

RC-032-PTE-14-106414-1-A

"This report cancels and replaces the test report N°RC-032-PTE-14-106414-1-A Edition 1"

E.M.C. TESTS REPORT

According to the standard:
FCC 47 CFR part 15 : 2014 (§15.225)

Equipment under test:

Controller SBC kit
PN7120 NFC

Company:

NXP Semiconductors

FCC accredited: FR0004
FCC ID : OWROM5577-PN7120S

Distribution: Mr DIGABEL

(Company: NXP Semiconductors)

Number of pages: 42 with 3 annexes

Ed.	Date	Modified page	Written by		Technical Verification and Quality	
			Name	Visa	Name	Visa
2	13/07/16	2 ; 3 ; 6 18 ; 19 ; 20 21 ; 26 ; 40	F. LHEUREUX FL		JC BOGA Boga	

*Duplication of this report is only permitted for an integral photographic facsimile. It includes the number of pages referenced above.
This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole production of the item tested.*



NAME OF THE EQUIPMENT UNDER TEST (E.U.T.) : Controller SBC kit PN7120 NFC

Serial number : PCB 2393-1

Part number : -

Software Version : V1.0

MANUFACTURER'S NAME : NXP Semiconductors

APPLICANT'S ADDRESS:

Company : NXP Semiconductors

Address : 2, esplanade Anton Philips
Campus Effiscience Colombelles
BP 20000
14906 CAEN CEDEX 9
FRANCE

Person present during the tests : Mr GESLIN

Responsible : Mr DIGABEL

DATES OF TESTS : 12/02/2015 and 13/02/2015
11/07/2016

TESTS LOCATIONS : Open area test site in Aunainville (28) and
Emitech laboratory in Montigny le
Bretonneux (78) - FRANCE

TESTS OPERATOR : F. LHEUREUX

TABLE OF CONTENTS

1.	INTRODUCTION	4
2.	REFERENCE DOCUMENTS	4
3.	EQUIPMENT UNDER TEST CONFIGURATION	4
4.	SUMMARY OF TESTS RESULTS	6
5.	INTENTIONAL RADIATED EMISSIONS IN THE BAND 13.553 MHZ – 13.567 MHZ	8
6.	INTENTIONAL RADIATED EMISSIONS IN THE BAND 13.110 MHZ – 14.010 MHZ	10
7.	UNINTENTIONAL RADIATED EMISSIONS IN THE BAND 9 KHZ – 30 MHZ	13
8.	UNINTENTIONAL RADIATED EMISSIONS IN THE BAND 30 MHZ – 1 GHZ	15
9.	CONDUCTED EMISSION	18
10.	FREQUENCY DRIFT	21
11.	20 DB BANDWIDTH	26

ANNEX 1: ANTENNA FACTORS, INSERTION LOSSES AND AMPLIFIER VALUES

ANNEX 2: PHOTOGRAPHIES

ANNEX 3: CALIBRATION DATES

1. INTRODUCTION

This document submits the results of Electromagnetic Compatibility tests performed on the equipment «**Controller SBC kit PN7120 NFC**» (denominated hereafter E.U.T.: equipment under test) according to documents listed below.

2. REFERENCE DOCUMENTS

FCC 47 CFR Part 15: 2014

Code of Federal Regulations

Title 47- Telecommunication

Chapter 1- Federal Communication Commission

Part 15- Radio frequency devices

ANSI C63.4: 2003

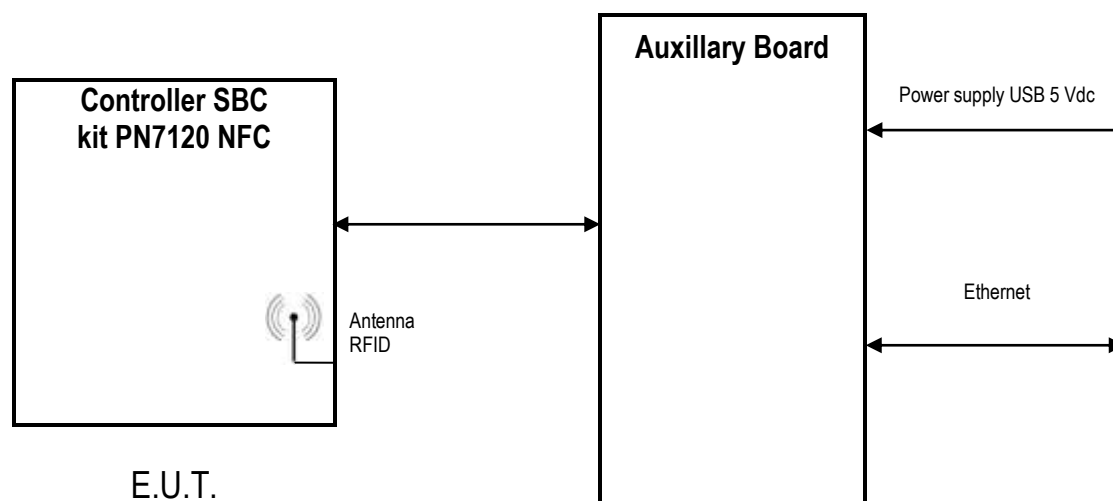
Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronics Equipment in the range of 9 kHz to 40 GHz.

3. EQUIPMENT UNDER TEST CONFIGURATION

Equipment under test (E.U.T.) description:

Class: B (residential environment)

Utilization: The PN7120 NFC controller SBC kit is intended to provide a flexible and easy solution to experience PN7120 functionalities and performances.



Antenna type and gain: internal antenna: Not communicated

Operating frequency range: from 13.553 MHz to 13.567 MHz

Number of channels: 1

Power source: 3.3 Vdc

Modification of the equipment during the tests: No.

Cycle and operating mode during emission tests:

PRBS mode: Via the DOS interface of the PC, the E.U.T. is in continuous transmission with a modulation type A (106 kbps).

Functional mode: Once the badge is placed on the antenna, constantly reading is performed via the DOS interface of the PC.

4. SUMMARY OF TESTS RESULTS

The following table summarizes test results of the EUT.

Subpart B of the standard FCC part 15 – Unintentional radiators

Test procedure	Designation of test	Test results				Comments
		Pass	Fail	N.A.	N.P.	
15.107	Measurement of conducted emission on AC mains ports	X				
15.109	Radiated emission limits	X				

Subpart C of the standard FCC part 15 – Intentional radiators

Test procedure	Designation of test	Test results				Comments
		Pass	Fail	N.A.	N.P.	
15.205	Restricted bands of operation	X				
15.207	Measurement of conducted emission on AC mains ports	X				
15.209	Radiated emission limits; general requirements	X				
15.215	Additional provisions to the general radiated emission limitations					
	(a) Alternative to general radiated emission limits	X				
	(b) Unwanted emissions outside of § 15.247 frequency bands			X		
	(c) 20 dB bandwidth and band-edge compliance	X				
15.225	intentional radiated emissions in the band 13.110 MHz – 14.010 MHz					
	a) 13.553 MHz - 13.567 MHz	X				
	b) 13.410-13.553 MHz and 13.567-13.710 MHz	X				
	c) 13.110-13.410 MHz and 13.710-14.010 MHz	X				
	d) outside 13.110 MHz and 14.010 MHz	X				
	e) Frequency drift	X				
	f) Tag			X		

N.A.: Not Applicable

N.P.: Not Performed

Conclusion:

The tested sample "**Controller SBC kit PN7120 NFC**" submitted to the tests complies with the requirements of the standard:

- FCC 47 CFR PART 15: 2014

According to the limits specified in this report.

To declare or not compliance with the specification, it has not been given explicit account of the uncertainty associated with result(s).

5. INTENTIONAL RADIATED EMISSIONS IN THE BAND 13.553 MHz – 13.567 MHz

Standard: FCC 47 CFR PART 15 : 2014

Section: 15.225 (a)

Test configuration:

The system is tested in an open area test site (OATS).

The equipment under test (EUT) is placed on a non-conductive test table at 0.8 m above the horizontal reference ground plane.

Antenna height is 1 m above the ground plane.

For each frequency corresponding to an emission, EUT carried out a rotation through 360° with the aid of the turntable, with the aim to find the maximum of signal.

The test antenna is oriented in all orientations. Only the highest level is recorded.

Frequency range: 13.553 MHz – 13.567 MHz

Detection mode: Quasi-peak.

Resolution bandwidth: 9 kHz

Measurement distance: 3 meters.

Limit:

Frequency range (MHz)	Frequency field strength		Frequency measurement distance (meters)
	µV/m	dBµV/m	
13.553 – 13.567	15848	84.0	30
	-	124.0 ①	3

①: $84 \text{ dB}\mu\text{V/m} + 20 \log(30/3)^2$

Operating mode during the test:

PRBS mode and functional mode.

