



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 [\[link\]](#)

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 & Ecouelles

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	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
6dB Bandwidth	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA()	<input type="checkbox"/> NP(1)
Duty Cycle	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Maximum Conducted Output Power	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Power Spectral Density	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Conducted Spurious Emission at the Band Edge	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA()	<input type="checkbox"/> NP(1)
Unwanted Emissions into Non-Restricted Frequency Bands	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA()	<input type="checkbox"/> NP(1)
AC Power Line Conducted Emission	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA(2)	<input type="checkbox"/> NP(1)
Unwanted Emissions into Restricted Frequency Bands	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Receiver Radiated emissions	<input checked="" type="checkbox"/> PASS (3)	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> 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





L C I E



Equipment Under Test

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
1	Power Supply	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
2	Ethernet	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-

Auxiliary equipment used during test:

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



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Software identification:

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

Equipment information:

Type:	WIFI					
Frequency band:	2400MHz-2483.5MHz					
Standard:	<input checked="" type="checkbox"/> 802.11b	<input checked="" type="checkbox"/> 802.11g	<input checked="" type="checkbox"/> 802.11n HT20	<input checked="" type="checkbox"/> 802.11n HT40		
Spectrum Modulation:	<input checked="" type="checkbox"/> DSSS		<input checked="" type="checkbox"/> OFDM			
Number of Channel:	11					
Spacing channel:	5MHz					
Channel bandwidth:	<input checked="" type="checkbox"/> 20MHz		<input checked="" type="checkbox"/> 40MHz			
Antenna Type:	<input checked="" type="checkbox"/> Integral		<input type="checkbox"/> External	<input type="checkbox"/> Dedicated		
Antenna connector:	<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No	<input type="checkbox"/> Temporary for test		
Transmit chains:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4		
Beam forming gain:	<input type="checkbox"/> Yes: XdB		<input checked="" type="checkbox"/> No			
Receiver chains	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4		
Type of equipment:	<input checked="" type="checkbox"/> Stand-alone		<input type="checkbox"/> Plug-in	<input type="checkbox"/> Combined		
Ad-Hoc mode:	<input type="checkbox"/> Yes		<input type="checkbox"/> No			
Operating temperature range:	Tmin:	<input type="checkbox"/> -20°C		<input checked="" type="checkbox"/> 0°C		
	Tnom:	20°C				
	Tmax:	<input type="checkbox"/> 35°C	<input type="checkbox"/> 55°C	<input checked="" type="checkbox"/> 40°C		
Type of power source:	<input checked="" type="checkbox"/> AC power supply		<input type="checkbox"/> DC power supply	<input type="checkbox"/> Battery		
Operating voltage range:	Vnom:	<input checked="" type="checkbox"/> 120V/60Hz		<input type="checkbox"/> 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



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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



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DATA RATE

802.11b

Data Rate (Mbps)	Modulation Type	Modulation Worst Case
1	DBPSK	<input type="checkbox"/>
2	DQPSK	<input type="checkbox"/>
5.5	DQPSK	<input type="checkbox"/>
11	CCK	<input checked="" type="checkbox"/>

DATA RATE

802.11g

Data Rate (Mbps)	Modulation Type	Modulation Worst Case
6	BPSK	<input checked="" type="checkbox"/>
9	BPSK	<input type="checkbox"/>
12	QPSK	<input type="checkbox"/>
18	QPSK	<input type="checkbox"/>
24	16-QAM	<input type="checkbox"/>
36	16-QAM	<input type="checkbox"/>
48	64-QAM	<input type="checkbox"/>
54	64-QAM	<input type="checkbox"/>



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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	<input type="checkbox"/>
✓	1	1	QPSK	13	14.4	<input type="checkbox"/>
✓	2	1	QPSK	19.5	21.7	<input type="checkbox"/>
✓	3	1	16-QAM	26	28.9	<input type="checkbox"/>
✓	4	1	16-QAM	39	43.3	<input type="checkbox"/>
✓	5	1	64-QAM	52	57.8	<input type="checkbox"/>
✓	6	1	64-QAM	58.5	65	<input type="checkbox"/>
✓	7	1	64-QAM	65	72.2	<input type="checkbox"/>
✓	8	2	BPSK	13	14.4	<input type="checkbox"/>
✓	9	2	QPSK	26	28.9	<input type="checkbox"/>
✓	10	2	QPSK	39	43.3	<input type="checkbox"/>
✓	11	2	16-QAM	52	57.8	<input type="checkbox"/>
✓	12	2	16-QAM	78	86.7	<input type="checkbox"/>
✓	13	2	64-QAM	104	115.6	<input type="checkbox"/>
✓	14	2	64-QAM	117	130.3	<input type="checkbox"/>
✓	15	2	64-QAM	130	144.4	<input type="checkbox"/>
✓	16	3	BPSK	19.5	21.7	<input type="checkbox"/>
✓	17	3	QPSK	39	43.3	<input type="checkbox"/>
✓	18	3	QPSK	58.5	65	<input type="checkbox"/>
✓	19	3	16-QAM	78	86.7	<input type="checkbox"/>
✓	20	3	16-QAM	117	130	<input type="checkbox"/>
✓	21	3	64-QAM	156	173.3	<input type="checkbox"/>
✓	22	3	64-QAM	175.5	195	<input type="checkbox"/>
✓	23	3	64-QAM	195	216.7	<input type="checkbox"/>
✓	24	4	BPSK	26	28.9	<input checked="" type="checkbox"/>
✓	25	4	QPSK	52	57.8	<input type="checkbox"/>
✓	26	4	QPSK	78	86.7	<input type="checkbox"/>
✓	27	4	16-QAM	104	115.6	<input type="checkbox"/>
✓	28	4	16-QAM	156	173.3	<input type="checkbox"/>
✓	29	4	64-QAM	208	231.1	<input type="checkbox"/>
✓	30	4	64-QAM	234	260	<input type="checkbox"/>
✓	31	4	64-QAM	260	288.9	<input type="checkbox"/>



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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



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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	<input type="checkbox"/>
✓	1	1	QPSK	27	30	<input type="checkbox"/>
✓	2	1	QPSK	40.5	45	<input type="checkbox"/>
✓	3	1	16-QAM	54	60	<input type="checkbox"/>
✓	4	1	16-QAM	81	90	<input type="checkbox"/>
✓	5	1	64-QAM	108	120	<input type="checkbox"/>
✓	6	1	64-QAM	121.5	135	<input type="checkbox"/>
✓	7	1	64-QAM	135	150	<input type="checkbox"/>
✓	8	2	BPSK	27	30	<input type="checkbox"/>
✓	9	2	QPSK	54	60	<input type="checkbox"/>
✓	10	2	QPSK	81	90	<input type="checkbox"/>
✓	11	2	16-QAM	108	120	<input type="checkbox"/>
✓	12	2	16-QAM	162	180	<input type="checkbox"/>
✓	13	2	64-QAM	216	240	<input type="checkbox"/>
✓	14	2	64-QAM	243	270	<input type="checkbox"/>
✓	15	2	64-QAM	270	300	<input type="checkbox"/>
✓	16	3	BPSK	40.5	45	<input type="checkbox"/>
✓	17	3	QPSK	81	90	<input type="checkbox"/>
✓	18	3	QPSK	121.5	135	<input type="checkbox"/>
✓	19	3	16-QAM	162	180	<input type="checkbox"/>
✓	20	3	16-QAM	243	270	<input type="checkbox"/>
✓	21	3	64-QAM	324	360	<input type="checkbox"/>
✓	22	3	64-QAM	364.5	405	<input type="checkbox"/>
✓	23	3	64-QAM	405	450	<input type="checkbox"/>
✓	24	4	BPSK	54	60	<input checked="" type="checkbox"/>
✓	25	4	QPSK	108	120	<input type="checkbox"/>
✓	26	4	QPSK	162	180	<input type="checkbox"/>
✓	27	4	16-QAM	216	240	<input type="checkbox"/>
✓	28	4	16-QAM	324	360	<input type="checkbox"/>
✓	29	4	64-QAM	432	480	<input type="checkbox"/>
✓	30	4	64-QAM	486	540	<input type="checkbox"/>
✓	31	4	64-QAM	540	600	<input type="checkbox"/>



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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



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:

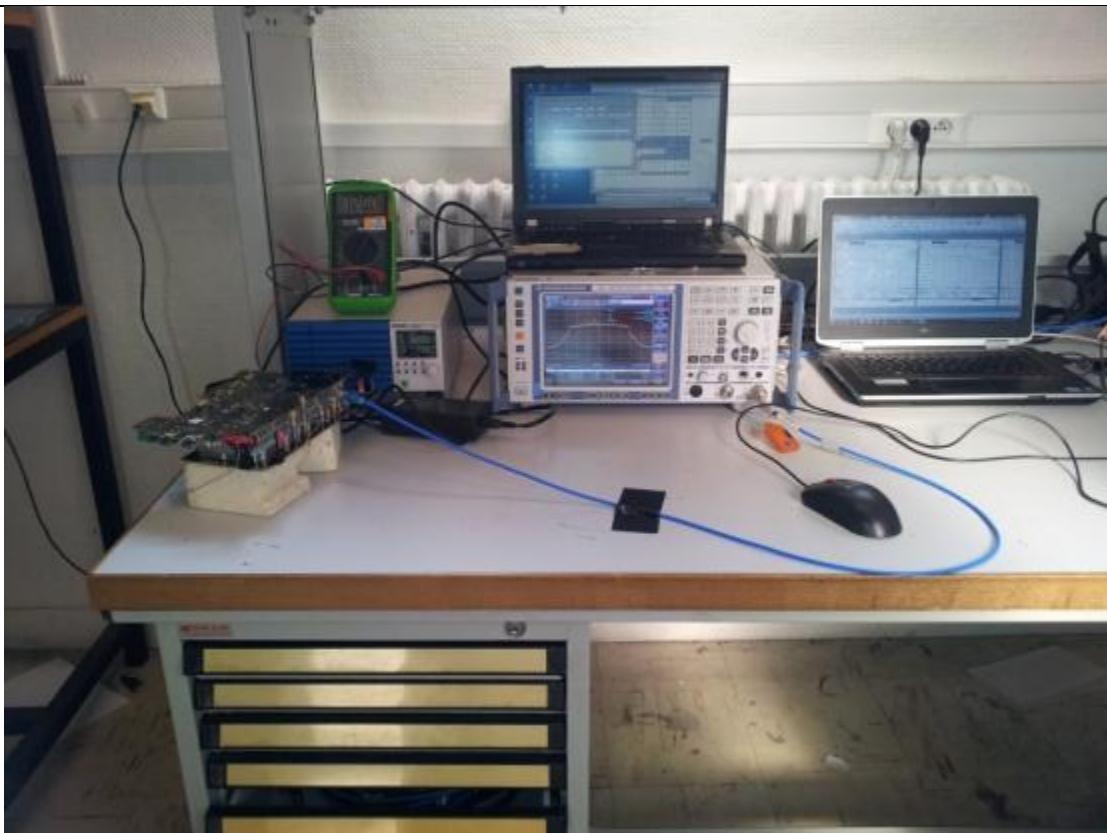
- On a table
- In an anechoic chamber

- 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



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3.1. LIMIT

None

3.2. TEST EQUIPMENT LIST

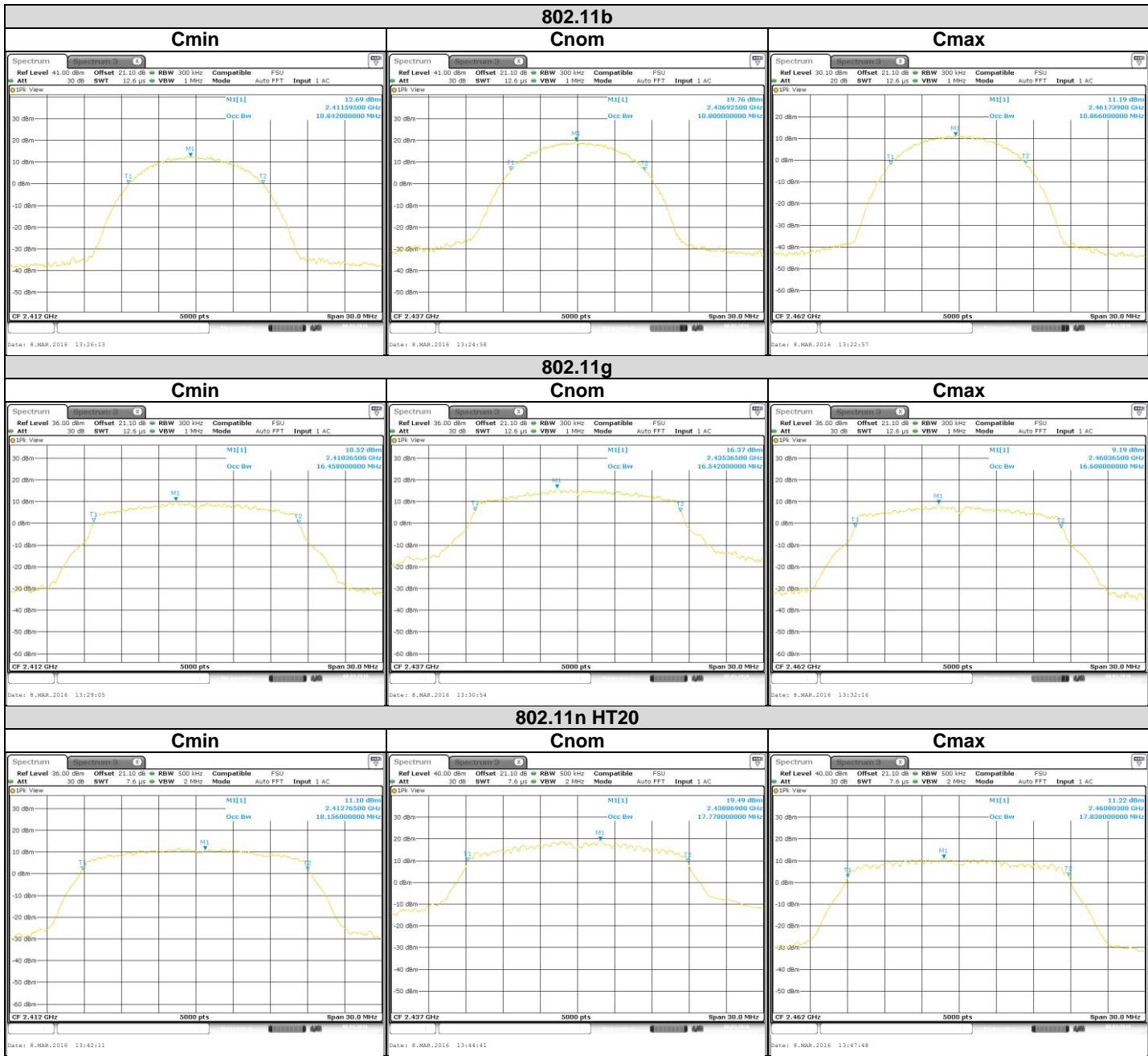
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253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



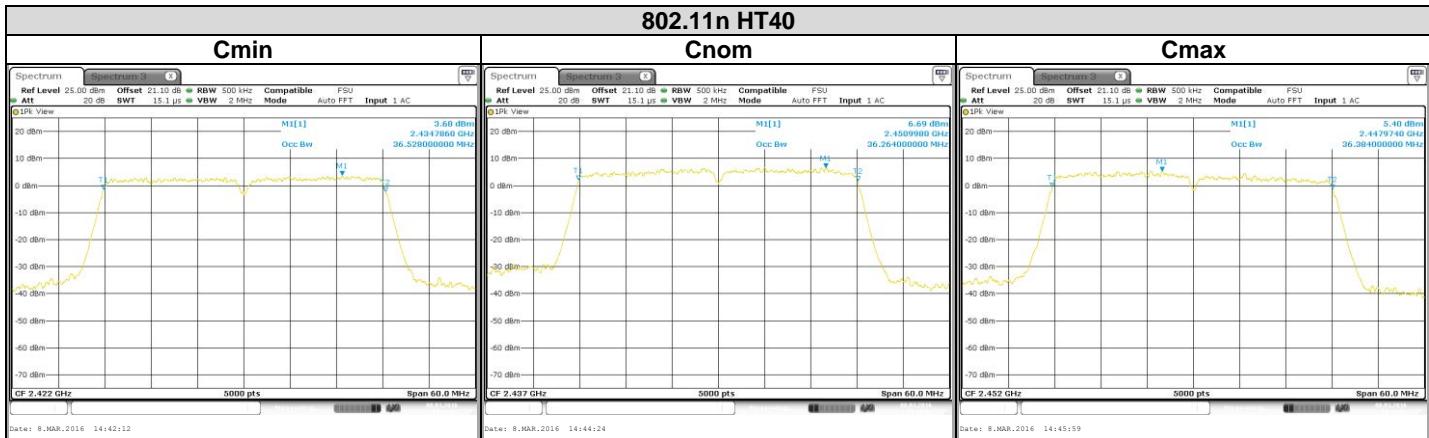
L C I E

3.3. RESULTS





L C I E

802.11n HT40**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: **DM160320300012**, 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



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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

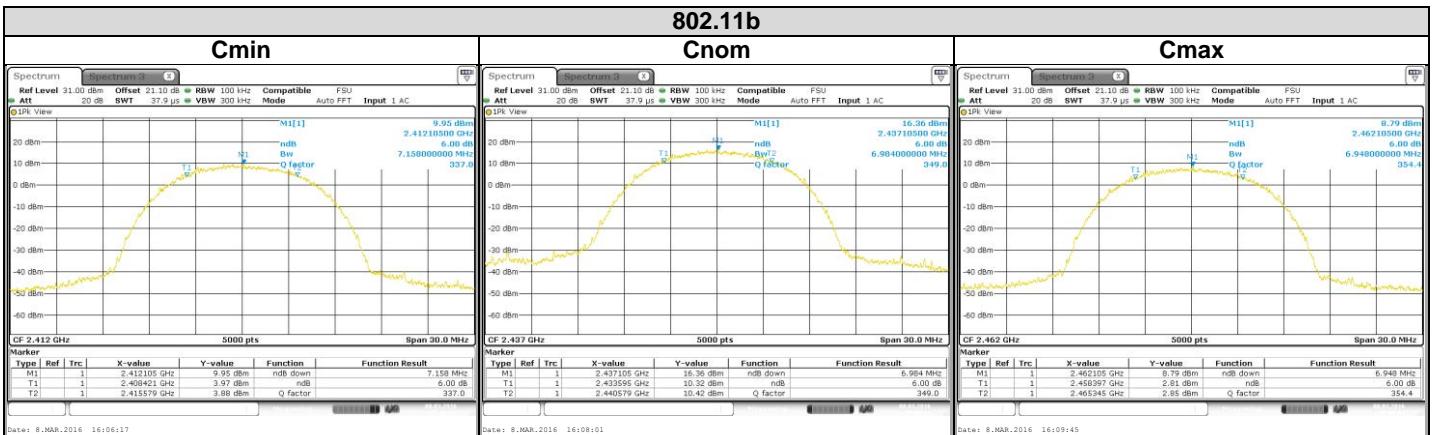
Note : In our Quality System, the calibration due of our equipment is more or less 2 months.



