



**ELECTROMAGNETIC COMPATIBILITY  
TEST REPORT TO  
FCC 47 CFR Part 15 SUBPART B, SUBPART C- 15.247, 15.212  
& INDUSTRY CANADA ICES-003 Issue 6, RSS-Gen Issue 4, RSS-247 Issue 1  
For Transmitter Intentional Radiator**

**Report Number:** E10702-1604\_Intrinsic-OpenQ410\_SOM\_DTS  
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**Testing laboratory:** QAI LABORATORIES LTD.  
**Address:** 3980 North Fraser Way Burnaby BC V5J 5K5 Canada  
**Phone:** 604.527.8378

**Laboratory Accreditations (per ISO/IEC 17025:2005):**



**American Association for Laboratory Accreditation Certificate Number: 3657.02**

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**Test Standard:** FCC 47 CFR Part 15 SUBPART B; SUBPART C - 15.247, 15.212;  
& INDUSTRY CANADA ICES-003 Issue 6; RSS-Gen Issue 4, RSS-247 Issue1

**Applicant's name:** Intrinsic Technologies Corp.



**Address:** 885 Dunsmuir Street – Suite 300, Vancouver, BC, Canada V6C 1N5  
**Model Number:** Open-Q™ 410 SOM  
**Test Item Description:** Open-Q™ 410 SOM is based on Qualcomm's Snapdragon 410 processor and features a Qualcomm WCN3620 Wi-Fi & BT combo chip to provide wireless connectivity.  
**Industry Canada Registration:** **9049A-ITCOQ410S**  
**FCC ID:** **2AFDI-ITCOQ410S**



## Revision History

Date	Report Number	Rev #	Details	Authors Initials
May 27, 2016	E10702-1604_INTRINSYC-OPENQ410_SOM	0.0	Draft Test Report	JQ
May 31, 2016	E10702-1604_INTRINSYC-OPENQ410_SOM	0.1	Draft Test Report	JQ
June 1, 2016	E10702-1604_INTRINSYC-OPENQ410_SOM	1.0	Final Test Report	JQ
June 2, 2016	E10702-1604_INTRINSYC-OPENQ410_SOM	2.0	Final Test Report	JQ
June 14, 2016	E10702-1604_INTRINSYC-OPENQ410_SOM	3.0	Final Test Report, update M/N	JQ
June 17, 2016	E10702-1604_Intrinsic-OpenQ410_SOM_DTS	4.0	Final Test Report for DTS	JQ
July 15, 2016	E10702-1604_Intrinsic-OpenQ410_SOM_DTS	5.0	Update as per TCB comments	JQ




**EMC TEST SUMMARY**

The following tests demonstrate testimony for the FCC & IC Marks for Transceivers / electromagnetic compatibility testing for this EUT.

	Test	Wi-Fi Standard	BTLE Standard	Description	Result
Part 1	Antenna requirement	FCC 47 CFR Part 15.203, RSS-Gen Issue 4 (7.1.2)		The antenna port has a unique connector	Complies
Part 2	RF power	RSS-247 Issue 1 FCC Subpart C 15.247 (a) (2)		Digitally modulated and frequency hopping systems emissions should not exceed the limits	Complies
Part 3	Radiated spurious emissions	RSS-247 Issue 1 & RSS-210 Issue 8; FCC Subpart C §15.209, 15.247 & 15.31		Emissions from intentional radiator should not exceed the limits	Complies
Part 4	Power Spectral Density	RSS-247 Issue 1 FCC Subpart C 15.247 (e)		Conducted power spectral density shall be not higher than 8 dBm in any 3 kHz band segment	Complies
Part 5	6 dB Occupied Bandwidth	RSS-247 Issue 1, FCC Subpart C §15.247		6 dB bandwidth shall be at least 500 kHz.	Complies
Part 6	99% Occupied Bandwidth	RSS-210 Issue 8, RSS-Gen Issue 5		The bandwidth shall fall completely within the frequency range specified by the standard.	Complies
Part 7	Band edge	RSS-247 Issue 1 Section 5.5; FCC Subpart C §15.247(d)		Spurious emissions shall be 50dBc	Complies
Part 8	Conducted Spurious Emissions	RSS-247 Issue 1; FCC Subpart C §15.247		Radiated Spurious emissions shall be 20dBc	Complies
Part 9	RF Exposure Evaluation	RSS-102 Issue 5 Section 2.5.2 FCC 47 CFR §2.1091 & §1.1310		Any radio transmitter should not emit higher the limit.	Complies
Part 10	Frequency Stability	FCC Part 15.215(c) & RSS-Gen Issue 4 (8.11)		Measured at temperatures of -30°C (-4°F), +20°C (+68°F) and +50°C (+122°F)	Complies
Part 11	Radiated Emissions (Unintentional Mode)	FCC CFR47 Part 15 Subpart B; RSS Gen issue 4, ICES-003 Issue 6		Class B Limits	Complies
Part 12	AC Mains Conducted Emissions	FCC CFR47 Part 15 Subpart B; RSS Gen issue 4, ICES-003 Issue 6		Class B Limits	Complies

Tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC 47 CFR Part 15 SUBPART B, SUBPART C - 15.247, 15.212 & INDUSTRY CANADA ICES-003 Issue 6, RSS-Gen Issue 4, RSS-247 Issue1. The manufacturer is responsible for the tested product configuration, continued product compliance with these standards listed, and for the appropriate auditing of subsequent products as required.

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 Written by Jack Qin  
 RF/EMC Test Engineer/Technical Writer

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 Reviewed by Aman Jathaul,  
 EMC Project Manager



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## Section I. GENERAL TEST INFORMATION

### PRODUCT DESCRIPTION

<b>Equipment Under Test (EUT)</b>	Open-Q™ 410 SOM		
<b>Manufacturer</b>	Intrinsic Technologies Corp.		
<b>Model No.</b>	Open-Q™ 410 SOM		
<b>Serial No.</b>	233-0100-120115-00597		
<b>Input Power</b>	12V DC		
<b>Software and Firmware</b>	Build Number: msm8916_64-userdebug 5.1.1 LMY47V eng.git. 20150610.150037 test-keys		
<b>Operational Description</b>			
<p>Intrinsic's Open-Q™ 410 SOM is a compact, production ready module based upon Qualcomm's Snapdragon 410 processor. The SOM's small form factor, advanced technology, and extensive range of supported peripherals provide the perfect platform for creating low cost, high performance embedded and mobile devices. The Qualcomm® Snapdragon™ 410 processor is a Quad-core ARM® Cortex™ A53 64-bit 1.2GHz clock speed per core processor designed for both 32-bit and 64-bit operations and its Qualcomm® Adreno™ 306 400MHz GPU supports image sensors up to 13 MP and provides 1080p HD video playback and capture. The SOM features an Qualcomm WCN3620 Wi-Fi + BT Combo chip that references a 19.2000 MHz crystal and provides wireless connectivity for WLAN 802.11b/g/n 2.4GHz and Bluetooth 4.1. An Qualcomm WGR4640 RF front end provides GPS functionality.</p>			
Modulation	Transmit Power	Frequency Range	Number of Channels
	dBm	MHz	
Bluetooth – GFSK Modulation	10.94	2402 – 2480	78
Bluetooth – $\pi/4$ -DQPSK Modulation	10.88	2402 – 2480	79
Bluetooth – 8DPSK Modulation	11.25	2402 – 2480	79
BTLE – GFSK Modulation	2.24	2402 – 2480	40
Wi-Fi 802.11b – CCK 1 Mbps	19.62	2412 – 2462	11
Wi-Fi 802.11g – OFDM 6 Mbps	18.12	2412 – 2462	11
Wi-Fi 802.11n 20 MHz – OFDM MCS 6.5	17.23	2412 – 2462	11
Wi-Fi 802.11n 40 MHz – OFDM MCS 13.5	11.73	2422 – 2452	7

### ANTENNA SPECIFICATION

Parameter	Specification
Manufacturer	LSR
Part Number	001-0014
Peak Gain	+2 dBi
Average Gain	>-1.5 dBi
Impedance	50 ohms
Type	Flexible Planar inverted F Antenna (FlexPIFA)
Polarization	Linear
VSWR	<2.0:1, 2400 - 2480
Frequency	2400 - 2480 MHz
Weight	1.13g
Size	40.1mm x 11mm x 2.5mm
Antenna Color	Clear Yellow
Adhesive	3M 100MP
Operating Temp	-40 to +85 C
Connector Height	U.FL: 2.5mm Max.



**Open-Q™ 410 SOM (EUT) on carrier board**



**The EUT's AC power adapter for the tests**



## FACILITIES AND ACCREDITATION

<b>Main Laboratory Headquarters:</b>	<b>Quality Auditing Institute</b>
Headquarters Location/Address:	3980 North Fraser Way, Burnaby, BC V5J Canada
FCC Designation Number:	CA9543
Industry Canada Test Site Registration Number (3 m SAC):	21146
American Association for Laboratory Accreditation Certificate Number:	3657.02

## ENVIRONMENTAL CONDITIONS

Indoor Temperature: 22-28°C R.H.: 39.7 - 54.4%

## TESTING METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4:2014, ANSI C63.10, FCC 47 CFR Part 15 SUBPART B, SUBPART C - 15.247, 15.212 & INDUSTRY CANADA ICES-003 Issue 6, RSS-Gen Issue 4, RSS-247 Issue1. The FCC testing was also done using the FCC KDB 558074 D01 DTS Measurement Guidance v03r05 for the Wi-Fi and BLE transmitters and the FCC Public Notice DA 00-705 Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems

## EUT TESTING CONFIGURATION

For the purpose of compliance testing, the transmitter of the EUT was set for continuous operation on various frequencies in modulated modes of operation.

## WORST TEST CASE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was **19.62dBm at 2412 MHz for the Wi-Fi 802.11b mode.**

## TEST SETUP

For conducted tests the EUT was installed in a test fixture connected to an EMI receiver and Spectrum Analyzer as well as a host laptop computer during the tests. Test software exercised the radio card. A separate EUT connected to an AC power adapter was used for the radiated tests.

## GENERAL TEST PROCEDURES

### **RF Conducted Emissions**

The EUT is placed on a test bench connected directly to an EMI Receiver and Spectrum Analyzer. Conducted emissions are measured in the frequency range 10kHz to 25GHz using CISPR Peak, Quasi-Peak and Average detectors.

### **AC Mains Conducted Emissions**

The EUT is placed on the turntable 0.8m above a ground plane. Conducted emissions are measured in the frequency range 0.15 – 30MHz using CISPR quasi-peak and average detector.

### **Radiated Emissions**

The EUT is placed on the turntable 0.8m above a ground plane 3m away from a receiving antenna. Height of receiving antenna varied from 1m to 4m, its polarity changes from vertical to horizontal. Turntable rotates 360 degrees. Motion of turntable and receiving antenna allows determining position of maximum emission level. Quasi-peak detector applies for measurements of emissions with frequency range of 30 to 1000MHz. and average/peak detector applies otherwise.



## TESTING EQUIPMENT

Manufacturer	Model	Description	Serial No.	Last Cal	Cal Due Date
ETS Lindgren	2165	Turntable	00043677	N/A	N/A
ETS Lindgren	2125	Mast	00077487	N/A	N/A
Rohde & Schwarz	ESU40	EMI Receiver	100011	20-Nov-2014	26-Jun-2017
FCC	FCC-LISN-50-25-2	LISN (150kHz-30MHz)	9927	22-Feb-2016	22-Feb-2019
EMCO	6502	Loop Antenna 10kHz-30MHz	2178	21-Aug-2014	21-Aug-2017
Sunol Sciences	JB3	Biconilog Antenna 30MHz-3GHz (Prescan use only)	A120106	24-Sep-2014	24-Sep-2017
ETS Lindgren	3117	Horn Antenna 1GHz-18GHz	00075944	29-Aug-2013	29-Aug-2016
EMCO	3160-09	Horn Antenna 18GHz-26.54GHz	9701-1071	30-Aug-2013	30-Aug-2016
ETS Lindgren	S201	5-meter Semi-Anechoic Chamber	1030	N/A	N/A
A.H. Systems Inc	PAM-1840VH	Preamplifier	152	14-Jun-2013	14-Jun-2016
A.H. Systems Inc	SAC-40G-2.25	RF cable	396	Conditional use	
A.H. Systems Inc	SAC-40G-0.3	RF cable	395	Conditional use	

### Measurement Software List

Manufacturer	Model	Version	Description
Rhode & Schwarz	EMC 32	6.20.0	Emissions Pre-scan Test Software

## MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Radiated Emissions, 30MHz-1GHz	± 2.40 dB
Radiated Emissions, 1GHz-40GHz	± 2.48 dB
Radio Frequency	±1.5Hz
Total RF Power Conducted	±1.36 dB
Spurious Emissions, Conducted	±1.36 dB
RF Power Density, Conducted	±1.36 dB
Temperature	±1°C
Humidity	±5 %
DC and low frequency voltages	±3 %





## **Section II. Requirements for the US (FCC ) & Canadian Market(IC):**

### **Part 1 - Antenna Requirements**

DATE: May 18, 2016

TEST STANDARD: FCC 47 CFR Part 15.203 and IC Rss-Gen Issue 4 Section 7.1.2

APPLICABLE REGULATIONS: - "An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited." ... "the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded."

RESULT: This unit meets this requirement.



## Part 2 – RF Power

DATE: April 27, 2016

TEST STANDARD: RSS-247 Issue 1  
 FCC Subpart C §15.247(a) (2), 15.247(b)

MINIMUM STANDARD: the maximum peak conducted output power shall not exceed 1.0 W (30 dBm).

TEST SETUP: The antenna port of EUT was directly connected to a spectrum analyser for measuring conducted RF power and, the radiated RF power is measured at 3m distance

MEASUREMENT METHOD: As called by the standards described above.

DEVICE DESCRIPTIONS: As described in the above EUT description and set up section.

OBSERVATIONS: The EUT performed as expected.

PERFORMANCE: Complies.

EMISSIONS DATA & PLOT:

### Conducted Peak Output Power

Modulation	Channel	Frequency	Un-corr Power	Correction Factors	Output Power	Result
		MHz	dBm	dB	dBm	
Wi-Fi 802.11b	<b>Low</b>	<b>2412</b>	<b>-12.3</b>	<b>31.92</b>	<b>19.62</b>	<b>Pass</b>
	Mid	2437	-12.55	31.96	19.41	Pass
	High	2462	-13.5	31.92	18.42	Pass
Wi-Fi 802.11g	Low	2412	-19.8	31.92	12.12	Pass
	Mid	2437	-13.84	31.96	18.12	Pass
	High	2462	-20.12	31.92	11.8	Pass
Wi-Fi 802.11n	Low	2412	-19.63	31.92	12.29	Pass
	Mid	2437	-14.73	31.96	17.23	Pass
	High	2462	-19.8	31.92	12.12	Pass
Wi-Fi 802.11n (40MHz)	Low	2422	-22	31.94	9.94	Pass
	Mid	2437	-20.23	31.96	11.73	Pass
	High	2452	-22.25	31.94	9.69	Pass
Bluetooth Low Energy	<b>Low</b>	<b>2402</b>	<b>-29.72</b>	<b>31.96</b>	<b>2.24</b>	<b>Pass</b>
	Mid	2440	-30.42	32	1.58	Pass
	High	2480	-30.78	31.98	1.2	Pass



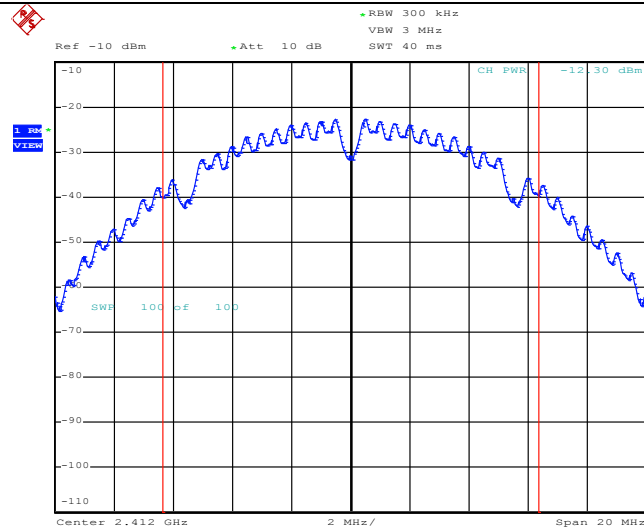
**EIRP Output Power**

Modulation	Freq.	Peak-Raw	Pol.	Anten. Height	Angle	Gain/Loss	Anten. factor	Peak Corr	EIRP	Result
	MHz	dBuV/m	V/H	cm	deg	dB	dBm	dBuV/m	dBm	
Wi-Fi 802.11b	2412	70.5	V	107	190	3.43	32.5	106.43	11.17	Pass
	2412	65.54	V	164	147	3.43	32.5	101.47	6.21	Pass
	2437	69.51	V	169.4	67.1	3.42	32.5	105.43	10.17	Pass
	2437	61.46	H	168.1	134.1	3.42	32.5	97.38	2.12	Pass
	2462	66.23	V	158.7	68.2	3.61	32.5	102.34	7.08	Pass
	2462	60.06	H	218.4	133.6	3.61	32.5	96.17	0.91	Pass
Wi-Fi 802.11g	<b>2412</b>	<b>77.84</b>	<b>V</b>	<b>100</b>	<b>36.3</b>	<b>3.43</b>	<b>32.5</b>	<b>113.77</b>	<b>18.51</b>	<b>Pass</b>
	2412	70.28	H	110.6	116.5	3.43	32.5	106.21	10.95	Pass
	2437	76.74	V	100	52	3.42	32.5	112.66	17.4	Pass
	2437	69.3	H	100	116.1	3.42	32.5	105.22	9.96	Pass
	2462	75.2	V	228.1	346.8	3.61	32.5	111.31	16.05	Pass
	2462	70.12	H	100	117.4	3.61	32.5	106.23	10.97	Pass
Wi-Fi 802.11n	2412	67.13	V	100	331.1	3.43	32.5	103.06	7.8	Pass
	2412	63.73	H	100	313.2	3.43	32.5	99.66	4.4	Pass
	2437	75.19	V	100	252.3	3.42	32.5	111.11	15.85	Pass
	2437	71.45	H	100	263.2	3.42	32.5	107.37	12.11	Pass
	2462	74.66	V	108.8	317.6	3.61	32.5	110.77	15.51	Pass
	2462	69.98	H	100	265.9	3.61	32.5	106.09	10.83	Pass
Wi-Fi 802.11n (40MHz)	2422	73.51	V	100	322.1	3.59	32.5	109.6	14.34	Pass
	2422	70.67	H	100	305.9	3.59	32.5	106.76	11.5	Pass
	2437	72.33	V	100	314.2	3.42	32.5	108.25	12.99	Pass
	2437	70.23	H	100	292.3	3.42	32.5	106.15	10.89	Pass
	2452	72.55	V	100	306.8	3.75	32.5	108.8	13.54	Pass
	2452	68.93	H	107	244.3	3.75	32.5	105.18	9.92	Pass
Bluetooth Low Energy	<b>2402</b>	<b>63.53</b>	<b>V</b>	<b>109.5</b>	<b>213.3</b>	<b>3.88</b>	<b>32.5</b>	<b>99.91</b>	<b>4.65</b>	<b>Pass</b>
	2402	58.1	H	274.6	329.6	3.88	32.5	94.48	-0.78	Pass
	2440	61.22	V	100	279.3	3.46	32.5	97.18	1.92	Pass
	2440	54.81	H	191.2	356.1	3.46	32.5	90.77	-4.49	Pass
	2480	60.51	V	172.3	255.5	3.62	32.5	96.63	1.37	Pass
	2480	53.56	H	186.1	29.3	3.62	32.5	89.68	-5.58	Pass



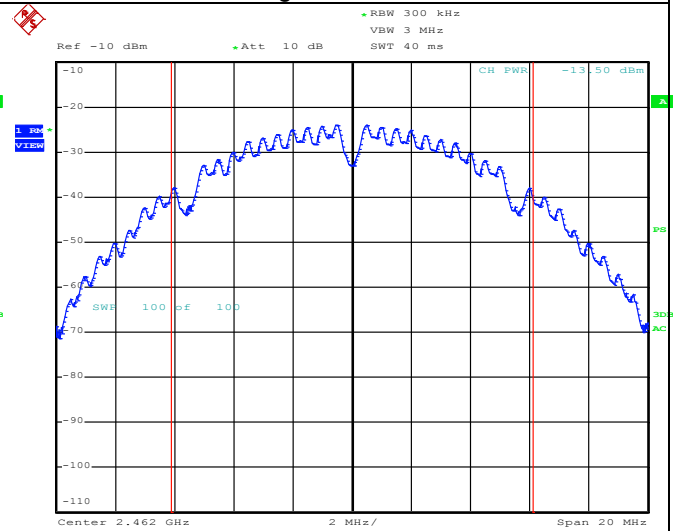
### Wi-Fi 802.11b

#### Low Channel



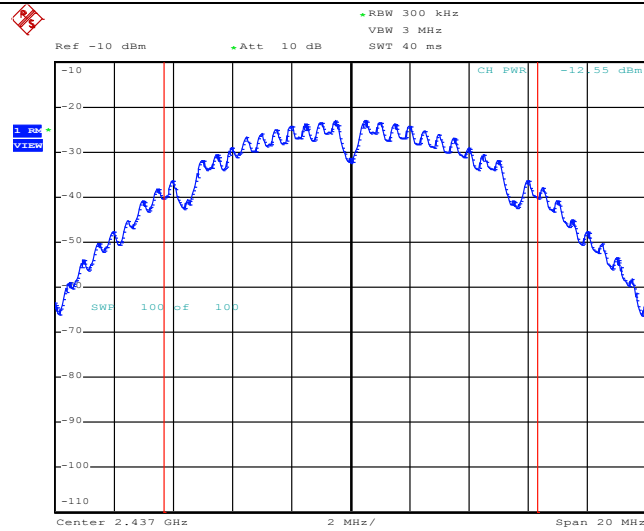
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#### High Channel



Date: 27.APR.2016 13:52:00

#### Middle Channel

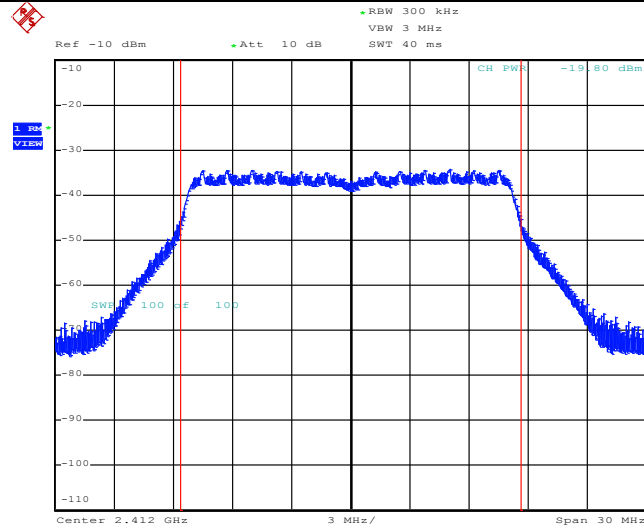


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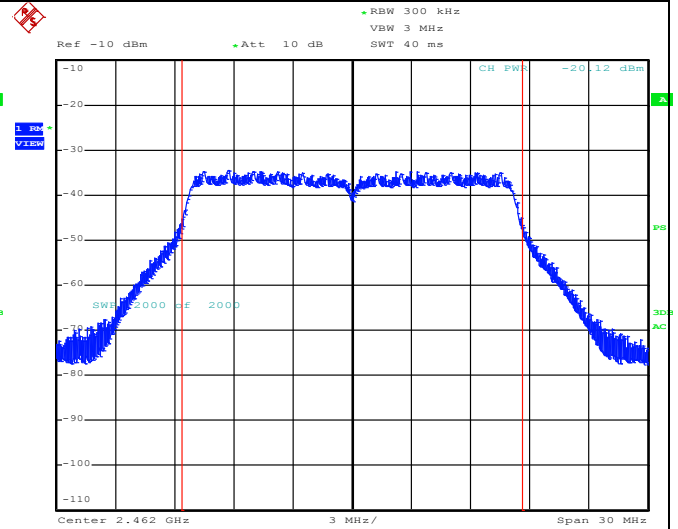
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#### Low Channel



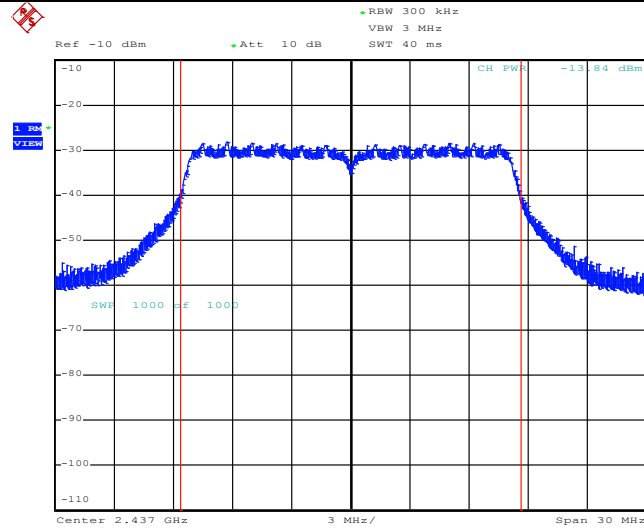
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#### High Channel



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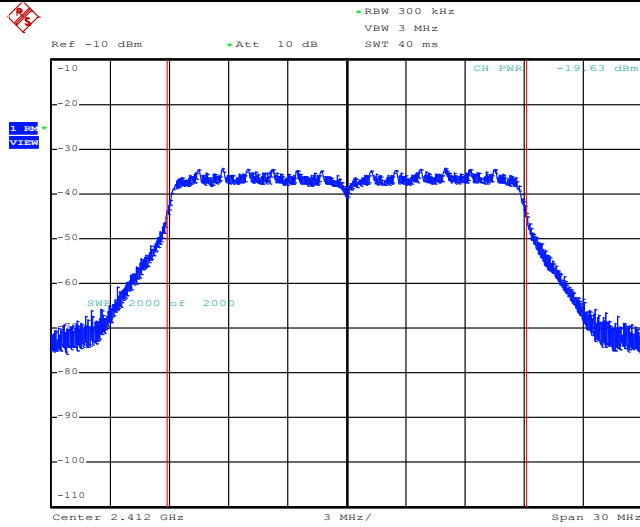


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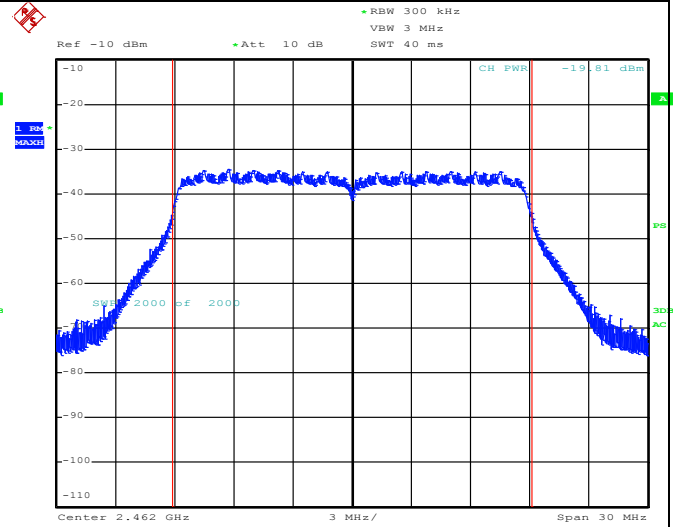
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#### Low Channel



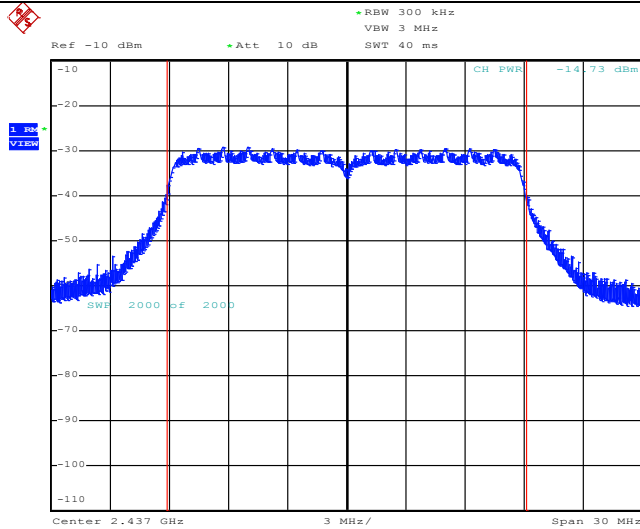
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#### High Channel



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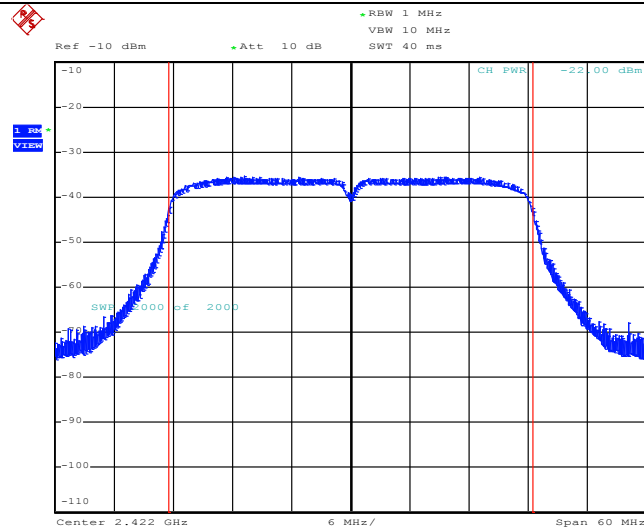


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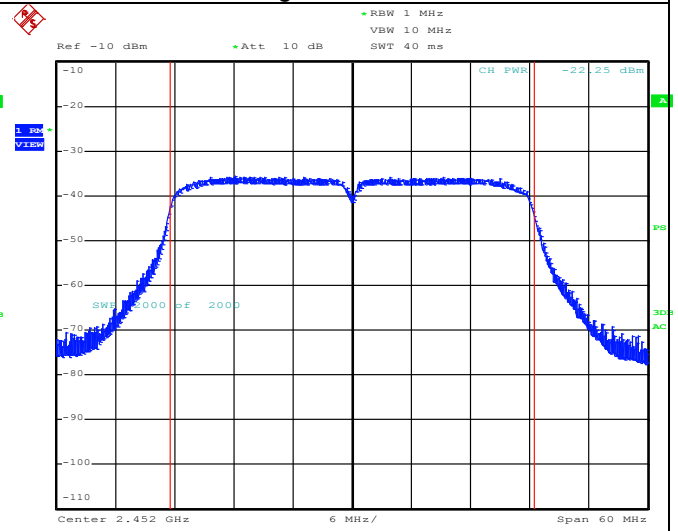
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#### Low Channel



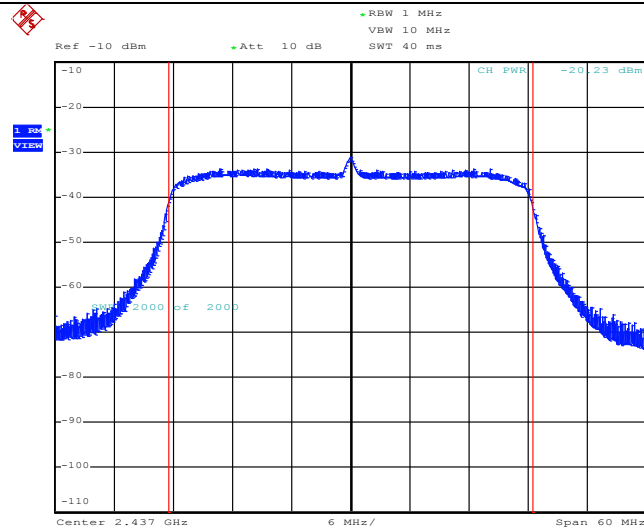
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#### High Channel



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#### Middle Channel

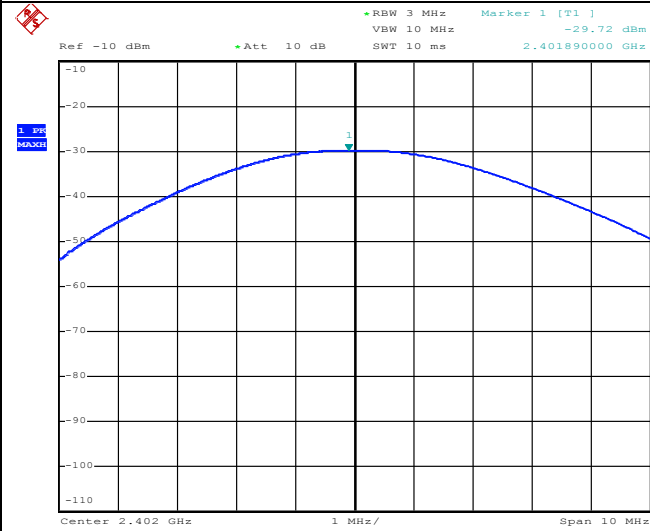


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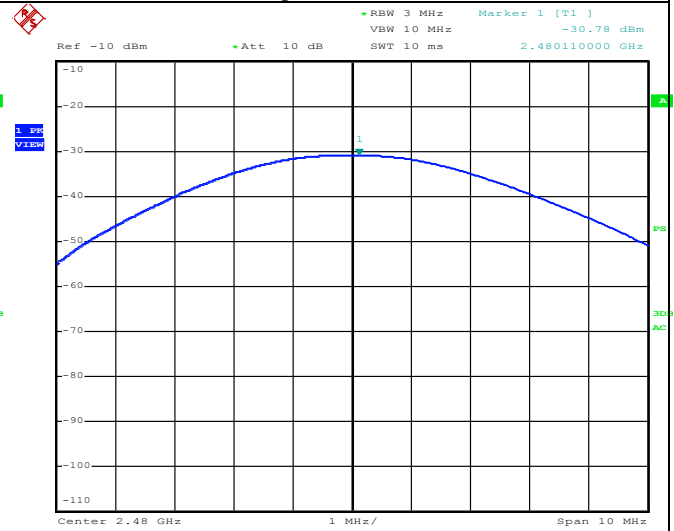
### Bluetooth Low Energy

#### Low Channel



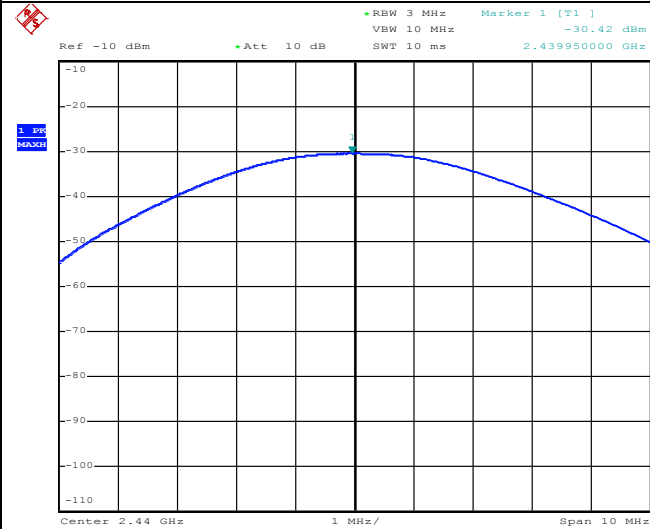
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#### High Channel



Date: 29.APR.2016 09:27:15

#### Middle Channel



Date: 29.APR.2016 09:26:22





### Part 3 - Radiated Spurious Emissions

DATE: April 27, 2016  
 TEST STANDARD: RSS-247 Issue 1 & RSS-210 Issue 8;  
 FCC Subpart C §15.209, 15.247 & 15.31

MINIMUM STANDARD: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

**Limits if emissions fall in restricted bands:**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

**RESTRICTED BANDS OF OPERATION**

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
1 0.495-0.505*	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

\* - note FCC-specific .

