TEST REPORT

RADIO

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Manufacturer	NXP Semiconductors
Type	JN5179-001-U00
Serial number	No serial number
IC	8764A-JN5179U0
FCC ID	XXMJN5179U0
Test date	2016/01/21, 2016/01/28 & 2016/03/14
Tests performed by	**Armand MAHOUNGOU**
Test site	Fontenay aux Roses/ Ecuelles
Date of issue	2016/03/18

Written by :
Armand MAHOUNGOU
Tests operator

Approved by :
Stéphane PHOUDIAH
Technical manager

LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES
S.A.S au capital de 15.745.984 €
RCS Nanterre B 408 363 174
33 avenue du General Leclerc
F - 92260 FONTENAY AUX ROSES

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1. TEST PROGRAM

- **References**

Standards:
- 47 CFR Part 15C
- RSS-247
- RSS-Gen
- CISPR 16-4-2
- ANSI C63.10 (2013)
- DTS measurement guidance 558074 D01 v03r04

Standard Section	Test Description	TEST RESULT - Comments
RSS-Gen § 6.6	Occupied Bandwidth	PASS
CFR 47 § 15.247 (a) (2) RSS-247 § 5.2 (1)	-6dB Bandwidth	PASS
CFR 47 § 15.247 (b) RSS-247 § 5.4 (4)	Maximum Output Power	PASS
CFR 47 § 15.247 (e) RSS-247 § 5.2 (2)	Power Spectral Density	PASS
CFR 47 § 15.247 (d) RSS-247 § 5.5	Conducted Spurious Emission at the Band Edge	PASS
CFR 47 § 15.247 (d) RSS-247 § 5.5	Unwanted Emissions into Non-Restricted Frequency Bands	PASS
CFR 47 § 15.207 RSS-Gen § 8.8	AC Power Line Conducted Emissions	PASS
CFR 47 § 15.209 (a) CFR 47 § 15.205 (a) CFR 47 § 15.247 (d) RSS-Gen § 8.10	Unwanted Emissions into Restricted Frequency Bands	PASS
RSS-Gen § 7.1	Receiver Radiated emissions	PASS (Include in Unwanted Emissions into Restricted Frequency Bands)

PASS: EUT complies with standard's requirement
FAIL: EUT does not comply with standard's requirement
NA: Not Applicable
NP: Test Not Performed

2. EQUIPMENT DESCRIPTION

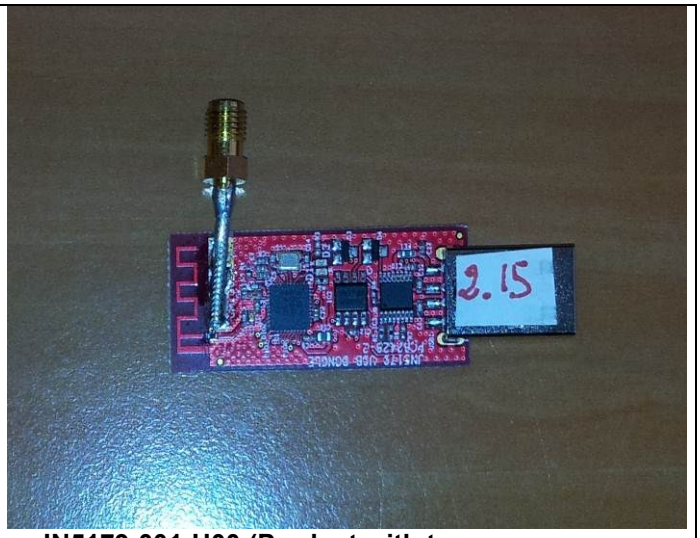
2.1. GENERAL DESCRIPTION

The JN5179-001-U00 Dongle provides an easy way of interfacing a host machine (such as a PC) to a wireless network based on the IEEE802.15.4, ZigBee Light Link, ZigBee Smart Energy networking applications. The dongle incorporates the NXP JN5179 wireless microcontroller, allowing a direct USB connection between the host machine and the JN5179 device, which then provides the radio interface to the wireless network.

2.2. HARDWARE & SOFTWARE IDENTIFICATION

- **Equipment under test (EUT):**

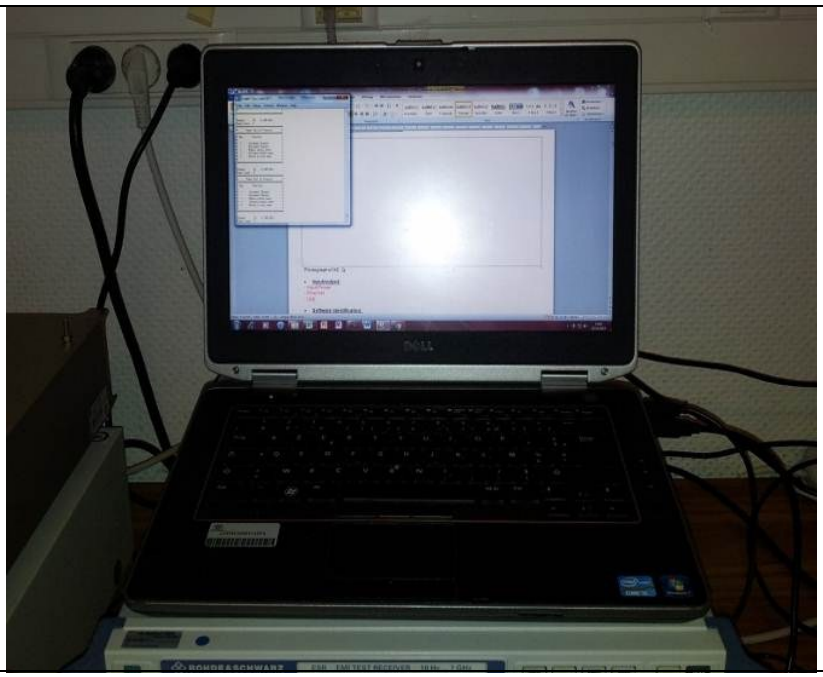
JN5179-001-U00 (Radiated product)



JN5179-001-U00 (Product with temporary access conduct for testing)

Photograph of EUT

Auxiliary equipment (AE) used for testing:



Photograph of AE

- **Input/output:**

- Input Power
- Usb

- **Software identification:**

-Software version:

- CMET 4.2

- **Equipment information:**

- Modulation technology: DSSS modulation
- Transmit operating mode: ☒ Single antenna

- Number of transmit chains: ☒ 1

- Number of receiver chains: ☒ 1

- Antenna type: ☒ Integral ☐ External
- Beamforming gain: ☐ Yes (dB) ☒ No

- Type of the equipment: ☐ Stand-alone equipment ☒ Plug-in radio device ☐ Combined equipment

- Test source voltage : Vnom: ☐ 120V/60Hz ☒ 5Vdc USB

Note: the mother board is connected to the PC with USB. A LDO on the JN5179-001-U00 dongle generates the 3.3V voltage.

- Type of power source: ☐ Battery (Alkaline/Lithium-Ion/Lead acid/Other) ☐ Internal power supply
☒ External power supply ☐ Car Charger

- Test sequence/test software used: See 2.2. Running Mode
- Ad-hoc mode: ☐ Yes ☒ No
- Duty Cycle: ☐ Continuous duty ☐ Intermittent duty ☒ Continuous operation
- Equipment type: ☐ Representative production model ☒ Pre-production model

- Antenna Gain:

Antenna	Gain (dBi)
1 (integral) for JN5179-001-U00	0.86

- Operating frequency range:

Frequency Band (MHz)	Available
2400MHz to 2483,5MHz	☒

-Channel plan:

Channel	Frequency (MHz)	Available Channel
Cmin: 11	2405	☒
12	2410	☒
13	2415	☒
14	2420	☒
15	2425	☒
16	2430	☒
17	2435	☒
Cnom: 18	2440	☒
19	2445	☒
20	2450	☒
21	2455	☒
22	2460	☒
23	2465	☒
24	2470	☒
25	2475	☒
Cmax: 26	2480	☒

-Data Rate:

Data Rate (Mbps)	Modulation Type	Worst Case Modulation
0,25	O-QPSK	☒

2.3. RUNNING MODE

The EUT is set in the following modes during tests:
- Permanent emission with modulation on a fixed channel in the data rate that produced the highest power
- Permanent reception

The following procedure is used to set the equipment:
- CMET for Certification JN5179-.doc

2.4. EQUIPEMENT LABELLING

2.5. EQUIPMENT MODIFICATIONS

No equipment modification has been necessary during testing.

3. OCCUPIED BANDWIDTH

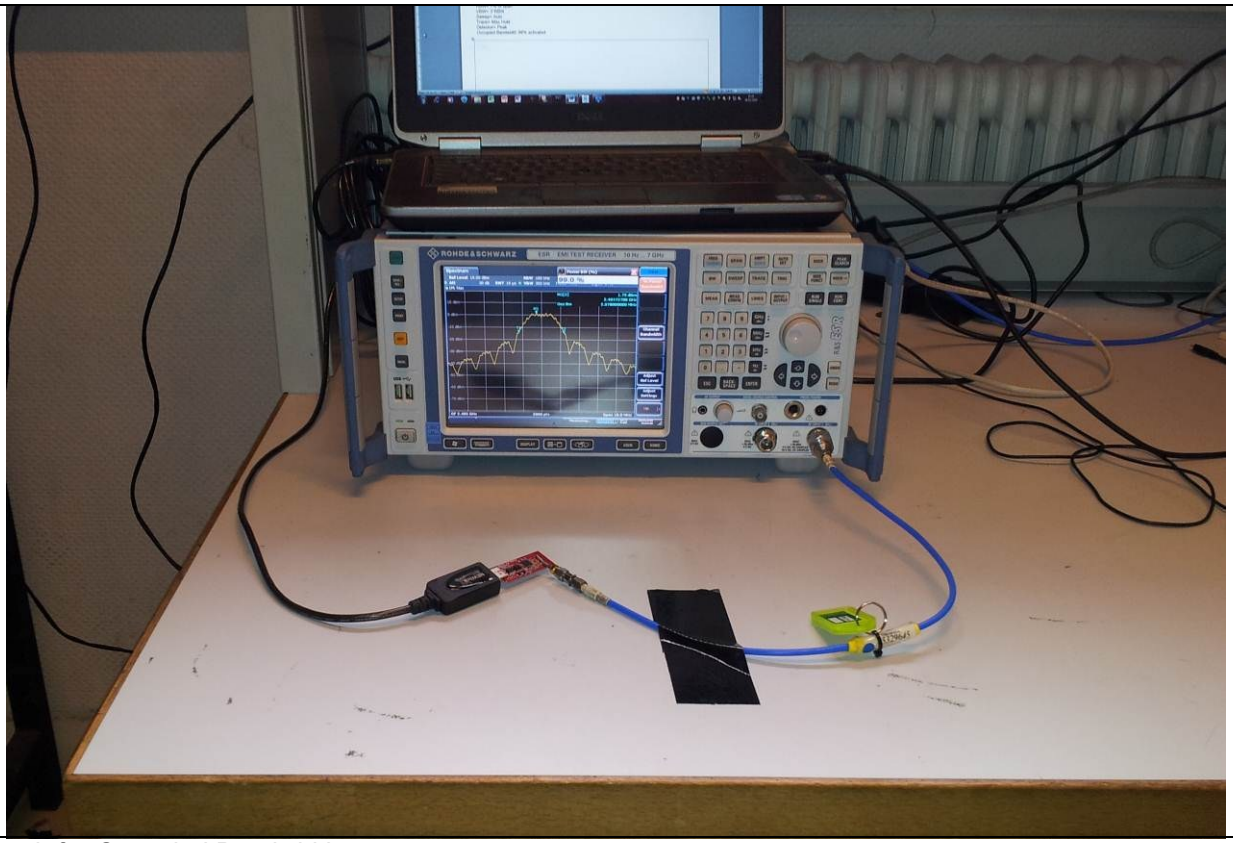
3.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : 2016/01/28
Ambient temperature : 26°C
Relative humidity : 44%

3.2. TEST SETUP

The Equipment Under Test is installed on a table and set in permanent emission with modulation. Measurement is performed with a spectrum analyzer on the EUT conducted access. The product has been tested according to the RSS-GEN § 6.6 reference method.

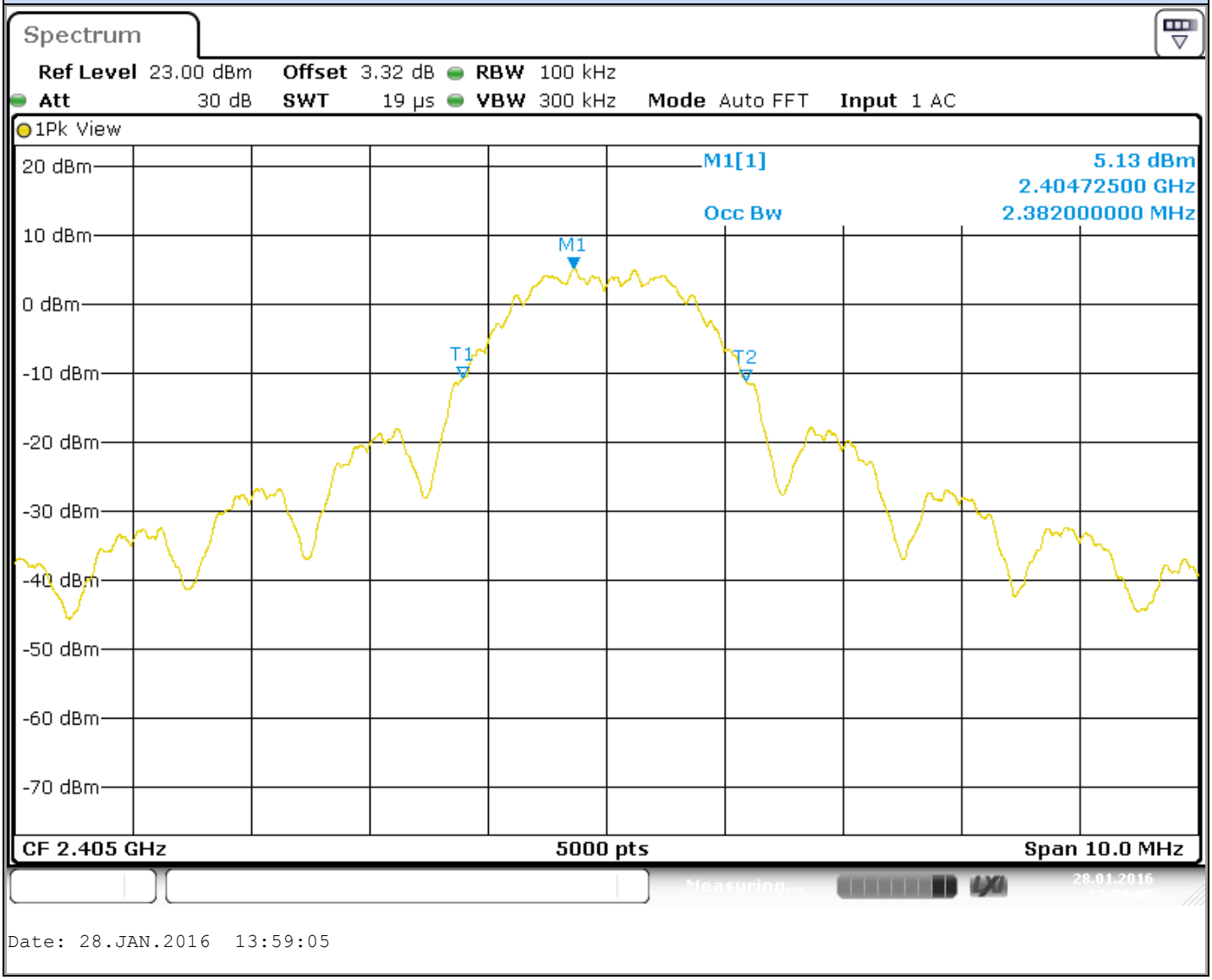
Spectrum Analyzer Setting:
Center frequency= Cmin or Cnom or Cmax
Span= Above the emission spectrum
Amplitude= Sufficient to observe the signal amplitude
RBW= 1% of span
VBW≥ 3*RBW
Sweep= Auto
Trace= Max Hold
Detector= Peak
Occupied Bandwidth 99% activated



