



# FCC PART 15C TEST REPORT No.23T04Z80263-09

for

**BLU Products, Inc.**

**Smart Phone**

**B170D**

**FCC ID:YHLBLUB170D**

with

**Hardware Version: V1.0**

**Software Version: BLU\_B170D\_V14.0.01.05.01.01\_FSec**

**Issued Date: 2023-11-28**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

**Test Laboratory:**

**CTTL-Telecommunication Technology Labs, CAICT**

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## **REPORT HISTORY**

| <b>Report Number</b> | <b>Revision</b> | <b>Description</b>                                                                                                                                                                                                                                                  | <b>Issue Date</b> |
|----------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 23T04Z80263-09       | Rev.0           | 1st edition                                                                                                                                                                                                                                                         | 2023-11-15        |
| 23T04Z80263-09       | Rev.1           | Adding the Loop Antenna in P11<br>Adding the description "In total, three EUT elevation positions are measured" in P27<br>Add the polts for Output power、Duty cycle and Peak Power Spectral Density.<br>Adding the "Automatically discontinued Transmission" in P10 | 2023-11-28        |

Note: the latest revision of the test report supersedes all previous version.

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## **1. Test Laboratory**

### **1.1. Introduction & Accreditation**

**Telecommunication Technology Labs, CAICT** is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

### **1.2. Testing Location**

Conducted testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China100191

Radiated testing Location: CTTL(BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology  
Development Area, Beijing, P. R. China 100176

**1.3. TestingEnvironment**

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

**1.4. Project date**

Testing Start Date: 2023-11-11

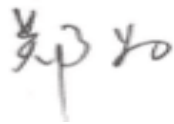
Testing End Date: 2023-11-06

**1.5. Signature**

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Yao Xingyu

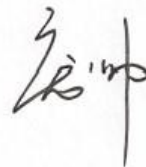
( Prepared this test report )



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Zheng Wei

(Reviewed this test report)



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Pang Shuai

(Approved this test report)



## **2. Client Information**

### **2.1. Applicant Information**

Company Name: BLU Products, Inc.  
Address: 8600 NW 36th Street, Suite #200, Doral, FL 33166  
City: Doral  
Postal Code: /  
Country: US  
Telephone: 305.715.7171  
Fax: 305.436.8819

### **2.2. Manufacturer Information**

Company Name: BLU Products, Inc.  
Address: 8600 NW 36th Street, Suite #200, Doral, FL 33166  
City: Doral  
Postal Code: /  
Country: US  
Telephone: 305.715.7171  
Fax: 305.436.8819

### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

#### **3.1. About EUT**

|                      |                           |
|----------------------|---------------------------|
| Description          | Smart Phone               |
| Model name           | B170D                     |
| FCC ID               | YHLBLUB170D               |
| WLAN Frequency Band  | ISM Band: 5725MHz~5850MHz |
| Type of modulation   | OFDM                      |
| Nominal Voltage      | 3.85V                     |
| Extreme High Voltage | 4.40V                     |
| Extreme Low Voltage  | 3.60V                     |

#### **3.2. Internal Identification of EUT used during the test**

| EUT ID* | SN or IMEI      | HW Version | SW Version                       | Date of receipt |
|---------|-----------------|------------|----------------------------------|-----------------|
| UT28a   | 359979710002223 | V1.0       | BLU_B170D_V14.0.01.05.01.01_FSec | 2023-10-12      |
| UT16a   | 359979710001274 | V1.0       | BLU_B170D_V14.0.01.05.01.01_FSec | 2023-10-12      |

\*EUT ID: is used to identify the test sample in the lab internally.

UT16a is used for Conduction test, UT28a is used for Radiation test.

#### **3.3. Internal Identification of AE used during the test**

| AE ID* | Description | Note        | Manufacturer                                   |
|--------|-------------|-------------|------------------------------------------------|
| AE1    | Battery     | C926547500P | Hunan Gaoyuan Battery Co., LTD                 |
| AE2    | Charger     | US-SP-2000  | ShenZhen BaiJunDa Electronic CO.,LTD.          |
| AE3    | USB cable   | CL2105-4    | Dongguan Yuwei Electronic Technology Co., Ltd. |

\*AE ID: is used to identify the test sample in the lab internally.

#### **3.4. General Description**

Equipment Under Test (EUT) is a model of Smart Phone with integrated antenna. It consists of normal options: Battery and Charger.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the Client.

## **4. Reference Documents**

### **4.1. Documents supplied by applicant**

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

### **4.2. Reference Documents for testing**

The following documents listed in this section are referred for testing.

|                  |                                                        |         |
|------------------|--------------------------------------------------------|---------|
| FCC Part15       | FCC CFR 47, Part 15, Subpart C and E:                  |         |
|                  | 15.205 Restricted bands of operation;                  | 2021    |
|                  | 15.209 Radiated emission limits, general requirements; |         |
|                  | 15.407 General technical requirements                  |         |
| ANSI C63.10      | Methods of Measurement of Radio-Noise Emissions from   |         |
|                  | Low-Voltage Electrical and Electronic Equipment in the | 2013    |
|                  | Range of 9 kHz to 40 GHz                               |         |
| UNII: KDB 789033 | General U-NII Test Procedures New Rules v02r01         | 2017-12 |
| D02              |                                                        |         |

## **5. Laboratory Environment**

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

## 6. Test Results

### 6.1. Summary of Test Results

| SUMMARY OF MEASUREMENT RESULTS                  | Sub-clause of Part15C  | Sub-clause of IC | Verdict   |
|-------------------------------------------------|------------------------|------------------|-----------|
| Maximum Peak Output Power                       | 15.407 (a)             | /                | <b>P</b>  |
| Peak Power Spectral Density                     | 15.407 (a)             | /                | <b>P</b>  |
| Occupied 6dB Bandwidth                          | 15.407 (e)             | /                | <b>P</b>  |
| Band Edges Compliance - Conducted& Radiated     | 15.407 (b)             | /                | <b>P</b>  |
| Transmitter Spurious Emission - Radiated        | 15.407, 15.205, 15.209 | /                | <b>P</b>  |
| AC Powerline Conducted Emission                 | 15.107, 15.207         | /                | <b>P</b>  |
| Automatically discontinued Transmission(note 1) | 15.407                 | /                | <b>NA</b> |

Note 1: The device can automatically discontinue transmission in case of either absence of information to transmitter operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

|    |                                                                               |
|----|-------------------------------------------------------------------------------|
| P  | Pass, The EUT complies with the essential requirements in the standard.       |
| NM | Not measured, The test was not measured by CTTL                               |
| NA | Not Applicable, The test was not applicable                                   |
| F  | Fail, The EUT does not comply with the essential requirements in the standard |

### 6.2. Statements

CTTL has evaluated the test cases as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.

This report only deals with the WLAN function among the features described in section 3.

### 6.3. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

|             |       |
|-------------|-------|
| Temperature | 26°C  |
| Voltage     | 3.85V |
| Humidity    | 44%   |

## 7. Test Facilities Utilized

### Conducted test system

| No. | Equipment              | Model   | Serial Number | Manufacturer    | Calibration Period | Calibration Due date |
|-----|------------------------|---------|---------------|-----------------|--------------------|----------------------|
| 1   | Vector Signal Analyzer | FSQ40   | 200089        | Rohde & Schwarz | 1 year             | 2024-07-04           |
| 2   | LISN                   | ENV216  | 101200        | Rohde & Schwarz | 1 year             | 2024-06-05           |
| 3   | Test Receiver          | ESCI    | 100344        | Rohde & Schwarz | 1 year             | 2024-02-28           |
| 4   | Attenuator             | 10dB/2W | /             | Rosenberger     | /                  | /                    |
| 5   | Shielding Room         | S81     | /             | ETS-Lindgren    | /                  | /                    |

### Radiated emission test system

#### FACT3-5

| No. | Equipment     | Model                 | Serial Number     | Manufacturer | Calibration Period | Calibration Due date |
|-----|---------------|-----------------------|-------------------|--------------|--------------------|----------------------|
| 1   | Test Receiver | ESW44                 | 103015            | R&S          | 1 year             | 2024-02-11           |
| 2   | EMI Antenna   | VULB9163              | 9163-235          | Schwarzbeck  | 1 year             | 2024-06-10           |
| 3   | EMI Antenna   | 3117                  | 00139065          | ETS          | 1 year             | 2024-09-13           |
| 4   | Test Receiver | LB-180400<br>-25-C-KF | 211008400<br>0006 | A-INFO       | 1 year             | 2024-03-02           |
| 5   | Loop Antenna  | HFH2-Z2               | 829324/00<br>7    | R&S          | 2 year             | 2024-12-23           |

## 8. Measurement Uncertainty

### 8.1. Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

### 8.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

### 8.3. 6dB Emission Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

### 8.4. Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

### 8.5. Spurious Emissions

#### Conducted (k=1.96)

| Frequency Range                            | Uncertainty(dB) |
|--------------------------------------------|-----------------|
| $30\text{MHz} \leq f \leq 2\text{GHz}$     | 1.22            |
| $2\text{GHz} \leq f \leq 3.6\text{GHz}$    | 1.22            |
| $3.6\text{GHz} \leq f \leq 8\text{GHz}$    | 1.22            |
| $8\text{GHz} \leq f \leq 12.75\text{GHz}$  | 1.51            |
| $12.75\text{GHz} \leq f \leq 26\text{GHz}$ | 1.51            |
| $26\text{GHz} \leq f \leq 40\text{GHz}$    | 1.59            |