Instrumentation test list:

CATEGORY	BRAND	TYPE	N ^R EMITECH
Antenna	Eaton	Cadre Eaton 96009/2	4713
Cable	Câbles & Connectiques	N-13m	2452
Cable	-	N-2m	2805
Cable	-	N-30m	4359
Open area test site	Emitech	Site champ libre	0187
Receiver	Rohde & Schwarz	R&S ESH3	0825

Results:

Ambient temperature (°C): 5
Relative humidity (%): 50
Power source: 5 Vdc by USB port

Mode	FREQUENCY (MHz)	ANTENNA ORIENTATION	AZIMUTH (degrees)	MEASUREMENT (dBμV/m)	LIMIT (dBμV/m)	MARGIN (dB)
PRBS	13.5602	Parallel	270	47.1	124.0	76.9
Functional	13.5602	Parallel	140	43.0	124.0	81.0

Test conclusion: Complies with the requirements of the standard.

6. INTENTIONAL RADIATED EMISSIONS IN THE BAND 13.110 MHz – 14.010 MHz

Standard: FCC 47 CFR PART 15 : 2014

Section: 15.225 (b) (c)

Test configuration:

The measure is realized in near field and the results are correlated with the intentional radiated emission at 3 meters.

PRBS mode: Field at 3 m = 47.1 dB μ V/m $\rightarrow$ field at 30 m = 7.1 dB μ V/m

Functional mode: Field at 3 m = 43.0 dB μ V/m $\rightarrow$ field at 30 m = 3.0 dB μ V/m

Frequency range: 13.110 MHz – 14.010 MHz

Detection mode: Peak

Resolution bandwidth: 10 kHz

Limit:

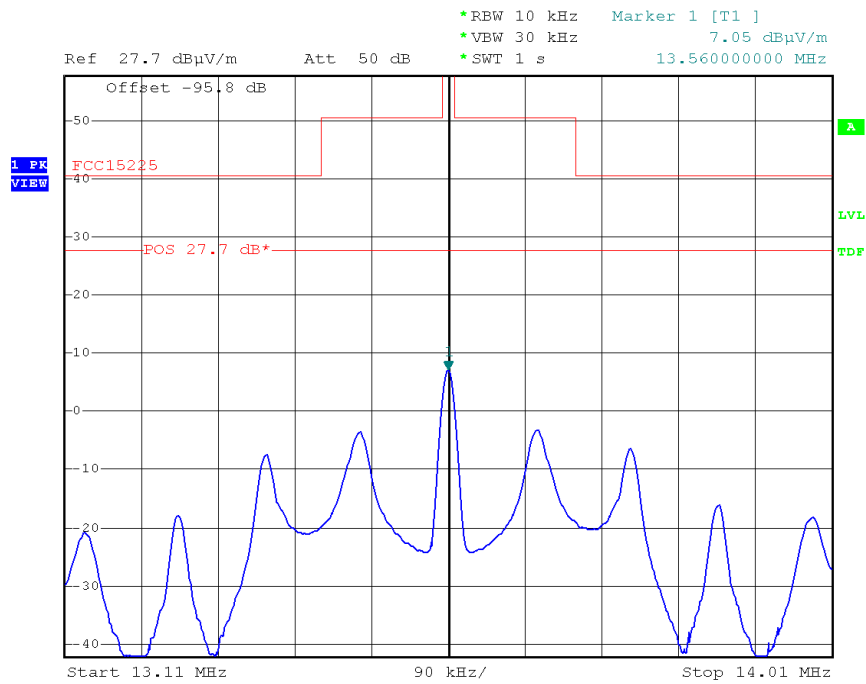
Frequencies range (MHz)	Frequency field strength		Frequency measurement distance (meters)
	μ V/m	dB μ V/m	
13.110 – 13.410 and 13.710 – 14.010	106.0	40.5	30
13.410 – 13.553 and 13.567 – 13.710	334.0	50.5	30
13.110 – 13.410 and 13.710 – 14.010	-	80.5①	3
13.410 – 13.553 and 13.567 – 13.710	-	90.5①	3

①: $E \text{ (dB}\mu\text{V/m)} + 20\log(30/3)^2$

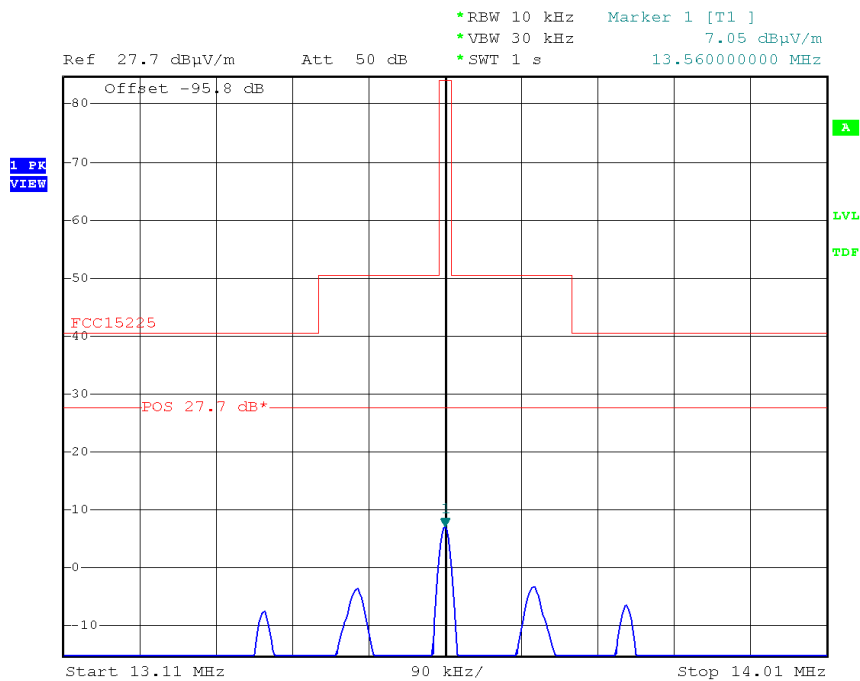
Results:

Ambient temperature (°C): 5
Relative humidity (%): 50
Power source: 5 Vdc by USB port

PRBS mode

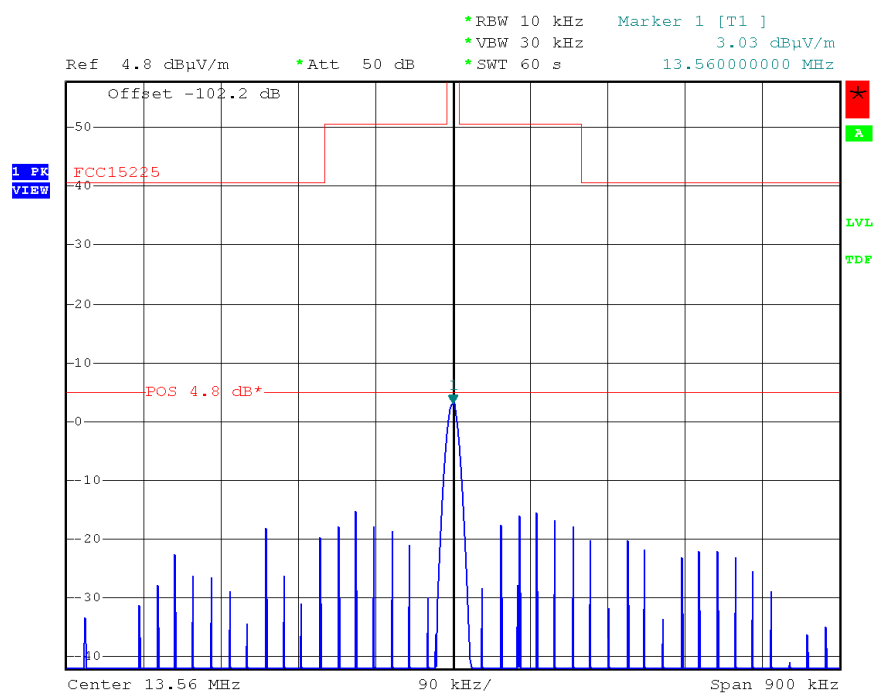


Date: 13.FEB.2015 09:29:33

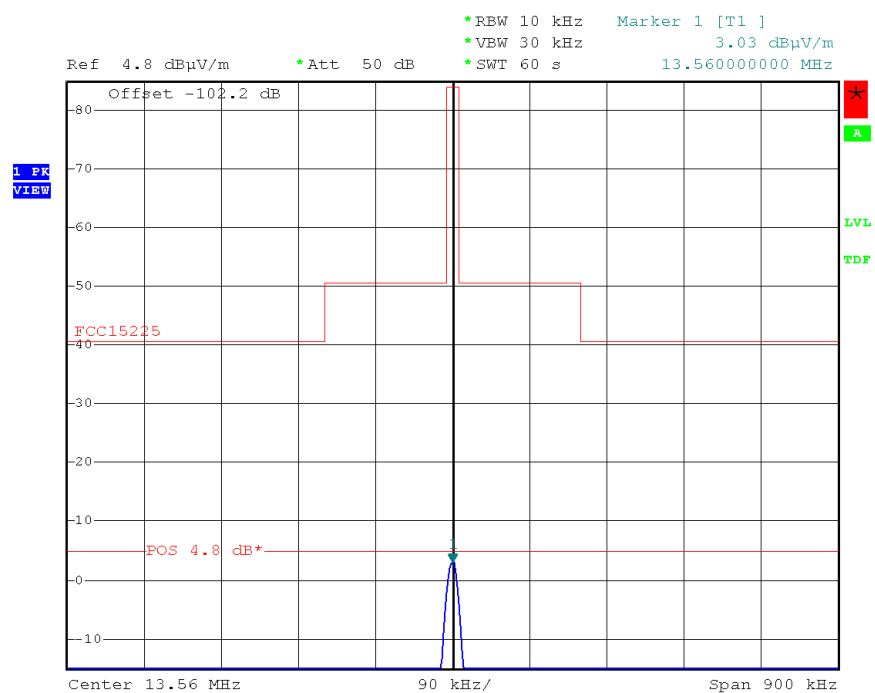


Date: 13.FEB.2015 09:29:12

Functional mode



Date: 13.FEB.2015 09:43:07



Date: 13.FEB.2015 09:43:48

7. UNINTENTIONAL RADIATED EMISSIONS IN THE BAND 9 KHz – 30 MHz

Standard: FCC 47 CFR PART 15 : 2014

Sections: 15.109 and 15.209

Equipment under test arrangement

The system is tested in an open area test site (OATS).

