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TEST REPORT

N°: 853835-R1-E

JDE : 136952

Subject **Electromagnetic compatibility and Radio spectrum Matters
(ERM) tests according to standards:
FCC CFR 47 Part 15, Subpart B et C
RSS-247 Issue 1.0**

Issued to	ISKN 52, cours Jean Jaurès 38000 GRENOBLE - FRANCE
Apparatus under test	
↻ Product	SLATE
↻ Trade mark	ISKN
↻ Manufacturer	ISKN
↻ Model under test	TS1E2
↻ Serial number	6004 & 6017
↻ FCCID	2ACQC-TS1E2
↻ ICID	12188A-TS1E2
Test date	From August 20 th to September 2 nd , 2015
Test location	Moirans
IC Test site	6500A-1 & 6500A-3
Test performed by	Nathalie BUGANZA & Gaëtan Deschamps
Composition of document	40 pages
Modification of the last version	None
Document issued on	September 2 nd , 2015

Written by :
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Tests operator



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SUMMARY

1.	TEST PROGRAM	3
2.	SYSTEM TEST CONFIGURATION.....	4
3.	CONDUCTED EMISSION DATA.....	7
4.	RADIATED EMISSION DATA	10
5.	BANDWIDTH (15.247)	15
6.	MAXIMUM PEAK OUTPUT POWER (15.247)	18
7.	POWER SPECTRAL DENSITY (15.247)	21
8.	BAND EDGE MEASUREMENT (15.247)	24
9.	OCCUPIED BANDWIDTH.....	28
10.	ANNEX 1 (GRAPHS)	30
11.	UNCERTAINTIES CHART	40



1. TEST PROGRAM

- Standard:**
- FCC Part 15, Subpart C 15.247
 - ANSI C63.10 (2013)
 - RSS-247 Issue 1.0 – May 2015
 - RSS-Gen Issue 4 – Nov 2014
 - 558074 D01 DTS Measurement Guidance v03r03

EMISSION TEST	LIMITS			RESULTS
	Frequency	Quasi-peak value (dBµV)	Average value (dBµV)	
Limits for conducted disturbance at mains ports 150kHz-30MHz	150-500kHz	66 to 56	56 to 46	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 9kHz-30MHz CFR 47 §15.209 (a) CFR 47 §15.247 (d) RSS-247 §5.5	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			<input type="checkbox"/> PASS <input type="checkbox"/> FAIL <input checked="" type="checkbox"/> NA <input type="checkbox"/> NP
Radiated emissions 30MHz-25GHz* CFR 47 §15.209 (a) CFR 47 §15.247 (d) RSS-247 §5.5 Highest frequency : 168MHz (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			<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP
Bandwidth 6dB CFR 47 §15.247 (a) (2) RSS-247 §5.2.1	At least 500kHz			<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP
Power spectral Density CFR 47 §15.247 (e) RSS-247 §5.2.2	Limit: 8dBm/3kHz			<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP
Maximum Peak Output Power CFR 47 §15.247 (b) RSS-247 §5.4.4	Limit: 30dBm Conducted or Radiated measurement			<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP
Band Edge Measurement CFR 47 §15.209 (a) CFR 47 §15.247 (d) RSS-247 §5.5	Limit: -20dBc or Radiated emissions limits in restricted bands			<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP
Occupied bandwidth RSS-Gen §4.6.1	No limit			<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP
Receiver Spurious Emission** RSS-Gen §4.10	See RSS-Gen §4.10			<input type="checkbox"/> PASS <input type="checkbox"/> FAIL <input checked="" type="checkbox"/> NA <input type="checkbox"/> 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):

TS1E2

Serial Number: 6004 & 6017



Photography of EUT

Power supply:

During all the tests, EUT is supplied by V_{nom} : 3.7Vdc (internal battery Lithium-ion)
5V of USB port of Laptop is used to charge internal battery.

For measurement with different voltage, it will be presented in test method.

Name	Type	Rating	Reference / Sn	Comments
Charge & Communication	<input type="checkbox"/> AC <input checked="" type="checkbox"/> DC <input type="checkbox"/> Battery	5Vdc - USB	/	For battery charging
Internal battery	<input type="checkbox"/> AC <input type="checkbox"/> DC <input checked="" type="checkbox"/> Battery	3.7VDC	-	For EUT supply

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
Charge & Communication	USB Cable	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
LAPTOP	TOSHIBA Satellite	TOSHIBA 2	/
Power Supply of LAPTOP	TOSHIBA PA3822U-1ACA	/	/

**Equipment information:**

Bluetooth LE Type:	<input type="checkbox"/> v4.0		<input checked="" type="checkbox"/> v4.1	
Frequency band:	[2400 – 2483.5] MHz			
Sub-band REC7003:	Annex 3 (a)			
Spectrum Modulation:	<input checked="" type="checkbox"/> DSSS (Tested like it)			
Number of Channel:	40			
Spacing channel:	2MHz			
Channel bandwidth:	1MHz			
Antenna Type:	<input checked="" type="checkbox"/> Integral	<input type="checkbox"/> External	<input type="checkbox"/> Dedicated	
Antenna connector:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Temporary for test	
Transmit chains:	<input checked="" type="checkbox"/> 1			
	Single antenna			
	Gain 1: 2dBi		Gain 2: dBi	
Beam forming gain:	No			
Receiver chains	1			
Type of equipment:	<input checked="" type="checkbox"/> Stand-alone	<input type="checkbox"/> Plug-in	<input type="checkbox"/> Combined	
Ad-Hoc mode:	<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No	
Adaptivity mode:	<input type="checkbox"/> Yes (Load Based)	<input type="checkbox"/> Off mode	<input checked="" type="checkbox"/> No	
	Clear Channel Assessment Time:			µs
	q value for Load Based Equipment:			
Duty cycle:	<input checked="" type="checkbox"/> Continuous duty	<input type="checkbox"/> Intermittent duty	<input type="checkbox"/> 100% duty	
Equipment type:	<input checked="" type="checkbox"/> Production model		<input type="checkbox"/> Pre-production model	
Type of power source:	<input type="checkbox"/> AC power supply	<input type="checkbox"/> DC power supply	<input checked="" type="checkbox"/> Battery (Lithium-Ion)	

CHANNEL PLAN

Channel	Frequency (MHz)	Channel	Frequency (MHz)
Cmin: 0	2402	Cmid: 20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2412	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	Cmax: 39	2480

DATA RATE

Data Rate (Mbps)	Modulation Type	Worst Case Modulation
1	GFSK	<input checked="" type="checkbox"/>



2.2. EUT CONFIGURATION

The EUT is set in the following modes during tests with software ("Certif_USB_sans_pos"):

- Permanent emission with modulation on a fixed channel in the data rate that produced the highest power
- Permanent reception
- The power order is set at 5dBm

There are 2 configurations tests:

- Configuration 1: EUT is powered by her internal battery and reloaded by USB with Laptop. The EUT detects the inductive pen and communicates with Laptop by Bluetooth radio.
- Configuration 2: EUT is powered by her internal battery. The EUT detects the inductive pen and communicates with Laptop by Bluetooth radio.

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 52.5dB μ V 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 dB μ V/m.

$$FS = 52.5 + 7.4 + 1.1 - 29 = 32 \text{ dB}\mu\text{V/m}$$

The 32 dB μ V/m value can be mathematically converted to its corresponding level in μ V/m.

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32\text{dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}.$$



3. CONDUCTED EMISSION DATA

3.1. ENVIRONMENTAL CONDITIONS

Date of test : August 27th, 2015
Test performed by : Nathalie BUGANZA
Atmospheric pressure (hPa) : 995
Relative humidity (%) : 45
Ambient temperature (°C) : 24

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} .

Measurement is performed on AC lines of AC/DC adapter of Laptop, powered through a LISN (measure)



Test setup

*Test setup*

3.3. TEST METHOD

The product has been tested according to ANSI C63.4 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 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 + self	-	-	A5329585	06/15	06/16
Conducted emission comb generator	BARDET	-	A3169049	-	-
LISN tri-phase ESH2-Z5	RHODE & SCHWARZ	33852.19.53	C2320062	07/15	07/16
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	04/15	04/16
Thermo-hygrometer	KIMO	HQ210	B4206022	04/15	04/16
Transient limiter	RHODE & SCHWARZ	ESH3-Z2	A7122204	11/14	11/15

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 **TS1E2**, SN: **6017**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-247 Issue 1.0 limits.



4. RADIATED EMISSION DATA

4.1. ENVIRONMENTAL CONDITIONS

Date of test	: August 26 th , 2015	August 27 th , 2015
Test performed by	: Nathalie BUGANZA	Nathalie BUGANZA
Atmospheric pressure (hPa)	: 995	995
Relative humidity (%)	: 49	45
Ambient temperature (°C)	: 23	24

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) - Below 1GHz
- 150cm above the ground on the non-conducting table (Table-top equipment) - Above 1GHz
- 10cm above the ground on isolating support (Floor standing equipment)

The EUT is powered by V_{nom} .



Axis XY



Axis Z



Axis XY

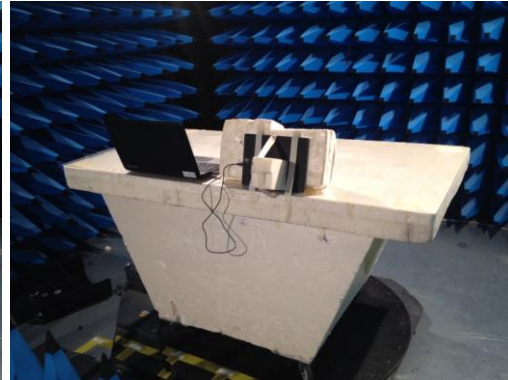


Axis Z

Test setup on OATS



Axis XY



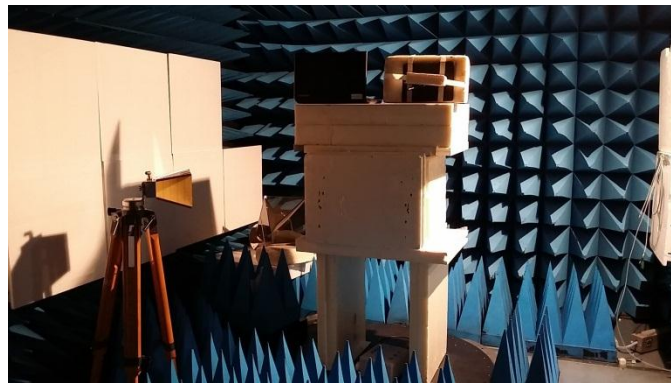
Axis Z



Axis XY



Axis Z

*Test setup in anechoic chamber*

4.3. TEST METHOD

Pre-characterisation measurement: (9kHz – 25GHz)

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 9kHz 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 (EUT smaller than the beamwidth of the measurement antenna)

Frequency list has been created with anechoic chamber pre-scan results.

