

# FCC UNII REPORT

## Certification

**Applicant Name:**  
SAMSUNG Electronics Co., Ltd.

**Address:**  
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**Date of Issue:**  
March 04, 2022

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

**Report No.:** HCT-RF-2203-FC001

<b>FCC ID:</b>	<b>A3LSMM536B</b>
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<b>APPLICANT:</b>	<b>SAMSUNG Electronics Co., Ltd.</b>
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**Model:** SM-M536B/DSN

**Additional Model:** -

**EUT Type:** Mobile Phone

**Modulation type** OFDM

**FCC Classification:** Unlicensed National Information Infrastructure(NII)

**FCC Rule Part(s):** Part 15.407

**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.

Report No.: HCT-RF-2203-FC001

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REVIEWED BY



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Report prepared by : Jeong Ho Kim  
Engineer of Telecommunication Testing Center

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

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

This laboratory is not accredited for the test results marked \*.

The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

\* The report shall not be reproduced except in full(only partly) without approval of the laboratory.

## Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2203-FC001	March 04, 2022	- First Approval Report

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## 1. GENERAL INFORMATION

### EUT DESCRIPTION

<b>Model</b>	SM-M536B/DSN	
<b>Additional Model</b>	-	
<b>EUT Type</b>	Mobile Phone	
<b>Power Supply</b>	DC 3.88 V	
<b>Modulation Type</b>	OFDM : 802.11a, 802.11n, 802.11ac	
<b>Frequency Range (MHz)</b>	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
<b>Straddle channel</b>	Supported	
<b>TDWR Band</b>	Supported	
<b>Dynamic Frequency Selection</b>	Slave without radar detection	
<b>Date(s) of Tests</b>	January 24, 2022~ March 04, 2022	
<b>Serial number</b>	Radiated: R3CRC0LNPCK Conducted: R3CRC0LNSAX	

**2. MAXIMUM OUTPUT POWER**

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

Band	Mode	Power	
		(dBm)	(W)
UNII1	802.11a	15.58	0.036
	802.11n (HT20)	14.48	0.028
	802.11n (HT40)	13.40	0.022
	802.11ac (VHT20)	14.48	0.028
	802.11ac (VHT40)	13.41	0.022
	802.11ac (VHT80)	8.32	0.007
UNII2A	802.11a	15.63	0.037
	802.11n (HT20)	14.73	0.030
	802.11n (HT40)	13.77	0.024
	802.11ac (VHT20)	14.70	0.029
	802.11ac (VHT40)	13.85	0.024
	802.11ac (VHT80)	8.03	0.006
UNII2C	802.11a	16.08	0.041
	802.11n (HT20)	15.13	0.033
	802.11n (HT40)	14.10	0.026
	802.11ac (VHT20)	15.18	0.033
	802.11ac (VHT40)	14.17	0.026
	802.11ac (VHT80)	12.68	0.019
UNII3	802.11a	15.55	0.036
	802.11n (HT20)	14.67	0.029
	802.11n (HT40)	13.75	0.024
	802.11ac (VHT20)	14.72	0.030
	802.11ac (VHT40)	13.82	0.024
	802.11ac (VHT80)	12.17	0.016

### 3. TEST METHODOLOGY

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

#### EUT CONFIGURATION

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

#### EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

#### GENERAL TEST PROCEDURES

##### Conducted Emissions

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

##### Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.6.5 of ANSI C63.10. (Version: 2013)

#### DESCRIPTION OF TEST MODES

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

#### **4. INSTRUMENT CALIBRATION**

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment'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, 17383, Rep. of KOREA.

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

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

##### **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 TestReceivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

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

#### **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 C63.10-2013.

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

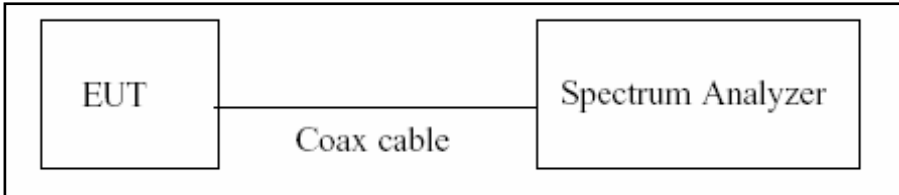
The measurement data shown herein meets or exceeds the  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	2.00 ( Confidence level about 95 %, $k=2$ )
Radiated Disturbance (9 kHz ~ 30 MHz)	4.40 ( Confidence level about 95 %, $k=2$ )
Radiated Disturbance (30 MHz ~ 1 GHz)	5.74 ( Confidence level about 95 %, $k=2$ )
Radiated Disturbance (1 GHz ~ 18 GHz)	5.51 ( Confidence level about 95 %, $k=2$ )
Radiated Disturbance (18 GHz ~ 40 GHz)	5.92 ( Confidence level about 95 %, $k=2$ )
Radiated Disturbance (Above 40 GHz)	5.48 ( Confidence level about 95 %, $k=2$ )

## 8. DESCRIPTION OF TESTS

### 8.1. Duty Cycle

#### Test Configuration



#### Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

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

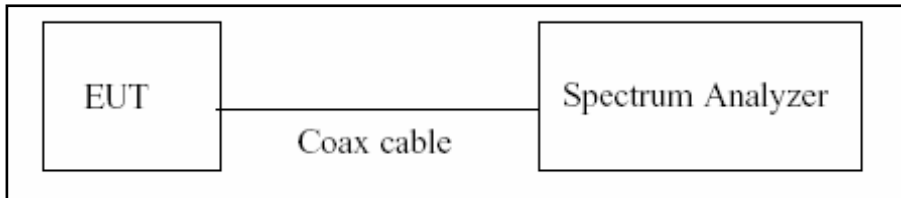
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ( $\geq$  RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure  $T_{total}$  and  $T_{on}$
8. Calculate Duty Cycle =  $T_{on} / T_{total}$  and Duty Cycle Factor =  $10\log(1/\text{Duty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

## 8.2.6dB Bandwidth & 26dB Bandwidth

### Limit

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

### Test Configuration



### Test Procedure(26dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

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

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

### Test Procedure (6dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

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

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

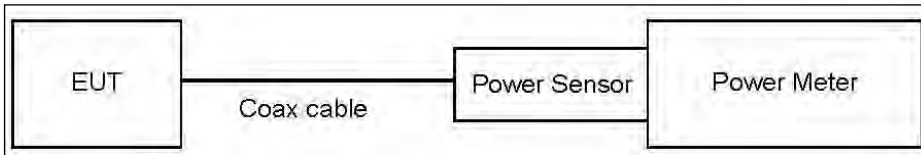
**8.3. Output Power Measurement**

**Limit**

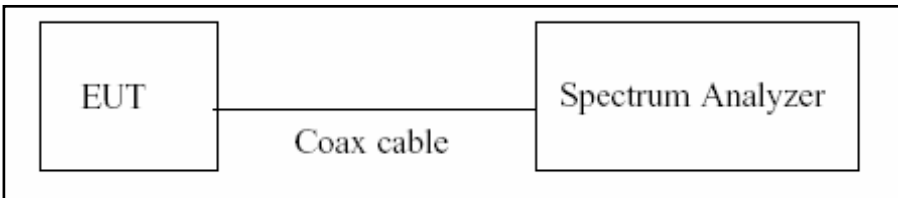
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30dBm)

**Test Configuration**

Power Meter



Spectrum Analyzer(Only Straddle Channel)



**Test Procedure(Power Meter)**

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

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

**Test Procedure(Spectrum Analyzer)**

The transmitter output is connected to the Spectrum Analyzer.

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

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

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

Loss = Attenuator loss(20 dB) + Cable loss+ EUT Cable loss

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

Band	Loss(dB)
UNII 1	20.82
UNII 2A	20.82
UNII 2C	20.82
UNII 3	20.82

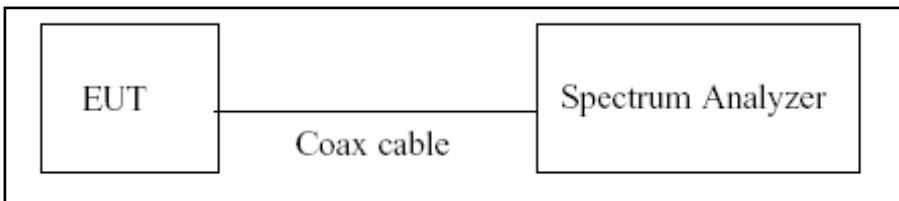
(Actual value of loss for the attenuator and cable combination)

**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

Test Configuration



Test Procedure

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

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

**Sample Calculation**

Total PSD(dBm) = Measured Level(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. Spectrum offset

Loss = Attenuator loss(20 dB) + Cable loss

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

<b>Band</b>	<b>Loss(dB)</b>
UNII 1	20.82
UNII 2A	20.82
UNII 2C	20.82
UNII 3	20.82

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

## 8.5. 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  $\mu$ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 <sup>(a)</sup>	56 to 46 <sup>(a)</sup>
0.50 to 5	56	46
5 to 30	60	50

<sup>(a)</sup>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 Level + Correction Factor



**8.6. Radiated Test**

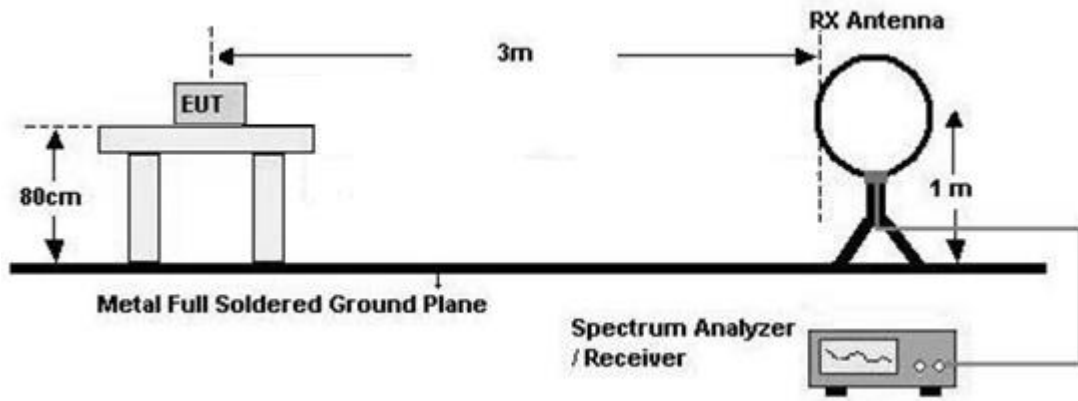
**Limit**

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 -27dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
4. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Section 15.209.

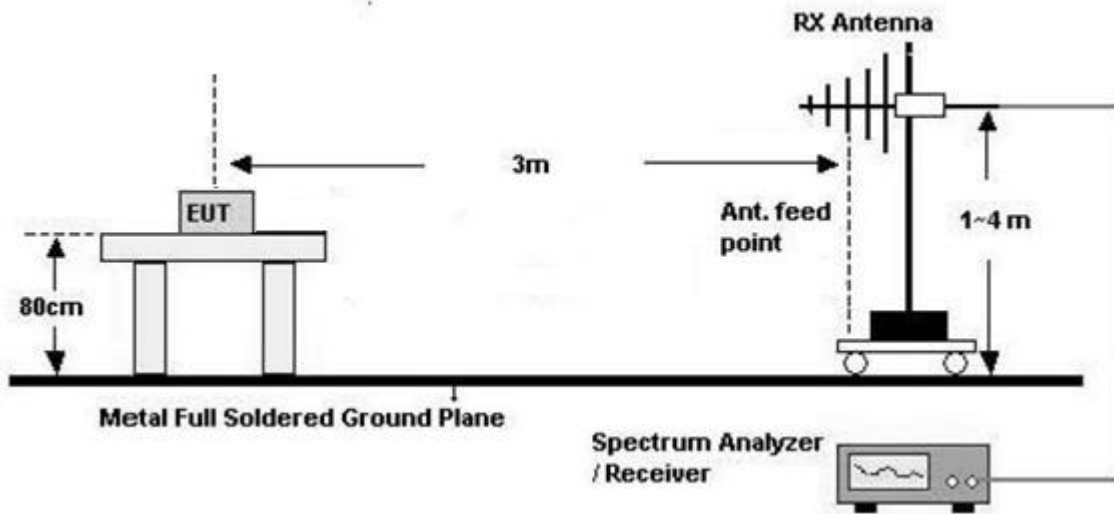
Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ )	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**Test Configuration**

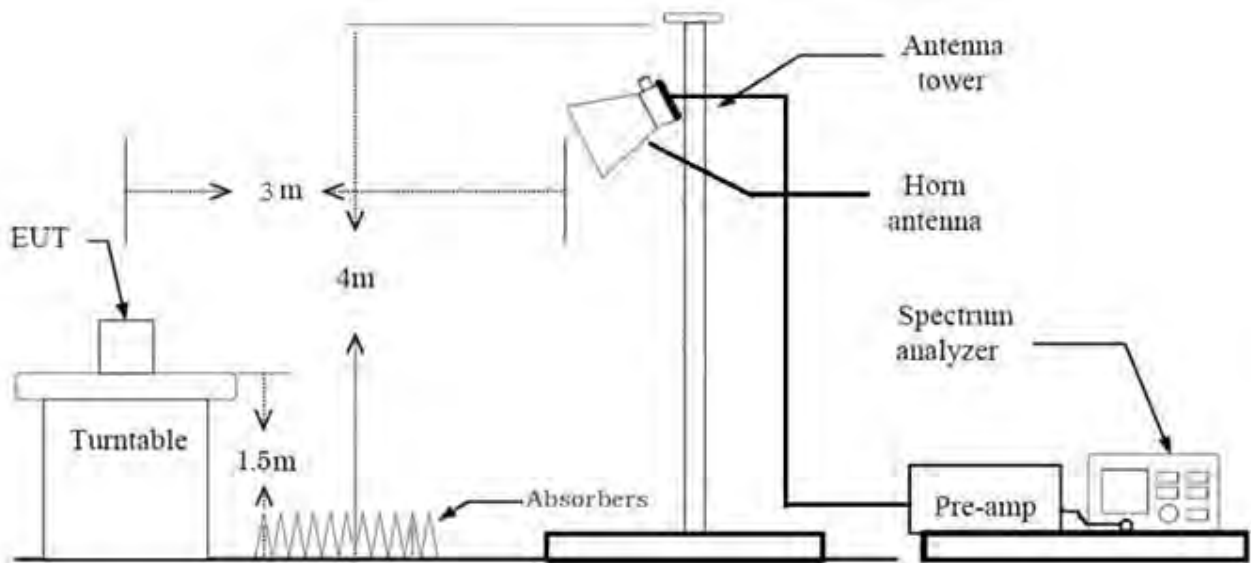
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz

**Test Procedure of Radiated spurious emissions(Below30 MHz)**

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) =  $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$   
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
  - Frequency Range = 9 kHz ~ 30 MHz
  - Detector = Peak
  - Trace = Maxhold
  - RBW = 9 kHz
  - VBW  $\geq 3 \times$  RBW
9. Total = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

**KDB 414788 OFS and Chamber Correlation Justification**

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

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

**Test Procedure of Radiated spurious emissions(Below 1GHz)**

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3m from the EUT, which is varied from 1m to 4m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Spectrum Setting

(1) Measurement Type(Peak):

- Measured Frequency Range : 30 MHz – 1 GHz
- Detector = Peak
- Trace = Maxhold
- RBW = 100 kHz
- VBW  $\geq$  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 Level + 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.

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**Test Procedure of Radiated spurious emissions (Above 1 GHz)**

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

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

- RBW = 1 MHz
- VBW  $\geq$  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, G.6.d in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW(Duty cycle  $\geq$  98 %) =  $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is  $<$  98 %) =  $VBW \geq 1/T$ , 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 % duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of  $1/x$ , where  $x$  is the duty cycle.

9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor
10. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency
11. Distance extrapolation factor =  $20\log(\text{test distance} / \text{specific distance})$  (dB)
12. Total = Measured Level + 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 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

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

- RBW = 1 MHz
- VBW  $\geq$  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, G.6.d in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW(Duty cycle  $\geq$  98 %) =  $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is <98 %) =  $VBW \geq 1/T$ , 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 % duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of  $1/x$ , where  $x$  is the duty cycle.

9. Measured Frequency Range :

- 4500MHz ~ 5150MHz
- 5350MHz ~ 5460MHz
- 5460MHz ~ 5470MHz
- (75 MHz or more below the 5725MHz) ~ 5725MHz
- 5850MHz ~ (75 MHz or more above the 5850MHz)

10. Distance extrapolation factor =  $20\log(\text{test distance} / \text{specific distance})$  (dB)

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

**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	0.934	0.295	1000
802.11n(HT20)	MCS0	0.932	0.308	1000
802.11n(HT40)	MCS0	0.868	0.613	3000
802.11ac(VHT20)	MCS0	0.930	0.314	1000
802.11ac(VHT40)	MCS0	0.869	0.609	3000
802.11ac(VHT80)	MCS0	0.771	1.129	5000

**8.7. Worst case configuration and mode**

**Radiated test**

1. All modes of operation were investigated and the worst case configuration results are reported.
  - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
  - Worstcase : Stand alone
2. EUT Axis
  - Radiated Spurious Emissions : X
  - Radiated Restricted Band Edge : X
3. 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
4. Radiated Spurious Emission
  - All modulation of operation were investigated and the worst case modulation results are reported.  
(Worstcase : 802.11a\_6 Mbps)
5. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
  - Position : Horizontal, Vertical, Parallel to the ground plane

**Radiated test(DBS)**

1. All modes of operation were investigated and the worst case configuration results are reported.
  - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
  - Worstcase : Stand alone
2. EUT Axis
  - Radiated Spurious Emissions : X
3. The following tables show the worst case configurations determined during testing.

Description	Bluetooth Emission	5 GHz Emission
Antenna	WIFI/BT	WIFI/BT
Channel	78	165
Data Rate	1 Mbps	6 Mbps
Mode	GFSK : DH5	802.11a



**AC Power line Conducted Emissions**

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

**Conducted test**

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

**9. SUMMARY OF TEST RESULTS**

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26dB Bandwidth	§15.407 (for Power Measurement)	N/A	Conducted	PASS
6 dB Bandwidth	§15.407(e)	>500 kHz (5725-5850 MHz)(UNII-3)		PASS
Maximum Conducted Output Power	§15.407(a)(1),(2),(3)	< 250 mW(5150-5250 MHz) < 250 mW or 11+10log <sub>10</sub> (BW) dBm (5250-5350 MHz) < 250 mW or 11+10log <sub>10</sub> (BW) dBm (5470-5725 MHz) <1 W(5725-5850 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)		PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207 15.407(b)(9)	<FCC 15.207 limits		PASS
Undesirable Emissions	§15.407(b) (1),(2),(3),(4)	<-27 dBm/MHz EIRP (UNII1, 2A, 2C) cf. Section 8.6 (UNII 3)		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		Radiated

## 10. TEST RESULT

### 10.1 DUTY CYCLE

Mode	Data Rate (Mbps)	T <sub>on</sub> (ms)	T <sub>total</sub> (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11a	6	1.392	1.490	0.934	0.295
	9	0.935	1.030	0.908	0.420
	12	0.707	0.805	0.878	0.565
	18	0.480	0.577	0.832	0.800
	24	0.364	0.462	0.788	1.037
	36	0.252	0.349	0.723	1.410
	48	0.192	0.289	0.665	1.772
	54	0.176	0.273	0.645	1.903

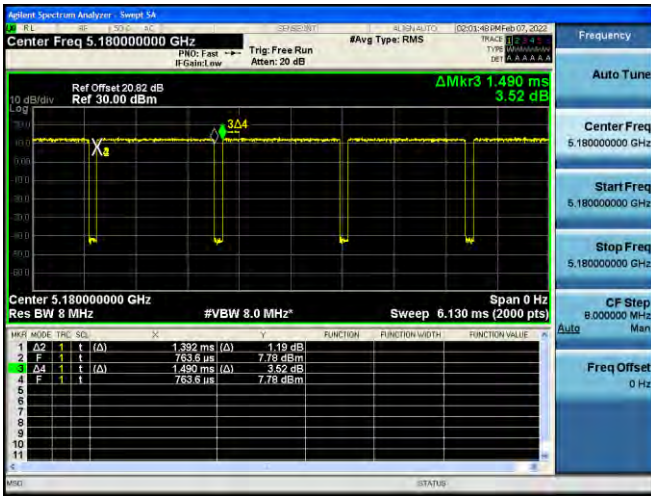
Mode	MCS Index	T <sub>on</sub> (ms)	T <sub>total</sub> (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	1.301	1.397	0.932	0.308
	1	0.668	0.765	0.873	0.592
	2	0.460	0.557	0.825	0.835
	3	0.351	0.448	0.782	1.065
	4	0.248	0.345	0.718	1.441
	5	0.196	0.293	0.668	1.755
	6	0.180	0.277	0.650	1.871
	7	0.164	0.261	0.629	2.014
802.11n (HT40)	0	0.647	0.745	0.868	0.613
	1	0.344	0.442	0.778	1.088
	2	0.240	0.338	0.710	1.486
	3	0.192	0.290	0.661	1.795
	4	0.140	0.238	0.588	2.310
	5	0.116	0.224	0.519	2.847
	6	0.104	0.220	0.473	3.254
	7	0.100	0.216	0.463	3.345

Mode	MCS Index	T <sub>on</sub> (ms)	T <sub>total</sub> (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	1.309	1.408	0.930	0.314
	1	0.675	0.773	0.873	0.590
	2	0.463	0.561	0.825	0.835
	3	0.359	0.457	0.787	1.038
	4	0.252	0.349	0.722	1.416
	5	0.200	0.297	0.673	1.719
	6	0.184	0.281	0.656	1.832
	7	0.168	0.265	0.634	1.982
	8	0.148	0.245	0.604	2.192
802.11ac (VHT40)	0	0.652	0.750	0.869	0.609
	1	0.348	0.446	0.781	1.076
	2	0.244	0.342	0.714	1.463
	3	0.196	0.294	0.666	1.765
	4	0.144	0.242	0.594	2.260
	5	0.120	0.227	0.529	2.766
	6	0.108	0.215	0.503	2.987
	7	0.104	0.220	0.473	3.254
	8	0.092	0.217	0.424	3.730
	9	0.087	0.222	0.394	4.041
802.11ac (VHT80)	0	0.324	0.420	0.771	1.129
	1	0.184	0.281	0.655	1.840
	2	0.136	0.233	0.583	2.343
	3	0.112	0.218	0.513	2.897
	4	0.087	0.221	0.395	4.032
	5	0.076	0.218	0.347	4.593
	6	0.072	0.214	0.336	4.732
	7	0.072	0.223	0.323	4.915
	8	0.064	0.215	0.299	5.245
	9	0.064	0.215	0.298	5.255

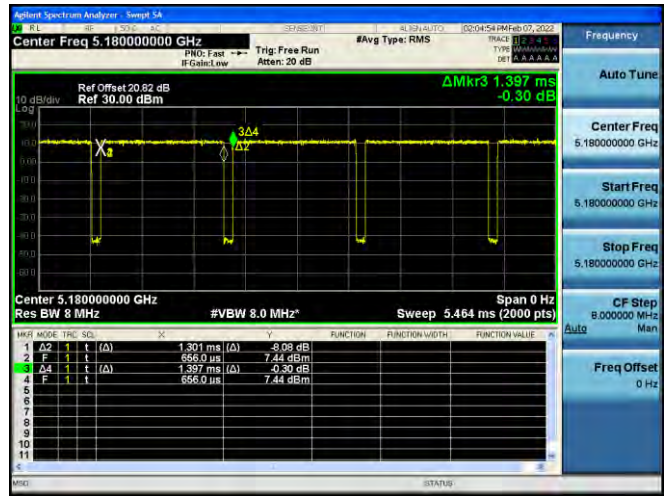
**Note:**

In order to simplify the report, attached plots were only lowest datarate.