Canada-specific frequency rangs - 3.020-3.026, 5.677–5.683, 121.94-123.0. 149.9-150.05, 162.0125-167.17, 167.72-173.2, 1300-1427, 2483.5-2500, 3500-3600,

(2) Above 38,6 GHz



**(b)** Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements.

**TEST SETUP:** The EUT was tested in our 3 m SAC and was positioned on the center of the turntable. The transmitter was set for continuous transmission. The lowest, middle and highest channels in the 2400-2483.5 MHz band were measured for all radiated emissions 10kHz to 18 GHz. The EUT was pre-scanned in 3 different orthogonal orientations to find out the worst case of radiated emissions, which was shown in the test photos.  
This test will be performed separately while unit was transmitting using: Bluetooth – GFSK,  $\pi/4$ -DQPSK and 8DPSK Modulations  
BTLE – GFSK Modulation, 802.11b – CCK 1 Mbps, 802.11g – OFDM 6 Mbps, 802.11n 20 MHz – OFDM MCS 6.5, 802.11n 40 MHz – OFDM MCS 13.5  
Above 1GHz the RF Absorbers were placed on the Ground Plane.

**MEASUREMENT METHOD:** Measurements were made using spectrum analyser and receiver, 200Hz RBW average detector for the frequency range 9-150KHz; 9kHz RBW average detector for the frequency range 150kHz to 30MHz; 120kHz RBW quasi-peak detector for the frequency range 30MHz to 1GHz; 1MHz RBW average detector for the frequency range above 1GHz.

**DEVICE DESCRIPTIONS:** As described in the above EUT description and setup section.

**MODIFICATIONS:** The EUT did not require any modifications.

**PERFORMANCE:** Complies with Standard

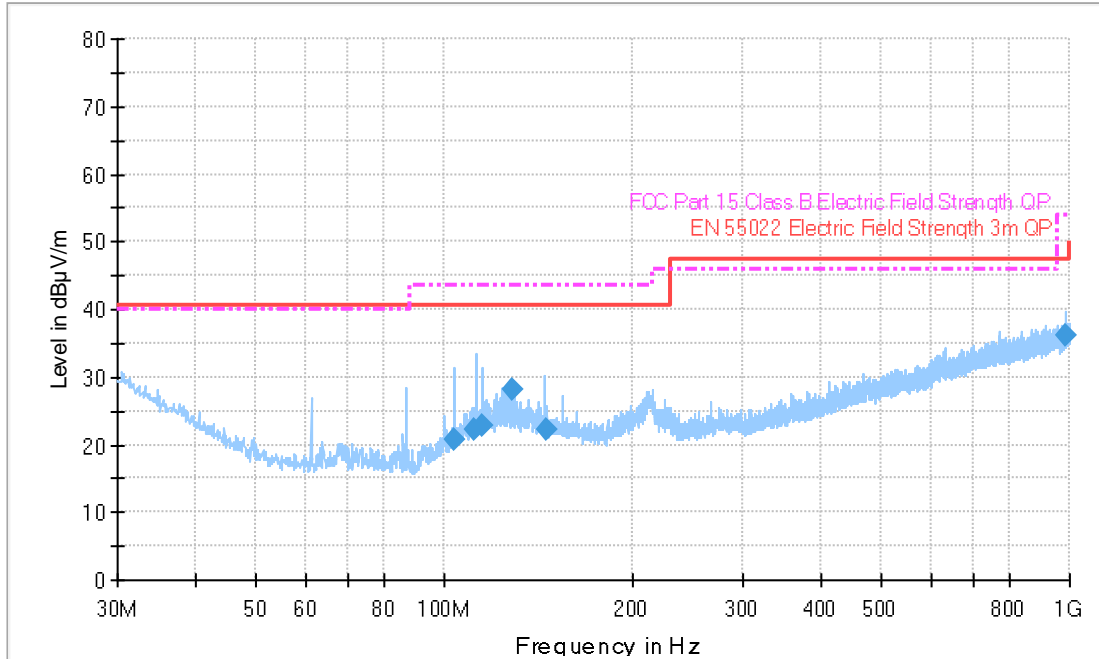
**EMISSIONS DATA & PLOT:**

- Note: 1) The measurements of Radiated Emissions were performed on all of operational modes of the EUT. For the purpose of the report the plots of the worst case were added only.
- 2) Radiated Emissions were verified up to 10<sup>th</sup> harmonics of fundamental frequency. But all spurious emissions above 18GHz were at least 20dB below the limit line or were undetectable.
  - 3) The EUT was also tested when its Wi-Fi and Bluetooth were transmitting simultaneously, However the radiated emissions were still under the limits required by the standard.

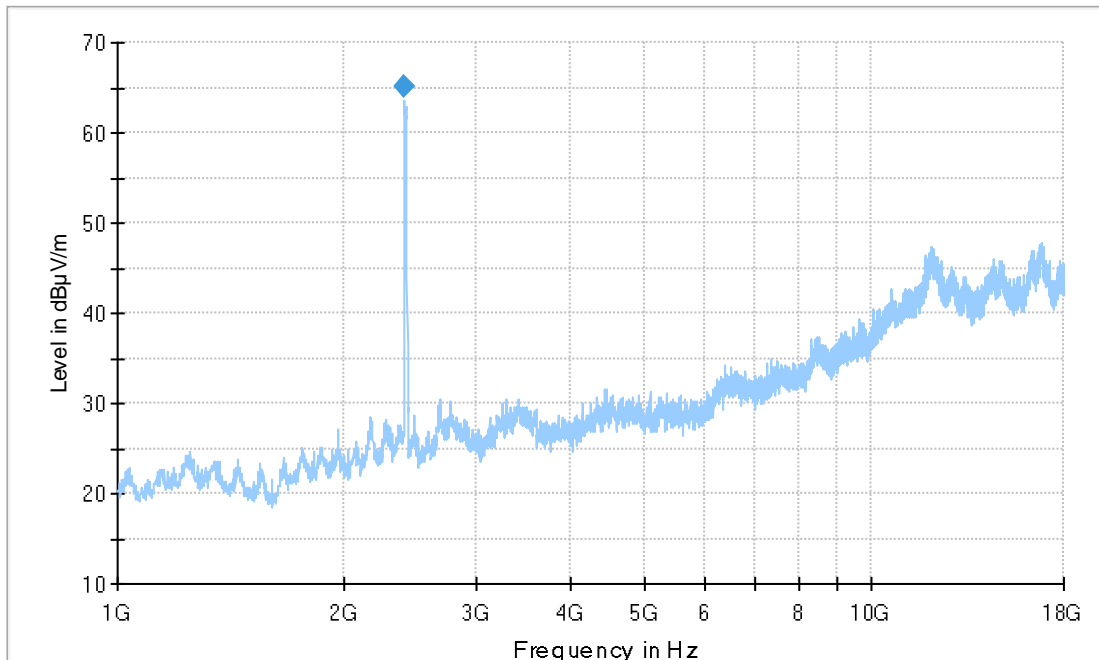


### Wi-Fi 802.11g, Low Ch.

Plot of Radiated Emissions, 30MHz- 1GHZ



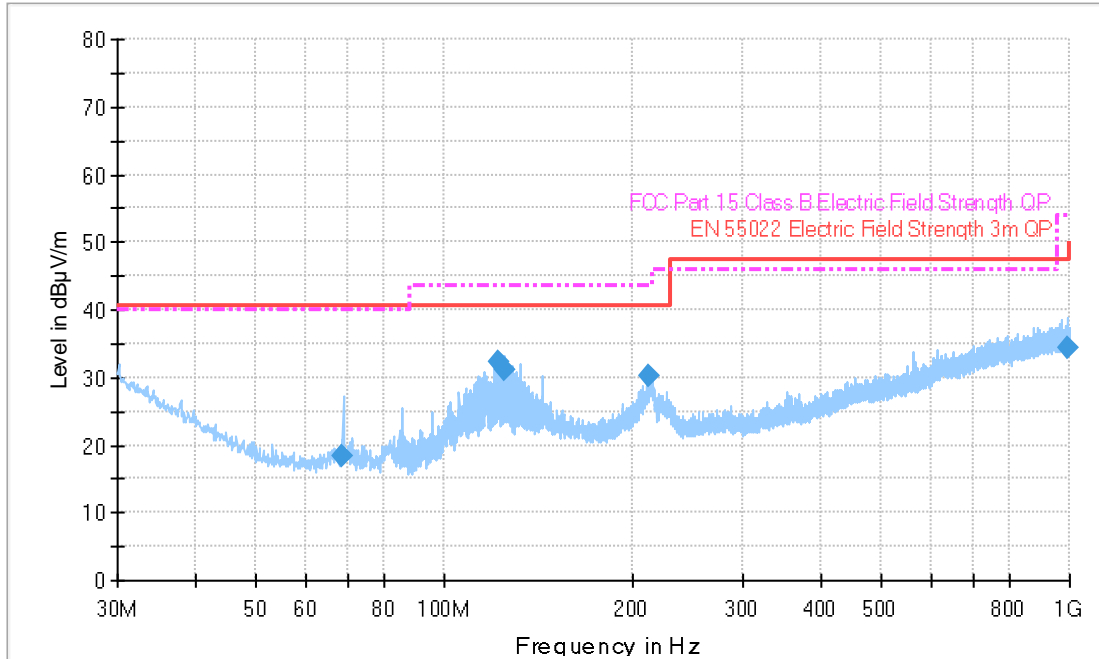
Plot of Radiated Emissions, 1GHz- 18GHZ



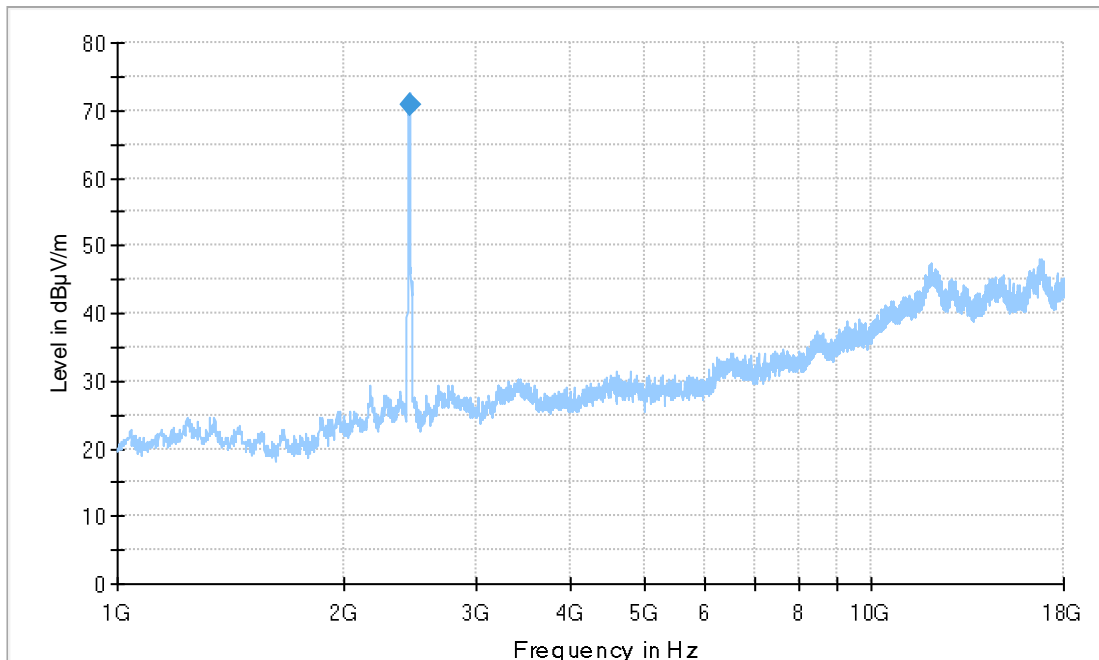


### Wi-Fi 802.11g, Mid Ch.

#### Plot of Radiated Emissions, 30MHz- 1GHZ



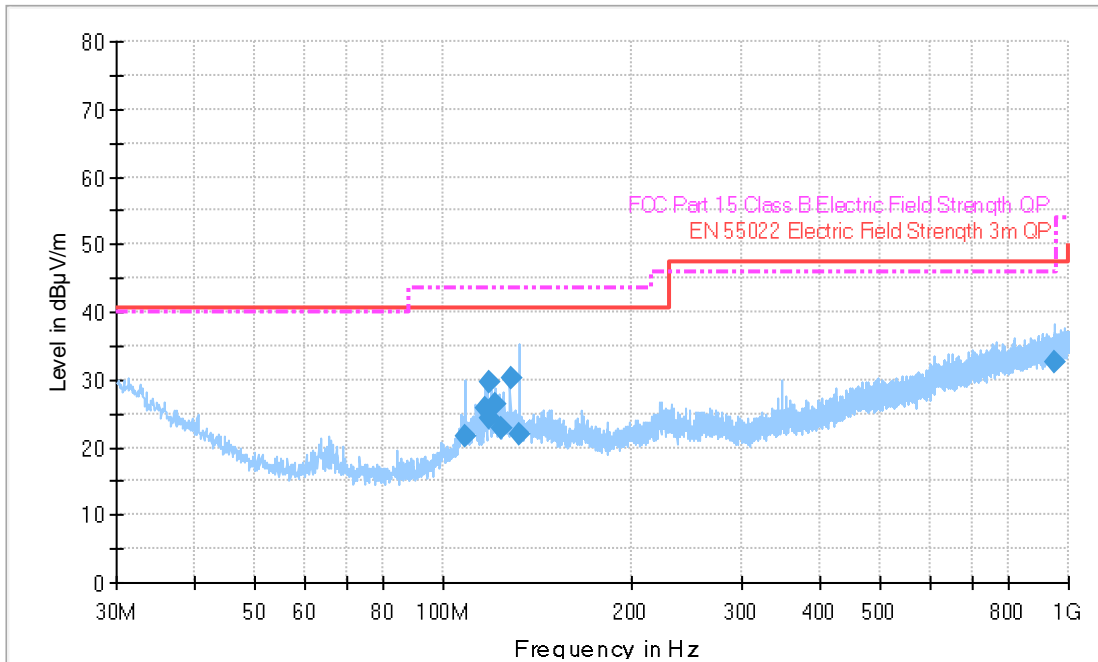
#### Plot of Radiated Emissions, 1GHZ- 18GHZ



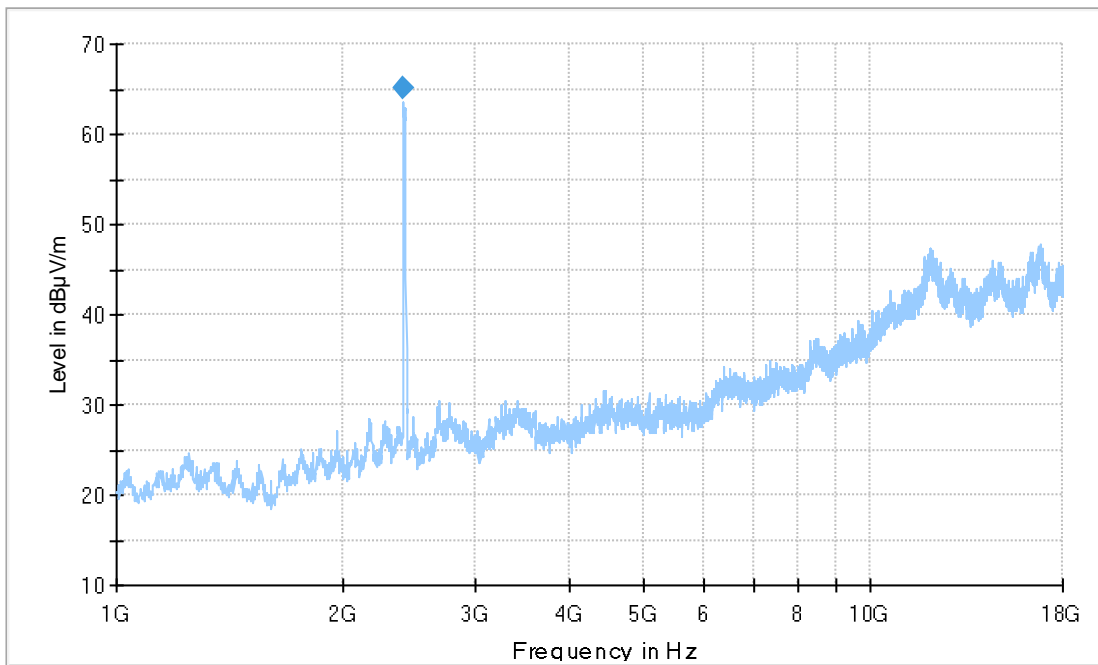


### Wi-Fi 802.11g, High Ch.

#### Plot of Radiated Emissions, 30MHz- 1GHZ



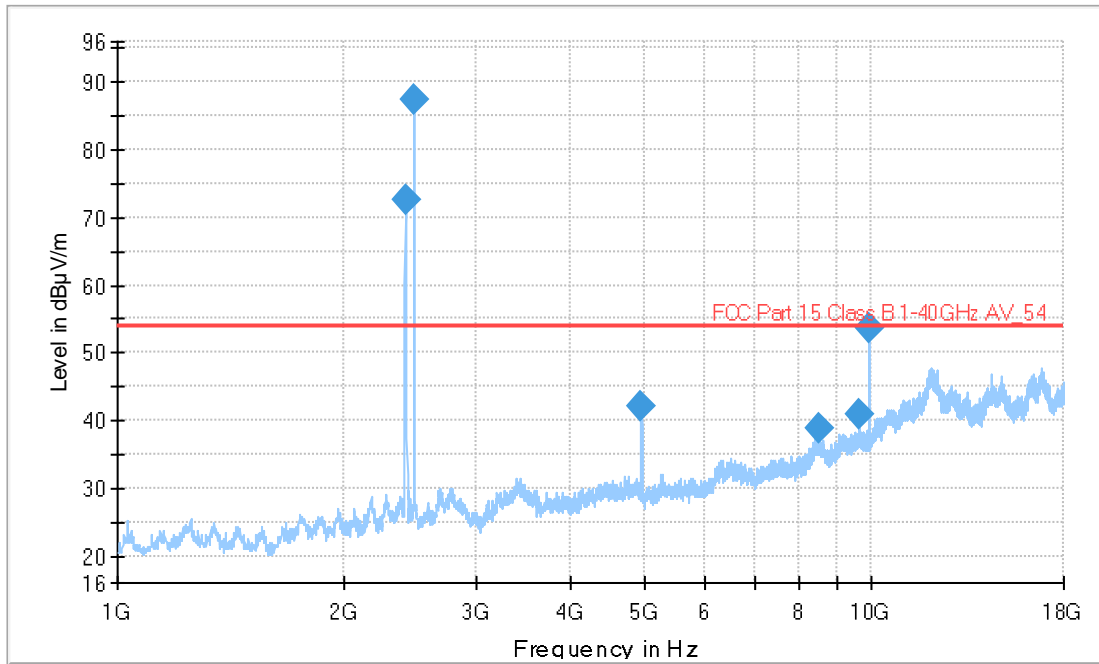
#### Plot of Radiated Emissions, 1GHz- 18GHZ





### Wi-Fi 802.11b Low Channel + Bluetooth High Channel

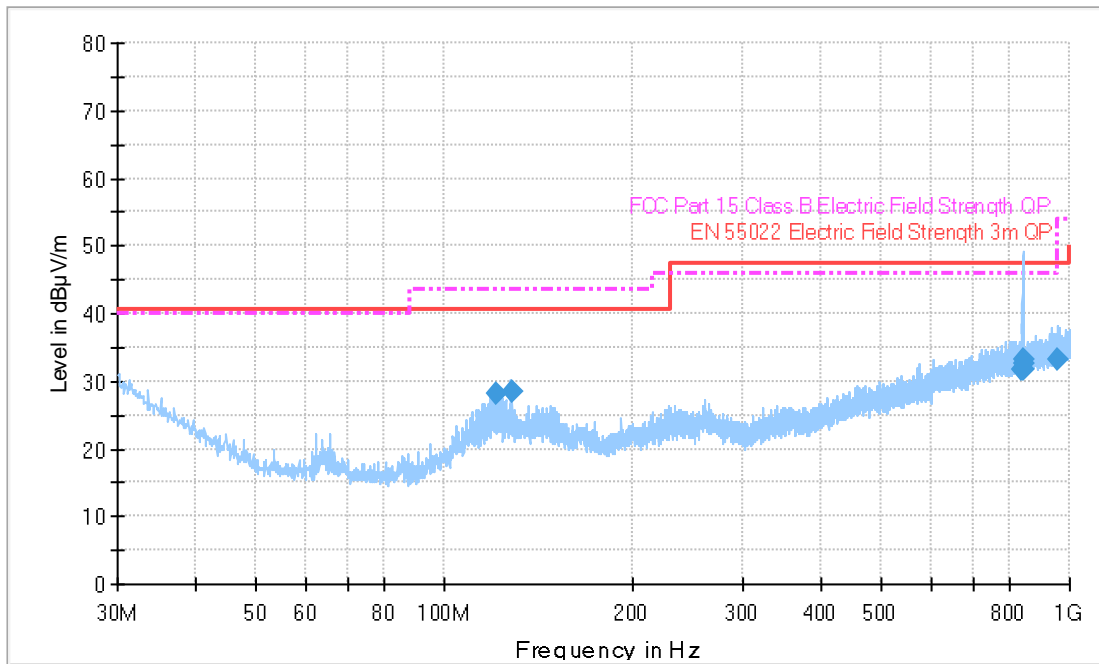
#### Plot of Radiated Emissions, 1GHz- 18GHZ



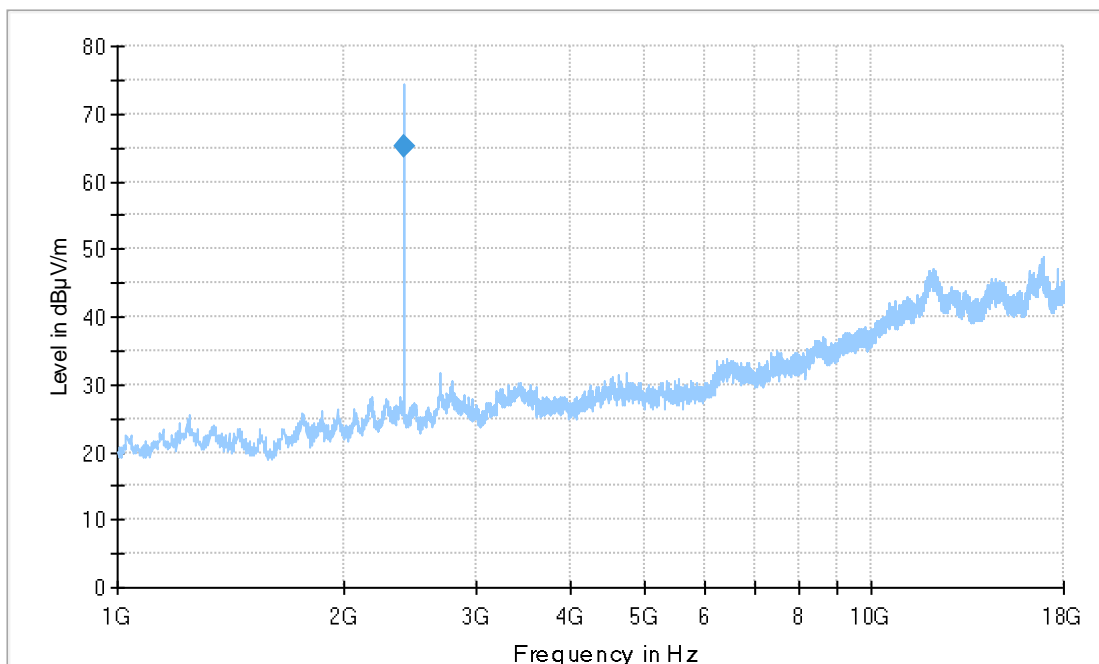


### BTLE Low Channel

#### Plot of Radiated Emissions, 30MHz- 1GHZ



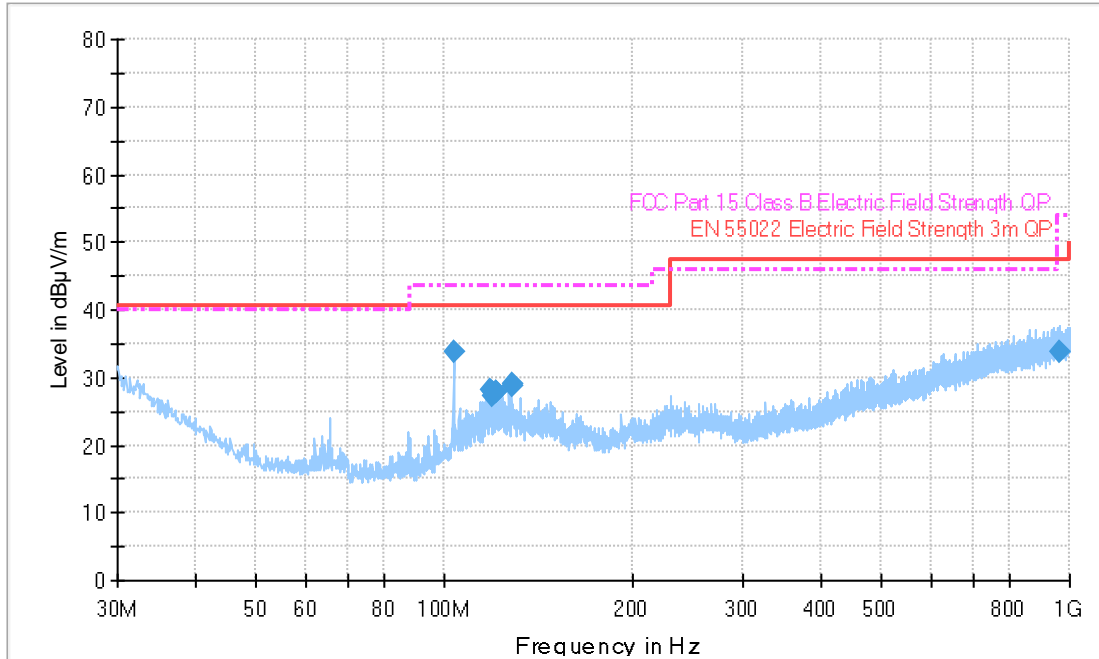
#### Plot of Radiated Emissions, 1GHZ- 18GHZ



