



TEST REPORT

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Composition of document

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6230B

Standards

47 CFR Part 15.247
RSS-247, Issue 1
RSS-Gen, Issue 4

Issued to

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Apparatus under test

Trade mark
Manufacturer
Type
Serial number
IC
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JN5169-001-M00-2
611-117
8764A-JN5169M0
XXMJN5169M0V2

Test date

2016/05/11 to 2016/05/12

Tests performed by

Mathieu CERISIER

Test site

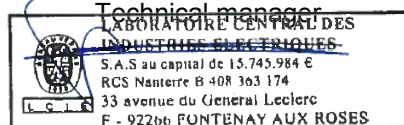
Fontenay aux Roses

Date of issue

2016/07/27

Written by :
Mathieu CERISIER
Tests operator

Approved by :
Stéphane PHOUDIAH
Technical manager



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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 v03r05

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. HARDWARE & SOFTWARE IDENTIFICATION

- Equipment under test (EUT):



Photograph of EUT



Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Carrier board	DR1174	-	To connect the EUT
USB cable			Interface PC – CMET - Device
Laptop	DELL	-	-

• **Software identification:**

- CMET for JN5169 certification Rev. 01.00 — 5/2/2016

• **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

- Temperature range: Tmin: ☐ -20°C ☐ 0°C ☒ -40°C

Tnom: ☒ 20°C

Tmax: ☐ +35°C ☐ 55°C ☒ +85°C

- Test source voltage : Vnom: ☐ 120V/60Hz ☒ 3.3 Vdc

Note: the mother board is connected to the PC with USB. A LDO on the mother board generates the 3.3V voltage from the USB 5V supply.

- 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:

Gain (dBi)
1

- 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	☒



2.2. RUNNING MODE

- 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:
- TERATERM : User guide Rev. 01.00 – 2/5/2016

2.3. EQUIPEMENT LABELLING



2.4. EQUIPMENT MODIFICATIONS

No equipment modification has been necessary during testing.



3. OCCUPIED BANDWIDTH

3.1. TEST CONDITIONS

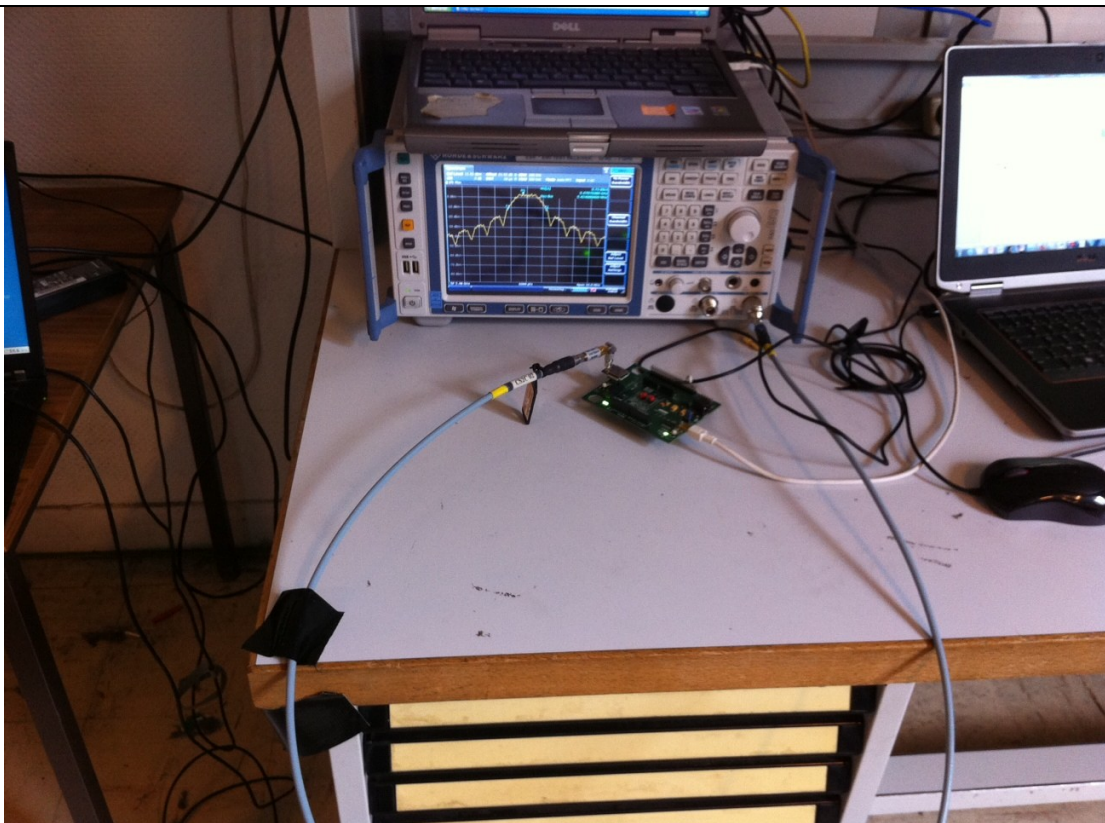
Test performed by : Mathieu CERISIER
Date of test : 2016/05/12
Ambient temperature : 25°C
Relative humidity : 37%

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:

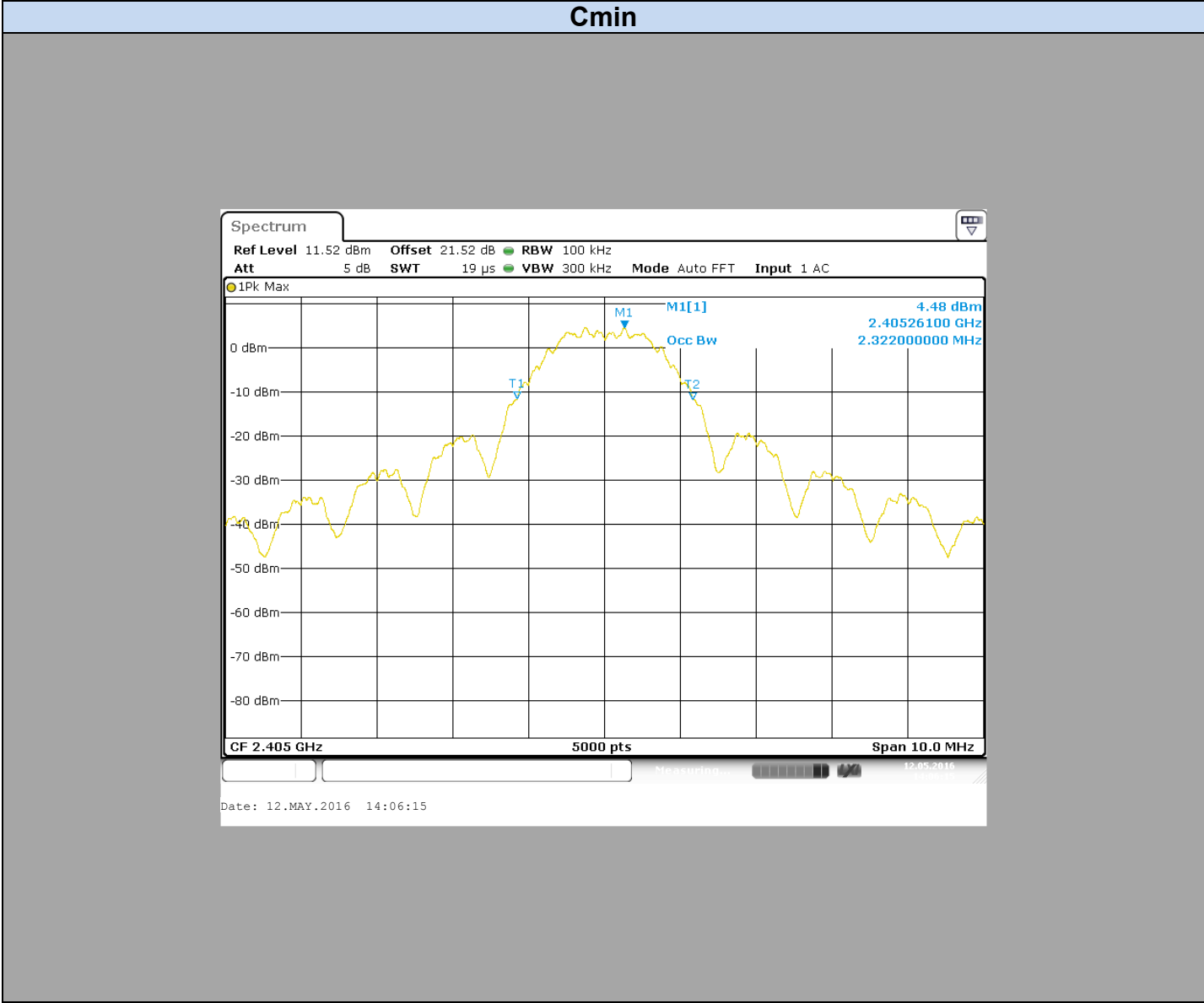
Center frequency= Cmin or Cnom or Cmax
Span= Above the emission spectrum
Amplitude= Sufficient to observe the signal amplitude
RBW= 1% to 5% of the occupied bandwidth (OBW)
VBW $\geq$ 3*RBW
Sweep= Auto
Trace= Max Hold
Detector= Peak
Occupied Bandwidth 99% activated



Photograph for Occupied Bandwidth

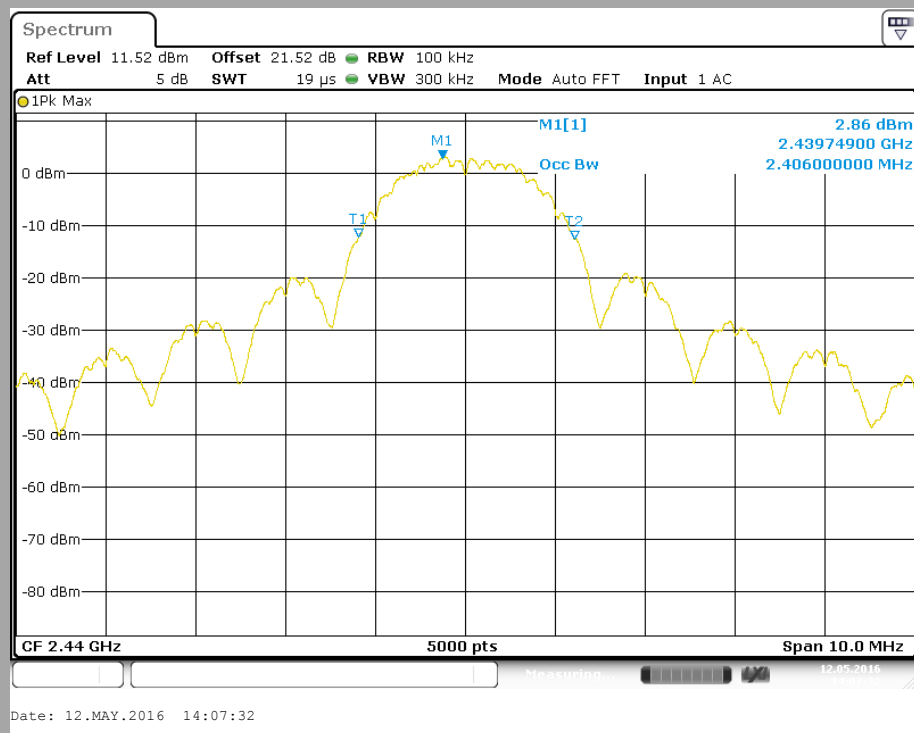


3.3. GRAPHICS & RESULTS



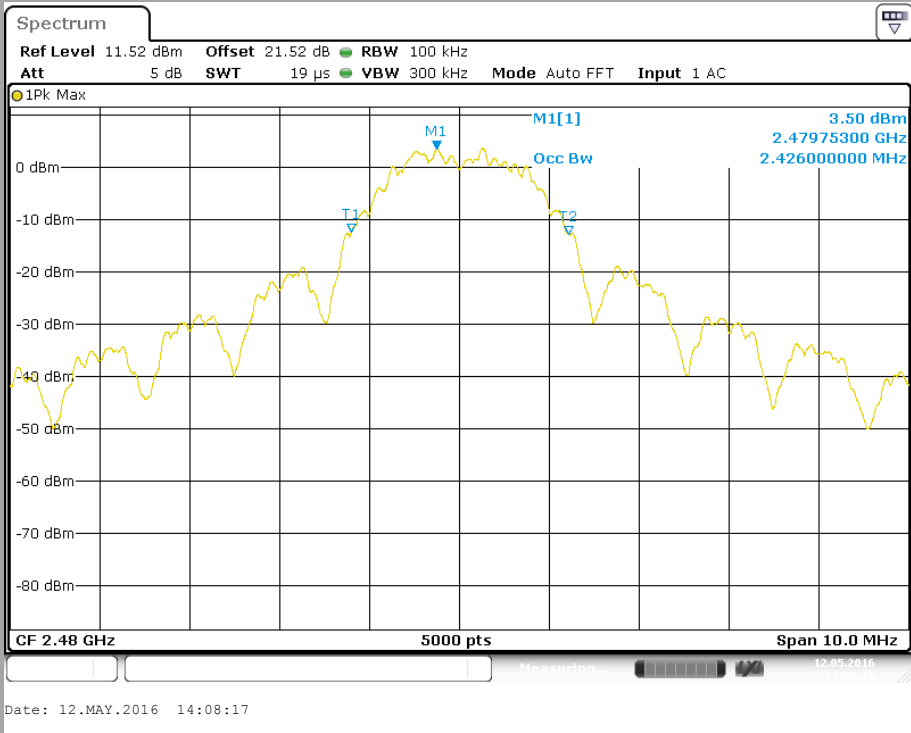


Cnom





Cmax



Temperature	Tnom		
Voltage	Vnom		
Frequency	Cmin	Cnom	Cmax
Occupied Bandwidth (MHz)	2,322	2,406	2,426

