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**

FCC DTS REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Date of Issue:
September 09, 2020

Test Site/Location:
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA

Report No.: HCT-RF-2008-FC030-R1

FCC ID:	**A3LSMG781V**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**
Model:	SM-G781V
EUT Type:	Mobile Phone
Average Output Power:	Ant.1: 802.11b : 18.10 dBm / 802.11g : 17.93 dBm / 802.11n(HT20) : 17.80 dBm Ant.2: 802.11b : 18.23 dBm / 802.11g : 17.89 dBm / 802.11n(HT20) : 17.93 dBm Ant.1&2 : 802.11b : 21.03 dBm / 802.11g : 20.87 dBm / 802.11n(HT20) : 20.83 dBm
Frequency Range:	2 412 MHz ~ 2 472 MHz
Modulation type:	CCK/DSSS/OFDM
FCC Classification:	Digital Transmission System(DTS)
FCC Rule Part(s):	Part 15.247

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. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

REVIEWED BY

Report prepared by : Jung Ki Lim
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2008-FC030	August 14, 2020	- First Approval Report
HCT-RF-2008-FC030-R1	September 09, 2020	- Revised the information (Frequency range)

Table of Contents

1. EUT DESCRIPTION

Model	SM-G781V		
Additional Model	-		
EUT Type	Mobile Phone		
Power Supply	DC 3.85 V		
Battery Information	Model: EB-BG781ABY Type: Li-ion Battery		
Travel Adapter Information (15W)	Model : EP-TA200 Manufacture: DONGYANG E&P		
Travel Adapter Information (25W)	Model : EP-TA800 Manufacture: DONGYANG E&P		
Data Cable Information (15W)	Model : EP-DG780BWE Manufacture: KSD		
Data Cable Information (25W)	Model : EP-DG980BBE Manufacture: KSD		
Ear-jack Information	Model : GH59-15252A Manufacture: CRESYN		
Frequency Range	2 412 MHz ~ 2 472 MHz		
Max. RF Output Power	Peak Power (For information only)	Ant. 1 (SISO)	802.11b : 24.29 dBm 802.11g : 26.52 dBm 802.11n(HT20) : 26.45 dBm
		Ant.2 (SISO)	802.11b : 24.38 dBm 802.11g : 26.55 dBm 802.11n(HT20) : 26.71 dBm
		Ant.1&2 (MIMO)	802.11b : 27.17 dBm 802.11g : 29.43 dBm 802.11n(HT20) : 29.59 dBm
	Average Power	Ant. 1 (SISO)	802.11b : 18.10 dBm 802.11g : 17.93 dBm 802.11n(HT20) : 17.80 dBm
		Ant.2 (SISO)	802.11b : 18.23 dBm 802.11g : 17.89 dBm 802.11n(HT20) : 17.93 dBm
		Ant.1&2 (MIMO)	802.11b : 21.03 dBm 802.11g : 20.87 dBm 802.11n(HT20) : 20.83 dBm
Modulation Type	DSSS/CCK : 802.11b OFDM : 802.11g, 802.11n		
Number of Channels	13 Channels		
Antenna Specification	Ant.1 Antenna type: Metal Peak Gain: -2.00 dBi	Ant.2 Antenna type: LDS+ metal Peak Gain: -8.02 dBi	
Date(s) of Tests	July 08, 2020 ~ August 13, 2020		

ANTENNA CONFIGURATIONS

1. The device employs MIMO technology. Below are the possible configurations

Configurations	SISO		SDM	CDD
	Ant1	Ant2	Ant1 + Ant2	Ant1 + Ant2
802.11b	O	O	X	O
802.11g	O	O	X	O
802.11n(HT20)	O	O	O	O

Note:

(1) O = Support, X = Not Support

(2) SISO = Single Input Single Output

(3) SDM = Spatial Diversity Multiplexing

(4) CDD = Cyclic Delay Diversity

2.This device supports simultaneous transmission operation, which allows for two channels to operate independent of one another in the 2.4GHz and 5GHz bands simultaneously on each antenna.

RSDB Scenario	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2
2.4 GHz WiFi MIMO + 5GHz WiFi	On	On	On			
2.4 GHz WiFi MIMO + 5GHz WiFi MIMO	On	On	On	On		
2.4 GHz WiFi + 5GHz WiFi + Bluetooth		On	On		On	
2.4 GHz WiFi + 5GHz WiFi MIMO + Bluetooth		On	On	On	On	

Non-DBS	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2
2.4 GHz WiFi MIMO + 5GHz WiFi MIMO + Bluetooth			On	On	On	
			On	On		On

3. Directional Gain Calculation

According to KDB 662911 D01 Multiple Transmitter Output v02r01 F) 2) f) (ii)

Directional gain =

- $$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

Ant Gain (dBi)		N_{ANT}/ N_{SS}	Directional Gain (dBi)
Ant.1	-2.00	2 / 2	-1.49
Ant.2	-8.02		

2. TEST METHODOLOGY

FCC KDB 558074 D01 15.247 Meas Guidance v05r02 dated April 02, 2019 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 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 6.6.5 of ANSI C63.10. (Version: 2013)

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).

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."

(1) The antennas of this E.U.T are permanently attached.

(2) The E.U.T Complies with the requirement of §15.203

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.

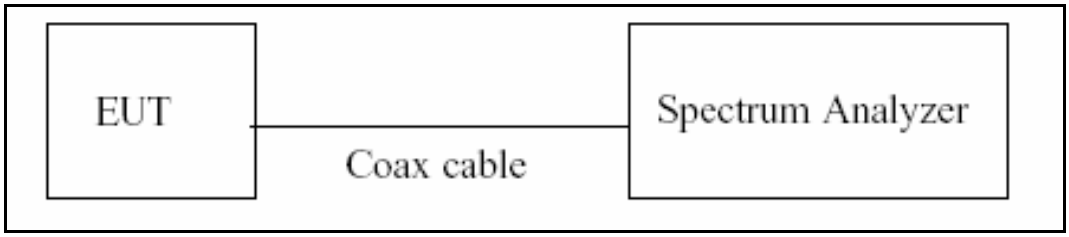
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

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)	5.05

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.

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*.

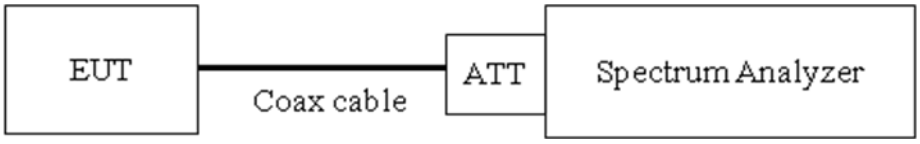
1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

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 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.

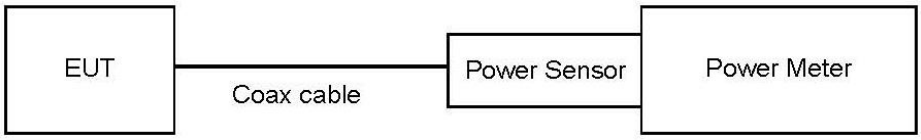
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

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 11.9.1.3 in ANSI 63.10-2013)

: Measure the peak power of the transmitter.

▪ Average Power (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

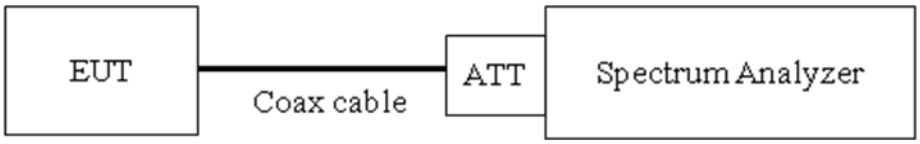
▪ Conducted Output Power(Average) = Reading Value + ATT loss + Cable loss + Duty Cycle Factor

7.4. Power Spectral Density

Limit

The transmitter power density average over 1-second interval shall not be greater than 8 dBm 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 v05r02, Procedure 11.10 in ANSI 63.10-2013.

The spectrum analyzer is set to :

1) Set analyzer center frequency to DTS channel center frequency.
2) Set span to at least 1.5 times the OBW.
3) RBW = 3 kHz ≤ RBW ≤ 100 kHz.
4) VBW ≥ 3 x RBW.
5) Sweep = auto couple
6) Detector = power averaging (rms) or sample detector (when rms not available).
7) Ensure that the number of measurement points in the sweep ≥[2 ×span / RBW].
8) Employ trace averaging (rms) modeover a minimum of 100 traces
9) Use the peak marker function to determine the maximum amplitude level.
10) 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.
11) if then duty factor shall be added to adjust the result if the duty cycle is less than 98%

Sample Calculation

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

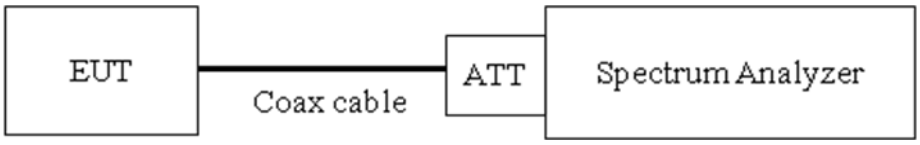
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

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 relative to the maximum in-band peak PSD level in 100 kHz.

[Conducted > 30 dBc]

Test Configuration



Test Procedure

The transmitter output is connected to the spectrum analyzer.

(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 x 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	10.04
100	10.07
200	10.12
300	10.17
400	10.20
500	10.21
600	10.21
700	10.23
800	10.24
900	10.26
1000	10.27
2000	10.41
2400	10.45
2500	10.47
3000	10.52
4000	10.60
5000	10.71
6000	10.73
7000	10.80
8000	10.85
9000	10.91
10000	10.97
11000	11.02
12000	11.10
13000	11.19
14000	11.16
15000	11.21
16000	11.22
17000	11.25
18000	11.30
19000	11.32
20000	11.36
21000	11.48
22000	11.55
23000	11.55
24000	11.59
25000	11.68
26000	11.69

Note : 1. 2400 ~ 2500 MHz is fundamental frequency range.

2. Factor = Attenuator loss + Cable loss + EUT Cable loss

3. Exten cable loss = 0.5 dB

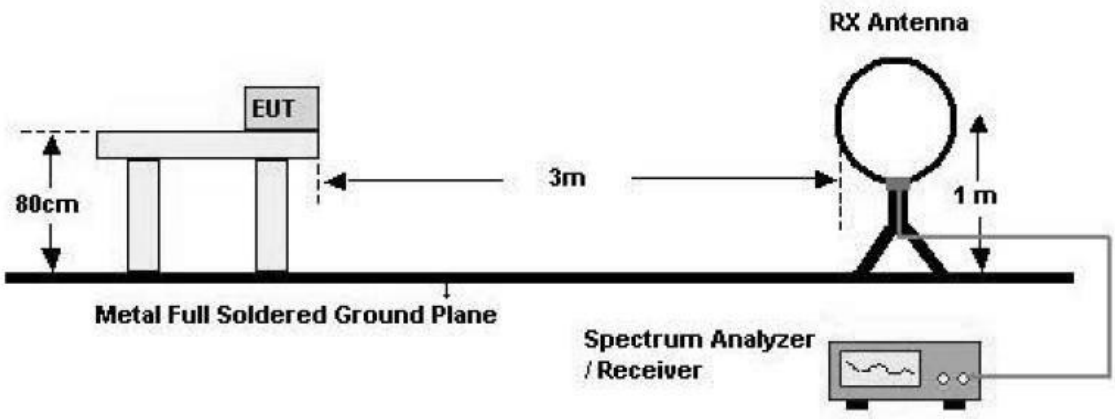
7.6. Radiated Test

Limit

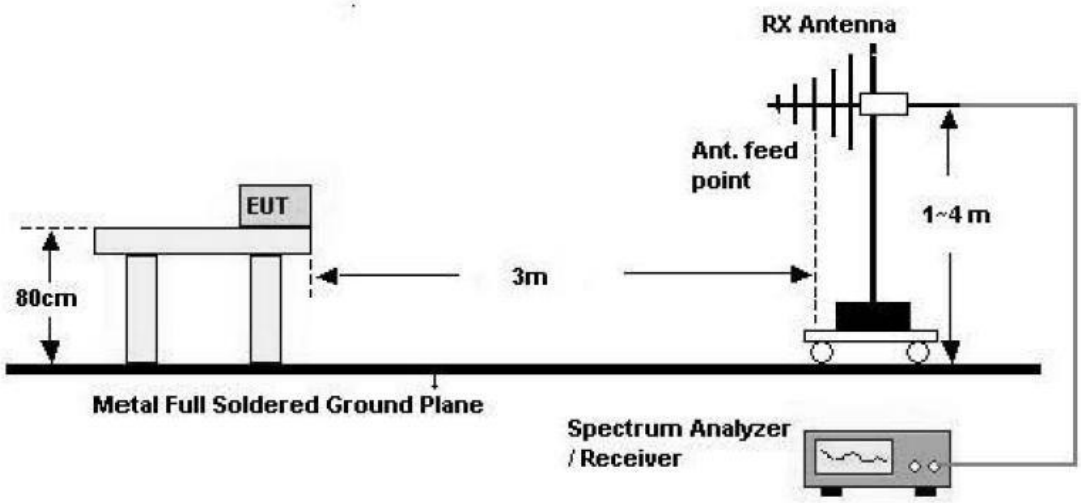
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

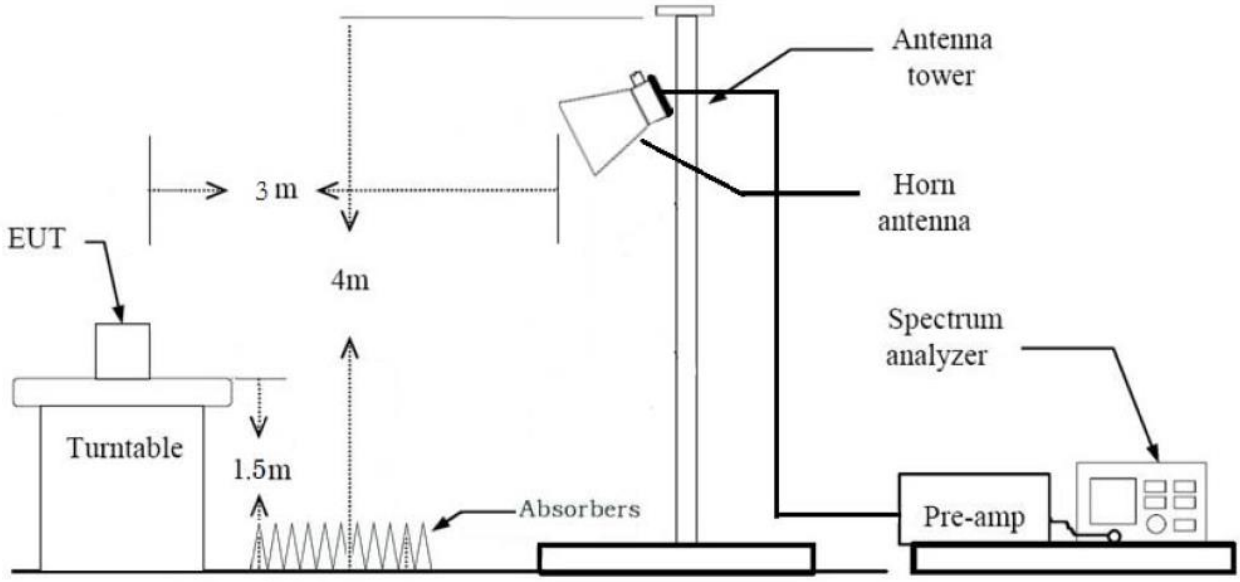
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) = 40log(3 m/300 m) = - 80 dB
   Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = 40log(3 m/30 m) = - 40 dB
   Measurement Distance : 3 m
8. Spectrum Setting
   - Frequency Range = 9 kHz ~ 30 MHz
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 9 kHz
   - VBW ≥ 3 x RBW
9. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
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.

KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Below 1GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3m from the EUT, which is varied from 1m to 4m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Spectrum Setting
   (1) Measurement Type(Peak):
      - Measured Frequency Range : 30 MHz – 1 GHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 100 kHz
      - VBW ≥ 3 x RBW
   (2) Measurement Type(Quasi-peak):
      - Measured Frequency Range : 30 MHz – 1 GHz
      - Detector = Quasi-Peak
      - RBW = 120 kHz

   ※In general, (1) is used mainly
7. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)
8. 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.

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 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting (Method 8.6 in KDB 558074 v05r02, 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 x 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 x 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 x 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.

9. 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.
10. Distance extrapolation factor = 20log (test distance / specific distance) (dB)
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 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. 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 x 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 x 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 x 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.

9. 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.
10. Distance extrapolation factor = 20log (test distance / specific distance) (dB)
11. Total(Measurement Type : Peak)
    = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

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

    Total(Measurement Type : Average, Duty cycle < 98%)
    = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + 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[(a)]	56 to 46[(a)]
0.50 to 5	56	46
5 to 30	60	50

[(a)]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. 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(Earphone, etc)
   - Worstcase : Stand alone
2. EUT Axis
   - Radiated Spurious Emissions : Y
   - Radiated Restricted Band Edge : X
3. Duty cycle factor not applies 802.11b/g/n(HT20)(Duty cycle > 98%, Continuous Signal).
4. All data rate of operation were investigated and the test results are worst case in lowest datarate of each mode.
   - 802.11b : 1 Mbps
   - 802.11g : 6 Mbps
   - 802.11n_HT20 : MCS0
5. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
   - Position : Horizontal, Vertical, Parallel to the ground plane

Radiated test(DBS)

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
   - Worstcase : Stand alone
2. EUT Axis
   - Radiated Spurious Emissions : Y
3. Test case

RSDB Scenario	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2	Test case
2.4 GHz WiFi MIMO + 5GHz WiFi	On	On	On				-
2.4 GHz WiFi MIMO + 5GHz WiFi MIMO	On	On	On	On			Case 1
2.4 GHz WiFi + 5GHz WiFi + Bluetooth		On	On		On		-
2.4 GHz WiFi + 5GHz WiFi MIMO + Bluetooth		On	On	On	On		Case 2

Non-DBS	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2	Test case
2.4 GHz WiFi MIMO + 5GHz WiFi MIMO + Bluetooth			On	On	On		-
			On	On		On	Case 3

4. The following tables show the worst case configurations determined during testing.
(Worst case: The lowest margin condition the channels and modes were selected for test.)
(Test case 3 Result : Please refer to the SM-G781V [BT], [UNII] Test Report.)

Test case	Description	2.4 GHz Emission	5 GHz Emission	Bluetooth Emission
1	Antenna	Ant All	Ant All	-
	Channel	11	165	-
	Data Rate	1 Mbps	6 Mbps	-
	Mode	802.11b	802.11a	-

Test case	Description	2.4 GHz Emission	5 GHz Emission	Bluetooth Emission
2	Antenna	Ant 2	Ant All	Ant 1
	Channel	11	165	78
	Data Rate	1 Mbps	6 Mbps	1 Mbps
	Mode	802.11b	802.11a	DH-5

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
- Mode : Stand alone + External accessories(Earphone, etc)+Travel Adapter,
Stand alone + Travel Adapter
- Worstcase : Stand alone + Travel Adapter

Conducted test

1. The EUT was configured with data rate of highest power.

8. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	> 500 kHz	Conducted	PASS
Conducted Maximum Output Power	§15.247(b)(3)	< 1 Watt		PASS
Power Spectral Density	§15.247(e)	< 8 dBm / 3 kHz Band		PASS
Band Edge (Out of Band Emissions)	§15.247(d)	Conducted > 30 dBc		PASS
AC Power line Conducted Emissions	§15.207	cf. Section 7.7		PASS
Radiated Spurious Emissions	§15.247(d), 15.205, 15.209	cf. Section 7.6	Radiated	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 7.6		PASS

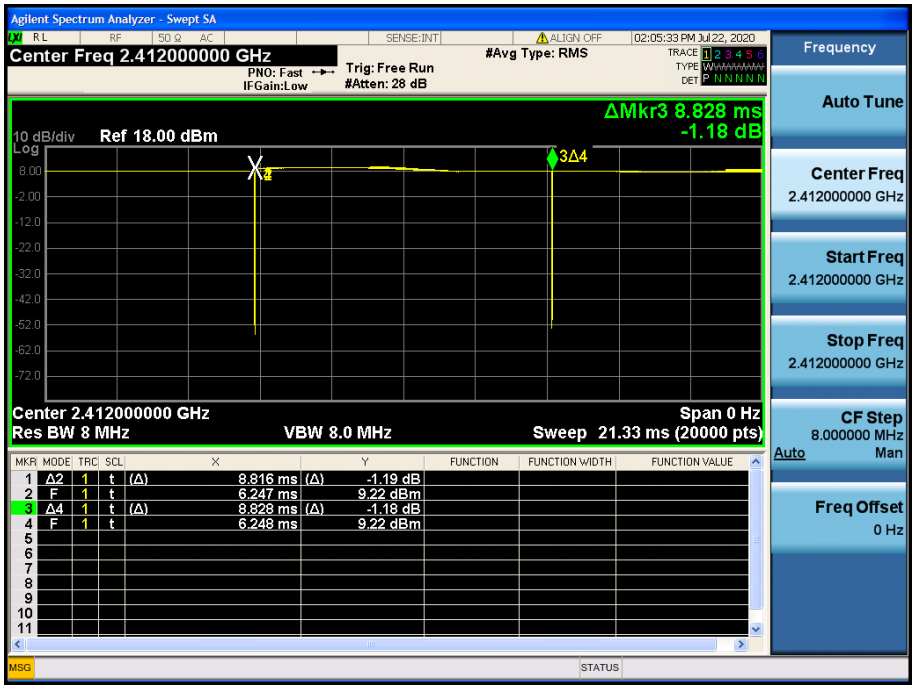
9. TEST RESULT

9.1 DUTY CYCLE

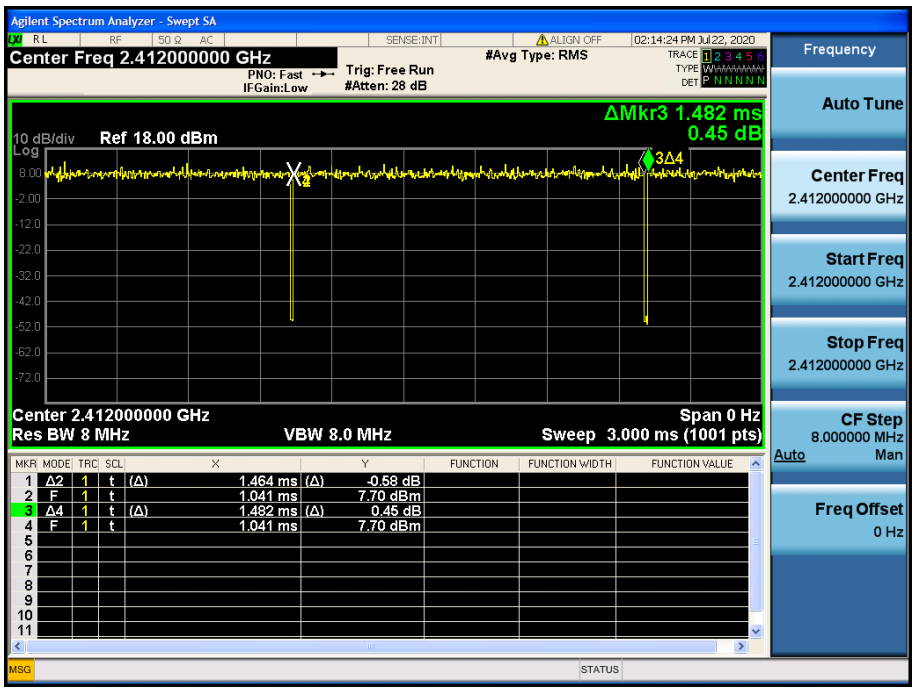
Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11b	1	8.816	8.828	0.999	0.006
	2	4.408	4.421	0.997	0.013
	5.5	1.663	1.677	0.992	0.036
	11	0.880	0.894	0.984	0.069
802.11g	6	1.464	1.482	0.988	0.053
	9	0.984	1.002	0.982	0.079
	12	0.744	0.759	0.980	0.087
	18	0.504	0.520	0.969	0.136
	24	0.382	0.400	0.955	0.200
	36	0.262	0.286	0.916	0.381
	48	0.425	0.656	0.648	1.885
	54	0.390	0.617	0.632	1.992
802.11n (HT20)	6.5 (MCS0)	5.432	5.447	0.997	0.012
	13 (MCS1)	5.432	5.447	0.997	0.012
	19.5 (MCS2)	5.424	5.447	0.996	0.018
	26 (MCS3)	5.432	5.447	0.997	0.012
	39 (MCS4)	5.420	5.440	0.996	0.016
	52 (MCS5)	5.420	5.440	0.996	0.016
	58.5 (MCS6)	5.432	5.447	0.997	0.012
	65 (MCS7)	5.432	5.447	0.997	0.012

▣ Test Plots

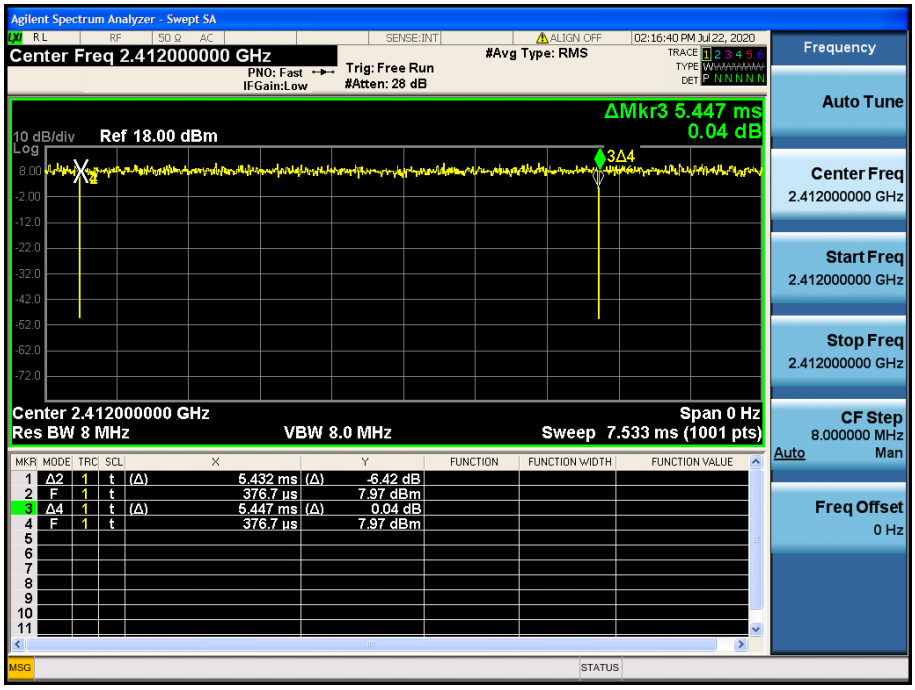
Duty cycle plot (802.11b(1Mbps))



Duty cycle plot (802.11g(6Mbps))



Duty cycle plot (802.11n(MCS0))



Note:

In order to simplify the report, attached plots were only the most lowest data rate.