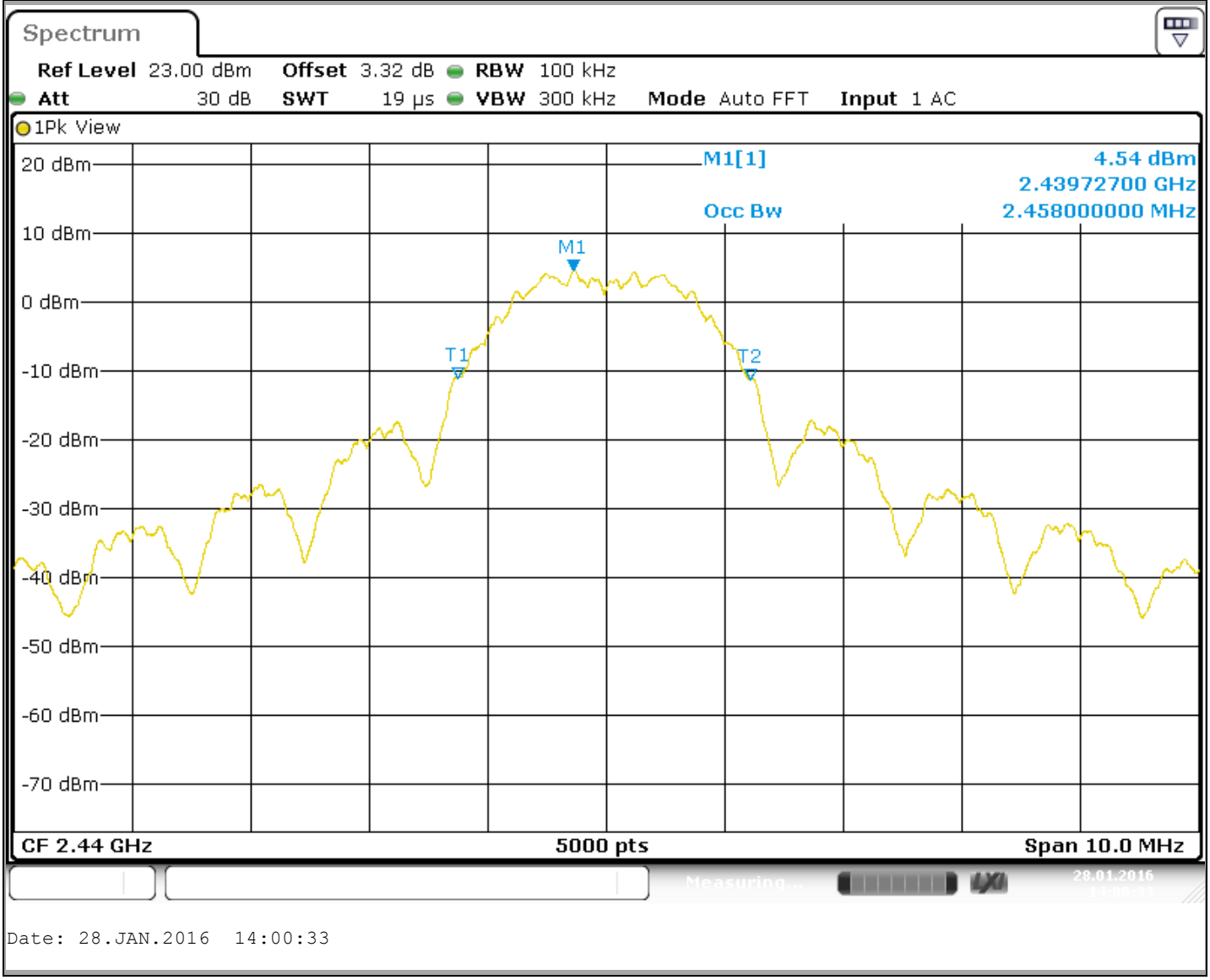
Photograph for Occupied Bandwidth

3.3. GRAPHICS & RESULTS

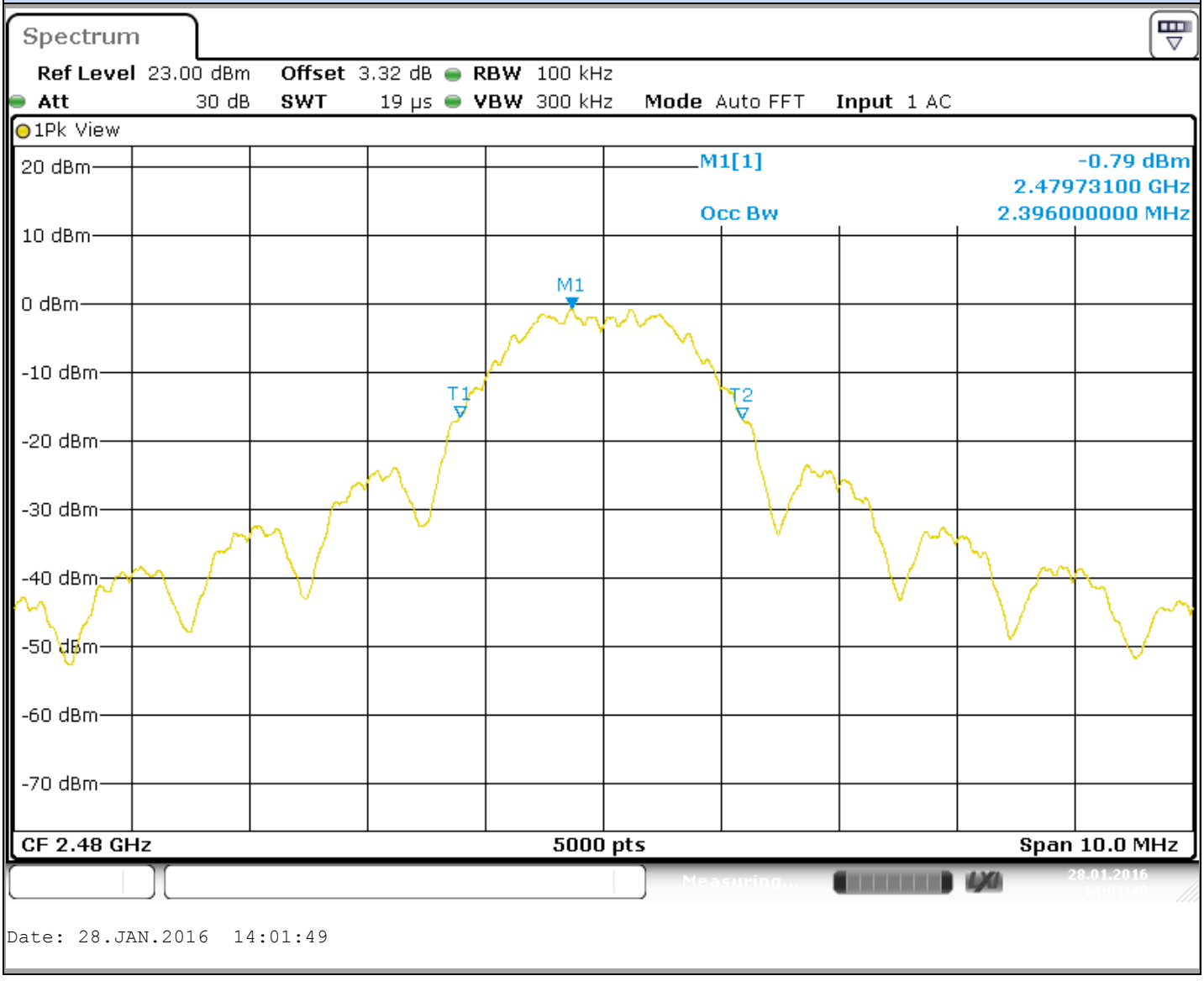
Cmin



Cnom


Spectrum
Ref Level 23.00 dBm Offset 3.32 dB RBW 100 kHz
Att 30 dB SWT 19 µs VBW 300 kHz Mode Auto FFT Input 1 AC
1Pk View
M1[1]
4.54 dBm
2.43972700 GHz
Occ Bw
2.458000000 MHz
M1
T1
T2
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.44 GHz
5000 pts
Span 10.0 MHz
Measuring...
28.01.2016
Date: 28.JAN.2016 14:00:33

Cmax



Temperature	Tnom		
Voltage	Vnom		
Frequency	Cmin	Cnom	Cmax
Occupied Bandwidth (MHz)	2.382	2.458	2.396

Result: PASS

Limit: → None

4. -6DB BANDWIDTH

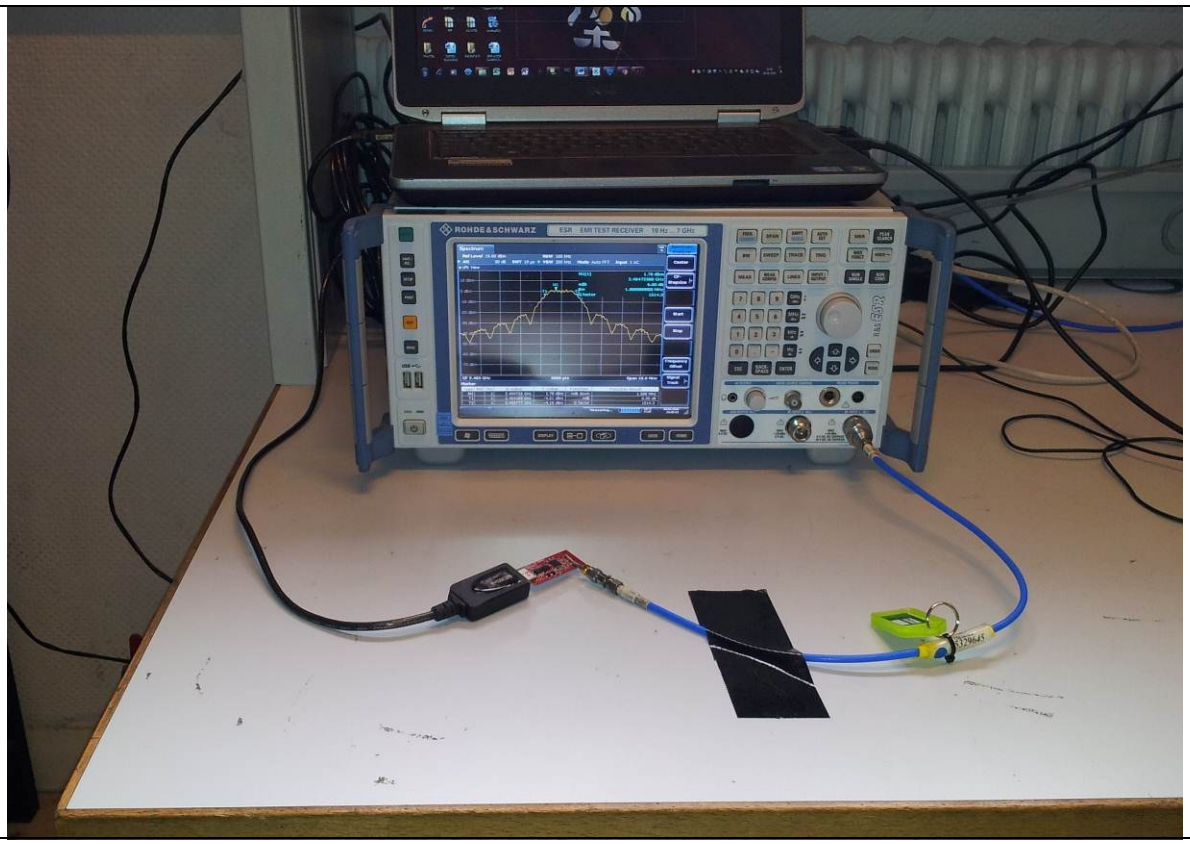
4.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : 2016/01/28
Ambient temperature : 26°C
Relative humidity : 44%

4.2. TEST SETUP

The Equipment Under Test is installed on a table and set in permanent emission with modulation. Measurement is performed with a spectrum analyzer on the EUT conducted access. The product has been tested according to the FCC KDB 558074 D01 DTS Meas Guidance v03r04 § 8.1 Option 1.

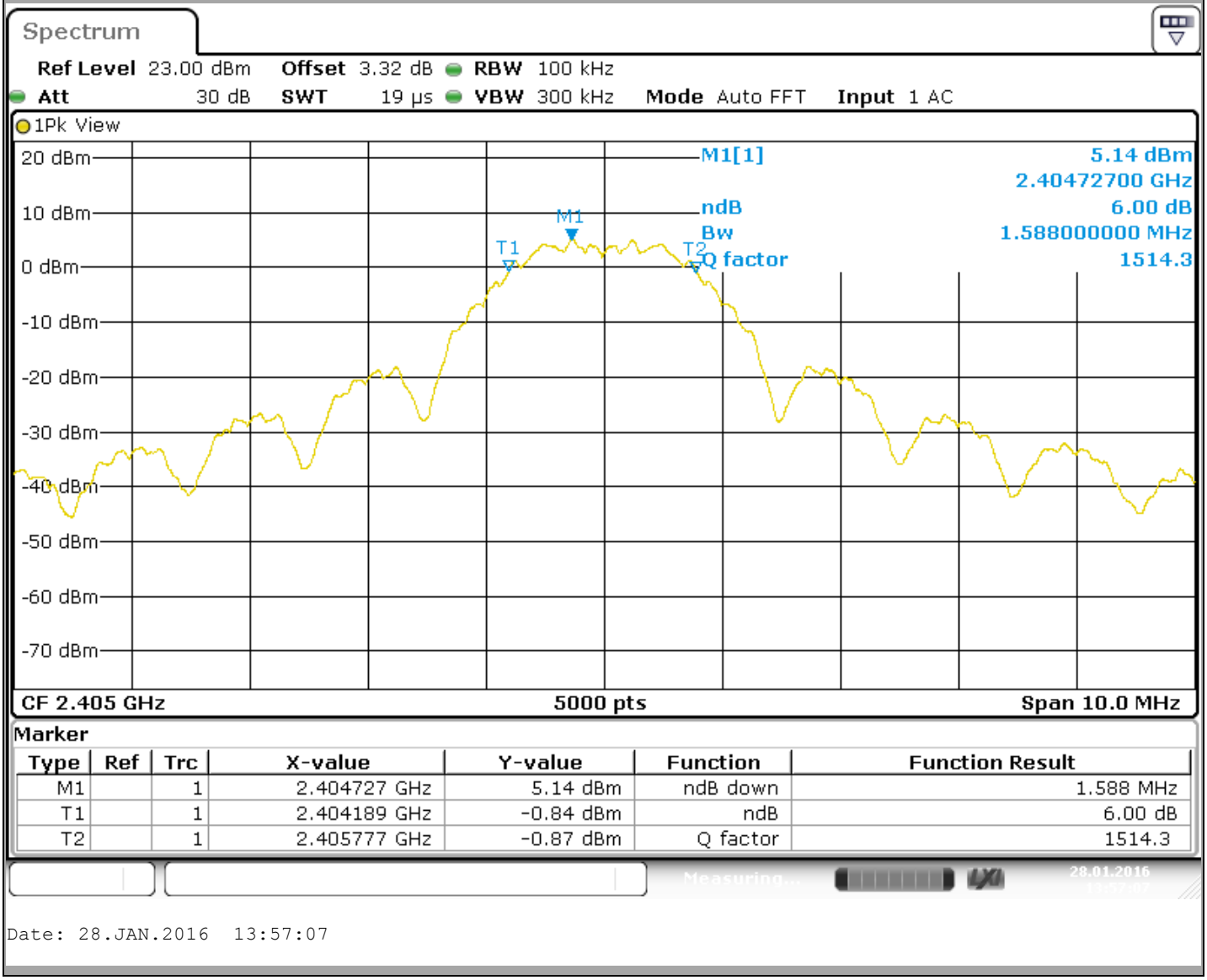
Spectrum Analyzer Setting:
Center frequency= Cmin or Cnom or Cmax
Span= At least twice the emission spectrum
Amplitude= Sufficient to observe the signal amplitude
RBW= 100kHz
VBW≥ 300kHz
Sweep= Auto
Trace= Max Hold
Detector= Peak