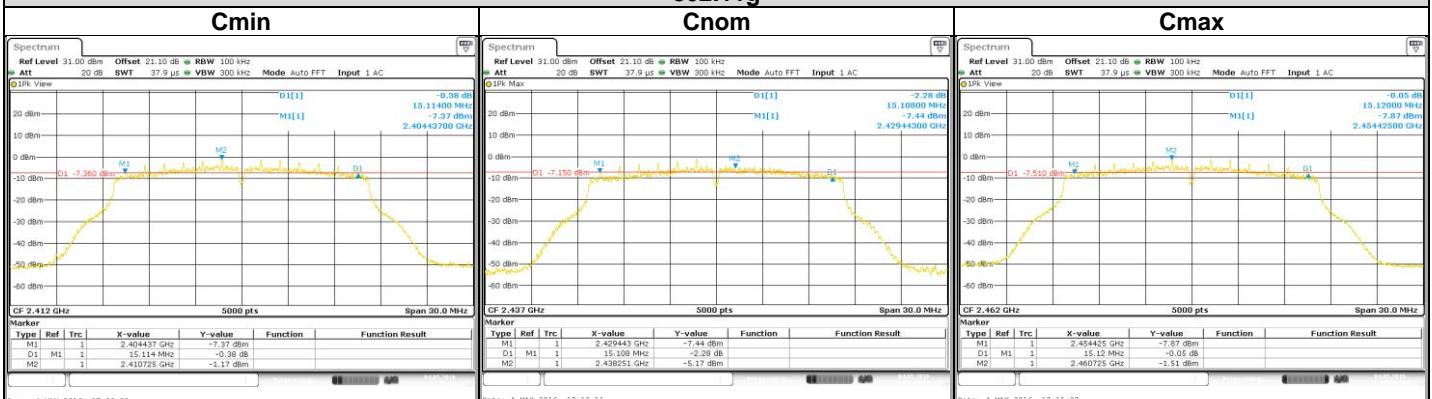
L C I E

4.5. RESULTS

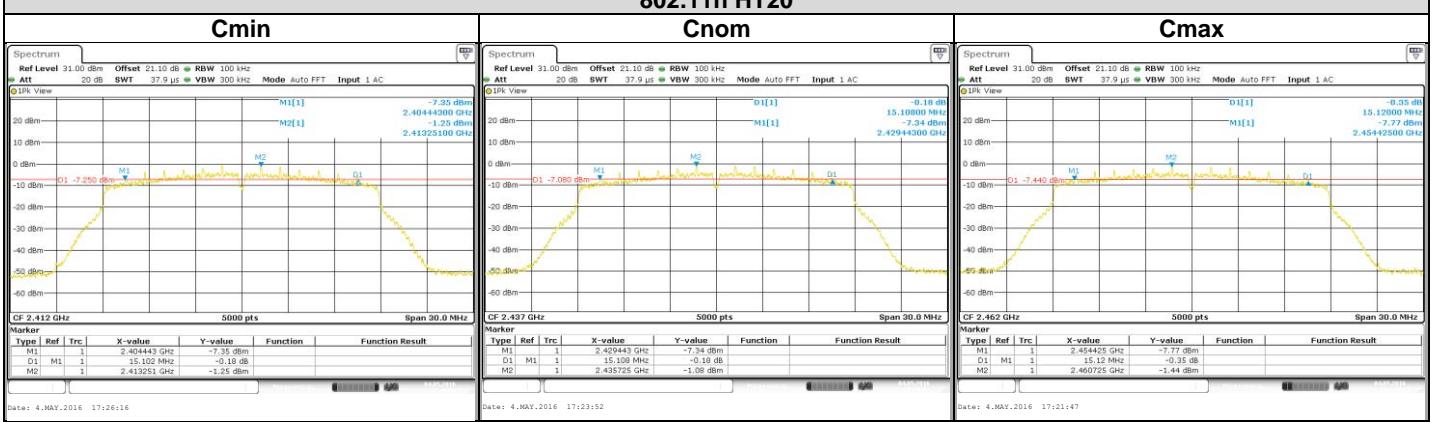
802.11b



802.11g



802.11n HT20



TEST REPORT

N° 140527-682780A

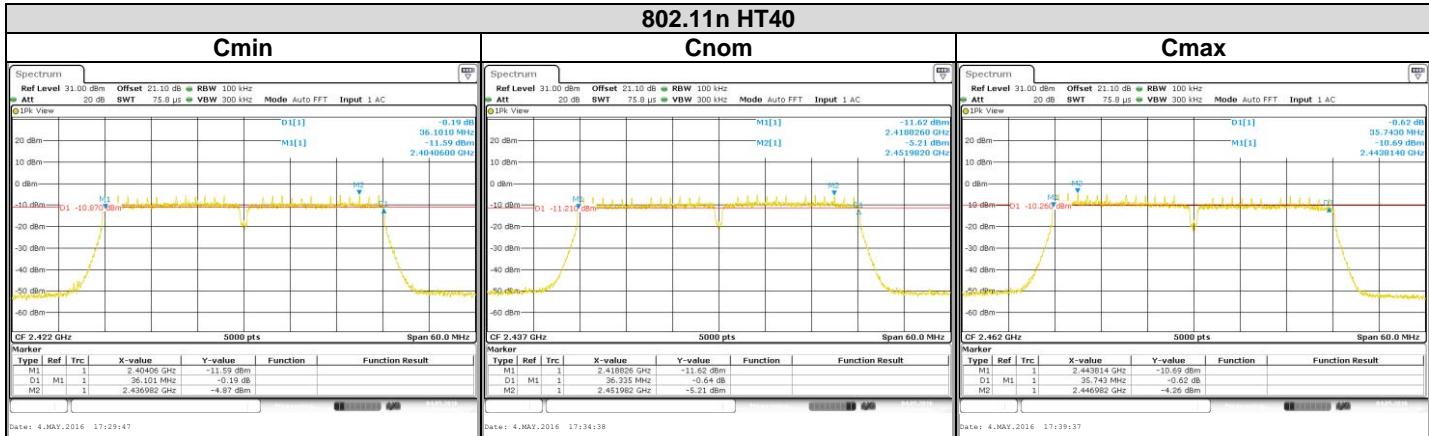
Version : 01

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L C I E

802.11n HT40



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:

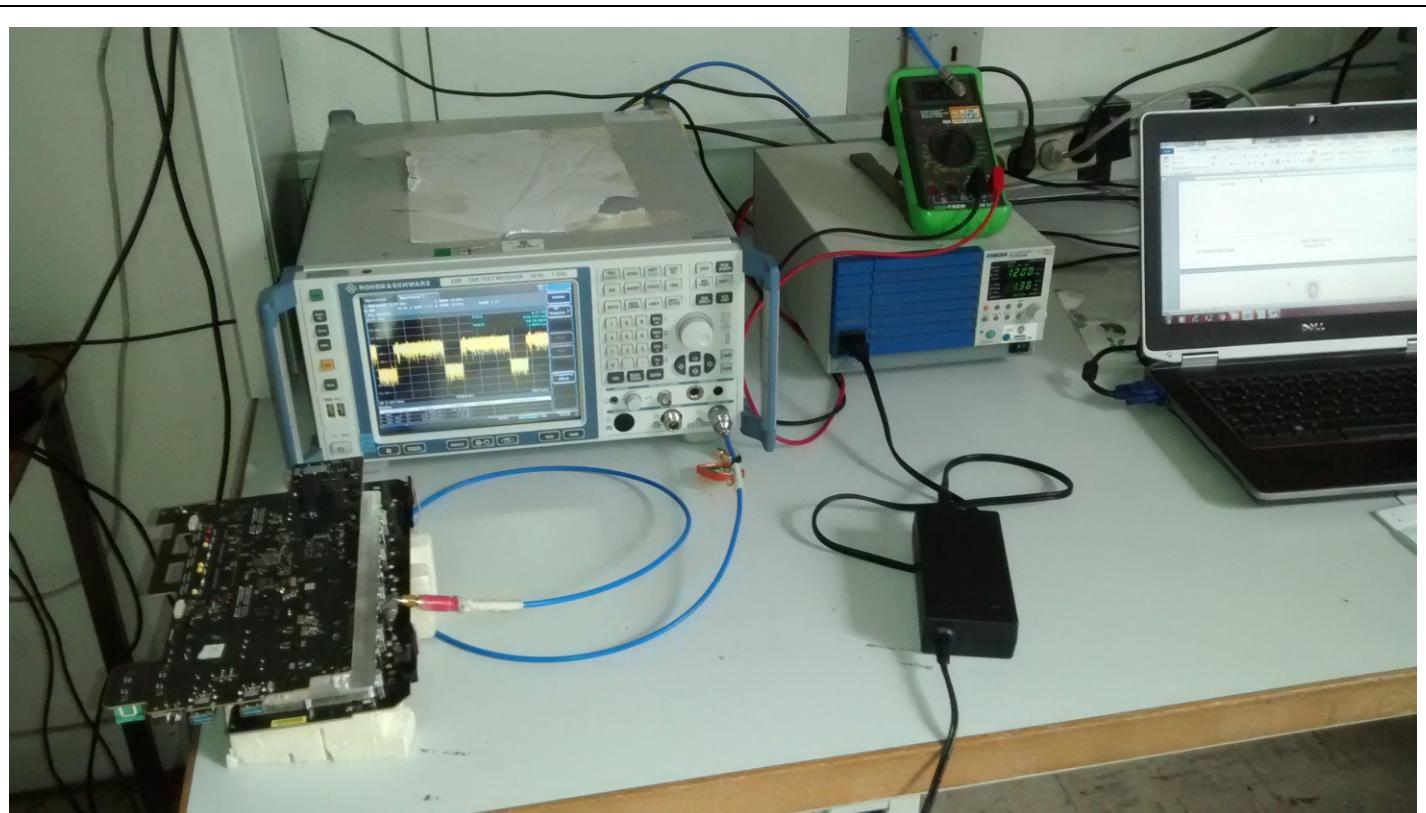
- On a table
- In an anechoic chamber

- 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.



L C I E

5.5. RESULTS



5.6. CONCLUSION

Duty Cycle measurement performed on the sample of the product **BELL CANADA FAST 5566**, SN: **DM160320300012**, 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

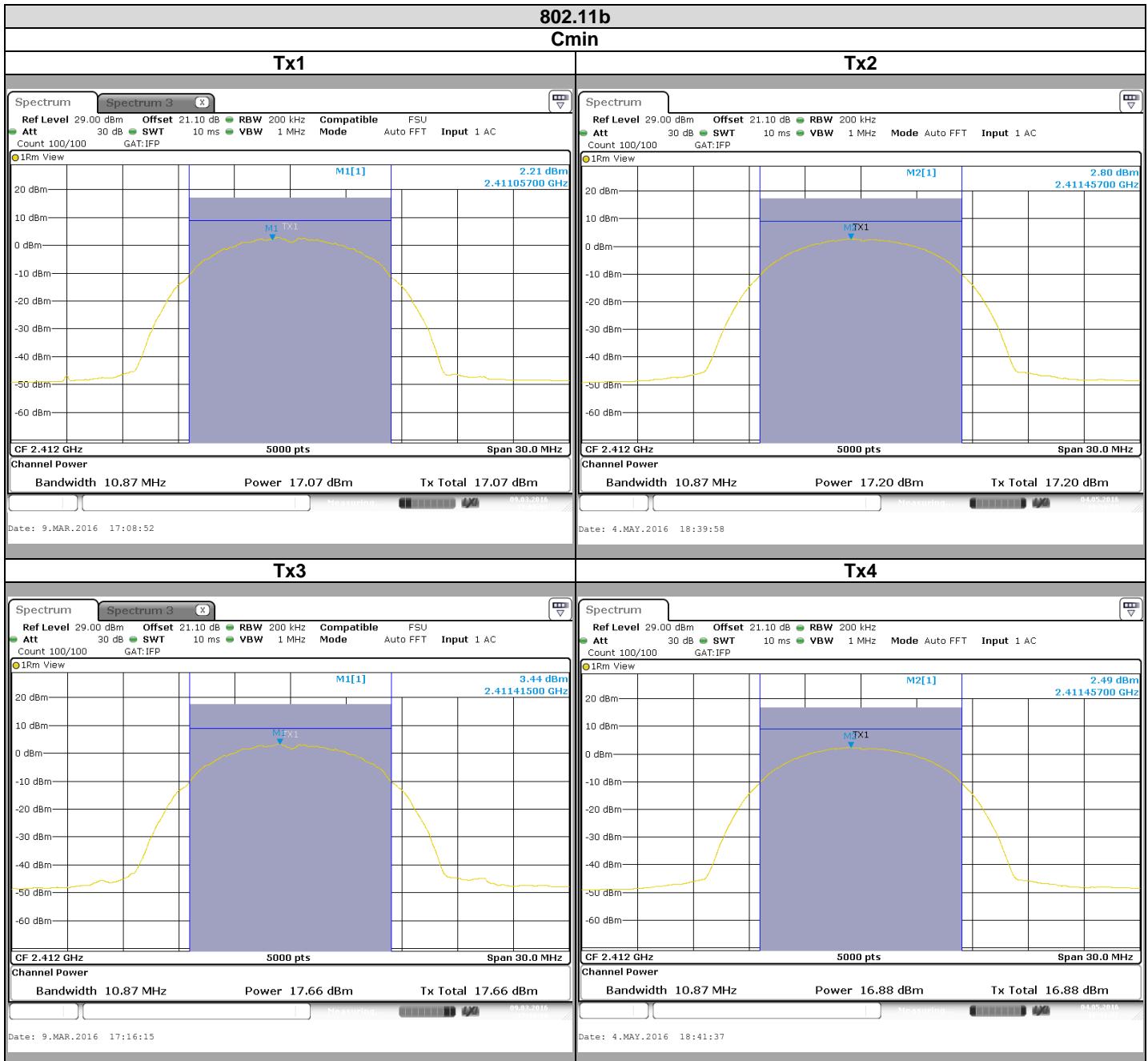
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253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