9.2 6dB BANDWIDTH

[Ant.1]

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	13.07	0.5
2437	6	12.61	0.5
2462	11	12.60	0.5
2467	12	13.12	0.5
2472	13	12.17	0.5

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	15.38	0.5
2437	6	15.49	0.5
2462	11	15.77	0.5
2467	12	16.02	0.5
2472	13	15.18	0.5

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	15.14	0.5
2437	6	15.32	0.5
2462	11	17.22	0.5
2467	12	15.96	0.5
2472	13	15.34	0.5

[Ant.2]

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	12.62	0.5
2437	6	13.08	0.5
2462	11	12.62	0.5
2467	12	12.65	0.5
2472	13	13.11	0.5

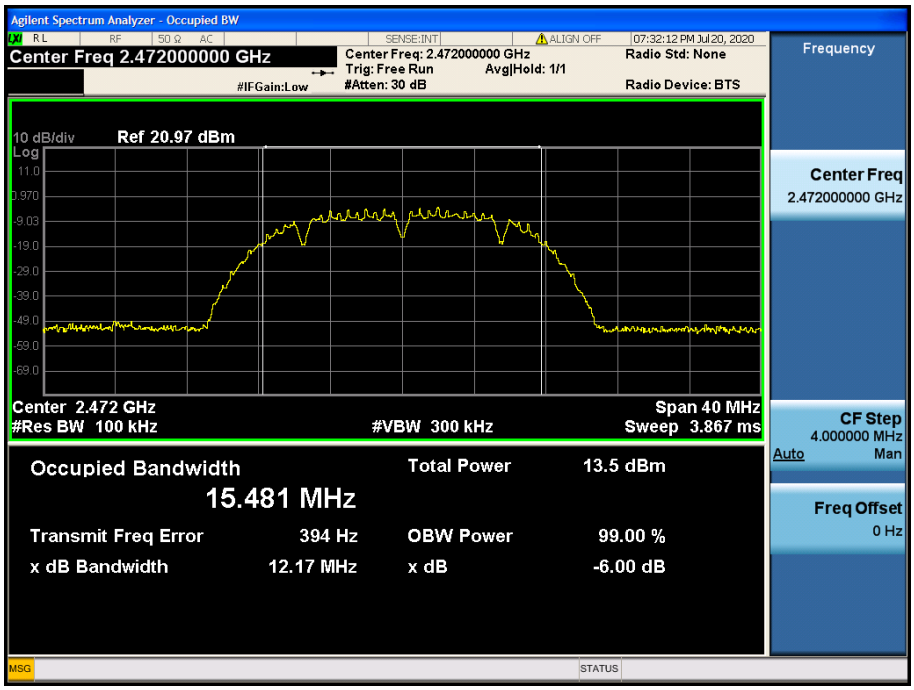
802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	15.19	0.5
2437	6	15.54	0.5
2462	11	15.19	0.5
2467	12	15.72	0.5
2472	13	15.75	0.5

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	15.96	0.5
2437	6	16.34	0.5
2462	11	15.50	0.5
2467	12	16.10	0.5
2472	13	16.06	0.5

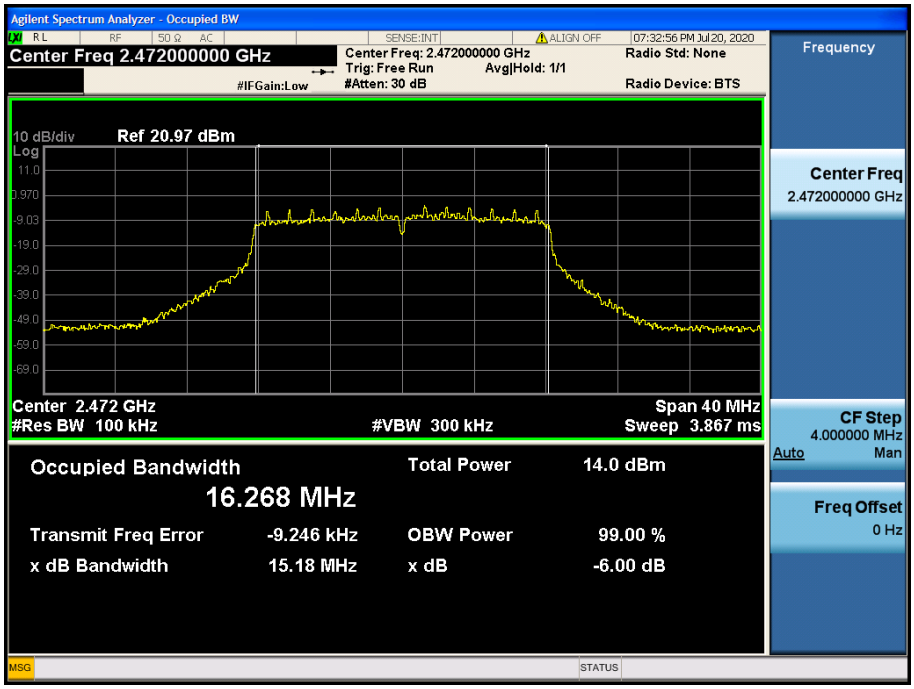
[Ant.1]

▣ Test Plots

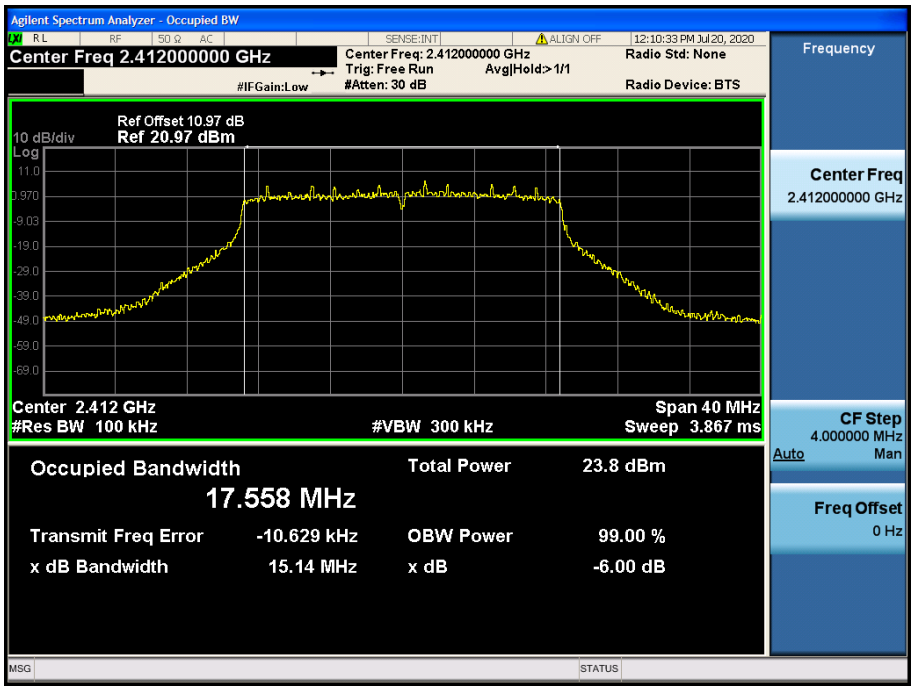
6dB Bandwidth plot (802.11b-CH 13)



6dB Bandwidth plot (802.11g-CH 13)



6dB Bandwidth plot (802.11n_HT20-CH 1)

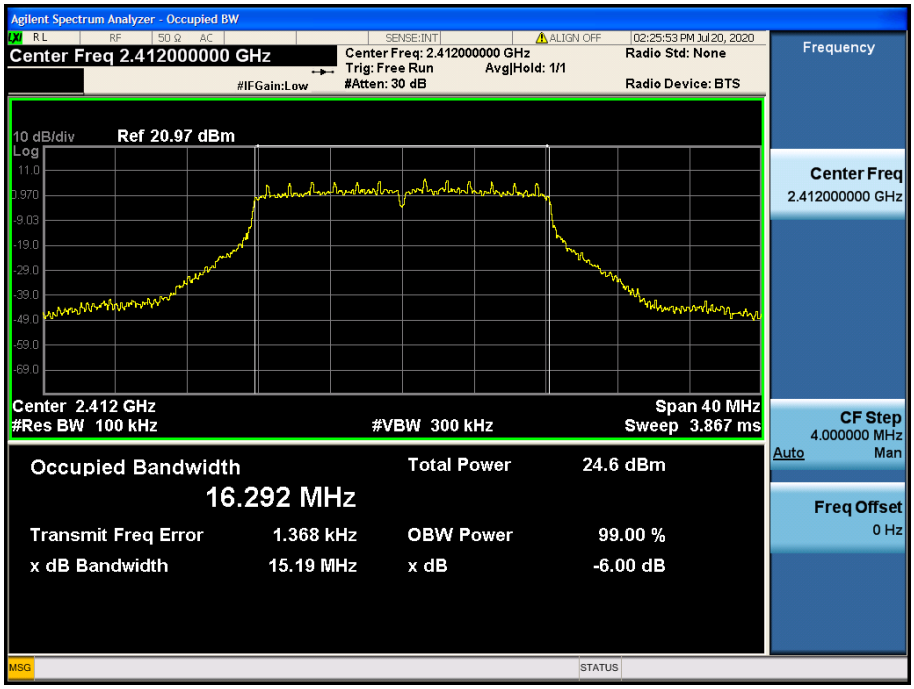


[Ant.2]

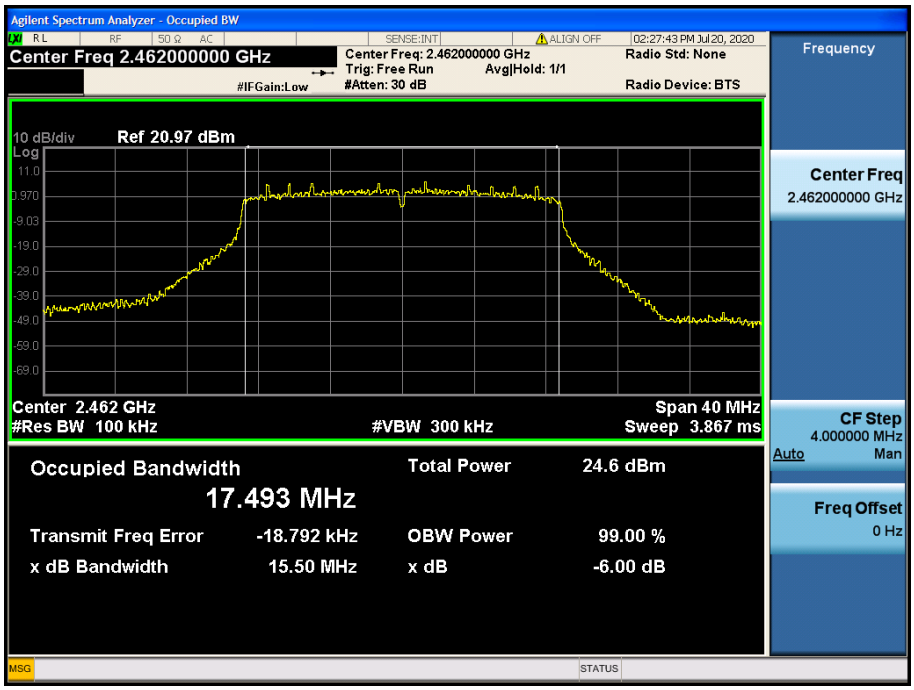
▣ Test Plots

6dB Bandwidth plot (802.11b-CH 11)

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.

9.3 OUTPUT POWER

Peak Power

1. Power Meter offset = Attenuator loss + Cable loss + EUT Cable loss
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
So, 10.97 dB is offset for 2.4 GHz Band

[Ant.1]

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.				
2412	1	1	20.06	30	19
		2	20.12	30	
		5.5	21.86	30	
		11	23.32	30	
2437	6	1	20.86	30	19
		2	21.02	30	
		5.5	22.87	30	
		11	24.29	30	
2462	11	1	20.20	30	19
		2	20.41	30	
		5.5	22.16	30	
		11	23.56	30	
2467	12	1	9.28	30	8
		2	9.48	30	
		5.5	11.17	30	
		11	12.67	30	
2472	13	1	9.30	30	8
		2	9.48	30	
		5.5	11.33	30	
		11	12.78	30	

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.				
2412	1	6	24.48	30	19
		9	24.65	30	
		12	24.50	30	
		18	24.96	30	
		24	25.44	30	
		36	25.19	30	
		48	25.30	30	
		54	25.39	30	
2437	6	6	25.40	30	19
		9	25.55	30	
		12	25.41	30	
		18	25.91	30	
		24	26.52	30	
		36	26.23	30	
		48	26.36	30	
		54	26.47	30	
2462	11	6	24.74	30	19
		9	24.87	30	
		12	24.71	30	
		18	25.15	30	
		24	25.76	30	
		36	25.51	30	
		48	25.63	30	
		54	25.69	30	
2467	12	6	12.74	30	7
		9	12.92	30	
		12	12.75	30	
		18	13.23	30	
		24	13.89	30	
		36	13.55	30	
		48	13.67	30	
		54	13.77	30	
2472	13	6	12.70	30	7
		9	12.88	30	
		12	12.75	30	
		18	13.25	30	
		24	13.81	30	
		36	13.51	30	
		48	13.58	30	
		54	13.66	30	

802.11n(HT20) Mode		MCS Index	Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.				
2412	1	0	24.60	30	19
		1	24.34	30	
		2	25.07	30	
		3	25.19	30	
		4	25.27	30	
		5	25.18	30	
		6	25.47	30	
		7	25.37	30	
2437	6	0	25.41	30	19
		1	25.19	30	
		2	25.96	30	
		3	26.09	30	
		4	26.31	30	
		5	26.15	30	
		6	26.45	30	
		7	26.35	30	
2462	11	0	25.12	30	19
		1	24.84	30	
		2	25.60	30	
		3	25.79	30	
		4	26.04	30	
		5	25.90	30	
		6	26.29	30	
		7	26.18	30	
2467	12	0	12.88	30	7
		1	12.60	30	
		2	13.34	30	
		3	13.52	30	
		4	13.67	30	
		5	13.82	30	
		6	14.12	30	
		7	13.99	30	
2472	13	0	12.81	30	7
		1	12.56	30	
		2	13.34	30	
		3	13.45	30	
		4	13.58	30	
		5	13.47	30	
		6	13.78	30	
		7	13.72	30	

[Ant.2]

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.				
2412	1	1	20.69	30	19
		2	20.88	30	
		5.5	22.61	30	
		11	24.07	30	
2437	6	1	20.66	30	19
		2	20.90	30	
		5.5	22.61	30	
		11	24.02	30	
2462	11	1	20.98	30	19
		2	21.18	30	
		5.5	22.95	30	
		11	24.38	30	
2467	12	1	10.47	30	8
		2	10.64	30	
		5.5	12.40	30	
		11	13.81	30	
2472	13	1	10.27	30	8
		2	10.40	30	
		5.5	12.11	30	
		11	13.51	30	

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.				
2412	1	6	25.19	30	19
		9	25.35	30	
		12	25.20	30	
		18	25.75	30	
		24	26.37	30	
		36	26.07	30	
		48	26.11	30	
		54	26.23	30	
2437	6	6	25.24	30	19
		9	25.43	30	
		12	25.27	30	
		18	25.74	30	
		24	26.33	30	
		36	26.01	30	
		48	26.11	30	
		54	26.23	30	
2462	11	6	25.36	30	19
		9	25.55	30	
		12	25.38	30	
		18	25.91	30	
		24	26.55	30	
		36	26.24	30	
		48	26.37	30	
		54	26.51	30	
2467	12	6	13.83	30	7
		9	14.01	30	
		12	13.82	30	
		18	14.31	30	
		24	14.99	30	
		36	14.67	30	
		48	14.83	30	
		54	14.91	30	
2472	13	6	13.64	30	7
		9	13.80	30	
		12	13.61	30	
		18	14.11	30	
		24	14.66	30	
		36	14.38	30	
		48	14.45	30	
		54	14.58	30	

802.11n(HT20) Mode		MCS Index	Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.				
2412	1	0	25.41	30	19
		1	25.19	30	
		2	25.98	30	
		3	26.14	30	
		4	26.42	30	
		5	26.30	30	
		6	26.60	30	
		7	26.52	30	
2437	6	0	25.54	30	19
		1	25.32	30	
		2	26.09	30	
		3	26.24	30	
		4	26.48	30	
		5	26.37	30	
		6	26.71	30	
		7	26.59	30	
2462	11	0	25.57	30	19
		1	25.41	30	
		2	26.11	30	
		3	26.28	30	
		4	26.49	30	
		5	26.36	30	
		6	26.65	30	
		7	26.57	30	
2467	12	0	13.95	30	7
		1	13.68	30	
		2	14.42	30	
		3	14.61	30	
		4	14.83	30	
		5	14.68	30	
		6	14.98	30	
		7	14.94	30	
2472	13	0	13.70	30	7
		1	13.43	30	
		2	14.22	30	
		3	14.35	30	
		4	14.76	30	
		5	14.59	30	
		6	14.92	30	
		7	14.81	30	

[MIMO]

802.11b Mode		Rate (Mbps)	Ant.1 Measured Power(dBm)	Ant.2 Measured Power(dBm)	MIMO Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.						
2412	1	1	20.06	20.69	23.40	30	19
		2	20.12	20.88	23.53	30	
		5.5	21.86	22.61	25.26	30	
		11	23.32	24.07	26.72	30	
2437	6	1	20.86	20.66	23.77	30	
		2	21.02	20.90	23.97	30	
		5.5	22.87	22.61	25.75	30	
		11	24.29	24.02	27.17	30	
2462	11	1	20.20	20.98	23.62	30	
		2	20.41	21.18	23.82	30	
		5.5	22.16	22.95	25.58	30	
		11	23.56	24.38	27.00	30	
2467	12	1	9.28	10.47	12.92	30	8
		2	9.48	10.64	13.11	30	
		5.5	11.17	12.40	14.84	30	
		11	12.67	13.81	16.29	30	
2472	13	1	9.30	10.27	12.82	30	
		2	9.48	10.40	12.98	30	
		5.5	11.33	12.11	14.75	30	
		11	12.78	13.51	16.17	30	

802.11g Mode		Rate (Mbps)	Ant.1 Measured Power(dBm)	Ant.2 Measured Power(dBm)	MIMO Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.						
2412	1	6	24.48	25.19	27.86	30	19
		9	24.65	25.35	28.03	30	
		12	24.50	25.20	27.87	30	
		18	24.96	25.75	28.38	30	
		24	25.44	26.37	28.94	30	
		36	25.19	26.07	28.66	30	
		48	25.30	26.11	28.73	30	
		54	25.39	26.23	28.84	30	
2437	6	6	25.40	25.24	28.33	30	
		9	25.55	25.43	28.50	30	
		12	25.41	25.27	28.35	30	
		18	25.91	25.74	28.84	30	
		24	26.52	26.33	29.43	30	
		36	26.23	26.01	29.13	30	
		48	26.36	26.11	29.25	30	
		54	26.47	26.23	29.36	30	
2462	11	6	24.74	25.36	28.07	30	
		9	24.87	25.55	28.23	30	
		12	24.71	25.38	28.07	30	
		18	25.15	25.91	28.55	30	
		24	25.76	26.55	29.18	30	
		36	25.51	26.24	28.90	30	
		48	25.63	26.37	29.03	30	
		54	25.69	26.51	29.13	30	
2467	12	6	12.74	13.83	16.33	30	7
		9	12.92	14.01	16.51	30	
		12	12.75	13.82	16.33	30	
		18	13.23	14.31	16.81	30	
		24	13.89	14.99	17.49	30	
		36	13.55	14.67	17.16	30	
		48	13.67	14.83	17.30	30	
		54	13.77	14.91	17.39	30	
2472	13	6	12.70	13.64	16.2	30	
		9	12.88	13.80	16.37	30	
		12	12.75	13.61	16.21	30	
		18	13.25	14.11	16.71	30	
		24	13.81	14.66	17.27	30	
		36	13.51	14.38	16.98	30	
		48	13.58	14.45	17.05	30	
		54	13.66	14.58	17.15	30	

802.11n(HT20) Mode		Rate (Mbps)	Ant.1 Measured Power(dBm)	Ant.2 Measured Power(dBm)	MIMO Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.						
2412	1	0	24.60	25.41	28.04	30	19
		1	24.34	25.19	27.80	30	
		2	25.07	25.98	28.56	30	
		3	25.19	26.14	28.70	30	
		4	25.27	26.42	28.89	30	
		5	25.18	26.30	28.79	30	
		6	25.47	26.60	29.08	30	
		7	25.37	26.52	28.99	30	
2437	6	0	25.41	25.54	28.48	30	
		1	25.19	25.32	28.27	30	
		2	25.96	26.09	29.04	30	
		3	26.09	26.24	29.18	30	
		4	26.31	26.48	29.40	30	
		5	26.15	26.37	29.27	30	
		6	26.45	26.71	29.59	30	
		7	26.35	26.59	29.48	30	
2462	11	0	25.12	25.57	28.36	30	
		1	24.84	25.41	28.14	30	
		2	25.60	26.11	28.87	30	
		3	25.79	26.28	29.05	30	
		4	26.04	26.49	29.28	30	
		5	25.90	26.36	29.14	30	
		6	26.29	26.65	29.48	30	
		7	26.18	26.57	29.39	30	
2467	12	0	12.88	13.95	16.46	30	7
		1	12.60	13.68	16.18	30	
		2	13.34	14.42	16.92	30	
		3	13.52	14.61	17.11	30	
		4	13.67	14.83	17.30	30	
		5	13.82	14.68	17.28	30	
		6	14.12	14.98	17.58	30	
		7	13.99	14.94	17.50	30	
2472	13	0	12.81	13.70	16.29	30	
		1	12.56	13.43	16.03	30	
		2	13.34	14.22	16.81	30	
		3	13.45	14.35	16.93	30	
		4	13.58	14.76	17.22	30	
		5	13.47	14.59	17.08	30	
		6	13.78	14.92	17.40	30	
		7	13.72	14.81	17.31	30	

Average Power

1. Power Meter offset = Attenuator loss + Cable loss + EUT Cable loss
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
   So, 10.97 dB is offset for 2.4 GHz Band.

[Ant.1]

802.11b Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)	Power Level Setting
Frequency [MHz]	Channel No.						
2412	1	1	17.17	0.006	17.18	30	19
		2	17.12	0.013	17.14	30	
		5.5	17.12	0.036	17.16	30	
		11	17.09	0.069	17.16	30	
2437	6	1	18.09	0.006	18.10	30	19
		2	18.07	0.013	18.08	30	
		5.5	18.02	0.036	18.06	30	
		11	18.02	0.069	18.09	30	
2462	11	1	17.50	0.006	17.50	30	19
		2	17.48	0.013	17.49	30	
		5.5	17.42	0.036	17.46	30	
		11	17.40	0.069	17.47	30	
2467	12	1	6.56	0.006	6.56	30	8
		2	6.49	0.013	6.50	30	
		5.5	6.47	0.036	6.50	30	
		11	6.44	0.069	6.51	30	
2472	13	1	6.61	0.006	6.62	30	8
		2	6.55	0.013	6.56	30	
		5.5	6.56	0.036	6.60	30	
		11	6.54	0.069	6.61	30	

802.11g Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)	Power Level Setting
Frequency [MHz]	Channel No.						
2412	1	6	16.30	0.053	16.36	30	19
		9	16.33	0.079	16.41	30	
		12	16.25	0.087	16.34	30	
		18	16.94	0.136	17.08	30	
		24	16.69	0.200	16.89	30	
		36	16.38	0.381	16.76	30	
		48	14.98	1.885	16.87	30	
		54	14.59	1.992	16.58	30	
2437	6	6	17.17	0.053	17.23	30	19
		9	17.14	0.079	17.22	30	
		12	17.09	0.087	17.17	30	
		18	17.79	0.136	17.93	30	
		24	17.62	0.200	17.82	30	
		36	17.24	0.381	17.62	30	
		48	15.83	1.885	17.72	30	
		54	15.61	1.992	17.60	30	
2462	11	6	16.49	0.053	16.54	30	19
		9	16.55	0.079	16.63	30	
		12	16.51	0.087	16.60	30	
		18	17.09	0.136	17.22	30	
		24	16.94	0.200	17.14	30	
		36	16.50	0.381	16.88	30	
		48	15.13	1.885	17.01	30	
		54	14.89	1.992	16.88	30	
2467	12	6	4.52	0.053	4.57	30	7
		9	4.48	0.079	4.56	30	
		12	4.42	0.087	4.51	30	
		18	5.04	0.136	5.18	30	
		24	4.93	0.200	5.13	30	
		36	4.50	0.381	4.88	30	
		48	3.04	1.885	4.93	30	
		54	2.78	1.992	4.77	30	
2472	13	6	4.52	0.053	4.57	30	7
		9	4.48	0.079	4.56	30	
		12	4.40	0.087	4.49	30	
		18	5.09	0.136	5.23	30	
		24	4.92	0.200	5.12	30	
		36	4.51	0.381	4.89	30	
		48	2.99	1.885	4.88	30	
		54	2.80	1.992	4.79	30	

802.11n(HT20) Mode		MCS Index	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)	Power Level Setting
Frequency [MHz]	Channel No.						
2412	1	0	16.12	0.012	16.13	30	19
		1	16.13	0.012	16.14	30	
		2	16.82	0.018	16.84	30	
		3	16.76	0.012	16.77	30	
		4	17.02	0.016	17.04	30	
		5	16.99	0.016	17.01	30	
		6	17.00	0.012	17.01	30	
		7	16.98	0.012	16.99	30	
2437	6	0	16.88	0.012	16.89	30	19
		1	16.84	0.012	16.85	30	
		2	17.60	0.018	17.62	30	
		3	17.60	0.012	17.61	30	
		4	17.77	0.016	17.79	30	
		5	17.76	0.016	17.78	30	
		6	17.79	0.012	17.80	30	
		7	17.77	0.012	17.78	30	
2462	11	0	16.32	0.012	16.34	30	19
		1	16.31	0.012	16.32	30	
		2	17.07	0.018	17.09	30	
		3	17.06	0.012	17.07	30	
		4	17.31	0.016	17.33	30	
		5	17.33	0.016	17.35	30	
		6	17.35	0.012	17.36	30	
		7	17.34	0.012	17.35	30	
2467	12	0	4.28	0.012	4.29	30	7
		1	4.23	0.012	4.24	30	
		2	4.97	0.018	4.98	30	
		3	4.93	0.012	4.94	30	
		4	5.40	0.016	5.42	30	
		5	5.38	0.016	5.40	30	
		6	5.38	0.012	5.39	30	
		7	5.38	0.012	5.39	30	
2472	13	0	4.20	0.012	4.22	30	7
		1	4.19	0.012	4.21	30	
		2	4.87	0.018	4.89	30	
		3	4.88	0.012	4.89	30	
		4	5.12	0.016	5.14	30	
		5	5.11	0.016	5.12	30	
		6	5.14	0.012	5.15	30	
		7	5.12	0.012	5.13	30	

[Ant.2]

802.11b Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)	Power Level Setting
Frequency [MHz]	Channel No.						
2412	1	1	17.99	0.006	17.99	30	19
		2	17.91	0.013	17.92	30	
		5.5	17.87	0.036	17.90	30	
		11	17.86	0.069	17.93	30	
2437	6	1	17.94	0.006	17.95	30	19
		2	17.86	0.013	17.87	30	
		5.5	17.86	0.036	17.90	30	
		11	17.85	0.069	17.92	30	
2462	11	1	18.22	0.006	18.23	30	19
		2	18.17	0.013	18.18	30	
		5.5	18.17	0.036	18.20	30	
		11	18.16	0.069	18.22	30	
2467	12	1	7.68	0.006	7.69	30	8
		2	7.61	0.013	7.62	30	
		5.5	7.61	0.036	7.65	30	
		11	7.58	0.069	7.65	30	
2472	13	1	7.43	0.006	7.43	30	8
		2	7.33	0.013	7.34	30	
		5.5	7.30	0.036	7.34	30	
		11	7.28	0.069	7.35	30	

802.11g Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)	Power Level Setting
Frequency [MHz]	Channel No.						
2412	1	6	17.05	0.053	17.10	30	19
		9	17.04	0.079	17.12	30	
		12	16.99	0.087	17.08	30	
		18	17.61	0.136	17.74	30	
		24	17.50	0.200	17.70	30	
		36	17.12	0.381	17.51	30	
		48	15.61	1.885	17.50	30	
		54	15.48	1.992	17.47	30	
2437	6	6	17.04	0.053	17.09	30	19
		9	17.09	0.079	17.17	30	
		12	17.01	0.087	17.10	30	
		18	17.66	0.136	17.79	30	
		24	17.53	0.200	17.73	30	
		36	17.05	0.381	17.44	30	
		48	15.64	1.885	17.52	30	
		54	15.37	1.992	17.36	30	
2462	11	6	17.42	0.053	17.47	30	19
		9	17.32	0.079	17.40	30	
		12	17.31	0.087	17.40	30	
		18	17.76	0.136	17.89	30	
		24	17.68	0.200	17.88	30	
		36	17.29	0.381	17.67	30	
		48	15.89	1.885	17.77	30	
		54	15.64	1.992	17.63	30	
2467	12	6	5.51	0.053	5.56	30	7
		9	5.48	0.079	5.56	30	
		12	5.46	0.087	5.55	30	
		18	5.84	0.136	5.98	30	
		24	5.75	0.200	5.95	30	
		36	5.58	0.381	5.96	30	
		48	4.07	1.885	5.96	30	
		54	3.92	1.992	5.91	30	
2472	13	6	5.25	0.053	5.30	30	7
		9	5.20	0.079	5.28	30	
		12	5.11	0.087	5.20	30	
		18	5.84	0.136	5.98	30	
		24	5.77	0.200	5.97	30	
		36	5.39	0.381	5.77	30	
		48	3.94	1.885	5.83	30	
		54	3.68	1.992	5.67	30	

