HCT CO.,LTD.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300 **FAX: +82-31-645-6401**

DTS REPORT

Certification

Applicant Name:
LG Electronics Inc.

Address:
222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do,451-713, Korea

Date of Issue:
October 10, 2018

Test Site/Location:
HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-RF-1810-FI005

FCC ID:	**BEJIL7SF**
IC:	**2703H-IL7SF**
APPLICANT:	**LG Electronics Inc.**

According to the Evaluation report, all of the data contained herein is reused from the reference FCC ID : BEJIL7SB / IC: 2703H-IL7SB report.

Model:	IL7SF
EUT Type:	Silverbox RADIO ASM-RECEIVER
Peak Output Power:	802.11b : 23.24 dBm 802.11g : 25.51 dBm 802.11n(HT20) : 28.05 dBm
Frequency Range:	2412 MHz - 2462 MHz
Modulation type:	CCK/DSSS/OFDM
FCC Classification:	Digital Transmission System(DTS)
FCC Rule Part(s):	Part 15.247, RSS-247 Issue 2, RSS-Gen Issue 5

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Report prepared by : Se Wook Park
Engineer of Telecommunication testing center

Approved by : Jong Seok Lee
Manager of Telecommunication testing center

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1810-FI005	October 10, 2018	- First Approval Report

Table of Contents

1. EUT DESCRIPTION

Model	IL7SF
EUT Type	Silverbox RADIO ASM-RECEIVER
Power Supply	DC 12.0 V
Frequency Range	2412 MHz - 2462 MHz
Max. RF Output Power (Peak)	**Internal Antenna** 802.11b : 17.44 dBm 802.11g : 25.51 dBm 802.11n(HT20) : 25.42 dBm **External Antenna** 802.11b : 23.24 dBm 802.11g : 25.44 dBm 802.11n(HT20) : 25.69 dBm **MIMO** 802.11n(HT20) : 28.05 dBm
Max. RF Output Power (Average)	**Internal Antenna** 802.11b : 13.97 dBm 802.11g : 16.89 dBm 802.11n(HT20) : 17.05 dBm **External Antenna** 802.11b : 17.52 dBm 802.11g : 17.75 dBm 802.11n(HT20) : 17.69 dBm **MIMO** 802.11n(HT20) : 19.66 dBm
Modulation Type	DSSS/CCK : 802.11b OFDM : 802.11g, 802.11n(HT20)
Number of Channels	11 Channels

Antenna Specification	**Internal Antenna** - Peak Gain : 5.40 dBi **External Antenna** - Peak Gain : 1.20 dBi
Date(s) of Tests	September 10, 2018 ~ October 05, 2018
Support for datarate	- 802.11b(Mbps) : 1, 2, 5.5, 11 - 802.11g(Mbps) : 6, 9, 12, 18, 24 ,36, 48, 54 - [SISO] 802.11n : MCS0 ~ MCS7 - [MIMO] 802.11n : MCS8 ~ MCS15
Multiple Outputs in Same Band	- 802.11n is only supported. - Multiple spatial streams : Supported. - Cyclic Delay Diversity : Not supported.
Directional gain	5.40 dBi
PMN	Silverbox RADIO ASM-RECEIVER
HVIN	IL7SF
FVIN	N/A
HMN	N/A

2. TEST METHODOLOGY

FCC KDB 558074 D01 15.247 Meas Guidance v05 dated August 24, 2018 entitled “guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices and the measurement procedure described in ANSI C63.10(Version : 2013) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpse of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3.75 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10. (Version: 2013)

Conducted Antenna Terminal

See Section from 8.3.(KDB 558074 v05)

DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment's, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

4. FACILITIES AND ACCREDITATIONS

FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.

The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).

For ISED, test facility was accepted dated December 20, 2016(Registration Number: 5944A-5)

EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 antennas of this E.U.T are permanently attached.
* The E.U.T Complies with the requirement of §15.203

According to RSS-GEN(Issue 5) Section 6.8:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested..

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

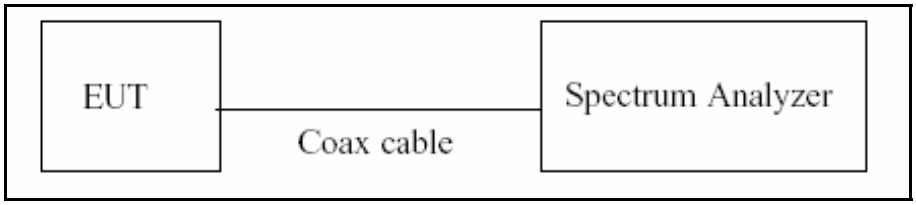
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.71

7. DESCRIPTION OF TESTS

7.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to the zero-span measurement method, 6.0)b) in KDB 558074 v05.

The largest availble value of RBW is 8 MHz and VBW is 50 MHz.

The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/*T*.

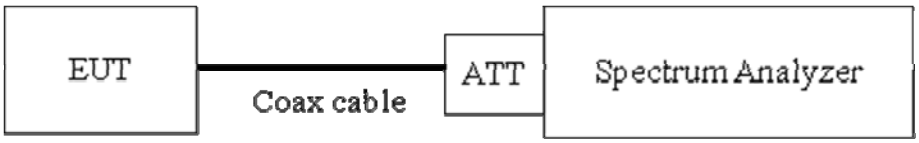
1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10*log(1/Duty Cycle)

7.2. 6dB Bandwidth

Limit

The minimum permissible 6 dB bandwidth is 500 kHz.

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to (Procedure 8.2 in KDB 558074 v05, Procedure 11.8.1 in ANSI 63.10-2013)

1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Detector = Peak
4) Trace mode = max hold
5) Sweep = auto couple
6) Allow the trace to stabilize
7) We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

Note

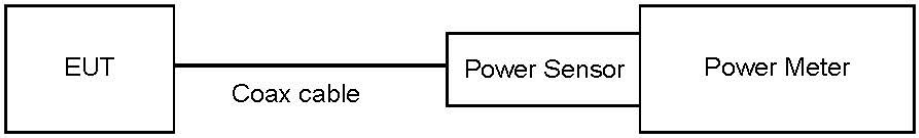
- Spectrum reading values are not plot data.
- The BW results in plot is already including the actual values of loss for the attenuator and cable combination.
- Spectrum offset = Attenuator loss + Cable loss
- We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
- Internal Antenna: 11.3 dB, External Antenna: 12.1 dB.

7.3. Output Power

Limit

The maximum permissible conducted output power is 1 Watt.

Test Configuration



Test Procedure

The transmitter output is connected to the Power Meter.

▪ Peak Power (Procedure 8.3.1.3 in KDB 558074 v05, Procedure 11.9.1.3 in ANSI 63.10-2013)
: Measure the peak power of the transmitter.

▪ Average Power (Procedure 8.3.2.3 in KDB 558074 v05, Procedure 11.9.2.3 in ANSI 63.10-2013)

1) Measure the duty cycle.
2) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Sample Calculation

▪ Conducted Output Power(Peak) = Reading Value + ATT loss + Cable loss
▪ Conducted Output Power(Average) = Reading Value + ATT loss + Cable loss + Duty Cycle Factor

Note

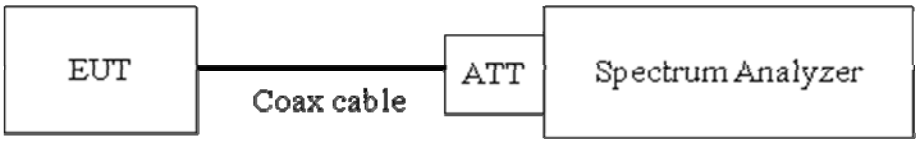
▪ Power Meter offset = Attenuator loss + Cable loss
▪ We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
▪ Internal Antenna: 11.3 dB, External Antenna: 12.1 dB.

7.4. Power Spectral Density

Limit

The transmitter power density average over 1-second interval shall not be greater than 8dBm in any 3kHz BW.

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure 8.4 in KDB 558074 v05, Procedure 11.10.2 in ANSI 63.10-2013.

The spectrum analyzer is set to :

1) Set analyzer center frequency to DTS channel center frequency.
2) Span = 1.5 times the DTS channel bandwidth.
3) RBW = 3 kHz ≤ RBW ≤ 100 kHz.
4) VBW ≥ 3 x RBW.
5) Sweep = auto couple
6) Detector = peak
7) Trace Mode = max hold
8) Allow trace to fully stabilize.
9) Use the peak marker function to determine the maximum amplitude level within the RBW.
   If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Sample Calculation

▪ Power Spectral Density = Reading Value + ATT loss + Cable loss

Note

▪ Spectrum reading values are not plot data.
▪ The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.
▪ Spectrum offset = Attenuator loss + Cable loss
▪ We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
▪ Internal Antenna: 11.3 dB, External Antenna: 12.1 dB..

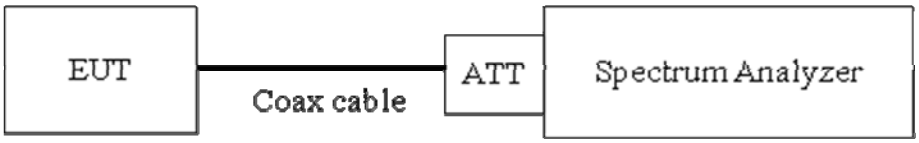
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

Limit

The maximum conducted (average) output power was used to demonstrate compliance, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

[Conducted > 20 dBc]

Test Configuration



Test Procedure

The transmitter output is connected to the spectrum analyzer.

(Procedure 8.5 in KDB 558074 v05, Procedure 11.11 in ANSI 63.10-2013)

1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Set span to encompass the spectrum to be examined
4) Detector = Peak
5) Trace Mode = max hold
6) Sweep time = auto couple
7) Ensure that the number of measurement points ≥ 2*Span/RBW
8) Allow trace to fully stabilize.
9) Use peak marker function to determine the maximum amplitude level.

Measurements are made over the 30 MHz to 25 GHz range with the transmitter set to the lowest, middle, and highest channels.

Factors for frequency

Freq(MHz)	Factor(dB)
30	12.75
100	11.28
200	11.64
300	11.58
400	11.68
500	11.7
600	11.77
700	11.8
800	11.8
900	11.79
1000	11.84
2000	12.09
2400*	12.1
2500*	12.12
3000	12.13
4000	12.34
5000	12.52
6000	12.51
7000	12.8
8000	12.77
9000	12.93
10000	13.01
11000	13.01
12000	13.13
13000	13.28
14000	13.35
15000	13.43
16000	13.49
17000	13.47
18000	13.53
19000	13.52
20000	13.59
21000	13.62
22000	13.76
23000	14.05
24000	13.79
25000	13.98
26000	13.47

Note : 1. '*' is fundamental frequency range.

2. Factor = Attenuator loss + Cable loss

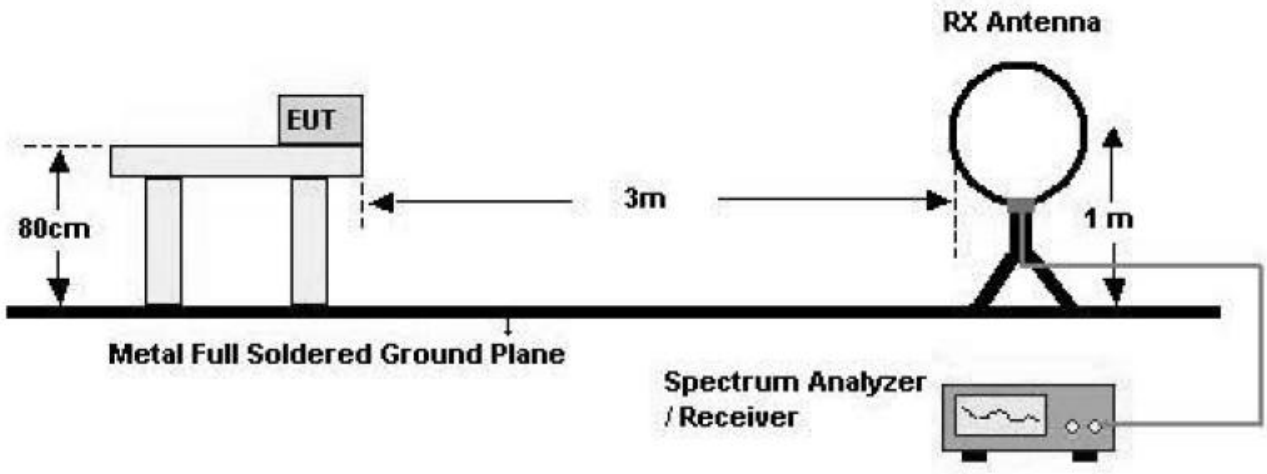
7.6. Radiated Test

Limit

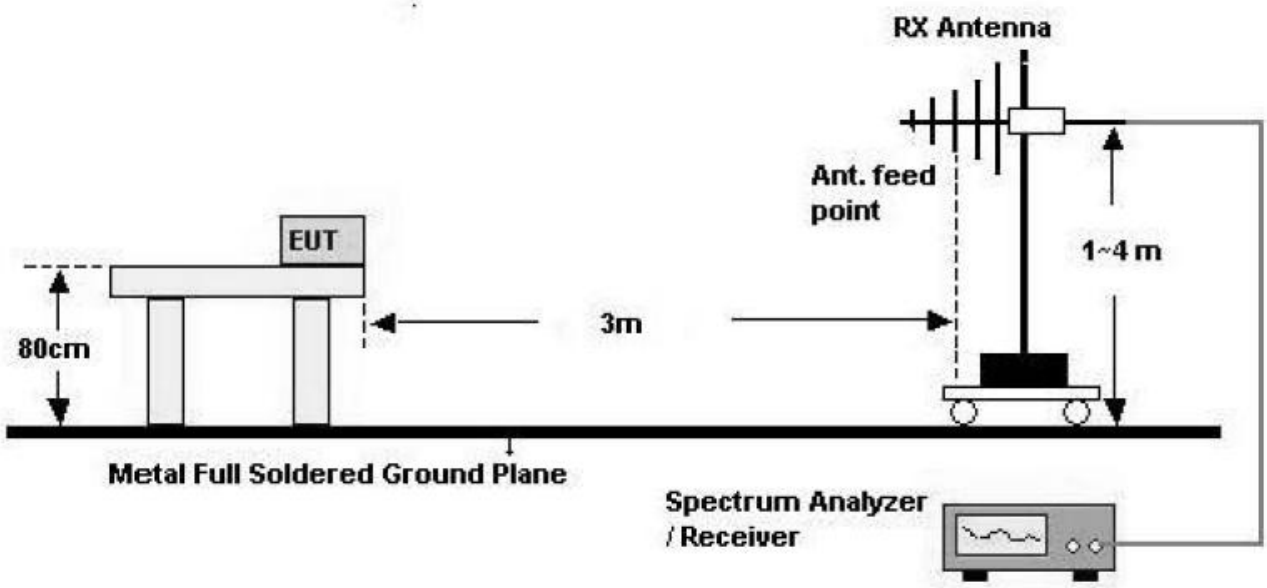
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

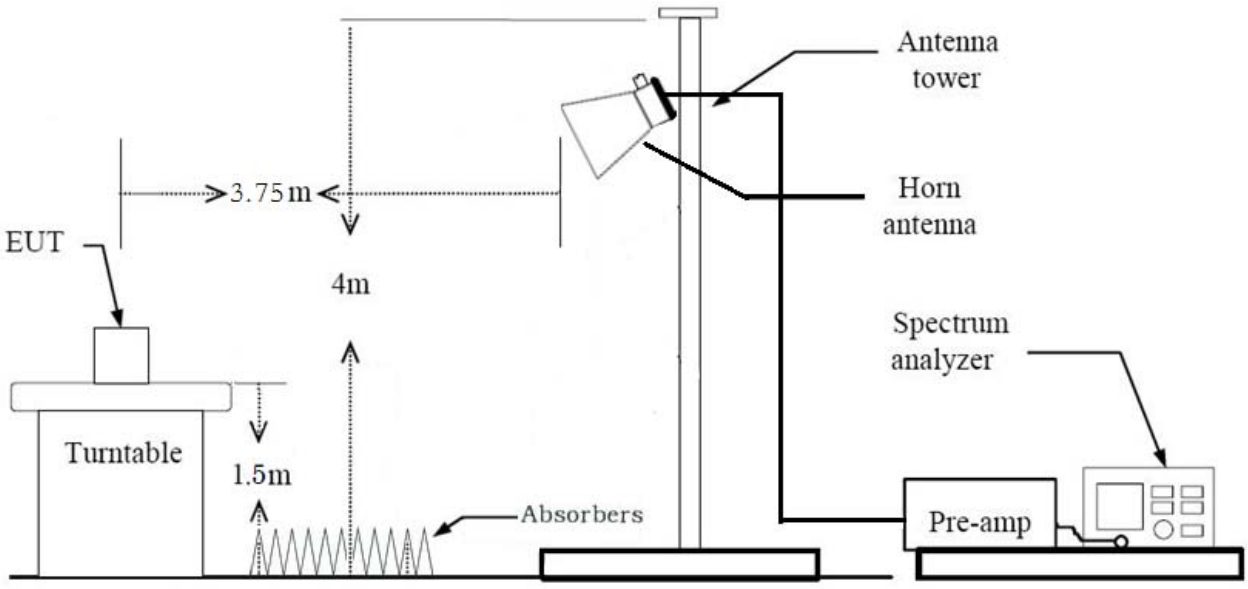
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3.75 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor(reference distance : 3 m).
   *Distance extrapolation factor = 20*log (test distance / specific distance) (dB)
6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
8. The unit was tested with its standard battery.
9. Spectrum Setting (Method 8.6 in KDB 558074 v05, Procedure 11.12 in ANSI 63.10-2013)
   (1) Measurement Type(Peak):
      - Measured Frequency Range : 1 GHz – 25 GHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 1 MHz
      - VBW ≥ 3*RBW
   (2) Measurement Type(Average): Duty cycle ≥ 98%
      - Measured Frequency Range : 1 GHz – 25 GHz
      - Detector = RMS
      - Averaging type = power (*i.e.*, RMS)
      - RBW = 1 MHz
      - VBW ≥ 3*RBW
      - Sweep time = auto.
      - Trace mode = average (at least 100 traces).

(3) Measurement Type(Average): Duty cycle < 98%, duty cycle variations are less than ±2%

- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3*RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.
- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.

10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

11. Total(Measurement Type : Peak)
= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

Total(Measurement Type : Average, Duty cycle ≥ 98%)
= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

Total(Measurement Type : Average, Duty cycle < 98%)
= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)
+ Duty Cycle Factor

Test Procedure of Radiated Restricted Band Edge

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3.75 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor(reference distance : 3 m).
   *Distance extrapolation factor = 20*log (test distance / specific distance) (dB)
6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
8. The unit was tested with its standard battery.
9. Spectrum Setting
   (1) Measurement Type(Peak):
      - Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 1 MHz
      - VBW ≥ 3*RBW
   (2) Measurement Type(Average): Duty cycle ≥ 98%,
      - Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
      - Detector = RMS
      - Averaging type = power (*i.e.*, RMS)
      - RBW = 1 MHz
      - VBW ≥ 3*RBW
      - Sweep time = auto.
      - Trace mode = average (at least 100 traces).

(3) Measurement Type(Average): Duty cycle < 98%, duty cycle variations are less than ±2%

- Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3*RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.
- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.

10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

11. Total(Measurement Type : Peak)
= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

Total(Measurement Type : Average, Duty cycle ≥ 98%)
= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

Total(Measurement Type : Average, Duty cycle < 98%)
= Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)
+ Duty Cycle Factor

7.7. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

7.8. Receiver Spurious Emissions

Limit

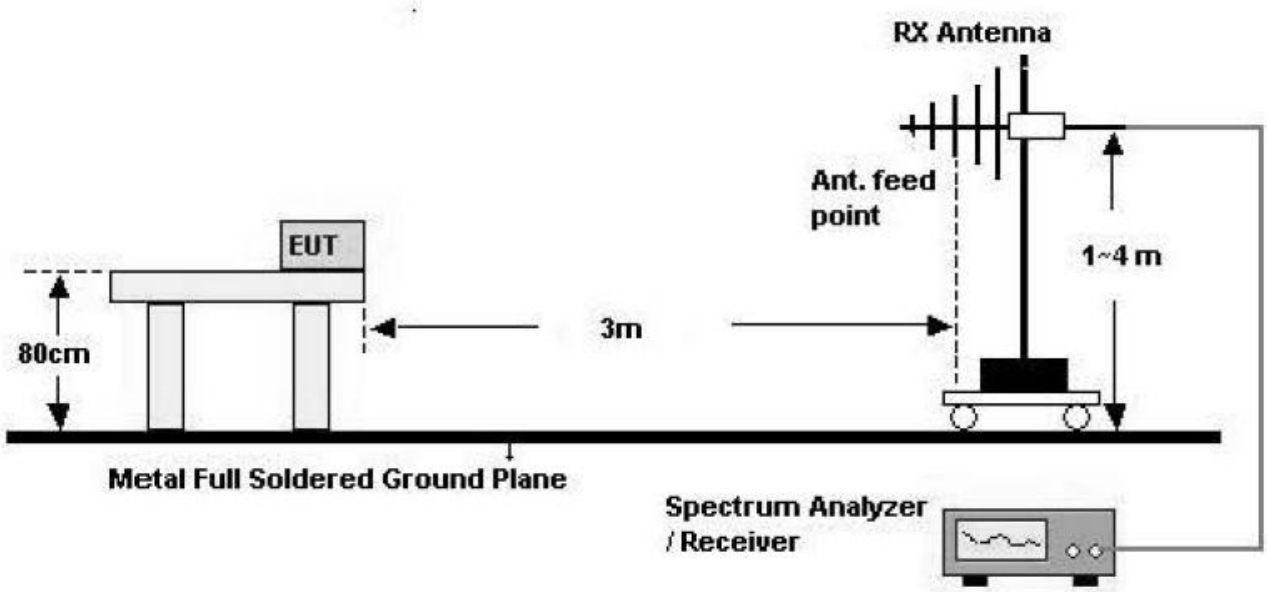
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

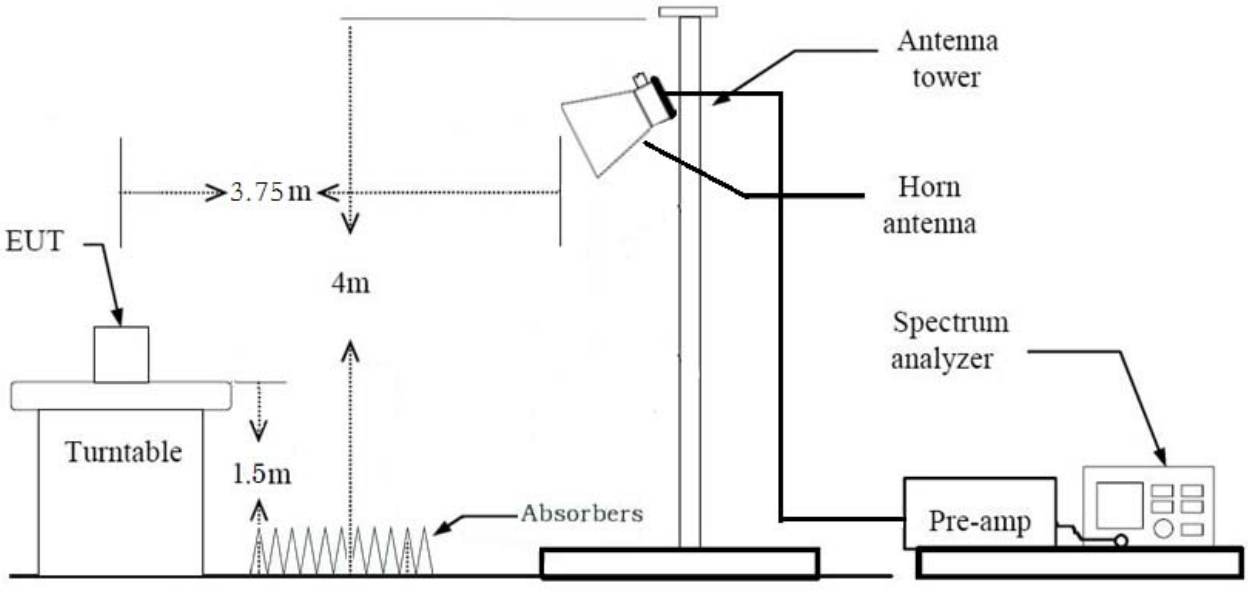
Measurements for compliance with the limits in table may be performed at distances other than 3 metres.