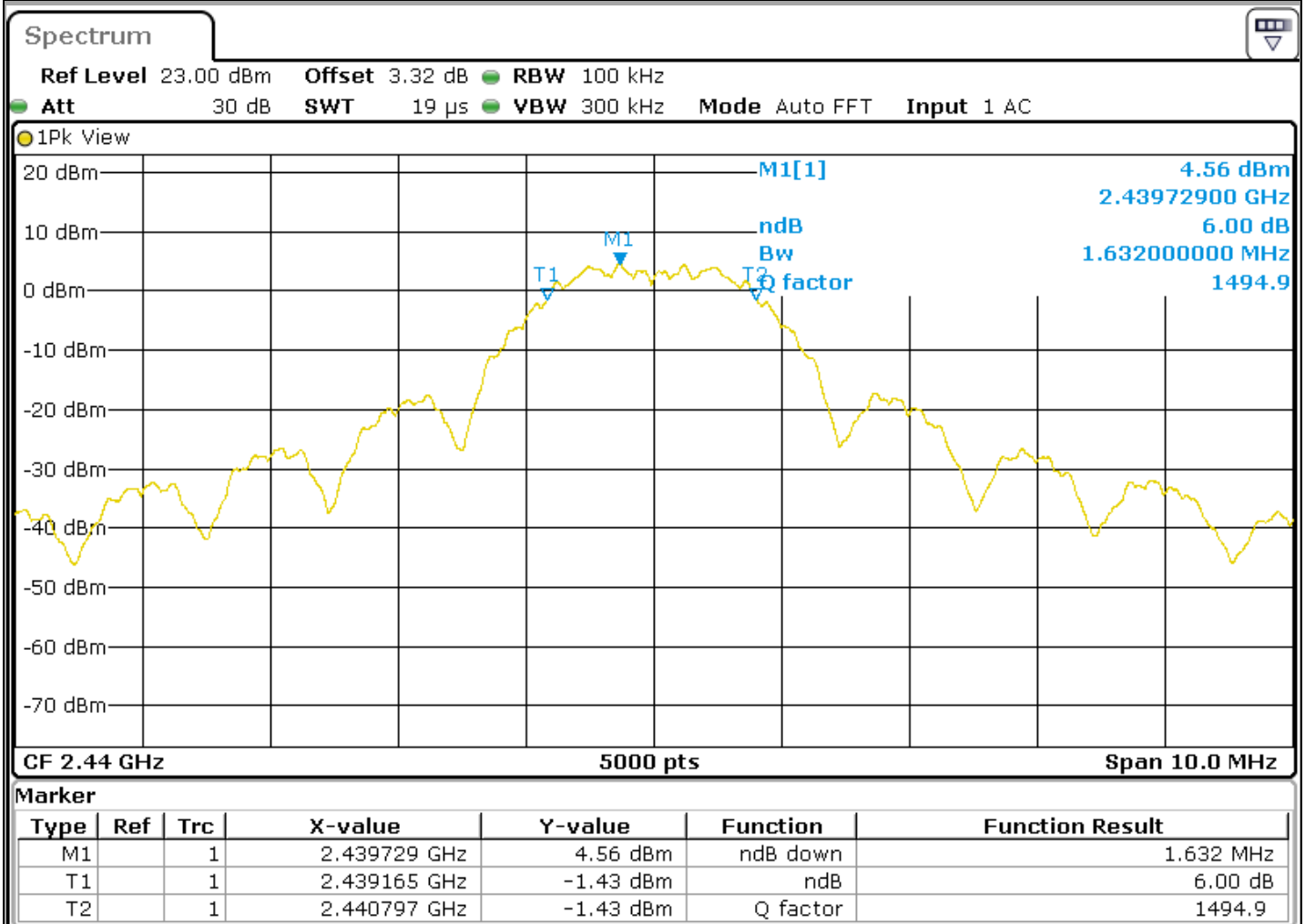
Photograph for -6dB Bandwidth

4.1. GRAPHICS & RESULTS

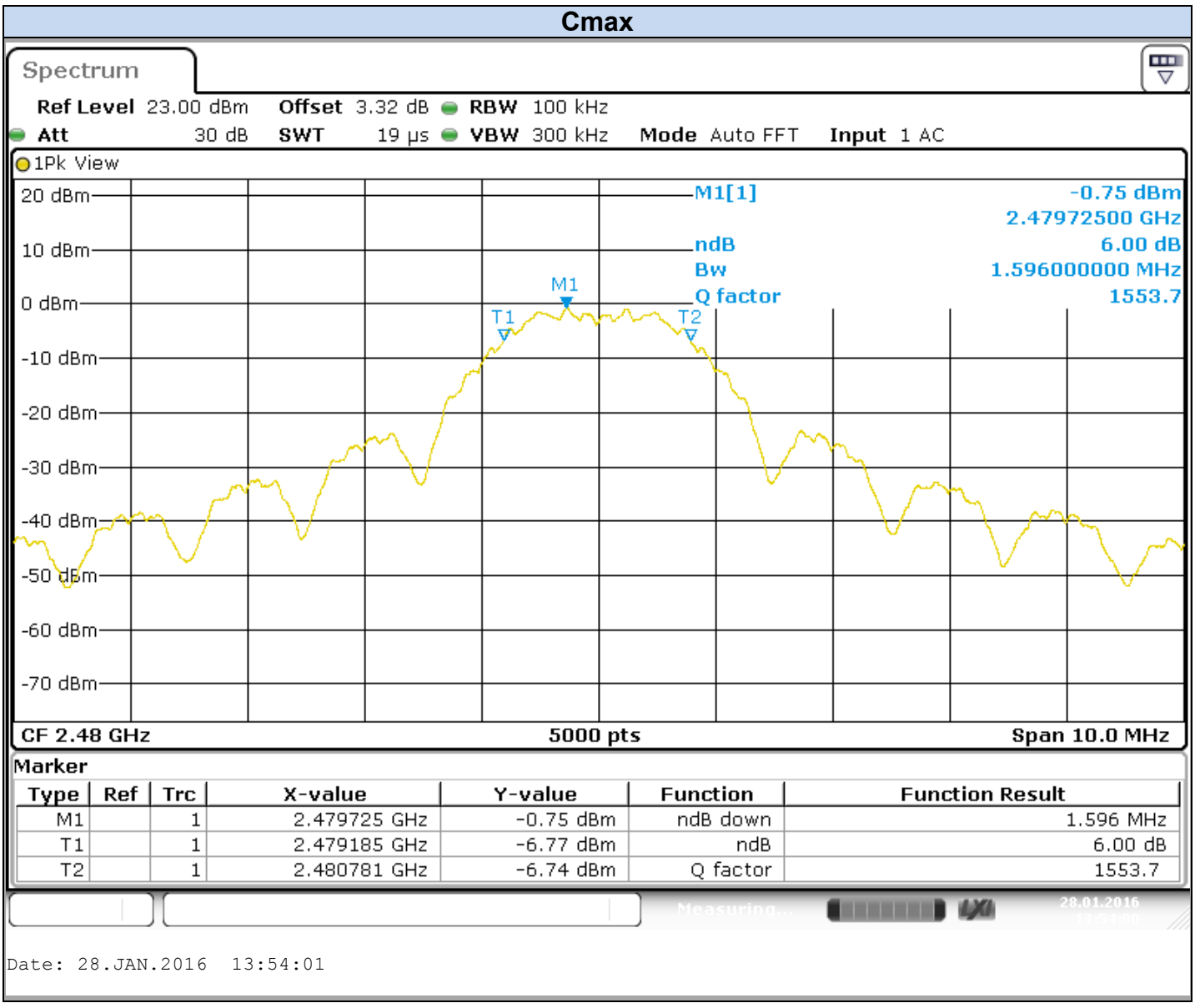
Cmin



Cnom


Spectrum
Ref Level 23.00 dBm Offset 3.32 dB RBW 100 kHz
Att 30 dB SWT 19 µs VBW 300 kHz Mode Auto FFT Input 1 AC
1Pk View
M1[1] 4.56 dBm
2.43972900 GHz
ndB 6.00 dB
Bw 1.632000000 MHz
Q factor 1494.9
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
T1
T2
CF 2.44 GHz
5000 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.439729 GHz 4.56 dBm ndB down 1.632 MHz
T1 1 2.439165 GHz -1.43 dBm ndB 6.00 dB
T2 1 2.440797 GHz -1.43 dBm Q factor 1494.9
Measuring...
28.01.2016
Date: 28.JAN.2016 13:55:50

Cmax



Temperature	Tnom		
Voltage	Vnom		
Frequency	Cmin	Cnom	Cmax
-6dB Bandwidth (MHz)	1.588	1.632	1.596

Result: PASS

Limit: → The -6dB bandwidth must be greater than 500kHz

5. MAXIMUM CONDUCTED POWER

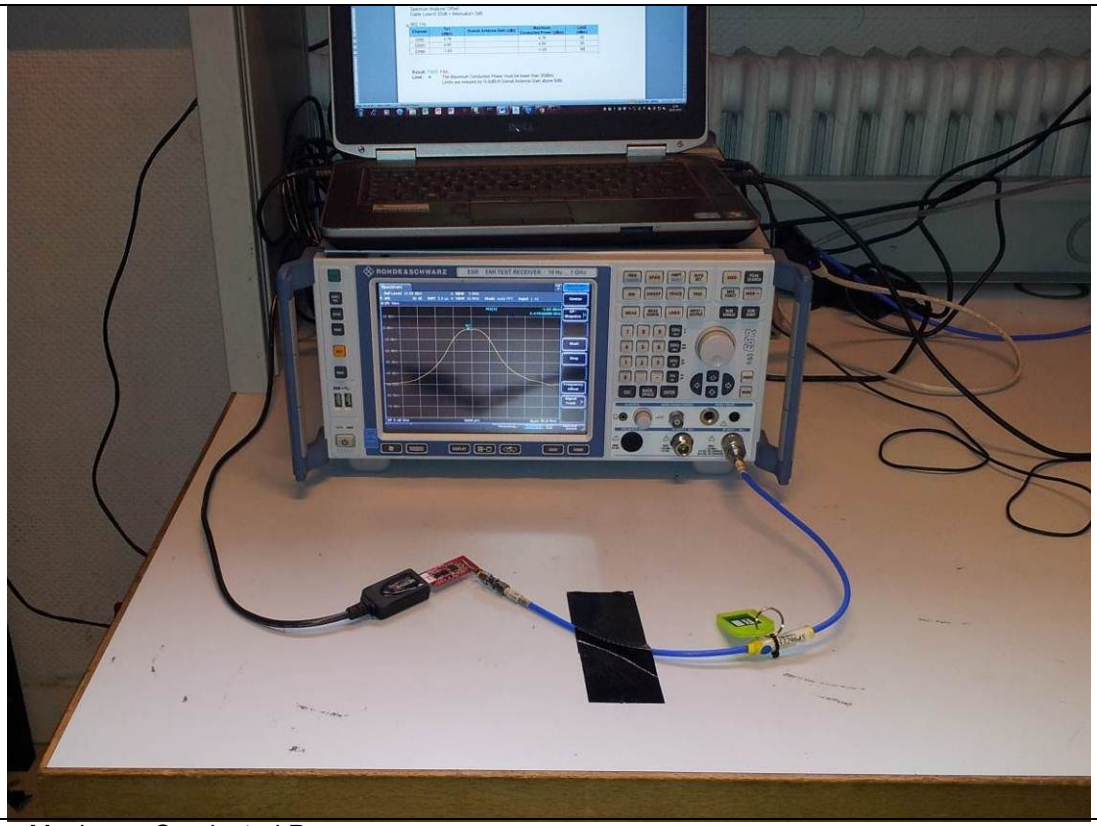
5.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : 2016/01/28
Ambient temperature : 26°C
Relative humidity : 48%

5.2. TEST SETUP

The Equipment Under Test is installed on a table and set in permanent emission with modulation. Measurement is performed with a spectrum analyzer on the EUT conducted access. The product has been tested according to the FCC KDB 558074 D01 DTS Meas Guidance v03r4 § 9.1.1

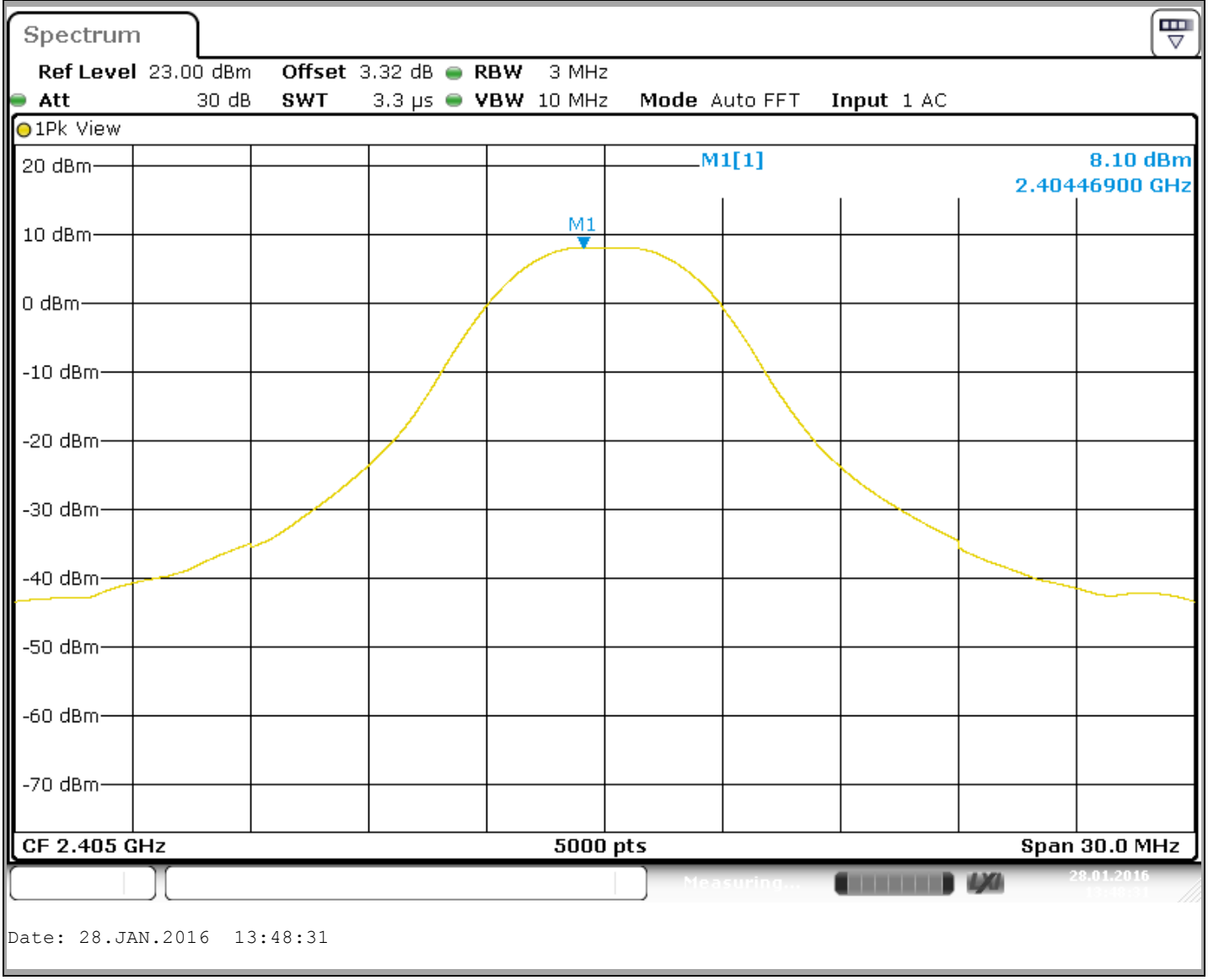
Spectrum Analyzer Setting (Maximum Peak Conducted Power):
Center frequency= Cmin or Cnom or Cmax
Span≥ 3RBW
Amplitude= Sufficient to observe the signal amplitude
RBW≥ DTS Bandwith
VBW≥ 3RBW
Sweep= Auto
Trace= Max Hold
Detector= Peak



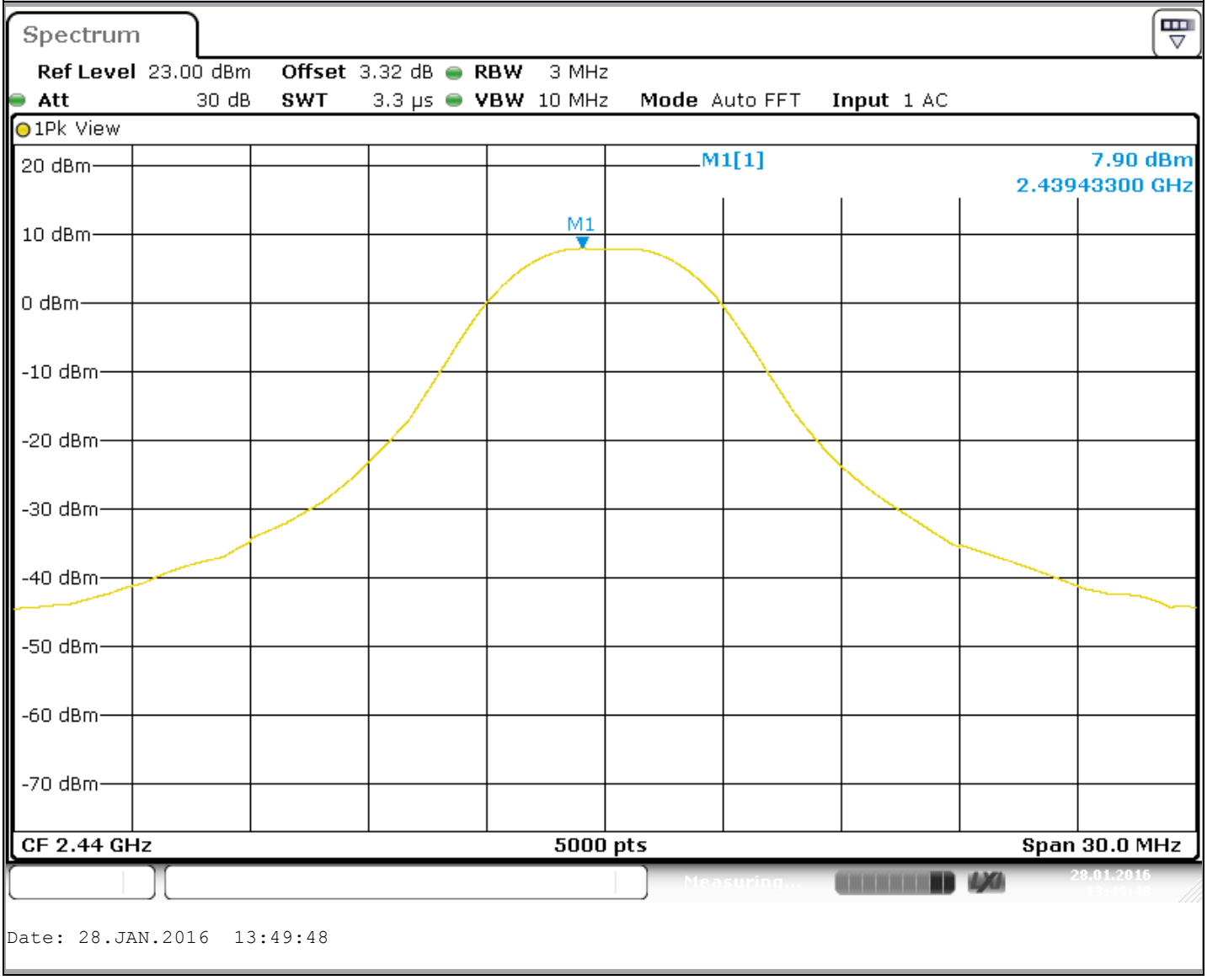
Photograph for Maximum Conducted Power

5.1. GRAPHICS & RESULTS

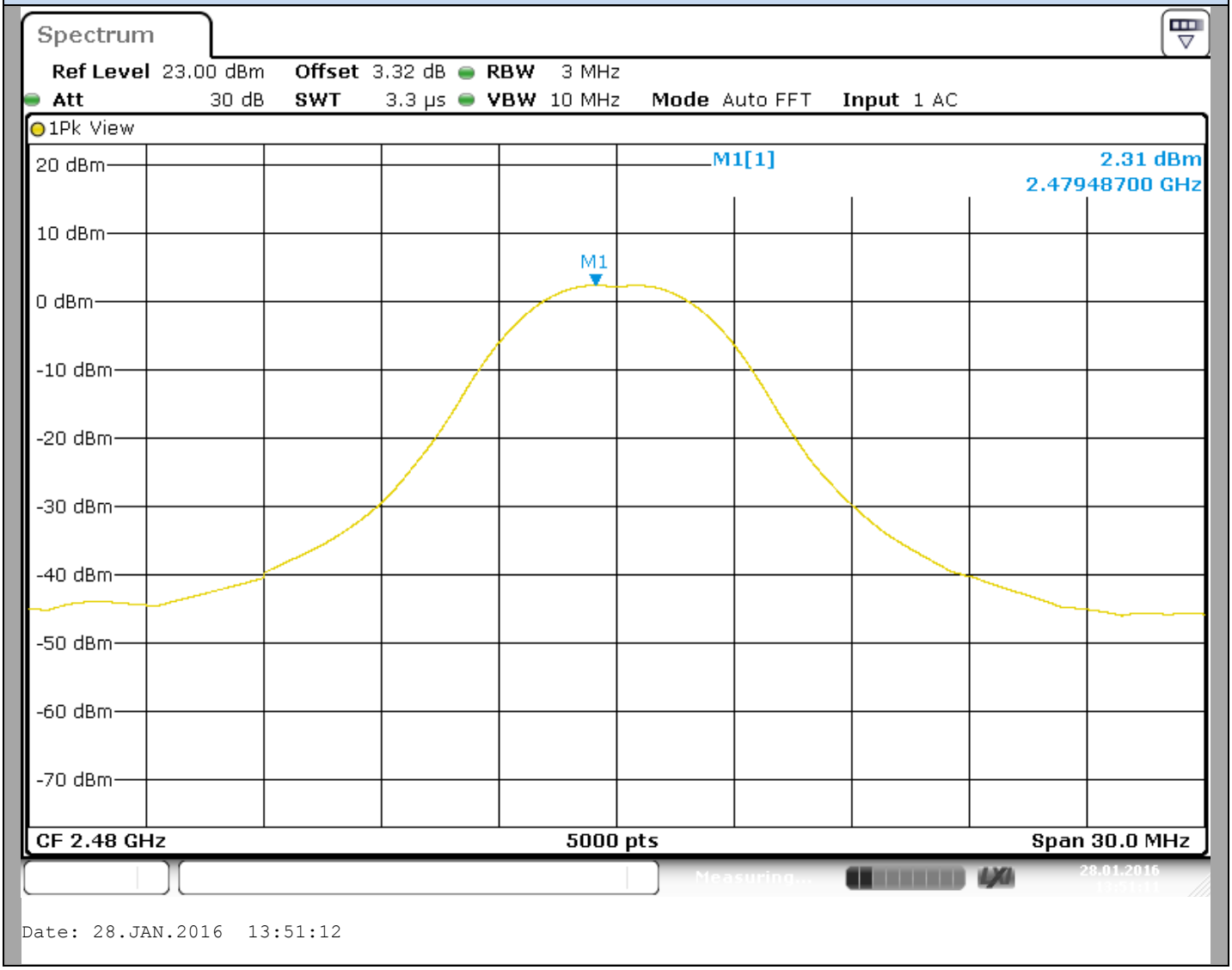
Cmin



Cnom


Spectrum
Ref Level 23.00 dBm Offset 3.32 dB RBW 3 MHz
Att 30 dB SWT 3.3 µs VBW 10 MHz Mode Auto FFT Input 1 AC
1Pk View
M1[1]
7.90 dBm
2.43943300 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.44 GHz
5000 pts
Span 30.0 MHz
Measuring...
28.01.2016
Date: 28.JAN.2016 13:49:48