Result: **PASS**

Limit: → None



4. -6dB BANDWIDTH

4.1. TEST CONDITIONS

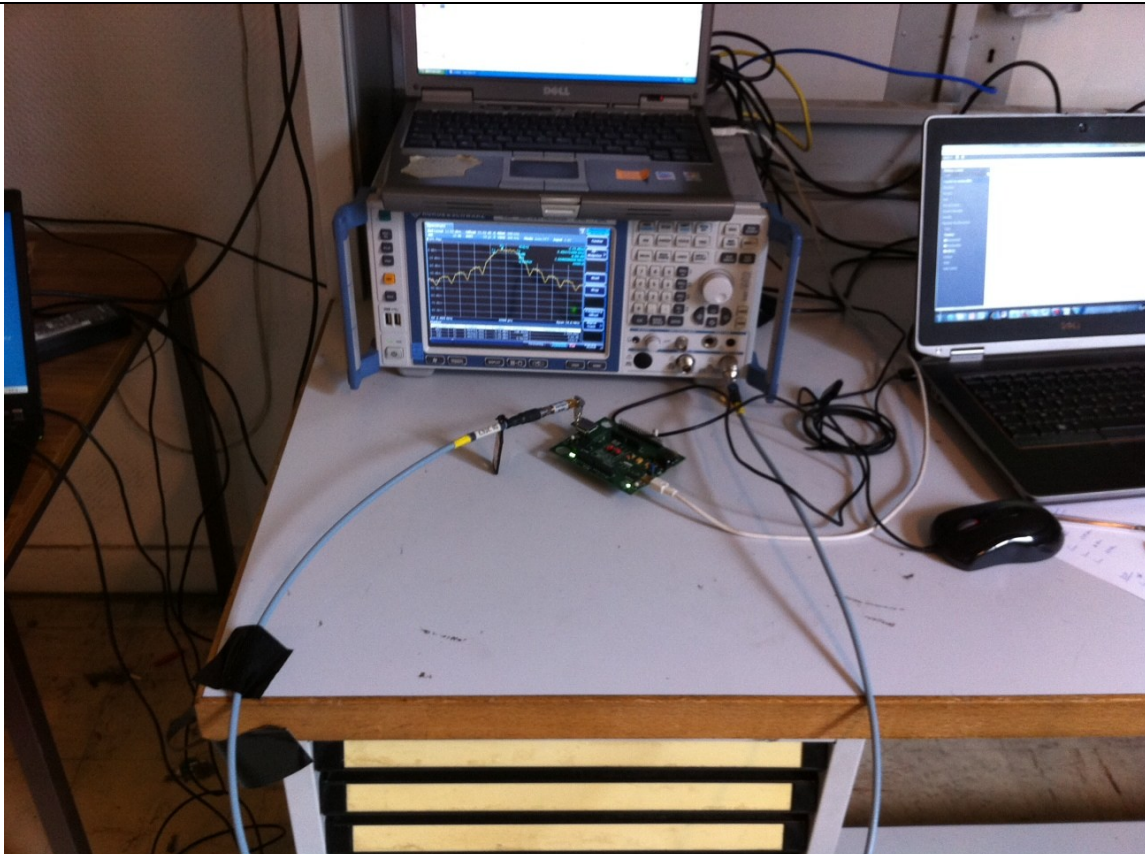
Test performed by : Mathieu CERISIER
Date of test : 2016/05/12
Ambient temperature : 25°C
Relative humidity : 37%

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.

Spectrum Analyzer Setting:

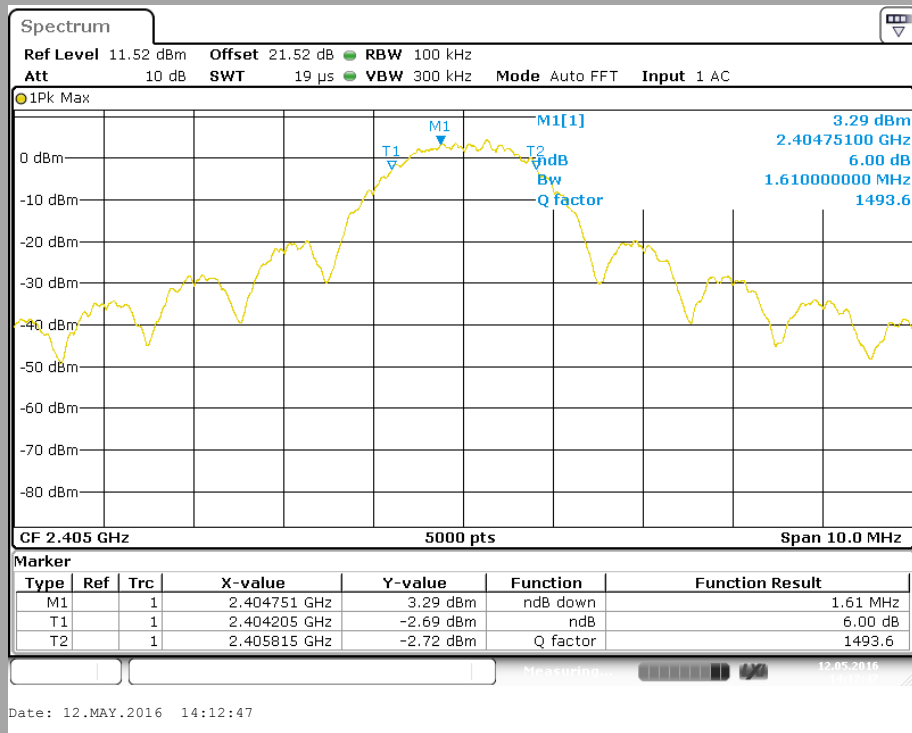
Center frequency= Cmin or Cnom or Cmax
Span= At least twice the emission spectrum
Amplitude= Sufficient to observe the signal amplitude
RBW= 100kHz
VBW≥ 300kHz
Sweep= Auto
Trace= Max Hold
Detector= Peak



Photograph for -6dB Bandwidth

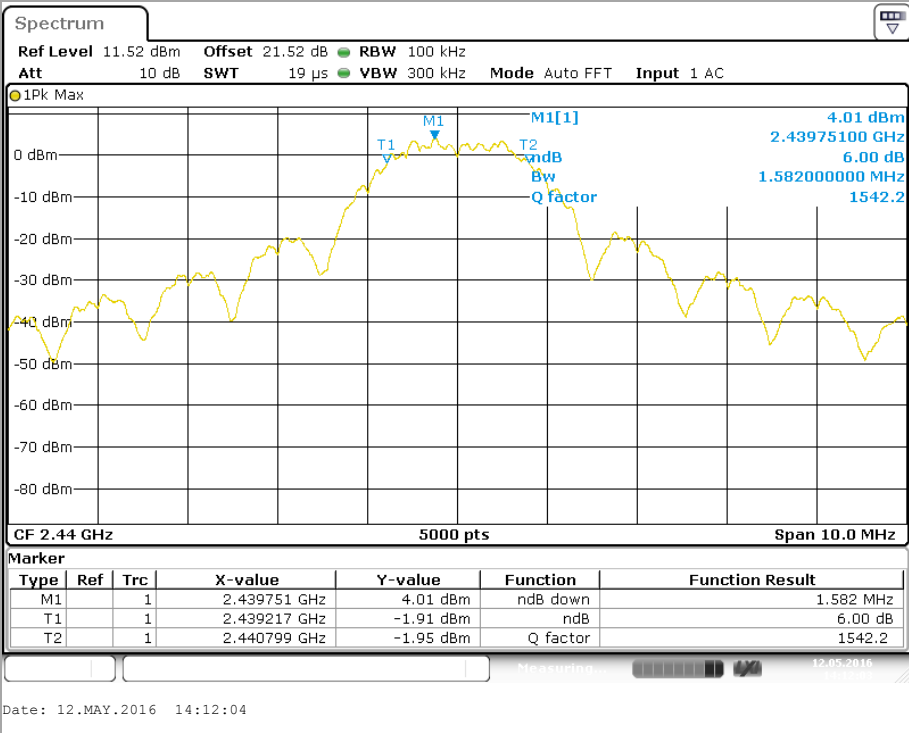
4.3. GRAPHICS & RESULTS

Cmin



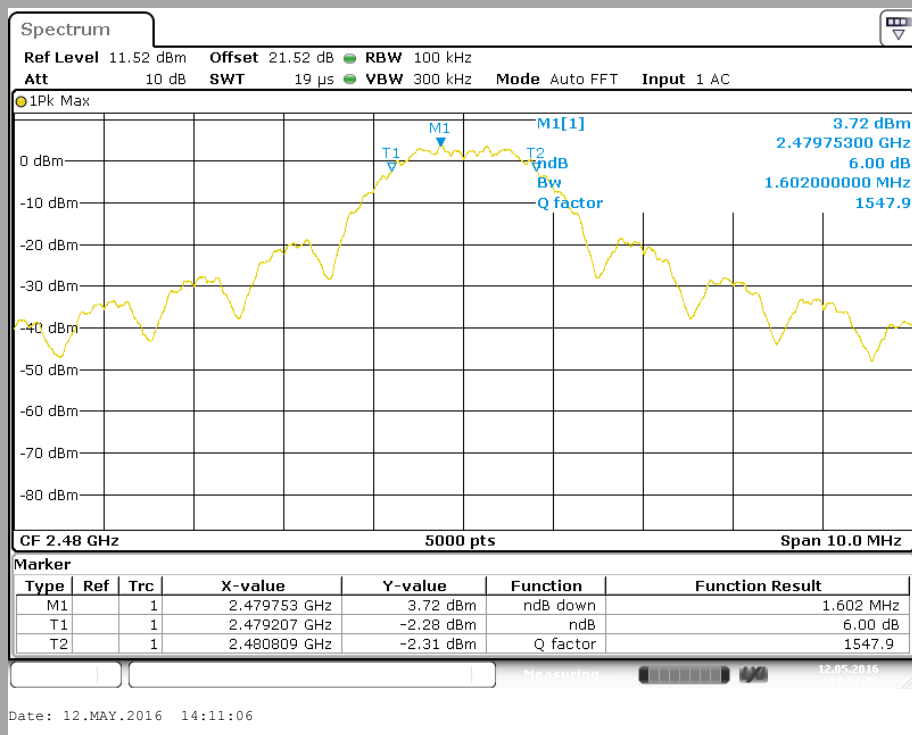


Cnom





Cmax



M00 & M03

Temperature	Tnom		
Voltage	Vnom		
Frequency	Cmin	Cnom	Cmax
-6dB Bandwidth (MHz)	1,61	1,582	1,602

Result: **PASS**

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



5. MAXIMUM CONDUCTED POWER

5.1. TEST CONDITIONS

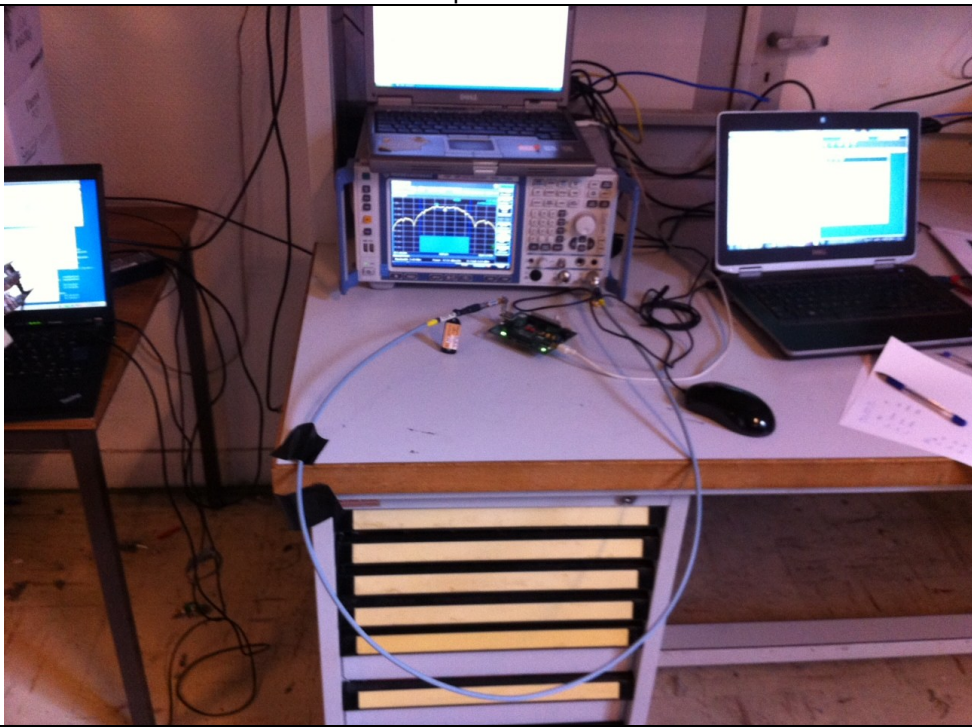
Test performed by : Mathieu CERISIER
Date of test : 2016/05/12
Ambient temperature : 25°C
Relative humidity : 37%