Test Configuration

30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3.75 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor(reference distance : 3 m).
   *Distance extrapolation factor = 20*log (test distance / specific distance) (dB)
6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
8. The unit was tested with its standard battery.
9. Spectrum Setting
   (1) Measurement Type(Peak):
      - Measured Frequency Range : 1 GHz – 25 GHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 1 MHz
      - VBW ≥ 3*RBW
   (2) Measurement Type(Average):
      - We performed using a reduced video BW method was done with the analyzer in linear mode
      - Measured Frequency Range : 1 GHz – 25 GHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 1 MHz
      - VBW ≥ 1/τ Hz, where τ = pulse width in seconds
        The actual setting value of VBW = 1 kHz
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
11. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

7.9. Additional Information

*** Directional Gain Calculation**

According to KDB 662911 D01 Multiple Transmitter Output v02r01 F) 2) e) (iii)

Directional gain = $G_{ANT\ MAX}$ + 10 log(N_{ANT}/N_{SS}) dBi

(N_{ANT} = 2, N_{SS} = 2, $G_{ANT\ MAX}$ is.the gain of the antenna having the highest gain)

= 5.40 + 0 = 5.40 dBi

*** Operating mode**

Mode	Operating Mode	Antenna
802.11b/g/n(HT20)	SISO	Internal Antenna
		External Antenna
802.11n(HT20)	MIMO	Internal Antenna + External Antenna

*** Power Level Setting(SISO)**

Internal Antenna			
Channel	802.11b	802.11g	802.11n(HT20)
1	12	8	6
2	13	12	11
3	13	15	14
4	13	16	16
5	13	16	16
6	13	16	16
7	13	16	16
8	13	16	16
9	13	16	16
10	13	14	13
11	13	10	10

External Antenna			
Channel	802.11b	802.11g	802.11n(HT20)
1	18	10	9
2	18	13	13
3	18	16	16
4	18	18	17
5	18	18	18
6	18	18	18
7	18	18	18
8	18	18	17
9	18	16	16
10	18	13	13
11	18	10	10

*** Power Level Setting(MIMO)**

Internal Antenna + External Antenna	
Channel	802.11n(HT20)
1	6
2	11
3	14
4	16
5	16
6	16
7	16
8	16
9	16
10	13
11	10

7.10. Worst case configuration and mode

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + external accessories
   - Worstcase : Stand alone
2. EUT Axis
   - Radiated Spurious Emissions : X
   - Radiated Restricted Band Edge : X
3. Duty cycle factor applies only 802.11g/n(Duty cycle < 98%).
4. All data rate of operation were investigated and the test results are worst case in lowest datarate of each mode.
   - 802.11b : 1Mbps
   - 802.11g : 6Mbps
   - 802.11n : MCS0
5. SISO & MIMO(Multiple spatial streams) were tested and the worst case results are reported.
   (Worst case : SISO(Internal Antenna & External Antenna)

Conducted test

1. The EUT was configured with data rate of highest power.
2. SISO & MIMO(Multiple spatial streams) were tested and the worst case results are reported.
   (Worst case : SISO(Internal Antenna & External Antenna)

8. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	IC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	RSS-247, 5.2.(a)	> 500 kHz	Conducted	PASS
Occupied Bandwidth	N/A	RSS-GEN, 6.7	N/A		PASS
Conducted Maximum Peak Output Power	§15.247(b)(3)	RSS-247, 5.4.(d)	< 1 Watt		N/A
Power Spectral Density	§15.247(e)	RSS-247, 5.2.(b)	< 8 dBm / 3 kHz Band		PASS
Band Edge (Out of Band Emissions)	§15.247(d)	RSS-247, 5.5	Conducted > 20 dBc		PASS
AC Power line Conducted Emissions	§15.207	RSS-GEN, 8.8	cf. Section 7.7		**See Note1**
Radiated Spurious Emissions	§15.247(d), 15.205, 15.209	RSS-GEN, 8.9	cf. Section 7.6	Radiated	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	RSS-GEN, 8.9 RSS-GEN, 8.10	cf. Section 7.6		PASS
Receiver Spurious Emissions	N/A	RSS-GEN, 7.3	cf. Section 7.8		PASS

Note:

1. This device is installed in a car. Therefore the power source is a battery of car.

9. TEST RESULT

9.1 DUTY CYCLE

SISO

Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11b	1	12.421	12.522	0.992	0.035
	2	6.201	6.302	0.984	0.070
	5.5	2.315	2.412	0.960	0.177
	11	1.210	1.304	0.927	0.327
802.11g	6	2.063	2.167	0.952	0.214
	9	1.385	1.488	0.931	0.312
	12	1.046	1.147	0.912	0.398
	18	0.703	0.805	0.874	0.586
	24	0.533	0.634	0.841	0.753
	36	0.365	0.466	0.783	1.060
	48	0.276	0.378	0.730	1.366
	54	0.248	0.349	0.710	1.487
802.11n (HT20)	MCS0	1.919	2.021	0.950	0.224
	MCS1	0.980	1.081	0.906	0.427
	MCS2	0.664	0.766	0.867	0.622
	MCS3	0.508	0.609	0.834	0.786
	MCS4	0.352	0.454	0.776	1.103
	MCS5	0.272	0.373	0.728	1.382
	MCS6	0.248	0.349	0.710	1.489
	MCS7	0.228	0.330	0.692	1.596

MIMO

Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11n (HT20)	MCS8	0.984	1.086	0.906	0.428
	MCS9	0.512	0.613	0.835	0.781
	MCS10	0.356	0.457	0.779	1.084
	MCS11	0.276	0.377	0.732	1.352
	MCS12	0.200	0.302	0.663	1.784
	MCS13	0.160	0.262	0.611	2.137
	MCS14	0.148	0.250	0.593	2.270
	MCS15	0.136	0.238	0.574	2.412

9.2 BANDWIDTH

Internal Antenna

802.11b Mode		6dB Bandwidth [MHz]	Occupied Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.			
2412	1	7.107	10.30	0.5
2437	6	7.121	10.29	0.5
2462	11	7.109	10.23	0.5

802.11g Mode		6dB Bandwidth [MHz]	Occupied Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.			
2412	1	16.08	17.06	0.5
2437	6	16.06	17.21	0.5
2462	11	16.47	17.07	0.5

802.11n Mode		6dB Bandwidth [MHz]	Occupied Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.			
2412	1	17.33	18.14	0.5
2437	6	17.57	18.22	0.5
2462	11	16.96	18.15	0.5

External Antenna

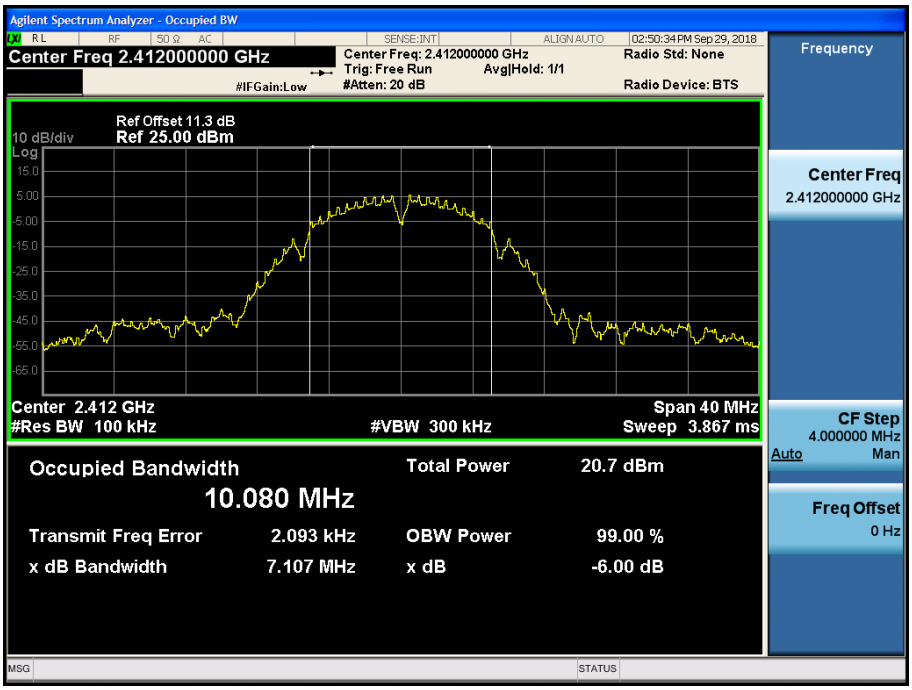
802.11b Mode		6dB Bandwidth [MHz]	Occupied Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.			
2412	1	7.135	10.42	0.5
2437	6	7.107	10.51	0.5
2462	11	7.120	10.44	0.5

802.11g Mode		6dB Bandwidth [MHz]	Occupied Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.			
2412	1	16.09	17.10	0.5
2437	6	16.29	17.73	0.5
2462	11	16.10	17.08	0.5

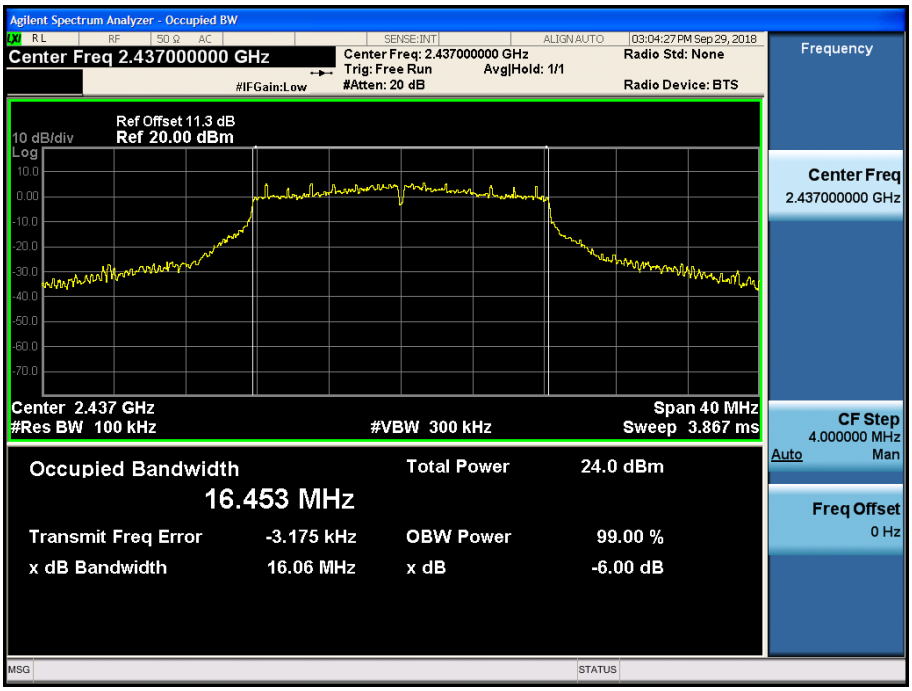
802.11n Mode		6dB Bandwidth [MHz]	Occupied Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.			
2412	1	17.29	18.14	0.5
2437	6	17.77	18.27	0.5
2462	11	16.83	18.15	0.5

▣ Test Plots(Internal Antenna)

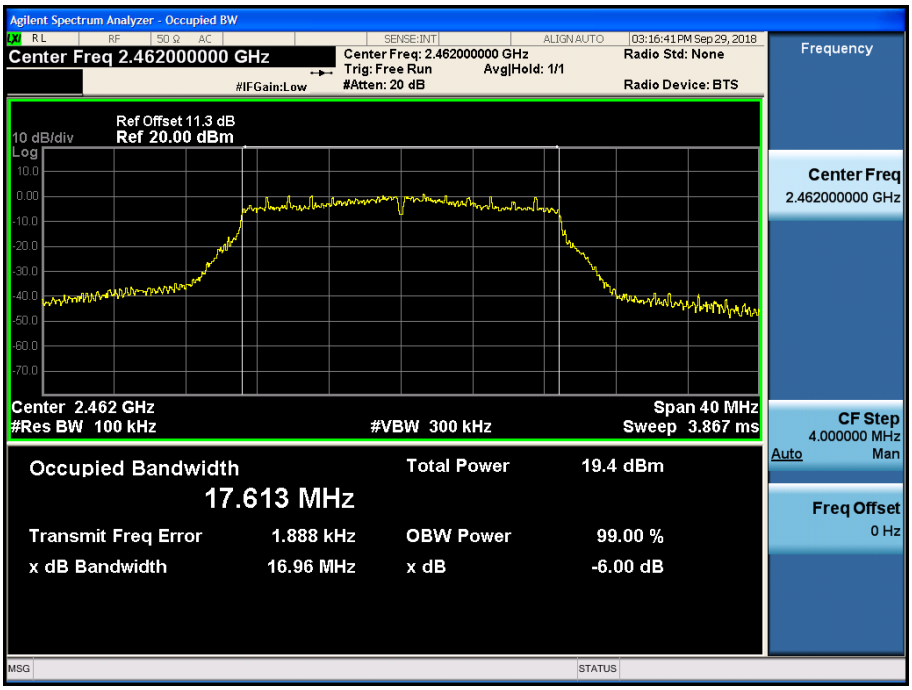
6dB Bandwidth plot (802.11b-CH 1)



6dB Bandwidth plot (802.11g-CH 6)



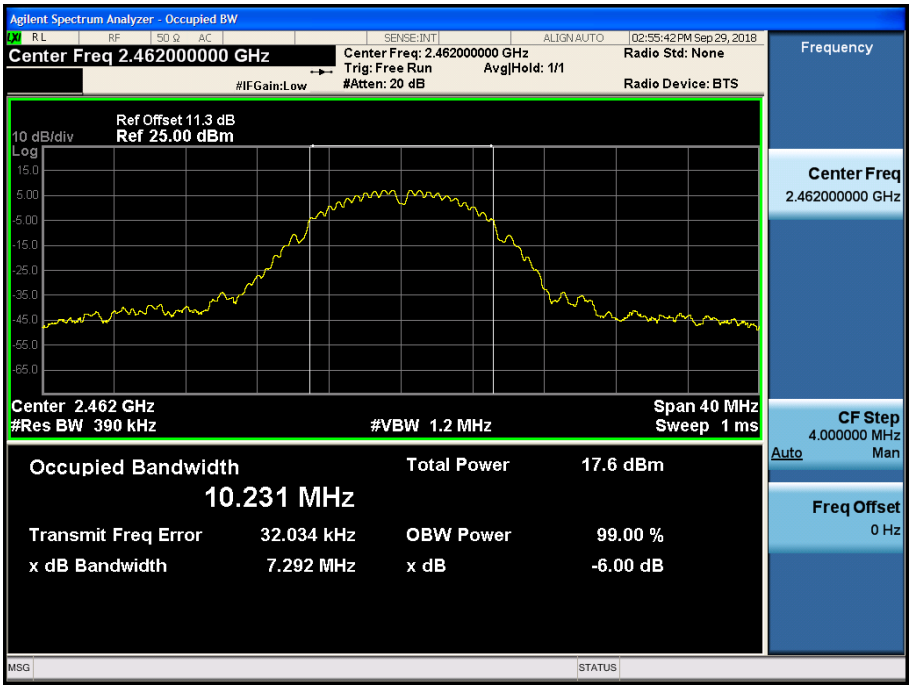
6dB Bandwidth plot (802.11n_HT20-CH 11)



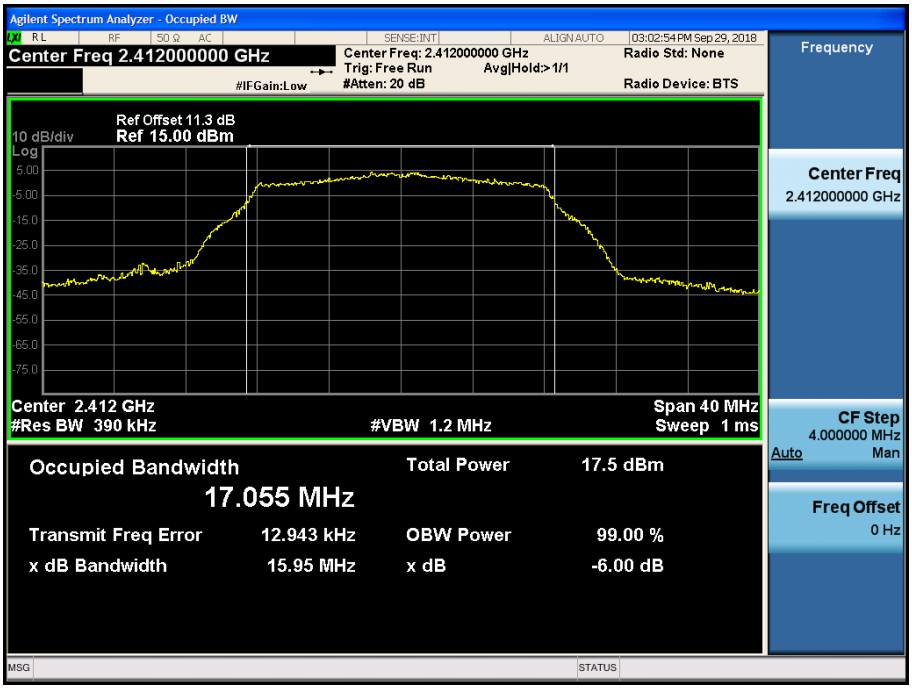
Note:

In order to simplify the report, attached plots were only the most narrow 6 dB BW channel.

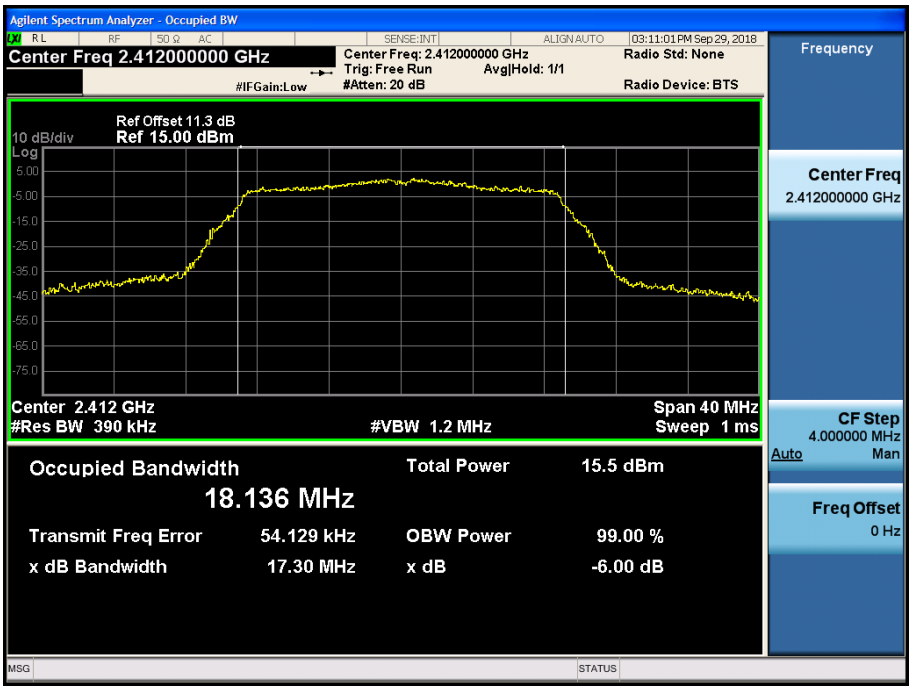
Occupied Bandwidth plot (802.11b-CH 11)



6dB Bandwidth plot (802.11g-CH 1)



Occupied Bandwidth plot (802.11n_HT20-CH 1)

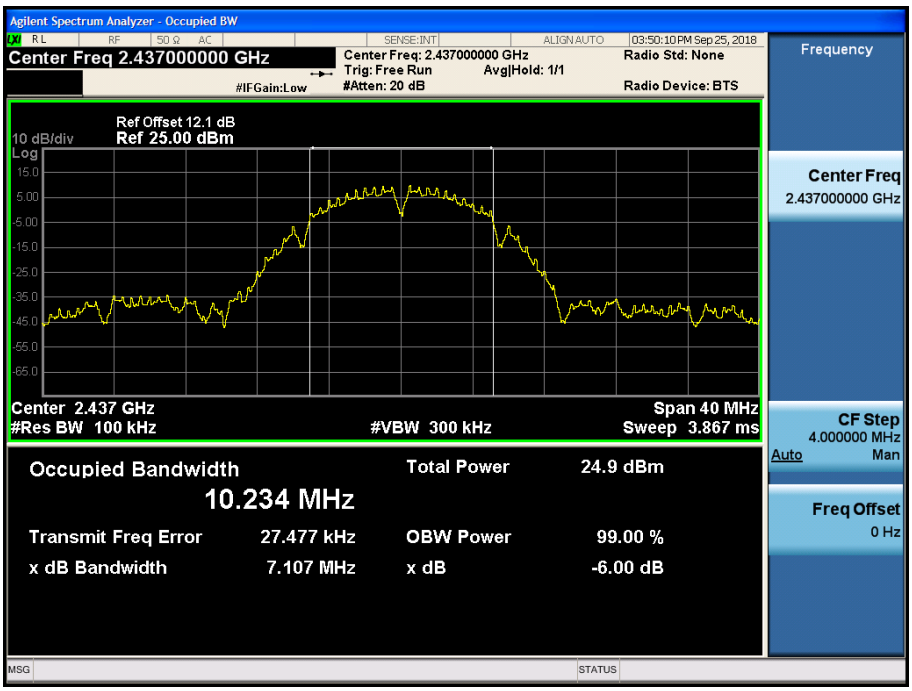


Note:

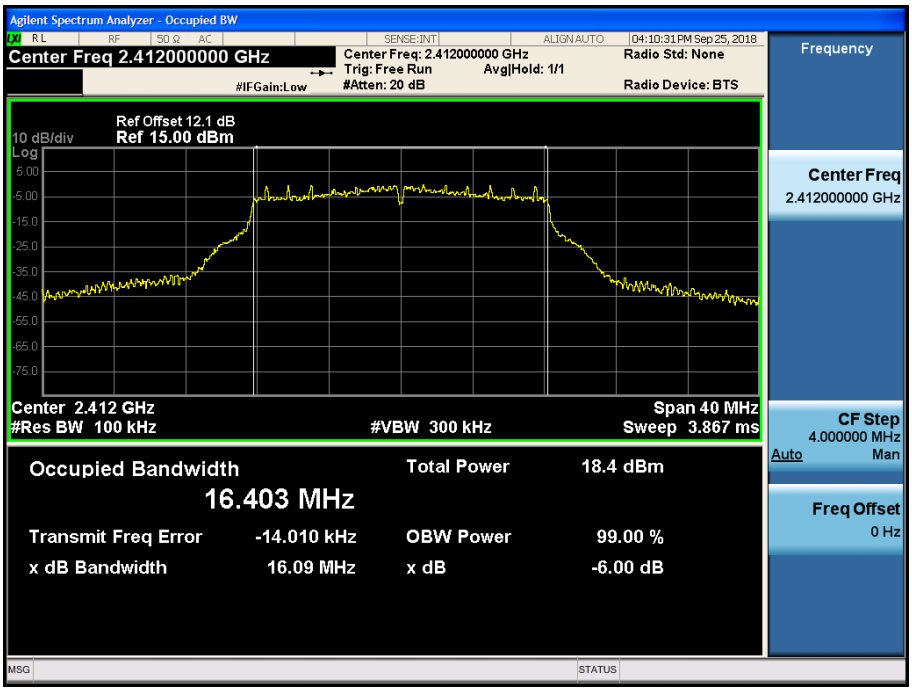
In order to simplify the report, attached plots were only the most narrow Occupied BW channel.