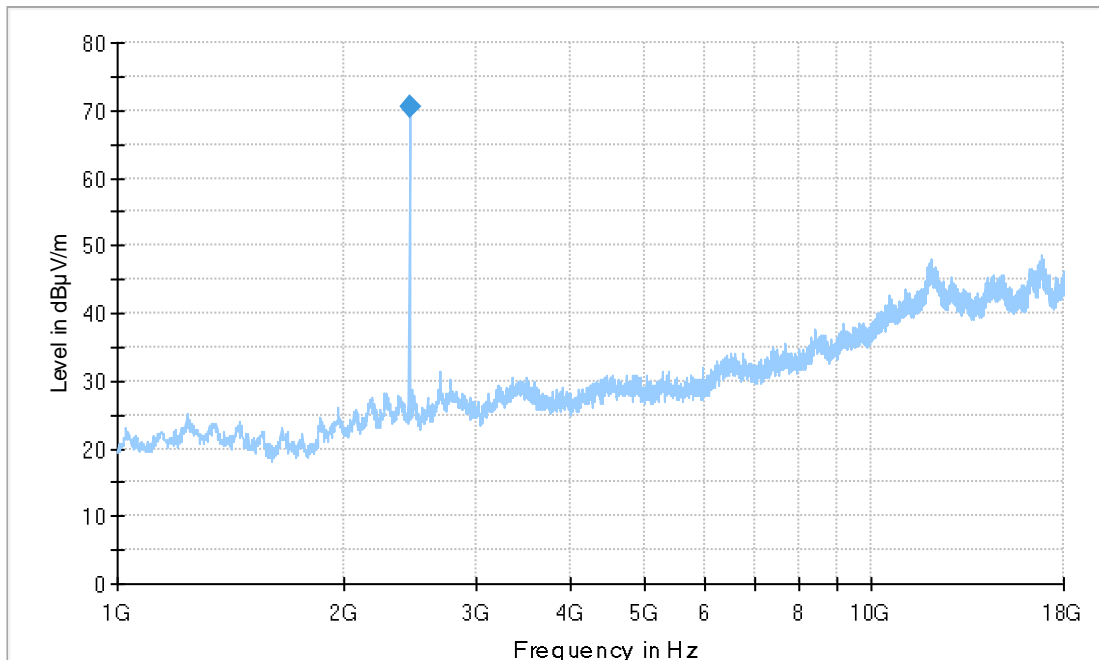


### BTLE Mid Channel

#### Plot of Radiated Emissions, 30MHz- 1GHZ



#### Plot of Radiated Emissions, 1GHZ- 18GHZ

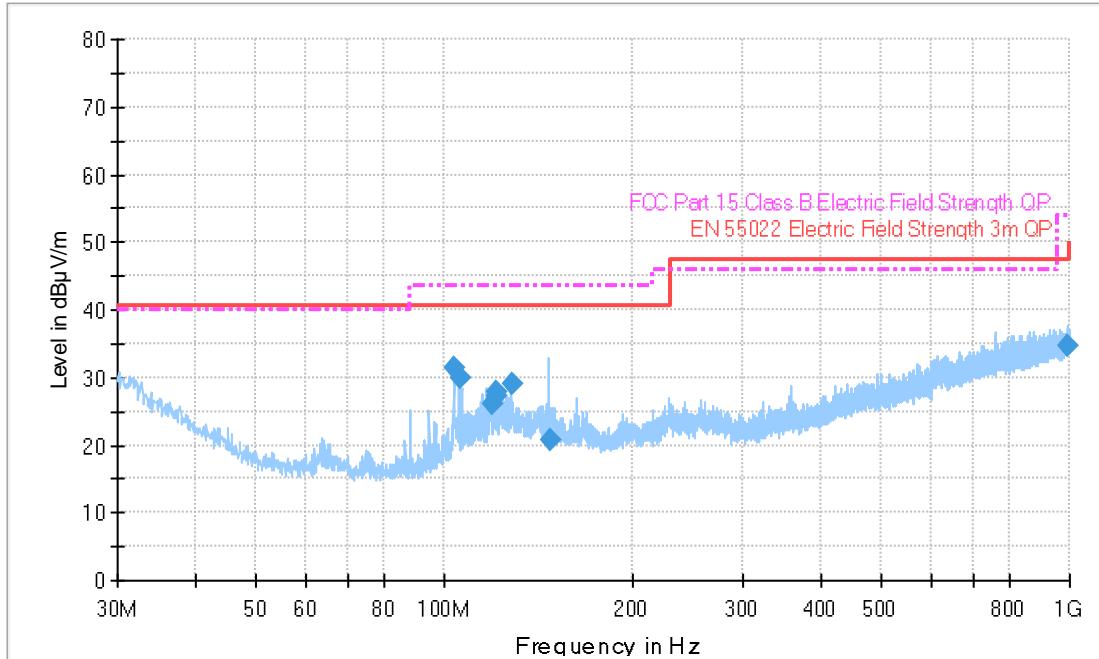




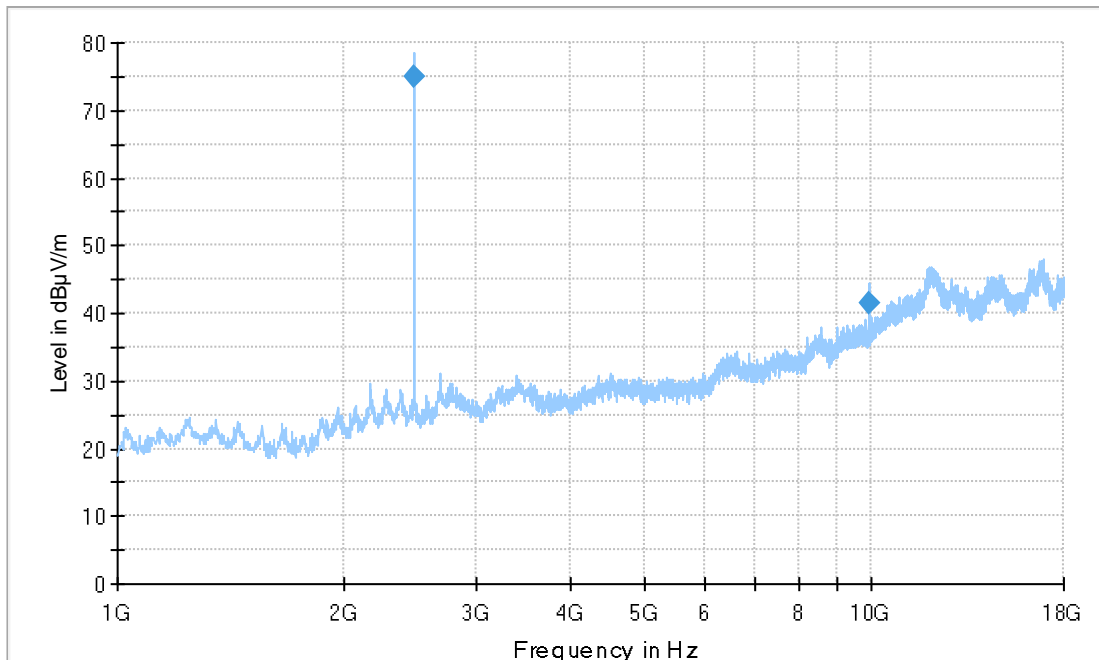


### BTLE High Channel

#### Plot of Radiated Emissions, 30MHz- 1GHZ



#### Plot of Radiated Emissions, 1GHZ- 18GHZ





**Data of Radiated Spurious Emissions 1-18 GHz, WI-Fi**

Modulation	Freq.	Peak Raw	Avg. Raw	Pol.	Anten. Height	Angle	Gain/Loss	Anten. factor	Peak Corr	Avg. Corr.	Peak Limit	Avg. Limit
	MHz	dBuV/m	dBuV/m	V/H	cm	deg	dB	dBm	dBuV/m	dBuV/m	dBuV/m	dBuV/m
Wi-Fi 802.11b Low Ch.	4824	38.26	24.1	V	162	77	-26.85	34.1	45.51	31.35	74	54
	4824	34.5	22	H	150	45	-26.85	34.1	41.75	29.25	74	54
	7236	34.5	23.9	V	132	57	-26.85	34.1	41.75	31.15	74	54
	7236	34.1	22.5	H	150	50	-26.85	34.1	41.35	29.75	74	54
	9648	31.78	21.76	V	100	150	-26.85	37	41.93	31.91	74	54
	9648	31.44	20.77	H	100	247	-26.85	37	41.59	30.92	74	54
Wi-Fi 802.11b Mid Ch.	4874	41.27	36.12	V	169.3	67.4	-26.71	34.1	48.66	43.51	74	54
	4874	37.04	25.84	H	113.4	141.2	-26.71	34.1	44.43	33.23	74	54
	7311	33	20.19	V	100	192.6	-22.56	35.5	45.94	33.13	74	54
	7311	33.08	20.59	H	100	274.8	-22.56	35.5	46.02	33.53	74	54
	9748	32.08	22.41	V	100	184.9	-16.42	37.2	52.86	43.19	74	54
	9748	32.18	22.71	H	100	167.2	-16.42	37.2	52.96	43.49	74	54
Wi-Fi 802.11b High Ch.	4924	47.55	44.75	V	134.6	189.6	-26.52	34.1	55.13	52.33	74	54
	4924	39.65	33.38	H	102.8	123.6	-26.52	34.1	47.23	40.96	74	54
	7386	33.67	20.41	V	100	84.7	-21.88	35.5	47.29	34.03	74	54
	7386	33.46	20.66	H	100	260.1	-21.88	35.5	47.08	34.28	74	54
	9848	30.4	20.36	V	100	171.7	-16.12	37.2	51.48	41.44	74	54
	9848	31.51	20.13	H	100	155.8	-16.12	37.2	52.59	41.21	74	54
Wi-Fi 802.11g Low Ch.	4824	45.79	31.18	V	169.4	355.9	-26.85	34.1	53.04	38.43	74	54
	4824	36.84	24.06	H	100	283	-26.85	34.1	44.09	31.31	74	54
	7236	34.92	21.92	V	100	204.2	-22.84	35.5	47.58	34.58	74	54
	7236	35.23	21.56	H	100	244.9	-22.84	35.5	47.89	34.22	74	54
	9648	32.63	24.41	V	100	181.7	-16.9	37	52.73	44.51	74	54
	9648	32.42	22.12	H	100	155.7	-16.9	37	52.52	42.22	74	54
Wi-Fi 802.11g Mid Ch.	4874	47.22	33.47	V	105.2	360	-26.71	34.1	54.61	40.86	74	54
	4874	37.04	24.3	H	100	284.3	-26.71	34.1	44.43	31.69	74	54
	7311	35.03	21.91	V	100	226.4	-22.56	35.5	47.97	34.85	74	54
	7311	35.93	22.63	H	100	247.9	-22.56	35.5	48.87	35.57	74	54
	9748	33.05	22.78	V	100	182.2	-16.42	37.2	53.83	43.56	74	54
	9748	33.2	21.81	H	100	1597	-16.42	37.2	53.98	42.59	74	54
Wi-Fi 802.11g High Ch.	4924	56.51	41.82	V	245.3	347.8	-26.52	34.1	64.09	49.4	74	54
	4924	49.54	34.95	H	100	121.3	-26.52	34.1	57.12	42.53	74	54
	7386	39.39	26.39	V	176.6	360	-21.88	35.5	53.01	40.01	74	54
	7386	38.29	25.24	H	100	228	-21.88	35.5	51.91	38.86	74	54
	9848	33.47	21.81	V	100	166.5	-16.12	37.2	54.55	42.89	74	54
	9848	35.45	22.16	H	100	158.4	-16.12	37.2	56.53	43.24	74	54
Wi-Fi 802.11n Low Ch.	4824	38.11	25.49	V	100	29.1	-26.85	34.1	45.36	32.74	74	54
	4824	38.08	25.35	H	115.3	115.2	-26.85	34.1	45.33	32.6	74	54
	7236	38.1	23.79	V	100	60.1	-22.84	35.5	50.76	36.45	74	54
	7236	37.07	23.84	H	100	0	-22.84	35.5	49.73	36.5	74	54
	9648	39.6	24.89	V	100	5.7	-16.9	37	59.7	44.99	74	54
	9648	40.6	25.53	H	104.8	333.4	-16.9	37	60.7	45.63	74	54
Wi-Fi 802.11n Mid Ch.	4874	43.5	29.75	V	100	204.5	-26.71	34.1	50.89	37.14	74	54
	4874	41.86	21.64	H	100	86.4	-26.71	34.1	49.25	29.03	74	54
	7311	38.77	25.83	V	100	225.7	-22.56	35.5	51.71	38.77	74	54
	7311	39.67	25.57	H	100	5	-22.56	35.5	52.61	38.51	74	54
	9748	39.02	26.16	V	100	2.8	-16.42	37.2	59.8	46.94	74	54
	9748	39.98	26.71	H	100	327.9	-16.42	37.2	60.76	47.49	74	54
	4924	47.77	33.4	V	100	198.7	-26.52	34.1	55.35	40.98	74	54
	4924	41.27	27.96	H	111.2	73.5	-26.52	34.1	48.85	35.54	74	54



Wi-Fi 802.11n High Ch.	7386	39.98	26.57	V	100	186.8	-21.88	35.5	53.6	40.19	74	54
	7386	40.65	27.31	H	100	65.9	-21.88	35.5	54.27	40.93	74	54
	9848	38.65	25.63	V	100	342.5	-16.12	37.2	59.73	46.71	74	54
	9848	39.25	25.83	H	100	325.4	-16.12	37.2	60.33	46.91	74	54
Wi-Fi 802.11n (40MHz) Low Ch.	4844	40.83	27.55	V	119.2	17.1	-27.38	34.1	47.55	34.27	74	54
	4844	40.84	27.07	H	103.3	100.4	-27.38	34.1	47.56	33.79	74	54
	7266	38.81	25.99	V	100	201.2	-22.9	35.5	51.41	38.59	74	54
	7266	39.65	25.77	H	100	201.5	-22.9	35.5	52.25	38.37	74	54
	9688	39.36	26.44	V	100	353.7	-16.83	37	59.53	46.61	74	54
	9688	38.94	26.61	H	100	322.7	-16.83	37	59.11	46.78	74	54
Wi-Fi 802.11n (40MHz) Mid Ch.	4874	41.02	27.68	V	114.8	17.8	-26.71	34.1	48.41	35.07	74	54
	4874	39.79	27.14	H	100	115.8	-26.71	34.1	47.18	34.53	74	54
	7311	39.7	25.63	V	100	176.9	-22.56	35.5	52.64	38.57	74	54
	7311	39.23	25.55	H	100	136.8	-22.56	35.5	52.17	38.49	74	54
	9748	39.2	25.89	V	100	22.4	-16.42	37.2	59.98	46.67	74	54
	9748	39.53	26.31	H	100	302.5	-16.42	37.2	60.31	47.09	74	54
Wi-Fi 802.11n (40MHz) High Ch.	4904	42.72	28.79	V	102.3	185.3	-26.76	34.1	50.06	36.13	74	54
	4904	40.44	27.36	H	100	334.4	-26.76	34.1	47.78	34.7	74	54
	7356	43.67	29.6	V	191.9	183.5	-22.25	35.5	56.92	42.85	74	54
	7356	41.07	27.4	H	100	182.5	-22.25	35.5	54.32	40.65	74	54
	9808	38.87	25.61	V	100	24.5	-15.84	37.2	60.23	46.97	74	54
	9808	38.81	25.52	H	100	319.1	-15.84	37.2	60.17	46.88	74	54

### Radiated Spurious Emissions, BTLE

Modulation	Freq.	Peak Raw	Avg. Raw	Pol.	Anten. Height	Angle	Gain/Loss	Anten. factor	Peak Corr	Avg. Corr.	Peak Limit	Avg. Limit
	MHz	dBuV/m	dBuV/m	V/H	cm	deg	dB	dBm	dBuV/m	dBuV/m	dBuV/m	dBuV/m
BTLE GFSK Low Ch.	4804	39.11	26.08	V	244.5	314.9	-26.14	34.1	47.07	34.04	74	54
	4804	38.71	25.71	H	100	51	-26.14	34.1	46.67	33.67	74	54
	7206	38.03	24.09	V	100	229.7	-22.97	35.6	50.66	36.72	<20dBC	<20dBC
	7206	38.48	24.1	H	100	266.1	-22.97	35.6	51.11	36.73	<20dBC	<20dBC
	9608	37.03	24	V	100	26	-17.87	37.54	56.7	43.67	<20dBC	<20dBC
	9608	36.75	23.89	H	100	360	-17.87	37.54	56.42	43.56	<20dBC	<20dBC
	12010	36.05	23.07	V	100	310	-15.01	38.6	59.64	46.66	74	54
	12010	36.38	23.31	H	100	187.2	-15.01	38.6	59.97	46.9	74	54
BTLE GFSK Mid Ch.	4880	38.77	26.18	V	319.4	180.2	-26.15	34.1	46.72	34.13	74	54
	4880	38.55	25.63	H	100	65.9	-26.15	34.1	46.5	33.58	74	54
	7320	36.45	23.45	V	100	221.7	-22.53	35.6	49.52	36.52	74	54
	7320	36.23	23.35	H	100	105.7	-22.53	35.6	49.3	36.42	74	54
	9760	36.28	23.88	V	100	27.9	-15.63	37.54	58.19	45.79	<20dBC	<20dBC
	9760	36.86	23.99	H	100	360	-15.63	37.54	58.77	45.9	<20dBC	<20dBC
	12200	37.53	24.27	V	100	64.9	-13.08	38.6	63.05	49.79	74	54
	12200	37.01	24.26	H	100	155.7	-13.08	38.6	62.53	49.78	74	54
BTLE GFSK High Ch.	4960	39.46	26.48	V	100	11.8	-26.93	34.1	46.63	33.65	74	54
	4960	39.08	26.15	H	114.3	116.7	-26.93	34.1	46.25	33.32	74	54
	7440	38.68	23.68	V	100	114.9	-21.43	35.6	52.85	37.85	74	54
	7440	36.79	23.65	H	100	5.4	-21.43	35.6	50.96	37.82	74	54
	9920	37.98	25.96	V	100	113.7	-15.66	37.54	59.86	47.84	<20dBC	<20dBC
	9920	39.45	27.5	H	100	356.7	-15.66	37.54	61.33	49.38	<20dBC	<20dBC
	12400	37.77	24.06	V	100	199.8	-13.28	38.6	63.09	49.38	74	54
	12400	37.51	24.03	H	100	227.5	-13.28	38.6	62.83	49.35	74	54



## Part 4 – Power Spectral Density

DATE: April 29, 2016

TEST STANDARD: RSS-247, Issue 1;  
 FCC Subpart C §15.247(e)

TEST METHOD: As called by the standards above

MINIMUM STANDARD: 8 dBm in any 3 kHz band

TEST SETUP: The EUT was connected to the DUT in conducted mode likewise for output power measurements.

METHOD OF MEASUREMENT: Measurements were made using a spectrum analyser with 100 kHz resolution bandwidth, peak and detector.

DEVICE DESCRIPTIONS: As described in the equipment under test section, above.

PERFORMANCE: Complies with Standard

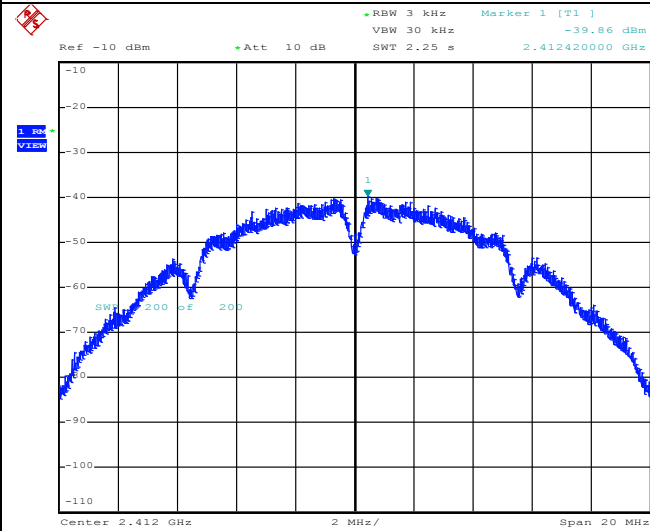
### MEASUREMENT DATA & PLOT:

Modulation		Channel	Frequency	Raw Reading	Cable Loss with 30dB attenuator	PSD	Limit	Margin	Result
			MHz	Reading	dB	dBm	dBm	dB	
Wi-Fi	802.11b	Low	2412	-39.86	31.92	-7.94	8	15.94	Pass
		Mid	2437	-39.95	31.96	-7.99	8	15.99	Pass
		High	2462	-41.3	31.92	-9.38	8	17.38	Pass
	802.11g	Low	2412	-52.77	31.92	-20.85	8	28.85	Pass
		Mid	2437	-47.06	31.96	-15.1	8	23.1	Pass
		High	2462	-53	31.92	-21.08	8	29.08	Pass
	802.11n	Low	2412	-53.36	31.92	-21.44	8	29.44	Pass
		Mid	2437	-48.67	31.96	-16.71	8	24.71	Pass
		High	2462	-53.56	31.92	-21.64	8	29.64	Pass
	802.11n(40MHz)	Low	2422	-53.36	31.92	-21.44	8	29.44	Pass
		Mid	2437	-48.67	31.96	-16.71	8	24.71	Pass
		High	2452	-53.56	31.92	-21.64	8	29.64	Pass
BTLE	GFSK	Low	2402	-45.78	31.96	-13.82	8	21.82	Pass
		Mid	2440	-46.52	32	-14.52	8	22.52	Pass
		High	2480	-46.89	31.98	-14.91	8	22.91	Pass



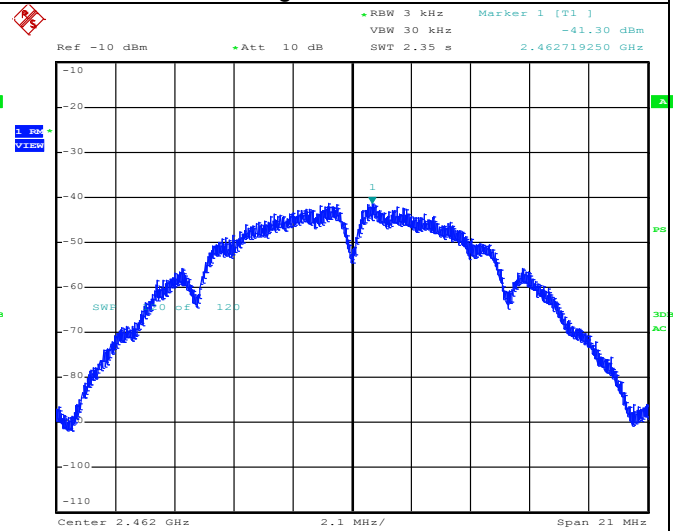
### PSD, Wi-Fi 802.11b

#### Low Channel



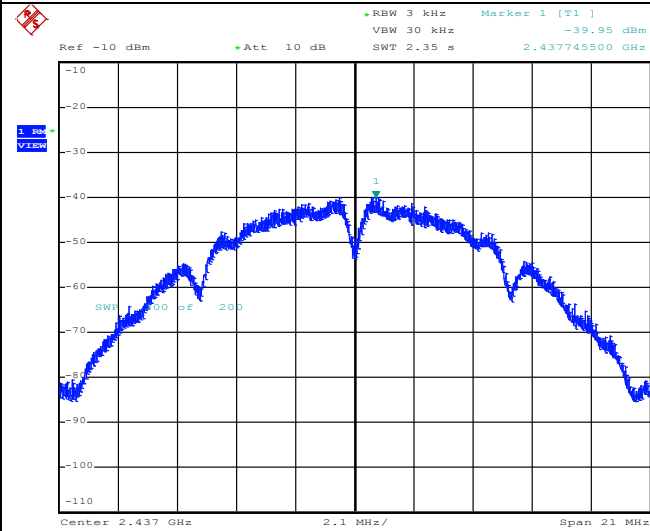
Date: 29.APR.2016 12:31:19

#### High Channel



Date: 29.APR.2016 12:51:33

#### Middle Channel

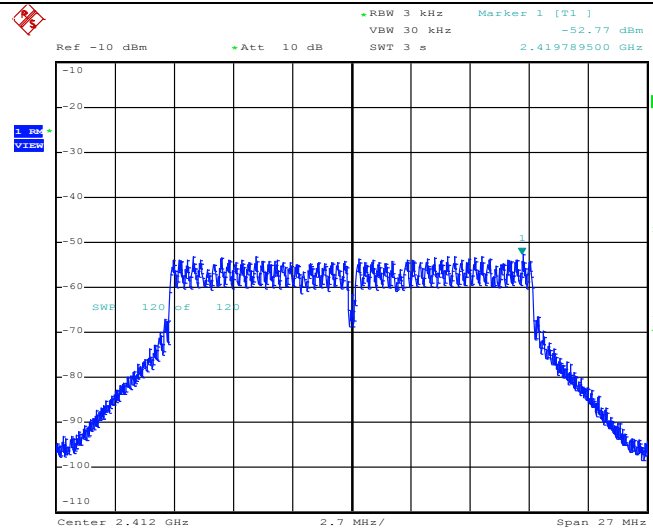


Date: 29.APR.2016 12:45:10



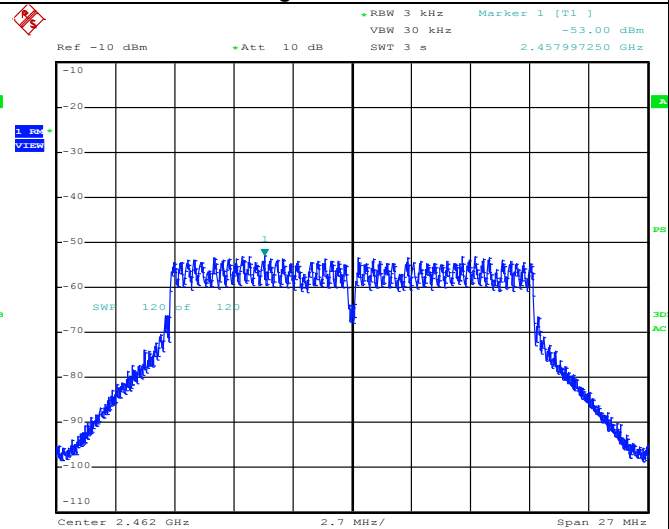
### PSD,Wi-Fi 802.11g

#### Low Channel



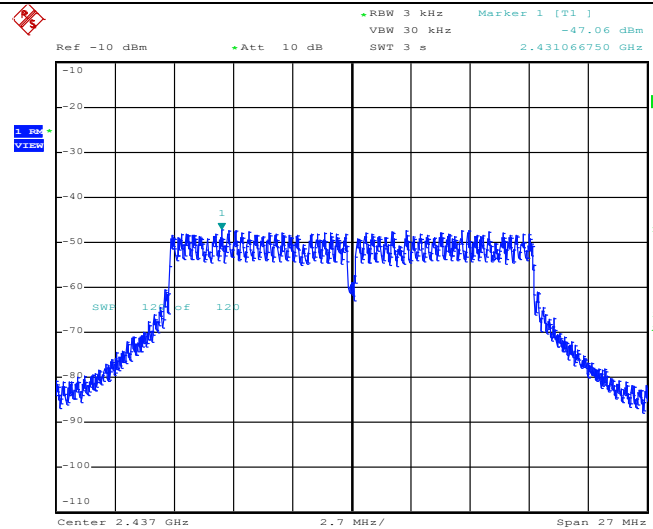
Date: 29.APR.2016 13:04:21

#### High Channel



Date: 29.APR.2016 13:27:20

#### Middle Channel

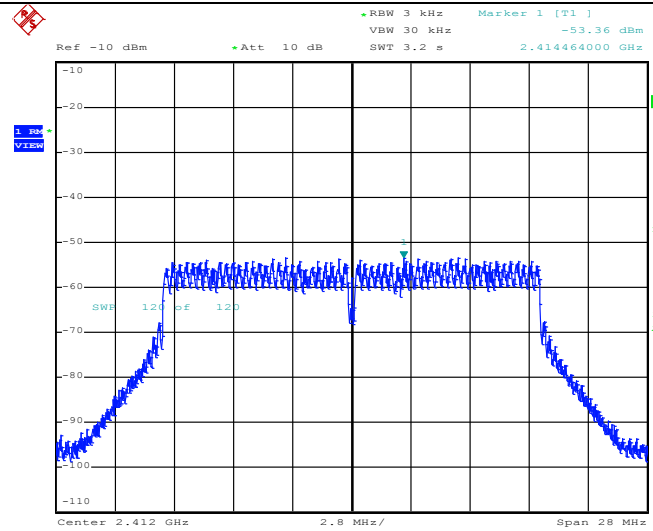


Date: 29.APR.2016 13:13:27



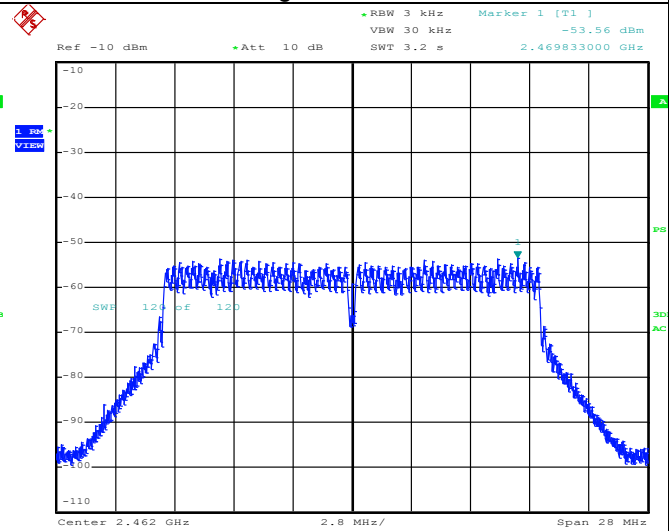
### PSD,Wi-Fi 802.11n

#### Low Channel



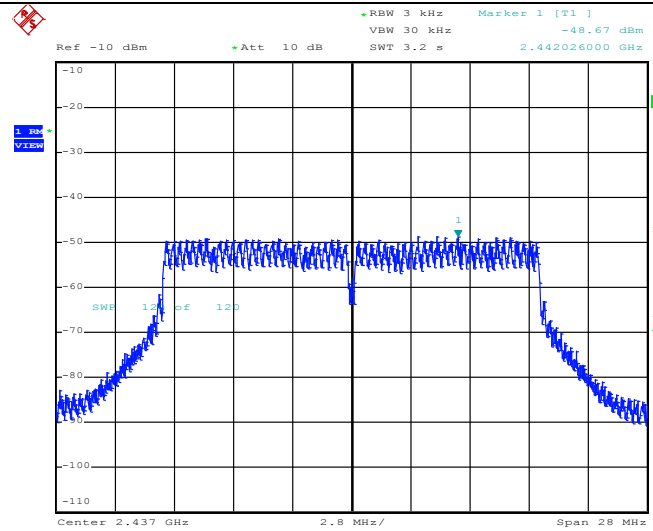
Date: 29.APR.2016 13:53:36

#### High Channel

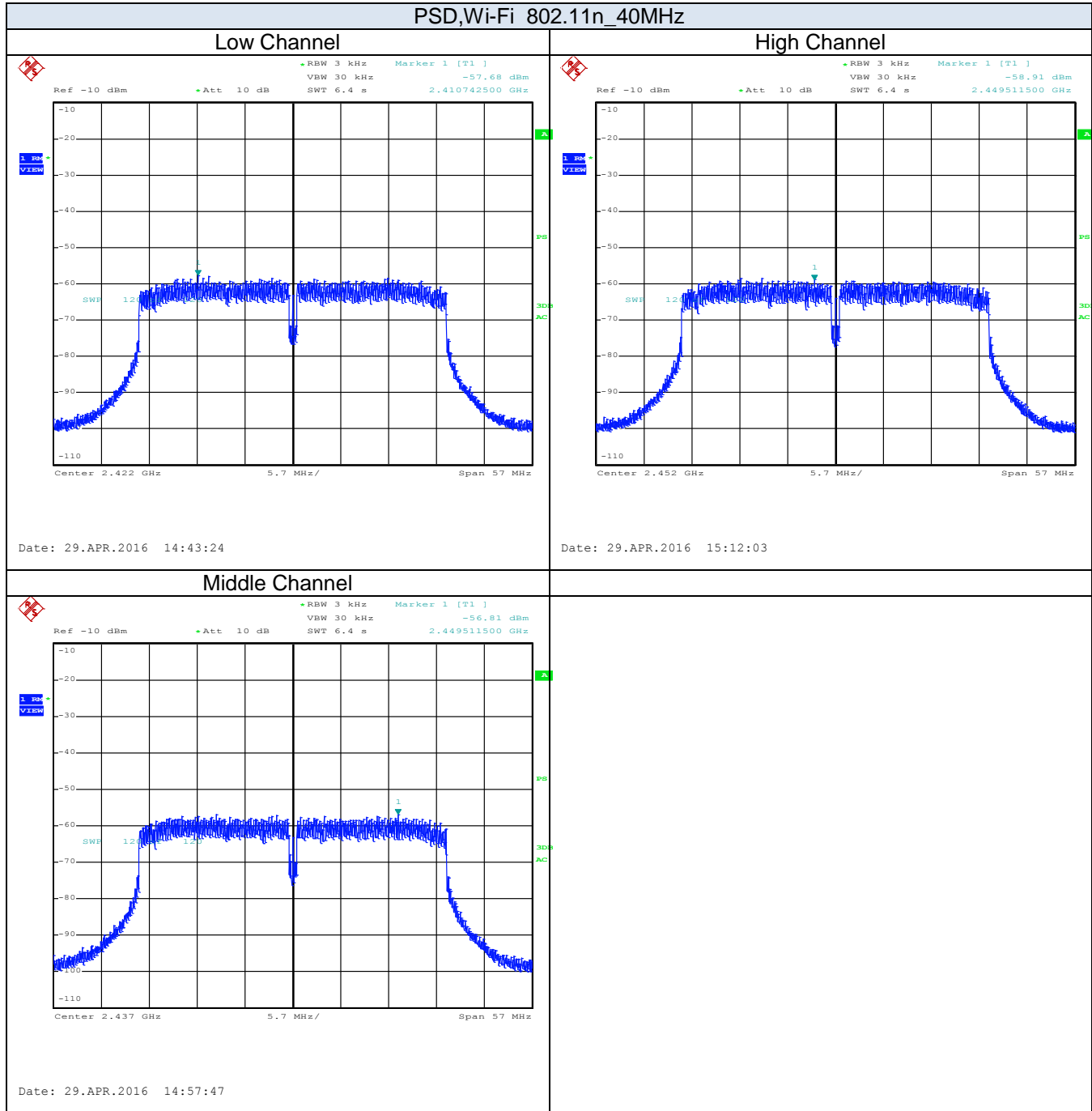


Date: 29.APR.2016 14:13:11

#### Middle Channel



Date: 29.APR.2016 14:02:09

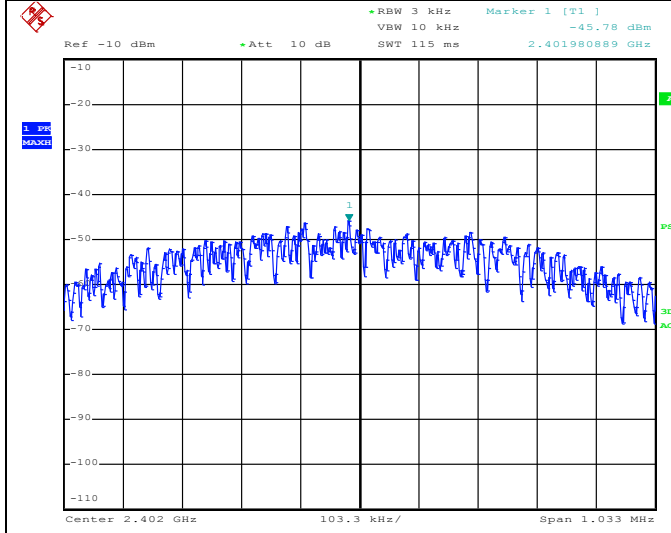






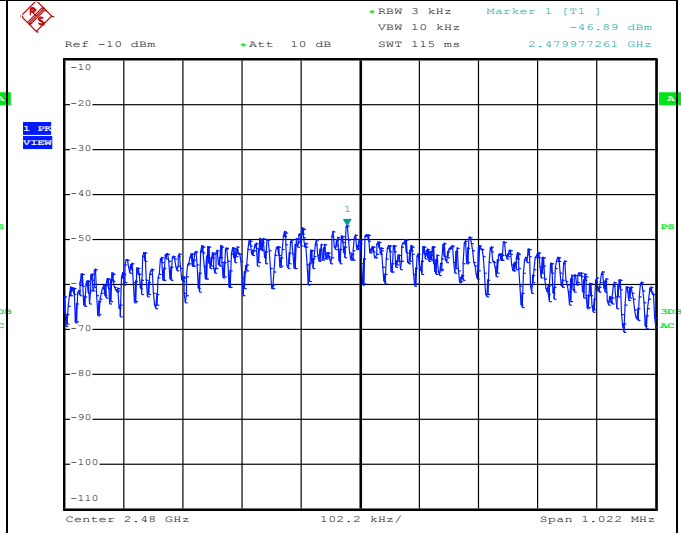
### PSD,BTLE\_GFSK

#### Low Channel



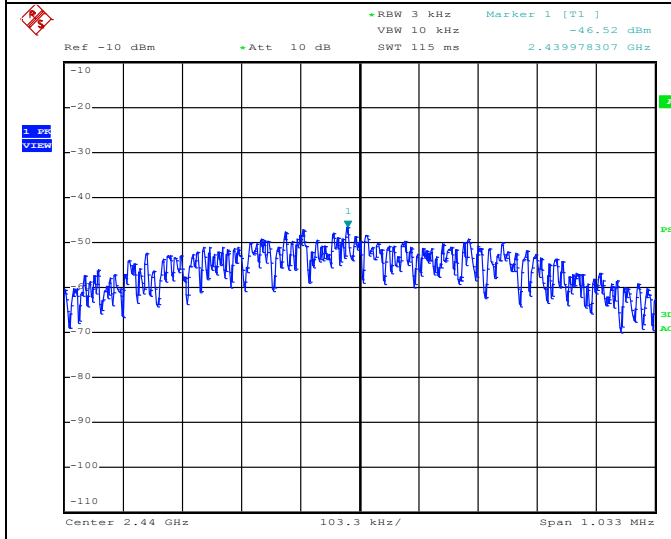
Date: 29.APR.2016 15:47:46

#### High Channel



Date: 29.APR.2016 15:54:40

#### Middle Channel



Date: 29.APR.2016 15:52:32



### Part 5 - 6 dB Occupied Bandwidth

DATE: April 21, 2016

TEST STANDARD: RSS-247 Issue 1, FCC Subpart C §15.247(a)(2)

MINIMUM STANDARD: The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST SETUP: The EUT was directly connected to a spectrum analyser. The transmitter was set for continuous transmission.

