



LCIE

WIFI 2,4GHz Template: Release March 25th, 2021

TEST REPORT

N°: 173833-769606-B(FILE#2976371)

Version : 02

Subject

Radio spectrum matters
tests according to standards:
47 CFR Part 15.247 & RSS-247 Issue 2 & RSS-Gen Issue 5

Issued to

IN&MOTION
10 rue de la Lyre – Cran-Gevrier
74960 – ANNECY
FRANCE

Apparatus under test

- ↳ Product
- ↳ Trade mark
- ↳ Manufacturer
- ↳ Model under test
- ↳ Serial number
- ↳ FCC ID
- ↳ IC

Airbag analysis, detection, triggering unit
In&motion
In&motion
In&box V6
63000003 & 63000005
2AS9Y-INEBOX630
25034-INEBOX630

Conclusion

See Test Program chapter

Test date

August 26, 2021 to September 16, 2021

Test location

Moirans

FCC Test site

FR0008 - 197516

ISED Test site

FR0008 - 6500A

Sample receipt date

August 11, 2021

Composition of document

77 pages

Document issued on

November 3, 2021

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PUBLICATION HISTORY

Version	Date	Author	Modification
01	October 19th, 2021	Majid MOURZAGH	Creation of the document
02	November 3, 2021	Majid MOURZAGH	Correction test site FCC/ISED on page 1 Correction name and mailing adress on page 1

Each new edition of this test report replaces and cancels the previous edition. The control of the old editions of report is under responsibility of client.



SUMMARY

1.	TEST PROGRAM	4
2.	EQUIPMENT UNDER TEST: CONFIGURATION (DECLARED BY PROVIDER)	5
3.	OCCUPIED BANDWIDTH.....	12
4.	6DB EMISSION BANDWIDTH	17
5.	MAXIMUM CONDUCTED OUTPUT POWER	22
6.	POWER SPECTRAL DENSITY	28
7.	UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS AT THE BAND EDGE	34
8.	UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS.....	39
9.	AC POWER LINE CONDUCTED EMISSIONS.....	45
10.	UNWANTED EMISSIONS IN RESTRICTED FREQUENCY BANDS	58
11.	UNCERTAINTIES CHART	77

1. TEST PROGRAM

References

- 47 CFR Part 15.247
- RSS 247 Issue 2
- RSS Gen Issue 5
- KDB 558074 D01 DTS Meas Guidance v05r02
- KDB 662911 D01 Multiple Transmitter Output v02r01
- ANSI C63.10-2013

Radio requirement:

Clause (47CFR Part 15.247 & RSS-247 Issue 2 & RSS-Gen Issue 5) Test Description	Test result - Comments			
Occupied Bandwidth	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
6dB Bandwidth	☒ PASS	☐ FAIL	☐ NA()	☐ NP(1)
Duty Cycle	☐ PASS	☐ FAIL	☒ NA	☐ NP(1)
Maximum Conducted Output Power	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
Power Spectral Density	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
Conducted Spurious Emission at the Band Edge	☒ PASS	☐ FAIL	☐ NA()	☐ NP(1)
Unwanted Emissions into Non-Restricted Frequency Bands	☒ PASS	☐ FAIL	☐ NA()	☐ NP(1)
AC Power Line Conducted Emission	☐ PASS	☐ FAIL	☐ NA(2)	☒ NP(1)
Unwanted Emissions into Restricted Frequency Bands	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
Receiver Radiated emissions	☐ PASS	☐ FAIL	☒ NA	☐ NP(1)
This table is a summary of test report, see conclusion of each clause of this test report for detail.				

(1): Limited program

(2): EUT not directly or indirectly connected to the AC Power Public Network

PASS: EUT complies with standard's requirement

FAIL: EUT does not comply with standard's requirement

NA: Not Applicable

NP: Test Not Performed

2. EQUIPMENT UNDER TEST: CONFIGURATION (DECLARED BY PROVIDER)

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):

In&motion In&box V6

Serial Number: 63000003



Equipment Under Test

Power supply:

During all the tests, EUT is supplied by V_{nom} : 3.7VDC

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

Name	Type	Rating	Reference / Sn	Comments
Supply1	☐ AC ☐ DC ☒ Battery	LiPo 3.7V 2600mAh	Akku Tronics 854166	


Voltage table used (for Power Line Conducted Emissions):

Type	Measurement performed:	
☒ AC	☒ 120VAC/60Hz	☒ 240VAC/50Hz
☒ battery	☒ +3.7VDC	☐ -....VDC
☒ USB (used to reload battery)	☒ +5VDCVDC	☐ -....VDC

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
Cable USB	USBC	0.3	☐	☒	☐	Used to reload battery

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Laptop LENOVO	L460		Used to let RF configuration setting
Switching Adapter INPUT:100-240 50/60Hz 0.3Amax OUTPUT:5V 2A	SOY-0500200EU	-	Used during test:"AC Power Line Conducted Emission"

Equipment information:

Equipment Information:

Type:	WIFI			
Frequency band:	2400MHz-2483.5MHz			
Standard:	☒ 802.11b	☒ 802.11g	☒ 802.11n HT20	☐ 802.11n HT40
Spectrum Modulation:	☒ DSSS		☒ OFDM	
Number of Channel:	11			
Spacing channel:	5MHz			
Channel bandwidth:	☒ 20MHz		☐ 40MHz	
Antenna Type:	☐ Integral	☐ External	☐ Dedicated	
Antenna connector:	☐ Yes	☐ No	☒ Temporary for test	
Transmit chains:	☒ 1	☐ 2	☐ 3	☐ 4
Beam forming gain:	☒ Yes: 2.74dB		☐ No	
Receiver chains	☒ 1	☐ 2	☐ 3	☐ 4
Antenna requirements §15.203	Conducted Method (welded connection, according to manufacturer's requirements)			
Type of equipment:	☒ Stand-alone	☐ Plug-in	☐ Combined	
Ad-Hoc mode:	☐ Yes		☐ No	
Duty cycle:	☐ Continuous duty	☐ Intermittent duty	☒ 100% duty	
Operating temperature range:	Tmin:	☒ -20°C	☐ 0°C	☐ X°C
	Tnom:	20°C		
	Tmax:	☐ 35°C	☒ 55°C	☐ X°C
Type of power source:	☐ AC power supply	☐ DC power supply	☒ Battery	
Operating voltage range:	Vnom:	☐ 120V/60Hz	☒ 3.7 Vdc	

Antenna Characteristic			
Antenna assembly	Gain (dBi)	Frequency Band (MHz)	Impedance(Ω)
1	2.74	2400 -2483.5	50

CHANNEL PLAN	
802.11b / 802.11g / 802.11n HT20	
Channel	Frequency (MHz)
Cmin: 1	2412
2	2417
3	2422
4	2427
5	2432
Cmid: 6	2437
7	2442
8	2447
9	2452
10	2457
Cmax: 11	2462

CHANNEL PLAN	
802.11n HT40	
Channel	Frequency (MHz)
Cmin: 3	2422
4	2427
5	2432
Cmid: 6	2437
7	2442
8	2447
Cmax: 9	2452

DATA RATE		
802.11b		
Data Rate (Mbps)	Modulation Type	Modulation Worst Case
1	DBPSK	☒
2	DQPSK	☐
5.5	DQPSK	☐
11	CCK	☐

DATA RATE		
802.11g		
Data Rate (Mbps)	Modulation Type	Modulation Worst Case
6	BPSK	☒
9	BPSK	☐
12	QPSK	☐
18	QPSK	☐
24	16-QAM	☐
36	16-QAM	☐
48	64-QAM	☐
54	64-QAM	☐



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DATA RATE									
802.11n HT20									
Available for EUT	MCS Index	Spatial streams	Modulation				Data Rate (Mbps)		Worst Case Modulation
							(GI = 800ns)	(GI = 400ns)	
☑	0	1	BPSK				6.5	7.2	☑
	1	1	QPSK				13	14.4	☐
	2	1	QPSK				19.5	21.7	☐
	3	1	16-QAM				26	28.9	☐
	4	1	16-QAM				39	43.3	☐
	5	1	64-QAM				52	57.8	☐
	6	1	64-QAM				58.5	65	☐
	7	1	64-QAM				65	72.2	☐
☐	32	1	BPSK	-	-	-	-	-	☐
	8	2	BPSK				13	14.4	☐
	9	2	QPSK				26	28.9	☐
	10	2	QPSK				39	43.3	☐
	11	2	16-QAM				52	57.8	☐
	12	2	16-QAM				78	86.7	☐
	13	2	64-QAM				104	115.6	☐
	14	2	64-QAM				117	130.3	☐
	15	2	64-QAM				130	144.4	☐
	33	2	16-QAM	QPSK	-	-	39	43.3	☐
	34	2	64-QAM	QPSK	-	-	52	57.8	☐
	35	2	64-QAM	16-QAM	-	-	65	72.2	☐
	36	2	16-QAM	QPSK	-	-	58.5	65	☐
	37	2	64-QAM	QPSK	-	-	78	86.7	☐
	38	2	64-QAM	16-QAM	-	-	97.5	108.3	☐
☐	16	3	BPSK				19.5	21.7	☐
	17	3	QPSK				39	43.3	☐
	18	3	QPSK				58.5	65	☐
	19	3	16-QAM				78	86.7	☐
	20	3	16-QAM				117	130	☐
	21	3	64-QAM				156	173.3	☐
	22	3	64-QAM				175.5	195	☐
	23	3	64-QAM				195	216.7	☐
	39	3	16-QAM	QPSK	QPSK	-	52	57.8	☐
	40	3	16-QAM	16-QAM	QPSK	-	65	72.2	☐
	41	3	64-QAM	QPSK	QPSK	-	65	72.2	☐
	42	3	64-QAM	16-QAM	QPSK	-	78	86.7	☐
	43	3	64-QAM	16-QAM	16-QAM	-	91	101.1	☐
	44	3	64-QAM	64-QAM	QPSK	-	91	101.1	☐
	45	3	64-QAM	64-QAM	16-QAM	-	104	115.6	☐
	46	3	16-QAM	QPSK	QPSK	-	78	86.7	☐
	47	3	16-QAM	16-QAM	QPSK	-	97.5	108.3	☐
	48	3	64-QAM	QPSK	QPSK	-	97.5	108.3	☐
	49	3	64-QAM	16-QAM	QPSK	-	117	130	☐
	50	3	64-QAM	16-QAM	16-QAM	-	136.5	151.7	☐
	51	3	64-QAM	64-QAM	QPSK	-	136.5	151.7	☐
☐	52	3	64-QAM	64-QAM	16-QAM	-	156	173.3	☐
	24	4	BPSK				26	28.9	☐
	25	4	QPSK				52	57.8	☐
	26	4	QPSK				78	86.7	☐
	27	4	16-QAM				104	115.6	☐
	28	4	16-QAM				156	173.3	☐
	29	4	64-QAM				208	231.1	☐
	30	4	64-QAM				234	260	☐
	31	4	64-QAM				260	288.9	☐
	53	4	16-QAM	QPSK	QPSK	QPSK	65	72.2	☐
	54	4	16-QAM	16-QAM	QPSK	QPSK	78	86.7	☐
	55	4	16-QAM	16-QAM	16-QAM	QPSK	91	101.1	☐
	56	4	64-QAM	QPSK	QPSK	QPSK	78	86.7	☐
	57	4	64-QAM	16-QAM	QPSK	QPSK	91	101.1	☐
	58	4	64-QAM	16-QAM	16-QAM	QPSK	104	115.6	☐
	59	4	64-QAM	16-QAM	16-QAM	16-QAM	117	130	☐
	60	4	64-QAM	QPSK	QPSK	QPSK	104	115.6	☐
	61	4	64-QAM	16-QAM	16-QAM	QPSK	117	130	☐
	62	4	64-QAM	16-QAM	16-QAM	16-QAM	130	144.4	☐
	63	4	64-QAM	64-QAM	64-QAM	QPSK	130	144.4	☐
	64	4	64-QAM	64-QAM	64-QAM	16-QAM	143	158.9	☐
	65	4	16-QAM	QPSK	QPSK	QPSK	97.5	108.3	☐
	66	4	16-QAM	16-QAM	QPSK	QPSK	117	130	☐
	67	4	16-QAM	16-QAM	16-QAM	QPSK	136.5	151.7	☐
	68	4	64-QAM	QPSK	QPSK	QPSK	117	130	☐
	69	4	64-QAM	16-QAM	QPSK	QPSK	136.5	151.7	☐
	70	4	64-QAM	16-QAM	16-QAM	QPSK	156	173.3	☐
	71	4	64-QAM	16-QAM	16-QAM	16-QAM	175.5	195	☐
	72	4	64-QAM	64-QAM	QPSK	QPSK	156	173.3	☐
	73	4	64-QAM	64-QAM	16-QAM	QPSK	175.5	195	☐
	74	4	64-QAM	64-QAM	16-QAM	16-QAM	195	216.7	☐
	75	4	64-QAM	64-QAM	64-QAM	QPSK	195	216.7	☐
	76	4	64-QAM	64-QAM	64-QAM	16-QAM	214.5	238.3	☐

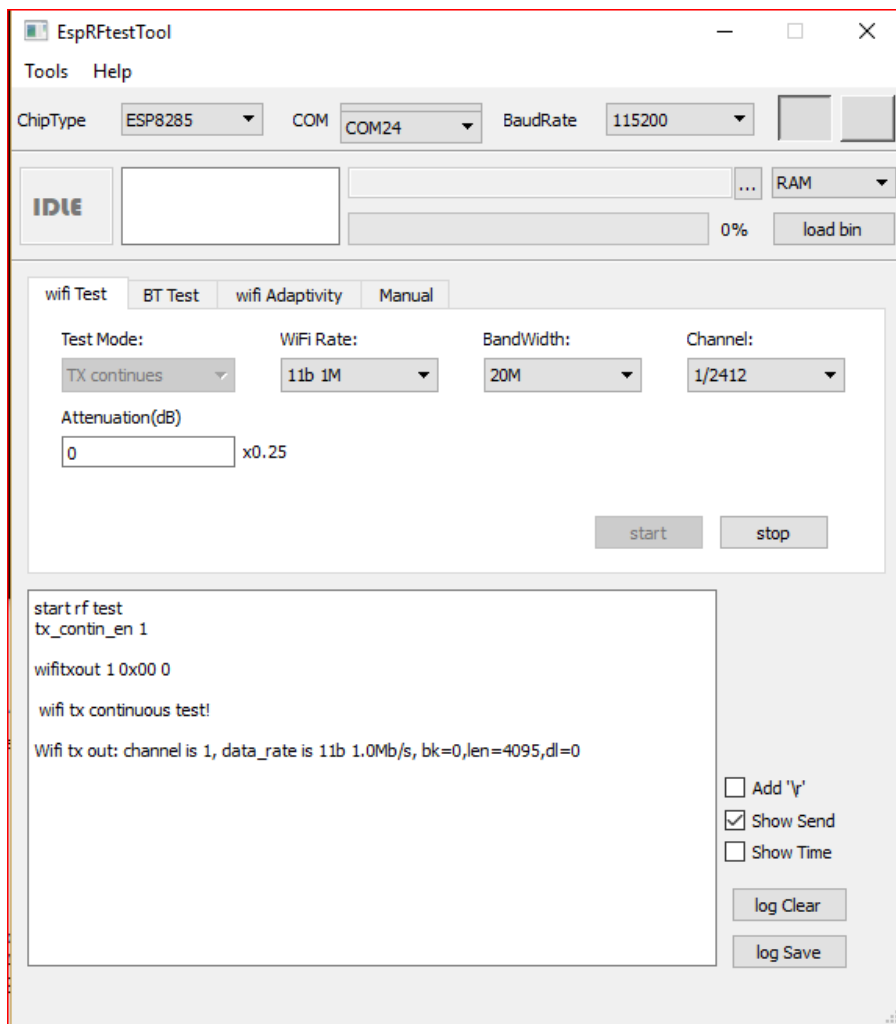
2.2. RUNNING MODE

Test mode	Description of test mode
Test mode 1	Permanent emission with modulation on a fixed channel in the data rate that produced the highest power
Test mode 2	Permanent reception

Test	Running mode	
Occupied Bandwidth	☒ Test mode 1 (1)	☐ Alternative test mode()
6dB Bandwidth	☒ Test mode 1 (1)	☐ Alternative test mode()
Duty Cycle	☒ Test mode 1 (1)	☐ Alternative test mode()
Maximum Conducted Output Power	☒ Test mode 1 (1)	☐ Alternative test mode()
Power Spectral Density	☒ Test mode 1 (1)	☐ Alternative test mode()
Conducted Spurious Emission at the Band Edge	☒ Test mode 1 (1)	☐ Alternative test mode()
Unwanted Emissions into Non-Restricted Frequency Bands	☒ Test mode 1 (1)	☐ Alternative test mode()
AC Power Line Conducted Emission	☒ Test mode 1 (1)	☐ Alternative test mode()
Unwanted Emissions into Restricted Frequency Bands	☒ Test mode 1 (1)	☐ Alternative test mode()
Receiver Radiated emissions	☐ Test mode 2 (1)	☐ Alternative test mode()

(1) Following commands with the specific test software "EspRFtestTool_V2.5" are used to set the product:

All tests are performed with “Attenuation(dB)” set at 0



Hardware information (declaration of provider)

Firmware GPS	V. :	SIM33ELA_B06V10
Firmware Atmel ATSAM4S8CA-ANR, Nordic Semi nRF52810 & Espressif ESP8285	V. :	Tag certif-rf-2021-08-v2, sha1 2c26c9efd36c14af3b06f3fe5d2084a9adce1d29

2.3. EQUIPMENT LABELLING

None

2.4. EQUIPMENT MODIFICATION

☐ None ☒ Modification: Only debug connectors soldered on PCB without any functional modification

3. OCCUPIED BANDWIDTH

3.1. TEST CONDITIONS

Test performed by : Majid MOURZAGH
Date of test : August 31, 2021
Ambient temperature : 24 °C
Relative humidity : 42 %

3.2. TEST SETUP

- The Equipment Under Test is installed:

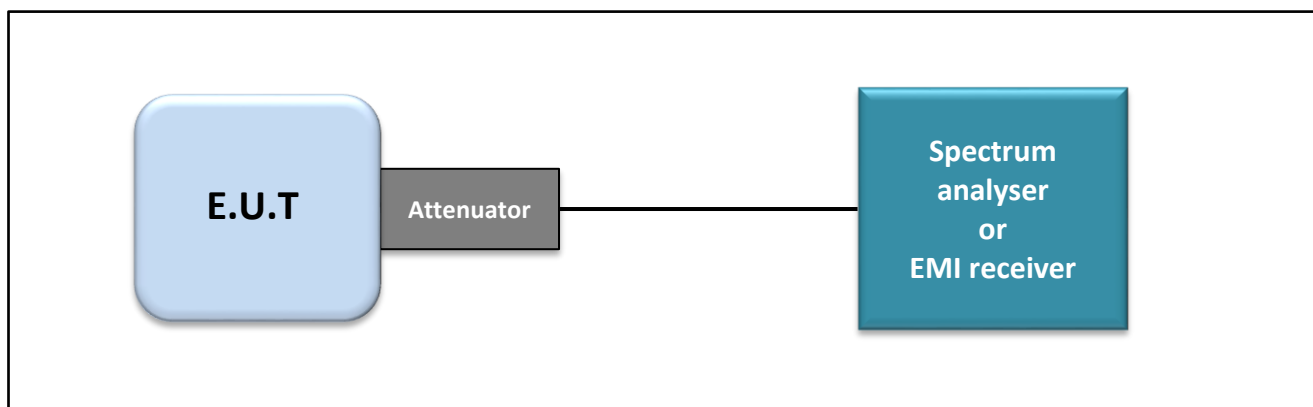
- ☐ On a table
- ☒ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☐ RSS-Gen Issue 5 § 6.7
- ☒ ANSI C63.10 § 6.9.2



Test set up of Occupied Bandwidth



Photograph for Occupied bandwidth

3.3. LIMIT

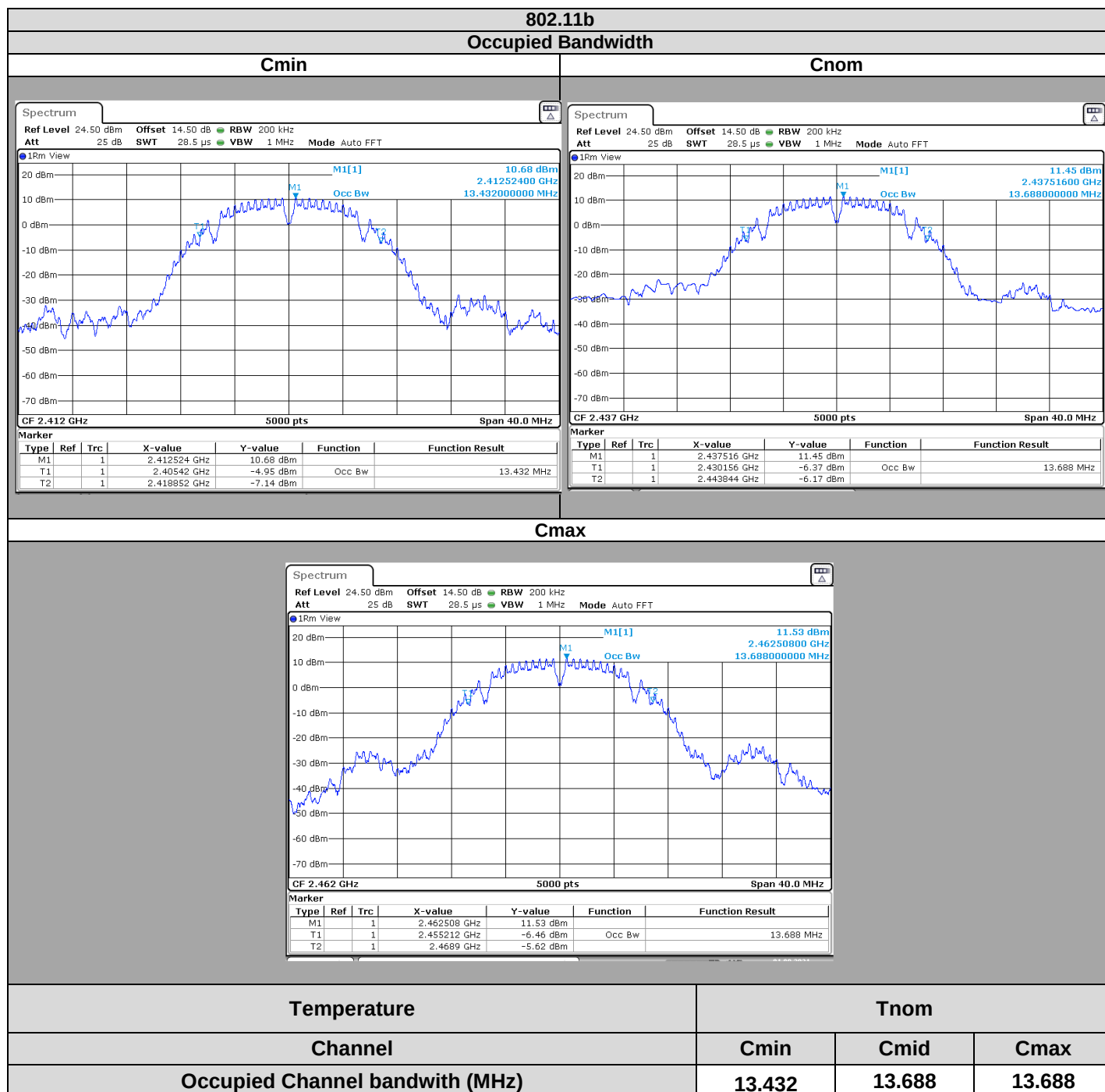
None

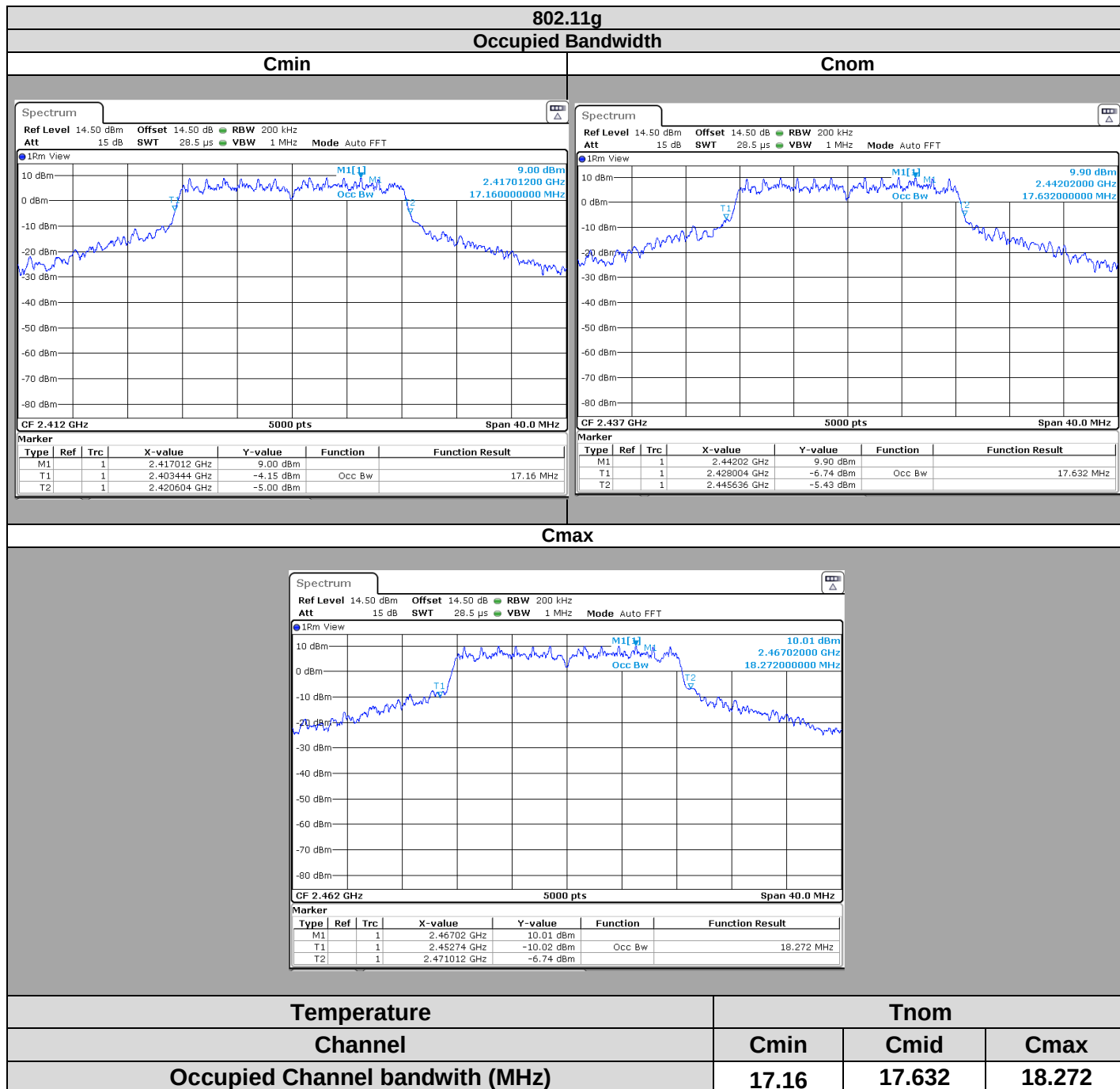
3.4. TEST EQUIPMENT LIST

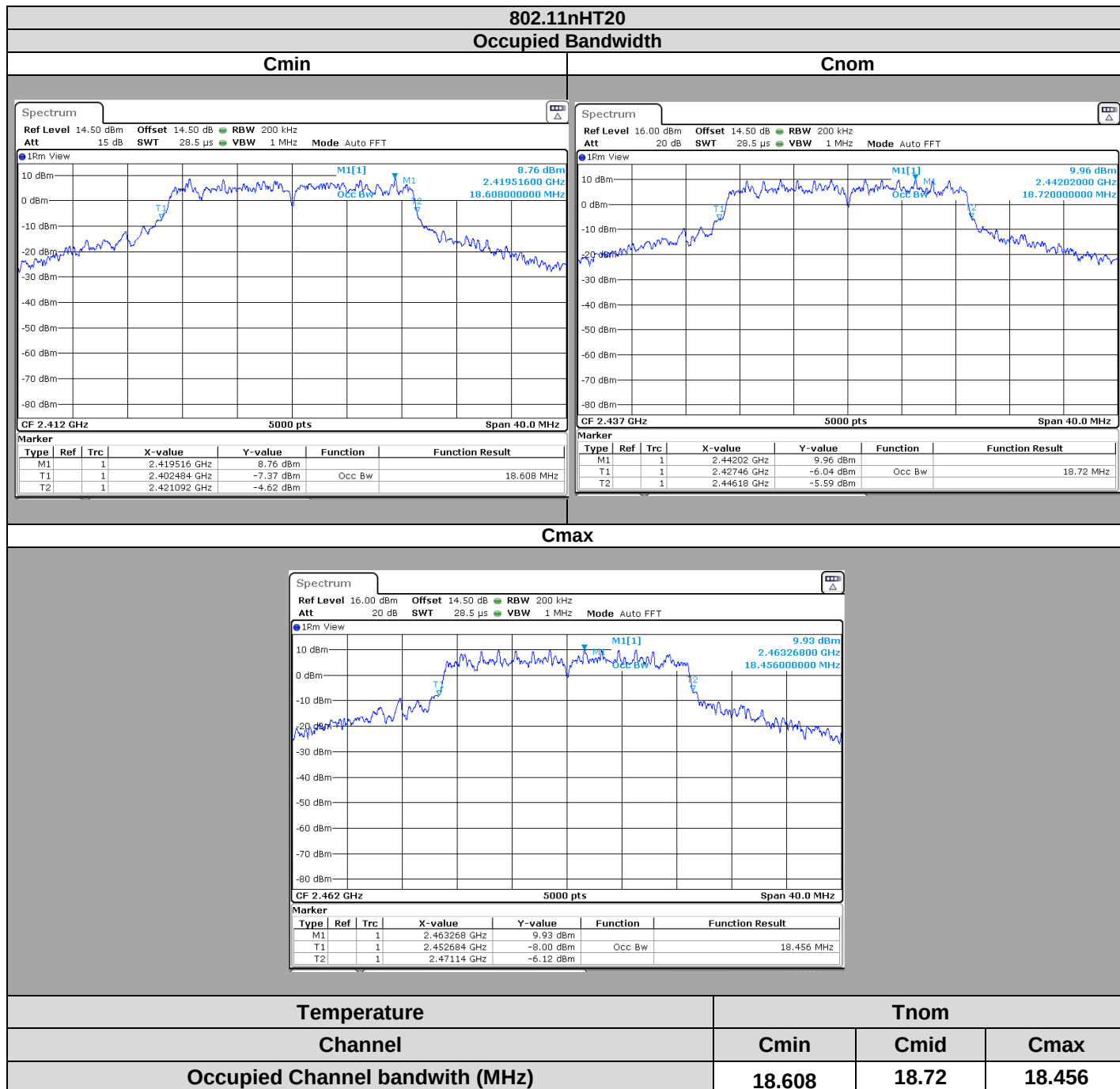
TEST EQUIPMENT USED					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
Attenuator 10dB	AEROFLEX	—	A7122269	09/20	03/22
CABLE SMA 1m	RADIALL	18GHz	A5329862	04/21	04/23
Full Anechoic Room	SIEPEL	—	D3044024		
Multimeter - CEM	FLUKE	87	A1240251	03/21	03/23
SMA 1.5m	SUCOFLEX	18GHz	A5329864	04/21	04/22
Spectrum analyzer	ROHDE & SCHWARZ	FSV 40	A4060059	05/19	09/21
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23

Note: In our quality system, the test equipment calibration due is more & less 2 months

3.5. RESULTS







3.6. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **In&motion In&box V6**, SN: **63000003**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS-GEN ISSUE 5** limits.

