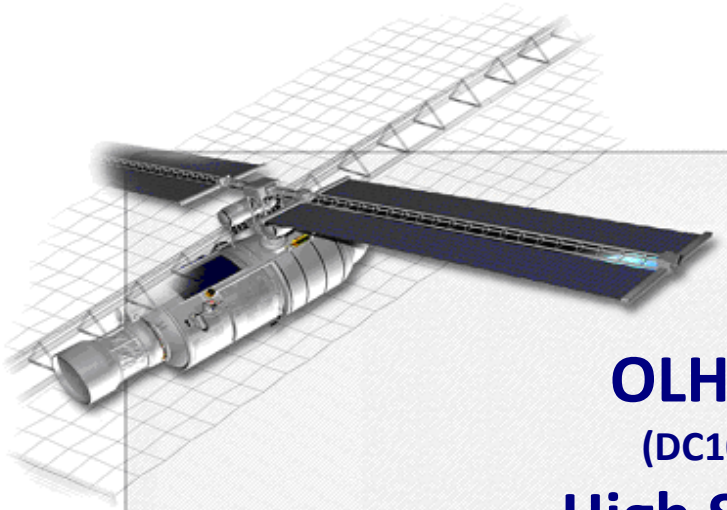
PROTONS DISPLACEMENT DAMAGE TEST REPORT



OLH400

(DC1048)

High Speed Low Input-Current Optocoupler From ISOLINK

TRAD/TP/OLH400/XXX1/ESA/YP/1104		Labège, April 16th, 2012
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Issue : 0		
To: Marc POIZAT	Project/Program :	ESA Contract N°4000102571/10/NL/AF-Radiation Characterization of Laplace RH optocouplers, sensors and detectors

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1 INTRODUCTION

This report includes the test results of OLH400, a High Speed Hermetic Low Input-Current Optocoupler from ISOLINK to evaluate displacement damage effects under proton irradiation. During January and February 2012, TRAD characterized this device for proton sensitivity at the KVI Facility, in GRONINGEN, The Netherlands using their AGOR cyclotron.
The objectives of the test are:

- to detect and measure the degradation of device parameters as a function of proton fluence,
- to determine if device parameters are within specified limits after exposure to final level of proton fluence.

2 DOCUMENTS

2.1 Applicable Documents

AD	1.	ESA contract	N°4000102571/10/NL/AF-Radiation Characterization of Laplace RH optocouplers, sensors and detectors
AD	2.	Irradiation Test Plan	ITP-TP-OLH400-ISO-ESA-1119, Iss.3, 08/02/2012

2.2 Reference Documents

RD	3.	Datasheet OLH400	High Speed Hermetic Low Input-Current Optocoupler dated 27/03/2002

3 DEVICE INFORMATION

3.1 Device description

The OLH400 is a High Speed Hermetic Low Input-Current Optocoupler. The OLH 400 has high current transfer ratio at very low input currents making it ideal for applications such as MOS, CMOS, and low power logic interfacing or RS232C data transmission systems. Each OLH 400 has a light emitting diode and an integrated photodiode-darlington detector IC mounted and coupled in a custom hermetic TO5 package providing 1000 Vdc electrical isolation between input and output.
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Type	OLH400
Manufacturer	ISOLINK
Function	Optocoupler
Package	TO5
Date Code	1048
Sample size	46 parts (3x15 test parts + 1 control sample)

3.2 Procurement information

75 parts OLH400 were delivered by ISOLINK through its French representative EUROMIP.

3.3 External view

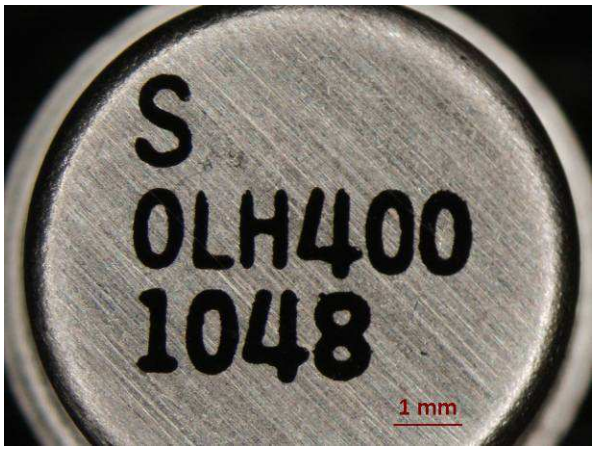


Figure 1: package marking

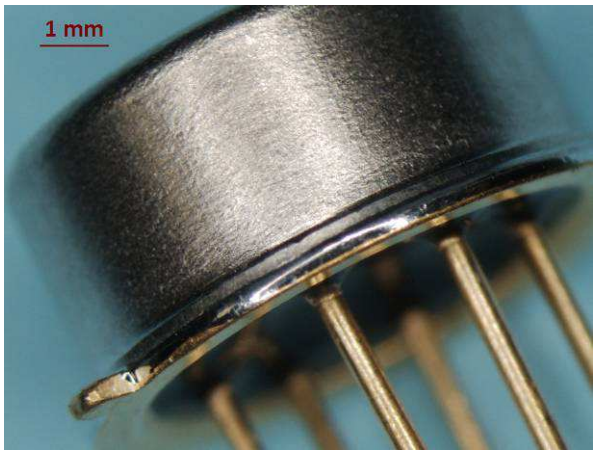
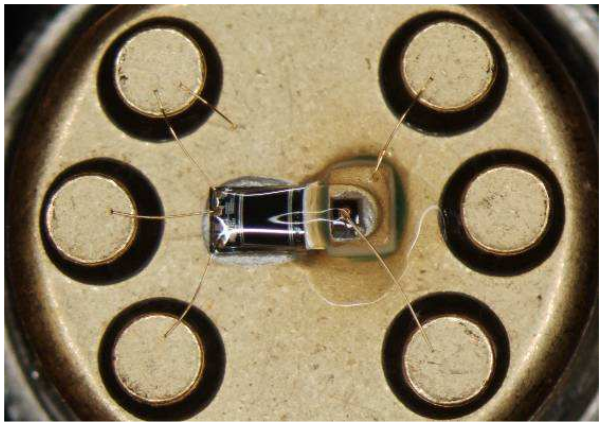


Figure 2: package view

3.4 Internal view



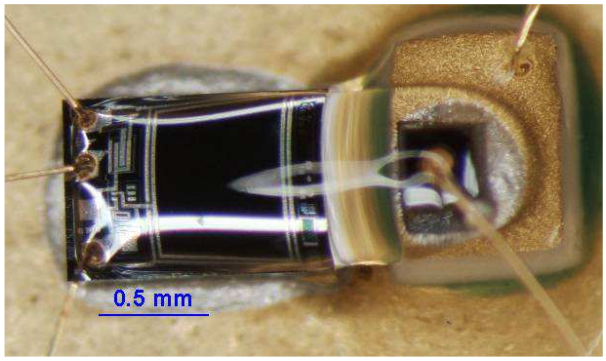
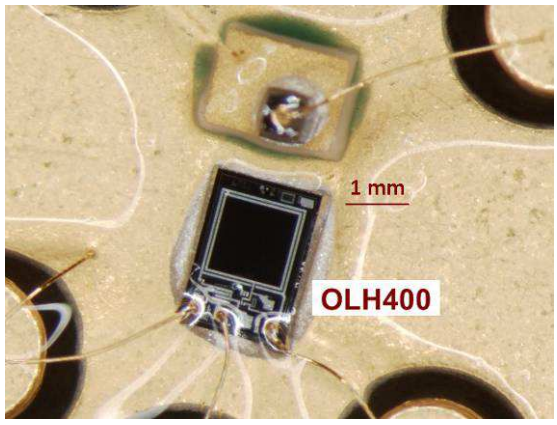


Figure 3: view of LED and integrated photodiode-darlington detector IC



3.5 Serialization

Each part is serialized to enable pre and post test identification and comparison.

Serial Number			
P1 (30MeV)	P2 (60MeV)	P3 (190MeV)	Mode
1 (Control sample)			
2	2	2	Bias 1
3	3	3	Bias 1
4	4	4	Bias 1
5	5	5	Bias 1
6	6	6	Bias 1
7	7	7	Bias 2
8	8	8	Bias 2
9	9	9	Bias 2
10	10	10	Bias 2
11	11	11	Bias 2
12	12	12	Off
13	13	13	Off
14	14	14	Off
15	15	15	Off
16	16	16	Off

4 IRRADIATION MEANS AND CONDITIONS

4.1 AGORFIRM/KVI irradiation facility (The Nederlands)

AGORFIRM is a facility that uses a dedicated beam line of the AGOR cyclotron for irradiations with protons in air. The facility is available for radiation damage studies. The standard proton beams used for irradiations produced by this cyclotron have primary energies of 90, 150 and 190 MeV.
The standard irradiation field has a diameter of 70 mm and homogeneity of better than ± 3%.

Figure 4: samples installed for irradiation

4.2 Energy and Flux measurement

The energy resolution of the beam when leaving the cyclotron is typically better than 0.25%. However, at the DUT position the resolution is in the order of a few MeV due to scattering in air, the scatter system and, when used, the energy degrader.
The proton flux at the centre of the irradiation field is measured with a 10 mm diameter scintillator detector. During the irradiation, the flux is monitored with a Beam Intensity Monitor (BIM). Before an irradiation the BIM signal (in Monitor Units) is related to the scintillator signal to obtain the flux calibration in protons cm^{-2} per MU. This calibration is conducted for every field size and every energy used during an irradiation.

4.3 Experimental conditions

An Equivalent total fluence of 1E12 #/cm² of 10 MeV protons is required [AD2] for this TNID (Total Non-Ionizing Dose) evaluation test. Considering NIEL (Non Ionizing Energy Loss) value for 10 MeV proton (7.86E-03 MeV cm^2 g^{-1}), total fluence to be reached at each energy is:

30	MeV	8,22E+11 cm^{-2}
60	MeV	1,14E+12 cm^{-2}
190	MeV	1,91E+12 cm^{-2}

Five steps were defined to determine the component degradation under 30MeV, 60MeV, 190MeV proton irradiation. The test devices have been exposed to the following proton fluence levels:

p/cm2	1,70E+10	8,50E+10	1,70E+11	1,70E+12
Energy (MeV)	30	30	30	30
p/cm2	2,30E+10	1,15E+11	2,30E+11	1,14E+12
Energy (MeV)	60	60	60	60
p/cm2	4,00E+10	2,00E+11	4,00E+11	1,91E+12
Energy (MeV)	190	190	190	190

5 ELECTRICAL TESTS

Electrical parameters to be measured in pre and post exposure tests are described in the following table. Electrical tests are performed on each part using the test set-up hereunder. All required data are recorded for each device. Test conditions and limits are given in the applicable irradiation test plan [AD2] and shown hereafter.

5.1 Test set-up

TEST BOARD	TRAD/CT1/N/OPTO/ZIP14/BR/1109
TEST PROGRAM	OLH400_TP30MeV_XXX1_B1_V10.llb OLH400_TP60MeV_XXX1_B1_V10.llb OLH400_TP200MeV_XXX1_B1_V10.llb

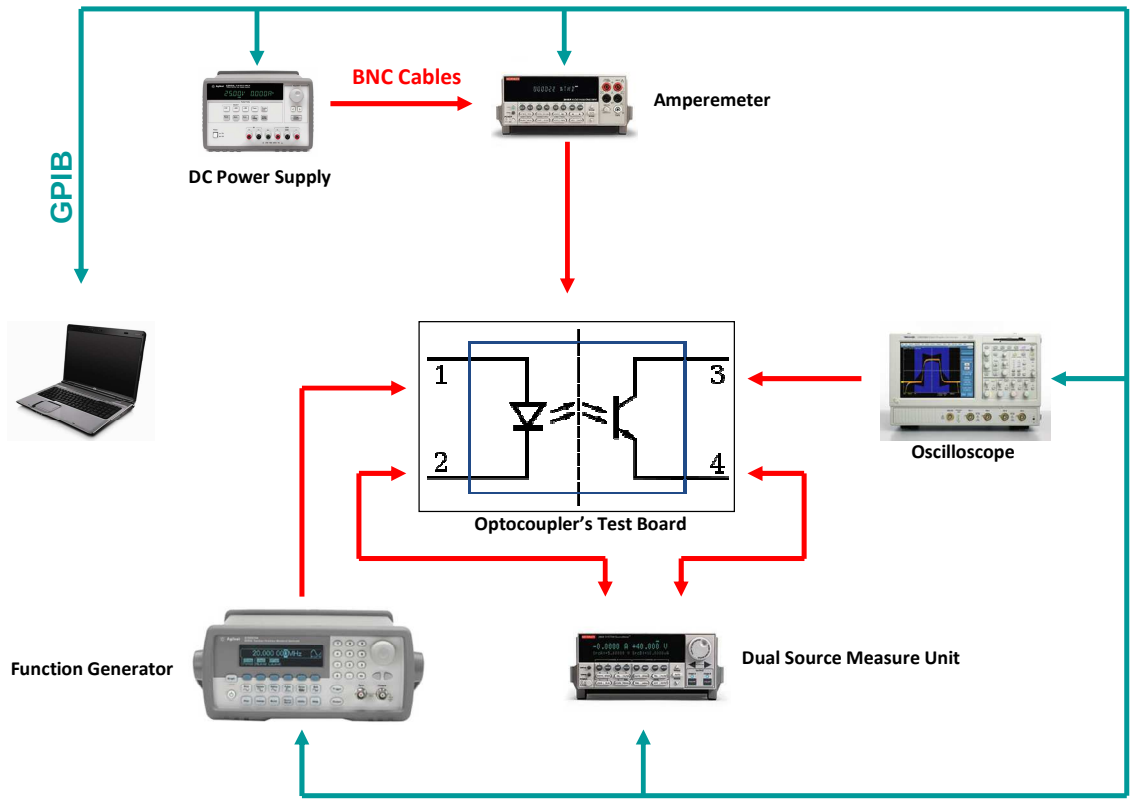


Figure 5: test principle

5.2 Test configuration

Samples were exposed to proton irradiation in three different modes - two on-modes (Figure 6 and Figure 7) and one off-mode (all terminal leads short-circuited) –

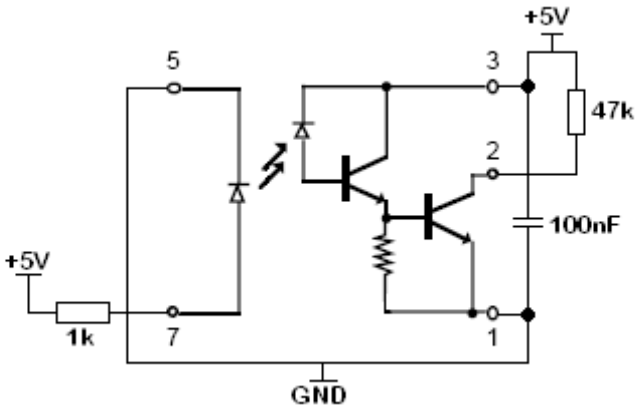


Figure 6: ON bias1

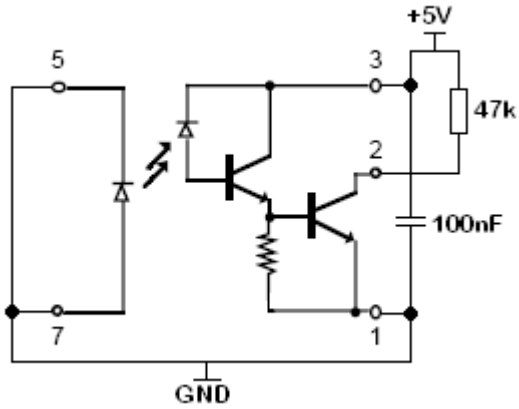


Figure 7: ON bias2

5.3 Electrical parameters

PARAMETER	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Logic Low Output Voltage	V_{OL1}	I_F=0.5 mA,I_{OL}=1.5mA,V_{CC}=4.5V		0.4	V
	V_{OL2}	I_F=5 mA,I_{OL}=10mA,V_{CC}=4.5V		0.4	V
Logic High Output Current	I_{OH}	I_F=0mA, V_O=V_{CC}=18v		250	µA
Logic Low Supply Current	I_{CCL}	I_F=1.6mA, V_{CC}=18V		2	mA
Logic High Supply Current	I_{CCH}	I_F=0mA, V_{CC}=18V		40	µA
Input Forward Voltage	V_F	I_F=1.6mA		2	V
Input Reverse Breakdown Voltage	B_{VR}	I_R=10 µA	3		V
Propagation Delay Time Logic High to Low	t_{PHL1}	I_F=0.5mA, R_L=4.7 KΩ, V_{CC}=5V		100	µs
	t_{PHL2}	I_F=5mA, R_L=680 Ω, V_{CC}=5V		10	µs
Propagation Delay Time Logic Low to High	t_{PLH1}	I_F=0.5mA, R_L=4.7 KΩ, V_{CC}=5V		60	µs
	t_{PlH2}	I_F=5mA, R_L=680 Ω, V_{CC}=5V		30	µs
Current Transfer Ratio	CTR1	I_F=1.6 mA, V_O=0.4V, V_{CC}=4.5V	300		%
	CTR2	I_F=0.16 mA, V_O=0.4V, V_{CC}=5V			%
	CTR3	I_F=0.32 mA, V_O=0.4V, V_{CC}=5V			%
	CTR4	I_F=1.6 mA, V_O=0.4V, V_{CC}=5V			%
	CTR5	I_F=16 mA, V_O=0.4V, V_{CC}=5V			%
	CTR6	I_F=1.6 mA, V_O=0.4V, V_{CC}=20V			%

Min/ Max values are those specified in the reference data-sheet [RD1].
Test measurements are performed at 25°C ± 10°C.

6 TEST HISTORY

Test sequence and all required conditions were executed as described in the test plan.
No incident during the test was noticed.

7 SUMMARY RESULTS

7.1 30 MeV proton irradiation summary results

Only the parameters with applicable test limits are shown hereunder.

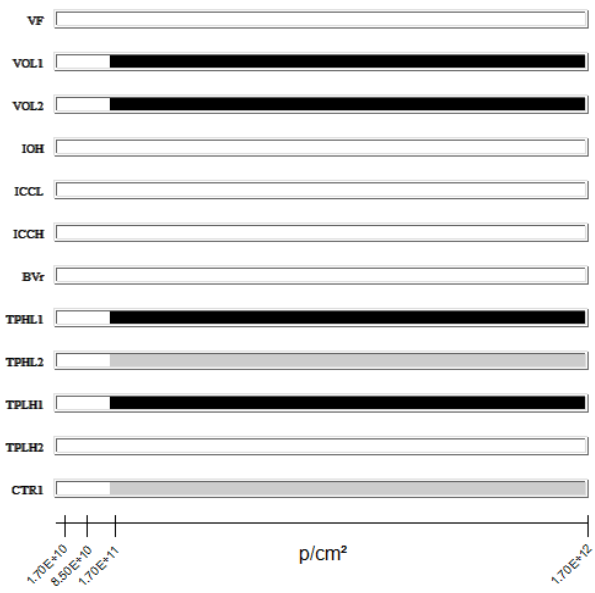


Figure 8: ON Bias 1 under 30 MeV protons

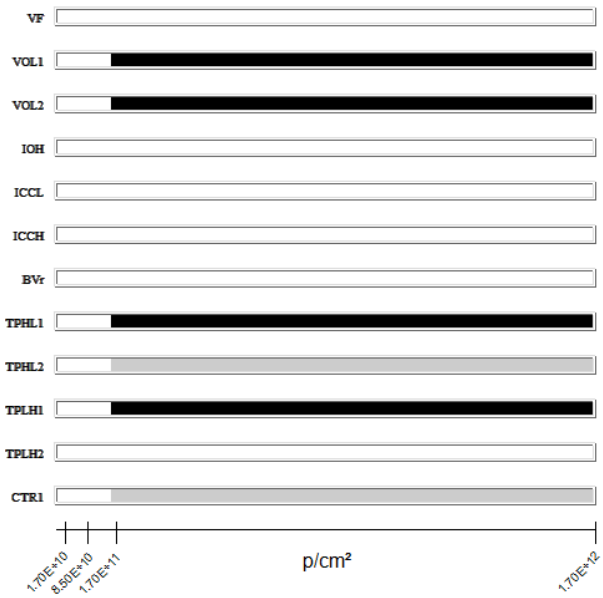


Figure 9: ON Bias 2 under 30 MeV protons

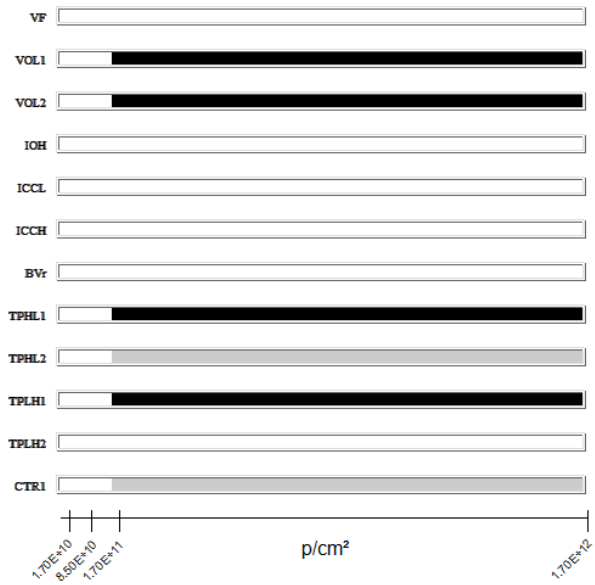
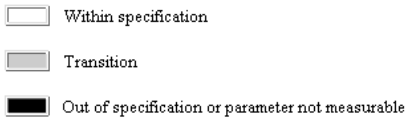


Figure 10: OFF Bias under 30 MeV protons



VOL1 and TPLH1 parameters are not measurable, whatever the Bias mode, at step 1.7E12.p/cm².

TPLH2 and CTR1 parameters are out of specification, whatever the Bias mode, at step 1.7E12.p/cm²:

- ON Bias1 mode: In the worst case, the TPLH2 parameter out of specification at 7.99 E11.p/cm² and the parameter CTR1 is out of specification at 1.48 E12.p/cm² by interpolation
- ON Bias2 mode: In the worst case, the TPLH2 parameter out of specification at 6.46 E11.p/cm² and the parameter CTR1 is out of specification at 1.45 E12.p/cm² by interpolation
- OFF mode: In the worst case, the TPLH2 parameter out of specification at 6.56 E11.p/cm² and the parameter CTR1 is out of specification at 1.45 E12.p/cm² by interpolation

As shown in Figure 8, Figure 9 and Figure 10, VOL2 and TPHL1 parameters are not measurable, whatever the Bias mode, at step 1.7E12.p/cm².

However, as shown in Figures hereunder:

- Two components tested in ON Bias1 exhibit VOL2 parameter drift within the specified value up to 1.17.E12p/cm².
- One component tested in off mode exhibits TPHL1 parameter drift within the specified value up to 1.17.E12p/cm².

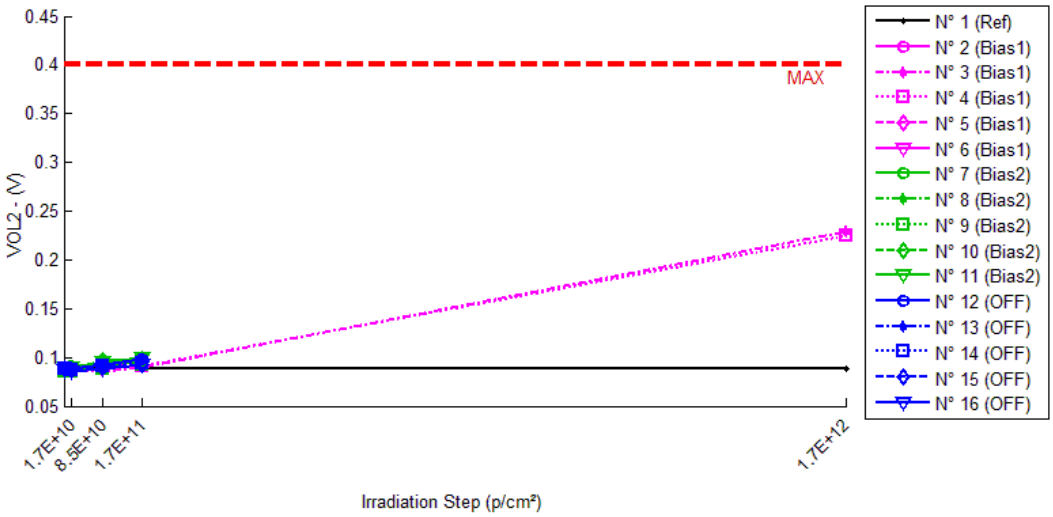


Figure 11: VOL2 function 30 MeV proton irradiation step for each component

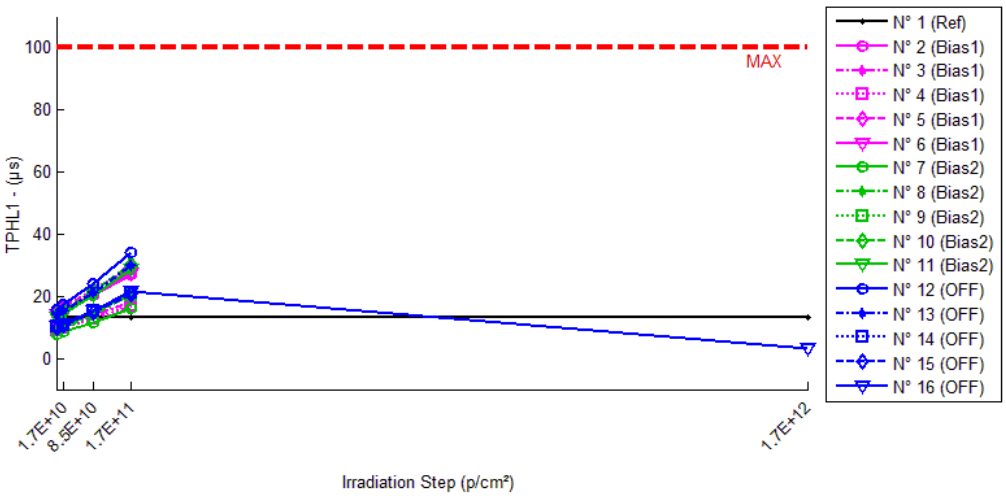


Figure 12: TPHL1 function 30 MeV proton irradiation step for each component

7.2 60 MeV proton irradiation summary results

Only the parameters with applicable test limits are shown hereunder.

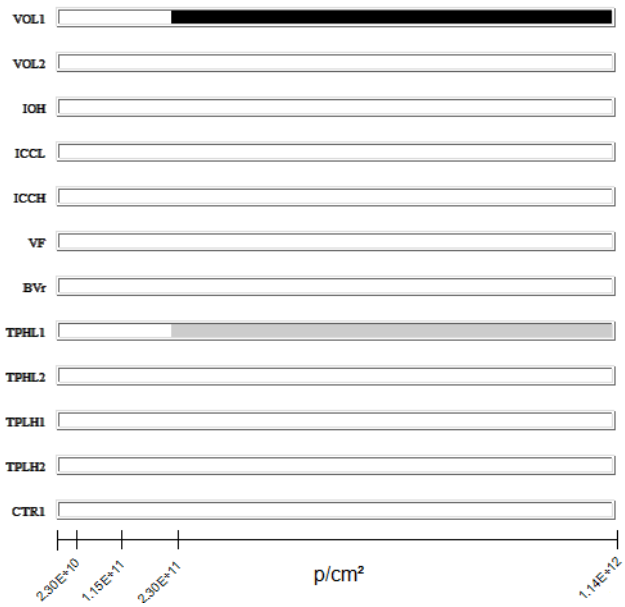


Figure 13: ON Bias 1 under 60 MeV protons

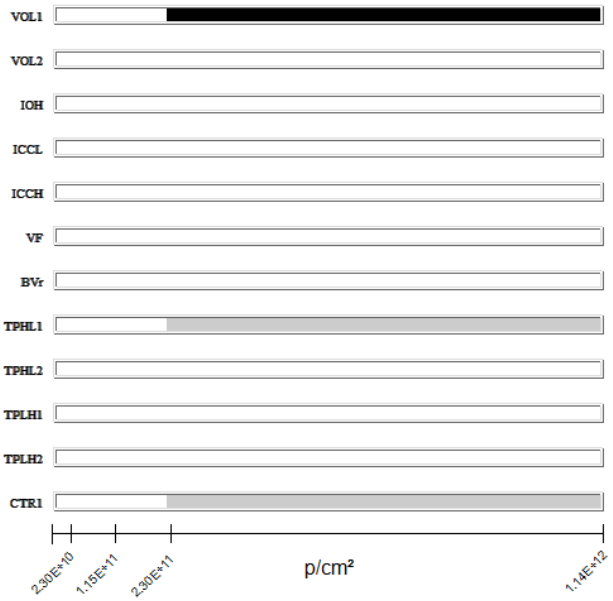
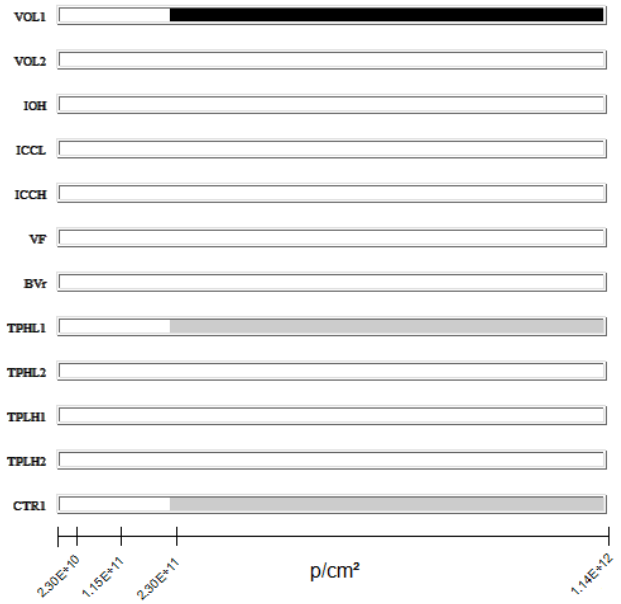


Figure 14: ON Bias 2 under 60 MeV protons



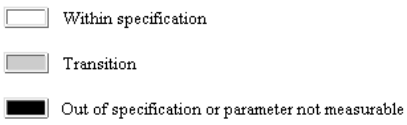


Figure 15: OFF Bias under 60 MeV protons

VOL1 is not measurable, whatever the Bias mode, at step **1.14E12.p/cm².**
TPLH1 is out of specification, whatever the Bias mode, at step **1.14E12.p/cm²:**

- ON Bias1 mode: out of specification at 7.35 E11.p/cm² by interpolation
- ON Bias2 mode: out of specification at 5.3 E11.p/cm² by interpolation
- OFF mode: out of specification at 5.91 E11.p/cm² by interpolation

CTR1 is out of specification, in ON Bias2 and OFF mode, at step **1.14E12.p/cm²:**

- ON Bias2 mode: out of specification at 1.09 E12.p/cm² by interpolation.
- OFF mode: out of specification at 1.09 E12.p/cm² by interpolation.

7.3 190 MeV proton irradiation summary results

Only the parameters with applicable test limits are shown hereunder.

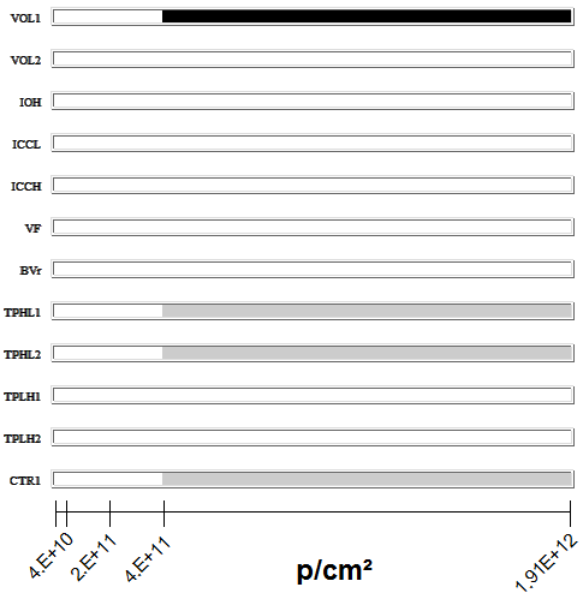


Figure 16: ON Bias 1 under 190 MeV protons

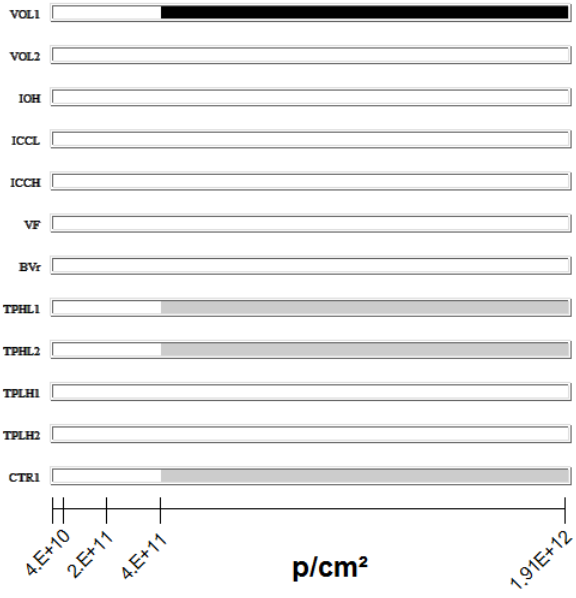
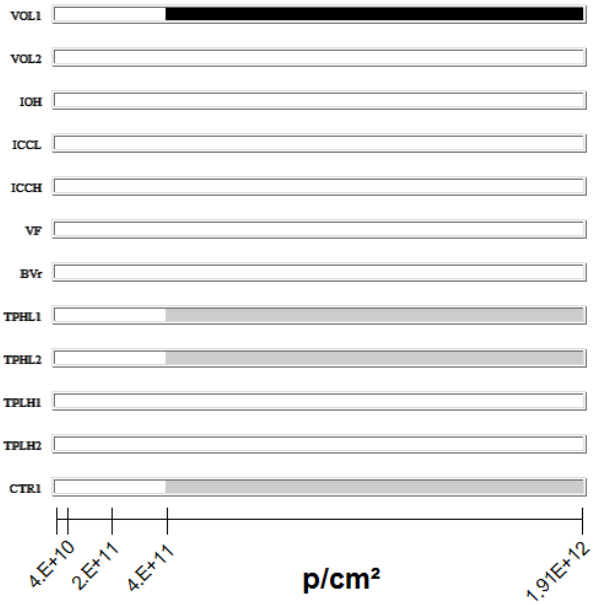


Figure 17: ON Bias 2 under 190 MeV protons



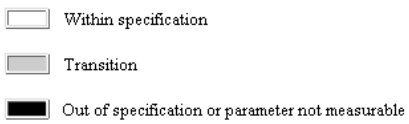


Figure 18: OFF Bias under 190 MeV protons

VOL1 is not measurable, whatever the Bias mode, at step **1.91E12.p/cm².**

TPLH1 is out of specification, whatever the Bias mode, at step **1.91E12.p/cm²:**

- ON Bias1 mode: out of specification at 8.29 E11.p/cm² by interpolation
- ON Bias2 mode: out of specification at 8.45 E11p/cm² by interpolation
- OFF mode: out of specification at 5. 8.01 E11.p/cm² by interpolation

TPLH2 is out of specification, whatever the Bias mode, at step **1.91E12.p/cm²:**

- ON Bias1 mode: out of specification at 1.57 E12.p/cm² by interpolation
- ON Bias2 mode: out of specification at 1.83 E12.p/cm² by interpolation
- OFF mode: out of specification at 1.77 E12.p/cm² by interpolation.

CTR1 is out of specification, for ON Bias2 and OFF mode, at step **1.91E12.p/cm²:**

- ON Bias1 mode: out of specification at 1.82 E12 p/cm² by interpolation
- ON Bias2 mode: out of specification at 1.8 E12.p/cm² by interpolation.
- OFF mode: out of specification at 1.79 E12.p/cm² by interpolation.

8 CONCLUSION

Total fluence steady-state irradiation test using protons has been applied on OLH400 type, a High Speed Hermetic Low Input-Current Optocoupler from ISOLINK**:**

- up to 1.7E+12 protons/cm², with an energy of 30 MeV
- up to 1,14E+12 protons/cm², with an energy of 60 MeV
- up to 1,91E+12 protons/cm², with an energy of 190 MeV

The results indicate that:

- Under 30MeV proton Beam:

All devices are functional up to 1.7 E+11 protons/cm² total fluence level.
The CTR3 parameter is out of specification at 1.7E+12 protons/cm² for all devices tested, and TPHL is out of specification at 1.7E+12 protons/cm² in OFF and ON Bias2 condition.
It seems that OFF and ON Bias2 conditions are more sensitive to proton displacement damage.

- Under 60MeV proton Beam:

All devices are functional up to 1.14 E+12 protons/cm² total fluence level.

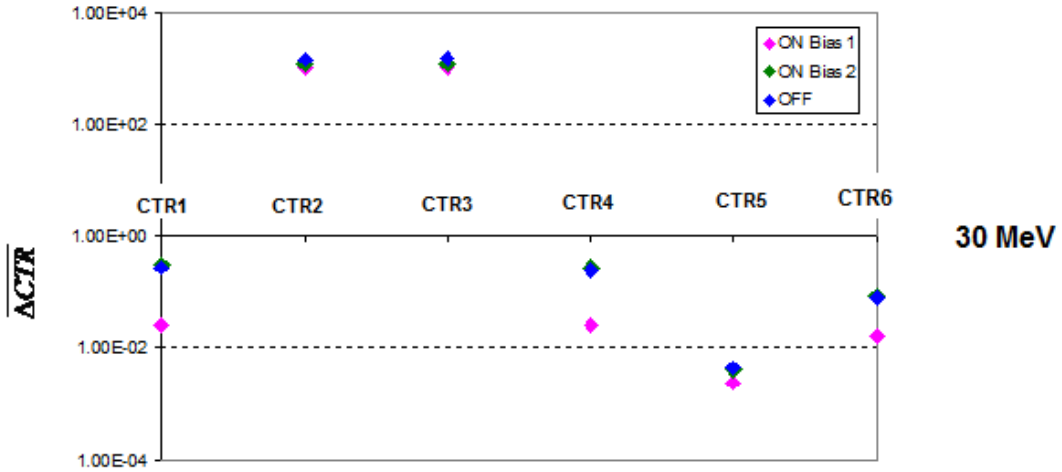
- Average drift current transfer ratio are represented in next Figure depending proton energy, CTR configuration and Bias condition at final irradiation step.

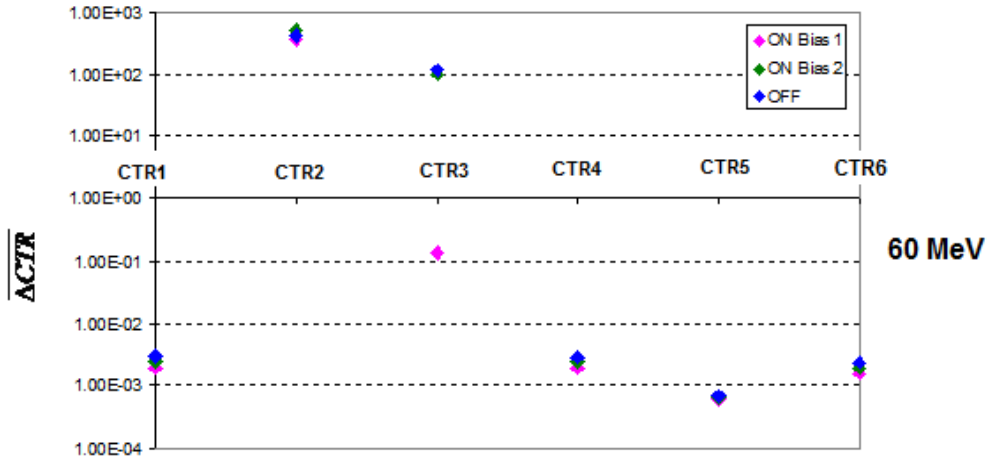
- CTR5 configuration (I_F=16 mA, V_O=0.4V, V_{CC}=5V) exhibits the smallest average parameter drift whatever the Bias mode.

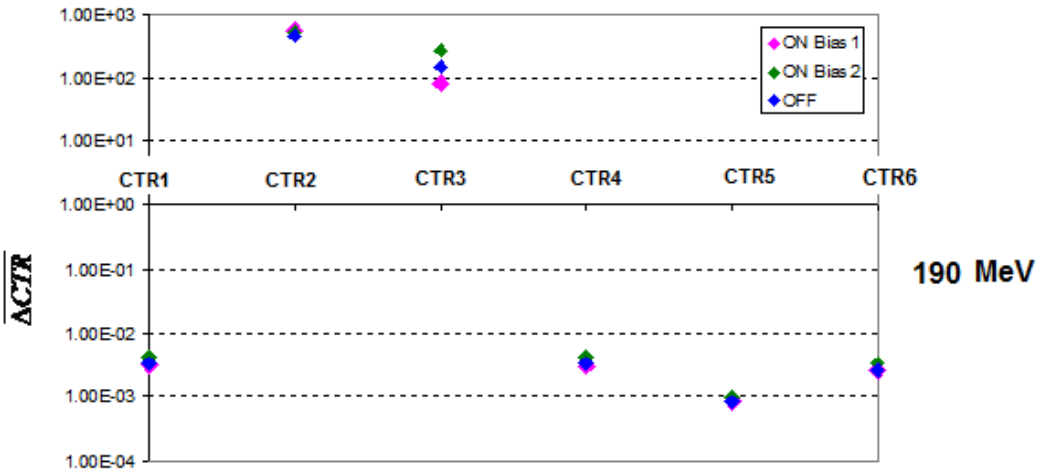
Conversely, CRT2 configuration (I_F=0.16 mA, V_O=0.4V, V_{CC}=5V) exhibits the greater parameter degradation.
Moreover CTR1 (I_F=1.6 mA, V_O=0.4V, V_{CC}=5V), which is the only CTR configuration subject to specification, is out of specification at step 1.7E12p/cm² with 30MeV proton, at step 1.14E12.p/cm² with 60MeV proton and at step 1.91E12.p/cm² with 190MeV proton.

- ON Bias1 configuration is the less sensitive configuration for all CTR configuration.

Conversely, depending on proton energy and CTR configuration OFF or ON Bias 2 configuration is the most sensitive configuration. Indeed average CTR drifts are almost the same for OFF and ON Bias 2 configurations.


1.00E+04
1.00E+02
1.00E+00
1.00E-02
1.00E-04
ΔCTR
CTR1
CTR2
CTR3
CTR4
CTR5
CTR6
ON Bias 1
ON Bias 2
OFF
30 MeV


1.00E+03
1.00E+02
1.00E+01
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
ΔCTR
CTR1
CTR2
CTR3
CTR4
CTR5
CTR6
ON Bias 1
ON Bias 2
OFF
60 MeV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1.00E+02
1.00E+01
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
ΔCTR
CTR1
CTR2
CTR3
CTR4
CTR5
CTR6
ON Bias 1
ON Bias 2
OFF
190 MeV

9 DETAILED TESTS RESULTS

The pre and post radiation test results are shown graphically in the following pages

- 30MeV: 9-2 to 9-35
- 60MeV: 10-2 to 10-35
- 190MeV: 11-2 to 11-35

The data is displayed in the following tables and graphs.

These graphs show parameter's shifts observed during the proton testing sequence. The control sample results are shown on each graph (black curve).

When available in the device data-sheet/specification, the maximum/minimum/typical values are also shown (red dotted line).

The tables include drift calculation between each measurement step and the "0" protons/cm² step.

For CTR values, the formula used is:

$$\text{Drift} = \frac{1}{\text{measurement } (\text{X protons /cm}^2)} - \frac{1}{\text{measurement } (0 \text{ proton /cm}^2)}$$

For the other measurements the formula used is:

Drift value= measurement (X protons/cm²) - measurement (0 proton/cm²)

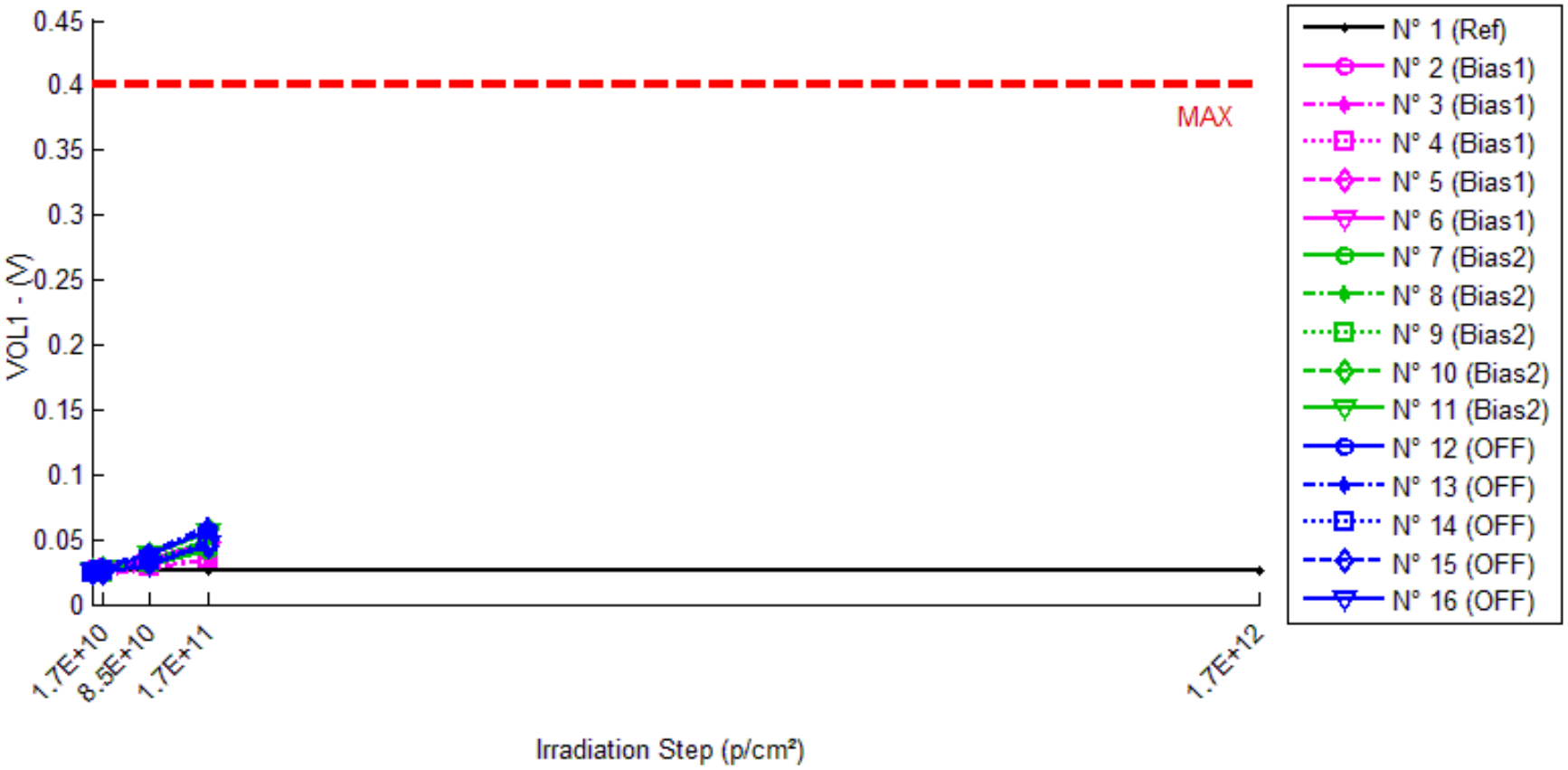
30 MeV proton / detailed results

CONTENTS

30 MeV proton / detailed results

1. VOL1

Ta=25°C; If=0.5mA; IOL=1.5mA; Vcc=4.5V



30 MeV proton / detailed results

VOL1 . (V) **Max = 0.4**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	0.026	0.026	0.026	0.026	0.026
N° 2 (Bias1)	0.027	0.029	0.036	0.048	Not Measurable*
N° 3 (Bias1)	0.023	0.023	0.027	0.035	Not Measurable*
N° 4 (Bias1)	0.024	0.024	0.029	0.036	Not Measurable*
N° 5 (Bias1)	0.026	0.028	0.035	0.047	Not Measurable*
N° 6 (Bias1)	0.025	0.026	0.032	0.042	Not Measurable*
N° 7 (Bias2)	0.024	0.025	0.031	0.041	Not Measurable*
N° 8 (Bias2)	0.024	0.026	0.034	0.049	Not Measurable*
N° 9 (Bias2)	0.024	0.025	0.032	0.044	Not Measurable*
N° 10 (Bias2)	0.026	0.028	0.039	0.057	Not Measurable*
N° 11 (Bias2)	0.026	0.028	0.038	0.055	Not Measurable*
N° 12 (OFF)	0.026	0.028	0.038	0.057	Not Measurable*
N° 13 (OFF)	0.027	0.029	0.040	0.061	Not Measurable*
N° 14 (OFF)	0.025	0.026	0.034	0.048	Not Measurable*
N° 15 (OFF)	0.024	0.025	0.032	0.044	Not Measurable*
N° 16 (OFF)	0.024	0.025	0.031	0.047	Not Measurable*

* Not measurable with this test condition

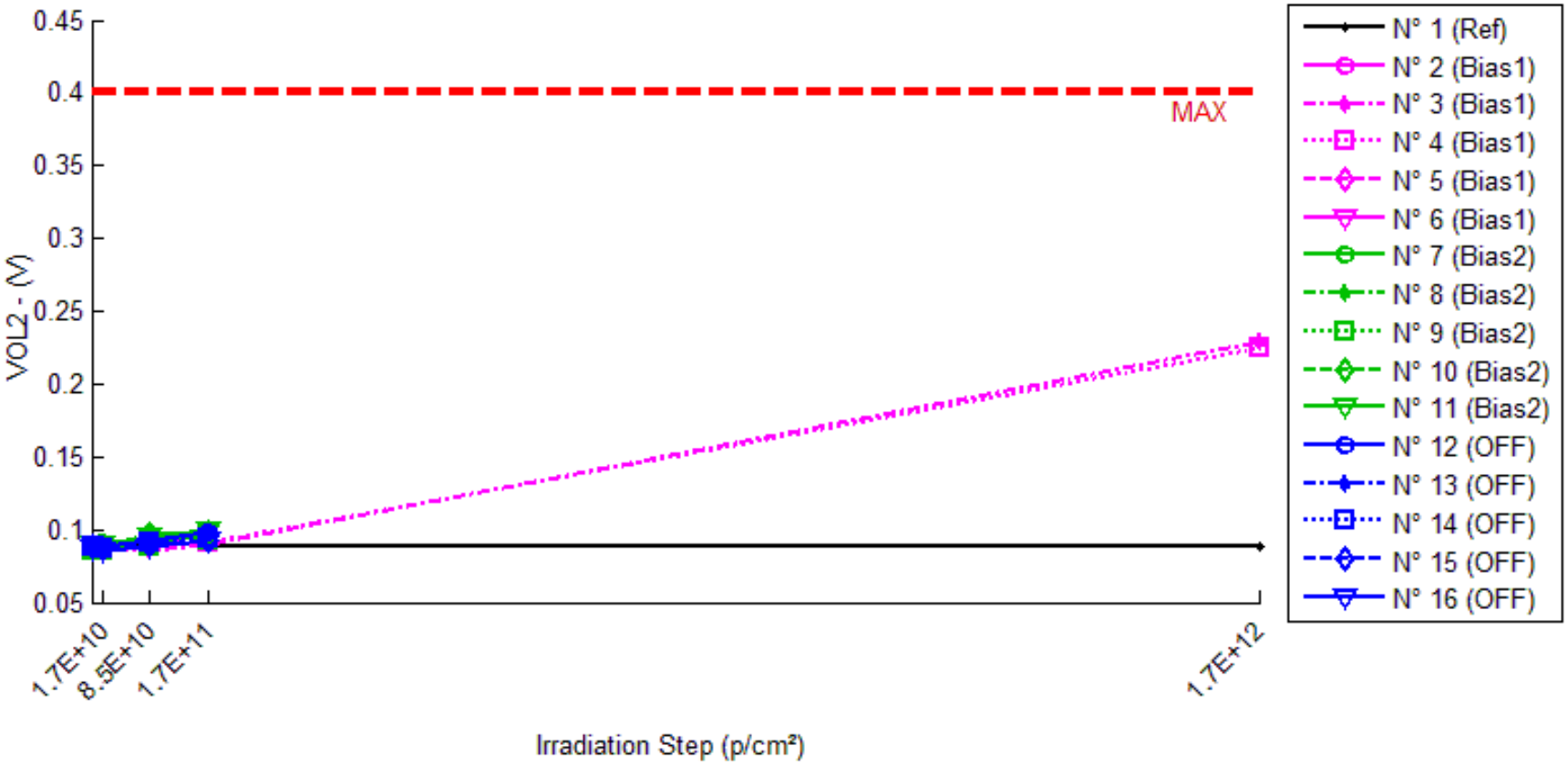
Delta [VOL1]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-7.060E-6	1.005E-4	6.840E-5	-9.827E-5
N° 2 (Bias1)	---	1.452E-3	8.731E-3	2.085E-2	NaN
N° 3 (Bias1)	---	6.650E-4	4.654E-3	1.212E-2	NaN
N° 4 (Bias1)	---	7.501E-4	5.004E-3	1.260E-2	NaN
N° 5 (Bias1)	---	1.447E-3	8.609E-3	2.110E-2	NaN
N° 6 (Bias1)	---	1.206E-3	6.937E-3	1.700E-2	NaN
N° 7 (Bias2)	---	1.280E-3	6.875E-3	1.725E-2	NaN
N° 8 (Bias2)	---	1.832E-3	9.559E-3	2.447E-2	NaN
N° 9 (Bias2)	---	1.401E-3	8.148E-3	2.038E-2	NaN
N° 10 (Bias2)	---	2.170E-3	1.296E-2	3.059E-2	NaN
N° 11 (Bias2)	---	1.937E-3	1.148E-2	2.858E-2	NaN
N° 12 (OFF)	---	1.984E-3	1.253E-2	3.104E-2	NaN
N° 13 (OFF)	---	2.093E-3	1.357E-2	3.429E-2	NaN
N° 14 (OFF)	---	1.374E-3	9.494E-3	2.344E-2	NaN
N° 15 (OFF)	---	1.158E-3	7.953E-3	2.029E-2	NaN
N° 16 (OFF)	---	1.319E-3	7.429E-3	2.320E-2	NaN
Average (OFF)	---	1.104E-3	6.787E-3	1.673E-2	NaN
σ (OFF)	---	3.764E-4	1.927E-3	4.316E-3	0.000E+0
Average+3σ (OFF)	---	2.233E-3	1.257E-2	2.968E-2	NaN
Average-3σ (OFF)	---	-2.531E-5	1.006E-3	3.786E-3	NaN
Average (Bias1)	---	1.724E-3	9.804E-3	2.425E-2	NaN
σ (Bias1)	---	3.732E-4	2.457E-3	5.542E-3	0.000E+0
Average+3σ (Bias1)	---	2.844E-3	1.718E-2	4.088E-2	NaN
Average-3σ (Bias1)	---	6.043E-4	2.432E-3	7.627E-3	NaN
Average (Bias2)	---	1.586E-3	1.020E-2	2.645E-2	NaN
σ (Bias2)	---	4.227E-4	2.740E-3	5.919E-3	0.000E+0
Average+3σ (Bias2)	---	2.854E-3	1.842E-2	4.421E-2	NaN
Average-3σ (Bias2)	---	3.174E-4	1.977E-3	8.696E-3	NaN

30 MeV proton / detailed results

2. VOL2

Ta=25°C; If=5mA; IOL=10mA; Vcc=4.5V



30 MeV proton / detailed results

VOL2 . (V) **Max = 0.4**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	0.090	0.089	0.090	0.090	0.089
N° 2 (Bias1)	0.090	0.090	0.093	0.098	Not Measurable*
N° 3 (Bias1)	0.086	0.085	0.086	0.090	0.229
N° 4 (Bias1)	0.087	0.086	0.088	0.091	0.225
N° 5 (Bias1)	0.088	0.087	0.090	0.096	Not Measurable*
N° 6 (Bias1)	0.087	0.087	0.089	0.092	Not Measurable*
N° 7 (Bias2)	0.090	0.091	0.092	0.096	Not Measurable*
N° 8 (Bias2)	0.088	0.089	0.091	0.095	Not Measurable*
N° 9 (Bias2)	0.086	0.086	0.089	0.093	Not Measurable*
N° 10 (Bias2)	0.088	0.088	0.097	0.098	Not Measurable*
N° 11 (Bias2)	0.090	0.090	0.095	0.099	Not Measurable*
N° 12 (OFF)	0.088	0.088	0.093	0.098	Not Measurable*
N° 13 (OFF)	0.089	0.088	0.093	0.098	Not Measurable*
N° 14 (OFF)	0.088	0.087	0.091	0.094	Not Measurable*
N° 15 (OFF)	0.088	0.087	0.090	0.093	Not Measurable*
N° 16 (OFF)	0.087	0.086	0.089	0.093	Not Measurable*

