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TEST REPORT

FCC/ISED UNII Test for ETGFFRBU01
Certification

APPLICANT
LG Innotek Co., Ltd.

REPORT NO.
HCT-RF-2106-FI009

DATE OF ISSUE
June 14, 2021

Tested by
Jin Gwan Lee

Technical Manager
Se Wook Park

Accredited by KOLAS, Republic of KOREA

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Additional Model
-

Applicant	**LG Innotek Co., Ltd.** E1/E3, 30, Magokjungang 10-ro, Gangseo-gu, Seoul, 07796, Korea
Eut Type Model Name	Wi-Fi Dongle ETGFFRBU01
FCC ID IC	YZP-ETGFFRBU01 7414C-ETGFFRBU01
Modulation type	OFDM
FCC Classification	Unlicensed National Information Infrastructure(NII)
FCC Rule Part(s)	Part 15.407
ISED Rule Part(s)	RSS-247 Issue 2 (February 2017) RSS-Gen Issue 5_Amendment 2 (February 2021)

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test results were applied only to the test methods required by the standard.

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	June 14, 2021	Initial Release

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 / ISED Rules under normal use and maintenance.

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)

CONTENTS

1. GENERAL INFORMATION

EUT DESCRIPTION

Model	ETGFFRBU01	
Additional Model	-	
EUT Type	Wi-Fi Dongle	
Power Supply	DC 5.00 V	
Modulation Type	OFDM : 802.11a, 802.11n, 802.11ac	
Frequency Range (MHz)	U-NII-1	20MHz BW : 5180 - 5240 40MHz BW : 5190 - 5230 80MHz BW : 5210
	U-NII-2A	20MHz BW : 5260 - 5320 40MHz BW : 5270 - 5310 80MHz BW : 5290
	U-NII-2C	20MHz BW : 5500 - 5720 40MHz BW : 5510 - 5710 80MHz BW : 5530 – 5690
	U-NII-3	20MHz BW : 5745 - 5825 40MHz BW : 5755 - 5795 80MHz BW : 5775
Antenna type	PCB printed antenna	
Antenna Peak Gain	Ant1 Peak Gain : 1.46 dBi(UNII 1)/ 1.48 dBi(UNII 2A)/ 1.47 dBi(UNII 2C)/ 1.50 dBi(UNII 3) Ant2 Peak Gain : 1.47 dBi(UNII 1)/ 1.49 dBi(UNII 2A)/ 1.50 dBi(UNII 2C)/ 1.44 dBi(UNII 3)	
Straddle channel	Supported	
TDWR Band	Not Supported	
Dynamic Frequency Selection	Slave without radar detection	
Date(s) of Tests	April 29, 2021 ~ June 09, 2021	
PMN (Product Marketing Number)	Wi-Fi Dongle	
HVIN (Hardware Version Identification Number)	ETGFFRBU01	
FVIN (Firmware Version Identification Number)	1.0	
HMN (Host Marketing Name)	N/A	
EUT serial numbers	Radiated : ETGFFRBU01-01 Conducted : ETGFFRBU01-02	
Manufacturer	LG INNOTEK INDONESIA PT BEKASI INTERNATIONAL INDUSTRIAL ESTATE BLOK C8 NO. 12-12A DESA CIBATU, CIKARANG	

ANTENNA CONFIGURATIONS

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

Configurations	SISO		SDM	CDD
	Ant1	Ant2	Ant1 + Ant2	Ant1 + Ant2
802.11a	O	O	X	O
802.11n(HT20)	O	O	O	O
802.11n(HT40)	O	O	O	O
802.11ac(VHT20)	O	O	O	O
802.11ac(VHT40)	O	O	O	O
802.11ac(VHT80)	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. Directional Gain Calculation

According to KDB 662911 D01 Multiple Transmitter Output v02r01

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

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

Band	Ant Gain (dBi)		N_{ANT}/N_{SS}	Directional Gain = G_{ANT}+10*log(N_{ANT}/N_{SS})dBi
UNII 1	Ant1	1.46	2/2	4.48
	Ant2	1.47	2/2	
UNII 2A	Ant1	1.48	2/2	4.50
	Ant2	1.49	2/2	
UNII 2C	Ant1	1.47	2/2	4.51
	Ant2	1.50	2/2	
UNII 3	Ant1	1.50	2/2	4.51
	Ant2	1.44	2/2	

2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted average output power as follows:

Band	Mode	SISO				MIMO	
		Ant1 Power		Ant2 Power		Ant 1 + Ant 2 Power	
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
UNII1	802.11a	11.80	0.015	12.44	0.018	15.01	0.032
	802.11n (HT20)	12.11	0.016	12.87	0.019	15.44	0.035
	802.11n (HT40)	11.98	0.016	12.06	0.016	15.03	0.032
	802.11ac (VHT20)	11.95	0.016	12.30	0.017	15.14	0.033
	802.11ac (VHT40)	11.82	0.015	12.08	0.016	14.89	0.031
	802.11ac (VHT80)	12.84	0.019	12.44	0.018	15.65	0.037
UNII2A	802.11a	12.48	0.018	12.31	0.017	15.28	0.034
	802.11n (HT20)	12.54	0.018	12.36	0.017	15.39	0.035
	802.11n (HT40)	12.55	0.018	12.33	0.017	15.45	0.035
	802.11ac (VHT20)	12.44	0.018	12.31	0.017	15.34	0.034
	802.11ac (VHT40)	12.14	0.016	11.75	0.015	14.96	0.031
	802.11ac (VHT80)	12.22	0.017	11.61	0.014	14.94	0.031
UNII2C	802.11a	12.44	0.018	12.21	0.017	15.34	0.034
	802.11n (HT20)	12.24	0.017	12.00	0.016	15.13	0.033
	802.11n (HT40)	12.64	0.018	11.74	0.015	15.22	0.033
	802.11ac (VHT20)	12.44	0.018	11.81	0.015	15.15	0.033
	802.11ac (VHT40)	12.47	0.018	12.10	0.016	15.28	0.034
	802.11ac (VHT80)	12.54	0.018	12.10	0.016	15.34	0.034
UNII3	802.11a	12.58	0.018	11.39	0.014	15.04	0.032
	802.11n (HT20)	12.57	0.018	11.63	0.015	15.09	0.032
	802.11n (HT40)	12.91	0.020	11.42	0.014	15.24	0.033
	802.11ac (VHT20)	12.92	0.020	11.66	0.015	15.34	0.034
	802.11ac (VHT40)	12.96	0.020	11.61	0.014	15.35	0.034
	802.11ac (VHT80)	12.44	0.018	12.19	0.017	15.33	0.034

3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 dated December 14, 2017 entitled “Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part15, Subpart E” and ANSI C63.10(Version : 2013) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’ were used in the measurement.

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 purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E. / RSS-Gen issue 5, RSS-247 issue 2.

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.

4. 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, which is traceable to recognized national standards.
Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil,
Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.
The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.
Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).
For ISED, test facility was accepted dated February 14, 2019 (CAB identifier: KR0032).

5.2 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.”

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR § 15.203, § 15.407 / RSS-Gen (Issue 5) Section 8:

"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, § 15.407

7. 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.

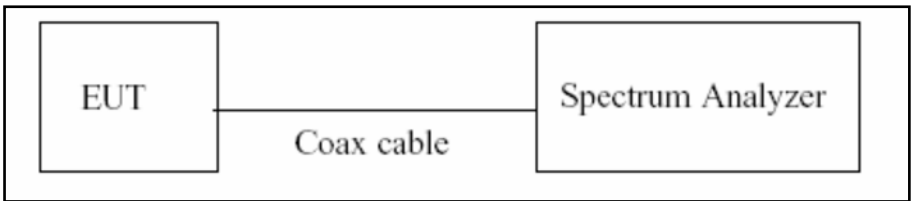
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance

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

8. DESCRIPTION OF TESTS

8.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure B.2 in KDB 789033 D02 v02r01.

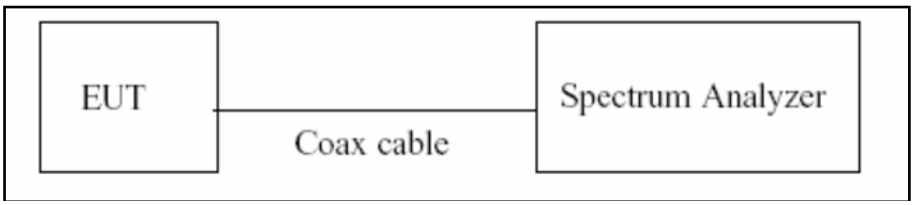
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

8.2. 6dB Bandwidth & 26dB Bandwidth & 99 % Bandwidth

Limit

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Configuration



Test Procedure(26dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure C.1 in KDB 789033 D02 v02r01.

1. RBW = approximately 1 % of the emission bandwidth
2. VBW > RBW
3. Detector = Peak
4. Trace mode = max hold
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

Test Procedure (6dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure C.2 in KDB 789033 D02 v02r01.

1. RBW = 100 kHz
2. VBW ≥ 3 x RBW
3. Detector = Peak
4. Trace mode = max hold
5. Allow the trace to stabilize
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points(upper and lower frequencies) that are attenuated by 6 dB relative to the maximum lever measured in the fundamental emission.

Note:

1. We tested X dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.

2. DFS test channels should be defined. So, We performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII1 and UNII3 band for DFS.
3. The 26 dB bandwidth is used to determine the conducted power limits.

Test Procedure (99 % Bandwidth for ISED)

The transmitter output is connected to the spectrum analyzer.

RBW = 1% ~ 5% of the occupied bandwidth

VBW ≒ 3 x RBW

Detector = Peak

Trace mode = max hold

Sweep = auto couple

Allow the trace to stabilize

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

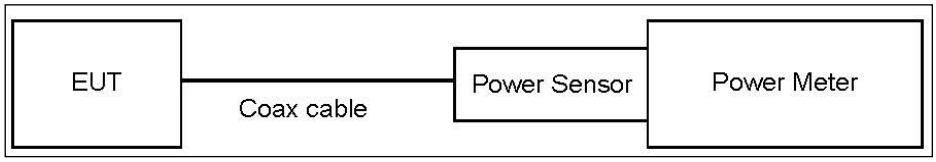
8.3. Output Power Measurement

Limit

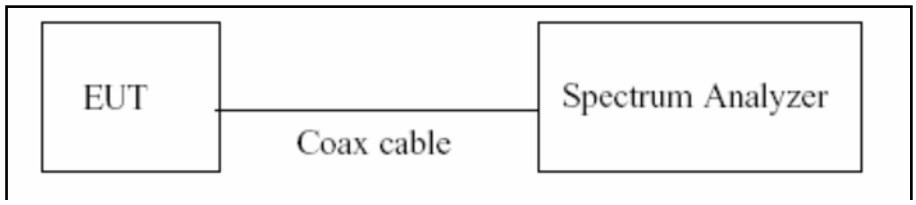
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30dBm)

Test Configuration

Power Meter



Spectrum Analyzer(Only Straddle Channel)



Test Procedure(Power Meter)

We tested according to Procedure E.3.a in KDB 789033 D02 v02r01.

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.

Test Procedure(Spectrum Analyzer)

The transmitter output is connected to the Spectrum Analyzer.

We use the spectrum analyzer's integrated band power measurement function.

We tested according to Procedure E.2.d) in KDB 789033 D02 v02r01.

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW ≥ 3 MHz.
5. Number of points in sweep ≥ 2 x span/RBW.
6. Sweep time = auto.
7. Detector = RMS.
8. Do not use sweep triggering. Allow the sweep to “free run”.
9. Trace average at least 100 traces in power averaging(RMS) mode
10. Integrated bandwidth = OBW
11. Add 10log(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

Total Power(dBm) = Reading Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum reading values are not plot data.
   The power results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss(20 dB) + Cable loss
3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1	20.87
UNII 2A	20.87
UNII 2C	20.87
UNII 3	20.87

(Actual value of loss for the attenuator and cable combination)

Limit & Ant Gain Calculation (FCC)

Operating Mode	Band	Mode	Conducted Limit (dBm)
SISO	UNII 1	802.11a/ 802.11n20/ 802.11ac20	23.98
			23.98
	UNII 2A		23.70
			23.66
	UNII 2C		23.70
			23.63
	UNII 3		30.00
			30.00
MIMO	UNII 1	802.11a/ 802.11n20/ 802.11ac20	23.98
	UNII 2A		23.66
	UNII 2C		23.63
	UNII 3		30.00
SISO	UNII 1	802.11n40/ 802.11ac40/ 802.11ac80	23.98
			23.98
	UNII 2A		23.98
			23.98
	UNII 2C		23.98
			23.98
	UNII 3		30.00
			30.00
MIMO	UNII 1	802.11n40/ 802.11ac40/ 802.11ac80	23.98
	UNII 2A		23.98
	UNII 2C		23.98
	UNII 3		30.00

Limit & Ant Gain Calculation (ISED)

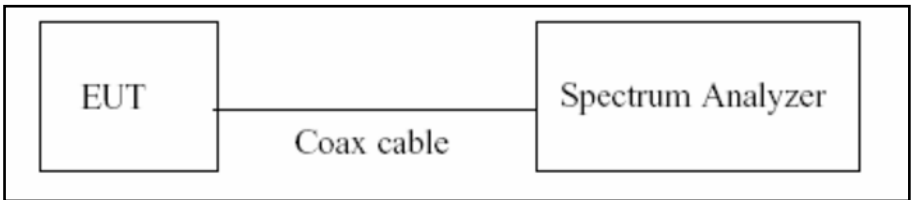
Operating Mode	Band	Mode	E.I.R.P Limit (dBm)	Conducted Limit (dBm)
SISO	UNII 1	802.11a/ 802.11n20/ 802.11ac20	22.14	N/A
			22.14	N/A
	UNII 2A		29.14	23.14
			29.14	23.14
	UNII 2C		29.14	23.14
			29.14	23.14
	UNII 3		N/A	30.00
			N/A	30.00
MIMO	UNII 1	802.11a/ 802.11n20/ 802.11ac20	22.14	N/A
	UNII 2A		29.14	23.14
	UNII 2C		29.14	23.14
	UNII 3		N/A	30.00
SISO	UNII 1	802.11n40/ 802.11ac40/ 802.11ac80	23.01	N/A
			23.01	N/A
	UNII 2A		30.00	23.98
			30.00	23.98
	UNII 2C		30.00	23.98
			30.00	23.98
	UNII 3		N/A	23.98
			N/A	23.98
MIMO	UNII 1	802.11n40/ 802.11ac40/ 802.11ac80	23.01	N/A
	UNII 2A		30.00	23.98
	UNII 2C		30.00	23.98
	UNII 3		N/A	23.98

8.4. Power Spectral Density

Limit

Band	Limit
UNII 1	11 dBm/MHz
UNII 2A, 2C	11 dBm/MHz
UNII 3	30 dBm/500 kHz

Test Configuration



Test Procedure

We tested according to Procedure F in KDB 789033 D02 v02r01.

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz(510 kHz for UNII 3)
3. VBW ≥ 3 MHz
4. Number of points in sweep ≥ 2 x span/RBW.
5. Sweep time = auto.
6. Detector = RMS(i.e., power averaging), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to “free run”.
8. Trace average at least 100 traces in power averaging(RMS) mode
9. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
10. If Method SA-2 was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum.

Sample Calculation

Total PSD(dBm) = Reading Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

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(20 dB) + Cable loss
3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1	20.87
UNII 2A	20.87
UNII 2C	20.87
UNII 3	20.87

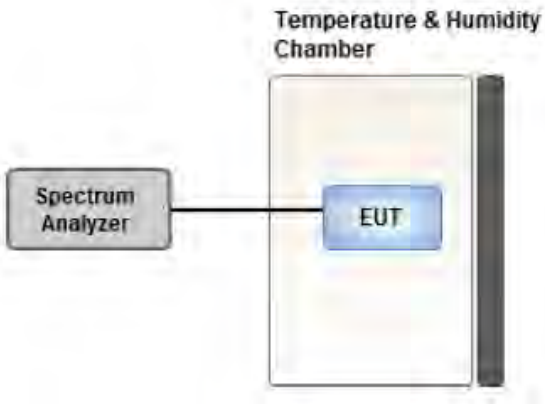
(Actual value of loss for the attenuator and cable combination)

8.5. Frequency Stability

Limit

Maintained within the band

Test Configuration



Test Procedure

1. The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -30 °C and 50 °C.
2. The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.
3. The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.
4. While maintaining a constant temperature inside the environmental chamber, turn the EUT ON
   and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after
   the EUT is energized. Four measurements in total are made.

8.6. AC Power line Conducted Emissions

Limit

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

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

8.7. Radiated Test

Limit

1. UNII 1: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of −27 dBm/MHz.

2. UNII 2A, 2C: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

3. UNII 3: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

4. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Section 15.209.

