

**FCC/IC - TEST REPORT**Report Number : **709502306120-00B** Date of Issue: March 12, 2024Model : **AccuFab-CEL**

Product Type : 3D Printer

FCC ID : 2AMG4-CEL

IC : 24652-CEL

Applicant : SHINING 3D Tech Co., Ltd.

Address : No.1398, Xiangbin Road, Wenyan, Xiaoshan, Hangzhou,  
Zhejiang, China

Manufacturer : SHINING 3D Tech Co., Ltd.

Address : No.1398, Xiangbin Road, Wenyan, Xiaoshan, Hangzhou,  
Zhejiang, ChinaTest Result : ☒ **Positive** ☐ **Negative**Total pages including  
Appendices : **317**

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## 2 Details about the Test Laboratory

### Details about the Test Laboratory

|                         |                                                                                                                                        |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Test Site 1             | TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch<br>No.16 Lane, 1951 Du Hui Road,<br>Shanghai 201108,<br>P.R. China |
| Telephone:              | +86 21 6141 0123                                                                                                                       |
| Fax:                    | +86 21 6140 8600                                                                                                                       |
| FCC Registration No.:   | 820234                                                                                                                                 |
| FCC Designation Number: | CN1183                                                                                                                                 |
| ISED CAB identifier     | CN0101                                                                                                                                 |
| IC Registration No.:    | 31668                                                                                                                                  |

### 3 Description of the Equipment under Test

Product: 3D Printer

Model no.: AccuFab-CEL

Hardware Version Identification No. (HVIN) AccuFab-CEL

Product Marketing Name (PMN) AccuFab-CEL

FCC ID: 2AMG4-CEL

IC: 24652-CEL

Options and accessories: NA

Rating: AC 110-240V, 50/60Hz

RF Transmission Frequency: For NFC: 13.56 MHz  
For 2.4G Wi-Fi:  
For 802.11b/g/n-HT20: 2412~2462 MHz

For 5G Wi-Fi:

| Band (GHz)      | Operating Channel Number | Channel center frequencies for 20MHz bandwidth (MHz) |
|-----------------|--------------------------|------------------------------------------------------|
| 5.15GHz~5.25GHz | 36                       | 5180                                                 |
|                 | 40                       | 5200                                                 |
|                 | 44                       | 5220                                                 |
|                 | 48                       | 5240                                                 |
| 5.25GHz~5.35GHz | 52                       | 5260                                                 |
|                 | 56                       | 5280                                                 |
|                 | 60                       | 5300                                                 |
|                 | 64                       | 5320                                                 |
| 5.5GHz~5.7GHz   | 100                      | 5500                                                 |
|                 | 104                      | 5520                                                 |
|                 | 108                      | 5540                                                 |
|                 | 112                      | 5560                                                 |
|                 | 116                      | 5580                                                 |
|                 | 132                      | 5660                                                 |

|                   |     |      |
|-------------------|-----|------|
| 5.725GHz~5.825GHz | 136 | 5680 |
|                   | 140 | 5700 |
|                   | 149 | 5745 |
|                   | 153 | 5765 |
|                   | 157 | 5785 |
|                   | 161 | 5805 |
|                   | 165 | 5825 |

| Band (GHz)        | Operating Channel Number | Channel center frequencies for 40MHz bandwidth (MHz) |
|-------------------|--------------------------|------------------------------------------------------|
| 5.15GHz~5.25GHz   | 38                       | 5190                                                 |
|                   | 46                       | 5230                                                 |
| 5.25GHz~5.35GHz   | 54                       | 5270                                                 |
|                   | 62                       | 5310                                                 |
| 5.5GHz~5.7GHz     | 102                      | 5510                                                 |
|                   | 110                      | 5550                                                 |
|                   | 118                      | 5590                                                 |
|                   | 134                      | 5670                                                 |
| 5.725GHz~5.825GHz | 151                      | 5755                                                 |
|                   | 159                      | 5795                                                 |

| Band (GHz)        | Operating Channel Number | Channel center frequencies for 80MHz bandwidth (MHz) |
|-------------------|--------------------------|------------------------------------------------------|
| 5.15GHz~5.25GHz   | 42                       | 5210                                                 |
| 5.25GHz~5.35GHz   | 58                       | 5290                                                 |
| 5.5GHz~5.7GHz     | 106                      | 5530                                                 |
| 5.725GHz~5.825GHz | 155                      | 5775                                                 |

The device shall not be capable of transmitting in the 5600-5650 MHz band.

No. of Operated Channel:

For NFC: 13.56 MHz

For 2.4G Wi-Fi:

11 for 802.11b/802.11g/802.11n(H20)

For 5G Wi-Fi:

5180~5240 MHz (U-NII-1)

5260~5320 MHz (U-NII-2A)

5500~5700 MHz (U-NII-2C)

5745~5825 MHz (U-NII-3)



|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Modulation:       | <p>For NFC: ASK</p> <p>For 2.4G Wi-Fi:<br/>         SISO: Direct Sequence Spread Spectrum (DSSS) for 802.11b<br/>         Orthogonal Frequency Division Multiplexing (OFDM) for 802.11g<br/>         MIMO: Orthogonal Frequency Division Multiplexing (OFDM) for 802.11n</p> <p>For 5G Wi-Fi:<br/>         MIMO: Orthogonal Frequency Division Multiplexing (OFDM) for 802.11a/n/ac</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Hardware Version: | A040                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Software Version: | 3.5.30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Data speed:       | <p>2.4G Wi-Fi:<br/>         SISO: 11b 1-11Mbps<br/>         11g 6-54Mbps</p> <p>MIMO: 11n HT20 6.5 ~ 144.4Mbps</p> <p>5G Wi-Fi:<br/>         MIMO: 11a 6 ~ 54Mbps,<br/>         11n HT20 13 ~ 144.4Mbps, 11n HT 40 27 ~ 300Mbps,<br/>         11ac VHT20 13 ~ 173.3Mbps, 11ac VHT40 27 ~ 400Mbps,<br/>         11ac VHT80 58.5 ~ 866.7Mbps</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Antenna Type:     | <p>For NFC: PCB loop</p> <p>For 2.4GHz &amp; 5GHz: FPC</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Antenna Gain:     | <p>For NFC: 2dBi</p> <p>Antenna1: 5.39 dBi for 2.4GWi-Fi, Antenna2: 3.23 dBi for 2.4GWi-Fi<br/>         Antenna1: 4.3 dBi for 5GWi-Fi, Antenna2: 5.72 dBi for 5GWi-Fi</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Directional gain: | <p>For 2.4GHz Wi-Fi output power &amp; power spectral density: 7.39 dBi<br/>         Directional gain = <math>10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]</math> dBi<br/> <math>G1 = 5.39</math> dBi, <math>G2 = 3.23</math> dBi, <math>N_{ANT} = 2</math><br/>         So Directional gain =<br/> <math>10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]</math> dBi = <math>10 \log[(10^{5.39/20} + 10^{3.23/20})^2 / 2]</math> dBi = 7.39 dBi</p> <p>For 5GHz Wi-Fi output power &amp; power spectral density: 8.05 dBi<br/>         Directional gain = <math>10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]</math> dBi<br/> <math>G1 = 4.3</math> dBi, <math>G2 = 5.72</math> dBi, <math>N_{ANT} = 2</math><br/>         So Directional gain =<br/> <math>10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]</math> dBi = <math>10 \log[(10^{4.3/20} + 10^{5.72/20})^2 / 2]</math> dBi = 8.05 dBi</p> |



The Equipment supports MIMO and does not support beamforming and CDD modulation, and all antennas have the different gain,  
According to KDB662911 D01 chapter F d) (i) :  
Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$  dBi  
[Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.],

Description of the EUT: The Equipment Under Test (EUT) is a 3D Printer with NFC and Wi-Fi Module. The EUT support NFC operated at 13.56MHz and Wi-Fi operated at 2.4GHz and 5GHz.

Test sample no.: SHA-748811-1 (Radiated sample)  
SHA-748811-2 (Conducted sample)

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment, antenna gain or any information supplied.

The device shall not be capable of transmitting in the 5600-5650 MHz band.



## 4 Summary of Test Standards

| Test Standards                                  |                                                                                                                              |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| FCC Part 15 Subpart E, 2021 Edition             | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart E - Unlicensed National Information Infrastructure Devices                      |
| RSS-Gen Issue 5<br>Amendment 2<br>February 2021 | General Requirements for Compliance of Radio Apparatus                                                                       |
| RSS-247 Issue 3<br>August 2023                  | Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSS) and License-Exempt Local Area Network (LE-LAN) Devices |

### Test Method:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

KDB 905462 D03 Client Without DFS New Rules v01r02

ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices



## 5 Summary of Test Results

| Technical Requirements                                                                                                |                                         |            |           |                                     |                          |                          |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------|-----------|-------------------------------------|--------------------------|--------------------------|
| FCC Part 15 Subpart E & RSS-247 Issue 3/RSS-Gen Issue 5                                                               |                                         |            |           |                                     |                          |                          |
| Test Condition                                                                                                        |                                         | Pages      | Test Site | Test Result                         |                          |                          |
|                                                                                                                       |                                         |            |           | Pass                                | Fail                     | N/A                      |
| §15.207 & RSS-GEN 8.8                                                                                                 | Conducted emission AC power port        | 16-18      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.407(a)(2), (e) & RSS-247 6.2.1.2, RSS-247 6.2.2.1, RSS-247 6.2.3.1, RSS-247 6.2.4.2, RSS-Gen 6.7                  | Emission bandwidth                      | 19-20      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15.407(a)(1)(2)(3) & RSS-247 6.2                                                                                      | Maximum Conducted Output Power and EIRP | 21-22      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15.407(a)(1)(2)(3) & RSS-247 6.2                                                                                      | Maximum Power Spectral Density          | 23-24      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.407(g) & RSS-GEN 6.11                                                                                             | Frequencies Stability                   | 25         | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.407(b)(1), 15.407(b)(2), 15.407(b)(3), 15.407(b)(4), 15.407(b)(8), 15.407(b)(9), 15.209 & RSS-247 6.2 RSS-GEN 8.9 | Unwanted Emissions                      | 26-59      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.203 & RSS-Gen 6.8                                                                                                 | Antenna requirement                     | See note 1 |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Remark 1: The EUT only operation at 2.4G Wi-Fi and 5G Wi-Fi UNII Band (5180MHz-5240MHz, 5260~5320 MHz, 5500~5700 MHz, 5745MHz-5825MHz). The EUT operate as Clients Device without Radar Detection.

Note 1: The EUT uses a PCB loop antenna and two FPC antenna, which PCB gain is 2dBi and FPC gain is Antenna1: 5.39 dBi for 2.4GWi-Fi, Antenna2: 3.23 dBi for 2.4GWi-Fi, Antenna1: 4.3 dBi for 5GWi-Fi, Antenna2: 5.72 dBi for 5GWi-Fi. In accordance to §15.203 and RSS-Gen 6.8, It is considered sufficiently to comply with the provisions of this section.

15.203 requirement: 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.



## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: 2AMG4-CEL, IC: 24652-CEL complies with Section 15.207, 15.209, 15.407 of the FCC Part 15, Subpart E Rules and RSS-247, RSS-GEN.