The equipment under test (EUT) is placed on a non-conductive test table at 0.8 m above the horizontal reference ground plane.

Antenna height is 1 m.

For each frequency corresponding to an emission, EUT carried out a rotation through 360° with the aid of the turntable, with the aim to find the maximum of signal.

The test antenna is oriented in all orientations. Only the highest level is recorded.

Frequency range: 9 kHz - 30 MHz.

Detection mode: Quasi-peak except frequency bands 9-90 kHz and 110-490 kHz (average).

Resolution bandwidth: 200 Hz from 9 kHz to 150 kHz.
9 kHz from 150 kHz to 30 MHz

Measurement distance: 30 meters.

Limit:

Frequency range (MHz)	Frequency field strength (μV/m)	Frequency measurement distance (meters)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	24000/F (kHz)	30
1.705-30.0	30	30

Limits in dBμV/m can be extrapolated to 30 m using 40 dB / decade.

Instrumentation test list:

CATEGORY	BRAND	TYPE	N ^R EMITECH
Antenna	Eaton	Cadre Eaton 96009/2	4713
Cable	Câbles & Connectiques	N-13m	2452
Cable	-	N-2m	2805
Cable	-	N-30m	4359
Open area test site	Emitech	Site champ libre	0187
Receiver	Rohde & Schwarz	R&S ESH3	0825
Spectrum analyzer	Advantest	Advantest R3361	5644

Results:

Ambient temperature (°C): 5
Relative humidity (%): 50
Power source: 5 Vdc by USB port

No frequency has been measured above the ambient noise in PRBS mode and functional mode.

Test conclusion: Complies with the requirements of the standard.

8. UNINTENTIONAL RADIATED EMISSIONS IN THE BAND 30 MHz – 1 GHz

Standard: FCC 47 CFR PART 15 : 2014

Sections: 15.109 and 15.209

Equipment under test arrangement:

The equipment under test (EUT) is placed on a non-conductive test table at 0.8 m above the horizontal reference ground plane.

For maximum meter reading at each frequency, the antenna height is adjusted between 1 m and 4 m above the ground plane. A 360 degrees rotation of the EUT is performed in vertical and horizontal polarization. The frequency azimuth and antenna height are presented in the tables on the next pages.

Frequency range: 30 MHz - 1 GHz

Detection mode: Quasi-peak

Resolution bandwidth: 120 kHz

Measurement distance: 3 meters

Limit: The EUT must satisfy requirements of the section 15.109 and 15.209 as shown in table below.

Frequency range (MHz)	Limit (dB μ V/m)
30 to 88	40.0
88 to 216	43.5
216 to 960	46.0
960 to 1000	54.0

Instrumentation test list:

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Schwarzbeck	Biconique VHA9103	317
Antenna	Schwarzbeck	Log-périodique UHALP 9108	3106
Antenna mast	Maturo	AM 4.0-O	7625
Cable	Câbles & Connectiques	N-13m	2452
Cable	-	N-2m	2805
Cable	-	N-10m	6000
Cable	-	N-8m	8021
Open area test site	Emitech	Site champ libre	187
Turntable	Maturo	MCU	7626
Voltmeter	Rohde & Schwarz	R&S ESVS10	1216

Results:

Ambient temperature (°C): 2
 Relative humidity (%): 50
 Power source: 5 Vdc by USB port

PRBS mode

FREQUENCY (MHz)	POLARIZATION	ANTENNA HEIGHT (cm)	AZIMUTH (degrees)	MEASUREMENT (dBμV/m)	LIMIT (dBμV/m)	MARGIN (dB)
149.184	Vertical	230	100	16.6	43.5	26.9
149.184	Horizontal	300	50	18.5	43.5	25.0
176.300	Vertical	100	30	16.9	43.5	26.6
176.300	Horizontal	200	140	18.8	43.5	24.7
250.016	Vertical	100	0	39.6	46.0	6.4
250.016	Horizontal	140	220	45.2	46.0	0.8
375.020	Vertical	270	270	36.6	46.0	9.4
375.020	Horizontal	100	300	41.0	46.0	5.0
500.015	Vertical	130	320	38.5	46.0	7.5
500.015	Horizontal	210	310	39.1	46.0	6.9
625.018	Vertical	130	280	43.3	46.0	2.7

Functional mode

FREQUENCY (MHz)	POLARIZATION	ANTENNA HEIGHT (cm)	AZIMUTH (degrees)	MEASUREMENT (dB μ V/m)	LIMIT (dB μ V/m)	MARGIN (dB)
40.687	Vertical	100	90	38.0	40.0	2.0
40.687	Horizontal	230	50	33.0	40.0	7.0
54.254	Vertical	100	200	15.3	40.0	24.7
54.254	Horizontal	400	160	14.3	40.0	25.7
122.063	Vertical	100	90	30.6	43.5	12.9
122.063	Horizontal	160	120	24.0	43.5	19.5
149.184	Vertical	230	100	38.2	43.5	5.3
149.184	Horizontal	125	30	42.0	43.5	1.5
176.300	Vertical	100	260	37.2	43.5	6.3
176.300	Horizontal	110	220	42.2	43.5	1.3
250.016	Vertical	100	200	41.3	46.0	4.7
250.016	Horizontal	130	220	45.0	46.0	1.0
352.573	Vertical	210	320	38.1	46.0	7.9
352.573	Horizontal	100	130	42.0	46.0	4.0
375.020	Vertical	270	270	35.9	46.0	10.1
375.020	Horizontal	100	310	41.3	46.0	4.7
500.015	Vertical	130	320	38.6	46.0	7.4
500.015	Horizontal	210	310	38.1	46.0	7.9
625.018	Vertical	130	280	43.2	46.0	2.8

Test conclusion: Complies with the requirements of the standard.

9. CONDUCTED EMISSION

Standard: FCC 47 CFR PART 15 : 2014

Test method: Part 15.107 and 15.207

Test configuration:

Tested cable	Measure with	E.U.T. height
Power supply 120 Vac / 60 Hz (PRBS mode)	L.I.S.N.	80 cm

Frequencies band	Tested cable	Resolution bandwidth	Video bandwidth
150 kHz - 30 MHz	Power supply 120 Vac / 60 Hz (PRBS mode)	10 kHz	30 kHz
150 kHz - 30 MHz	Power supply 120 Vac / 60 Hz (PRBS mode)	9 kHz	Auto

Test method deviation: No

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH
[Bobine PE]	EMITECH	CISPR 16-2-1 : 2008	10078
Cable	C&C	BNC-0.3m	10026
Cable	/	N-4m	02809
Cable	/	N-2m	02820
LISN	Rohde & Schwarz	ESH2-Z5	00326
Multimeter	EMITECH	Absorbeur courant de gaine	12366
Power supply	Schaffner	NSG 1007-5-400	04637
Spectrum analyzer	Agilent Technologies	E7405A (V A.14.06)	02205
Surges Suppressor	Hewlett Packard	11947A	00758
Test enclosure	EMITECH	JD1	01804