4.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	A7085009	10/14	10/15
Antenna Bi-Log XWing	TESEQ	CBL6144	C2040146	11/14	11/16
Emission Cable	MICRO-COAX	6GHz	A5329654	04/15	04/16
Emission Cable	MICRO-COAX	6GHz	A5329655	04/15	04/16
Emission Cable	MICRO-COAX	6GHz	A5329656	04/15	04/16
Semi-Anechoic chamber #2	SIEPEL	-	D3044015	03/15	03/16
Radiated emission comb generator	BARDET	-	A3169050	-	-
HF Radiated emission comb generator	LCIE SUD EST	-	A3169088	-	-
Spectrum Analyzer 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642049	11/14	11/15
Thermo-hygrometer (C2)	LACROSS Techn.	WS-2357	B4206015	08/14	08/15
Turntable controller (Cage#2)	ETS Lingren	Model 2066	F2000393	-	-
Turntable chamber (Cage#2)	ETS Lingren	Model 2165	F2000404	-	-
Table	LCIE	-	F2000438	-	-
Antenna Bi-log	CHASE	CBL6111A	C2040051	04/14	04/16
Cable	SUCOFLEX	106G	A5329061	03/15	03/16
Cable (OATS)	-	-	A5329623	10/14	10/15
OATS	-	-	F2000409	09/14	09/15
Receiver 20-1000MHz	ROHDE & SCHWARZ	ESVS30	A2642006	05/15	05/16
Thermo-hygrometer	KIMO	HQ210	B4206022	04/15	04/16
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	LCIE	-	F2000445	-	-

4.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

Divergence:



4.6. TEST RESULTS

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

See graphs for 30MHz-1GHz:

Graph identifier		Polarization	EUT position	Comments	
Emr#	1	Vertical / Horizontal	Axis XY	Mode USB	See annex 1
Emr#	2	Vertical / Horizontal	Axis Z	Mode USB	See annex 1
Emr#	3	Vertical / Horizontal	Axis XY	Mode Bluetooth	See annex 1
Emr#	4	Vertical / Horizontal	Axis Z	Mode Bluetooth	See annex 1

4.6.2. Pre-characterization at 3 meters [1GHz-2GHz]

See graphs for 1GHz-2GHz:

Graph identifier		Polarization	EUT position	Comments	
Emr#	5	Vertical / Horizontal	Axis XY	Mode USB	See annex 1
Emr#	6	Vertical / Horizontal	Axis Z	Mode USB	See annex 1
Emr#	7	Vertical / Horizontal	Axis XY	Mode Bluetooth	See annex 1
Emr#	8	Vertical / Horizontal	Axis Z	Mode Bluetooth	See annex 1

4.6.3. 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)	Limit QPeak (dB μ V/m)	Measure QPeak (dB μ V/m)	Margin QPeak (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Configuration EUT	Remark
1	53.568	40.0	31.0	-9.0	0	V	100	8.8	1	
2	193.993	43.5	35.2	-8.3	0	V	100	11.2	1	Due to Laptop
3	258.688	46.0	44.1	-1.9	70	V	100	15.5	1	Due to Laptop
4	258.688	46.0	44.6	-1.4	300	H	400	15.5	1	Due to Laptop
5	323.368	46.0	41.2	-4.8	61	H	310	16.9	1	Due to Laptop
6	323.368	46.0	43.5	-2.5	300	V	100	16.9	1	Due to Laptop
7	388.078	46.0	37.2	-8.8	61	V	100	19.2	1	Due to Laptop
8	388.078	46.0	43.3	-2.7	270	H	270	19.2	1	Due to Laptop
9	517.655	46.0	41.2	-4.8	0	H	300	22.4	1	Due to Laptop
10	193.993	43.5	29.1	-14.4	0	V	100	11.2	2	
11	258.642	46.0	23.3	-22.7	270	V	100	15.5	2	
12	258.661	46.0	29.6	-16.4	40	H	400	15.5	2	
13	323.388	46.0	30.8	-15.2	0	H	400	16.9	2	
14	323.388	46.0	30.6	-15.4	0	V	400	16.9	2	
15	517.605	46.0	33.4	-12.6	180	V	340	22.4	2	
16	517.605	46.0	33.7	-12.3	0	H	400	22.4	2	

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



4.6.4. 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 (dB μ V/m)	Measure Peak (dB μ V/m)	Margin Peak (dB)	Limit Average (dB μ V/m)	Measure Average (dB μ V/m)	Margin Average (dB)	Angle Table (°)	Pol. Ant.	Ht. Ant. (cm)	FC (dB)	Remark
1	4804.000	74.0	57.2	-16.8	54.0	43.0	-11.0	270	V	100	36.3	Configuration 1
2	4884.000	74.0	57.5	-16.5	54.0	42.7	-11.3	290	V	100	36.5	Configuration 1
3	4960.000	74.0	58.0	-16.0	54.0	43.3	-10.7	280	V	100	36.7	Configuration 1
4	7328.000	74.0	62.5	-11.5	54.0	42.7	-11.3	330	V	100	40.5	Configuration 1
5	7440.000	74.0	59.2	-14.8	54.0	42.1	-11.9	320	V	100	40.7	Configuration 1

Note: Measures have been done at 3m distance.

4.7. CONCLUSION

Radiated emission data measurement performed on the sample of the product **TS1E2**, SN: **6017**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-247 Issue 1.0 limits.



5. BANDWIDTH (15.247)

5.1. TEST CONDITIONS

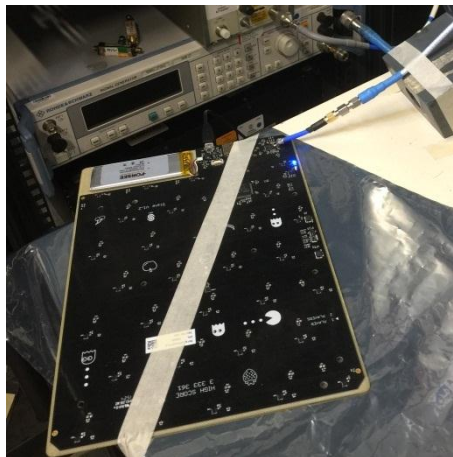
Date of test	:August 21 st , 2015
Test performed by	:G.Deschamps
Atmospheric pressure (hPa)	:999
Relative humidity (%)	:32
Ambient temperature (°C)	:22

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: Attenuator+cable 10.1dB



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: §8.1 Option 1 (DTS Measurement Guidance)

1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ 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
Attenuator 10dB	JFW	-	A7122166	10/14	10/15
Cable 2m	-	-	A5329703	11/14	11/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	01/15	01/16
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	04/15	04/16
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

5.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

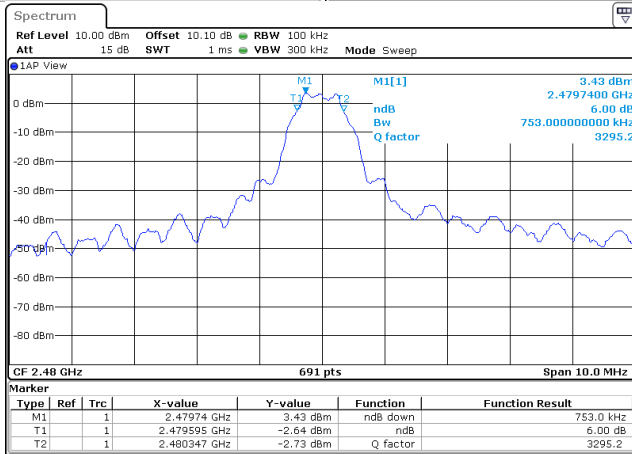
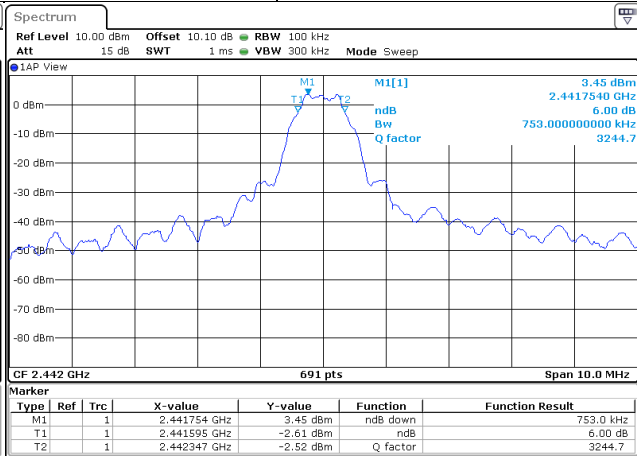
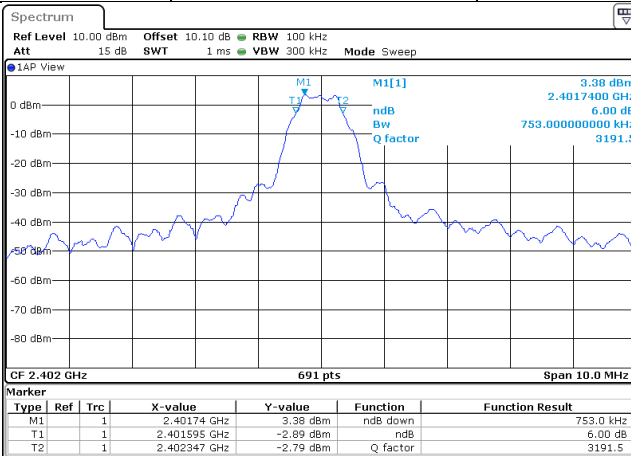
None

Divergence:



5.5. TEST SEQUENCE AND RESULTS

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Bandwidth Limit (kHz)
Cmin	2402	753	>500
Cmid	2442	753	>500
Cmax	2480	753	>500



5.6. CONCLUSION

Bandwidth measurement performed on the sample of the product **TS1E2**, SN: **6004**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-247 Issue 1.0 limits.



6. MAXIMUM PEAK OUTPUT POWER (15.247)

6.1. TEST CONDITIONS

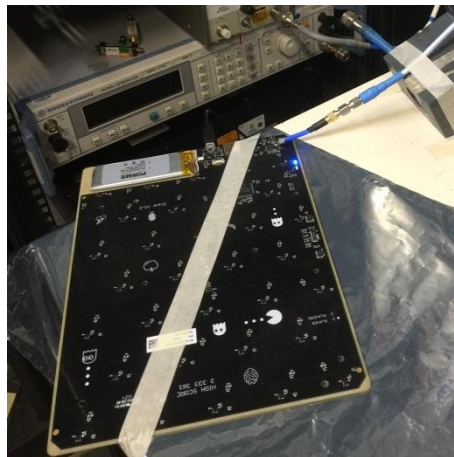
Date of test	:August 21 st , 2015	:
Test performed by	:G.Deschamps	:
Atmospheric pressure (hPa)	:999	:
Relative humidity (%)	:32	:
Ambient temperature (°C)	:22	:

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: Attenuator+cable 10.1dB



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 \geq DTS bandwidth §9.1.1 (DTS Measurement Guidance)**

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 \geq DTS bandwidth.
- b) Set VBW $\geq 3 \times$ RBW.
- c) Set span $\geq 3 \times$ 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 $\geq 3 \times$ RBW
- c) Set the span $\geq 1.5 \times$ 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
Attenuator 10dB	JFW	-	A7122166	10/14	10/15
Cable 2m	-	-	A5329703	11/14	11/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	01/15	01/16
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	04/15	04/16
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