* Not measurable with this test condition

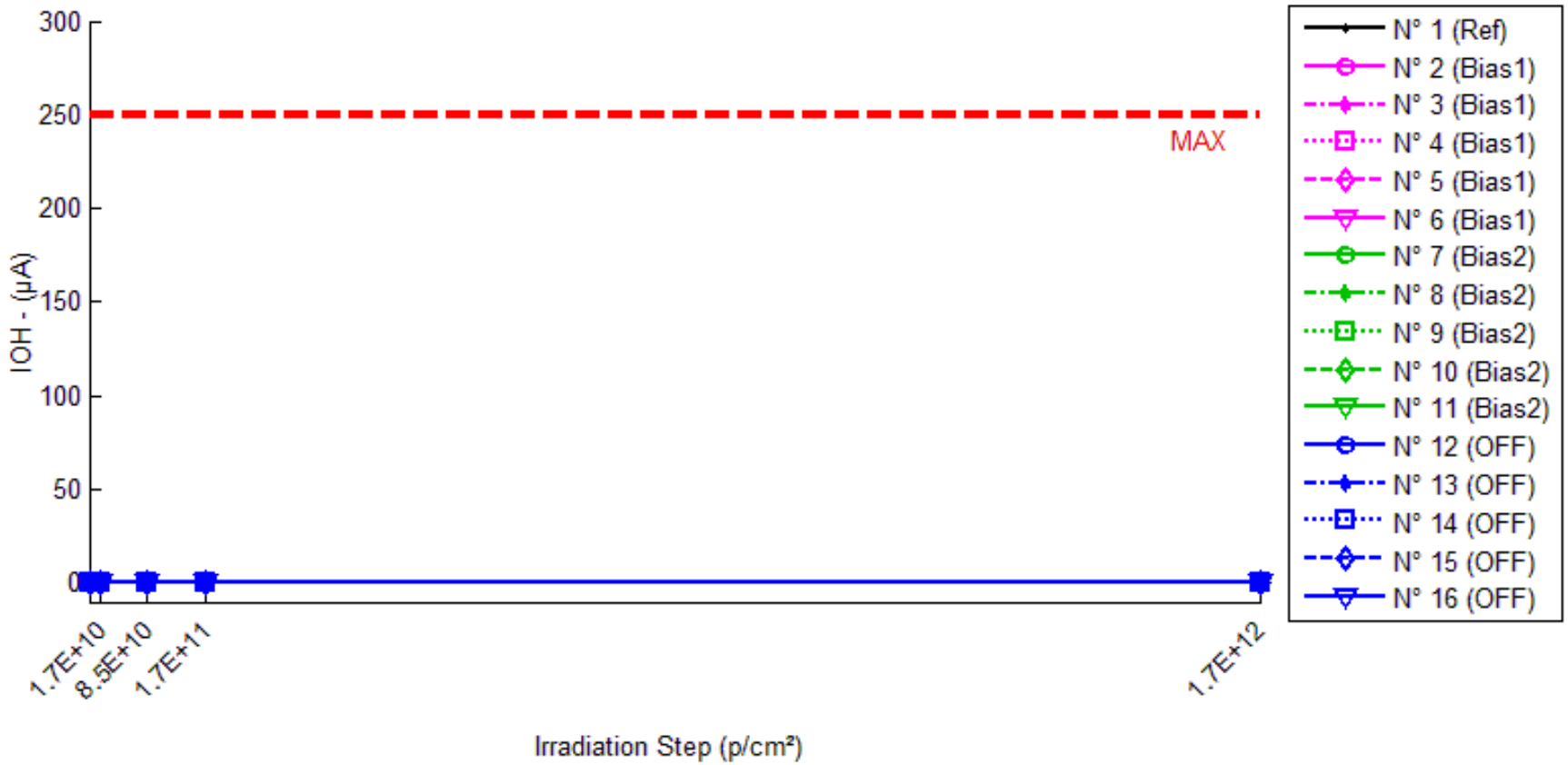
Delta [VOL2]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-7.312E-4	5.849E-4	5.440E-4	-8.631E-4
N° 2 (Bias1)	---	-5.026E-4	2.772E-3	7.565E-3	NaN
N° 3 (Bias1)	---	-8.339E-4	6.233E-4	4.718E-3	1.429E-1
N° 4 (Bias1)	---	-7.853E-4	6.807E-4	4.379E-3	1.377E-1
N° 5 (Bias1)	---	-2.982E-4	2.296E-3	8.656E-3	NaN
N° 6 (Bias1)	---	4.122E-4	1.799E-3	5.368E-3	NaN
N° 7 (Bias2)	---	7.770E-4	1.894E-3	5.796E-3	NaN
N° 8 (Bias2)	---	1.669E-3	2.951E-3	7.450E-3	NaN
N° 9 (Bias2)	---	4.181E-4	3.227E-3	7.536E-3	NaN
N° 10 (Bias2)	---	6.336E-4	9.105E-3	1.041E-2	NaN
N° 11 (Bias2)	---	7.281E-4	5.129E-3	9.057E-3	NaN
N° 12 (OFF)	---	-3.797E-4	4.319E-3	9.387E-3	NaN
N° 13 (OFF)	---	-5.489E-4	4.286E-3	9.769E-3	NaN
N° 14 (OFF)	---	-8.892E-4	2.858E-3	6.367E-3	NaN
N° 15 (OFF)	---	-8.332E-4	2.130E-3	5.464E-3	NaN
N° 16 (OFF)	---	-7.594E-4	2.171E-3	6.418E-3	NaN
Average (OFF)	---	-4.016E-4	1.634E-3	6.137E-3	1.403E-1
σ (OFF)	---	5.043E-4	9.605E-4	1.876E-3	3.724E-3
Average+3σ (OFF)	---	1.111E-3	4.516E-3	1.177E-2	1.515E-1
Average-3σ (OFF)	---	-1.914E-3	-1.248E-3	5.087E-4	1.291E-1
Average (Bias1)	---	8.451E-4	4.461E-3	8.049E-3	NaN
σ (Bias1)	---	4.805E-4	2.846E-3	1.752E-3	0.000E+0
Average+3σ (Bias1)	---	2.287E-3	1.300E-2	1.330E-2	NaN
Average-3σ (Bias1)	---	-5.965E-4	-4.077E-3	2.794E-3	NaN
Average (Bias2)	---	-6.821E-4	3.153E-3	7.481E-3	NaN
σ (Bias2)	---	2.127E-4	1.089E-3	1.956E-3	0.000E+0
Average+3σ (Bias2)	---	-4.404E-5	6.419E-3	1.335E-2	NaN
Average-3σ (Bias2)	---	-1.320E-3	-1.131E-4	1.613E-3	NaN

30 MeV proton / detailed results

3. IOH

Ta=25°C; If=0; Vo=Vcc=18V



30 MeV proton / detailed results

IOH . (µA) **Max = 250.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	4.706E-4	4.514E-4	4.431E-4	4.414E-4	4.545E-4
N° 2 (Bias1)	4.539E-4	4.414E-4	4.200E-4	4.612E-4	8.457E-4
N° 3 (Bias1)	4.352E-4	4.318E-4	4.473E-4	4.561E-4	8.030E-4
N° 4 (Bias1)	4.872E-4	4.729E-4	4.895E-4	5.068E-4	8.694E-4
N° 5 (Bias1)	4.645E-4	4.620E-4	4.671E-4	4.809E-4	8.204E-4
N° 6 (Bias1)	5.571E-4	5.627E-4	5.612E-4	5.701E-4	9.047E-4
N° 7 (Bias2)	4.770E-4	4.271E-4	4.299E-4	4.576E-4	7.612E-4
N° 8 (Bias2)	4.643E-4	4.179E-4	4.325E-4	4.504E-4	8.240E-4
N° 9 (Bias2)	4.903E-4	4.354E-4	4.466E-4	4.633E-4	8.266E-4
N° 10 (Bias2)	4.740E-4	4.380E-4	4.502E-4	4.635E-4	8.036E-4
N° 11 (Bias2)	4.787E-4	4.314E-4	4.448E-4	4.594E-4	7.769E-4
N° 12 (OFF)	4.801E-4	4.400E-4	4.561E-4	4.729E-4	8.811E-4
N° 13 (OFF)	4.768E-4	4.436E-4	4.589E-4	4.818E-4	8.801E-4
N° 14 (OFF)	4.770E-4	4.594E-4	4.650E-4	4.845E-4	8.267E-4
N° 15 (OFF)	4.821E-4	4.559E-4	4.747E-4	4.568E-4	8.384E-4
N° 16 (OFF)	4.882E-4	4.600E-4	4.850E-4	4.927E-4	8.345E-4

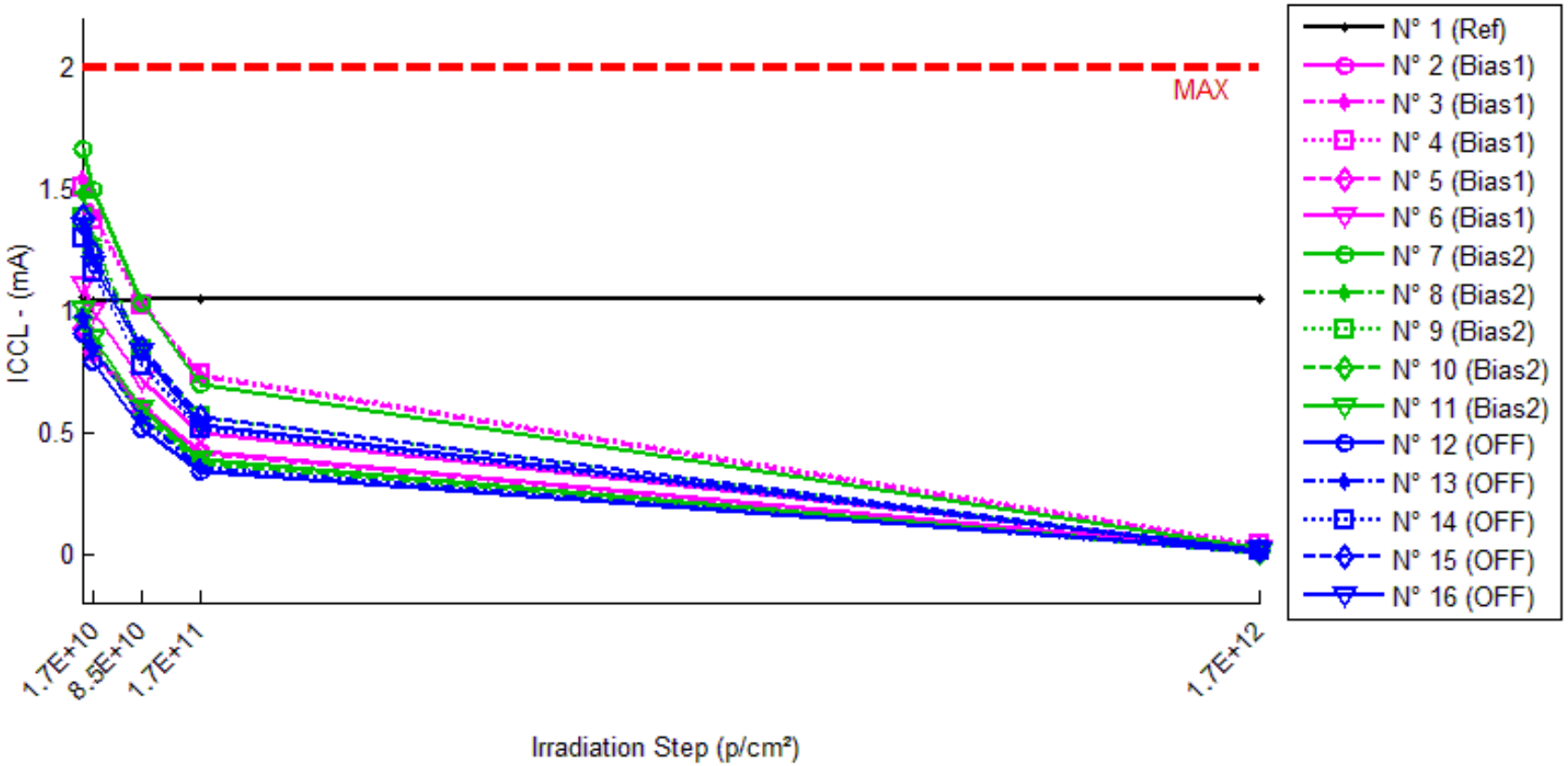
Delta [IOH]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-1.920E-5	-2.741E-5	-2.913E-5	-1.606E-5
N° 2 (Bias1)	---	-1.249E-5	-3.391E-5	7.290E-6	3.918E-4
N° 3 (Bias1)	---	-3.354E-6	1.211E-5	2.091E-5	3.678E-4
N° 4 (Bias1)	---	-1.429E-5	2.344E-6	1.957E-5	3.822E-4
N° 5 (Bias1)	---	-2.475E-6	2.555E-6	1.634E-5	3.559E-4
N° 6 (Bias1)	---	5.657E-6	4.105E-6	1.307E-5	3.476E-4
N° 7 (Bias2)	---	-4.988E-5	-4.711E-5	-1.937E-5	2.842E-4
N° 8 (Bias2)	---	-4.636E-5	-3.181E-5	-1.388E-5	3.597E-4
N° 9 (Bias2)	---	-5.487E-5	-4.372E-5	-2.695E-5	3.363E-4
N° 10 (Bias2)	---	-3.605E-5	-2.385E-5	-1.057E-5	3.295E-4
N° 11 (Bias2)	---	-4.732E-5	-3.391E-5	-1.933E-5	2.982E-4
N° 12 (OFF)	---	-4.011E-5	-2.398E-5	-7.130E-6	4.010E-4
N° 13 (OFF)	---	-3.316E-5	-1.782E-5	5.024E-6	4.033E-4
N° 14 (OFF)	---	-1.765E-5	-1.199E-5	7.540E-6	3.497E-4
N° 15 (OFF)	---	-2.624E-5	-7.422E-6	-2.528E-5	3.563E-4
N° 16 (OFF)	---	-2.813E-5	-3.148E-6	4.563E-6	3.463E-4
Average (OFF)	---	-5.391E-6	-2.559E-6	1.544E-5	3.691E-4
σ (OFF)	---	8.130E-6	1.798E-5	5.473E-6	1.821E-5
Average+3σ (OFF)	---	1.900E-5	5.137E-5	3.186E-5	4.237E-4
Average-3σ (OFF)	---	-2.978E-5	-5.649E-5	-9.826E-7	3.144E-4
Average (Bias1)	---	-4.690E-5	-3.608E-5	-1.802E-5	3.216E-4
σ (Bias1)	---	6.903E-6	9.387E-6	6.246E-6	3.030E-5
Average+3σ (Bias1)	---	-2.619E-5	-7.920E-6	7.196E-7	4.125E-4
Average-3σ (Bias1)	---	-6.760E-5	-6.424E-5	-3.676E-5	2.307E-4
Average (Bias2)	---	-2.906E-5	-1.287E-5	-3.056E-6	3.713E-4
σ (Bias2)	---	8.337E-6	8.258E-6	1.366E-5	2.841E-5
Average+3σ (Bias2)	---	-4.047E-6	1.190E-5	3.791E-5	4.566E-4
Average-3σ (Bias2)	---	-5.407E-5	-3.765E-5	-4.402E-5	2.861E-4

30 MeV proton / detailed results

4. ICCL

Ta=25°C; If=1.6mA; Vcc=18V



30 MeV proton / detailed results

ICCL . (mA) **Max = 2.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	1.061	1.045	1.052	1.050	1.050
N° 2 (Bias1)	0.922	0.832	0.605	0.427	0.016
N° 3 (Bias1)	1.545	1.403	1.032	0.731	0.033
N° 4 (Bias1)	1.512	1.374	1.023	0.737	0.036
N° 5 (Bias1)	0.934	0.835	0.593	0.413	0.016
N° 6 (Bias1)	1.110	1.003	0.713	0.501	0.019
N° 7 (Bias2)	1.671	1.499	1.032	0.701	0.019
N° 8 (Bias2)	1.483	1.296	0.838	0.529	0.011
N° 9 (Bias2)	1.383	1.235	0.841	0.566	0.014
N° 10 (Bias2)	0.974	0.854	0.565	0.369	0.007
N° 11 (Bias2)	1.010	0.895	0.598	0.389	0.008
N° 12 (OFF)	0.912	0.794	0.518	0.342	0.010
N° 13 (OFF)	0.972	0.846	0.553	0.358	0.007
N° 14 (OFF)	1.300	1.155	0.776	0.515	0.012
N° 15 (OFF)	1.391	1.241	0.848	0.567	0.013
N° 16 (OFF)	1.348	1.193	0.835	0.530	0.013

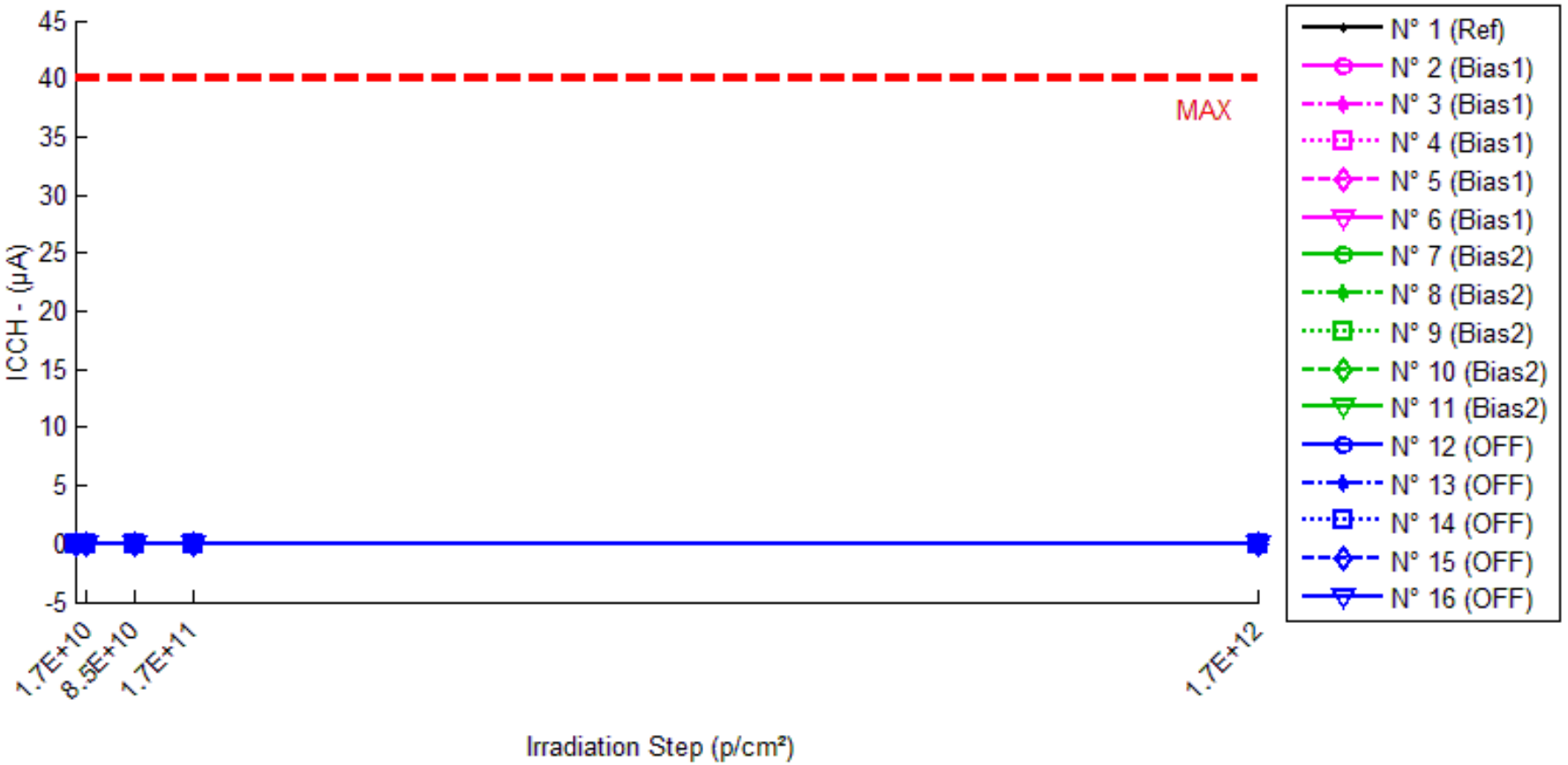
Delta [ICCL]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-1.665E-2	-9.500E-3	-1.135E-2	-1.123E-2
N° 2 (Bias1)	---	-9.022E-2	-3.175E-1	-4.950E-1	-9.059E-1
N° 3 (Bias1)	---	-1.416E-1	-5.122E-1	-8.140E-1	-1.511E+0
N° 4 (Bias1)	---	-1.378E-1	-4.892E-1	-7.750E-1	-1.476E+0
N° 5 (Bias1)	---	-9.818E-2	-3.401E-1	-5.202E-1	-9.180E-1
N° 6 (Bias1)	---	-1.070E-1	-3.975E-1	-6.098E-1	-1.092E+0
N° 7 (Bias2)	---	-1.722E-1	-6.386E-1	-9.695E-1	-1.652E+0
N° 8 (Bias2)	---	-1.875E-1	-6.450E-1	-9.541E-1	-1.473E+0
N° 9 (Bias2)	---	-1.484E-1	-5.422E-1	-8.180E-1	-1.369E+0
N° 10 (Bias2)	---	-1.208E-1	-4.094E-1	-6.056E-1	-9.673E-1
N° 11 (Bias2)	---	-1.143E-1	-4.114E-1	-6.209E-1	-1.002E+0
N° 12 (OFF)	---	-1.188E-1	-3.945E-1	-5.706E-1	-9.021E-1
N° 13 (OFF)	---	-1.255E-1	-4.189E-1	-6.138E-1	-9.650E-1
N° 14 (OFF)	---	-1.452E-1	-5.238E-1	-7.843E-1	-1.288E+0
N° 15 (OFF)	---	-1.494E-1	-5.431E-1	-8.240E-1	-1.378E+0
N° 16 (OFF)	---	-1.558E-1	-5.134E-1	-8.181E-1	-1.336E+0
Average (OFF)	---	-1.149E-1	-4.113E-1	-6.428E-1	-1.181E+0
σ (OFF)	---	2.337E-2	8.706E-2	1.456E-1	2.955E-1
Average+3σ (OFF)	---	-4.483E-2	-1.501E-1	-2.060E-1	-2.943E-1
Average-3σ (OFF)	---	-1.851E-1	-6.725E-1	-1.080E+0	-2.067E+0
Average (Bias1)	---	-1.486E-1	-5.293E-1	-7.936E-1	-1.293E+0
σ (Bias1)	---	3.171E-2	1.159E-1	1.750E-1	2.990E-1
Average+3σ (Bias1)	---	-5.349E-2	-1.815E-1	-2.686E-1	-3.955E-1
Average-3σ (Bias1)	---	-2.438E-1	-8.771E-1	-1.319E+0	-2.190E+0
Average (Bias2)	---	-1.389E-1	-4.787E-1	-7.221E-1	-1.174E+0
σ (Bias2)	---	1.596E-2	6.716E-2	1.206E-1	2.227E-1
Average+3σ (Bias2)	---	-9.105E-2	-2.772E-1	-3.605E-1	-5.057E-1
Average-3σ (Bias2)	---	-1.868E-1	-6.802E-1	-1.084E+0	-1.842E+0

30 MeV proton / detailed results

5. ICCH

Ta=25°C; If=0; Vcc=18V



30 MeV proton / detailed results

ICCH . (µA) **Max = 40.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	0.018	0.017	0.016	0.017	0.019
N° 2 (Bias1)	0.018	0.017	0.017	0.018	0.020
N° 3 (Bias1)	0.017	0.016	0.019	0.017	0.021
N° 4 (Bias1)	0.018	0.017	0.015	0.018	0.022
N° 5 (Bias1)	0.016	0.016	0.016	0.017	0.021
N° 6 (Bias1)	0.018	0.016	0.017	0.016	0.020
N° 7 (Bias2)	0.017	0.016	0.020	0.017	0.019
N° 8 (Bias2)	0.019	0.016	0.017	0.017	0.022
N° 9 (Bias2)	0.016	0.018	0.017	0.015	0.020
N° 10 (Bias2)	0.015	0.016	0.016	0.016	0.020
N° 11 (Bias2)	0.017	0.015	0.016	0.015	0.020
N° 12 (OFF)	0.017	0.016	0.015	0.016	0.021
N° 13 (OFF)	0.015	0.015	0.015	0.015	0.023
N° 14 (OFF)	0.015	0.017	0.016	0.016	0.019
N° 15 (OFF)	0.016	0.015	0.017	0.017	0.020
N° 16 (OFF)	0.017	0.016	0.018	0.018	0.019

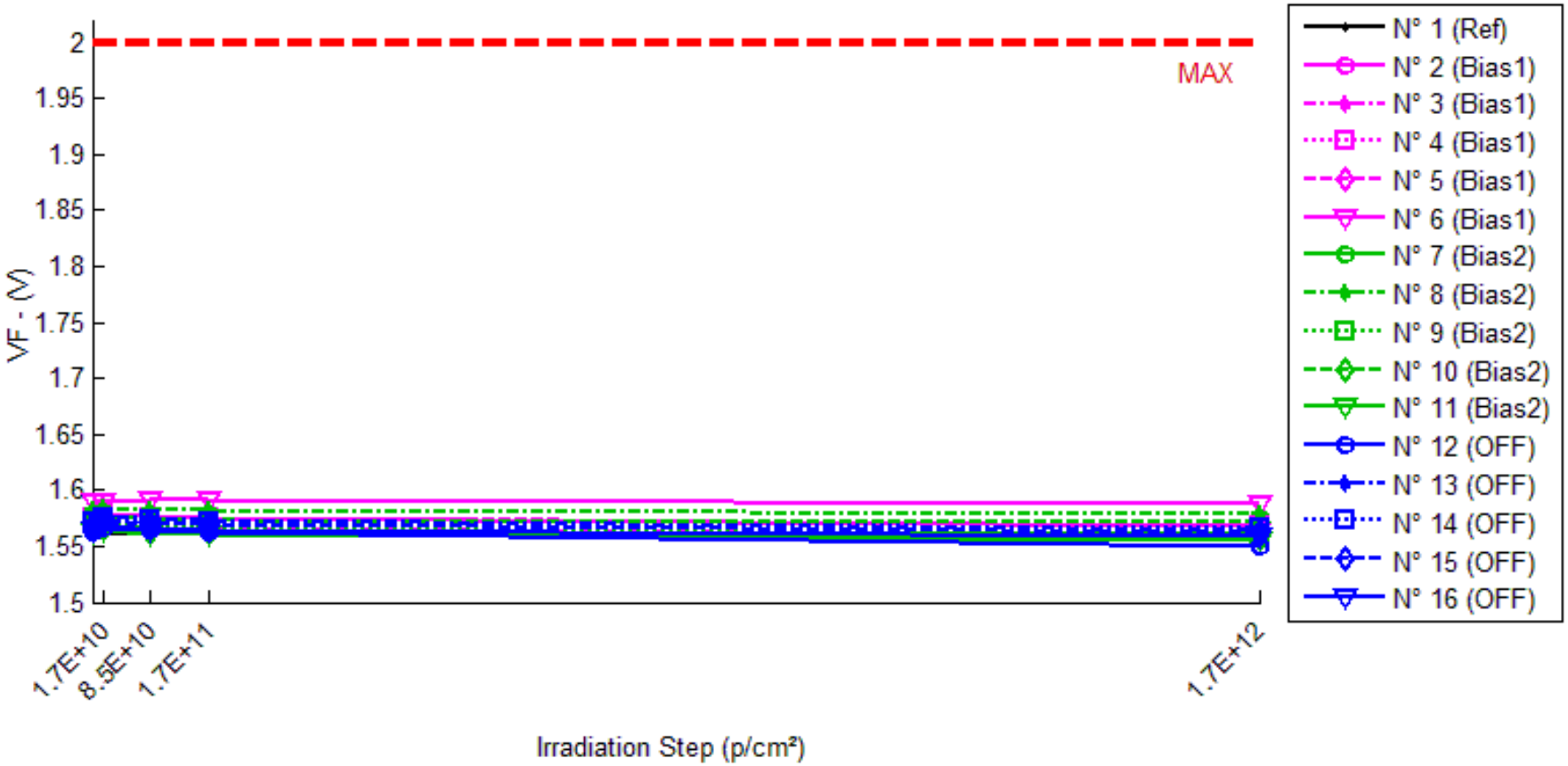
Delta [ICCH]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-9.300E-4	-1.560E-3	-3.700E-4	1.290E-3
N° 2 (Bias1)	---	-2.700E-4	-5.600E-4	1.800E-4	2.460E-3
N° 3 (Bias1)	---	-1.050E-3	1.430E-3	-4.900E-4	3.750E-3
N° 4 (Bias1)	---	-1.010E-3	-3.040E-3	-2.300E-4	3.920E-3
N° 5 (Bias1)	---	8.000E-5	5.300E-4	8.600E-4	4.980E-3
N° 6 (Bias1)	---	-2.070E-3	-7.800E-4	-1.720E-3	2.610E-3
N° 7 (Bias2)	---	-4.600E-4	2.890E-3	4.300E-4	2.130E-3
N° 8 (Bias2)	---	-2.730E-3	-1.530E-3	-2.270E-3	2.610E-3
N° 9 (Bias2)	---	1.440E-3	7.200E-4	-1.390E-3	3.690E-3
N° 10 (Bias2)	---	8.600E-4	7.400E-4	1.210E-3	5.250E-3
N° 11 (Bias2)	---	-2.280E-3	-1.130E-3	-1.810E-3	3.280E-3
N° 12 (OFF)	---	-8.200E-4	-2.540E-3	-1.660E-3	3.570E-3
N° 13 (OFF)	---	8.900E-4	5.800E-4	3.700E-4	8.130E-3
N° 14 (OFF)	---	2.190E-3	1.270E-3	1.080E-3	4.270E-3
N° 15 (OFF)	---	-4.100E-4	1.210E-3	1.910E-3	4.040E-3
N° 16 (OFF)	---	-5.500E-4	1.010E-3	1.260E-3	2.470E-3
Average (OFF)	---	-8.640E-4	-4.840E-4	-2.800E-4	3.544E-3
σ (OFF)	---	8.298E-4	1.682E-3	9.528E-4	1.036E-3
Average+3σ (OFF)	---	1.625E-3	4.562E-3	2.578E-3	6.652E-3
Average-3σ (OFF)	---	-3.353E-3	-5.530E-3	-3.138E-3	4.360E-4
Average (Bias1)	---	-6.340E-4	3.380E-4	-7.660E-4	3.392E-3
σ (Bias1)	---	1.848E-3	1.765E-3	1.506E-3	1.200E-3
Average+3σ (Bias1)	---	4.911E-3	5.634E-3	3.753E-3	6.991E-3
Average-3σ (Bias1)	---	-6.179E-3	-4.958E-3	-5.285E-3	-2.073E-4
Average (Bias2)	---	2.600E-4	3.060E-4	5.920E-4	4.496E-3
σ (Bias2)	---	1.264E-3	1.614E-3	1.373E-3	2.146E-3
Average+3σ (Bias2)	---	4.053E-3	5.147E-3	4.711E-3	1.094E-2
Average-3σ (Bias2)	---	-3.533E-3	-4.535E-3	-3.527E-3	-1.943E-3

30 MeV proton / detailed results

6. VF

Ta=25°C; If=1.6mA



30 MeV proton / detailed results

VF . (V) **Max = 2.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	1.565	1.561	1.560	1.562	1.561
N° 2 (Bias1)	1.576	1.579	1.577	1.576	1.568
N° 3 (Bias1)	1.567	1.568	1.565	1.566	1.559
N° 4 (Bias1)	1.576	1.578	1.575	1.575	1.568
N° 5 (Bias1)	1.574	1.577	1.576	1.575	1.569
N° 6 (Bias1)	1.589	1.590	1.592	1.591	1.587
N° 7 (Bias2)	1.566	1.567	1.565	1.562	1.560
N° 8 (Bias2)	1.582	1.585	1.583	1.582	1.579
N° 9 (Bias2)	1.569	1.571	1.568	1.568	1.558
N° 10 (Bias2)	1.575	1.577	1.576	1.574	1.571
N° 11 (Bias2)	1.562	1.564	1.561	1.560	1.555
N° 12 (OFF)	1.563	1.567	1.565	1.562	1.549
N° 13 (OFF)	1.572	1.577	1.575	1.573	1.565
N° 14 (OFF)	1.572	1.576	1.573	1.572	1.567
N° 15 (OFF)	1.569	1.573	1.569	1.569	1.563
N° 16 (OFF)	1.565	1.569	1.564	1.564	1.559

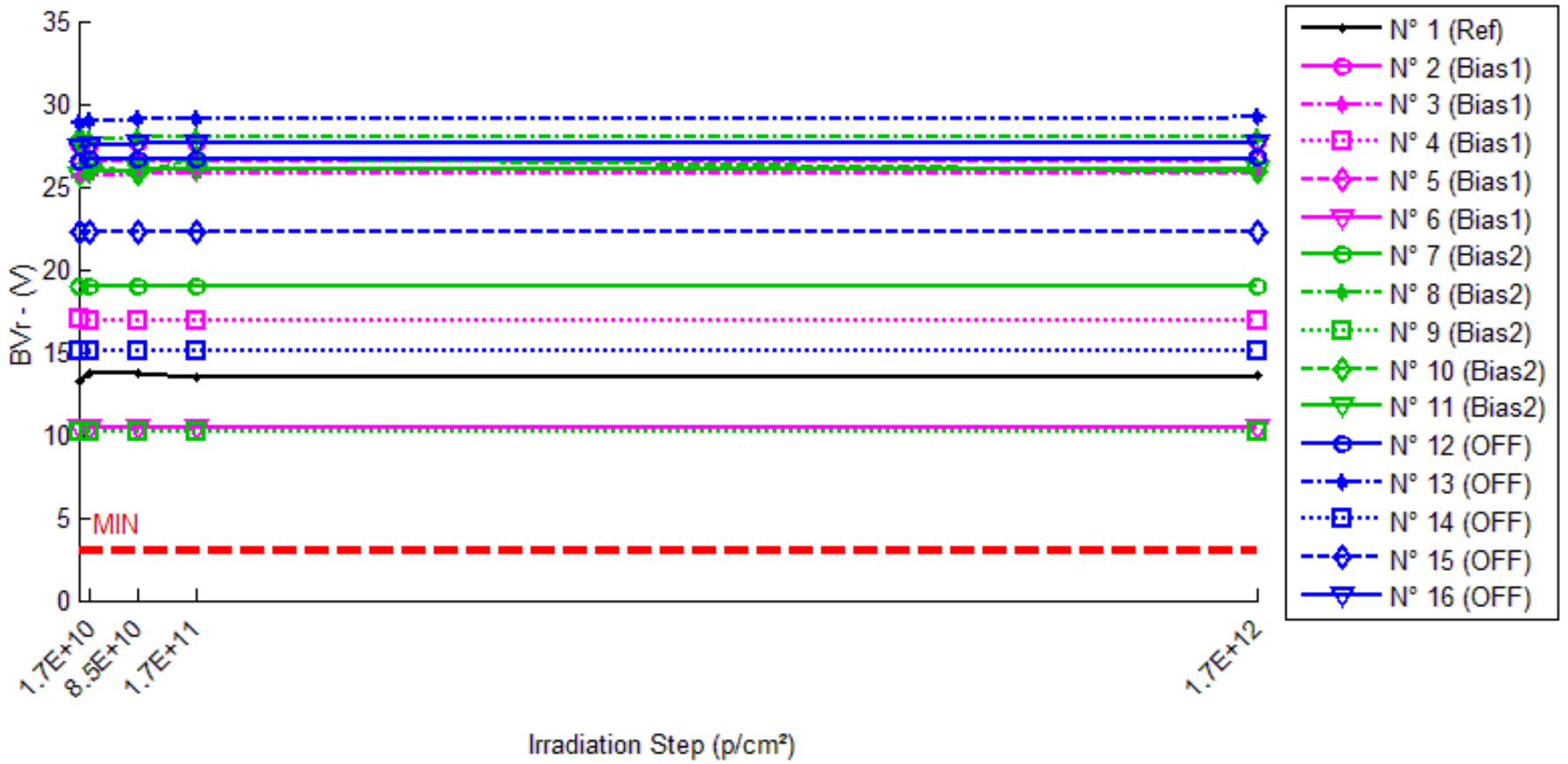
Delta [VF]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-3.720E-3	-4.266E-3	-2.845E-3	-3.246E-3
N° 2 (Bias1)	---	3.571E-3	1.293E-3	6.230E-4	-7.649E-3
N° 3 (Bias1)	---	1.090E-3	-1.734E-3	-7.960E-4	-8.098E-3
N° 4 (Bias1)	---	2.370E-3	-3.260E-4	-2.650E-4	-7.450E-3
N° 5 (Bias1)	---	3.246E-3	1.695E-3	1.067E-3	-5.021E-3
N° 6 (Bias1)	---	9.400E-4	2.363E-3	2.170E-3	-2.611E-3
N° 7 (Bias2)	---	9.640E-4	-1.443E-3	-4.460E-3	-6.363E-3
N° 8 (Bias2)	---	3.450E-3	1.506E-3	-2.420E-4	-2.892E-3
N° 9 (Bias2)	---	2.559E-3	-2.000E-5	-3.500E-4	-1.050E-2
N° 10 (Bias2)	---	2.639E-3	8.380E-4	-1.138E-3	-3.930E-3
N° 11 (Bias2)	---	2.438E-3	-4.040E-4	-2.234E-3	-6.668E-3
N° 12 (OFF)	---	4.485E-3	1.997E-3	-2.050E-4	-1.380E-2
N° 13 (OFF)	---	5.220E-3	3.347E-3	1.021E-3	-7.162E-3
N° 14 (OFF)	---	4.589E-3	1.467E-3	5.040E-4	-5.198E-3
N° 15 (OFF)	---	3.751E-3	-5.420E-4	-6.310E-4	-6.828E-3
N° 16 (OFF)	---	3.703E-3	-1.682E-3	-1.529E-3	-6.570E-3
Average (OFF)	---	2.243E-3	6.582E-4	5.598E-4	-6.166E-3
σ (OFF)	---	1.206E-3	1.664E-3	1.159E-3	2.320E-3
Average+3σ (OFF)	---	5.860E-3	5.650E-3	4.037E-3	7.942E-4
Average-3σ (OFF)	---	-1.373E-3	-4.334E-3	-2.917E-3	-1.313E-2
Average (Bias1)	---	2.410E-3	9.540E-5	-1.685E-3	-6.072E-3
σ (Bias1)	---	9.011E-4	1.137E-3	1.744E-3	2.949E-3
Average+3σ (Bias1)	---	5.113E-3	3.506E-3	3.547E-3	2.776E-3
Average-3σ (Bias1)	---	-2.933E-4	-3.315E-3	-6.917E-3	-1.492E-2
Average (Bias2)	---	4.350E-3	9.174E-4	-1.680E-4	-7.911E-3
σ (Bias2)	---	6.344E-4	2.016E-3	9.916E-4	3.373E-3
Average+3σ (Bias2)	---	6.253E-3	6.965E-3	2.807E-3	2.209E-3
Average-3σ (Bias2)	---	2.447E-3	-5.131E-3	-3.143E-3	-1.803E-2

30 MeV proton / detailed results

7. BVr

Ta=25°C; Ir=10µA



30 MeV proton / detailed results

BVr . (V) **Min = 3.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	13.204	13.692	13.697	13.506	13.651
N° 2 (Bias1)	27.498	27.517	27.681	27.670	27.749
N° 3 (Bias1)	25.584	25.676	25.772	25.758	25.815
N° 4 (Bias1)	16.955	16.944	16.949	16.934	16.948
N° 5 (Bias1)	26.473	26.514	26.579	26.572	26.649
N° 6 (Bias1)	10.420	10.408	10.402	10.395	10.391
N° 7 (Bias2)	18.992	19.002	19.007	19.003	18.980
N° 8 (Bias2)	27.879	27.849	27.998	28.010	28.045
N° 9 (Bias2)	10.181	10.179	10.179	10.178	10.184
N° 10 (Bias2)	27.839	26.256	25.794	26.777	25.873
N° 11 (Bias2)	25.685	25.890	25.988	25.994	25.984
N° 12 (OFF)	26.520	26.594	26.637	26.673	26.756
N° 13 (OFF)	28.876	29.009	29.088	29.130	29.215
N° 14 (OFF)	15.050	15.037	15.047	15.041	15.049
N° 15 (OFF)	22.271	22.233	22.253	22.246	22.273
N° 16 (OFF)	27.360	27.511	27.624	27.618	27.641

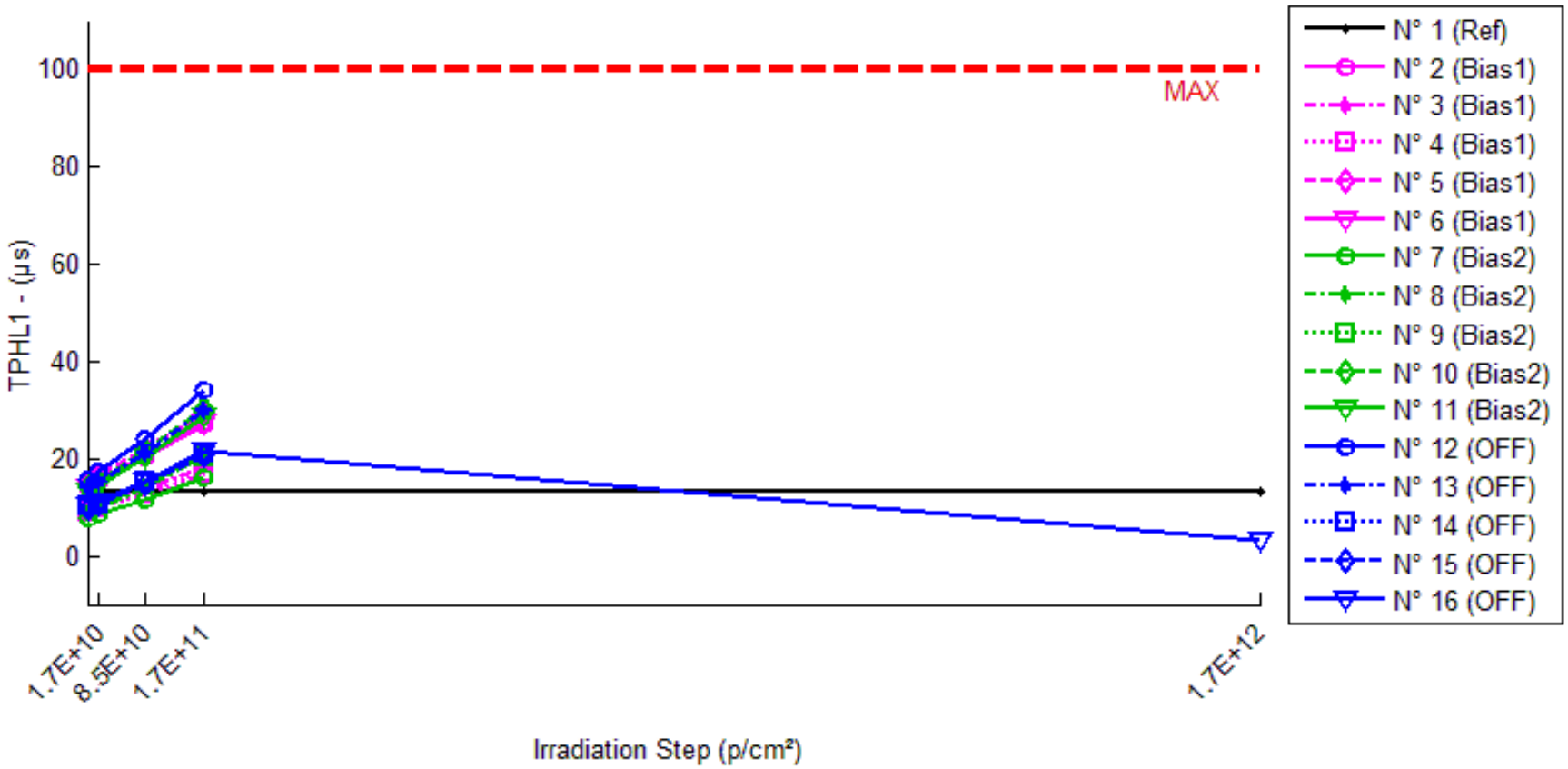
Delta [BVr]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	4.877E-1	4.926E-1	3.019E-1	4.468E-1
N° 2 (Bias1)	---	1.867E-2	1.822E-1	1.716E-1	2.506E-1
N° 3 (Bias1)	---	9.240E-2	1.884E-1	1.745E-1	2.316E-1
N° 4 (Bias1)	---	-1.044E-2	-5.270E-3	-2.007E-2	-6.510E-3
N° 5 (Bias1)	---	4.110E-2	1.062E-1	9.969E-2	1.762E-1
N° 6 (Bias1)	---	-1.217E-2	-1.763E-2	-2.506E-2	-2.868E-2
N° 7 (Bias2)	---	9.310E-3	1.499E-2	1.075E-2	-1.220E-2
N° 8 (Bias2)	---	-2.972E-2	1.190E-1	1.314E-1	1.658E-1
N° 9 (Bias2)	---	-2.330E-3	-1.860E-3	-3.030E-3	3.160E-3
N° 10 (Bias2)	---	-1.583E+0	-2.045E+0	-1.062E+0	-1.966E+0
N° 11 (Bias2)	---	2.045E-1	3.024E-1	3.086E-1	2.991E-1
N° 12 (OFF)	---	7.449E-2	1.174E-1	1.531E-1	2.356E-1
N° 13 (OFF)	---	1.337E-1	2.128E-1	2.547E-1	3.392E-1
N° 14 (OFF)	---	-1.283E-2	-2.990E-3	-9.020E-3	-1.660E-3
N° 15 (OFF)	---	-3.780E-2	-1.812E-2	-2.491E-2	2.080E-3
N° 16 (OFF)	---	1.516E-1	2.646E-1	2.584E-1	2.813E-1
Average (OFF)	---	2.591E-2	9.077E-2	8.015E-2	1.246E-1
σ (OFF)	---	4.323E-2	9.887E-2	9.846E-2	1.329E-1
Average+3σ (OFF)	---	1.556E-1	3.874E-1	3.755E-1	5.234E-1
Average-3σ (OFF)	---	-1.038E-1	-2.058E-1	-2.152E-1	-2.741E-1
Average (Bias1)	---	-2.803E-1	-3.222E-1	-1.229E-1	-3.021E-1
σ (Bias1)	---	7.342E-1	9.709E-1	5.397E-1	9.391E-1
Average+3σ (Bias1)	---	1.922E+0	2.591E+0	1.496E+0	2.515E+0
Average-3σ (Bias1)	---	-2.483E+0	-3.235E+0	-1.742E+0	-3.119E+0
Average (Bias2)	---	6.183E-2	1.148E-1	1.265E-1	1.713E-1
σ (Bias2)	---	8.497E-2	1.261E-1	1.377E-1	1.604E-1
Average+3σ (Bias2)	---	3.167E-1	4.931E-1	5.396E-1	6.526E-1
Average-3σ (Bias2)	---	-1.931E-1	-2.636E-1	-2.866E-1	-3.100E-1

30 MeV proton / detailed results

8. TPHL1

Ta=25°C; If=0.5mA; RL=4.7 kOhms; Vcc=5V



30 MeV proton / detailed results

TPHL1 . (µs) **Max = 100.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	13.10	13.30	13.20	13.10	13.00
N° 2 (Bias1)	14.10	15.40	20.40	27.10	Not Measurable*
N° 3 (Bias1)	9.30	10.30	13.70	18.20	Not Measurable*
N° 4 (Bias1)	8.95	9.80	12.90	16.95	Not Measurable*
N° 5 (Bias1)	14.90	16.40	21.90	29.50	Not Measurable*
N° 6 (Bias1)	13.90	15.30	20.65	27.45	Not Measurable*
N° 7 (Bias2)	7.70	8.40	11.70	16.10	Not Measurable*
N° 8 (Bias2)	8.80	9.70	14.20	20.60	Not Measurable*
N° 9 (Bias2)	10.10	10.90	15.00	20.40	Not Measurable*
N° 10 (Bias2)	14.20	15.35	21.50	30.20	Not Measurable*
N° 11 (Bias2)	13.40	14.50	20.40	28.60	Not Measurable*
N° 12 (OFF)	15.90	17.20	24.20	34.00	Not Measurable*
N° 13 (OFF)	13.90	15.20	21.30	30.00	Not Measurable*
N° 14 (OFF)	10.10	10.80	15.30	21.20	Not Measurable*
N° 15 (OFF)	9.90	10.80	15.00	20.60	Not Measurable*
N° 16 (OFF)	10.20	11.15	15.30	21.60	3.20

* Not measurable with this test condition

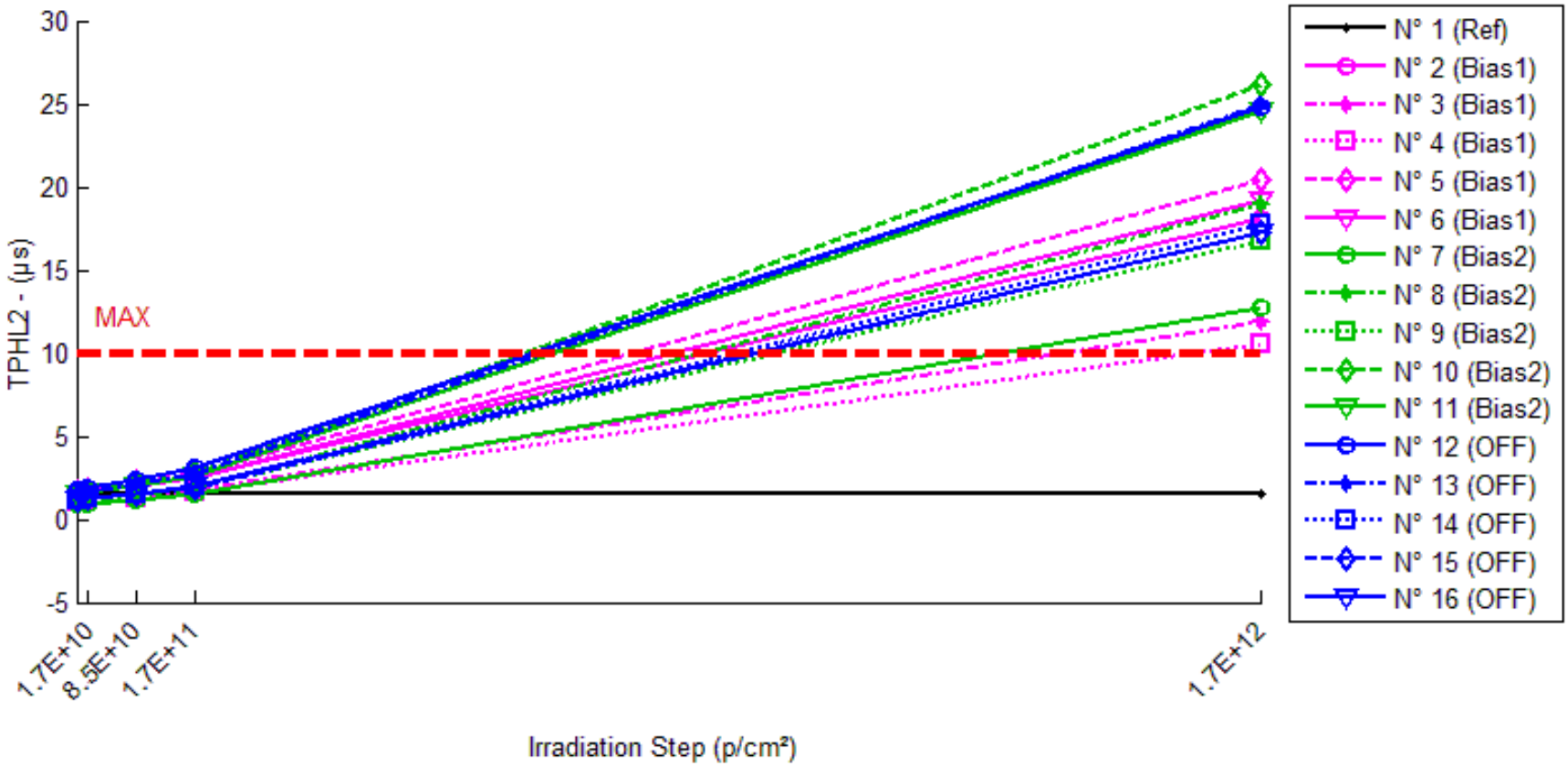
Delta [TPHL1]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	2.000E-1	1.000E-1	0.000E+0	-1.000E-1
N° 2 (Bias1)	---	1.300E+0	6.300E+0	1.300E+1	NaN
N° 3 (Bias1)	---	1.000E+0	4.400E+0	8.900E+0	NaN
N° 4 (Bias1)	---	8.500E-1	3.950E+0	8.000E+0	NaN
N° 5 (Bias1)	---	1.500E+0	7.000E+0	1.460E+1	NaN
N° 6 (Bias1)	---	1.400E+0	6.750E+0	1.355E+1	NaN
N° 7 (Bias2)	---	7.000E-1	4.000E+0	8.400E+0	NaN
N° 8 (Bias2)	---	9.000E-1	5.400E+0	1.180E+1	NaN
N° 9 (Bias2)	---	8.000E-1	4.900E+0	1.030E+1	NaN
N° 10 (Bias2)	---	1.150E+0	7.300E+0	1.600E+1	NaN
N° 11 (Bias2)	---	1.100E+0	7.000E+0	1.520E+1	NaN
N° 12 (OFF)	---	1.300E+0	8.300E+0	1.810E+1	NaN
N° 13 (OFF)	---	1.300E+0	7.400E+0	1.610E+1	NaN
N° 14 (OFF)	---	7.000E-1	5.200E+0	1.110E+1	NaN
N° 15 (OFF)	---	9.000E-1	5.100E+0	1.070E+1	NaN
N° 16 (OFF)	---	9.500E-1	5.100E+0	1.140E+1	-7.000E+0
Average (OFF)	---	1.210E+0	5.680E+0	1.161E+1	NaN
σ (OFF)	---	2.748E-1	1.406E+0	2.959E+0	0.000E+0
Average+3σ (OFF)	---	2.034E+0	9.897E+0	2.049E+1	NaN
Average-3σ (OFF)	---	3.857E-1	1.463E+0	2.734E+0	NaN
Average (Bias1)	---	9.300E-1	5.720E+0	1.234E+1	NaN
σ (Bias1)	---	1.924E-1	1.402E+0	3.223E+0	0.000E+0
Average+3σ (Bias1)	---	1.507E+0	9.927E+0	2.201E+1	NaN
Average-3σ (Bias1)	---	3.529E-1	1.513E+0	2.671E+0	NaN
Average (Bias2)	---	1.030E+0	6.220E+0	1.348E+1	-7.000E+0
σ (Bias2)	---	2.636E-1	1.522E+0	3.389E+0	NaN
Average+3σ (Bias2)	---	1.821E+0	1.079E+1	2.365E+1	NaN
Average-3σ (Bias2)	---	2.391E-1	1.653E+0	3.314E+0	NaN

30 MeV proton / detailed results

9. TPHL2

Ta=25°C; If=5mA; RL=680 Ohms; Vcc=5V



30 MeV proton / detailed results

TPHL2 . (µs) **Max = 10.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	1.48	1.48	1.48	1.47	1.47
N° 2 (Bias1)	1.59	1.70	2.06	2.52	18.10
N° 3 (Bias1)	1.08	1.16	1.41	1.74	11.84
N° 4 (Bias1)	1.04	1.10	1.33	1.62	10.60
N° 5 (Bias1)	1.66	1.79	2.20	2.73	20.40
N° 6 (Bias1)	1.54	1.64	2.03	2.52	19.20
N° 7 (Bias2)	0.91	0.97	1.21	1.52	12.70
N° 8 (Bias2)	1.00	1.09	1.41	1.86	19.00
N° 9 (Bias2)	1.16	1.24	1.54	1.93	16.80
N° 10 (Bias2)	1.58	1.70	2.14	2.74	26.10
N° 11 (Bias2)	1.51	1.61	2.03	2.60	24.60
N° 12 (OFF)	1.78	1.92	2.43	3.10	24.80
N° 13 (OFF)	1.56	1.68	2.12	2.72	24.90
N° 14 (OFF)	1.15	1.22	1.53	1.96	17.80
N° 15 (OFF)	1.15	1.22	1.53	1.93	17.30
N° 16 (OFF)	1.18	1.26	1.57	2.00	17.30