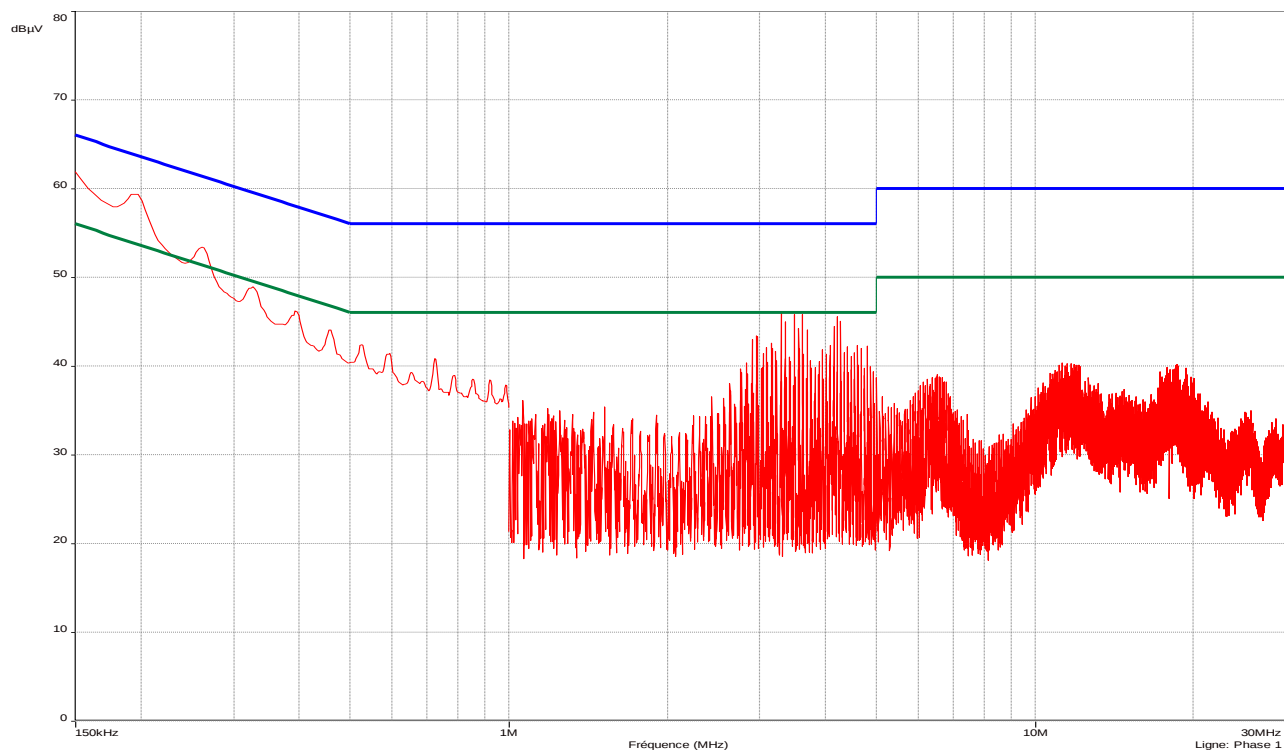
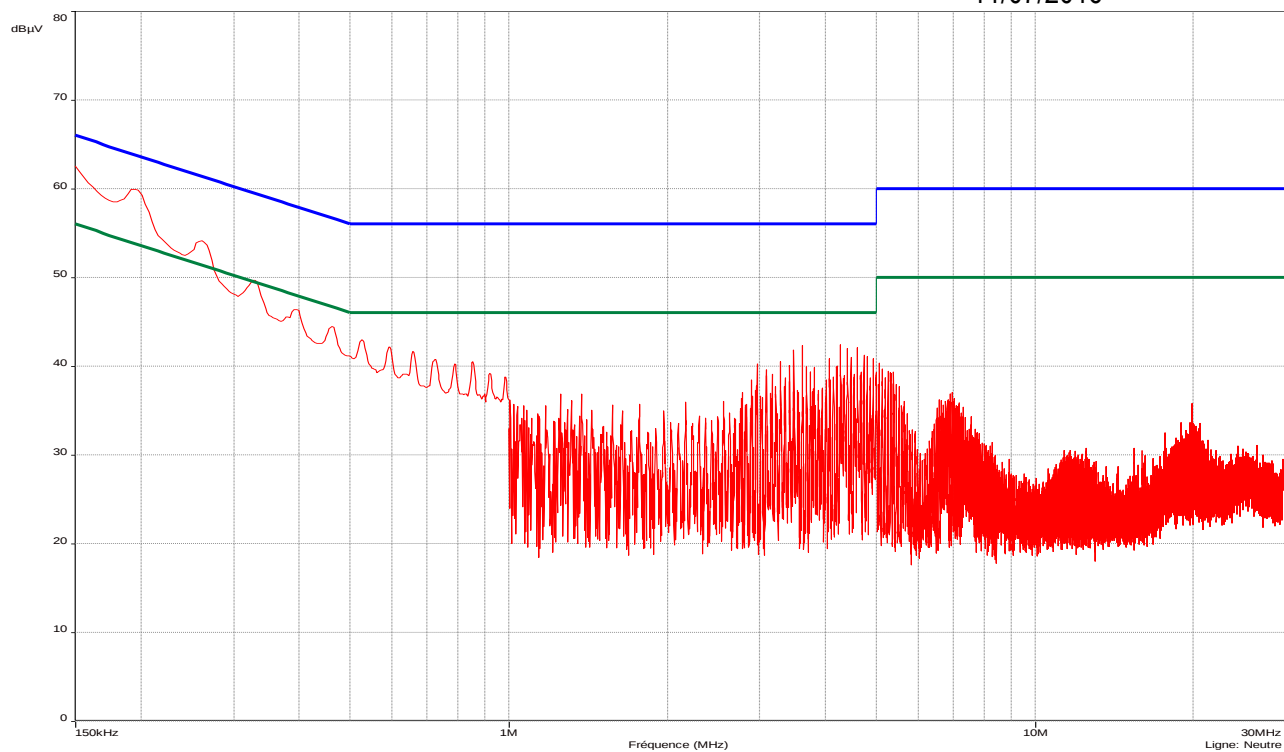
Results:

See curves below including detections and limits in peak (red), average (green) and quasi-peak (blue).

Controller SBC kit PN7120 NFC

Conducted voltage emission (measurement): Power supply 120 Vac / 60 Hz
(PRBS mode) in peak detection

11/07/2016

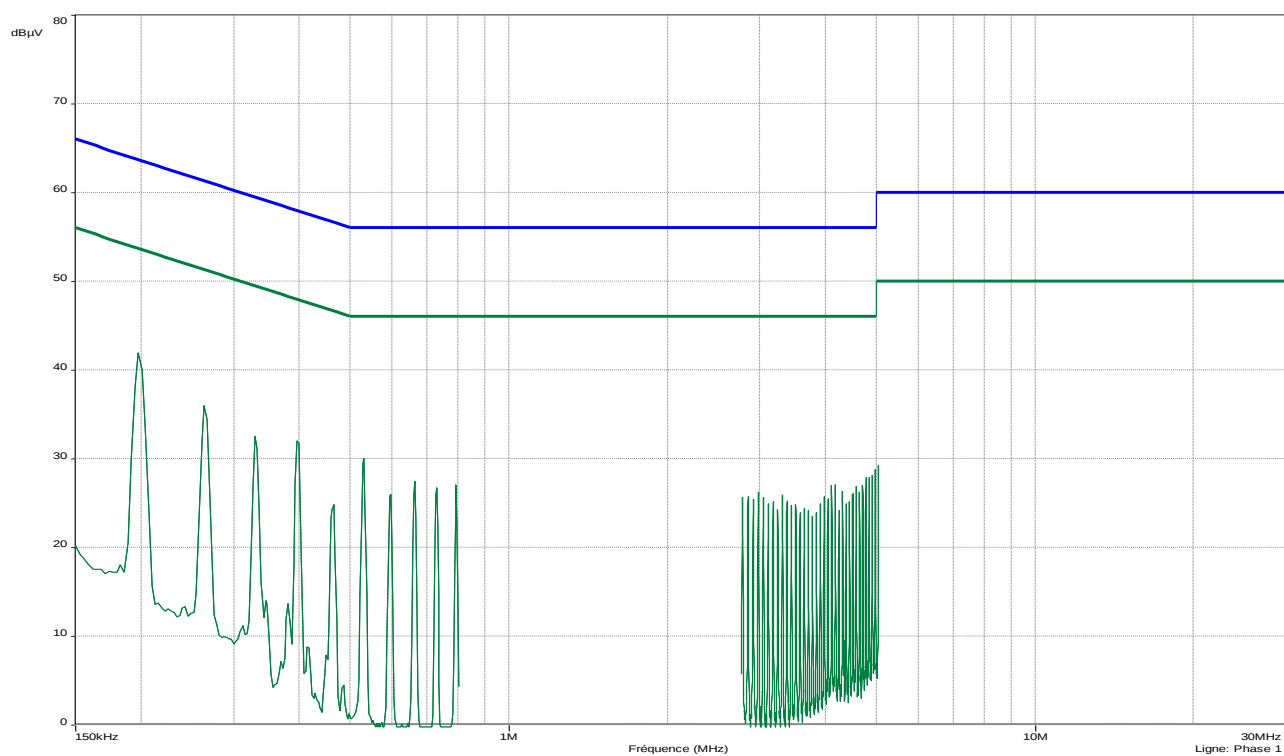
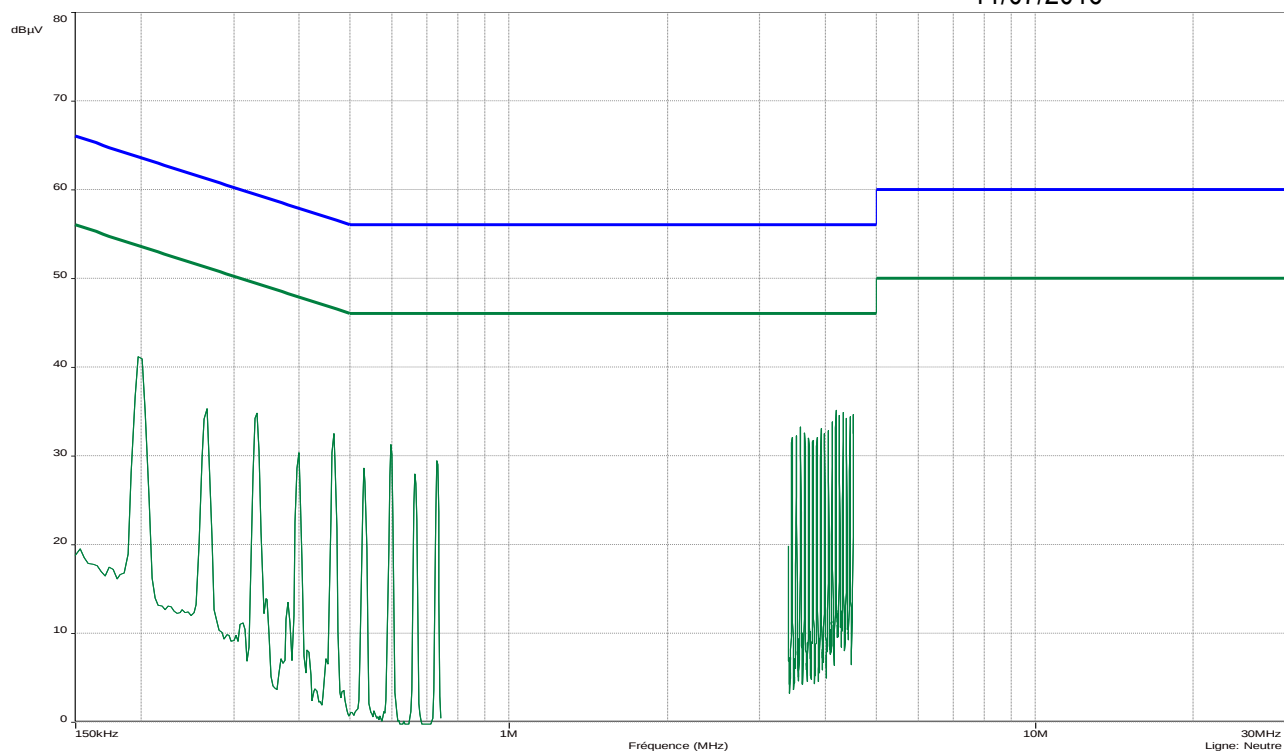