#### Radiated (k=2)

| Frequency Range                         | Uncertainty(dB) |
|-----------------------------------------|-----------------|
| 9kHz-30MHz                              | /               |
| $30\text{MHz} \leq f \leq 1\text{GHz}$  | 5.29            |
| $1\text{GHz} \leq f \leq 18\text{GHz}$  | 5.62            |
| $18\text{GHz} \leq f \leq 40\text{GHz}$ | 3.52            |

### 8.6. AC Power-line Conducted Emission

Measurement Uncertainty : 3.10dB,k=2

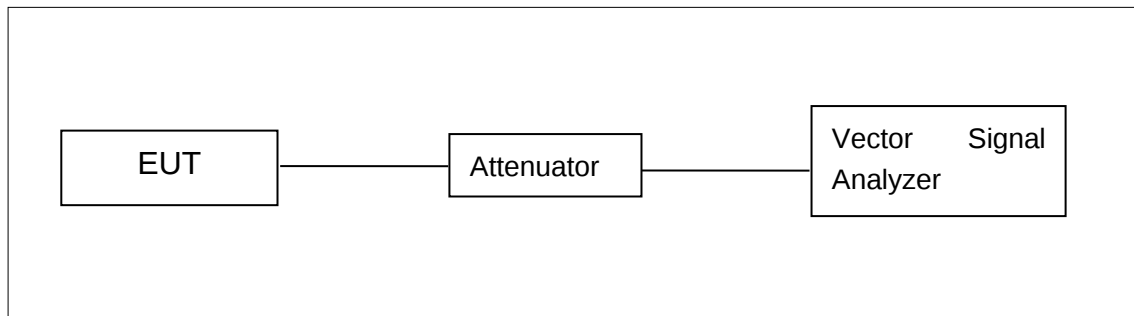


## **ANNEX A: MEASUREMENT RESULTS**

### **A.1. Measurement Method**

#### **A.1.1. Conducted Measurements**

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode.
- 3). Set the EUT to the required channel.
- 4). Set the spectrum analyzer to start measurement.
- 5). Record the values. Vector Signal Analyzer

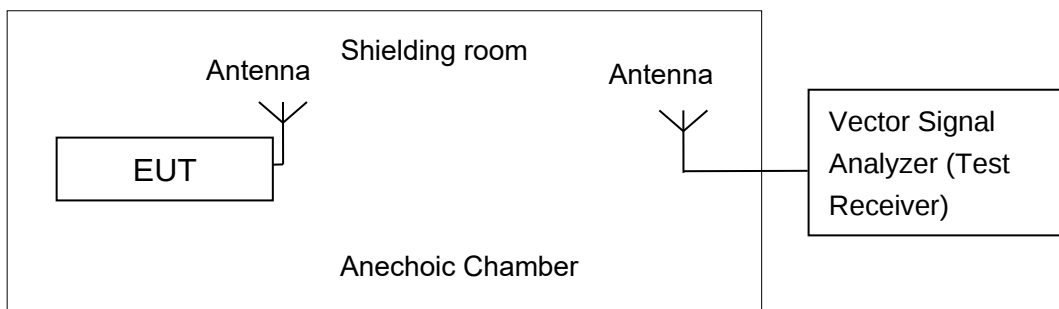


#### **A.1.2. Radiated Emission Measurements**

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 3MHz;



The measurement is made according to ANSI C63.10.

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

## **A.2. Maximum Peak Output Power**

### **Measurement Limit and Method:**

| Standard               | Limit (dBm) |
|------------------------|-------------|
| FCC CRF Part 15.407(a) | < 30        |

Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

Set RBW = 1 MHz.

Set VBW  $\geq$  3 MHz.

Number of points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ .

Sweep time = auto.

Detector = power averaging (rms)

Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.

Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal. Add 10 log (1/x), where x is the duty cycle

### **A.2.1 Antenna Gain**

Antenna gain is -4.0dBi and the value is supplied by the applicant or manufacturer.

### **A.2.2. Maximum Average Output Power-Conducted**

**EUT ID: UT16a**

### **Measurement Results:**

#### **802.11a mode**

| Mode    | Data Rate (Mbps) | Test Result (dBm) |                 |                 |
|---------|------------------|-------------------|-----------------|-----------------|
|         |                  | 5745MHz (Ch149)   | 5785MHz (Ch157) | 5825MHz (Ch165) |
| 802.11a | 6                | 17.55             | 17.21           | 17.16           |
|         | 9                | /                 | /               | /               |
|         | 12               | /                 | /               | /               |
|         | 18               | /                 | /               | /               |
|         | 24               | /                 | /               | /               |
|         | 36               | /                 | /               | /               |
|         | 48               | /                 | /               | /               |
|         | 54               | /                 | /               | /               |

The data rate 6Mbps is selected as worst condition, and the following cases are performed with this condition.

### 802.11n-HT20 mode

| Mode               | Data Rate<br>(Index) | Test Result (dBm)  |                    |                    |
|--------------------|----------------------|--------------------|--------------------|--------------------|
|                    |                      | 5745MHz<br>(Ch149) | 5785MHz<br>(Ch157) | 5825MHz<br>(Ch165) |
| 802.11n<br>(20MHz) | MCS0                 | 16.61              | 16.76              | 16.54              |
|                    | MCS1                 | /                  | /                  | /                  |
|                    | MCS2                 | /                  | /                  | /                  |
|                    | MCS3                 | /                  | /                  | /                  |
|                    | MCS4                 | /                  | /                  | /                  |
|                    | MCS5                 | /                  | /                  | /                  |
|                    | MCS6                 | /                  | /                  | /                  |
|                    | MCS7                 | /                  | /                  | /                  |

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

### 802.11ac-HT20 mode

| Mode                | Data Rate<br>(Index) | Test Result (dBm)  |                    |                    |
|---------------------|----------------------|--------------------|--------------------|--------------------|
|                     |                      | 5745MHz<br>(Ch149) | 5785MHz<br>(Ch157) | 5825MHz<br>(Ch165) |
| 802.11ac<br>(20MHz) | MCS0                 | 17.82              | 17.66              | 17.52              |
|                     | MCS1                 | /                  | /                  | /                  |
|                     | MCS2                 | /                  | /                  | /                  |
|                     | MCS3                 | /                  | /                  | /                  |
|                     | MCS4                 | /                  | /                  | /                  |
|                     | MCS5                 | /                  | /                  | /                  |
|                     | MCS6                 | /                  | /                  | /                  |
|                     | MCS7                 | /                  | /                  | /                  |
|                     | MCS8                 | /                  | /                  | /                  |

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

#### 802.11n-HT40 mode

| Mode               | Data Rate<br>(Index) | Test Result (dBm)  |                    |
|--------------------|----------------------|--------------------|--------------------|
|                    |                      | 5755MHz<br>(Ch151) | 5795MHz<br>(Ch159) |
| 802.11n<br>(40MHz) | MCS0                 | 15.65              | 15.42              |
|                    | MCS1                 | /                  | /                  |
|                    | MCS2                 | /                  | /                  |
|                    | MCS3                 | /                  | /                  |
|                    | MCS4                 | /                  | /                  |
|                    | MCS5                 | /                  | /                  |
|                    | MCS6                 | /                  | /                  |
|                    | MCS7                 | /                  | /                  |

The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

#### 802.11ac-HT40 mode

| Mode                | Data Rate<br>(Index) | Test Result (dBm)  |                    |
|---------------------|----------------------|--------------------|--------------------|
|                     |                      | 5755MHz<br>(Ch151) | 5795MHz<br>(Ch159) |
| 802.11ac<br>(40MHz) | MCS0                 | 16.63              | 16.64              |
|                     | MCS1                 | /                  | /                  |
|                     | MCS2                 | /                  | /                  |
|                     | MCS3                 | /                  | /                  |
|                     | MCS4                 | /                  | /                  |
|                     | MCS5                 | /                  | /                  |
|                     | MCS6                 | /                  | /                  |
|                     | MCS7                 | /                  | /                  |
|                     | MCS8                 | /                  | /                  |
|                     | MCS9                 | /                  | /                  |

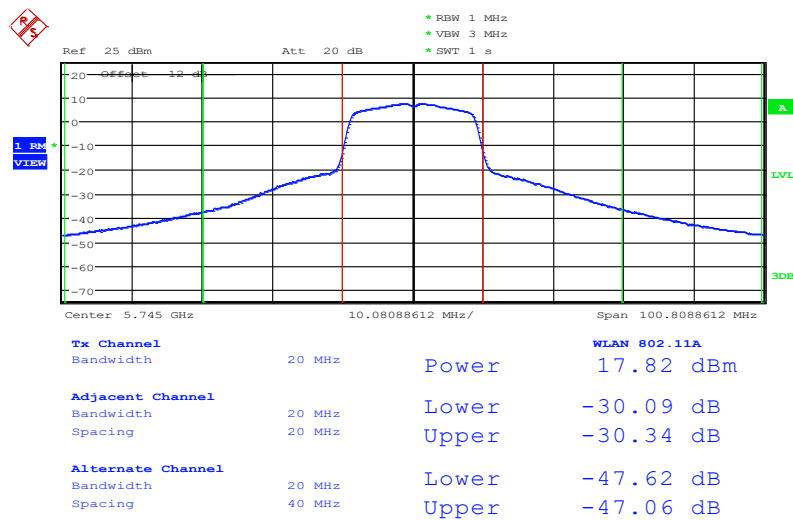
The data rate MCS0 is selected as worst condition, and the following cases are performed with this condition.

