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TEST REPORT

N°: 770941-A1-R1-E **JDE : 662007**

Subject **Electromagnetic compatibility and Radio spectrum Matters (ERM) tests according to standards: FCC CFR 47 Part 15, Subpart B et C RSS-210 Issue 8**

Issued to	**ACOEM** 200 Chemin des Ormeaux 69578 LIMONEST - FRANCE
Apparatus under test	
Product	**GATEWAY**
Trade mark	**ACOEM**
Manufacturer	**ACOEM**
Model	**GATEWAY**
Model under test	**EGL1101000 – EGL1105000**
Serial number	**EAGLE- 0009B2 & EAGLE- 0009CD**
FCCID	**2AC3Z-EGL1101**
ICID	**12336A-EGL1101**
Test date	From October 13hd to 21st, 2014
Test location	Moirans
Test performed by	Anthony MERLIN / Gaëtan DESCHAMPS
Composition of document	54 pages
Modification of the last version	None
Document issued on	December 22th, 2014

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SUMMARY

1. TEST PROGRAM

Standard:
- **FCC Part 15, Subpart C 15.247**
- **ANSI C63.4 (2003)**
- **RSS-210 Issue 8 – Dec 2010**
- **RSS-Gen Issue 3 – Dec 2010**

EMISSION TEST	LIMITS			RESULTS
Limits for conducted disturbance at mains ports 150kHz-30MHz	**Frequency**	**Quasi-peak value (dBµV)**	**Average value (dBµV)**	☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
	150-500kHz	66 to 56	56 to 46	
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 9kHz-30MHz *CFR 47 §15.209 (a)* *CFR 47 §15.247 (d)* *RSS-210 §A8.5*	**Measure at 300m** 9kHz-490kHz : 67.6dBµV/m /F(kHz) **Measure at 30m** 490kHz-1.705MHz : 87.6dBµV/m /F(kHz) 1.705MHz-30MHz : 29.5 dBµV/m			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Radiated emissions 30MHz-25GHz* *CFR 47 §15.209 (a)* *CFR 47 §15.247 (d)* *RSS-210 §A8.5* ***Highest frequency :*** ***(Declaration of provider)***	**Measure at 3m** 30MHz-88MHz : 40 dBµV/m 88MHz-216MHz : 43.5 dBµV/m 216MHz-960MHz : 46.0 dBµV/m Above 960MHz : 54.0 dBµV/m			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Bandwidth 6dB *CFR 47 §*15.247 (a) (2) *RSS-210 §A8.2*	**At least 500kHz**			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Maximum Peak Output Power *CFR 47 §*15.247 (b) *RSS-210 §A8.4 (4)*	**Limit: 30dBm** Conducted or Radiated measurement			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Band Edge Measurement *CFR 47 §15.209 (a)* *CFR 47 §15.247 (d)* *RSS-210 §A8.5*	**Limit: -20dBc or** **Radiated emissions limits in restricted bands**			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Power spectral Density *CFR 47 §15.247 (e)* *RSS-210 §A8.2*	**Limit: 8dBm/3kHz**			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Occupied bandwidth *RSS-Gen §4.6.1*	**No limit**			☑ **PASS** ☐ **FAIL** ☐ **NA** ☐ **NP**
Receiver Spurious Emission** *RSS-Gen §4.10*	**See RSS-Gen §4.10**			☐ **PASS** ☐ **FAIL** ☑ **NA** ☐ **NP**

***§15.33:** The highest internal source of a testing device is defined like more the highest frequency generated or used in the testing device or on which the testing device works or agrees.
- If the highest frequency of the internal sources of the testing device is lower than 108 MHz, measurement must be only performed until 1GHz.
- If the highest frequency of the internal sources of the testing device ranges between 108 MHz and 500 MHz, measurement must be only performed until 2GHz.
- If the highest frequency of the internal sources of the testing device ranges between 500 MHz and 1 GHz, measurement must be only performed until 5GHz.

If the highest frequency of the internal sources of the testing device is above 1 GHz, measurement must be only performed until 5 times the highest frequency or 40 GHz, while taking smallest of both.

2. SYSTEM TEST CONFIGURATION

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):
EGL1101000 – EGL1105000
Serial Number: EAGLE- 0009B2

Photography of EUT

Power supply:
During all the tests, EUT is supplied by V_{nom}: 48VDC
For measurement with different voltage, it will be presented in test method.

Name	Type	Rating	Reference / Sn	Comments
POE Power supply	☐ AC ☑ DC ☐ Battery	100-240VAC to 48VDC, 50-60Hz and 0.4A to 0.32A	PSA16U-480 / None	PHIHONG

Inputs/outputs – Cable for the configuration 1 (see running mode §2.2):

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
POE Power supply	Ethernet power supply	3	☐	☑	☑	Reference : PSA16U-480

Inputs/outputs – Cable for the configuration 2 (see running mode §2.2):

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
Antenna access	I/O and SMA cable with a Isolate Galvanic	1	☐	☑	☑	S/N of Isolate Galvanic is 127014
Antenna	N	2	☐	☑	☑	Extronics, S/N: 133297
POE Power supply	Ethernet power supply	3	☐	☑	☑	Reference : PSA16U-480

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Laptop DELL	PRECISION	8P3J5S1	-

Equipment information:

Type:	**ZIGBEE**			
Frequency band:	[2400 – 2483.5] MHz			
Sub-band REC7003:	Annex 3 (a)			
Spectrum Modulation:	☑ DSSS			
Number of Channel:	15			
Spacing channel:	5MHz			
Channel bandwidth:	2MHz			
Transmit chains:	☑ 1	☐ 2	☐ 3	☐ 4
	☑ Single antenna	☐ Symmetrical	☐ Asymmetrical	
	Gain 1: 3dBi	Gain 2: dBi	Gain 3: dBi	Gain 4: dBi
Beam forming gain:	☐ Yes: dB		☑ No	
Receiver chains	☑ 1	☐ 2	☐ 3	☐ 4
Type of equipment:	☑ Stand-alone	☐ Plug-in	☐ Combined	
Ad-Hoc mode:	☐ Yes		☑ No	
Adaptivity mode:	☐ Yes (Load Based)	☐ Off mode	☑ No	
	Clear Channel Assessment Time:		None	
	q value for Load Based Equipment:		None	
Duty cycle:	☑ Continuous duty	☐ Intermittent duty	☐ Continuous operation	
Equipment type:	☑ Production model		☐ Prototype	
Module reference:	AT86RF231-ZU			

Temperature range:	Tmin:	☑ -20°C	☐ 0°C	☐ 60°C
	Tnom:	20°C		
	Tmax:	☐ 35°C	☐ 55°C	☑ 60°C
Test source voltage:	☐ AC:	☑ DC: 48	☐ Battery: VDC / Alkaline	

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

*Not used by the provider.

DATA RATE		
Data Rate (Mbps)	**Modulation Type**	**Worst Case Modulation**
0.25	O-QPSK	☑

2.2. EUT CONFIGURATION

The EUT is set in the following modes during tests with simulator / software (Unknown):
- Permanent emission with modulation on a fixed channel in the data rate that produced the highest power
- Permanent reception
- The power is set at 3dBm

Two setup are tested in “Radiated Emission Data” and “Maximum Peak Output Power” and the worst case is selected for all the others tests.

The configuration 1:
EUT is powered by I.T.E Power supply and the antenna is a PCB internal to the EUT.

The configuration 2:
EUT is powered by I.T.E Power supply and the antenna is deported. The antenna cables measure 3 meters and they are isolated by an Isolate Galvanic.

2.3. EQUIPMENT MODIFICATIONS

☑ None ☐ Modification:

2.4. FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follow:

FS = RA + AF + CF – AG

Where FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Factor
AG = Amplifier Gain

Assume a receiver reading of 52.5dBµV is obtained. The antenna factor of 7.4 and a cable factor of 1.1 are added. The amplifier gain of 29dB is subtracted, giving a field strength of 32 dBµV/m.
FS = 52.5 + 7.4 + 1.1 – 29 = 32 dBµV/m
The 32 dBµV/m value can be mathematically converted to its corresponding level in µV/m.
Level in µV/m = Common Antilogarithm [(32dBµV/m)/20] = 39.8 µV/m.

3. CONDUCTED EMISSION DATA

3.1. ENVIRONMENTAL CONDITIONS

Date of test	:October 24th, 2014
Test performed by	: A.Merlin / G.Deschamps
Atmospheric pressure (hPa)	: 998
Relative humidity (%)	: 22
Ambient temperature (°C)	: 33

3.2. TEST SETUP

Mains terminals

The EUT and auxiliaries are set:

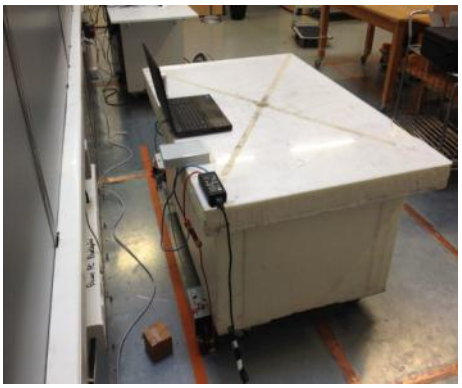
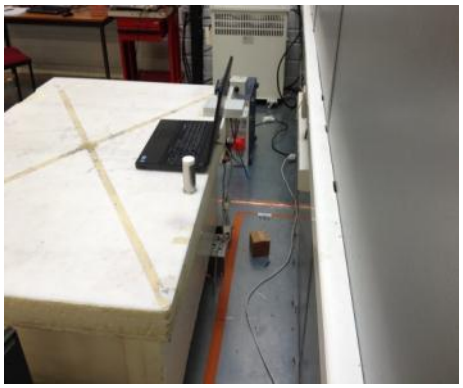
☑ 80cm above the ground on the non-conducting table (Table-top equipment)

☐ 10cm above the ground on isolating support (Floor standing equipment)

The distance between the EUT and the LISN is 80cm. The EUT is 40cm away for the vertical ground plane.

The EUT is powered by V_{nom}.

The EUT is powered through a LISN (measure). Auxiliaries are powered by another LISN.

Test setup

3.3. TEST METHOD

The product has been tested according to ANSI C63.4-(2003) and FCC Part 15 subpart B and C. The product has been tested with 120V/60Hz power line voltage and compared to the FCC Part 15 subpart B §15.107 and C §15.207 limits. Measurement bandwidth was 9kHz from 150kHz to 30MHz. 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. The Peak data are shown on plots in annex 1. Quasi-Peak and Average measurements are detailed in a table with frequencies and levels measured. Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on the following page.

Measurements are performed on the phase (L1) and neutral (N) of power line voltage. Graphs are obtained in PEAK detection. Measures are also performed in Quasi-Peak and Average for any strong signal.

3.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable	-	-	A5329578	05/14	05/15
Conducted emission comb generator	BARDET	-	A3169049	-	-
Coupling Decoupling Network	TESEQ	T8	C2320140	07/14	07/16
LISN tri-phase ESH2-Z5	RHODE & SCHWARZ	33852.19.53	C2320063	10/13	10/14
Load 50Ω	-	-	A7152035	01/14	01/15
Load 50Ω	-	-	A7152036	02/14	02/15
Probe - Current	SCHAFFNER	CSP9160	A1290017	04/14	04/15
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	10/13	10/14
Transient limiter	HEWLETT PACKARD	11947A	A4049061	01/14	01/15

3.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

3.6. TEST RESULTS

Measurements are performed on the phase (L1) and neutral (N) of the power line.
Results: (PEAK detection)

Measure on L1:	graph **Emc#1**	(see annex 1)
Measure on N:	graph **Emc#2**	(see annex 1)

3.7. CONCLUSION

Conducted emission data measurement performed on the sample of the product **EGL1101000 – EGL1105000**, SN: **EAGLE- 0009B2**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-210 Issue 8 limits.

4. RADIATED EMISSION DATA

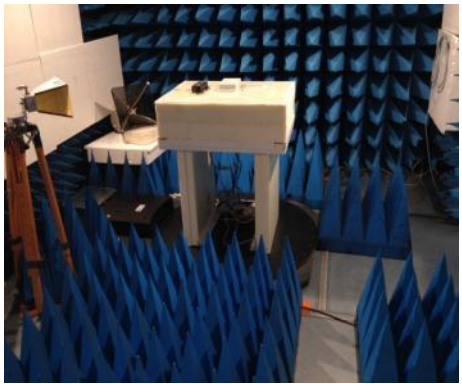
4.1. ENVIRONMENTAL CONDITIONS

Date of test	: October 15th, 2014
Test performed by	: A.Merlin / G.Deschamps
Atmospheric pressure (hPa)	: 998
Relative humidity (%)	: 48
Ambient temperature (°C)	: 23

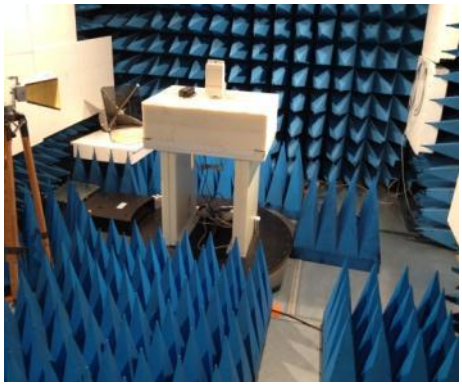
4.2. TEST SETUP

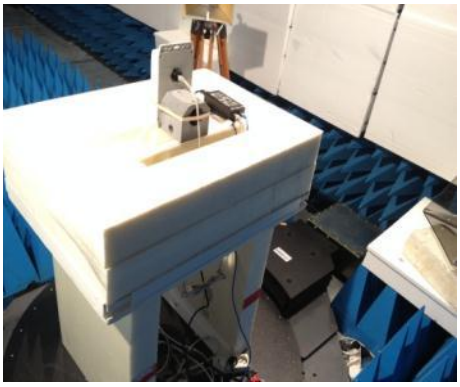
The installation of EUT is identical for pre-characterization measures in a 3 meters semi- anechoic chamber and for measures on the 10 meters Open site.
The EUT and auxiliaries are set:
☑ 80cm above the ground on the non-conducting table (Table-top equipment)
☐ 10cm above the ground on isolating support (Floor standing equipment)
The EUT is powered by V_{nom}.

Test setup on OATS (worst case see in pre-characterization)



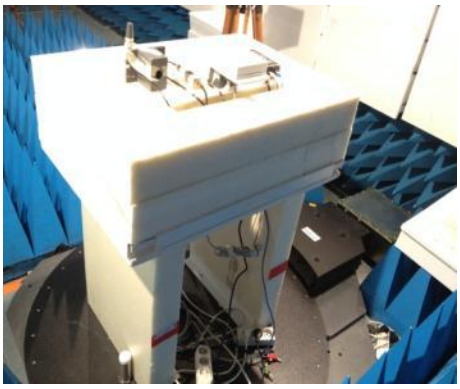
Configuration 1 in Axis XY



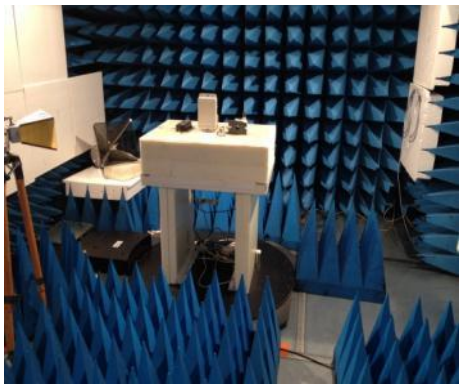


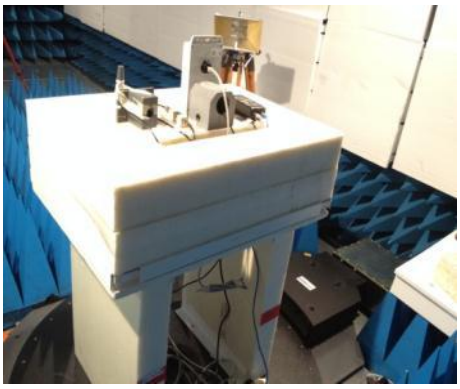
Configuration 1 in Axis Z





Configuration 2 in Axis XY





Configuration 2 in Axis Z

4.1. TEST METHOD

Pre-characterisation measurement: (30MHz – 5GHz)
A pre-scan of all the setup has been performed in a 3 meters semi-anechoic chamber for frequency from 30MHz to 25GHz. Test is performed in horizontal (H) and vertical (V) polarization, the loop antenna was rotated during the test to maximize the emission measurement. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration.
The pre-characterization graphs are obtained in PEAK detection and PEAK/AVERAGE from 1GHz to 25GHz.