FCC

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

ISED

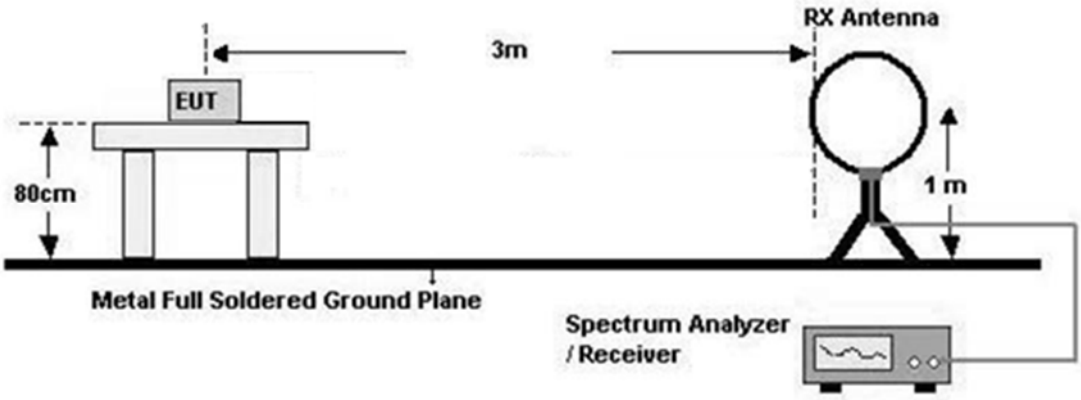
Frequency (MHz)	Field Strength (uA/m)	Measurement Distance (m)
0.009 – 0.490	6.37/F(kHz)	300
0.490 – 1.705	63.7/F(kHz)	30
1.705 – 30	0.08	30

FCC&ISED

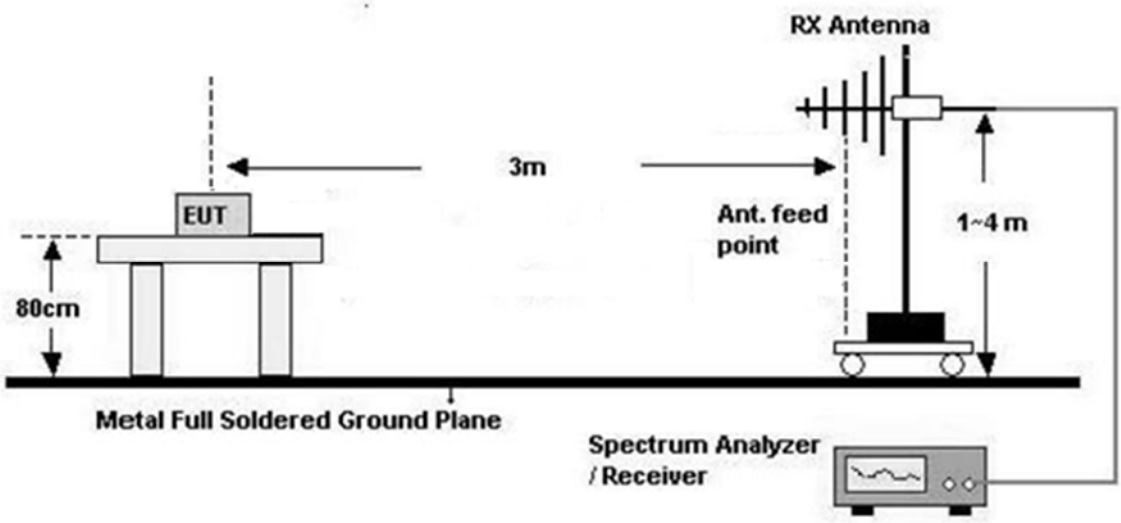
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

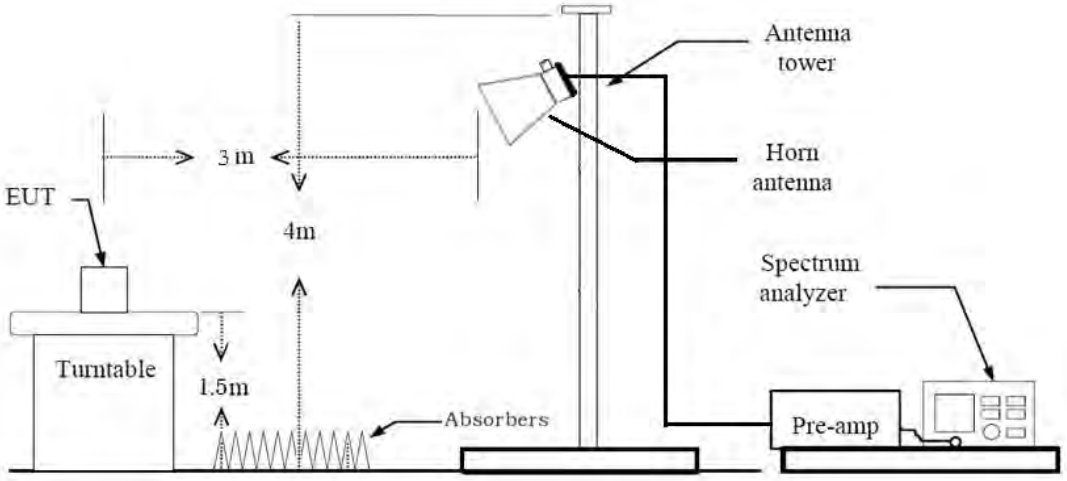
Below 30 MHz



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

(1) Measurement Type (Peak, G.5 in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep Time = auto
- Trace mode = max hold
- Allow sweeps to continue until the trace stabilizes.

Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle.

(2) Measurement Type (Average, G.6.c in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW ≥ 3 MHz
- The analyzer is set to linear detector mode.
- Averaging type = power (*i.e.*, RMS)
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning on and off with the transmit cycle, no duty cycle correction is required for that emission.

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. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency
11. Distance extrapolation factor = 20log (test distance / specific distance) (dB)
12. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

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, G.5 in KDB 789033 v02r01):
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep Time = auto
   - Trace mode = max hold
   - Allow sweeps to continue until the trace stabilizes.
     Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle.

   (2) Measurement Type (Average, G.6.c in KDB 789033 v02r01):
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - The analyzer is set to linear detector mode.
   - Averaging type = power (*i.e.*, RMS)
   - Sweep time = auto.
   - Trace mode = average (at least 100 traces).
   - If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning on and off with the transmit cycle, no duty cycle correction is required for that emission.

9. Measured Frequency Range :
   - 4500MHz ~ 5150MHz
   - 5350MHz ~ 5460MHz
   - 5460MHz ~ 5470MHz
   - (75 MHz or more below the 5725MHz) ~ 5725MHz
   - 5850MHz ~ (75 MHz or more above the 5850MHz)

10. Distance extrapolation factor = 20log (test distance / specific distance) (dB)

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

8.8. Receiver Spurious Emissions

Limit

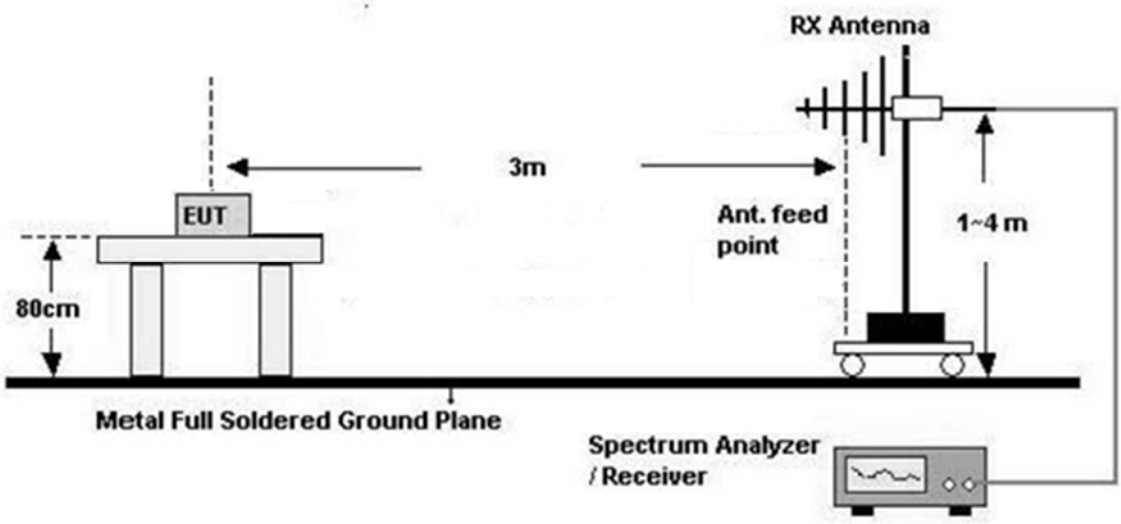
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

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

Test Configuration

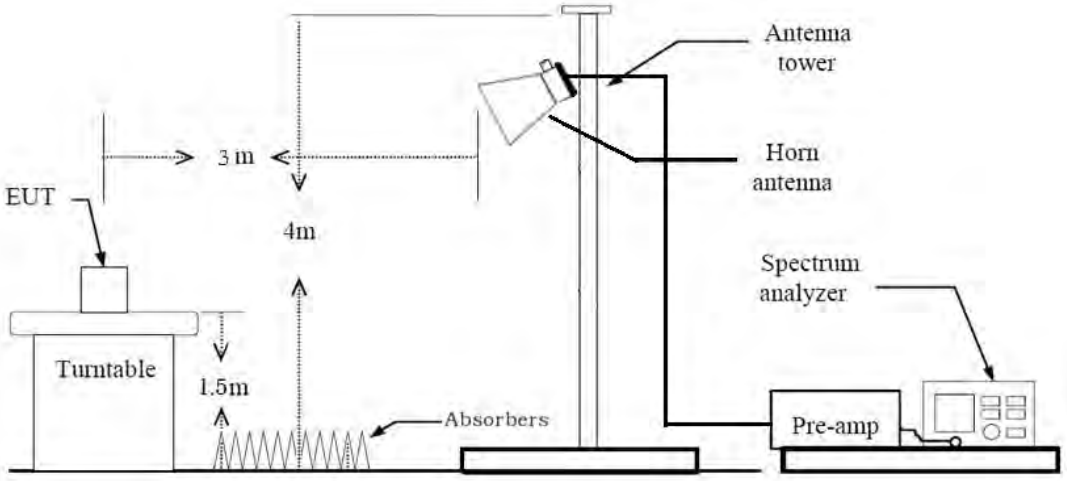
30 MHz - 1 GHz



Test Procedure of Receiver 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
7. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)

Above 1 GHz



Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 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 : 1 GHz – 25 GHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 1 MHz
      - VBW ≥ 3 x RBW
   (2) Measurement Type(Average):
      - We performed using a reduced video BW method was done with the analyzer in linear mode
      - Measured Frequency Range : 1 GHz – 25 GHz

- Detector = Peak
- Trace = Maxhold
- RBW = 1 MHz
- VBW ≥ 1/τ Hz, where τ = pulse width in seconds
  The actual setting value of VBW = 1 kHz

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 = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

8.9. Worst case configuration and mode

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
2. All configurations of antenna were investigated and the worst case configuration results are reported.
   - Mode : Ant1(SISO), Ant2(SISO), Ant1+Ant2(CDD,SDM)
   - Worstcase : Ant1+Ant2(CDD)
3. EUT Axis
   - Radiated Spurious Emissions : Z
   - Radiated Restricted Band Edge : Z
4. All data rate of operation were investigated and the worst case data rate results are reported
   - 802.11a : 6Mbps
   - 802.11n : MCS0
   - 802.11ac : MCS0
5. Radiated Spurious Emission
   - All modulation of operation were investigated and the worst case modulation results are reported.
   (Worstcase : 802.11a_6 Mbps)
6. 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

AC Power line Conducted Emissions

1. We don't perform powerline conducted emission test. Because this EUT is used DC.

Conducted test

1. All data rate of operation were investigated and the worst case data rate results are reported.

2. SISO & MIMO were tested and the all case results are reported.
   - Mode : Ant1(SISO), Ant2(SISO), Ant1+Ant2(CDD)

9. SUMMARY OF TEST RESULTS

FCC

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26dB Bandwidth	§ 15.407 (for Power Measurement)	N/A	Conducted	PASS
6 dB Bandwidth	§ 15.407(e)	>500 kHz (5725-5850 MHz)		PASS
Maximum Conducted Output Power	§ 15.407(a)(1),(2),(3)	< 250 mW(5150-5250 MHz) < 250 mW or 11+10 log $\log_{10}$ (BW) dBm (5250-5350 MHz) < 250 mW or 11+10 log $\log_{10}$ (BW) dBm (5470-5725 MHz) <1 W(5725-5850 MHz)		PASS
Peak Power Spectral Density	§ 15.407(a)(1),(2),(3)	<11 dBm/ MHz (5150-5250 MHz) <11 dBm/ MHz (5250-5350 MHz) <11 dBm/ MHz (5470-5725 MHz) <30 dBm/500 kHz(5725-5850 MHz)		PASS
Frequency Stability	§ 15.407(g) § 2.1055	Maintained within the band		PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207 15.407(b)(8)	<FCC 15.207 limits		N/A(#Note1)
Undesirable Emissions	§ 15.407(b) (1),(2),(3),(4)	<-27 dBm/MHz EIRP (UNII1, 2A, 2C) cf. Section 8.7 (UNII 3)	Radiated	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	15.205, 15.407(b)(9),(10)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS

#Note1 : Not Tested

ISED

Test Description	ISED Part Section(s)	Test Limit	Test Condition	Test Result
99% Bandwidth	RSS-GEN, 6.7	N/A	CONDUCTED	PASS
6 dB Bandwidth	RSS-247, 6.2.4.1	> 500 kHz (5725~5850 MHz)		PASS
Maximum Conducted Output Power,	RSS-247, 6.2	< 250 mW or 11+10 log $_{10}$ (BW) dBm (5470-5600, 5650-5725 MHz) Whichever power is less		PASS
	RSS-247, 6.2.4 1	<1 W (5725-5850 MHz)		
Maximum e.i.r.p	RSS-247, 6.2	< 200 mW or 10+10 log $_{10}$ (BW) dBm (5150-5250 MHz) < 1 W or 17+10 log $_{10}$ (BW) dBm (5250-5350 MHz) < 1 W or 17+10 log $_{10}$ (BW) dBm (5470-5725 MHz) Whichever power is less		PASS
Power Spectral Density	RSS-247 6.2	<10 dBm/ MHz(e.i.r.p.) (5150-5250 MHz) <11 dBm/MHz(Conducted) (5250-5350 MHz, 5470-5600 MHz, 5650-5725 MHz)		PASS
	RSS-247, 6.2.4 1	<30 dBm/500 kHz(Conducted) (5725-5850 MHz)		
Frequency Stability	RSS-GEN 8.11	should be kept within at least the central 80% of its permitted operating frequency band in order to minimize the possibility of out-of-band operation.		PASS
AC Conducted Emissions 150 kHz-30 MHz	RSS-GEN, 8.8	RSS-GEN section 8.8 table 4		N/A(#Note1)
Undesirable Emissions	RSS-247, 6.2.1 2	26 dBc at 5250~5350 MHz (5150~5350 MHz)		PASS
	RSS-247, 6.2	<-27 dBm/ MHz EIRP (5150-5350 MHz, 5470-5725 MHz)	RADIATED	PASS
	RSS-247, 6.2.4 2	cf. Section 9.8.1 (UNII 3)		
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	RSS-Gen, 8.9 RSS-Gen, 8.10	RSS-Gen section 8.9 table 5, 6 section 8.10 table 7		PASS
Receiver Spurious Emissions	RSS-GEN, 5 RSS-GEN, 7.3	RSS-GEN section 7.3 table 3		PASS

#Note1 : Not Tested

10. TEST RESULT

10.1 26DB BANDWIDTH & 99 % BANDWIDTH

[ANT1]

802.11a Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	18.54	16.384
5200	40	18.68	16.379
5240	48	18.68	16.387
5260	52	18.69	16.391
5300	60	18.65	16.380
5320	64	18.63	16.383
5500	100	18.61	16.379
5580	116	18.68	16.394
5720	144	18.68	16.394
5745	149	18.63	16.404
5785	157	18.70	16.410
5825	165	20.93	16.437

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	19.58	17.551
5200	40	19.63	17.542
5240	48	19.57	17.550
5260	52	19.60	17.550
5300	60	19.61	17.553
5320	64	19.54	17.550
5500	100	19.47	17.550
5580	116	19.58	17.571
5720	144	19.70	17.550
5745	149	19.58	17.560
5785	157	19.66	17.569
5825	165	19.63	17.558

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	41.22	36.101
5230	46	41.25	36.098
5270	54	41.30	36.125
5310	62	41.20	36.061
5510	102	40.85	36.094
5550	110	41.40	36.115
5710	142	41.48	36.098
5755	151	41.05	36.328
5795	159	40.58	36.303

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	19.63	17.558
5200	40	19.54	17.559
5240	48	19.60	17.561
5260	52	19.62	17.561
5300	60	19.54	17.560
5320	64	19.53	17.554
5500	100	19.61	17.568
5580	116	19.58	17.573
5720	144	19.55	17.566
5745	149	19.53	17.564
5785	157	19.54	17.570
5825	165	19.62	17.565

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	40.86	36.076
5230	46	41.42	36.091
5270	54	41.22	36.071
5310	62	41.34	36.077
5510	102	41.17	36.064
5550	110	41.15	36.097
5710	142	40.89	36.078
5755	151	41.68	36.083
5795	159	41.02	36.096

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	80.70	74.615
5290	58	81.16	74.780
5530	106	81.08	74.762
5690	138	81.16	74.797
5775	155	81.41	74.893

[ANT2]

802.11a Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	18.44	16.374
5200	40	18.45	16.379
5240	48	18.45	16.383
5260	52	18.43	16.379
5300	60	18.47	16.367
5320	64	18.48	16.377
5500	100	18.31	16.392
5580	116	18.38	16.380
5720	144	18.44	16.378
5745	149	18.49	16.371
5785	157	18.52	16.393
5825	165	18.50	16.381

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	19.46	17.556
5200	40	19.42	17.543
5240	48	19.49	17.549
5260	52	19.56	17.554
5300	60	19.47	17.543
5320	64	19.53	17.548
5500	100	19.56	17.556
5580	116	19.64	17.551
5720	144	19.59	17.549
5745	149	19.60	17.551
5785	157	19.65	17.556
5825	165	19.61	17.554

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	40.86	36.051
5230	46	40.84	36.037
5270	54	41.16	36.041
5310	62	40.83	36.045
5510	102	41.63	36.047
5550	110	40.98	36.087
5710	142	40.98	36.031
5755	151	41.35	36.090
5795	159	41.08	36.068

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	19.57	17.560
5200	40	19.49	17.555
5240	48	19.56	17.547
5260	52	19.47	17.552
5300	60	19.50	17.555
5320	64	19.47	17.555
5500	100	19.51	17.561
5580	116	19.52	17.561
5720	144	19.64	17.556
5745	149	19.37	17.582
5785	157	19.69	17.575
5825	165	19.66	17.561

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	41.25	36.069
5230	46	41.09	36.078
5270	54	41.18	36.104
5310	62	41.10	36.087
5510	102	41.89	36.119
5550	110	40.89	36.097
5710	142	41.16	36.071
5755	151	41.22	36.105
5795	159	40.77	36.137

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	80.67	74.608
5290	58	81.30	74.732
5530	106	80.95	74.633
5690	138	81.47	74.758
5775	155	81.27	74.822

[ANT1]

▣ Test Plots(802.11a)

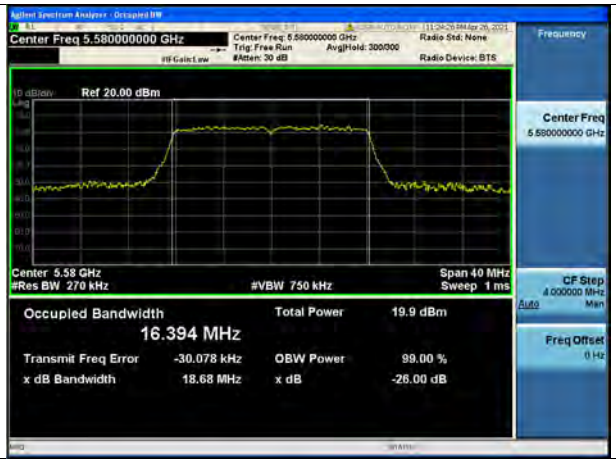
Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11a UNII 1 BAND 26dB Bandwidth (CH 48)

802.11a UNII 2A BAND 26dB Bandwidth (CH 52)

802.11a UNII 2C BAND 26dB Bandwidth (CH116)



802.11a UNII 3 BAND 26dB Bandwidth (CH 165)

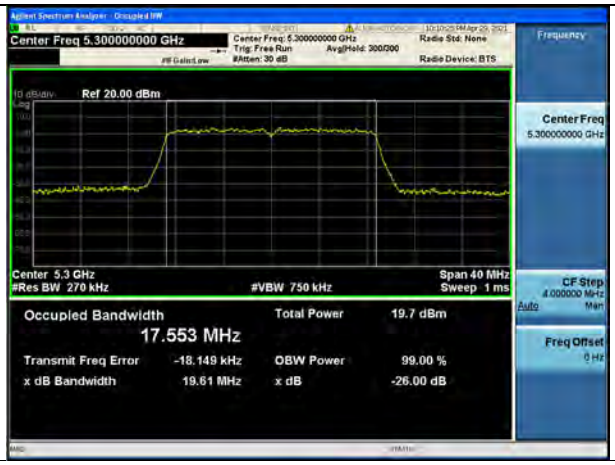
▣ Test Plots(802.11n(HT20))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 40)

802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 60)



802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 144)

802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 157)

▣ Test Plots(802.11n(HT40))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 46)

802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 54)

802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 142)

802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 151)

▣ Test Plots(802.11ac(VHT20))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT20 UNII 1 BAND 26dB Bandwidth(CH 36)	802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 52)
	
802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 100)	802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 165)
	

▣ Test Plots(802.11ac(VHT40))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 46)

802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 62)

802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 102)

802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 151)

▣ Test Plots(802.11ac(VHT80))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)

802.11ac_VHT80 UNII 2A BAND 26dB Bandwidth (CH 58)

802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 138)

802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth (CH 155)

[ANT2]

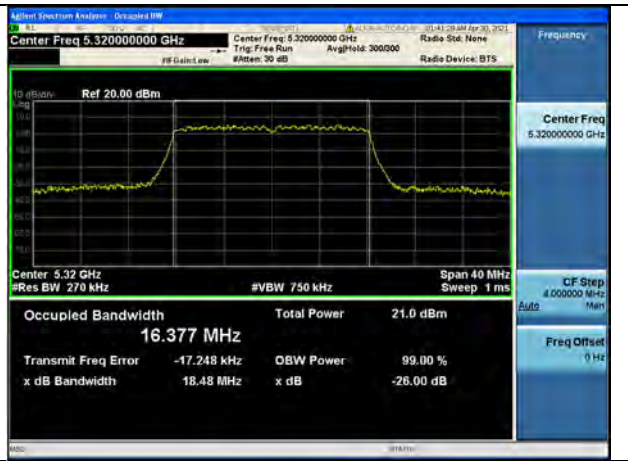
▣ Test Plots(802.11a)

Note:

In order to simplify the report, attached plots were only the most wide channel.