This report is only for 5GHz Wi-Fi, for the 2.4GHz Wi-Fi test report please refer to 709502306120-00A, for 5GHz Wi-Fi DFS test report please refer to 709502306120-00C, for the 13.56MHz NFC test report please refer to 709502306120-00D. The TX and RX range is 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5700MHz, 5745MHz-5825MHz.

We tested it and listed the worst data in this report.

### SUMMARY:

All tests according to the regulations cited on page 6 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: January 2, 2024

Testing Start Date: January 2, 2024

Testing End Date: March 8, 2024

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:

Prepared by:

Tested by:

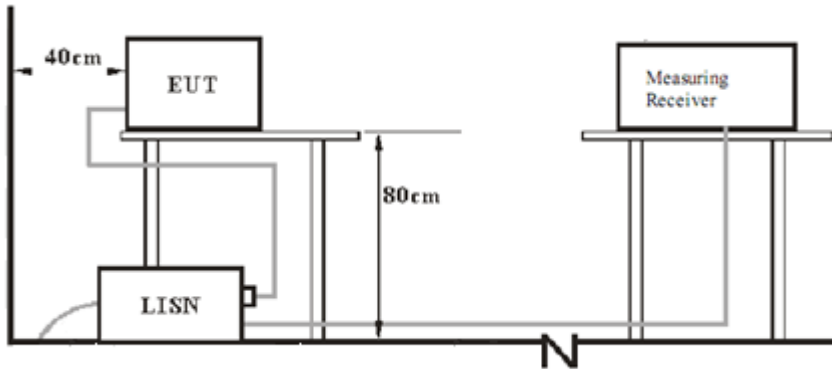
Hui TONG  
Review Engineer

Wenqiang LU  
Project Engineer

Chengjie GUO  
Test Engineer

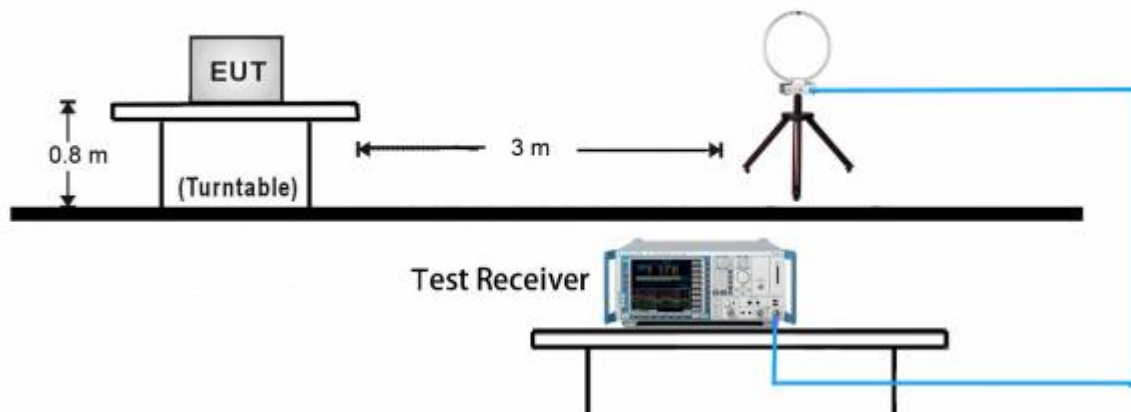
## 7 Test Setups

### 7.1 AC Power Line Conducted Emission test setups

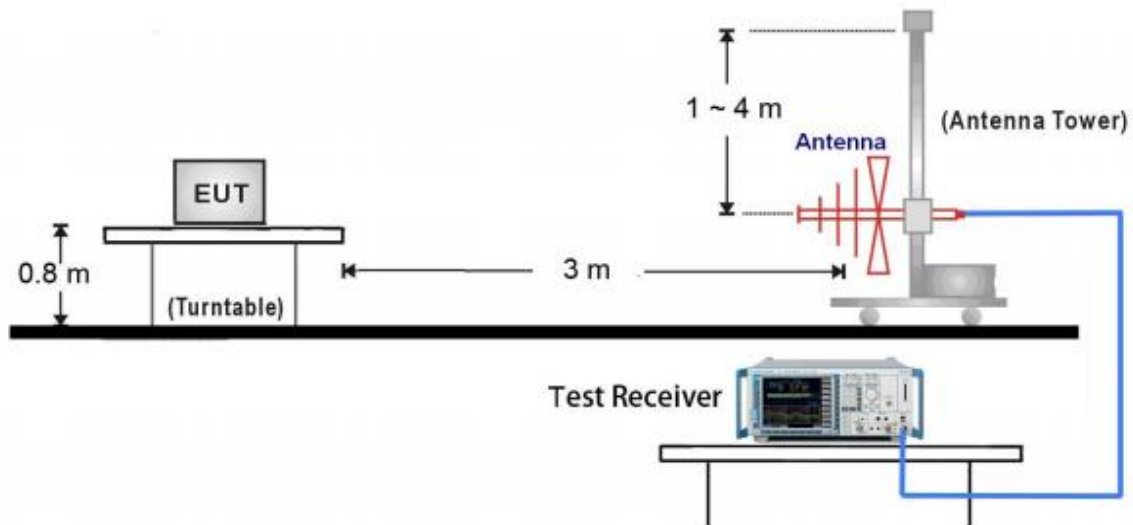


### 7.2 Radiated test setups

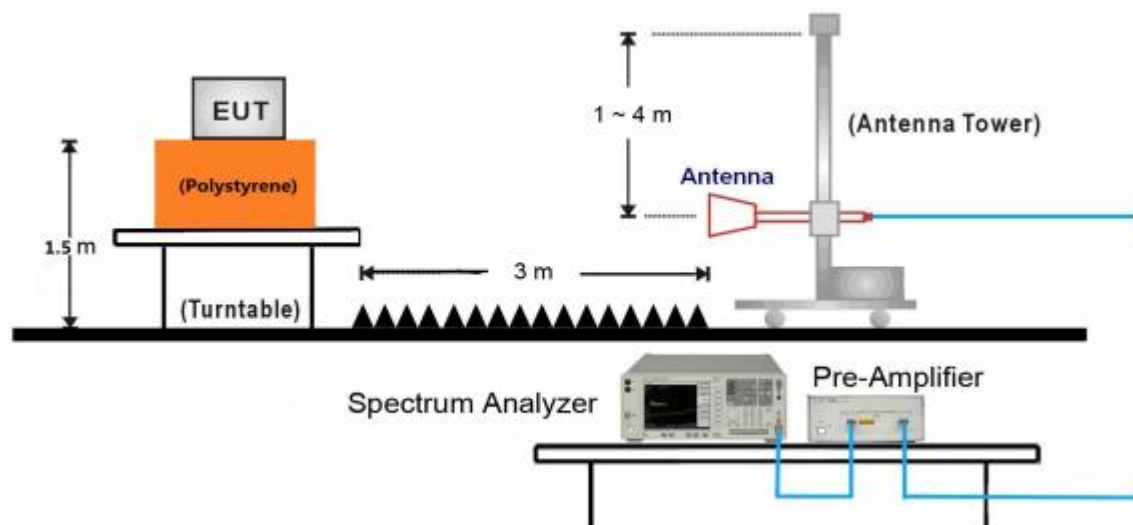
#### 9kHz ~ 30MHz Test Setup:



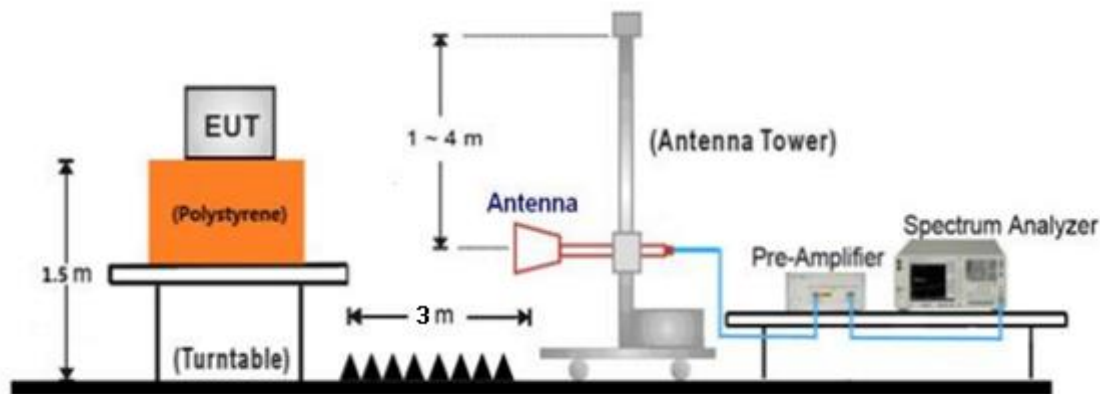
### 30MHz ~ 1GHz Test Setup:



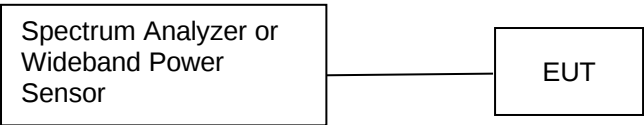
### 1GHz ~ 18GHz Test Setup:



18GHz ~ 40GHz Test Setup:



7.3 Conducted RF test setups



## 8 Systems test configuration

Auxiliary Equipment Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO.(SHIELD) | S/N(LENGTH)        |
|-------------|--------------|-------------------|--------------------|
| Notebook    | Lenove       | E470              | PF-OU5TS7<br>17/09 |

Test software: SecureCRT.exe, which used to control the EUT in continues transmitting mode.

The system was configured to channel:

| Test Mode                                  | Channel (MHz)    |                 |                 |
|--------------------------------------------|------------------|-----------------|-----------------|
| 802.11a,<br>802.11n HT20<br>802.11ac VHT20 | 5G WIFI-Band 1   |                 |                 |
|                                            | CH36 (5180MHz)   | CH40 (5200MHz)  | CH48 (5240MHz)  |
|                                            | 5G WIFI-Band 2   |                 |                 |
|                                            | CH52 (5260MHz)   | CH56 (5280MHz)  | CH64 (5320MHz)  |
|                                            | 5G WIFI-Band 3   |                 |                 |
|                                            | CH100 (5500MHz)  | CH108 (5540MHz) | CH116 (5580MHz) |
|                                            | CH132 (5660MHz)  | CH136 (5680MHz) | CH140 (5700MHz) |
|                                            | 5G WIFI-Band 4   |                 |                 |
|                                            | CH149 (5745MHz), | CH157 (5785MHz) | CH165 (5825MHz) |

| Test Mode                      | Channel (MHz)   |                 |                 |
|--------------------------------|-----------------|-----------------|-----------------|
| 802.11n HT40<br>802.11ac VHT40 | 5G WIFI-Band 1  |                 |                 |
|                                | CH38 (5190MHz)  | CH46 (5230MHz)  |                 |
|                                | 5G WIFI-Band 2  |                 |                 |
|                                | CH54 (5270MHz)  | CH62 (5310MHz)  |                 |
|                                | 5G WIFI-Band 3  |                 |                 |
|                                | CH102 (5510MHz) | CH110 (5550MHz) | CH118 (5590MHz) |
|                                | CH134 (5670MHz) |                 |                 |
|                                | 5G WIFI-Band 4  |                 |                 |
|                                | CH151 (5755MHz) | CH159 (5795MHz) |                 |

| Test Mode      | Channel (MHz)   |  |  |
|----------------|-----------------|--|--|
| 802.11ac VHT80 | 5G WIFI-Band 1  |  |  |
|                | CH42 (5210MHz)  |  |  |
|                | 5G WIFI-Band 2  |  |  |
|                | CH58 (5290MHz)  |  |  |
|                | 5G WIFI-Band 3  |  |  |
|                | CH106 (5530MHz) |  |  |
|                | 5G WIFI-Band 4  |  |  |



|  |                 |
|--|-----------------|
|  | CH155 (5775MHz) |
|--|-----------------|