Characterization on 10 meters open site from 30MHz to 1GHz:
The product has been tested according to ANSI C63.4 (2003), FCC part 15 subpart C. Radiated Emissions were measured on an open area test site. A description of the facility is on file with the FCC. The product has been tested at a distance of **10 meters** from the antenna and compared to the FCC part 15 subpart C §15.225 limits in the frequency range 13.553MHz 13.567MHz. Measurement bandwidth was 9kHz below 30MHz and 120kHz from 30 MHz to 1GHz. Test is performed in horizontal (H) and vertical (V) polarization, the loop antenna was rotated during the test to maximize the emission measurement. The height antenna is varied from 1m to 4m. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration. A summary of the worst case emissions found in all test configurations and modes is shown.
Frequency list has been created with anechoic chamber pre-scan results.

Characterization on 3 meters full anechoic chamber from 1GHz to 25GHz:
The product has been tested at a distance of **3 meters** from the antenna and compared to the FCC part 15 subpart B §15.109 limits and C §15.209 limits. Measurement bandwidth was 1MHz from 1GHz to 25GHz.
Test is performed in horizontal (H) and vertical (V) polarization. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration. A summary of the worst case emissions found in all test configurations and modes is shown.The height antenna is
☐ On mast, varied from 1m to 4m
☑ Fixed and centered on the EUT
Frequency list has been created with anechoic chamber pre-scan results.

4.2. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Antenna horn	EMCO	3115	C2042027	09/14	09/15
Cable - Measure	-	-	A5329038	08/14	08/15
Cable Measure	-	-	A5329206	01/14	01/15
Cable Measure	-	-	A5329604	04/13	04/14
Semi-Anechoic chamber #3	SIEPEL	-	D3044017	-	-
Radiated emission comb generator	BARDET	-	A3169050	-	-
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	-	-
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	01/14	01/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15
Table	LCIE	-	F2000461	-	-
Turntable controller (Cage#3)	ETS Lingren	Model 2090	F2000444	-	-
Antenna Bi-log	CHASE	CBL6111A	C2040051	04/14	04/16
Cable	-	-	A5329059	09/13	09/14
Cable (OATS)	-	-	A5329623	08/13	08/14
Radiated emission comb generator	BARDET	-	A3169050	-	-
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	10/13	10/14
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15
Turntable / Mast controller (OATS)	ETS Lindgren	Model 2066	F2000372	-	-
Antenna mast (OATS)	ETS Lindgren	2071-2	F2000392	-	-
Turntable (OATS)	ETS Lindgren	Model 2187	F2000403	-	-
Table	MATURO Gmbh	-	F2000437	-	-

4.3. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

4.4. TEST RESULTS

4.4.1. Pre-characterization at 3 meters [30MHz-1GHz]

See graphs for 30MHz-1GHz:

For the configuration 1:

Graph identifier		Polarization	Mode	EUT position	Channel	Comments
Emr#	1	H	TX	Axis XY	Min/Mid/Max	See annex 2
Emr#	2	V	TX	Axis XY	Min/Mid/Max	See annex 2
Emr#	3	H	TX	Axis Z	Min/Mid/Max	See annex 2
Emr#	4	V	TX	Axis Z	Min/Mid/Max	See annex 2

For the configuration 2:

Graph identifier		Polarization	Mode	EUT position	Channel	Comments
Emr#	5	H	TX	Axis XY	Min/Mid/Max	See annex 2
Emr#	6	V	TX	Axis XY	Min/Mid/Max	See annex 2
Emr#	7	H	TX	Axis Z	Min/Mid/Max	See annex 2
Emr#	8	V	TX	Axis Z	Min/Mid/Max	See annex 2

4.4.2. Pre-characterization at 3 meters [1GHz-5GHz]

See graphs for 1GHz-5GHz:

For the configuration 1:

Graph identifier		Polarization	Mode	EUT position	Channel	Comments
Emr#	1	H	TX	Axis XY	Min/Mid/Max	See annex 3
Emr#	2	V	TX	Axis XY	Min/Mid/Max	See annex 3
Emr#	3	H	TX	Axis Z	Min/Mid/Max	See annex 3
Emr#	4	V	TX	Axis Z	Min/Mid/Max	See annex 3

For the configuration 2:

Graph identifier		Polarization	Mode	EUT position	Channel	Comments
Emr#	5	H	TX	Axis XY	Min/Mid/Max	See annex 3
Emr#	6	V	TX	Axis XY	Min/Mid/Max	See annex 3
Emr#	7	H	TX	Axis Z	Min/Mid/Max	See annex 3
Emr#	8	V	TX	Axis Z	Min/Mid/Max	See annex 3

4.4.3. Characterization on 10 meters open site from 30MHz to 1GHz

Worst case final data result:

Frequency list has been created with semi-anechoic chamber pre-scan results.
Measurements are performed using a QUASI-PEAK detection.

No	Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
1	36.766	40.0	27.2	**-12.8**	345	V	100	16.1	
2	41.475	40.0	26.5	**-13.5**	0	V	100	13.5	
3	55.517	40.0	22.1	**-17.9**	40	V	100	8.4	
4	64.765	40.0	24.2	**-15.8**	0	V	100	7.7	
5	66.278	40.0	26.4	**-13.6**	130	V	300	7.8	
6	81.231	40.0	24.1	**-15.9**	100	V	100	9.0	
7	157.488	43.5	26.7	**-16.8**	300	V	250	12.7	
8	499.983	46.0	30.3	**-15.7**	360	H	250	22.2	
9	749.975	46.0	28.4	**-17.6**	320	H	20	26.6	
10	874.970	46.0	32.0	**-14.0**	243	H	270	28.7	

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e)
(M@3m = M@10m+10.5dB)

4.4.4. Characterization on 3meters anechoic chamber from 1GHz to 25GHz

Worst case final data result:

The frequency list is created from the results obtained during the pre-characterization in anechoic chamber.
Measurements are performed using a PEAK and AVERAGE detection.

No	Frequency (MHz)	Limit Peak (dBµV/m)	Measure Peak (dBµV/m)	Margin Peak (dB)	Limit Average (dBµV/m)	Measure Average (dBµV/m)	Margin Average (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
1	2274.650	74.0	49.0	**-25.0**	54.0	34.0	**-20.0**	0	H	100	30.8	Axis XY
2	2341.190	74.0	49.1	**-24.9**	54.0	34.1	**-19.9**	0	H	100	30.9	Axis XY
3	2352.190	74.0	49.1	**-24.9**	54.0	34.1	**-19.9**	0	H	100	30.9	Axis XY
4	2484.040	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	37	H	100	31.1	Axis XY
5	2485.105	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
6	2486.070	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
7	2487.102	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
8	2488.067	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
9	2489.099	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
10	2490.064	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
11	2491.096	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
12	2492.062	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
13	2492.960	74.0	70.3	**-3.7**	54.0	46.1	**-7.9**	36	H	100	31.1	Axis XY
14	4807.000	74.0	59.1	**-14.9**	54.0	45.3	**-8.7**	32	H	100	36.3	Axis XY
15	4880.000	74.0	59.7	**-14.3**	54.0	46.7	**-7.3**	36	H	100	36.4	Axis XY
16	4950.000	74.0	60.6	**-13.4**	54.0	48.1	**-5.9**	36	H	100	36.6	Axis XY

Note: Measures have been done at 3m distance.

4.5. CONCLUSION

Radiated emission data measurement performed on the sample of the product **EGL1101000 – EGL1105000**, SN: **EAGLE- 0009B2**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-210 Issue 8 limits.

5. BANDWIDTH (15.247)

5.1. TEST CONDITIONS

Date of test : October 15th, 2014
Test performed by : A.Merlin / G.Deschamps
Atmospheric pressure (hPa) : 989
Relative humidity (%) : 51
Ambient temperature (°C) : 19

5.2. SETUP

☑ ***Conducted measurement:***
The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.
Offset: cable 0.53dB

☐ ***Radiated measurement:***
The EUT is placed in an anechoic chamber; the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete, a delta marker is used to measure the frequency difference as the emission bandwidth.

Measurement Procedure:
1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Compare the resultant bandwidth with the RBW setting of the analyzer.

5.3. TEST EQUIPMENT LIST

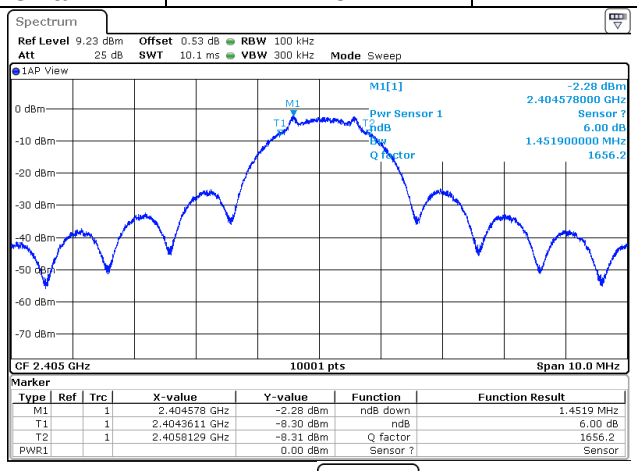
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable Measure	-	-	A5329603	08/14	08/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	-	-
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	01/14	01/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

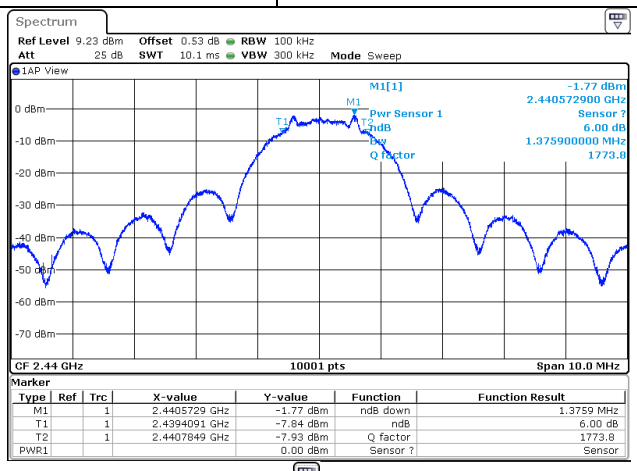
5.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

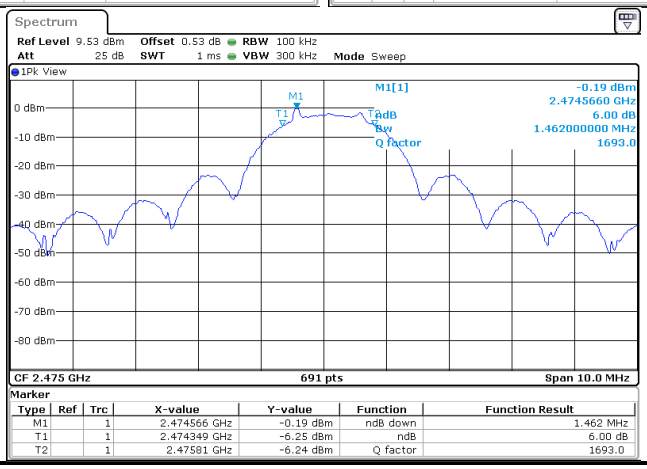
☑ None ☐ Divergence:

5.5. TEST SEQUENCE AND RESULTS

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Bandwidth Limit (kHz)
Cmin	2405	**1451.9**	**>500**
Cmid	2440	**1375.9**	**>500**
Cmax	2475	**1462.0**	**>500**







5.6. CONCLUSION

Bandwidth measurement performed on the sample of the product **EGL1101000 – EGL1105000**, SN: **EAGLE- 0009B2**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-210 Issue 8 limits.

6. MAXIMUM PEAK OUTPUT POWER (15.247)

6.1. TEST CONDITIONS

Date of test : October 15th, 2014
Test performed by : A.Merlin / G.Deschamps
Atmospheric pressure (hPa) : 989
Relative humidity (%) : 51
Ambient temperature (°C) : 19

6.2. SETUP

☑ ***Conducted measurement:***
The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency.
Offset: cable 0.53dB

☐ ***Radiated measurement:***
The EUT is placed in an anechoic chamber; the center frequency of the spectrum analyzer is set to the fundamental frequency.
The product has been tested at a distance of 3 meters from the antenna. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on 3 axis of EUT. A summary of the worst case emissions found in all test configurations and modes is shown on following table. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.
To demonstrate compliance with peak output power requirement of section 15.247 (b), the transmitter's peak output power is calculated using the following equation:

$$E = \frac{\sqrt{30PG}}{d}$$

Where:
- E is the measured maximum fundamental field strength in V/m.
- G is the numeric gain of the transmitting antenna with reference to an isotropic radiator.
- d is the distance in meters from which the field strength was measured.
- P is the power in watts for which you are solving:

$$P = \frac{(Ed)^2}{30G}$$

Maximum peak conducted output power

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

- ☑ ***RBW ≥ DTS bandwidth***

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ 3 x RBW.
c) Set span ≥ 3 x RBW
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

- ☐ ***Integrated band power method***

This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.

a) Set the RBW = 1 MHz.
b) Set the VBW ≥ 3 x RBW
c) Set the span ≥ 1.5 x DTS bandwidth.
d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges

6.3. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable Measure	-	-	A5329603	08/14	08/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	-	-
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	01/14	01/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

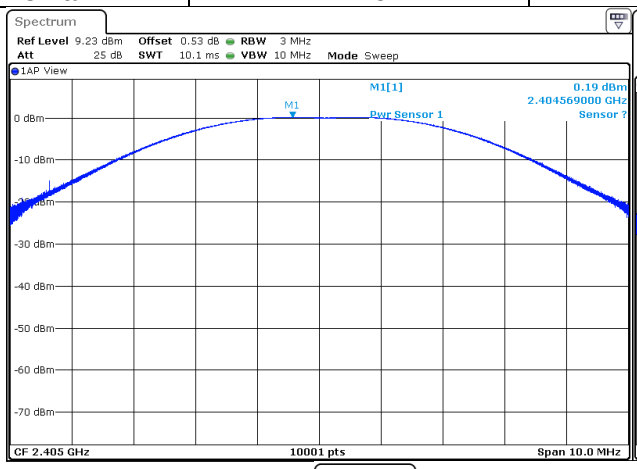
6.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

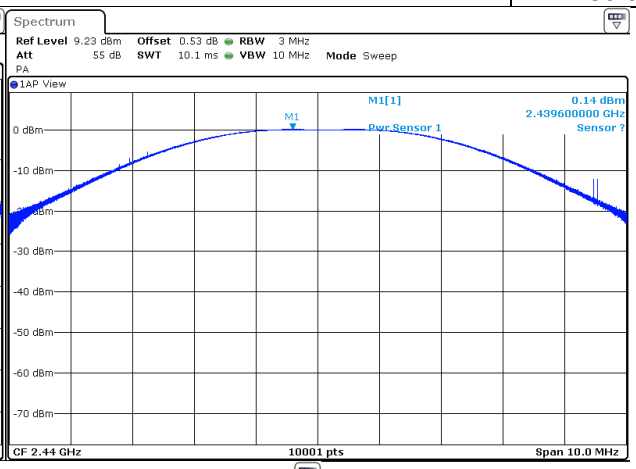
☑ None ☐ Divergence:

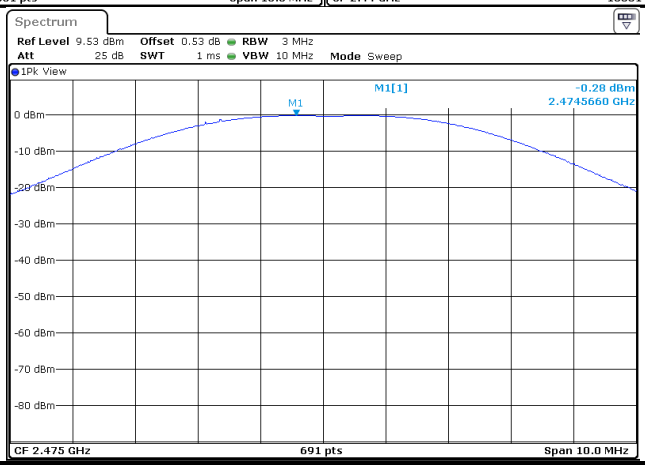
6.5. TEST SEQUENCE AND RESULTS

Modulation:

Channel	Channel Frequency (MHz)	Peak Output Power (dBm)	Power Limit (dBm)
Cmin	2405	**0.19**	30.0
Cmid	2440	**0.14**	30.0
Cmax	2475	**-0.28**	30.0







6.6. CONCLUSION

Maximum Peak Output Power measurement performed on the sample of the product **EGL1101000 – EGL1105000**, SN: **EAGLE- 0009B2**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-210 Issue 8 limits.