6.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

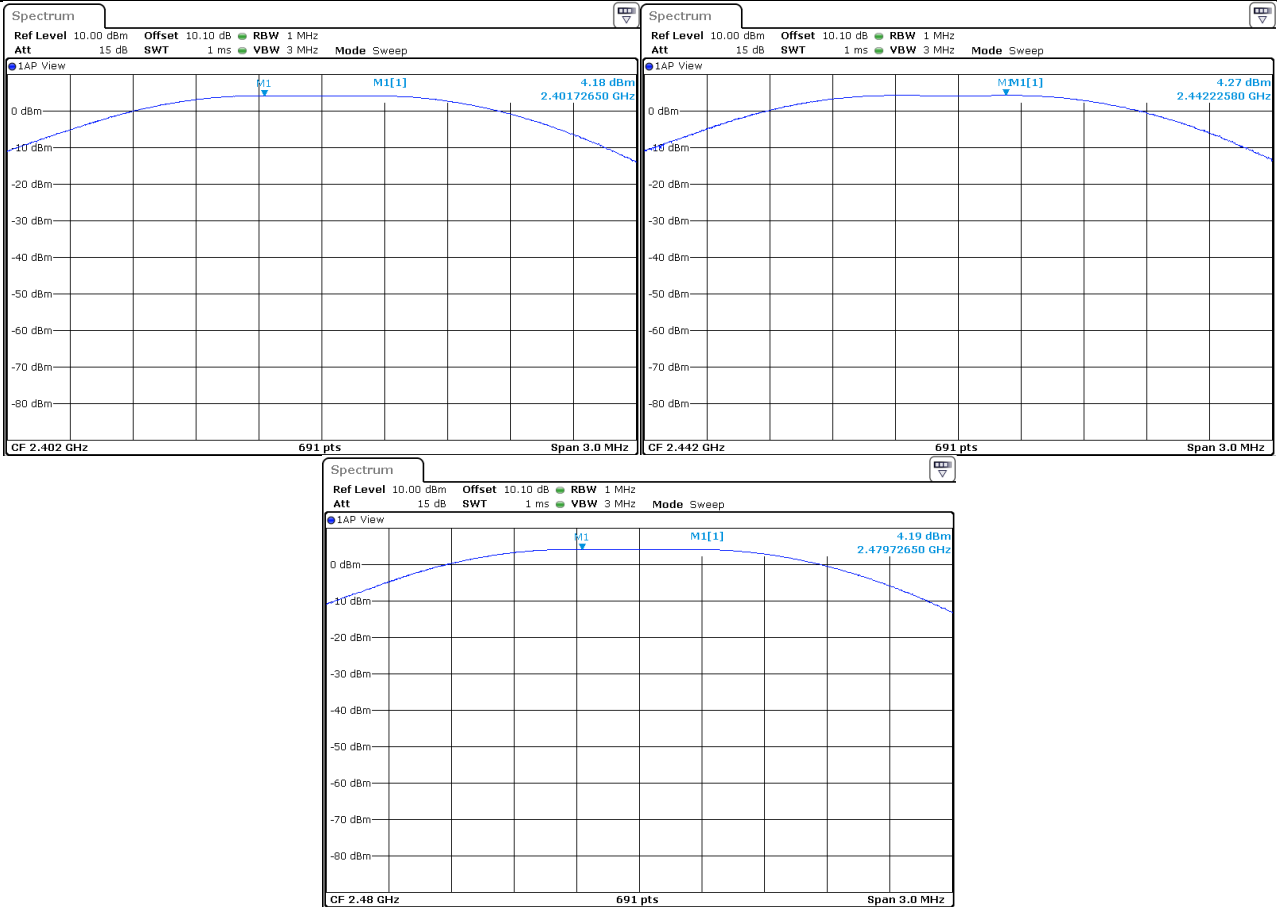
- None Divergence:



6.5. TEST SEQUENCE AND RESULTS

Modulation:

Channel	Channel Frequency (MHz)	Peak Output Power (dBm)	Power Limit (dBm)
Cmin	2402	4.18	30.0
Cmid	2442	4.27	30.0
Cmax	2480	4.19	30.0



6.6. CONCLUSION

Maximum Peak Output Power measurement performed on the sample of the product **TS1E2**, SN: **6004**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-247 Issue 1.0 limits.



7. POWER SPECTRAL DENSITY (15.247)

7.1. TEST CONDITIONS

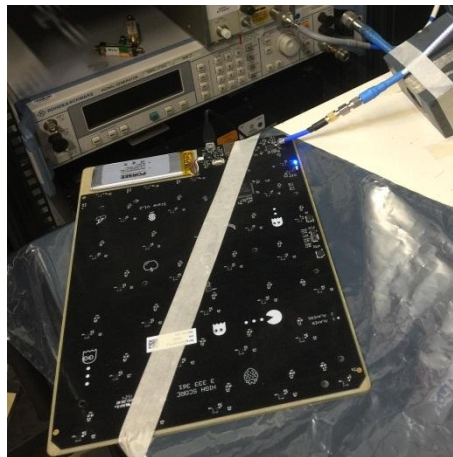
Date of test	:August 31 st , 2015
Test performed by	:G.Deschamps
Atmospheric pressure (hPa)	:992
Relative humidity (%)	:32
Ambient temperature (°C)	:23

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 10.1dB



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: §10.2 (DTS Measurement Guidance)**

- 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.
- d) Set the VBW $\geq 3 \times$ 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
Attenuator 10dB	JFW	-	A7122166	10/14	10/15
Cable 2m	-	-	A5329703	11/14	11/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	01/15	01/16
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	04/15	04/16
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

7.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

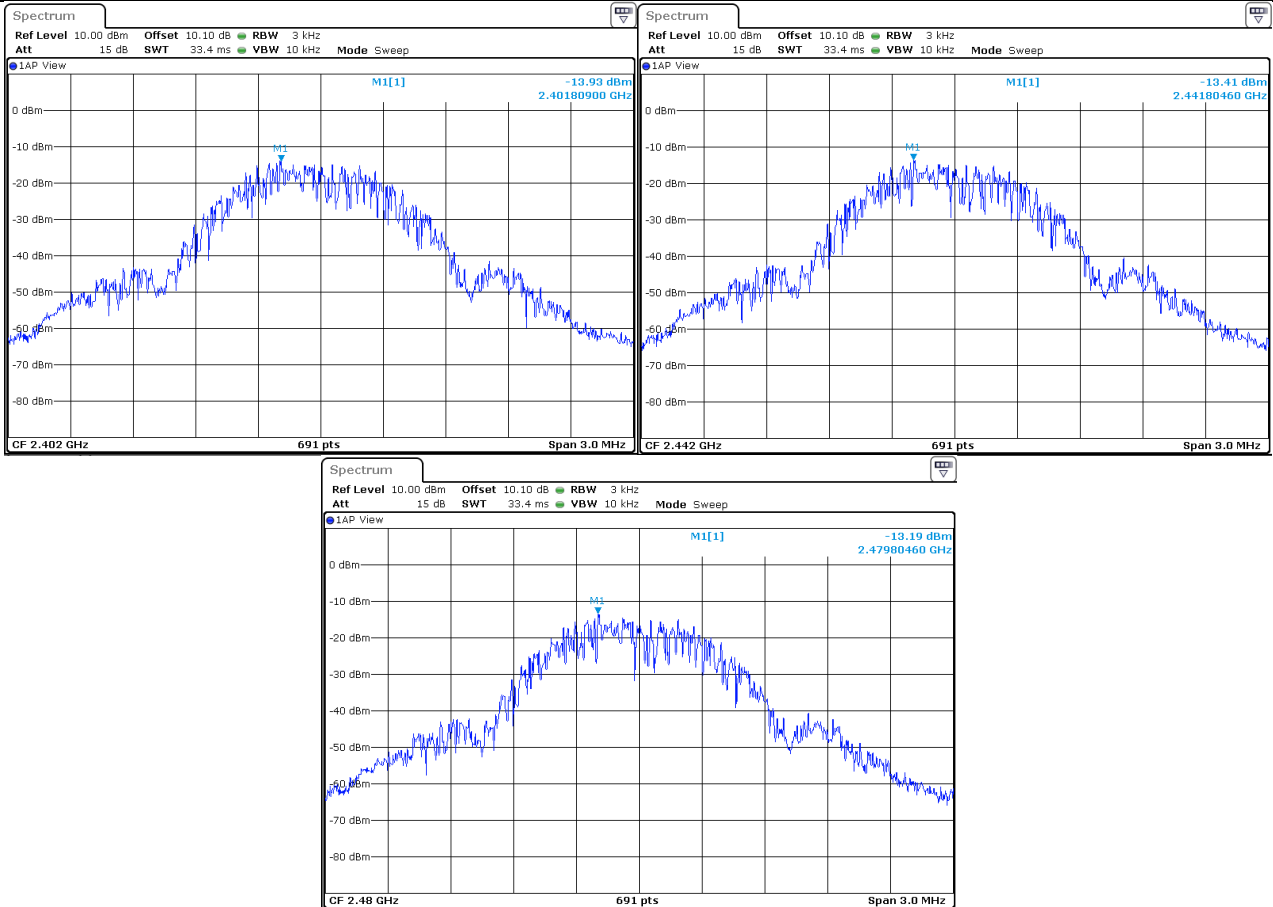
- None Divergence:



7.5. TEST SEQUENCE AND RESULTS

Modulation:

Channel	Channel Frequency (MHz)	Power Spectral Density (dBm)	PSD Limit (dBm)
Cmin	2402	-13.93	8.0
Cmid	2442	-13.41	8.0
Cmax	2480	-13.19	8.0



7.6. CONCLUSION

Power Spectral Density measurement performed on the sample of the product **TS1E2**, SN: **6004**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-247 Issue 1.0 limits.



8. BAND EDGE MEASUREMENT (15.247)

8.1. TEST CONDITIONS

Date of test	:August 31 st , 2015
Test performed by	:G.Deschamps
Atmospheric pressure (hPa)	:992
Relative humidity (%)	:32
Ambient temperature (°C)	:23

8.2. LIMIT

RF antenna conducted test: § 11 (DTS Measurement Guidance)

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: § 12 (DTS Measurement Guidance)

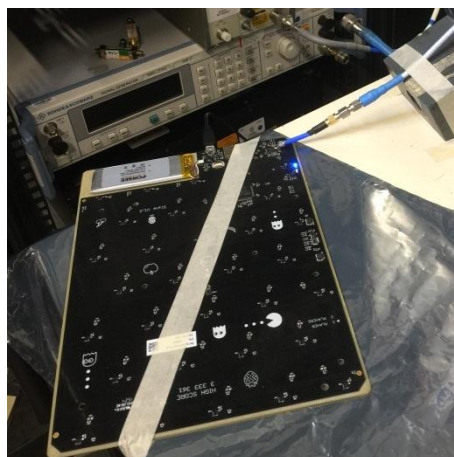
Applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; 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

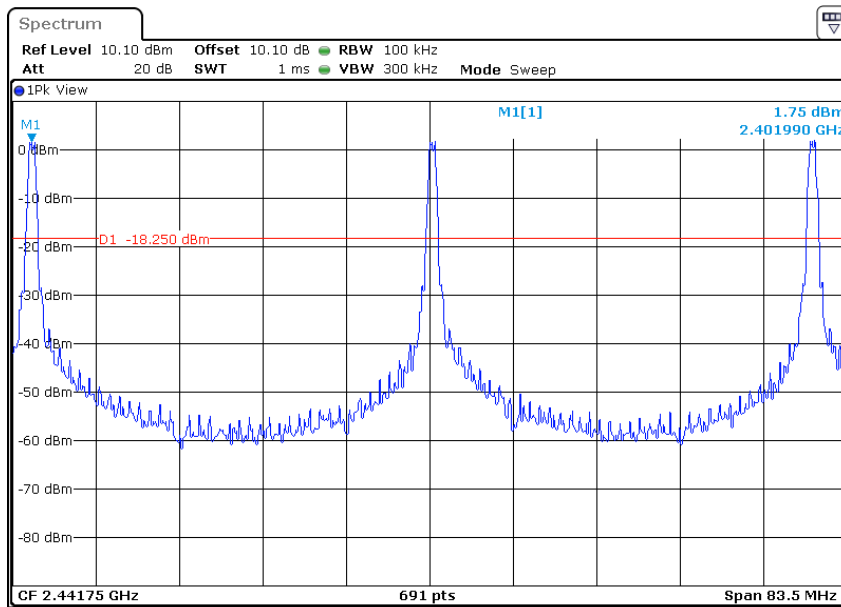
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Attenuator 10dB	JFW	-	A7122166	10/14	10/15
Cable 2m	-	-	A5329703	11/14	11/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	01/15	01/16
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	04/15	04/16
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