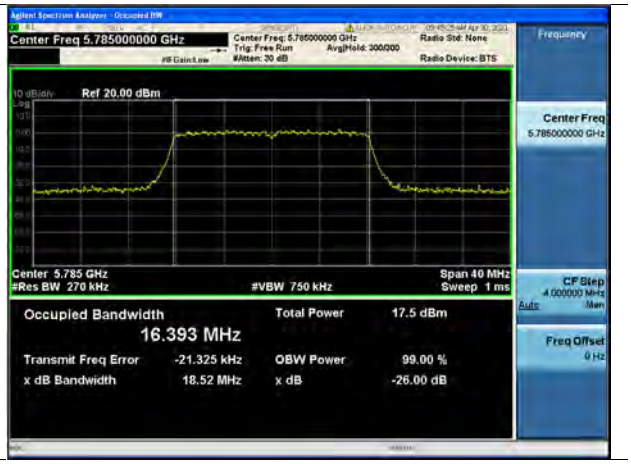
802.11a UNII 1 BAND 26dB Bandwidth (CH 40)

802.11a UNII 2A BAND 26dB Bandwidth (CH 64)



802.11a UNII 2C BAND 26dB Bandwidth (CH 144)

802.11a UNII 3 BAND 26dB Bandwidth (CH 157)



▣ Test Plots(802.11n(HT20))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 48)

802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 52)

802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 116)

802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 157)

▣ Test Plots(802.11n(HT40))

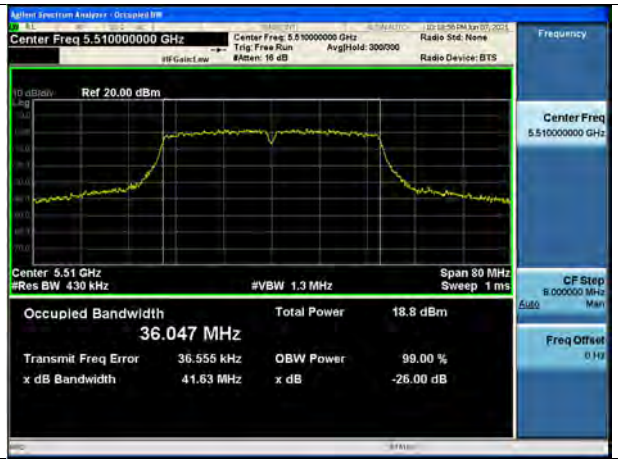
Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 38)

802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 54)

802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 102)



802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 151)

▣ Test Plots(802.11ac(VHT20))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT20 UNII 1 BAND 26dB Bandwidth(CH 36)	802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 60)
	
802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 144)	802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 157)
	

▣ Test Plots(802.11ac(VHT40))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 38)

802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 54)

802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 102)

802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 151)

▣ Test Plots(802.11ac(VHT80))

Note:

In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)

802.11ac_VHT80 UNII 2A BAND 26dB Bandwidth (CH 58)

802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 138)

802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth (CH 155)

10.2 6DB BANDWIDTH

[ANT1]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.53	> 0.5	Pass
5785	157	16.52	> 0.5	Pass
5825	165	16.50	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.70	> 0.5	Pass
5785	157	17.71	> 0.5	Pass
5825	165	17.69	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.51	> 0.5	Pass
5795	159	36.53	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.71	> 0.5	Pass
5785	157	17.72	> 0.5	Pass
5825	165	17.72	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.48	> 0.5	Pass
5795	159	36.44	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	76.18	> 0.5	Pass

[ANT2]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.49	> 0.5	Pass
5785	157	16.49	> 0.5	Pass
5825	165	16.48	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.70	> 0.5	Pass
5785	157	17.70	> 0.5	Pass
5825	165	17.69	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.47	> 0.5	Pass
5795	159	36.47	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.69	> 0.5	Pass
5785	157	17.71	> 0.5	Pass
5825	165	17.68	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.45	> 0.5	Pass
5795	159	36.46	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.90	> 0.5	Pass

[ANT1]

▣ Test Plots

Note: In order to simplify the report, attached plots were only the most narrow channel.

802.11a (CH.165)

802.11n(HT20) (CH.165)

802.11n(HT40) (CH.151)

802.11ac(VHT20) (CH.149)

802.11ac(VHT40) (CH.159)

802.11ac(VHT80) (CH.155)

[ANT2]

▣ Test Plots

Note: In order to simplify the report, attached plots were only the most narrow channel.

802.11a (CH.165)	802.11n(HT20) (CH.165)
	
802.11n(HT40) (CH.159)	**802.11ac(VHT20) (CH.165)**
	
802.11ac(VHT40) (CH.151)	**802.11ac(VHT80) (CH.155)**
	

99 % Bandwidth measurement(ISED)

[ANT1]

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	16.502
5785	157	16.516
5825	165	16.532

802.11n(HT20) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.611
5785	157	17.613
5825	165	17.590

802.11n(HT40) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.550
5795	159	36.691

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.608
5785	157	17.614
5825	165	17.604

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.333
5795	159	36.286

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5775	155	74.727

[ANT2]

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	16.454
5785	157	16.447
5825	165	16.451

802.11n(HT20) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.619
5785	157	17.609
5825	165	17.607

802.11n(HT40) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.306
5795	159	36.300

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.619
5785	157	17.611
5825	165	17.608

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.369
5795	159	36.310

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5775	155	74.716

[ANT1]

▣ Test Plots

Note: In order to simplify the report, attached plots were only the most wide channel.

802.11a (CH.165)

802.11n(HT20) (CH.157)

802.11n(HT40) (CH.159)

802.11ac(VHT20) (CH.157)

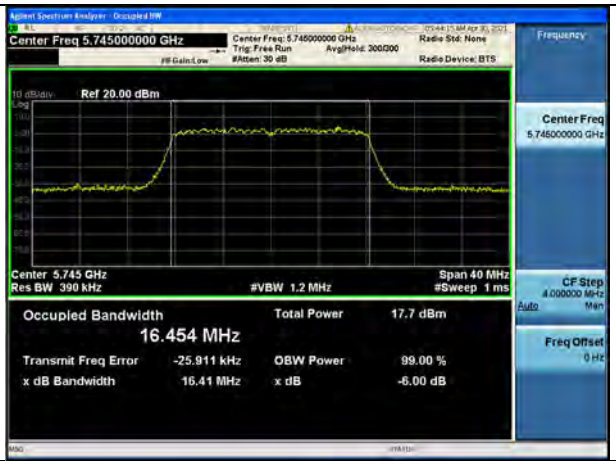
802.11ac(VHT40) (CH.151)

802.11ac(VHT80) (CH.155)

[ANT2]

▣ Test Plots

Note: In order to simplify the report, attached plots were only the most wide channel.

802.11a (CH.149)	802.11n(HT20) (CH.149)
	
802.11n(HT40) (CH.151)	**802.11ac(VHT20) (CH.149)**
	
802.11ac(VHT40) (CH.151)	**802.11ac(VHT80) (CH.155)**
	

10.3 OUTPUT POWER MEASUREMENT

Straddle channel data in the table below are for reporting purposes only.
Straddle channel data were added in section 10.7.3.

[Ant1]

FCC Limts (802.11a, 802.11n_HT20, 802.11ac_VHT20)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.70 dBm
UNII-2C	: Total Power < 23.70 dBm
UNII-3	: Total Power < 30.00 dBm

FCC Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

ISED Limts (802.11a, 802.11n_HT20, 802.11ac_VHT20)

UNII-1	: E.I.R.P < 22.14 dBm
UNII-2A	: Total Power < 23.14 dBm
UNII-2A	: E.I.R.P < 29.14 dBm
UNII-2C	: Total Power < 23.14 dBm
UNII-2C	: E.I.R.P < 29.14 dBm
UNII-3	: Total Power < 30.00 dBm

ISED Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: E.I.R.P < 23.01 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2A	: E.I.R.P < 30.00 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-2C	: E.I.R.P < 30.00 dBm
UNII-3	: Total Power < 23.98 dBm

802.11a Mode			Worstcase Datarate (Mbps)	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5180	36	6	11.52	1.46	12.98	66
	5200	40	6	11.80	1.46	13.26	64
	5240	48	6	11.75	1.46	13.21	66

802.11a Mode			Worstcase Datarate (Mbps)	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5260	52	6	11.96	1.48	13.44	68
	5300	60	6	12.22	1.48	13.70	70
	5320	64	6	12.48	1.48	13.96	68

802.11a Mode			Worstcase Datarate (Mbps)	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5500	100	6	12.28	1.47	13.75	66
	5580	116	6	12.01	1.47	12.01	68
	5720	144	6	12.44	1.47	13.91	66

802.11a Mode			Worstcase Datarate (Mbps)	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	PLS
UNII 3	5745	149	6	12.55	60
	5785	157	6	12.25	60
	5825	165	6	12.58	60

802.11n Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5180	36	MCS0	11.72	1.46	13.18	66
	5200	40	MCS0	11.94	1.46	13.40	68
	5240	48	MCS0	12.11	1.46	13.57	68

802.11n Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5260	52	MCS0	12.40	1.48	13.88	70
	5300	60	MCS0	12.54	1.48	14.02	68
	5320	64	MCS0	12.11	1.48	13.59	68

802.11n Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5500	100	MCS0	12.24	1.47	13.71	66
	5580	116	MCS0	12.17	1.47	13.64	68
	5720	144	MCS0	12.21	1.47	13.68	66

802.11n Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	PLS
UNII 3	5745	149	MCS0	12.53	60
	5785	157	MCS0	12.57	60
	5825	165	MCS0	12.48	60

802.11ac Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5180	36	MCS0	11.84	1.46	13.30	64
	5200	40	MCS0	11.95	1.46	13.41	66
	5240	48	MCS0	11.66	1.46	13.12	66

802.11ac Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5260	52	MCS0	12.10	1.48	13.58	68
	5300	60	MCS0	12.31	1.48	13.79	68
	5320	64	MCS0	12.44	1.48	13.92	70

802.11ac Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5500	100	MCS0	12.44	1.47	13.91	68
	5580	116	MCS0	12.14	1.47	13.61	68
	5720	144	MCS0	12.22	1.47	13.69	66

802.11ac Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	PLS
UNII 3	5745	149	MCS0	12.86	62
	5785	157	MCS0	12.92	62
	5825	165	MCS0	12.91	62

802.11n(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5190	38	MCS0	11.87	1.46	13.33	64
	5230	46	MCS0	11.98	1.46	13.44	66

802.11n(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5270	54	MCS0	12.14	1.48	13.62	70
	5310	62	MCS0	12.55	1.48	14.03	72

802.11n(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5510	102	MCS0	12.43	1.47	13.90	68
	5550	110	MCS0	12.45	1.47	13.92	70
	5710	142	MCS0	12.64	1.47	14.11	68

802.11n(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	PLS
UNII 3	5755	151	MCS0	12.75	60
	5795	159	MCS0	12.91	62

802.11ac(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5190	38	MCS0	11.82	1.46	13.28	66
	5230	46	MCS0	11.68	1.46	13.14	68

802.11ac(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5270	54	MCS0	12.14	1.48	13.62	70
	5310	62	MCS0	12.07	1.48	13.55	70

802.11ac(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5510	102	MCS0	12.47	1.47	13.94	70
	5550	110	MCS0	12.31	1.47	13.78	70
	5710	142	MCS0	12.40	1.47	13.87	70

802.11ac(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	PLS
UNII 3	5755	151	MCS0	12.91	62
	5795	159	MCS0	12.96	62

802.11ac(80MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5210	42	MCS0	12.84	1.46	14.30	68

802.11ac(80MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5290	58	MCS0	12.22	1.48	13.70	70

802.11ac(80MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5530	106	MCS0	12.54	1.47	14.01	70
	5690	138	MCS0	12.11	1.47	13.58	70

802.11ac(80MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant1 Power (dBm)	PLS
UNII 3	5775	155	MCS0	12.44	64

[Ant2]

FCC Limts (802.11a, 802.11n_HT20, 802.11ac_VHT20)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.66 dBm
UNII-2C	: Total Power < 23.63 dBm
UNII-3	: Total Power < 30.00 dBm

FCC Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

ISED Limts (802.11a, 802.11n_HT20, 802.11ac_VHT20)

UNII-1	: E.I.R.P < 22.14 dBm
UNII-2A	: Total Power < 23.14 dBm
UNII-2A	: E.I.R.P < 29.14 dBm
UNII-2C	: Total Power < 23.14 dBm
UNII-2C	: E.I.R.P < 29.14 dBm
UNII-3	: Total Power < 30.00 dBm

ISED Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: E.I.R.P < 23.01 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2A	: E.I.R.P < 30.00 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-2C	: E.I.R.P < 30.00 dBm
UNII-3	: Total Power < 23.98 dBm

802.11a Mode			Worstcase Datarate (Mbps)	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5180	36	6	12.44	1.47	13.91	66
	5200	40	6	11.87	1.47	13.34	64
	5240	48	6	11.90	1.47	13.37	66

802.11a Mode			Worstcase Datarate (Mbps)	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5260	52	6	12.10	1.49	13.59	68
	5300	60	6	12.31	1.49	13.80	70
	5320	64	6	11.73	1.49	13.22	68

802.11a Mode			Worstcase Datarate (Mbps)	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5500	100	6	12.08	1.50	13.58	66
	5580	116	6	12.17	1.50	13.67	68
	5720	144	6	12.21	1.50	13.71	66

802.11a Mode			Worstcase Datarate (Mbps)	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	PLS
UNII 3	5745	149	6	11.24	60
	5785	157	6	11.31	60
	5825	165	6	11.39	60

802.11n Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5180	36	MCS0	12.81	1.47	14.28	66
	5200	40	MCS0	12.87	1.47	14.34	68
	5240	48	MCS0	12.43	1.47	13.90	68

802.11n Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5260	52	MCS0	12.36	1.49	13.85	70
	5300	60	MCS0	11.79	1.49	13.28	68
	5320	64	MCS0	11.74	1.49	13.23	68

802.11n Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5500	100	MCS0	12.00	1.50	13.50	66
	5580	116	MCS0	11.74	1.50	13.24	68
	5720	144	MCS0	11.98	1.50	13.48	66

802.11n Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	PLS
UNII 3	5745	149	MCS0	11.31	60
	5785	157	MCS0	11.28	60
	5825	165	MCS0	11.63	60

802.11ac Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5180	36	MCS0	11.94	1.47	13.41	64
	5200	40	MCS0	12.30	1.47	13.77	66
	5240	48	MCS0	11.91	1.47	13.38	66

802.11ac Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5260	52	MCS0	12.31	1.49	13.80	68
	5300	60	MCS0	12.04	1.49	13.53	68
	5320	64	MCS0	12.22	1.49	13.71	70

802.11ac Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5500	100	MCS0	11.81	1.50	13.31	68
	5580	116	MCS0	11.54	1.50	13.04	68
	5720	144	MCS0	11.66	1.50	13.16	66

802.11ac Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	PLS
UNII 3	5745	149	MCS0	11.55	62
	5785	157	MCS0	11.30	62
	5825	165	MCS0	11.66	62

802.11n(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5190	38	MCS0	11.90	1.47	13.37	64
	5230	46	MCS0	12.06	1.47	13.53	66

802.11n(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5270	54	MCS0	12.11	1.49	13.60	70
	5310	62	MCS0	12.33	1.49	13.82	72

802.11n(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5510	102	MCS0	11.66	1.50	13.16	68
	5550	110	MCS0	11.71	1.50	13.21	70
	5710	142	MCS0	11.74	1.50	13.24	68

802.11n(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	PLS
UNII 3	5755	151	MCS0	11.14	60
	5795	159	MCS0	11.42	62

802.11ac(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5190	38	MCS0	11.77	1.47	13.24	66
	5230	46	MCS0	12.08	1.47	13.55	68

802.11ac(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5270	54	MCS0	11.75	1.49	13.24	70
	5310	62	MCS0	11.61	1.49	13.10	70