Cmax



Spectrum Analyzer Offset:
Cable Loss=**0.32dB** + Attenuator= **3dB**

Channel	Tx1 (dBm)	Overall Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Limit (dBm)
Cmin	8.10	0.86	8.10	30
Cnom	7.90	0.86	7.90	30
Cmax	2.31	0.86	2.31	30

Result: PASS

Limit: → The Maximum Conducted Power must be lower than 30dBm
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

6. POWER SPECTRAL DENSITY

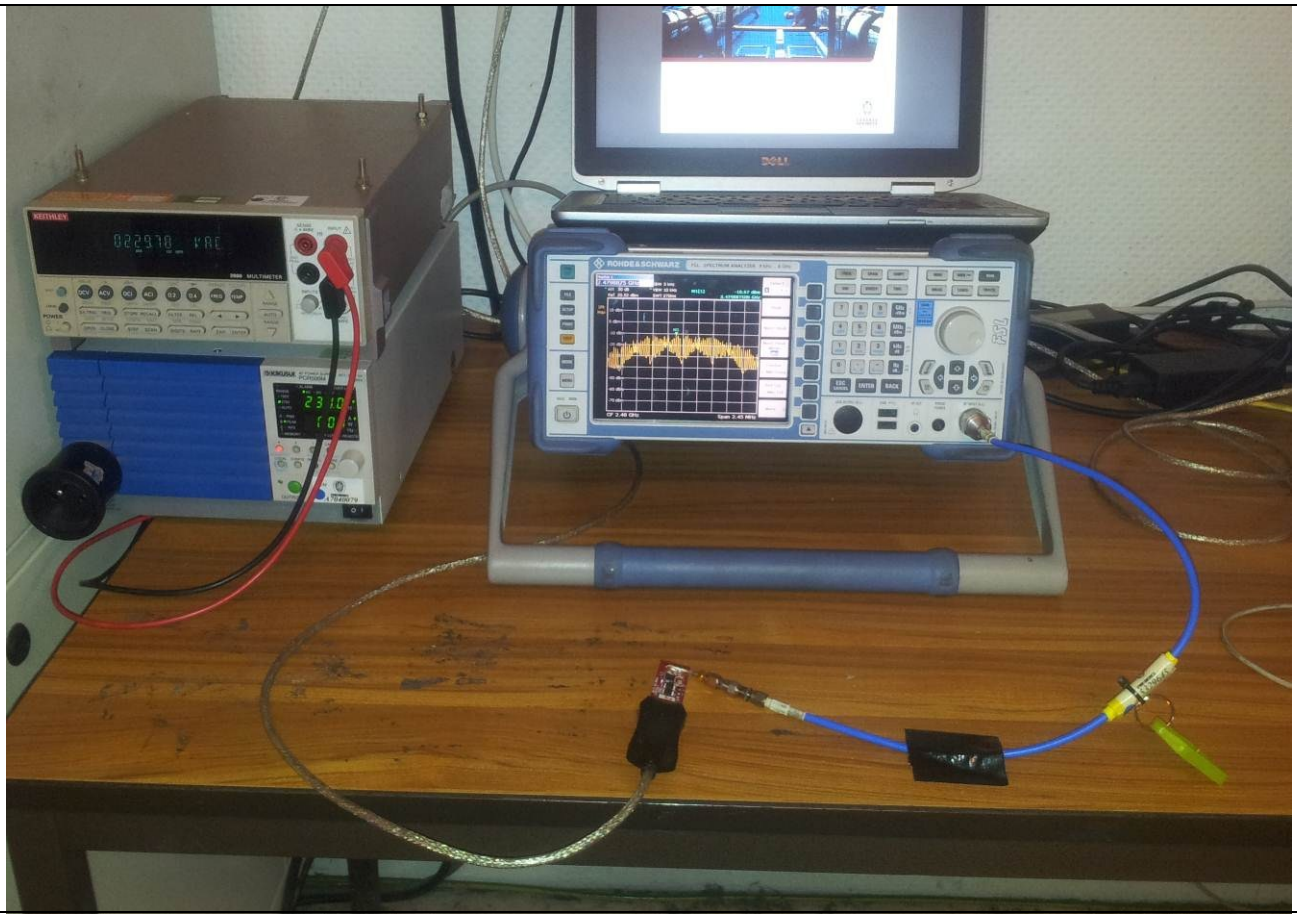
6.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : 2016/01/28
Ambient temperature : 26°C
Relative humidity : 48%

6.2. TEST SETUP

The Equipment Under Test is installed on a table and set in permanent emission with modulation. Measurement is performed with a spectrum analyzer on the EUT conducted access. The product has been tested according to the FCC KDB 558074 D01 DTS Meas Guidance v03r4 § 10.2.

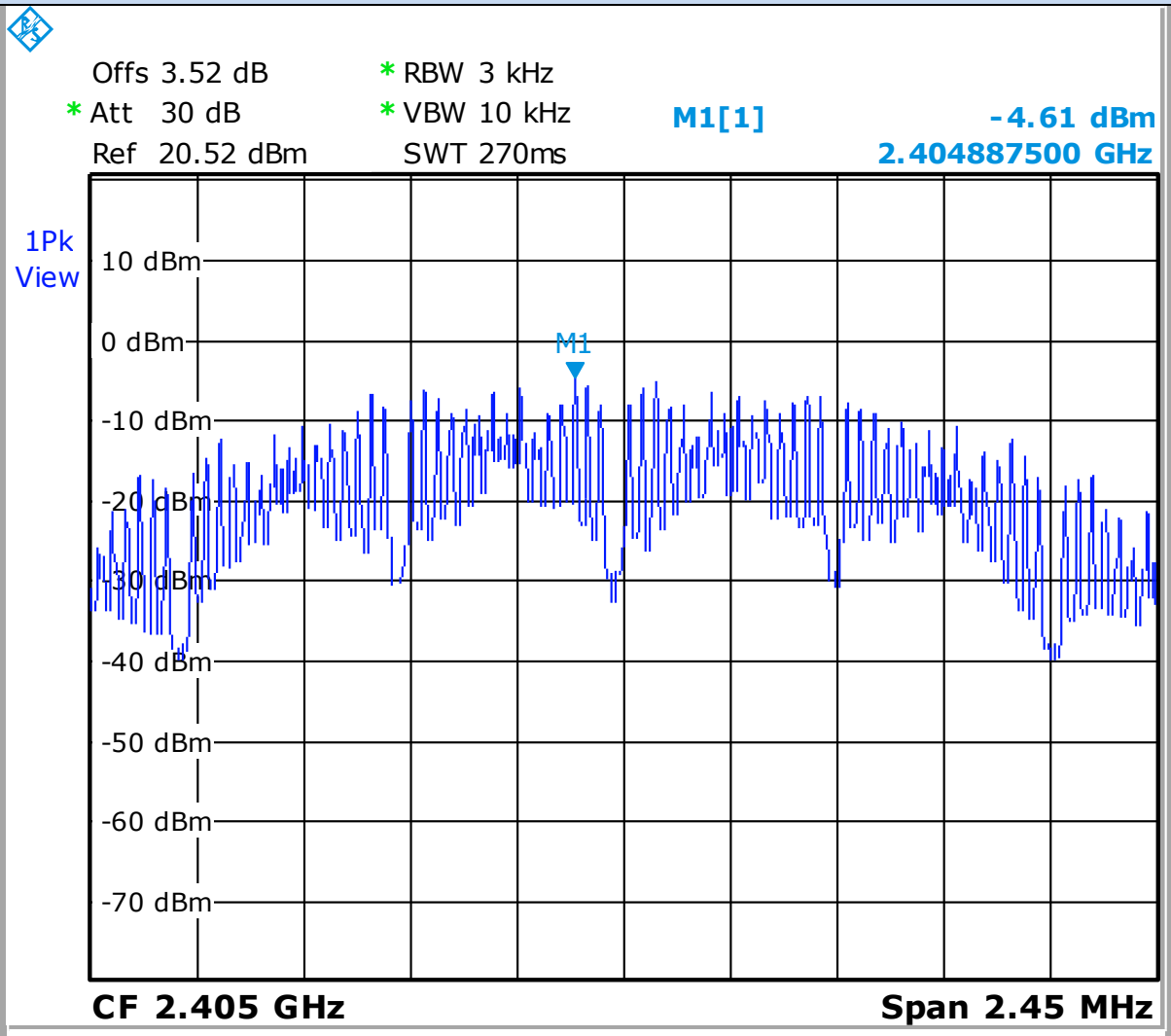
Spectrum Analyzer Setting:
Center frequency= Cmin or Cnom or Cmax
Span= 1.5 times the DTS Bandwith
Amplitude= Sufficient to observe the signal amplitude
RBW= 3kHz ≤ RBW ≤ 100kHz
VBW≥ 3*RBW
Sweep= Auto
Trace= Max Hold
Detector= Peak



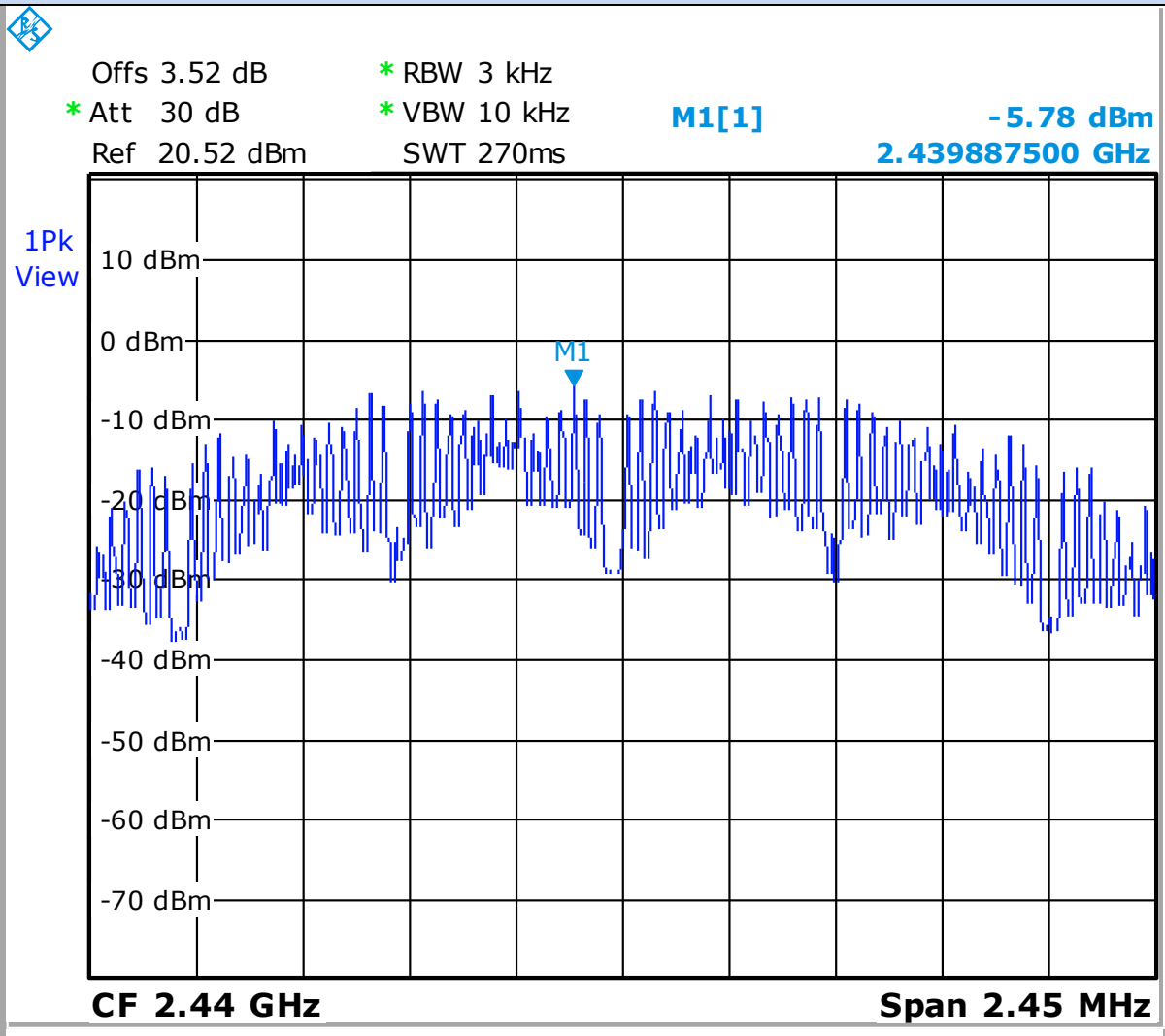
Photograph for Power Spectral Density

6.1. GRAPHICS & RESULTS

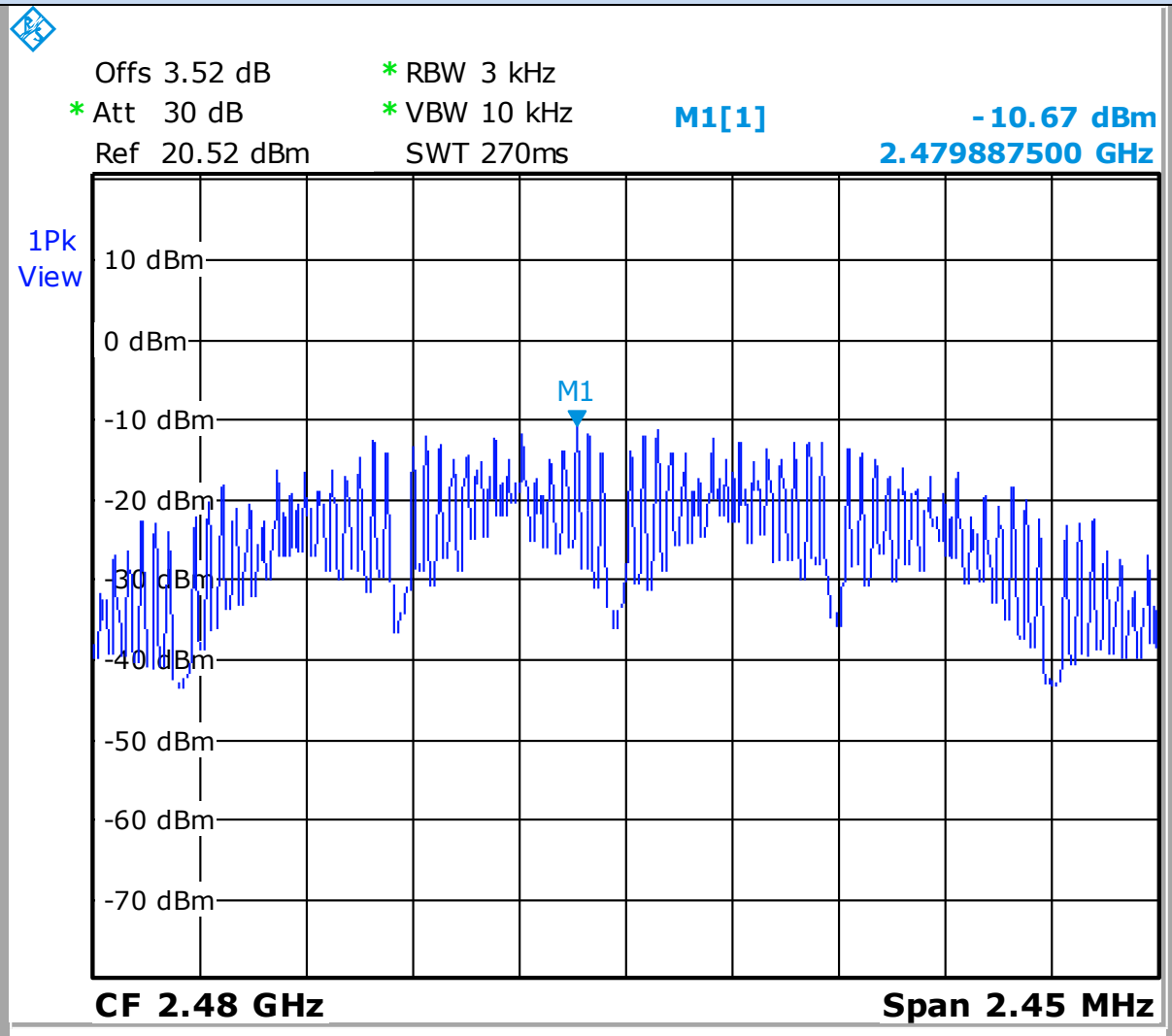
Cmin



Cnom


Offs 3.52 dB
* RBW 3 kHz
* Att 30 dB
* VBW 10 kHz
Ref 20.52 dBm
SWT 270ms
M1[1]
-5.78 dBm
2.439887500 GHz
1Pk
View
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.44 GHz
Span 2.45 MHz
Date: 14.MAR.2016 16:07:31