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 § 9.2.2.2

Spectrum Analyzer Setting (Maximum Peak Conducted Power):

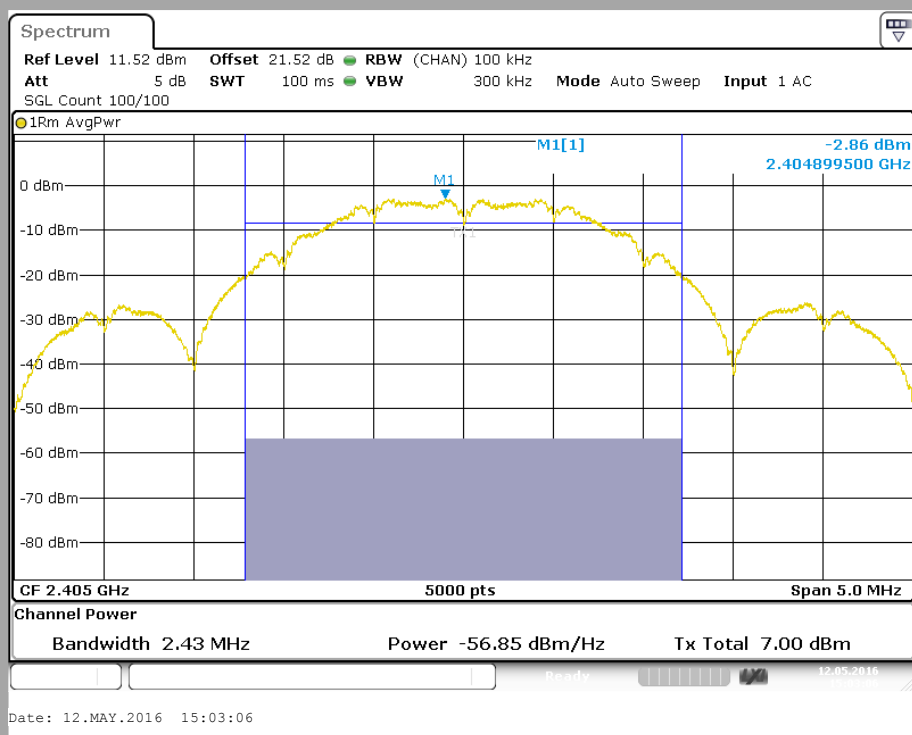
Center frequency= Cmin or Cnom or Cmax
Span $\geq$ At least 1.5 times the OBW
Amplitude= Sufficient to observe the signal amplitude
RBW= 1% to 5% of the OBW
VBW $\geq$ 3*RBW
Sweep= Auto
Sweep points= 2*Span/RBW
Trace= RMS
Trigger= Free Run
Detector= Average 100
Meas Fonction= Channel Power inside of the emission spectrum



Photograph for Maximum Conducted Power

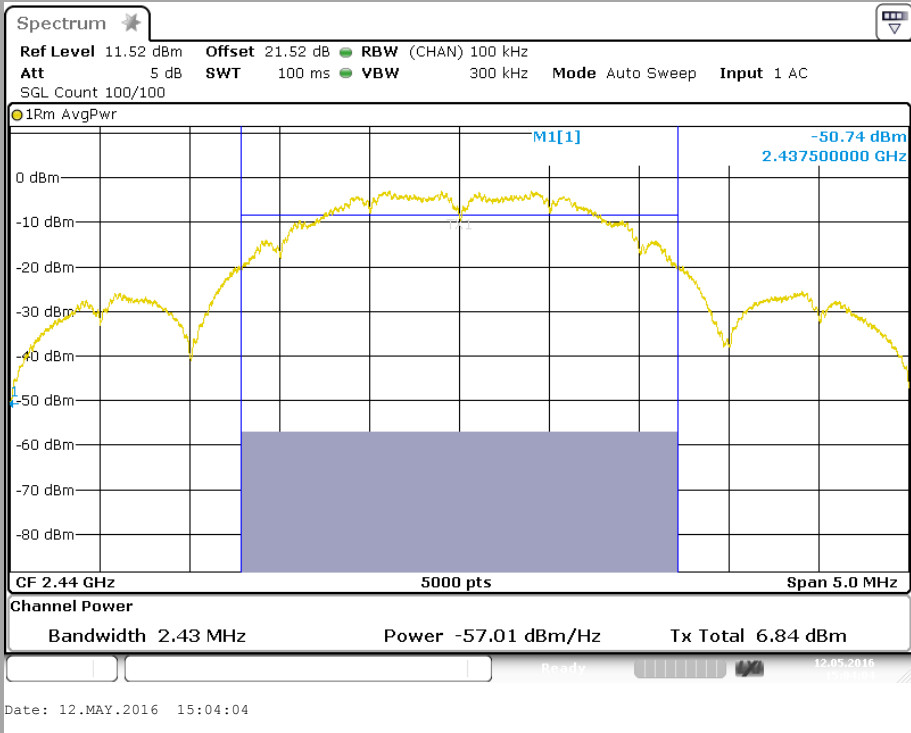
5.3. GRAPHICS & RESULTS

Cmin



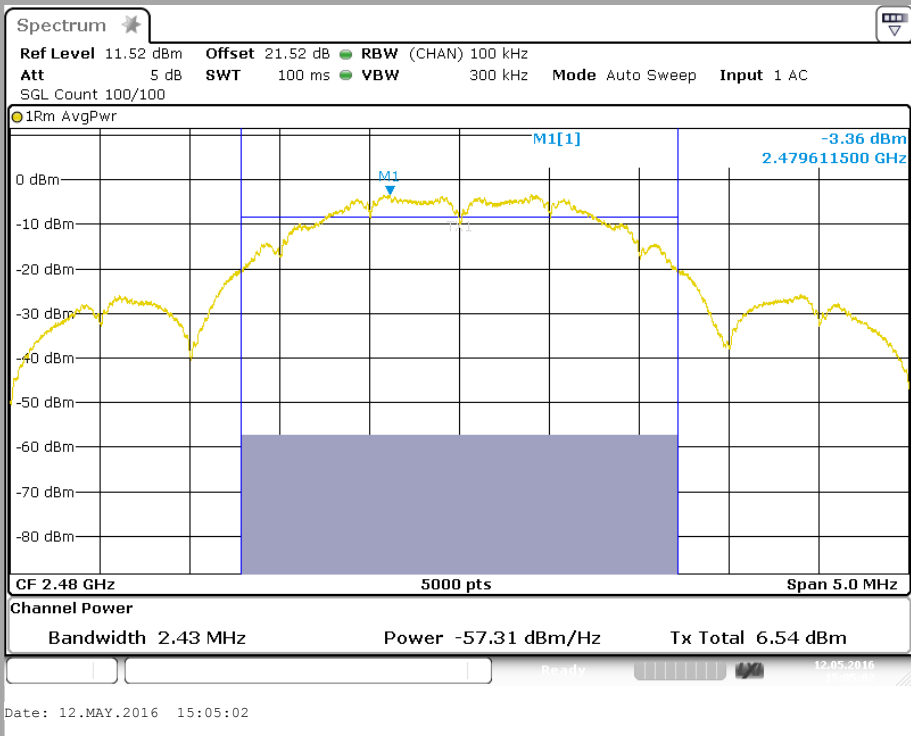


Cnom





Cmax





Spectrum Analyzer Offset:
Cable Loss + Attenuator= **21,52dB**

Channel	Overall Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Limit (dBm)
Cmin	1	7	30
Cnom	1	6,84	30
Cmax	1	6,54	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

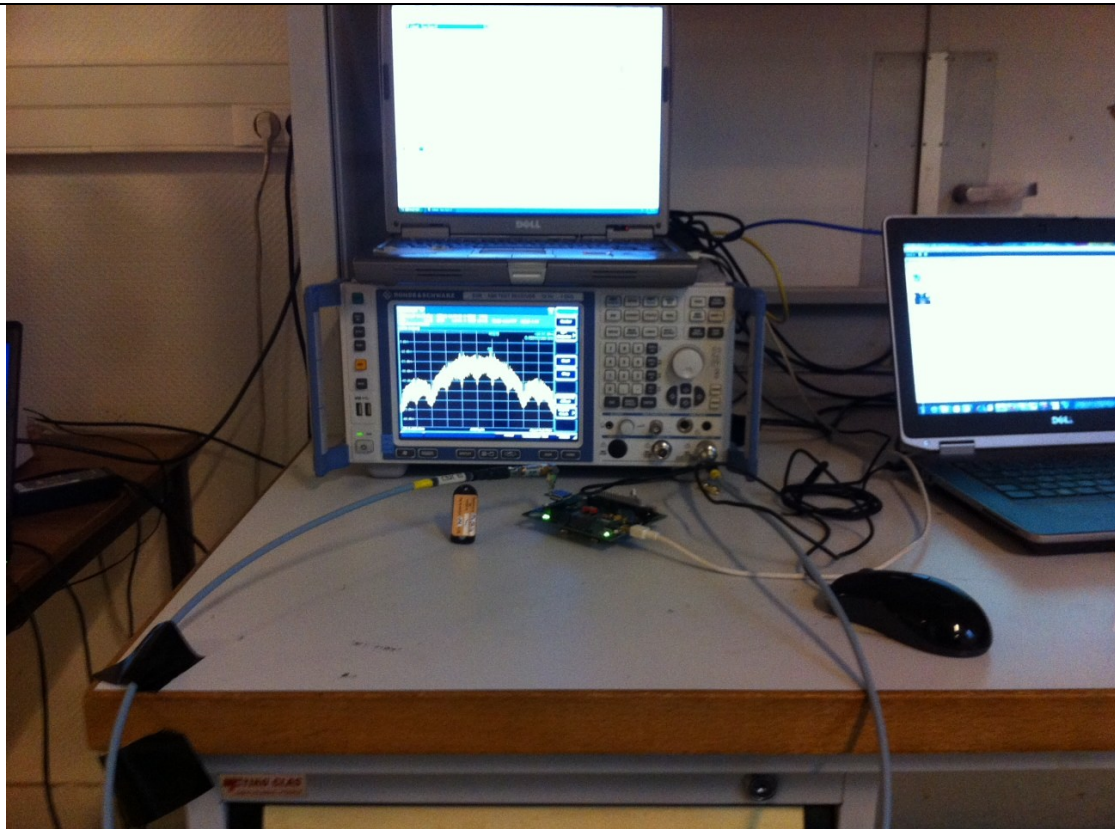
Test performed by : Mathieu CERISIER
Date of test : 2016/05/12
Ambient temperature : 25°C
Relative humidity : 37%

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 § 10.3.

