



LCIE

WIFI 2,4GHz Template: Release May 04th, 2016

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
- Trade mark
- Manufacturer
- Model under test
- Serial number

HOME Hub
BELL CANADA
SAGEMCOM BROADBAND SAS
FAST 5566
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 :
Armand MAHOUNGOU
Tests operator

Approved by :



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PUBLICATION HISTORY

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



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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 P	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
6dB Bandwidth P	☒ PASS	☐ FAIL	☐ NA()	☐ NP(1)
Duty Cycle P	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
Maximum Conducted Output Power P	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
Power Spectral Density P	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
Conducted Spurious Emission at the Band Edge P	☒ PASS	☐ FAIL	☐ NA()	☐ NP(1)
Unwanted Emissions into Non-Restricted Frequency Bands P	☒ PASS	☐ FAIL	☐ NA()	☐ NP(1)
AC Power Line Conducted Emission P	☒ PASS	☐ FAIL	☐ NA(2)	☐ NP(1)
Unwanted Emissions into Restricted Frequency Bands P	☒ PASS	☐ FAIL	☐ NA	☐ NP(1)
Receiver Radiated emissions P	☒ 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





L C I E



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:

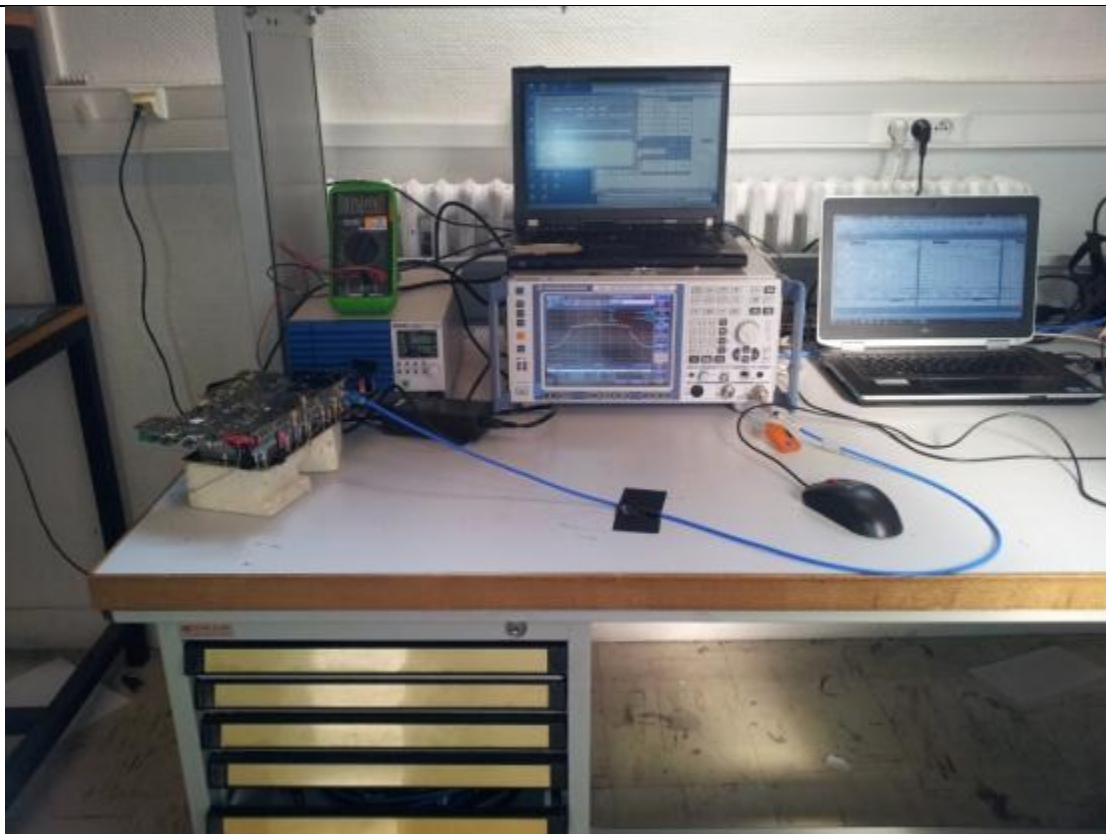
- ☒ On a table
- ☐ In an anechoic chamber

- 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

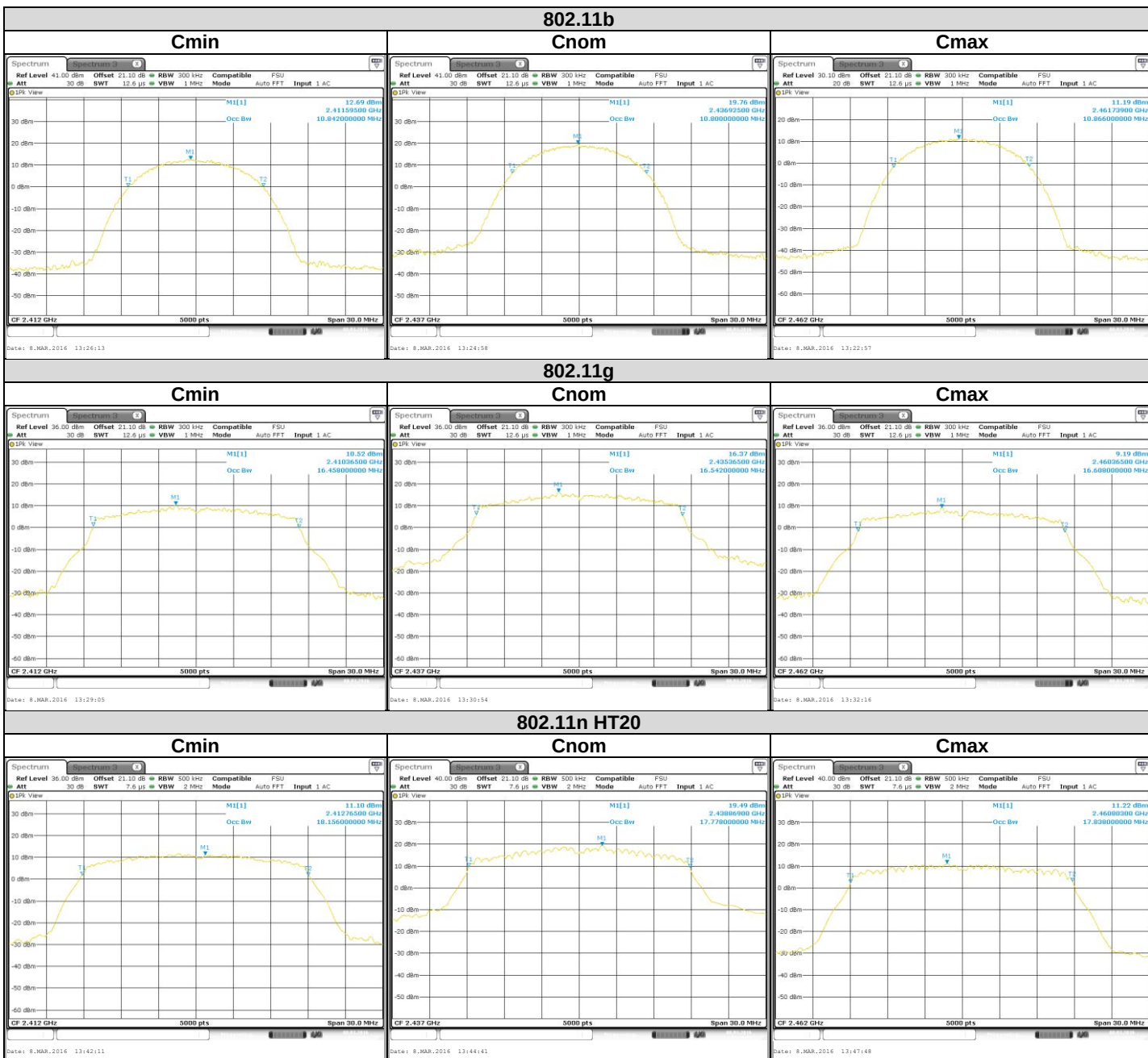
None

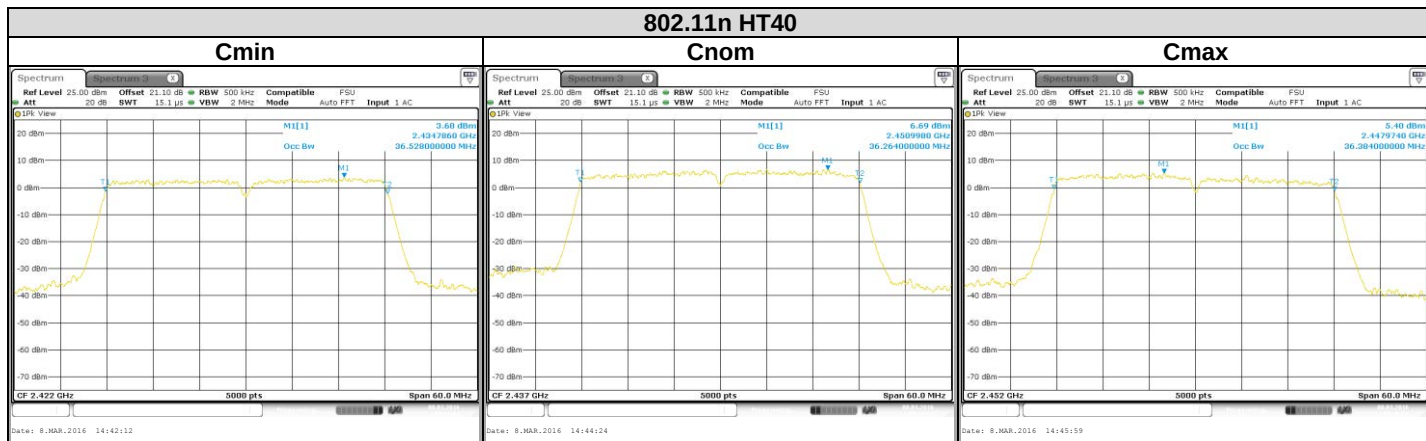
3.2. TEST EQUIPMENT LIST

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	Télédynne	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			
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

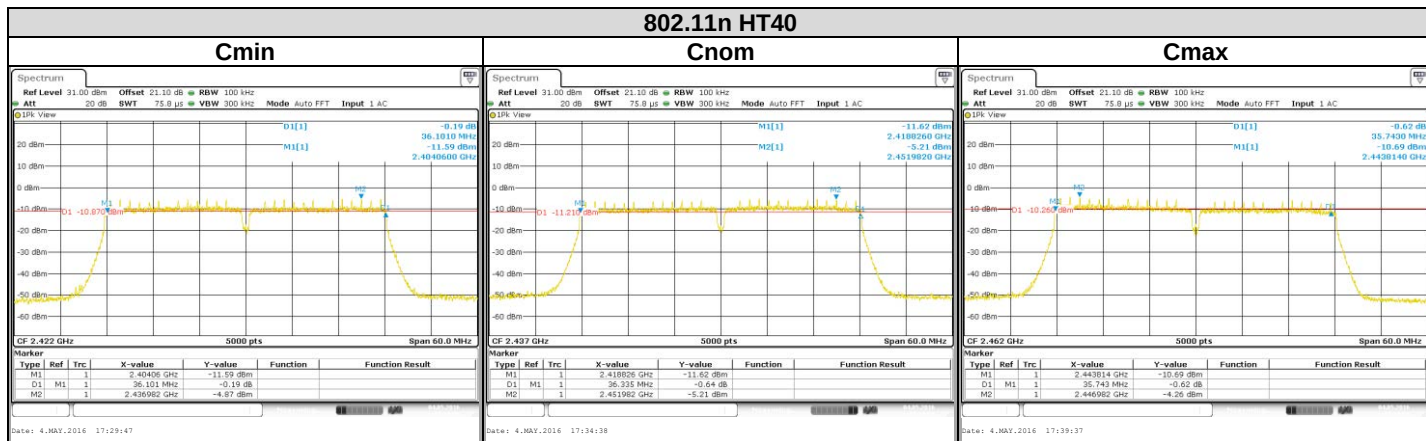
4.4. TEST EQUIPMENT LIST

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	Télédyné	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			
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	Télédynne	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



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

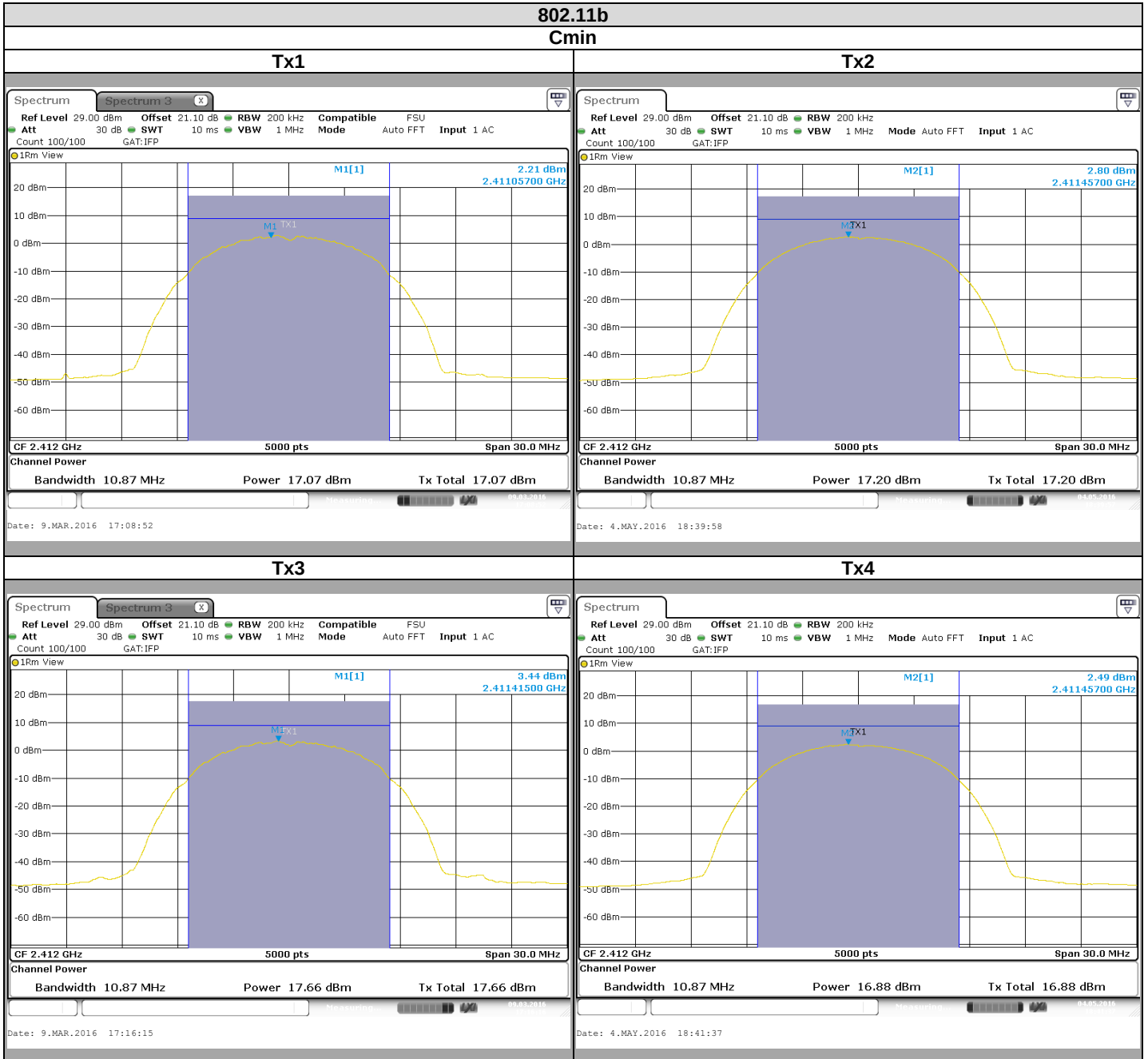
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

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	Télédynne	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.