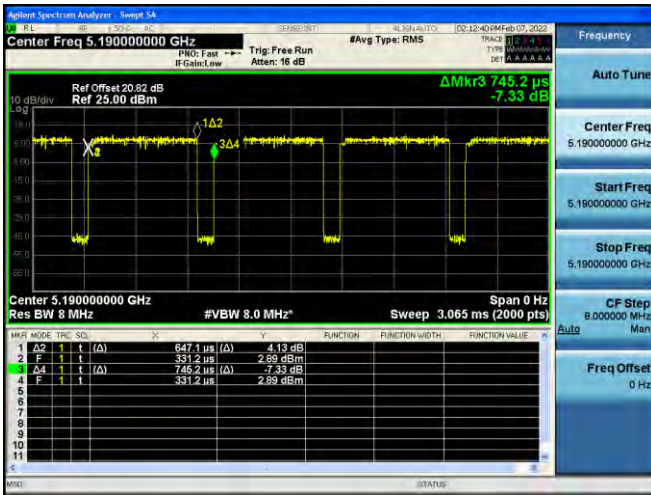
802.11a



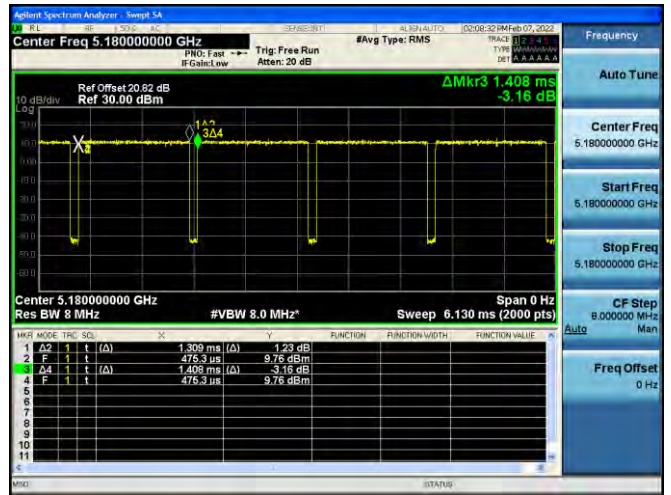
802.11n(HT20)



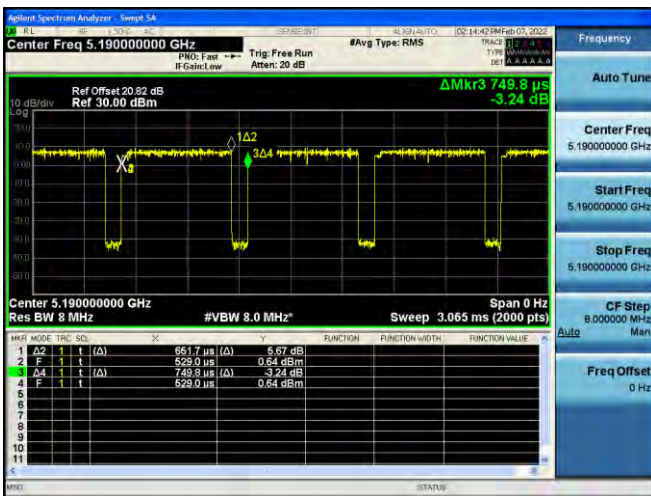
802.11n(HT40)



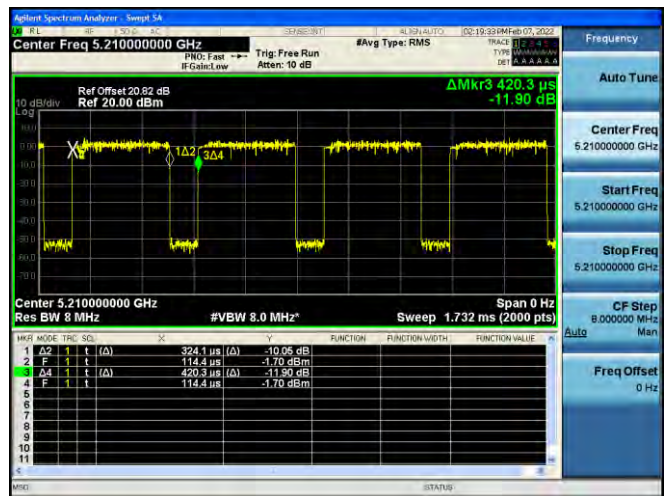
802.11ac(VHT20)



802.11ac(VHT40)



802.11ac(VHT80)



**10.2 26 dB Bandwidth**

Straddle channel data in the table below are for reporting purposes only.

Straddle channel data were added in section 10.7.1.

802.11a Mode		26dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.88	16.693
5200	40	22.29	16.689
5240	48	22.91	16.666
5260	52	22.50	16.740
5300	60	23.46	16.681
5320	64	24.61	16.716
5500	100	23.36	16.671
5600	120	22.43	16.639
5720	144	22.72	16.676
5745	149	23.29	16.690
5785	157	22.22	16.655
5825	165	23.03	16.680

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	23.84	17.829
5200	40	24.85	17.843
5240	48	22.69	17.832
5260	52	23.50	17.816
5300	60	23.22	17.818
5320	64	23.98	17.836
5500	100	23.93	17.841
5600	120	24.05	17.764
5720	144	23.61	17.822
5745	149	22.93	17.855
5785	157	23.27	17.833
5825	165	23.17	17.818

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	40.36	35.960
5230	46	39.94	35.954
5270	54	40.36	35.992
5310	62	40.31	35.992
5510	102	40.49	35.973
5590	118	40.17	35.899
5710	142	40.01	35.924
5755	151	39.81	35.887
5795	159	40.03	35.923

802.11ac(VHT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	25.03	17.918
5200	40	22.95	17.870
5240	48	23.28	17.829
5260	52	23.11	17.830
5300	60	23.78	17.794
5320	64	24.25	17.838
5500	100	23.16	17.809
5600	120	23.63	17.831
5720	144	23.97	17.826
5745	149	23.04	17.821
5785	157	23.99	17.835
5825	165	23.27	17.811

802.11ac(VHT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	40.04	36.010
5230	46	40.54	35.906
5270	54	40.00	35.870
5310	62	39.85	35.995
5510	102	40.17	35.890
5590	118	40.02	35.941
5710	142	39.91	35.865
5755	151	39.91	35.879
5795	159	40.43	35.885

802.11ac(VHT80) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	80.08	75.691
5290	58	79.95	75.562
5530	106	80.17	75.650
5610	122	79.88	75.589
5690	138	80.33	75.588
5775	155	80.15	75.672

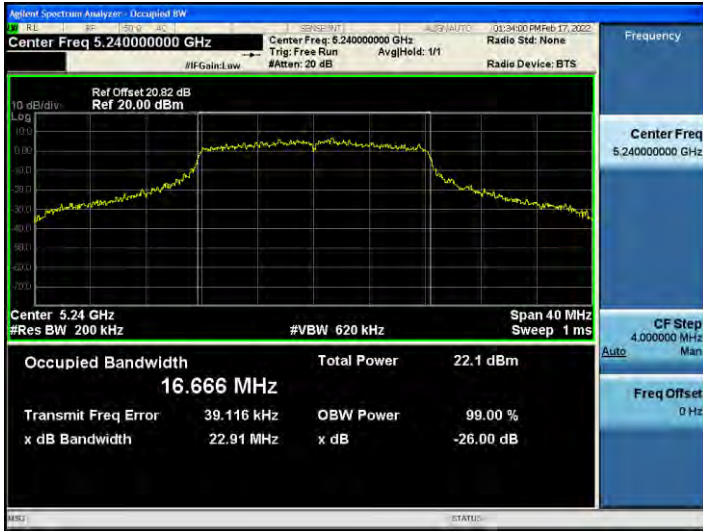


☐ Test Plots(802.11a)

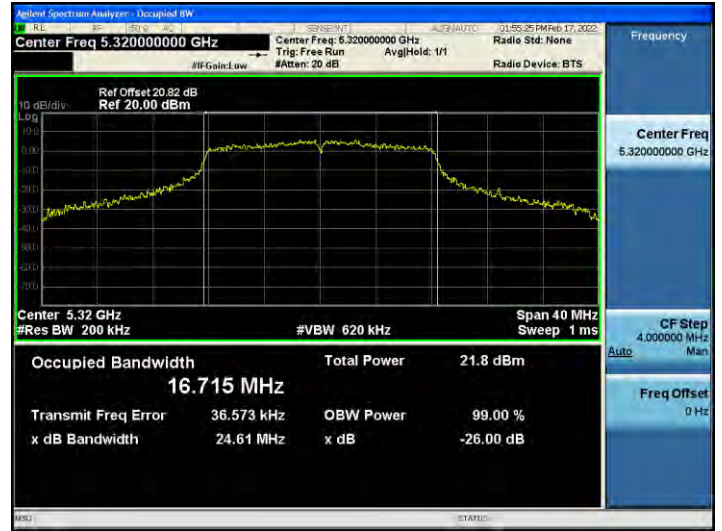
Note:

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

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



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



**802.11a UNII 2C BAND 26 dB Bandwidth (CH 100)**



**802.11a UNII 3 BAND 26 dB Bandwidth (CH 149)**





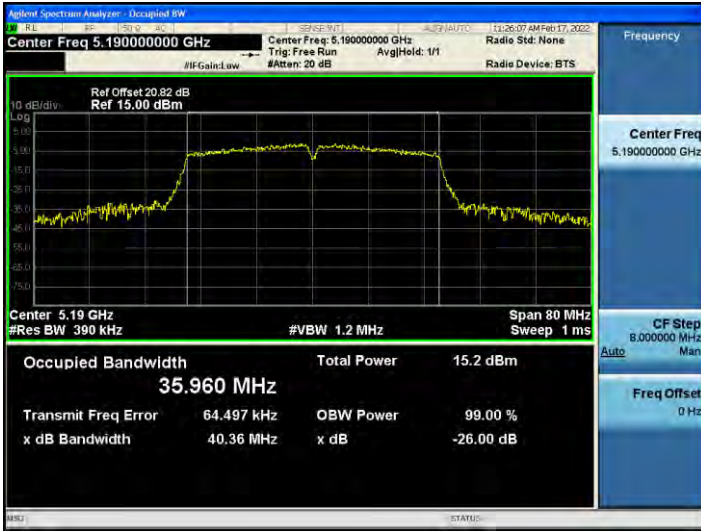


☐ Test Plots(802.11n(HT40))

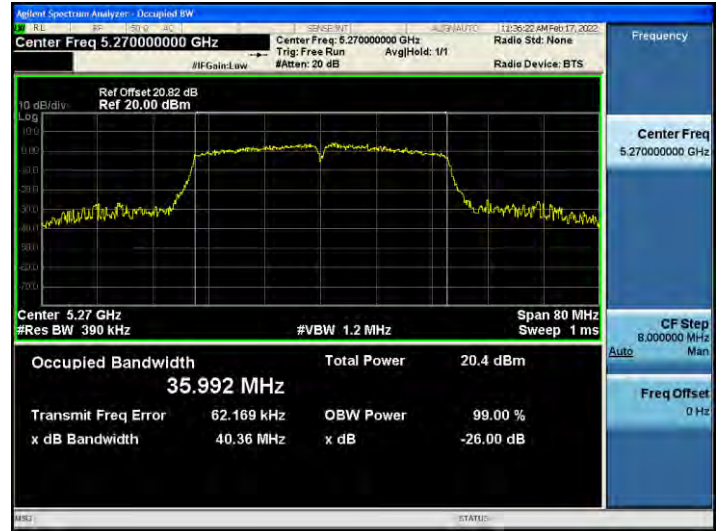
Note:

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

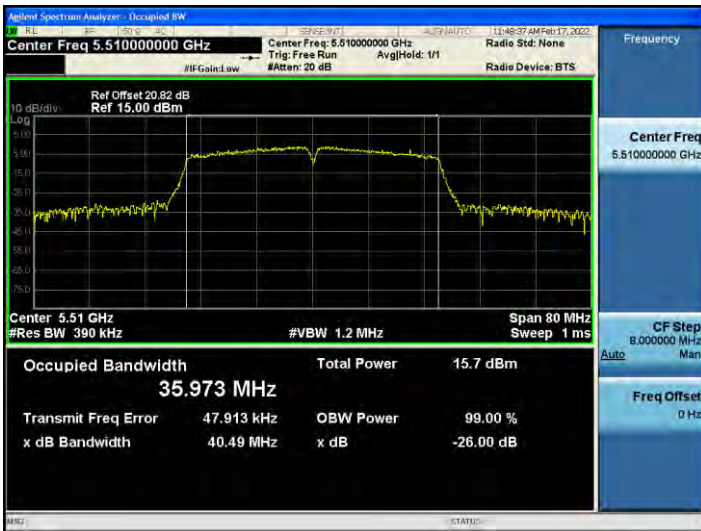
**802.11n\_HT40 UNII 1 BAND 26 dB Bandwidth(CH 38)**



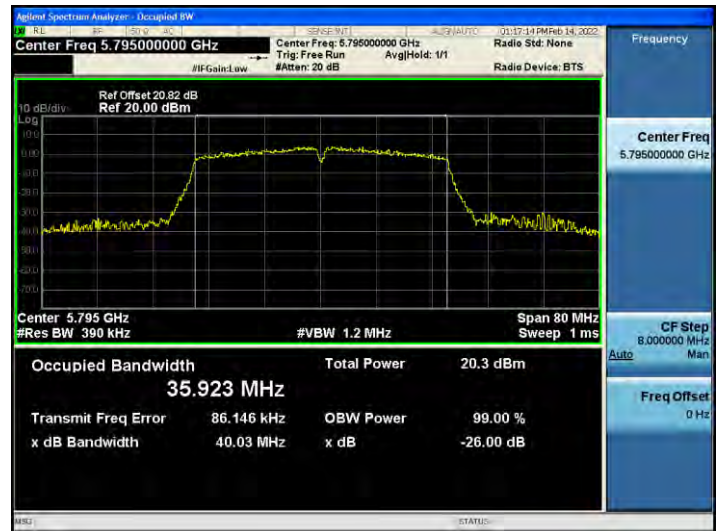
**802.11n\_HT40 UNII 2A BAND 26 dB Bandwidth (CH 54)**



**802.11n\_HT40 UNII 2C BAND 26 dB Bandwidth(CH 102)**



**802.11n\_HT40 UNII 3 BAND 26 dB Bandwidth (CH 159)**

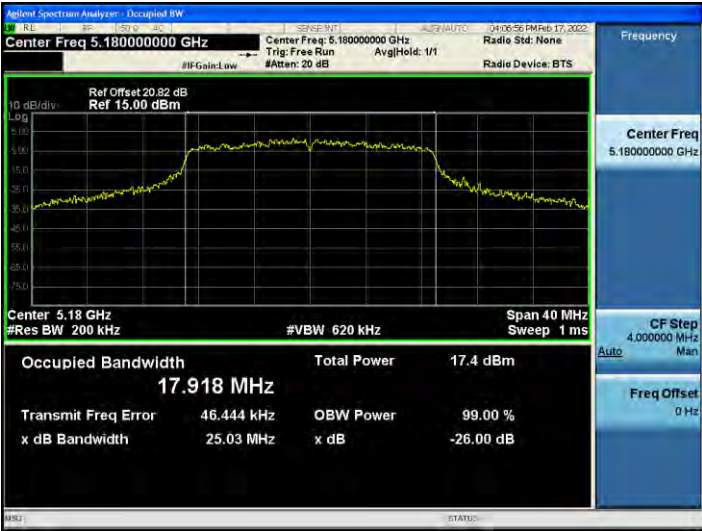


☑ Test Plots(802.11ac(VHT20))

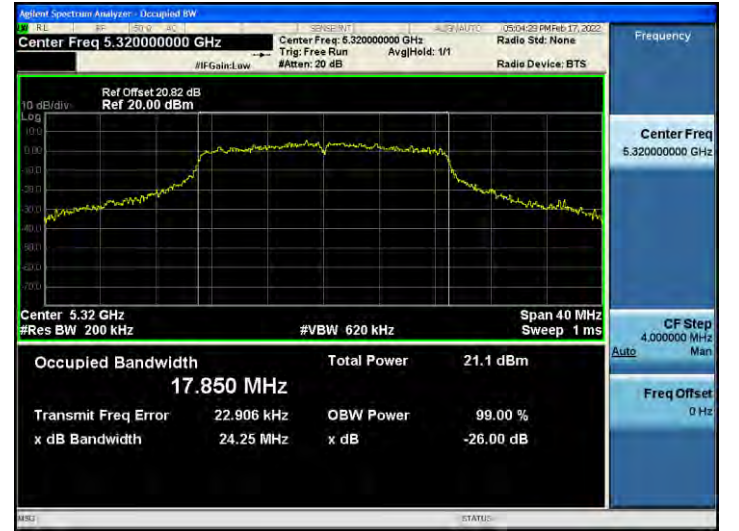
Note:

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

802.11ac\_VHT20 UNII 1 BAND 26 dB Bandwidth(CH 36)



802.11ac\_VHT20 UNII 2A BAND 26 dB Bandwidth(CH 64)



802.11ac\_VHT20 UNII 2C BAND 26 dB Bandwidth(CH 144)



802.11ac\_VHT20 UNII 3 BAND 26 dB Bandwidth(CH 157)



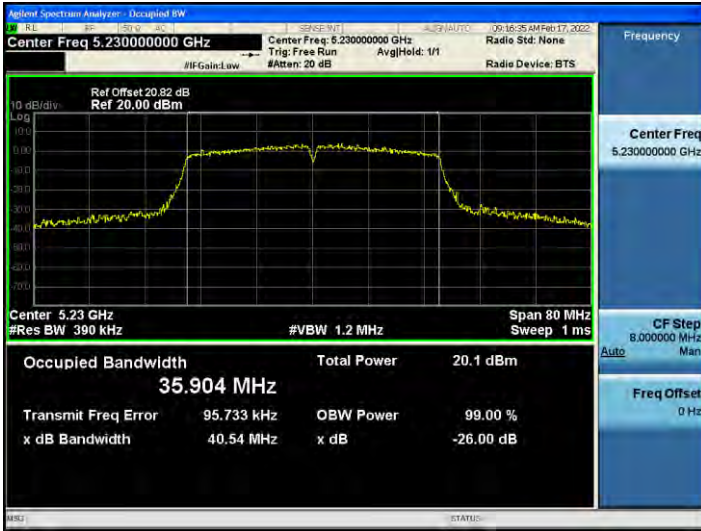


☐ Test Plots(802.11ac(VHT40))