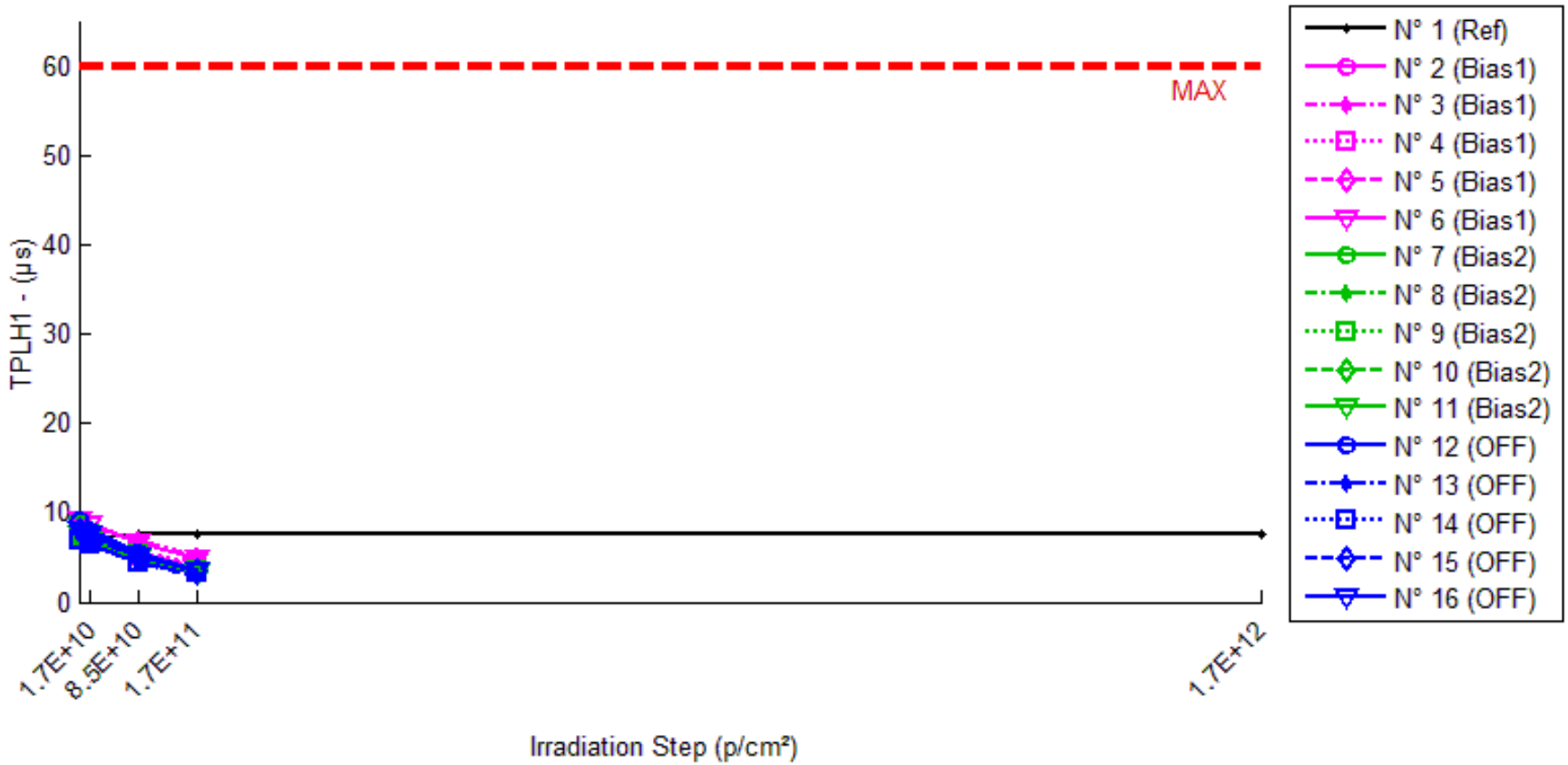
Delta [TPHL2]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	0.000E+0	0.000E+0	-1.000E-2	-1.000E-2
N° 2 (Bias1)	---	1.100E-1	4.700E-1	9.300E-1	1.651E+1
N° 3 (Bias1)	---	8.000E-2	3.300E-1	6.600E-1	1.076E+1
N° 4 (Bias1)	---	6.000E-2	2.900E-1	5.800E-1	9.560E+0
N° 5 (Bias1)	---	1.300E-1	5.400E-1	1.070E+0	1.874E+1
N° 6 (Bias1)	---	1.000E-1	4.900E-1	9.800E-1	1.766E+1
N° 7 (Bias2)	---	6.000E-2	3.000E-1	6.100E-1	1.179E+1
N° 8 (Bias2)	---	9.000E-2	4.100E-1	8.600E-1	1.800E+1
N° 9 (Bias2)	---	8.000E-2	3.800E-1	7.700E-1	1.564E+1
N° 10 (Bias2)	---	1.200E-1	5.600E-1	1.160E+0	2.452E+1
N° 11 (Bias2)	---	1.000E-1	5.200E-1	1.090E+0	2.309E+1
N° 12 (OFF)	---	1.400E-1	6.500E-1	1.320E+0	2.302E+1
N° 13 (OFF)	---	1.200E-1	5.600E-1	1.160E+0	2.334E+1
N° 14 (OFF)	---	7.000E-2	3.800E-1	8.100E-1	1.665E+1
N° 15 (OFF)	---	7.000E-2	3.800E-1	7.800E-1	1.615E+1
N° 16 (OFF)	---	8.000E-2	3.900E-1	8.200E-1	1.612E+1
Average (OFF)	---	9.600E-2	4.240E-1	8.440E-1	1.465E+1
σ (OFF)	---	2.702E-2	1.081E-1	2.124E-1	4.192E+0
Average+3σ (OFF)	---	1.771E-1	7.482E-1	1.481E+0	2.722E+1
Average-3σ (OFF)	---	1.494E-2	9.978E-2	2.067E-1	2.070E+0
Average (Bias1)	---	9.000E-2	4.340E-1	8.980E-1	1.861E+1
σ (Bias1)	---	2.236E-2	1.057E-1	2.271E-1	5.261E+0
Average+3σ (Bias1)	---	1.571E-1	7.512E-1	1.579E+0	3.439E+1
Average-3σ (Bias1)	---	2.292E-2	1.168E-1	2.167E-1	2.826E+0
Average (Bias2)	---	9.600E-2	4.720E-1	9.780E-1	1.906E+1
σ (Bias2)	---	3.209E-2	1.256E-1	2.462E-1	3.772E+0
Average+3σ (Bias2)	---	1.923E-1	8.487E-1	1.717E+0	3.037E+1
Average-3σ (Bias2)	---	-2.808E-4	9.526E-2	2.394E-1	7.739E+0

30 MeV proton / detailed results

10.TPLH1

Ta=25°C; If=0.5mA; RL=4.7 kOhms; Vcc=5V



30 MeV proton / detailed results

TPLH1 . (µs) **Max = 60.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	7.2	7.2	7.6	7.6	7.6
N° 2 (Bias1)	6.8	6.4	4.8	3.6	Not Measurable*
N° 3 (Bias1)	9.2	8.6	6.8	5.2	Not Measurable*
N° 4 (Bias1)	7.6	6.8	5.6	4.4	Not Measurable*
N° 5 (Bias1)	8.0	7.2	5.6	4.0	Not Measurable*
N° 6 (Bias1)	9.2	8.8	6.6	4.8	Not Measurable*
N° 7 (Bias2)	7.2	6.8	5.0	3.6	Not Measurable*
N° 8 (Bias2)	7.2	6.4	4.4	3.2	Not Measurable*
N° 9 (Bias2)	8.4	7.6	5.4	3.6	Not Measurable*
N° 10 (Bias2)	7.6	7.2	4.8	3.2	Not Measurable*
N° 11 (Bias2)	7.6	6.8	4.8	3.2	Not Measurable*
N° 12 (OFF)	9.2	8.0	5.6	3.6	Not Measurable*
N° 13 (OFF)	7.6	6.4	4.4	2.8	Not Measurable*
N° 14 (OFF)	6.8	6.4	4.4	3.2	Not Measurable*
N° 15 (OFF)	8.0	7.2	5.2	3.6	Not Measurable*
N° 16 (OFF)	8.0	7.6	5.2	3.6	Not Measurable*

* Not measurable with this test condition

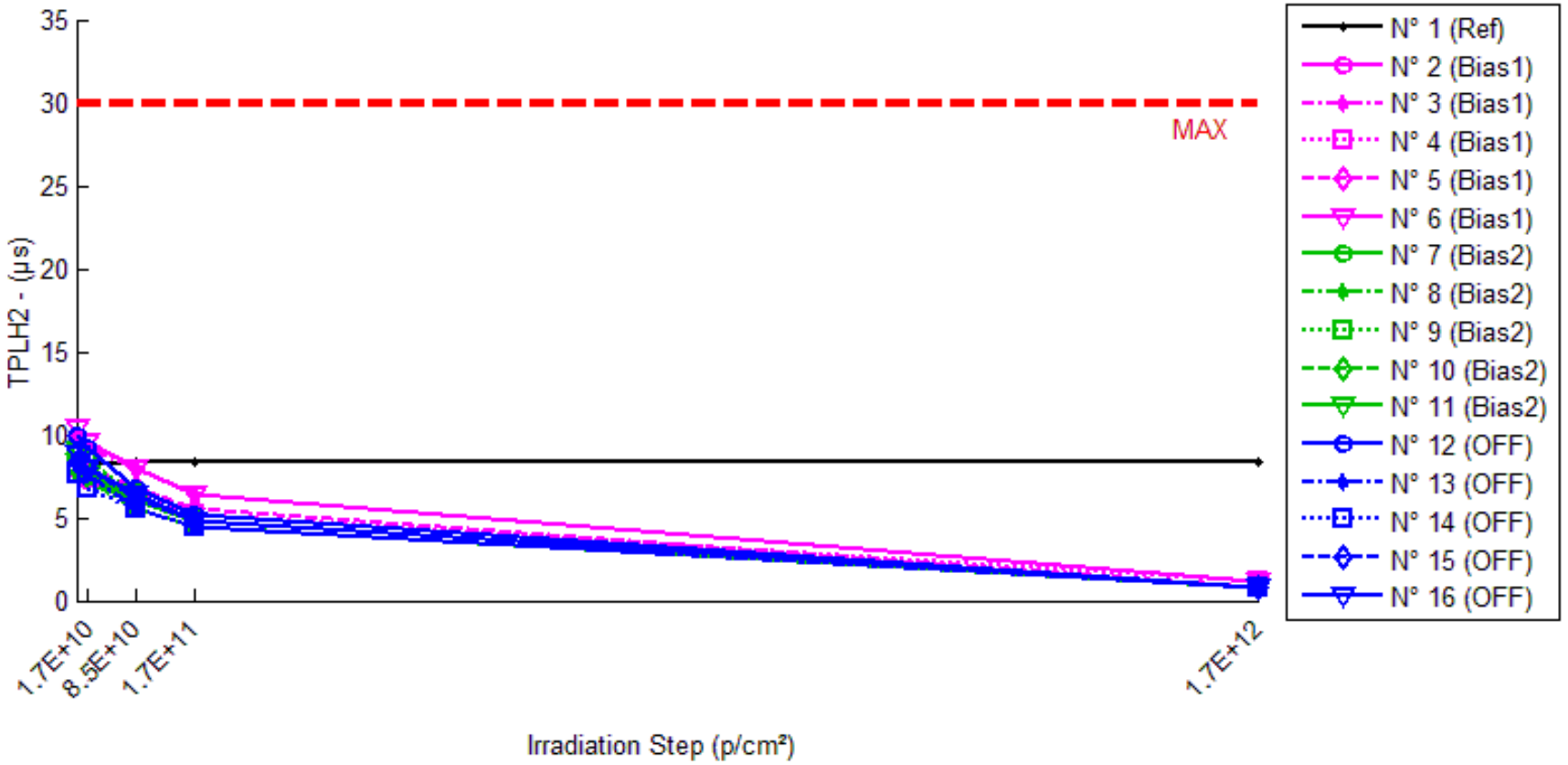
Delta [TPLH1]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	0.000E+0	4.000E-1	4.000E-1	4.000E-1
N° 2 (Bias1)	---	-4.000E-1	-2.000E+0	-3.200E+0	NaN
N° 3 (Bias1)	---	-6.000E-1	-2.400E+0	-4.000E+0	NaN
N° 4 (Bias1)	---	-8.000E-1	-2.000E+0	-3.200E+0	NaN
N° 5 (Bias1)	---	-8.000E-1	-2.400E+0	-4.000E+0	NaN
N° 6 (Bias1)	---	-4.000E-1	-2.600E+0	-4.400E+0	NaN
N° 7 (Bias2)	---	-4.000E-1	-2.200E+0	-3.600E+0	NaN
N° 8 (Bias2)	---	-8.000E-1	-2.800E+0	-4.000E+0	NaN
N° 9 (Bias2)	---	-8.000E-1	-3.000E+0	-4.800E+0	NaN
N° 10 (Bias2)	---	-4.000E-1	-2.800E+0	-4.400E+0	NaN
N° 11 (Bias2)	---	-8.000E-1	-2.800E+0	-4.400E+0	NaN
N° 12 (OFF)	---	-1.200E+0	-3.600E+0	-5.600E+0	NaN
N° 13 (OFF)	---	-1.200E+0	-3.200E+0	-4.800E+0	NaN
N° 14 (OFF)	---	-4.000E-1	-2.400E+0	-3.600E+0	NaN
N° 15 (OFF)	---	-8.000E-1	-2.800E+0	-4.400E+0	NaN
N° 16 (OFF)	---	-4.000E-1	-2.800E+0	-4.400E+0	NaN
Average (OFF)	---	-6.000E-1	-2.280E+0	-3.760E+0	NaN
σ (OFF)	---	2.000E-1	2.683E-1	5.367E-1	0.000E+0
Average+3σ (OFF)	---	1.776E-15	-1.475E+0	-2.150E+0	NaN
Average-3σ (OFF)	---	-1.200E+0	-3.085E+0	-5.370E+0	NaN
Average (Bias1)	---	-6.400E-1	-2.720E+0	-4.240E+0	NaN
σ (Bias1)	---	2.191E-1	3.033E-1	4.561E-1	0.000E+0
Average+3σ (Bias1)	---	1.727E-2	-1.810E+0	-2.872E+0	NaN
Average-3σ (Bias1)	---	-1.297E+0	-3.630E+0	-5.608E+0	NaN
Average (Bias2)	---	-8.000E-1	-2.960E+0	-4.560E+0	NaN
σ (Bias2)	---	4.000E-1	4.561E-1	7.266E-1	0.000E+0
Average+3σ (Bias2)	---	4.000E-1	-1.592E+0	-2.380E+0	NaN
Average-3σ (Bias2)	---	-2.000E+0	-4.328E+0	-6.740E+0	NaN

30 MeV proton / detailed results

11.TPLH2

Ta=25°C; If=5mA; RL=680 Ohms; Vcc=5V



30 MeV proton / detailed results

TPLH2 . (µs) **Max = 30.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	8.4	8.2	8.4	8.4	8.4
N° 2 (Bias1)	8.0	7.2	6.0	4.8	0.8
N° 3 (Bias1)	10.0	9.2	8.0	6.4	1.2
N° 4 (Bias1)	8.0	7.6	6.4	5.2	1.2
N° 5 (Bias1)	8.8	8.0	6.8	5.6	0.8
N° 6 (Bias1)	10.4	9.6	8.0	6.4	1.2
N° 7 (Bias2)	8.0	7.6	5.6	4.4	0.8
N° 8 (Bias2)	7.6	7.2	5.6	4.4	0.8
N° 9 (Bias2)	9.0	8.4	6.4	4.8	0.8
N° 10 (Bias2)	8.8	8.0	6.0	4.8	0.8
N° 11 (Bias2)	8.4	7.6	6.0	4.8	0.8
N° 12 (OFF)	10.0	9.2	6.8	5.2	0.8
N° 13 (OFF)	8.4	7.6	5.6	4.4	0.8
N° 14 (OFF)	7.6	6.8	5.6	4.4	0.8
N° 15 (OFF)	8.4	8.0	6.2	4.8	0.8
N° 16 (OFF)	8.8	8.0	6.4	4.8	0.8

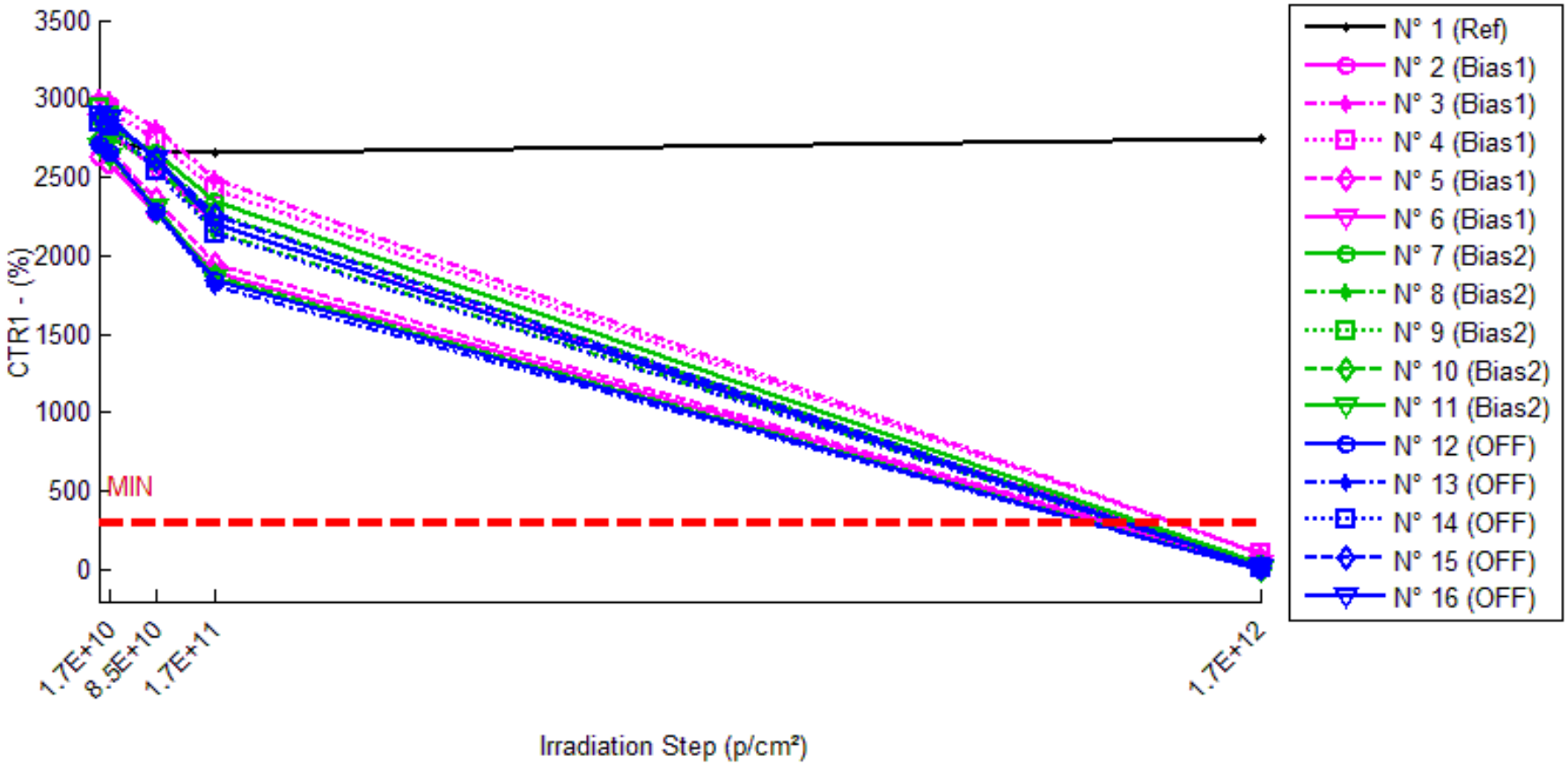
Delta [TPLH2]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-2.000E-1	0.000E+0	0.000E+0	0.000E+0
N° 2 (Bias1)	---	-8.000E-1	-2.000E+0	-3.200E+0	-7.200E+0
N° 3 (Bias1)	---	-8.000E-1	-2.000E+0	-3.600E+0	-8.800E+0
N° 4 (Bias1)	---	-4.000E-1	-1.600E+0	-2.800E+0	-6.800E+0
N° 5 (Bias1)	---	-8.000E-1	-2.000E+0	-3.200E+0	-8.000E+0
N° 6 (Bias1)	---	-8.000E-1	-2.400E+0	-4.000E+0	-9.200E+0
N° 7 (Bias2)	---	-4.000E-1	-2.400E+0	-3.600E+0	-7.200E+0
N° 8 (Bias2)	---	-4.000E-1	-2.000E+0	-3.200E+0	-6.800E+0
N° 9 (Bias2)	---	-6.000E-1	-2.600E+0	-4.200E+0	-8.200E+0
N° 10 (Bias2)	---	-8.000E-1	-2.800E+0	-4.000E+0	-8.000E+0
N° 11 (Bias2)	---	-8.000E-1	-2.400E+0	-3.600E+0	-7.600E+0
N° 12 (OFF)	---	-8.000E-1	-3.200E+0	-4.800E+0	-9.200E+0
N° 13 (OFF)	---	-8.000E-1	-2.800E+0	-4.000E+0	-7.600E+0
N° 14 (OFF)	---	-8.000E-1	-2.000E+0	-3.200E+0	-6.800E+0
N° 15 (OFF)	---	-4.000E-1	-2.200E+0	-3.600E+0	-7.600E+0
N° 16 (OFF)	---	-8.000E-1	-2.400E+0	-4.000E+0	-8.000E+0
Average (OFF)	---	-7.200E-1	-2.000E+0	-3.360E+0	-8.000E+0
σ (OFF)	---	1.789E-1	2.828E-1	4.561E-1	1.020E+0
Average+3σ (OFF)	---	-1.833E-1	-1.151E+0	-1.992E+0	-4.941E+0
Average-3σ (OFF)	---	-1.257E+0	-2.849E+0	-4.728E+0	-1.106E+1
Average (Bias1)	---	-6.000E-1	-2.440E+0	-3.720E+0	-7.560E+0
σ (Bias1)	---	2.000E-1	2.966E-1	3.899E-1	5.727E-1
Average+3σ (Bias1)	---	9.992E-16	-1.550E+0	-2.550E+0	-5.842E+0
Average-3σ (Bias1)	---	-1.200E+0	-3.330E+0	-4.890E+0	-9.278E+0
Average (Bias2)	---	-7.200E-1	-2.520E+0	-3.920E+0	-7.840E+0
σ (Bias2)	---	1.789E-1	4.817E-1	5.933E-1	8.764E-1
Average+3σ (Bias2)	---	-1.833E-1	-1.075E+0	-2.140E+0	-5.211E+0
Average-3σ (Bias2)	---	-1.257E+0	-3.965E+0	-5.700E+0	-1.047E+1

30 MeV proton / detailed results

12.CTR1

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=4.5V



30 MeV proton / detailed results

CTR1 . (%) **Min = 300.0**

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	2718.30	2735.77	2668.61	2653.93	2743.80
N° 2 (Bias1)	2627.53	2576.96	2274.61	1897.73	27.52
N° 3 (Bias1)	3001.59	2987.20	2806.27	2483.41	101.23
N° 4 (Bias1)	2941.92	2923.28	2737.89	2426.50	102.82
N° 5 (Bias1)	2726.98	2667.38	2363.77	1946.59	22.61
N° 6 (Bias1)	2848.76	2782.13	2552.47	2198.32	36.72
N° 7 (Bias2)	2878.36	2814.52	2654.56	2347.36	33.55
N° 8 (Bias2)	2903.51	2760.36	2576.07	2152.76	7.54
N° 9 (Bias2)	2942.41	2887.31	2602.24	2273.32	18.31
N° 10 (Bias2)	2747.47	2668.18	2286.77	1864.48	1.45
N° 11 (Bias2)	2695.63	2633.86	2302.02	1853.71	1.70
N° 12 (OFF)	2707.79	2657.47	2288.11	1839.10	5.30
N° 13 (OFF)	2710.05	2660.01	2284.79	1803.05	1.10
N° 14 (OFF)	2842.67	2821.83	2535.12	2146.27	10.85
N° 15 (OFF)	2886.23	2867.13	2615.68	2259.59	15.74
N° 16 (OFF)	2905.07	2879.87	2617.91	2209.99	13.90

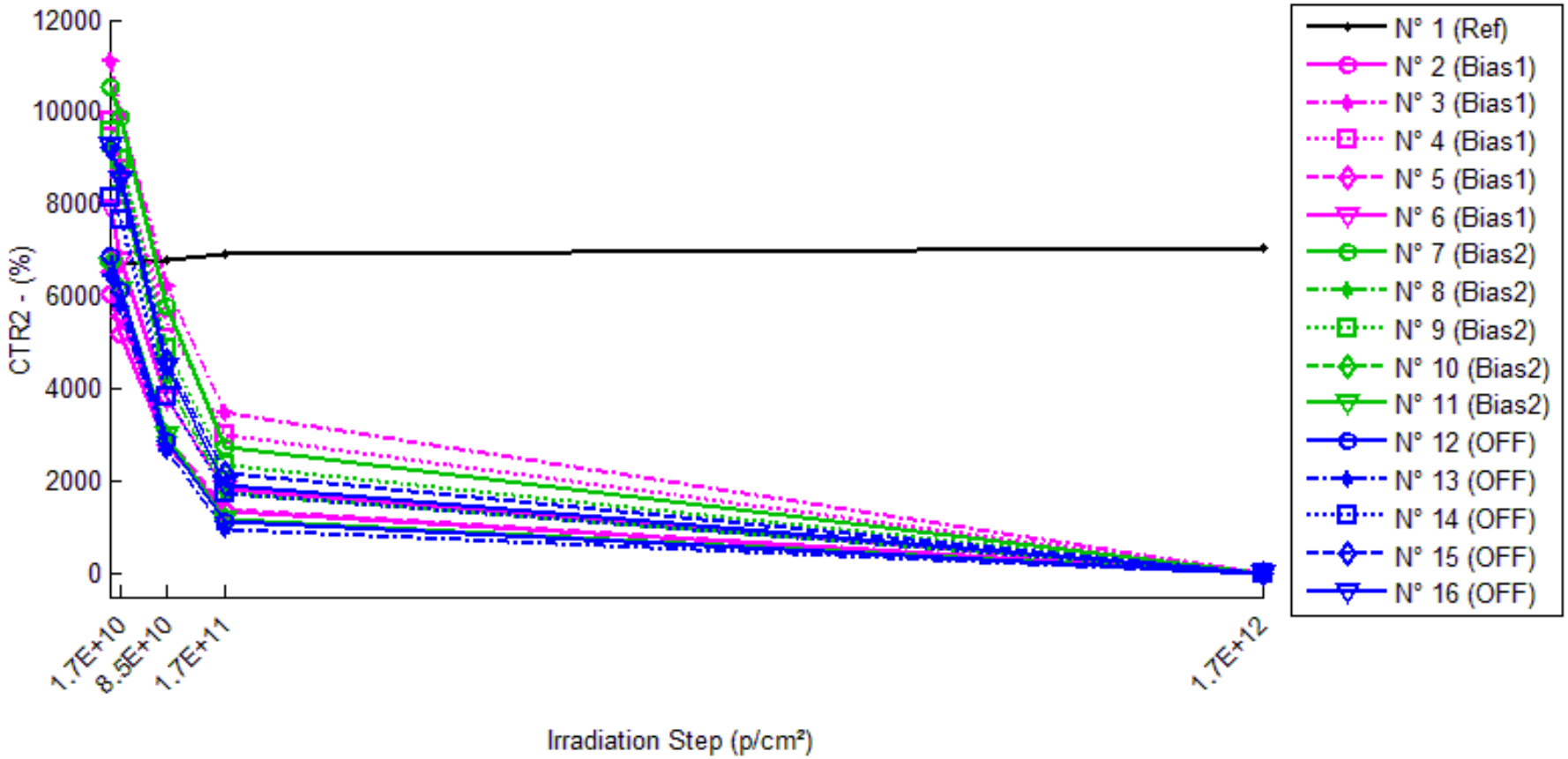
1/Delta [CTR1]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-2.349E-6	6.850E-6	8.923E-6	-3.419E-6
N° 2 (Bias1)	---	7.469E-6	5.905E-5	1.464E-4	3.595E-2
N° 3 (Bias1)	---	1.604E-6	2.319E-5	6.951E-5	9.545E-3
N° 4 (Bias1)	---	2.167E-6	2.533E-5	7.220E-5	9.385E-3
N° 5 (Bias1)	---	8.193E-6	5.635E-5	1.470E-4	4.386E-2
N° 6 (Bias1)	---	8.407E-6	4.075E-5	1.039E-4	2.688E-2
N° 7 (Bias2)	---	7.881E-6	2.929E-5	7.859E-5	2.946E-2
N° 8 (Bias2)	---	1.786E-5	4.378E-5	1.201E-4	1.322E-1
N° 9 (Bias2)	---	6.486E-6	4.443E-5	1.000E-4	5.428E-2
N° 10 (Bias2)	---	1.082E-5	7.333E-5	1.724E-4	6.879E-1
N° 11 (Bias2)	---	8.700E-6	6.343E-5	1.685E-4	5.894E-1
N° 12 (OFF)	---	6.992E-6	6.774E-5	1.744E-4	1.884E-1
N° 13 (OFF)	---	6.942E-6	6.868E-5	1.856E-4	9.108E-1
N° 14 (OFF)	---	2.598E-6	4.268E-5	1.141E-4	9.178E-2
N° 15 (OFF)	---	2.309E-6	3.584E-5	9.609E-5	6.317E-2
N° 16 (OFF)	---	3.012E-6	3.776E-5	1.083E-4	7.160E-2
Average (OFF)	---	5.568E-6	4.093E-5	1.078E-4	2.512E-2
σ (OFF)	---	3.385E-6	1.676E-5	3.799E-5	1.551E-2
Average+3σ (OFF)	---	1.572E-5	9.123E-5	2.218E-4	7.164E-2
Average-3σ (OFF)	---	-4.588E-6	-9.361E-6	-6.181E-6	-2.139E-2
Average (Bias1)	---	1.035E-5	5.085E-5	1.279E-4	2.986E-1
σ (Bias1)	---	4.483E-6	1.746E-5	4.152E-5	3.146E-1
Average+3σ (Bias1)	---	2.380E-5	1.032E-4	2.525E-4	1.242E+0
Average-3σ (Bias1)	---	-3.099E-6	-1.532E-6	3.372E-6	-6.452E-1
Average (Bias2)	---	4.371E-6	5.054E-5	1.357E-4	2.652E-1
σ (Bias2)	---	2.384E-6	1.633E-5	4.117E-5	3.644E-1
Average+3σ (Bias2)	---	1.152E-5	9.952E-5	2.592E-4	1.358E+0
Average-3σ (Bias2)	---	-2.781E-6	1.560E-6	1.221E-5	-8.280E-1

30 MeV proton / detailed results

13.CTR2

Ta=25°C; If=0.16mA; Vo=0.4V; Vcc=5V



30 MeV proton / detailed results

CTR2 . (%)

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	7008.113	6707.663	6800.837	6936.119	7050.744
N° 2 (Bias1)	6048.454	5190.905	2807.351	1360.642	0.001
N° 3 (Bias1)	11087.670	9916.362	6244.603	3489.286	0.002
N° 4 (Bias1)	9807.987	8759.962	5425.163	2985.564	0.002
N° 5 (Bias1)	6515.281	5591.276	2959.412	1402.844	0.001
N° 6 (Bias1)	7935.519	6783.725	3786.183	1851.306	0.001
N° 7 (Bias2)	10555.230	9893.638	5782.713	2759.446	0.001
N° 8 (Bias2)	9141.606	8358.462	4210.211	1727.475	0.001
N° 9 (Bias2)	9579.737	8956.925	4873.963	2332.354	0.001
N° 10 (Bias2)	6713.863	6134.179	2944.763	1169.513	0.001
N° 11 (Bias2)	6668.400	6123.565	3001.153	1197.041	0.001
N° 12 (OFF)	6868.950	6157.456	2864.953	1121.991	0.000
N° 13 (OFF)	6443.519	5808.533	2636.399	977.354	0.001
N° 14 (OFF)	8144.087	7666.956	3829.808	1732.999	0.001
N° 15 (OFF)	9230.237	8622.931	4623.549	2165.641	0.001
N° 16 (OFF)	9289.288	8524.950	4466.062	1929.614	0.001

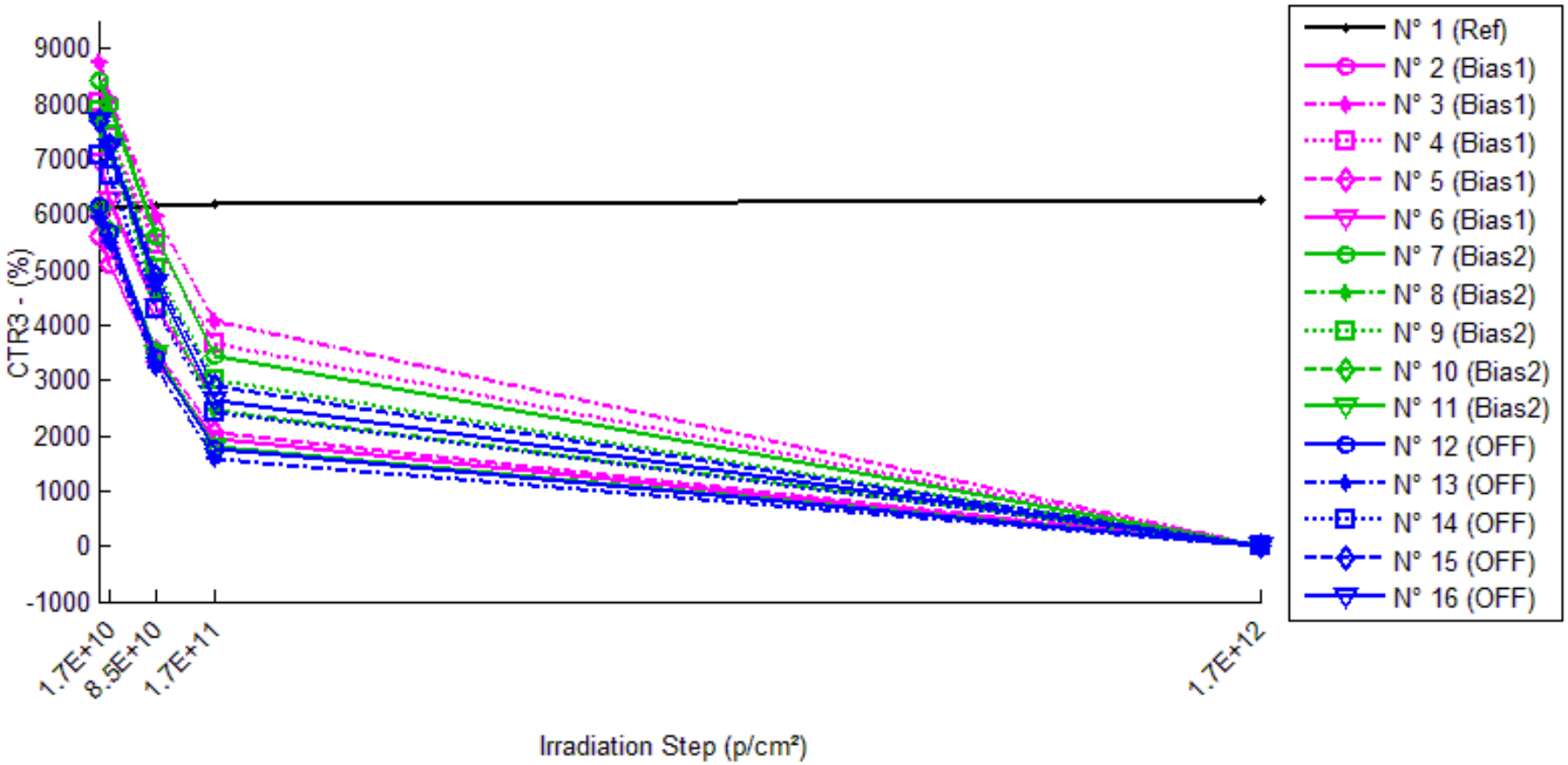
1/Delta [CTR2]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	6.391E-6	4.349E-6	1.481E-6	-8.628E-7
N° 2 (Bias1)	---	2.731E-5	1.909E-4	5.696E-4	1.219E+3
N° 3 (Bias1)	---	1.065E-5	6.995E-5	1.964E-4	6.409E+2
N° 4 (Bias1)	---	1.220E-5	8.237E-5	2.330E-4	6.016E+2
N° 5 (Bias1)	---	2.536E-5	1.844E-4	5.594E-4	1.156E+3
N° 6 (Bias1)	---	2.140E-5	1.381E-4	4.141E-4	1.215E+3
N° 7 (Bias2)	---	6.335E-6	7.819E-5	2.677E-4	9.150E+2
N° 8 (Bias2)	---	1.025E-5	1.281E-4	4.695E-4	1.281E+3
N° 9 (Bias2)	---	7.258E-6	1.008E-4	3.244E-4	9.645E+2
N° 10 (Bias2)	---	1.408E-5	1.906E-4	7.061E-4	1.338E+3
N° 11 (Bias2)	---	1.334E-5	1.832E-4	6.854E-4	1.304E+3
N° 12 (OFF)	---	1.682E-5	2.035E-4	7.457E-4	2.145E+3
N° 13 (OFF)	---	1.697E-5	2.241E-4	8.680E-4	1.242E+3
N° 14 (OFF)	---	7.641E-6	1.383E-4	4.542E-4	1.208E+3
N° 15 (OFF)	---	7.630E-6	1.079E-4	3.534E-4	1.382E+3
N° 16 (OFF)	---	9.652E-6	1.163E-4	4.106E-4	9.794E+2
Average (OFF)	---	1.938E-5	1.331E-4	3.945E-4	9.665E+2
σ (OFF)	---	7.592E-6	5.603E-5	1.758E-4	3.165E+2
Average+3σ (OFF)	---	4.216E-5	3.012E-4	9.218E-4	1.916E+3
Average-3σ (OFF)	---	-3.391E-6	-3.496E-5	-1.328E-4	1.703E+1
Average (Bias1)	---	1.025E-5	1.362E-4	4.906E-4	1.161E+3
σ (Bias1)	---	3.481E-6	4.965E-5	2.014E-4	2.034E+2
Average+3σ (Bias1)	---	2.070E-5	2.852E-4	1.095E-3	1.771E+3
Average-3σ (Bias1)	---	-1.911E-7	-1.276E-5	-1.135E-4	5.503E+2
Average (Bias2)	---	1.174E-5	1.580E-4	5.664E-4	1.391E+3
σ (Bias2)	---	4.775E-6	5.261E-5	2.266E-4	4.454E+2
Average+3σ (Bias2)	---	2.607E-5	3.159E-4	1.246E-3	2.727E+3
Average-3σ (Bias2)	---	-2.581E-6	1.807E-7	-1.133E-4	5.505E+1

30 MeV proton / detailed results

14.CTR3

Ta=25°C; If=0.32mA; Vo=0.4V; Vcc=5V



30 MeV proton / detailed results

CTR3 . (%)

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	6238.3910	6115.5940	6140.5970	6200.3410	6276.9310
N° 2 (Bias1)	5615.3190	5077.1160	3351.7190	1961.8140	0.0008
N° 3 (Bias1)	8747.2810	8079.3810	5973.9410	4051.7780	0.0016
N° 4 (Bias1)	8014.7970	7413.6870	5454.8190	3652.4000	0.0017
N° 5 (Bias1)	5972.7340	5389.7620	3525.9060	2045.2830	0.0008
N° 6 (Bias1)	6947.4880	6280.3030	4334.7780	2628.2650	0.0008
N° 7 (Bias2)	8424.1720	7970.8470	5610.7970	3432.6750	0.0011
N° 8 (Bias2)	7705.1130	7147.8030	4593.8470	2439.8230	0.0008
N° 9 (Bias2)	7872.7880	7445.2840	5027.0970	3009.7000	0.0010
N° 10 (Bias2)	6118.4620	5679.1250	3483.3590	1777.9590	0.0007
N° 11 (Bias2)	6017.9060	5624.5160	3495.6160	1803.2450	0.0007
N° 12 (OFF)	6153.5530	5663.3720	3416.0160	1749.2310	0.0004
N° 13 (OFF)	5933.8530	5488.4280	3225.7750	1576.6670	0.0008
N° 14 (OFF)	7065.9310	6696.8970	4293.6280	2432.4940	0.0008
N° 15 (OFF)	7677.3630	7267.4030	4881.2970	2899.6750	0.0007
N° 16 (OFF)	7688.8970	7217.0560	4773.6220	2646.5370	0.0010

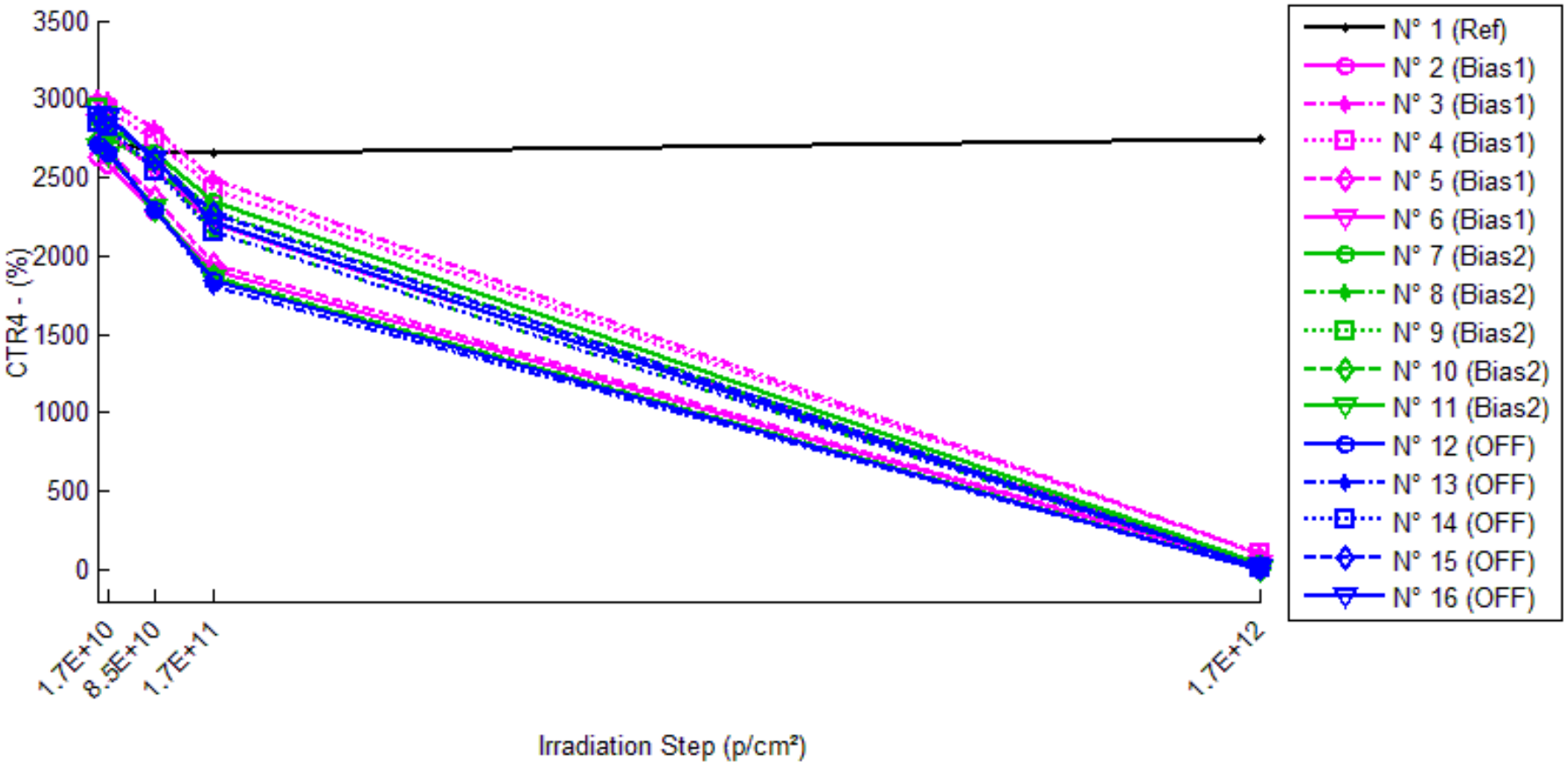
1/Delta [CTR3]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	3.219E-6	2.553E-6	9.837E-7	-9.842E-7
N° 2 (Bias1)	---	1.888E-5	1.203E-4	3.316E-4	1.260E+3
N° 3 (Bias1)	---	9.451E-6	5.307E-5	1.325E-4	6.383E+2
N° 4 (Bias1)	---	1.012E-5	5.855E-5	1.490E-4	5.872E+2
N° 5 (Bias1)	---	1.811E-5	1.162E-4	3.215E-4	1.199E+3
N° 6 (Bias1)	---	1.529E-5	8.676E-5	2.365E-4	1.235E+3
N° 7 (Bias2)	---	6.751E-6	5.952E-5	1.726E-4	9.235E+2
N° 8 (Bias2)	---	1.012E-5	8.790E-5	2.801E-4	1.331E+3
N° 9 (Bias2)	---	7.293E-6	7.190E-5	2.052E-4	9.576E+2
N° 10 (Bias2)	---	1.264E-5	1.236E-4	3.990E-4	1.394E+3
N° 11 (Bias2)	---	1.162E-5	1.199E-4	3.884E-4	1.343E+3
N° 12 (OFF)	---	1.407E-5	1.302E-4	4.092E-4	2.321E+3
N° 13 (OFF)	---	1.368E-5	1.415E-4	4.657E-4	1.264E+3
N° 14 (OFF)	---	7.799E-6	9.138E-5	2.696E-4	1.259E+3
N° 15 (OFF)	---	7.348E-6	7.461E-5	2.146E-4	1.454E+3
N° 16 (OFF)	---	8.503E-6	7.943E-5	2.478E-4	1.001E+3
Average (OFF)	---	1.437E-5	8.697E-5	2.342E-4	9.840E+2
σ (OFF)	---	4.400E-6	3.130E-5	9.317E-5	3.400E+2
Average+3σ (OFF)	---	2.757E-5	1.809E-4	5.138E-4	2.004E+3
Average-3σ (OFF)	---	1.169E-6	-6.936E-6	-4.528E-5	-3.608E+1
Average (Bias1)	---	9.686E-6	9.257E-5	2.891E-4	1.190E+3
σ (Bias1)	---	2.599E-6	2.852E-5	1.032E-4	2.292E+2
Average+3σ (Bias1)	---	1.748E-5	1.781E-4	5.987E-4	1.877E+3
Average-3σ (Bias1)	---	1.888E-6	7.013E-6	-2.060E-5	5.024E+2
Average (Bias2)	---	1.028E-5	1.034E-4	3.214E-4	1.460E+3
σ (Bias2)	---	3.308E-6	3.049E-5	1.096E-4	5.075E+2
Average+3σ (Bias2)	---	2.020E-5	1.949E-4	6.501E-4	2.982E+3
Average-3σ (Bias2)	---	3.531E-7	1.196E-5	-7.396E-6	-6.262E+1

30 MeV proton / detailed results

15.CTR4

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=5V



30 MeV proton / detailed results

CTR4 . (%)

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	2720.86	2738.30	2670.71	2656.01	2746.29
N° 2 (Bias1)	2630.37	2580.89	2279.99	1902.63	28.44
N° 3 (Bias1)	3003.03	2989.09	2809.41	2487.65	103.25
N° 4 (Bias1)	2943.32	2925.03	2740.74	2429.37	104.88
N° 5 (Bias1)	2729.80	2671.12	2369.00	1951.42	23.37
N° 6 (Bias1)	2851.17	2784.87	2557.09	2203.70	37.72
N° 7 (Bias2)	2879.38	2815.96	2657.08	2352.14	34.53
N° 8 (Bias2)	2904.64	2763.85	2580.47	2158.95	7.93
N° 9 (Bias2)	2944.00	2890.09	2606.71	2279.33	18.97
N° 10 (Bias2)	2750.33	2672.17	2293.03	1871.49	1.63
N° 11 (Bias2)	2698.34	2637.68	2308.37	1860.41	1.91
N° 12 (OFF)	2710.70	2661.56	2295.06	1845.48	5.68
N° 13 (OFF)	2712.98	2664.38	2290.96	1809.70	1.24
N° 14 (OFF)	2844.42	2824.53	2539.74	2152.08	11.39
N° 15 (OFF)	2887.82	2869.53	2620.11	2265.56	16.40
N° 16 (OFF)	2906.84	2882.38	2621.85	2216.15	14.51

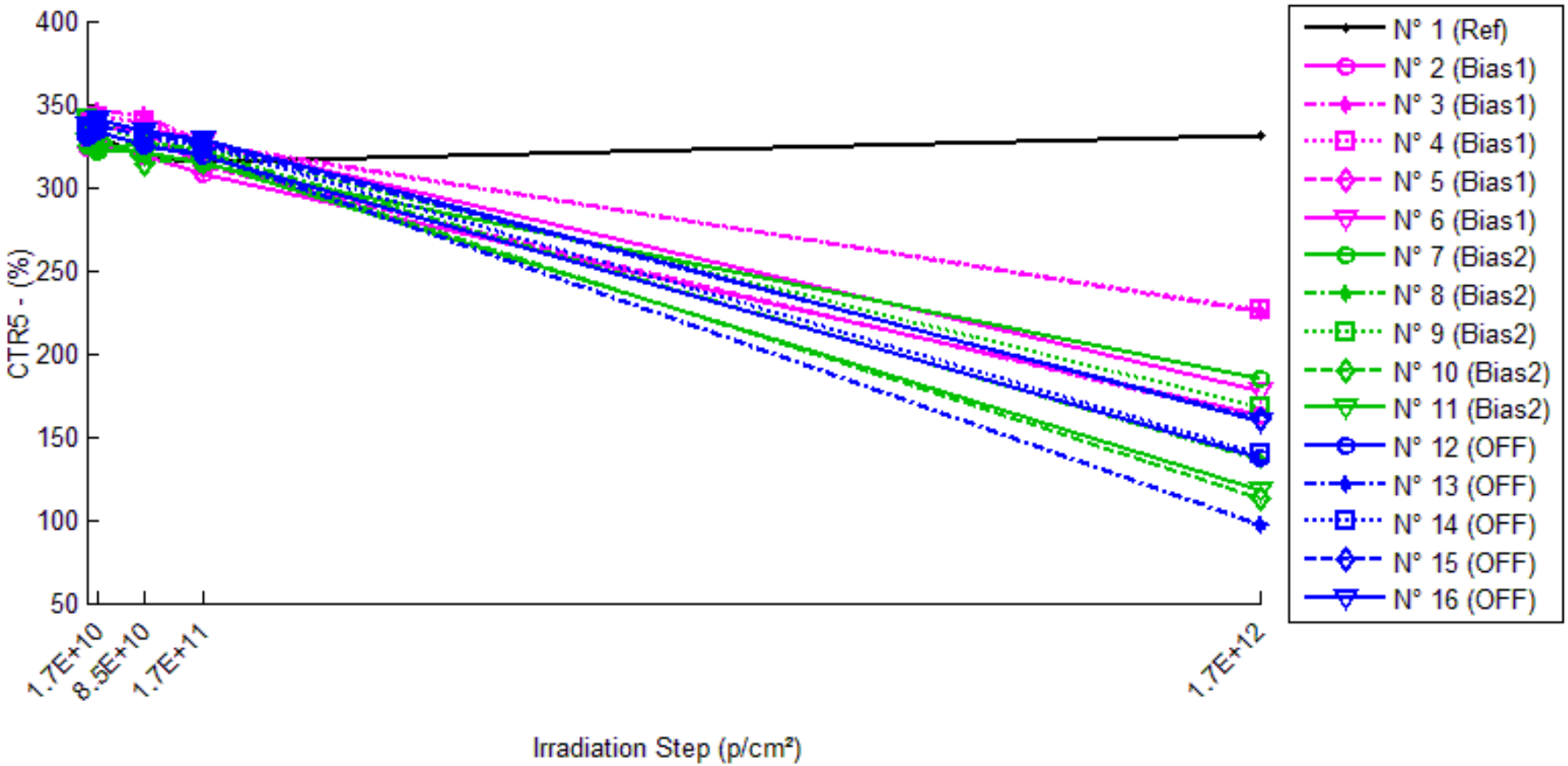
1/Delta [CTR4]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-2.342E-6	6.902E-6	8.974E-6	-3.403E-6
N° 2 (Bias1)	---	7.289E-6	5.843E-5	1.454E-4	3.478E-2
N° 3 (Bias1)	---	1.552E-6	2.295E-5	6.899E-5	9.352E-3
N° 4 (Bias1)	---	2.124E-6	2.511E-5	7.188E-5	9.195E-3
N° 5 (Bias1)	---	8.047E-6	5.579E-5	1.461E-4	4.242E-2
N° 6 (Bias1)	---	8.350E-6	4.034E-5	1.030E-4	2.616E-2
N° 7 (Bias2)	---	7.822E-6	2.906E-5	7.785E-5	2.861E-2
N° 8 (Bias2)	---	1.754E-5	4.325E-5	1.189E-4	1.258E-1
N° 9 (Bias2)	---	6.336E-6	4.395E-5	9.905E-5	5.238E-2
N° 10 (Bias2)	---	1.063E-5	7.251E-5	1.707E-4	6.119E-1
N° 11 (Bias2)	---	8.523E-6	6.261E-5	1.669E-4	5.227E-1
N° 12 (OFF)	---	6.812E-6	6.681E-5	1.730E-4	1.757E-1
N° 13 (OFF)	---	6.724E-6	6.790E-5	1.840E-4	8.033E-1
N° 14 (OFF)	---	2.475E-6	4.218E-5	1.131E-4	8.743E-2
N° 15 (OFF)	---	2.206E-6	3.538E-5	9.511E-5	6.063E-2
N° 16 (OFF)	---	2.918E-6	3.739E-5	1.072E-4	6.859E-2
Average (OFF)	---	5.473E-6	4.052E-5	1.071E-4	2.438E-2
σ (OFF)	---	3.346E-6	1.658E-5	3.775E-5	1.494E-2
Average+3σ (OFF)	---	1.551E-5	9.027E-5	2.203E-4	6.921E-2
Average-3σ (OFF)	---	-4.566E-6	-9.226E-6	-6.160E-6	-2.045E-2
Average (Bias1)	---	1.017E-5	5.028E-5	1.267E-4	2.683E-1
σ (Bias1)	---	4.399E-6	1.722E-5	4.114E-5	2.771E-1
Average+3σ (Bias1)	---	2.337E-5	1.019E-4	2.501E-4	1.100E+0
Average-3σ (Bias1)	---	-3.027E-6	-1.386E-6	3.284E-6	-5.630E-1
Average (Bias2)	---	4.227E-6	4.993E-5	1.345E-4	2.391E-1
σ (Bias2)	---	2.334E-6	1.610E-5	4.087E-5	3.187E-1
Average+3σ (Bias2)	---	1.123E-5	9.823E-5	2.571E-4	1.195E+0
Average-3σ (Bias2)	---	-2.774E-6	1.632E-6	1.187E-5	-7.170E-1

30 MeV proton / detailed results

16.CTR5

Ta=25°C; If=16mA; Vo=0.4V; Vcc=5V



30 MeV proton / detailed results

CTR5 . (%)

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	326.87	330.60	317.65	314.77	331.01
N° 2 (Bias1)	323.37	326.56	318.69	307.96	163.41
N° 3 (Bias1)	342.51	346.23	343.32	326.10	225.26
N° 4 (Bias1)	338.32	341.72	339.06	325.07	226.20
N° 5 (Bias1)	334.39	336.35	333.22	312.78	160.01
N° 6 (Bias1)	336.90	334.31	334.60	327.95	177.86
N° 7 (Bias2)	325.39	321.44	321.79	314.55	184.28
N° 8 (Bias2)	334.28	320.76	327.64	321.08	135.70
N° 9 (Bias2)	341.23	339.48	326.21	324.33	167.09
N° 10 (Bias2)	334.50	332.01	314.10	319.15	113.14
N° 11 (Bias2)	327.48	327.03	320.08	314.75	117.75
N° 12 (OFF)	330.18	333.89	324.99	319.16	137.49
N° 13 (OFF)	330.20	333.75	325.52	319.80	97.22
N° 14 (OFF)	333.18	337.07	330.13	325.28	139.37
N° 15 (OFF)	333.66	337.13	330.95	326.31	160.06
N° 16 (OFF)	337.19	340.43	334.14	328.25	159.58