8.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

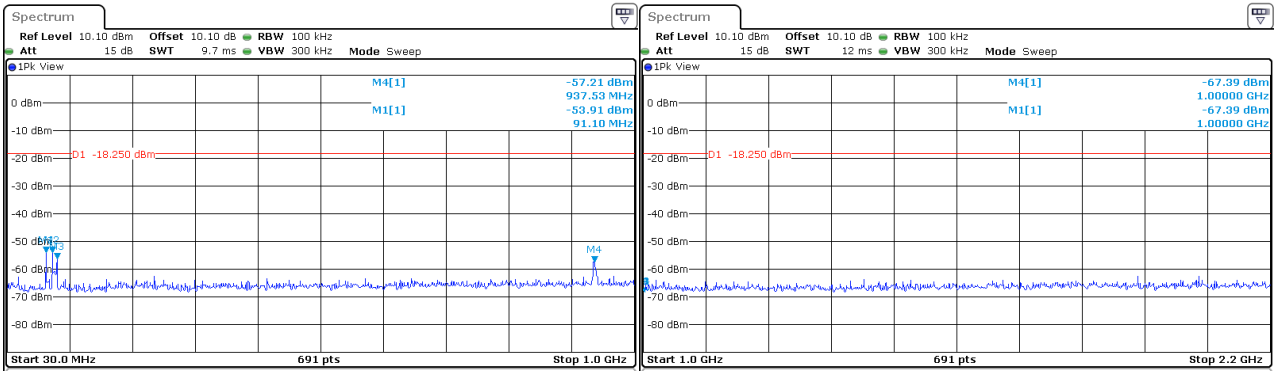
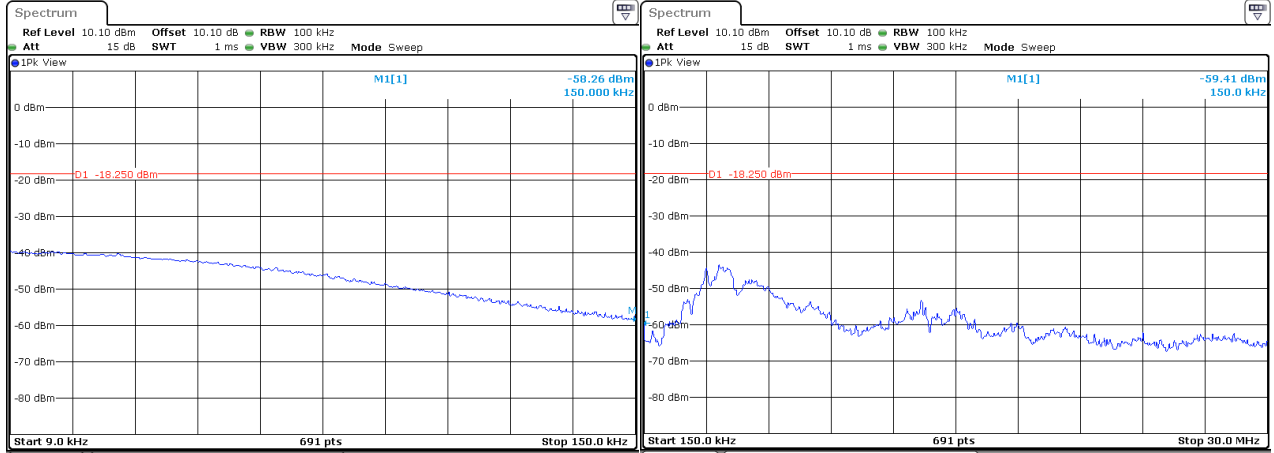
None Divergence:

8.6. TEST SEQUENCE AND RESULTS

Offset: Attenuator+cable 10.1dB

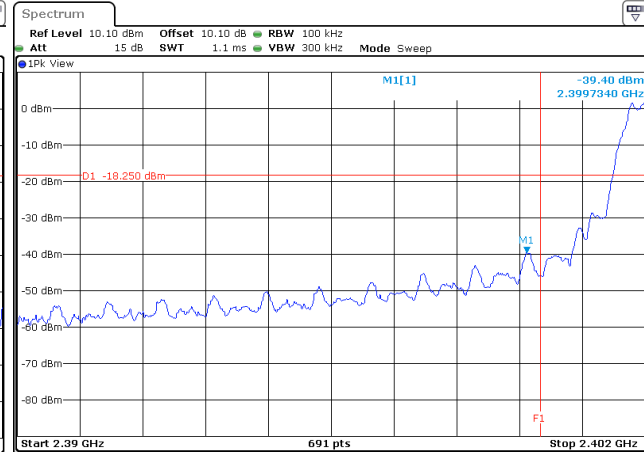
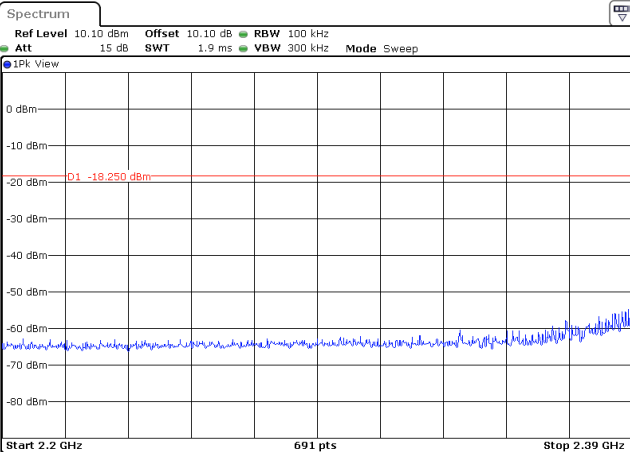


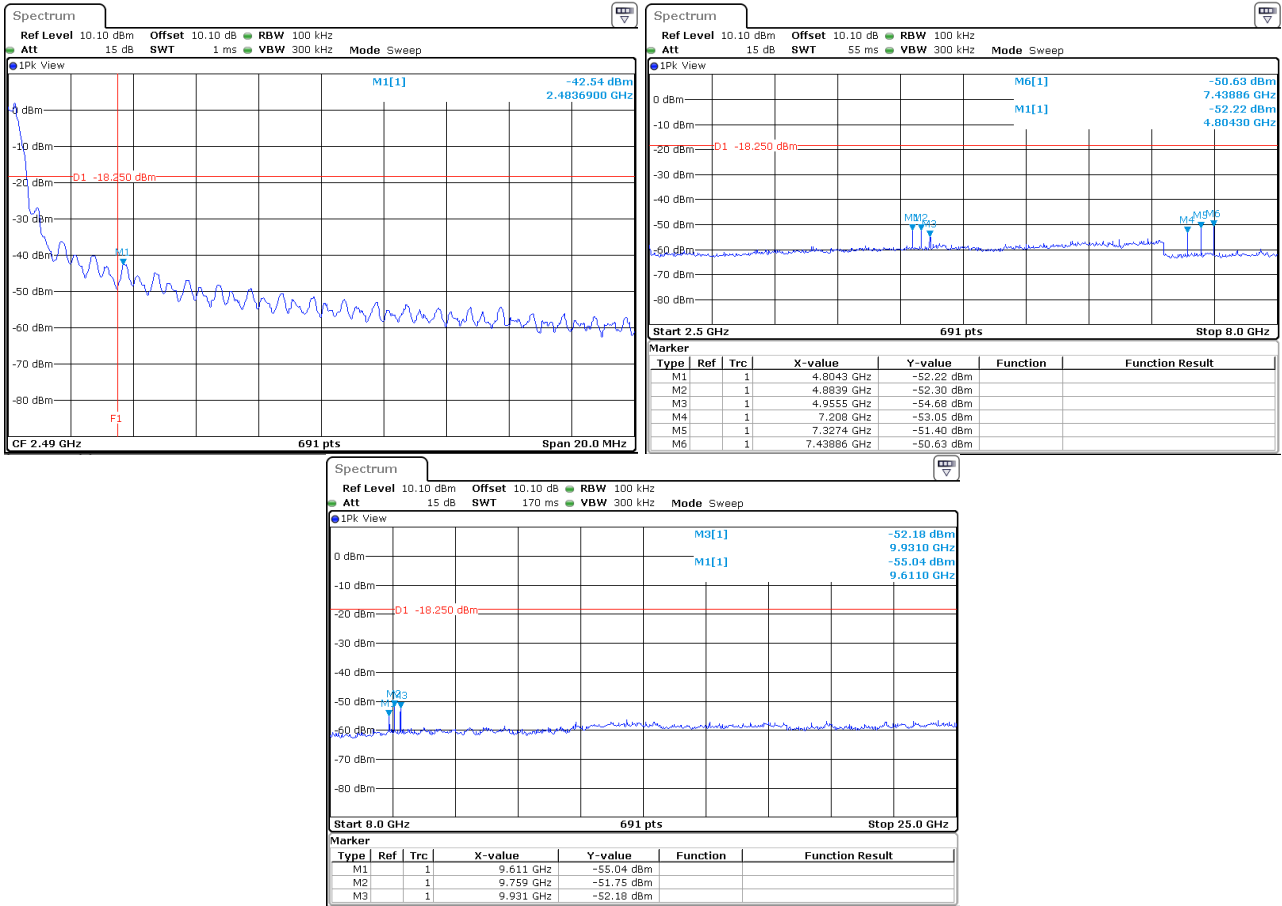
Worst case in Cmin and display line at -18.25dBm



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		91.1 MHz	-53.91 dBm		
M2	1		100.89 MHz	-53.76 dBm		
M3	1		107.9 MHz	-56.13 dBm		
M4	1		937.53 MHz	-57.21 dBm		

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.0 GHz	-67.39 dBm		
M2	1		1.0 GHz	-67.39 dBm		
M3	1		1.0 GHz	-67.39 dBm		
M4	1		1.0 GHz	-67.39 dBm		





8.7. CONCLUSION

Band Edge Measurement performed on the sample of the product **TS1E2**, SN: **6004**, in configuration and description presented in this test report, show levels below the FCC CFR 47 Part 15 and RSS-247 Issue 1.0 limits.



9. OCCUPIED BANDWIDTH

9.1. TEST CONDITIONS

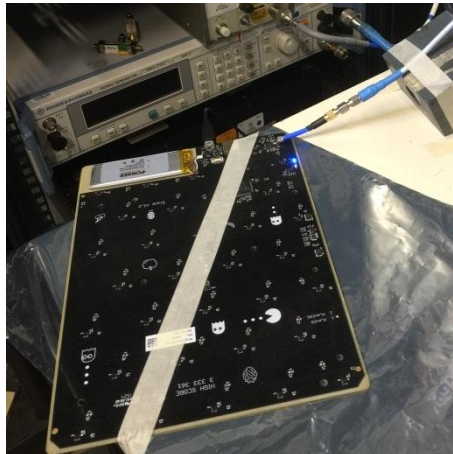
Date of test	:August 31 st , 2015
Test performed by	:G.Deschamps
Atmospheric pressure (hPa)	:992
Relative humidity (%)	:32
Ambient temperature (°C)	:23

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: Attenuator+cable 10.1dB



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:

- RBW shall be in the range of 1% to 5% of the anticipated occupied bandwidth
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW
- SPAN = Capture all products of the modulation process
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- OBW 99% function of spectrum analyzer used