MEASUREMENT METHOD: Measurements were made using an spectrum analyser 100kHz RBW peak detector set on maximum hold using the appropriate antennas, amplifiers and filters.

DEVICE DESCRIPTIONS: As described in the above EUT description and setup section.

DATA:

Modulation		Channel	Frequency	6dB Occupied bandwidth	Limit	Result
			MHz	MHz	MHz	
Wi-Fi	IEEE 802.11b	Low	2412	7.994	0.5	Pass
		Mid	2437	8.001	0.5	Pass
		High	2462	8.42	0.5	Pass
	IEEE 802.11g	Low	2412	16.49	0.5	Pass
		Mid	2437	16.46	0.5	Pass
		High	2462	16.37	0.5	Pass
	IEEE 802.11n	Low	2412	17.599	0.5	Pass
		Mid	2437	17.6	0.5	Pass
		High	2462	17.59	0.5	Pass
	IEEE 802.11n, (13.5Mbps)	Low	2422	35.5	0.5	Pass
		Mid	2437	35.6	0.5	Pass
		High	2452	35.8	0.5	Pass
BTLE	GFSK	Low	2402	6.82	0.5	Pass
		Mid	2440	6.81	0.5	Pass
		High	2480	6.81	0.5	Pass

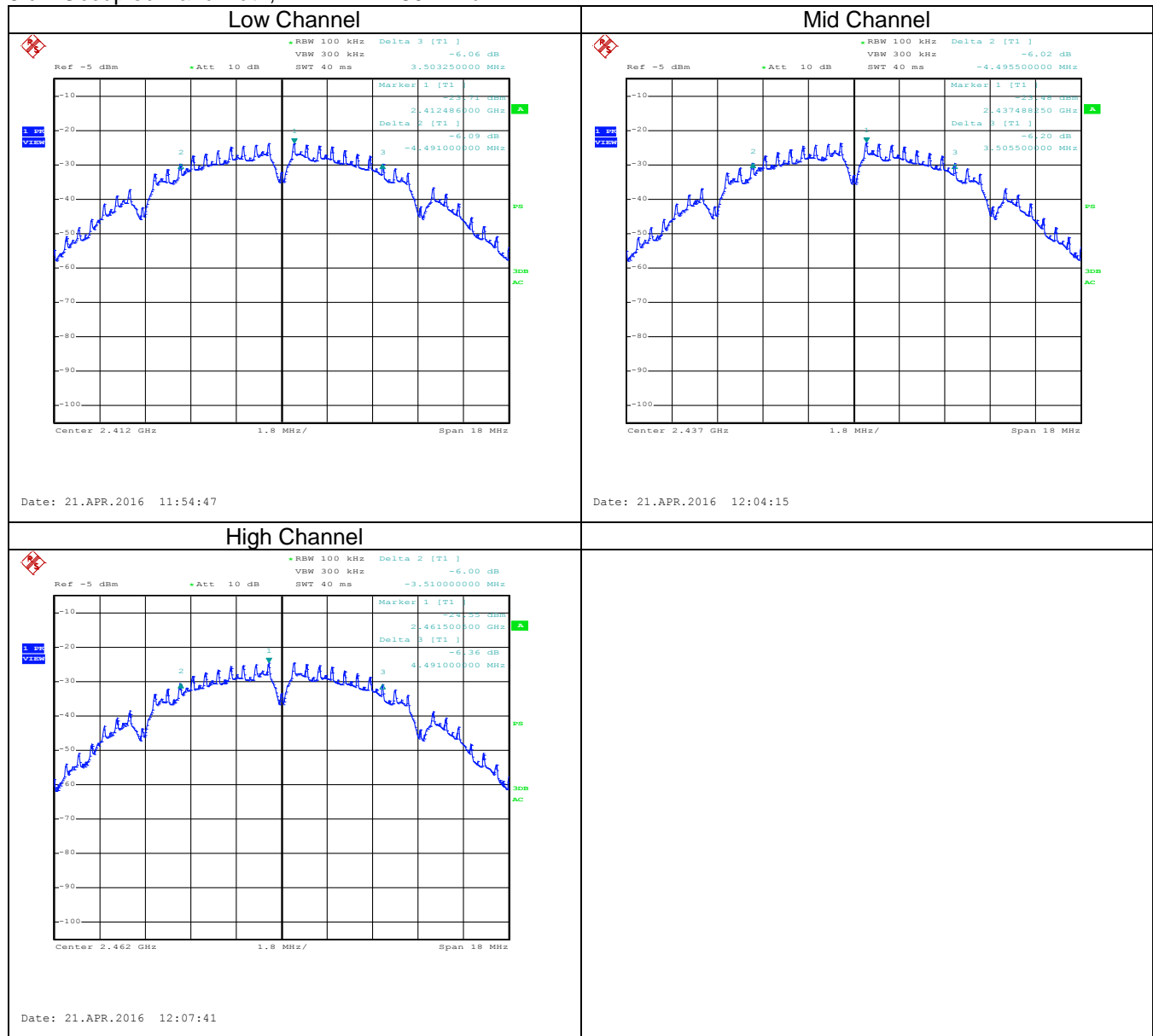
OBSERVATIONS: The EUT performed as expected.

PERFORMANCE: Complies.



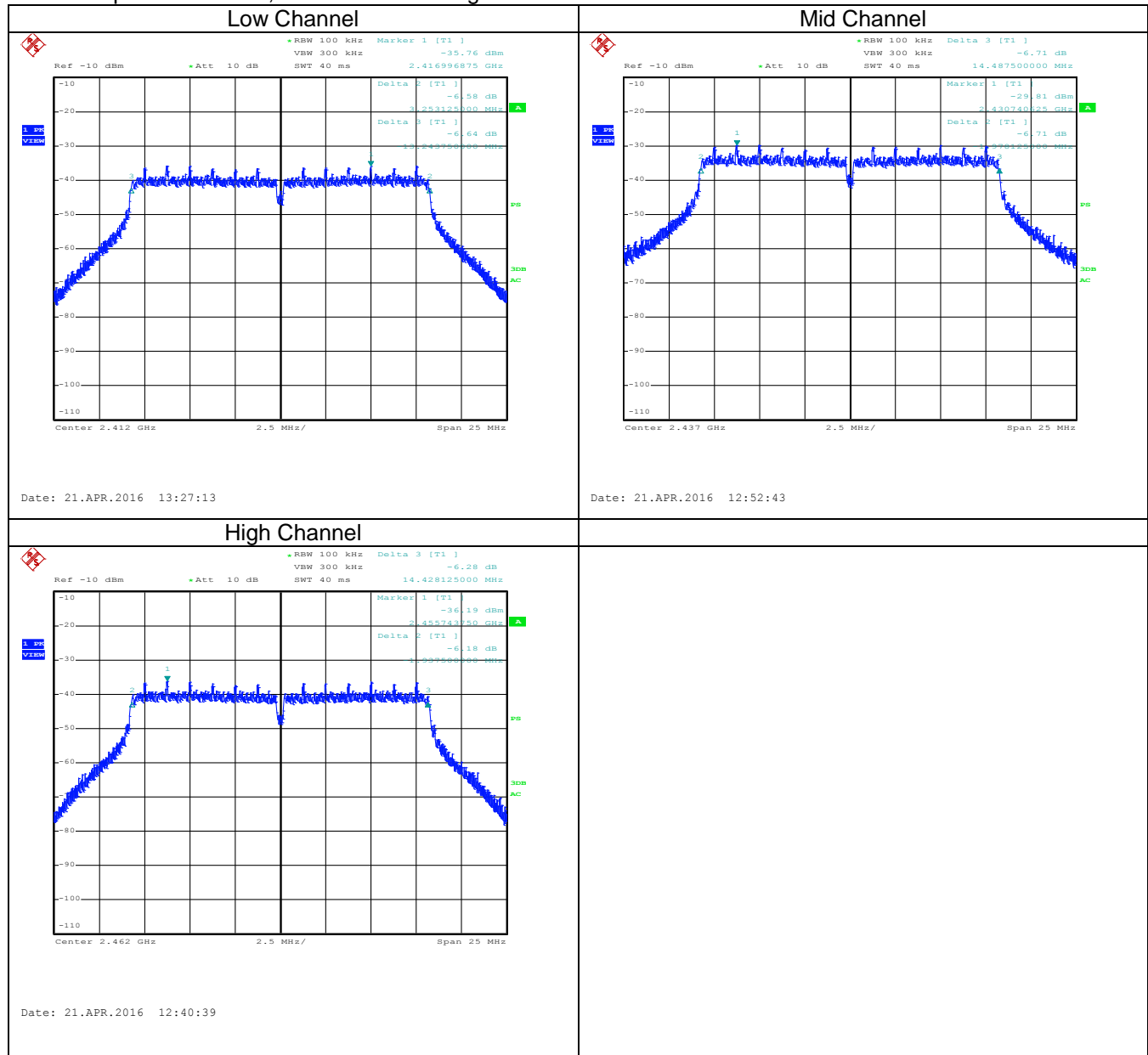
PLOT:

### 6 dB Occupied Bandwidth, Wi-Fi IEEE 802.11b



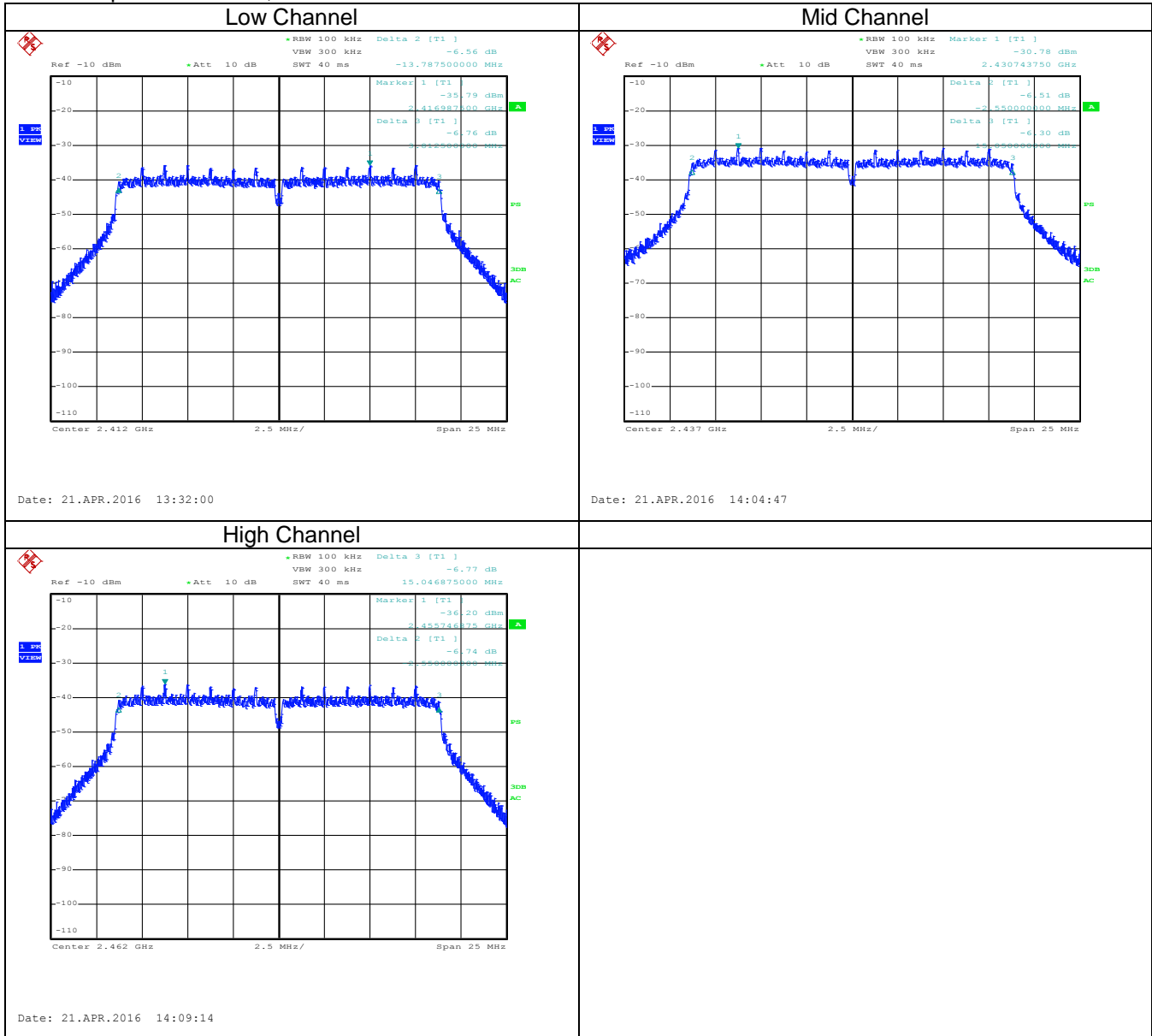


### 6 dB Occupied Bandwidth, Wi-Fi IEEE 802.11g



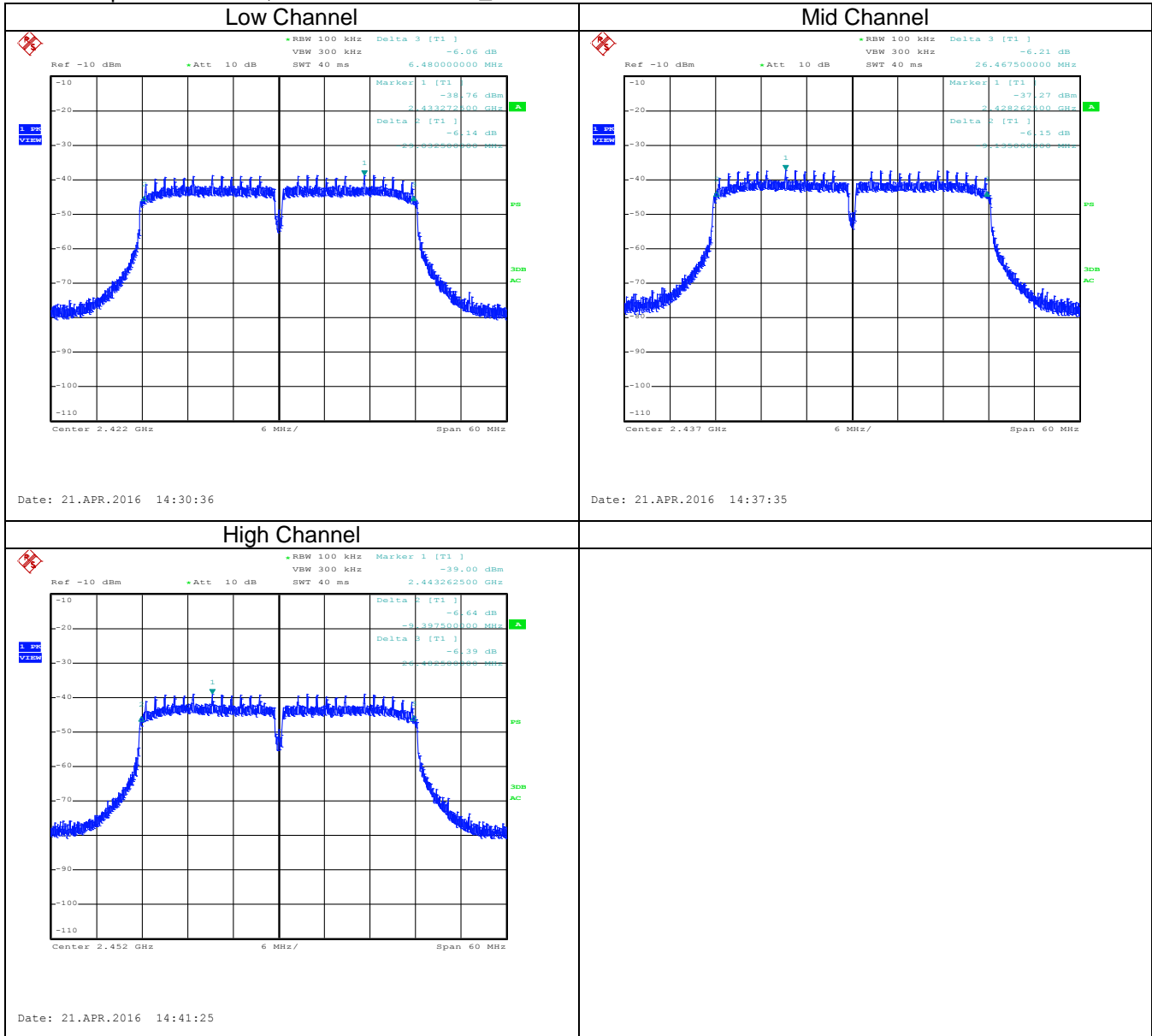


### 6 dB Occupied Bandwidth, Wi-Fi IEEE 802.11n



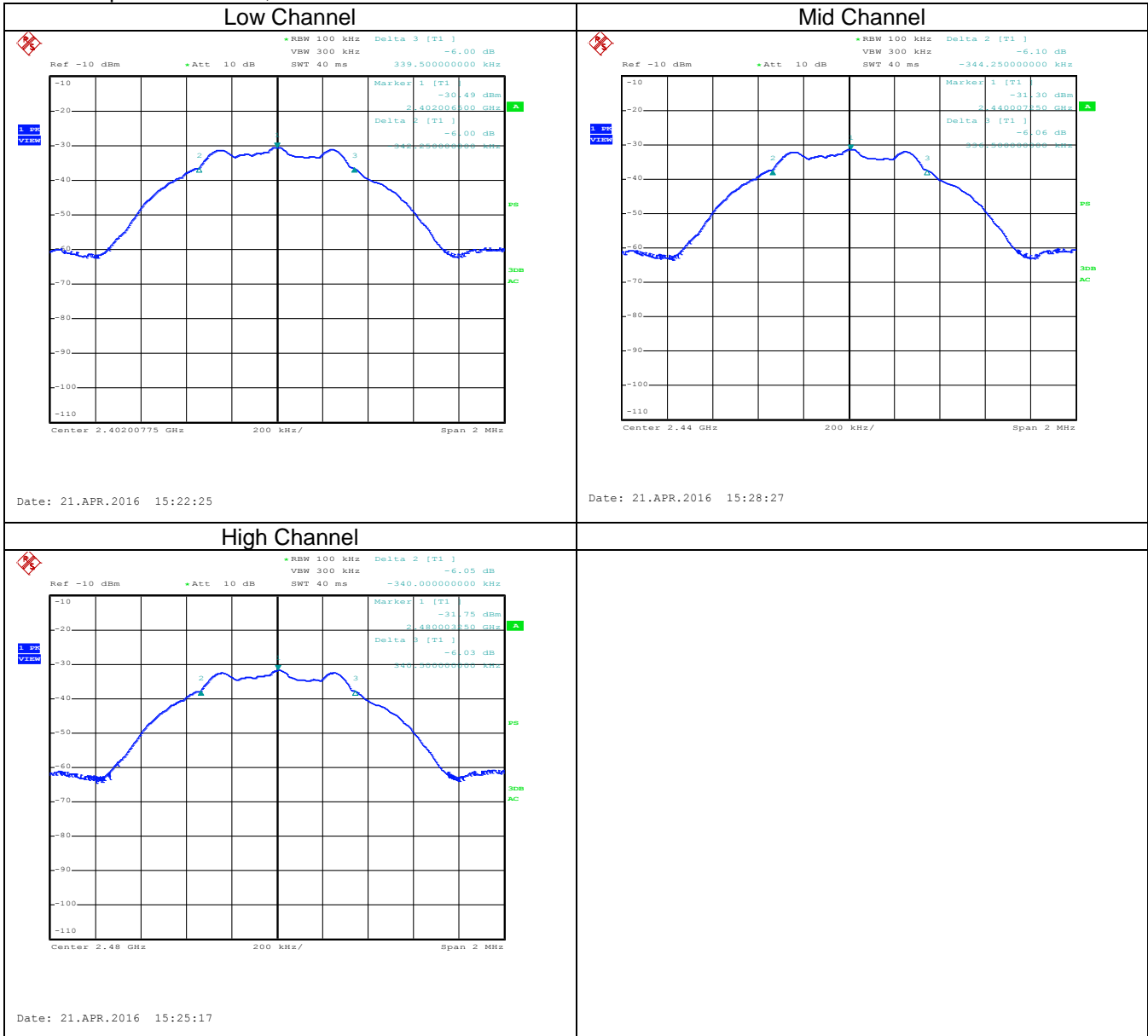


### 6 dB Occupied Bandwidth, Wi-Fi IEEE 802.11n\_40MHz





### 6 dB Occupied Bandwidth, BTLE





## Part 6 – 99% Bandwidth

DATE: April 25,2016

TEST STANDARD: RSS-210 Issue 8, RSS-Gen Issue 5

MINIMUM STANDARD: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.  
 The bandwidth shall fall completely within the frequency range specified by the standard.

TEST SETUP: The antenna port of EUT was directly connected to a spectrum analyser.

MODIFICATIONS: No modification is required to comply for this test.

PERFORMANCE: Complies with standard

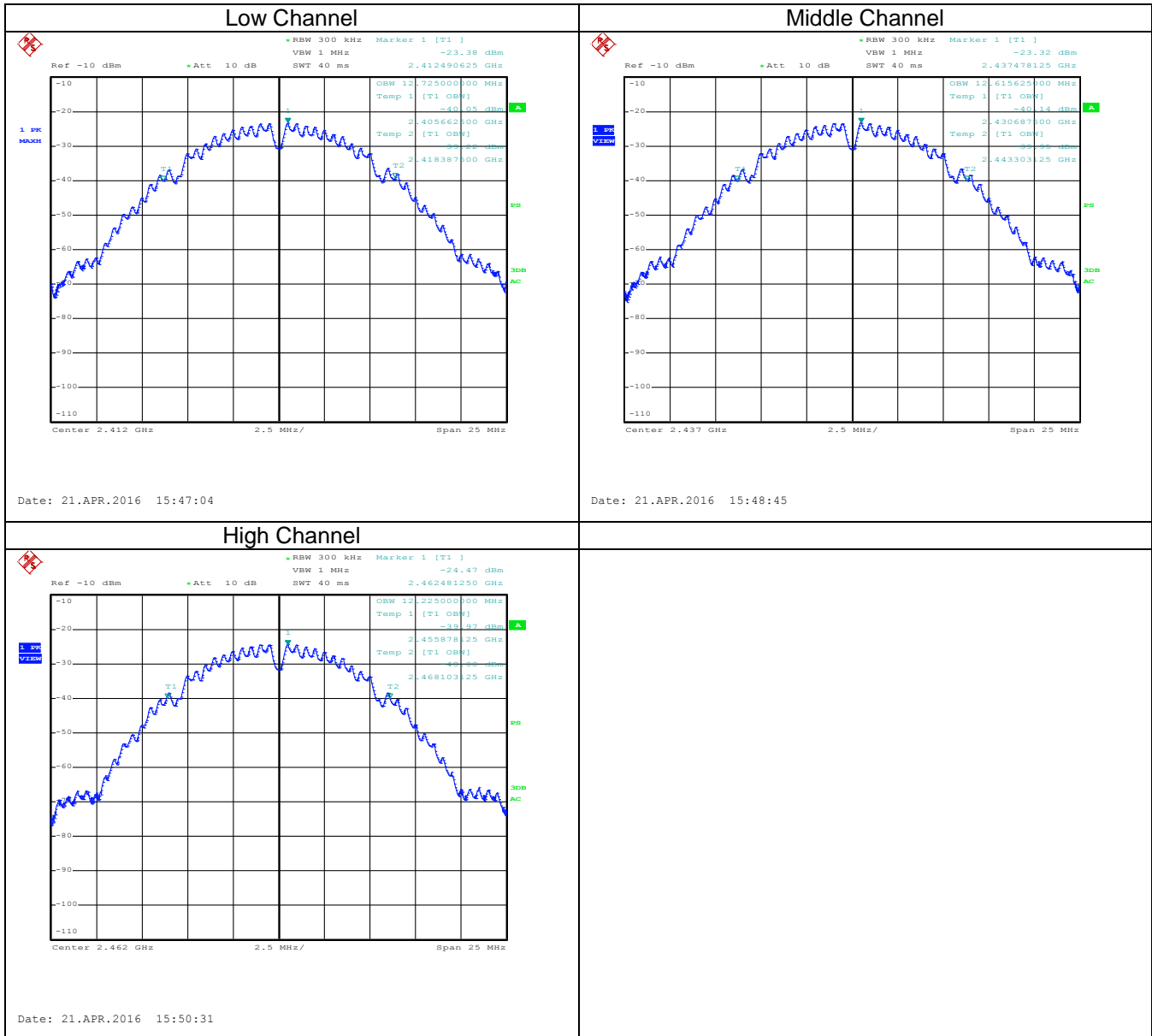
DATA & PLOT:

Modulation	Channel	Frequency	99% BW	Result
		MHz	MHz	
Wifi B 1Mbps	Low	2412	12.72	Complies
	Mid	2437	12.62	Complies
	High	2462	12.22	Complies
Wifi g 6Mbps	Low	2412	17.26	Complies
	Mid	2437	17.26	Complies
	High	2462	17.26	Complies
Wifi n 6.5Mbps	Low	2412	18.21	Complies
	Mid	2437	18.21	Complies
	High	2462	18.19	Complies
Wifi n 13.5Mbps	Low	2422	37.01	Complies
	Mid	2437	37.01	Complies
	High	2452	37.02	Complies
BTLE GFSK	Low	2402	1.068	Complies
	Mid	2440	1.068	Complies
	High	2480	1.068	Complies