7. POWER SPECTRAL DENSITY (15.247)

7.1. TEST CONDITIONS

Date of test : October 15th, 2014
Test performed by : A.Merlin / G.Deschamps
Atmospheric pressure (hPa) : 989
Relative humidity (%) : 51
Ambient temperature (°C) : 19

7.2. SETUP

☑ ***Conducted measurement:***
The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency.
Offset: Attenuator+cable 0.53dB

☐ ***Radiated measurement:***
The EUT is placed in an anechoic chamber; the center frequency of the spectrum analyzer is set to the fundamental frequency.
The product has been tested at a distance of 3 meters from the antenna. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on 3 axis of EUT. A summary of the worst case emissions found in all test configurations and modes is shown on following table. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.
To demonstrate compliance with peak output power requirement of section 15.247 (b), the transmitter's peak output power is calculated using the following equation:

$$E = \frac{\sqrt{30PG}}{d}$$

Where:
- E is the measured maximum fundamental field strength in V/m.
- G is the numeric gain of the transmitting antenna with reference to an isotropic radiator.
- d is the distance in meters from which the field strength was measured.
- P is the power in watts for which you are solving:

$$P = \frac{(Ed)^2}{30G}$$

Measurement Procedure PKPSD:
a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to: 3 kHz ≤ RBW
d) Set the VBW ≥ 3 X RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

7.3. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable Measure	-	-	A5329603	08/14	08/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	-	-
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	01/14	01/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

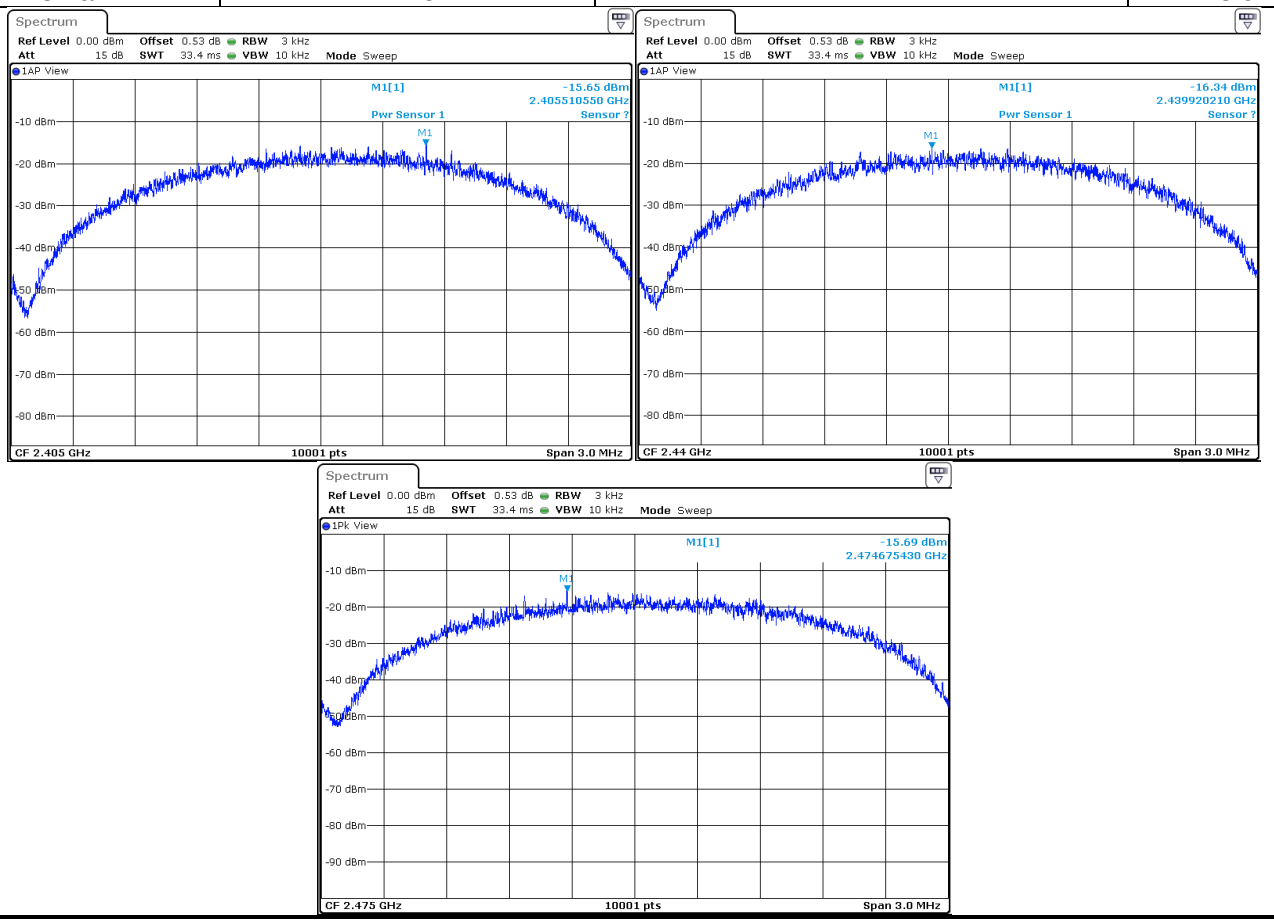
7.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

7.5. TEST SEQUENCE AND RESULTS

Modulation:

Channel	Channel Frequency (MHz)	Power Spectral Density (dBm)	PSD Limit (dBm)
Cmin	2405	**-15.65**	8.0
Cmid	2440	**-16.34**	8.0
Cmax	2475	**-15.69**	8.0



7.6. CONCLUSION

Power Spectral Density measurement performed on the sample of the product **EGL1101000 – EGL1105000**, SN: **EAGLE- 0009B2**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-210 Issue 8 limits.

8. BAND EDGE MEASUREMENT (15.247)

8.1. TEST CONDITIONS

Date of test : October 16th, 2014
Test performed by : A.Merlin / G.Deschamps
Atmospheric pressure (hPa) : 990
Relative humidity (%) : 49
Ambient temperature (°C) : 21

8.2. LIMIT

RF antenna conducted test:
Set RBW = 100 kHz, Video bandwidth (VBW) > RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB. *For -20dBc limit, lowest power output level is considered, worst case.*

Radiated emission test:
Applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation. See results in Radiated emissions section before.

8.3. SETUP

The EUT is placed in an anechoic chamber; levels have been corrected to be in compliant with Peak Output Power measurement. The EUT is turn ON; the graphs of the restrict frequency band are recorded with a display line indicating the highest level and other the 20dB offset below to show compliance with 15.247 (d) and 15.205. The emissions in restricted bands are compared to 15.209 limits.
RBW: 100kHz
VBW: 300kHz

8.4. TEST EQUIPMENT LIST

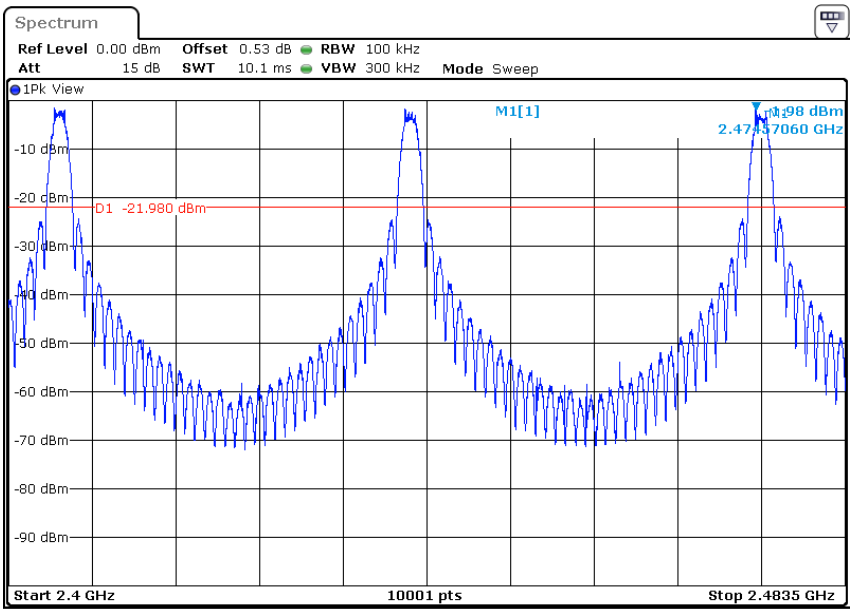
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable Measure	-	-	A5329603	08/14	08/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	-	-
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	01/14	01/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

8.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☑ None ☐ Divergence:

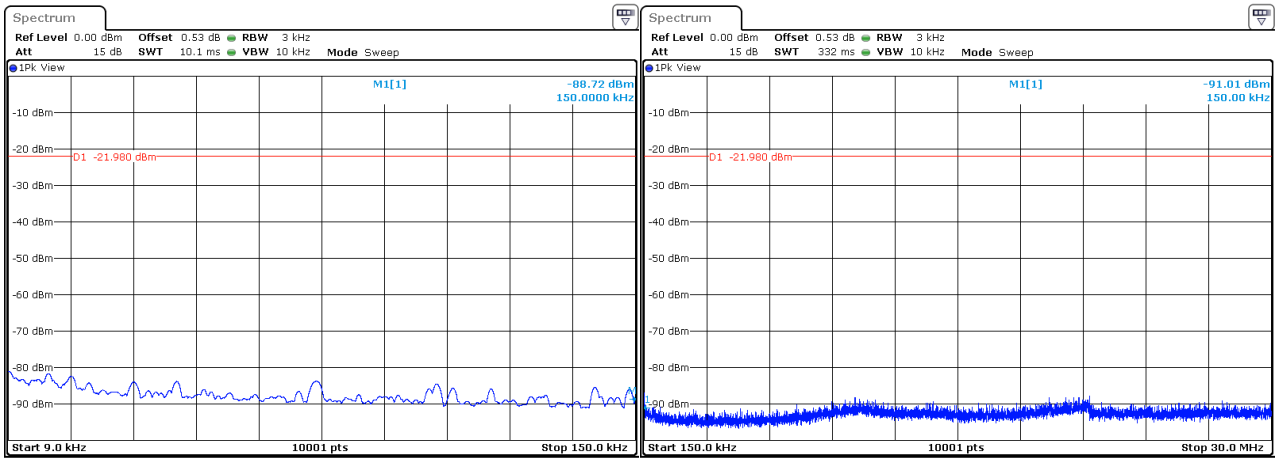
8.6. TEST SEQUENCE AND RESULTS

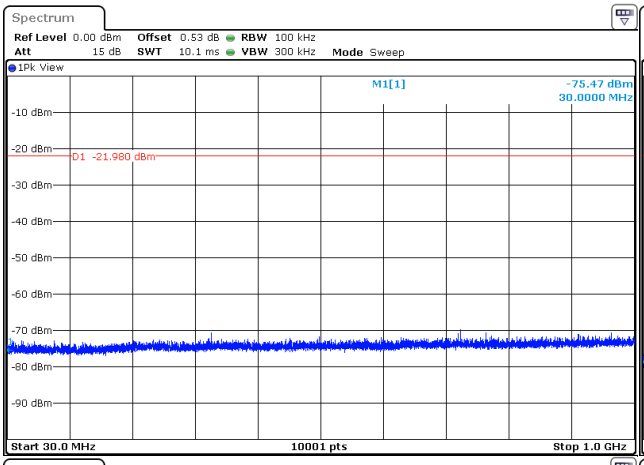
Offset: Attenuator+cable 0.53dB

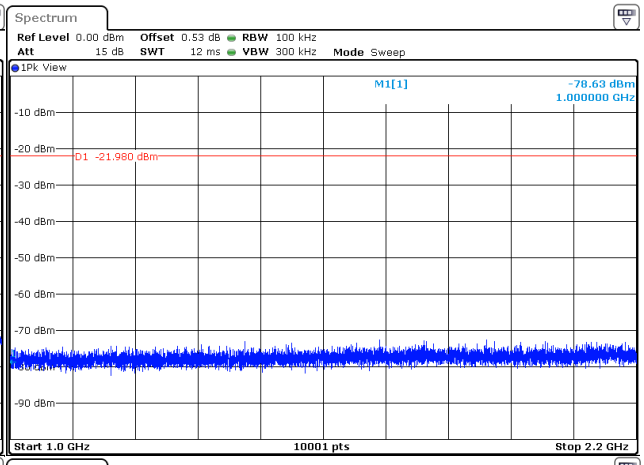


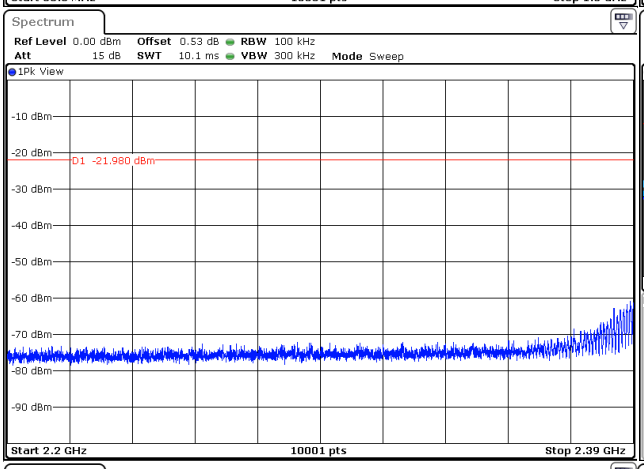
-20dbc limit used: **Worst case: Channel max, limit at -21.98dBm**

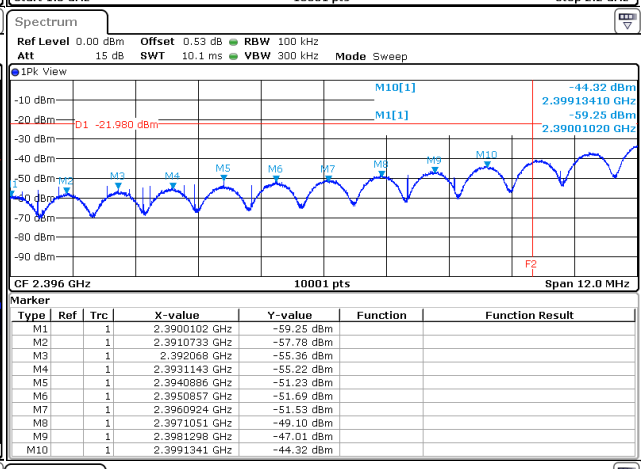
Graphs 9kHz to 25GHz:





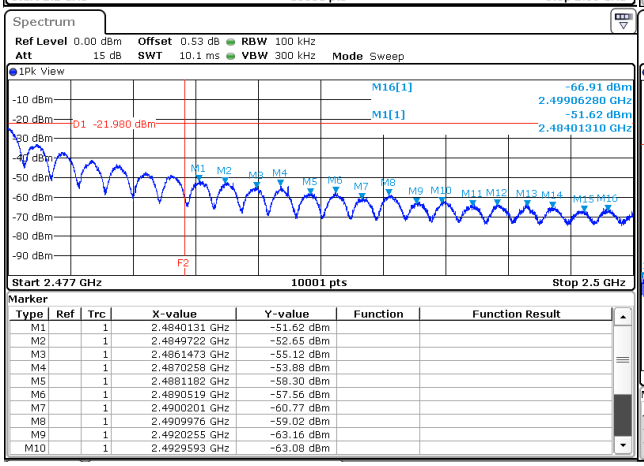






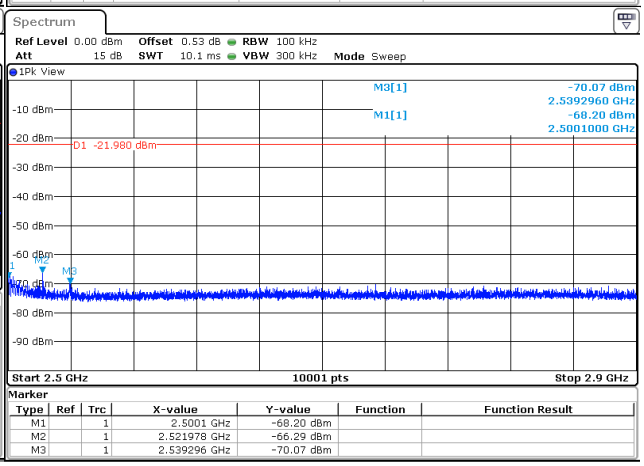
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.3900102 GHz	-59.25 dBm		
M2		1	2.3910733 GHz	-57.78 dBm		
M3		1	2.392068 GHz	-55.36 dBm		
M4		1	2.3931143 GHz	-55.22 dBm		
M5		1	2.3940886 GHz	-51.23 dBm		
M6		1	2.3950857 GHz	-51.69 dBm		
M7		1	2.3960924 GHz	-51.53 dBm		
M8		1	2.3971051 GHz	-49.10 dBm		
M9		1	2.3981298 GHz	-47.01 dBm		
M10		1	2.3991341 GHz	-44.32 dBm		



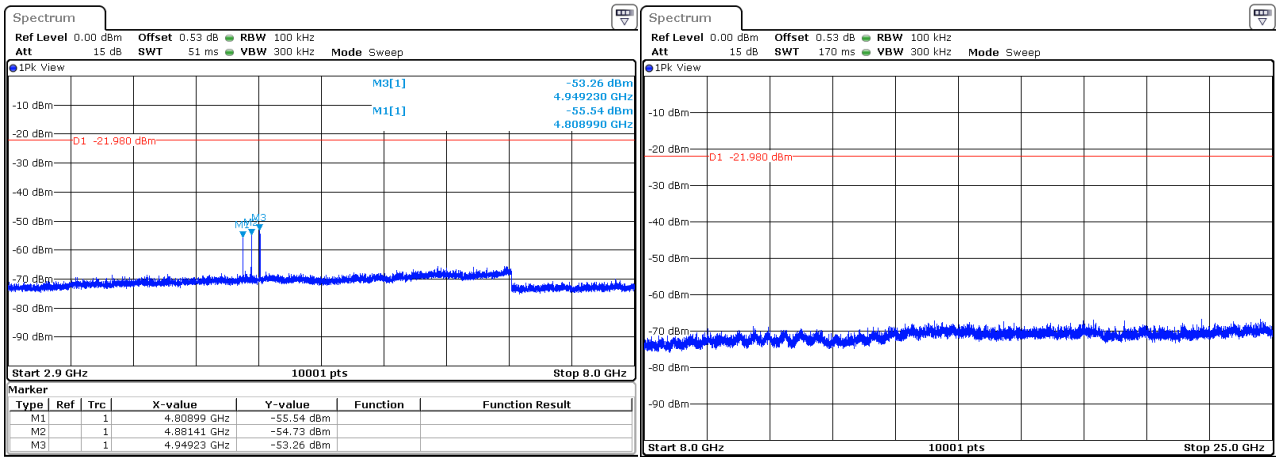
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4840131 GHz	-51.62 dBm		
M2		1	2.4849722 GHz	-52.65 dBm		
M3		1	2.4861473 GHz	-55.12 dBm		
M4		1	2.4870258 GHz	-53.88 dBm		
M5		1	2.4881182 GHz	-58.30 dBm		
M6		1	2.4890519 GHz	-57.56 dBm		
M7		1	2.4900201 GHz	-60.77 dBm		
M8		1	2.4909976 GHz	-59.02 dBm		
M9		1	2.4920255 GHz	-63.16 dBm		
M10		1	2.4929593 GHz	-63.08 dBm		



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.5001 GHz	-68.20 dBm		
M2		1	2.521978 GHz	-66.29 dBm		
M3		1	2.539296 GHz	-70.07 dBm		



8.7. CONCLUSION

Band Edge Measurement performed on the sample of the product **EGL1101000 – EGL1105000**, SN: **EAGLE- 0009B2**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-210 Issue 8 limits.

9. OCCUPIED BANDWIDTH

9.1. TEST CONDITIONS

Date of test : October 15th, 2014
Test performed by : A.Merlin / G.Deschamps
Atmospheric pressure (hPa) : 989
Relative humidity (%) : 51
Ambient temperature (°C) : 19

9.2. SETUP

☑ ***Conducted measurement:***
The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.
Offset: cable 0.53dB

☐ ***Radiated measurement:***
The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.

Measurement Procedure:
1. RBW used should not be lower than 1% of the selected span
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. OBW 99% function of spectrum analyzer used

9.3. TEST EQUIPMENT LIST

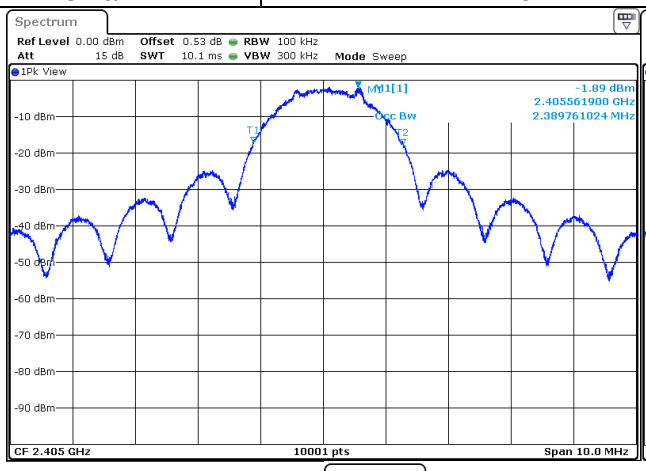
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable Measure	-	-	A5329603	08/14	08/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	-	-
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	01/14	01/15
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

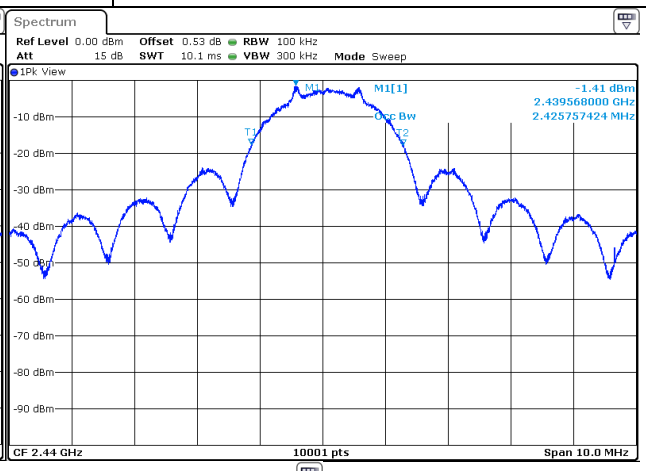
9.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

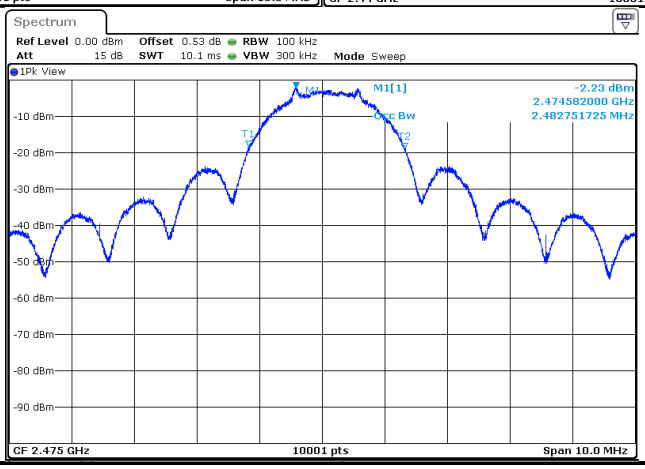
☑ None ☐ Divergence:

9.5. TEST SEQUENCE AND RESULTS

Channel	Channel Frequency (MHz)	99% Occupied Bandwidth (MHz)
Cmin	2405	**2389.761**
Cmid	2440	**2425.757**
Cmax	2475	**2482.751**

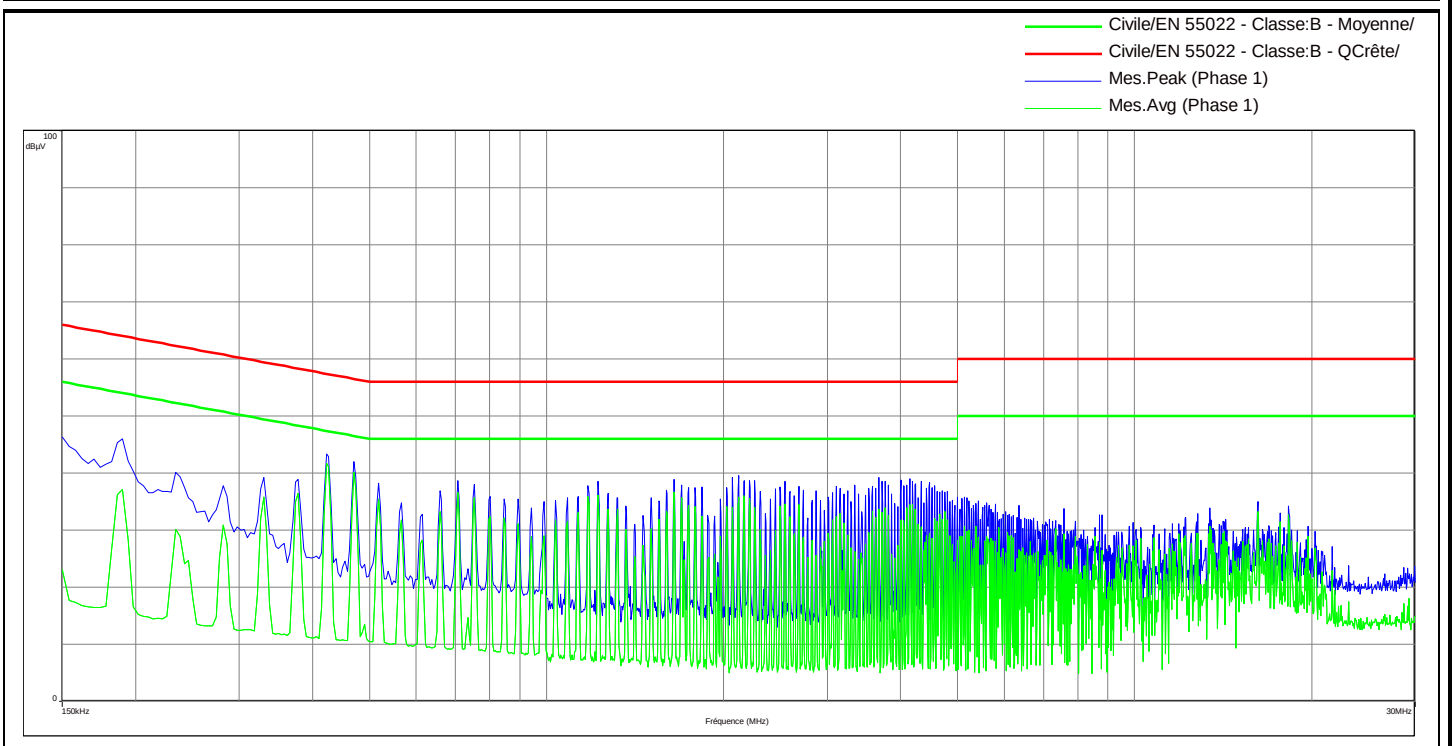






10. ANNEX 1 (GRAPHS < 30MHz)

CONDUCTED EMISSIONS			
Graph name:	Emc#1	**Test configuration:**	
Limit:	EN 55022	Line	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	**RBW :**	10kHz
Line:	Phase	**VBW :**	30kHz



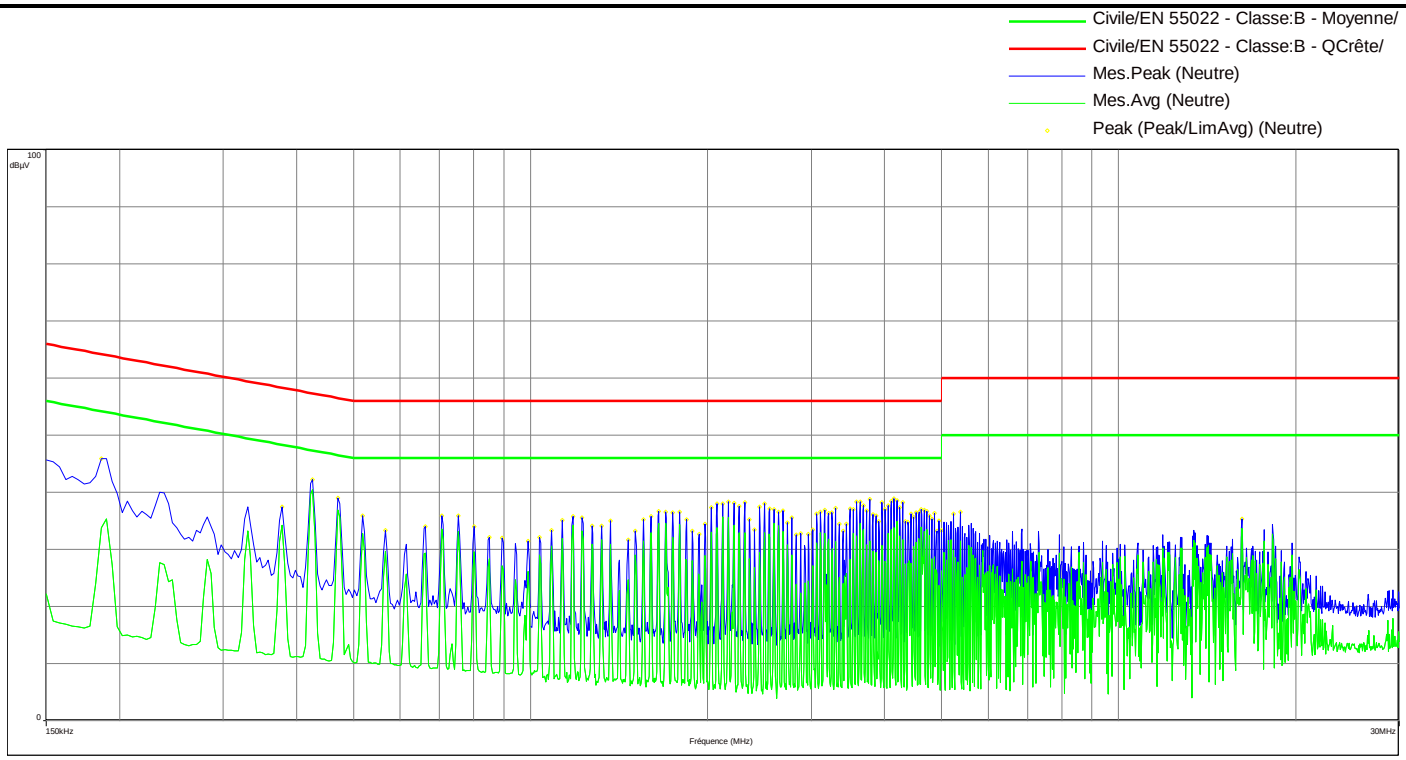
Spurious emissions

Frequency (MHz)	Peak (dBµV)
0.15	46.28
0.33	39.27
0.378	38.86
0.422	43.35
0.47	41.97
0.518	38.18
0.566	34.79
0.614	32.81
0.658	36.93
0.706	38.68
0.754	38.05
0.802	35.86
0.846	35.47
0.894	35.42
0.942	33.94
0.99	34.96
1.036	35.22