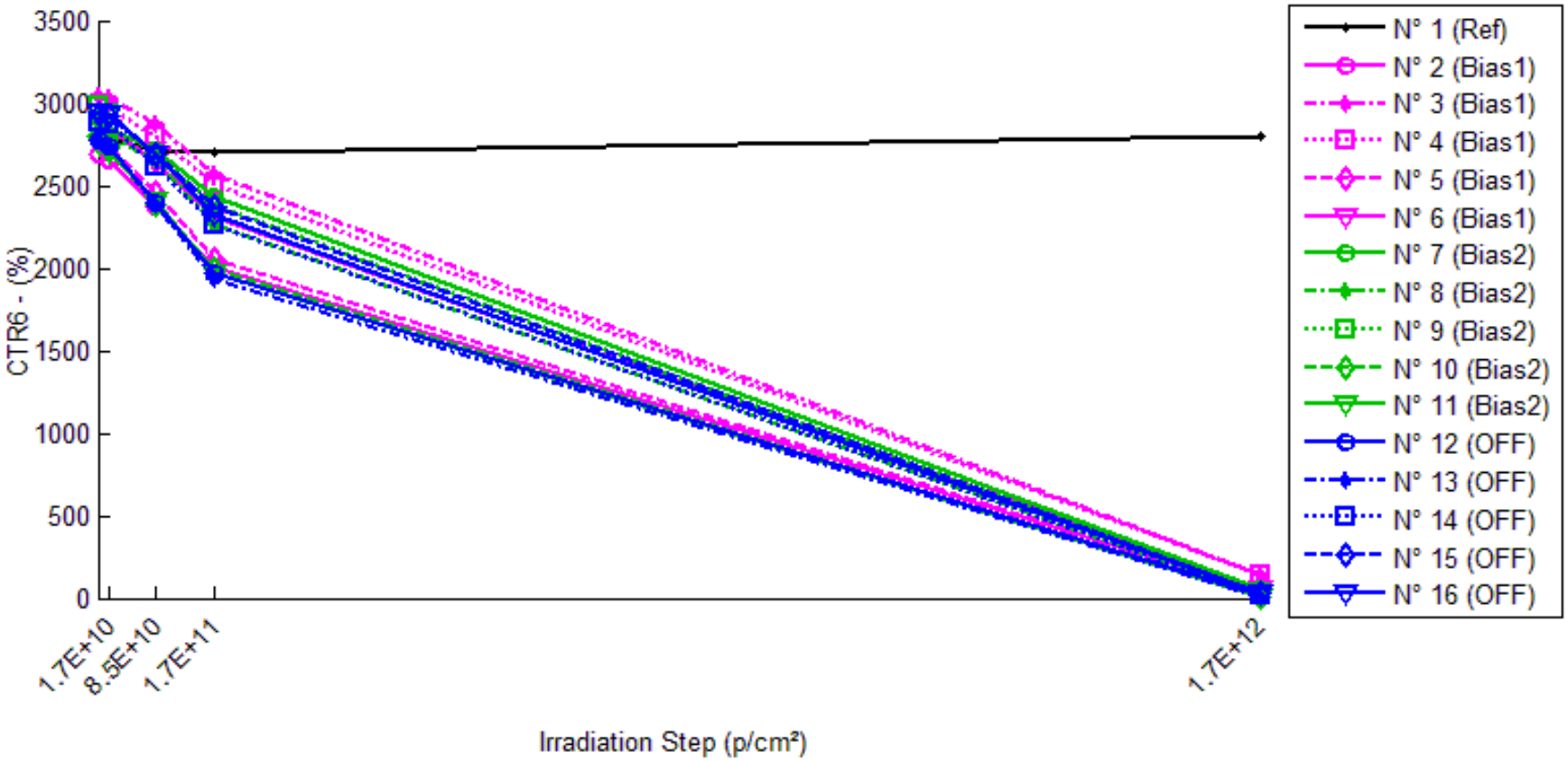
1/Delta [CTR5]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-3.456E-5	8.874E-5	1.175E-4	-3.828E-5
N° 2 (Bias1)	---	-3.017E-5	4.549E-5	1.547E-4	3.027E-3
N° 3 (Bias1)	---	-3.135E-5	-6.867E-6	1.469E-4	1.520E-3
N° 4 (Bias1)	---	-2.941E-5	-6.494E-6	1.204E-4	1.465E-3
N° 5 (Bias1)	---	-1.743E-5	1.049E-5	2.066E-4	3.259E-3
N° 6 (Bias1)	---	2.301E-5	2.039E-5	8.102E-5	2.654E-3
N° 7 (Bias2)	---	3.772E-5	3.435E-5	1.059E-4	2.353E-3
N° 8 (Bias2)	---	1.261E-4	6.060E-5	1.230E-4	4.378E-3
N° 9 (Bias2)	---	1.509E-5	1.350E-4	1.528E-4	3.054E-3
N° 10 (Bias2)	---	2.235E-5	1.941E-4	1.438E-4	5.849E-3
N° 11 (Bias2)	---	4.194E-6	7.060E-5	1.235E-4	5.439E-3
N° 12 (OFF)	---	-3.363E-5	4.835E-5	1.046E-4	4.244E-3
N° 13 (OFF)	---	-3.220E-5	4.350E-5	9.850E-5	7.258E-3
N° 14 (OFF)	---	-3.468E-5	2.772E-5	7.288E-5	4.174E-3
N° 15 (OFF)	---	-3.084E-5	2.452E-5	6.753E-5	3.251E-3
N° 16 (OFF)	---	-2.820E-5	2.709E-5	8.081E-5	3.301E-3
Average (OFF)	---	-1.707E-5	1.260E-5	1.420E-4	2.385E-3
σ (OFF)	---	2.310E-5	2.174E-5	4.623E-5	8.432E-4
Average+3σ (OFF)	---	5.222E-5	7.782E-5	2.806E-4	4.915E-3
Average-3σ (OFF)	---	-8.636E-5	-5.262E-5	3.256E-6	-1.446E-4
Average (Bias1)	---	4.109E-5	9.892E-5	1.298E-4	4.215E-3
σ (Bias1)	---	4.905E-5	6.480E-5	1.858E-5	1.501E-3
Average+3σ (Bias1)	---	1.882E-4	2.933E-4	1.855E-4	8.716E-3
Average-3σ (Bias1)	---	-1.061E-4	-9.549E-5	7.404E-5	-2.870E-4
Average (Bias2)	---	-3.191E-5	3.424E-5	8.487E-5	4.445E-3
σ (Bias2)	---	2.531E-6	1.087E-5	1.610E-5	1.640E-3
Average+3σ (Bias2)	---	-2.432E-5	6.685E-5	1.332E-4	9.366E-3
Average-3σ (Bias2)	---	-3.950E-5	1.618E-6	3.657E-5	-4.749E-4

30 MeV proton / detailed results

17.CTR6

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=20V



30 MeV proton / detailed results

CTR6 . (%)

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	2773.76	2792.49	2718.83	2702.98	2799.84
N° 2 (Bias1)	2688.84	2649.34	2367.74	2000.49	42.24
N° 3 (Bias1)	3041.65	3033.21	2869.47	2565.04	136.19
N° 4 (Bias1)	2981.18	2968.77	2800.92	2508.32	135.71
N° 5 (Bias1)	2792.49	2742.66	2461.70	2050.97	36.75
N° 6 (Bias1)	2906.93	2846.00	2643.90	2314.16	56.06
N° 7 (Bias2)	2908.45	2847.97	2708.58	2430.19	54.32
N° 8 (Bias2)	2940.99	2802.43	2649.77	2261.85	16.73
N° 9 (Bias2)	2986.57	2937.48	2674.52	2379.75	33.75
N° 10 (Bias2)	2810.18	2739.11	2382.20	1989.22	6.11
N° 11 (Bias2)	2754.31	2701.67	2402.50	1975.15	6.86
N° 12 (OFF)	2772.06	2733.71	2394.43	1966.71	13.02
N° 13 (OFF)	2770.70	2732.56	2389.85	1929.27	5.10
N° 14 (OFF)	2886.52	2874.00	2615.04	2256.37	22.28
N° 15 (OFF)	2927.95	2915.88	2691.05	2369.17	30.63
N° 16 (OFF)	2948.45	2930.44	2689.48	2323.90	27.41

1/Delta [CTR6]

	0.p/cm²	1.7E10.p/cm²	8.5E10.p/cm²	1.7E11.p/cm²	1.7E12.p/cm²
N° 1 (Ref)	---	-2.417E-6	7.284E-6	9.441E-6	-3.358E-6
N° 2 (Bias1)	---	5.546E-6	5.044E-5	1.280E-4	2.330E-2
N° 3 (Bias1)	---	9.151E-7	1.973E-5	6.109E-5	7.014E-3
N° 4 (Bias1)	---	1.402E-6	2.159E-5	6.324E-5	7.033E-3
N° 5 (Bias1)	---	6.506E-6	4.812E-5	1.295E-4	2.686E-2
N° 6 (Bias1)	---	7.365E-6	3.422E-5	8.812E-5	1.749E-2
N° 7 (Bias2)	---	7.301E-6	2.537E-5	6.766E-5	1.806E-2
N° 8 (Bias2)	---	1.681E-5	3.737E-5	1.021E-4	5.942E-2
N° 9 (Bias2)	---	5.596E-6	3.907E-5	8.538E-5	2.930E-2
N° 10 (Bias2)	---	9.233E-6	6.393E-5	1.469E-4	1.632E-1
N° 11 (Bias2)	---	7.074E-6	5.316E-5	1.432E-4	1.454E-1
N° 12 (OFF)	---	5.061E-6	5.689E-5	1.477E-4	7.644E-2
N° 13 (OFF)	---	5.037E-6	5.752E-5	1.574E-4	1.958E-1
N° 14 (OFF)	---	1.509E-6	3.597E-5	9.675E-5	4.455E-2
N° 15 (OFF)	---	1.414E-6	3.007E-5	8.055E-5	3.231E-2
N° 16 (OFF)	---	2.084E-6	3.266E-5	9.115E-5	3.614E-2
Average (OFF)	---	4.347E-6	3.482E-5	9.398E-5	1.634E-2
σ (OFF)	---	2.986E-6	1.435E-5	3.345E-5	9.137E-3
Average+3σ (OFF)	---	1.330E-5	7.788E-5	1.943E-4	4.375E-2
Average-3σ (OFF)	---	-4.610E-6	-8.239E-6	-6.384E-6	-1.107E-2
Average (Bias1)	---	9.203E-6	4.378E-5	1.090E-4	8.309E-2
σ (Bias1)	---	4.446E-6	1.497E-5	3.507E-5	6.706E-2
Average+3σ (Bias1)	---	2.254E-5	8.869E-5	2.142E-4	2.843E-1
Average-3σ (Bias1)	---	-4.134E-6	-1.126E-6	3.844E-6	-1.181E-1
Average (Bias2)	---	3.021E-6	4.262E-5	1.147E-4	7.705E-2
σ (Bias2)	---	1.869E-6	1.348E-5	3.520E-5	6.864E-2
Average+3σ (Bias2)	---	8.627E-6	8.306E-5	2.203E-4	2.830E-1
Average-3σ (Bias2)	---	-2.585E-6	2.181E-6	9.103E-6	-1.289E-1

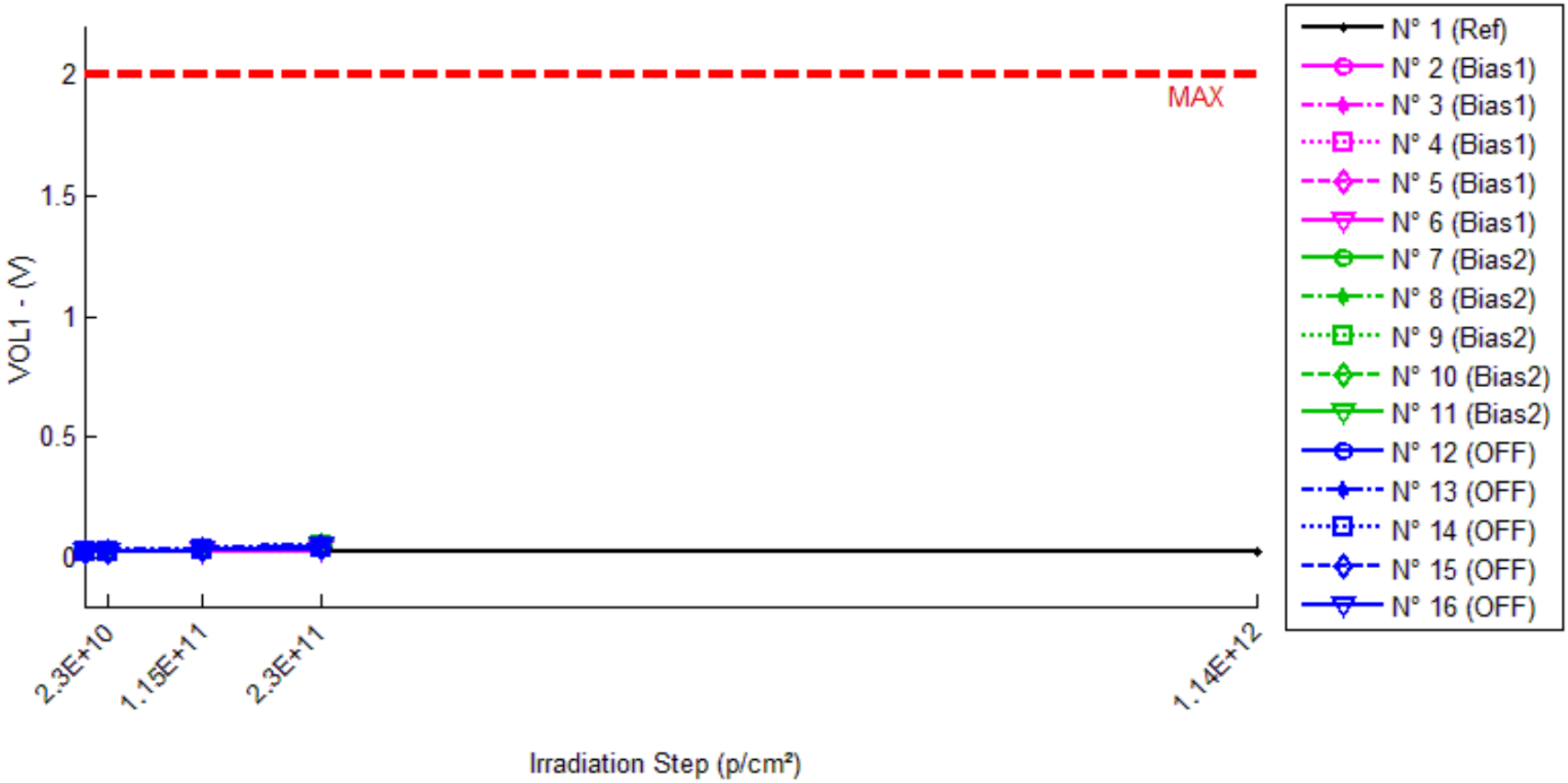
60 MeV proton / detailed results

CONTENTS

60 MeV proton / detailed results

1. VOL1

Ta=25°C; If=0.5mA; IOL=1.5mA; Vcc=4.5V



60 MeV proton / detailed results

VOL1 . (V) **Max = 0.4**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	0.026	0.026	0.026	0.027	0.026
N° 2 (Bias1)	0.027	0.028	0.035	0.046	Not Measurable*
N° 3 (Bias1)	0.025	0.025	0.031	0.041	Not Measurable*
N° 4 (Bias1)	0.025	0.027	0.032	0.042	Not Measurable*
N° 5 (Bias1)	0.027	0.028	0.035	0.047	Not Measurable*
N° 6 (Bias1)	0.024	0.024	0.029	0.037	Not Measurable*
N° 7 (Bias2)	0.025	0.026	0.032	0.043	Not Measurable*
N° 8 (Bias2)	0.024	0.026	0.032	0.044	Not Measurable*
N° 9 (Bias2)	0.026	0.027	0.034	0.048	Not Measurable*
N° 10 (Bias2)	0.027	0.028	0.037	0.054	Not Measurable*
N° 11 (Bias2)	0.024	0.025	0.032	0.043	Not Measurable*
N° 12 (OFF)	0.024	0.026	0.032	0.045	Not Measurable*
N° 13 (OFF)	0.028	0.030	0.040	0.057	Not Measurable*
N° 14 (OFF)	0.024	0.026	0.033	0.046	Not Measurable*
N° 15 (OFF)	0.025	0.026	0.033	0.045	Not Measurable*
N° 16 (OFF)	0.027	0.029	0.038	0.054	Not Measurable*

***le courant If est trop faible pour faire basculer la sortie à un état bas.**

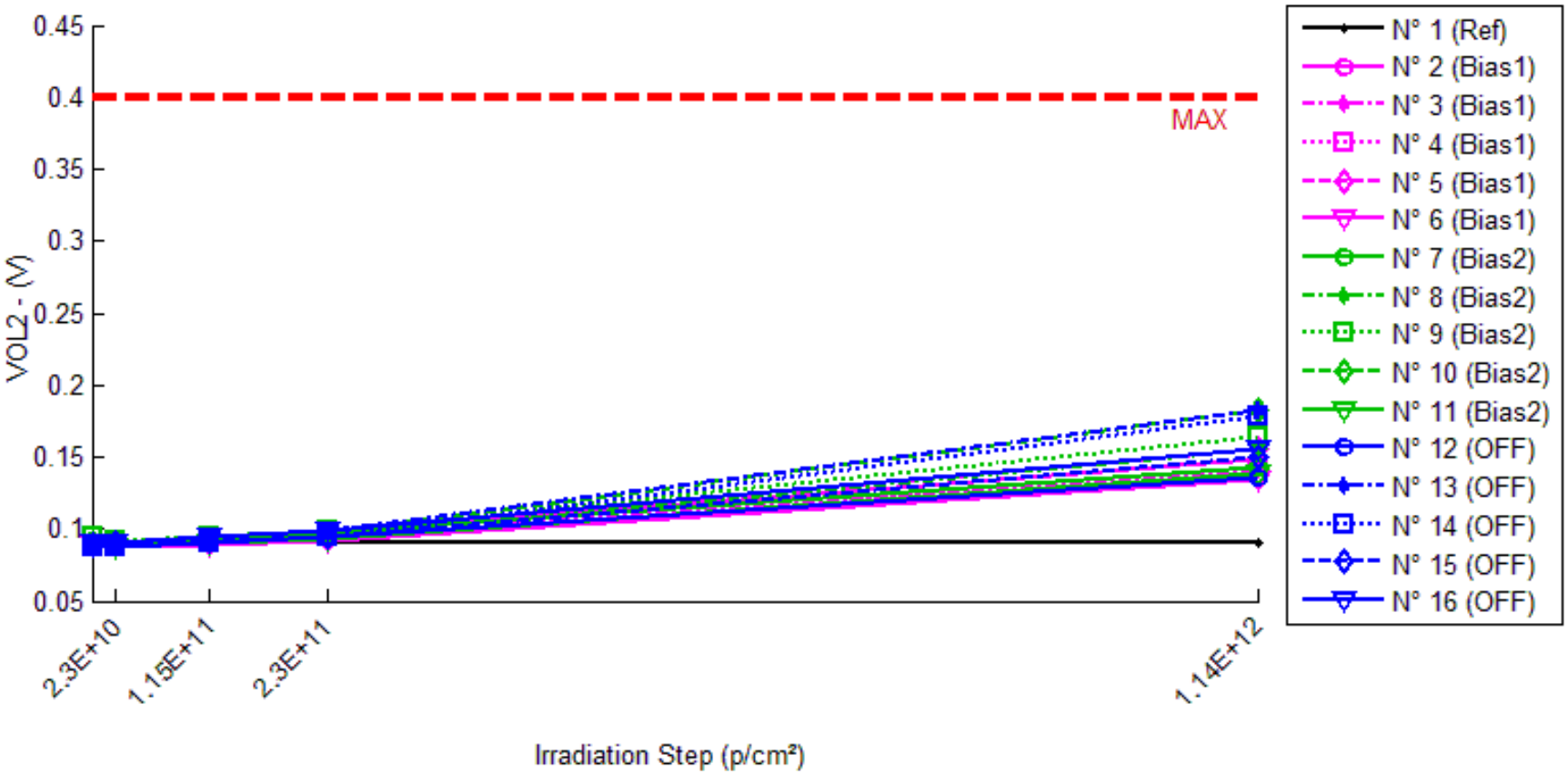
Delta [VOL1]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-1.764E-5	-1.373E-4	1.229E-3	-1.602E-4
N° 2 (Bias1)	---	1.245E-3	7.907E-3	1.903E-2	NaN
N° 3 (Bias1)	---	7.630E-4	6.068E-3	1.590E-2	NaN
N° 4 (Bias1)	---	1.060E-3	6.662E-3	1.627E-2	NaN
N° 5 (Bias1)	---	1.174E-3	7.983E-3	1.986E-2	NaN
N° 6 (Bias1)	---	6.674E-4	5.296E-3	1.360E-2	NaN
N° 7 (Bias2)	---	1.201E-3	7.138E-3	1.851E-2	NaN
N° 8 (Bias2)	---	1.078E-3	7.340E-3	1.916E-2	NaN
N° 9 (Bias2)	---	1.243E-3	8.284E-3	2.158E-2	NaN
N° 10 (Bias2)	---	1.727E-3	1.068E-2	2.726E-2	NaN
N° 11 (Bias2)	---	9.825E-4	7.339E-3	1.881E-2	NaN
N° 12 (OFF)	---	1.393E-3	7.924E-3	2.007E-2	NaN
N° 13 (OFF)	---	1.943E-3	1.173E-2	2.896E-2	NaN
N° 14 (OFF)	---	1.421E-3	8.550E-3	2.155E-2	NaN
N° 15 (OFF)	---	1.372E-3	8.153E-3	2.003E-2	NaN
N° 16 (OFF)	---	1.823E-3	1.109E-2	2.675E-2	NaN
Average (OFF)	---	9.820E-4	6.783E-3	1.693E-2	NaN
σ (OFF)	---	2.546E-4	1.166E-3	2.528E-3	0.000E+0
Average+3σ (OFF)	---	1.746E-3	1.028E-2	2.452E-2	NaN
Average-3σ (OFF)	---	2.181E-4	3.285E-3	9.348E-3	NaN
Average (Bias1)	---	1.246E-3	8.156E-3	2.106E-2	NaN
σ (Bias1)	---	2.875E-4	1.479E-3	3.674E-3	0.000E+0
Average+3σ (Bias1)	---	2.109E-3	1.259E-2	3.208E-2	NaN
Average-3σ (Bias1)	---	3.837E-4	3.719E-3	1.004E-2	NaN
Average (Bias2)	---	1.590E-3	9.487E-3	2.347E-2	NaN
σ (Bias2)	---	2.709E-4	1.780E-3	4.121E-3	0.000E+0
Average+3σ (Bias2)	---	2.403E-3	1.483E-2	3.584E-2	NaN
Average-3σ (Bias2)	---	7.775E-4	4.149E-3	1.111E-2	NaN

60 MeV proton / detailed results

2. VOL2

Ta=25°C; If=5mA; IOL=10mA; Vcc=4.5V



60 MeV proton / detailed results

VOL2 . (V) **Max = 0.4**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	0.091	0.092	0.091	0.091	0.091
N° 2 (Bias1)	0.092	0.091	0.094	0.098	0.148
N° 3 (Bias1)	0.090	0.088	0.090	0.095	0.141
N° 4 (Bias1)	0.089	0.089	0.091	0.095	0.143
N° 5 (Bias1)	0.090	0.089	0.092	0.097	0.156
N° 6 (Bias1)	0.089	0.087	0.089	0.092	0.134
N° 7 (Bias2)	0.092	0.091	0.092	0.097	0.143
N° 8 (Bias2)	0.091	0.090	0.091	0.095	0.155
N° 9 (Bias2)	0.094	0.092	0.094	0.099	0.164
N° 10 (Bias2)	0.091	0.090	0.092	0.098	0.183
N° 11 (Bias2)	0.090	0.087	0.090	0.093	0.139
N° 12 (OFF)	0.087	0.088	0.090	0.094	0.136
N° 13 (OFF)	0.091	0.091	0.094	0.099	0.182
N° 14 (OFF)	0.087	0.088	0.090	0.094	0.178
N° 15 (OFF)	0.089	0.090	0.092	0.095	0.150
N° 16 (OFF)	0.090	0.091	0.094	0.099	0.155

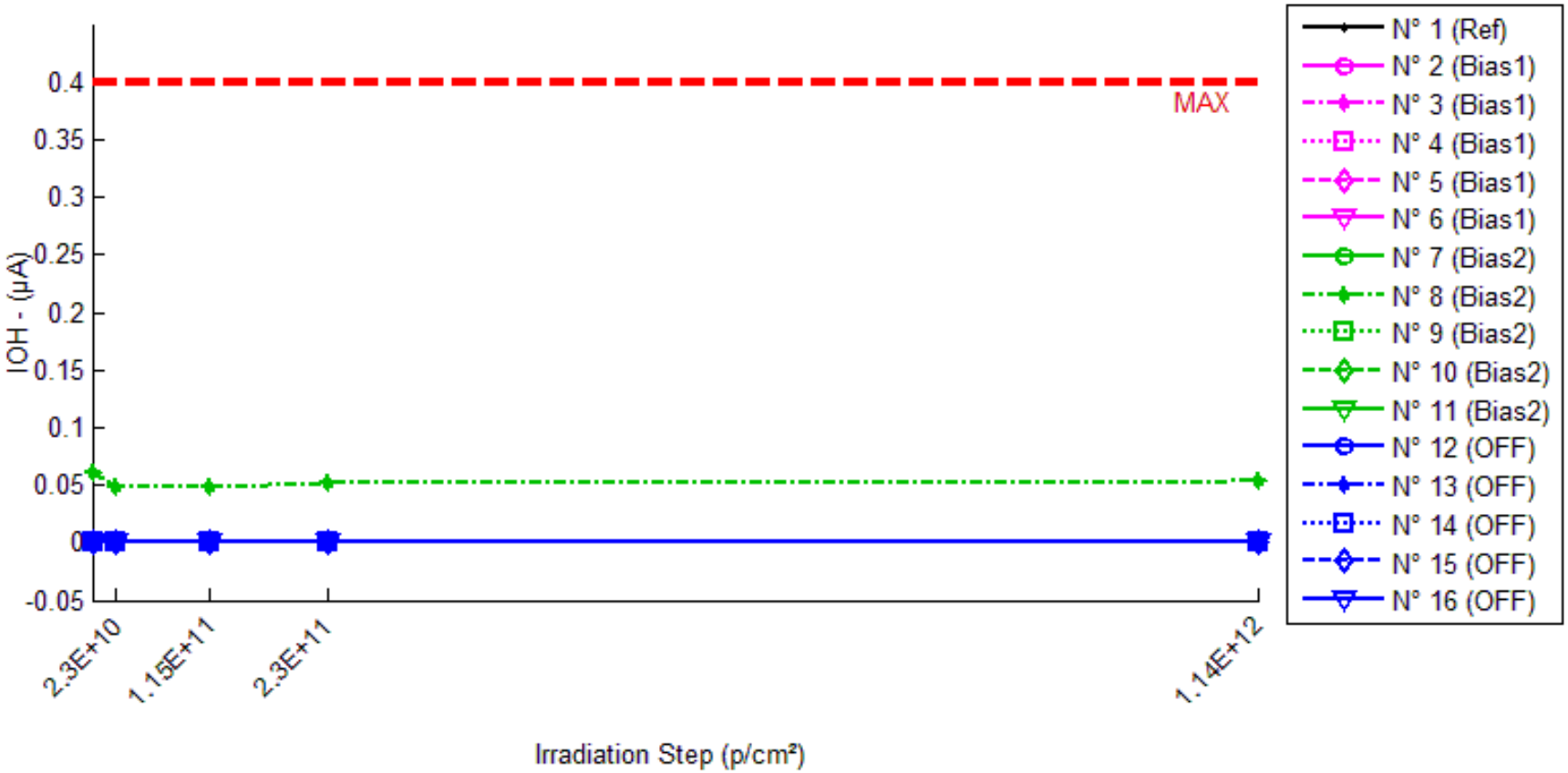
Delta [VOL2]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	3.763E-4	-7.191E-4	-2.809E-4	-4.243E-4
N° 2 (Bias1)	---	-9.516E-4	1.864E-3	6.251E-3	5.627E-2
N° 3 (Bias1)	---	-1.760E-3	2.460E-4	4.566E-3	5.104E-2
N° 4 (Bias1)	---	-6.420E-4	1.471E-3	5.521E-3	5.384E-2
N° 5 (Bias1)	---	-1.354E-3	1.537E-3	6.015E-3	6.580E-2
N° 6 (Bias1)	---	-1.926E-3	7.116E-5	3.551E-3	4.462E-2
N° 7 (Bias2)	---	-7.041E-4	1.167E-4	5.088E-3	5.106E-2
N° 8 (Bias2)	---	-1.025E-3	3.258E-4	3.612E-3	6.359E-2
N° 9 (Bias2)	---	-1.700E-3	7.512E-5	4.979E-3	7.061E-2
N° 10 (Bias2)	---	-8.266E-4	1.275E-3	6.754E-3	9.220E-2
N° 11 (Bias2)	---	-2.311E-3	3.227E-5	3.651E-3	4.885E-2
N° 12 (OFF)	---	2.257E-4	2.507E-3	6.255E-3	4.839E-2
N° 13 (OFF)	---	-1.001E-4	2.881E-3	7.891E-3	9.083E-2
N° 14 (OFF)	---	5.432E-4	2.987E-3	6.992E-3	9.066E-2
N° 15 (OFF)	---	5.027E-4	2.648E-3	6.047E-3	6.112E-2
N° 16 (OFF)	---	7.307E-4	3.730E-3	8.231E-3	6.474E-2
Average (OFF)	---	-1.327E-3	1.038E-3	5.181E-3	5.431E-2
σ (OFF)	---	5.381E-4	8.188E-4	1.117E-3	7.757E-3
Average+3σ (OFF)	---	2.874E-4	3.494E-3	8.532E-3	7.758E-2
Average-3σ (OFF)	---	-2.941E-3	-1.418E-3	1.829E-3	3.104E-2
Average (Bias1)	---	-1.313E-3	3.651E-4	4.817E-3	6.526E-2
σ (Bias1)	---	6.774E-4	5.213E-4	1.291E-3	1.752E-2
Average+3σ (Bias1)	---	7.188E-4	1.929E-3	8.689E-3	1.178E-1
Average-3σ (Bias1)	---	-3.345E-3	-1.199E-3	9.455E-4	1.269E-2
Average (Bias2)	---	3.805E-4	2.951E-3	7.083E-3	7.115E-2
σ (Bias2)	---	3.237E-4	4.746E-4	9.667E-4	1.889E-2
Average+3σ (Bias2)	---	1.351E-3	4.374E-3	9.984E-3	1.278E-1
Average-3σ (Bias2)	---	-5.905E-4	1.527E-3	4.183E-3	1.447E-2

60 MeV proton / detailed results

3. IOH

Ta=25°C; If=0; Vo=Vcc=18V



60 MeV proton / detailed results

IOH . (µA) **Max = 250.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	2.178E-4	2.068E-4	2.216E-4	2.026E-4	1.985E-4
N° 2 (Bias1)	1.958E-4	2.057E-4	2.167E-4	2.260E-4	3.593E-4
N° 3 (Bias1)	1.966E-4	1.986E-4	2.174E-4	2.301E-4	3.547E-4
N° 4 (Bias1)	1.967E-4	1.697E-4	2.126E-4	2.282E-4	3.374E-4
N° 5 (Bias1)	1.972E-4	2.061E-4	2.206E-4	2.174E-4	3.423E-4
N° 6 (Bias1)	2.019E-4	2.072E-4	2.176E-4	2.230E-4	3.428E-4
N° 7 (Bias2)	2.015E-4	1.941E-4	2.049E-4	2.346E-4	3.660E-4
N° 8 (Bias2)	5.963E-2	4.811E-2	4.840E-2	5.208E-2	5.265E-2
N° 9 (Bias2)	2.012E-4	1.953E-4	2.077E-4	2.367E-4	3.583E-4
N° 10 (Bias2)	2.052E-4	1.985E-4	2.059E-4	2.343E-4	3.541E-4
N° 11 (Bias2)	2.064E-4	1.989E-4	2.059E-4	2.380E-4	3.623E-4
N° 12 (OFF)	2.168E-4	1.948E-4	2.185E-4	1.786E-4	3.688E-4
N° 13 (OFF)	2.057E-4	2.107E-4	2.208E-4	2.277E-4	3.624E-4
N° 14 (OFF)	2.045E-4	2.086E-4	2.172E-4	1.998E-4	3.531E-4
N° 15 (OFF)	2.107E-4	2.083E-4	2.252E-4	2.224E-4	3.505E-4
N° 16 (OFF)	2.087E-4	2.301E-4	2.182E-4	2.291E-4	3.506E-4

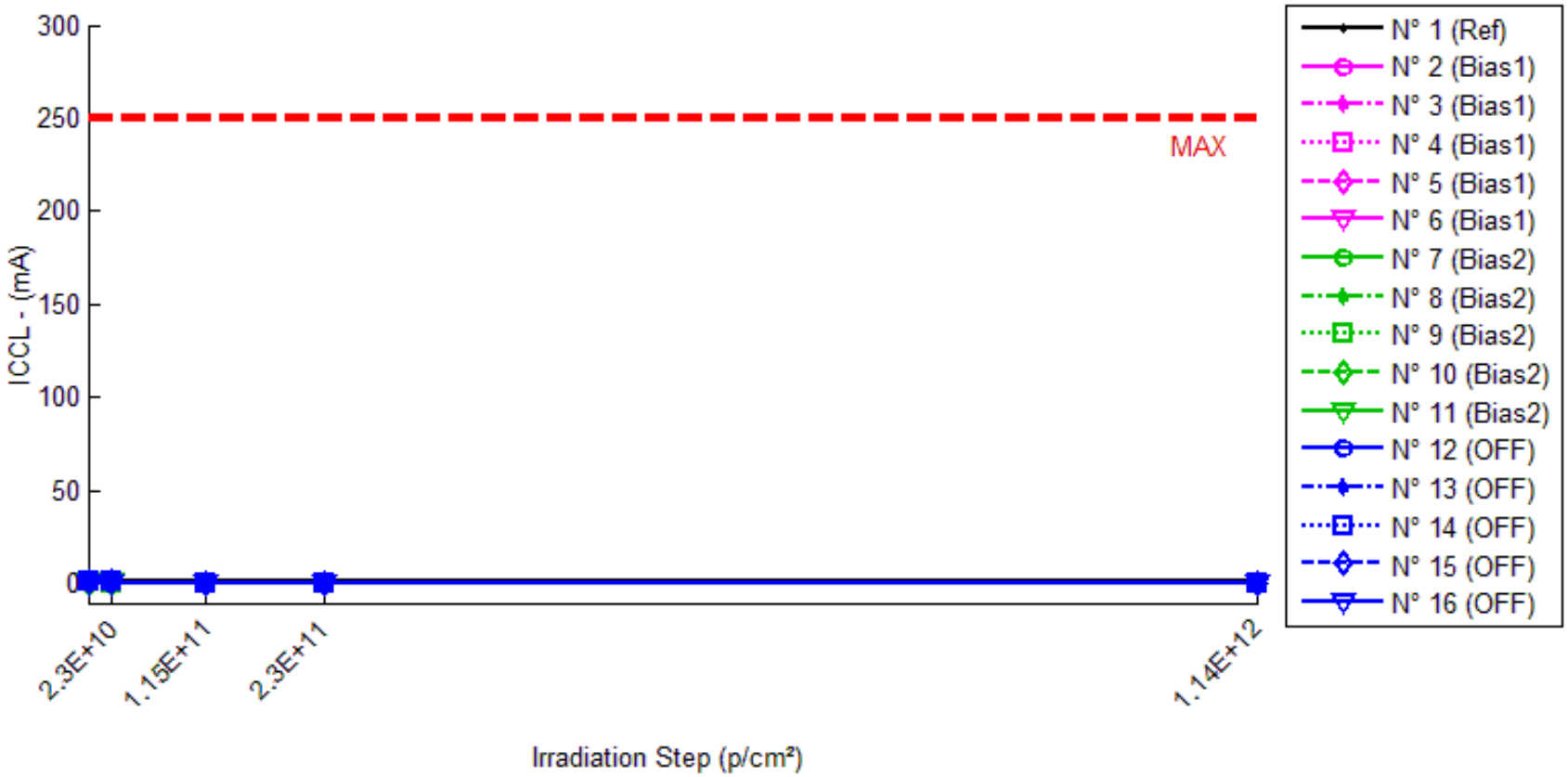
Delta [IOH]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-1.098E-5	3.812E-6	-1.517E-5	-1.932E-5
N° 2 (Bias1)	---	9.806E-6	2.087E-5	3.013E-5	1.635E-4
N° 3 (Bias1)	---	2.010E-6	2.083E-5	3.353E-5	1.581E-4
N° 4 (Bias1)	---	-2.699E-5	1.588E-5	3.152E-5	1.407E-4
N° 5 (Bias1)	---	8.842E-6	2.339E-5	2.020E-5	1.451E-4
N° 6 (Bias1)	---	5.321E-6	1.563E-5	2.104E-5	1.409E-4
N° 7 (Bias2)	---	-7.334E-6	3.480E-6	3.315E-5	1.645E-4
N° 8 (Bias2)	---	-1.152E-2	-1.123E-2	-7.553E-3	-6.983E-3
N° 9 (Bias2)	---	-5.909E-6	6.498E-6	3.554E-5	1.571E-4
N° 10 (Bias2)	---	-6.621E-6	7.554E-7	2.917E-5	1.490E-4
N° 11 (Bias2)	---	-7.544E-6	-4.599E-7	3.160E-5	1.559E-4
N° 12 (OFF)	---	-2.196E-5	1.676E-6	-3.818E-5	1.520E-4
N° 13 (OFF)	---	4.946E-6	1.509E-5	2.201E-5	1.567E-4
N° 14 (OFF)	---	4.107E-6	1.270E-5	-4.693E-6	1.486E-4
N° 15 (OFF)	---	-2.473E-6	1.450E-5	1.165E-5	1.398E-4
N° 16 (OFF)	---	2.138E-5	9.472E-6	2.037E-5	1.419E-4
Average (OFF)	---	-2.031E-7	1.932E-5	2.728E-5	1.497E-4
σ (OFF)	---	1.529E-5	3.414E-6	6.209E-6	1.047E-5
Average+3σ (OFF)	---	4.567E-5	2.956E-5	4.591E-5	1.811E-4
Average-3σ (OFF)	---	-4.607E-5	9.077E-6	8.656E-6	1.183E-4
Average (Bias1)	---	-2.310E-3	-2.244E-3	-1.485E-3	-1.271E-3
σ (Bias1)	---	5.149E-3	5.024E-3	3.392E-3	3.193E-3
Average+3σ (Bias1)	---	1.314E-2	1.283E-2	8.692E-3	8.308E-3
Average-3σ (Bias1)	---	-1.776E-2	-1.732E-2	-1.166E-2	-1.085E-2
Average (Bias2)	---	1.198E-6	1.069E-5	2.231E-6	1.478E-4
σ (Bias2)	---	1.565E-5	5.492E-6	2.495E-5	7.003E-6
Average+3σ (Bias2)	---	4.814E-5	2.716E-5	7.708E-5	1.688E-4
Average-3σ (Bias2)	---	-4.575E-5	-5.788E-6	-7.262E-5	1.268E-4

60 MeV proton / detailed results

4. ICCL

Ta=25°C; If=1.6mA; Vcc=18V



60 MeV proton / detailed results

ICCL . (mA) **Max = 2.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	1.035	1.052	1.050	1.050	1.052
N° 2 (Bias1)	0.954	0.853	0.625	0.446	0.081
N° 3 (Bias1)	1.149	1.039	0.760	0.540	0.091
N° 4 (Bias1)	1.021	0.920	0.677	0.488	0.085
N° 5 (Bias1)	0.868	0.783	0.574	0.397	0.064
N° 6 (Bias1)	1.322	1.193	0.878	0.624	0.107
N° 7 (Bias2)	1.256	1.131	0.822	0.560	0.093
N° 8 (Bias2)	1.370	1.222	0.854	0.576	0.075
N° 9 (Bias2)	1.061	0.948	0.671	0.458	0.062
N° 10 (Bias2)	0.898	0.801	0.542	0.362	0.045
N° 11 (Bias2)	1.218	1.082	0.763	0.528	0.156
N° 12 (OFF)	1.088	0.982	0.698	0.479	0.088
N° 13 (OFF)	0.890	0.801	0.552	0.372	0.047
N° 14 (OFF)	1.184	1.060	0.732	0.496	0.048
N° 15 (OFF)	1.251	1.140	0.807	0.558	0.077
N° 16 (OFF)	0.933	0.845	0.580	0.397	0.068

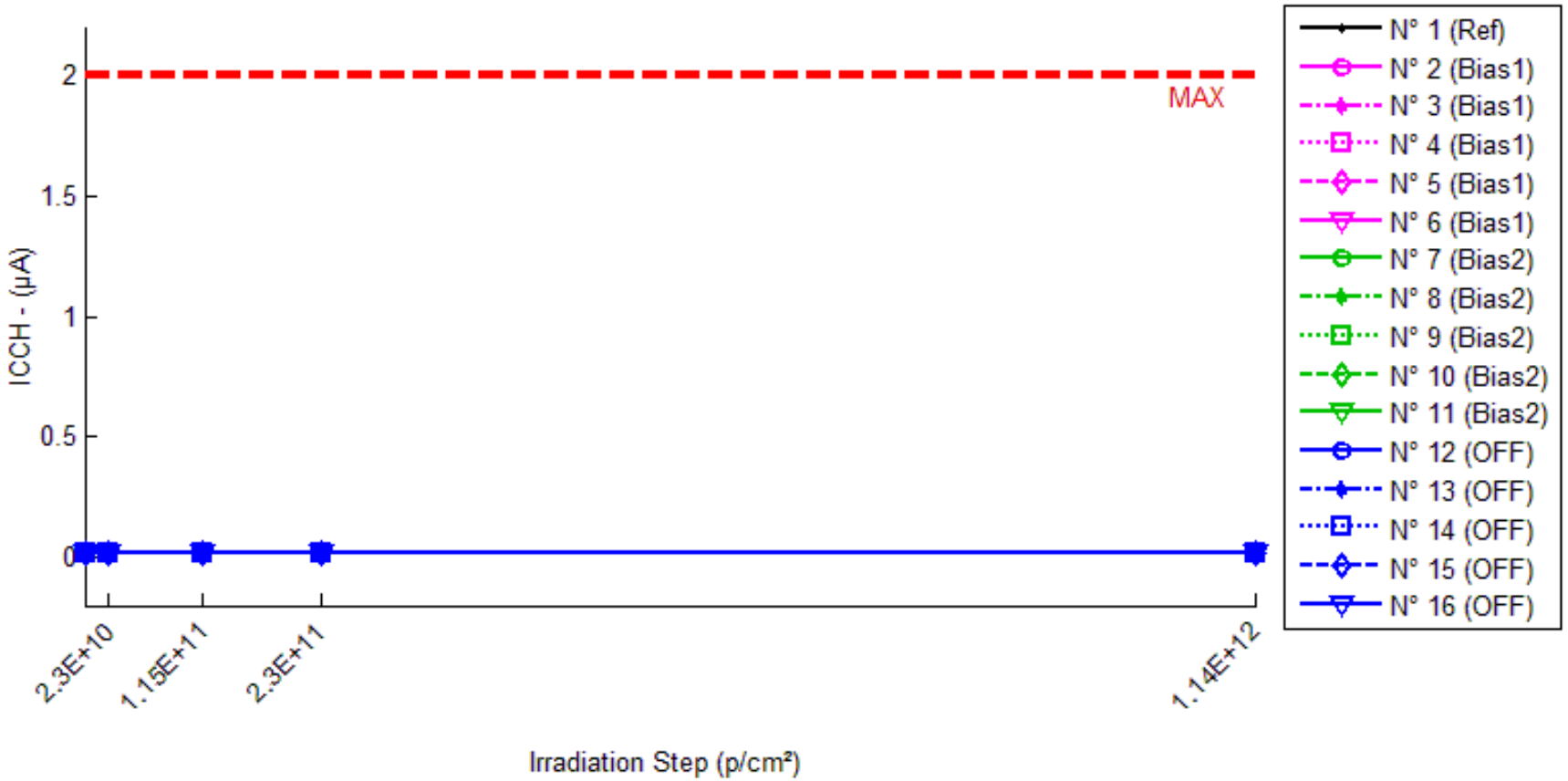
Delta [ICCL]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	1.628E-2	1.506E-2	1.509E-2	1.683E-2
N° 2 (Bias1)	---	-1.007E-1	-3.292E-1	-5.078E-1	-8.726E-1
N° 3 (Bias1)	---	-1.100E-1	-3.882E-1	-6.089E-1	-1.057E+0
N° 4 (Bias1)	---	-1.007E-1	-3.435E-1	-5.333E-1	-9.355E-1
N° 5 (Bias1)	---	-8.585E-2	-2.947E-1	-4.716E-1	-8.047E-1
N° 6 (Bias1)	---	-1.290E-1	-4.443E-1	-6.988E-1	-1.215E+0
N° 7 (Bias2)	---	-1.246E-1	-4.335E-1	-6.958E-1	-1.163E+0
N° 8 (Bias2)	---	-1.477E-1	-5.153E-1	-7.936E-1	-1.295E+0
N° 9 (Bias2)	---	-1.130E-1	-3.899E-1	-6.025E-1	-9.985E-1
N° 10 (Bias2)	---	-9.738E-2	-3.554E-1	-5.362E-1	-8.526E-1
N° 11 (Bias2)	---	-1.353E-1	-4.542E-1	-6.897E-1	-1.062E+0
N° 12 (OFF)	---	-1.055E-1	-3.900E-1	-6.090E-1	-1.000E+0
N° 13 (OFF)	---	-8.877E-2	-3.374E-1	-5.179E-1	-8.428E-1
N° 14 (OFF)	---	-1.241E-1	-4.517E-1	-6.879E-1	-1.136E+0
N° 15 (OFF)	---	-1.104E-1	-4.440E-1	-6.932E-1	-1.174E+0
N° 16 (OFF)	---	-8.831E-2	-3.525E-1	-5.361E-1	-8.652E-1
Average (OFF)	---	-1.052E-1	-3.600E-1	-5.641E-1	-9.770E-1
σ (OFF)	---	1.584E-2	5.787E-2	9.058E-2	1.623E-1
Average+3σ (OFF)	---	-5.772E-2	-1.864E-1	-2.924E-1	-4.901E-1
Average-3σ (OFF)	---	-1.528E-1	-5.336E-1	-8.358E-1	-1.464E+0
Average (Bias1)	---	-1.236E-1	-4.296E-1	-6.636E-1	-1.074E+0
σ (Bias1)	---	1.948E-2	6.132E-2	9.822E-2	1.669E-1
Average+3σ (Bias1)	---	-6.515E-2	-2.457E-1	-3.689E-1	-5.733E-1
Average-3σ (Bias1)	---	-1.820E-1	-6.136E-1	-9.582E-1	-1.575E+0
Average (Bias2)	---	-1.034E-1	-3.951E-1	-6.088E-1	-1.004E+0
σ (Bias2)	---	1.520E-2	5.189E-2	8.204E-2	1.512E-1
Average+3σ (Bias2)	---	-5.782E-2	-2.395E-1	-3.627E-1	-5.500E-1
Average-3σ (Bias2)	---	-1.490E-1	-5.508E-1	-8.549E-1	-1.457E+0

60 MeV proton / detailed results

5. ICCH

Ta=25°C; If=0; Vcc=18V



60 MeV proton / detailed results

ICCH . (µA) **Max = 40.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	0.017	0.016	0.015	0.016	0.016
N° 2 (Bias1)	0.021	0.017	0.015	0.017	0.021
N° 3 (Bias1)	0.016	0.016	0.016	0.017	0.020
N° 4 (Bias1)	0.017	0.017	0.017	0.016	0.019
N° 5 (Bias1)	0.016	0.015	0.016	0.015	0.019
N° 6 (Bias1)	0.017	0.016	0.016	0.017	0.020
N° 7 (Bias2)	0.017	0.016	0.015	0.016	0.021
N° 8 (Bias2)	0.018	0.015	0.016	0.016	0.020
N° 9 (Bias2)	0.017	0.016	0.016	0.016	0.019
N° 10 (Bias2)	0.015	0.016	0.016	0.016	0.018
N° 11 (Bias2)	0.016	0.015	0.015	0.016	0.020
N° 12 (OFF)	0.015	0.017	0.017	0.016	0.021
N° 13 (OFF)	0.015	0.015	0.015	0.014	0.018
N° 14 (OFF)	0.016	0.016	0.015	0.015	0.018
N° 15 (OFF)	0.016	0.018	0.015	0.016	0.020
N° 16 (OFF)	0.016	0.013	0.015	0.015	0.019

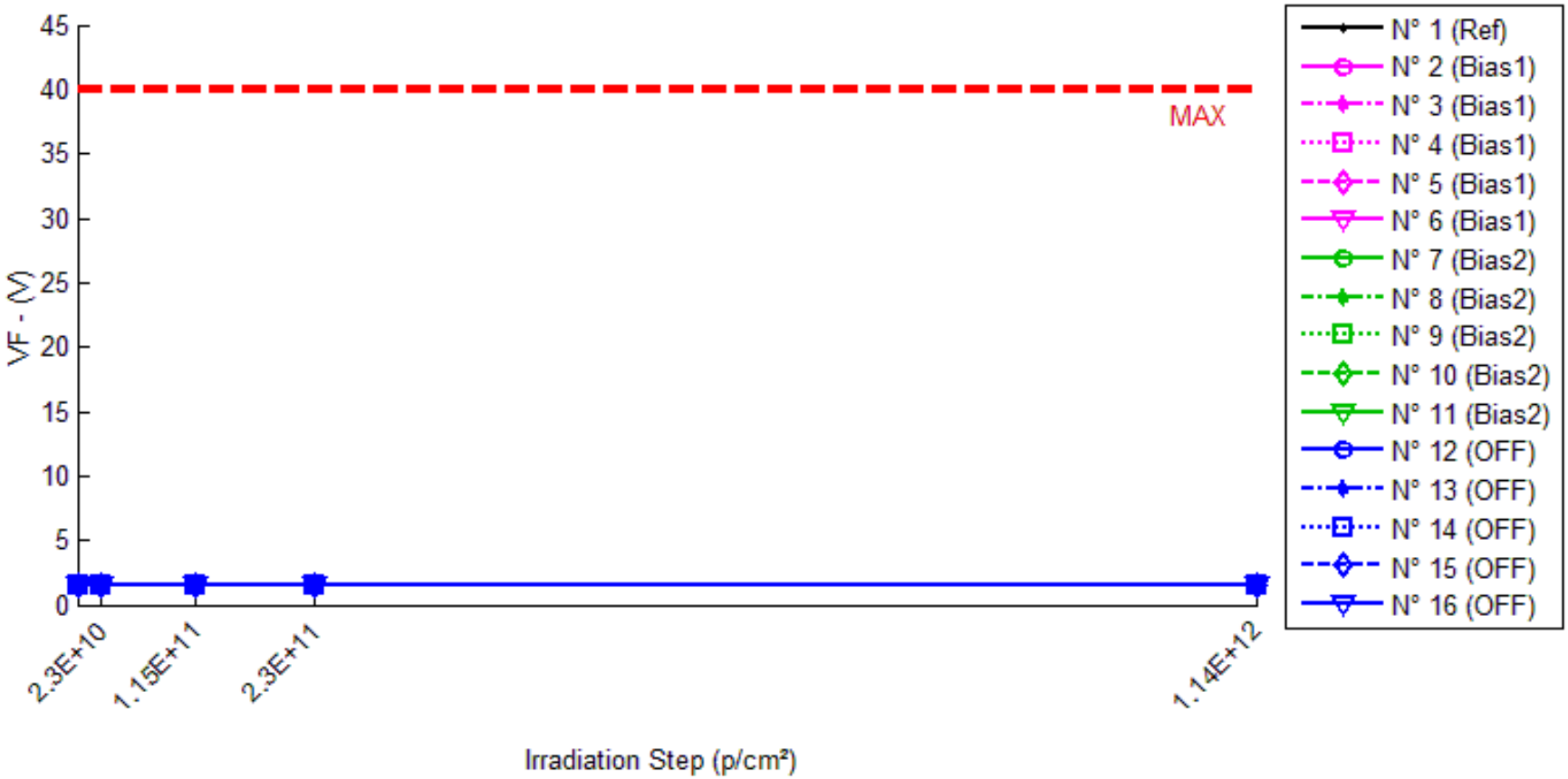
Delta [ICCH]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-1.260E-3	-1.950E-3	-9.900E-4	-1.850E-3
N° 2 (Bias1)	---	-4.290E-3	-6.080E-3	-3.990E-3	-1.100E-4
N° 3 (Bias1)	---	-4.000E-5	-3.500E-4	1.700E-4	3.180E-3
N° 4 (Bias1)	---	2.000E-5	3.500E-4	-1.420E-3	2.320E-3
N° 5 (Bias1)	---	-9.900E-4	5.300E-4	-8.900E-4	2.690E-3
N° 6 (Bias1)	---	-7.200E-4	-7.600E-4	6.000E-4	3.660E-3
N° 7 (Bias2)	---	-1.150E-3	-1.240E-3	-7.600E-4	3.940E-3
N° 8 (Bias2)	---	-2.720E-3	-1.700E-3	-2.340E-3	1.890E-3
N° 9 (Bias2)	---	-1.210E-3	-1.600E-3	-1.580E-3	1.500E-3
N° 10 (Bias2)	---	8.800E-4	6.800E-4	8.400E-4	3.040E-3
N° 11 (Bias2)	---	-5.100E-4	-1.030E-3	1.000E-4	4.250E-3
N° 12 (OFF)	---	2.210E-3	1.520E-3	1.250E-3	6.150E-3
N° 13 (OFF)	---	2.800E-4	-4.000E-4	-7.000E-4	2.850E-3
N° 14 (OFF)	---	-8.000E-5	-7.100E-4	-2.800E-4	2.450E-3
N° 15 (OFF)	---	1.510E-3	-1.030E-3	-5.800E-4	3.400E-3
N° 16 (OFF)	---	-3.010E-3	-7.000E-4	-5.700E-4	3.390E-3
Average (OFF)	---	-1.204E-3	-1.262E-3	-1.106E-3	2.348E-3
σ (OFF)	---	1.779E-3	2.743E-3	1.803E-3	1.464E-3
Average+3σ (OFF)	---	4.132E-3	6.968E-3	4.303E-3	6.740E-3
Average-3σ (OFF)	---	-6.540E-3	-9.492E-3	-6.515E-3	-2.044E-3
Average (Bias1)	---	-9.420E-4	-9.780E-4	-7.480E-4	2.924E-3
σ (Bias1)	---	1.302E-3	9.655E-4	1.272E-3	1.215E-3
Average+3σ (Bias1)	---	2.965E-3	1.918E-3	3.067E-3	6.568E-3
Average-3σ (Bias1)	---	-4.849E-3	-3.874E-3	-4.563E-3	-7.198E-4
Average (Bias2)	---	1.820E-4	-2.640E-4	-1.760E-4	3.648E-3
σ (Bias2)	---	2.009E-3	1.022E-3	8.120E-4	1.454E-3
Average+3σ (Bias2)	---	6.209E-3	2.802E-3	2.260E-3	8.011E-3
Average-3σ (Bias2)	---	-5.845E-3	-3.330E-3	-2.612E-3	-7.149E-4

60 MeV proton / detailed results

6. VF

Ta=25°C; If=1.6mA



60 MeV proton / detailed results

VF . (V) **Max = 2.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	1.563	1.563	1.561	1.559	1.561
N° 2 (Bias1)	1.563	1.574	1.568	1.569	1.559
N° 3 (Bias1)	1.573	1.582	1.579	1.577	1.576
N° 4 (Bias1)	1.565	1.574	1.573	1.573	1.570
N° 5 (Bias1)	1.571	1.579	1.572	1.576	1.574
N° 6 (Bias1)	1.570	1.579	1.576	1.577	1.574
N° 7 (Bias2)	1.565	1.571	1.574	1.561	1.559
N° 8 (Bias2)	1.568	1.579	1.577	1.573	1.570
N° 9 (Bias2)	1.567	1.572	1.571	1.567	1.567
N° 10 (Bias2)	1.567	1.571	1.572	1.567	1.566
N° 11 (Bias2)	1.565	1.573	1.571	1.567	1.571
N° 12 (OFF)	1.572	1.571	1.572	1.568	1.561
N° 13 (OFF)	1.577	1.576	1.576	1.574	1.572
N° 14 (OFF)	1.576	1.576	1.575	1.573	1.567
N° 15 (OFF)	1.569	1.568	1.567	1.567	1.563
N° 16 (OFF)	1.573	1.572	1.571	1.572	1.571