### 802.11ac-HT80 mode

| Mode             | Data Rate (Index) | Test Result (dBm) |
|------------------|-------------------|-------------------|
|                  |                   | 5775MHz (Ch155)   |
| 802.11ac (80MHz) | MCS0              | 15.45             |
|                  | MCS1              | /                 |
|                  | MCS2              | /                 |
|                  | MCS3              | /                 |
|                  | MCS4              | /                 |
|                  | MCS5              | /                 |
|                  | MCS6              | /                 |
|                  | MCS7              | /                 |
|                  | MCS8              | /                 |
|                  | MCS9              | /                 |

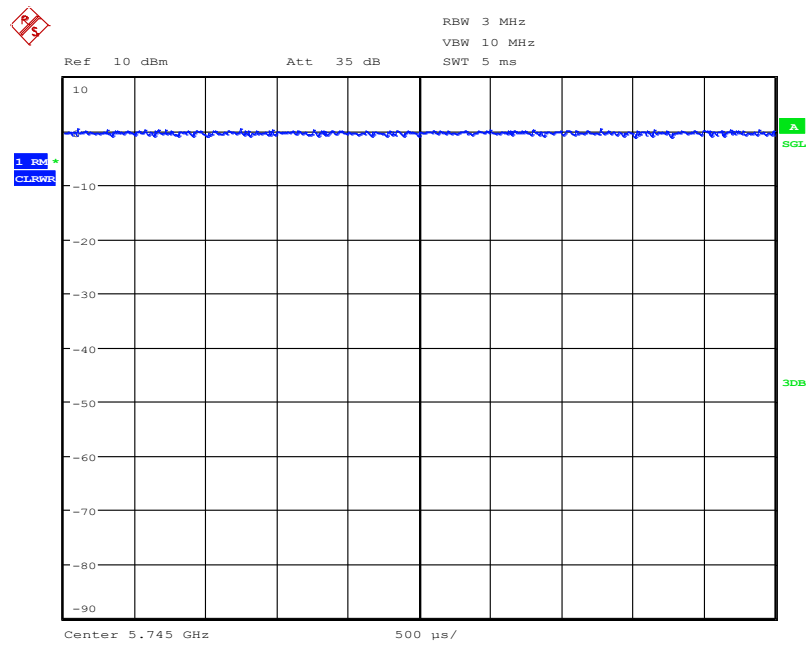
The data rate MSC0 is selected as worst condition, and the following cases are performed with this condition.

The duty cycle of all mode are 100%.



Date: 1.NOV.2023 17:49:53

### Maximum output Power:11ac20 CH149



Date: 1.NOV.2023 17:50:23

**Duty cycle:11ac20 CH149**

**Conclusion: PASS**

### **A.3. Peak Power Spectral Density**

#### **Measurement Limit:**

| Standard                  | Limit            |
|---------------------------|------------------|
| FCC 47 CFR Part 15.407(a) | < 30 dBm/500 kHz |

Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

Set RBW = 500 kHz.

Set VBW  $\geq$  3 MHz.

Number of points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ .

Sweep time = auto.

Detector = power averaging (rms)

Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter. Use the peak search function on the instrument to find the peak of the spectrum and record its value. Add  $10 \log (1/x)$ , where x is the duty cycle.

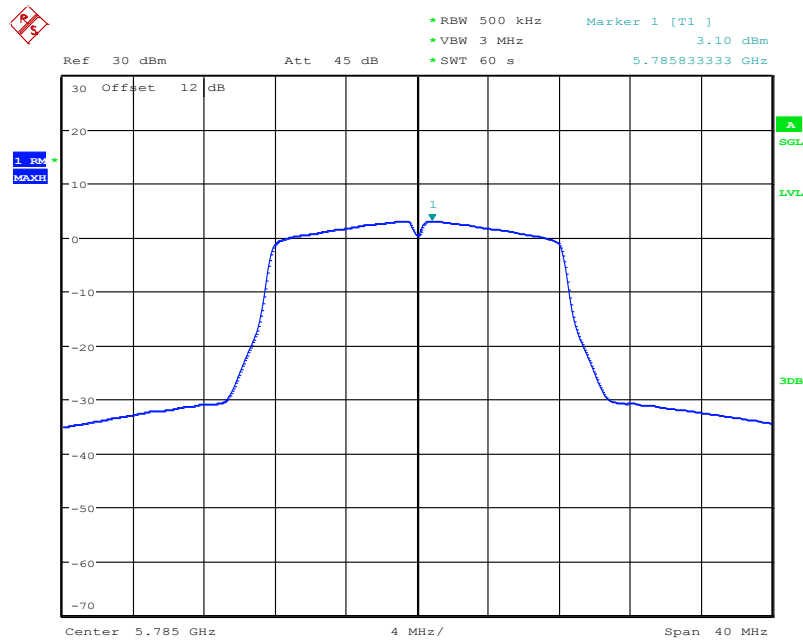
#### **Measurement Uncertainty:**

|                         |        |
|-------------------------|--------|
| Measurement Uncertainty | 0.75dB |
|-------------------------|--------|

#### **EUT ID: UT16a**

#### **Measurement Results:**

| Mode             | Channel | Power Spectral Density<br>( dBm/500kHz ) | Conclusion |
|------------------|---------|------------------------------------------|------------|
| 802.11a          | 149     | 3.04                                     | P          |
|                  | 157     | 3.10                                     | P          |
|                  | 165     | 3.03                                     | P          |
| 802.11ac<br>HT20 | 149     | 2.98                                     | P          |
|                  | 157     | 2.71                                     | P          |
|                  | 165     | 2.45                                     | P          |
| 802.11ac<br>HT40 | 151     | -0.98                                    | P          |
|                  | 159     | -1.29                                    | P          |
| 802.11ac HT80    | 155     | -5.59                                    | P          |



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**Peak Power Spectral Density:11a CH157**

**Conclusion: PASS**

#### **A.4. 6dB Emission Bandwidth**

##### **Measurement Limit:**

| Standard                   | Limit (kHz) |
|----------------------------|-------------|
| FCC 47 CFR Part 15.407 (e) | ≥ 500       |

Set RBW = 100 kHz.

Set the video bandwidth (VBW) ≥ 3 × RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

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.

##### **Measurement Uncertainty:**

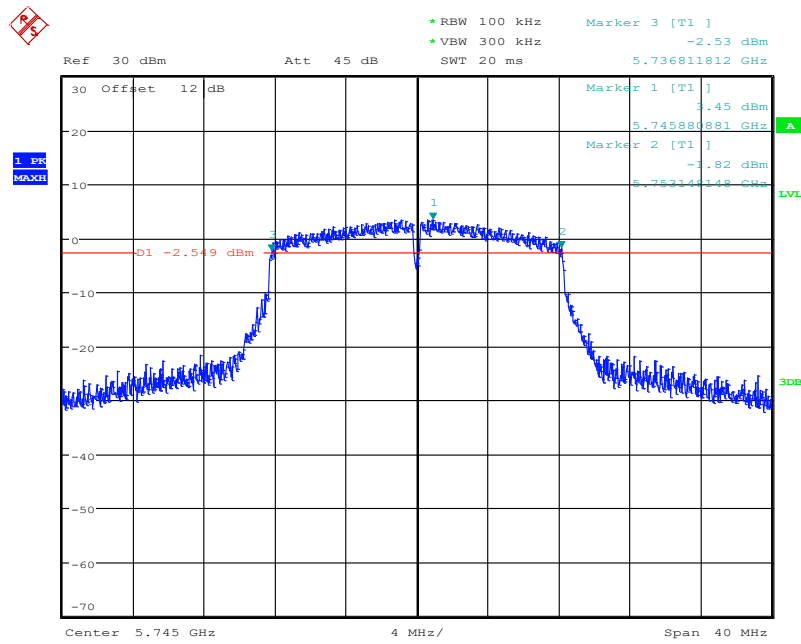
|                         |         |
|-------------------------|---------|
| Measurement Uncertainty | 60.80Hz |
|-------------------------|---------|

**EUT ID: UT16a**

##### **Measurement Result:**

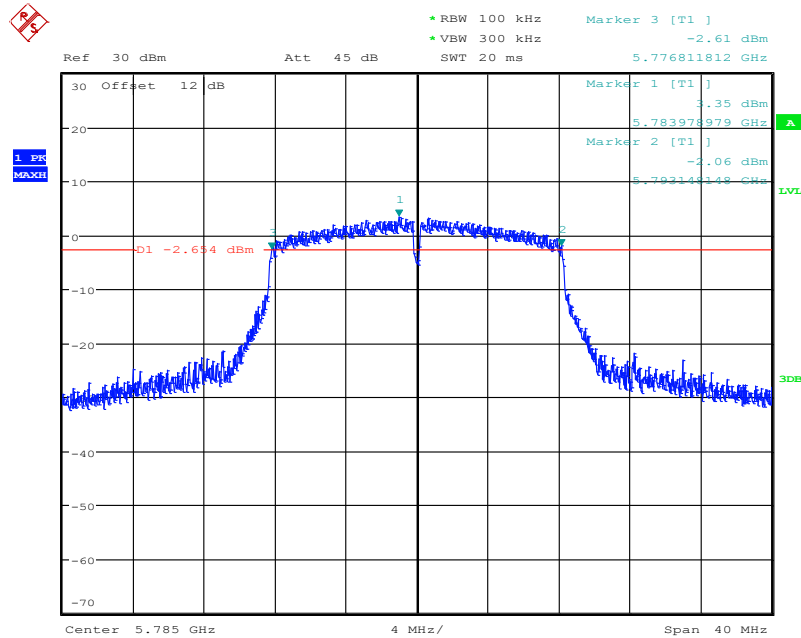
| Mode                | Channel | 6dB Emission Bandwidth<br>( MHz) |       | conclusion |
|---------------------|---------|----------------------------------|-------|------------|
| 802.11a             | 149     | Fig.1                            | 16.34 | P          |
|                     | 157     | Fig.2                            | 16.34 | P          |
|                     | 165     | Fig.3                            | 16.32 | P          |
| 802.11ac<br>(VHT20) | 149     | Fig.4                            | 17.56 | P          |
|                     | 157     | Fig.5                            | 17.58 | P          |
|                     | 165     | Fig.6                            | 17.58 | P          |
| 802.11ac<br>(VHT40) | 151     | Fig.7                            | 36.08 | P          |
|                     | 159     | Fig.8                            | 36.28 | P          |
| 802.11ac (VHT80)    | 155     | Fig.9                            | 76.40 | P          |