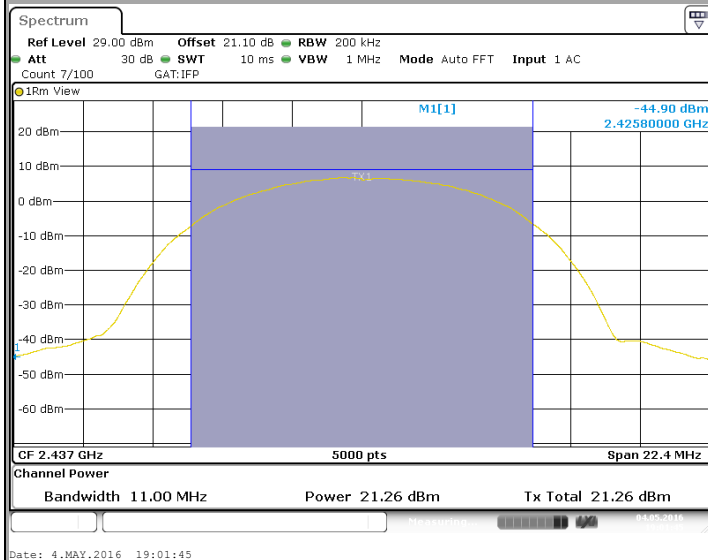
6.5. RESULTS



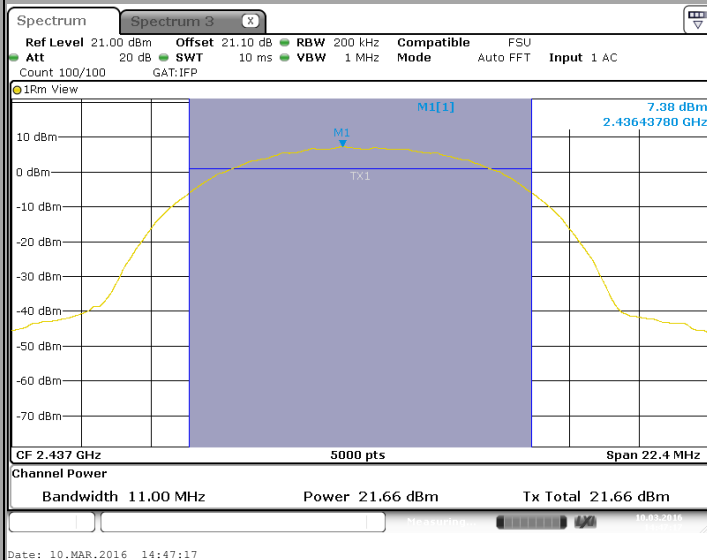
802.11b

Cnom

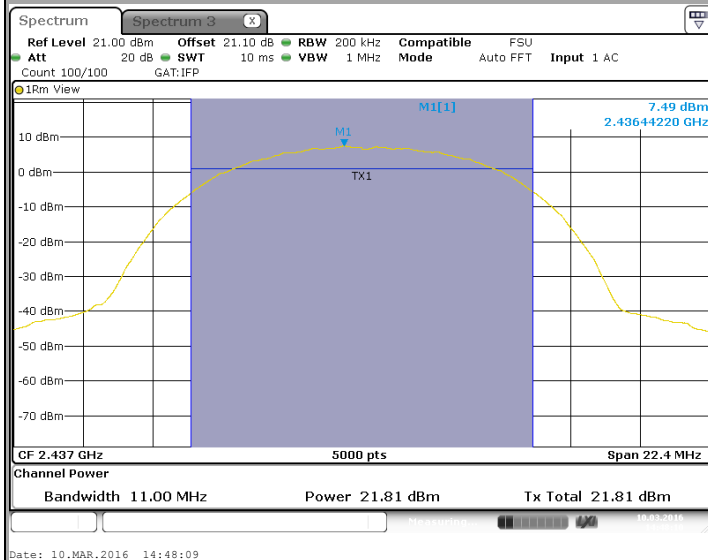
Tx1



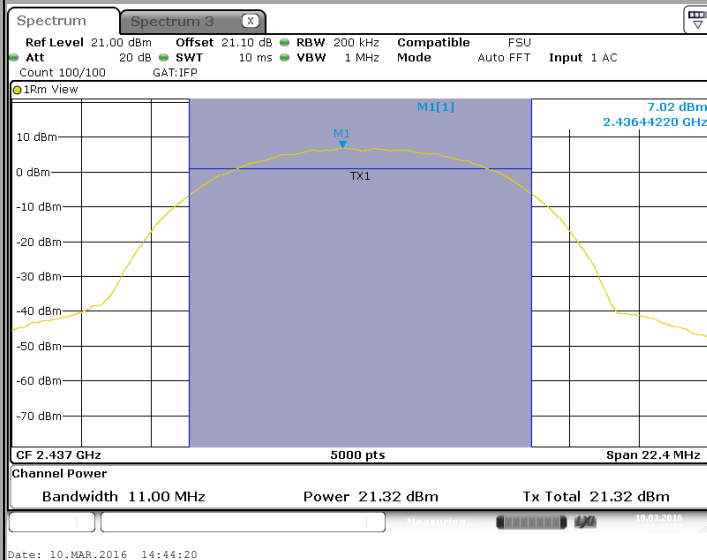
Tx2



Tx3



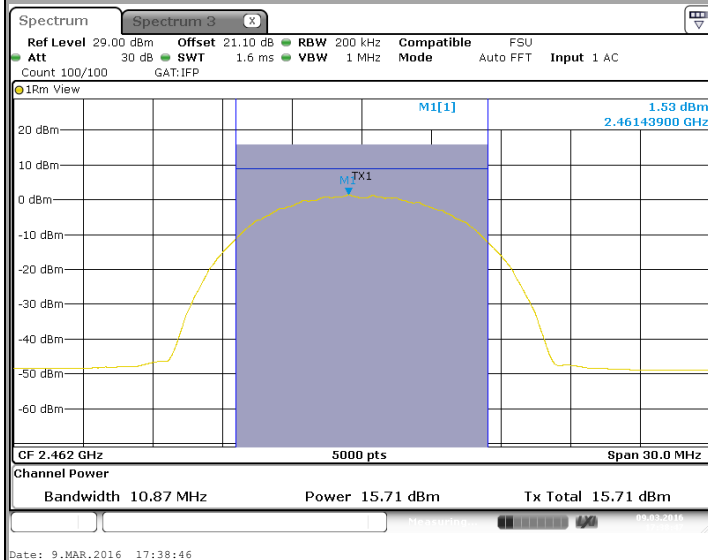
Tx4



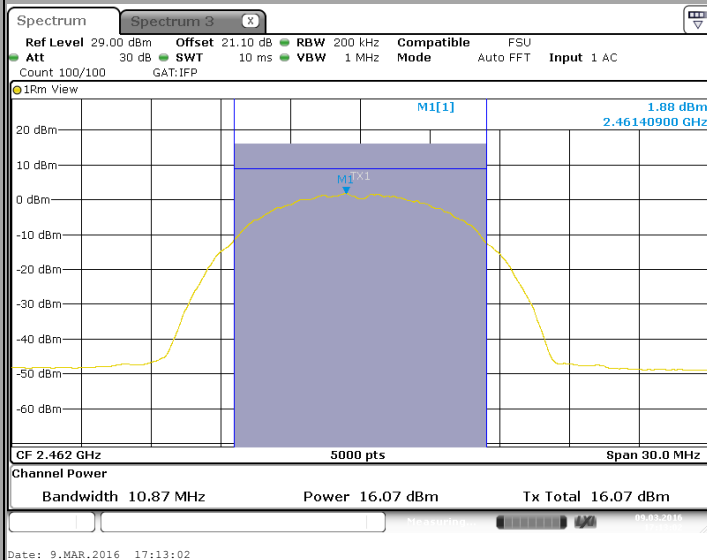
802.11b

Cmax

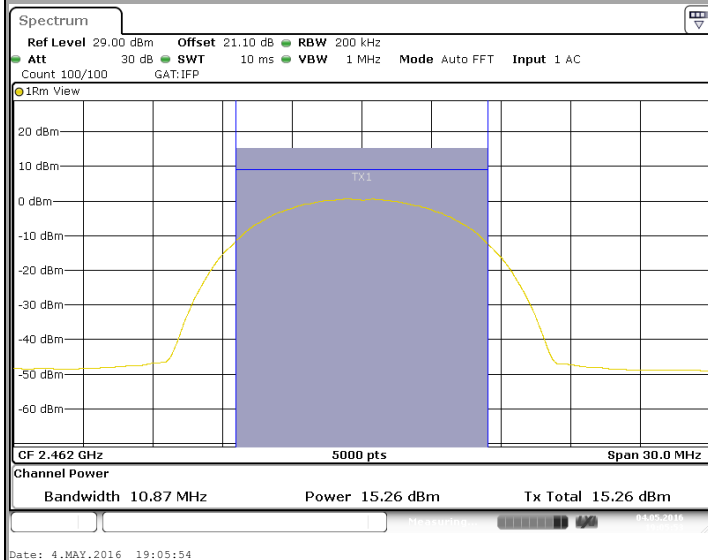
Tx1



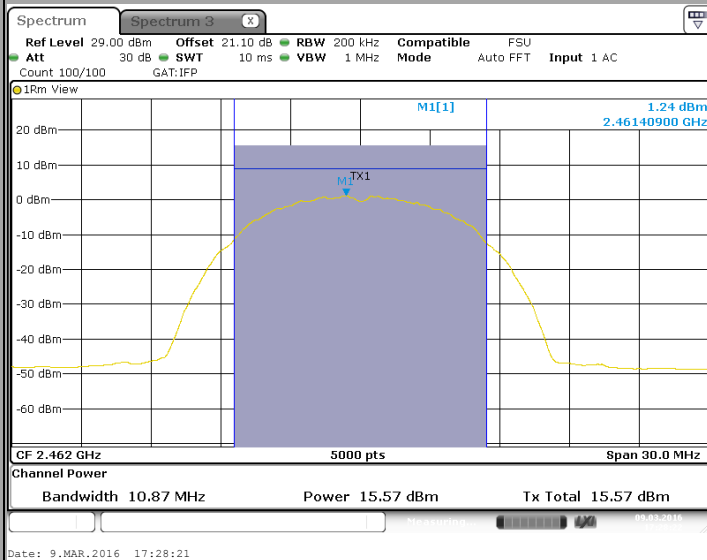
Tx2



Tx3



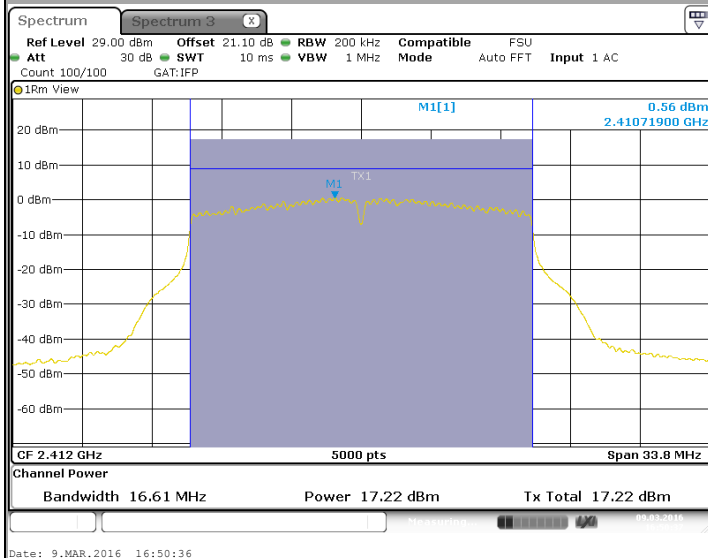
Tx4



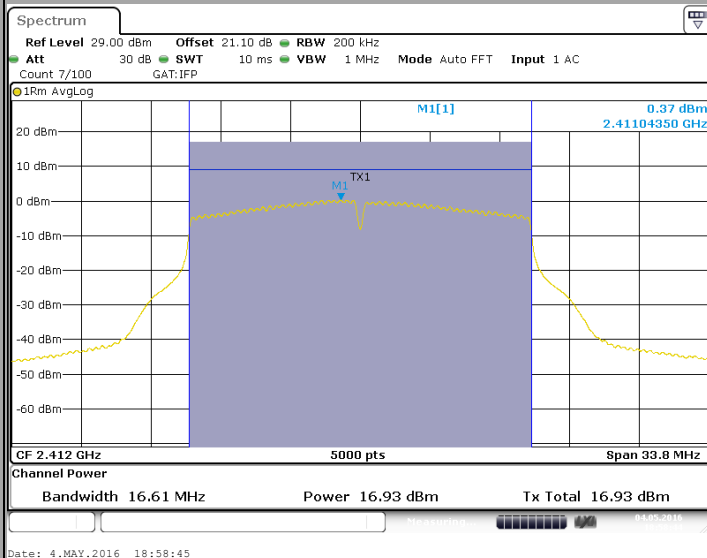
802.11g

Cmin

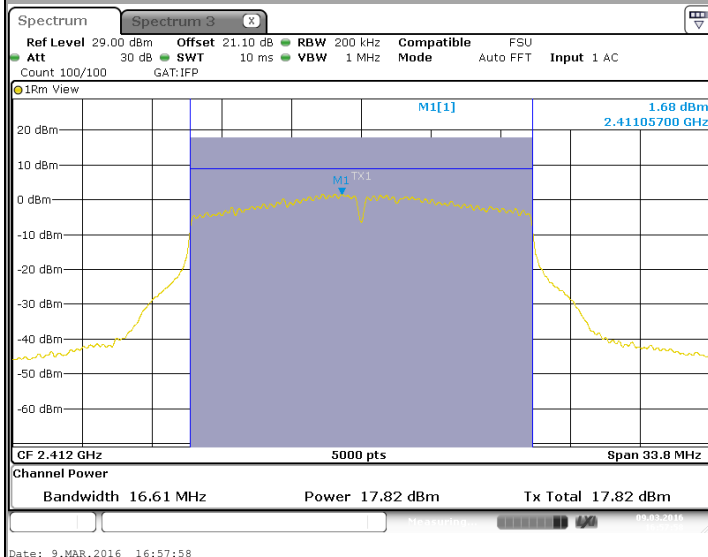
Tx1



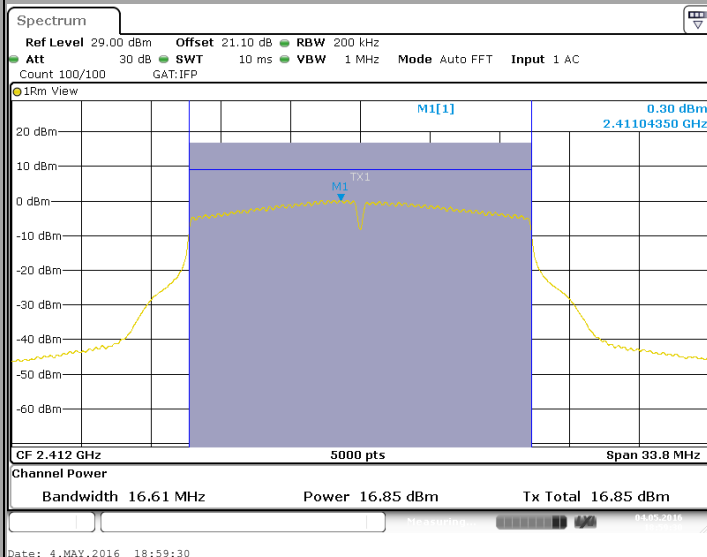
Tx2



Tx3