802.11ac(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5510	102	MCS0	12.05	1.50	13.55	70
	5550	110	MCS0	11.76	1.50	13.26	70
	5710	142	MCS0	12.10	1.50	13.60	70

802.11ac(40 MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	PLS
UNII 3	5755	151	MCS0	11.21	62
	5795	159	MCS0	11.61	62

802.11ac(80MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 1	5210	42	MCS0	12.44	1.47	13.91	68

802.11ac(80MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2A	5290	58	MCS0	11.61	1.49	13.10	70

802.11ac(80MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)			
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	Peak Ant Gain (dBi)	E.I.R.P (dBm)	PLS
UNII 2C	5530	106	MCS0	12.10	1.50	13.60	70
	5690	138	MCS0	11.85	1.50	13.35	70

802.11ac(80MHz) Mode			Worstcase MCS Index	SISO Measured Power(dBm)	
Band	Frequency [MHz]	Channel No.		Ant2 Power (dBm)	PLS
UNII 3	5775	155	MCS0	12.19	64

[MIMO]

FCC Limts (802.11a, 802.11n_HT20, 802.11ac_VHT20)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.66 dBm
UNII-2C	: Total Power < 23.63 dBm
UNII-3	: Total Power < 30.00 dBm

FCC Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

ISED Limts (802.11a, 802.11n_HT20, 802.11ac_VHT20)

UNII-1	: E.I.R.P < 22.14 dBm
UNII-2A	: Total Power < 23.14 dBm
UNII-2A	: E.I.R.P < 29.14 dBm
UNII-2C	: Total Power < 23.14 dBm
UNII-2C	: E.I.R.P < 29.14 dBm
UNII-3	: Total Power < 30.00 dBm

ISED Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: E.I.R.P < 23.01 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2A	: E.I.R.P < 30.00 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-2C	: E.I.R.P < 30.00 dBm
UNII-3	: Total Power < 23.98 dBm

802.11a Mode			Worstcase Datarate (Mbps)	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 1	5180	36	6	31.73	15.01	4.48	19.49	66
	5200	40	6	30.52	14.85	4.48	19.33	64
	5240	48	6	30.45	14.84	4.48	19.32	66

802.11a Mode			Worstcase Datarate (Mbps)	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2A	5260	52	6	31.94	15.04	4.50	19.54	68
	5300	60	6	33.69	15.28	4.50	19.78	70
	5320	64	6	32.59	15.13	4.50	19.63	68

802.11a Mode			Worstcase Datarate (Mbps)	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2C	5500	100	6	33.05	15.19	4.51	19.70	66
	5580	116	6	32.37	15.10	4.51	15.10	68
	5720	144	6	34.17	15.34	4.51	19.85	66

802.11a Mode			Worstcase Datarate (Mbps)	MIMO Total Power (dBm) (CDD)		PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	
UNII 3	5745	149	6	31.29	14.95	60
	5785	157	6	30.31	14.82	60
	5825	165	6	31.89	15.04	60

802.11n Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 1	5180	36	MCS0	33.96	15.31	4.48	19.79	66
	5200	40	MCS0	35.00	15.44	4.48	19.92	68
	5240	48	MCS0	33.75	15.28	4.48	19.76	68

802.11n Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2A	5260	52	MCS0	34.60	15.39	4.50	19.89	70
	5300	60	MCS0	33.05	15.19	4.50	19.69	68
	5320	64	MCS0	31.18	14.94	4.50	19.44	68

802.11n Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2C	5500	100	MCS0	32.60	15.13	4.51	19.64	66
	5580	116	MCS0	31.41	14.97	4.51	19.48	68
	5720	144	MCS0	32.41	15.11	4.51	19.62	66

802.11n Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)		PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	
UNII 3	5745	149	MCS0	31.43	14.97	60
	5785	157	MCS0	31.50	14.98	60
	5825	165	MCS0	32.26	15.09	60

802.11ac Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 1	5180	36	MCS0	30.91	14.90	4.48	19.38	64
	5200	40	MCS0	32.65	15.14	4.48	19.62	66
	5240	48	MCS0	30.18	14.80	4.48	19.28	66

802.11ac Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2A	5260	52	MCS0	33.24	15.22	4.50	19.72	68
	5300	60	MCS0	33.00	15.18	4.50	19.69	68
	5320	64	MCS0	34.21	15.34	4.50	19.84	70

802.11ac Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2C	5500	100	MCS0	32.71	15.15	4.51	19.66	68
	5580	116	MCS0	30.62	14.86	4.51	19.37	68
	5720	144	MCS0	31.33	14.96	4.51	19.47	66

802.11ac Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)		PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	
UNII 3	5745	149	MCS0	33.61	15.26	62
	5785	157	MCS0	33.08	15.20	62
	5825	165	MCS0	34.20	15.34	62

802.11n(40MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 1	5190	38	MCS0	30.87	14.90	4.48	19.38	64
	5230	46	MCS0	31.85	15.03	4.48	19.38	66

802.11n(40MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2A	5270	54	MCS0	32.62	15.14	4.50	19.64	70
	5310	62	MCS0	35.09	15.45	4.50	19.95	72

802.11n(40MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2C	5510	102	MCS0	32.15	15.07	4.51	19.58	68
	5550	110	MCS0	32.40	15.11	4.51	19.62	70
	5710	142	MCS0	33.29	15.22	4.51	19.73	68

802.11n(40MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)		PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	
UNII 3	5755	151	MCS0	31.84	15.03	60
	5795	159	MCS0	33.41	15.24	62

802.11ac(40MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 1	5190	38	MCS0	30.24	14.81	4.48	19.29	66
	5230	46	MCS0	30.87	14.89	4.48	19.38	68

802.11ac(40MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2A	5270	54	MCS0	31.33	14.96	4.50	19.46	70
	5310	62	MCS0	30.59	14.86	4.50	19.36	70

802.11ac(40MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2C	5510	102	MCS0	33.69	15.28	4.51	19.79	70
	5550	110	MCS0	32.02	15.05	4.51	19.56	70
	5710	142	MCS0	33.60	15.26	4.51	19.77	70

802.11ac(40MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)		PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	
UNII 3	5755	151	MCS0	32.76	15.15	62
	5795	159	MCS0	34.26	15.35	62

802.11ac(80MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 1	5210	42	MCS0	36.77	15.65	4.48	20.14	68

802.11ac(80MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2A	5290	58	MCS0	31.16	14.94	4.50	19.44	70

802.11ac(80MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)				PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	Directional Ant Gain (dBi)	E.I.R.P (dBm)	
UNII 2C	5530	106	MCS0	34.17	15.34	4.51	19.85	70
	5690	138	MCS0	31.57	14.99	4.51	19.50	70

802.11ac(80MHz) Mode			Worstcase MCS Index	MIMO Total Power (dBm) (CDD)		PLS
Band	Frequency [MHz]	Channel No.		mW	SUM Power (dBm)	
UNII 3	5775	155	MCS0	34.10	15.33	64

10.4 POWER SPECTRAL DENSITY

FCC&ISED

[Ant1]

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11a	1.083	2.543	11 dBm/MHz
5200	40		0.875	2.335	
5240	48		0.759	2.219	
5260	52		1.047	-	
5300	60		1.529	-	
5320	64		1.234	-	
5500	100		1.329	-	
5580	116		1.441	-	
5720	144		1.294	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11a	-1.168	30 dBm/500kHz
5785	157		-1.781	
5825	165		-1.047	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11n (20 MHz)	0.466	1.926	11 dBm/MHz
5200	40		0.792	2.252	
5240	48		0.775	2.235	
5260	52		0.991	-	
5300	60		1.085	-	
5320	64		0.486	-	
5500	100		0.965	-	
5580	116		0.860	-	
5720	144		1.005	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11n (20 MHz)	-1.478	30 dBm/500kHz
5785	157		-1.636	
5825	165		-1.575	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5190	38	802.11n (40 MHz)	-2.399	-0.939	11 dBm/MHz
5230	46		-2.429	-0.969	
5270	54		-2.442	-	
5310	62		-2.000	-	
5510	102		-1.866	-	
5500	110		-2.498	-	
5710	142		-2.850	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5755	151	802.11n (40 MHz)	-4.605	30 dBm/500kHz
5795	159		-4.592	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11ac (20 MHz)	0.004	1.464	11 dBm/MHz
5200	40		0.410	1.870	
5240	48		0.364	1.824	
5260	52		0.688	-	
5300	60		0.886	-	
5320	64		0.980	-	
5500	100		0.688	-	
5580	116		0.760	-	
5720	144		0.981	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11ac (20 MHz)	-0.778	30 Bm/500kHz
5785	157		-1.535	
5825	165		-1.321	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5190	38	802.11ac (40 MHz)	-2.207	-0.747	11 dBm/MHz
5230	46		-2.229	-0.769	
5270	54		-2.239	-	
5310	62		-2.080	-	
5510	102		-1.779	-	
5500	110		-1.866	-	
5710	142		-1.797	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5755	151	802.11ac (40 MHz)	-4.439	30 dBm/500kHz
5795	159		-4.521	

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5210	42	802.11ac (80 MHz)	-5.422	-3.952	11 dBm/MHz
5290	58		-5.377	-	
5530	106		-4.924	-	
5690	138		-5.302	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5775	155	802.11ac (80 MHz)	-7.895	30 dBm/500kHz

Note :

UNII-1 Limit : 10 dBm/MHz

[Ant2]

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11a	1.704	3.174	11 dBm/MHz
5200	40		0.640	2.110	
5240	48		0.873	2.343	
5260	52		0.950	-	
5300	60		1.198	-	
5320	64		0.778	-	
5500	100		1.325	-	
5580	116		1.098	-	
5720	144		1.320	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11a	-3.112	30 dBm/500kHz
5785	157		-3.079	
5825	165		-3.010	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11n (20 MHz)	1.465	2.935	11 dBm/MHz
5200	40		1.646	3.116	
5240	48		1.190	2.660	
5260	52		1.193	-	
5300	60		0.412	-	
5320	64		0.359	-	
5500	100		0.876	-	
5580	116		0.602	-	
5720	144		0.662	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11n (20 MHz)	-2.555	30 dBm/500kHz
5785	157		-3.179	
5825	165		-2.843	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5190	38	802.11n (40 MHz)	-2.170	-0.710	11 dBm/MHz
5230	46		-2.033	-0.573	
5270	54		-2.071	-	
5310	62		-1.988	-	
5510	102		-2.271	-	
5500	110		-2.219	-	
5710	142		-2.203	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5755	151	802.11n (40 MHz)	-6.650	30 dBm/500kHz
5795	159		-6.219	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11ac (20 MHz)	0.854	2.314	11 dBm/MHz
5200	40		0.906	2.366	
5240	48		0.329	1.789	
5260	52		0.874	-	
5300	60		0.502	-	
5320	64		0.613	-	
5500	100		0.425	-	
5580	116		0.010	-	
5720	144		0.265	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11ac (20 MHz)	-2.580	30 dBm/500kHz
5785	157		-3.180	
5825	165		-2.359	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5190	38	802.11ac (40 MHz)	-2.626	-1.156	11 dBm/MHz
5230	46		-2.325	-0.855	
5270	54		-2.529	-	
5310	62		-2.644	-	
5510	102		-1.916	-	
5500	110		-2.460	-	
5710	142		-1.974	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5755	151	802.11ac (40 MHz)	-6.055	30 dBm/500kHz
5795	159		-5.831	

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5210	42	802.11ac (80 MHz)	-3.989	-2.519	11 dBm/MHz
5290	58		-5.132	-	
5530	106		-4.901	-	
5690	138		-5.014	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5775	155	802.11ac (80 MHz)	-7.911	30 dBm/500kHz

Note :

UNII-1 Limit : 10 dBm/MHz

[MIMO (CDD)]

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11a	4.409	8.890	11 dBm/MHz
5200	40		3.769	8.249	
5240	48		3.826	8.307	
5260	52		4.009	-	
5300	60		4.375	-	
5320	64		4.019	-	
5500	100		4.337	-	
5580	116		4.281	-	
5720	144		4.317	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11a	0.925	30 dBm/500kHz
5785	157		0.605	
5825	165		1.037	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11n (20 MHz)	3.990	8.470	11 dBm/MHz
5200	40		4.240	8.720	
5240	48		3.995	8.476	
5260	52		4.103	-	
5300	60		3.765	-	
5320	64		3.433	-	
5500	100		3.931	-	
5580	116		3.742	-	
5720	144		3.845	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11n (20 MHz)	1.010	30 dBm/500kHz
5785	157		0.637	
5825	165		0.824	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5190	38	802.11n (40 MHz)	0.727	5.207	11 dBm/MHz
5230	46		0.782	5.262	
5270	54		0.756	-	
5310	62		1.016	-	
5510	102		0.944	-	
5500	110		0.653	-	
5710	142		0.490	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5755	151	802.11n (40 MHz)	-2.557	30 dBm/500kHz
5795	159		-2.357	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5180	36	802.11ac (20 MHz)	3.450	7.930	11 dBm/MHz
5200	40		3.672	8.152	
5240	48		3.357	7.837	
5260	52		3.792	-	
5300	60		3.706	-	
5320	64		3.809	-	
5500	100		3.568	-	
5580	116		3.403	-	
5720	144		3.641	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5745	149	802.11ac (20 MHz)	1.378	30 dBm/500kHz
5785	157		0.692	
5825	165		1.186	

Note :

UNII-1 Limit : 10 dBm/MHz

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5190	38	802.11ac (40 MHz)	0.596	5.077	11 dBm/MHz
5230	46		0.733	5.214	
5270	54		0.628	-	
5310	62		0.653	-	
5510	102		1.163	-	
5500	110		0.852	-	
5710	142		1.125	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5755	151	802.11ac (40 MHz)	-2.199	30 dBm/500kHz
5795	159		-2.141	

Frequency (MHz)	Channel No.	Mode	Test Result		
			Conducted (dBm/MHz)	E.I.R.P (dBm/MHz)	Limit
5210	42	802.11ac (80 MHz)	-1.666	2.815	11 dBm/MHz
5290	58		-2.243	-	
5530	106		-1.902	-	
5690	138		-2.147	-	

Frequency (MHz)	Channel No.	Mode	Test Result	
			Conducted (dBm/500kHz)	Limit
5775	155	802.11ac (80 MHz)	-4.893	30 dBm/500kHz

Note :

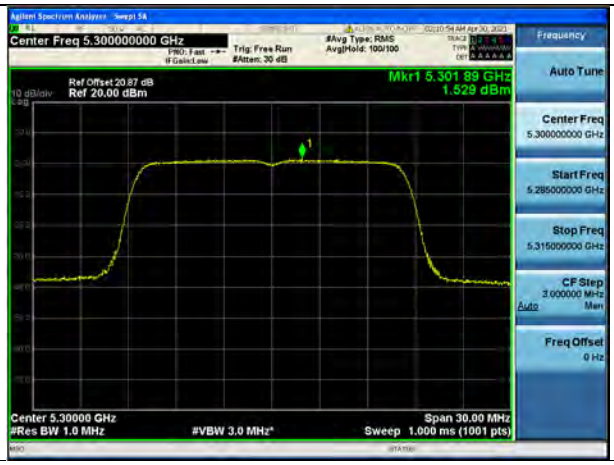
UNII-1 Limit : 10 dBm/MHz

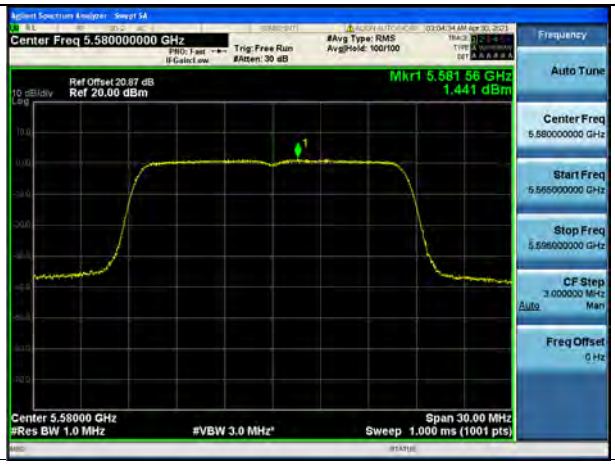
[Ant1]

▣ Test Plots(802.11a)

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 36)	UNII 2A (Ch. 60)
	

UNII 2C (Ch. 116)	UNII 3 (Ch. 165)
	

▣ Test Plots(802.11n(HT20))

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 40)	UNII 2A (Ch. 60)
	

UNII 2C (Ch. 144)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11n(HT40))

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 38)	UNII 2A (Ch. 62)
	
UNII 2C (Ch. 102)	**UNII 3 (Ch. 159)**
	

▣ Test Plots(802.11ac(VHT20))

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 40)	UNII 2A (Ch. 64)
	
UNII 2C (Ch. 144)	**UNII 3 (Ch. 149)**
	

▣ Test Plots(802.11ac(VHT40))

Note:

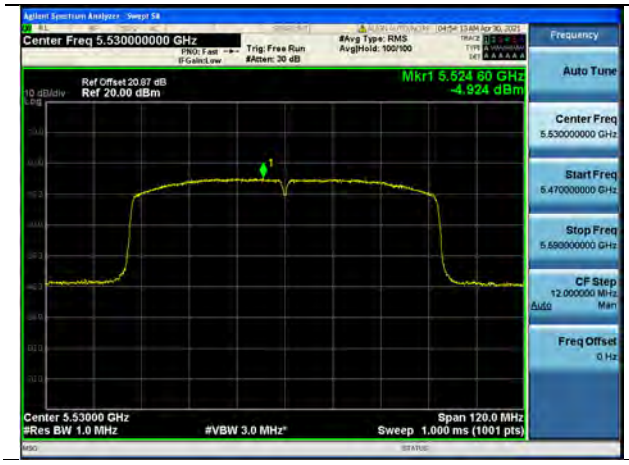
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 38)	UNII 2A (Ch. 62)
	
UNII 2C (Ch. 102)	**UNII 3 (Ch. 151)**
	

▣ Test Plots(802.11ac(VHT80))

Note:

In order to simplify the report, attached plots were only channel of highest power.