4. 6dB EMISSION BANDWIDTH

4.1. TEST CONDITIONS

Test performed by : Majid MOURZAGH
Date of test : August 31, 2021
Ambient temperature : 24 °C
Relative humidity : 42 %

4.2. TEST SETUP

- The Equipment Under Test is installed:

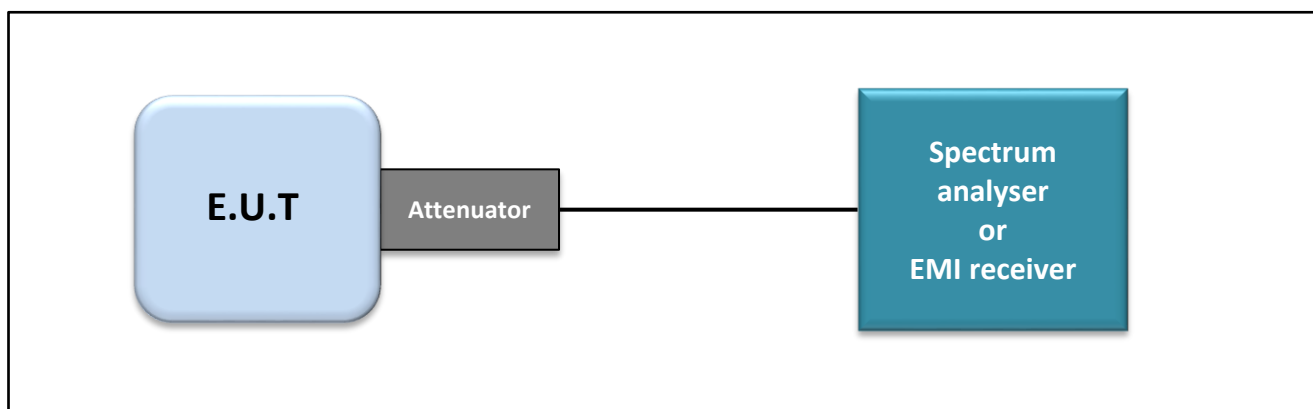
- ☐ On a table
- ☒ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☒ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.2



Test set up of 6dB Emission Bandwidth



Photograph for 6dB emission bandwidth

4.3. LIMIT

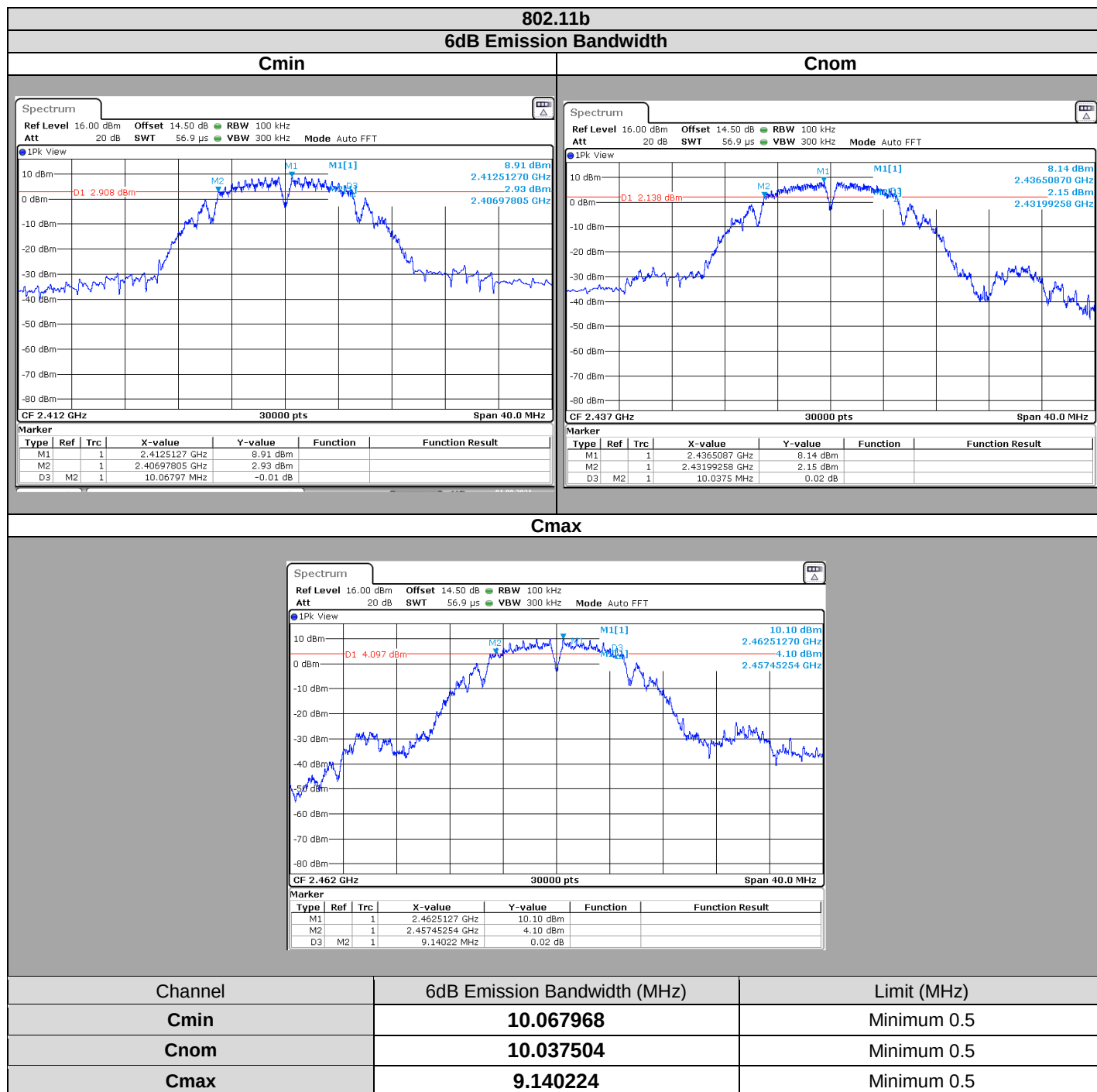
Frequency range	The 6dB bandwidth Limit
2400MHz to 2483.5MHz	≤500kHz

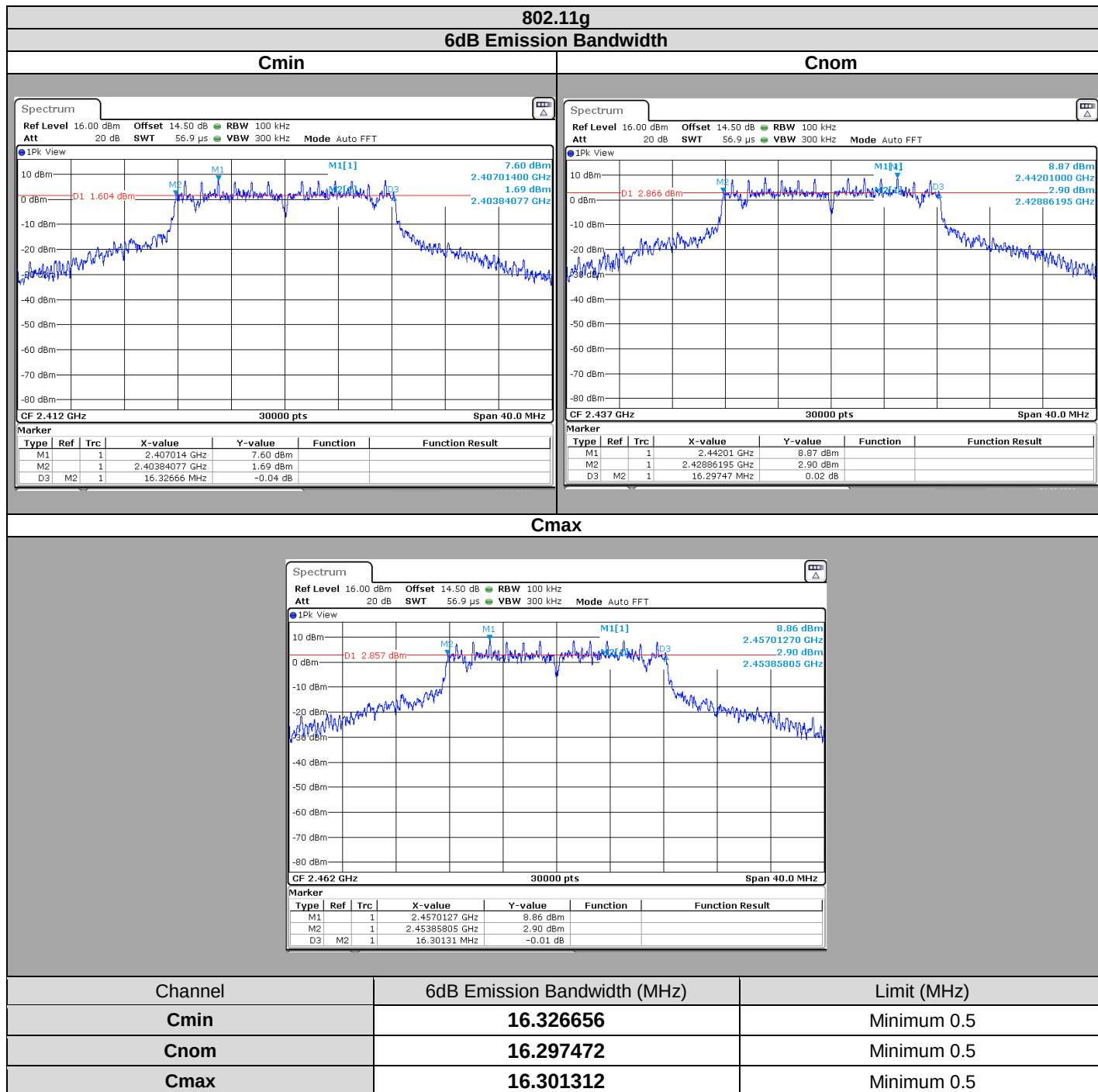
4.4. TEST EQUIPMENT LIST

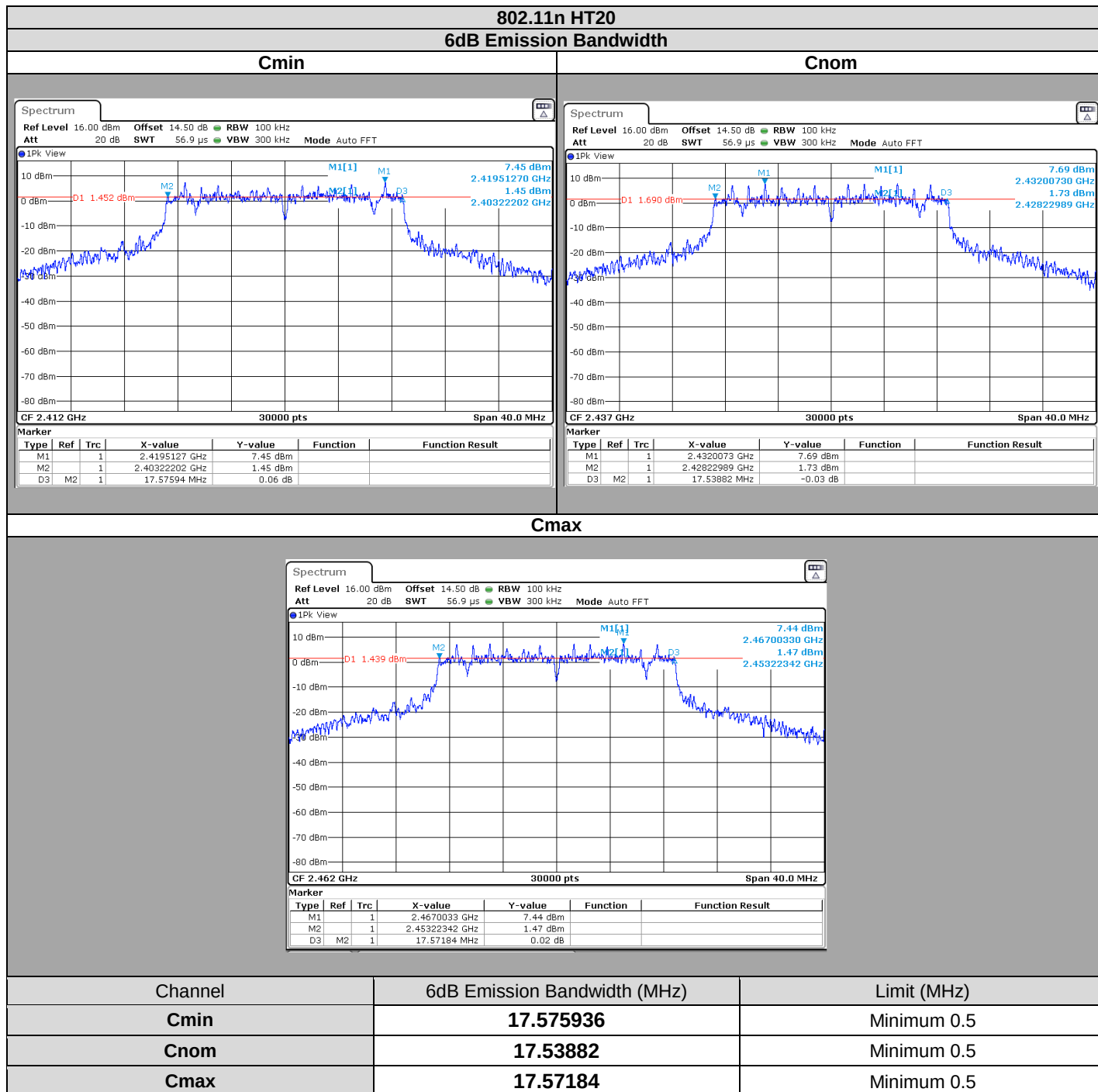
TEST EQUIPMENT USED					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
Attenuator 10dB	AEROFLEX	—	A7122269	09/20	03/22
CABLE SMA 1m	RADIALL	18GHz	A5329862	04/21	04/23
Full Anechoic Room	SIEPEL	—	D3044024		
Multimeter - CEM	FLUKE	87	A1240251	03/21	03/23
SMA 1.5m	SUCOFLEX	18GHz	A5329864	04/21	04/22
Spectrum analyzer	ROHDE & SCHWARZ	FSV 40	A4060059	05/19	09/21
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23

Note: In our quality system, the test equipment calibration due is more & less 2 months

4.5. RESULTS







4.6. CONCLUSION

6dB Emission Bandwidth measurement performed on the sample of the product **In&motion In&box V6**, SN: **63000003**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

5. MAXIMUM CONDUCTED OUTPUT POWER

5.1. TEST CONDITIONS

Test performed by : Majid MOURZAGH
Date of test : August 31, 2021
Ambient temperature : 24 °C
Relative humidity : 42 %

5.2. TEST SETUP

- The Equipment under Test is installed:

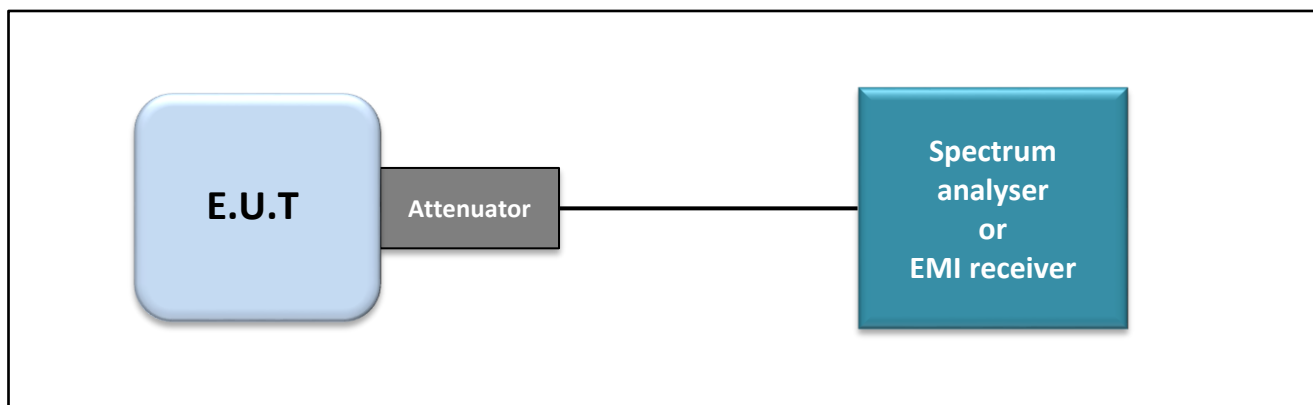
- ☐ On a table
- ☒ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

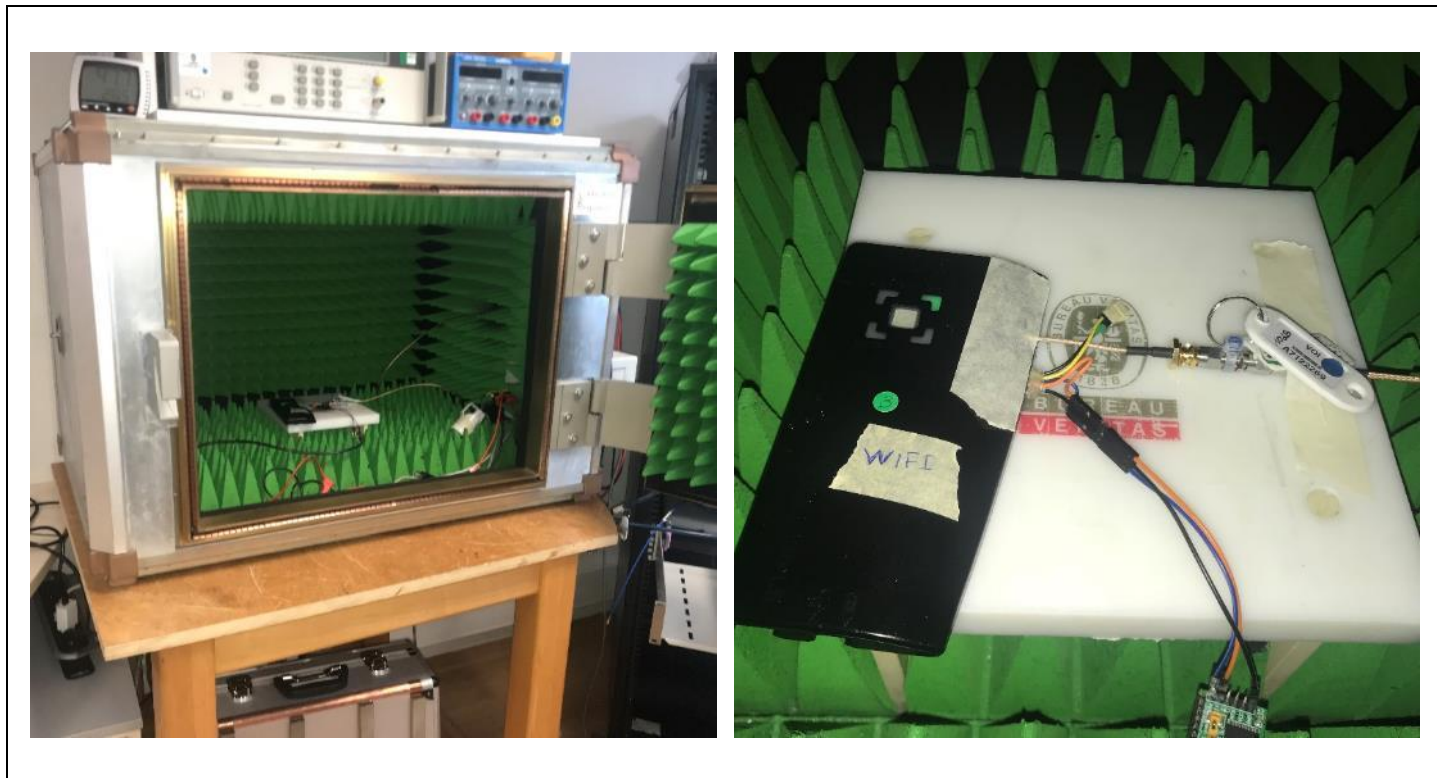
- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☐ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.3.1.2
- ☒ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.3.2.2(Method AVGSA-1)
- ☐ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.3.2.2(Method AVGSA-2)
- ☐ KDB 662911 D01 Multiple Transmitter Output v02r01



Test set up of Maximum Conducted Output Power



Photograph for Maximum Conducted Output Power

5.3. LIMIT

Frequency range	Maximum Conducted Output Power
2400MHz to 2483.5MHz	≤30dBm*

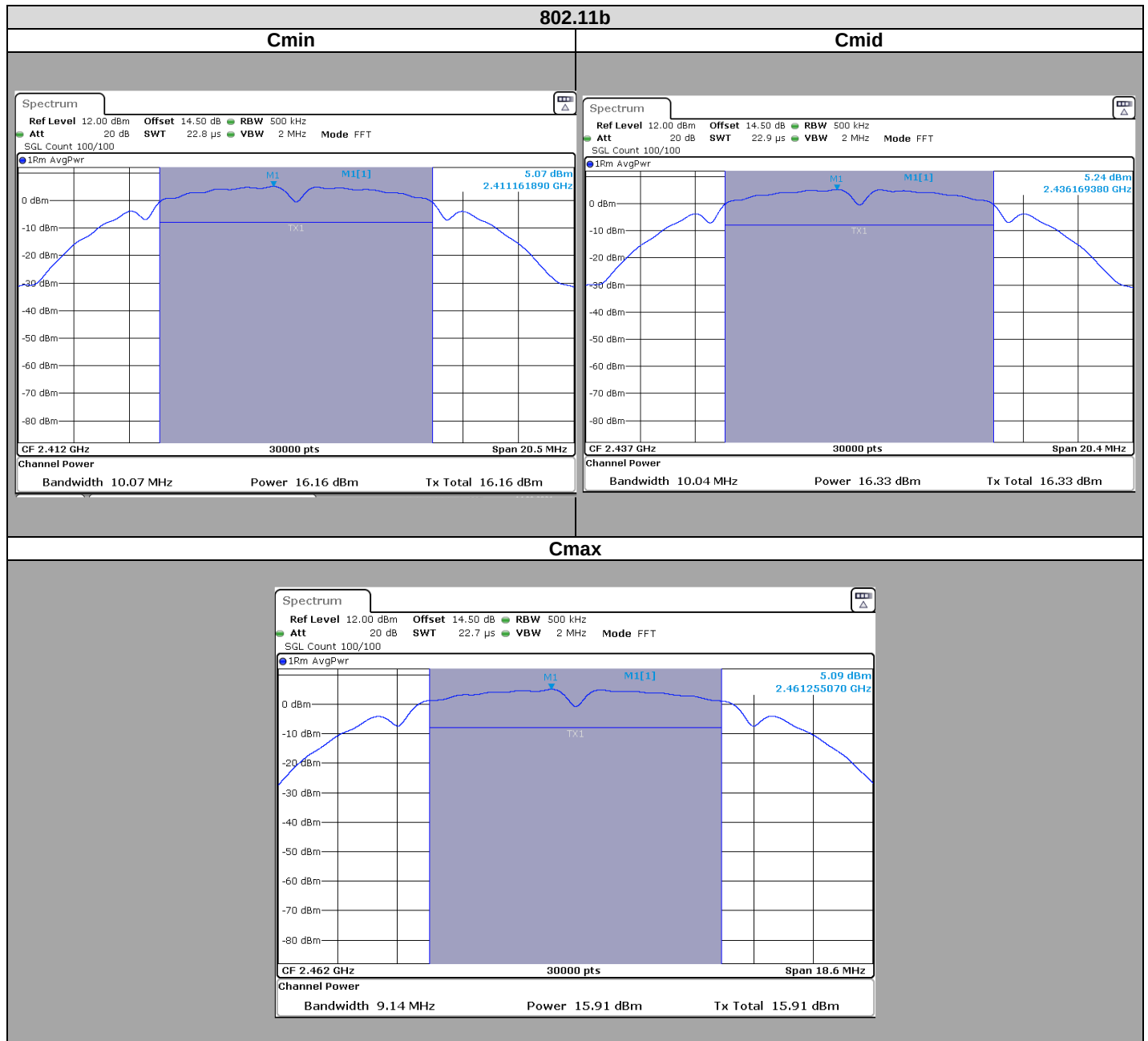
*Remark: Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

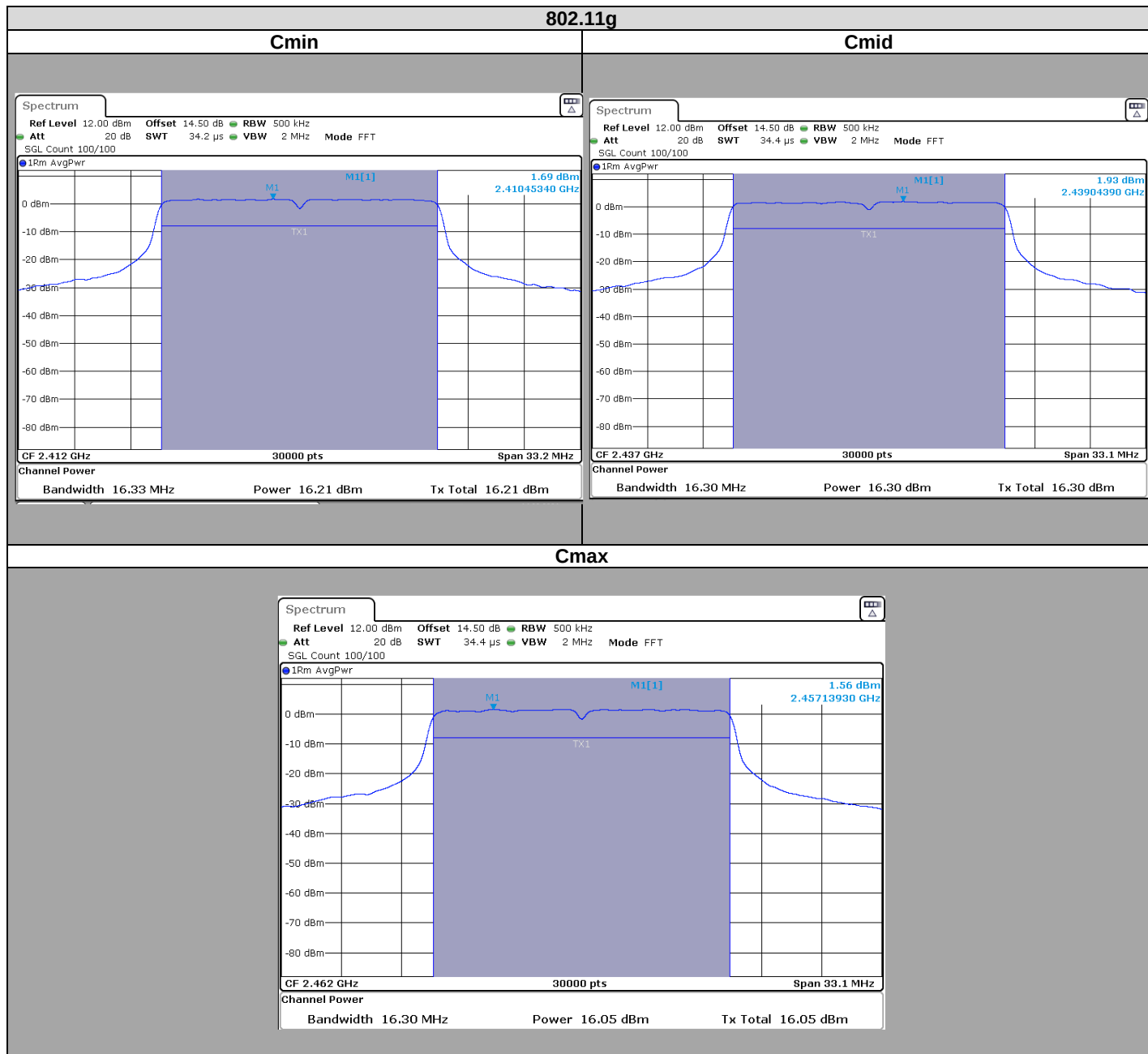
5.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
Attenuator 10dB	AEROFLEX	—	A7122269	09/20	03/22
CABLE SMA 1m	RADIALL	18GHz	A5329862	04/21	04/23
Full Anechoic Room	SIEPEL	—	D3044024		
Multimeter - CEM	FLUKE	87	A1240251	03/21	03/23
SMA 1.5m	SUCOFLEX	18GHz	A5329864	04/21	04/22
Spectrum analyzer	ROHDE & SCHWARZ	FSV 40	A4060059	05/19	09/21
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23