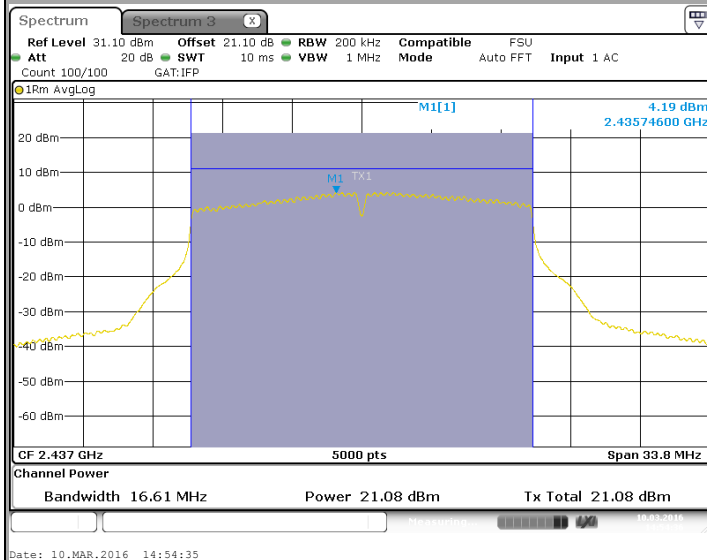
Tx4



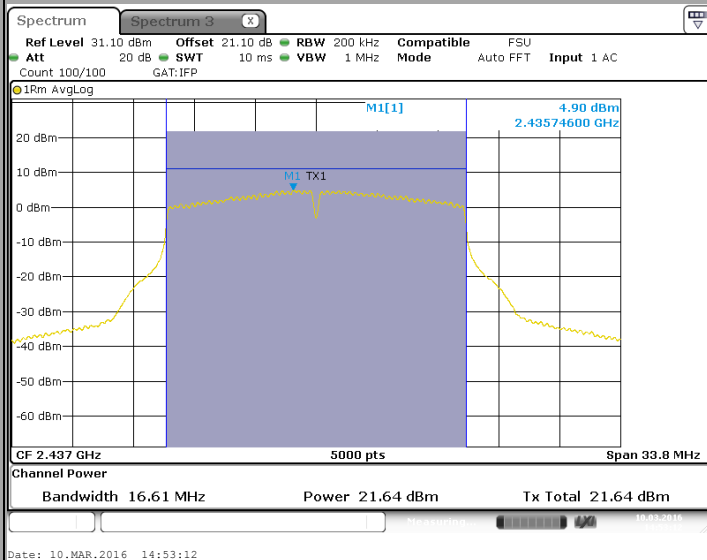
802.11g

Cnom

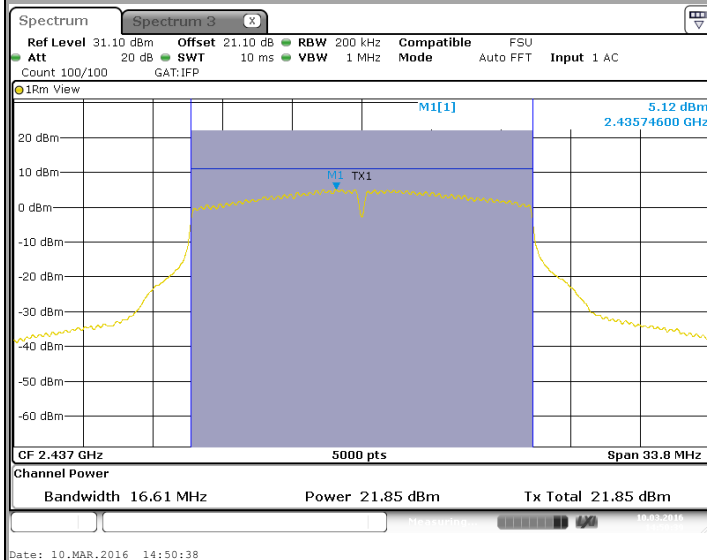
Tx1



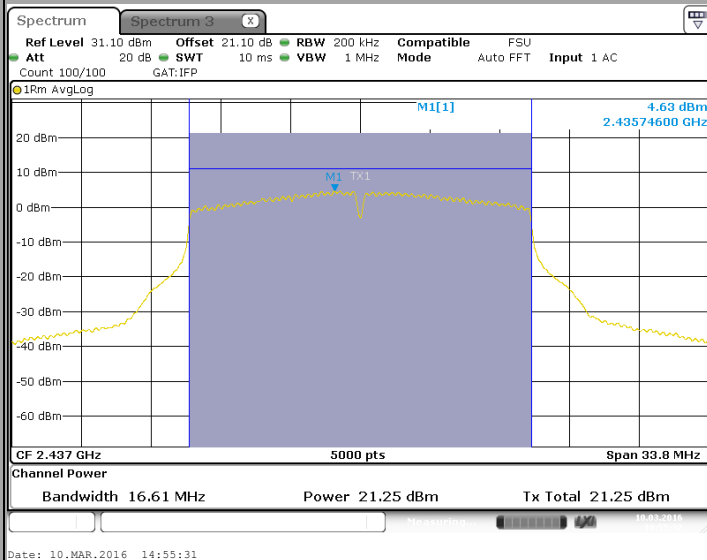
Tx2



Tx3



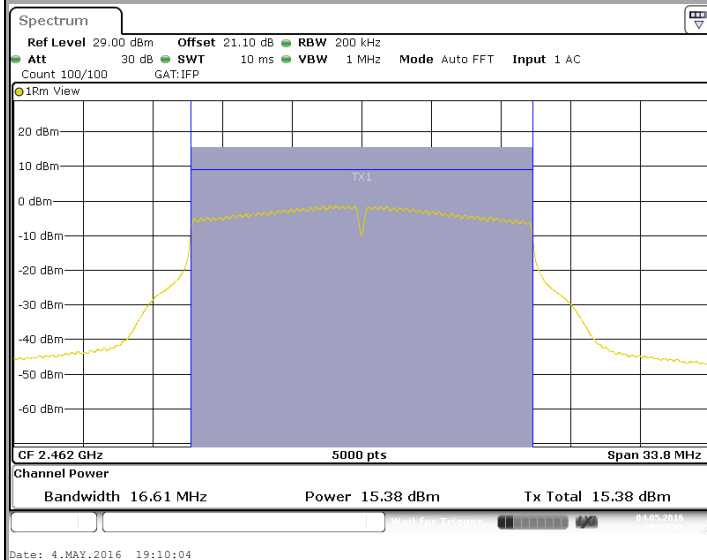
Tx4



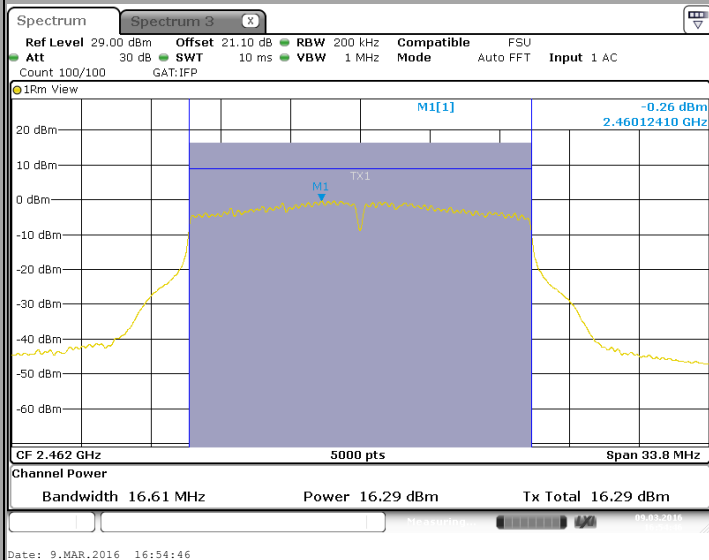
802.11g

Cmax

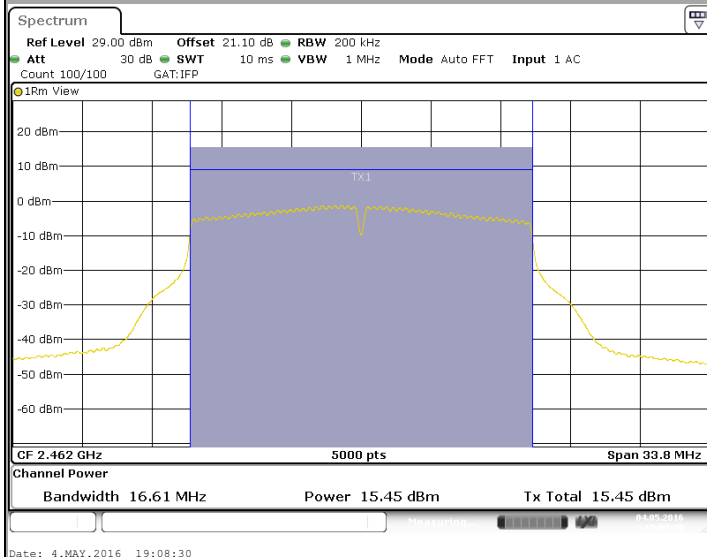
Tx1



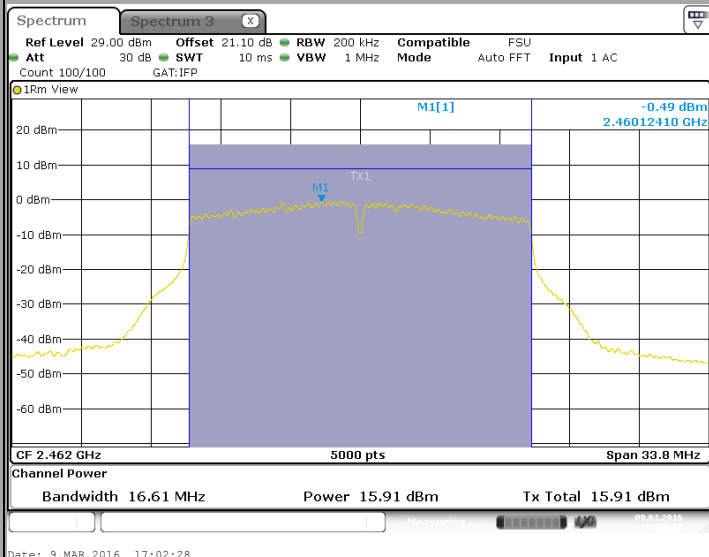
Tx2



Tx3



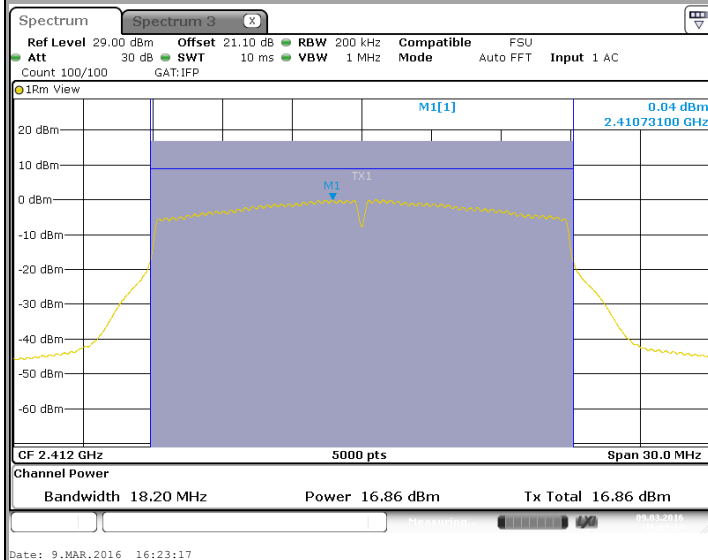
Tx4



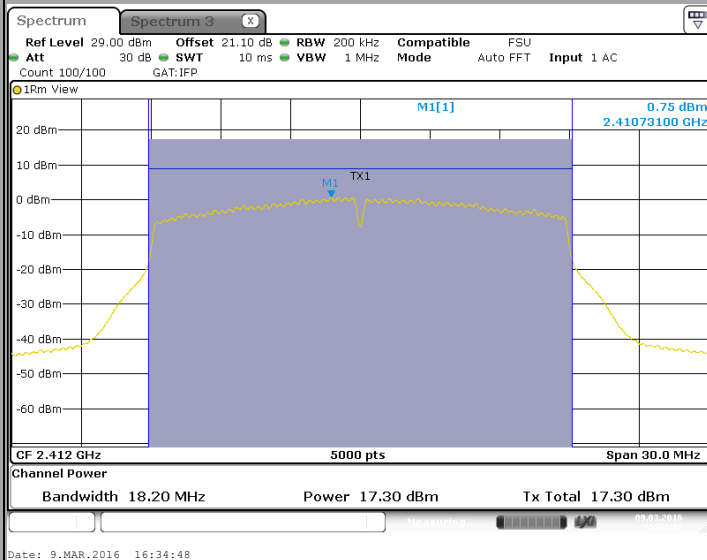
802.11n HT20

Cmin

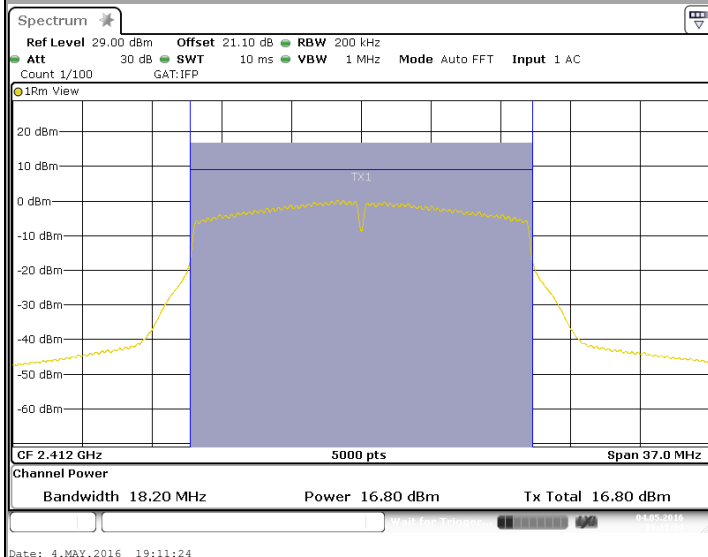
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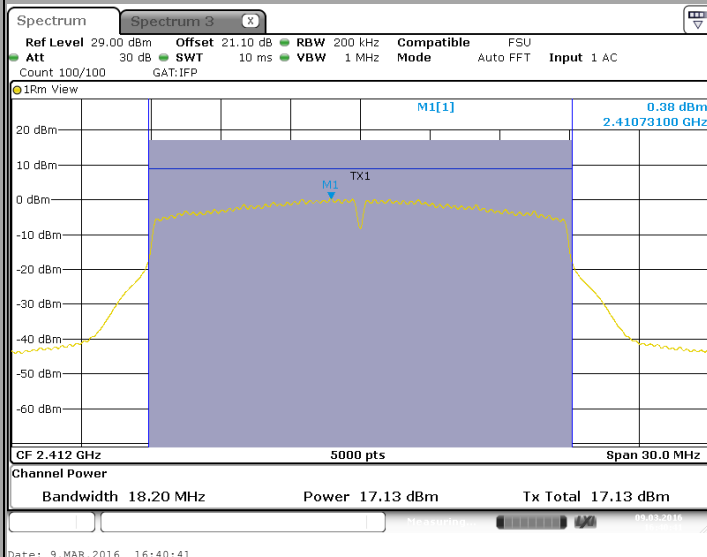
Tx2