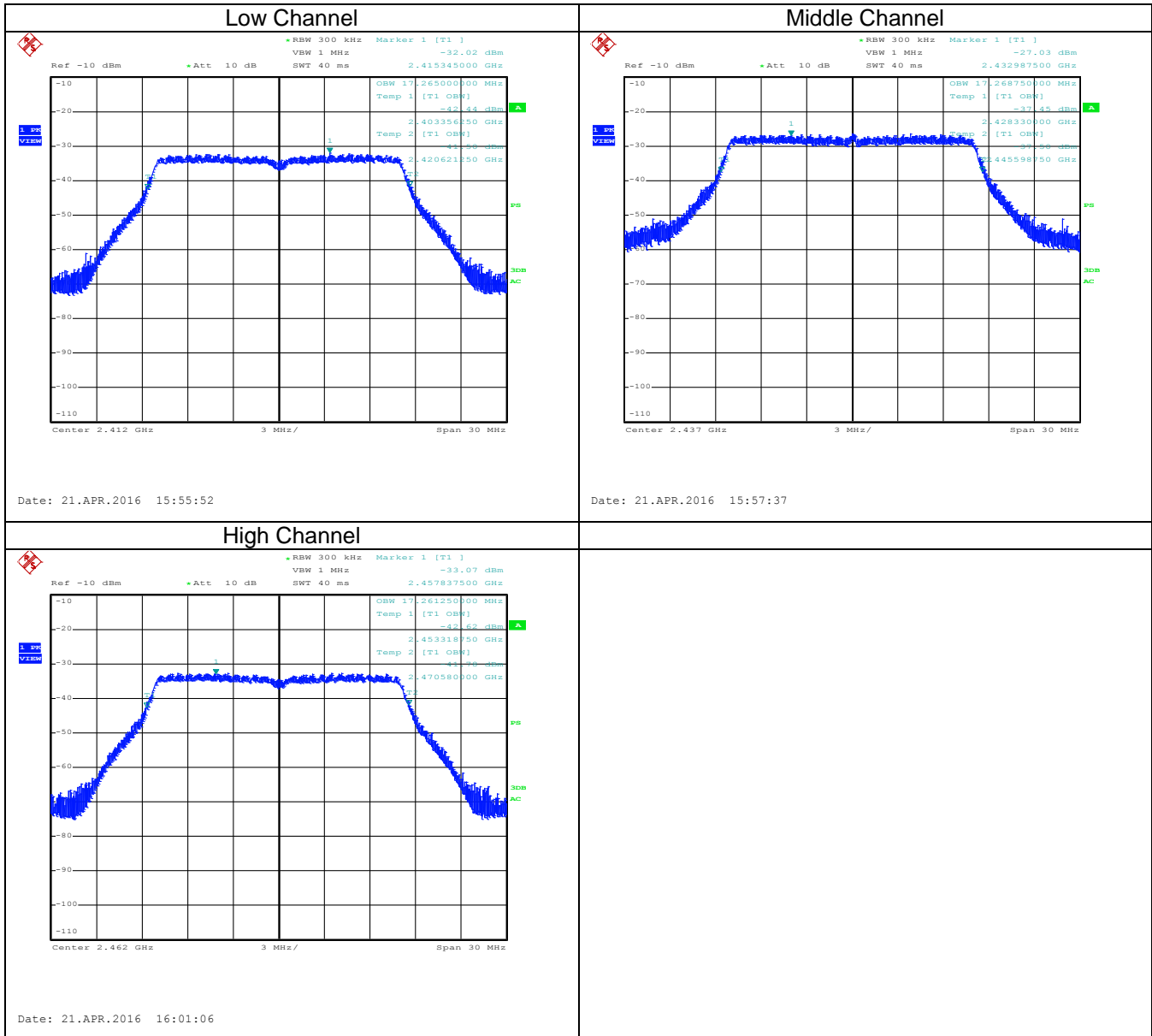


### 99% Bandwidth\_WiFi\_B



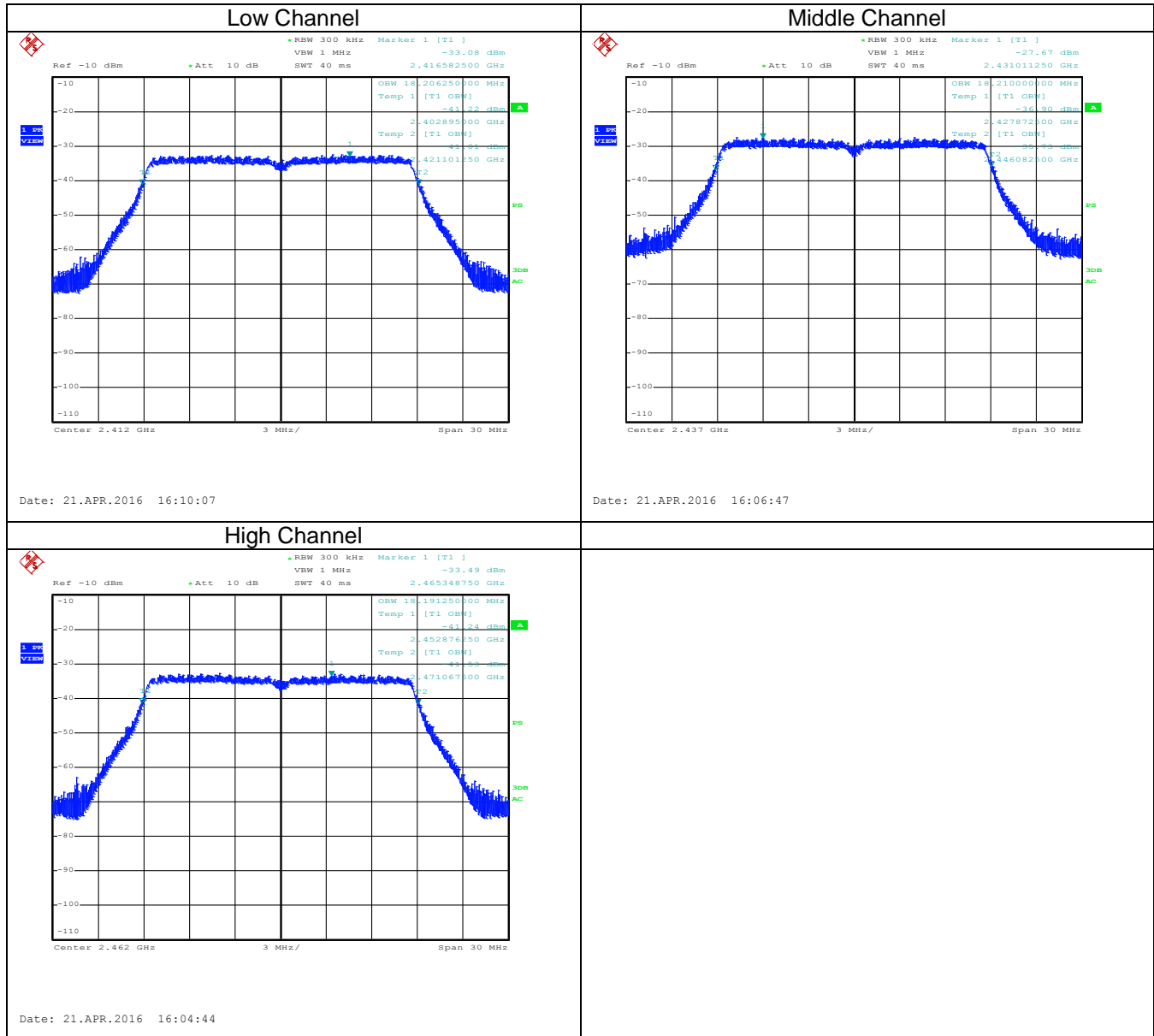


### 99% Bandwidth\_WiFi\_G



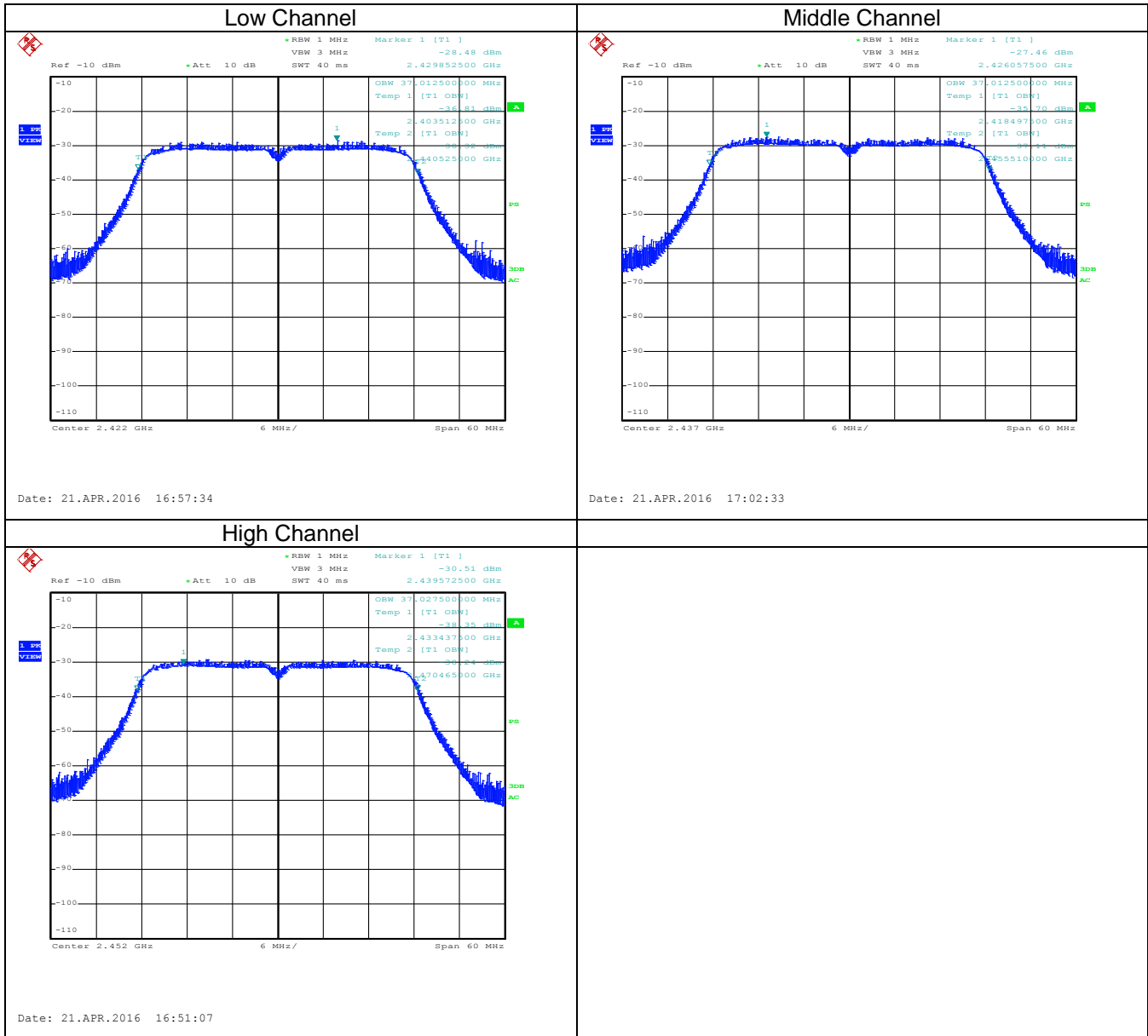


### 99% Bandwidth\_WiFi\_N



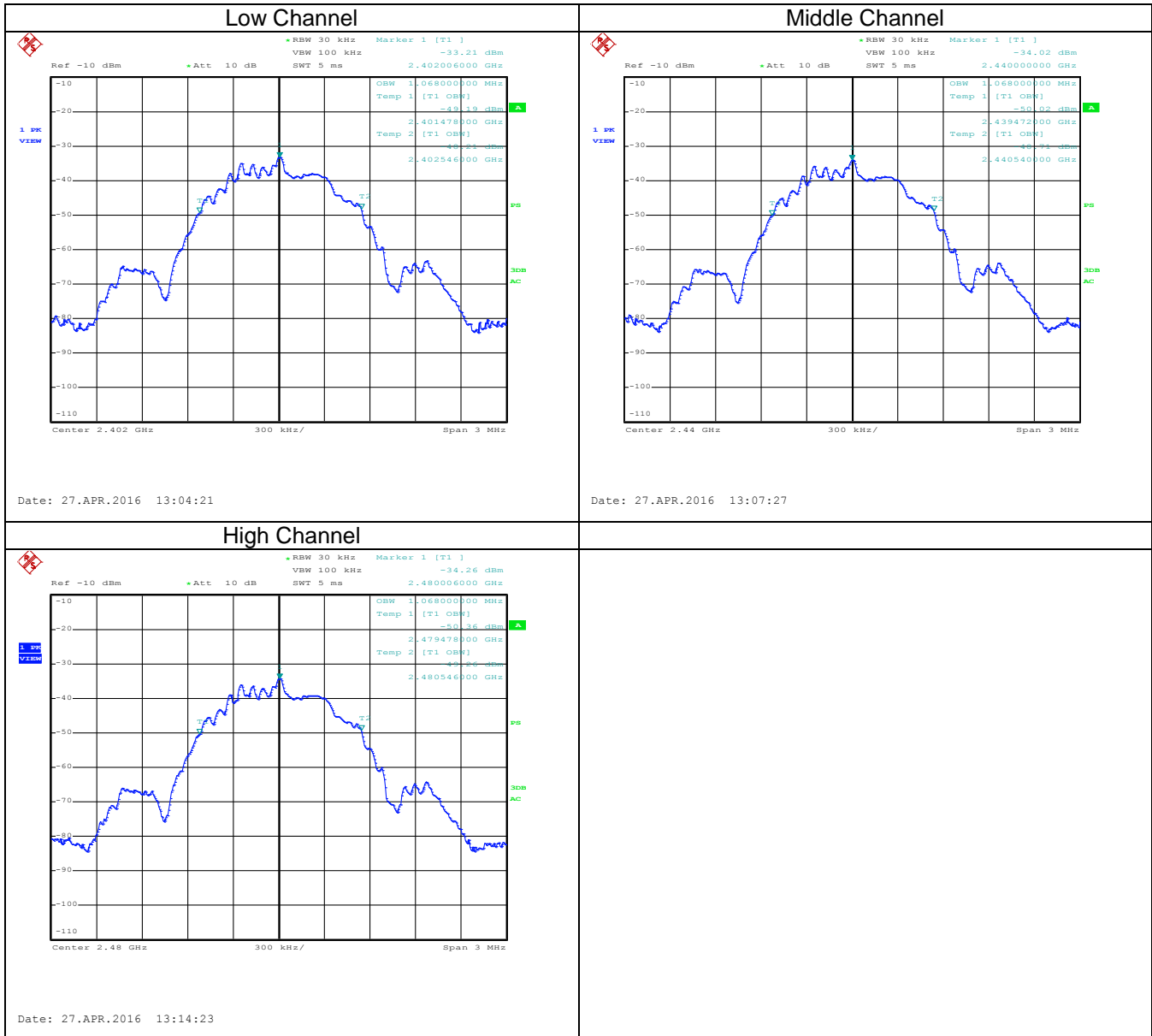


### 99% Bandwidth\_WiFi\_N\_40MHz





### 99% Bandwidth\_BTLE





## Part 7– Band Edge

DATE: April 29, 2016

TEST STANDARD: RSS-247 Issue 1 Section 5.5, FCC Subpart C §15.247(d)

MINIMUM STANDARD:

RSS-247 Issue 1 Section 5.5: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

FCC Subpart C §15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

TEST SETUP: The EUT was directly connected to a spectrum analyser. The transmitter was set for continuous transmission.

MEASUREMENT METHOD: Measurements were made using a spectrum analyser with 300 kHz RBW peak detector using the appropriate antennas, amplifiers and filters.

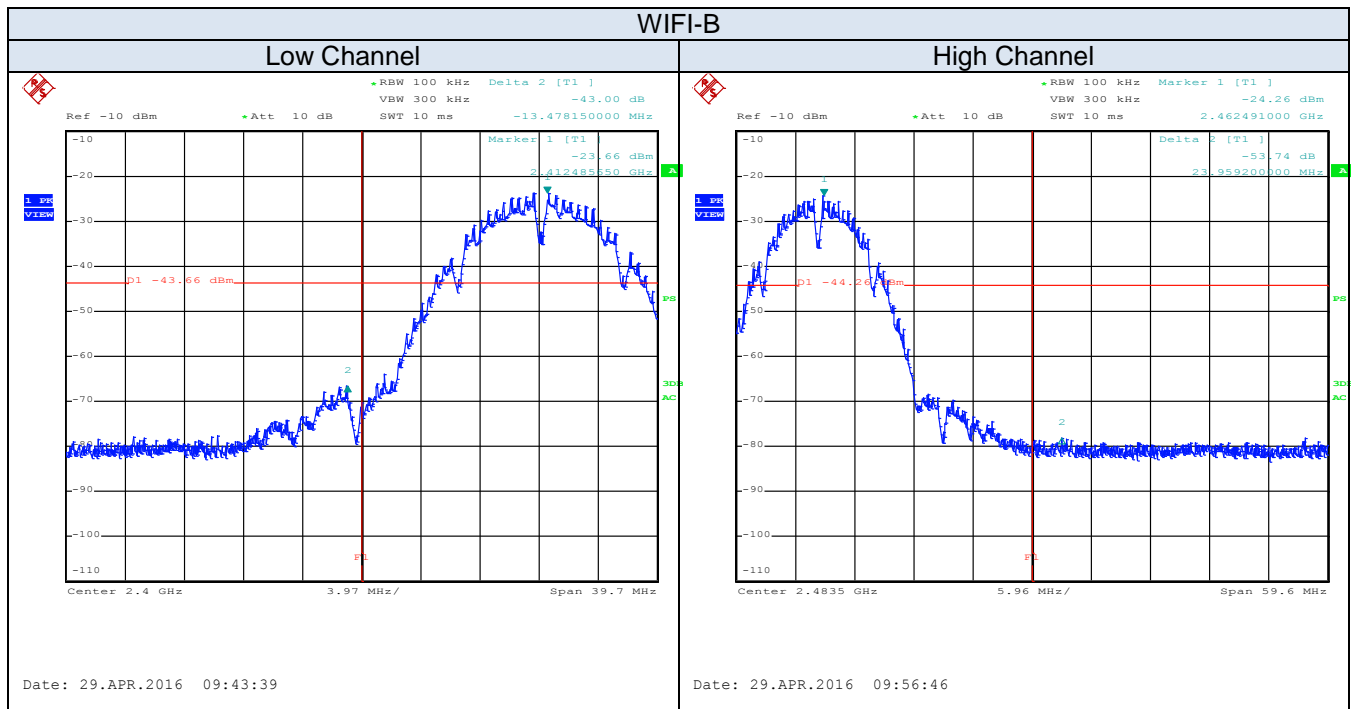
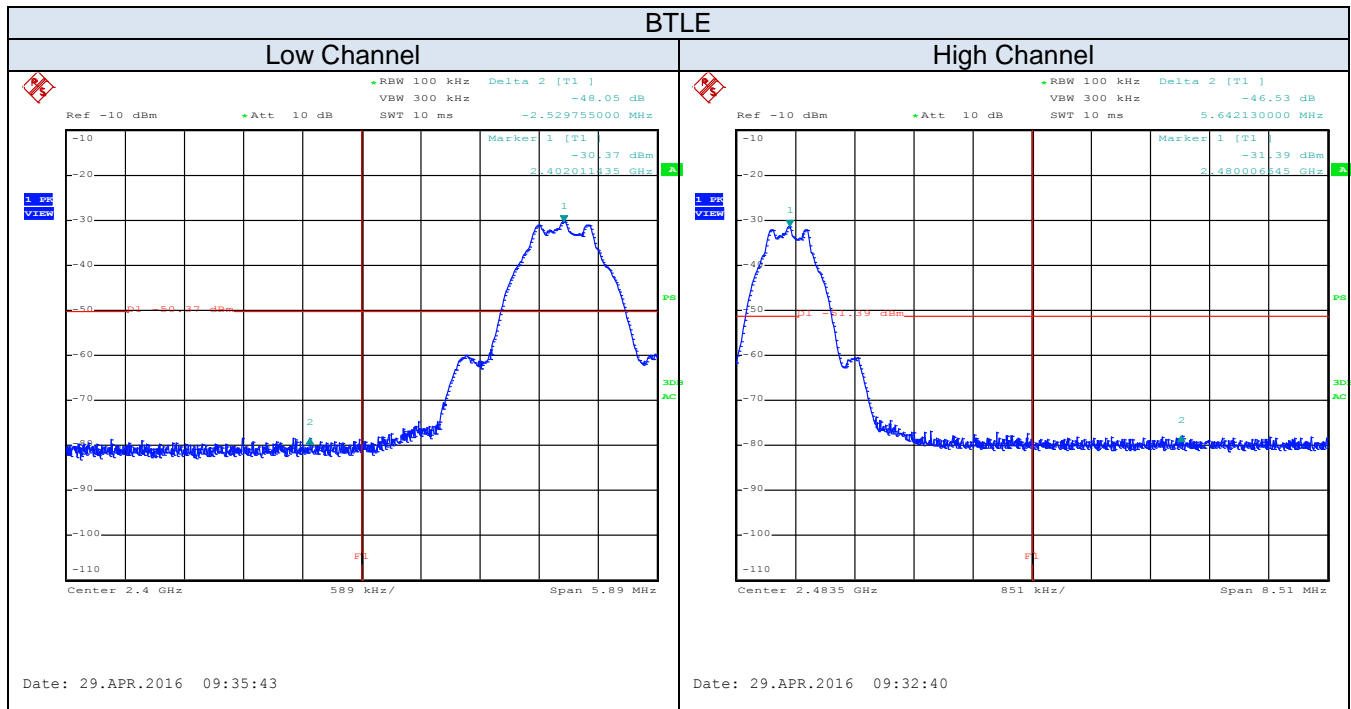
DEVICE DESCRIPTIONS: As described in the above EUT description and setup section.

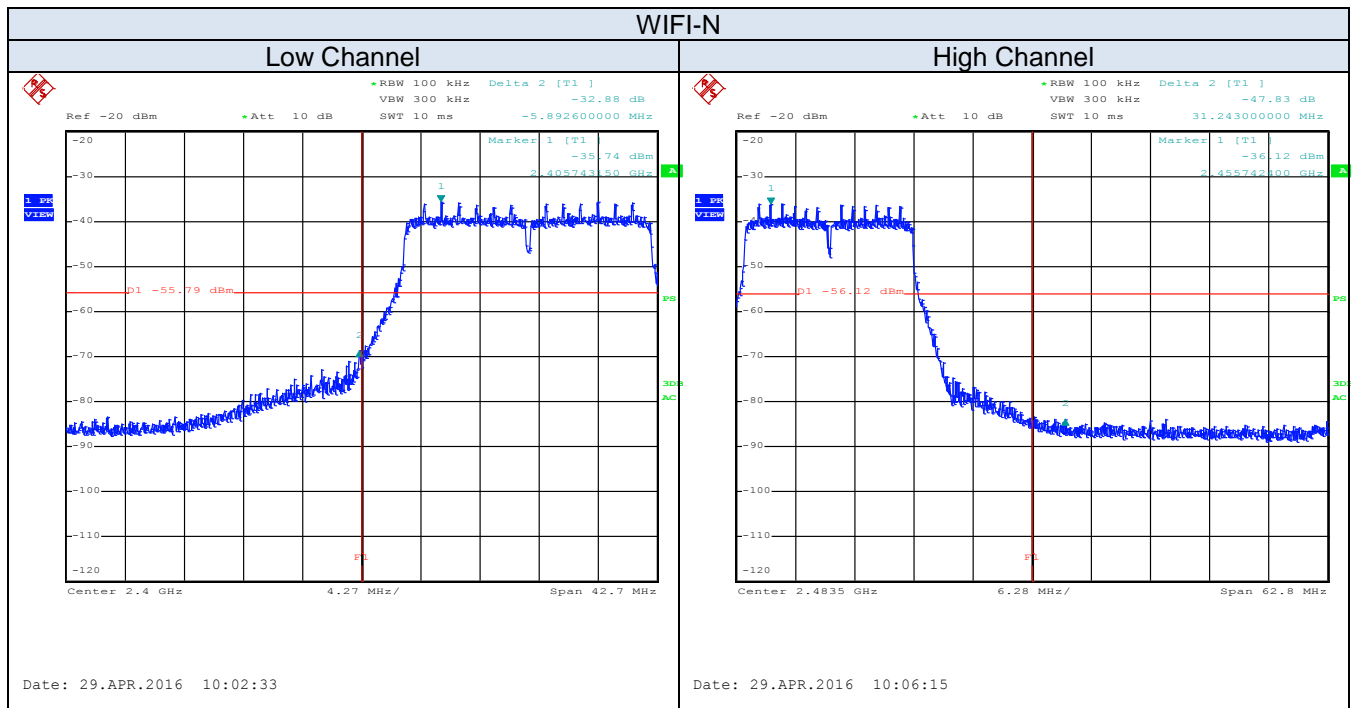
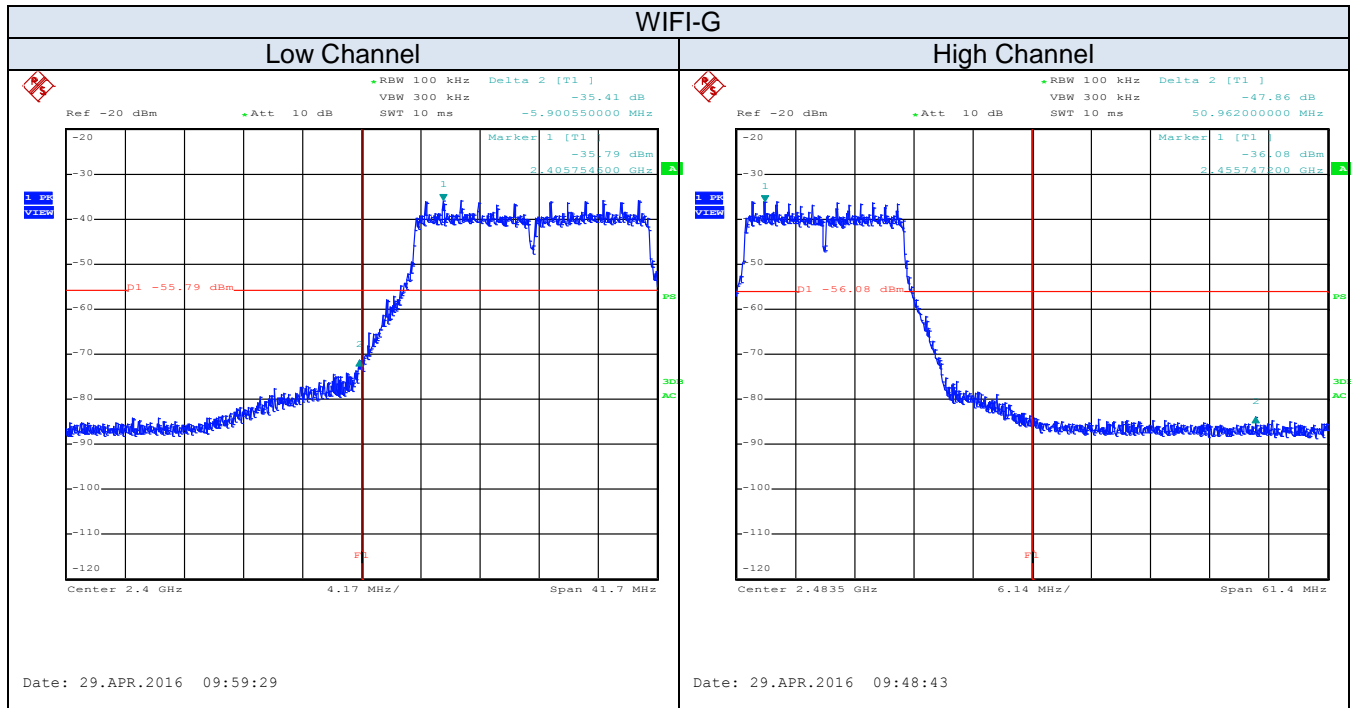
OBSERVATIONS: The EUT performed as expected.

PERFORMANCE: Complies.

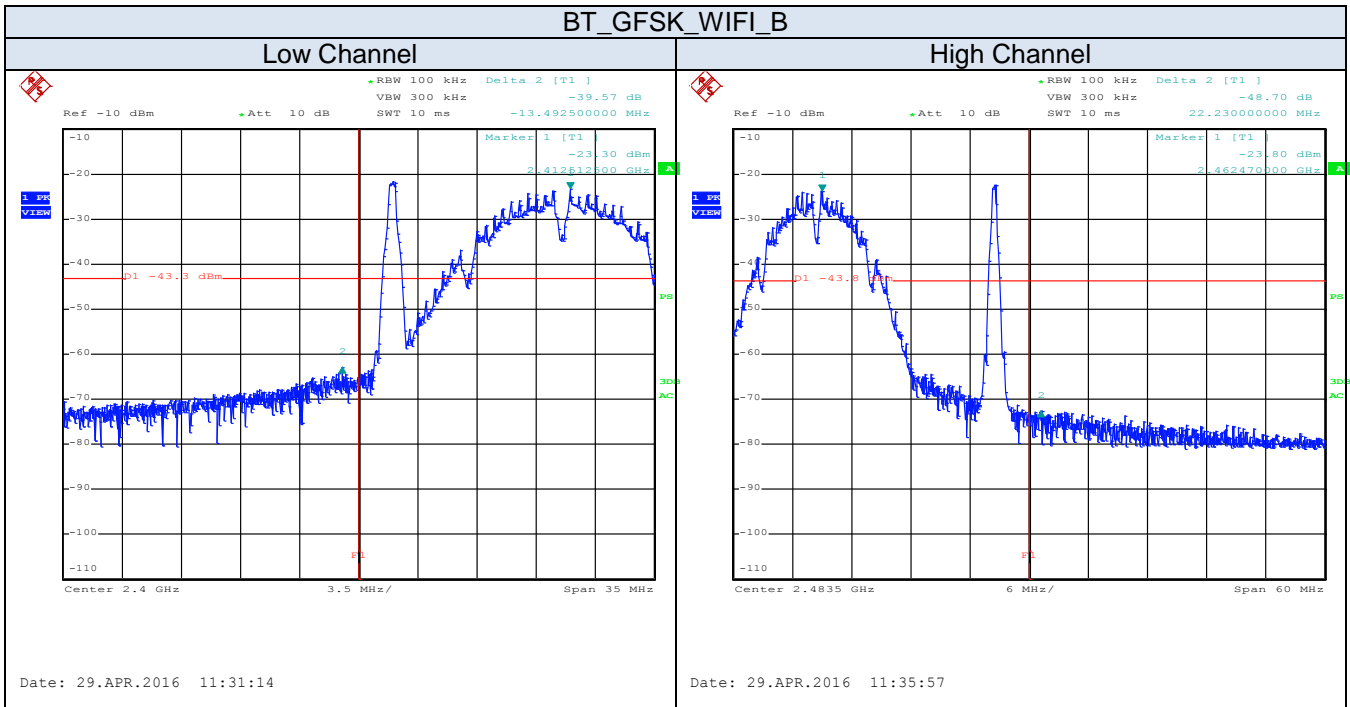
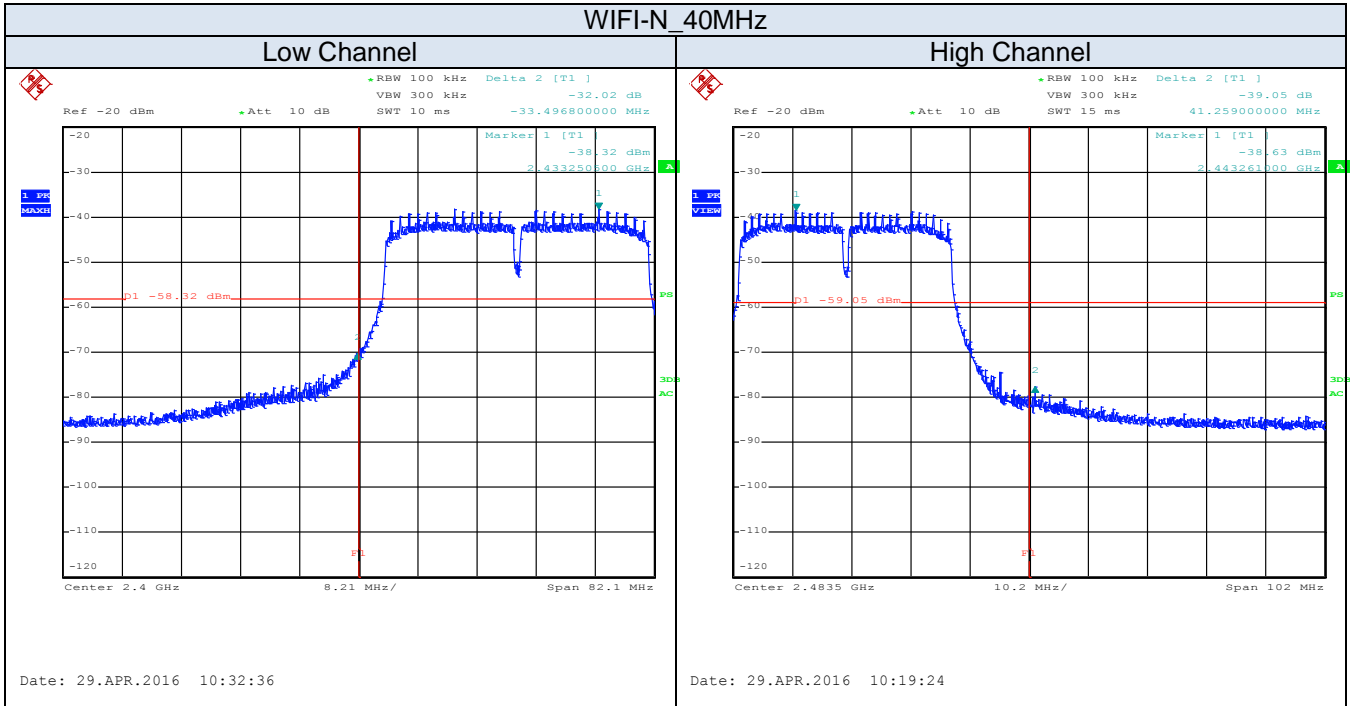


DATA & PLOT:





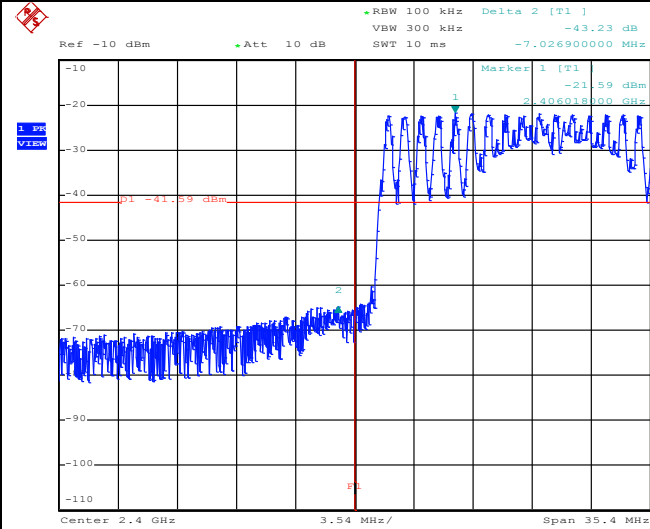






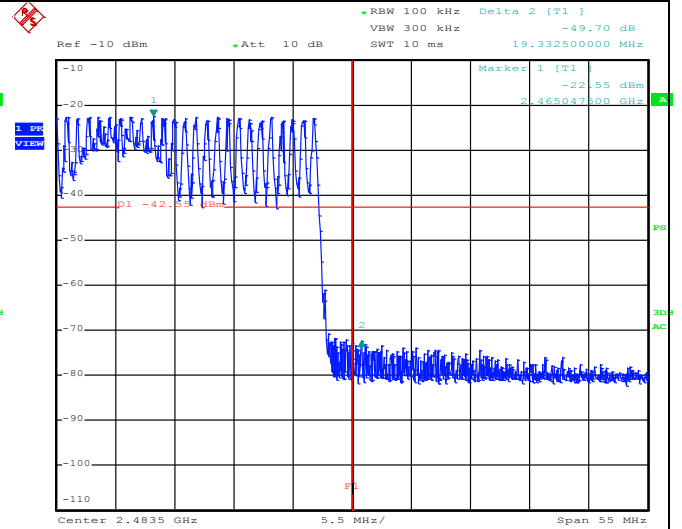
### WIFI-B-BT\_GFSK\_HOP

#### Low Channel



Date: 29.APR.2016 12:07:45

#### High Channel



Date: 29.APR.2016 12:05:31



## Part 8 – Conducted Spurious Emissions

DATE:	April 26,2016
TEST STANDARD:	RSS-247 Issue 1; FCC Subpart C §15.247
MINIMUM STANDARD:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))
TEST SETUP:	The EUT was directly connected to a spectrum analyser. The transmitter was set for continuous transmission. Measurements were done up to 25GHz.
MEASUREMENT METHOD:	Measurements were made using a spectrum analyser with 100kHz RBW quasi-peak detector using the appropriate antennas, amplifiers and filters.
DEVICE DESCRIPTIONS:	As described in the above EUT description and setup section.
EMISSIONS DATA & PLOT:	

