TEST REPORT

N°: 140527-682780A **Version : 01**

Subject	**Radio spectrum matters** **tests according to standards:** **47 CFR Part 15.247 & RSS-247 Issue 1 & RSS-Gen Issue 4**
Issued to	**SAGEMCOM BROADBAND SAS** 250 Route de l'Empereur 92848 - RUEIL MALMAISON France

Apparatus under test

Product	HOME Hub
Trade mark	BELL CANADA
Manufacturer	**SAGEMCOM BROADBAND SAS**
Model under test	FAST 5566
Serial number	DM1603203000012

Test date	: March 8, 2016 to May 9, 2016
Test location	Fontenay Aux Roses & Ecuelles
Composition of document	112 pages
Document issued on	June 10, 2016

Written by :
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PUBLICATION HISTORY

Version	Date	Author	Modification
01	June 10, 2016	Armand MAHOUNGOU	Creation of the document

SUMMARY

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1. TEST PROGRAM

References

- **47 CFR Part 15.247**
- **RSS 247 Issue 1**
- **RSS Gen Issue 4**
- **KDB 558074 D01 DTS Meas Guidance v03r05**
- **KDB 662911 D01 Multiple Transmitter Output v02r01**
- **ANSI C63.10-2013**

Radio requirement:

Clause (47CFR Part 15.407 & RSS-247 Issue 1 & RSS-Gen Issue 4) 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 (3)	☐ 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
(3): Include in Unwanted Emissions into Restricted Frequency Bands

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

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):

BELL CANADA **FAST** 5566 **Serial Number: DM1603203000012**

Equipment Under Test

SagemCom
SWITCH MODE POWER SUPPLY
P/N:191297739
MODEL:NBS60C120500M2
INPUT:100-120V ~ 50/60Hz 1.0A
OUTPUT:12V 5.0A
CAUTION:
FOR INDOOR USE ONLY
FOR USE WITH INFORMATION
TECHNOLOGY EQUIPMENT
LISTED
FOR HOME OR OFFICE USE
MADE IN CHINA BY NetBit

Equipment Under Test

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
1	Power Supply	-	☑	☐	☐	-
2	Ethernet	-	☑	☐	☐	-

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Laptop	Lenovo Think Pad	L3-AW9Z	Use to set the EUT & the communication traffic

Software identification:
Software version: 5566-softtest-V16 (8b.34.2x)

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: XdB		☑ No	
Receiver chains	☐ 1	☐ 2	☐ 3	☑ 4
Type of equipment:	☑ Stand-alone	☐ Plug-in	☐ Combined	
Ad-Hoc mode:	☐ Yes		☐ No	
Operating temperature range:	Tmin:	☐ -20°C	☑ 0°C	☐ X°C
	Tnom:	20°C		
	Tmax:	☐ 35°C	☐ 55°C	☑ 40°C
Type of power source:	☑ AC power supply	☐ DC power supply	☐ Battery	
Operating voltage range:	Vnom:	☑ 120V/60Hz	☐ X Vdc	

Antenna Characteristic			
Antenna assembly	**Gain (dBi)**	**Frequency Band (MHz)**	**Impedance(Ω)**
1	1,7	2400MHz to 2483,5MHz	50
2	4,9	2400MHz to 2483,5MHz	50
3	4	2400MHz to 2483,5MHz	50
4	3,2	2400MHz to 2483,5MHz	50
Accumulated	7,2	2400MHz to 2483,5MHz	50

Operating frequency range		
Frequency Band (MHz)	**Test report**	**Purpose**
2400MHz to 2483.5MHz	140527-682720A	Power measurement 2.4GHz
5150MHz to 5250MHz	140527-682720B	Power measurement 5GHz
5150MHz to 5250MHz	140527-682720C	DFS measurement 5GHz
5470MHz to 5825MHz	140527-682720D	Power measurement 5GHz
5470MHz to 5825MHz	140527-682720E	DFS measurement 5GHz

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	☐

DATA RATE						
802.11n HT20 (Table 1)						
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	☐
☑	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	☐
☑	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	☐
☑	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	☐

DATA RATE									
802.11n HT20 (Table 2)									
Available for EUT	MCS Index	Spatial streams	Modulation				Data Rate (Mbps)		Worst Case Modulation
							(GI = 800ns)	(GI = 400ns)	
☑	32	1	BPSK	-	-	-	-	-	☐
☑	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	☐
☑	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	☐
☑	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	☐

DATA RATE						
802.11n HT40 (Table 1)						
Available for EUT	MCS Index	Spatial streams	Modulation	Data Rate (Mbps)		Worst Case Modulation
				(GI = 800ns)	(GI = 400ns)	
☑	0	1	BPSK	13	15	☐
☑	1	1	QPSK	27	30	☐
☑	2	1	QPSK	40.5	45	☐
☑	3	1	16-QAM	54	60	☐
☑	4	1	16-QAM	81	90	☐
☑	5	1	64-QAM	108	120	☐
☑	6	1	64-QAM	121.5	135	☐
☑	7	1	64-QAM	135	150	☐
☑	8	2	BPSK	27	30	☐
☑	9	2	QPSK	54	60	☐
☑	10	2	QPSK	81	90	☐
☑	11	2	16-QAM	108	120	☐
☑	12	2	16-QAM	162	180	☐
☑	13	2	64-QAM	216	240	☐
☑	14	2	64-QAM	243	270	☐
☑	15	2	64-QAM	270	300	☐
☑	16	3	BPSK	40.5	45	☐
☑	17	3	QPSK	81	90	☐
☑	18	3	QPSK	121.5	135	☐
☑	19	3	16-QAM	162	180	☐
☑	20	3	16-QAM	243	270	☐
☑	21	3	64-QAM	324	360	☐
☑	22	3	64-QAM	364.5	405	☐
☑	23	3	64-QAM	405	450	☐
☑	24	4	BPSK	54	60	☑
☑	25	4	QPSK	108	120	☐
☑	26	4	QPSK	162	180	☐
☑	27	4	16-QAM	216	240	☐
☑	28	4	16-QAM	324	360	☐
☑	29	4	64-QAM	432	480	☐
☑	30	4	64-QAM	486	540	☐
☑	31	4	64-QAM	540	600	☐

DATA RATE									
802.11n HT40 (Table 2)									
Available for EUT	MCS Index	Spatial streams	Modulation				Data Rate (Mbps)		Worst Case Modulation
							(GI = 800ns)	(GI = 400ns)	
☑	32	1	BPSK	-	-	-	6.0	6.7	☐
☑	33	2	16-QAM	QPSK	-	-	81	90.0	☐
☑	34	2	64-QAM	QPSK	-	-	108	120	☐
☑	35	2	64-QAM	16-QAM	-	-	135	150	☐
☑	36	2	16-QAM	QPSK	-	-	121.5	135	☐
☑	37	2	64-QAM	QPSK	-	-	162	180	☐
☑	38	2	64-QAM	16-QAM	-	-	202.5	225	☐
☑	39	3	16-QAM	QPSK	QPSK	-	108	120	☐
☑	40	3	16-QAM	16-QAM	QPSK	-	135	150	☐
☑	41	3	64-QAM	QPSK	QPSK	-	135	150	☐
☑	42	3	64-QAM	16-QAM	QPSK	-	162	180	☐
☑	43	3	64-QAM	16-QAM	16-QAM	-	189	210	☐
☑	44	3	64-QAM	64-QAM	QPSK	-	189	210	☐
☑	45	3	64-QAM	64-QAM	16-QAM	-	216	240	☐
☑	46	3	16-QAM	QPSK	QPSK	-	162	180	☐
☑	47	3	16-QAM	16-QAM	QPSK	-	202.5	225	☐
☑	48	3	64-QAM	QPSK	QPSK	-	202.5	225	☐
☑	49	3	64-QAM	16-QAM	QPSK	-	243	270	☐
☑	50	3	64-QAM	16-QAM	16-QAM	-	283.5	315	☐
☑	51	3	64-QAM	64-QAM	QPSK	-	283.5	315	☐
☑	52	3	64-QAM	64-QAM	16-QAM	-	324	360	☐
☑	53	4	16-QAM	QPSK	QPSK	QPSK	135	150	☐
☑	54	4	16-QAM	16-QAM	QPSK	QPSK	162	180	☐
☑	55	4	16-QAM	16-QAM	16-QAM	QPSK	189	210	☐
☑	56	4	64-QAM	QPSK	QPSK	QPSK	162	180	☐
☑	57	4	64-QAM	16-QAM	QPSK	QPSK	189	210	☐
☑	58	4	64-QAM	16-QAM	16-QAM	QPSK	216	240	☐
☑	59	4	64-QAM	16-QAM	16-QAM	16-QAM	243	270	☐
☑	60	4	64-QAM	QPSK	QPSK	QPSK	216	240	☐
☑	61	4	64-QAM	16-QAM	16-QAM	QPSK	243	270	☐
☑	62	4	64-QAM	16-QAM	16-QAM	16-QAM	270	300	☐
☑	63	4	64-QAM	64-QAM	64-QAM	QPSK	270	300	☐
☑	64	4	64-QAM	64-QAM	64-QAM	16-QAM	297	330	☐
☑	65	4	16-QAM	QPSK	QPSK	QPSK	202.5	225	☐
☑	66	4	16-QAM	16-QAM	QPSK	QPSK	243	270	☐
☑	67	4	16-QAM	16-QAM	16-QAM	QPSK	283.5	315	☐
☑	68	4	64-QAM	QPSK	QPSK	QPSK	243	270	☐
☑	69	4	64-QAM	16-QAM	QPSK	QPSK	283.5	315	☐
☑	70	4	64-QAM	16-QAM	16-QAM	QPSK	324	360	☐
☑	71	4	64-QAM	16-QAM	16-QAM	16-QAM	364.5	405	☐
☑	72	4	64-QAM	64-QAM	QPSK	QPSK	324	360	☐
☑	73	4	64-QAM	64-QAM	16-QAM	QPSK	364.5	405	☐
☑	74	4	64-QAM	64-QAM	16-QAM	16-QAM	405	450	☐
☑	75	4	64-QAM	64-QAM	64-QAM	QPSK	405	450	☐
☑	76	4	64-QAM	64-QAM	64-QAM	16-QAM	445.5	495	☐

2.2. RUNNING MODE

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

Following commands with the specific test software “Mtools” are used to set the product:
- See document :” procedure tests.docx” for the commands used to initialize the product.
- See document :” Copie de XI0000026.xls” for the commands used during test.

2.3. EQUIPMENT LABELLING

Power Supply

Power Supply

Power Supply

Power Supply

2.4. EQUIPMENT MODIFICATION

☑ None ☐ Modification:

3. OCCUPIED BANDWIDTH

3.1. TEST CONDITIONS

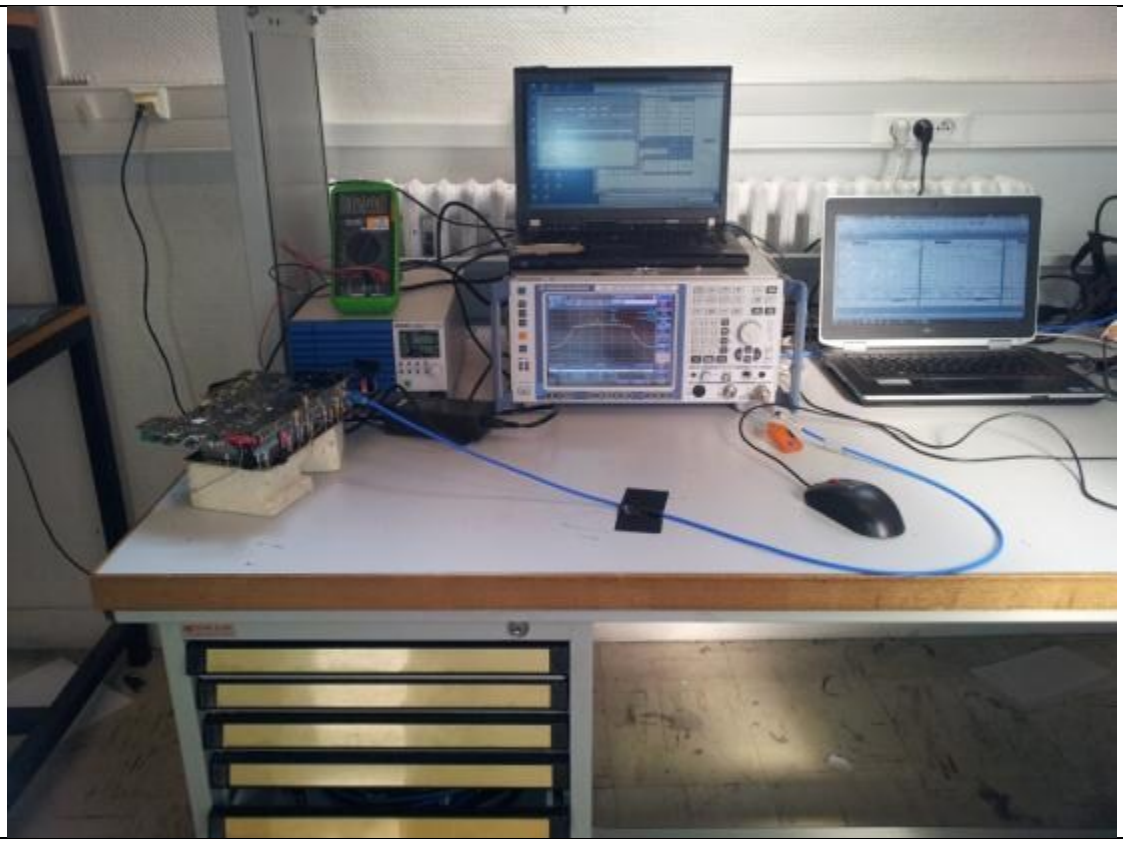
Test performed by	: Armand MAHOUNGOU
Date of test	: March 8, 2016
Ambient temperature	: 22 °C
Relative humidity	: 43 %

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 4 § 6.6
☐ ANSI C63.10 § 6.9.2



Photograph for Occupied bandwidth

3.1. LIMIT

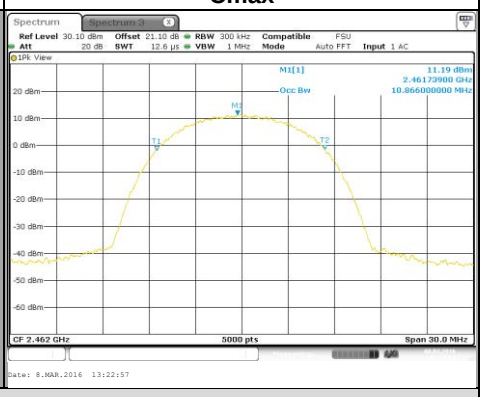
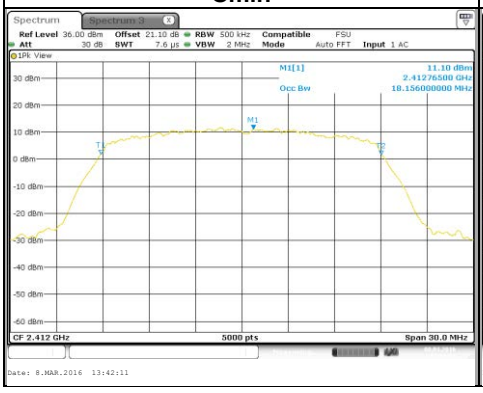
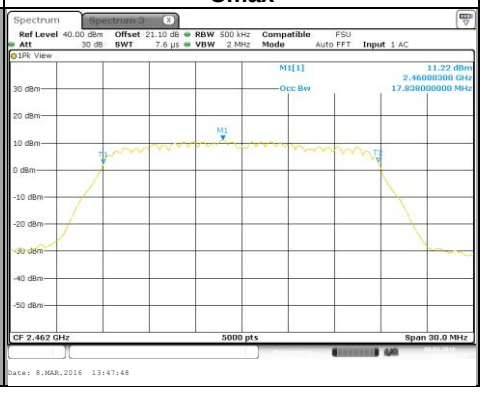
None

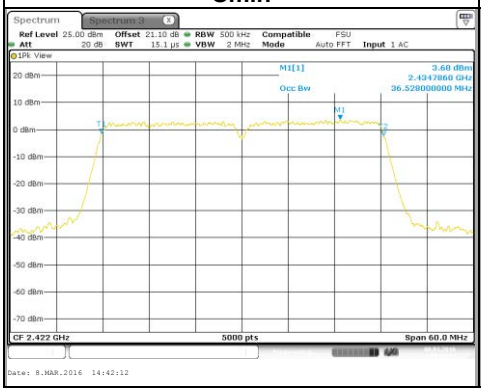
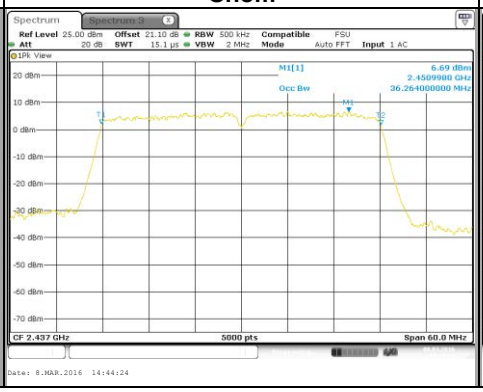
3.2. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253	2015/08	2016/08
Load 50 ohms	-; TELEGARTNER	-	A7150103	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150104	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150105	2015/10	2016/10

Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

3.3. RESULTS

802.11b		
Cmin	**Cnom**	**Cmax**
		
802.11g		
Cmin	**Cnom**	**Cmax**
802.11n HT20		
Cmin	**Cnom**	**Cmax**
		

802.11n HT40		
Cmin	**Cnom**	**Cmax**
		

802.11b			
Frequency	Cmin	Cnom	Cmax
Occupied Bandwidth (MHz)	10.842	10.800	10.866

802.11b			
Frequency	Cmin	Cnom	Cmax
Occupied Bandwidth (MHz)	16.458	16.542	16.608

802.11n HT20			
Frequency	Cmin	Cnom	Cmax
Occupied Bandwidth (MHz)	18.156	17.778	17.838

802.11n HT40			
Frequency	Cmin	Cnom	Cmax
Occupied Bandwidth (MHz)	36.528	36.264	36.384

3.1. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS-GEN ISSUE 4** limits.

4. 6DB EMISSION BANDWIDTH

4.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : March 8, 2016 to May 4, 2016
Ambient temperature : 22 °C
Relative humidity : 43 %

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 v03r05 § 8.1
☐ KDB 558074 D01 DTS Meas Guidance v03r05 § 8.2

Photograph for 6dB emission bandwidth

4.3. LIMIT

The 6dB bandwidth shall be at least 500kHz

4.4. TEST EQUIPMENT LIST

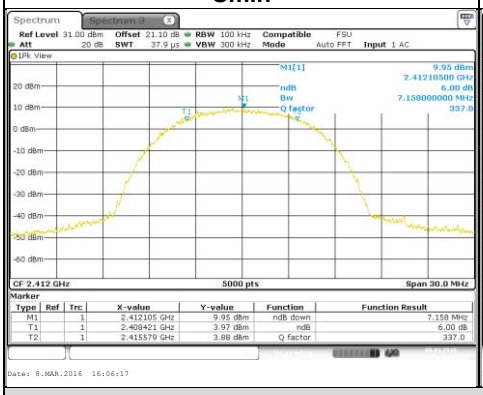
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253	2015/08	2016/08
Load 50 ohms	-; TELEGARTNER	-	A7150103	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150104	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150105	2015/10	2016/10

Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

4.5. RESULTS

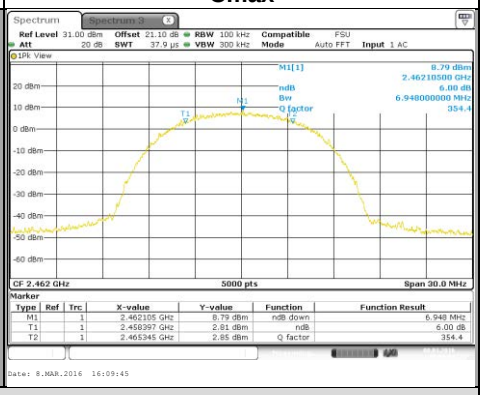
802.11b

Cmin



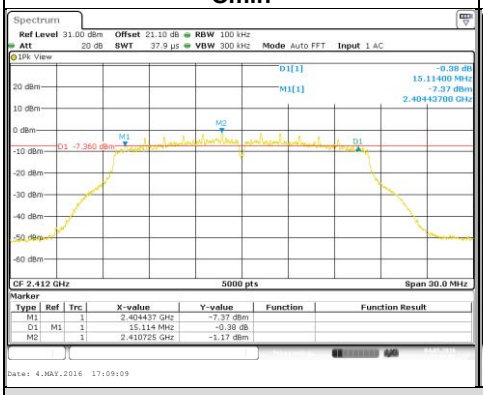
Cnom

Cmax

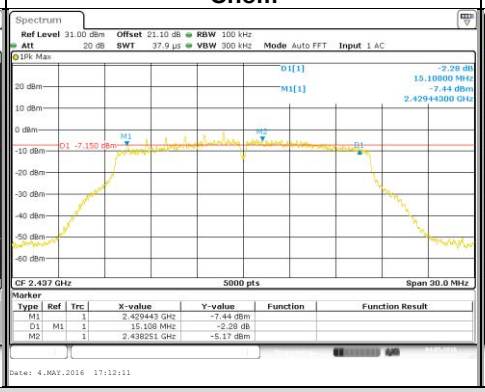


802.11g

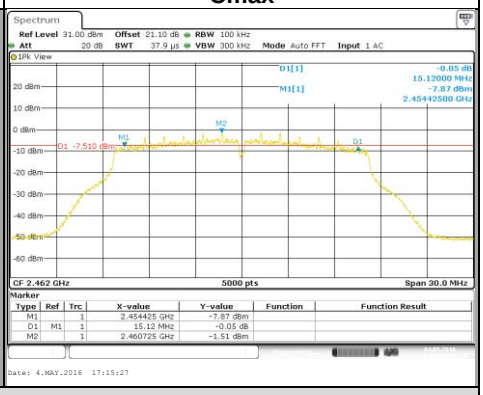
Cmin



Cnom

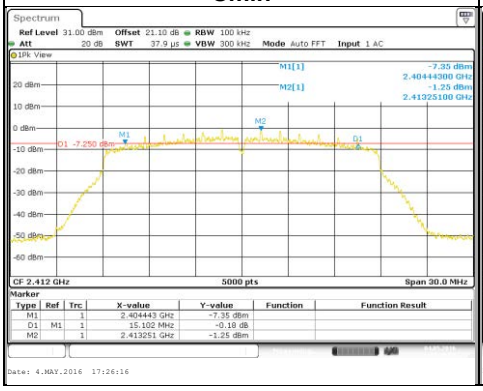


Cmax

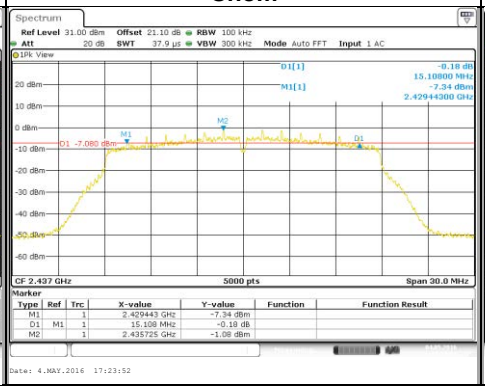


802.11n HT20

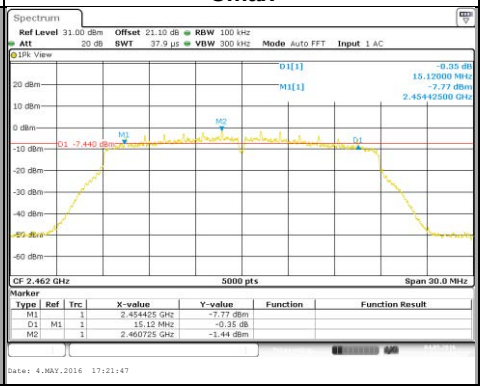
Cmin

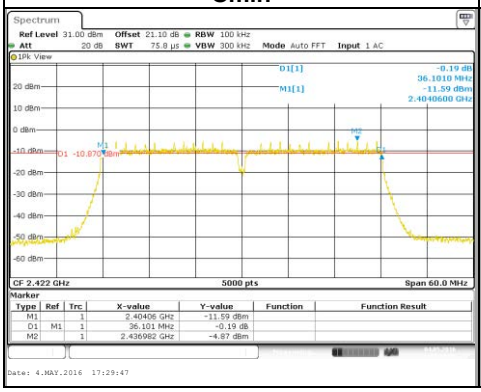
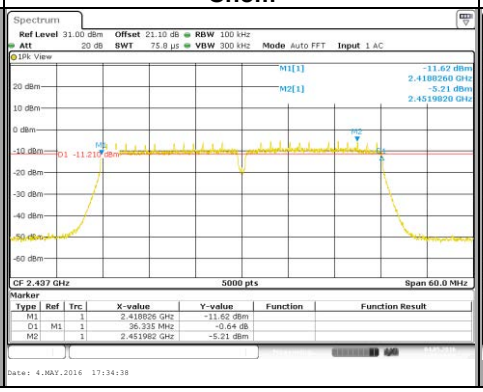
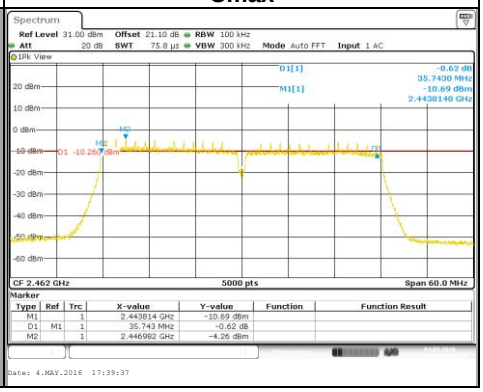


Cnom



Cmax



802.11n HT40		
Cmin	**Cnom**	**Cmax**
		

802.11b			
Frequency	Cmin	Cnom	Cmax
6dB Bandwidth (MHz)	7.158	6.984	6.948

802.11b			
Frequency	Cmin	Cnom	Cmax
6dB Bandwidth (MHz)	15,11	15,11	15,12

802.11n HT20			
Frequency	Cmin	Cnom	Cmax
6dB Bandwidth (MHz)	15,10	15,11	15,12

802.11n HT40			
Frequency	Cmin	Cnom	Cmax
6dB Bandwidth (MHz)	36,101	36,335	35,74

4.6. CONCLUSION

6dB Emission Bandwidth measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

5. DUTY CYCLE

5.1. TEST CONDITIONS

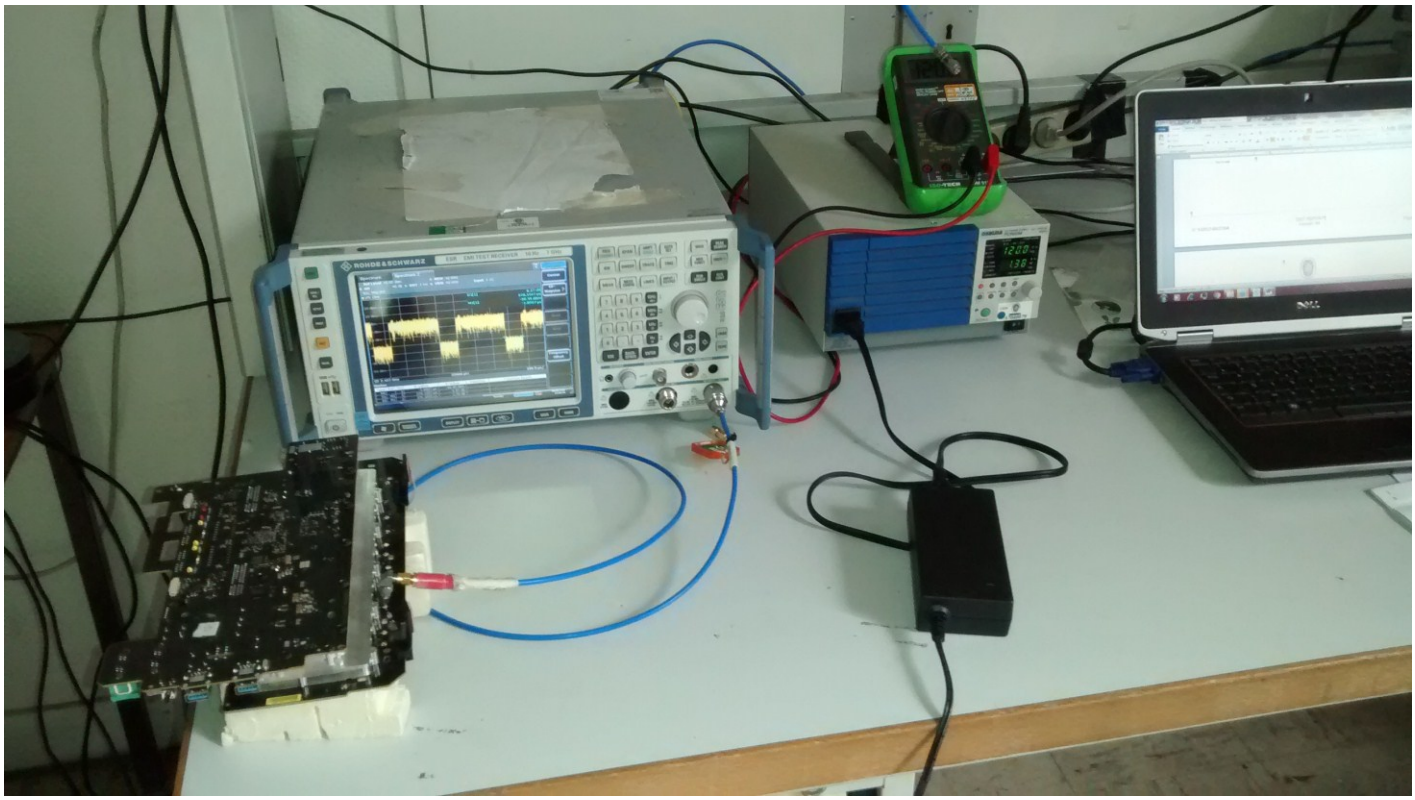
Test performed by : Armand MAHOUNGOU
Date of test : May 9, 2016
Ambient temperature : 21 °C
Relative humidity : 42 %

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 v03r05 § 6.0 b)



Photograph for Duty Cycle

5.3. LIMIT

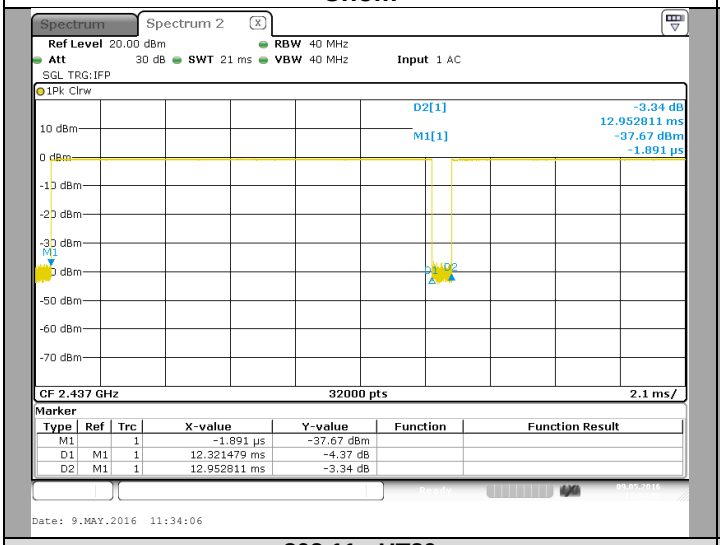
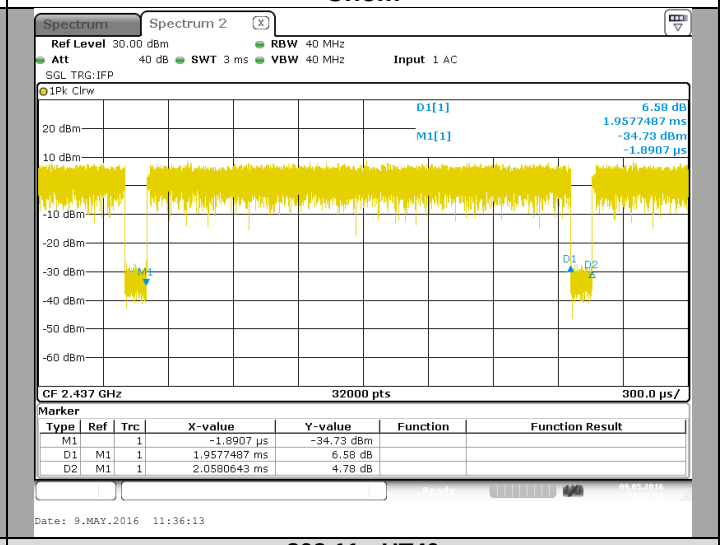
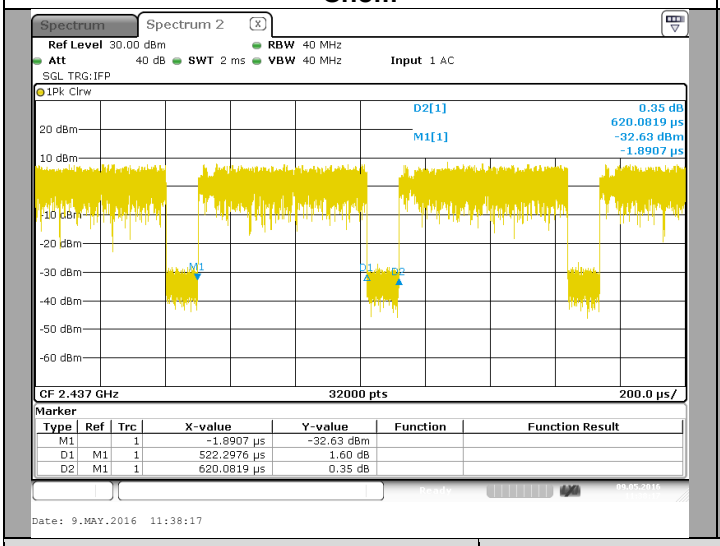
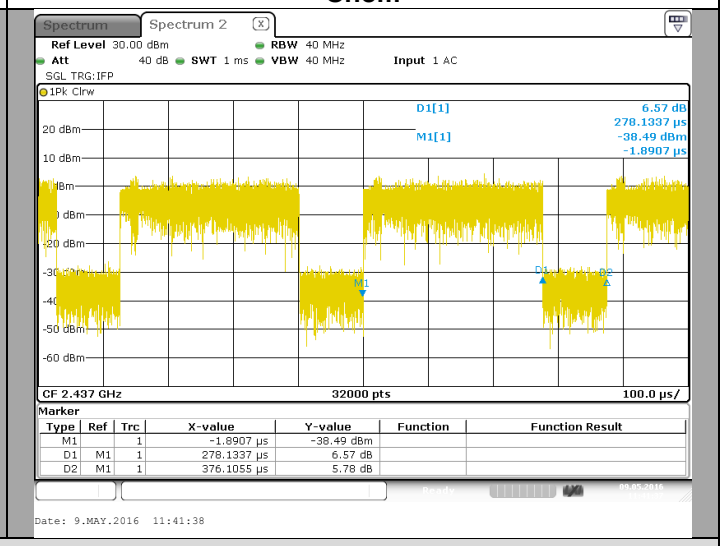
None

5.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253	2015/08	2016/08
Load 50 ohms	-; TELEGARTNER	-	A7150103	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150104	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150105	2015/10	2016/10

Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

5.5. RESULTS

802.11b	802.11g
Cnom	Cnom
	
802.11n HT20	**802.11n HT40**
Cnom	Cnom
	

Mode	Duty Cycle (%)
802.11b	95,14
802.11g	95,14
802.11n HT20	84,23
802.11n HT40	73,95

5.6. CONCLUSION

Duty Cycle measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

6. MAXIMUM CONDUCTED OUTPUT POWER

6.1. TEST CONDITIONS

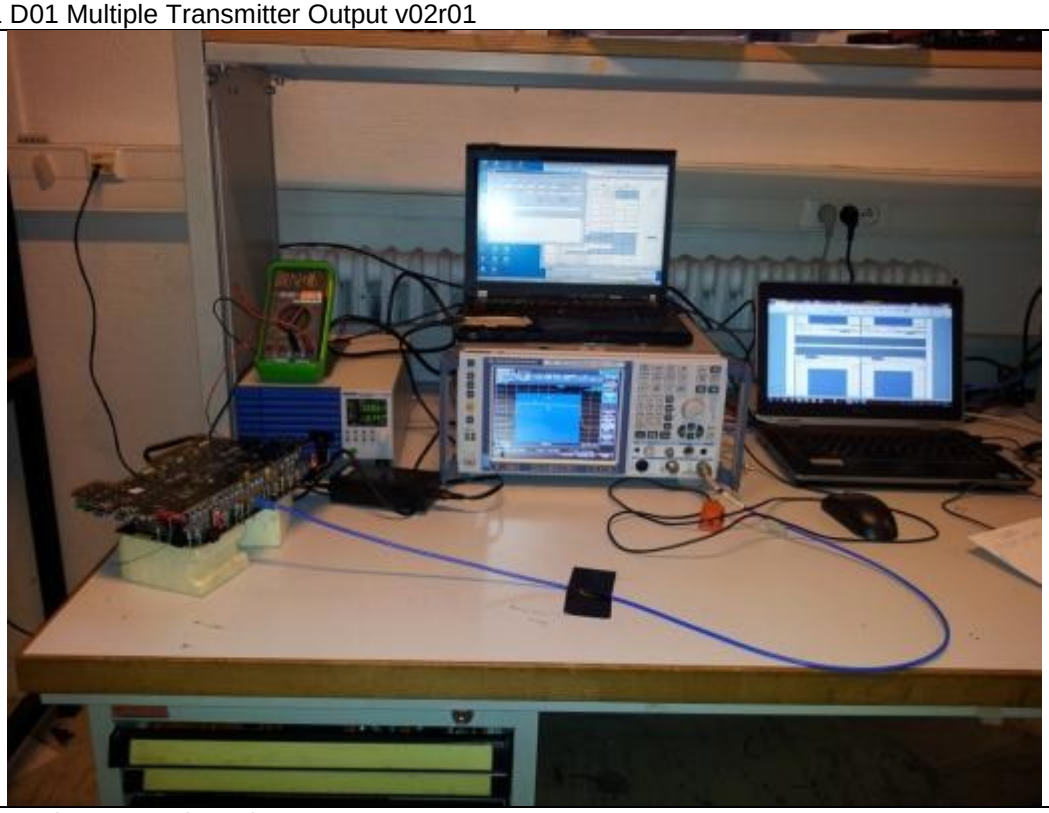
Test performed by : Armand MAHOUNGOU
Date of test : March 9, 2016 to May 9, 2016
Ambient temperature : 22 °C
Relative humidity : 43 %

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 v03r05 § 9.2.2.2 (Method AVGSA-1)
☐ KDB 558074 D01 DTS Meas Guidance v03r05 § 9.2.2.4 (Method AVGSA-2)
☑ KDB 662911 D01 Multiple Transmitter Output v02r01



Photograph for Maximum Conducted Output Power

6.3. LIMIT

Maximum Conducted Output power:
2400MHz-2483.5MHz: Shall not exceed 30dBm
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

6.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253	2015/08	2016/08
Load 50 ohms	-; TELEGARTNER	-	A7150103	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150104	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150105	2015/10	2016/10

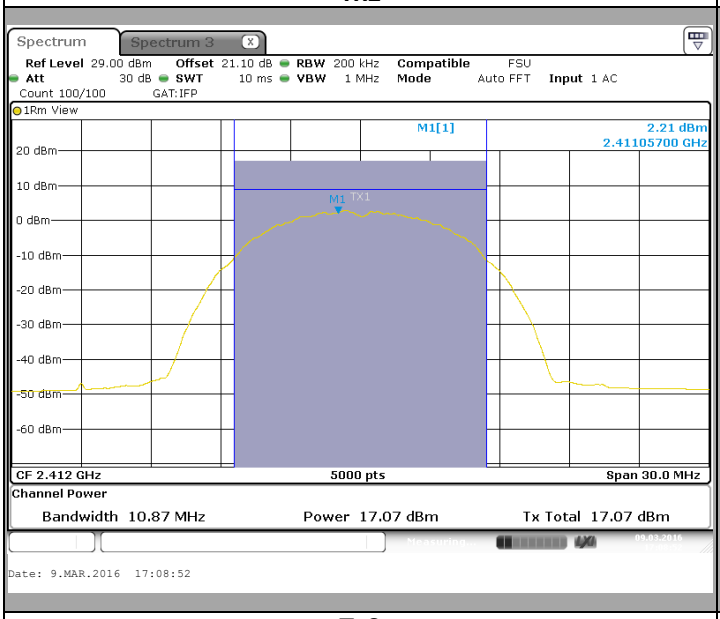
Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