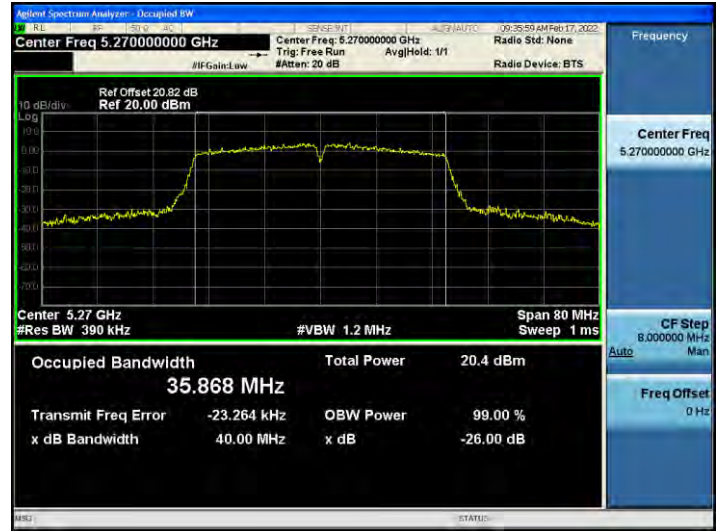
Note:

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

**802.11ac\_VHT40 UNII 1 BAND 26 dB Bandwidth(CH 46)**



**802.11ac\_VHT40 UNII 2A BAND 26 dB Bandwidth (CH 54)**



**802.11ac\_VHT40 UNII 2C BAND 26 dB Bandwidth(CH 102)**



**802.11ac\_VHT40 UNII 3 BAND 26 dB Bandwidth (CH 159)**

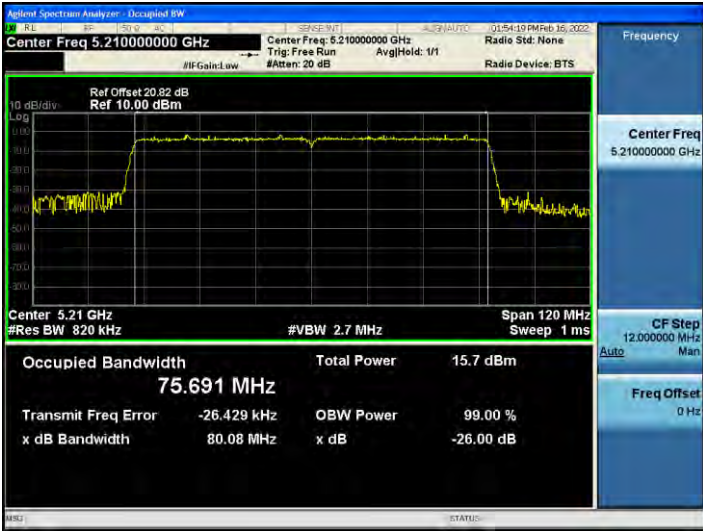


☑ Test Plots(802.11ac(VHT80))

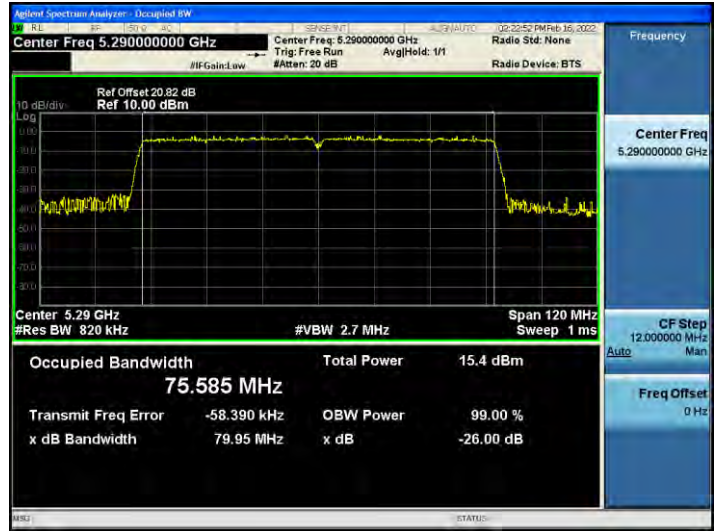
Note:

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

**802.11ac\_VHT80 UNII 1 BAND 26 dB Bandwidth(CH 42)**



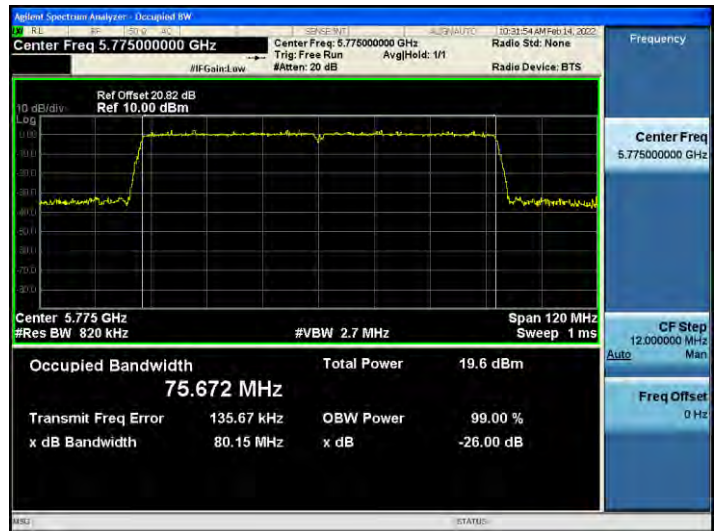
**802.11ac\_VHT80 UNII 2A BAND 26 dB Bandwidth (CH 58)**



**802.11ac\_VHT80 UNII 2C BAND 26 dB Bandwidth(CH 138)**



**802.11ac\_VHT80 UNII 3 BAND 26 dB Bandwidth (CH 155)**



**10.3 6 dB BANDWIDTH**

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	13.29	> 0.5	Pass
5785	157	15.17	> 0.5	Pass
5825	165	13.91	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.07	> 0.5	Pass
5785	157	15.11	> 0.5	Pass
5825	165	15.05	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	33.86	> 0.5	Pass
5795	159	35.17	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.17	> 0.5	Pass
5785	157	15.13	> 0.5	Pass
5825	165	15.46	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.12	> 0.5	Pass
5795	159	35.12	> 0.5	Pass

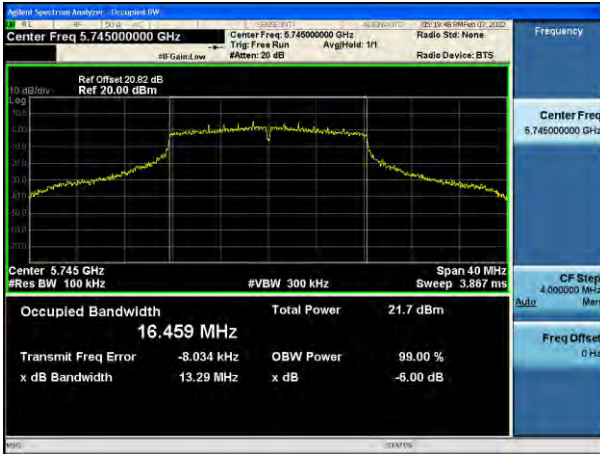
802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	76.12	> 0.5	Pass



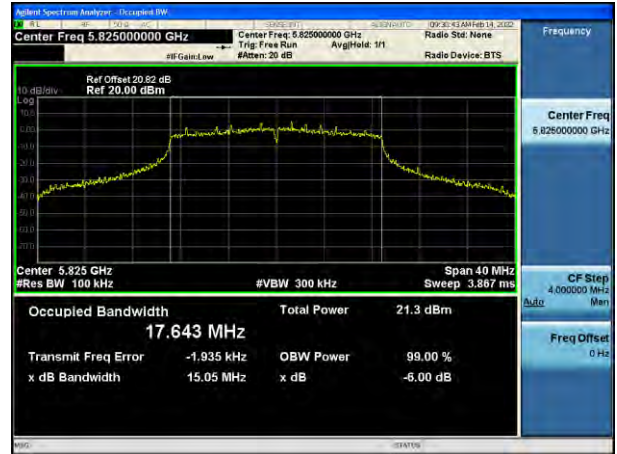
**Test Plots**

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

**802.11a (CH.149)**



**802.11n(HT20) (CH.165)**



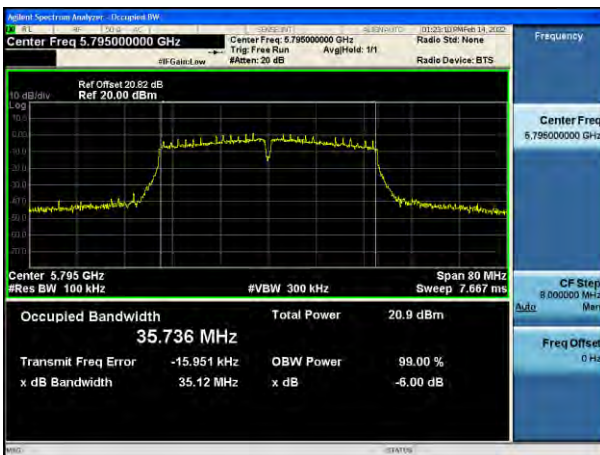
**802.11n(HT40) (CH.151)**



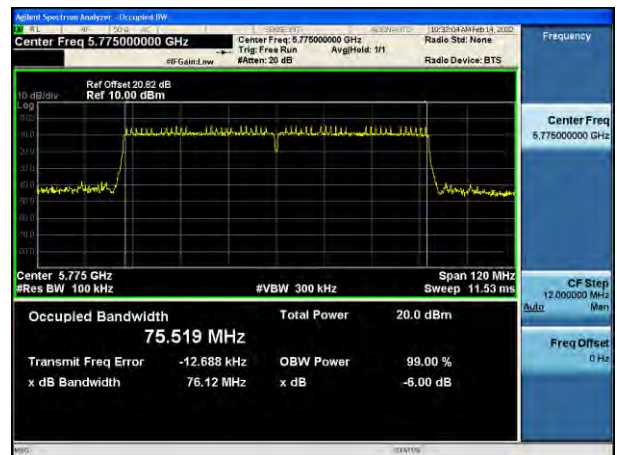
**802.11ac(VHT20) (CH.157)**



**802.11ac(VHT40) (CH.159)**



**802.11ac(VHT80) (CH.155)**





### 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 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)

(UNII 3) : 30.00 dBm

802.11a Mode		Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.					
5180	36	10.97	1.410	12.38	23.98	36M
5200	40	13.39	1.772	15.16	23.98	48M
5240	48	14.17	1.410	15.58	23.98	36M
5260	52	14.22	1.410	15.63	23.98	36M
5300	60	13.95	1.410	15.36	23.98	36M
5320	64	13.91	1.410	15.32	23.98	36M
5500	100	12.11	0.800	12.91	23.98	18M
5600	120	15.65	0.295	15.95	23.98	6M
5720	144	15.78	0.295	16.08	23.98	6M
5745	149	14.61	0.565	15.18	30.00	12M
5785	157	15.13	0.420	15.55	30.00	9M
5825	165	13.95	1.410	15.36	30.00	36M

802.11n(20 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5180	36	9.59	1.755	11.35	23.98	MCS5
5200	40	12.71	1.441	14.15	23.98	MCS4
5240	48	12.72	1.755	14.48	23.98	MCS5
5260	52	12.97	1.755	14.73	23.98	MCS5
5300	60	12.95	1.441	14.39	23.98	MCS4
5320	64	14.14	0.308	14.45	23.98	MCS0
5500	100	12.49	0.308	12.80	23.98	MCS0
5600	120	13.47	1.441	14.91	23.98	MCS4
5720	144	14.54	0.592	15.13	23.98	MCS1
5745	149	13.12	1.441	14.56	30.00	MCS4
5785	157	13.23	1.441	14.67	30.00	MCS4
5825	165	13.93	0.592	14.52	30.00	MCS1

802.11n(40 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5190	38	8.09	0.613	8.70	23.98	MCS0
5230	46	12.78	0.613	13.40	23.98	MCS0
5270	54	13.15	0.613	13.77	23.98	MCS0
5310	62	7.68	0.613	8.29	23.98	MCS0
5510	102	7.87	0.613	8.48	23.98	MCS0
5590	118	13.40	0.613	14.01	23.98	MCS0
5710	142	13.49	0.613	14.10	23.98	MCS0
5755	151	13.04	0.613	13.66	30.00	MCS0
5795	159	13.14	0.613	13.75	30.00	MCS0

802.11ac(20 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5180	36	10.10	0.590	10.69	23.98	MCS1
5200	40	12.72	1.416	14.14	23.98	MCS4
5240	48	13.06	1.416	14.48	23.98	MCS4
5260	52	13.28	1.416	14.70	23.98	MCS4
5300	60	12.66	1.719	14.38	23.98	MCS5
5320	64	14.08	0.314	14.40	23.98	MCS0
5500	100	12.55	0.314	12.86	23.98	MCS0
5600	120	14.66	0.314	14.97	23.98	MCS0
5720	144	14.59	0.590	15.18	23.98	MCS1
5745	149	13.19	1.416	14.61	30.00	MCS4
5785	157	13.30	1.416	14.72	30.00	MCS4
5825	165	13.18	1.416	14.60	30.00	MCS4

802.11ac(40 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5190	38	9.06	0.609	9.67	23.98	MCS0
5230	46	12.80	0.609	13.41	23.98	MCS0
5270	54	13.24	0.609	13.85	23.98	MCS0
5310	62	8.78	0.609	9.39	23.98	MCS0
5510	102	7.74	0.609	8.35	23.98	MCS0
5590	118	13.47	0.609	14.08	23.98	MCS0
5710	142	13.56	0.609	14.17	23.98	MCS0
5755	151	12.94	0.609	13.55	30.00	MCS0
5795	159	13.21	0.609	13.82	30.00	MCS0

802.11ac(80 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5210	42	7.19	1.129	8.32	23.98	MCS0
5290	58	6.91	1.129	8.03	23.98	MCS0
5530	106	7.20	1.129	8.33	23.98	MCS0
5610	122	11.49	1.129	12.62	23.98	MCS0
5690	138	11.55	1.129	12.68	30.00	MCS0
5775	155	10.33	1.840	12.17	23.98	MCS1

**10.5 POWER SPECTRAL DENSITY**

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase Datarate (Mbps)	Limit
Frequency [MHz]	Channel No.					
5180	36	1.052	1.410	2.462	36M	11 dBm/MHz
5200	40	3.662	1.772	5.434	48M	
5240	48	4.531	1.410	5.941	36M	
5260	52	4.422	1.410	5.832	36M	
5300	60	4.101	1.410	5.511	36M	
5320	64	4.433	1.410	5.843	36M	
5500	100	2.091	0.800	2.891	18M	
5600	120	5.762	0.295	6.057	6M	
5720	144	5.979	0.295	6.274	6M	
5745	149	2.000	0.565	2.565	12M	30 dBm/500 kHz
5785	157	2.501	0.420	2.921	9M	
5825	165	1.475	1.410	2.885	36M	

802.11n(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	-0.614	1.755	1.141	MCS5	11 dBm/MHz
5200	40	2.671	1.441	4.112	MCS4	
5240	48	3.114	1.755	4.869	MCS5	
5260	52	2.843	1.755	4.598	MCS5	
5300	60	2.758	1.441	4.199	MCS4	
5320	64	4.020	0.308	4.328	MCS0	
5500	100	2.303	0.308	2.611	MCS0	
5600	120	3.518	1.441	4.959	MCS4	
5720	144	4.575	0.592	5.167	MCS1	
5745	149	0.420	1.441	1.861	MCS4	30 dBm/500 kHz
5785	157	0.568	1.441	2.009	MCS4	
5825	165	1.020	0.592	1.612	MCS1	

802.11n(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-5.033	0.613	-4.420	MCS0	11 dBm/MHz
5230	46	-0.117	0.613	0.496	MCS0	
5270	54	-0.040	0.613	0.573	MCS0	
5310	62	-5.399	0.613	-4.786	MCS0	
5510	102	-5.292	0.613	-4.679	MCS0	
5590	118	0.254	0.613	0.867	MCS0	
5710	142	0.583	0.613	1.196	MCS0	
5755	151	-2.809	0.613	-2.196	MCS0	30 dBm /500 kHz
5795	159	-2.911	0.613	-2.298	MCS0	

802.11ac(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	0.298	0.590	0.888	MCS1	11 dBm/MHz
5200	40	2.957	1.416	4.373	MCS4	
5240	48	3.125	1.416	4.541	MCS4	
5260	52	3.221	1.416	4.637	MCS4	
5300	60	2.813	1.719	4.532	MCS5	
5320	64	3.992	0.314	4.306	MCS0	
5500	100	2.300	0.314	2.614	MCS0	
5600	120	4.788	0.314	5.102	MCS0	
5720	144	4.429	0.590	5.019	MCS1	
5745	149	0.648	1.416	2.064	MCS4	
5785	157	1.090	1.416	2.506	MCS4	
5825	165	0.447	1.416	1.863	MCS4	

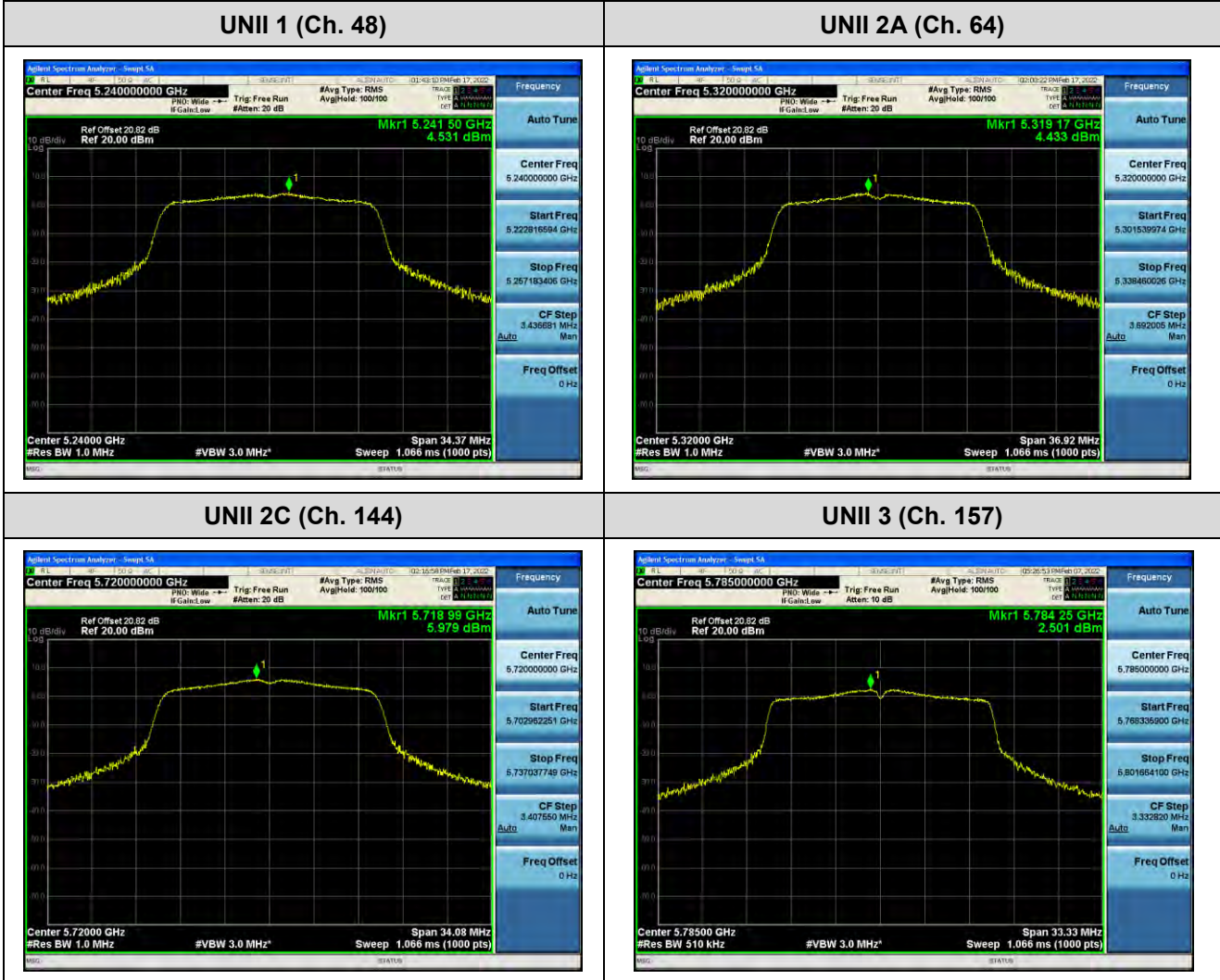
802.11ac(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-3.835	0.609	-3.226	MCS0	11 dBm/MHz
5230	46	0.111	0.609	0.720	MCS0	
5270	54	0.148	0.609	0.757	MCS0	
5310	62	-4.038	0.609	-3.429	MCS0	
5510	102	-5.392	0.609	-4.783	MCS0	
5590	118	-9.036	0.609	-8.427	MCS0	
5710	142	-9.150	0.609	-8.541	MCS0	
5755	151	-2.629	0.609	-2.020	MCS0	30 dBm/500 kHz
5795	159	-2.672	0.609	-2.063	MCS0	