Class: B of the standard

Controller SBC kit PN7120 NFC

Conducted voltage emission (measurement): Power supply 120 Vac / 60 Hz
(PRBS mode) in average value detection

11/07/2016



Class: B of the standard

10. FREQUENCY DRIFT

Standard: FCC 47 CFR Part 15 : 2014

Section: 15.225 (e)

Test configuration:

The measure is realized in near field and the results are correlated with the intentional radiated emission at 3 meters.

PRBS mode: Field at 3 m = 47.1 dB μ V/m $\rightarrow$ field at 30 m = 7.1 dB μ V/m

Functional mode: Field at 3 m = 43.0 dB μ V/m $\rightarrow$ field at 30 m = 3.0 dB μ V/m

Test equipment used:

CATEGORY	BRAND	TYPE	N° EMITECH
Climatic enclosure	Flonic Schlumberger	200P	2694
Spectrum analyzer	Rohde & Schwarz	R&S FSP40	5175

Measurement conditions:

Resolution bandwidth: 10 kHz

Video bandwidth: 30 kHz

Test operating conditions of the equipment:

The transmitter is in PRBS mode and functional mode.

Results:

PRBS mode

			F (MHz)	Deviation (kHz)	Curve	Limit (1)
Normal test conditions	Nominal power source (5.0 V)	Temperature (+5°C) Humidity (50%)	13.560200	+ 0.200	1	± 1.356 kHz
	Minimal power source		N.A.	N.A.	N.A.	
	Maximal power source		N.A.	N.A.	N.A.	
Extreme test conditions	Minimal temperature (-20°C)	Nominal power source (5.0 V)	13.560200	+ 0.200	2	
	Maximal temperature (+50°C)		13.560200	+ 0.200	3	

Functional mode

			F (MHz)	Deviation (kHz)	Curve	Limit (1)
Normal test conditions	Nominal power source (5.0 V)	Temperature (+5°C) Humidity (50%)	13.560200	+ 0.200	4	± 1.356 kHz
	Minimal power source		N.A.	N.A.	N.A.	
	Maximal power source		N.A.	N.A.	N.A.	
Extreme test conditions	Minimal temperature (-20°C)	Nominal power source (5.0 V)	13.560200	+ 0.200	5	
	Maximal temperature (+50°C)		13.560200	+ 0.200	6	

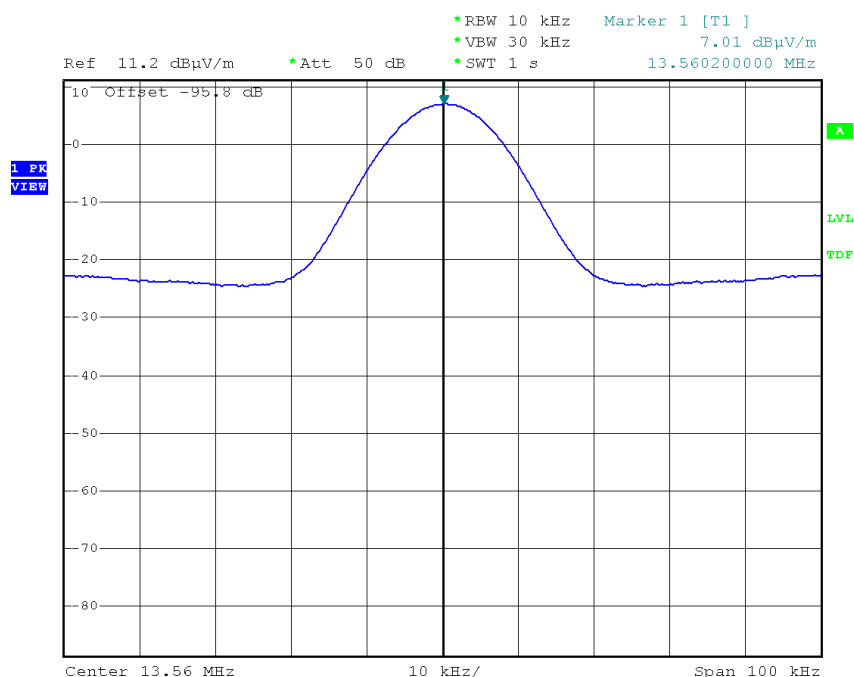
(1) ± 0.01 % of the operating frequency.

N.A. : Not Applicable

Measurement uncertainty: ± 1 x 10⁻⁷

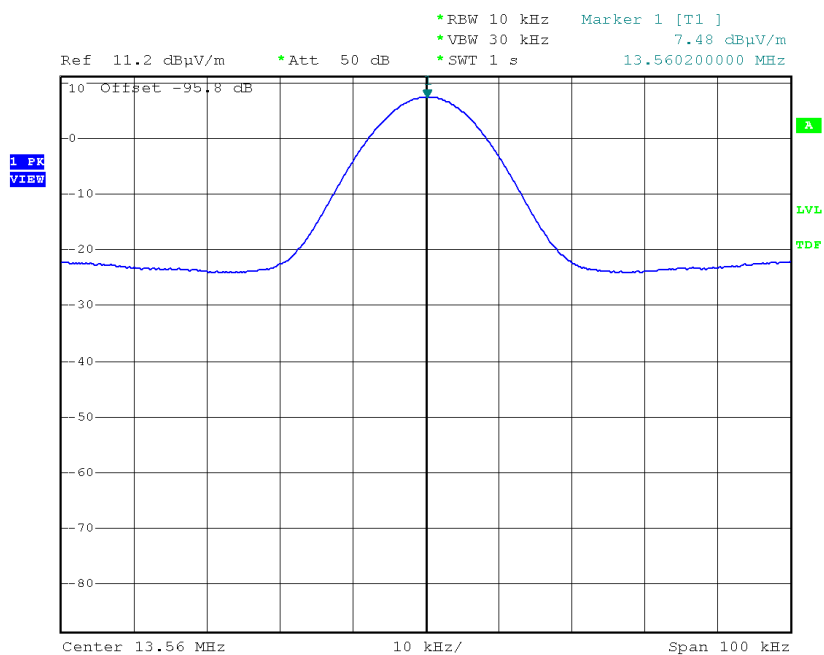
Test conclusion: Complies with the requirements of the standard.