802.11n(HT20) Mode		MCS Index	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)	Power Level Setting
Frequency [MHz]	Channel No.						
2412	1	0	16.79	0.012	16.80	30	19
		1	16.77	0.012	16.79	30	
		2	17.51	0.018	17.53	30	
		3	17.49	0.012	17.50	30	
		4	17.78	0.016	17.80	30	
		5	17.76	0.016	17.78	30	
		6	17.78	0.012	17.79	30	
		7	17.76	0.012	17.77	30	
2437	6	0	16.83	0.012	16.85	30	19
		1	16.83	0.012	16.84	30	
		2	17.62	0.018	17.64	30	
		3	17.61	0.012	17.62	30	
		4	17.80	0.016	17.82	30	
		5	17.81	0.016	17.83	30	
		6	17.83	0.012	17.84	30	
		7	17.80	0.012	17.82	30	
2462	11	0	16.99	0.012	17.00	30	19
		1	16.96	0.012	16.98	30	
		2	17.74	0.018	17.76	30	
		3	17.71	0.012	17.72	30	
		4	17.89	0.016	17.91	30	
		5	17.88	0.016	17.90	30	
		6	17.92	0.012	17.93	30	
		7	17.90	0.012	17.91	30	
2467	12	0	5.24	0.012	5.25	30	7
		1	5.21	0.012	5.22	30	
		2	5.93	0.018	5.95	30	
		3	5.91	0.012	5.92	30	
		4	5.96	0.016	5.98	30	
		5	5.94	0.016	5.96	30	
		6	5.95	0.012	5.96	30	
		7	5.96	0.012	5.97	30	
2472	13	0	5.02	0.012	5.03	30	7
		1	5.03	0.012	5.04	30	
		2	5.73	0.018	5.75	30	
		3	5.71	0.012	5.72	30	
		4	5.94	0.016	5.96	30	
		5	5.92	0.016	5.94	30	
		6	5.96	0.012	5.97	30	
		7	5.94	0.012	5.95	30	

[MIMO]

802.11b Mode		Rate (Mbps)	Ant.1 Measured Power(dBm)	Ant.2 Measured Power(dBm)	MIMO Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.						
2412	1	1	17.18	17.99	20.61	30	19
		2	17.14	17.92	20.56	30	
		5.5	17.16	17.90	20.56	30	
		11	17.16	17.93	20.57	30	
2437	6	1	18.10	17.95	21.03	30	
		2	18.08	17.87	20.99	30	
		5.5	18.06	17.90	20.99	30	
		11	18.09	17.92	21.01	30	
2462	11	1	17.50	18.23	20.89	30	
		2	17.49	18.18	20.86	30	
		5.5	17.46	18.20	20.86	30	
		11	17.47	18.22	20.87	30	
2467	12	1	6.56	7.69	10.17	30	8
		2	6.50	7.62	10.11	30	
		5.5	6.50	7.65	10.12	30	
		11	6.51	7.65	10.12	30	
2472	13	1	6.62	7.43	10.05	30	
		2	6.56	7.34	9.98	30	
		5.5	6.60	7.34	9.99	30	
		11	6.61	7.35	10.01	30	

802.11g Mode		Rate (Mbps)	Ant.1 Measured Power(dBm)	Ant.2 Measured Power(dBm)	MIMO Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.						
2412	1	6	16.36	17.10	19.75	30	19
		9	16.41	17.12	19.79	30	
		12	16.34	17.08	19.73	30	
		18	17.08	17.74	20.43	30	
		24	16.89	17.70	20.32	30	
		36	16.76	17.51	20.16	30	
		48	16.87	17.50	20.20	30	
		54	16.58	17.47	20.06	30	
2437	6	6	17.23	17.09	20.17	30	
		9	17.22	17.17	20.20	30	
		12	17.17	17.10	20.15	30	
		18	17.93	17.79	20.87	30	
		24	17.82	17.73	20.79	30	
		36	17.62	17.44	20.54	30	
		48	17.72	17.52	20.63	30	
		54	17.60	17.36	20.50	30	
2462	11	6	16.54	17.47	20.04	30	
		9	16.63	17.40	20.04	30	
		12	16.60	17.40	20.02	30	
		18	17.22	17.89	20.58	30	
		24	17.14	17.88	20.54	30	
		36	16.88	17.67	20.30	30	
		48	17.01	17.77	20.42	30	
		54	16.88	17.63	20.28	30	
2467	12	6	4.57	5.56	8.11	30	7
		9	4.56	5.56	8.10	30	
		12	4.51	5.55	8.07	30	
		18	5.18	5.98	8.60	30	
		24	5.13	5.95	8.57	30	
		36	4.88	5.96	8.46	30	
		48	4.93	5.96	8.48	30	
		54	4.77	5.91	8.39	30	
2472	13	6	4.57	5.30	7.96	30	
		9	4.56	5.28	7.94	30	
		12	4.49	5.20	7.87	30	
		18	5.23	5.98	8.63	30	
		24	5.12	5.97	8.58	30	
		36	4.89	5.77	8.36	30	
		48	4.88	5.83	8.39	30	
		54	4.79	5.67	8.26	30	

802.11n(HT20) Mode		Rate (Mbps)	Ant.1 Measured Power(dBm)	Ant.2 Measured Power(dBm)	MIMO Measured Power(dBm)	Limit (dBm)	Power Level Setting
Frequency[MHz]	Channel No.						
2412	1	0	16.13	16.80	19.49	30	19
		1	16.14	16.79	19.49	30	
		2	16.84	17.53	20.21	30	
		3	16.77	17.50	20.16	30	
		4	17.04	17.80	20.45	30	
		5	17.01	17.78	20.42	30	
		6	17.01	17.79	20.43	30	
		7	16.99	17.77	20.41	30	
2437	6	0	16.89	16.85	19.88	30	
		1	16.85	16.84	19.86	30	
		2	17.62	17.64	20.64	30	
		3	17.61	17.62	20.62	30	
		4	17.79	17.82	20.81	30	
		5	17.78	17.83	20.81	30	
		6	17.80	17.84	20.83	30	
		7	17.78	17.82	20.81	30	
2462	11	0	16.34	17.00	19.69	30	
		1	16.32	16.98	19.67	30	
		2	17.09	17.76	20.45	30	
		3	17.07	17.72	20.42	30	
		4	17.33	17.91	20.64	30	
		5	17.35	17.90	20.64	30	
		6	17.36	17.93	20.67	30	
		7	17.35	17.91	20.65	30	
2467	12	0	4.29	5.25	7.81	30	7
		1	4.24	5.22	7.77	30	
		2	4.98	5.95	8.50	30	
		3	4.94	5.92	8.47	30	
		4	5.42	5.98	8.72	30	
		5	5.40	5.96	8.70	30	
		6	5.39	5.96	8.70	30	
		7	5.39	5.97	8.70	30	
2472	13	0	4.22	5.03	7.65	30	
		1	4.21	5.04	7.65	30	
		2	4.89	5.75	8.35	30	
		3	4.89	5.72	8.34	30	
		4	5.14	5.96	8.58	30	
		5	5.12	5.94	8.56	30	
		6	5.15	5.97	8.59	30	
		7	5.13	5.95	8.57	30	

9.4 POWER SPECTRAL DENSITY

[Ant.1]

Mode	Frequency (MHz)	Channel No.	Test Result			
			Measured PSD (dBm)	Duty Cycle Factor	Measured PSD(dBm) + Duty Cycle Factor	Limit (dBm)
802.11b	2412	1	-6.556	0.006	-6.550	8
	2437	6	-5.514	0.006	-5.508	
	2462	11	-6.548	0.006	-6.542	
	2467	12	-17.420	0.006	-17.414	
	2472	13	-17.086	0.006	-17.080	
802.11g	2412	1	-7.105	0.136	-6.969	
	2437	6	-6.141	0.136	-6.005	
	2462	11	-6.707	0.136	-6.571	
	2467	12	-16.699	0.136	-16.563	
	2472	13	-16.372	0.136	-16.236	
802.11n	2412	1	-7.878	0.016	-7.862	
	2437	6	-6.663	0.012	-6.651	
	2462	11	-6.826	0.012	-6.814	
	2467	12	-19.046	0.016	-19.030	
	2472	13	-19.576	0.012	-19.564	

[Ant.2]

Mode	Frequency (MHz)	Channel No.	Test Result			
			Measured PSD (dBm)	Duty Cycle Factor	Measured PSD(dBm) + Duty Cycle Factor	Limit (dBm)
802.11b	2412	1	-5.950	0.006	-5.944	8
	2437	6	-5.968	0.006	-5.962	
	2462	11	-5.550	0.006	-5.544	
	2467	12	-16.406	0.006	-16.400	
	2472	13	-16.556	0.006	-16.550	
802.11g	2412	1	-6.476	0.136	-6.340	
	2437	6	-6.612	0.136	-6.476	
	2462	11	-5.892	0.136	-5.756	
	2467	12	-15.633	0.136	-15.497	
	2472	13	-15.791	0.136	-15.655	
802.11n	2412	1	-6.824	0.016	-6.808	
	2437	6	-7.180	0.012	-7.168	
	2462	11	-6.747	0.012	-6.735	
	2467	12	-18.024	0.016	-18.008	
	2472	13	-17.641	0.012	-17.629	

[MIMO]

Mode	Frequency (MHz)	Channel No.	Test Result			
			ANT 1 Measured PSD(dBm) + Duty Cycle Factor	ANT 2 Measured PSD(dBm) + Duty Cycle Factor	MIMO Result (dBm)	Limit (dBm)
802.11b	2412	1	-6.550	-5.944	-3.226	8
	2437	6	-5.508	-5.962	-2.719	
	2462	11	-6.542	-5.544	-3.004	
	2467	12	-17.414	-16.400	-13.867	
	2472	13	-17.080	-16.550	-13.797	
802.11g	2412	1	-6.969	-6.340	-3.633	
	2437	6	-6.005	-6.476	-3.224	
	2462	11	-6.571	-5.756	-3.134	
	2467	12	-16.563	-15.497	-12.987	
	2472	13	-16.236	-15.655	-12.926	
802.11n	2412	1	-7.862	-6.808	-4.293	
	2437	6	-6.651	-7.168	-3.892	
	2462	11	-6.814	-6.735	-3.764	
	2467	12	-19.030	-18.008	-15.479	
	2472	13	-19.564	-17.629	-15.479	

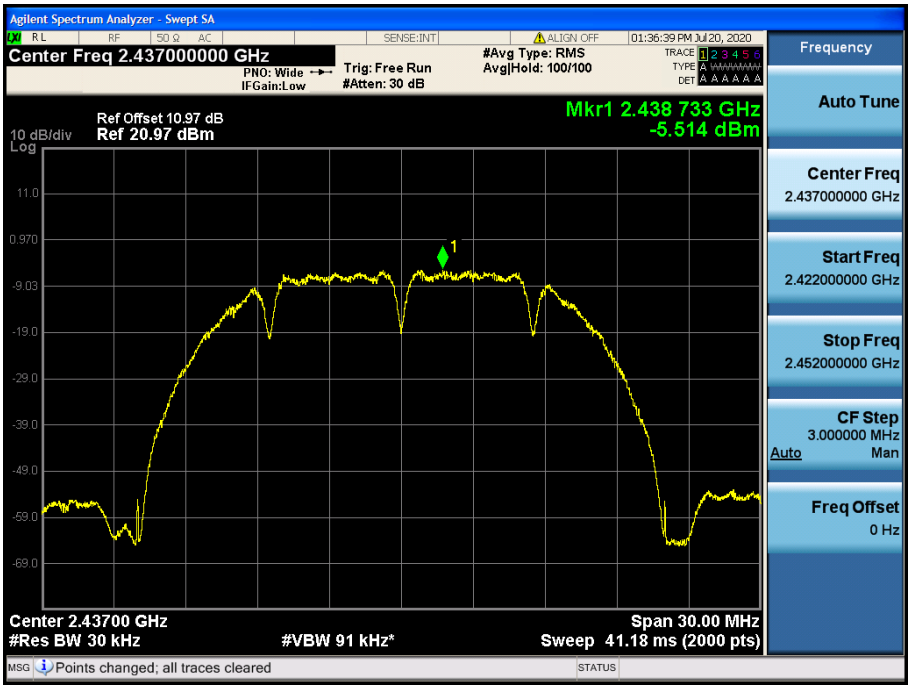
Note :

1. 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.
2. Spectrum offset = Attenuator loss(10 dB) + Cable loss(1ea) + EUT Cable loss(1ea)
3. 10.97 dB is offset for 2.4 GHz Band.

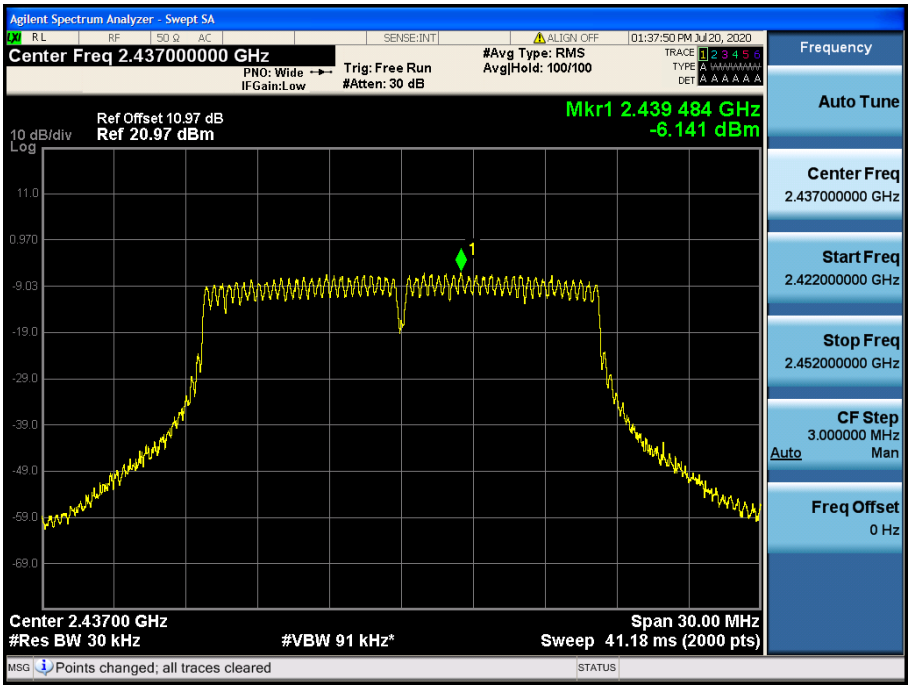
[Ant.1]

▣ Test Plots

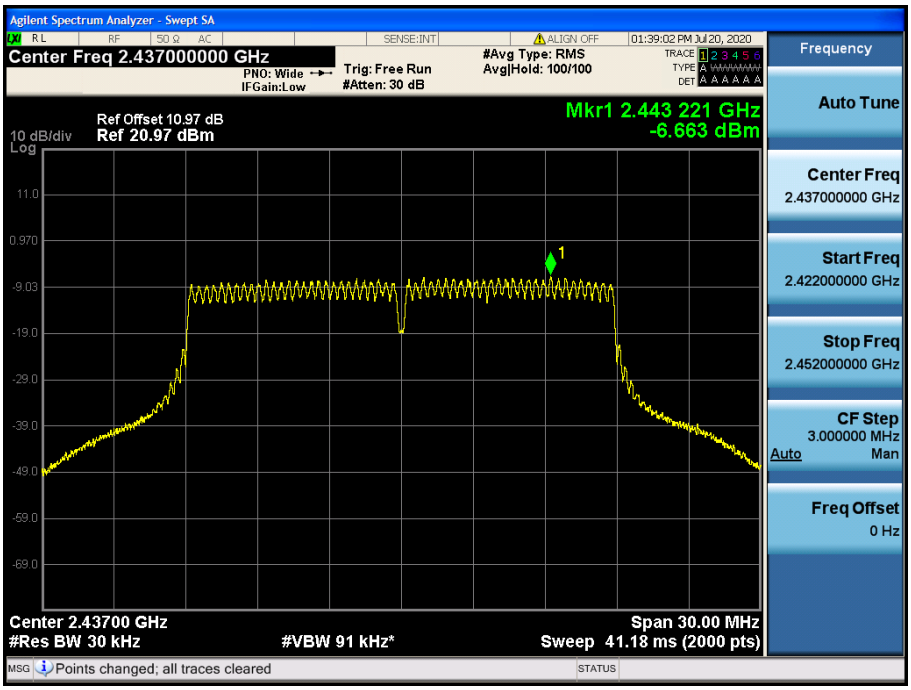
Power Spectral Density (802.11b-CH 6)



Power Spectral Density (802.11g-CH 6)



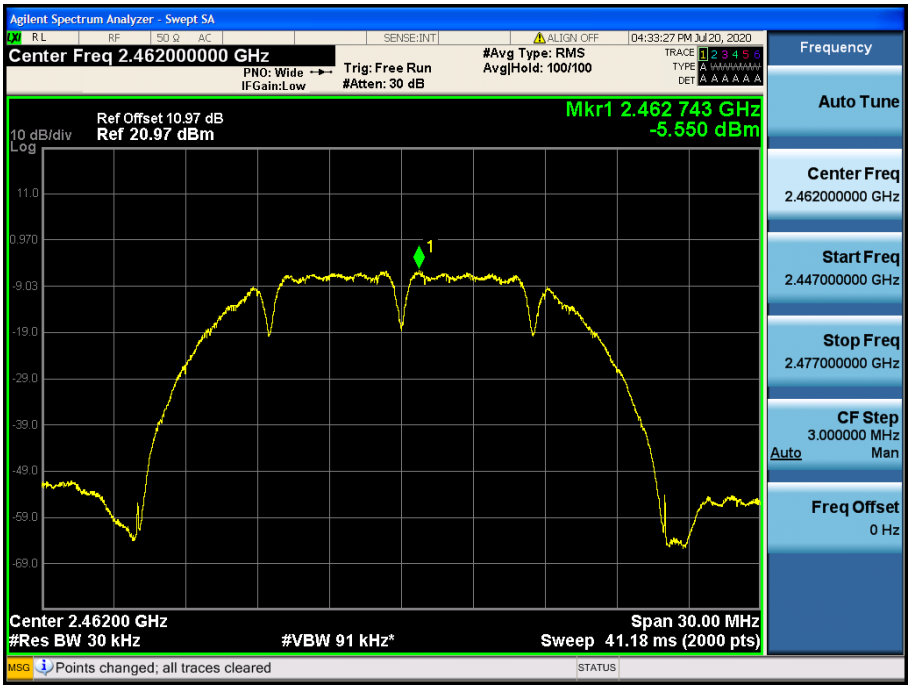
Power Spectral Density (802.11n_HT20 -CH 6)



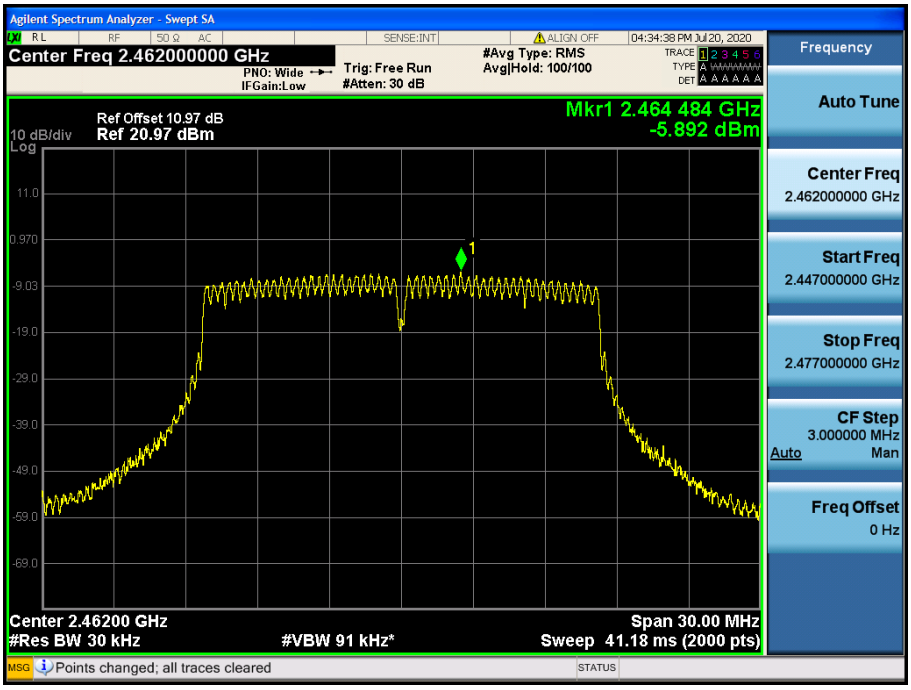
[Ant.2]

▣ Test Plots

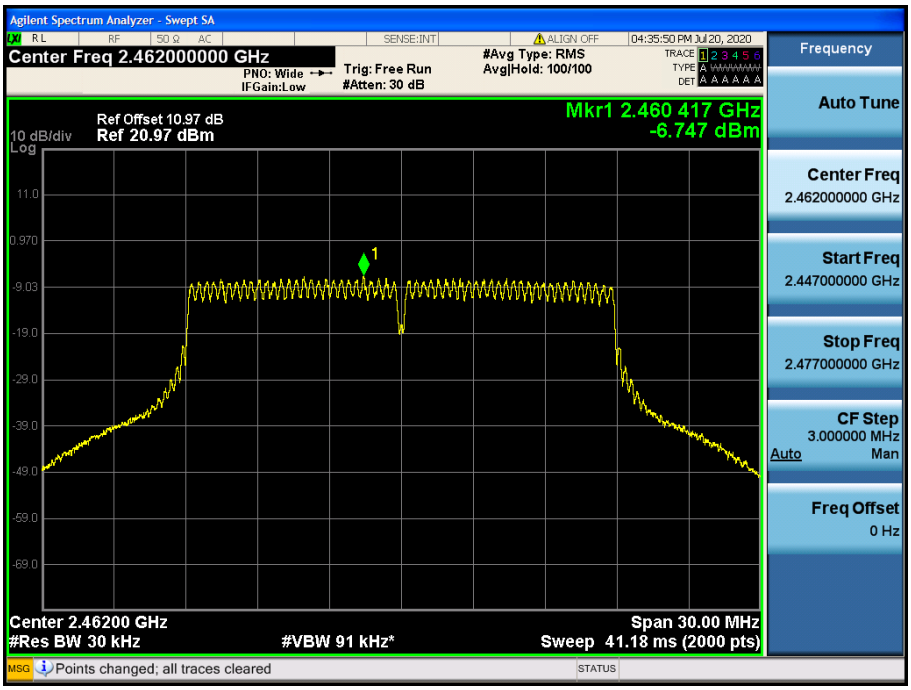
Power Spectral Density (802.11b-CH 11)



Power Spectral Density (802.11g-CH 11)



Power Spectral Density (802.11n_HT20 -CH 11)



Note :

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

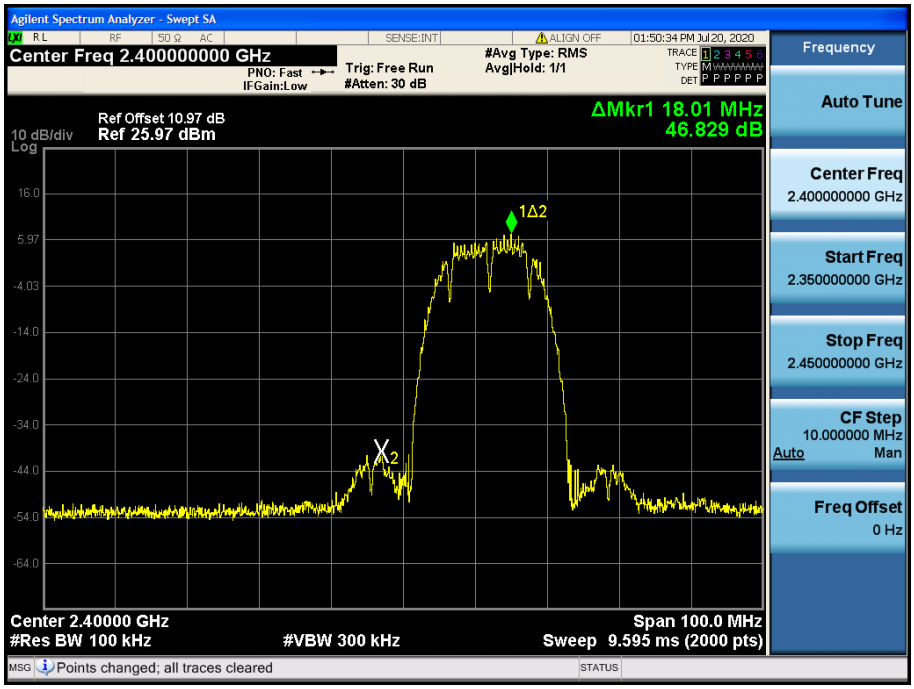
9.5 BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

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.