**Test graphs as below:**



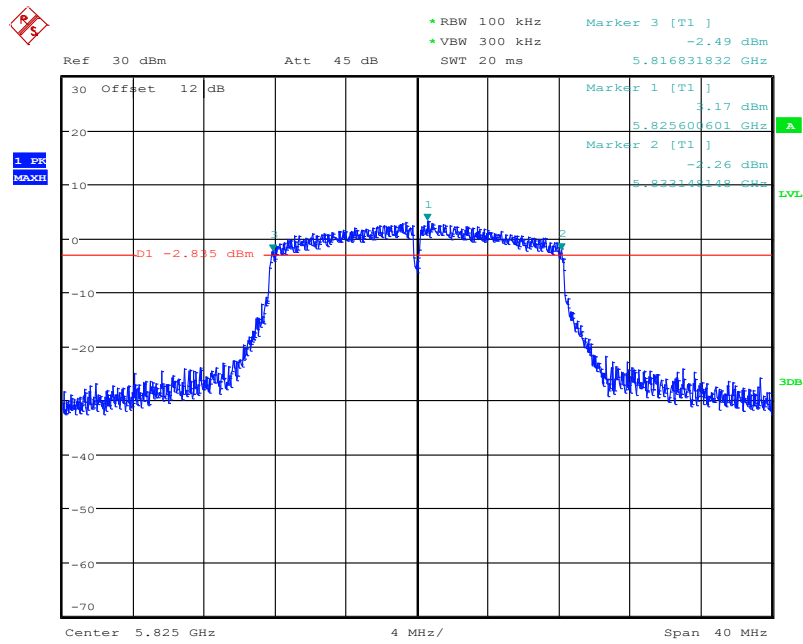
Date: 2.NOV.2023 14:08:49

**Fig. 1 6dB Emission Bandwidth (802.11a, Ch 149)**



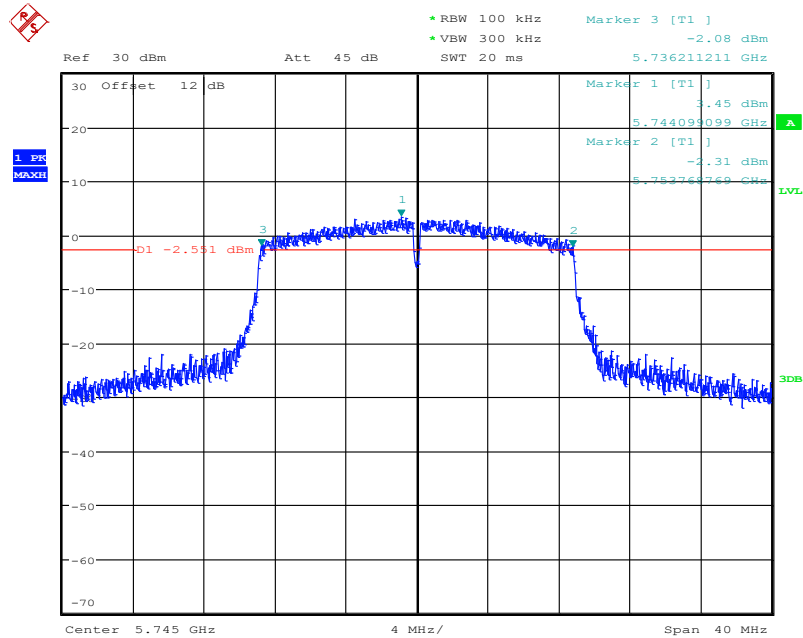
Date: 2.NOV.2023 14:09:25

**Fig. 2 6dB Emission Bandwidth (802.11a, Ch 157)**



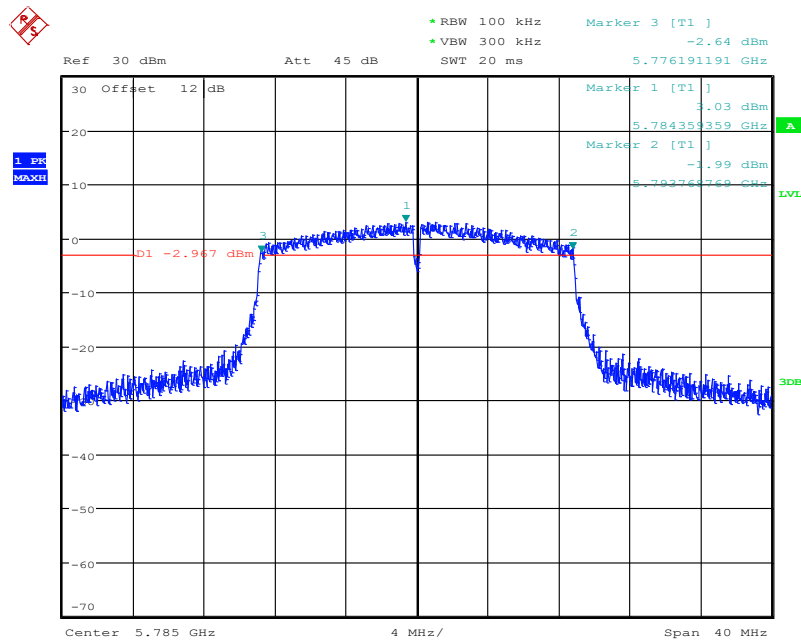
Date: 2.NOV.2023 14:10:08

**Fig. 3 6dB Emission Bandwidth (802.11a, Ch 165)**



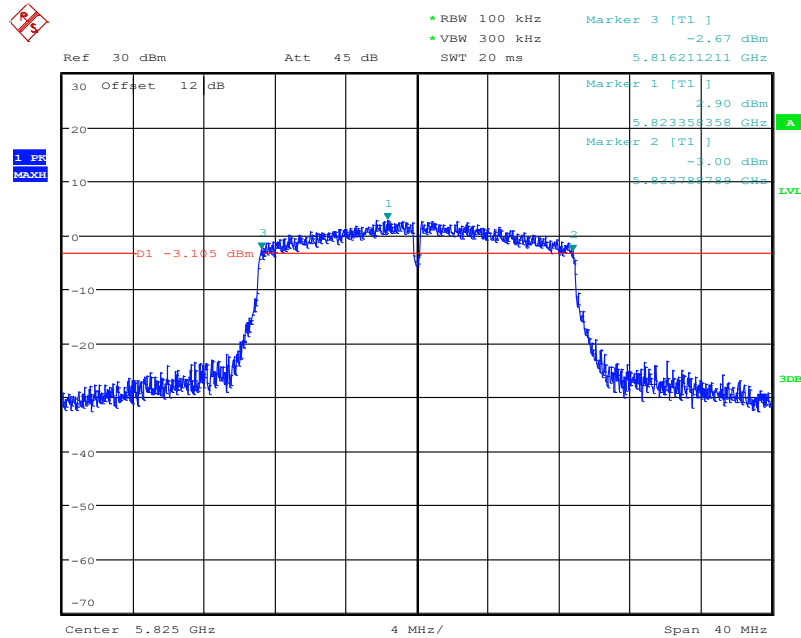
Date: 2.NOV.2023 14:05:19

**Fig. 4 6dB Emission Bandwidth (802.11ac-VHT20, Ch 149)**



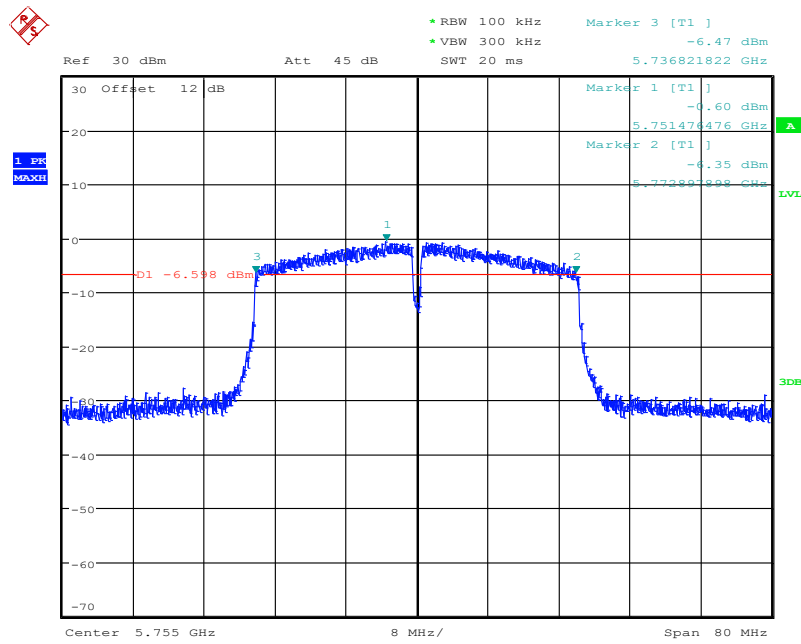
Date: 2.NOV.2023 14:05:55

**Fig. 5 6dB Emission Bandwidth (802.11ac-VHT20, Ch 157)**



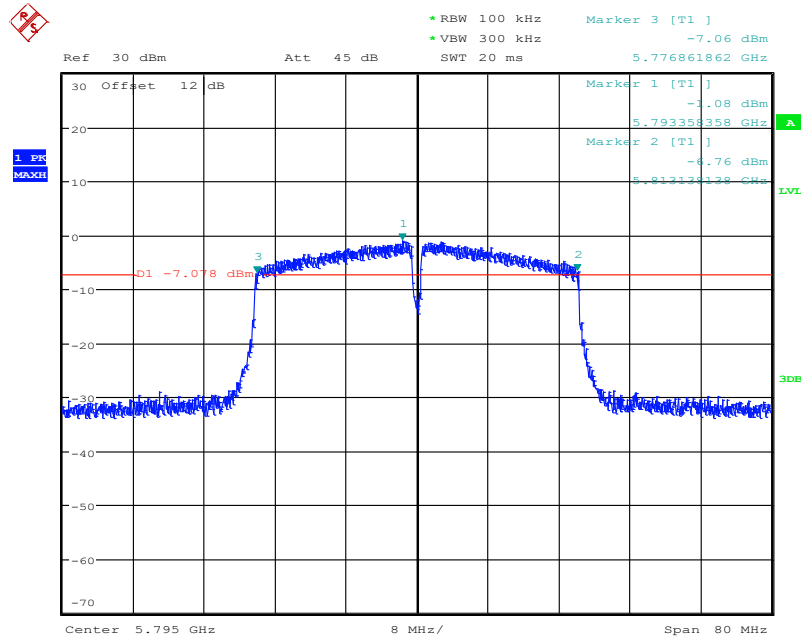
Date: 2.NOV.2023 14:06:29

**Fig. 6 6dB Emission Bandwidth (802.11ac-VHT20, Ch 165)**



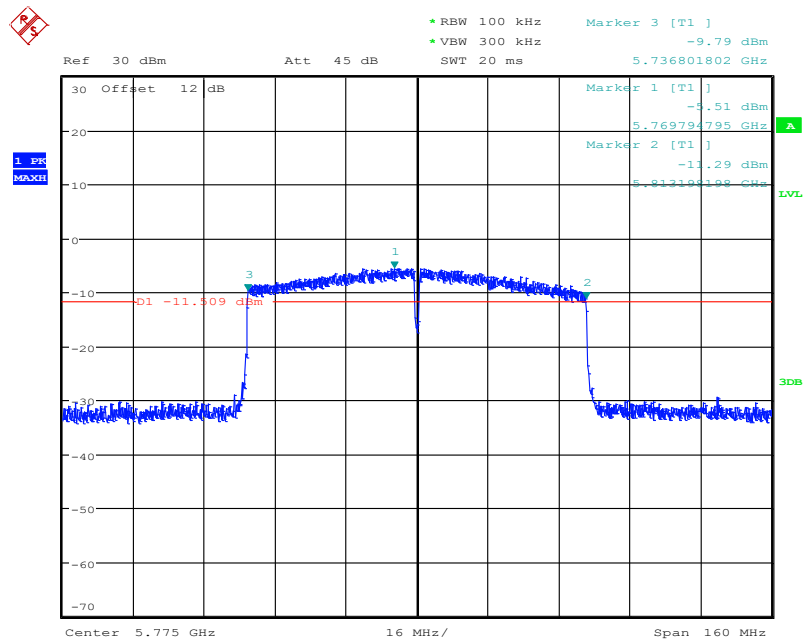
Date: 2.NOV.2023 14:07:06

**Fig. 7 6dB Emission Bandwidth (802.11ac-VHT40, Ch 151)**



Date: 2.NOV.2023 14:08:06

**Fig. 8 6dB Emission Bandwidth (802.11ac-VHT40, Ch 159)**



Date: 2.NOV.2023 14:04:32

**Fig. 9 6dB Emission Bandwidth (802.11ac-VHT80, Ch 155)**

**Conclusion: PASS**

## A.5. Transmitter Spurious Emission

### A.5.1 Transmitter Spurious Emission - Radiated

#### Measurement Limit:

| Standard               | Frequency (MHz) | Limit (dBm/MHz) |
|------------------------|-----------------|-----------------|
| FCC 47 CFR Part 15.407 | 5725MHz~5850MHz | < -27           |

The measurement is made according to ANSI C63.10 .

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