Curve 1

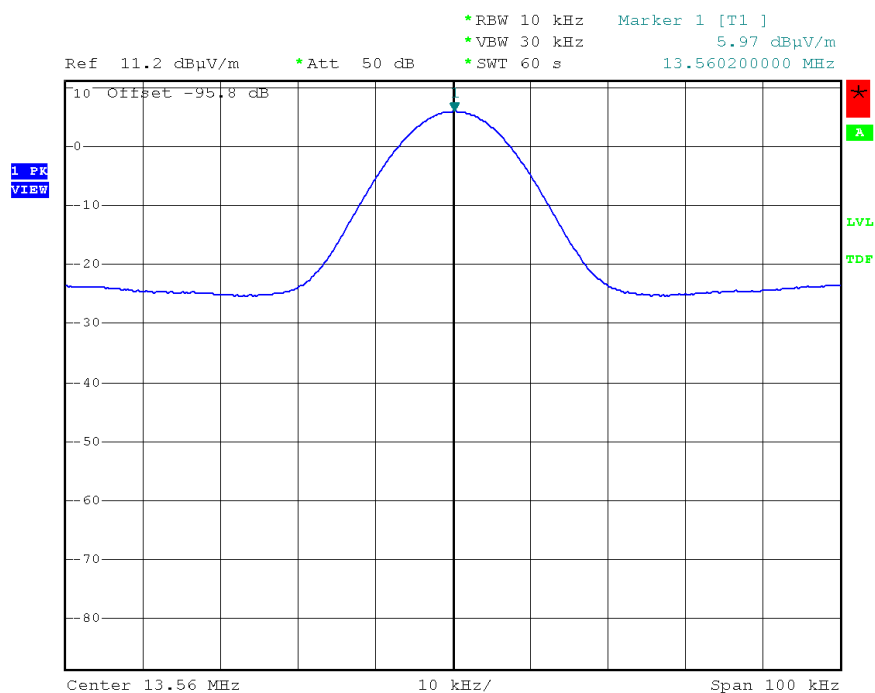


Date: 13.FEB.2015 09:31:19

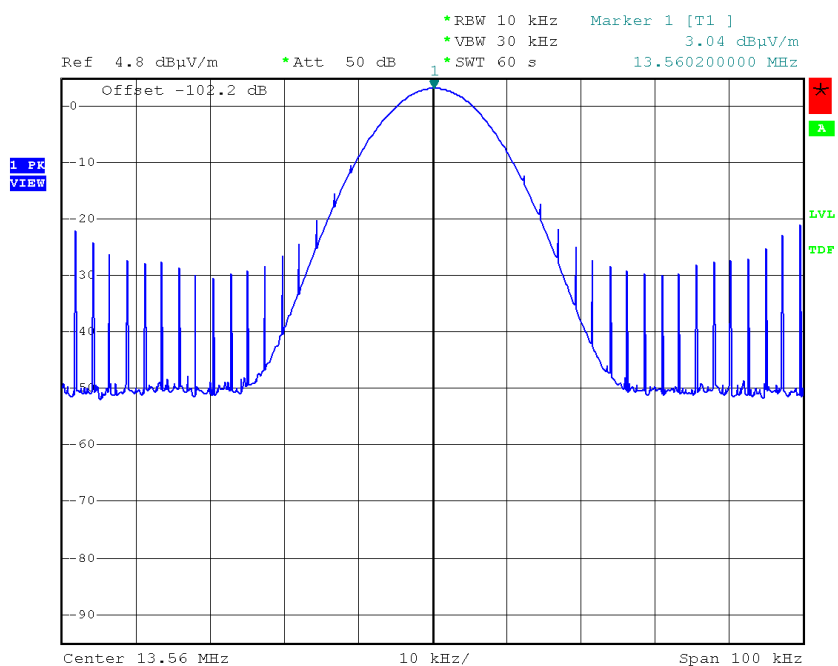
Curve 2



Date: 13.FEB.2015 10:17:28

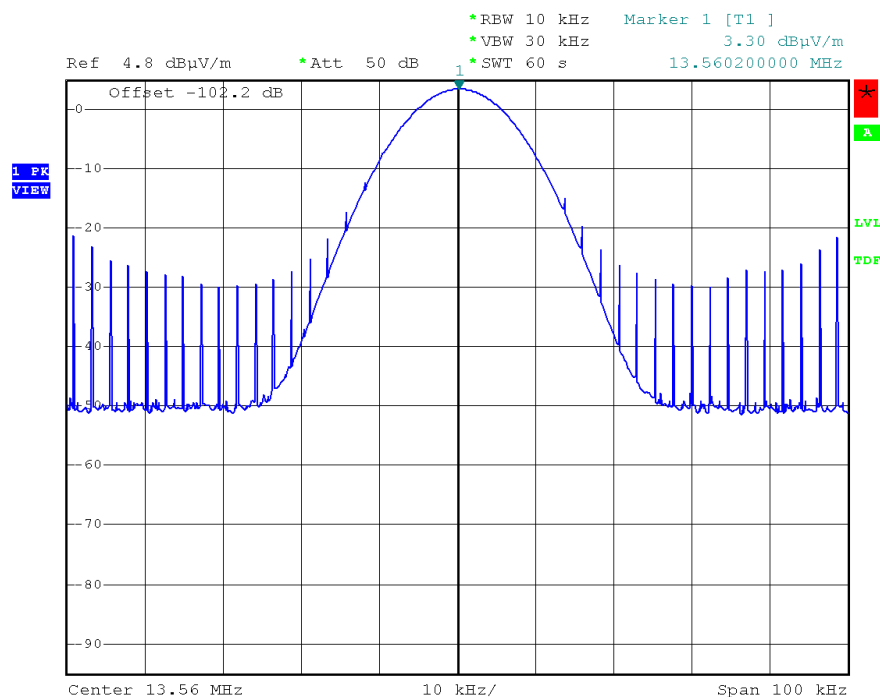
Curve 3


Date: 13.FEB.2015 11:07:38

Curve 4


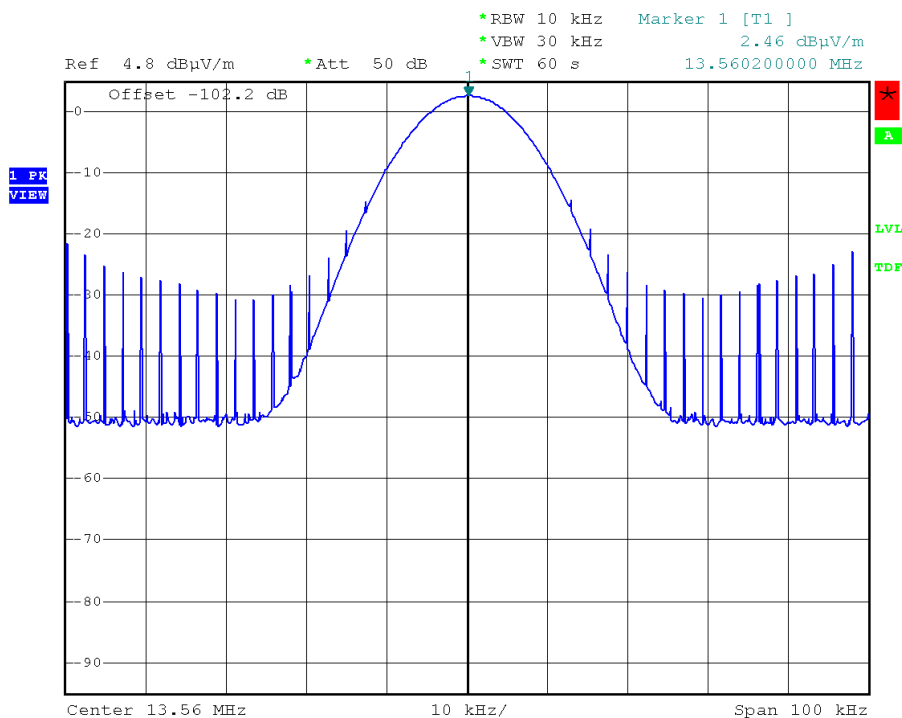
Date: 13.FEB.2015 09:39:57

Curve 5



Date: 13.FEB.2015 10:16:04

Curve 6



Date: 13.FEB.2015 11:03:11

11. 20 DB BANDWIDTH

Standard: FCC 47 CFR Part 15 : 2014

Section: 15.215 (c)

Test configuration:

The measure is realized in near field and the results are correlated with the intentional radiated emission at 3 meters.