802.11ac(80 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-10.348	1.129	-9.219	MCS0	11 dBm/MHz
5290	58	-10.082	1.129	-8.953	MCS0	
5530	106	-10.305	1.129	-9.176	MCS0	
5610	122	-5.845	1.129	-4.716	MCS0	
5690	138	-5.900	1.129	-4.771	MCS0	
5775	155	-9.544	1.840	-7.704	MCS1	30 dBm/500 kHz

☐ Test Plots(802.11a)

Note:

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

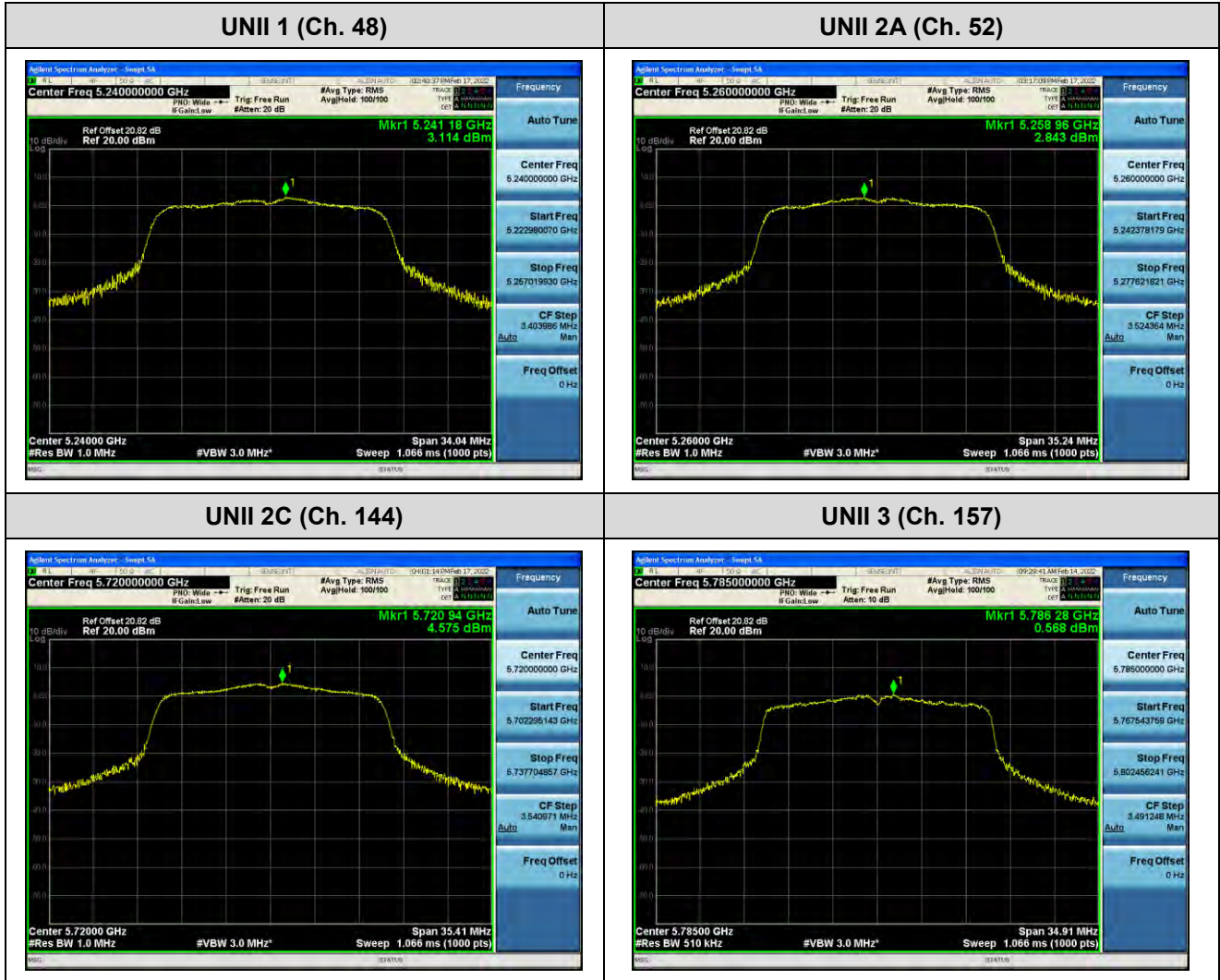




☐ Test Plots(802.11n(HT20))

Note:

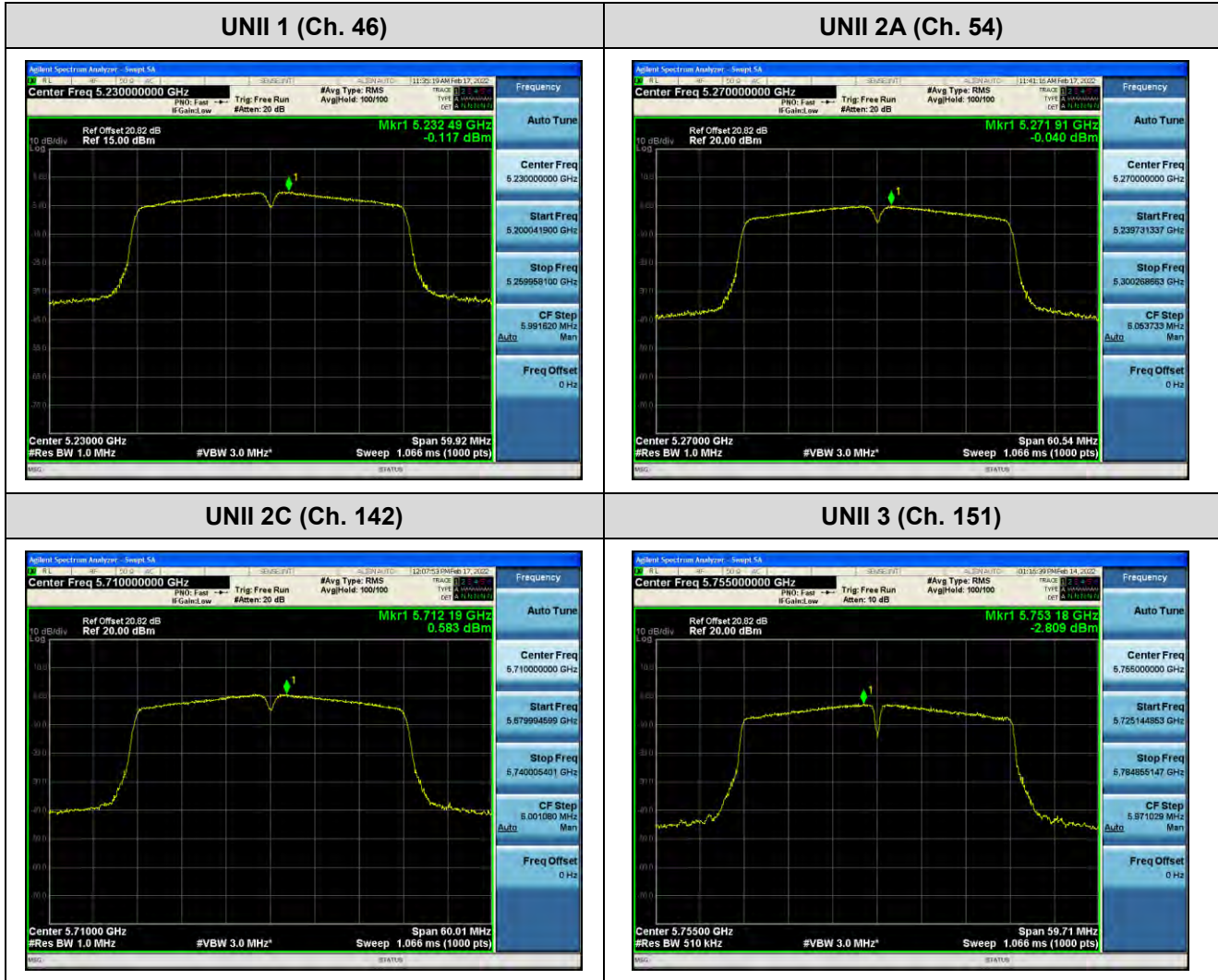
In order to simplify the report, attached plots were only channel of highest power.



☐ Test Plots(802.11n(HT40))

Note:

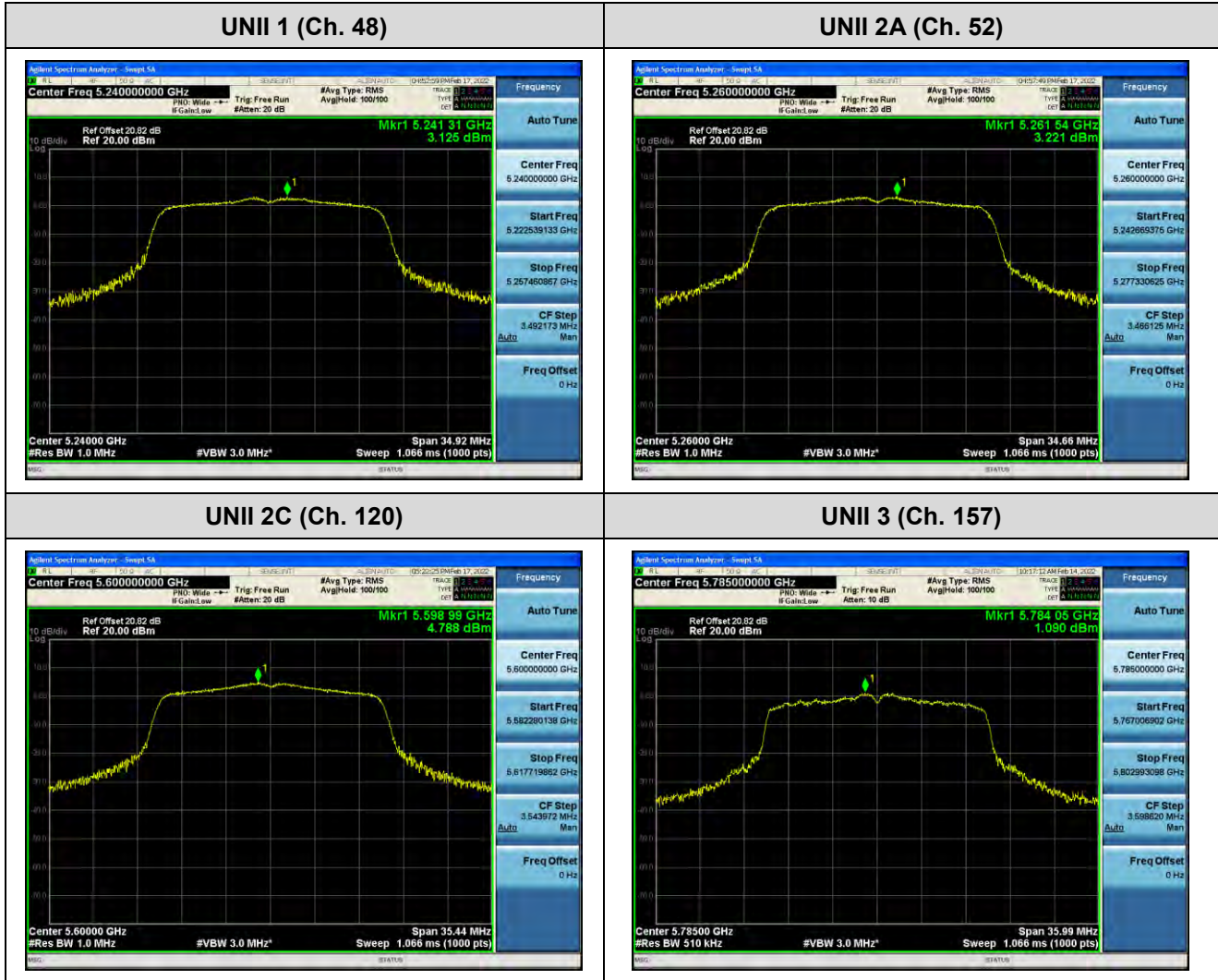
In order to simplify the report, attached plots were only channel of highest power.



☑ Test Plots(802.11ac(VHT20))

Note:

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

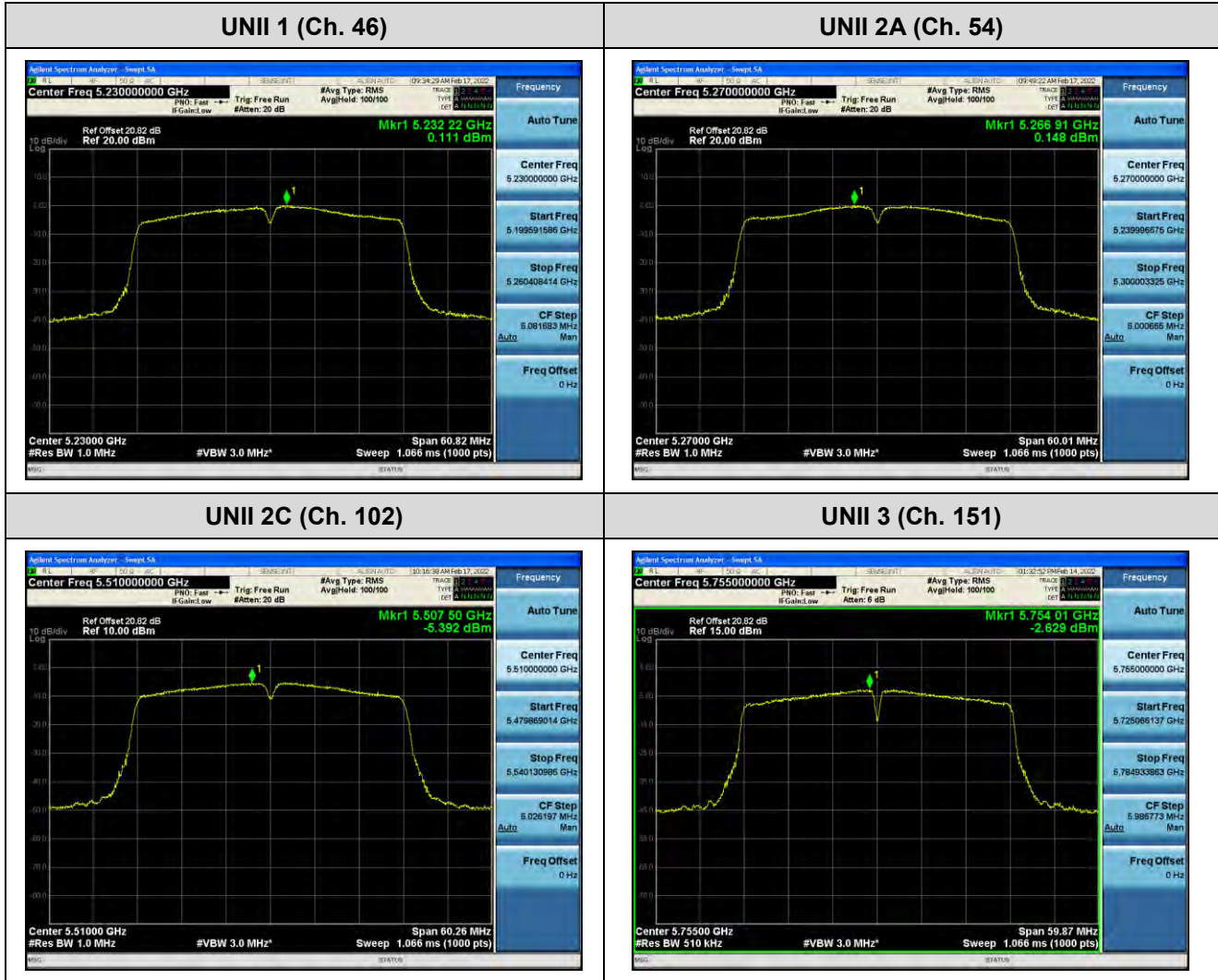




☐ Test Plots(802.11ac(VHT40))

Note:

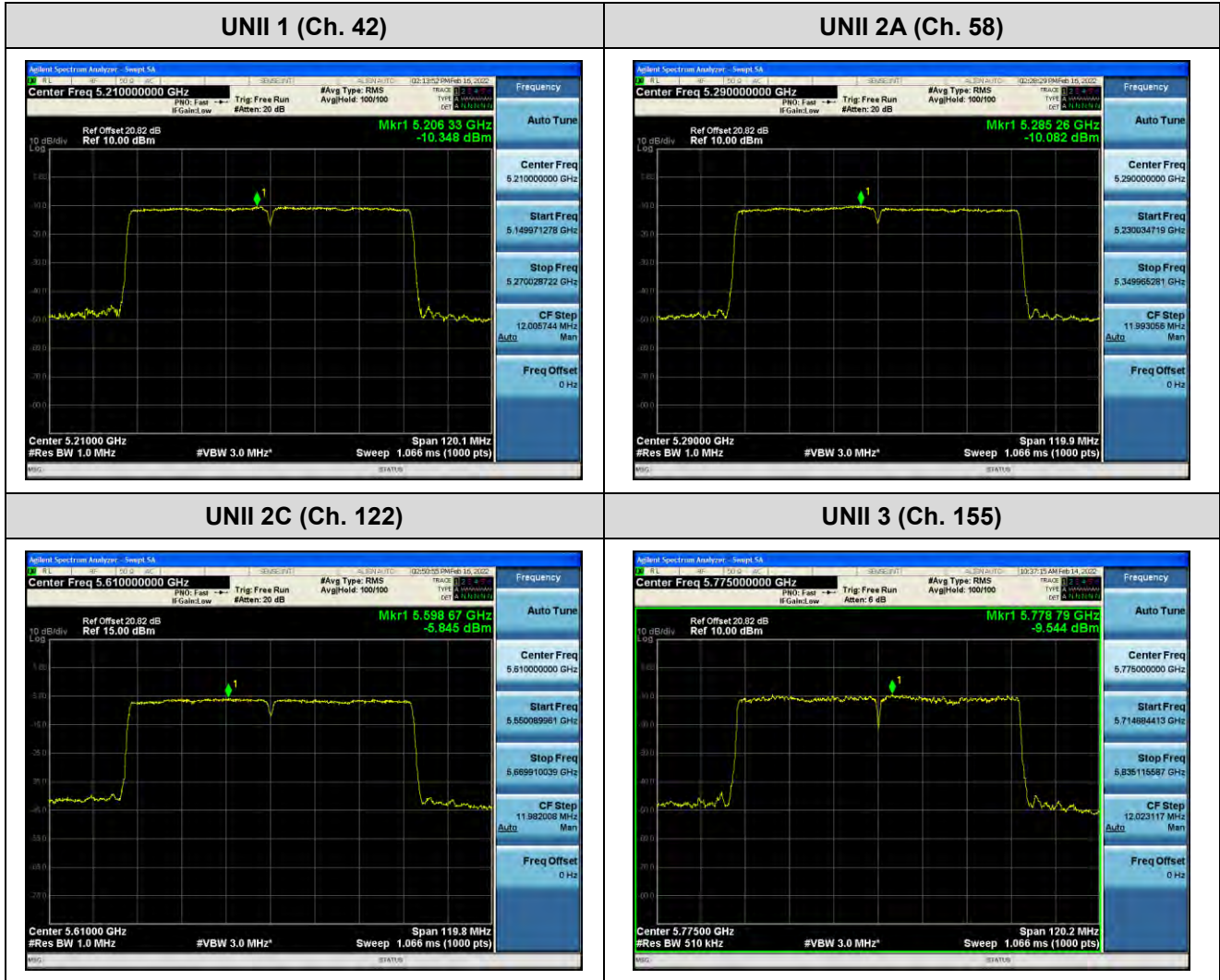
In order to simplify the report, attached plots were only channel of highest power.