Tx3



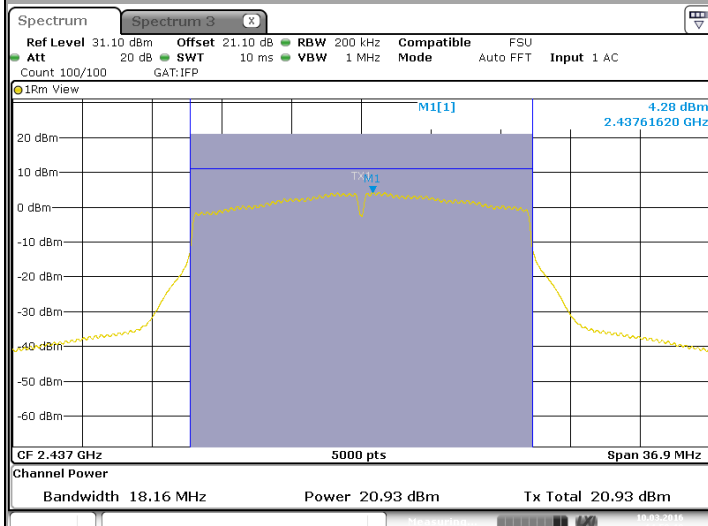
Tx4



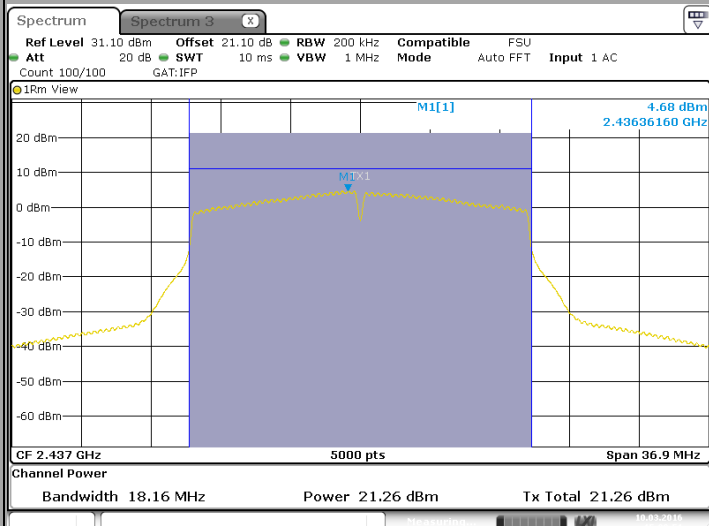
802.11n HT20

Cnom

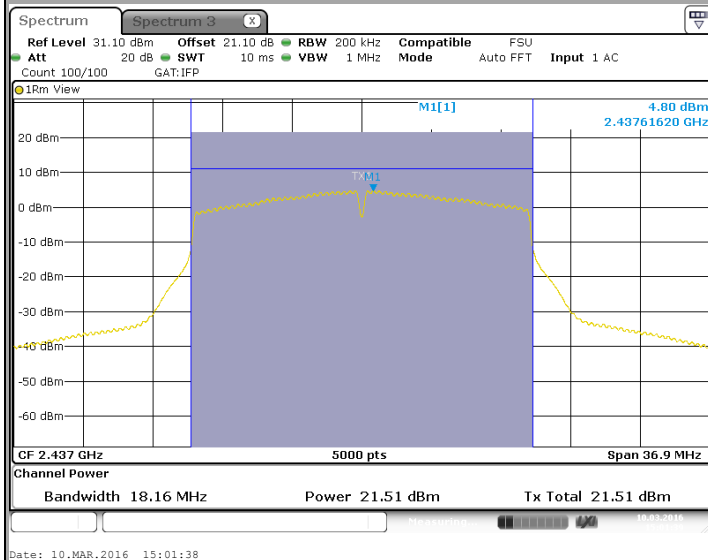
Tx1



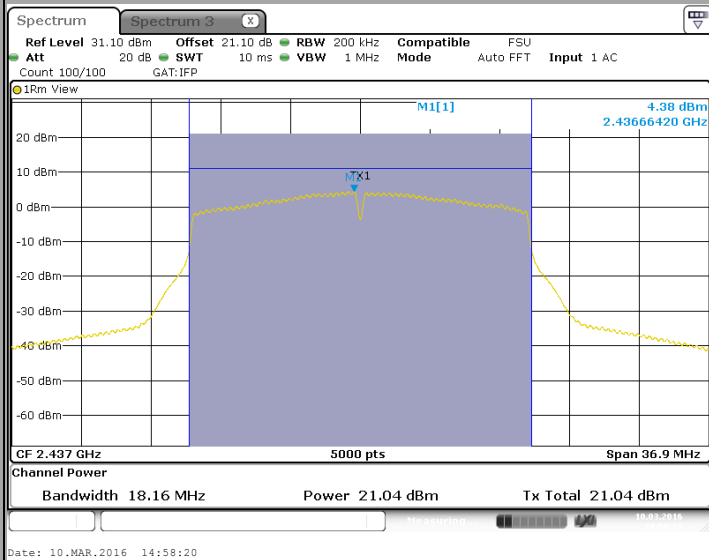
Tx2



Tx3



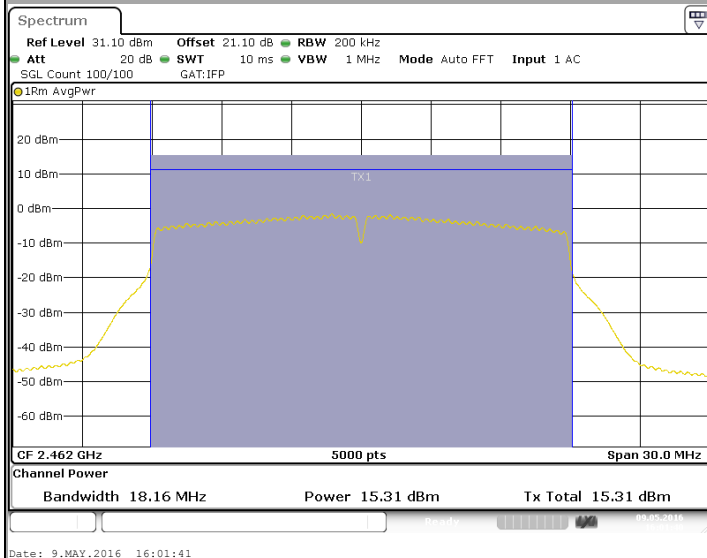
Tx4



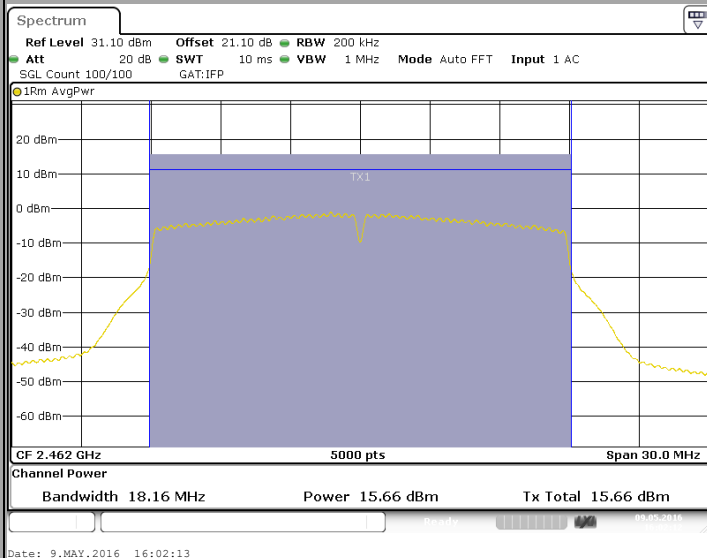
802.11n HT20

Cmax

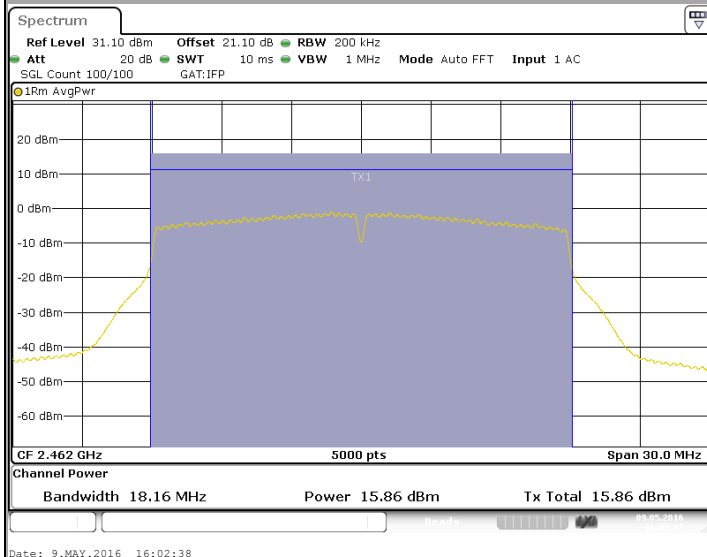
Tx1



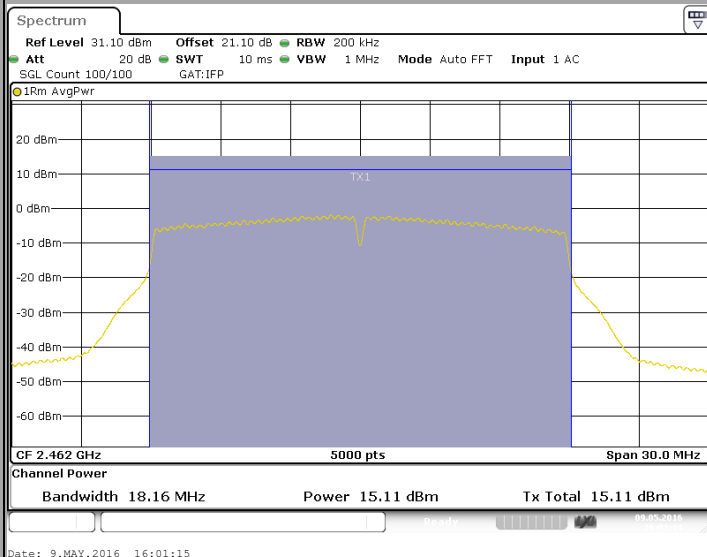
Tx2



Tx3



Tx4

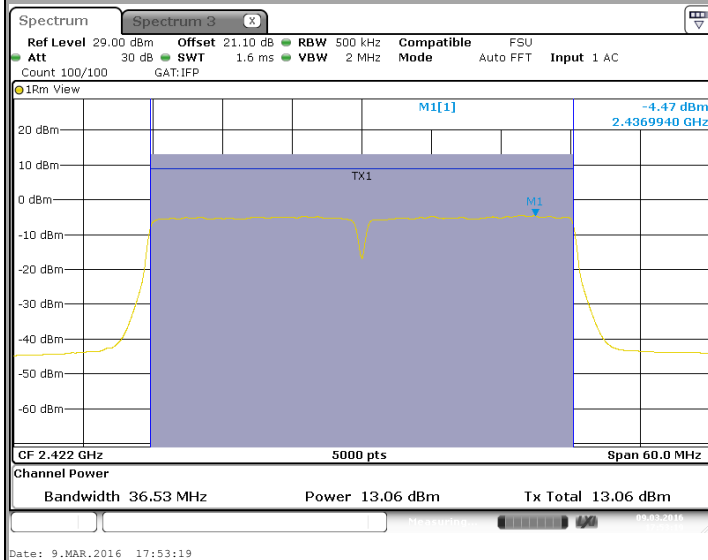




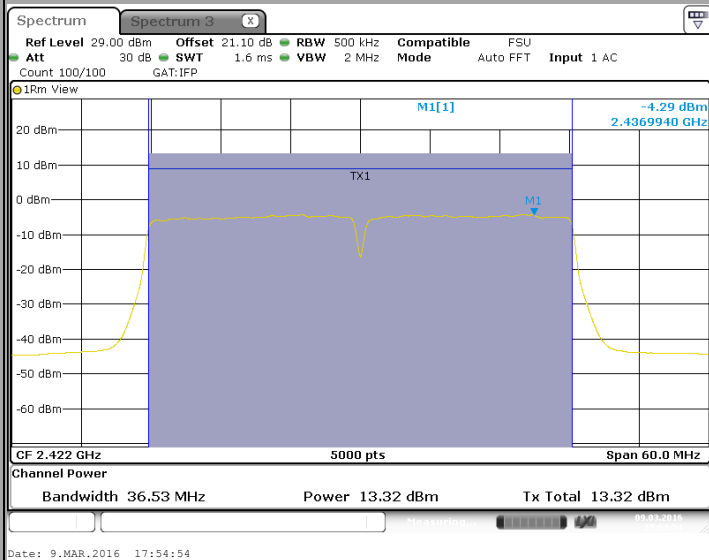
802.11n HT40

Cmin

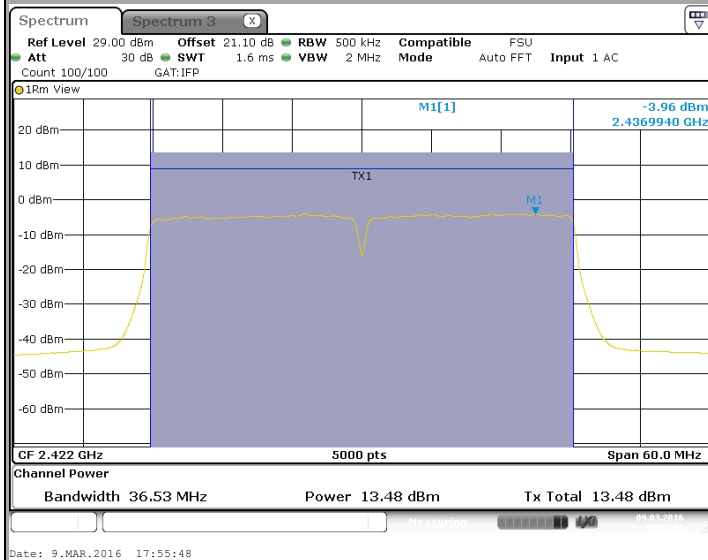
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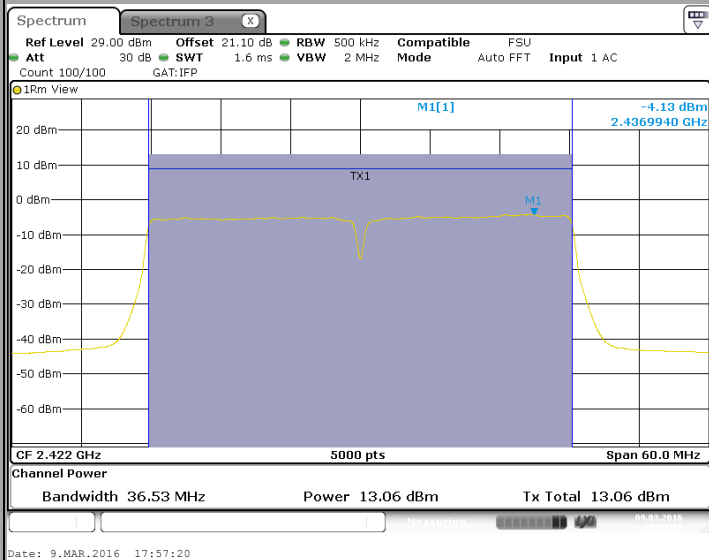
Tx2