Spectrum Analyzer Setting:

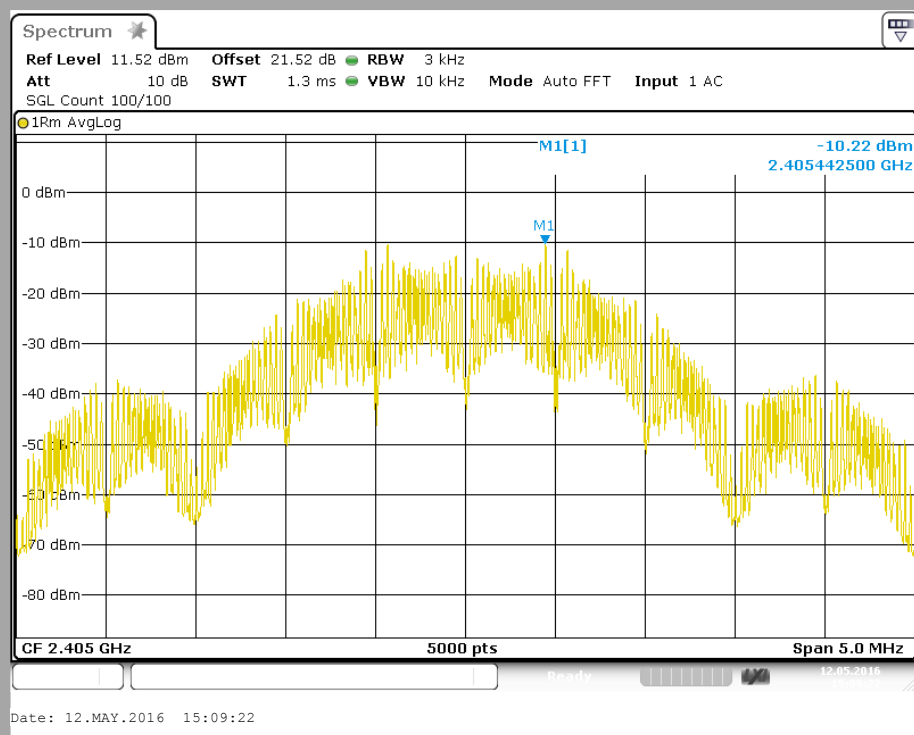
Center frequency= Cmin or Cnom or Cmax
Span $\geq$ At least 1.5 times the OBW
Amplitude= Sufficient to observe the signal amplitude
 $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz} := 3\text{kHz}$
 $\text{VBW} \geq 3 \cdot \text{RBW} = 10\text{kHz}$
Sweep= Auto
Sweep points $\geq 2 \cdot \text{Span} / \text{RBW}$
Trace= Average 100
Detector= RMS



Photograph for Power Spectral Density

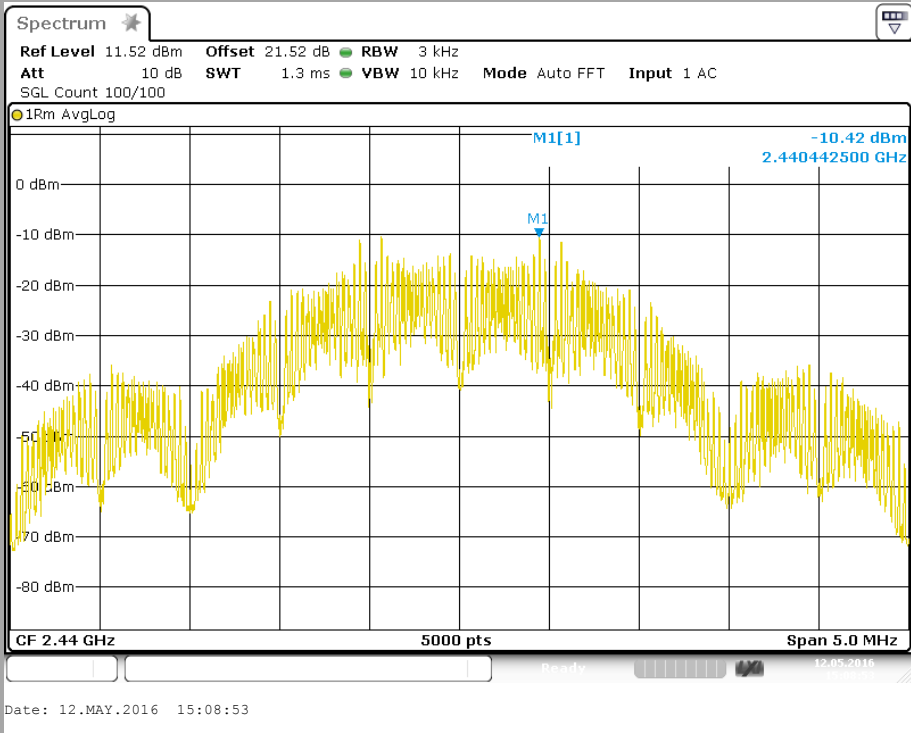
6.3. GRAPHICS & RESULTS

Cmin



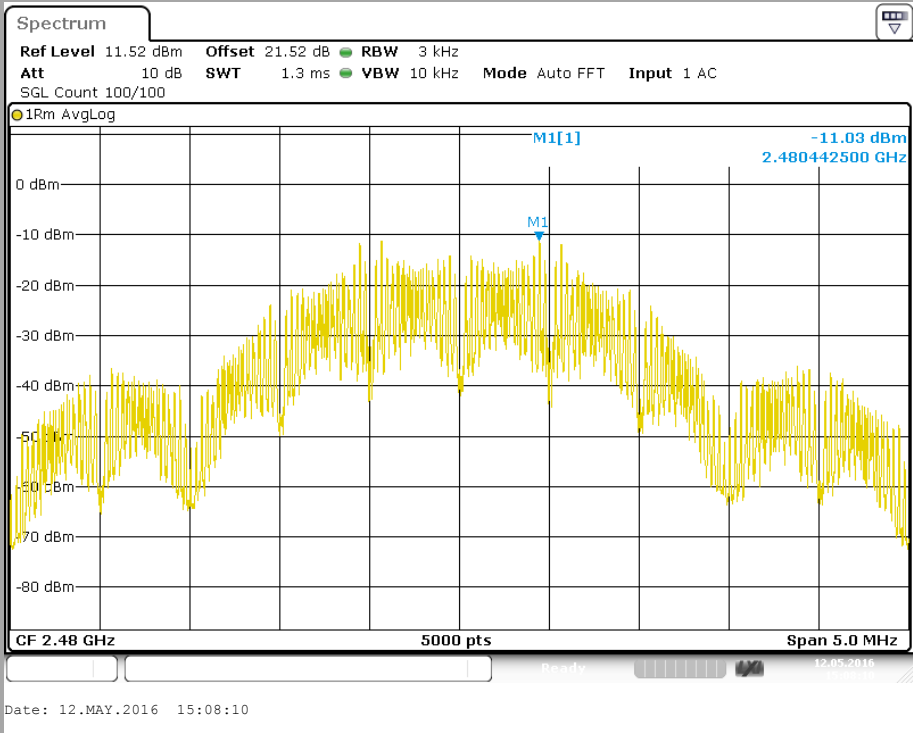


Cnom





Cmax





Spectrum Analyzer Offset:
Cable Loss + Attenuator= **21,52dB**

Channel	Antenna Gain (dBi)	Power spectral density (dBm/3kHz)	Limit (dBm)
Cmin	1	-10,22	8
Cnom	1	-10,42	8
Cmax	1	-11,03	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

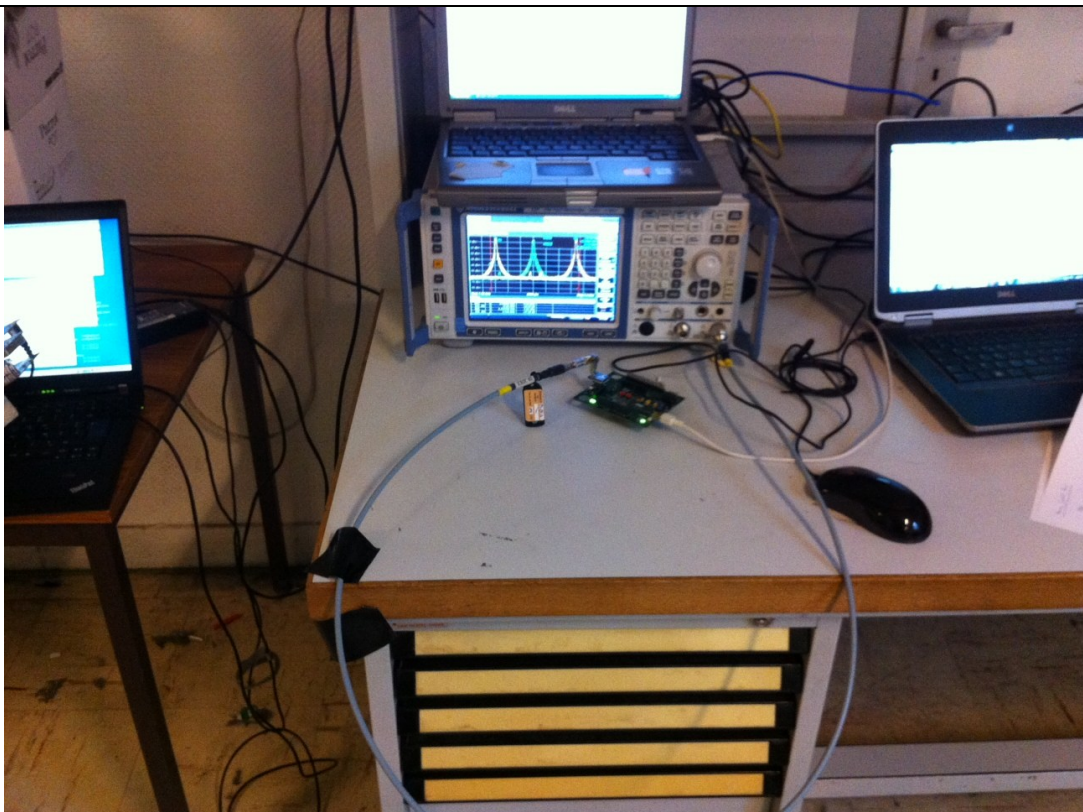
Test performed by : Mathieu CERISIER
Date of test : 2016/05/12
Ambient temperature : 25°C
Relative humidity : 37%

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:

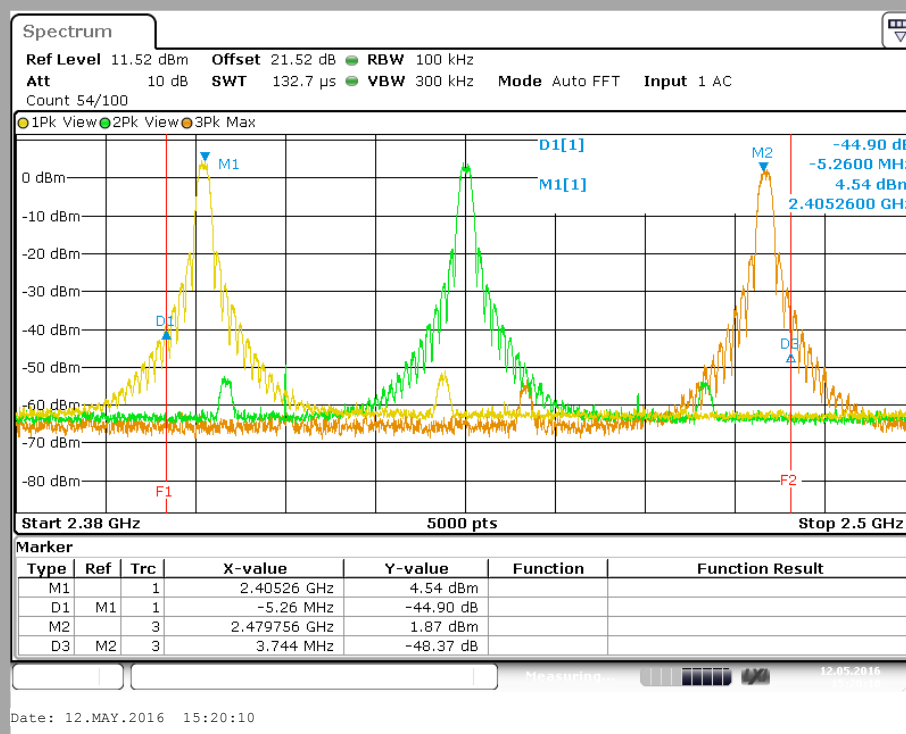
Start frequency= 2380MHz
Stop frequency= 2500MHz
span $\geq$ 1.5 times the DTS Bandwidth
Amplitude= Sufficient to observe the signal amplitude
RBW= 100kHz
VBW $\geq$ 300kHz
Sweep Time= Auto Couple
Detector= Peak
Trace= Max Hold



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

7.3. GRAPHICS & RESULTS

Cmin / Cnom / Cmax



Temperature	Tnom	
Voltage	Vnom	
Conducted Spurious Emission at the Band Edge (MHz)	2400	2483,5
Spurious Level (dBc)	-44,90	-48.37

Result: **PASS**

Limit: → All Spurious Emissions must be at least 30dB (Average 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