☐ Test Plots(802.11ac(VHT80))

Note:

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



**10.6 STRADDLE CHANNEL**

**10.6.1 26 dB Bandwidth**

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11a	UNII 2C	5720	144	5709.20	15.80
802.11n(HT20)				5709.16	15.84
802.11ac(VHT20)				5708.88	16.12
802.11a	UNII 3	5720	144	5730.88	5.88
802.11n(HT20)				5730.72	5.72
802.11ac(VHT20)				5731.40	6.40

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5690.16	34.84
802.11ac(VHT40)				5690.16	34.84
802.11n(HT40)	UNII 3	5710	142	5730.16	5.16
802.11ac(VHT40)				5730.08	5.08

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5650.04	74.96
	UNII 3	5690	138	5730.20	5.20

**Note:**

[UNII 2C] 26 dB Bandwidth = 5 725 MHz - Measured Frequency[MHz]

[UNII 3C] 26 dB Bandwidth = Measured Frequency[MHz] – 5 725 MHz

☐ Test Plots (26 dB Bandwidth)

**802.11a UNII Band**



**802.11n(HT20) UNII Band**



**802.11ac(VHT20) UNII Band**





☐ Test Plots (26 dB Bandwidth)

**802.11n(HT40) UNII Band**



**802.11ac(VHT40) UNII Band**



**802.11ac(VHT80) UNII Band**





**10.6.2 6 dB Bandwidth**

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11a	UNII 3	5720	144	5727.60	2.60	> 0.5
802.11n(HT20)				5727.60	2.60	> 0.5
802.11ac(VHT20)				5727.60	2.60	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11n(HT40)	UNII 3	5710	142	5727.60	2.60	> 0.5
802.11ac(VHT40)				5727.60	2.60	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11ac(VHT80)	UNII 3	5690	138	5728.28	3.28	> 0.5

**Note:**

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

Test Plots(UNII 3 Band 6 dB Bandwidth)

802.11a CH.144



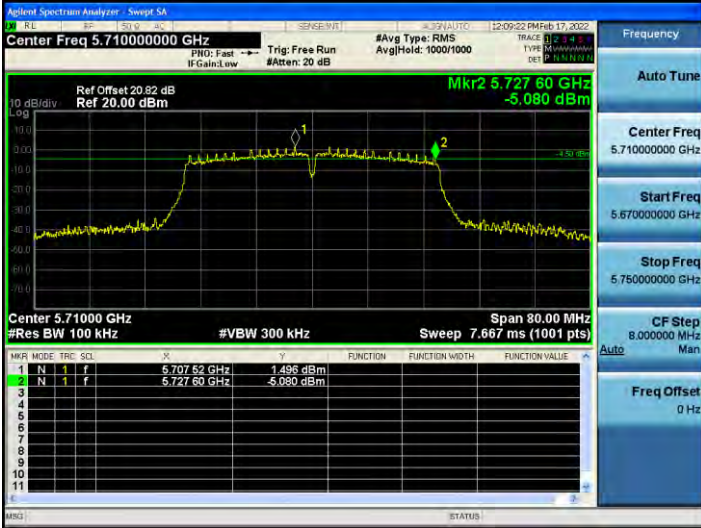
802.11n\_HT20 CH.144



802.11ac\_VHT20 CH.144



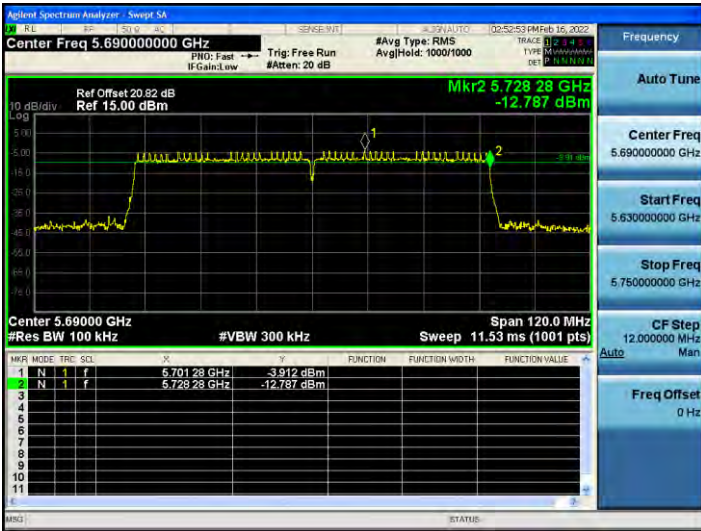
**802.11n\_HT40 CH.142**



**802.11ac\_VHT40 CH.142**



**802.11ac\_VHT80 CH.138**



### 10.6.3 Output Power

Mode	Frequency [MHz]	Channel	Measured Power (dBm)	Duty Cycle Factor (dB)	Total Power (dBm)	Limit (dBm)	Worstcase Datarate
802.11a	5720	144	15.08	0.295	15.37	22.99	6 Mbps
802.11n(HT20)	(UNII 2C		13.93	0.592	14.52	23.00	MCS1
802.11ac(VHT20)	Band)		13.76	0.590	14.35	23.07	MCS1
802.11a	5720	144	7.44	0.295	7.73	30.00	6 Mbps
802.11n(HT20)	(UNII 3		6.64	0.592	7.23	30.00	MCS1
802.11ac(VHT20)	Band)		6.60	0.590	7.19	30.00	MCS1

Mode	Frequency [MHz]	Channel	Measured Power (dBm)	Duty Cycle Factor (dB)	Total Power (dBm)	Limit (dBm)	Worstcase Datarate
802.11n(HT40)	5710	142	13.42	0.613	14.04	23.98	MCS0
802.11ac(VHT40)	(UNII 2C Band)		13.32	0.609	13.93	23.98	MCS0
802.11n(HT40)	5710	142	0.82	0.613	1.44	30.00	MCS0
802.11ac(VHT40)	(UNII 3 Band)		0.76	0.609	1.37	30.00	MCS0

Mode	Frequency [MHz]	Channel	Measured Power (dBm)	Duty Cycle Factor (dB)	Total Power (dBm)	Limit (dBm)	Worstcase Datarate
802.11ac(VHT80)	5690 (UNII 2C Band)	138	11.22	1.129	12.35	23.98	MCS0
	5690 (UNII 3 Band)	138	-2.00	1.129	-0.88	30.00	MCS0



☐ Test Plots

802.11a UNII 2C Band



802.11a UNII 3 Band



802.11n(HT20) UNII 2C Band



802.11n(HT20) UNII 3 Band



802.11ac(VHT20) UNII 2C Band



802.11ac(VHT20) UNII 3 Band



**802.11n(HT40) UNII 2C Band**



**802.11n(HT40) UNII 3 Band**



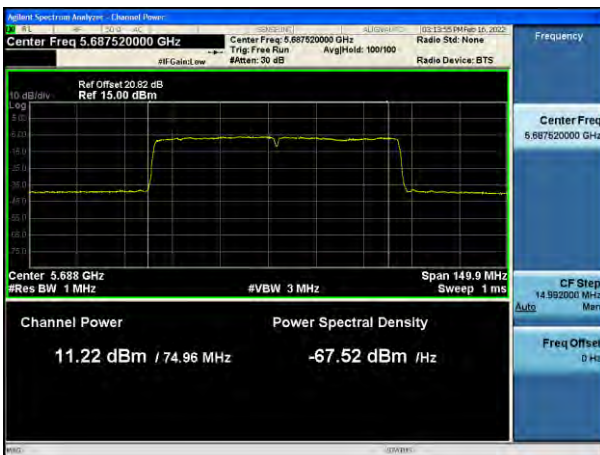
**802.11ac(VHT40) UNII 2C Band**



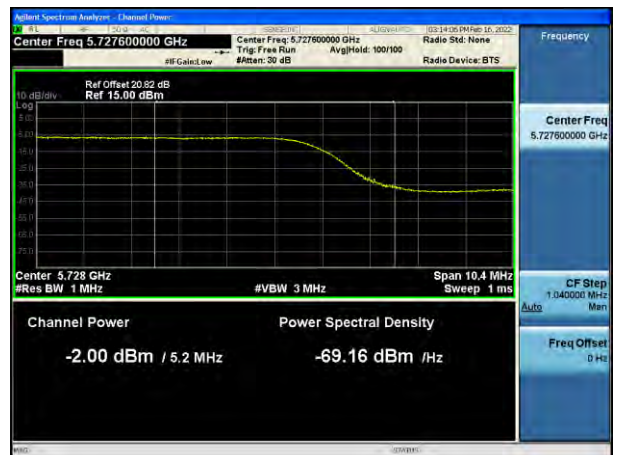
**802.11ac(VHT40) UNII 3 Band**



**802.11ac(VHT80) UNII 2C Band**



**802.11ac(VHT80) UNII 3 Band**



**10.6.4 Power Spectral Density**

Mode	Frequency [MHz]	Channel	Measured Density (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)	Limit (dBm)	Worstcase Datarate
802.11a	5720 (UNII 2C Band)	144	6.151	0.295	6.446	11dBm/ MHz	6 Mbps
802.11n(HT20)			4.378	0.592	4.970		MCS1
802.11ac(VHT20)			4.652	0.590	5.242		MCS1
802.11a	5720 (UNII 3 Band)	144	0.595	0.295	0.890	30 dBm/ 500 kHz	6 Mbps
802.11n(HT20)			-0.900	0.592	-0.308		MCS1
802.11ac(VHT20)			-1.047	0.590	-0.457		MCS1

Mode	Frequency [MHz]	Channel	Measured Density (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)	Limit (dBm)	Worstcase Datarate
802.11n(HT40)	5710 (UNII 2C Band)	142	0.751	0.613	1.364	11dBm/ MHz	MCS0
802.11ac(VHT40)			0.805	0.609	1.414		MCS0
802.11n(HT40)	5710 (UNII 3 Band)	142	-6.357	0.613	-5.744	30 dBm/ 500 kHz	MCS0
802.11ac(VHT40)			-5.900	0.609	-5.291		MCS0

Mode	Frequency [MHz]	Channel	Measured Density (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)	Limit (dBm)	Worstcase Datarate
802.11ac(VHT80)	5690 (UNII 2C Band)	138	-5.824	1.129	-4.695	11dBm/ MHz	MCS0
	5690 (UNII 3 Band)	138	-9.637	1.129	-8.508	30 dBm/ 500 kHz	MCS0



**Test Plots**

**802.11a UNII 2C Band**



**802.11a UNII 3 Band**



**802.11n(HT20) UNII 2C Band**



**802.11n(HT20) UNII 3 Band**



**802.11ac(VHT20) UNII 2C Band**



**802.11ac(VHT20) UNII 3 Band**





**802.11n(HT40) UNII 2C Band**



**802.11n(HT40) UNII 3 Band**



**802.11ac(VHT40) UNII 2C Band**



**802.11ac(VHT40) UNII 3 Band**



**802.11ac(VHT80) UNII 2C Band**



**802.11ac(VHT80) UNII 3 Band**



**10.7 RADIATED SPURIOUS EMISSIONS**

**Frequency Range : 9 kHz – 30MHz**

Frequency	Measured Level	A.F+C.L+D.F	POL	Total	Limit	Margin
[MHz]	[dBμV/m]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]
No Critical peaks found						

**Note:**

1. The Measured 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 (dBμV) + Distance extrapolation factor

**Frequency Range : Below 1 GHz**

Frequency	Measured Level	A.F+C.L	ANT. POL	Total	Limit	Margin
[MHz]	[dBμV/m]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/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:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Measured Level [dB $\mu$ V]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
10360	44.59	8.12	V	52.71	68.20	15.49	PK
15540	42.03	12.95	V	54.98	73.98	19.00	PK
15540	27.50	12.95	V	40.45	53.98	13.53	AV
10360	43.16	8.12	H	51.28	68.20	16.92	PK
15540	41.13	12.95	H	54.08	73.98	19.90	PK
15540	27.72	12.95	H	40.67	53.98	13.31	AV

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
10400	44.77	8.14	V	52.91	68.20	15.29	PK
15600	39.34	13.29	V	52.63	73.98	21.35	PK
15600	26.58	13.29	V	39.87	53.98	14.11	AV
10400	44.40	8.14	H	52.54	68.20	15.66	PK
15600	40.57	13.29	H	53.86	73.98	20.12	PK
15600	26.76	13.29	H	40.05	53.98	13.93	AV

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

Frequency [MHz]	Measured Level [dBμV]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10480	44.38	8.62	V	53.00	68.20	15.20	PK
15720	39.13	13.21	V	52.34	73.98	21.64	PK
15720	26.14	13.21	V	39.35	53.98	14.63	AV
10480	42.91	8.62	H	51.53	68.20	16.67	PK
15720	39.58	13.21	H	52.79	73.98	21.19	PK
15720	26.31	13.21	H	39.52	53.98	14.46	AV

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

Frequency [MHz]	Measured Level [dBμV]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
10520	43.98	8.85	V	52.83	68.20	15.37	PK
15780	40.98	12.87	V	53.85	73.98	20.13	PK
15780	27.08	12.87	V	39.95	53.98	14.03	AV
10520	43.79	8.85	H	52.64	68.20	15.56	PK
15780	40.88	12.87	H	53.75	73.98	20.23	PK
15780	27.01	12.87	H	39.88	53.98	14.10	AV

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
10600	43.34	9.35	V	52.69	73.98	21.29	PK
10600	30.03	9.35	V	39.38	53.98	14.60	AV
15900	41.08	12.56	V	53.64	73.98	20.34	PK
15900	27.65	12.56	V	40.21	53.98	13.77	AV
10600	43.11	9.35	H	52.46	73.98	21.52	PK
10600	29.89	9.35	H	39.24	53.98	14.74	AV
15900	40.99	12.56	H	53.55	73.98	20.43	PK
15900	27.59	12.56	H	40.15	53.98	13.83	AV

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
10640	43.84	9.15	V	52.99	73.98	20.99	PK
10640	29.92	9.15	V	39.07	53.98	14.91	AV
15960	41.35	12.21	V	53.56	73.98	20.42	PK
15960	27.66	12.21	V	39.87	53.98	14.11	AV
10640	43.75	9.15	H	52.90	73.98	21.08	PK
10640	29.84	9.15	H	38.99	53.98	14.99	AV
15960	43.21	12.21	H	55.42	73.98	18.56	PK
15960	27.60	12.21	H	39.81	53.98	14.17	AV

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

Frequency [MHz]	Measured Level [dBμV]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11000	43.91	10.19	V	54.10	73.98	19.88	PK
11000	30.64	10.19	V	40.83	53.98	13.15	AV
16500	40.96	12.17	V	53.13	68.20	15.07	PK
11000	42.41	10.19	H	52.60	73.98	21.38	PK
11000	30.38	10.19	H	40.57	53.98	13.41	AV
16500	42.32	12.17	H	54.49	68.20	13.71	PK

Band : UNII 2C  
 Operation Mode: 802.11 a  
 Transfer Rate: 6 Mbps  
 Operating Frequency 5600 MHz  
 Channel No. 120 Ch

Frequency [MHz]	Measured Level [dBμV]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11200	44.01	10.29	V	54.30	73.98	19.68	PK
11200	30.46	10.29	V	40.75	53.98	13.23	AV
16800	41.87	13.25	V	55.12	68.20	13.08	PK
11200	43.92	10.29	H	54.21	73.98	19.77	PK
11200	30.39	10.29	H	40.68	53.98	13.30	AV
16800	41.74	13.25	H	54.99	68.20	13.21	PK

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
11440	44.78	10.43	V	55.21	73.98	18.77	PK
11440	30.73	10.43	V	41.16	53.98	12.82	AV
17160	40.96	13.78	V	54.74	68.20	13.46	PK
11440	44.22	10.43	H	54.65	73.98	19.33	PK
11440	30.69	10.43	H	41.12	53.98	12.86	AV
17160	40.85	13.78	H	54.63	68.20	13.57	PK

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
11490	44.35	10.81	V	55.16	73.98	18.82	PK
11490	30.35	10.81	V	41.16	53.98	12.82	AV
17235	41.05	14.28	V	55.33	68.20	12.87	PK
11490	44.54	10.81	H	55.35	73.98	18.63	PK
11490	30.49	10.81	H	41.30	53.98	12.68	AV
17235	41.18	14.28	H	55.46	68.20	12.74	PK



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

Frequency [MHz]	Measured Level [dB $\mu$ V]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
11570	44.39	10.13	V	54.52	73.98	19.46	PK
11570	31.05	10.13	V	41.18	53.98	12.80	AV
17355	41.56	15.62	V	57.18	68.20	11.02	PK
11570	44.67	10.13	H	54.80	73.98	19.18	PK
11570	31.19	10.13	H	41.32	53.98	12.66	AV
17355	41.74	15.62	H	57.36	68.20	10.84	PK

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
11650	45.25	9.58	V	54.83	73.98	19.15	PK
11650	31.54	9.58	V	41.12	53.98	12.86	AV
<b>17475</b>	<b>40.81</b>	<b>17.18</b>	<b>V</b>	<b>57.99</b>	<b>68.20</b>	<b>10.21</b>	<b>PK</b>
11650	45.43	9.58	H	55.01	73.98	18.97	PK
11650	31.69	9.58	H	41.27	53.98	12.71	AV
17475	40.75	17.18	H	57.93	68.20	10.27	PK

[DBS Mode]

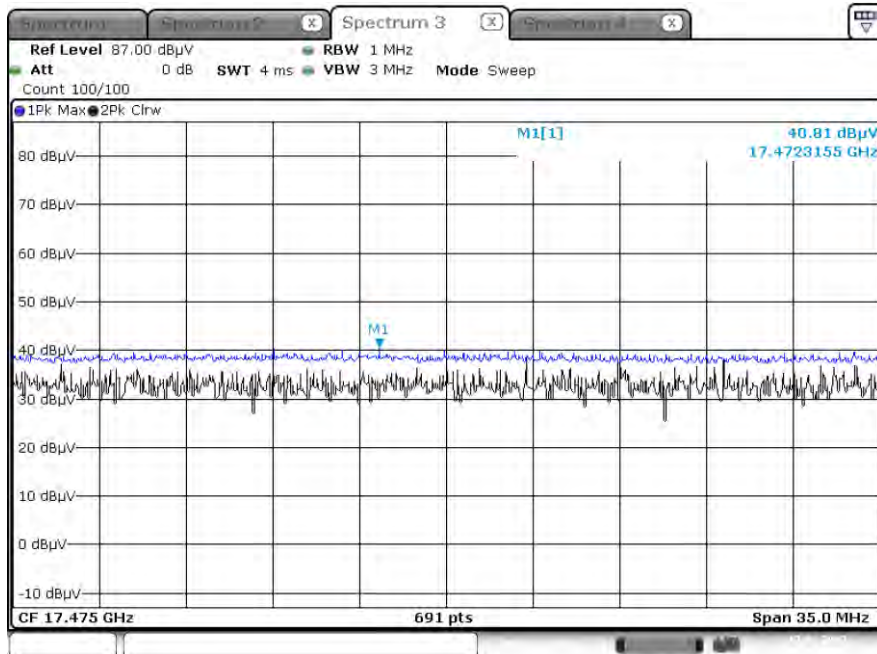
WLAN/BT Ant :BT GFSK ch.78 2nd & 5G 802.11a 6 Mbps Ch.165 3rd

Frequency [MHz]	Measured Level [dBμV]	C.L+A.F +D.F-A.G [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
11650	45.21	9.58	V	54.79	73.98	19.19	PK
11650	31.49	9.58	V	41.07	53.98	12.91	AV
<b>17475</b>	<b>41.36</b>	<b>17.18</b>	<b>V</b>	<b>58.54</b>	<b>68.20</b>	<b>9.66</b>	<b>PK</b>
11650	45.39	9.58	H	54.97	73.98	19.01	PK
11650	31.62	9.58	H	41.20	53.98	12.78	AV
17475	40.87	17.18	H	58.05	68.20	10.15	PK

Note : Bluetooth DBS Data refer to [BT] Test Report.

▣ Test Plots

Peak Result (802.11a 6 Mbps, Ch.165 3rdHarmonic, Y-V)



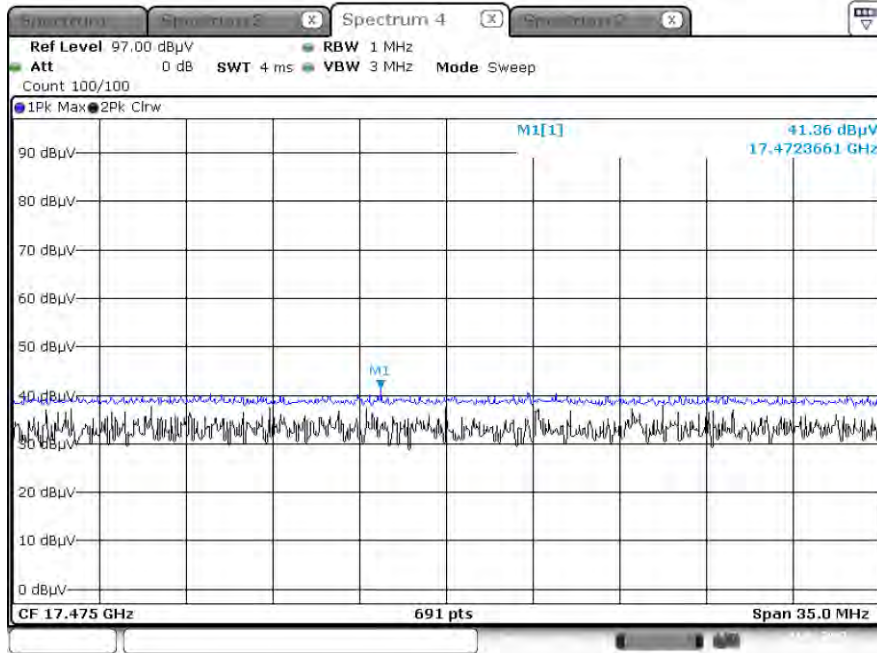
**Note:**

Only the worst case plots for Radiated Spurious Emissions.