Tx3



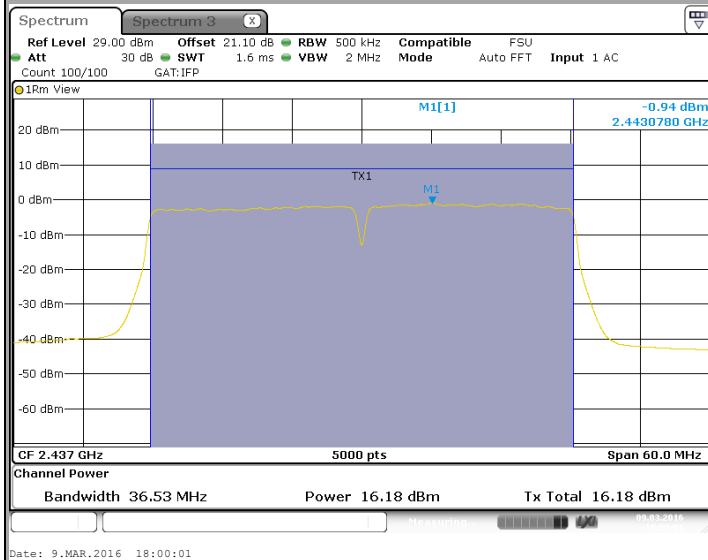
Tx4



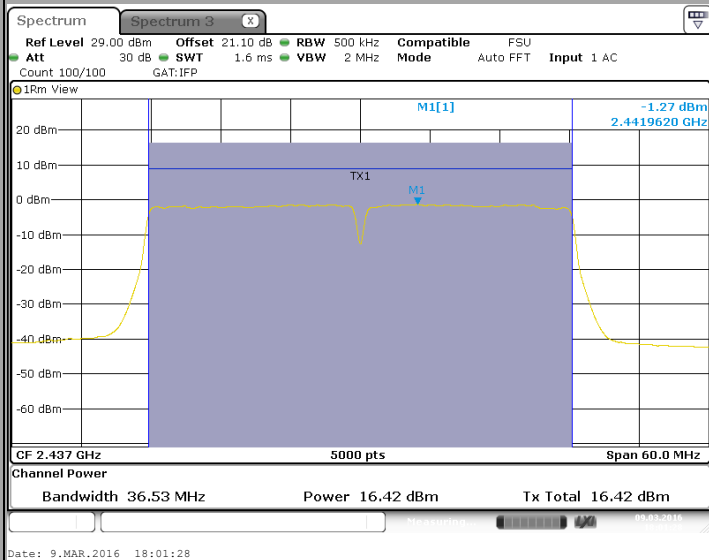
802.11n HT40

Cnom

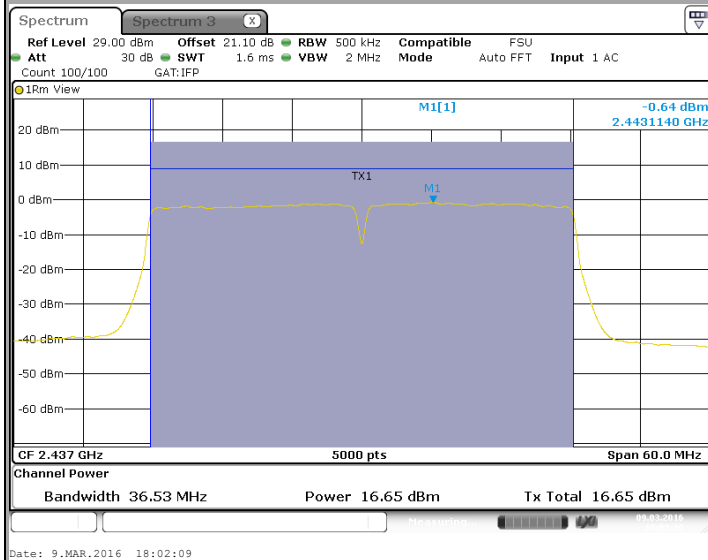
Tx1



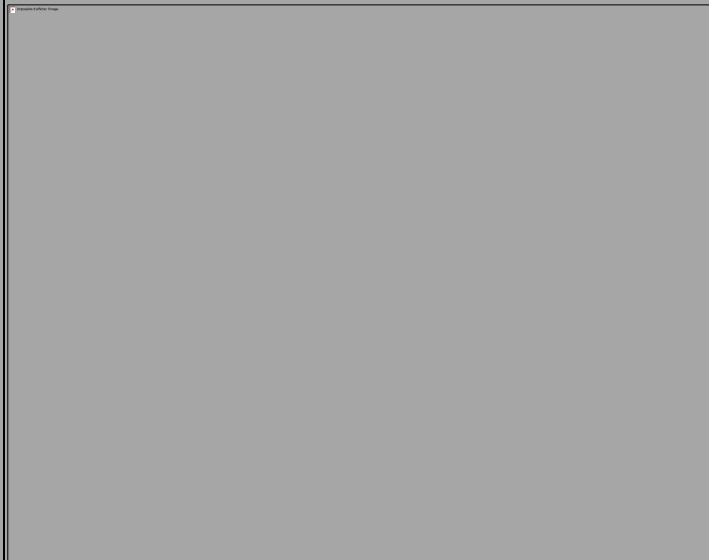
Tx2



Tx3



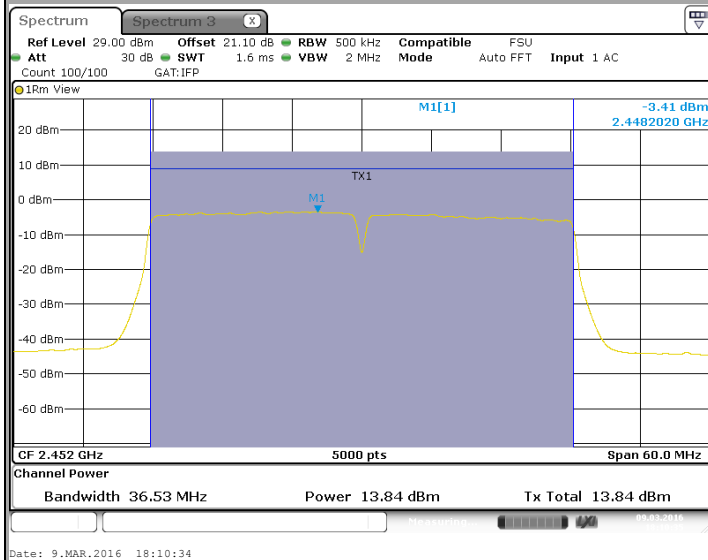
Tx4



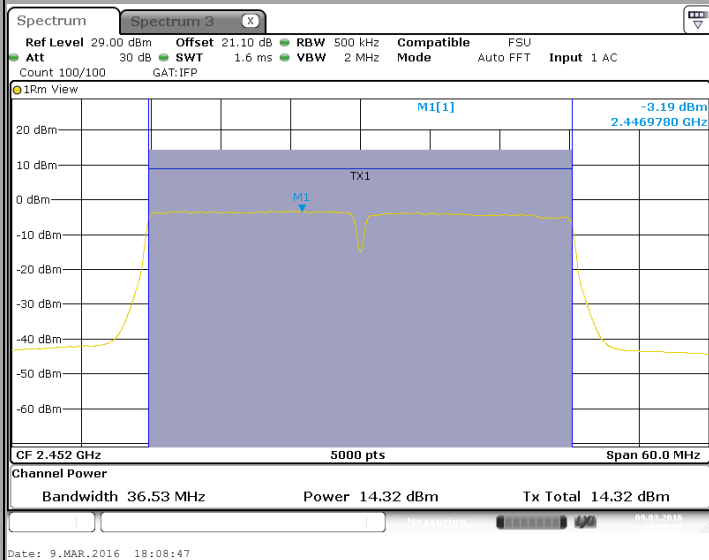
802.11n HT40

Cmax

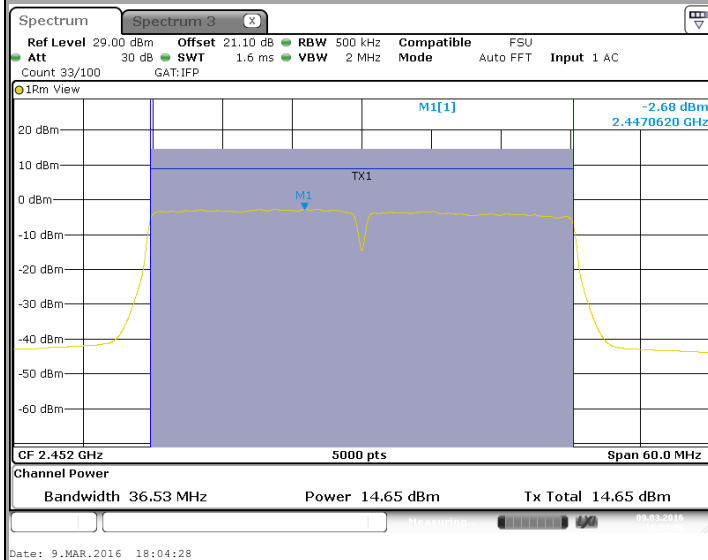
Tx1



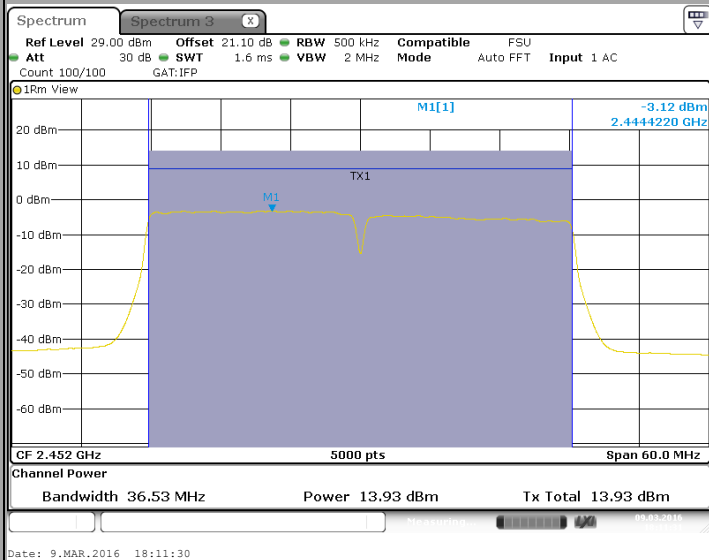
Tx2



Tx3



Tx4





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:

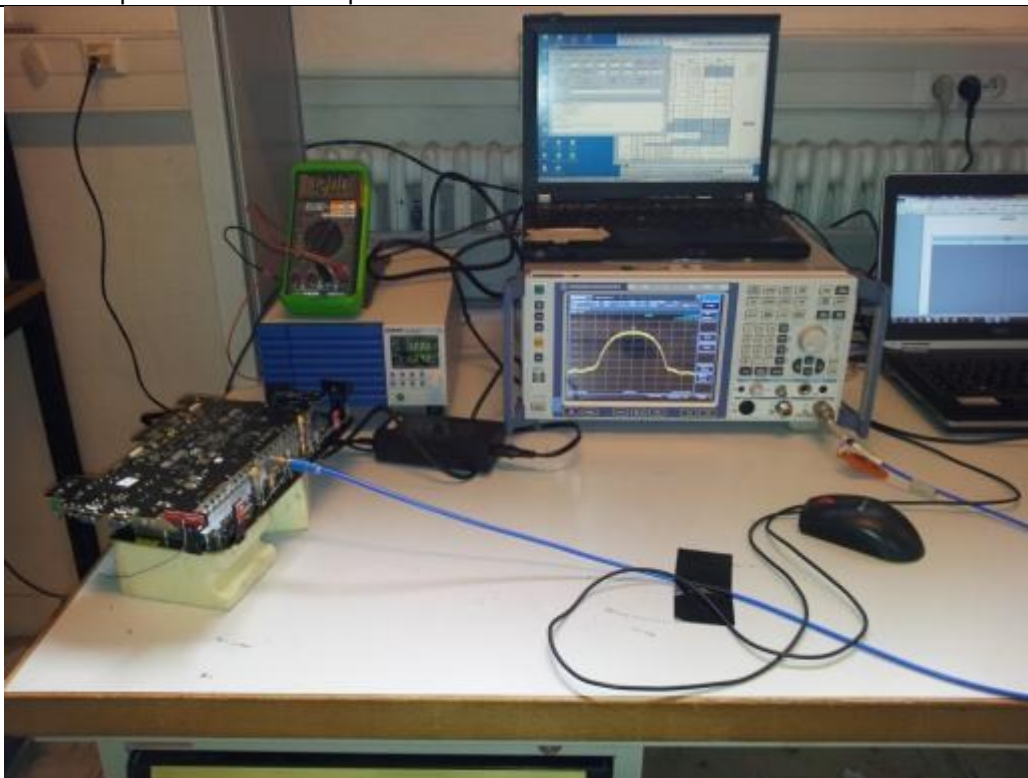
- ☒ On a table
- ☐ In an anechoic chamber

- 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 AVGPS-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

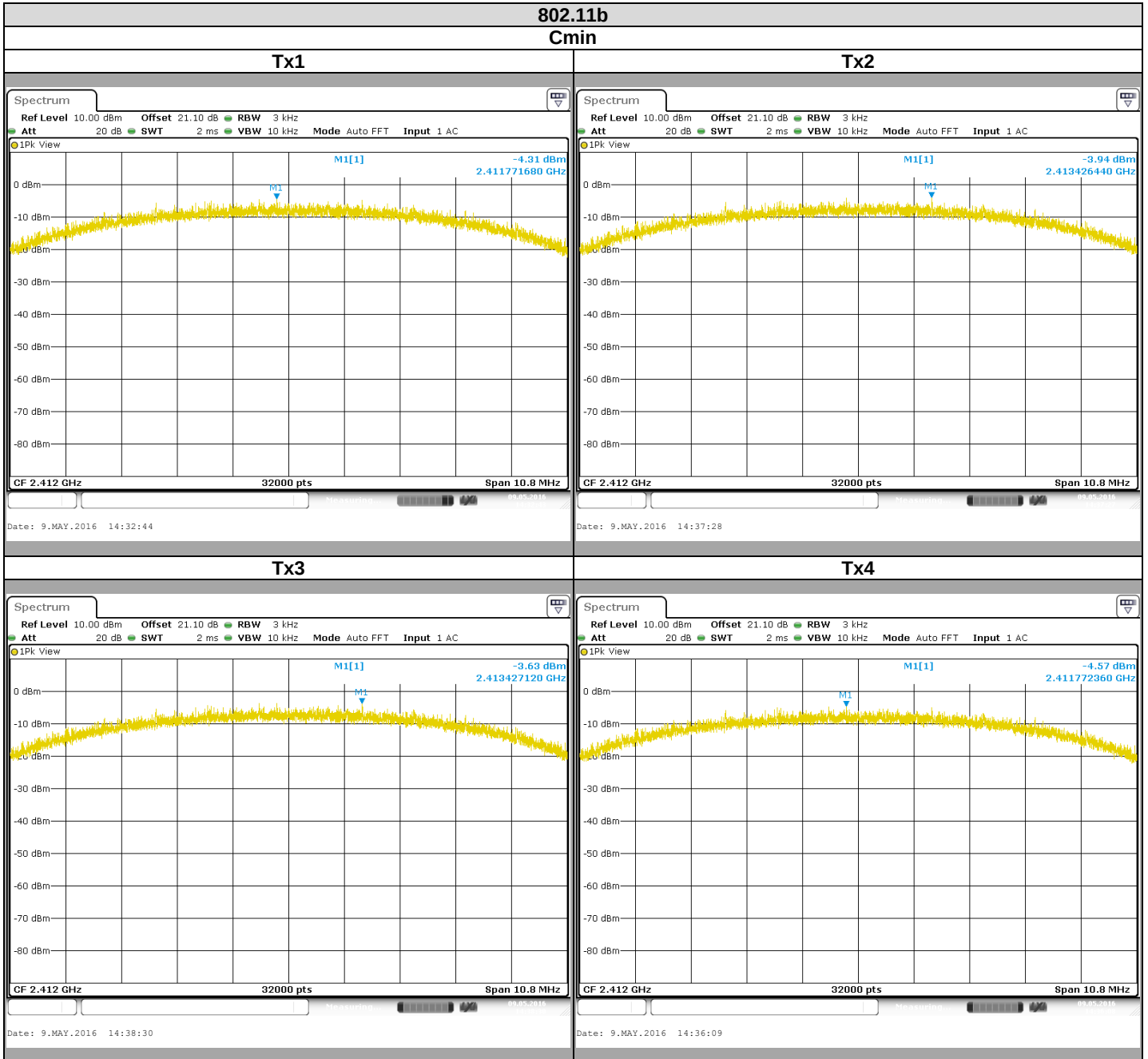
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