PRBS mode: Field at 3 m = 47.1 dB μ V/m $\rightarrow$ field at 30 m = 7.1 dB μ V/m

Functional mode: Field at 3 m = 43.0 dB μ V/m $\rightarrow$ field at 30 m = 3.0 dB μ V/m

Test equipment used:

CATEGORY	BRAND	TYPE	N° EMITECH
Climatic enclosure	Flonic Schlumberger	200P	2694
Spectrum analyzer	Rohde & Schwarz	R&S FSP40	5175

Measurement conditions:

Resolution bandwidth: 1 kHz

Video bandwidth: 3 kHz

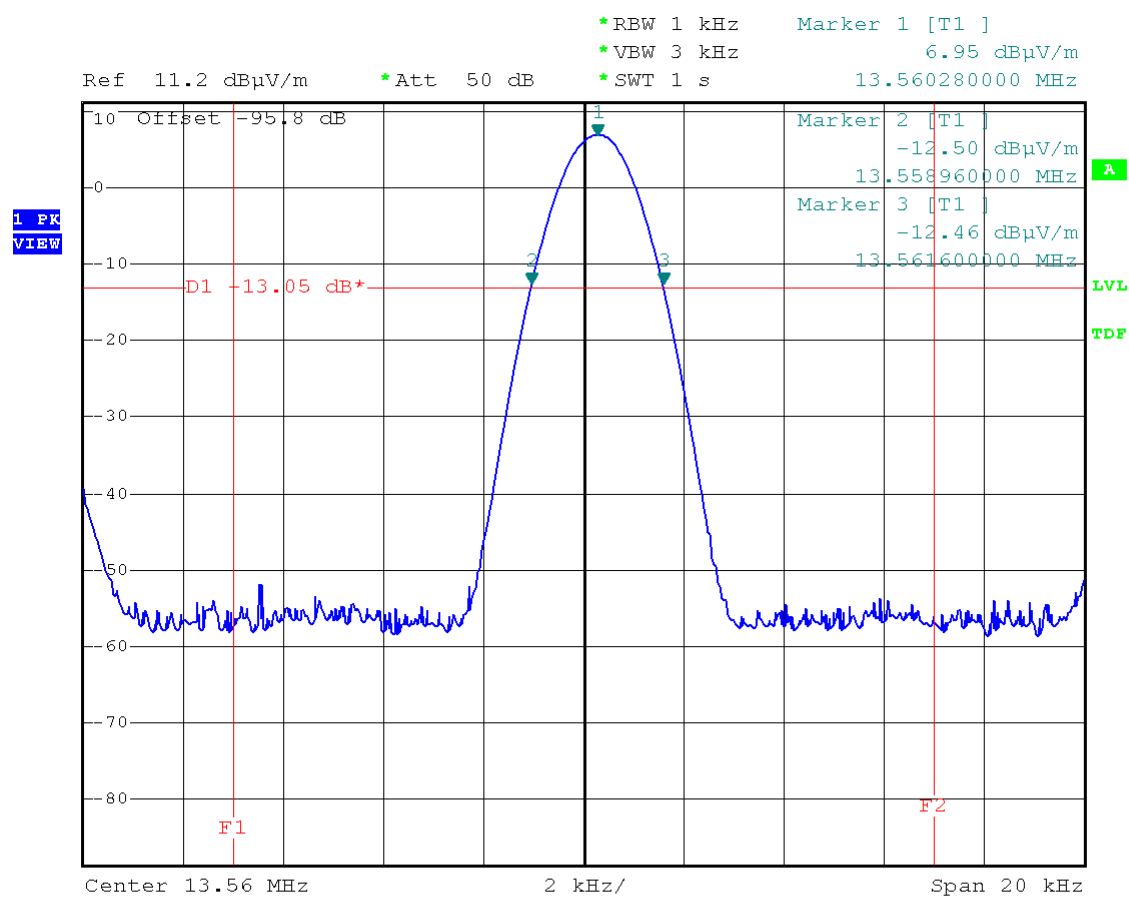
Test operating conditions of the equipment:

The transmitter is in PRBS mode and functional mode.

Results:

PRBS mode

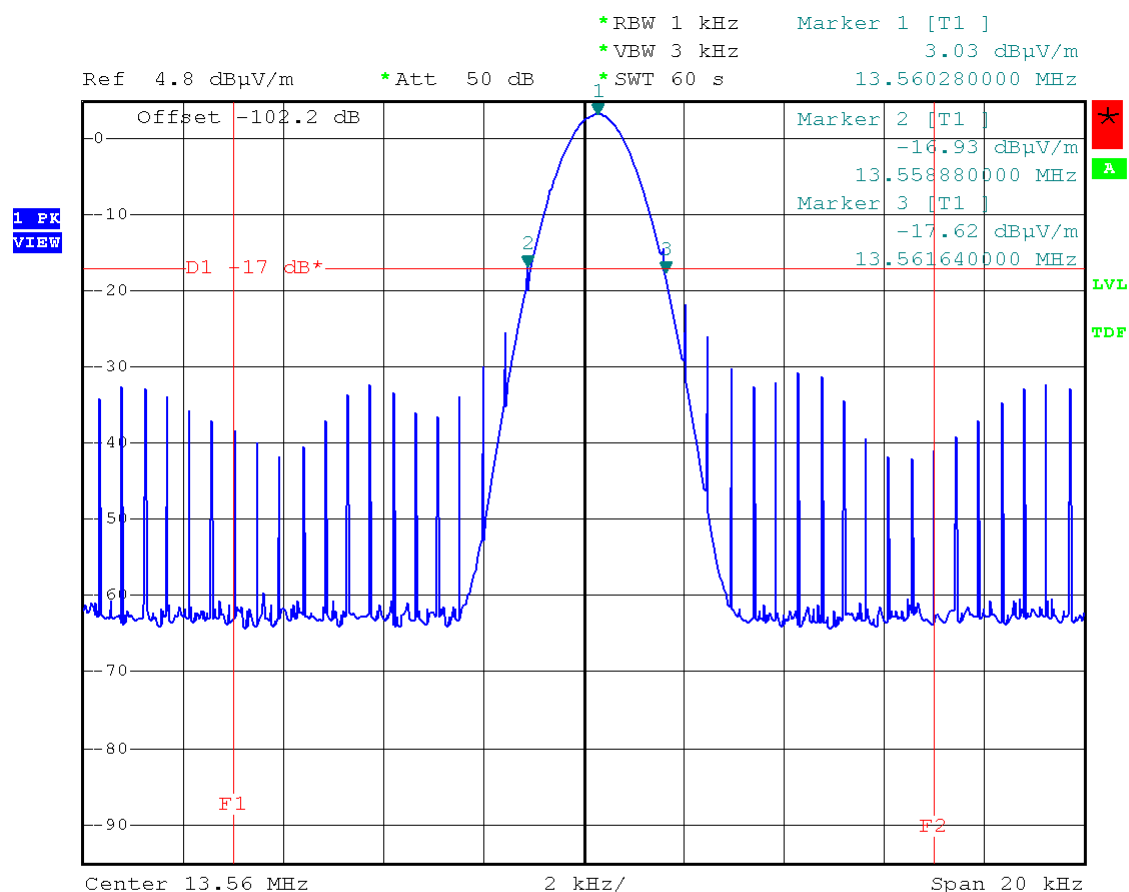
20 dBc point (Low)	20 dBc point (High)	Operating frequency band (MHz)
13.558960 MHz	13.561600 MHz	13.553 to 13.567



Date: 13.FEB.2015 09:34:54

Functional mode

20 dBc point (Low)	20 dBc point (High)	Operating frequency band (MHz)
13.558880 MHz	13.561640 MHz	13.553 to 13.567



Date: 13.FEB.2015 09:47:01

□□□ End of report - 3 annexes to be forwarded □□□

ANNEX 1:

ANTENNA FACTORS, INSERTION LOSSES AND AMPLIFIER VALUES

BILL OF MATERIAL

The test antenna used for the radiated emission between 9 kHz and 30 MHz is the active loop antenna n°4713. Antenna factors are given in table 1.

The test antenna used for the radiated emission between 30 MHz and 200 MHz is the biconical antenna n°0317. Antenna factors are given in table 2.

The test antenna used for the radiated emission between 200 MHz and 1 GHz is the logper antenna n°3106. Antenna factors are given in table 3.

The measuring receiver n°1216 used in the frequency range 30 MHz to 1 GHz has an integrated preamplifier.

The test cable used between 9 kHz and 30 MHz to connect the antennas to the receiver for measurements at a distance of 3 meters has losses given in table 4.

The test cable used between 30 MHz and 1 GHz to connect the antennas to the receiver for measurements at a distance of 3 meters has losses given in table 5.

Frequency (MHz)	Antenna factor (dB/m)	Frequency (MHz)	Antenna factor (dB/m)
0.009	26.3	0.8	9.9
0.01	25.6	1	10.0
0.015	22.8	1.5	10.1
0.02	21.0	2	10.1
0.03	18.7	3	10.0
0.05	15.4	5	10.0
0.08	12.8	8	9.8
0.1	11.8	10	9.7
0.15	10.5	15	9.2
0.2	9.9	20	8.5
0.3	9.7	25	7.4
0.5	9.7	30	5.6

TABLE 1 : ACTIVE LOOP ANTENNA

Frequency (MHz)	Antenna factor (dB/m)	Frequency (MHz)	Antenna factor (dB/m)
30	18.9	90	8.5
35	17.1	100	10.1
40	15.1	120	13.0
45	13.3	140	14.5
50	11.5	160	15.5
60	8.0	180	15.7
70	6.4	200	16.1
80	6.9	-	-

TABLE 2 : BICONICAL ANTENNA

Frequency (MHz)	Antenna factor (dB/m)	Frequency (MHz)	Antenna factor (dB/m)
200	24.3	650	19.9
250	17.6	700	20.4
300	14.6	750	20.7
350	15.0	800	21.3
400	17.0	850	21.7
450	17.2	900	21.9
500	18.5	950	21.7
550	18.7	1000	22.5
600	19.6	-	-

