

TEST REPORT

FCC UNII Test for SM-A176U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2510-FC041

DATE OF ISSUE
October 24, 2025

Tested by
Jeong Ho Kim



Technical Manager
Jong Seok Lee



HCT CO., LTD.
BongJai Huh
BongJai Huh / CEO



HCT CO.,LTD.

2-6, 73, 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea
Tel. +82 31 645 6300 Fax. +82 31 645 6401

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Applicant **SAMSUNG Electronics Co., Ltd.**
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Product Name Mobile Phone
Model Name SM-A176U

FCC ID A3LSMA176U

Date of Test September 03, 2025 ~ October 24, 2025

FCC Classification Unlicensed National Information Infrastructure(NII)

Test Standard Used FCC Rule Part(s): Part 15.407

Test Results PASS

Location of Test ☒ Permanent Testing Lab ☐ On Site Testing Lab
(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	October 24, 2025	Initial Release

Notice

Content

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	SM-A176U	
Additional Model	SM-A176U1, SM-S176V	
EUT Type	Mobile Phone	
Power Supply	DC 3.88 V	
Modulation Type	OFDM : 802.11a, 802.11n, 802.11ac	
Frequency Range (MHz)	U-NII-1	20 MHz BW : 5180 - 5240 40 MHz BW : 5190 - 5230 80 MHz BW : 5210
	U-NII-2A	20 MHz BW : 5260 - 5320 40 MHz BW : 5270 - 5310 80 MHz BW : 5290
	U-NII-2C	20 MHz BW : 5500 - 5720 40 MHz BW : 5510 - 5710 80 MHz BW : 5530 - 5690
	U-NII-3	20 MHz BW : 5745 - 5825 40 MHz BW : 5755 - 5795 80 MHz BW : 5775
	U-NII-4	20 MHz BW : 5845 - 5885 40 MHz BW : 5835 - 5875 80 MHz BW : 5855
Straddle channel	Supported	
TDWR Band	Supported	
Dynamic Frequency Selection	Slave without radar detection	
Antenna Specification	Type: MFA	
Antenna gain(dBi)	U-NII-1: -4.7, U-NII-2A: -4.8, U-NII-2C: -4.0, U-NII-3: -4.6 U-NII-4: -4.9	
Serial number	Conducted : R3CY70RH0GF Radiated : R3CY80LZDYY	

ANTENNA CONFIGURATIONS

1. Antenna configuration

Configurations	SISO		MIMO	
	Ant.1	Ant.2	CDD	SDM
802.11a	O	X	X	X
802.11n	O	X	X	X
802.11ac	O	X	X	X

Note:

- (1) O = Support, X = Not Support
- (2) SISO = Single Input Single Output
- (3) SDM = Spatial Diversity Multiplexing
- (4) CDD = Cyclic Delay Diversity

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

Simultaneous transmission Scenario	5 GHz WiFi Ant.1	BT Ant.1	Test Case
Bluetooth + 5 GHz WiFi	on	on	Scenario1

2. MAXIMUM OUTPUT POWER

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

Band	Mode	Power	
		(dBm)	(W)
UNII1	802.11a	17.25	0.05
	802.11n (HT20)	17.27	0.05
	802.11n (HT40)	15.38	0.03
	802.11ac (VHT20)	17.13	0.05
	802.11ac (VHT40)	15.32	0.03
	802.11ac (VHT80)	8.56	0.01
UNII2A	802.11a	17.29	0.05
	802.11n (HT20)	17.21	0.05
	802.11n (HT40)	15.24	0.03
	802.11ac (VHT20)	16.99	0.05
	802.11ac (VHT40)	15.37	0.03
	802.11ac (VHT80)	8.40	0.01
UNII2C	802.11a	17.45	0.06
	802.11n (HT20)	17.41	0.06
	802.11n (HT40)	15.57	0.04
	802.11ac (VHT20)	17.42	0.06
	802.11ac (VHT40)	15.63	0.04
	802.11ac (VHT80)	9.33	0.01
UNII3	802.11a	17.77	0.06
	802.11n (HT20)	17.55	0.06
	802.11n (HT40)	15.71	0.04
	802.11ac (VHT20)	17.50	0.06
	802.11ac (VHT40)	15.69	0.04
	802.11ac (VHT80)	9.78	0.01
UNII4 (Conducted For inf.)	802.11a	17.39	0.05
	802.11n (HT20)	17.21	0.05
	802.11n (HT40)	15.31	0.03
	802.11ac (VHT20)	17.07	0.05
	802.11ac (VHT40)	15.36	0.03
	802.11ac (VHT80)	8.99	0.01

Band	Mode	EIRP Power			
		(dBm)	ANT Gain (dBi)	EIRP (dBm)	(W)
UNII4 (EIRP)	802.11a	17.39	-4.9	12.49	0.018
	802.11n (HT20)	17.21	-4.9	12.31	0.017
	802.11n (HT40)	15.31	-4.9	10.41	0.011
	802.11ac (VHT20)	17.07	-4.9	12.17	0.016
	802.11ac (VHT40)	15.36	-4.9	10.46	0.011
	802.11ac (VHT80)	8.99	-4.9	4.09	0.003

3. TEST METHODOLOGY

Unlicensed wireless device were tested using the following measurement procedure.

- [1] KDB 789033 D02 15.407 Meas Guidance v02r01.
- [2] KDB 291074 D02 U-NII-4 band EMC Meas Guidance v01.
- [3] ANSI C63.10-2020.

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.

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 C63.10-2020 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and average Measurement Typeor modes.

Radiated Emissions

According to the requirements in Section 6.3 ~ Section 6.6 of ANSI C63.10-2020

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1 GHz. Above 1 GHz with 1.5 m 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.

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's, which is traceable to recognized national standards.

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

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, Republic 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 March 11, 2024 (Registration Number: 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 ANSI/USEMCSC C63.2-2023, "American National Standard for Specifications of Electromagnetic Interference and Field Strength Measuring Instrumentation in the Frequency Range 9 kHz to 40 GHz".

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR § 15.203, § 15.407:

“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 C63.10-2020.

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 ($\pm$ kHz)
X dB, 99% Bandwidth	95 (Confidence level about 95 %, $k=2$)
Frequency stability	28 (Confidence level about 95 %, $k=2$)

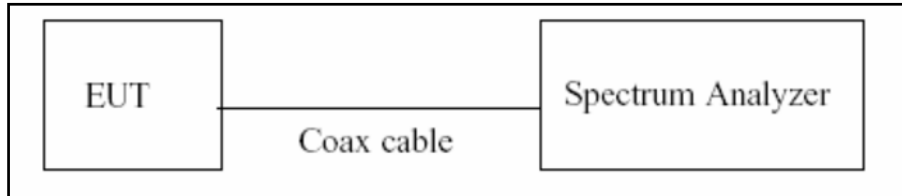
Parameter	Expanded Uncertainty ($\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.54 (Confidence level about 95 %, $k=2$)
Conducted Output Power(Power Meter)	0.54 (Confidence level about 95 %, $k=2$)
Conducted Output Power(Signal Analyzer)	0.68 (Confidence level about 95 %, $k=2$)
Power Spectral Density	1.03 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.68 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.75 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.82 (Confidence level about 95 %, $k=2$)

8. DESCRIPTION OF TESTS

Test Item	Test Procedure
Duty Cycle	- KDB 789033 D02 – Section B.2
6 dB Bandwidth & 26dB Bandwidth	- KDB 789033 D02 - Section C
Output Power	- KDB 789033 D02 - Section E
Power Spectral Density	- KDB 789033 D02 - Section F
Frequency Stability	- ANSI C63.10-2020 - Section 6.8
AC Power line Conducted Emissions	- ANSI C63.10-2020– Section 6.2
Radiated Test	- KDB 789033 D02 – Section II.G

8.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

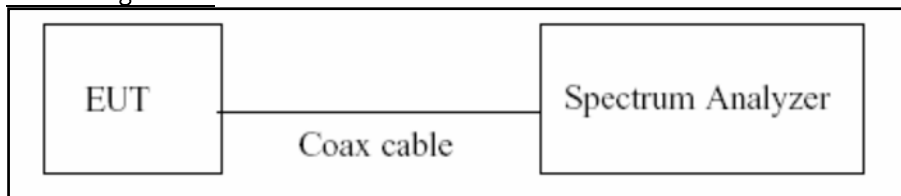
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Detector = Average
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = $T_{\text{on}} / T_{\text{total}}$ and Duty Cycle Factor = $10\log(1/\text{Duty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

8.2. 6 dB Bandwidth & 26 dB Bandwidth

Limit

Within the 5.725-5.85 GHz(NII-3) & 5.85-5.925 GHz(NII-4) band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Configuration



Test Procedure (26 dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

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 (6 dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

1. RBW = 100 kHz
2. VBW $\geq 3 \times$ 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 level 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.

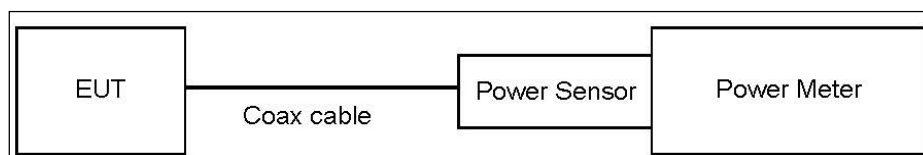
8.3. Output Power Measurement

Limit

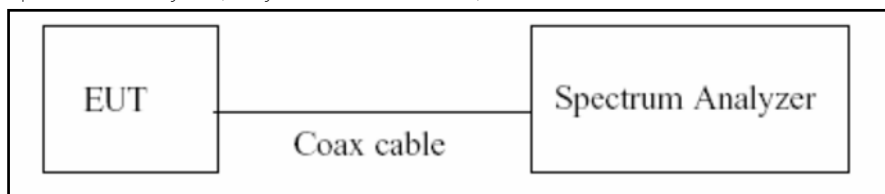
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30 dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30 dBm)
UNII 4	EIRP 30 dBm

Test Configuration

Power Meter



Spectrum Analyzer(Only Straddle Channel)



Test Procedure(Power Meter)

The transmitter output is connected to the Power Meter.

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)

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

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW $\geq$ 3 MHz.
5. Number of points in sweep $\geq 2 \times \text{span/RBW}$.
6. Sweep time = auto.
7. Measurement Type or = 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 $10\log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Sample Calculation

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

Note

1. Spectrum Measured Levels are not plot data.

The power results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1	10.80
UNII 2A	10.80
UNII 2C	10.80
UNII 3&4	10.80

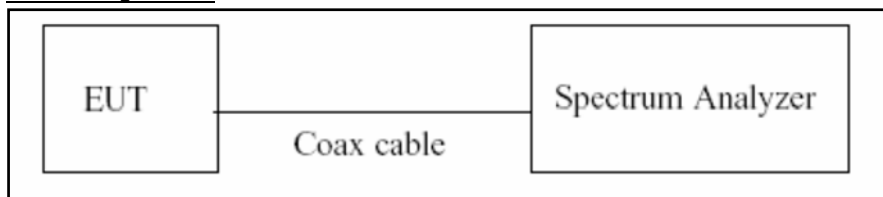
(Actual value of loss for the attenuator and cable combination)

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
UNII 4	EIRP 14 dBm/MHz

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz(510 kHz for UNII 3)
→For portion within the NII-3 be used RBW 510kHz
3. VBW $\geq$ 3 MHz
4. Number of points in sweep $\geq$ 2 x span/RBW.
5. Sweep time = auto.
6. Measurement Typeor = RMS(i.e., power averaging), if available. Otherwise, use sample Measurement Typeor 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) = Measured Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum Measured Levels are not plot data.

The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1	10.80
UNII 2A	10.80
UNII 2C	10.80
UNII 3&4	10.80

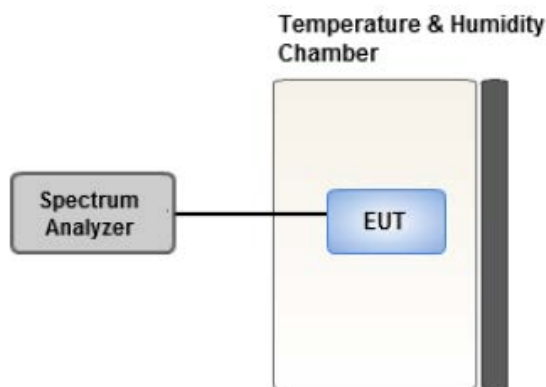
(Actual value of loss for the attenuator and cable combination)

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 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 ^(a)	56 to 46 ^(a)
0.50 to 5	56	46
5 to 30	60	50

^(a)Decreases with the logarithm of the frequency.

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

Test Configuration

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

Test Procedure

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

Sample Calculation

Quasi-peak(Final Result) = Measured 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. UNII 4: [Low Channel O.O.B.E] measured with a Peak detector

For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

[High Channel O.O.B.E] measured with a RMS detector

For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.

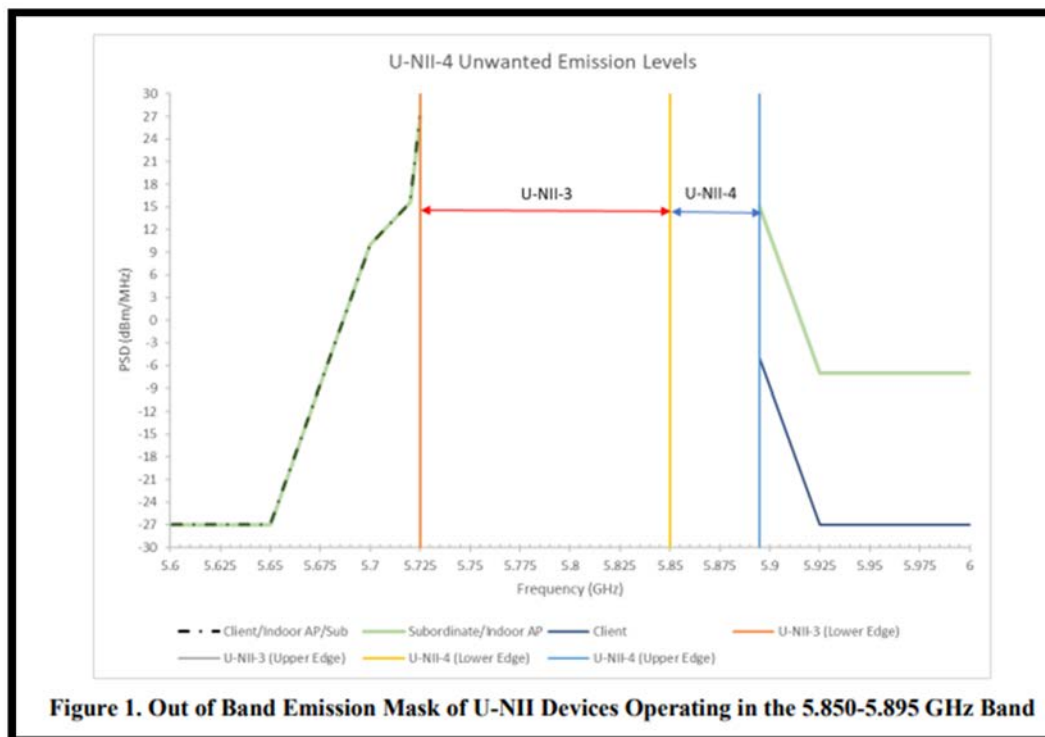


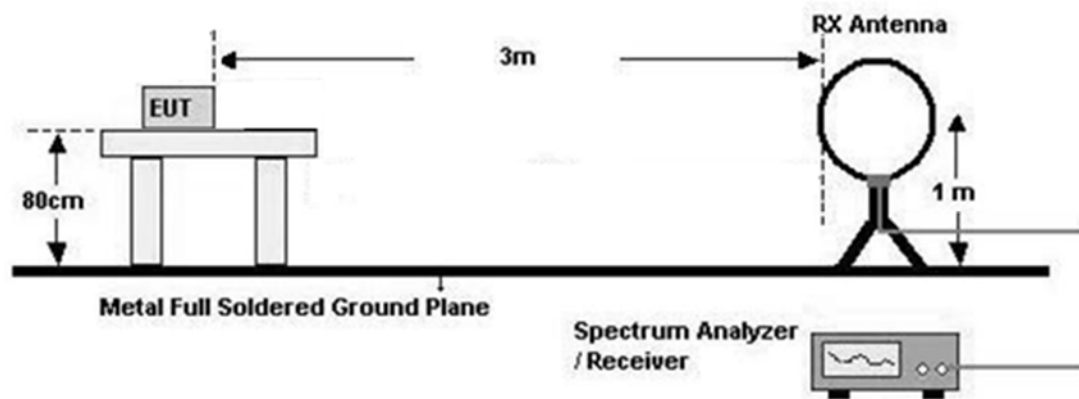
Figure 1. Out of Band Emission Mask of U-NII Devices Operating in the 5.850-5.895 GHz Band

5. 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.

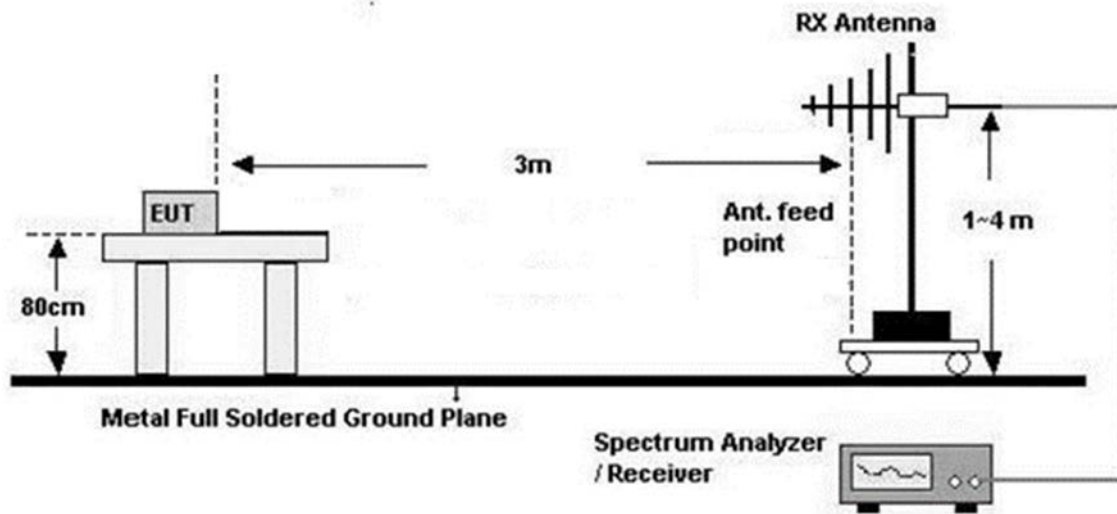
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

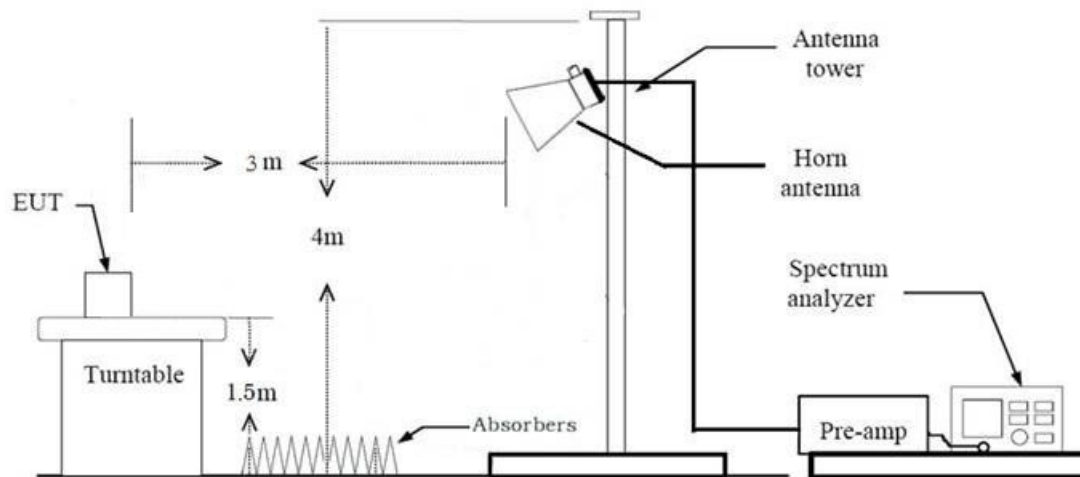
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions (Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m 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) = $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = $40\log(3\text{ m}/30\text{ m}) = -40\text{ dB}$
Measurement Distance : 3 m
8. Spectrum Setting
Measurement Type(Peak) :
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Max Hold
 - RBW = 9 kHz
 - VBW $\geq 3 \times$ RBW
9. Total = Measured 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 1 GHz)

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 3 m from the EUT, which is varied from 1 m to 4 m 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 = Max Hold
- RBW = 100 kHz
- VBW $\geq$ 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 = Measured 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 1 m to 4 m 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. Spectrum Setting

(1) Measurement Type (Peak) :

- RBW = 1 MHz
- VBW $\geq$ 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) :

- RBW = 1 MHz
- VBW(Duty cycle $\geq$ 98 percent) = VBW $\leq$ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle $<$ 98 percent) = VBW $\geq$ $1/T$, where T is the minimum transmission duration.
- The analyzer is set to linear detector mode.
- Detector = Peak.
- Sweep time = auto.
- Trace mode = Max Hold.
- Allow Max Hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of $1/x$, where x is the duty cycle.