■ Test Plots (DBS)

WLAN/BT Ant :BT GFSK ch.78 2nd & 5G 802.11a 6 Mbps Ch.165 3rd

Radiated Spurious Emissions plot – Peak Result (3rdHarmonic, Y-V)



**Note:**

Only the worst case plots for Radiated Spurious Emissions.

**10.8 RADIATED RESTRICTED BAND EDGE**

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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	60.44	8.43	H	68.87	73.98	5.11	PK
<b>5150</b>	<b>43.31</b>	<b>8.43</b>	<b>H</b>	<b>51.74</b>	<b>53.98</b>	<b>2.24</b>	<b>AV</b>
5150	59.26	8.43	V	67.69	73.98	6.29	PK
5150	41.88	8.43	V	50.31	53.98	3.67	AV

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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	50.08	8.43	H	58.51	73.98	15.47	PK
5150	38.73	8.43	H	47.16	53.98	6.82	AV
5150	49.70	8.43	V	58.13	73.98	15.85	PK
5150	37.14	8.43	V	45.57	53.98	8.41	AV

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
5350	60.54	8.23	H	68.77	73.98	5.21	PK
5350	41.78	8.23	H	50.01	53.98	3.97	AV
5350	59.16	8.23	V	67.39	73.98	6.59	PK
5350	40.65	8.23	V	48.88	53.98	5.10	AV

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
5460	51.78	8.98	H	60.76	73.98	13.22	PK
5460	37.17	8.98	H	46.15	53.98	7.83	AV
5470	56.68	8.75	H	65.43	68.20	2.77	PK
5460	50.19	8.98	V	59.17	73.98	14.81	PK
5460	36.22	8.98	V	45.20	53.98	8.78	AV
5470	55.42	8.75	V	64.17	68.20	4.03	PK

Band :	UNII 2C
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5520 MHz
Channel No.	104 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5460	48.93	8.98	H	57.91	73.98	16.07	PK
5460	34.91	8.98	H	43.89	53.98	10.09	AV
5470	52.16	8.75	H	60.91	68.20	7.29	PK
5460	48.27	8.98	V	57.25	73.98	16.73	PK
5460	33.74	8.98	V	42.72	53.98	11.26	AV
5470	50.31	8.75	V	59.06	68.20	9.14	PK



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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	55.69	8.43	H	64.12	73.98	9.86	PK
5150	42.86	8.43	H	51.29	53.98	2.69	AV
5150	54.68	8.43	V	63.11	73.98	10.87	PK
5150	42.81	8.43	V	51.24	53.98	2.74	AV

Band :	UNII 1
Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	5200 MHz
Channel No.	40 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	51.72	8.43	H	60.15	73.98	13.83	PK
5150	38.88	8.43	H	47.31	53.98	6.67	AV
5150	49.52	8.43	V	57.95	73.98	16.03	PK
5150	37.62	8.43	V	46.05	53.98	7.93	AV

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
5350	62.49	8.23	H	70.72	73.98	3.26	PK
5350	43.00	8.23	H	51.23	53.98	2.75	AV
5350	60.91	8.23	V	69.14	73.98	4.84	PK
5350	42.15	8.23	V	50.38	53.98	3.60	AV

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
5460	52.12	8.98	H	61.10	73.98	12.88	PK
5460	37.46	8.98	H	46.44	53.98	7.54	AV
5470	56.38	8.75	H	65.13	68.20	3.07	PK
5460	51.42	8.98	V	60.40	73.98	13.58	PK
5460	36.52	8.98	V	45.50	53.98	8.48	AV
5470	55.31	8.75	V	64.06	68.20	4.14	PK

Band :	UNII 2C
Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	5520 MHz
Channel No.	104 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5460	48.05	8.98	H	57.03	73.98	16.95	PK
5460	34.64	8.98	H	43.62	53.98	10.36	AV
5470	50.11	8.75	H	58.86	68.20	9.34	PK
5460	47.86	8.98	V	56.84	73.98	17.14	PK
5460	34.25	8.98	V	43.23	53.98	10.75	AV
5470	49.45	8.75	V	58.20	68.20	10.00	PK

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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	62.90	8.43	H	71.33	73.98	2.65	PK
5150	36.83	8.43	H	45.26	53.98	8.72	AV
5150	61.11	8.43	V	69.54	73.98	4.44	PK
5150	36.05	8.43	V	44.48	53.98	9.50	AV

Band :	UNII 1
Operation Mode:	802.11 ac_VHT20
Transfer MCS Index:	0
Operating Frequency	5200 MHz
Channel No.	40 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	51.25	8.43	H	59.68	73.98	14.30	PK
5150	38.57	8.43	H	47.00	53.98	6.98	AV
5150	49.87	8.43	V	58.30	73.98	15.68	PK
5150	37.44	8.43	V	45.87	53.98	8.11	AV

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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350	59.87	8.23	H	68.10	73.98	5.88	PK
5350	41.39	8.23	H	49.62	53.98	4.36	AV
5350	58.19	8.23	V	66.42	73.98	7.56	PK
5350	40.77	8.23	V	49.00	53.98	4.98	AV

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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5460	51.75	8.98	H	60.73	73.98	13.25	PK
5460	37.85	8.98	H	46.83	53.98	7.15	AV
5470	55.59	8.75	H	64.34	68.20	3.86	PK
5460	50.12	8.98	V	59.10	73.98	14.88	PK
5460	36.91	8.98	V	45.89	53.98	8.09	AV
5470	54.25	8.75	V	63.00	68.20	5.20	PK

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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	61.97	8.43	H	70.40	73.98	3.58	PK
5150	36.31	8.43	H	44.74	53.98	9.24	AV
5150	60.22	8.43	V	68.65	73.98	5.33	PK
5150	35.46	8.43	V	43.89	53.98	10.09	AV

Band :	UNII 1
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5230 MHz
Channel No.	46 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	53.14	8.43	H	61.57	73.98	12.41	PK
5150	38.90	8.43	H	47.33	53.98	6.65	AV
5150	52.09	8.43	V	60.52	73.98	13.46	PK
5150	37.62	8.43	V	46.05	53.98	7.93	AV



Band :	UNII 2A
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350	61.79	8.23	H	70.02	73.98	3.96	PK
5350	36.82	8.23	H	45.05	53.98	8.93	AV
5350	60.67	8.23	V	68.90	73.98	5.08	PK
5350	35.26	8.23	V	43.49	53.98	10.49	AV

Band :	UNII 2A
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5270 MHz
Channel No.	54 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350	48.31	8.23	H	56.54	73.98	17.44	PK
5350	34.92	8.23	H	43.15	53.98	10.83	AV
5350	47.12	8.23	V	55.35	73.98	18.63	PK
5350	34.77	8.23	V	43.00	53.98	10.98	AV

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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5460	55.21	8.98	H	64.19	73.98	9.79	PK
5460	32.88	8.98	H	41.86	53.98	12.12	AV
<b>5470</b>	<b>57.25</b>	<b>8.75</b>	<b>H</b>	<b>66.00</b>	<b>68.20</b>	<b>2.20</b>	<b>PK</b>
5460	54.22	8.98	V	63.20	73.98	10.78	PK
5460	31.19	8.98	V	40.17	53.98	13.81	AV
5470	56.21	8.75	V	64.96	68.20	3.24	PK

Band :	UNII 2C
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5550 MHz
Channel No.	110 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5460	46.34	8.98	H	55.32	73.98	18.66	PK
5460	34.11	8.98	H	43.09	53.98	10.89	AV
5470	47.47	8.75	H	56.22	68.20	11.98	PK
5460	45.52	8.98	V	54.50	73.98	19.48	PK
5460	33.83	8.98	V	42.81	53.98	11.17	AV
5470	46.55	8.75	V	55.30	68.20	12.90	PK

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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	59.03	8.43	H	67.46	73.98	6.52	PK
5150	38.64	8.43	H	47.07	53.98	6.91	AV
5150	58.29	8.43	V	66.72	73.98	7.26	PK
5150	37.49	8.43	V	45.92	53.98	8.06	AV

Band :	UNII 1
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5230 MHz
Channel No.	46 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	49.42	8.43	H	57.85	73.98	16.13	PK
5150	37.85	8.43	H	46.28	53.98	7.70	AV
5150	48.14	8.43	V	56.57	73.98	17.41	PK
5150	36.47	8.43	V	44.90	53.98	9.08	AV

Band :	UNII 2A
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350	61.38	8.23	H	69.61	73.98	4.37	PK
5350	39.51	8.23	H	47.74	53.98	6.24	AV
5350	60.51	8.23	V	68.74	73.98	5.24	PK
5350	38.49	8.23	V	46.72	53.98	7.26	AV

Band :	UNII 2A
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5270 MHz
Channel No.	54 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350	47.21	8.23	H	55.44	73.98	18.54	PK
5350	34.98	8.23	H	43.21	53.98	10.77	AV
5350	46.47	8.23	V	54.70	73.98	19.28	PK
5350	34.55	8.23	V	42.78	53.98	11.20	AV

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

Frequency [MHz]	Measured Level [dB $\mu$ V]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
5460	54.97	8.98	H	63.95	73.98	10.03	PK
5460	32.57	8.98	H	41.55	53.98	12.43	AV
5470	57.08	8.75	H	65.83	68.20	2.37	PK
5460	52.69	8.98	V	61.67	73.98	12.31	PK
5460	31.02	8.98	V	40.00	53.98	13.98	AV
5470	56.72	8.75	V	65.47	68.20	2.73	PK

Band :	UNII 2C
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5550 MHz
Channel No.	110 Ch

Frequency [MHz]	Measured Level [dB $\mu$ V]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
5460	46.22	8.98	H	55.20	73.98	18.78	PK
5460	34.03	8.98	H	43.01	53.98	10.97	AV
5470	48.33	8.75	H	57.08	68.20	11.12	PK
5460	45.98	8.98	V	54.96	73.98	19.02	PK
5460	33.76	8.98	V	42.74	53.98	11.24	AV
5470	47.24	8.75	V	55.99	68.20	12.21	PK

Band : UNII 1

Operation Mode: 802.11 ac\_VHT80

Transfer MCS Index: 0

Operating Frequency 5210 MHz

Channel No. 42 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	56.17	8.43	H	64.60	73.98	9.38	PK
5150	40.68	8.43	H	49.11	53.98	4.87	AV
5150	55.26	8.43	V	63.69	73.98	10.29	PK
5150	39.54	8.43	V	47.97	53.98	6.01	AV

Band : UNII 1

Operation Mode: 802.11 ac\_VHT80

Transfer MCS Index: 0

Operating Frequency 5290 MHz

Channel No. 58 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5150	44.09	8.43	H	52.52	73.98	21.46	PK
5150	32.71	8.43	H	41.14	53.98	12.84	AV
5150	43.50	8.43	V	51.93	73.98	22.05	PK
5150	32.30	8.43	V	40.73	53.98	13.25	AV



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

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5350	57.94	8.23	H	66.17	73.98	7.81	PK
5350	41.64	8.23	H	49.87	53.98	4.11	AV
5350	56.77	8.23	V	65.00	73.98	8.98	PK
5350	40.21	8.23	V	48.44	53.98	5.54	AV

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

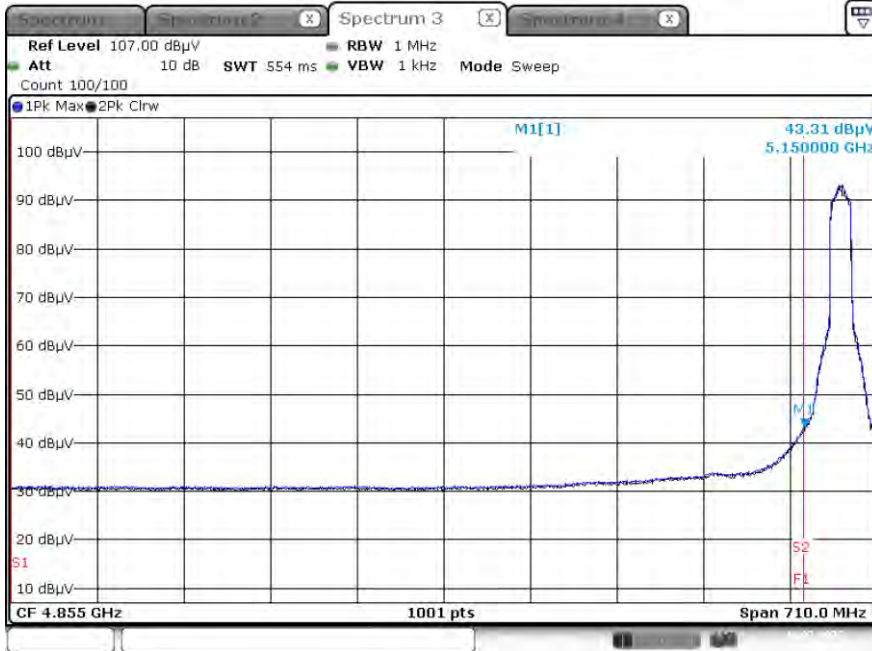
Frequency [MHz]	Measured Level [dBμV]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
5460	52.09	8.98	H	61.07	73.98	12.91	PK
5460	38.11	8.98	H	47.09	53.98	6.89	AV
5470	54.06	8.75	H	62.81	68.20	5.39	PK
5460	51.40	8.98	V	60.38	73.98	13.60	PK
5460	37.14	8.98	V	46.12	53.98	7.86	AV
5470	53.24	8.75	V	61.99	68.20	6.21	PK

Band :	UNII 2C
Operation Mode:	802.11 ac_VHT80
Transfer MCS Index:	0
Operating Frequency	5610 MHz
Channel No.	122 Ch

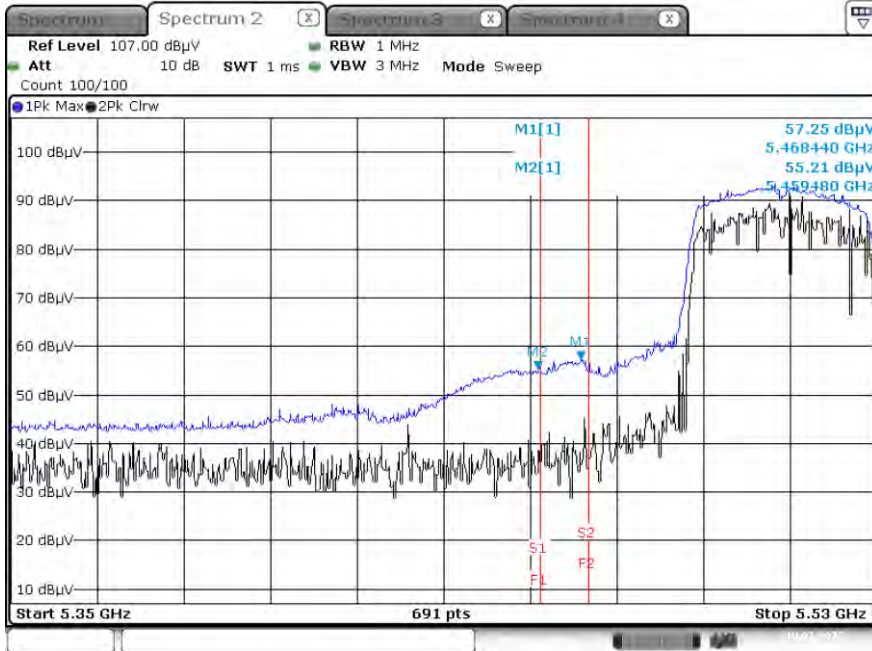
Frequency [MHz]	Measured Level [dB $\mu$ V]	A.F+C.L- A.G+ATT+D.F [dB/m]	ANT. POL [H/V]	Total [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Measurement Type
5460	47.69	8.98	H	56.67	73.98	17.31	PK
5460	34.66	8.98	H	43.64	53.98	10.34	AV
5470	48.60	8.75	H	57.35	68.20	10.85	PK
5460	47.52	8.98	V	56.50	73.98	17.48	PK
5460	34.05	8.98	V	43.03	53.98	10.95	AV
5470	47.57	8.75	V	56.32	68.20	11.88	PK

▣ Test Plots(UNII 1, 2A, 2C)

Average Result (802.11 a\_6 Mbps, Ch.36, Y-H)



Peak Result (802.11 n\_HT40\_ MCS0, Ch.102, Y-H)

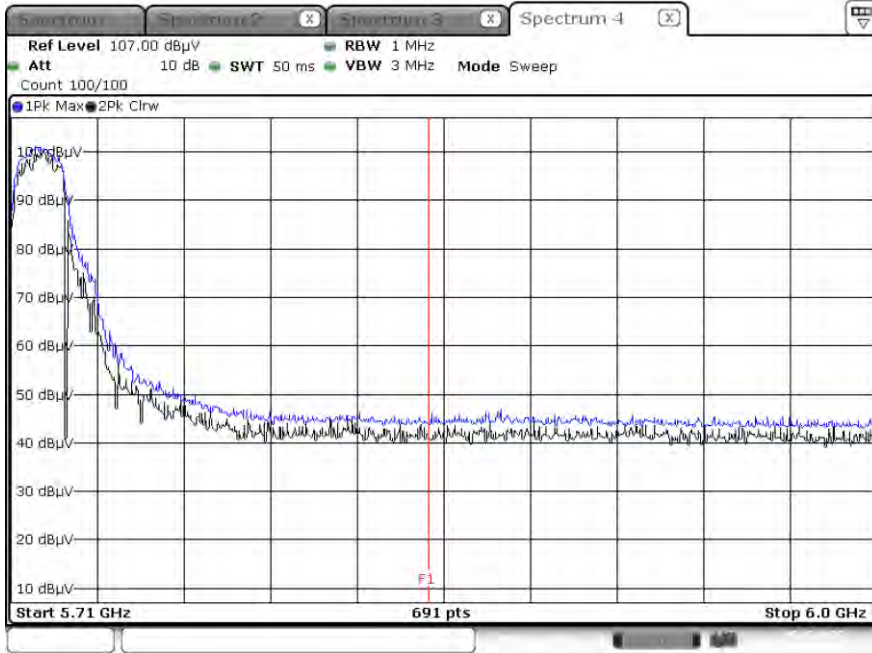


**Note:**

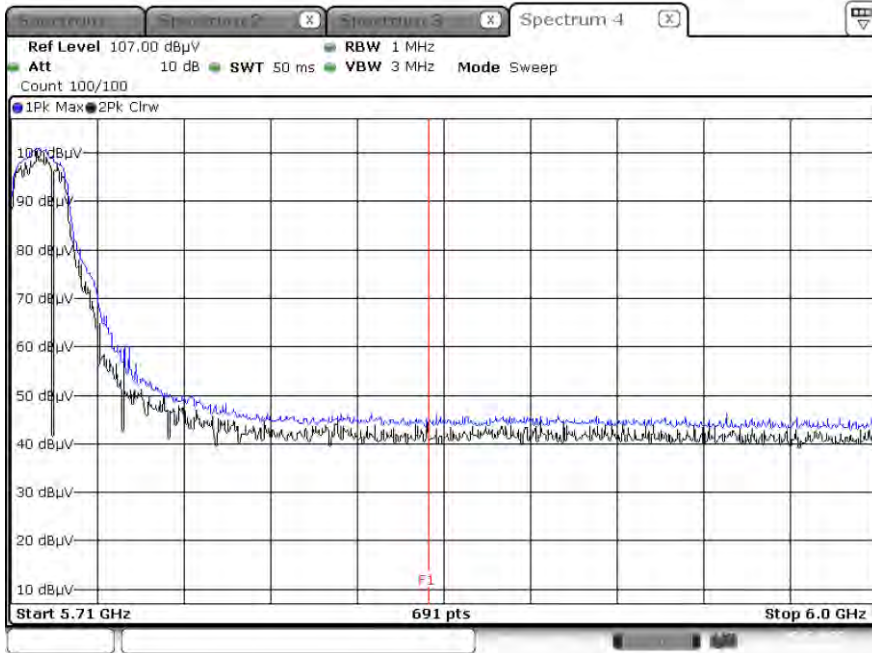
Only the worst case plots for Radiated Restricted Band Edge.

