



RF TEST REPORT

Report No.: SET2021-11492

Product Name: RDS AV RECEIVER

IC: 775E-K118

FCC ID: AJDK118

Model No. : DMH-W2700NEX

Serial Model: DMH-W2770NEX

Applicant: PIONEER CORPORATION

Address: 28-8, Honkomagome 2-Chome, Bunkyo-ku, Tokyo 113-0021, Japan.

Dates of Testing: 08/30/2021 —09/03/2021

Issued by: CCIC Southern Testing Co., Ltd.

Lab Location: Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China.

Tel: 86 755 26627338 **Fax:** 86 755 26627238

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Test Report

Product Name : RDS AV RECEIVER

Brand Name : Pioneer

Trade Name : Pioneer

Applicant : PIONEER CORPORATION.


Applicant Address : 28-8, Honkomagome 2-Chome, Bunkyo-ku, Tokyo
113-0021, Japan

Manufacturer : PIONEER CORPORATION.

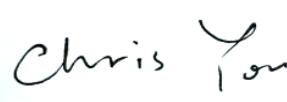
Manufacturer Address : 28-8, Honkomagome 2-Chome, Bunkyo-ku, Tokyo
113-0021, Japan

Test Standards : 47 CFR Part 15 Subpart E 15.407
IC RSS-Gen(Issue 5, March 2019)
IC RSS-247(Issue 2, Feb. 2017)

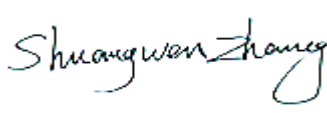
Test Result : PASS

Tested by :  2021.09.15

Sun, Test Engineer

Reviewed by :  2021.09.15

Chris You, Senior Engineer

Approved by :  2021.09.15

Shuangwen Zhang, Manager

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| Change History | | |
|----------------|------------|---------------------------------------|
| Issue | Date | Reason for change |
| 1.0 | 2021.09.15 | First edition |
| 2.0 | 2021.09.15 | Correct the Model Name and SW version |
| | | |

1. General Information

1.1. EUT Description

| | |
|---------------------------------|--|
| Product Name | RDS AV RECEIVER |
| EUT Type | OEM devices installed in vehicles |
| Hardware Version | 1.0.0 |
| Software Version | PIO_WS01_0.1.10 |
| EUT supports Radios application | WLAN5.0GHz 802.11a/n (HT20/40)/ac(VHT20/40/80) |
| Modulation Type | CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only |
| Transfer Rate | 802.11a: 54/48/36/24/18/12/9/6 Mbps 802.11n : up to 150 Mbps 802.11ac: up to 433.3Mbps |
| Frequency Range | Band UNII-3: 5735~5815MHz |
| Channel Bandwidth | 802.11a: 20MHz, 802.11n: 20MHz/40MHz 802.11ac: 20MHz/40MHz/80MHz |
| Antenna Type | PIFA |
| Antenna Gain | -4.7dBi |
| Output Power (Max.) | Band UNII-3: 13.13dBm |

Note1: The EUT is a RDS AV RECEIVER, it contains 2 models, they are DMH-W2700NEX; DMH-W2770NEX. They have the same size, appearance and internal structure, and the only difference is the model number. and DMH-W2770NEX contain an extra remote control.

Note2: The antenna gain and RF adapter/cable insert loss provided by manufacture.

1.2. Test Standards and Results

The objective of the report is to perform testing according to below standards for the EUT FCC ID/IC Certification:

| No. | Identity | Document Title |
|-----|--|--|
| 1 | 47 CFR Part 15 Subpart E § 15.407 | Radio Frequency Devices |
| 2 | 789033 D02 General UNII Test Procedures New Rules v02r01 | Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E |
| 3 | IC RSS-Gen (Issue 5, March. 2019) | General Requirements for Compliance of Radio Apparatus |
| 4 | IC RSS-247 (Issue 2, Feb. 2017) | Digital Transmission Systems (DTSs), Frequency Hopping Systems(FHSs) and Licence-Exemp Local Area Network (LE-LAN) Devices |
| 5 | ANSI C63.10-2013 | American National Standard for Testing Unlicensed Wireless Devices |

Test detailed items/section required by FCC /IC rules and results are as below:

| No. | FCC Rule | IC Rule | Description | Result |
|-----|---------------------|------------------|--|--------|
| 1 | 15.203 | RSS GEN, 6.8 | Antenna Requirement | PASS |
| 2 | 15.407(a) | RSS-247, 6.2 | Maximum Conducted Output Power | PASS |
| 3 | 15.407(a) | - | Emission Bandwidth(26 dB Bandwidth) | N/A |
| | 15.407(e) | RSS-247, 6.2 | Emission Bandwidth(6 dB Bandwidth) | PASS |
| | - | RSS GEN (6.7) | Emission Bandwidth(99%) | PASS |
| 4 | 15.407(a) | RSS-247, 6.2 | Power spectral density (PSD) | PASS |
| 5 | 15.207 | RSS-Gen, 8.8 | Power Line Conducted Emission | PASS |
| 6 | 15.209 15.407(b) | RSS-247, 6.2 | Radiated Band Edges and Spurious Emission | PASS |
| 7 | 15.407(g) | - | Frequency Stability | PASS |
| 8 | 15.407(c) | RSS-247, 6.4 | Automatically discontinue transmission | PASS |

1.3. Channel List

Operated band in 5735 MHz ~ 5815MHz

1 channels are provided for 802.11a

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 149 | 5745 MHz | | |

1 channels are provided for 802.11n-HT40 and 802.11ac-VHT40

| Channel | Frequency | | |
|---------|-----------|--|--|
| 151 | 5755 MHz | | |

1 channel are provided for 802.11ac-VHT80

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 155 | 5775 MHz | / | / |

1.4. Test environment and mode

| Operating Environment | |
|--------------------------------|--|
| Temperature | 24 °C |
| Humidity | 57 % RH |
| Atmospheric Pressure | 1010 mbar |
| Test mode: | |
| Continuously transmitting mode | For RF test items, an engineering test program was provided and enable to make EUT transmitting. Keeps the EUT in 100% duty cycle transmitting with modulation in SISO, duty cycle factor is not required. |

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

| For Frequency band 5735 ~ 5815 MHz | | | |
|------------------------------------|-------------------------------|--|--|
| Mode | Modulation scheme / bandwidth | | |
| | 5745 MHz | | |
| 802.11a | 6 Mbps | | |
| 802.11n/ac – HT20 | MCS 0 | | |
| Frequency | 5755 MHz | | |
| 802.11n/ac – HT40 | MCS 0 | | |
| Frequency | 5775 MHz | | |
| 802.11ac – VHT80 | MCS 0 | | |

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation modes or test configuration modes mentioned above was evaluated respectively.



| Test Mode | Description |
|-----------|----------------------|
| Mode 1 | TX A Mode / CH149 |
| Mode 2 | TX N20 Mode / CH149 |
| Mode 3 | TX N40 Mode / CH151 |
| Mode 4 | TX AC20 Mode / CH149 |
| Mode 5 | TX AC40 Mode / CH151 |
| Mode 6 | TX AC80 Mode / CH155 |
| Mode 7 | TX Mode |

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

| For Conducted Test | |
|--------------------|----------------------|
| Final Test Mode | Description |
| Mode 7 | TX Mode |
| For Radiated Test | |
| Final Test Mode | Description |
| Mode 1 | TX A Mode / CH149 |
| Mode 2 | TX N20 Mode / CH149 |
| Mode 3 | TX N40 Mode / CH151 |
| Mode 4 | TX AC20 Mode / CH149 |
| Mode 5 | TX AC40 Mode / CH151 |
| Mode 6 | TX AC80 Mode / CH155 |

1.5. Power level setup in software

| Power level setup in software for 5G wifi | | | |
|---|------|--|--|
| 5735-5815MHz | | | |
| Frequency (MHz) | 5745 | | |
| A mode | 55 | | |
| Frequency (MHz) | 5745 | | |
| N20 mode | 55 | | |
| Frequency (MHz) | 5755 | | |
| N40 mode | 55 | | |
| Frequency (MHz) | 5745 | | |
| AC20 mode | 55 | | |
| Frequency (MHz) | 5755 | | |
| AC40 mode | 55 | | |
| Frequency (MHz) | 5775 | | |
| AC80 mode | 55 | | |



1.6. Laboratory Facilities

CNAS-Lab Code: L1659

CCIC-SET is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

FCC-Registration No.: 406086

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No.: 406086, valid time is until April 19th, 2023.

ISED Registration: 11185A-1

CAB identifier: CN0064

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Jun. 30th, 2023.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

2. Test Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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.

And according to FCC 47 CFR Section 15.407(E), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

According to RSSGEN 6.8, The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

2.1.2. Antenna Information

| | |
|---------------------------|------------------|
| Antenna Type | PIFA |
| EUT | RDS AV RECEIVER |
| Operating frequency range | 5735-5815 MHz |
| Antenna Gain | -4.7dBi(Maximum) |

2.1.3. Result: comply

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Output Power

2.2.1. Limit of Output Power

FCC 15.407(a)

The maximum conducted output power should not exceed:

| Band | EUT Category | Limit |
|----------|---|---|
| U-NII-1 | <input type="checkbox"/> Outdoor Access Point | 1 Watt (30 dBm) (Max. e.i.r.p. \leq 125mW(21dBm) at any elevation angle above 30 degrees as measured from the horizon) |
| | <input type="checkbox"/> Fixed point-to-point Access device | 1 Watt (30 dBm) |
| | <input type="checkbox"/> Indoor Access Point | 1 Watt (30 dBm) |
| | <input type="checkbox"/> Mobile and portable client device | 250mW (24 dBm) |
| U-NII-2A | <input type="checkbox"/> | 250mW (24 dBm) or 11dBm+10logB* Whichever is less. |
| U-NII-2C | <input type="checkbox"/> | 250mW (24 dBm) or 11dBm+10logB* Whichever is less. |
| U-NII-3 | <input checked="" type="checkbox"/> | 1 Watt (30 dBm) |

Note: B* is the 26 dB emission bandwidth in MHz.

RSS-247, 6.2

The maximum conducted output power shall not exceed:

| Band | EUT Category | Limit |
|----------|--|--|
| U-NII-1 | <input type="checkbox"/> OEM devices installed in vehicles | 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less |
| U-NII-2A | <input type="checkbox"/> | 250mW (24 dBm) or 11dBm+10logB* Whichever is less. |
| U-NII-2C | <input type="checkbox"/> | 250mW (24 dBm) or 11dBm+10logB* Whichever is less. |
| U-NII-3 | <input checked="" type="checkbox"/> | 1 Watt (30 dBm) |

Note: B* is the 99% emission bandwidth in MHz.

The maximum e.i.r.p. shall not exceed:

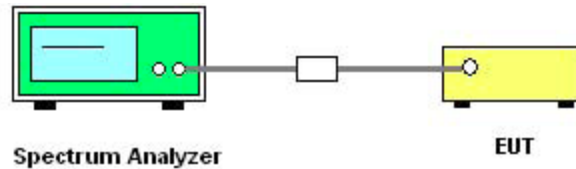
| Band | EUT Category | Limit |
|----------|-------------------------------------|--|
| U-NII-1 | <input type="checkbox"/> | 200mW(23dBm) or 10dBm+10log B* Whichever is less. |
| U-NII-2A | <input type="checkbox"/> | 1W (30 dBm) or 17dBm+10logB* Whichever is less. |
| U-NII-2C | <input type="checkbox"/> | 1W (30 dBm) or 17dBm+10logB* Whichever is less. |
| U-NII-3 | <input checked="" type="checkbox"/> | N/A |

Note: B* is the 99% emission bandwidth in MHz.

2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.2.3. Test Setup



2.2.4. Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1
2. The RF output of EUT was connected to spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW=1MHz, VBW=3MHz, Sweep time=Auto, Detector=average (RMS), Compute power by integrating the spectrum across the 99%OBW.
5. Measure the conducted output power and record the results in the test report.



2.2.5. Test Result

Please refer to APPENDIX A for detail

2.3. Emission Bandwidth

2.3.1. Limit of Bandwidth

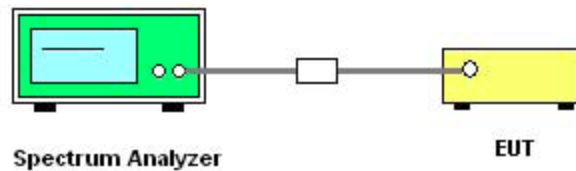
There is no limit bandwidth for band U-NII-1, U-NII-2A and U-NII-2C.

The minimum of 6dB bandwidth measurement is 0.5 MHz for U-NII-3.

2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.3.3. Test Setup



2.3.4. Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

3. Set to the maximum power setting and enable the EUT transmit continuously.

4. For 26dB bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = approximately 1%EBW, VBW \geq 3RBW, Detector = Peak, Trace mode = max hold
Span > 26 dB bandwidth and Sweep time = auto

5. Use the spectrum analyzer N dB down function to find the 26dB bandwidth.

6. For 6 Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 100kHz
VBW = 300 kHz, Detector = Peak, Trace mode = max hold

7. Use the spectrum analyzer N dB down function to find the 6dB bandwidth

8. Measure and record the worst results in the test report.



2.3.5. Test Results Bandwidth

Please refer to APPENDIX A for detail

2.4. Power spectral density (PSD)

2.4.1. Limit of Power Spectral Density

FCC 15.407(a)

The maximum power spectral density should not exceed:

| Band | EUT Category | Limit |
|----------|---|--------------|
| U-NII-1 | <input type="checkbox"/> Access Point (Master device) | 17 dBm/MHz |
| | <input type="checkbox"/> Fixed point-to-point Access device | |
| | <input type="checkbox"/> Mobile and portable client device | 11 dBm/MHz |
| U-NII-2A | <input type="checkbox"/> | 11 dBm/MHz |
| U-NII-2C | <input type="checkbox"/> | 11 dBm/MHz |
| U-NII-3 | <input checked="" type="checkbox"/> | 30dBm/500kHz |

RSS-247, 6.2

The maximum power spectral density should not exceed:

| Band | EUT Category | Limit |
|----------|-------------------------------------|---------------|
| U-NII-1 | <input type="checkbox"/> | N/A |
| U-NII-2A | <input type="checkbox"/> | 11 dBm/MHz |
| U-NII-2C | <input type="checkbox"/> | 11 dBm/MHz |
| U-NII-3 | <input checked="" type="checkbox"/> | 30 dBm/500kHz |

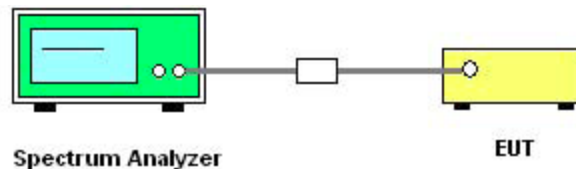
The e.i.r.p. spectral density should not exceed:

| Band | EUT Category | Limit |
|----------|-------------------------------------|------------|
| U-NII-1 | <input type="checkbox"/> | 10 dBm/MHz |
| U-NII-2A | <input type="checkbox"/> | N/A |
| U-NII-2C | <input type="checkbox"/> | N/A |
| U-NII-3 | <input checked="" type="checkbox"/> | N/A |

2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.4.3. Test Setup



2.4.4. Test Procedures

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.