9.3. TEST EQUIPMENT LIST

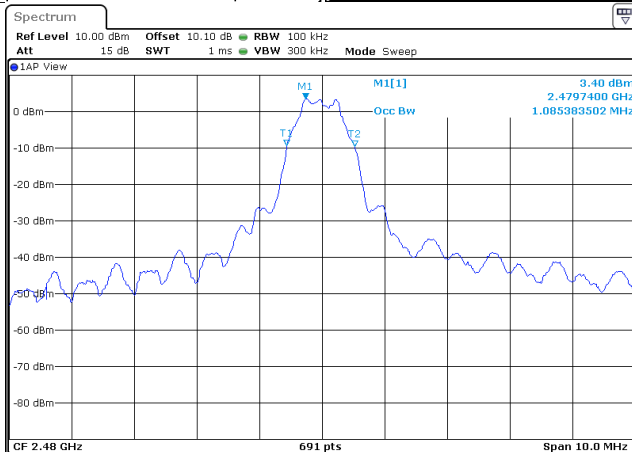
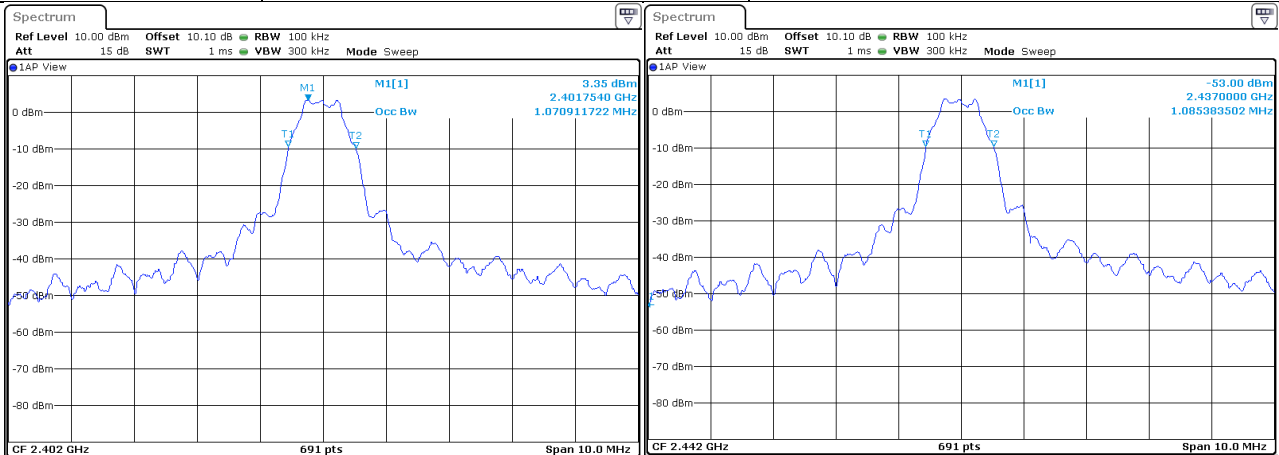
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Attenuator 10dB	JFW	-	A7122166	10/14	10/15
Cable 2m	-	-	A5329703	11/14	11/15
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	01/15	01/16
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	04/15	04/16
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206011	04/14	04/15

9.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None Divergence:

9.5. TEST SEQUENCE AND RESULTS

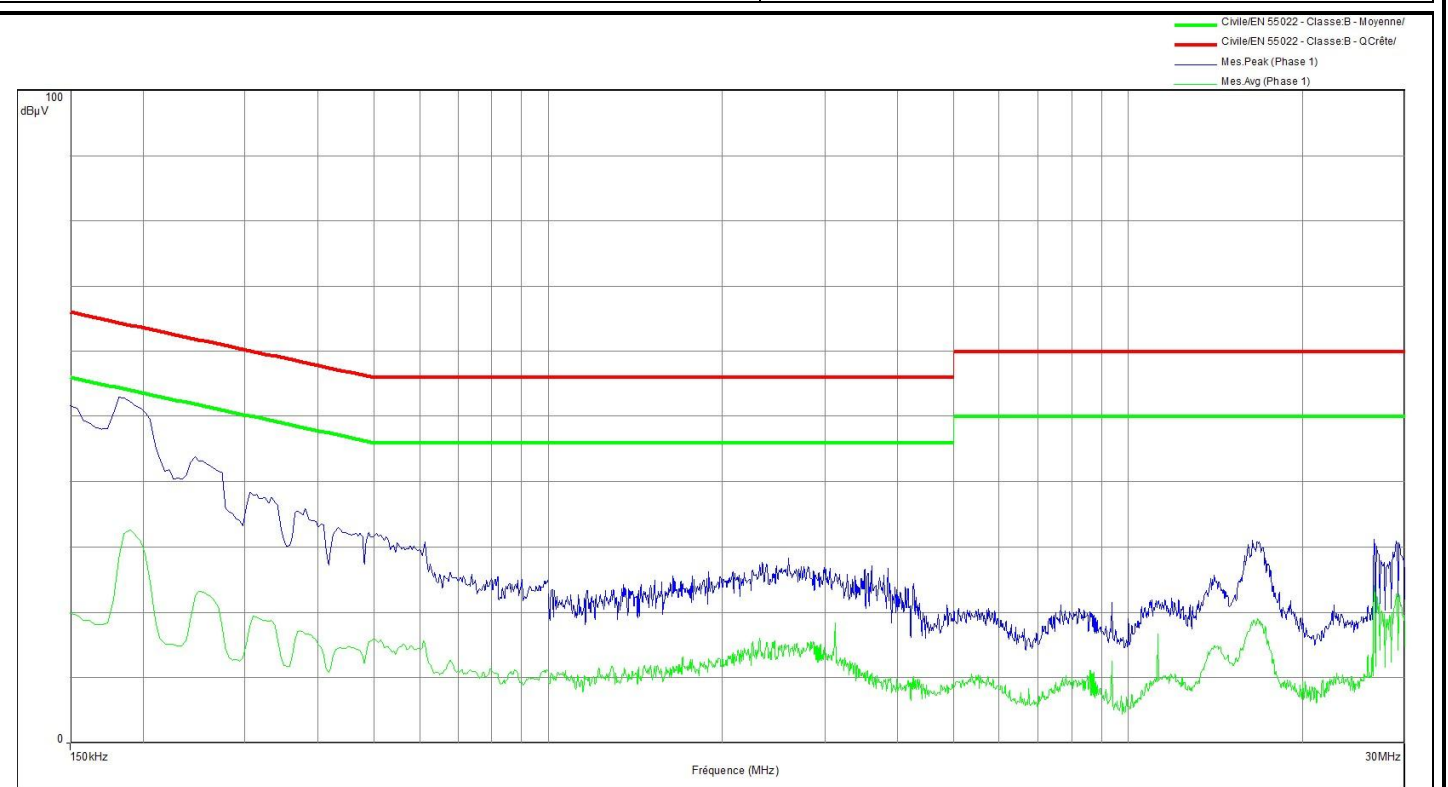
Channel	Channel Frequency (MHz)	99% Occupied Bandwidth (MHz)
Cmin	2402	1.070
Cmid	2442	1.085
Cmax	2480	1.085





10. ANNEX 1 (GRAPHS)

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



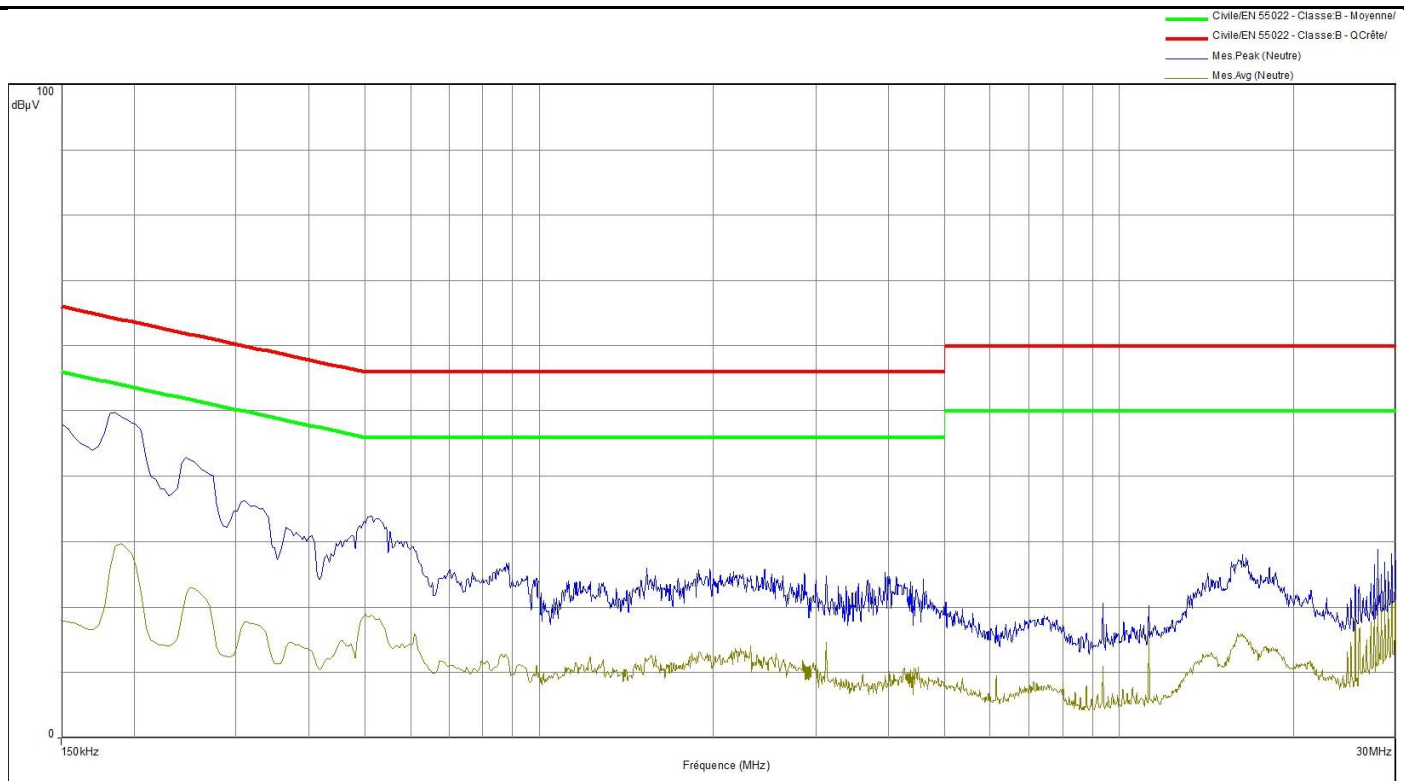
Spurious emissions

Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.182	52.09	48.7	64.39	-15.7	27.43	54.39	-26.96
0.19	51.55	48.95	64.04	-15.09	31.5	54.04	-22.54



CONDUCTED EMISSIONS

Graph name:	Emc#2	Test configuration:	
Limit:	EN 55022	110V - N	
Class:	B		
Frequency range: [150kHz - 30MHz]			
Voltage / Frequency:	110VAC / 60Hz	RBW :	10kHz
Line:	Neutral	VBW :	30kHz