L C I E

6.5. RESULTS



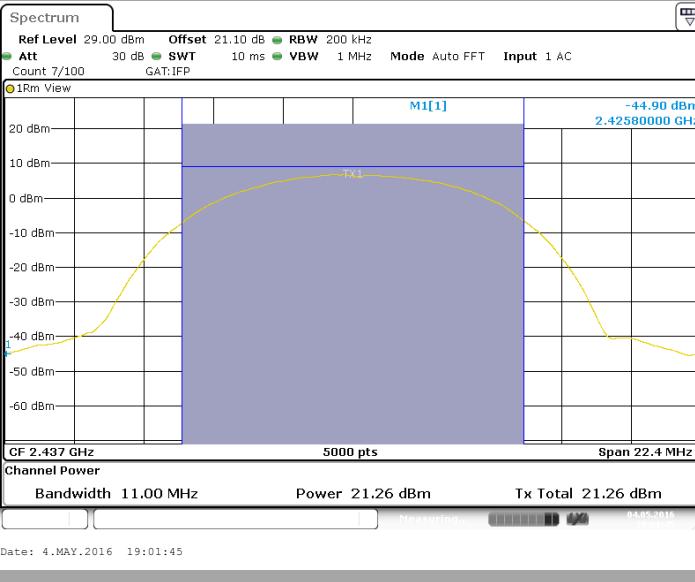


L C I E

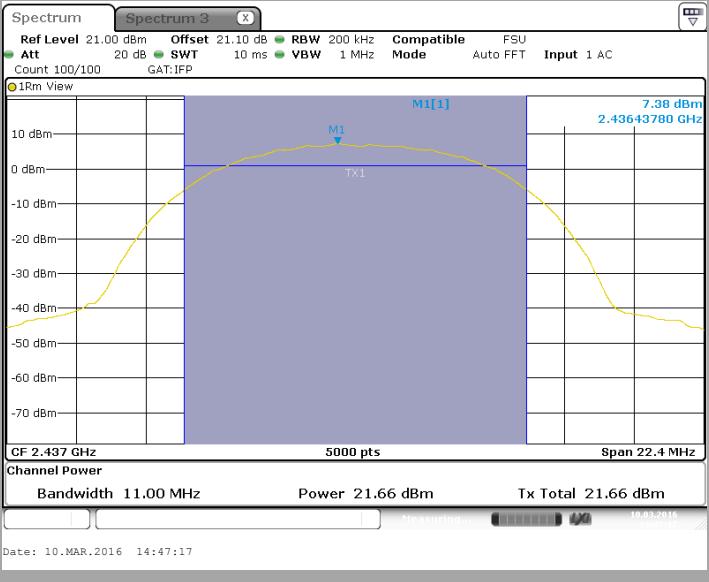
802.11b

Cnom

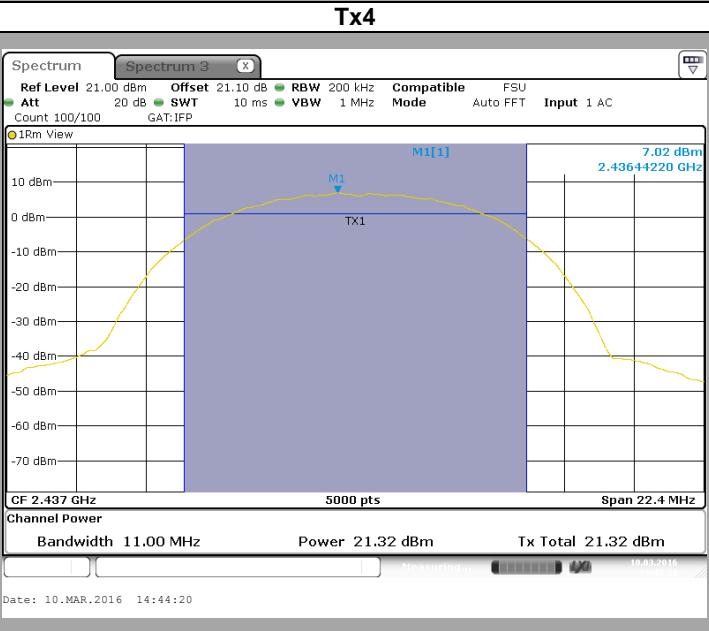
Tx1



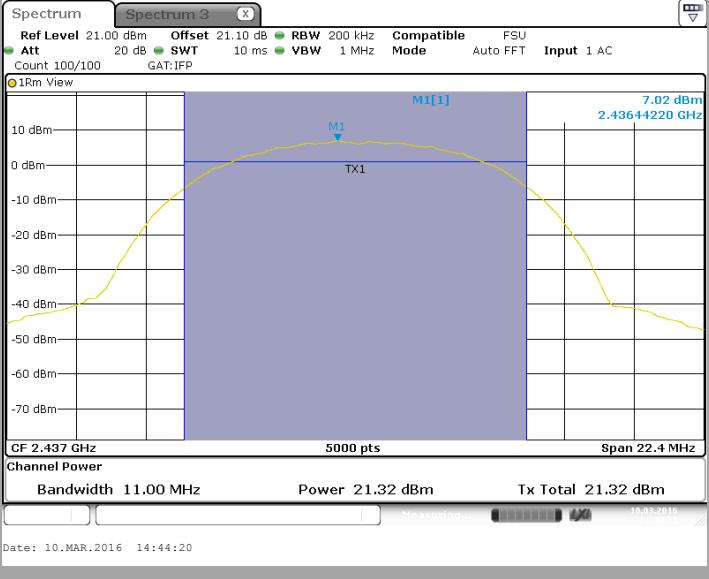
Tx2



Tx3



Tx4



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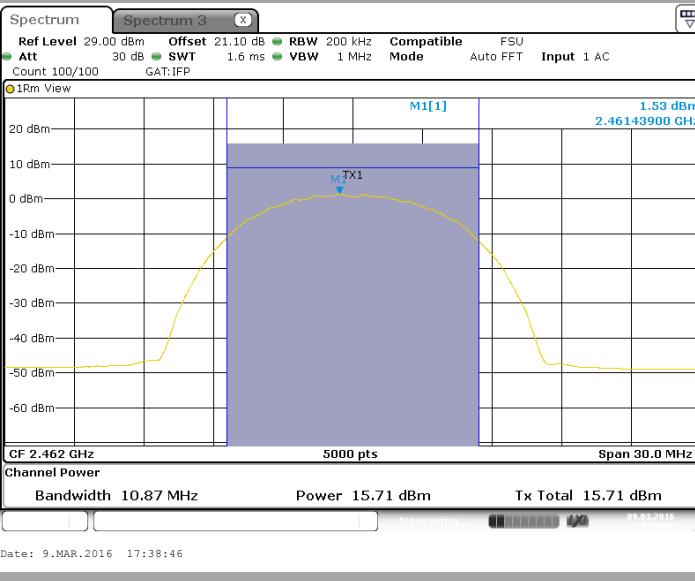


L C I E

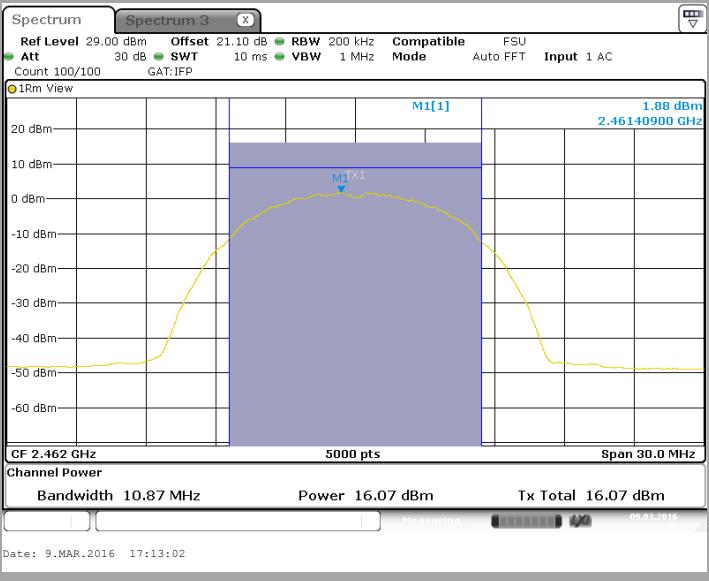
802.11b

Cmax

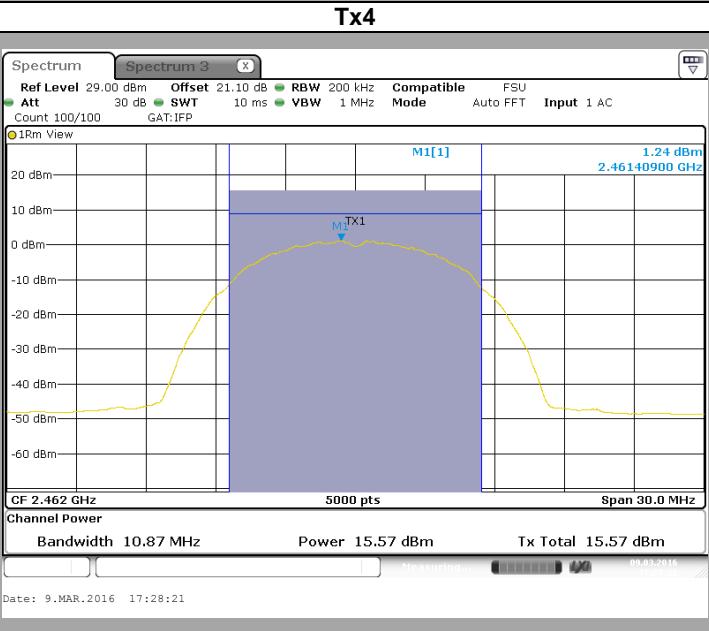
Tx1



Tx2



Tx3



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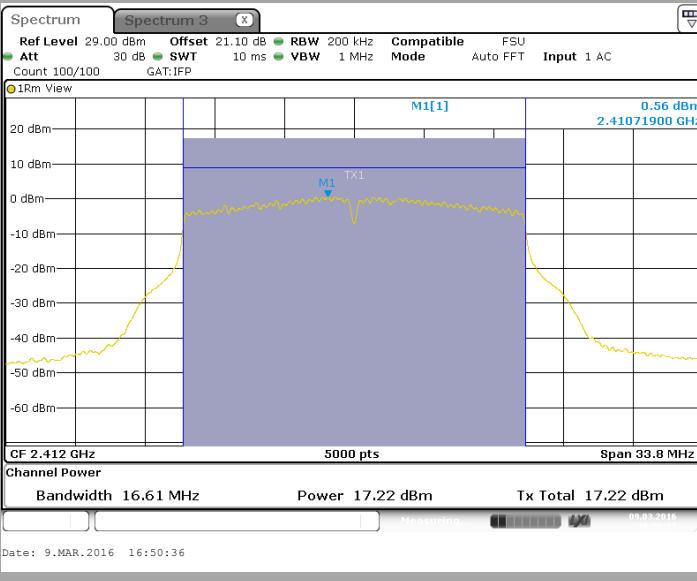


L C I E

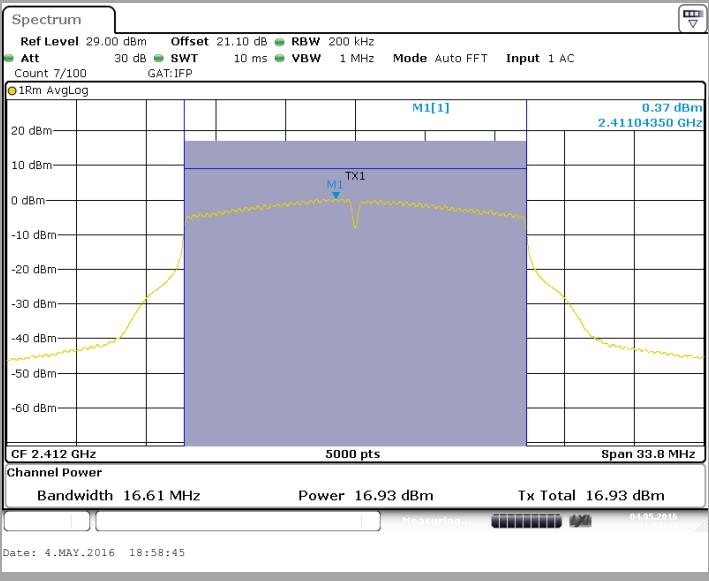
802.11g

Cmin

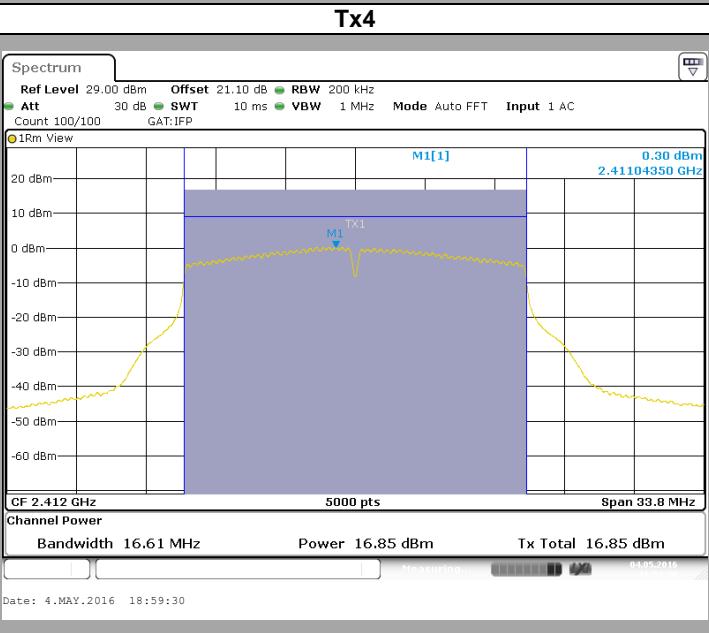
Tx1



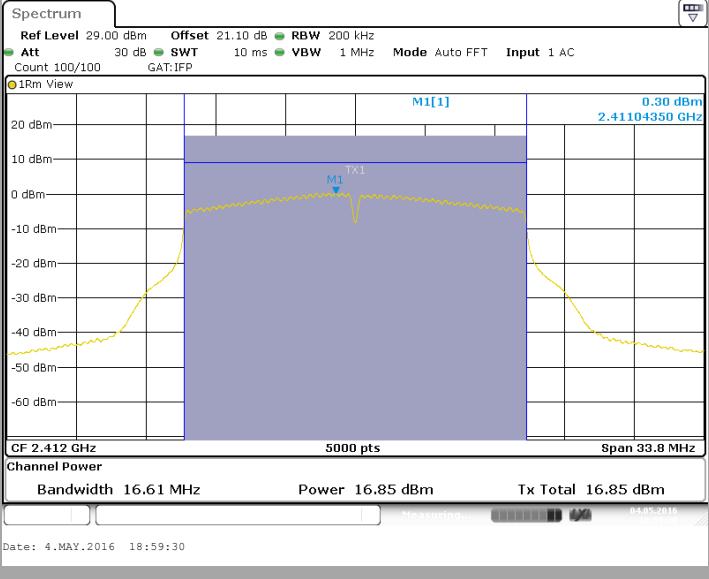
Tx2



Tx3



Tx4



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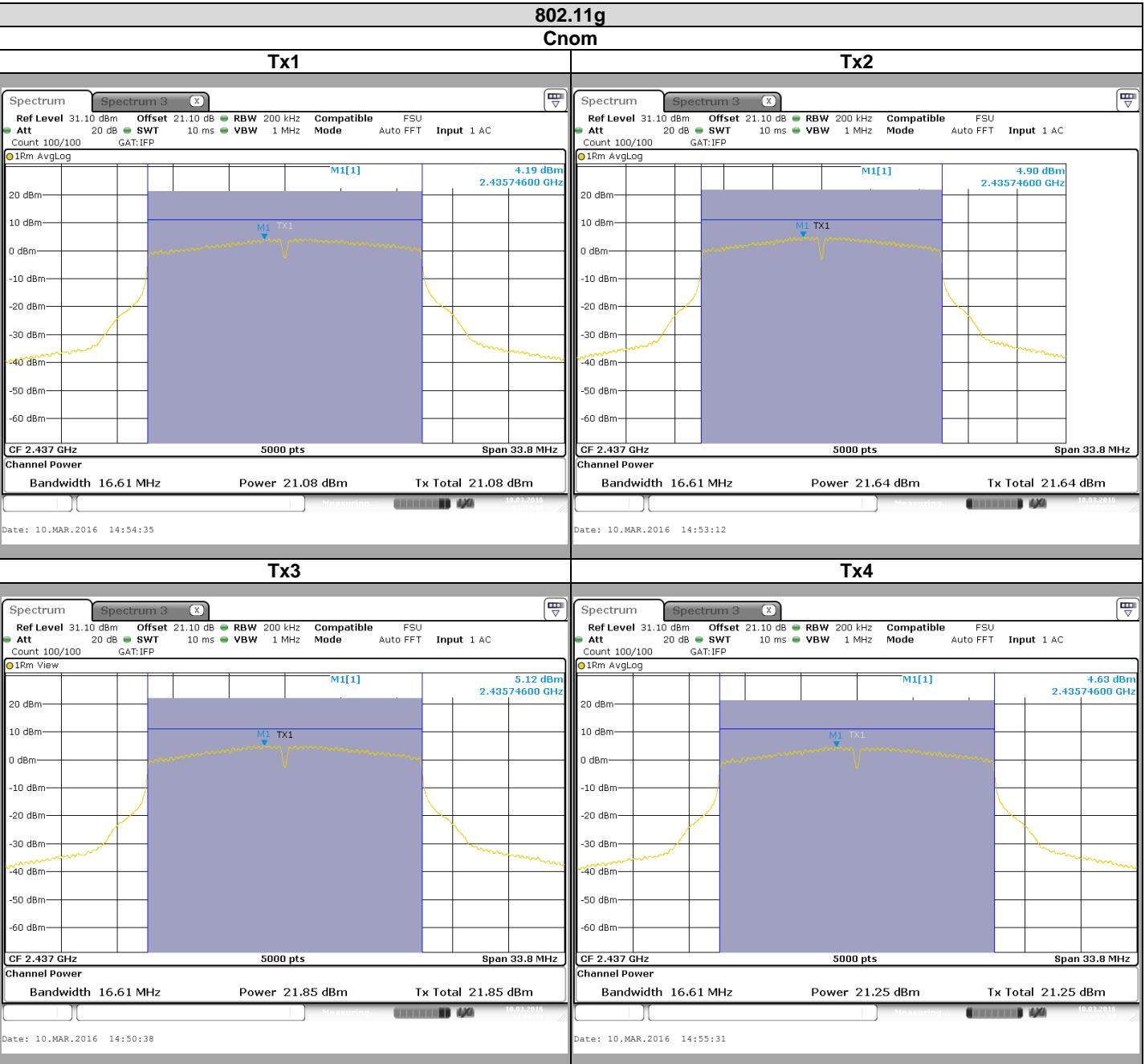
L C I E

802.11g

Cnom

Tx1

Tx2



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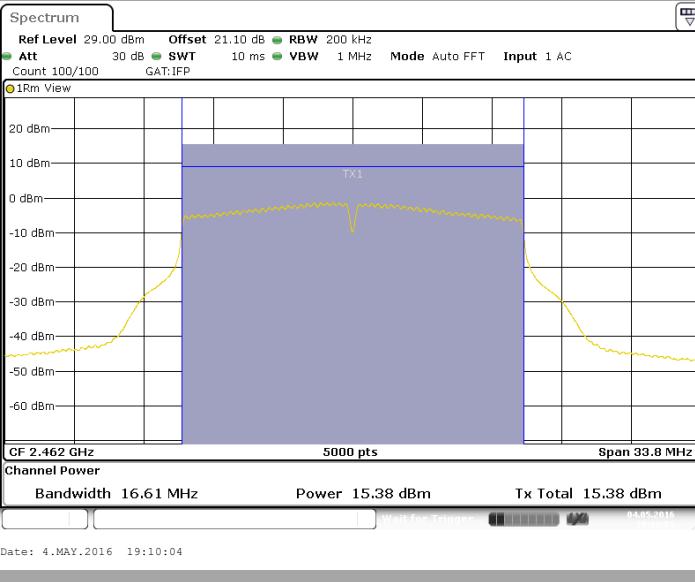