4. For U-NII-1, U-NII-2A, U-NII-2C Band:

Using method SA-1

Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto, detector = sample, traces 100 sweeps of averaging mode.

For U-NII-3 Band:

Set RBW=500 kHz, $VBW \geq 3RBW$, where span is enough to capture the entire bandwidth, Sweep time = Auto, detector = sample, traces 100 sweeps of averaging mode.

5. Use peak search function on the instrument to find the peak of the spectrum and record its value
6. Repeat above procedures until all default test channel (low, middle, and high) was complete.

2.4.5. Test Results of Power spectral density

Please refer to APPENDIX A for detail

2.5. Frequency Stability

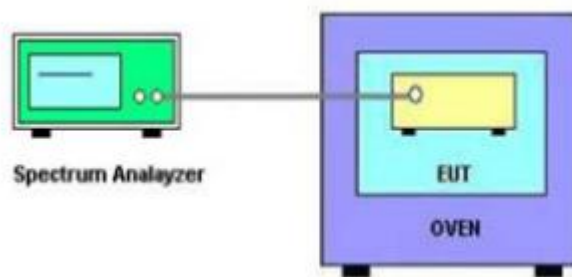
2.5.1. Limit

| FCC 15.407(b) Frequency Stability | |
|-----------------------------------|--------------------------------|
| Frequency Band(MHz) | Limit |
| 5150~5250 | Specified in the user's manual |
| 5250~5350 | |
| 5470~5725 | |
| 5725~5850 | |

2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.5.3. Test Setup



2.5.4. Test Procedures

1. The EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. The EUT is installed in an environment test chamber with external power source.
4. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.
5. A sufficient stabilization period at each temperatures in used prior to each frequency measurement.
6. The test shall be performed under -10 to 55 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.
7. Measure and record the worst results in the test report.



2.5.5. Test Results of Frequency Stability

Please refer to APPENDIX A for detail

2.6. Automatically Discontinue Transmission

2.6.1. Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

2.6.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.6.3. Test Results of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

2.7. Radiated Band Edge and Spurious Emission

2.7.1. Limit of Radiated Band Edges and Spurious Emission

Radiated emission which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

| Frequency (MHz) | Field Strength ($\mu\text{V}/\text{m}$) | Measurement Distance (m) |
|-----------------|---|--------------------------|
| 0.009 - 0.490 | 2400/F(kHz) | 300 |
| 0.490 - 1.705 | 24000/F(kHz) | 30 |
| 1.705 - 30.0 | 30 | 30 |
| 30 - 88 | 100 | 3 |
| 88 - 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

| Applicable To | Limit | |
|--|-----------------------------------|------------------------------------|
| 789033 D02 General UNII Test Procedures New Rules V02r01 | Field Strength at 3m | |
| | PK:74(dB $\mu\text{V}/\text{m}$) | AV:54 (dB $\mu\text{V}/\text{m}$) |

| Frequency Band (MHz) | Frequency (MHz) | EIRP Limit (dBm) | Equivalent Field Strength (3m) (dB $\mu\text{V}/\text{m}$) |
|----------------------|-------------------------------|------------------|---|
| 5150 - 5250 | Outside of the 5.15~5.35 GHz | -27 | 68.2 |
| 5250 - 5350 | Outside of the 5.15~5.35 GHz | | |
| 5470 -5725 | Outside of the 5.47~5.725 GHz | | |

| FCC 15.407 | | | |
|----------------------|-----------------|------------------|---|
| Frequency Band (MHz) | Frequency (MHz) | EIRP Limit (dBm) | Equivalent Field Strength (3m) (dBμV/m) |
| 5725 - 5850 | <5650 | -27 | 68.2 |
| | 5650~5700 | -27~10 | 68.2~105.2 |
| | 5700~5720 | 10~15.6 | 105.2~110.8 |
| | 5720~5725 | 15.6~27 | 110.8~122.2 |
| | 5850~5855 | 27~15.6 | 122.2~110.8 |
| | 5855~5875 | 15.6~10 | 110.8~105.2 |
| | 5875~5925 | 10~-27 | 105.2~68.2 |
| | >5925 | -27 | 68.2 |

Note: 1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000 \sqrt{30P}}{3} \mu\text{V/m, where } P \text{ is the eirp (Watts).}$$

For IC:

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

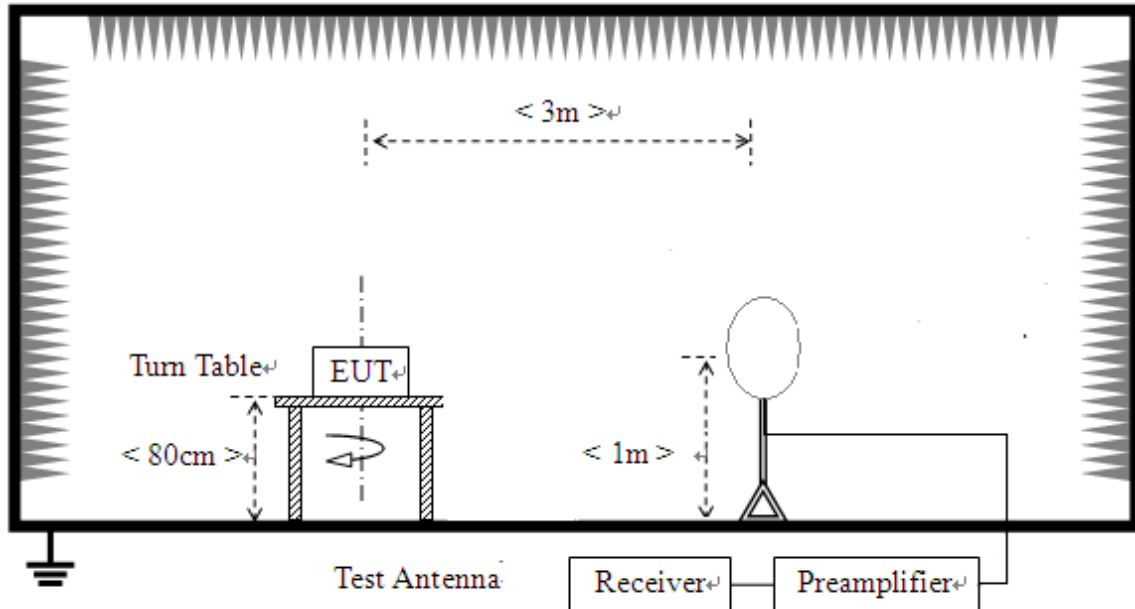
- a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
- b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
- c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
- d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

2.7.2. Measuring Instruments

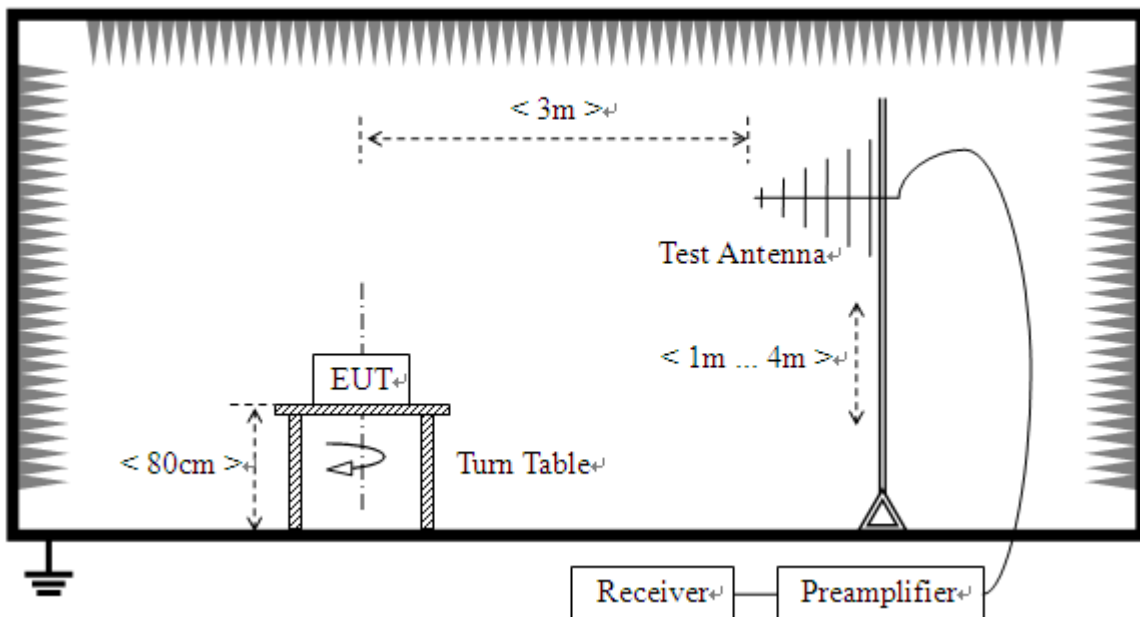
The measuring equipment is listed in the section 3 of this test report.

2.7.3. Test Setup

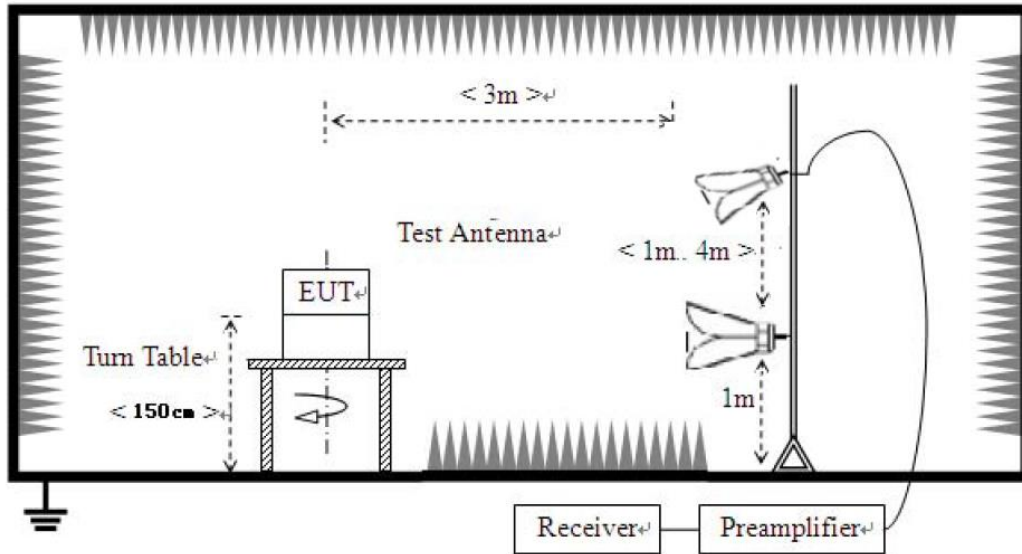
For radiated emissions from 9 KHz to 30 MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.7.4. Test Procedures

1. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
6. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:



1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

The worst mode as below:

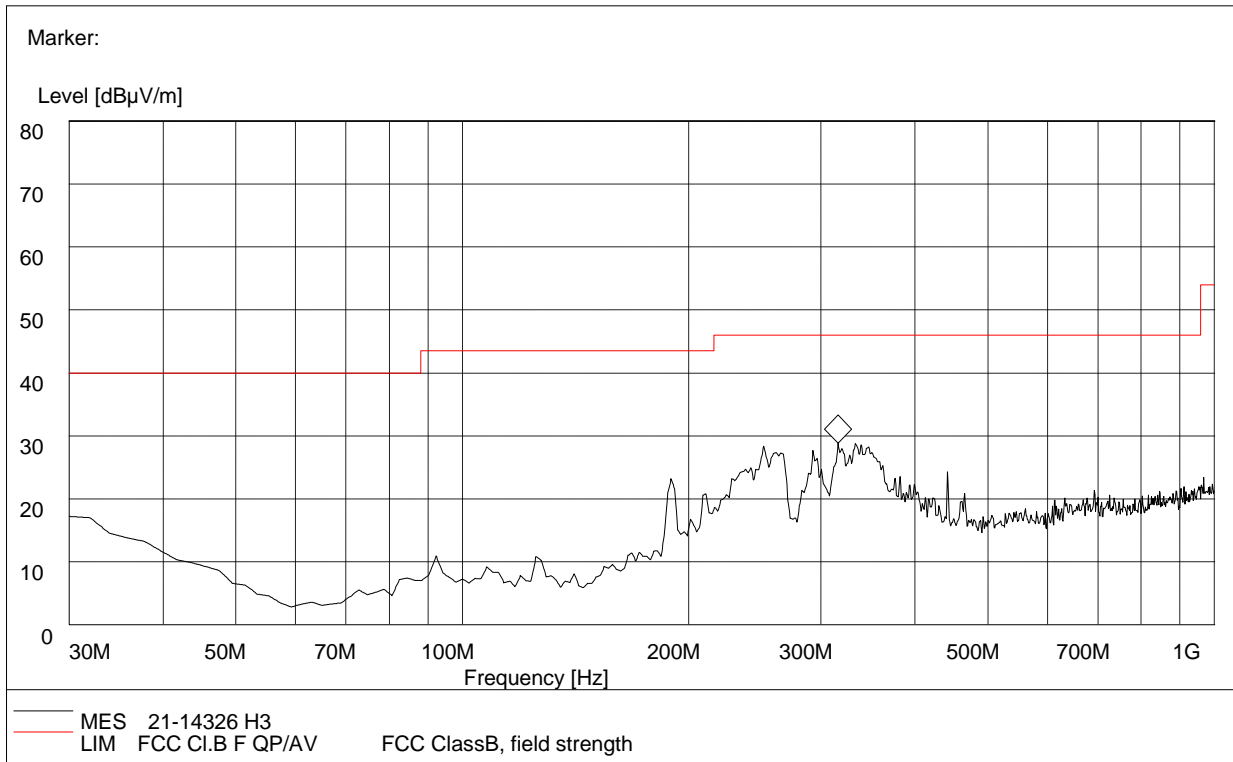
802.11n (40MHz) 5755MHz TX for below 1GHz due to maximum conducted power