6.5. RESULTS

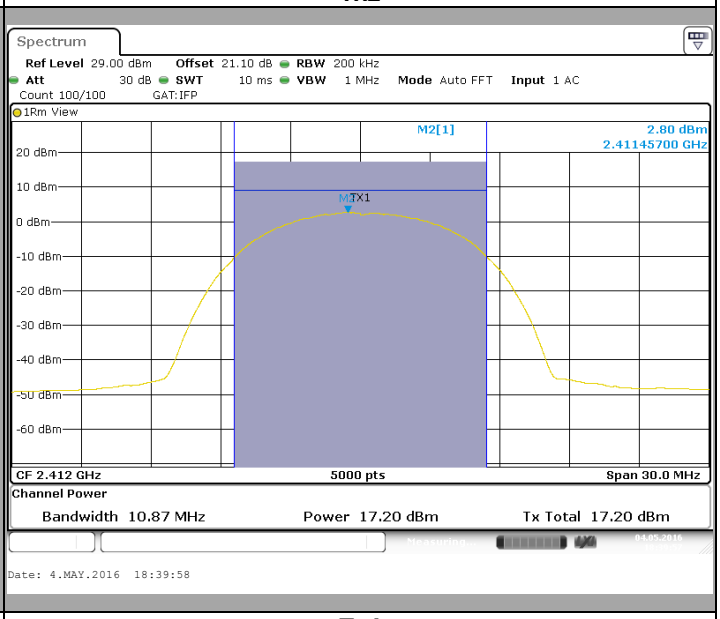
802.11b

Cmin

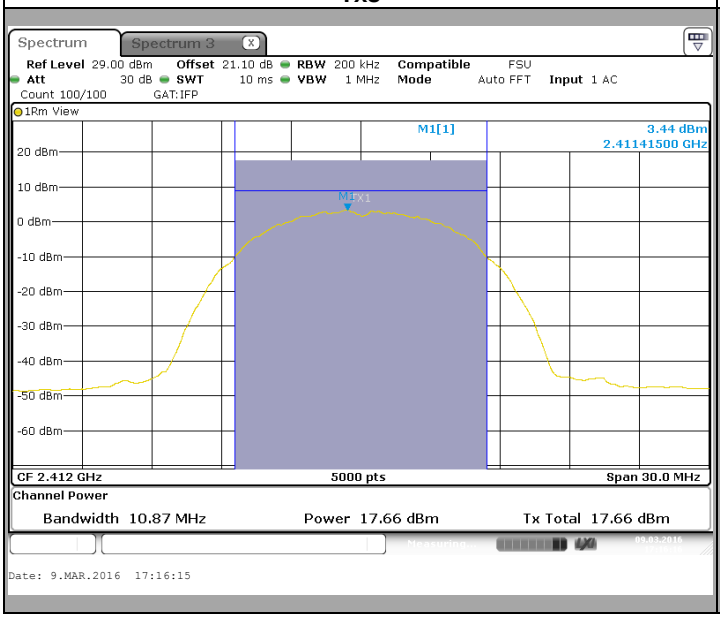
Tx1



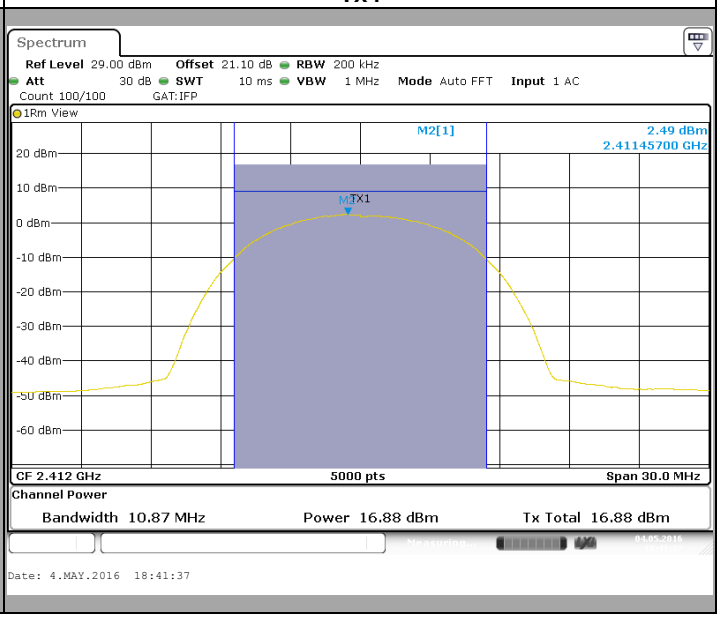
Tx2



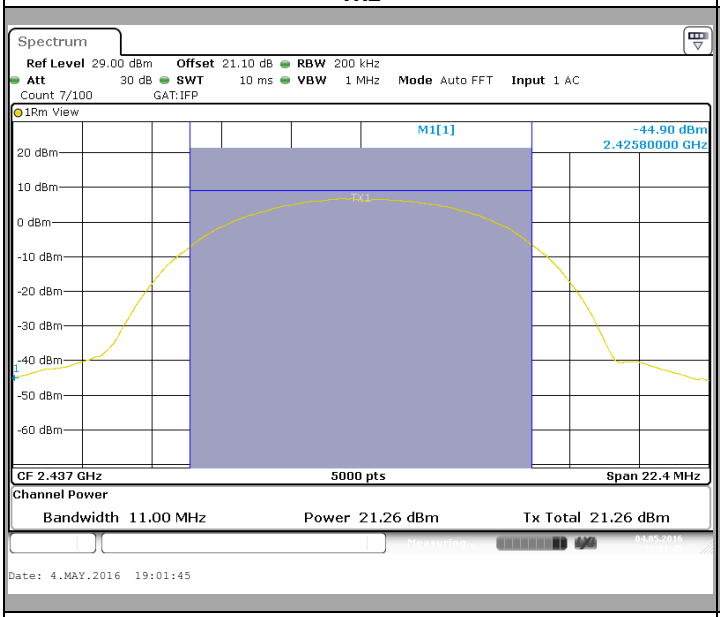
Tx3

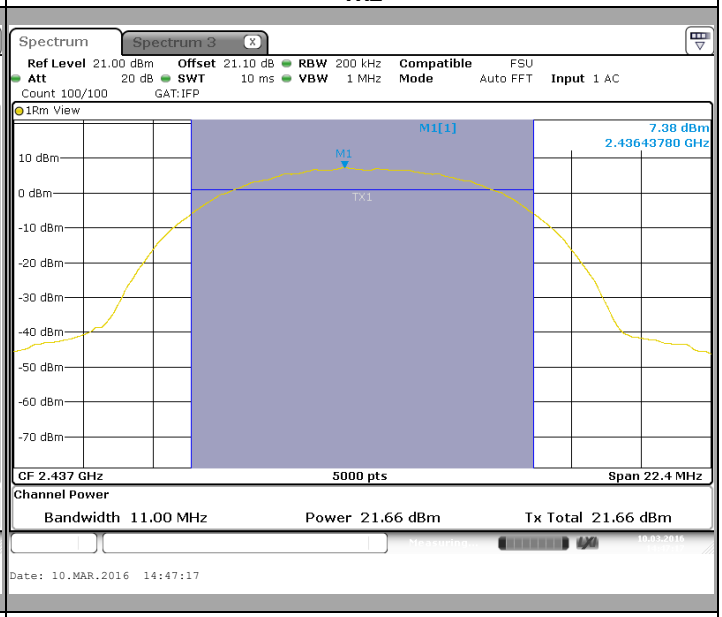


Tx4

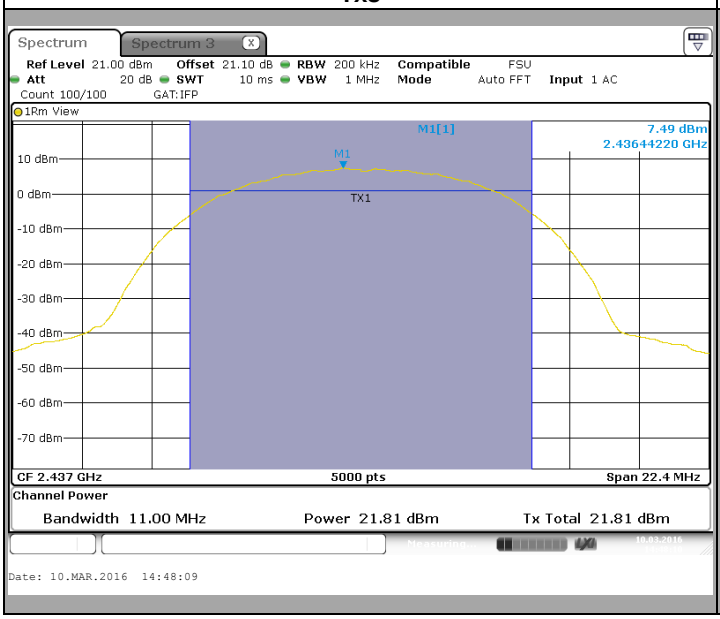


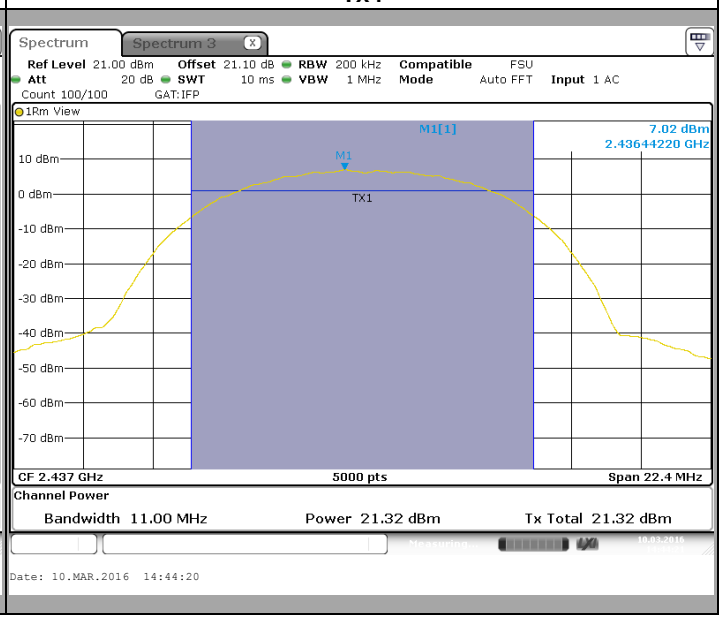
802.11b	
Cnom	
Tx1	Tx2



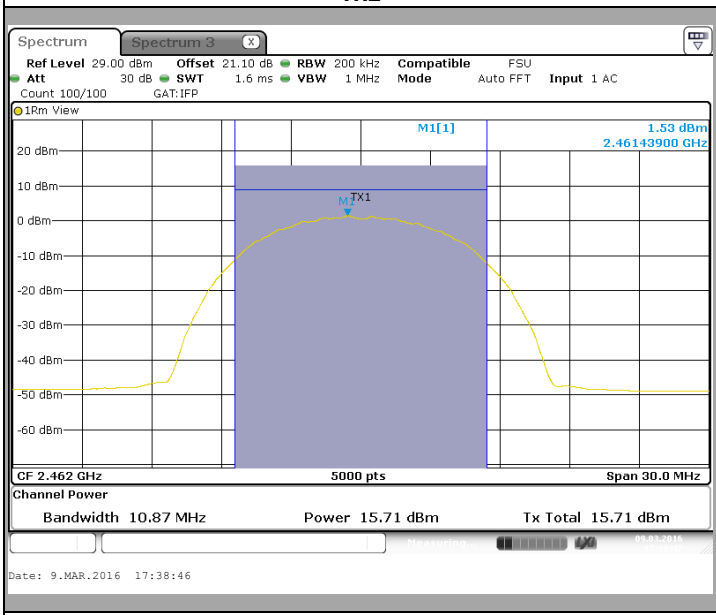


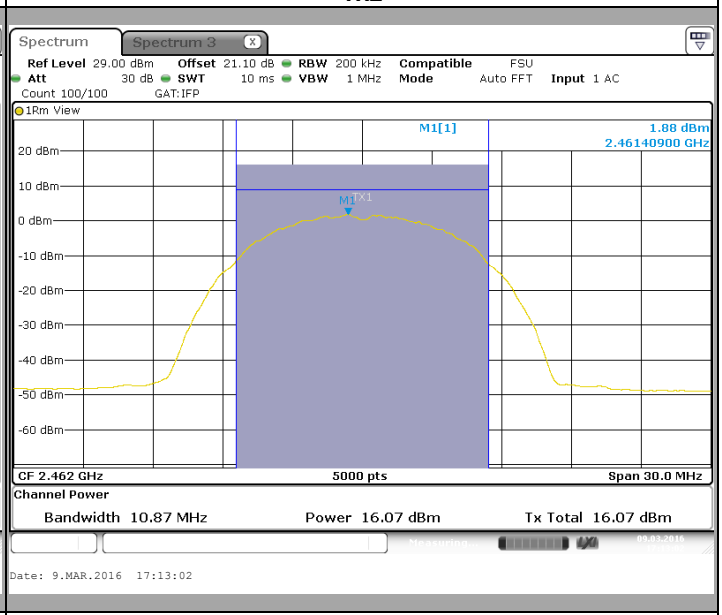
Tx3	Tx4



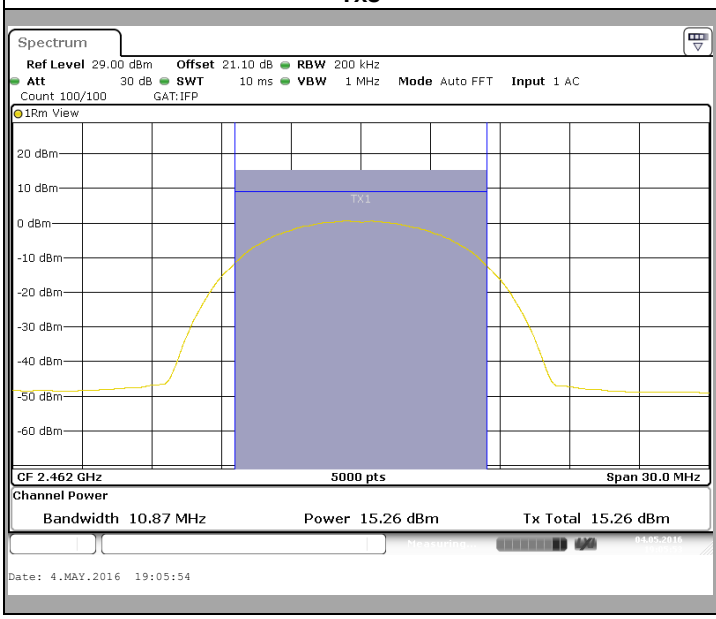


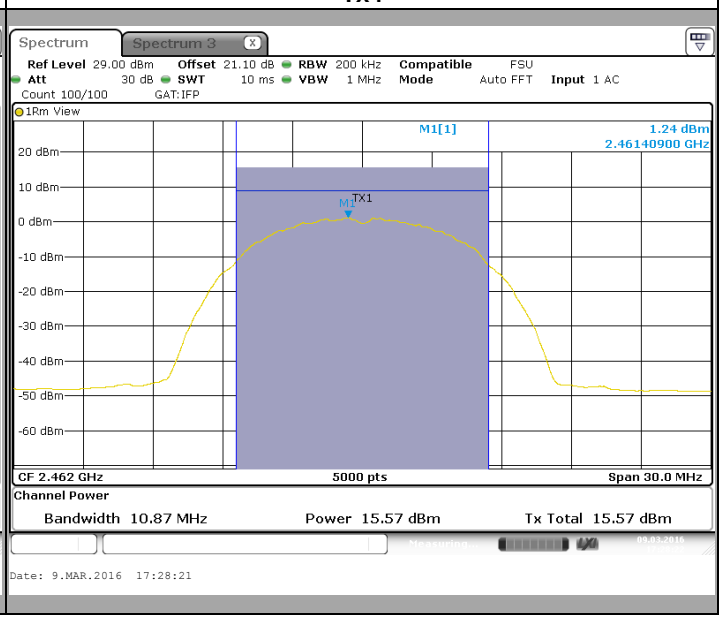
802.11b	
Cmax	
Tx1	Tx2



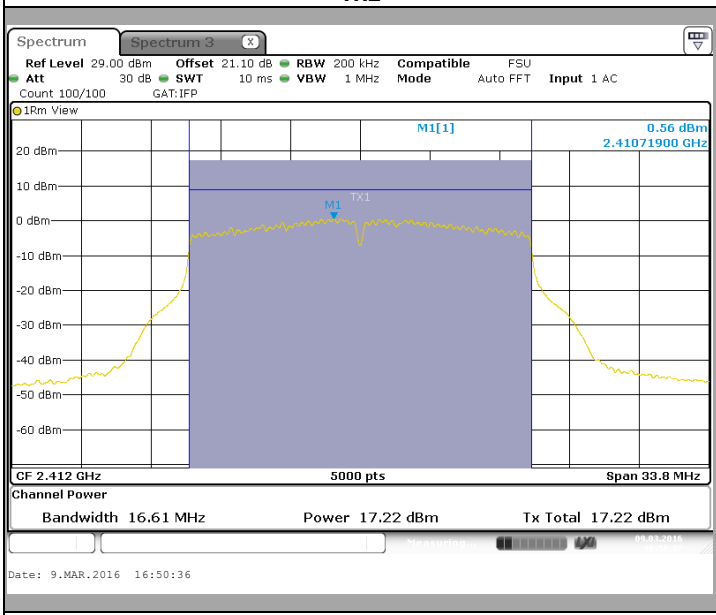


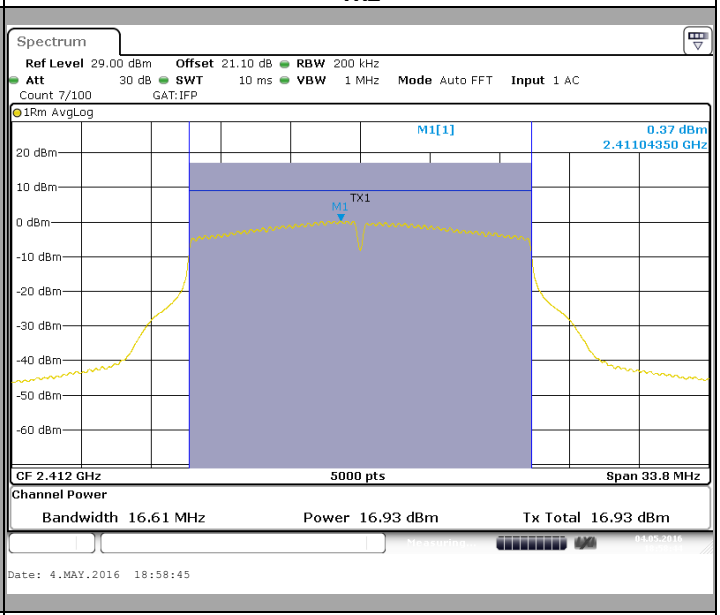
Tx3	Tx4



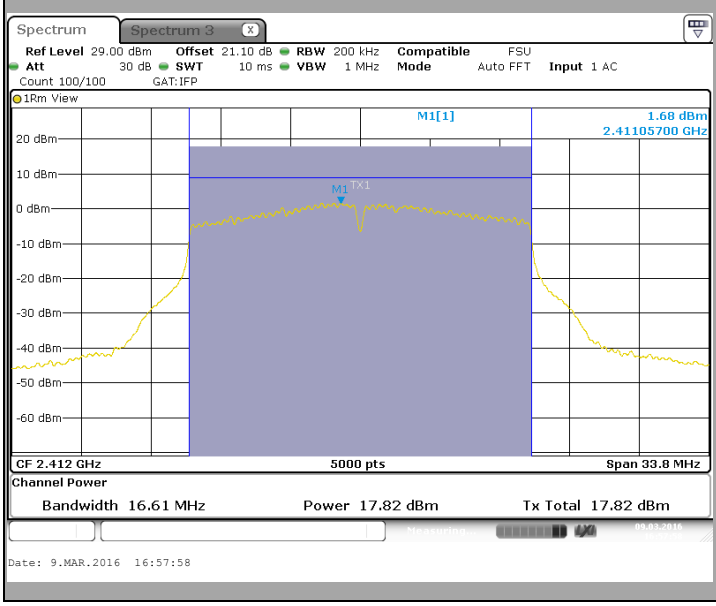


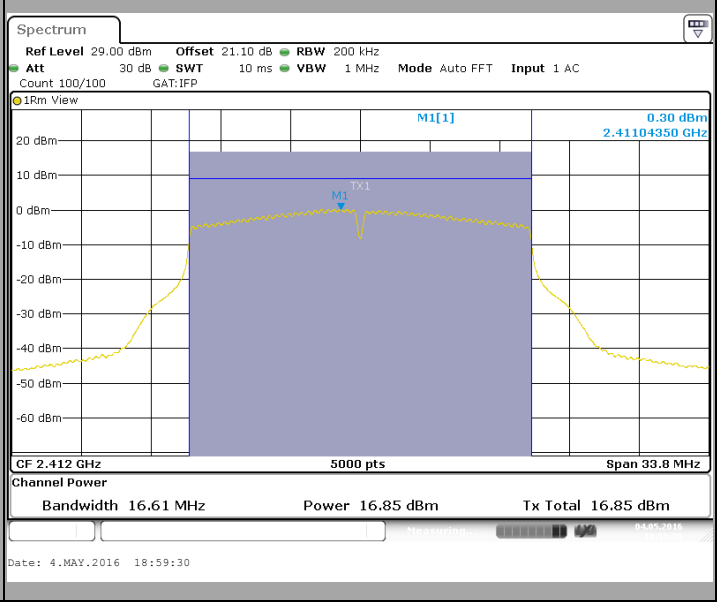
802.11g	
Cmin	
Tx1	Tx2



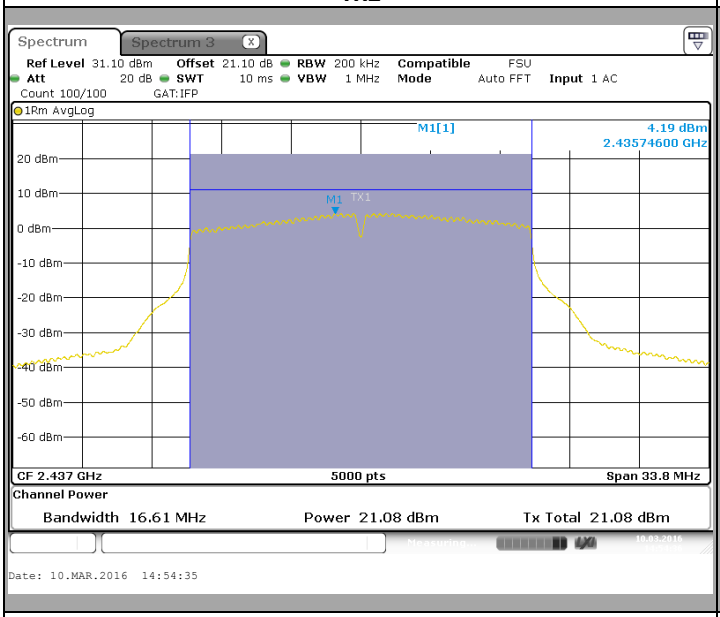


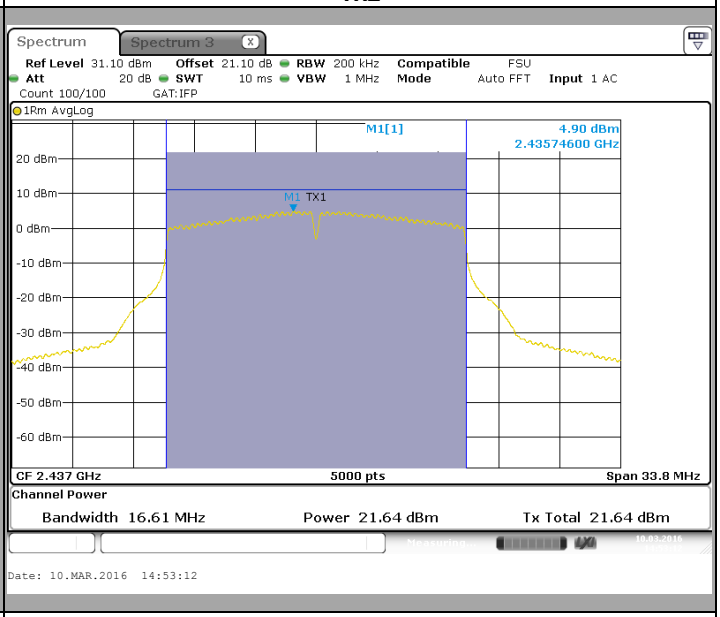
Tx3	Tx4



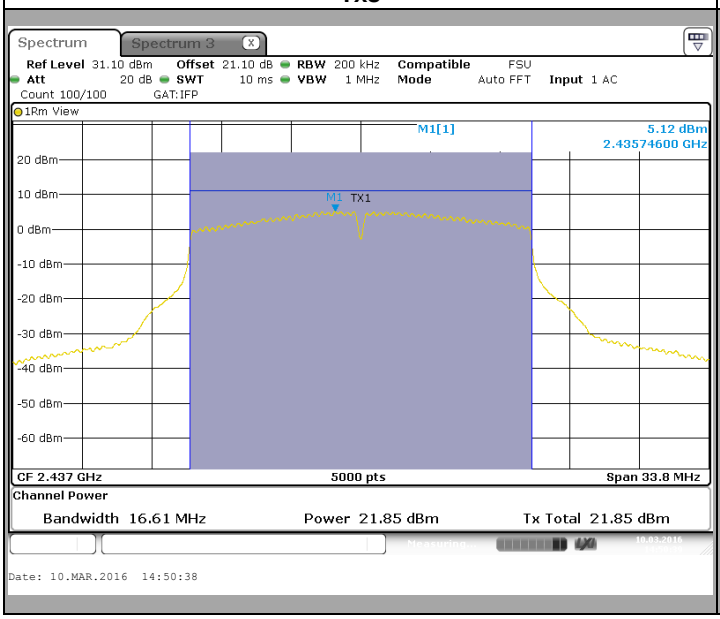


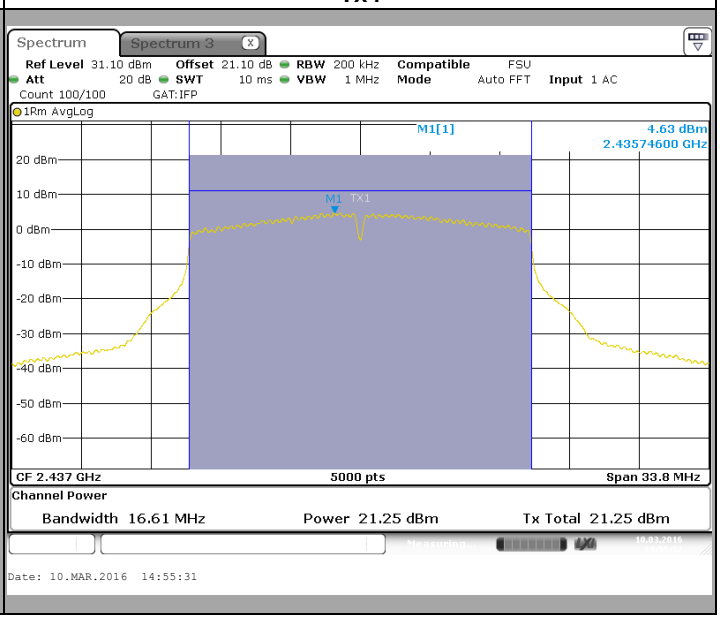
802.11g	
Cnom	
Tx1	Tx2



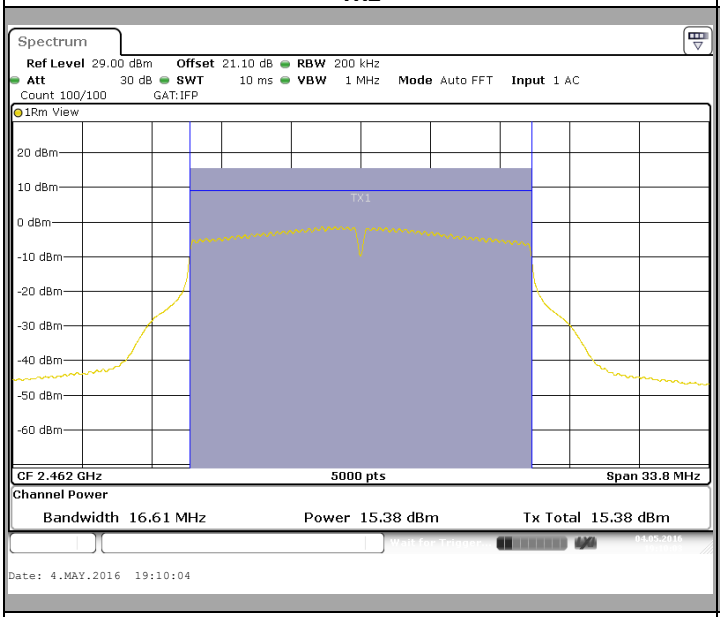


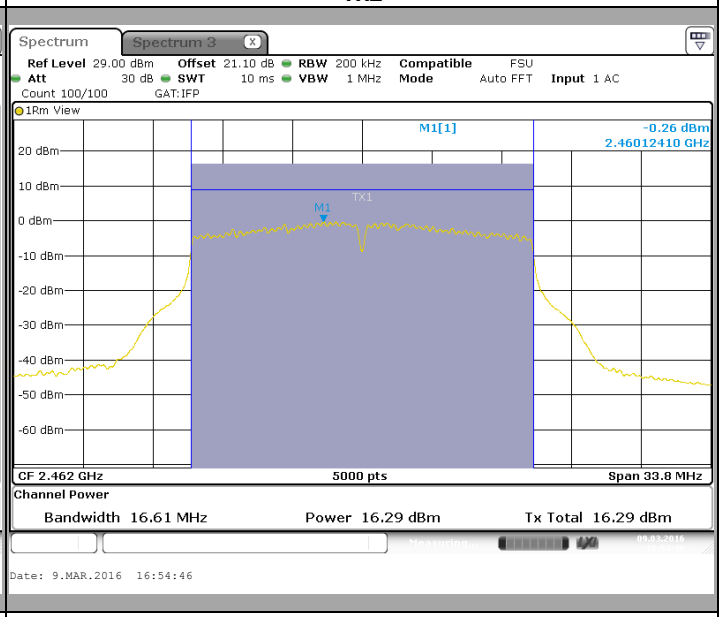
Tx3	Tx4





802.11g	
Cmax	
Tx1	Tx2





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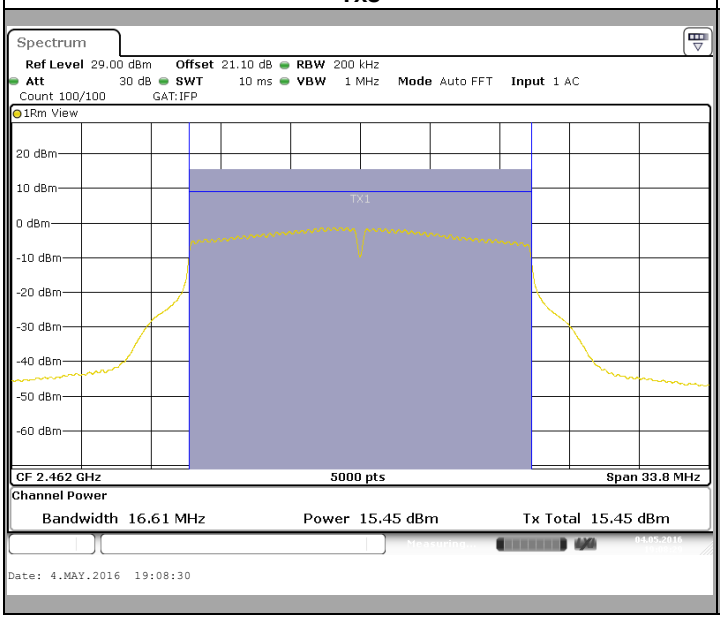

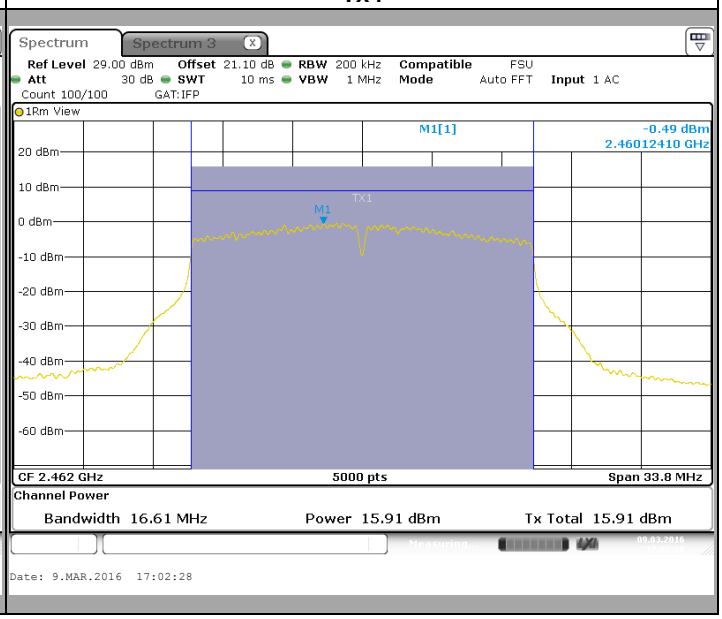

802.11n HT20	
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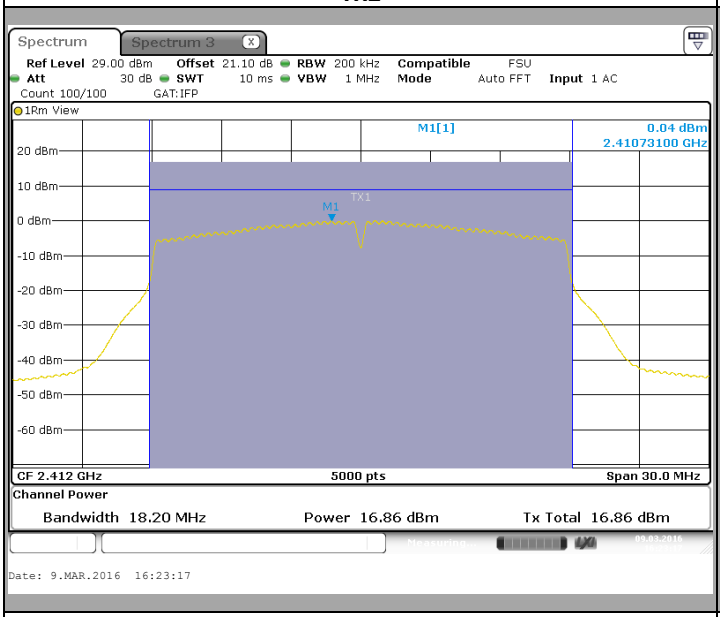	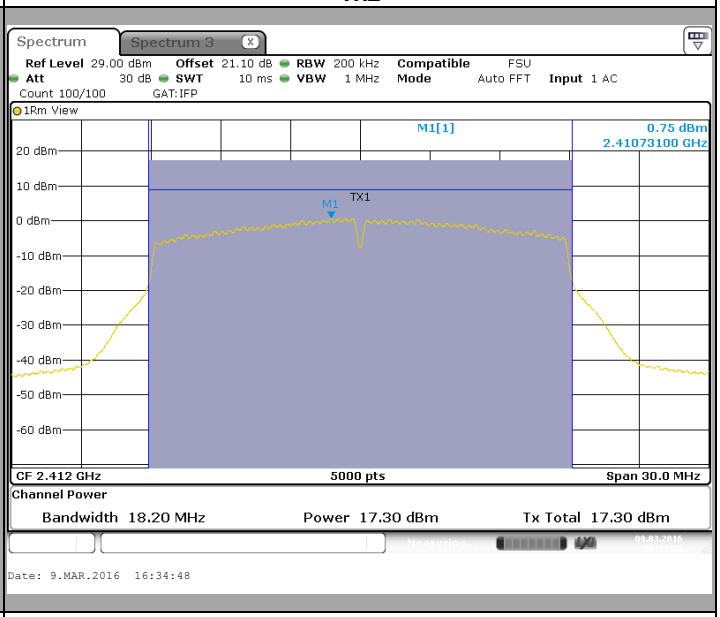
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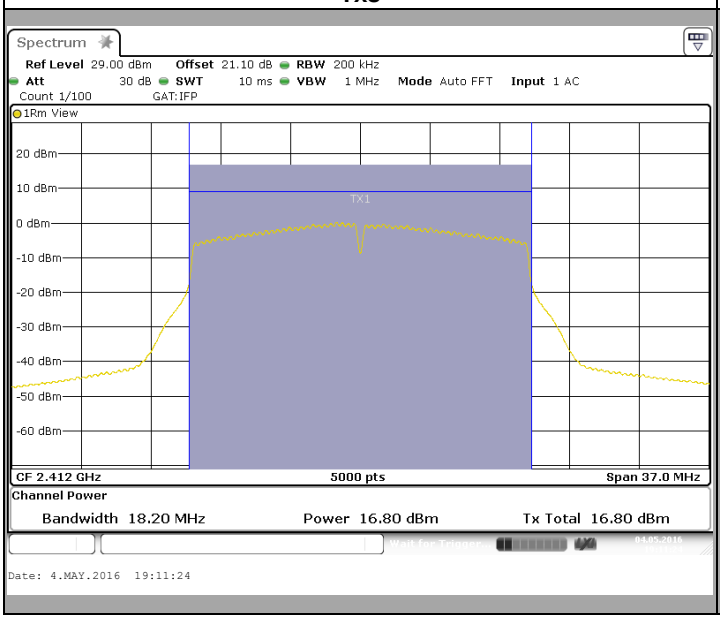	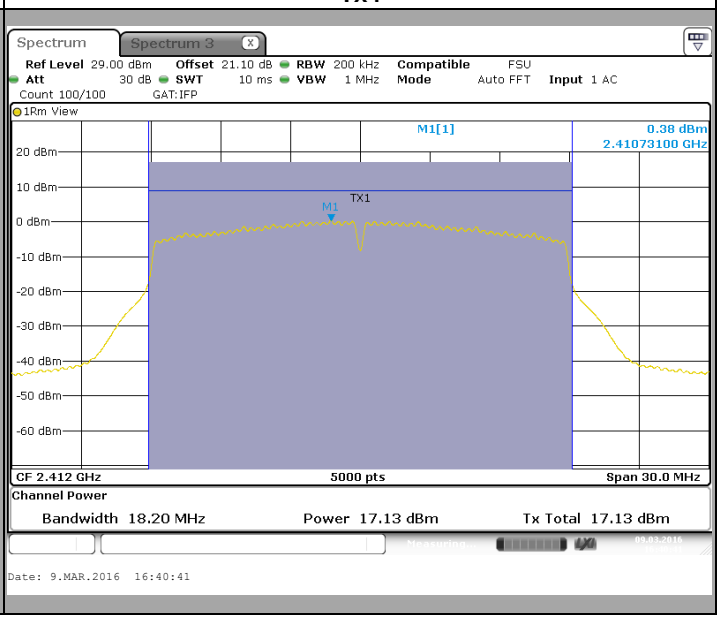

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Cnom	
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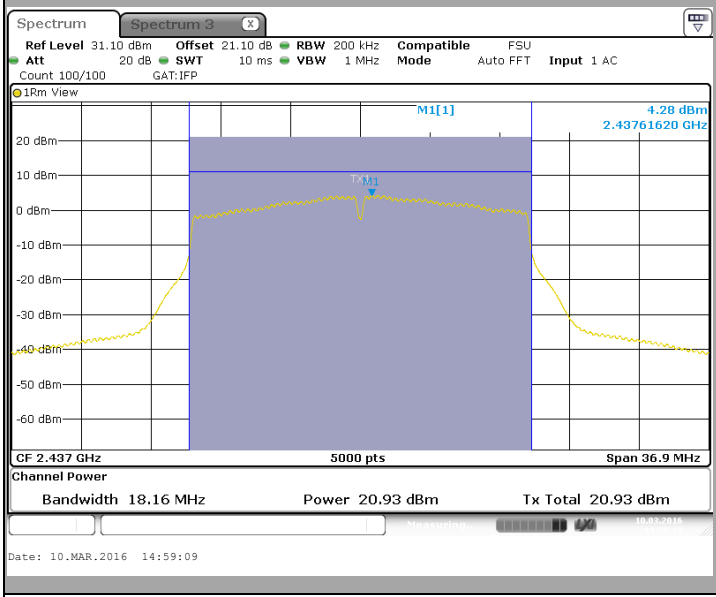
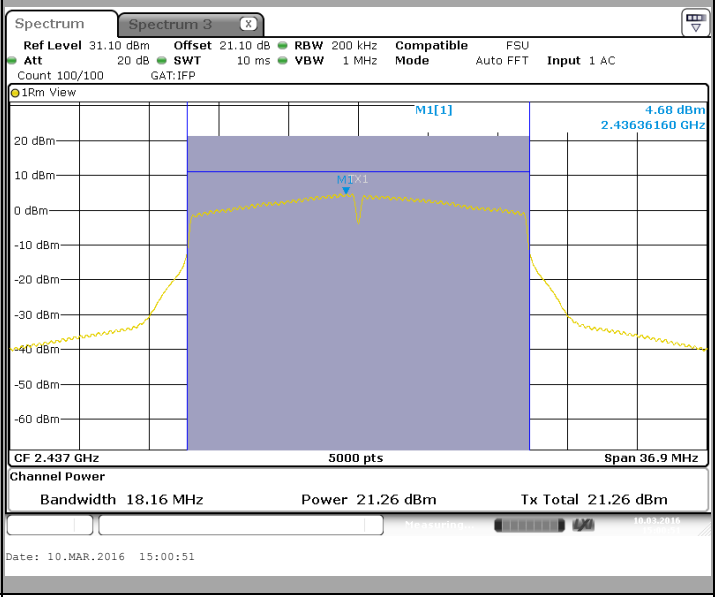
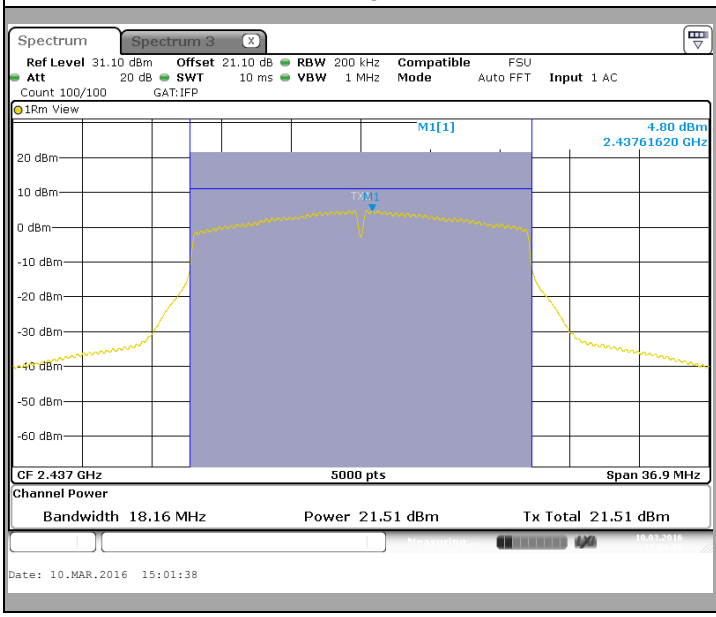
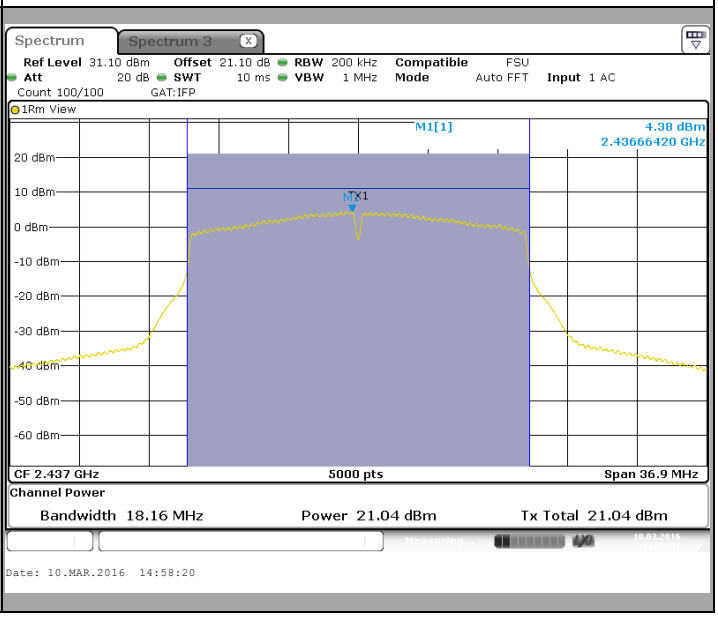
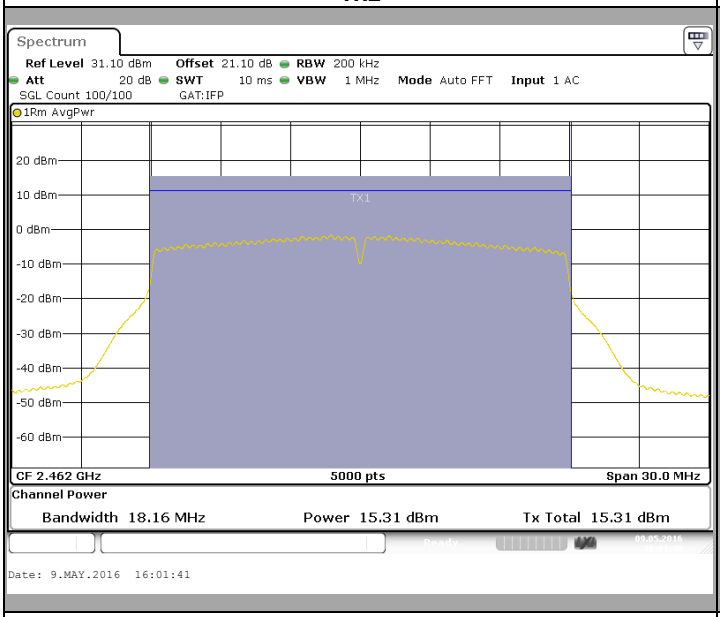
	