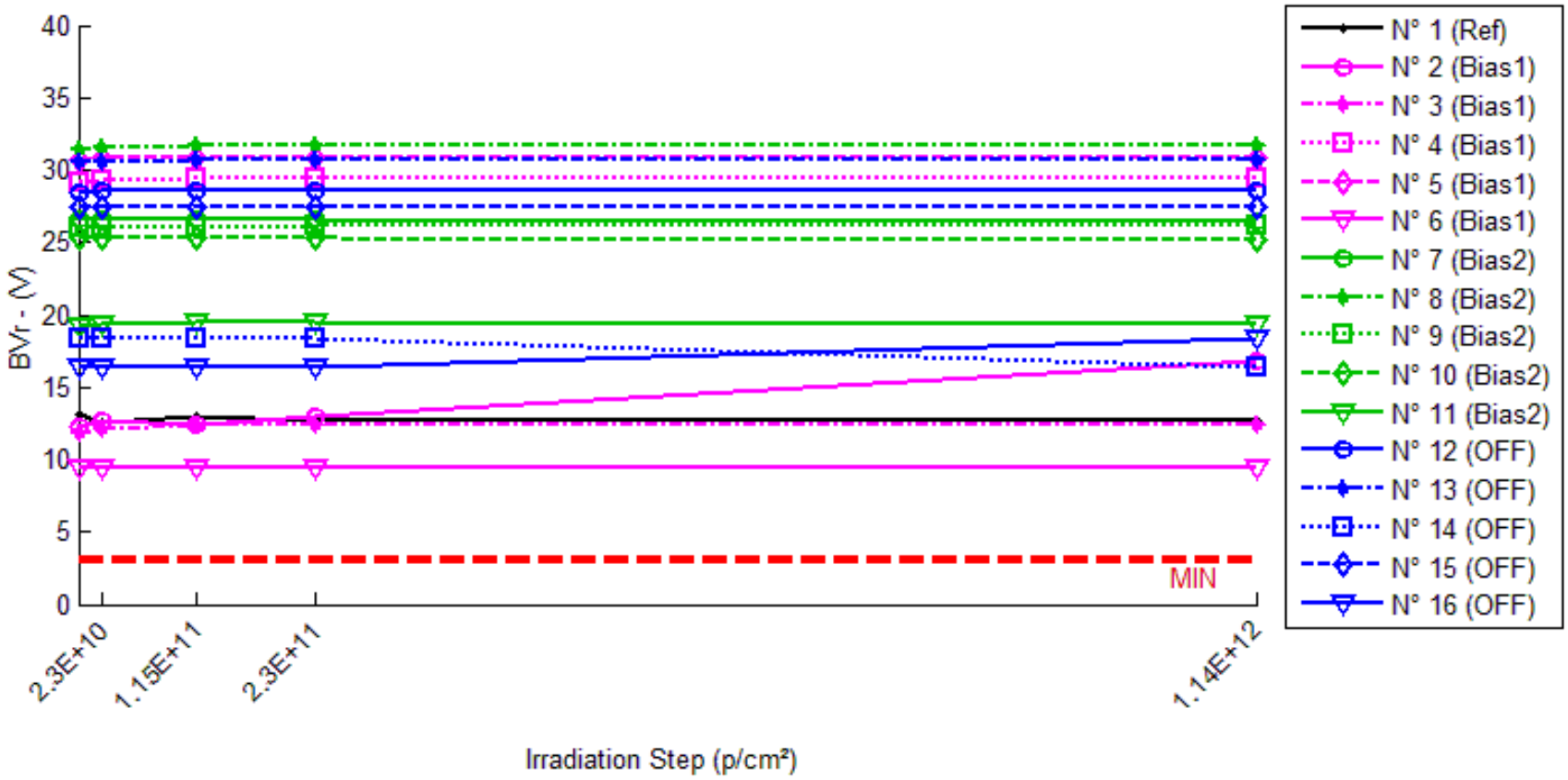
Delta [VF]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-8.900E-5	-1.440E-3	-3.242E-3	-2.144E-3
N° 2 (Bias1)	---	1.112E-2	4.248E-3	6.200E-3	-3.947E-3
N° 3 (Bias1)	---	9.081E-3	6.389E-3	4.981E-3	3.116E-3
N° 4 (Bias1)	---	8.872E-3	8.683E-3	8.358E-3	5.117E-3
N° 5 (Bias1)	---	7.661E-3	2.800E-4	5.229E-3	2.992E-3
N° 6 (Bias1)	---	9.191E-3	6.098E-3	6.676E-3	4.257E-3
N° 7 (Bias2)	---	6.295E-3	9.156E-3	-3.645E-3	-5.447E-3
N° 8 (Bias2)	---	1.014E-2	8.763E-3	4.506E-3	1.770E-3
N° 9 (Bias2)	---	5.557E-3	4.591E-3	2.080E-4	4.400E-4
N° 10 (Bias2)	---	4.090E-3	4.797E-3	1.100E-4	-1.015E-3
N° 11 (Bias2)	---	7.859E-3	6.492E-3	2.592E-3	6.112E-3
N° 12 (OFF)	---	-8.280E-4	-4.090E-4	-4.452E-3	-1.065E-2
N° 13 (OFF)	---	-9.900E-4	-1.300E-3	-2.830E-3	-5.055E-3
N° 14 (OFF)	---	3.150E-4	-6.360E-4	-2.809E-3	-9.064E-3
N° 15 (OFF)	---	-3.110E-4	-1.823E-3	-1.430E-3	-6.044E-3
N° 16 (OFF)	---	-1.235E-3	-2.219E-3	-8.540E-4	-2.145E-3
Average (OFF)	---	9.185E-3	5.140E-3	6.289E-3	2.307E-3
σ (OFF)	---	1.243E-3	3.140E-3	1.348E-3	3.603E-3
Average+3σ (OFF)	---	1.292E-2	1.456E-2	1.033E-2	1.312E-2
Average-3σ (OFF)	---	5.455E-3	-4.281E-3	2.244E-3	-8.503E-3
Average (Bias1)	---	6.789E-3	6.760E-3	7.542E-4	3.720E-4
σ (Bias1)	---	2.315E-3	2.144E-3	3.063E-3	4.204E-3
Average+3σ (Bias1)	---	1.373E-2	1.319E-2	9.942E-3	1.298E-2
Average-3σ (Bias1)	---	-1.568E-4	3.286E-4	-8.434E-3	-1.224E-2
Average (Bias2)	---	-6.098E-4	-1.277E-3	-2.475E-3	-6.592E-3
σ (Bias2)	---	6.180E-4	7.665E-4	1.402E-3	3.355E-3
Average+3σ (Bias2)	---	1.244E-3	1.022E-3	1.732E-3	3.473E-3
Average-3σ (Bias2)	---	-2.464E-3	-3.577E-3	-6.682E-3	-1.666E-2

60 MeV proton / detailed results

7. BVr

Ta=25°C; Ir=10µA



60 MeV proton / detailed results

BVr . (V) **Min = 3.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	13.172	12.575	12.954	12.659	12.726
N° 2 (Bias1)	12.334	12.747	12.359	13.000	16.740
N° 3 (Bias1)	11.895	12.184	12.404	12.363	12.341
N° 4 (Bias1)	29.214	29.345	29.375	29.382	29.414
N° 5 (Bias1)	30.753	30.786	30.879	30.891	30.893
N° 6 (Bias1)	9.463	9.452	9.454	9.453	9.453
N° 7 (Bias2)	26.646	26.572	26.580	26.567	26.466
N° 8 (Bias2)	31.486	31.497	31.654	31.687	31.674
N° 9 (Bias2)	26.071	26.049	26.092	26.124	26.131
N° 10 (Bias2)	25.361	25.286	25.259	25.285	25.233
N° 11 (Bias2)	19.283	19.386	19.433	19.540	19.393
N° 12 (OFF)	28.464	28.593	28.574	28.600	28.645
N° 13 (OFF)	30.557	30.559	30.674	30.685	30.727
N° 14 (OFF)	18.324	18.319	18.311	18.318	16.388
N° 15 (OFF)	27.396	27.438	27.442	27.427	27.462
N° 16 (OFF)	16.385	16.359	16.378	16.398	18.324

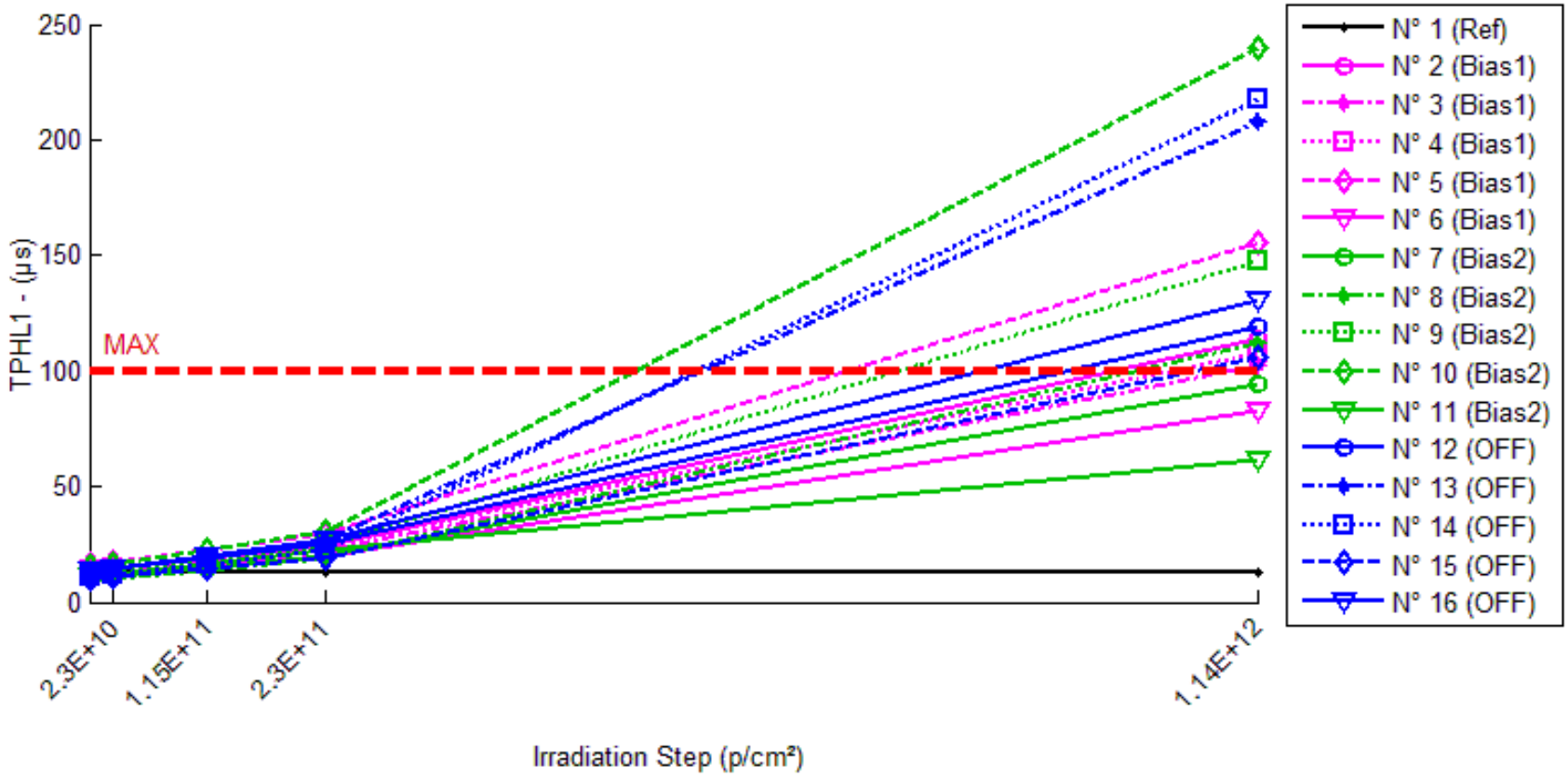
Delta [BVr]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-5.970E-1	-2.179E-1	-5.129E-1	-4.462E-1
N° 2 (Bias1)	---	4.129E-1	2.460E-2	6.656E-1	4.406E+0
N° 3 (Bias1)	---	2.897E-1	5.092E-1	4.687E-1	4.469E-1
N° 4 (Bias1)	---	1.302E-1	1.610E-1	1.673E-1	1.999E-1
N° 5 (Bias1)	---	3.355E-2	1.267E-1	1.378E-1	1.404E-1
N° 6 (Bias1)	---	-1.117E-2	-8.896E-3	-9.992E-3	-1.046E-2
N° 7 (Bias2)	---	-7.370E-2	-6.593E-2	-7.853E-2	-1.800E-1
N° 8 (Bias2)	---	1.039E-2	1.677E-1	2.011E-1	1.875E-1
N° 9 (Bias2)	---	-2.201E-2	2.085E-2	5.312E-2	6.027E-2
N° 10 (Bias2)	---	-7.438E-2	-1.021E-1	-7.572E-2	-1.281E-1
N° 11 (Bias2)	---	1.034E-1	1.500E-1	2.574E-1	1.105E-1
N° 12 (OFF)	---	1.296E-1	1.099E-1	1.363E-1	1.811E-1
N° 13 (OFF)	---	2.800E-3	1.171E-1	1.288E-1	1.702E-1
N° 14 (OFF)	---	-5.470E-3	-1.327E-2	-6.060E-3	-1.936E+0
N° 15 (OFF)	---	4.121E-2	4.572E-2	3.064E-2	6.561E-2
N° 16 (OFF)	---	-2.681E-2	-7.610E-3	1.264E-2	1.938E+0
Average (OFF)	---	1.710E-1	1.625E-1	2.859E-1	1.036E+0
σ (OFF)	---	1.777E-1	2.061E-1	2.744E-1	1.891E+0
Average+3σ (OFF)	---	7.042E-1	7.807E-1	1.109E+0	6.709E+0
Average-3σ (OFF)	---	-3.622E-1	-4.557E-1	-5.372E-1	-4.636E+0
Average (Bias1)	---	-1.126E-2	3.410E-2	7.146E-2	1.004E-2
σ (Bias1)	---	7.351E-2	1.225E-1	1.548E-1	1.576E-1
Average+3σ (Bias1)	---	2.093E-1	4.016E-1	5.359E-1	4.828E-1
Average-3σ (Bias1)	---	-2.318E-1	-3.334E-1	-3.930E-1	-4.627E-1
Average (Bias2)	---	2.827E-2	5.036E-2	6.048E-2	8.377E-2
σ (Bias2)	---	6.177E-2	6.210E-2	6.714E-2	1.373E+0
Average+3σ (Bias2)	---	2.136E-1	2.366E-1	2.619E-1	4.202E+0
Average-3σ (Bias2)	---	-1.570E-1	-1.359E-1	-1.410E-1	-4.035E+0

60 MeV proton / detailed results

8. TPHL1

Ta=25°C; If=0.5mA; RL=4.7 kOhms; Vcc=5V



60 MeV proton / detailed results

TPHL1 . (µs) **Max = 100.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	13.1	12.7	12.9	13.0	12.7
N° 2 (Bias1)	13.8	14.2	19.4	24.6	114.0
N° 3 (Bias1)	12.4	13.0	17.3	22.7	102.0
N° 4 (Bias1)	13.8	14.4	18.7	24.3	108.0
N° 5 (Bias1)	16.3	17.1	23.0	30.1	156.0
N° 6 (Bias1)	11.1	11.4	15.1	19.9	83.0
N° 7 (Bias2)	10.4	10.9	14.6	20.1	94.0
N° 8 (Bias2)	9.6	10.0	13.6	19.0	112.0
N° 9 (Bias2)	12.5	13.2	17.5	24.1	148.0
N° 10 (Bias2)	15.3	16.4	22.2	31.0	240.0
N° 11 (Bias2)	11.5	12.2	16.3	22.3	62.0
N° 12 (OFF)	12.9	14.2	18.7	25.1	119.0
N° 13 (OFF)	13.5	14.8	20.0	27.3	208.0
N° 14 (OFF)	11.2	12.3	16.7	22.7	217.5
N° 15 (OFF)	10.3	11.1	14.8	19.5	106.0
N° 16 (OFF)	13.9	15.0	20.2	26.9	131.0

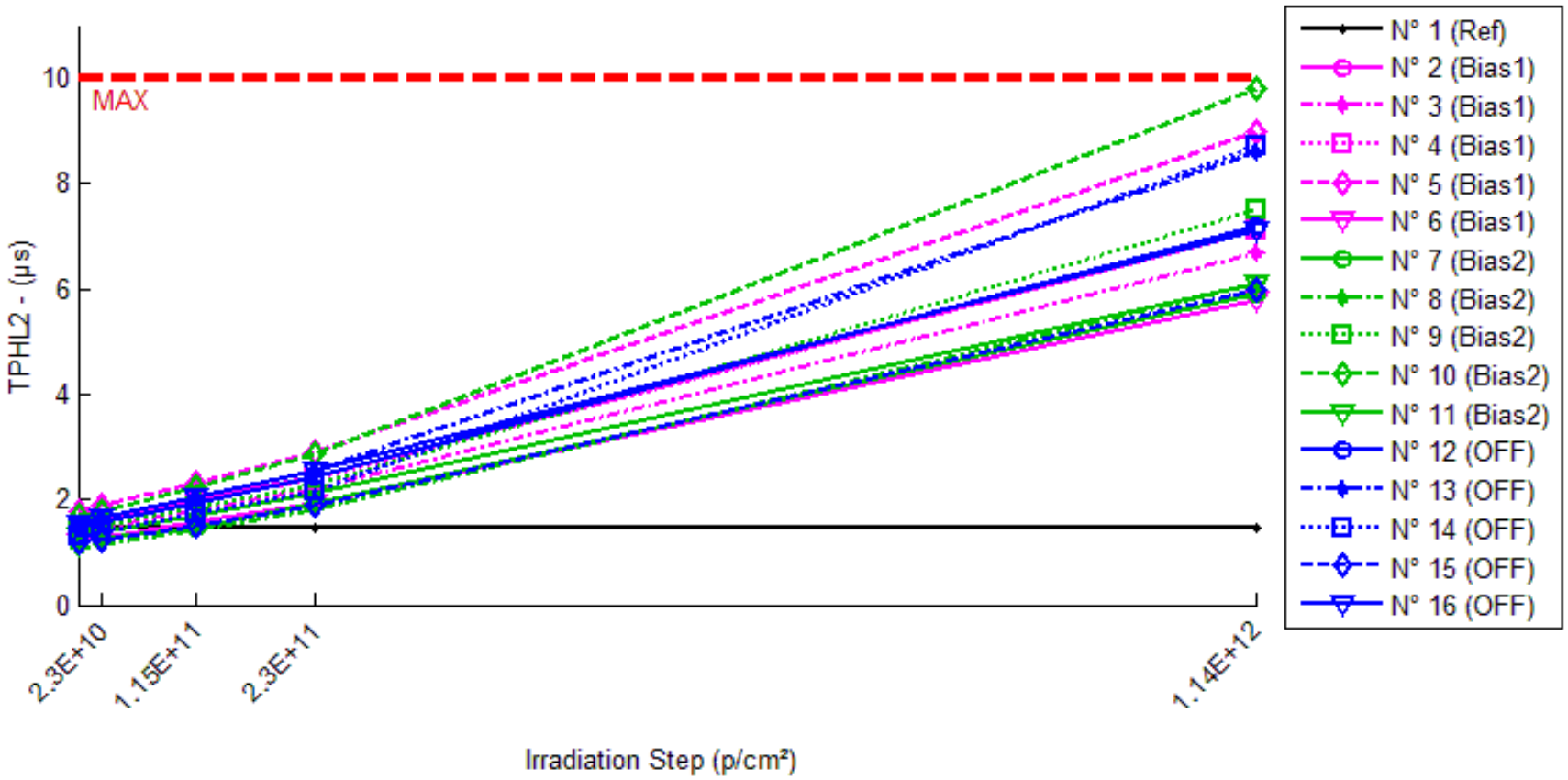
Delta [TPHL1]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-4.000E-1	-2.000E-1	-1.000E-1	-4.000E-1
N° 2 (Bias1)	---	3.500E-1	5.550E+0	1.070E+1	1.002E+2
N° 3 (Bias1)	---	5.500E-1	4.850E+0	1.025E+1	8.955E+1
N° 4 (Bias1)	---	6.000E-1	4.900E+0	1.050E+1	9.420E+1
N° 5 (Bias1)	---	8.000E-1	6.700E+0	1.380E+1	1.397E+2
N° 6 (Bias1)	---	3.000E-1	4.000E+0	8.850E+0	7.190E+1
N° 7 (Bias2)	---	5.000E-1	4.150E+0	9.700E+0	8.360E+1
N° 8 (Bias2)	---	4.500E-1	4.050E+0	9.450E+0	1.025E+2
N° 9 (Bias2)	---	7.000E-1	5.000E+0	1.160E+1	1.355E+2
N° 10 (Bias2)	---	1.100E+0	6.900E+0	1.570E+1	2.247E+2
N° 11 (Bias2)	---	7.000E-1	4.800E+0	1.080E+1	5.050E+1
N° 12 (OFF)	---	1.250E+0	5.750E+0	1.215E+1	1.060E+2
N° 13 (OFF)	---	1.300E+0	6.500E+0	1.380E+1	1.945E+2
N° 14 (OFF)	---	1.100E+0	5.500E+0	1.150E+1	2.063E+2
N° 15 (OFF)	---	7.500E-1	4.500E+0	9.200E+0	9.570E+1
N° 16 (OFF)	---	1.100E+0	6.300E+0	1.300E+1	1.171E+2
Average (OFF)	---	5.200E-1	5.200E+0	1.082E+1	9.910E+1
σ (OFF)	---	2.019E-1	1.003E+0	1.817E+0	2.502E+1
Average+3σ (OFF)	---	1.126E+0	8.209E+0	1.627E+1	1.742E+2
Average-3σ (OFF)	---	-8.560E-2	2.191E+0	5.370E+0	2.403E+1
Average (Bias1)	---	6.900E-1	4.980E+0	1.145E+1	1.193E+2
σ (Bias1)	---	2.559E-1	1.148E+0	2.528E+0	6.645E+1
Average+3σ (Bias1)	---	1.458E+0	8.424E+0	1.904E+1	3.187E+2
Average-3σ (Bias1)	---	-7.779E-2	1.536E+0	3.865E+0	-8.001E+1
Average (Bias2)	---	1.100E+0	5.710E+0	1.193E+1	1.439E+2
σ (Bias2)	---	2.151E-1	7.877E-1	1.756E+0	5.227E+1
Average+3σ (Bias2)	---	1.745E+0	8.073E+0	1.720E+1	3.007E+2
Average-3σ (Bias2)	---	4.548E-1	3.347E+0	6.663E+0	-1.288E+1

60 MeV proton / detailed results

9. TPHL2

Ta=25°C; If=5mA; RL=680 Ohms; Vcc=5V



60 MeV proton / detailed results

TPHL2 . (µs) **Max = 10.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	1.47	1.45	1.46	1.47	1.45
N° 2 (Bias1)	1.54	1.64	2.01	2.44	7.10
N° 3 (Bias1)	1.39	1.47	1.80	2.22	6.70
N° 4 (Bias1)	1.52	1.62	1.97	2.41	7.10
N° 5 (Bias1)	1.77	1.89	2.31	2.89	9.00
N° 6 (Bias1)	1.20	1.28	1.57	1.94	5.80
N° 7 (Bias2)	1.18	1.25	1.47	1.92	5.90
N° 8 (Bias2)	1.08	1.15	1.42	1.82	6.10
N° 9 (Bias2)	1.41	1.50	1.84	2.30	7.50
N° 10 (Bias2)	1.68	1.79	2.25	2.86	9.80
N° 11 (Bias2)	1.30	1.39	1.71	2.13	6.10
N° 12 (OFF)	1.49	1.58	1.94	2.42	7.20
N° 13 (OFF)	1.54	1.64	2.03	2.56	8.60
N° 14 (OFF)	1.29	1.38	1.72	2.17	8.70
N° 15 (OFF)	1.18	1.24	1.52	1.89	6.00
N° 16 (OFF)	1.56	1.66	2.06	2.55	7.10

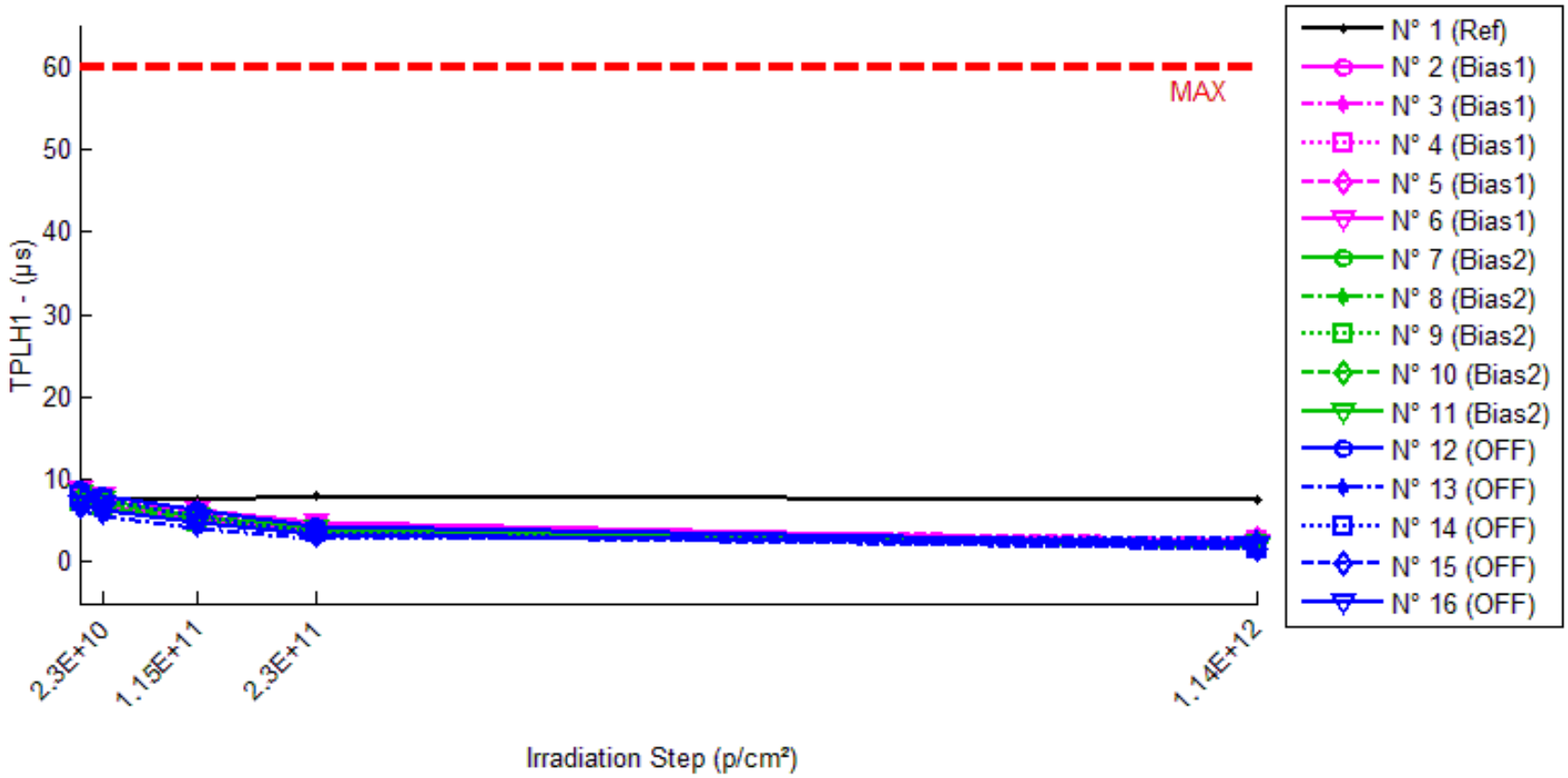
Delta [TPHL2]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-2.000E-2	-1.000E-2	0.000E+0	-2.000E-2
N° 2 (Bias1)	---	1.000E-1	4.700E-1	9.000E-1	5.560E+0
N° 3 (Bias1)	---	8.000E-2	4.100E-1	8.300E-1	5.310E+0
N° 4 (Bias1)	---	1.000E-1	4.500E-1	8.900E-1	5.580E+0
N° 5 (Bias1)	---	1.200E-1	5.400E-1	1.120E+0	7.230E+0
N° 6 (Bias1)	---	8.000E-2	3.700E-1	7.400E-1	4.600E+0
N° 7 (Bias2)	---	7.000E-2	2.900E-1	7.400E-1	4.720E+0
N° 8 (Bias2)	---	7.000E-2	3.400E-1	7.400E-1	5.020E+0
N° 9 (Bias2)	---	9.000E-2	4.300E-1	8.900E-1	6.090E+0
N° 10 (Bias2)	---	1.100E-1	5.700E-1	1.180E+0	8.120E+0
N° 11 (Bias2)	---	9.000E-2	4.100E-1	8.300E-1	4.800E+0
N° 12 (OFF)	---	9.000E-2	4.500E-1	9.300E-1	5.710E+0
N° 13 (OFF)	---	1.000E-1	4.900E-1	1.020E+0	7.060E+0
N° 14 (OFF)	---	9.000E-2	4.300E-1	8.800E-1	7.410E+0
N° 15 (OFF)	---	6.000E-2	3.400E-1	7.100E-1	4.820E+0
N° 16 (OFF)	---	1.000E-1	5.000E-1	9.900E-1	5.540E+0
Average (OFF)	---	9.600E-2	4.480E-1	8.960E-1	5.656E+0
σ (OFF)	---	1.673E-2	6.419E-2	1.405E-1	9.653E-1
Average+3σ (OFF)	---	1.462E-1	6.406E-1	1.317E+0	8.552E+0
Average-3σ (OFF)	---	4.580E-2	2.554E-1	4.746E-1	2.760E+0
Average (Bias1)	---	8.600E-2	4.080E-1	8.760E-1	5.750E+0
σ (Bias1)	---	1.673E-2	1.064E-1	1.815E-1	1.434E+0
Average+3σ (Bias1)	---	1.362E-1	7.272E-1	1.420E+0	1.005E+1
Average-3σ (Bias1)	---	3.580E-2	8.881E-2	3.316E-1	1.447E+0
Average (Bias2)	---	8.800E-2	4.420E-1	9.060E-1	6.108E+0
σ (Bias2)	---	1.643E-2	6.380E-2	1.222E-1	1.089E+0
Average+3σ (Bias2)	---	1.373E-1	6.334E-1	1.273E+0	9.374E+0
Average-3σ (Bias2)	---	3.870E-2	2.506E-1	5.394E-1	2.842E+0

60 MeV proton / detailed results

10.TPLH1

Ta=25°C; If=0.5mA; RL=4.7 kOhms; Vcc=5V



60 MeV proton / detailed results

TPLH1 . (µs) **Max = 60.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	7.2	7.6	7.6	8.0	7.6
N° 2 (Bias1)	7.2	6.8	5.2	3.6	2.6
N° 3 (Bias1)	8.4	8.0	6.0	4.4	2.4
N° 4 (Bias1)	8.0	7.6	6.0	4.4	2.6
N° 5 (Bias1)	8.0	7.6	6.0	4.4	2.8
N° 6 (Bias1)	8.8	8.0	6.4	4.8	2.3
N° 7 (Bias2)	7.2	6.6	4.8	3.6	2.0
N° 8 (Bias2)	7.2	6.4	4.8	3.6	2.0
N° 9 (Bias2)	7.2	6.8	4.8	3.6	2.0
N° 10 (Bias2)	7.6	7.2	5.0	3.4	2.2
N° 11 (Bias2)	8.4	7.6	5.6	4.0	1.9
N° 12 (OFF)	8.8	8.0	6.4	4.4	2.4
N° 13 (OFF)	6.4	5.6	4.0	2.8	2.8
N° 14 (OFF)	8.0	7.6	5.6	3.6	1.6
N° 15 (OFF)	6.8	6.4	4.8	3.4	1.6
N° 16 (OFF)	7.0	6.4	4.8	3.2	2.0

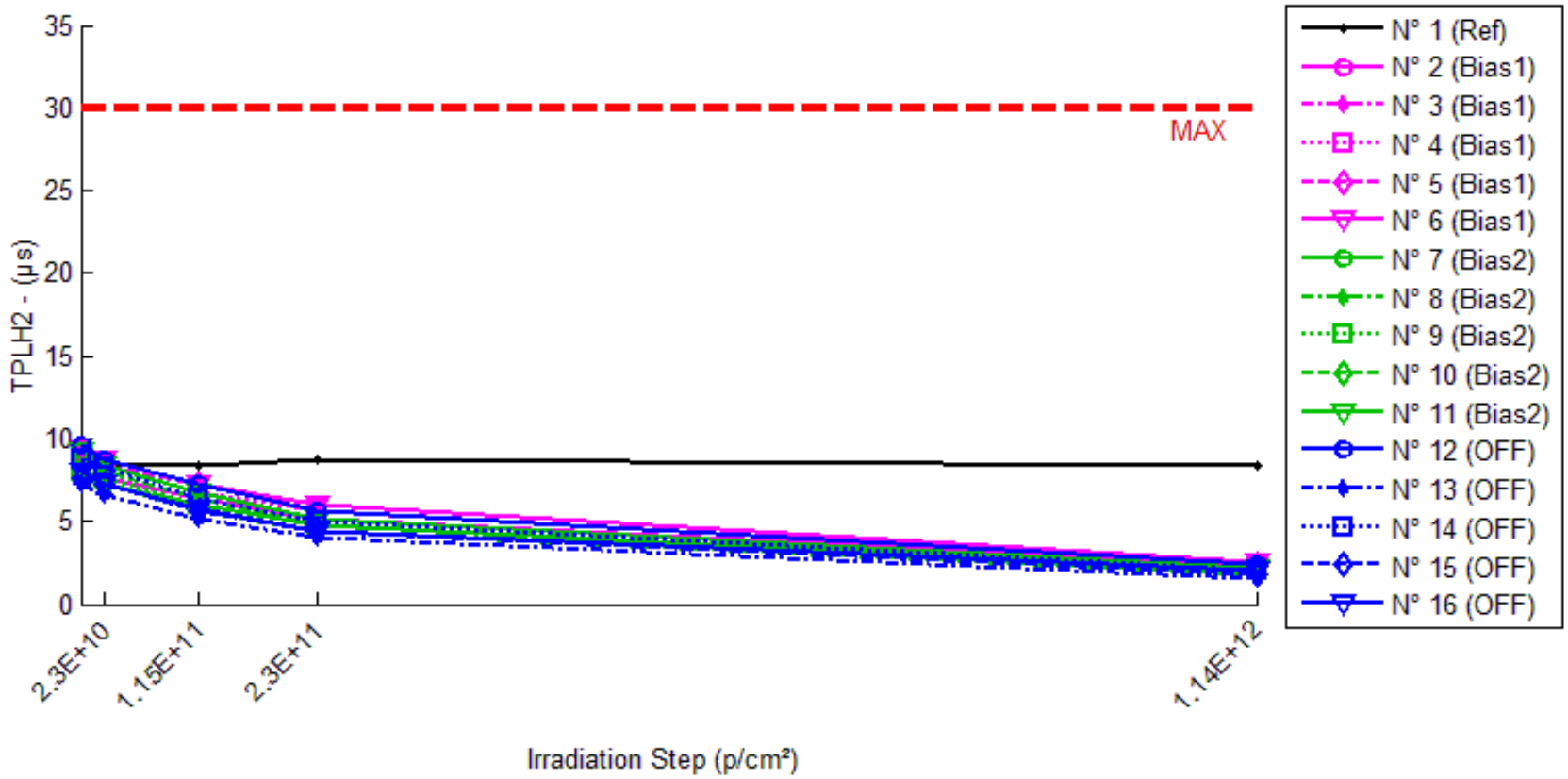
Delta [TPLH1]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	4.000E-1	4.000E-1	8.000E-1	4.000E-1
N° 2 (Bias1)	---	-4.000E-1	-2.000E+0	-3.600E+0	-4.600E+0
N° 3 (Bias1)	---	-4.000E-1	-2.400E+0	-4.000E+0	-6.000E+0
N° 4 (Bias1)	---	-4.000E-1	-2.000E+0	-3.600E+0	-5.400E+0
N° 5 (Bias1)	---	-4.000E-1	-2.000E+0	-3.600E+0	-5.200E+0
N° 6 (Bias1)	---	-8.000E-1	-2.400E+0	-4.000E+0	-6.500E+0
N° 7 (Bias2)	---	-6.000E-1	-2.400E+0	-3.600E+0	-5.200E+0
N° 8 (Bias2)	---	-8.000E-1	-2.400E+0	-3.600E+0	-5.200E+0
N° 9 (Bias2)	---	-4.000E-1	-2.400E+0	-3.600E+0	-5.200E+0
N° 10 (Bias2)	---	-4.000E-1	-2.600E+0	-4.200E+0	-5.400E+0
N° 11 (Bias2)	---	-8.000E-1	-2.800E+0	-4.400E+0	-6.500E+0
N° 12 (OFF)	---	-8.000E-1	-2.400E+0	-4.400E+0	-6.400E+0
N° 13 (OFF)	---	-8.000E-1	-2.400E+0	-3.600E+0	-3.600E+0
N° 14 (OFF)	---	-4.000E-1	-2.400E+0	-4.400E+0	-6.400E+0
N° 15 (OFF)	---	-4.000E-1	-2.000E+0	-3.400E+0	-5.200E+0
N° 16 (OFF)	---	-6.000E-1	-2.200E+0	-3.800E+0	-5.000E+0
Average (OFF)	---	-4.800E-1	-2.160E+0	-3.760E+0	-5.540E+0
σ (OFF)	---	1.789E-1	2.191E-1	2.191E-1	7.335E-1
Average+3σ (OFF)	---	5.666E-2	-1.503E+0	-3.103E+0	-3.340E+0
Average-3σ (OFF)	---	-1.017E+0	-2.817E+0	-4.417E+0	-7.740E+0
Average (Bias1)	---	-6.000E-1	-2.520E+0	-3.880E+0	-5.500E+0
σ (Bias1)	---	2.000E-1	1.789E-1	3.899E-1	5.657E-1
Average+3σ (Bias1)	---	3.331E-16	-1.983E+0	-2.710E+0	-3.803E+0
Average-3σ (Bias1)	---	-1.200E+0	-3.057E+0	-5.050E+0	-7.197E+0
Average (Bias2)	---	-6.000E-1	-2.280E+0	-3.920E+0	-5.320E+0
σ (Bias2)	---	2.000E-1	1.789E-1	4.604E-1	1.163E+0
Average+3σ (Bias2)	---	9.992E-16	-1.743E+0	-2.539E+0	-1.832E+0
Average-3σ (Bias2)	---	-1.200E+0	-2.817E+0	-5.301E+0	-8.808E+0

60 MeV proton / detailed results

11.TPLH2

Ta=25°C; If=5mA; RL=680 Ohms; Vcc=5V



60 MeV proton / detailed results

TPLH2 . (µs) **Max = 30.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	8.2	8.4	8.4	8.8	8.4
N° 2 (Bias1)	8.0	7.6	6.4	5.2	2.4
N° 3 (Bias1)	9.2	8.8	7.2	5.6	2.4
N° 4 (Bias1)	9.2	8.4	6.8	5.6	2.4
N° 5 (Bias1)	9.2	8.4	7.2	5.6	2.4
N° 6 (Bias1)	9.2	8.8	7.2	6.0	2.6
N° 7 (Bias2)	7.8	7.2	6.0	4.8	2.0
N° 8 (Bias2)	8.0	7.2	5.6	4.4	1.8
N° 9 (Bias2)	8.0	7.6	6.0	4.8	2.0
N° 10 (Bias2)	8.8	8.0	6.4	4.8	1.8
N° 11 (Bias2)	9.2	8.4	6.8	5.2	2.2
N° 12 (OFF)	9.6	8.8	7.2	5.6	2.4
N° 13 (OFF)	7.2	6.6	5.2	4.0	1.6
N° 14 (OFF)	8.8	8.2	6.4	5.0	2.0
N° 15 (OFF)	7.6	7.2	5.6	4.4	1.8
N° 16 (OFF)	8.0	7.2	5.8	4.4	2.0

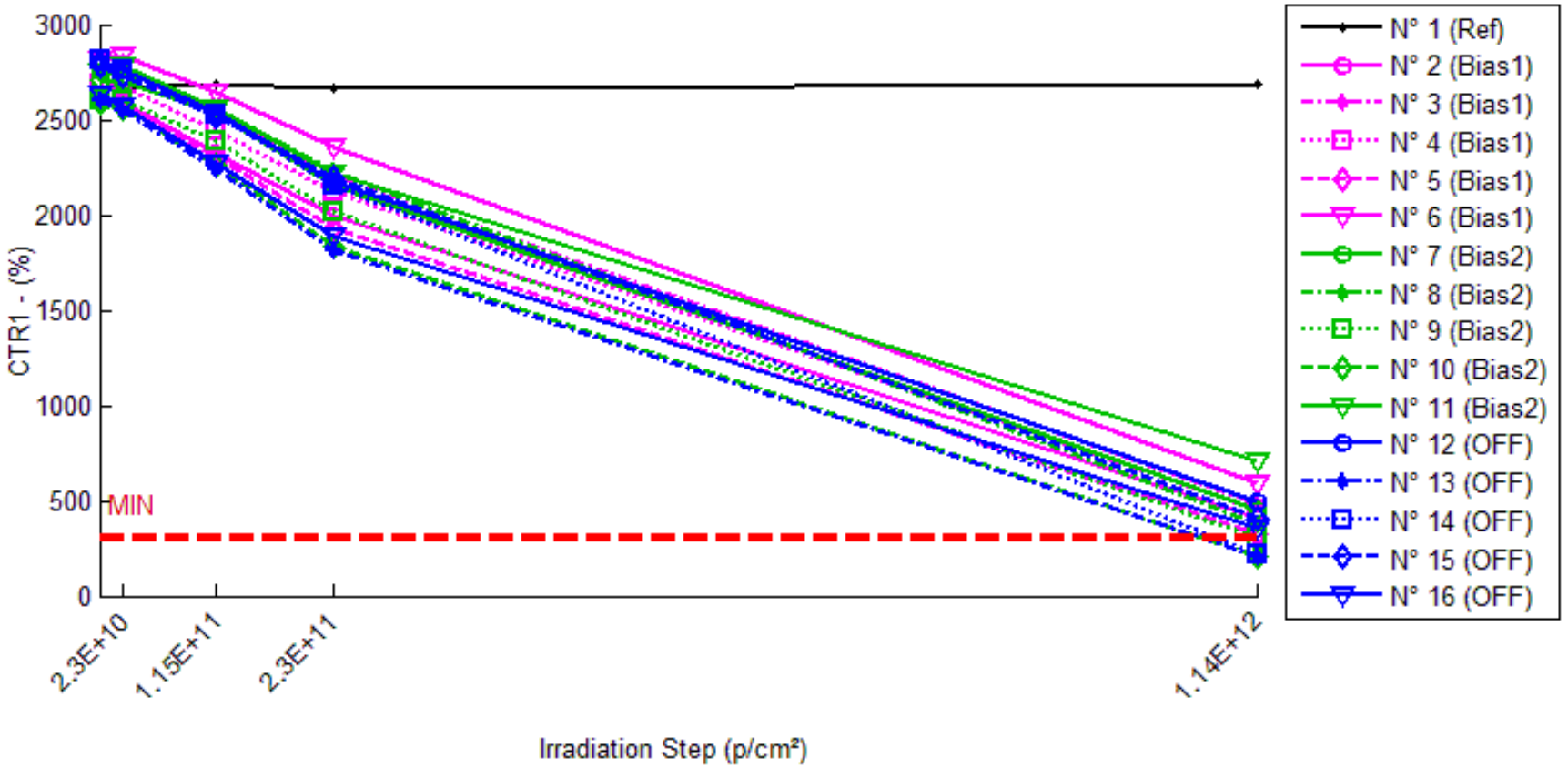
Delta [TPLH2]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	2.000E-1	2.000E-1	6.000E-1	2.000E-1
N° 2 (Bias1)	---	-4.000E-1	-1.600E+0	-2.800E+0	-5.600E+0
N° 3 (Bias1)	---	-4.000E-1	-2.000E+0	-3.600E+0	-6.800E+0
N° 4 (Bias1)	---	-8.000E-1	-2.400E+0	-3.600E+0	-6.800E+0
N° 5 (Bias1)	---	-8.000E-1	-2.000E+0	-3.600E+0	-6.800E+0
N° 6 (Bias1)	---	-4.000E-1	-2.000E+0	-3.200E+0	-6.600E+0
N° 7 (Bias2)	---	-6.000E-1	-1.800E+0	-3.000E+0	-5.800E+0
N° 8 (Bias2)	---	-8.000E-1	-2.400E+0	-3.600E+0	-6.200E+0
N° 9 (Bias2)	---	-4.000E-1	-2.000E+0	-3.200E+0	-6.000E+0
N° 10 (Bias2)	---	-8.000E-1	-2.400E+0	-4.000E+0	-7.000E+0
N° 11 (Bias2)	---	-8.000E-1	-2.400E+0	-4.000E+0	-7.000E+0
N° 12 (OFF)	---	-8.000E-1	-2.400E+0	-4.000E+0	-7.200E+0
N° 13 (OFF)	---	-6.000E-1	-2.000E+0	-3.200E+0	-5.600E+0
N° 14 (OFF)	---	-6.000E-1	-2.400E+0	-3.800E+0	-6.800E+0
N° 15 (OFF)	---	-4.000E-1	-2.000E+0	-3.200E+0	-5.800E+0
N° 16 (OFF)	---	-8.000E-1	-2.200E+0	-3.600E+0	-6.000E+0
Average (OFF)	---	-5.600E-1	-2.000E+0	-3.360E+0	-6.520E+0
σ (OFF)	---	2.191E-1	2.828E-1	3.578E-1	5.215E-1
Average+3σ (OFF)	---	9.727E-2	-1.151E+0	-2.287E+0	-4.955E+0
Average-3σ (OFF)	---	-1.217E+0	-2.849E+0	-4.433E+0	-8.085E+0
Average (Bias1)	---	-6.800E-1	-2.200E+0	-3.560E+0	-6.400E+0
σ (Bias1)	---	1.789E-1	2.828E-1	4.561E-1	5.657E-1
Average+3σ (Bias1)	---	-1.433E-1	-1.351E+0	-2.192E+0	-4.703E+0
Average-3σ (Bias1)	---	-1.217E+0	-3.049E+0	-4.928E+0	-8.097E+0
Average (Bias2)	---	-6.400E-1	-2.200E+0	-3.560E+0	-6.280E+0
σ (Bias2)	---	1.673E-1	2.000E-1	3.578E-1	6.870E-1
Average+3σ (Bias2)	---	-1.380E-1	-1.600E+0	-2.487E+0	-4.219E+0
Average-3σ (Bias2)	---	-1.142E+0	-2.800E+0	-4.633E+0	-8.341E+0

60 MeV proton / detailed results

12.CTR1

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=4.5V



60 MeV proton / detailed results

CTR1 . (%) **Min = 300.0**

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	2651.37	2664.94	2682.93	2669.69	2682.06
N° 2 (Bias1)	2594.93	2590.60	2328.01	1991.40	404.48
N° 3 (Bias1)	2738.18	2751.05	2537.07	2205.39	486.19
N° 4 (Bias1)	2684.99	2672.55	2444.32	2117.40	454.44
N° 5 (Bias1)	2600.49	2584.11	2300.89	1930.94	321.35
N° 6 (Bias1)	2811.74	2839.91	2644.55	2353.76	586.64
N° 7 (Bias2)	2702.89	2691.96	2537.28	2157.91	456.62
N° 8 (Bias2)	2739.67	2745.36	2557.83	2231.16	373.97
N° 9 (Bias2)	2603.68	2605.12	2383.68	2013.05	305.62
N° 10 (Bias2)	2593.85	2563.43	2263.37	1834.01	207.28
N° 11 (Bias2)	2749.93	2780.25	2553.60	2213.31	705.98
N° 12 (OFF)	2807.73	2760.37	2536.90	2176.54	490.34
N° 13 (OFF)	2601.54	2545.14	2241.38	1813.01	205.95
N° 14 (OFF)	2814.10	2759.72	2525.31	2153.19	222.66
N° 15 (OFF)	2778.92	2732.50	2520.92	2195.46	407.37
N° 16 (OFF)	2632.92	2568.00	2276.28	1886.00	358.81

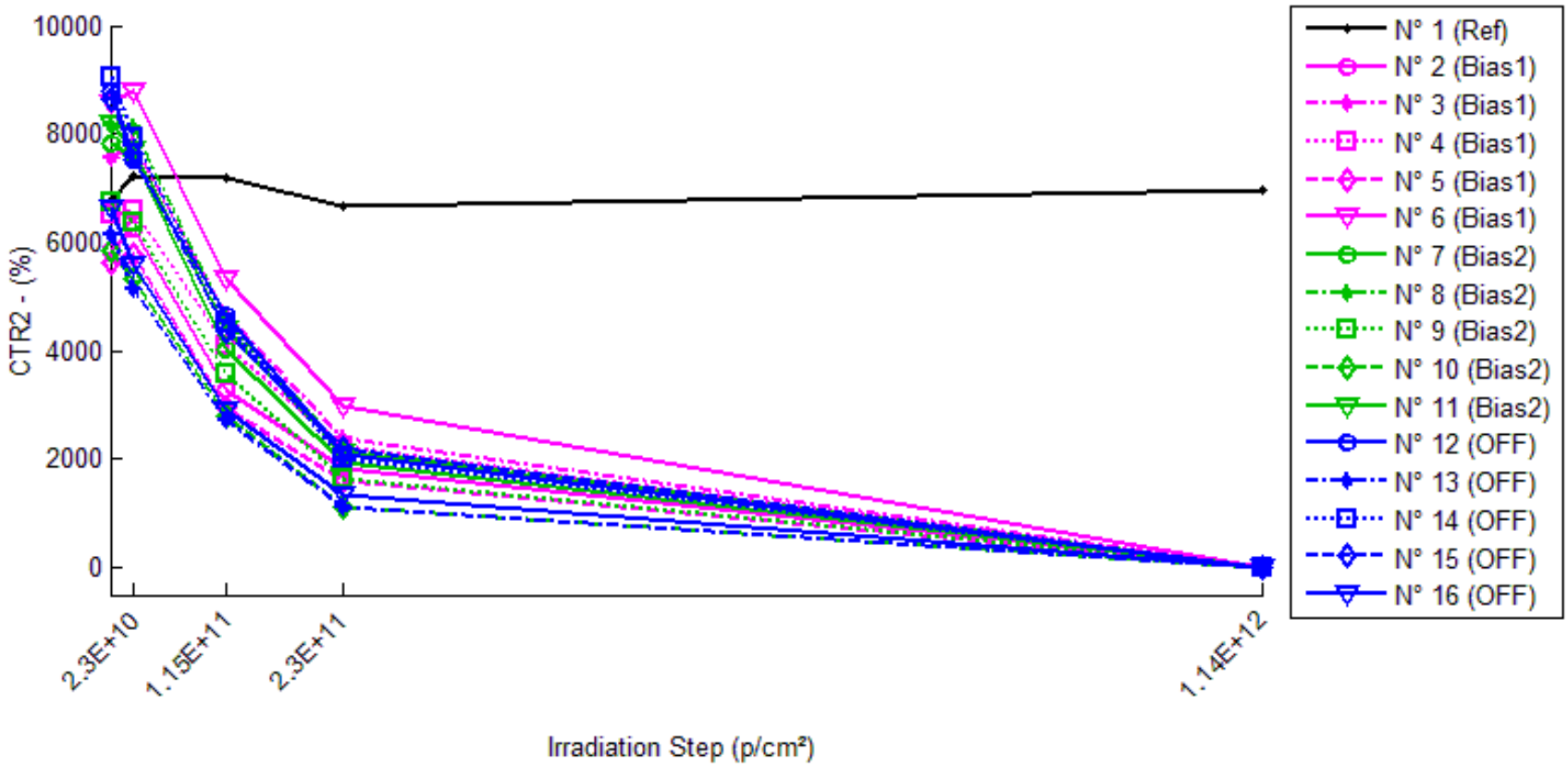
1/Delta [CTR1]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-1.921E-6	-4.436E-6	-2.588E-6	-4.316E-6
N° 2 (Bias1)	---	6.443E-7	4.418E-5	1.168E-4	2.087E-3
N° 3 (Bias1)	---	-1.708E-6	2.895E-5	8.823E-5	1.692E-3
N° 4 (Bias1)	---	1.734E-6	3.667E-5	9.984E-5	1.828E-3
N° 5 (Bias1)	---	2.438E-6	5.007E-5	1.333E-4	2.727E-3
N° 6 (Bias1)	---	-3.527E-6	2.248E-5	6.920E-5	1.349E-3
N° 7 (Bias2)	---	1.502E-6	2.415E-5	9.344E-5	1.820E-3
N° 8 (Bias2)	---	-7.560E-7	2.595E-5	8.319E-5	2.309E-3
N° 9 (Bias2)	---	-2.123E-7	3.545E-5	1.127E-4	2.888E-3
N° 10 (Bias2)	---	4.575E-6	5.629E-5	1.597E-4	4.439E-3
N° 11 (Bias2)	---	-3.965E-6	2.796E-5	8.817E-5	1.053E-3
N° 12 (OFF)	---	6.112E-6	3.802E-5	1.033E-4	1.683E-3
N° 13 (OFF)	---	8.517E-6	6.177E-5	1.672E-4	4.471E-3
N° 14 (OFF)	---	7.002E-6	4.064E-5	1.091E-4	4.136E-3
N° 15 (OFF)	---	6.113E-6	3.683E-5	9.563E-5	2.095E-3
N° 16 (OFF)	---	9.602E-6	5.951E-5	1.504E-4	2.407E-3
Average (OFF)	---	-8.381E-8	3.647E-5	1.015E-4	1.937E-3
σ (OFF)	---	2.484E-6	1.114E-5	2.485E-5	5.160E-4
Average+3σ (OFF)	---	7.369E-6	6.990E-5	1.760E-4	3.485E-3
Average-3σ (OFF)	---	-7.537E-6	3.042E-6	2.694E-5	3.886E-4
Average (Bias1)	---	2.287E-7	3.396E-5	1.074E-4	2.502E-3
σ (Bias1)	---	3.133E-6	1.320E-5	3.129E-5	1.275E-3
Average+3σ (Bias1)	---	9.628E-6	7.357E-5	2.013E-4	6.327E-3
Average-3σ (Bias1)	---	-9.171E-6	-5.653E-6	1.356E-5	-1.323E-3
Average (Bias2)	---	7.469E-6	4.735E-5	1.251E-4	2.958E-3
σ (Bias2)	---	1.545E-6	1.223E-5	3.167E-5	1.260E-3
Average+3σ (Bias2)	---	1.210E-5	8.404E-5	2.201E-4	6.738E-3
Average-3σ (Bias2)	---	2.834E-6	1.066E-5	3.010E-5	-8.214E-4

60 MeV proton / detailed results

13.CTR2

Ta=25°C; If=0.16mA; Vo=0.4V; Vcc=5V



60 MeV proton / detailed results

CTR2 . (%)

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	6762.100	7231.762	7204.762	6667.837	6979.556
N° 2 (Bias1)	5852.628	6253.087	3272.133	1821.836	0.002
N° 3 (Bias1)	7565.194	7807.719	4650.719	2370.864	0.003
N° 4 (Bias1)	6521.181	6595.881	4091.719	2236.982	0.003
N° 5 (Bias1)	5633.641	5758.394	2942.151	1615.297	0.002
N° 6 (Bias1)	8580.169	8788.594	5318.190	2994.610	0.008
N° 7 (Bias2)	7810.456	7613.725	4014.128	1927.166	0.003
N° 8 (Bias2)	8156.050	8104.587	4571.236	2163.337	0.002
N° 9 (Bias2)	6745.069	6386.294	3591.653	1631.294	0.002
N° 10 (Bias2)	5856.323	5321.833	2796.134	1123.813	0.001
N° 11 (Bias2)	8205.062	7708.700	4394.589	2132.612	0.003
N° 12 (OFF)	8777.319	7538.500	4644.123	2078.029	0.003
N° 13 (OFF)	6157.039	5155.809	2719.798	1111.951	0.003
N° 14 (OFF)	9064.450	7935.369	4510.497	2000.285	0.002
N° 15 (OFF)	8633.138	7635.375	4371.097	2209.059	0.002
N° 16 (OFF)	6616.238	5579.798	2913.829	1343.059	0.002