Spurious emissions

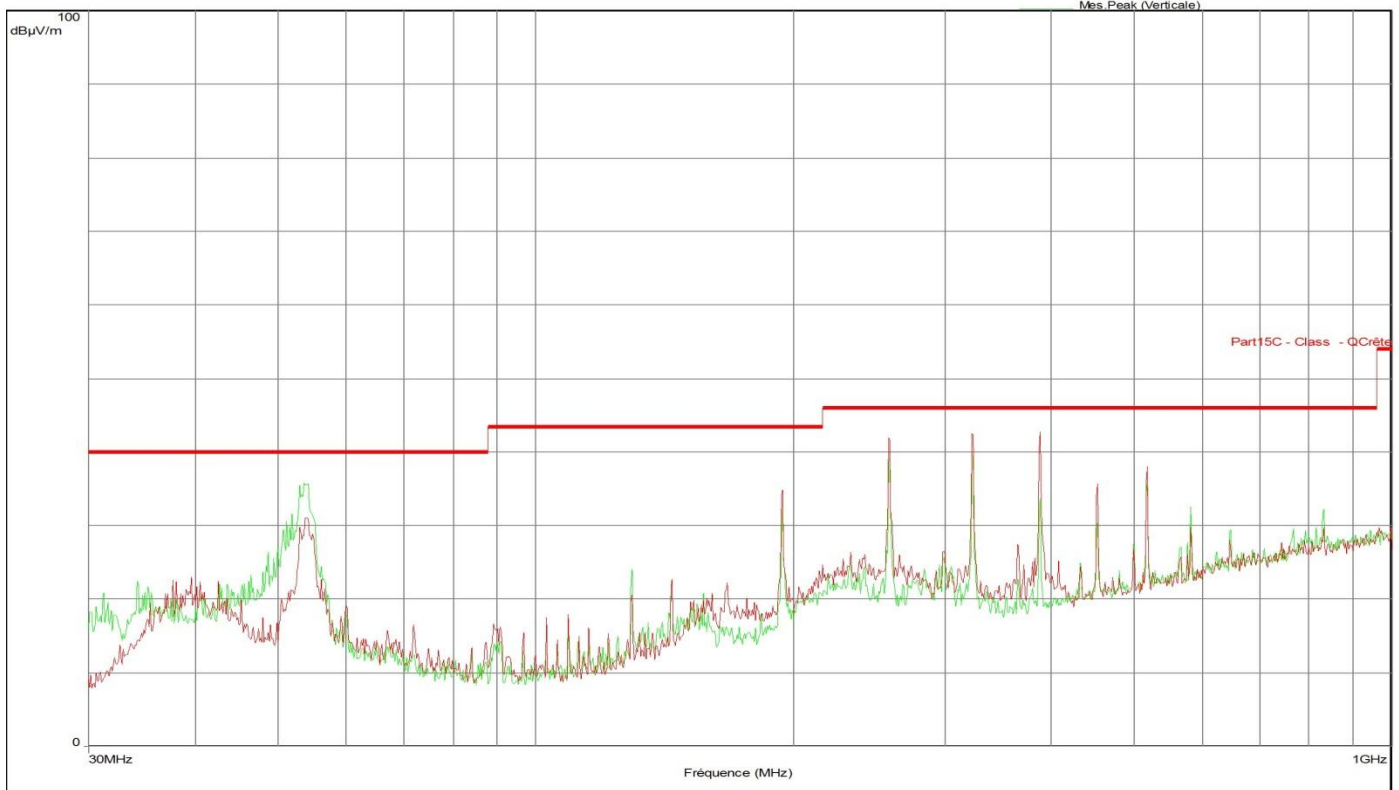
Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)
0.186	49.82	47.1	64.21	-17.12	29.05	54.21	-25.16
0.19	49.53	46.78	64.04	-17.25	29.63	54.04	-24.41



RADIATED EMISSIONS

Graph name:	Emr#1	Test configuration:
Limit:	FCC CFR47 Part15C	(H+V) - USB <1GHz – Axis X
Class:		
Frequency range: [30MHz - 1GHz]		
Antenna polarization:	Horizontal & Vertical	RBW : 100kHz
Azimuth:	0° - 360°	VBW : 300kHz

— FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
— FCC/FCC CFR47 Part15C - Classe: - QCrête/3.0m/
— FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
— Mes. Peak (Horizontale)
— Mes. Peak (Verticale)



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	LimQP (dBµV/m)	Peak-LimQP (dB)	Polarization
194.016	34.86	43.5	-8.64	Horizontal (*)
258.48	41.98	46	-4.02	Horizontal (*)
323.48	42.5	46	-3.5	Horizontal (*)
388.36	42.77	46	-3.23	Horizontal (*)
517.68	38.03	46	-7.97	Horizontal (*)
53.562	35.83	40	-4.17	Vertical
194.203	32.61	43.5	-10.89	Vertical (*)
258.76	39.12	46	-6.88	Vertical (*)
322.8	38.91	46	-7.09	Vertical (*)
323.44	39.68	46	-6.32	Vertical (*)

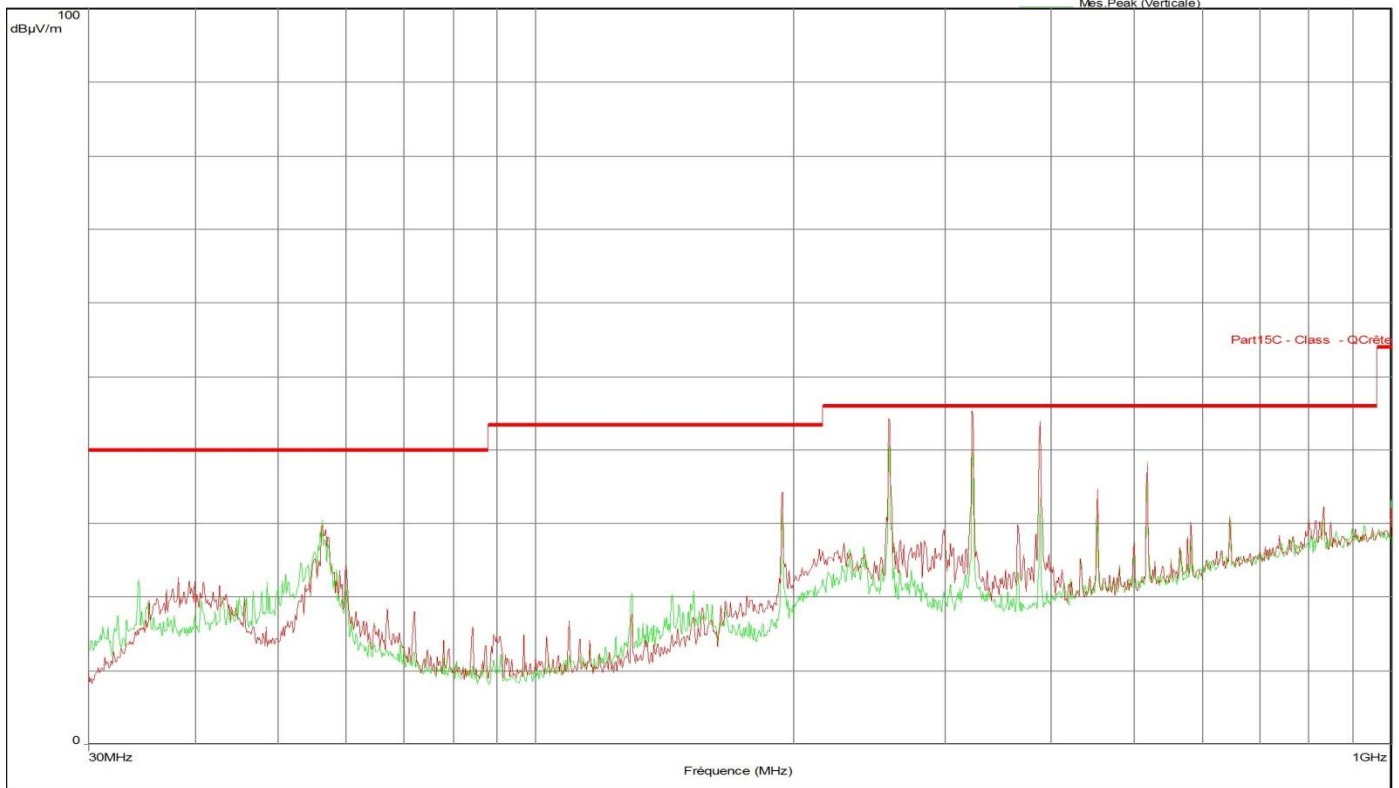
(*) Due to laptop (auxiliary)



RADIATED EMISSIONS

Graph name:	Emr#2	Test configuration:
Limit:	FCC CFR47 Part15C	(H+V) - USB <1GHz – Axis Z
Class:		
Frequency range: [30MHz - 1GHz]		
Antenna polarization:	Horizontal & Vertical	RBW : 100kHz
Azimuth:	0° - 360°	VBW : 300kHz

— FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
— FCC/FCC CFR47 Part15C - Classe: - QCrête/3.0m/
— FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
— Mes. Peak (Horizontale)
— Mes. Peak (Verticale)



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	LimQP (dBµV/m)	Peak-LimQP (dB)	Polarization
194.152	34.3	43.5	-9.2	Horizontal (*)
258.28	44.31	46	-1.69	Horizontal (*)
323.28	45.28	46	-0.72	Horizontal (*)
388.16	43.95	46	-2.05	Horizontal (*)
517.84	37.9	46	-8.1	Horizontal (*)
56.231	30.47	40	-9.53	Vertical
194.118	31.18	43.5	-12.32	Vertical (*)
258.88	40.94	46	-5.06	Vertical (*)
323.28	39.77	46	-6.23	Vertical (*)
517.68	38.33	46	-7.67	Vertical (*)

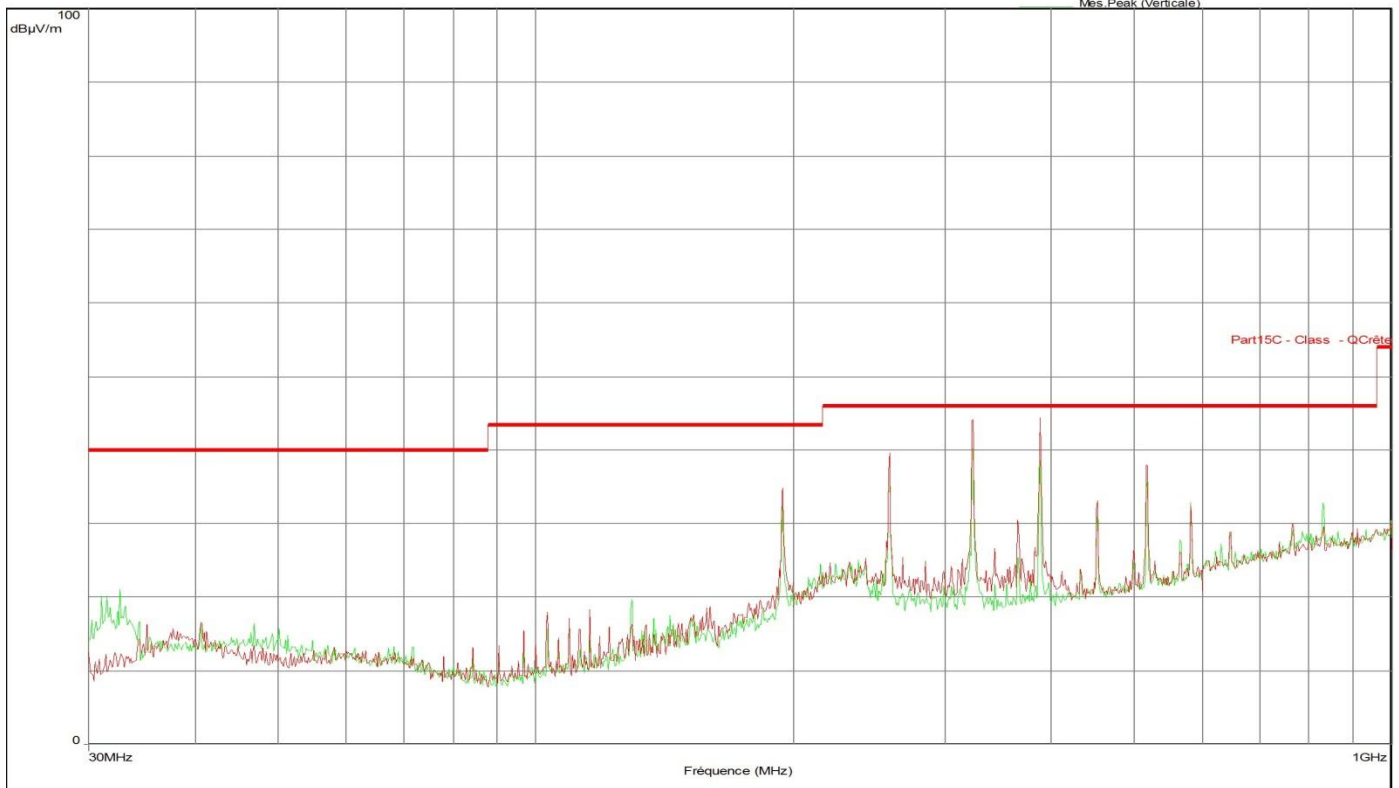
(*) Due to laptop (auxiliary)