Tx3	Tx4
	

802.11n HT20

Cmax

Tx1



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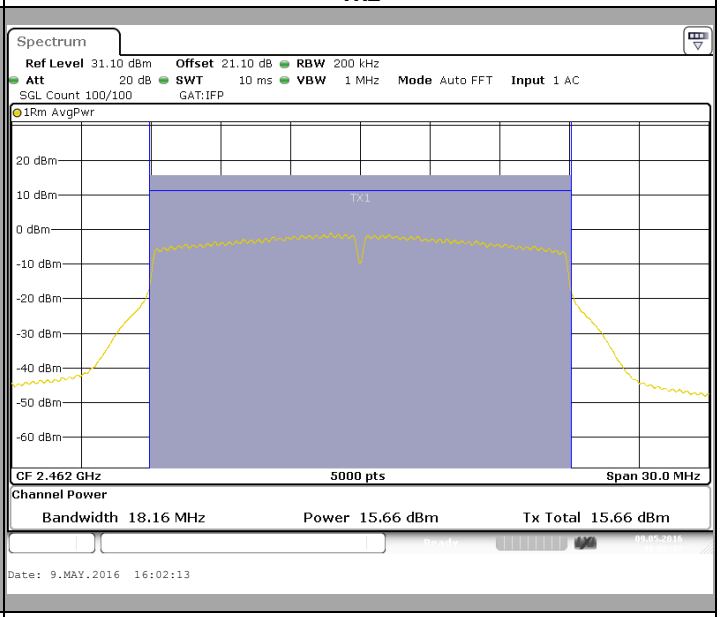

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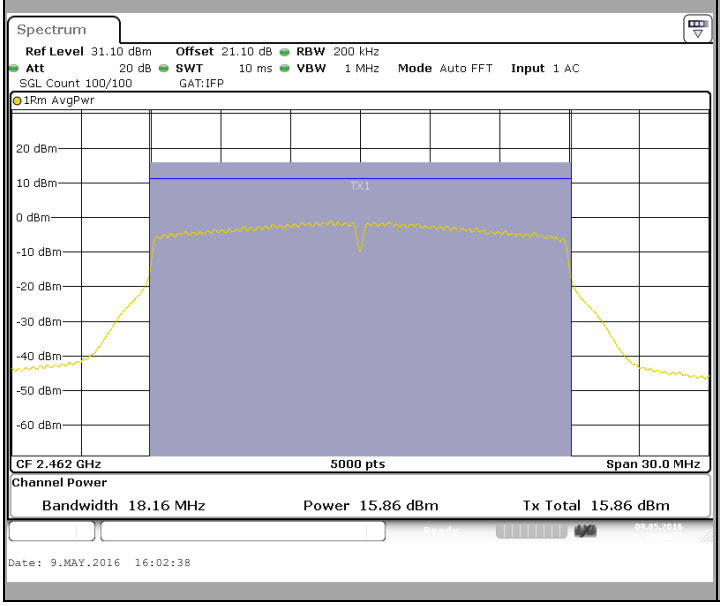

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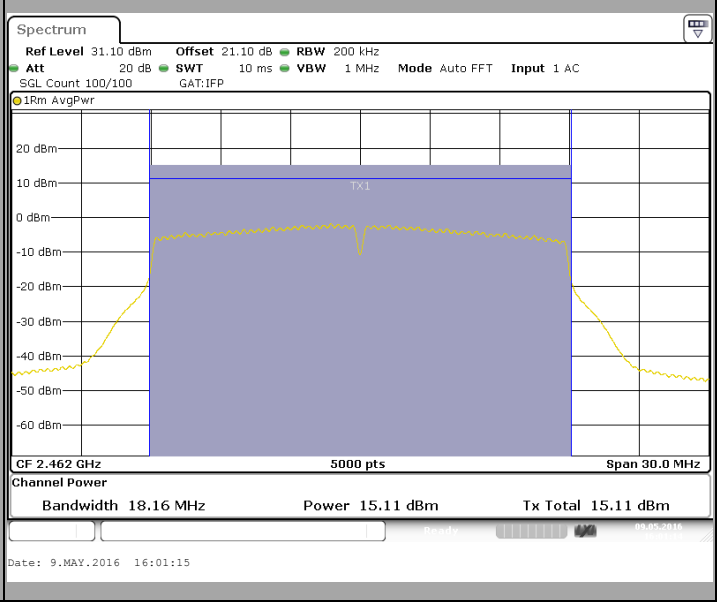
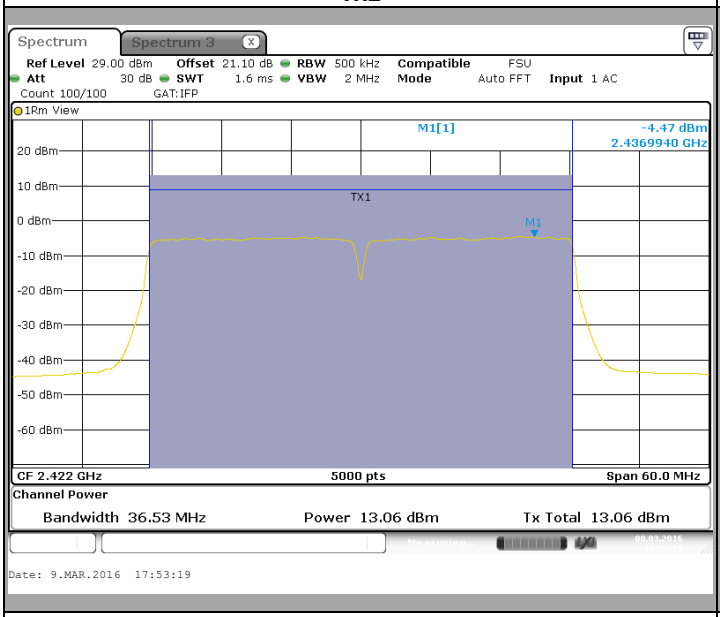


802.11n HT40

Cmin

Tx1



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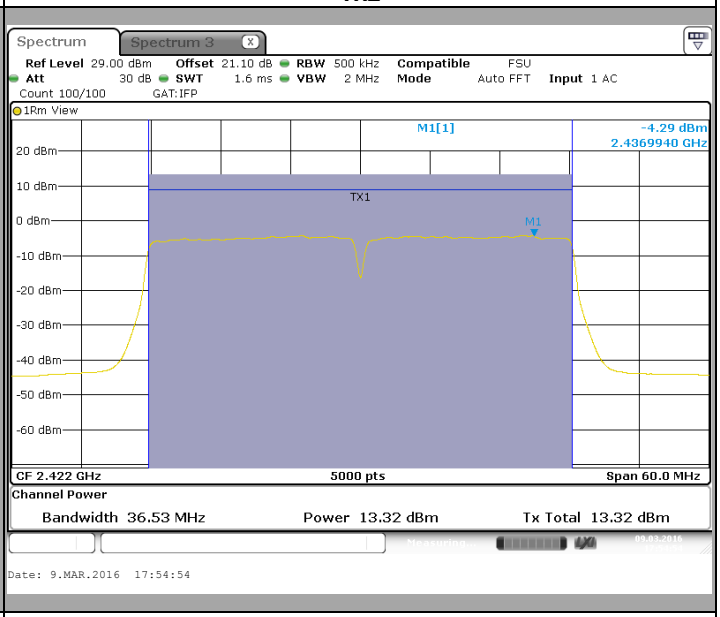

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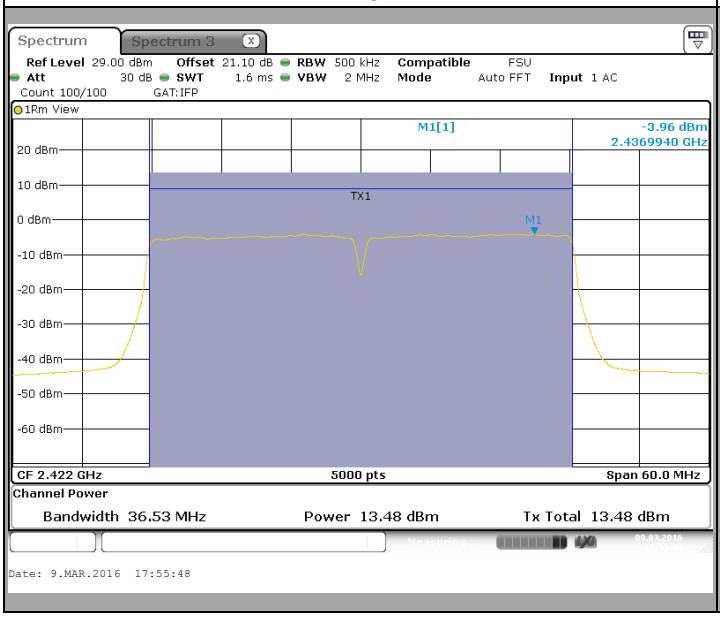

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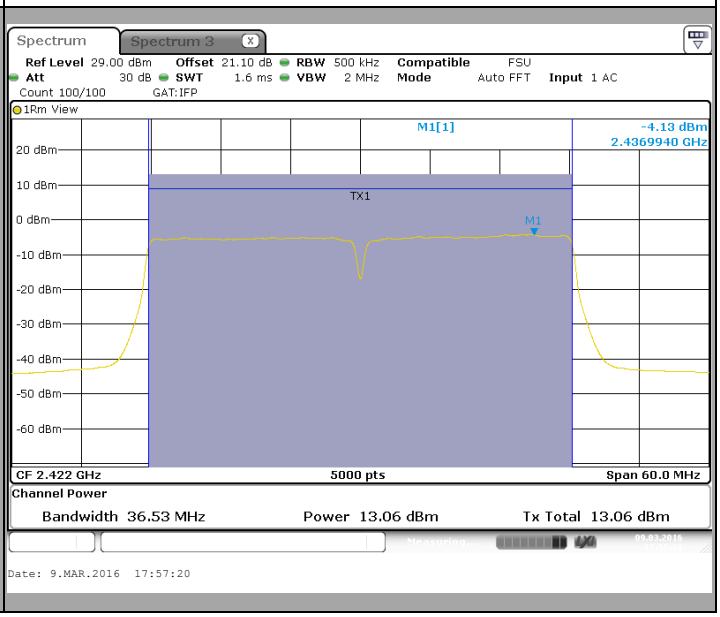
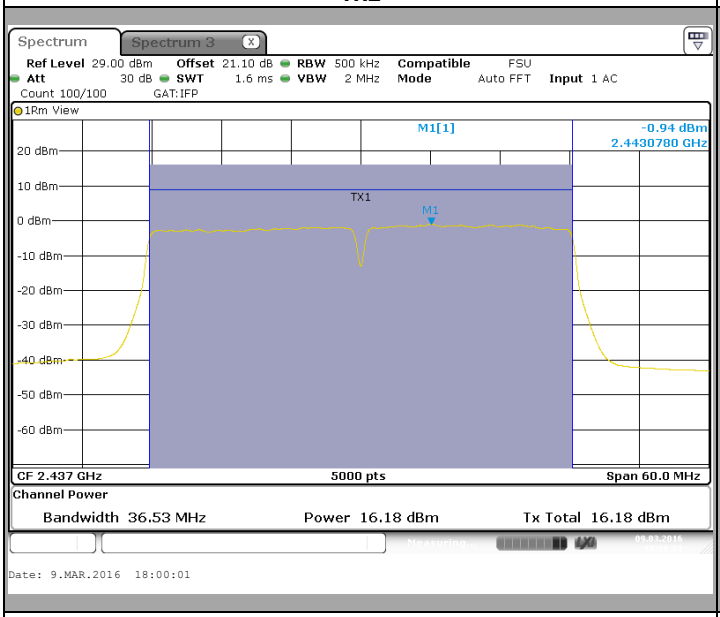


802.11n HT40

Cnom

Tx1



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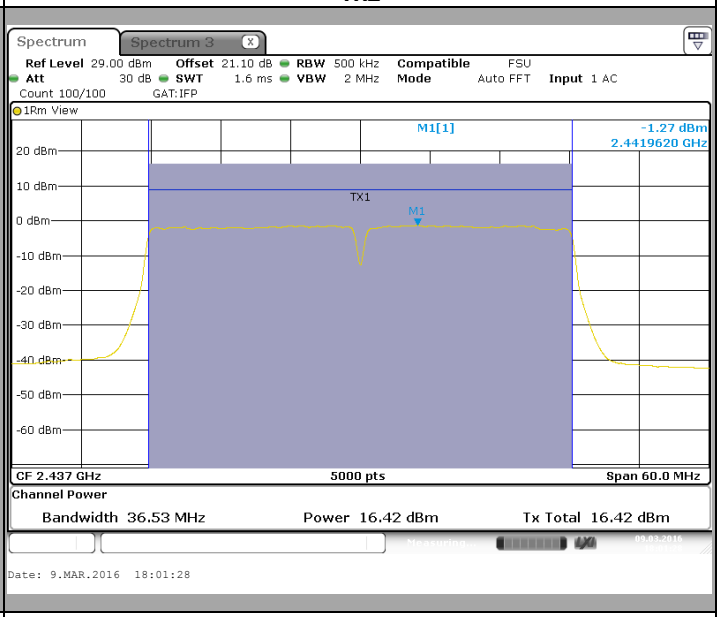

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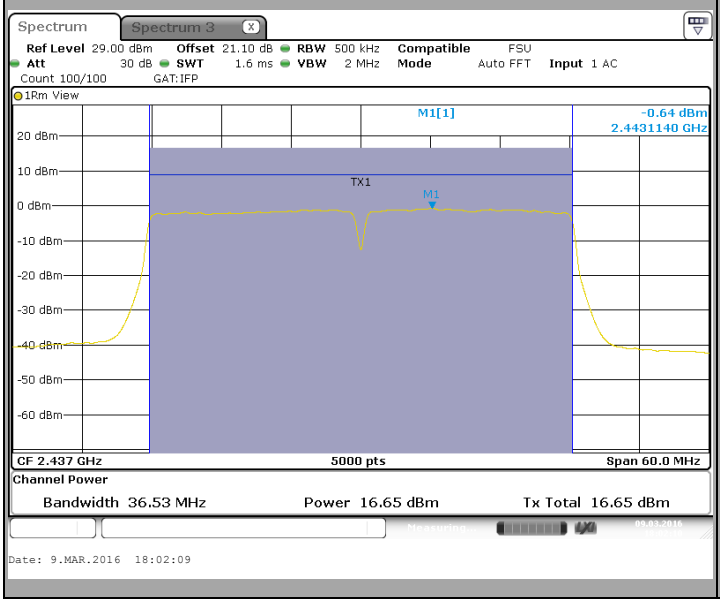
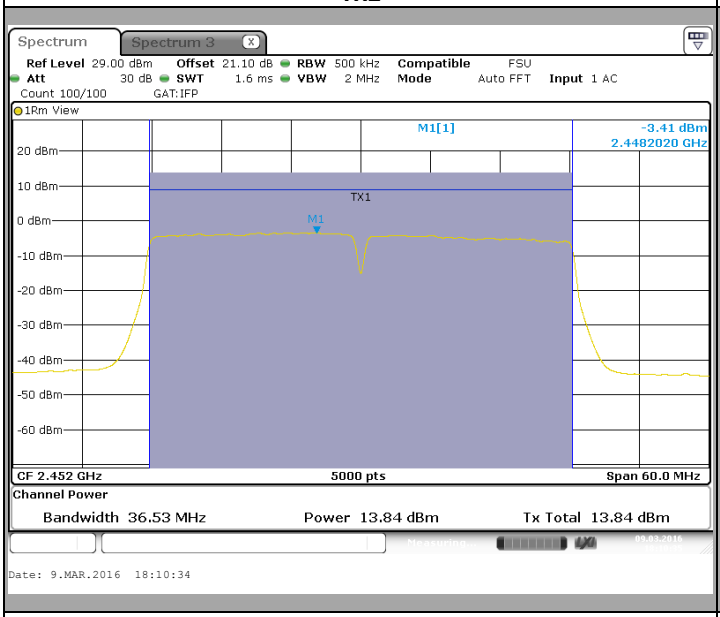


Tx4

802.11n HT40

Cmax

Tx1



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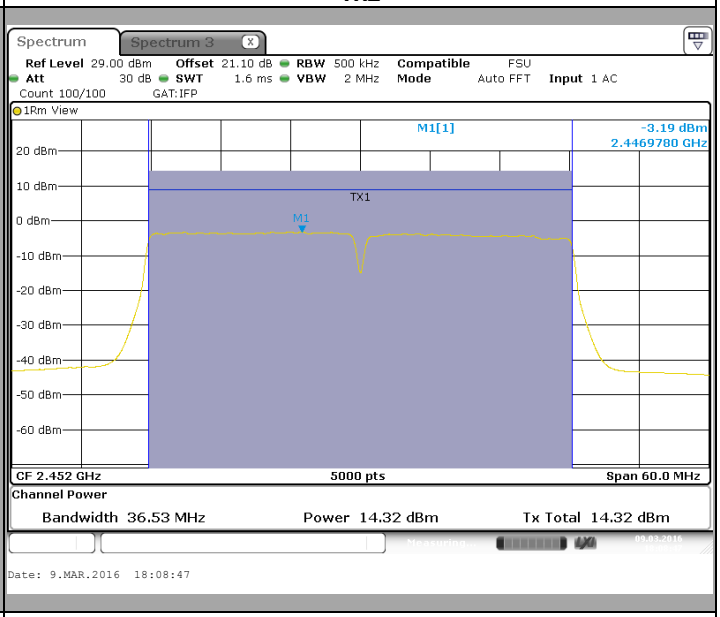

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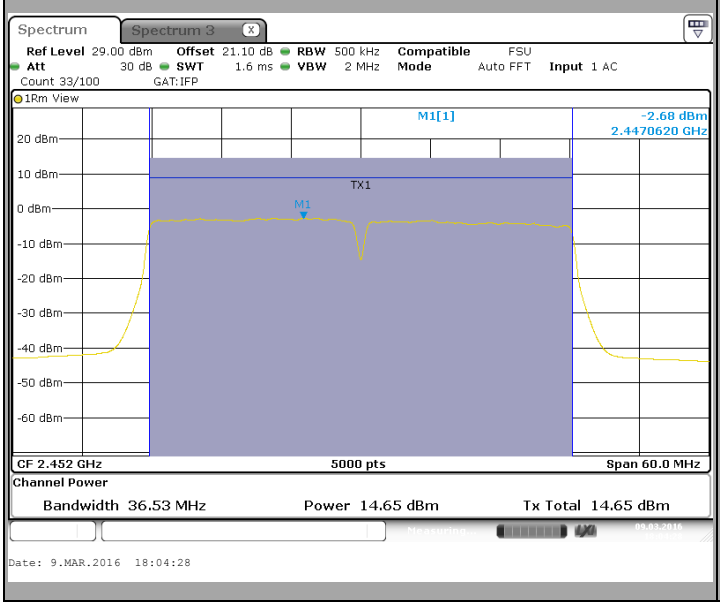

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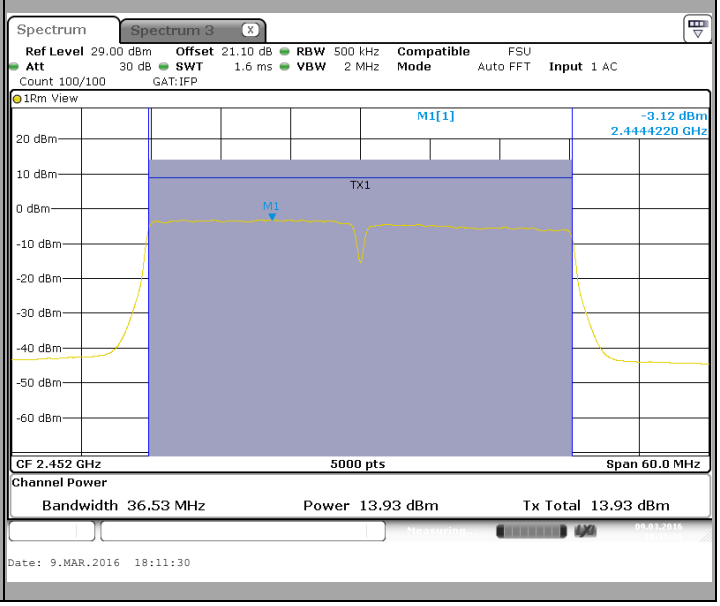


Spectrum Analyzer Offset:
Cable Loss + Attenuator =21.1dB

802.11b							
Channel	**Tx1 (dBm)**	**Tx2 (dBm)**	**Tx3 (dBm)**	**Tx4 (dBm)**	**Overall Antenna Gain (dBi)**	**Maximum Conducted Power (dBm)**	**Limit (dBm)**
Cmin	17,07	17,2	17,66	16,88	7,2	23,23	28.8
Cnom	21,26	21,66	21,81	21,32	7,2	27,53	28.8
Cmax	15,71	16,07	15,26	15,57	7,2	21,68	28.8

802.11g							
Channel	**Tx1 (dBm)**	**Tx2 (dBm)**	**Tx3 (dBm)**	**Tx4 (dBm)**	**Overall Antenna Gain (dBi)**	**Maximum Conducted Power (dBm)**	**Limit (dBm)**
Cmin	17,22	16,93	17,82	16,85	7,2	23,24	28.8
Cnom	21,08	21,64	21,85	21,25	7,2	27,48	28.8
Cmax	15,38	16,29	15,45	15,91	7,2	21,79	28.8

802.11n HT20							
Channel	**Tx1 (dBm)**	**Tx2 (dBm)**	**Tx3 (dBm)**	**Tx4 (dBm)**	**Overall Antenna Gain (dBi)**	**Maximum Conducted Power (dBm)**	**Limit (dBm)**
Cmin	16,86	17,3	16,8	17,13	7,2	23,04	28.8
Cnom	20,93	21,26	21,51	21,04	7,2	27,21	28.8
Cmax	15,31	15,66	15,86	15,11	7,2	21,51	28.8

802.11n HT40							
Channel	**Tx1 (dBm)**	**Tx2 (dBm)**	**Tx3 (dBm)**	**Tx4 (dBm)**	**Overall Antenna Gain (dBi)**	**Maximum Conducted Power (dBm)**	**Limit (dBm)**
Cmin	13,06	13,32	13,48	13,06	7,2	19,25	28.8
Cnom	16,18	16,42	16,65	16,35	7,2	22,42	28.8
Cmax	13,84	14,32	14,65	13,93	7,2	20,21	28.8

6.6. CONCLUSION

Maximum Conducted Output Power measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

7. POWER SPECTRAL DENSITY

7.1. TEST CONDITIONS

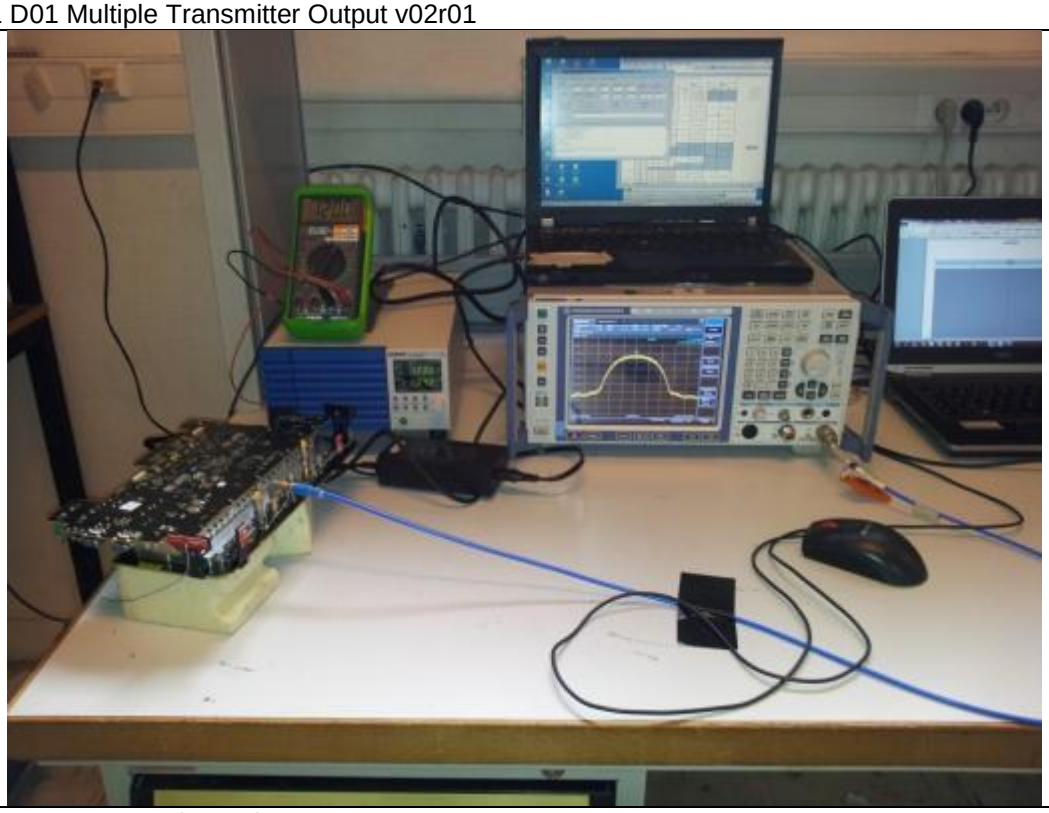
Test performed by	: Armand MAHOUNGOU
Date of test	: May 9, 2016
Ambient temperature	: 24 °C
Relative humidity	: 45 %

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 v03r05 § 10.2 (Method PKPSD)
☐ KDB 558074 D01 DTS Meas Guidance v03r05 § 10.3 (Method AVGPSD-1)
☑ KDB 662911 D01 Multiple Transmitter Output v02r01



Photograph for Power Spectral Density

7.3. LIMIT

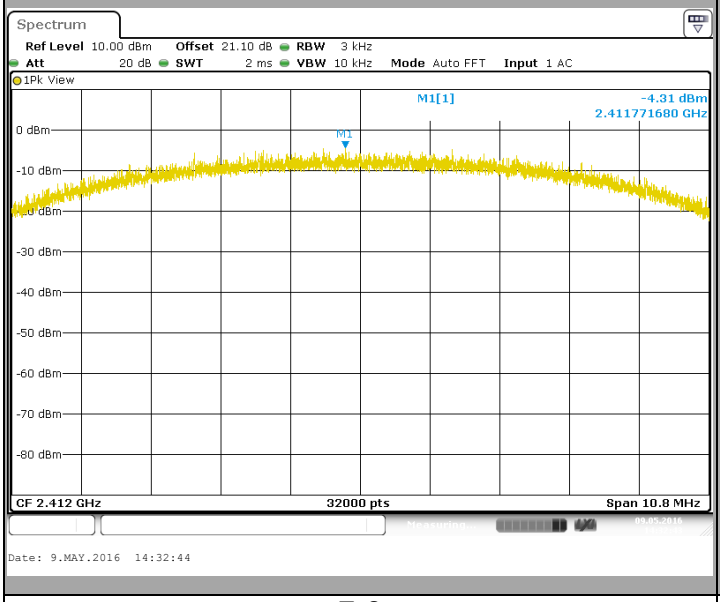
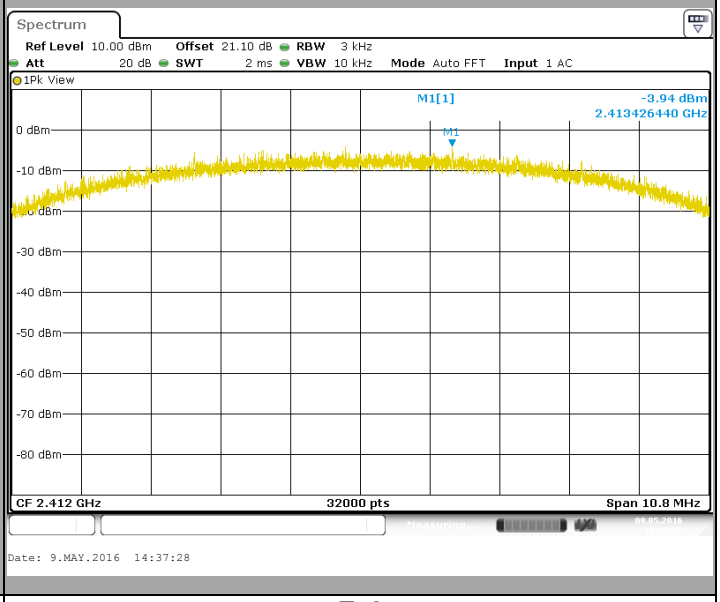
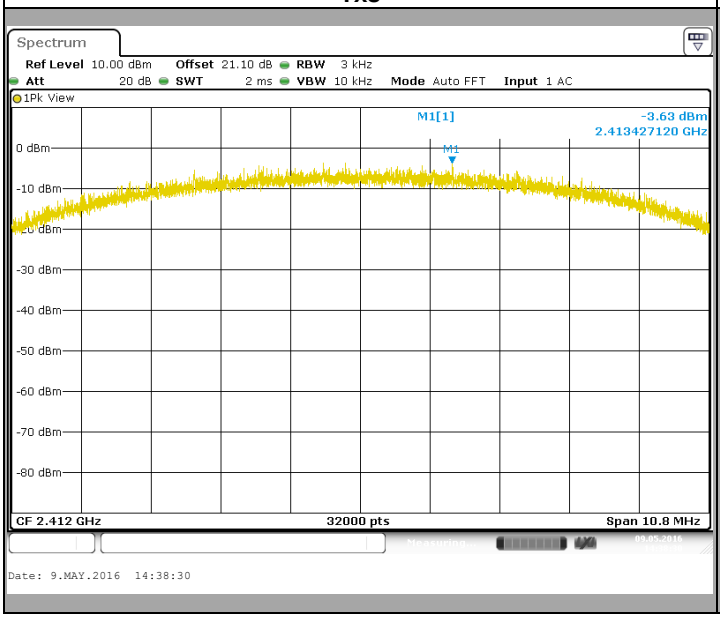
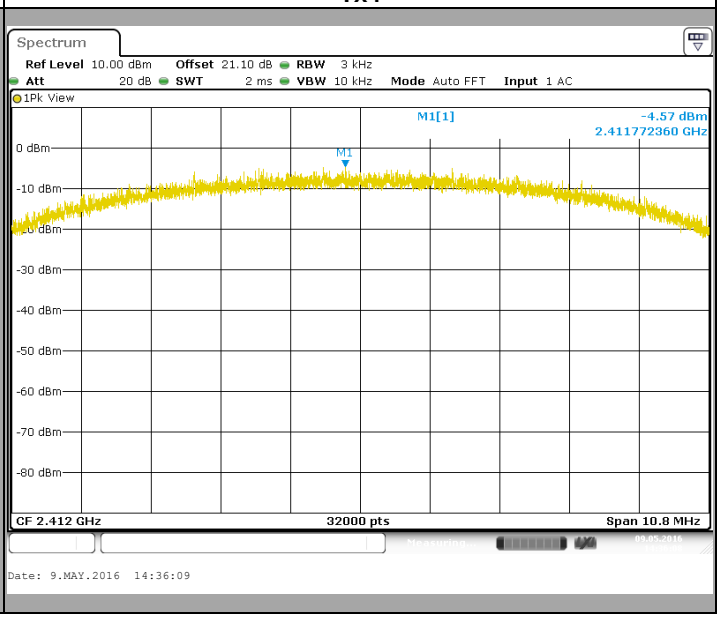
Power Spectral Density:
2400MHz-2483.5MHz: Shall not exceed 8dBm/3kHz
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

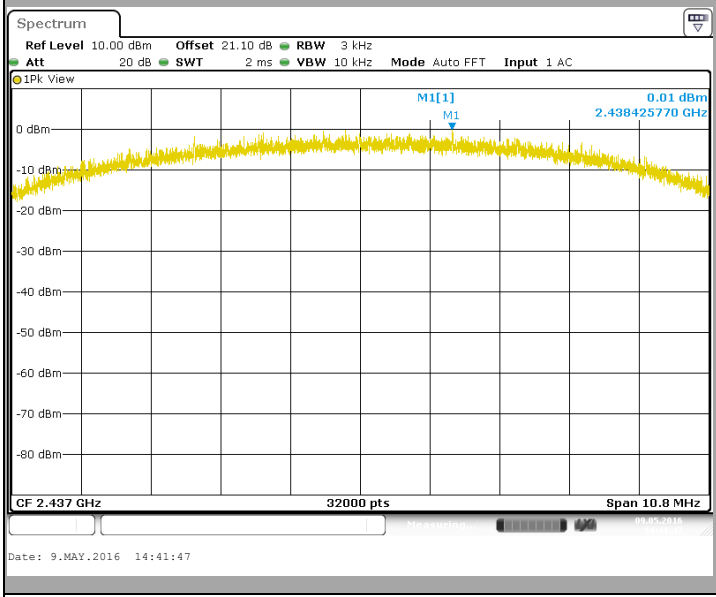
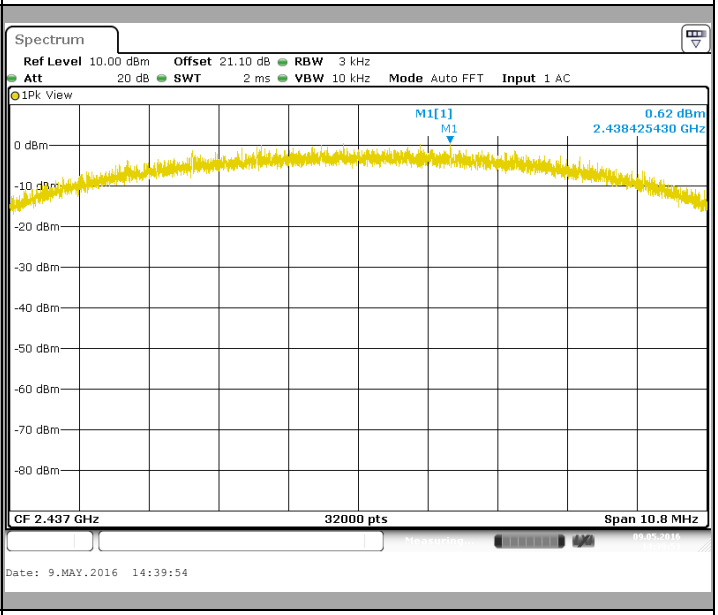
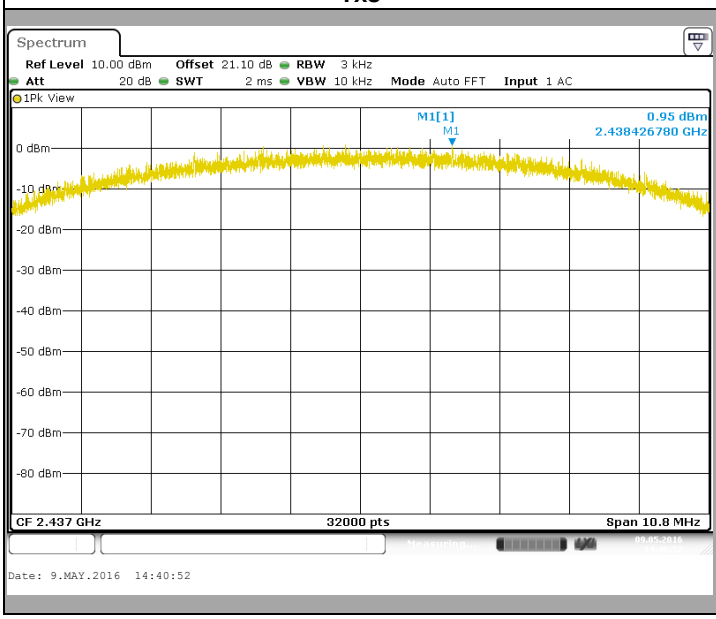
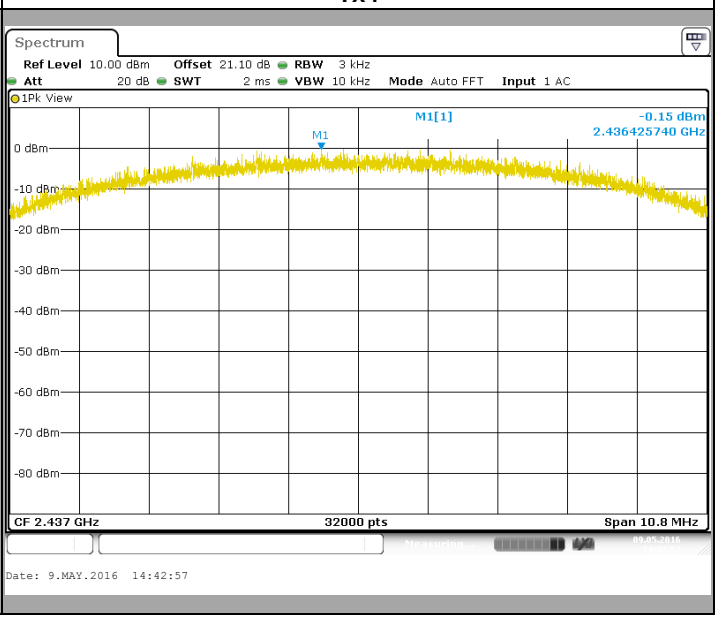
7.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253	2015/08	2016/08
Load 50 ohms	-; TELEGARTNER	-	A7150103	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150104	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150105	2015/10	2016/10

Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

7.5. RESULTS

802.11b	
Cmin	
Tx1	Tx2
	
Tx3	Tx4
	

802.11b	
Cnom	
Tx1	Tx2
	
Tx3	Tx4
	

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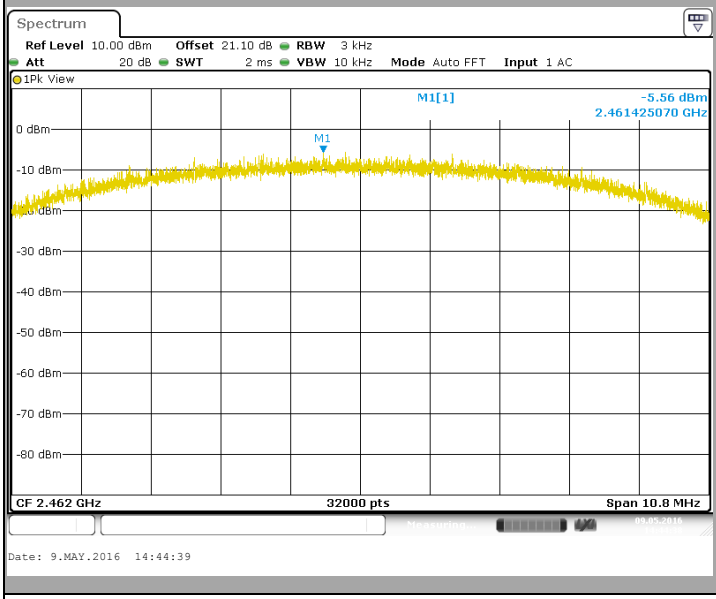
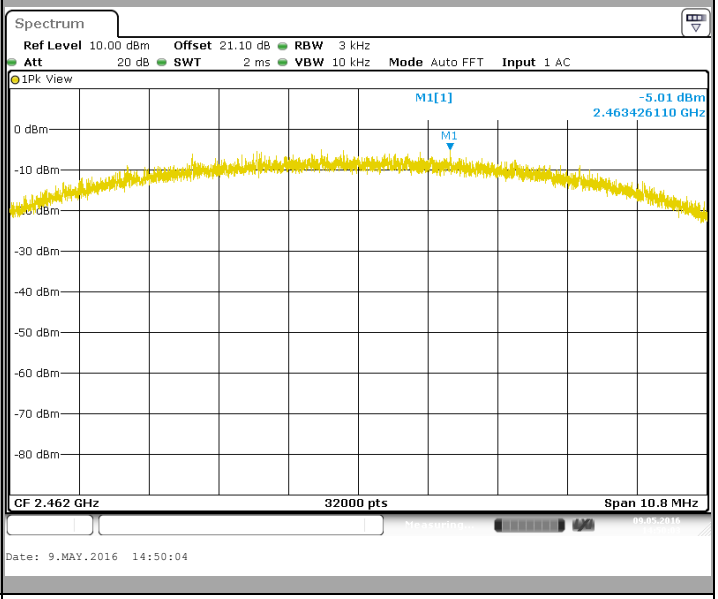
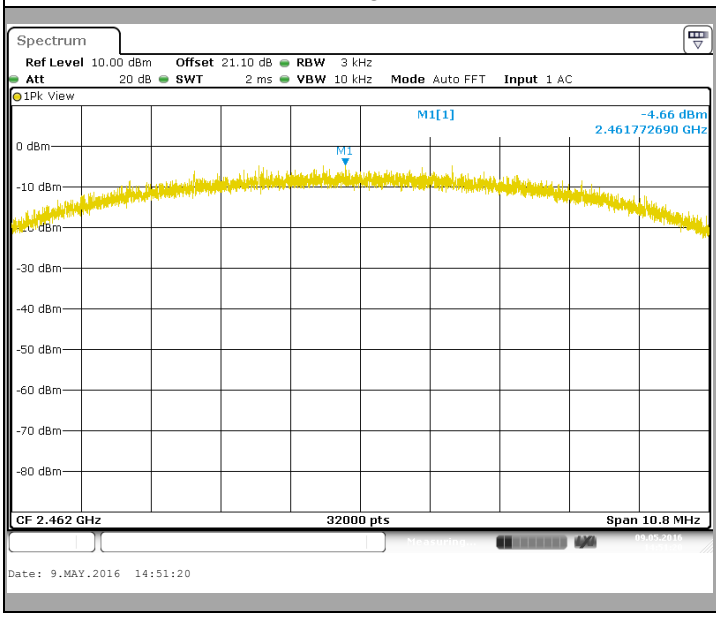
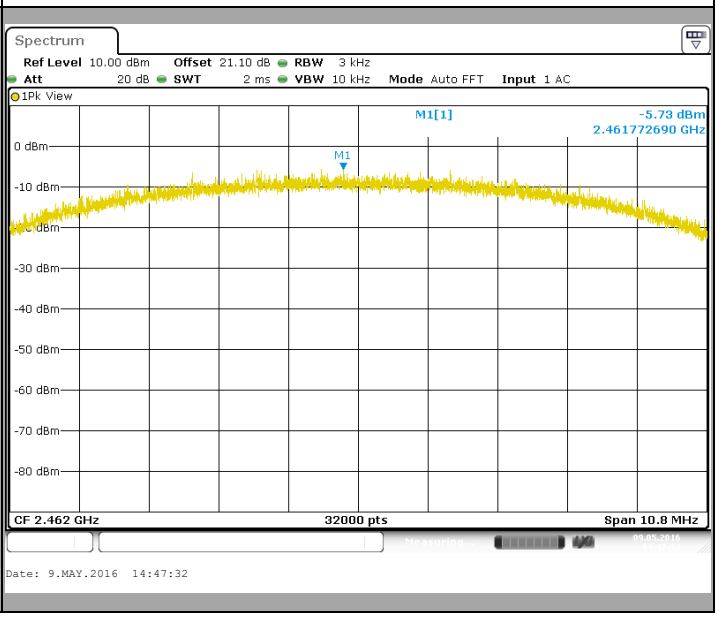
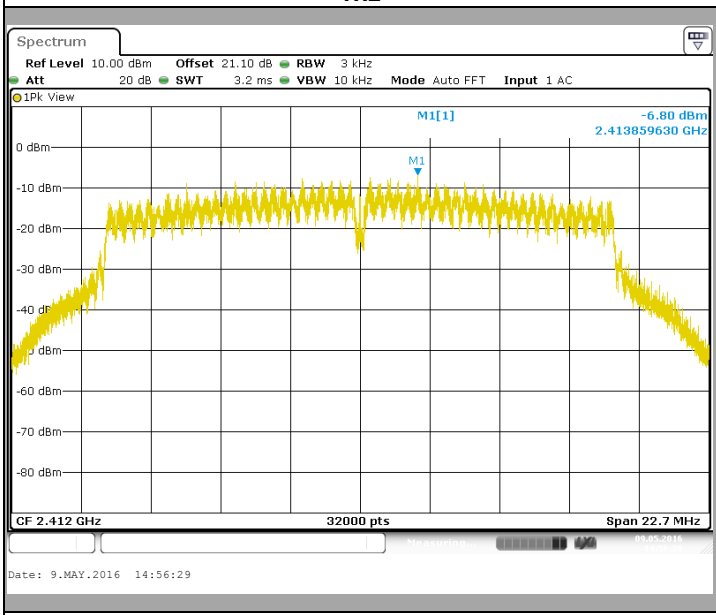
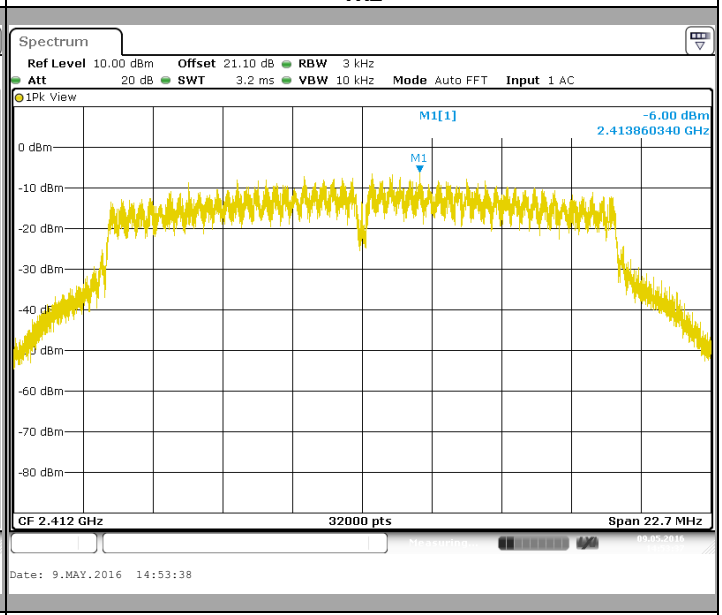
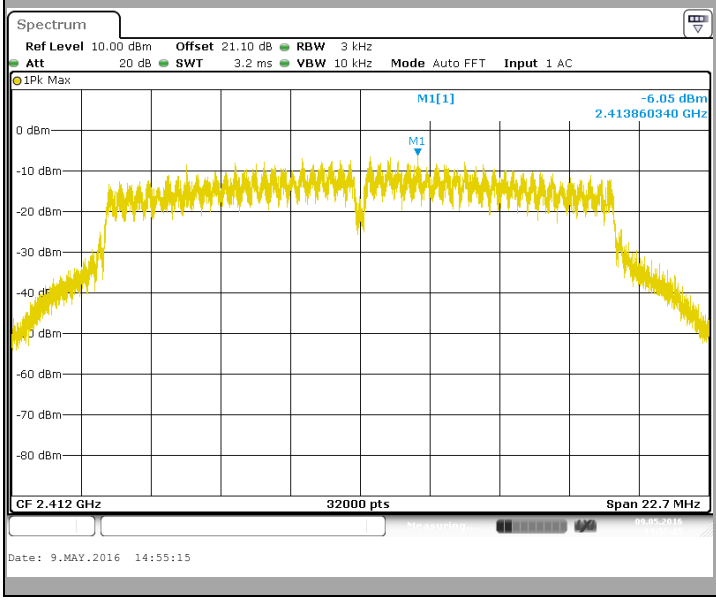
Cmax	
Tx1	Tx2
	