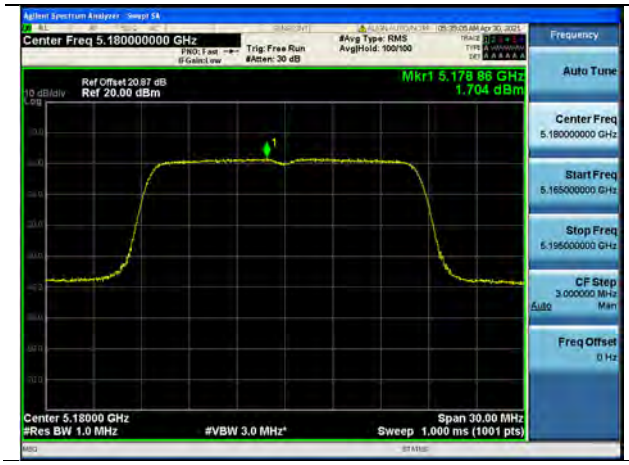
UNII 1 (Ch. 42)	UNII 2A (Ch. 58)
	
UNII 2C (Ch. 106)	**UNII 3 (Ch. 155)**
	

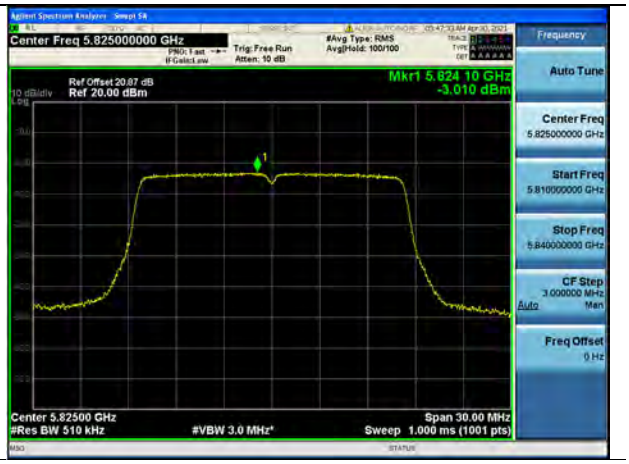
[Ant2]

▣ Test Plots(802.11a)

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 36)	UNII 2A (Ch. 60)
	

UNII 2C (Ch. 100)	UNII 3 (Ch. 165)
	

▣ Test Plots(802.11n(HT20))

Note:

In order to simplify the report, attached plots were only channel of highest power.

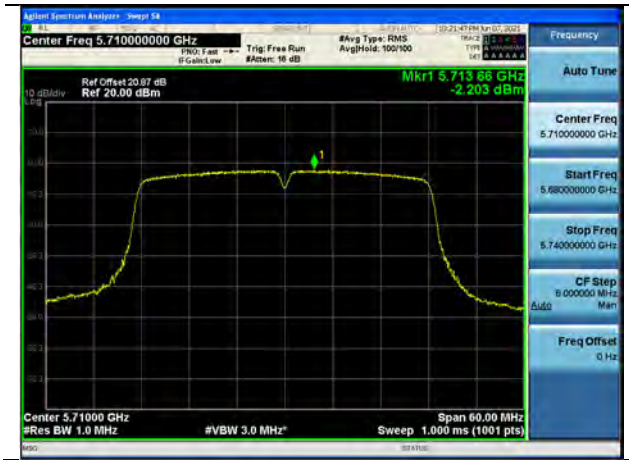
UNII 1 (Ch. 40)	UNII 2A (Ch. 52)
	

UNII 2C (Ch. 100)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11n(HT40))

Note:

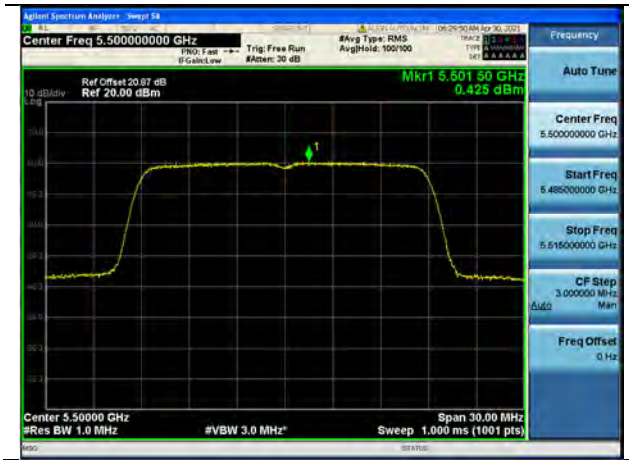
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 46)	UNII 2A (Ch. 62)
	
UNII 2C (Ch. 142)	**UNII 3 (Ch. 159)**
	

▣ Test Plots(802.11ac(VHT20))

Note:

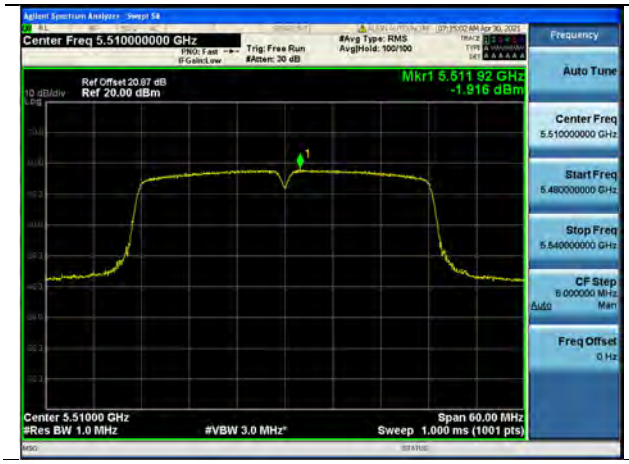
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 40)	UNII 2A (Ch. 52)
	
UNII 2C (Ch. 100)	**UNII 3 (Ch. 165)**
	

▣ Test Plots(802.11ac(VHT40))

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 46)	UNII 2A (Ch. 54)
	
UNII 2C (Ch. 102)	UNII 3 (Ch. 159)
	

▣ Test Plots(802.11ac(VHT80))

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 42)	UNII 2A (Ch. 58)
	
UNII 2C (Ch. 106)	**UNII 3 (Ch. 155)**
	

10.5 FREQUENCY STABILITY.

10.5.1 80MHz BW

[ANT1]

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	5.00 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	5.00	+20(Ref)	5210057.50	57.50
100%		-30	5210074.32	74.32
100%		-20	5210049.05	49.05
100%		-10	5210091.26	91.26
100%		0	5210095.72	95.72
100%		+10	5210052.39	52.39
100%		+30	5210076.68	76.68
100%		+40	5210079.45	79.45
100%		+50	5210040.03	40.03
Max	5.25	+20	5210046.63	46.63
Min	4.75	+20	5210049.89	49.89

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5290005.40	5.40
100%		-30	5290080.43	80.43
100%		-20	5290098.80	98.8
100%		-10	5290038.30	38.3
100%		0	5290063.10	63.1
100%		+10	5290047.71	47.71
100%		+30	5290070.64	70.64
100%		+40	5290062.54	62.54
100%		+50	5290055.39	55.39
Max	5.25	+20	5290042.47	42.47
Min	4.75	+20	5290049.34	49.34

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	5.00 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	5.00	+20(Ref)	5530003.15	3.15
100%		-30	5530052.33	52.33
100%		-20	5530054.55	54.55
100%		-10	5530005.58	5.58
100%		0	5530059.76	59.76
100%		+10	5530017.79	17.79
100%		+30	5530022.41	22.41
100%		+40	5530011.53	11.53
100%		+50	5530064.90	64.90
Max	5.25	+20	5530001.04	1.04
Min	4.75	+20	5530022.68	22.68

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5775030.90	30.90
100%		-30	5775033.22	33.22
100%		-20	5775085.82	85.82
100%		-10	5775099.31	99.31
100%		0	5775048.26	48.26
100%		+10	5775050.10	50.1
100%		+30	5775002.66	2.66
100%		+40	5775001.65	1.65
100%		+50	5775047.98	47.98
Max	5.25	+20	5775071.57	71.57
Min	4.75	+20	5775020.76	20.76

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

2 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5210049.74	49.74
100%		-30	5210077.54	77.54
100%		-20	5210005.45	5.45
100%		-10	5210060.68	60.68
100%		0	5210001.06	1.06
100%		+10	5210023.46	23.46
100%		+30	5210004.18	4.18
100%		+40	5210067.23	67.23
100%		+50	5210064.41	64.41
Max	5.25	+20	5210092.42	92.42
Min	4.75	+20	5210042.66	42.66

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5290049.54	49.54
100%		-30	5290066.10	66.10
100%		-20	5290030.08	30.08
100%		-10	5290066.29	66.29
100%		0	5290087.09	87.09
100%		+10	5290085.38	85.38
100%		+30	5290021.93	21.93
100%		+40	5290036.60	36.6
100%		+50	5290043.32	43.32
Max	5.25	+20	5290039.06	39.06
Min	4.75	+20	5290097.81	97.81

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5530032.90	32.90
100%		-30	5530020.68	20.68
100%		-20	5530076.72	76.72
100%		-10	5530051.39	51.39
100%		0	5530055.94	55.94
100%		+10	5530067.22	67.22
100%		+30	5530073.92	73.92
100%		+40	5530026.35	26.35
100%		+50	5530009.46	9.46
Max	5.25	+20	5530090.60	90.60
Min	4.75	+20	5530039.87	39.87

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5775090.77	90.77
100%		-30	5775010.61	10.61
100%		-20	5775069.78	69.78
100%		-10	5775008.88	8.88
100%		0	5775089.49	89.49
100%		+10	5775060.84	60.84
100%		+30	5775004.63	4.63
100%		+40	5775064.31	64.31
100%		+50	5775088.13	88.13
Max	5.25	+20	5775078.88	78.88
Min	4.75	+20	5775091.21	91.21

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

5 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5210059.37	59.37
100%		-30	5210064.30	64.30
100%		-20	5210034.09	34.09
100%		-10	5210043.70	43.70
100%		0	5210005.06	5.06
100%		+10	5210092.29	92.29
100%		+30	5210083.37	83.37
100%		+40	5210084.30	84.30
100%		+50	5210027.03	27.03
Max	5.25	+20	5210093.67	93.67
Min	4.75	+20	5210002.92	2.92

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5290077.35	77.35
100%		-30	5290098.66	98.66
100%		-20	5290099.61	99.61
100%		-10	5290042.41	42.41
100%		0	5290007.83	7.83
100%		+10	5290028.45	28.45
100%		+30	5290014.48	14.48
100%		+40	5290035.97	35.97
100%		+50	5290053.11	53.11
Max	5.25	+20	5290070.27	70.27
Min	4.75	+20	5290073.87	73.87

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	5.00 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	5.00	+20(Ref)	5530052.48	52.48
100%		-30	5530078.91	78.91
100%		-20	5530072.74	72.74
100%		-10	5530070.23	70.23
100%		0	5530069.26	69.26
100%		+10	5530085.68	85.68
100%		+30	5530080.58	80.58
100%		+40	5530086.17	86.17
100%		+50	5530086.29	86.29
Max	5.25	+20	5530038.49	38.49
Min	4.75	+20	5530030.52	30.52

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5775062.25	62.25
100%		-30	5775099.34	99.34
100%		-20	5775044.60	44.6
100%		-10	5775031.92	31.92
100%		0	5775032.51	32.51
100%		+10	5775081.07	81.07
100%		+30	5775042.42	42.42
100%		+40	5775061.29	61.29
100%		+50	5775014.43	14.43
Max	5.25	+20	5775006.12	6.12
Min	4.75	+20	5775060.69	60.69

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

10 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5210007.13	7.13
100%		-30	5210020.05	20.05
100%		-20	5210099.62	99.62
100%		-10	5210059.78	59.78
100%		0	5210012.77	12.77
100%		+10	5210022.70	22.70
100%		+30	5210016.45	16.45
100%		+40	5210079.10	79.10
100%		+50	5210062.64	62.64
Max	5.25	+20	5210083.07	83.07
Min	4.75	+20	5210008.15	8.15

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5290031.44	31.44
100%		-30	5290090.79	90.79
100%		-20	5290006.97	6.97
100%		-10	5290088.08	88.08
100%		0	5290082.16	82.16
100%		+10	5290096.25	96.25
100%		+30	5290012.15	12.15
100%		+40	5290023.28	23.28
100%		+50	5290087.21	87.21
Max	5.25	+20	5290018.16	18.16
Min	4.75	+20	5290044.93	44.93

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5530080.34	80.34
100%		-30	5530065.65	65.65
100%		-20	5530035.58	35.58
100%		-10	5530051.18	51.18
100%		0	5530072.27	72.27
100%		+10	5530031.84	31.84
100%		+30	5530007.54	7.54
100%		+40	5530045.28	45.28
100%		+50	5530029.38	29.38
Max	5.25	+20	5530065.48	65.48
Min	4.75	+20	5530006.91	6.91

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5775020.12	20.12
100%		-30	5775084.63	84.63
100%		-20	5775058.06	58.06
100%		-10	5775074.38	74.38
100%		0	5775078.20	78.2
100%		+10	5775073.80	73.8
100%		+30	5775033.87	33.87
100%		+40	5775060.04	60.04
100%		+50	5775032.68	32.68
Max	5.25	+20	5775046.95	46.95
Min	4.75	+20	5775016.15	16.15

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

[ANT2]

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5210065.25	65.25
100%		-30	5210050.30	50.30
100%		-20	5210039.51	39.51
100%		-10	5210063.34	63.34
100%		0	5210036.42	36.42
100%		+10	5210059.65	59.65
100%		+30	5210063.70	63.70
100%		+40	5210013.39	13.39
100%		+50	5210029.33	29.33
Max	5.25	+20	5210018.48	18.48
Min	4.75	+20	5210035.46	35.46

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5290049.91	49.91
100%		-30	5290068.44	68.44
100%		-20	5290078.32	78.32
100%		-10	5290034.87	34.87
100%		0	5290058.16	58.16
100%		+10	5290069.64	69.64
100%		+30	5290059.57	59.57
100%		+40	5290007.08	7.08
100%		+50	5290054.34	54.34
Max	5.25	+20	5290002.16	2.16
Min	4.75	+20	5290067.60	67.6

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	5.00 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	5.00	+20(Ref)	5530099.11	99.11
100%		-30	5530026.20	26.20
100%		-20	5530076.83	76.83
100%		-10	5530085.69	85.69
100%		0	5530098.72	98.72
100%		+10	5530005.83	5.83
100%		+30	5530082.33	82.33
100%		+40	5530035.57	35.57
100%		+50	5530001.05	1.05
Max	5.25	+20	5530085.71	85.71
Min	4.75	+20	5530083.17	83.17

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5775046.76	46.76
100%		-30	5775098.95	98.95
100%		-20	5775014.73	14.73
100%		-10	5775008.63	8.63
100%		0	5775083.39	83.39
100%		+10	5775062.22	62.22
100%		+30	5775050.20	50.2
100%		+40	5775017.64	17.64
100%		+50	5775097.32	97.32
Max	5.25	+20	5775089.40	89.40
Min	4.75	+20	5775055.14	55.14

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

2 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5210069.98	69.98
100%		-30	5210038.62	38.62
100%		-20	5210037.81	37.81
100%		-10	5210031.87	31.87
100%		0	5210037.82	37.82
100%		+10	5210055.26	55.26
100%		+30	5210074.89	74.89
100%		+40	5210072.16	72.16
100%		+50	5210078.42	78.42
Max	5.25	+20	5210070.78	70.78
Min	4.75	+20	5210037.49	37.49

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5290042.66	42.66
100%		-30	5290048.19	48.19
100%		-20	5290019.43	19.43
100%		-10	5290047.19	47.19
100%		0	5290035.72	35.72
100%		+10	5290092.48	92.48
100%		+30	5290089.35	89.35
100%		+40	5290007.27	7.27
100%		+50	5290078.67	78.67
Max	5.25	+20	5290074.04	74.04
Min	4.75	+20	5290083.72	83.72

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5530015.26	15.26
100%		-30	5530015.96	15.96
100%		-20	5530012.99	12.99
100%		-10	5530056.29	56.29
100%		0	5530070.09	70.09
100%		+10	5530072.22	72.22
100%		+30	5530011.05	11.05
100%		+40	5530052.99	52.99
100%		+50	5530022.11	22.11
Max	5.25	+20	5530016.24	16.24
Min	4.75	+20	5530032.70	32.7

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5775026.07	26.07
100%		-30	5775080.14	80.14
100%		-20	5775023.74	23.74
100%		-10	5775011.36	11.36
100%		0	5775077.57	77.57
100%		+10	5775073.40	73.4
100%		+30	5775082.67	82.67
100%		+40	5775003.67	3.67
100%		+50	5775042.25	42.25
Max	5.25	+20	5775093.72	93.72
Min	4.75	+20	5775019.53	19.53

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

5 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5210048.80	48.80
100%		-30	5210054.82	54.82
100%		-20	5210097.19	97.19
100%		-10	5210085.50	85.50
100%		0	5210030.25	30.25
100%		+10	5210054.31	54.31
100%		+30	5210084.71	84.71
100%		+40	5210025.39	25.39
100%		+50	5210091.87	91.87
Max	5.25	+20	5210036.20	36.20
Min	4.75	+20	5210094.02	94.02

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5290040.83	40.83
100%		-30	5290098.21	98.21
100%		-20	5290015.86	15.86
100%		-10	5290083.18	83.18
100%		0	5290063.21	63.21
100%		+10	5290099.10	99.1
100%		+30	5290068.59	68.59
100%		+40	5290014.78	14.78
100%		+50	5290075.33	75.33
Max	5.25	+20	5290026.09	26.09
Min	4.75	+20	5290069.28	69.28

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5530030.88	30.88
100%		-30	5530091.76	91.76
100%		-20	5530062.78	62.78
100%		-10	5530074.91	74.91
100%		0	5530084.22	84.22
100%		+10	5530067.09	67.09
100%		+30	5530043.03	43.03
100%		+40	5530009.12	9.12
100%		+50	5530037.30	37.30
Max	5.25	+20	5530055.22	55.22
Min	4.75	+20	5530048.95	48.95

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5775043.03	43.03
100%		-30	5775077.15	77.15
100%		-20	5775075.40	75.4
100%		-10	5775048.12	48.12
100%		0	5775033.83	33.83
100%		+10	5775003.77	3.77
100%		+30	5775032.50	32.5
100%		+40	5775080.69	80.69
100%		+50	5775096.70	96.70
Max	5.25	+20	5775097.06	97.06
Min	4.75	+20	5775030.87	30.87

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

10 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5210022.08	22.08
100%		-30	5210048.67	48.67
100%		-20	5210069.28	69.28
100%		-10	5210082.80	82.80
100%		0	5210015.89	15.89
100%		+10	5210096.81	96.81
100%		+30	5210074.54	74.54
100%		+40	5210065.13	65.13
100%		+50	5210072.02	72.02
Max	5.25	+20	5210021.60	21.60
Min	4.75	+20	5210089.98	89.98

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	5.00 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	5.00	+20(Ref)	5290008.98	8.98
100%		-30	5290081.32	81.32
100%		-20	5290029.13	29.13
100%		-10	5290068.18	68.18
100%		0	5290051.07	51.07
100%		+10	5290045.80	45.8
100%		+30	5290021.52	21.52
100%		+40	5290031.10	31.1
100%		+50	5290034.53	34.53
Max	5.25	+20	5290013.04	13.04
Min	4.75	+20	5290053.20	53.2