▣ Test Plots(External Antenna)

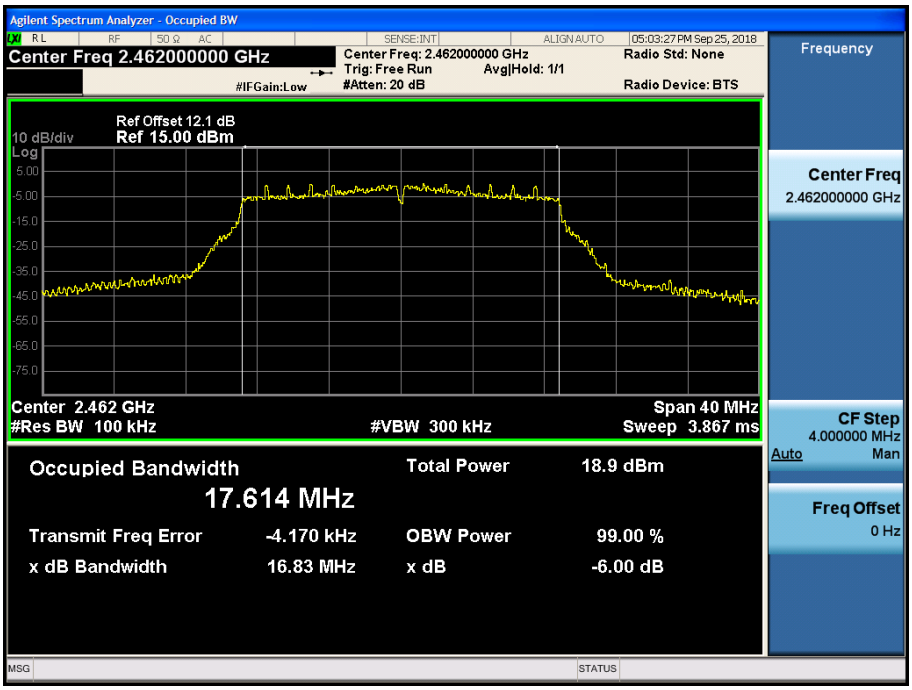
6dB Bandwidth plot (802.11b-CH 6)



6dB Bandwidth plot (802.11g-CH 1)



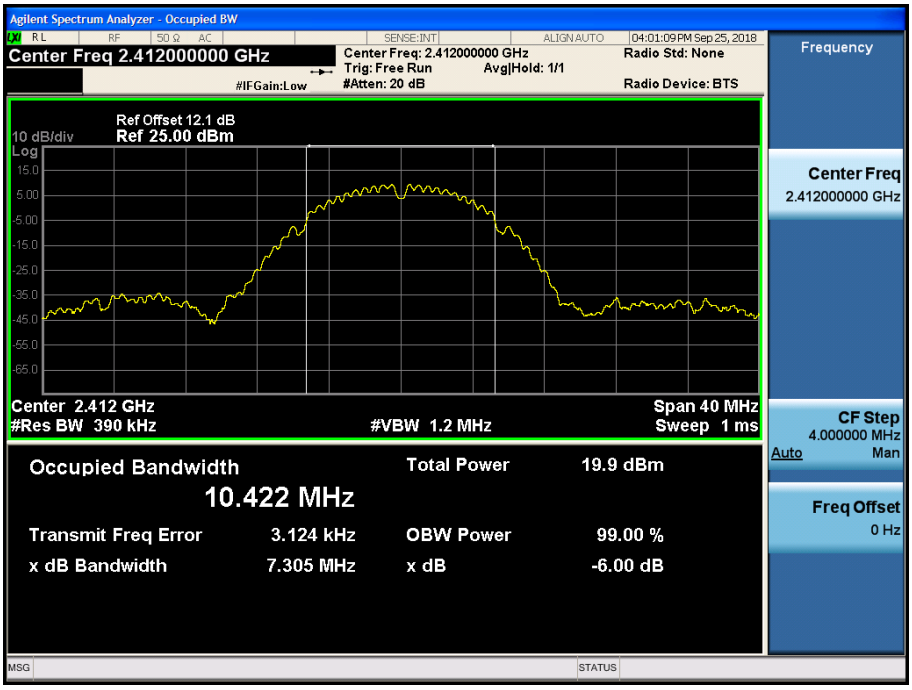
6dB Bandwidth plot (802.11n_HT20-CH 11)



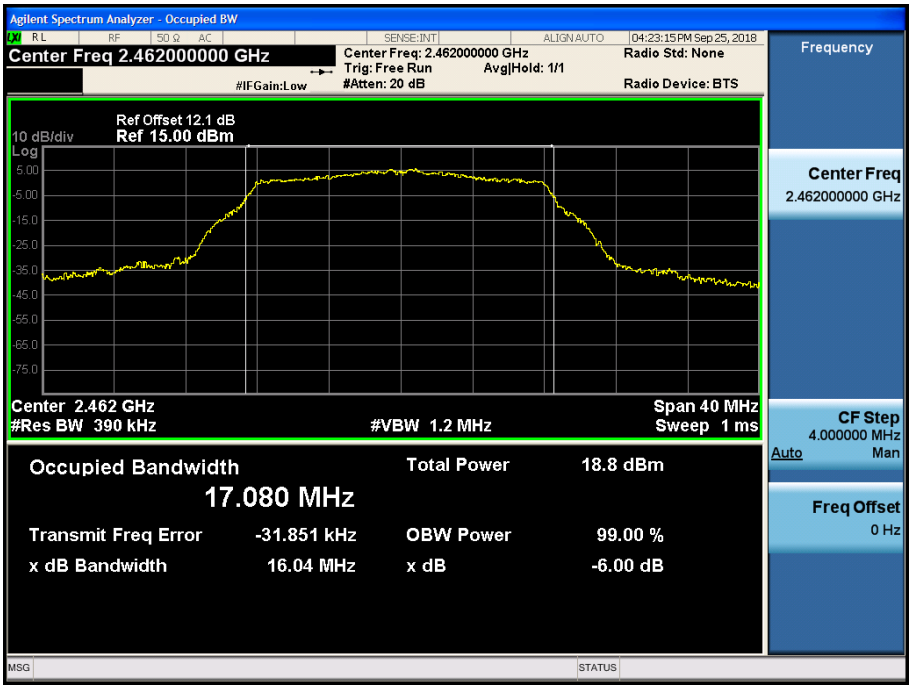
Note:

In order to simplify the report, attached plots were only the most narrow 6 dB BW channel.

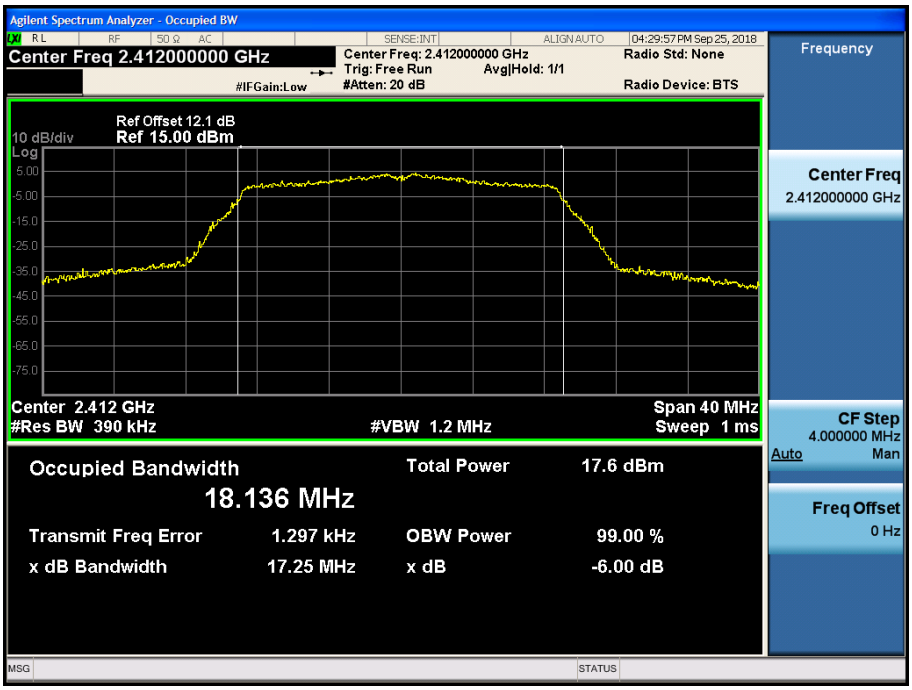
Occupied Bandwidth plot (802.11b-CH 1)



6dB Bandwidth plot (802.11g-CH 11)



Occupied Bandwidth plot (802.11n_HT20-CH 1)



Note:

In order to simplify the report, attached plots were only the most narrow Occupied BW channel.

9.3 OUTPUT POWER

Peak Power

Internal Antenna

802.11b Mode		Data Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency [MHz]	Channel No.			
2412	1	1	16.69	30
		2	16.30	30
		5.5	16.27	30
		11	16.37	30
2417	2	1	17.20	30
		2	17.10	30
		5.5	17.25	30
		11	17.22	30
2437	6	1	17.06	30
		2	17.08	30
		5.5	17.09	30
		11	17.17	30
2462	11	1	17.43	30
		2	17.39	30
		5.5	17.36	30
		11	17.44	30

802.11g Mode		Data Rate	Measured	Limit
Frequency[MHz]	Channel No.	[Mbps]	Power[dBm]	[dBm]
2412	1	6	21.45	30
		9	21.30	30
		12	20.92	30
		18	20.59	30
		24	20.16	30
		36	20.13	30
		48	20.79	30
		54	20.31	30
2412	2	6	23.25	30
		9	23.18	30
		12	22.95	30
		18	22.66	30
		24	22.74	30
		36	22.63	30
		48	23.64	30
		54	22.25	30
2422	3	6	24.28	30
		9	24.19	30
		12	24.04	30
		18	23.81	30
		24	25.27	30
		36	25.10	30
		48	25.41	30
		54	24.71	30
2437	6	6	24.76	30
		9	24.61	30
		12	24.60	30
		18	24.34	30
		24	25.31	30
		36	25.27	30
		48	25.51	30
		54	25.32	30

2457	10	6	23.14	30
		9	23.10	30
		12	22.95	30
		18	22.72	30
		24	23.95	30
		36	23.80	30
		48	24.12	30
		54	23.41	30
2462	11	6	21.87	30
		9	21.76	30
		12	21.51	30
		18	21.22	30
		24	20.70	30
		36	20.57	30
		48	21.94	30
		54	20.76	30

802.11n Mode		MCS Index	Measured	Limit
Frequency[MHz]	Channel No.		Power[dBm]	[dBm]
2412	1	0	20.24	30
		1	19.75	30
		2	20.52	30
		3	19.98	30
		4	19.35	30
		5	20.50	30
		6	19.50	30
		7	19.51	30
2417	2	0	22.86	30
		1	23.08	30
		2	22.88	30
		3	23.26	30
		4	23.05	30
		5	24.12	30
		6	23.33	30
		7	22.80	30
2422	3	0	24.12	30
		1	24.02	30
		2	24.00	30
		3	25.00	30
		4	25.14	30
		5	25.33	30
		6	25.23	30
		7	25.27	30
2437	6	0	24.86	30
		1	24.75	30
		2	24.76	30
		3	25.28	30
		4	25.41	30
		5	25.42	30
		6	25.37	30
		7	25.33	30

2457	10	0	23.15	30
		1	23.30	30
		2	23.11	30
		3	23.99	30
		4	23.91	30
		5	24.14	30
		6	24.10	30
		7	24.06	30
2462	11	0	22.06	30
		1	22.61	30
		2	21.75	30
		3	22.31	30
		4	21.93	30
		5	22.95	30
		6	22.05	30
		7	21.89	30

External Antenna

802.11b Mode		Data Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency [MHz]	Channel No.			
2412	1	1	20.08	30
		2	19.97	30
		5.5	21.80	30
		11	23.24	30
2437	6	1	19.87	30
		2	19.81	30
		5.5	21.35	30
		11	23.08	30
2462	11	1	19.50	30
		2	19.41	30
		5.5	20.93	30
		11	22.60	30

802.11g Mode		Data Rate	Measured	Limit
Frequency[MHz]	Channel No.	[Mbps]	Power[dBm]	[dBm]
2412	1	6	19.12	30
		9	19.05	30
		12	18.88	30
		18	18.57	30
		24	18.92	30
		36	18.97	30
		48	19.02	30
		54	18.94	30
2417	2	6	23.16	30
		9	23.15	30
		12	22.74	30
		18	22.60	30
		24	23.70	30
		36	23.72	30
		48	23.78	30
		54	23.34	30
2422	3	6	24.04	30
		9	24.05	30
		12	23.75	30
		18	23.65	30
		24	24.43	30
		36	24.44	30
		48	24.45	30
		54	24.30	30
2437	6	6	25.44	30
		9	25.23	30
		12	24.93	30
		18	24.74	30
		24	25.11	30
		36	25.36	30
		48	25.37	30
		54	25.26	30

2452	9	6	24.08	30
		9	23.98	30
		12	24.12	30
		18	23.85	30
		24	24.32	30
		36	24.59	30
		48	24.75	30
		54	24.55	30
2457	10	6	23.19	30
		9	23.14	30
		12	22.90	30
		18	23.58	30
		24	23.91	30
		36	23.85	30
		48	24.30	30
		54	23.67	30
2462	11	6	19.50	30
		9	19.42	30
		12	19.28	30
		18	18.86	30
		24	19.18	30
		36	19.22	30
		48	19.30	30
		54	19.26	30

802.11n Mode		MCS Index	Measured	Limit
Frequency[MHz]	Channel No.		Power[dBm]	[dBm]
2412	1	0	18.14	30
		1	18.15	30
		2	18.11	30
		3	18.29	30
		4	18.29	30
		5	18.30	30
		6	18.32	30
		7	18.27	30
2417	2	0	23.31	30
		1	23.72	30
		2	23.47	30
		3	23.89	30
		4	24.01	30
		5	24.21	30
		6	24.31	30
		7	24.17	30
2422	3	0	24.12	30
		1	24.30	30
		2	24.12	30
		3	24.60	30
		4	24.53	30
		5	24.94	30
		6	24.47	30
		7	24.75	30
2422	4	0	24.54	30
		1	24.55	30
		2	24.52	30
		3	24.69	30
		4	24.83	30
		5	24.68	30
		6	24.53	30
		7	24.61	30

2437	6	0	25.60	30
		1	25.35	30
		2	25.24	30
		3	25.64	30
		4	25.69	30
		5	25.55	30
		6	25.54	30
		7	25.69	30
2447	8	0	24.58	30
		1	24.59	30
		2	24.57	30
		3	24.79	30
		4	24.95	30
		5	25.06	30
		6	24.84	30
		7	24.88	30
2452	9	0	24.37	30
		1	24.50	30
		2	24.42	30
		3	24.75	30
		4	24.74	30
		5	24.78	30
		6	24.79	30
		7	24.73	30
2457	10	0	23.42	30
		1	23.15	30
		2	23.25	30
		3	24.02	30
		4	24.09	30
		5	24.45	30
		6	24.20	30
		7	24.36	30
2462	11	0	19.39	30
		1	19.46	30

		2	19.38	30
		3	19.63	30
		4	19.50	30
		5	19.52	30
		6	19.58	30
		7	19.43	30

MIMO

802.11n Mode		MCS Index	Measured Power [dBm]			Limit [dBm]
Frequency[MHz]	Channel No.		Internal Antenna	External Antenna	Sum	
2412	1	8	19.73	18.74	22.27	30.000
		9	19.30	17.82	21.63	30.000
		10	21.40	19.46	23.55	30.000
		11	19.72	19.30	22.53	30.000
		12	19.58	18.00	21.87	30.000
		13	19.61	17.22	21.59	30.000
		14	20.34	18.01	22.34	30.000
		15	19.69	17.74	21.83	30.000
2417	2	8	22.94	22.75	25.86	30.000
		9	22.79	22.93	25.87	30.000
		10	23.24	23.12	26.19	30.000
		11	23.41	23.42	26.43	30.000
		12	23.46	23.45	26.46	30.000
		13	23.52	23.53	26.53	30.000
		14	23.32	23.44	26.39	30.000
		15	22.89	23.48	26.21	30.000
2422	3	8	23.80	23.58	26.70	30.000
		9	23.65	23.45	26.56	30.000
		10	24.20	23.98	27.10	30.000
		11	24.39	24.27	27.34	30.000
		12	24.53	24.25	27.40	30.000
		13	24.58	24.35	27.48	30.000
		14	24.47	24.28	27.39	30.000
		15	24.45	24.36	27.42	30.000
2437	6	8	24.65	24.39	27.53	30.000
		9	24.54	24.14	27.35	30.000
		10	25.06	24.59	27.84	30.000
		11	25.36	24.81	28.10	30.000
		12	25.43	24.51	28.00	30.000
		13	25.49	24.43	28.00	30.000
		14	25.45	24.58	28.05	30.000
		15	25.34	24.50	27.95	30.000

2457	10	8	23.69	23.45	26.58	30.000
		9	23.50	23.21	26.37	30.000
		10	24.02	23.82	26.93	30.000
		11	24.26	24.03	27.16	30.000
		12	24.46	24.10	27.29	30.000
		13	24.47	24.23	27.36	30.000
		14	24.47	24.15	27.32	30.000
		15	24.64	24.23	27.45	30.000
2462	11	8	22.20	22.57	25.40	30.000
		9	22.30	22.72	25.53	30.000
		10	23.36	23.04	26.21	30.000
		11	21.74	22.37	25.08	30.000
		12	22.24	23.06	25.68	30.000
		13	22.33	22.53	25.44	30.000
		14	22.87	22.59	25.74	30.000
		15	22.33	23.04	25.71	30.000

Average Power

Internal Antenna

802.11b Mode		Data Rate [Mbps]	Measured Power[dBm]	Duty Cycle Factor [dB]	Measured Power(dBm) + Duty Cycle Factor[dB]	Limit [dBm]
Frequency [MHz]	Channel No.					
2412	1	1	13.14	0.035	13.18	30
		2	12.92	0.070	12.99	30
		5.5	12.75	0.178	12.93	30
		11	12.64	0.325	12.96	30
2417	2	1	13.75	0.035	13.79	30
		2	13.55	0.070	13.62	30
		5.5	13.41	0.178	13.59	30
		11	13.19	0.325	13.52	30
2437	6	1	13.60	0.035	13.64	30
		2	13.48	0.070	13.55	30
		5.5	13.16	0.178	13.34	30
		11	13.06	0.325	13.38	30
2462	11	1	13.93	0.035	13.97	30
		2	13.79	0.070	13.86	30
		5.5	13.52	0.178	13.70	30
		11	13.48	0.325	13.80	30

802.11g Mode		Data Rate [Mbps]	Measured Power[dBm]	Duty Cycle Factor [dB]	Measured Power(dBm) + Duty Cycle Factor[dB]	Limit [dBm]
Frequency [MHz]	Channel No.					
2412	1	6	10.28	0.214	10.49	30
		9	10.18	0.312	10.49	30
		12	10.12	0.400	10.52	30
		18	9.53	0.588	10.12	30
		24	9.36	0.754	10.11	30
		36	9.07	1.061	10.13	30
		48	8.74	1.366	10.11	30
		54	8.55	1.484	10.03	30
2417	2	6	12.99	0.214	13.20	30
		9	12.87	0.312	13.18	30
		12	12.78	0.400	13.18	30
		18	12.19	0.588	12.78	30
		24	11.86	0.754	12.61	30
		36	11.58	1.061	12.64	30
		48	11.37	1.366	12.74	30
		54	11.19	1.484	12.67	30
2422	3	6	15.40	0.214	15.61	30
		9	15.29	0.312	15.60	30
		12	15.23	0.400	15.63	30
		18	14.63	0.588	15.22	30
		24	14.46	0.754	15.21	30
		36	13.96	1.061	15.02	30
		48	13.80	1.366	15.17	30
		54	13.53	1.484	15.01	30
2437	6	6	16.67	0.214	16.88	30
		9	16.53	0.312	16.84	30
		12	16.49	0.400	16.89	30
		18	15.87	0.588	16.46	30
		24	15.77	0.754	16.52	30
		36	15.44	1.061	16.50	30
		48	15.25	1.366	16.62	30
		54	14.91	1.484	16.39	30

2457	10	6	14.24	0.214	14.45	30
		9	14.18	0.312	14.49	30
		12	14.10	0.400	14.50	30
		18	13.35	0.588	13.94	30
		24	13.25	0.754	14.00	30
		36	12.85	1.061	13.91	30
		48	12.58	1.366	13.95	30
		54	12.36	1.484	13.84	30
2462	11	6	11.17	0.214	11.38	30
		9	11.05	0.312	11.36	30
		12	10.97	0.400	11.37	30
		18	10.38	0.588	10.97	30
		24	10.03	0.754	10.78	30
		36	9.72	1.061	10.78	30
		48	9.58	1.366	10.95	30
		54	9.36	1.484	10.84	30

802.11n Mode		MCS Index	Measured Power[dBm]	Duty Cycle Factor [dB]	Measured Power(dBm) + Duty Cycle Factor[dB]	Limit [dBm]
Frequency [MHz]	Channel No.					
2412	1	0	8.10	0.225	8.32	30
		1	7.91	0.426	8.34	30
		2	7.68	0.621	8.30	30
		3	7.26	0.788	8.05	30
		4	6.94	1.105	8.05	30
		5	6.74	1.371	8.11	30
		6	6.55	1.484	8.03	30
		7	6.44	1.606	8.05	30
2417	2	0	11.92	0.225	12.14	30
		1	11.76	0.426	12.19	30
		2	11.58	0.621	12.20	30
		3	11.02	0.788	11.81	30
		4	10.81	1.105	11.92	30
		5	10.47	1.371	11.84	30
		6	10.40	1.484	11.88	30
		7	10.16	1.606	11.77	30
2422	3	0	14.46	0.225	14.68	30
		1	14.24	0.426	14.67	30
		2	14.07	0.621	14.69	30
		3	13.54	0.788	14.33	30
		4	13.19	1.105	14.30	30
		5	12.97	1.371	14.34	30
		6	12.87	1.484	14.35	30
		7	12.68	1.606	14.29	30
2437	6	0	16.83	0.225	17.05	30
		1	16.60	0.426	17.03	30
		2	16.39	0.621	17.01	30
		3	16.02	0.788	16.81	30
		4	15.69	1.105	16.80	30
		5	15.41	1.371	16.78	30
		6	15.28	1.484	16.76	30
		7	15.11	1.606	16.72	30

2457	10	0	13.31	0.225	13.53	30
		1	13.10	0.426	13.53	30
		2	12.93	0.621	13.55	30
		3	12.35	0.788	13.14	30
		4	12.01	1.105	13.12	30
		5	11.71	1.371	13.08	30
		6	11.64	1.484	13.12	30
		7	11.47	1.606	13.08	30
2462	11	0	11.08	0.225	11.30	30
		1	10.80	0.426	11.23	30
		2	10.63	0.621	11.25	30
		3	10.10	0.788	10.89	30
		4	9.73	1.105	10.84	30
		5	9.38	1.371	10.75	30
		6	9.30	1.484	10.78	30
		7	9.19	1.606	10.80	30

External Antenna

802.11b Mode		Data Rate [Mbps]	Measured Power[dBm]	Duty Cycle Factor [dB]	Measured Power(dBm) + Duty Cycle Factor[dB]	Limit [dBm]
Frequency [MHz]	Channel No.					
2412	1	1	17.48	0.035	17.52	30
		2	17.24	0.070	17.31	30
		5.5	17.30	0.178	17.48	30
		11	17.00	0.325	17.32	30
2437	6	1	17.29	0.035	17.32	30
		2	17.07	0.070	17.14	30
		5.5	16.93	0.178	17.11	30
		11	16.91	0.325	17.23	30
2462	11	1	16.88	0.035	16.91	30
		2	16.68	0.070	16.75	30
		5.5	16.51	0.178	16.69	30
		11	16.38	0.325	16.71	30

802.11g Mode		Data Rate [Mbps]	Measured Power[dBm]	Duty Cycle Factor [dB]	Measured Power(dBm) + Duty Cycle Factor[dB]	Limit [dBm]
Frequency [MHz]	Channel No.					
2412	1	6	11.15	0.214	11.36	30
		9	11.06	0.312	11.37	30
		12	11.01	0.400	11.41	30
		18	10.30	0.588	10.89	30
		24	10.30	0.754	11.05	30
		36	9.97	1.061	11.03	30
		48	9.63	1.366	10.99	30
		54	9.43	1.484	10.92	30
2417	2	6	13.77	0.214	13.98	30
		9	13.61	0.312	13.92	30
		12	13.50	0.400	13.90	30
		18	12.94	0.588	13.53	30
		24	12.76	0.754	13.51	30
		36	12.56	1.061	13.62	30
		48	12.29	1.366	13.66	30
		54	12.07	1.484	13.55	30
2422	3	6	15.99	0.214	16.20	30
		9	16.00	0.312	16.31	30
		12	15.79	0.400	16.19	30
		18	15.26	0.588	15.85	30
		24	15.24	0.754	15.99	30
		36	14.76	1.061	15.82	30
		48	14.63	1.366	16.00	30
		54	14.42	1.484	15.90	30
2437	6	6	17.54	0.214	17.75	30
		9	17.30	0.312	17.61	30
		12	17.21	0.400	17.61	30
		18	16.71	0.588	17.30	30
		24	16.79	0.754	17.54	30
		36	16.46	1.061	17.52	30
		48	16.25	1.366	17.61	30
		54	15.92	1.484	17.41	30

2452	9	6	16.22	0.214	16.43	30
		9	16.13	0.312	16.44	30
		12	16.06	0.400	16.46	30
		18	15.51	0.588	16.10	30
		24	15.40	0.754	16.15	30
		36	15.16	1.061	16.22	30
		48	14.96	1.366	16.33	30
		54	14.70	1.484	16.18	30
2457	10	6	13.77	0.214	13.98	30
		9	13.67	0.312	13.98	30
		12	13.60	0.400	14.00	30
		18	12.94	0.588	13.53	30
		24	12.78	0.754	13.53	30
		36	12.48	1.061	13.54	30
		48	12.34	1.366	13.71	30
		54	12.10	1.484	13.58	30
2462	11	6	11.52	0.214	11.73	30
		9	11.44	0.312	11.75	30
		12	11.35	0.400	11.75	30
		18	10.60	0.588	11.18	30
		24	10.44	0.754	11.19	30
		36	10.16	1.061	11.22	30
		48	10.04	1.366	11.41	30
		54	9.81	1.484	11.29	30

802.11n Mode		MCS Index	Measured Power[dBm]	Duty Cycle Factor [dB]	Measured Power(dBm) + Duty Cycle Factor[dB]	Limit [dBm]
Frequency [MHz]	Channel No.					
2412	1	0	10.22	0.225	10.45	30
		1	9.97	0.426	10.40	30
		2	9.79	0.621	10.41	30
		3	9.12	0.788	9.91	30
		4	8.95	1.105	10.06	30
		5	8.65	1.371	10.02	30
		6	8.58	1.484	10.06	30
		7	8.45	1.606	10.05	30
2417	2	0	13.64	0.225	13.86	30
		1	13.48	0.426	13.91	30
		2	13.19	0.621	13.81	30
		3	12.82	0.788	13.61	30
		4	12.41	1.105	13.52	30
		5	12.29	1.371	13.66	30
		6	12.02	1.484	13.50	30
		7	11.91	1.606	13.52	30
2422	3	0	15.92	0.225	16.14	30
		1	15.72	0.426	16.15	30
		2	15.55	0.621	16.17	30
		3	15.10	0.788	15.89	30
		4	14.89	1.105	16.00	30
		5	14.57	1.371	15.94	30
		6	14.46	1.484	15.94	30
		7	14.37	1.606	15.98	30
2427	4	0	16.77	0.225	16.99	30
		1	16.60	0.426	17.03	30
		2	16.44	0.621	17.06	30
		3	16.10	0.788	16.89	30
		4	15.76	1.105	16.87	30
		5	15.55	1.371	16.92	30
		6	15.46	1.484	16.94	30
		7	15.23	1.606	16.84	30