Note: In our quality system, the test equipment calibration due is more & less 2 months

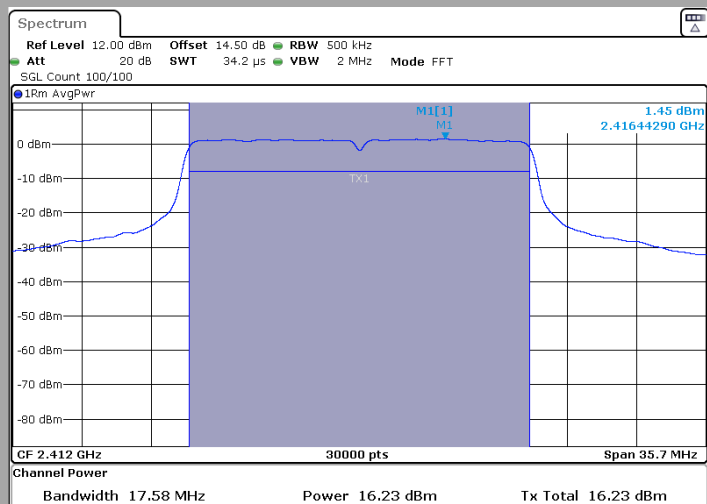
5.5. RESULTS



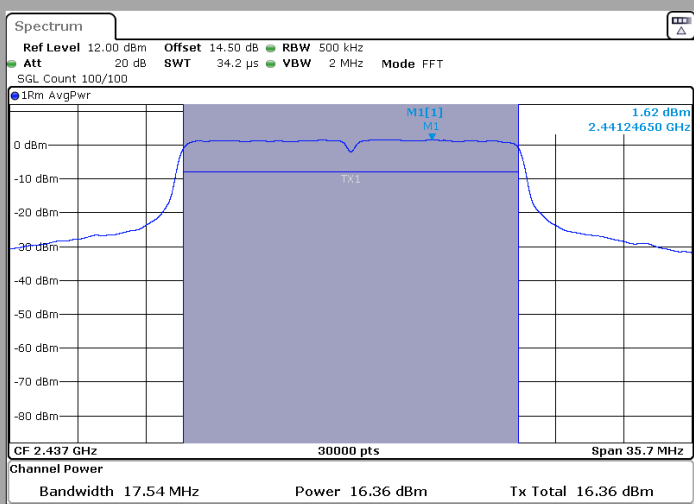


802.11nHT20

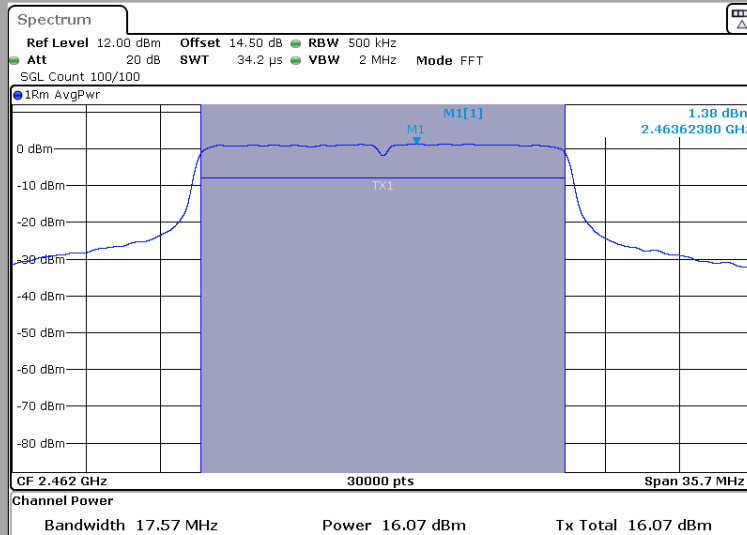
Cmin



Cmid



Cmax





Spectrum Analyzer Offset:
Cable Loss=4.5dB + Attenuator= 10dB

802.11b							
Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	Overall Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Limit (dBm)
Cmin	16.16	/	/	/	2.74	16.16	30
Cnom	16.33	/	/	/	2.74	16.33	30
Cmax	15.91	/	/	/	2.74	15.91	30

802.11g							
Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	Overall Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Limit (dBm)
Cmin	16.21	/	/	/	2.74	16.21	30
Cnom	16.30	/	/	/	2.74	16.30	30
Cmax	16.05	/	/	/	2.74	16.05	30

802.11n HT20							
Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	Overall Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Limit (dBm)
Cmin	16.23	/	/	/	2.74	16.23	30
Cnom	16.36	/	/	/	2.74	16.36	30
Cmax	16.07	/	/	/	2.74	16.07	30

5.6. CONCLUSION

Maximum Conducted Output Power measurement performed on the sample of the product **In&motion In&box V6**, SN: **63000003**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

6. POWER SPECTRAL DENSITY

6.1. TEST CONDITIONS

Test performed by : Majid MOURZAGH
Date of test : September 1, 2021
Ambient temperature : 23 °C
Relative humidity : 40 %

6.2. TEST SETUP

- The Equipment Under Test is installed:

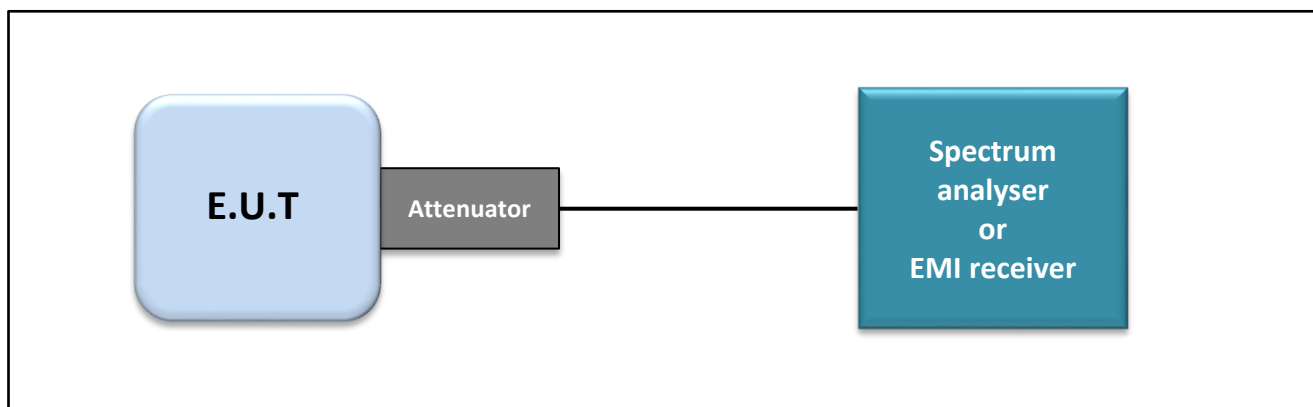
- ☐ On a table
- ☒ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

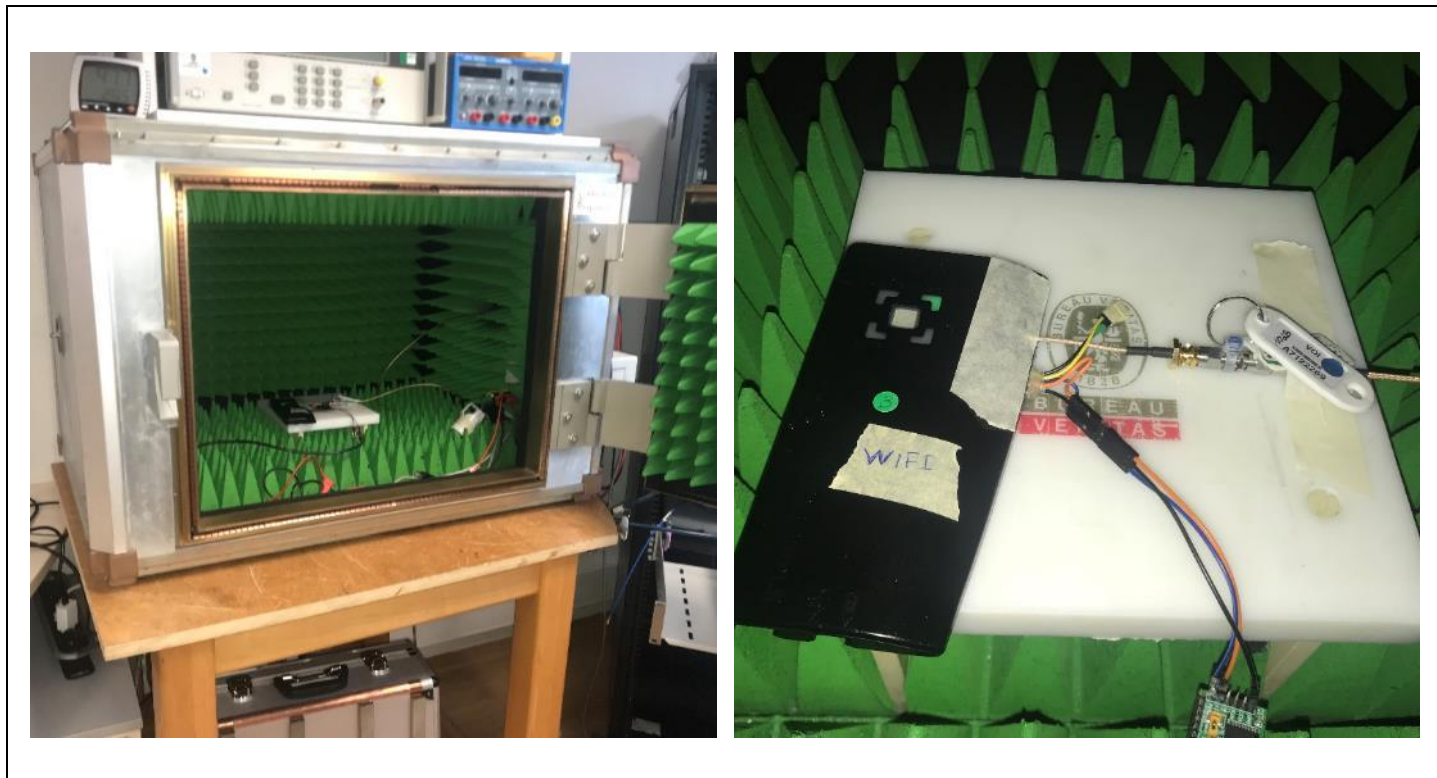
- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☒ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.4 (Method PKPSD)
- ☐ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.4 (Method AVGPSD-1)
- ☐ KDB 662911 D01 Multiple Transmitter Output v02r01



Test set up of Power Spectral Density



Photograph for Power Spectral Density

6.3. LIMIT

Frequency range	Power Spectral Density
2400MHz to 2483.5MHz	$\leq 8\text{dBm}/3\text{kHz}^*$

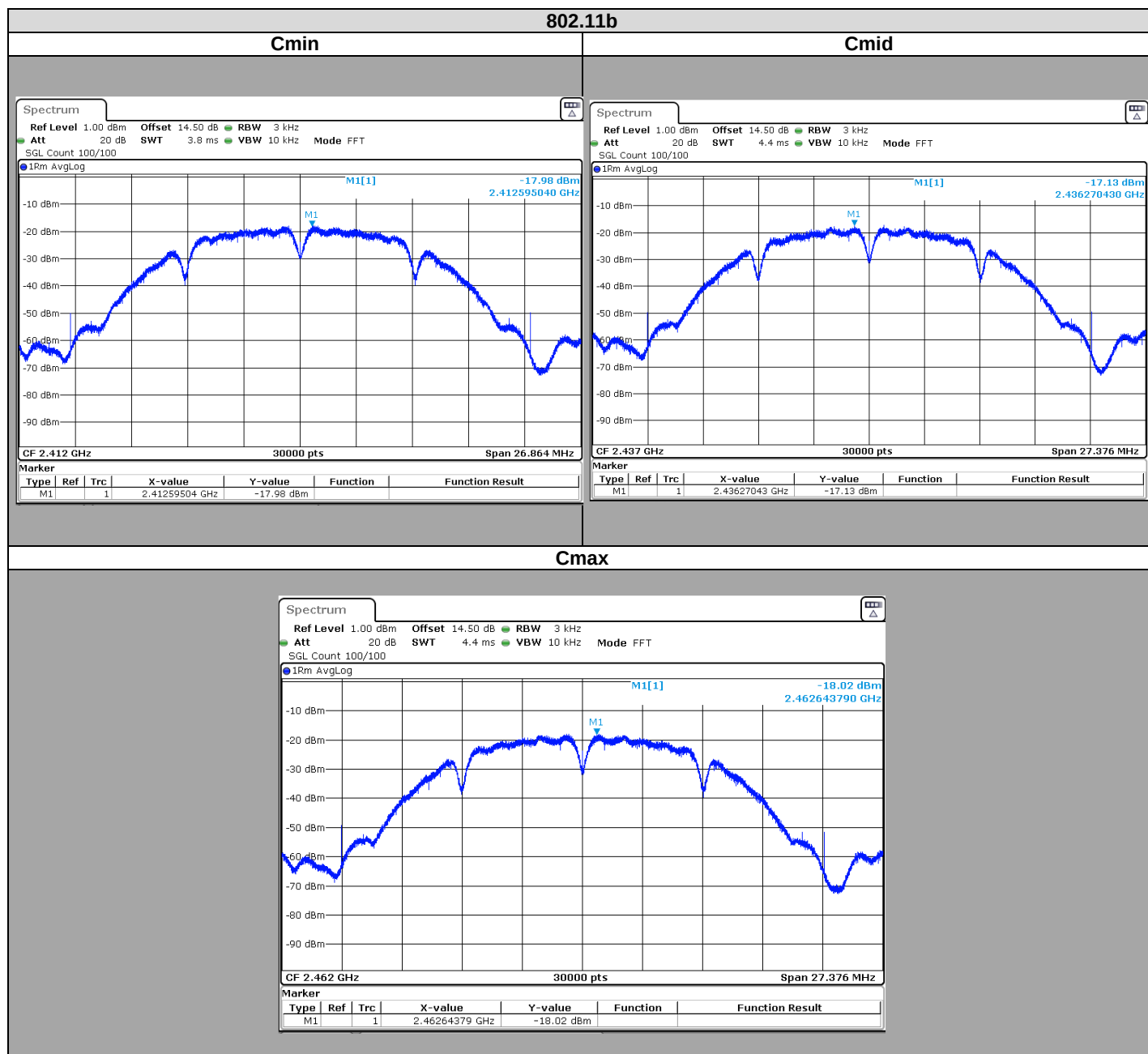
*Remark: Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

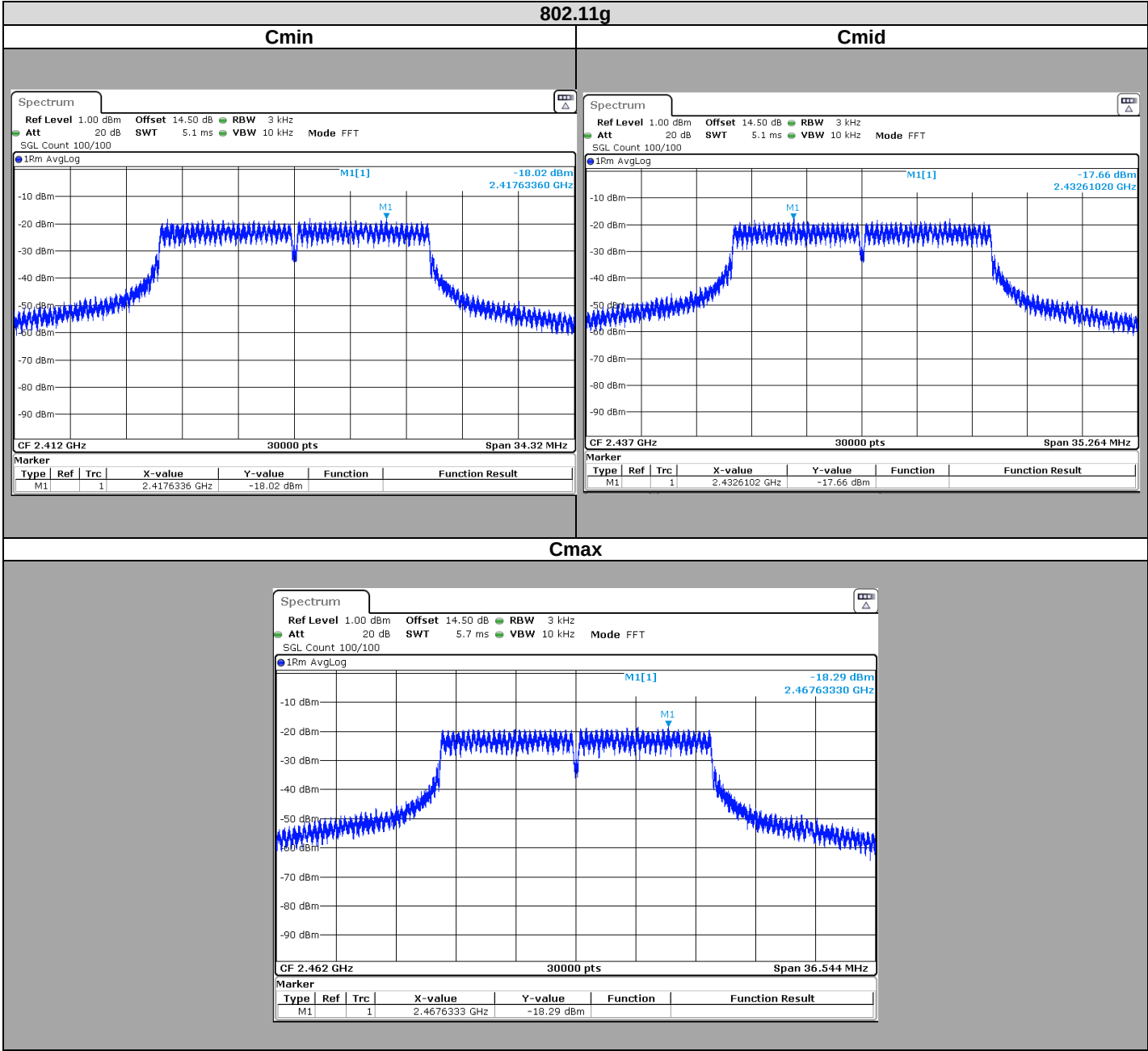
6.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
Attenuator 10dB	AEROFLEX	—	A7122269	09/20	03/22
CABLE SMA 1m	RADIALL	18GHz	A5329862	04/21	04/23
Full Anechoic Room	SIEPEL	—	D3044024		
Multimeter - CEM	FLUKE	87	A1240251	03/21	03/23
SMA 1.5m	SUCOFLEX	18GHz	A5329864	04/21	04/22
Spectrum analyzer	ROHDE & SCHWARZ	FSV 40	A4060059	05/19	09/21
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23

Note: In our quality system, the test equipment calibration due is more & less 2 months

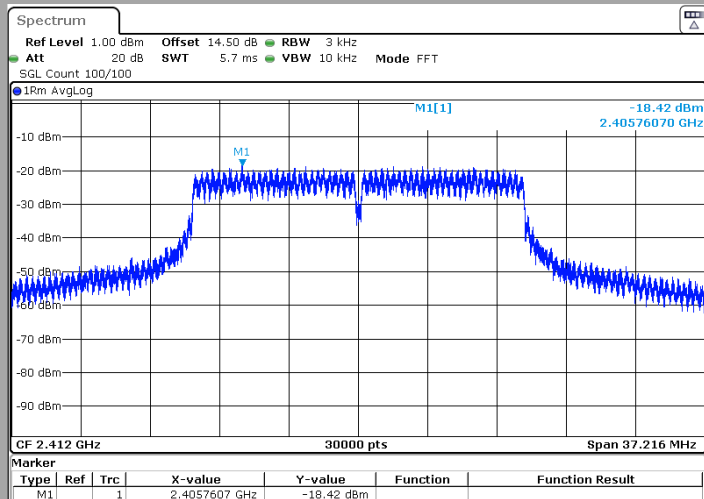
6.5. RESULTS



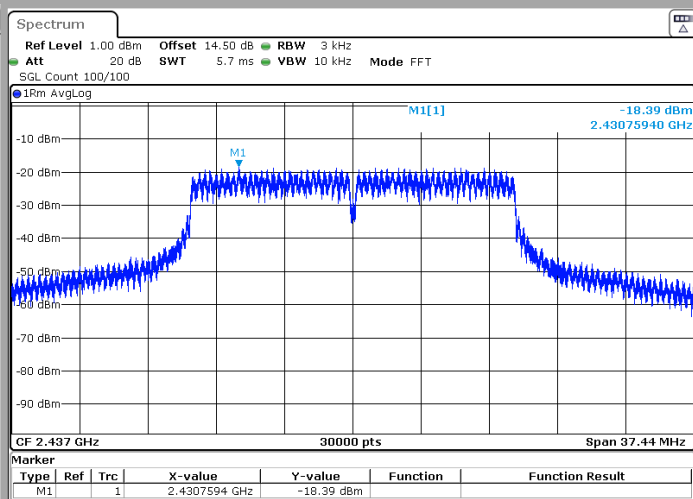


802.11nHT20

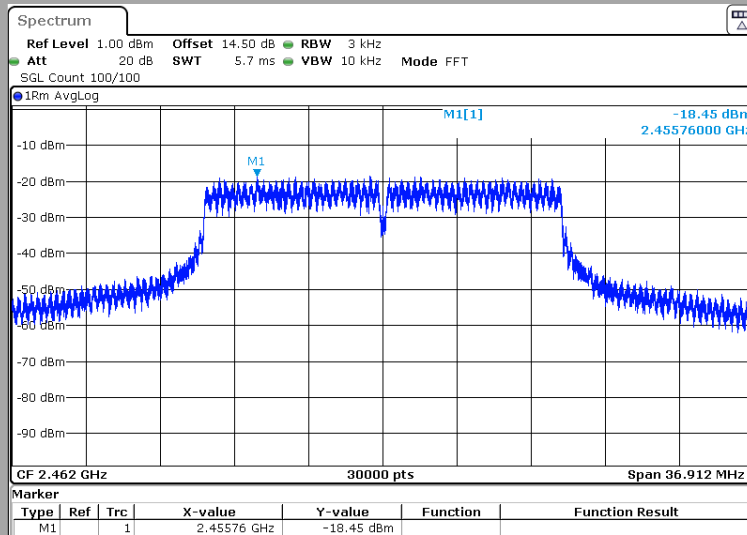
Cmin



Cmid



Cmax





Spectrum Analyzer Offset:
Cable Loss=4.5dB + Attenuator= 10dB

802.11b							
Channel	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Overall Antenna Gain (dBi)	Power Spectral Density (dBm)	Limit (dBm/3kHz)
Cmin	-17.98	/	/	/	2.74	-17.98	8
Cnom	-17.13	/	/	/	2.74	-17.13	8
Cmax	-18.02	/	/	/	2.74	-18.02	8

802.11g							
Channel	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Overall Antenna Gain (dBi)	Power Spectral Density (dBm)	Limit (dBm/3kHz)
Cmin	-18.02	/	/	/	2.74	-18.02	8
Cnom	-17.66	/	/	/	2.74	-17.66	8
Cmax	-18.29	/	/	/	2.74	-18.29	8

802.11n HT20							
Channel	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Tx1 (dBm/3kHz)	Overall Antenna Gain (dBi)	Power Spectral Density (dBm)	Limit (dBm/3kHz)
Cmin	-18.42	/	/	/	2.74	-18.42	8
Cnom	-18.39	/	/	/	2.74	-18.39	8
Cmax	-18.45	/	/	/	2.74	-18.45	8

6.6. CONCLUSION

Power Spectral Density measurement performed on the sample of the product **In&motion In&box V6**, SN: **63000003**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

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

7.1. TEST CONDITIONS

Test performed by : Majid MOURZAGH
Date of test : September 1, 2021
Ambient temperature : 23 °C
Relative humidity : 40 %

7.2. TEST SETUP

- The Equipment Under Test is installed:

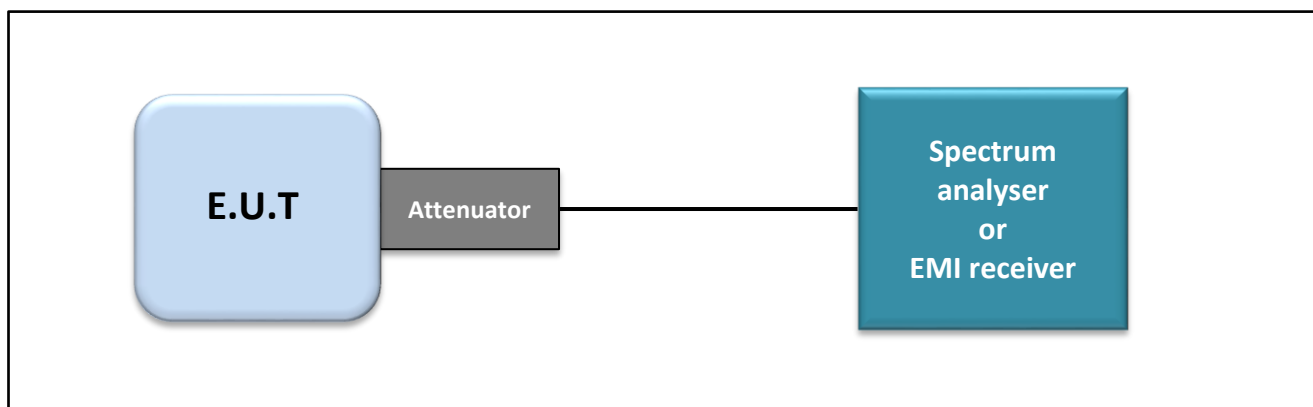
- ☒ On a table
- ☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

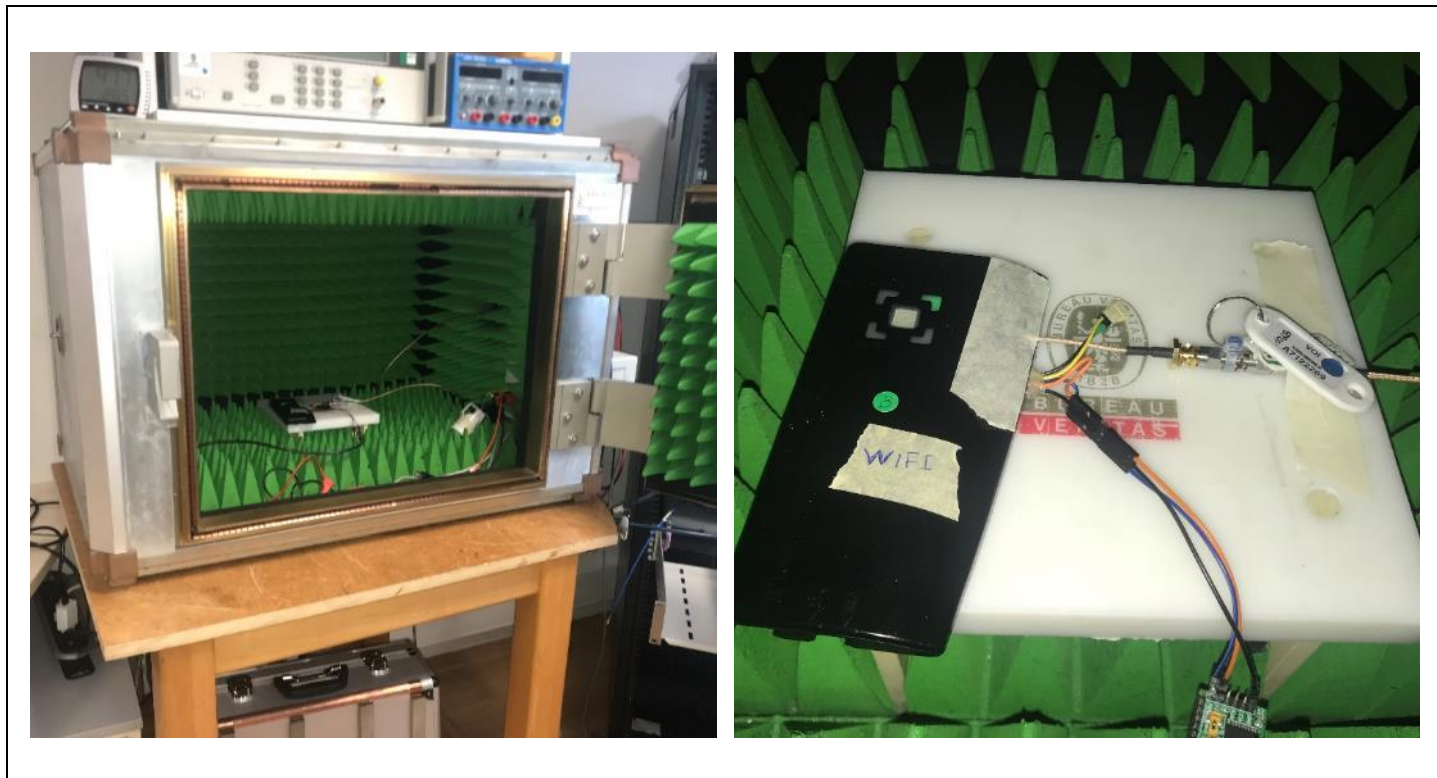
- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☒ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.5
- ☐ KDB 662911 D01 Multiple Transmitter Output v02r01