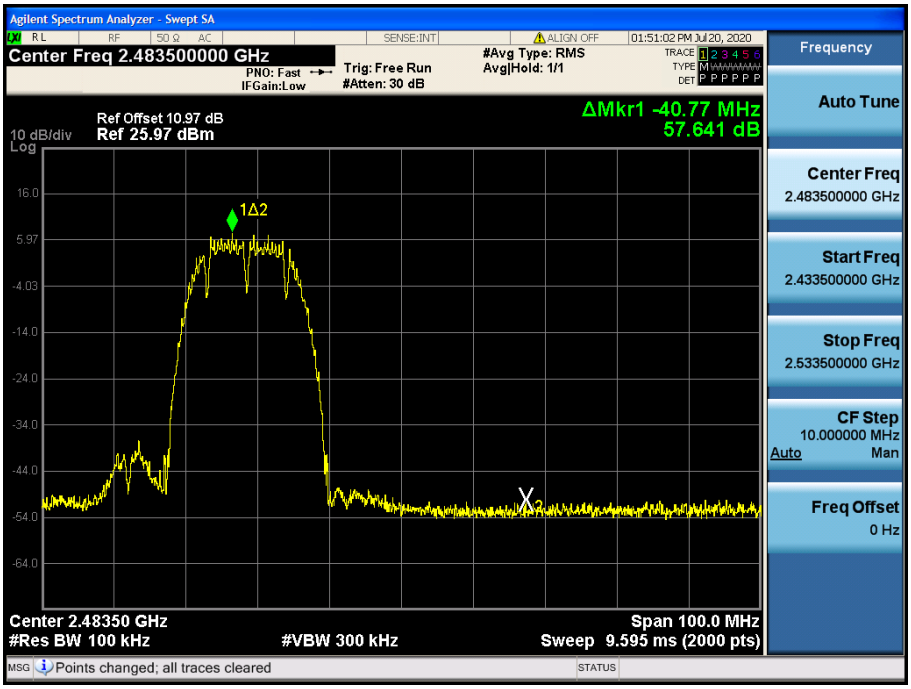
[Ant.1]

▣ Test Plots(BandEdge)

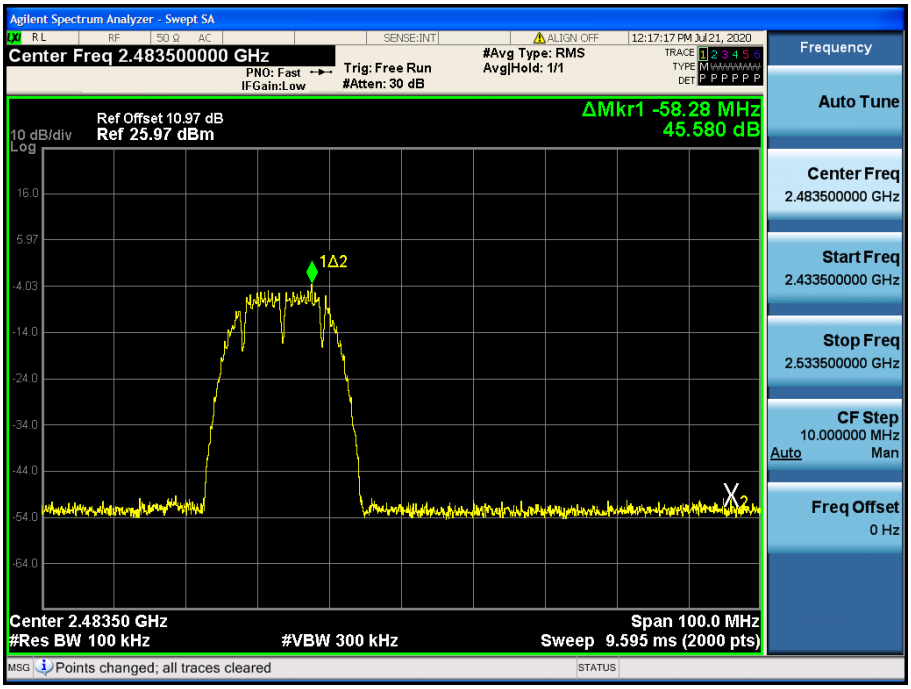
Band Edge (802.11b-CH1)



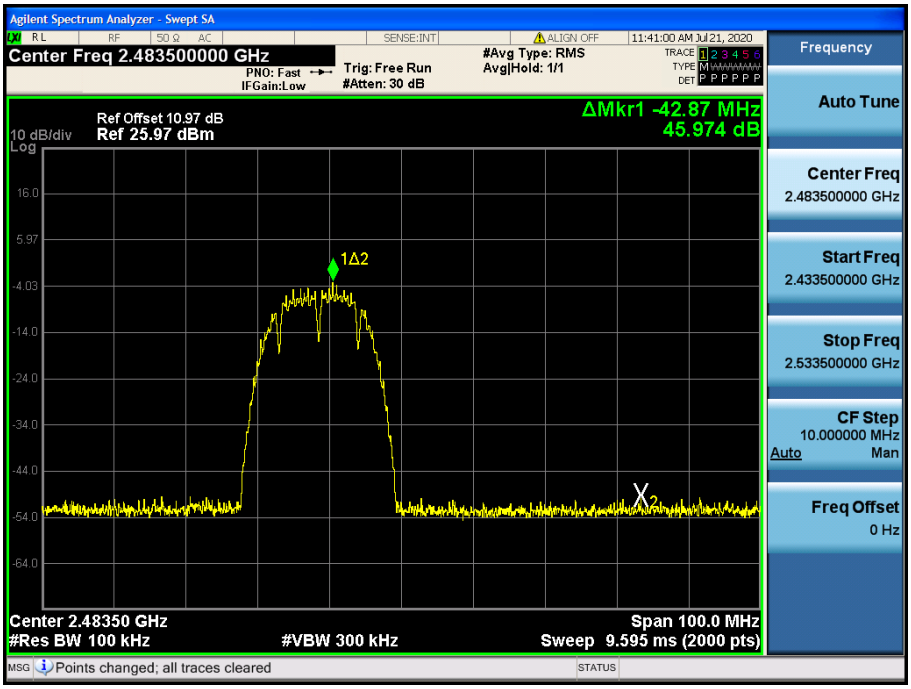
Band Edge (802.11b-CH11)



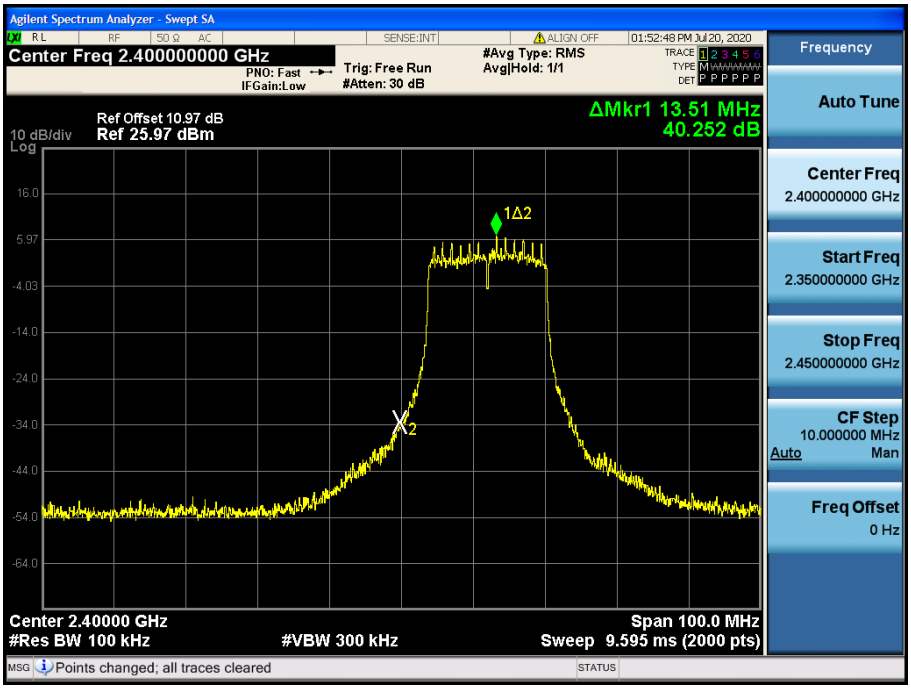
Band Edge (802.11b-CH12)



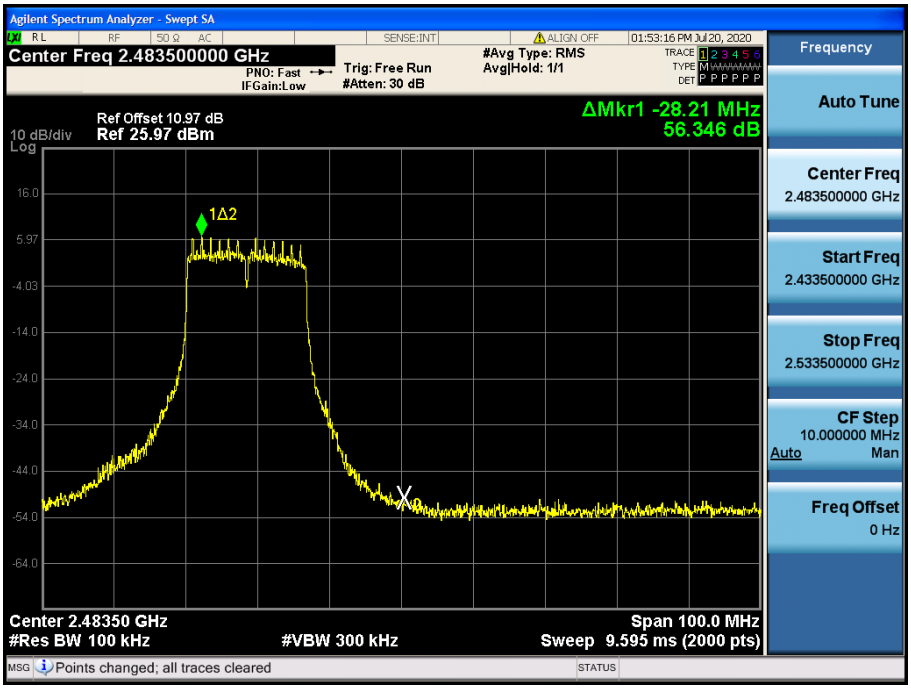
Band Edge (802.11b-CH13)



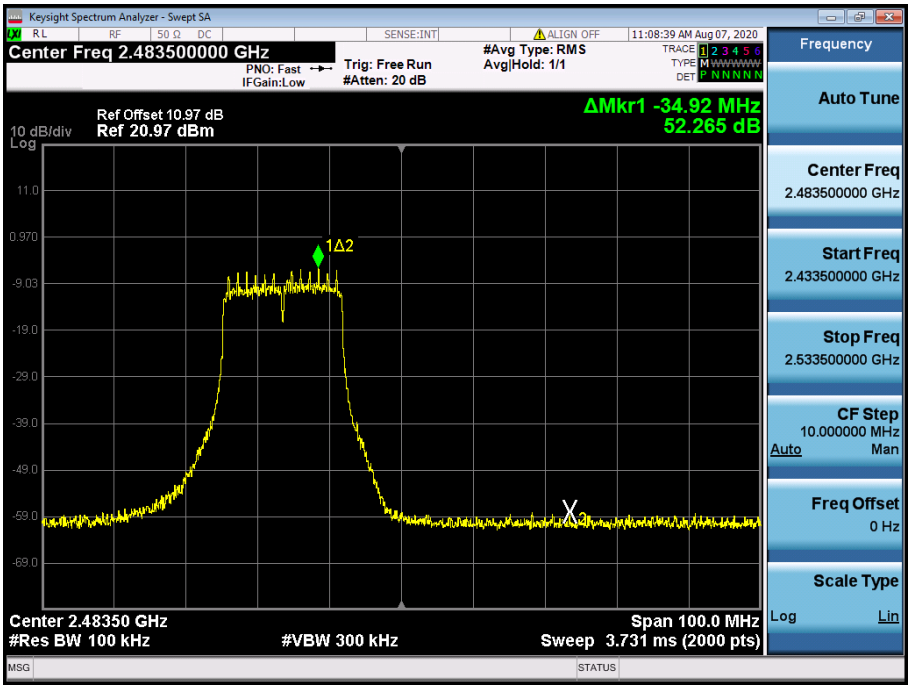
Band Edge (802.11g-CH1)



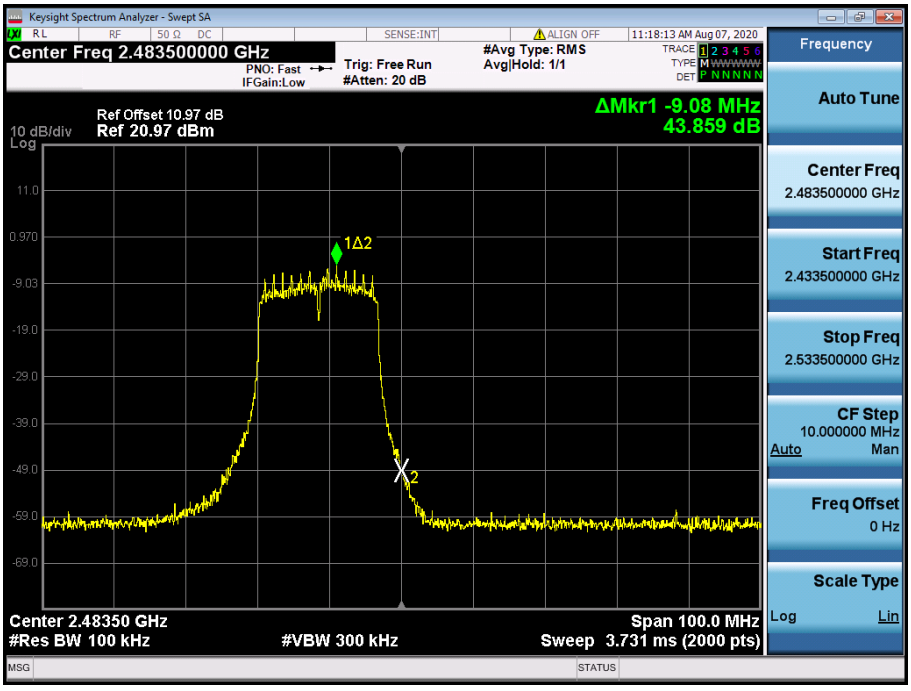
Band Edge (802.11g-CH11)



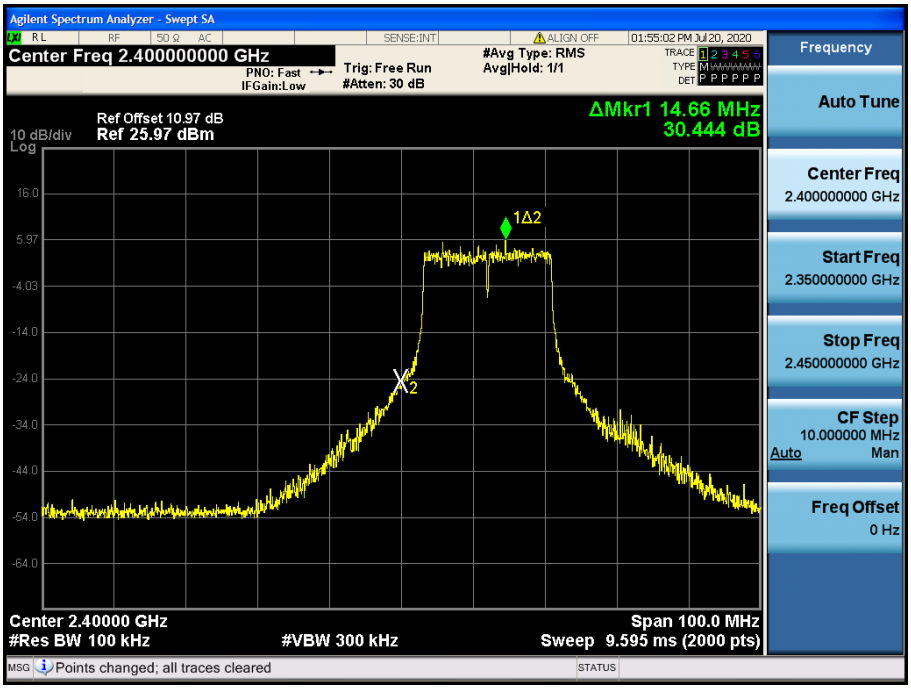
Band Edge (802.11g-CH12)



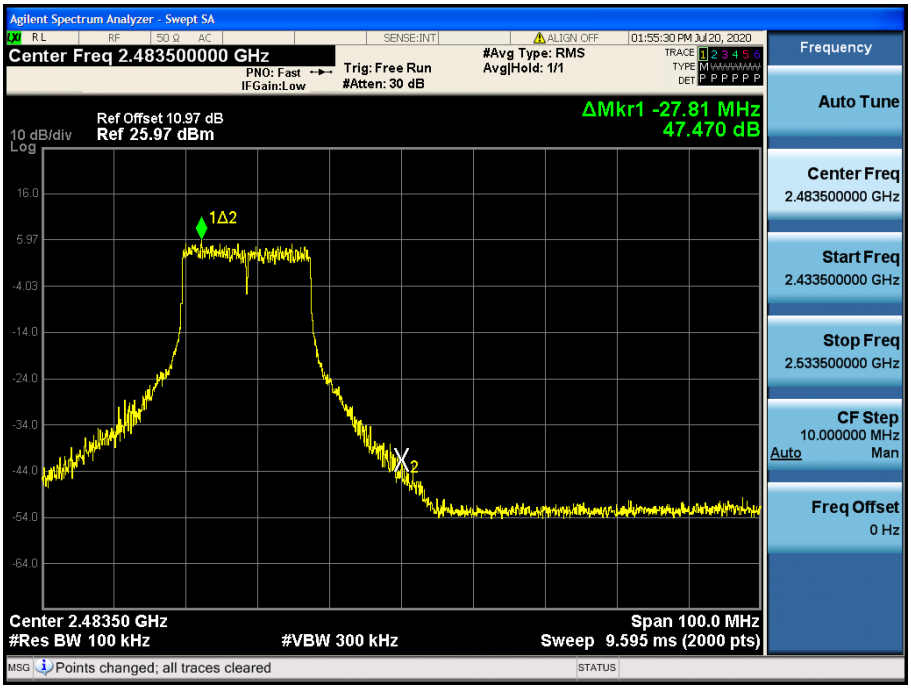
Band Edge (802.11g-CH13)



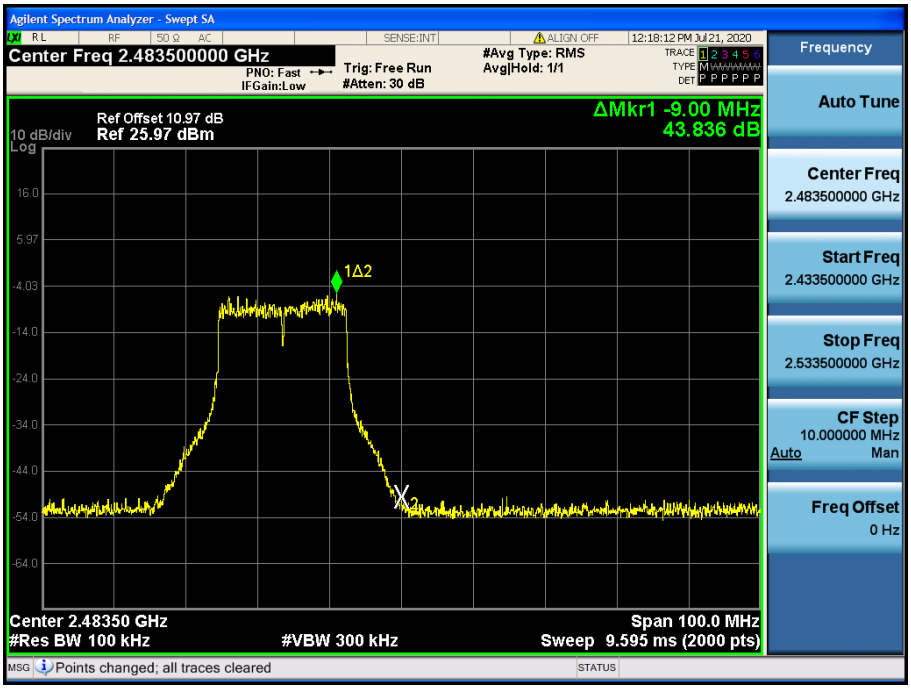
Band Edge (802.11n_HT20 -CH1)



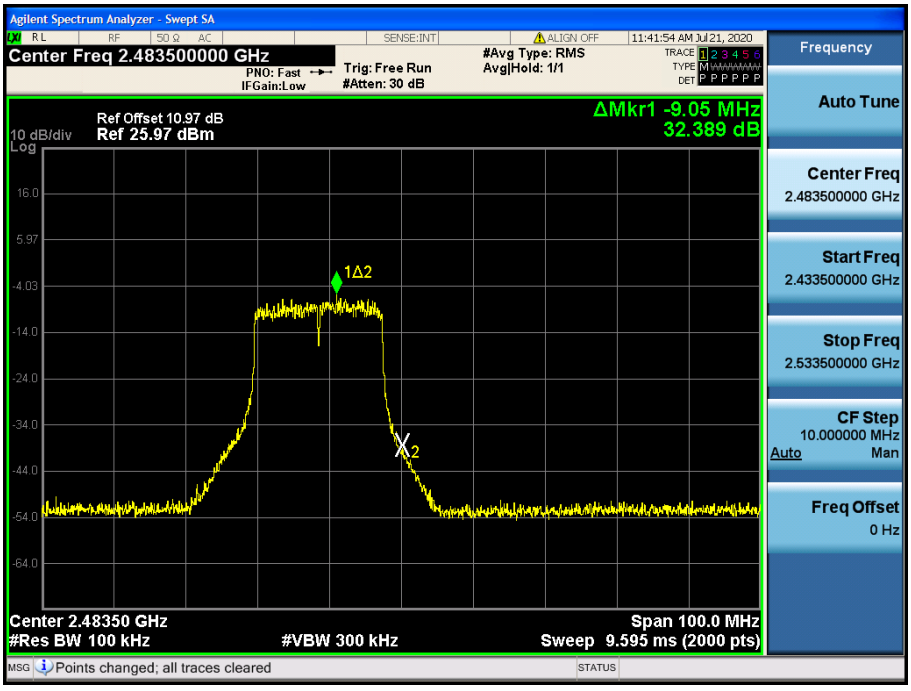
Band Edge (802.11n_HT20 –CH11)



Band Edge (802.11n_HT20 –CH12)



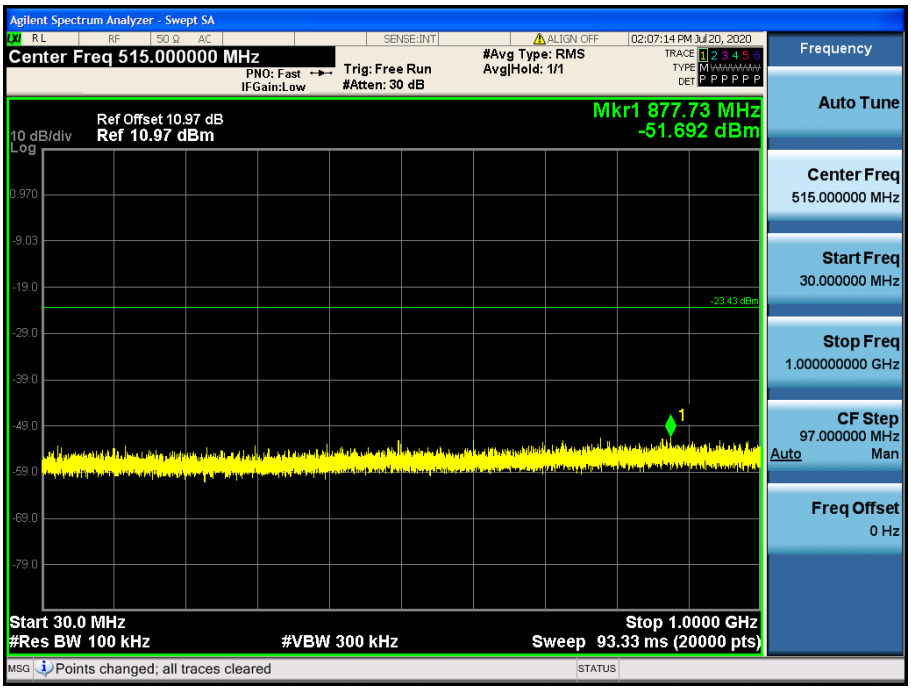
Band Edge (802.11n_HT20 –CH13)



▣ Test Plots(Conducted Spurious Emission)

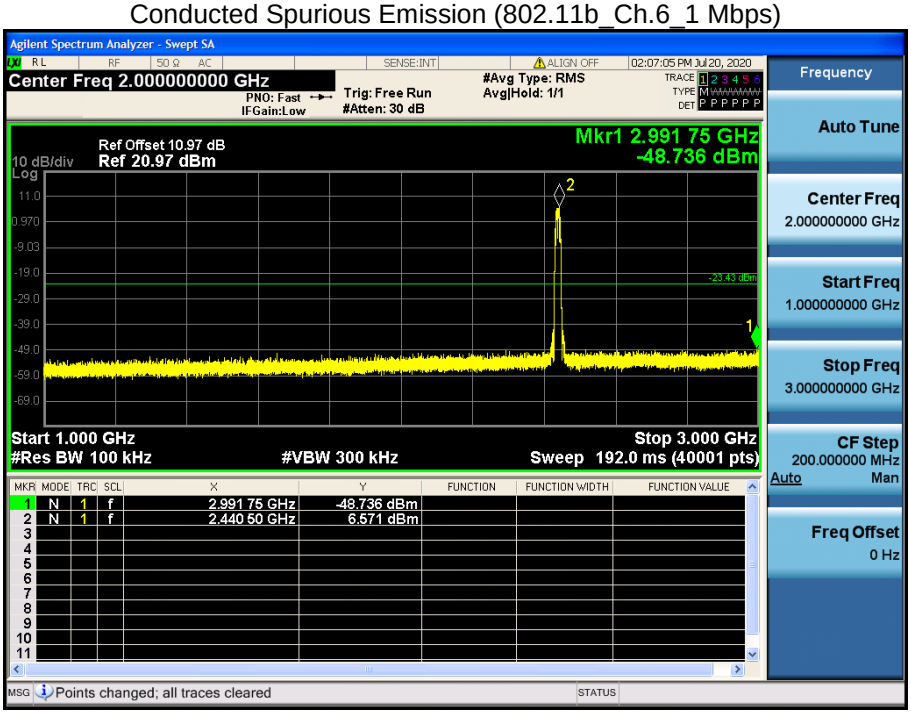
30 MHz ~ 1 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



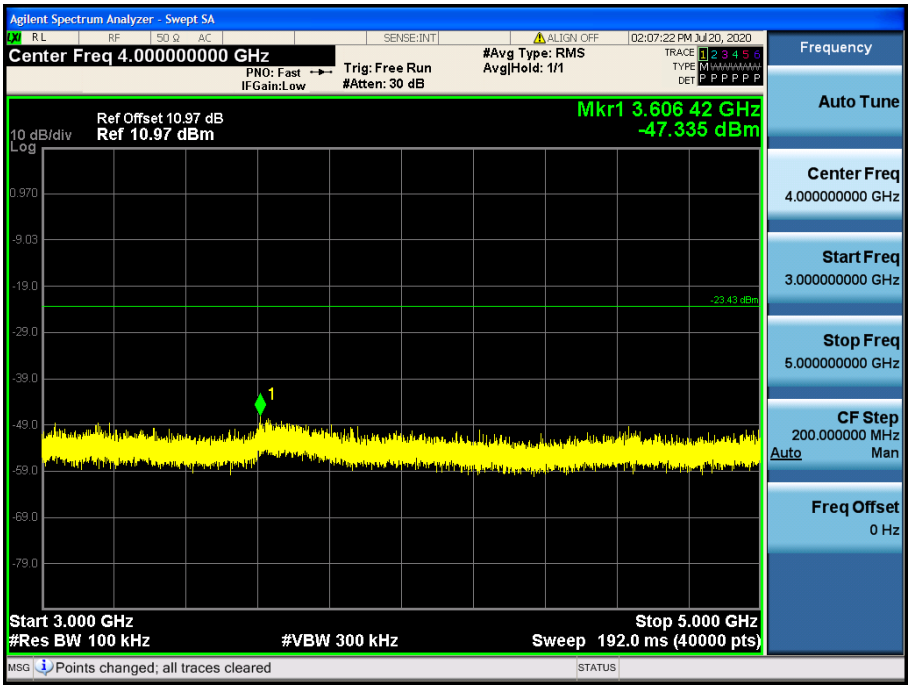
1 GHz ~ 3 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



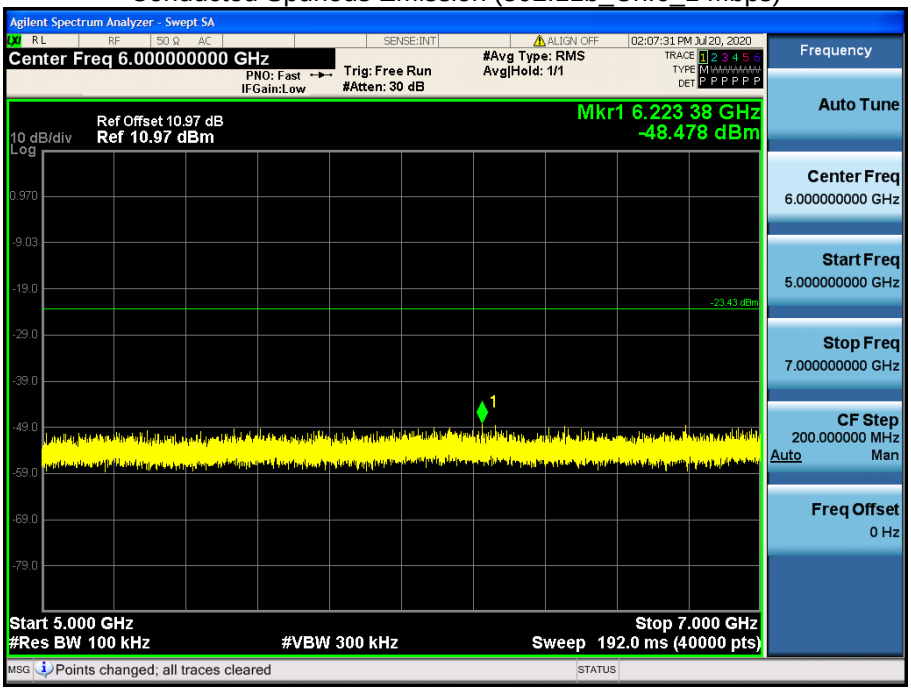
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



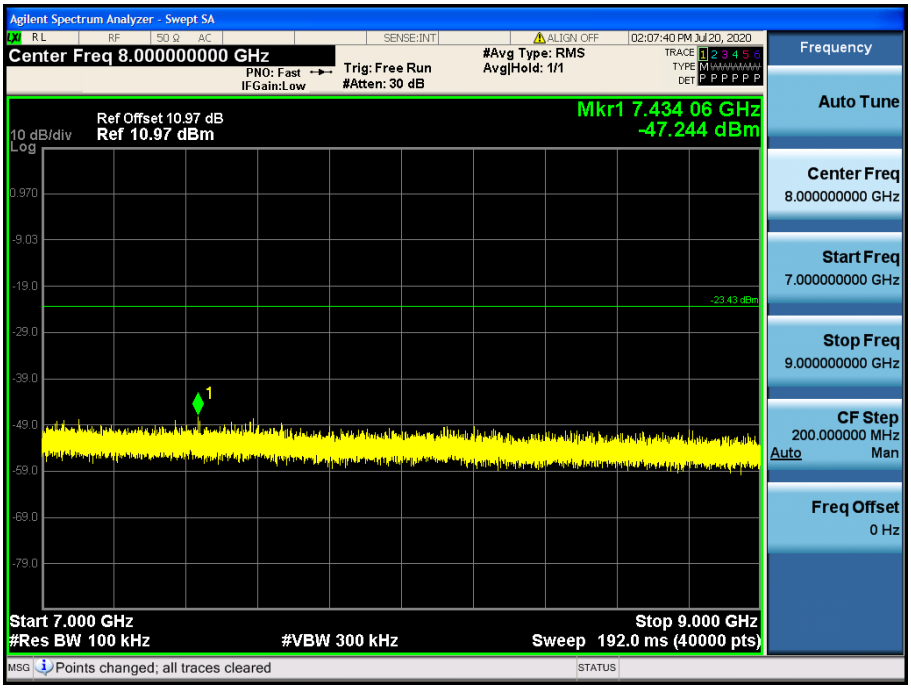
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