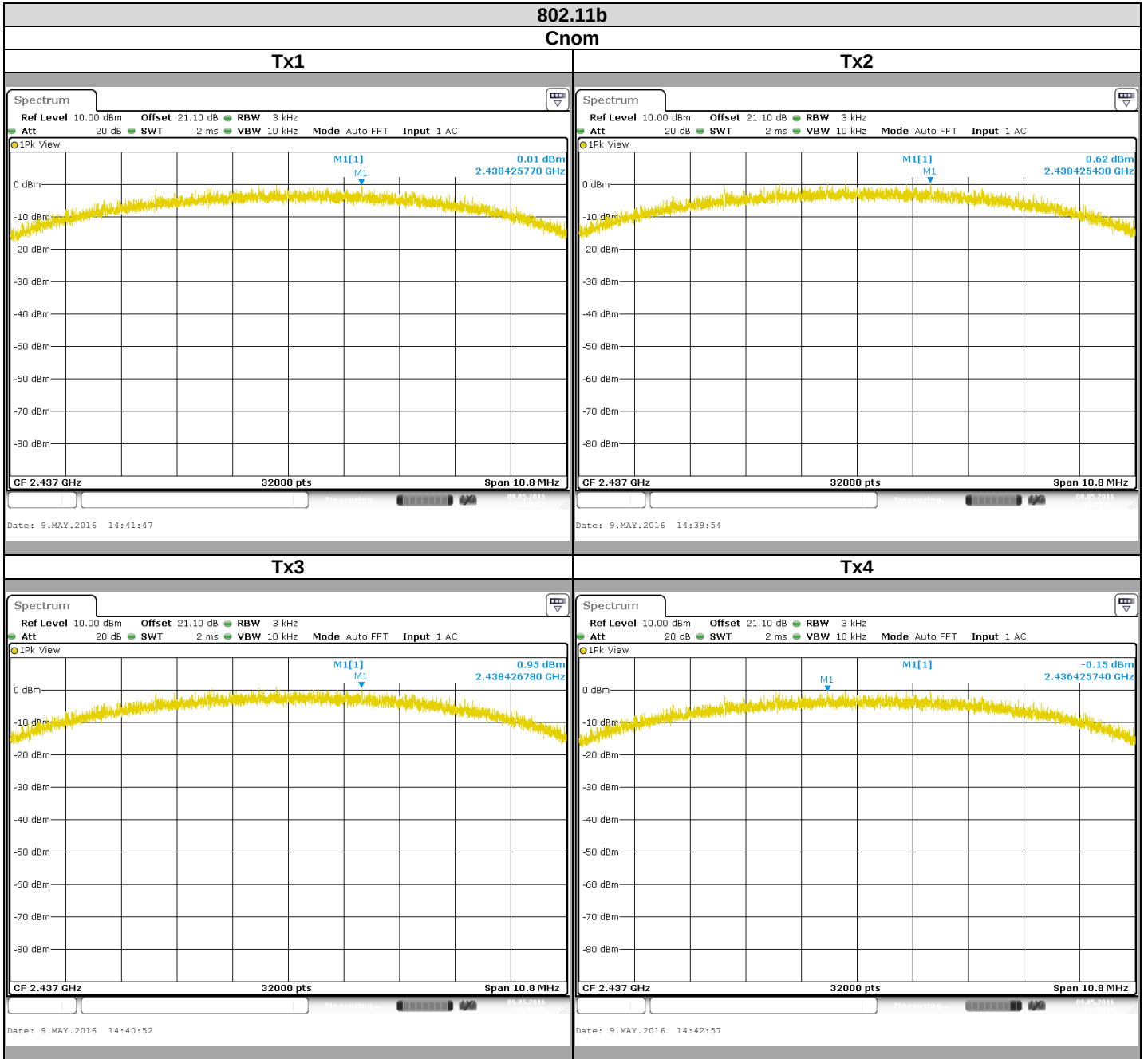
7.4. TEST EQUIPMENT LIST

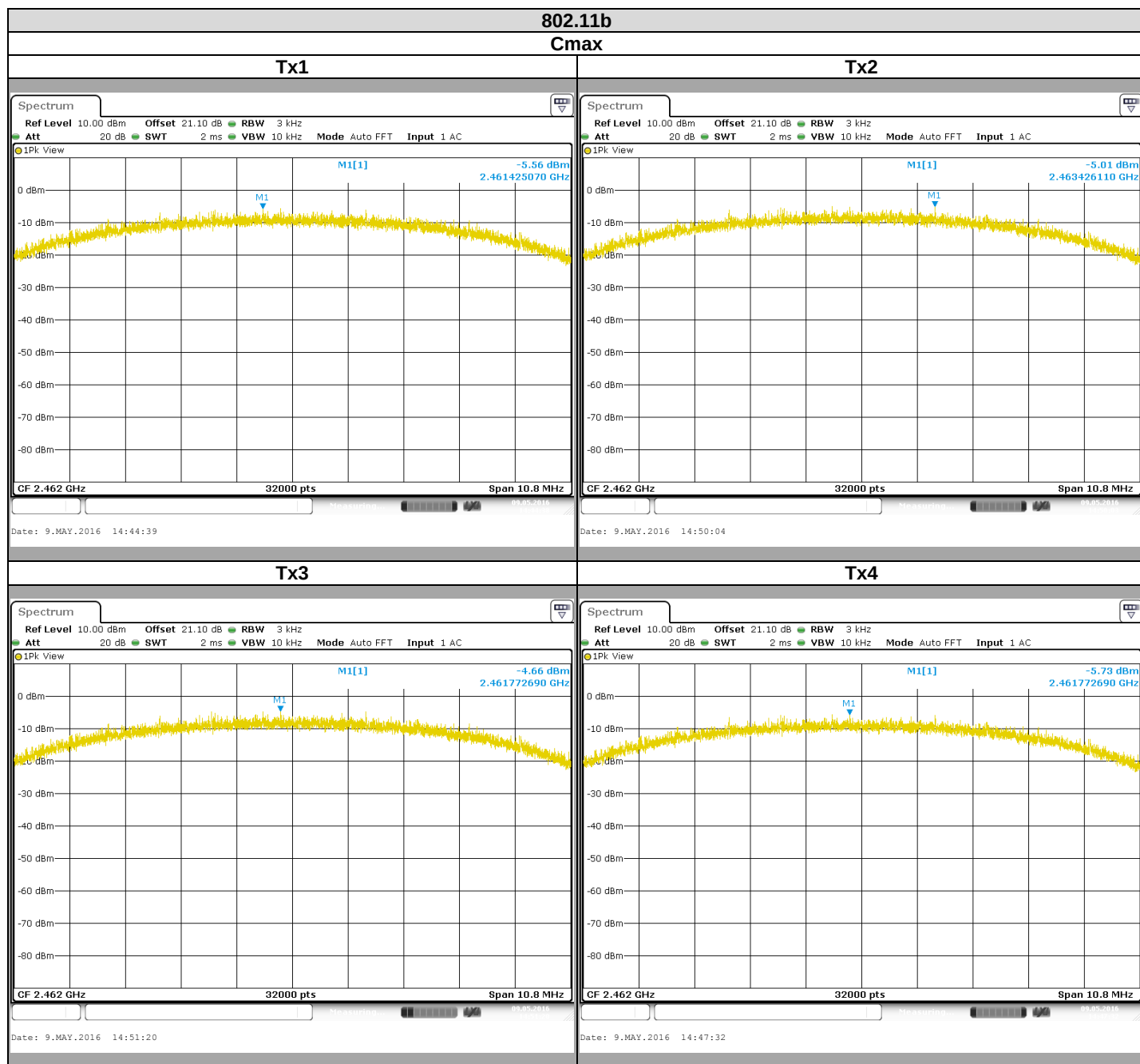
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal Date	Cal Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyné	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253	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

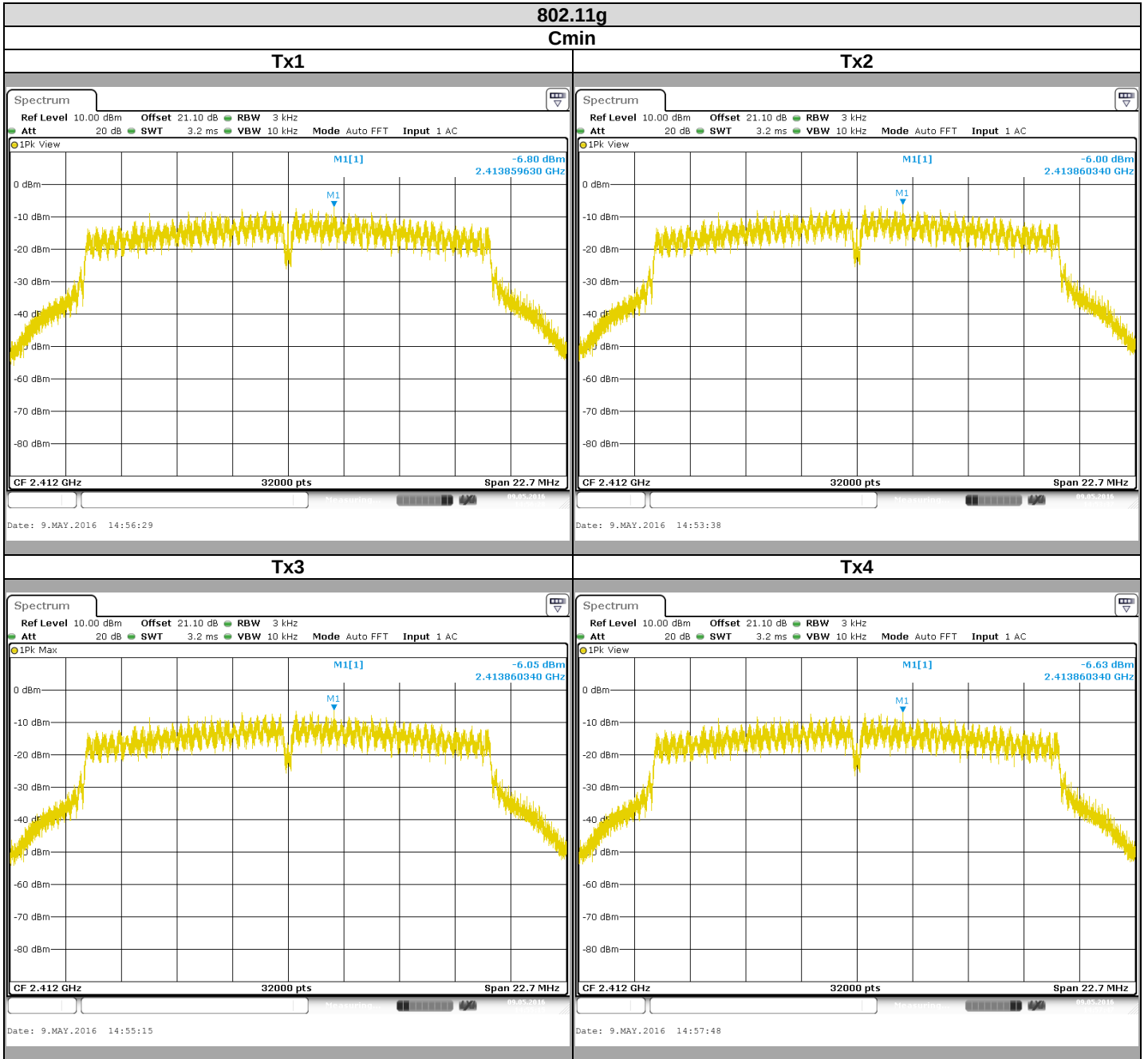
Note : In our Quality System, the calibration due of our equipment is more or less 2 months.