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	5.00 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	5.00	+20(Ref)	5530071.61	71.61
100%		-30	5530079.99	79.99
100%		-20	5530027.78	27.78
100%		-10	5530056.52	56.52
100%		0	5530064.68	64.68
100%		+10	5530098.37	98.37
100%		+30	5530021.55	21.55
100%		+40	5530065.63	65.63
100%		+50	5530054.32	54.32
Max	5.25	+20	5530034.68	34.68
Min	4.75	+20	5530065.21	65.21

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	5.00 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	5.00	+20(Ref)	5775055.81	55.81
100%		-30	5775063.61	63.61
100%		-20	5775047.63	47.63
100%		-10	5775059.45	59.45
100%		0	5775046.20	46.2
100%		+10	5775041.71	41.71
100%		+30	5775097.29	97.29
100%		+40	5775039.17	39.17
100%		+50	5775042.31	42.31
Max	5.25	+20	5775074.21	74.21
Min	4.75	+20	5775058.03	58.03

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

10.6 STRADDLE CHANNEL

10.6.1 26dB Bandwidth

[ANT1]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26dB Bandwidth [MHz]
802.11a	UNII 2C	5720	144	5710.60	14.40
802.11n(HT20)				5710.24	14.76
802.11ac(VHT20)				5710.16	14.84
802.11a	UNII 3	5720	144	5729.20	4.20
802.11n(HT20)				5729.72	4.72
802.11ac(VHT20)				5729.80	4.80

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5689.68	35.32
802.11ac(VHT40)				5689.68	35.32
802.11n(HT40)	UNII 3	5710	142	5730.64	5.64
802.11ac(VHT40)				5730.48	5.48

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5649.52	75.48
	UNII 3	5690	138	5730.80	5.80

Note:

[UNII 2C] 26dB Bandwidth = 5725MHz - Measured Frequency[MHz]

[UNII 3C] 26dB Bandwidth = Measured Frequency[MHz] -5725MHz

[ANT2]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26dB Bandwidth [MHz]
802.11a	UNII 2C	5720	144	5710.76	14.24
802.11n(HT20)				5710.20	14.80
802.11ac(VHT20)				5710.28	14.72
802.11a	UNII 3	5720	144	5729.16	4.16
802.11n(HT20)				5729.68	4.68
802.11ac(VHT20)				5729.68	4.68

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5689.60	35.40
802.11ac(VHT40)				5689.36	35.64
802.11n(HT40)	UNII 3	5710	142	5730.48	5.48
802.11ac(VHT40)				5730.48	5.48

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5649.36	75.64
	UNII 3	5690	138	5730.48	5.48

Note:

[UNII 2C] 26dB Bandwidth = 5725MHz - Measured Frequency[MHz]

[UNII 3C] 26dB Bandwidth = Measured Frequency[MHz] -5725MHz

[ANT1]

▣ Test Plots (26dB Bandwidth)

802.11a UNII Band	802.11n(HT20) UNII Band
	

802.11ac(VHT20) UNII Band

▣ Test Plots (26dB Bandwidth)

802.11n(HT40) UNII Band

802.11ac(VHT40) UNII Band

802.11ac(VHT80) UNII Band

[ANT2]

▣ Test Plots (26dB Bandwidth)

802.11a UNII Band

802.11n(HT20) UNII Band

802.11ac(VHT20) UNII Band

▣ Test Plots (26dB Bandwidth)

802.11n(HT40) UNII Band

802.11ac(VHT40) UNII Band

802.11ac(VHT80) UNII Band

10.6.2 6dB Bandwidth

[ANT1]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
802.11a	UNII 3	5720	144	5728.24	3.24	> 0.5
802.11n(HT20)				5728.84	3.84	> 0.5
802.11ac(VHT20)				5728.84	3.84	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
802.11n(HT40)	UNII 3	5710	142	5728.24	3.24	> 0.5
802.11ac(VHT40)				5728.24	3.24	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
802.11ac(VHT80)	UNII 3	5690	138	5727.92	2.92	> 0.5

Note:

6dB Bandwidth = Measured Frequency[MHz] – 5725MHz

[ANT2]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
802.11a	UNII 3	5720	144	5728.24	3.24	> 0.5
802.11n(HT20)				5728.84	3.84	> 0.5
802.11ac(VHT20)				5728.84	3.84	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
802.11n(HT40)	UNII 3	5710	142	5728.24	3.24	> 0.5
802.11ac(VHT40)				5728.24	3.24	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
802.11ac(VHT80)	UNII 3	5690	138	5727.92	2.92	> 0.5

Note:

6dB Bandwidth = Measured Frequency[MHz] – 5725MHz

[ANT1]

▣ Test Plots(UNII 3 Band 6dB Bandwidth)

802.11a CH.144	802.11n_HT20 CH.144
	
802.11ac_VHT20 CH.144	
	

802.11n_HT40 CH.142	802.11ac_VHT40 CH.142
	

802.11ac_VHT80 CH.138

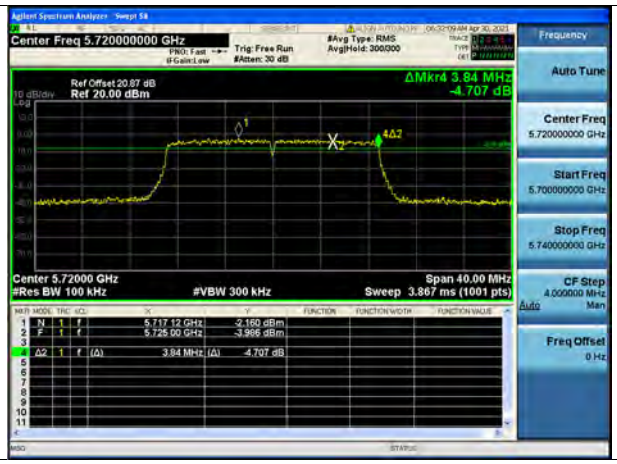
[ANT2]

▣ Test Plots(UNII 3 Band 6dB Bandwidth)

802.11a CH.144

802.11n_HT20 CH.144

802.11ac_VHT20 CH.144



802.11n_HT40 CH.142	802.11ac_VHT40 CH.142
	

802.11ac_VHT80 CH.138

10.6.3 Output Power

[ANT1]

Mode	Frequency [MHz]	Channel	Total Power (dBm)	Limit (dBm)
802.11a	5720 (UNII 2C Band)	144	11.32	22.58
802.11n(HT20)			11.15	22.69
802.11ac(VHT20)			11.07	22.71
802.11a	5720 (UNII 3 Band)	144	4.87	30.00
802.11n(HT20)			5.23	30.00
802.11ac(VHT20)			5.14	30.00

Mode	Frequency [MHz]	Channel	Total Power (dBm)	Limit (dBm)
802.11n(HT40)	5710 (UNII 2C Band)	142	10.78	23.98
802.11ac(VHT40)			11.91	23.98
802.11n(HT40)	5710 (UNII 3 Band)	142	-0.73	30.00
802.11ac(VHT40)			0.40	30.00

Mode	Frequency [MHz]	Channel	Total Power (dBm)	Limit (dBm)
802.11ac(VHT80)	5690 (UNII 2C Band)	138	11.66	23.98
	5690 (UNII 3 Band)	138	-5.30	30.00

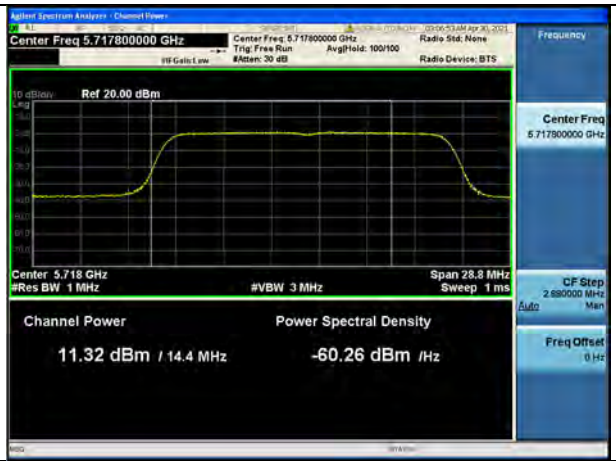
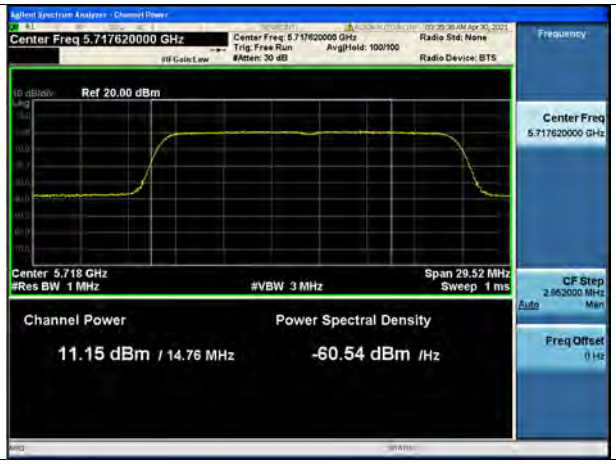
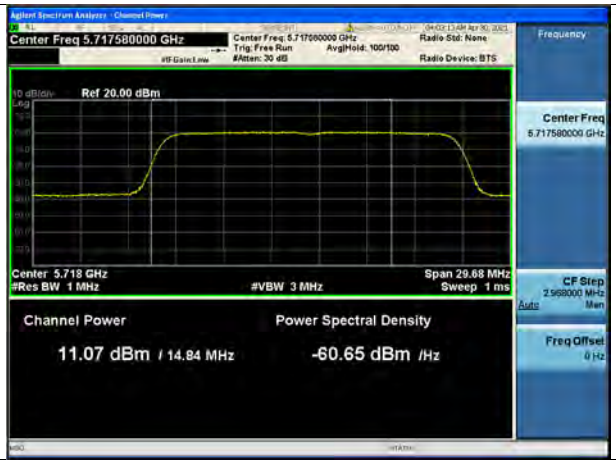
[ANT2]

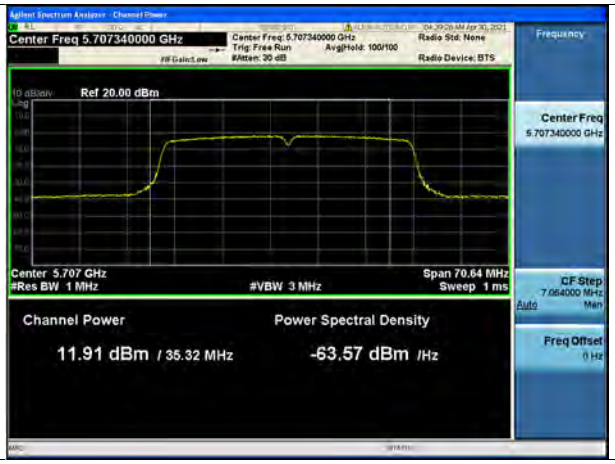
Mode	Frequency [MHz]	Channel	Total Power (dBm)	Limit (dBm)
802.11a	5720 (UNII 2C Band)	144	11.23	22.54
802.11n(HT20)			10.89	22.70
802.11ac(VHT20)			10.56	22.68
802.11a	5720 (UNII 3 Band)	144	4.71	30.00
802.11n(HT20)			4.93	30.00
802.11ac(VHT20)			4.67	30.00

Mode	Frequency [MHz]	Channel	Total Power (dBm)	Limit (dBm)
802.11n(HT40)	5710 (UNII 2C Band)	142	11.43	23.98
802.11ac(VHT40)			11.60	23.98
802.11n(HT40)	5710 (UNII 3 Band)	142	-0.21	30.00
802.11ac(VHT40)			0.12	30.00

Mode	Frequency [MHz]	Channel	Total Power (dBm)	Limit (dBm)
802.11ac(VHT80)	5690 (UNII 2C Band)	138	11.76	23.98
	5690 (UNII 3 Band)	138	-5.33	30.00

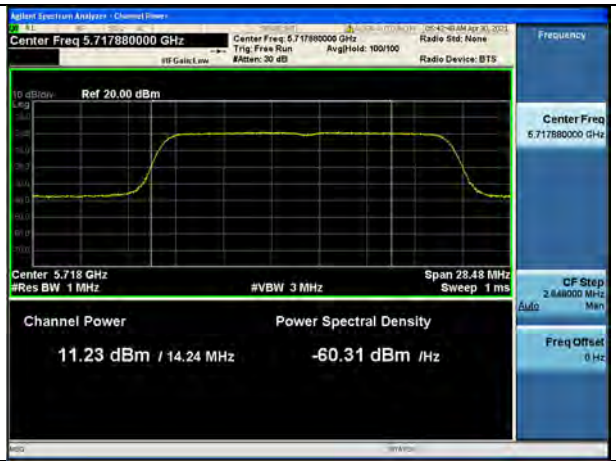
▣ Test Plots_**[ANT1]**

802.11a UNII 2C Band	802.11a UNII 3 Band
	
802.11n(HT20) UNII 2C Band	802.11n(HT20) UNII 3 Band
	
802.11ac(VHT20) UNII 2C Band	802.11ac(VHT20) UNII 3 Band
	

802.11n(HT40) UNII 2C Band	802.11n(HT40) UNII 3 Band
	
802.11ac(VHT40) UNII 2C Band	802.11ac(VHT40) UNII 3 Band
	
802.11ac(VHT80) UNII 2C Band	802.11ac(VHT80) UNII 3 Band
	

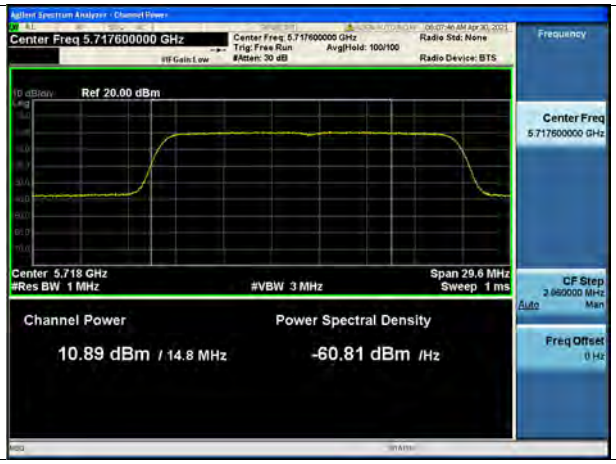
▣ Test Plots_[ANT2]

802.11a UNII 2C Band



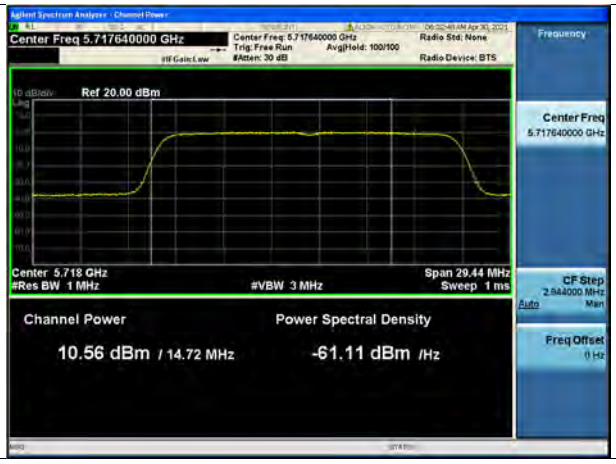
802.11a UNII 3 Band

802.11n(HT20) UNII 2C Band

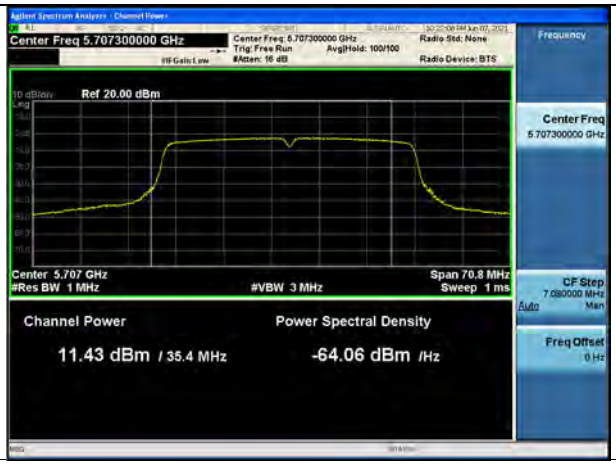
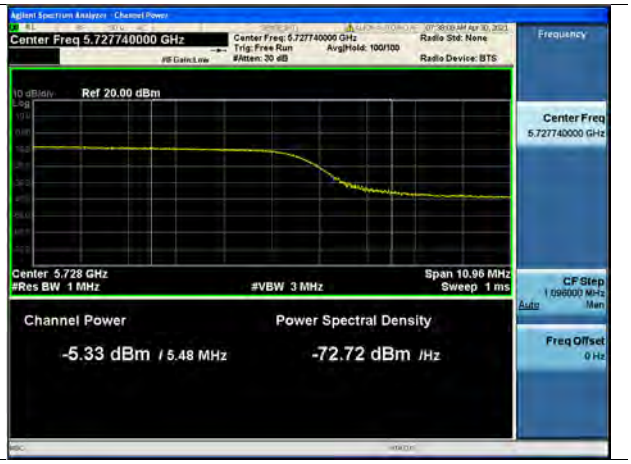


802.11n(HT20) UNII 3 Band

802.11ac(VHT20) UNII 2C Band



802.11ac(VHT20) UNII 3 Band

802.11n(HT40) UNII 2C Band	802.11n(HT40) UNII 3 Band
	
802.11ac(VHT40) UNII 2C Band	802.11ac(VHT40) UNII 3 Band
	
802.11ac(VHT80) UNII 2C Band	802.11ac(VHT80) UNII 3 Band
	

10.6.4 Power Spectral Density

[ANT1]

Mode	Frequency [MHz]	Channel	Total PSD (dBm/MHz)	Limit
802.11a	5720 (UNII 2C Band)	144	1.196	11 dBm/MHz
802.11n(HT20)			1.230	
802.11ac(VHT20)			0.931	
802.11a	5720 (UNII 3 Band)	144	-2.065	30 dBm/500kHz
802.11n(HT20)			-2.092	
802.11ac(VHT20)			-2.376	

Mode	Frequency [MHz]	Channel	Total PSD (dBm/MHz)	Limit
802.11n(HT40)	5710 (UNII 2C Band)	142	**-2.075**	11 dBm/MHz
802.11ac(VHT40)			**-1.963**	
802.11n(HT40)	5710 (UNII 3 Band)	142	**-6.919**	30 dBm/500kHz
802.11ac(VHT40)			**-6.648**	

Mode	Frequency [MHz]	Channel	Total PSD (dBm/MHz)	Limit
802.11ac(VHT80)	5690 (UNII 2C Band)	138	-5.044	11 dBm/MHz
802.11ac(VHT80)	5690 (UNII 3 Band)	138	-11.853	30 dBm/500kHz