The pre-test has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

|      | Modulation Type        | Data Rate     | Index Value<br>(Power level setting) |
|------|------------------------|---------------|--------------------------------------|
| MIMO | 802.11a OFDM           | 6Mbps         | 11                                   |
|      | 802.11n (HT20): OFDM   | MCS0 (13Mbps) | 11                                   |
|      | 802.11n (HT40): OFDM   | MCS0 (27Mbps) | 8                                    |
|      | 802.11ac (VHT20): OFDM | 11ac 13Mbps   | 11                                   |
|      | 802.11ac (VHT40): OFDM | 11ac 27Mbps   | 8                                    |
|      | 802.11ac (VHT80): OFDM | 11ac 58.5Mbps | 7                                    |

## 9 Technical Requirement

### 9.1 Conducted Emission

#### Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. An EMI test receiver is used to test the emissions from both sides of AC line

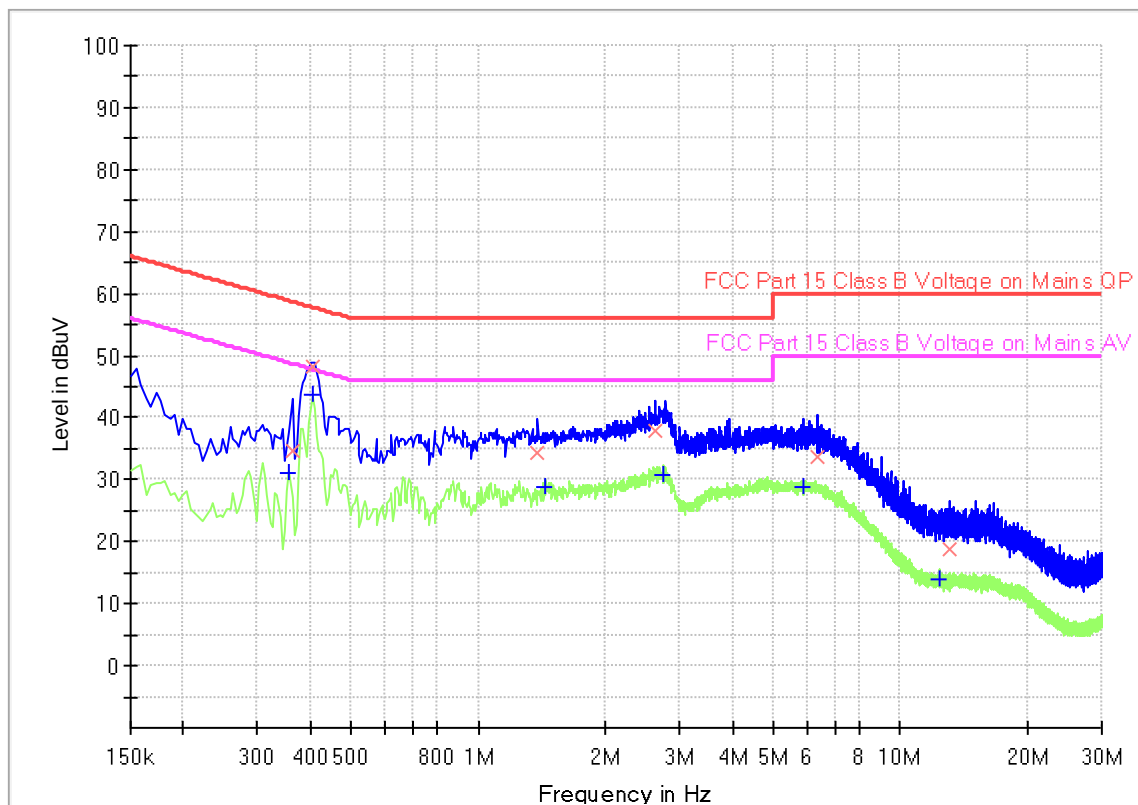
#### Limit

| Frequency<br>MHz | QP Limit<br>dB $\mu$ V | AV Limit<br>dB $\mu$ V |
|------------------|------------------------|------------------------|
| 0.150-0.500      | 66-56*                 | 56-46*                 |
| 0.500-5          | 56                     | 46                     |
| 5-30             | 60                     | 50                     |

Decreasing linearly with logarithm of the frequency

## Conducted Emission

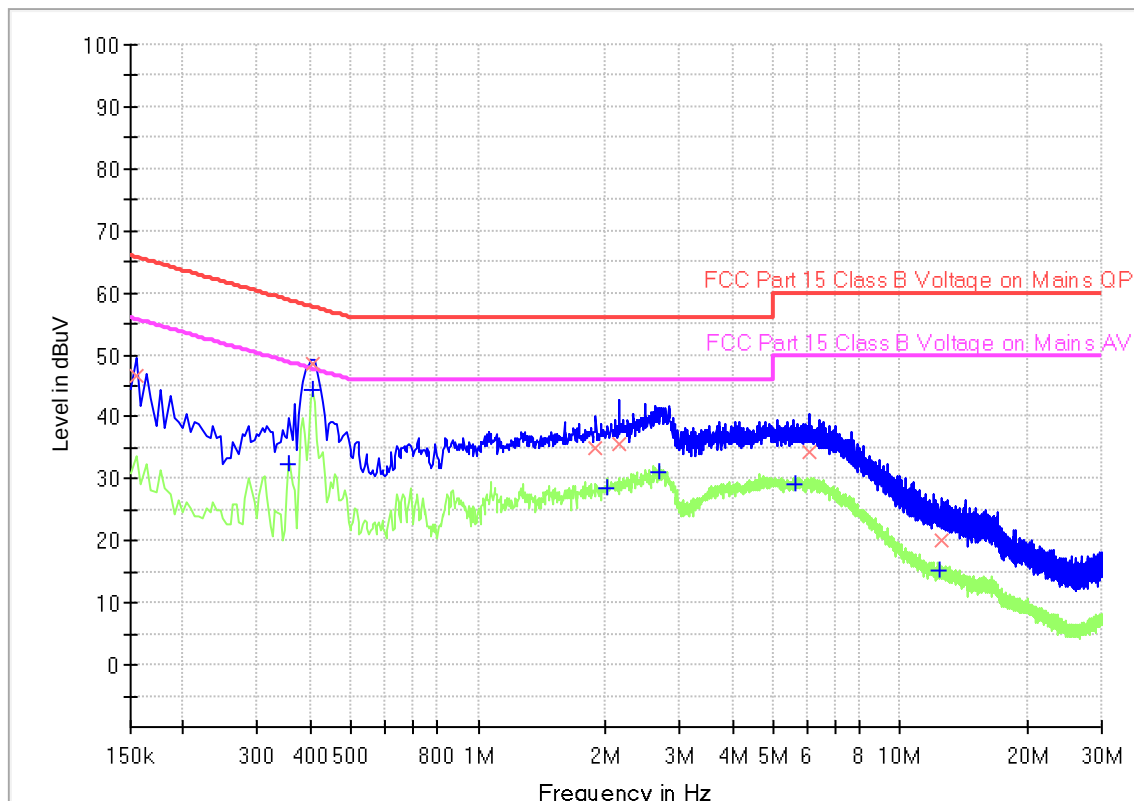
Product Type : 3D Printer  
 M/N : AccuFab-CEL  
 Operating Condition : Mode 1: Tx\_802.11a, 5500MHz MIMO  
 Test Specification : L-Line  
 Comment : AC 120V/60Hz



## Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.357000        | ---              | 30.93           | 48.80        | 17.87       | 1000.0          | 9.000           | L1   | 19.6       |
| 0.361500        | 34.68            | ---             | 58.69        | 24.01       | 1000.0          | 9.000           | L1   | 19.6       |
| 0.406500        | ---              | 43.75           | 47.72        | 3.97        | 1000.0          | 9.000           | L1   | 19.6       |
| 0.406500        | 48.15            | ---             | 57.72        | 9.57        | 1000.0          | 9.000           | L1   | 19.6       |
| 1.383000        | 34.37            | ---             | 56.00        | 21.63       | 1000.0          | 9.000           | L1   | 19.6       |
| 1.446000        | ---              | 28.68           | 46.00        | 17.32       | 1000.0          | 9.000           | L1   | 19.6       |
| 2.616000        | 37.87            | ---             | 56.00        | 18.13       | 1000.0          | 9.000           | L1   | 19.6       |
| 2.755500        | ---              | 30.71           | 46.00        | 15.29       | 1000.0          | 9.000           | L1   | 19.6       |
| 5.869500        | ---              | 28.97           | 50.00        | 21.03       | 1000.0          | 9.000           | L1   | 19.6       |
| 6.387000        | 33.66            | ---             | 60.00        | 26.34       | 1000.0          | 9.000           | L1   | 19.6       |
| 12.417000       | ---              | 13.92           | 50.00        | 36.08       | 1000.0          | 9.000           | L1   | 19.8       |
| 13.083000       | 18.93            | ---             | 60.00        | 41.07       | 1000.0          | 9.000           | L1   | 19.8       |

Product Type : 3D Printer  
 M/N : AccuFab-CEL  
 Operating Condition : Mode 1: Tx\_802.11a, 5500MHz MIMO  
 Test Specification : N-Line  
 Comment : AC 120V/60Hz



## Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.154500        | 46.57            | ---             | 65.75        | 19.18       | 1000.0          | 9.000           | N    | 19.6       |
| 0.357000        | ---              | 32.39           | 48.80        | 16.41       | 1000.0          | 9.000           | N    | 19.6       |
| 0.406500        | ---              | 44.21           | 47.72        | 3.51        | 1000.0          | 9.000           | N    | 19.6       |
| 0.406500        | 48.48            | ---             | 57.72        | 9.24        | 1000.0          | 9.000           | N    | 19.6       |
| 1.900500        | 35.10            | ---             | 56.00        | 20.90       | 1000.0          | 9.000           | N    | 19.6       |
| 2.026500        | ---              | 28.50           | 46.00        | 17.50       | 1000.0          | 9.000           | N    | 19.6       |
| 2.152500        | 35.47            | ---             | 56.00        | 20.53       | 1000.0          | 9.000           | N    | 19.6       |
| 2.683500        | ---              | 30.93           | 46.00        | 15.07       | 1000.0          | 9.000           | N    | 19.6       |
| 5.653500        | ---              | 29.23           | 50.00        | 20.77       | 1000.0          | 9.000           | N    | 19.7       |
| 6.099000        | 34.45            | ---             | 60.00        | 25.55       | 1000.0          | 9.000           | N    | 19.7       |
| 12.430500       | ---              | 15.12           | 50.00        | 34.88       | 1000.0          | 9.000           | N    | 19.9       |
| 12.480000       | 20.07            | ---             | 60.00        | 39.93       | 1000.0          | 9.000           | N    | 19.9       |

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)  
 Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator

## 9.2 Emission bandwidth

### 1、 Test Method of 26dB Bandwidth

According to KDB789033 D02

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) 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%.