Tx3	Tx4
	

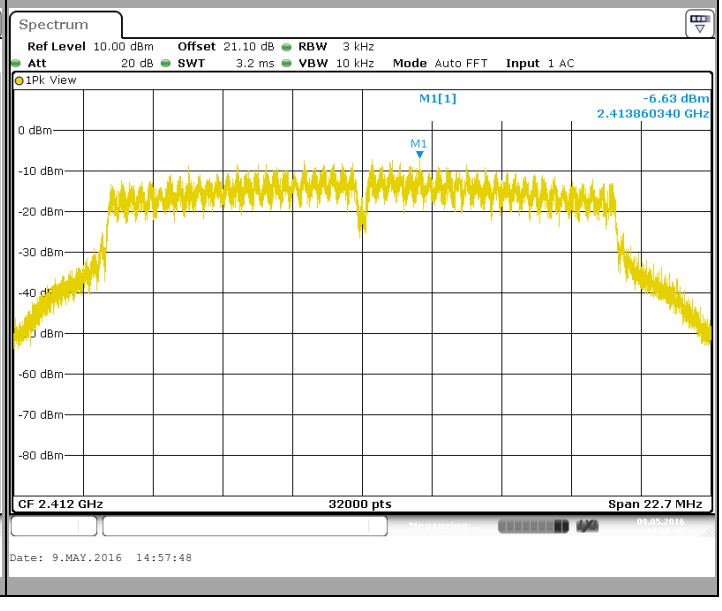
802.11g	
Cmin	
Tx1	Tx2



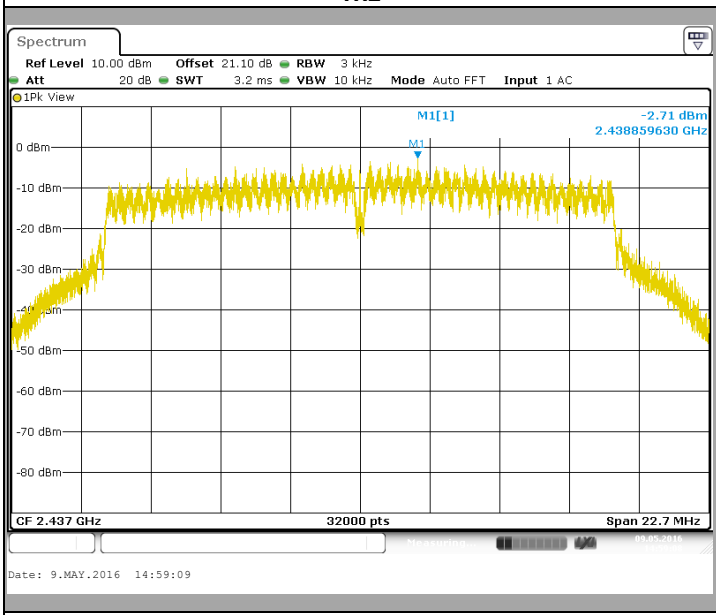


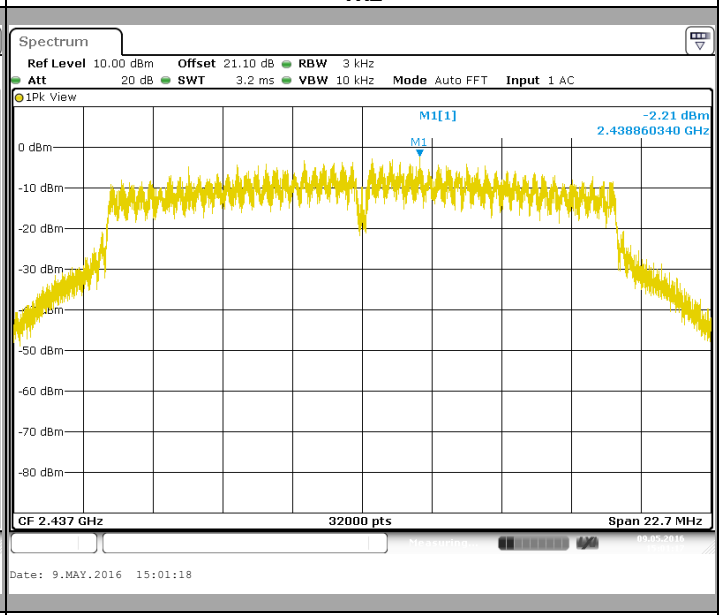
Tx3	Tx4



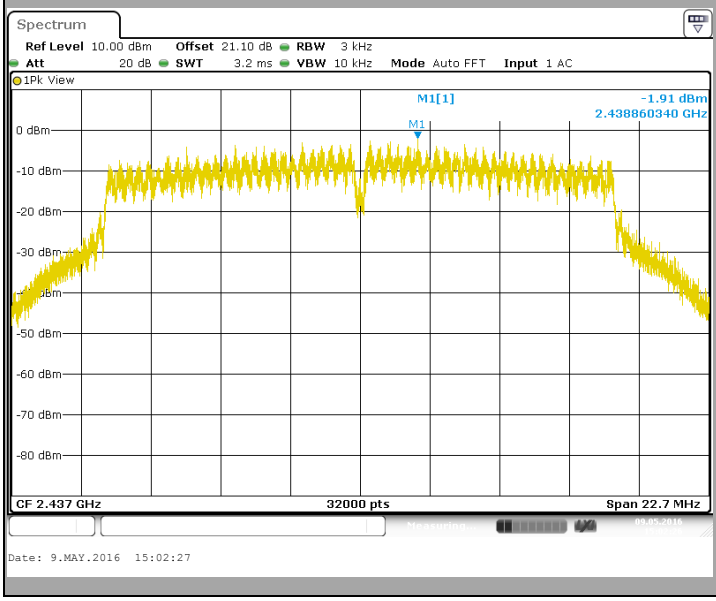


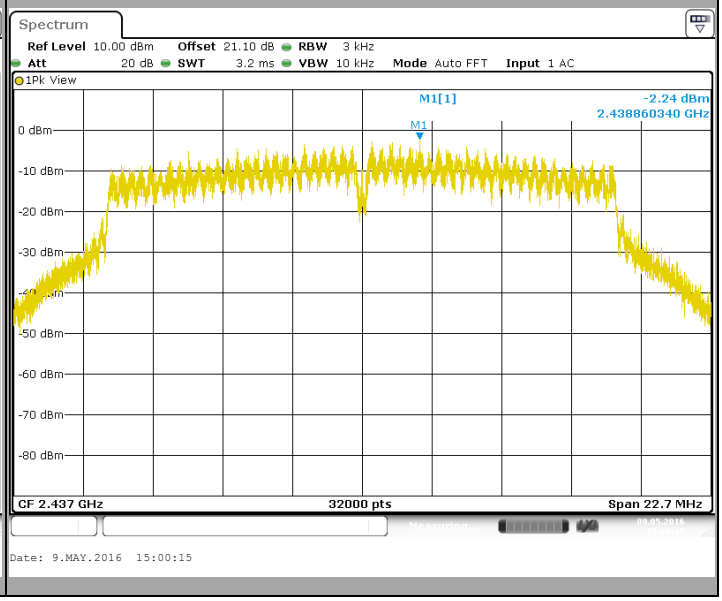
802.11g	
Cnom	
Tx1	Tx2



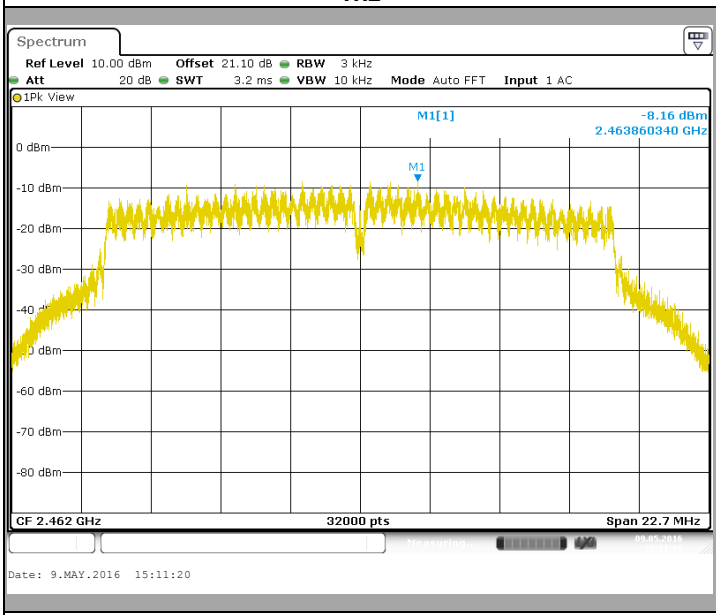


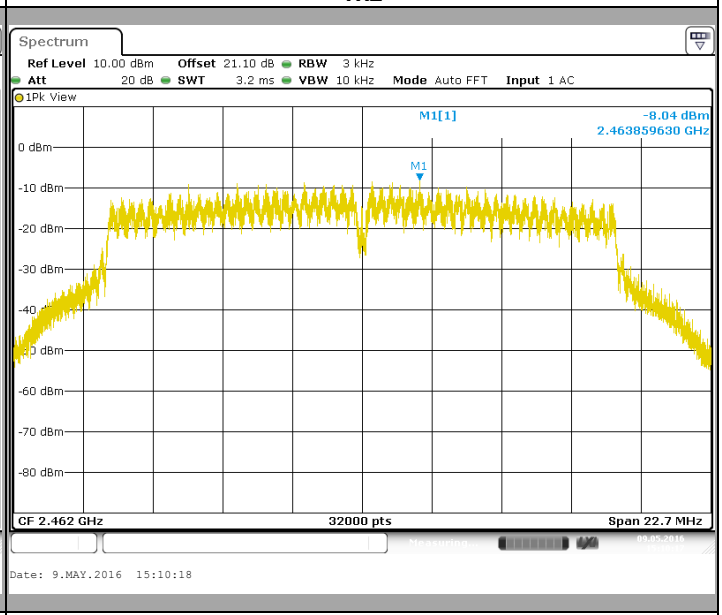
Tx3	Tx4





802.11g	
Cmax	
Tx1	Tx2





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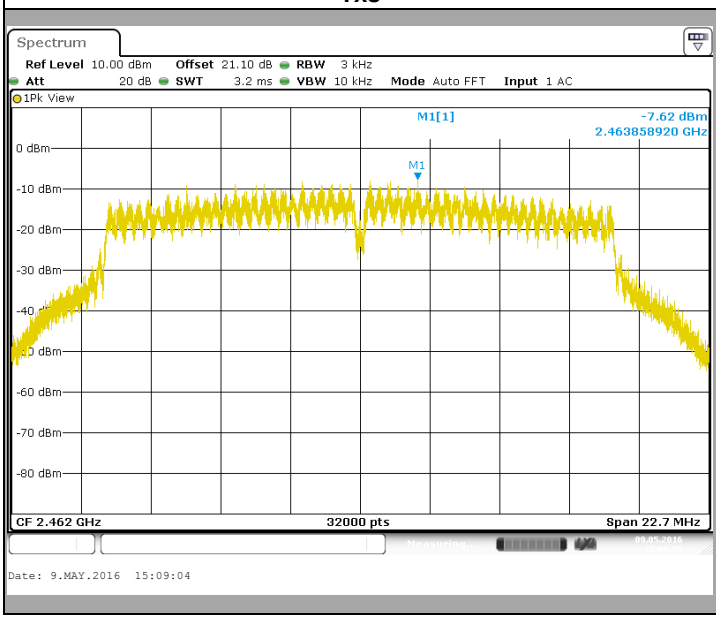

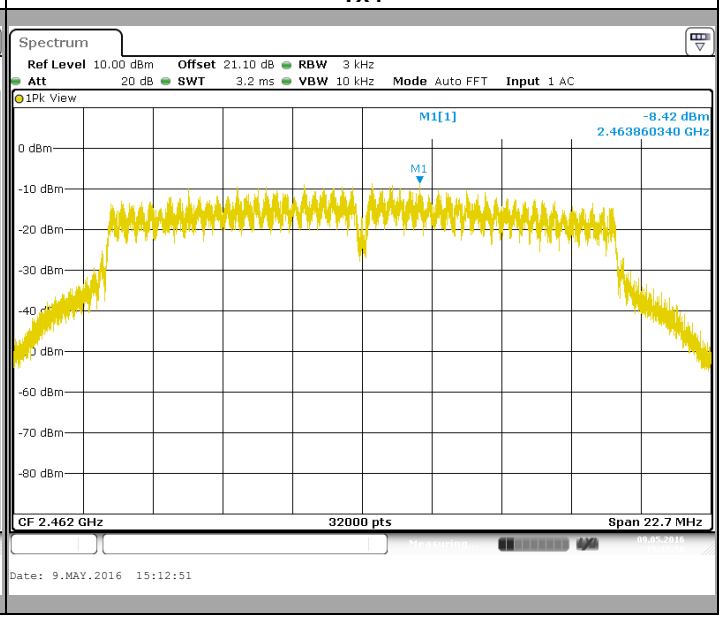

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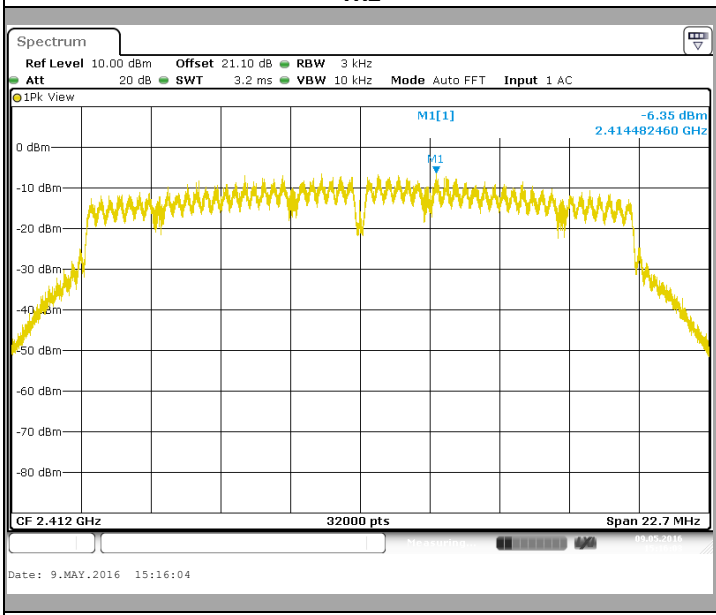
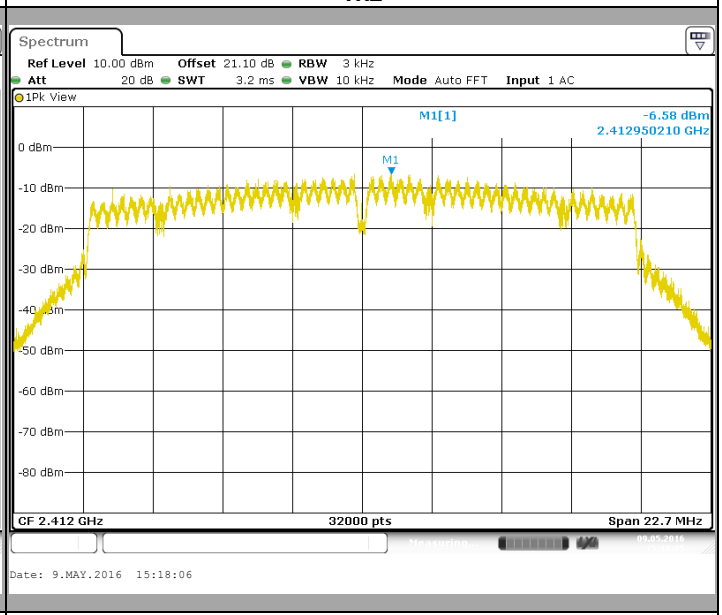
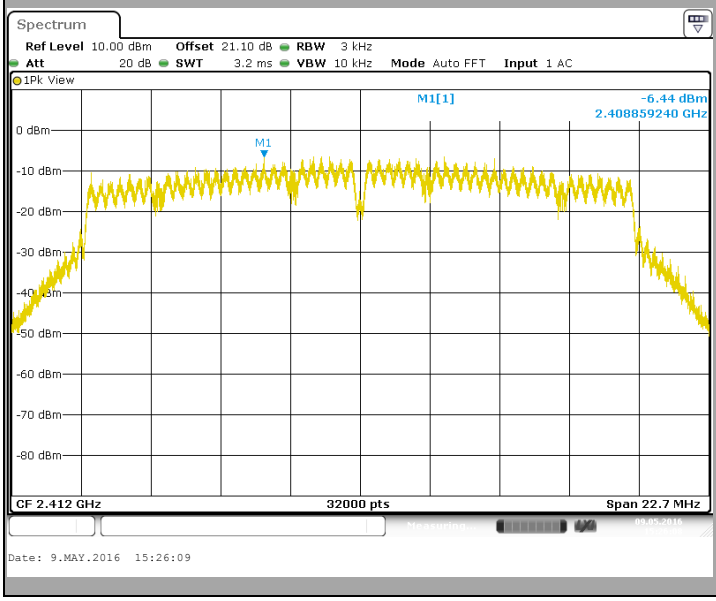
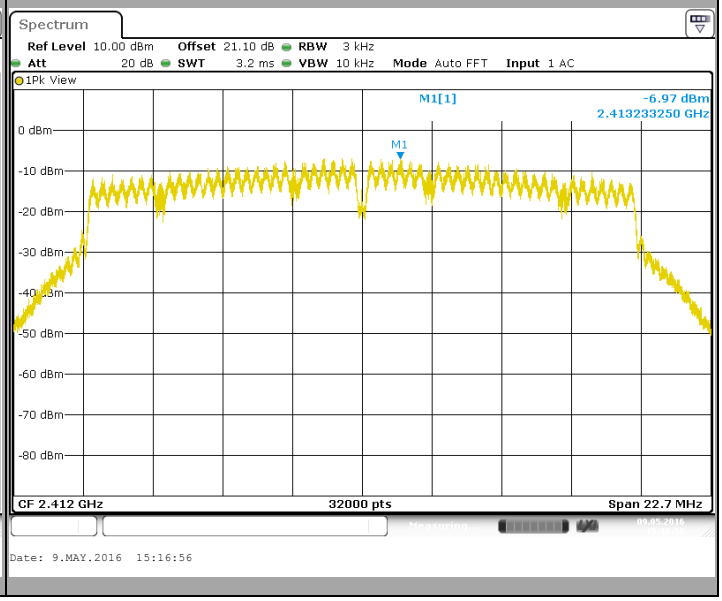
Tx1	Tx2





Tx3	Tx4





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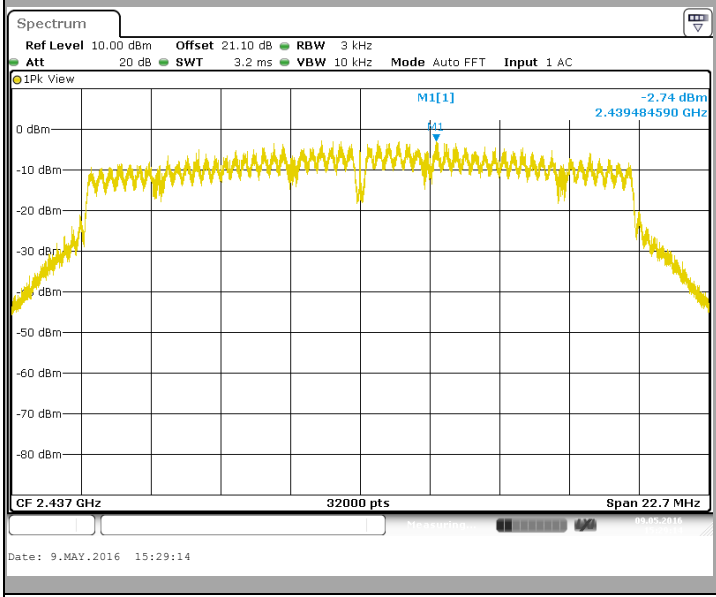
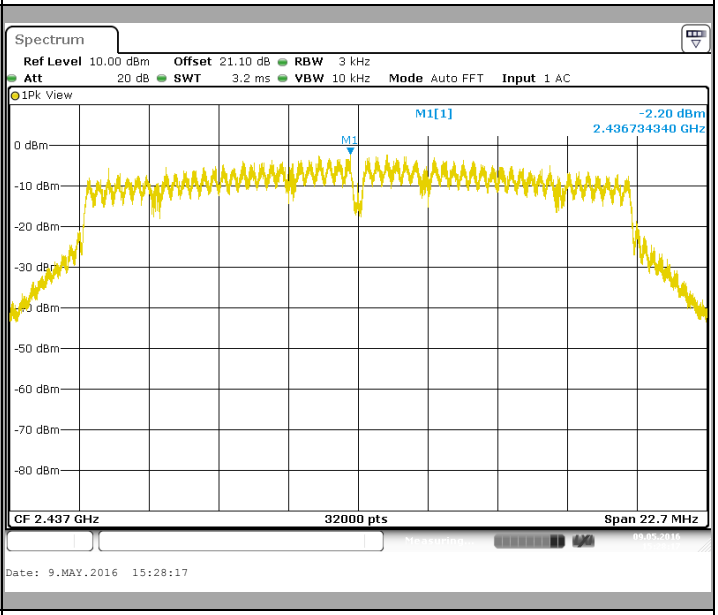
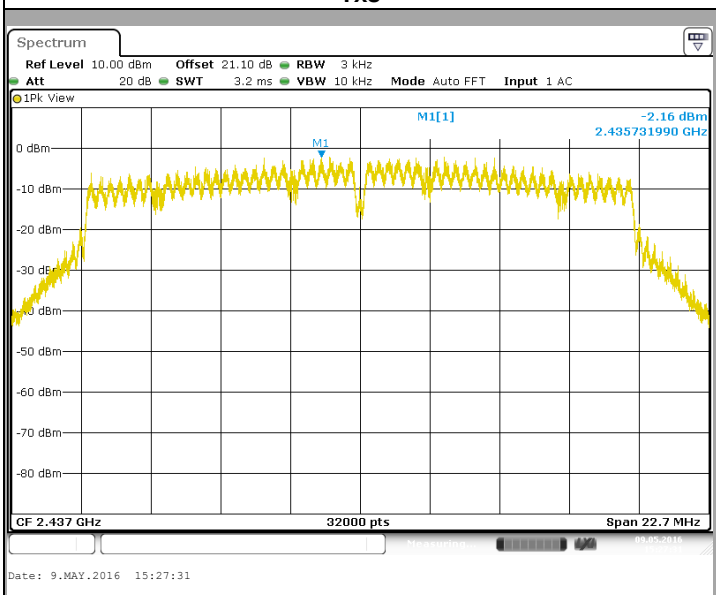
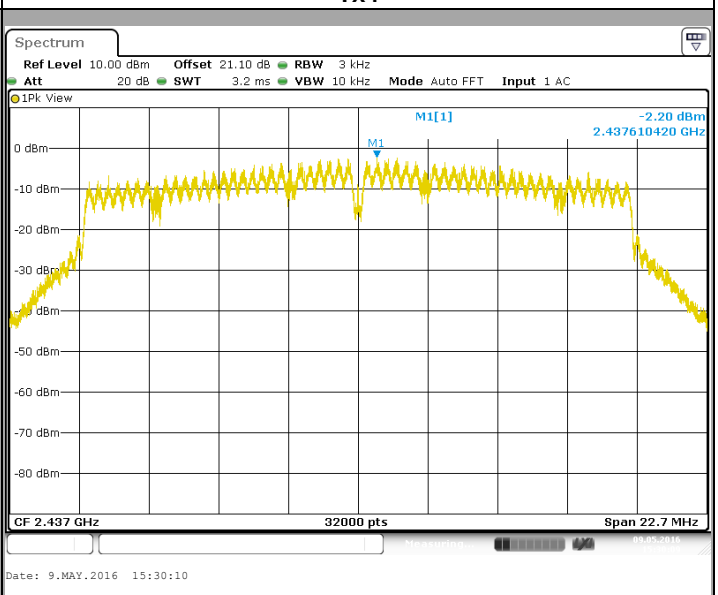
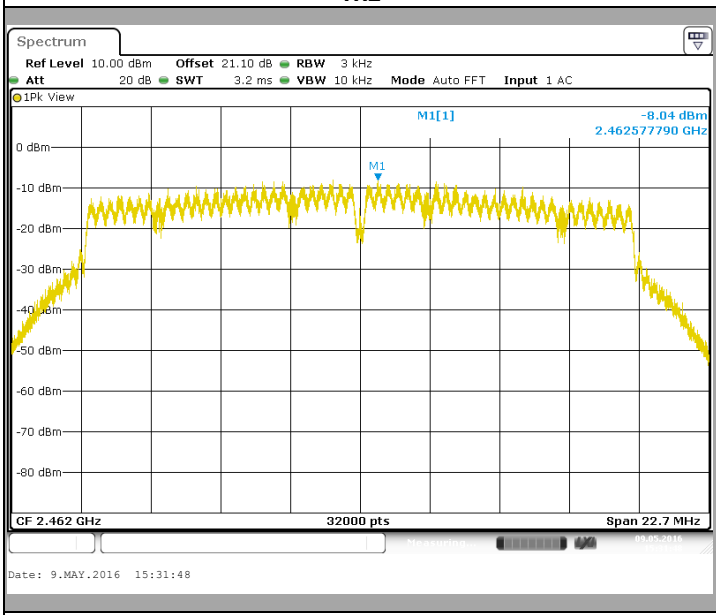
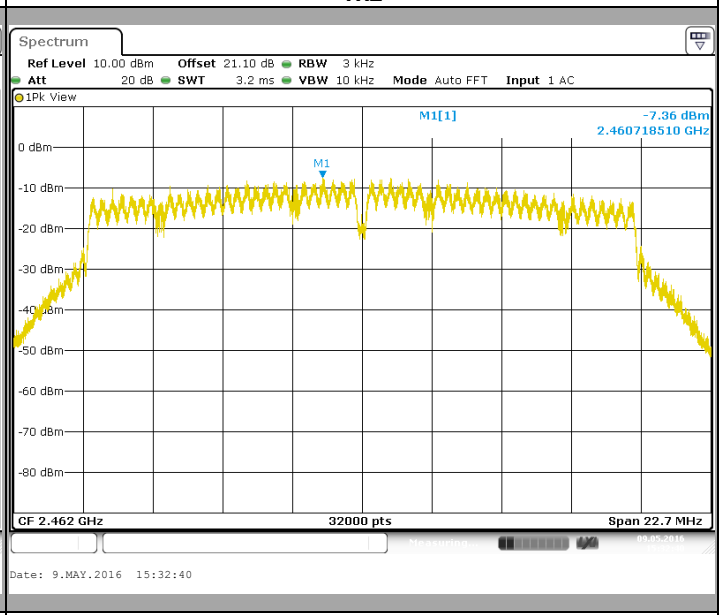
Cnom	
Tx1	Tx2
	
Tx3	Tx4
	

802.11n HT20	
Cmax	
Tx1	Tx2





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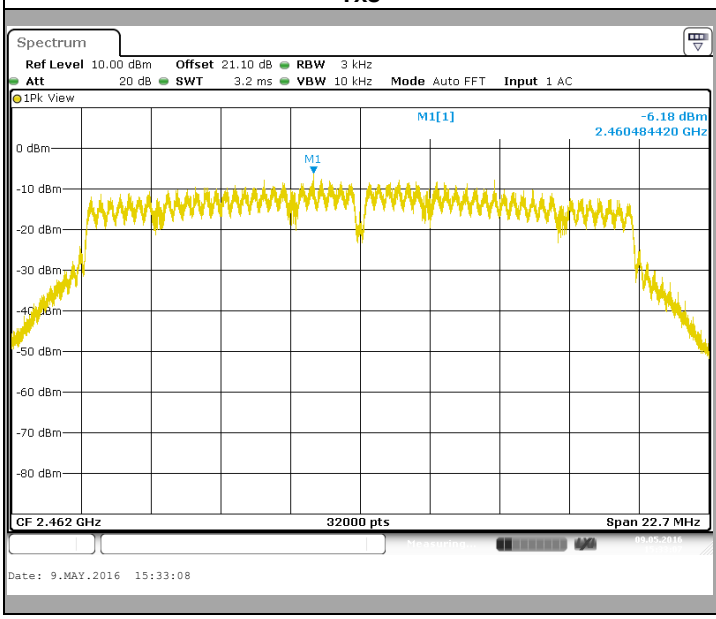
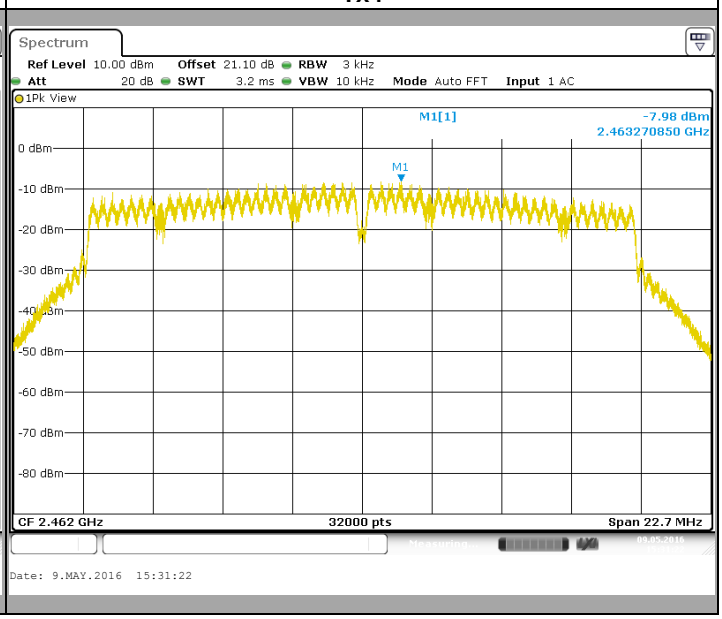
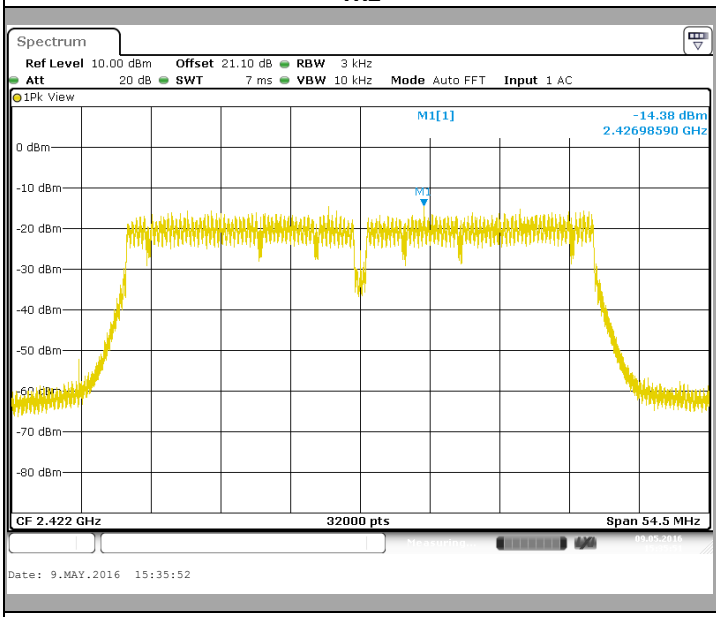
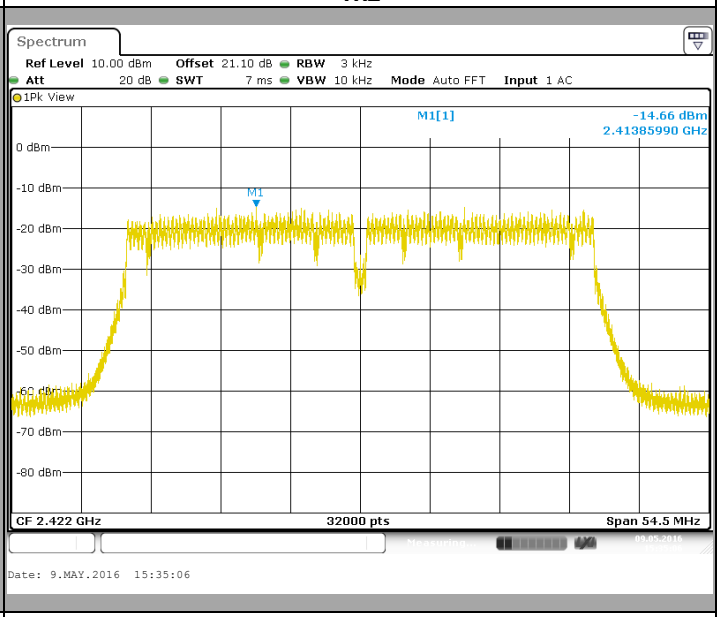


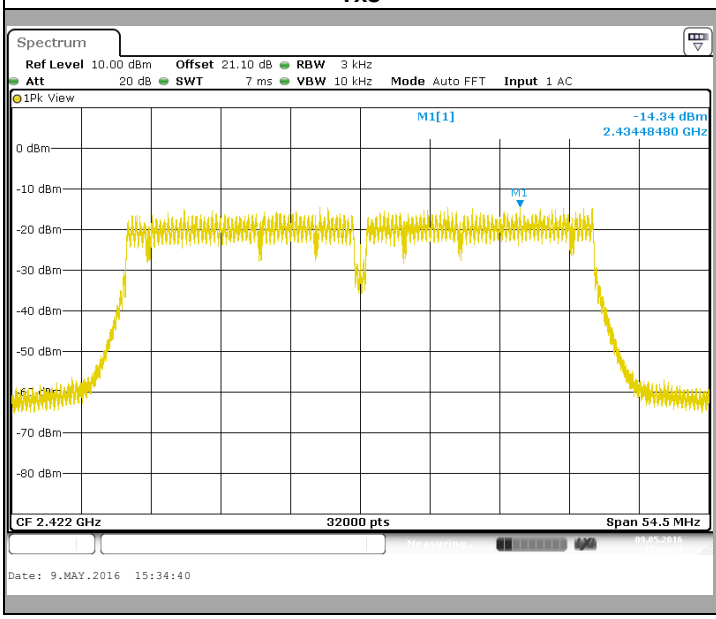


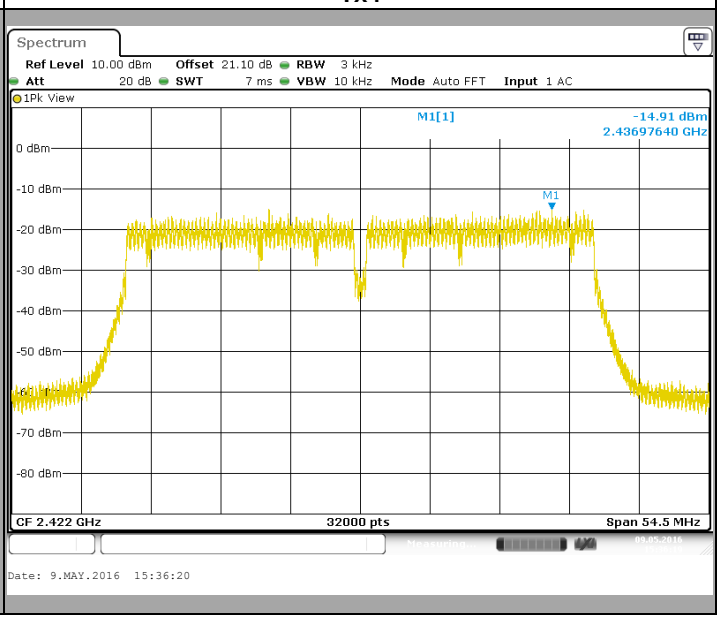
802.11n HT40	
Cmin	
Tx1	Tx2

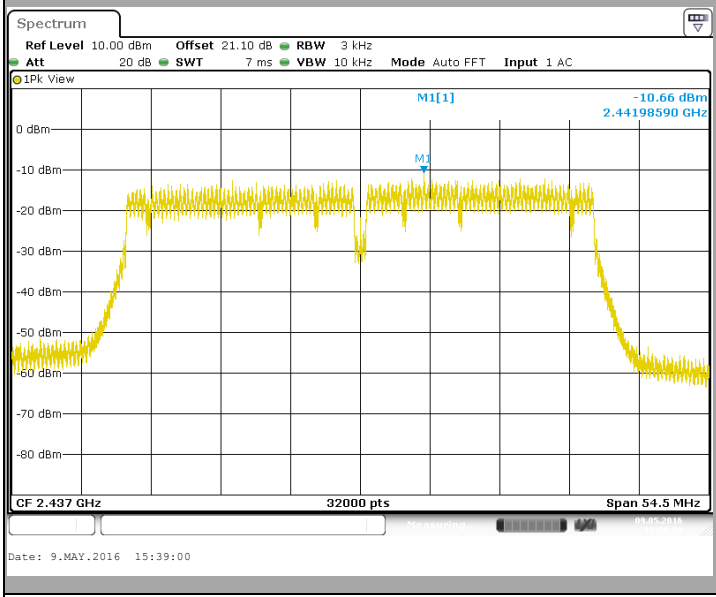
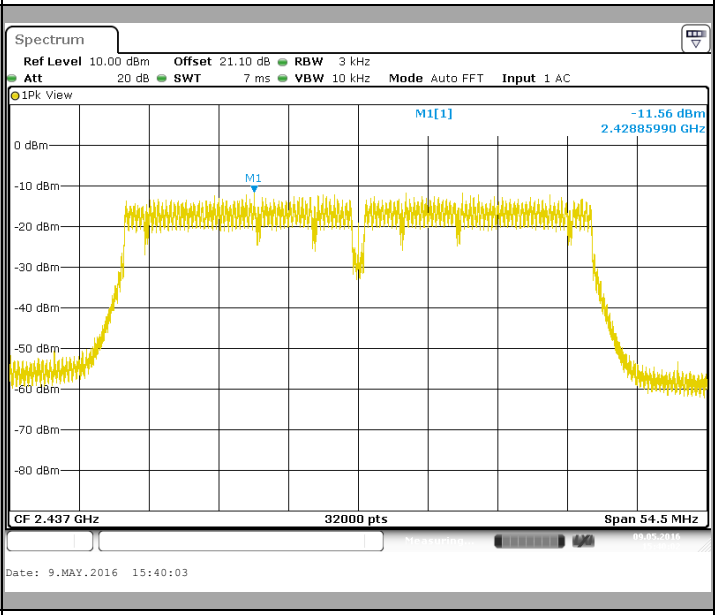
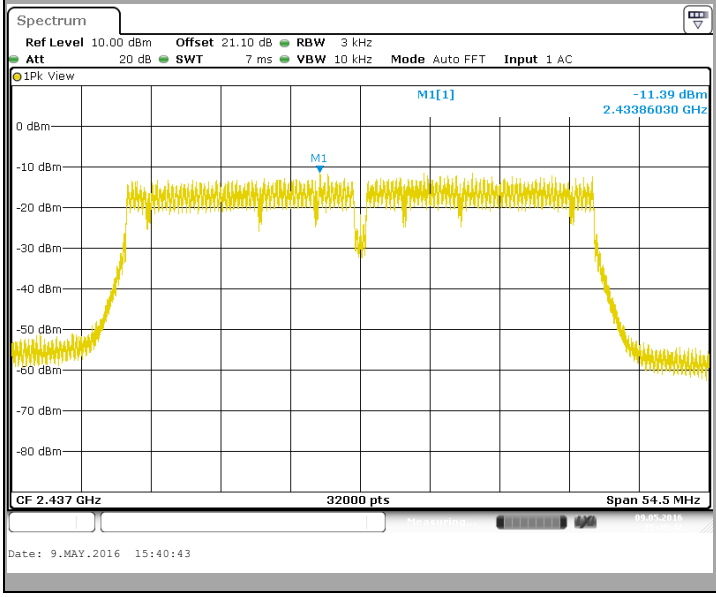
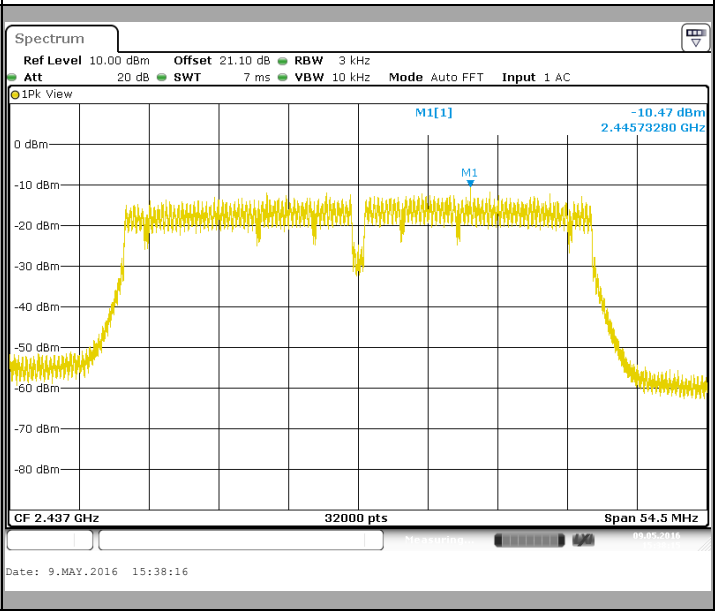