L C I E

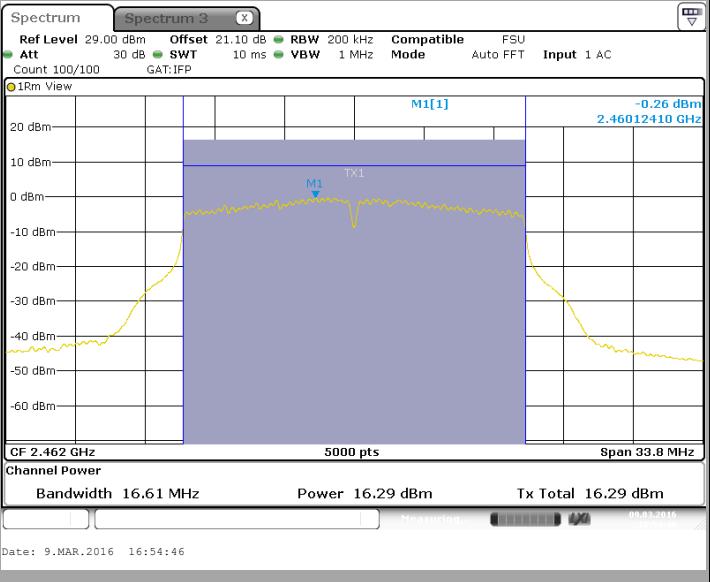
802.11g

Cmax

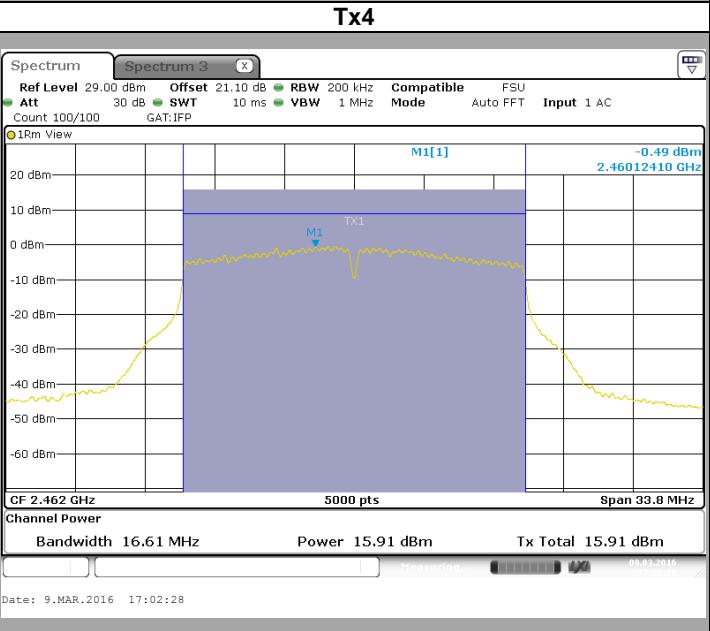
Tx1



Tx2



Tx3



Tx4

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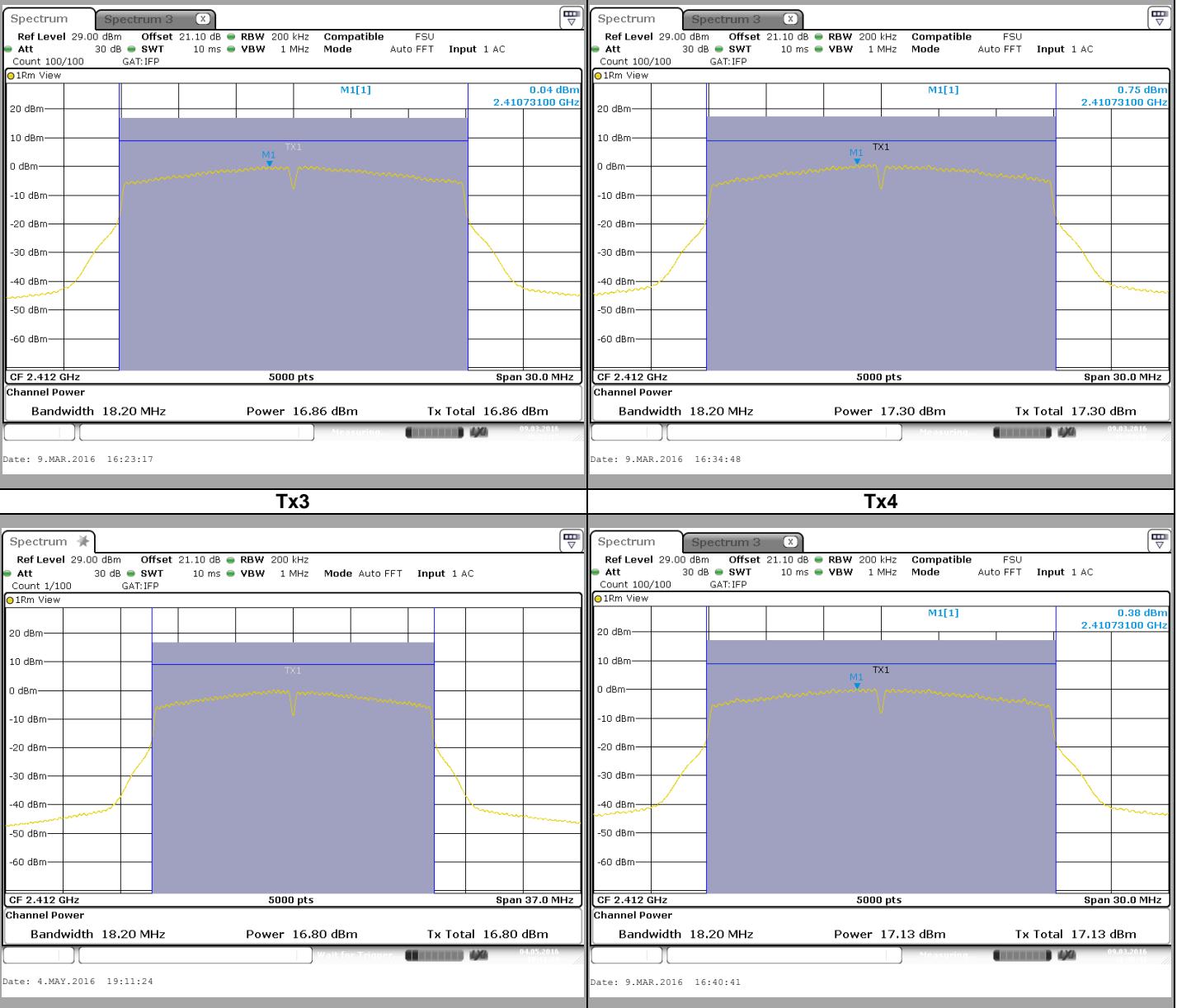
L C I E

802.11n HT20

Cmin

Tx1

Tx2



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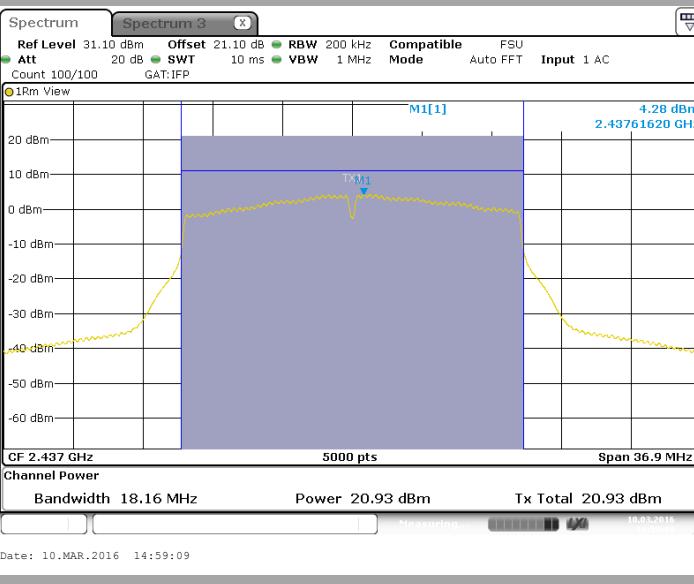


L C I E

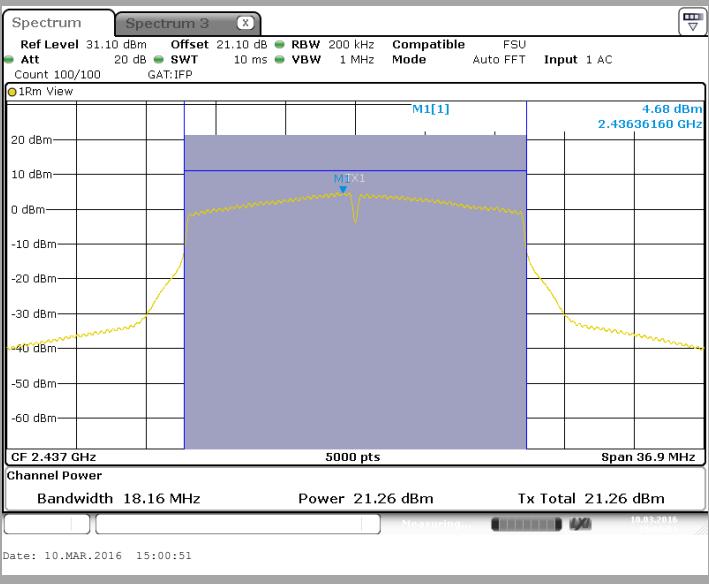
802.11n HT20

Cnom

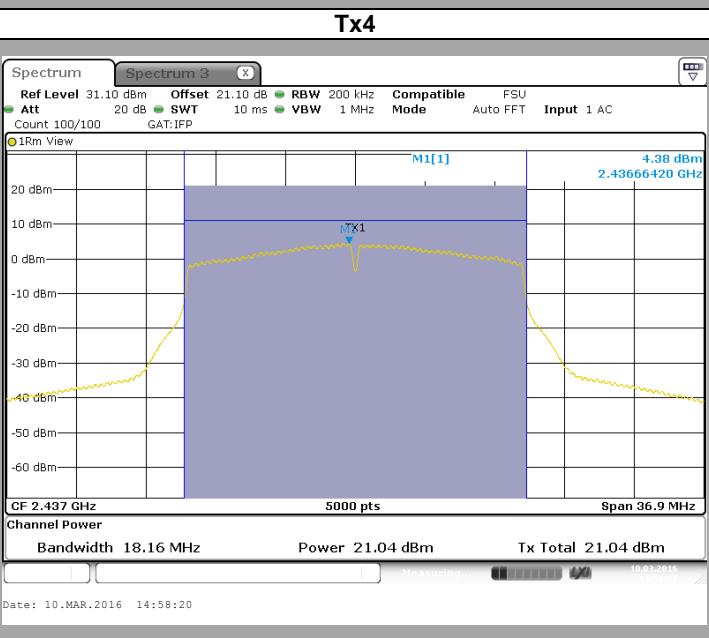
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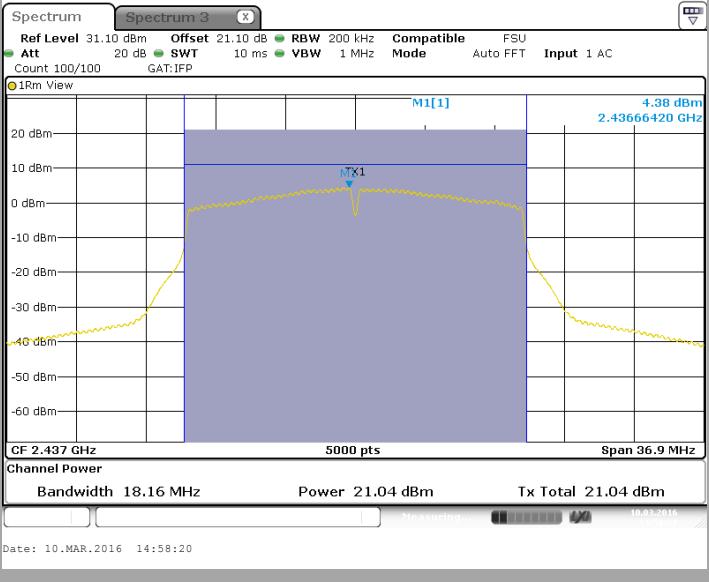
Tx2



Tx3



Tx4



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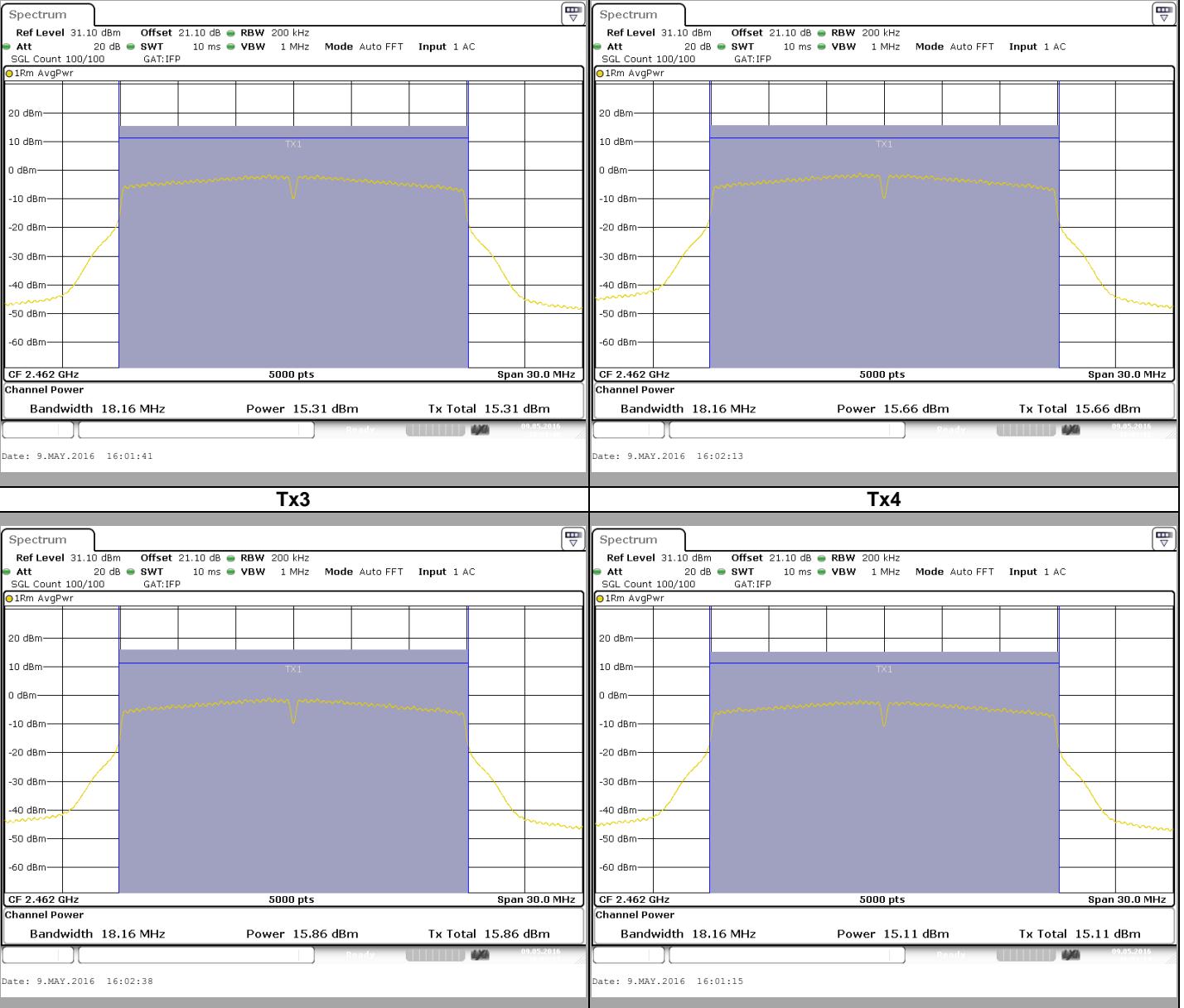
L C I E

802.11n HT20

Cmax

Tx1

Tx2



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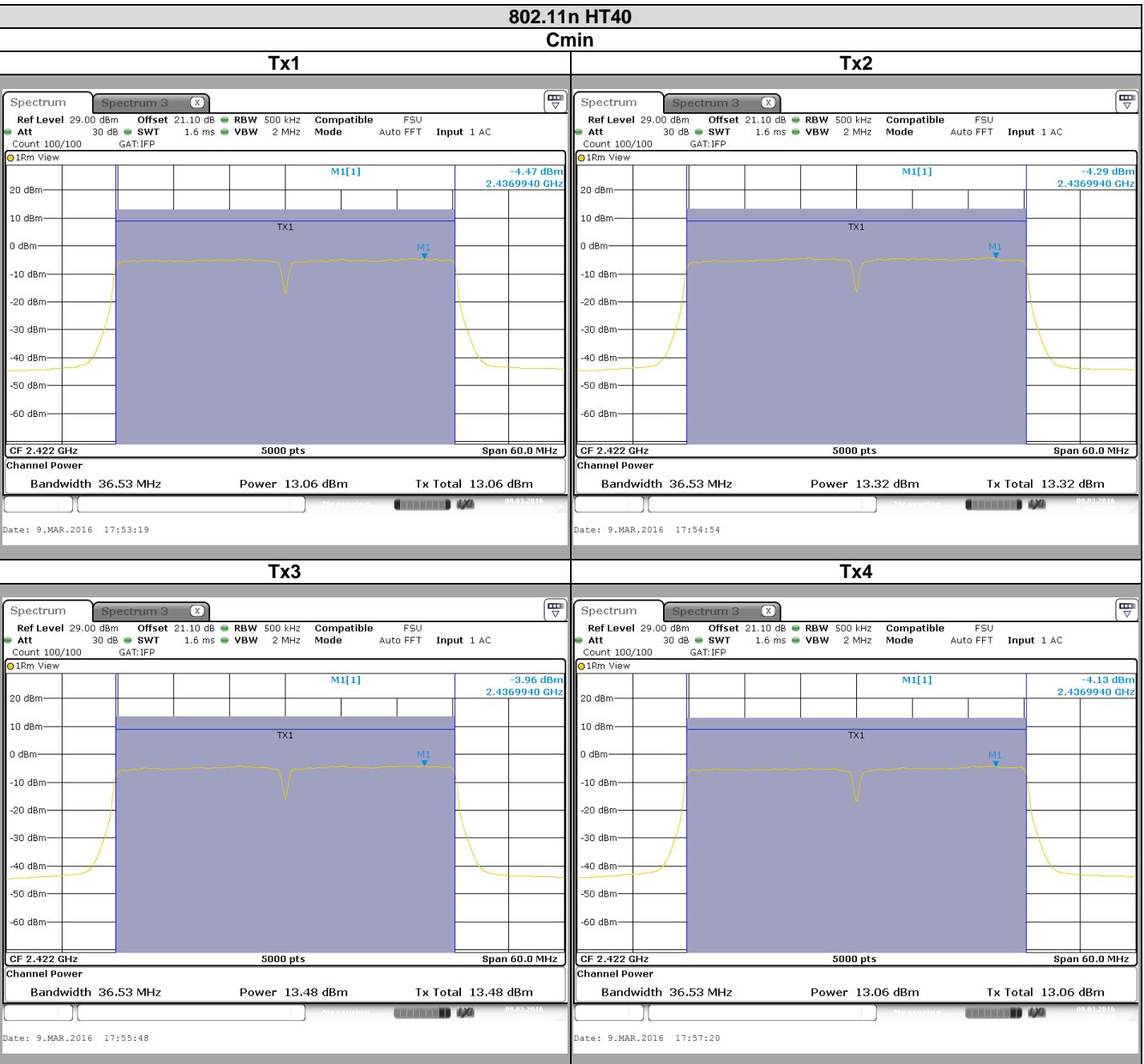
L C I E