Cmax



Spectrum Analyzer Offset:
Cable Loss=**0.32dB** + Attenuator= **3dB**

Channel	Tx1 (dBm)	Overall Antenna Gain (dBi)	Power spectral density (dBm/3kHz)	Limit (dBm)
Cmin	-4.61	0.86	-4.61	8
Cnom	-5.78	0.86	-5.78	8
Cmax	-10.67	0.86	-10.67	8

Result: PASS

Limit: → The Power Spectral Density must be lower than 8dBm/3kHz
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

7. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS AT THE BAND EDGE

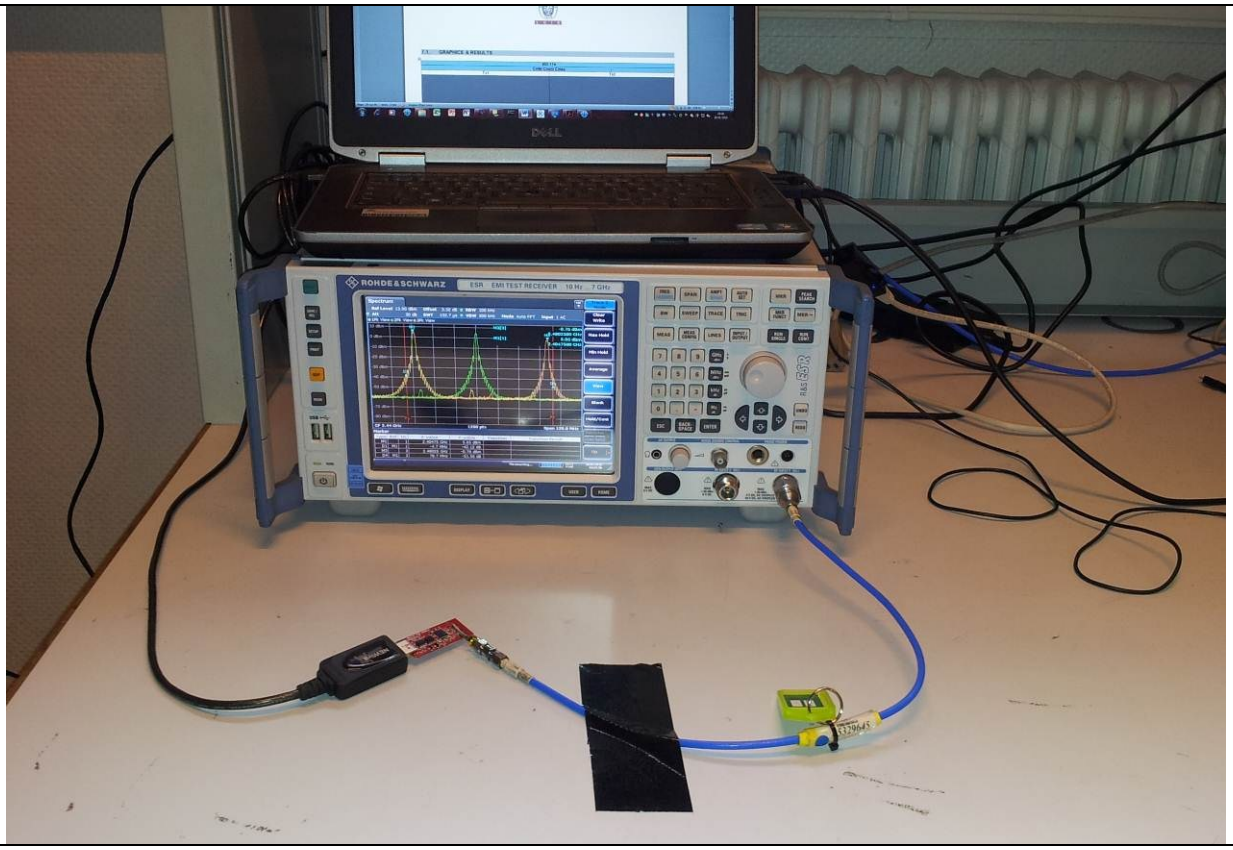
7.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : 2016/01/28
Ambient temperature : 26°C
Relative humidity : 48%

7.2. TEST SETUP

The Equipment Under Test is installed on a table and set in permanent emission with modulation. Measurement is performed with a spectrum analyzer on the EUT conducted access. The product has been tested according to the FCC KDB 558074 D01 DTS Meas Guidance v03r4 § 11.0.

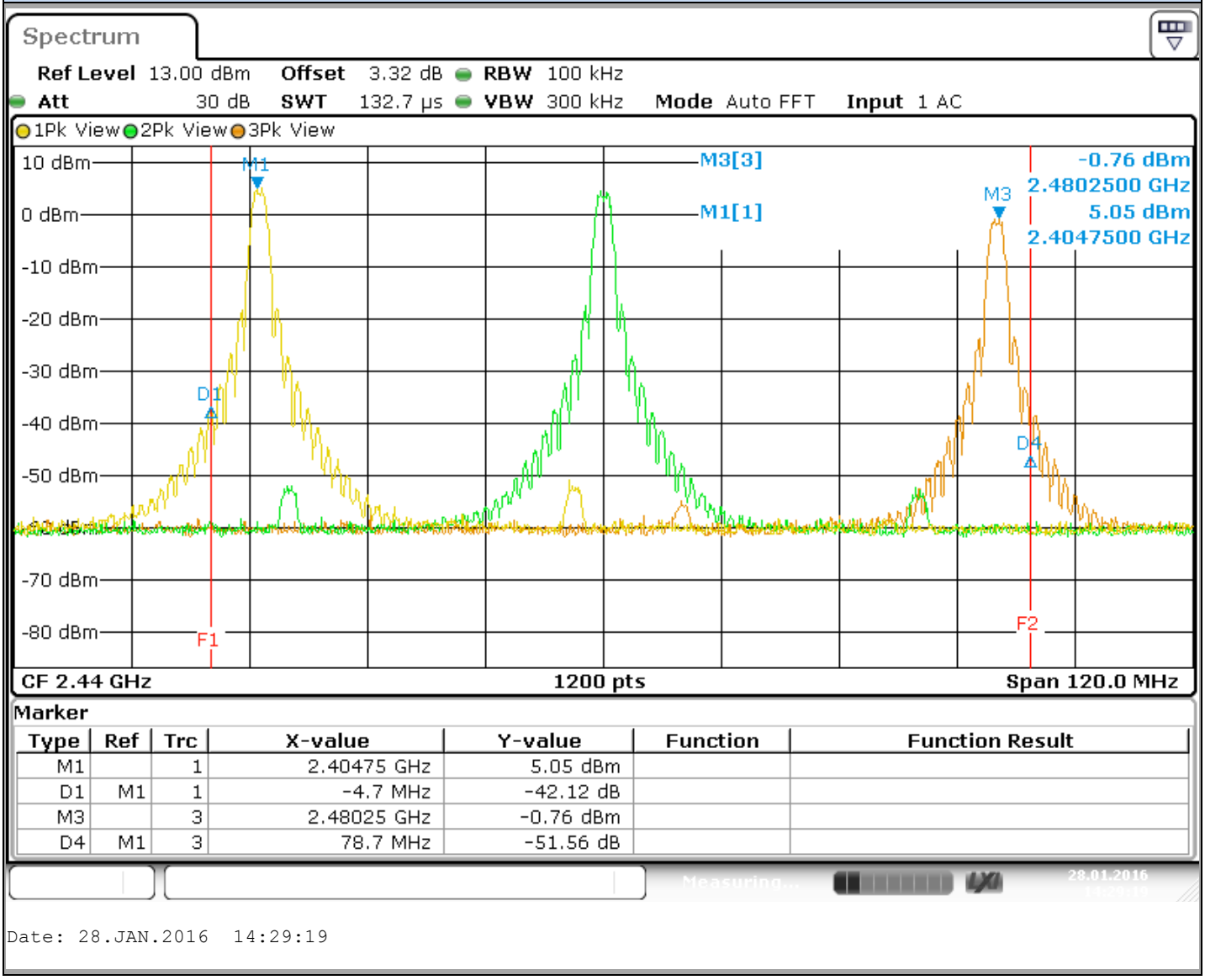
Spectrum Analyzer Setting:
Start frequency= 2380MHz
Stop frequency= 2500MHz
Amplitude= Sufficient to observe the signal amplitude
RBW= 100kHz
VBW= 300kHz
Sweep Time= Auto
Sweep Point= 1200
Trace= Max Hold
Detector= Peak



Photograph for Unwanted Emissions into Non-Restricted Frequency Bands At the Band Edge

7.1. GRAPHICS & RESULTS

Cmin / Cnom / Cmax



Temperature	Tnom	
Voltage	**Vnom**	
Conducted Spurious Emission at the Band Edge (MHz)	2400	2483,5
Spurious Level (dBc)	42.12	51.56

Result: PASS

Limit: → All Spurious Emissions must be at least 20dB (Maximum Conducted Power) below the Fundamental Radiator Level at the Band Edge Edge “2400MHz & 2483,5MHz”

8. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS

8.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : 2016/01/28
Ambient temperature : 25°C
Relative humidity : 46%

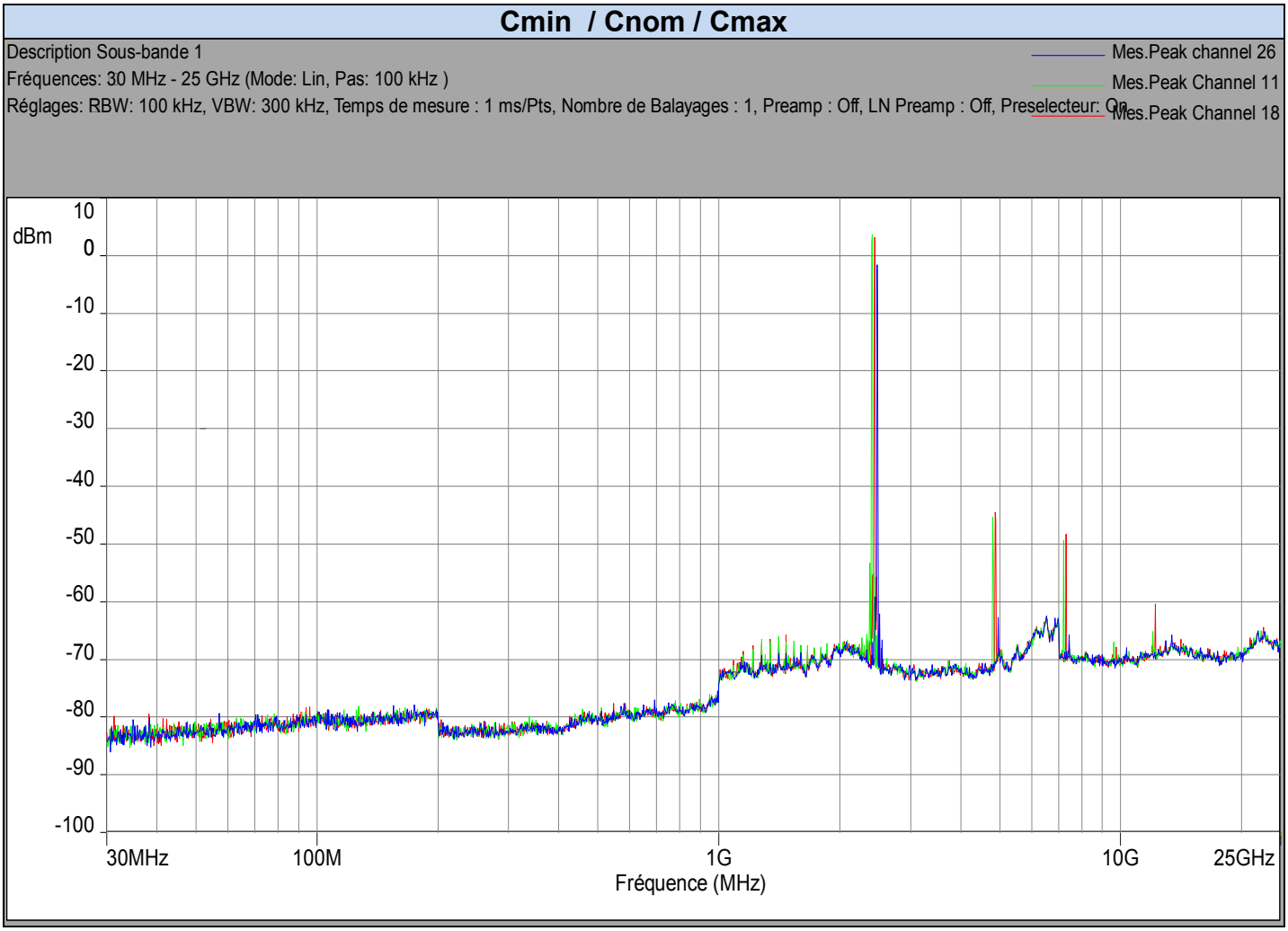
8.2. TEST SETUP

The Equipment Under Test is installed on a table and set in permanent emission with modulation. Measurement is performed with a spectrum analyzer on the EUT conducted access. The product has been tested according to the FCC KDB 558074 D01 DTS Meas Guidance v03r4 § 11.0.

Spectrum Analyzer Setting:
Start frequency= 30MHz
Stop frequency= 25GHz
Amplitude= Sufficient to observe the signal amplitude
RBW= 100kHz
VBW= 300kHz
Sweep Time= Auto
Trace= Max Hold
Detector= Peak

Photograph for Unwanted Emissions into Non-Restricted Frequency Bands

8.3. GRAPHICS & RESULTS



Frequency (MHz)	Spurious Level (dBm)	Spurious Level (dBc)
4809	-45.39	-49.03
4879	-44.49	-47.67
4959	-62.73	-64.38
7213.6	-49.37	-53.01
7318.2	-48.34	-51.98
7438.6	-65.73	-67.38
12023.7	-65.14	-68.78
12179	-60.45	-63.63

Result: PASS

Limit: → All Spurious Emissions must be at least 20dB (Maximum Conducted Power) below the Fundamental Radiator Level outside of the 2400MHz-2483,5MHz band

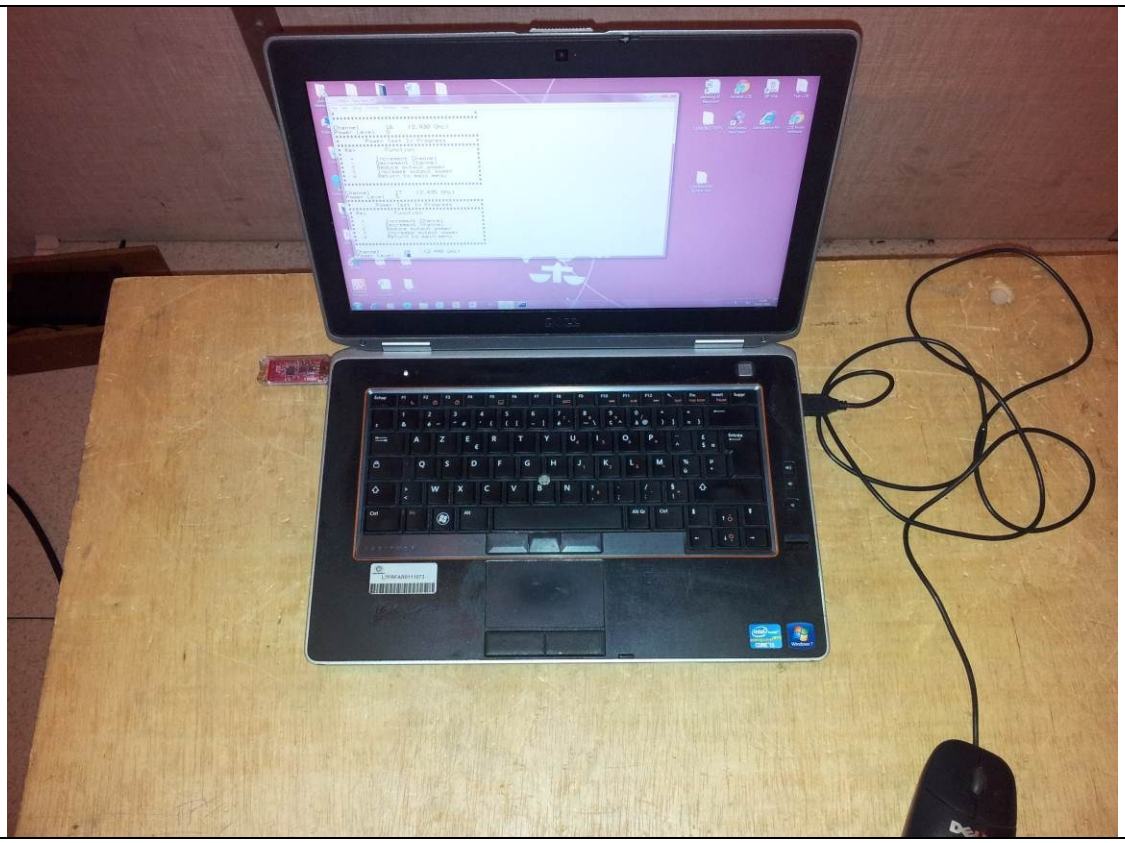
9. AC POWER LINE CONDUCTED EMISSIONS

9.1. TEST CONDITIONS

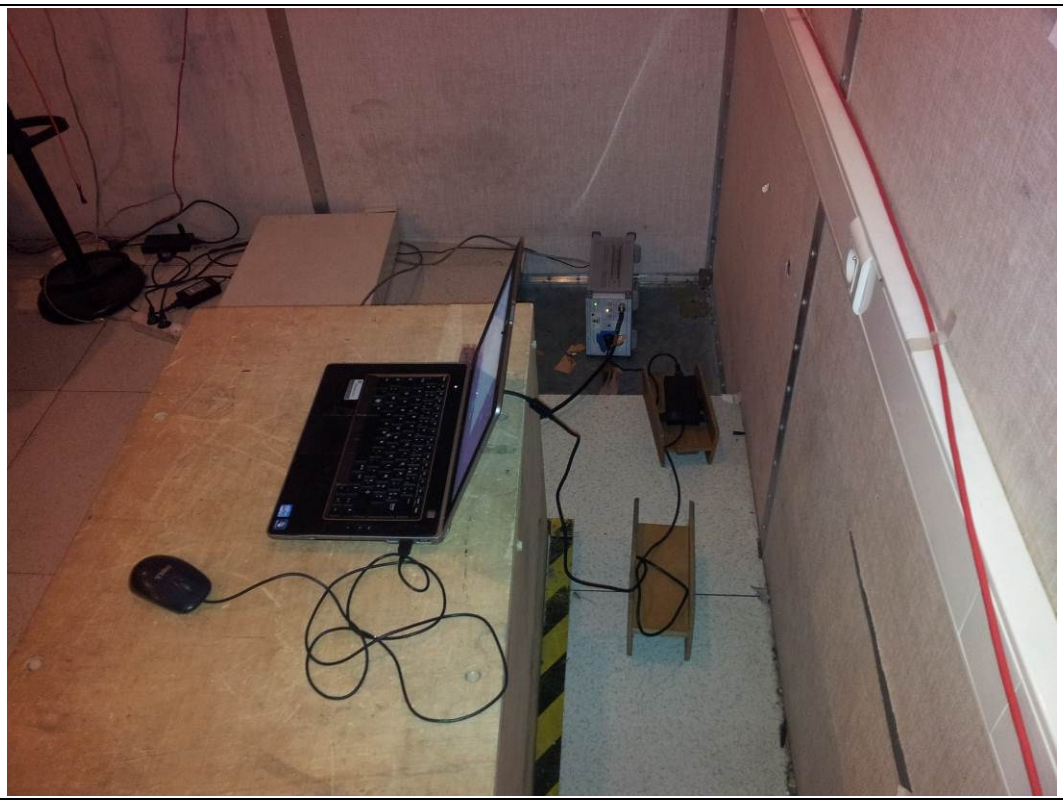
Test performed by : Armand MAHOUNGOU
Date of test : 2016/01/21
Ambient temperature : 23°C
Relative humidity : 47%