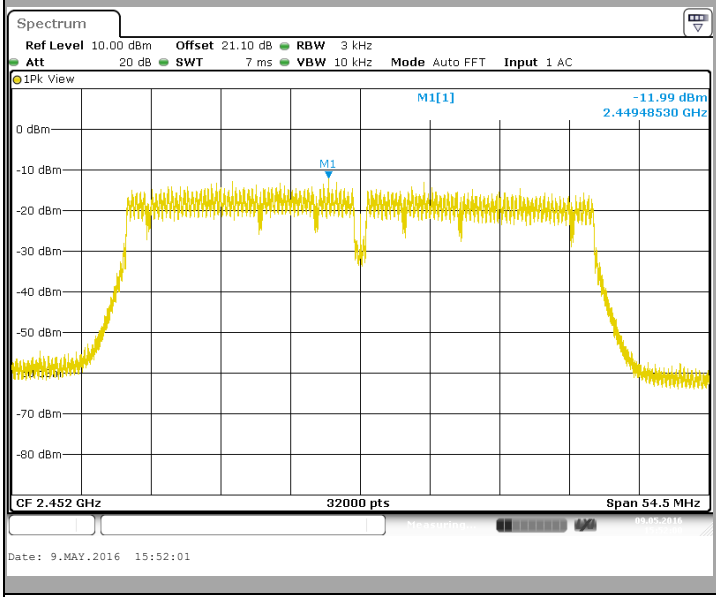
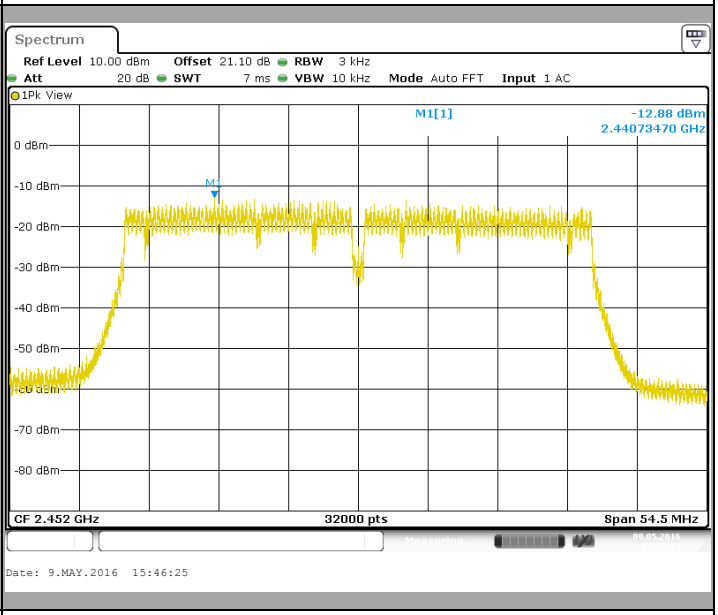
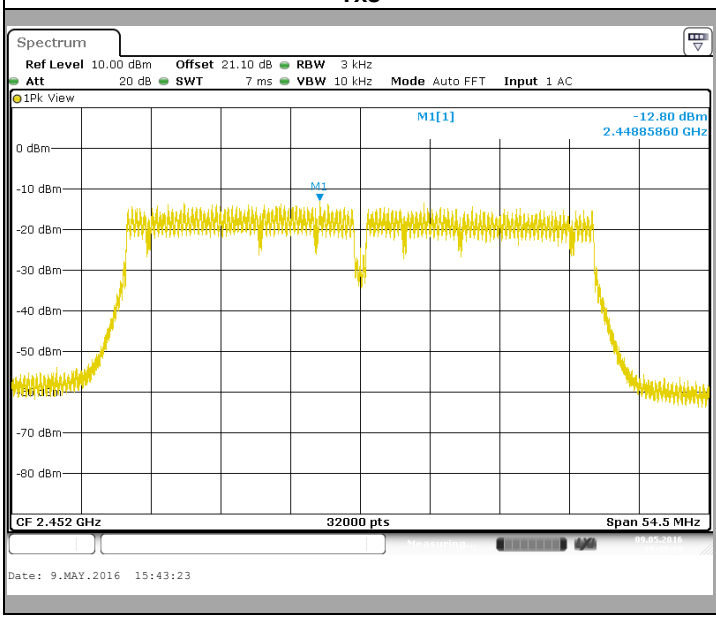
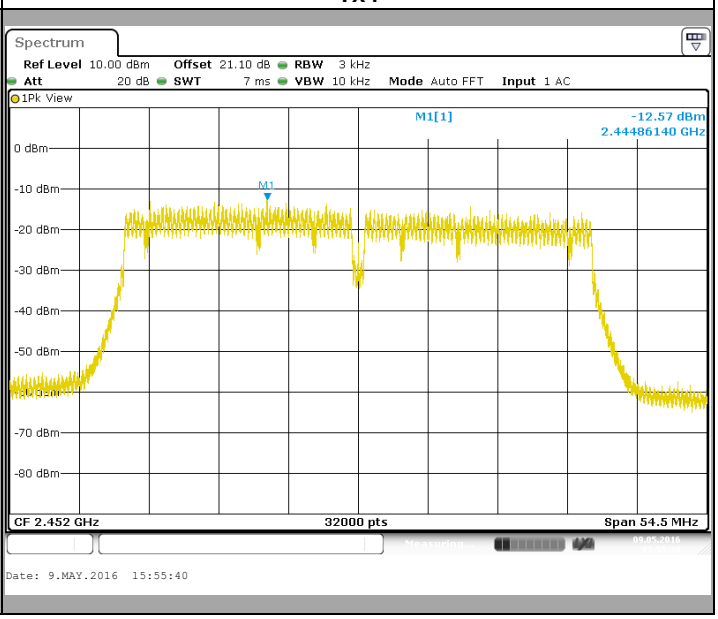


Tx3	Tx4





802.11n HT40	
Cnom	
Tx1	Tx2
	
Tx3	Tx4
	

802.11n HT40	
Cmax	
Tx1	Tx2
	
Tx3	Tx4
	

Spectrum Analyzer Offset:
Cable Loss=1.1dB + Attenuator= 20dB

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	-4,31	-3,94	-3,63	-4,57	7,2	1,92	6,8
Cnom	0,01	0,62	0,95	-0,15	7,2	6,40	6,8
Cmax	-5,56	-5,01	-4,56	-5,73	7,2	0,83	6,8

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	-6,8	-6	-6,05	-6,63	7,2	-0,33	6,8
Cnom	-2,71	-2,21	-1,91	-2,24	7,2	3,76	6,8
Cmax	-8,16	-8,04	-7,62	-8,42	7,2	-2,02	6,8

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	-6,35	-6,58	-6,44	-6,97	7,2	-0,55	6,8
Cnom	-2,74	-2,2	-2,16	-2,2	7,2	3,70	6,8
Cmax	-8,04	-7,36	-6,18	-7,98	7,2	-1,30	6,8

802.11n HT40							
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	-14,38	-14,66	-14,34	-14,91	7,2	-8,54	6,8
Cnom	-10,66	-11,56	-11,39	-10,47	7,2	-4,97	6,8
Cmax	-11,99	-12,88	-12,8	-12,57	7,2	-6,52	6,8

7.6. CONCLUSION

Power Spectral Density measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

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

8.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : March 10, 2016
Ambient temperature : 21 °C
Relative humidity : 45 %

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 v03r05 § 11
☑ KDB 662911 D01 Multiple Transmitter Output v02r01

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

8.3. LIMIT

All Spurious Emissions must be at least 30dB (Average Conducted Power) below the Fundamental Radiator Level at the Band Edge Edge “2400MHz & 2483,5MHz”

8.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253	2015/08	2016/08
Load 50 ohms	-; TELEGARTNER	-	A7150103	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150104	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150105	2015/10	2016/10

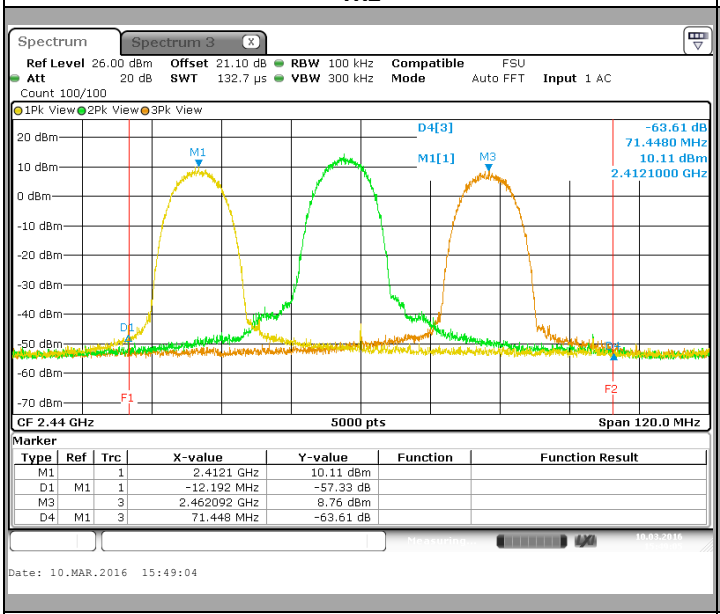
Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

8.5. RESULTS

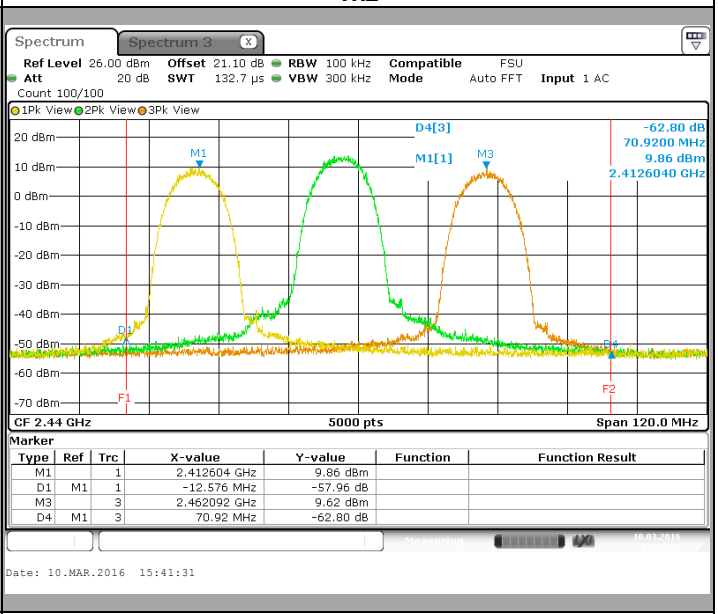
802.11b

Cmin/Cnom/Cmax

Tx1



Tx2



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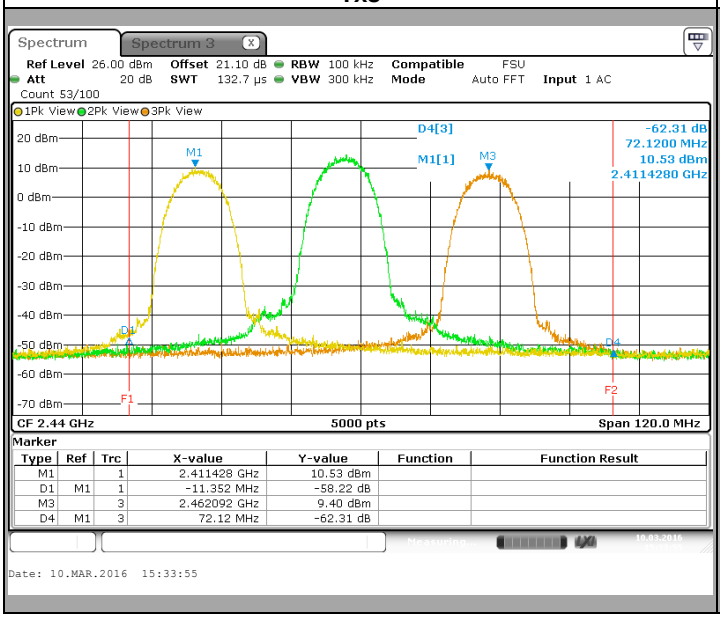

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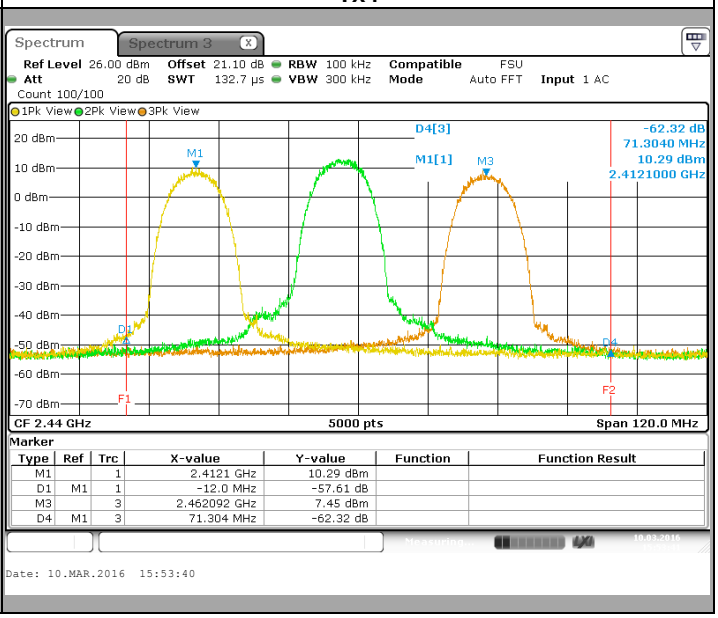
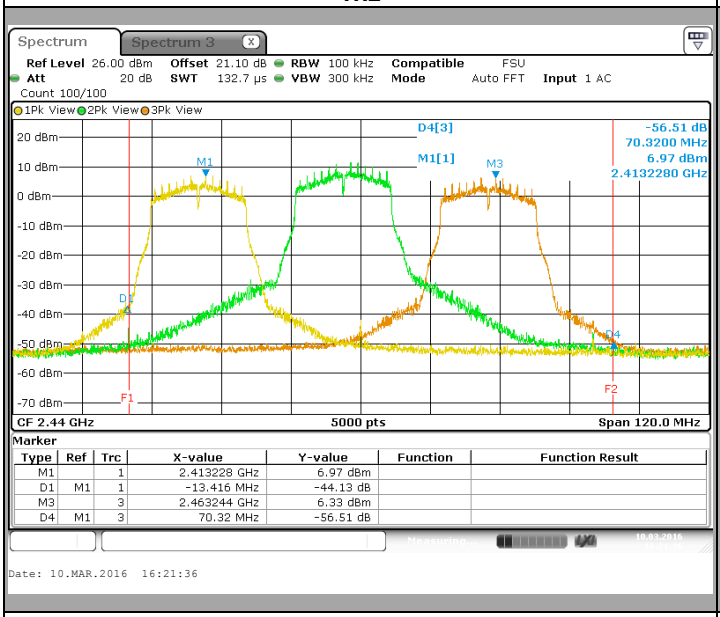


802.11g

Cmin/Cnom/Cmax

Tx1



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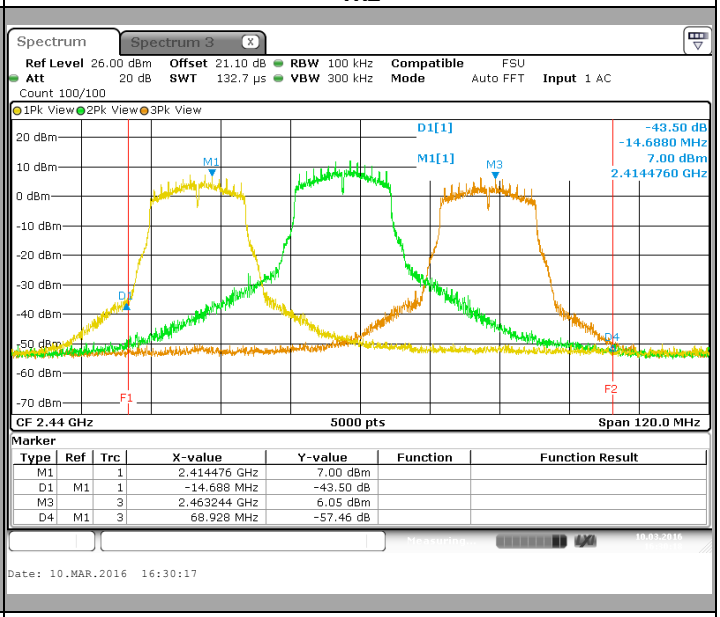

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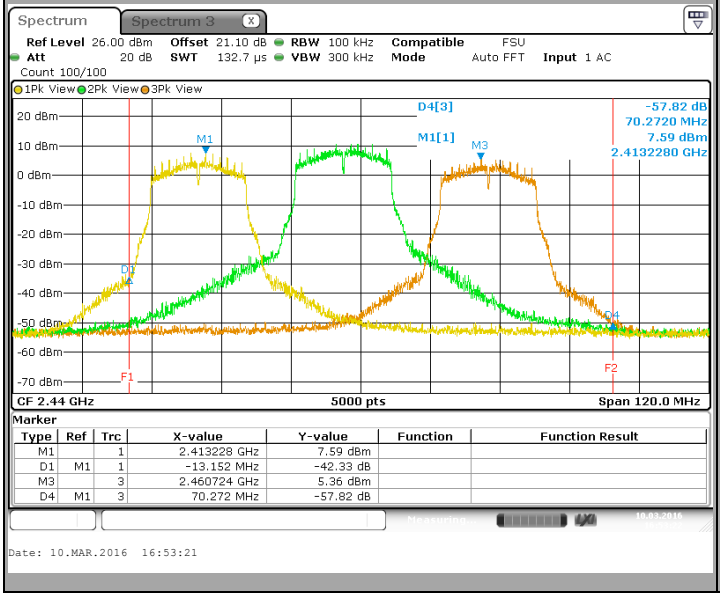
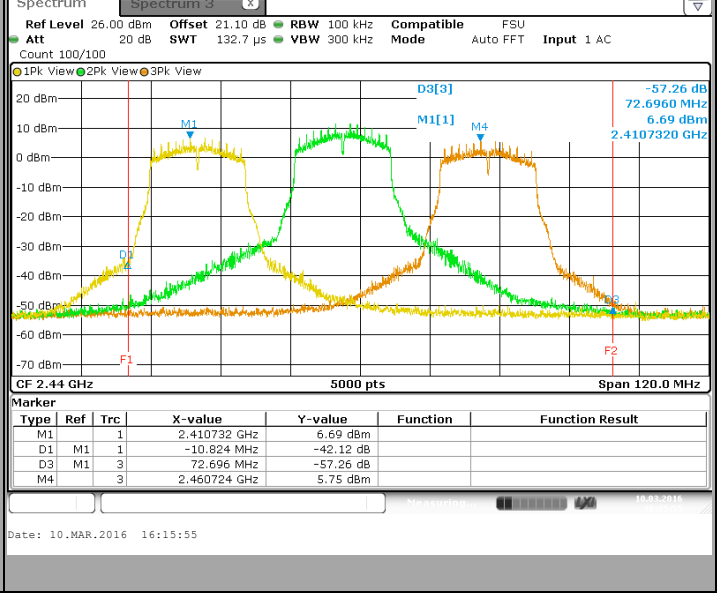


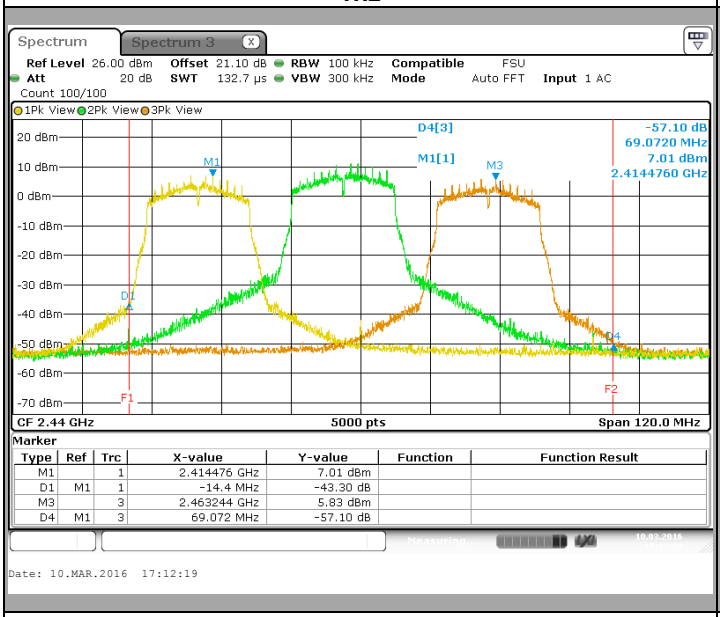
Tx4



802.11n HT20

Cmin/Cnom/Cmax

Tx1



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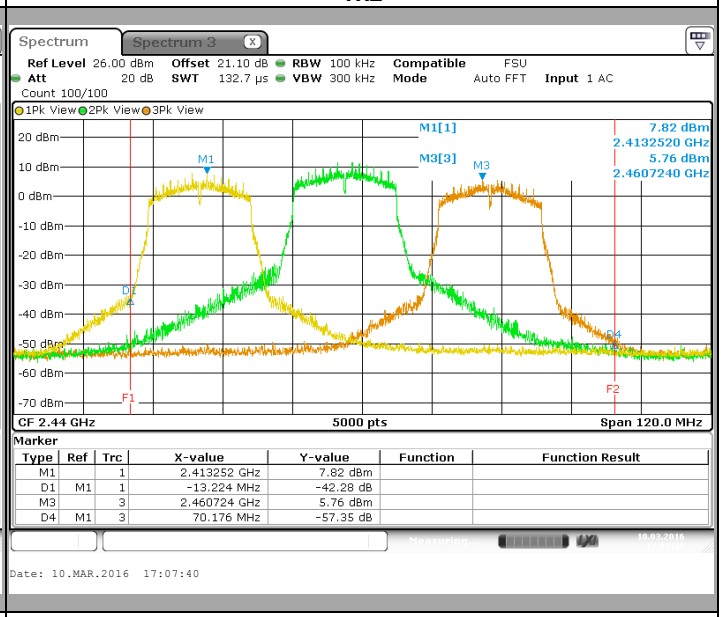
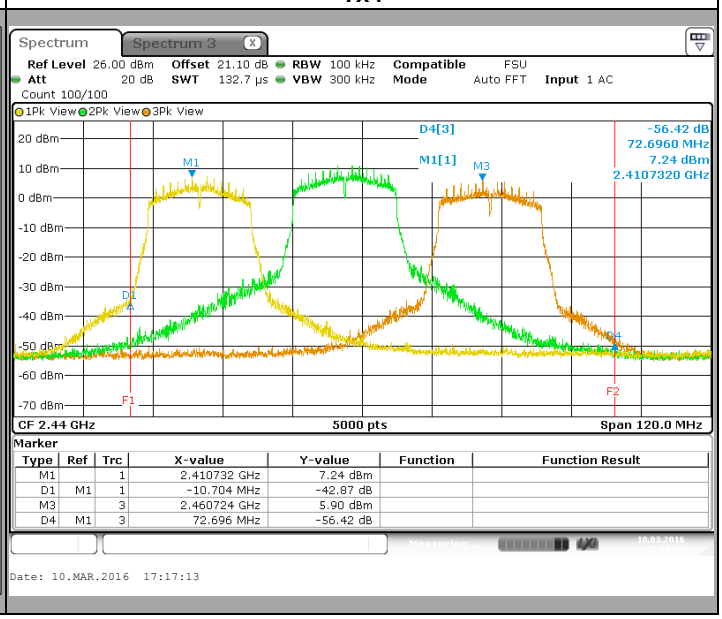


Tx3

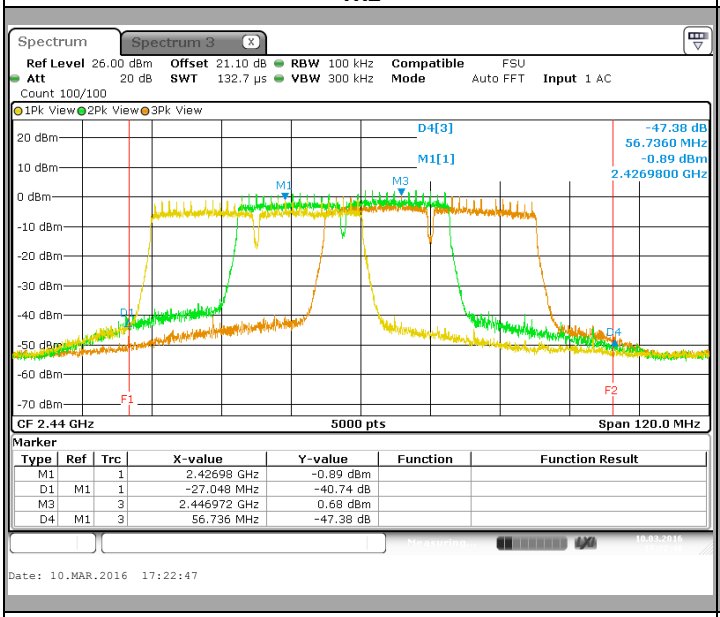
Tx4



802.11n HT40

Cmin/Cnom/max

Tx1



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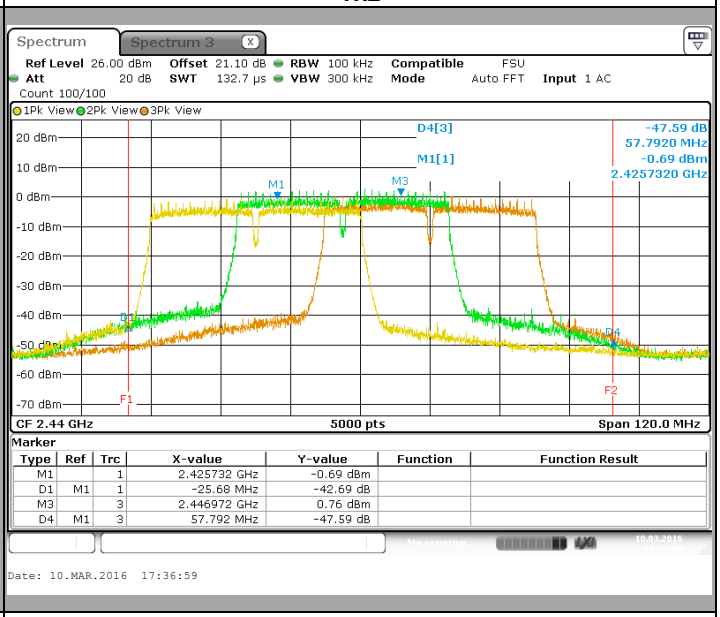
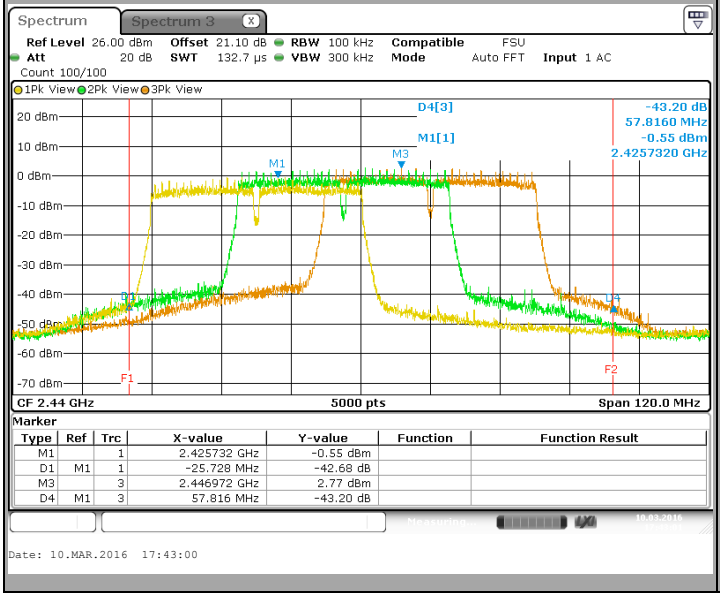
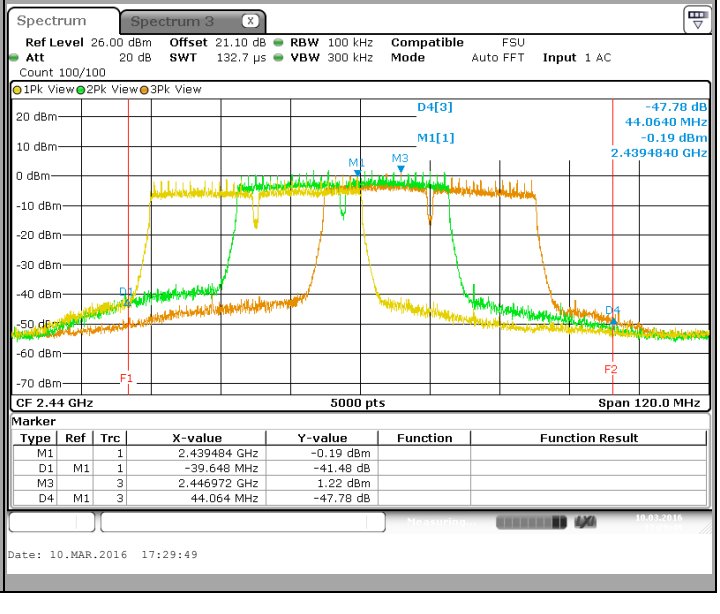


Tx3



Tx4



802.11b		
Conducted Spurious Emission at the Band Edge (MHz)	2400	2483,5
Spurious Level (dBc)	58.22	63.61

802.11g		
Conducted Spurious Emission at the Band Edge (MHz)	2400	2483,5
Spurious Level (dBc)	44.13	57.82

802.11n HT20		
Conducted Spurious Emission at the Band Edge (MHz)	2400	2483,5
Spurious Level (dBc)	43.30	57.35

802.11n HT40		
Conducted Spurious Emission at the Band Edge (MHz)	2400	2483,5
Spurious Level (dBc)	42.69	47.78

8.6. CONCLUSION

Unwanted Emission into non-restricted frequency bands at the band edge measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

9. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS

9.1. TEST CONDITIONS

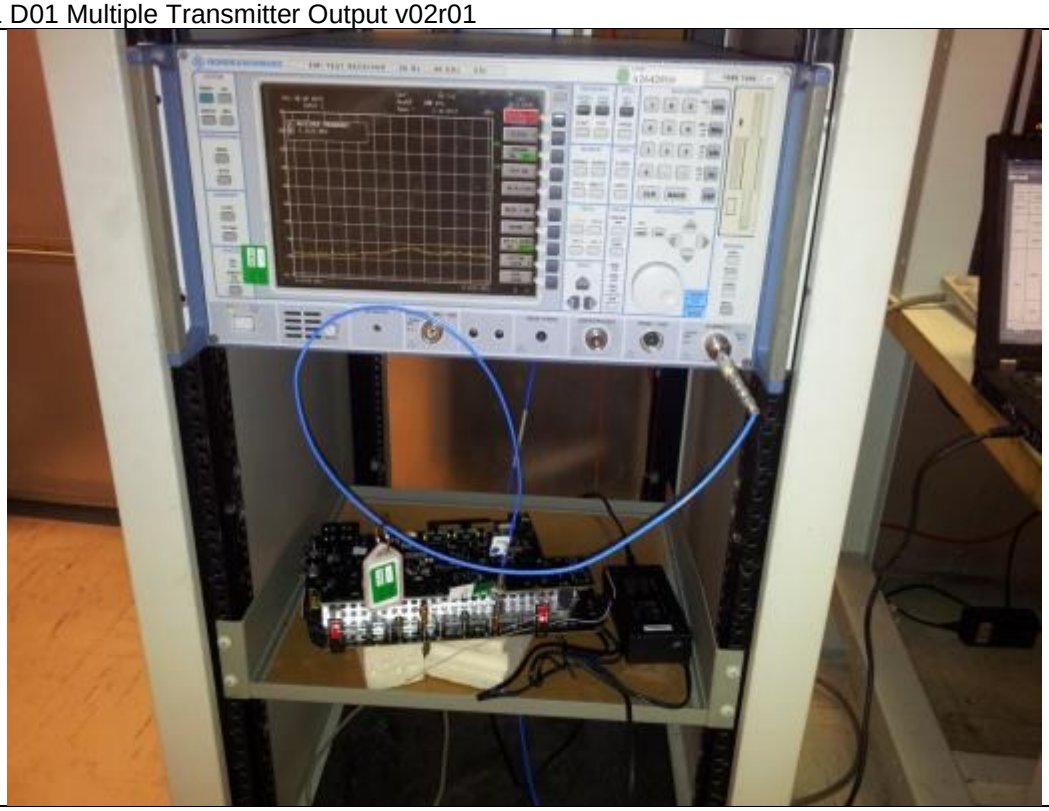
Test performed by : Armand MAHOUNGOU
Date of test : March 21, 2016
Ambient temperature : 24 °C
Relative humidity : 48 %

9.2. 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 v03r05 § 11
☑ KDB 662911 D01 Multiple Transmitter Output v02r01



Photograph for Unwanted Emission into non-restricted frequency bands

9.3. LIMIT

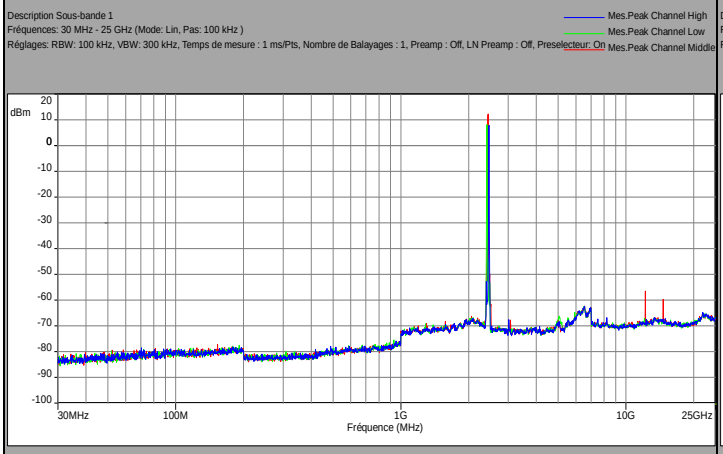
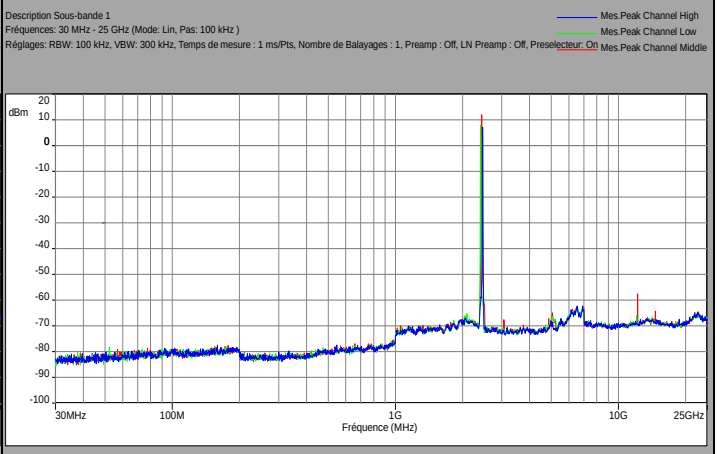
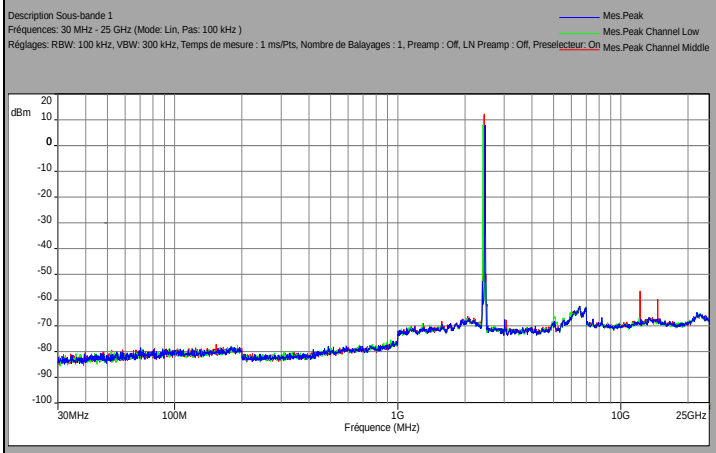
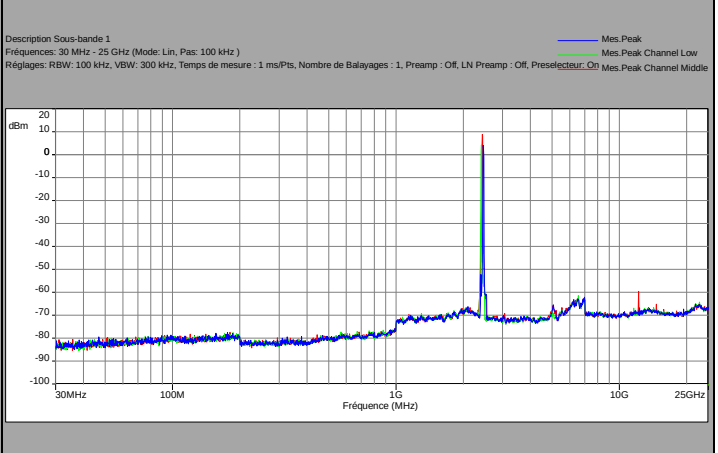
All Spurious Emissions must be at least 30dB (Average Conducted Power) below the Fundamental Radiator Level

9.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESI40 1088 740K40	A2642010	2015/05	2016/05
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
Measurement RF cable	-	Cordon 082-5454-1.5mtr	A5329624	2015/10	2017/10
Multi-meter	ISOTECH	IDM 91E	A1240253	2015/08	2016/08
Load 50 ohms	-; TELEGARTNER	-	A7150103	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150104	2015/10	2016/10
Load 50 ohms	TELEGARTNER	-	A7150105	2015/10	2016/10

Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

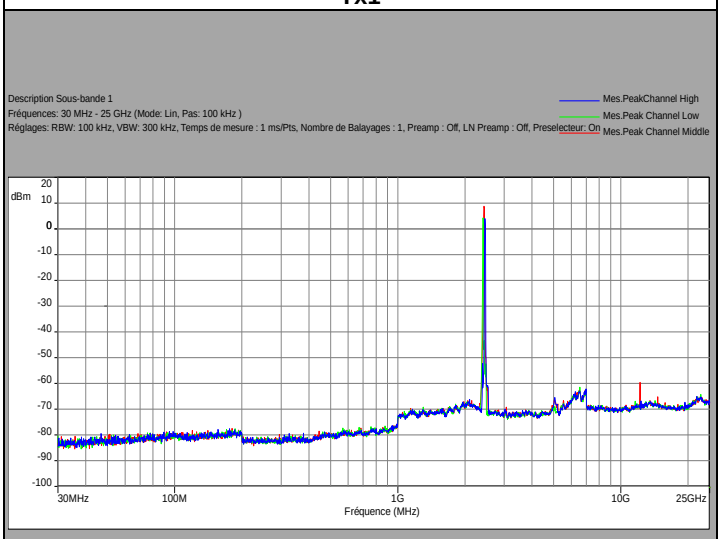
9.5. RESULTS

802.11b	
Cmin/Cnom/Cmax	
Tx1	Tx2
	
Tx3	Tx4
	

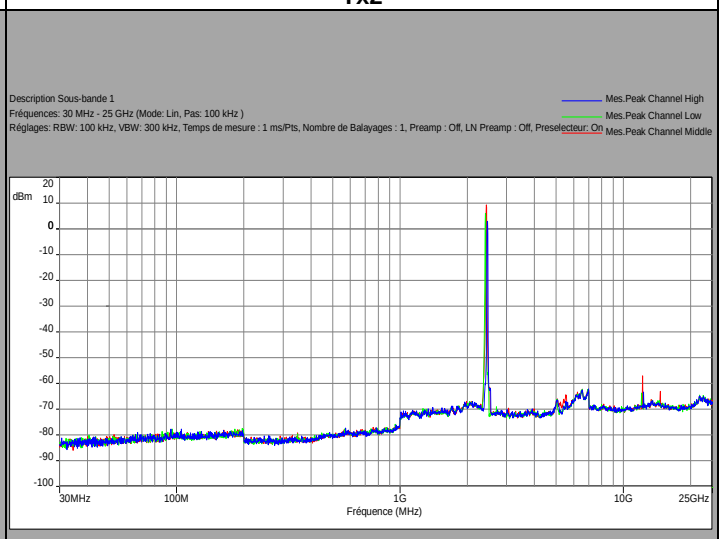
802.11g

Cmin/Cnom/Cmax

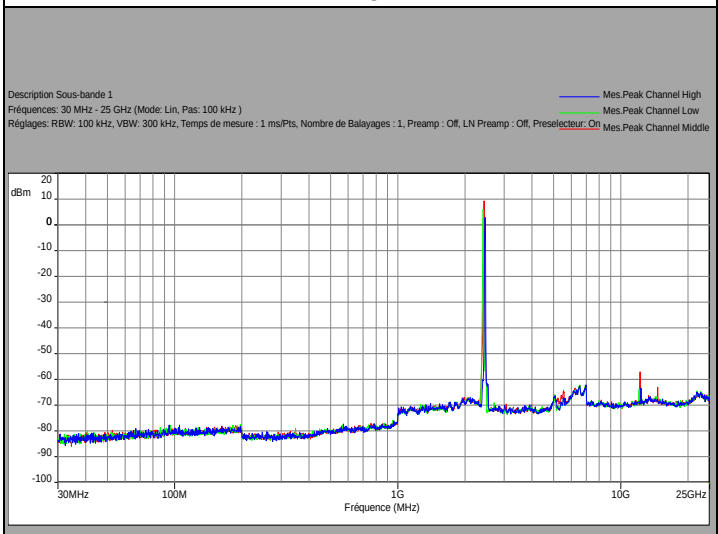
Tx1



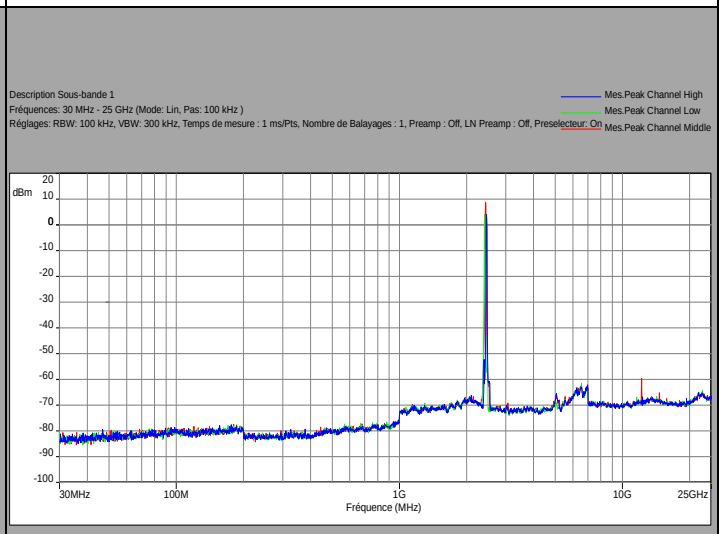
Tx2



Tx3



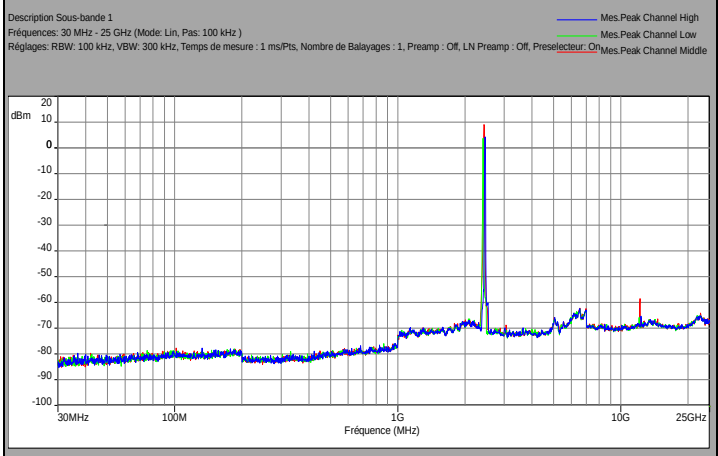
Tx4



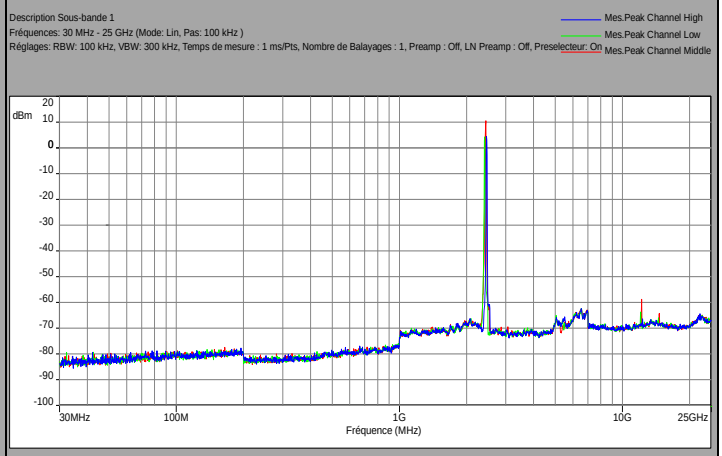
802.11n HT20

Cmin/Cnom/Cmax

Tx1



Tx2



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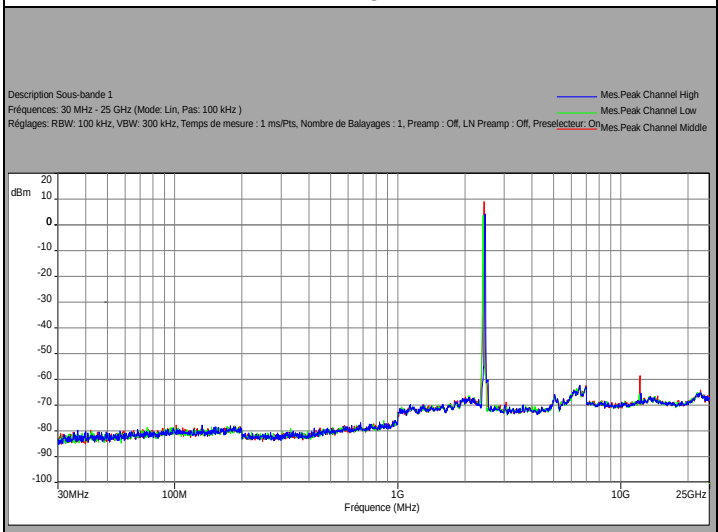

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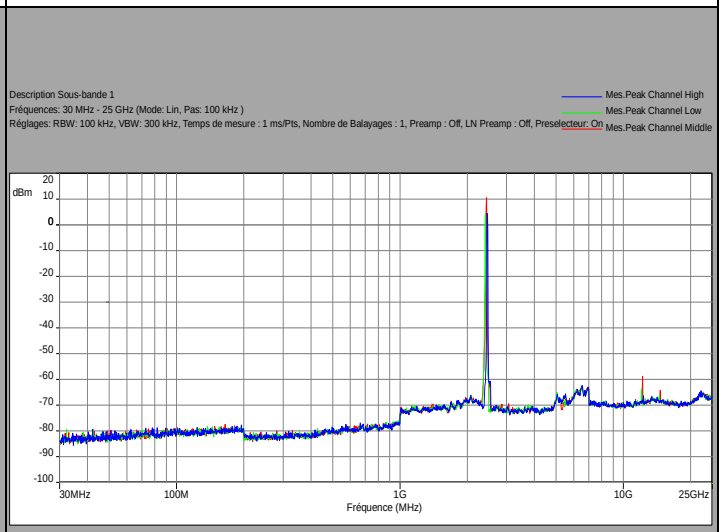
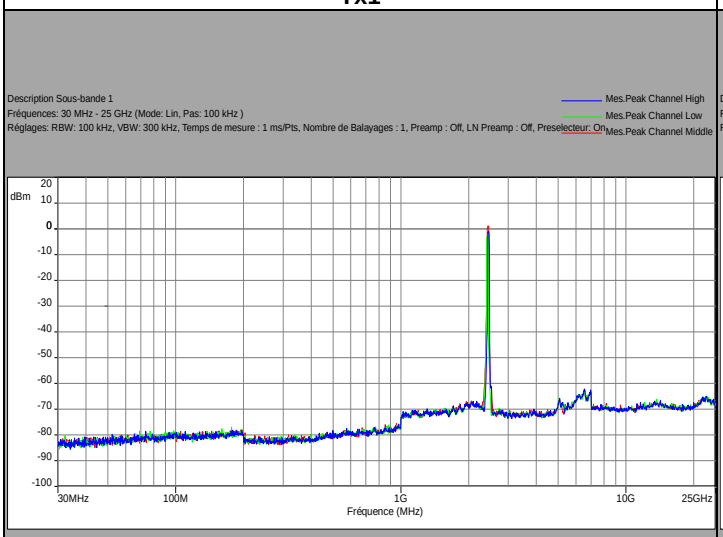


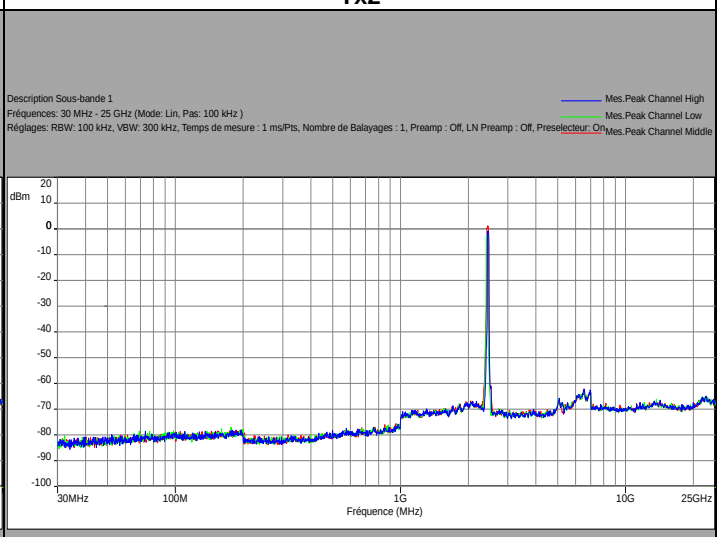
802.11n HT40

Cmin/Cnom/max

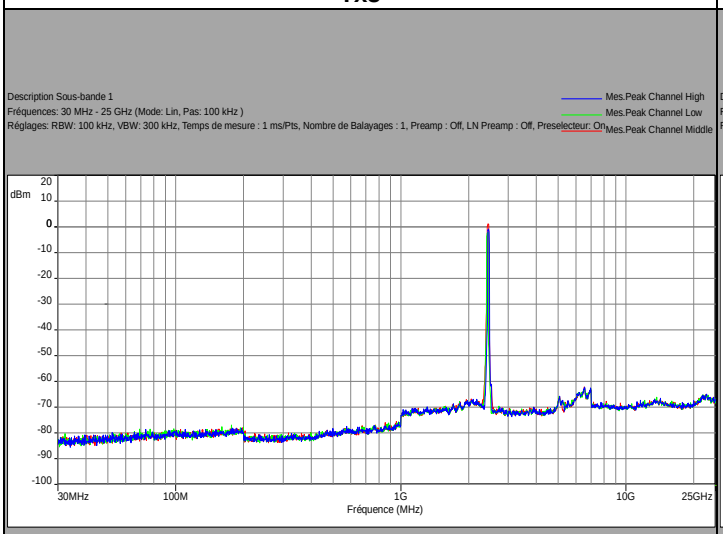
Tx1



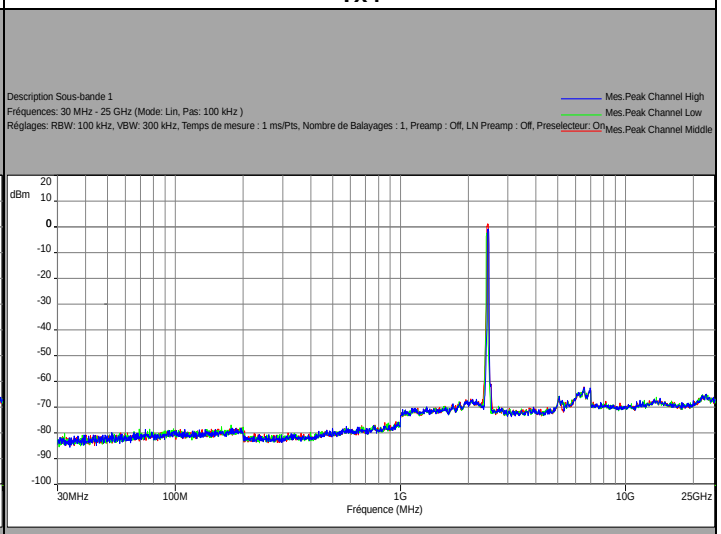
Tx2



Tx3



Tx4



802.11b		
Frequency (MHz)	**Spurious Level (dBm)**	**Spurious Level (dBc)**
12183.4	-56.59	68.92
14622	-59.77	72.10

802.11g		
Frequency (MHz)	**Spurious Level (dBm)**	**Spurious Level (dBc)**
12186	-59.59	68.40
14617.6	-65.17	73.98

802.11n HT20		
Frequency (MHz)	**Spurious Level (dBm)**	**Spurious Level (dBc)**
12183.7	-58.57	67.66

802.11n HT40		
Frequency (MHz)	**Spurious Level (dBm)**	**Spurious Level (dBc)**
No spurious observed		

9.6. CONCLUSION

Unwanted Emission into non-restricted frequency bands measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

10. AC POWER LINE CONDUCTED EMISSIONS

10.1. TEST CONDITIONS

Test performed by :Laurent DENEUX
Date of test :April 5th to 7th, 2016
Ambient temperature :21 °C
Relative humidity :53 %

10.2. TEST SETUP

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

Photograph for AC Power Line Conducted Emissions (Front view)

Photograph for AC Power Line Conducted Emissions (Rear view)

Photograph for AC Power Line Conducted Emissions (Front view)

10.3. LIMIT

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

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

*Decreases with the logarithm of the frequency

10.4. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	ROHDE & SCHWARZ	ESU	A2642018	2016-03	2017-03
EMI Test Receiver	RHODE & SCHWARZ	ESIB26	A2642021	2015-12	2016-12
V ISLN	ROHDE & SCHWARZ	ESH2-Z5	C2322001	2015-06	2016-06
Pulse limiter	ROHDE & SCHWARZ	ESH3-Z2	A2649008	2016-03	2017-03
Cable	-	-	A5329417	2015-10	2016-10
Artificial hand	LCIE		A7484060	2016-01	2017-01
Ground plane	LCIE	-	-	-	-

Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

10.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

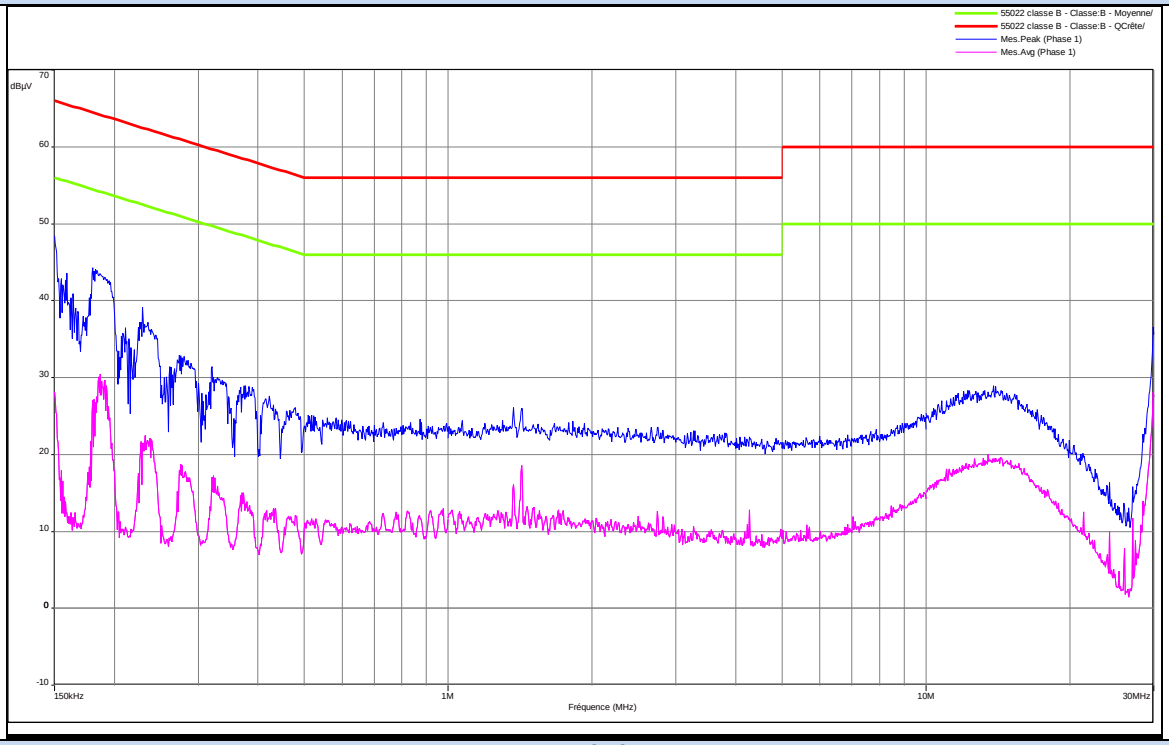
☑ None ☐ Divergence:

10.6. RESULTS

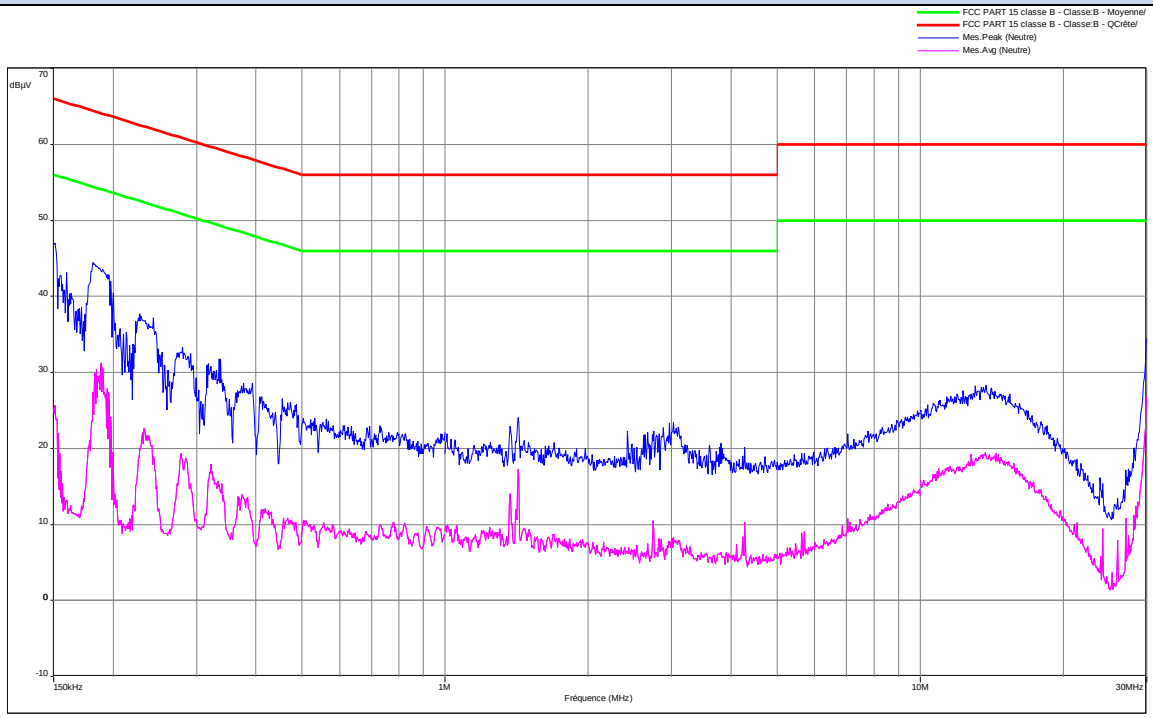
802.11b

Power supply NBS60C120500M2

Phase Line



Neutral Line



Phase Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.151	53	65.9	41.5	55.9
0.3	41.7	60.1	33.5	50.1
1.59	28	56	16.4	46
12.23	30.8	60	21.7	56
29.8	30.1	60	20.5	56

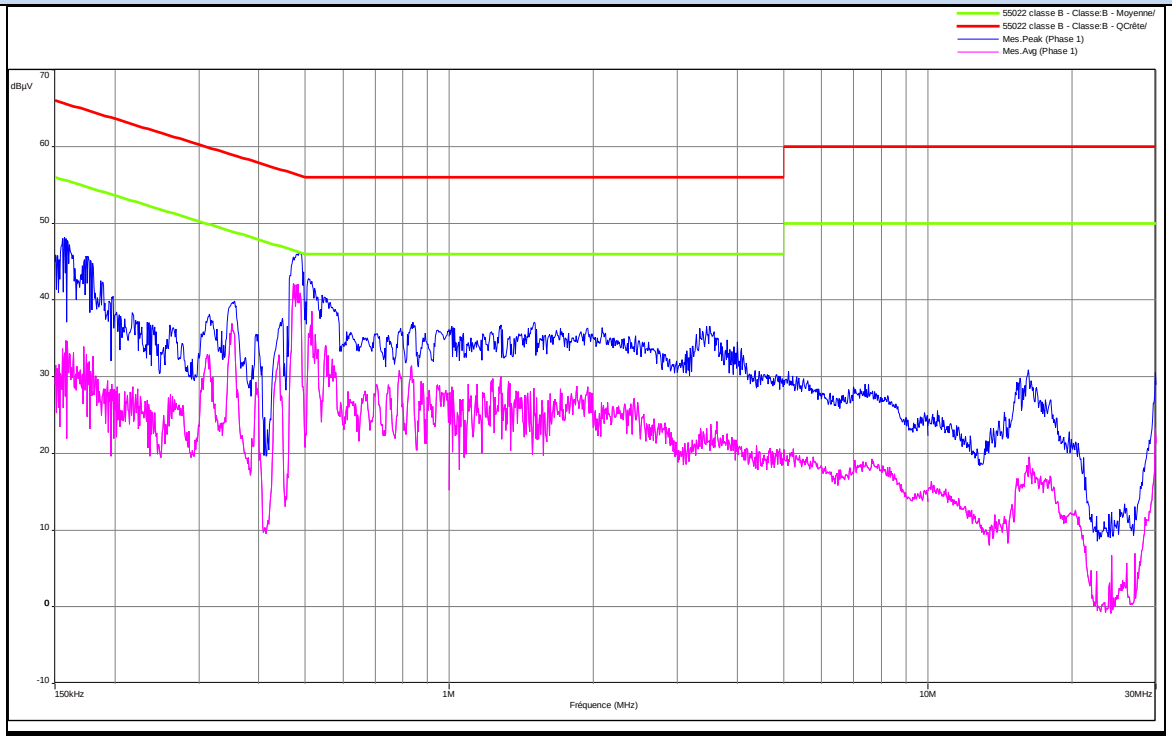
Neutral Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.151	52.7	65.9	43.3	55.9
0.3	41.1	60.2	35.2	50.2
1.574	25.5	56	20.5	46
14.78	28	60	18.8	50
29.98	36.4	60	24.4	50

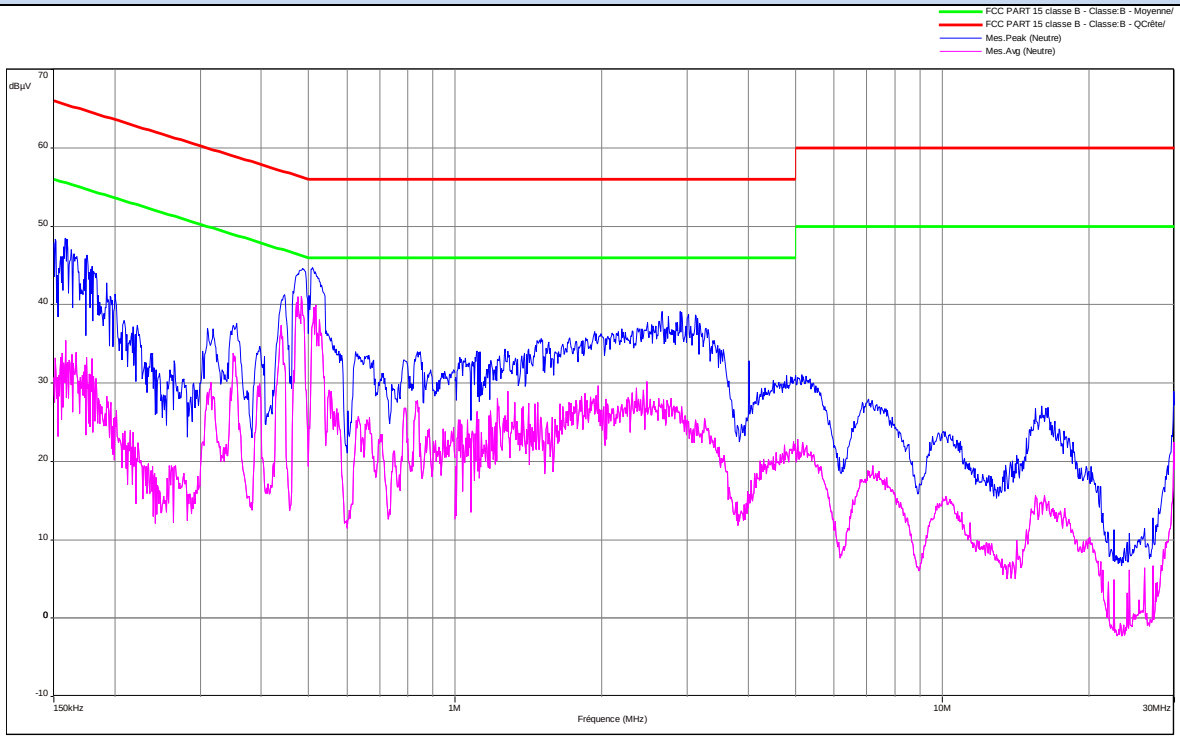
802.11b

Power supply LPL-C060120500ZS

Phase Line



Neutral Line



Phase Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.157	48.2	65.6	34.6	55.6
0.489	46	56.2	41.9	46.2
3.512	36.5	56	25.7	46
16.22	31	60	17	50
29.9	30.1	60	23.2	50

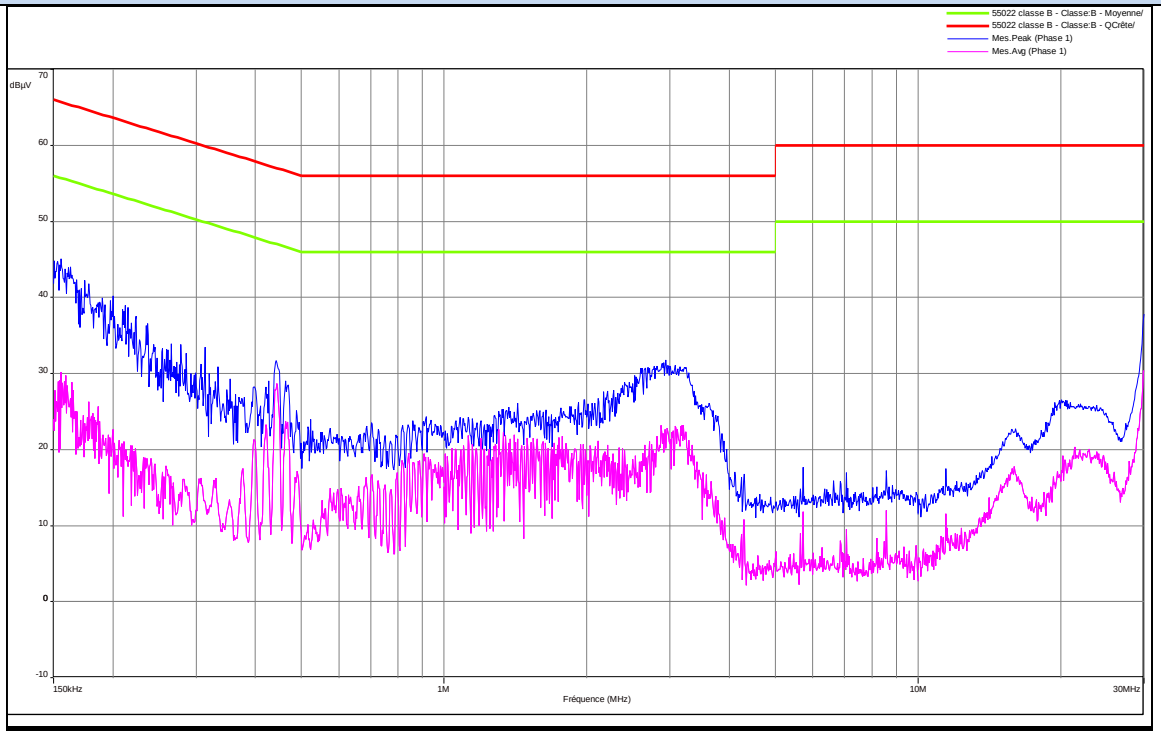
Neutral Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.158	48.5	65.6	35.4	55.6
0.509	44.7	56	41.2	46
2.652	38.5	56	30.1	46
15.55	26.8	60	15.6	50
29.98	29	60	22.5	50

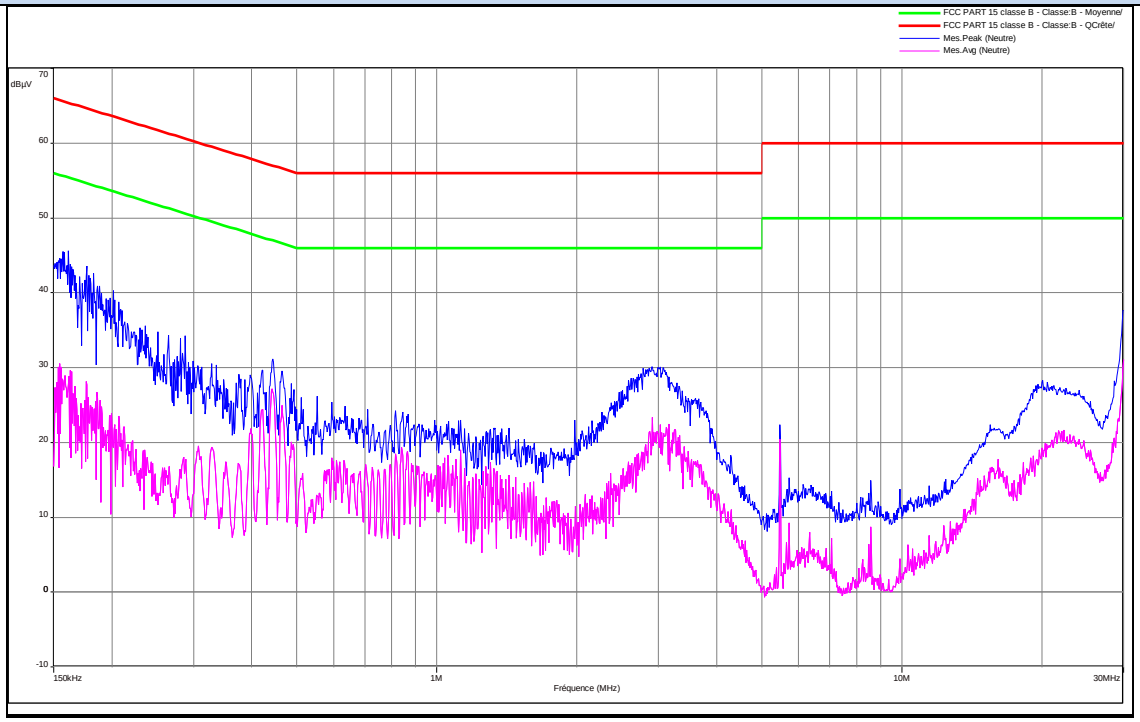
802.11b

Power supply MSA-Z5000IS12.060A-P

Phase Line



Neutral Line



Phase Line

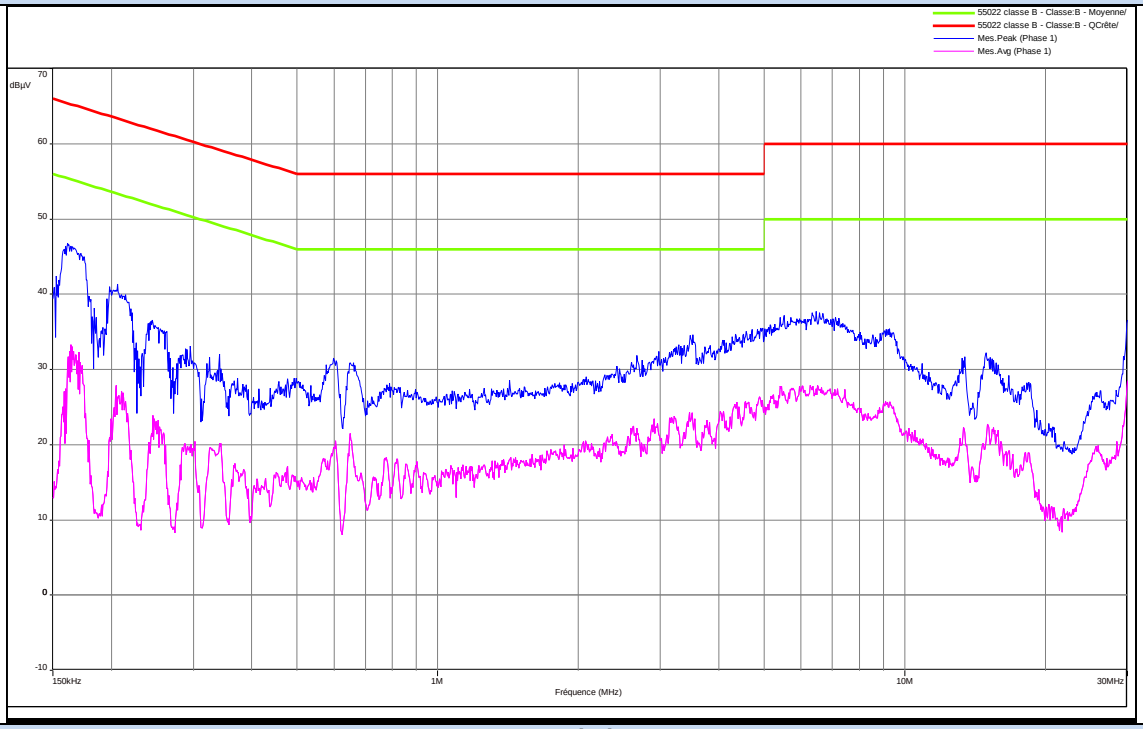
Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.155	45.1	65.7	30.1	55.7
0.442	31.6	57	28.6	47
2.884	31.2	56	23.1	46
20.22	26	60	19.2	50
29.85	36	60	27.8	50

Neutral Line

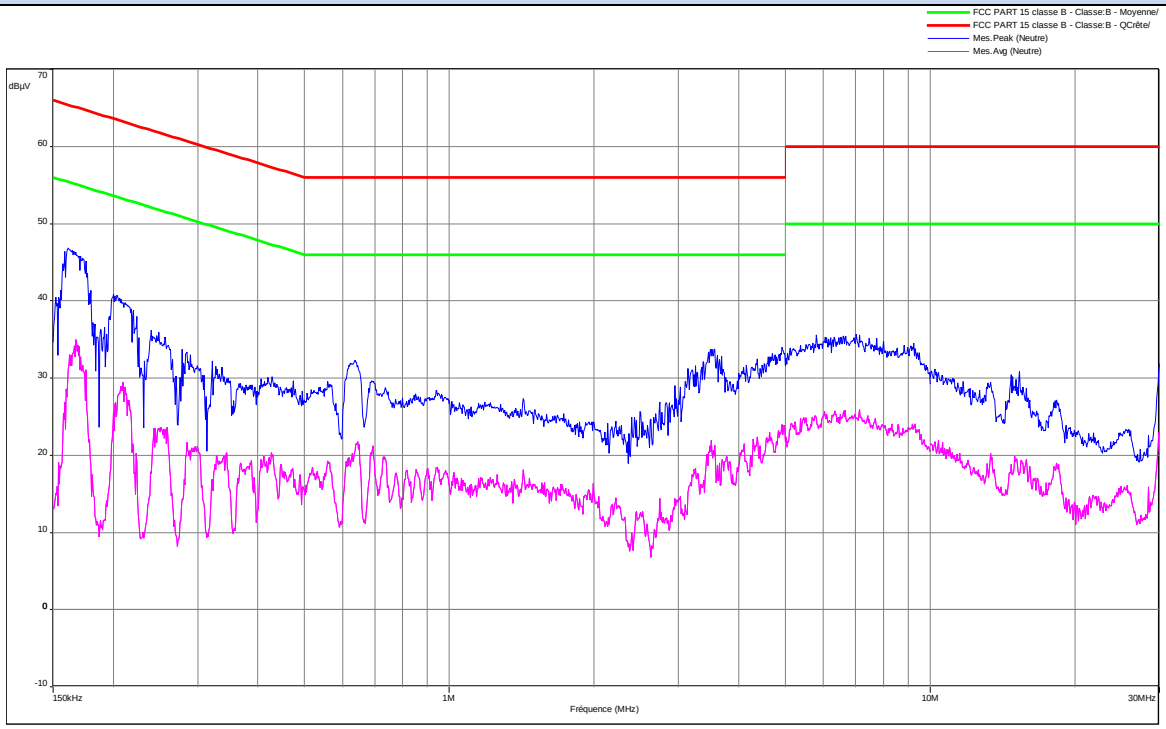
Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.158	45.6	65.5	30.1	55.5
0.442	30.8	57	27.2	47
2.904	30	56	23.3	46
20.05	28	60	19.2	50
28.63	28.2	60	20.6	50

802.11b
Power supply A15-060P1A

Phase Line



Neutral Line



Phase Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.161	46.8	65.4	33.2	55.4
0.6	31.5	56	21.4	46
6.472	37.7	60	27.4	50
13.28	31.5	60	22.3	50
29.8	33.4	60	26	50

Neutral Line

Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.160	46.7	65.4	33.7	55.4
0.636	32	56	21.7	46
3.51	36.7	60	26.4	60
15.33	31	60	20	60
29.77	32.8	60	23	60

10.7. CONCLUSION

Ac Power Line Conducted Emission measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.407 & RSS 247 ISSUE 1 limits.

11. UNWANTED EMISSIONS

11.1. TEST CONDITIONS

Test performed by :Laurent DENEUX
Date of test :March 14th to 16th, 2016
Ambient temperature :18°C
Relative humidity : 45%

11.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013). 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** antenna below 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height search was performed from 1 to 4m. The EUT is place at 1.5m high above 1GHz and at 0.8m high under 1GHz.

Photograph for Unwanted Emissions

Photograph for Unwanted Emissions

11.3. LIMIT

Limit at 10m:

30MHz to 88MHz:	29.5dBµV/m QPeak
88MHz to 216MHz:	33dBµV/m QPeak
216MHz to 960MHz:	35.5dBµV/m QPeak
960MHz to 1000MHz:	43.5dBµV/m QPeak
Above 1000MHz:	63.5BµV/m Peak
	43.5BµV/m Average

11.4. TEST EQUIPMENT LIST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Open test site	LCIE	-	F2000400	2015-06	2016-06
EMI Test Receiver	ROHDE & SCHWARZ	ESU	A2642018	2016-03	2017-03
EMI Test Receiver	ROHDE & SCHWARZ	ESIB	A2642021	2015-12	2016-12
EMI Test Receiver	ROHDE & SCHWARZ	ESI40 1088 740K40	A2642010	2015/05	2016/05
Pre amplifier	HEWLETT PACKARD	8449B	A4069002	2016-01	2017-01
Bilog antenna	CHASE	CBL 6112A	C2040040	2016-01	2017-01
Horn	EMCO	.3115	C2042016	2016-02	2017-02
Horn	PASTERNACK	PE9852/2F-20	C2042048	2015/05	2017/05
Horn	PASTERNACK	PE9850/2F-20	C2042052	2015/10	2016/01
Cable	-	-	A5329368	2015-11	2016-11
cable	-	-	A5329444	2015-11	2016-11
Cable	-	-	A5329449	2015-11	2016-11
Cable	-	-	A5329542	2016-02	2017-02

Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

11.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

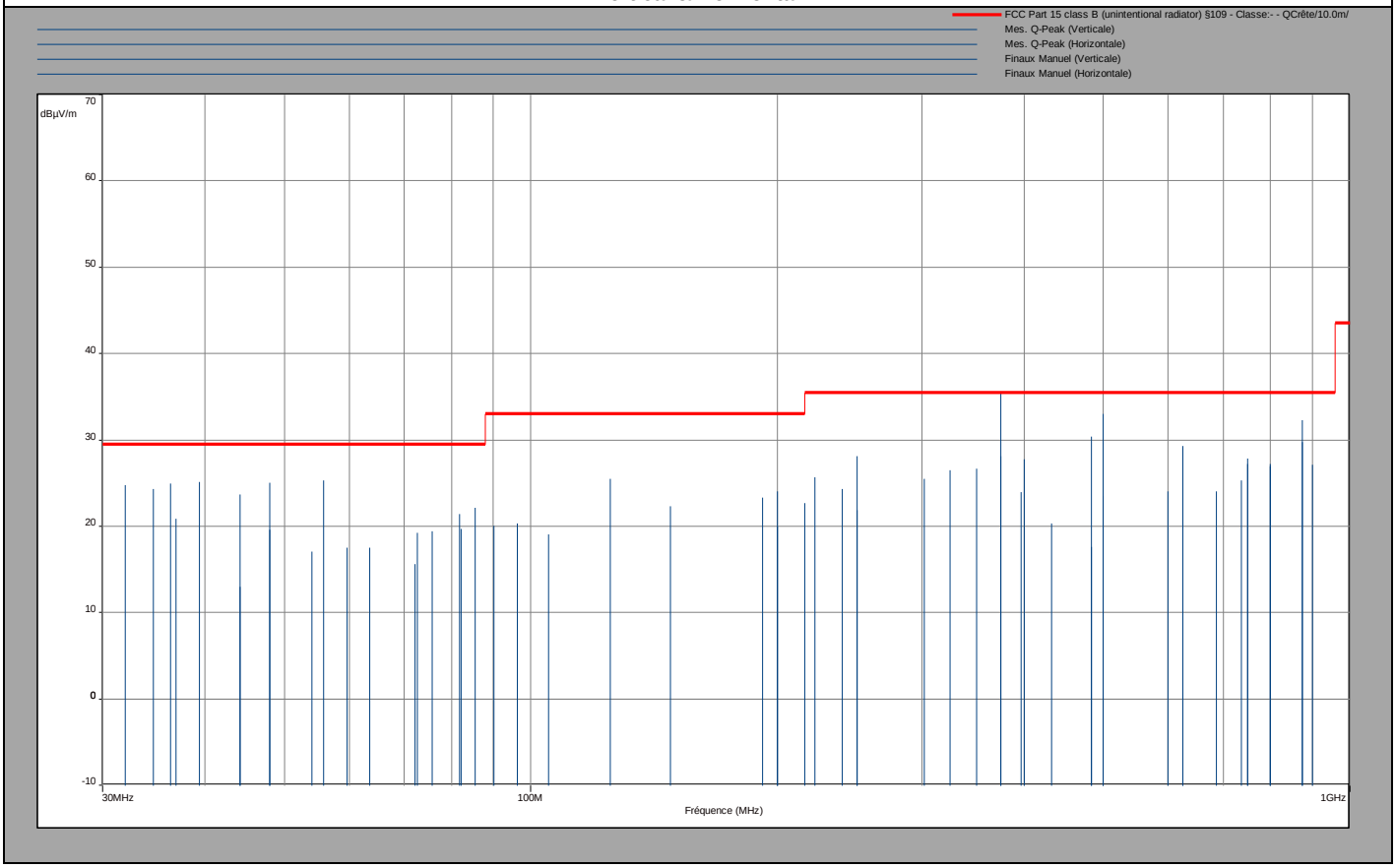
☑ None ☐ Divergence:

11.6. RESULTS

Below 1GHz

Power supply NBS60C120500M2

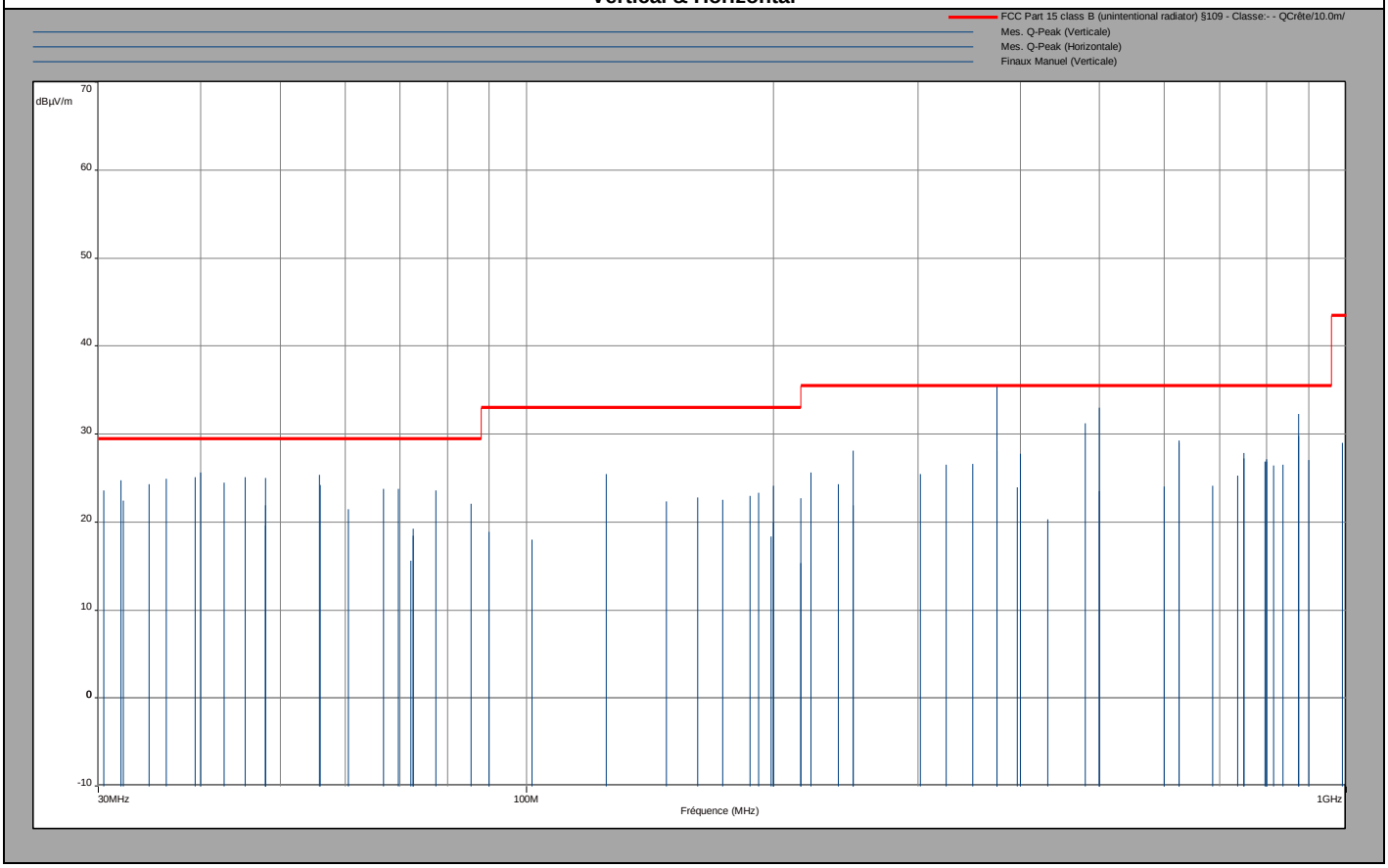
Worst case 802.11b
Cnom
Vertical & Horizontal



Below 1GHz

Power supply LPL-C060120500ZS

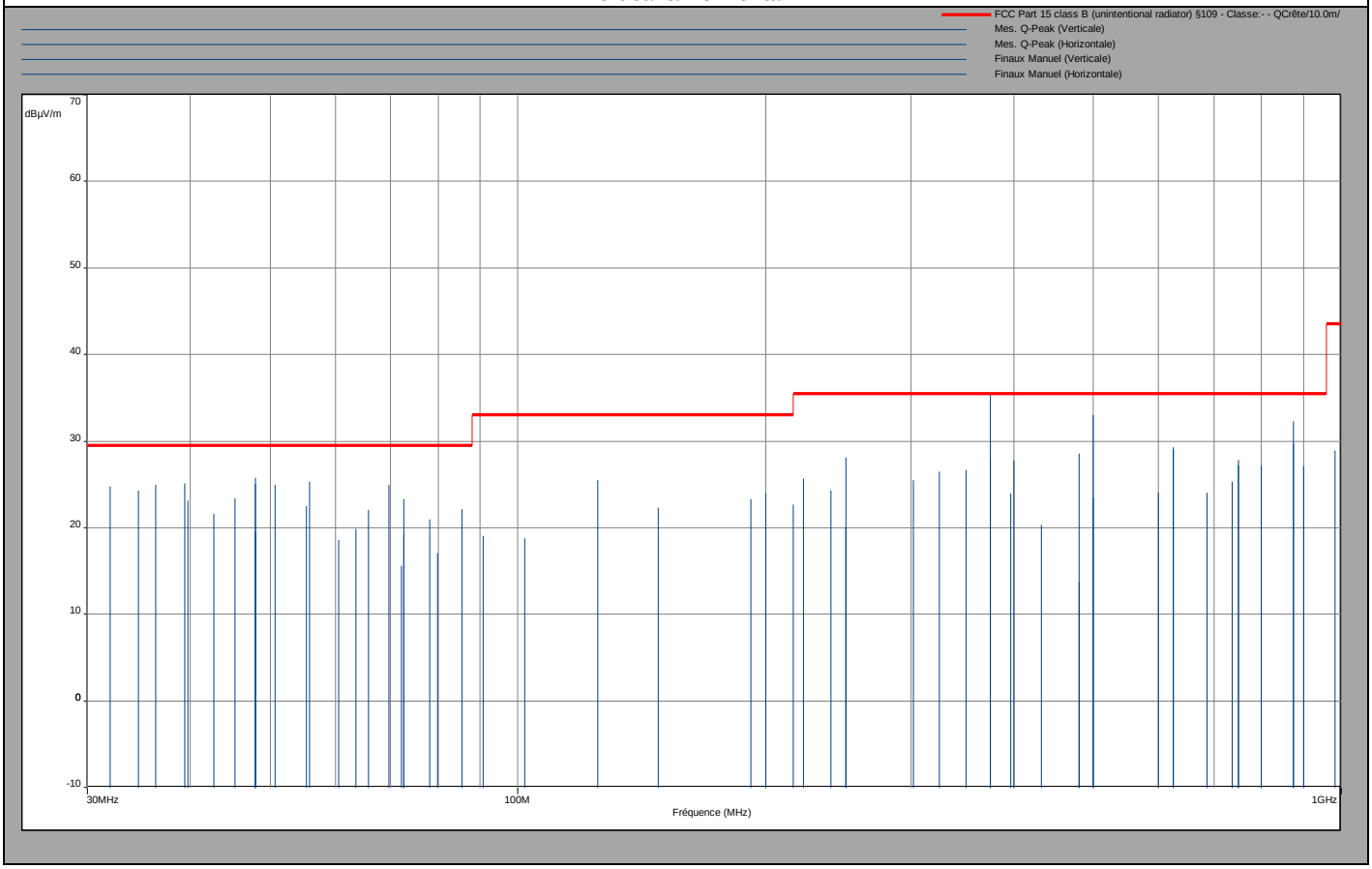
Worst case 802.11b
Cnom
Vertical & Horizontal



Below 1GHz

Power supply MSA-Z5000IS12.060A-P

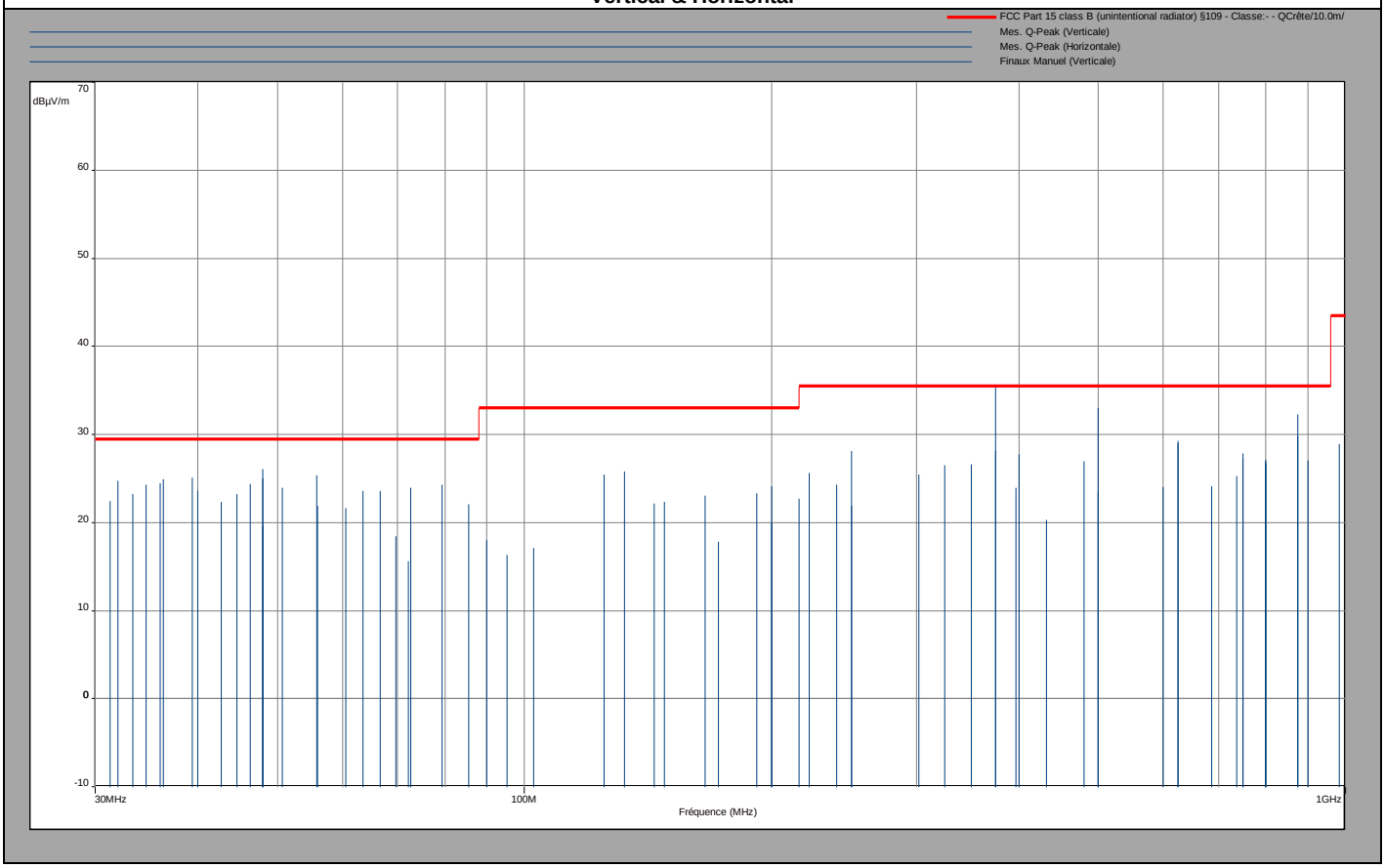
Worst case 802.11b
Cnom
Vertical & Horizontal



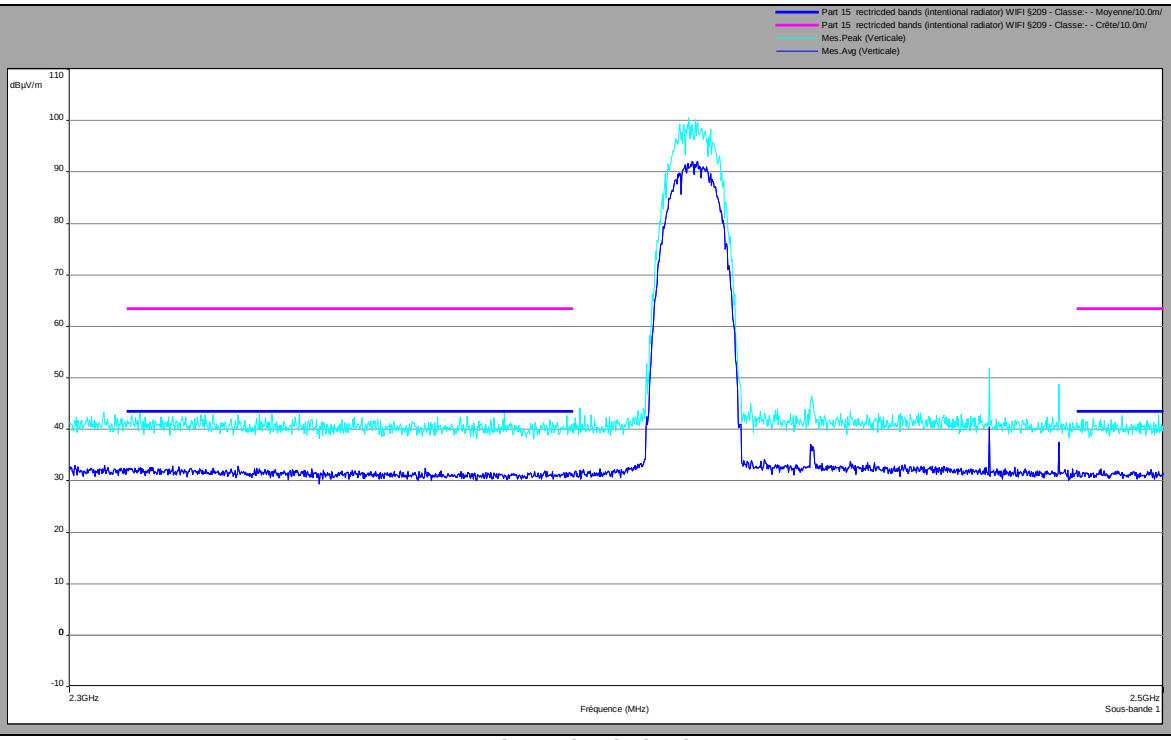
Below 1GHz

Power supply A15-060P1A

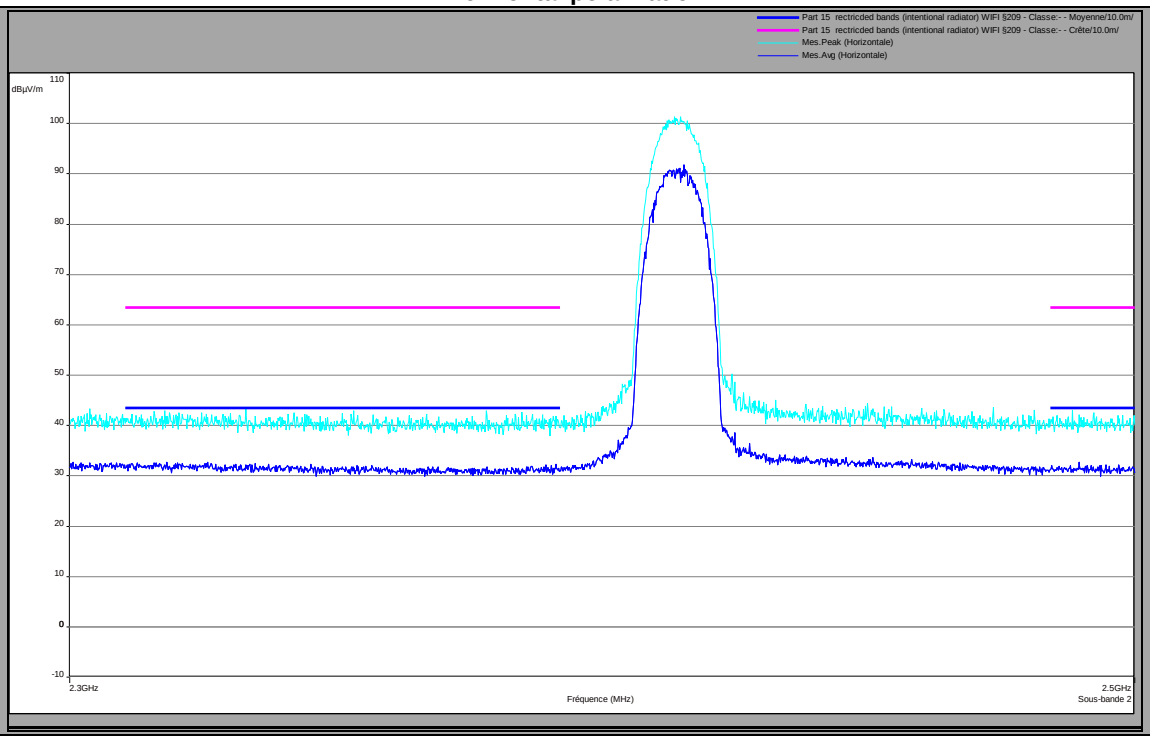
Worst case 802.11b
Cnom
Vertical & Horizontal



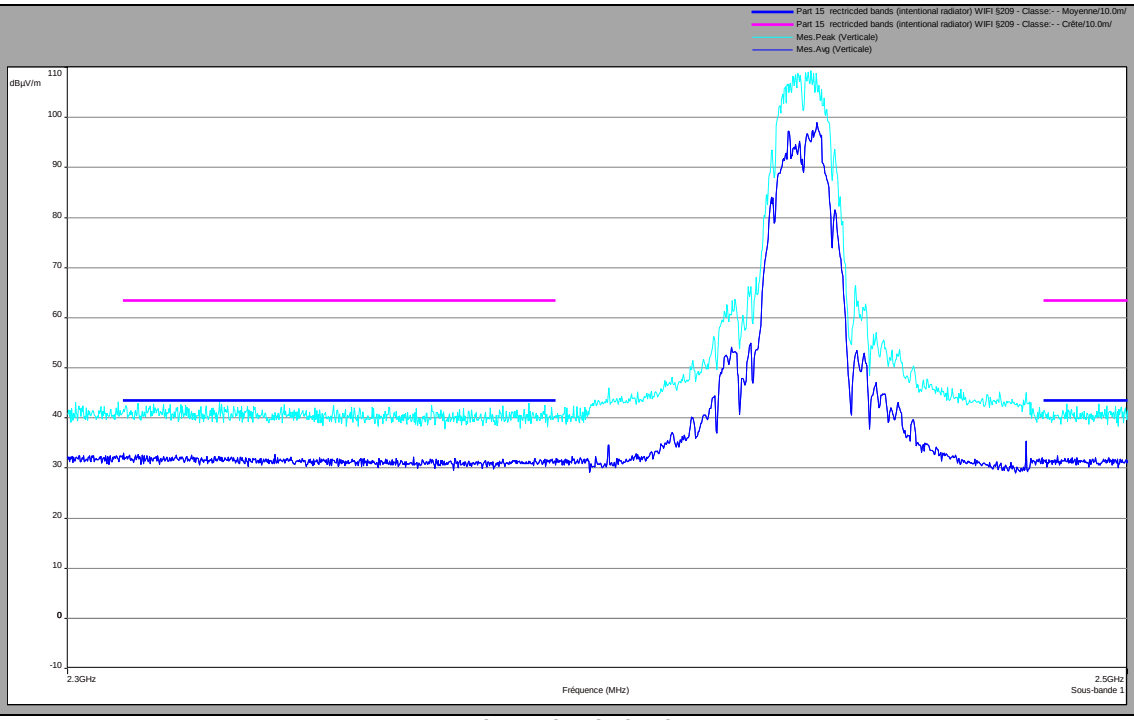
Above 1GHz
802.11b
Cmin
Vertical Polarization



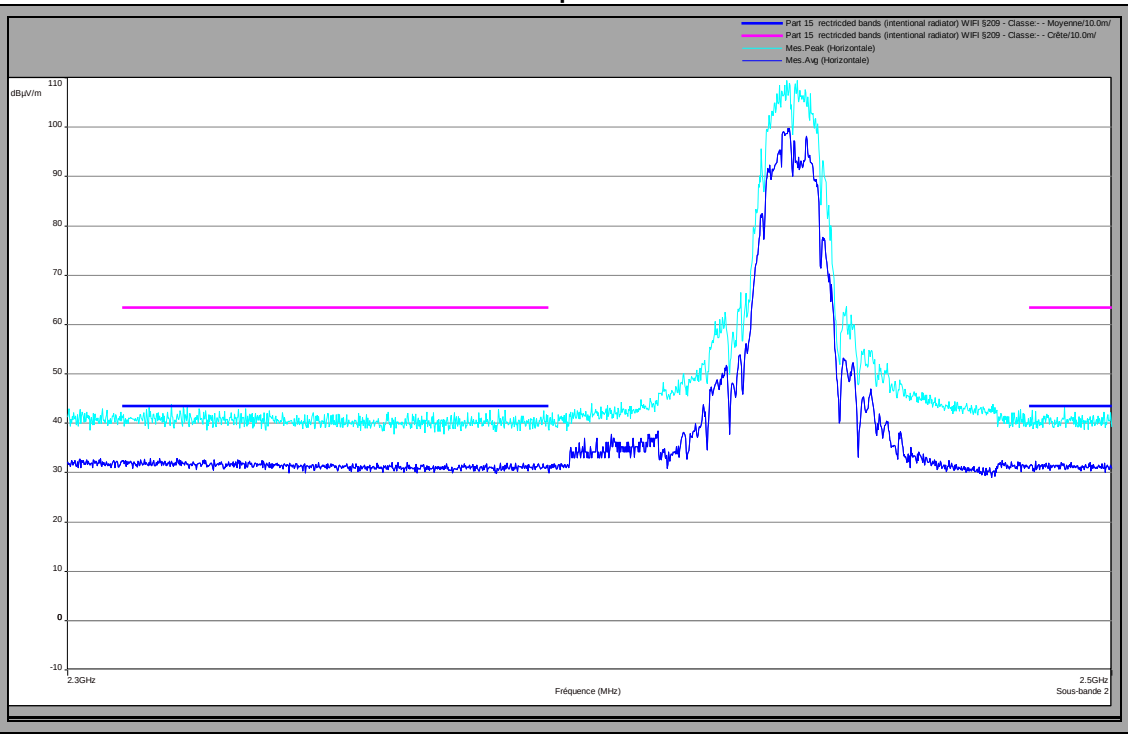
Horizontal polarization



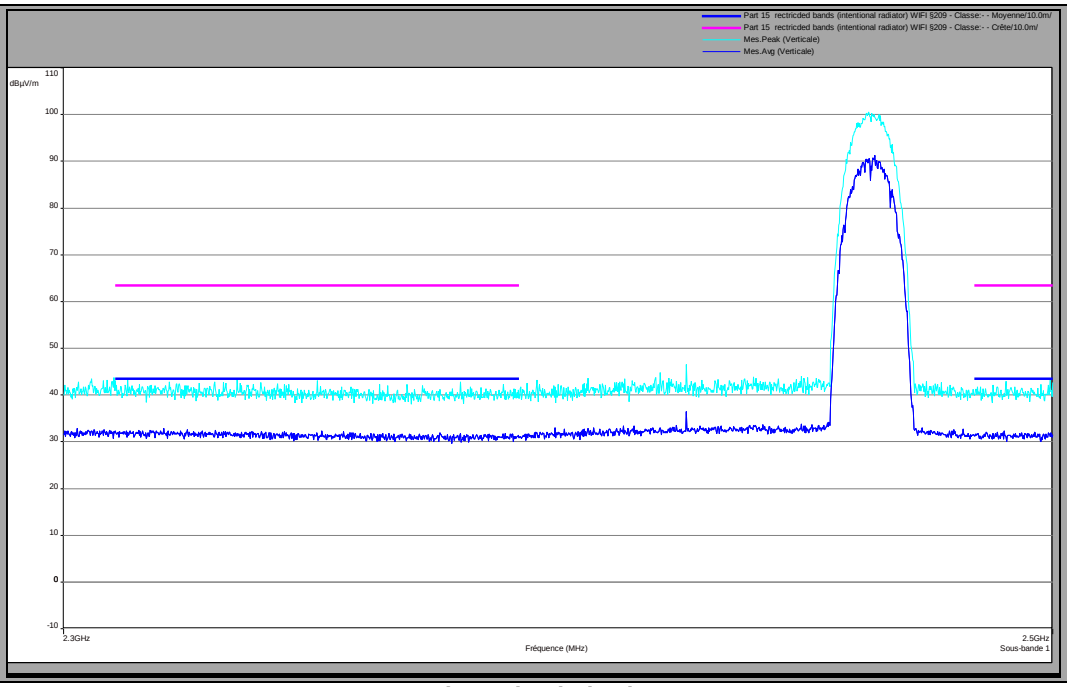
Above 1GHz
802.11b
Cnom
Vertical Polarization



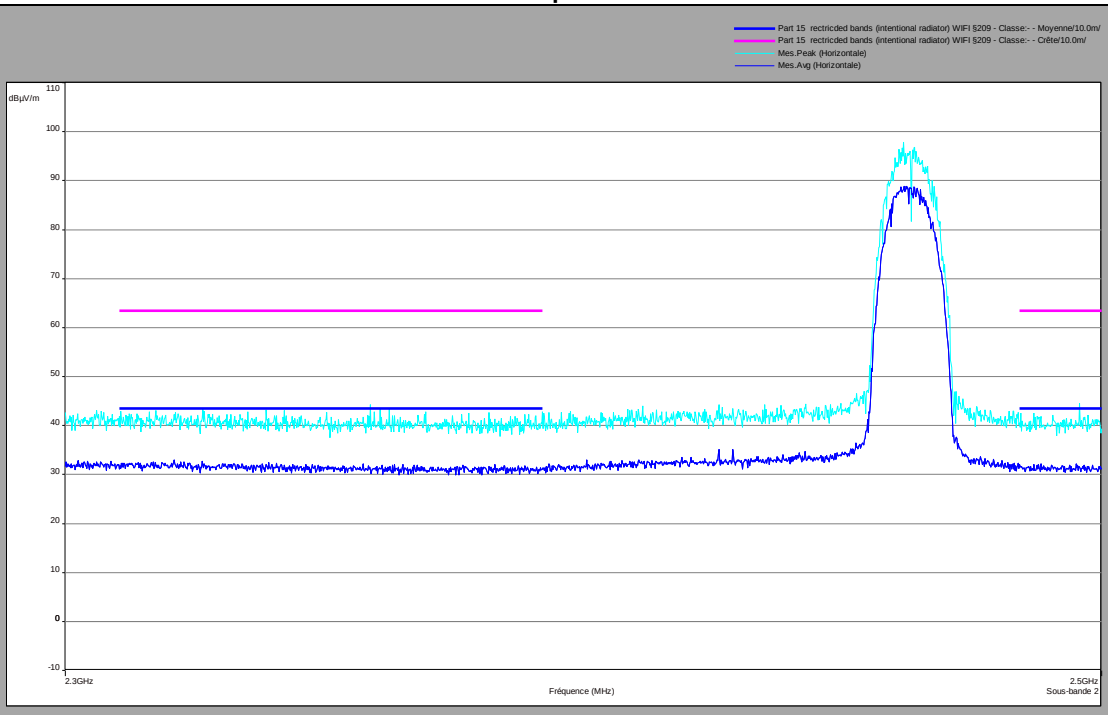
Horizontal polarization



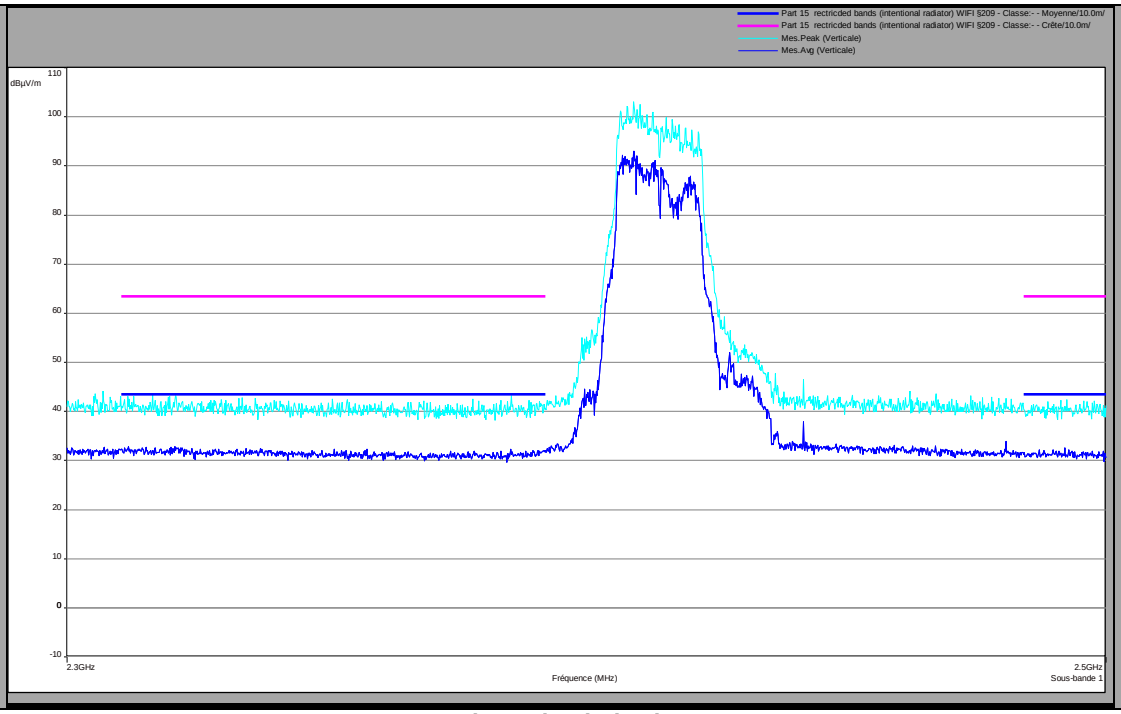
Above 1GHz
802.11b
Cmax
Vertical Polarization



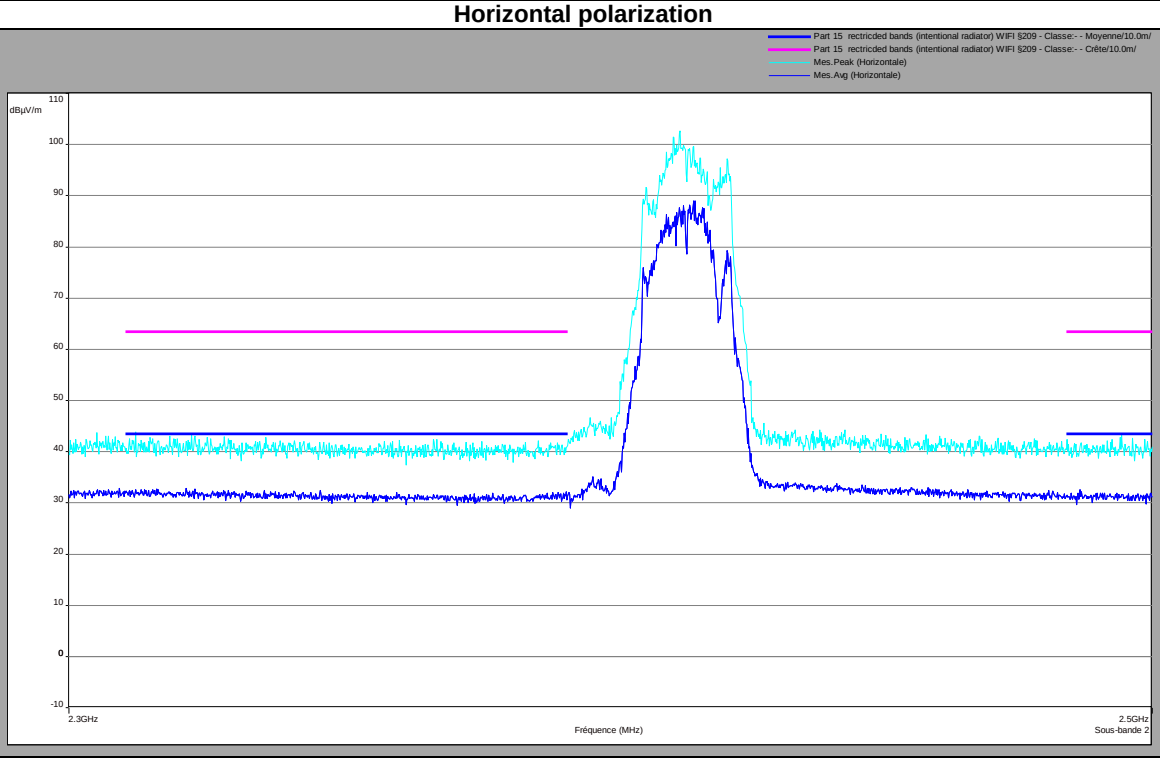
Horizontal polarization



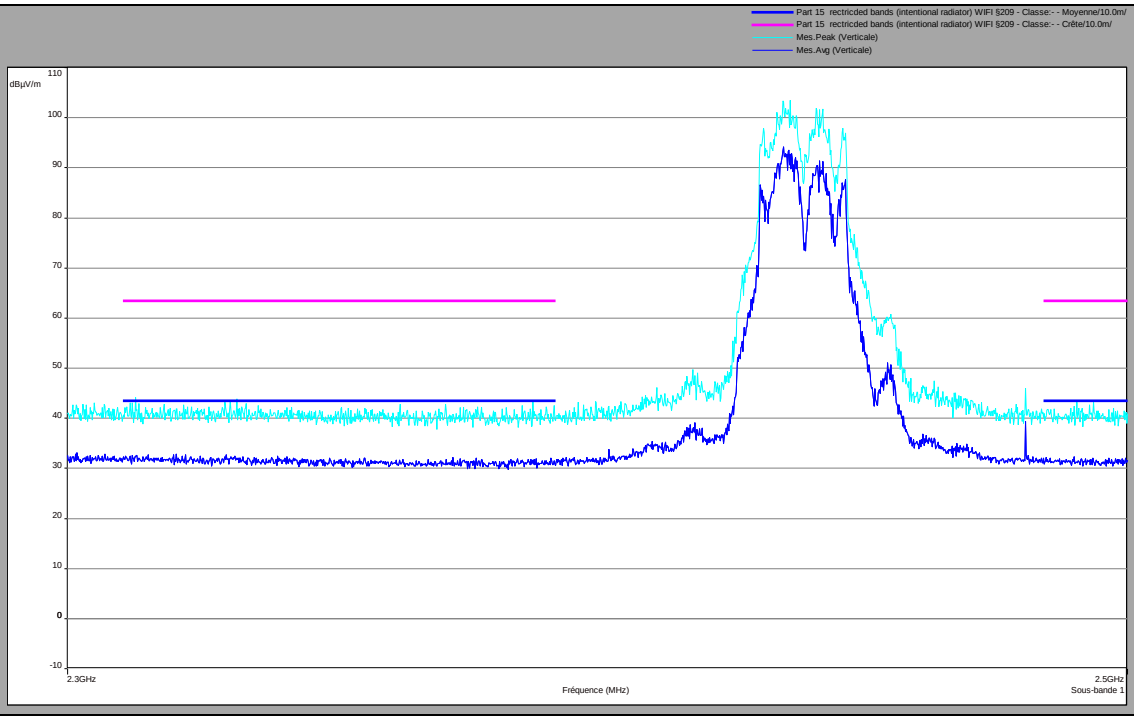
Above 1GHz
802.11g
Cmin
Vertical Polarization



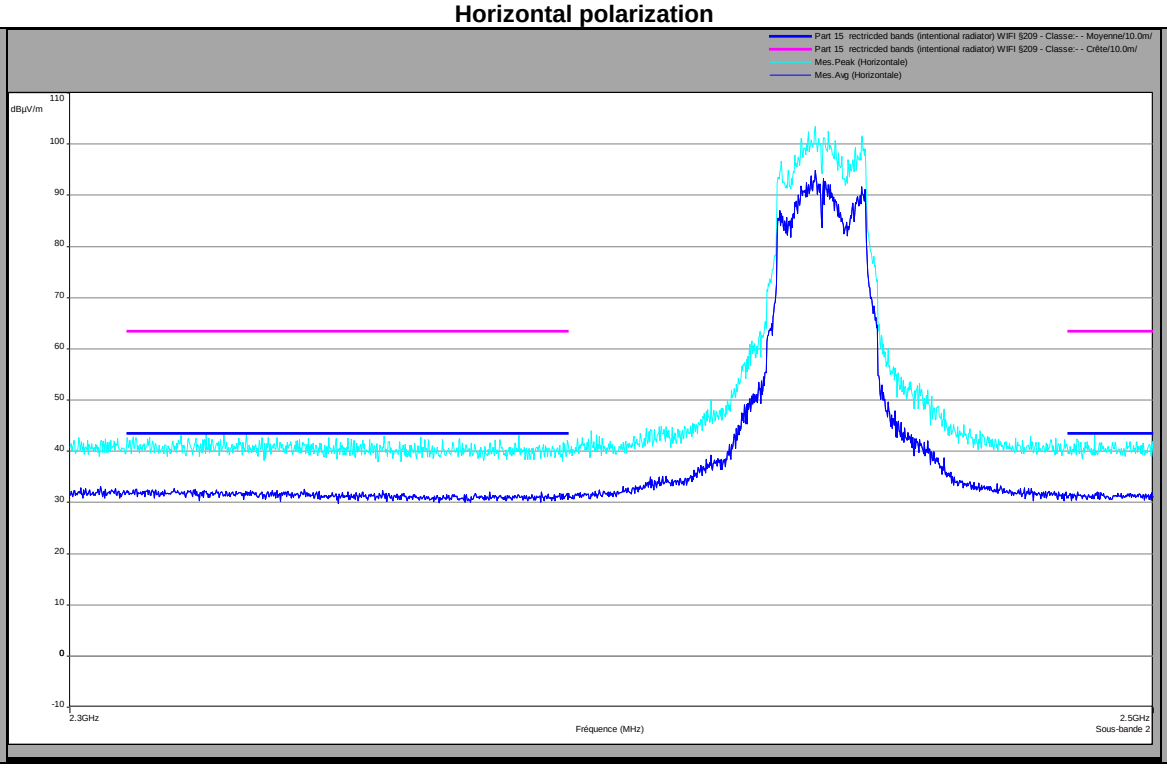
Horizontal polarization



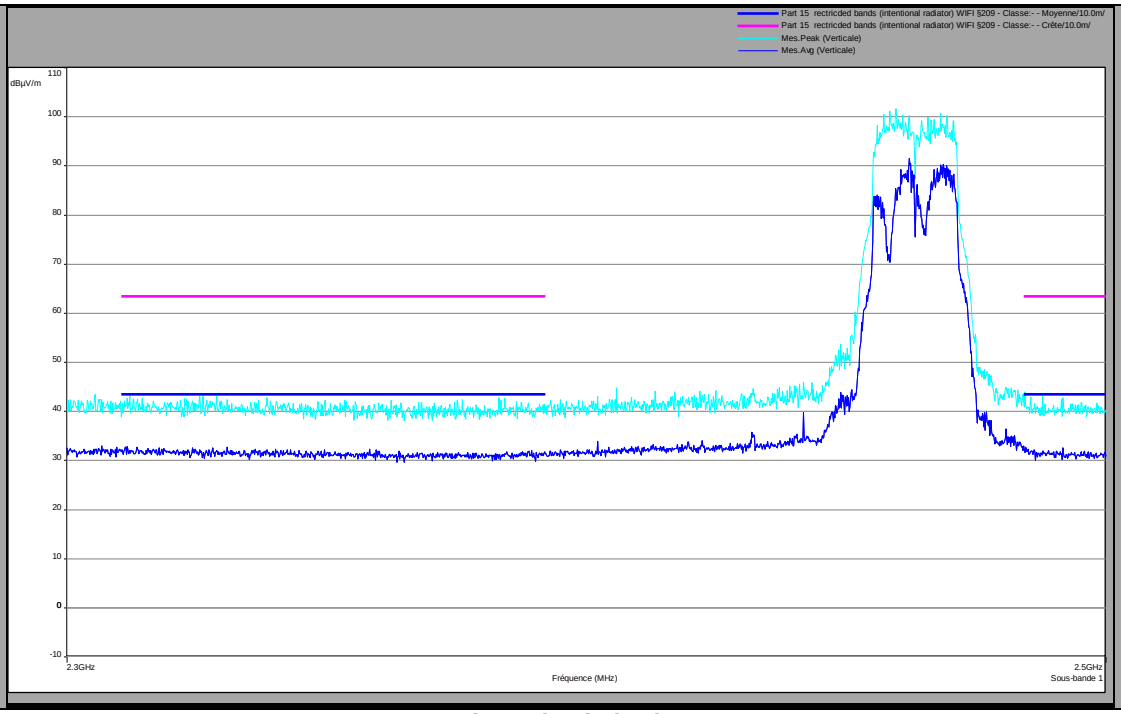
Above 1GHz
802.11g
Cnom
Vertical Polarization



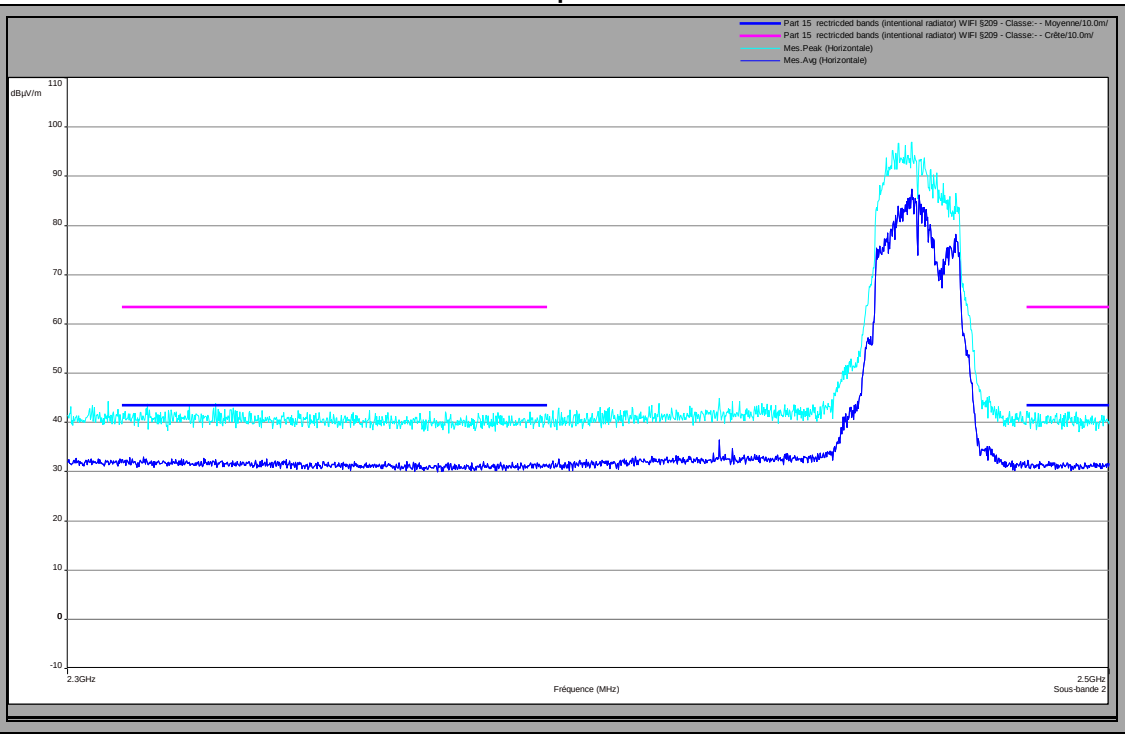
Horizontal polarization



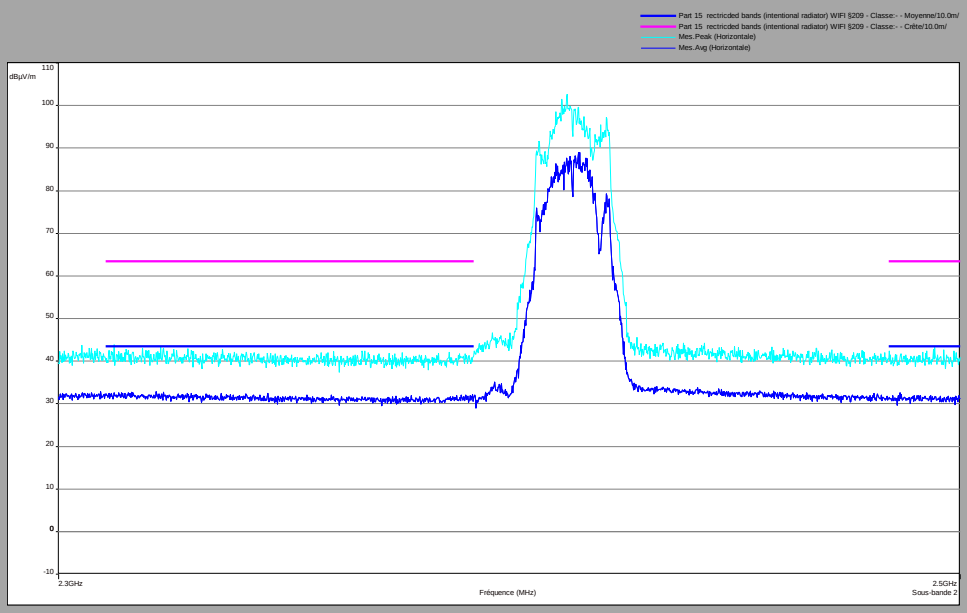
Above 1GHz
802.11g
Cmax
Vertical Polarization