2437	6	0	16.05	0.225	16.28	30
		1	17.19	0.426	17.62	30
		2	17.07	0.621	17.69	30
		3	16.73	0.788	17.52	30
		4	16.47	1.105	17.57	30
		5	16.02	1.371	17.39	30
		6	16.09	1.484	17.58	30
		7	15.91	1.606	17.52	30
2447	8	0	16.85	0.225	17.07	30
		1	16.66	0.426	17.09	30
		2	16.49	0.621	17.11	30
		3	16.22	0.788	17.01	30
		4	15.97	1.105	17.08	30
		5	15.65	1.371	17.02	30
		6	15.41	1.484	16.89	30
		7	15.33	1.606	16.94	30
2452	9	0	16.09	0.225	16.31	30
		1	15.88	0.426	16.31	30
		2	15.72	0.621	16.34	30
		3	15.38	0.788	16.17	30
		4	15.14	1.105	16.25	30
		5	14.78	1.371	16.15	30
		6	14.68	1.484	16.16	30
		7	14.60	1.606	16.21	30
2457	10	0	13.64	0.225	13.86	30
		1	13.45	0.426	13.88	30
		2	13.29	0.621	13.91	30
		3	12.83	0.788	13.62	30
		4	12.54	1.105	13.65	30
		5	12.18	1.371	13.55	30
		6	12.06	1.484	13.54	30
		7	12.01	1.606	13.62	30
2462	11	0	11.47	0.225	11.69	30
		1	11.20	0.426	11.63	30
		2	11.10	0.621	11.72	30

		3	10.60	0.788	11.38	30
		4	10.20	1.105	11.30	30
		5	9.96	1.371	11.33	30
		6	9.84	1.484	11.33	30
		7	9.77	1.606	11.37	30

MIMO

802.11n Mode		MCS Index	Duty Cycle Factor [dB]	Measured Power [dBm]			Result [dBm)	Limit [dBm]
Frequency [MHz]	Channel No.			Internal Antenna	External Antenna	Sum		
2412	1	8	0.43	7.90	6.47	10.25	10.68	30.000
		9	0.78	7.43	6.08	9.82	10.60	30.000
		10	1.08	7.26	5.82	9.61	10.69	30.000
		11	1.35	6.71	5.44	9.13	10.48	30.000
		12	1.78	6.27	4.64	8.54	10.33	30.000
		13	2.14	6.00	4.38	8.28	10.41	30.000
		14	2.27	5.71	4.24	8.05	10.32	30.000
		15	2.41	5.56	4.07	7.89	10.30	30.000
2417	2	8	0.43	11.83	11.98	14.92	15.34	30.000
		9	0.78	11.36	11.56	14.47	15.25	30.000
		10	1.08	11.08	11.31	14.20	15.29	30.000
		11	1.35	10.64	10.84	13.75	15.11	30.000
		12	1.78	10.06	10.20	13.14	14.93	30.000
		13	2.14	9.70	9.90	12.81	14.95	30.000
		14	2.27	9.60	9.70	12.66	14.93	30.000
		15	2.41	9.45	9.61	12.54	14.95	30.000
2422	3	8	0.43	14.30	14.25	17.29	17.71	30.000
		9	0.78	13.87	13.78	16.84	17.62	30.000
		10	1.08	13.57	13.55	16.57	17.66	30.000
		11	1.35	13.08	13.06	16.08	17.43	30.000
		12	1.78	12.53	12.48	15.51	17.30	30.000
		13	2.14	12.25	12.09	15.18	17.32	30.000
		14	2.27	12.07	12.01	15.05	17.32	30.000
		15	2.41	11.87	11.95	14.92	17.33	30.000
2437	6	8	0.43	16.42	15.97	19.21	19.64	30.000
		9	0.78	16.06	15.60	18.85	19.63	30.000
		10	1.08	15.79	15.33	18.58	19.66	30.000
		11	1.35	15.30	14.89	18.11	19.46	30.000
		12	1.78	14.75	14.47	17.62	19.41	30.000
		13	2.14	14.40	14.12	17.27	19.41	30.000
		14	2.27	14.28	14.03	17.17	19.44	30.000
		15	2.41	14.15	13.86	17.02	19.43	30.000

2457	10	8	0.43	13.39	13.49	16.45	16.88	30.000
		9	0.78	12.96	13.05	16.02	16.80	30.000
		10	1.08	12.62	12.80	15.72	16.80	30.000
		11	1.35	12.19	12.24	15.22	16.57	30.000
		12	1.78	11.61	11.72	14.68	16.46	30.000
		13	2.14	11.28	11.34	14.32	16.46	30.000
		14	2.27	11.21	11.30	14.27	16.54	30.000
		15	2.41	10.91	11.28	14.11	16.52	30.000
2462	11	8	0.43	10.95	11.40	14.19	14.62	30.000
		9	0.78	10.65	11.35	14.02	14.80	30.000
		10	1.08	10.33	10.68	13.52	14.60	30.000
		11	1.35	9.65	10.07	12.88	14.23	30.000
		12	1.78	9.16	9.72	12.46	14.24	30.000
		13	2.14	8.86	9.32	12.11	14.24	30.000
		14	2.27	8.72	9.29	12.02	14.29	30.000
		15	2.41	8.59	9.05	11.84	14.25	30.000

9.4 POWER SPECTRAL DENSITY

Internal Antenna

Mode	Frequency (MHz)	Channel No.	Test Result	
			PSD (dBm)	Limit (dBm)
802.11b	2412	1	-7.754	8
	2437	6	-6.749	8
	2462	11	-7.745	8
802.11g	2412	1	-12.877	8
	2437	6	-9.559	8
	2462	11	-14.221	8
802.11n (HT20)	2412	1	-15.756	8
	2437	6	-8.813	8
	2462	11	-14.114	8

External Antenna

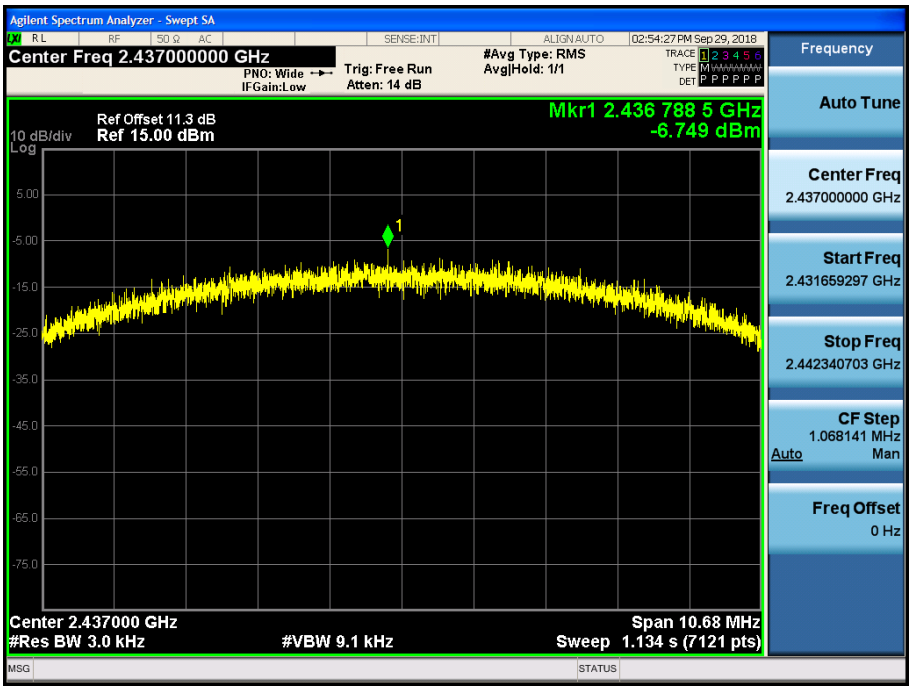
Mode	Frequency (MHz)	Channel No.	Test Result	
			PSD (dBm)	Limit (dBm)
802.11b	2412	1	-5.230	8
	2437	6	-4.942	8
	2462	11	-3.849	8
802.11g	2412	1	-12.234	8
	2437	6	-5.101	8
	2462	11	-11.723	8
802.11n (HT20)	2412	1	-16.162	8
	2437	6	-8.564	8
	2462	11	-13.774	8

MIMO

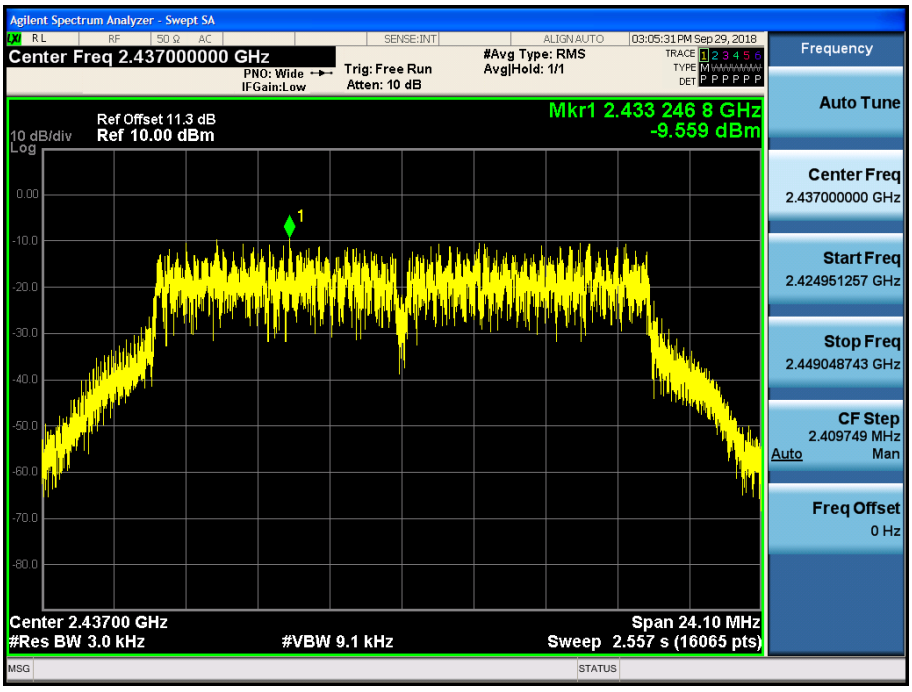
Mode	Frequency (MHz)	Channel No.	Measured PSD [dBm]			Limit (dBm)
			Internal Antenna	External Antenna	Sum	
802.11n (HT20)	2412	1	-16.315	-17.253	-13.75	8
	2437	6	-9.654	-9.696	-6.66	8
	2462	11	-13.106	-13.588	-10.33	8

▣ Test Plots(Internal Antenna)

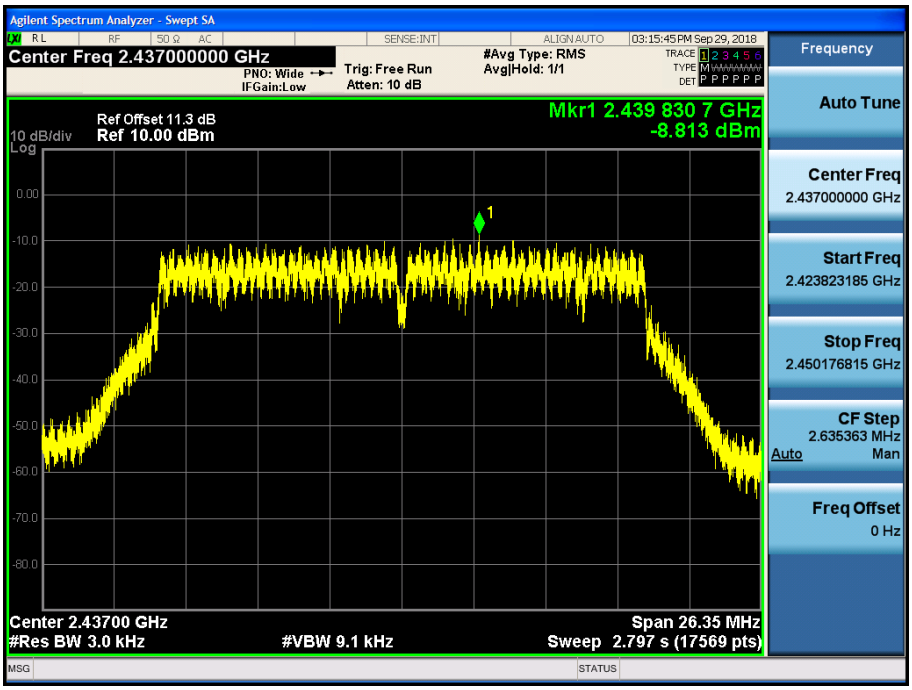
Power Spectral Density (802.11b-CH 6)



Power Spectral Density (802.11g-CH 6)



Power Spectral Density (802.11n_HT20 -CH 6)

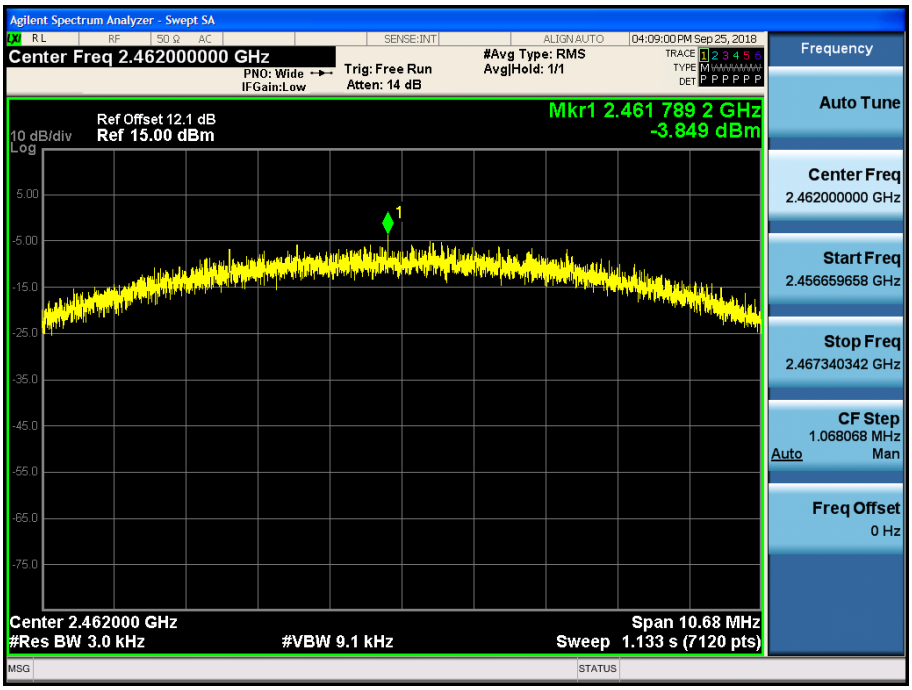


Note :

In order to simplify the report, attached plots were only the worstcase PSD channel.

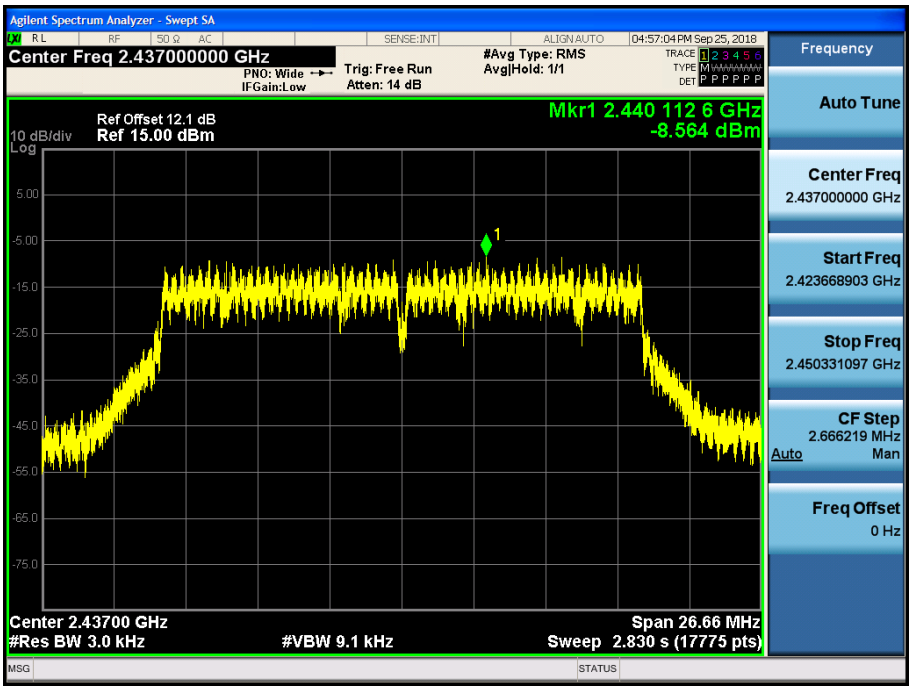
▣ Test Plots(External Antenna)

Power Spectral Density (802.11b-CH 11)



Power Spectral Density (802.11g-CH 6)

Power Spectral Density (802.11n_HT20 -CH 6)



Note :

In order to simplify the report, attached plots were only the worstcase PSD channel.

9.5 BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

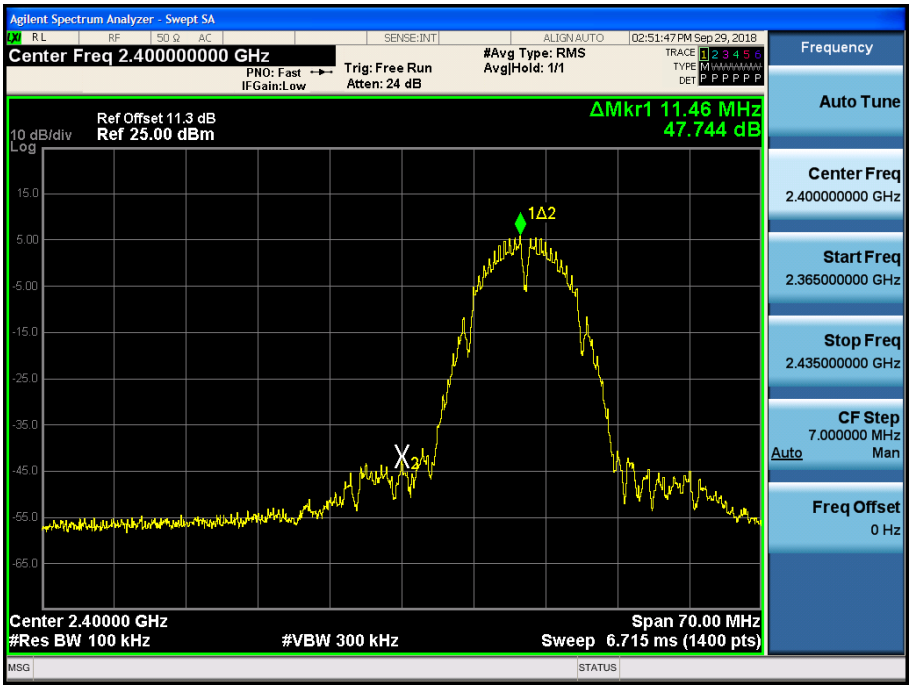
Test Result : please refer to the plot below.

In order to simplify the report, attached plots were only the worst case channel and data rate.

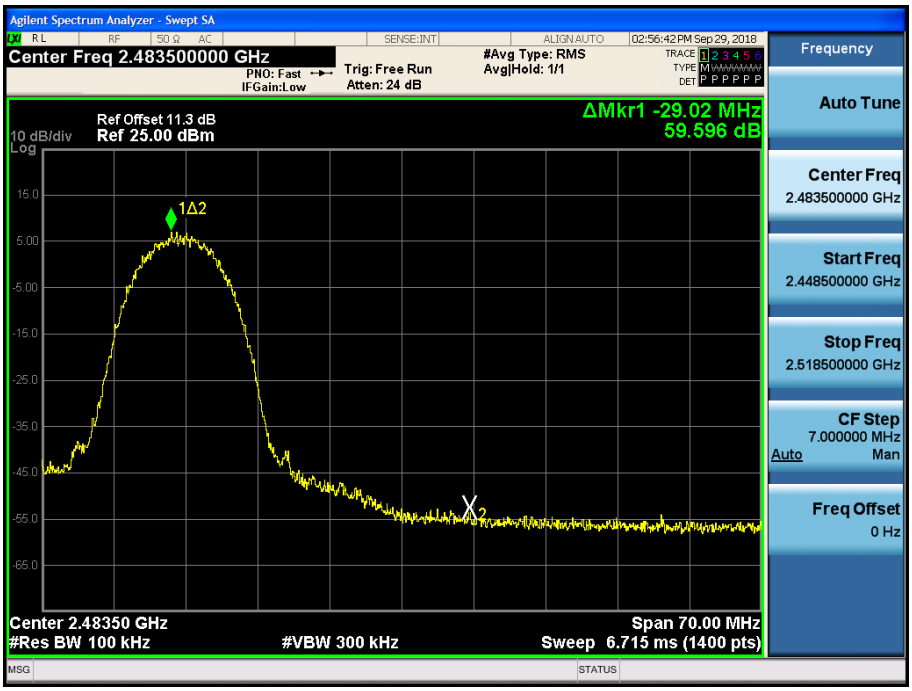
▣ Test Plots(Internal Antenna)

BandEdge

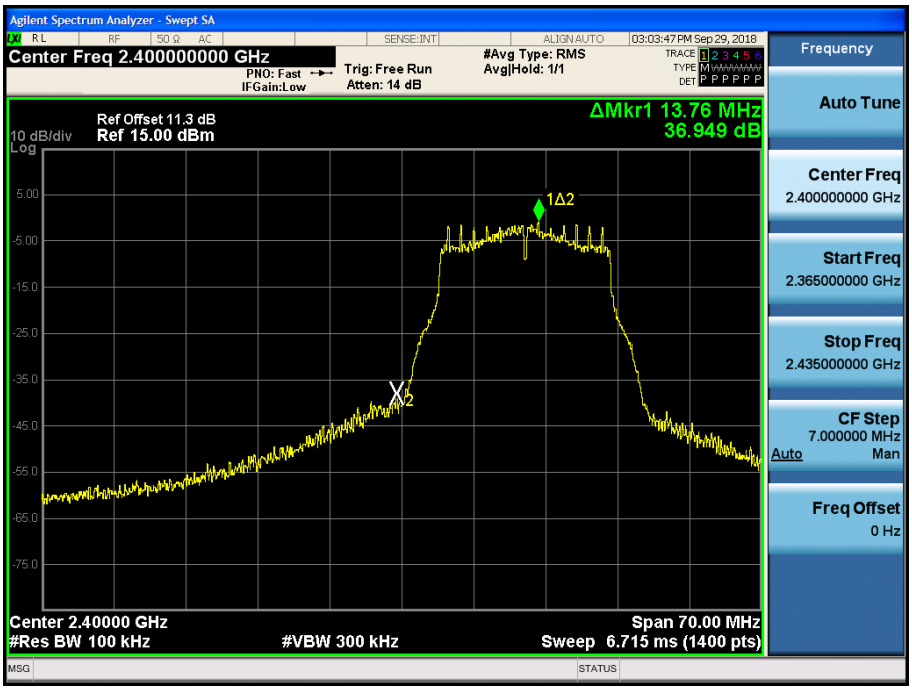
Band Edge (802.11b-CH1)



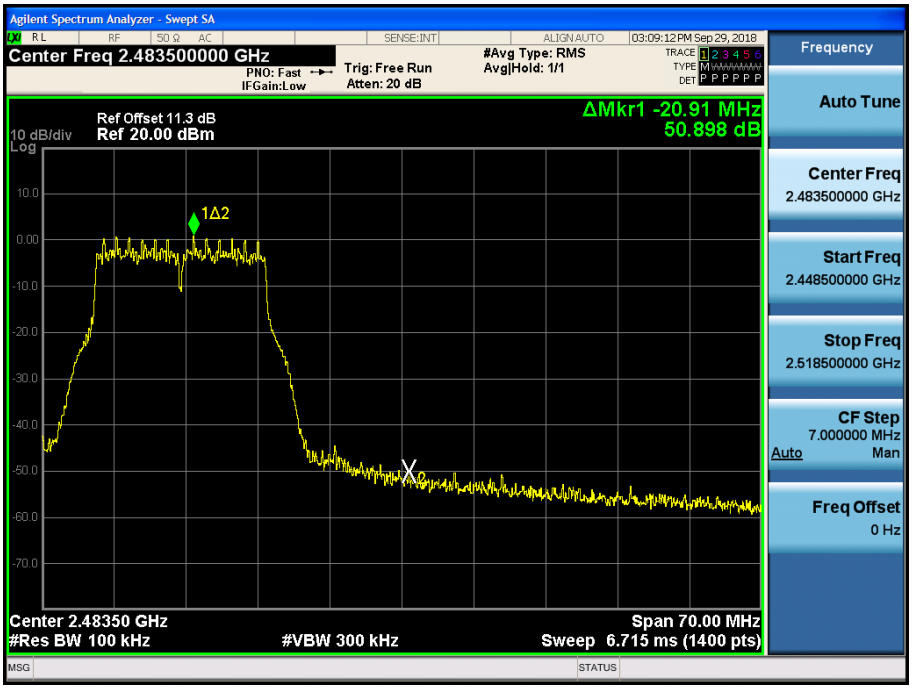
Band Edge (802.11b-CH11)