#### Limit in restricted band:

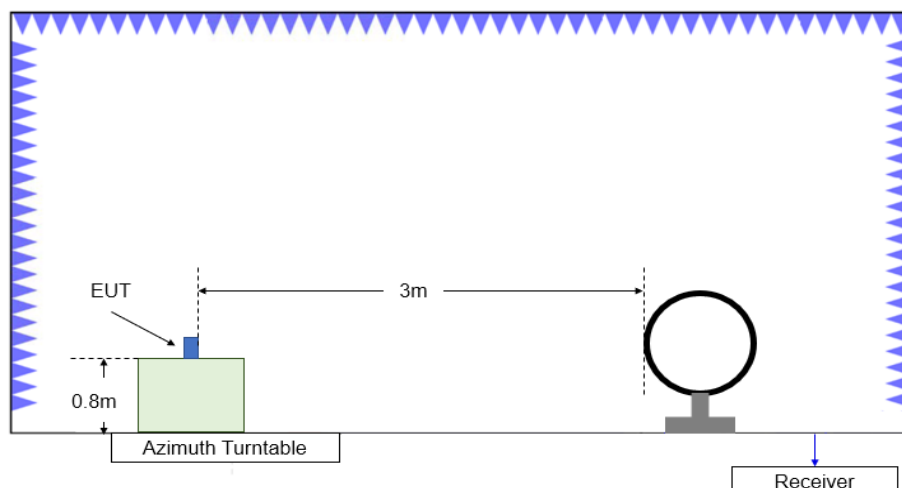
| Frequency of emission (MHz) | Field strength (uV/m) | Field strength (dBμV/m) | Measurement distance(m) |
|-----------------------------|-----------------------|-------------------------|-------------------------|
| 30-88                       | 100                   | 40.0                    | 3                       |
| 88-216                      | 150                   | 43.5                    | 3                       |
| 216-960                     | 200                   | 46.0                    | 3                       |
| Above 960                   | 500                   | 54.0                    | 3                       |

#### Test Condition

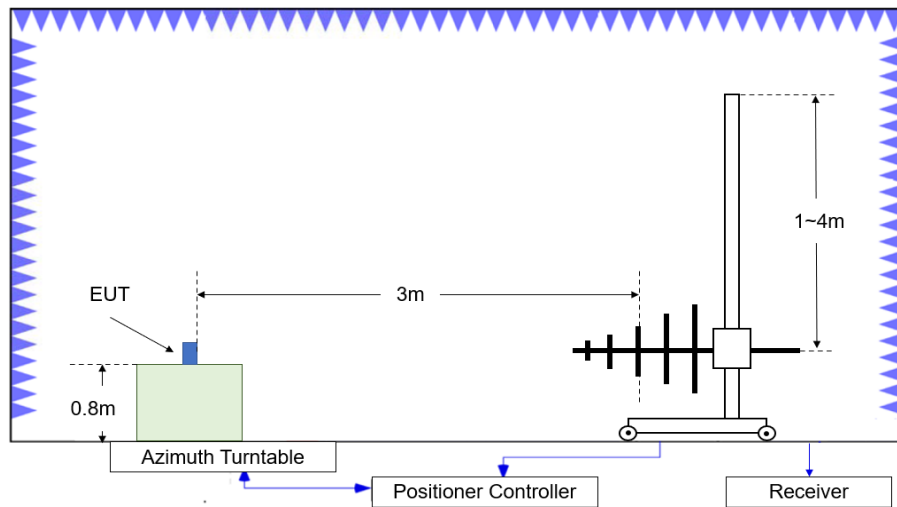
The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

| Frequency of emission (MHz) | RBW/VBW       | Sweep Time(s) |
|-----------------------------|---------------|---------------|
| 30-1000                     | 100KHz/300KHz | 5             |
| 1000-4000                   | 1MHz/3MHz     | 15            |
| 4000-18000                  | 1MHz/3MHz     | 40            |
| 18000-26500                 | 1MHz/3MHz     | 20            |

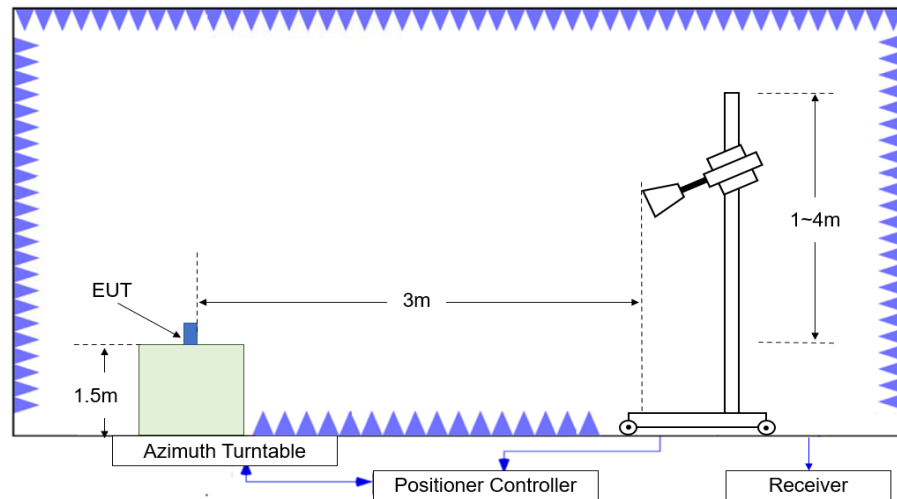
#### Test setup



Test Site Diagram (9kHz-30MHz)



**Test Site Diagram (30MHz-1GHz)**



**Test Site Diagram (1GHz-40GHz)**

## Measurement Results:

### Note:

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

$P_{Mea}$  is the field strength recorded from the instrument.