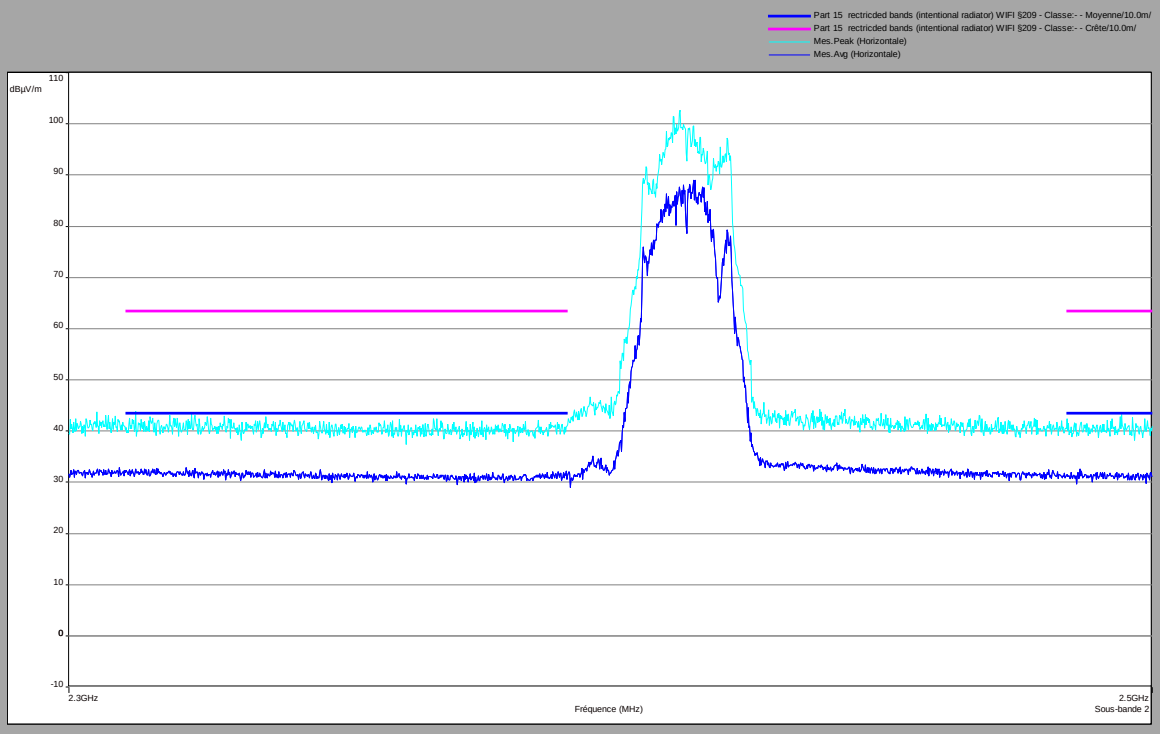
Horizontal polarization



Above 1GHz
802.11n HT20
Cmin
Vertical Polarization



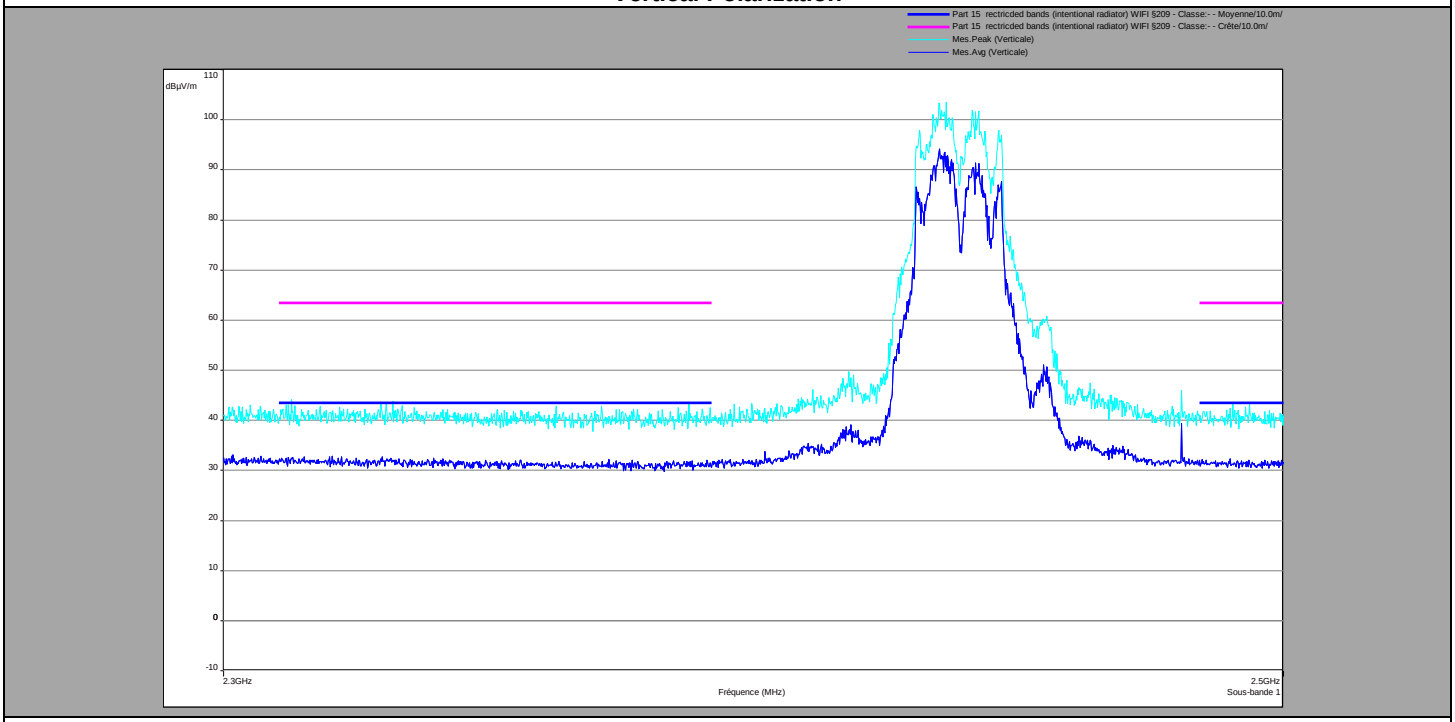
Horizontal polarization



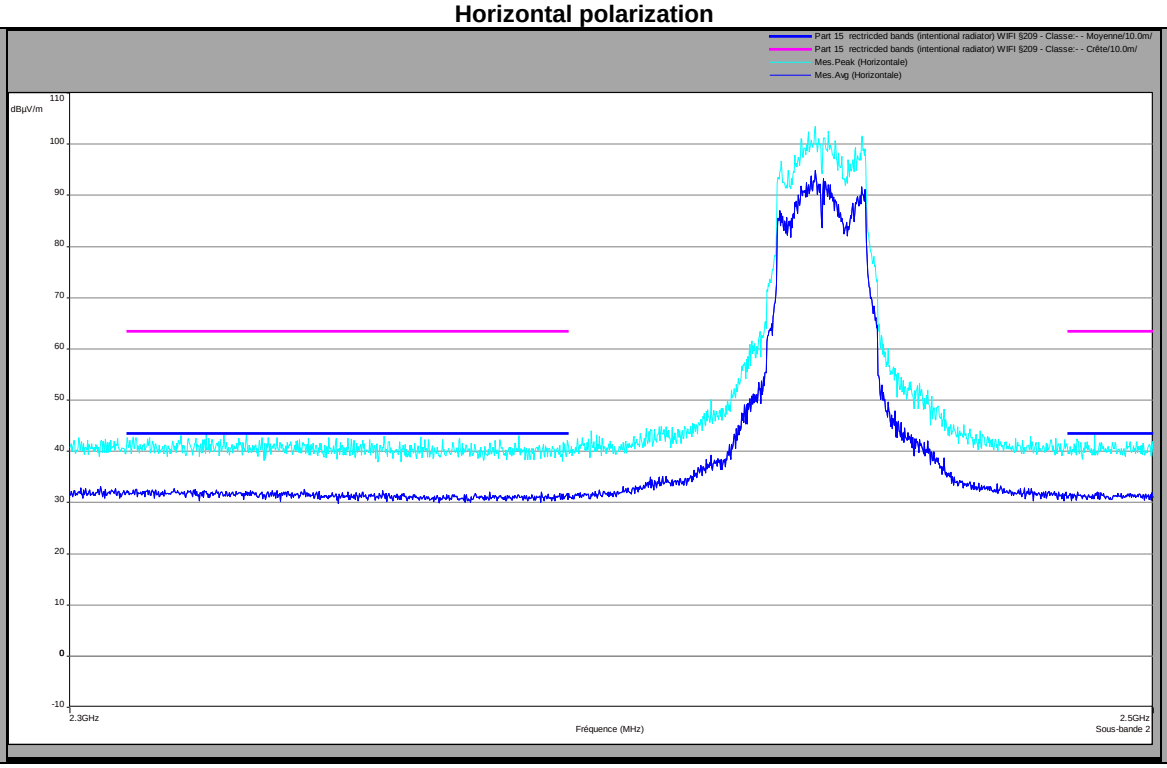
802.11n HT20

Cnom

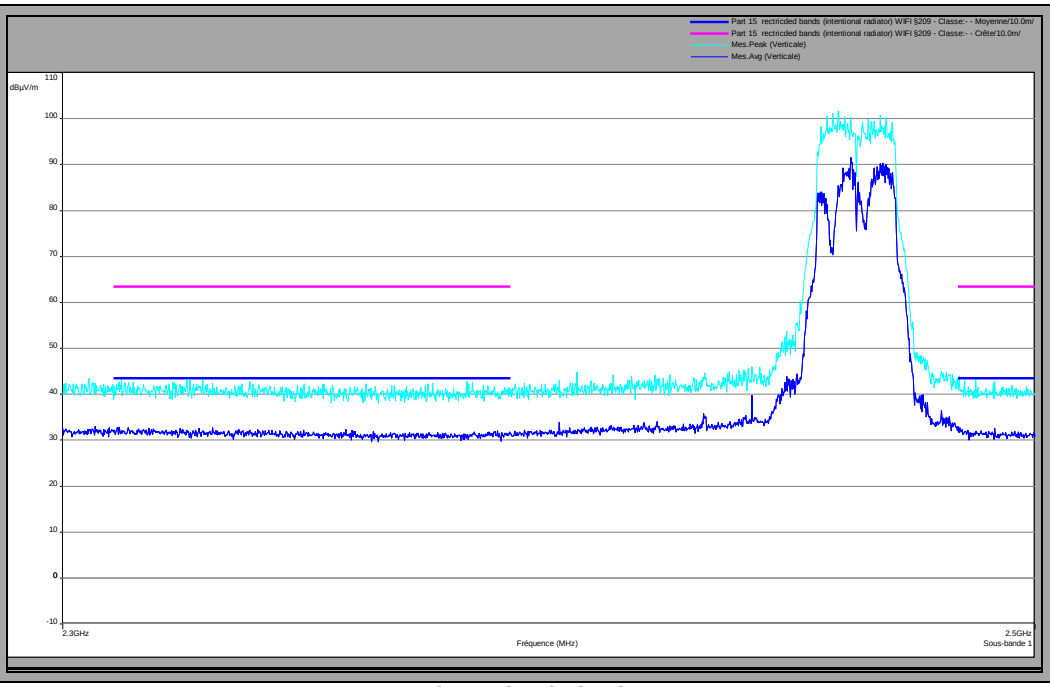
Vertical Polarization



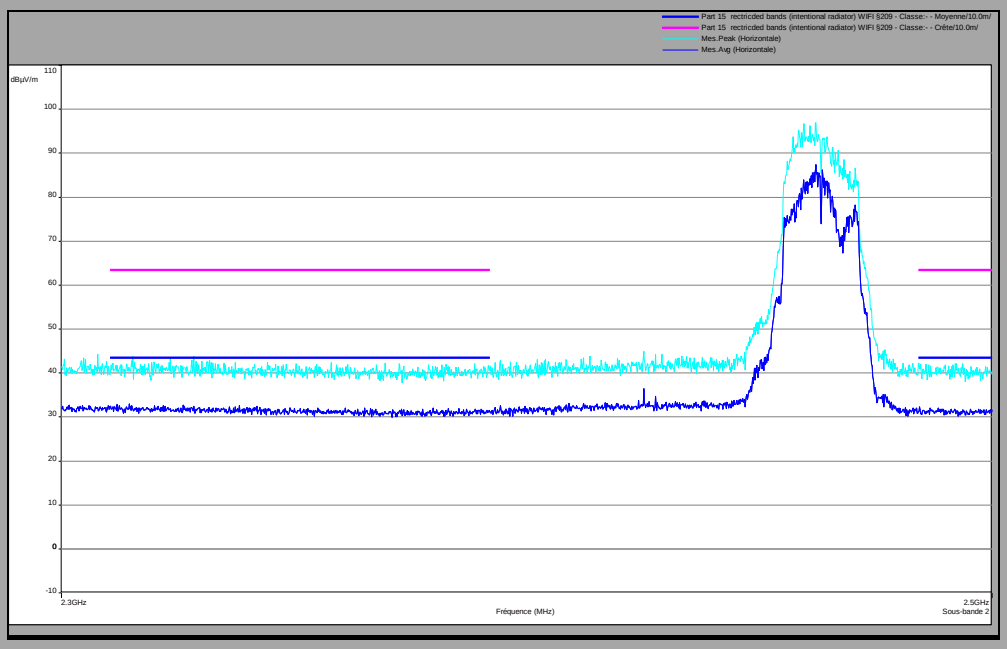
Horizontal polarization



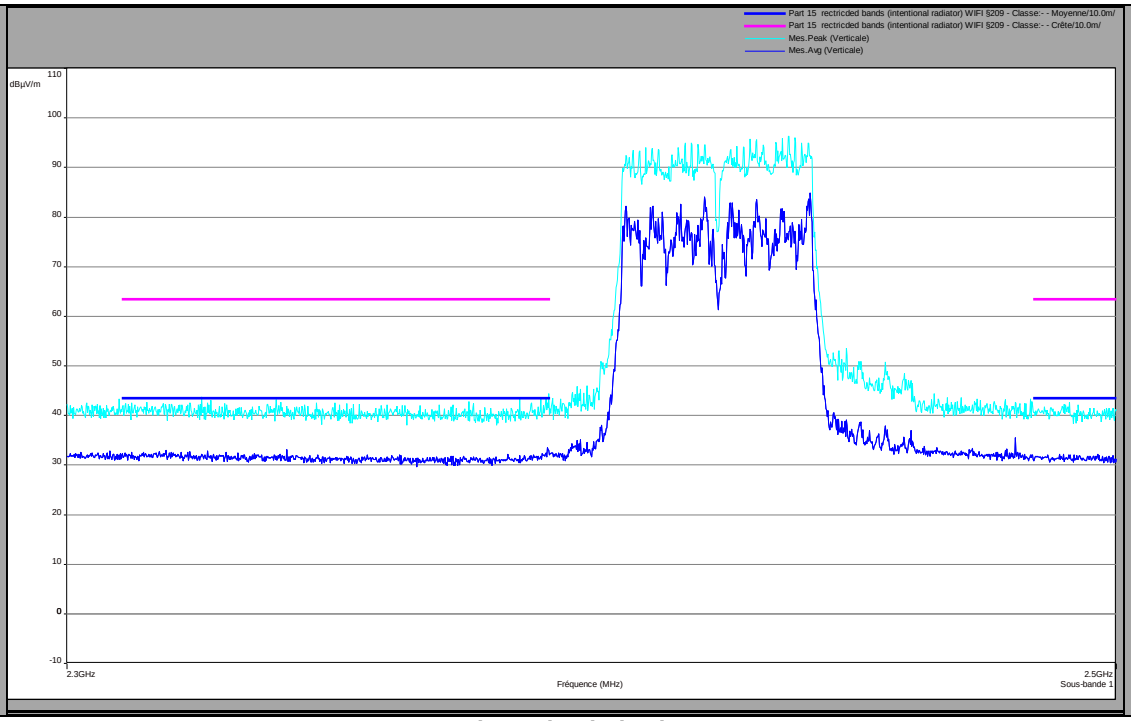
Above 1GHz
802.11n HT20
Cmax
Vertical Polarization



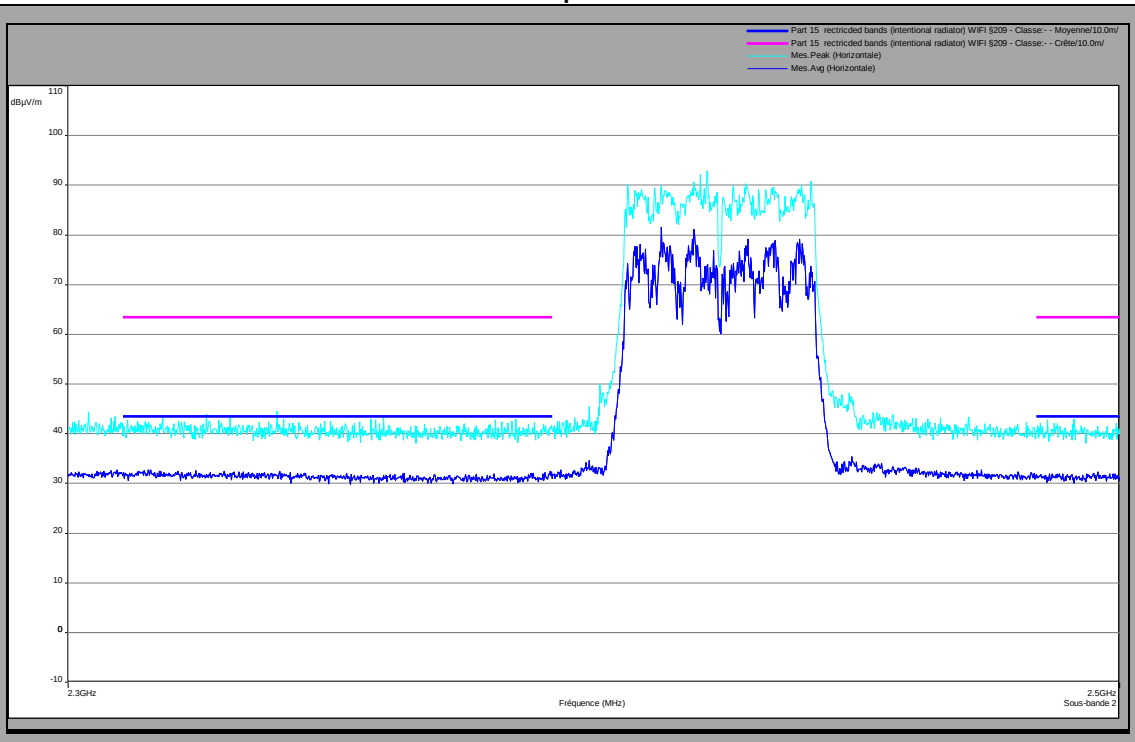
Horizontal polarization



Above 1GHz
802.11n HT40
Cmin
Vertical Polarization



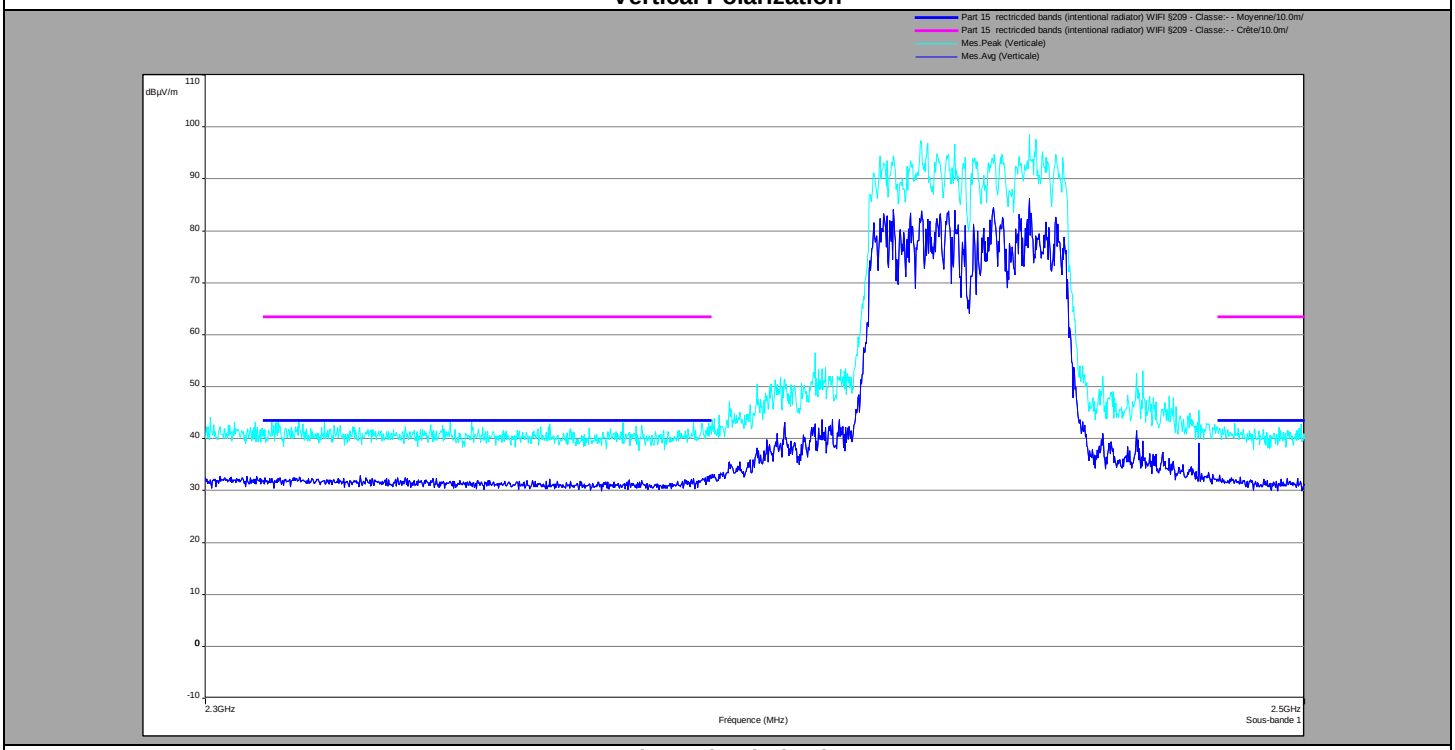
Horizontal polarization



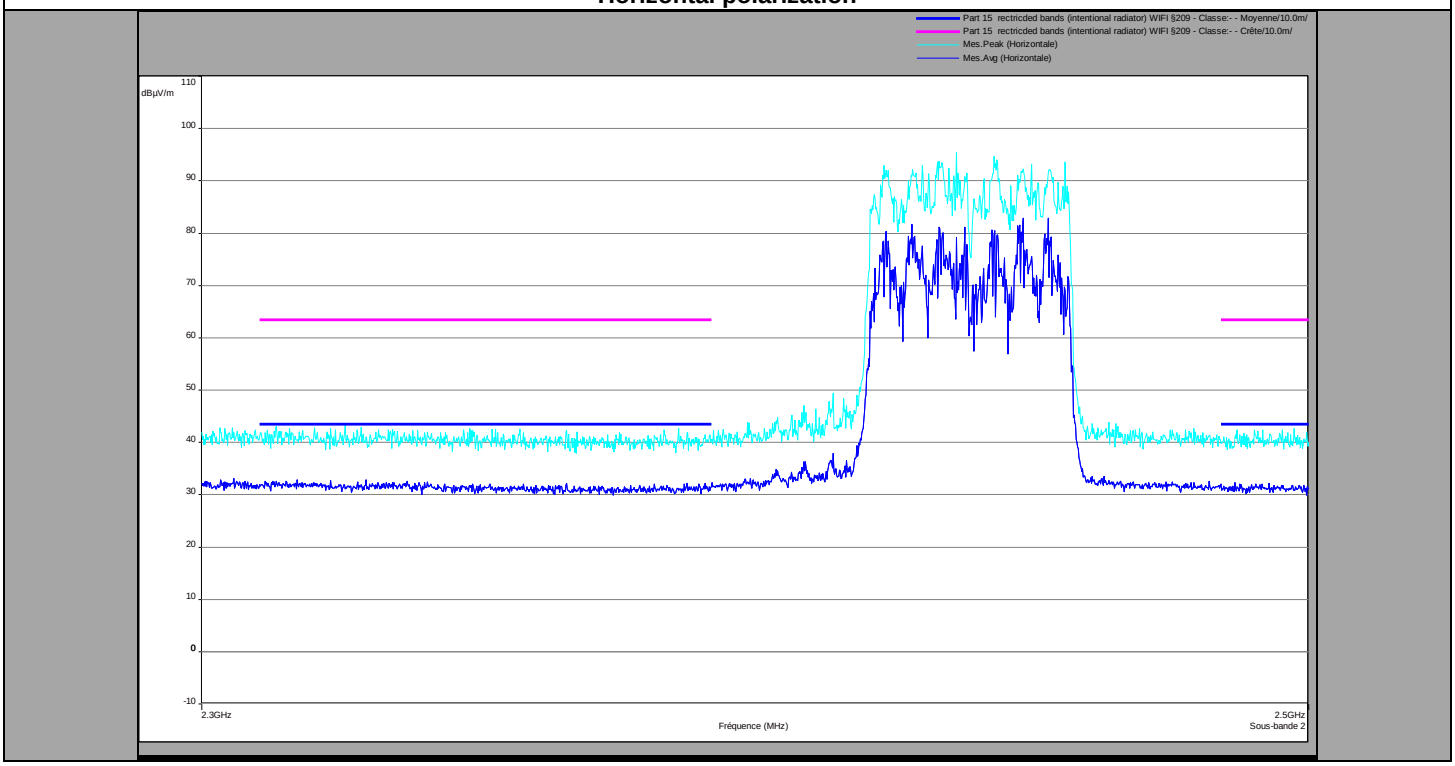
802.11n HT40

Cnom

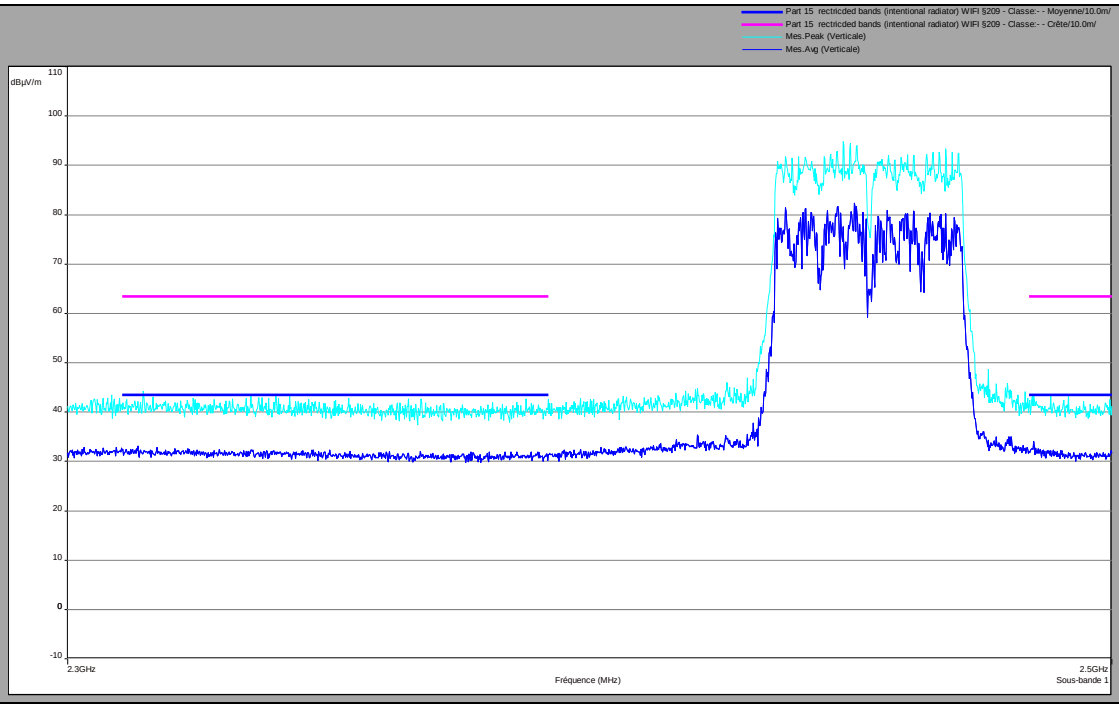
Vertical Polarization



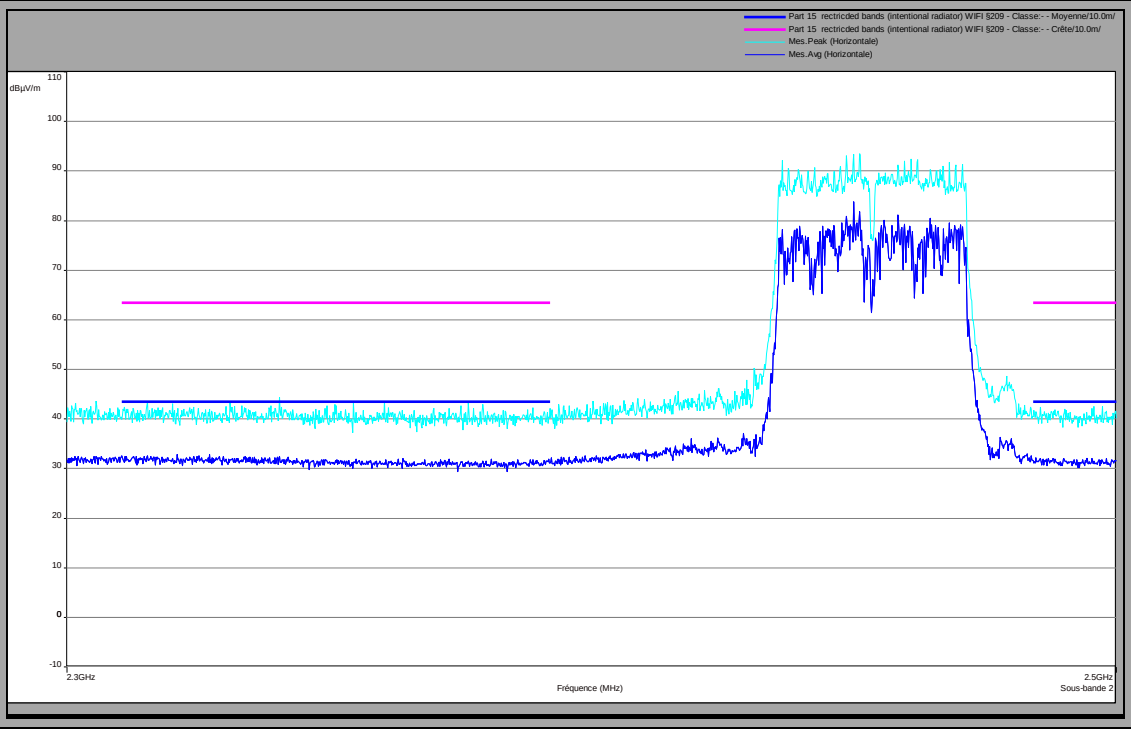
Horizontal polarization



Above 1GHz
802.11n HT40
Cmax
Vertical Polarization



Horizontal polarization



Below 1GHz
Powr supply NBS60C120500M2

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
vertical	32	24.78	29.5
vertical	33.7	23.07	29.5
vertical	34.6	24.33	29.5
vertical	36	23.21	29.5
vertical	36.3	24.93	29.5
vertical	38.2	19.35	29.5
vertical	39.4	25.12	29.5
vertical	40	22.25	29.5
vertical	42.7	22.01	29.5
vertical	43.8	23.67	29.5
vertical	45.3	23.97	29.5
vertical	48	25.03	29.5
vertical	50.7	23.74	29.5
vertical	55.9	25.36	29.5
vertical	56	21.58	29.5
vertical	61.3	21.97	29.5
vertical	64	24.54	29.5
vertical	66.7	23.73	29.5
vertical	69.7	21.98	29.5
vertical	72.2	15.6	29.5
vertical	77.7	21.67	29.5
vertical	89.3	18.29	33
vertical	100.8	18.94	33
vertical	140	19.93	33
vertical	148	22.33	33
vertical	166.6	22.93	33
vertical	173.1	17.94	33
vertical	200	20.02	33
vertical	222	25.66	35.5
vertical	250	21.93	35.5
vertical	276.5	25.18	35.5
vertical	302.3	25.51	35.5
vertical	350	26.65	35.5
vertical	375	28.12	35.5
vertical	397.1	23.97	35.5
vertical	400	28.26	35.5
vertical	432	20.34	35.5
vertical	480	26.8	35.5

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
vertical	500	23.56	35.5
vertical	625	29.29	35.5
vertical	687.5	24.11	35.5
vertical	737.7	25.31	35.5
vertical	750	27.91	35.5
vertical	771.7	26.43	35.5
vertical	800	27.2	35.5
vertical	875	32.3	35.5

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
Horizontal	85.5	22.14	33
Horizontal	125	25.49	33
Horizontal	192	23.31	33
Horizontal	200	24.11	33
Horizontal	216	22.71	33
Horizontal	240	24.31	35.5
Horizontal	250	28.13	35.5
Horizontal	325	26.55	35.5
Horizontal	375	35.47	35.5
Horizontal	400	27.81	35.5
Horizontal	500	33.05	35.5
Horizontal	600	24.03	35.5
Horizontal	625	29.05	35.5
Horizontal	750	27.24	35.5
Horizontal	800	26.94	35.5
Horizontal	875	29.79	35.5
Horizontal	900	27.12	35.5

Below 1GHz
Powr supply LPL-C060120500ZS

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
vertical	30.5	23.63	29.5
vertical	32	24.78	29.5
vertical	34.6	24.33	29.5
vertical	36.3	24.93	29.5
vertical	39.4	25.12	29.5
vertical	40	25.63	29.5
vertical	42.7	24.52	29.5
vertical	45.3	25.11	29.5
vertical	48	25.03	29.5
vertical	55.9	25.36	29.5
vertical	56	24.2	29.5
vertical	60.6	21.51	29.5
vertical	66.8	23.8	29.5
vertical	69.7	23.75	29.5
vertical	72.2	15.6	29.5
vertical	72.7	19.23	29.5
vertical	77.4	23.64	29.5
vertical	85.5	22.14	29.5
vertical	90	18.94	33
vertical	101.4	18.03	33
vertical	148	22.33	33
vertical	161.6	22.85	33
vertical	173.4	22.54	33
vertical	187.2	23.01	33
vertical	198.8	18.34	33
vertical	200	20.02	33
vertical	216	15.37	33
vertical	222	25.66	35.5
vertical	250	21.93	35.5
vertical	302.3	25.51	35.5
vertical	350	26.65	35.5
vertical	375	28.12	35.5
vertical	397.1	23.97	35.5
vertical	432	20.34	35.5
vertical	480	31.23	35.5
vertical	500	23.56	35.5
vertical	625	29.29	35.5
vertical	687.5	24.11	35.5

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
vertical	737.7	25.31	35.5
vertical	750	27.91	35.5
vertical	795.4	26.92	35.5
vertical	800	27.2	35.5
vertical	816.2	26.44	35.5
vertical	836.3	26.51	35.5
vertical	875	32.3	35.5
vertical	989.4	29.06	43.5

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
Horizontal	125	25.49	33
Horizontal	192	23.31	33
Horizontal	200	24.11	33
Horizontal	216	22.71	33
Horizontal	240	24.31	33
Horizontal	250	28.13	35.5
Horizontal	325	26.55	35.5
Horizontal	375	35.47	35.5
Horizontal	400	27.81	35.5
Horizontal	500	33.05	35.5
Horizontal	600	24.03	35.5
Horizontal	625	29.05	35.5
Horizontal	750	27.24	35.5
Horizontal	800	26.94	35.5
Horizontal	875	29.79	35.5
Horizontal	900	27.12	35.5

Below 1GHz
Power supply MSA-Z5000IS12.060A-P

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
vertical	32	24.78	29.5
vertical	34.6	24.33	29.5
vertical	36.3	24.93	29.5
vertical	39.4	25.12	29.5
vertical	39.7	23.14	29.5
vertical	42.7	21.6	29.5
vertical	45.3	23.42	29.5
vertical	48	25.79	29.5
vertical	50.7	24.94	29.5
vertical	55.4	22.57	29.5
vertical	55.9	25.36	29.5
vertical	60.6	18.66	29.5
vertical	63.6	19.87	29.5
vertical	65.9	22.09	29.5
vertical	69.7	24.94	29.5
vertical	72.2	15.6	29.5
vertical	72.7	23.37	29.5
vertical	78.2	20.98	29.5
vertical	79.8	17.08	29.5
vertical	85.5	22.14	29.5
vertical	90.8	19.07	33
vertical	101.9	18.81	33
vertical	148	22.33	33
vertical	192	23.31	33
vertical	200	24.11	33
vertical	216	22.71	33
vertical	222	25.66	33
vertical	240	24.31	35.5
vertical	250	28.13	35.5
vertical	302.3	25.51	35.5
vertical	325	26.55	35.5
vertical	350	26.65	35.5
vertical	375	35.47	35.5
vertical	397.1	23.97	35.5
vertical	400	27.81	35.5
vertical	432	20.34	35.5
vertical	480	28.61	35.5
vertical	500	33.05	35.5

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
vertical	600	24.03	35.5
vertical	625	29.05	35.5
vertical	687.5	24.11	35.5
vertical	737.7	25.31	35.5
vertical	750	27.91	35.5
vertical	800	27.2	35.5
vertical	875	32.3	35.5
vertical	900	27.12	35.5
vertical	982.2	28.92	43.5

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
Horizontal	125	25.49	33
Horizontal	192	23.31	33
Horizontal	200	24.11	33
Horizontal	216	22.71	33
Horizontal	240	24.31	35.5
Horizontal	250	28.13	35.5
Horizontal	325	26.55	35.5
Horizontal	375	35.47	35.5
Horizontal	400	27.81	35.5
Horizontal	500	33.05	35.5
Horizontal	600	24.03	35.5
Horizontal	625	29.05	35.5
Horizontal	750	27.24	35.5
Horizontal	800	26.94	35.5
Horizontal	875	29.79	35.5
Horizontal	900	27.12	35.5

Below 1GHz
Powr supply A15-060P1A

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
vertical	31.3	22.43	29.5
vertical	32	24.78	29.5
vertical	33.3	23.26	29.5
vertical	34.6	24.33	29.5
vertical	36	24.52	29.5
vertical	36.3	24.93	29.5
vertical	39.4	25.12	29.5
vertical	40	23.63	29.5
vertical	42.7	22.36	29.5
vertical	44.6	23.26	29.5
vertical	46.3	24.4	29.5
vertical	48	26.14	29.5
vertical	50.7	23.96	29.5
vertical	55.9	25.36	29.5
vertical	56	21.94	29.5
vertical	60.6	21.66	29.5
vertical	63.6	23.62	29.5
vertical	66.7	23.61	29.5
vertical	69.7	18.51	29.5
vertical	72.2	15.6	29.5
vertical	72.7	23.93	29.5
vertical	79.3	24.3	29.5
vertical	85.5	22.14	29.5
vertical	89.9	18.03	33
vertical	95.3	16.34	33
vertical	102.6	17.13	33
vertical	132.4	25.83	33
vertical	144	22.21	33
vertical	148	22.33	33
vertical	172.4	17.84	33
vertical	200	20.02	33
vertical	222	25.66	35.5
vertical	250	21.93	35.5
vertical	302.3	25.51	35.5
vertical	350	26.65	35.5
vertical	375	28.12	35.5
vertical	397.1	23.97	35.5
vertical	432	20.34	35.5
vertical	480	27	35.5

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
vertical	500	23.56	35.5
vertical	625	29.29	35.5
vertical	687.5	24.11	35.5
vertical	737.7	25.31	35.5
vertical	750	27.91	35.5
vertical	800	27.2	35.5
vertical	875	32.3	35.5
vertical	982.2	28.98	43.5

Polarisation	Frequency (MHz)	QPeak Level (dBµV/m)	Limit (dBµV/m)
Horizontal	125	25.49	33
Horizontal	166	23.06	33
Horizontal	192	23.31	33
Horizontal	200	24.11	33
Horizontal	216	22.71	33
Horizontal	240	24.31	35.5
Horizontal	250	28.13	35.5
Horizontal	325	26.55	35.5
Horizontal	375	35.47	35.5
Horizontal	400	27.81	35.5
Horizontal	500	33.05	35.5
Horizontal	600	24.03	35.5
Horizontal	625	29.05	35.5
Horizontal	750	27.24	35.5
Horizontal	800	26.94	35.5
Horizontal	875	29.79	35.5
Horizontal	900	27.12	35.5

Above 1GHz

WIFI 2.4GHz b
Canal 1

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24	43.5	31	63.5
Vertical	4822	34.3	43.5	42	63.5

Canal 6

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24	43.5	31	63.5
Vertical	4.328	30.2	43.5	39.1	63.5
Vertical	4871	36.3	43.5	43	63.5
Horizontal	4871	31.6	43.5	40.9	63.5

Canal 11

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24	43.5	31	63.5
Vertical	4928	35.3	43.5	42.1	63.5

WIFI 2.4GHz g
Canal 1

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24	43.5	31	63.5
Vertical	4828	33.8	43.5	41	63.5

Canal 6

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24	43.5	31	63.5
Vertical	4.330	30.7	43.5	38.7	63.5
Vertical	4874	36.9	43.5	43.5	63.5
Horizontal	4874	32.1	43.5	41.5	63.5

Canal 11

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24	43.5	31	63.5
Vertical	4929	33.3	43.5	41.2	63.5

Above 1GHz

WIFI 2.4GHz N
Canal 1

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24.2	43.5	31.8	63.5

Canal 4

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24.2	43.5	31.8	63.5
Vertical	4874	33.9	43.5	42.5	63.5

Canal 7

Polarisation	Frequency (MHz)	Average Level (dBµV/m)	Average Limit (dBµV/m)	Peak Level (dBµV/m)	Peak Limit (dBµV/m)
Vertical	1625	24.2	43.5	31.8	63.5

11.7. CONCLUSION

Unwanted emissions measurement performed on the sample of the product **BELL** CANADA **FAST** 5566, SN: **DM1603203000012**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 & RSS 247 ISSUE 1 limits.

12. UNCERTAINTIES CHART

47 CFR Part 15.247 & RSS 247 Kind of test	Wide uncertainty laboratory (k=2) ±x(dB) / (Hz)/ ms	Uncertainty limit
RF Output Power, Conducted	±0.6 dB	± 1.5dB
Power Spectral Density, Conducted	±0.6 dB	± 3dB
Unwanted Emissions, Conducted	±0.6 dB	± 3dB
All Emissions, Radiated below 1GHz All Emissions, Radiated above 1GHz	±3.9 dB ±3.1 dB	± 6dB
Temperature	±0.5°C	± 3°C

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