802.11n HT40

Cmin

Tx1

Tx2



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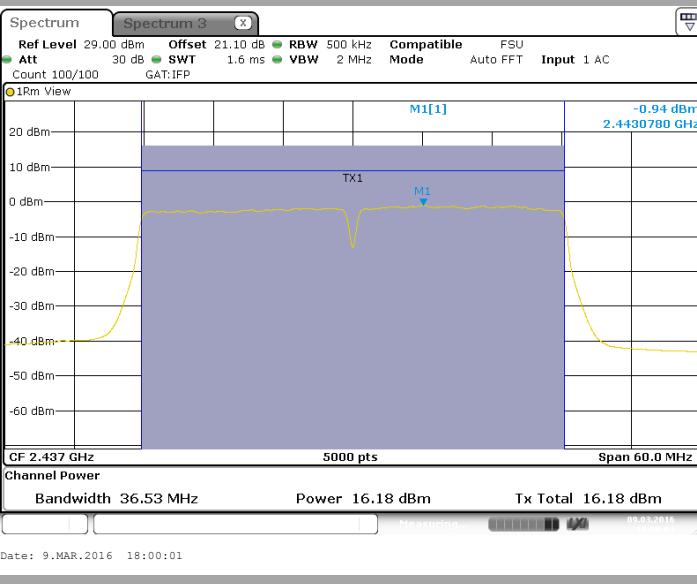


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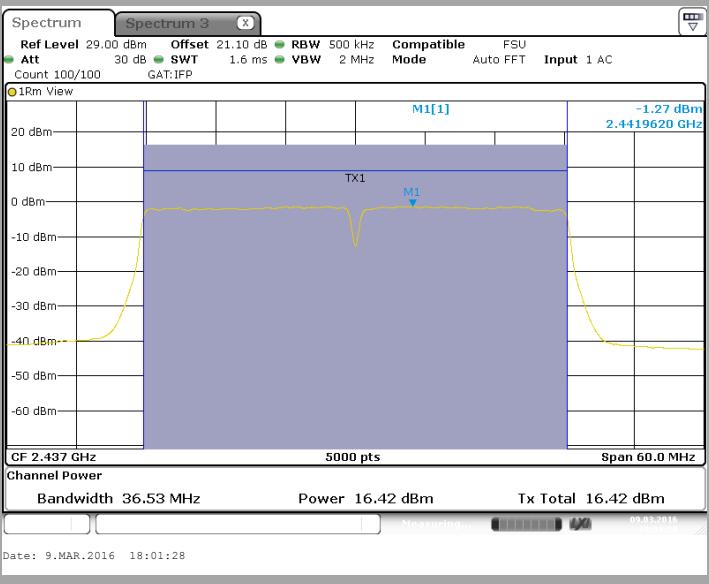
802.11n HT40

Cnom

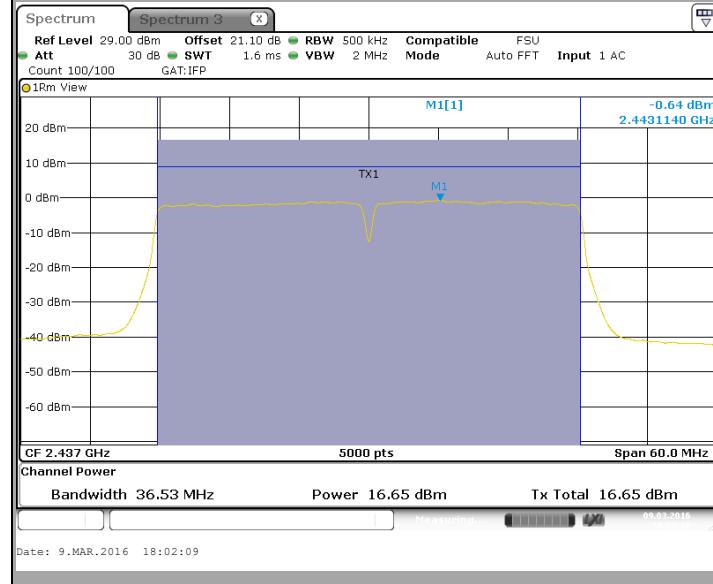
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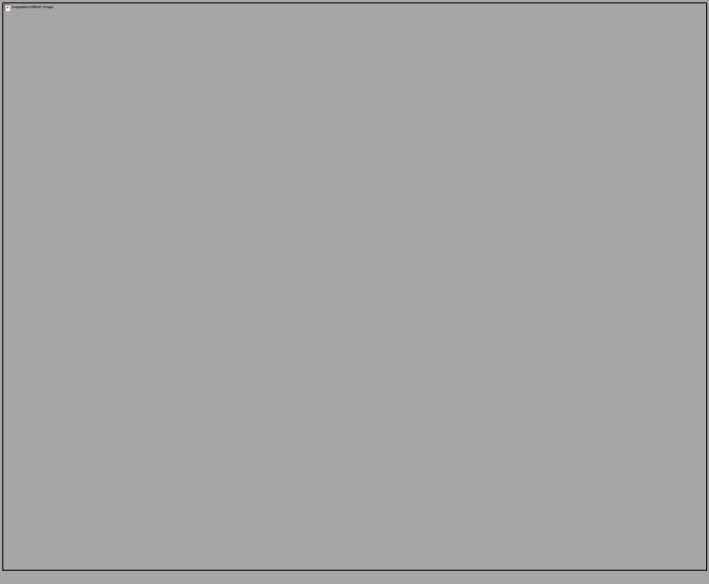
Tx2



Tx3



Tx4



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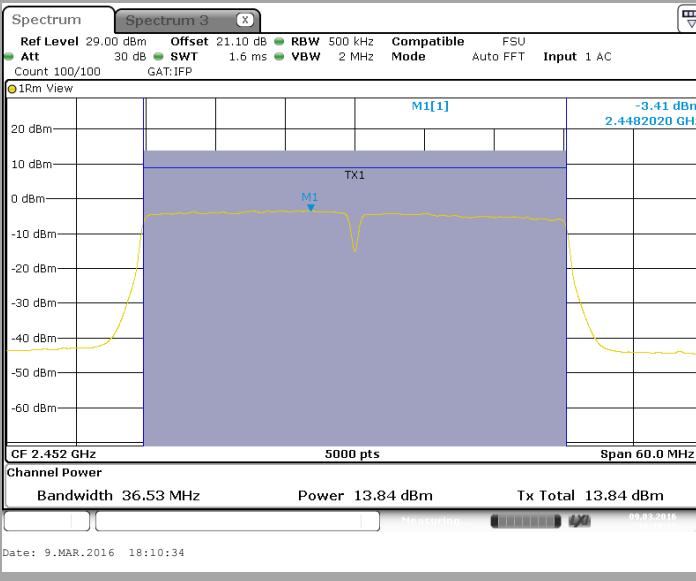


L C I E

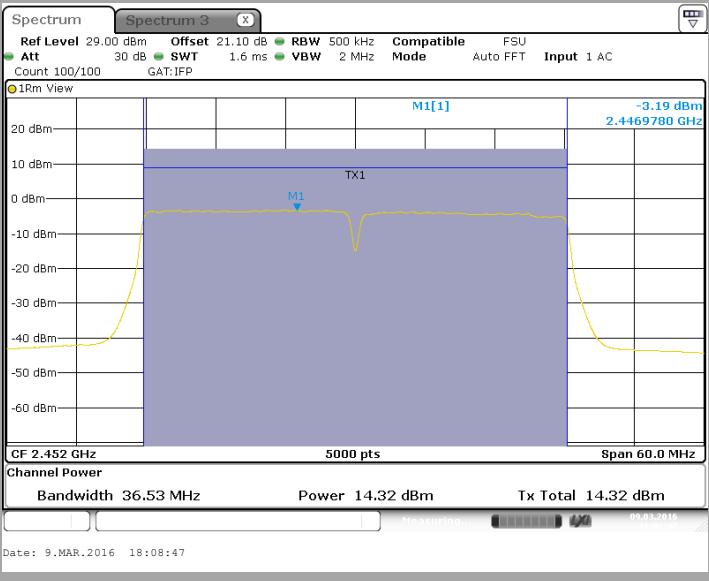
802.11n HT40

Cmax

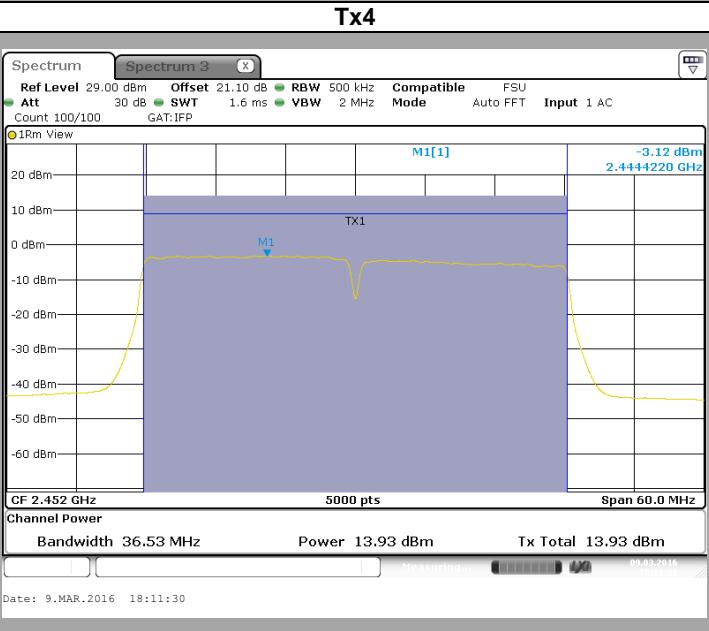
Tx1



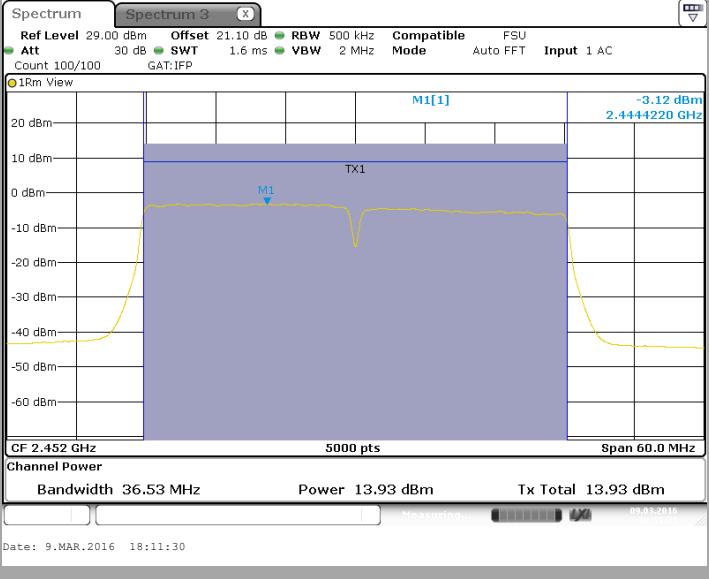
Tx2



Tx3



Tx4



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L C I E

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:

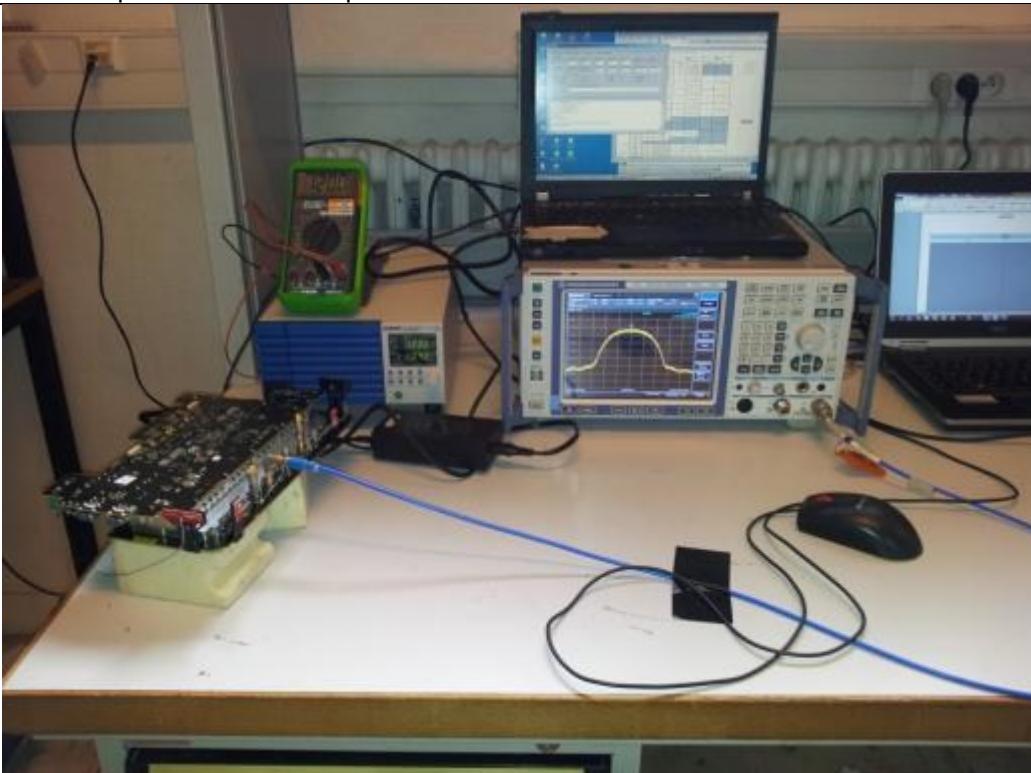
- On a table
- In an anechoic chamber

- 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

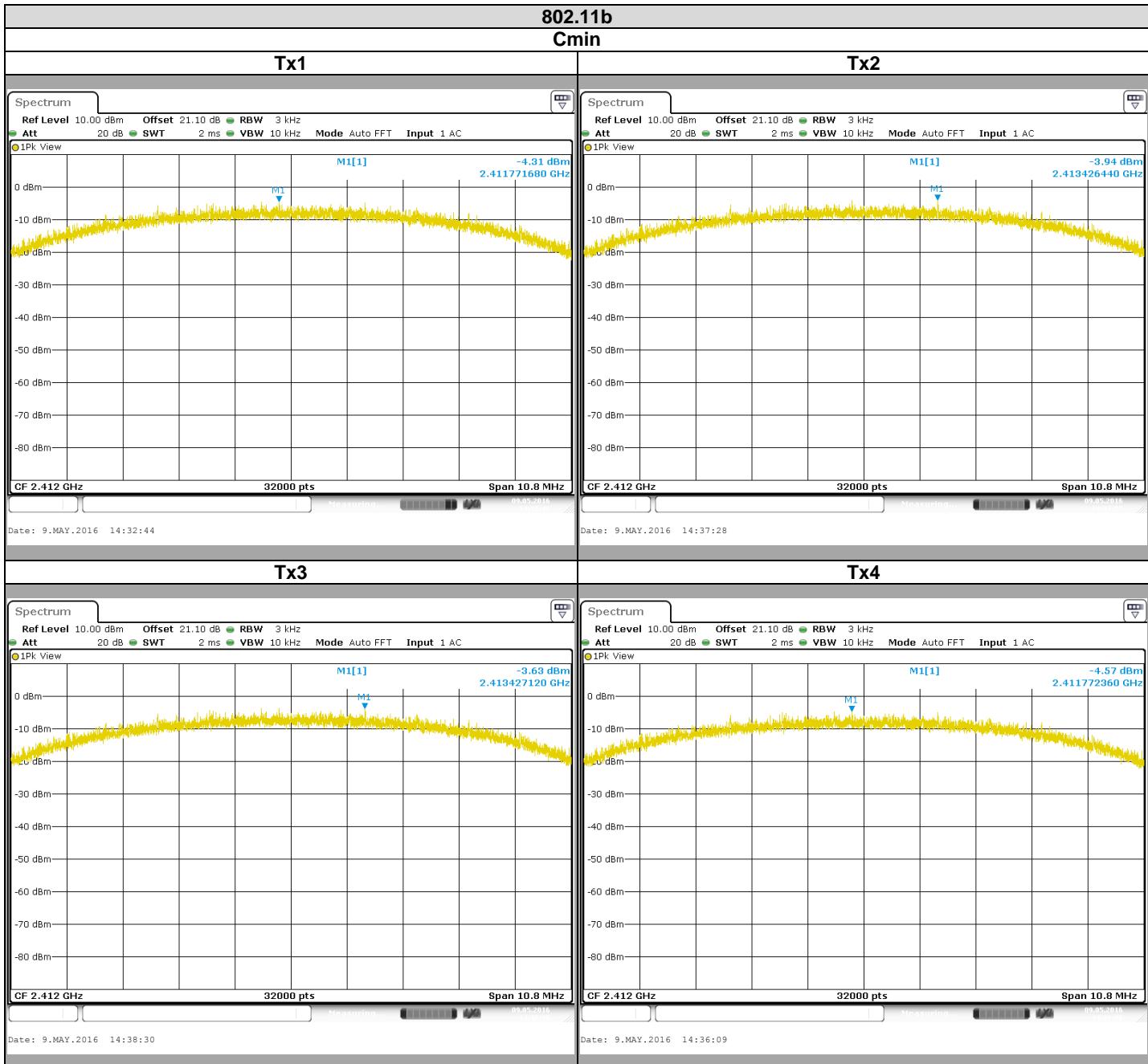
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2015/03	2016/03
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	2014/05	2016/05
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10
Multi-meter	ISOTECH	IDM 91E	A1240253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