**Limit:** No limit

### 2、 Test Method of 6dB Bandwidth

According to KDB789033 D02

- a) Set RBW = 100KHz
- b) Set the video bandwidth (VBW)  $\geq 3 \times \text{RBW}$
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) 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.

**Limit:**  $\geq 500\text{KHz}$

### 3、 Test Method of 99% Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency
- b) Set span = 1.5 times to 5.0 times the OBW.
- c) Set RBW = 1 % to 5 % of the OBW
- d) Set VBW  $\geq 3 \cdot \text{RBW}$
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99 % power bandwidth function of the instrument (if available).
- g) If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

**Limit:** No limit



**26dB Bandwidth Test Result:**

Test data should be referred to Appendix A for 709502306120-00B.

**6dB Bandwidth Test Result:**

Test data should be referred to Appendix A for 709502306120-00B.

**99% Bandwidth Test Result**

Test data should be referred to Appendix A for 709502306120-00B.

### 9.3 Maximum conducted output power and EIRP

#### Test Method

According to C63.10, the EUT was placed on 0.8m height table, the RF output of EUT was connected to the Spectrum Analyzer by RF cable. The path loss was compensated to the results for each measurement.

1. Measure the duty cycle
2. Use the following spectrum analyzer settings:  
RBW=1MHz, VBW≥3MHz, Span≥ the 99% Bandwidth of the emission being measured  
Sweep = auto, Detector function = power averaging.
3. Trace average at least 100 traces in power averaging (rms) mode
4. 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

#### 15.407 Limits:

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26dB emission bandwidth in megahertz.

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

#### RSS 247 Limits:

For client devices in the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or  $10 + 10 \log_{10} B$ , dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.

For the 5.25-5.35 GHz bands, shall comply with the following:

- a) The maximum conducted output power shall not exceed 250 mW or  $11 + 10 \log_{10} B$ , dBm, whichever is less;
- b) The maximum e.i.r.p. shall not exceed 1.0 W or  $17 + 10 \log_{10} B$ , dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

For the 5.47-5.6 and 5.65-5.725 GHz bands, The maximum conducted output power shall not exceed 250 mW or  $11 + 10 \log_{10} B$ , dBm, whichever is less.

The maximum e.i.r.p. shall not exceed 1.0 W or  $17 + 10 \log_{10} B$ , dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.



For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

**Maximum conducted output power Test Result:**

Test data should be referred to Appendix A for 709502306120-00B.

## 9.4 Maximum power spectral density

### Test Method

According to C63.10, the EUT was placed on 0.8m height table, the RF output of EUT was connected to the test power meter by RF cable. The path loss was compensated to the results for each measurement.

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...." (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
  2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
  3. Make the following adjustments to the peak value of the spectrum, if applicable:
    - a) If Method SA-2 or SA-2 Alternative was used, add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the peak of the spectrum.
    - b) If Method SA-3 Alternative was used and the linear mode was used in II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
  4. The result is the Maximum PSD over 1 MHz reference bandwidth.
  5. For devices operating in the bands 5.15–5.25 GHz, 5.25–5.35 GHz, and 5.47–5.725 GHz, the preceding procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5) & RSS-247 6.2. For devices operating in the band 5.725–5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth ( $< 1$  MHz, or  $< 500$  kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:
    - a) Set  $RBW \geq 1/T$ , where  $T$  is defined in II.B.I.a).
    - b) Set  $VBW \geq 3$  RBW.
    - c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10 \log (500 \text{ kHz}/RBW)$  to the measured result, whereas RBW ( $< 500$  kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
    - d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add  $10 \log (1\text{MHz}/RBW)$  to the measured result, whereas RBW ( $< 1$  MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
    - e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
- Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the II.F.5.c) and II.F.5.d), since RBW=100 kHz is available on nearly all spectrum analyzers.



**Limit:** The maximum power spectral density shall not exceed 11dBm for the 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725 GHz Band in any 1 megahertz band.  
For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30dBm in any 1 500kHz band.

**Test Result:**

Test data should be referred to Appendix A for 709502306120-00B.



## 9.5 Frequencies Stability

### Test Method

1. Connect the UUT to the spectrum analyzer
2. Set Centre Frequency of the channel under test.
3. Set Detector PEAK
4. Set RBW: 10KHz, VBW: 3RBW
5. Set Span: Encompass the entire emissions bandwidth (EBW) of the signal.
6. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

User manual temperature is 20 to 35 °C.

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

Limit: 20ppm

Test Results (All conditions and all modes were performed, only list Worst-Case in the report)  
Remark: NV is normal Voltage: 120V~, HV is High Voltage: 138V~, LV is Low Voltage: 102V~, NT is normal Temperature: +25 °C.

### Test Result:

Test data should be referred to Appendix A for 709502306120-00B.

## 9.6 Unwanted emissions

### Transmitting spurious emission test result as below:

#### Test Method

##### Radiated Mode:

1. The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3meter 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
5. Use the following spectrum analyzer settings According to C63.10:

##### For Above 1GHz

Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 1MHz, VBW $\geq$ RBW for peak measurement and VBW = 10Hz for average measurement, Sweep = auto, Detector function = peak, Trace = max hold.

##### For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 KHz, VBW $\geq$ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

##### Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz 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 (20log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.

#### Limit

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.



(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of  $-27$  dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

According to part 15.407(b) & RSS-247 6.2, the radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section 15.205 and RSS-GEN 8.10, must comply with the radiated emission limits specified in section 15.209 & RSS-GEN 8.9.

| Frequency<br>MHz | Field Strength<br>uV/m | Field Strength<br>dBμV/m | Detector |
|------------------|------------------------|--------------------------|----------|
| 30-88            | 100                    | 40                       | QP       |
| 88-216           | 150                    | 43.5                     | QP       |
| 216-960          | 200                    | 46                       | QP       |
| 960-1000         | 500                    | 54                       | QP       |
| Above 1000       | 500                    | 54                       | AV       |
| Above 1000       | 5000                   | 74                       | PK       |

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case listed in the report.

#### Transmitting spurious emission worse case test result:

Transmitting spurious emission test result as below:



| 802.11a Modulation 5180MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | #5131.4       | Horizontal           | 51.17                  | PK       | 74             | 22.83       | Pass   |
| 1000-7000                       | #5150         | Horizontal           | 51.61                  | PK       | 74             | 22.39       | Pass   |
| 1000-7000                       | #5150         | Vertical             | 55.37                  | PK       | 74             | 18.63       | Pass   |
| 1000-7000                       | #5150         | Vertical             | 46.5                   | AV       | 54             | 7.5         | Pass   |
| 7000-40000                      | *10375.5      | Horizontal           | 51.98                  | PK       | 74             | 22.02       | Pass   |
| 7000-40000                      | *10365.87     | Vertical             | 51.77                  | PK       | 74             | 22.23       | Pass   |

| 802.11a Modulation 5200MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | *10402.7      | Horizontal           | 51.12                  | PK       | 74             | 22.88       | Pass   |
| 7000-40000                      | *10401.57     | Vertical             | 51.75                  | PK       | 74             | 22.25       | Pass   |

| 802.11a Modulation 5240MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | *10482.6      | Horizontal           | 51.93                  | PK       | 74             | 22.07       | Pass   |
| 7000-40000                      | *10481.47     | Vertical             | 51.25                  | PK       | 74             | 22.75       | Pass   |

| 802.11a Modulation 5260MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | *10518.87     | Horizontal           | 52.26                  | PK       | 74             | 21.74       | Pass   |
| 7000-40000                      | *10520        | Vertical             | 51.77                  | PK       | 74             | 22.23       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11a Modulation 5280MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | *10560        | Horizontal           | 50.89                  | PK       | 74             | 23.11       | Pass   |
| 7000-40000                      | *10560.07     | Vertical             | 50.68                  | PK       | 74             | 23.32       | Pass   |

| 802.11a Modulation 5320MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | #5350         | Horizontal           | 46.91                  | PK       | 74             | 27.09       | Pass   |
| 1000-7000                       | #5350         | Vertical             | 48.94                  | PK       | 74             | 25.06       | Pass   |
| 7000-40000                      | 10639.57      | Horizontal           | 51.05                  | PK       | 74             | 22.95       | Pass   |
| 7000-40000                      | 10649.77      | Vertical             | 50.47                  | PK       | 74             | 23.53       | Pass   |

| 802.11a Modulation 5500MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | #5460         | Horizontal           | 50.31                  | PK       | 74             | 23.69       | Pass   |
| 1000-7000                       | *#5470        | Horizontal           | 49.81                  | PK       | 74             | 24.19       | Pass   |
| 1000-7000                       | #5460         | Vertical             | 51.23                  | PK       | 74             | 22.77       | Pass   |
| 1000-7000                       | *#5470        | Vertical             | 53.28                  | AV       | 74             | 20.72       | Pass   |
| 7000-40000                      | 10999.4       | Horizontal           | 51.95                  | PK       | 74             | 22.05       | Pass   |
| 7000-40000                      | 11030         | Vertical             | 52.5                   | PK       | 74             | 21.5        | Pass   |

| 802.11a Modulation 5540MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | 11080.36      | Horizontal           | 50.1                   | PK       | 74             | 23.9        | Pass   |

Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "\*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBuV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) "#" is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

| 802.11a Modulation 5580MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | 11160.93      | Horizontal           | 50.87                  | PK       | 74             | 23.13       | Pass   |
| 7000-40000                      | 11160.32      | Vertical             | 50.65                  | PK       | 74             | 23.35       | Pass   |

| 802.11a Modulation 5660MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | 11321.87      | Horizontal           | 50.02                  | PK       | 74             | 23.98       | Pass   |
| 7000-40000                      | 11321.56      | Vertical             | 50.11                  | PK       | 74             | 23.89       | Pass   |

| 802.11a Modulation 5680MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | 11360.87      | Horizontal           | 51.23                  | PK       | 74             | 22.77       | Pass   |
| 7000-40000                      | 11361.65      | Vertical             | 49.74                  | PK       | 74             | 24.26       | Pass   |

## Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "\*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBuV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) "#" is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11a Modulation 5700MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | *#5725        | Horizontal           | 47.62                  | PK       | 74             | 26.38       | Pass   |
| 1000-7000                       | *#5725        | Vertical             | 53.69                  | PK       | 74             | 20.31       | Pass   |
| 1000-7000                       | *#5725        | Vertical             | 44                     | AV       | 54             | 10          | Pass   |
| 7000-40000                      | 11394.37      | Horizontal           | 51.98                  | PK       | 74             | 22.02       | Pass   |
| 7000-40000                      | 11398.9       | Vertical             | 51.61                  | PK       | 74             | 22.39       | Pass   |

| 802.11a Modulation 5745MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | *5645.72      | Horizontal           | 51.42                  | PK       | 74             | 22.58       | Pass   |
| 1000-7000                       | *5650         | Horizontal           | 50.11                  | PK       | 74             | 23.89       | Pass   |
| 1000-7000                       | *#5723.19     | Horizontal           | 59.63                  | PK       | 118.1          | 58.47       | Pass   |
| 1000-7000                       | *5642.47      | Vertical             | 52.75                  | PK       | 74             | 21.25       | Pass   |
| 1000-7000                       | *5650         | Vertical             | 51.23                  | PK       | 74             | 22.77       | Pass   |
| 1000-7000                       | *#5723.9      | Vertical             | 65.99                  | PK       | 119.7          | 53.71       | Pass   |
| 7000-40000                      | 11490.7       | Horizontal           | 50.52                  | PK       | 74             | 23.48       | Pass   |
| 7000-40000                      | 11490.13      | Vertical             | 51.37                  | PK       | 74             | 22.63       | Pass   |

| 802.11a Modulation 5785MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                       | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                      | 11570.33      | Horizontal           | 49.67                  | PK       | 74             | 24.33       | Pass   |
| 7000-40000                      | 11570.33      | Vertical             | 50.14                  | PK       | 74             | 23.86       | Pass   |

| 802.11a Modulation 5825MHz MIMO |               |                      |                        |          |                |             |        |
|---------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz             | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                       | *#5850.63     | Horizontal           | 59.06                  | PK       | 121.3          | 62.24       | Pass   |
| 1000-7000                       | *5925         | Horizontal           | 50.31                  | PK       | 74             | 23.69       | Pass   |
| 1000-7000                       | *5948.32      | Horizontal           | 51.82                  | PK       | 74             | 22.18       | Pass   |
| 1000-7000                       | *#5850.39     | Vertical             | 59.1                   | PK       | 121.3          | 62.2        | Pass   |
| 1000-7000                       | *5965         | Vertical             | 49.23                  | PK       | 74             | 24.77       | Pass   |
| 1000-7000                       | *5943.37      | Vertical             | 51.63                  | PK       | 74             | 22.37       | Pass   |
| 7000-40000                      | 11649.93      | Horizontal           | 52.21                  | PK       | 74             | 21.79       | Pass   |
| 7000-40000                      | 11648.8       | Vertical             | 49.95                  | PK       | 74             | 24.05       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11n 20 Modulation 5180MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | #5149.32      | Horizontal           | 50.2                   | PK       | 74             | 23.8        | Pass   |
| 1000-7000                          | #5148.76      | Vertical             | 53.06                  | PK       | 74             | 20.94       | Pass   |
| 7000-40000                         | *10361.9      | Horizontal           | 51.16                  | PK       | 68.2           | 17.04       | Pass   |
| 7000-40000                         | *10361.9      | Vertical             | 50.58                  | PK       | 68.2           | 17.62       | Pass   |

| 802.11n 20 Modulation 5200MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | *10401.57     | Horizontal           | 50.94                  | PK       | 68.2           | 17.26       | Pass   |
| 7000-40000                         | *10403.83     | Vertical             | 51.01                  | PK       | 68.2           | 17.19       | Pass   |

| 802.11n 20 Modulation 5240MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | *10483.73     | Horizontal           | 51.78                  | PK       | 68.2           | 16.42       | Pass   |
| 7000-40000                         | *10478.8      | Vertical             | 51.73                  | PK       | 68.2           | 16.47       | Pass   |

| 802.11n 20 Modulation 5260MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | *10521.7      | Horizontal           | 50.71                  | PK       | 68.2           | 17.49       | Pass   |
| 7000-40000                         | *10527.93     | Vertical             | 51.51                  | PK       | 68.2           | 16.69       | Pass   |

Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "\*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBuV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) "#" is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11n 20 Modulation 5300MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | 10600.47      | Horizontal           | 51.14                  | PK       | 74             | 22.86       | Pass   |
| 7000-40000                         | 10600.47      | Vertical             | 52.01                  | PK       | 74             | 21.99       | Pass   |

| 802.11n 20 Modulation 5320MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | #5350.96      | Horizontal           | 48.12                  | PK       | 74             | 25.88       | Pass   |
| 1000-7000                          | #5350.09      | Vertical             | 47.55                  | PK       | 74             | 26.45       | Pass   |
| 7000-40000                         | 10637.87      | Horizontal           | 50.52                  | PK       | 74             | 23.48       | Pass   |
| 7000-40000                         | 10637.87      | Vertical             | 51.42                  | PK       | 74             | 22.58       | Pass   |

| 802.11n 20 Modulation 5500MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | *#5468.49     | Horizontal           | 50.35                  | PK       | 74             | 23.65       | Pass   |
| 1000-7000                          | *#5467.79     | Vertical             | 53.96                  | PK       | 74             | 20.04       | Pass   |
| 7000-40000                         | *#5467.79     | Vertical             | 43.6                   | AV       | 54             | 10.4        | Pass   |
| 7000-40000                         | 10999.4       | Horizontal           | 51.02                  | PK       | 74             | 22.98       | Pass   |
| 7000-40000                         | 10998.27      | Vertical             | 51.04                  | PK       | 74             | 22.96       | Pass   |

| 802.11n 20 Modulation 5540MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | 11080.51      | Horizontal           | 50.36                  | PK       | 74             | 23.64       | Pass   |
| 7000-40000                         | 11080.38      | Vertical             | 49.23                  | PK       | 74             | 24.77       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

| 802.11n 20 Modulation 5580MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | 11160.97      | Horizontal           | 50.32                  | PK       | 74             | 23.68       | Pass   |
| 7000-40000                         | 11160.54      | Vertical             | 49.83                  | PK       | 74             | 24.17       | Pass   |

| 802.11n 20 Modulation 5660MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | 11320.34      | Horizontal           | 50.52                  | PK       | 74             | 23.48       | Pass   |
| 7000-40000                         | 11320.38      | Vertical             | 49.37                  | PK       | 74             | 24.63       | Pass   |

| 802.11n 20 Modulation 5680MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | 11360.27      | Horizontal           | 50.89                  | PK       | 74             | 23.11       | Pass   |
| 7000-40000                         | 11361.61      | Vertical             | 50.26                  | PK       | 74             | 23.74       | Pass   |

## Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "\*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) "#" is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "----" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11n 20 Modulation 5700MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | *#5725.33     | Horizontal           | 47.41                  | PK       | 74             | 26.59       | Pass   |
| 1000-7000                          | *#5728.78     | Vertical             | 55.3                   | PK       | 74             | 18.7        | Pass   |
| 1000-7000                          | *#5728.78     | Vertical             | 43.5                   | AV       | 54             | 10.5        | Pass   |
| 7000-40000                         | 11406.83      | Horizontal           | 51.56                  | PK       | 74             | 22.44       | Pass   |
| 7000-40000                         | 11401.17      | Vertical             | 51.6                   | PK       | 74             | 22.4        | Pass   |

| 802.11n 20 Modulation 5745MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | *5642.99      | Horizontal           | 51.21                  | PK       | 74             | 22.79       | Pass   |
| 1000-7000                          | *5650         | Horizontal           | 50.32                  | PK       | 74             | 23.68       | Pass   |
| 1000-7000                          | *#5724.66     | Horizontal           | 60.61                  | PK       | 121.4          | 60.79       | Pass   |
| 1000-7000                          | *5647.22      | Vertical             | 51.81                  | PK       | 74             | 22.19       | Pass   |
| 1000-7000                          | *5650         | Vertical             | 50.01                  | PK       | 74             | 23.99       | Pass   |
| 1000-7000                          | *#5723.24     | Vertical             | 67.04                  | PK       | 118.2          | 51.16       | Pass   |
| 7000-40000                         | 11490.13      | Horizontal           | 51.11                  | PK       | 74             | 22.89       | Pass   |
| 7000-40000                         | 11489.57      | Vertical             | 52.09                  | PK       | 74             | 21.91       | Pass   |

| 802.11n 20 Modulation 5785MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | 11570.6       | Horizontal           | 51.45                  | PK       | 74             | 22.55       | Pass   |
| 7000-40000                         | 11571.73      | Vertical             | 51.47                  | PK       | 74             | 22.53       | Pass   |

## Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "\*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBuV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) "#" is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

| 802.11n 20 Modulation 5825MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | *#5850.09     | Horizontal           | 55.84                  | PK       | 121.3          | 65.46       | Pass   |
| 1000-7000                          | *5925         | Horizontal           | 50.16                  | PK       | 74             | 23.84       | Pass   |
| 1000-7000                          | *5942.92      | Horizontal           | 51.38                  | PK       | 74             | 22.62       | Pass   |
| 1000-7000                          | *#5850.67     | Vertical             | 56.53                  | PK       | 121.3          | 64.77       | Pass   |
| 1000-7000                          | *5925         | Vertical             | 51.41                  | PK       | 74             | 22.59       | Pass   |
| 1000-7000                          | *5927.76      | Vertical             | 50.76                  | PK       | 74             | 23.24       | Pass   |
| 7000-40000                         | 11650.5       | Horizontal           | 50.96                  | PK       | 74             | 23.04       | Pass   |
| 7000-40000                         | 11650.5       | Vertical             | 50.12                  | PK       | 74             | 23.88       | Pass   |

| 802.11n 40 Modulation 5190MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | #5148.34      | Horizontal           | 56.66                  | PK       | 74             | 17.34       | Pass   |
| 1000-7000                          | #5148.34      | Horizontal           | 46.1                   | AV       | 54             | 7.9         | Pass   |
| 1000-7000                          | #5146.52      | Vertical             | 60.73                  | PK       | 74             | 13.27       | Pass   |
| 1000-7000                          | #5146.52      | Vertical             | 52.3                   | AV       | 54             | 1.7         | Pass   |
| 7000-40000                         | *10378.9      | Horizontal           | 50.24                  | PK       | 74             | 23.76       | Pass   |
| 7000-40000                         | *10387.97     | Vertical             | 51.92                  | PK       | 74             | 22.08       | Pass   |

| 802.11n 40 Modulation 5230MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | *10459.37     | Horizontal           | 51.01                  | PK       | 74             | 22.99       | Pass   |
| 7000-40000                         | *10459.37     | Vertical             | 50.47                  | PK       | 74             | 23.53       | Pass   |

| 802.11n 40 Modulation 5270MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | *10543.23     | Horizontal           | 51.34                  | PK       | 74             | 22.66       | Pass   |
| 7000-40000                         | *10539.27     | Vertical             | 52.04                  | PK       | 74             | 21.96       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

| 802.11n 40 Modulation 5310MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | #5352.46      | Horizontal           | 54.64                  | PK       | 74             | 19.36       | Pass   |
| 1000-7000                          | #5352.46      | Horizontal           | 46.1                   | AV       | 54             | 7.9         | Pass   |
| 1000-7000                          | #5352.31      | Vertical             | 57.29                  | PK       | 74             | 16.71       | Pass   |
| 1000-7000                          | #5352.31      | Vertical             | 48.9                   | AV       | 54             | 5.1         | Pass   |
| 7000-40000                         | 10624.83      | Horizontal           | 52.08                  | PK       | 74             | 21.92       | Pass   |
| 7000-40000                         | 10628.8       | Vertical             | 51.59                  | PK       | 74             | 22.41       | Pass   |