TABLE 3 : LOGPER ANTENNA

Frequency (MHz)	Loss (dB)	Frequency (MHz)	Loss (dB)
0.009	0.0	6.000	0.5
0.020	0.0	7.000	0.5
0.050	0.0	8.000	0.5
0.100	0.1	9.000	0.6
0.500	0.1	10.00	0.6
1.000	0.2	15.00	0.8
2.000	0.3	20.00	0.9
3.000	0.3	25.00	1.0
4.000	0.4	30.00	1.1
5.000	0.4	-	-

**TABLE 4 : TEST CABLE FOR 3M MEASUREMENT INTO 9 kHz
AND 30 MHz**

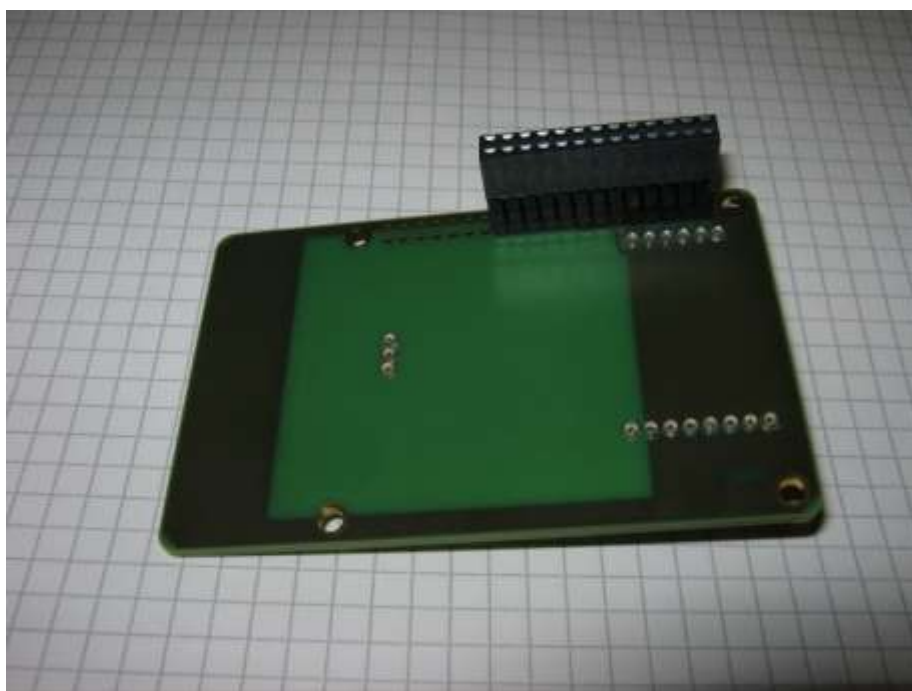
Frequency (MHz)	Loss (dB)	Frequency (MHz)	Loss (dB)
30	0.7	250	1.8
40	0.7	300	2.1
50	0.9	400	2.3
60	0.9	500	2.5
70	0.9	600	3.0
80	0.9	700	3.4
90	1.1	800	3.6
100	1.1	900	3.9
150	1.4	1000	4.1
200	1.6	-	-

**TABLE 5 : TEST CABLE FOR 3M MEASUREMENT INTO 30 MHz
AND 1 GHz**

ANNEX 2:

PHOTOGRAPHIES

EQUIPMENT UNDER TEST (E.U.T.) PHOTOGRAPHIES





NFC Board





Auxillary board

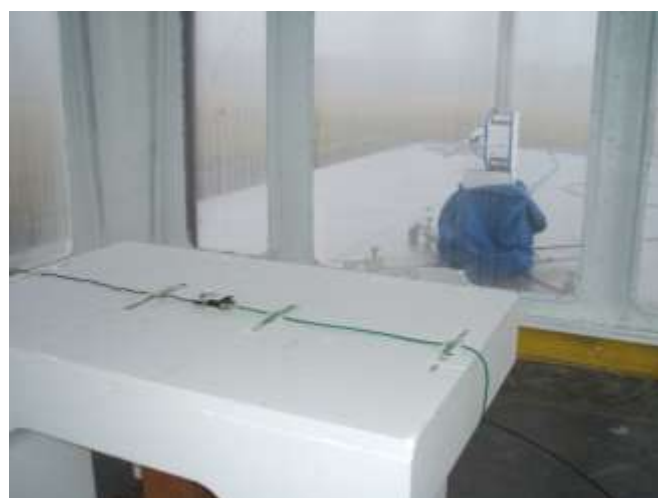




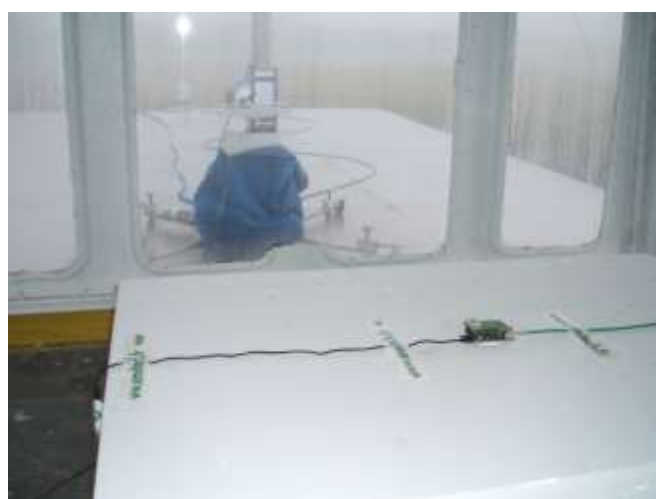
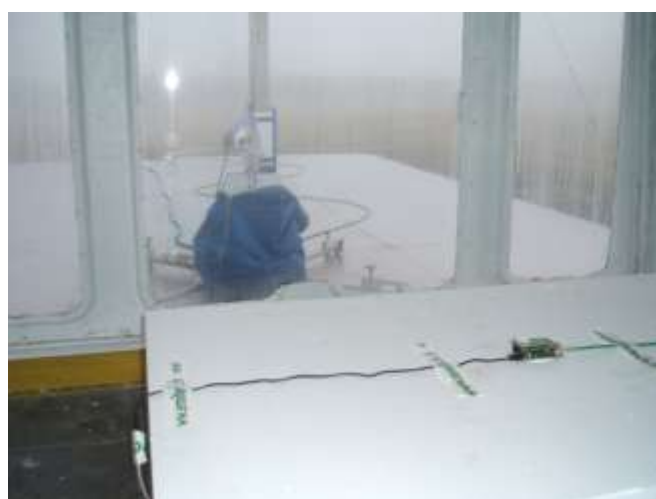
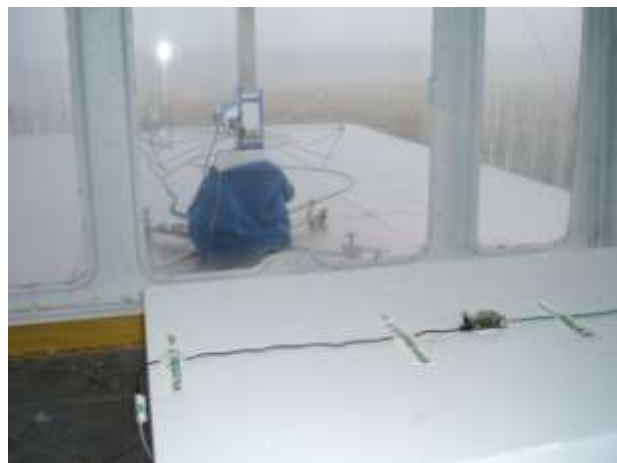
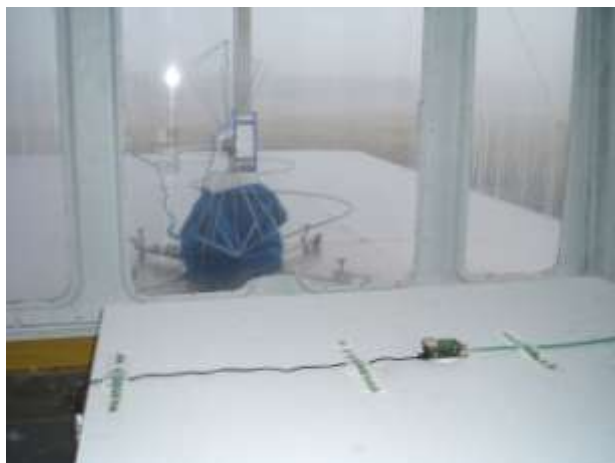
NFC Board + Auxillary board



Badge



E.U.T in functional mode



E.U.T in PRBS mode



ANNEX 3:

CALIBRATION DATES

N° EMITECH	LAST CALIBRATION	CALIBRATION DUE DATE
1216	23/04/2014	23/04/2016
0187	24/10/2014	24/10/2017
0317	25/02/2014	25/02/2016
3106	05/06/2014	05/06/2016
2452	24/10/2014	24/10/2016
2805	01/08/2013	01/08/2015
5175	23/06/2014	23/06/2016
4713	11/02/2014	11/02/2016
4359	27/06/2014	27/06/2016
8021	22/02/2013	22/02/2015
6000	28/11/2014	28/11/2016