1.084	35.67
1.132	35.89
1.176	37.79
1.224	38.52
1.272	36.47
1.316	35.62
1.364	34.2
1.412	31.02
1.46	32.57
1.508	35.72
1.552	35.09
1.6	37.01
1.648	38.87
1.696	37.93
1.744	37.42
1.788	37.49
1.836	37.53
1.88	32.51
1.932	32.41
1.976	35.5
2.024	37.45
2.072	39.23
2.12	39.57
2.168	38.64
2.212	38.67
2.26	38.61
2.308	36.74
2.356	32.91
2.404	35.46
2.452	37.18
2.496	37.5
2.544	38.57
2.592	36.75
2.64	35.99
2.684	37.69
2.732	37.03
2.78	32.11
2.828	35.22
2.872	36.89
2.92	35.25
2.968	33.46
3.012	35.78
3.064	36.57
3.108	37.71
3.156	37.36
3.2	36.34
3.248	36.93
3.296	35.04
3.344	37.88
3.392	36.36
3.436	33.23
3.488	36.1
3.532	37.38
3.58	37.67

3.624	37.35
3.672	39.19
3.72	38.5
3.768	38.59
3.812	37.92
3.864	36.29
3.908	34.63
3.956	34.09
4.004	38.75
4.048	37.78
4.096	37.92
4.144	38.96
4.192	38.52
4.24	38.16
4.288	35.62
4.332	38.54
4.38	34.75
4.424	37.29
4.476	38.32
4.52	37.46
4.568	37.74
4.616	36.8
4.664	36.71
4.708	36.87
4.756	36.68
4.804	36.76
4.852	34.96
4.896	35.28
4.944	34.37
4.992	35.78
5.088	35.52
5.136	35.74
5.18	35.61
5.228	35.12
5.416	35.08
16.228	35.03

CONDUCTED EMISSIONS			
Graph name:	Emc#2	**Test configuration:**	
Limit:	EN 55022	Neutral	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	120VAC / 60Hz	**RBW :**	10kHz
Line:	Phase	**VBW :**	30kHz



Spurious emissions

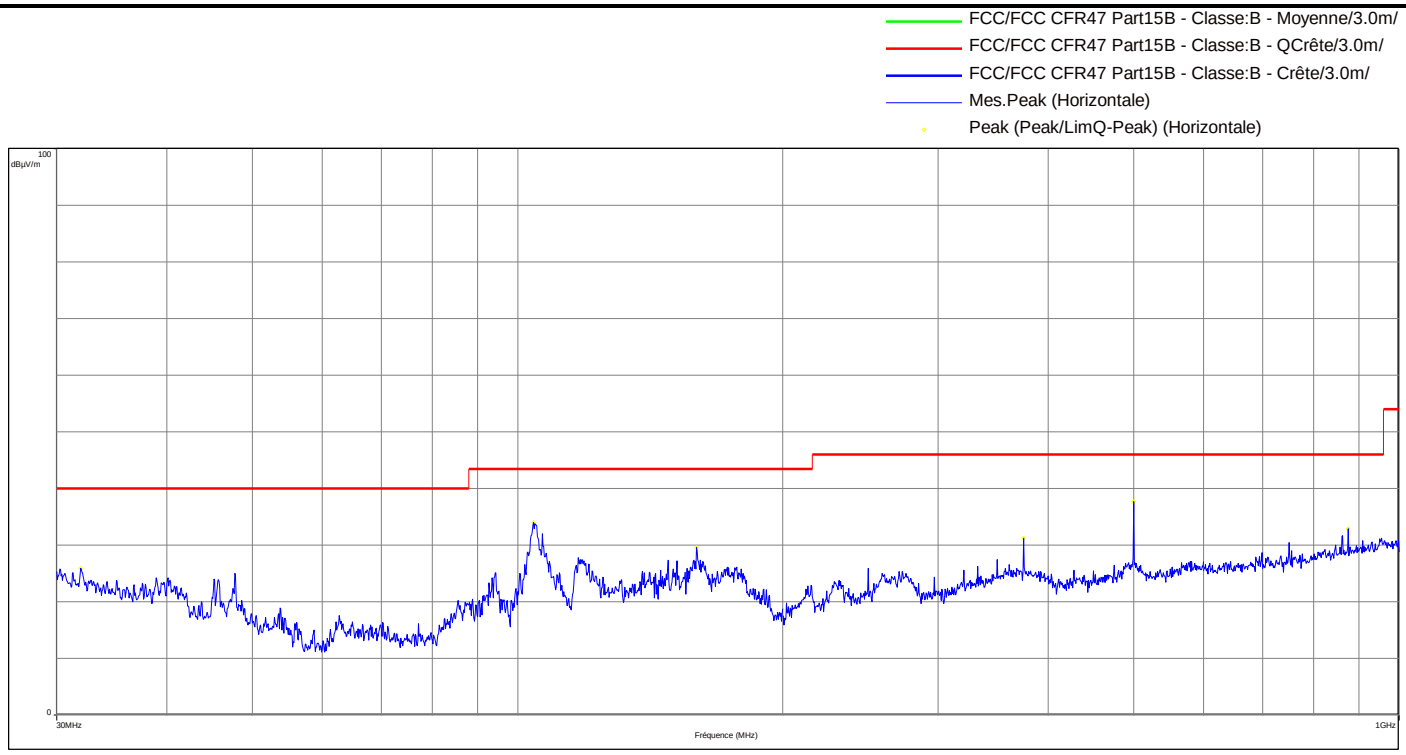
Frequency (MHz)	Peak (dBµV)
0.186	45.95
0.378	37.45
0.426	42.18
0.47	39.04
0.518	35.9
0.566	33.33
0.662	34.01
0.706	35.93
0.754	35.92
0.802	33.99
0.85	32.09
0.894	31.97
0.99	31.46
1.036	32.12
1.084	33.29
1.132	35.07
1.18	35.83
1.224	35.54
1.272	34.07

1.32	34.16
1.368	35.03
1.464	31.65
1.508	33.28
1.556	35.19
1.604	35.74
1.652	36.64
1.696	36.57
1.744	36.49
1.792	36.6
1.84	35.24
1.884	33.25
1.936	32.68
1.98	34.49
2.028	37.31
2.076	37.97
2.12	37.96
2.168	38.33
2.216	38.08
2.264	37.61
2.312	38.25
2.356	35.23
2.404	33.42
2.452	37.43
2.5	37.98
2.548	37.07
2.592	36.97
2.64	36.5
2.688	36.79
2.736	34.63
2.78	35.52
2.832	32.5
2.876	32.75
2.968	32.7
3.016	33.44
3.064	36.19
3.112	36.59
3.16	36.89
3.208	36.29
3.252	36.48
3.3	37.22
3.348	34.48
3.396	33.28
3.44	34.46
3.492	37.08
3.536	37.04
3.584	38.33
3.632	38.28
3.68	37.7
3.724	36.74
3.772	38.73
3.82	36.11
3.868	35.87
3.912	34.94

3.96	38.22
4.008	36.95
4.056	37.72
4.104	38.42
4.152	38.87
4.196	38.55
4.244	37.36
4.292	38.28
4.336	34.93
4.384	34.76
4.432	36.27
4.48	35.63
4.528	36.46
4.576	36.6
4.62	37.01
4.668	36.94
4.716	36.72
4.764	35.85
4.808	35.29
4.856	36.34
4.904	33.26
4.952	35.05
5	33.3
5.236	36.27
5.376	36.57
16.228	35.33

11. ANNEX 2 (GRAPHS < 1GHZ)

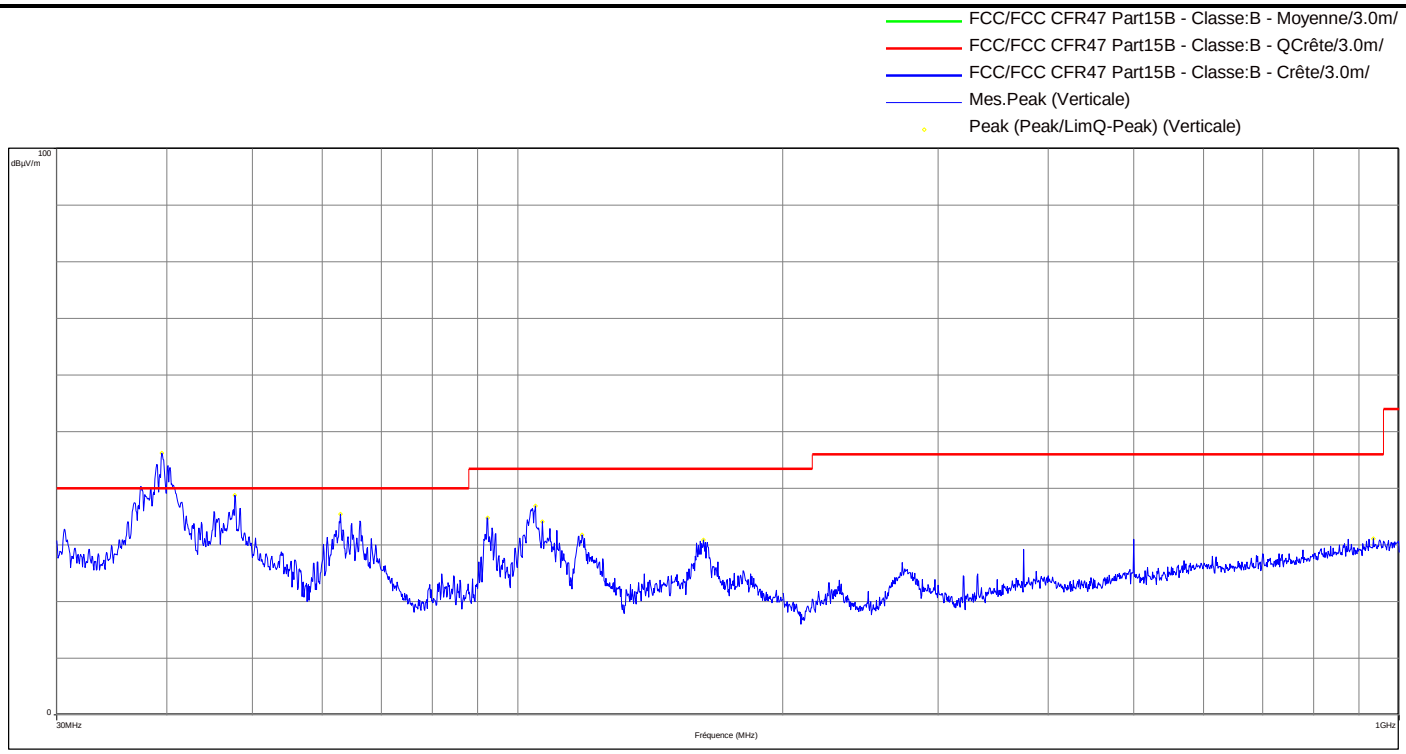
RADIATED EMISSIONS			
Graph name:	Emr#1	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 1 - Gateway - Axis XY - (H) - Hopping Mode	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
31.955	25.84
104.273	34.02
159.659	29.58
375	31.27
500	37.66
875	32.87

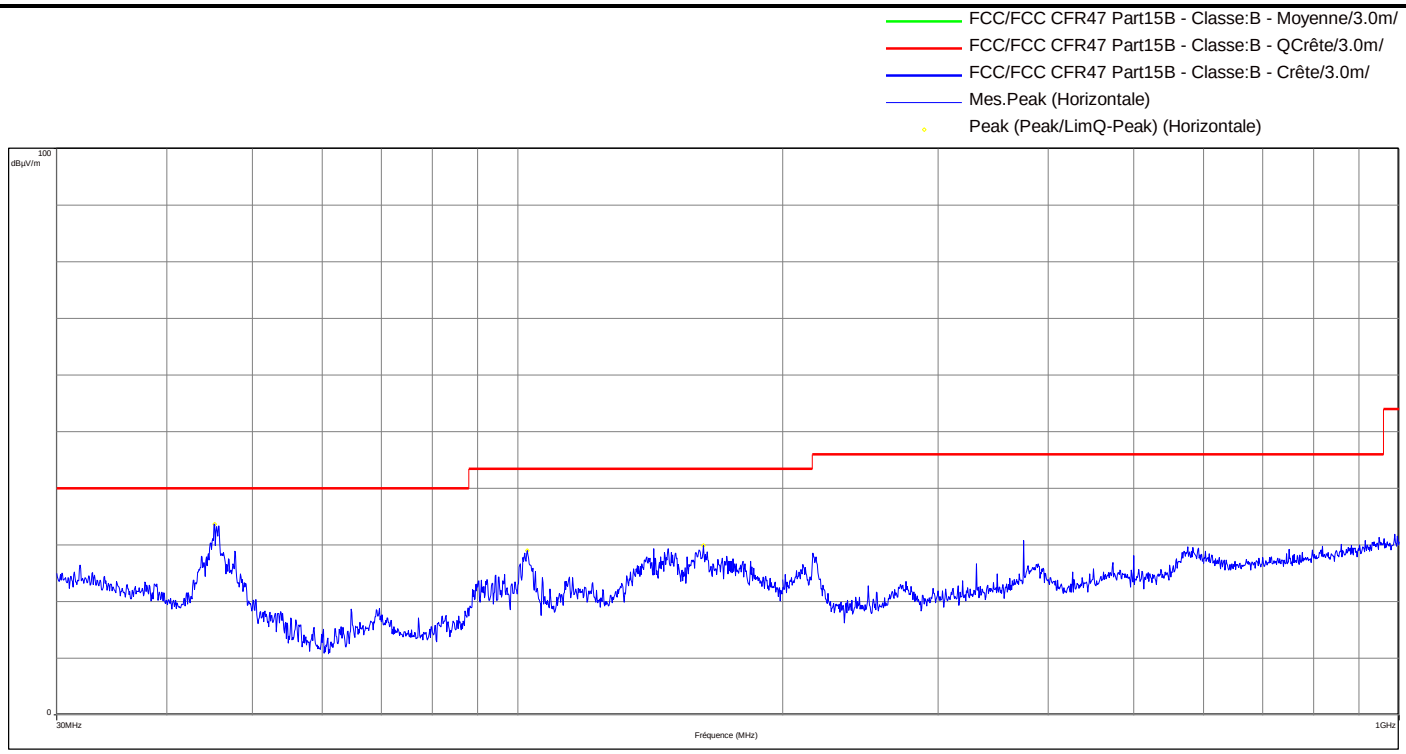
RADIATED EMISSIONS			
Graph name:	Emr#2	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 1 - Gateway - Axis XY - (V) - Hopping Mode	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Vertical	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
39.486	46.21
47.799	38.73
62.946	35.47
92.407	34.79
104.766	36.9
106.67	34.09
118.366	31.8
162.515	30.88
935.4	31.09