| 802.11n 40 Modulation 5510MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | *#5468.86     | Horizontal           | 55.6                   | PK       | 74             | 18.4        | Pass   |
| 1000-7000                          | *#5468.86     | Horizontal           | 45.6                   | AV       | 54             | 8.4         | Pass   |
| 1000-7000                          | *#5469.64     | Vertical             | 58.47                  | PK       | 74             | 15.53       | Pass   |
| 1000-7000                          | *#5469.64     | Vertical             | 48.7                   | AV       | 54             | 5.3         | Pass   |
| 7000-40000                         | 11019.23      | Horizontal           | 52.29                  | PK       | 74             | 21.71       | Pass   |
| 7000-40000                         | 11020.37      | Vertical             | 49.9                   | PK       | 74             | 24.1        | Pass   |

| 802.11n 40 Modulation 5550MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | 11100.43      | Horizontal           | 51.03                  | PK       | 74             | 22.97       | Pass   |
| 7000-40000                         | 11100.29      | Vertical             | 50.24                  | PK       | 74             | 23.76       | Pass   |

| 802.11n 40 Modulation 5590MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                          | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                         | 11181.3       | Horizontal           | 51.31                  | PK       | 74             | 22.69       | Pass   |
| 7000-40000                         | 11180.73      | Vertical             | 50.64                  | PK       | 74             | 23.36       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11n 40 Modulation 5670MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | *#5725.34     | Horizontal           | 45.91                  | PK       | 74             | 28.09       | Pass   |
| 1000-7000                          | *#5725.88     | Vertical             | 48.18                  | PK       | 74             | 25.82       | Pass   |
| 7000-40000                         | 11339.97      | Horizontal           | 50.68                  | PK       | 74             | 23.32       | Pass   |
| 7000-40000                         | 11339.4       | Vertical             | 50.09                  | PK       | 74             | 23.91       | Pass   |

| 802.11n 40 Modulation 5755MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | *5642.62      | Horizontal           | 51.23                  | PK       | 74             | 22.77       | Pass   |
| 1000-7000                          | *5650         | Horizontal           | 50.72                  | PK       | 74             | 23.28       | Pass   |
| 1000-7000                          | *#5714.16     | Horizontal           | 56.83                  | PK       | 109.2          | 52.37       | Pass   |
| 1000-7000                          | *5641.07      | Vertical             | 51.03                  | PK       | 74             | 22.97       | Pass   |
| 1000-7000                          | *5650         | Vertical             | 50.81                  | PK       | 74             | 23.19       | Pass   |
| 1000-7000                          | *#5718.44     | Vertical             | 62.22                  | PK       | 110.4          | 48.18       | Pass   |
| 7000-40000                         | 11509.4       | Horizontal           | 50.87                  | PK       | 74             | 23.13       | Pass   |
| 7000-40000                         | 11510.53      | Vertical             | 51.19                  | PK       | 74             | 22.81       | Pass   |

| 802.11n 40 Modulation 5795MHz MIMO |               |                      |                        |          |                |             |        |
|------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                          | *5851.48      | Horizontal           | 61.04                  | PK       | 118.8          | 57.76       | Pass   |
| 1000-7000                          | *5925         | Horizontal           | 50.32                  | PK       | 74             | 23.68       | Pass   |
| 1000-7000                          | *5927.88      | Horizontal           | 51.48                  | PK       | 74             | 22.52       | Pass   |
| 1000-7000                          | *5860.18      | Vertical             | 64.39                  | PK       | 109.4          | 45.01       | Pass   |
| 1000-7000                          | *5925         | Vertical             | 50.18                  | PK       | 74             | 23.82       | Pass   |
| 1000-7000                          | *5926.32      | Vertical             | 51.29                  | PK       | 74             | 22.71       | Pass   |
| 7000-40000                         | 11589.67      | Horizontal           | 49.72                  | PK       | 74             | 24.28       | Pass   |
| 7000-40000                         | 11590.43      | Vertical             | 51.31                  | PK       | 74             | 22.69       | Pass   |

| 802.11ac 20 Modulation 5180MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | #5148.83      | Horizontal           | 51.32                  | PK       | 74             | 22.68       | Pass   |
| 1000-7000                           | #5148.9       | Vertical             | 56.36                  | PK       | 74             | 17.64       | Pass   |
| 1000-7000                           | #5148.9       | Vertical             | 46.1                   | AV       | 54             | 7.9         | Pass   |
| 7000-40000                          | *10363.6      | Horizontal           | 52.2                   | PK       | 68.2           | 16          | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11ac 20 Modulation 5200MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | *10427.07     | Horizontal           | 51.23                  | PK       | 68.2           | 16.97       | Pass   |
| 7000-40000                          | *10393.07     | Vertical             | 51.4                   | PK       | 68.2           | 16.8        | Pass   |

| 802.11ac 20 Modulation 5240MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | *10482.03     | Horizontal           | 51.56                  | PK       | 68.2           | 16.64       | Pass   |
| 7000-40000                          | *10476.37     | Vertical             | 50.53                  | PK       | 68.2           | 17.67       | Pass   |

| 802.11ac 20 Modulation 5260MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | *10516.6      | Horizontal           | 51.49                  | PK       | 68.2           | 16.71       | Pass   |
| 7000-40000                          | *10520.73     | Vertical             | 51.45                  | PK       | 68.2           | 16.75       | Pass   |

| 802.11ac 20 Modulation 5300MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | *10610.1      | Horizontal           | 51.33                  | PK       | 74             | 22.67       | Pass   |
| 7000-40000                          | *10600.33     | Vertical             | 49.65                  | PK       | 74             | 24.35       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

| 802.11ac 20 Modulation 5320MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | #5350.2       | Horizontal           | 47.42                  | PK       | 74             | 26.58       | Pass   |
| 1000-7000                           | #5351.04      | Vertical             | 47.64                  | PK       | 74             | 26.36       | Pass   |
| 7000-40000                          | 10641.27      | Horizontal           | 50.3                   | PK       | 74             | 23.7        | Pass   |
| 7000-40000                          | 10639         | Vertical             | 51.04                  | PK       | 74             | 22.96       | Pass   |

| 802.11ac 20 Modulation 5500MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *#5468.25     | Horizontal           | 49.48                  | PK       | 74             | 24.52       | Pass   |
| 1000-7000                           | *#5469.75     | Vertical             | 50.31                  | PK       | 74             | 23.69       | Pass   |
| 7000-40000                          | 11020.37      | Horizontal           | 50.88                  | PK       | 74             | 23.12       | Pass   |
| 7000-40000                          | 10997.7       | Vertical             | 51.9                   | PK       | 74             | 22.1        | Pass   |

| 802.11ac 20 Modulation 5540MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | 11080.28      | Horizontal           | 50.76                  | PK       | 74             | 23.24       | Pass   |
| 7000-40000                          | 11080.43      | Vertical             | 50.32                  | PK       | 74             | 23.68       | Pass   |

| 802.11ac 20 Modulation 5580MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | 11160.82      | Horizontal           | 50.49                  | PK       | 74             | 23.51       | Pass   |
| 7000-40000                          | 11161.44      | Vertical             | 50.28                  | PK       | 74             | 23.72       | Pass   |

## Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "\*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBuV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) "#" is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11ac 20 Modulation 5660MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | 11360.42      | Horizontal           | 50.12                  | PK       | 74             | 23.88       | Pass   |
| 7000-40000                          | 11359.92      | Vertical             | 50.98                  | PK       | 74             | 23.02       | Pass   |

| 802.11ac 20 Modulation 5680MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | 11360.63      | Horizontal           | 49.93                  | PK       | 74             | 24.07       | Pass   |
| 7000-40000                          | 11360.84      | Vertical             | 48.34                  | PK       | 74             | 25.66       | Pass   |

| 802.11ac 20 Modulation 5700MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *#5726.6      | Horizontal           | 48.52                  | PK       | 74             | 25.48       | Pass   |
| 1000-7000                           | *#5725.38     | Vertical             | 53.92                  | PK       | 74             | 20.08       | Pass   |
| 1000-7000                           | *#5725.38     | Vertical             | 42.9                   | AV       | 54             | 11.1        | Pass   |
| 7000-40000                          | 11397.77      | Horizontal           | 52.28                  | PK       | 74             | 21.72       | Pass   |
| 7000-40000                          | 11402.3       | Vertical             | 52.34                  | PK       | 74             | 21.66       | Pass   |

## Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "\*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBuV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) "#" is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

| 802.11ac 20 Modulation 5745MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *5648.69      | Horizontal           | 51.55                  | PK       | 74             | 22.45       | Pass   |
| 1000-7000                           | *5650         | Horizontal           | 50.28                  | PK       | 74             | 23.72       | Pass   |
| 1000-7000                           | *#5723.47     | Horizontal           | 68.94                  | PK       | 118.7          | 49.76       | Pass   |
| 1000-7000                           | *5647.77      | Vertical             | 52.03                  | PK       | 74             | 21.97       | Pass   |
| 1000-7000                           | *5650         | Vertical             | 50.12                  | PK       | 74             | 23.88       | Pass   |
| 1000-7000                           | *#5723.04     | Vertical             | 67.14                  | PK       | 117.7          | 50.56       | Pass   |
| 7000-40000                          | 11492.4       | Horizontal           | 53.53                  | PK       | 74             | 20.47       | Pass   |
| 7000-40000                          | 11491.27      | Vertical             | 52.81                  | PK       | 74             | 21.19       | Pass   |

| 802.11ac 20 Modulation 5785MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | 11573.43      | Horizontal           | 51.64                  | PK       | 74             | 22.36       | Pass   |
| 7000-40000                          | 11570.6       | Vertical             | 50.67                  | PK       | 74             | 23.33       | Pass   |

| 802.11ac 20 Modulation 5825MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *#5853        | Horizontal           | 56.51                  | PK       | 115.4          | 58.89       | Pass   |
| 1000-7000                           | *5925         | Horizontal           | 50.37                  | PK       | 74             | 23.63       | Pass   |
| 1000-7000                           | *5928.61      | Horizontal           | 51.87                  | PK       | 74             | 22.13       | Pass   |
| 1000-7000                           | *#5851.06     | Vertical             | 57.76                  | PK       | 119.8          | 62.04       | Pass   |
| 1000-7000                           | *5925         | Vertical             | 50.26                  | PK       | 74             | 23.74       | Pass   |
| 1000-7000                           | *5929.69      | Vertical             | 51.03                  | PK       | 74             | 22.97       | Pass   |
| 7000-40000                          | 11652.91      | Vertical             | 51.36                  | PK       | 74             | 22.64       | Pass   |
| 7000-40000                          | 11652.77      | Vertical             | 51.7                   | PK       | 74             | 22.3        | Pass   |

| 802.11ac 40 Modulation 5190MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | #5148.62      | Horizontal           | 59.08                  | PK       | 74             | 14.92       | Pass   |
| 1000-7000                           | #5148.62      | Horizontal           | 49.3                   | AV       | 54             | 4.7         | Pass   |
| 1000-7000                           | #5148.76      | Vertical             | 60.87                  | PK       | 74             | 13.13       | Pass   |
| 1000-7000                           | #5148.76      | Vertical             | 52.6                   | AV       | 54             | 1.4         | Pass   |
| 7000-40000                          | *10377.67     | Horizontal           | 52.32                  | PK       | 68.2           | 15.88       | Pass   |
| 7000-40000                          | *10325.63     | Vertical             | 52.81                  | PK       | 68.2           | 15.39       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11ac 40 Modulation 5230MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | *10462.2      | Horizontal           | 51.86                  | PK       | 68.2           | 16.34       | Pass   |
| 7000-40000                          | *10462.2      | Vertical             | 51.37                  | PK       | 68.2           | 16.83       | Pass   |