### Test note

1. Investigation has been done on all modes and modulations/data rates. In total, three EUT elevation positions are measured. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.
2. Spurious emissions for all channels were investigated and almost the same below 1GHz. According to FCC 47 CFR §15.31, emission levels are not report much lower than the limit by over 20dB
3. Measurement frequencies were performed from 9 kHz to the 10<sup>th</sup> harmonic of highest fundamental frequency or 40GHz, whichever is lower.

**Average Results:**
**802.11a**
**Channel 149**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5455.200        | 42.65                       | -23.00          | 33.61                 | 32.04                   | 54.00          | 11.35       | V                  |
| 5457.600        | 42.72                       | -22.97          | 33.62                 | 32.07                   | 54.00          | 11.28       | H                  |
| 11490.000       | 34.18                       | -30.15          | 38.98                 | 25.34                   | 54.00          | 19.82       | V                  |
| 15865.000       | 35.78                       | -25.49          | 38.67                 | 22.61                   | 54.00          | 18.22       | H                  |
| 17956.000       | 39.81                       | -24.18          | 41.81                 | 22.18                   | 54.00          | 14.19       | H                  |
| 17990.000       | 39.85                       | -24.29          | 41.88                 | 22.25                   | 54.00          | 14.15       | H                  |

**Channel 157**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5456.400        | 42.71                       | -22.99          | 33.61                 | 32.08                   | 54.00          | 11.29       | V                  |
| 5458.000        | 42.77                       | -22.96          | 33.62                 | 32.11                   | 54.00          | 11.23       | H                  |
| 11570.000       | 34.19                       | -30.11          | 38.93                 | 25.36                   | 54.00          | 19.81       | V                  |
| 15848.500       | 35.83                       | -25.35          | 38.65                 | 22.54                   | 54.00          | 18.17       | V                  |
| 17895.000       | 39.42                       | -24.15          | 41.70                 | 21.87                   | 54.00          | 14.58       | H                  |
| 17985.000       | 39.99                       | -24.27          | 41.87                 | 22.40                   | 54.00          | 14.01       | V                  |

**Channel 165**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5456.000        | 42.64                       | -22.99          | 33.61                 | 32.02                   | 54.00          | 11.36       | H                  |
| 5458.000        | 42.75                       | -22.96          | 33.62                 | 32.09                   | 54.00          | 11.25       | H                  |
| 11650.000       | 34.29                       | -29.97          | 38.85                 | 25.41                   | 54.00          | 19.71       | H                  |
| 15860.500       | 35.77                       | -25.45          | 38.66                 | 22.56                   | 54.00          | 18.23       | V                  |
| 17931.500       | 39.60                       | -24.15          | 41.76                 | 21.99                   | 54.00          | 14.40       | H                  |
| 17986.000       | 39.74                       | -24.28          | 41.87                 | 22.15                   | 54.00          | 14.26       | V                  |

**802.11n-HT20**
**Channel 149**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5458.400        | 42.74                       | -22.95          | 33.62                 | 32.08                   | 54.00          | 11.26       | V                  |
| 5456.800        | 42.68                       | -22.98          | 33.61                 | 32.05                   | 54.00          | 11.32       | H                  |
| 11490.000       | 34.16                       | -30.15          | 38.98                 | 25.32                   | 54.00          | 19.84       | V                  |
| 15861.000       | 35.85                       | -25.45          | 38.66                 | 22.65                   | 54.00          | 18.15       | H                  |
| 17929.000       | 39.70                       | -24.15          | 41.76                 | 22.09                   | 54.00          | 14.30       | V                  |
| 17986.000       | 39.94                       | -24.28          | 41.87                 | 22.35                   | 54.00          | 14.06       | H                  |

**Channel 157**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5453.600        | 42.62                       | -23.03          | 33.61                 | 32.04                   | 54.00          | 11.38       | V                  |
| 5455.600        | 42.71                       | -23.00          | 33.61                 | 32.10                   | 54.00          | 11.29       | H                  |
| 11570.000       | 34.35                       | -30.11          | 38.93                 | 25.53                   | 54.00          | 19.65       | V                  |
| 15854.000       | 36.04                       | -25.38          | 38.65                 | 22.77                   | 54.00          | 17.96       | H                  |
| 17924.000       | 39.67                       | -24.15          | 41.75                 | 22.07                   | 54.00          | 14.33       | V                  |
| 17958.500       | 39.95                       | -24.19          | 41.82                 | 22.32                   | 54.00          | 14.05       | V                  |

**Channel 165**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5445.200        | 42.49                       | -23.14          | 33.57                 | 32.06                   | 54.00          | 11.51       | V                  |
| 5451.200        | 42.67                       | -23.07          | 33.60                 | 32.14                   | 54.00          | 11.33       | V                  |
| 11650.000       | 34.00                       | -29.97          | 38.85                 | 25.12                   | 54.00          | 20.00       | V                  |
| 15827.500       | 35.77                       | -25.46          | 38.63                 | 22.61                   | 54.00          | 18.23       | V                  |
| 17959.000       | 39.91                       | -24.19          | 41.82                 | 22.29                   | 54.00          | 14.09       | V                  |
| 17985.000       | 39.79                       | -24.27          | 41.87                 | 22.20                   | 54.00          | 14.21       | H                  |

**802.11n-HT40**
**Channel 151**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5455.200        | 42.65                       | -23.00          | 33.61                 | 32.05                   | 54.00          | 11.35       | V                  |
| 5458.000        | 42.78                       | -22.96          | 33.62                 | 32.12                   | 54.00          | 11.22       | H                  |
| 11510.000       | 34.65                       | -30.13          | 38.99                 | 25.80                   | 54.00          | 19.35       | H                  |
| 15868.500       | 35.80                       | -25.53          | 38.67                 | 22.67                   | 54.00          | 18.20       | H                  |
| 17822.000       | 39.41                       | -24.01          | 41.70                 | 21.72                   | 54.00          | 14.59       | H                  |
| 17986.500       | 39.93                       | -24.28          | 41.87                 | 22.33                   | 54.00          | 14.07       | V                  |

**Channel 159**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5454.800        | 42.71                       | -23.01          | 33.61                 | 32.11                   | 54.00          | 11.29       | H                  |
| 5458.800        | 42.84                       | -22.95          | 33.62                 | 32.17                   | 54.00          | 11.16       | V                  |
| 11590.000       | 34.23                       | -30.23          | 38.91                 | 25.55                   | 54.00          | 19.77       | V                  |
| 15867.000       | 35.80                       | -25.51          | 38.67                 | 22.65                   | 54.00          | 18.20       | V                  |
| 17955.000       | 39.92                       | -24.18          | 41.81                 | 22.29                   | 54.00          | 14.08       | V                  |
| 17990.500       | 39.73                       | -24.29          | 41.88                 | 22.14                   | 54.00          | 14.27       | V                  |

**802.11ac-HT20**
**Channel 149**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5454.800        | 42.64                       | -23.01          | 33.61                 | 32.04                   | 54.00          | 11.36       | V                  |
| 5458.800        | 42.79                       | -22.95          | 33.62                 | 32.11                   | 54.00          | 11.21       | H                  |
| 11490.000       | 34.33                       | -30.15          | 38.98                 | 25.50                   | 54.00          | 19.67       | H                  |
| 15861.000       | 35.82                       | -25.45          | 38.66                 | 22.61                   | 54.00          | 18.18       | V                  |
| 17957.500       | 39.94                       | -24.19          | 41.82                 | 22.31                   | 54.00          | 14.06       | V                  |
| 17989.500       | 39.91                       | -24.29          | 41.88                 | 22.32                   | 54.00          | 14.09       | V                  |

**Channel 157**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5456.800        | 42.74                       | -22.98          | 33.61                 | 32.11                   | 54.00          | 11.26       | H                  |
| 5460.000        | 42.80                       | -22.93          | 33.62                 | 32.10                   | 54.00          | 11.20       | H                  |
| 11570.000       | 34.45                       | -30.11          | 38.93                 | 25.63                   | 54.00          | 19.55       | H                  |
| 15830.500       | 35.77                       | -25.45          | 38.63                 | 22.58                   | 54.00          | 18.23       | H                  |
| 17959.000       | 40.02                       | -24.19          | 41.82                 | 22.40                   | 54.00          | 13.98       | V                  |
| 17989.000       | 39.99                       | -24.29          | 41.88                 | 22.40                   | 54.00          | 14.01       | H                  |