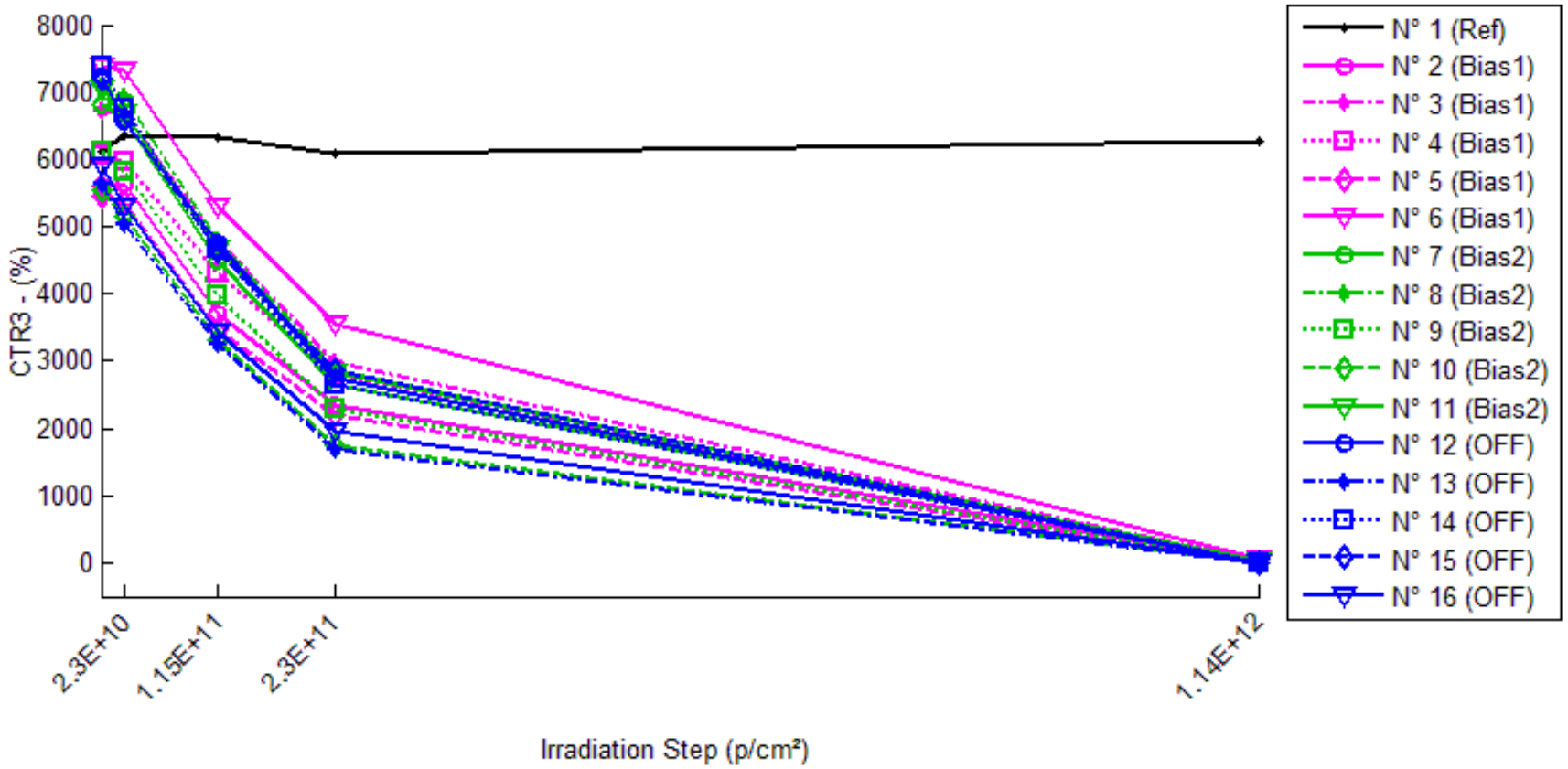
1/Delta [CTR2]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-9.604E-6	-9.086E-6	2.091E-6	-4.607E-6
N° 2 (Bias1)	---	-1.094E-5	1.347E-4	3.780E-4	4.475E+2
N° 3 (Bias1)	---	-4.106E-6	8.284E-5	2.896E-4	3.292E+2
N° 4 (Bias1)	---	-1.737E-6	9.105E-5	2.937E-4	3.036E+2
N° 5 (Bias1)	---	-3.846E-6	1.624E-4	4.416E-4	5.436E+2
N° 6 (Bias1)	---	-2.764E-6	7.149E-5	2.174E-4	1.235E+2
N° 7 (Bias2)	---	3.308E-6	1.211E-4	3.909E-4	3.972E+2
N° 8 (Bias2)	---	7.785E-7	9.615E-5	3.396E-4	4.757E+2
N° 9 (Bias2)	---	8.329E-6	1.302E-4	4.648E-4	4.088E+2
N° 10 (Bias2)	---	1.715E-5	1.869E-4	7.191E-4	8.619E+2
N° 11 (Bias2)	---	7.848E-6	1.057E-4	3.470E-4	3.884E+2
N° 12 (OFF)	---	1.872E-5	1.014E-4	3.673E-4	3.779E+2
N° 13 (OFF)	---	3.154E-5	2.053E-4	7.369E-4	3.615E+2
N° 14 (OFF)	---	1.570E-5	1.114E-4	3.896E-4	4.707E+2
N° 15 (OFF)	---	1.514E-5	1.129E-4	3.368E-4	4.602E+2
N° 16 (OFF)	---	2.807E-5	1.920E-4	5.934E-4	4.034E+2
Average (OFF)	---	-4.679E-6	1.085E-4	3.241E-4	3.495E+2
σ (OFF)	---	3.626E-6	3.849E-5	8.691E-5	1.588E+2
Average+3σ (OFF)	---	6.198E-6	2.240E-4	5.848E-4	8.259E+2
Average-3σ (OFF)	---	-1.556E-5	-6.965E-6	6.333E-5	-1.269E+2
Average (Bias1)	---	7.483E-6	1.280E-4	4.523E-4	5.064E+2
σ (Bias1)	---	6.258E-6	3.547E-5	1.572E-4	2.017E+2
Average+3σ (Bias1)	---	2.626E-5	2.344E-4	9.239E-4	1.111E+3
Average-3σ (Bias1)	---	-1.129E-5	2.159E-5	-1.938E-5	-9.863E+1
Average (Bias2)	---	2.183E-5	1.446E-4	4.848E-4	4.147E+2
σ (Bias2)	---	7.506E-6	4.976E-5	1.733E-4	4.876E+1
Average+3σ (Bias2)	---	4.435E-5	2.939E-4	1.005E-3	5.610E+2
Average-3σ (Bias2)	---	-6.837E-7	-4.664E-6	-3.505E-5	2.685E+2

60 MeV proton / detailed results

14.CTR3

Ta=25°C; If=0.32mA; Vo=0.4V; Vcc=5V



60 MeV proton / detailed results

CTR3 . (%)

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	6115.416	6365.512	6334.281	6086.637	6254.913
N° 2 (Bias1)	5593.525	5640.400	3691.850	2349.603	12.708
N° 3 (Bias1)	6706.869	6684.169	4780.228	2984.086	32.857
N° 4 (Bias1)	6063.994	5953.453	4318.700	2771.157	28.957
N° 5 (Bias1)	5448.684	5365.175	3467.762	2187.691	1.982
N° 6 (Bias1)	7375.781	7317.637	5296.109	3561.278	70.664
N° 7 (Bias2)	6811.719	6597.825	4481.656	2645.848	14.324
N° 8 (Bias2)	7091.941	6934.969	4796.262	2869.841	2.509
N° 9 (Bias2)	6124.203	5825.044	3990.834	2278.656	0.143
N° 10 (Bias2)	5542.681	5157.859	3311.075	1735.181	0.002
N° 11 (Bias2)	7037.744	6695.262	4657.687	2822.234	41.426
N° 12 (OFF)	7238.975	6573.450	4755.453	2743.901	10.070
N° 13 (OFF)	5624.944	5025.194	3239.244	1693.598	0.004
N° 14 (OFF)	7386.250	6739.081	4677.147	2663.040	0.003
N° 15 (OFF)	7186.453	6603.613	4633.019	2852.781	5.455
N° 16 (OFF)	5920.028	5310.934	3439.947	1951.663	1.669

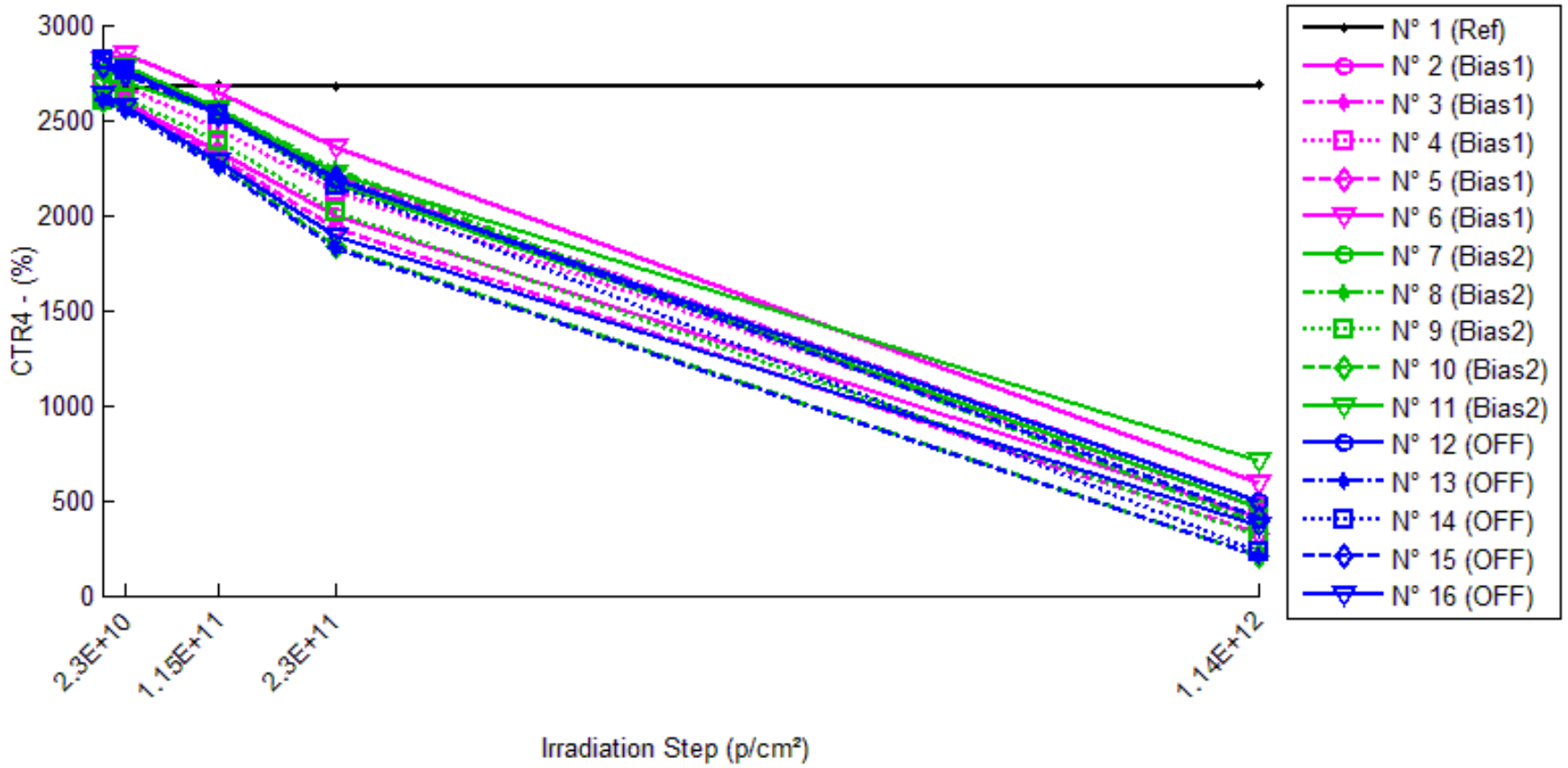
1/Delta [CTR3]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-6.425E-6	-5.650E-6	7.732E-7	-3.647E-6
N° 2 (Bias1)	---	-1.486E-6	9.209E-5	2.468E-4	7.851E-2
N° 3 (Bias1)	---	5.064E-7	6.009E-5	1.860E-4	3.029E-2
N° 4 (Bias1)	---	3.062E-6	6.664E-5	1.960E-4	3.437E-2
N° 5 (Bias1)	---	2.857E-6	1.048E-4	2.736E-4	5.044E-1
N° 6 (Bias1)	---	1.077E-6	5.324E-5	1.452E-4	1.402E-2
N° 7 (Bias2)	---	4.759E-6	7.633E-5	2.311E-4	6.967E-2
N° 8 (Bias2)	---	3.192E-6	6.749E-5	2.074E-4	3.984E-1
N° 9 (Bias2)	---	8.386E-6	8.729E-5	2.756E-4	6.992E+0
N° 10 (Bias2)	---	1.346E-5	1.216E-4	3.959E-4	4.915E+2
N° 11 (Bias2)	---	7.268E-6	7.261E-5	2.122E-4	2.400E-2
N° 12 (OFF)	---	1.399E-5	7.214E-5	2.263E-4	9.917E-2
N° 13 (OFF)	---	2.122E-5	1.309E-4	4.127E-4	2.424E+2
N° 14 (OFF)	---	1.300E-5	7.842E-5	2.401E-4	3.226E+2
N° 15 (OFF)	---	1.228E-5	7.669E-5	2.114E-4	1.832E-1
N° 16 (OFF)	---	1.937E-5	1.218E-4	3.435E-4	5.991E-1
Average (OFF)	---	1.203E-6	7.538E-5	2.095E-4	1.323E-1
σ (OFF)	---	1.866E-6	2.206E-5	5.091E-5	2.094E-1
Average+3σ (OFF)	---	6.800E-6	1.416E-4	3.622E-4	7.604E-1
Average-3σ (OFF)	---	-4.393E-6	9.189E-6	5.680E-5	-4.957E-1
Average (Bias1)	---	7.413E-6	8.506E-5	2.645E-4	9.979E+1
σ (Bias1)	---	3.950E-6	2.168E-5	7.824E-5	2.190E+2
Average+3σ (Bias1)	---	1.926E-5	1.501E-4	4.992E-4	7.567E+2
Average-3σ (Bias1)	---	-4.436E-6	2.002E-5	2.974E-5	-5.571E+2
Average (Bias2)	---	1.597E-5	9.599E-5	2.868E-4	1.132E+2
σ (Bias2)	---	4.046E-6	2.800E-5	8.744E-5	1.571E+2
Average+3σ (Bias2)	---	2.811E-5	1.800E-4	5.491E-4	5.846E+2
Average-3σ (Bias2)	---	3.835E-6	1.199E-5	2.447E-5	-3.582E+2

60 MeV proton / detailed results

15.CTR4

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=5V



60 MeV proton / detailed results

CTR4 . (%)

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	2653.50	2666.71	2685.19	2672.32	2684.53
N° 2 (Bias1)	2596.40	2593.16	2332.77	1995.92	407.47
N° 3 (Bias1)	2740.16	2753.70	2541.34	2210.01	490.29
N° 4 (Bias1)	2686.72	2675.45	2448.55	2122.44	458.54
N° 5 (Bias1)	2602.93	2588.12	2306.32	1935.65	324.43
N° 6 (Bias1)	2812.92	2841.91	2647.30	2358.36	591.34
N° 7 (Bias2)	2704.40	2694.33	2540.62	2162.54	460.15
N° 8 (Bias2)	2740.98	2747.32	2561.36	2237.39	377.56
N° 9 (Bias2)	2605.51	2607.72	2388.11	2018.26	309.32
N° 10 (Bias2)	2596.12	2566.93	2269.17	1839.54	210.02
N° 11 (Bias2)	2751.65	2782.79	2557.77	2218.44	707.11
N° 12 (OFF)	2810.56	2763.41	2541.73	2182.04	494.22
N° 13 (OFF)	2604.97	2548.78	2246.63	1819.40	208.50
N° 14 (OFF)	2815.90	2762.27	2529.84	2159.39	226.06
N° 15 (OFF)	2781.34	2734.67	2524.95	2200.90	411.70
N° 16 (OFF)	2635.65	2570.88	2282.19	1891.57	362.86

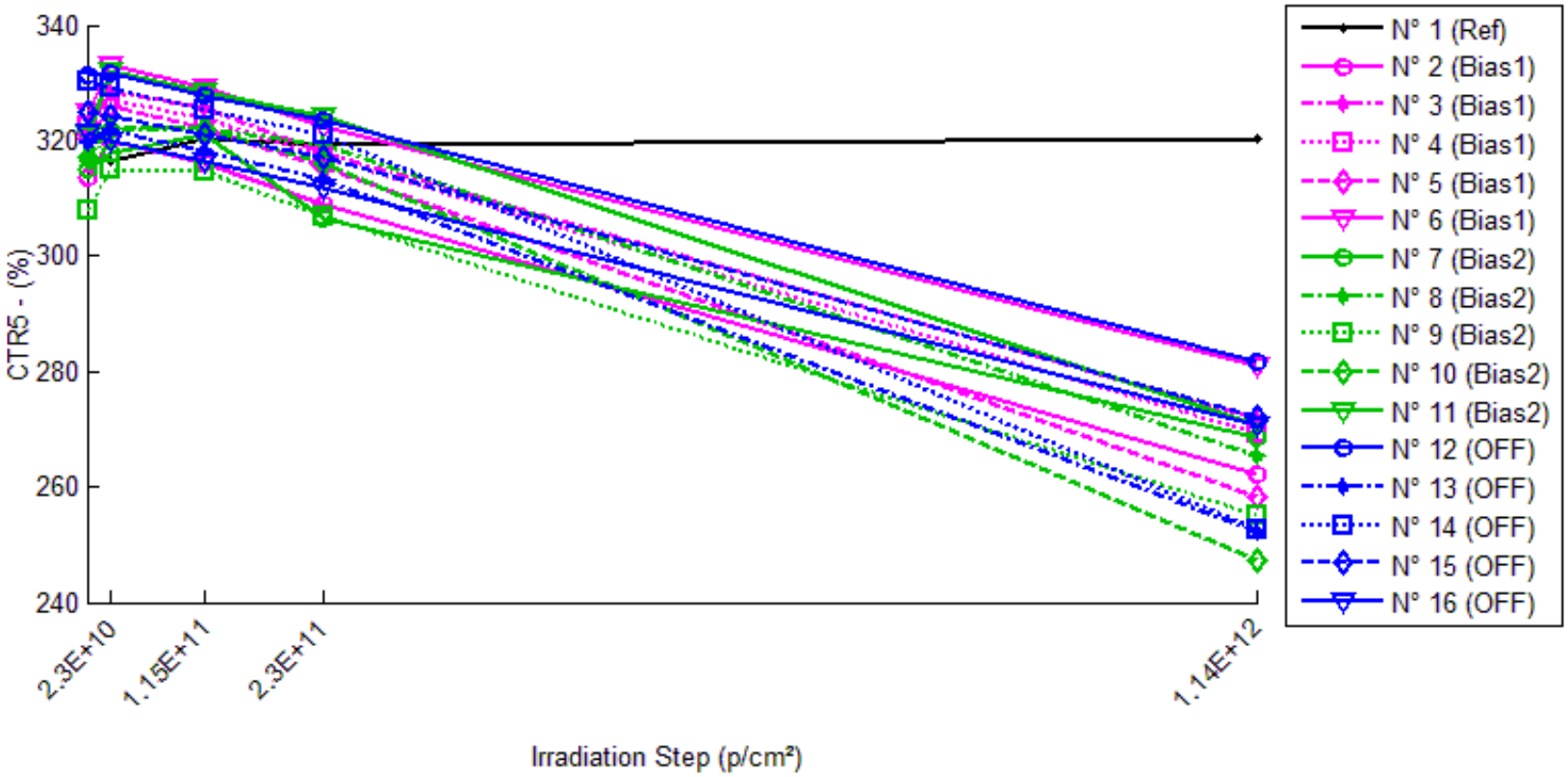
1/Delta [CTR4]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-1.867E-6	-4.447E-6	-2.653E-6	-4.356E-6
N° 2 (Bias1)	---	4.803E-7	4.353E-5	1.159E-4	2.069E-3
N° 3 (Bias1)	---	-1.794E-6	2.855E-5	8.754E-5	1.675E-3
N° 4 (Bias1)	---	1.567E-6	3.620E-5	9.895E-5	1.809E-3
N° 5 (Bias1)	---	2.199E-6	4.941E-5	1.324E-4	2.698E-3
N° 6 (Bias1)	---	-3.627E-6	2.224E-5	6.852E-5	1.336E-3
N° 7 (Bias2)	---	1.383E-6	2.384E-5	9.265E-5	1.803E-3
N° 8 (Bias2)	---	-8.421E-7	2.559E-5	8.212E-5	2.284E-3
N° 9 (Bias2)	---	-3.251E-7	3.494E-5	1.117E-4	2.849E-3
N° 10 (Bias2)	---	4.380E-6	5.550E-5	1.584E-4	4.376E-3
N° 11 (Bias2)	---	-4.067E-6	2.755E-5	8.735E-5	1.051E-3
N° 12 (OFF)	---	6.071E-6	3.763E-5	1.025E-4	1.668E-3
N° 13 (OFF)	---	8.463E-6	6.123E-5	1.658E-4	4.412E-3
N° 14 (OFF)	---	6.894E-6	4.016E-5	1.080E-4	4.068E-3
N° 15 (OFF)	---	6.136E-6	3.651E-5	9.482E-5	2.069E-3
N° 16 (OFF)	---	9.559E-6	5.876E-5	1.492E-4	2.376E-3
Average (OFF)	---	-2.347E-7	3.599E-5	1.007E-4	1.917E-3
σ (OFF)	---	2.430E-6	1.097E-5	2.474E-5	5.104E-4
Average+3σ (OFF)	---	7.055E-6	6.889E-5	1.749E-4	3.448E-3
Average-3σ (OFF)	---	-7.524E-6	3.080E-6	2.643E-5	3.861E-4
Average (Bias1)	---	1.057E-7	3.348E-5	1.064E-4	2.473E-3
σ (Bias1)	---	3.098E-6	1.301E-5	3.113E-5	1.252E-3
Average+3σ (Bias1)	---	9.400E-6	7.253E-5	1.998E-4	6.229E-3
Average-3σ (Bias1)	---	-9.189E-6	-5.562E-6	1.306E-5	-1.283E-3
Average (Bias2)	---	7.425E-6	4.686E-5	1.241E-4	2.919E-3
σ (Bias2)	---	1.534E-6	1.210E-5	3.143E-5	1.238E-3
Average+3σ (Bias2)	---	1.203E-5	8.315E-5	2.183E-4	6.634E-3
Average-3σ (Bias2)	---	2.824E-6	1.056E-5	2.976E-5	-7.960E-4

60 MeV proton / detailed results

16.CTR5

Ta=25°C; If=16mA; Vo=0.4V; Vcc=5V



60 MeV proton / detailed results

CTR5 . (%)

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	316.41	316.55	320.19	319.14	320.35
N° 2 (Bias1)	313.64	319.80	316.05	309.01	262.32
N° 3 (Bias1)	321.81	328.65	325.68	317.66	271.85
N° 4 (Bias1)	322.35	327.05	323.93	317.16	269.43
N° 5 (Bias1)	320.32	326.04	321.99	315.36	258.30
N° 6 (Bias1)	324.88	333.17	329.14	322.53	280.90
N° 7 (Bias2)	314.84	317.99	320.93	306.41	268.55
N° 8 (Bias2)	316.43	321.87	321.94	319.34	265.33
N° 9 (Bias2)	307.85	315.05	314.79	306.96	254.96
N° 10 (Bias2)	317.10	322.24	322.00	316.15	247.21
N° 11 (Bias2)	320.98	331.89	328.45	324.22	270.84
N° 12 (OFF)	331.24	331.54	327.87	323.63	281.54
N° 13 (OFF)	319.70	321.64	318.34	313.40	252.31
N° 14 (OFF)	330.14	329.09	325.41	320.89	252.54
N° 15 (OFF)	324.99	324.05	320.99	317.26	272.23
N° 16 (OFF)	321.27	320.13	316.50	311.90	270.54

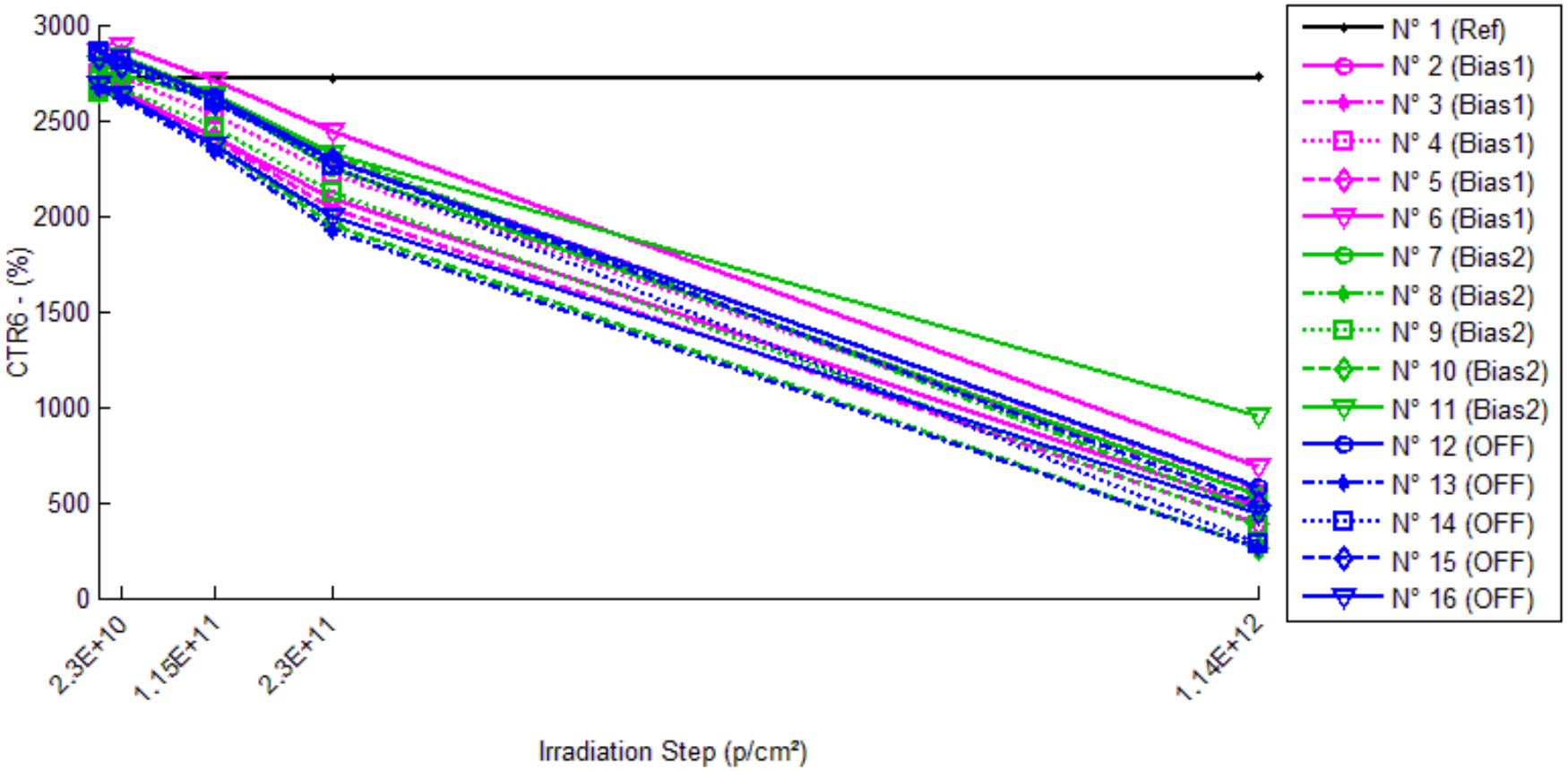
1/Delta [CTR5]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-1.391E-6	-3.725E-5	-2.700E-5	-3.883E-5
N° 2 (Bias1)	---	-6.134E-5	-2.425E-5	4.784E-5	6.238E-4
N° 3 (Bias1)	---	-6.465E-5	-3.685E-5	4.067E-5	5.712E-4
N° 4 (Bias1)	---	-4.457E-5	-1.510E-5	5.084E-5	6.094E-4
N° 5 (Bias1)	---	-5.475E-5	-1.619E-5	4.911E-5	7.496E-4
N° 6 (Bias1)	---	-7.660E-5	-3.979E-5	2.240E-5	4.819E-4
N° 7 (Bias2)	---	-3.150E-5	-6.022E-5	8.737E-5	5.475E-4
N° 8 (Bias2)	---	-5.338E-5	-5.406E-5	-2.875E-5	6.087E-4
N° 9 (Bias2)	---	-7.419E-5	-7.159E-5	9.467E-6	6.738E-4
N° 10 (Bias2)	---	-5.036E-5	-4.797E-5	9.506E-6	8.916E-4
N° 11 (Bias2)	---	-1.024E-4	-7.088E-5	-3.114E-5	5.767E-4
N° 12 (OFF)	---	-2.713E-6	3.106E-5	7.096E-5	5.329E-4
N° 13 (OFF)	---	-1.887E-5	1.334E-5	6.291E-5	8.355E-4
N° 14 (OFF)	---	9.720E-6	4.404E-5	8.734E-5	9.307E-4
N° 15 (OFF)	---	8.910E-6	3.835E-5	7.499E-5	5.964E-4
N° 16 (OFF)	---	1.108E-5	4.698E-5	9.352E-5	5.837E-4
Average (OFF)	---	-6.038E-5	-2.644E-5	4.217E-5	6.072E-4
σ (OFF)	---	1.187E-5	1.146E-5	1.171E-5	9.690E-5
Average+3σ (OFF)	---	-2.477E-5	7.944E-6	7.730E-5	8.979E-4
Average-3σ (OFF)	---	-9.600E-5	-6.081E-5	7.044E-6	3.165E-4
Average (Bias1)	---	-6.237E-5	-6.095E-5	9.292E-6	6.597E-4
σ (Bias1)	---	2.703E-5	1.035E-5	4.790E-5	1.379E-4
Average+3σ (Bias1)	---	1.873E-5	-2.990E-5	1.530E-4	1.073E-3
Average-3σ (Bias1)	---	-1.435E-4	-9.199E-5	-1.344E-4	2.460E-4
Average (Bias2)	---	1.625E-6	3.475E-5	7.794E-5	6.958E-4
σ (Bias2)	---	1.272E-5	1.343E-5	1.239E-5	1.758E-4
Average+3σ (Bias2)	---	3.978E-5	7.503E-5	1.151E-4	1.223E-3
Average-3σ (Bias2)	---	-3.653E-5	-5.522E-6	4.076E-5	1.683E-4

60 MeV proton / detailed results

17.CTR6

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=20V



60 MeV proton / detailed results

CTR6 . (%)

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	2701.06	2712.79	2733.11	2721.04	2733.33
N° 2 (Bias1)	2646.85	2652.38	2411.80	2090.11	474.15
N° 3 (Bias1)	2785.39	2805.07	2611.59	2303.37	572.56
N° 4 (Bias1)	2737.80	2733.98	2527.03	2218.88	536.73
N° 5 (Bias1)	2663.06	2657.09	2395.43	2039.59	388.38
N° 6 (Bias1)	2852.48	2887.55	2708.71	2441.77	686.68
N° 7 (Bias2)	2741.85	2737.78	2607.00	2251.93	538.81
N° 8 (Bias2)	2775.34	2788.34	2626.51	2327.99	454.70
N° 9 (Bias2)	2648.45	2660.19	2467.02	2117.39	380.43
N° 10 (Bias2)	2651.33	2632.37	2366.13	1950.43	262.46
N° 11 (Bias2)	2792.80	2833.87	2632.31	2320.90	953.23
N° 12 (OFF)	2861.47	2819.88	2623.29	2294.28	583.86
N° 13 (OFF)	2660.36	2612.16	2338.18	1925.12	261.13
N° 14 (OFF)	2860.08	2811.21	2602.52	2263.01	282.96
N° 15 (OFF)	2821.22	2778.80	2590.64	2296.28	494.84
N° 16 (OFF)	2690.87	2632.35	2370.95	1997.49	443.29

1/Delta [CTR6]

	0.p/cm²	2.3E10.p/cm²	1.15E11.p/cm²	2.3E11.p/cm²	1.14E12.p/cm²
N° 1 (Ref)	---	-1.601E-6	-4.341E-6	-2.718E-6	-4.371E-6
N° 2 (Bias1)	---	-7.877E-7	3.682E-5	1.006E-4	1.731E-3
N° 3 (Bias1)	---	-2.518E-6	2.389E-5	7.513E-5	1.388E-3
N° 4 (Bias1)	---	5.111E-7	3.047E-5	8.542E-5	1.498E-3
N° 5 (Bias1)	---	8.433E-7	4.195E-5	1.148E-4	2.199E-3
N° 6 (Bias1)	---	-4.257E-6	1.861E-5	5.897E-5	1.106E-3
N° 7 (Bias2)	---	5.422E-7	1.887E-5	7.935E-5	1.491E-3
N° 8 (Bias2)	---	-1.680E-6	2.042E-5	6.924E-5	1.839E-3
N° 9 (Bias2)	---	-1.666E-6	2.777E-5	9.470E-5	2.251E-3
N° 10 (Bias2)	---	2.717E-6	4.546E-5	1.355E-4	3.433E-3
N° 11 (Bias2)	---	-5.189E-6	2.183E-5	7.280E-5	6.910E-4
N° 12 (OFF)	---	5.155E-6	3.173E-5	8.640E-5	1.363E-3
N° 13 (OFF)	---	6.936E-6	5.179E-5	1.436E-4	3.454E-3
N° 14 (OFF)	---	6.079E-6	3.460E-5	9.225E-5	3.184E-3
N° 15 (OFF)	---	5.412E-6	3.155E-5	8.103E-5	1.666E-3
N° 16 (OFF)	---	8.261E-6	5.014E-5	1.290E-4	1.884E-3
Average (OFF)	---	-1.242E-6	3.035E-5	8.699E-5	1.584E-3
σ (OFF)	---	2.142E-6	9.435E-6	2.172E-5	4.108E-4
Average+3σ (OFF)	---	5.183E-6	5.865E-5	1.522E-4	2.817E-3
Average-3σ (OFF)	---	-7.667E-6	2.041E-6	2.183E-5	3.519E-4
Average (Bias1)	---	-1.055E-6	2.687E-5	9.033E-5	1.941E-3
σ (Bias1)	---	2.942E-6	1.093E-5	2.709E-5	1.012E-3
Average+3σ (Bias1)	---	7.772E-6	5.965E-5	1.716E-4	4.977E-3
Average-3σ (Bias1)	---	-9.883E-6	-5.912E-6	9.054E-6	-1.095E-3
Average (Bias2)	---	6.368E-6	3.996E-5	1.064E-4	2.310E-3
σ (Bias2)	---	1.263E-6	1.014E-5	2.800E-5	9.440E-4
Average+3σ (Bias2)	---	1.016E-5	7.037E-5	1.904E-4	5.142E-3
Average-3σ (Bias2)	---	2.580E-6	9.555E-6	2.245E-5	-5.216E-4

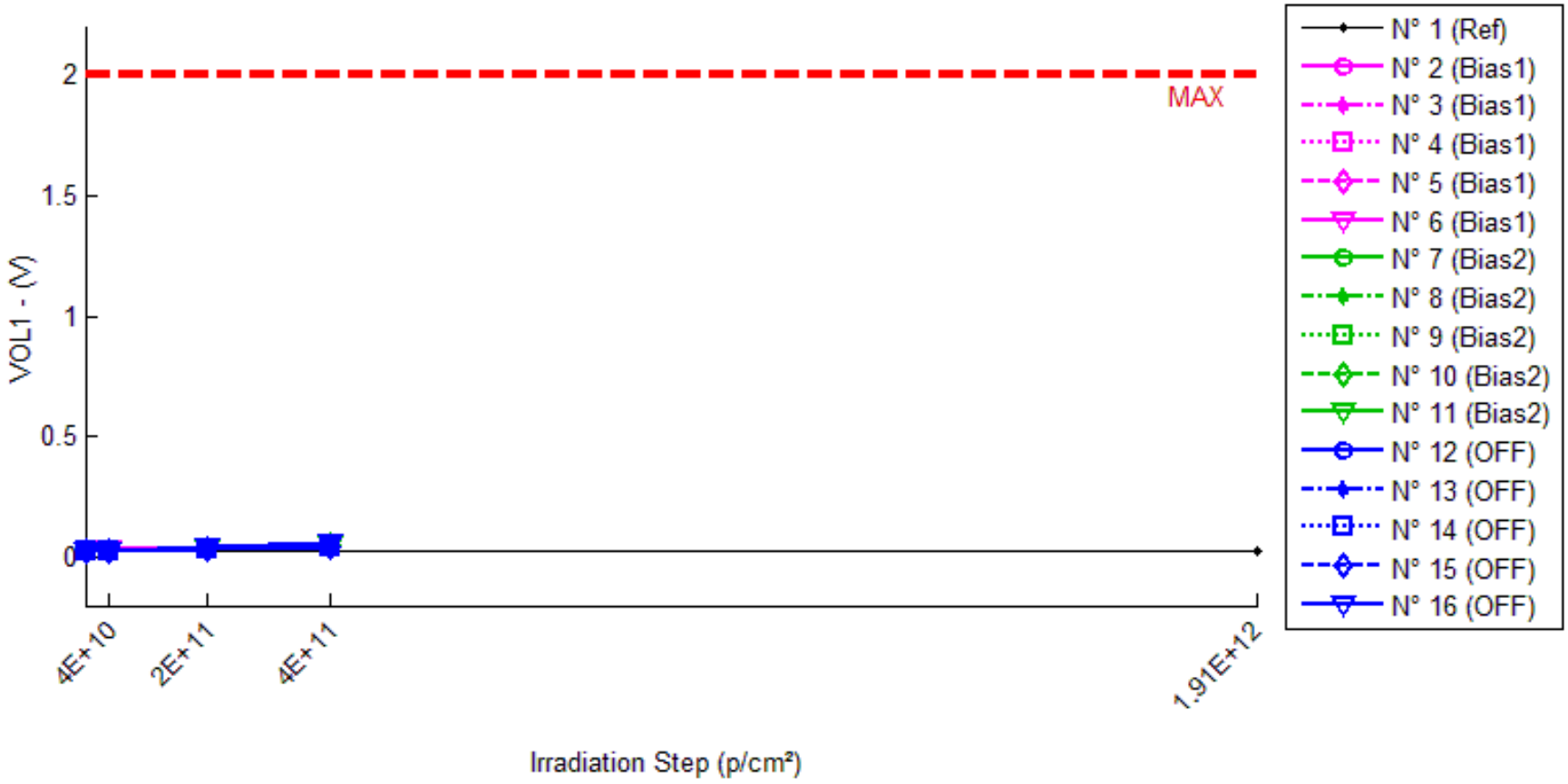
190 MeV proton / detailed results

CONTENTS

190 MeV proton / detailed results

1. VOL1

Ta=25°C; If=0.5mA; IOL=1.5mA; Vcc=4.5V



190 MeV proton / detailed results

VOL1 . (V) **Max = 0.4**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	0.026	0.026	0.028	0.026	0.026
N° 2 (Bias1)	0.027	0.028	0.035	0.047	Not Measurable
N° 3 (Bias1)	0.024	0.025	0.030	0.038	Not Measurable
N° 4 (Bias1)	0.027	0.028	0.036	0.050	Not Measurable
N° 5 (Bias1)	0.027	0.028	0.035	0.046	Not Measurable
N° 6 (Bias1)	0.028	0.030	0.038	0.052	Not Measurable
N° 7 (Bias2)	0.027	0.029	0.038	0.054	Not Measurable
N° 8 (Bias2)	0.026	0.028	0.038	0.055	Not Measurable
N° 9 (Bias2)	0.024	0.026	0.033	0.046	Not Measurable
N° 10 (Bias2)	0.025	0.027	0.035	0.050	Not Measurable
N° 11 (Bias2)	0.025	0.026	0.034	0.048	Not Measurable
N° 12 (OFF)	0.024	0.025	0.031	0.042	Not Measurable
N° 13 (OFF)	0.025	0.027	0.036	0.052	Not Measurable
N° 14 (OFF)	0.024	0.026	0.033	0.046	Not Measurable
N° 15 (OFF)	0.024	0.025	0.032	0.044	Not Measurable
N° 16 (OFF)	0.026	0.029	0.039	0.057	Not Measurable

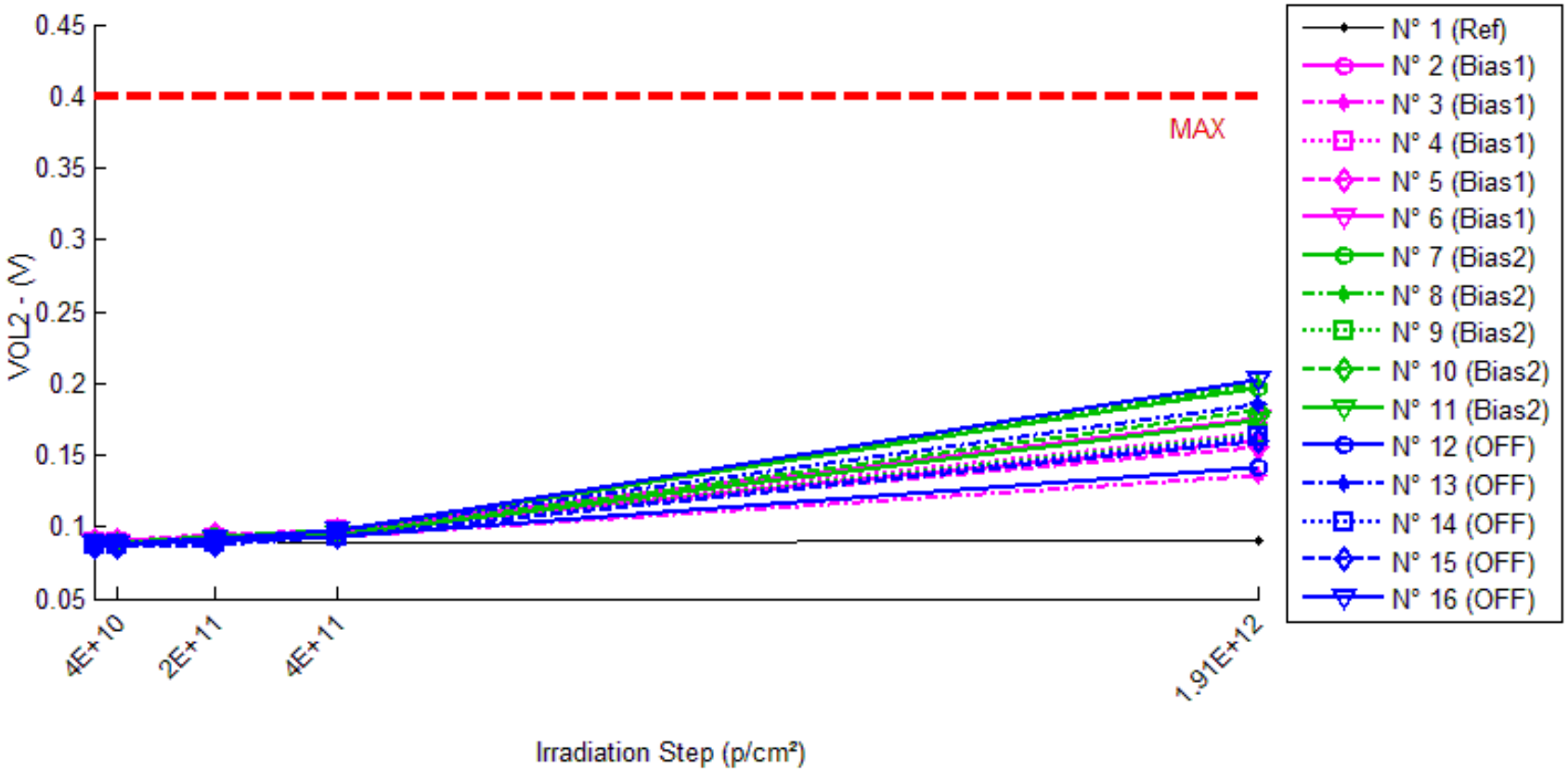
Delta [VOL1]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	2.938E-4	2.065E-3	2.965E-5	1.029E-4
N° 2 (Bias1)	---	1.507E-3	8.449E-3	2.015E-2	9.973E+0
N° 3 (Bias1)	---	9.792E-4	5.887E-3	1.394E-2	9.976E+0
N° 4 (Bias1)	---	1.656E-3	9.455E-3	2.306E-2	9.973E+0
N° 5 (Bias1)	---	1.397E-3	8.196E-3	1.972E-2	9.973E+0
N° 6 (Bias1)	---	1.891E-3	1.025E-2	2.390E-2	9.972E+0
N° 7 (Bias2)	---	2.088E-3	1.117E-2	2.759E-2	9.973E+0
N° 8 (Bias2)	---	2.111E-3	1.201E-2	2.956E-2	9.974E+0
N° 9 (Bias2)	---	1.579E-3	8.709E-3	2.188E-2	9.975E+0
N° 10 (Bias2)	---	1.837E-3	9.893E-3	2.475E-2	9.975E+0
N° 11 (Bias2)	---	1.685E-3	9.467E-3	2.354E-2	9.975E+0
N° 12 (OFF)	---	1.143E-3	6.972E-3	1.788E-2	9.976E+0
N° 13 (OFF)	---	1.766E-3	1.053E-2	2.642E-2	9.974E+0
N° 14 (OFF)	---	1.463E-3	8.560E-3	2.182E-2	9.975E+0
N° 15 (OFF)	---	1.311E-3	7.982E-3	2.047E-2	9.976E+0
N° 16 (OFF)	---	2.133E-3	1.216E-2	3.013E-2	9.973E+0
Average (Bias1)	---	1.486E-3	8.447E-3	2.015E-2	9.973E+0
σ (Bias1)	---	3.385E-4	1.649E-3	3.911E-3	1.315E-3
Average+3σ (Bias1)	---	2.502E-3	1.339E-2	3.189E-2	9.977E+0
Average-3σ (Bias1)	---	4.705E-4	3.499E-3	8.420E-3	9.969E+0
Average (Bias2)	---	1.860E-3	1.025E-2	2.546E-2	9.974E+0
σ (Bias2)	---	2.374E-4	1.330E-3	3.095E-3	9.281E-4
Average+3σ (Bias2)	---	2.572E-3	1.424E-2	3.475E-2	9.977E+0
Average-3σ (Bias2)	---	1.147E-3	6.260E-3	1.618E-2	9.972E+0
Average (OFF)	---	1.563E-3	9.240E-3	2.334E-2	9.975E+0
σ (OFF)	---	3.923E-4	2.083E-3	4.898E-3	1.210E-3
Average+3σ (OFF)	---	2.740E-3	1.549E-2	3.804E-2	9.979E+0
Average-3σ (OFF)	---	3.862E-4	2.990E-3	8.647E-3	9.971E+0

190 MeV proton / detailed results

2. VOL2

Ta=25°C; If=5mA; IOL=10mA; Vcc=4.5V



190 MeV proton / detailed results

VOL2 . (V) **Max = 0.4**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	0.089	0.091	0.090	0.089	0.090
N° 2 (Bias1)	0.090	0.090	0.092	0.097	0.160
N° 3 (Bias1)	0.088	0.088	0.090	0.093	0.136
N° 4 (Bias1)	0.089	0.089	0.092	0.097	0.165
N° 5 (Bias1)	0.091	0.091	0.094	0.098	0.155
N° 6 (Bias1)	0.089	0.089	0.092	0.097	0.176
N° 7 (Bias2)	0.089	0.089	0.093	0.098	0.197
N° 8 (Bias2)	0.087	0.087	0.091	0.096	0.199
N° 9 (Bias2)	0.087	0.087	0.089	0.094	0.164
N° 10 (Bias2)	0.087	0.087	0.090	0.095	0.181
N° 11 (Bias2)	0.087	0.087	0.090	0.094	0.174
N° 12 (OFF)	0.089	0.088	0.090	0.093	0.142
N° 13 (OFF)	0.089	0.089	0.092	0.097	0.185
N° 14 (OFF)	0.087	0.087	0.089	0.093	0.163
N° 15 (OFF)	0.086	0.086	0.088	0.093	0.160
N° 16 (OFF)	0.088	0.088	0.092	0.098	0.203

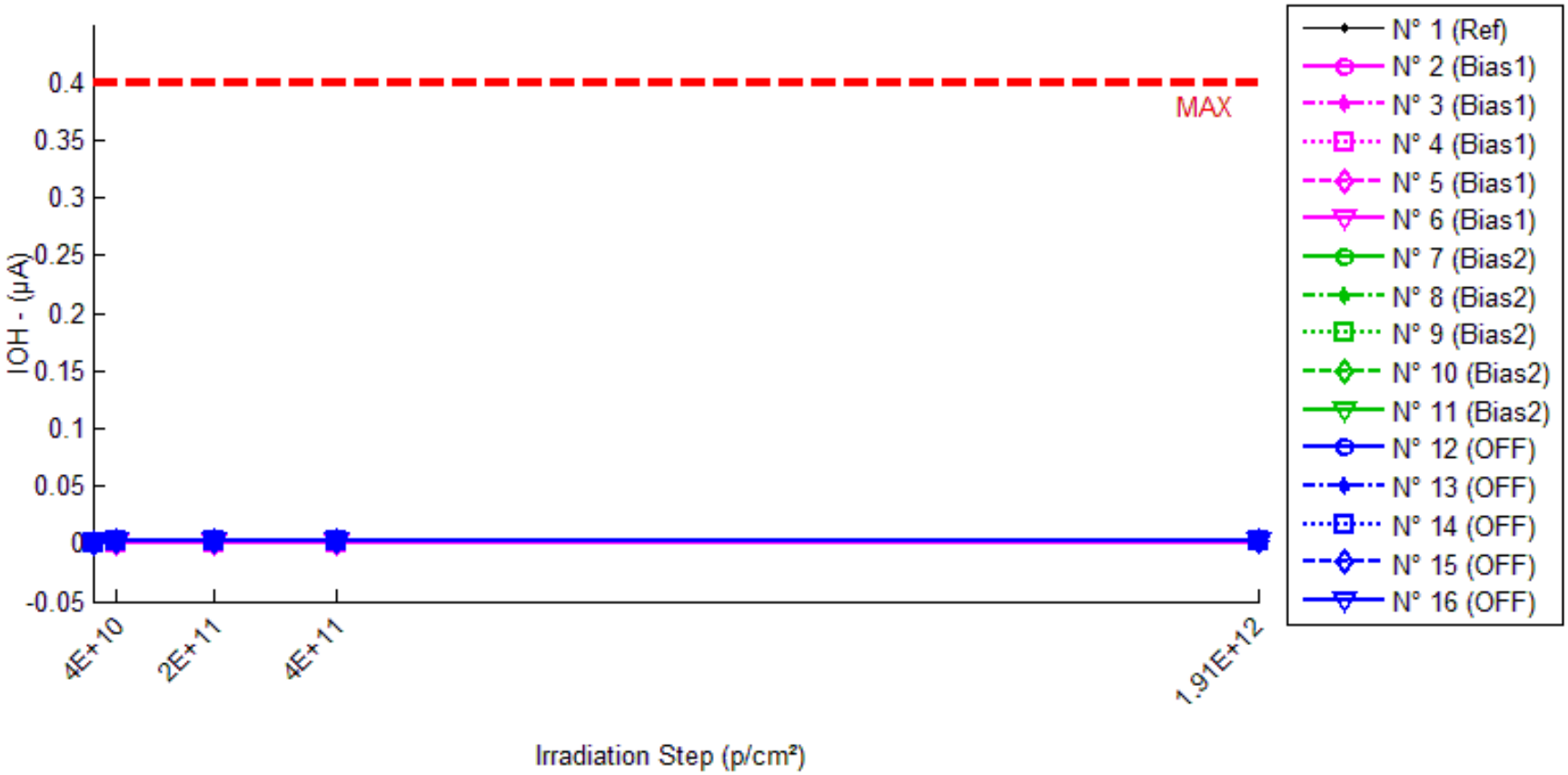
Delta [VOL2]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	1.432E-3	7.597E-4	-2.459E-4	2.056E-4
N° 2 (Bias1)	---	1.767E-4	2.734E-3	7.577E-3	7.011E-2
N° 3 (Bias1)	---	-1.997E-4	1.474E-3	4.259E-3	4.730E-2
N° 4 (Bias1)	---	4.266E-4	3.325E-3	8.197E-3	7.675E-2
N° 5 (Bias1)	---	2.458E-4	2.706E-3	6.681E-3	6.455E-2
N° 6 (Bias1)	---	5.534E-4	3.680E-3	8.569E-3	8.684E-2
N° 7 (Bias2)	---	2.964E-4	3.604E-3	8.969E-3	1.079E-1
N° 8 (Bias2)	---	2.585E-4	3.990E-3	9.611E-3	1.123E-1
N° 9 (Bias2)	---	-1.549E-5	2.648E-3	6.907E-3	7.716E-2
N° 10 (Bias2)	---	9.436E-5	3.127E-3	8.048E-3	9.414E-2
N° 11 (Bias2)	---	2.999E-5	2.995E-3	7.666E-3	8.753E-2
N° 12 (OFF)	---	-2.309E-4	1.470E-3	4.904E-3	5.371E-2
N° 13 (OFF)	---	1.664E-4	3.153E-3	8.111E-3	9.614E-2
N° 14 (OFF)	---	1.427E-4	2.469E-3	6.697E-3	7.667E-2
N° 15 (OFF)	---	1.658E-4	2.174E-3	6.331E-3	7.374E-2
N° 16 (OFF)	---	3.735E-4	3.907E-3	9.678E-3	1.148E-1
Average (Bias1)	---	2.406E-4	2.784E-3	7.057E-3	6.911E-2
σ (Bias1)	---	2.874E-4	8.399E-4	1.720E-3	1.475E-2
Average+3σ (Bias1)	---	1.103E-3	5.304E-3	1.222E-2	1.134E-1
Average-3σ (Bias1)	---	-6.218E-4	2.640E-4	1.898E-3	2.485E-2
Average (Bias2)	---	1.328E-4	3.273E-3	8.240E-3	9.580E-2
σ (Bias2)	---	1.384E-4	5.276E-4	1.067E-3	1.446E-2
Average+3σ (Bias2)	---	5.479E-4	4.856E-3	1.144E-2	1.392E-1
Average-3σ (Bias2)	---	-2.824E-4	1.690E-3	5.039E-3	5.241E-2
Average (OFF)	---	1.235E-4	2.634E-3	7.144E-3	8.302E-2
σ (OFF)	---	2.192E-4	9.331E-4	1.819E-3	2.330E-2
Average+3σ (OFF)	---	7.810E-4	5.434E-3	1.260E-2	1.529E-1
Average-3σ (OFF)	---	-5.340E-4	-1.649E-4	1.687E-3	1.313E-2

190 MeV proton / detailed results

3. IOH

Ta=25°C; If=0; Vo=Vcc=18V



190 MeV proton / detailed results

IOH . (µA) **Max = 250.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	0.0011	0.0014	0.0013	0.0014	0.0022
N° 2 (Bias1)	0.0011	0.0013	0.0014	0.0014	0.0028
N° 3 (Bias1)	0.0011	0.0013	0.0013	0.0014	0.0024
N° 4 (Bias1)	0.0011	0.0013	0.0014	0.0014	0.0023
N° 5 (Bias1)	0.0011	0.0014	0.0014	0.0014	0.0022
N° 6 (Bias1)	0.0011	0.0013	0.0014	0.0014	0.0022
N° 7 (Bias2)	0.0011	0.0018	0.0022	0.0020	0.0021
N° 8 (Bias2)	0.0012	0.0018	0.0022	0.0021	0.0021
N° 9 (Bias2)	0.0011	0.0018	0.0022	0.0021	0.0021
N° 10 (Bias2)	0.0011	0.0018	0.0022	0.0022	0.0020
N° 11 (Bias2)	0.0011	0.0018	0.0023	0.0021	0.0020
N° 12 (OFF)	0.0011	0.0021	0.0023	0.0022	0.0022
N° 13 (OFF)	0.0011	0.0023	0.0023	0.0022	0.0025
N° 14 (OFF)	0.0011	0.0023	0.0023	0.0023	0.0024
N° 15 (OFF)	0.0011	0.0023	0.0023	0.0022	0.0023
N° 16 (OFF)	0.0011	0.0024	0.0023	0.0022	0.0023