Test set up of Unwanted Emissions into Non-Restricted Frequency Bands at the Band Edge



Photograph for Unwanted Emission into non-restricted frequency bands at the band edge

7.3. LIMIT

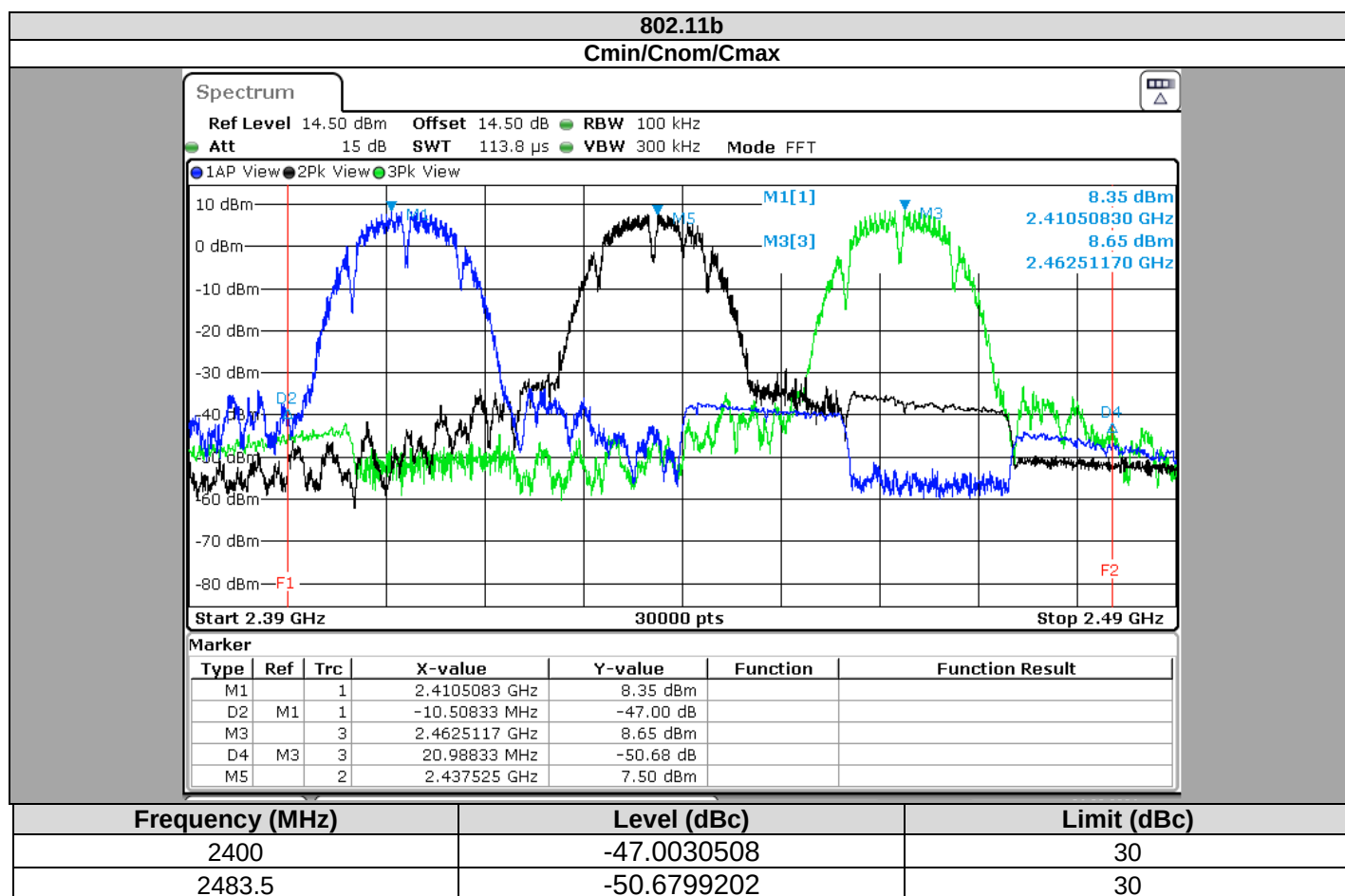
All Spurious Emissions must be at least Choose limit below the Fundamental Radiator Level at the Band Edge Edge
 “2400MHz & 2483,5MHz”

7.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
Attenuator 10dB	AEROFLEX	—	A7122269	09/20	03/22
CABLE SMA 1m	RADIALL	18GHz	A5329862	04/21	04/23
Full Anechoic Room	SIEPEL	—	D3044024		
Multimeter - CEM	FLUKE	87	A1240251	03/21	03/23
SMA 1.5m	SUCOFLEX	18GHz	A5329864	04/21	04/22
Spectrum analyzer	ROHDE & SCHWARZ	FSV 40	A4060059	05/19	09/21
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23

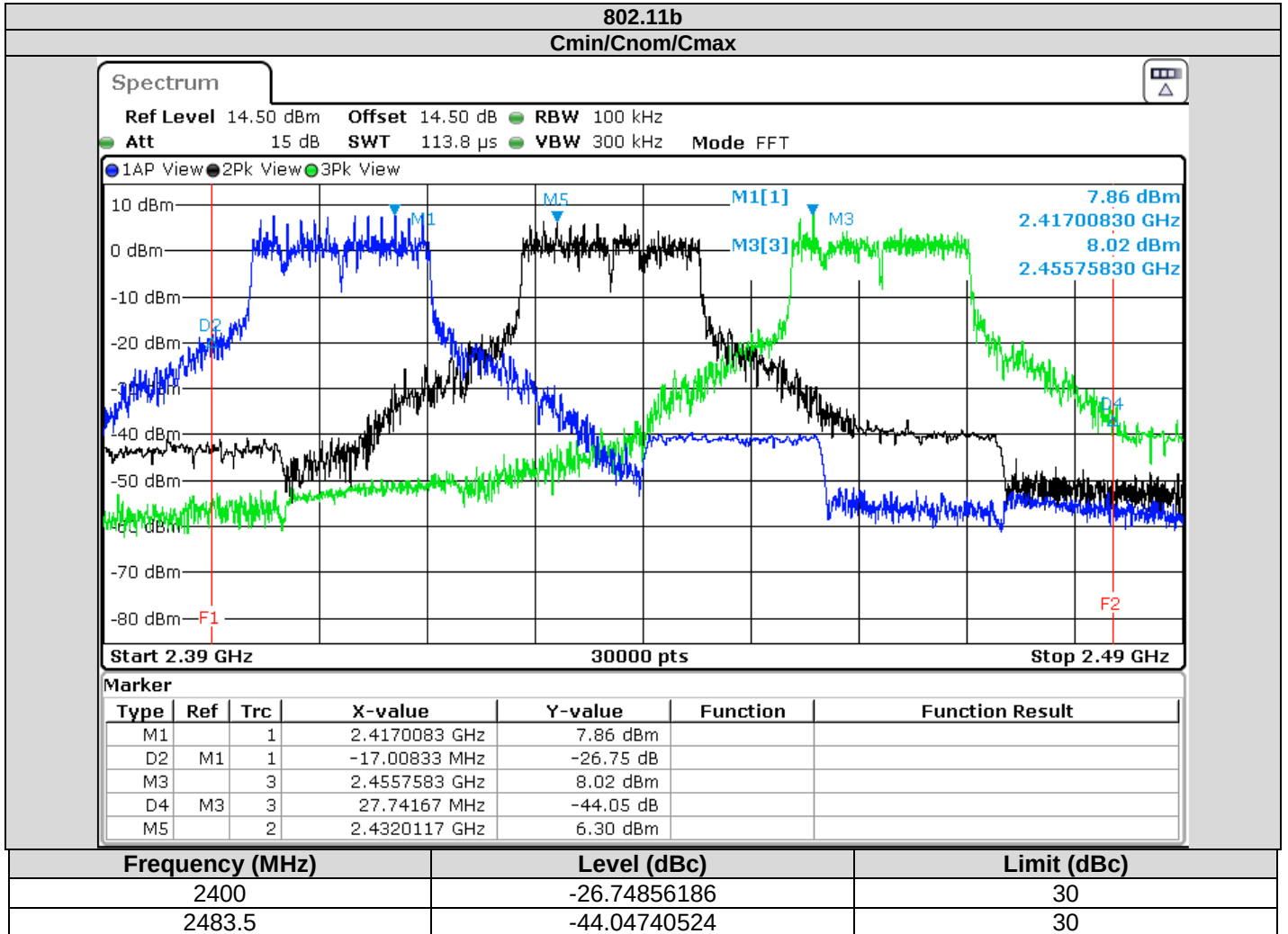
Note: In our quality system, the test equipment calibration due is more & less 2 months

7.5. RESULTS



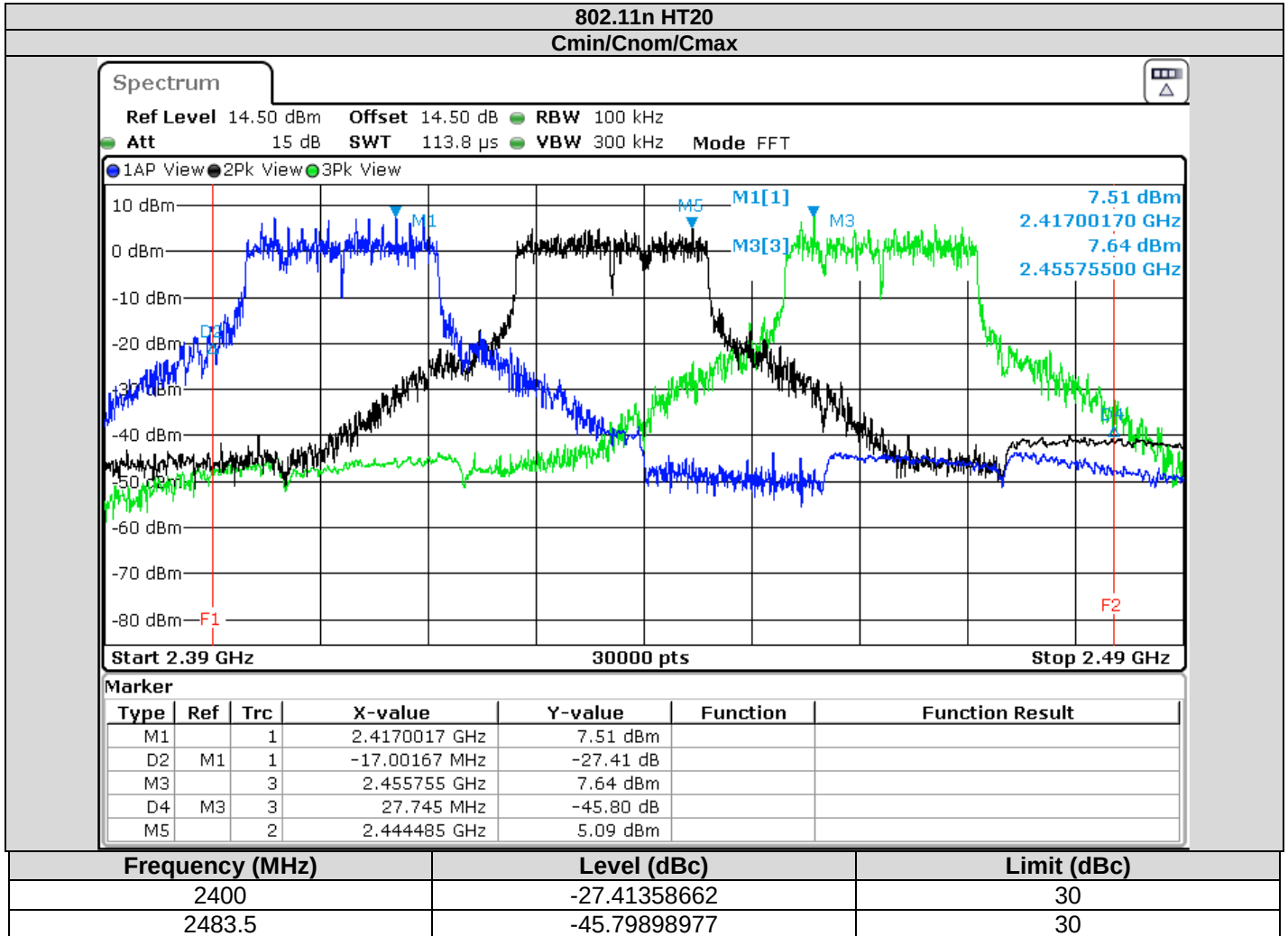


L C I E





L C I E



7.6. CONCLUSION

Unwanted Emission into non-restricted frequency bands at the band edge measurement performed on the sample of the product **In&motion In&box V6**, SN: **63000003**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

8. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS

8.1. TEST CONDITIONS

Test performed by : Majid MOURZAGH
Date of test : September 1, 2021
Ambient temperature : 23 °C
Relative humidity : 40 %

8.2. TEST SETUP

- The Equipment Under Test is installed:

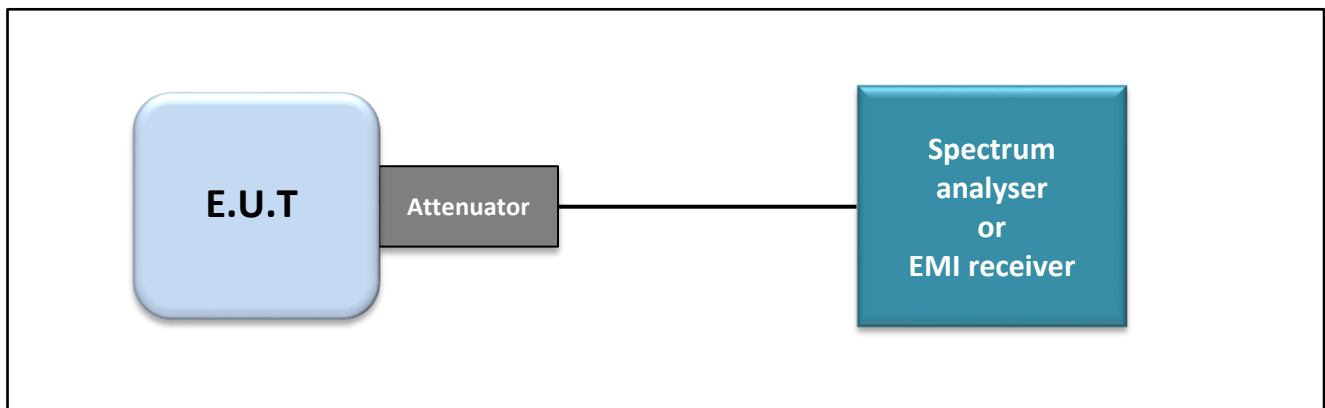
- ☒ On a table
- ☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

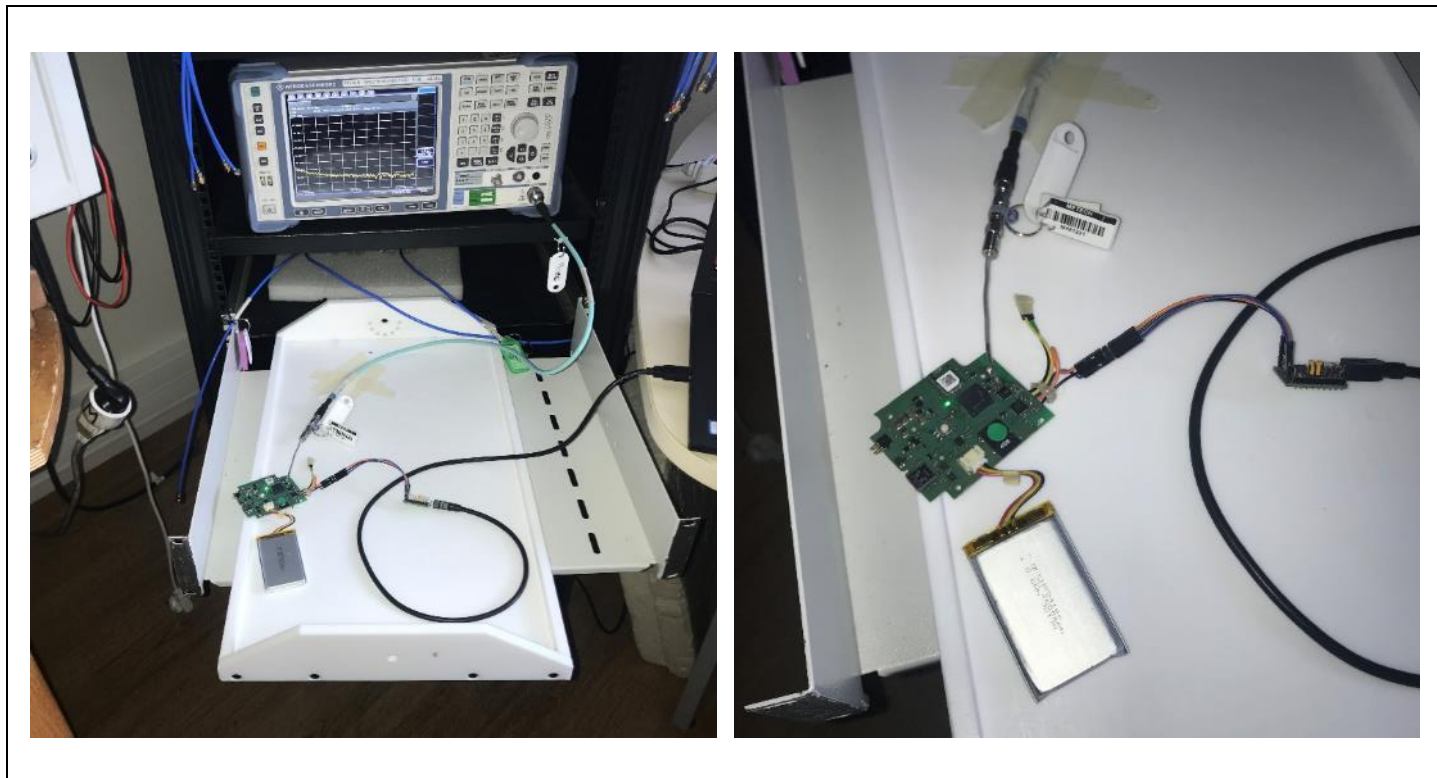
- ☒ Conducted Method
- ☐ Radiated Method

- Test Procedure:

- ☒ KDB 558074 D01 DTS Meas Guidance v05r02 § 8.5
- ☐ KDB 662911 D01 Multiple Transmitter Output v02r01



Test set up of Unwanted Emissions into Non-Restricted Frequency Bands



Photograph for Unwanted Emission into non-restricted frequency bands

8.3. LIMIT

All Spurious Emissions must be at least Choose limit below the Fundamental Radiator Level

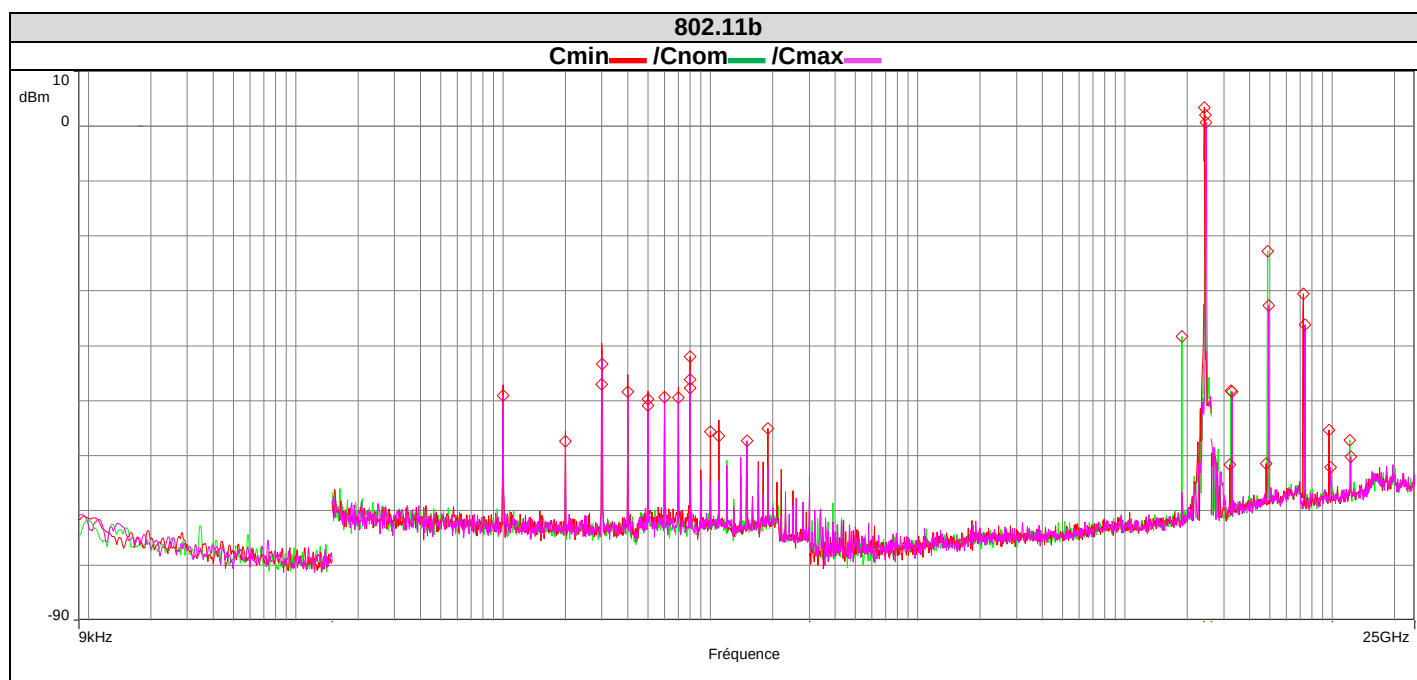
8.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
Attenuator 10dB	AEROFLEX	—	A7122269	09/20	03/22
Multimeter - CEM	FLUKE	87	A1240251	03/21	03/23
Cable Measure	—	36G	A5329604	04/21	04/22
Spectrum analyzer	ROHDE & SCHWARZ	FSV 40	A4060059	05/19	09/21
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23
BAT EMC	NEXIO	v3.19.1.23	L1000115		

Note: In our quality system, the test equipment calibration due is more & less 2 months

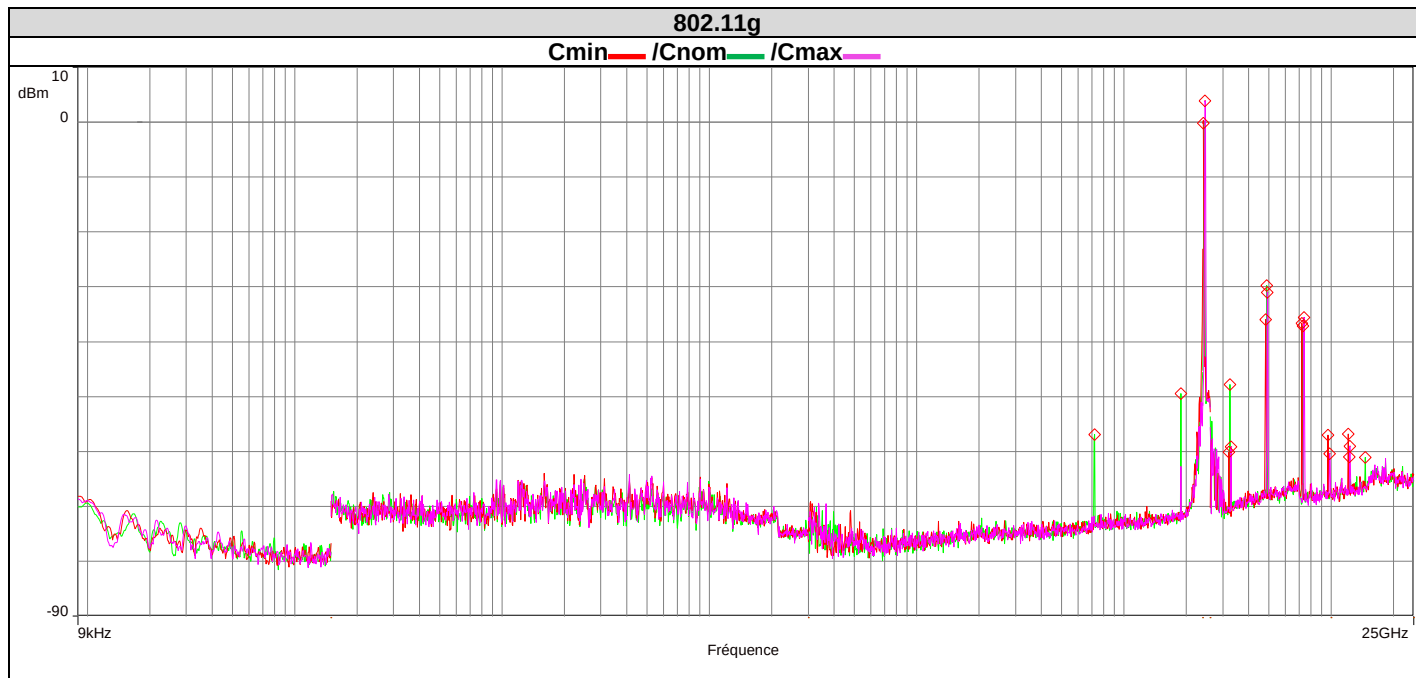
8.5. RESULTS

Worst case presented (see §8.5 in Unwanted Emissions...Band Edge):



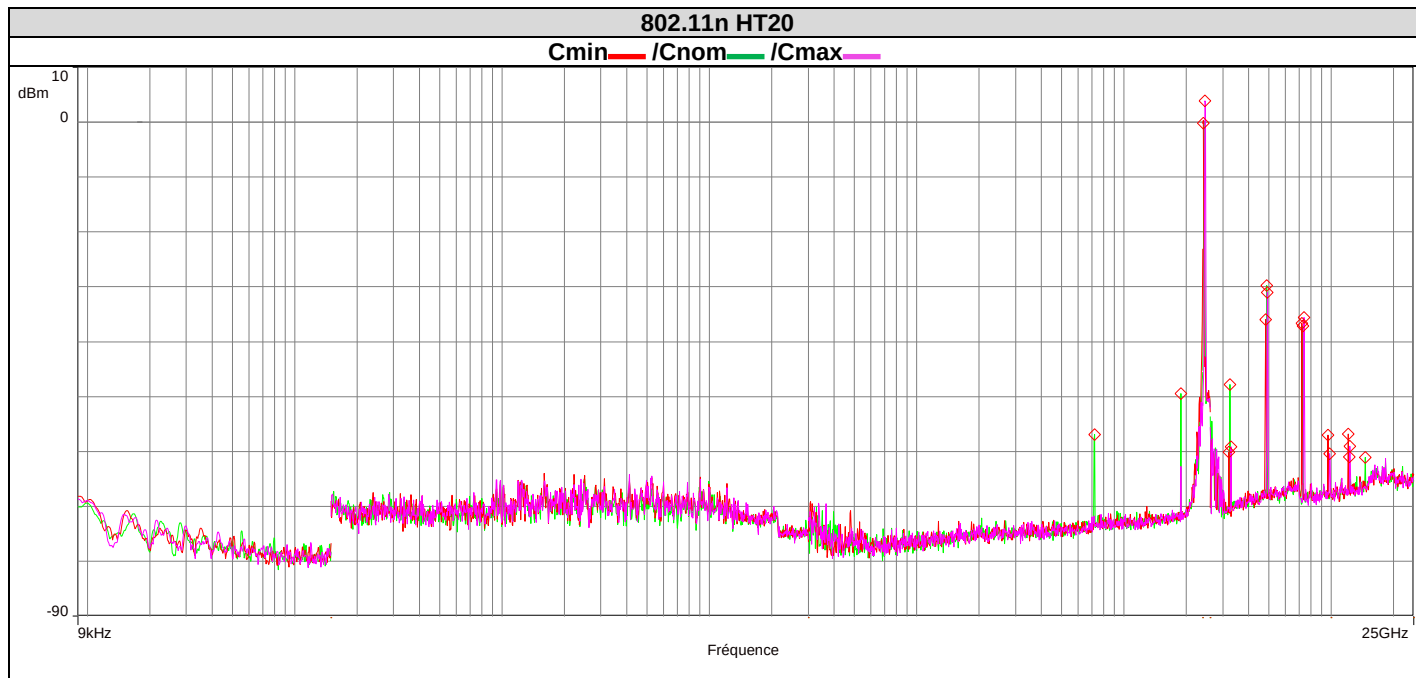
802.11b			
Frequency (MHz)	Level (dBm)	Level (dBc)	Limit (dBc)
2412	3.38		
1	-47.08	-50.46	30
2	-55.66	-59.04	30
3	-39.55	-42.93	30
4	-42.24	-45.62	30
5	-48.30	-51.68	30
6	-48.34	-51.72	30
7	-47.46	-50.84	30
8	-42.66	-46.04	30
9	-62.41	-65.79	30
10	-55.69	-59.07	30
11	-53.57	-56.95	30
19	-55.07	-58.45	30
3215	-61.68	-65.06	30
4824	-61.42	-64.8	30
7236	-30.57	-33.95	30
9648	55.38	-58.76	30
2437	2.01		
1885*	-38.33	-40.34	30
3249	-48.23	-50.24	30
4874	-22.81	-24.82	30
12185	-57.23	-59.24	30
2462	0.73		
15	-57.47	-58.2	30
3282	-48.34	-49.07	30
4924	-32.66	-33.39	30
7386	-36.21	-36.94	30
9848	-62.19	-62.92	30
12310	-60.25	-60.98	30

*: Due to local cellular signal, not due to EUT



802.11g			
Frequency (MHz)	Level (dBm)	Level (dBc)	Limit (dBc)
2412	-0.15		
3215	-60.1	-59.95	30
4824	-35.95	-35.8	30
7236	-36.68	-36.53	30
9648	-57.03	-56.88	30
12060	-56.86	-56.71	30
2437	0.07		
719	-56.94	-57.01	30
1886*	-49.48	-49.55	30
3249	-47.81	-47.88	30
4874	-29.74	-29.81	30
7311	-37.10	-37.17	30
12185	-60.86	-60.93	30
14622	-61.13	-61.2	30
2462	3.92		
4924	-31.1	-35.02	30
7386	-35.54	-39.46	30
9848	-60.38	-64.3	30
12310	-59.06	-62.98	30

*: Due to local cellular signal, not due to EUT



802.11n HT20			
Frequency (MHz)	Level (dBm)	Level (dBc)	Limit (dBc)
2412	1.44		
3215	-48.22	-49.66	30
4824	-43.99	-45.43	30
7236	-33.36	-34.8	30
9648	-63.89	-65.33	30
2437	1.02		
719	-57.65	-58.67	30
1897	-43.01	-44.03	30
3249	-59.71	-60.73	30
4874	-35.24	-36.26	30
7311	-34.11	-35.13	30
12185	-57.63	-58.65	30
2462	1.87		
3282	-58.62	-60.49	30
4924	-59.97	-61.84	30
7386	-33.16	-35.03	30
9848	-57.82	-59.69	30
12310	-54.04	-55.91	30

8.6. CONCLUSION

Unwanted Emission into non-restricted frequency bands measurement performed on the sample of the product **In&motion In&box V6**, SN: **63000003**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 2** limits.