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
9. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency
10. Distance extrapolation factor = $20\log(\text{test distance} / \text{specific distance})$ (dB)
11. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.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 1 m to 4 m 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. Spectrum Setting

(1) Measurement Type (Peak) :

- RBW = 1 MHz
 - VBW $\geq$ 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 (Peak, Integration Method) :

- RBW = 100 KHz
- VBW $\geq$ 3 x RBW
- Detector = Peak
- Sweep Time = auto
- Trace mode = Max Hold
- Allow sweeps to continue until the trace stabilizes.
- Perform a band-power integration across the 1 MHz bandwidth in which the bandedge emission level is to be measured.

(3) Measurement Type (Average) :

- RBW = 1 MHz
- VBW(Duty cycle $\geq$ 98 percent) = VBW $\leq$ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle < 98 percent) = VBW $\geq$ $1/T$, where T is the minimum transmission duration.
- The analyzer is set to linear detector mode.
- Detector = Peak.
- Sweep time = auto.
- Trace mode = Max Hold.
- Allow Max Hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of $1/x$, where x is the duty cycle.

8. Measured Frequency Range :

- 4 500 MHz ~ 5 150 MHz
- 5 350 MHz ~ 5 460 MHz
- 5 460 MHz ~ 5 470 MHz
- (75 MHz or more below the 5 725 MHz) ~ 5 725 MHz
- 5 850 MHz ~ (75 MHz or more above the 5 850 MHz)

9. Distance extrapolation factor = $20\log$ (test distance / specific distance) (dB)

10. Total

(1) Measurement(Peak)

= Measured Value(Peak)

(2) Measurement(Avg)

= Measured Value (Avg)

- We apply to the offset in the range 1 GHz - 18 GHz.

- The offset = Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F) – Amp. Gain(A.G) + Attenuator (ATT)

The actual setting value of VBW

Mode	Worst Data rate (Mbps)	Duty Cycle	Duty Cycle Factor (dB)	The actual setting value of VBW (Hz)
802.11a	6	0.948	0.232	1 000
802.11n(HT20)	MCS0	0.938	0.280	1 000
802.11n(HT40)	MCS0	0.862	0.646	3 000
802.11ac(VHT20)	MCS0	0.927	0.331	1 000
802.11ac(VHT40)	MCS0	0.862	0.643	3 000
802.11ac(VHT80)	MCS0	0.792	1.011	5 000

8.8. Worst case configuration and mode

Conducted test

1. All datarate of operation were investigated and the worst case datarate results are reported.
 2. SM-A176U, Additional Models were tested and the worst case results are reported.
- (Worst case: SM-A176U)

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
 - Mode : Stand alone, Stand alone + External accessories
 - Worstcase : Stand alone
 2. All Antennas of operation were investigated and the worst case results are reported
 3. EUT Axis
 - Radiated Spurious Emissions : X
 - Radiated Restricted Band Edge : X
 4. All datarate of operation were investigated and the worst case datarate results are reported.
 - 802.11a : 6 Mbps
 - 802.11n_HT20 : MCS0
 - 802.11n_HT40 : MCS0
 - 802.11ac_VHT20 : MCS0
 - 802.11ac_VHT40 : MCS0
 - 802.11ac_VHT80 : MCS0
 5. Radiated Spurious Emission
 - All modulations of operation were investigated and the worst case modulation results are reported.
 - Worst-case : 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
 7. SM-A176U, Additional Models were tested and the worst case results are reported.
- (Worst case: SM-A176U)

Radiated test(Simultaneous transmission Scenario)

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

- Mode : Stand alone, Stand alone + External accessories
- Worstcase : Stand alone

2. EUT Axis

- Radiated Spurious Emissions : X

3. All of Simultaneous transmission Scenario were investigated and the worst case configuration results are reported.

Simultaneous transmission Scenario	5 GHz WiFi Ant.1	BT Ant.1	Test Case
Bluetooth + 5 GHz WiFi	on	on	Scenario1

4. The Simultaneous transmission Scenario mode test investigated both intermodulation and radiated spurious emissions.

- Worst result: Radiated spurious emissions
- Intermodulation: No signals are generated.
- Radiated spurious emissions: cf. Section 10.8

5. The following tables show the worst cases configurations determined during testing.

(Worst case: The lowest margin condition the channels and modes were selected for test.)

Scenario 1	Description	Bluetooth Emission	5 GHz Emission
Bluetooth + 5 GHz WiFi	Antenna	ANT 1	ANT 1
	Channel	37	36
	Data Rate	1 Mbps	6 Mbps
	Mode	BTLE 1M 37 Bytes	802.11a

Note : BT LE Simultaneous transmission Data refer to [BT LE] Test Report

6. SM-A176U, Additional Models were tested and the worst case results are reported.

(Worst case: SM-A176U)

AC Power line Conducted Emissions

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

- Mode : Stand alone + External accessories + Travel Adapter, Stand alone + Travel Adapter
- Worstcase : Stand alone + Travel Adapter

2. SM-A176U, Additional Models were tested and the worst case results are reported.

(Worst case: SM-A176U)

9. SUMMARY OF TEST RESULTS

Test Item	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26 dB Bandwidth	§ 15.407 (for Power Measurement)	N/A	Conducted	PASS
6 dB Bandwidth	§ 15.407(e)	>500 kHz (5725-5850 MHz)(UNII-3) (5850-5895 MHz)(UNII-4)		PASS
Maximum Conducted Output Power	§ 15.407(a)(1),(2),(3)	< 250 mW(5150-5250 MHz) < 250 mW or $11+10\log_{10}$ (BW) dBm (5250-5350 MHz) < 250 mW or $11+10\log_{10}$ (BW) dBm (5470-5725 MHz) <1 W (5725-5850 MHz)		PASS
Maximum EIRP Output Power	§ 15.407(a)(3)(iii)	< EIRP 30dBm (5850-5895 MHz)		PASS
Maximum 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) < EIRP 14 dBm/MHz(5850-5895 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		PASS
Undesirable Emissions	§ 15.407(b) (1),(2),(3),(4) § 15.407(b)(5)(ii),(iii) § 15.35(b)	<-27 dBm/MHz EIRP (UNII1, 2A, 2C) cf. Section 8.6 (UNII 3&4)	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

Note:

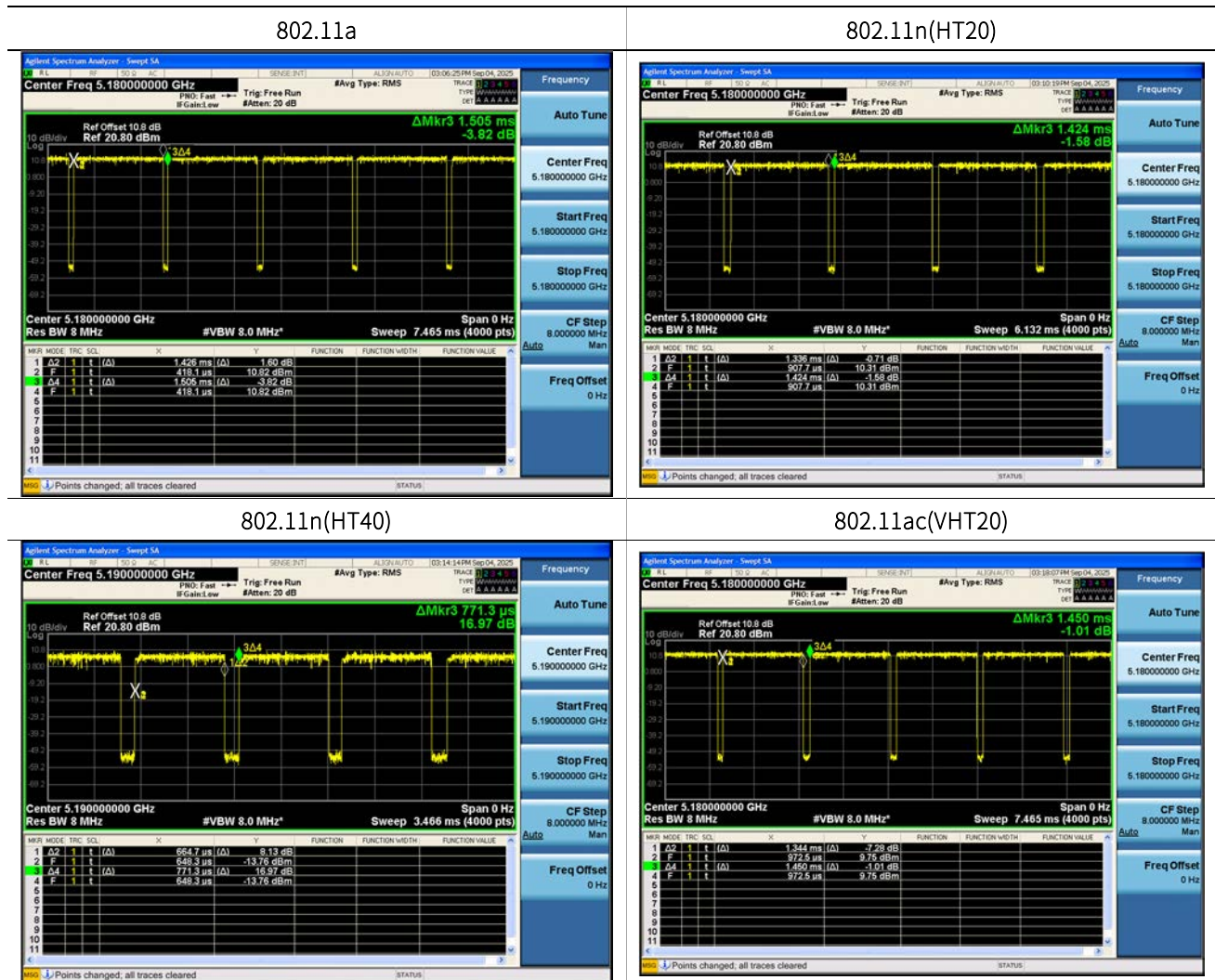
1. UNII 2A, 2C: TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.
2. The decision rule applies 'simple acceptance'

10. TEST RESULT

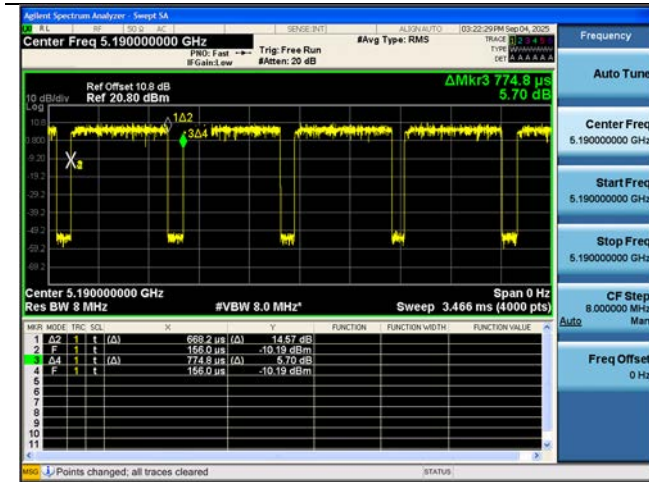
10.1 DUTY CYCLE

Mode	Data Rate (Mbps)	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11a	6M	1.426	1.505	0.948	0.232
802.11n(HT20)	MCS0	1.336	1.424	0.938	0.280
802.11n(HT40)	MCS0	0.665	0.771	0.862	0.646
802.11ac(VHT20)	MCS0	1.344	1.450	0.927	0.331
802.11ac(VHT40)	MCS0	0.668	0.775	0.862	0.643
802.11ac(VHT80)	MCS0	0.333	0.421	0.792	1.011

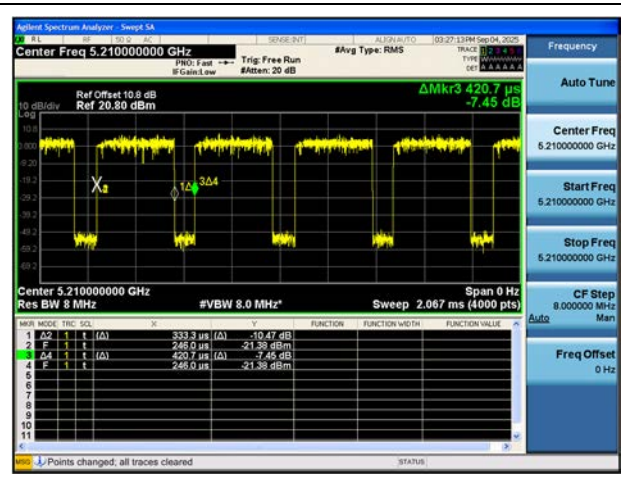
Note: In order to simplify the report, attached plots were only the lowest data rate.



802.11ac(VHT40)



802.11ac(VHT80)



10.2 26 dB Bandwidth

Note:

Straddle channel data in the table below are for reporting purposes only. Straddle channel data were added in section 10.7.1.

Mode : 802.11a				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	20.45	16.316
	5200	40	21.10	16.324
	5240	48	21.88	16.348
UNII2A	5260	52	21.74	16.339
	5300	60	21.86	16.360
	5320	64	21.94	16.348
UNII2C	5500	100	20.12	16.340
	5600	120	21.58	16.360
	5720	144	22.63	16.373
UNII3	5745	149	29.28	16.484
	5785	157	26.26	16.399
	5825	165	22.79	16.413
UNII4	5845	169	24.95	16.456
	5865	173	22.03	16.358
	5885	177	23.44	16.462

Mode : 802.11n(HT20)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	23.61	17.461
	5200	40	23.56	17.458
	5240	48	22.71	17.479
UNII2A	5260	52	22.73	17.467
	5300	60	22.64	17.468
	5320	64	23.84	17.501
UNII2C	5500	100	24.74	17.504
	5600	120	30.42	17.567
	5720	144	24.82	17.520
UNII3	5745	149	28.30	17.601
	5785	157	25.75	17.588
	5825	165	24.54	17.472
UNII4	5845	169	25.09	17.518
	5865	173	23.26	17.497
	5885	177	27.62	17.549

Mode : 802.11ac(VHT20)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	21.68	17.446
	5200	40	22.58	17.468
	5240	48	22.78	17.481
UNII2A	5260	52	27.17	20.463
	5300	60	23.61	18.625
	5320	64	22.16	17.465
UNII2C	5500	100	22.34	17.467
	5600	120	24.59	17.506
	5720	144	25.66	17.590
UNII3	5745	149	25.74	17.572
	5785	157	25.88	17.520
	5825	165	27.30	18.850
UNII4	5845	169	22.46	17.504
	5865	173	25.17	17.585
	5885	177	27.98	17.574

Mode : 802.11n(HT40)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5190	38	44.68	35.811
	5230	46	39.93	35.746
UNII2A	5270	54	41.05	35.760
	5310	62	49.33	35.769
UNII2C	5510	102	40.42	35.673
	5590	118	43.45	35.778
	5710	142	42.03	35.820
UNII3	5755	151	46.18	35.922
	5795	159	50.38	35.886
UNII4	5835	167	40.14	35.791
	5875	175	46.95	35.784

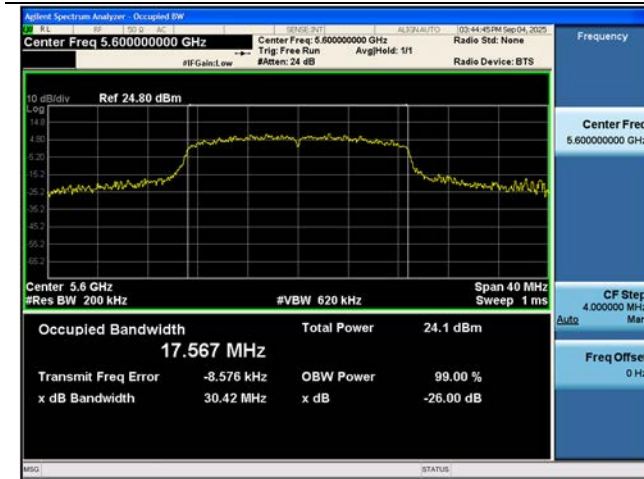
Mode : 802.11ac(VHT40)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5190	38	42.25	35.759
	5230	46	40.65	35.659
UNII2A	5270	54	40.84	35.719
	5310	62	41.73	35.895
UNII2C	5510	102	40.81	35.819
	5590	118	52.49	35.885
	5710	142	40.73	35.800
UNII3	5755	151	45.08	35.796
	5795	159	42.07	35.770
UNII4	5835	167	40.04	35.712
	5875	175	43.05	35.824

Mode : 802.11ac(VHT80)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5210	42	84.96	75.267
UNII2A	5290	58	81.11	75.285
UNII2C	5530	106	80.73	75.216
	5610	122	81.11	75.278
	5690	138	78.87	74.770
UNII3	5775	155	85.02	75.251
UNII4	5855	171	80.91	75.217

Test Plots

Note: In order to simplify the report, attached plots were only the widest channel per channel bandwidth.

Bandwidth 20M, 802.11n(HT20) Ch.120



Bandwidth 40M, 802.11ac(VHT40) Ch.118



Bandwidth 80M, 802.11ac(VHT80) Ch.155



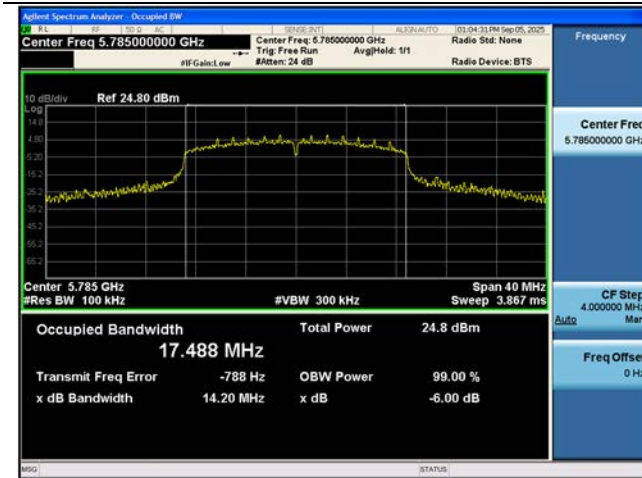
10.3 6 dB BANDWIDTH

Mode : 802.11a				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	15.13	> 0.5
	5785	157	15.15	> 0.5
	5825	165	15.11	> 0.5
UNII4	5845	169	15.12	> 0.5
	5865	173	15.12	> 0.5
	5885	177	15.14	> 0.5
Mode : 802.11n(HT20)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	15.15	> 0.5
	5785	157	15.16	> 0.5
	5825	165	15.13	> 0.5
UNII4	5845	169	15.07	> 0.5
	5865	173	15.14	> 0.5
	5885	177	15.08	> 0.5
Mode : 802.11ac(VHT20)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	15.08	> 0.5
	5785	157	14.20	> 0.5
	5825	165	14.68	> 0.5
UNII4	5845	169	15.14	> 0.5
	5865	173	15.16	> 0.5
	5885	177	15.10	> 0.5
Mode : 802.11n(HT40)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5755	151	35.12	> 0.5
	5795	159	33.91	> 0.5
UNII4	5835	167	35.13	> 0.5
	5875	175	35.12	> 0.5
Mode : 802.11ac(VHT40)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5755	151	35.10	> 0.5
	5795	159	35.11	> 0.5
UNII4	5835	167	35.11	> 0.5
	5875	175	31.30	> 0.5
Mode : 802.11ac(VHT80)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5775	155	75.39	> 0.5
UNII4	5855	171	62.47	> 0.5

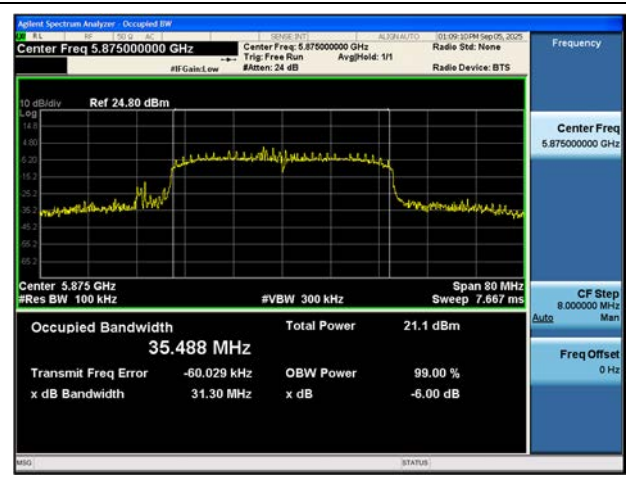
Test Plots

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

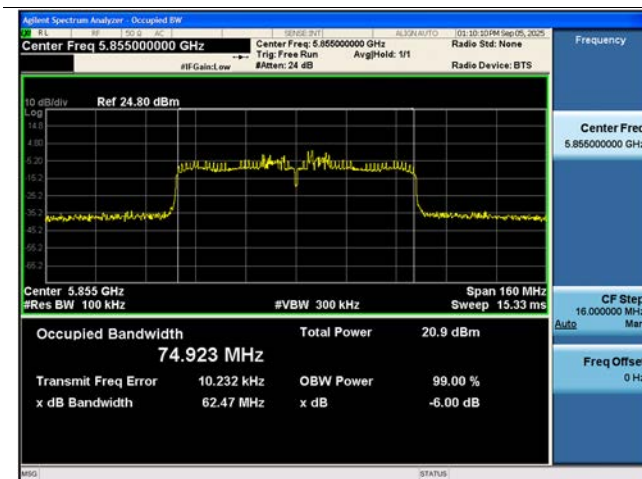
Bandwidth 20M, 802.11ac(VHT20) Ch.157



Bandwidth 40M, 802.11ac(VHT40) Ch.175



Bandwidth 80M, 802.11ac(VHT80) Ch.171



10.4 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.