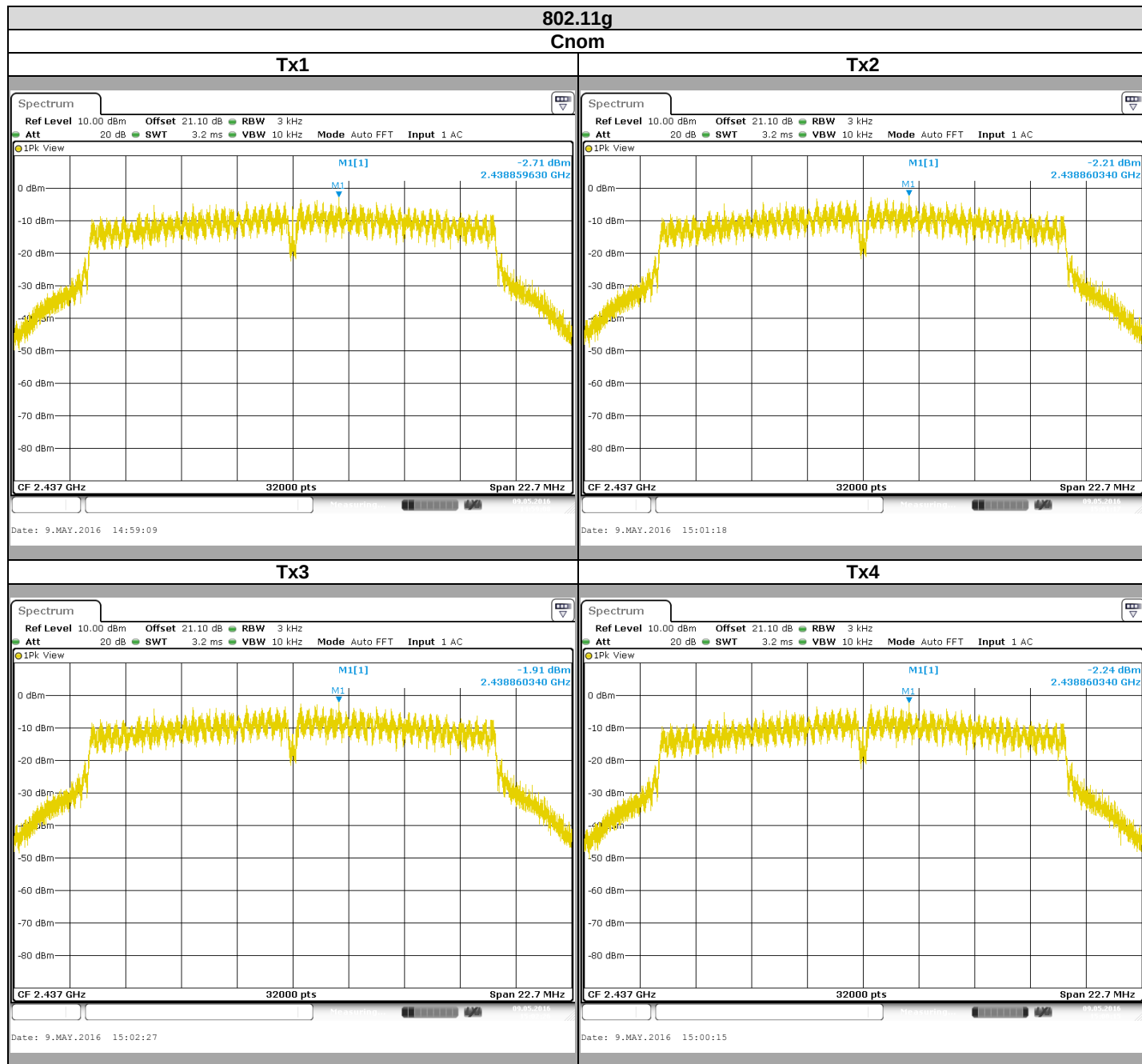
7.5. RESULTS

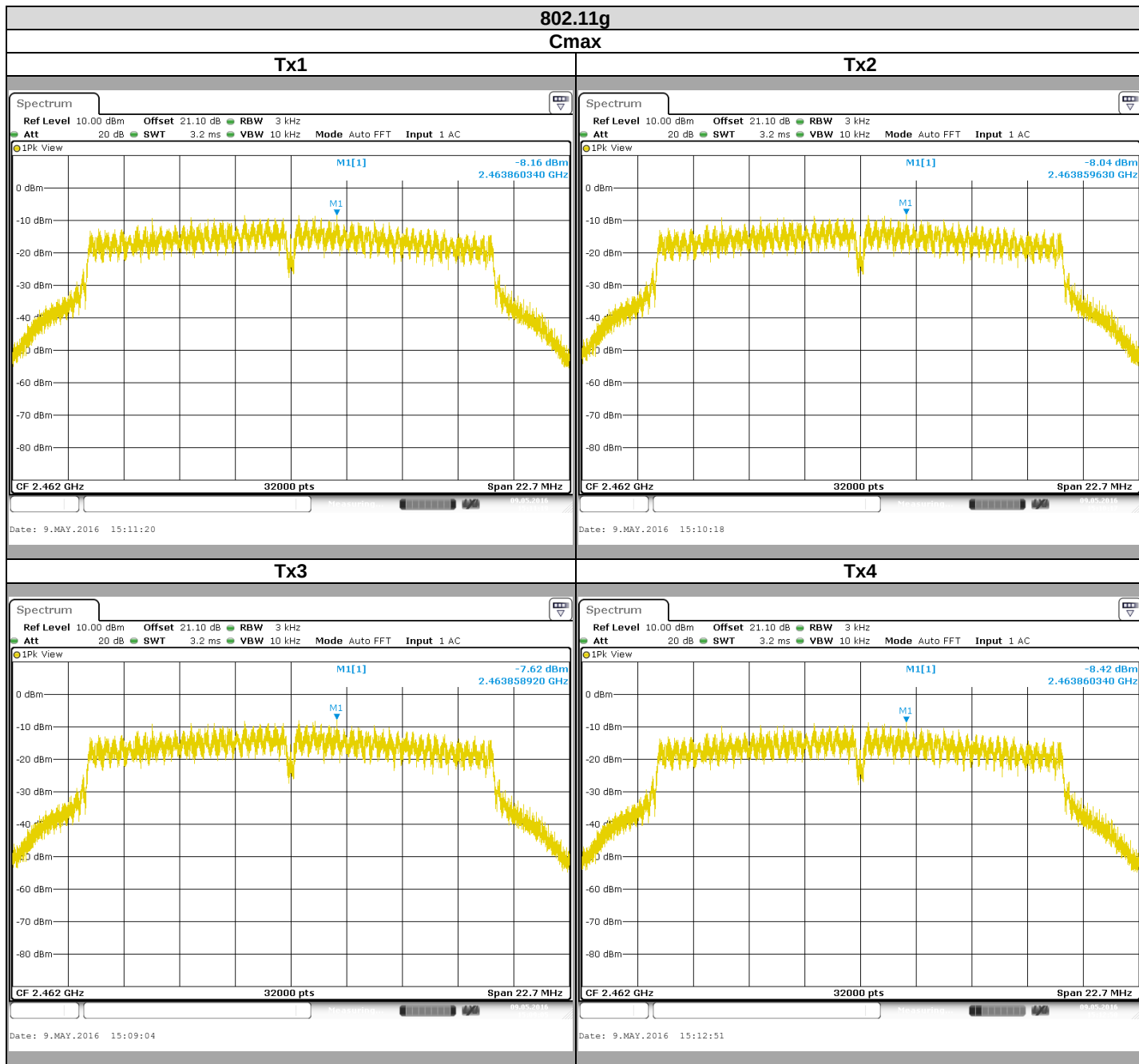








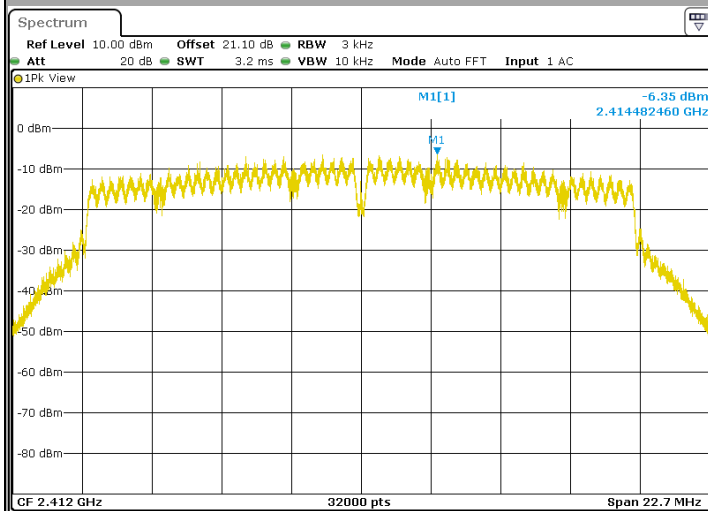




802.11n HT20

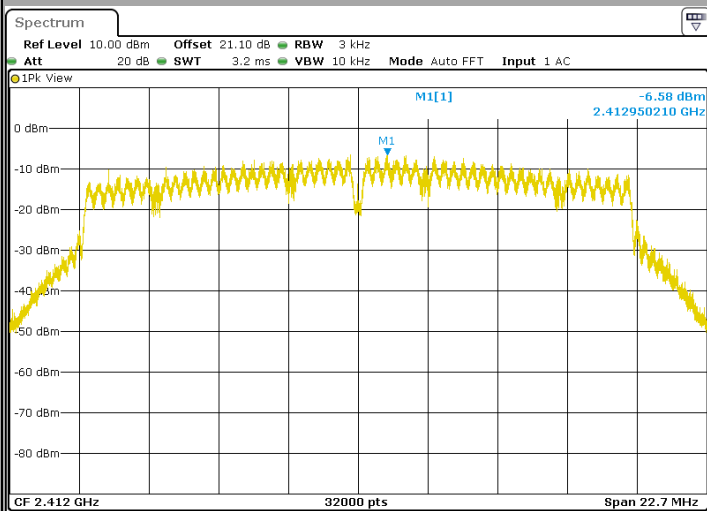
Cmin

Tx1



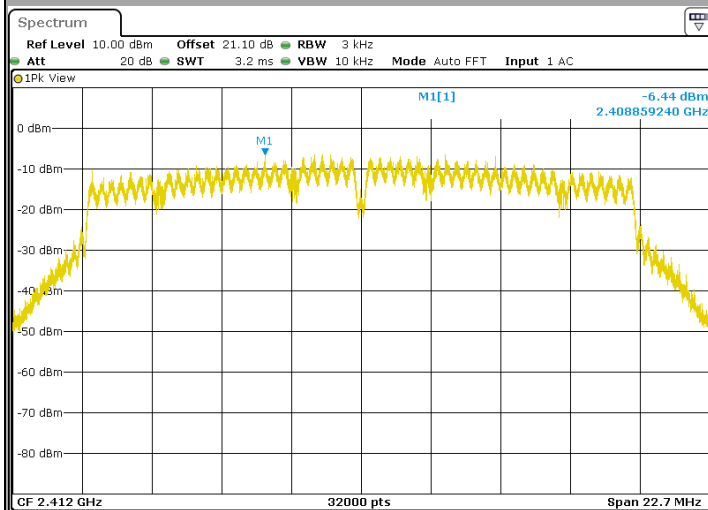
Date: 9.MAY.2016 15:16:04

Tx2



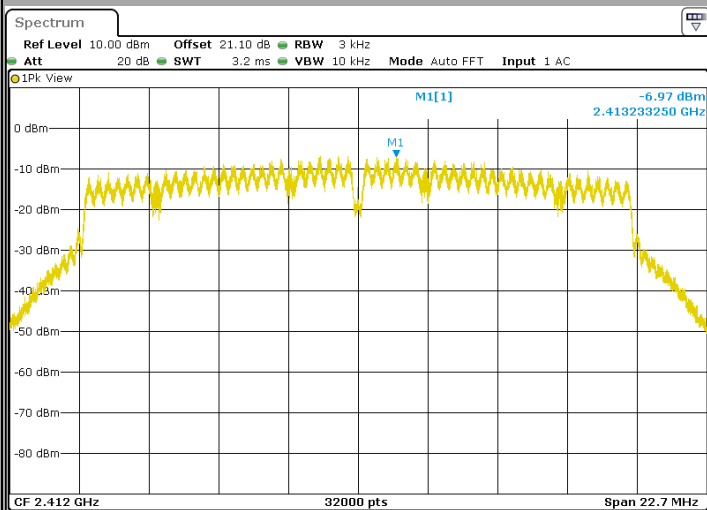
Date: 9.MAY.2016 15:18:06

Tx3

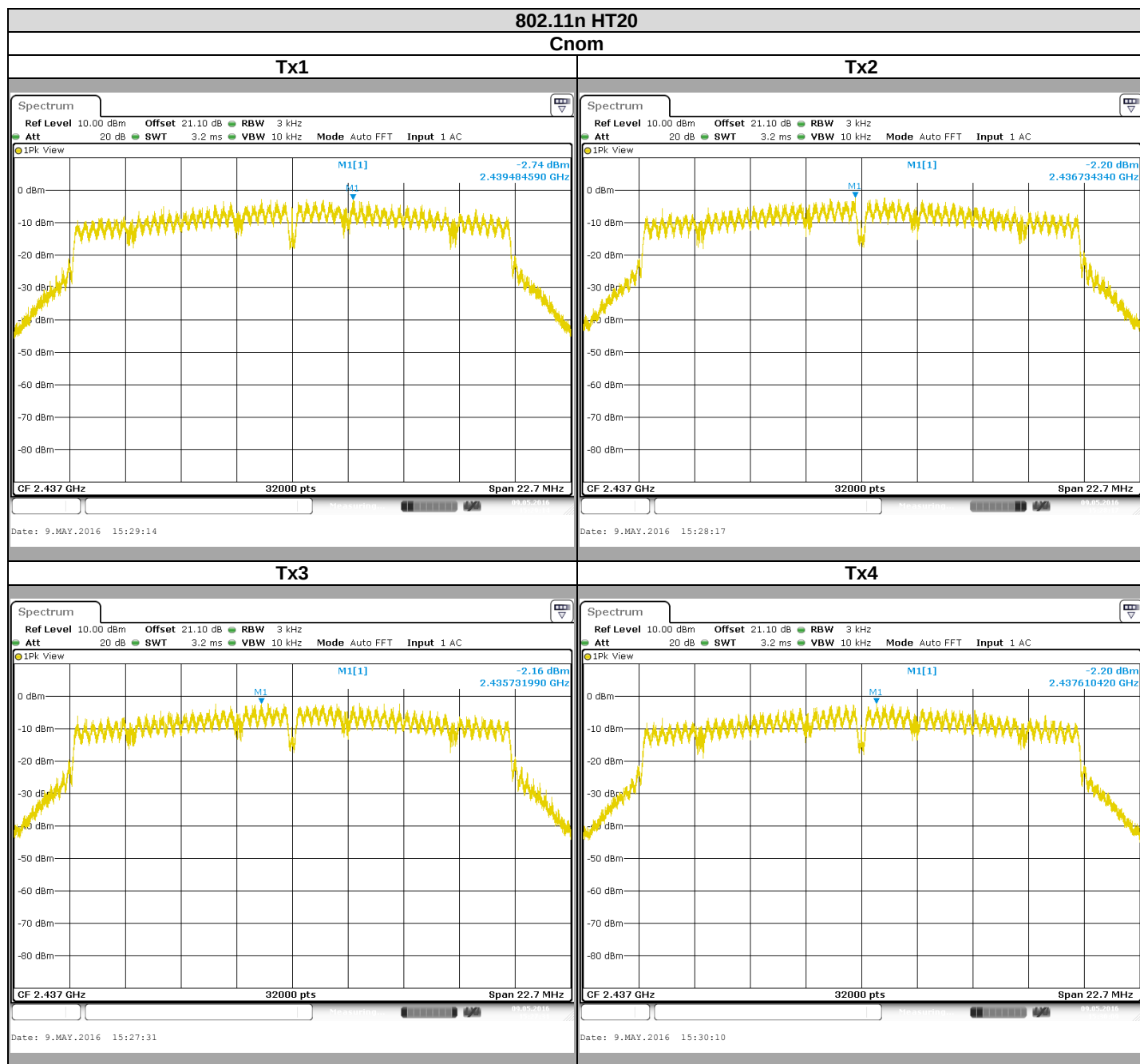


Date: 9.MAY.2016 15:26:09

Tx4



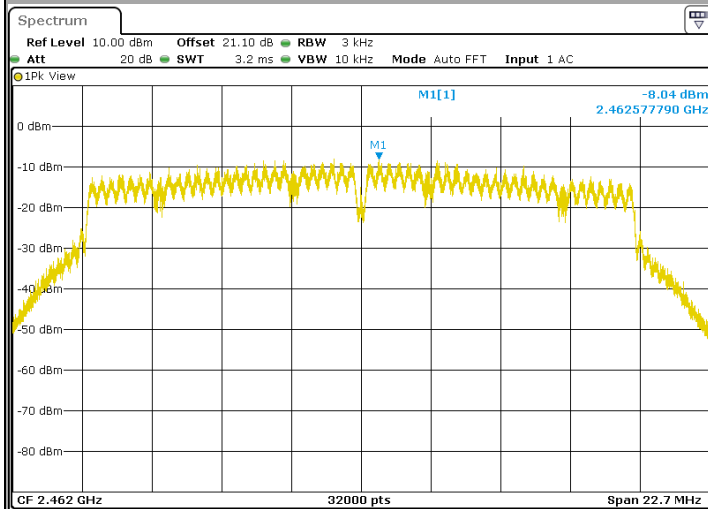
Date: 9.MAY.2016 15:16:56



802.11n HT20

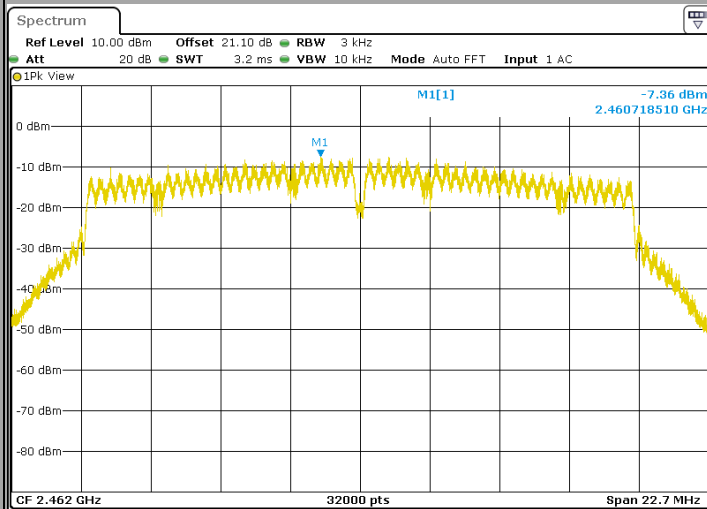
Cmax

Tx1



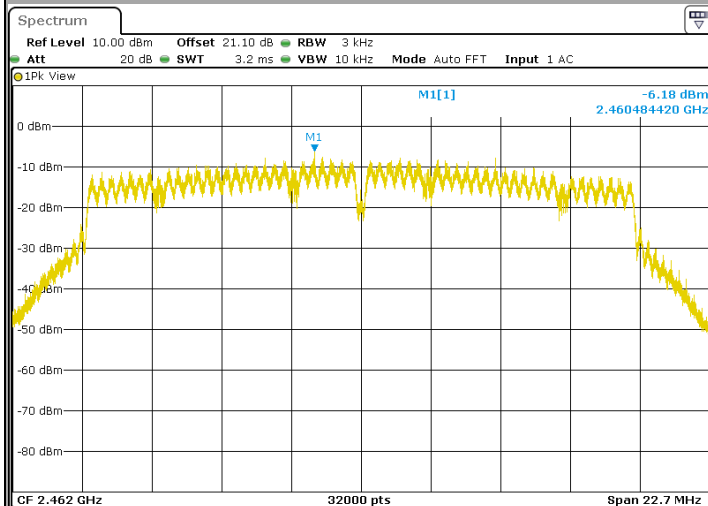
Date: 9.MAY.2016 15:31:48

Tx2