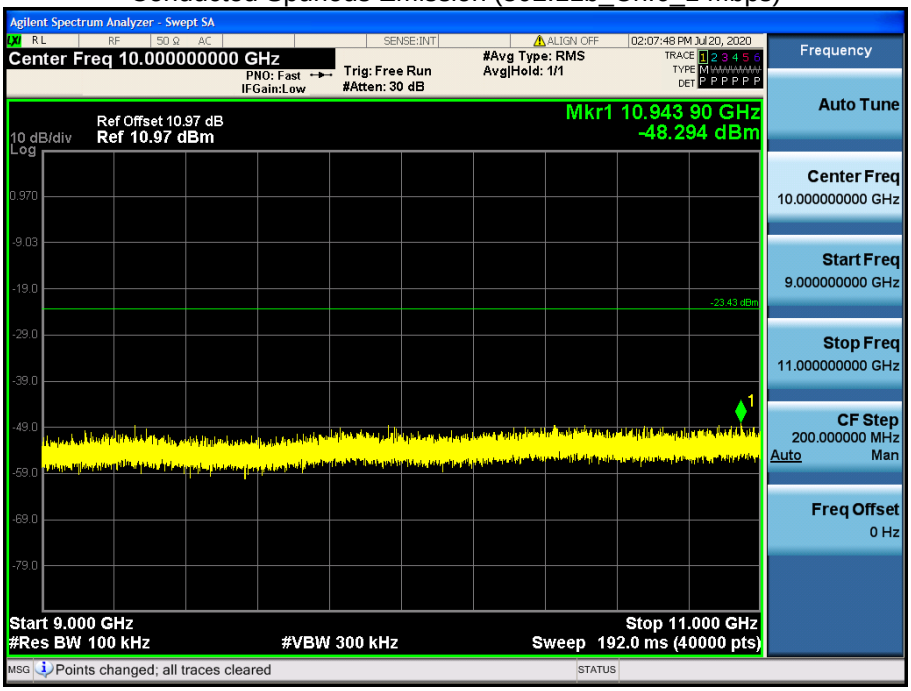
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



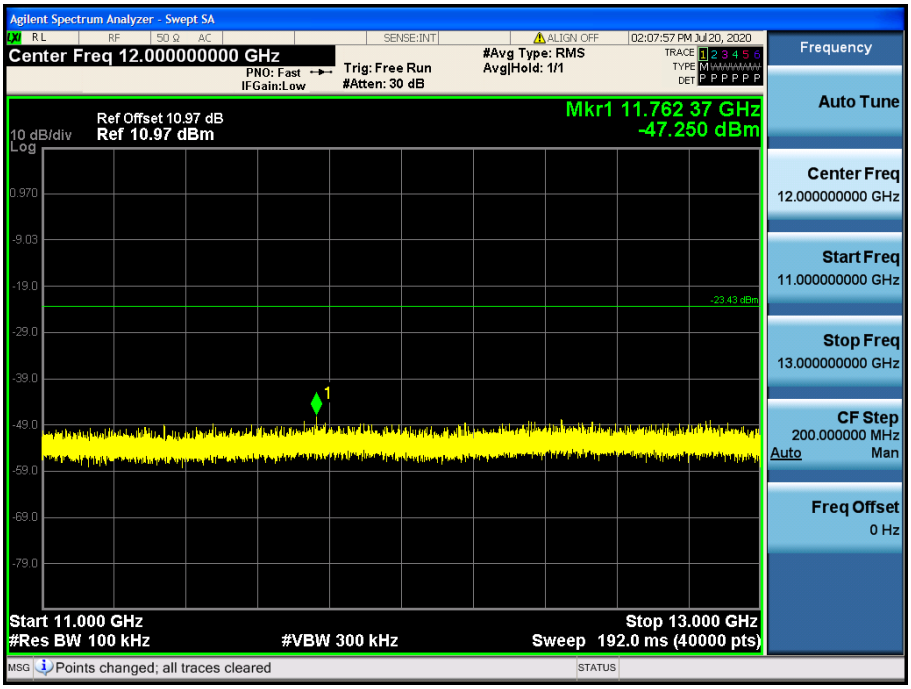
9 GHz ~ 11 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



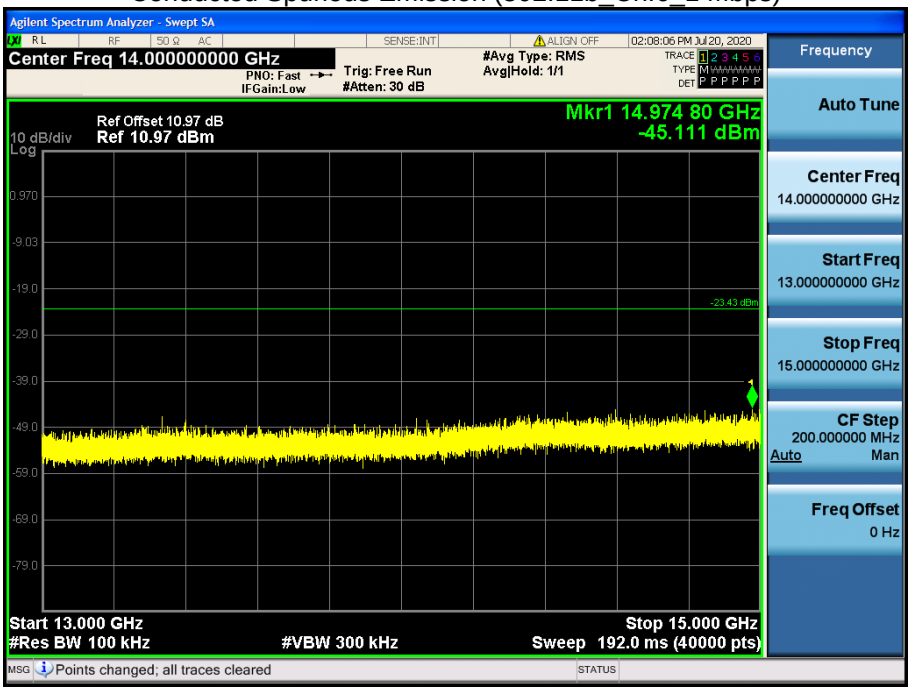
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



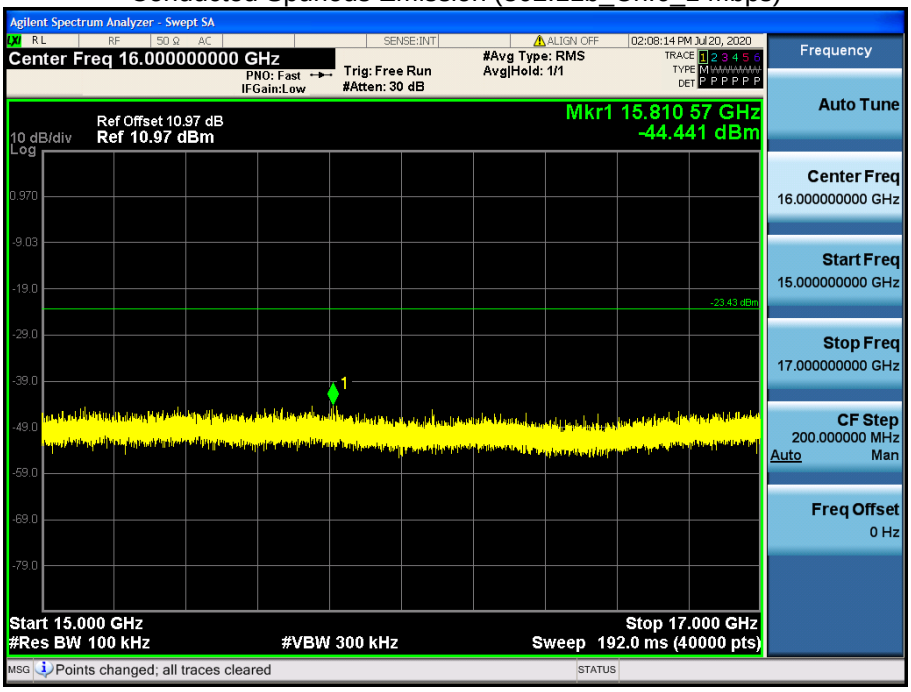
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



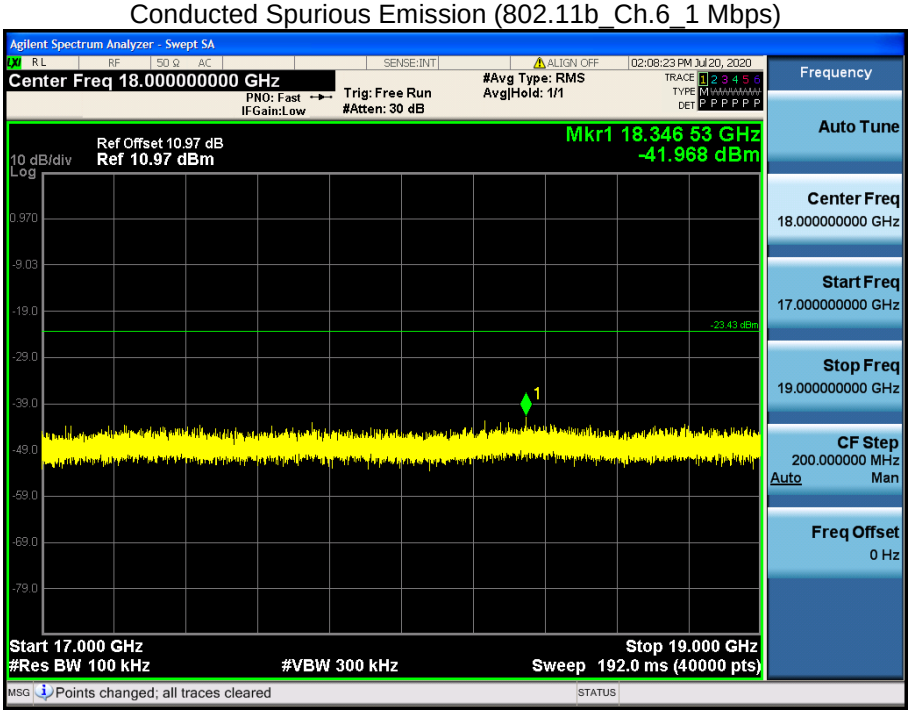
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



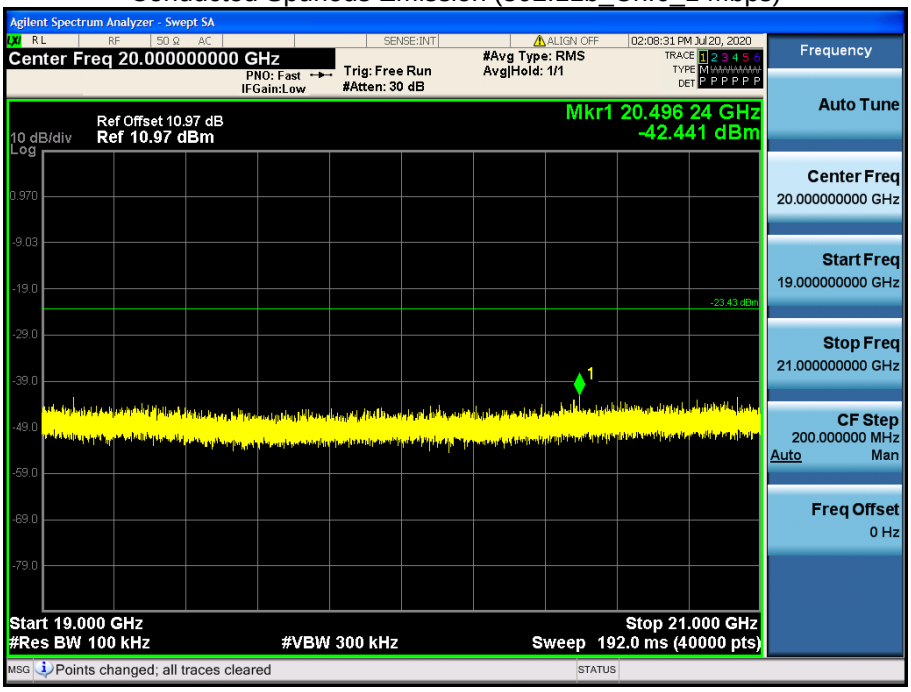
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



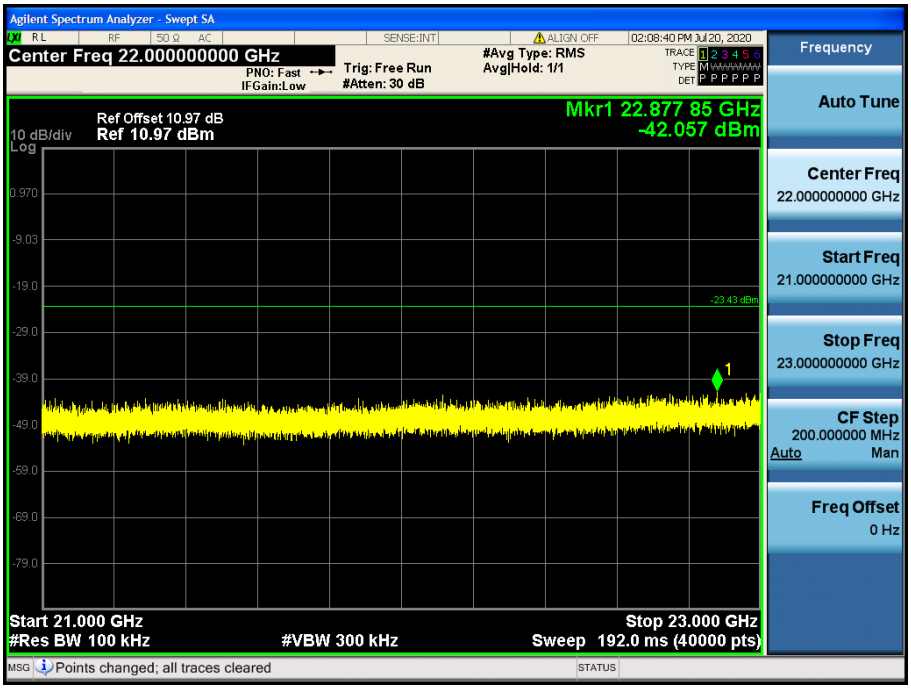
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



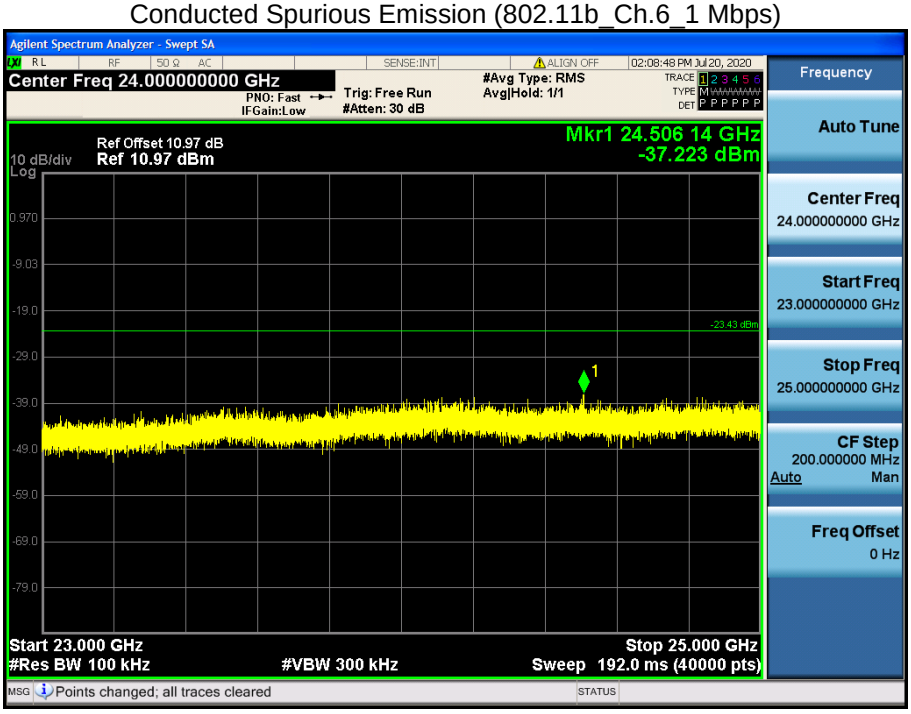
21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



23 GHz ~ 25 GHz

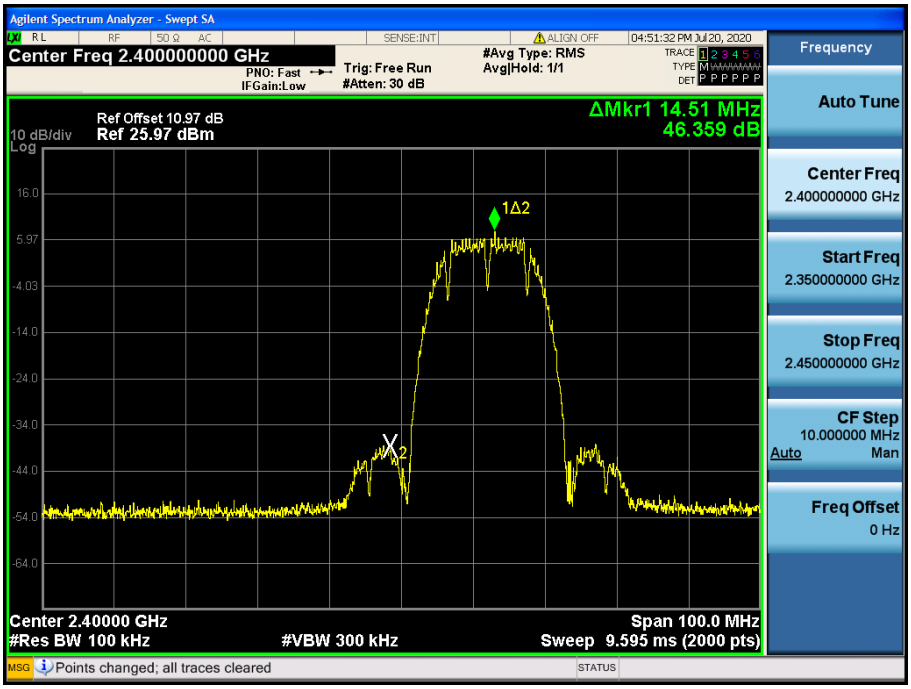
Conducted Spurious Emission (802.11b_Ch.6_1 Mbps)



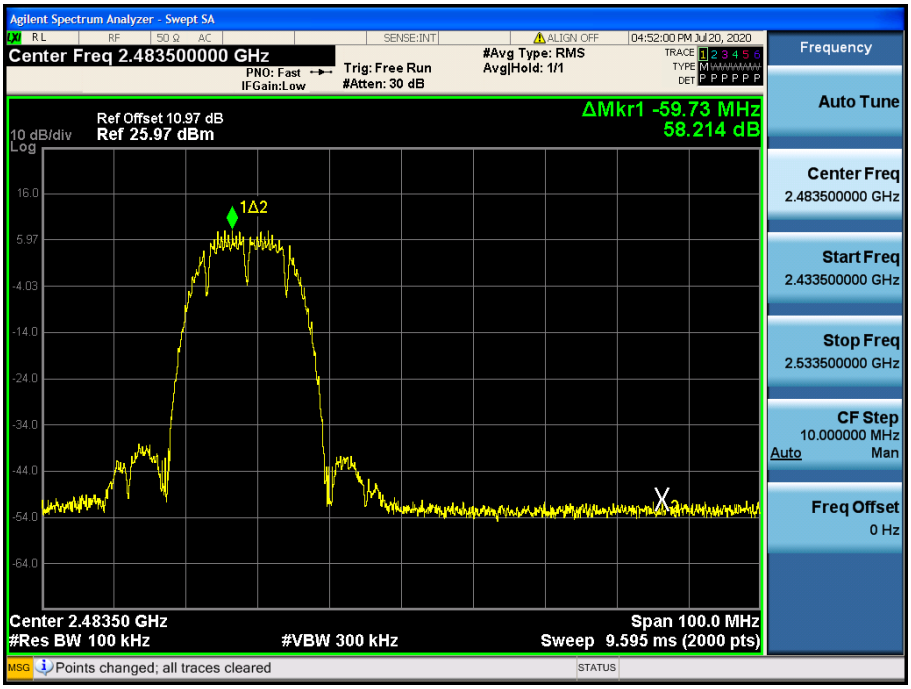
[Ant.2]

▣ Test Plots(BandEdge)

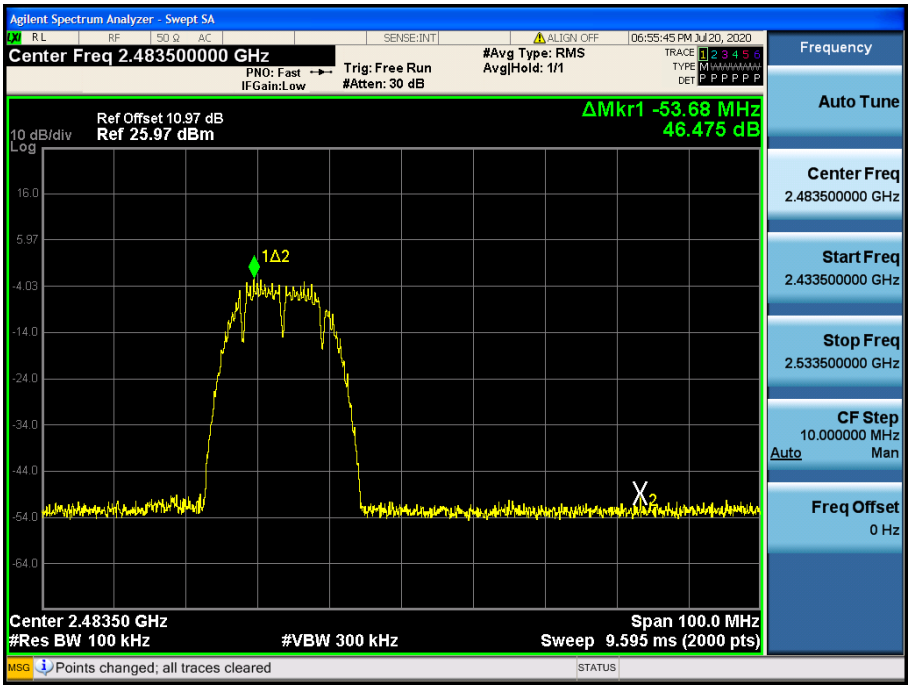
Band Edge (802.11b-CH1)



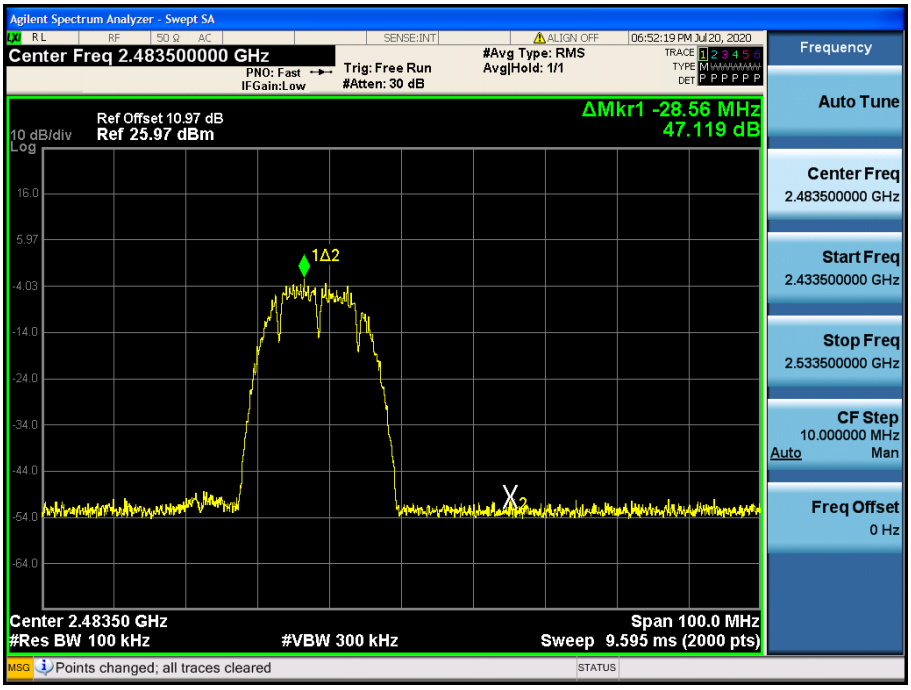
Band Edge (802.11b-CH11)



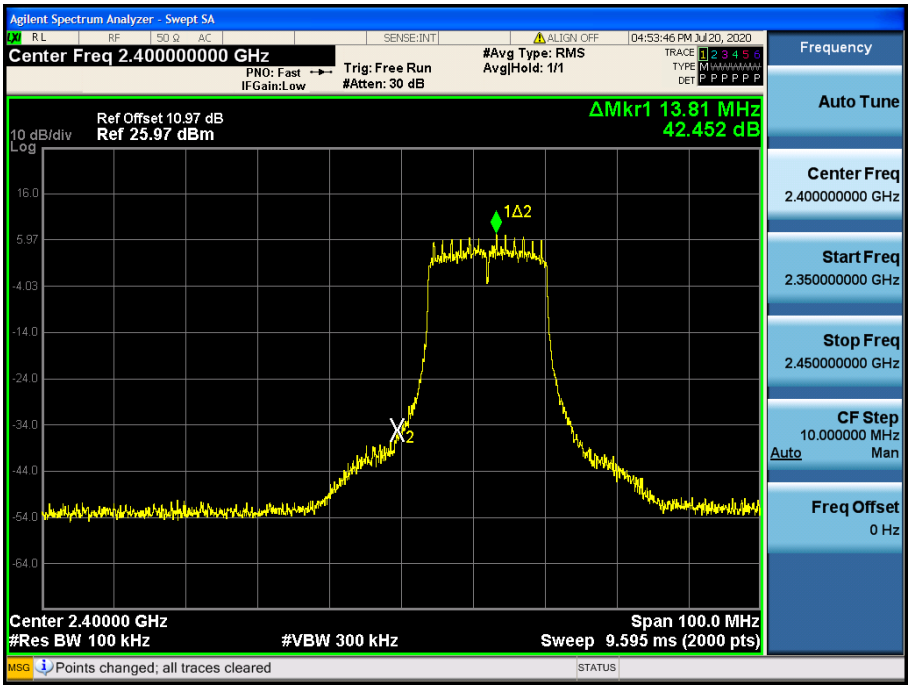
Band Edge (802.11b-CH12)



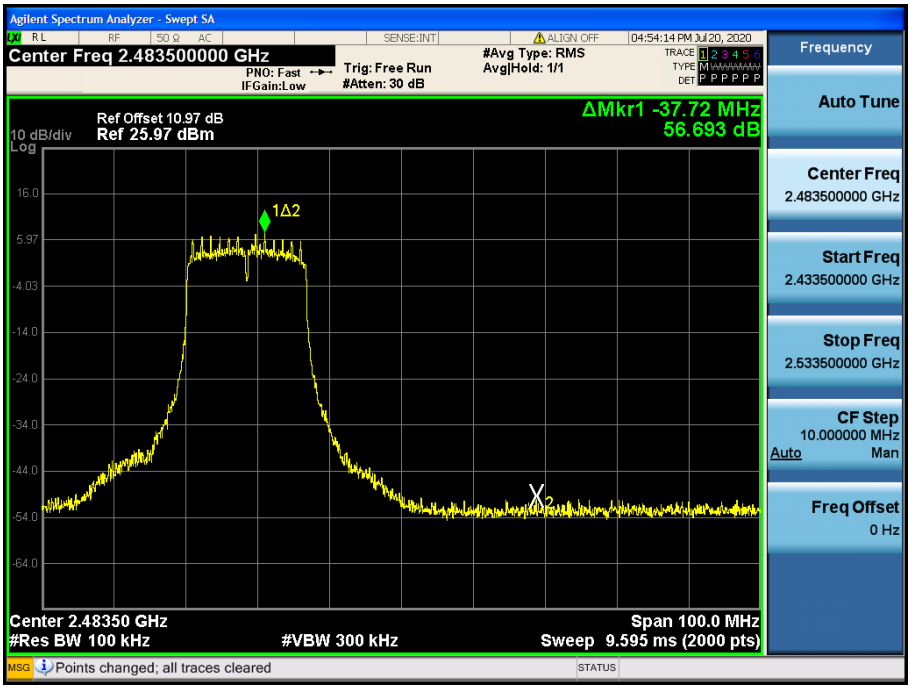
Band Edge (802.11b-CH13)