Limit

(UNII 1) : 23.98 dBm

(UNII 2A, 2C) : 23.98 dBm or $11 \text{ dBm} + 10 \log B$, (where B is the 26 dB emission bandwidth in megahertz.)

(UNII 3) : 30.00 dBm

(UNII 4) : EIRP 30.0 dBm/MHz

(UNII 3&4) : Worst limit 30.00 dBm → UNII 4 Band Antenna Gain Negative

e.i.r.p = Total Power [dBm] + Antenna Gain [dBi]

Mode : 802.11a									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured Power [dBm]	Duty cycle Fcator [dB]	Total Power [dBm]	Antenna Gain [dBi]	e.i.r.p [dBm]	Limit [dBm]
UNII1	5180	36	6M	16.06	0.23	16.29	-	-	23.98
	5200	40	6M	16.91	0.23	17.14	-	-	23.98
	5240	48	6M	17.02	0.23	17.25	-	-	23.98
UNII2A	5260	52	6M	17.06	0.23	17.29	-	-	23.98
	5300	60	6M	16.98	0.23	17.22	-	-	23.98
	5320	64	6M	13.93	0.23	14.16	-	-	23.98
UNII2C	5500	100	6M	12.84	0.23	13.07	-	-	23.98
	5600	120	6M	17.20	0.23	17.43	-	-	23.98
	5720	144	6M	17.22	0.23	17.45	-	-	23.98
UNII3	5745	149	6M	17.53	0.23	17.77	-	-	30.00
	5785	157	6M	17.17	0.23	17.40	-	-	30.00
	5825	165	6M	17.38	0.23	17.61	-	-	30.00
UNII4	5825	169	6M	16.84	0.23	17.07	-4.90	12.17	30dBm/EIRP
	5825	173	6M	16.96	0.23	17.19	-4.90	12.29	30dBm/EIRP
	5825	177	6M	17.16	0.23	17.39	-4.90	12.49	30dBm/EIRP

Mode : 802.11n(HT20)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured Power [dBm]	Duty cycle Fcator [dB]	Total Power [dBm]	Antenna Gain [dBi]	e.i.r.p [dBm]	Limit [dBm]
UNII1	5180	36	MCS0	15.91	0.28	16.19	-	-	23.98
	5200	40	MCS0	16.91	0.28	17.19	-	-	23.98
	5240	48	MCS0	16.99	0.28	17.27	-	-	23.98
UNII2A	5260	52	MCS0	16.93	0.28	17.21	-	-	23.98
	5300	60	MCS0	16.75	0.28	17.03	-	-	23.98
	5320	64	MCS0	13.62	0.28	13.90	-	-	23.98
UNII2C	5500	100	MCS0	12.64	0.28	12.92	-	-	23.98
	5600	120	MCS0	16.96	0.28	17.24	-	-	23.98
	5720	144	MCS0	17.13	0.28	17.41	-	-	23.98
UNII3	5745	149	MCS0	17.27	0.28	17.55	-	-	30.00
	5785	157	MCS0	16.93	0.28	17.21	-	-	30.00
	5825	165	MCS0	17.24	0.28	17.52	-	-	30.00
UNII4	5825	169	MCS0	16.62	0.28	16.90	-4.90	12.00	30dBm/EIRP
	5825	173	MCS0	16.84	0.28	17.12	-4.90	12.22	30dBm/EIRP
	5825	177	MCS0	16.93	0.28	17.21	-4.90	12.31	30dBm/EIRP

Mode : 802.11ac(VHT20)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured Power [dBm]	Duty cycle Fcator [dB]	Total Power [dBm]	Antenna Gain [dBi]	e.i.r.p [dBm]	Limit [dBm]
UNII1	5180	36	MCS0	16.07	0.33	16.40	-	-	23.98
	5200	40	MCS0	16.80	0.33	17.13	-	-	23.98
	5240	48	MCS0	16.74	0.33	17.07	-	-	23.98
UNII2A	5260	52	MCS0	16.65	0.33	16.98	-	-	23.98
	5300	60	MCS0	16.66	0.33	16.99	-	-	23.98
	5320	64	MCS0	13.58	0.33	13.91	-	-	23.98
UNII2C	5500	100	MCS0	12.61	0.33	12.94	-	-	23.98
	5600	120	MCS0	16.73	0.33	17.07	-	-	23.98
	5720	144	MCS0	17.09	0.33	17.42	-	-	23.98
UNII3	5745	149	MCS0	17.17	0.33	17.50	-	-	30.00
	5785	157	MCS0	16.80	0.33	17.13	-	-	30.00
	5825	165	MCS0	17.14	0.33	17.47	-	-	30.00
UNII4	5825	169	MCS0	16.46	0.33	16.79	-4.90	11.89	30dBm/EIRP
	5825	173	MCS0	16.73	0.33	17.06	-4.90	12.16	30dBm/EIRP
	5825	177	MCS0	16.74	0.33	17.07	-4.90	12.17	30dBm/EIRP

Mode : 802.11n(HT40)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured Power [dBm]	Duty cycle Fcator [dB]	Total Power [dBm]	Antenna Gain [dBi]	e.i.r.p [dBm]	Limit [dBm]
UNII1	5190	38	MCS0	10.71	0.65	11.36	-	-	23.98
	5230	46	MCS0	14.73	0.65	15.38	-	-	23.98
UNII2A	5270	54	MCS0	14.59	0.65	15.24	-	-	23.98
	5310	62	MCS0	10.08	0.65	10.73	-	-	23.98
UNII2C	5510	102	MCS0	9.47	0.65	10.11	-	-	23.98
	5590	118	MCS0	14.92	0.65	15.57	-	-	23.98
	5710	142	MCS0	14.92	0.65	15.57	-	-	23.98
UNII3	5755	151	MCS0	15.06	0.65	15.71	-	-	30.00
	5795	159	MCS0	14.64	0.65	15.29	-	-	30.00
UNII4	5755	167	MCS0	14.51	0.65	15.15	-4.90	10.25	30dBm/EIRP
	5795	175	MCS0	14.67	0.65	15.31	-4.90	10.41	30dBm/EIRP

Mode : 802.11ac(VHT40)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured Power [dBm]	Duty cycle Fcator [dB]	Total Power [dBm]	Antenna Gain [dBi]	e.i.r.p [dBm]	Limit [dBm]
UNII1	5190	38	MCS0	10.69	0.64	11.33	-	-	23.98
	5230	46	MCS0	14.68	0.64	15.32	-	-	23.98
UNII2A	5270	54	MCS0	14.73	0.64	15.37	-	-	23.98
	5310	62	MCS0	10.32	0.64	10.96	-	-	23.98
UNII2C	5510	102	MCS0	9.62	0.64	10.26	-	-	23.98
	5590	118	MCS0	14.98	0.64	15.63	-	-	23.98
	5710	142	MCS0	14.91	0.64	15.55	-	-	23.98
UNII3	5755	151	MCS0	15.05	0.64	15.69	-	-	30.00
	5795	159	MCS0	14.70	0.64	15.34	-	-	30.00
UNII4	5755	167	MCS0	14.44	0.64	15.08	-4.90	10.18	30dBm/EIRP
	5795	175	MCS0	14.72	0.64	15.36	-4.90	10.46	30dBm/EIRP

Mode : 802.11ac(VHT80)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured Power [dBm]	Duty cycle Fcator [dB]	Total Power [dBm]	Antenna Gain [dBi]	e.i.r.p [dBm]	Limit [dBm]
UNII1	5210	42	MCS0	7.55	1.01	8.56	-	-	23.98
UNII2A	5290	58	MCS0	7.39	1.01	8.40	-	-	23.98
UNII2C	5530	106	MCS0	5.85	1.01	6.86	-	-	23.98
	5610	122	MCS0	8.32	1.01	9.33	-	-	23.98
	5690	138	MCS0	8.02	1.01	9.03	-	-	23.98
UNII3	5775	155	MCS0	8.77	1.01	9.78	-	-	30.00
UNII4	5775	171	MCS0	7.98	1.01	8.99	-4.90	4.09	30dBm/EIRP

10.5 POWER SPECTRAL DENSITY

e.i.r.p = Total PSD [dBm/MHz] + Antenna Gain [dBi]

Mode : 802.11a									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured PSD [dBm/MHz]	Duty cycle Fcator [dB]	Total PSD [dBm/MHz]	Antenna Gain [dBi]	e.i.r.p [dBm/MHz]	Limit [dBm/MHz]
UNII1	5180	36	6M	6.038	0.232	6.270	-	-	11
	5200	40	6M	7.025	0.232	7.257	-	-	11
	5240	48	6M	6.801	0.232	7.033	-	-	11
UNII2A	5260	52	6M	6.485	0.232	6.717	-	-	11
	5300	60	6M	6.866	0.232	7.098	-	-	11
	5320	64	6M	3.848	0.232	4.080	-	-	11
UNII2C	5500	100	6M	2.618	0.232	2.850	-	-	11
	5600	120	6M	7.411	0.232	7.643	-	-	11
	5720	144	6M	6.386	0.232	6.618	-	-	11
UNII3	5745	149	6M	3.752	0.232	3.984	-	-	30 dBm/500kHz
	5785	157	6M	3.795	0.232	4.027	-	-	30 dBm/500kHz
	5825	165	6M	4.643	0.232	4.875	-	-	30 dBm/500kHz
UNII4	5845	169	6M	7.074	0.232	7.306	-4.90	2.406	14 EIRP
	5865	173	6M	7.033	0.232	7.265	-4.90	2.365	14 EIRP
	5885	177	6M	7.286	0.232	7.518	-4.90	2.618	14 EIRP

Mode : 802.11n(HT20)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured PSD [dBm/MHz]	Duty cycle Fcator [dB]	Total PSD [dBm/MHz]	Antenna Gain [dBi]	e.i.r.p [dBm/MHz]	Limit [dBm/MHz]
UNII1	5180	36	MCS0	5.657	0.280	5.937	-	-	11
	5200	40	MCS0	6.460	0.280	6.740	-	-	11
	5240	48	MCS0	6.281	0.280	6.561	-	-	11
UNII2A	5260	52	MCS0	6.208	0.280	6.488	-	-	11
	5300	60	MCS0	6.087	0.280	6.367	-	-	11
	5320	64	MCS0	3.643	0.280	3.923	-	-	11
UNII2C	5500	100	MCS0	2.183	0.280	2.463	-	-	11
	5600	120	MCS0	6.926	0.280	7.206	-	-	11
	5720	144	MCS0	6.282	0.280	6.562	-	-	11
UNII3	5745	149	MCS0	3.581	0.280	3.861	-	-	30 dBm/500kHz
	5785	157	MCS0	3.553	0.280	3.833	-	-	30 dBm/500kHz
	5825	165	MCS0	4.578	0.280	4.858	-	-	30 dBm/500kHz
UNII4	5845	169	MCS0	6.665	0.280	6.945	-4.90	2.045	14 EIRP
	5865	173	MCS0	6.671	0.280	6.951	-4.90	2.051	14 EIRP
	5885	177	MCS0	6.961	0.280	7.241	-4.90	2.341	14 EIRP

Mode : 802.11ac(VHT20)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured PSD [dBm/MHz]	Duty cycle Fcator [dB]	Total PSD [dBm/MHz]	Antenna Gain [dBi]	e.i.r.p [dBm/MHz]	Limit [dBm/MHz]
UNII1	5180	36	MCS0	5.412	0.331	5.743	-	-	11
	5200	40	MCS0	6.342	0.331	6.673	-	-	11
	5240	48	MCS0	6.290	0.331	6.621	-	-	11
UNII2A	5260	52	MCS0	6.134	0.331	6.465	-	-	11
	5300	60	MCS0	6.356	0.331	6.687	-	-	11
	5320	64	MCS0	3.792	0.331	4.123	-	-	11
UNII2C	5500	100	MCS0	2.390	0.331	2.721	-	-	11
	5600	120	MCS0	7.032	0.331	7.363	-	-	11
	5720	144	MCS0	6.259	0.331	6.590	-	-	11
UNII3	5745	149	MCS0	3.294	0.331	3.625	-	-	30 dBm/500kHz
	5785	157	MCS0	3.387	0.331	3.718	-	-	30 dBm/500kHz
	5825	165	MCS0	4.074	0.331	4.405	-	-	30 dBm/500kHz
UNII4	5845	169	MCS0	6.652	0.331	6.983	-4.90	2.083	14 EIRP
	5865	173	MCS0	6.988	0.331	7.319	-4.90	2.419	14 EIRP
	5885	177	MCS0	7.090	0.331	7.421	-4.90	2.521	14 EIRP

Mode : 802.11n(HT40)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured PSD [dBm/MHz]	Duty cycle Fcator [dB]	Total PSD [dBm/MHz]	Antenna Gain [dBi]	e.i.r.p [dBm/MHz]	Limit [dBm/MHz]
UNII1	5190	38	MCS0	-2.705	0.646	-2.059	-	-	11
	5230	46	MCS0	0.844	0.646	1.490	-	-	11
UNII2A	5270	54	MCS0	0.411	0.646	1.057	-	-	11
	5310	62	MCS0	-3.287	0.646	-2.641	-	-	11
UNII2C	5510	102	MCS0	-4.039	0.646	-3.393	-	-	11
	5590	118	MCS0	0.396	0.646	1.042	-	-	11
	5710	142	MCS0	0.914	0.646	1.560	-	-	11
UNII3	5755	151	MCS0	-1.619	0.646	-0.973	-	-	30 dBm/500kHz
	5795	159	MCS0	-2.144	0.646	-1.498	-	-	30 dBm/500kHz
UNII4	5835	167	MCS0	0.530	0.646	1.176	-4.90	-3.724	14 EIRP
	5875	175	MCS0	0.277	0.646	0.923	-4.90	-3.977	14 EIRP

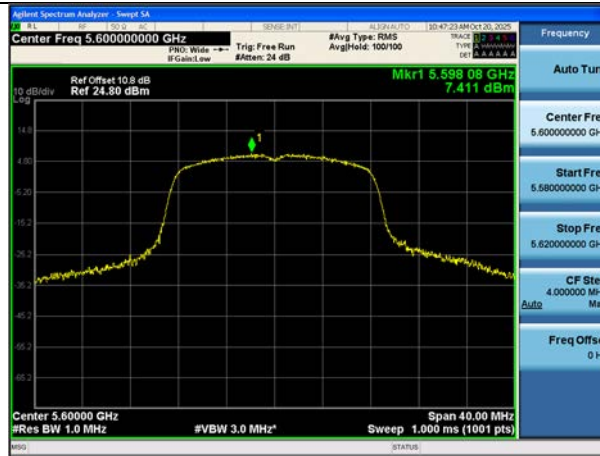
Mode : 802.11ac(VHT40)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured PSD [dBm/MHz]	Duty cycle Fcator [dB]	Total PSD [dBm/MHz]	Antenna Gain [dBi]	e.i.r.p [dBm/MHz]	Limit [dBm/MHz]
UNII1	5190	38	MCS0	-2.753	0.643	-2.110	-	-	11
	5230	46	MCS0	0.564	0.643	1.207	-	-	11
UNII2A	5270	54	MCS0	0.447	0.643	1.090	-	-	11
	5310	62	MCS0	-3.233	0.643	-2.590	-	-	11
UNII2C	5510	102	MCS0	-4.093	0.643	-3.450	-	-	11
	5590	118	MCS0	0.280	0.643	0.923	-	-	11
	5710	142	MCS0	0.845	0.643	1.488	-	-	11
UNII3	5755	151	MCS0	-1.462	0.643	-0.819	-	-	30 dBm/500kHz
	5795	159	MCS0	-2.168	0.643	-1.525	-	-	30 dBm/500kHz
UNII4	5835	167	MCS0	0.510	0.643	1.153	-4.90	-3.747	14 EIRP
	5875	175	MCS0	0.179	0.643	0.822	-4.90	-4.078	14 EIRP

Mode : 802.11ac(VHT80)									
Band	Freq. [MHz]	CH.	Worstcase Datarate	Measured PSD [dBm/MHz]	Duty cycle Fcator [dB]	Total PSD [dBm/MHz]	Antenna Gain [dBi]	e.i.r.p [dBm/MHz]	Limit [dBm/MHz]
UNII1	5210	42	MCS0	-9.269	1.011	-8.258	-	-	11
UNII2A	5290	58	MCS0	-9.216	1.011	-8.205	-	-	11
UNII2C	5530	106	MCS0	-10.966	1.011	-9.955	-	-	11
	5610	122	MCS0	-8.581	1.011	-7.570	-	-	11
	5690	138	MCS0	-8.812	1.011	-7.801	-	-	11
UNII3	5775	155	MCS0	-11.164	1.011	-10.153	-	-	30 dBm/500kHz
UNII4	5855	171	MCS0	-8.566	1.011	-7.555	-4.90	-12.455	14 EIRP

Test Plots

Note: In order to simplify the report, attached plots were only channel of the highest PSD.

Bandwidth 20M, 802.11a (Ch. 120)



Bandwidth 40M, 802.11n(HT40) (Ch. 142)



Bandwidth 80M, 802.11ac(VHT80) (Ch. 171)



10.6 FREQUENCY STABILITY

Note:

1. All modes of operation were investigated and the worst case configuration results are reported.
2. 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.