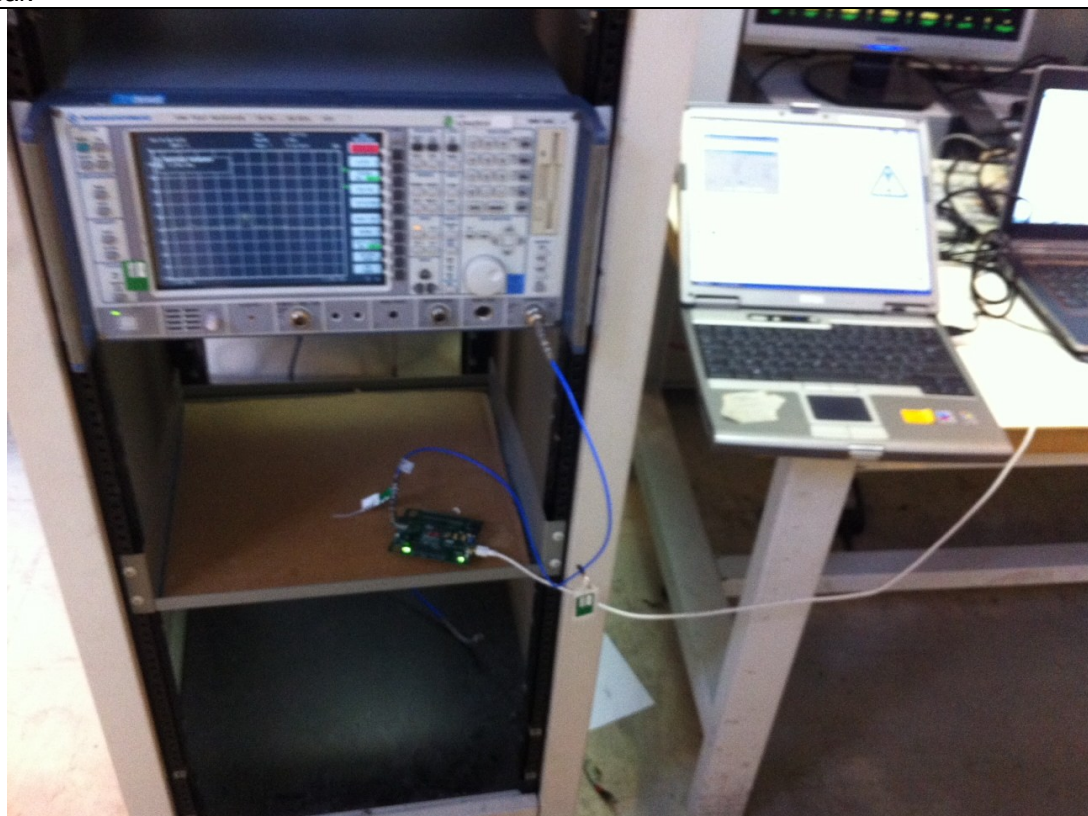
Test performed by : Mathieu CERISIER
Date of test : 2016/05/11
Ambient temperature : 24°C
Relative humidity : 41%

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:

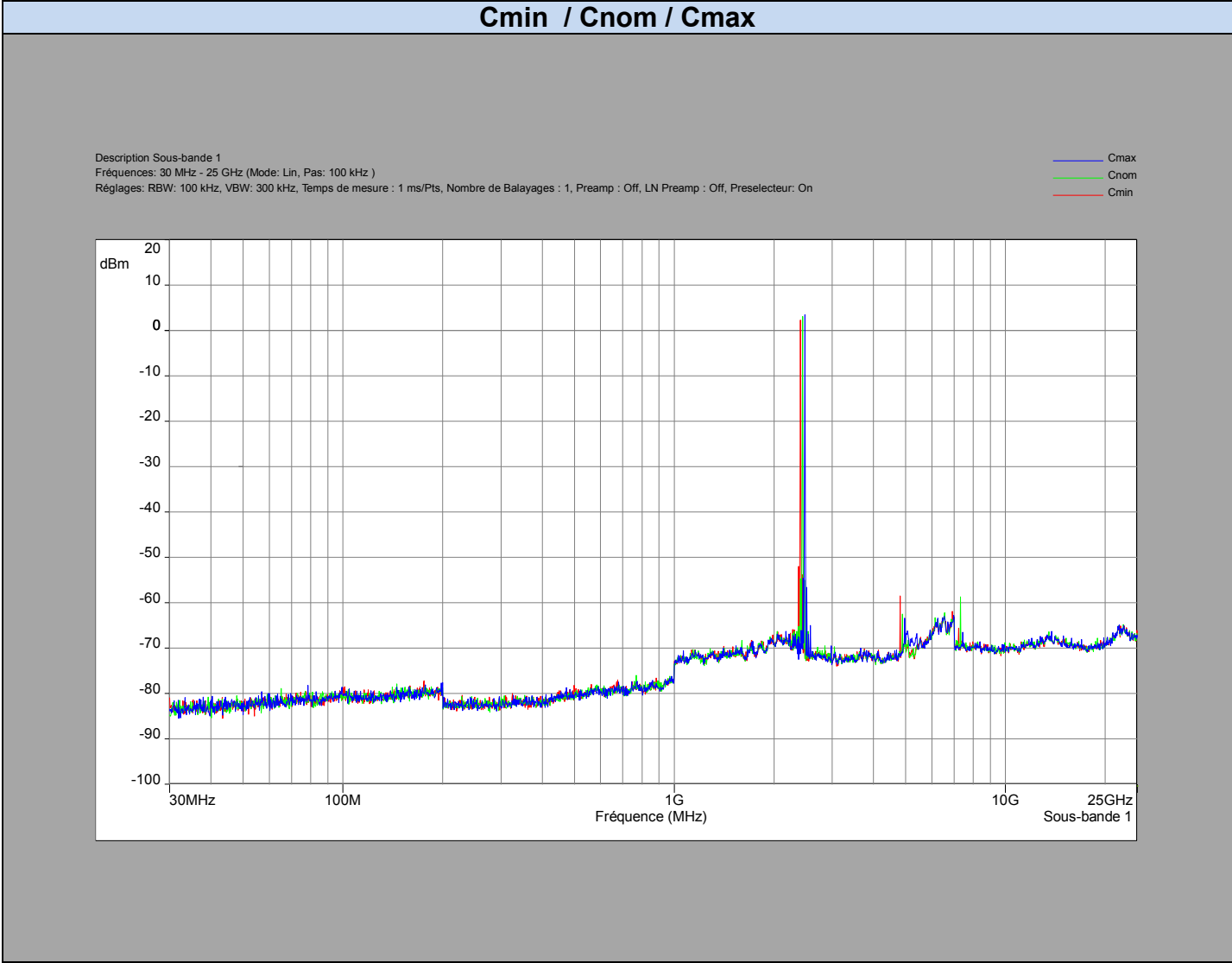
Start frequency= 30MHz
Stop frequency= 25GHz
Amplitude= Sufficient to observe the signal amplitude
RBW= 100kHz
VBW= 300kHz
Sweep Time= Auto
Sweep Point= 249700
Trace= Max Hold
Detector= Peak



Photograph for Unwanted Emissions into Non-Restricted Frequency Bands



8.3. GRAPHICS & RESULTS





Frequency (MHz)	Spurious Level (dBm)	Spurious Level (dBc)
4809	-58.439	60,806
4879	-62,486	65,544
4959	-63,376	66,865
7213,4	-65,63	67,947
7321,3	-58,712	61,77
7442,1	-66,481	69,97

Result: **PASS**

Limit: → All Spurious Emissions must be at least 30dB (Average 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 : Christophe FERREIRA
Date of test : May 13th, 2016
Ambient temperature : 20°C
Relative humidity : 40%

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 $50\Omega / 50\mu\text{H}$. 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)

9.3. RESULTS

Phase Line

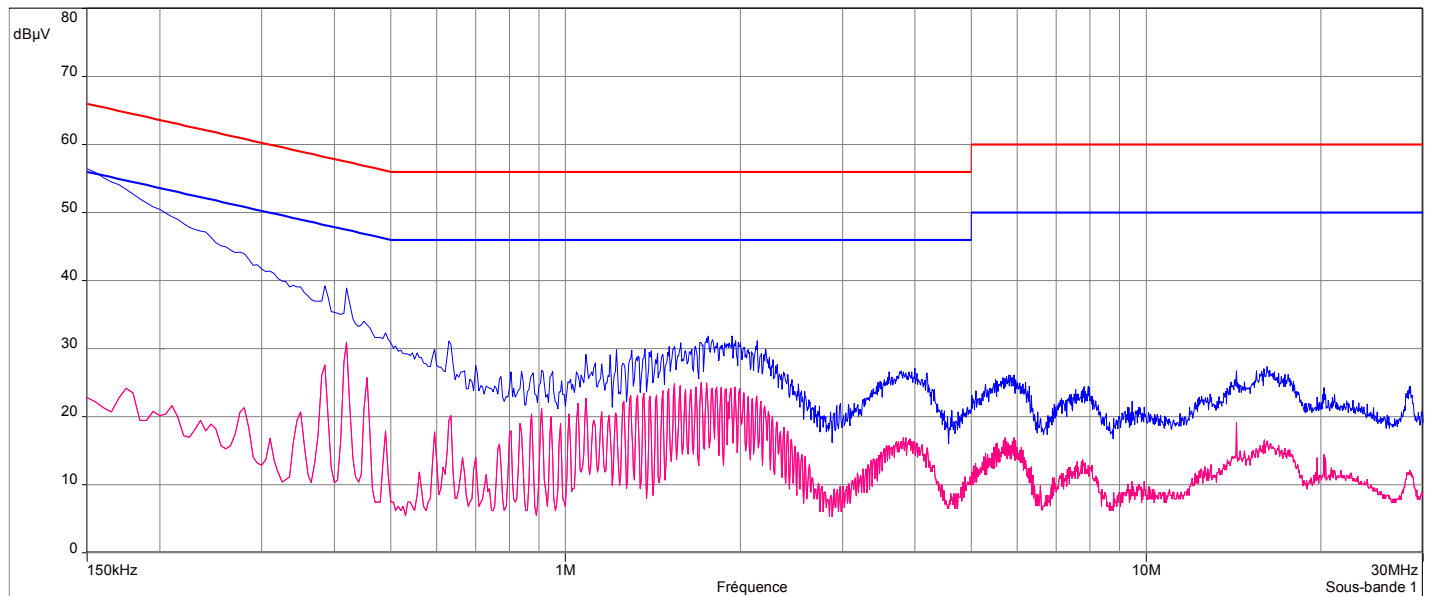
Description Sous-bande 1

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9 kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: 210477776, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Preselecteur: On

Ligne: Phase 1

— FCC/FCC 15.107 - Classe:B - Moyenne/
— FCC/FCC 15.107 - Classe:B - QCrête/
— Mes.Peak (Phase 1)
— Mes.Avg (Phase 1)



Neutral Line

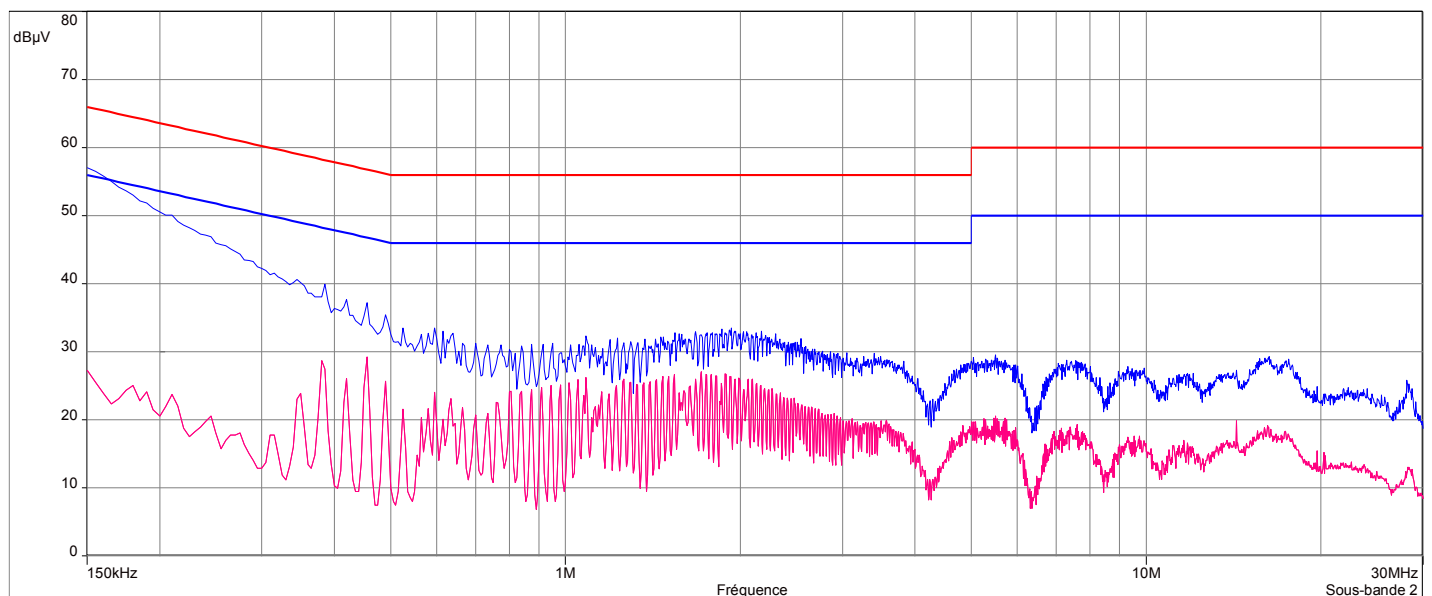
Description Sous-bande 2

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9 kHz, VBW: Auto, Durée balayage: 50 ms/Pts, Atténuation: 210477744, Nombre de Balayages: 1, Preamp: Off, LN Preamp: Off, Preselecteur: On