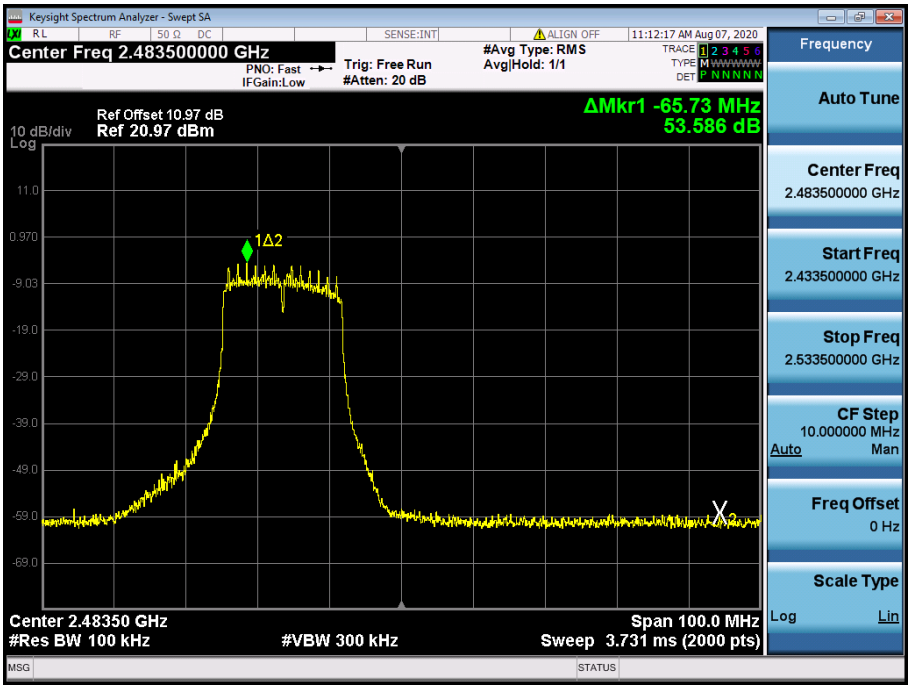
Band Edge (802.11g-CH1)



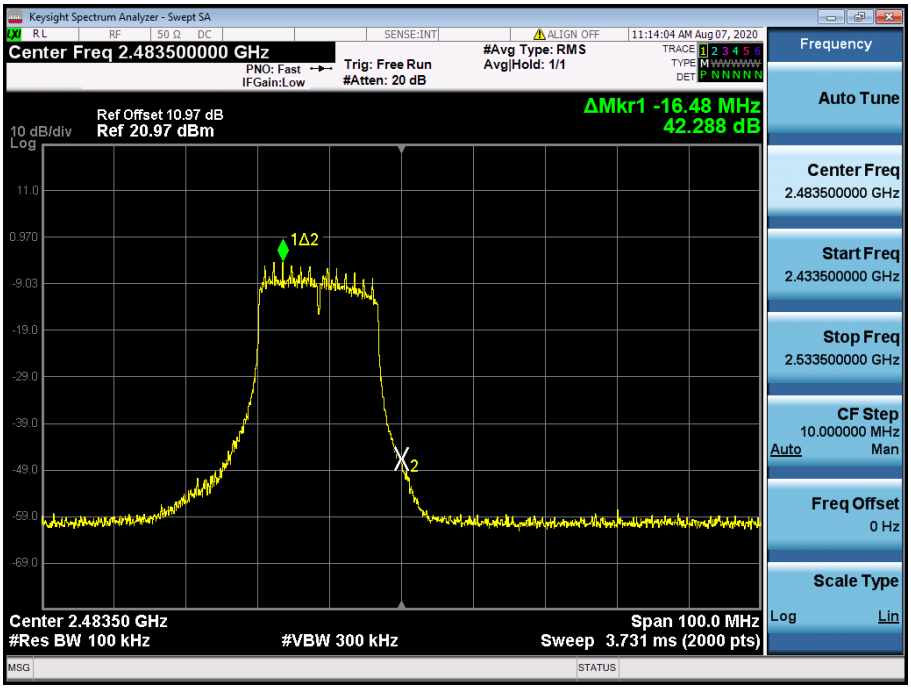
Band Edge (802.11g-CH11)



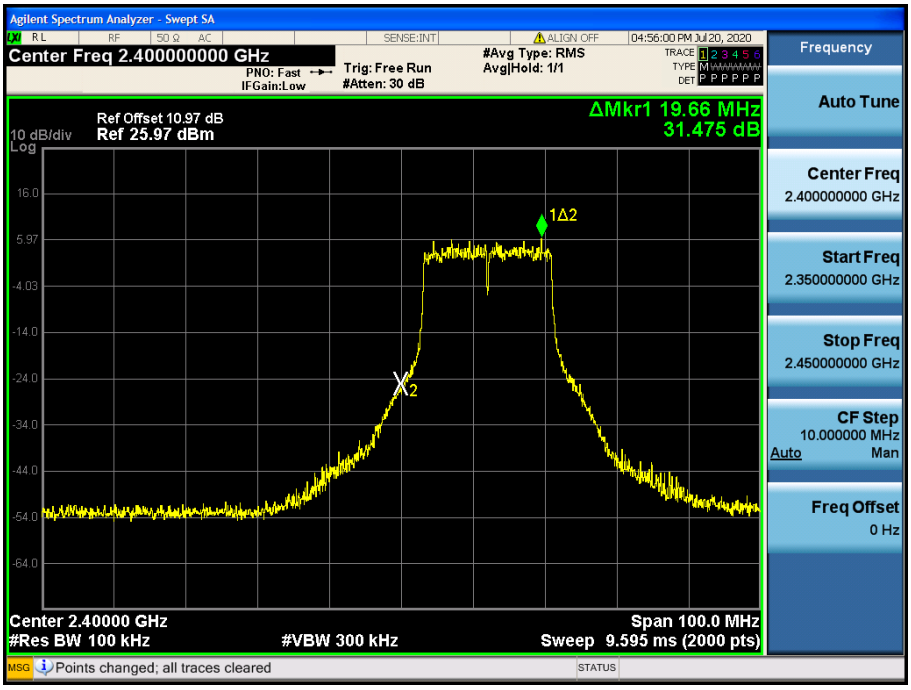
Band Edge (802.11g-CH12)



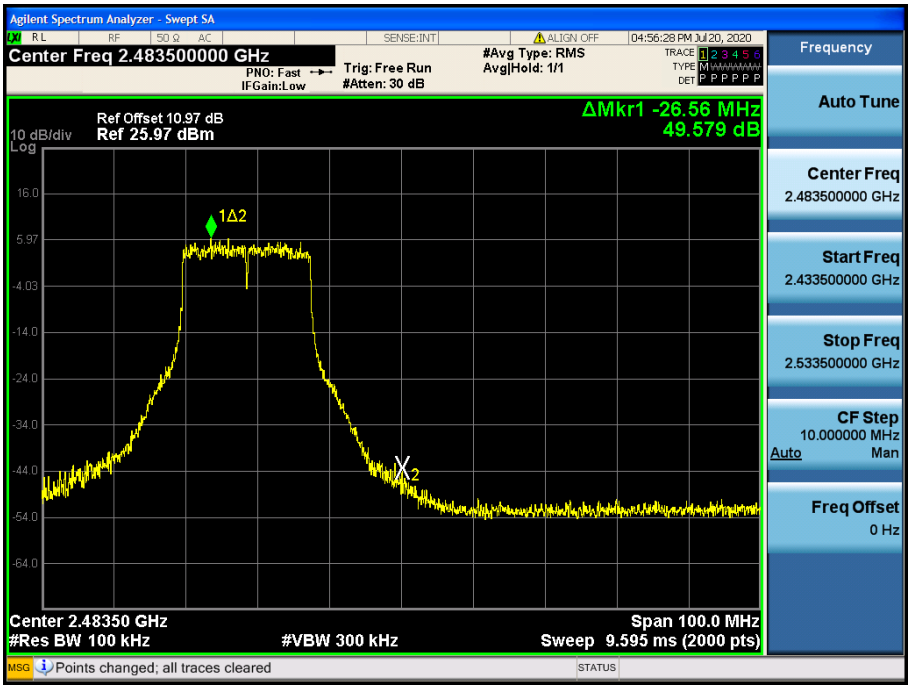
Band Edge (802.11g-CH13)



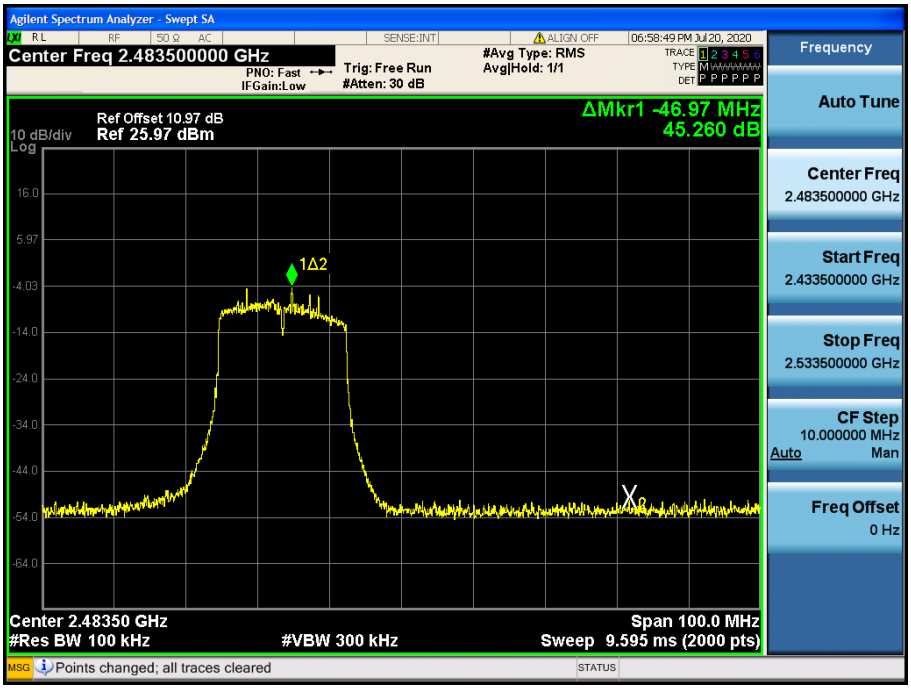
Band Edge (802.11n_HT20 -CH1)



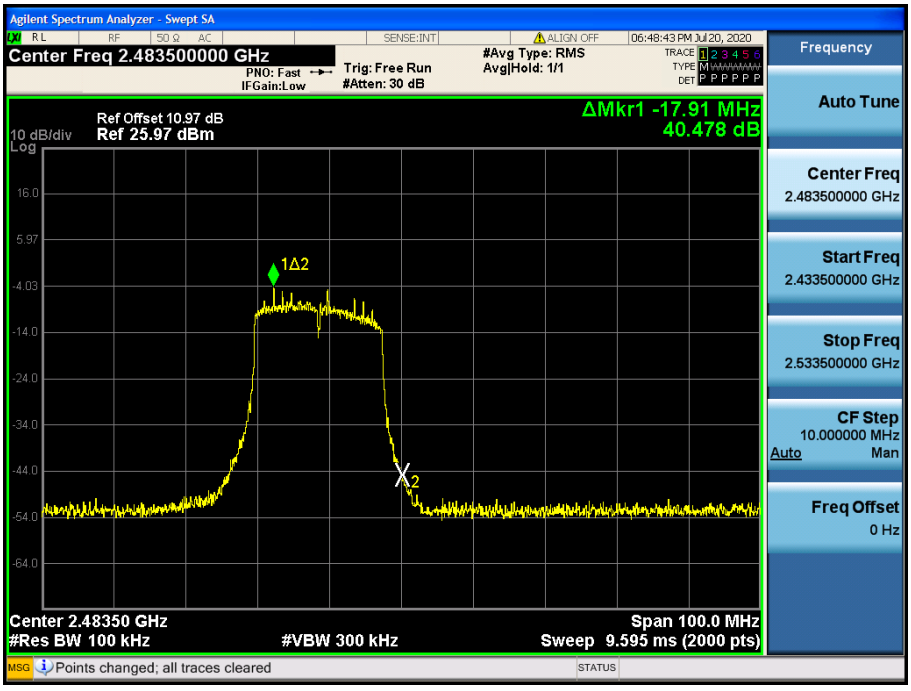
Band Edge (802.11n_HT20 –CH11)



Band Edge (802.11n_HT20 –CH12)



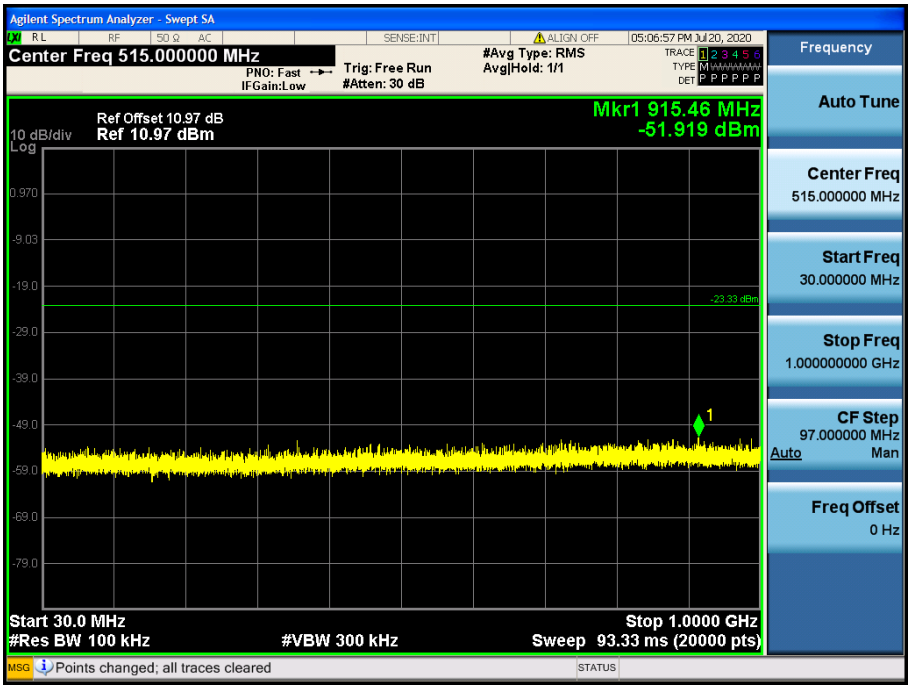
Band Edge (802.11n_HT20 –CH13)



▣ Test Plots(Conducted Spurious Emission)

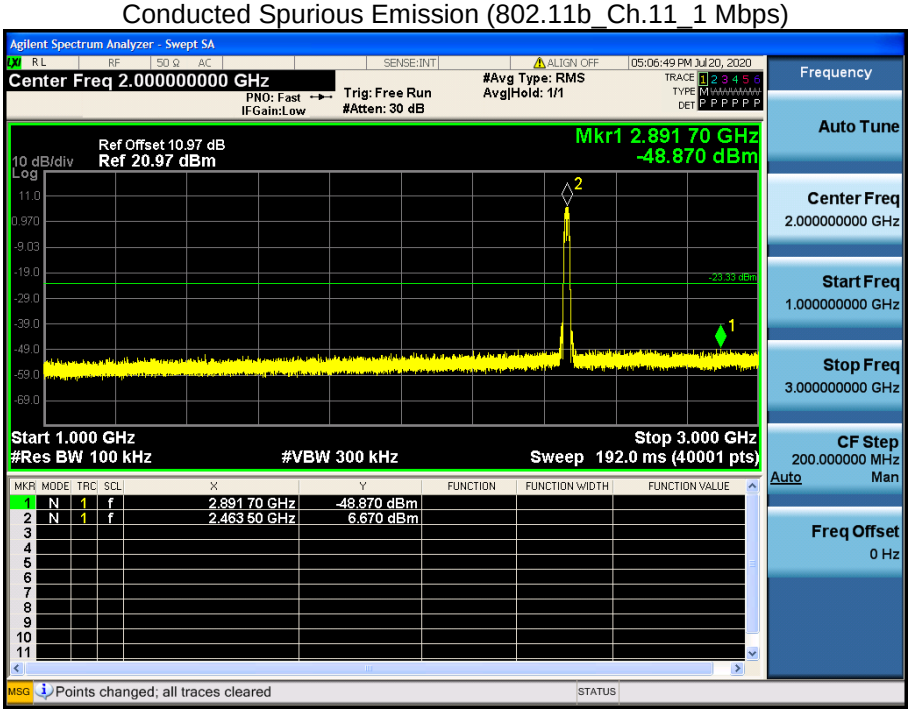
30 MHz ~ 1 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



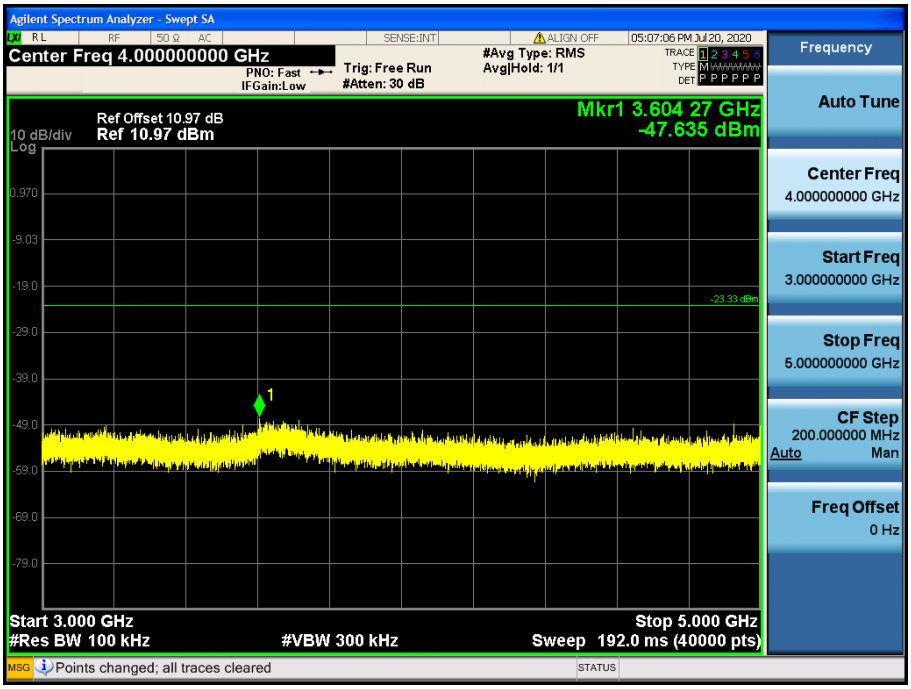
1 GHz ~ 3 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



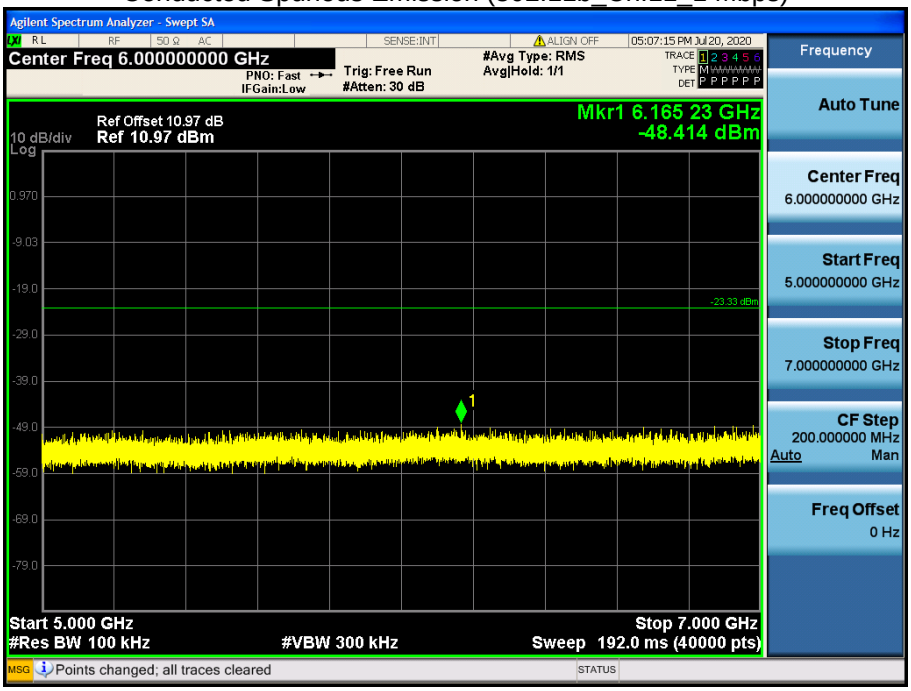
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



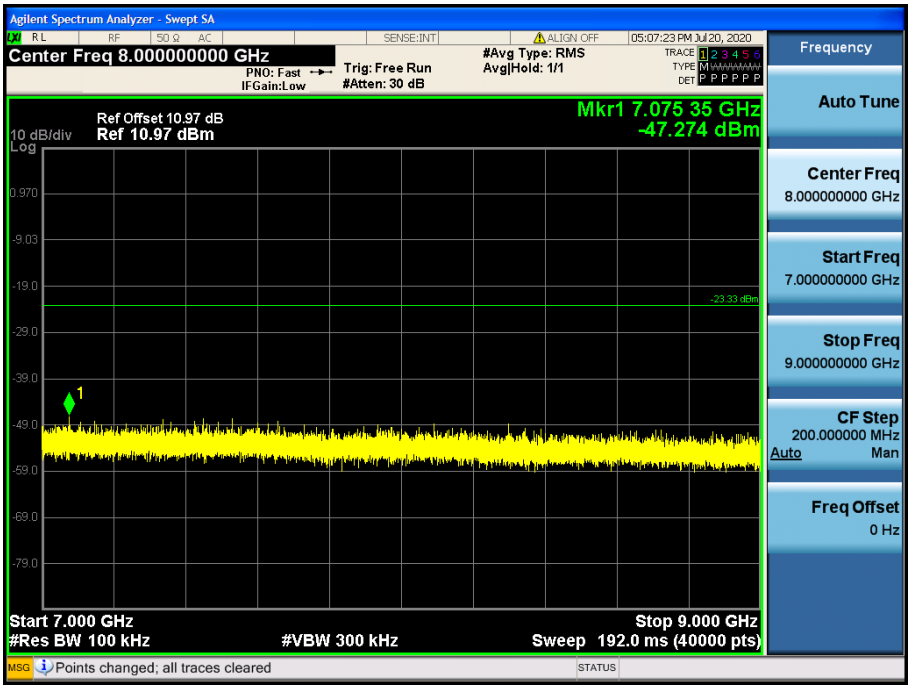
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



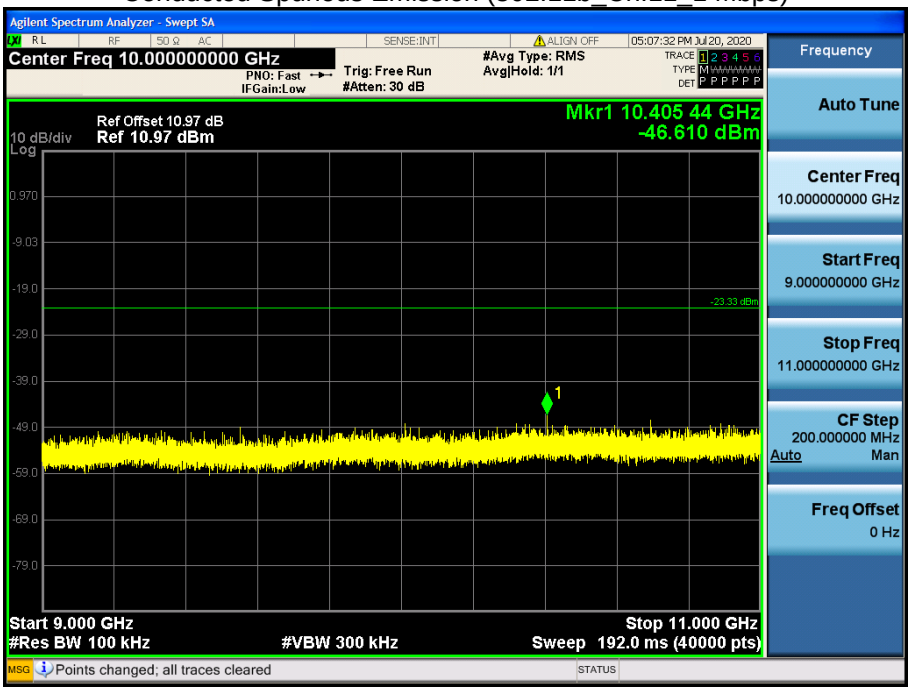
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



9 GHz ~ 11 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)

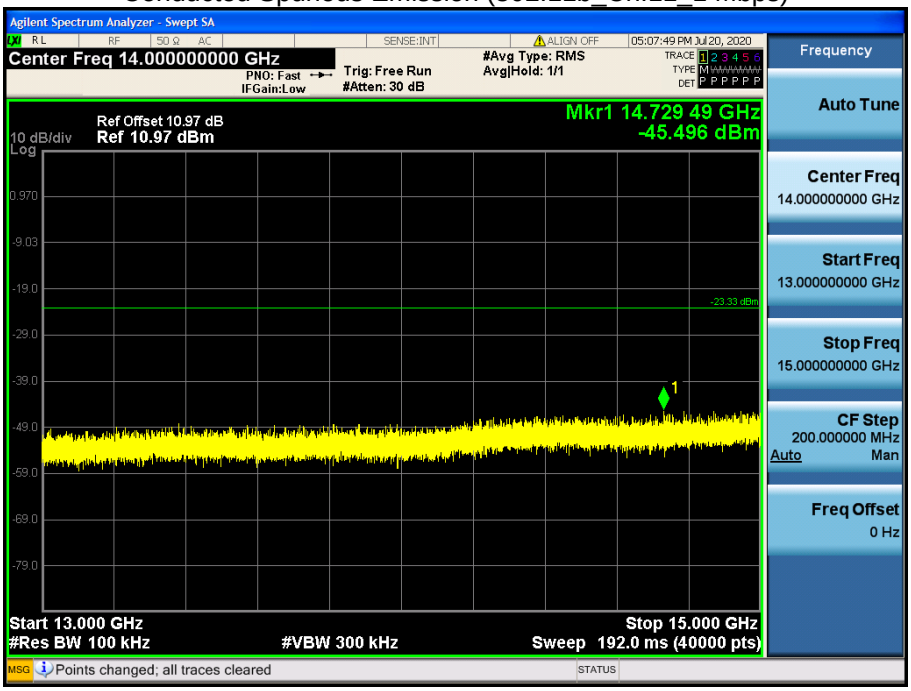


11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)

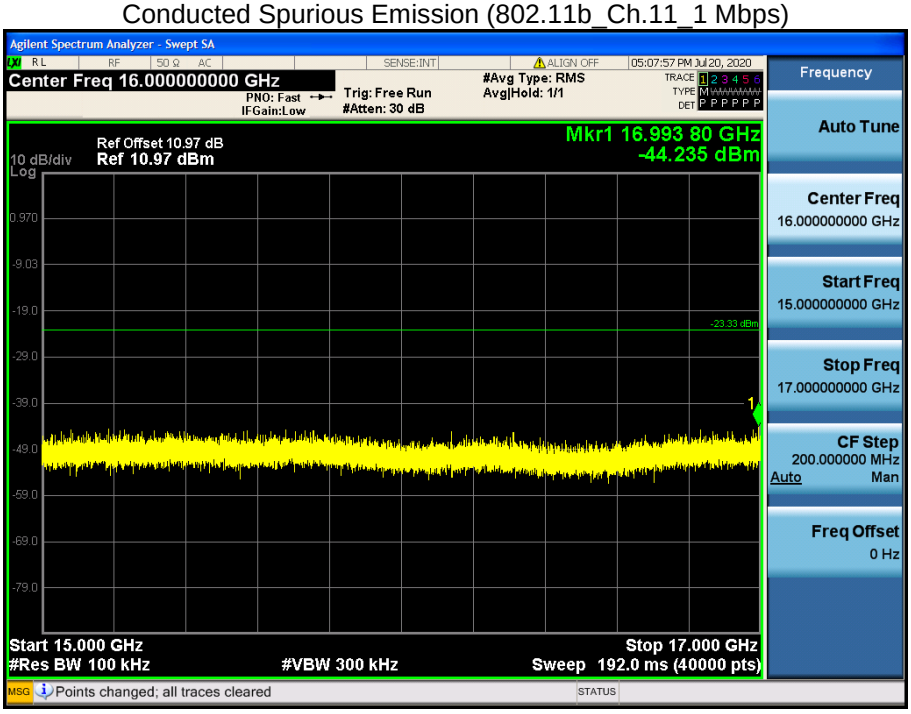
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