L C I E

7.5. RESULTS



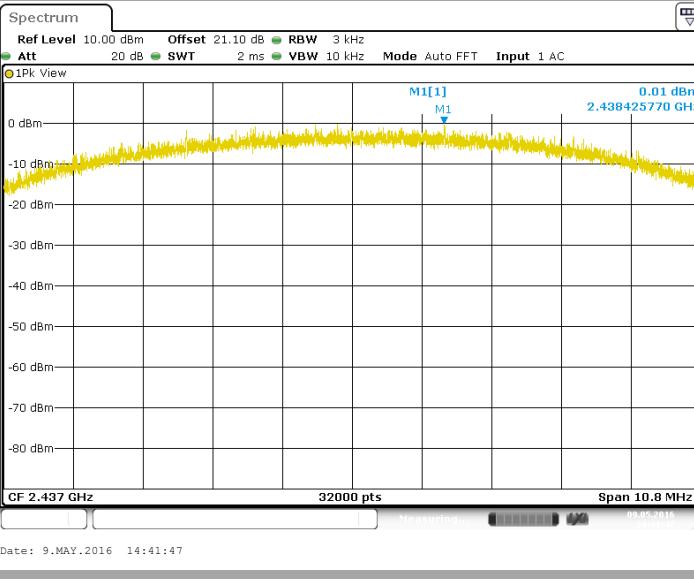


L C I E

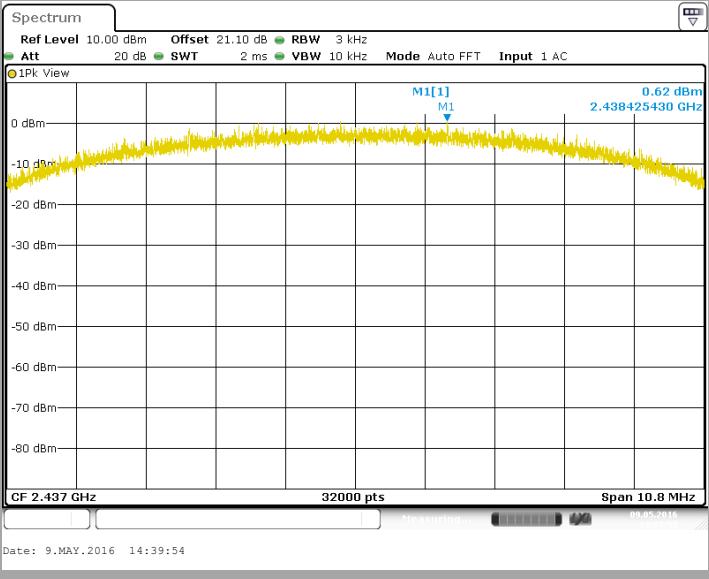
802.11b

Cnom

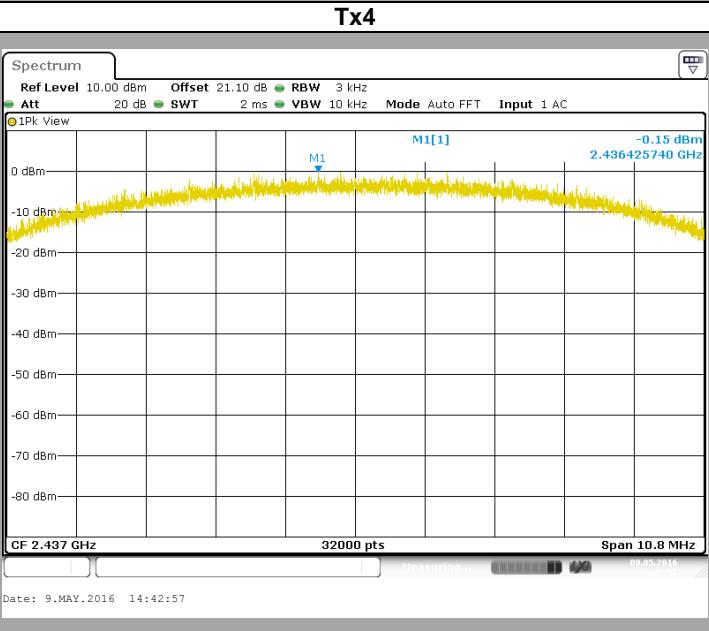
Tx1



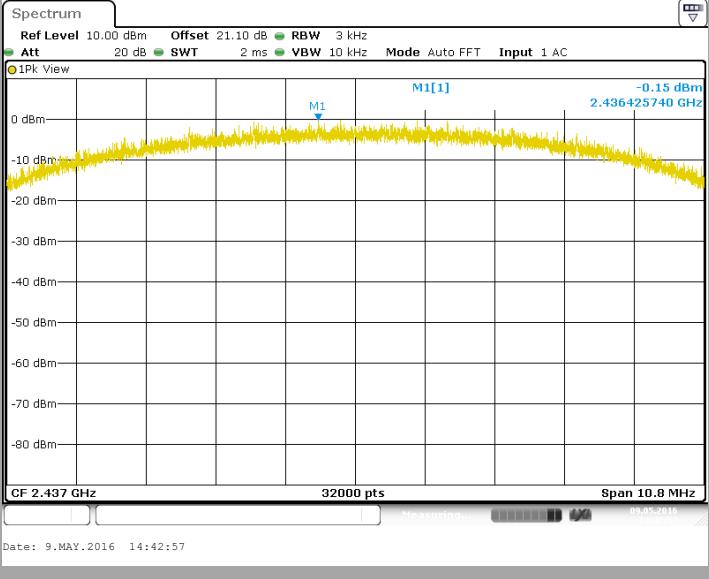
Tx2



Tx3



Tx4



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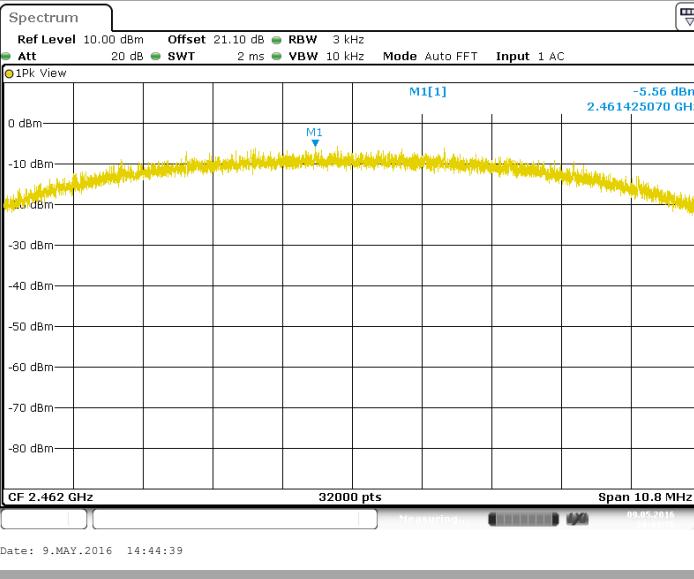


L C I E

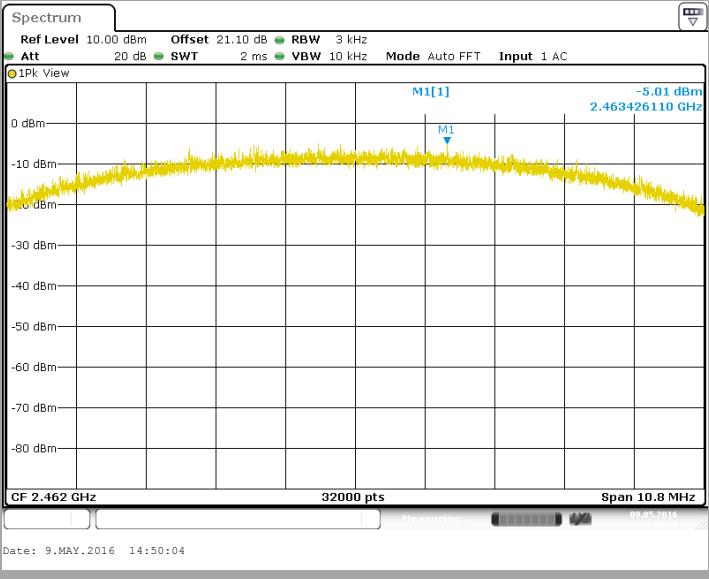
802.11b

Cmax

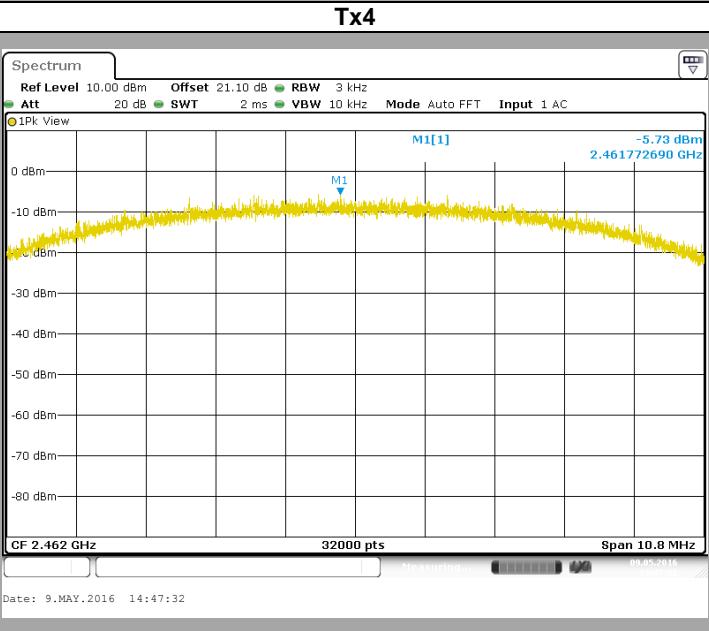
Tx1



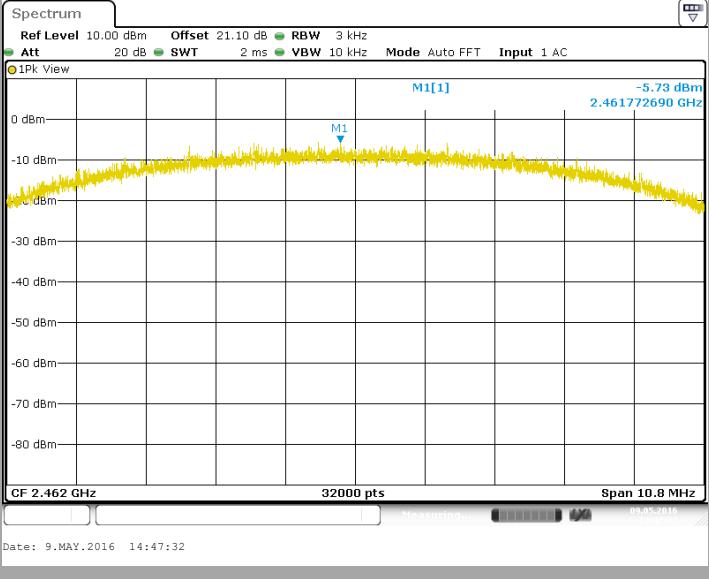
Tx2



Tx3



Tx4



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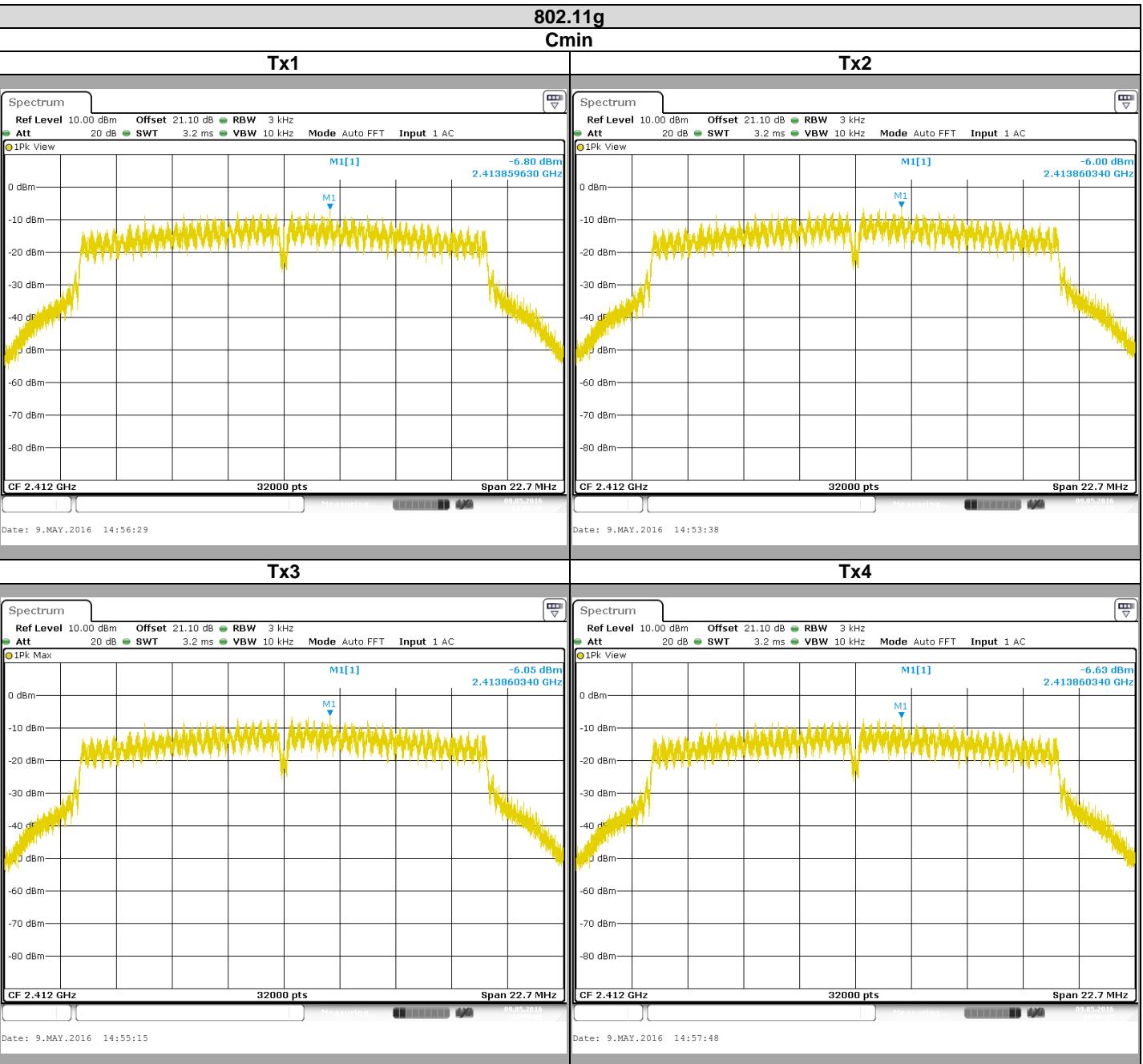
L C I E

802.11g

Cmin

Tx1

Tx2



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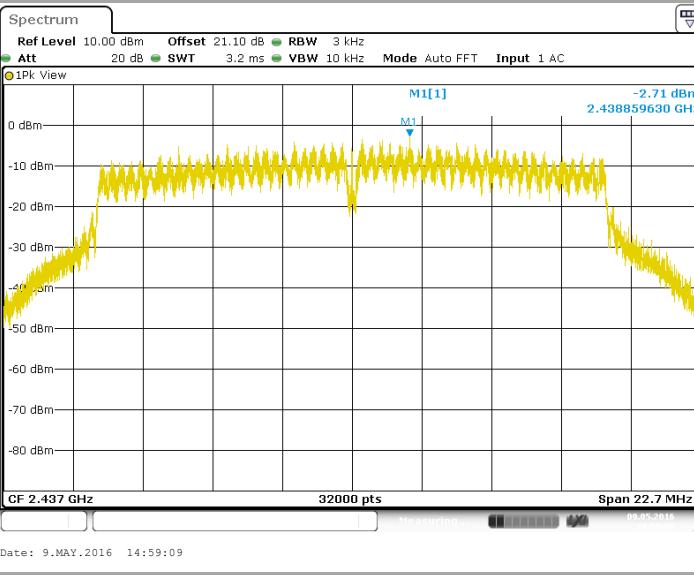