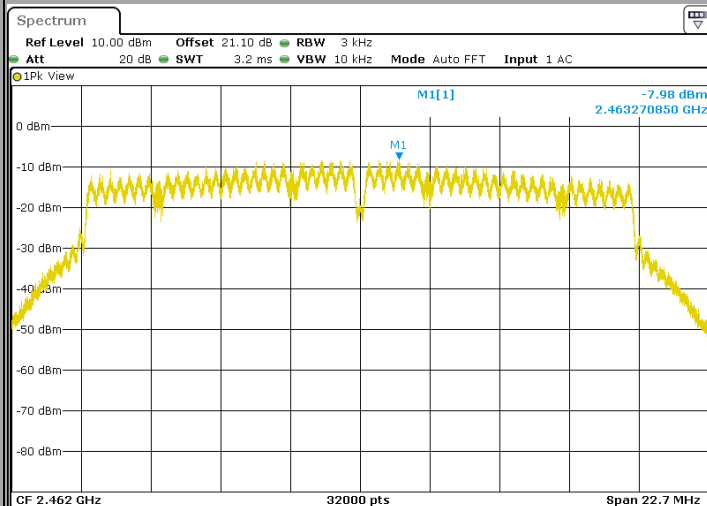
Date: 9.MAY.2016 15:32:40

Tx3



Date: 9.MAY.2016 15:33:08

Tx4

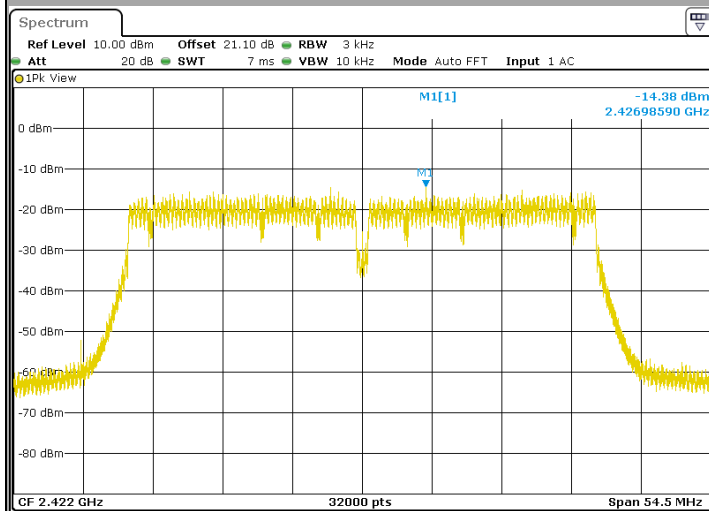


Date: 9.MAY.2016 15:31:22

802.11n HT40

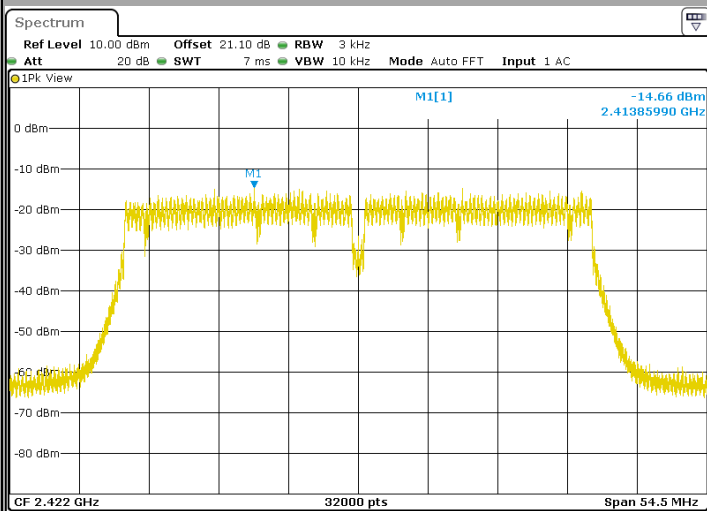
Cmin

Tx1



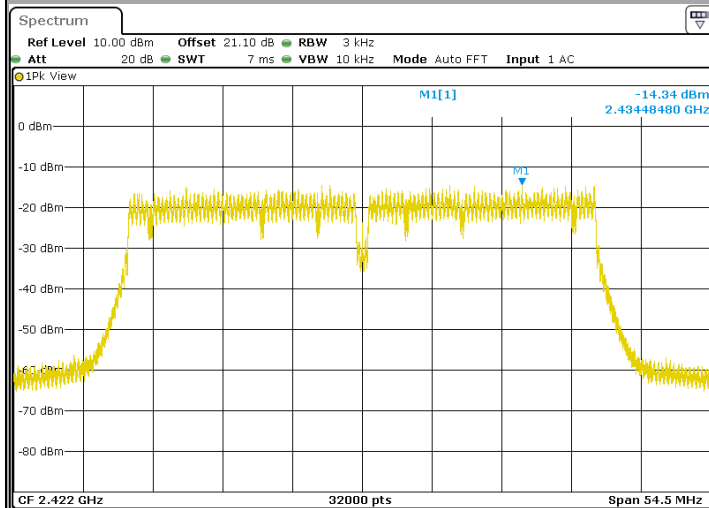
Date: 9.MAY.2016 15:35:52

Tx2



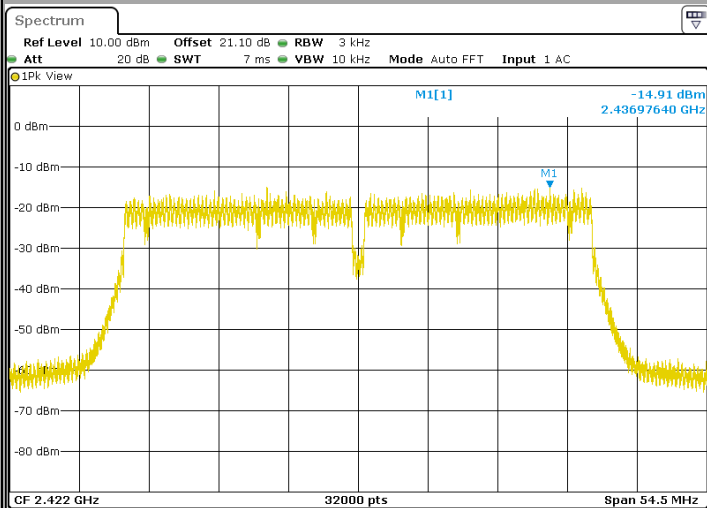
Date: 9.MAY.2016 15:35:06

Tx3

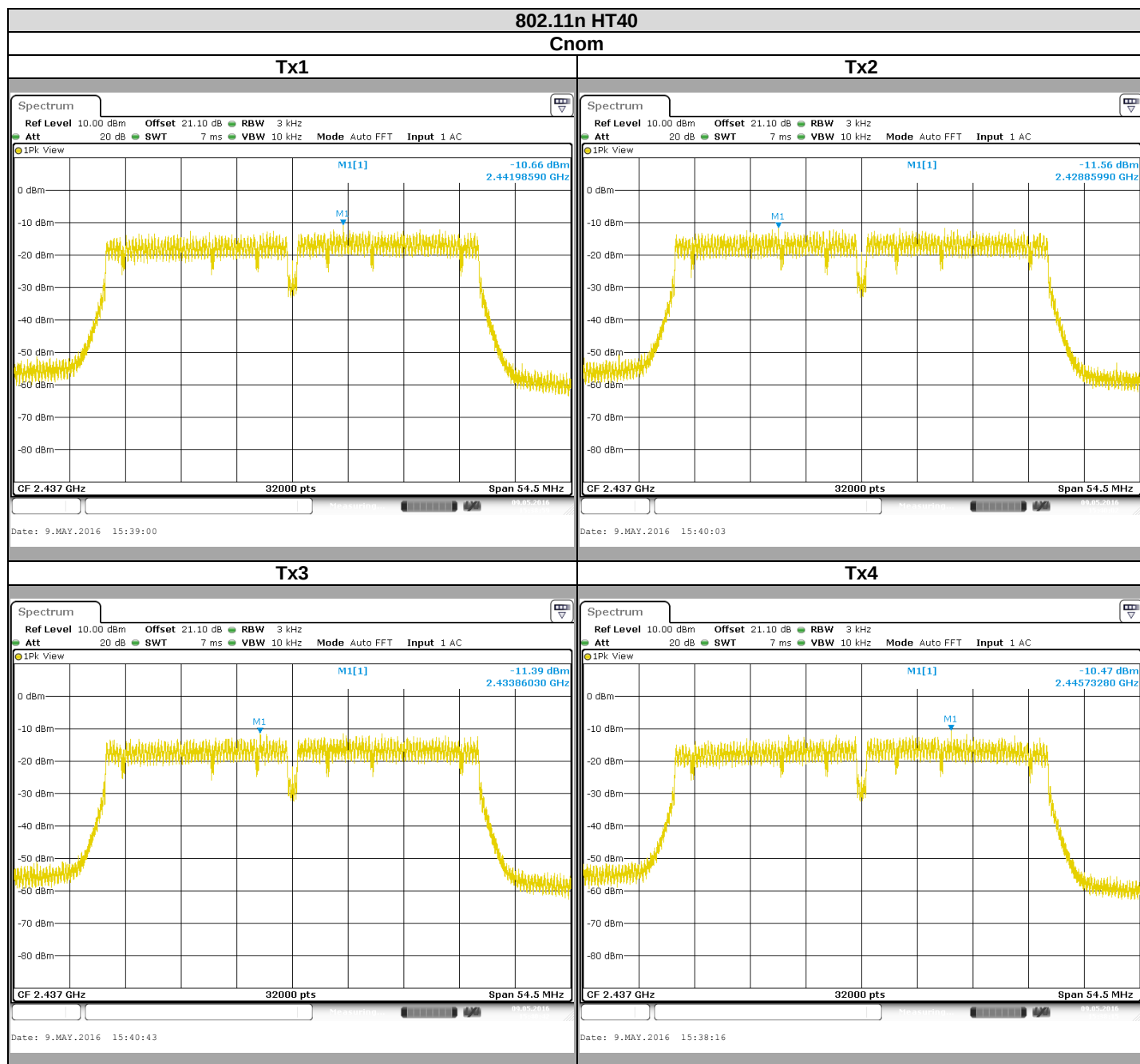


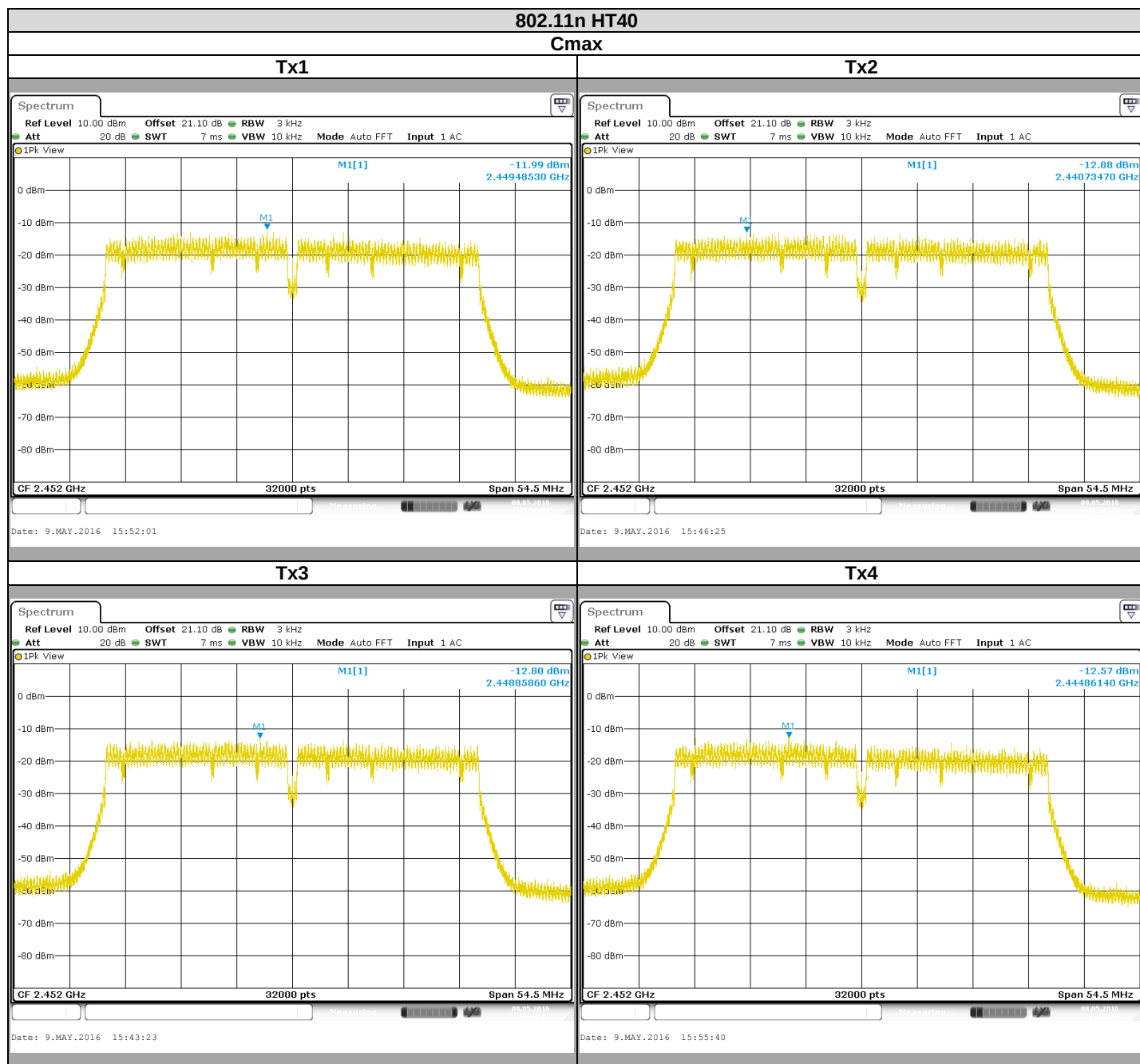
Date: 9.MAY.2016 15:34:40

Tx4



Date: 9.MAY.2016 15:36:20







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 "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