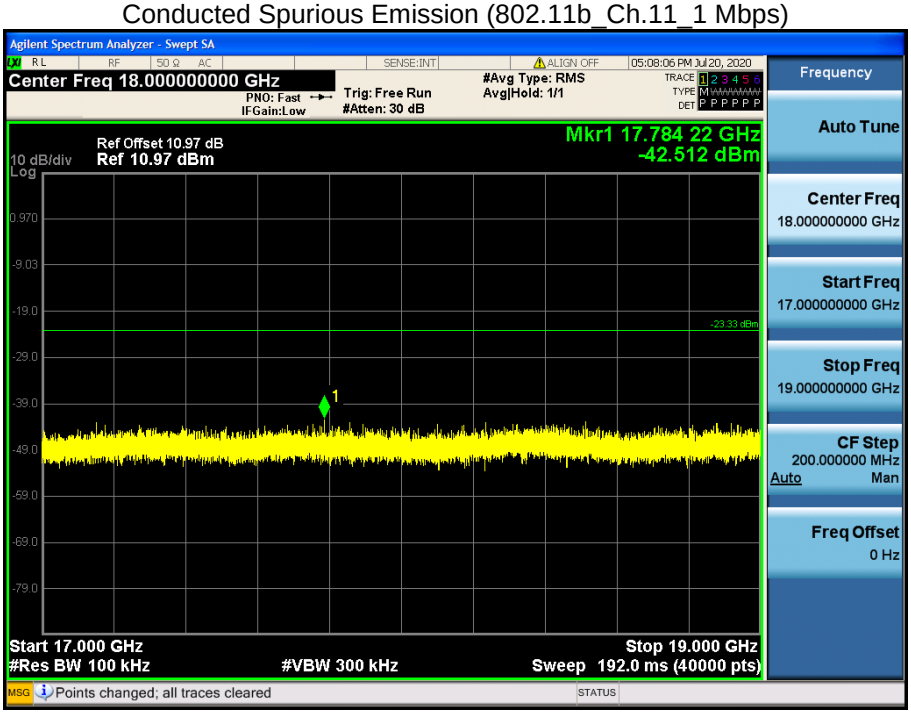
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



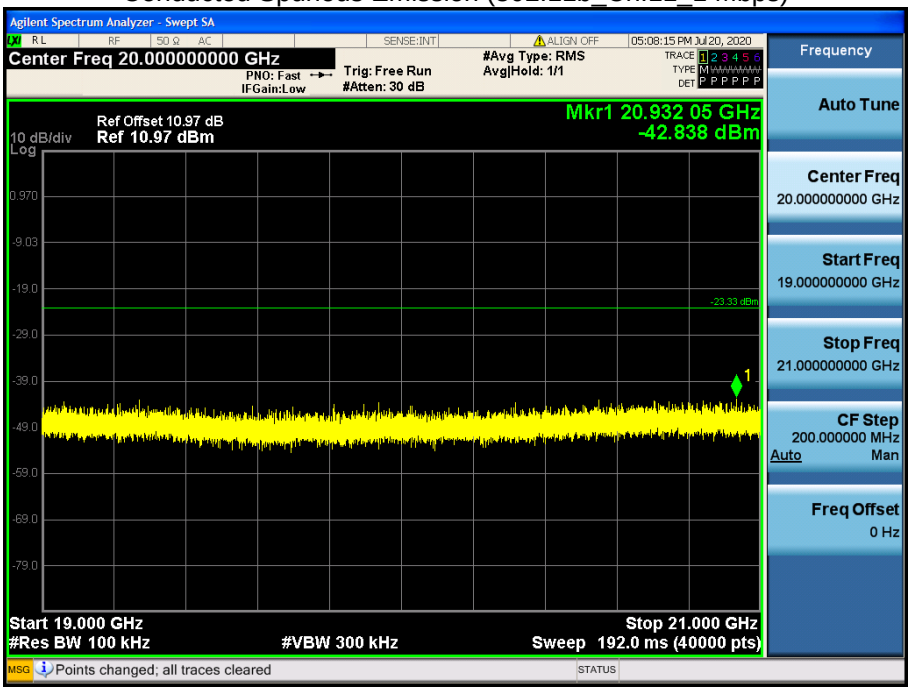
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



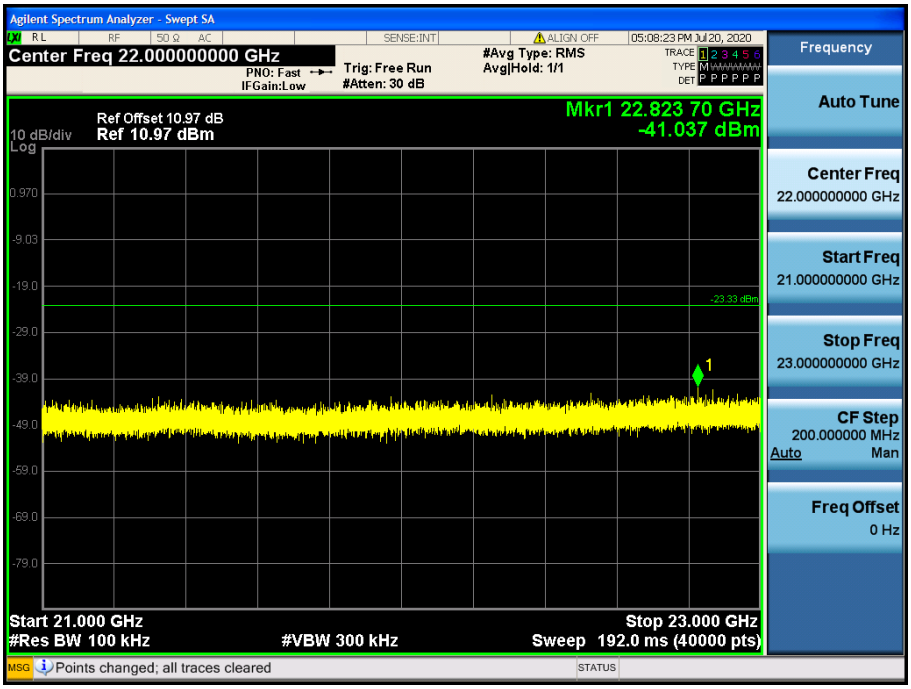
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



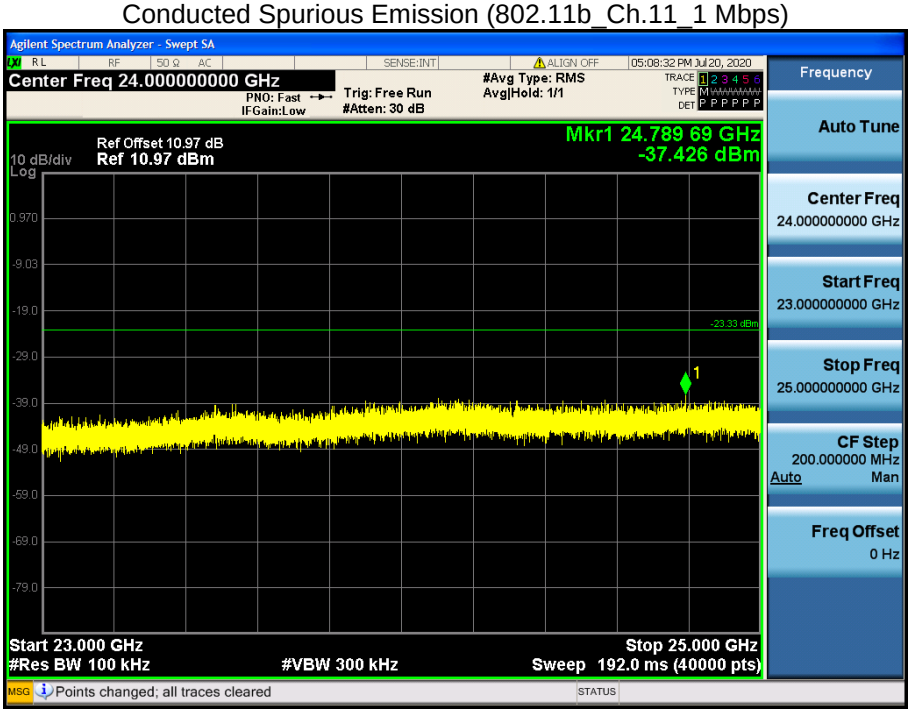
21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



23 GHz ~ 25 GHz

Conducted Spurious Emission (802.11b_Ch.11_1 Mbps)



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 = 40log (specific distance / test distance) (dB)
3. Limit line = specific Limits (dBuV) + Distance extrapolation factor

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.

[Ant.1&Ant.2_MIMO(CDD)]

Frequency Range : Above 1 GHz

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	45.12	1.76	V	46.88	73.98	27.10	PK
4824	39.18	1.76	V	40.94	53.98	13.04	AV
7236	39.42	12.28	V	51.70	73.98	22.28	PK
7236	26.89	12.28	V	39.17	53.98	14.81	AV
4824	45.31	1.76	H	47.07	73.98	26.91	PK
4824	38.68	1.76	H	40.44	53.98	13.54	AV
7236	39.33	12.28	H	51.61	73.98	22.37	PK
7236	26.84	12.28	H	39.12	53.98	14.86	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	45.47	1.96	V	47.43	73.98	26.55	PK
4874	38.20	1.96	V	40.16	53.98	13.82	AV
7311	39.69	11.45	V	51.14	73.98	22.84	PK
7311	27.79	11.45	V	39.24	53.98	14.74	AV
4874	44.48	1.96	H	46.44	73.98	27.54	PK
4874	35.00	1.96	H	36.96	53.98	17.02	AV
7311	39.18	11.45	H	50.63	73.98	23.35	PK
7311	27.74	11.45	H	39.19	53.98	14.79	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	43.61	2.83	V	46.44	73.98	27.54	PK
4924	36.47	2.83	V	39.30	53.98	14.68	AV
7386	38.71	11.87	V	50.58	73.98	23.40	PK
7386	26.82	11.87	V	38.69	53.98	15.29	AV
4924	44.81	2.83	H	47.64	73.98	26.34	PK
4924	38.18	2.83	H	41.01	53.98	12.97	AV
7386	38.95	11.87	H	50.82	73.98	23.16	PK
7386	26.79	11.87	H	38.66	53.98	15.32	AV

Note:

Channel 12 and 13 are less powerful than channel 11 so the test for high channel was performed at channel 11.

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	43.49	0.00	1.76	V	45.25	73.98	28.73	PK
4824	30.56	0.00	1.76	V	32.32	53.98	21.66	AV
7236	38.50	0.00	12.28	V	50.78	73.98	23.20	PK
7236	26.94	0.00	12.28	V	39.22	53.98	14.76	AV
4824	43.50	0.00	1.76	H	45.26	73.98	28.72	PK
4824	30.69	0.00	1.76	H	32.45	53.98	21.53	AV
7236	38.71	0.00	12.28	H	50.99	73.98	22.99	PK
7236	27.02	0.00	12.28	H	39.30	53.98	14.68	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	43.00	0.00	1.96	V	44.96	73.98	29.02	PK
4874	30.93	0.00	1.96	V	32.89	53.98	21.09	AV
7311	39.30	0.00	11.45	V	50.75	73.98	23.23	PK
7311	27.67	0.00	11.45	V	39.12	53.98	14.86	AV
4874	42.75	0.00	1.96	H	44.71	73.98	29.27	PK
4874	30.79	0.00	1.96	H	32.75	53.98	21.23	AV
7311	38.45	0.00	11.45	H	49.90	73.98	24.08	PK
7311	27.61	0.00	11.45	H	39.06	53.98	14.92	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	43.07	0.00	2.83	V	45.90	73.98	28.08	PK
4924	30.65	0.00	2.83	V	33.48	53.98	20.50	AV
7386	38.05	0.00	11.87	V	49.92	73.98	24.06	PK
7386	26.88	0.00	11.87	V	38.75	53.98	15.23	AV
4924	43.14	0.00	2.83	H	45.97	73.98	28.01	PK
4924	30.82	0.00	2.83	H	33.65	53.98	20.33	AV
7386	39.11	0.00	11.87	H	50.98	73.98	23.00	PK
7386	26.92	0.00	11.87	H	38.79	53.98	15.19	AV

Note:

Channel 12 and 13 are less powerful than channel 11 so the test for high channel was performed at channel 11.

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	43.02	0.00	1.76	V	44.78	73.98	29.20	PK
4824	30.71	0.00	1.76	V	32.47	53.98	21.51	AV
7236	38.43	0.00	12.28	V	50.71	73.98	23.27	PK
7236	26.87	0.00	12.28	V	39.15	53.98	14.83	AV
4824	42.60	0.00	1.76	H	44.36	73.98	29.62	PK
4824	30.66	0.00	1.76	H	32.42	53.98	21.56	AV
7236	38.55	0.00	12.28	H	50.83	73.98	23.15	PK
7236	26.95	0.00	12.28	H	39.23	53.98	14.75	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	42.59	0.00	1.96	V	44.55	73.98	29.43	PK
4874	30.96	0.00	1.96	V	32.92	53.98	21.06	AV
7311	39.36	0.00	11.45	V	50.81	73.98	23.17	PK
7311	27.61	0.00	11.45	V	39.06	53.98	14.92	AV
4874	42.28	0.00	1.96	H	44.24	73.98	29.74	PK
4874	30.84	0.00	1.96	H	32.80	53.98	21.18	AV
7311	38.60	0.00	11.45	H	50.05	73.98	23.93	PK
7311	27.66	0.00	11.45	H	39.11	53.98	14.87	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	42.35	0.00	2.83	V	45.18	73.98	28.80	PK
4924	30.74	0.00	2.83	V	33.57	53.98	20.41	AV
7386	38.43	0.00	11.87	V	50.30	73.98	23.68	PK
7386	26.74	0.00	11.87	V	38.61	53.98	15.37	AV
4924	42.15	0.00	2.83	H	44.98	73.98	29.00	PK
4924	30.69	0.00	2.83	H	33.52	53.98	20.46	AV
7386	38.86	0.00	11.87	H	50.73	73.98	23.25	PK
7386	26.82	0.00	11.87	H	38.69	53.98	15.29	AV

Note:

Channel 12 and 13 are less powerful than channel 11 so the test for high channel was performed at channel 11.

[DBS Mode]

Test case 1

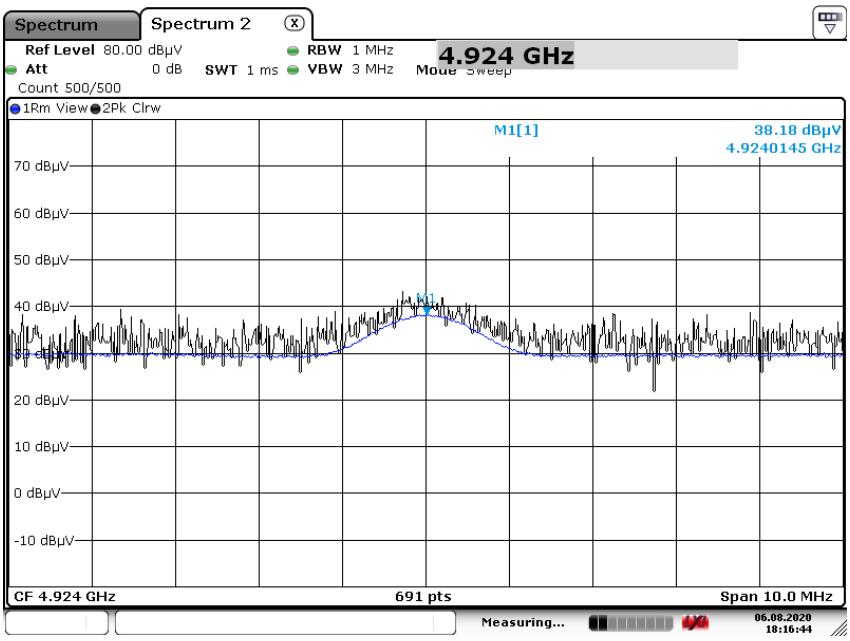
Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G + D.F [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	46.37	2.83	V	49.20	73.98	24.78	PK
4924	40.52	2.83	V	43.35	53.98	10.63	AV
7386	38.34	11.87	V	50.21	73.98	23.77	PK
7386	26.84	11.87	V	38.71	53.98	15.27	AV
4924	46.77	2.83	H	49.60	73.98	24.38	PK
4924	40.88	2.83	H	43.71	53.98	10.27	AV
7386	38.88	11.87	H	50.75	73.98	23.23	PK
7386	27.01	11.87	H	38.88	53.98	15.10	AV

Test case 2

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	47.69	2.83	V	50.52	73.98	23.46	PK
4924	39.34	2.83	V	42.17	53.98	11.81	AV
7386	37.55	11.87	V	49.42	73.98	24.56	PK
7386	26.88	11.87	V	38.75	53.98	15.23	AV
4924	48.83	2.83	H	51.66	73.98	22.32	PK
4924	39.85	2.83	H	42.68	53.98	11.30	AV
7386	38.03	11.87	H	49.90	73.98	24.08	PK
7386	27.10	11.87	H	38.97	53.98	15.01	AV

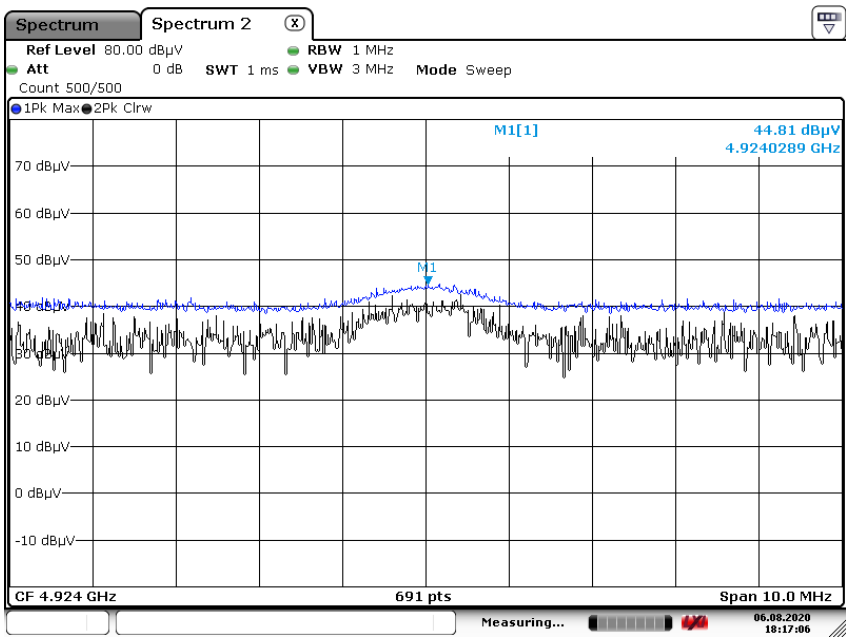
▣ Test Plots [Ant.1&Ant.2_MIMO(CDD)] _ Worst case : Y-H

Radiated Spurious Emissions plot – Average Reading (802.11b_1 Mbps, Ch.11 2nd Harmonic)



Date: 6.AUG.2020 18:16:45

Radiated Spurious Emissions plot – Peak Reading (802.11b_1 Mbps, Ch.11 2nd Harmonic)

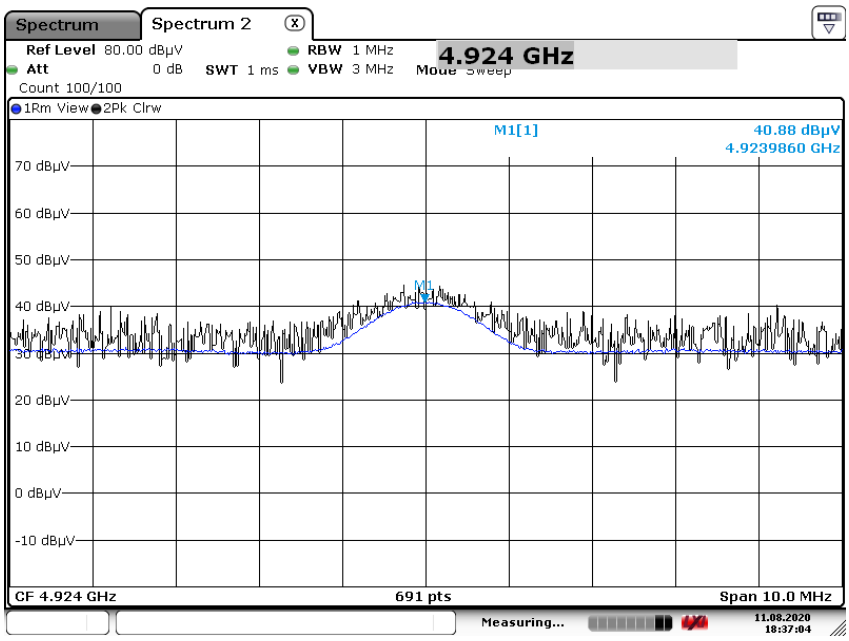


Date: 6.AUG.2020 18:17:06

Note: Plot of worst case are only reported.

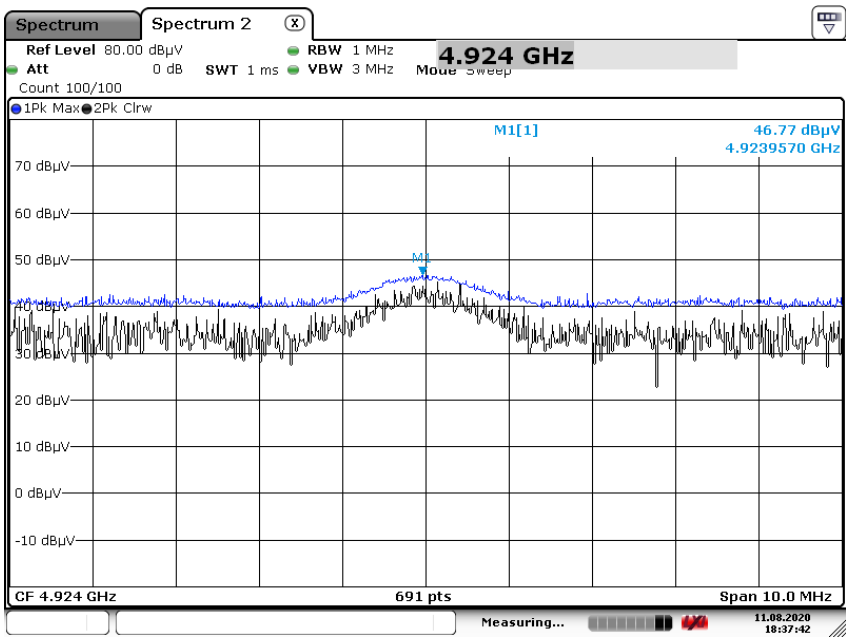
▣ **Test Plots (DBS) _ Worst case : Y-H**

Radiated Spurious Emissions plot – Average Reading (Test case 1_ 2nd Harmonic)



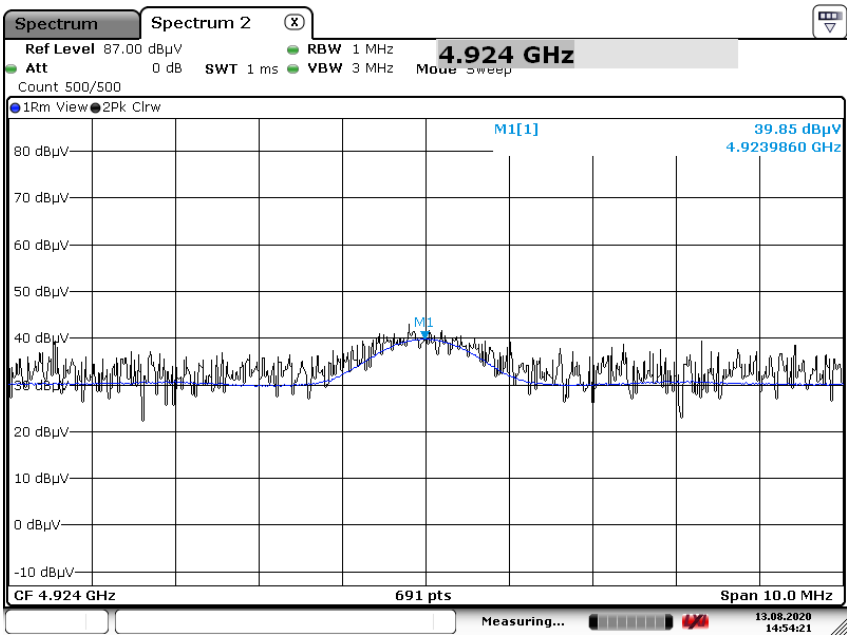
Date: 11.AUG.2020 18:37:04

Radiated Spurious Emissions plot – Peak Reading (Test case 1_ 2nd Harmonic)



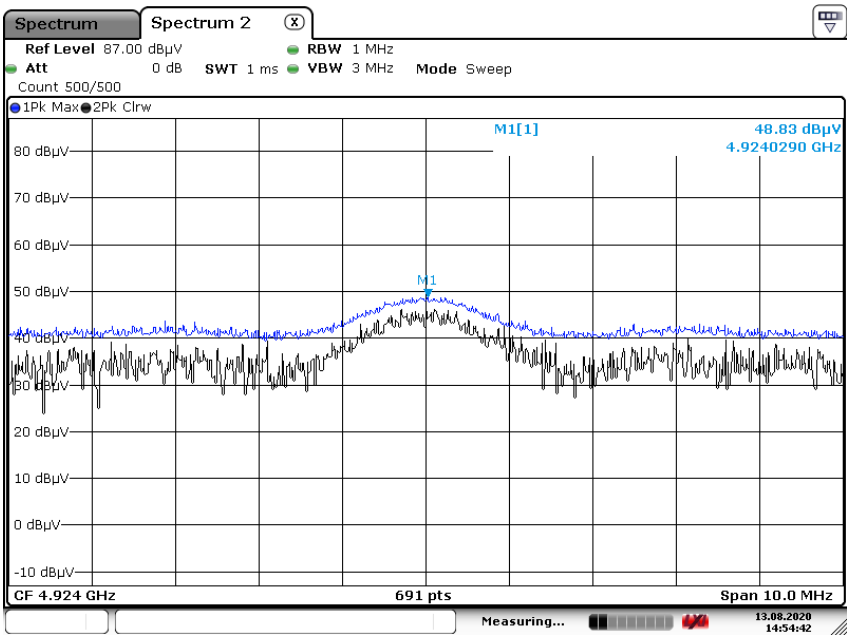
Date: 11.AUG.2020 18:37:42

Radiated Spurious Emissions plot – Average Reading (Test case 2_ 2nd Harmonic)



Date: 13.AUG.2020 14:54:21

Radiated Spurious Emissions plot – Peak Reading (Test case 2_ 2nd Harmonic)



Date: 13.AUG.2020 14:54:42

9.7 RADIATED RESTRICTED BAND EDGES

[Ant.1&Ant.2_MIMO(CDD)]

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	23.246	34.77	H	58.02	73.98	15.96	PK
2390.0	11.753	34.77	H	46.52	53.98	7.46	AV
2390.0	19.756	34.77	V	54.53	73.98	19.45	PK
2390.0	11.850	34.77	V	46.62	53.98	7.36	AV
2483.5	23.539	34.25	H	57.79	73.98	16.19	PK
2483.5	11.629	34.25	H	45.88	53.98	8.10	AV
2483.5	21.850	34.25	V	56.10	73.98	17.88	PK
2483.5	11.594	34.25	V	45.84	53.98	8.14	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2467 MHz, 2472 MHz
Channel No.	12 Ch, 13 Ch

Channel No	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
12	2483.5	18.118	34.25	H	52.37	73.98	21.61	PK
	2483.5	7.684	34.25	H	41.93	53.98	12.05	AV
	2483.5	17.541	34.25	V	51.79	73.98	22.19	PK
	2483.5	7.492	34.25	V	41.74	53.98	12.24	AV
13	2483.5	18.313	34.25	H	52.56	73.98	21.42	PK
	2483.5	7.704	34.25	H	41.95	53.98	12.03	AV
	2483.5	17.699	34.25	V	51.95	73.98	22.03	PK
	2483.5	7.614	34.25	V	41.86	53.98	12.12	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	22.850	0.00	34.77	H	57.62	73.98	16.36	PK
2390.0	11.968	0.00	34.77	H	46.74	53.98	7.24	AV
2390.0	21.368	0.00	34.77	V	56.14	73.98	17.84	PK
2390.0	11.694	0.00	34.77	V	46.46	53.98	7.52	AV
2483.5	23.957	0.00	34.25	H	58.21	73.98	15.77	PK
2483.5	11.856	0.00	34.25	H	46.11	53.98	7.87	AV
2483.5	23.755	0.00	34.25	V	58.01	73.98	15.98	PK
2483.5	11.537	0.00	34.25	V	45.79	53.98	8.19	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2467 MHz, 2472 MHz
Channel No.	12 Ch, 13 Ch