Band Edge (802.11g-CH1)

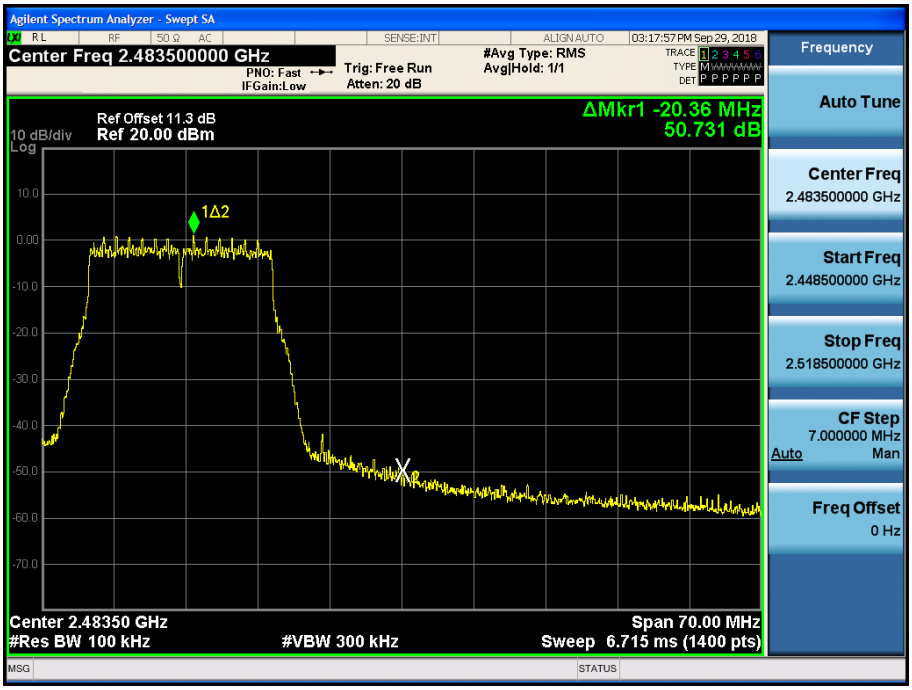


Band Edge (802.11g-CH11)



Band Edge (802.11n_HT20-CH1)

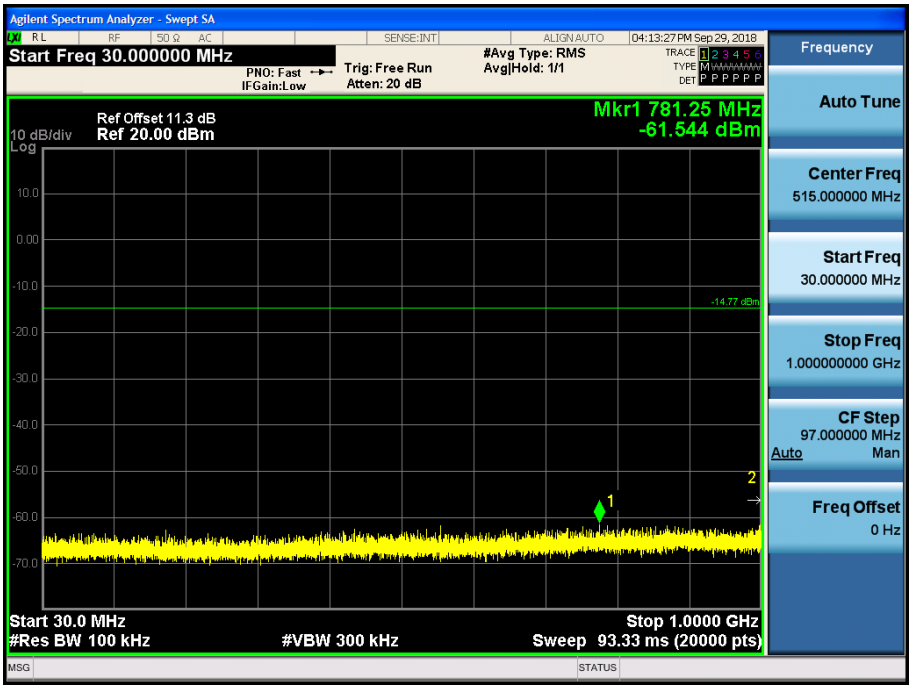
Band Edge (802.11n_HT20-CH11)



Conducted Spurious Emission

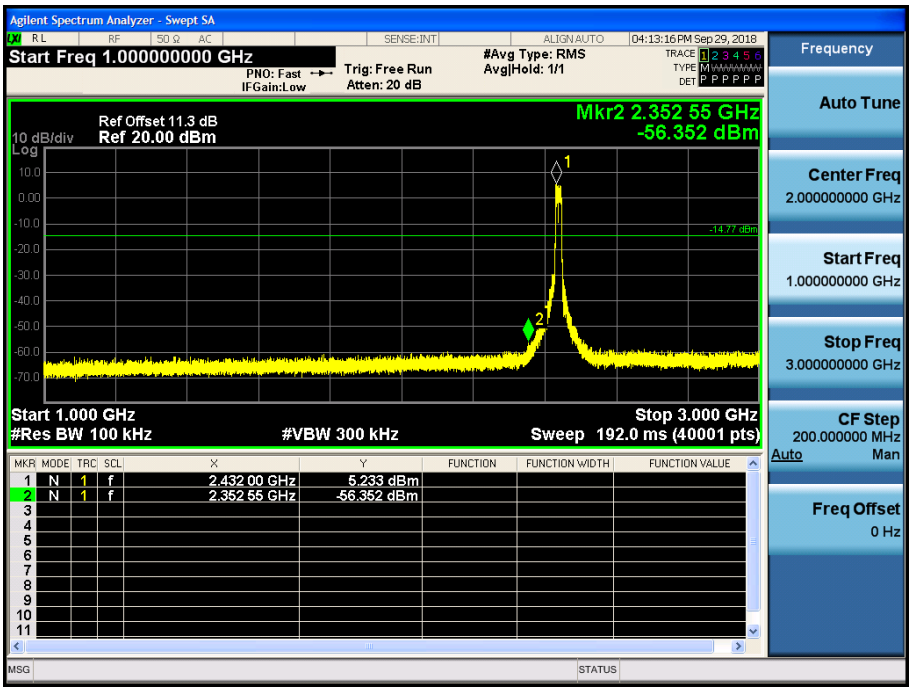
30 MHz ~ 1 GHz

Conducted Spurious Emission (802.11n_Ch.6)



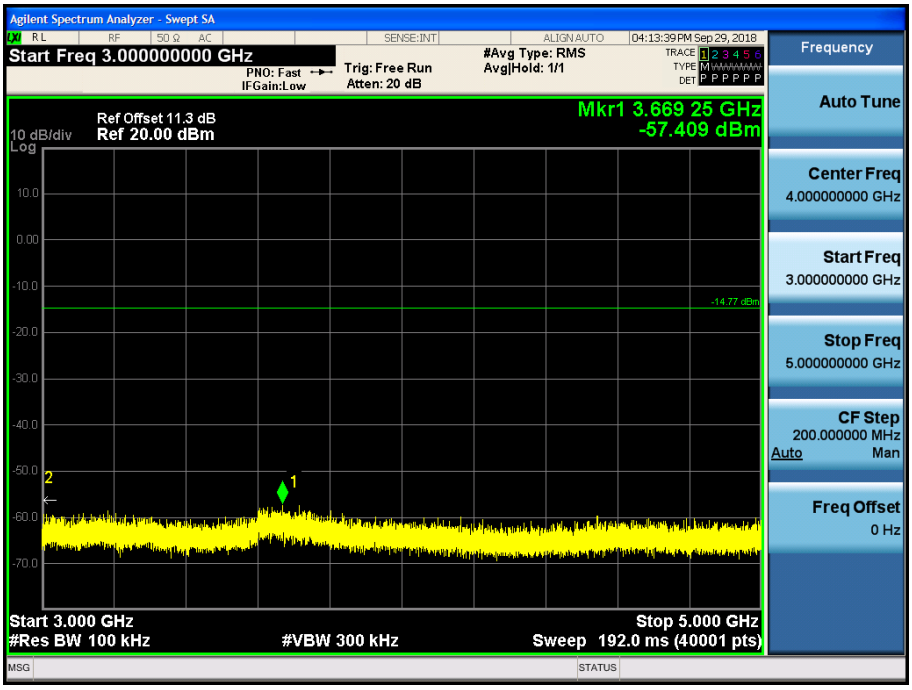
1 GHz ~ 3 GHz

Conducted Spurious Emission (802.11n_Ch.6)



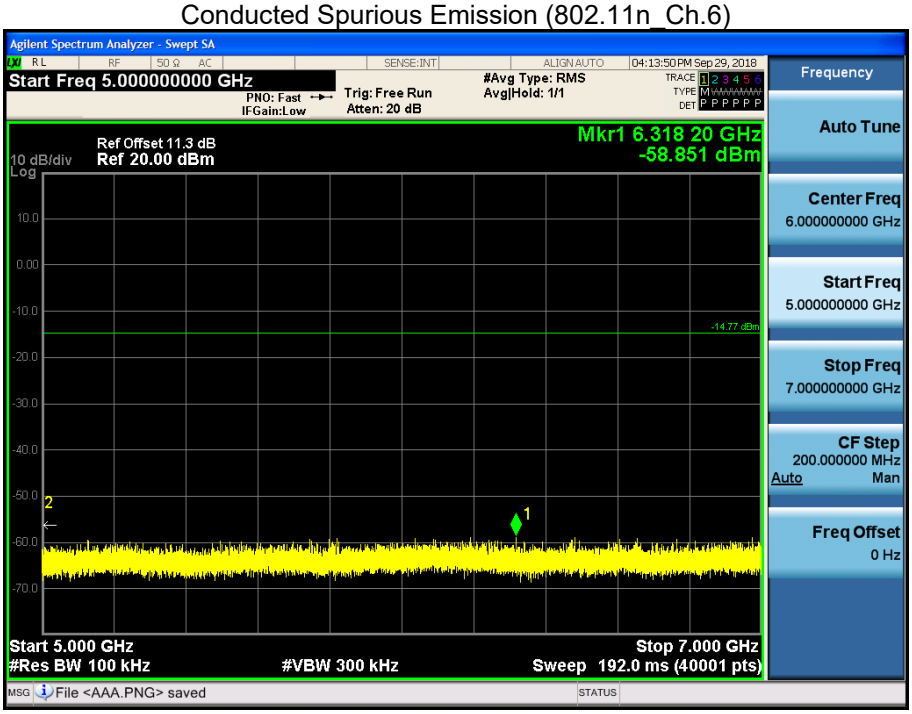
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11n_Ch.6)



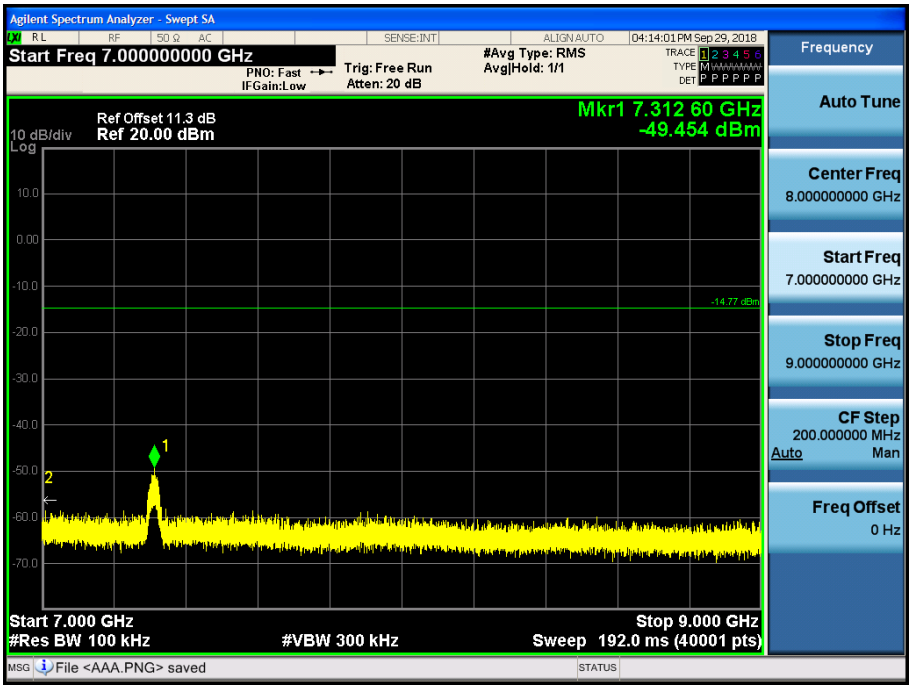
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11n_Ch.6)



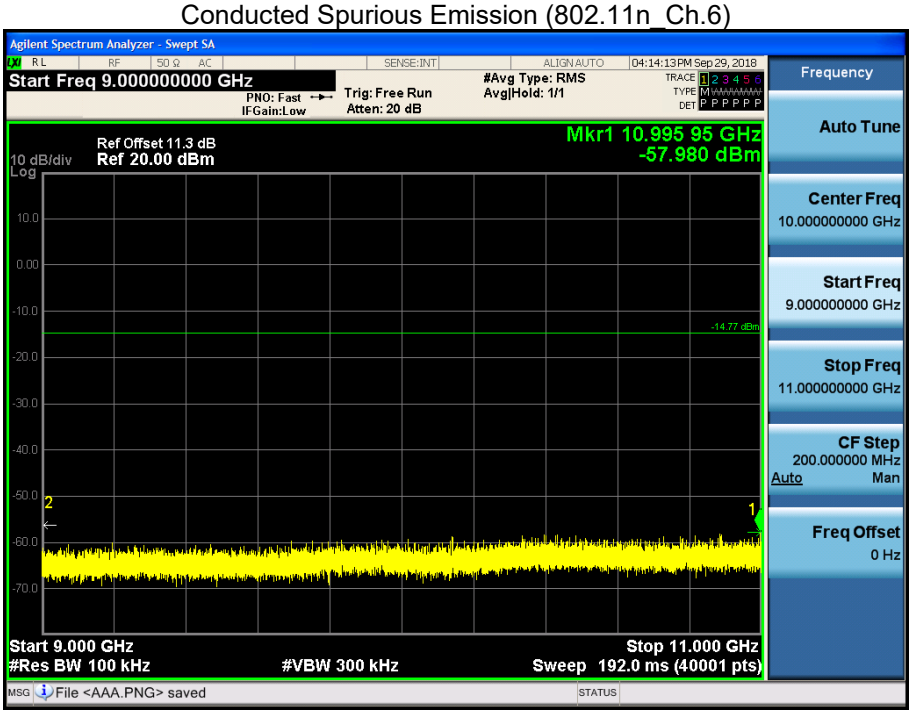
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11n_Ch.6)



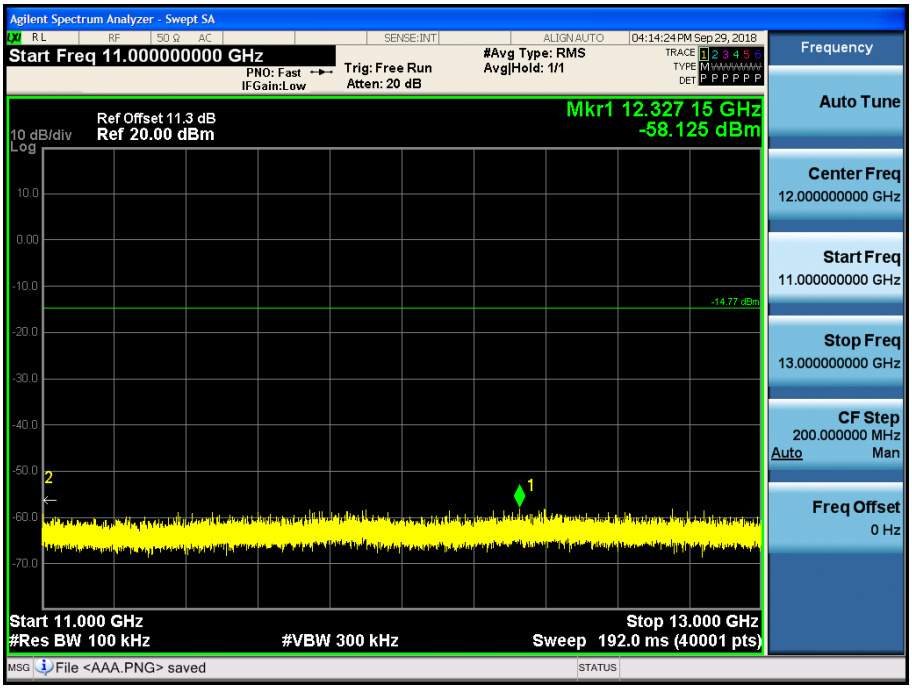
9 GHz ~ 11 GHz

Conducted Spurious Emission (802.11n_Ch.6)



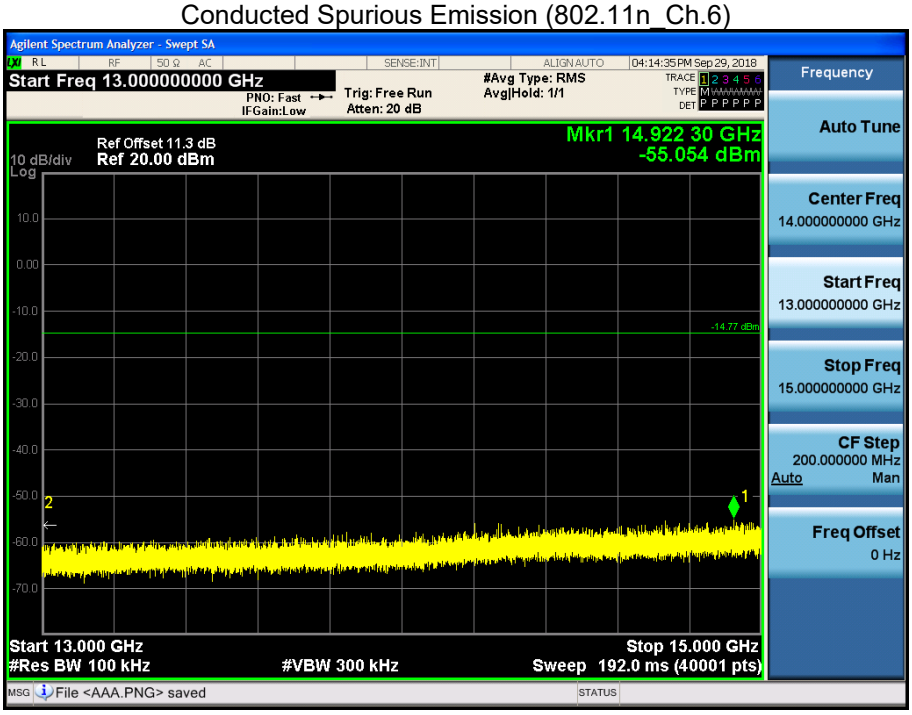
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11n_Ch.6)



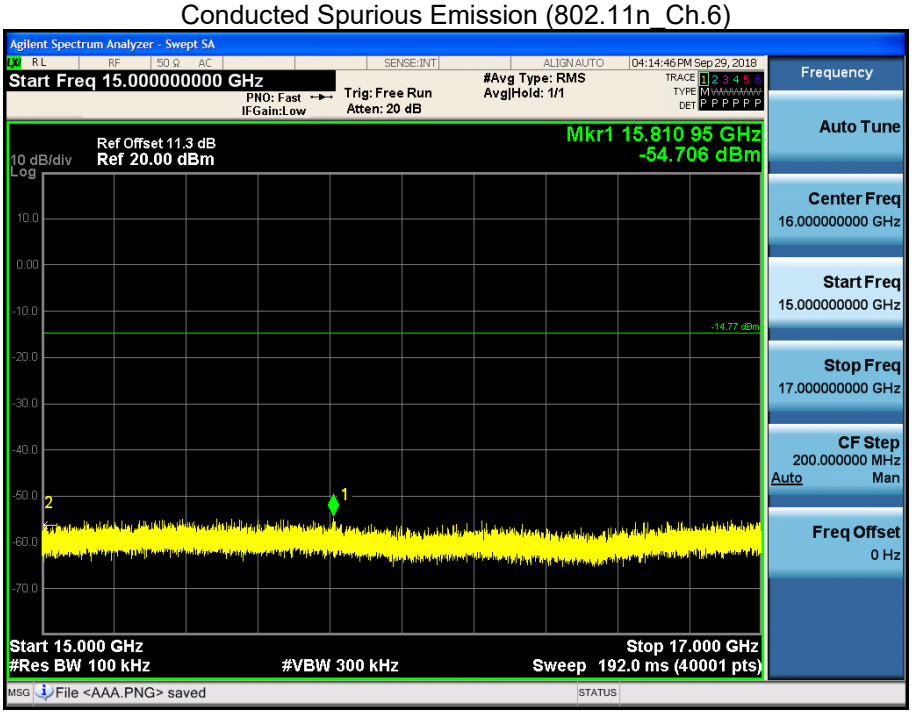
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11n_Ch.6)



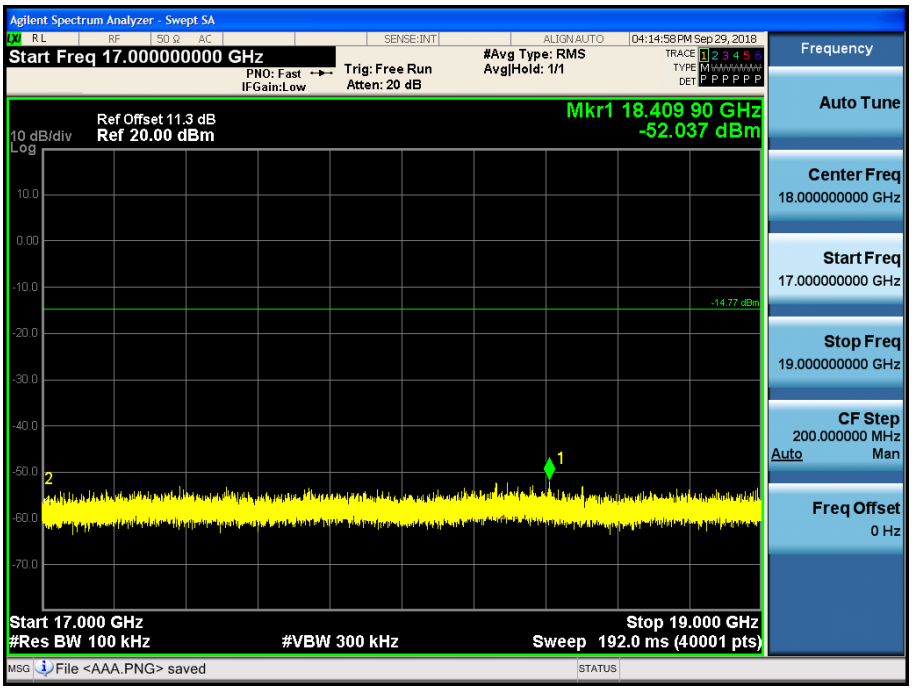
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11n_Ch.6)



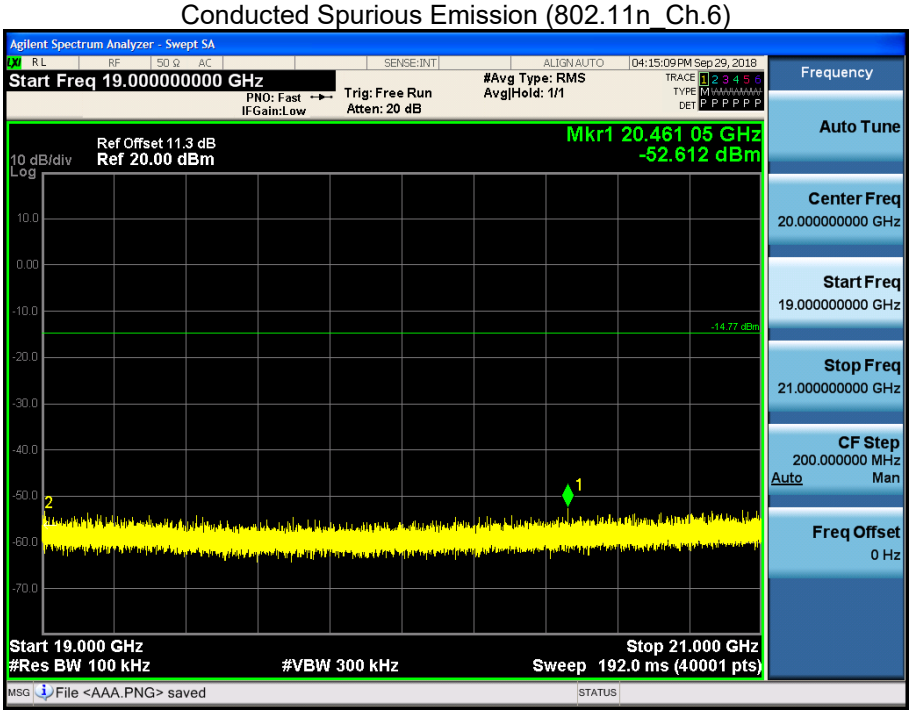
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11n_Ch.6)