RADIATED EMISSIONS

Graph name:	Emr#3	Test configuration:
Limit:	FCC CFR47 Part15C	(H+V) - BT <1GHz – Axis XY
Class:		
Frequency range: [30MHz - 1GHz]		
Antenna polarization:	Horizontal & Vertical	RBW : 100kHz
Azimuth:	0° - 360°	VBW : 300kHz

— FCC/FCC CFR47 Part15C - Classe - Moyenne/3.0m/
— FCC/FCC CFR47 Part15C - Classe - QCrête/3.0m/
— FCC/FCC CFR47 Part15C - Classe - Crête/3.0m/
— Mes.Peak (Horizontale)
— Mes.Peak (Verticale)



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	LimQP (dBµV/m)	Peak-LimQP (dB)	Polarization
194.152	34.88	43.5	-8.62	Horizontal (*)
258.96	39.6	46	-6.4	Horizontal (*)
323.64	44.14	46	-1.86	Horizontal (*)
388.6	44.44	46	-1.56	Horizontal (*)
517.24	37.89	46	-8.11	Horizontal (*)
194.101	33.07	43.5	-10.43	Vertical (*)
258.68	38.51	46	-7.49	Vertical (*)
323.48	40.33	46	-5.67	Vertical (*)
388.2	38.57	46	-7.43	Vertical (*)

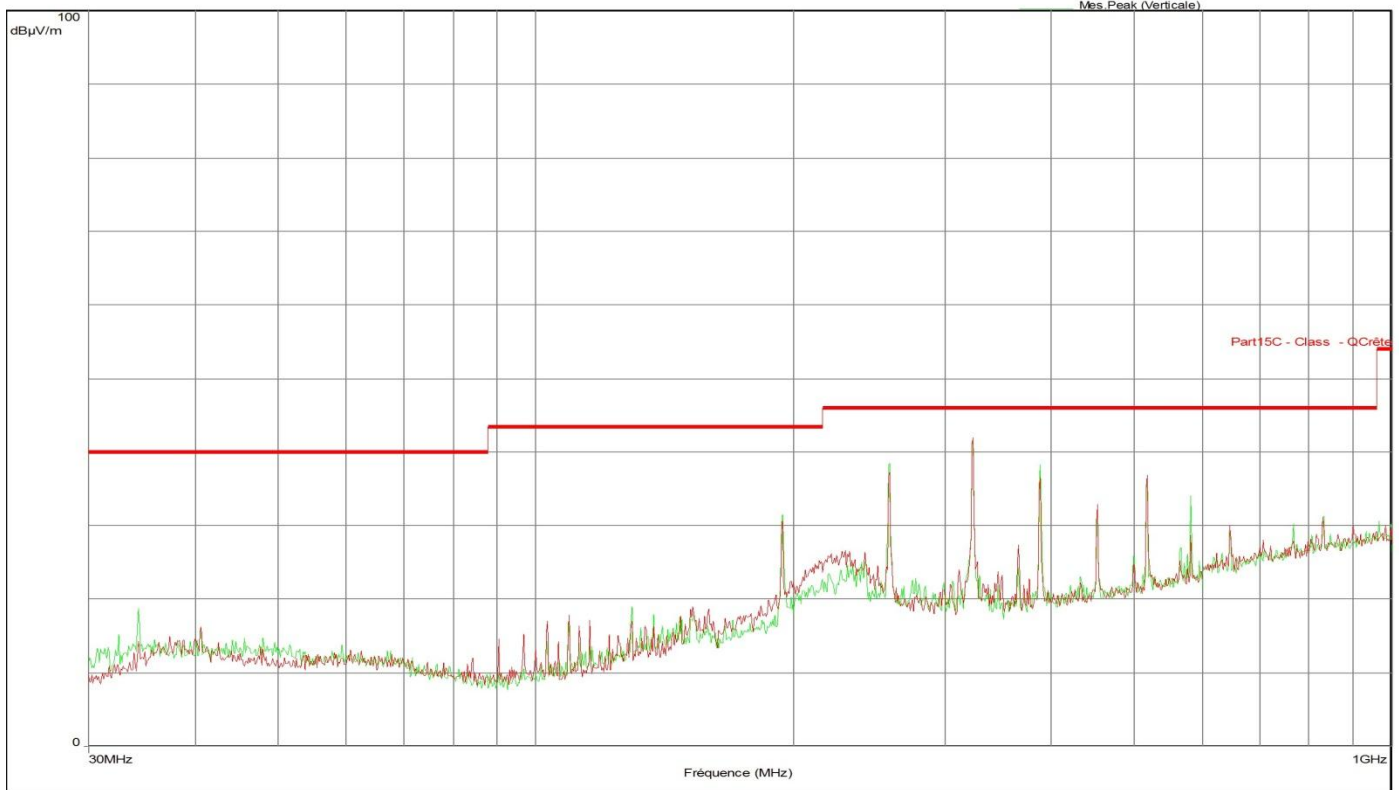
(*) Due to laptop (auxiliary)



RADIATED EMISSIONS

Graph name:	Emr#4	Test configuration:
Limit:	FCC CFR47 Part15C	(H+V) - BT <1GHz – Axis Z
Class:		
Frequency range: [30MHz - 1GHz]		
Antenna polarization:	Horizontal & Vertical	RBW : 100kHz
Azimuth:	0° - 360°	VBW : 300kHz

— FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
— FCC/FCC CFR47 Part15C - Classe: - QCrête/3.0m/
— FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
— Mes. Peak (Horizontale)
— Mes. Peak (Verticale)



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	LimQP (dBµV/m)	Peak-LimQP (dB)	Polarization
194.067	30.68	43.5	-12.82	Horizontal (*)
259.04	37.34	46	-8.66	Horizontal (*)
323.72	41.96	46	-4.04	Horizontal (*)
194.05	31.5	43.5	-12	Vertical (*)
258.76	38.48	46	-7.52	Vertical (*)
323.48	41.33	46	-4.67	Vertical (*)
388.16	38.3	46	-7.7	Vertical (*)

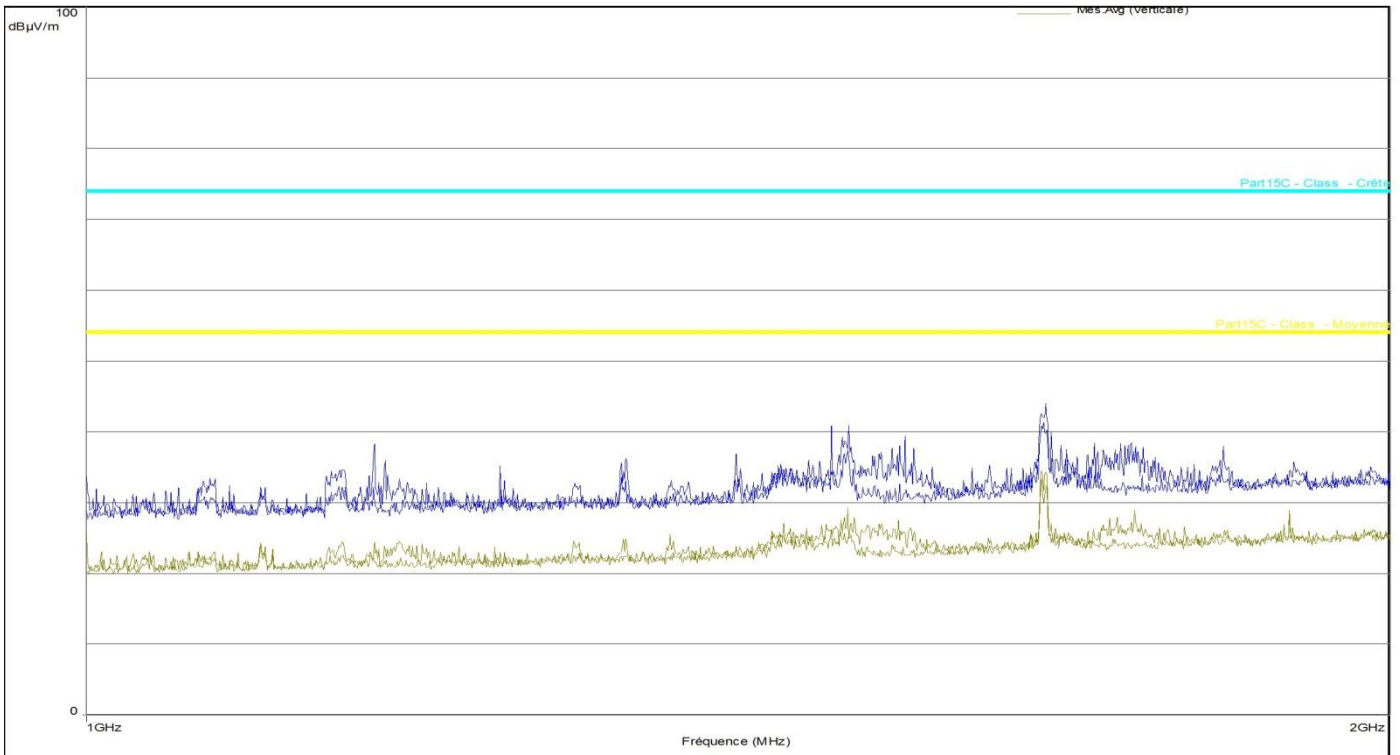
(*) Due to laptop (auxiliary)



RADIATED EMISSIONS

Graph name:	Emr#5	Test configuration:
Limit:	FCC CFR47 Part15C	(H+V) - USB >1GHz – Axis XY
Class:		
Frequency range: [1GHz - 2GHz]		
Antenna polarization:	Horizontal & Vertical	RBW : 1MHz
Azimuth:	0° - 360°	VBW : 3MHz

- FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
- Mes.Peak (Horizontale)
- Mes.Peak (Verticale)
- Mes.Avg (Horizontale)
- Mes.Avg (Verticale)



Spurious emissions

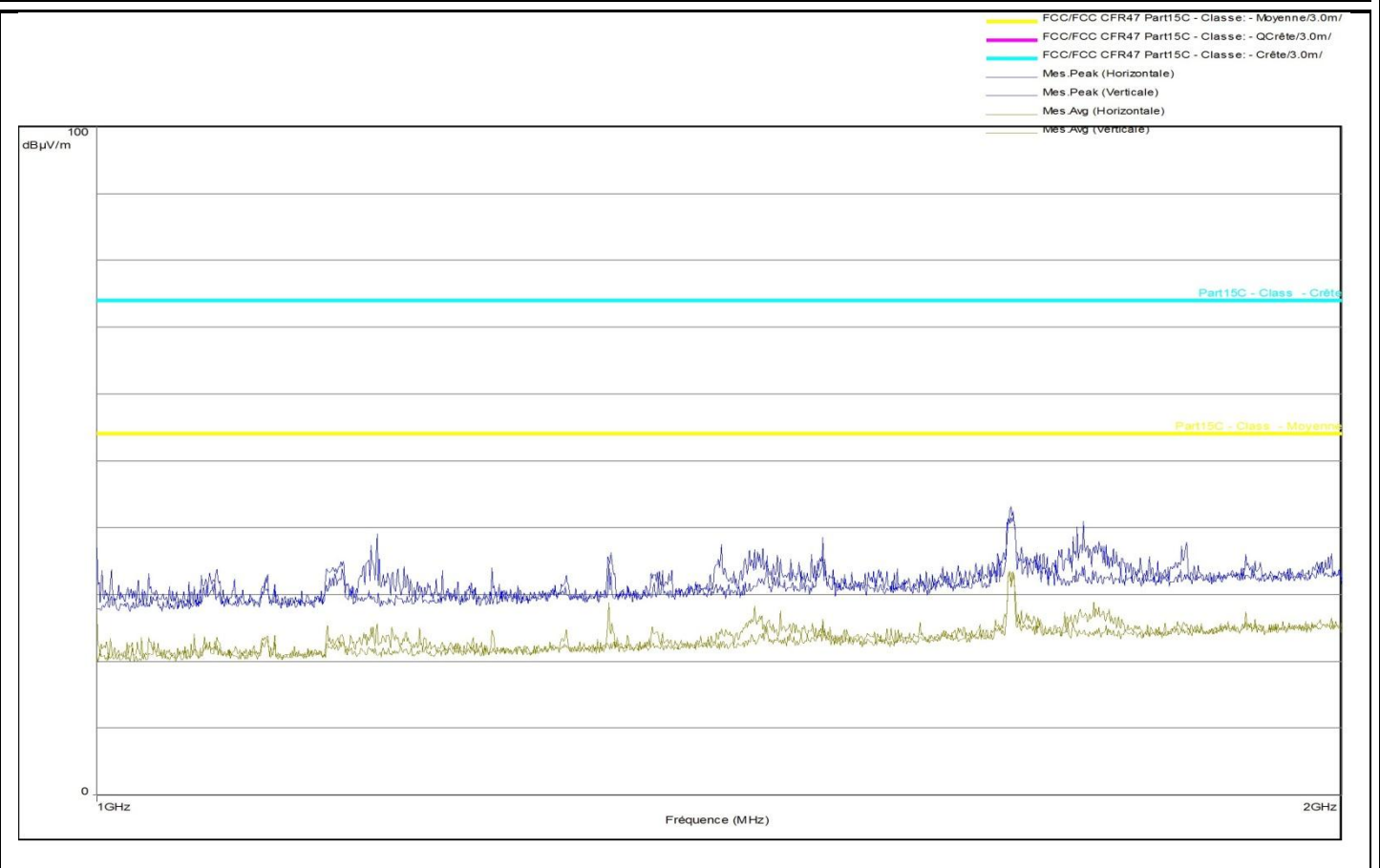
Frequency (MHz)	Peak (dBµV/m)	LimM (dBµV/m)	Peak-LimM (dB)	Polarization
1663.1	41.42	54	-12.58	Horizontal (*)
1665.6	44.04	54	-9.96	Vertical (*)