2.7.5. Test Results of Radiated Band Edge and Spurious Emission

For 9 KHz to 30MHz

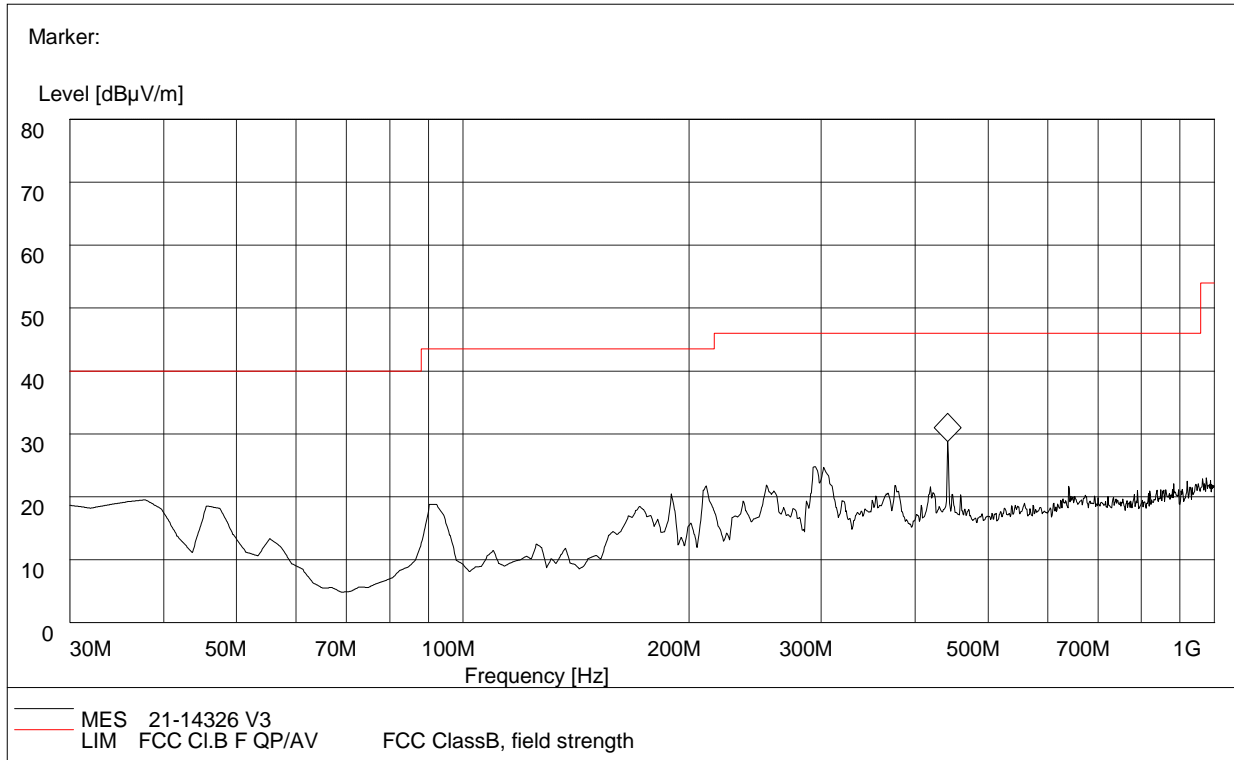
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz



30MHz to 1GHz, Antenna Horizontal

| Frequency (MHz) | QuasiPeak (dBµV/m) | Bandwidth (kHz) | Corr. Factor (dB/m) | Antenna height (cm) | Limit (dBµV/m) | Margin | Antenna | Verdict |
|-----------------|--------------------|-----------------|---------------------|---------------------|----------------|--------|------------|---------|
| 30.000000 | 17.50 | 120.000 | 17.9 | 100.0 | 40.0 | 22.5 | Horizontal | Pass |
| 189.380000 | 22.01 | 120.000 | 13.7 | 100.0 | 43.5 | 21.49 | Horizontal | Pass |
| 237.890000 | 23.54 | 120.000 | 10.6 | 100.0 | 46.0 | 22.46 | Horizontal | Pass |
| 251.530000 | 27.82 | 120.000 | 17.5 | 100.0 | 46.0 | 18.18 | Horizontal | Pass |
| 292.420000 | 27.50 | 120.000 | 17.5 | 100.0 | 46.0 | 18.5 | Horizontal | Pass |
| 315.750000 | 27.82 | 120.000 | 24.8 | 100.0 | 46.0 | 18.18 | Horizontal | Pass |



30MHz to 1GHz, Antenna Vertical

| Frequency (MHz) | QuasiPeak (dB μ V/m) | Bandwidth (kHz) | Corr. Factor (dB μ V/m) | Antenna height (cm) | Limit (dB μ V/m) | Margin | Antenna | Verdict |
|-----------------|--------------------------|-----------------|-----------------------------|---------------------|----------------------|--------|----------|---------|
| 36.820000 | 18.50 | 120.000 | 17.9 | 100.0 | 40.0 | 21.5 | Vertical | Pass |
| 45.020000 | 17.95 | 120.000 | 13.7 | 100.0 | 40.0 | 22.05 | Vertical | Pass |
| 92.820000 | 17.58 | 120.000 | 10.3 | 100.0 | 43.5 | 25.92 | Vertical | Pass |
| 189.520000 | 20.00 | 120.000 | 17.5 | 100.0 | 43.5 | 23.5 | Vertical | Pass |
| 210.820000 | 21.08 | 120.000 | 17.5 | 100.0 | 43.5 | 22.42 | Vertical | Pass |
| 442.080000 | 27.82 | 120.000 | 19.3 | 100.0 | 46.0 | 18.18 | Vertical | Pass |

**For 1GHz to 40 GHz****ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11a_5745MHz)**

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 55.25 | PK | 68.20 | -12.95 | 1.50 | 300 | 45.60 | 9.65 |
| 2 | 11490.00 | 56.24 | PK | 68.20 | -11.96 | 1.50 | 300 | 34.54 | 21.70 |
| 3 | 11490.00 | 43.55 | AV | 54.00 | -10.45 | 1.50 | 300 | 21.85 | 21.70 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11a_5745MHz)

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 56.12 | PK | 68.20 | -12.08 | 1.60 | 180 | 46.47 | 9.65 |
| 2 | 11490.00 | 57.95 | PK | 68.20 | -10.25 | 1.60 | 180 | 36.25 | 21.70 |
| 3 | 11490.00 | 45.10 | AV | 54.00 | -8.9 | 1.60 | 180 | 23.40 | 21.70 |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20_5745MHz)**

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 56.02 | PK | 68.20 | -12.18 | 1.50 | 300 | 46.37 | 9.65 |
| 2 | 11490.00 | 56.38 | PK | 68.20 | -11.82 | 1.50 | 300 | 34.68 | 21.70 |
| 3 | 11490.00 | 43.81 | AV | 54.00 | -10.19 | 1.50 | 300 | 22.11 | 21.70 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20_5745MHz)

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 56.32 | PK | 68.20 | -11.88 | 1.60 | 180 | 46.67 | 9.65 |
| 2 | 11490.00 | 57.25 | PK | 68.20 | -10.95 | 1.60 | 180 | 35.55 | 21.70 |
| 3 | 11490.00 | 44.44 | AV | 54.00 | -9.56 | 1.60 | 180 | 22.74 | 21.70 |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac20_5745MHz)**

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 55.98 | PK | 68.20 | -12.22 | 1.50 | 300 | 46.33 | 9.65 |
| 2 | 11490.00 | 56.74 | PK | 68.20 | -11.46 | 1.50 | 300 | 35.04 | 21.70 |
| 3 | 11490.00 | 44.25 | AV | 54.00 | -9.75 | 1.50 | 300 | 22.55 | 21.70 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac20_5745MHz)

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 57.65 | PK | 68.20 | -10.55 | 1.60 | 180 | 48.00 | 9.65 |
| 2 | 11490.00 | 56.82 | PK | 68.20 | -11.38 | 1.60 | 180 | 35.12 | 21.70 |
| 3 | 11490.00 | 44.08 | AV | 54.00 | -9.92 | 1.60 | 180 | 22.38 | 21.70 |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40_5755MHz)**

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 54.59 | PK | 68.20 | -13.61 | 1.50 | 300.00 | 44.94 | 9.65 |
| 2 | 11510.00 | 56.74 | PK | 68.20 | -11.46 | 1.50 | 300.00 | 35.04 | 21.70 |
| 3 | 11510.00 | 44.17 | AV | 54.00 | -9.83 | 1.50 | 300.00 | 22.47 | 21.70 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40_5755MHz)

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 55.25 | PK | 68.20 | -12.95 | 1.60 | 300.00 | 45.60 | 9.65 |
| 2 | 11510.00 | 56.02 | PK | 68.20 | -12.18 | 1.60 | 300.00 | 34.32 | 21.70 |
| 3 | 11510.00 | 43.87 | AV | 54.00 | -10.13 | 1.60 | 300.00 | 22.17 | 21.70 |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac40_5755MHz)**

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 55.02 | PK | 68.20 | -13.18 | 1.50 | 300.00 | 45.37 | 9.65 |
| 2 | 11510.00 | 56.02 | PK | 68.20 | -12.18 | 1.50 | 300.00 | 34.32 | 21.70 |
| 3 | 11510.00 | 43.28 | AV | 54.00 | -10.72 | 1.50 | 300.00 | 21.58 | 21.70 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac40_5755MHz)

| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
|-----|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| 1 | 5725.00 | 54.06 | PK | 68.20 | -14.14 | 1.60 | 300.00 | 44.41 | 9.65 |
| 2 | 11510.00 | 55.28 | PK | 68.20 | -12.92 | 1.60 | 300.00 | 33.58 | 21.70 |
| 3 | 11510.00 | 42.93 | AV | 54.00 | -11.07 | 1.60 | 300.00 | 21.23 | 21.70 |



| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11ac-VHT80_5775MHz) | | | | | | | | | |
|--|-----------------|-------------------------|----|----------------|-------------|--------------------|----------------------|--------------------|--------------------------|
| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
| 1 | 5460.00 | 56.25 | PK | 68.20 | -11.95 | 1.80 | 280.00 | 46.47 | 9.78 |
| 2 | 5460.00 | 44.28 | AV | 54.00 | -9.72 | 1.80 | 280.00 | 34.50 | 9.78 |
| 3 | 11220.00 | 57.25 | PK | 68.20 | -10.95 | 1.80 | 280.00 | 35.45 | 21.80 |
| 4 | 11220.00 | 45.20 | AV | 54.00 | -8.80 | 1.80 | 280.00 | 23.40 | 21.80 |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11ac-VHT80_5775MHz) | | | | | | | | | |
| No. | Frequency (MHz) | Emission Level (dBuV/m) | | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV/m) | Correction Factor (dB/m) |
| 1 | 5460.00 | 55.98 | PK | 68.20 | -12.22 | 1.70 | 300.00 | 46.20 | 9.78 |
| 2 | 5460.00 | 44.01 | AV | 54.00 | -9.99 | 1.70 | 300.00 | 34.23 | 9.78 |
| 3 | 11220.00 | 56.94 | PK | 68.20 | -11.26 | 1.70 | 300.00 | 35.14 | 21.80 |
| 4 | 11220.00 | 45.45 | AV | 54.00 | -8.55 | 1.70 | 300.00 | 23.65 | 21.80 |