L C I E

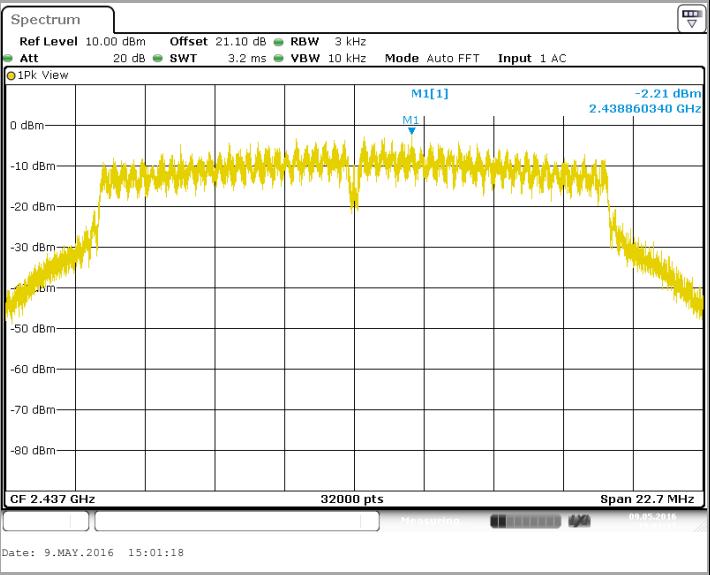
802.11g

Cnom

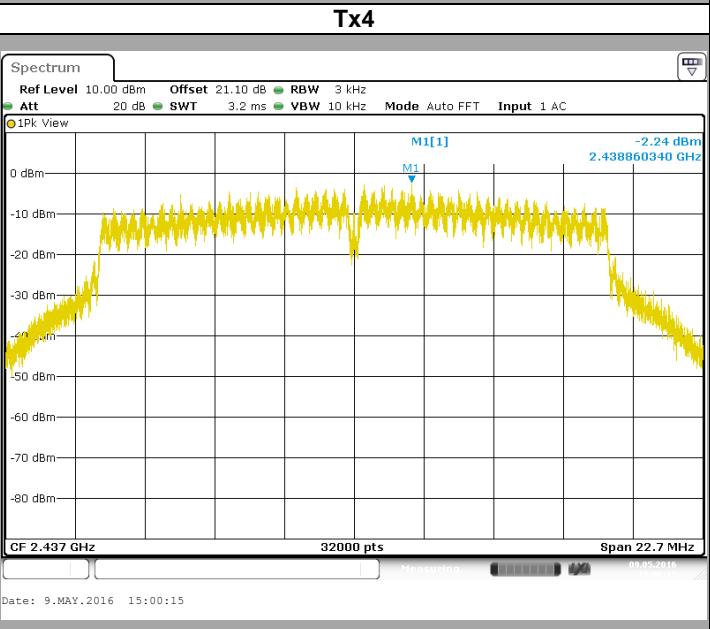
Tx1



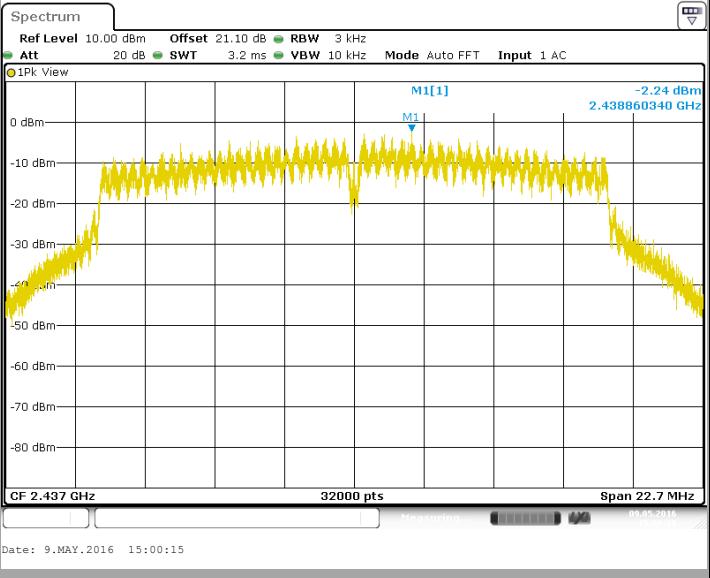
Tx2



Tx3



Tx4



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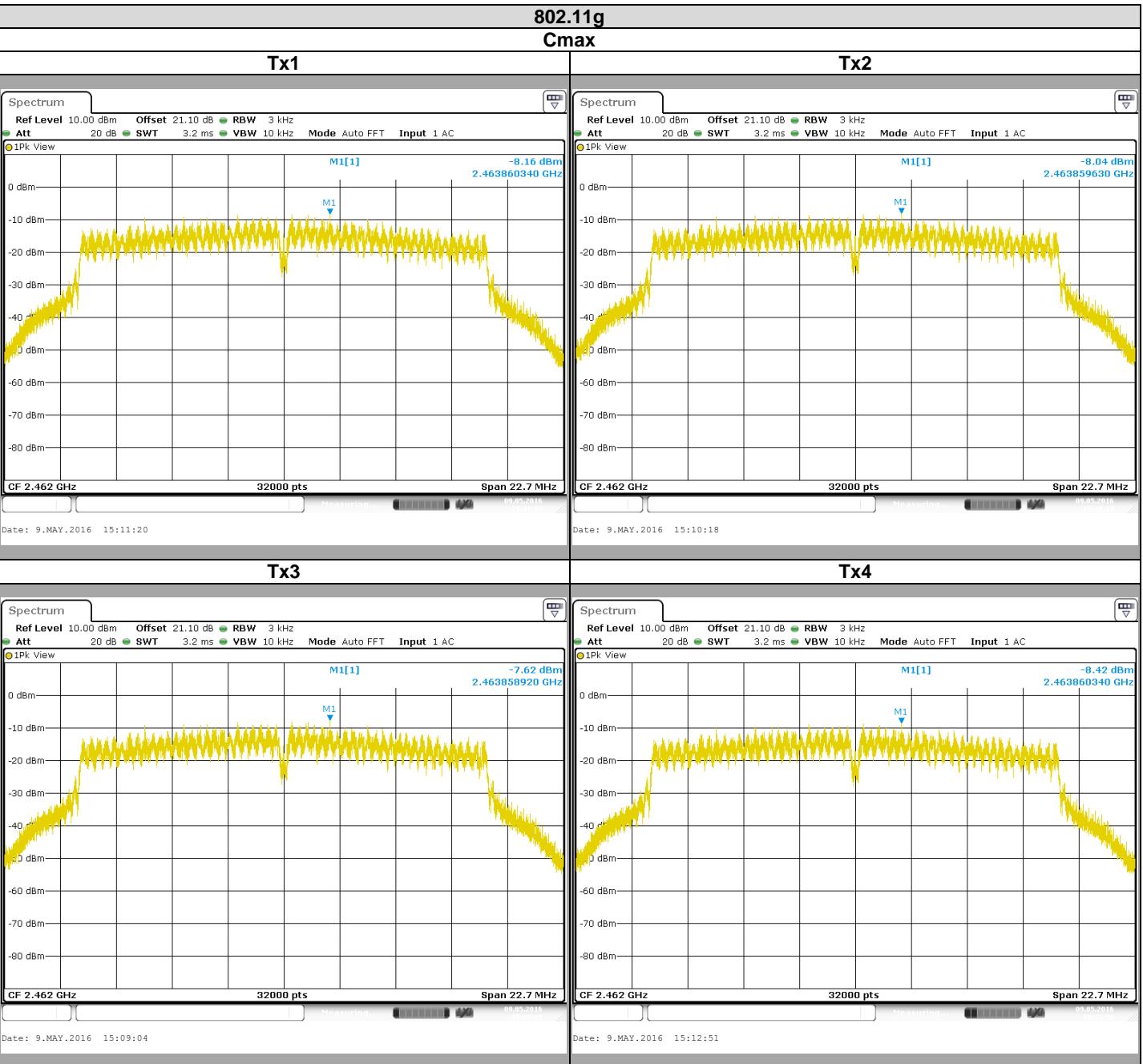
L C I E

802.11g

Cmax

Tx1

Tx2



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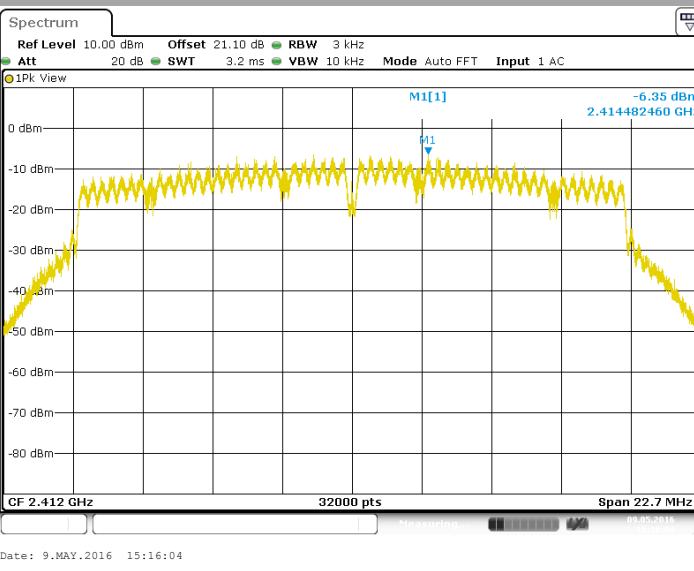


L C I E

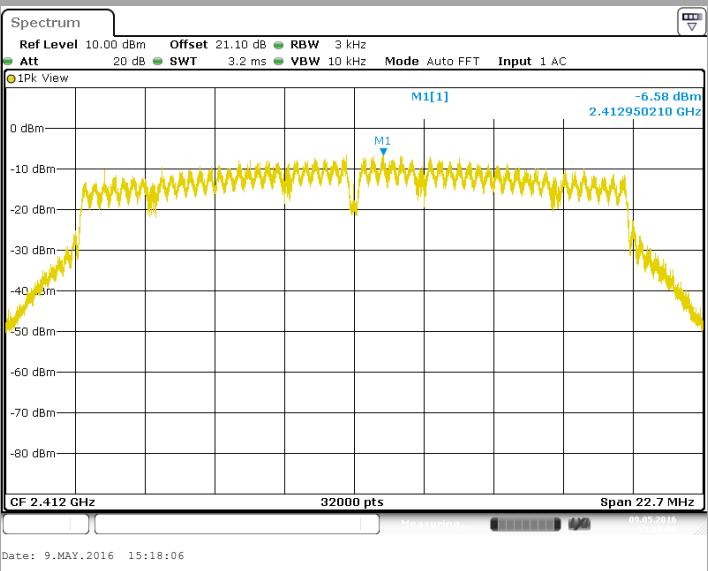
802.11n HT20

Cmin

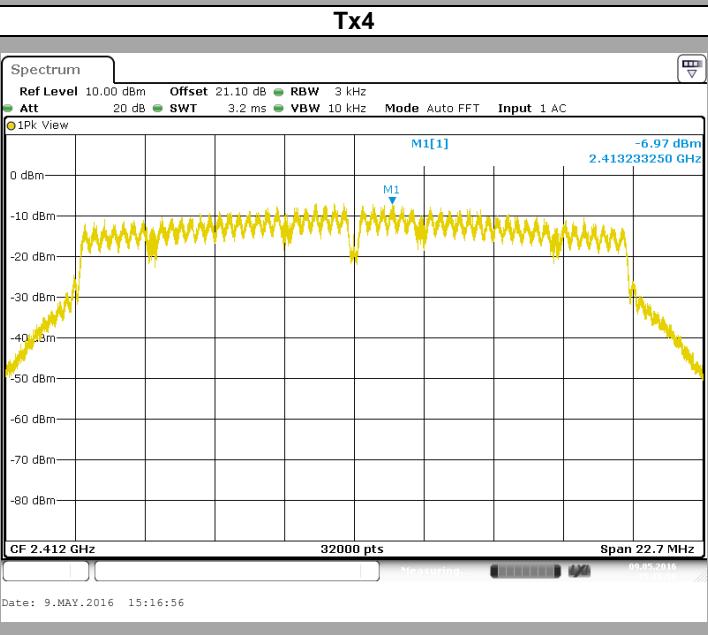
Tx1



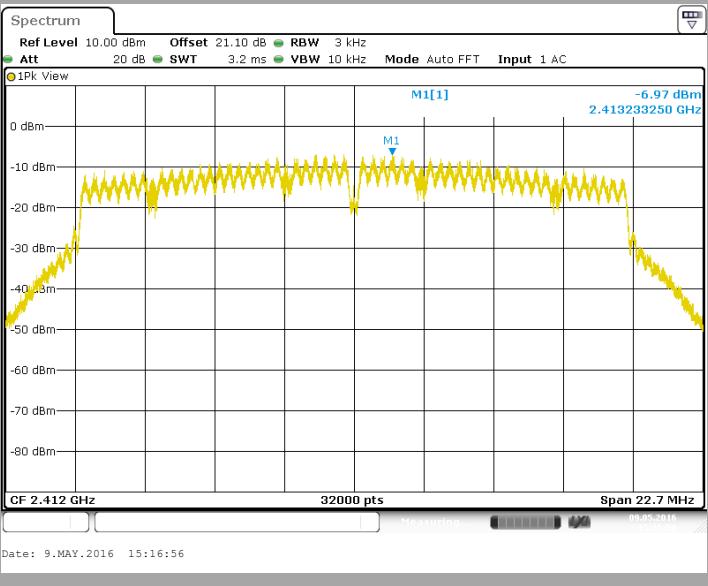
Tx2



Tx3



Tx4



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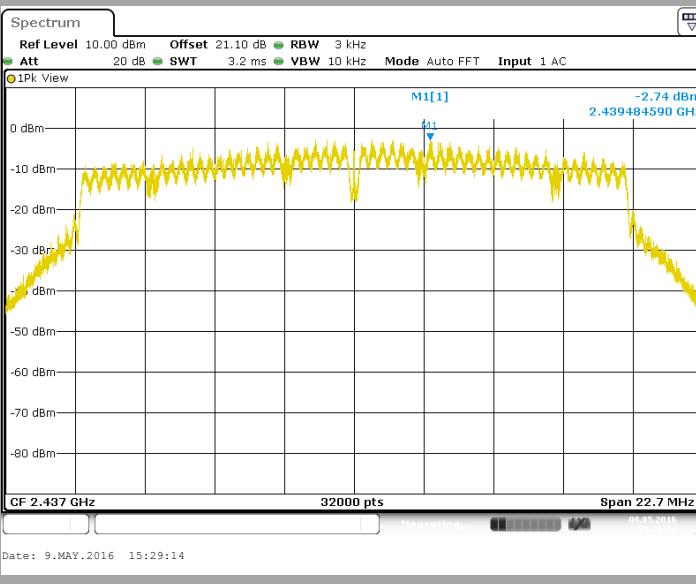


L C I E

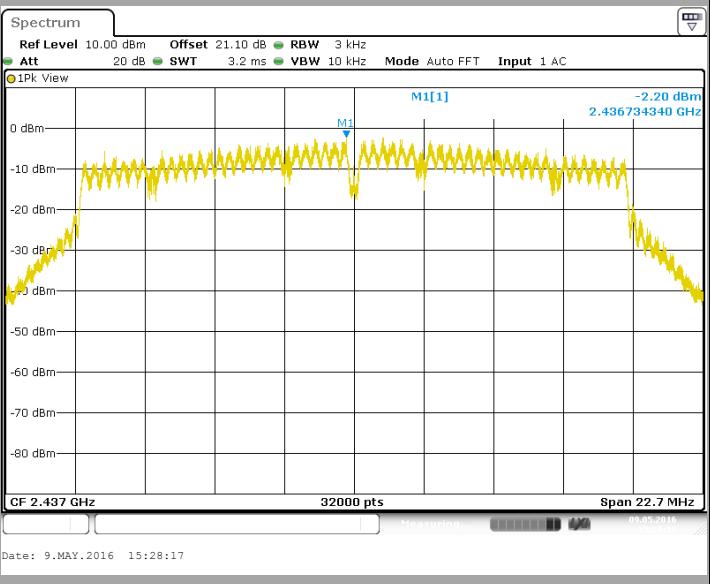
802.11n HT20

Cnom

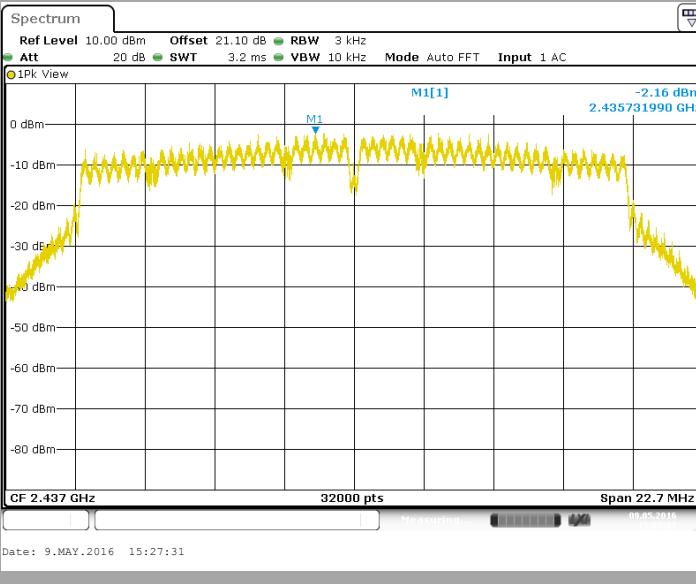
Tx1



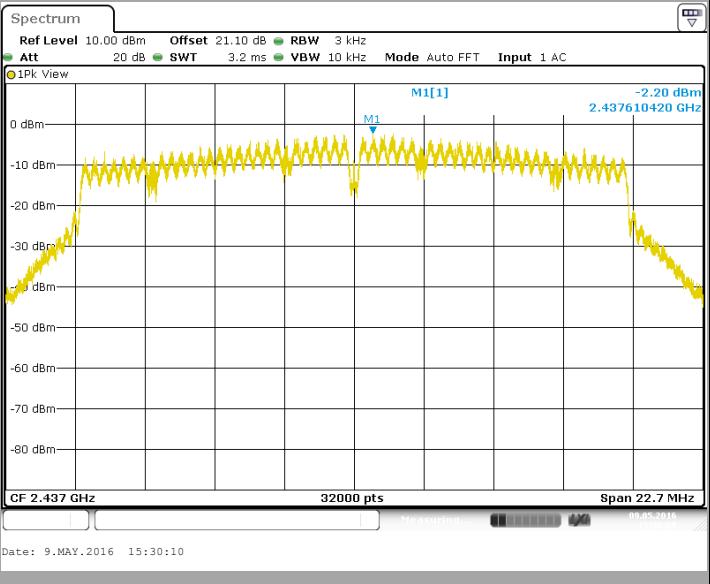
Tx2



Tx3



Tx4



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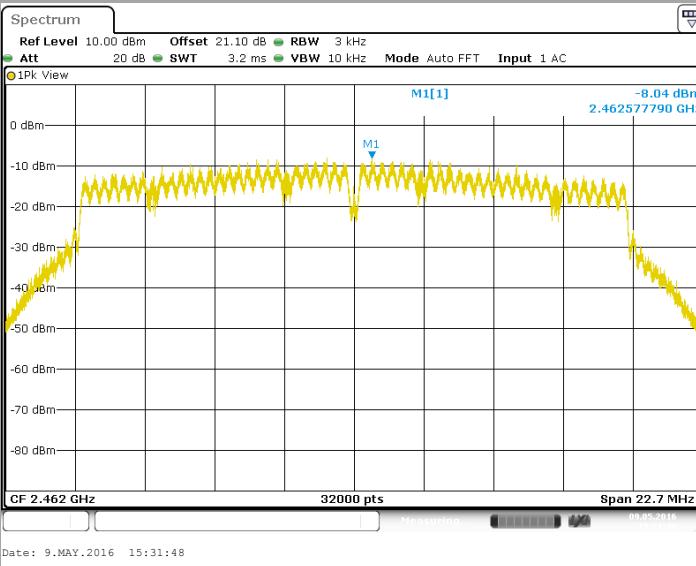