10.6.1 80 MHz BW

REFERENCE VOLTAGE: 3.88 VDC

Startup after the EUT is energized

OPERATING BAND:			UNII Band 1		UNII Band 2A		UNII Band 2C	
OPERATING FREQUENCY:			5,210,000,000 Hz		5,290,000,000 Hz		5,530,000,000 Hz	
CHANNEL:			42		58		106	
Voltage	Power	Temp.	Frequency	Frequency Error	Frequency	Frequency Error	Frequency	Frequency Error
(%)	(VDC)	(°C)	(kHz)	(kHz)	(kHz)	(kHz)	(kHz)	(kHz)
100%	3.88	+20(Ref)	5210033.79	33.79	5290031.25	31.25	5530034.66	34.66
100%		-30	5210006.41	6.41	5290005.15	5.15	5530006.26	6.26
100%		-20	5210015.53	15.53	5290014.49	14.49	5530013.98	13.98
100%		-10	5210020.02	20.02	5290016.50	16.50	5530019.36	19.36
100%		0	5210022.35	22.35	5290020.85	20.85	5530020.10	20.10
100%		+10	5210026.79	26.79	5290027.73	27.73	5530027.58	27.58
100%		+30	5210040.31	40.31	5290035.92	35.92	5530035.89	35.89
100%		+40	5210047.85	47.85	5290049.55	49.55	5530044.84	44.84
100%		+50	5210058.02	58.02	5290050.97	50.97	5530052.30	52.30
High	4.47	+20	5210034.12	34.12	5290035.34	35.34	5530032.57	32.57
Low	3.40	+20	5210031.26	31.26	5290032.73	32.73	5530034.42	34.42

OPERATING BAND:			UNII Band 3		UNII Band 4	
OPERATING FREQUENCY:			5,775,000,000 Hz		5,855,000,000 Hz	
CHANNEL:			155		171	
Voltage	Power	Temp.	Frequency	Frequency Error	Frequency	Frequency Error
(%)	(VDC)	(°C)	(kHz)	(kHz)	(kHz)	(kHz)
100%	3.88	+20(Ref)	5775034.81	34.81	5855032.39	32.39
100%		-30	5775006.28	6.28	5855008.29	8.29
100%		-20	5775011.11	11.11	5855013.28	13.28
100%		-10	5775018.59	18.59	5855017.15	17.15
100%		0	5775022.96	22.96	5855024.80	24.80
100%		+10	5775025.31	25.31	5855028.44	28.44
100%		+30	5775038.17	38.17	5855037.87	37.87
100%		+40	5775043.07	43.07	5855041.66	41.66
100%		+50	5775054.92	54.92	5855058.74	58.74
High	4.47	+20	5775031.71	31.71	5855034.97	34.97
Low	3.40	+20	5775035.61	35.61	5855035.16	35.16

2 minutes after the EUT is energized

OPERATING BAND:			UNII Band 1		UNII Band 2A		UNII Band 2C	
OPERATING FREQUENCY:			5,210,000,000 Hz		5,290,000,000 Hz		5,530,000,000 Hz	
CHANNEL:			42		58		106	
Voltage	Power	Temp.	Frequency	Frequency Error	Frequency	Frequency Error	Frequency	Frequency Error
(%)	(VDC)	(°C)	(kHz)	(kHz)	(kHz)	(kHz)	(kHz)	(kHz)
100%	3.88	+20(Ref)	5210035.17	35.17	5290032.97	32.97	5530030.79	30.79
100%		-30	5210008.49	8.49	5290009.85	9.85	5530009.68	9.68
100%		-20	5210010.32	10.32	5290010.17	10.17	5530012.18	12.18
100%		-10	5210020.80	20.80	5290016.34	16.34	5530017.23	17.23
100%		0	5210021.41	21.41	5290024.64	24.64	5530021.42	21.42
100%		+10	5210026.77	26.77	5290026.04	26.04	5530025.32	25.32
100%		+30	5210039.02	39.02	5290038.25	38.25	5530037.94	37.94
100%		+40	5210041.99	41.99	5290048.13	48.13	5530046.89	46.89
100%		+50	5210052.11	52.11	5290059.64	59.64	5530055.61	55.61
High	4.47	+20	5210031.70	31.70	5290032.18	32.18	5530033.74	33.74
Low	3.40	+20	5210033.11	33.11	5290034.41	34.41	5530035.99	35.99

OPERATING BAND:			UNII Band 3		UNII Band 4	
OPERATING FREQUENCY:			5,775,000,000 Hz		5,855,000,000 Hz	
CHANNEL:			155		171	
Voltage	Power	Temp.	Frequency	Frequency Error	Frequency	Frequency Error
(%)	(VDC)	(°C)	(kHz)	(kHz)	(kHz)	(kHz)
100%	3.88	+20(Ref)	5775035.58	35.58	5855035.95	35.95
100%		-30	5775010.22	10.22	5855009.85	9.85
100%		-20	5775010.84	10.84	5855013.61	13.61
100%		-10	5775018.31	18.31	5855015.29	15.29
100%		0	5775022.08	22.08	5855020.59	20.59
100%		+10	5775027.13	27.13	5855028.56	28.56
100%		+30	5775040.72	40.72	5855037.77	37.77
100%		+40	5775047.57	47.57	5855040.48	40.48
100%		+50	5775059.80	59.80	5855051.37	51.37
High	4.47	+20	5775035.75	35.75	5855032.39	32.39
Low	3.40	+20	5775033.95	33.95	5855034.31	34.31

5 minutes after the EUT is energized

OPERATING BAND:			UNII Band 1		UNII Band 2A		UNII Band 2C	
OPERATING FREQUENCY:			5,210,000,000 Hz		5,290,000,000 Hz		5, 530,000,000 Hz	
CHANNEL:			42		58		106	
Voltage	Power	Temp.	Frequency	Frequency Error	Frequency	Frequency Error	Frequency	Frequency Error
(%)	(VDC)	(°C)	(kHz)	(kHz)	(kHz)	(kHz)	(kHz)	(kHz)
100%	3.88	+20(Ref)	5210030.87	30.87	5290031.06	31.06	5530030.73	30.73
100%		-30	5210009.32	9.32	5290007.74	7.74	5530009.98	9.98
100%		-20	5210010.59	10.59	5290011.84	11.84	5530012.79	12.79
100%		-10	5210019.10	19.10	5290018.28	18.28	5530018.03	18.03
100%		0	5210022.78	22.78	5290024.10	24.10	5530023.32	23.32
100%		+10	5210029.42	29.42	5290030.45	30.45	5530025.93	25.93
100%		+30	5210035.95	35.95	5290039.69	39.69	5530040.17	40.17
100%		+40	5210043.83	43.83	5290041.63	41.63	5530048.27	48.27
100%		+50	5210053.74	53.74	5290052.52	52.52	5530051.76	51.76
High	4.47	+20	5210032.22	32.22	5290033.63	33.63	5530032.53	32.53
Low	3.40	+20	5210035.71	35.71	5290034.77	34.77	5530032.78	32.78

OPERATING BAND:			UNII Band 3		UNII Band 4	
OPERATING FREQUENCY:			5,775,000,000 Hz		5,855,000,000 Hz	
CHANNEL:			155		171	
Voltage	Power	Temp.	Frequency	Frequency Error	Frequency	Frequency Error
(%)	(VDC)	(°C)	(kHz)	(kHz)	(kHz)	(kHz)
100%	3.88	+20(Ref)	5775031.50	31.50	5855035.77	35.77
100%		-30	5775010.12	10.12	5855008.90	8.90
100%		-20	5775012.60	12.60	5855014.74	14.74
100%		-10	5775016.84	16.84	5855015.42	15.42
100%		0	5775023.95	23.95	5855022.99	22.99
100%		+10	5775027.90	27.90	5855030.89	30.89
100%		+30	5775040.58	40.58	5855040.79	40.79
100%		+40	5775050.59	50.59	5855049.31	49.31
100%		+50	5775051.92	51.92	5855057.88	57.88
High	4.47	+20	5775033.70	33.70	5855033.77	33.77
Low	3.40	+20	5775030.58	30.58	5855030.40	30.40

10 minutes after the EUT is energized

OPERATING BAND:			UNII Band 1		UNII Band 2A		UNII Band 2C	
OPERATING FREQUENCY:			5,210,000,000 Hz		5,290,000,000 Hz		5,530,000,000 Hz	
CHANNEL:			42		58		106	
Voltage	Power	Temp.	Frequency	Frequency Error	Frequency	Frequency Error	Frequency	Frequency Error
(%)	(VDC)	(°C)	(kHz)	(kHz)	(kHz)	(kHz)	(kHz)	(kHz)
100%	3.88	+20(Ref)	5210033.76	33.76	5290034.25	34.25	5530035.11	35.11
100%		-30	5210009.10	9.10	5290010.95	10.95	5530010.29	10.29
100%		-20	5210014.41	14.41	5290012.40	12.40	5530014.33	14.33
100%		-10	5210015.53	15.53	5290018.12	18.12	5530017.73	17.73
100%		0	5210021.84	21.84	5290024.07	24.07	5530024.70	24.70
100%		+10	5210029.86	29.86	5290030.06	30.06	5530028.21	28.21
100%		+30	5210037.76	37.76	5290038.20	38.20	5530036.06	36.06
100%		+40	5210043.44	43.44	5290047.83	47.83	5530048.19	48.19
100%		+50	5210053.28	53.28	5290060.51	60.51	5530051.40	51.40
High	4.47	+20	5210034.94	34.94	5290032.94	32.94	5530030.77	30.77
Low	3.40	+20	5210034.28	34.28	5290032.10	32.10	5530031.37	31.37

OPERATING BAND:			UNII Band 3		UNII Band 4	
OPERATING FREQUENCY:			5,775,000,000 Hz		5,855,000,000 Hz	
CHANNEL:			155		171	
Voltage	Power	Temp.	Frequency	Frequency Error	Frequency	Frequency Error
(%)	(VDC)	(°C)	(kHz)	(kHz)	(kHz)	(kHz)
100%	3.88	+20(Ref)	5775031.99	31.99	5855032.77	32.77
100%		-30	5775005.99	5.99	5855008.83	8.83
100%		-20	5775012.65	12.65	5855011.11	11.11
100%		-10	5775019.84	19.84	5855019.87	19.87
100%		0	5775025.26	25.26	5855021.54	21.54
100%		+10	5775027.98	27.98	5855025.64	25.64
100%		+30	5775040.55	40.55	5855037.72	37.72
100%		+40	5775049.36	49.36	5855049.71	49.71
100%		+50	5775052.80	52.80	5855059.53	59.53
High	4.47	+20	5775032.73	32.73	5855033.37	33.37
Low	3.40	+20	5775033.79	33.79	5855034.57	34.57

10.7 STRADDLE CHANNEL

Test Description	Note
26 dB Bandwidth	1. [UNII 2C] 26 dB Bandwidth = 5725 MHz - Measured Frequency[MHz] 2. [UNII 3] 26 dB Bandwidth = Measured Frequency[MHz] - 5725 MHz
6 dB Bandwidth	1. 6 dB Bandwidth = Measured Frequency[MHz] - 5725 MHz 2. Limit : > 0.5 MHz
Output Power	1. Limit(UNII2C) : 23.98 dBm or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.) 2. Limit(UNII 3) : 30.00 dBm 3. Total Power (dBm) = Measured Value (dBm) + Duty Cycle Factor (dB)
Power Spectral Density	1. Limit(UNII 2C) : 11.0 dBm/MHz 2. Limit(UNII 3) : 30.0 dBm/500kHz 3. Total PSD (dBm/MHz) = Measured Value (dBm/MHz) + Duty Cycle Factor (dB)

Mode	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Limit [dBm]	Total PSD [dBm]	Limit [dBm/MHz]
802.11a	UNII2C	5720	144	15.04	-	16.39	22.77	6.822	11
802.11n(HT20)				15.60	-	16.22	22.93	6.518	11
802.11ac(VHT20)				17.12	-	16.30	23.34	6.576	11
802.11a	UNII3	5720	144	5.44	2.60	8.34	30.00	2.149	30 dBm/500kHz
802.11n(HT20)				8.48	2.60	8.55	30.00	1.933	30 dBm/500kHz
802.11ac(VHT20)				7.12	2.60	8.56	30.00	1.791	30 dBm/500kHz

Mode	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Limit [dBm]	Total PSD [dBm]	Limit [dBm/MHz]
802.11n(HT40)	UNII2C	5710	142	34.76	-	15.03	23.98	1.575	11
802.11ac(VHT40)				40.68	-	15.08	23.98	1.570	11
802.11n(HT40)	UNII3	5710	142	5.00	2.60	1.99	30.00	-4.196	30 dBm/500kHz
802.11ac(VHT40)				8.68	2.60	2.02	30.00	-4.174	30 dBm/500kHz

Mode	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Limit [dBm]	Total PSD [dBm]	Limit [dBm/MHz]
802.11ac(VHT80)	UNII2C	5690	138	75.32	-	7.81	23.98	-9.289	11
802.11ac(VHT80)	UNII3	5690	138	5.00	2.76	-8.40	30.00	-14.254	30 dBm/500kHz

□ Test Plots (26 dB Bandwidth)

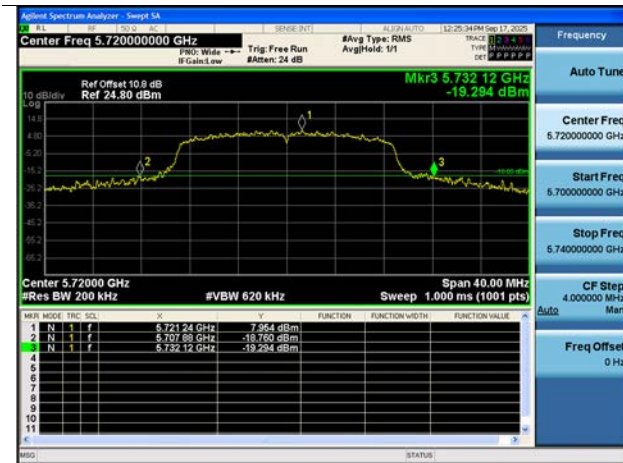
802.11a UNII Band



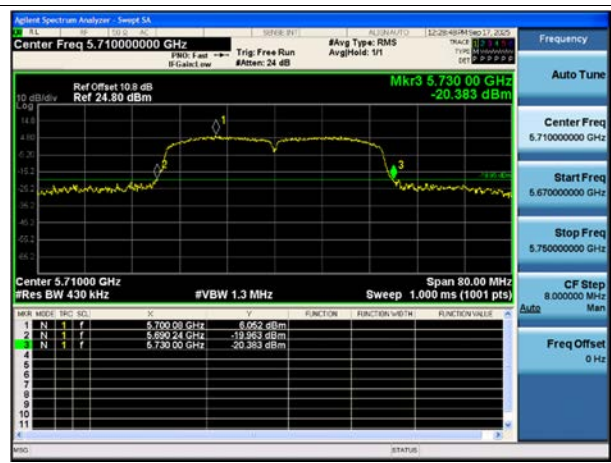
802.11n(HT20) UNII Band



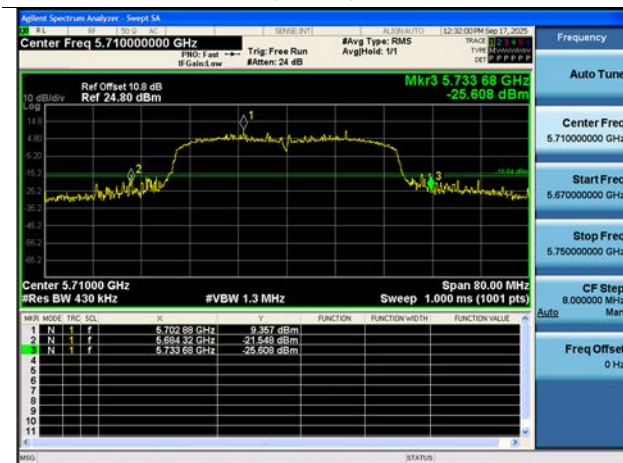
802.11ac(VHT20) UNII Band



802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band

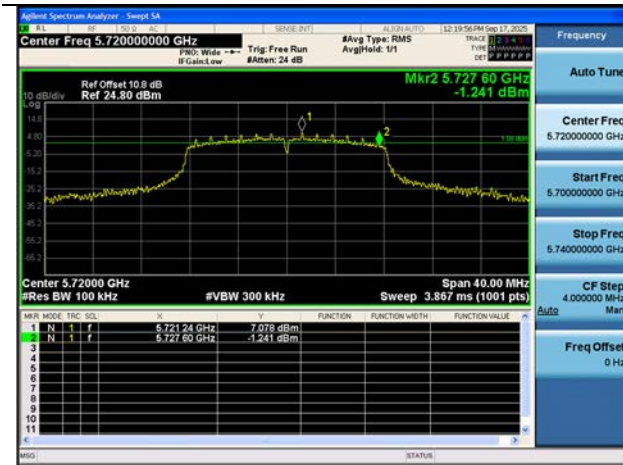


802.11ac(VHT80) UNII Band

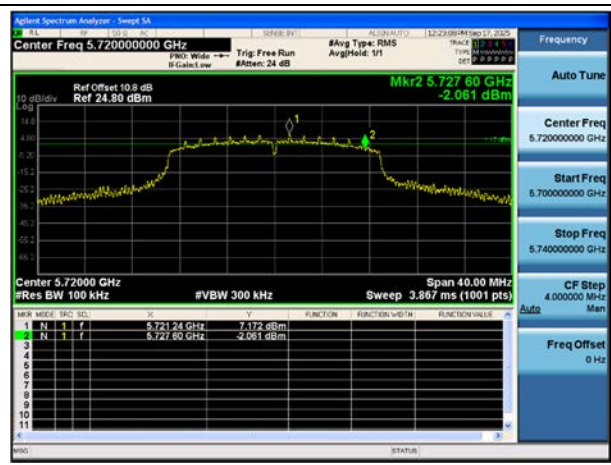


□ Test Plots (UNII 3 Band 6 dB Bandwidth)

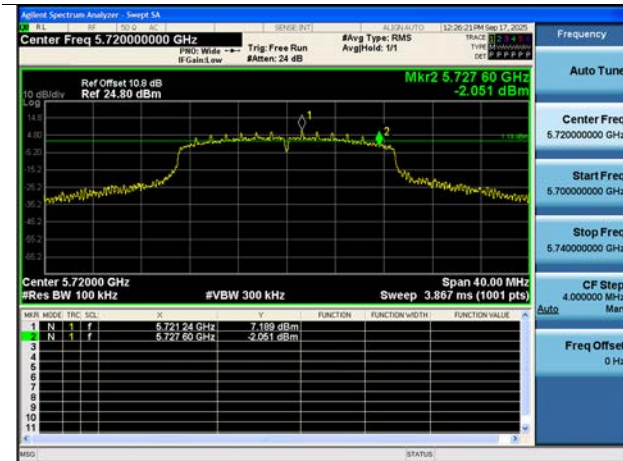
802.11a UNII Band



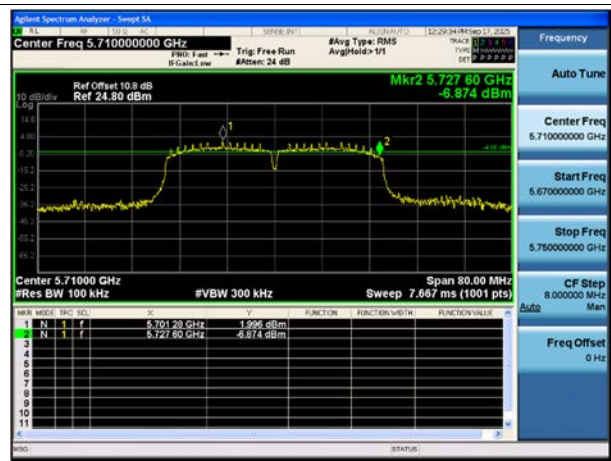
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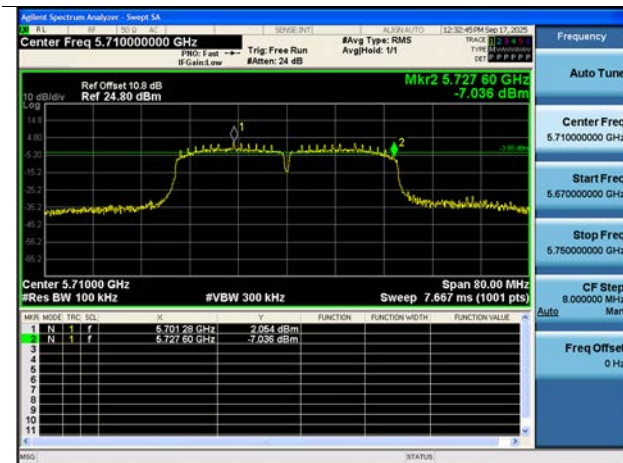
802.11ac(VHT20) UNII Band



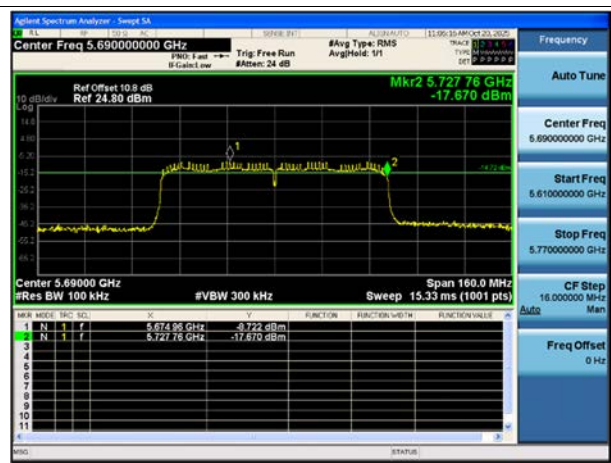
802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band

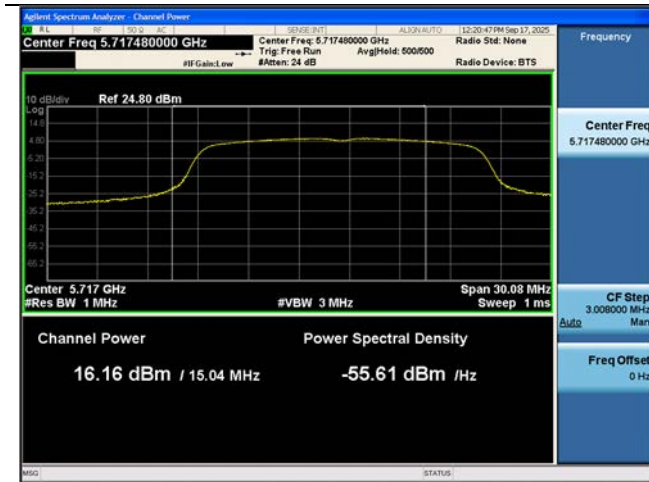


802.11ac(VHT80) UNII Band



Test Plots(Output Power)