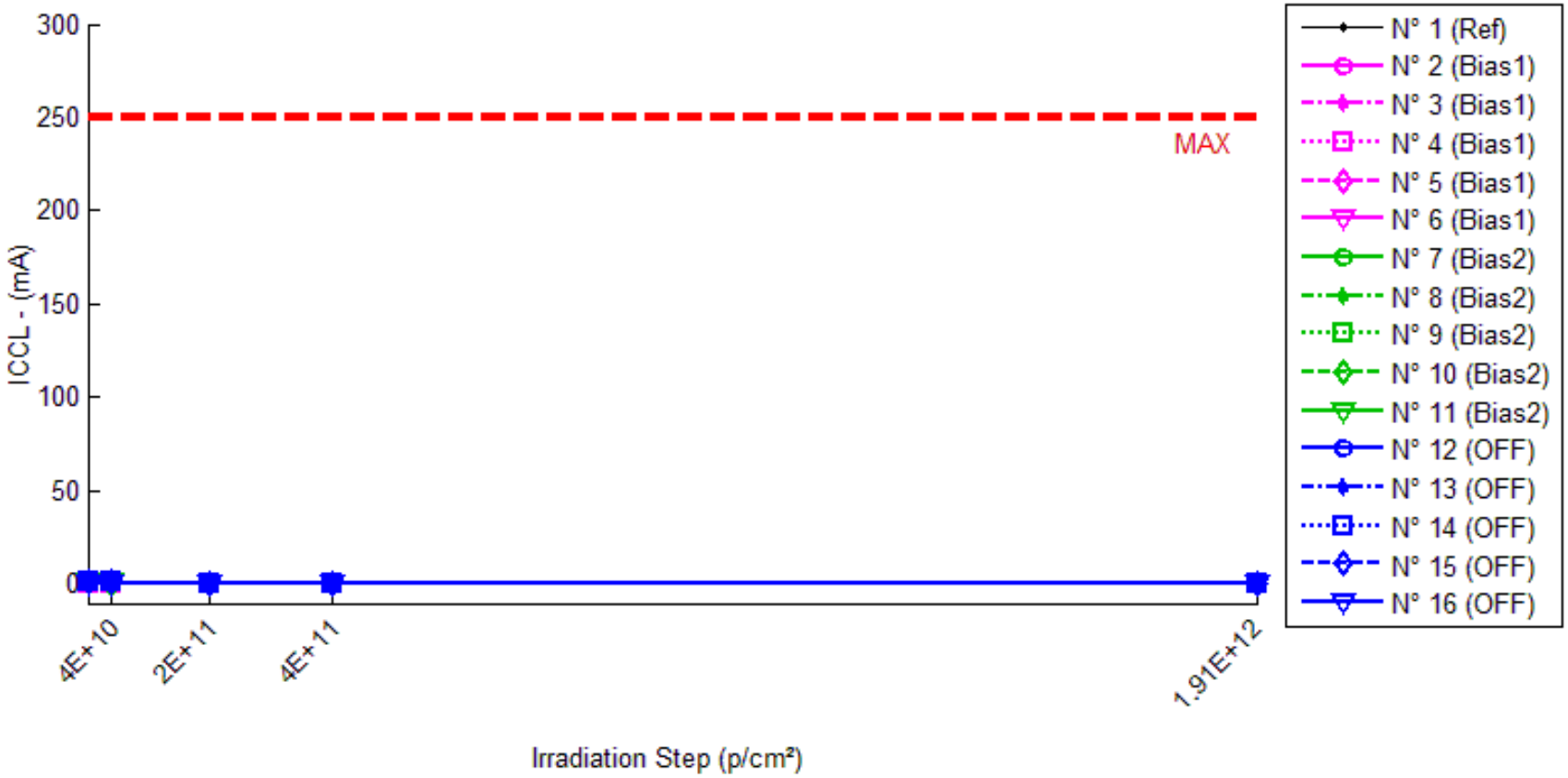
Delta [IOH]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	2.182E-4	1.774E-4	2.277E-4	1.080E-3
N° 2 (Bias1)	---	1.800E-4	2.127E-4	2.244E-4	1.648E-3
N° 3 (Bias1)	---	2.089E-4	2.218E-4	3.060E-4	1.251E-3
N° 4 (Bias1)	---	2.089E-4	2.285E-4	3.016E-4	1.152E-3
N° 5 (Bias1)	---	2.354E-4	2.674E-4	3.151E-4	1.100E-3
N° 6 (Bias1)	---	2.129E-4	2.659E-4	3.044E-4	1.025E-3
N° 7 (Bias2)	---	6.855E-4	1.094E-3	9.182E-4	9.881E-4
N° 8 (Bias2)	---	6.875E-4	1.063E-3	9.202E-4	9.522E-4
N° 9 (Bias2)	---	6.744E-4	1.066E-3	9.550E-4	9.417E-4
N° 10 (Bias2)	---	7.114E-4	1.097E-3	1.091E-3	9.014E-4
N° 11 (Bias2)	---	6.788E-4	1.132E-3	9.604E-4	8.892E-4
N° 12 (OFF)	---	1.019E-3	1.141E-3	1.055E-3	1.032E-3
N° 13 (OFF)	---	1.139E-3	1.162E-3	1.095E-3	1.378E-3
N° 14 (OFF)	---	1.161E-3	1.152E-3	1.127E-3	1.283E-3
N° 15 (OFF)	---	1.202E-3	1.175E-3	1.106E-3	1.216E-3
N° 16 (OFF)	---	1.285E-3	1.148E-3	1.090E-3	1.215E-3
Average (Bias1)	---	2.092E-4	2.393E-4	2.903E-4	1.235E-3
σ (Bias1)	---	1.971E-5	2.561E-5	3.720E-5	2.449E-4
Average+3σ (Bias1)	---	2.683E-4	3.161E-4	4.019E-4	1.970E-3
Average-3σ (Bias1)	---	1.501E-4	1.624E-4	1.787E-4	5.003E-4
Average (Bias2)	---	6.875E-4	1.091E-3	9.690E-4	9.345E-4
σ (Bias2)	---	1.433E-5	2.804E-5	7.093E-5	3.994E-5
Average+3σ (Bias2)	---	7.305E-4	1.175E-3	1.182E-3	1.054E-3
Average-3σ (Bias2)	---	6.445E-4	1.007E-3	7.562E-4	8.147E-4
Average (OFF)	---	1.161E-3	1.156E-3	1.094E-3	1.225E-3
σ (OFF)	---	9.713E-5	1.321E-5	2.626E-5	1.267E-4
Average+3σ (OFF)	---	1.453E-3	1.195E-3	1.173E-3	1.605E-3
Average-3σ (OFF)	---	8.699E-4	1.116E-3	1.016E-3	8.445E-4

190 MeV proton / detailed results

4. ICCL

Ta=25°C; If=1.6mA; Vcc=18V



190 MeV proton / detailed results

ICCL . (mA) **Max = 2.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	1.046	1.046	1.045	1.033	1.042
N° 2 (Bias1)	1.002	0.891	0.624	0.426	0.061
N° 3 (Bias1)	1.512	1.349	0.959	0.676	0.107
N° 4 (Bias1)	0.846	0.746	0.507	0.335	0.049
N° 5 (Bias1)	1.043	0.935	0.652	0.441	0.068
N° 6 (Bias1)	0.872	0.770	0.528	0.359	0.049
N° 7 (Bias2)	0.993	0.849	0.562	0.359	0.040
N° 8 (Bias2)	1.048	0.890	0.568	0.363	0.040
N° 9 (Bias2)	1.249	1.064	0.717	0.471	0.058
N° 10 (Bias2)	1.107	0.931	0.616	0.394	0.044
N° 11 (Bias2)	1.177	1.004	0.670	0.434	0.051
N° 12 (OFF)	1.628	1.432	0.966	0.645	0.090
N° 13 (OFF)	1.200	1.036	0.674	0.430	0.047
N° 14 (OFF)	1.327	1.145	0.766	0.502	0.060
N° 15 (OFF)	1.303	1.110	0.726	0.472	0.056
N° 16 (OFF)	0.951	0.817	0.535	0.348	0.038

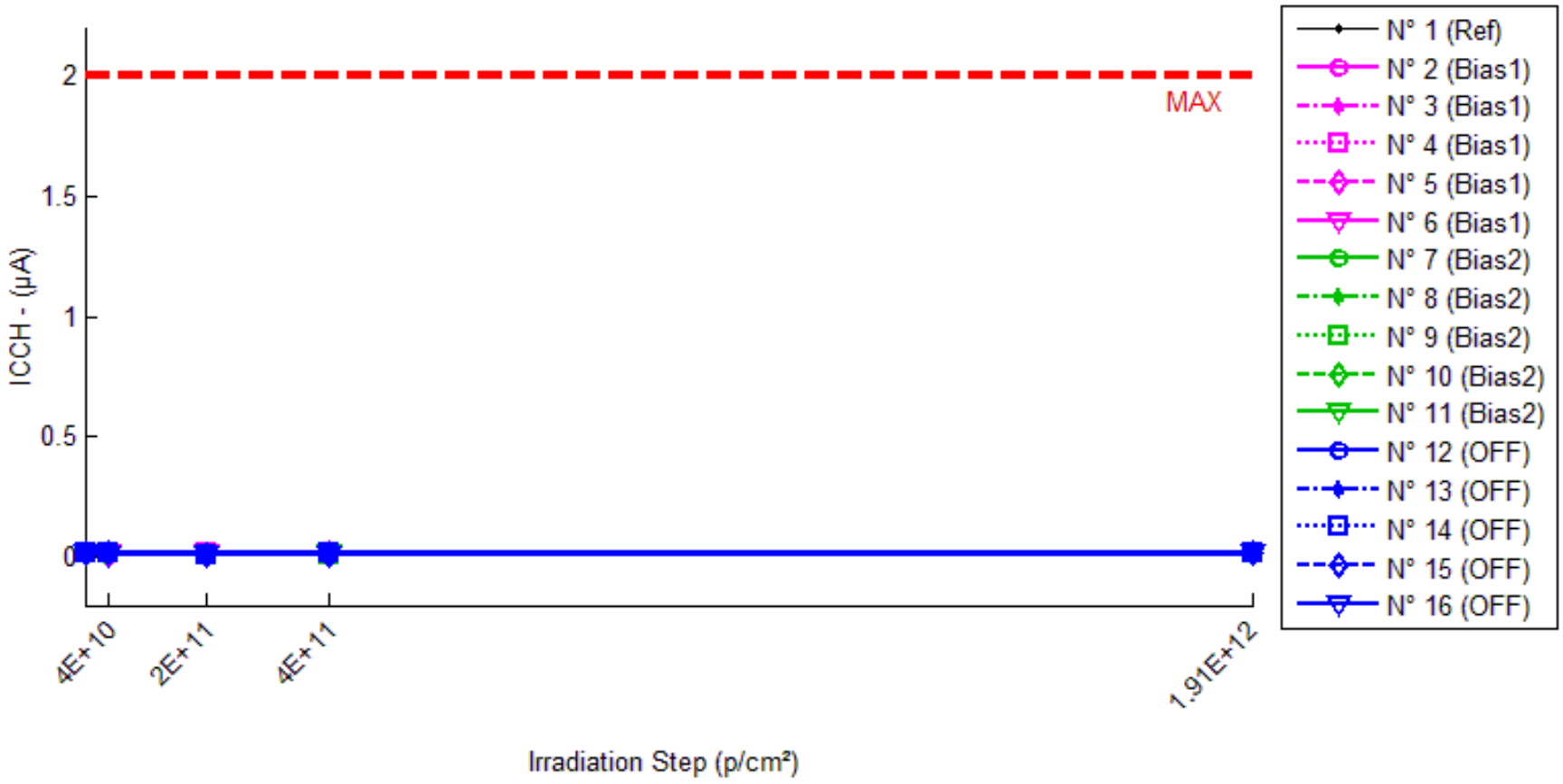
Delta [ICCL]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	-1.030E-4	-1.296E-3	-1.326E-2	-4.153E-3
N° 2 (Bias1)	---	-1.105E-1	-3.783E-1	-5.756E-1	-9.414E-1
N° 3 (Bias1)	---	-1.628E-1	-5.528E-1	-8.361E-1	-1.404E+0
N° 4 (Bias1)	---	-1.003E-1	-3.388E-1	-5.109E-1	-7.975E-1
N° 5 (Bias1)	---	-1.074E-1	-3.910E-1	-6.012E-1	-9.748E-1
N° 6 (Bias1)	---	-1.019E-1	-3.437E-1	-5.129E-1	-8.222E-1
N° 7 (Bias2)	---	-1.444E-1	-4.312E-1	-6.340E-1	-9.526E-1
N° 8 (Bias2)	---	-1.584E-1	-4.798E-1	-6.854E-1	-1.008E+0
N° 9 (Bias2)	---	-1.847E-1	-5.314E-1	-7.773E-1	-1.191E+0
N° 10 (Bias2)	---	-1.764E-1	-4.911E-1	-7.135E-1	-1.063E+0
N° 11 (Bias2)	---	-1.737E-1	-5.069E-1	-7.433E-1	-1.126E+0
N° 12 (OFF)	---	-1.962E-1	-6.621E-1	-9.834E-1	-1.538E+0
N° 13 (OFF)	---	-1.637E-1	-5.259E-1	-7.697E-1	-1.153E+0
N° 14 (OFF)	---	-1.818E-1	-5.613E-1	-8.251E-1	-1.267E+0
N° 15 (OFF)	---	-1.925E-1	-5.773E-1	-8.314E-1	-1.247E+0
N° 16 (OFF)	---	-1.346E-1	-4.163E-1	-6.033E-1	-9.133E-1
Average (Bias1)	---	-1.166E-1	-4.009E-1	-6.074E-1	-9.880E-1
σ (Bias1)	---	2.618E-2	8.777E-2	1.338E-1	2.446E-1
Average+3σ (Bias1)	---	-3.808E-2	-1.376E-1	-2.061E-1	-2.543E-1
Average-3σ (Bias1)	---	-1.951E-1	-6.642E-1	-1.009E+0	-1.722E+0
Average (Bias2)	---	-1.675E-1	-4.881E-1	-7.107E-1	-1.068E+0
σ (Bias2)	---	1.605E-2	3.721E-2	5.484E-2	9.417E-2
Average+3σ (Bias2)	---	-1.194E-1	-3.765E-1	-5.462E-1	-7.856E-1
Average-3σ (Bias2)	---	-2.156E-1	-5.997E-1	-8.752E-1	-1.351E+0
Average (OFF)	---	-1.737E-1	-5.486E-1	-8.026E-1	-1.224E+0
σ (OFF)	---	2.527E-2	8.930E-2	1.368E-1	2.250E-1
Average+3σ (OFF)	---	-9.793E-2	-2.807E-1	-3.923E-1	-5.486E-1
Average-3σ (OFF)	---	-2.496E-1	-8.165E-1	-1.213E+0	-1.899E+0

190 MeV proton / detailed results

5. ICCH

Ta=25°C; If=0; Vcc=18V



190 MeV proton / detailed results

ICCH . (µA) **Max = 40.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	0.015	0.014	0.012	0.012	0.013
N° 2 (Bias1)	0.014	0.012	0.012	0.012	0.016
N° 3 (Bias1)	0.015	0.013	0.013	0.013	0.015
N° 4 (Bias1)	0.014	0.013	0.013	0.012	0.014
N° 5 (Bias1)	0.014	0.012	0.012	0.013	0.014
N° 6 (Bias1)	0.013	0.013	0.013	0.011	0.015
N° 7 (Bias2)	0.013	0.012	0.012	0.011	0.014
N° 8 (Bias2)	0.014	0.014	0.010	0.012	0.014
N° 9 (Bias2)	0.013	0.014	0.012	0.012	0.015
N° 10 (Bias2)	0.013	0.014	0.011	0.011	0.014
N° 11 (Bias2)	0.015	0.012	0.011	0.013	0.015
N° 12 (OFF)	0.016	0.014	0.013	0.014	0.016
N° 13 (OFF)	0.013	0.012	0.013	0.007	0.015
N° 14 (OFF)	0.013	0.013	0.012	0.013	0.015
N° 15 (OFF)	0.013	0.014	0.012	0.011	0.016
N° 16 (OFF)	0.013	0.011	0.012	0.011	0.015

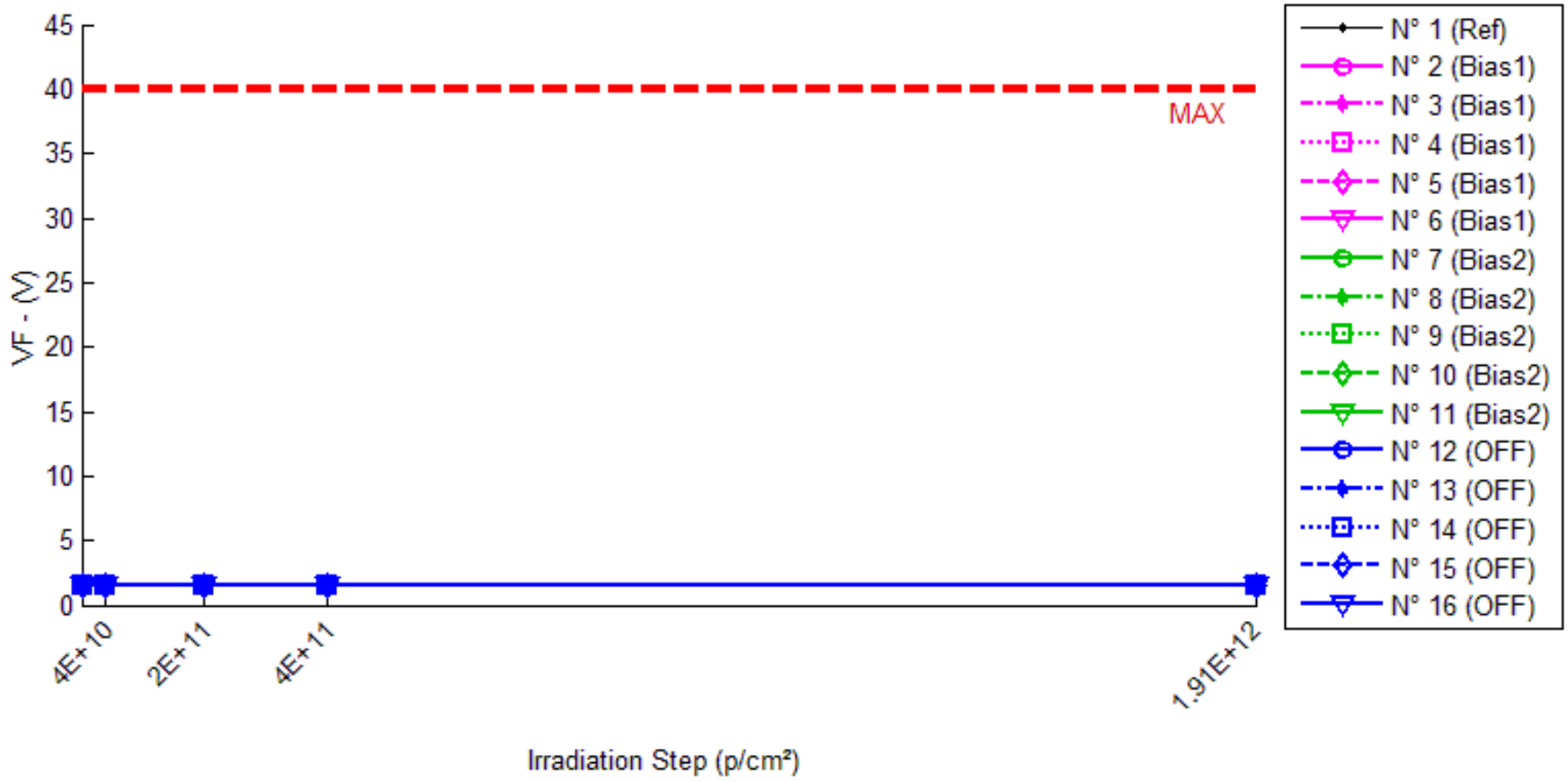
Delta [ICCH]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	-1.210E-3	-3.010E-3	-2.970E-3	-2.420E-3
N° 2 (Bias1)	---	-1.880E-3	-1.580E-3	-1.930E-3	1.690E-3
N° 3 (Bias1)	---	-1.730E-3	-2.360E-3	-2.510E-3	2.200E-4
N° 4 (Bias1)	---	-1.230E-3	-6.600E-4	-2.280E-3	-3.100E-4
N° 5 (Bias1)	---	-2.130E-3	-2.300E-3	-1.230E-3	3.100E-4
N° 6 (Bias1)	---	2.000E-4	-6.400E-4	-2.320E-3	1.540E-3
N° 7 (Bias2)	---	-1.540E-3	-9.000E-4	-2.110E-3	8.400E-4
N° 8 (Bias2)	---	-3.900E-4	-4.070E-3	-2.220E-3	1.200E-4
N° 9 (Bias2)	---	1.800E-4	-1.090E-3	-1.320E-3	1.180E-3
N° 10 (Bias2)	---	3.900E-4	-2.500E-3	-2.710E-3	4.100E-4
N° 11 (Bias2)	---	-2.280E-3	-3.670E-3	-1.450E-3	5.200E-4
N° 12 (OFF)	---	-1.190E-3	-2.240E-3	-1.400E-3	6.800E-4
N° 13 (OFF)	---	-1.240E-3	-4.800E-4	-5.690E-3	2.150E-3
N° 14 (OFF)	---	2.000E-5	-1.190E-3	-8.000E-5	2.070E-3
N° 15 (OFF)	---	5.700E-4	-1.010E-3	-2.240E-3	2.280E-3
N° 16 (OFF)	---	-1.770E-3	-1.070E-3	-1.970E-3	1.250E-3
Average (Bias1)	---	-1.354E-3	-1.508E-3	-2.054E-3	6.900E-4
σ (Bias1)	---	9.288E-4	8.413E-4	5.060E-4	8.786E-4
Average+3σ (Bias1)	---	1.432E-3	1.016E-3	-5.360E-4	3.326E-3
Average-3σ (Bias1)	---	-4.140E-3	-4.032E-3	-3.572E-3	-1.946E-3
Average (Bias2)	---	-7.280E-4	-2.446E-3	-1.962E-3	6.140E-4
σ (Bias2)	---	1.146E-3	1.446E-3	5.750E-4	4.080E-4
Average+3σ (Bias2)	---	2.711E-3	1.893E-3	-2.371E-4	1.838E-3
Average-3σ (Bias2)	---	-4.167E-3	-6.785E-3	-3.687E-3	-6.101E-4
Average (OFF)	---	-7.220E-4	-1.198E-3	-2.276E-3	1.686E-3
σ (OFF)	---	9.754E-4	6.429E-4	2.082E-3	6.924E-4
Average+3σ (OFF)	---	2.204E-3	7.306E-4	3.970E-3	3.763E-3
Average-3σ (OFF)	---	-3.648E-3	-3.127E-3	-8.522E-3	-3.912E-4

190 MeV proton / detailed results

6. VF

Ta=25°C; If=1.6mA



190 MeV proton / detailed results

VF . (V) **Max = 2.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	1.563	1.563	1.560	1.566	1.564
N° 2 (Bias1)	1.577	1.585	1.586	1.585	1.582
N° 3 (Bias1)	1.561	1.571	1.570	1.569	1.565
N° 4 (Bias1)	1.569	1.577	1.577	1.576	1.570
N° 5 (Bias1)	1.570	1.577	1.577	1.577	1.574
N° 6 (Bias1)	1.574	1.580	1.580	1.580	1.576
N° 7 (Bias2)	1.567	1.577	1.574	1.573	1.568
N° 8 (Bias2)	1.572	1.583	1.579	1.579	1.576
N° 9 (Bias2)	1.567	1.578	1.575	1.574	1.571
N° 10 (Bias2)	1.569	1.582	1.579	1.577	1.575
N° 11 (Bias2)	1.567	1.578	1.575	1.574	1.571
N° 12 (OFF)	1.570	1.578	1.577	1.573	1.570
N° 13 (OFF)	1.565	1.573	1.570	1.569	1.565
N° 14 (OFF)	1.570	1.578	1.577	1.576	1.572
N° 15 (OFF)	1.562	1.572	1.571	1.570	1.565
N° 16 (OFF)	1.564	1.572	1.570	1.568	1.564

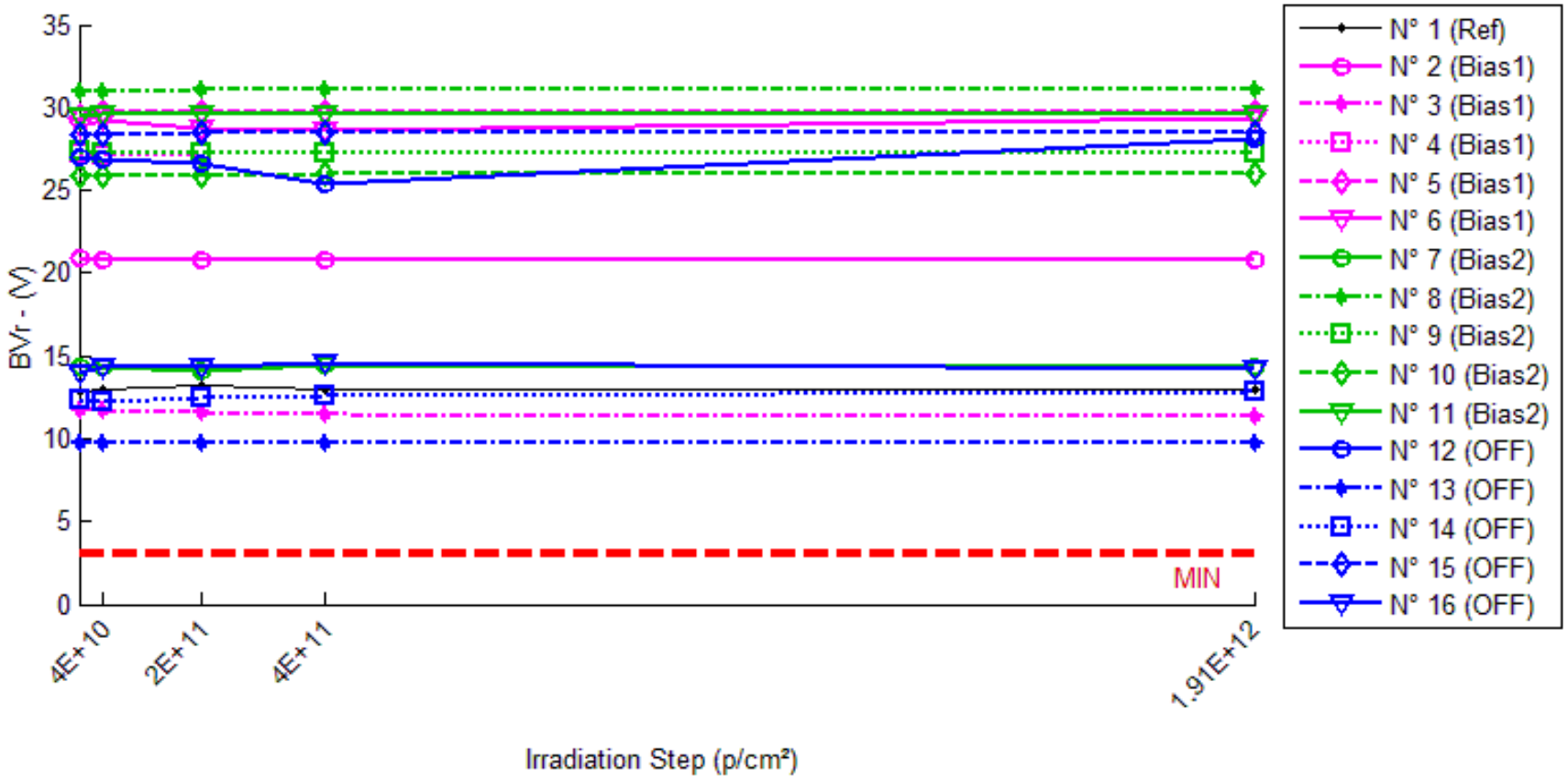
Delta [VF]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	6.900E-5	-2.468E-3	3.867E-3	1.344E-3
N° 2 (Bias1)	---	8.088E-3	8.276E-3	7.876E-3	4.726E-3
N° 3 (Bias1)	---	1.000E-2	8.926E-3	8.607E-3	4.060E-3
N° 4 (Bias1)	---	7.608E-3	7.936E-3	6.990E-3	1.062E-3
N° 5 (Bias1)	---	7.073E-3	6.312E-3	6.792E-3	3.417E-3
N° 6 (Bias1)	---	6.131E-3	6.230E-3	5.832E-3	1.548E-3
N° 7 (Bias2)	---	9.855E-3	6.979E-3	6.061E-3	7.580E-4
N° 8 (Bias2)	---	1.096E-2	7.210E-3	7.150E-3	4.418E-3
N° 9 (Bias2)	---	1.148E-2	8.496E-3	7.442E-3	4.682E-3
N° 10 (Bias2)	---	1.244E-2	9.089E-3	7.951E-3	5.632E-3
N° 11 (Bias2)	---	1.137E-2	8.179E-3	6.764E-3	3.869E-3
N° 12 (OFF)	---	8.773E-3	7.107E-3	3.460E-3	4.950E-4
N° 13 (OFF)	---	7.586E-3	5.003E-3	4.209E-3	-5.310E-4
N° 14 (OFF)	---	8.500E-3	7.233E-3	6.067E-3	2.319E-3
N° 15 (OFF)	---	1.041E-2	8.703E-3	7.522E-3	3.014E-3
N° 16 (OFF)	---	7.467E-3	5.758E-3	3.898E-3	2.290E-4
Average (Bias1)	---	7.780E-3	7.536E-3	7.219E-3	2.963E-3
σ (Bias1)	---	1.438E-3	1.209E-3	1.063E-3	1.592E-3
Average+3σ (Bias1)	---	1.209E-2	1.116E-2	1.041E-2	7.738E-3
Average-3σ (Bias1)	---	3.466E-3	3.910E-3	4.032E-3	-1.812E-3
Average (Bias2)	---	1.122E-2	7.991E-3	7.074E-3	3.872E-3
σ (Bias2)	---	9.363E-4	8.846E-4	7.128E-4	1.854E-3
Average+3σ (Bias2)	---	1.403E-2	1.064E-2	9.212E-3	9.434E-3
Average-3σ (Bias2)	---	8.412E-3	5.337E-3	4.935E-3	-1.690E-3
Average (OFF)	---	8.547E-3	6.761E-3	5.031E-3	1.105E-3
σ (OFF)	---	1.185E-3	1.433E-3	1.711E-3	1.494E-3
Average+3σ (OFF)	---	1.210E-2	1.106E-2	1.016E-2	5.589E-3
Average-3σ (OFF)	---	4.993E-3	2.463E-3	-1.009E-4	-3.378E-3

190 MeV proton / detailed results

7. BVr

Ta=25°C; Ir=10µA



190 MeV proton / detailed results

BVr . (V) **Min = 3.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	12.857	12.960	13.162	12.992	13.024
N° 2 (Bias1)	20.869	20.780	20.778	20.777	20.784
N° 3 (Bias1)	11.679	11.692	11.641	11.507	11.394
N° 4 (Bias1)	27.196	27.135	27.235	27.247	27.282
N° 5 (Bias1)	29.506	29.665	29.672	29.675	29.710
N° 6 (Bias1)	28.912	29.234	28.731	28.658	29.301
N° 7 (Bias2)	14.305	14.282	14.074	14.403	14.297
N° 8 (Bias2)	31.025	30.992	31.107	31.122	31.122
N° 9 (Bias2)	27.311	27.185	27.268	27.277	27.300
N° 10 (Bias2)	25.936	25.901	25.914	25.955	25.964
N° 11 (Bias2)	29.444	29.553	29.602	29.625	29.629
N° 12 (OFF)	26.979	26.886	26.604	25.359	28.102
N° 13 (OFF)	9.800	9.789	9.789	9.788	9.792
N° 14 (OFF)	12.399	12.246	12.482	12.546	12.826
N° 15 (OFF)	28.350	28.299	28.428	28.440	28.461
N° 16 (OFF)	14.002	14.317	14.340	14.533	14.252

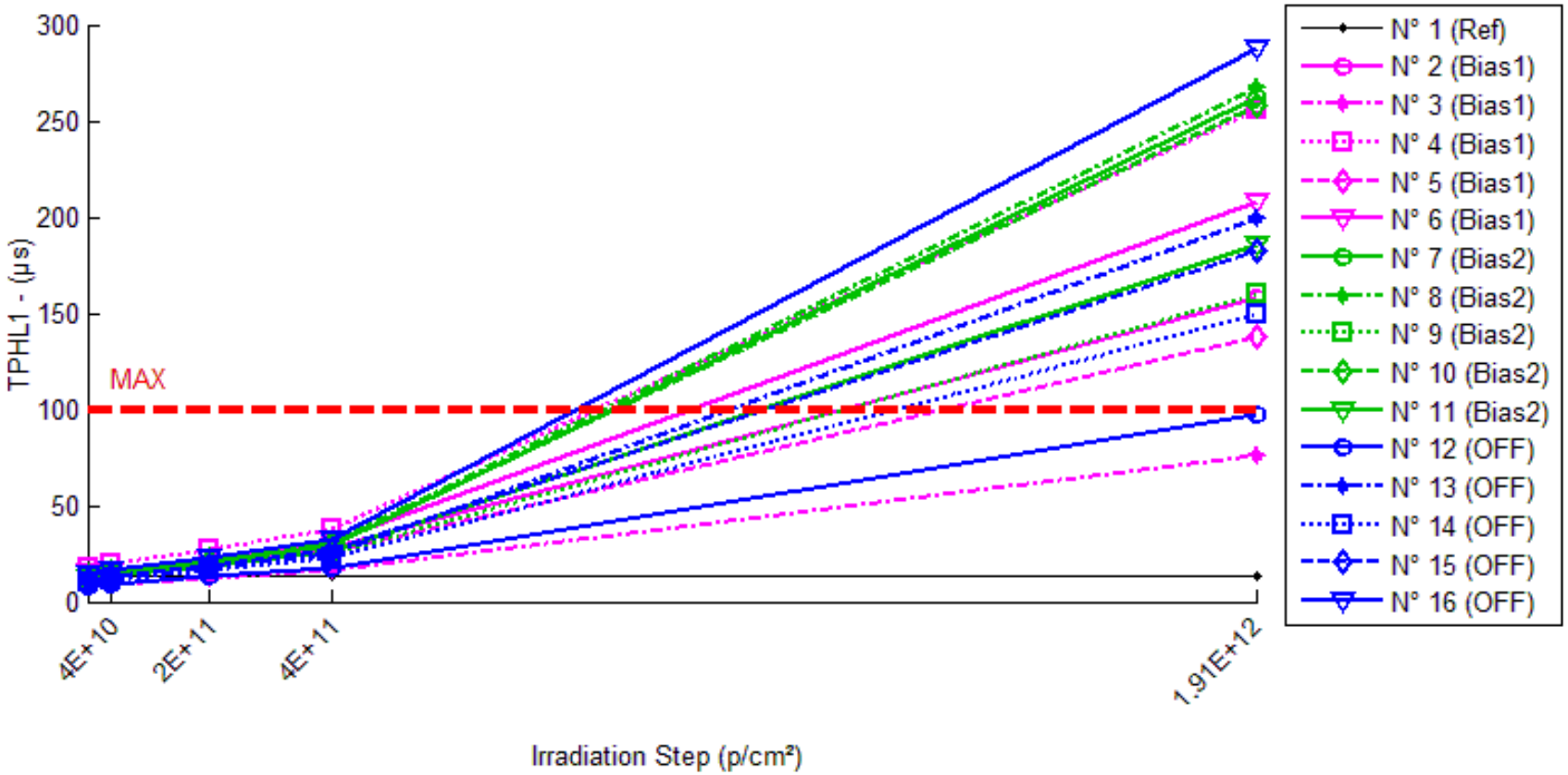
Delta [BVr]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	1.025E-1	3.051E-1	1.349E-1	1.667E-1
N° 2 (Bias1)	---	-8.831E-2	-9.030E-2	-9.114E-2	-8.433E-2
N° 3 (Bias1)	---	1.297E-2	-3.728E-2	-1.715E-1	-2.848E-1
N° 4 (Bias1)	---	-6.101E-2	3.919E-2	5.112E-2	8.562E-2
N° 5 (Bias1)	---	1.587E-1	1.657E-1	1.689E-1	2.041E-1
N° 6 (Bias1)	---	3.216E-1	-1.815E-1	-2.545E-1	3.886E-1
N° 7 (Bias2)	---	-2.244E-2	-2.311E-1	9.809E-2	-7.310E-3
N° 8 (Bias2)	---	-3.355E-2	8.207E-2	9.678E-2	9.664E-2
N° 9 (Bias2)	---	-1.258E-1	-4.292E-2	-3.339E-2	-1.057E-2
N° 10 (Bias2)	---	-3.557E-2	-2.174E-2	1.903E-2	2.817E-2
N° 11 (Bias2)	---	1.084E-1	1.583E-1	1.804E-1	1.852E-1
N° 12 (OFF)	---	5.907E+0	5.625E+0	4.380E+0	7.123E+0
N° 13 (OFF)	---	-1.021E-2	-1.071E-2	-1.162E-2	-8.114E-3
N° 14 (OFF)	---	-1.526E-1	8.319E-2	1.473E-1	4.264E-1
N° 15 (OFF)	---	-5.091E-2	7.844E-2	9.007E-2	1.118E-1
N° 16 (OFF)	---	3.149E-1	3.381E-1	5.314E-1	2.505E-1
Average (Bias1)	---	6.879E-2	-2.083E-2	-5.943E-2	6.184E-2
σ (Bias1)	---	1.708E-1	1.316E-1	1.703E-1	2.594E-1
Average+3σ (Bias1)	---	5.810E-1	3.740E-1	4.514E-1	8.400E-1
Average-3σ (Bias1)	---	-4.435E-1	-4.157E-1	-5.702E-1	-7.163E-1
Average (Bias2)	---	-2.178E-2	-1.107E-2	7.218E-2	5.844E-2
σ (Bias2)	---	8.380E-2	1.474E-1	8.209E-2	8.298E-2
Average+3σ (Bias2)	---	2.296E-1	4.311E-1	3.185E-1	3.074E-1
Average-3σ (Bias2)	---	-2.732E-1	-4.533E-1	-1.741E-1	-1.905E-1
Average (OFF)	---	1.202E+0	1.223E+0	1.027E+0	1.581E+0
σ (OFF)	---	2.636E+0	2.464E+0	1.885E+0	3.103E+0
Average+3σ (OFF)	---	9.110E+0	8.616E+0	6.683E+0	1.089E+1
Average-3σ (OFF)	---	-6.707E+0	-6.170E+0	-4.629E+0	-7.727E+0

190 MeV proton / detailed results

8. TPHL1

Ta=25°C; If=0.5mA; RL=4.7 kOhms; Vcc=5V



190 MeV proton / detailed results

TPHL1 . (µs) **Max = 100.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	13.00	13.10	13.40	13.20	13.00
N° 2 (Bias1)	13.60	14.60	20.40	27.90	158.00
N° 3 (Bias1)	8.60	9.20	12.70	16.80	76.00
N° 4 (Bias1)	17.90	19.40	27.35	38.10	256.00
N° 5 (Bias1)	12.80	13.85	19.20	26.40	138.00
N° 6 (Bias1)	15.00	16.45	23.10	31.60	207.50
N° 7 (Bias2)	13.30	14.90	21.00	29.75	262.00
N° 8 (Bias2)	12.70	14.40	21.10	29.80	268.00
N° 9 (Bias2)	11.50	12.90	17.80	24.70	160.00
N° 10 (Bias2)	13.40	15.20	21.30	30.40	258.00
N° 11 (Bias2)	11.80	13.30	18.50	26.00	186.00
N° 12 (OFF)	8.20	9.10	12.80	17.65	97.60
N° 13 (OFF)	11.00	12.40	17.80	25.10	200.00
N° 14 (OFF)	10.30	11.60	16.30	22.90	149.00
N° 15 (OFF)	11.65	13.20	18.85	26.70	182.00
N° 16 (OFF)	14.30	16.30	22.80	32.00	288.00

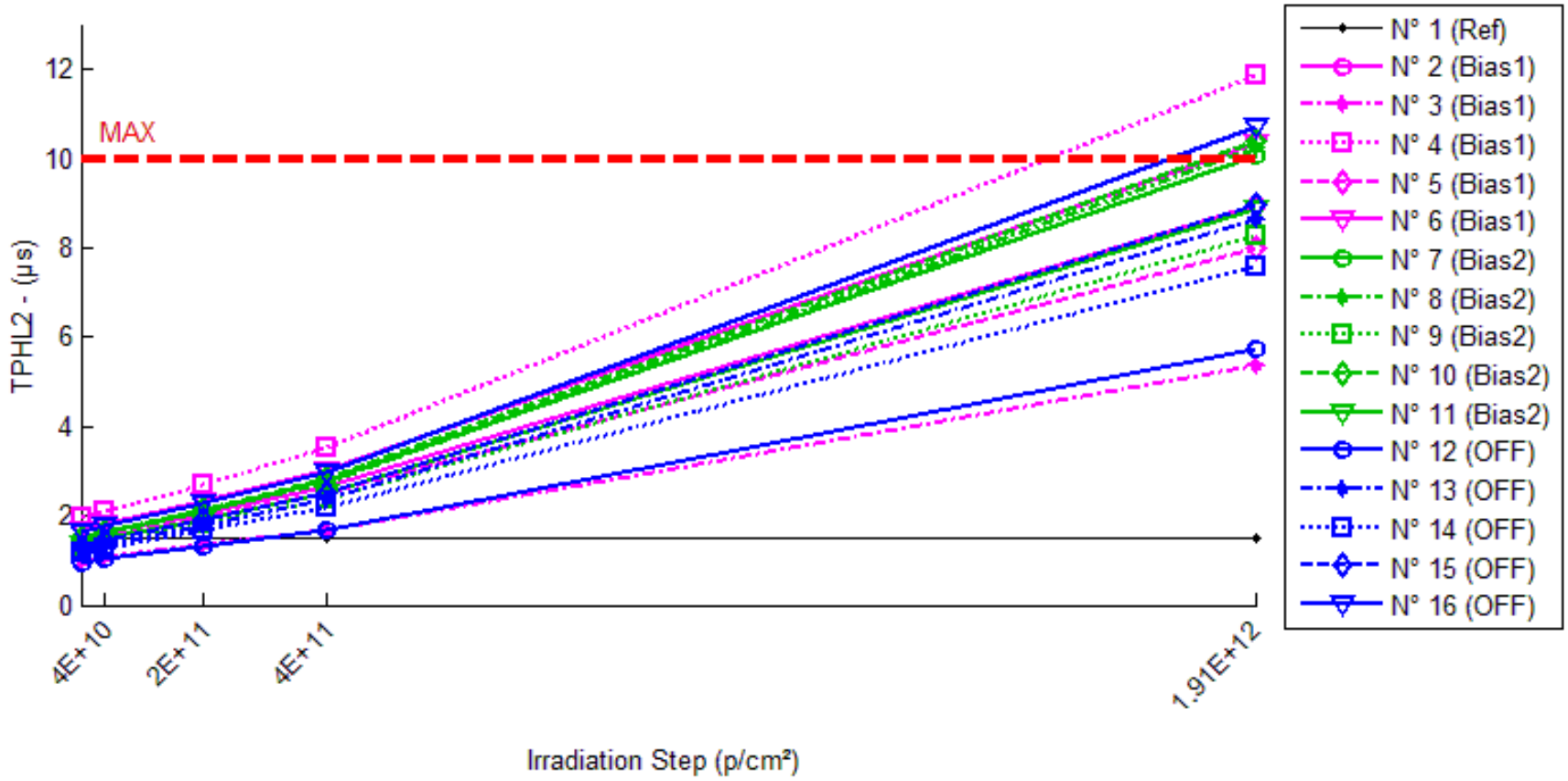
Delta [TPHL1]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	1.000E-1	4.000E-1	2.000E-1	0.000E+0
N° 2 (Bias1)	---	1.000E+0	6.800E+0	1.430E+1	1.444E+2
N° 3 (Bias1)	---	6.000E-1	4.100E+0	8.200E+0	6.740E+1
N° 4 (Bias1)	---	1.500E+0	9.450E+0	2.020E+1	2.381E+2
N° 5 (Bias1)	---	1.050E+0	6.400E+0	1.360E+1	1.252E+2
N° 6 (Bias1)	---	1.450E+0	8.100E+0	1.660E+1	1.925E+2
N° 7 (Bias2)	---	1.600E+0	7.700E+0	1.645E+1	2.487E+2
N° 8 (Bias2)	---	1.700E+0	8.400E+0	1.710E+1	2.553E+2
N° 9 (Bias2)	---	1.400E+0	6.300E+0	1.320E+1	1.485E+2
N° 10 (Bias2)	---	1.800E+0	7.900E+0	1.700E+1	2.446E+2
N° 11 (Bias2)	---	1.500E+0	6.700E+0	1.420E+1	1.742E+2
N° 12 (OFF)	---	9.000E-1	4.600E+0	9.450E+0	8.940E+1
N° 13 (OFF)	---	1.400E+0	6.800E+0	1.410E+1	1.890E+2
N° 14 (OFF)	---	1.300E+0	6.000E+0	1.260E+1	1.387E+2
N° 15 (OFF)	---	1.550E+0	7.200E+0	1.505E+1	1.703E+2
N° 16 (OFF)	---	2.000E+0	8.500E+0	1.770E+1	2.737E+2
Average (Bias1)	---	1.120E+0	6.970E+0	1.458E+1	1.535E+2
σ (Bias1)	---	3.684E-1	2.001E+0	4.399E+0	6.514E+1
Average+3σ (Bias1)	---	2.225E+0	1.297E+1	2.778E+1	3.490E+2
Average-3σ (Bias1)	---	1.467E-2	9.666E-1	1.383E+0	-4.191E+1
Average (Bias2)	---	1.600E+0	7.400E+0	1.559E+1	2.143E+2
σ (Bias2)	---	1.581E-1	8.718E-1	1.778E+0	4.930E+1
Average+3σ (Bias2)	---	2.074E+0	1.002E+1	2.093E+1	3.621E+2
Average-3σ (Bias2)	---	1.126E+0	4.785E+0	1.025E+1	6.637E+1
Average (OFF)	---	1.430E+0	6.620E+0	1.378E+1	1.722E+2
σ (OFF)	---	3.994E-1	1.446E+0	3.051E+0	6.813E+1
Average+3σ (OFF)	---	2.628E+0	1.096E+1	2.293E+1	3.766E+2
Average-3σ (OFF)	---	2.319E-1	2.281E+0	4.628E+0	-3.216E+1

190 MeV proton / detailed results

9. TPHL2

Ta=25°C; If=5mA; RL=680 Ohms; Vcc=5V



190 MeV proton / detailed results

TPHL2 . (µs) **Max = 10.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	1.48	1.49	1.49	1.49	1.49
N° 2 (Bias1)	1.51	1.62	2.06	2.63	8.96
N° 3 (Bias1)	1.00	1.07	1.34	1.66	5.36
N° 4 (Bias1)	1.94	2.10	2.69	3.52	11.88
N° 5 (Bias1)	1.44	1.54	1.94	2.50	8.00
N° 6 (Bias1)	1.69	1.83	2.34	3.00	10.36
N° 7 (Bias2)	1.50	1.64	2.12	2.79	10.08
N° 8 (Bias2)	1.44	1.58	2.10	2.76	10.28
N° 9 (Bias2)	1.31	1.44	1.83	2.36	8.28
N° 10 (Bias2)	1.49	1.65	2.13	2.82	10.40
N° 11 (Bias2)	1.35	1.49	1.90	2.49	8.88
N° 12 (OFF)	0.95	1.02	1.31	1.69	5.75
N° 13 (OFF)	1.25	1.36	1.77	2.36	8.66
N° 14 (OFF)	1.19	1.29	1.66	2.18	7.60
N° 15 (OFF)	1.32	1.45	1.91	2.51	8.96
N° 16 (OFF)	1.62	1.77	2.28	2.98	10.74

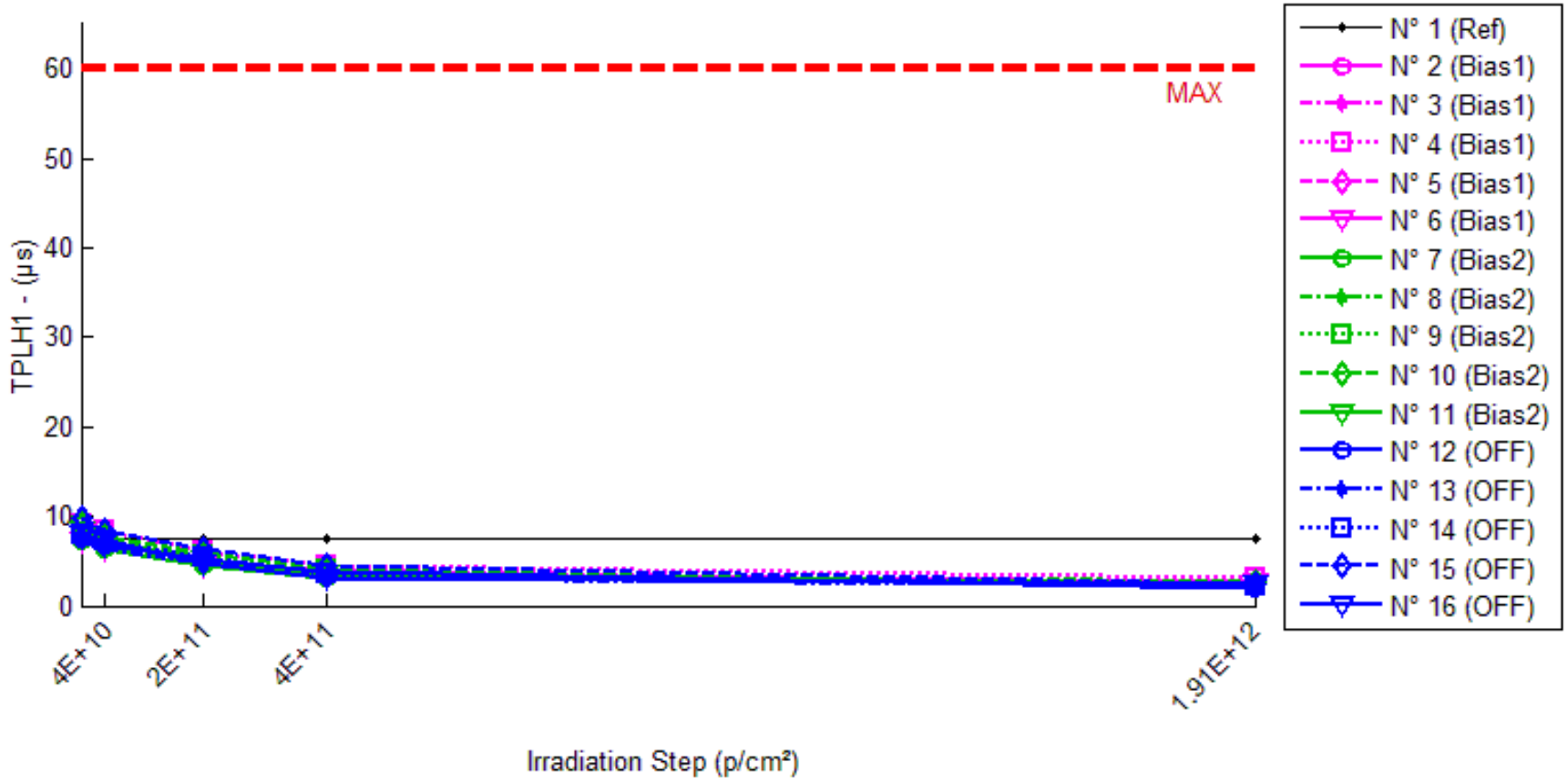
Delta [TPHL2]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	1.000E-2	1.000E-2	1.000E-2	1.000E-2
N° 2 (Bias1)	---	1.100E-1	5.500E-1	1.120E+0	7.450E+0
N° 3 (Bias1)	---	7.000E-2	3.400E-1	6.600E-1	4.360E+0
N° 4 (Bias1)	---	1.600E-1	7.500E-1	1.580E+0	9.940E+0
N° 5 (Bias1)	---	1.000E-1	5.000E-1	1.060E+0	6.560E+0
N° 6 (Bias1)	---	1.400E-1	6.500E-1	1.310E+0	8.670E+0
N° 7 (Bias2)	---	1.400E-1	6.200E-1	1.290E+0	8.580E+0
N° 8 (Bias2)	---	1.400E-1	6.600E-1	1.320E+0	8.840E+0
N° 9 (Bias2)	---	1.300E-1	5.200E-1	1.050E+0	6.970E+0
N° 10 (Bias2)	---	1.600E-1	6.400E-1	1.330E+0	8.910E+0
N° 11 (Bias2)	---	1.400E-1	5.500E-1	1.140E+0	7.530E+0
N° 12 (OFF)	---	7.000E-2	3.600E-1	7.400E-1	4.800E+0
N° 13 (OFF)	---	1.100E-1	5.200E-1	1.110E+0	7.410E+0
N° 14 (OFF)	---	1.000E-1	4.700E-1	9.900E-1	6.410E+0
N° 15 (OFF)	---	1.300E-1	5.900E-1	1.190E+0	7.640E+0
N° 16 (OFF)	---	1.500E-1	6.600E-1	1.360E+0	9.120E+0
Average (Bias1)	---	1.160E-1	5.580E-1	1.146E+0	7.396E+0
σ (Bias1)	---	3.507E-2	1.551E-1	3.389E-1	2.122E+0
Average+3σ (Bias1)	---	2.212E-1	1.023E+0	2.163E+0	1.376E+1
Average-3σ (Bias1)	---	1.079E-2	9.256E-2	1.292E-1	1.030E+0
Average (Bias2)	---	1.420E-1	5.980E-1	1.226E+0	8.166E+0
σ (Bias2)	---	1.095E-2	6.017E-2	1.246E-1	8.681E-1
Average+3σ (Bias2)	---	1.749E-1	7.785E-1	1.600E+0	1.077E+1
Average-3σ (Bias2)	---	1.091E-1	4.175E-1	8.521E-1	5.562E+0
Average (OFF)	---	1.120E-1	5.200E-1	1.078E+0	7.076E+0
σ (OFF)	---	3.033E-2	1.147E-1	2.319E-1	1.599E+0
Average+3σ (OFF)	---	2.030E-1	8.640E-1	1.774E+0	1.187E+1
Average-3σ (OFF)	---	2.101E-2	1.760E-1	3.823E-1	2.278E+0

190 MeV proton / detailed results

10.TPLH1

Ta=25°C; If=0.5mA; RL=4.7 kOhms; Vcc=5V



190 MeV proton / detailed results

TPLH1 . (µs) **Max = 60.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	7.6	7.6	7.6	7.6	7.6
N° 2 (Bias1)	7.6	6.8	5.2	3.6	2.6
N° 3 (Bias1)	7.2	6.4	4.8	4.0	2.1
N° 4 (Bias1)	9.2	8.4	6.0	4.4	3.2
N° 5 (Bias1)	7.6	6.8	5.2	3.6	2.5
N° 6 (Bias1)	7.2	6.4	4.6	3.6	2.7
N° 7 (Bias2)	7.2	6.4	4.4	3.2	2.4
N° 8 (Bias2)	7.6	6.4	4.8	3.2	2.4
N° 9 (Bias2)	8.8	7.6	5.6	4.0	2.3
N° 10 (Bias2)	9.2	7.8	5.8	4.0	2.6
N° 11 (Bias2)	8.4	7.2	5.2	3.6	2.4
N° 12 (OFF)	7.6	6.8	5.2	3.8	2.0
N° 13 (OFF)	7.2	6.4	4.8	3.2	2.2
N° 14 (OFF)	8.0	7.2	5.4	3.6	2.1
N° 15 (OFF)	9.8	8.4	6.4	4.4	2.5
N° 16 (OFF)	8.0	7.2	4.8	3.2	2.5