Ligne: Neutre

— FCC/FCC 15.107 - Classe:B - Moyenne/
— FCC/FCC 15.107 - Classe:B - QCrête/
— Mes.Peak (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)
0.150	56.4	-	66.0	22.8	56.0
0.385	39.2	-	58.2	27.6	48.2
0.420	38.9	-	57.4	30.9	47.4
1.960	31.9	-	56.0	24.4	46.0
16.17	27.3	-	60.0	16.4	50.0

Neutral Line

Frequency (MHz)	Peak Level (dBμV)	Quasi-Peak Level (dBμV)	Quasi-Peak Limit (dBμV)	Average Level (dBμV)	Average Limit (dBμV)
0.150	57.1	-	66.0	27.3	56.0
0.380	39.9	-	58.3	28.7	48.3
0.455	37.2	-	56.8	29.3	46.8
1.930	33.5	-	56.0	23.5	46.0
16.30	29.3	-	60.0	19.2	50.0

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



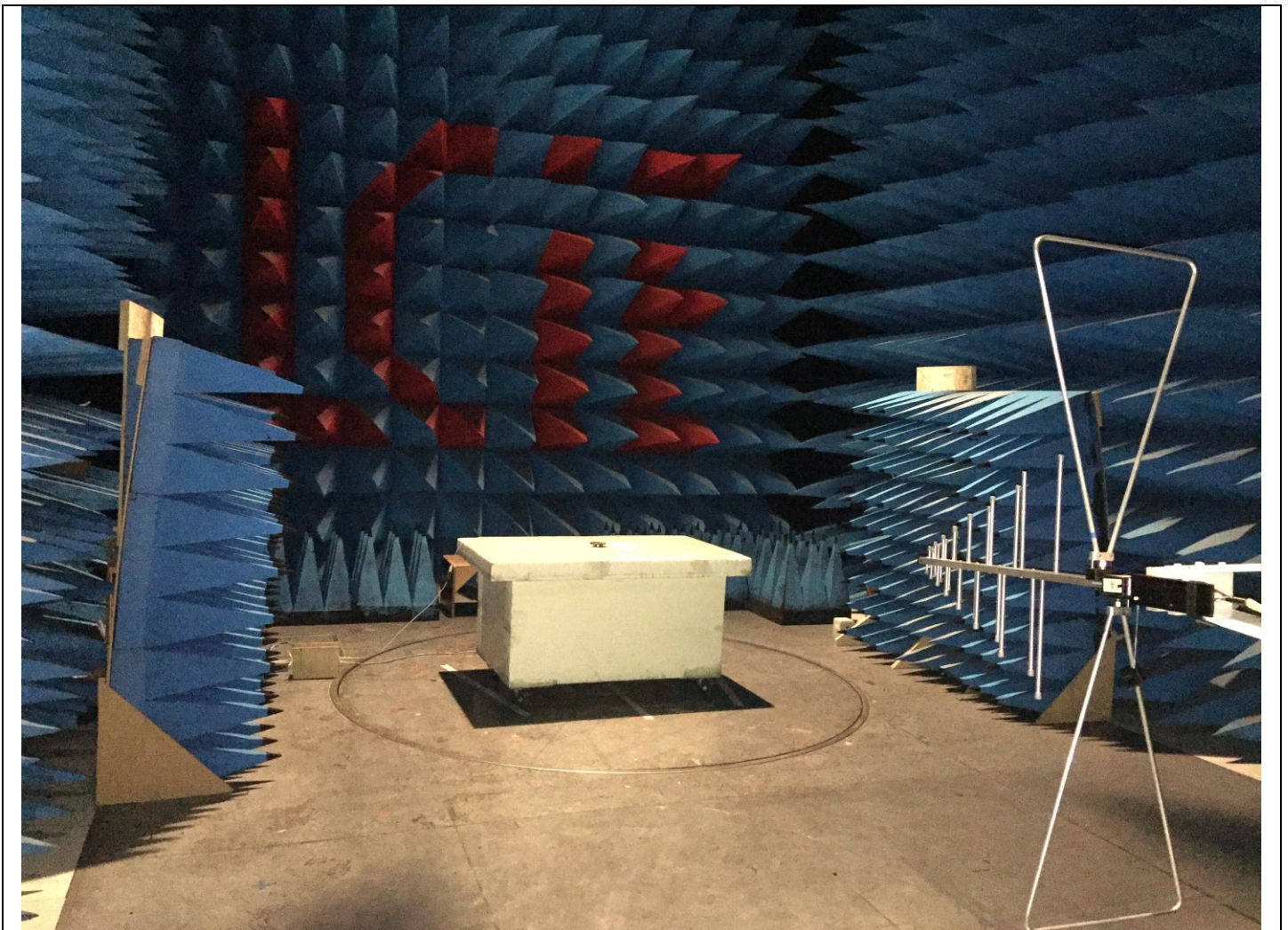
10. UNWANTED EMISSIONS INTO RESTRICTED FREQUENCY BANDS

10.1. TEST CONDITIONS

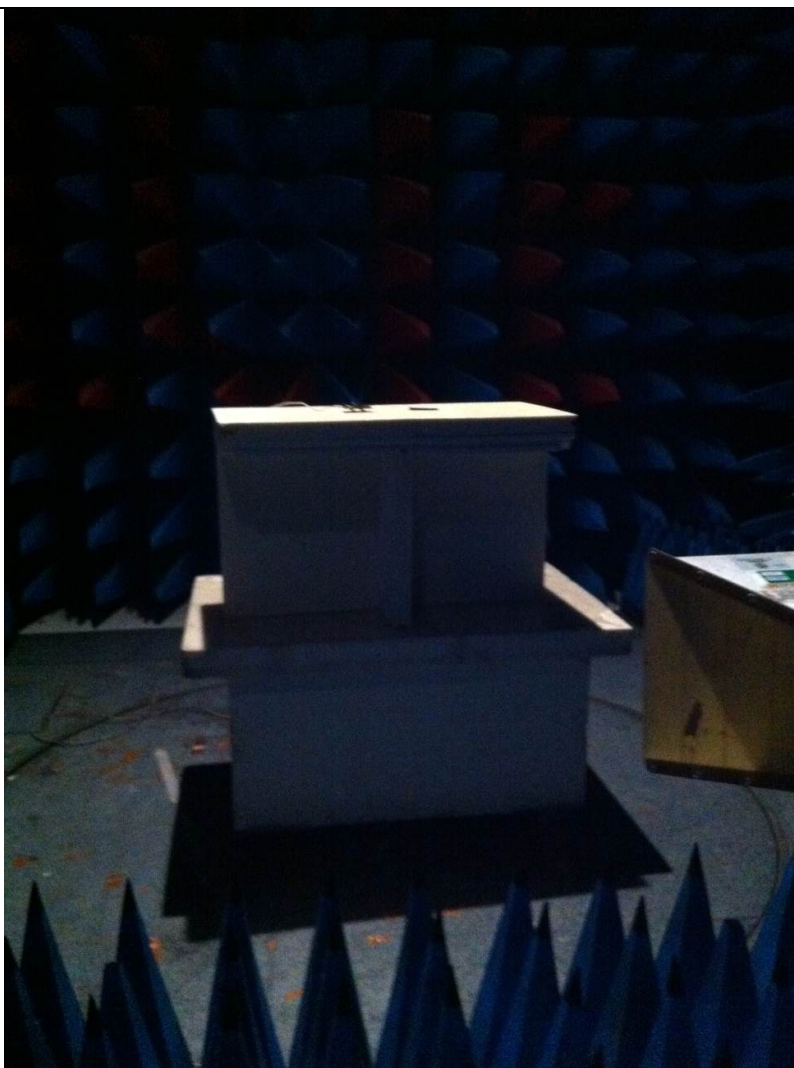
Test performed by : Christophe FERREIRA
Date of test : May 13th, 2016
Ambient temperature : 20°C
Relative humidity : 40%

10.2. TEST SETUP

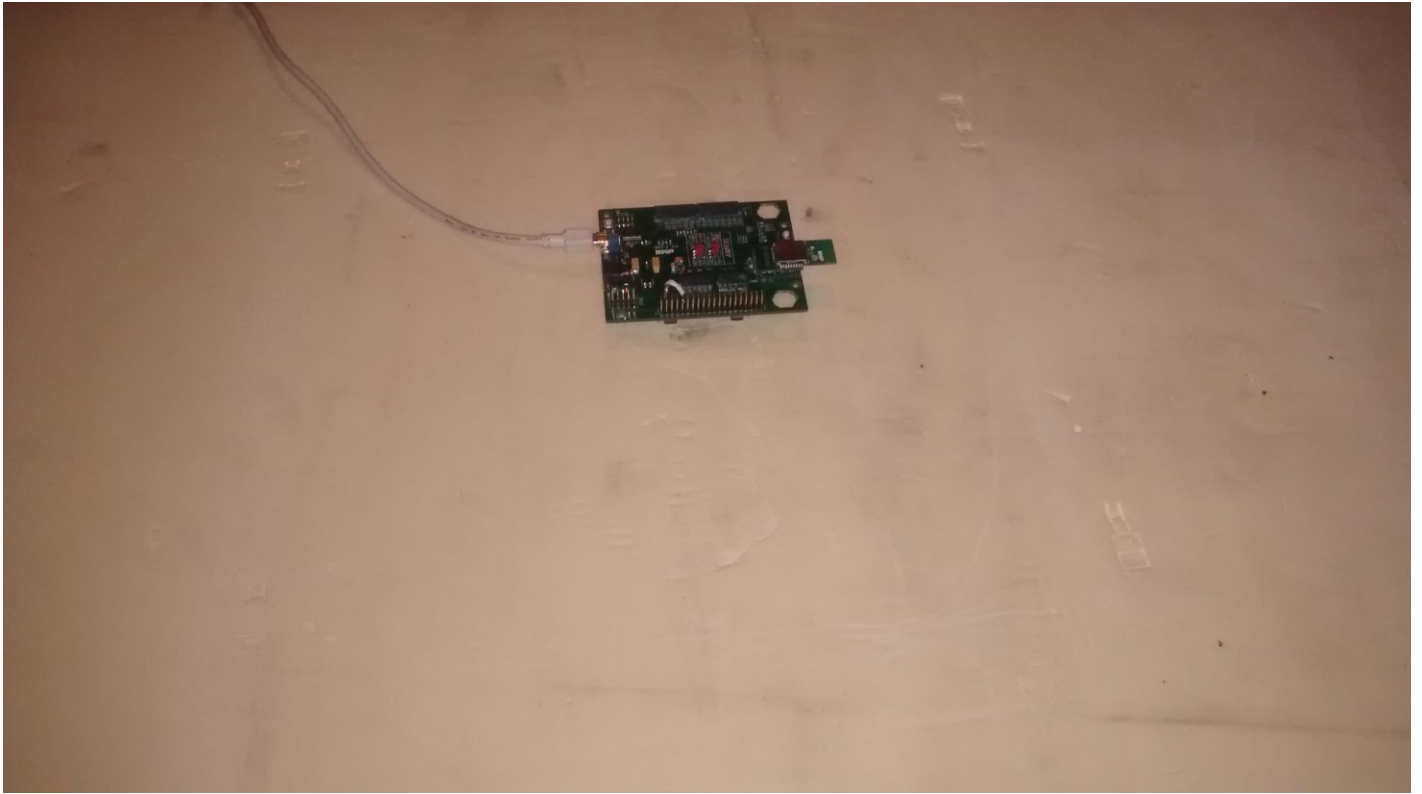
The product has been tested according to ANSI C63.10 (2013). The EUT is placed in a semi-anechoic chamber. Distance between measuring antenna and the EUT is 10m. Test is performed in horizontal (H) and vertical (V) polarization with bilog antenna below 1GHz and with a horn antenna above 1GHz. Measurement 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 placed 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