Note:

The limits of the conducted spurious emissions are calculated from the following formula:

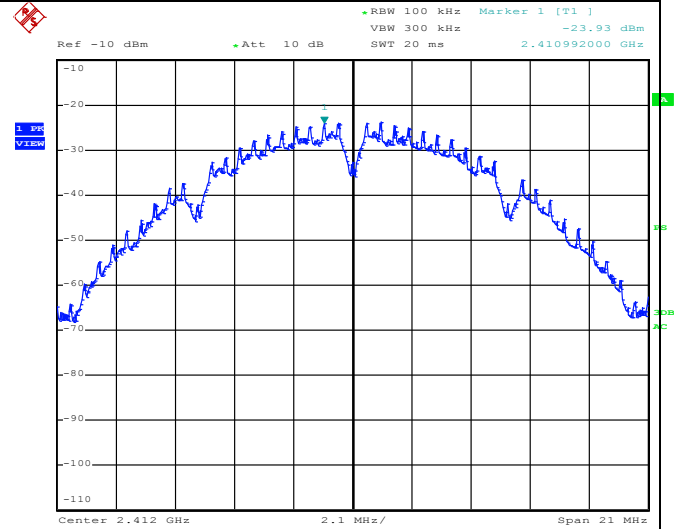
- 1) Limits = Reference level - 20dB
- 2) Reference level was measured as per "558074 D01 DTS Meas Guidance v03r05, section 11.2"



Wi-Fi 802.11 b, Reference Level

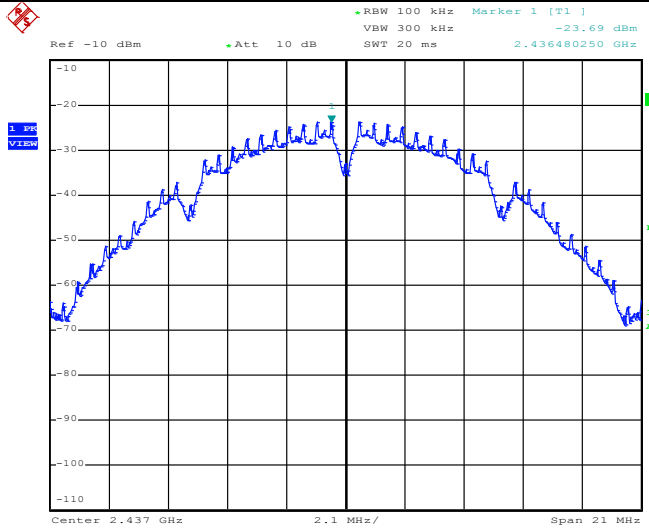
Frequency (MHz)	Raw Reading (dBm)	Cable Loss with 30dB attenuator (dB)	Corrected Ref level (dB)
2412	-23.93	31.92	7.99
2437	-23.69	31.96	8.27
2462	-24.61	31.92	7.31

Low Channel



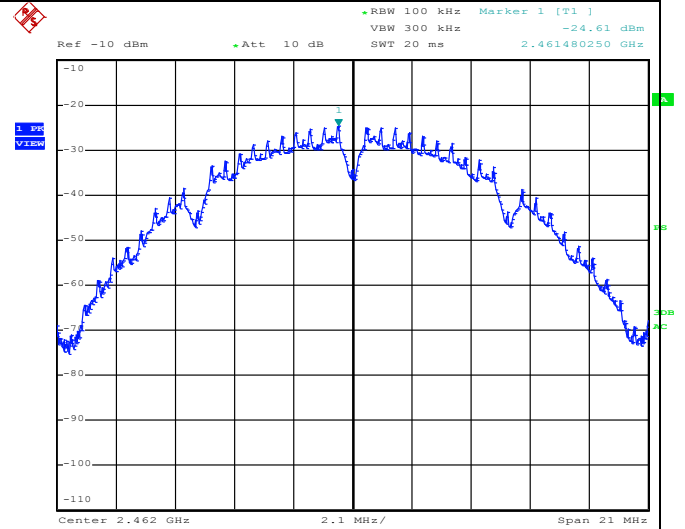
Date: 29.APR.2016 12:33:36

Mid Channel



Date: 29.APR.2016 12:36:00

High Channel

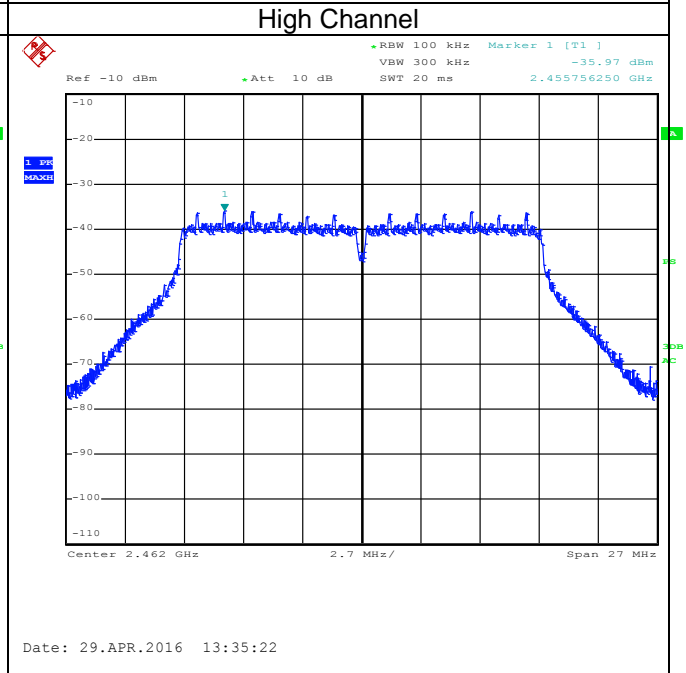
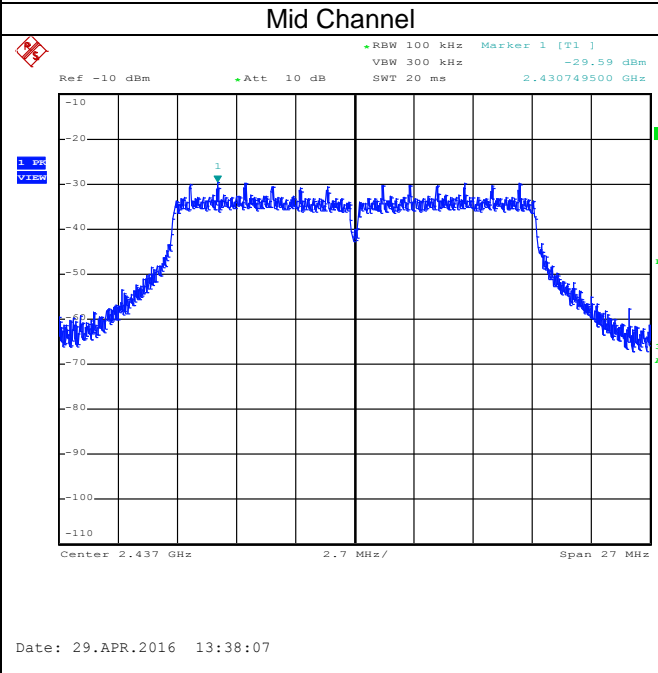
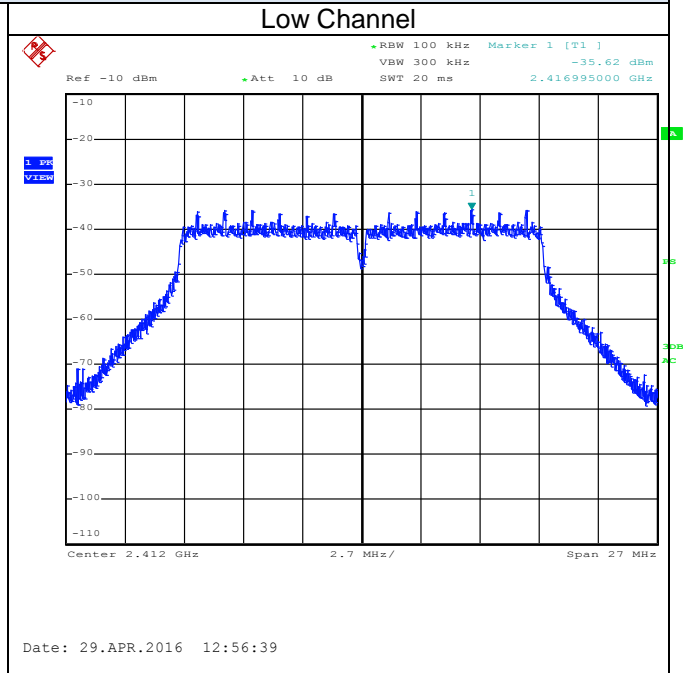


Date: 29.APR.2016 12:52:54



Wi-Fi 802.11 g, Reference Level

Frequency (MHz)	Raw Reading (dBm)	Cable Loss with 30dB attenuator (dB)	Corrected Peak O/P Power (dB)
2412	-35.62	31.92	-3.7
2437	-29.59	31.96	2.37
2462	-35.97	31.92	-4.05

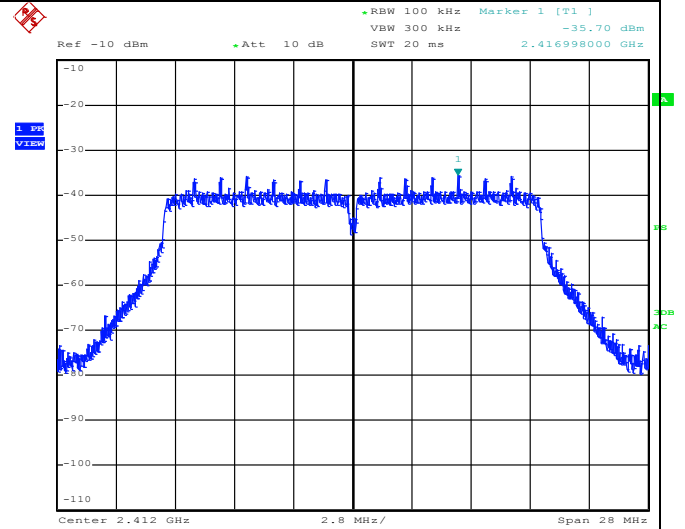




Wi-Fi 802.11 n, Reference Level

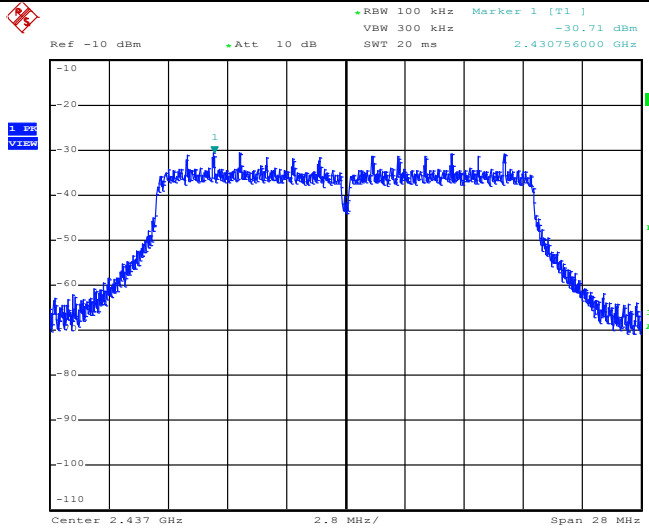
Frequency (MHz)	Raw Reading (dBm)	Cable Loss with 30dB attenuator (dB)	Corrected Peak O/P Power (dB)
2412	-35.7	31.92	-3.78
2437	-30.7	31.96	1.26
2462	-36.3	31.92	-4.38

Low Channel



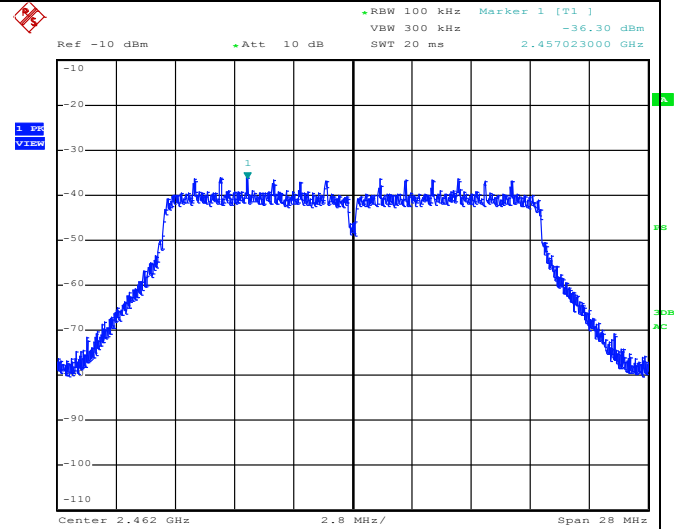
Date: 29.APR.2016 13:43:39

Mid Channel



Date: 29.APR.2016 14:16:22

High Channel



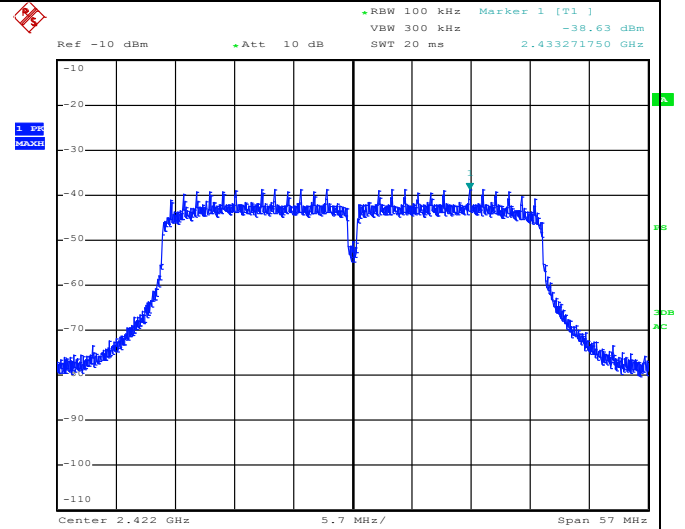
Date: 29.APR.2016 14:15:13



Wi-Fi 802.11 n, 40MHz, Reference Level

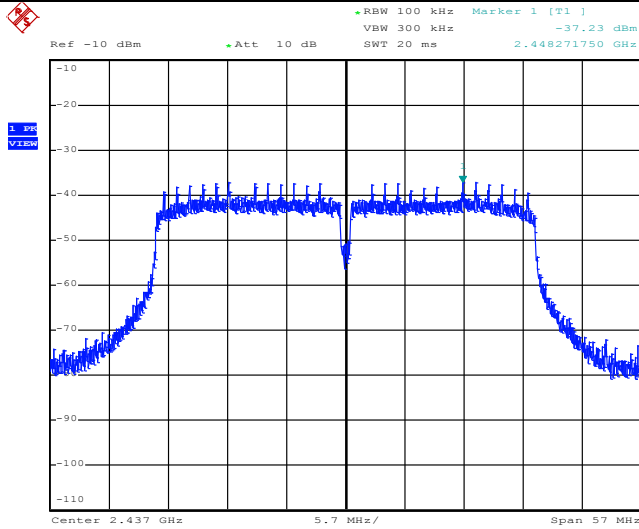
Frequency (MHz)	Raw Reading (dBm)	Cable Loss with 30dB attenuator (dB)	Corrected Peak O/P Power (dB)
2412	-38.63	31.94	-6.69
2437	-37.23	31.96	-5.27
2462	-38.89	31.94	-6.95

Low Channel



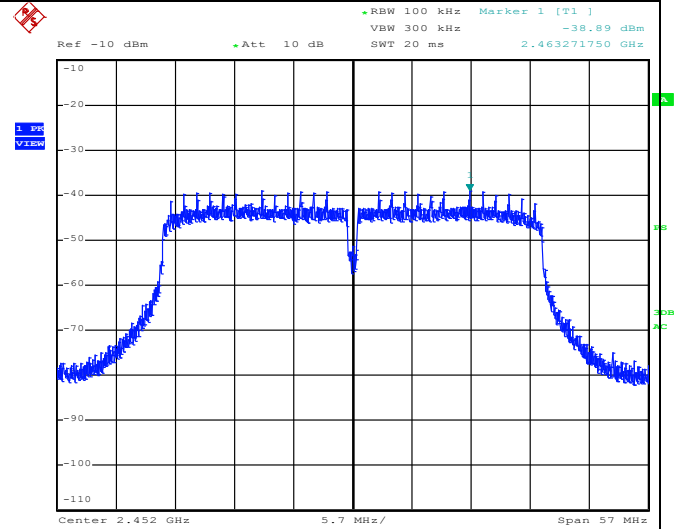
Date: 29.APR.2016 14:21:41

Mid Channel



Date: 29.APR.2016 15:14:30

High Channel



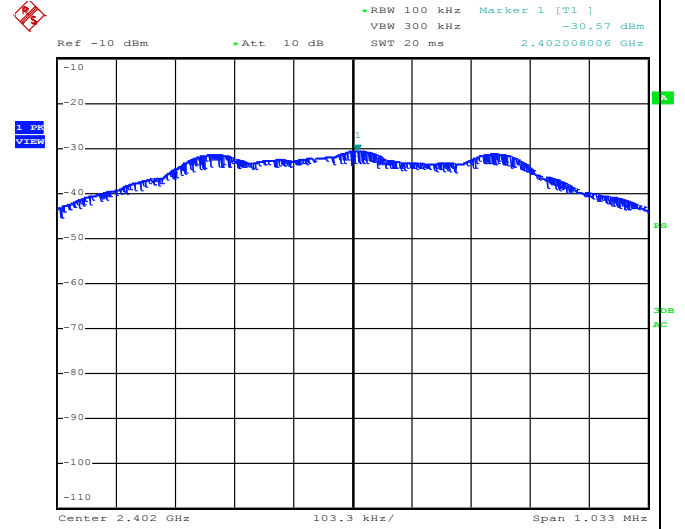
Date: 29.APR.2016 15:13:15



BTLE, Reference Level

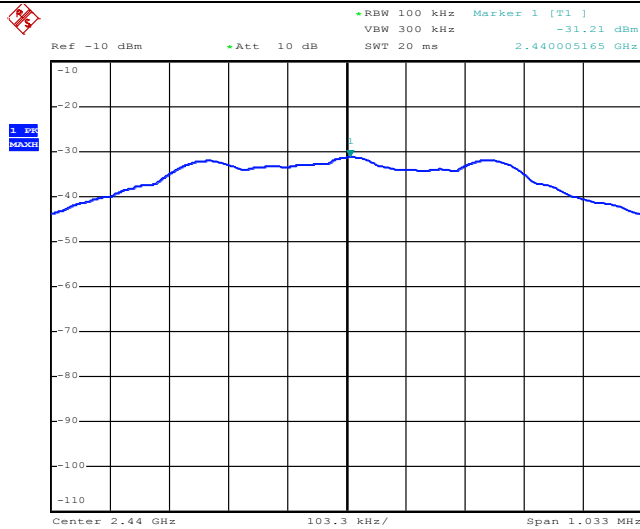
Frequency (MHz)	Raw Reading (dBm)	Cable Loss with 30dB attenuator (dB)	Corrected Peak O/P Power (dB)
2402	-30.57	31.96	1.39
2440	-31.21	32	0.79
2480	-31.62	31.98	0.36

Low Channel



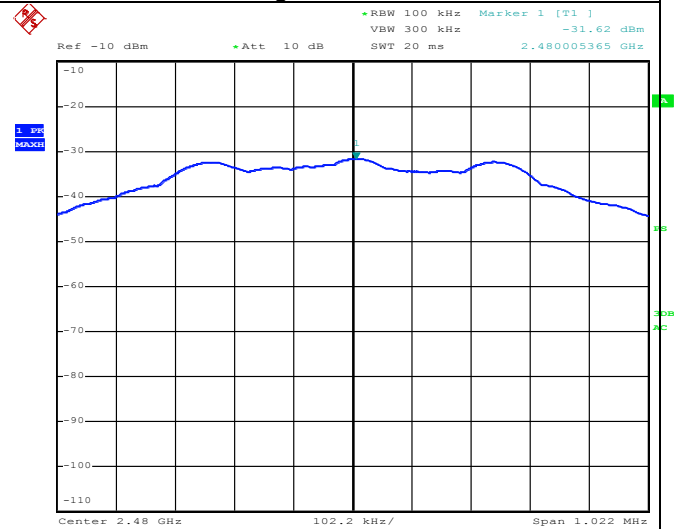
Date: 29.APR.2016 15:49:25

Mid Channel



Date: 29.APR.2016 15:51:44

High Channel



Date: 29.APR.2016 15:56:03

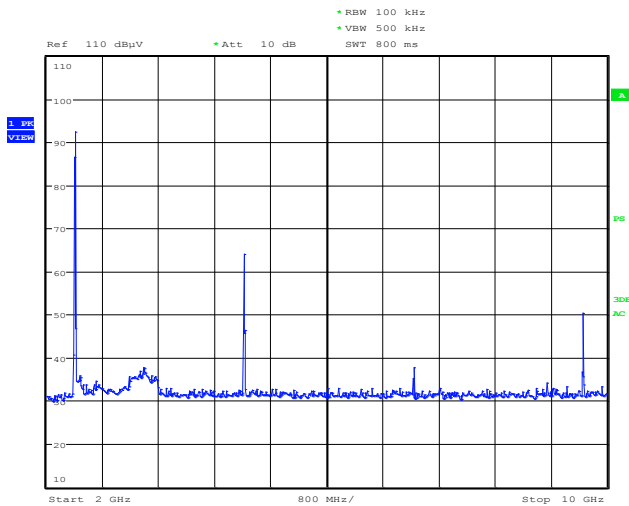




### Conducted Spurious Emissions, Wi-Fi 802.11b, Low Channel

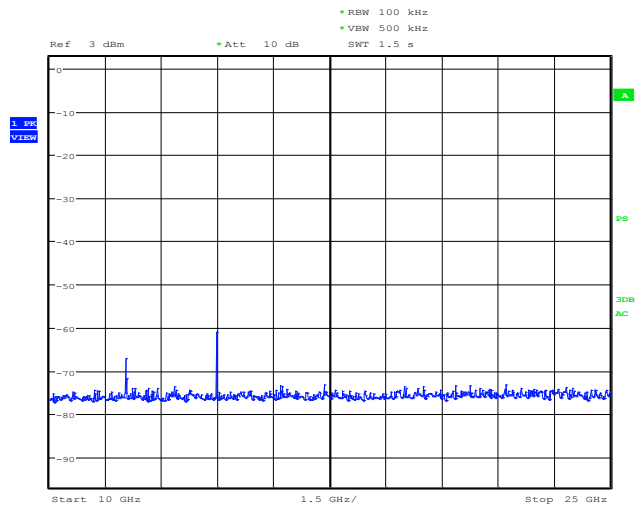
Wifi B					
Low Channel 2412 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4824	-42.53	1.78	-40.75	-22.7	18.05
7236	-66.2	3.41	-62.79	-22.7	40.09
9648	-56.6	4.01	-52.59	-22.7	29.89
12060	-64.88	4.42	-60.46	-22.7	37.76
14472	-59.98	9.34	-50.64	-22.7	27.94
16884	-71.74	8.01	-63.73	-22.7	41.03
19296	-68.42	10.1	-58.28	-22.7	35.58

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 16:02:33

#### Conducted Spurious Emissions, 10GHz-25GHz



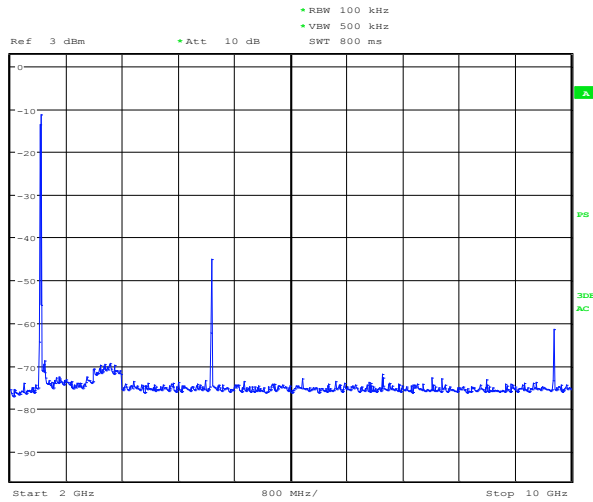
Date: 26.APR.2016 16:21:42



### Conducted Spurious Emissions, Wi-Fi 802.11b, Mid Channel

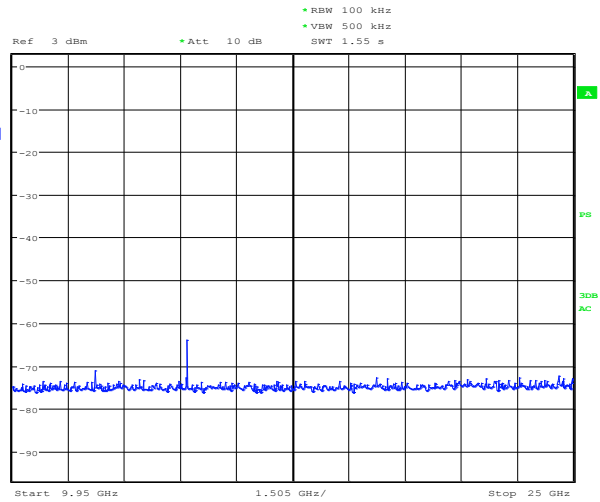
Wifi B					
Mid Channel 2437 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4874	-45.47	2.66	-42.81	-22.7	20.11
7311	-68.83	2.94	-65.89	-22.7	43.19
9748	-60.38	4.26	-56.12	-22.7	33.42
12185	-68.96	4.85	-64.11	-22.7	41.41
14622	-63.3	9.77	-53.53	-22.7	30.83
17059	-72.32	9.33	-62.99	-22.7	40.29
19496	-73.5	13	-60.5	-22.7	37.8
21933	-71.05	11.3	-59.79	-22.7	37.09

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 16:14:26

#### Conducted Spurious Emissions, 10GHz-25GHz



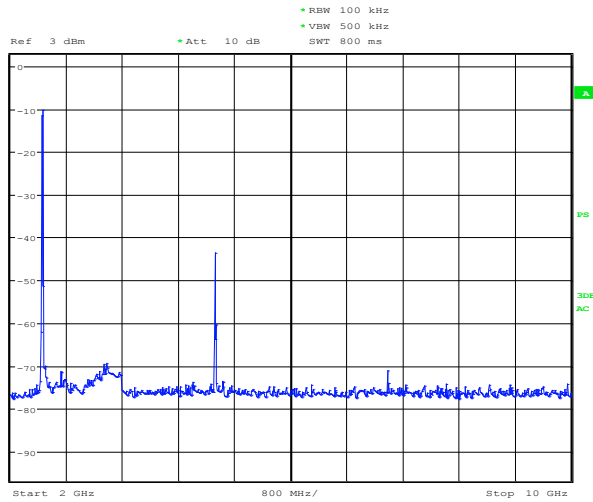
Date: 26.APR.2016 16:26:03



### Conducted Spurious Emissions, Wi-Fi 802.11b, High Channel

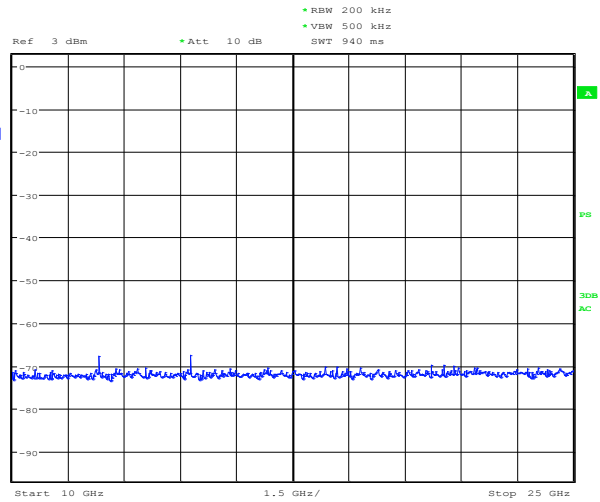
Wifi B					
HI Channel 2462 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4924	-43.47	2.93	-40.54	-22.7	17.84
7386	-67.81	3.09	-64.72	-22.7	42.02
9848	-73.44	4.92	-68.52	-22.7	45.82
12310	-67.49	5.22	-62.27	-22.7	39.57
14772	-65.39	9.42	-55.97	-22.7	33.27
17234	-70.14	7.49	-62.65	-22.7	39.95
19696	-69.62	14.2	-55.45	-22.7	32.75
22158	-69.46	9.72	-59.74	-22.7	37.04

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 16:16:42

#### Conducted Spurious Emissions, 10GHz-25GHz



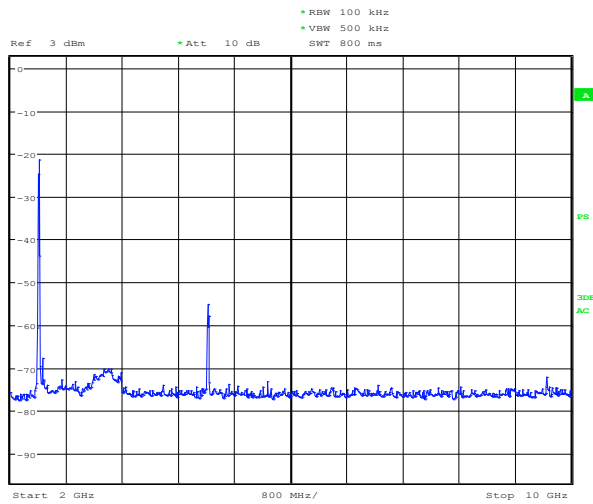
Date: 26.APR.2016 16:33:25



### Conducted Spurious Emissions, Wi-Fi 802.11g, Low Channel

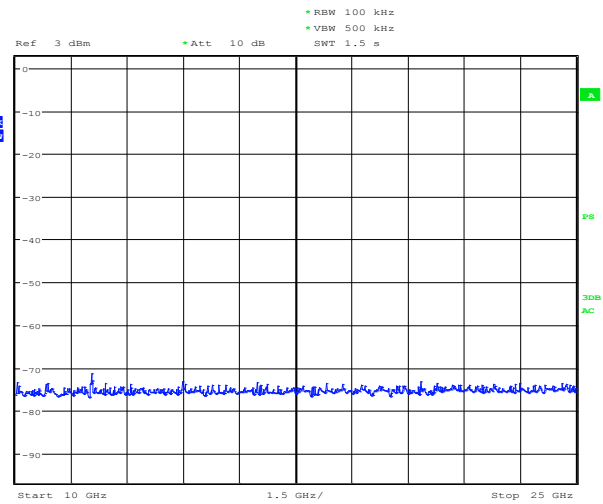
Wifi G					
Low Channel 2412 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4824	-54.23	1.78	-52.45	-27.6	24.82
7236	-73.38	3.41	-69.97	-27.6	42.34
9648	-71.74	4.01	-67.73	-27.6	40.1
12060	-69.58	4.42	-65.16	-27.6	37.53
14472	-72.12	9.34	-62.78	-27.6	35.15