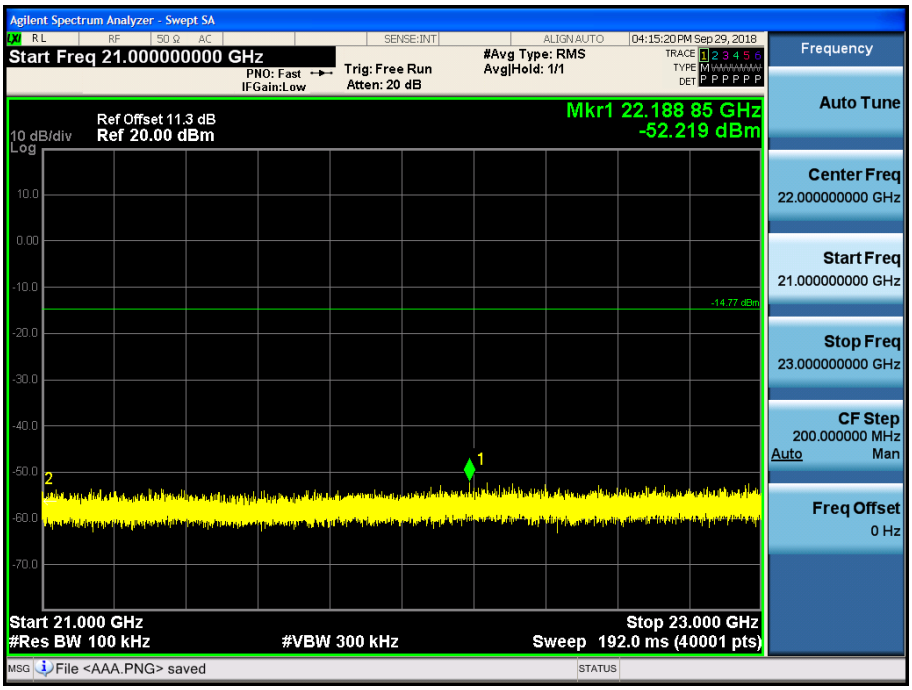
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11n_Ch.6)



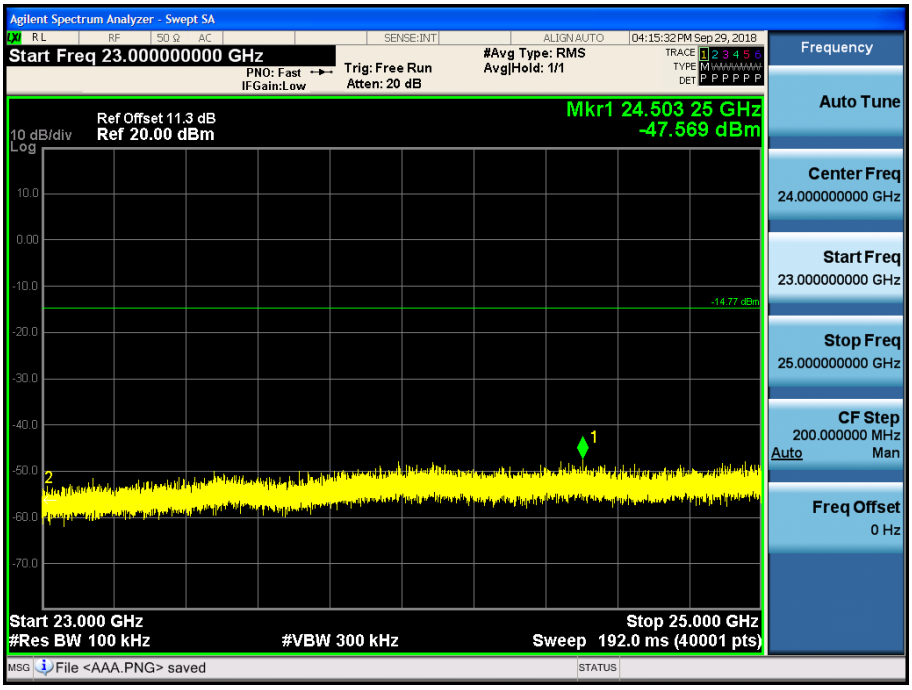
21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11n_Ch.6)



23 GHz ~ 25 GHz

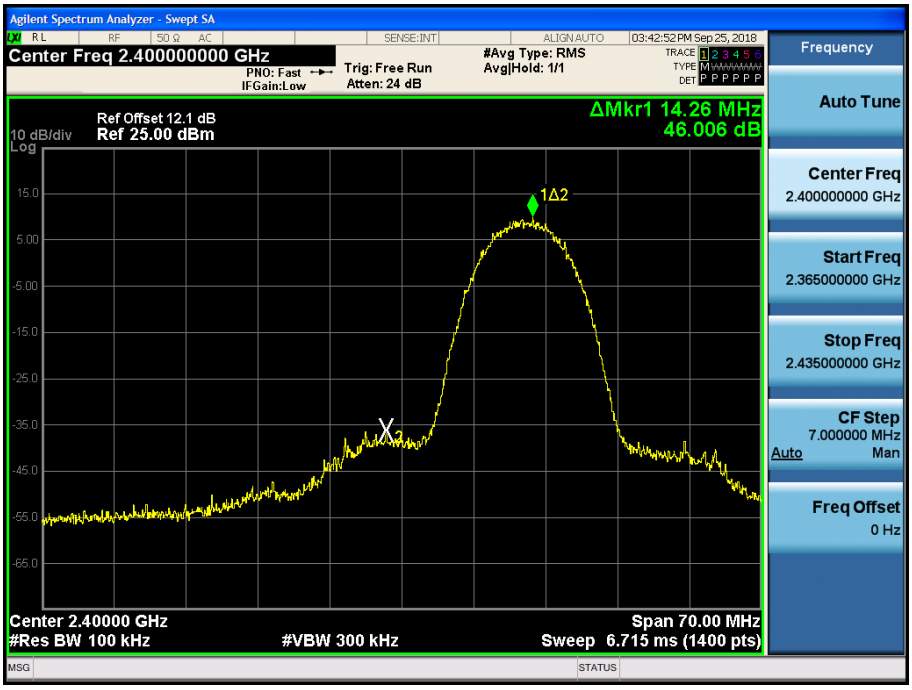
Conducted Spurious Emission (802.11n_Ch.6)



▣ Test Plots(External Antenna)

BandEdge

Band Edge (802.11b-CH1)

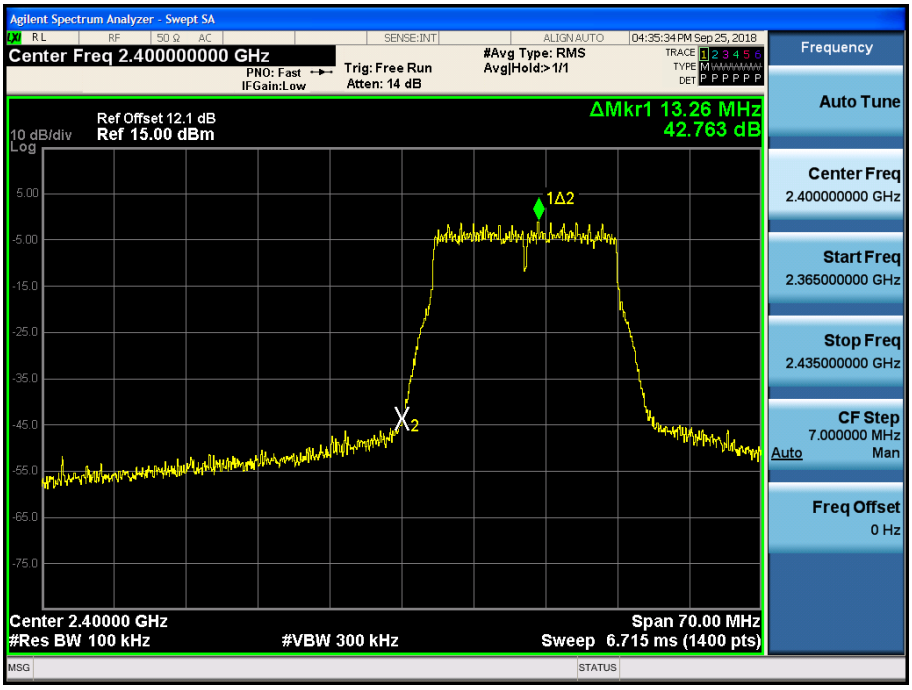


Band Edge (802.11b-CH11)

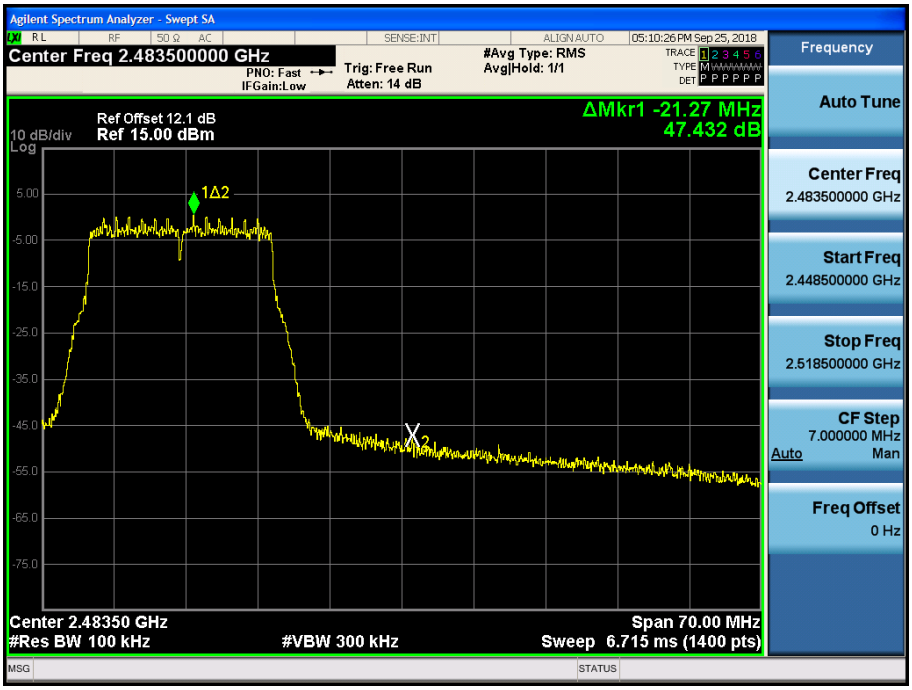
Band Edge (802.11g-CH1)

Band Edge (802.11g-CH11)

Band Edge (802.11n_HT20-CH1)



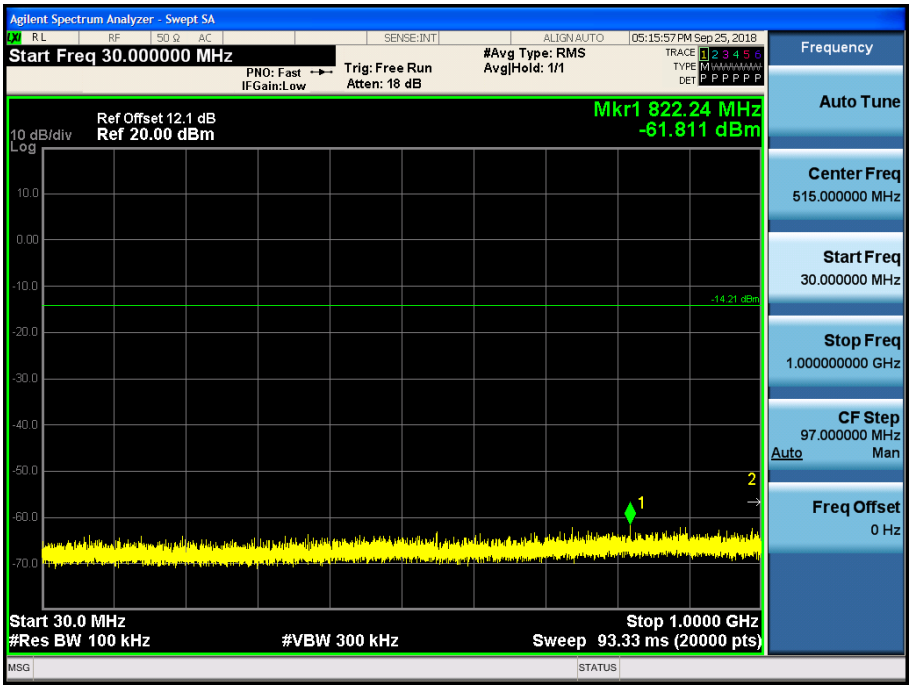
Band Edge (802.11n_HT20-CH11)



Conducted Spurious Emission

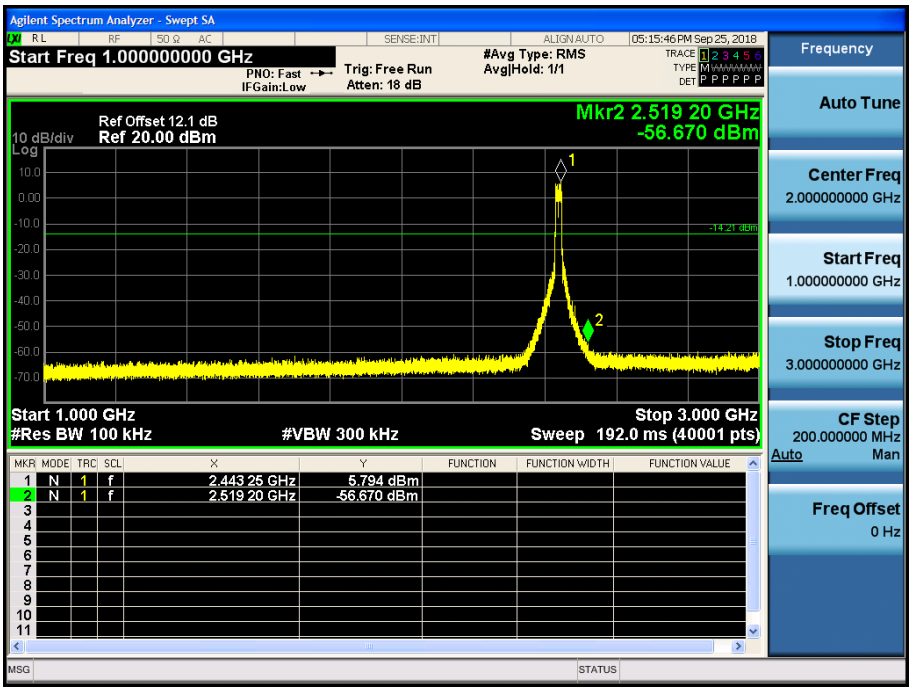
30 MHz ~ 1 GHz

Conducted Spurious Emission (802.11n_Ch.6)



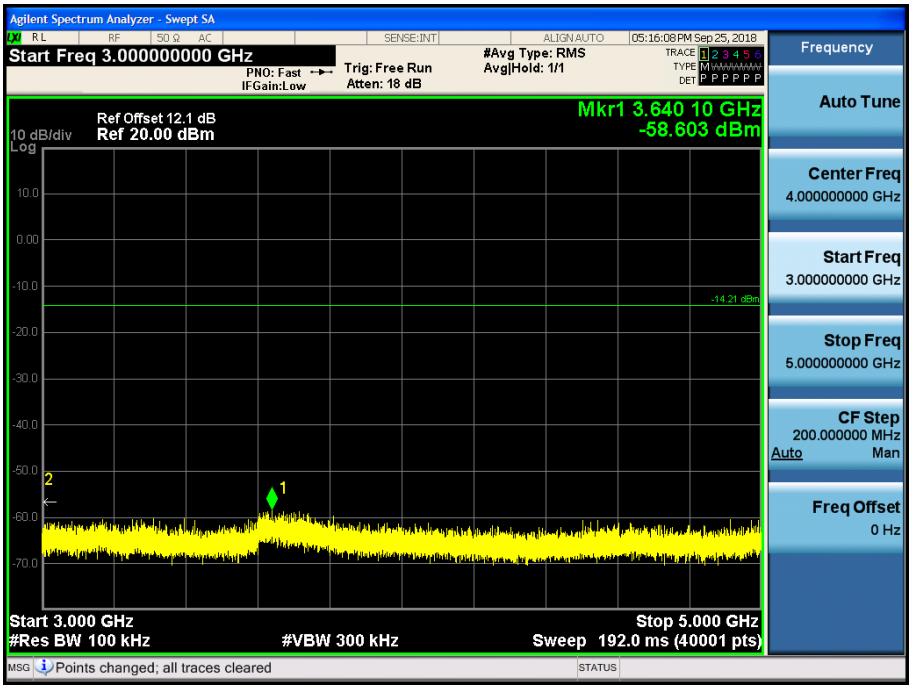
1 GHz ~ 3 GHz

Conducted Spurious Emission (802.11n_Ch.6)



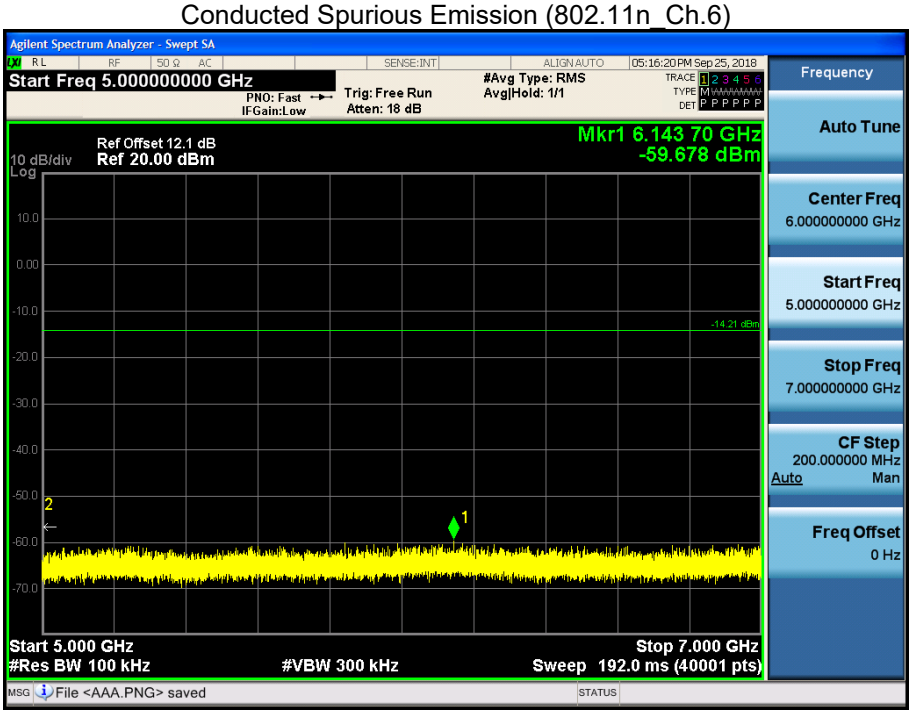
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11n_Ch.6)



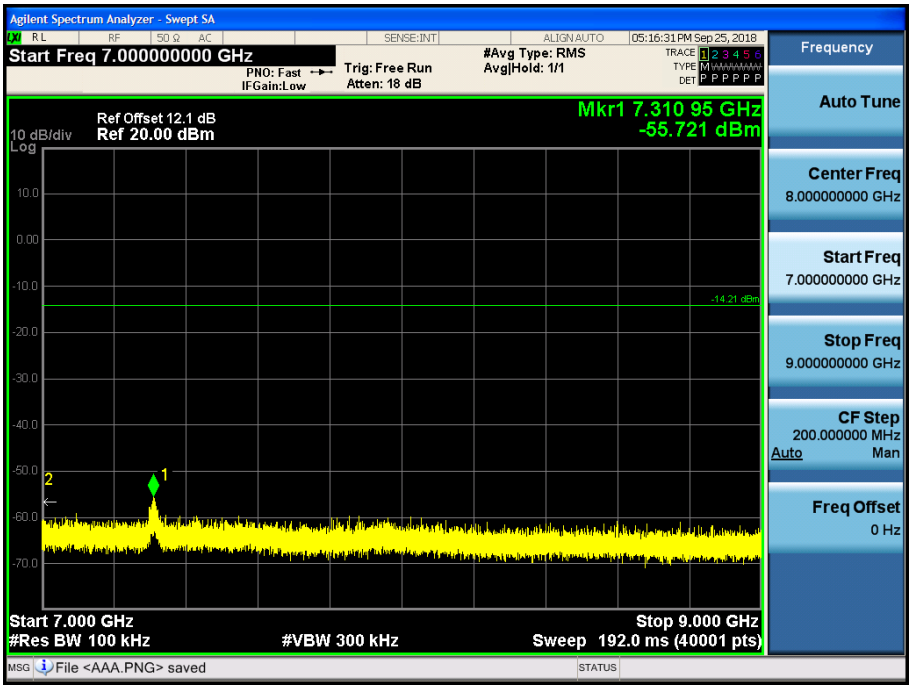
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11n_Ch.6)



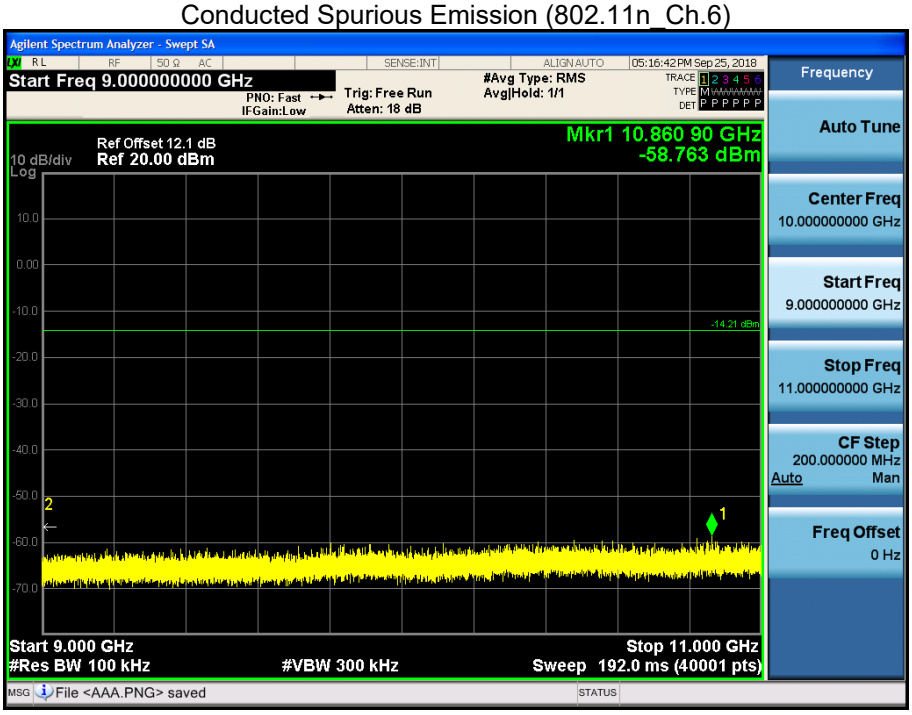
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11n_Ch.6)



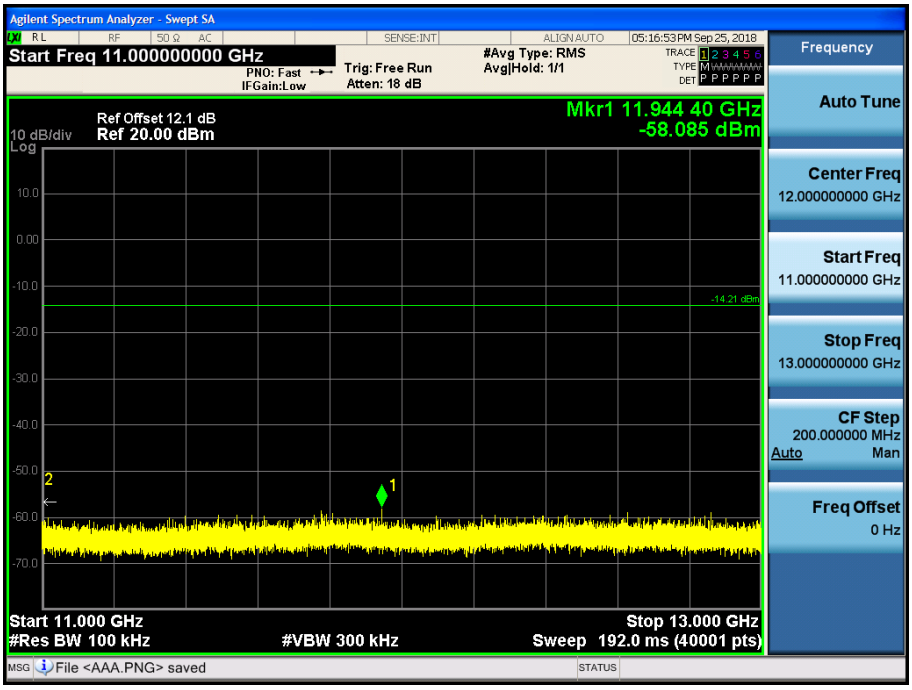
9 GHz ~ 11 GHz

Conducted Spurious Emission (802.11n_Ch.6)