| 802.11ac 40 Modulation 5270MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | *10541.53     | Horizontal           | 51.28                  | PK       | 68.2           | 16.92       | Pass   |
| 7000-40000                          | *10546.63     | Vertical             | 52.05                  | PK       | 68.2           | 16.15       | Pass   |

| 802.11ac 40 Modulation 5310MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | #5350.29      | Horizontal           | 54.2                   | PK       | 74             | 19.8        | Pass   |
| 1000-7000                           | #5350.29      | Horizontal           | 45.4                   | AV       | 54             | 8.6         | Pass   |
| 1000-7000                           | #5350.49      | Vertical             | 57.49                  | PK       | 74             | 16.51       | Pass   |
| 1000-7000                           | #5350.49      | Vertical             | 48.4                   | AV       | 54             | 5.6         | Pass   |
| 7000-40000                          | 10620.3       | Horizontal           | 50.28                  | PK       | 74             | 23.72       | Pass   |
| 7000-40000                          | 10627.1       | Vertical             | 51.85                  | PK       | 74             | 22.15       | Pass   |

| 802.11ac 40 Modulation 5510MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *#5468.92     | Horizontal           | 55.79                  | PK       | 74             | 18.21       | Pass   |
| 1000-7000                           | *#5468.92     | Horizontal           | 45                     | AV       | 54             | 9           | Pass   |
| 1000-7000                           | *#5470.88     | Vertical             | 59.63                  | PK       | 74             | 14.37       | Pass   |
| 1000-7000                           | *#5470.88     | Vertical             | 49.7                   | AV       | 54             | 4.3         | Pass   |
| 7000-40000                          | 11020.37      | Horizontal           | 51.68                  | PK       | 74             | 22.32       | Pass   |
| 7000-40000                          | 11019.8       | Vertical             | 49.87                  | PK       | 74             | 24.13       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

| 802.11ac 40 Modulation 5550MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | 11100.2       | Horizontal           | 51.86                  | PK       | 74             | 22.14       | Pass   |
| 7000-40000                          | 11100.2       | Vertical             | 51.37                  | PK       | 74             | 22.63       | Pass   |

| 802.11ac 40 Modulation 5590MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | --            | Horizontal           | --                     | PK       | 74             | --          | Pass   |
| 1000-7000                           | --            | Vertical             | --                     | PK       | 74             | --          | Pass   |
| 7000-40000                          | 11180.17      | Horizontal           | 50                     | PK       | 74             | 24          | Pass   |
| 7000-40000                          | 11180.73      | Vertical             | 50.51                  | PK       | 74             | 23.49       | Pass   |

| 802.11ac 40 Modulation 5670MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *#5726.86     | Horizontal           | 46.63                  | PK       | 74             | 27.37       | Pass   |
| 1000-7000                           | *#5725.62     | Vertical             | 46.14                  | PK       | 74             | 27.86       | Pass   |
| 7000-40000                          | 11340.53      | Horizontal           | 50.69                  | PK       | 74             | 23.31       | Pass   |
| 7000-40000                          | 11340.53      | Vertical             | 50.29                  | PK       | 74             | 23.71       | Pass   |

| 802.11ac 40 Modulation 5755MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *5642.81      | Horizontal           | 51.37                  | PK       | 74             | 22.63       | Pass   |
| 1000-7000                           | *5650         | Horizontal           | 50.26                  | PK       | 74             | 23.74       | Pass   |
| 1000-7000                           | *#5724.61     | Horizontal           | 56.7                   | PK       | 121.3          | 64.6        | Pass   |
| 1000-7000                           | *5642.53      | Vertical             | 51.96                  | PK       | 74             | 22.04       | Pass   |
| 1000-7000                           | *5650         | Vertical             | 50.29                  | PK       | 74             | 23.71       | Pass   |
| 1000-7000                           | *#5716.96     | Vertical             | 62.91                  | PK       | 109.7          | 46.79       | Pass   |
| 7000-40000                          | 11511.1       | Horizontal           | 51.44                  | PK       | 74             | 22.56       | Pass   |
| 7000-40000                          | 11511.1       | Vertical             | 51.99                  | PK       | 74             | 22.01       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

| 802.11ac 40 Modulation 5795MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *#5724.8      | Horizontal           | 59.05                  | PK       | 121.7          | 62.65       | Pass   |
| 1000-7000                           | *5925         | Horizontal           | 50.47                  | PK       | 74             | 23.53       | Pass   |
| 1000-7000                           | *5928.53      | Horizontal           | 51.03                  | PK       | 74             | 22.97       | Pass   |
| 1000-7000                           | *#5853.24     | Vertical             | 62.15                  | PK       | 114.8          | 52.65       | Pass   |
| 1000-7000                           | *5925         | Vertical             | 50.03                  | PK       | 74             | 23.97       | Pass   |
| 1000-7000                           | *5929.31      | Vertical             | 51.42                  | PK       | 74             | 22.58       | Pass   |
| 7000-40000                          | 11589.87      | Horizontal           | 51.28                  | PK       | 74             | 22.72       | Pass   |
| 7000-40000                          | 11591.57      | Vertical             | 50.86                  | PK       | 74             | 23.14       | Pass   |

| 802.11ac 80 Modulation 5210MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | #5141.27      | Horizontal           | 57.74                  | PK       | 74             | 16.26       | Pass   |
| 1000-7000                           | #5141.27      | Horizontal           | 47.3                   | PK       | 54             | 6.7         | Pass   |
| 1000-7000                           | #5134.17      | Vertical             | 60.9                   | PK       | 74             | 13.1        | Pass   |
| 1000-7000                           | #5134.17      | Vertical             | 52.4                   | PK       | 54             | 1.6         | Pass   |
| 7000-40000                          | *10419.7      | Horizontal           | 51.02                  | PK       | 68.2           | 17.18       | Pass   |
| 7000-40000                          | *10423.1      | Vertical             | 50.81                  | PK       | 68.2           | 17.39       | Pass   |

| 802.11ac 80 Modulation 5290MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | #5350.35      | Horizontal           | 47.84                  | PK       | 74             | 26.16       | Pass   |
| 1000-7000                           | #5350         | Vertical             | 50.44                  | PK       | 74             | 23.56       | Pass   |
| 7000-40000                          | *10576.67     | Horizontal           | 50.64                  | PK       | 68.2           | 17.56       | Pass   |
| 7000-40000                          | *10586.3      | Vertical             | 50.73                  | PK       | 68.2           | 17.47       | Pass   |

| 802.11ac 80 Modulation 5530MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *#5463.58     | Horizontal           | 51.07                  | PK       | 74             | 22.93       | Pass   |
| 1000-7000                           | *#5466.14     | Horizontal           | 53.26                  | PK       | 74             | 20.74       | Pass   |
| 1000-7000                           | *#5466.14     | Vertical             | 41.3                   | AV       | 54             | 12.7        | Pass   |
| 7000-40000                          | 11060.6       | Horizontal           | 51.38                  | PK       | 74             | 22.62       | Pass   |
| 7000-40000                          | 11060.6       | Vertical             | 61.66                  | PK       | 74             | 12.34       | Pass   |



Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) “#” is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



| 802.11ac 80 Modulation 5610MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | *#5725.84     | Horizontal           | 45.84                  | PK       | 74             | 28.16       | Pass   |
| 1000-7000                           | *#5725.18     | Vertical             | 46.88                  | PK       | 74             | 27.12       | Pass   |
| 7000-40000                          | 11220.4       | Horizontal           | 50.86                  | PK       | 74             | 23.14       | Pass   |
| 7000-40000                          | 11220.97      | Vertical             | 49.8                   | PK       | 74             | 24.2        | Pass   |

| 802.11ac 80 Modulation 5775MHz MIMO |               |                      |                        |          |                |             |        |
|-------------------------------------|---------------|----------------------|------------------------|----------|----------------|-------------|--------|
| Frequency Range MHz                 | Frequency MHz | Antenna Polarization | Emission Level(dBuV/m) | Detector | Limit (dBuV/m) | Margin (dB) | Result |
| 1000-7000                           | 5647.98       | Horizontal           | 51.03                  | PK       | 74             | 22.97       | Pass   |
| 1000-7000                           | *5650         | Horizontal           | 50.21                  | PK       | 74             | 23.79       | Pass   |
| 1000-7000                           | *#5724.61     | Horizontal           | 59.13                  | PK       | 121.3          | 62.17       | Pass   |
| 1000-7000                           | *5925         | Horizontal           | 50.47                  | PK       | 74             | 23.53       | Pass   |
| 1000-7000                           | *5647.29      | Vertical             | 51.98                  | PK       | 74             | 22.02       | Pass   |
| 1000-7000                           | *5650         | Vertical             | 50.26                  | PK       | 74             | 23.74       | Pass   |
| 1000-7000                           | *#5723.81     | Vertical             | 75.08                  | PK       | 119.5          | 44.42       | Pass   |
| 1000-7000                           | *5925         | Vertical             | 50.47                  | PK       | 74             | 23.53       | Pass   |
| 7000-40000                          | 11549.63      | Horizontal           | 51.85                  | PK       | 74             | 22.15       | Pass   |
| 7000-40000                          | 11551.33      | Vertical             | 51.31                  | PK       | 74             | 22.69       | Pass   |

Remark:

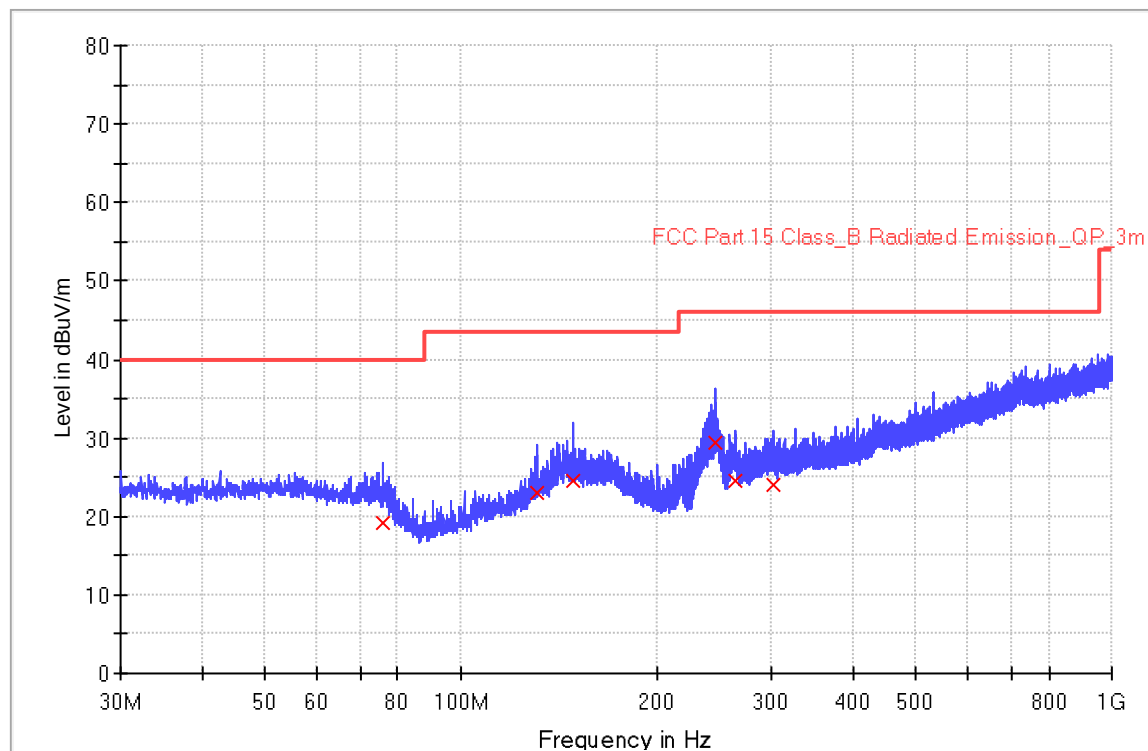
- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "\*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBuV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) "#" is band edge band
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