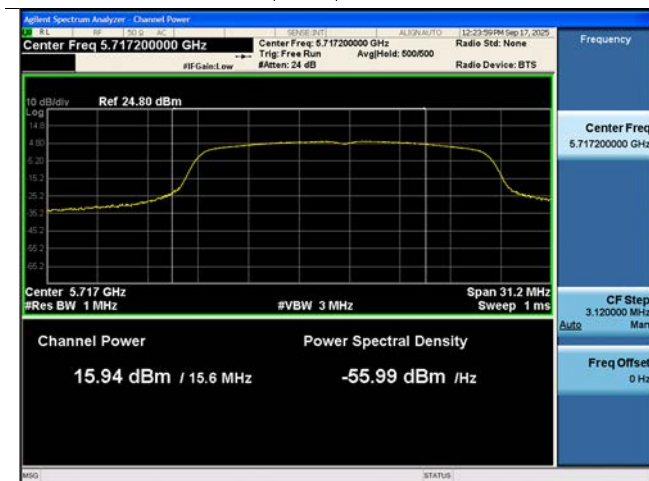
802.11a UNII 2C Band



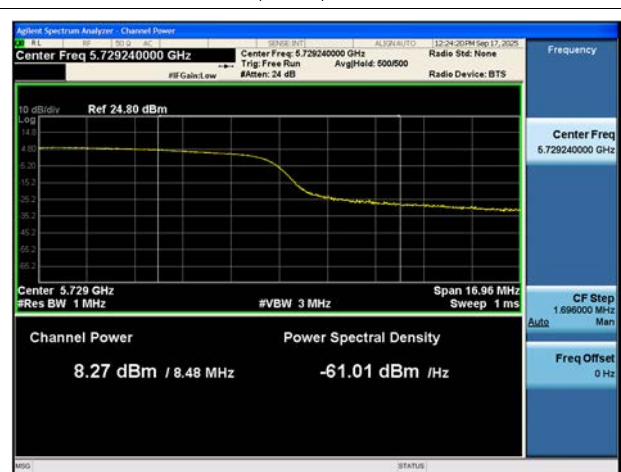
802.11a UNII 3 Band



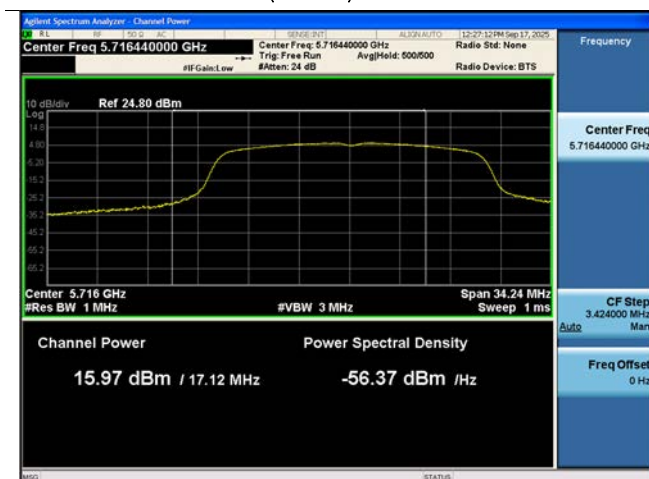
802.11n(HT20) UNII 2C Band



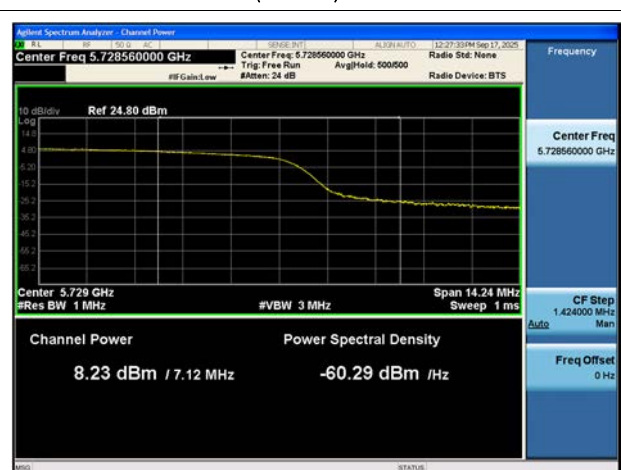
802.11n(HT20) UNII 3 Band



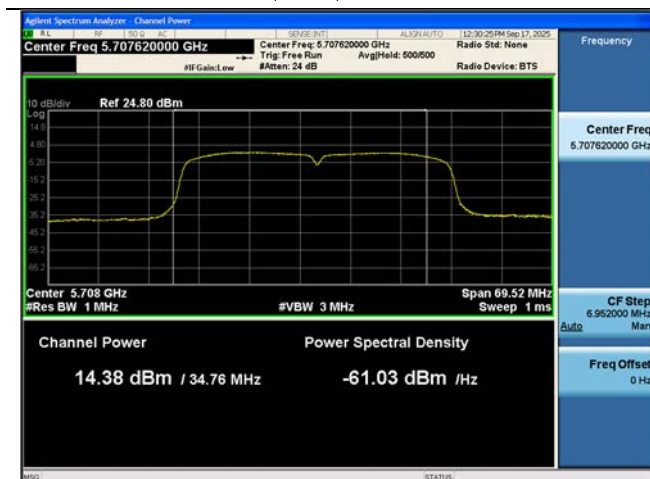
802.11ac(VHT20) UNII 2C Band



802.11ac(VHT20) UNII 3 Band



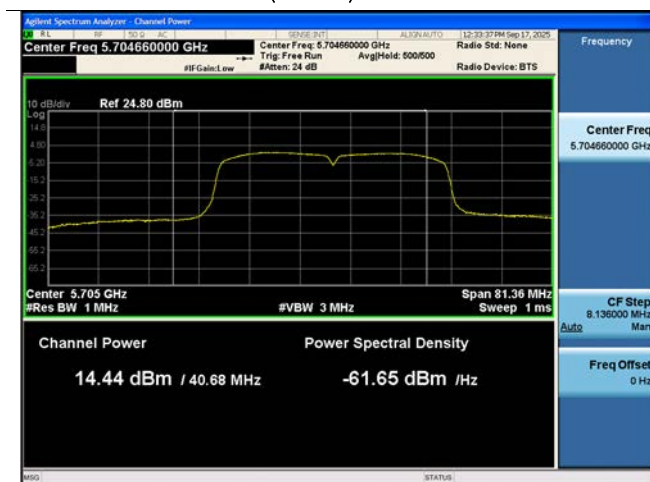
802.11n(HT40) UNII 2C Band



802.11n(HT40) UNII 3 Band



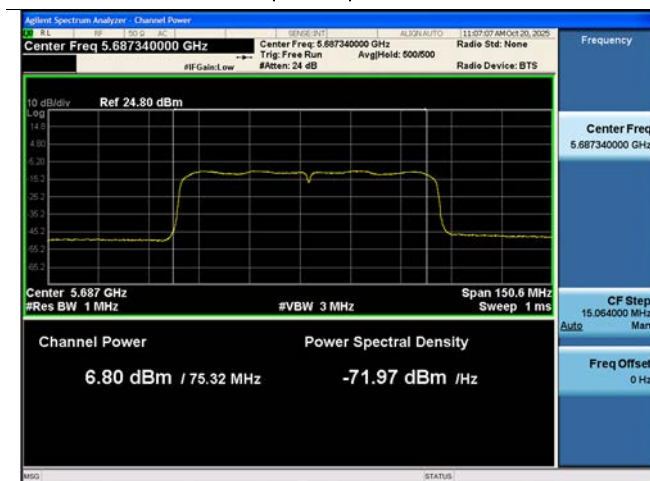
802.11ac(VHT40) UNII 2C Band



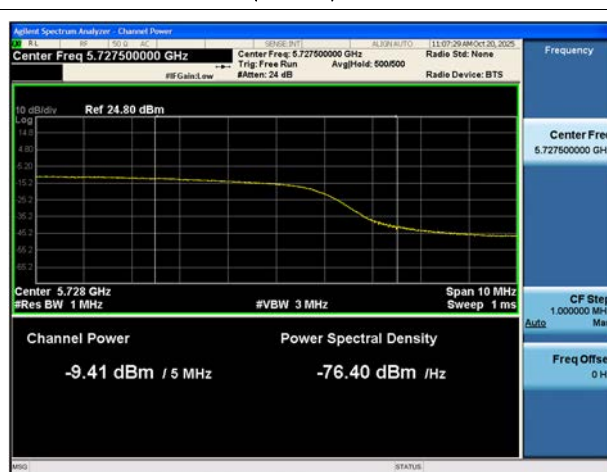
802.11ac(VHT40) UNII 3 Band



802.11ac(VHT80) UNII 2C Band

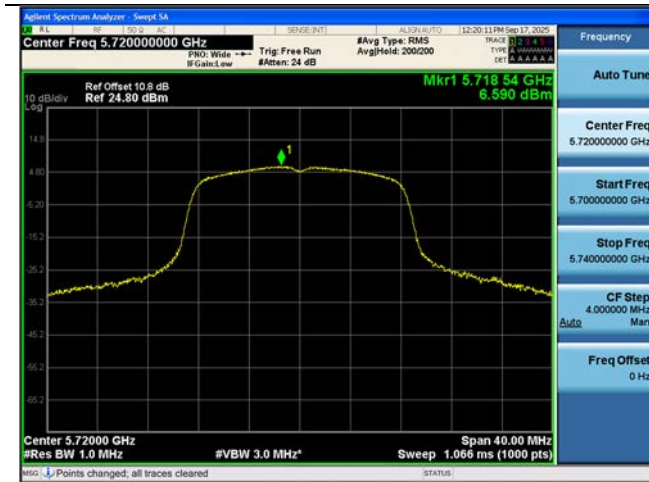


802.11ac(VHT80) UNII 3 Band

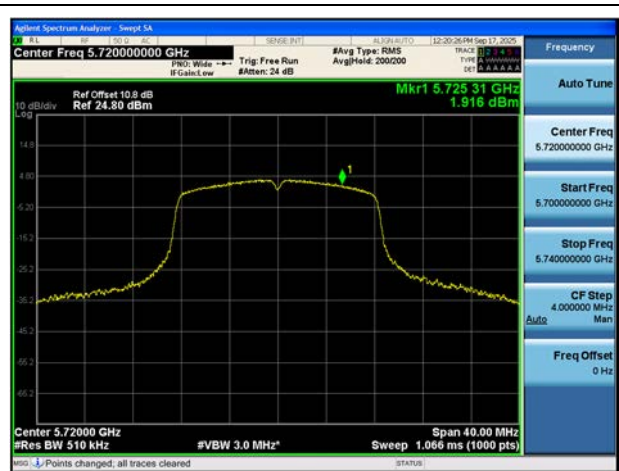


Test Plots(Power Spectral Density)

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



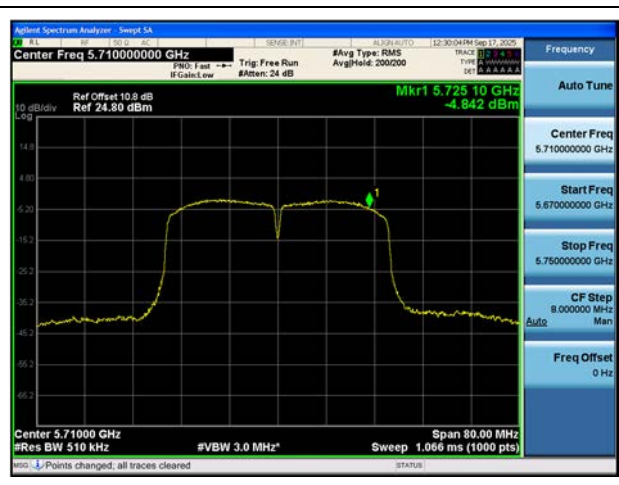
802.11ac(VHT20) UNII 3 Band



802.11n(HT40) UNII 2C Band



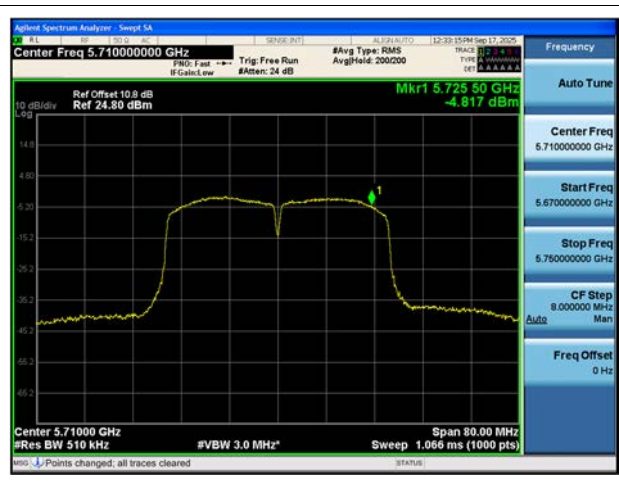
802.11n(HT40) UNII 3 Band



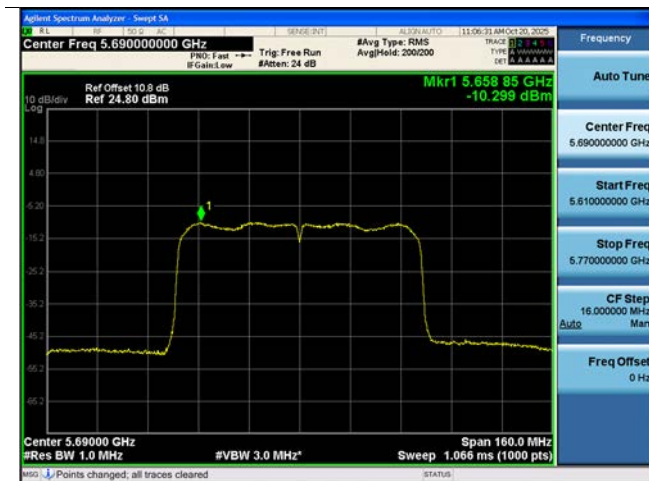
802.11ac(VHT40) UNII 2C Band



802.11ac(VHT40) UNII 3 Band



802.11ac(VHT80) UNII 2C Band



802.11ac(VHT80) UNII 3 Band



10.8 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Value	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB μ V/m]	[dB μ V/m]	[dB]
No Critical peaks found						

Note:

1. The Measured Value of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dB μ V) + Distance extrapolation factor

Frequency Range : Below 1 GHz

Frequency	Measured Value	A.F+C.L	ANT. POL	Total	Limit	Margin
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB μ V/m]	[dB μ V/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

Band : UNII 1			Operation Mode : 802.11a				
CH.36 5180 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10360	66.98	-3.27	V	63.71	68.20	4.49	PK
15540	52.83	-1.27	V	51.56	73.98	22.42	PK
15540	39.44	-1.27	V	38.17	53.98	15.81	AV
10360	60.67	-3.27	H	57.40	68.20	10.80	PK
15540	52.35	-1.27	H	51.08	73.98	22.90	PK
15540	39.24	-1.27	H	37.97	53.98	16.01	AV

Band : UNII 1			Operation Mode : 802.11a				
CH.40 5200 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10400	66.22	-3.23	V	62.99	68.20	5.21	PK
15600	53.75	-1.75	V	52.00	73.98	21.98	PK
15600	40.34	-1.75	V	38.59	53.98	15.39	AV
10400	60.69	-3.23	H	57.46	68.20	10.74	PK
15600	53.52	-1.75	H	51.77	73.98	22.21	PK
15600	40.26	-1.75	H	38.51	53.98	15.47	AV

Band : UNII 1			Operation Mode : 802.11a				
CH.48 5240 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10480	64.40	-3.59	V	60.81	68.20	7.39	PK
15720	53.36	-2.02	V	51.34	73.98	22.64	PK
15720	40.14	-2.02	V	38.12	53.98	15.86	AV
10480	59.07	-3.59	H	55.48	68.20	12.72	PK
15720	53.16	-2.02	H	51.14	73.98	22.84	PK
15720	40.07	-2.02	H	38.05	53.98	15.93	AV

Band : UNII 2A			Operation Mode : 802.11a				
CH.52 5260 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10520	63.55	-3.80	V	59.75	68.20	8.45	PK
15780	53.01	-2.36	V	50.65	73.98	23.33	PK
15780	39.82	-2.36	V	37.46	53.98	16.52	AV
10520	60.57	-3.80	H	56.77	68.20	11.43	PK
15780	53.02	-2.36	H	50.66	73.98	23.32	PK
15780	39.51	-2.36	H	37.15	53.98	16.83	AV

Band : UNII 2A			Operation Mode : 802.11a				
CH.60 5300 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10600	60.80	-3.43	V	57.37	73.98	16.61	PK
10600	48.08	-3.43	V	44.65	53.98	9.33	AV
15900	52.67	-2.54	V	50.13	73.98	23.85	PK
15900	39.80	-2.54	V	37.26	53.98	16.72	AV
10600	59.55	-3.43	H	56.12	73.98	17.86	PK
10600	46.67	-3.43	H	43.24	53.98	10.74	AV
15900	52.75	-2.54	H	50.21	73.98	23.77	PK
15900	39.39	-2.54	H	36.85	53.98	17.13	AV

Band : UNII 2A			Operation Mode : 802.11a				
CH.64 5320 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10640	58.41	-3.36	V	55.05	73.98	18.93	PK
10640	45.77	-3.36	V	42.41	53.98	11.57	AV
15960	53.37	-2.25	V	51.12	73.98	22.86	PK
15960	39.68	-2.25	V	37.43	53.98	16.55	AV
10640	57.65	-3.36	H	54.29	73.98	19.69	PK
10640	45.36	-3.36	H	42.00	53.98	11.98	AV
15960	52.86	-2.25	H	50.61	73.98	23.37	PK
15960	39.72	-2.25	H	37.47	53.98	16.51	AV

Band : UNII 2C			Operation Mode : 802.11a				
CH.100 5500 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11000	56.61	-2.69	V	53.92	73.98	20.06	PK
11000	44.13	-2.69	V	41.44	53.98	12.54	AV
16500	53.14	-2.52	V	50.62	68.20	17.58	PK
11000	56.86	-2.69	H	54.17	73.98	19.81	PK
11000	44.24	-2.69	H	41.55	53.98	12.43	AV
16500	53.68	-2.52	H	51.16	68.20	17.04	PK

Band : UNII 2C			Operation Mode : 802.11a				
CH.120 5600 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11200	58.95	-3.54	V	55.41	73.98	18.57	PK
11200	45.33	-3.54	V	41.79	53.98	12.19	AV
16800	54.27	-2.51	V	51.76	68.20	16.44	PK
11200	57.40	-3.54	H	53.86	73.98	20.12	PK
11200	43.87	-3.54	H	40.33	53.98	13.65	AV
16800	53.77	-2.51	H	51.26	68.20	16.94	PK

Band : UNII 2C			Operation Mode : 802.11a				
CH.144 5720 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11440	59.33	-3.03	V	56.30	73.98	17.68	PK
11440	46.51	-3.03	V	43.48	53.98	10.50	AV
17160	54.11	-2.42	V	51.69	68.20	16.51	PK
11440	58.15	-3.03	H	55.12	73.98	18.86	PK
11440	45.01	-3.03	H	41.98	53.98	12.00	AV
17160	53.23	-2.42	H	50.81	68.20	17.39	PK

Band : UNII 3			Operation Mode : 802.11a				
CH.149 5745 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11490	58.49	-3.10	V	55.39	73.98	18.59	PK
11490	45.86	-3.10	V	42.76	53.98	11.22	AV
17235	53.94	-2.28	V	51.66	68.20	16.54	PK
11490	57.22	-3.10	H	54.12	73.98	19.86	PK
11490	44.57	-3.10	H	41.47	53.98	12.51	AV
17235	54.08	-2.28	H	51.80	68.20	16.40	PK

Band : UNII 3			Operation Mode : 802.11a				
CH.157 5785 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11570	59.86	-3.44	V	56.42	73.98	17.56	PK
11570	46.55	-3.44	V	43.11	53.98	10.87	AV
17355	53.90	-2.01	V	51.89	68.20	16.31	PK
11570	57.44	-3.44	H	54.00	73.98	19.98	PK
11570	44.76	-3.44	H	41.32	53.98	12.66	AV
17355	54.03	-2.01	H	52.02	68.20	16.18	PK

Band : UNII 3			Operation Mode : 802.11a				
CH.165 5825 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11650	59.55	-3.92	V	55.63	73.98	18.35	PK
11650	46.89	-3.92	V	42.97	53.98	11.01	AV
17475	52.69	-0.72	V	51.97	68.20	16.23	PK
11650	57.27	-3.92	H	53.35	73.98	20.63	PK
11650	44.59	-3.92	H	40.67	53.98	13.31	AV
17475	52.71	-0.72	H	51.99	68.20	16.21	PK

Band : UNII 4			Operation Mode : 802.11a				
CH.169 5845 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11690	58.14	-3.69	V	54.45	73.98	19.53	PK
11690	45.51	-3.69	V	41.82	53.98	12.16	AV
17535	52.42	0.45	V	52.87	68.20	15.33	PK
11690	56.89	-3.69	H	53.20	73.98	20.78	PK
11690	43.82	-3.69	H	40.13	53.98	13.85	AV
17535	52.79	0.45	H	53.24	68.20	14.96	PK