(*) Due to laptop (auxiliary)



RADIATED EMISSIONS

Graph name:	Emr#6	Test configuration:
Limit:	FCC CFR47 Part15C	(H+V) - USB >1GHz – Axis Z
Class:		
Frequency range: [1GHz - 2GHz]		
Antenna polarization:	Horizontal & Vertical	RBW : 1MHz
Azimuth:	0° - 360°	VBW : 3MHz



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	LimM (dBµV/m)	Peak-LimM (dB)	Polarization
1663.7	43.23	54	-10.77	Horizontal (*)
1665	41.56	54	-12.44	Vertical (*)

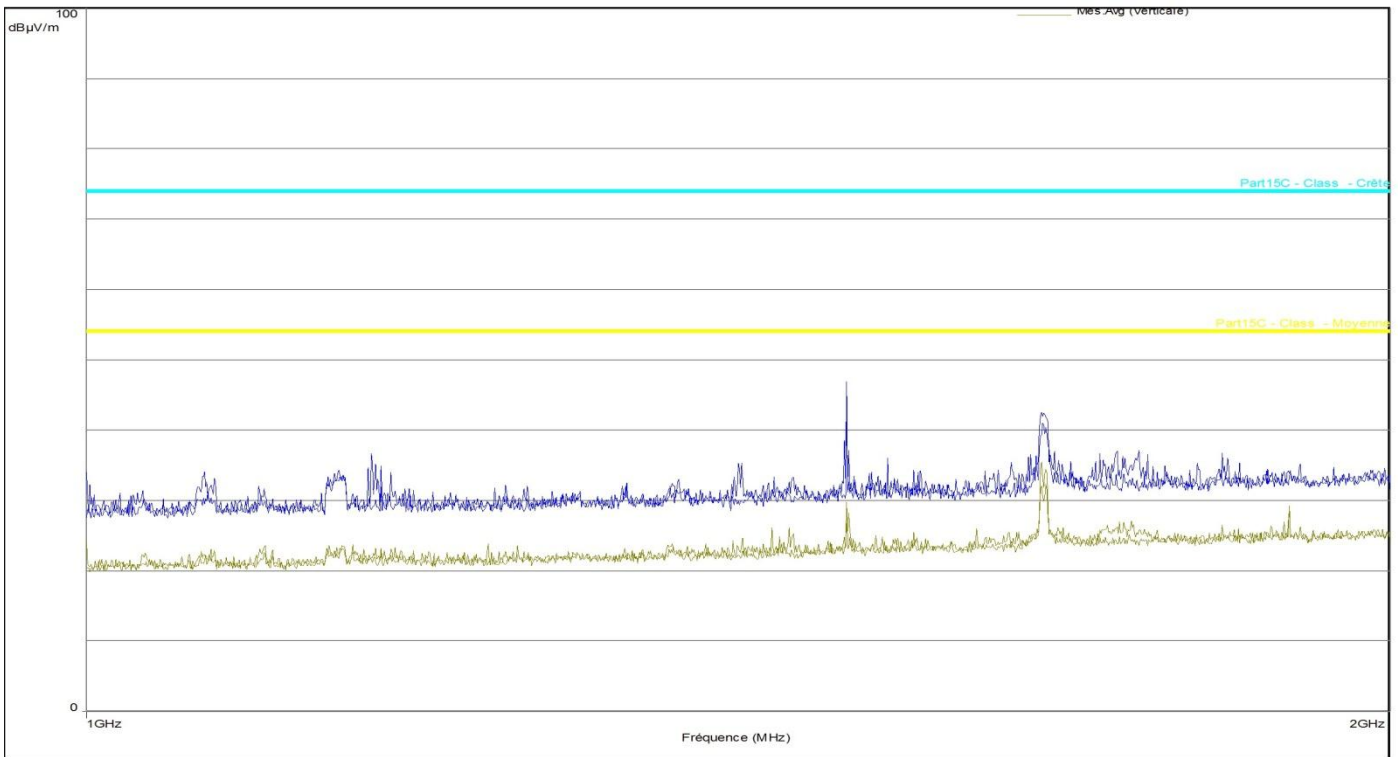
(*) Due to laptop (auxiliary)



RADIATED EMISSIONS

Graph name:	Emr#7	Test configuration:
Limit:	FCC CFR47 Part15C	(H+V) - BT >1GHz – Axis XY
Class:		
Frequency range: [1GHz - 2GHz]		
Antenna polarization:	Horizontal & Vertical	RBW : 1MHz
Azimuth:	0° - 360°	VBW : 3MHz

- FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - QCrête/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
- Mes.Peak (Horizontale)
- Mes.Peak (Verticale)
- Mes.Avg (Horizontale)
- Mes.Avg (Verticale)



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	LimM (dBµV/m)	Peak-LimM (dB)	Polarization
1662.6	41.01	54	-12.99	Horizontal (*)
1661.2	42.57	54	-11.43	Vertical (*)

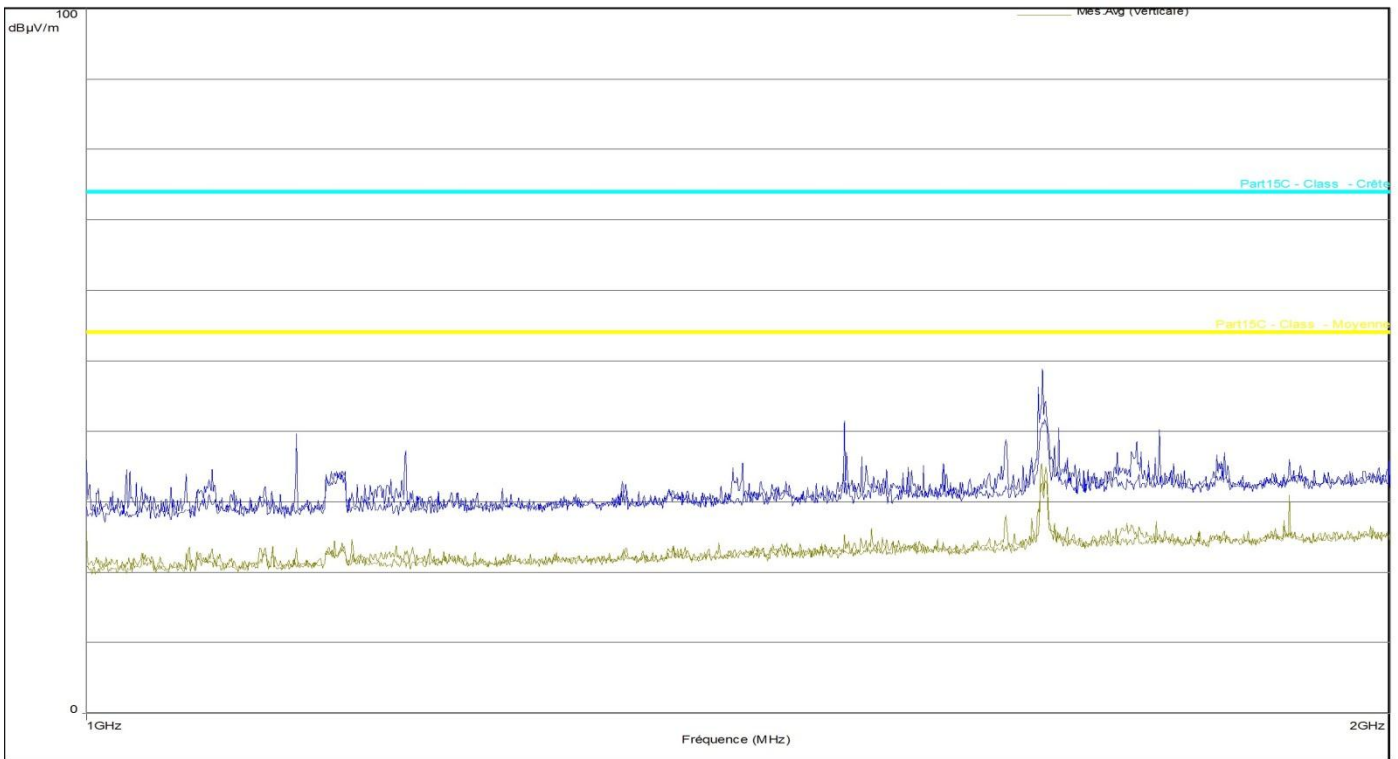
(*) Due to laptop (auxiliary)



RADIATED EMISSIONS

Graph name:	Emr#8	Test configuration:
Limit:	FCC CFR47 Part15C	(H+V) - BT >1GHz – Axis Z
Class:		
Frequency range: [1GHz - 2GHz]		
Antenna polarization:	Horizontal & Vertical	RBW : 1MHz
Azimuth:	0° - 360°	VBW : 3MHz

- FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - QCrête/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
- Mes.Peak (Horizontale)
- Mes.Peak (Verticale)
- Mes.Avg (Horizontale)
- Mes.Avg (Verticale)



Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	LimM (dBµV/m)	Peak-LimM (dB)	Polarization
1664.9	41.79	54	-12.21	Horizontal (*)
1662.3	48.8	54	-5.2	Vertical (*)

(*) Due to laptop (auxiliary)



11. 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 <i>Measurement of conducted disturbances in voltage on the power port</i>	3.57 dB	3.6 dB
Mesure des perturbations conduites en tension sur le réseau de télécommunication <i>Measurement of conducted disturbances in voltage on the telecommunication port.</i>	3.28 dB	A l'étude / Under consid.
Mesure des perturbations discontinues conduites en tension <i>Measurement of discontinuous conducted disturbances in voltage</i>	3.47 dB	3.6 dB
Mesure des perturbations conduites en courant <i>Measurement of conducted disturbances in current</i>	2.90 dB	A l'étude / Under consid.
Mesure du champ électrique rayonné sur le site en espace libre de Moirans <i>Measurement of radiated electric field on the Moirans open area test site</i>	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.