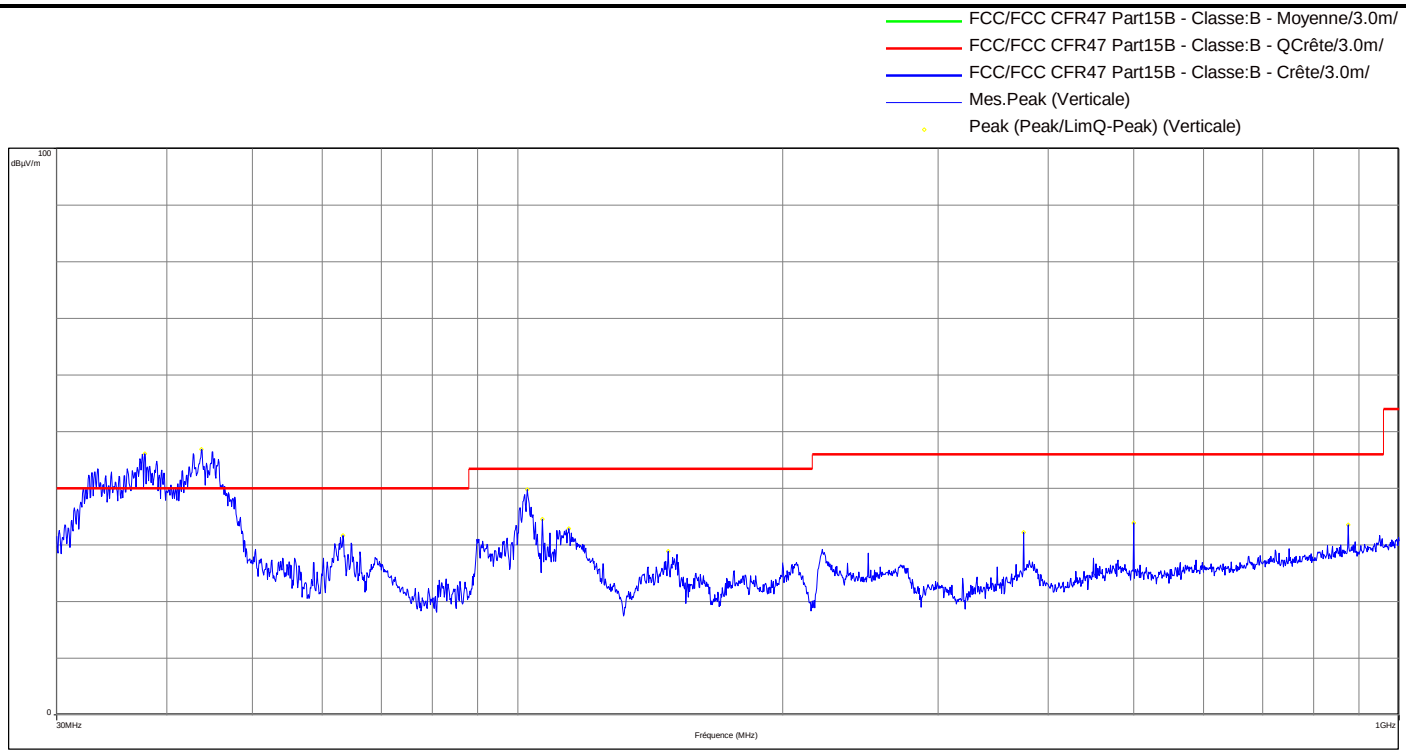
RADIATED EMISSIONS			
Graph name:	Emr#3	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 1 - Gateway - Axis Z - (H) - Hopping Mode	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
45.283	33.72
102.522	29.04
162.464	29.92

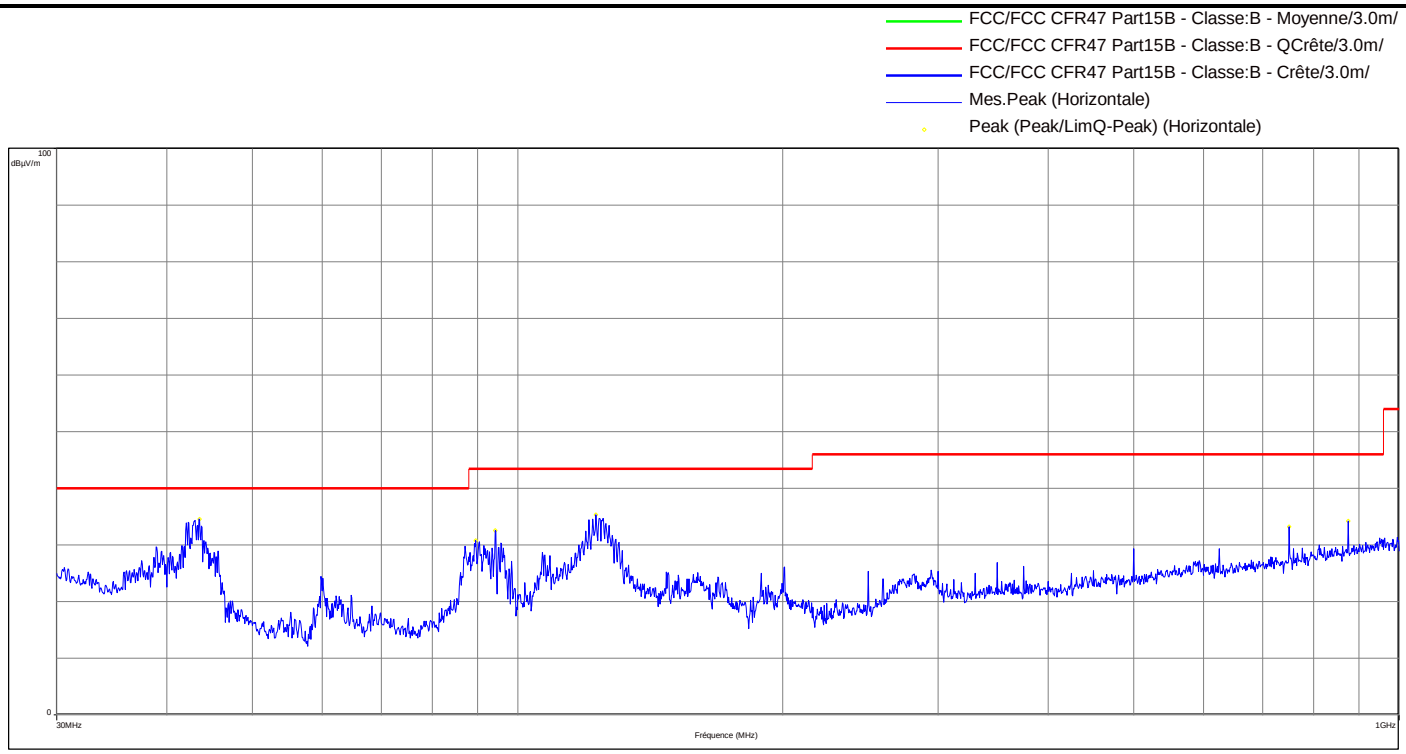
RADIATED EMISSIONS			
Graph name:	Emr#4	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 1 - Gateway - Axis Z - (V) - Hopping Mode	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Vertical	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
37.769	46.12
43.804	46.84
63.371	31.66
102.539	39.81
106.687	34.56
114.252	32.92
148.116	28.87
375	32.24
500	33.95
874.96	33.53

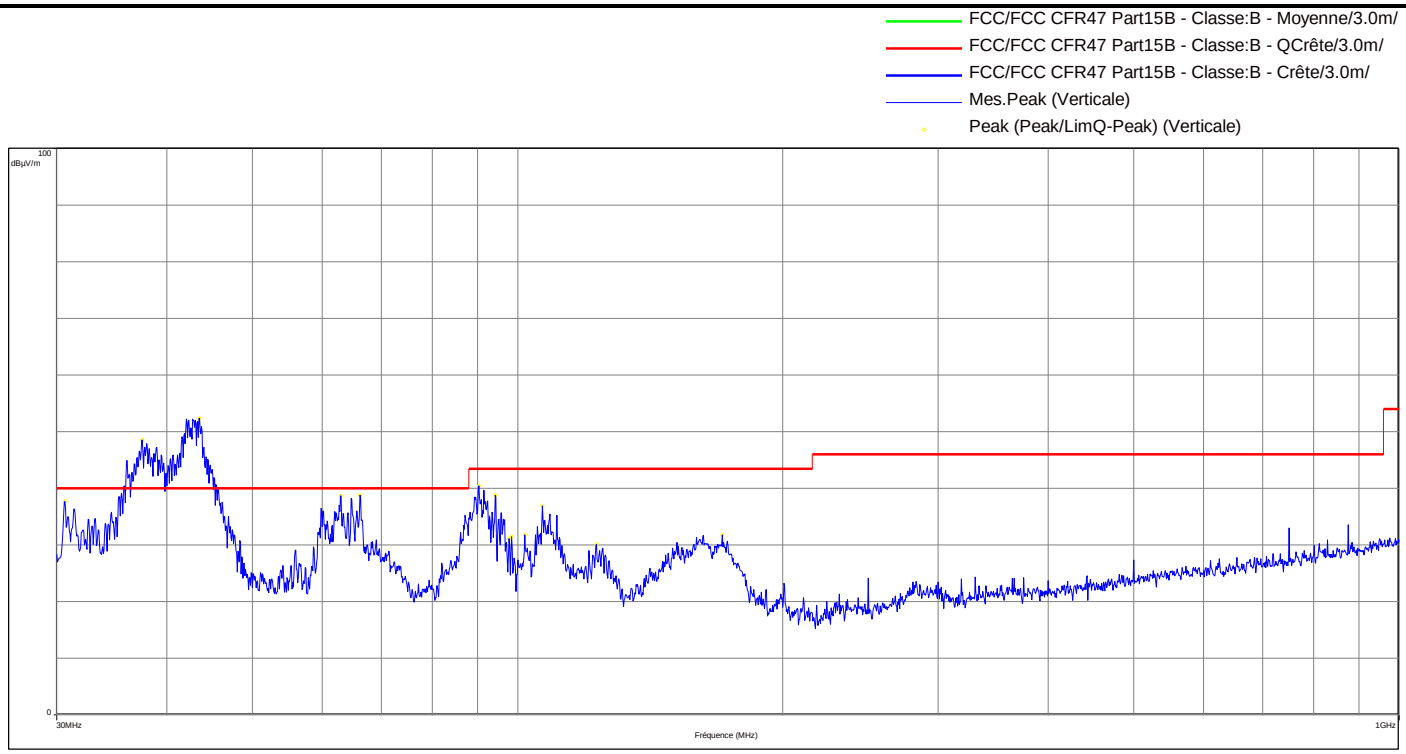
RADIATED EMISSIONS			
Graph name:	Emr#5	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 2 - Gateway - Axis XY - (H) - Hopping Mode	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
43.532	34.6
89.585	30.75
94.379	32.55
122.633	35.34
749.96	33.24
874.96	34.18

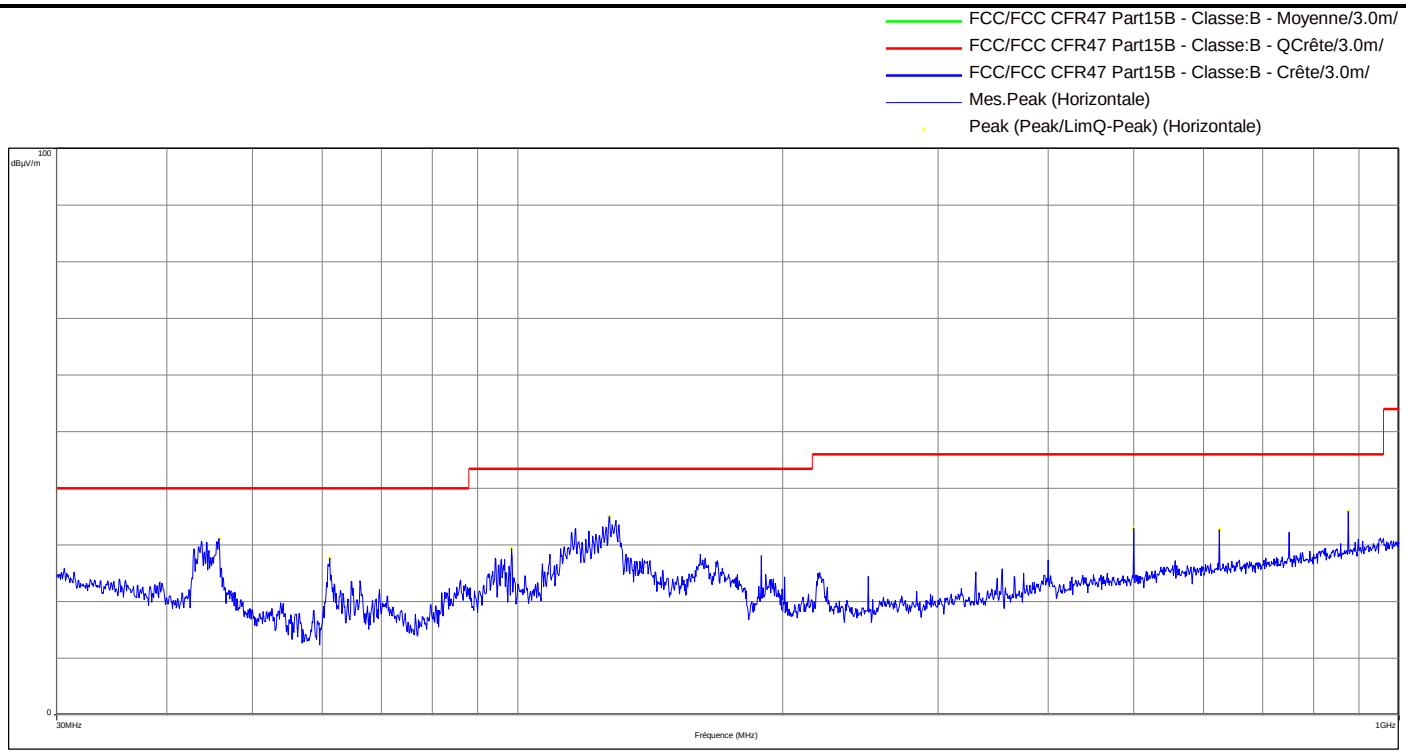
RADIATED EMISSIONS			
Graph name:	Emr#6	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 2 - Gateway - Axis XY - (V) - Hopping Mode	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Vertical	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
30.629	37.71
37.497	48.55
43.532	52.37
63.014	38.68
66.278	38.79
90.401	40.47
94.379	38.73
97.813	31.09
98.425	31.5
101.876	31.81
106.67	36.94
122.922	30.17
170.641	31.73

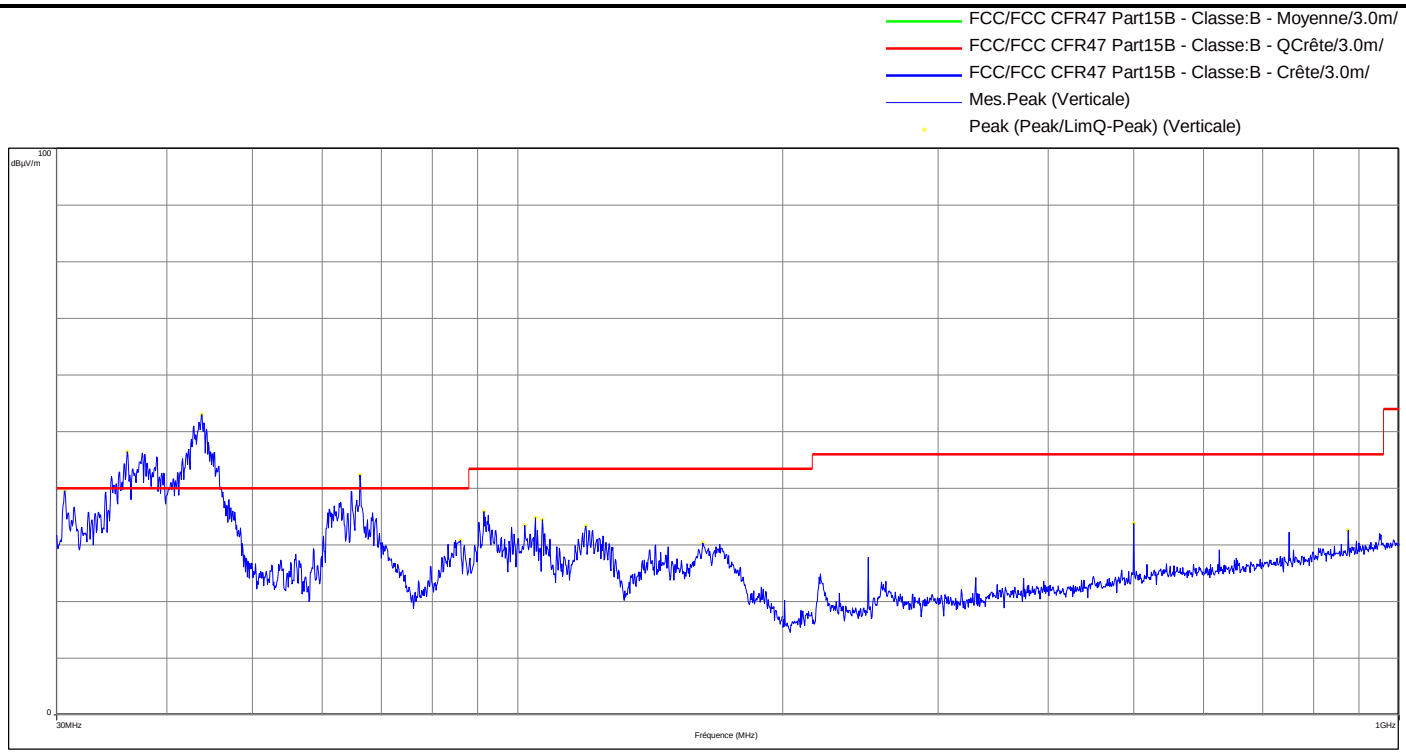
RADIATED EMISSIONS			
Graph name:	Emr#7	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 2 - Gateway - Axis Z - (H) - Hopping Mode	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Horizontal	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
45.827	31.15
61.212	27.7
98.425	29.33
127.07	34.98
500	32.89
624.96	32.68
875	35.88