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 16:52:49

#### Conducted Spurious Emissions, 10GHz-25GHz



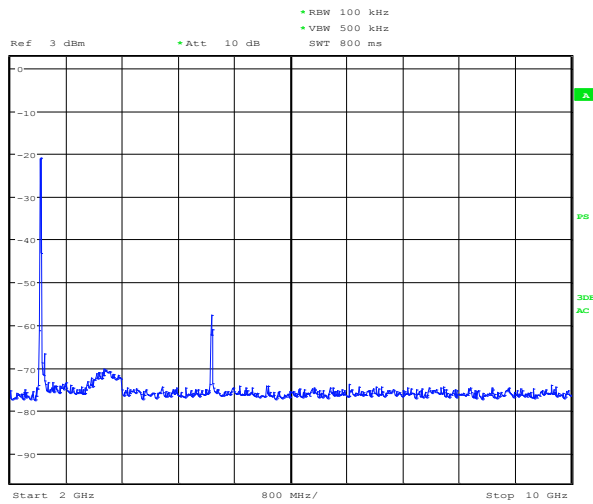
Date: 26.APR.2016 16:41:30



### Conducted Spurious Emissions, Wi-Fi 802.11g, Mid Channel

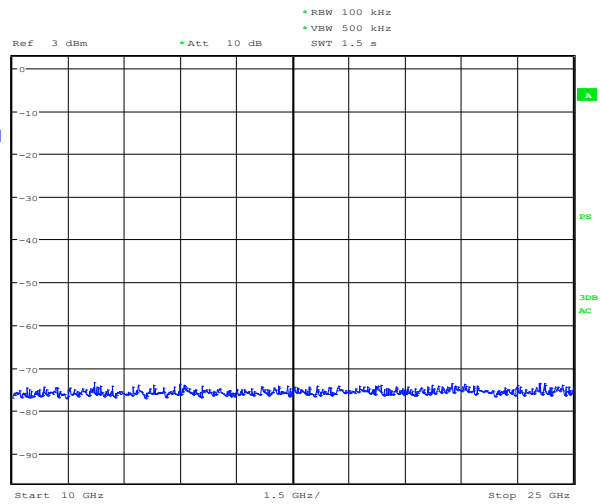
Wifi G					
Mid Channel 2437 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4874	-55.7	2.66	-53.04	-27.6	25.41
7311	-73.26	2.94	-70.32	-27.6	42.69
9748	-71.69	4.26	-67.43	-27.6	39.8
12185	-71.42	4.85	-66.57	-27.6	38.94
14622	-73.03	9.77	-63.26	-27.6	35.63

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 16:57:33

#### Conducted Spurious Emissions, 10GHz-25GHz



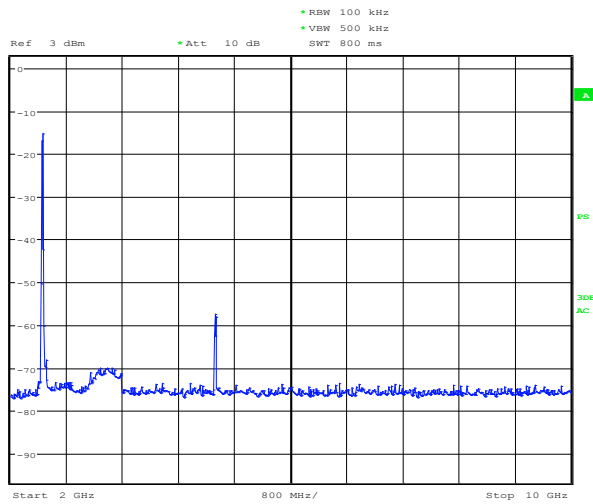
Date: 26.APR.2016 16:46:35



### Conducted Spurious Emissions, Wi-Fi 802.11g, High Channel

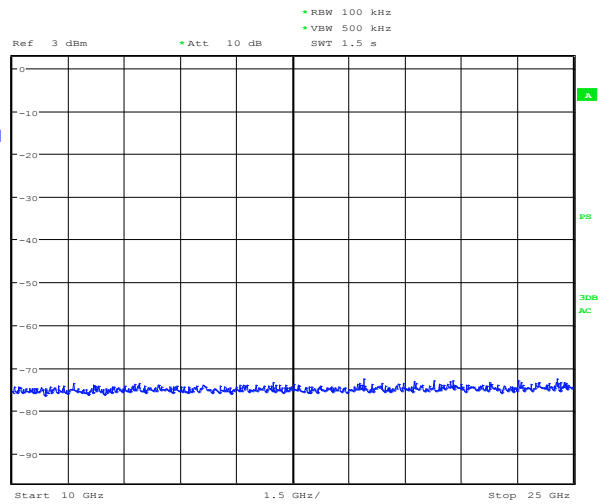
Wifi G					
HI Channel 2462 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4924	-54.84	2.93	-51.91	-27.6	24.28
7386	-71.99	3.09	-68.9	-27.6	41.27
9848	-71.24	4.92	-66.32	-27.6	38.69
12310	-73.38	5.22	-68.16	-27.6	40.53
14772	-74.25	9.42	-64.83	-27.6	37.2

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 16:58:44

#### Conducted Spurious Emissions, 10GHz-25GHz



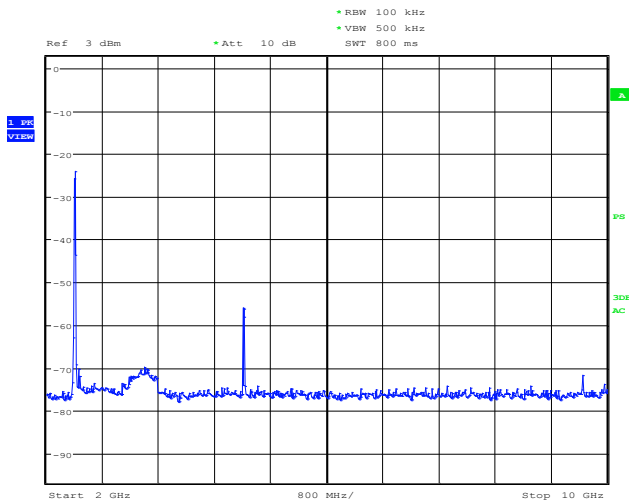
Date: 26.APR.2016 16:48:29



### Conducted Spurious Emissions, Wi-Fi 802.11n, Low Channel

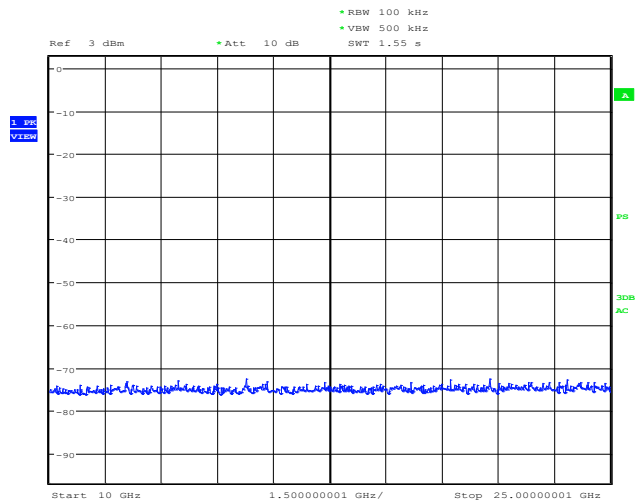
Wifi N					
Low Channel 2412 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4824	-54.26	1.78	-52.48	-28.7	23.74
7236	-72.19	3.41	-68.78	-28.7	40.04
9648	-69.39	4.01	-65.38	-28.7	36.64
12060	-70.64	4.42	-66.22	-28.7	37.48
14472	-72.2	9.34	-62.86	-28.7	34.12
16884	-73.2	8.01	-65.19	-28.7	36.45

### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 17:05:31

### Conducted Spurious Emissions, 10GHz-25GHz



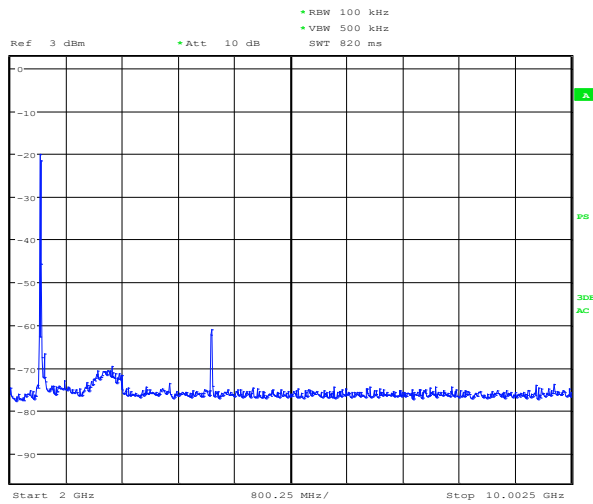
Date: 26.APR.2016 17:22:34



### Conducted Spurious Emissions, Wi-Fi 802.11n, Mid Channel

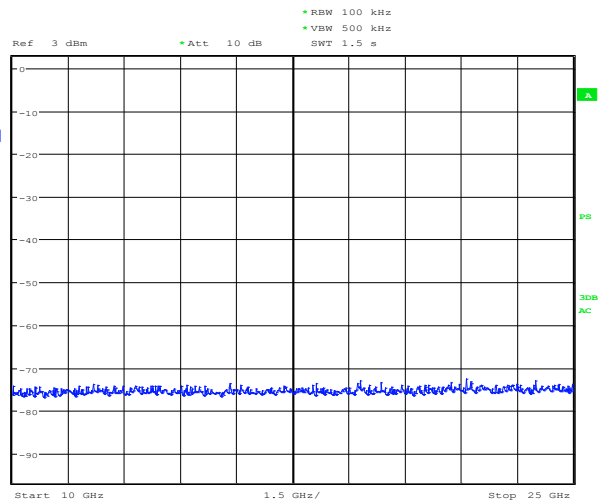
Wifi N					
Mid Channel 2437 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4874	-56.33	2.66	-53.67	-28.7	24.93
7311	-74.09	2.94	-71.15	-28.7	42.41
9748	-71.72	4.26	-67.46	-28.7	38.72
12185	-72.48	4.85	-67.63	-28.7	38.89
14622	-73.61	9.77	-63.84	-28.7	35.1
17059	-74.2	9.33	-64.87	-28.7	36.13

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 17:08:19

#### Conducted Spurious Emissions, 10GHz-25GHz



Date: 26.APR.2016 17:18:34

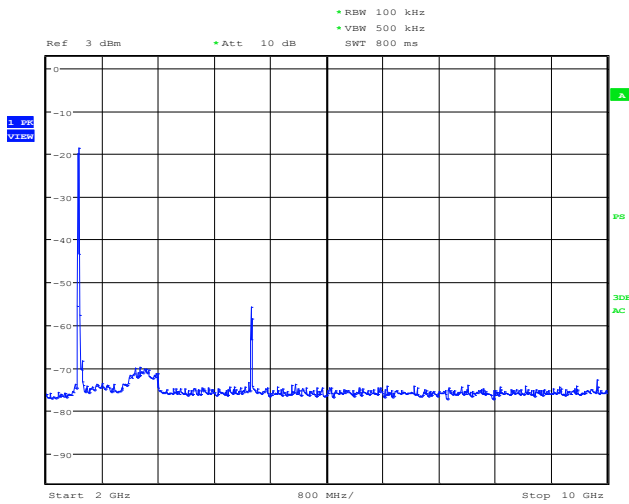




### Conducted Spurious Emissions, Wi-Fi 802.11n, High Channel

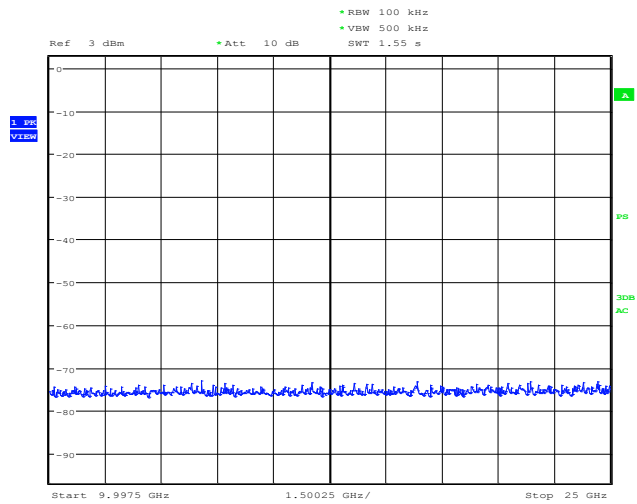
Wifi N					
HI Channel 2462 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4924	-55.25	2.93	-52.32	-28.7	23.58
7386	-73.34	3.09	-70.25	-28.7	41.51
9848	-70.79	4.92	-65.87	-28.7	37.13
12310	-72.67	5.22	-67.45	-28.7	38.71
14772	-72.64	9.42	-63.22	-28.7	34.48

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 17:11:19

#### Conducted Spurious Emissions, 10GHz-25GHz



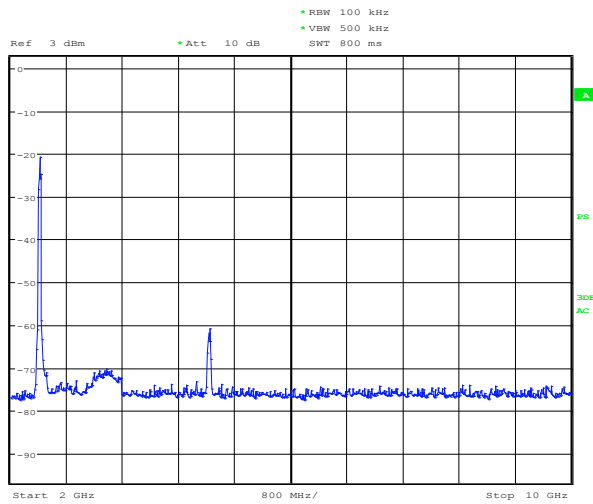
Date: 26.APR.2016 17:14:37



### Conducted Spurious Emissions, Wi-Fi 802.11n 40MHz, Low Channel

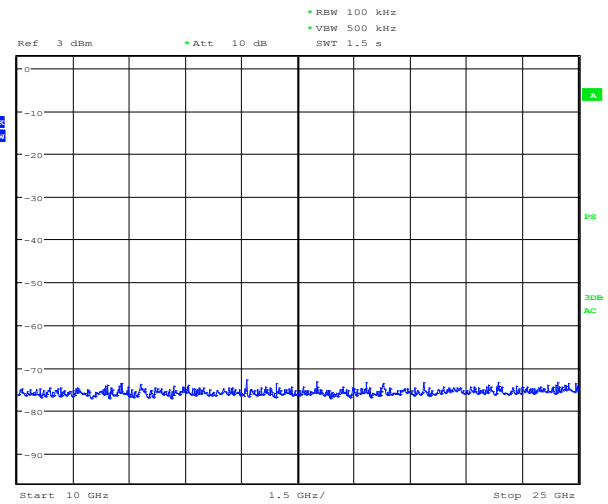
Wifi n 40MHz					
Low Channel 2412 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4844	-54.59	2.21	-52.38	-35.27	17.11
7266	-73.12	2.77	-70.35	-35.27	35.08
9688	-70.38	3.99	-66.39	-35.27	31.12
12110	-73.26	4.7	-68.56	-35.27	33.29
14532	-72.92	9.63	-63.29	-35.27	28.02
16954	-72.5	8.98	-63.52	-35.27	28.25

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 18:09:07

#### Conducted Spurious Emissions, 10GHz-25GHz



Date: 26.APR.2016 17:52:05

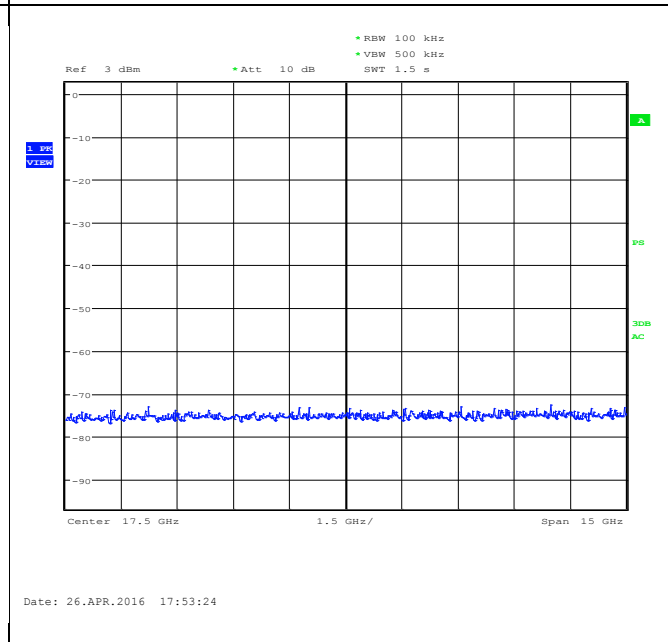
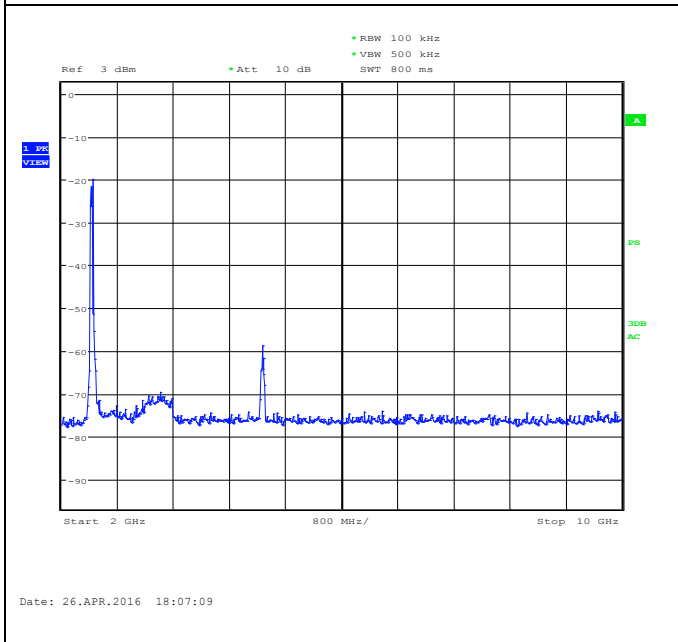


**Conducted Spurious Emissions, Wi-Fi 802.11n 40MHz, Mid Channel**

Wifi n 40MHz					
Mid Channel 2437 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4874	-55.93	2.66	-53.27	-35.27	18
7311	-73.4	2.94	-70.46	-35.27	35.19
9748	-71.2	4.26	-66.94	-35.27	31.67
12185	-73.12	4.85	-68.27	-35.27	33
14622	-73	9.77	-63.23	-35.27	27.96
17059	-72.78	9.33	-63.45	-35.27	28.18
19496	-73.5		-73.5	-35.27	38.23

**Conducted Spurious Emissions, 2GHz-10GHz**

**Conducted Spurious Emissions, 10GHz-25GHz**

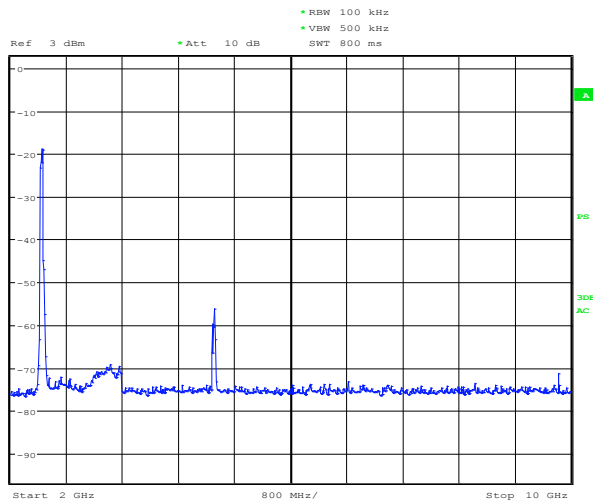




### Conducted Spurious Emissions, Wi-Fi 802.11n 40MHz, High Channel

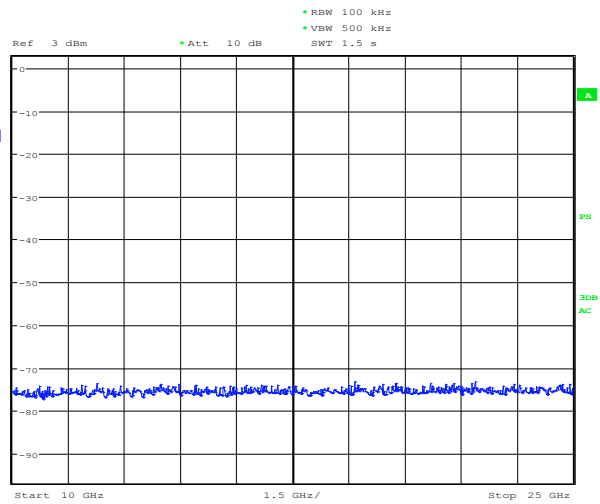
Wifi n 40MHz					
HI Channel 2462 MHz					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4904	-55.57	2.54	-53.03	-35.27	17.76
7356	-73.32	3.35	-69.97	-35.27	34.7
9808	-71.2	3.46	-67.74	-35.27	32.47
12260	-72.84	5.36	-67.48	-35.27	32.21
14712	-73.55	8.44	-65.11	-35.27	29.84
17164	-73.9	9.65	-64.25	-35.27	28.98

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 18:03:34

#### Conducted Spurious Emissions, 10GHz-25GHz



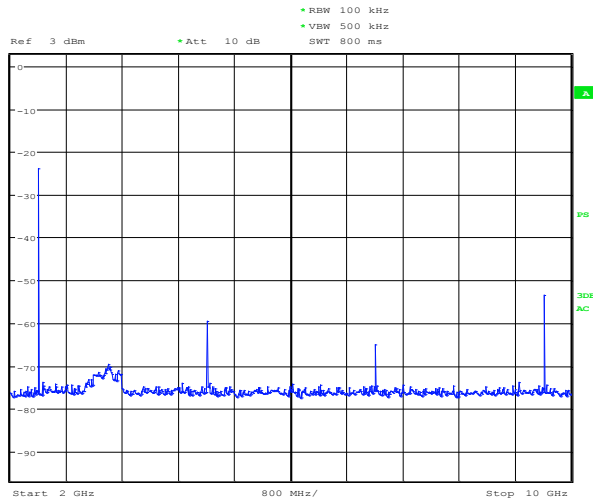
Date: 26.APR.2016 17:58:31



### Conducted Spurious Emissions, BTLE, Low Channel

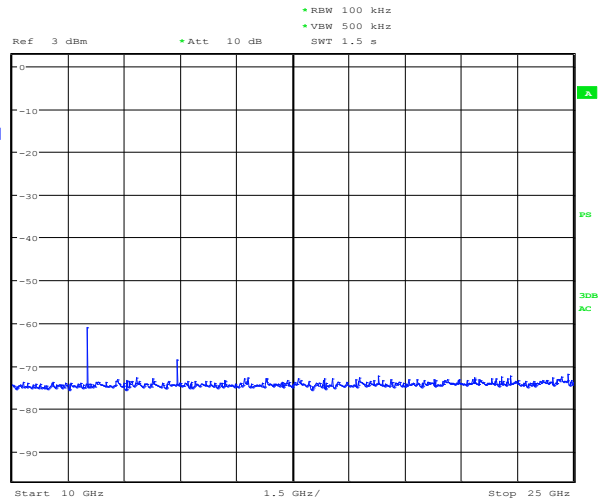
Bluetooth Low Energy GFSK					
Low Channel -2402					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4804	-57.35	2.26	-55.09	-18.61	36.48
7206	-62.47	2.44	-60.03	-18.61	41.42
9608	-51.7	3.91	-47.79	-18.61	29.18
12010	-60.29	4.74	-55.55	-18.61	36.94
14412	-67.22	8.76	-58.46	-18.61	39.85
16814	-72.21	8.53	-63.68	-18.61	45.07

### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 20:53:34

### Conducted Spurious Emissions, 10GHz-25GHz



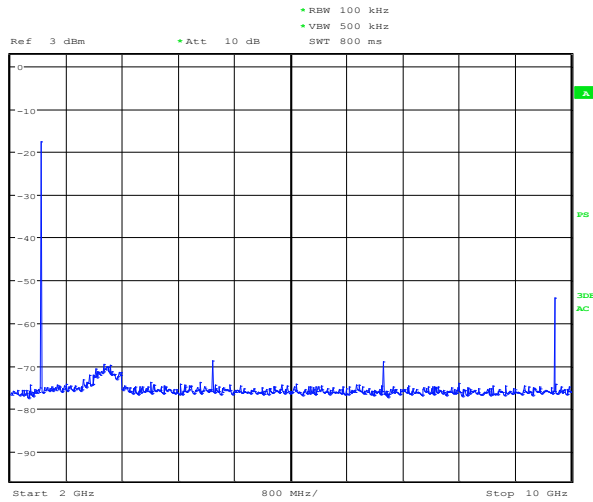
Date: 26.APR.2016 20:41:53



### Conducted Spurious Emissions, BTLE, Mid Channel

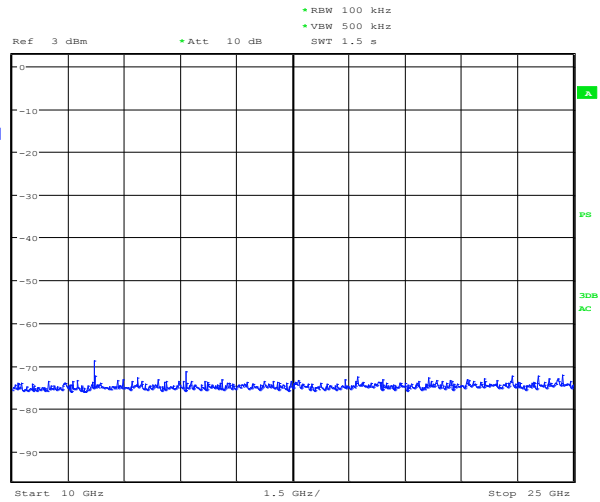
Bluetooth Low Energy GFSK					
Mid Channel -2440					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4880	-65.95	2.84	-63.11	-18.61	44.5
7320	-66.19	3.12	-63.07	-18.61	44.46
9760	-53.74	4.73	-49.01	-18.61	30.4
12200	-65.23	4.69	-60.54	-18.61	41.93
14640	-69.71	9.36	-60.35	-18.61	41.74
17080	-72.8	8.58	-64.22	-18.61	45.61

### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 20:54:40

### Conducted Spurious Emissions, 10GHz-25GHz



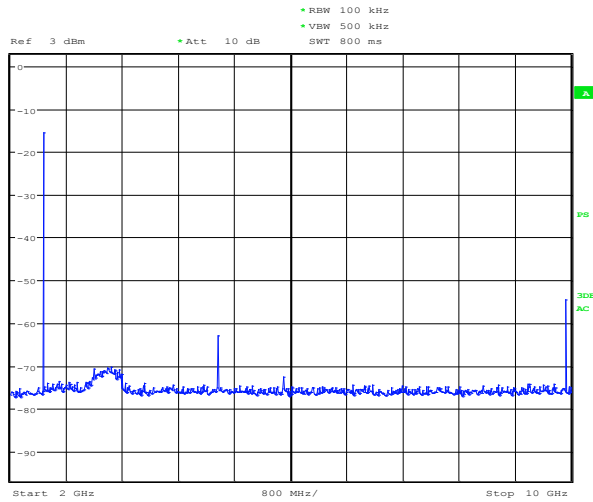
Date: 26.APR.2016 20:45:03



### Conducted Spurious Emissions, BTLE, High Channel

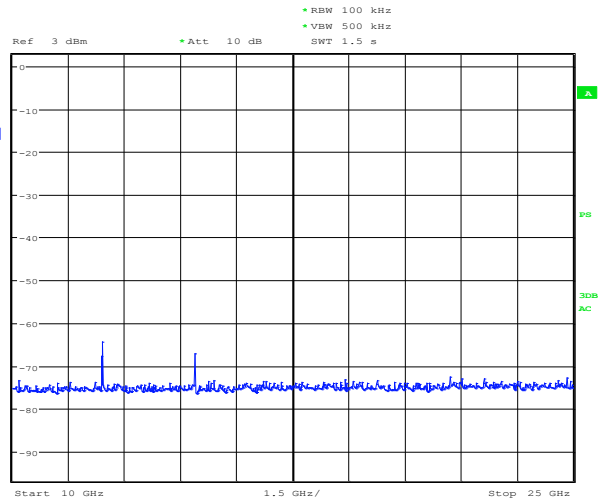
Bluetooth Low Energy GFSK					
Hi Channel -2480					
Frequency (MHz)	Raw Peak (dBm)	Loss (dB)	Corrected Peak (dBm)	Limit (dBm)	Margin (dBm)
4960	-58.78	2.23	-56.55	-18.61	37.94
7440	-70.31	3.15	-67.16	-18.61	48.55
9920	-53.04	4.46	-48.58	-18.61	29.97
12400	-62.69	4.65	-58.04	-18.61	39.43
14880	-65.4	8.54	-56.86	-18.61	38.25
17360	-73.32	7.74	-65.58	-18.61	46.97

#### Conducted Spurious Emissions, 2GHz-10GHz



Date: 26.APR.2016 20:58:14

#### Conducted Spurious Emissions, 10GHz-25GHz



Date: 26.APR.2016 20:47:44



## **Part 9 – RF Exposure Evaluation**

DATE: July 15, 2016

TEST STANDARD: RSS-102 Section 2.5.2

FCC 47 CFR §2.1091 Radiofrequency radiation exposure evaluation: mobile devices & §1.1310 Radiofrequency radiation exposure limits.

TEST CONDITIONS: Indoor

MINIMUM STANDARD: RSS-102 Section 2.5.2:  
Exemption Limits for Routine Evaluation – RF Exposure Evaluation  
RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:  
....• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834} W$  (adjusted for tune-up tolerance), where  $f$  is in MHz;.....  
In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

FCC 47 CFR §1.1310 Radiofrequency radiation exposure limits:

Limits for General Population/Uncontrolled Exposure at Frequency range 1500-100000 MHz: 1.0 mW/cm<sup>2</sup>

Exposure Evaluation:

- 1) The highest conducted power measured was 19.62dBm when the EUT was operated at 2412 MHz in Wi- Fi 802.11b mode.
- 2) The Antenna gain: 2.1dBi.
- 3) E.I.R.P = 19.62dBm + 2.1dBi = 21.72dBm = 158mW
- 4) Power Density at 20cm distance =  $158mW / (4 \times 3.14 \times 20 \times 20 \text{ cm}^2) = 0.03mW/cm^2$

Conclusion: The radiated emissions of EUT is far below the exemption limit 2.7W as per RSS-102 Section 2.5.2.

The maximum power density at 20 cm distance is 0.03mW/cm<sup>2</sup> and is far below the limit 1.0 mW/cm<sup>2</sup> as per FCC 47 CFR §2.1091 & §1.1310

The EUT is compatible with the above standards





## Part 10 - Frequency Stability

DATE: April 28, 2016

TEST STANDARD: FCC Part 15.215(c) and RSS-Gen Issue 4 (8.11)

MINIMUM STANDARD: Not specified.

TEST SETUP: The transmitter of the EUT was set for Carrier Wave (CW) mode and the lowest and highest channel Frequency was measured at each Temperature setting, after the Transmitter stabilized at the temperature.

MEASUREMENT METHOD: Measurements were made using a Spectrum Analyzer with 120kHz RBW Average detector while directly connected to the EUT through the antenna port.

### Measurement Data:

Modulation	Channel	Frequency at -30 °C	Frequency at 20 °C	Frequency at 55 °C
		GHz	GHz	GHz
Wi-Fi 802.11b	Low	2.411912	2.411908	2.411904
	High	2.462306	2.462303	2.462294
Wi-Fi 802.11g	Low	2.411906	2.411901	2.411896
	High	2.462313	2.462307	2.462298
Wi-Fi 802.11n	Low	2.411906	2.411902	2.411898
	High	2.462314	2.462304	2.462294
Wi-Fi 802.11n (40MHz)	Low	2.421912	2.421904	2.421896
	High	2.452210	2.452208	2.452203
Bluetooth Low Energy	Low	2.402112	2.402106	2.402099
	High	2.480319	2.480309	2.480302



## **Part 11 - Radiated Emissions (Unintentional Mode)**

DATE: April 18, 2016

TEST STANDARD: FCC CFR47 Part 15 Subpart B; RSS Gen issue 4, ICES-003 Issue 6

MINIMUM STANDARD: Except as provided elsewhere in FCC Part 15.249 and RSS-247 Issue 1, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (dB $\mu$ V/m) at 3m
30 – 88	40
88 – 216	43.5
216 - 960	46
960 – above	54

Note: In the above emission table, the tighter limit applies at the band edges.