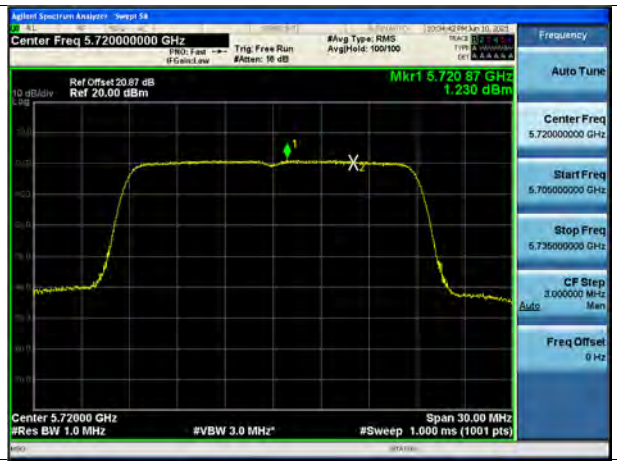
[ANT2]

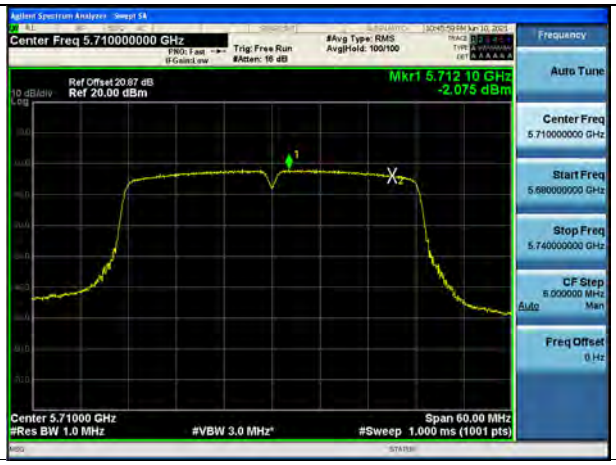
Mode	Frequency [MHz]	Channel	Total PSD (dBm/MHz)	Limit
802.11a	5720 (UNII 2C Band)	144	**1.278**	11 dBm/MHz
802.11n(HT20)			**0.829**	
802.11ac(VHT20)			**-0.080**	
802.11a	5720 (UNII 3 Band)	144	**-2.258**	30 dBm/500kHz
802.11n(HT20)			**-2.293**	
802.11ac(VHT20)			**-3.537**	

Mode	Frequency [MHz]	Channel	Total PSD (dBm/MHz)	Limit
802.11n(HT40)	5710 (UNII 2C Band)	142	**-2.156**	11 dBm/MHz
802.11ac(VHT40)			**-2.249**	
802.11n(HT40)	5710 (UNII 3 Band)	142	**-7.214**	30 dBm/500kHz
802.11ac(VHT40)			**-7.574**	

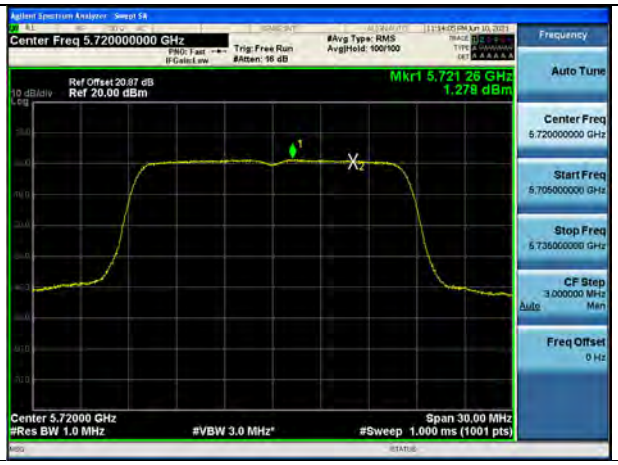
Mode	Frequency [MHz]	Channel	Total PSD (dBm/MHz)	Limit
802.11ac(VHT80)	5690 (UNII 2C Band)	138	**-5.181**	11 dBm/MHz
802.11ac(VHT80)	5690 (UNII 3 Band)	138	**-12.618**	30 dBm/500kHz

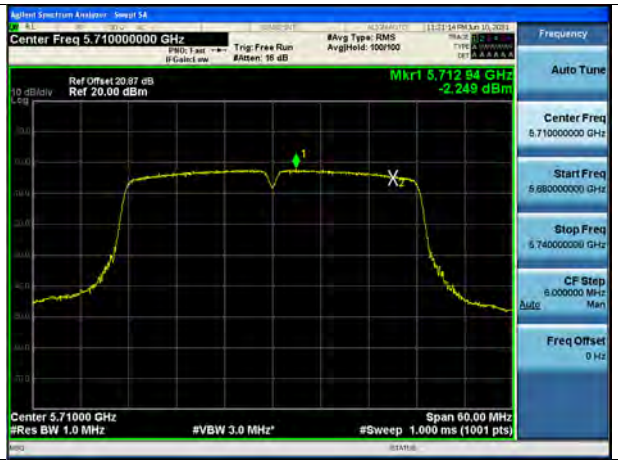
▣ Test Plots_[ANT1]

802.11a UNII 2C Band	802.11a UNII 3 Band
	
802.11n(HT20) UNII 2C Band	802.11n(HT20) UNII 3 Band
	
802.11ac(VHT20) UNII 2C Band	802.11ac(VHT20) UNII 3 Band
	

802.11n(HT40) UNII 2C Band	802.11n(HT40) UNII 3 Band
	
802.11ac(VHT40) UNII 2C Band	802.11ac(VHT40) UNII 3 Band
	
802.11ac(VHT80) UNII 2C Band	802.11ac(VHT80) UNII 3 Band
	

▣ Test Plots_**[ANT2]**

802.11a UNII 2C Band	802.11a UNII 3 Band
	
802.11n(HT20) UNII 2C Band	802.11n(HT20) UNII 3 Band
	
802.11ac(VHT20) UNII 2C Band	802.11ac(VHT20) UNII 3 Band
	

802.11n(HT40) UNII 2C Band	802.11n(HT40) UNII 3 Band
	
802.11ac(VHT40) UNII 2C Band	802.11ac(VHT40) UNII 3 Band
	
802.11ac(VHT80) UNII 2C Band	802.11ac(VHT80) UNII 3 Band
	

10.7 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

[Olny MIMO]

Frequency Range : Above 1 GHz

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
10360	49.90	5.63	V	55.53	68.20	12.67	PK
15540	50.28	6.11	V	56.39	73.98	17.59	PK
15540	36.42	6.11	V	42.53	53.98	11.45	AV
10360	50.30	5.63	H	55.93	68.20	12.27	PK
15540	50.74	6.11	H	56.85	73.98	17.13	PK
15540	36.62	6.11	H	42.73	53.98	11.25	AV

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5200 MHz
Channel No.	40 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
10400	51.94	5.06	V	57.00	68.20	11.20	PK
15600	52.14	4.93	V	57.07	73.98	16.91	PK
15600	36.36	4.93	V	41.29	53.98	12.69	AV
10400	52.15	5.06	H	57.21	68.20	10.99	PK
15600	52.25	4.93	H	57.18	73.98	16.80	PK
15600	36.39	4.93	H	41.32	53.98	12.66	AV

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5240 MHz
Channel No.	48 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
10480	51.11	5.81	V	56.92	68.20	11.28	PK
15720	52.91	4.48	V	57.39	73.98	16.59	PK
15720	37.79	4.48	V	42.27	53.98	11.71	AV
10480	51.17	5.81	H	56.98	68.20	11.22	PK
15720	53.03	4.48	H	57.51	73.98	16.47	PK
15720	37.98	4.48	H	42.46	53.98	11.52	AV

Band :	UNII 2A
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5260 MHz
Channel No.	52 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
10520	50.18	5.64	V	55.82	68.20	12.38	PK
15780	54.65	5.17	V	59.82	73.98	14.16	PK
15780	41.21	5.17	V	46.38	53.98	7.60	AV
10520	50.40	5.64	H	56.04	68.20	12.16	PK
15780	54.95	5.17	H	60.12	73.98	13.86	PK
15780	41.37	5.17	H	46.54	53.98	7.44	AV

Band :	UNII 2A
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5300 MHz
Channel No.	60 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
10600	51.24	5.90	V	57.14	73.98	16.84	PK
10600	38.14	5.90	V	44.04	53.98	9.94	AV
15900	53.11	5.96	V	59.07	73.98	14.91	PK
15900	38.45	5.96	V	44.41	53.98	9.57	AV
10600	51.48	5.90	H	57.38	73.98	16.60	PK
10600	38.34	5.90	H	44.24	53.98	9.74	AV
15900	53.23	5.96	H	59.19	73.98	14.79	PK
15900	38.58	5.96	H	44.54	53.98	9.44	AV

Band :	UNII 2A
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
10640	50.75	6.01	V	56.76	73.98	17.22	PK
10640	38.76	6.01	V	44.77	53.98	9.21	AV
15960	53.96	5.20	V	59.16	73.98	14.82	PK
15960	39.10	5.20	V	44.30	53.98	9.68	AV
10640	50.93	6.01	H	56.94	73.98	17.04	PK
10640	38.87	6.01	H	44.88	53.98	9.10	AV
15960	54.15	5.20	H	59.35	73.98	14.63	PK
15960	39.21	5.20	H	44.41	53.98	9.57	AV

Band :	UNII 2C
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
11000	52.17	6.10	V	58.27	73.98	15.71	PK
11000	40.39	6.10	V	46.49	53.98	7.49	AV
16500	51.75	7.83	V	59.58	68.20	8.62	PK
11000	52.49	6.10	H	58.59	73.98	15.39	PK
11000	40.52	6.10	H	46.62	53.98	7.36	AV
16500	51.97	7.83	H	59.80	68.20	8.40	PK

Band :	UNII 2C
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5580 MHz
Channel No.	116 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
11160	52.78	5.39	V	58.17	73.98	15.81	PK
11160	39.67	5.39	V	45.06	53.98	8.92	AV
16740	47.23	9.32	V	56.55	68.20	11.65	PK
11160	53.04	5.39	H	58.43	73.98	15.55	PK
11160	40.22	5.39	H	45.61	53.98	8.37	AV
16740	47.47	9.32	H	56.79	68.20	11.41	PK

Band :	UNII 2C
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5720 MHz
Channel No.	144 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
11440	53.63	6.02	V	59.65	73.98	14.33	PK
11440	40.15	6.02	V	46.17	53.98	7.81	AV
17160	45.89	9.78	V	55.67	68.20	12.53	PK
11440	53.95	6.02	H	59.97	73.98	14.01	PK
11440	40.38	6.02	H	46.40	53.98	7.58	AV
17160	46.04	9.78	H	55.82	68.20	12.38	PK

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5745MHz
Channel No.	149 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
11490	52.31	6.06	V	58.37	73.98	15.61	PK
11490	38.05	6.06	V	44.11	53.98	9.87	AV
17235	47.54	10.88	V	58.42	68.20	9.78	PK
11490	52.43	6.06	H	58.49	73.98	15.49	PK
11490	38.18	6.06	H	44.24	53.98	9.74	AV
17235	47.72	10.88	H	58.60	68.20	9.60	PK

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5785 MHz
Channel No.	157 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
11570	49.93	6.77	V	56.70	73.98	17.28	PK
11570	36.58	6.77	V	43.35	53.98	10.63	AV
17355	47.15	11.73	V	58.88	68.20	9.32	PK
11570	50.24	6.77	H	57.01	73.98	16.97	PK
11570	36.91	6.77	H	43.68	53.98	10.30	AV
17355	47.21	10.98	H	58.19	68.20	10.01	PK

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5825 MHz
Channel No.	165 Ch

Frequency	Reading	ANT+CL-AMP G	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
11650	49.51	6.38	V	55.89	73.98	18.09	PK
11650	39.46	6.38	V	45.84	53.98	8.14	AV
17475	48.45	11.29	V	59.74	68.20	8.46	PK
11650	49.63	6.38	H	56.01	73.98	17.97	PK
11650	39.67	6.38	H	46.05	53.98	7.93	AV
17475	48.80	11.29	H	60.09	68.20	8.11	PK

Note:

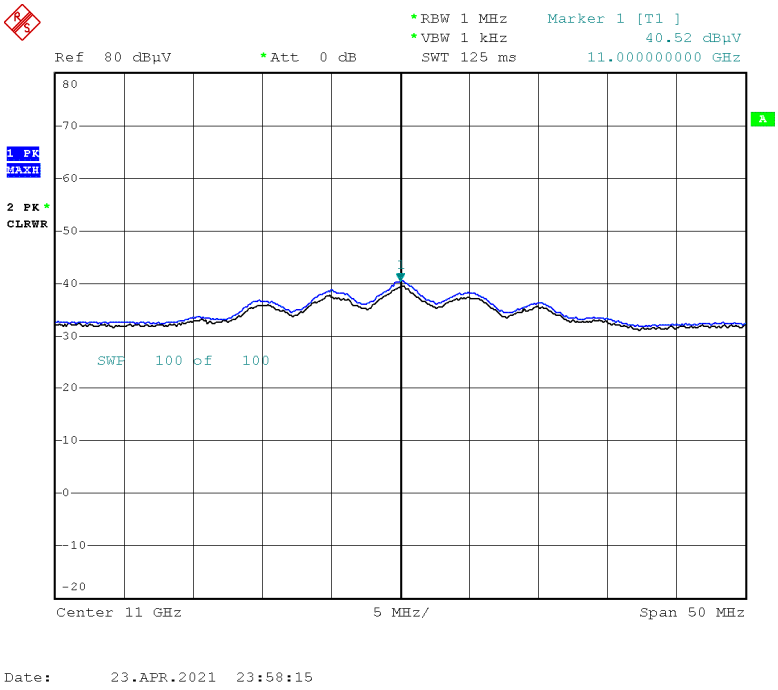
All Modes of operation were investigated and the worst case configuration results are reported.

[Worst case]

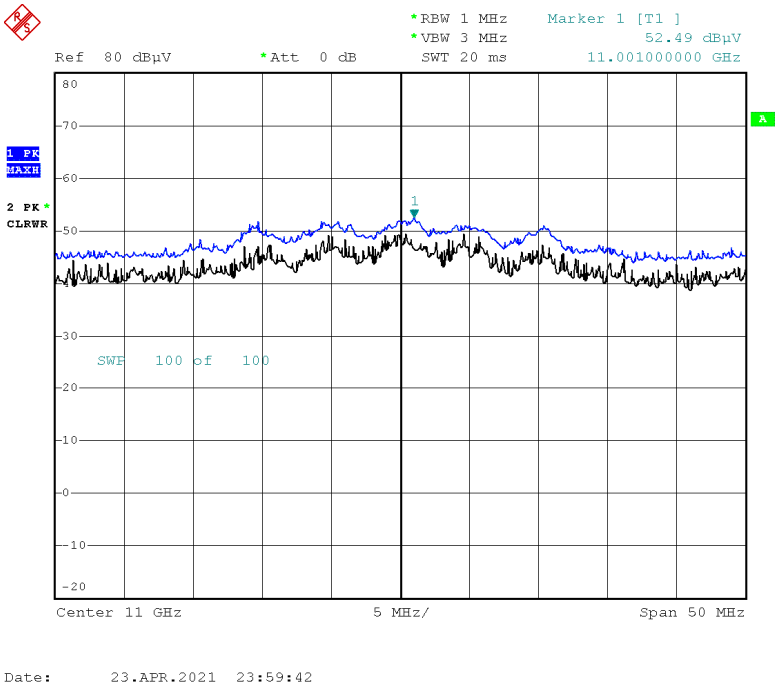
UNII 1, 2A, 2C, 3 : 802.11a

▣ Test Plots

Average Reading (802.11a, Ch.100 2nd Harmonic, Y-H)



Peak Reading (802.11a, Ch.100 2nd Harmonic, Y-H)



Note:

Only the worst case plots for Radiated Spurious Emissions.