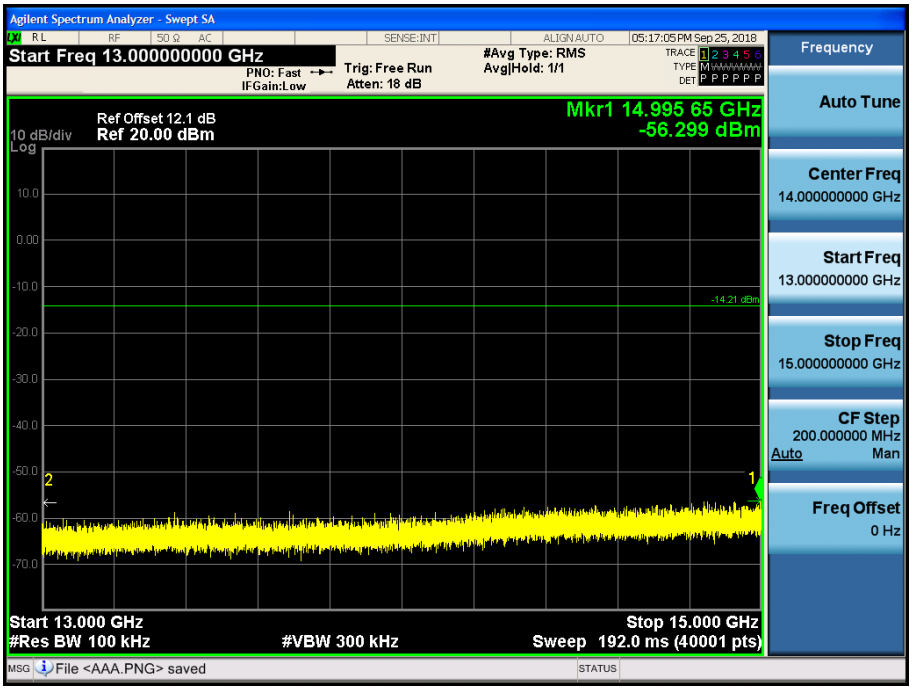
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11n_Ch.6)



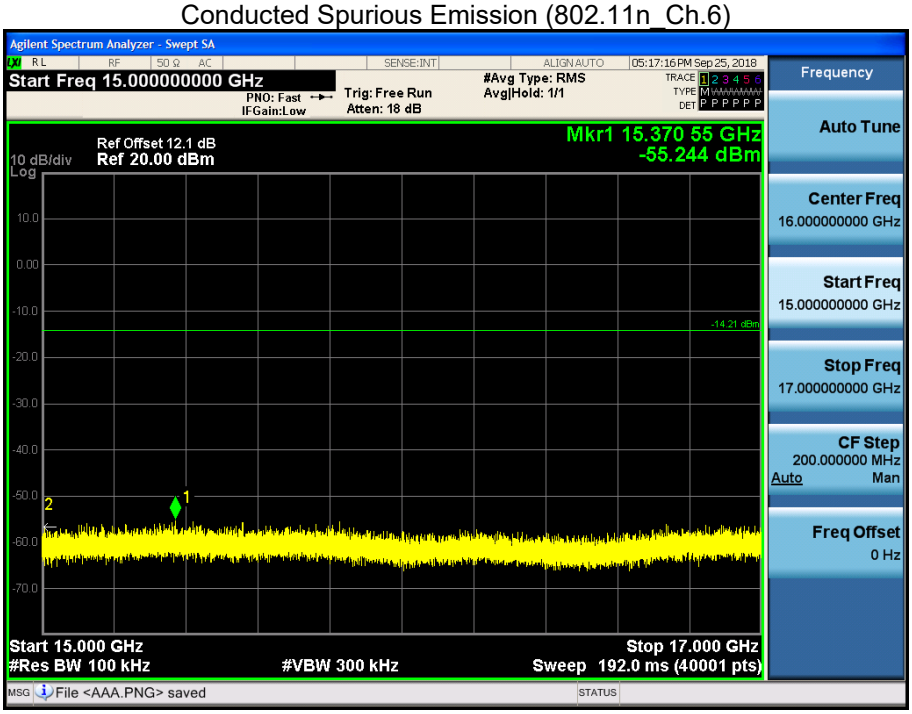
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11n_Ch.6)



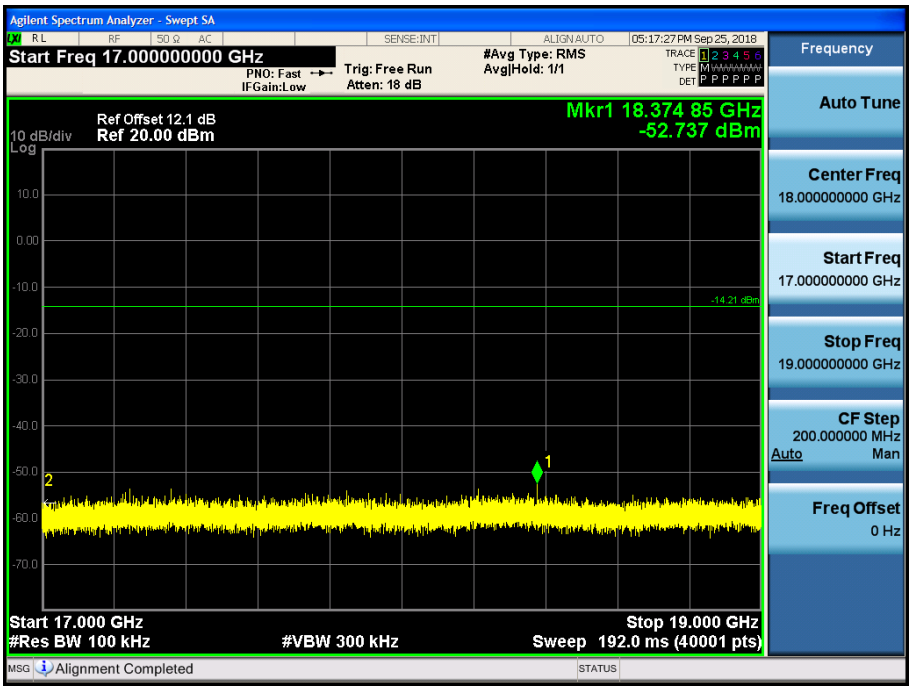
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11n_Ch.6)



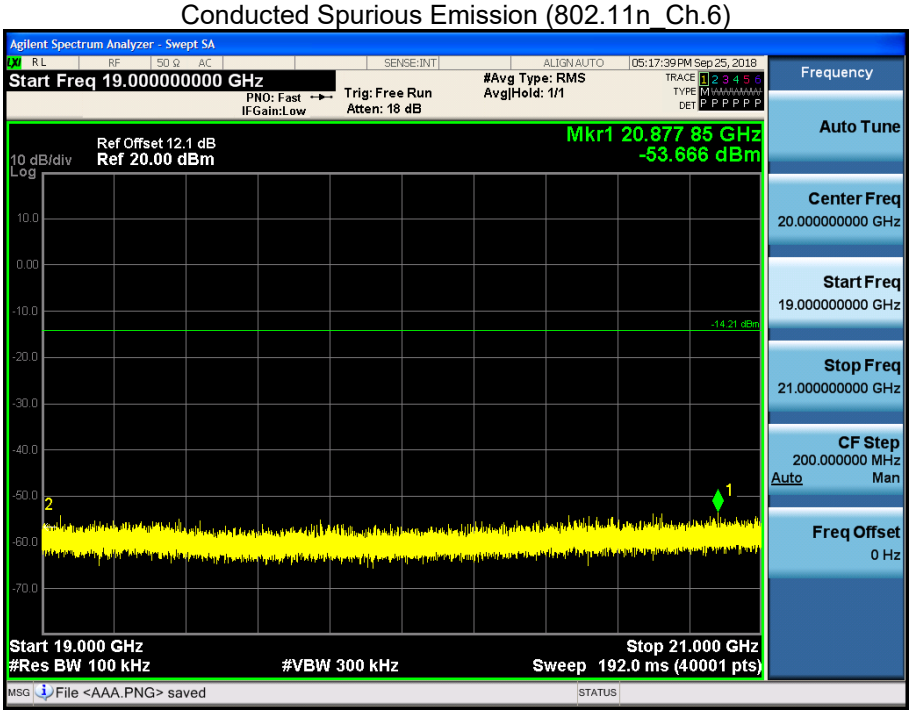
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11n_Ch.6)



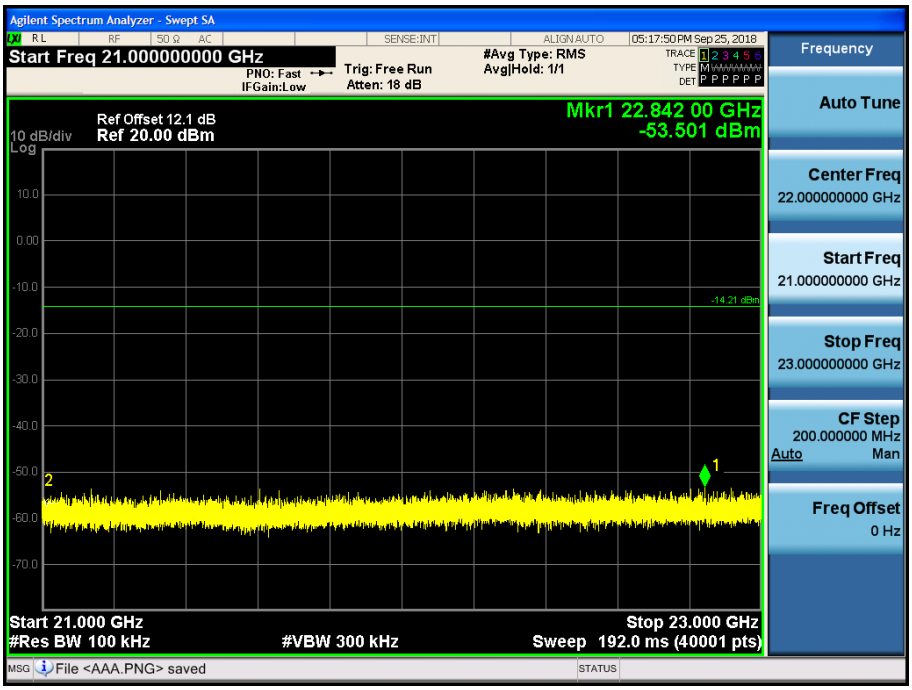
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11n_Ch.6)



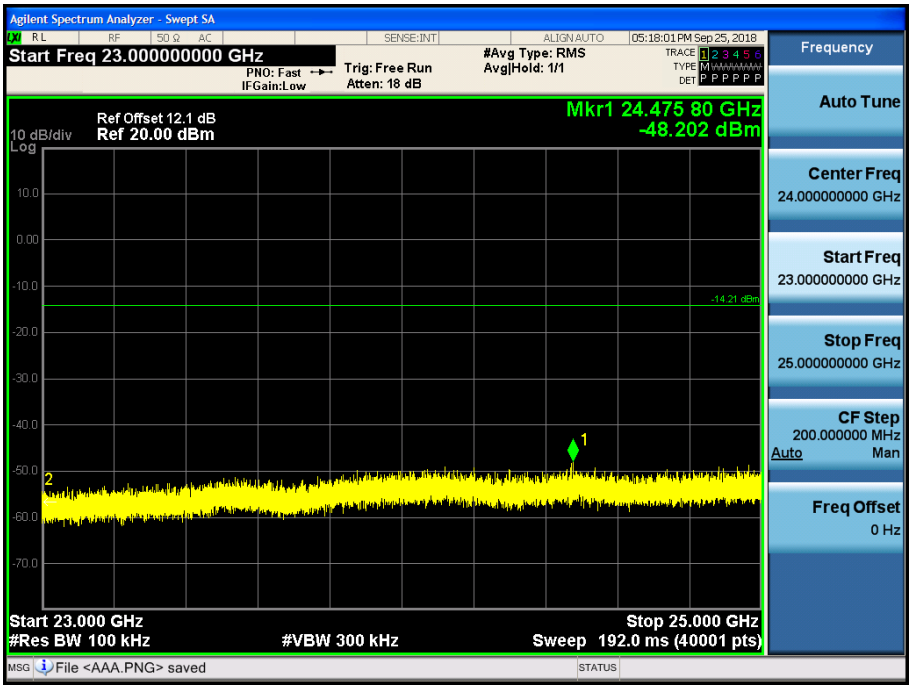
21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11n_Ch.6)



23 GHz ~ 25 GHz

Conducted Spurious Emission (802.11n_Ch.6)



9.6 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30MHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

Note:

1. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = 40*log (specific distance / test distance) (dB)
3. Limit line = specific Limits (dBuV) + Distance extrapolation factor
4. The test results for below 30 MHz is correlated to an open site.
   The result on OATS is about 2 dB higher than semi-anechoic chamber(10 m chamber)

Frequency Range : Below 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.

Frequency Range : Above 1 GHz

Internal Antenna

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.13	-0.67	V	51.47	73.98	22.52	PK
4824	40.34	-0.67	V	39.68	53.98	14.31	AV
7236	53.42	5.28	V	58.70	73.98	15.29	PK
7236	44.68	5.28	V	49.96	53.98	4.03	AV
4824	50.16	-0.67	H	49.50	73.98	24.49	PK
4824	40.11	-0.67	H	39.45	53.98	14.54	AV
7236	54.93	5.28	H	60.21	73.98	13.78	PK
7236	45.64	5.28	H	50.92	53.98	3.07	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.09	0.00	-0.67	V	51.43	73.98	22.56	PK
4824	40.10	0.21	-0.67	V	39.65	53.98	14.33	AV
7236	51.84	0.00	5.28	V	57.12	73.98	16.87	PK
7236	38.92	0.21	5.28	V	44.41	53.98	9.57	AV
4824	51.56	0.00	-0.67	H	50.90	73.98	23.09	PK
4824	39.05	0.21	-0.67	H	38.60	53.98	15.38	AV
7236	52.37	0.00	5.28	H	57.65	73.98	16.34	PK
7236	39.94	0.21	5.28	H	45.43	53.98	8.55	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.27	0.00	-0.67	V	51.61	73.98	22.38	PK
4824	39.93	0.22	-0.67	V	39.49	53.98	14.49	AV
7236	50.59	0.00	5.28	V	55.87	73.98	18.12	PK
7236	39.65	0.22	5.28	V	45.15	53.98	8.83	AV
4824	51.09	0.00	-0.67	H	50.43	73.98	23.56	PK
4824	39.52	0.22	-0.67	H	39.08	53.98	14.90	AV
7236	51.41	0.00	5.28	H	56.69	73.98	17.30	PK
7236	39.73	0.22	5.28	H	45.23	53.98	8.75	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	52.13	-0.37	V	51.76	73.98	22.22	PK
4874	40.57	-0.37	V	40.20	53.98	13.78	AV
7311	52.46	5.60	V	58.06	73.98	15.92	PK
7311	42.75	5.60	V	48.35	53.98	5.63	AV
4874	51.21	-0.37	H	50.84	73.98	23.14	PK
4874	39.47	-0.37	H	39.10	53.98	14.88	AV
7311	53.36	5.60	H	58.96	73.98	15.02	PK
7311	43.51	5.60	H	49.11	53.98	4.87	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	52.07	0.00	-0.37	V	51.70	73.98	22.28	PK
4874	40.29	0.21	-0.37	V	40.13	53.98	13.85	AV
7311	56.81	0.00	5.60	V	62.41	73.98	11.57	PK
7311	43.25	0.21	5.60	V	49.06	53.98	4.92	AV
4874	51.72	0.00	-0.37	H	51.35	73.98	22.63	PK
4874	39.87	0.21	-0.37	H	39.71	53.98	14.27	AV
7311	58.68	0.00	5.60	H	64.28	73.98	9.70	PK
7311	44.40	0.21	5.60	H	50.21	53.98	3.77	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	52.43	0.00	-0.37	V	52.06	73.98	21.92	PK
4874	40.33	0.22	-0.37	V	40.18	53.98	13.80	AV
7311	57.08	0.00	5.60	V	62.68	73.98	11.30	PK
7311	43.81	0.22	5.60	V	49.63	53.98	4.35	AV
4874	51.69	0.00	-0.37	H	51.32	73.98	22.66	PK
4874	40.02	0.22	-0.37	H	39.87	53.98	14.11	AV
7311	57.71	0.00	5.60	H	63.31	73.98	10.67	PK
7311	44.13	0.22	5.60	H	49.95	53.98	4.03	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	51.94	-0.60	V	51.35	73.98	22.64	PK
4924	40.29	-0.60	V	39.70	53.98	14.29	AV
7386	52.81	5.67	V	58.48	73.98	15.51	PK
7386	42.81	5.67	V	48.48	53.98	5.51	AV
4924	50.81	-0.60	H	50.22	73.98	23.77	PK
4924	39.88	-0.60	H	39.29	53.98	14.70	AV
7386	54.11	5.67	H	59.78	73.98	14.21	PK
7386	44.27	5.67	H	49.94	53.98	4.04	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	52.14	0.00	-0.60	V	51.55	73.98	22.44	PK
4924	39.85	0.21	-0.60	V	39.47	53.98	14.51	AV
7386	52.20	0.00	5.67	V	57.87	73.98	16.12	PK
7386	40.02	0.21	5.67	V	45.90	53.98	8.08	AV
4924	51.68	0.00	-0.60	H	51.09	73.98	22.90	PK
4924	38.31	0.21	-0.60	H	37.93	53.98	16.05	AV
7386	53.81	0.00	5.67	H	59.48	73.98	14.51	PK
7386	40.51	0.21	5.67	H	46.39	53.98	7.59	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	52.07	0.00	-0.60	V	51.48	73.98	22.51	PK
4924	40.00	0.22	-0.60	V	39.63	53.98	14.35	AV
7386	52.81	0.00	5.67	V	58.48	73.98	15.51	PK
7386	39.85	0.22	5.67	V	45.74	53.98	8.24	AV
4924	51.89	0.00	-0.60	H	51.30	73.98	22.69	PK
4924	39.94	0.22	-0.60	H	39.57	53.98	14.41	AV
7386	53.55	0.00	5.67	H	59.22	73.98	14.77	PK
7386	40.29	0.22	5.67	H	46.18	53.98	7.80	AV

External Antenna

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.58	-0.67	V	51.92	73.98	22.07	PK
4824	40.34	-0.67	V	39.68	53.98	14.31	AV
7236	53.17	5.28	V	58.45	73.98	15.54	PK
7236	43.56	5.28	V	48.84	53.98	5.15	AV
4824	52.66	-0.67	H	52.00	73.98	21.99	PK
4824	40.51	-0.67	H	39.85	53.98	14.14	AV
7236	51.88	5.28	H	57.16	73.98	16.83	PK
7236	42.12	5.28	H	47.40	53.98	6.59	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.83	0.00	-0.67	V	52.17	73.98	21.82	PK
4824	40.33	0.21	-0.67	V	39.88	53.98	14.10	AV
7236	50.73	0.00	5.28	V	56.01	73.98	17.98	PK
7236	38.51	0.21	5.28	V	44.00	53.98	9.98	AV
4824	51.25	0.00	-0.67	H	50.59	73.98	23.40	PK
4824	39.89	0.21	-0.67	H	39.44	53.98	14.54	AV
7236	50.62	0.00	5.28	H	55.90	73.98	18.09	PK
7236	38.11	0.21	5.28	H	43.60	53.98	10.38	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.14	0.00	-0.67	V	51.48	73.98	22.51	PK
4824	40.34	0.22	-0.67	V	39.90	53.98	14.08	AV
7236	50.64	0.00	5.28	V	55.92	73.98	18.07	PK
7236	38.64	0.22	5.28	V	44.14	53.98	9.84	AV
4824	51.43	0.00	-0.67	H	50.77	73.98	23.22	PK
4824	39.84	0.22	-0.67	H	39.40	53.98	14.58	AV
7236	49.88	0.00	5.28	H	55.16	73.98	18.83	PK
7236	38.52	0.22	5.28	H	44.02	53.98	9.96	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	50.87	-0.37	V	50.50	73.98	23.48	PK
4874	38.95	-0.37	V	38.58	53.98	15.40	AV
7311	53.24	5.60	V	58.84	73.98	15.14	PK
7311	43.63	5.60	V	49.23	53.98	4.75	AV
4874	50.58	-0.37	H	50.21	73.98	23.77	PK
4874	38.79	-0.37	H	38.42	53.98	15.56	AV
7311	53.87	5.60	H	59.47	73.98	14.51	PK
7311	43.75	5.60	H	49.35	53.98	4.63	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	49.96	0.00	-0.37	V	49.59	73.98	24.39	PK
4874	37.51	0.21	-0.37	V	37.35	53.98	16.63	AV
7311	51.97	0.00	5.60	V	57.57	73.98	16.41	PK
7311	40.21	0.21	5.60	V	46.02	53.98	7.96	AV
4874	50.65	0.00	-0.37	H	50.28	73.98	23.70	PK
4874	38.94	0.21	-0.37	H	38.78	53.98	15.20	AV
7311	52.88	0.00	5.60	H	58.48	73.98	15.50	PK
7311	40.61	0.21	5.60	H	46.42	53.98	7.56	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	49.62	0.00	-0.37	V	49.25	73.98	24.73	PK
4874	37.54	0.22	-0.37	V	37.39	53.98	16.59	AV
7311	52.17	0.00	5.60	V	57.77	73.98	16.21	PK
7311	39.14	0.22	5.60	V	44.96	53.98	9.02	AV
4874	50.83	0.00	-0.37	H	50.46	73.98	23.52	PK
4874	38.79	0.22	-0.37	H	38.64	53.98	15.34	AV
7311	53.28	0.00	5.60	H	58.88	73.98	15.10	PK
7311	40.24	0.22	5.60	H	46.06	53.98	7.92	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	50.89	-0.60	V	50.30	73.98	23.69	PK
4924	40.08	-0.60	V	39.49	53.98	14.50	AV
7386	51.20	5.67	V	56.87	73.98	17.12	PK
7386	40.45	5.67	V	46.12	53.98	7.86	AV
4924	51.25	-0.60	H	50.66	73.98	23.33	PK
4924	40.14	-0.60	H	39.55	53.98	14.44	AV
7386	52.13	5.67	H	57.80	73.98	16.19	PK
7386	41.03	5.67	H	46.70	53.98	7.29	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2462
Channel No.	11 Ch

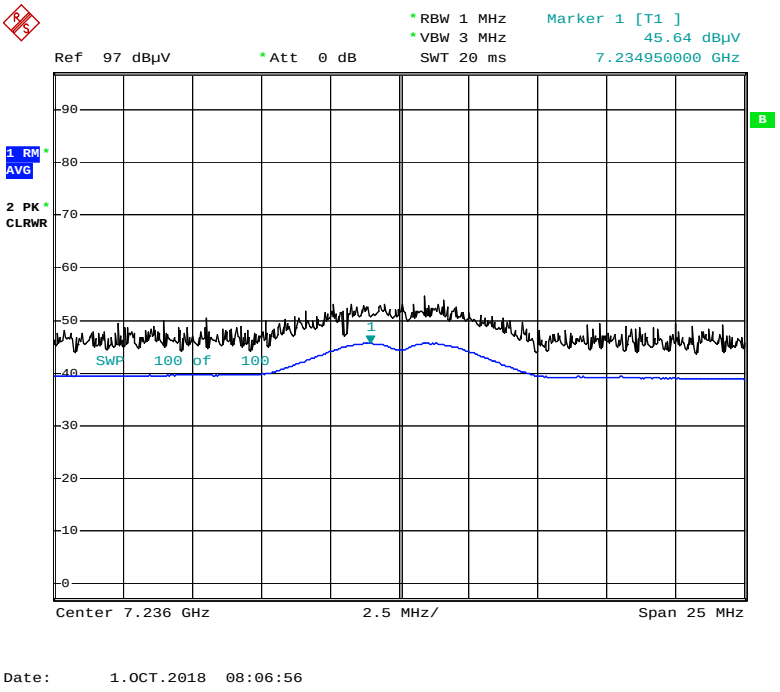
Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	51.63	0.00	-0.60	V	51.04	73.98	22.95	PK
4924	39.65	0.21	-0.60	V	39.27	53.98	14.71	AV
7386	50.81	0.00	5.67	V	56.48	73.98	17.51	PK
7386	38.54	0.21	5.67	V	44.42	53.98	9.56	AV
4924	52.84	0.00	-0.60	H	52.25	73.98	21.74	PK
4924	40.05	0.21	-0.60	H	39.67	53.98	14.31	AV
7386	51.14	0.00	5.67	H	56.81	73.98	17.18	PK
7386	38.61	0.21	5.67	H	44.49	53.98	9.49	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2462
Channel No.	11 Ch