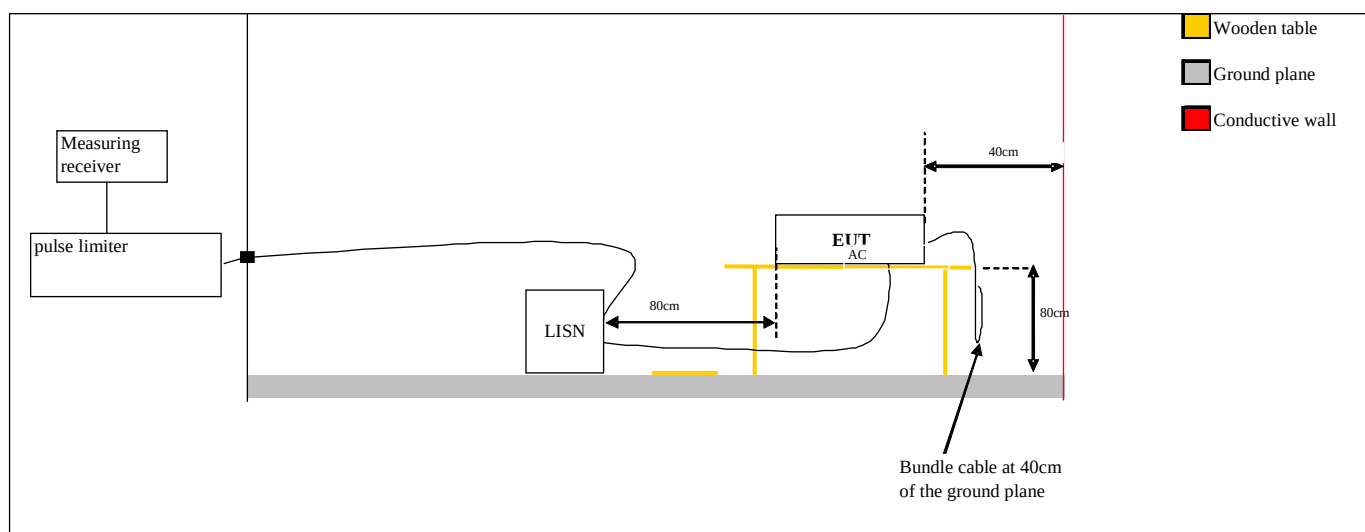
9. AC POWER LINE CONDUCTED EMISSIONS

9.1. TEST CONDITIONS

Test performed by : Majid MOURZAGH
 Date of test : September 16, 2021
 Ambient temperature : 21 °C
 Relative humidity : 41 %

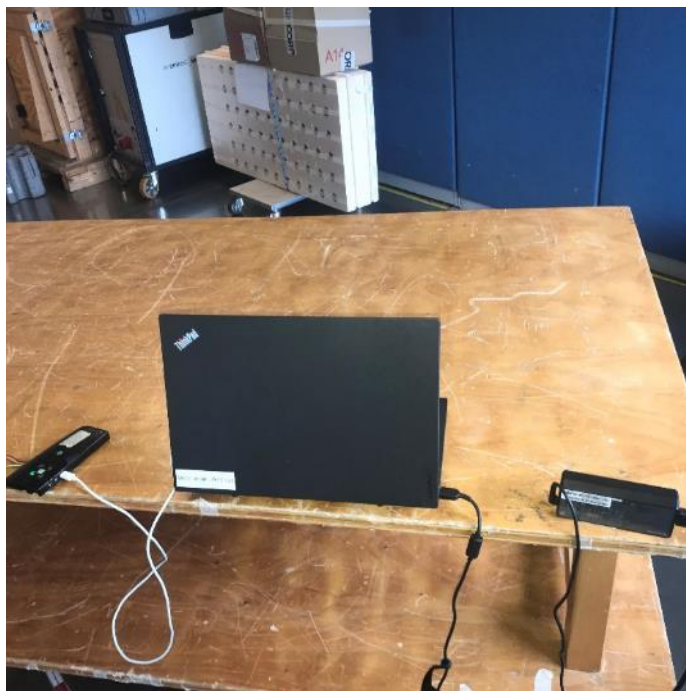
9.2. TEST SETUP

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





Photograph for AC Power Line Conducted Emissions (with AC/DC Adapter)



Photograph for AC Power Line Conducted Emissions (with Laptop)

Mains terminals:

Supply1

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

Results: (PEAK detection)

Graph identifier	Line	Comments	
Emc# n°1	Phase	120VAC/60Hz (AC/DC adapter)	See below
Emc# n°2	Neutral	120VAC/60Hz (AC/DC adapter)	See below
Emc# n°3	Phase	240VAC/50Hz (AC/DC adapter)	See below
Emc# n°4	Neutral	240VAC/50Hz (AC/DC adapter)	See below
Emc# n°5	Phase	120VAC/60Hz (With laptop)	See below
Emc# n°6	Neutral	120VAC/60Hz (With laptop)	See below
Emc# n°7	Phase	240VAC/50Hz (With laptop)	See below
Emc# n°8	Neutral	240VAC/50Hz (With laptop)	See below

9.3. LIMIT

Frequency range	Level	Detector
0,15kHz to 0,5MHz	66dBμV to 56μV*	QPeak
	56dBμV to 46μV*	Average
0,5MHz to 5MHz	56dBμV	QPeak
	46dBμV	Average
5MHz to 30MHz	60BμV	QPeak
	50dBμV	Average

*Decreases with the logarithm of the frequency



9.4. TEST EQUIPMENT LIST

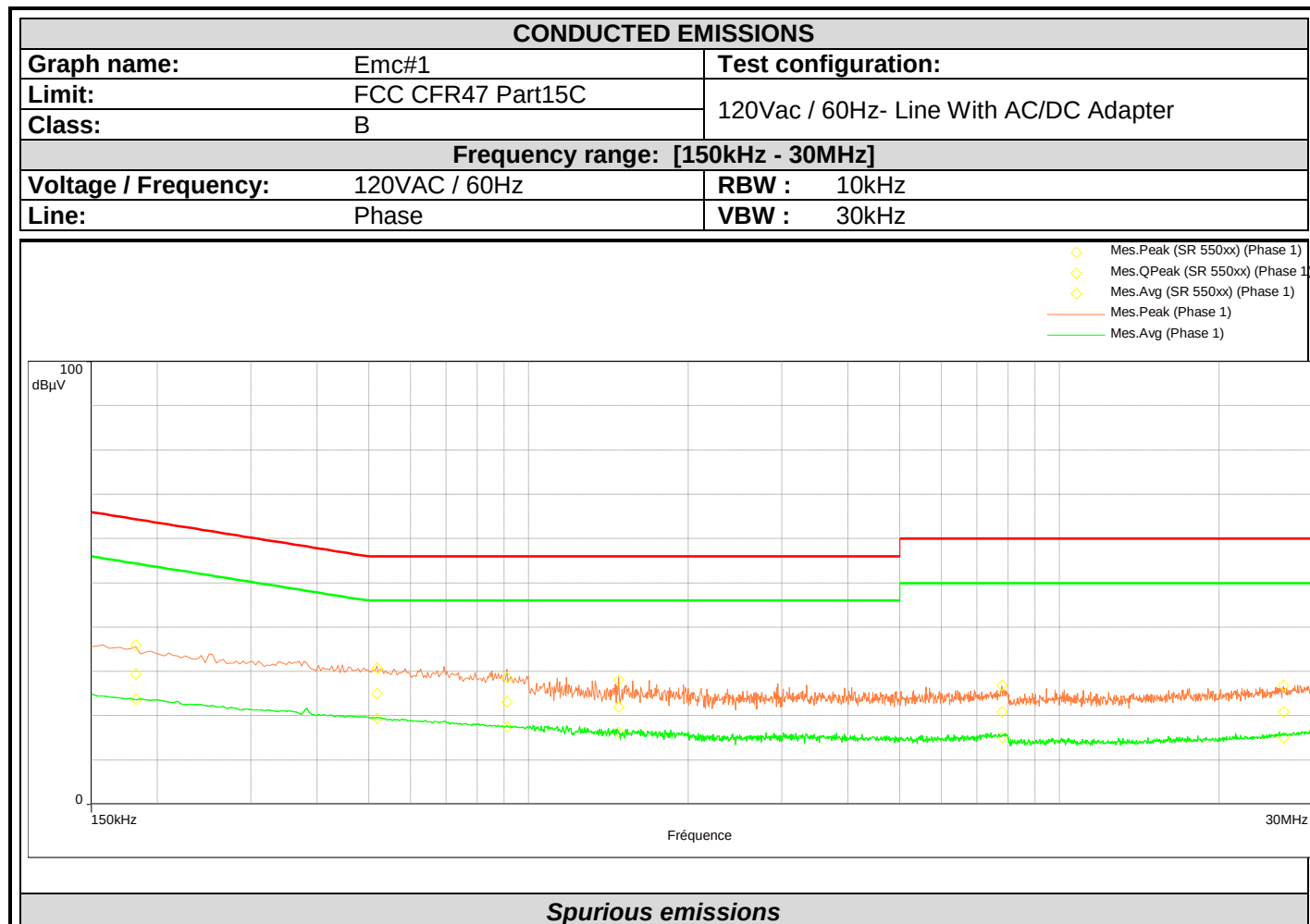
TEST EQUIPMENT USED					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
BAT EMC	NEXIO	v3.19.1.23	L1000115		
Cable + self	—	—	A5329578	04/21	04/22
EMC comb generator	LCIE SUD EST	—	A3169098		
LISN	ROHDE & SCHWARZ	ENV216	C2320291	08/21	08/22
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	11/20	11/22
Spectrum Analyzer 9kHz - 30MHz	ROHDE & SCHWARZ	ESHS10	A2642028	01/20	01/22
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23
Transient limiter	ROHDE & SCHWARZ	ESH3-Z2	A7122204	08/20	08/22

Note: In our quality system, the test equipment calibration due is more & less 2 months

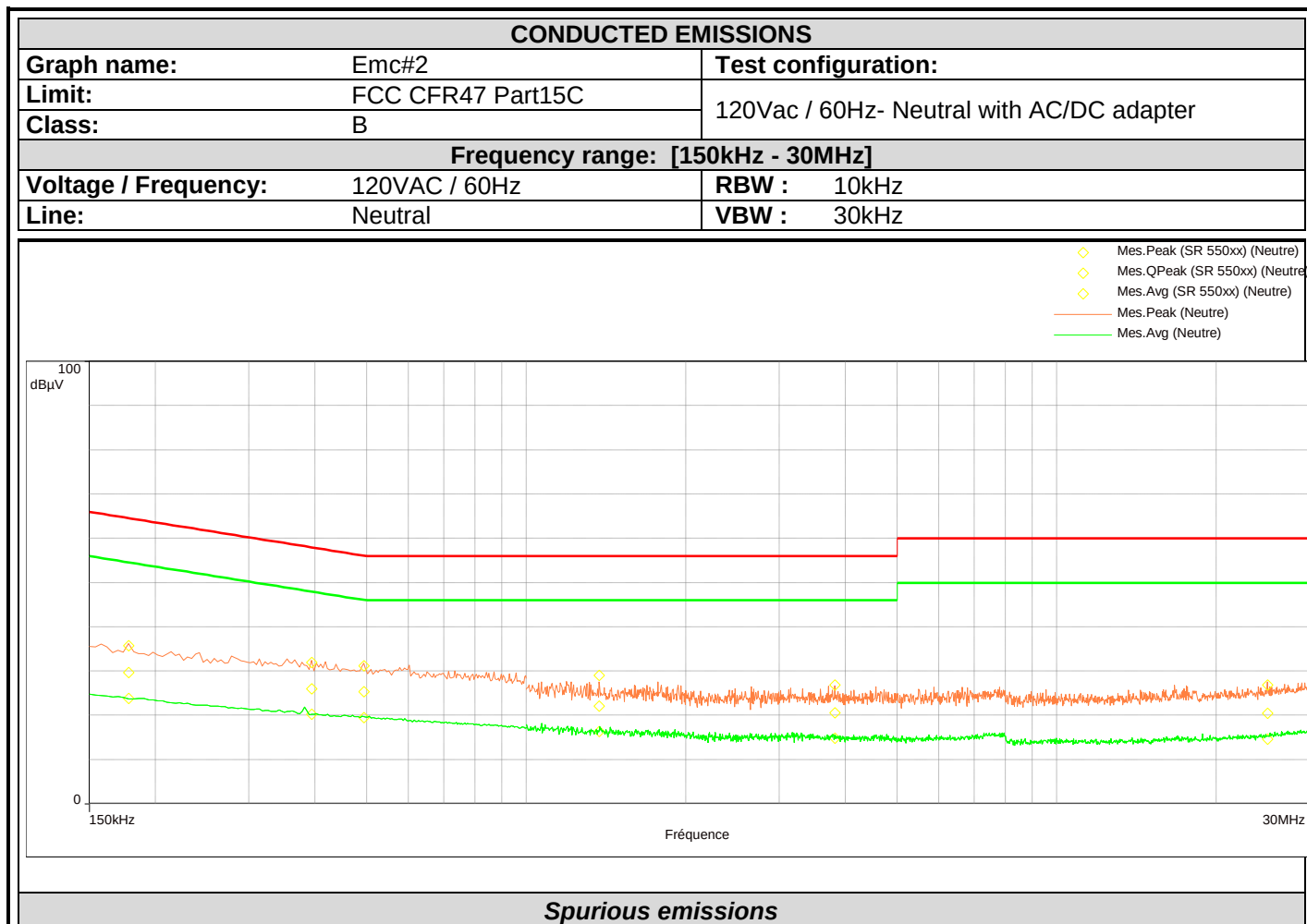
9.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

☒ None ☐ Divergence:

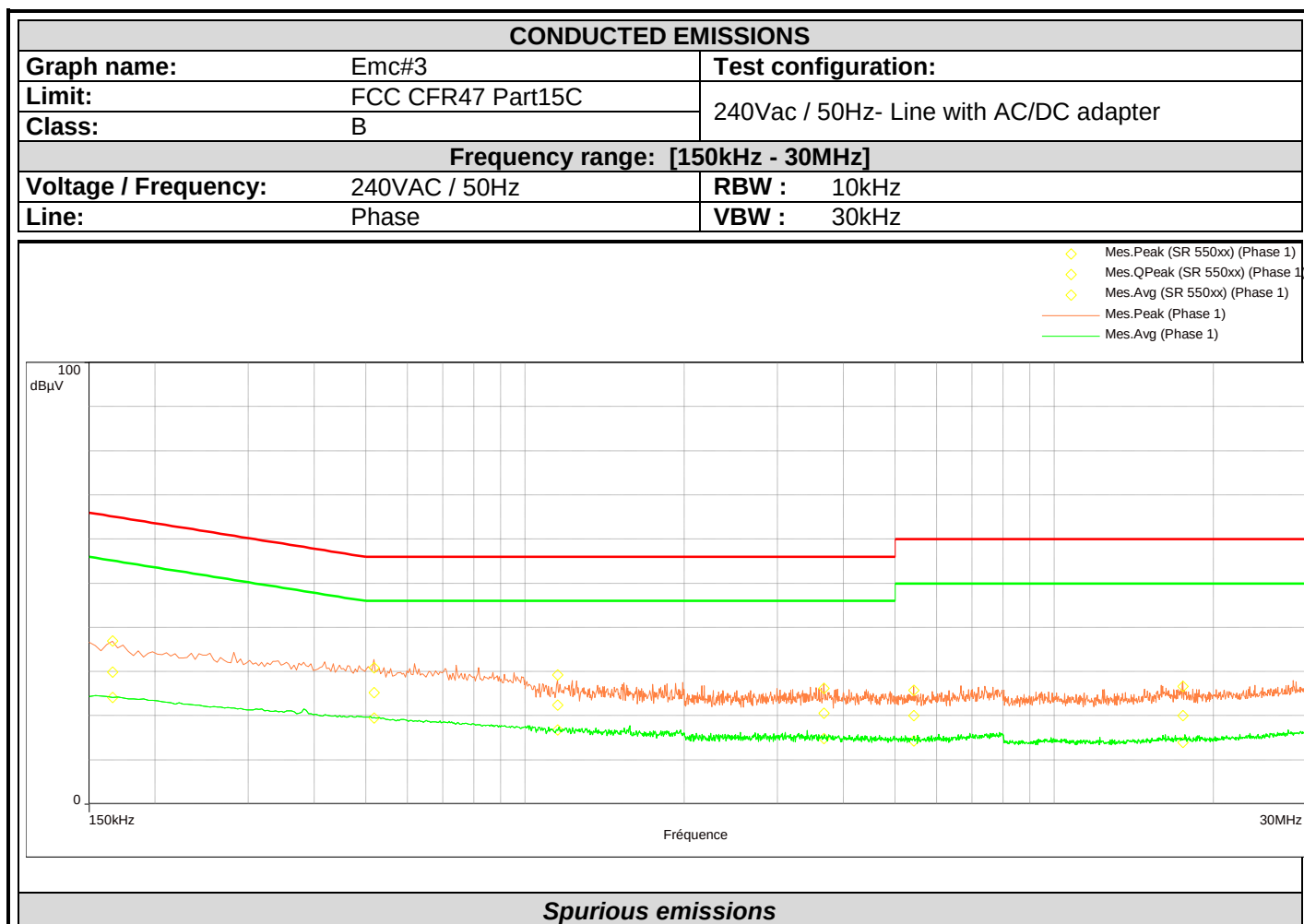
9.6. RESULTS



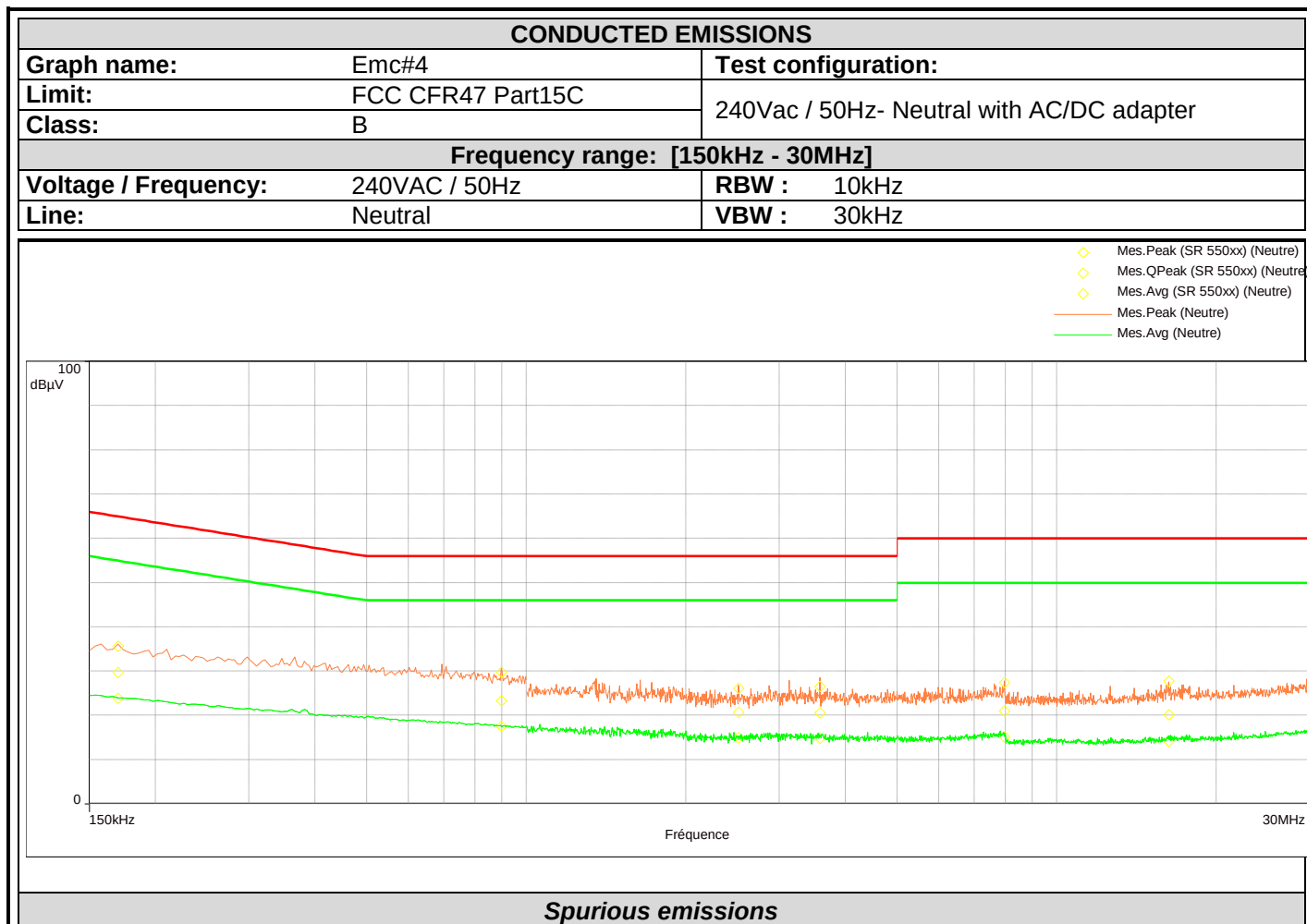
Frequency (MHz)	Mes.Peak (dBμV)	Mes.QPeak (dBμV)	LimQP (dBμV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBμV)	LimAvg (dBμV)	Mes.Avg-LimAvg (dB)	Line	Correction (dB)
0.182	36.0	29.5	64.4	-34.9	23.7	54.4	-30.7	Phase 1	19.5
0.518	30.8	25.1	56.0	-30.9	19.4	46.0	-26.6	Phase 1	19.5
0.910	28.6	23.2	56.0	-32.8	17.5	46.0	-28.5	Phase 1	19.5
1.480	28.0	22.0	56.0	-34.0	16.2	46.0	-29.8	Phase 1	19.6
7.796	26.8	20.9	60.0	-39.1	15.2	50.0	-34.8	Phase 1	20.1
26.440	26.9	21.0	60.0	-39.0	15.1	50.0	-34.9	Phase 1	21.3



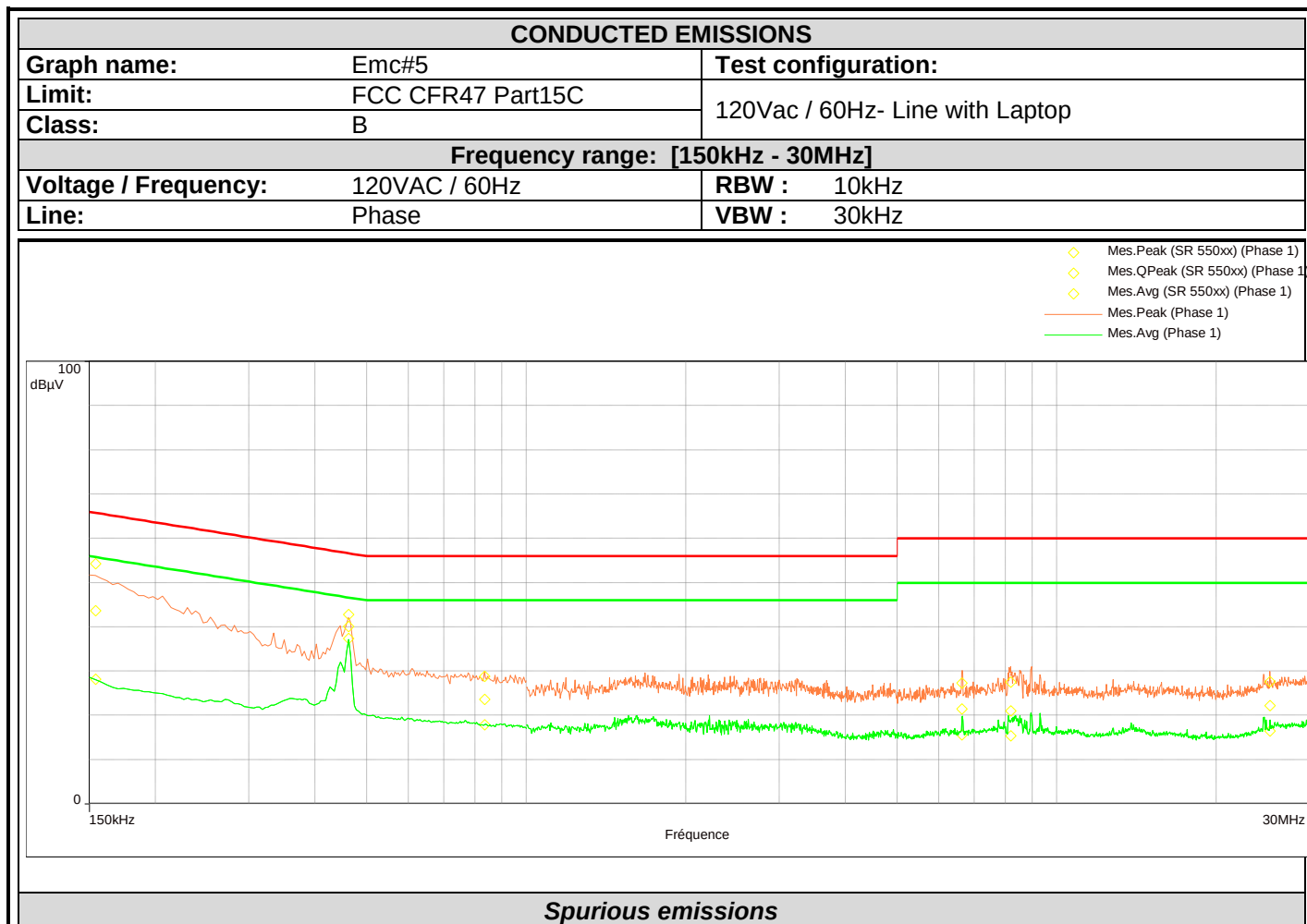
Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)	Line	Correction (dB)
0.178	35.7	29.7	64.6	-34.9	23.8	54.6	-30.7	Neutre	19.5
0.394	32.0	26.0	58.0	-32.0	20.3	48.0	-27.7	Neutre	19.5
0.494	31.2	25.3	56.1	-30.8	19.5	46.1	-26.6	Neutre	19.5
1.372	29.0	22.1	56.0	-33.9	16.4	46.0	-29.6	Neutre	19.6
3.820	26.9	20.6	56.0	-35.4	14.8	46.0	-31.2	Neutre	19.8
24.968	26.8	20.5	60.0	-39.5	14.7	50.0	-35.3	Neutre	21.2