### Transmitting spurious emission test result as below:

The worst case of Radiated Emission below 1GHz:

|                                                                         |                                |
|-------------------------------------------------------------------------|--------------------------------|
| Site: 3 meter chamber                                                   | Time: 2023/01/07 - 10:08       |
| Limit: FCC_Part15.209_RE(3m)_ClassB                                     | Engineer: Wenqiang LU          |
| Probe: VULB9168                                                         | Polarity: Horizontal           |
| EUT: 3D Printer, Model no: AccuFab-CEL                                  | Power: 120VAC, 60Hz for Cradle |
| Note: Transmit by at 802.11a channel 5500MHz MIMO.                      |                                |
| Note: Pre-scan with three orthogonal axis and the worst case as X axis. |                                |

RE\_VULB9168\_pre\_Cont\_30-1000



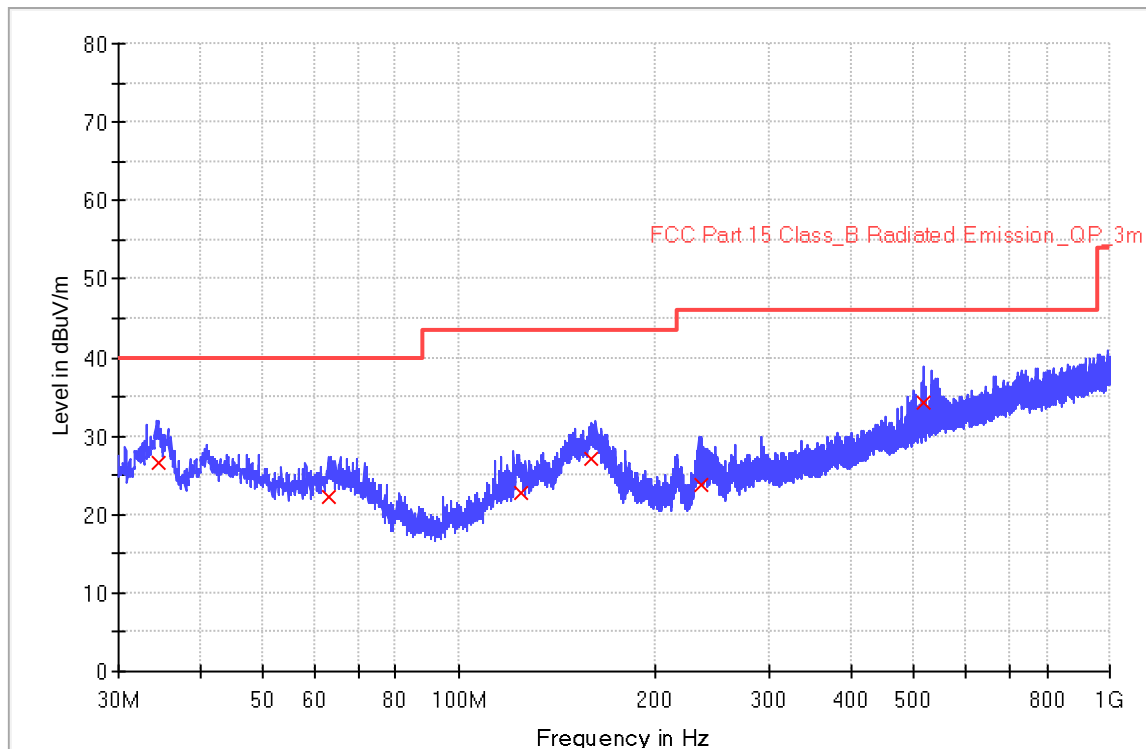
### Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) | Margin - QPK (dB) | Limit - QPK (dBuV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|-----|---------------|------------|-------------------|----------------------|
| 75.960000       | 19.1               | 1000.0          | 120.000         | 200.0       | H   | 224.0         | 17.3       | 20.9              | 40.0                 |
| 130.920000      | 22.9               | 1000.0          | 120.000         | 148.0       | H   | 54.0          | 19.3       | 20.6              | 43.5                 |
| 148.840000      | 24.5               | 1000.0          | 120.000         | 152.0       | H   | 177.0         | 21.0       | 19.0              | 43.5                 |
| 246.600000      | 29.4               | 1000.0          | 120.000         | 100.0       | H   | 99.0          | 19.9       | 16.7              | 46.0                 |
| 263.280000      | 24.4               | 1000.0          | 120.000         | 100.0       | H   | 292.0         | 20.1       | 21.6              | 46.0                 |
| 301.400000      | 24.0               | 1000.0          | 120.000         | 100.0       | H   | 103.0         | 21.5       | 22.0              | 46.0                 |

## The worst case of Radiated Emission below 1GHz:

|                                                                         |                                |
|-------------------------------------------------------------------------|--------------------------------|
| Site: 3 meter chamber                                                   | Time: 2023/01/07 - 09:23       |
| Limit: FCC_Part15.209_RE(3m)_ClassB                                     | Engineer: Wenqiang LU          |
| Probe: VULB9168                                                         | Polarity: Vertical             |
| EUT: 3D Printer, Model no: AccuFab-CEL                                  | Power: 120VAC, 60Hz for Cradle |
| Note: Transmit by at 802.11a channel 5500MHz MIMO.                      |                                |
| Note: Pre-scan with three orthogonal axis and the worst case as X axis. |                                |

RE\_VULB9168\_pre\_Cont\_30-1000



## Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) | Margin - QPK (dB) | Limit - QPK (dBuV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|-----|---------------|------------|-------------------|----------------------|
| 34.520000       | 26.5               | 1000.0          | 120.000         | 100.0       | V   | 238.0         | 19.4       | 13.5              | 40.0                 |
| 62.920000       | 22.2               | 1000.0          | 120.000         | 149.0       | V   | 54.0          | 19.7       | 17.8              | 40.0                 |
| 124.800000      | 22.6               | 1000.0          | 120.000         | 102.0       | V   | 89.0          | 18.5       | 20.9              | 43.5                 |
| 160.160000      | 27.1               | 1000.0          | 120.000         | 115.0       | V   | 294.0         | 20.9       | 16.4              | 43.5                 |
| 235.200000      | 23.7               | 1000.0          | 120.000         | 100.0       | V   | 106.0         | 18.9       | 22.3              | 46.0                 |
| 516.400000      | 34.3               | 1000.0          | 120.000         | 100.0       | V   | 186.0         | 26.9       | 11.7              | 46.0                 |

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

## 10 Test Equipment List

List of Test Instruments  
Test Site1

|    | DESCRIPTION                          | MANUFACTURER    | MODEL NO.  | SERIAL NO.       | CAL. DATE  | CAL. DUE DATE |
|----|--------------------------------------|-----------------|------------|------------------|------------|---------------|
| C  | Wideband Radio Communication Tester  | R&S             | CMW500     | S2110416b-YQ-EMC | 2023-11-10 | 2024-11-9     |
|    | Vector signal generator              | Agilent         | N5182A     | S2110417b-YQ-EMC | 2023-11-10 | 2024-11-9     |
|    | RF automatic control unit            | MWRFTtest       | MW100-RFCB | S2110418b-YQ-EMC | 2023-9-28  | 2024-9-27     |
|    | Temperature Chamber                  | Shanghai HUCAN  | HTT-100AP  | S2201430b-YQ-EMC | 2023-3-3   | 2024-3-2      |
|    | Signal Analyzer                      | R & S           | FSV40      | S1503003-YQ-EMC  | 2023-8-1   | 2024-7-31     |
| RE | EMI Test Receiver                    | Rohde & Schwarz | ESR3       | 101906           | 2023-8-1   | 2024-7-31     |
|    | Signal Analyzer                      | Rohde & Schwarz | FSV40      | 101091           | 2023-8-1   | 2024-7-31     |
|    | Trilog Super Broadband Test Antenna  | Schwarzbeck     | VULB 9168  | 961              | 2021-9-23  | 2024-9-22     |
|    | Double-ridged waveguide horn antenna | Rohde & Schwarz | HF907      | 102393           | 2021-4-13  | 2024-4-12     |
|    | Pre-amplifier                        | Rohde & Schwarz | SCU-18D    | 19006451         | 2023-8-1   | 2024-7-31     |
|    | Loop antenna                         | Rohde & Schwarz | HFH2-Z2    | 100443           | 2023-6-15  | 2024-6-14     |
|    | Double Ridged Horn Antenna           | ETS-Lindgren    | 3116C      | 00246076         | 2023-7-7   | 2026-7-6      |
|    | 3m Semi-anechoic chamber             | TDK             | 9X6X6      | ----             | 2021-5-8   | 2024-5-7      |
| CE | EMI Test Receiver                    | Rohde & Schwarz | ESR3       | 101907           | 2022-8-1   | 2023-7-31     |
|    | LISN                                 | Rohde & Schwarz | ENV216     | 101924           | 2022-8-1   | 2023-7-31     |

| Measurement Software Information |          |                 |           |
|----------------------------------|----------|-----------------|-----------|
| Test Item                        | Software | Manufacturer    | Version   |
| C                                | MTS 8310 | MWRFTtest       | 3.0.0.0   |
| RE                               | EMC 32   | Rohde & Schwarz | V10.50.40 |
| CE                               | EMC 32   | Rohde & Schwarz | V9.15.03  |

### C - Conducted RF tests

- Conducted peak output power
- 6dB Occupied Bandwidth
- Power spectral density\*
- Conducted Band Edge and Out-of-Band Emissions

## 11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

| Items                                    | Extended Uncertainty                                                                                                                                                                                          |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conducted Disturbance at Mains Terminals | 150kHz to 30MHz, LISN, $\pm 3.16\text{dB}$                                                                                                                                                                    |
| Radiated Disturbance                     | 30MHz to 1GHz, $\pm 5.03\text{dB}$ (Horizontal)<br>$\pm 5.12\text{dB}$ (Vertical)<br>1GHz to 18GHz, $\pm 5.15\text{dB}$ (Horizontal)<br>$\pm 5.12\text{dB}$ (Vertical)<br>18GHz to 25GHz, $\pm 4.76\text{dB}$ |

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2021, clause 4.4.3 and 4.5.1.



## 12 Photographs of Test Set-ups

Refer to the < Test Setup photos >.



## 13 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

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THE END