RADIATED EMISSIONS			
Graph name:	Emr#8	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 2 - Gateway - Axis Z - (V) - Hopping Mode	
Class:	B		
Frequency range: [30MHz - 1GHz]			
Antenna polarization:	Vertical	**RBW :**	100kHz
Azimuth:	0° - 360°	**VBW :**	300kHz

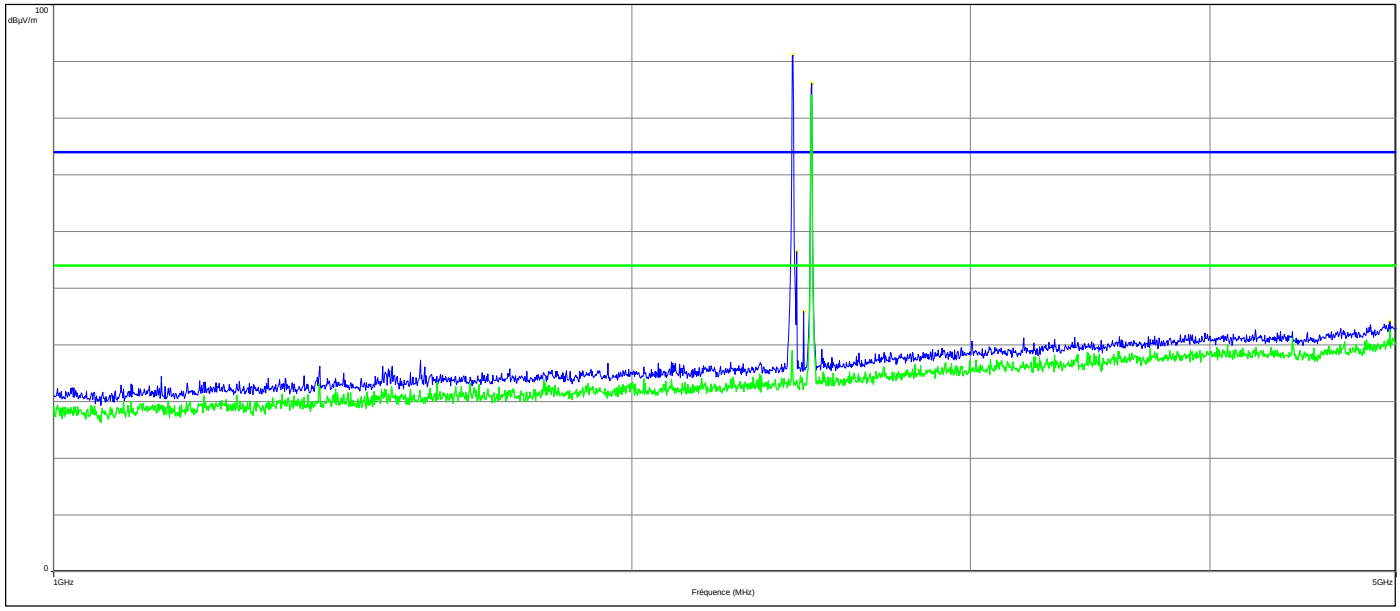


Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
30.629	39.53
36.069	46.48
43.804	52.97
66.261	42.37
86.151	30.76
91.557	35.92
101.876	33.43
104.749	34.83
106.704	34.44
119.403	33.37
162.311	30.28
500	33.76
875	32.5

12. ANNEX 3 (GRAPHS > 1GHZ)

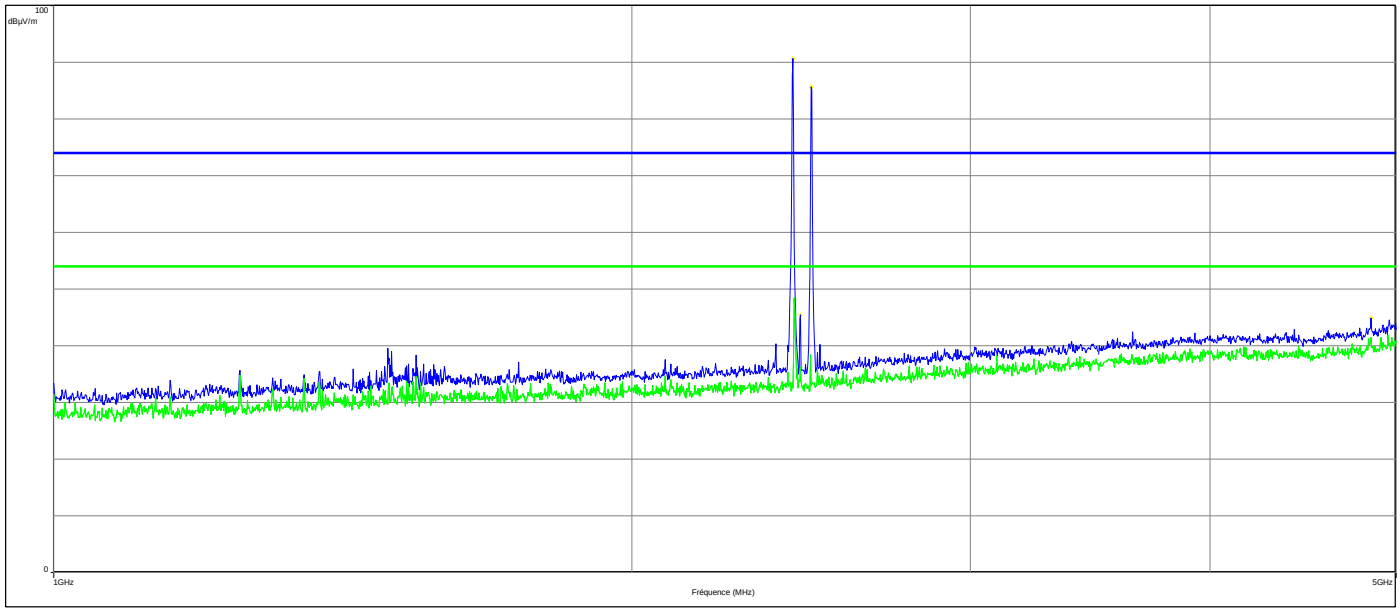
RADIATED EMISSIONS			
Graph name:	Emr#1	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 1 - Gateway - Axis XY - (H) - Hopping Mode	
Class:	B		
Frequency range: [1GHz - 5GHz]			
Antenna polarization:	Horizontal	**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
2425.75	91.13
2437.25	56.39
2457.25	45.86
2480.75	86.16
4961.45	44.13

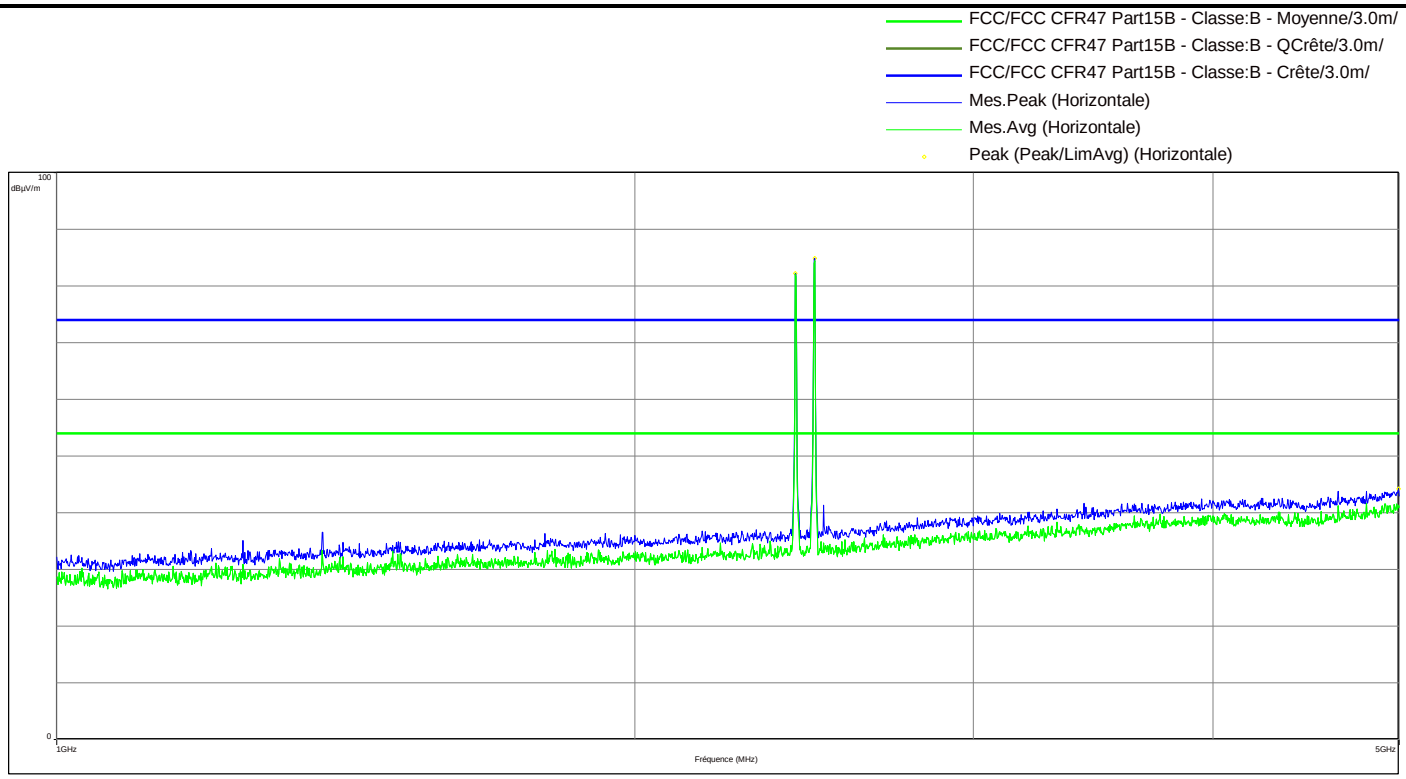
RADIATED EMISSIONS			
Graph name:	Emr#2	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 1 - Gateway - Axis XY - (V) - Hopping Mode	
Class:	B		
Frequency range: [1GHz - 5GHz]			
Antenna polarization:	Vertical	**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
2425.5	90.67
2447	45.48
2479.75	85.64
4851.2	44.94

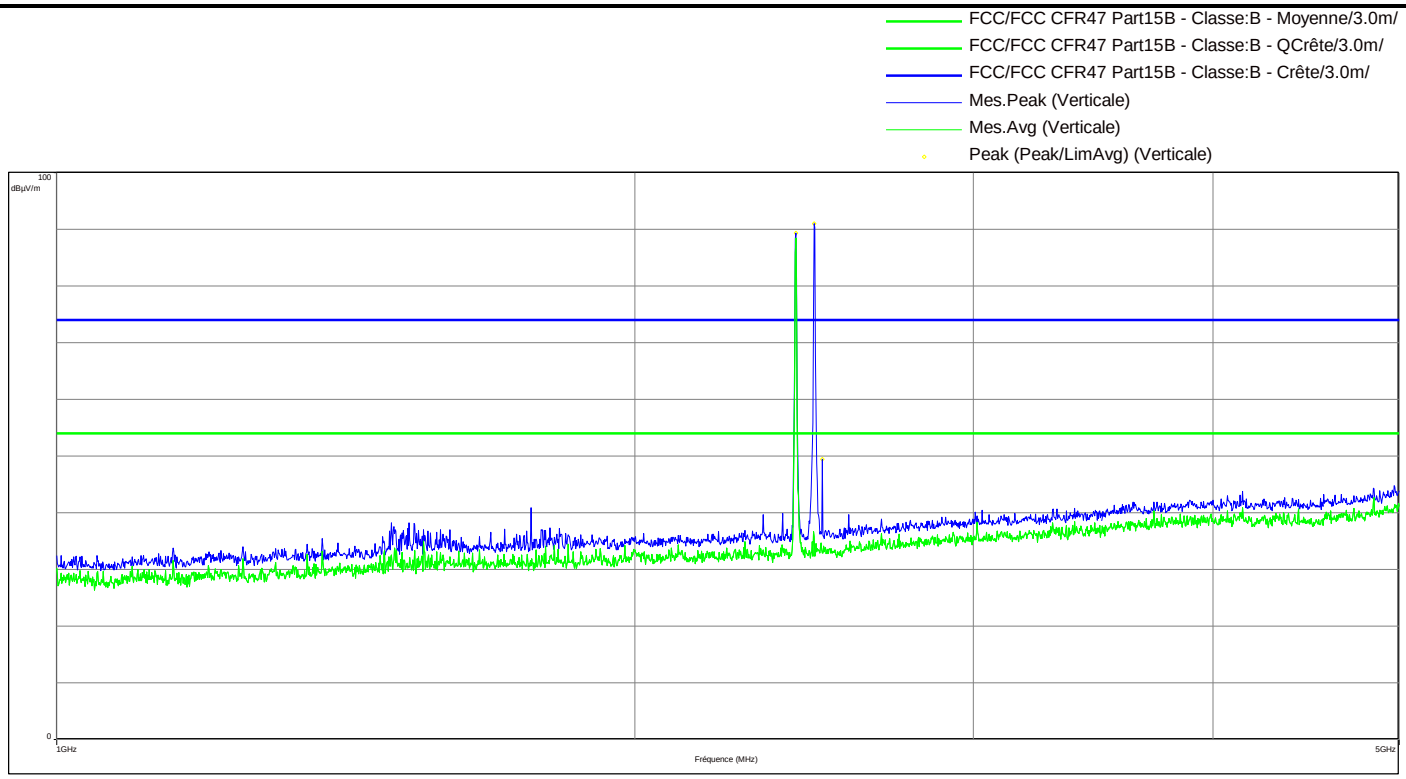
RADIATED EMISSIONS			
Graph name:	Emr#3	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 1 - Gateway - Axis Z - (H) - Hopping Mode	
Class:	B		
Frequency range: [1GHz - 5GHz]			
Antenna polarization:	Horizontal	**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
2424.75	82.23
2480.5	84.91
4997.75	44.19