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

2.8. Conducted Emission

2.8.1. Limit of Conducted Emission

FCC 15.207,

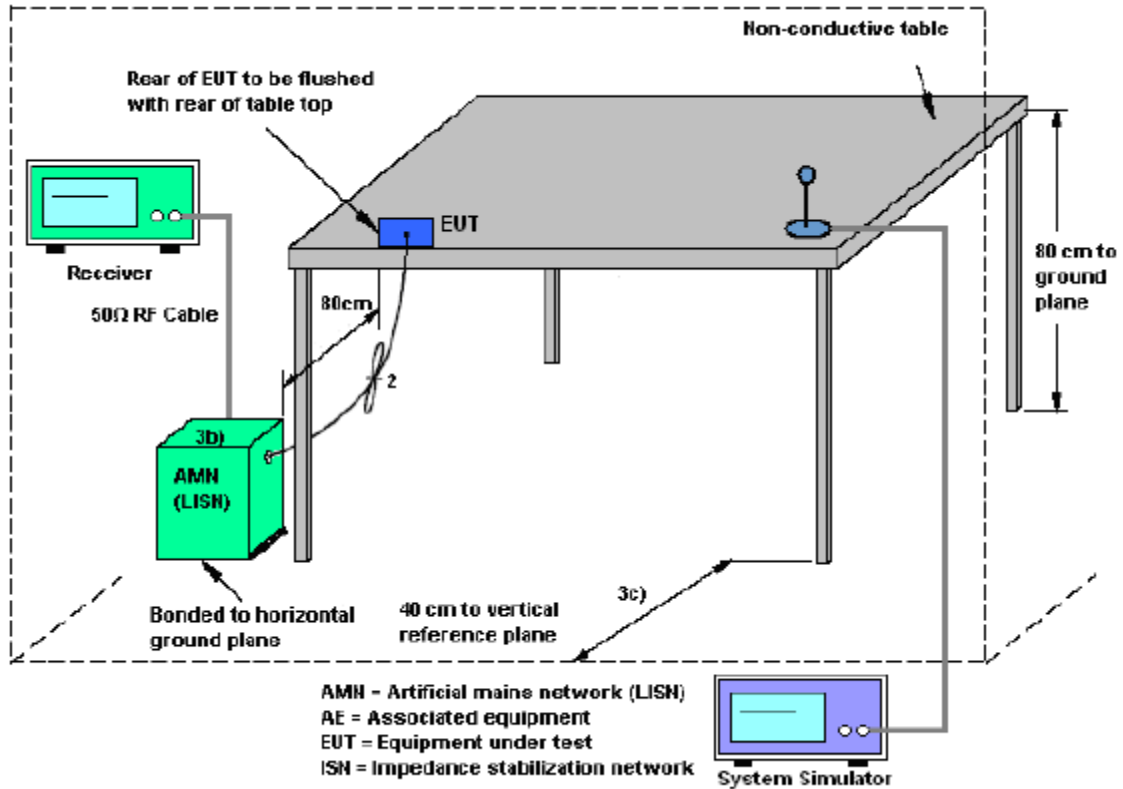
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency range (MHz) | Conducted Limit (dB μ V) | |
|-----------------------|------------------------------|----------|
| | Quai-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

2.8.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.8.3. Test Setup

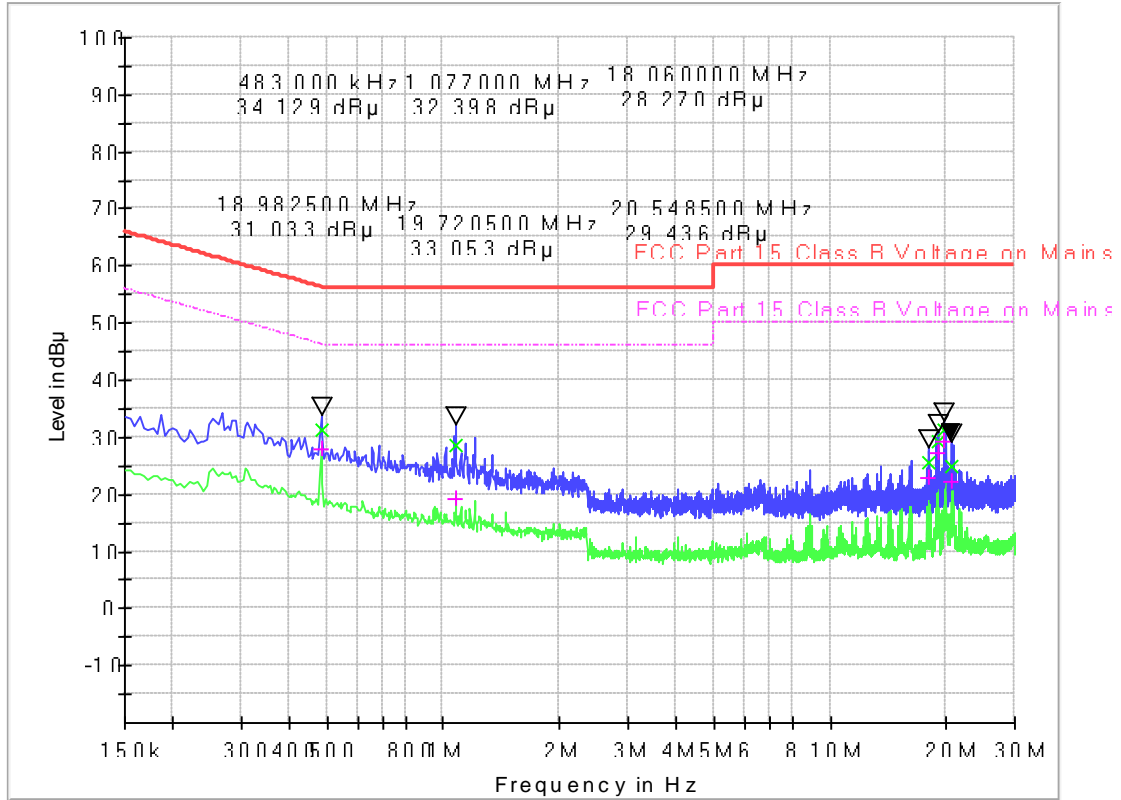


2.8.4. Test Procedures

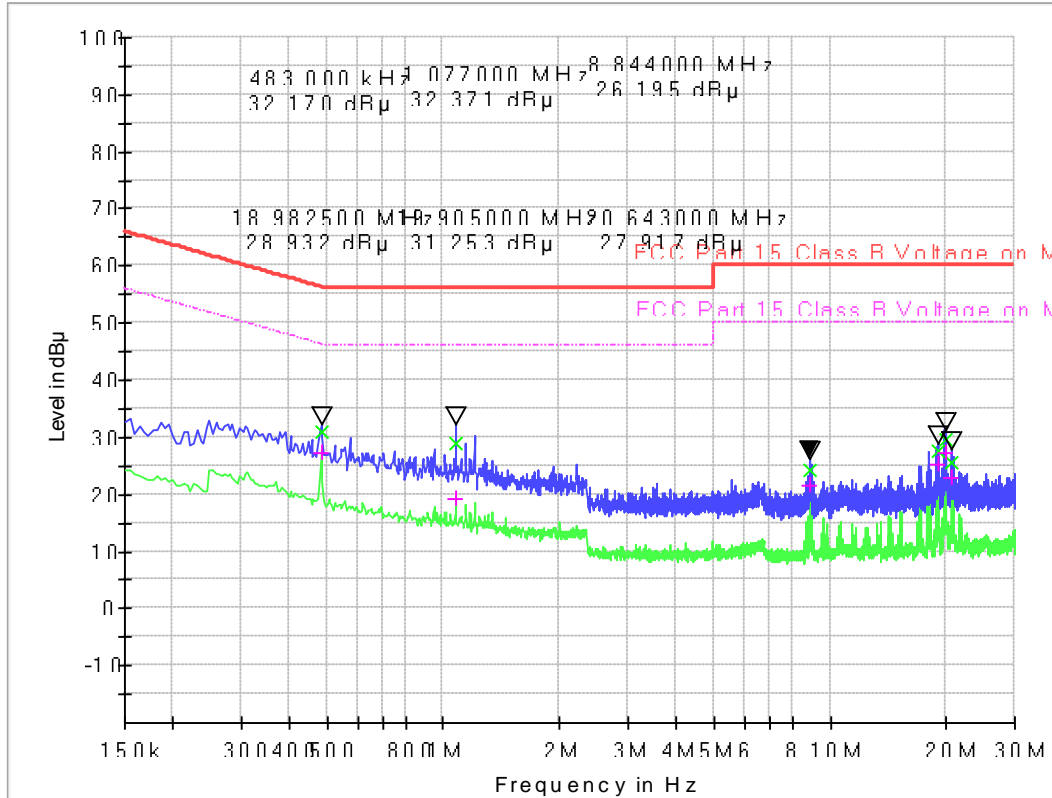
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

2.8.5. Test Results of Conducted Emission

The EUT configuration of the emission tests is 5G WLAN Link + DC Power on



| Frequency (MHz) | QuasiPeak (dB μV) | Average (dB μV) | Cabel Loss (dB) | Corr. (dB) | Margin - QPK | Limit - QPK | Margin - AV | Limit - AV (dB μV) |
|-----------------|-------------------|-----------------|-----------------|------------|--------------|-------------|-------------|--------------------|
| 0.483000 | 31.19 | 27.86 | 0.1 | 10.1 | 25.10 | 56.3 | 18.43 | 46.3 |
| 1.077000 | 28.68 | 19.30 | 0.1 | 10.1 | 27.32 | 56.0 | 26.70 | 46.0 |
| 18.060000 | 25.52 | 22.94 | 0.1 | 10.1 | 34.48 | 60.0 | 27.06 | 50.0 |
| 18.982500 | 29.44 | 27.26 | 0.1 | 10.1 | 30.56 | 60.0 | 22.74 | 50.0 |
| 19.720500 | 31.44 | 29.36 | 0.2 | 10.2 | 28.56 | 60.0 | 20.64 | 50.0 |
| 20.548500 | 25.02 | 22.13 | 0.2 | 10.2 | 34.98 | 60.0 | 27.87 | 50.0 |



| Frequency (MHz) | QuasiPeak (dB μ V) | CAverage (dB μ V) | Cabel Loss (dB) | Corr. (dB) | Margin - QPK | Limit - QPK | Margin - AV | Limit - AV (dB μ V) |
|-----------------|--------------------|-------------------|-----------------|------------|--------------|-------------|-------------|---------------------|
| 0.483000 | 30.92 | 27.41 | 0.1 | 10.1 | 25.37 | 56.3 | 18.88 | 46.3 |
| 1.077000 | 28.79 | 19.16 | 0.1 | 10.1 | 27.21 | 56.0 | 26.84 | 46.0 |
| 8.844000 | 24.20 | 21.42 | 0.1 | 10.1 | 35.80 | 60.0 | 28.58 | 50.0 |
| 18.982500 | 27.63 | 25.31 | 0.1 | 10.1 | 32.37 | 60.0 | 24.69 | 50.0 |
| 19.905000 | 29.48 | 27.21 | 0.2 | 10.2 | 30.52 | 60.0 | 22.79 | 50.0 |
| 20.643000 | 25.73 | 22.92 | 0.2 | 10.2 | 34.27 | 60.0 | 27.08 | 50.0 |

Test Result: PASS

**Note: Correction factor=Cabel loss+ attenuation factor
attenuation factor=10dB**

3. List of measuring equipment

| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal Date | Due Date |
|------|-------------------------------|------------------------------|---------------------|------------|------------|------------|
| 1 | EMI TEST RECEIVER | KEYSIGHT | N9038A | A141202036 | 2020.09.21 | 2021.09.20 |
| 2 | Power Meter | R&S | NRP-Z31 | 102872 | 2021.04.26 | 2022.04.25 |
| 3 | TURNTABLE | ETS | 2088 | 2149 | N/A | N/A |
| 4 | ANTENNA MAST | ETS | 2075 | 2346 | N/A | N/A |
| 5 | EMI TEST Software | R&S | ESK1 | N/A | N/A | N/A |
| 6 | Horn antenna (18GHz~26.5GHz) | AR | AT4003A | 325306 | 2020.09.16 | 2022.09.15 |
| 7 | Amplifier 30M~1GHz | MILMEGA | 80RF1000-10004 | A140101634 | 2021.01.26 | 2022.01.25 |
| 8 | Amplifier 1G~18GHz | MILMEGA | AS0104R-800/400 | A160302517 | 2021.01.26 | 2022.01.25 |
| 9 | High pass filter | Compliance Direction systems | BSU-6 | 34202 | 2020.11.10 | 2021.11.09 |
| 10 | Horn Antenna | R&S | HF906 | A0304225 | 2019.04.17 | 2022.04.16 |
| 11 | Horn Antenna | R&S | ESIB7 | A0501375 | 2020.06.24 | 2022.06.22 |
| 12 | ULTRA-BROADBAND ANTENNA | SCHWARZBECK | VULB9160 | A0805560 | 2019.05.24 | 2022.05.23 |
| 13 | Passive Loop Antenna | R&S | HFH2-Z2 | 100047 | 2019.04.26 | 2022.04.25 |
| 14 | Temperature chamber | TABAI | PS-232 | A8708054 | 2020.10.30 | 2021.10.29 |
| 15 | Spectrum Analyzer | KEYSIGHT | N9030A | A160702554 | 2021.04.26 | 2022.04.25 |
| 16 | Power Supply | R&S | ESIB26 | A0304218 | 2021.01.04 | 2022.01.03 |
| 17 | LISN | ROHDE&SCHWARZ | ENV216 | A140701847 | 2020.09.22 | 2021.09.21 |
| 18 | Test software | ECIT | Eagle | V2.0 | N/A | N/A |
| 19 | Horn antenna (26.5GHz~40GHz) | R&S | Oct-60 | A0902600 | 2020.09.27 | 2023.09.26 |
| 20 | Pre-Amplifier (26.5GHz~40GHz) | R&S | Oct-60 S/N1360-2715 | A0902600 | 2020.09.27 | 2023.09.26 |
| 21 | Pre-Amplifier (18GHz~26.5GHz) | R&S | Sep-60 S/N1299056 | A0902599 | 2020.09.27 | 2023.09.26 |

4. Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All the measurement uncertainty value were shown with a coverage $K=2$ to indicate 95% level of confidence . The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Emission Measurement (150KHz~30MHz)

| | |
|--|-------|
| Measuring Uncertainty for a level of confidence of 95% ($U=2U_c(y)$) | 2.8dB |
|--|-------|

Uncertainty of Radiated Emission Measurement (30MHz~1GHz)

| | |
|--|--------|
| Measuring Uncertainty for a level of confidence of 95% ($U=2U_c(y)$) | 3.91dB |
|--|--------|

Uncertainty of Radiated Emission Measurement (1GHz~18GHz)

| | |
|--|-------|
| Measuring Uncertainty for a level of confidence of 95% ($U=2U_c(y)$) | 4.5dB |
|--|-------|

Uncertainty of Radiated Emission Measurement (18GHz~40GHz)

| | |
|--|-------|
| Measuring Uncertainty for a level of confidence of 95% ($U=2U_c(y)$) | 4.9dB |
|--|-------|