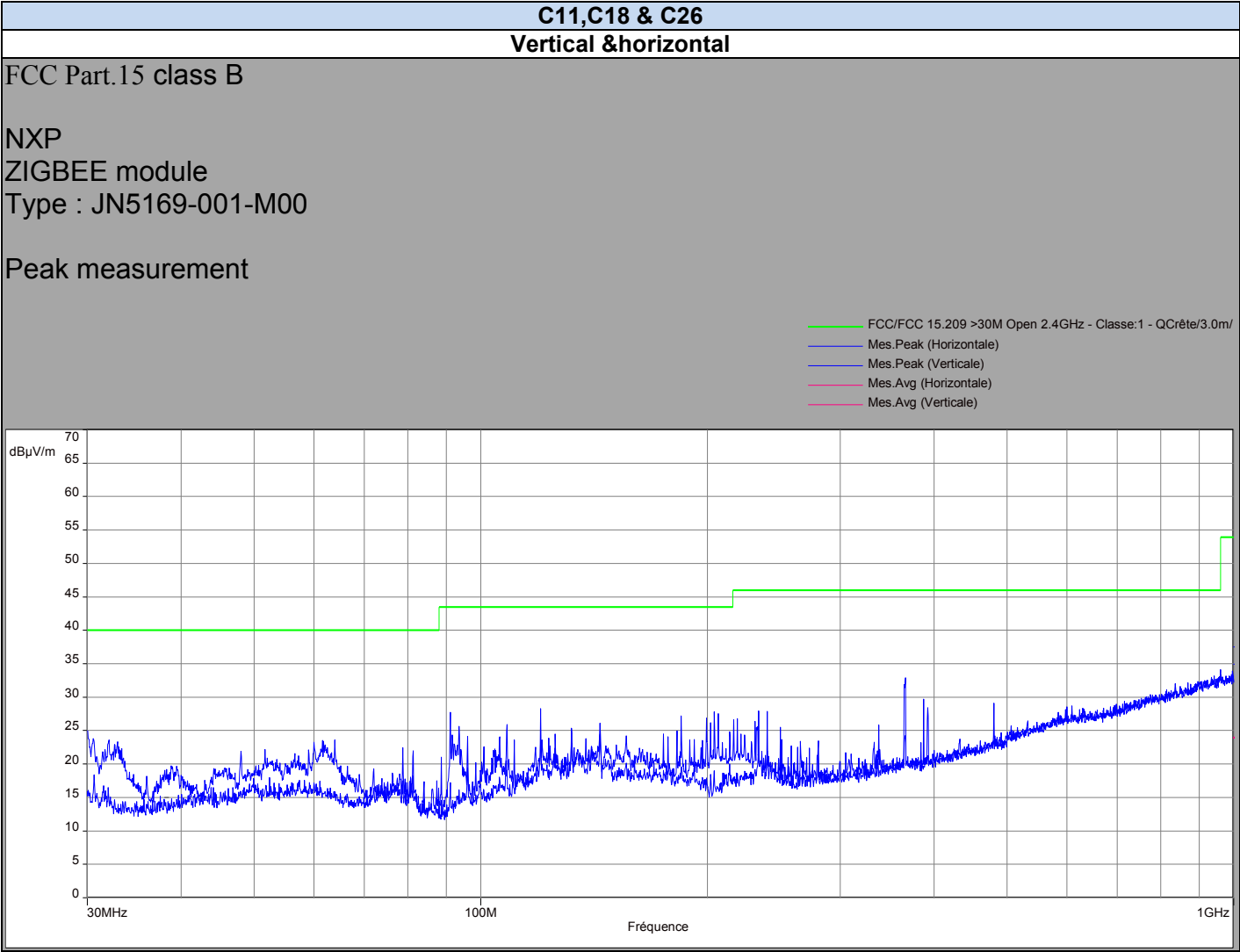


Photograph for Unwanted Emissions into Restricted Frequency Bands



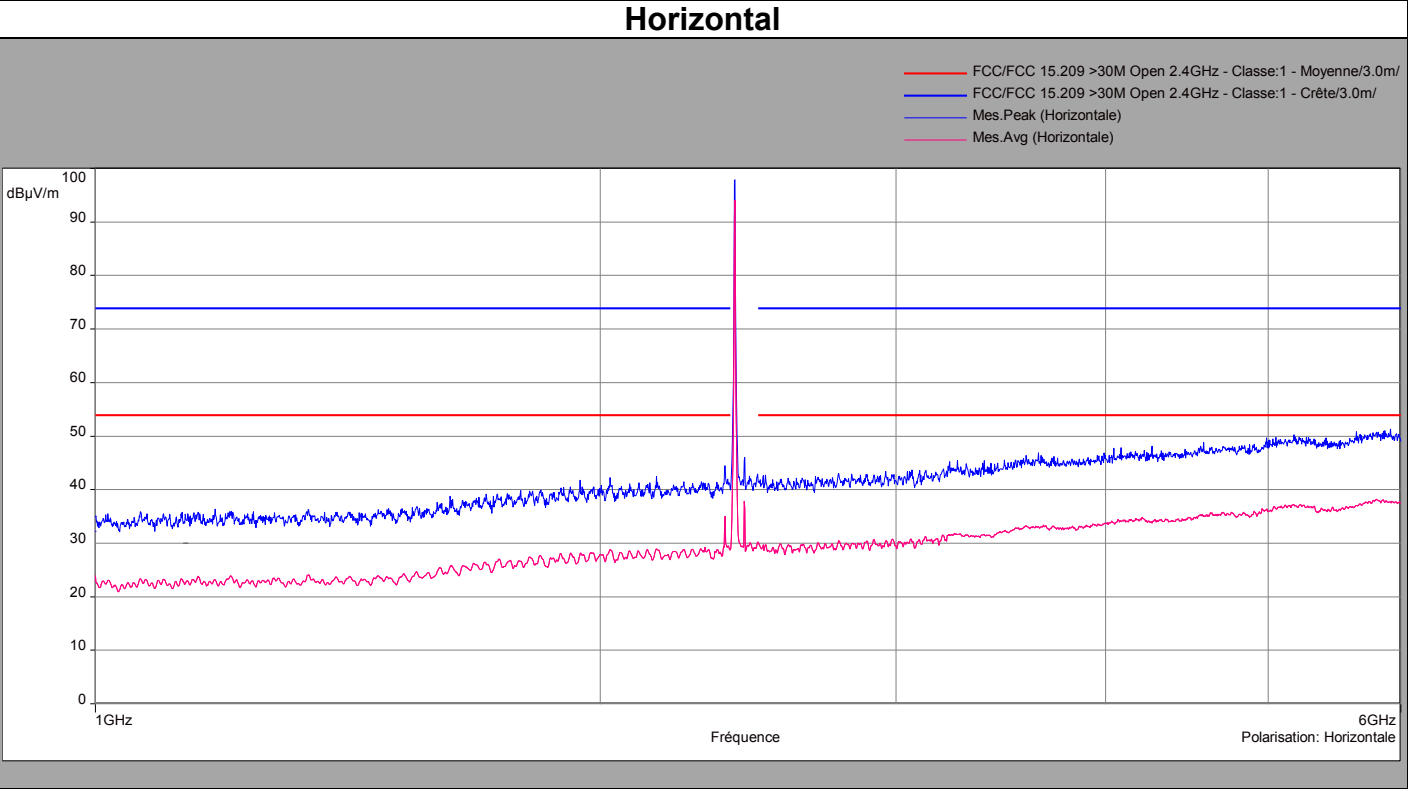
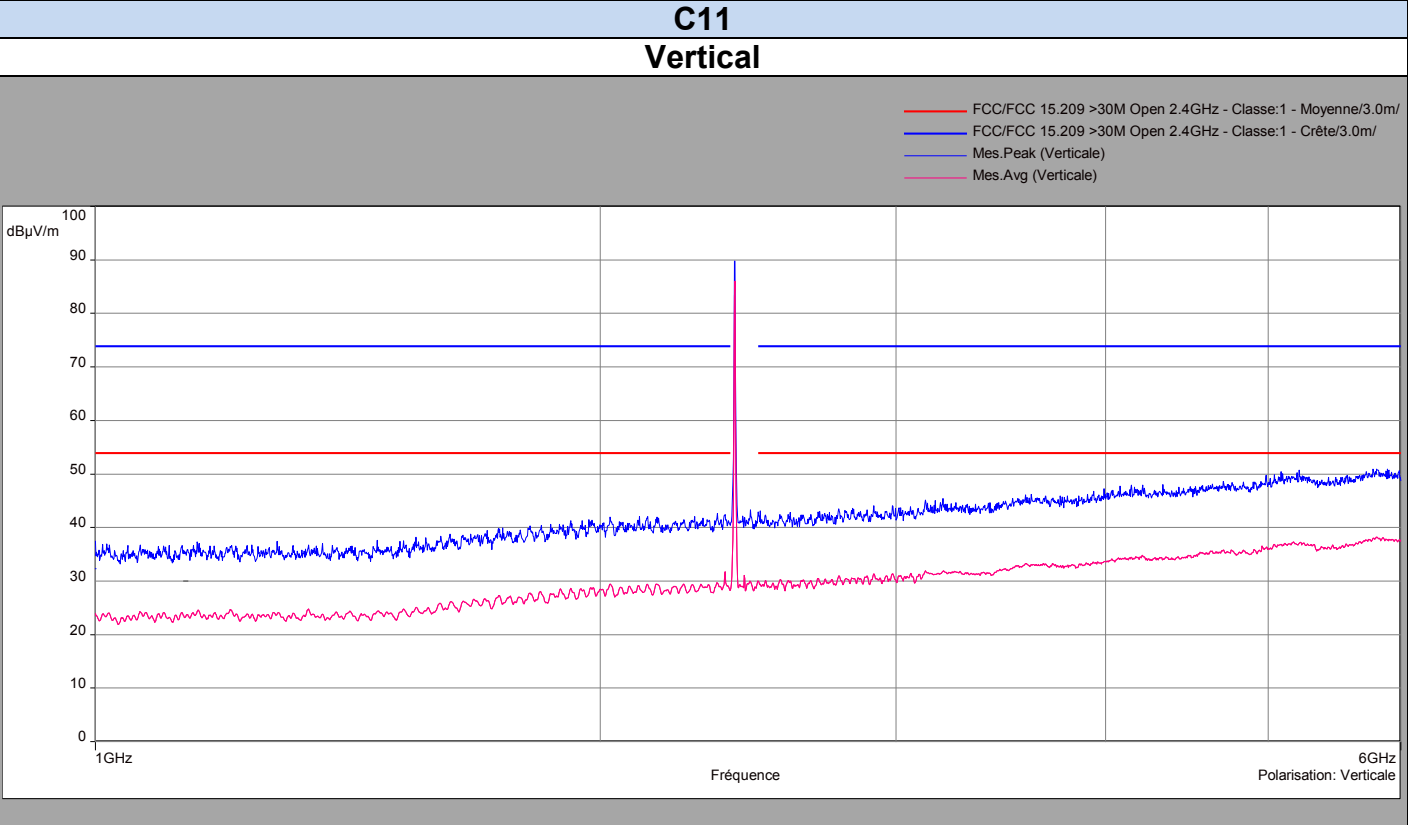
10.3. RESULTS

Below 1GHz





Above 1GHz



Above 1GHz

C18

Vertical

Description Sous-bande 2

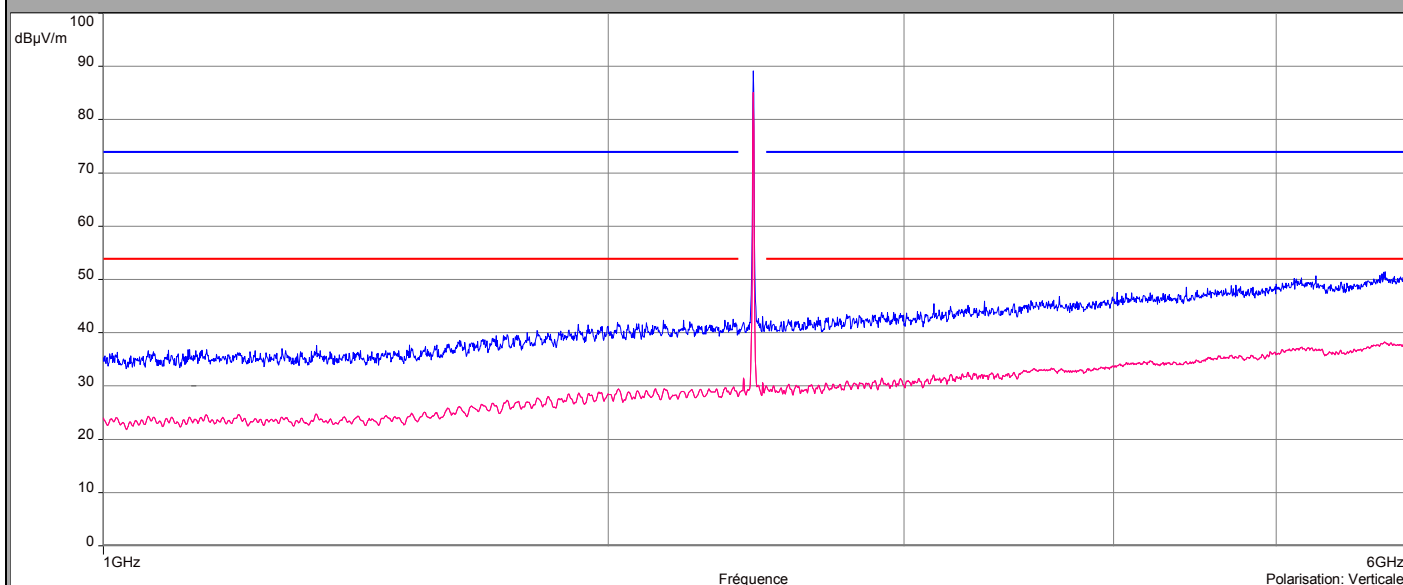
Fréquences: 1 GHz - 6 GHz (Mode: Lin, Pas: 500 kHz)