Channel No	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
12	2483.5	19.201	0.00	34.25	H	53.45	73.98	20.53	PK
	2483.5	7.811	0.00	34.25	H	42.06	53.98	11.92	AV
	2483.5	18.881	0.00	34.25	V	53.13	73.98	20.85	PK
	2483.5	7.749	0.00	34.25	V	42.00	53.98	11.98	AV
13	2483.5	31.862	0.00	34.25	H	66.11	73.98	7.87	PK
	# 2483.5~ 2484.5	17.280	0.00	34.25	H	51.53	53.98	2.45	AV
	2484.5 ~ 2500	15.316	0.00	34.25	H	49.57	53.98	4.41	AV
	2483.5	30.294	0.00	34.25	V	64.54	73.98	9.44	PK
	# 2483.5~ 2484.5	16.641	0.00	34.25	V	50.89	53.98	3.09	AV
	2484.5 ~ 2500	15.210	0.00	34.25	V	49.46	53.98	4.52	AV

Note : # integration method Used (ANSI C63.10 Section11.13.3)

Operation Mode:	802.11n (HT20)
Transfer Rate:	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	23.115	0.00	34.77	H	57.89	73.98	16.10	PK
2390.0	12.011	0.00	34.77	H	46.78	53.98	7.20	AV
2390.0	20.090	0.00	34.77	V	54.86	73.98	19.12	PK
2390.0	11.946	0.00	34.77	V	46.72	53.98	7.26	AV
2483.5	23.816	0.00	34.25	H	58.07	73.98	15.91	PK
2483.5	12.030	0.00	34.25	H	46.28	53.98	7.70	AV
2483.5	22.143	0.00	34.25	V	56.39	73.98	17.59	PK
2483.5	11.855	0.00	34.25	V	46.11	53.98	7.87	AV

Operation Mode:	802.11n (HT20)
Transfer Rate:	0
Operating Frequency	2467 MHz, 2472 MHz
Channel No.	12 Ch, 13 Ch

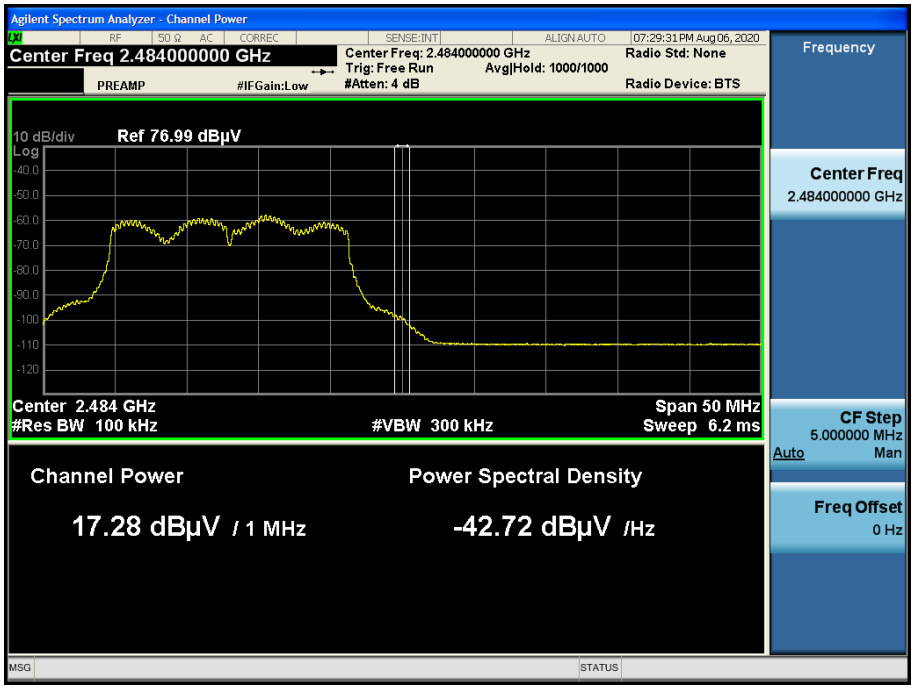
Channel No	Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+ C.L + D.F [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
12	2483.5	18.941	0.00	34.25	H	53.19	73.98	20.79	PK
	2483.5	7.711	0.00	34.25	H	41.96	53.98	12.02	AV
	2483.5	18.552	0.00	34.25	V	52.80	73.98	21.18	PK
	2483.5	7.546	0.00	34.25	V	41.80	53.98	12.18	AV
13	2483.5	30.793	0.00	34.25	H	65.04	73.98	8.94	PK
	# 2483.5~ 2484.5	17.170	0.00	34.25	H	51.42	53.98	2.56	AV
	2484.5 ~ 2500	15.990	0.00	34.25	H	50.24	53.98	3.74	AV
	2483.5	28.970	0.00	34.25	V	63.22	73.98	10.76	PK
	# 2483.5~ 2484.5	15.113	0.00	34.25	V	49.36	53.98	4.62	AV
	2484.5 ~ 2500	13.890	0.00	34.25	V	48.14	53.98	5.84	AV

Note : # integration method Used (ANSI C63.10 Section11.13.3)

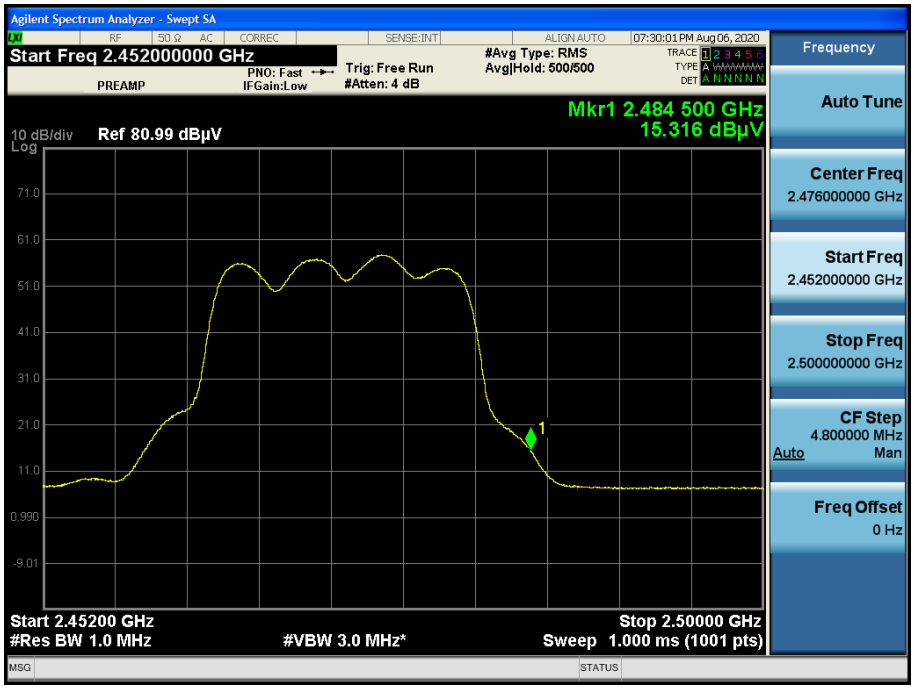
[Ant.1&Ant.2_MIMO(CDD)]

▣ Test Plots (Worst case : X-H)

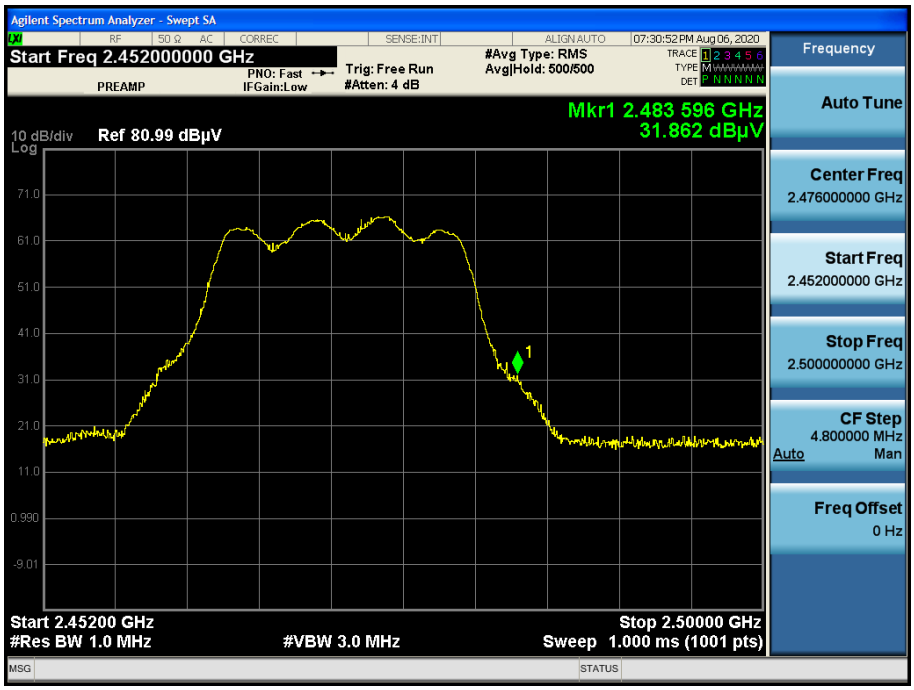
Radiated Restricted Band Edges plot – Average Reading (802.11g_6 Mbps Ch.13)_ 2 483.5 MHz ~ 2 484.5 MHz



Radiated Restricted Band Edges plot – Average Reading (802.11g_6 Mbps Ch.13)_ 2 484.5 MHz ~ 2 500 MHz



Radiated Restricted Band Edges plot – Peak Reading (802.11g_6 Mbps Ch.13)



Note:

Plot of worst case are only reported.

9.8 POWERLINE CONDUCTED EMISSIONS

[T/A : 15 W] Conducted Emissions (Line 1)

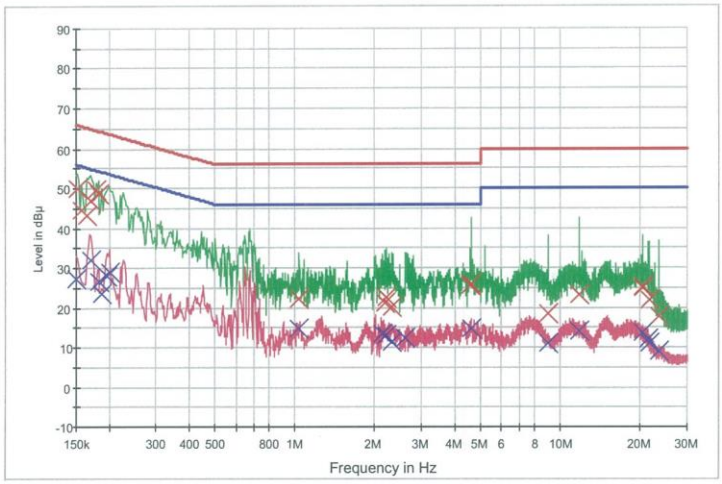
2.4GHz WLAN MODE L1 1 / 2

HCT TEST Report

Common Information

EUT:	SM-G781V
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	2.4GHz WLAN MODE L1

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	50.1	9.000	Off	L1	9.8	15.8	65.9
0.158000	44.5	9.000	Off	L1	9.8	21.1	65.6
0.164000	43.2	9.000	Off	L1	9.8	22.0	65.3
0.170000	47.0	9.000	Off	L1	9.8	18.0	65.0
0.178000	49.8	9.000	Off	L1	9.8	14.8	64.6
0.182000	48.5	9.000	Off	L1	9.8	15.9	64.4
1.038000	22.1	9.000	Off	L1	9.8	33.9	56.0
2.194000	21.2	9.000	Off	L1	9.9	34.8	56.0
2.210000	22.4	9.000	Off	L1	9.9	33.6	56.0
2.328000	20.3	9.000	Off	L1	9.9	35.7	56.0
4.586000	25.6	9.000	Off	L1	10.0	30.4	56.0
4.596000	25.9	9.000	Off	L1	10.0	30.1	56.0
8.980000	18.3	9.000	Off	L1	10.2	41.7	60.0
11.768000	23.3	9.000	Off	L1	10.3	36.7	60.0
20.344000	25.3	9.000	Off	L1	10.5	34.7	60.0
20.376000	25.0	9.000	Off	L1	10.5	35.0	60.0
21.684000	21.8	9.000	Off	L1	10.6	38.2	60.0
23.460000	17.9	9.000	Off	L1	10.6	42.1	60.0

2020-08-03 오후 6:09:58

2.4GHz WLAN MODE L1 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	27.4	9.000	Off	L1	9.8	28.6	56.0
0.170000	31.9	9.000	Off	L1	9.8	23.1	55.0
0.182000	26.6	9.000	Off	L1	9.8	27.8	54.4
0.188000	23.6	9.000	Off	L1	9.8	30.6	54.1
0.196000	28.0	9.000	Off	L1	9.8	25.8	53.8
0.200000	28.8	9.000	Off	L1	9.8	24.8	53.6
1.038000	14.9	9.000	Off	L1	9.8	31.1	46.0
2.146000	13.3	9.000	Off	L1	9.9	32.7	46.0
2.212000	13.2	9.000	Off	L1	9.9	32.8	46.0
2.328000	11.3	9.000	Off	L1	9.9	34.7	46.0
2.612000	12.4	9.000	Off	L1	9.9	33.6	46.0
4.596000	14.8	9.000	Off	L1	10.0	31.2	46.0
8.980000	10.9	9.000	Off	L1	10.2	39.1	50.0
11.766000	14.2	9.000	Off	L1	10.3	35.8	50.0
20.376000	13.7	9.000	Off	L1	10.5	36.3	50.0
21.354000	11.9	9.000	Off	L1	10.6	38.1	50.0
21.684000	10.9	9.000	Off	L1	10.6	39.1	50.0
23.460000	9.1	9.000	Off	L1	10.6	40.9	50.0

2020-08-03 오후 6:09:58

[T/A : 15 W] Conducted Emissions (Line 2)

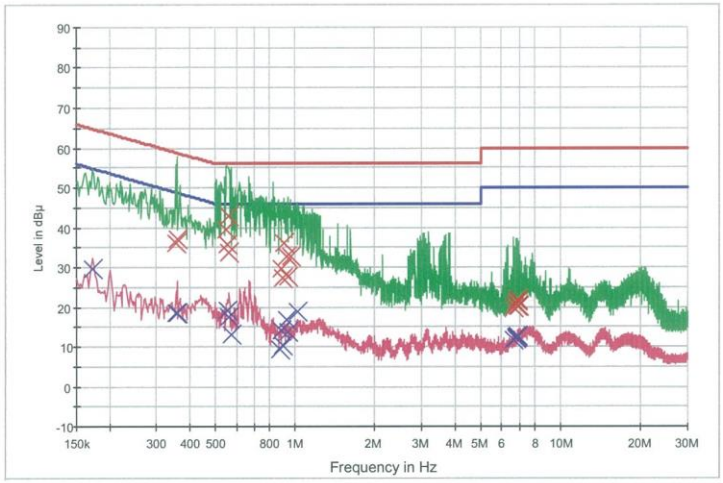
2.4GHz WLAN MODE N 1 / 2

HCT TEST Report

Common Information

EUT:	SM-G781V
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	2.4GHz WLAN MODE N

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.356000	36.0	9.000	Off	N	9.8	22.8	58.8
0.360000	37.2	9.000	Off	N	9.8	21.5	58.7
0.552000	39.7	9.000	Off	N	9.8	16.3	56.0
0.556000	35.6	9.000	Off	N	9.8	20.4	56.0
0.560000	43.0	9.000	Off	N	9.8	13.0	56.0
0.564000	33.7	9.000	Off	N	9.8	22.3	56.0
0.886000	29.7	9.000	Off	N	9.8	26.3	56.0
0.896000	27.3	9.000	Off	N	9.8	28.7	56.0
0.910000	36.0	9.000	Off	N	9.8	20.0	56.0
0.932000	32.8	9.000	Off	N	9.8	23.2	56.0
0.938000	27.7	9.000	Off	N	9.8	28.3	56.0
0.964000	32.7	9.000	Off	N	9.8	23.3	56.0
6.664000	19.8	9.000	Off	N	10.1	40.2	60.0
6.826000	20.7	9.000	Off	N	10.1	39.3	60.0
6.880000	21.8	9.000	Off	N	10.1	38.2	60.0
6.900000	21.4	9.000	Off	N	10.1	38.6	60.0
6.904000	20.3	9.000	Off	N	10.1	39.7	60.0
6.944000	20.1	9.000	Off	N	10.1	39.9	60.0

2020-08-03 오후 6:21:19

2.4GHz WLAN MODE N 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.172000	29.8	9.000	Off	N	9.8	25.1	54.9
0.356000	18.4	9.000	Off	N	9.8	30.4	48.8
0.360000	18.6	9.000	Off	N	9.8	30.1	48.7
0.556000	19.3	9.000	Off	N	9.8	26.7	46.0
0.564000	17.5	9.000	Off	N	9.8	28.5	46.0
0.574000	13.1	9.000	Off	N	9.8	32.9	46.0
0.882000	9.3	9.000	Off	N	9.8	36.7	46.0
0.886000	13.9	9.000	Off	N	9.8	32.1	46.0
0.896000	10.2	9.000	Off	N	9.8	35.8	46.0
0.932000	16.8	9.000	Off	N	9.8	29.2	46.0
0.938000	13.7	9.000	Off	N	9.8	32.3	46.0
1.016000	18.7	9.000	Off	N	9.8	27.3	46.0
6.664000	11.9	9.000	Off	N	10.1	38.1	50.0
6.816000	12.1	9.000	Off	N	10.1	37.9	50.0
6.826000	12.4	9.000	Off	N	10.1	37.6	50.0
6.860000	12.4	9.000	Off	N	10.1	37.6	50.0
6.900000	12.8	9.000	Off	N	10.1	37.2	50.0
6.904000	12.7	9.000	Off	N	10.1	37.3	50.0

2020-08-03 오후 6:21:19

[T/A : 25 W] Conducted Emissions (Line 1)

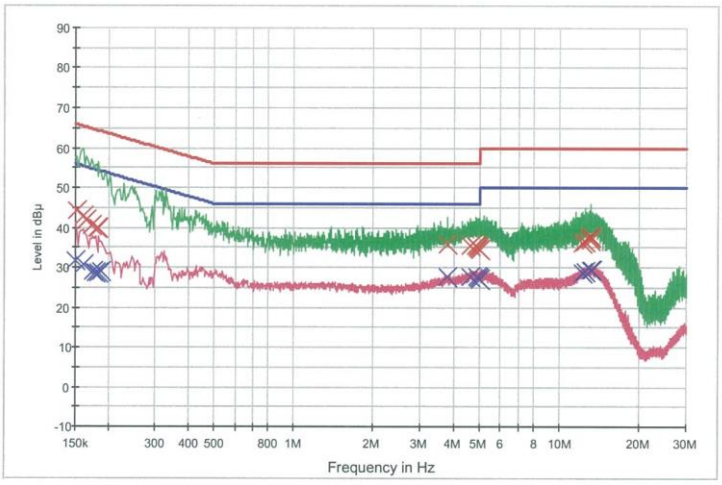
2.4GHz WLAN MODE L1 1 / 2

HCT TEST Report

Common Information

EUT:	SM-G781V
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	2.4GHz WLAN MODE L1

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	44.2	9.000	Off	L1	9.8	21.7	65.9
0.160000	42.8	9.000	Off	L1	9.8	22.7	65.5
0.164000	42.0	9.000	Off	L1	9.8	23.3	65.3
0.172000	40.5	9.000	Off	L1	9.8	24.3	64.9
0.180000	39.9	9.000	Off	L1	9.8	24.6	64.5
0.184000	39.8	9.000	Off	L1	9.8	24.5	64.3
3.766000	35.7	9.000	Off	L1	10.0	20.3	56.0
4.620000	35.5	9.000	Off	L1	10.0	20.5	56.0
4.850000	35.4	9.000	Off	L1	10.0	20.6	56.0
4.920000	35.1	9.000	Off	L1	10.0	20.9	56.0
4.978000	34.9	9.000	Off	L1	10.0	21.1	56.0
5.006000	34.4	9.000	Off	L1	10.0	25.6	60.0
12.228000	36.2	9.000	Off	L1	10.3	23.8	60.0
12.496000	36.6	9.000	Off	L1	10.3	23.4	60.0
12.950000	37.0	9.000	Off	L1	10.3	23.0	60.0
13.108000	36.6	9.000	Off	L1	10.3	23.4	60.0
13.130000	37.8	9.000	Off	L1	10.3	22.2	60.0
13.150000	37.4	9.000	Off	L1	10.3	22.6	60.0

2020-08-04 오후 6:19:17

2.4GHz WLAN MODE L1 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	31.8	9.000	Off	L1	9.8	24.2	56.0
0.160000	30.7	9.000	Off	L1	9.8	24.7	55.5
0.174000	29.1	9.000	Off	L1	9.8	25.7	54.8
0.178000	28.5	9.000	Off	L1	9.8	26.1	54.6
0.184000	28.5	9.000	Off	L1	9.8	25.8	54.3
0.188000	28.9	9.000	Off	L1	9.8	25.3	54.1
3.766000	27.6	9.000	Off	L1	10.0	18.4	46.0
4.620000	27.5	9.000	Off	L1	10.0	18.5	46.0
4.908000	27.8	9.000	Off	L1	10.0	18.2	46.0
4.978000	27.2	9.000	Off	L1	10.0	18.8	46.0
5.006000	26.9	9.000	Off	L1	10.0	23.1	50.0
5.034000	26.9	9.000	Off	L1	10.0	23.1	50.0
12.228000	28.6	9.000	Off	L1	10.3	21.4	50.0
12.496000	29.1	9.000	Off	L1	10.3	20.9	50.0
13.108000	29.4	9.000	Off	L1	10.3	20.6	50.0
13.130000	29.4	9.000	Off	L1	10.3	20.6	50.0
13.150000	29.3	9.000	Off	L1	10.3	20.7	50.0
13.304000	29.4	9.000	Off	L1	10.3	20.6	50.0

2020-08-04 오후 6:19:17

[T/A : 25 W] Conducted Emissions (Line 2)

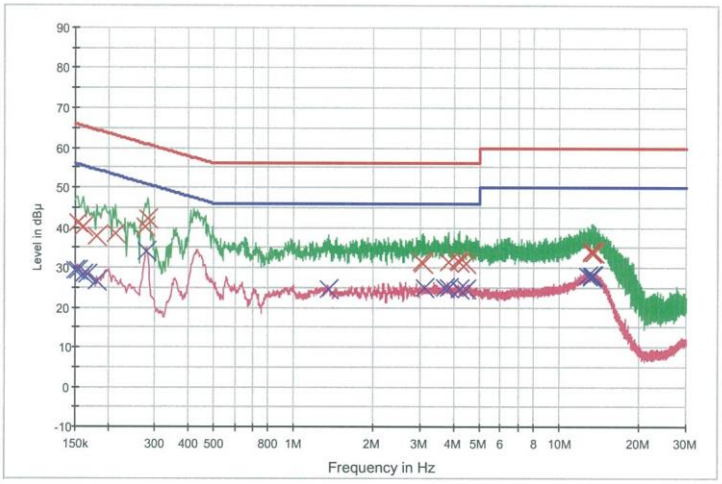
2.4GHz WLAN MODE N 1 / 2

HCT TEST Report

Common Information

EUT:	SM-G781V
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	2.4GHz WLAN MODE N

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154000	41.2	9.000	Off	N	9.8	24.6	65.8
0.160000	40.1	9.000	Off	N	9.8	25.4	65.5
0.180000	37.6	9.000	Off	N	9.8	26.9	64.5
0.212000	38.6	9.000	Off	N	9.8	24.5	63.1
0.276000	40.3	9.000	Off	N	9.8	20.6	60.9
0.282000	42.1	9.000	Off	N	9.8	18.6	60.8
3.022000	31.5	9.000	Off	N	9.9	24.5	56.0
3.082000	31.0	9.000	Off	N	9.9	25.0	56.0
3.808000	31.4	9.000	Off	N	10.0	24.6	56.0
4.168000	31.7	9.000	Off	N	10.0	24.3	56.0
4.194000	31.4	9.000	Off	N	10.0	24.6	56.0
4.458000	31.1	9.000	Off	N	10.0	24.9	56.0
13.202000	33.7	9.000	Off	N	10.4	26.3	60.0
13.268000	34.0	9.000	Off	N	10.4	26.0	60.0
13.304000	34.2	9.000	Off	N	10.4	25.8	60.0
13.324000	34.0	9.000	Off	N	10.4	26.0	60.0
13.466000	33.7	9.000	Off	N	10.4	26.3	60.0
13.564000	33.8	9.000	Off	N	10.4	26.2	60.0

2020-08-04 오후 6:29:10

2.4GHz WLAN MODE N 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	29.3	9.000	Off	N	9.8	26.7	56.0
0.154000	29.2	9.000	Off	N	9.8	26.6	55.8
0.160000	28.4	9.000	Off	N	9.8	27.0	55.5
0.166000	28.4	9.000	Off	N	9.8	26.8	55.2
0.180000	26.5	9.000	Off	N	9.8	28.0	54.5
0.278000	34.2	9.000	Off	N	9.8	16.7	50.9
1.358000	24.6	9.000	Off	N	9.8	21.4	46.0
3.100000	24.8	9.000	Off	N	9.9	21.2	46.0
3.686000	24.8	9.000	Off	N	10.0	21.2	46.0
3.808000	24.9	9.000	Off	N	10.0	21.1	46.0
4.194000	24.7	9.000	Off	N	10.0	21.3	46.0
4.458000	24.6	9.000	Off	N	10.0	21.4	46.0
12.836000	27.9	9.000	Off	N	10.4	22.1	50.0
13.180000	28.0	9.000	Off	N	10.4	22.0	50.0
13.200000	27.8	9.000	Off	N	10.4	22.2	50.0
13.270000	27.8	9.000	Off	N	10.4	22.2	50.0
13.416000	27.9	9.000	Off	N	10.4	22.1	50.0
13.430000	27.8	9.000	Off	N	10.4	22.2	50.0

2020-08-04 오후 6:29:10

10. LIST OF TEST EQUIPMENT

Conducted Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	09/11/2019	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/05/2020	Annual	100033
ESPAC	SU-642 /Temperature Chamber	03/18/2020	Annual	0093008124
Agilent	N9020A / Signal Analyzer	05/11/2020	Annual	MY51110085
Agilent	N9020A / Signal Analyzer	05/25/2020	Annual	MY52090906
Agilent	N9030A / Signal Analyzer	01/13/2020	Annual	MY49431210
Rohde & Schwarz	OSP 120 / Power Measurement Set	07/02/2020	Annual	101231
Agilent	N1911A / Power Meter	04/07/2020	Annual	MY45100523
Keysight	N1921A / Power Sensor	06/08/2020	Annual	MY57820067
Agilent	87300B / Directional Coupler	11/11/2019	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	05/25/2020	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	06/12/2020	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	06/26/2020	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

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	05/18/2020	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	03/22/2019	Biennial	760
Schwarzbeck	BBHA 9120D / Horn Antenna	04/29/2019	Biennial	9120D-937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	11/29/2019	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 30 GHz) / Spectrum Analyzer	04/27/2020	Annual	100854
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/26/2019	Annual	101068-SZ
Agilent	N9020A / Signal Analyzer	05/11/2020	Annual	MY51110085
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	01/21/2020	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	02/10/2020	Annual	1
Wainwright Instruments	WHK3.0/18G-10EF / High Pass Filter	03/02/2020	Annual	8
Wainwright Instruments	WHKX8-6090-7000-18000-40SS/ High Pass Filter	03/02/2020	Annual	25
Api tech.	18B-03 / Attenuator (3 dB)	03/02/2020	Annual	1
Agilent	8493C-10 / Attenuator(10 dB)	03/02/2020	Annual	08285
CERNEX	CBLU1183540 / Power Amplifier	03/02/2020	Annual	22964
CERNEX	CBL06185030 / Power Amplifier	03/02/2020	Annual	22965
CERNEX	CBL18265035 / Power Amplifier	12/26/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	03/23/2020	Annual	25956

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

11. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2008-FC030-P