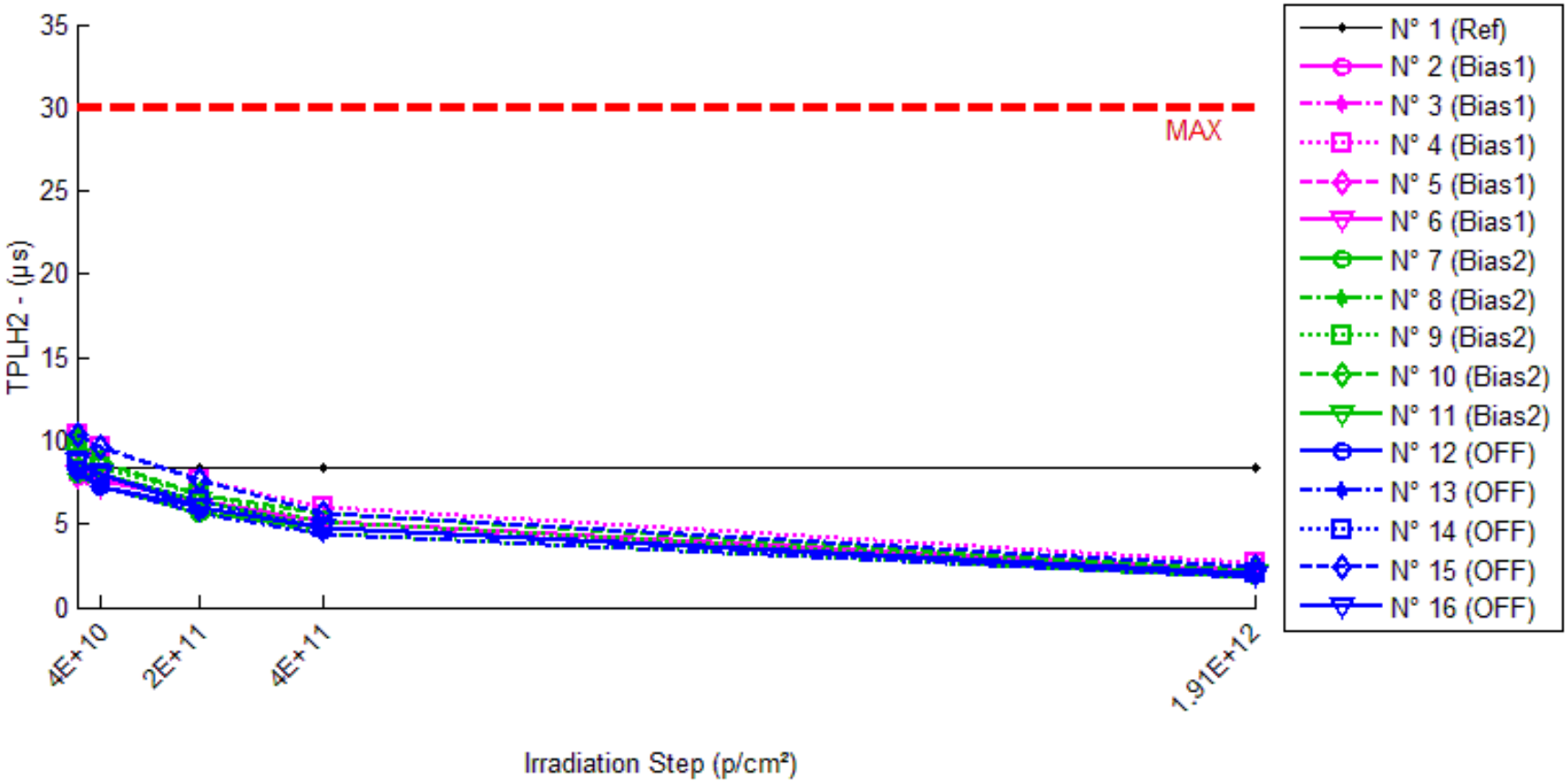
Delta [TPLH1]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	0.000E+0	0.000E+0	0.000E+0	0.000E+0
N° 2 (Bias1)	---	-8.000E-1	-2.400E+0	-4.000E+0	-5.000E+0
N° 3 (Bias1)	---	-8.000E-1	-2.400E+0	-3.200E+0	-5.100E+0
N° 4 (Bias1)	---	-8.000E-1	-3.200E+0	-4.800E+0	-6.000E+0
N° 5 (Bias1)	---	-8.000E-1	-2.400E+0	-4.000E+0	-5.100E+0
N° 6 (Bias1)	---	-8.000E-1	-2.600E+0	-3.600E+0	-4.500E+0
N° 7 (Bias2)	---	-8.000E-1	-2.800E+0	-4.000E+0	-4.800E+0
N° 8 (Bias2)	---	-1.200E+0	-2.800E+0	-4.400E+0	-5.200E+0
N° 9 (Bias2)	---	-1.200E+0	-3.200E+0	-4.800E+0	-6.500E+0
N° 10 (Bias2)	---	-1.400E+0	-3.400E+0	-5.200E+0	-6.550E+0
N° 11 (Bias2)	---	-1.200E+0	-3.200E+0	-4.800E+0	-6.000E+0
N° 12 (OFF)	---	-8.000E-1	-2.400E+0	-3.800E+0	-5.600E+0
N° 13 (OFF)	---	-8.000E-1	-2.400E+0	-4.000E+0	-5.000E+0
N° 14 (OFF)	---	-8.000E-1	-2.600E+0	-4.400E+0	-5.900E+0
N° 15 (OFF)	---	-1.400E+0	-3.400E+0	-5.400E+0	-7.300E+0
N° 16 (OFF)	---	-8.000E-1	-3.200E+0	-4.800E+0	-5.500E+0
Average (Bias1)	---	-8.000E-1	-2.600E+0	-3.920E+0	-5.140E+0
σ (Bias1)	---	4.003E-16	3.464E-1	5.933E-1	5.413E-1
Average+3σ (Bias1)	---	-8.000E-1	-1.561E+0	-2.140E+0	-3.516E+0
Average-3σ (Bias1)	---	-8.000E-1	-3.639E+0	-5.700E+0	-6.764E+0
Average (Bias2)	---	-1.160E+0	-3.080E+0	-4.640E+0	-5.810E+0
σ (Bias2)	---	2.191E-1	2.683E-1	4.561E-1	7.829E-1
Average+3σ (Bias2)	---	-5.027E-1	-2.275E+0	-3.272E+0	-3.461E+0
Average-3σ (Bias2)	---	-1.817E+0	-3.885E+0	-6.008E+0	-8.159E+0
Average (OFF)	---	-9.200E-1	-2.800E+0	-4.480E+0	-5.860E+0
σ (OFF)	---	2.683E-1	4.690E-1	6.419E-1	8.678E-1
Average+3σ (OFF)	---	-1.150E-1	-1.393E+0	-2.554E+0	-3.257E+0
Average-3σ (OFF)	---	-1.725E+0	-4.207E+0	-6.406E+0	-8.463E+0

190 MeV proton / detailed results

11.TPLH2

Ta=25°C; If=5mA; RL=680 Ohms; Vcc=5V



190 MeV proton / detailed results

TPLH2 . (µs) **Max = 30.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	8.4	8.4	8.4	8.4	8.4
N° 2 (Bias1)	8.4	7.6	6.4	5.2	2.2
N° 3 (Bias1)	7.6	7.2	5.6	4.8	2.2
N° 4 (Bias1)	10.4	9.6	7.6	6.0	2.7
N° 5 (Bias1)	8.4	7.6	6.4	5.2	2.2
N° 6 (Bias1)	8.0	7.2	6.0	4.8	2.0
N° 7 (Bias2)	8.0	7.2	5.6	4.8	1.9
N° 8 (Bias2)	8.4	7.2	6.0	4.4	1.8
N° 9 (Bias2)	9.6	8.4	6.8	5.2	2.1
N° 10 (Bias2)	10.0	8.8	6.8	5.6	2.2
N° 11 (Bias2)	9.0	8.0	6.4	4.8	2.1
N° 12 (OFF)	8.2	7.2	6.0	4.8	2.0
N° 13 (OFF)	8.0	7.2	5.6	4.4	1.8
N° 14 (OFF)	8.8	8.0	6.4	4.8	2.0
N° 15 (OFF)	10.4	9.6	7.6	5.6	2.4
N° 16 (OFF)	8.8	8.0	6.0	4.8	1.9

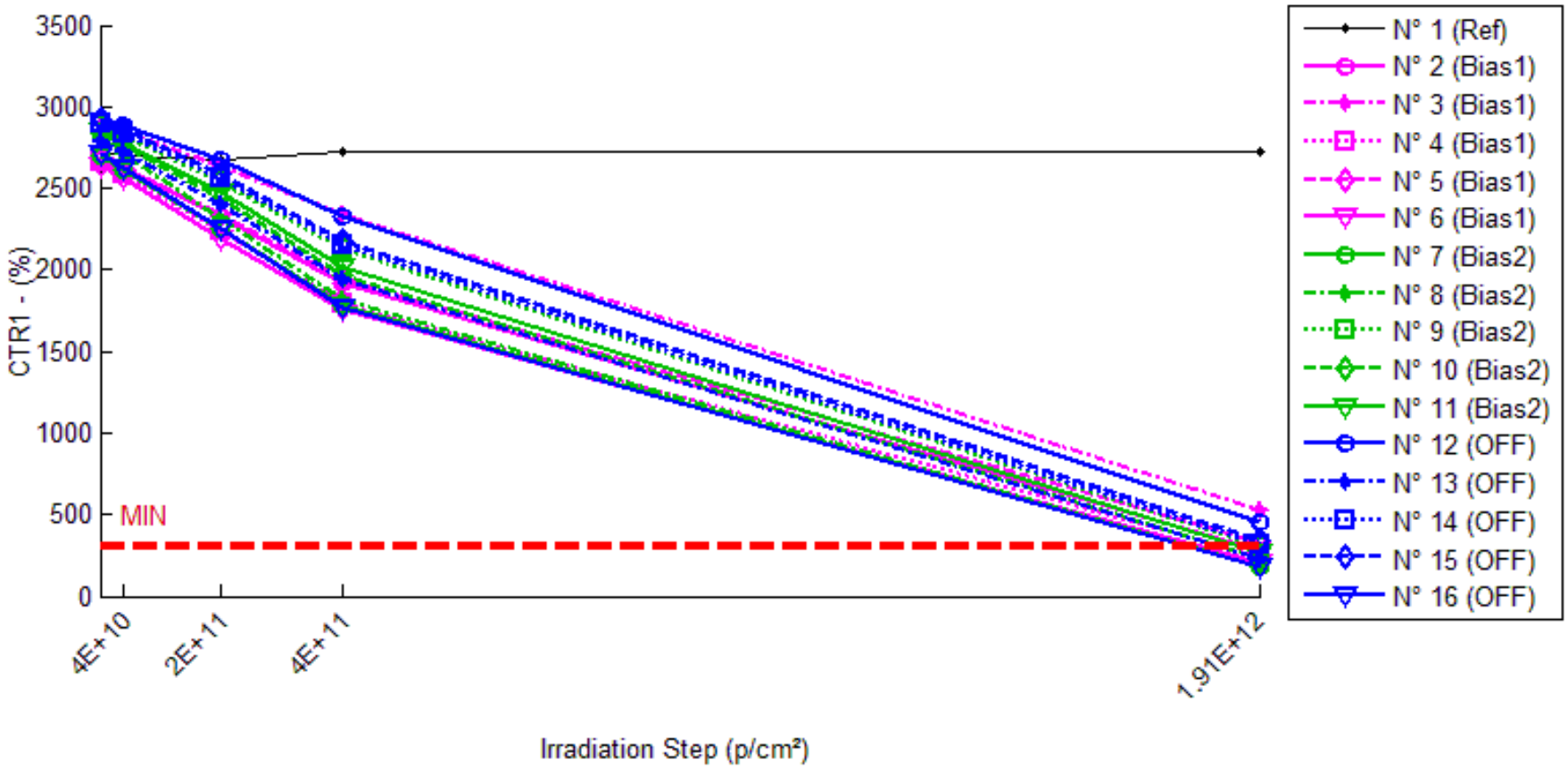
Delta [TPLH2]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	0.000E+0	0.000E+0	0.000E+0	0.000E+0
N° 2 (Bias1)	---	-8.000E-1	-2.000E+0	-3.200E+0	-6.200E+0
N° 3 (Bias1)	---	-4.000E-1	-2.000E+0	-2.800E+0	-5.400E+0
N° 4 (Bias1)	---	-8.000E-1	-2.800E+0	-4.400E+0	-7.700E+0
N° 5 (Bias1)	---	-8.000E-1	-2.000E+0	-3.200E+0	-6.200E+0
N° 6 (Bias1)	---	-8.000E-1	-2.000E+0	-3.200E+0	-5.950E+0
N° 7 (Bias2)	---	-8.000E-1	-2.400E+0	-3.200E+0	-6.150E+0
N° 8 (Bias2)	---	-1.200E+0	-2.400E+0	-4.000E+0	-6.650E+0
N° 9 (Bias2)	---	-1.200E+0	-2.800E+0	-4.400E+0	-7.500E+0
N° 10 (Bias2)	---	-1.200E+0	-3.200E+0	-4.400E+0	-7.800E+0
N° 11 (Bias2)	---	-1.000E+0	-2.600E+0	-4.200E+0	-6.920E+0
N° 12 (OFF)	---	-1.000E+0	-2.200E+0	-3.400E+0	-6.200E+0
N° 13 (OFF)	---	-8.000E-1	-2.400E+0	-3.600E+0	-6.200E+0
N° 14 (OFF)	---	-8.000E-1	-2.400E+0	-4.000E+0	-6.760E+0
N° 15 (OFF)	---	-8.000E-1	-2.800E+0	-4.800E+0	-8.000E+0
N° 16 (OFF)	---	-8.000E-1	-2.800E+0	-4.000E+0	-6.880E+0
Average (Bias1)	---	-7.200E-1	-2.160E+0	-3.360E+0	-6.290E+0
σ (Bias1)	---	1.789E-1	3.578E-1	6.066E-1	8.532E-1
Average+3σ (Bias1)	---	-1.833E-1	-1.087E+0	-1.540E+0	-3.730E+0
Average-3σ (Bias1)	---	-1.257E+0	-3.233E+0	-5.180E+0	-8.850E+0
Average (Bias2)	---	-1.080E+0	-2.680E+0	-4.040E+0	-7.004E+0
σ (Bias2)	---	1.789E-1	3.347E-1	4.980E-1	6.598E-1
Average+3σ (Bias2)	---	-5.433E-1	-1.676E+0	-2.546E+0	-5.025E+0
Average-3σ (Bias2)	---	-1.617E+0	-3.684E+0	-5.534E+0	-8.983E+0
Average (OFF)	---	-8.400E-1	-2.520E+0	-3.960E+0	-6.808E+0
σ (OFF)	---	8.944E-2	2.683E-1	5.367E-1	7.362E-1
Average+3σ (OFF)	---	-5.717E-1	-1.715E+0	-2.350E+0	-4.600E+0
Average-3σ (OFF)	---	-1.108E+0	-3.325E+0	-5.570E+0	-9.016E+0

190 MeV proton / detailed results

12.CTR1

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=4.5V



190 MeV proton / detailed results

CTR1 . (%) **Min = 300.0**

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	2723.93	2695.82	2668.65	2724.19	2718.97
N° 2 (Bias1)	2688.06	2628.91	2323.20	1922.19	285.35
N° 3 (Bias1)	2886.27	2850.00	2641.74	2341.78	532.93
N° 4 (Bias1)	2664.46	2592.99	2240.26	1797.33	239.84
N° 5 (Bias1)	2681.11	2627.94	2342.79	1947.49	327.73
N° 6 (Bias1)	2639.53	2559.29	2190.95	1758.44	210.03
N° 7 (Bias2)	2698.47	2612.84	2256.26	1780.69	180.30
N° 8 (Bias2)	2793.24	2706.72	2310.94	1813.35	176.97
N° 9 (Bias2)	2880.70	2818.27	2540.62	2123.18	299.05
N° 10 (Bias2)	2839.84	2760.20	2433.55	1965.42	229.95
N° 11 (Bias2)	2849.44	2780.00	2473.49	2021.66	260.93
N° 12 (OFF)	2924.26	2886.48	2668.53	2331.56	455.38
N° 13 (OFF)	2789.65	2724.06	2401.03	1941.68	228.83
N° 14 (OFF)	2901.72	2841.44	2569.14	2148.29	319.30
N° 15 (OFF)	2925.79	2863.91	2593.62	2179.29	336.79
N° 16 (OFF)	2712.87	2624.96	2249.89	1774.20	176.59

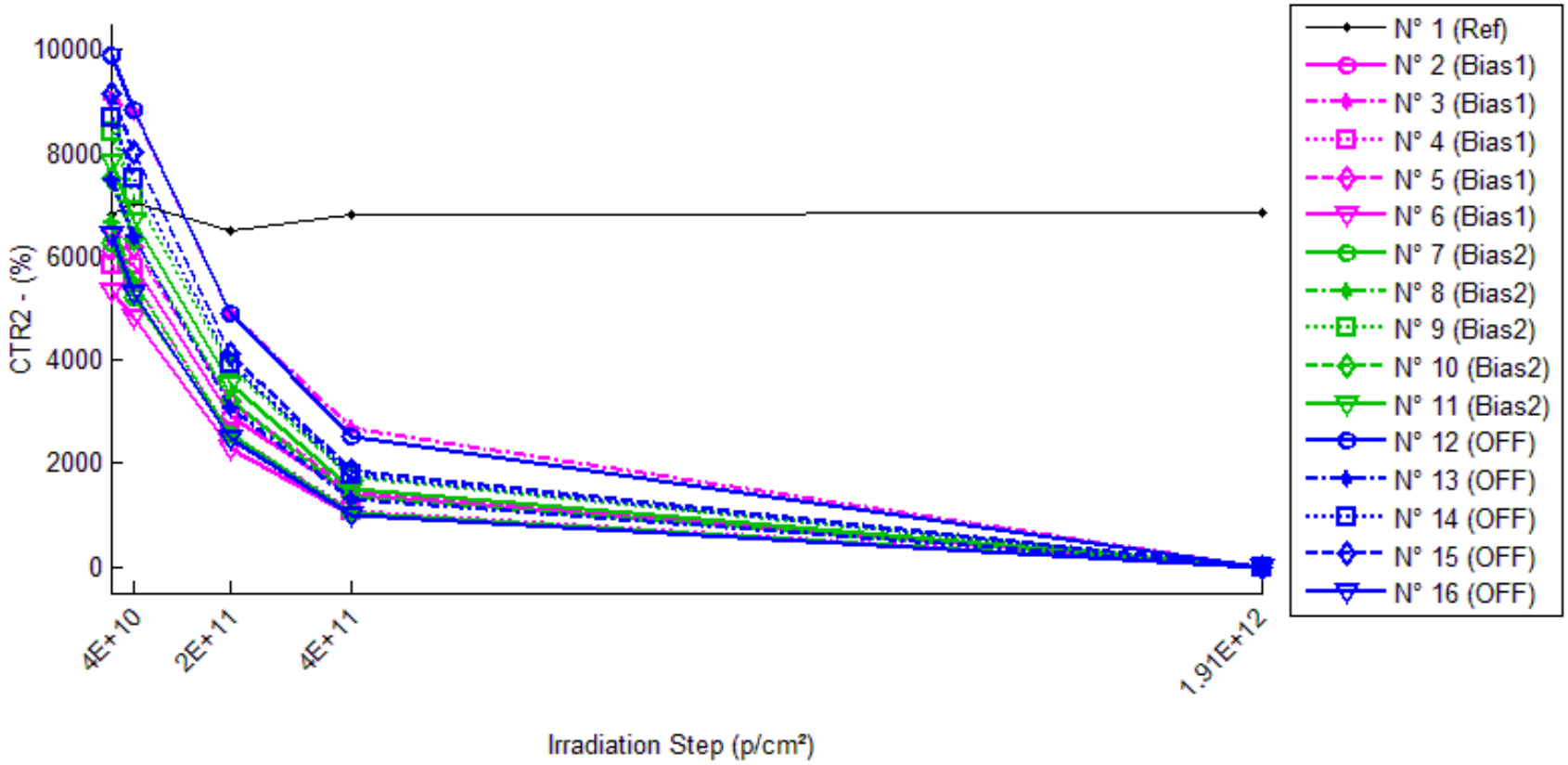
1/Delta [CTR1]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	3.828E-6	7.605E-6	-3.463E-8	6.702E-7
N° 2 (Bias1)	---	8.371E-6	5.843E-5	1.482E-4	3.133E-3
N° 3 (Bias1)	---	4.409E-6	3.207E-5	8.056E-5	1.530E-3
N° 4 (Bias1)	---	1.034E-5	7.107E-5	1.811E-4	3.794E-3
N° 5 (Bias1)	---	7.547E-6	5.386E-5	1.405E-4	2.678E-3
N° 6 (Bias1)	---	1.188E-5	7.757E-5	1.898E-4	4.382E-3
N° 7 (Bias2)	---	1.214E-5	7.263E-5	1.910E-4	5.176E-3
N° 8 (Bias2)	---	1.144E-5	7.472E-5	1.935E-4	5.293E-3
N° 9 (Bias2)	---	7.690E-6	4.647E-5	1.239E-4	2.997E-3
N° 10 (Bias2)	---	1.016E-5	5.879E-5	1.567E-4	3.997E-3
N° 11 (Bias2)	---	8.766E-6	5.334E-5	1.437E-4	3.481E-3
N° 12 (OFF)	---	4.476E-6	3.277E-5	8.693E-5	1.854E-3
N° 13 (OFF)	---	8.630E-6	5.802E-5	1.565E-4	4.012E-3
N° 14 (OFF)	---	7.310E-6	4.461E-5	1.209E-4	2.787E-3
N° 15 (OFF)	---	7.384E-6	4.377E-5	1.171E-4	2.627E-3
N° 16 (OFF)	---	1.234E-5	7.585E-5	1.950E-4	5.294E-3
Average (Bias1)	---	8.510E-6	5.860E-5	1.480E-4	3.103E-3
σ (Bias1)	---	2.849E-6	1.762E-5	4.315E-5	1.092E-3
Average+3σ (Bias1)	---	1.706E-5	1.115E-4	2.775E-4	6.380E-3
Average-3σ (Bias1)	---	-3.782E-8	5.746E-6	1.858E-5	-1.727E-4
Average (Bias2)	---	1.004E-5	6.119E-5	1.617E-4	4.189E-3
σ (Bias2)	---	1.841E-6	1.223E-5	3.020E-5	1.019E-3
Average+3σ (Bias2)	---	1.556E-5	9.787E-5	2.523E-4	7.245E-3
Average-3σ (Bias2)	---	4.518E-6	2.451E-5	7.113E-5	1.133E-3
Average (OFF)	---	8.029E-6	5.101E-5	1.353E-4	3.315E-3
σ (OFF)	---	2.852E-6	1.652E-5	4.153E-5	1.350E-3
Average+3σ (OFF)	---	1.659E-5	1.006E-4	2.599E-4	7.364E-3
Average-3σ (OFF)	---	-5.278E-7	1.432E-6	1.070E-5	-7.346E-4

190 MeV proton / detailed results

13.CTR2

Ta=25°C; If=0.16mA; Vo=0.4V; Vcc=5V



190 MeV proton / detailed results

CTR2 . (%)

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	6813.244	7036.406	6519.250	6821.288	6869.831
N° 2 (Bias1)	6109.176	5854.235	2912.823	1400.209	0.001
N° 3 (Bias1)	9041.125	8810.531	4902.538	2693.002	0.004
N° 4 (Bias1)	5833.079	5515.163	2577.381	1094.164	0.002
N° 5 (Bias1)	6504.437	6172.766	3199.414	1488.652	0.002
N° 6 (Bias1)	5338.503	4841.834	2306.339	1019.831	0.002
N° 7 (Bias2)	6262.575	5199.666	2563.738	1035.954	0.002
N° 8 (Bias2)	6651.394	5519.492	2563.689	1041.175	0.002
N° 9 (Bias2)	8410.331	7190.706	3847.325	1725.374	0.003
N° 10 (Bias2)	7529.163	6335.225	3226.986	1346.787	0.002
N° 11 (Bias2)	7837.525	6701.038	3532.400	1509.129	0.002
N° 12 (OFF)	9904.237	8858.556	4903.684	2519.617	0.005
N° 13 (OFF)	7495.312	6392.781	3083.390	1312.021	0.002
N° 14 (OFF)	8677.794	7508.169	3924.028	1768.382	0.003
N° 15 (OFF)	9146.631	8034.044	4113.764	1848.023	0.002
N° 16 (OFF)	6414.331	5283.244	2487.387	1003.039	0.001

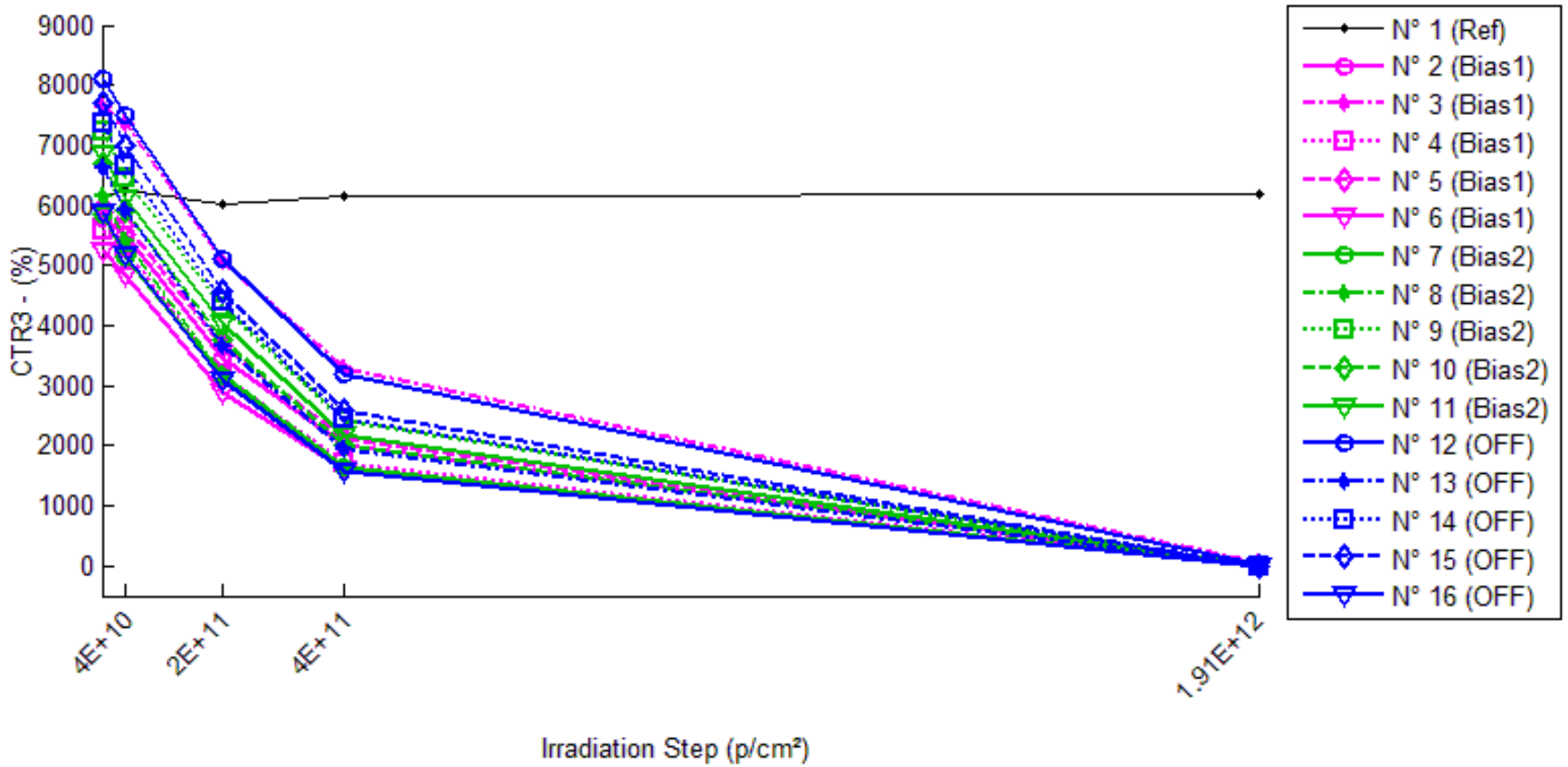
1/Delta [CTR2]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	-4.655E-6	6.619E-6	-1.731E-7	-1.209E-6
N° 2 (Bias1)	---	7.128E-6	1.796E-4	5.505E-4	7.943E+2
N° 3 (Bias1)	---	2.895E-6	9.337E-5	2.607E-4	2.718E+2
N° 4 (Bias1)	---	9.882E-6	2.166E-4	7.425E-4	6.027E+2
N° 5 (Bias1)	---	8.261E-6	1.588E-4	5.180E-4	6.146E+2
N° 6 (Bias1)	---	1.921E-5	2.463E-4	7.932E-4	5.173E+2
N° 7 (Bias2)	---	3.264E-5	2.304E-4	8.056E-4	6.640E+2
N° 8 (Bias2)	---	3.083E-5	2.397E-4	8.101E-4	5.814E+2
N° 9 (Bias2)	---	2.017E-5	1.410E-4	4.607E-4	3.980E+2
N° 10 (Bias2)	---	2.503E-5	1.771E-4	6.097E-4	4.755E+2
N° 11 (Bias2)	---	2.164E-5	1.555E-4	5.350E-4	4.310E+2
N° 12 (OFF)	---	1.192E-5	1.030E-4	2.959E-4	2.093E+2
N° 13 (OFF)	---	2.301E-5	1.909E-4	6.288E-4	4.467E+2
N° 14 (OFF)	---	1.795E-5	1.396E-4	4.503E-4	3.867E+2
N° 15 (OFF)	---	1.514E-5	1.338E-4	4.318E-4	5.052E+2
N° 16 (OFF)	---	3.338E-5	2.461E-4	8.411E-4	6.817E+2
Average (Bias1)	---	9.476E-6	1.789E-4	5.730E-4	5.601E+2
σ (Bias1)	---	6.027E-6	5.847E-5	2.111E-4	1.901E+2
Average+3σ (Bias1)	---	2.756E-5	3.543E-4	1.206E-3	1.130E+3
Average-3σ (Bias1)	---	-8.606E-6	3.512E-6	-6.036E-5	-1.023E+1
Average (Bias2)	---	2.606E-5	1.887E-4	6.442E-4	5.100E+2
σ (Bias2)	---	5.509E-6	4.430E-5	1.584E-4	1.104E+2
Average+3σ (Bias2)	---	4.259E-5	3.216E-4	1.119E-3	8.413E+2
Average-3σ (Bias2)	---	9.534E-6	5.583E-5	1.690E-4	1.787E+2
Average (OFF)	---	2.028E-5	1.627E-4	5.296E-4	4.459E+2
σ (OFF)	---	8.378E-6	5.634E-5	2.105E-4	1.722E+2
Average+3σ (OFF)	---	4.541E-5	3.317E-4	1.161E-3	9.625E+2
Average-3σ (OFF)	---	-4.853E-6	-6.340E-6	-1.021E-4	-7.068E+1

190 MeV proton / detailed results

14.CTR3

Ta=25°C; If=0.32mA; Vo=0.4V; Vcc=5V



190 MeV proton / detailed results

CTR3 . (%)

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	6163.191	6249.978	6019.997	6155.969	6178.241
N° 2 (Bias1)	5767.000	5506.497	3469.187	2013.257	0.294
N° 3 (Bias1)	7642.891	7366.591	5058.925	3296.866	57.612
N° 4 (Bias1)	5575.328	5274.131	3169.187	1710.106	0.004
N° 5 (Bias1)	6000.941	5696.028	3676.562	2097.147	2.100
N° 6 (Bias1)	5245.547	4847.422	2885.653	1594.473	0.008
N° 7 (Bias2)	5836.159	5133.766	3157.284	1632.245	0.002
N° 8 (Bias2)	6144.381	5400.722	3173.559	1632.415	0.002
N° 9 (Bias2)	7222.113	6470.428	4304.847	2409.440	0.164
N° 10 (Bias2)	6692.322	5923.819	3770.034	2006.937	0.004
N° 11 (Bias2)	6860.331	6127.941	4020.169	2162.411	0.050
N° 12 (OFF)	8121.466	7492.272	5112.156	3197.797	12.813
N° 13 (OFF)	6624.650	5923.538	3648.406	1947.513	0.010
N° 14 (OFF)	7378.453	6668.041	4385.459	2455.952	0.365
N° 15 (OFF)	7694.984	6992.466	4556.231	2574.776	0.226
N° 16 (OFF)	5899.728	5170.816	3079.180	1582.104	0.002

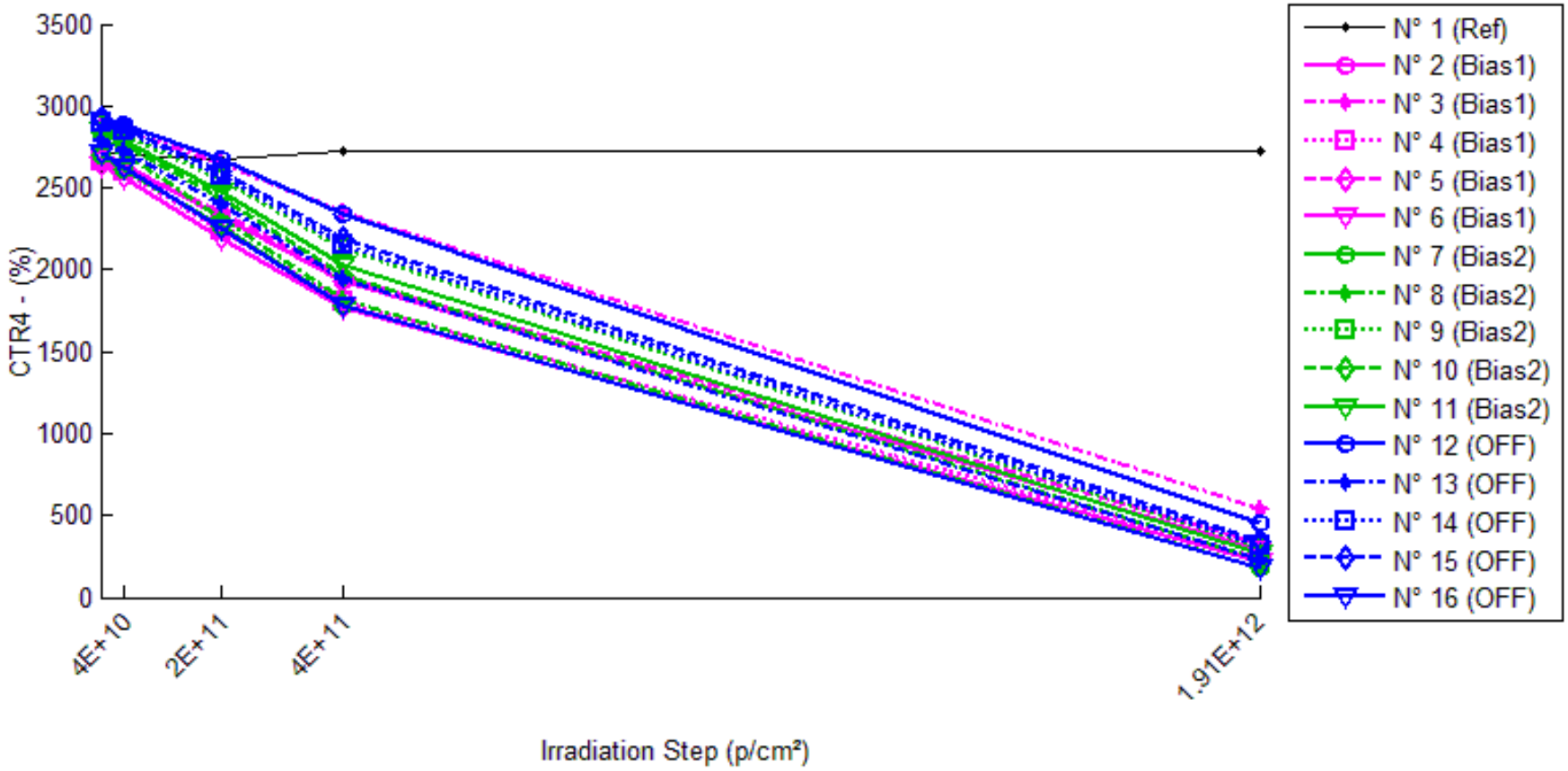
1/Delta [CTR3]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	-2.253E-6	3.859E-6	1.904E-7	-3.952E-7
N° 2 (Bias1)	---	8.203E-6	1.149E-4	3.233E-4	3.401E+0
N° 3 (Bias1)	---	4.907E-6	6.683E-5	1.725E-4	1.723E-2
N° 4 (Bias1)	---	1.024E-5	1.362E-4	4.054E-4	2.742E+2
N° 5 (Bias1)	---	8.920E-6	1.054E-4	3.102E-4	4.761E-1
N° 6 (Bias1)	---	1.566E-5	1.559E-4	4.365E-4	1.303E+2
N° 7 (Bias2)	---	2.344E-5	1.454E-4	4.413E-4	5.724E+2
N° 8 (Bias2)	---	2.241E-5	1.524E-4	4.498E-4	4.920E+2
N° 9 (Bias2)	---	1.609E-5	9.383E-5	2.766E-4	6.113E+0
N° 10 (Bias2)	---	1.939E-5	1.158E-4	3.488E-4	2.416E+2
N° 11 (Bias2)	---	1.742E-5	1.030E-4	3.167E-4	1.996E+1
N° 12 (OFF)	---	1.034E-5	7.248E-5	1.896E-4	7.792E-2
N° 13 (OFF)	---	1.787E-5	1.231E-4	3.625E-4	1.050E+2
N° 14 (OFF)	---	1.444E-5	9.250E-5	2.716E-4	2.739E+0
N° 15 (OFF)	---	1.306E-5	8.952E-5	2.584E-4	4.431E+0
N° 16 (OFF)	---	2.389E-5	1.553E-4	4.626E-4	6.016E+2
Average (Bias1)	---	9.586E-6	1.158E-4	3.296E-4	8.168E+1
σ (Bias1)	---	3.922E-6	3.366E-5	1.028E-4	1.213E+2
Average+3σ (Bias1)	---	2.135E-5	2.168E-4	6.380E-4	4.454E+2
Average-3σ (Bias1)	---	-2.180E-6	1.485E-5	2.114E-5	-2.821E+2
Average (Bias2)	---	1.975E-5	1.221E-4	3.666E-4	2.664E+2
σ (Bias2)	---	3.150E-6	2.579E-5	7.652E-5	2.616E+2
Average+3σ (Bias2)	---	2.920E-5	1.995E-4	5.962E-4	1.051E+3
Average-3σ (Bias2)	---	1.030E-5	4.469E-5	1.371E-4	-5.183E+2
Average (OFF)	---	1.592E-5	1.066E-4	3.090E-4	1.428E+2
σ (OFF)	---	5.218E-6	3.277E-5	1.057E-4	2.603E+2
Average+3σ (OFF)	---	3.157E-5	2.049E-4	6.259E-4	9.237E+2
Average-3σ (OFF)	---	2.663E-7	8.264E-6	-8.049E-6	-6.382E+2

190 MeV proton / detailed results

15.CTR4

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=5V



190 MeV proton / detailed results

CTR4 . (%)

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	2726.19	2699.16	2674.28	2726.87	2721.67
N° 2 (Bias1)	2689.95	2632.26	2327.45	1926.94	287.96
N° 3 (Bias1)	2887.39	2851.59	2644.53	2346.27	536.55
N° 4 (Bias1)	2667.37	2597.13	2244.82	1801.80	242.15
N° 5 (Bias1)	2683.08	2630.92	2347.04	1952.12	330.45
N° 6 (Bias1)	2642.30	2563.57	2195.58	1762.78	212.09
N° 7 (Bias2)	2700.81	2616.35	2261.89	1786.63	182.41
N° 8 (Bias2)	2795.66	2710.22	2315.76	1818.89	179.04
N° 9 (Bias2)	2882.32	2821.10	2545.20	2128.89	302.70
N° 10 (Bias2)	2841.76	2763.61	2438.87	1971.63	232.75
N° 11 (Bias2)	2851.31	2783.03	2479.00	2027.65	263.81
N° 12 (OFF)	2925.30	2888.01	2671.42	2335.70	459.07
N° 13 (OFF)	2791.39	2726.68	2405.77	1946.45	231.06
N° 14 (OFF)	2903.27	2843.70	2573.76	2153.61	322.44
N° 15 (OFF)	2928.00	2866.38	2598.47	2184.99	340.11
N° 16 (OFF)	2715.37	2628.77	2254.87	1779.66	178.90

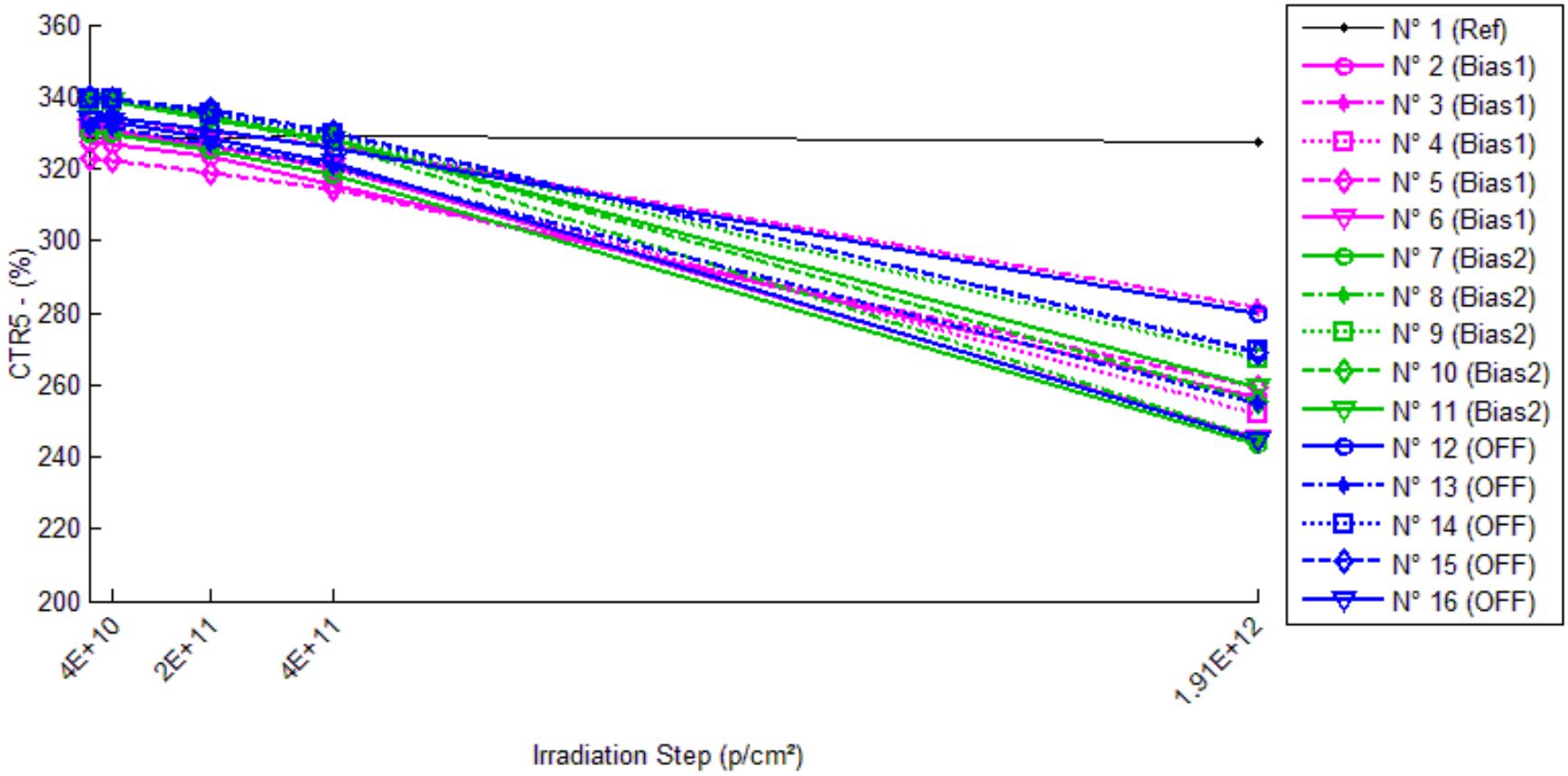
1/Delta [CTR4]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	3.673E-6	7.120E-6	-9.120E-8	6.089E-7
N° 2 (Bias1)	---	8.147E-6	5.790E-5	1.472E-4	3.101E-3
N° 3 (Bias1)	---	4.347E-6	3.181E-5	7.988E-5	1.517E-3
N° 4 (Bias1)	---	1.014E-5	7.057E-5	1.801E-4	3.755E-3
N° 5 (Bias1)	---	7.390E-6	5.336E-5	1.396E-4	2.653E-3
N° 6 (Bias1)	---	1.162E-5	7.700E-5	1.888E-4	4.337E-3
N° 7 (Bias2)	---	1.195E-5	7.185E-5	1.895E-4	5.112E-3
N° 8 (Bias2)	---	1.128E-5	7.413E-5	1.921E-4	5.228E-3
N° 9 (Bias2)	---	7.529E-6	4.595E-5	1.228E-4	2.957E-3
N° 10 (Bias2)	---	9.951E-6	5.813E-5	1.553E-4	3.945E-3
N° 11 (Bias2)	---	8.605E-6	5.267E-5	1.425E-4	3.440E-3
N° 12 (OFF)	---	4.414E-6	3.249E-5	8.629E-5	1.836E-3
N° 13 (OFF)	---	8.501E-6	5.742E-5	1.555E-4	3.970E-3
N° 14 (OFF)	---	7.215E-6	4.410E-5	1.199E-4	2.757E-3
N° 15 (OFF)	---	7.342E-6	4.331E-5	1.161E-4	2.599E-3
N° 16 (OFF)	---	1.213E-5	7.521E-5	1.936E-4	5.221E-3
Average (Bias1)	---	8.329E-6	5.813E-5	1.471E-4	3.073E-3
σ (Bias1)	---	2.779E-6	1.751E-5	4.303E-5	1.079E-3
Average+3σ (Bias1)	---	1.667E-5	1.107E-4	2.762E-4	6.310E-3
Average-3σ (Bias1)	---	-8.435E-9	5.593E-6	1.802E-5	-1.647E-4
Average (Bias2)	---	9.863E-6	6.055E-5	1.604E-4	4.136E-3
σ (Bias2)	---	1.830E-6	1.218E-5	3.005E-5	1.007E-3
Average+3σ (Bias2)	---	1.535E-5	9.707E-5	2.506E-4	7.157E-3
Average-3σ (Bias2)	---	4.372E-6	2.402E-5	7.028E-5	1.115E-3
Average (OFF)	---	7.921E-6	5.051E-5	1.343E-4	3.277E-3
σ (OFF)	---	2.793E-6	1.640E-5	4.127E-5	1.329E-3
Average+3σ (OFF)	---	1.630E-5	9.970E-5	2.581E-4	7.264E-3
Average-3σ (OFF)	---	-4.578E-7	1.311E-6	1.049E-5	-7.106E-4

190 MeV proton / detailed results

16.CTR5

Ta=25°C; If=16mA; Vo=0.4V; Vcc=5V



190 MeV proton / detailed results

CTR5 . (%)

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	328.55	329.10	328.64	328.82	327.61
N° 2 (Bias1)	327.45	326.66	323.35	315.51	256.26
N° 3 (Bias1)	332.77	332.73	330.26	326.20	281.67
N° 4 (Bias1)	331.18	330.26	326.39	319.94	252.05
N° 5 (Bias1)	322.95	322.34	319.01	314.28	259.53
N° 6 (Bias1)	331.59	330.61	326.43	320.33	244.90
N° 7 (Bias2)	329.65	329.84	325.00	318.44	243.35
N° 8 (Bias2)	339.55	339.76	334.00	326.86	245.38
N° 9 (Bias2)	338.25	338.60	334.19	328.58	267.09
N° 10 (Bias2)	339.21	339.49	334.64	328.04	255.59
N° 11 (Bias2)	338.34	338.79	333.86	327.85	259.56
N° 12 (OFF)	333.47	333.99	330.95	325.68	279.87
N° 13 (OFF)	331.12	331.09	326.68	320.68	254.47
N° 14 (OFF)	339.38	339.04	335.54	329.81	269.34
N° 15 (OFF)	340.01	339.08	336.29	330.11	269.17
N° 16 (OFF)	333.50	333.26	328.55	321.61	244.69

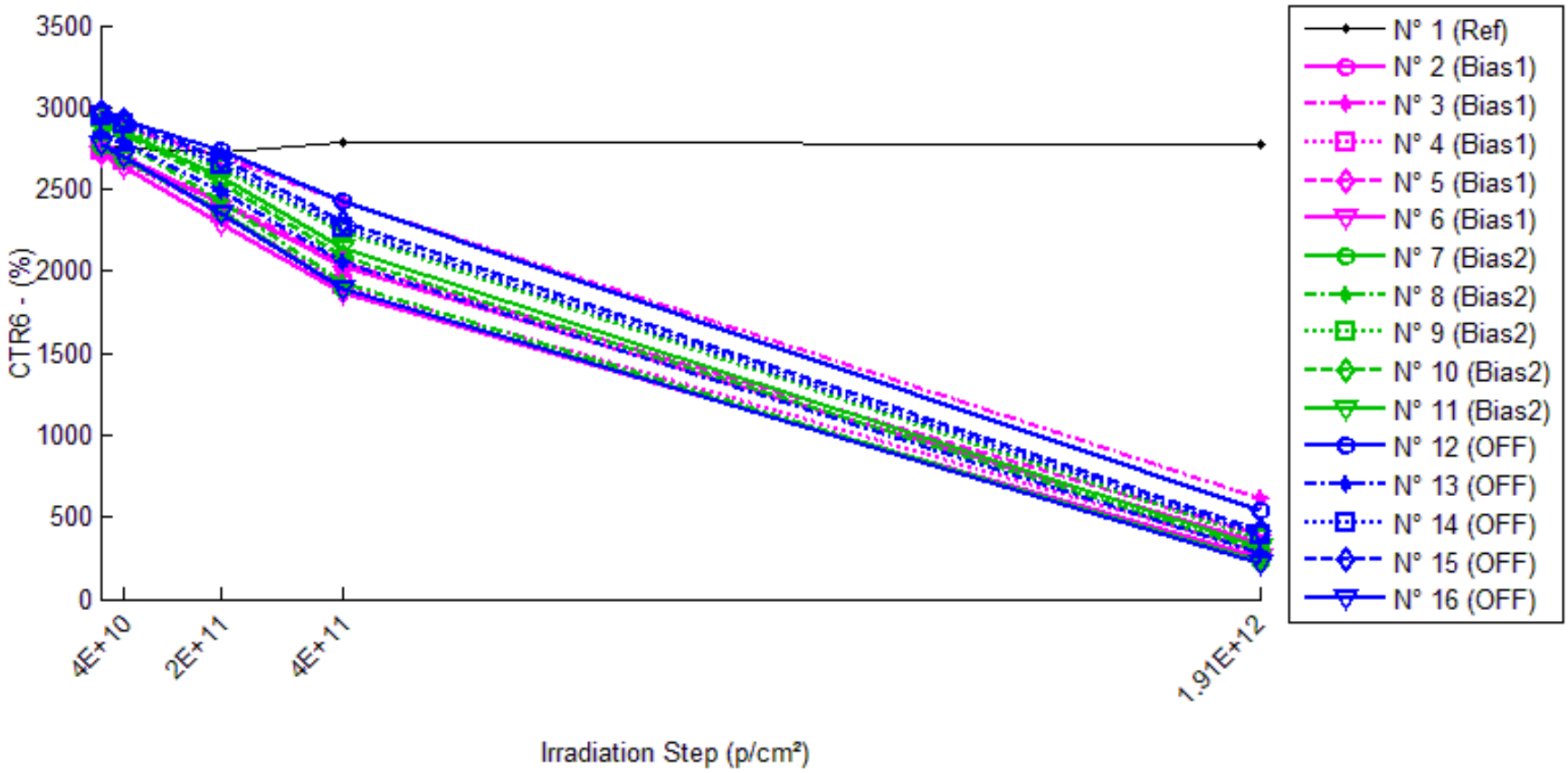
1/Delta [CTR5]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	-5.121E-6	-8.724E-7	-2.570E-6	8.738E-6
N° 2 (Bias1)	---	7.388E-6	3.868E-5	1.156E-4	8.484E-4
N° 3 (Bias1)	---	3.224E-7	2.282E-5	6.053E-5	5.451E-4
N° 4 (Bias1)	---	8.398E-6	4.432E-5	1.061E-4	9.480E-4
N° 5 (Bias1)	---	5.901E-6	3.828E-5	8.547E-5	7.567E-4
N° 6 (Bias1)	---	8.967E-6	4.764E-5	1.060E-4	1.068E-3
N° 7 (Bias2)	---	-1.768E-6	4.335E-5	1.067E-4	1.076E-3
N° 8 (Bias2)	---	-1.756E-6	4.894E-5	1.143E-4	1.130E-3
N° 9 (Bias2)	---	-3.085E-6	3.592E-5	8.695E-5	7.877E-4
N° 10 (Bias2)	---	-2.412E-6	4.028E-5	1.004E-4	9.645E-4
N° 11 (Bias2)	---	-3.871E-6	3.964E-5	9.458E-5	8.970E-4
N° 12 (OFF)	---	-4.648E-6	2.287E-5	7.181E-5	5.744E-4
N° 13 (OFF)	---	2.873E-7	4.110E-5	9.829E-5	9.097E-4
N° 14 (OFF)	---	2.971E-6	3.373E-5	8.546E-5	7.662E-4
N° 15 (OFF)	---	8.076E-6	3.249E-5	8.814E-5	7.740E-4
N° 16 (OFF)	---	2.233E-6	4.518E-5	1.109E-4	1.088E-3
Average (Bias1)	---	6.195E-6	3.835E-5	9.473E-5	8.332E-4
σ (Bias1)	---	3.483E-6	9.532E-6	2.206E-5	1.982E-4
Average+3σ (Bias1)	---	1.665E-5	6.694E-5	1.609E-4	1.428E-3
Average-3σ (Bias1)	---	-4.255E-6	9.754E-6	2.855E-5	2.384E-4
Average (Bias2)	---	-2.578E-6	4.163E-5	1.006E-4	9.710E-4
σ (Bias2)	---	9.066E-7	4.868E-6	1.060E-5	1.373E-4
Average+3σ (Bias2)	---	1.415E-7	5.623E-5	1.324E-4	1.383E-3
Average-3σ (Bias2)	---	-5.298E-6	2.702E-5	6.881E-5	5.590E-4
Average (OFF)	---	1.784E-6	3.507E-5	9.093E-5	8.225E-4
σ (OFF)	---	4.605E-6	8.599E-6	1.464E-5	1.906E-4
Average+3σ (OFF)	---	1.560E-5	6.087E-5	1.349E-4	1.394E-3
Average-3σ (OFF)	---	-1.203E-5	9.277E-6	4.700E-5	2.506E-4

190 MeV proton / detailed results

17.CTR6

Ta=25°C; If=1.6mA; Vo=0.4V; Vcc=20V



190 MeV proton / detailed results

CTR6 . (%)

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	2779.73	2749.41	2725.84	2781.25	2774.73
N° 2 (Bias1)	2745.80	2694.47	2415.72	2028.10	340.42
N° 3 (Bias1)	2922.39	2890.55	2703.10	2427.92	613.05
N° 4 (Bias1)	2737.82	2675.13	2348.13	1913.18	293.81
N° 5 (Bias1)	2732.90	2686.71	2426.12	2049.59	387.51
N° 6 (Bias1)	2708.74	2638.55	2294.10	1863.96	254.19
N° 7 (Bias2)	2757.28	2685.87	2362.38	1896.67	226.63
N° 8 (Bias2)	2852.86	2780.24	2420.25	1933.31	222.35
N° 9 (Bias2)	2930.02	2878.48	2630.02	2242.99	369.83
N° 10 (Bias2)	2897.61	2832.10	2539.47	2093.15	289.47
N° 11 (Bias2)	2901.46	2844.24	2570.53	2142.72	321.93
N° 12 (OFF)	2958.02	2926.15	2730.97	2422.09	536.26
N° 13 (OFF)	2837.10	2781.19	2490.90	2055.06	281.78
N° 14 (OFF)	2947.51	2895.64	2652.36	2263.47	388.24
N° 15 (OFF)	2975.78	2922.12	2684.47	2304.82	413.84
N° 16 (OFF)	2777.33	2701.57	2357.54	1895.67	222.77

1/Delta [CTR6]

	0.p/cm²	4E10.p/cm²	2E11.p/cm²	4E11.p/cm²	1.91E12.p/cm²
N° 1 (Ref)	---	3.967E-6	7.111E-6	-1.966E-7	6.473E-7
N° 2 (Bias1)	---	6.938E-6	4.976E-5	1.289E-4	2.573E-3
N° 3 (Bias1)	---	3.770E-6	2.776E-5	6.969E-5	1.289E-3
N° 4 (Bias1)	---	8.560E-6	6.062E-5	1.574E-4	3.038E-3
N° 5 (Bias1)	---	6.291E-6	4.627E-5	1.220E-4	2.215E-3
N° 6 (Bias1)	---	9.821E-6	6.673E-5	1.673E-4	3.565E-3
N° 7 (Bias2)	---	9.642E-6	6.063E-5	1.646E-4	4.050E-3
N° 8 (Bias2)	---	9.155E-6	6.266E-5	1.667E-4	4.147E-3
N° 9 (Bias2)	---	6.111E-6	3.893E-5	1.045E-4	2.363E-3
N° 10 (Bias2)	---	7.984E-6	4.867E-5	1.326E-4	3.109E-3
N° 11 (Bias2)	---	6.934E-6	4.437E-5	1.220E-4	2.762E-3
N° 12 (OFF)	---	3.681E-6	2.811E-5	7.480E-5	1.527E-3
N° 13 (OFF)	---	7.085E-6	4.899E-5	1.341E-4	3.196E-3
N° 14 (OFF)	---	6.077E-6	3.775E-5	1.025E-4	2.236E-3
N° 15 (OFF)	---	6.170E-6	3.647E-5	9.783E-5	2.080E-3
N° 16 (OFF)	---	1.010E-5	6.411E-5	1.675E-4	4.129E-3
Average (Bias1)	---	7.076E-6	5.023E-5	1.291E-4	2.536E-3
σ (Bias1)	---	2.308E-6	1.501E-5	3.822E-5	8.618E-4
Average+3σ (Bias1)	---	1.400E-5	9.525E-5	2.437E-4	5.121E-3
Average-3σ (Bias1)	---	1.525E-7	5.206E-6	1.440E-5	-4.925E-5
Average (Bias2)	---	7.965E-6	5.105E-5	1.381E-4	3.286E-3
σ (Bias2)	---	1.478E-6	1.029E-5	2.708E-5	7.879E-4
Average+3σ (Bias2)	---	1.240E-5	8.192E-5	2.193E-4	5.650E-3
Average-3σ (Bias2)	---	3.533E-6	2.018E-5	5.685E-5	9.223E-4
Average (OFF)	---	6.622E-6	4.309E-5	1.153E-4	2.634E-3
σ (OFF)	---	2.315E-6	1.391E-5	3.600E-5	1.030E-3
Average+3σ (OFF)	---	1.357E-5	8.481E-5	2.233E-4	5.723E-3
Average-3σ (OFF)	---	-3.227E-7	1.365E-6	7.354E-6	-4.556E-4