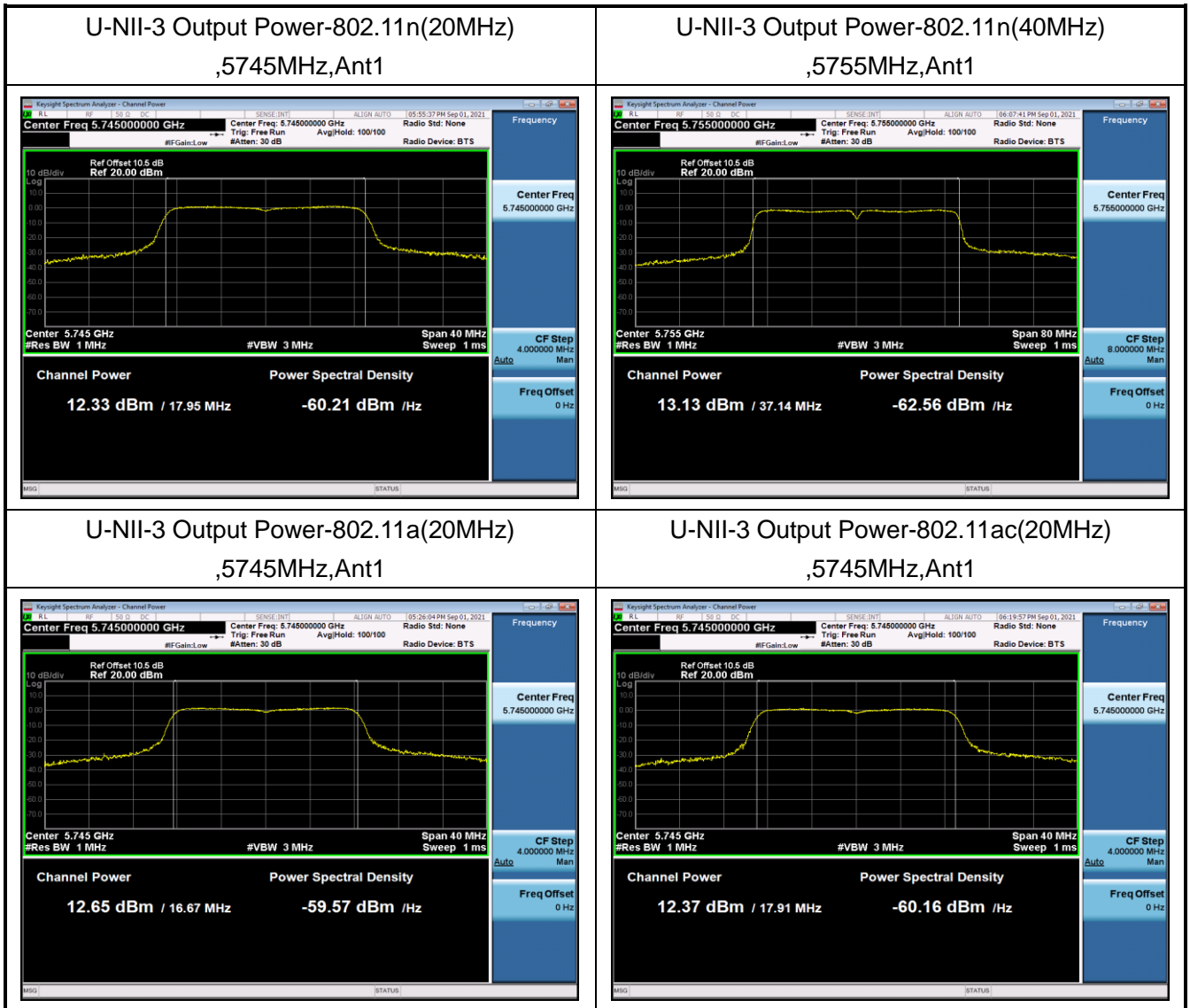


Appendix A

Conducted output power

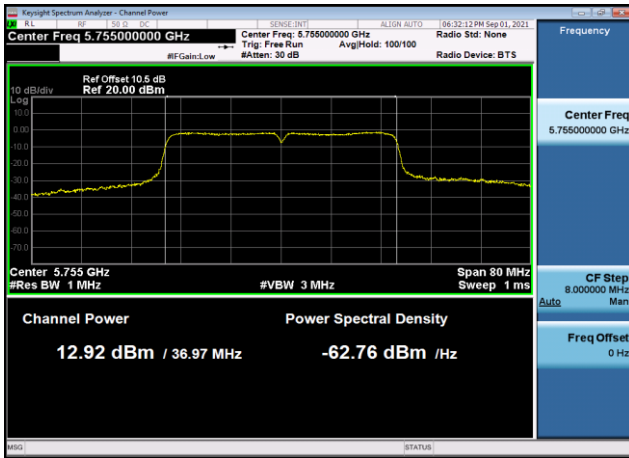
| U-NII-3 AVGSA Output Power | | | | | |
|----------------------------|----------------------|-----------------|-----------------|----------------|--------|
| Mode | Test Frequency (MHz) | Max Power (dBm) | FCC Limit (dBm) | IC Limit (dBm) | Result |
| 802.11n (20MHz) | 5745 | 12.33 | 30 | 30 | Pass |
| 802.11n (40MHz) | 5755 | 13.13 | | | Pass |
| 802.11ac (20MHz) | 5745 | 12.37 | | | Pass |
| 802.11ac (40MHz) | 5755 | 12.92 | | | Pass |
| 802.11ac (80MHz) | 5775 | 12.72 | | | Pass |
| 802.11a (20MHz) | 5745 | 12.65 | | | Pass |

Test Plots

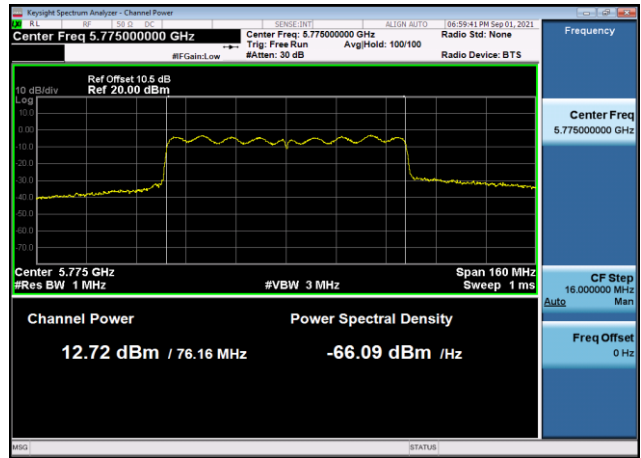




U-NII-3 Output Power-802.11ac(40MHz) ,5755MHz,Ant1



U-NII-3 Output Power-802.11ac(80MHz) ,5775MHz,Ant1



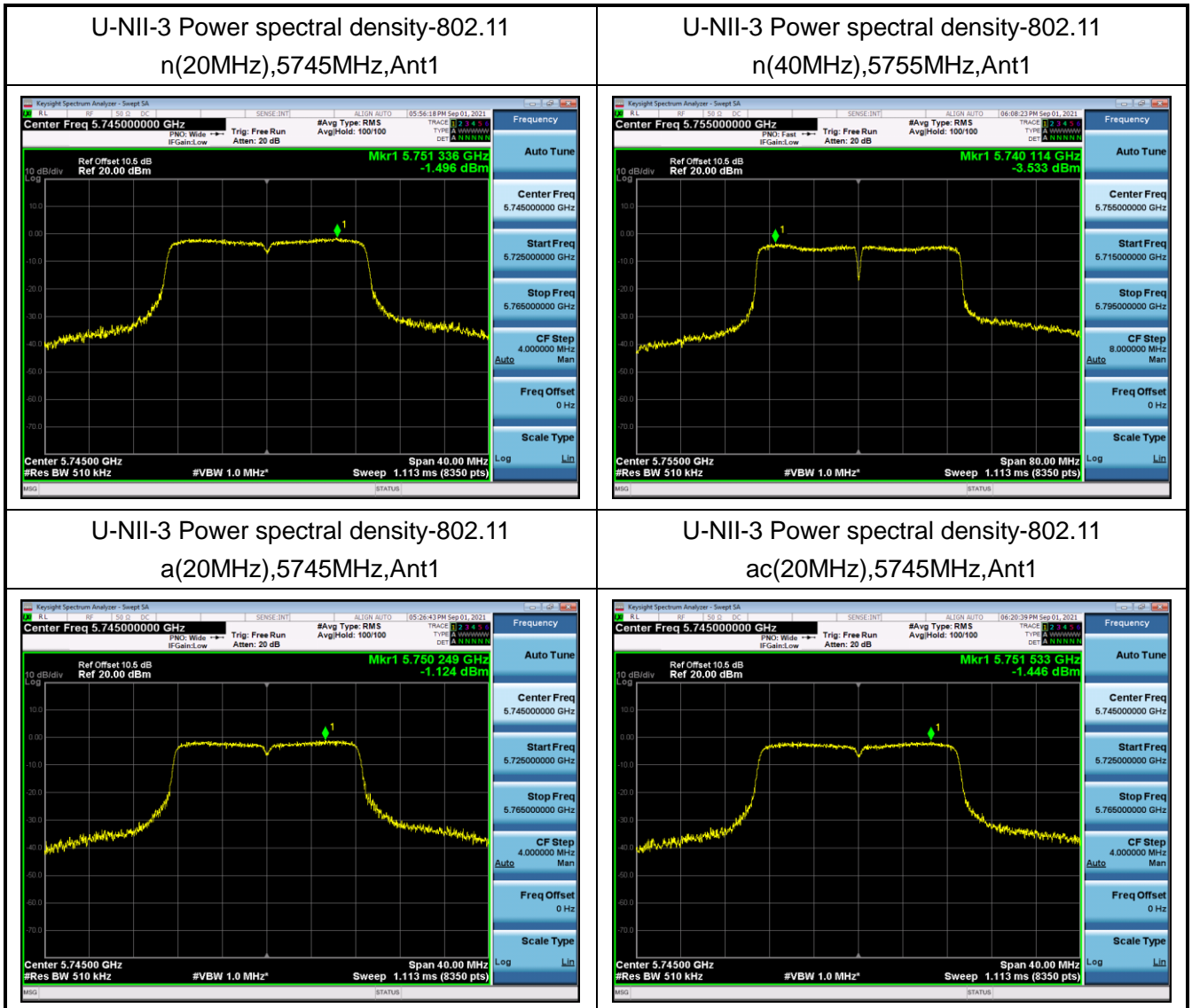


AVGSA Power Spectral Density

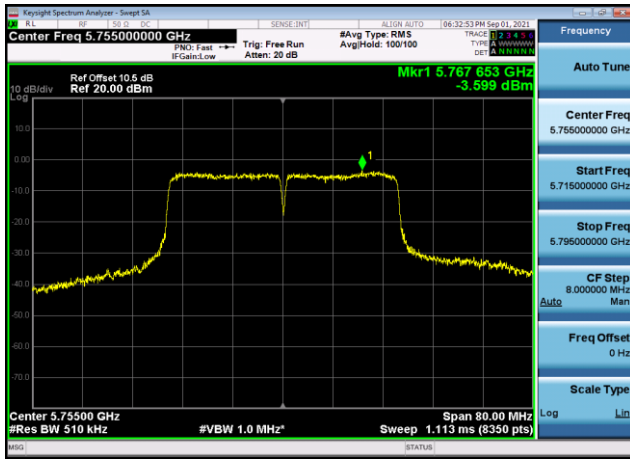
Test Result and Data

| U-NII-3 AVGSA Power Spectral Density | | | | |
|--------------------------------------|----------------------|------------------|--------------------|--------|
| Mode | Test Frequency (MHz) | PSD (dBm/510KHz) | Limit (dBm/500KHz) | Result |
| 802.11n (20MHz) | 5745 | -1.496 | 30 | Pass |
| 802.11n (40MHz) | 5755 | -3.533 | 30 | Pass |
| 802.11ac (20MHz) | 5745 | -1.446 | 30 | Pass |
| 802.11ac (40MHz) | 5755 | -3.599 | 30 | Pass |
| 802.11ac (80MHz) | 5775 | -5.700 | 30 | Pass |
| 802.11a (20MHz) | 5745 | -1.124 | 30 | Pass |