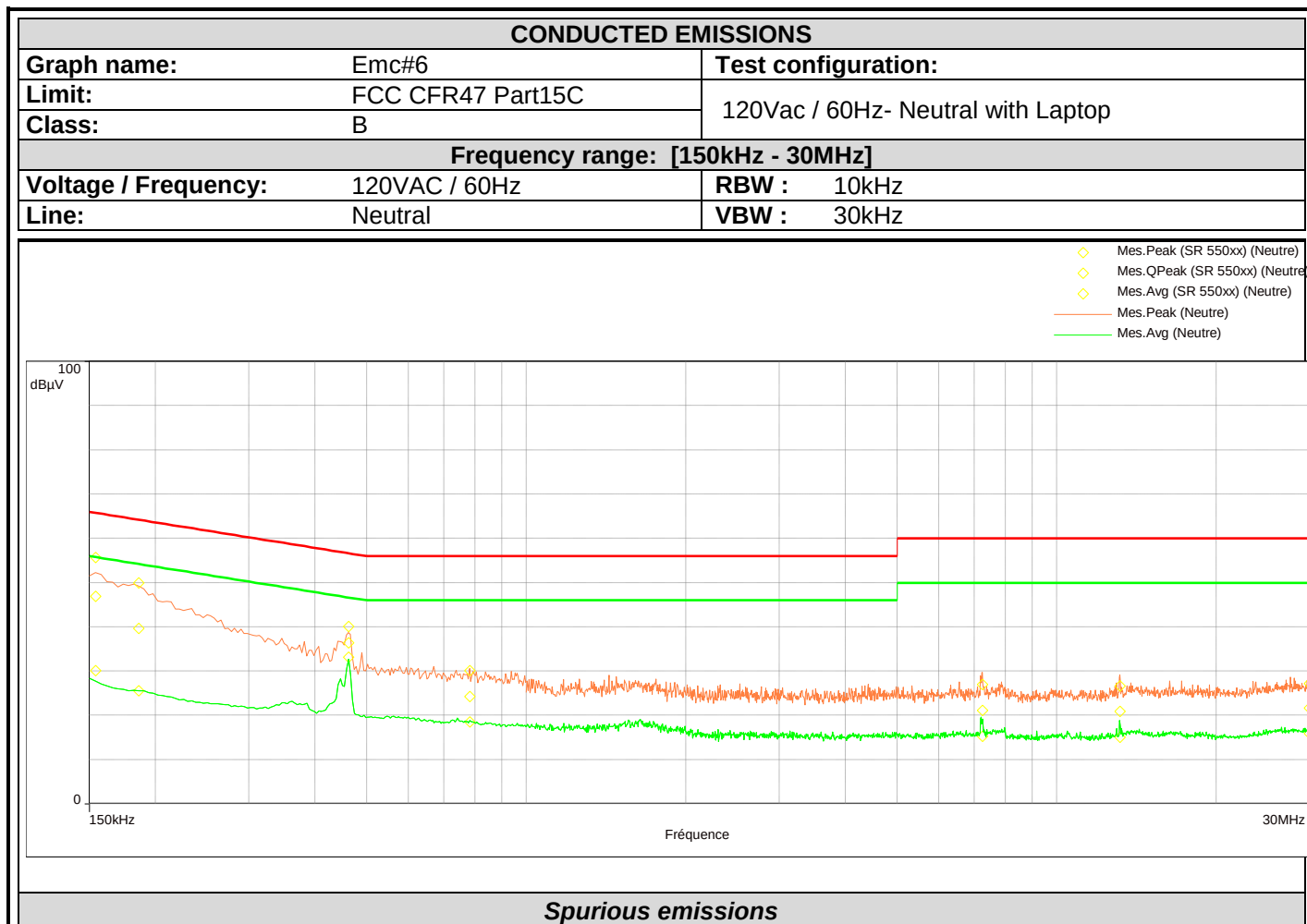
Frequency (MHz)	Mes.Peak (dBμV)	Mes.QPeak (dBμV)	LimQP (dBμV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBμV)	LimAvg (dBμV)	Mes.Avg-LimAvg (dB)	Line	Correction (dB)
0.166	37.0	29.9	65.2	-35.2	24.1	55.2	-31.0	Phase 1	19.4
0.518	30.9	25.3	56.0	-30.7	19.5	46.0	-26.5	Phase 1	19.5
1.152	29.3	22.5	56.0	-33.5	16.8	46.0	-29.2	Phase 1	19.6
3.668	26.2	20.6	56.0	-35.4	14.9	46.0	-31.1	Phase 1	19.8
5.424	25.8	20.1	60.0	-39.9	14.3	50.0	-35.7	Phase 1	19.9
17.508	26.7	20.0	60.0	-40.0	14.0	50.0	-36.0	Phase 1	20.8



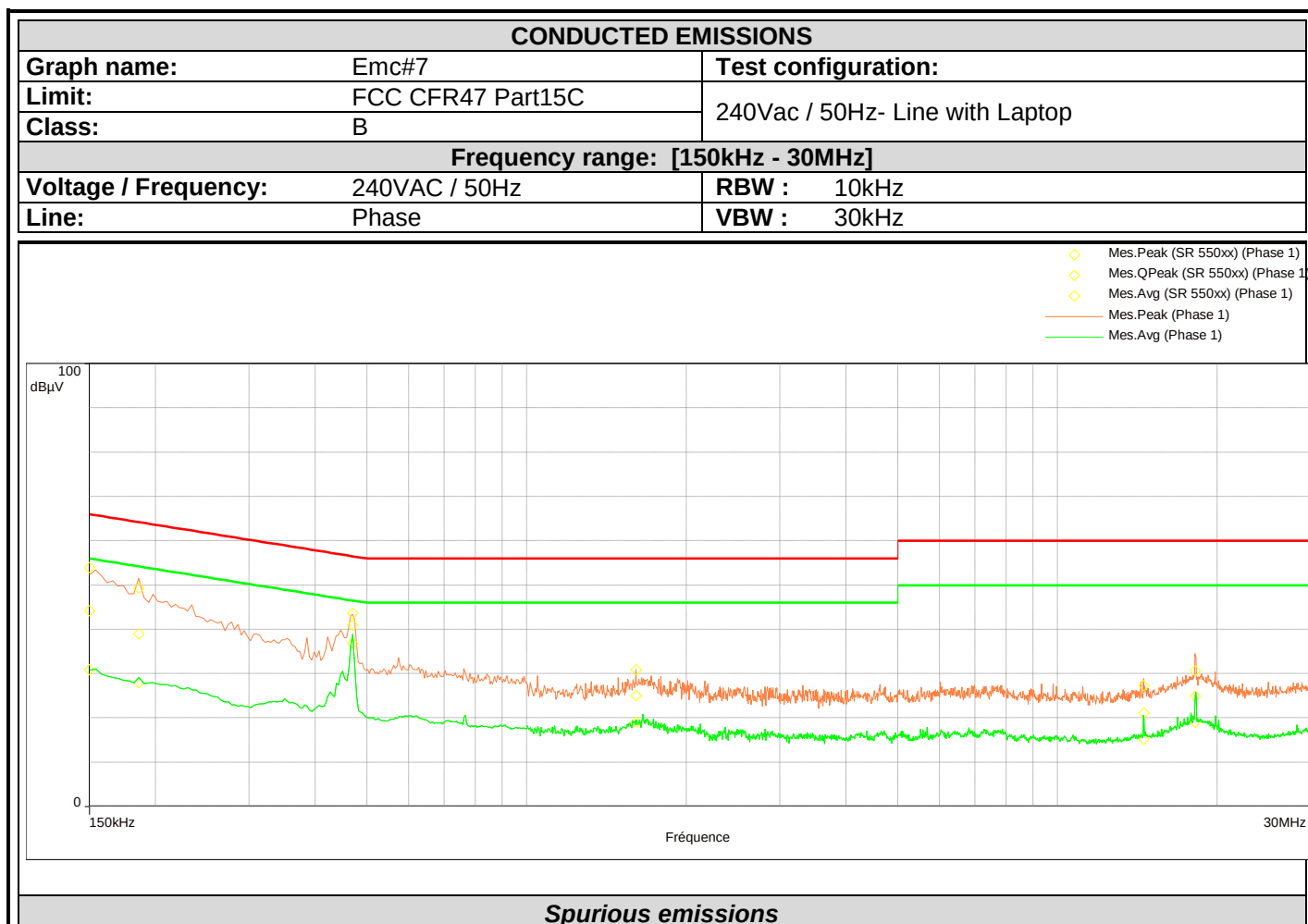
Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)	Line	Correction (dB)
0.170	35.7	29.7	65.0	-35.3	23.9	55.0	-31.1	Neutre	19.4
0.898	29.9	23.3	56.0	-32.7	17.6	46.0	-28.4	Neutre	19.5
2.512	26.1	20.7	56.0	-35.3	15.0	46.0	-31.0	Neutre	19.7
3.580	26.6	20.6	56.0	-35.4	14.9	46.0	-31.1	Neutre	19.8
7.972	27.4	21.0	60.0	-39.0	15.2	50.0	-34.8	Neutre	20.1
16.288	27.7	20.2	60.0	-39.8	14.1	50.0	-35.9	Neutre	20.7



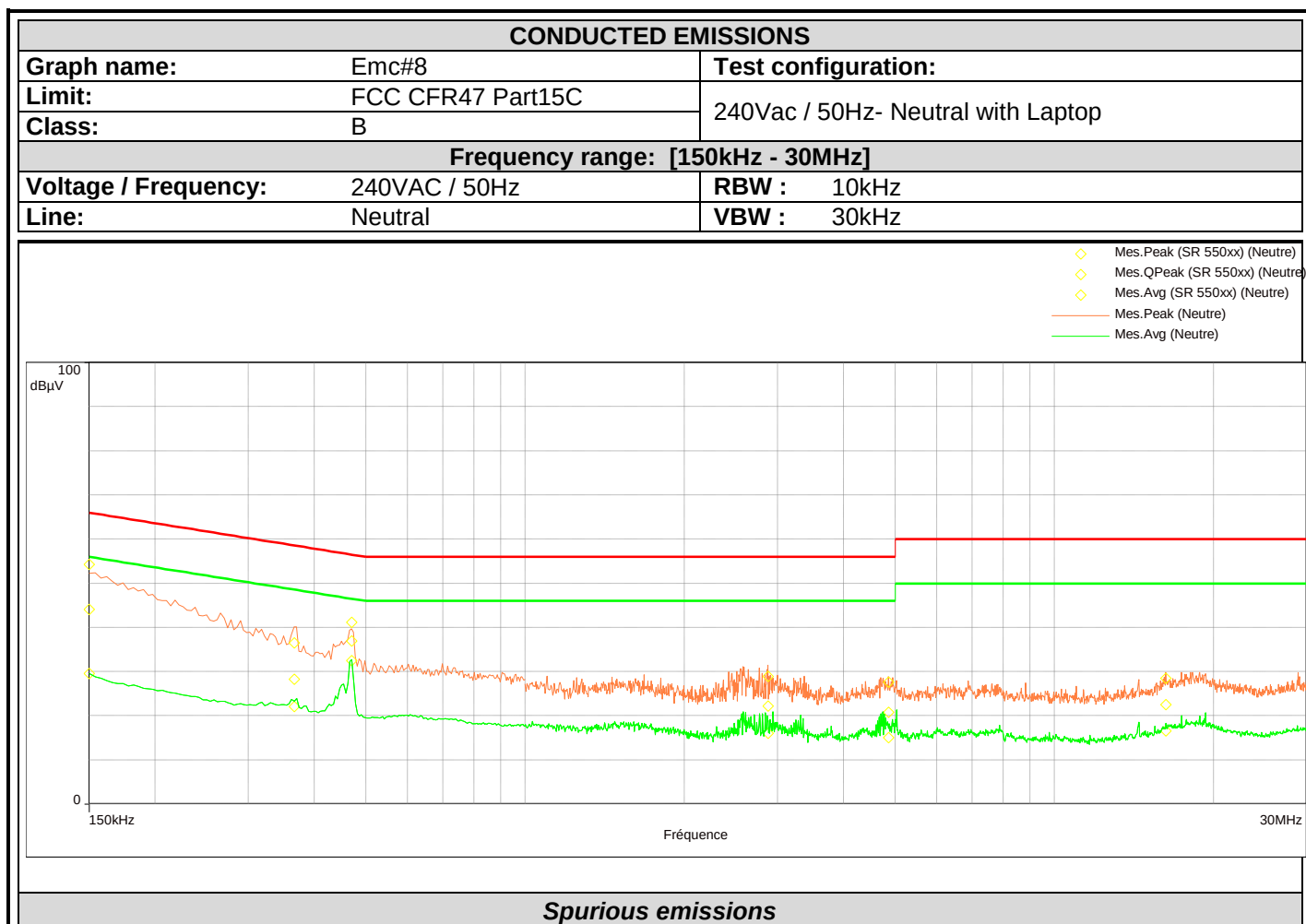
Frequency (MHz)	Mes.Peak (dBµV)	Mes.QPeak (dBµV)	LimQP (dBµV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBµV)	LimAvg (dBµV)	Mes.Avg-LimAvg (dB)	Line	Correction (dB)
0.154	54.3	43.7	65.8	-22.1	28.1	55.8	-27.6	Phase 1	19.4
0.462	42.8	40.1	56.7	-16.6	37.4	46.7	-9.3	Phase 1	19.5
0.834	28.8	23.6	56.0	-32.4	17.9	46.0	-28.1	Phase 1	19.5
6.624	27.4	21.5	60.0	-38.5	15.6	50.0	-34.4	Phase 1	20.0
8.188	27.5	21.0	60.0	-39.0	15.4	50.0	-34.6	Phase 1	20.1
25.228	27.6	22.2	60.0	-37.8	16.5	50.0	-33.5	Phase 1	21.3



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)	Line	Correction (dB)
0.154	55.7	47.0	65.8	-18.8	30.1	55.8	-25.7	Neutre	19.4
0.186	50.0	39.6	64.2	-24.6	25.5	54.2	-28.7	Neutre	19.5
0.462	40.1	36.4	56.7	-20.2	33.1	46.7	-13.5	Neutre	19.5
0.782	30.1	24.3	56.0	-31.7	18.5	46.0	-27.5	Neutre	19.5
7.252	27.0	21.1	60.0	-38.9	15.3	50.0	-34.7	Neutre	20.0
13.164	26.7	20.9	60.0	-39.1	15.0	50.0	-35.0	Neutre	20.5
29.924	27.2	21.7	60.0	-38.3	15.9	50.0	-34.1	Neutre	21.5



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)	Line	Correction (dB)
0.150	53.9	44.2	66.0	-21.8	30.9	56.0	-25.1	Phase 1	19.4
0.186	49.3	39.0	64.2	-25.2	28.0	54.2	-26.2	Phase 1	19.5
0.470	43.6	41.0	56.5	-15.5	36.9	46.5	-9.6	Phase 1	19.5
1.608	30.8	25.0	56.0	-31.0	19.1	46.0	-26.9	Phase 1	19.6
14.532	27.3	21.1	60.0	-38.9	15.2	50.0	-34.8	Phase 1	20.6
18.176	30.6	24.9	60.0	-35.1	19.0	50.0	-31.0	Phase 1	20.8



Frequency (MHz)	Mes.Peak (dBμV)	Mes.QPeak (dBμV)	LimQP (dBμV)	Mes.QPeak-LimQP (dB)	Mes.Avg (dBμV)	LimAvg (dBμV)	Mes.Avg-LimAvg (dB)	Line	Correction (dB)
0.150	54.2	44.1	66.0	-21.9	29.6	56.0	-26.4	Neutre	19.4
0.366	36.5	28.2	58.6	-30.4	22.2	48.6	-26.4	Neutre	19.5
0.470	41.1	37.0	56.5	-19.5	32.5	46.5	-14.0	Neutre	19.5
2.876	29.0	22.2	56.0	-33.8	16.0	46.0	-30.0	Neutre	19.7
4.860	27.7	20.8	56.0	-35.2	15.1	46.0	-30.9	Neutre	19.8
16.252	28.5	22.6	60.0	-37.4	16.6	50.0	-33.4	Neutre	20.7

9.7. CONCLUSION

Ac Power Line Conducted Emission measurement performed on the sample of the product **In&motion In&box V6**, SN: **63000005** in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 & RSS 247 ISSUE 2 limits.

10. UNWANTED EMISSIONS IN RESTRICTED FREQUENCY BANDS

10.1. TEST CONDITIONS

Test performed by : Majid MOURZAGH
 Date of test : September 6, 2021
 Ambient temperature : 23 °C
 Relative humidity : 39 %

10.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013) and FCC part15 subpart C.

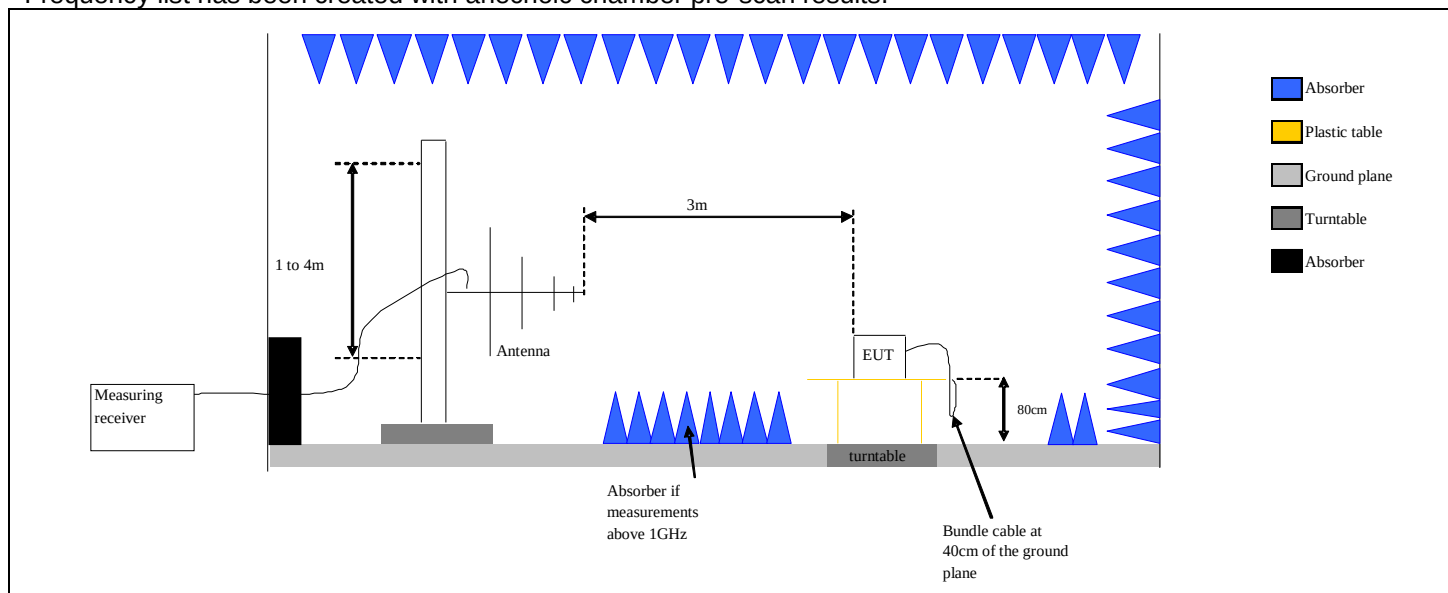
Test is performed in parallel, perpendicular and ground parallel axis with a loop antenna below 30MHz. Measurement bandwidth was 200Hz below 150kHz and 9kHz between 150kHz & 30MHz. The level has been maximised by the turntable rotation of 360 degrees range on all axis of EUT used in normal configuration. Antenna height was 1m. The EUT is placed **on an open area test site**. Distance between measuring antenna and the EUT is **10m**.

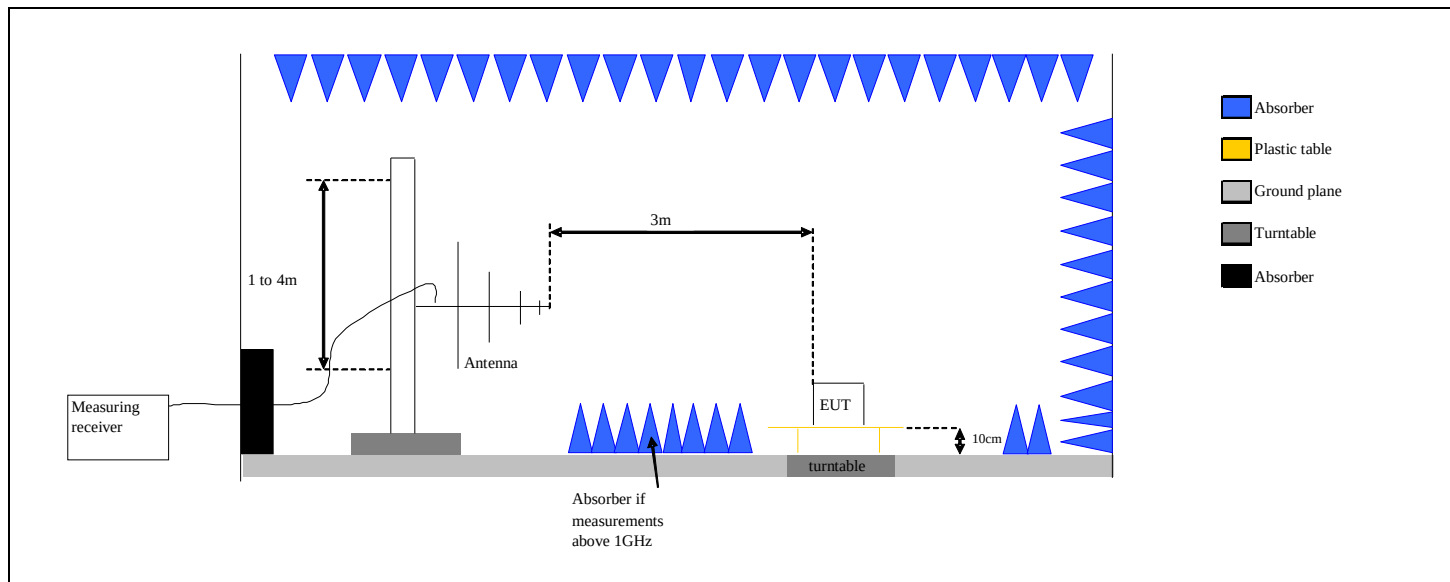
Test is performed in horizontal (H) and vertical (V) polarization with **bilog** between 30MHz & 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on all axis of EUT used in normal configuration. The EUT is placed at 1.5m high above 1GHz and at 0.8m high under 1GHz. The EUT is placed **in a full anechoic chamber** above 1GHz and **on an open area test site** from 30MHz to 1GHz. Distance between measuring antenna and the EUT is **3m**. The height antenna is varied from 1m to 4m from 30MHz to 1GHz and above 1GHz is:

☐ On mast, varied from 1m to 4m

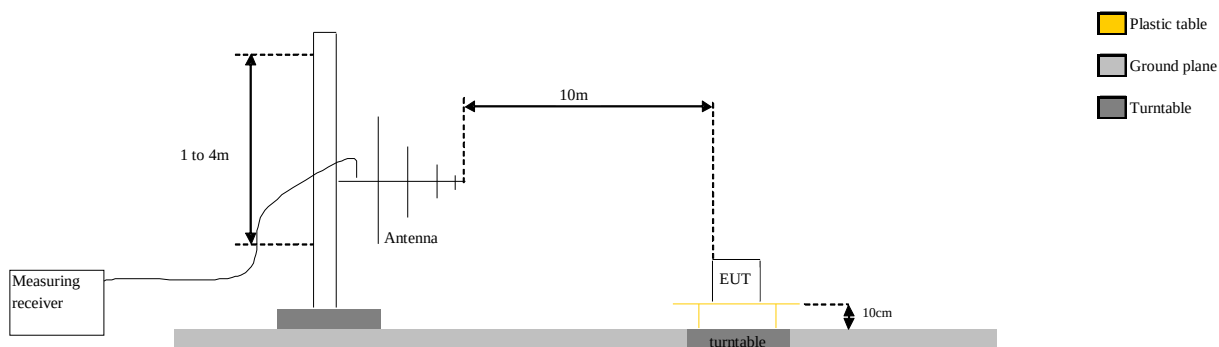
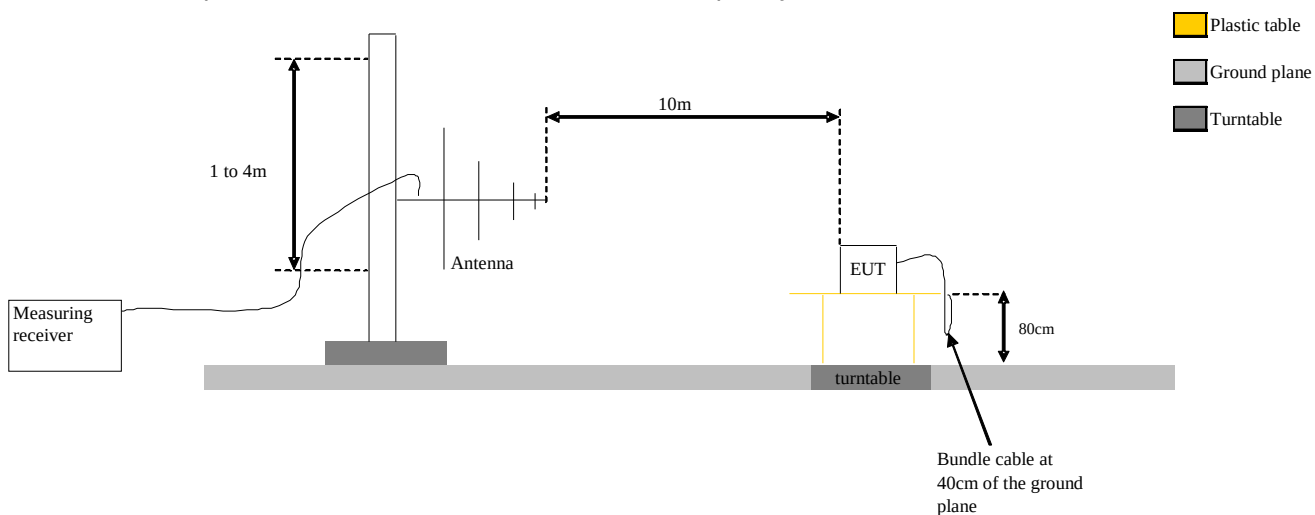
☒ Fixed and centered on the EUT (EUT smaller than the beamwidth of the measurement antenna, ANSI C63.10 §6.6.5)

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

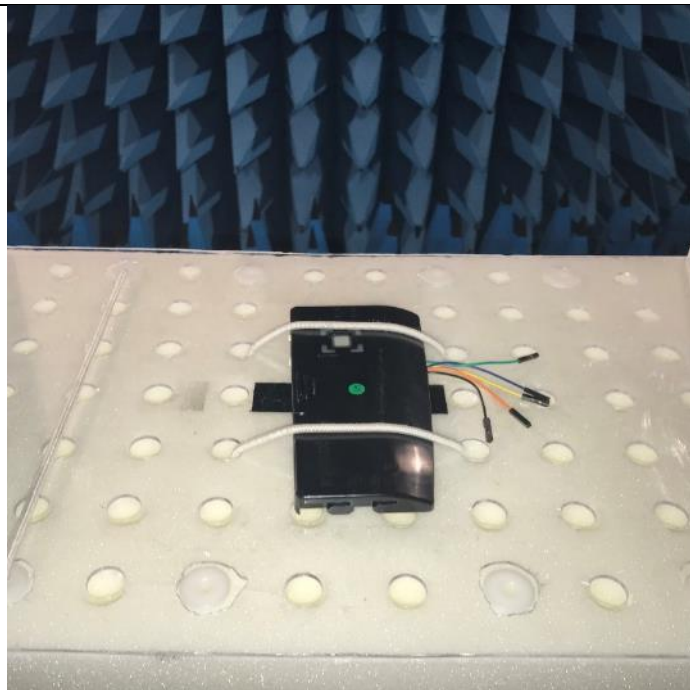




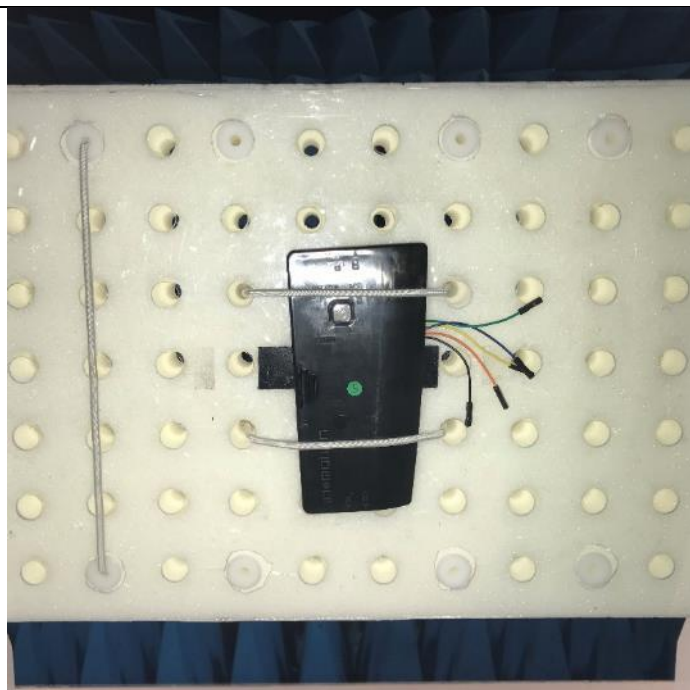
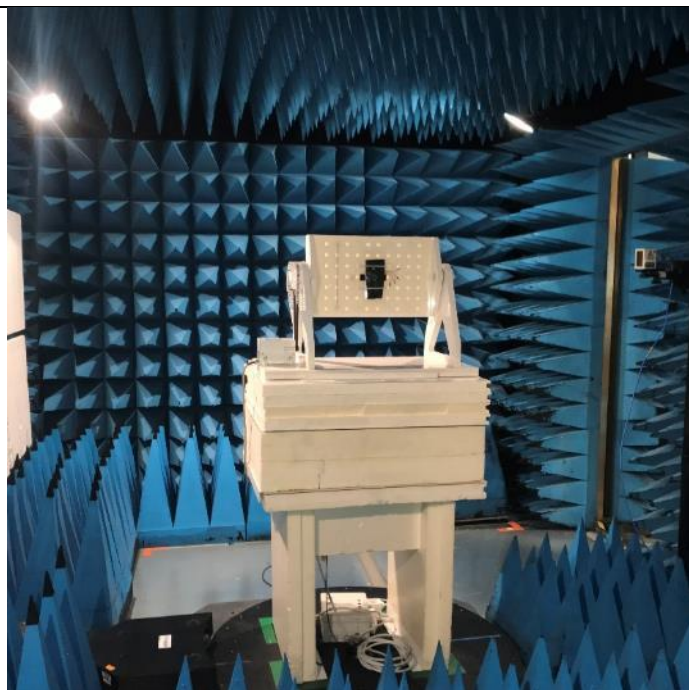
Test set up of Unwanted Emissions in Restricted Frequency Bands in semi anechoic chamber