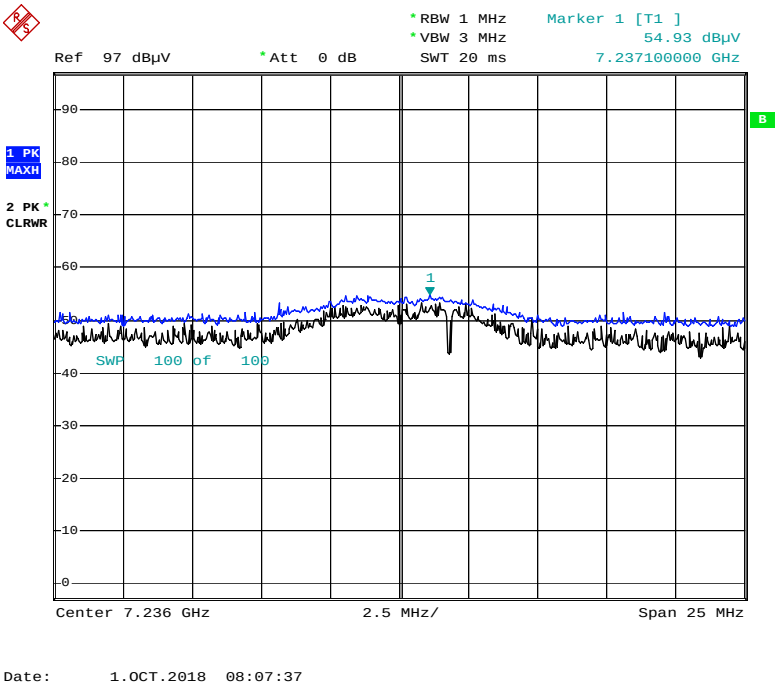
Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.-A.G+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	51.17	0.00	-0.60	V	50.58	73.98	23.41	PK
4924	39.44	0.22	-0.60	V	39.07	53.98	14.91	AV
7386	49.88	0.00	5.67	V	55.55	73.98	18.44	PK
7386	38.05	0.22	5.67	V	43.94	53.98	10.04	AV
4924	51.59	0.00	-0.60	H	51.00	73.98	22.99	PK
4924	40.05	0.22	-0.60	H	39.68	53.98	14.30	AV
7386	50.15	0.00	5.67	H	55.82	73.98	18.17	PK
7386	38.67	0.22	5.67	H	44.56	53.98	9.42	AV

▣ Test Plots(Internal Antenna)

Radiated Spurious Emissions plot – Average Reading (802.11b, Ch.1 3rd Harmonic)



Radiated Spurious Emissions plot – Peak Reading (802.11b, Ch.1 3rd Harmonic)

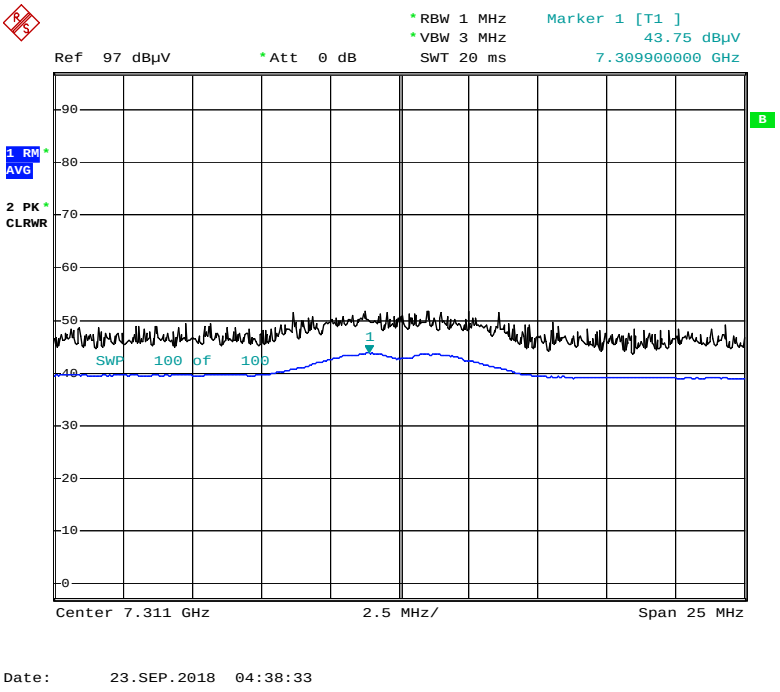


Note:

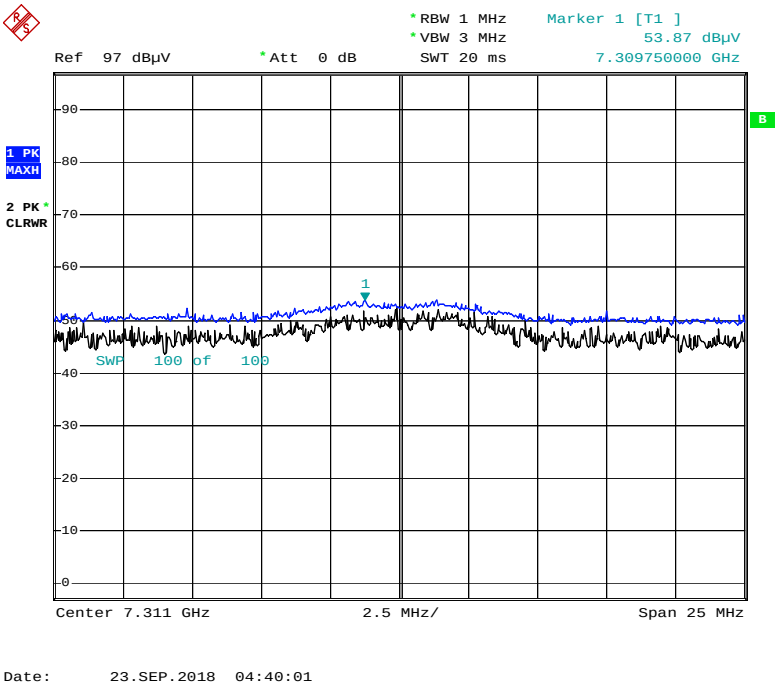
Plot of worst case are only reported.

▣ Test Plots(External Antenna)

Radiated Spurious Emissions plot – Average Reading (802.11b, Ch.6 3rd Harmonic)



Radiated Spurious Emissions plot – Peak Reading (802.11b, Ch.6 3rd Harmonic)



Note:

Plot of worst case are only reported.

9.7 RADIATED RESTRICTED BAND EDGES

Internal Antenna

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	54.00	0.26	H	54.26	73.98	19.72	PK
2390.0	43.56	0.26	H	43.82	53.98	10.16	AV
2390.0	53.12	0.26	V	53.38	73.98	20.60	PK
2390.0	41.52	0.26	V	41.78	53.98	12.20	AV
2483.5	54.87	0.32	H	55.19	73.98	18.79	PK
2483.5	44.91	0.32	H	45.23	53.98	8.75	AV
2483.5	52.11	0.32	V	52.43	73.98	21.55	PK
2483.5	42.54	0.32	V	42.86	53.98	11.12	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2417 MHz
Channel No.	02 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	53.22	0.26	H	53.48	73.98	20.50	PK
2390.0	42.18	0.26	H	42.44	53.98	11.54	AV
2390.0	55.79	0.26	V	56.05	73.98	17.93	PK
2390.0	44.12	0.26	V	44.38	53.98	9.60	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	62.93	0.00	0.26	H	63.19	73.98	10.79	PK
2390.0	49.31	0.21	0.26	H	49.78	53.98	4.20	AV
2390.0	60.32	0.00	0.26	V	60.58	73.98	13.40	PK
2390.0	47.22	0.21	0.26	V	47.69	53.98	6.29	AV
2483.5	69.71	0.00	0.32	H	70.03	73.98	3.95	PK
2483.5	49.23	0.21	0.32	H	49.76	53.98	4.22	AV
2483.5	66.23	0.00	0.32	V	66.55	73.98	7.43	PK
2483.5	45.62	0.21	0.32	V	46.15	53.98	7.83	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2417 MHz, 2457 MHz
Channel No.	02 Ch, 10 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	60.79	0.00	0.26	H	61.05	73.98	12.93	PK
2390.0	47.91	0.21	0.26	H	48.38	53.98	5.60	AV
2390.0	57.23	0.00	0.26	V	57.49	73.98	16.49	PK
2390.0	45.22	0.21	0.26	V	45.69	53.98	8.29	AV
2483.5	66.37	0.00	0.32	H	66.69	73.98	7.29	PK
2483.5	49.94	0.21	0.32	H	50.47	53.98	3.51	AV
2483.5	64.23	0.00	0.32	V	64.55	73.98	9.43	PK
2483.5	47.66	0.21	0.32	V	48.19	53.98	5.79	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2422 MHz
Channel No.	03 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	64.30	0.00	0.26	H	64.56	73.98	9.42	PK
2390.0	48.56	0.21	0.26	H	49.03	53.98	4.95	AV
2390.0	61.34	0.00	0.26	V	61.60	73.98	12.38	PK
2390.0	45.72	0.21	0.26	V	46.19	53.98	7.79	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	61.83	0.00	0.26	H	62.09	73.98	11.89	PK
2390.0	47.66	0.22	0.26	H	48.14	53.98	5.84	AV
2390.0	58.42	0.00	0.26	V	58.68	73.98	15.30	PK
2390.0	44.72	0.22	0.26	V	45.20	53.98	8.78	AV
2483.5	70.15	0.00	0.32	H	70.47	73.98	3.51	PK
2483.5	50.37	0.22	0.32	H	50.91	53.98	3.07	AV
2483.5	68.32	0.00	0.32	V	68.64	73.98	5.34	PK
2483.5	47.62	0.22	0.32	V	48.16	53.98	5.82	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2417 MHz, 2457 MHz
Channel No.	02 Ch, 10 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	63.44	0.00	0.26	H	63.70	73.98	10.28	PK
2390.0	48.35	0.22	0.26	H	48.83	53.98	5.15	AV
2390.0	61.23	0.00	0.26	V	61.49	73.98	12.49	PK
2390.0	45.62	0.22	0.26	V	46.10	53.98	7.88	AV
2483.5	61.62	0.00	0.32	H	61.94	73.98	12.04	PK
2483.5	46.83	0.22	0.32	H	47.37	53.98	6.61	AV
2483.5	64.77	0.00	0.32	V	65.09	73.98	8.89	PK
2483.5	49.88	0.22	0.32	V	50.42	53.98	3.56	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2422 MHz, 2452 MHz
Channel No.	03 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	60.44	0.00	0.26	H	60.70	73.98	13.28	PK
2390.0	45.62	0.22	0.26	H	46.10	53.98	7.88	AV
2390.0	62.81	0.00	0.26	V	63.07	73.98	10.91	PK
2390.0	48.84	0.22	0.26	V	49.32	53.98	4.66	AV

External Antenna

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	57.22	0.26	H	57.48	73.98	16.50	PK
2390.0	46.52	0.26	H	46.78	53.98	7.20	AV
2390.0	59.18	0.26	V	59.44	73.98	14.54	PK
2390.0	49.30	0.26	V	49.56	53.98	4.42	AV
2483.5	54.52	0.32	H	54.84	73.98	19.14	PK
2483.5	45.62	0.32	H	45.94	53.98	8.04	AV
2483.5	57.92	0.32	V	58.24	73.98	15.74	PK
2483.5	48.02	0.32	V	48.34	53.98	5.64	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	59.23	0.00	0.26	H	59.49	73.98	14.49	PK
2390.0	46.77	0.21	0.26	H	47.24	53.98	6.74	AV
2390.0	61.90	0.00	0.26	V	62.16	73.98	11.82	PK
2390.0	49.11	0.21	0.26	V	49.58	53.98	4.40	AV
2483.5	61.42	0.00	0.32	H	61.74	73.98	12.24	PK
2483.5	46.72	0.21	0.32	H	47.25	53.98	6.73	AV
2483.5	64.07	0.00	0.32	V	64.39	73.98	9.59	PK
2483.5	49.23	0.21	0.32	V	49.76	53.98	4.22	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2417 MHz, 2457 MHz
Channel No.	02 Ch, 10 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	56.72	0.00	0.26	H	56.98	73.98	17.00	PK
2390.0	45.62	0.21	0.26	H	46.09	53.98	7.89	AV
2390.0	59.00	0.00	0.26	V	59.26	73.98	14.72	PK
2390.0	47.30	0.21	0.26	V	47.77	53.98	6.21	AV
2483.5	57.62	0.00	0.32	H	57.94	73.98	16.04	PK
2483.5	43.62	0.21	0.32	H	44.15	53.98	9.83	AV
2483.5	60.90	0.00	0.32	V	61.22	73.98	12.76	PK
2483.5	47.90	0.21	0.32	V	48.43	53.98	5.55	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2422 MHz, 2452 MHz
Channel No.	03 Ch, 09 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	57.24	0.00	0.26	H	57.50	73.98	16.48	PK
2390.0	44.62	0.21	0.26	H	45.09	53.98	8.89	AV
2390.0	60.87	0.00	0.26	V	61.13	73.98	12.85	PK
2390.0	47.37	0.21	0.26	V	47.84	53.98	6.14	AV
2483.5	61.62	0.00	0.32	H	61.94	73.98	12.04	PK
2483.5	46.72	0.21	0.32	H	47.25	53.98	6.73	AV
2483.5	63.35	0.00	0.32	V	63.67	73.98	10.31	PK
2483.5	48.81	0.21	0.32	V	49.34	53.98	4.64	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	59.62	0.00	0.26	H	59.88	73.98	14.10	PK
2390.0	45.62	0.22	0.26	H	46.10	53.98	7.88	AV
2390.0	62.89	0.00	0.26	V	63.15	73.98	10.83	PK
2390.0	49.07	0.22	0.26	V	49.55	53.98	4.43	AV
2483.5	63.52	0.00	0.32	H	63.84	73.98	10.14	PK
2483.5	45.72	0.22	0.32	H	46.26	53.98	7.72	AV
2483.5	66.02	0.00	0.32	V	66.34	73.98	7.64	PK
2483.5	49.13	0.22	0.32	V	49.67	53.98	4.31	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2417 MHz, 2457 MHz
Channel No.	02 Ch, 10 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	60.62	0.00	0.26	H	60.88	73.98	13.10	PK
2390.0	47.62	0.22	0.26	H	48.10	53.98	5.88	AV
2390.0	62.33	0.00	0.26	V	62.59	73.98	11.39	PK
2390.0	49.04	0.22	0.26	V	49.52	53.98	4.46	AV
2483.5	61.11	0.00	0.32	H	61.43	73.98	12.55	PK
2483.5	45.83	0.22	0.32	H	46.37	53.98	7.61	AV
2483.5	63.56	0.00	0.32	V	63.88	73.98	10.10	PK
2483.5	48.82	0.22	0.32	V	49.36	53.98	4.62	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2422 MHz, 2452 MHz
Channel No.	03 Ch, 09 Ch

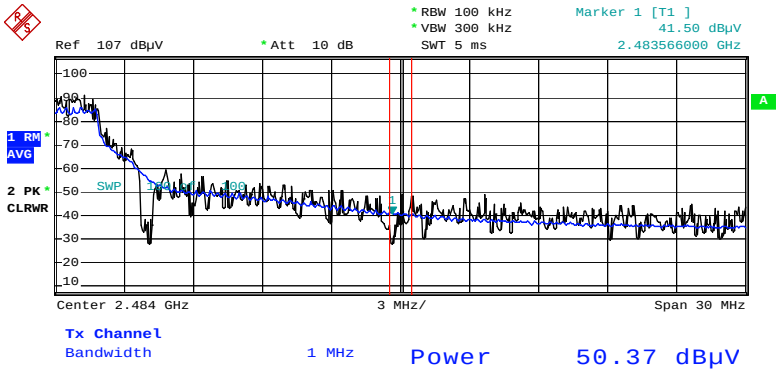
Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	61.66	0.00	0.26	H	61.92	73.98	12.06	PK
2390.0	46.72	0.22	0.26	H	47.20	53.98	6.78	AV
2390.0	64.87	0.00	0.26	V	65.13	73.98	8.85	PK
2390.0	49.39	0.22	0.26	V	49.87	53.98	4.11	AV
2483.5	62.52	0.00	0.32	H	62.84	73.98	11.14	PK
2483.5	45.78	0.22	0.32	H	46.32	53.98	7.66	AV
2483.5	65.23	0.00	0.32	V	65.55	73.98	8.43	PK
2483.5	49.98	0.22	0.32	V	50.52	53.98	3.46	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2427 MHz, 2447 MHz
Channel No.	04 Ch, 08 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	61.72	0.00	0.26	H	61.98	73.98	12.00	PK
2390.0	45.77	0.22	0.26	H	46.25	53.98	7.73	AV
2390.0	63.48	0.00	0.26	V	63.74	73.98	10.24	PK
2390.0	48.58	0.22	0.26	V	49.06	53.98	4.92	AV
2483.5	60.44	0.00	0.32	H	60.76	73.98	13.22	PK
2483.5	46.23	0.22	0.32	H	46.77	53.98	7.21	AV
2483.5	64.99	0.00	0.32	V	65.31	73.98	8.67	PK
2483.5	49.10	0.22	0.32	V	49.64	53.98	4.34	AV

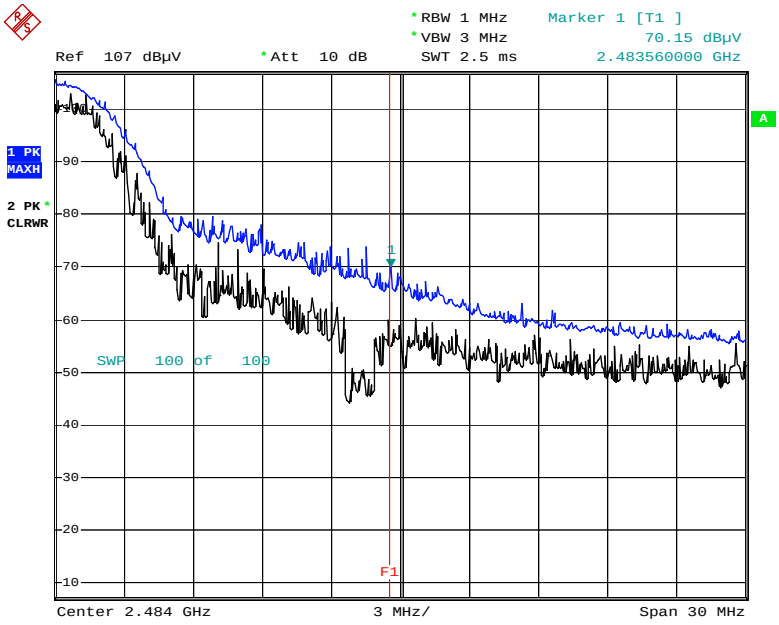
▣ Test Plots(Internal Antenna)

Radiated Restricted Band Edges plot – Average Reading (802.11n Ch.11)



Date: 5.OCT.2018 02:43:05

Radiated Restricted Band Edges plot – Peak Reading (802.11n Ch.11)



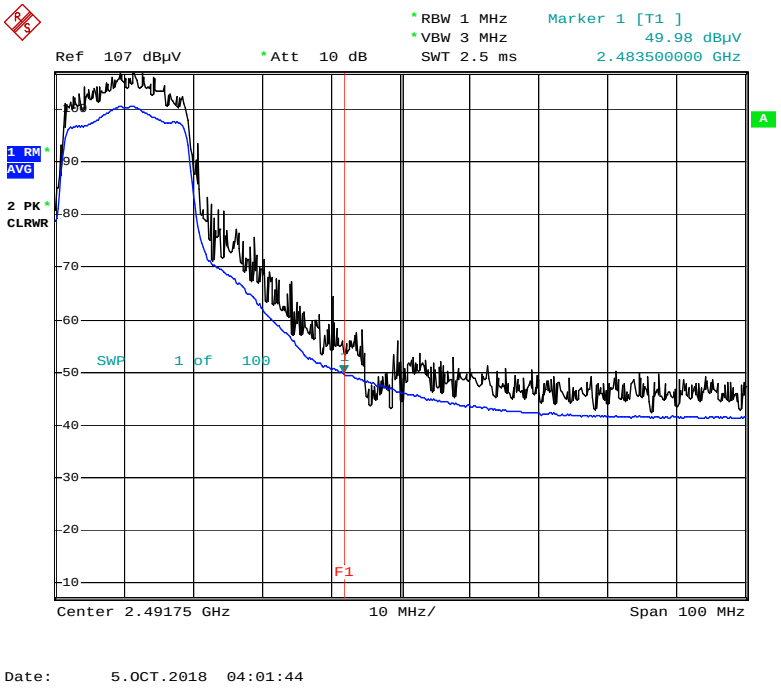
Date: 5.OCT.2018 02:46:25

Note:

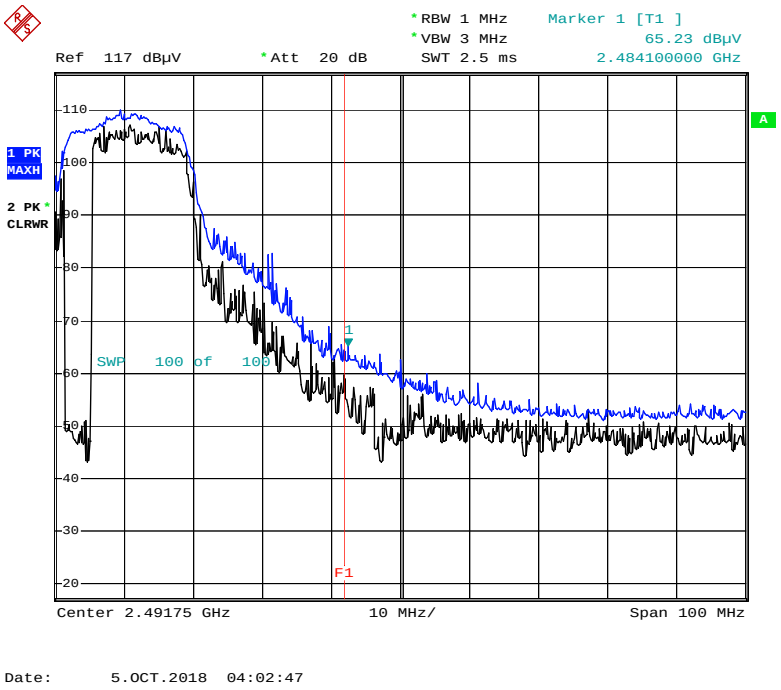
Plot of worst case are only reported.

▣ Test Plots(External Antenna)

Radiated Restricted Band Edges plot – Average Reading (802.11n Ch.9)



Radiated Restricted Band Edges plot – Peak Reading (802.11n Ch.9)



Note:

Plot of worst case are only reported.

9.8 RECEIVER SPURIOUS EMISSIONS

Internal Antenna

Frequency Range : Below 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

External Antenna

Frequency Range : Below 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.

Frequency Range : Above 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

10. LIST OF TEST EQUIPMENT

Conducted Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	12/20/2017	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/27/2018	Annual	100033
ESPAC	SU-642 /Temperature Chamber	03/30/2018	Annual	0093008124
Agilent	N9020A / Signal Analyzer	06/08/2018	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	11/22/2017	Annual	MY49431210
Agilent	N1911A / Power Meter	04/16/2018	Annual	MY45100523
Agilent	N1921A / Power Sensor	04/16/2018	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/20/2017	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	06/07/2018	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	06/26/2018	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	07/10/2018	Annual	07560
Rohde & Schwarz	EMC32 / Software	N/A	N/A	N/A
HCT CO., LTD.	FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	N/A	N/A
Rohde & Schwarz	CBT / Bluetooth Tester	05/17/2018	Annual	100422

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

Radiated Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Audix	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	04/19/2017	Biennial	1513-175
Schwarzbeck	VULB 9160 / Hybrid Antenna	08/09/2018	Annual	3368
Schwarzbeck	BBHA 9120D / Horn Antenna	05/02/2017	Biennial	9120D-937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	12/04/2017	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 30 GHz) / Spectrum Analyzer	09/03/2018	Annual	100688
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/28/2018	Annual	101068-SZ
Wainwright Instruments	WHK3.0/18G-10EF / High Pass Filter	06/07/2018	Annual	8
Wainwright Instruments	WHFX7.0/18G-8SS / High Pass Filter	05/09/2018	Annual	29
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	06/29/2018	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/03/2018	Annual	2
Api tech.	18B-03 / Attenuator (3 dB)	06/07/2018	Annual	1
Agilent	8493C-10 / Attenuator(10 dB)	07/17/2018	Annual	08285
CERNEX	CBLU1183540 / Power Amplifier	07/10/2018	Annual	22964
CERNEX	CBL06185030 / Power Amplifier	07/10/2018	Annual	22965
CERNEX	CBL18265035 / Power Amplifier	01/10/2018	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/29/2018	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/27/2018	Annual	3000C000276

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Model : FSV40-N
   - Use date of equipment : September 29, 2018 ~ October 05, 2018

11. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-1810-FI004-P
2	HCT-RF-1810-FI005-P
3	HCT-RF-1810-FI006-P
4	HCT-RF-1810-FI007-P