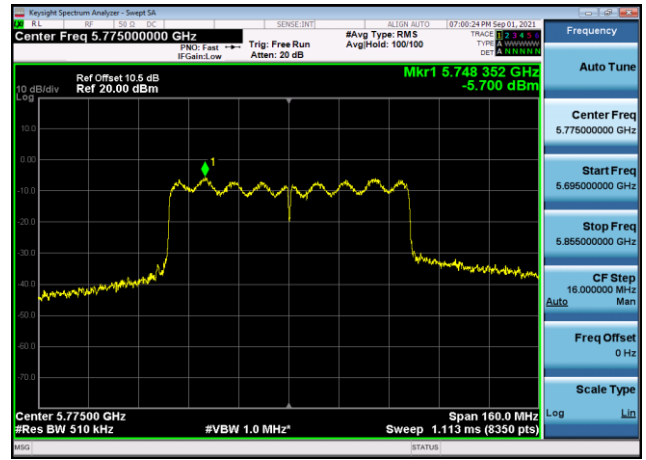
Test Plots



U-NII-3 Power spectral density-802.11
ac(40MHz),5755MHz,Ant1



U-NII-3 Power spectral density-802.11
ac(80MHz),5775MHz,Ant1



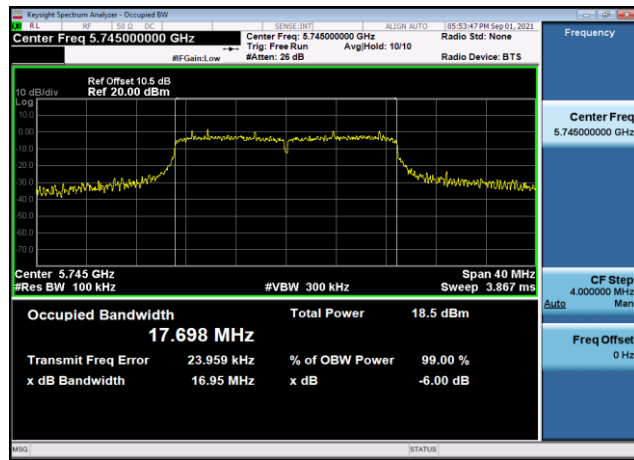


6dB and 26dB Down Bandwidth Test Result and Data

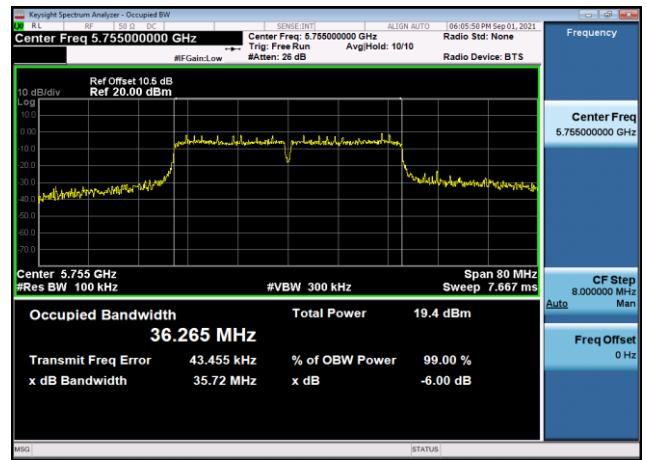
| U-NII-3 Occupied 6dB Bandwidth | | | | |
|--------------------------------|----------------------|--------------------------|-------------|--------|
| Mode | Test Frequency (MHz) | Occupied Bandwidth (MHz) | Limit (KHz) | Result |
| 802.11n (20MHz) | 5745 | 16.95 | 500 | Pass |
| 802.11n (40MHz) | 5755 | 35.72 | 500 | Pass |
| 802.11ac (20MHz) | 5745 | 17.30 | 500 | Pass |
| 802.11ac (40MHz) | 5755 | 35.81 | 500 | Pass |
| 802.11ac (80MHz) | 5775 | 75.27 | 500 | Pass |
| 802.11a (20MHz) | 5745 | 16.36 | 500 | Pass |
| U-NII-3 99% Occupied Bandwidth | | | | |
| Mode | Test Frequency (MHz) | Occupied Bandwidth (MHz) | Result | |
| 802.11n (20MHz) | 5745 | 17.954 | Report only | |
| 802.11n (40MHz) | 5755 | 37.140 | | |
| 802.11ac (20MHz) | 5745 | 17.913 | | |
| 802.11ac (40MHz) | 5755 | 36.965 | | |
| 802.11ac (80MHz) | 5775 | 76.162 | | |
| 802.11a (20MHz) | 5745 | 16.671 | | |

Test Plots

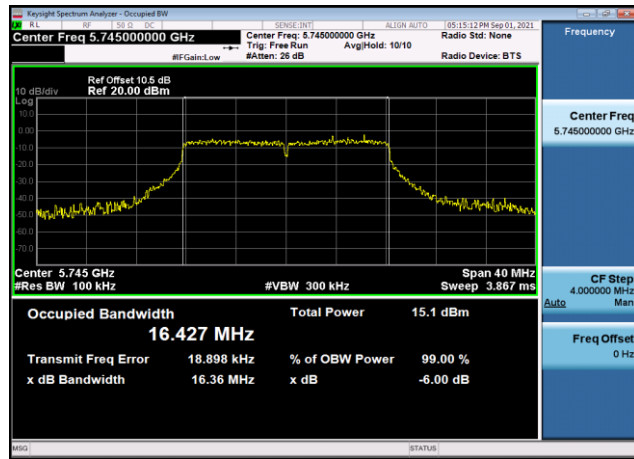
U-NII-3 6dB Bandwidth-802.11n(20MHz)
,5745MHz,Ant1



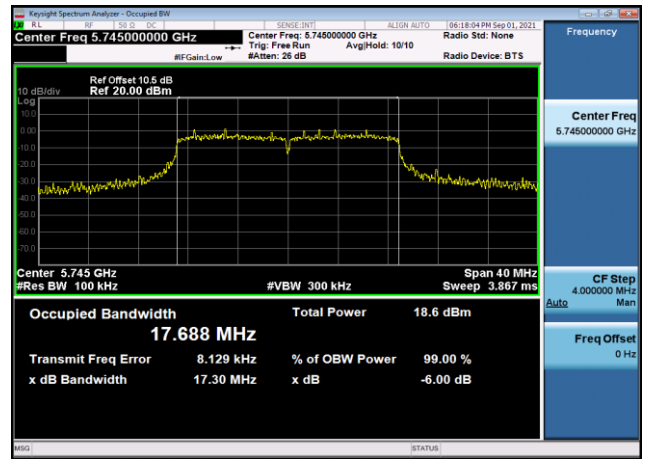
U-NII-3 6dB Bandwidth-802.11n(40MHz)
,5755MHz,Ant1



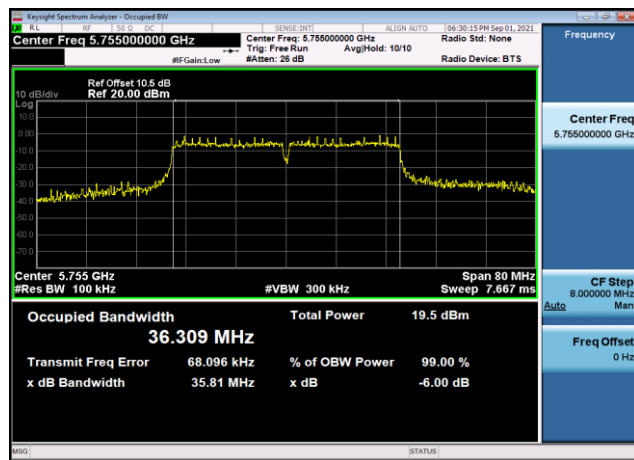
U-NII-3 6dB Bandwidth-802.11a(20MHz)
,5745MHz,Ant1



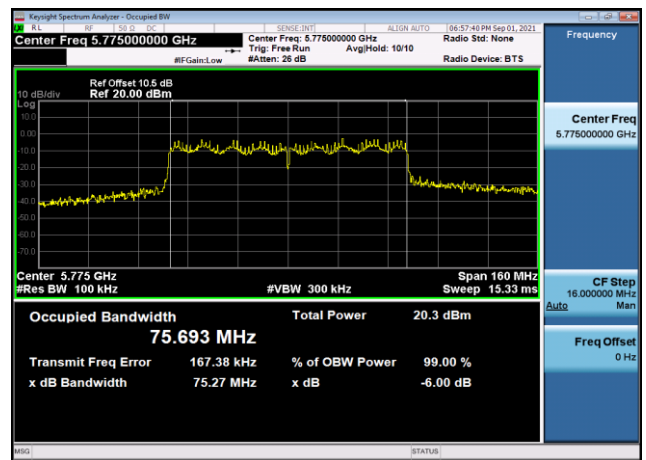
U-NII-3 6dB Bandwidth-802.11ac(20MHz)
,5745MHz,Ant1



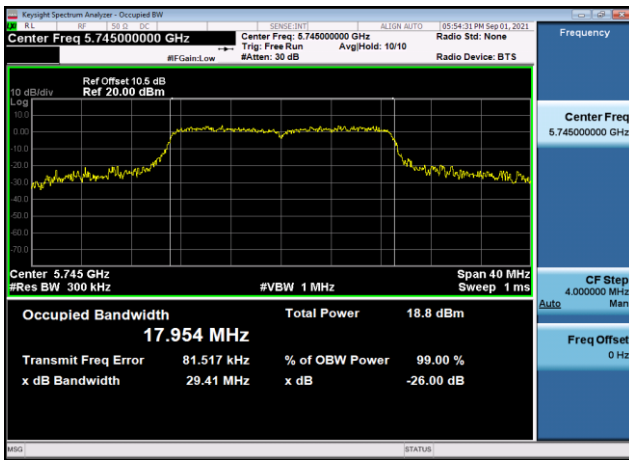
U-NII-3 6dB Bandwidth-802.11ac(40MHz)
,5755MHz,Ant1



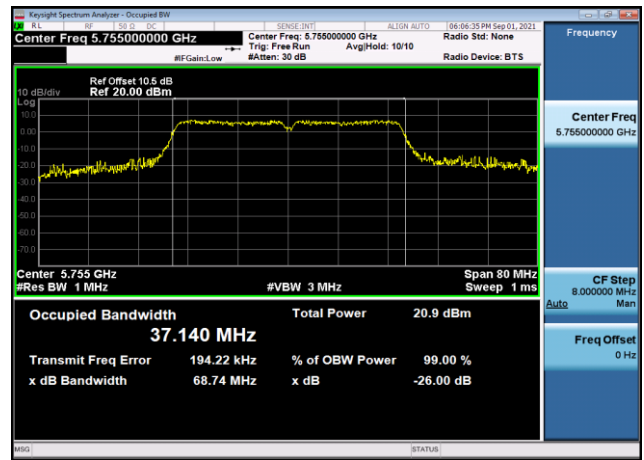
U-NII-3 6dB Bandwidth-802.11ac(80MHz)
,5775MHz,Ant1



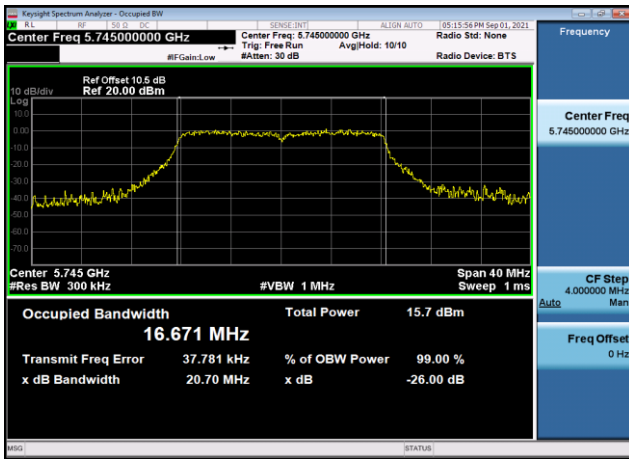
U-NII-3 99% Bandwidth-802.11n(20MHz)
,5745MHz,Ant1



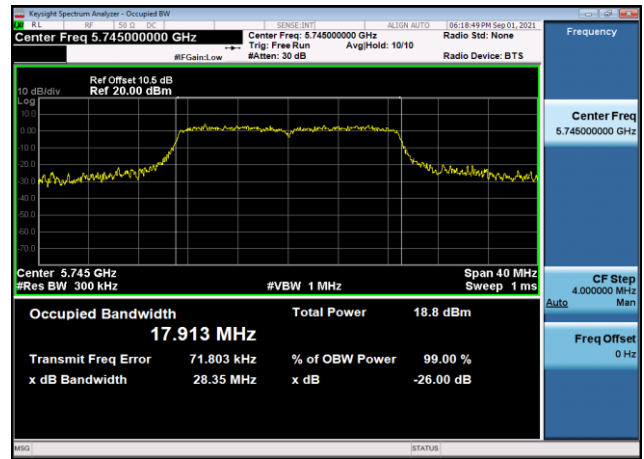
U-NII-3 99% Bandwidth-802.11n(40MHz)
,5755MHz,Ant1



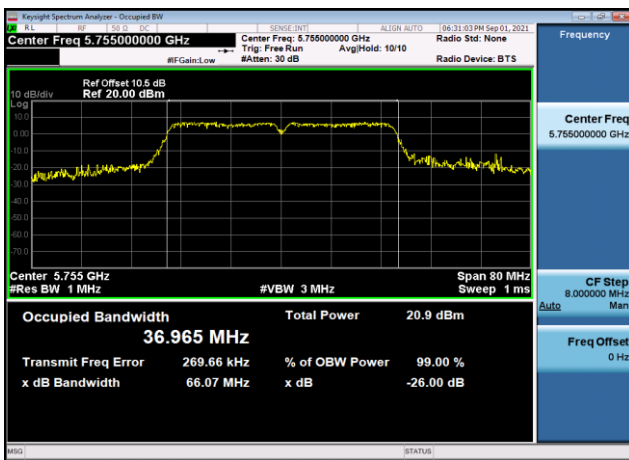
U-NII-3 99% Bandwidth-802.11a(20MHz)
,5745MHz,Ant1



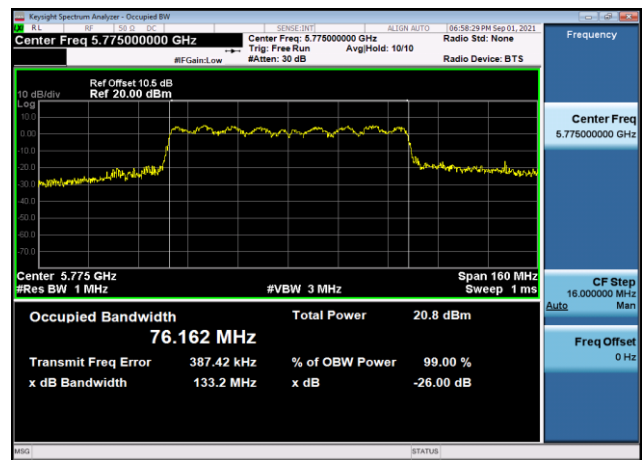
U-NII-3 99% Bandwidth-802.11ac(20MHz)
,5745MHz,Ant1