Test Set up for radiated measurement in open area test site



Axis XY on FAR



Axis Z on FAR

Photograph for Unwanted Emissions



Axis XY on OATS



Axis Z on OATS



Photograph for Unwanted Emission in restricted frequency bands

10.3. LIMIT

Measure at 300m		
Frequency range	Level	Detector
9kHz-490kHz	67.6dB μ V/m /F(kHz)	QPeak
Measure at 30m		
Frequency range	Level	Detector
490kHz-1.705MHz	87.6dB μ V/m /F(kHz)	QPeak
1.705MHz-30MHz	29.5dB μ V/m	QPeak
Measure at 10m		
Frequency range	Level	Detector
30MHz to 88MHz	29.5dB μ V/m	QPeak
88MHz to 216MHz	33dB μ V/m	QPeak
216MHz to 960MHz	35.5B μ V/m	QPeak
960MHz to 1000MHz	43.5dB μ V/m	QPeak
Above 1000MHz	63.5dB μ V/m	Peak
	43.5dB μ V/m	Average
Measure at 3m		
Frequency range	Level	Detector
30MHz to 88MHz	40dB μ V/m	QPeak
88MHz to 216MHz	43.5dB μ V/m	QPeak
216MHz to 960MHz	46B μ V/m	QPeak
960MHz to 1000MHz	54dB μ V/m	QPeak
Above 1000MHz	74dB μ V/m	Peak
	54dB μ V/m	Average

10.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
Amplifier 9kHz - 40GHz	LCIE SUD EST	—	A7102082	06/20	09/21
Antenna Bi-log	CHASE	CBL6111A	C2040172	09/18	09/21
Antenna horn 18GHz	EMCO	3115	C2042029	09/18	09/21
Antenna Loop	ELECTRO-METRICS	EM-6879	C2040052	06/19	06/22
BAT EMC	NEXIO	v3.19.1.23	L1000115		
CABLE N 3m	—	-	A5329206	07/20	07/22
Cable SMA 40GHz 40cm	WITHWAVE	W101-SM1-0.4M	A5329979	04/21	04/22
Comb EMR HF	YORK	CGE01	A3169114		
Emission Cable (SMA 1m)	TELEDYNE	26GHz	A5329874	10/20	10/21
Emission Cable (SMA 3.3m)	TELEDYNE	26GHz	A5329875	10/20	10/21
Emission Cable <1GHz (Ampl <-> Cage)	-	18GHz	A5329907	08/20	09/21
Filter Matrice	LCIE SUD EST	Combined filters	A7484078	09/20	09/21
Multimeter - CEM	FLUKE	87	A1240251	03/21	03/23
Rehausse Table C3	LCIE	—	F2000507		
Rehausse Table C3	LCIE	—	F2000511		
Semi-Anechoic chamber #3 (BF)	SIEPEL	—	D3044017_BF	12/19	12/22
Semi-Anechoic chamber #3 (VSWR)	SIEPEL	—	D3044017_VSWR	12/19	12/22
Spare C3 Cable Measure	TELEDYNE	26GHz	A5329681	09/20	09/22
Spectrum analyzer	ROHDE & SCHWARZ	FSU 26	A4060058	09/19	09/21
Table C3	LCIE	—	F2000461		
Thermo-hygrometer (PM1/2/3)	KIMO	HQ 210	B4206022	01/21	01/23
Turntable chamber (Cage#3)	ETS Lingren	Model 2165	F2000371		
Turntable controller (Cage#3)	ETS Lingren	Model 2090	F2000444		

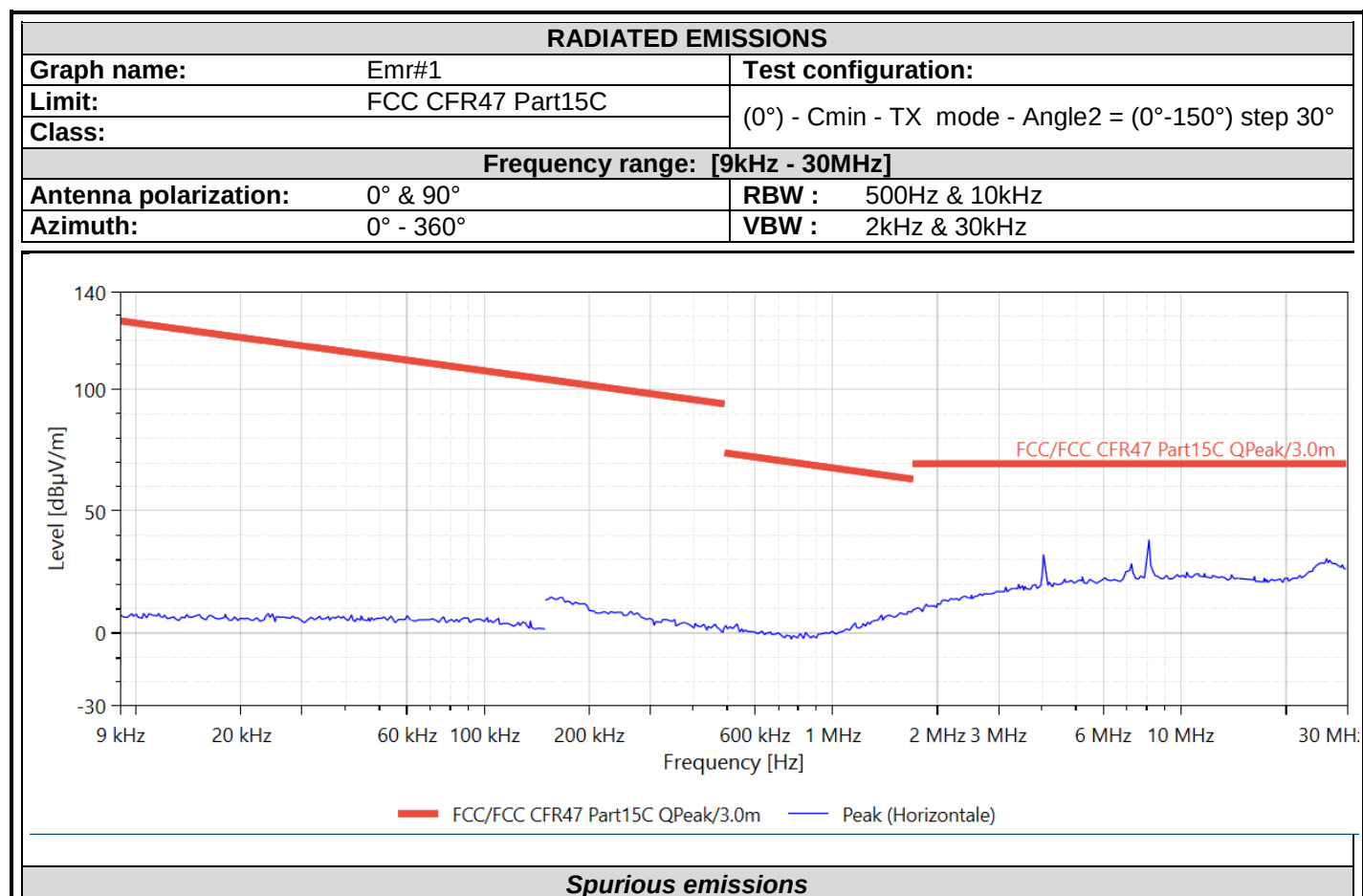
Note: In our quality system, the test equipment calibration due is more & less 2 months

10.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

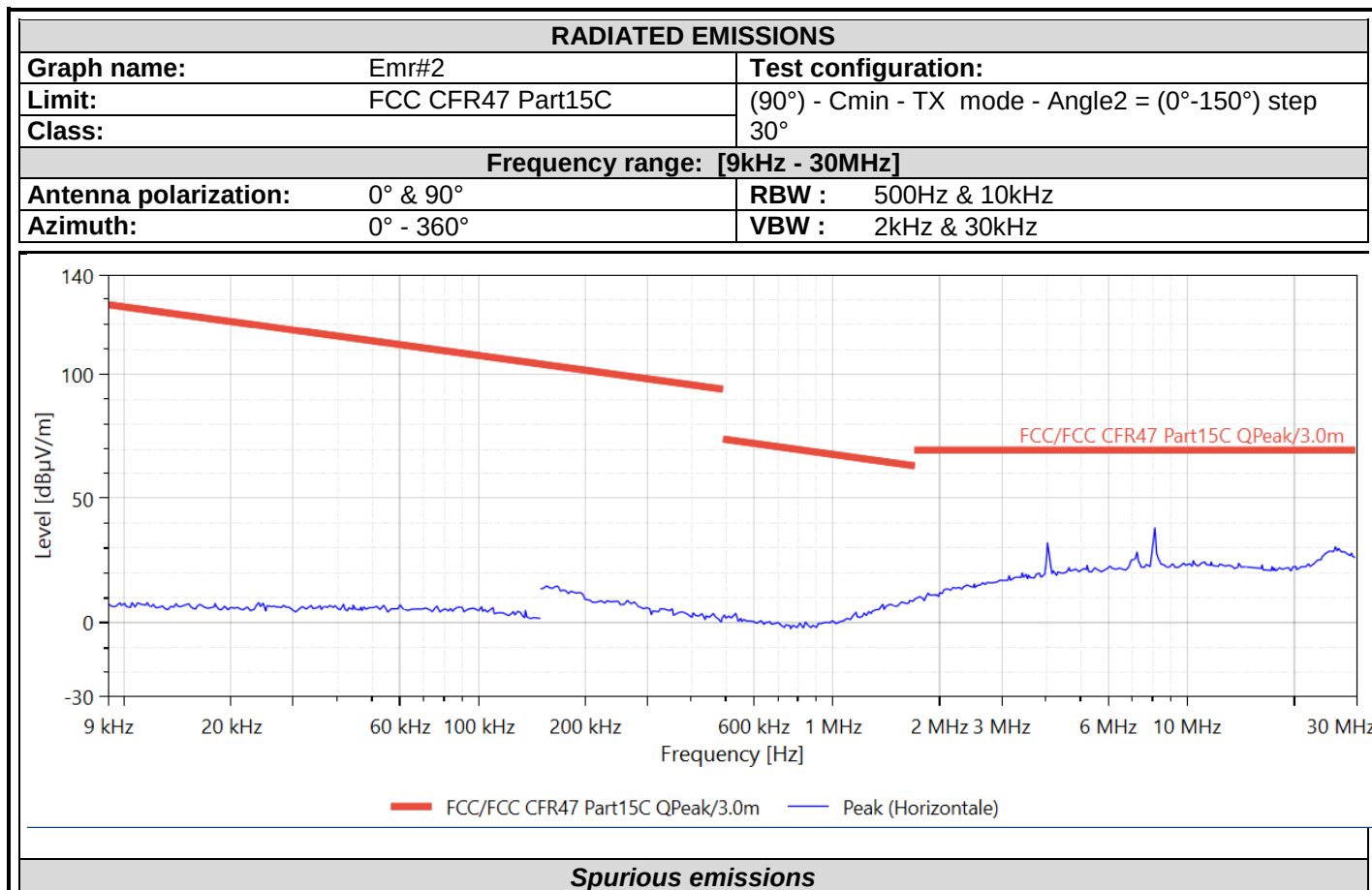
☒ None ☐ Divergence:

10.6. RESULTS

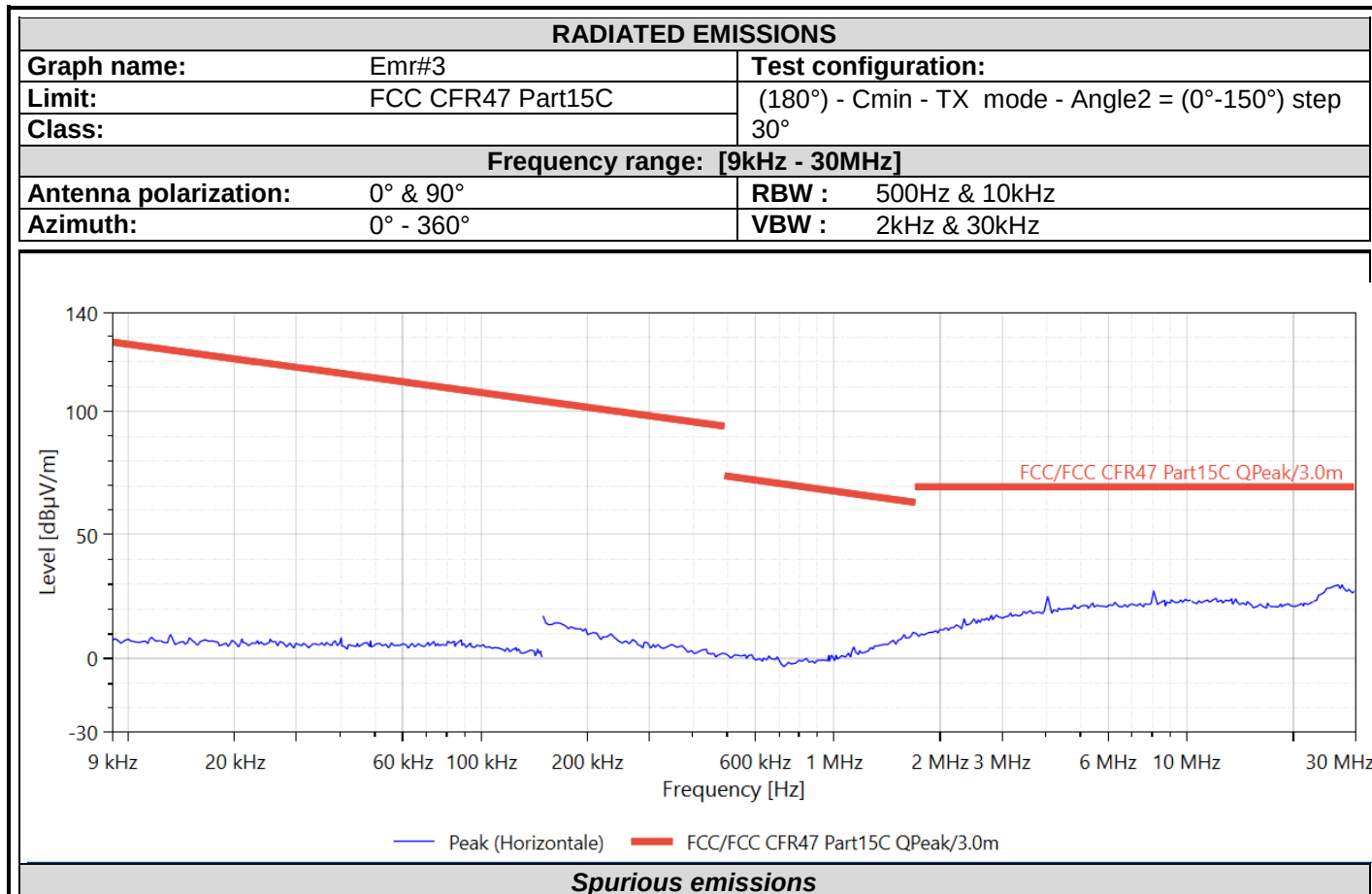
Results in the frequency band [0.009-30] MHz: Worst case presented 802.11b



Frequency (MHz)	QPeak Level (dBµV/m)	Polarization	Correction (dB)
No significant frequency observed in 20dB below limit of restricted frequency bands			

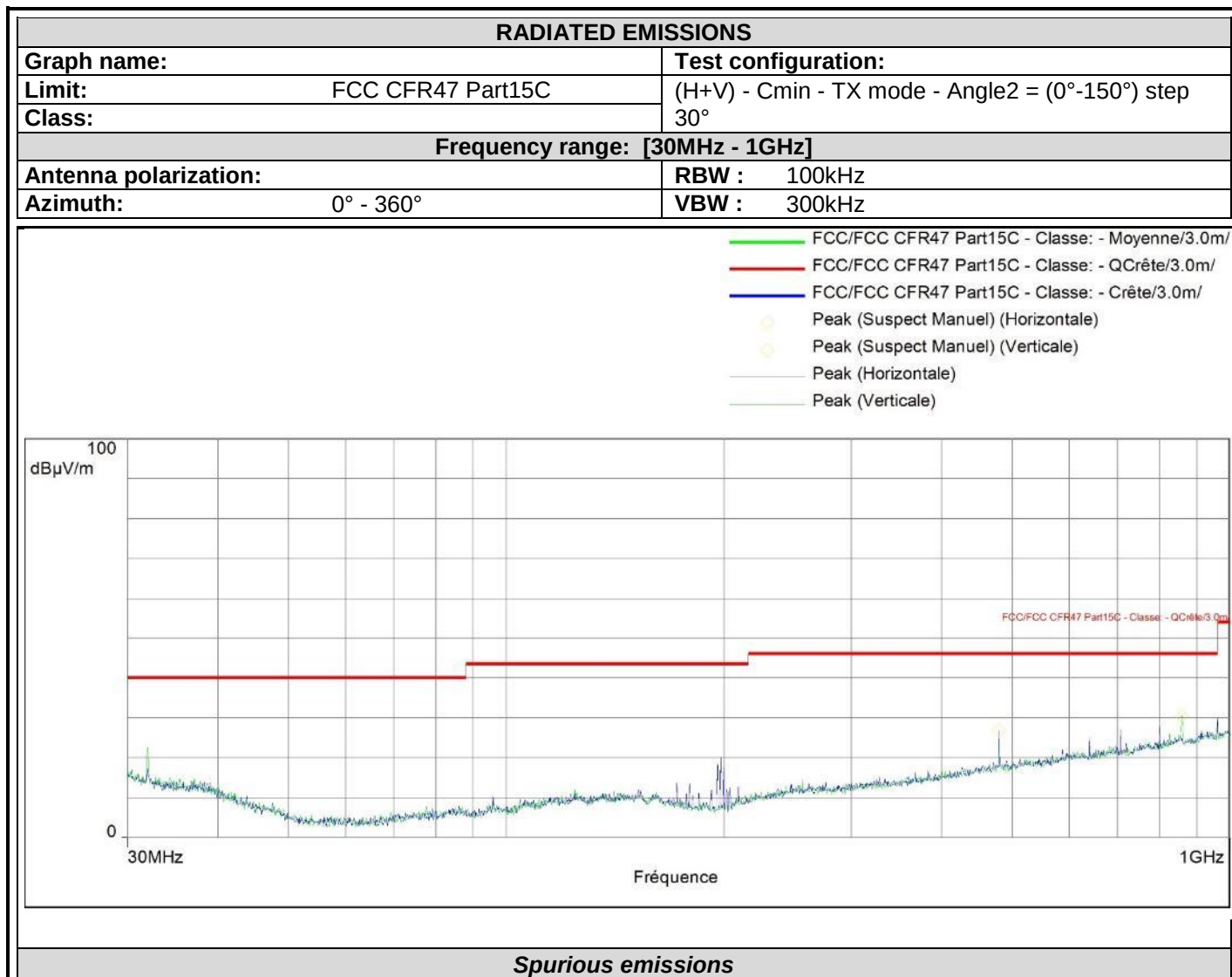


Frequency (MHz)	QPeak Level (dBµV/m)	Polarization	Correction (dB)
No significant frequency observed in 20dB below limit of restricted frequency bands			

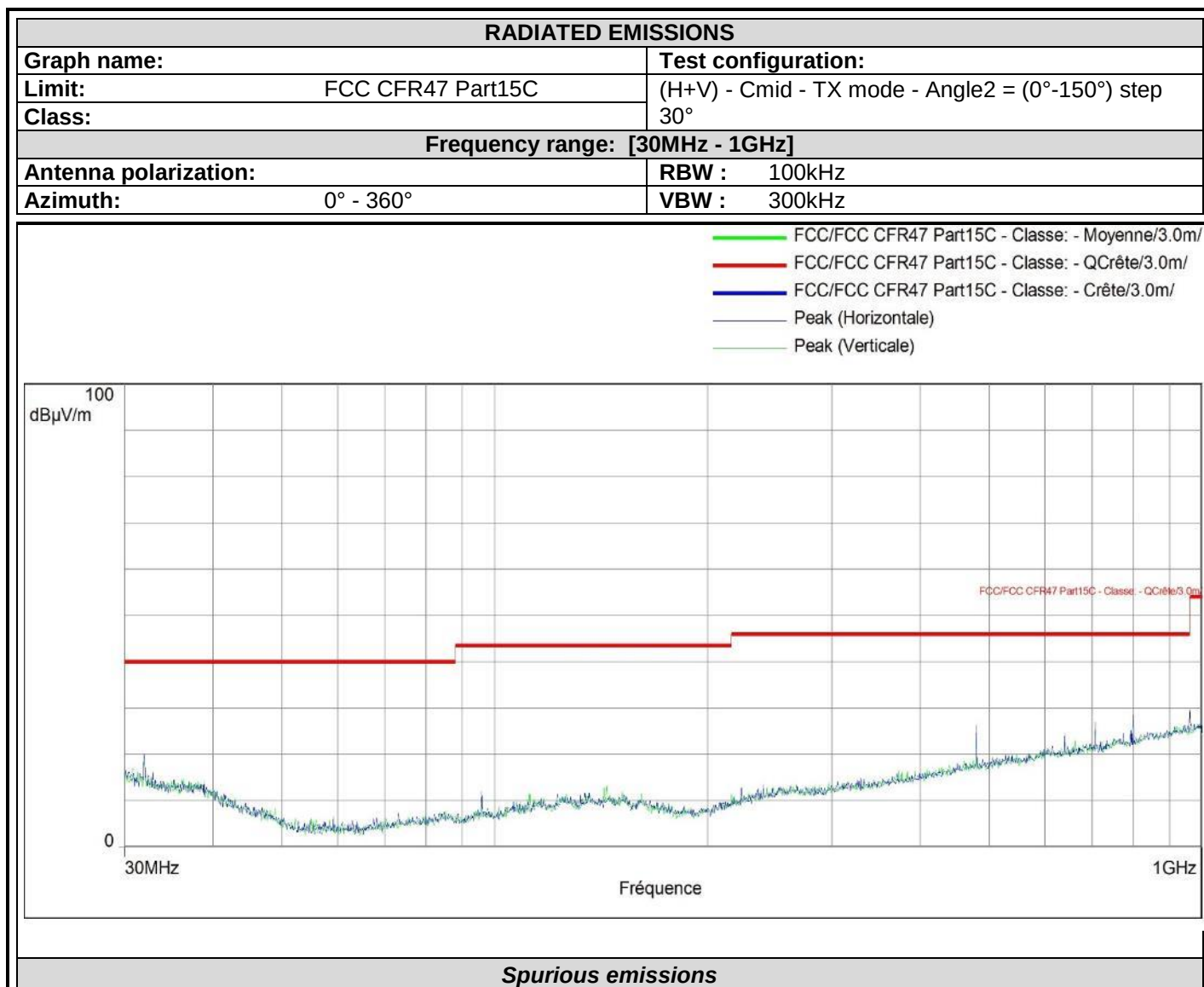


Frequency (MHz)	QPeak Level (dBμV/m)	Polarization	Correction (dB)
No significant frequency observed in 20dB below limit of restricted frequency bands			

Results in the frequency band [30-1000] MHz: Worst case presented 802.11b



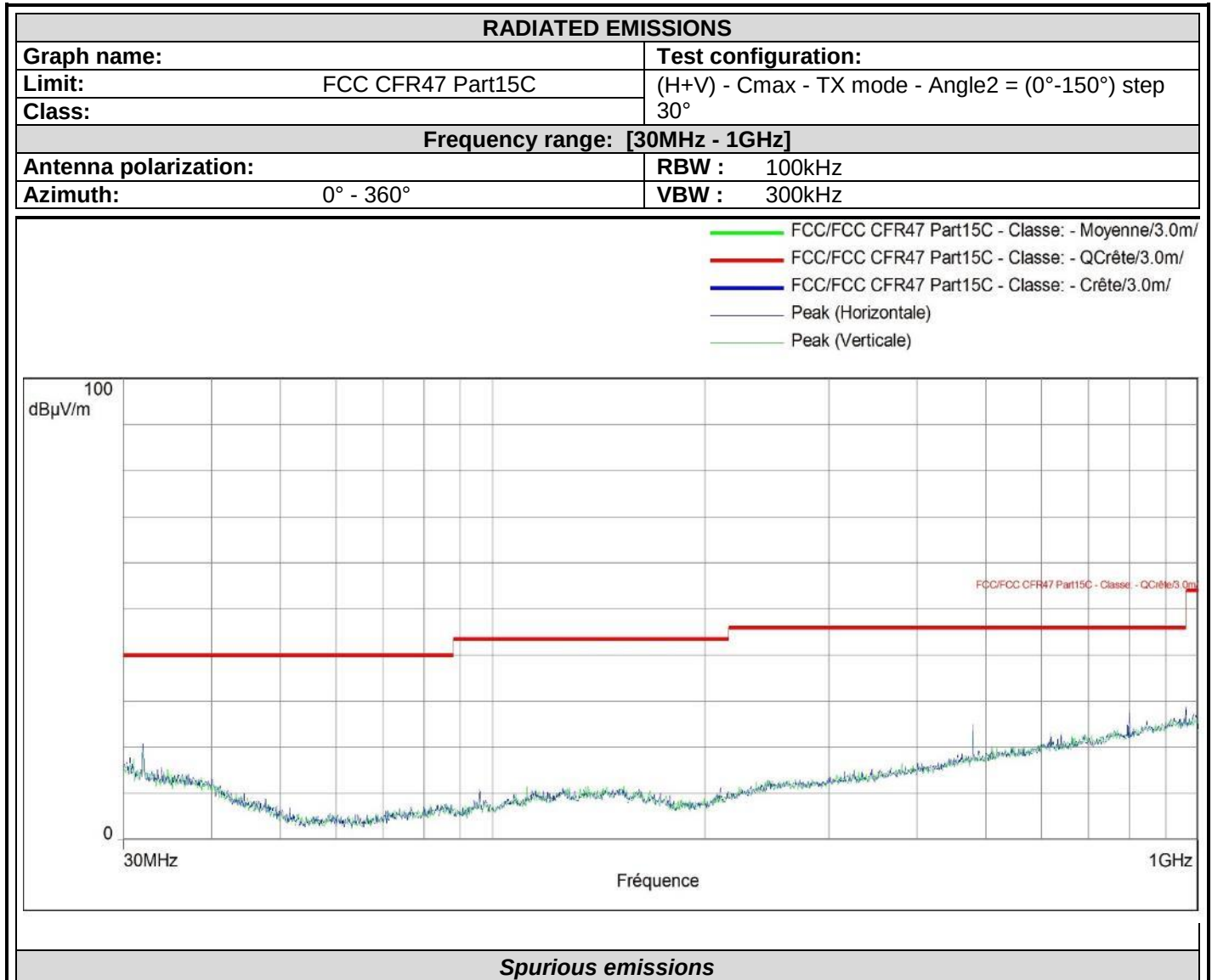
Frequency (MHz)	Peak (dBμV/m)	Lim.Peak (dBμV/m)	Margin (dB)	Angle1 (°)	Angle2 (°)	Polarisation	Correction (dB)
479.983	26.88	46	-19.12	63.00	90	Horizontale	-14.48
858.1375	30.44	46	-15.56	301.00	90	Verticale	-9.10



Frequency (MHz)	QPeak Level (dBµV/m)	Polarization	Correction (dB)
No significant frequency observed in 20dB below limit of restricted frequency bands			



L C I E



Frequency (MHz)	QPeak Level (dBµV/m)	Polarization	Correction (dB)
No significant frequency observed in 20dB below limit of restricted frequency bands			

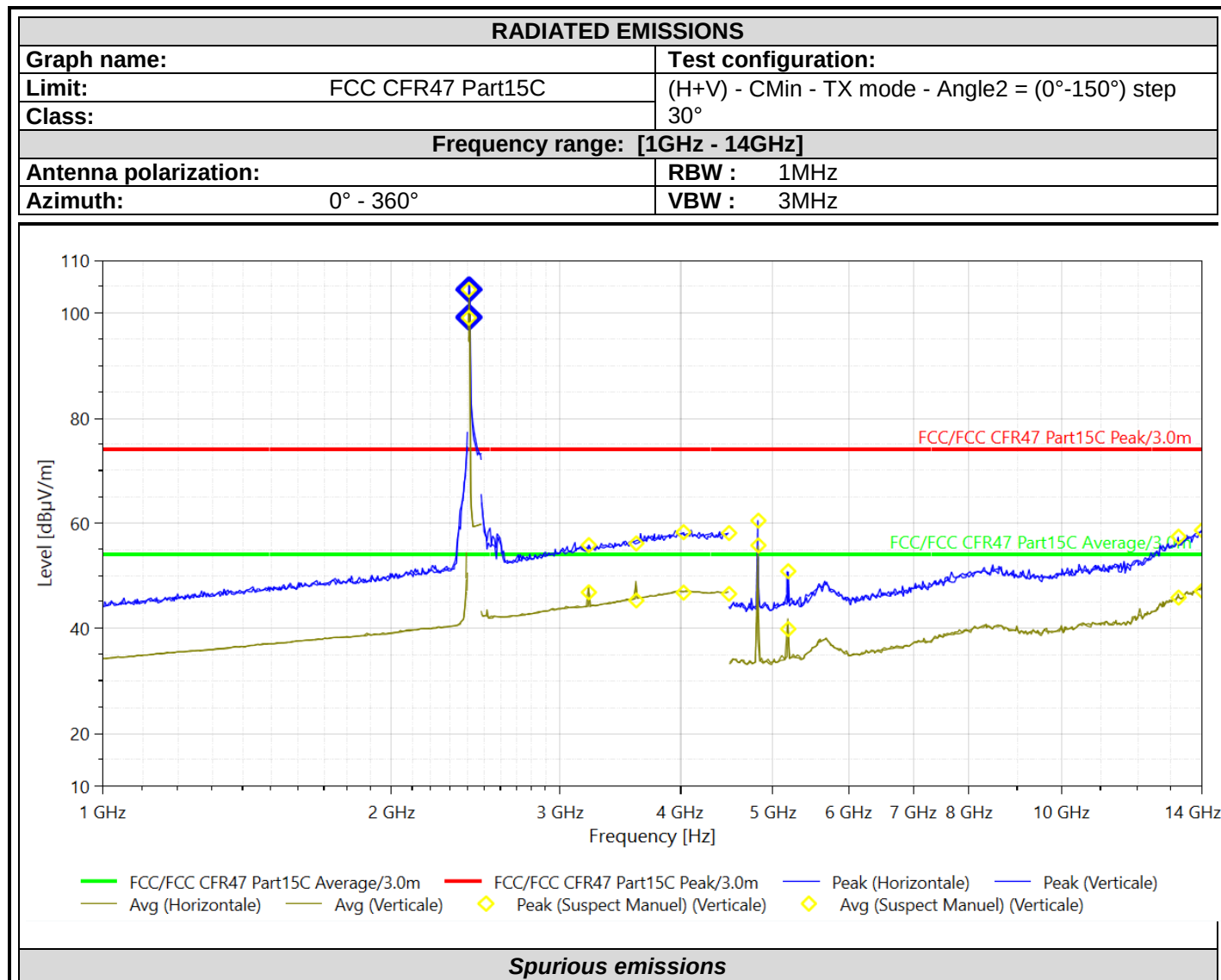
QUALIFICATION (30MHz-1GHz): 10 meters measurement on the Open Area Test Site.
Frequency list has been created with semi-anechoic chamber pre-scan results.
Measurements are performed using a QUASI-PEAK detection.