▣ Test Plots(Straddle Channel)

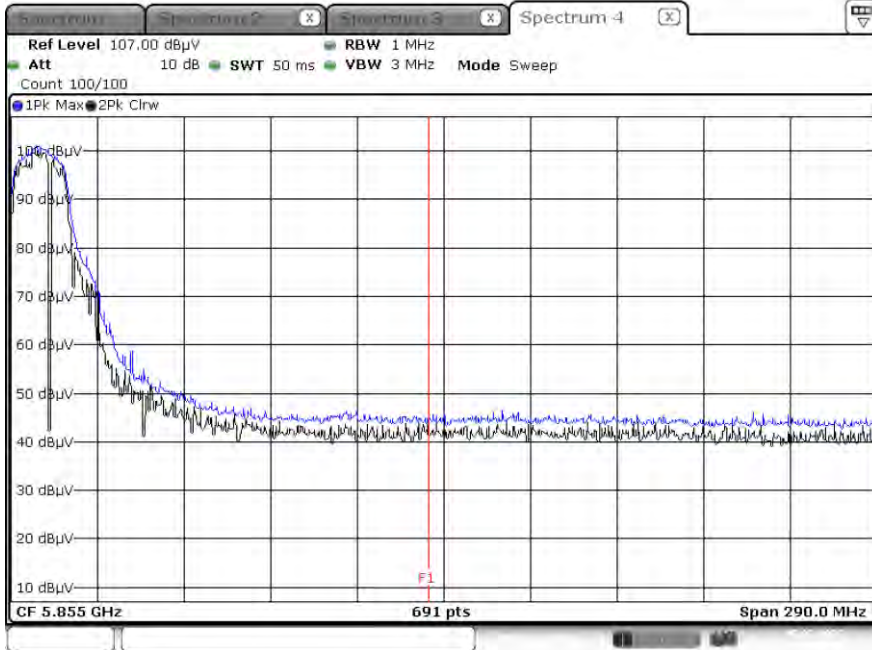
Peak Result (802.11a, Ch.144, X-H)



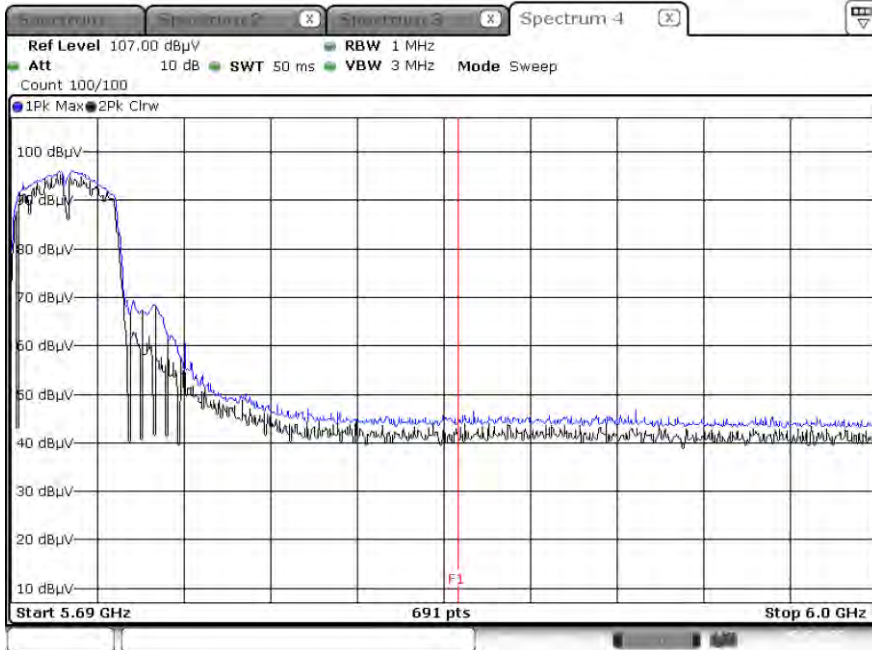
Peak Result (802.11n\_HT20, Ch.144, X-H)



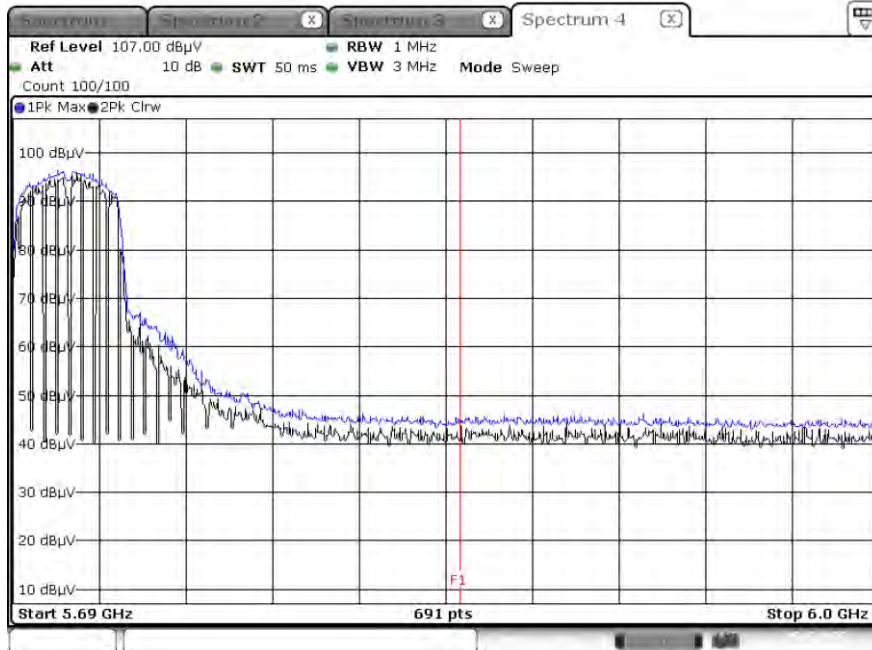
Peak Result (802.11ac\_VHT20, Ch.144, X-H)



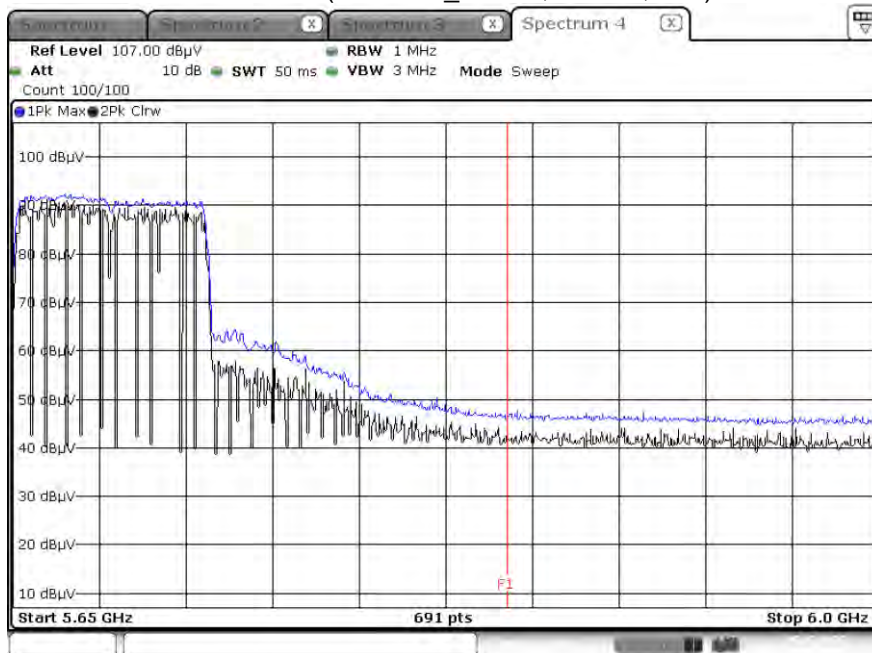
Peak Result (802.11n\_HT40, Ch.142, X-H)



Peak Result (802.11ac\_VHT40, Ch.142, X-H)



Peak Result (802.11ac\_VHT80, Ch.138, X-H)



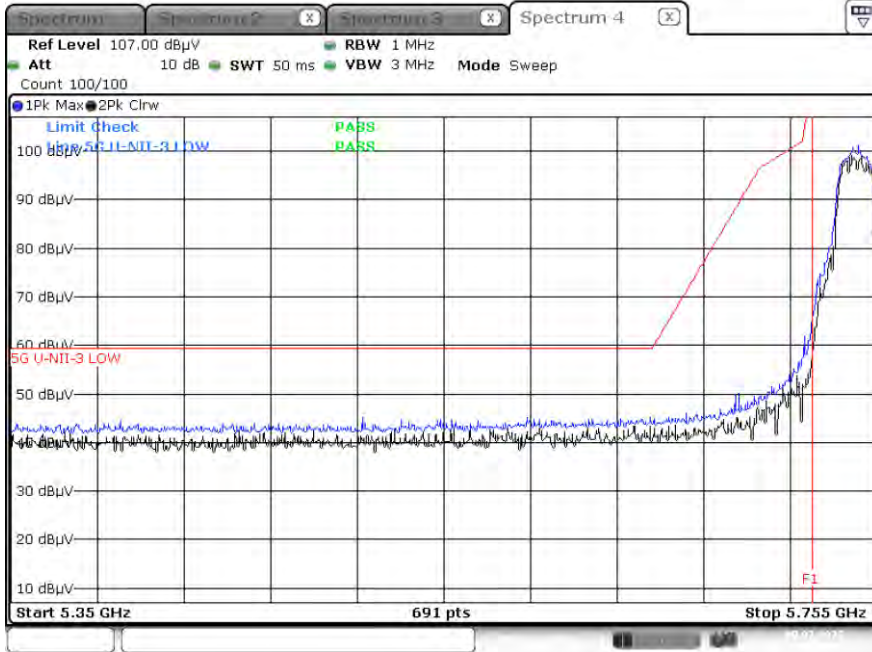
**Note :**

1. Only the worst case plots for Radiated Restricted Band Edge.
2. Red line : 5850 MHz
3. Ambient Noise (Because of ambient noise, We attached only the worst plot without a data table)

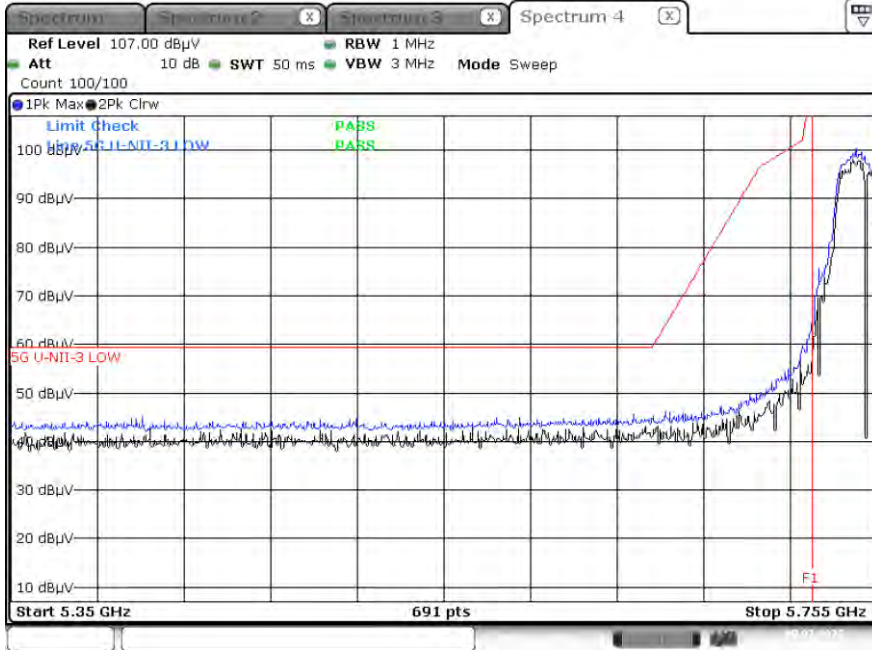


▣ Test Plots(UNII 3)

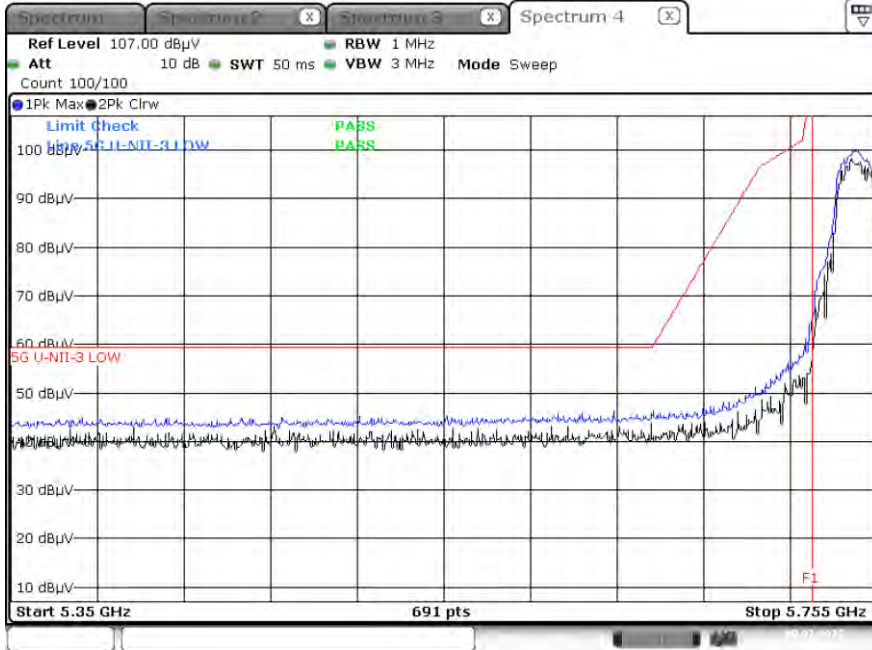
Peak Result (802.11a, Ch.149, X-H)



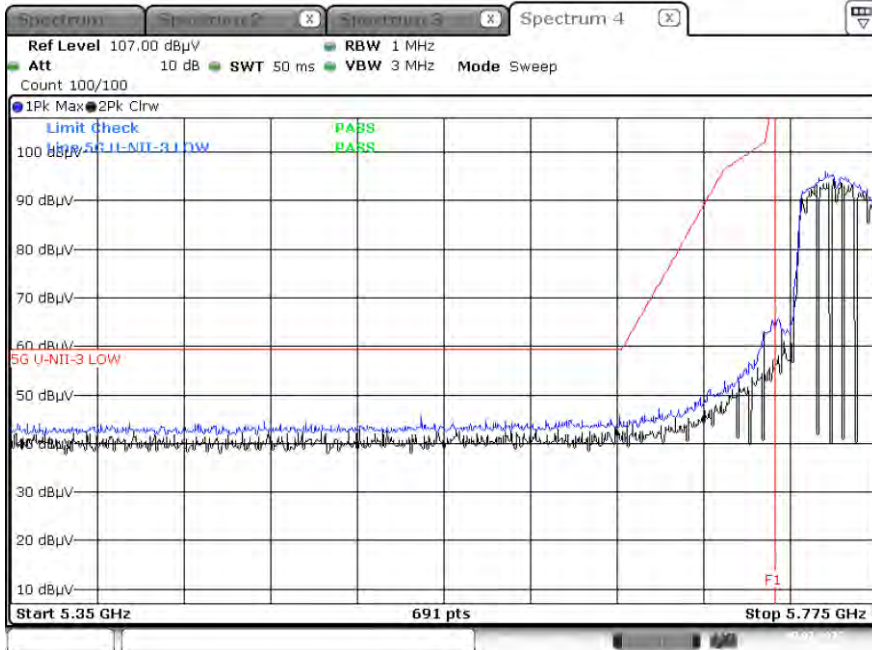
Peak Result (802.11n\_HT20, Ch.149, X-H)



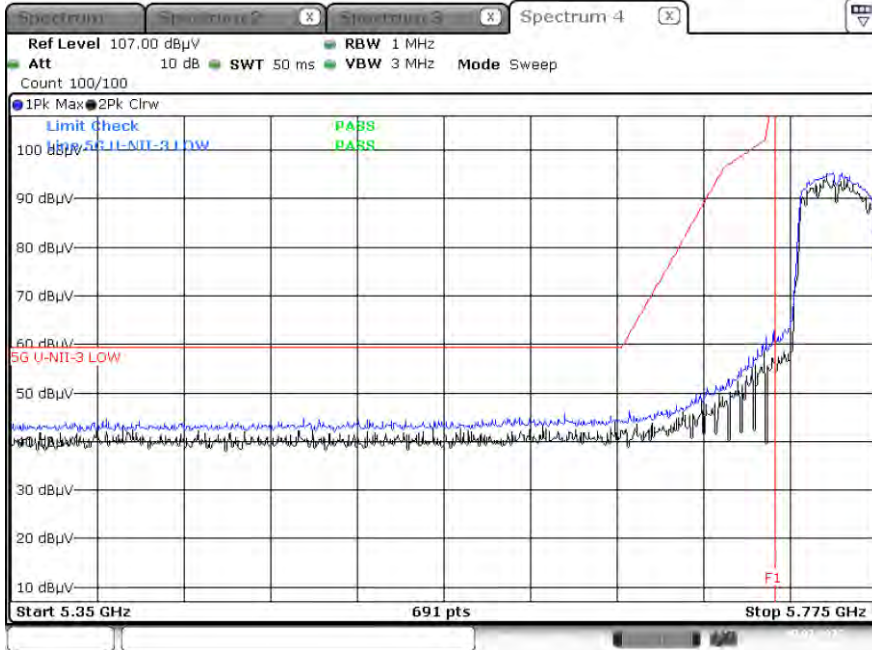
Peak Result (802.11ac\_VHT20, Ch.149, X-H)



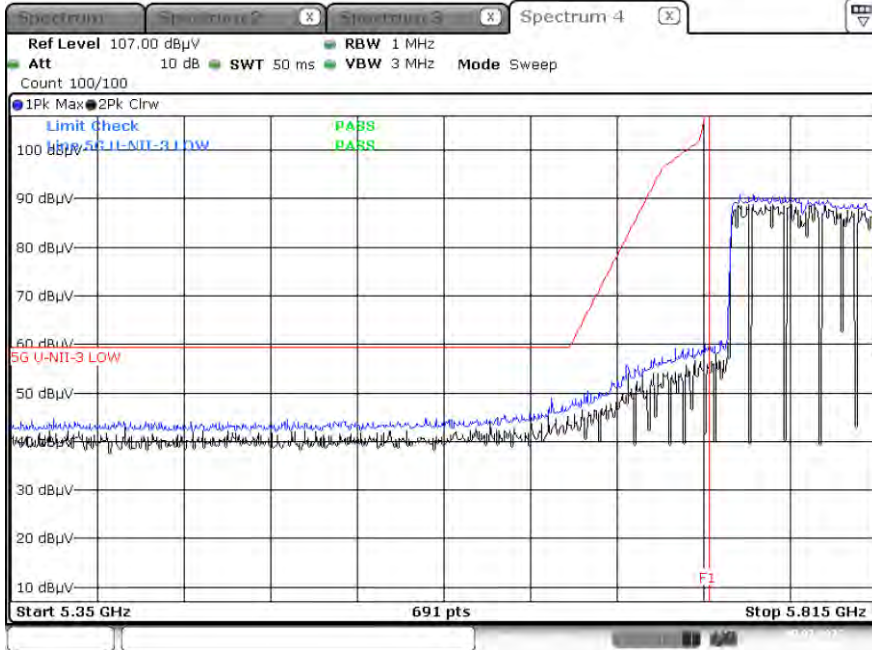
Peak Result (802.11n\_HT40, Ch.151, X-H)



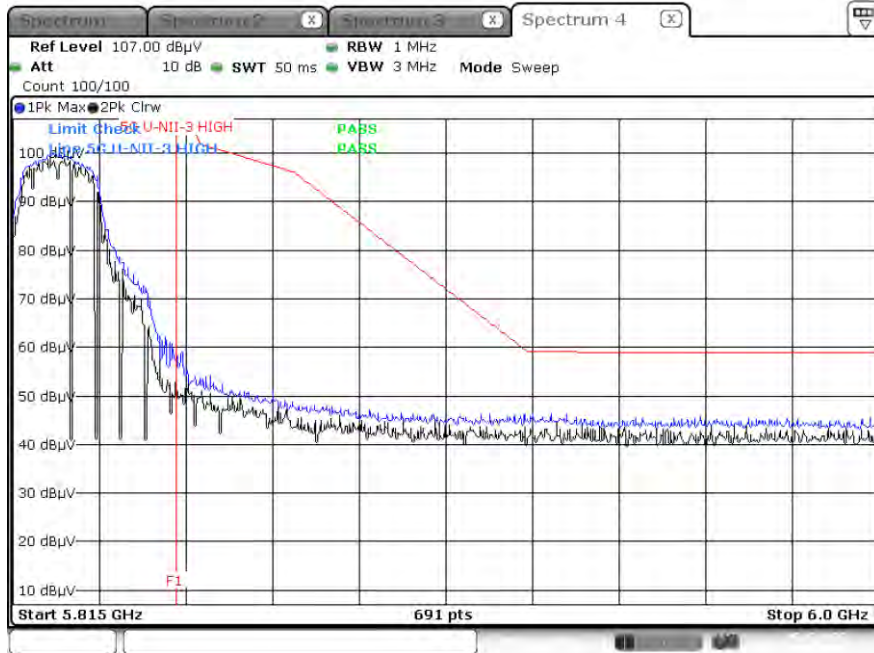
Peak Result (802.11ac\_VHT40, Ch.151, X-H)