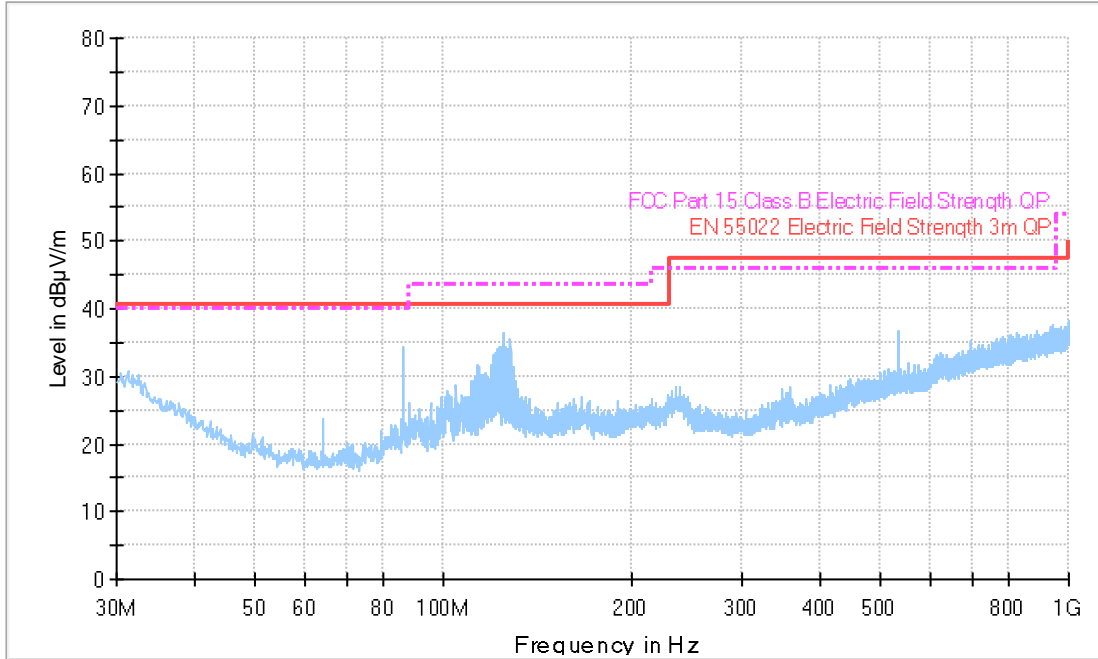
TEST SETUP: The EUT was placed on a turntable, which is 0.8 m above ground plane. Emissions in both horizontal and vertical polarizations were measured while rotating the EUT on a turntable and moving the receiving antenna from 1m to 4 m high to maximize the emissions signal strength. The equipment was set up in a 3-meter Semi Anechoic Chamber for preliminary measurements and finals were completed in 3m/10m Open Air Test Site at 3 meters.

PERFORMANCE: Complies with standard.



MEASUREMENT DATA & PLOT:

Radiated Emissions 30MHz- 1GHZ, No\_Tx



Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
86.477960	30.2	1.000	120.000	170.0	V	270.0	14.6	10.3	40.5
122.280280	36.3	1.000	120.000	147.0	V	139.0	20.9	4.2	40.5
123.457480	35.2	1.000	120.000	100.0	V	101.0	20.8	5.3	40.5
125.827280	34.5	1.000	120.000	100.0	V	186.0	20.8	6.0	40.5
127.621280	34.1	1.000	120.000	100.0	V	154.0	20.8	6.4	40.5
532.971640	36.4	1.000	120.000	158.0	H	1.0	26.2	11.1	47.5

All other radiated emissions were at least 20 dB below the required limit line.



**Part 12 – AC Mains Conducted Emissions**

DATE: April 18, 2016

TEST STANDARD: FCC CFR47 Part 15 Subpart B; RSS Gen issue 4, ICES-003 Issue 6

MINIMUM STANDARD: Class B Limit:

Frequency (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.5 – 5	56	46
5 – 30	60	50

Note 1 The lower limit shall apply at the transition frequencies  
 Note 2 The limit decreases linearly with the logarithm of the frequency in the 0.15 to 0.50 MHz..

TEST SETUP: The EUT was connected to the conducted emissions LISN apparatus. The equipment was operated and tested at 120Vac 60Hz while in continuous mode of operation.

METHOD OF MEASUREMENT: Measurements were made using a test receiver with 9 kHz bandwidth, quasi-peak and average detector.

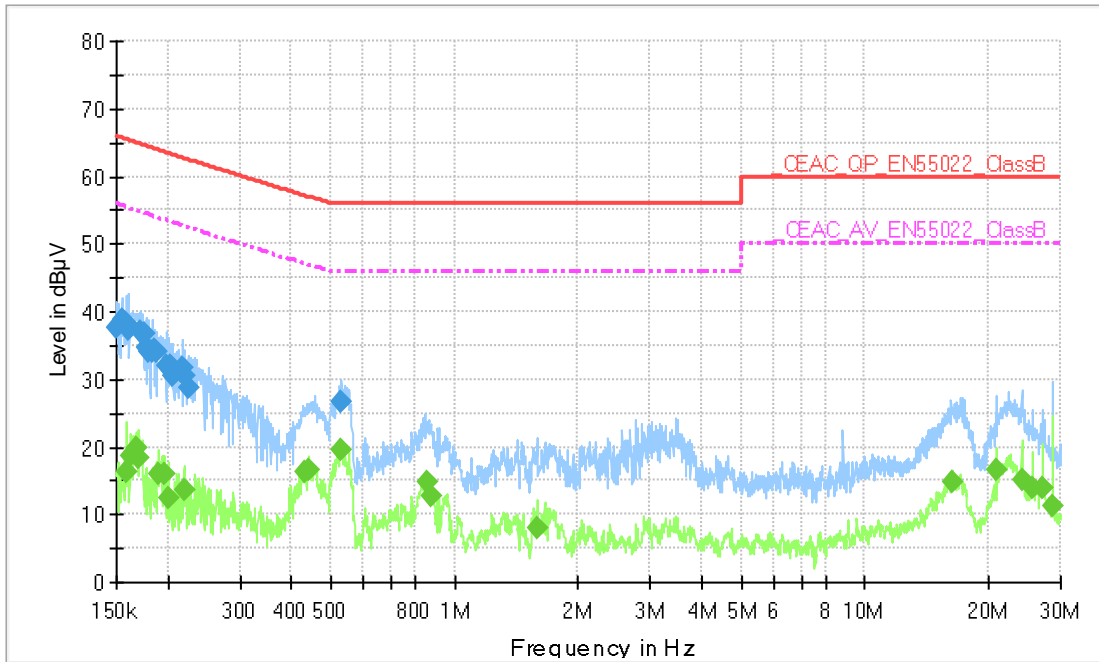
DEVICE DESCRIPTIONS: As described in the equipment test section above.

PERFORMANCE: Complies with Standard

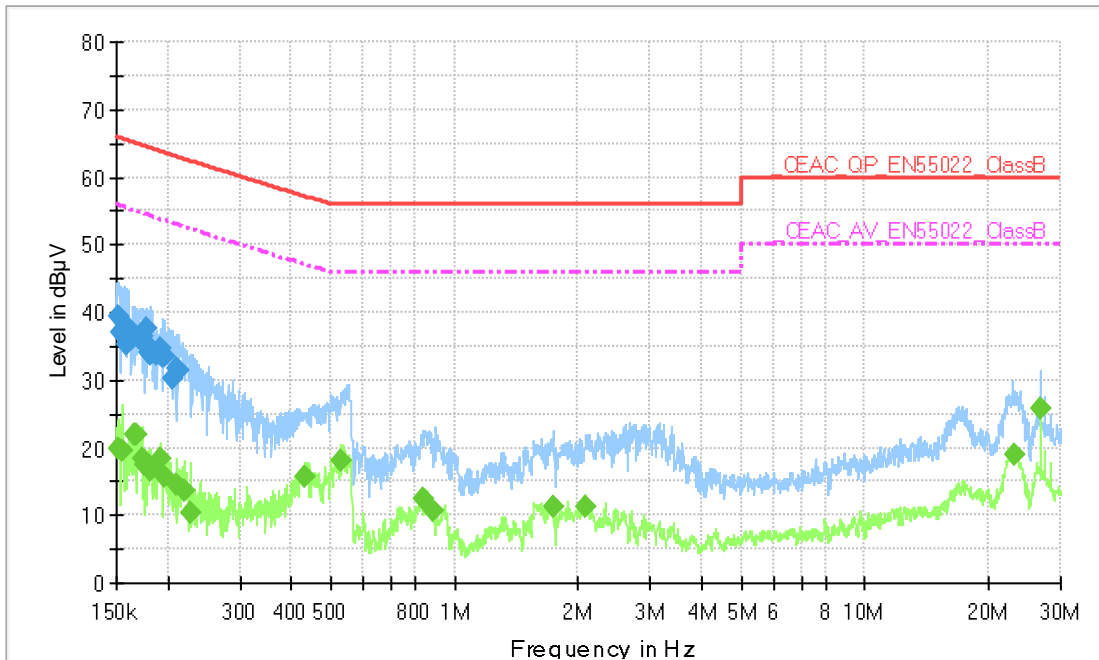


DATA & PLOT:

Pre-tests were performed to find out the worst case which is the transmitters of both of Wi-Fi b low channel and Bluetooth high channel on



Plot of 120V/60Hz AC main conducted emissions, Line 1, Tx-Off



Plot of 120V/60Hz AC main conducted emissions, Line 2, Tx-Off



Quasi Peak Data of 120V/60Hz AC main conducted emissions, Line 1, Tx-Off

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.150601	37.7	1000.000	9.000	On	0.7	28.3	66.0
0.154564	38.7	1000.000	9.000	On	0.7	27.0	65.7
0.158314	38.3	1000.000	9.000	On	0.7	27.2	65.5
0.160223	37.3	1000.000	9.000	On	0.7	28.1	65.4
0.170802	37.1	1000.000	9.000	On	0.7	27.7	64.8
0.175647	36.7	1000.000	9.000	On	0.7	27.9	64.6
0.176703	34.5	1000.000	9.000	On	0.7	30.0	64.5
0.177766	34.7	1000.000	9.000	On	0.7	29.8	64.5
0.179550	34.3	1000.000	9.000	On	0.7	30.1	64.4
0.180269	33.9	1000.000	9.000	On	0.7	30.5	64.4
0.183907	34.0	1000.000	9.000	On	0.7	30.2	64.2
0.185754	34.3	1000.000	9.000	On	0.7	29.8	64.1
0.187994	34.2	1000.000	9.000	On	0.6	29.8	64.0
0.199607	31.9	1000.000	9.000	On	0.6	31.6	63.5
0.203635	32.1	1000.000	9.000	On	0.6	31.2	63.3
0.206091	30.5	1000.000	9.000	On	0.6	32.7	63.2
0.217080	31.6	1000.000	9.000	On	0.6	31.2	62.8
0.218822	30.5	1000.000	9.000	On	0.6	32.2	62.7
0.224580	28.6	1000.000	9.000	On	0.6	33.9	62.5
0.531323	26.6	1000.000	9.000	On	0.5	29.4	56.0

Average Data of 120V/60Hz AC main conducted emissions, Line 1, Tx-Off

Frequency (MHz)	Average (dB $\mu$ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.158314	16.3	1000.000	9.000	On	0.7	39.2	55.5
0.162156	18.6	1000.000	9.000	On	0.7	36.7	55.3
0.167089	20.0	1000.000	9.000	On	0.7	35.0	55.0
0.169781	18.4	1000.000	9.000	On	0.7	36.5	54.9
0.190642	16.0	1000.000	9.000	On	0.6	37.8	53.8
0.196835	15.9	1000.000	9.000	On	0.6	37.7	53.6
0.200807	12.4	1000.000	9.000	On	0.6	41.0	53.4
0.219698	13.6	1000.000	9.000	On	0.6	39.0	52.6
0.432498	16.3	1000.000	9.000	On	0.5	30.8	47.1
0.439466	16.6	1000.000	9.000	On	0.5	30.4	47.0
0.531323	19.5	1000.000	9.000	On	0.5	26.5	46.0
0.858247	14.7	1000.000	9.000	On	0.5	31.3	46.0
0.879073	12.8	1000.000	9.000	On	0.5	33.2	46.0
1.597620	8.1	1000.000	9.000	On	0.5	37.9	46.0
16.414848	14.7	1000.000	9.000	On	0.6	35.3	50.0
20.862360	16.6	1000.000	9.000	On	0.7	33.4	50.0
24.138324	15.1	1000.000	9.000	On	0.7	34.9	50.0
25.629419	14.0	1000.000	9.000	On	0.7	36.0	50.0
27.158306	13.8	1000.000	9.000	On	0.8	36.2	50.0
28.606416	11.4	1000.000	9.000	On	0.7	38.6	50.0

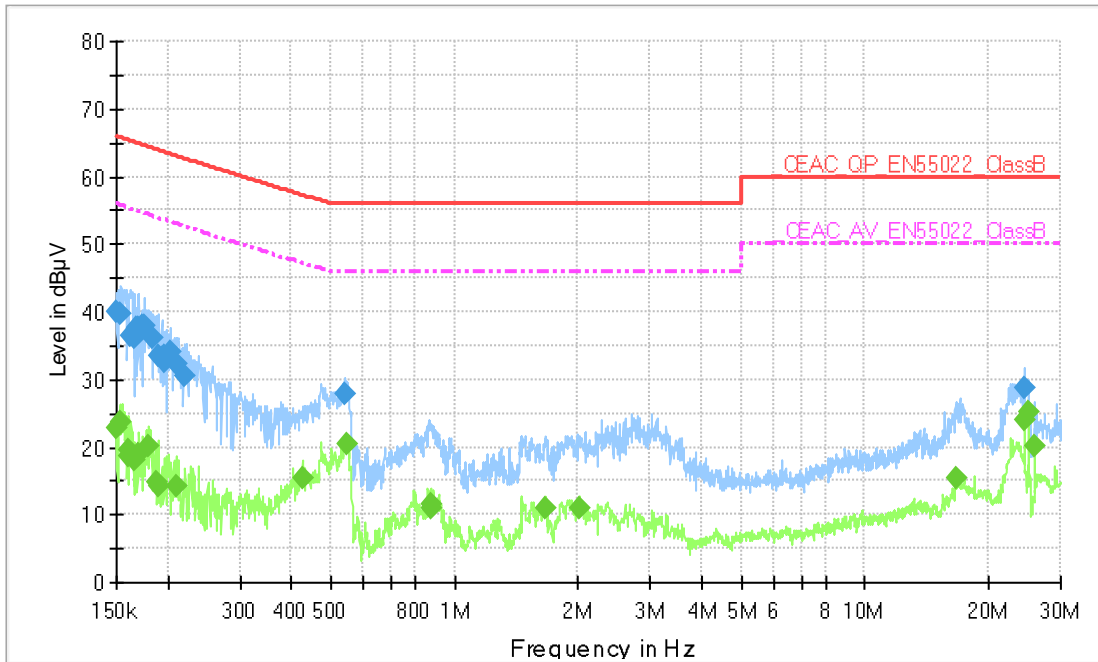


Quasi Peak Data of 120V/60Hz AC main conducted emissions, Line 2, Tx-Off

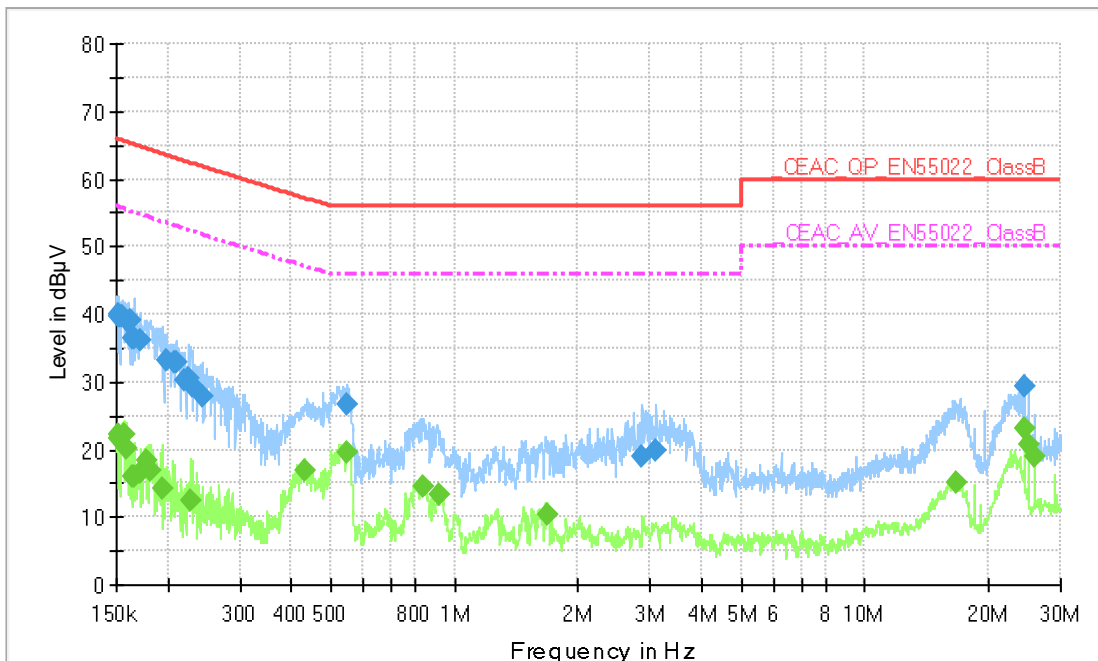
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150902	39.5	1000.000	9.000	On	0.7	26.4	65.9
0.153947	37.2	1000.000	9.000	On	0.7	28.6	65.8
0.156740	37.5	1000.000	9.000	On	0.7	28.1	65.6
0.157368	36.5	1000.000	9.000	On	0.7	29.1	65.6
0.159266	35.3	1000.000	9.000	On	0.7	30.2	65.5
0.159904	37.6	1000.000	9.000	On	0.7	27.8	65.4
0.164768	36.3	1000.000	9.000	On	0.7	28.9	65.2
0.173554	36.4	1000.000	9.000	On	0.7	28.3	64.7
0.174947	35.1	1000.000	9.000	On	0.7	29.5	64.6
0.177057	37.7	1000.000	9.000	On	0.7	26.8	64.5
0.178477	35.4	1000.000	9.000	On	0.7	29.1	64.5
0.179192	34.0	1000.000	9.000	On	0.7	30.4	64.4
0.182079	33.7	1000.000	9.000	On	0.7	30.6	64.3
0.187244	33.8	1000.000	9.000	On	0.6	30.2	64.0
0.192941	34.7	1000.000	9.000	On	0.6	29.1	63.8
0.195268	33.4	1000.000	9.000	On	0.6	30.3	63.7
0.196835	33.6	1000.000	9.000	On	0.6	30.0	63.6
0.205269	30.3	1000.000	9.000	On	0.6	32.9	63.2
0.210250	31.7	1000.000	9.000	On	0.6	31.3	63.0
0.213638	31.5	1000.000	9.000	On	0.6	31.4	62.9

Average Data of 120V/60Hz AC main conducted emissions, Line 2, Tx-Off

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150902	19.8	1000.000	9.000	On	0.7	36.1	55.9
0.155493	19.5	1000.000	9.000	On	0.7	36.2	55.7
0.165428	21.9	1000.000	9.000	On	0.7	33.2	55.1
0.167758	21.8	1000.000	9.000	On	0.7	33.2	55.0
0.173554	18.5	1000.000	9.000	On	0.7	36.3	54.7
0.174947	17.5	1000.000	9.000	On	0.7	37.1	54.6
0.180630	16.5	1000.000	9.000	On	0.7	37.8	54.3
0.192941	18.3	1000.000	9.000	On	0.6	35.4	53.7
0.195658	15.8	1000.000	9.000	On	0.6	37.8	53.6
0.210250	14.4	1000.000	9.000	On	0.6	38.6	53.0
0.219259	13.6	1000.000	9.000	On	0.6	39.0	52.6
0.228198	10.5	1000.000	9.000	On	0.6	41.8	52.3
0.432498	15.6	1000.000	9.000	On	0.5	31.5	47.1
0.528148	18.2	1000.000	9.000	On	0.5	27.8	46.0
0.834572	12.6	1000.000	9.000	On	0.5	33.4	46.0
0.882593	10.5	1000.000	9.000	On	0.5	35.5	46.0
1.740947	11.1	1000.000	9.000	On	0.5	34.9	46.0
2.096446	11.2	1000.000	9.000	On	0.5	34.8	46.0
23.054171	18.9	1000.000	9.000	On	0.7	31.1	50.0
26.834676	25.8	1000.000	9.000	On	0.8	24.2	50.0



Plot of 120V/60Hz AC main conducted emissions, Line 2, Tx-On



Plot of 120V/60Hz AC main conducted emissions, Line 1, Tx-On





Quasi Peak Data of 120V/60Hz AC main conducted emissions, Line 2, Tx-On

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	40.0	1000.000	9.000	On	0.7	26.0	66.0
0.154255	39.8	1000.000	9.000	On	0.7	25.9	65.7
0.162156	36.3	1000.000	9.000	On	0.7	29.0	65.3
0.165759	36.5	1000.000	9.000	On	0.7	28.6	65.1
0.166423	36.1	1000.000	9.000	On	0.7	29.0	65.1
0.168094	37.7	1000.000	9.000	On	0.7	27.3	65.0
0.170461	37.5	1000.000	9.000	On	0.7	27.4	64.9
0.173208	37.7	1000.000	9.000	On	0.7	27.0	64.7
0.174598	38.0	1000.000	9.000	On	0.7	26.6	64.6
0.175647	37.9	1000.000	9.000	On	0.7	26.7	64.6
0.184644	36.1	1000.000	9.000	On	0.7	28.1	64.2
0.189124	33.6	1000.000	9.000	On	0.6	30.3	63.9
0.193327	33.2	1000.000	9.000	On	0.6	30.6	63.8
0.196050	32.7	1000.000	9.000	On	0.6	30.9	63.6
0.196835	33.4	1000.000	9.000	On	0.6	30.2	63.6
0.203635	34.0	1000.000	9.000	On	0.6	29.3	63.3
0.210250	32.3	1000.000	9.000	On	0.6	30.7	63.0
0.221019	30.7	1000.000	9.000	On	0.6	31.9	62.6
0.539884	27.7	1000.000	9.000	On	0.5	28.3	56.0
24.478295	28.9	1000.000	9.000	On	0.7	31.1	60.0

Average Data of 120V/60Hz AC main conducted emissions, Line 2, Tx-On

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150300	22.9	1000.000	9.000	On	0.7	33.1	56.0
0.152722	23.8	1000.000	9.000	On	0.7	32.0	55.8
0.159584	19.6	1000.000	9.000	On	0.7	35.8	55.4
0.161187	18.6	1000.000	9.000	On	0.7	36.7	55.3
0.166423	18.0	1000.000	9.000	On	0.7	37.1	55.1
0.170461	18.9	1000.000	9.000	On	0.7	35.9	54.8
0.180269	20.2	1000.000	9.000	On	0.7	34.1	54.3
0.188370	14.8	1000.000	9.000	On	0.6	39.2	54.0
0.189124	14.2	1000.000	9.000	On	0.6	39.7	53.9
0.210671	14.3	1000.000	9.000	On	0.6	38.7	53.0
0.424790	15.5	1000.000	9.000	On	0.5	31.7	47.2
0.544216	20.4	1000.000	9.000	On	0.5	25.6	46.0
0.873819	11.0	1000.000	9.000	On	0.5	35.0	46.0
0.879073	11.5	1000.000	9.000	On	0.5	34.5	46.0
1.672750	11.0	1000.000	9.000	On	0.5	35.0	46.0
2.022389	11.0	1000.000	9.000	On	0.5	35.0	46.0
16.712690	15.4	1000.000	9.000	On	0.6	34.6	50.0
24.478295	24.1	1000.000	9.000	On	0.7	25.9	50.0
25.072280	25.1	1000.000	9.000	On	0.7	24.9	50.0
25.990391	20.2	1000.000	9.000	On	0.7	29.8	50.0



Quasi Peak Data of 120V/60Hz AC main conducted emissions, Line 1, Tx-On

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.151204	40.1	1000.000	9.000	On	0.7	25.8	65.9
0.152113	39.8	1000.000	9.000	On	0.7	26.1	65.9
0.153333	39.8	1000.000	9.000	On	0.7	26.0	65.8
0.154873	39.7	1000.000	9.000	On	0.7	26.0	65.7
0.161187	38.8	1000.000	9.000	On	0.7	26.6	65.4
0.162156	39.2	1000.000	9.000	On	0.7	26.1	65.3
0.164768	36.4	1000.000	9.000	On	0.7	28.8	65.2
0.165759	36.4	1000.000	9.000	On	0.7	28.7	65.1
0.170802	36.0	1000.000	9.000	On	0.7	28.8	64.8
0.198414	33.2	1000.000	9.000	On	0.6	30.3	63.5
0.206916	33.0	1000.000	9.000	On	0.6	30.2	63.2
0.209412	32.7	1000.000	9.000	On	0.6	30.4	63.1
0.219259	30.3	1000.000	9.000	On	0.6	32.4	62.7
0.224580	30.6	1000.000	9.000	On	0.6	31.9	62.5
0.230490	29.5	1000.000	9.000	On	0.6	32.7	62.2
0.243752	27.9	1000.000	9.000	On	0.6	33.9	61.8
0.545305	26.8	1000.000	9.000	On	0.5	29.2	56.0
2.868904	18.8	1000.000	9.000	On	0.5	37.2	56.0
3.107598	20.0	1000.000	9.000	On	0.5	36.0	56.0
24.478295	29.4	1000.000	9.000	On	0.7	30.6	60.0

Average Data of 120V/60Hz AC main conducted emissions, Line 1, Tx-On

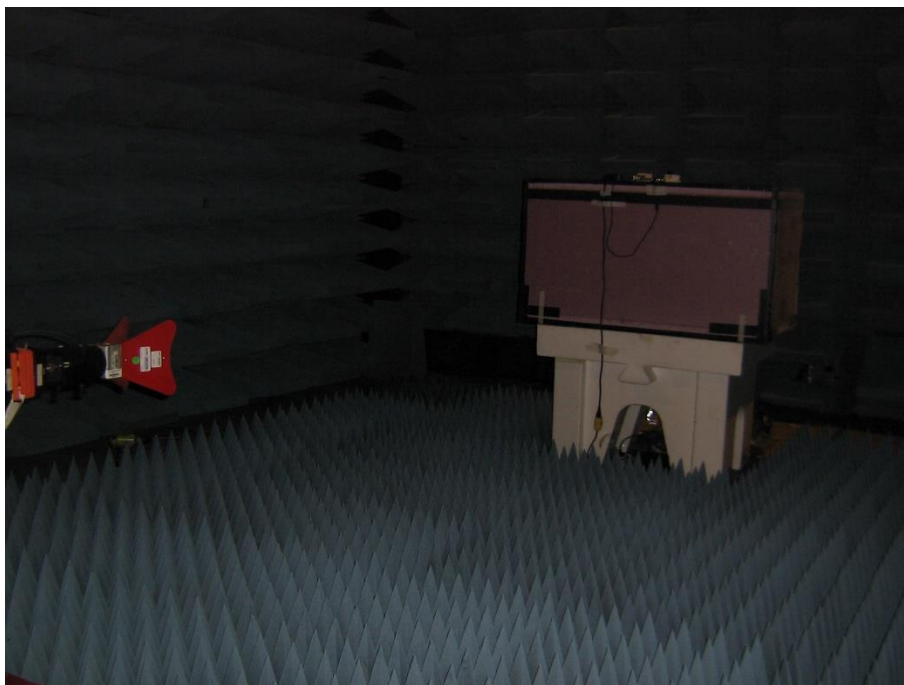
Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.151204	21.6	1000.000	9.000	On	0.7	34.3	55.9
0.152417	22.1	1000.000	9.000	On	0.7	33.8	55.9
0.156115	22.1	1000.000	9.000	On	0.7	33.5	55.6
0.158631	20.3	1000.000	9.000	On	0.7	35.2	55.5
0.164768	15.9	1000.000	9.000	On	0.7	39.2	55.1
0.165759	15.9	1000.000	9.000	On	0.7	39.2	55.1
0.172517	16.7	1000.000	9.000	On	0.7	38.0	54.7
0.177766	18.3	1000.000	9.000	On	0.7	36.2	54.5
0.182079	16.8	1000.000	9.000	On	0.7	37.5	54.3
0.193713	14.4	1000.000	9.000	On	0.6	39.3	53.7
0.228198	12.6	1000.000	9.000	On	0.6	39.7	52.3
0.430773	16.8	1000.000	9.000	On	0.5	30.3	47.1
0.549680	19.6	1000.000	9.000	On	0.5	26.4	46.0
0.834572	14.6	1000.000	9.000	On	0.5	31.4	46.0
0.922253	13.2	1000.000	9.000	On	0.5	32.8	46.0
1.676096	10.3	1000.000	9.000	On	0.5	35.7	46.0
16.679331	15.1	1000.000	9.000	On	0.6	34.9	50.0
24.478295	23.1	1000.000	9.000	On	0.7	26.9	50.0
25.072280	20.8	1000.000	9.000	On	0.7	29.2	50.0
25.990391	19.1	1000.000	9.000	On	0.7	30.9	50.0



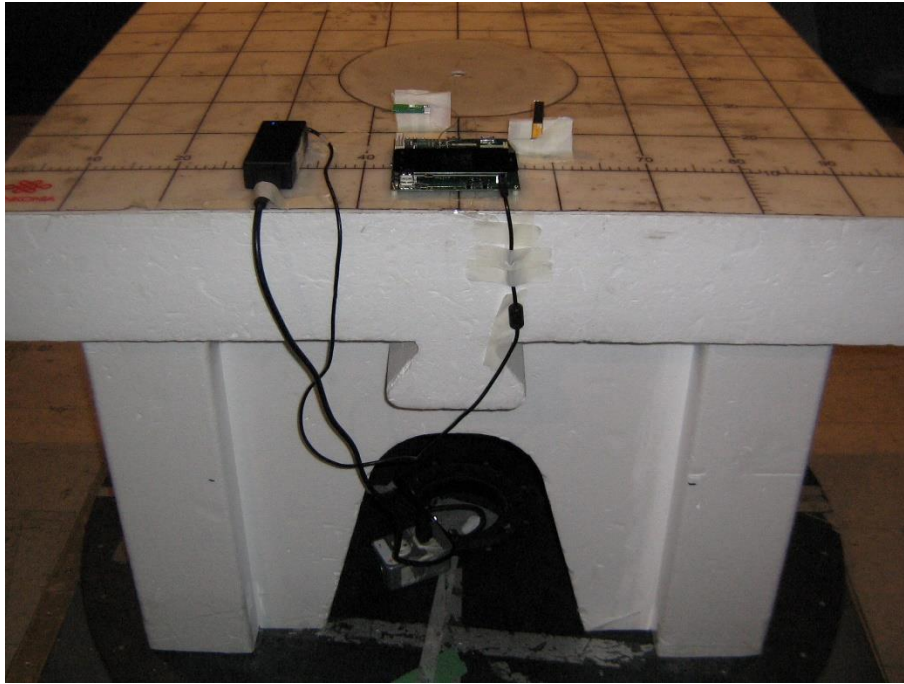
## Appendix A: EUT photos during the testing



Radiated Emissions Test Setup - 30MHz-1GHz



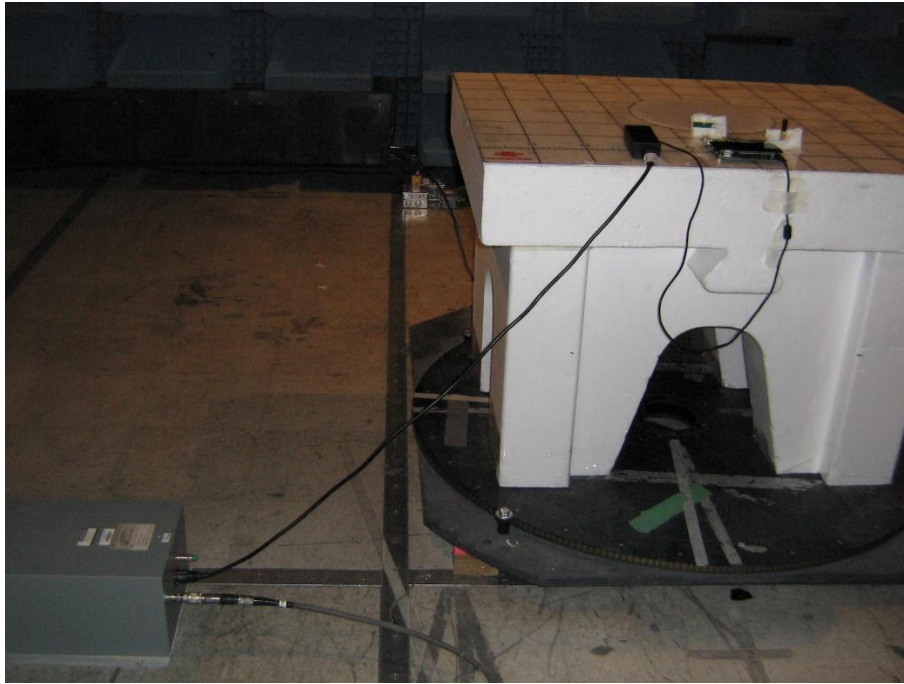
Radiated Emissions Test Setup - 1GHz to 18GHz



Radiated Emissions Test Setup



Radiated Emissions Test Setup



Conducted Emissions Test Setup



**End of report**

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