Band : UNII 4			Operation Mode : 802.11a				
CH.173 5865 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11730	59.72	-3.48	V	56.24	73.98	17.74	PK
11730	45.74	-3.48	V	42.26	53.98	11.72	AV
17595	52.05	0.74	V	52.79	68.20	15.41	PK
11730	56.67	-3.48	H	53.19	73.98	20.79	PK
11730	43.52	-3.48	H	40.04	53.98	13.94	AV
17595	52.48	0.74	H	53.22	68.20	14.98	PK

Band : UNII 4			Operation Mode : 802.11a				
CH.177 5885 MHz			Transfer Rate : 6M				
Frequency [MHz]	Measured value [dBμV]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11770	58.85	-3.30	V	55.55	73.98	18.43	PK
11770	45.66	-3.30	V	42.36	53.98	11.62	AV
17655	52.55	1.20	V	53.75	68.20	14.45	PK
11770	57.79	-3.30	H	54.49	73.98	19.49	PK
11770	44.42	-3.30	H	41.12	53.98	12.86	AV
17655	52.48	1.20	H	53.68	68.20	14.52	PK

[Simultaneous transmission Scenario]

Scenario 1

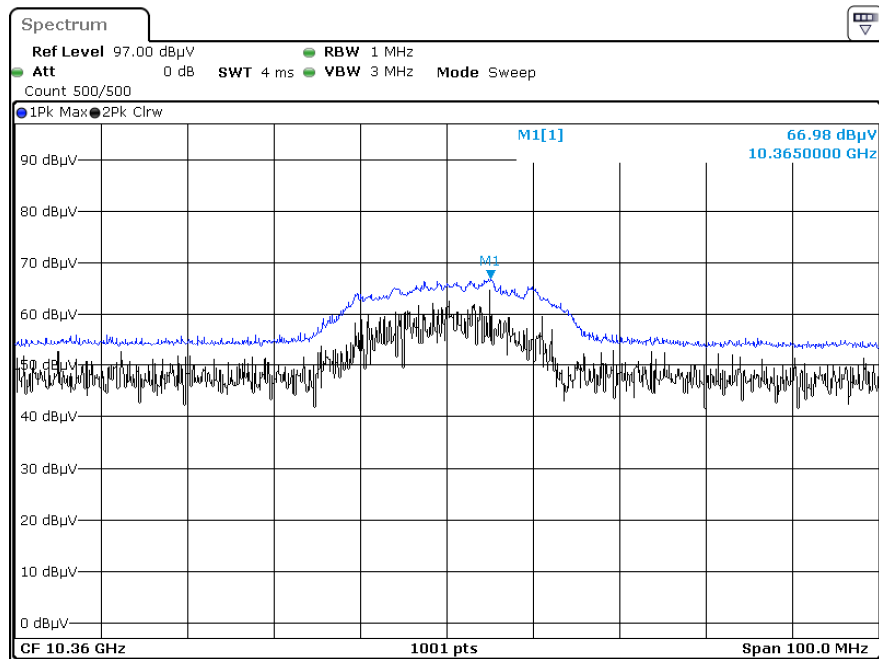
BT LE 1M 37 byte Ch.37 + UNII 802.11a 6 Mbps Ch.36

Frequency	Measured value	CL+AF+DF-AG	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
10360	66.57	-3.27	V	63.30	68.20	4.90	PK
15540	52.44	-1.27	V	51.17	73.98	22.81	PK
15540	39.06	-1.27	V	37.79	53.98	16.19	AV
10360	60.21	-3.27	H	56.94	68.20	11.26	PK
15540	52.61	-1.27	H	51.34	73.98	22.64	PK
15540	39.17	-1.27	H	37.90	53.98	16.08	AV

Test Plots

Note: Only the worst case plot for Radiated Spurious Emissions.

Radiated Spurious Emissions plot – Peak Result (802.11a, Ch.36 Spurious Emissions, X-V)

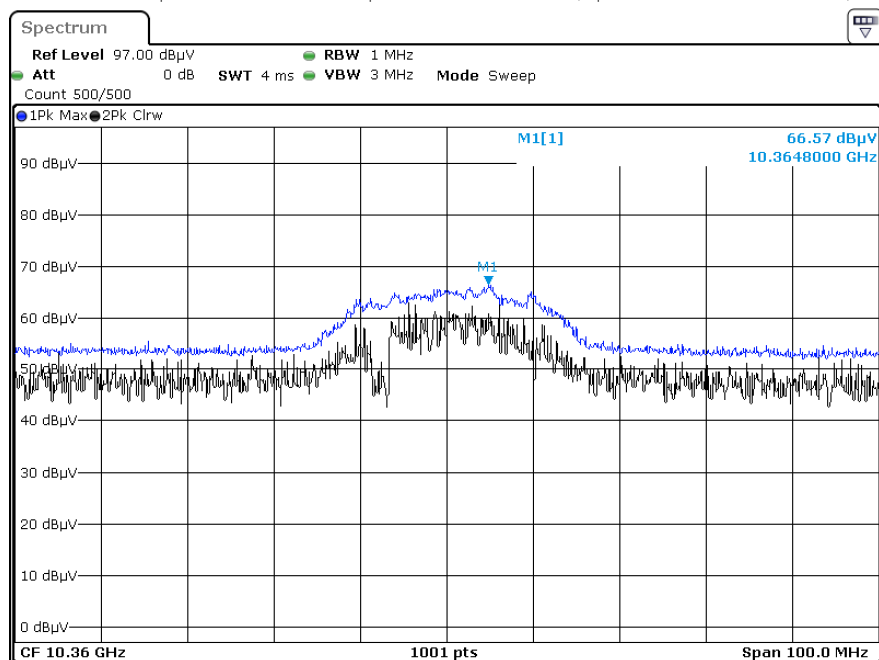


[Simultaneous transmission Scenario]

Scenario 1

BT LE 1M 37 byte Ch.37 + UNII 802.11a 6 Mbps Ch.36

Radiated Spurious Emissions plot – Peak Result (Spurious Emissions, X-V)



10.9 RADIATED RESTRICTED BAND EDGE

Operation Mode :	802.11a_20	Tone & RU Index :	-	Transfer Rate :	6M	
Channel No. :	36	Frequency :	5180 MHz	Band :	UNII-1	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4500 - 5150	67.10	H	67.10	73.98	6.88	PK
4500 - 5150	51.12	H	51.12	53.98	2.86	AV

Operation Mode :	802.11n_20	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	36	Frequency :	5180 MHz	Band :	UNII-1	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4500 - 5150	67.75	H	67.75	73.98	6.23	PK
4500 - 5150	51.57	H	51.57	53.98	2.41	AV

Operation Mode :	802.11ac_20	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	36	Frequency :	5180 MHz	Band :	UNII-1	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4500 - 5150	67.48	H	67.48	73.98	6.50	PK
4500 - 5150	51.18	H	51.18	53.98	2.80	AV

Operation Mode :	802.11a_20	Tone & RU Index :	-	Transfer Rate :	6M	
Channel No. :	40	Frequency :	5200 MHz	Band :	UNII-1	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4500 - 5150	65.15	H	65.15	73.98	8.83	PK
4500 - 5150	50.71	H	50.71	53.98	3.27	AV

Operation Mode :	802.11n_20	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	40	Frequency :	5200 MHz	Band :	UNII-1	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4500 - 5150	67.14	H	67.14	73.98	6.84	PK
4500 - 5150	50.47	H	50.47	53.98	3.51	AV

Operation Mode :		802.11ac_20		Tone & RU Index :		-		MCS index :		MCS0			
Channel No. :		40		Frequency :		5200 MHz		Band :		UNII-1			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
4500 - 5150		68.28		H		68.28		73.98		5.70		PK	
4500 - 5150		50.80		H		50.80		53.98		3.18		AV	

Operation Mode :		802.11n_40		Tone & RU Index :		-		MCS index :		MCS0			
Channel No. :		38		Frequency :		5190 MHz		Band :		UNII-1			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
4500 - 5150		66.54		H		66.54		73.98		7.44		PK	
4500 - 5150		50.53		H		50.53		53.98		3.45		AV	

Operation Mode :		802.11ac_40		Tone & RU Index :		-		MCS index :		MCS0			
Channel No. :		38		Frequency :		5190 MHz		Band :		UNII-1			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
4500 - 5150		66.23		H		66.23		73.98		7.75		PK	
4500 - 5150		51.19		H		51.19		53.98		2.79		AV	

Operation Mode :		802.11n_40		Tone & RU Index :		-		MCS index :		MCS0			
Channel No. :		46		Frequency :		5230 MHz		Band :		UNII-1			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
4500 - 5150		65.06		H		65.06		73.98		8.92		PK	
4500 - 5150		49.36		H		49.36		53.98		4.62		AV	

Operation Mode: 802.11ac_40		Tone & RU Index: -		MCS index: MCS0		
Channel No.: 46		Frequency: 5230 MHz		Band: UNII-1		
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4500 - 5150	62.60	H	62.60	73.98	11.38	PK
4500 - 5150	49.03	H	49.03	53.98	4.95	AV

Operation Mode :	802.11ac_80	Tone & RU Index :		MCS index :		MCS0
Channel No. :	42	Frequency :		5210 MHz	Band :	UNII-1
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4500 - 5150	67.91	H	67.91	73.98	6.07	PK
4500 - 5150	51.29	H	51.29	53.98	2.69	AV

Operation Mode :		802.11a_20		Tone & RU Index :		-		Transfer Rate :		6M			
Channel No. :		64		Frequency :		5320 MHz		Band :		UNII-2A			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
5350 - 5460		67.14		H		67.14		73.98		6.84		PK	
5350 - 5460		50.87		H		50.87		53.98		3.11		AV	

Operation Mode :	802.11n_20	Tone & RU Index :	-	MCS index :		MCS0
Channel No. :	64	Frequency :	5320 MHz	Band :		UNII-2A
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	66.77	H	66.77	73.98	7.21	PK
5350 - 5460	50.97	H	50.97	53.98	3.01	AV

Operation Mode :		802.11ac_20		Tone & RU Index :		-		MCS index :		MCS0			
Channel No. :		64		Frequency :		5320 MHz		Band :		UNII-2A			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
5350 - 5460		67.75		H		67.75		73.98		6.23		PK	
5350 - 5460		51.26		H		51.26		53.98		2.72		AV	

Operation Mode :		802.11a_20	Tone & RU Index :		-	Transfer Rate :		6M
Channel No. :		60	Frequency :		5300 MHz	Band :		UNII-2A
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type		
5350 - 5460	62.58	H	62.58	73.98	11.40	PK		
5350 - 5460	49.84	H	49.84	53.98	4.14	AV		

Operation Mode :	802.11n_20	Tone & RU Index :	-		MCS index :	MCS0
Channel No. :	60	Frequency :	5300 MHz		Band :	UNII-2A
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	62.56	H	62.56	73.98	11.42	PK
5350 - 5460	49.35	H	49.35	53.98	4.63	AV

Operation Mode : 802.11ac_20		Tone & RU Index : -		MCS index : MCS0		
Channel No. : 60		Frequency : 5300 MHz		Band : UNII-2A		
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	63.05	H	63.05	73.98	10.93	PK
5350 - 5460	49.44	H	49.44	53.98	4.54	AV

Operation Mode: 802.11n_40		Tone & RU Index: -		MCS index: MCS0		
Channel No.: 62		Frequency: 5310 MHz		Band: UNII-2A		
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	66.35	H	66.35	73.98	7.63	PK
5350 - 5460	50.31	H	50.31	53.98	3.67	AV

Operation Mode : 802.11ac_40		Tone & RU Index : -		MCS index : MCS0		
Channel No. : 62		Frequency : 5310 MHz		Band : UNII-2A		
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	66.60	H	66.60	73.98	7.38	PK
5350 - 5460	50.03	H	50.03	53.98	3.95	AV

Operation Mode :	802.11n_40	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	54	Frequency :	5270 MHz	Band :	UNII-2A	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	62.16	H	62.16	73.98	11.82	PK
5350 - 5460	48.79	H	48.79	53.98	5.19	AV

Operation Mode :	802.11ac_40	Tone & RU Index :		-	MCS index :	MCS0
Channel No. :	54	Frequency :		5270 MHz	Band :	UNII-2A
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	61.86	H	61.86	73.98	12.12	PK
5350 - 5460	48.56	H	48.56	53.98	5.42	AV

Operation Mode :		802.11ac_80		Tone & RU Index :		-		MCS index :		MCS0			
Channel No. :		58		Frequency :		5290 MHz		Band :		UNII-2A			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
5350 - 5460		65.93		H		65.93		73.98		8.05		PK	
5350 - 5460		51.97		H		51.97		53.98		2.01		AV	

Operation Mode :	802.11a_20	Tone & RU Index :	-	Transfer Rate :	6M	
Channel No. :	100	Frequency :	5500 MHz	Band :	UNII-2C	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	63.07	H	63.07	73.98	10.91	PK
5350 - 5460	49.08	H	49.08	53.98	4.90	AV
5460 - 5470	65.77	H	65.77	68.20	2.43	PK

Operation Mode :		802.11n_20		Tone & RU Index :		-		MCS index :		MCS0			
Channel No. :		100		Frequency :		5500 MHz		Band :		UNII-2C			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
5350 - 5460		62.20		H		62.20		73.98		11.78		PK	
5350 - 5460		48.79		H		48.79		53.98		5.19		AV	
5460 - 5470		65.46		H		65.46		68.20		2.74		PK	

Operation Mode :		802.11ac_20	Tone & RU Index :		-	MCS index :	MCS0
Channel No. :		100	Frequency :		5500 MHz	Band :	UNII-2C
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type	
5350 - 5460	62.66	H	62.66	73.98	11.32	PK	
5350 - 5460	48.83	H	48.83	53.98	5.15	AV	
5460 - 5470	65.72	H	65.72	68.20	2.48	PK	

Operation Mode :	802.11a_20	Tone & RU Index :	-	Transfer Rate :	6M	
Channel No. :	104	Frequency :	5520 MHz	Band :	UNII-2C	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	63.76	H	63.76	73.98	10.22	PK
5350 - 5460	50.54	H	50.54	53.98	3.44	AV
5460 - 5470	65.54	H	65.54	68.20	2.66	PK

Operation Mode :	802.11n_20	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	104	Frequency :	5520 MHz	Band :	UNII-2C	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	64.99	H	64.99	73.98	8.99	PK
5350 - 5460	50.47	H	50.47	53.98	3.51	AV
5460 - 5470	65.13	H	65.13	68.20	3.07	PK

Operation Mode :	802.11ac_20	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	104	Frequency :	5520 MHz	Band :	UNII-2C	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	64.46	H	64.46	73.98	9.52	PK
5350 - 5460	50.58	H	50.58	53.98	3.40	AV
5460 - 5470	64.67	H	64.67	68.20	3.53	PK

Operation Mode :	802.11n_40	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	102	Frequency :	5510 MHz	Band :	UNII-2C	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	64.16	H	64.16	73.98	9.82	PK
5350 - 5460	48.36	H	48.36	53.98	5.62	AV
5460 - 5470	65.47	H	65.47	68.20	2.73	PK

Operation Mode :	802.11ac_40	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	102	Frequency :	5510 MHz	Band :	UNII-2C	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	62.21	H	62.21	73.98	11.77	PK
5350 - 5460	48.17	H	48.17	53.98	5.81	AV
5460 - 5470	65.13	H	65.13	68.20	3.07	PK

Operation Mode :	802.11n_40	Tone & RU Index :	-	MCS index :	MCS0	
Channel No. :	110	Frequency :	5550 MHz	Band :	UNII-2C	
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	61.71	H	61.71	73.98	12.27	PK
5350 - 5460	49.03	H	49.03	53.98	4.95	AV
5460 - 5470	64.68	H	64.68	68.20	3.52	PK

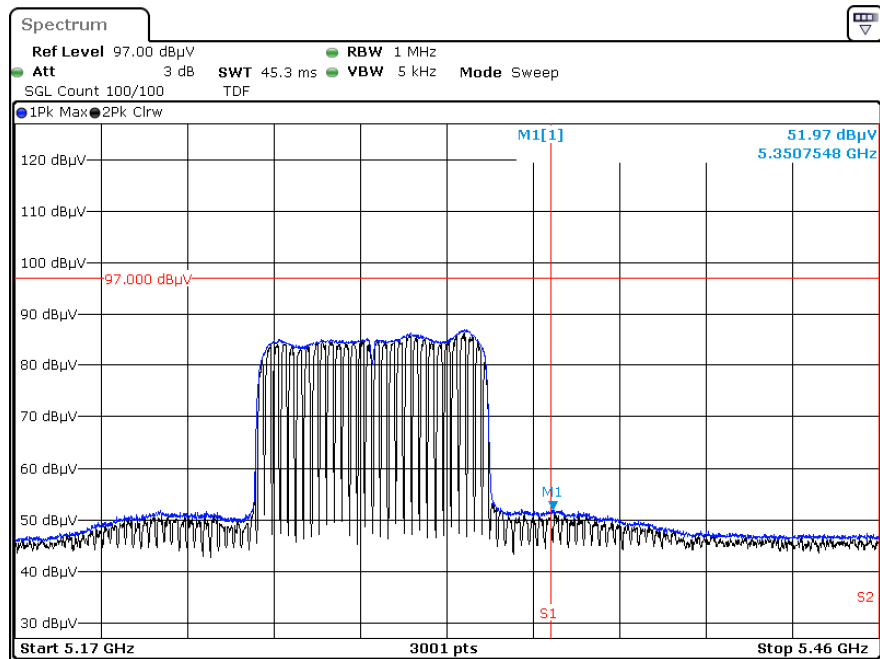
Operation Mode :	802.11ac_40	Tone & RU Index :	-		MCS index :	MCS0
Channel No. :	110	Frequency :	5550 MHz		Band :	UNII-2C
Frequency [MHz]	Measured Value [dBμV]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350 - 5460	62.43	H	62.43	73.98	11.55	PK
5350 - 5460	49.29	H	49.29	53.98	4.69	AV
5460 - 5470	64.95	H	64.95	68.20	3.25	PK

Operation Mode :		802.11ac_80		Tone & RU Index :		- MCS index :		MCS0					
Channel No. :		106		Frequency :		5530 MHz		Band : UNII-2C					
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
5350 - 5460		64.64		H		64.64		73.98		9.34		PK	
5350 - 5460		50.43		H		50.43		53.98		3.55		AV	
5460 - 5470		65.68		H		65.68		68.20		2.52		PK	

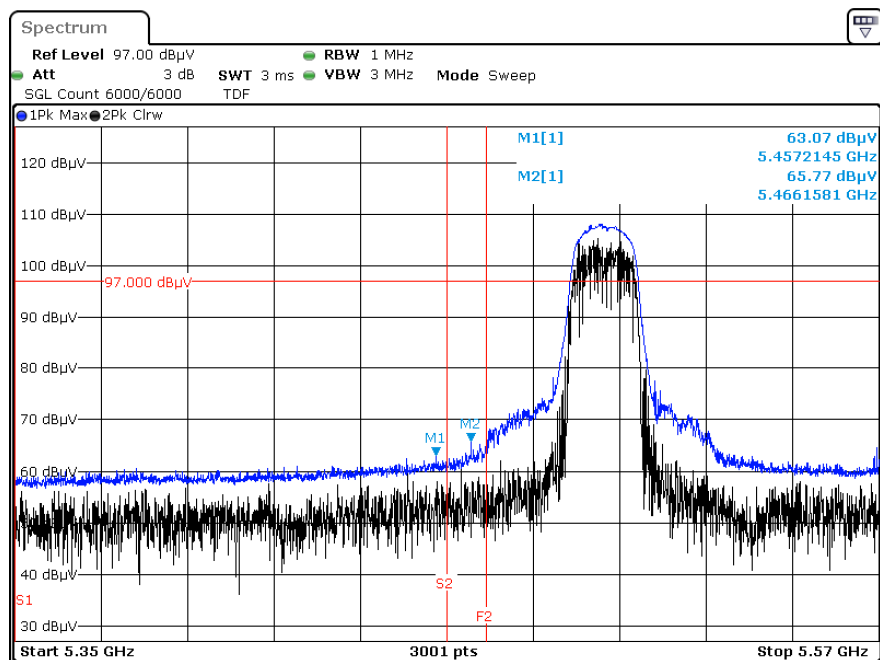
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Channel No. :		122		Frequency :		5610 MHz		Band :		UNII-2C			
Frequency [MHz]		Measured Value [dBμV]		ANT. POL [H/V]		Total [dBμV/m]		Limit [dBμV/m]		Margin [dB]		Measurement Type	
5350 - 5460		63.56		H		63.56		73.98		10.42		PK	
5350 - 5460		48.59		V		48.59		53.98		5.39		AV	
5460 - 5470		65.03		H		65.03		68.20		3.17		PK	

■ Test Plots(UNII 1, 2A, 2C)

Average Result (802.11ac80_ MCS0, Ch. 58, X-H)



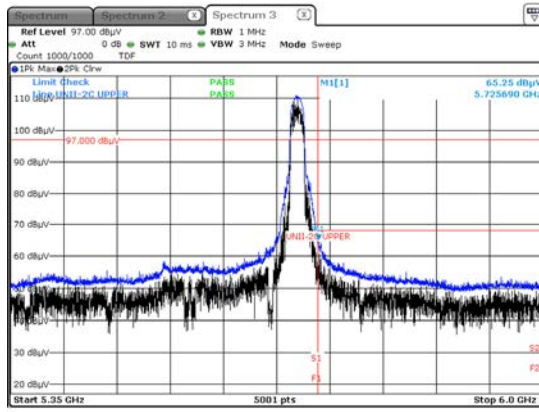
Peak Result (802.11ac80_ MCS0, Ch. 100, X-H)



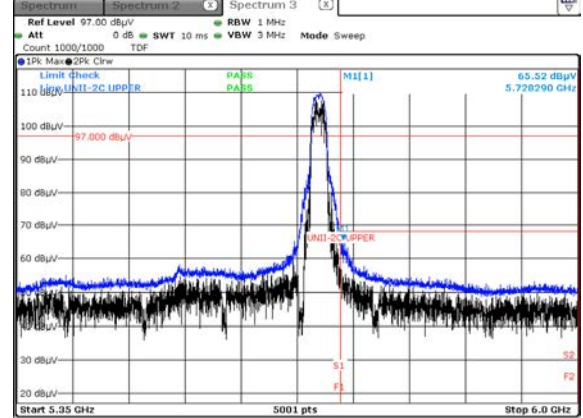
Note: Only the worst case plots for Radiated Restricted Band Edge.