Test Frequency (MHz)	Meter Reading dB(µV)	Detector (Pk/QP/Av)	Polarity (V/H)	Azimuth (Degrees)	Antenna Height (cm)	Transducer Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
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No significant frequency observed margin > 15dB

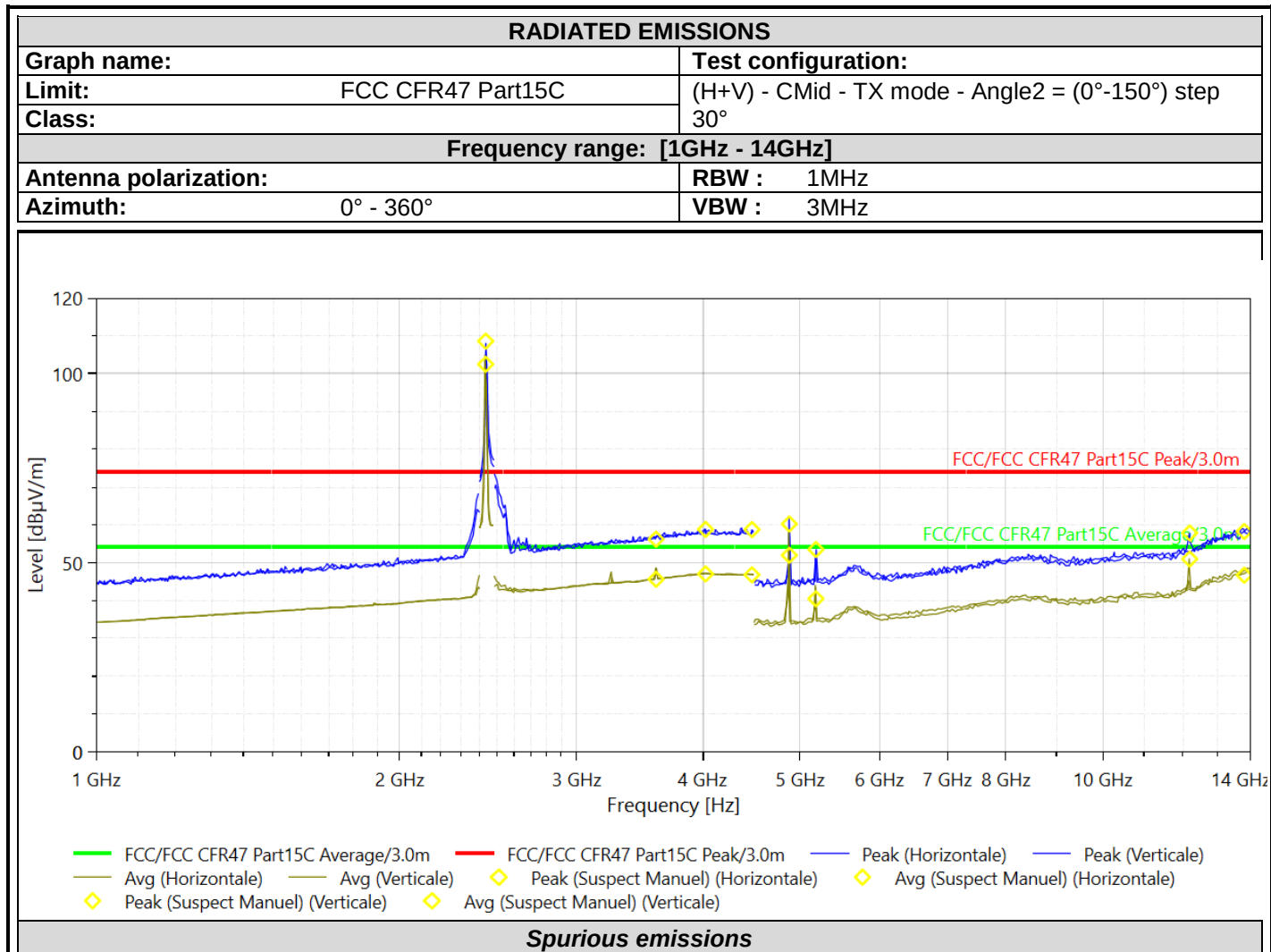
Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e)
(M@3m = M@10m+10.5dB

Results in the frequency band [1-25] GHz: Worst case presented 802.11b



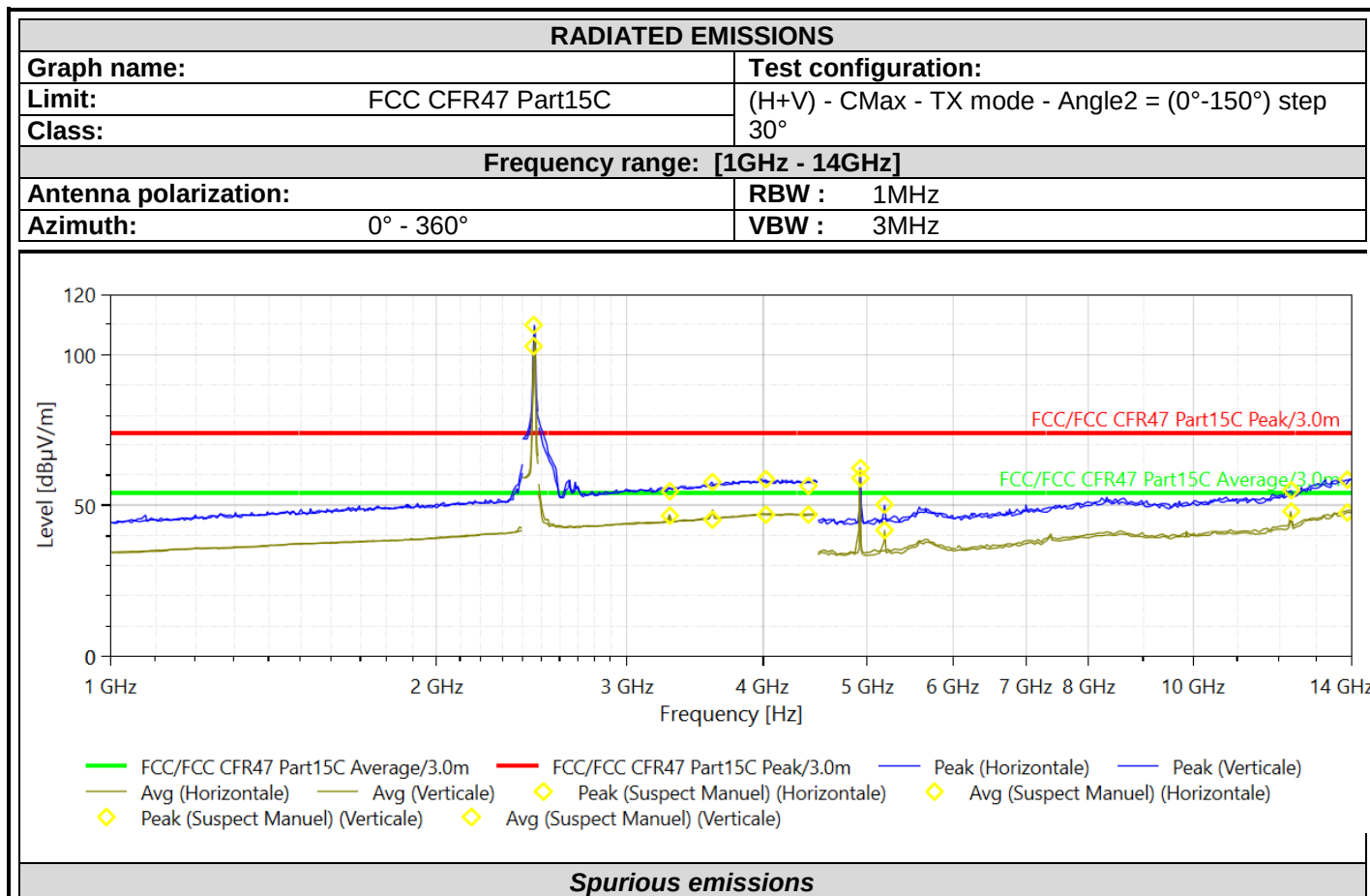
Frequency (MHz)	Peak (dBµV/m)	Lim.Peak (dBµV/m)	Margin Peak (dB)	Avg (dBµV/m)	Lim.Avg (dBµV/m)	Margin Avg (dB)	Azimet	Angle2 (°)	Polarisation	Correction (dB)
2411.1055	104.43	/	/	99.1	/	/	258.00	90	Verticale	34.71
3215.8928	55.84	74	-18.16	46.79	54	-7.21	92.00	60	Verticale	37.67
3598.2212	56.16	74	-17.84	45.24	54	-8.76	270.00	120	Verticale	38.60
4030.5588	58.3	74	-15.7	46.73	54	-7.27	250.00	9	Verticale	39.91
4495.967	58.13	74	-15.87	46.49	54	-7.51	254.00	0	Verticale	39.75
4823.95*	60.49	74	-13.51	55.71	54	1.71	0.00	60	Verticale	-22.79
5182.1	50.87	74	-23.13	39.8	54	-14.2	173.00	120	Verticale	-22.20
13229.55	57.44	74	-16.56	45.79	54	-8.21	78.00	120	Verticale	-9.82
13993.35	58.65	74	-15.35	47.07	54	-6.93	53.00	30	Verticale	-7.18

* : See qualification tab result below



Frequency (MHz)	Peak (dBµV/m)	Lim.Peak (dBµV/m)	Margin Peak (dB)	Avg (dBµV/m)	Lim.Avg (dBµV/m)	Margin Avg (dB)	Azimet	Angle2 (°)	Polarisation	Correction (dB)
2437.571	108.62	/	/	102.52	/	/	257.00	30	Verticale	34.81
3593.3816	56.12	74	-17.88	45.45	54	-8.55	213.00	90	Horizontale	38.59
4024.106	58.7	74	-15.3	46.86	54	-7.14	282.00	90	Verticale	39.91
4474.9954	58.66	74	-15.34	46.63	54	-7.37	0.00	0	Verticale	39.75
4873.35*	62.2	74	-11.8	58.48	54	4.48	0.00	90	Verticale	-22.70
5183.05	53.43	74	-20.57	40.41	54	-13.59	0.00	120	Horizontale	-22.20
12186.45*	57.8	74	-16.2	50.92	54	-3.08	340.00	150	Horizontale	-14.00
13796.7	58.15	74	-15.85	46.52	54	-7.48	162.00	120	Verticale	-8.46

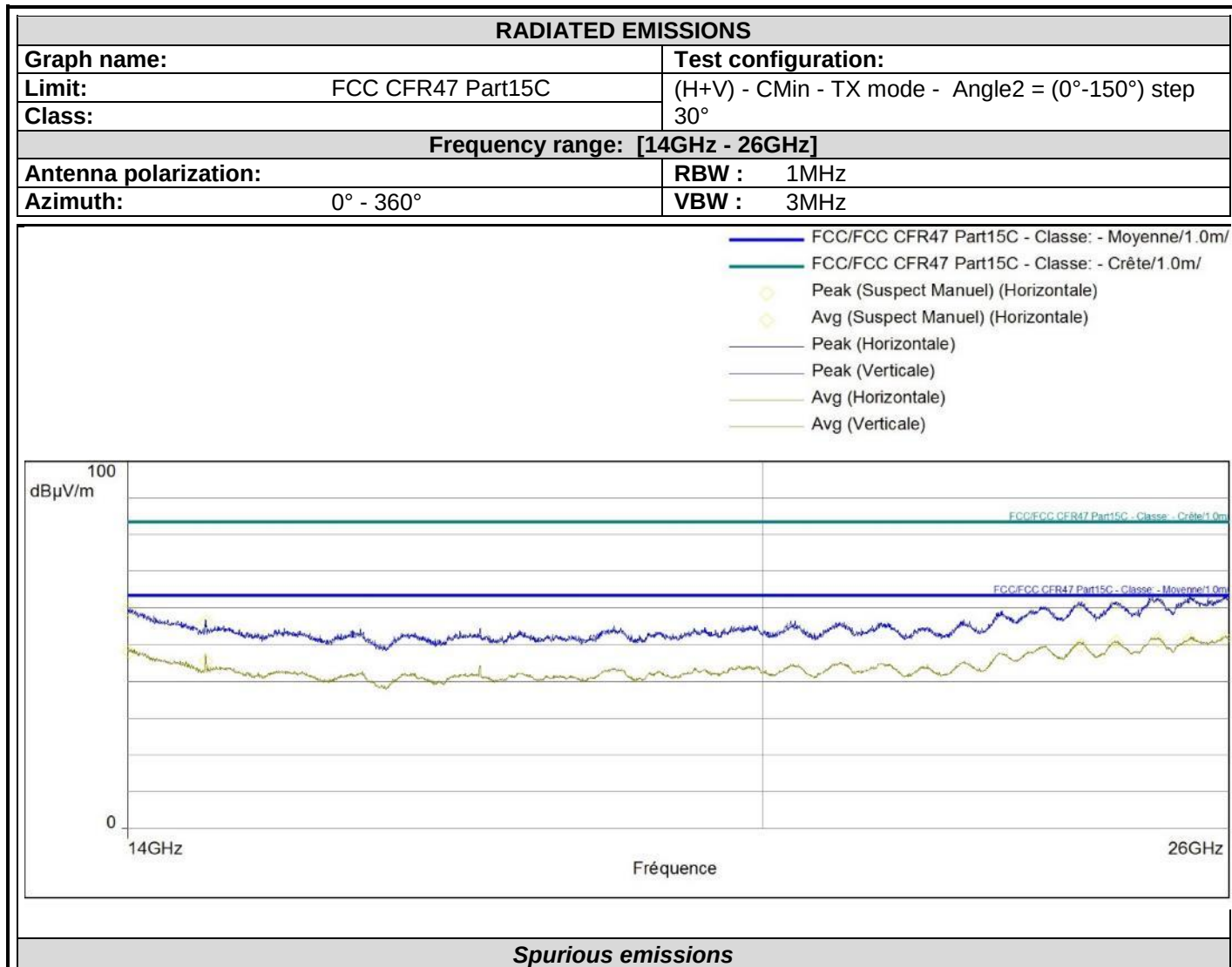
* : See qualification tab result below



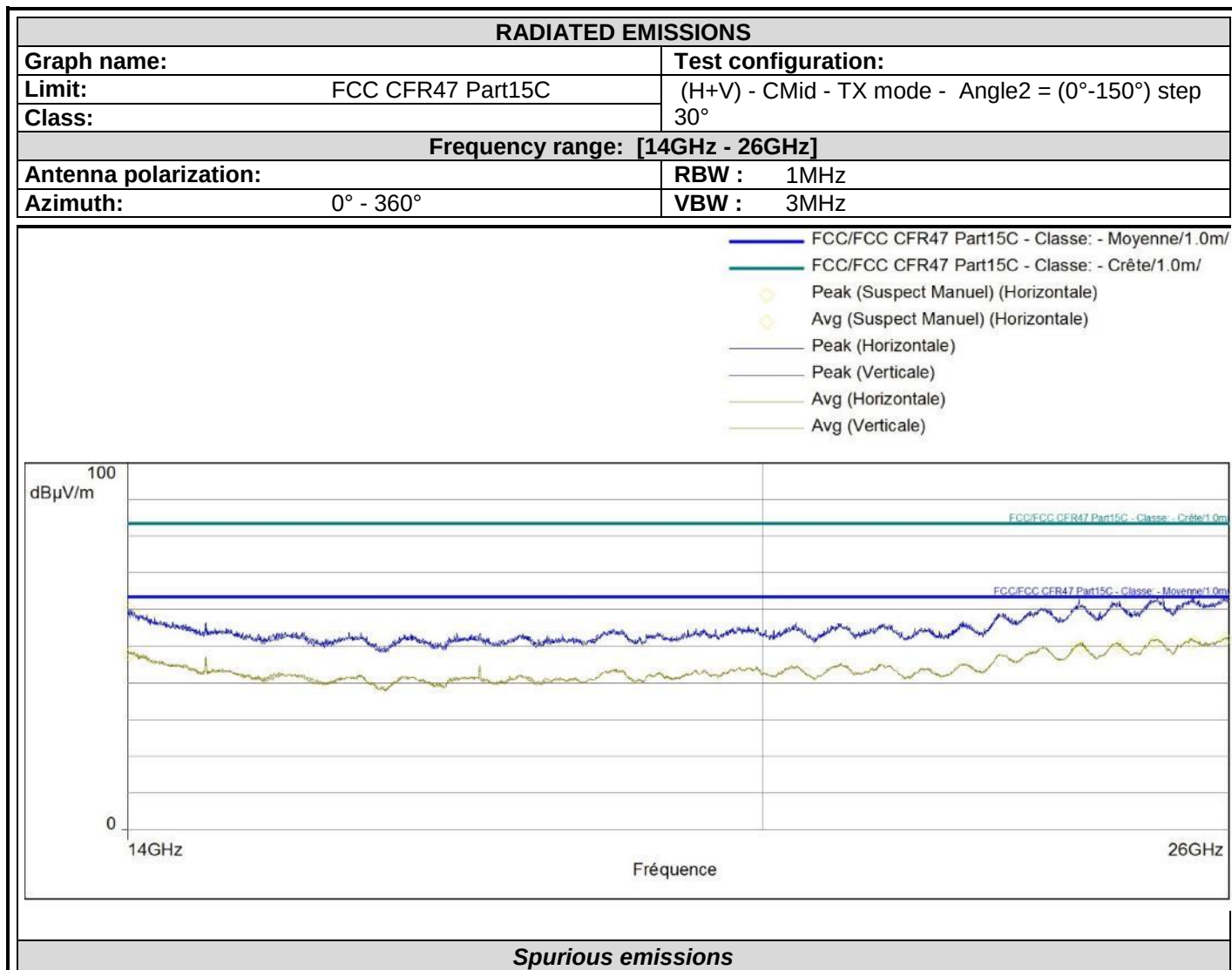
Spurious emissions

Frequency (MHz)	Peak (dBµV/m)	Lim.Peak (dBµV/m)	Margin Peak (dB)	Avg (dBµV/m)	Lim.Avg (dBµV/m)	Margin Avg (dB)	Azimet	Angle2 (°)	Polarisation	Correction (dB)
2460.99675	109.91	/	/	102.87	/	/	203.00	30	Horizontale	34.90
3282.8406	54.59	74	-19.41	46.7	54	-7.3	133.00	150	Verticale	37.80
3593.7849	57.62	74	-16.38	45.39	54	-8.61	132.00	150	Verticale	38.59
4028.139	58.63	74	-15.37	46.87	54	-7.13	285.00	120	Horizontale	39.91
4407.6443	56.44	74	-17.56	46.89	54	-7.11	246.00	90	Horizontale	39.75
4923.7*	62.31	74	-11.69	59.13	54	5.13	206.00	30	Verticale	-22.79
5182.1	50.16	74	-23.84	41.92	54	-12.08	0.00	0	Verticale	-22.20
12309	54.98	74	-19.02	47.94	54	-6.06	0.00	150	Horizontale	-13.43
13867	58.45	74	-15.55	47.56	54	-6.44	303.00	0	Horizontale	-7.93

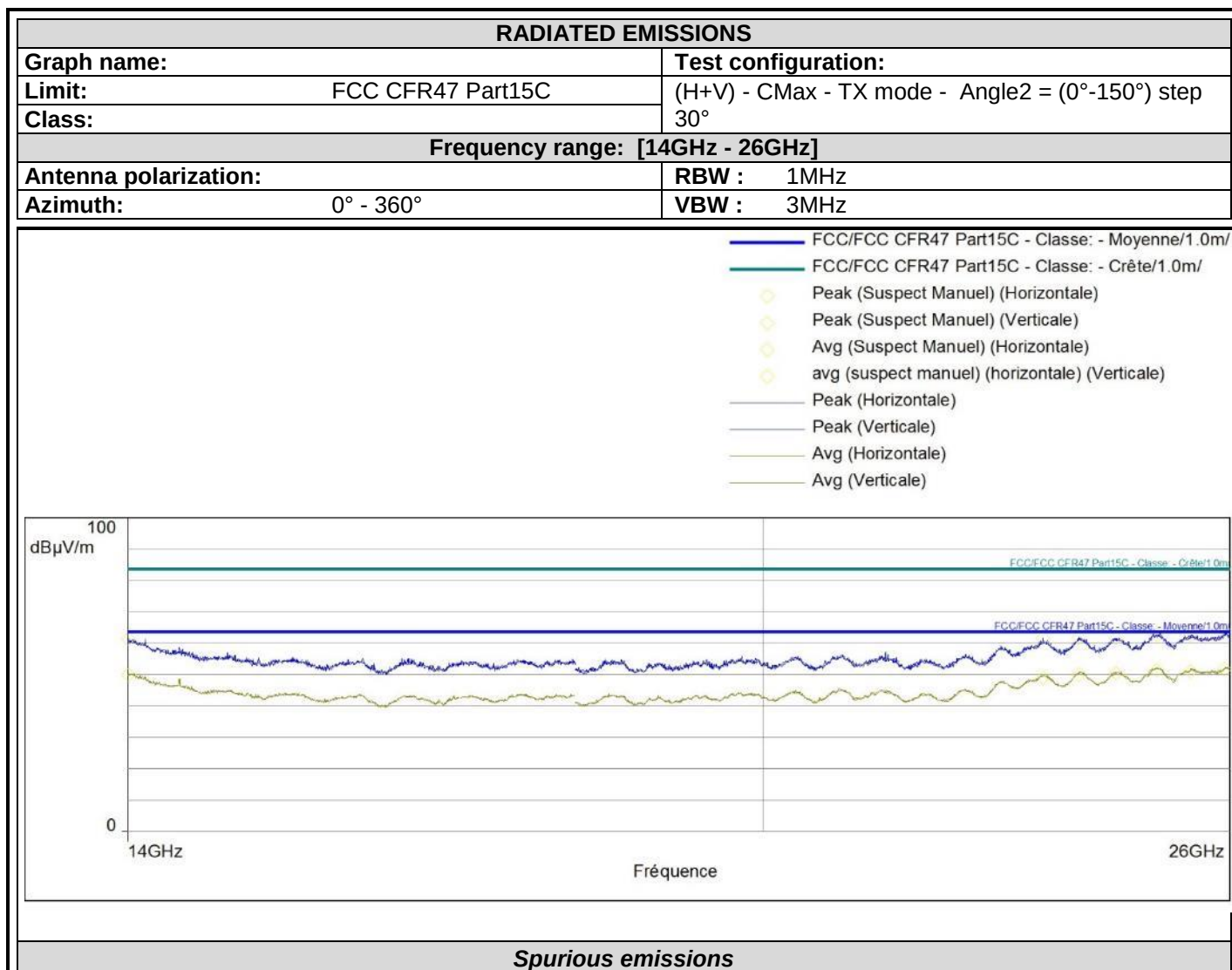
* : See qualification tab result below



Frequency (MHz)	Peak (dBμV/m)	Lim.Peak (dBμV/m)	Margin	Avg (dBμV/m)	Lim.Avg (dBμV/m)	Margin Avg (dB)	Azimuth	Angle2 (°)	Polarisation	Correction (dB)
14008	59.49	83.50	-24.01	48.05	63.50	-15.79	14.00	60	Horizontale	7.55
14629.5	56.42	83.50	-27.08	45.48	63.50	-13.5	122.00	90	Verticale	2.33
23916	61.38	83.50	-22.12	49.96	63.50	-13.61	0.00	120	Horizontale	13.74
24400	61.68	83.50	-21.82	50.78	63.50	-12.22	341.00	30	Horizontale	14.10
24977	62.84	83.50	-20.66	51.32	63.50	-12.35	240.00	120	Horizontale	15.03
25431	62.65	83.50	-20.85	51.66	63.50	-11.56	100.00	90	Verticale	16.09
25942	63.22	83.50	-20.28	51.81	63.50	-12.28	49.00	150	Horizontale	17.50



Frequency (MHz)	Peak (dBµV/m)	Lim.Peak (dBµV/m)	Margin	Avg (dBµV/m)	Lim.Avg (dBµV/m)	Margin Avg (dB)	Azimuth	Angle2 (°)	Polarisation	Correction (dB)
14013.5	59.89	83.5	-23.61	47.71	63.5	-15.79	263.00	150	Horizontale	7.53
23900	62.75	83.5	-20.75	50	63.5	-13.5	175.00	30	Horizontale	13.71
24445	62.4	83.5	-21.1	49.89	63.5	-13.61	253.00	30	Horizontale	14.19
24933	62.69	83.5	-20.81	51.28	63.5	-12.22	76.00	30	Horizontale	14.98
25481	63.13	83.5	-20.37	51.15	63.5	-12.35	0.00	60	Verticale	16.17
25947	63.23	83.5	-20.27	51.94	63.5	-11.56	214.00	60	Verticale	17.51



Frequency (MHz)	Peak (dBμV/m)	Lim.Peak (dBμV/m)	Margin	Avg (dBμV/m)	Lim.Avg (dBμV/m)	Margin Avg (dB)	Azimuth	Angle2 (°)	Polarisation	Correction (dB)
14003	61.41	83.5	-22.09	49.91	63.5	-13.59	0.00	90	Horizontale	8.62
23405	61.56	83.5	-21.94	48.83	63.5	-14.67	13.00	30	Horizontale	12.43
24386	61.52	83.5	-21.98	50.4	63.5	-13.1	0.00	150	Horizontale	14.09
25425	62.6	83.5	-20.9	51.2	63.5	-12.3	224.00	120	Horizontale	16.08
25919	63.92	83.5	-19.58	51.61	63.5	-11.89	266.00	120	Horizontale	17.45
23886	61.74	83.5	-21.76	49.92	63.5	-13.58	258.00	60	Verticale	13.68
24951	62.62	83.5	-20.88	51.22	63.5	-12.28	0.00	90	Verticale	15.00



QUALIFICATION (1GHz- 25GHz): 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.

Test Frequency (MHz)	Meter Reading dB(μV)	Detector (Pk/Av)	Polarity (V/H)	Tilt (Degrees)	Antenna Height (cm)	Transducer Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
4824.000	66.15	Pk	V	60	165	-22.8	43.3	74.0	-30.7	Worst case
4824.000	64.92	Av	V	60	165	-22.8	42.1	54.0	-11.9	Worst case
4874.000	67.23	Pk	V	90	165	-22.7	44.5	74.0	-29.5	Worst case
4874.000	51.79	Av	V	90	165	-22.7	29.1	54.0	-24.9	Worst case
12185.000	67.45	Pk	H	150	165	-14	53.4	74.0	-20.6	Worst case
12185.000	52.36	Av	H	150	165	-14	38.4	54.0	-15.6	Worst case
4924.000	80.48	Pk	V	120	165	-22.7	57.8	74.0	-16.2	Worst case
4924.000	57.97	Av	V	120	165	-22.7	35.3	54.0	-18.7	Worst case

10.7. CONCLUSION

Unwanted emissions measurement performed on the sample of the product **In&motion In&box V6**, SN: **63000005**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 & RSS 247 ISSUE 2 limits.

11. UNCERTAINTIES CHART

Type de mesure / Kind of measurement	Incertitude élargie laboratoire / Wide uncertainty laboratory (k=2) $\pm x$	Incertitude limite du CISPR / CISPR uncertainty limit $\pm y$
Measurement of conducted disturbances in voltage on the power port	3.29dB	3.4 dB
Measurement of conducted disturbances in voltage on the telecommunication port.	3.26 dB	5dB
Measurement of discontinuous conducted disturbances in voltage	3.33 dB	3.4 dB
Measurement of conducted disturbances in current	2.67 dB	2.9dB
Spurious emission, radiated (Semi anechoic chamber & open test site)	5.60 dB	6 dB
Spurious emission, radiated (Full anechoic chamber above 1GHz)	± 3.8 dB	± 6 dB
Occupied Channel Bandwidth	± 2.8 %	± 5 %
RF power, conducted	± 1.2 dB	± 1.5 dB
Power Spectral Density, Conducted	± 1.7 dB	± 3 dB
Spurious emission, conducted	± 2.3 dB	± 3 dB
Temperature	± 0.75 °C	± 3 °C
Supply Voltages	± 1.7 %	± 3 %

The uncertainty values calculated by the laboratory are lower than limit uncertainty values defined by the CISPR. The conformity of the sample is directly established by the applicable limits values. This table includes all uncertainties maximum feasible for testing in the laboratory, whether or not made in this report