**Channel 165**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5455.200        | 42.70                       | -23.00          | 33.61                 | 32.09                   | 54.00          | 11.30       | H                  |
| 5459.600        | 42.69                       | -22.93          | 33.62                 | 32.00                   | 54.00          | 11.31       | H                  |
| 11650.000       | 34.02                       | -29.97          | 38.85                 | 25.13                   | 54.00          | 19.98       | V                  |
| 15851.000       | 35.91                       | -25.35          | 38.65                 | 22.62                   | 54.00          | 18.09       | V                  |
| 17797.500       | 39.76                       | -23.87          | 41.70                 | 21.93                   | 54.00          | 14.24       | V                  |
| 17985.500       | 40.08                       | -24.27          | 41.87                 | 22.48                   | 54.00          | 13.92       | H                  |

**802.11ac-HT40**

## Channel 151

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5453.200        | 42.73                       | -23.04          | 33.61                 | 32.16                   | 54.00          | 11.27       | V                  |
| 5456.400        | 42.68                       | -22.99          | 33.61                 | 32.05                   | 54.00          | 11.32       | H                  |
| 11510.000       | 34.68                       | -30.13          | 38.99                 | 25.82                   | 54.00          | 19.32       | H                  |
| 15857.000       | 36.02                       | -25.41          | 38.66                 | 22.77                   | 54.00          | 17.98       | H                  |
| 17798.000       | 39.62                       | -23.87          | 41.70                 | 21.78                   | 54.00          | 14.38       | V                  |
| 17962.000       | 39.91                       | -24.20          | 41.82                 | 22.29                   | 54.00          | 14.09       | V                  |

## Channel 159

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5457.600        | 42.74                       | -22.97          | 33.62                 | 32.09                   | 54.00          | 11.26       | H                  |
| 5458.800        | 42.75                       | -22.95          | 33.62                 | 32.08                   | 54.00          | 11.25       | H                  |
| 11590.000       | 34.22                       | -30.23          | 38.91                 | 25.54                   | 54.00          | 19.78       | V                  |
| 15866.500       | 35.81                       | -25.51          | 38.67                 | 22.66                   | 54.00          | 18.19       | H                  |
| 17926.500       | 39.78                       | -24.15          | 41.75                 | 22.18                   | 54.00          | 14.22       | H                  |
| 17991.500       | 39.94                       | -24.29          | 41.88                 | 22.35                   | 54.00          | 14.06       | H                  |

**802.11ac-HT80**

## Channel 155 L

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5452.400        | 40.7                        | -23.1           | 33.6                  | 30.13                   | 54.0           | 13.3        | H                  |
| 5458.800        | 42.7                        | -22.9           | 33.6                  | 32.03                   | 54.0           | 11.3        | H                  |
| 11550.000       | 34.1                        | -30.0           | 38.9                  | 25.15                   | 54.0           | 19.9        | V                  |
| 17757.000       | 39.3                        | -24.1           | 41.7                  | 21.70                   | 54.0           | 14.7        | V                  |
| 17891.500       | 39.5                        | -24.2           | 41.7                  | 21.90                   | 54.0           | 14.6        | V                  |
| 17708.000       | 39.2                        | -24.0           | 41.8                  | 21.32                   | 54.0           | 14.8        | H                  |

## Channel 155 R

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5452.400        | 40.7                        | -23.1           | 33.6                  | 30.13                   | 54.0           | 13.3        | H                  |
| 5458.800        | 42.7                        | -22.9           | 33.6                  | 32.03                   | 54.0           | 11.3        | H                  |
| 11550.000       | 34.1                        | -30.0           | 38.9                  | 25.15                   | 54.0           | 19.9        | V                  |
| 17757.000       | 39.3                        | -24.1           | 41.7                  | 21.70                   | 54.0           | 14.7        | V                  |
| 17891.500       | 39.5                        | -24.2           | 41.7                  | 21.90                   | 54.0           | 14.6        | V                  |
| 17708.000       | 39.2                        | -24.0           | 41.8                  | 21.32                   | 54.0           | 14.8        | H                  |

**Peak Results:**
**802.11a**

## Channel 149

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5650.325        | 56.30                       | -22.71          | 33.90                 | 45.11                   | 68.44          | 12.14       | H                  |
| 5650.400        | 56.63                       | -22.71          | 33.90                 | 45.44                   | 68.50          | 11.87       | V                  |
| 11490.000       | 45.13                       | -30.15          | 38.98                 | 36.30                   | 74.00          | 28.87       | H                  |
| 17235.000       | 49.96                       | -24.43          | 41.57                 | 32.81                   | 68.30          | 18.34       | V                  |
| 17461.500       | 52.89                       | -24.30          | 42.00                 | 35.19                   | 68.30          | 15.41       | V                  |
| 17676.500       | 52.81                       | -23.88          | 41.82                 | 34.87                   | 68.30          | 15.49       | V                  |

## Channel 157

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5728.400        | 55.59                       | -22.64          | 34.06                 | 44.18                   | 68.30          | 12.71       | H                  |
| 5849.200        | 55.54                       | -22.80          | 34.50                 | 43.84                   | 68.30          | 12.76       | H                  |
| 11570.000       | 45.02                       | -30.11          | 38.93                 | 36.20                   | 74.00          | 28.98       | V                  |
| 17355.000       | 51.22                       | -24.39          | 41.87                 | 33.75                   | 68.30          | 17.08       | V                  |
| 17502.000       | 52.68                       | -24.07          | 42.00                 | 34.75                   | 68.30          | 15.62       | V                  |
| 17675.000       | 52.48                       | -23.88          | 41.82                 | 34.54                   | 68.30          | 15.82       | V                  |

## Channel 165

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5924.900        | 56.87                       | -22.82          | 34.90                 | 44.79                   | 68.27          | 11.41       | H                  |
| 5925.000        | 56.68                       | -22.82          | 34.90                 | 44.60                   | 68.20          | 11.52       | H                  |
| 11650.000       | 45.10                       | -29.97          | 38.85                 | 36.21                   | 74.00          | 28.90       | H                  |
| 17475.000       | 51.82                       | -24.22          | 42.00                 | 34.04                   | 68.30          | 16.48       | V                  |
| 17596.000       | 52.48                       | -24.00          | 41.90                 | 34.57                   | 68.30          | 15.82       | H                  |
| 17651.500       | 52.48                       | -23.84          | 41.85                 | 34.48                   | 68.30          | 15.82       | V                  |

**802.11n-HT20**
**Channel 149**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5650.150        | 55.72                       | -22.71          | 33.90                 | 44.53                   | 68.31          | 12.59       | V                  |
| 5650.300        | 56.44                       | -22.71          | 33.90                 | 45.25                   | 68.42          | 11.98       | H                  |
| 11490.000       | 44.71                       | -30.15          | 38.98                 | 35.87                   | 74.00          | 29.29       | H                  |
| 17235.000       | 51.13                       | -24.43          | 41.57                 | 33.99                   | 68.30          | 17.17       | H                  |
| 17370.000       | 53.09                       | -24.39          | 41.91                 | 35.57                   | 68.30          | 15.21       | V                  |
| 17647.500       | 52.46                       | -23.85          | 41.85                 | 34.46                   | 68.30          | 15.84       | H                  |

**Channel 157**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5657.600        | 56.01                       | -22.61          | 33.92                 | 44.71                   | 68.30          | 12.29       | H                  |
| 5863.200        | 56.34                       | -22.69          | 34.58                 | 44.46                   | 68.30          | 11.96       | V                  |
| 11570.000       | 44.78                       | -30.11          | 38.93                 | 35.96                   | 74.00          | 29.22       | V                  |
| 17355.000       | 49.89                       | -24.39          | 41.87                 | 32.42                   | 68.30          | 18.41       | H                  |
| 17455.500       | 52.82                       | -24.34          | 42.00                 | 35.16                   | 68.30          | 15.48       | H                  |
| 17600.500       | 53.10                       | -23.98          | 41.90                 | 35.19                   | 68.30          | 15.20       | H                  |

**Channel 165**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5924.850        | 56.77                       | -22.83          | 34.90                 | 44.70                   | 68.31          | 11.54       | V                  |
| 5924.900        | 57.42                       | -22.82          | 34.90                 | 45.34                   | 68.27          | 10.86       | V                  |
| 11650.000       | 45.52                       | -29.97          | 38.85                 | 36.63                   | 74.00          | 28.48       | H                  |
| 17475.000       | 50.21                       | -24.22          | 42.00                 | 32.42                   | 68.30          | 18.09       | H                  |
| 17554.500       | 52.26                       | -24.19          | 41.95                 | 34.50                   | 68.30          | 16.04       | V                  |
| 17650.000       | 52.80                       | -23.84          | 41.85                 | 34.79                   | 68.30          | 15.50       | V                  |

**802.11n-HT40**

## Channel 151

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5650.725        | 56.98                       | -22.70          | 33.90                 | 45.78                   | 68.74          | 11.76       | H                  |
| 5651.100        | 56.02                       | -22.70          | 33.90                 | 44.82                   | 69.01          | 12.99       | H                  |
| 11510.000       | 46.05                       | -30.13          | 38.99                 | 37.19                   | 74.00          | 27.95       | H                  |
| 17265.000       | 50.54                       | -24.40          | 41.63                 | 33.31                   | 68.30          | 17.76       | V                  |
| 17491.500       | 53.29                       | -24.11          | 42.00                 | 35.41                   | 68.30          | 15.01       | V                  |
| 17622.500       | 52.69                       | -23.92          | 41.88                 | 34.73                   | 68.30          | 15.61       | H                  |