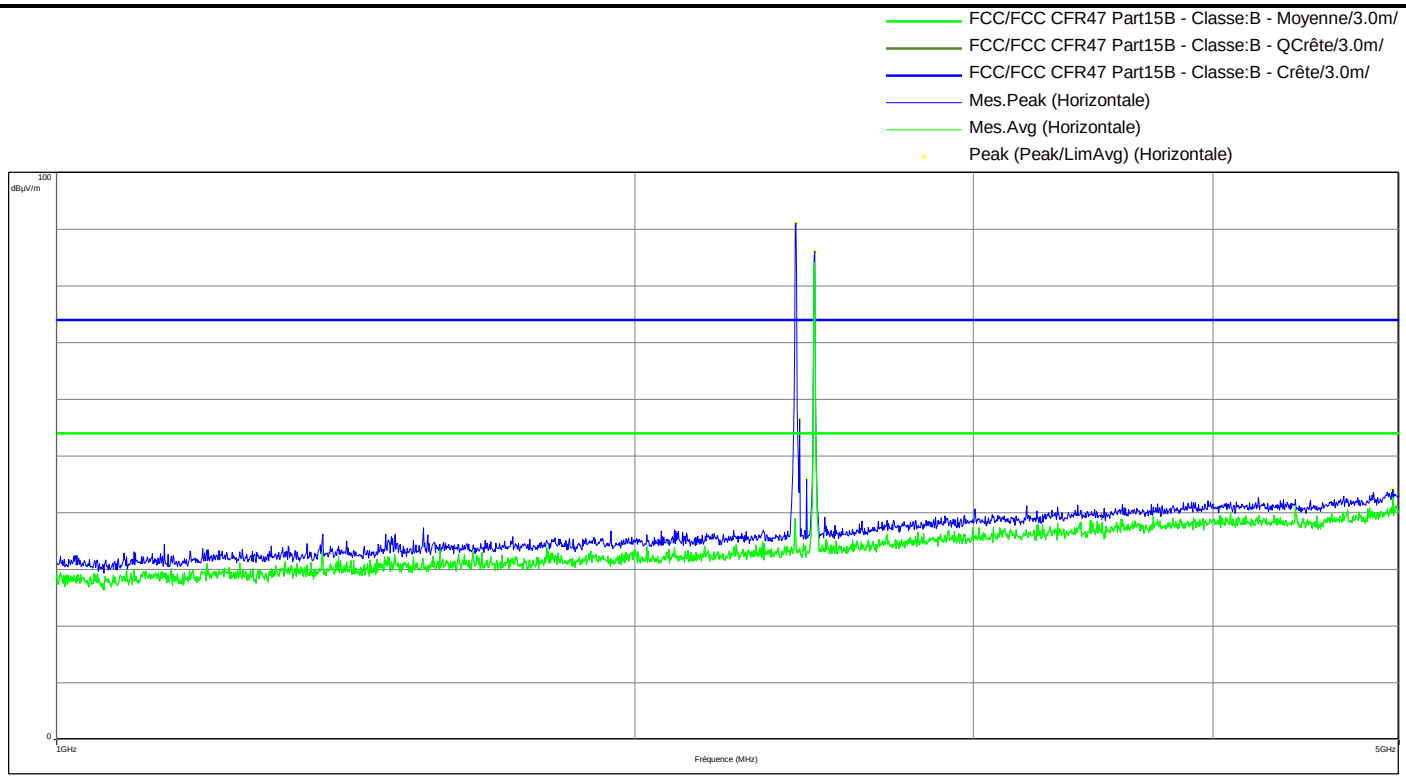
RADIATED EMISSIONS			
Graph name:	Emr#4	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 1 - Gateway - Axis Z - (V) - Hopping Mode	
Class:	B		
Frequency range: [1GHz - 5GHz]			
Antenna polarization:	Vertical	**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
2425.75	89.35
2479.75	91.02
2504.75	49.47

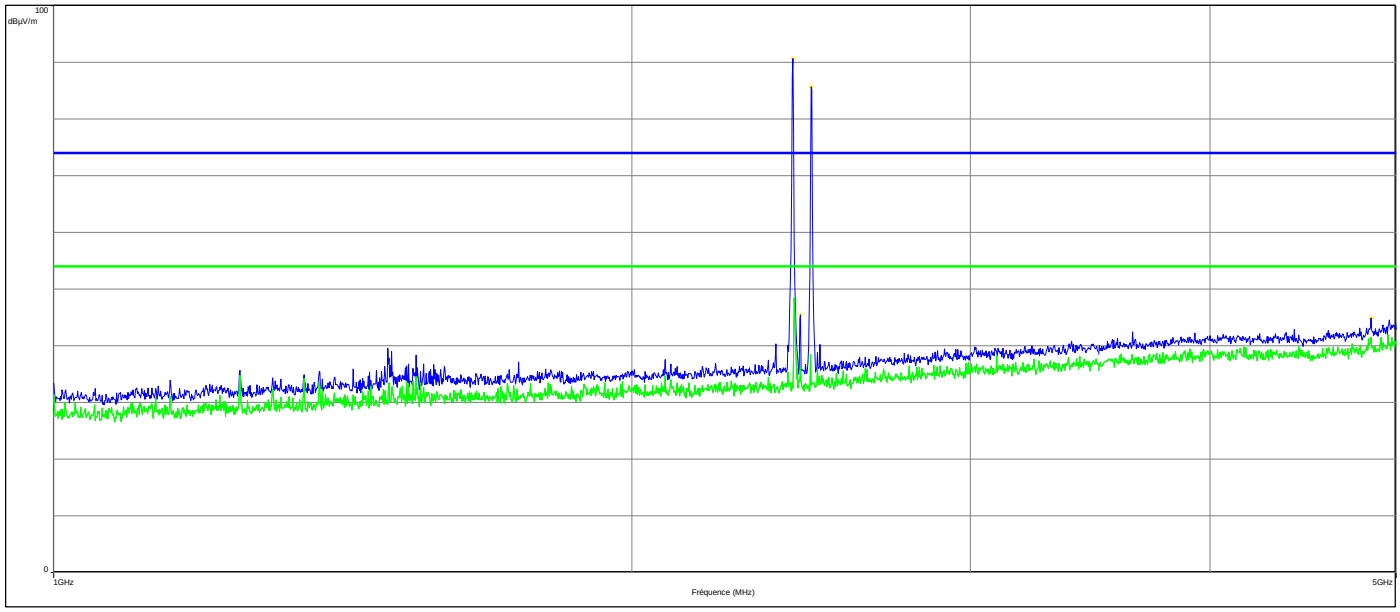
RADIATED EMISSIONS			
Graph name:	Emr#5	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 2 - Gateway - Axis XY - (H) - Hopping Mode	
Class:	B		
Frequency range: [1GHz - 5GHz]			
Antenna polarization:	Horizontal	**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
2425.75	91.13
2437.25	56.39
2457.25	45.86
2480.75	86.16
4961.45	44.13

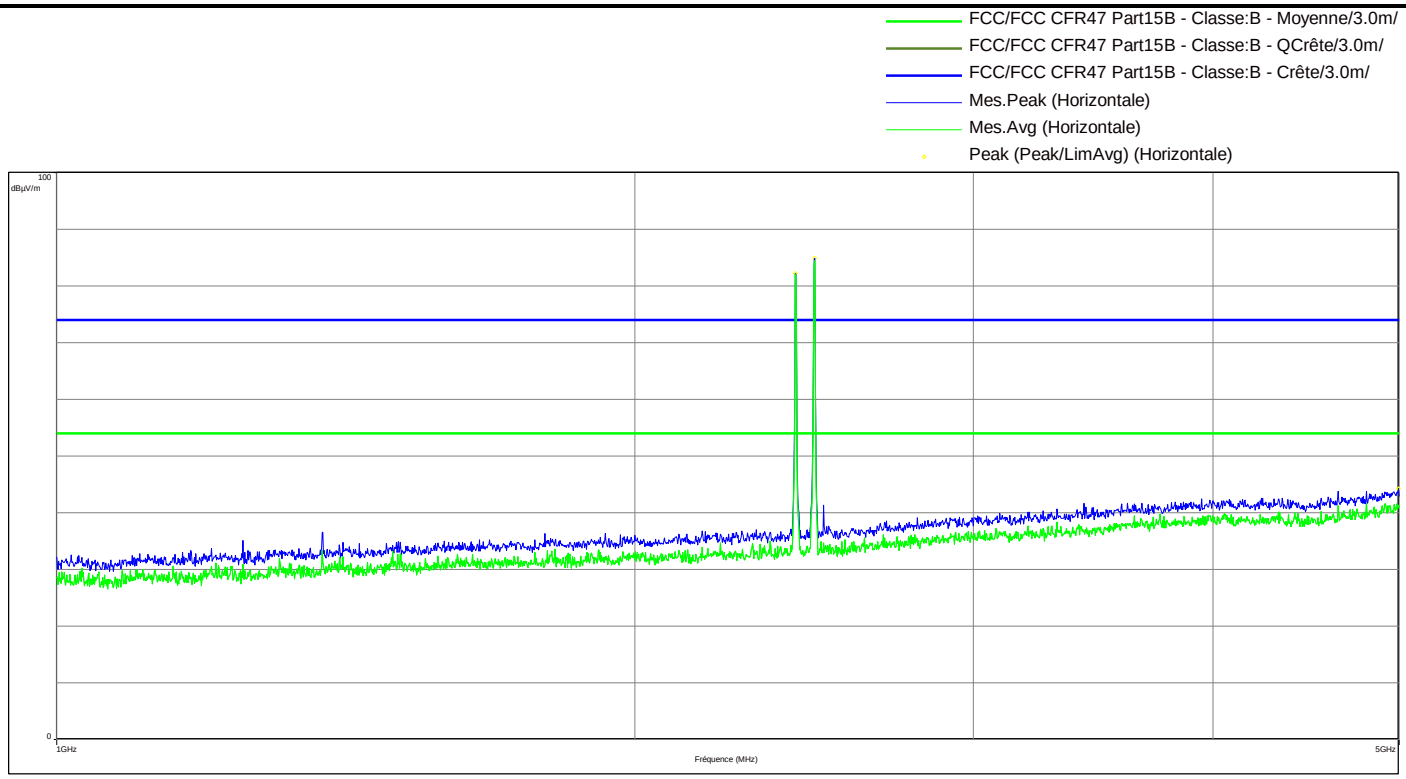
RADIATED EMISSIONS			
Graph name:	Emr#6	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 2 - Gateway - Axis XY - (V) - Hopping Mode	
Class:	B		
Frequency range: [1GHz - 5GHz]			
Antenna polarization:	Vertical	**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
2425.5	90.67
2447	45.48
2479.75	85.64
4851.2	44.94

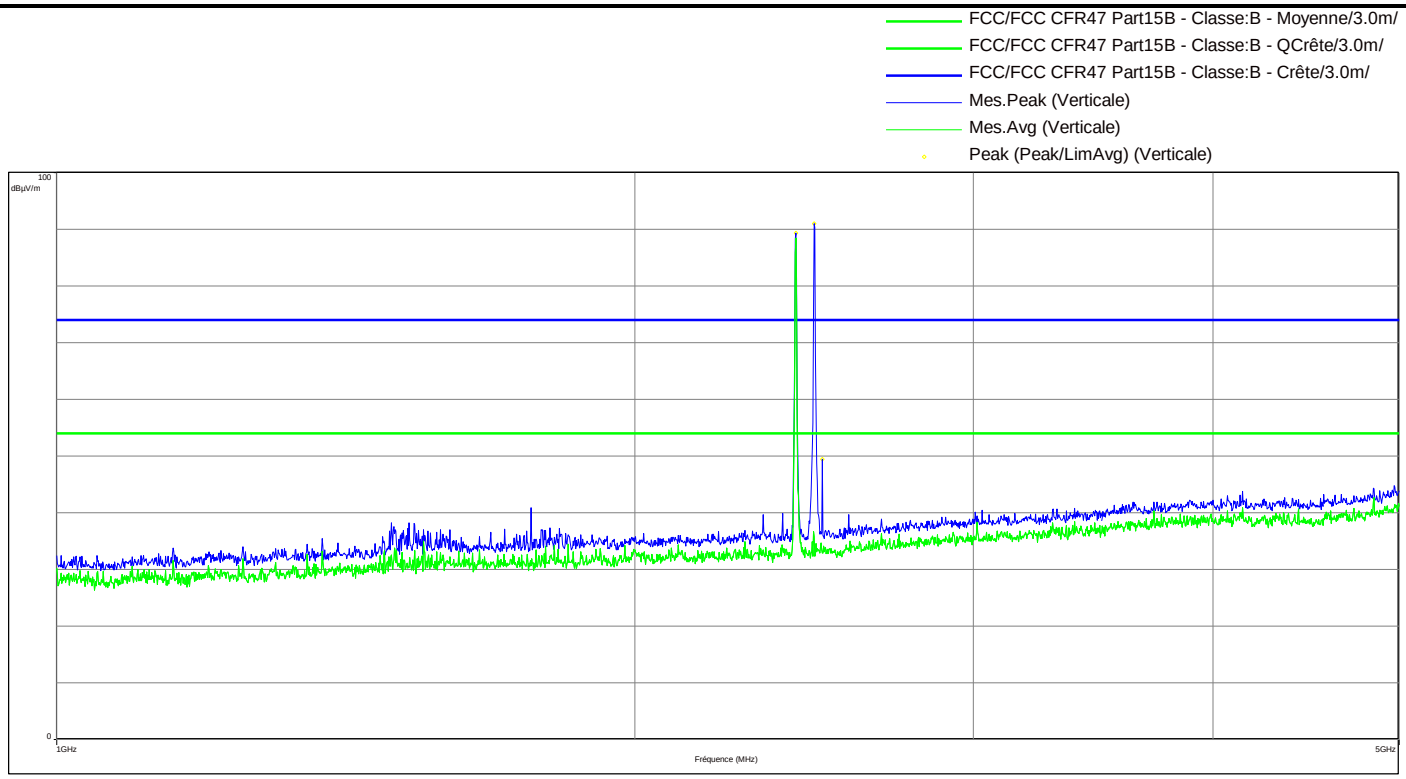
RADIATED EMISSIONS			
Graph name:	Emr#7	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 2 - Gateway - Axis Z - (H) - Hopping Mode	
Class:	B		
Frequency range: [1GHz - 5GHz]			
Antenna polarization:	Horizontal	**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
2424.75	82.23
2480.5	84.91
4997.75	44.19

RADIATED EMISSIONS			
Graph name:	Emr#8	**Test configuration:**	
Limit:	FCC CFR47 Part15B	Configuration 2 - Gateway - Axis Z - (V) - Hopping Mode	
Class:	B		
Frequency range: [1GHz - 5GHz]			
Antenna polarization:	Vertical	**RBW :**	1MHz
Azimuth:	0° - 360°	**VBW :**	3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)
2425.75	89.35
2479.75	91.02
2504.75	49.47

13. UNCERTAINTIES CHART

Type de mesure / *Kind of measurement*	**Incertitude élargie laboratoire / *Wide uncertainty laboratory* (k=2) ± x**	**Incertitude limite du CISPR / *CISPR uncertainty limit* ± y**
Mesure des perturbations conduites en tension sur le réseau d'énergie *Measurement of conducted disturbances in voltage on the power port*	3.57 dB	3.6 dB
Mesure des perturbations conduites en tension sur le réseau de télécommunication *Measurement of conducted disturbances in voltage on the telecommunication port.*	3.28 dB	A l'étude / Under consid.
Mesure des perturbations discontinues conduites en tension *Measurement of discontinuous conducted disturbances in voltage*	3.47 dB	3.6 dB
Mesure des perturbations conduites en courant *Measurement of conducted disturbances in current*	2.90 dB	A l'étude / Under consid.
Mesure du champ électrique rayonné sur le site en espace libre de Moirans *Measurement of radiated electric field on the Moirans open area test site*	5.07 dB	5.2 dB

Les valeurs d'incertitudes calculées du laboratoire étant inférieures aux valeurs d'incertitudes limites établies par la norme, la conformité de l'échantillon est établie directement par les niveaux limites applicables. / *The uncertainty values calculated by the laboratory are lower than limit uncertainty values defined by the standard. The conformity of the sample is directly established by the applicable limits values.*