U-NII-3 99% Bandwidth-802.11ac(40MHz)
,5755MHz,Ant1



U-NII-3 99% Bandwidth-802.11ac(80MHz)
,5775MHz,Ant1



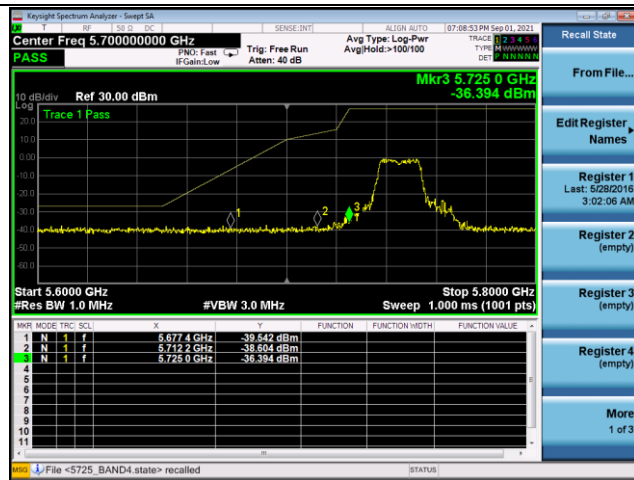
**Frequency Stability**

| U-NII-3 Centre Frequency | | | | | | | |
|--------------------------|----------------------|------|----------|----------|----------|----------------------|-------------|
| Mode | Test Frequency (MHz) | Ant | LF (MHz) | HF (MHz) | CF (MHz) | Freq Stability (ppm) | Test Result |
| 802.11n (20MHz) | 5745 | Ant1 | 5736.134 | 5753.906 | 5745.020 | 3.480 | Pass |
| 802.11n (40MHz) | 5755 | Ant1 | 5736.832 | 5773.300 | 5755.066 | 11.470 | Pass |
| 802.11ac (20MHz) | 5745 | Ant1 | 5736.177 | 5753.896 | 5745.036 | 6.310 | Pass |
| 802.11ac (40MHz) | 5755 | Ant1 | 5736.823 | 5773.266 | 5755.044 | 7.690 | Pass |
| 802.11ac (80MHz) | 5775 | Ant1 | 5736.923 | 5813.207 | 5775.065 | 11.260 | Pass |
| 802.11a (20MHz) | 5745 | Ant1 | 5736.741 | 5753.298 | 5745.020 | 3.410 | Pass |

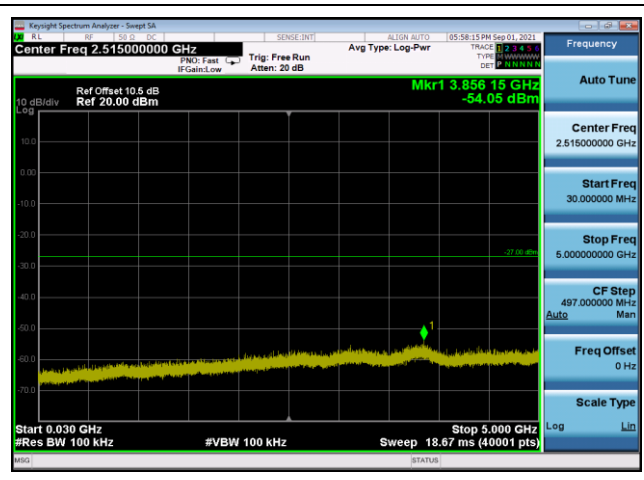
Note: All the extreme conditions have been tested, The worst data reported only.

Bandedge and spurious Emission

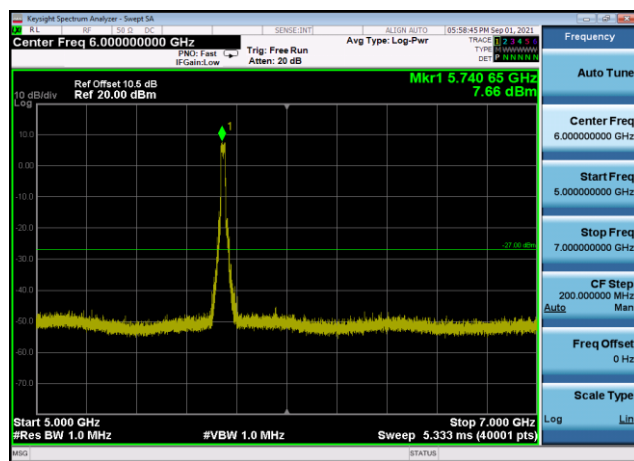
U-NII-3 ,Plot 1,Band Edge-802.11n(20M Hz),5745MHz,Ant1



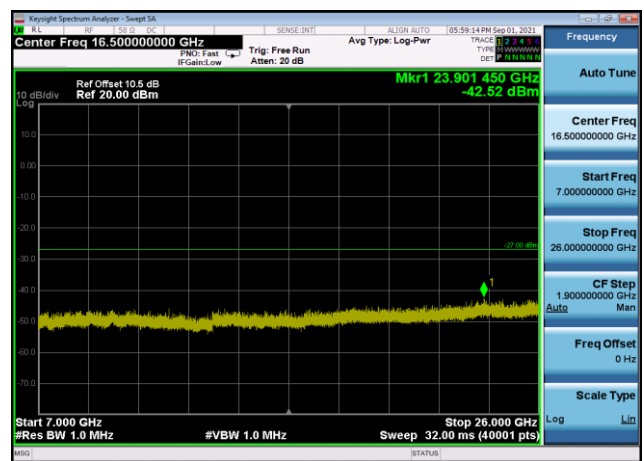
U-NII-3 ,Plot 2,30MHz~5000MHz-802.11n (20MHz),5745MHz,Ant1



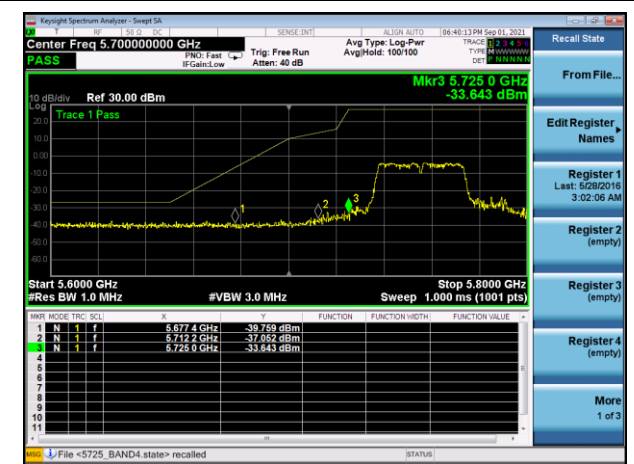
U-NII-3 ,Plot 3,5000MHz~7000MHz-802.1 n(20MHz),5745MHz,Ant1



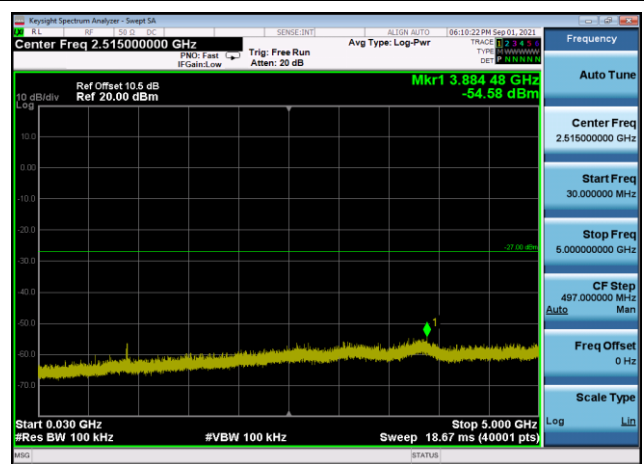
U-NII-3 ,Plot 4,7000MHz~26000MHz-802.11n(20MHz),5745MHz,Ant1



U-NII-3 ,Plot 1,Band Edge-802.11n(40M Hz),5755MHz,Ant1

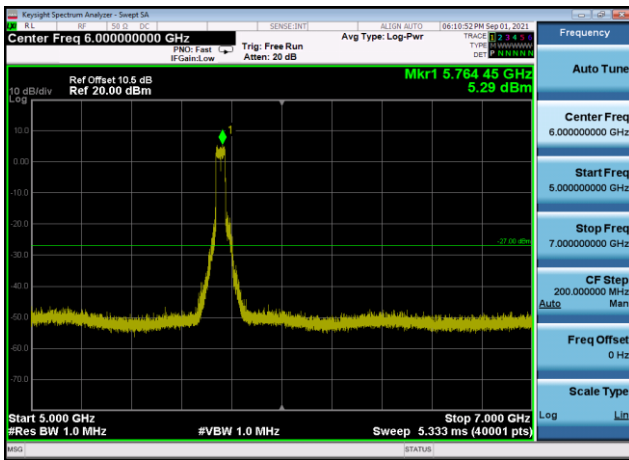


U-NII-3 ,Plot 2,30MHz~5000MHz-802.11n (40MHz),5755MHz,Ant1

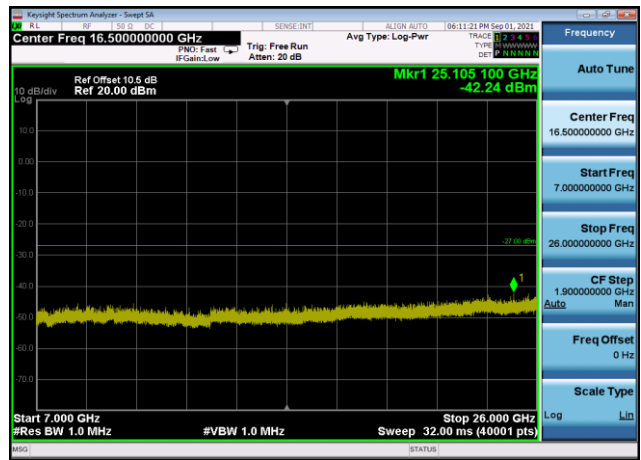




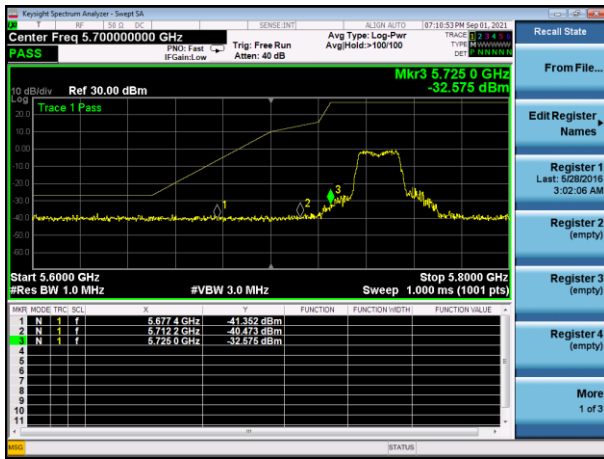
U-NII-3 ,Plot 3,5000MHz~7000MHz-802.1
1n(40MHz),5755MHz,Ant1



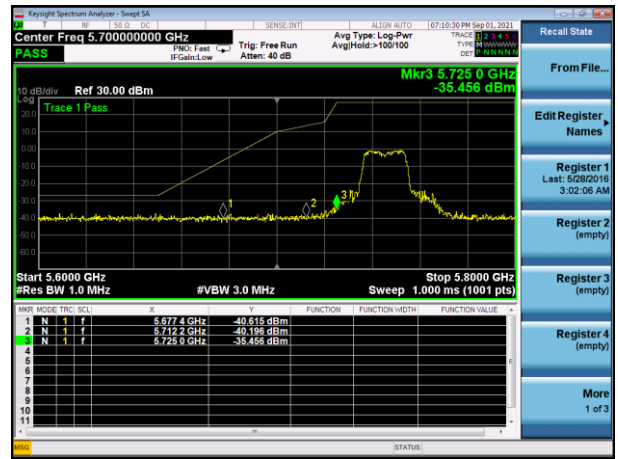
U-NII-3 ,Plot 4,7000MHz~26000MHz-802.
11n(40MHz),5755MHz,Ant1



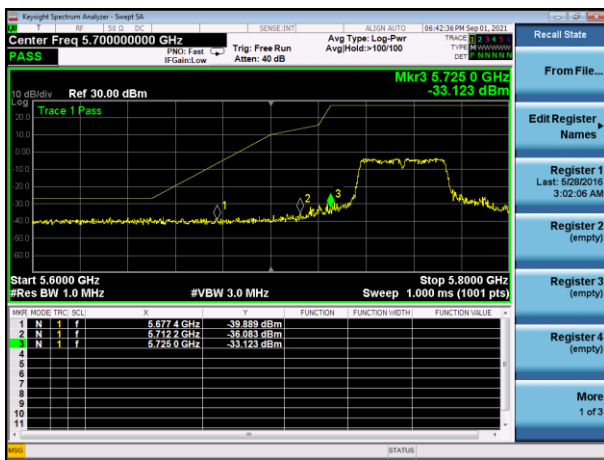
U-NII-3 ,Plot 1,Band Edge-802.11a(20M
Hz),5745MHz,Ant1



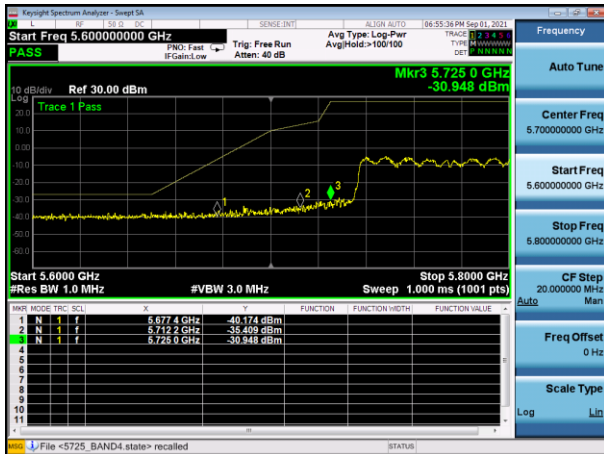
U-NII-3 ,Plot 1,Band Edge-802.11ac(20
MHz),5745MHz,Ant1