10.8 RADIATED RESTRICTED BAND EDGE

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5150	44.68	12.69	H	57.37	73.98	16.61	PK
5150	31.57	12.69	H	44.26	53.98	9.72	AV
5150	44.51	12.69	V	57.20	73.98	16.78	PK
5150	31.43	12.69	V	44.12	53.98	9.86	AV

Band :	UNII 2A
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5350	43.93	12.36	H	56.29	73.98	17.69	PK
5350	31.13	12.36	H	43.49	53.98	10.49	AV
5350	43.86	12.36	V	56.22	73.98	17.76	PK
5350	31.05	12.36	V	43.41	53.98	10.57	AV

Band :	UNII 2C
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5460	44.34	12.83	H	57.17	73.98	16.81	PK
5460	31.84	12.83	H	44.67	53.98	9.31	AV
5470	47.79	13.04	H	60.83	68.20	7.37	PK
5460	44.57	12.83	V	57.40	73.98	16.58	PK
5460	32.04	12.83	V	44.87	53.98	9.11	AV
5470	47.95	13.04	V	60.99	68.20	7.21	PK

Band :	UNII 1
Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5150	54.50	12.69	H	67.19	73.98	6.79	PK
5150	32.15	12.69	H	44.84	53.98	9.14	AV
5150	53.96	12.69	V	66.65	73.98	7.33	PK
5150	31.94	12.69	V	44.63	53.98	9.35	AV

Band :	UNII 2A
Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5350	46.34	12.36	H	58.70	73.98	15.28	PK
5350	31.50	12.36	H	43.86	53.98	10.12	AV
5350	46.24	12.36	V	58.60	73.98	15.38	PK
5350	31.16	12.36	V	43.52	53.98	10.46	AV

Band :	UNII 2C
Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5460	44.16	12.83	H	56.99	73.98	16.99	PK
5460	31.57	12.83	H	44.40	53.98	9.58	AV
5470	48.94	13.04	H	61.98	68.20	6.22	PK
5460	44.50	12.83	V	57.33	73.98	16.65	PK
5460	31.88	12.83	V	44.71	53.98	9.27	AV
5470	49.38	13.04	V	62.42	68.20	5.78	PK

Band :	UNII 1
Operation Mode:	802.11 ac_VHT20
Transfer MCS Index:	0
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5150	51.05	12.69	H	63.74	73.98	10.24	PK
5150	32.06	12.69	H	44.75	53.98	9.23	AV
5150	50.94	12.69	V	63.63	73.98	10.35	PK
5150	31.86	12.69	V	44.55	53.98	9.43	AV

Band :	UNII 2A
Operation Mode:	802.11 ac_VHT20
Transfer MCS Index:	0
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5350	47.04	12.36	H	59.40	73.98	14.58	PK
5350	31.28	12.36	H	43.64	53.98	10.34	AV
5350	46.86	12.36	V	59.22	73.98	14.76	PK
5350	31.12	12.36	V	43.48	53.98	10.50	AV

Band :	UNII 2C
Operation Mode:	802.11 ac_VHT20
Transfer MCS Index:	0
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5460	44.99	12.83	H	57.82	73.98	16.16	PK
5460	31.76	12.83	H	44.59	53.98	9.39	AV
5470	50.28	13.04	H	63.32	68.20	4.88	PK
5460	45.10	12.83	V	57.93	73.98	16.05	PK
5460	31.91	12.83	V	44.74	53.98	9.24	AV
5470	50.60	13.04	V	63.64	68.20	4.56	PK

Band :	UNII 1
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5150	42.17	12.69	H	54.86	73.98	19.12	PK
5150	29.52	12.69	H	42.21	53.98	11.77	AV
5150	41.96	12.69	V	54.65	73.98	19.33	PK
5150	29.42	12.69	V	42.11	53.98	11.87	AV

Band :	UNII 1
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5350	46.99	12.36	H	59.35	73.98	14.63	PK
5350	31.41	12.36	H	43.77	53.98	10.21	AV
5350	46.72	12.36	V	59.08	73.98	14.90	PK
5350	31.25	12.36	V	43.61	53.98	10.37	AV

Band :	UNII 2C
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5460	43.58	12.83	H	56.41	73.98	17.57	PK
5460	30.25	12.83	H	43.08	53.98	10.90	AV
5470	46.89	13.04	H	59.93	68.20	8.27	PK
5460	43.89	12.83	V	56.72	73.98	17.26	PK
5460	30.40	12.83	V	43.23	53.98	10.75	AV
5470	47.03	13.04	V	60.07	68.20	8.13	PK

Band :	UNII 1
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5150	46.60	12.69	H	59.29	73.98	14.69	PK
5150	33.97	12.69	H	46.66	53.98	7.32	AV
5150	46.19	12.69	V	58.88	73.98	15.10	PK
5150	33.87	12.69	V	46.56	53.98	7.42	AV

Band :	UNII 1
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5350	43.28	12.36	H	55.64	73.98	18.34	PK
5350	30.47	12.36	H	42.83	53.98	11.15	AV
5350	43.15	12.36	V	55.51	73.98	18.47	PK
5350	30.11	12.36	V	42.47	53.98	11.51	AV

Band :	UNII 2C
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5460	43.12	12.83	H	55.95	73.98	18.03	PK
5460	29.92	12.83	H	42.75	53.98	11.23	AV
5470	46.75	13.04	H	59.79	68.20	8.41	PK
5460	44.03	12.83	V	56.86	73.98	17.12	PK
5460	30.53	12.83	V	43.36	53.98	10.62	AV
5470	47.35	13.04	V	60.39	68.20	7.81	PK

Band :	UNII 1
Operation Mode:	802.11 ac_VHT80
Transfer MCS Index:	0
Operating Frequency	5210 MHz
Channel No.	42 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5150	47.82	12.69	H	60.51	73.98	13.47	PK
5150	35.75	12.69	H	48.44	53.98	5.54	AV
5150	47.60	12.69	V	60.29	73.98	13.69	PK
5150	35.56	12.69	V	48.25	53.98	5.73	AV

Band :	UNII 2A
Operation Mode:	802.11 ac_VHT80
Transfer MCS Index:	0
Operating Frequency	5290 MHz
Channel No.	58 Ch

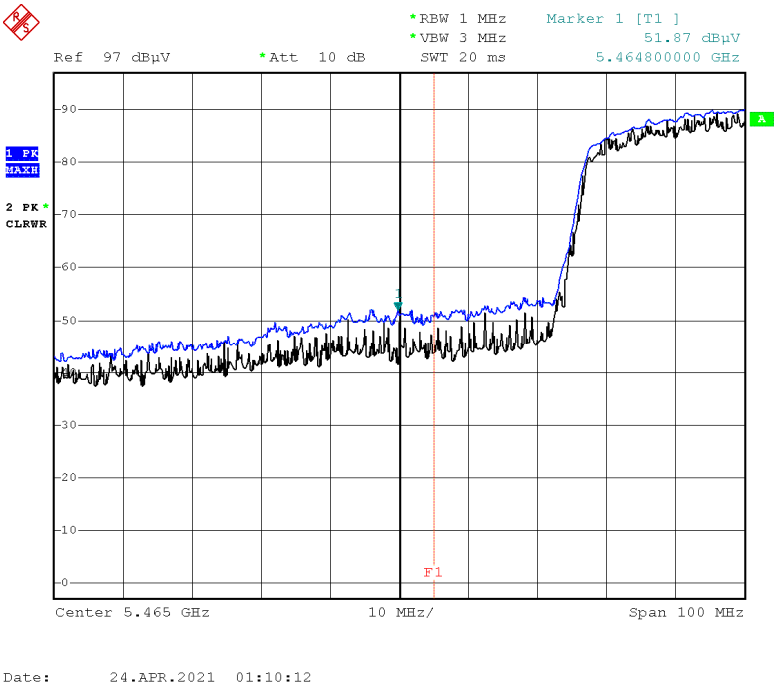
Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5350	42.86	12.36	H	55.22	73.98	18.76	PK
5350	30.97	12.36	H	43.33	53.98	10.65	AV
5350	42.46	12.36	V	54.82	73.98	19.16	PK
5350	30.76	12.36	V	43.12	53.98	10.86	AV

Band :	UNII 2C
Operation Mode:	802.11 ac_VHT80
Transfer MCS Index:	0
Operating Frequency	5530 MHz
Channel No.	106 Ch

Frequency	Reading	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
5460	51.49	12.83	H	64.32	73.98	9.66	PK
5460	34.96	12.83	H	47.79	53.98	6.19	AV
5470	51.75	13.04	H	64.79	68.20	3.41	PK
5460	51.84	12.83	V	64.67	73.98	9.31	PK
5460	35.20	12.83	V	48.03	53.98	5.95	AV
5470	51.87	13.04	V	64.91	68.20	3.29	PK

▣ Test Plots(UNII 1, 2A, 2C)

Peak Reading (802.11ac(80M), Ch.106, **Z-V**)

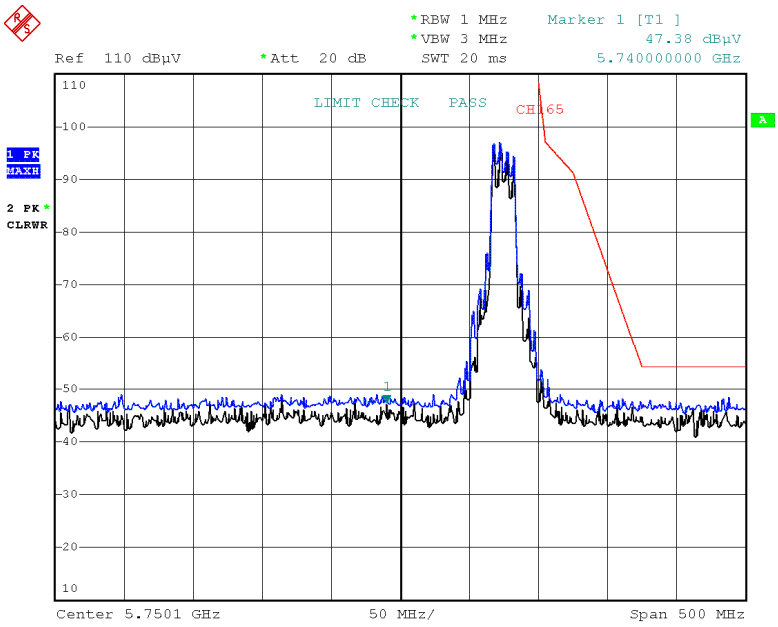


Note:

Only the worst case plots for Radiated Restricted Band Edge.

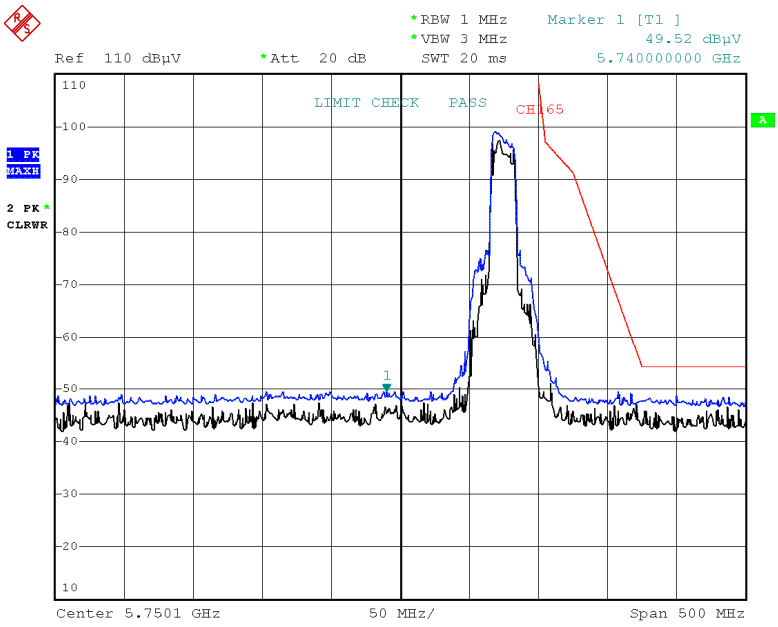
▣ Test Plots(UNII 3)

Peak Reading (802.11a, Ch.165)



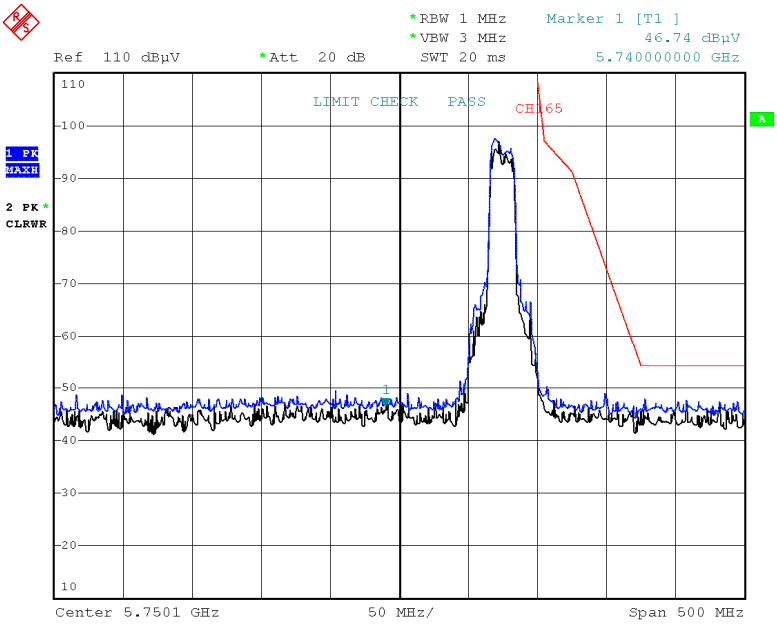
Date: 24.APR.2021 01:34:46

Peak Reading (802.11n_HT20, Ch.165)



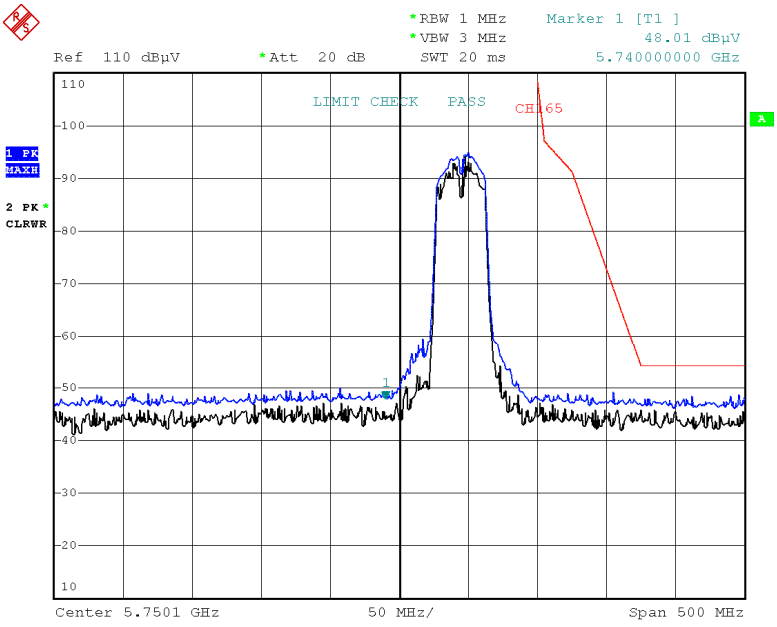
Date: 24.APR.2021 01:35:42

Peak Reading (802.11ac_VHT20, Ch.165)



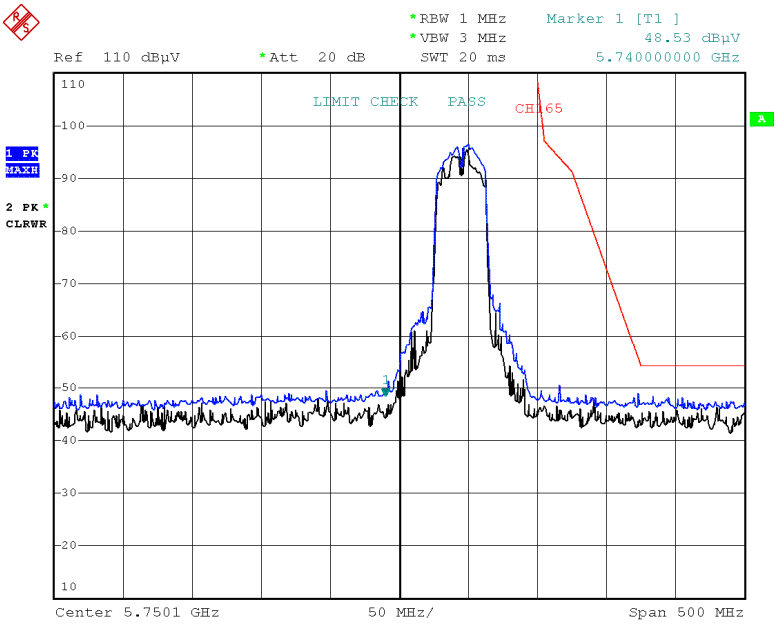
Date: 24.APR.2021 01:36:28

Peak Reading (802.11n_HT40, Ch.159)



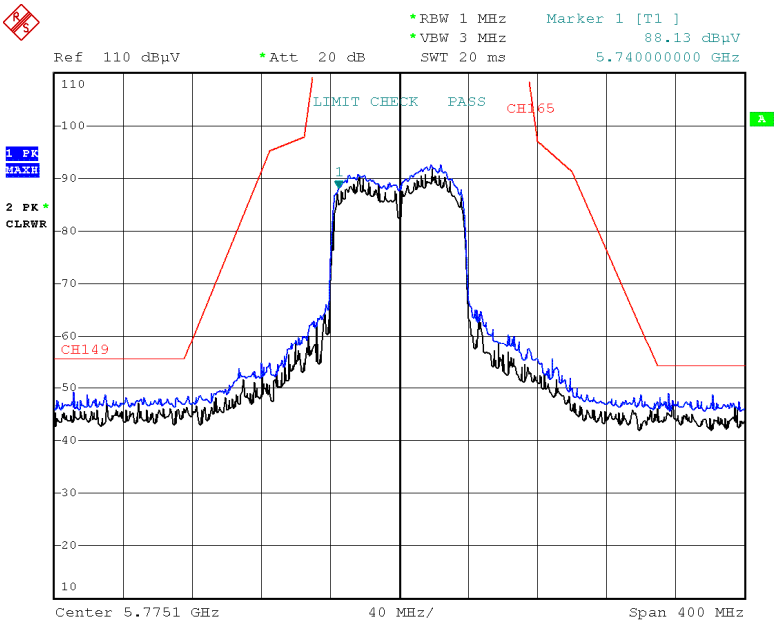
Date: 24.APR.2021 01:33:47

Peak Reading (802.11ac_VHT40, Ch.159)



Date: 24.APR.2021 01:32:13

Peak Reading (802.11ac_VHT80, Ch.155)



Date: 24.APR.2021 01:29:39

10.9 RECEIVER SPURIOUS EMISSIONS

Frequency Range : Below 1 GHz

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

Note:

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

Frequency Range : Above 1 GHz

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

11. LIST OF TEST EQUIPMENT

Conducted Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	09/04/2020	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	09/16/2020	Annual	101910
ESPAC	SU-642 /Temperature Chamber	03/15/2021	Annual	0093008124
Agilent	N9020A / Signal Analyzer	04/16/2021	Annual	MY50210191
Agilent	N9030A / Signal Analyzer	01/11/2021	Annual	MY49431210
Agilent	N1911A / Power Meter	04/08/2021	Annual	MY45100523
Agilent	N1921A / Power Sensor	04/08/2021	Annual	MY57820067
Agilent	87300B / Directional Coupler	11/10/2020	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	02/09/2021	Annual	10545
Hewlett Packard	E3632A / DC Power Supply	06/10/2021	Annual	KR75303960
Weinschel	2-20 / Attenuator(20 dB)	10/07/2020	Annual	BR0592
Rohde & Schwarz	EMC32 / Software	N/A	N/A	N/A
HCT CO., LTD.	FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	N/A	N/A
Rohde & Schwarz	CBT / Bluetooth Tester	05/04/2021	Annual	100422

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

Radiated Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	03/19/2020	Biennial	1513-333
Schwarzbeck	VULB 9168 / Hybrid Antenna	09/04/2020	Biennial	9168-0895
Schwarzbeck	BBHA 9120D / Horn Antenna	11/18/2019	Biennial	9120D-1191
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	11/29/2019	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 30 GHz) / Spectrum Analyzer	09/14/2020	Annual	836650/016
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/22/2020	Annual	101068-SZ
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	01/06/2021	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	02/08/2021	Annual	1
CERNEX WEINSCHEL	CBLU1183540B-01/Broadband Bench Top LNA 56-10 / Attenuator(10 dB)	12/23/2020	Annual	N/A
CERNEX Api tech.	CBL06185030 / Broadband Low Noise Amplifier 18B-03 / Attenuator (3 dB)	12/23/2020	Annual	N/A
Wainwright Instruments	WHKX10-2700-3000-18000-40SS / High Pass Filter	12/23/2020	Annual	N/A
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	12/23/2020	Annual	N/A
T&M SYSTEM	COAXIAL ATTENUATOR / Thru	12/23/2020	Annual	N/A
CERNEX	CBL18265035 / Power Amplifier	12/04/2020	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	03/23/2021	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/09/2021	Annual	3000C000276

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5(Version : 2017).

12. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2106-FI009-P