▣ Test Plots(UNII2C_Upper)

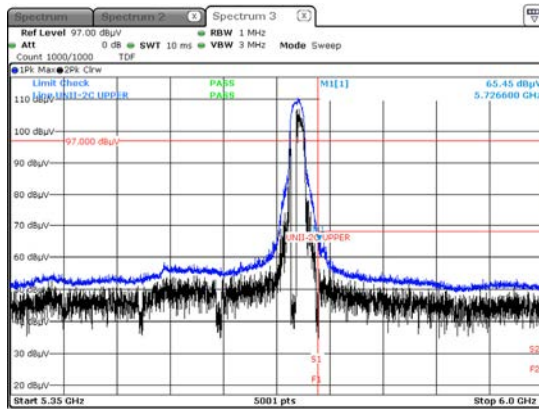
Peak Result (802.11a, Ch.140, X-H)



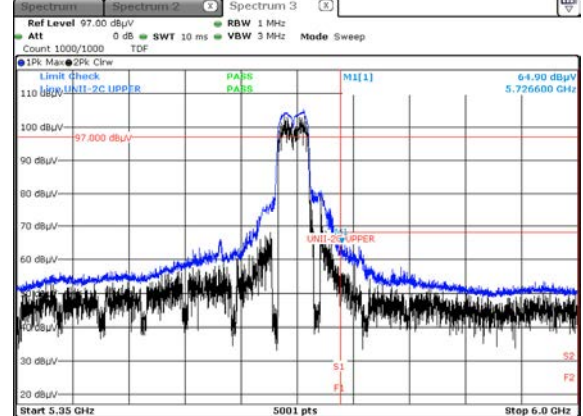
Peak Result (802.11n_HT20, Ch.140, X-H)



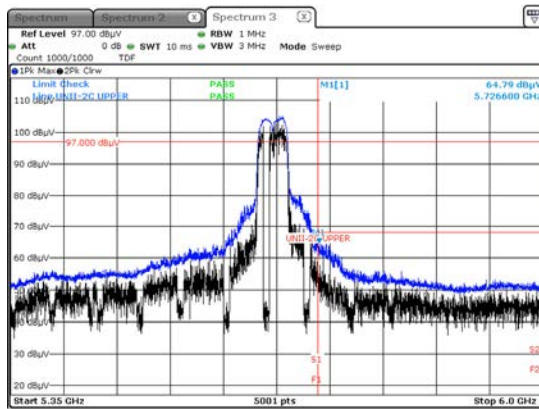
Peak Result (802.11ac_VHT20, Ch.140, X-H)



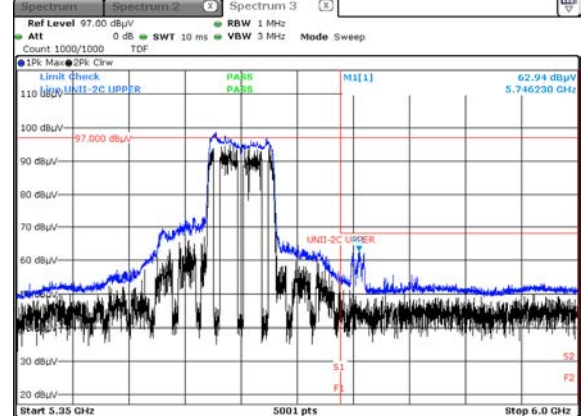
Peak Result (802.11n_HT40, Ch.134, X-H)



Peak Result (802.11ac_VHT40, Ch.134, X-H)

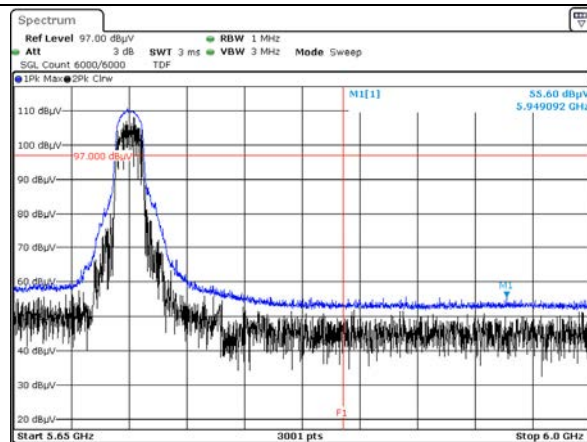


Peak Result (802.11ac_VHT80, Ch.122, X-H)

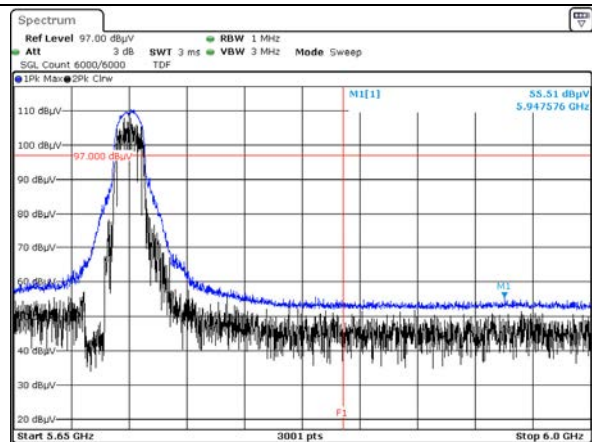


Test Plots(Straddle Channel)

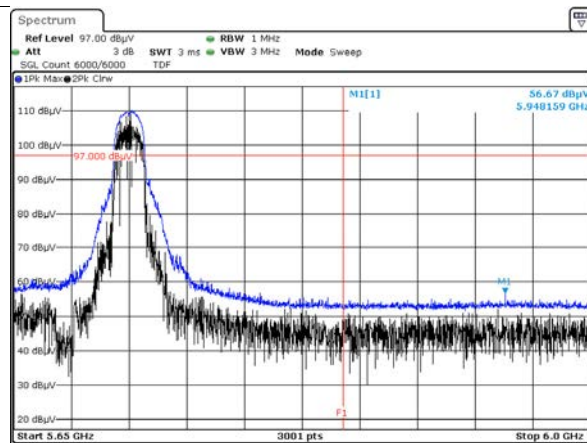
Peak Result (802.11a, Ch.144, X-H)



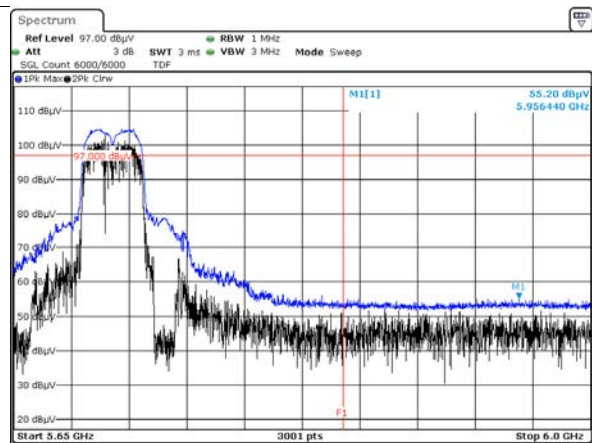
Peak Result (802.11n_HT20, Ch.144, X-H)



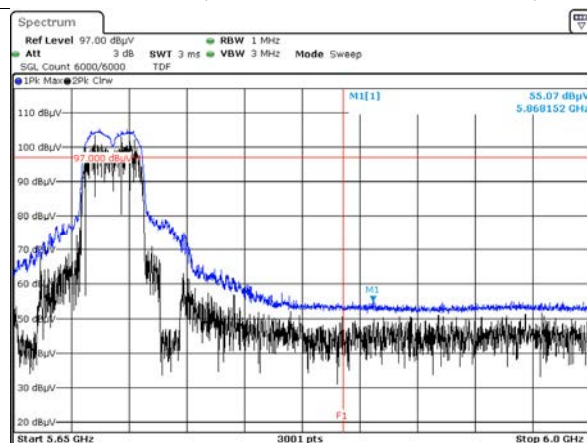
Peak Result (802.11ac_VHT20, Ch.144, X-H)



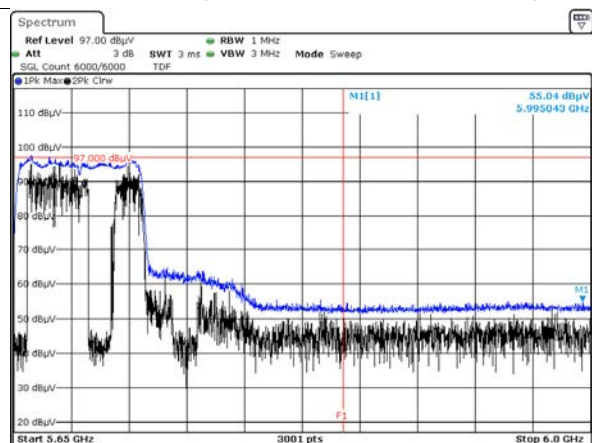
Peak Result (802.11n_HT40, Ch.142, X-H)



Peak Result (802.11ac_VHT40, Ch.142, X-H)



Peak Result (802.11ac_VHT80, Ch.138, X-H)

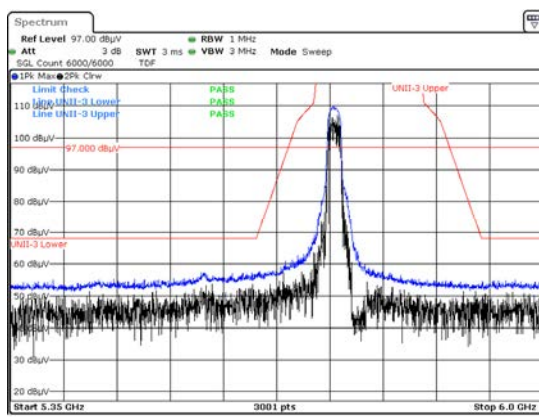


Note:

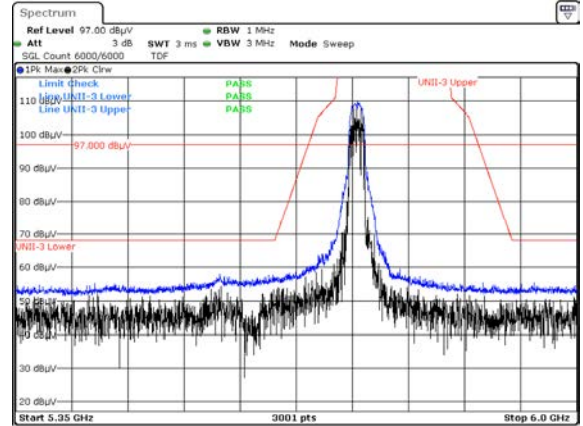
1. Only the worst case plots for Radiated Restricted Band Edge.
2. Red line : 5 850 MHz

Test Plots(UNII 3)

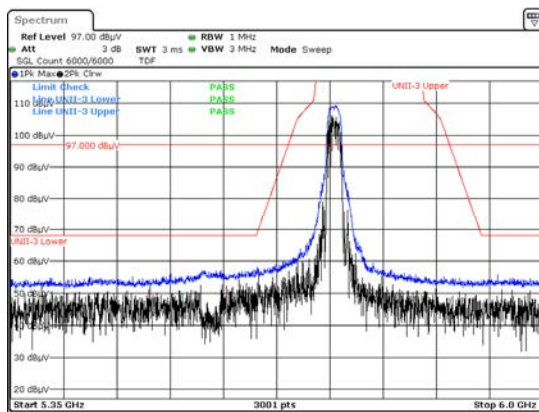
Peak Result (802.11a, Ch.149, X-H)



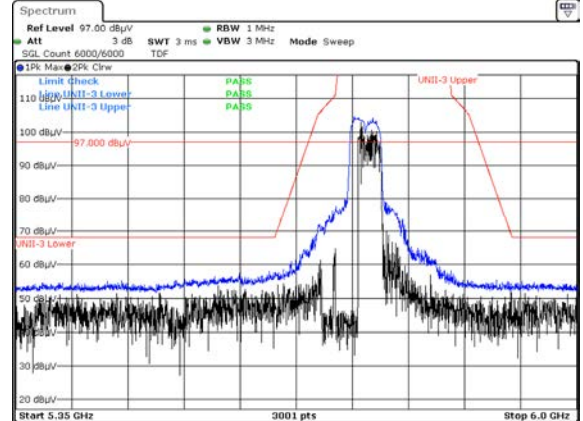
Peak Result (802.11n_HT20, Ch.149, X-H)



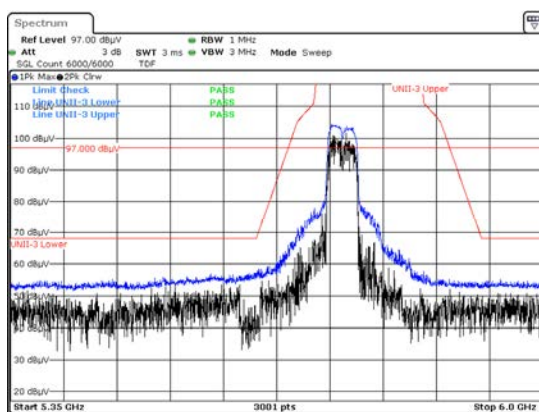
Peak Result (802.11ac_VHT20, Ch.149, X-H)



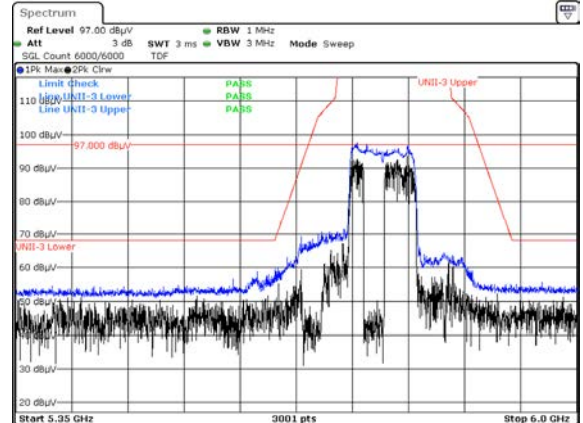
Peak Result (802.11n_HT40, Ch.151, X-H)



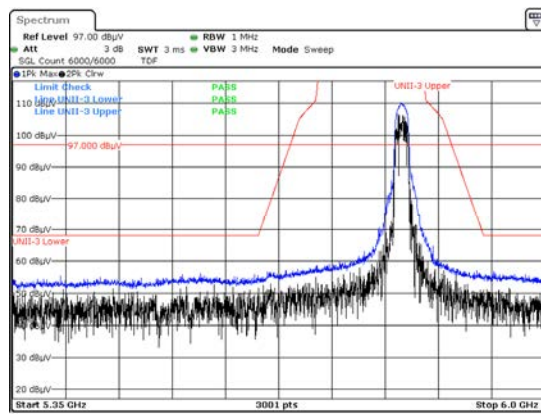
Peak Result (802.11ac_VHT40, Ch.151, X-H)



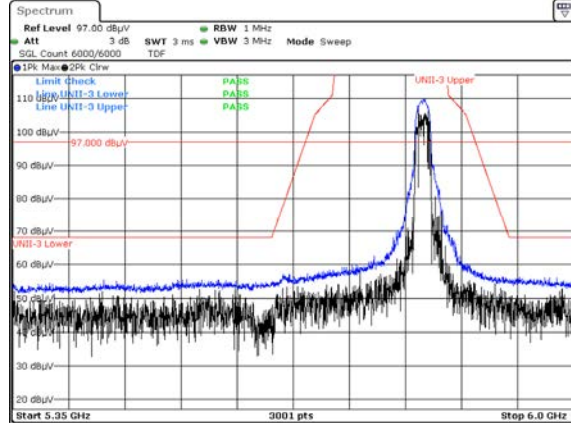
Peak Result (802.11ac_VHT80, Ch.155, X-H)



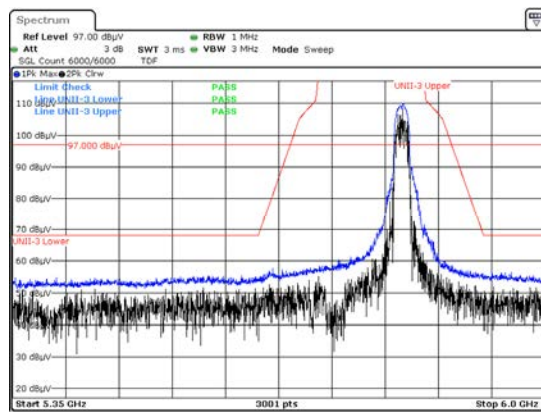
Peak Result (802.11a, Ch.165, X-H)



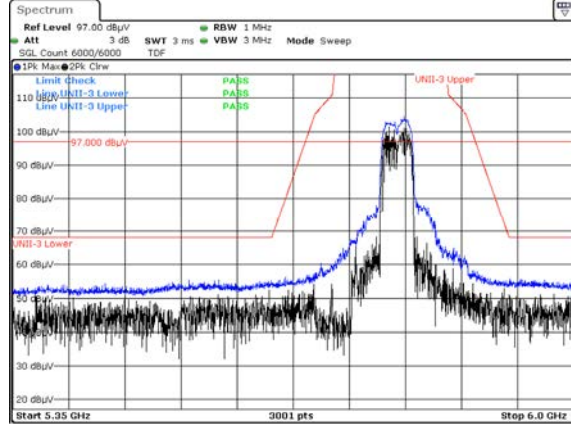
Peak Result (802.11n_HT20, Ch.165, X-H)



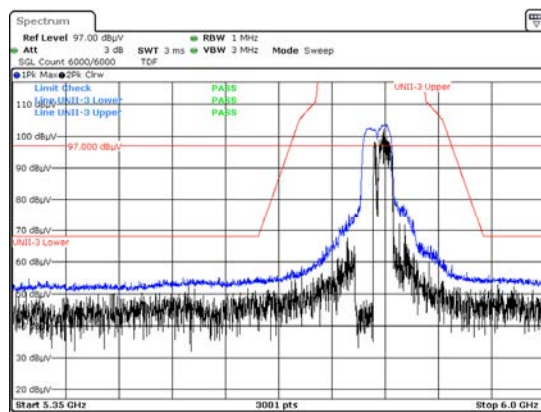
Peak Result (802.11ac_VHT20, Ch.165, X-H)



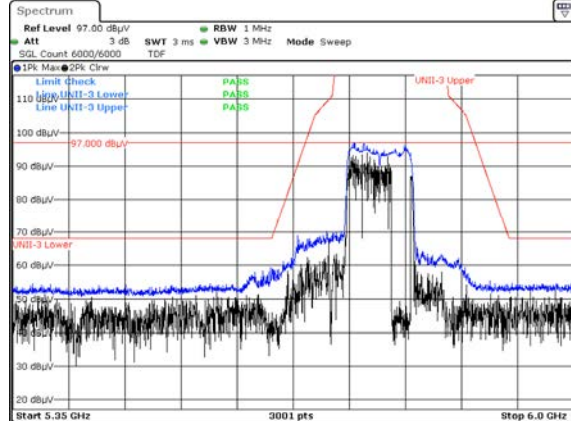
Peak Result (802.11n_HT40, Ch.159, X-H)



Peak Result (802.11ac_VHT40, Ch.159, X-H)



Peak Result (802.11ac_VHT80, Ch.155, X-H)