Réglages: RBW: 1 MHz, VBW: Auto, Durée balayage: 10 ms/Pts, Atténuation: 220601664, Nombre de Balayages: 1, Preamp: On: 20 dB, LN Preamp: Off, Preset: Off

Polarisation: Verticale

Distance: 3 m

FCC/FCC 15.209 >30M Open 2.4GHz - Classe:1 - Moyenne/3.0m/
FCC/FCC 15.209 >30M Open 2.4GHz - Classe:1 - Crête/3.0m/
Mes. Peak (Verticale)
Mes. Avg (Verticale)



Horizontal

Description Sous-bande 1

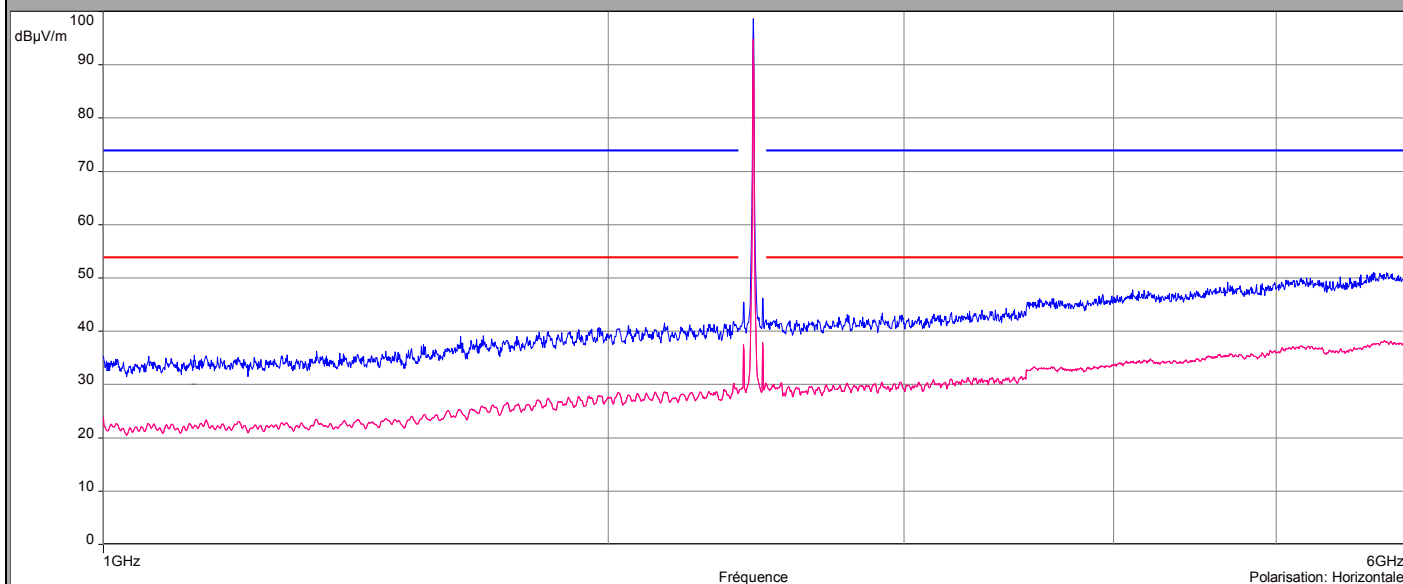
Fréquences: 1 GHz - 6 GHz (Mode: Lin, Pas: 500 kHz)

Réglages: RBW: 1 MHz, VBW: Auto, Durée balayage: 10 ms/Pts, Atténuation: 220594768, Nombre de Balayages: 1, Preamp: On: 20 dB, LN Preamp: Off, Preset: Off

Polarisation: Horizontale

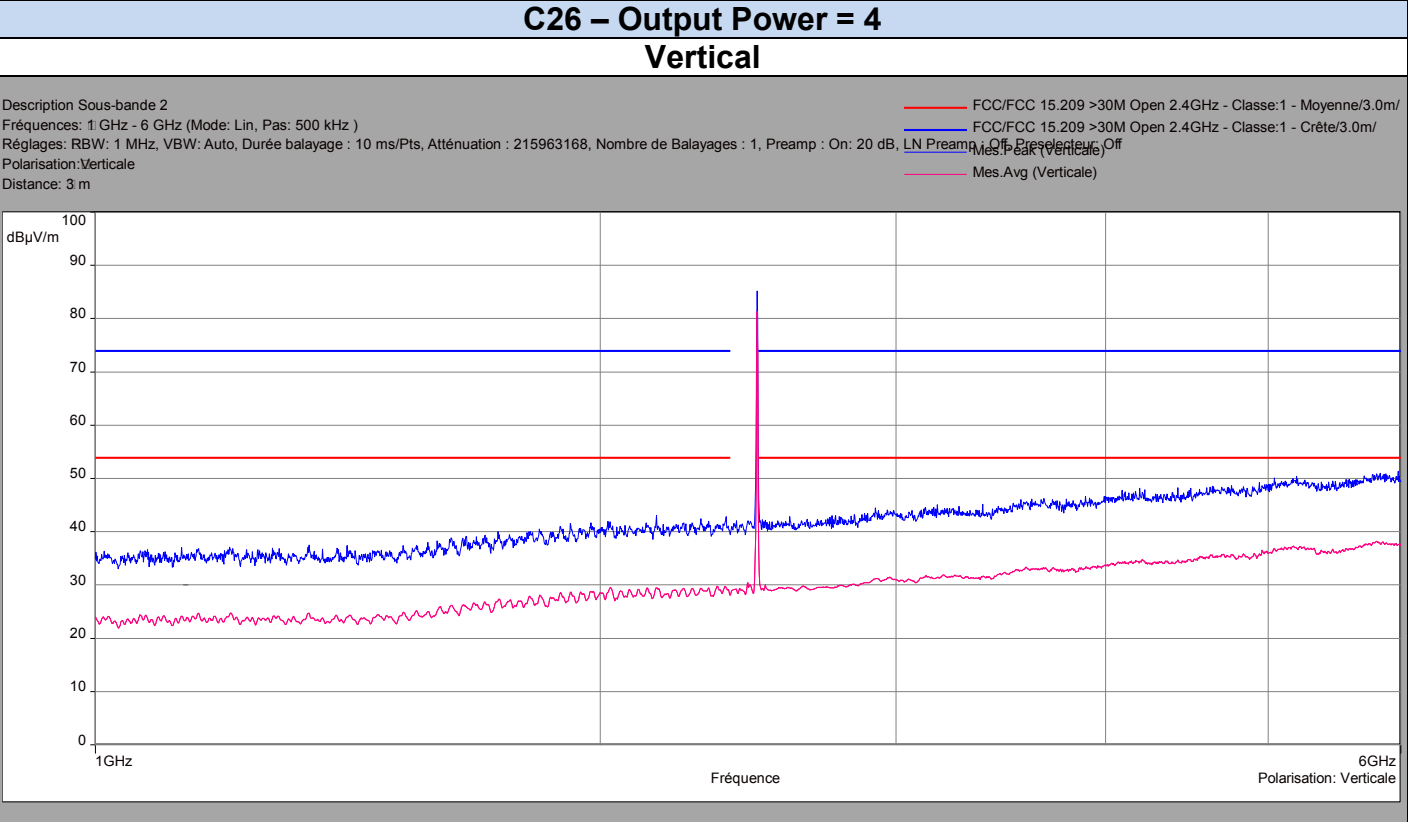
Distance: 3 m

FCC/FCC 15.209 >30M Open 2.4GHz - Classe:1 - Moyenne/3.0m/
FCC/FCC 15.209 >30M Open 2.4GHz - Classe:1 - Crête/3.0m/
Mes. Peak (Horizontale)
Mes. Avg (Horizontale)





Above 1GHz





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

Below 1GHz

C11 18 and 26

Polarisation	Frequency (MHz)	QPeak Level (dBμV/m)	Limit (dBμV/m)
Vertical	30.1	25.0	40.0
Vertical	61.7	23.5	40.0
Vertical	91.1	27.8	43.5
Vertical	204.3	27.8	43.5
Vertical	366.3	32.9	46.0

Below 1GHz

C11 18 and 26

Polarisation	Frequency (MHz)	QPeak Level (dBμV/m)	Limit (dBμV/m)
Horizontal	120.0	28.3	43.5
Horizontal	240.0	27.9	46.0
Horizontal	902.2	32.3	46.0

Above 1GHz

C11

Polarisation	Frequency (MHz)	Average Level (dBμV/m)	Average Limit (dBμV/m)	Peak Level (dBμV/m)	Peak Limit (dBμV/m)
Horizontal	2390	28.7	53.9	39.9	73.9
Vertical	2132	29.4	53.9	42.1	73.9
Vertical	5805	38.1	53.9	51.0	73.9
Horizontal	5647	38.2	53.9	50.8	73.9

C18

Polarisation	Frequency (MHz)	Average Level (dBμV/m)	Average Limit (dBμV/m)	Peak Level (dBμV/m)	Peak Limit (dBμV/m)
Vertical	2218	29.3	53.9	42.4	73.9
Vertical	5807	38.2	53.9	51.5	73.9
Horizontal	5821	38.2	53.9	51.0	73.9



C26

Polarisation	Frequency (MHz)	Average Level (dBμV/m)	Average Limit (dBμV/m)	Peak Level (dBμV/m)	Peak Limit (dBμV/m)
Horizontal	2483.5	50,2	53.9	59.8	73.9
Vertical	2160	29.5	53.9	41.3	73.9
Vertical	5822	37.8	53.9	50.8	73.9
Horizontal	5808	38.1	53.9	49.4	73.9

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	ESIB26	A2642021	2015/12	2016/12
RF cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA/3.5MD/1500	A5329356	2015/07	2016/07
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642024	2016/03	2017/03
Spectrum analyzer	ROHDE & SCHWARZ	FSL6	A4060032	2015/04	2017/04
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Attenuator 3dB	WEINSCHEL	WA54-3-12	A7122223	2015/06	2016/06
Unwanted Emissions into Restricted Frequency Bands					
Apparatus	Trade Mark	Type	Registration number	Calibration date	Calibration due
Semi anechoic chamber	SIEPEL	-	D3044008	2014/05	2017/05
EMI receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015/12	2016/12
Measurement RF cable	-	Cordon 082-5454-1.5mtr	A5329624	2015/10	2017/10
Bilog antenna	SCHWARZBECK	VULB 9160	C2040150	2016/03	2017/03
Measurement RF cable	-	082-0404-1MTR	A5329625	2015/12	2016/12
Cable	CABLES & CONNECTIQUES	2.9MD/CSU440AA/2.9MD/2000	A5329358	2016/02	2017/02
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA/3.5MD/4000	A5329374	2015/06	2016/06
Measurement RF cable	-	-	A5329626	2015/12	2016/12
Preamplifier	LCIE; LCIE	LCIE-ALB-001	A7080073	2015/06	2016/06
Horn antenna	EMCO	3115	C2042018	2015/05	2016/05
Measurement horn antenna 18-26,5GHz	PASTERNAK	PE9852/2F-20	C2042048	2015/05	2017/05
Rejector filter 2,4GHz	-	2.45GHz	A7484048	2015/12	2016/12
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA/3.5MD/1500	A5329355	2016/03	2017/03
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA/3.5MC/4000	A5329431	2016/03	2017/03
RF cable	RADIALL; CDI	30990-7M	A5329711	2016/03	2017/03
Preamplifier	-; HEWLETT PACKARD	8449B OPT H02	A7080071	2015/07	2016/07
AC Power Line Conducted Emissions					
Apparatus	Trade Mark	Type	Registration number	Calibration date	Calibration due
EMI receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015/12	2016/12
Cable	-	Cable RF type Emission conduite	A5329257	2015/06	2016/06
Cable	CABLES & CONNECTIQUES		A5329411	2015/06	2016/06
V LISN	ROHDE & SCHWARZ	ENV216	C2320162	2015/06	2016/06
Semi anechoic chamber	SIEPEL	-	D3044008	2014/05	2017/05

In our system quality, the calibration due is & more less 2months



12. UNCERTAINTIES CHART

Kind of test	Measurement uncertainties (k=2) $\pm x(\text{dB})$ / (Hz)	Limit for uncertainties $\pm y(\text{dB})$
TRANSMITTER REQUIREMENTS		
Radio frequency	$\pm 2 \cdot 10^{-8}$ Hz	$\pm 1 \cdot 10^{-7}$ 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	$\pm 0.5^{\circ}\text{C}$	$\pm 1^{\circ}\text{C}$
Humidity	± 2.5 %	± 10 %
RECEIVER REQUIREMENTS		
Spurious emissions - Frequency < 1000 MHz - Frequency > 1000 MHz	± 3.9 dB ± 3.1 dB	± 6 dB