9.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013) method. The EUT is placed on the ground reference plane, at 80cm from the LISN. The distance between the EUT and the vertical ground plane is 40cm. Auxiliaries are powered by another LISN. The cable has been shorted to 1meter length. The EUT is powered through the LISN. Measurement is made with a receiver in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary. The LISN (measure) is 50Ω / 50µH. Interconnecting cables and equipment's were moved to position that maximized emission.



Photograph for AC Power Line Conducted Emissions (product)



Photograph for AC Power Line Conducted Emissions (Rear view)

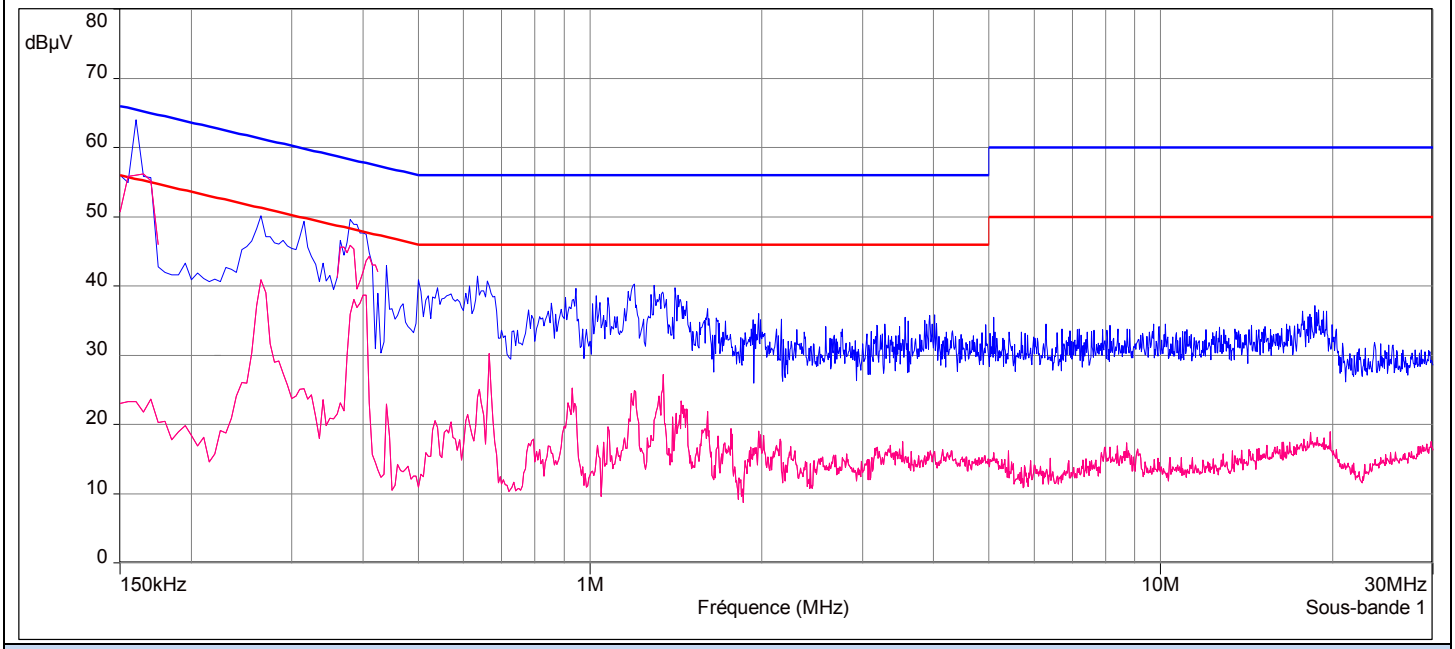
Photograph for AC Power Line Conducted Emissions (Global view)

9.3. RESULTS

Phase Line

Description Sous-bande 1
Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)
Réglages: RBW: 9 kHz, VBW: Auto, Temps de mesure : 50 ms/Pts, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: On
Ligne:Phase 1

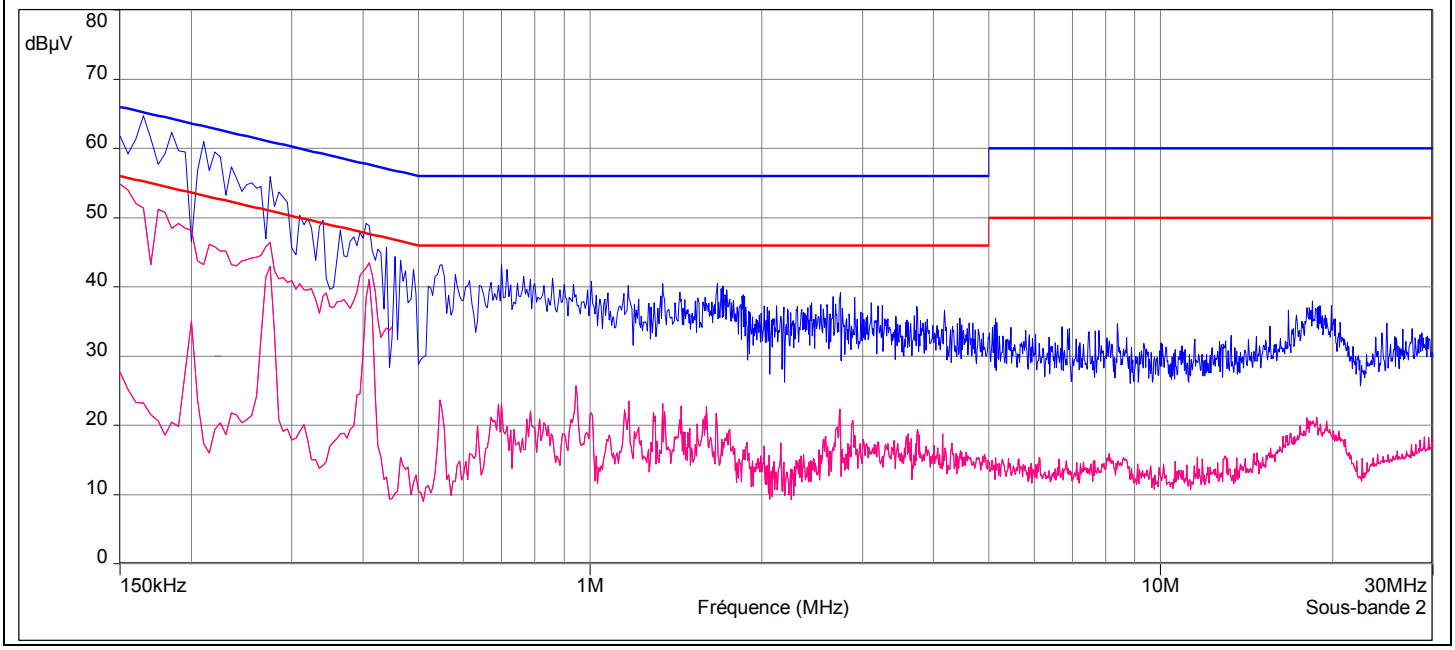
FCC/FCC 15.207 - Classe:B - Moyenne/
FCC/FCC 15.207 - Classe:B - QCrête/
Mes.Peak (Phase 1)
Mes.QPeak (Phase 1)
Mes.Avg (Phase 1)



Neutral Line

Description Sous-bande 2
Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)
Réglages: RBW: 9 kHz, VBW: Auto, Temps de mesure : 50 ms/Pts, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: On
Ligne:Neutre

FCC/FCC 15.207 - Classe:B - Moyenne/
FCC/FCC 15.207 - Classe:B - QCrête/
Mes.Peak (Neutre)
Mes.QPeak (Neutre)
Mes.Avg (Neutre)



Phase Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.160	63.98	56.21	65.46	23.68	55.46
0.265	50.13	-	61.30	40.86	51.30
0.380	49.61	45.88	58.20	38.70	48.20
0.635	41.42	-	56	30.26	46
1.295	40.11	-	56	27.24	46
18.615	37.19	-	60	18.88	50

Neutral Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.165	64.70	53.93	65.33	25.13	55.33
0.185	62.35	51.16	64.26	35.05	54.26
0.210	60.97	48.20	63.20	36.10	53.20
0.275	55.92	46.39	60.94	42.94	50.94
0.405	49.12	43.49	57.72	41.09	47.72
1.005	40.83	-	56	25.68	46
2.745	39.17	-	56	22.33	46
18.46	37.92	-	60	21.07	50

Result: PASS

Limit: →

Quasi-Peak
0,15kHz to 0,5MHz: 66dBµV to 56dBµV*
0,5MHz to 5MHz: 56dBµV
5MHz to 30MHz: 60dBµV

Average
0,15kHz to 0,5MHz: 56dBµV to 46dBµV*
0,5MHz to 5MHz: 46dBµV
5MHz to 30MHz: 50dBµV

*Decreases with the logarithm of the frequency

10. UNWANTED EMISSIONS INTO RESTRICTED FREQUENCY BANDS

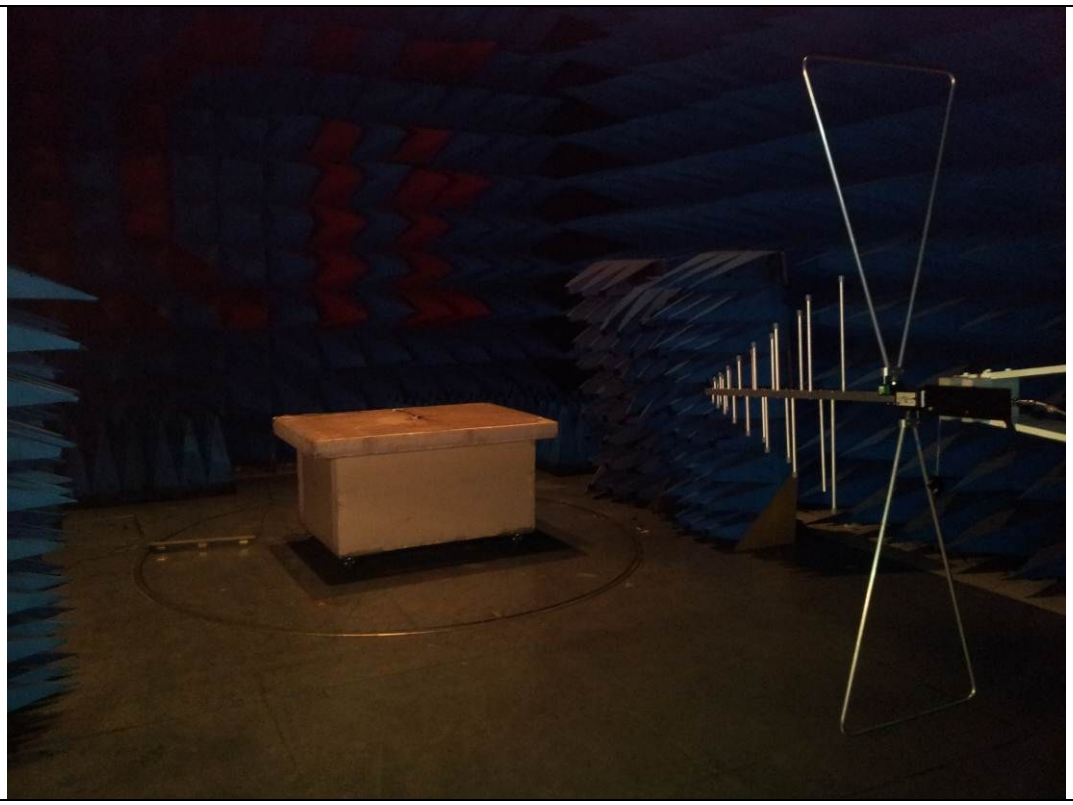
10.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : 2016/01/21
Ambient temperature : 23°C
Relative humidity : 47%

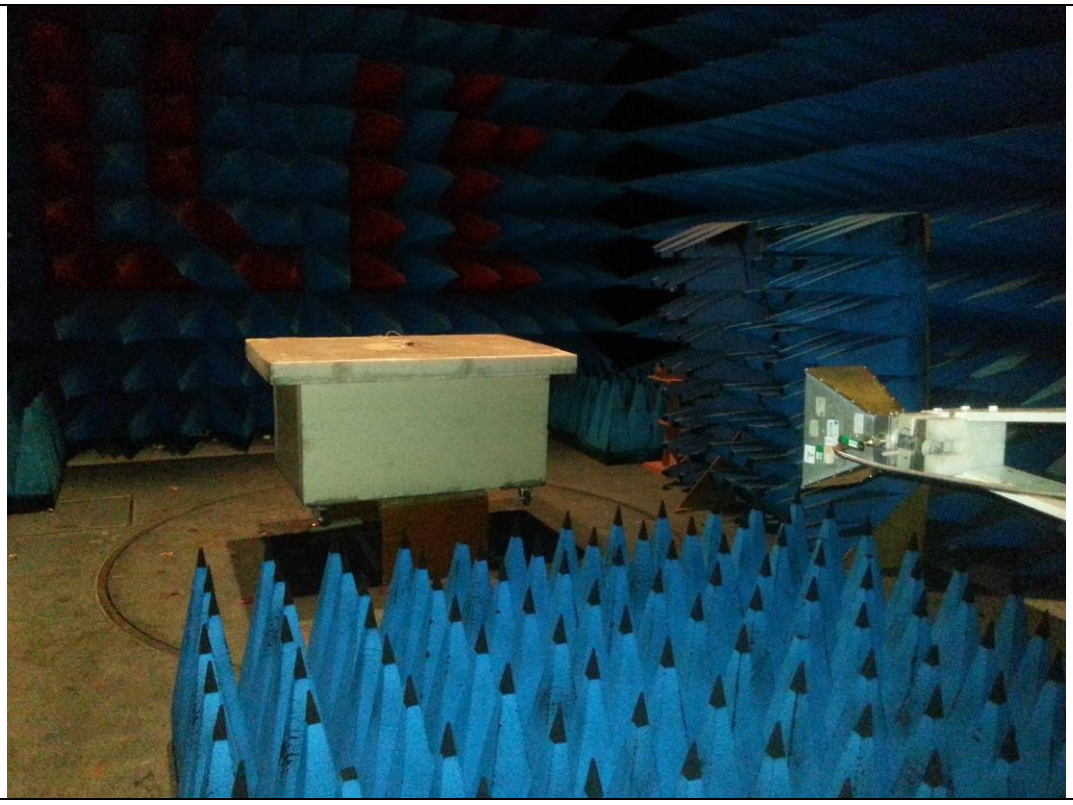
10.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013). The EUT is placed in a semi-anechoic chamber. Distance between measuring antenna and the EUT is 3m. Test is performed in horizontal (H) and vertical (V) polarization with bilog antenna below 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height search was performed from 1 to 4m. The EUT is place at 1.5m high above 1GHz and at 0.8m high under 1GHz.