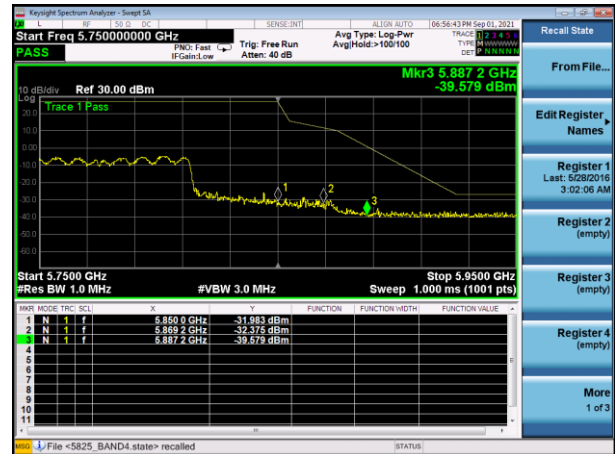
U-NII-3 ,Plot 1,Band Edge-802.11ac(40
MHz),5755MHz,Ant1



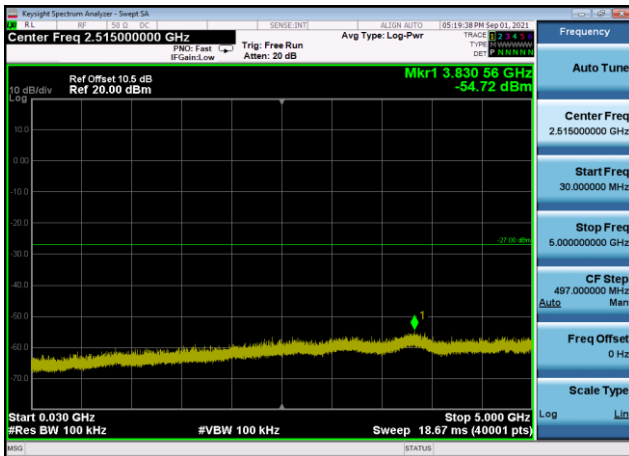
U-NII-3 ,Plot 1,Band Edge-802.11ac(80 MHz),5775MHz,Ant1 Left Bandedge



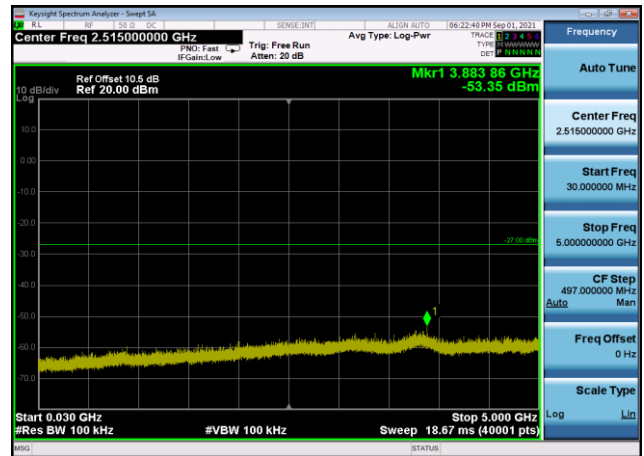
U-NII-3 ,Plot 1,Band Edge-802.11ac(80 MHz),5775MHz,Ant1 Right Bandedge



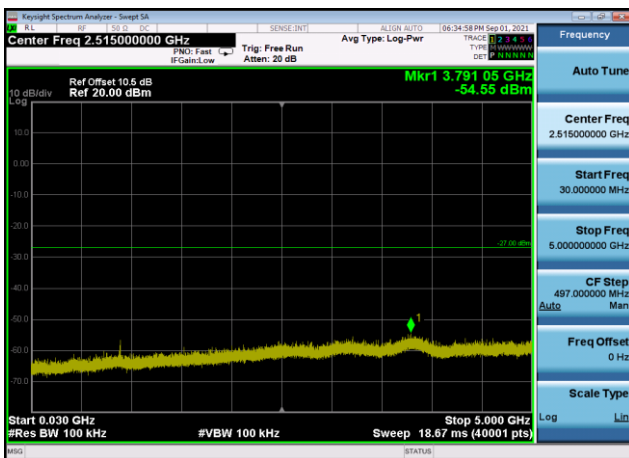
U-NII-3 ,Plot 2,30MHz~5000MHz-802.11a (20MHz),5745MHz,Ant1



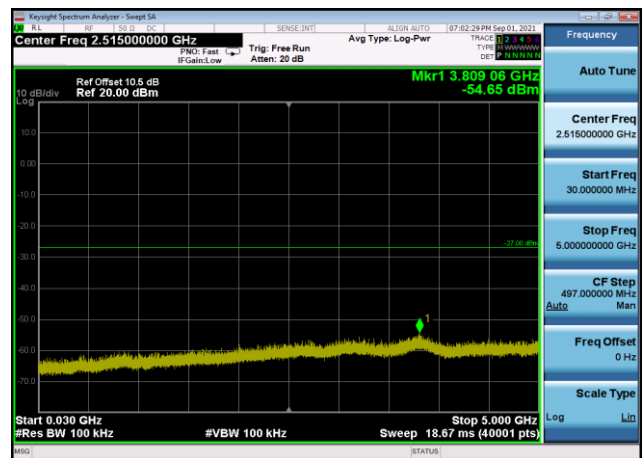
U-NII-3 ,Plot 2,30MHz~5000MHz-802.11a c(20MHz),5745MHz,Ant1



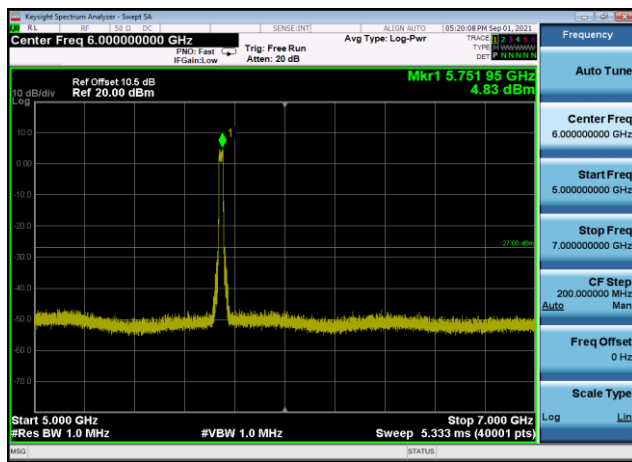
U-NII-3 ,Plot 2,30MHz~5000MHz-802.11a c(40MHz),5755MHz,Ant1



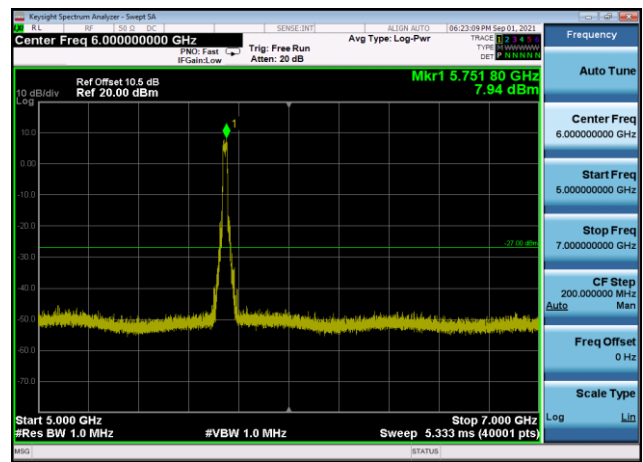
U-NII-3 ,Plot 2,30MHz~5000MHz-802.11a c(80MHz),5775MHz,Ant1



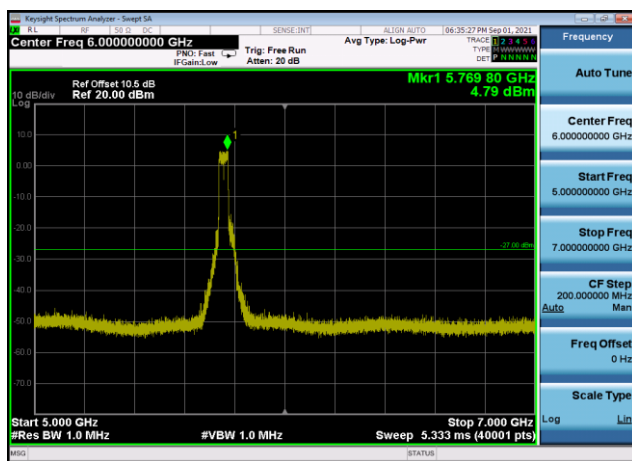
U-NII-3 ,Plot 3,5000MHz~7000MHz-802.1
1a(20MHz),5745MHz,Ant1



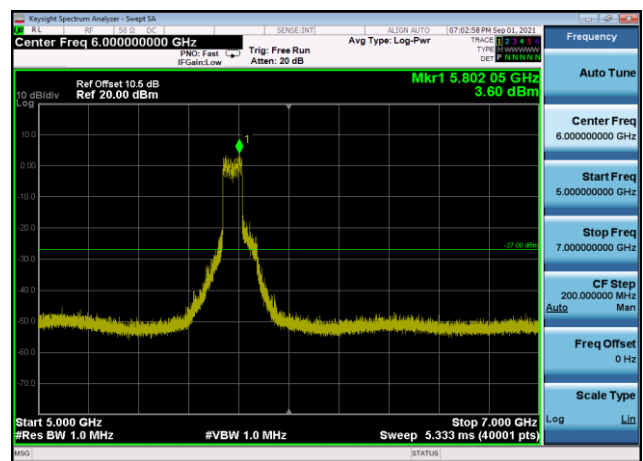
U-NII-3 ,Plot 3,5000MHz~7000MHz-802.1
1ac(20MHz),5745MHz,Ant1



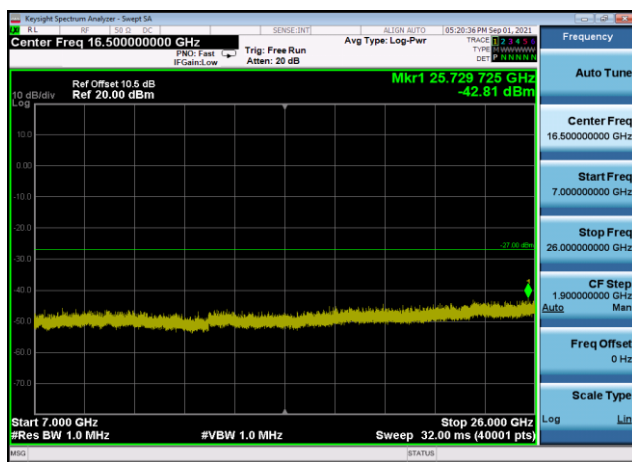
U-NII-3 ,Plot 3,5000MHz~7000MHz-802.1
1ac(40MHz),5755MHz,Ant1



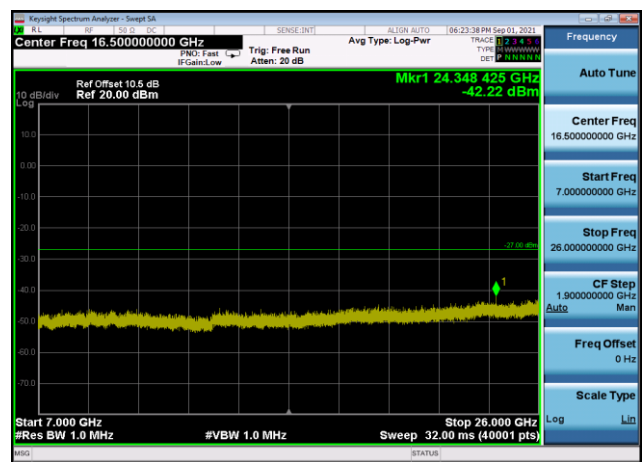
U-NII-3 ,Plot 3,5000MHz~7000MHz-802.1
1ac(80MHz),5775MHz,Ant1



U-NII-3 ,Plot 4,7000MHz~26000MHz-802.
11a(20MHz),5745MHz,Ant1



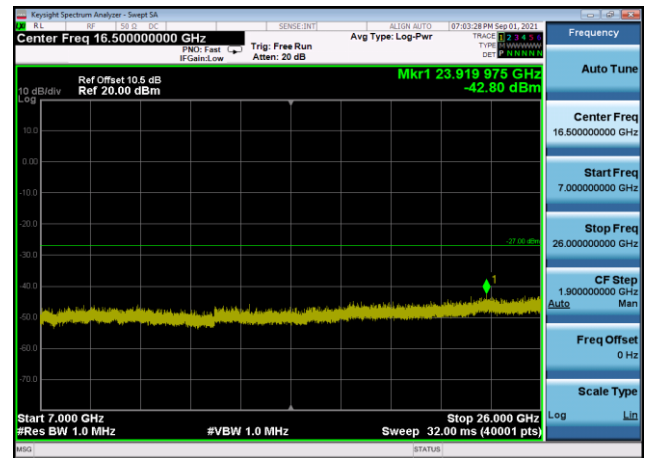
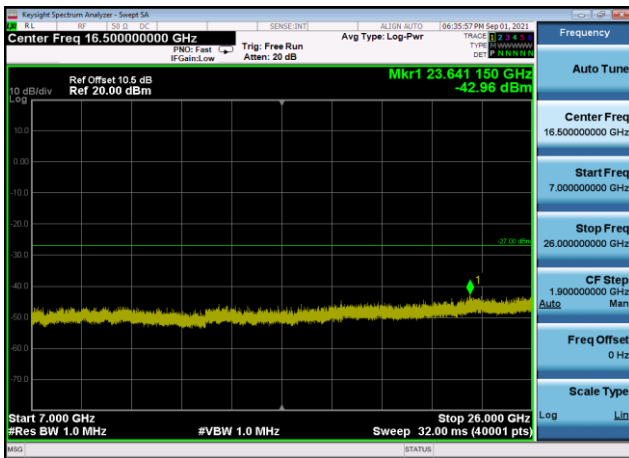
U-NII-3 ,Plot 4,7000MHz~26000MHz-802.
11ac(20MHz),5745MHz,Ant1





U-NII-3 ,Plot 4,7000MHz~26000MHz-802.
11ac(40MHz),5755MHz,Ant1

U-NII-3 ,Plot 4,7000MHz~26000MHz-802.
11ac(80MHz),5775MHz,Ant1



** END OF REPORT **