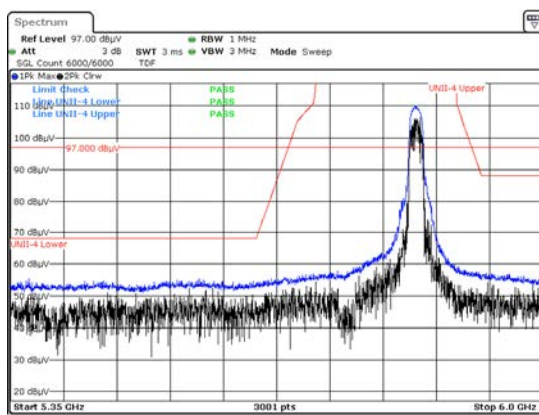
Note:

1. Only the worst case plots for U-NII-3 Out of Band e.i.r.p Emission.

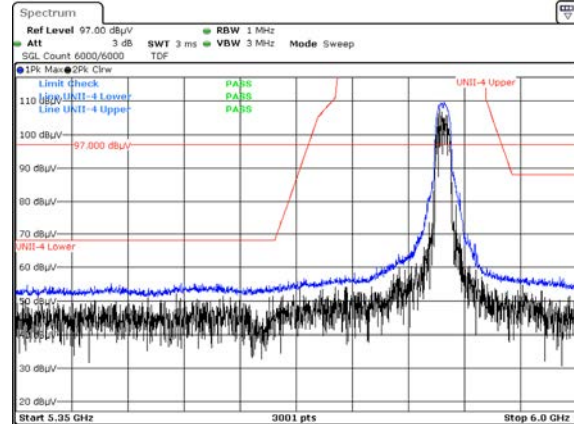
Test Plots(UNII 4) – O.O.B.E

Peak Result

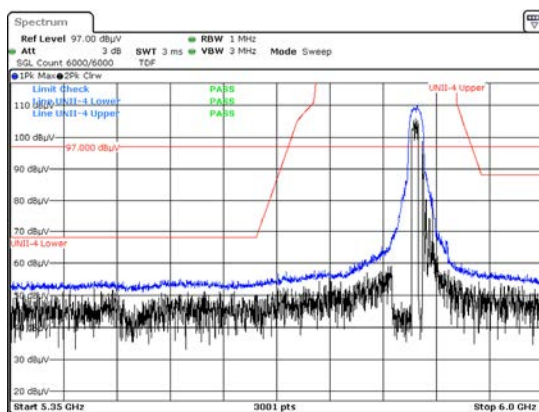
Peak Result (802.11a, Ch.169, X-H)



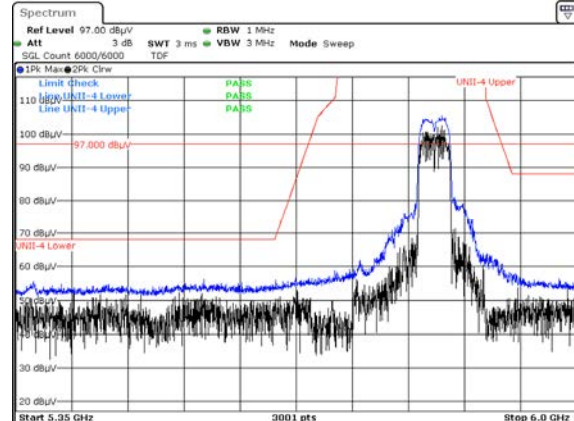
Peak Result (802.11n_HT20, Ch.169, X-H)



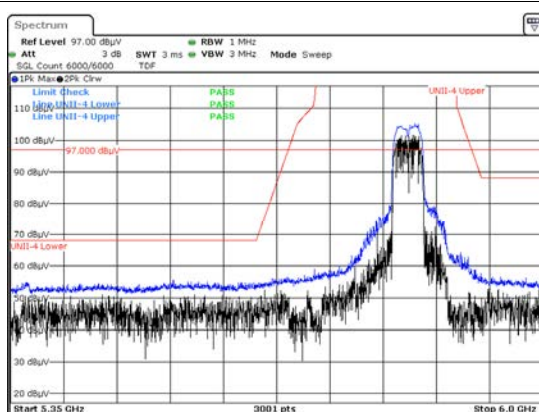
Peak Result (802.11ac_VHT20, Ch.169, X-H)



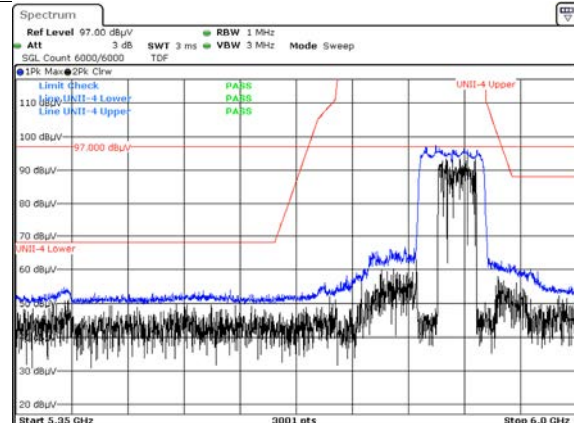
Peak Result (802.11n_HT40, Ch.167, X-H)



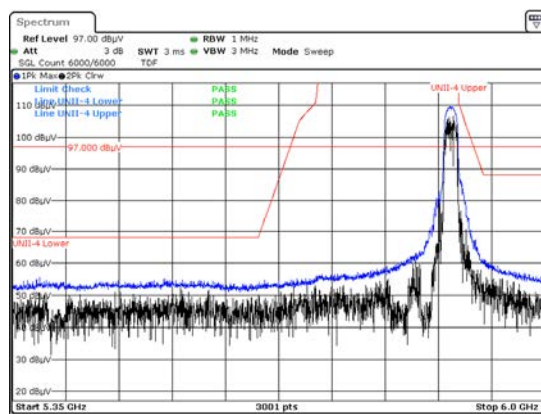
Peak Result (802.11ac_VHT40, Ch.167, X-H)



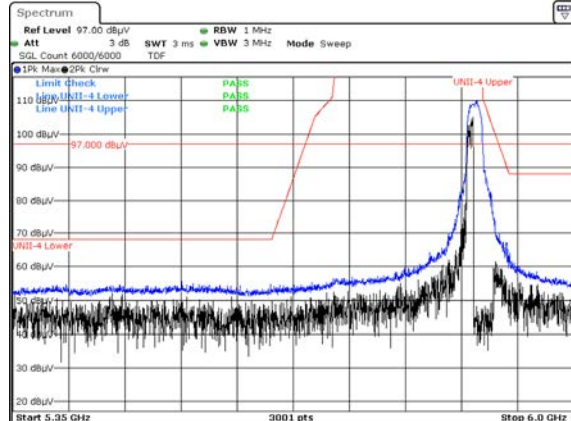
Peak Result (802.11ac_VHT80, Ch.171, X-H)



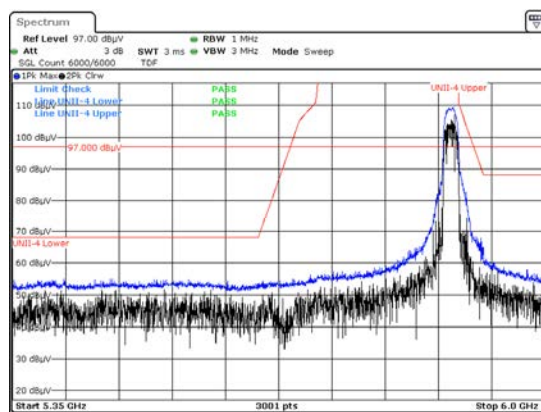
Peak Result (802.11a, Ch.177, X-H)



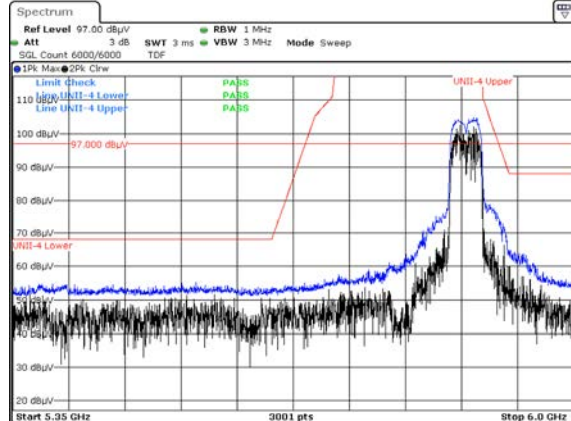
Peak Result (802.11n_HT20, Ch.177, X-H)



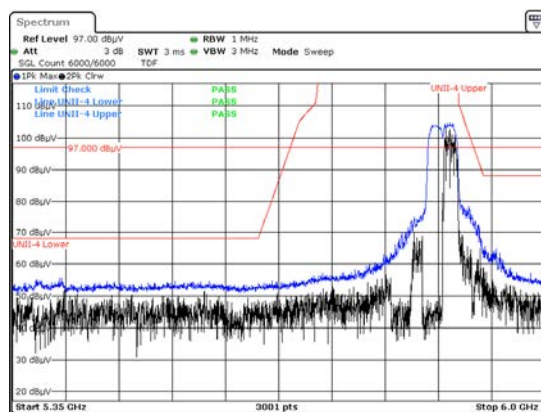
Peak Result (802.11ac_VHT20, Ch.177, X-H)



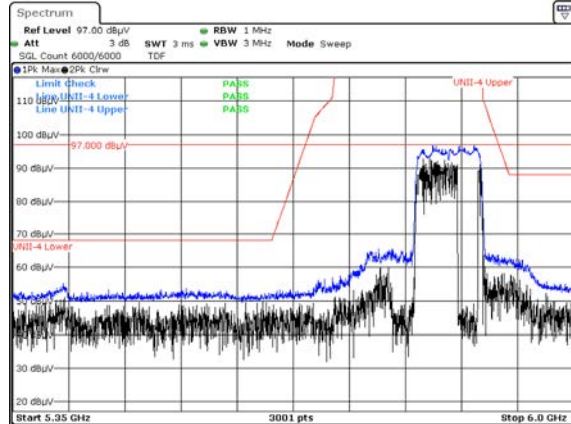
Peak Result (802.11n_HT40, Ch.175, X-H)



Peak Result (802.11ac_VHT40, Ch.175, X-H)



Peak Result (802.11ac_VHT80, Ch.171, X-H)

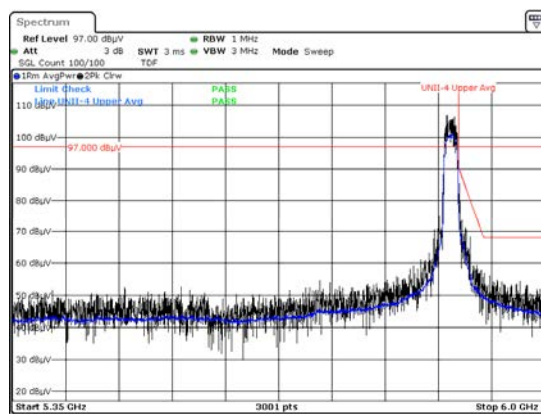


Note:

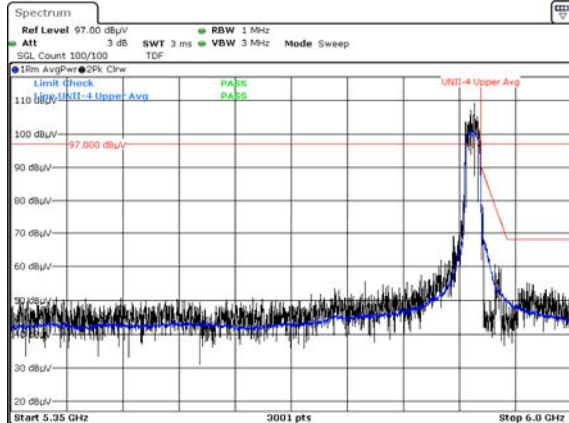
- Only the worst case plots for U-NII-4 O.O.B.E

Average Result

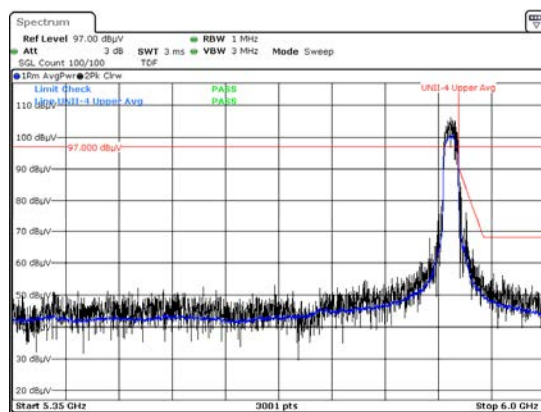
Average Result (802.11a, Ch.177, X-H)



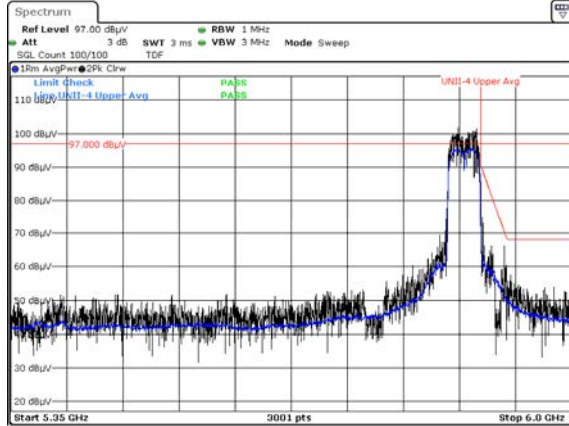
Average Result (802.11n_HT20, Ch.177, X-H)



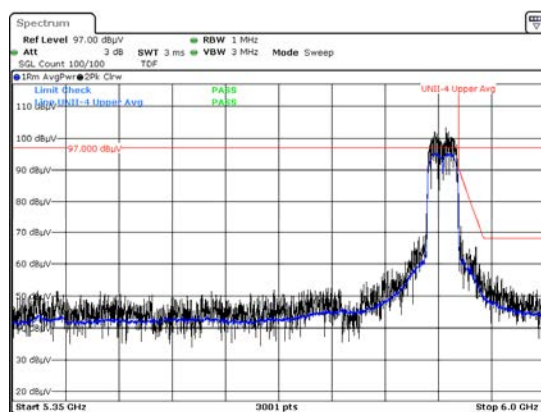
Average Result (802.11ac_VHT20, Ch.177, X-H)



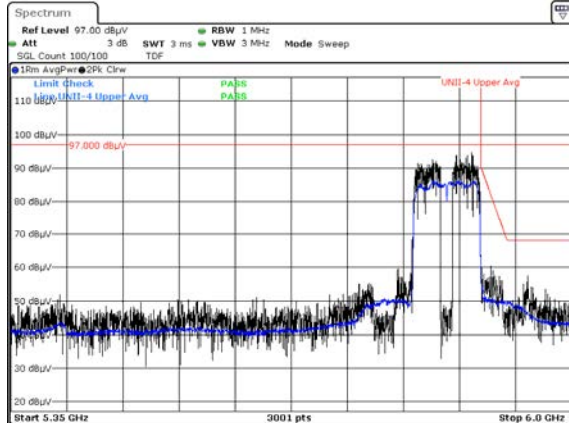
Average Result (802.11n_HT40, Ch.175, X-H)



Average Result (802.11ac_VHT40, Ch.175, X-H)



Average Result (802.11ac_VHT80, Ch.171, X-H)



Note:

1. Only the worst case plots for U-NII-4 O.O.B.E

10.10 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions

Test

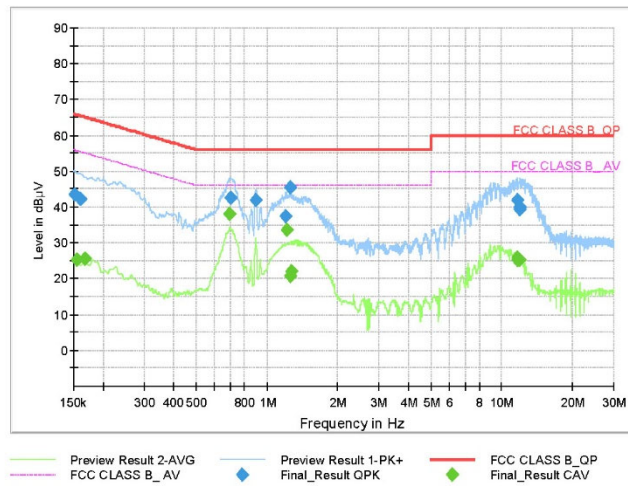
1 / 1

Test Report

Common Information

EUT : SM-A176U
Operating Conditions : 5G WLAN Mode
Comment :

Full Spectrum



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1523	43.64	65.88	22.23	9.000	N	9.7
0.1613	42.20	65.40	23.20	9.000	L1	9.8
0.6980	42.61	56.00	13.39	9.000	L1	9.8
0.9005	42.07	56.00	13.93	9.000	N	9.7
1.2065	37.28	56.00	18.72	9.000	L1	9.8
1.2560	45.36	56.00	10.64	9.000	L1	9.8
11.6735	41.87	60.00	18.13	9.000	L1	10.2
11.8828	39.36	60.00	20.64	9.000	L1	10.2
11.9750	39.99	60.00	20.01	9.000	L1	10.2

Final_Result_CAV

Frequency (MHz)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1545	25.12	55.75	30.63	9.000	N	9.7
0.1680	25.53	55.06	29.53	9.000	L1	9.8
0.6958	38.01	46.00	7.99	9.000	L1	9.8
1.2155	33.67	46.00	12.33	9.000	L1	9.8
1.2538	20.92	46.00	25.08	9.000	L1	9.8
1.2785	22.12	46.00	23.88	9.000	L1	9.8
11.6308	25.78	50.00	24.22	9.000	L1	10.2
11.6713	25.27	50.00	24.73	9.000	L1	10.2
11.9773	25.26	50.00	24.74	9.000	L1	10.2

2025-09-23

오전 9:22:50

11. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	07/15/2026	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	08/20/2026	Annual
Temperature Chamber	SU-642	ESPEC	0093008124	02/11/2026	Annual
Signal Analyzer	N9030A	Agilent	MY49431210	12/12/2025	Annual
Power Meter	N1911A	Agilent	MY45100523	02/21/2026	Annual
Power Sensor	N1921A	Agilent	MY57820067	02/04/2026	Annual
Directional Coupler	87300B	Agilent	3116A03621	10/14/2026	Annual
Power Splitter	11667B	Hewlett Packard	5001	04/10/2026	Annual
DC Power Supply	E3632A	H.P	KR75303243	04/16/2026	Annual
Attenuator(10 dB)	8493C	Hewlett Packard	07560	05/27/2026	Annual
Bluetooth Tester	CBT	Rohde & Schwarz	100752	12/27/2025	Annual
Software	EMC32	Rohde & Schwarz	N/A	N/A	N/A
Automation Software	FCC WLAN Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC Bluetooth Conducted	HCT CO., LTD	-	-	-

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

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Controller (Antenna mast & Turn Table)	CO3000	Innco system	CO3000/1031/ 41190717/P	N/A	N/A
Antenna Mast	MA4640	Innco system	S2AM	07/25/2026	Annual
Turn Table	DS2000-S	Innco system	N/A	N/A	N/A
Loop Antenna	FMZB 1513	Rohde & Schwarz	1513-333	03/07/2026	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	760	02/17/2027	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	02299	01/29/2026	Biennial
Horn Antenna (15GHz ~ 40 GHz)	BBHA9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial
Spectrum Analyzer	FSV40	Rohde & Schwarz	100901	02/21/2026	Annual
Signal Analyzer	N9030A	Agilent	MY52350879	03/25/2026	Annual
Attenuator(3 dB)	18B-03	Api tech.	1	04/21/2026	Annual
Band Reject Filter	WRCJV12-4900-5100-5900- 6100-50SS	Wainwright Instruments	5	05/27/2026	Annual
Band Reject Filter	WRCJV12-4900-5100-5900- 6100-50SS	Wainwright Instruments	6	05/27/2026	Annual
Band Reject Filter	WRCJV2400/2483.5- 2370/2520-60/12SS	Wainwright Instruments	2	12/26/2025	Annual
Band Reject Filter	WRCJV5100/5850-40/50- 8EEK	Wainwright Instruments	1	01/09/2026	Annual
RF Switching System	FMSR-04B (3G HPF+LNA)	T&M SYSTEM	S2L1	12/23/2025	Annual
RF Switching System	FMSR-04B (10dB ATT+LNA)	T&M SYSTEM	S2L2	12/23/2025	Annual
RF Switching System	FMSR-04B (3dB ATT+LNA)	T&M SYSTEM	S2L3	12/23/2025	Annual
RF Switching System	FMSR-04B (LNA)	T&M SYSTEM	S2L4	12/23/2025	Annual
RF Switching System	FMSR-04B (7G HPF+LNA)	T&M SYSTEM	S2L5	12/23/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	10/21/2026	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/19/2026	Annual
Bluetooth Tester	TC-3000C	TESCOM	3000C000175	03/12/2026	Annual
Automation Software	FCC WLAN Radiated	HCT CO., LTD	-	-	-

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-2510-FC041-P