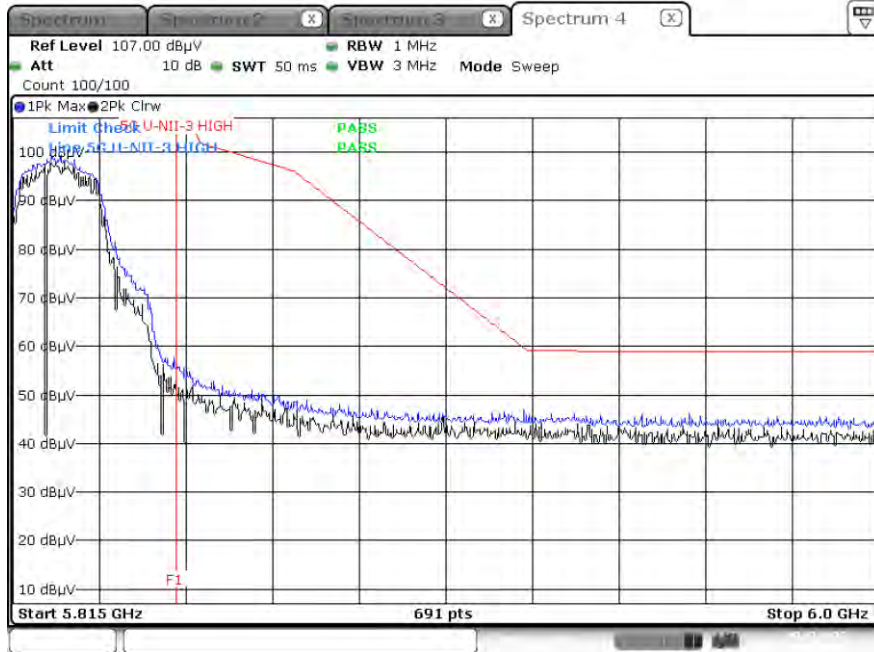
Peak Result (802.11ac\_VHT80, Ch.155, X-H)



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

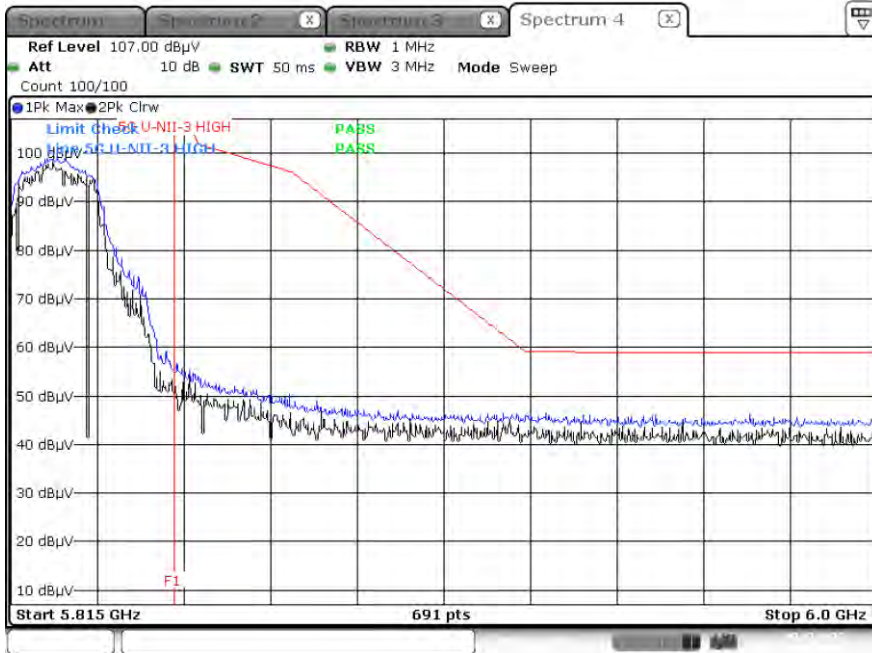


Peak Result (802.11n\_HT20, Ch.165, X-H)

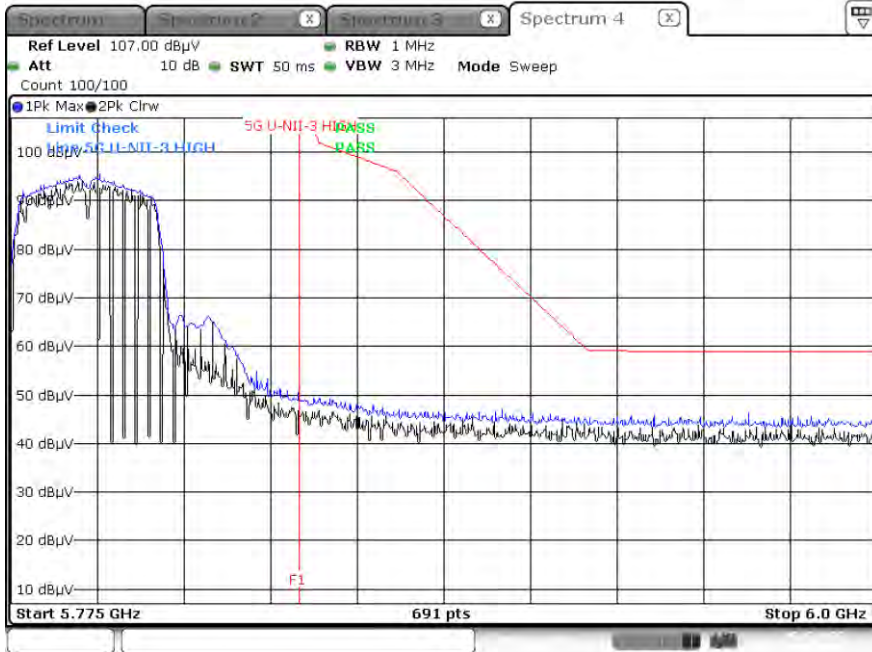




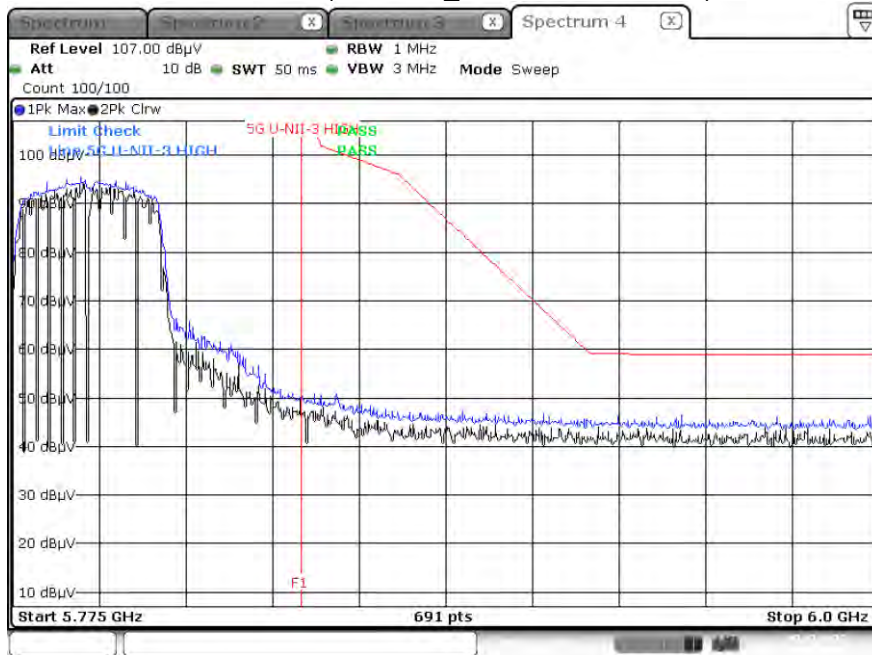
Peak Result (802.11ac\_VHT20, Ch.165, X-H)



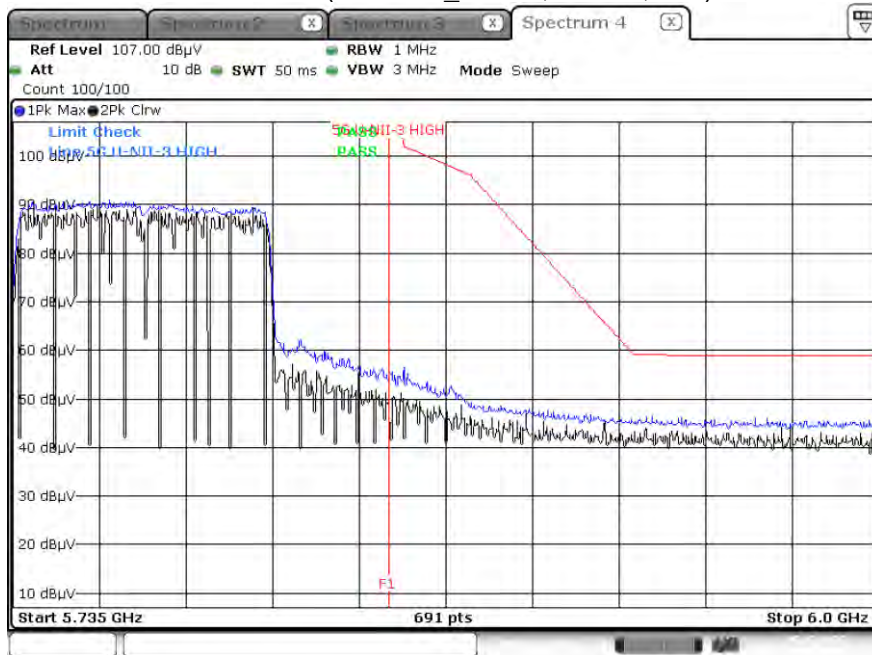
Peak Result (802.11n\_HT40, Ch.159, X-H)



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.
2. U-NII-3 Low & High Band Edge RedLine is Final Test Limit about factor value compensation.



**10.9 POWERLINE CONDUCTED EMISSIONS**

**Conducted Emissions (Line 1)**

5G WLAN\_L1

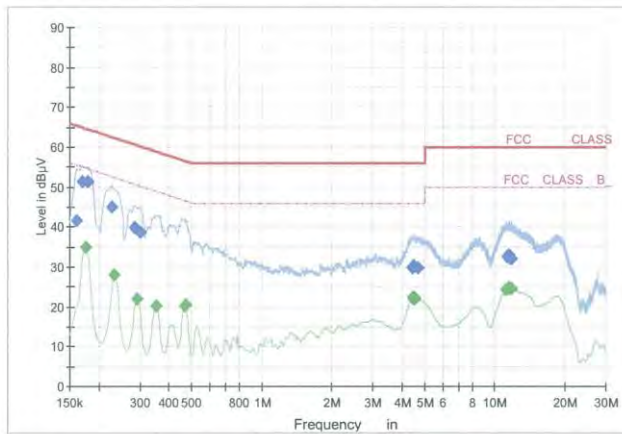
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**Test Report**

**Common Information**

EUT : SM-M536B/DSN  
 Manufacturer : SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions : 5G WLAN\_L1

Full Spectrum



Preview Result FCC CLASS  
 Preview Result Final\_Result QPK  
 Preview Result Final\_Result GAV

**Final Result QPK**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1613	41.54	65.40	23.86	9.000	L1	OFF	9.6
0.1703	51.28	64.95	13.67	9.000	L1	OFF	9.6
0.1793	51.25	64.52	13.27	9.000	L1	OFF	9.6
0.2265	45.05	62.58	17.52	9.000	L1	OFF	9.6
0.2850	39.69	60.67	20.98	9.000	L1	OFF	9.6
0.3008	38.70	60.22	21.53	9.000	L1	OFF	9.6
4.4128	29.68	56.00	26.32	9.000	L1	OFF	9.8
4.4285	29.86	56.00	26.14	9.000	L1	OFF	9.8
4.4510	30.00	56.00	26.00	9.000	L1	OFF	9.8
4.4735	30.26	56.00	25.74	9.000	L1	OFF	9.8
4.5140	29.86	56.00	26.14	9.000	L1	OFF	9.8
4.6963	29.70	56.00	26.30	9.000	L1	OFF	9.8
11.2348	32.72	60.00	27.28	9.000	L1	OFF	10.1
11.2820	32.55	60.00	27.45	9.000	L1	OFF	10.1
11.4800	32.57	60.00	27.43	9.000	L1	OFF	10.1
11.5003	32.78	60.00	27.22	9.000	L1	OFF	10.1
11.5273	32.39	60.00	27.61	9.000	L1	OFF	10.1
11.8333	32.07	60.00	27.93	9.000	L1	OFF	10.1

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5G WLAN\_L1

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**Final Result CAV**

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1748	34.91	54.73	19.82	9.000	L1	OFF	9.6
0.2333	27.90	52.33	24.43	9.000	L1	OFF	9.6
0.2918	21.83	50.47	28.64	9.000	L1	OFF	9.6
0.3525	20.19	48.90	28.71	9.000	L1	OFF	9.6
0.4650	20.07	46.60	26.53	9.000	L1	OFF	9.7
0.4718	20.47	46.48	26.02	9.000	L1	OFF	9.7
4.4105	22.10	46.00	23.90	9.000	L1	OFF	9.8
4.4713	22.24	46.00	23.76	9.000	L1	OFF	9.8
4.4758	22.23	46.00	23.77	9.000	L1	OFF	9.8
4.4983	22.17	46.00	23.83	9.000	L1	OFF	9.8
4.5253	22.20	46.00	23.80	9.000	L1	OFF	9.8
4.5478	22.04	46.00	23.96	9.000	L1	OFF	9.8
11.1785	24.36	50.00	25.64	9.000	L1	OFF	10.1
11.4778	24.69	50.00	25.31	9.000	L1	OFF	10.1
11.5340	24.52	50.00	25.48	9.000	L1	OFF	10.1
11.5430	24.59	50.00	25.41	9.000	L1	OFF	10.1
11.7658	24.51	50.00	25.49	9.000	L1	OFF	10.1
11.8333	24.40	50.00	25.60	9.000	L1	OFF	10.1

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**Conducted Emissions (Line 2)**

5G WLAN\_N

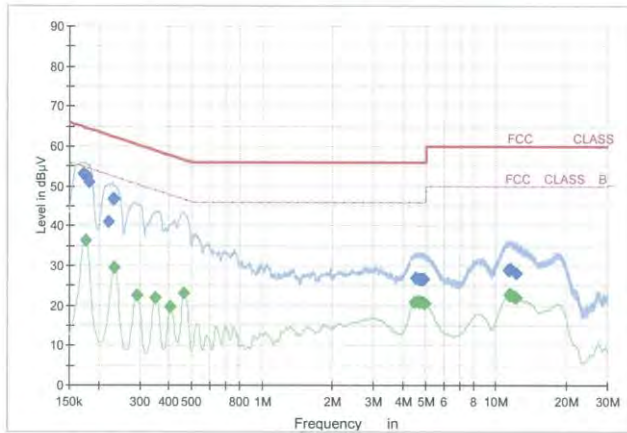
1 / 2

**Test Report**

**Common Information**

EUT : SM-M536B/DSN  
 Manufacturer : SAMSUNG  
 Test Site : SHIELD ROOM  
 Operating Conditions : 5G WLAN\_N

Full Spectrum



Preview Result Preview Result FCC CLASS  
 FCC CLASS B\_ Final\_Result QPK Final\_Result CAV

**Final Result QPK**

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1725	52.98	64.84	11.85	9.000	N	OFF	9.6
0.1770	52.64	64.63	11.99	9.000	N	OFF	9.6
0.1815	51.18	64.42	13.23	9.000	N	OFF	9.6
0.2198	41.03	62.83	21.80	9.000	N	OFF	9.6
0.2288	46.68	62.50	15.82	9.000	N	OFF	9.6
0.2333	46.62	62.33	15.71	9.000	N	OFF	9.6
4.5568	26.85	56.00	29.15	9.000	N	OFF	9.8
4.6805	26.47	56.00	29.53	9.000	N	OFF	9.8
4.7615	26.64	56.00	29.36	9.000	N	OFF	9.8
4.7908	26.50	56.00	29.50	9.000	N	OFF	9.8
4.8493	26.49	56.00	29.51	9.000	N	OFF	9.8
4.8808	26.46	56.00	29.54	9.000	N	OFF	9.8
11.3113	28.86	60.00	31.14	9.000	N	OFF	10.1
11.3810	28.99	60.00	31.01	9.000	N	OFF	10.1
11.4665	29.20	60.00	30.80	9.000	N	OFF	10.1
11.4733	29.07	60.00	30.93	9.000	N	OFF	10.1
11.5453	28.85	60.00	31.15	9.000	N	OFF	10.1
12.2585	28.11	60.00	31.89	9.000	N	OFF	10.2

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**Final Result CAV**

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1748	36.25	54.73	18.48	9.000	N	OFF	9.6
0.2333	29.48	52.33	22.86	9.000	N	OFF	9.6
0.2918	22.52	50.47	27.96	9.000	N	OFF	9.6
0.3503	21.94	48.96	27.02	9.000	N	OFF	9.6
0.4043	19.64	47.77	28.12	9.000	N	OFF	9.7
0.4628	23.21	46.64	23.44	9.000	N	OFF	9.7
4.4690	20.74	46.00	25.26	9.000	N	OFF	9.8
4.6288	21.05	46.00	24.95	9.000	N	OFF	9.8
4.6873	20.90	46.00	25.10	9.000	N	OFF	9.8
4.7615	20.85	46.00	25.15	9.000	N	OFF	9.8
4.8493	20.75	46.00	25.25	9.000	N	OFF	9.8
4.9618	20.42	46.00	25.58	9.000	N	OFF	9.8
11.3810	22.60	50.00	27.40	9.000	N	OFF	10.1
11.4598	22.78	50.00	27.22	9.000	N	OFF	10.1
11.4755	22.74	50.00	27.26	9.000	N	OFF	10.1
11.5903	22.62	50.00	27.38	9.000	N	OFF	10.1
11.9773	22.27	50.00	27.73	9.000	N	OFF	10.1
12.2585	22.02	50.00	27.98	9.000	N	OFF	10.2

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## 11. LIST OF TEST EQUIPMENT

### Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	08/23/2022	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	06/17/2022	Annual
Temperature Chamber	SU-642	ESPEC	0093008124	03/15/2022	Annual
Signal Analyzer	N9030A	Agilent	MY49432108	03/09/2022	Annual
Power Meter	N1911A	Agilent	MY45100523	04/08/2022	Annual
Power Sensor	N1921A	Agilent	MY57820067	04/08/2022	Annual
Directional Coupler	87300B	Agilent	3116A03621	11/02/2022	Annual
Power Splitter	11667B	Hewlett Packard	10545	02/03/2023	Annual
DC Power Supply	E3632A	HP	KR75303243	04/27/2022	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C	HP	07560	06/18/2022	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C	HP	08285	06/28/2022	Annual
Attenuator(20 dB)	18N-20dB	Rohde & Schwarz	8	03/08/2022	Annual
Software	EMC32	Rohde & Schwarz	N/A	N/A	N/A
FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	HCT CO., LTD.	N/A	N/A	N/A

### Note:

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

**Radiated Test**

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Controller(Antenna mast)	CO3000	Innco system	CO3000-4p	N/A	N/A
Antenna Position Tower	MA4640/800-XP-EP	Innco system	N/A	N/A	N/A
EM1000 / Controller	EM1000	Audix	060520	N/A	N/A
Turn Table	N/A	Audix	N/A	N/A	N/A
Amp &Filter Bank Switch Controller	FBSM-01B	TNM system	TM19050002	N/A	N/A
Loop Antenna	1513	Schwarzbeck	1513-333	03/19/2022	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-0895	09/04/2022	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-1300	01/18/2024	Biennial
Horn Antenna(15 GHz ~ 40 GHz)	BBHA9170	Schwarzbeck	BBHA9170124	04/12/2023	Biennial
Spectrum Analyzer	FSV(10 Hz ~ 40 GHz)	Rohde & Schwarz	101055	05/14/2022	Annual
Band Reject Filter	WRCJV2400/2483.5-2370/2520-60/12SS	Wainwright Instruments	2	01/06/2023	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	5	06/24/2022	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	6	06/24/2022	Annual
High Pass Filter(7 GHz ~ 18 GHz)	WHKX10-7150-8000-18000-50SS	Wainwright Instruments	1	04/02/2022	Annual
Power Amplifier	CBL18265035	CERNEX	22966	12/02/2022	Annual
Power Amplifier	CBL26405040	CERNEX	25956	03/23/2022	Annual
HPF(3~18GHz) LNA1(1~18GHz)	FMSR-05B	TNM system	F6	01/19/2023	Annual
ATT(10dB) + LNA1(1~18GHz)	FMSR -05B	TNM system	None	01/19/2023	Annual
ATT(3dB) + LNA1(1~18GHz)	FMSR -05B	TNM system	None	01/19/2023	Annual
LNA1(1~18GHz)	FMSR -05B	TNM system	25540	01/19/2023	Annual
HPF(7~18GHz) LNA2(6~18GHz)	FMSR -05B	TNM system	28550	01/19/2023	Annual
Thru(30MHz ~ 18GHz)	FMSR -05B	TNM system	None	01/19/2023	Annual

**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-2203-FC001-P