Photograph for Unwanted Emissions into Restricted Frequency Bands



Photograph for Unwanted Emissions into Restricted Frequency Bands



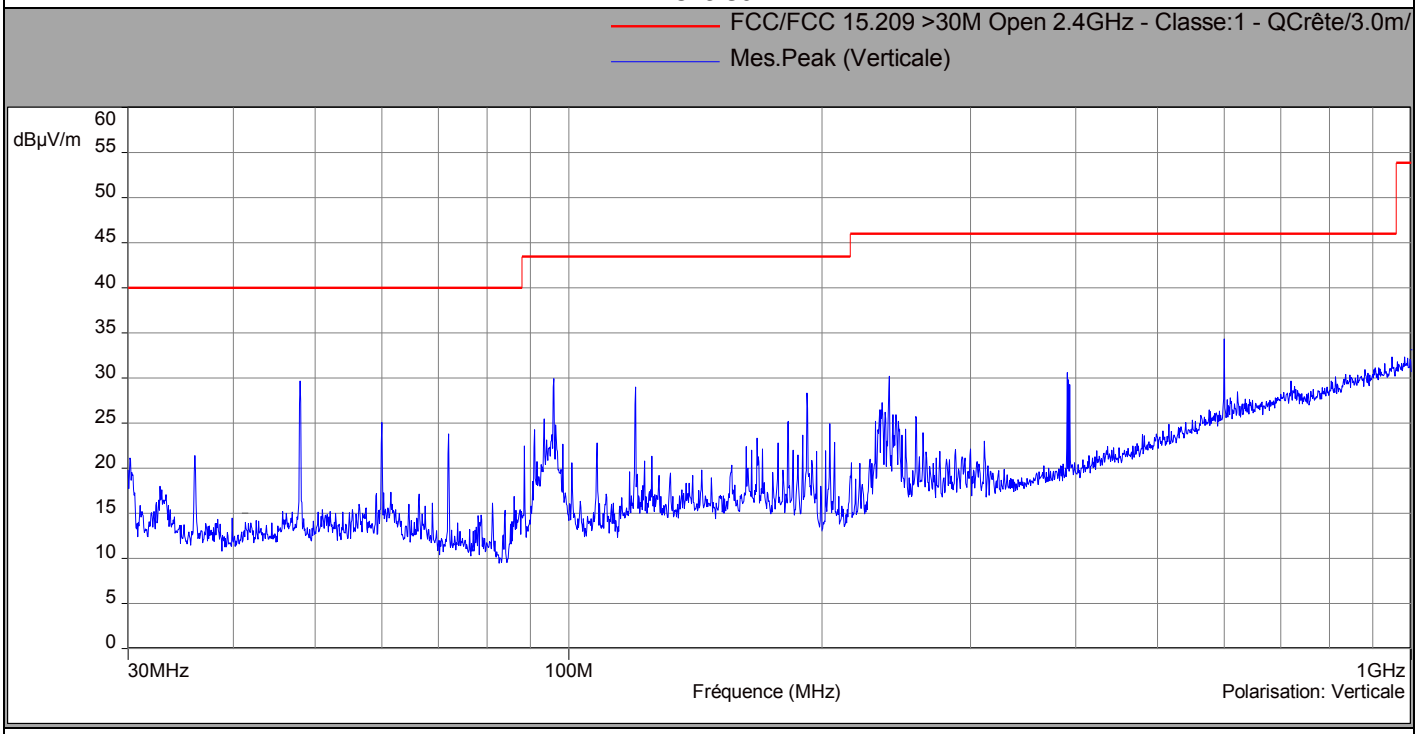
Photograph for Unwanted Emissions into Restricted Frequency Bands