L C I E

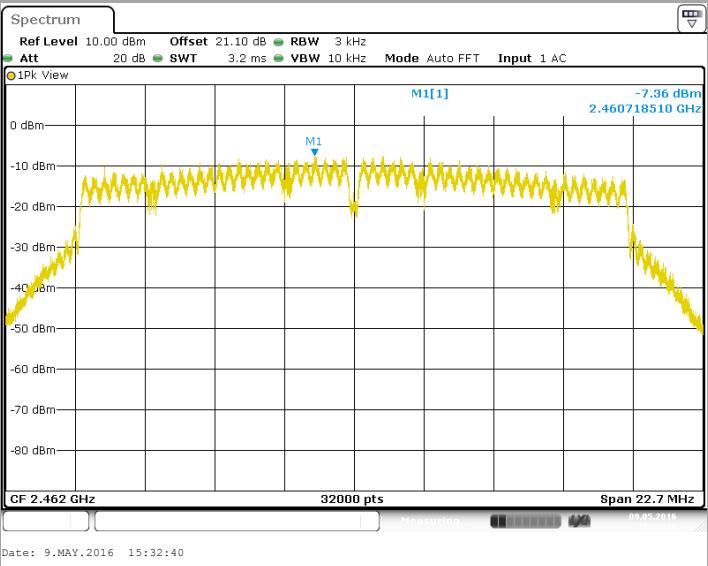
802.11n HT20

Cmax

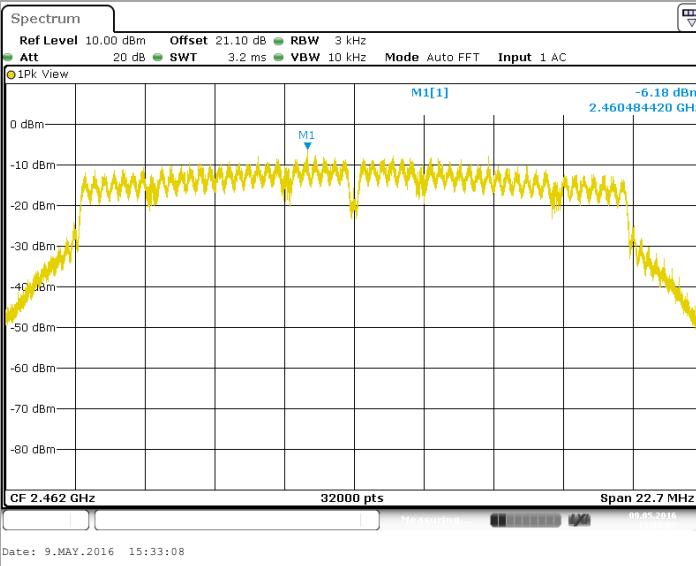
Tx1



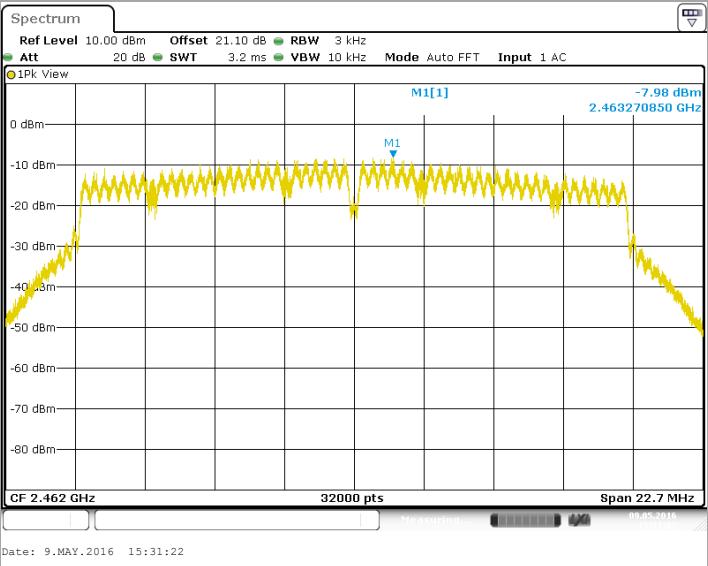
Tx2



Tx3



Tx4



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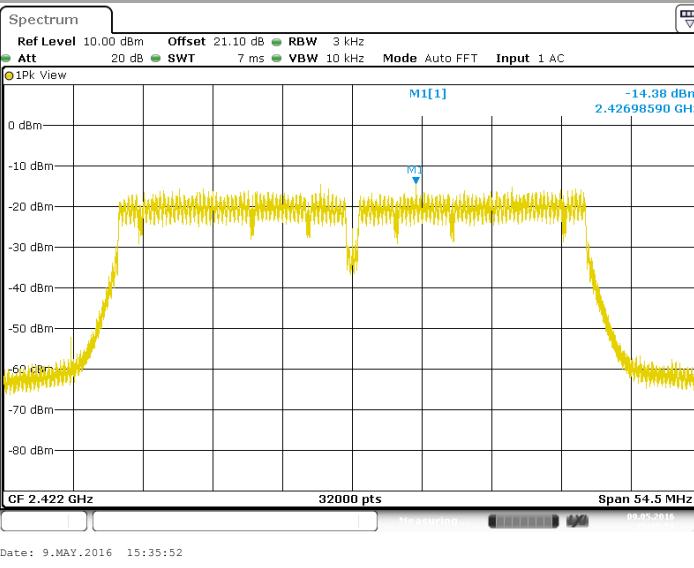


L C I E

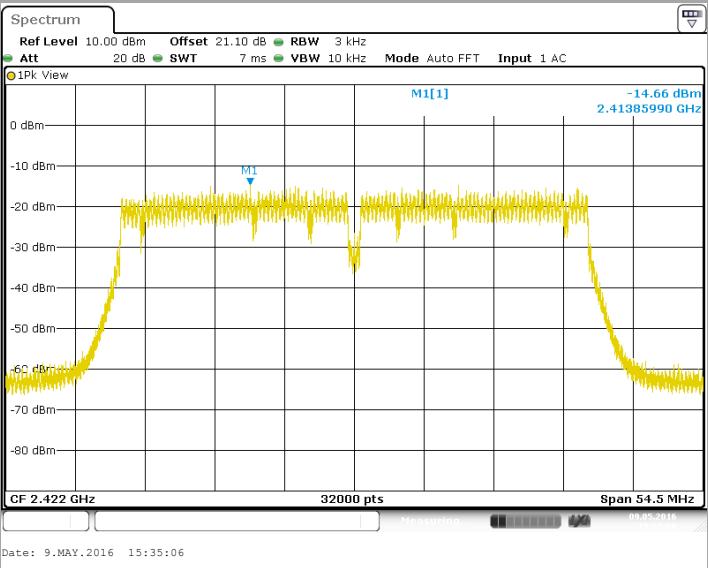
802.11n HT40

Cmin

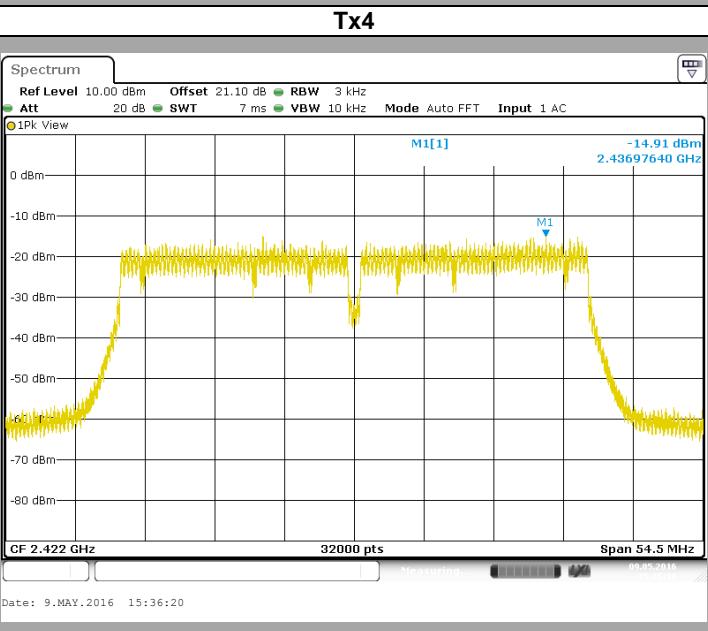
Tx1



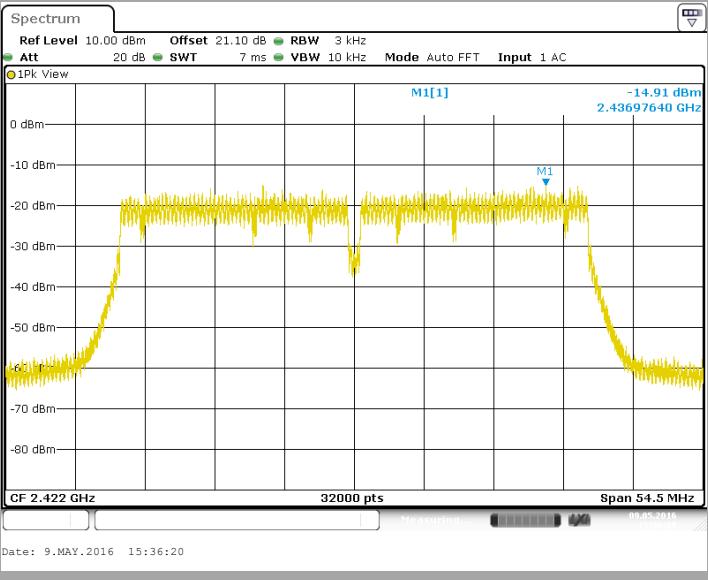
Tx2



Tx3



Tx4



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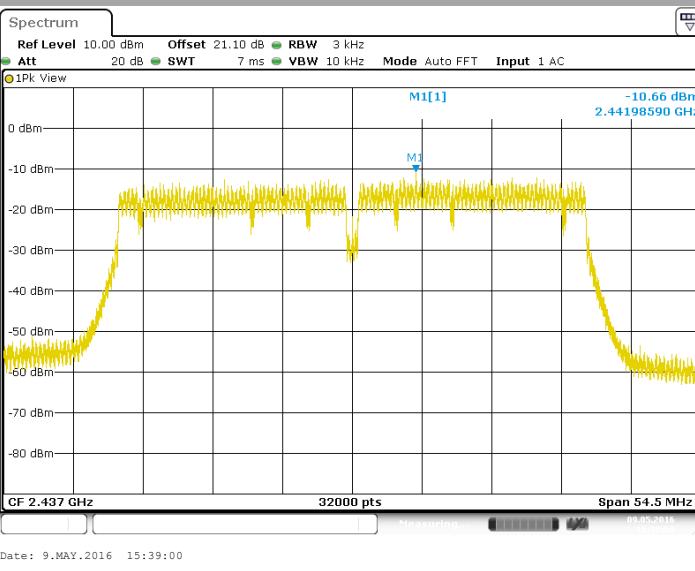


L C I E

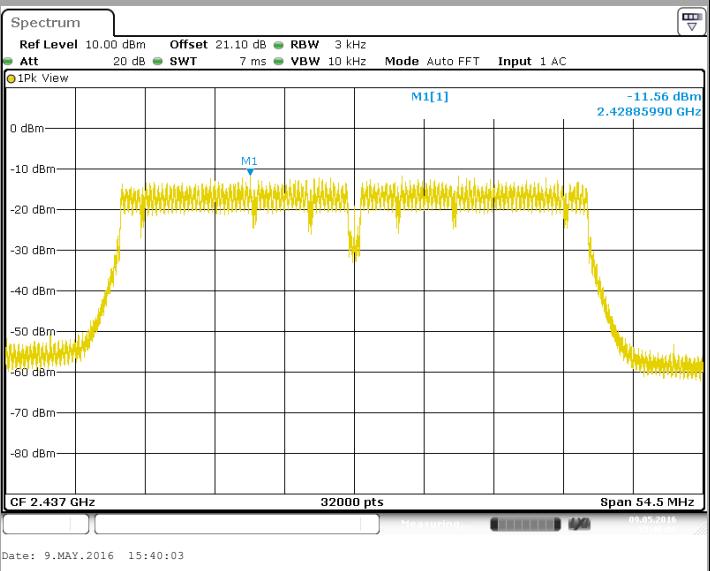
802.11n HT40

Cnom

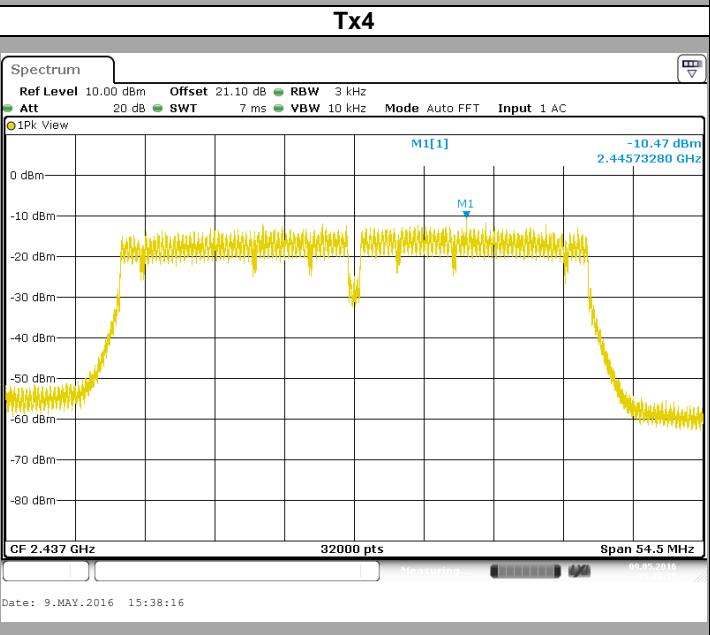
Tx1



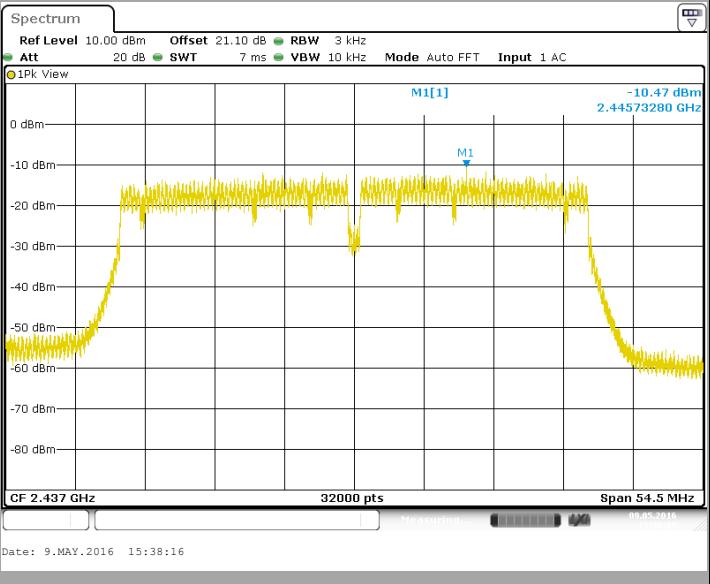
Tx2



Tx3



Tx4



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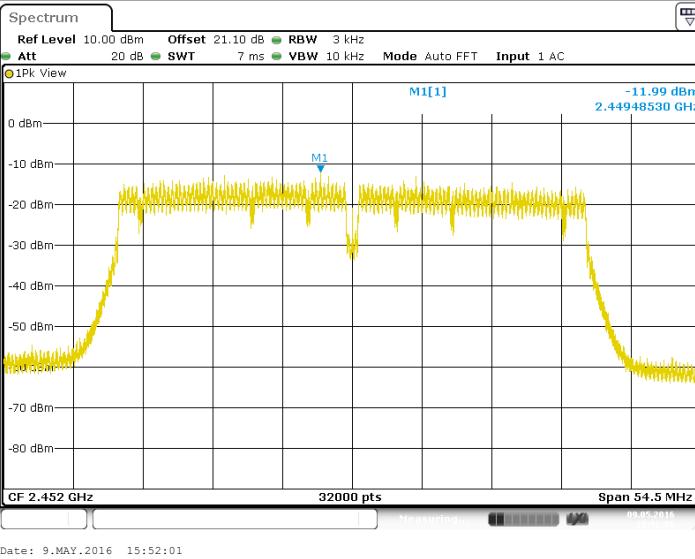


L C I E

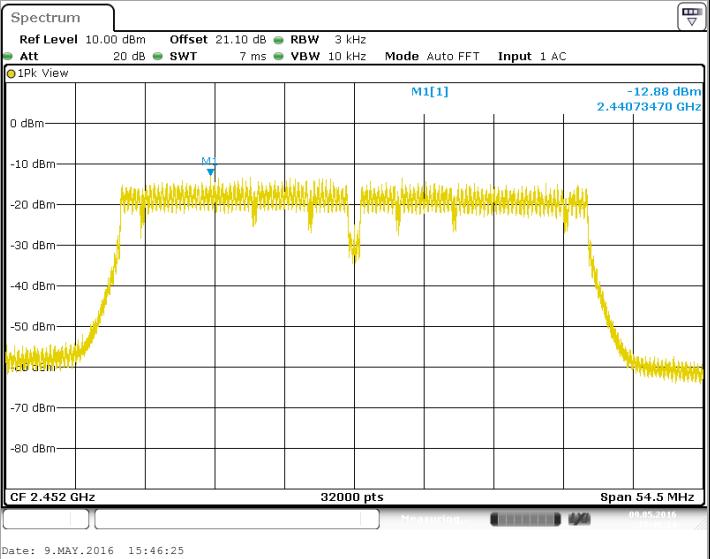
802.11n HT40

Cmax

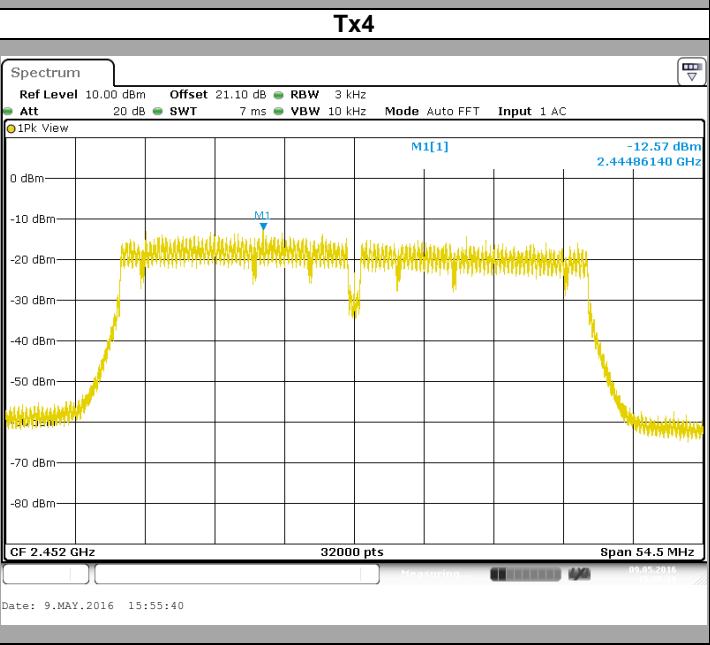
Tx1



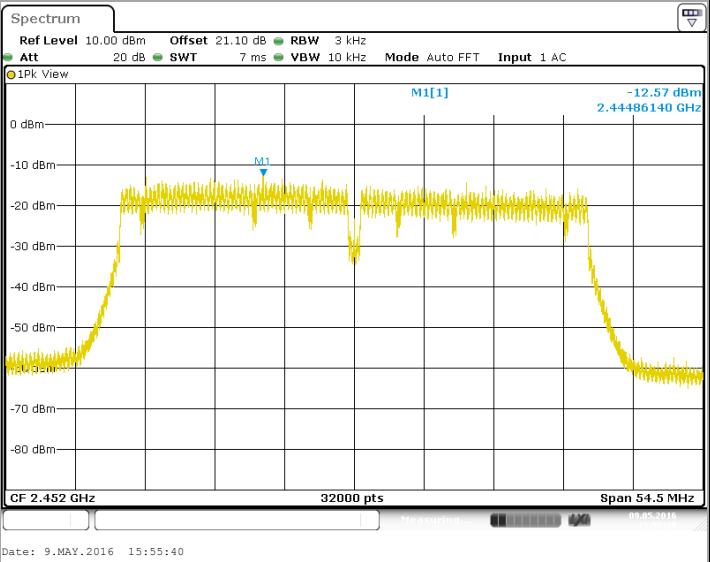
Tx2



Tx3



Tx4



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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: **DM160320300012**, 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



LCIE

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.



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8.5. RESULTS