10.3. RESULTS

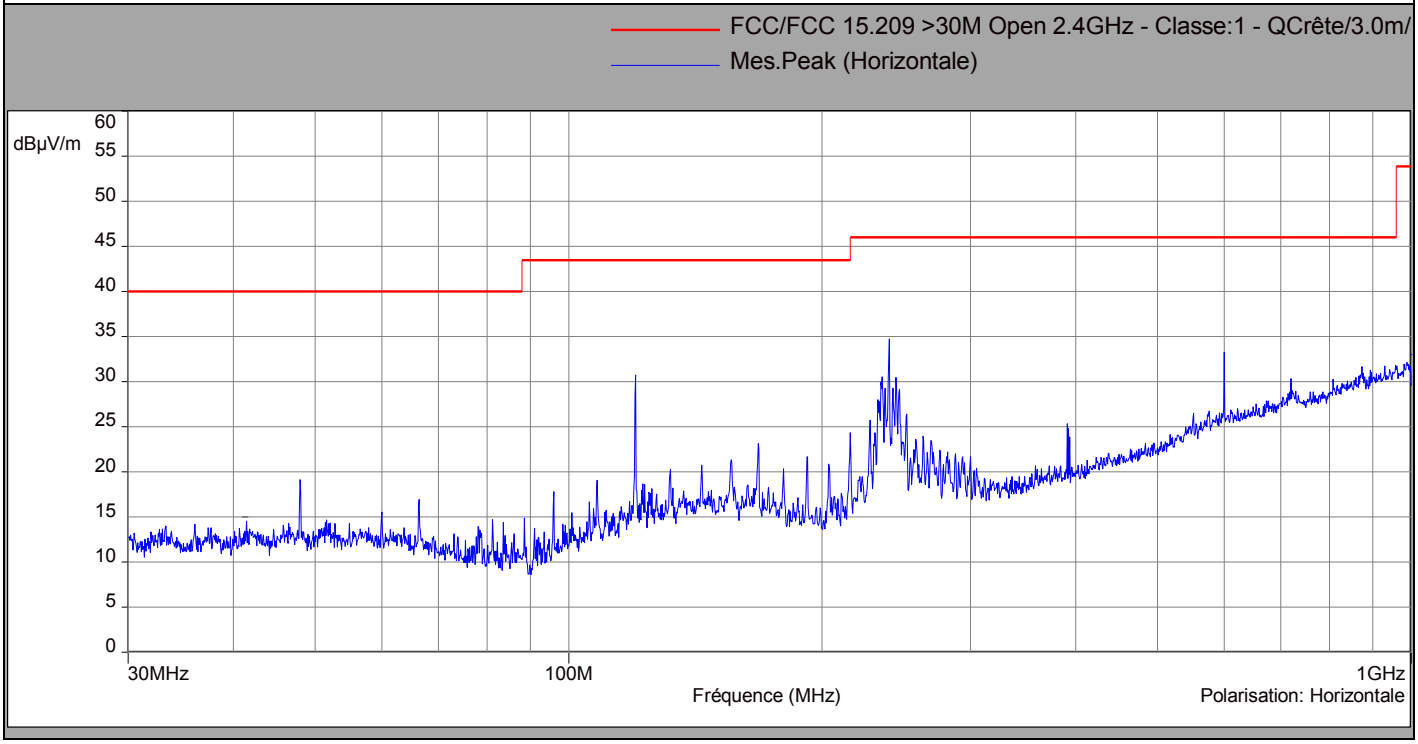
Below 1GHz

Channel 18

Vertical



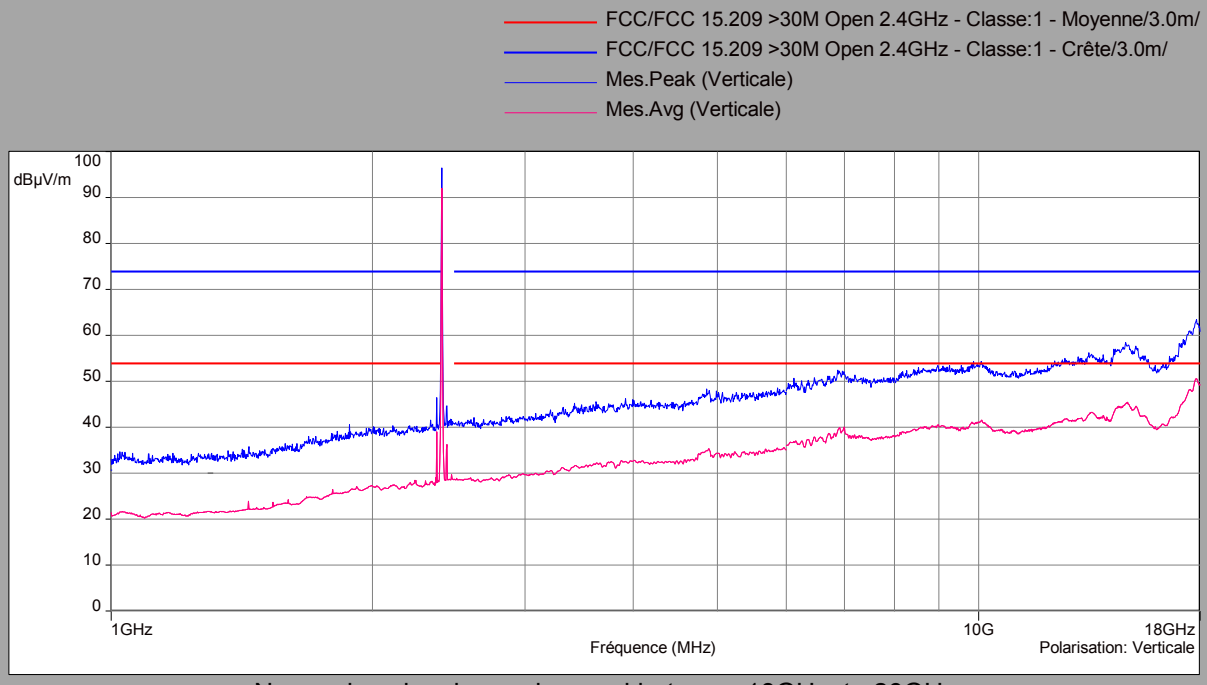
Horizontal



Above 1GHz

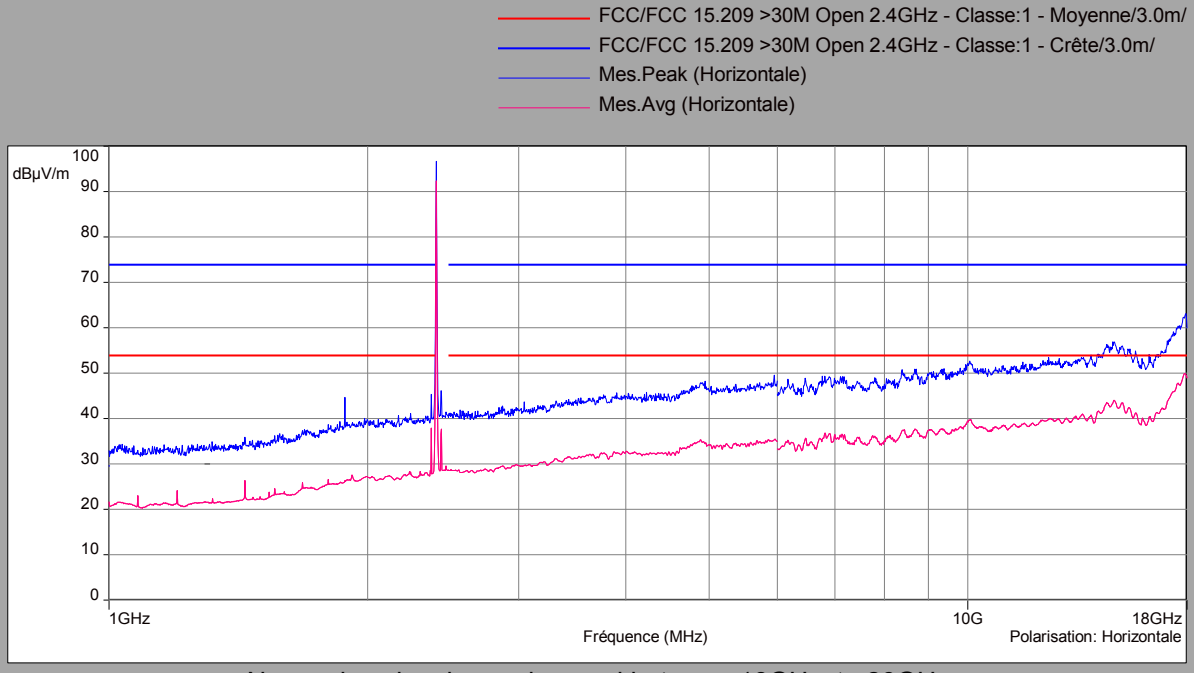
C11

Vertical



No spurious has been observed between 18GHz to 26GHz

Horizontal

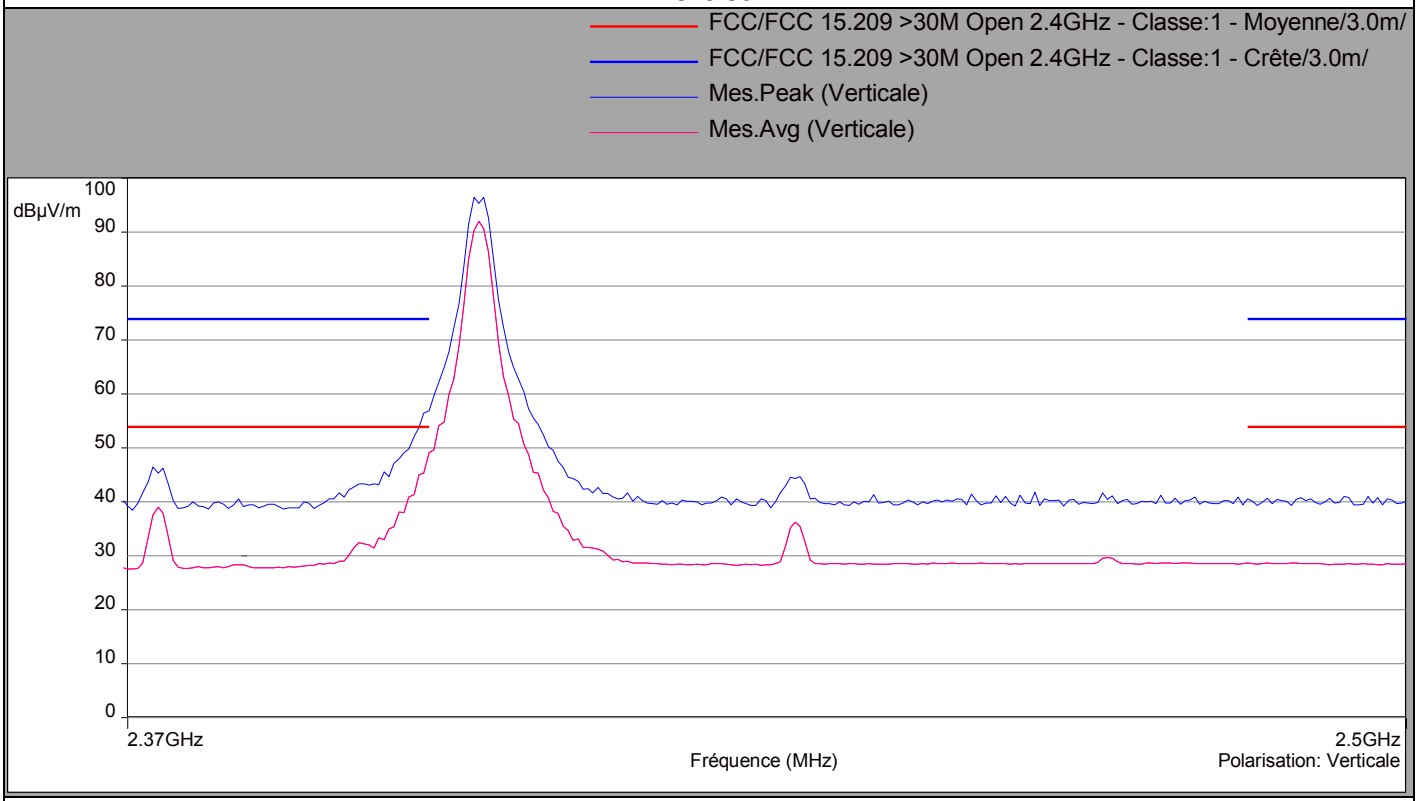


No spurious has been observed between 18GHz to 26GHz

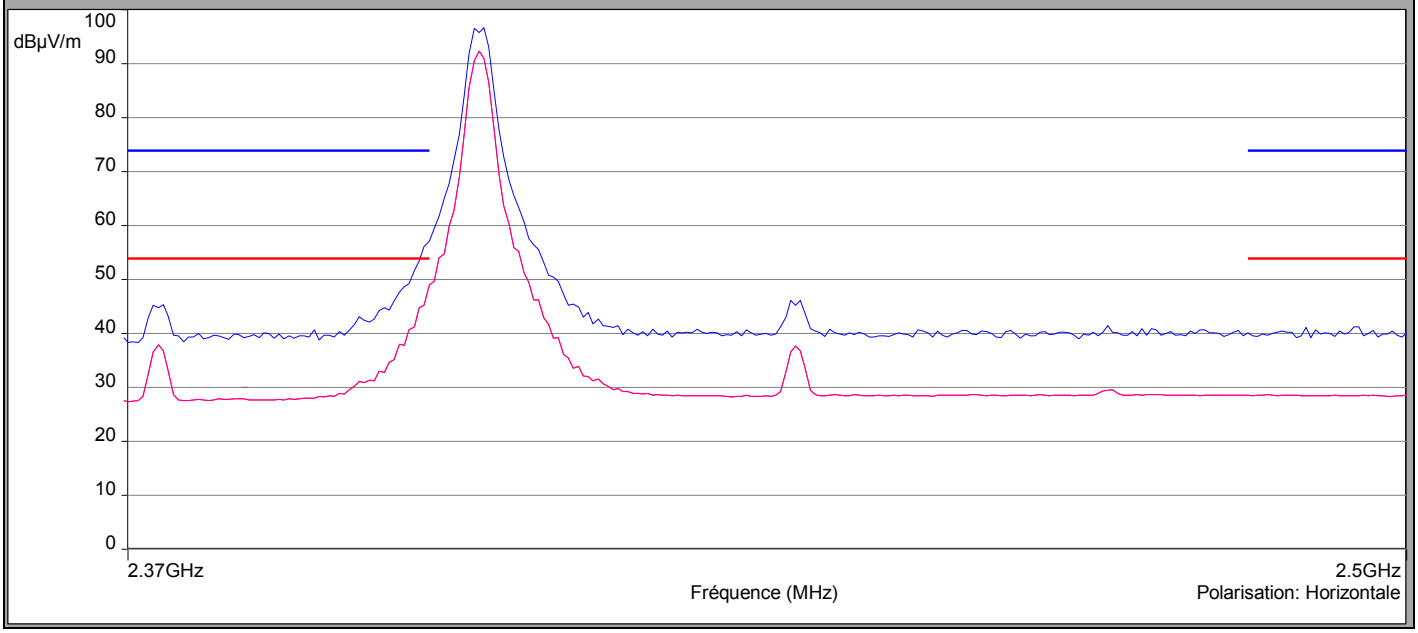
Above 1GHz

C11

Vertical



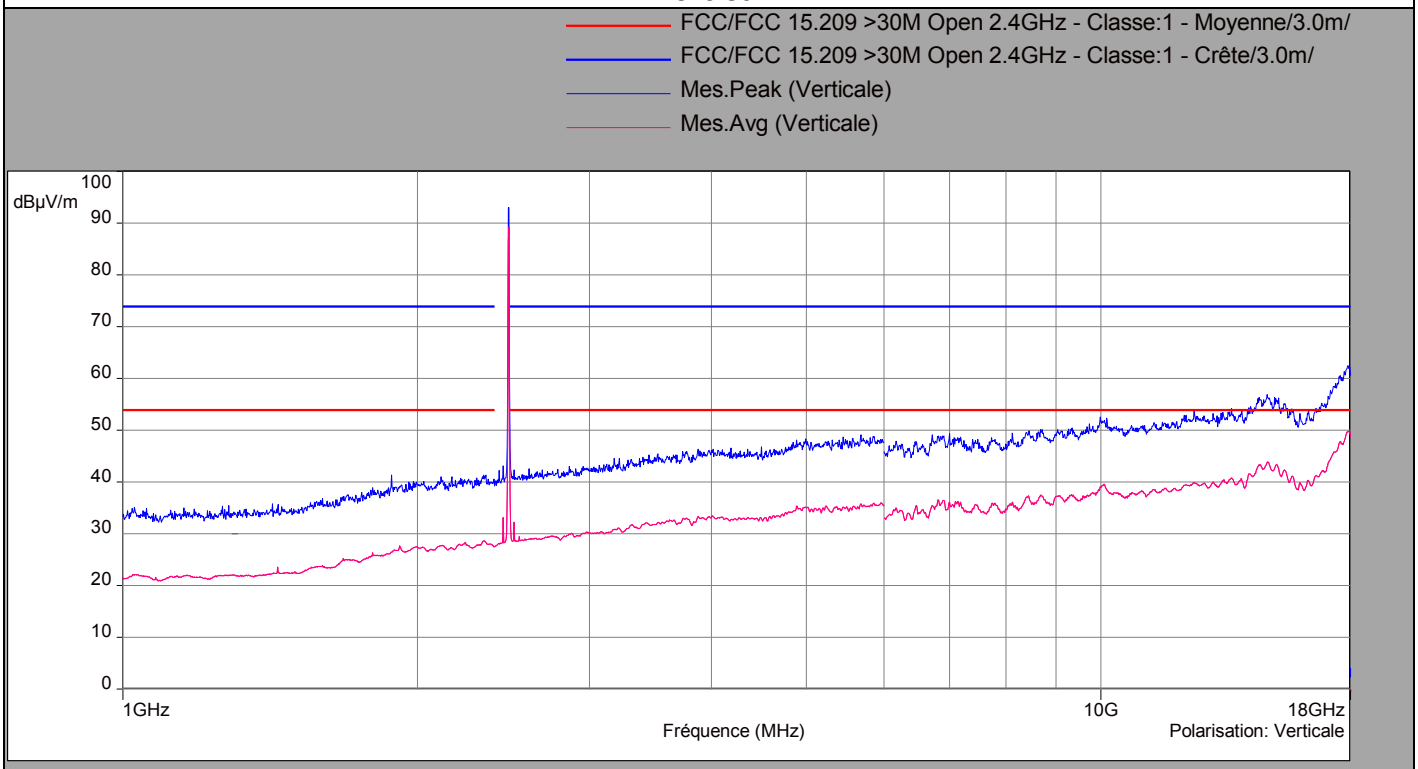
Horizontal



Above 1GHz

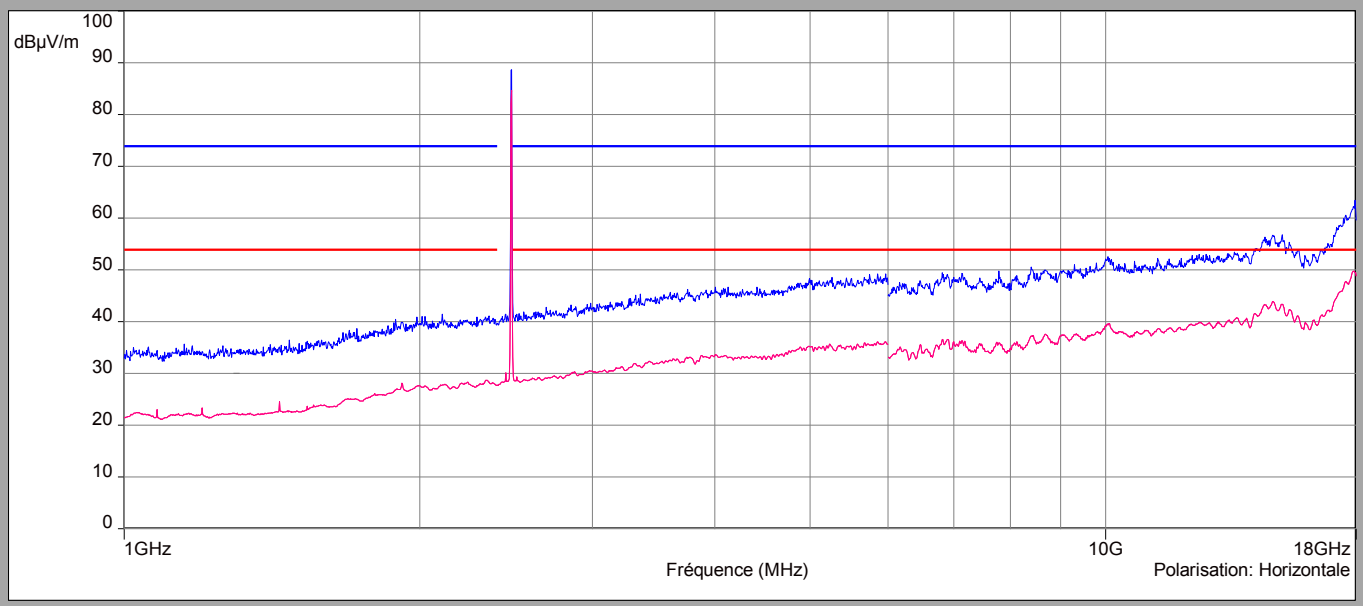
C26

Vertical



No spurious has been observed between 18GHz to 26GHz

Horizontal

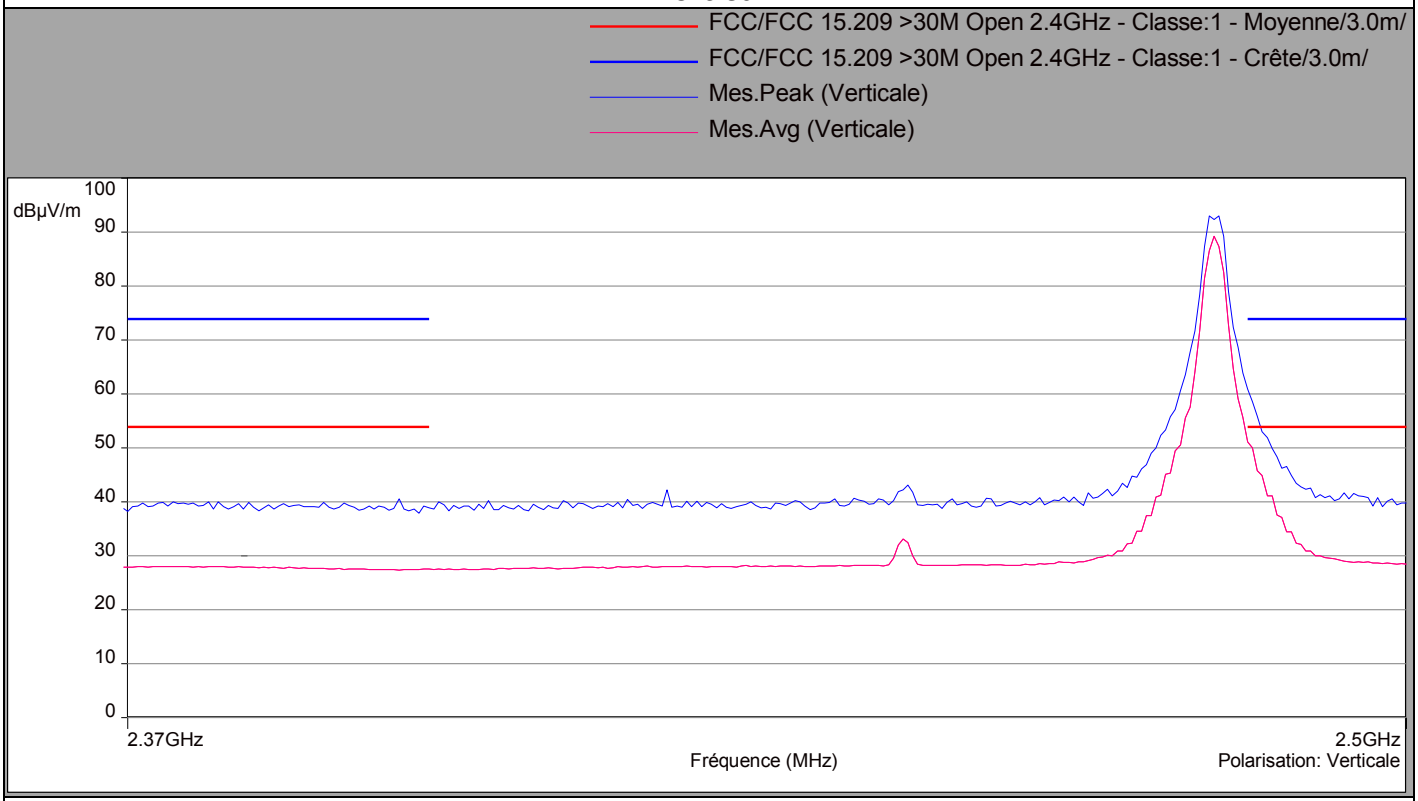


No spurious has been observed between 18GHz to 26GHz

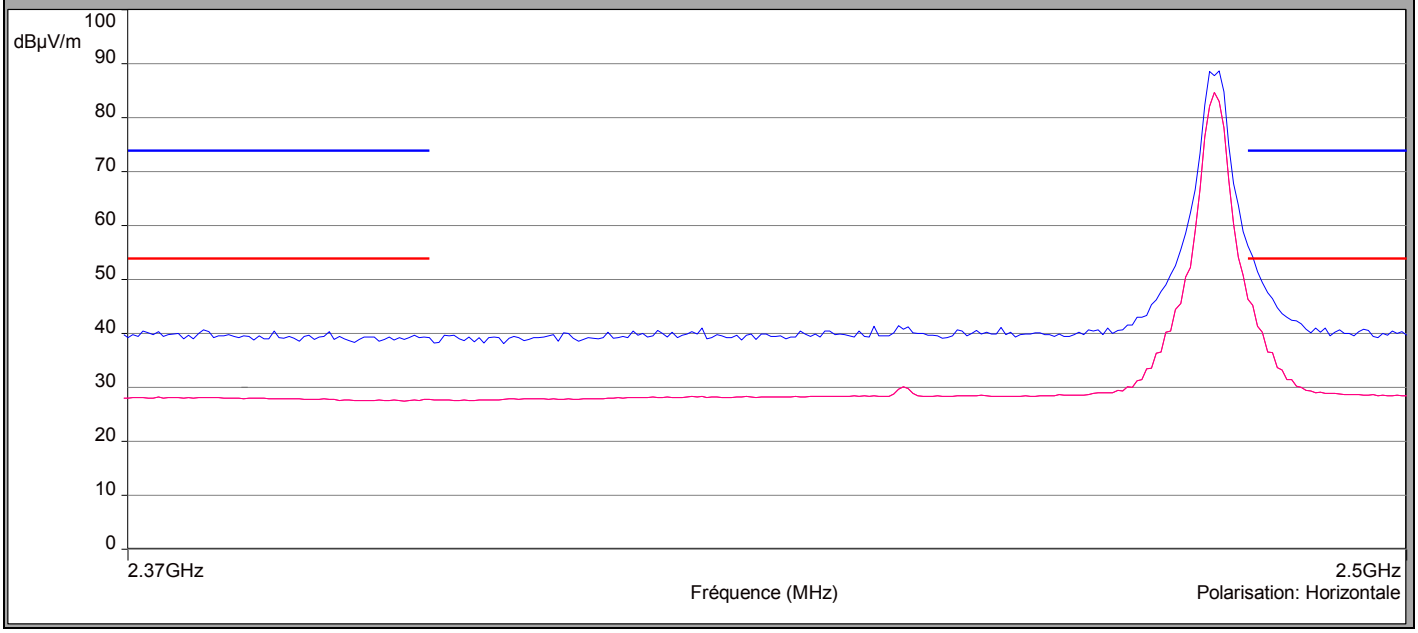
Above 1GHz

C26

Vertical



Horizontal



- **Characterization in a semi anechoic chamber (30MHz to 26GHz):**

Below 1GHz
C11 & C26

Polarisation	Frequency (MHz)	Peak Level (dBµV/m)	QPeak Level (dBµV/m)	Limit (dBµV/m)
Vertical	36	21.41	-	40
Vertical	48	29.66	-	40
Vertical	60	25.09	-	40
Vertical	72	23.80	-	40
Vertical	96	29.95	-	43.5
Vertical	120	28.99	-	43.5
Vertical	191.95	28.32	-	43.5
Vertical	240.02	30.22	-	46
Vertical	390.68	30.61	-	46
Vertical	600.02	34.31	-	46

Below 1GHz
C11 & C26

Polarisation	Frequency (MHz)	Peak Level (dBµV/m)	QPeak Level (dBµV/m)	Limit (dBµV/m)
Horizontal	48	19.12	-	40
Horizontal	120	30.76	-	43.5
Horizontal	215.96	24.36	-	46
Horizontal	240.02	34.72	-	46
Horizontal	390.86	25.36	-	46
Horizontal	600.02	33.28	-	46

Above 1GHz
C11 & C26

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	2372.5	38.97	53.90	46.45	73.90
Vertical	2437.5	36.22	53.90	44.69	73.90
Vertical	2448.5	33.15	53.90	43.11	73.90
Vertical	2510.5	32.26	53.90	41.70	73.90

Above 1GHz
C11, C18 & C26

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Horizontal	1882	27.61	53.90	44.71	73.90
Horizontal	2373.5	37.94	53.90	45.36	73.90
Horizontal	2436.5	37.65	53.90	46.16	73.90
Horizontal	2447.5	30.17	53.90	41.48	73.90
Horizontal	2511	29.35	53.90	41.42	73.90

Result: PASS

Limit: →

30MHz to 88MHz:	40dBµV/m QPeak
88MHz to 216MHz:	43,5dBµV/m QPeak
216MHz to 960MHz:	46dBµV/m QPeak
960MHz to 1000MHz:	54dBµV/m QPeak
Above 1000MHz:	74dBµV/m Peak
	54dBµV/m Average

11. TEST EQUIPMENT LIST

Occupied Bandwidth, -6dB Bandwidth, Maximum Peak Output Power, Power Spectral Density and Unwanted Emissions into Non-Restricted Frequency Bands					
Apparatus	**Trade Mark**	**Type**	**Registration number**	**Calibration date**	**Calibration due**
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Cable	sans; ATEM	SMA 0.5m	A5329645	2015/08	2016/08
Attenuator 3dB	MINI CIRCUITS	BW-S3W2+	A7122244	2015/10	2017/10
Unwanted Emissions into Restricted Frequency Bands & Receiver Spurious Emissions					
Apparatus	**Trade Mark**	**Type**	**Registration number**	**Calibration date**	**Calibration due**
Semi anechoic chamber	SIEPEL	-	D3044008	2014/05	2017/05
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642024	2015/03	2016/03
EMI receiver	ROHDE & SCHWARZ	ESI40 1088 740K40	A2642010	2015/05	2016/05
Bilog antenna	SCHWARZBECK	VULB 9160	C2040150	2016/01	2017/01
Horn antenna	EMCO	3115	C2042018	2015/05	2016/05
Preamplifier	BONN Elektronik	BLNA 3018-8F305	A7080053	2015/03	2016/03
Preamplifier	LCIE; LCIE	LCIE-ALB-001	A7080073	2015/06	2016/06
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA/3.5MD/4000	A5329374	2015/06	2016/06
Cable	CABLES & CONNECTIQUES	2.9MD/CSU440AA-TDINOX/2.9MD/12000	A5329425	2015/07	2016/07
Cable	CABLES & CONNECTIQUES	2.9MD/CSU440AA/2.9MD/2000	A5329358	2015/12	2016/12
Measurement RF cable	-	-	A5329626	2015/12	2016/12
Measurement RF cable	-	-	A5329592	2014/05	2016/05
Attenuator 3dB	WEINSCHEL	WA54-3-12	A7122223	2015/06	2016/06
Rejector filter 2,4GHz	-	2.45GHz	A7484048	2015/12	2016/12
Measurement horn antenna 18-26,5GHz	PASTERNACK	PE9852/2F-20	C2042048	2015/05	2017/05
AC Power Line Conducted Emissions					
Apparatus	**Trade Mark**	**Type**	**Registration number**	**Calibration date**	**Calibration due**
Semi anechoic chamber	SIEPEL	-	D3044008	2014/05	2017/05
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642024	2015/03	2016/03
V LISN	ROHDE & SCHWARZ	ENV216	C2320163	2015/02	2016/02
Cable	CABLES & CONNECTIQUES		A5329411	2015/06	2016/06

12. UNCERTAINTIES CHART

Kind of test	Measurement uncertainties (k=2) ±x(dB) / (Hz)	Limit for uncertainties ±y(dB)
TRANSMITTER REQUIREMENTS		
Radio frequency	$\pm 2.10^{-8}$ Hz	$\pm 1.10^{-7}$ Hz
RF Conducted power	±0.6 dB	±1.5 dB
Spurious emissions • Frequency < 1000 MHz • Frequency > 1000 MHz	 ±3.9 dB ±3.1 dB	±6 dB
Spurious in conduction	±1.6 dB	±3 dB
Temperature	±0.5°C	±1°C
Humidity	±2.5 %	±10 %
RECEIVER REQUIREMENTS		
Spurious emissions • Frequency < 1000 MHz • Frequency > 1000 MHz	 ±3.9 dB ±3.1 dB	±6 dB