## Channel 159

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5923.100        | 57.19                       | -22.87          | 34.89                 | 45.17                   | 69.61          | 12.41       | V                  |
| 5923.525        | 58.18                       | -22.86          | 34.89                 | 46.14                   | 69.29          | 11.11       | V                  |
| 11590.000       | 44.22                       | -30.23          | 38.91                 | 35.54                   | 74.00          | 29.78       | V                  |
| 17385.000       | 50.23                       | -24.39          | 41.96                 | 32.66                   | 68.30          | 18.07       | V                  |
| 17497.000       | 52.89                       | -24.08          | 42.00                 | 34.97                   | 68.30          | 15.41       | V                  |
| 17676.000       | 52.77                       | -23.88          | 41.82                 | 34.83                   | 68.30          | 15.53       | V                  |

**802.11ac-HT20**
**Channel 149**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5650.825        | 57.15                       | -22.70          | 33.90                 | 45.95                   | 68.81          | 11.66       | V                  |
| 5651.475        | 56.25                       | -22.69          | 33.90                 | 45.04                   | 69.29          | 13.04       | H                  |
| 11490.000       | 46.01                       | -30.15          | 38.98                 | 37.17                   | 74.00          | 27.99       | H                  |
| 17235.000       | 52.18                       | -24.43          | 41.57                 | 35.04                   | 68.30          | 16.12       | V                  |
| 17486.000       | 52.34                       | -24.15          | 42.00                 | 34.49                   | 68.30          | 15.96       | V                  |
| 17630.000       | 51.90                       | -23.90          | 41.87                 | 33.93                   | 68.30          | 16.40       | H                  |

**Channel 157**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5756.800        | 56.59                       | -22.85          | 34.15                 | 45.29                   | 68.30          | 11.71       | V                  |
| 5812.000        | 55.62                       | -22.74          | 34.50                 | 43.86                   | 68.30          | 12.68       | V                  |
| 11570.000       | 44.94                       | -30.11          | 38.93                 | 36.11                   | 74.00          | 29.06       | H                  |
| 17355.000       | 51.26                       | -24.39          | 41.87                 | 33.78                   | 68.30          | 17.04       | V                  |
| 17493.000       | 52.08                       | -24.11          | 42.00                 | 34.19                   | 68.30          | 16.22       | V                  |
| 17655.000       | 52.63                       | -23.85          | 41.84                 | 34.63                   | 68.30          | 15.67       | V                  |

**Channel 165**

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5924.075        | 56.80                       | -22.84          | 34.90                 | 44.75                   | 68.88          | 12.08       | V                  |
| 5924.700        | 57.16                       | -22.83          | 34.90                 | 45.09                   | 68.42          | 11.27       | V                  |
| 11650.000       | 45.47                       | -29.97          | 38.85                 | 36.59                   | 74.00          | 28.53       | V                  |
| 17475.000       | 49.59                       | -24.22          | 42.00                 | 31.81                   | 68.30          | 18.71       | V                  |
| 17552.500       | 51.74                       | -24.20          | 41.95                 | 33.99                   | 68.30          | 16.56       | H                  |
| 17648.000       | 52.35                       | -23.85          | 41.85                 | 34.34                   | 68.30          | 15.95       | V                  |

**802.11ac-HT40**

## Channel 151

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5650.750        | 56.68                       | -22.70          | 33.90                 | 45.48                   | 68.76          | 12.08       | V                  |
| 5651.225        | 56.43                       | -22.70          | 33.90                 | 45.22                   | 69.11          | 12.68       | H                  |
| 11510.000       | 45.51                       | -30.13          | 38.99                 | 36.65                   | 74.00          | 28.49       | V                  |
| 17265.000       | 50.86                       | -24.40          | 41.63                 | 33.63                   | 68.30          | 17.44       | H                  |
| 17478.000       | 52.81                       | -24.20          | 42.00                 | 35.01                   | 68.30          | 15.48       | H                  |
| 17664.000       | 52.68                       | -23.86          | 41.84                 | 34.70                   | 68.30          | 15.62       | V                  |

## Channel 159

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5924.400        | 57.62                       | -22.84          | 34.90                 | 45.56                   | 68.64          | 11.03       | H                  |
| 5924.675        | 57.75                       | -22.83          | 34.90                 | 45.68                   | 68.44          | 10.69       | H                  |
| 11590.000       | 44.83                       | -30.23          | 38.91                 | 36.16                   | 74.00          | 29.17       | H                  |
| 17385.000       | 50.64                       | -24.39          | 41.96                 | 33.07                   | 68.30          | 17.66       | H                  |
| 17489.500       | 52.94                       | -24.13          | 42.00                 | 35.06                   | 68.30          | 15.36       | V                  |
| 17642.500       | 53.27                       | -23.86          | 41.86                 | 35.28                   | 68.30          | 15.03       | H                  |

**802.11ac-HT80**

## Channel 155 L

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5651.825        | 56.9                        | -22.7           | 33.9                  | 45.69                   | 69.6           | 12.6        | H                  |
| 5652.675        | 56.2                        | -22.7           | 33.9                  | 45.00                   | 70.2           | 14.0        | V                  |
| 11550.000       | 44.4                        | -30.0           | 38.9                  | 35.47                   | 74.0           | 29.6        | V                  |
| 17325.000       | 49.9                        | -24.3           | 41.8                  | 32.44                   | 68.3           | 18.4        | V                  |
| 17546.000       | 53.0                        | -24.2           | 42.0                  | 35.25                   | 68.3           | 15.3        | V                  |
| 17623.500       | 53.5                        | -23.9           | 41.9                  | 35.53                   | 68.3           | 14.8        | H                  |

## Channel 155 R

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 5924.475        | 57.6                        | -22.8           | 34.9                  | 45.49                   | 68.6           | 11.0        | V                  |
| 5924.550        | 56.5                        | -22.8           | 34.9                  | 44.42                   | 68.5           | 12.0        | V                  |
| 11550.000       | 44.4                        | -30.0           | 38.9                  | 35.47                   | 74.0           | 29.6        | V                  |
| 17325.000       | 49.9                        | -24.3           | 41.8                  | 32.44                   | 68.3           | 18.4        | V                  |
| 17546.000       | 53.0                        | -24.2           | 42.0                  | 35.25                   | 68.3           | 15.3        | V                  |
| 17623.500       | 53.5                        | -23.9           | 41.9                  | 35.53                   | 68.3           | 14.8        | H                  |

## **A.6. Band Edges Compliance**

### **A6.1 Band Edges - Radiated**

#### **Measurement Limit:**

| Standard                  | Limit (dBm/MHz)                                |      |
|---------------------------|------------------------------------------------|------|
| FCC 47 CFR<br>Part 15.407 | at the band edge                               | 27   |
|                           | at 5 MHz above or below the band edge          | 15.6 |
|                           | at 25 MHz above or below the band edge         | 10   |
|                           | at 75 MHz or more above or below the band edge | -27  |
|                           | Note: increasing linearly from point to point. |      |

The measurement is made according to KDB 789033 D02

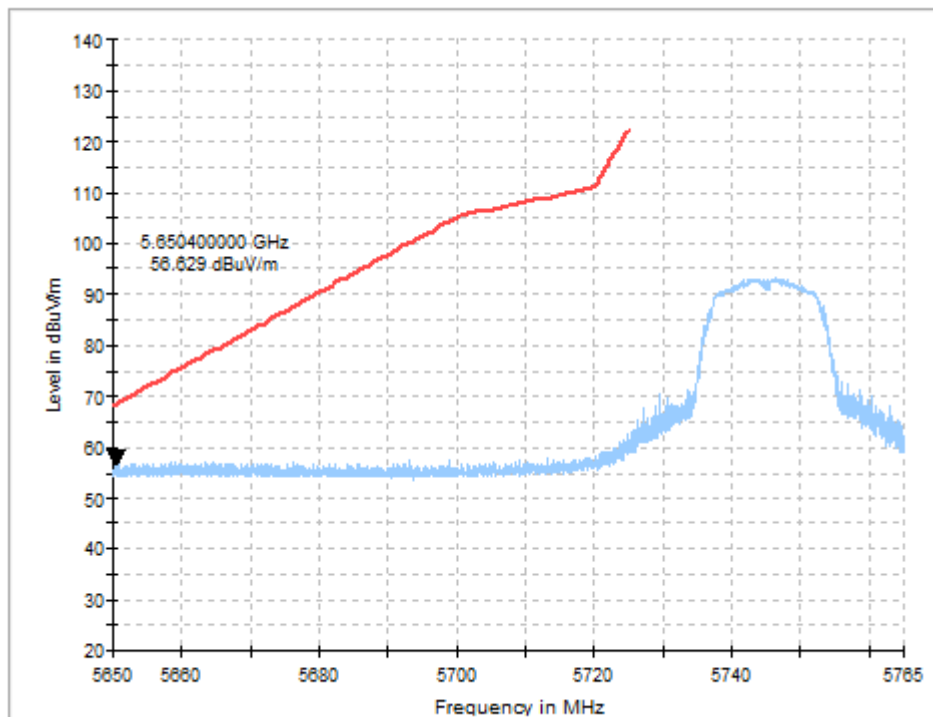
In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

#### **Measurement Result:**

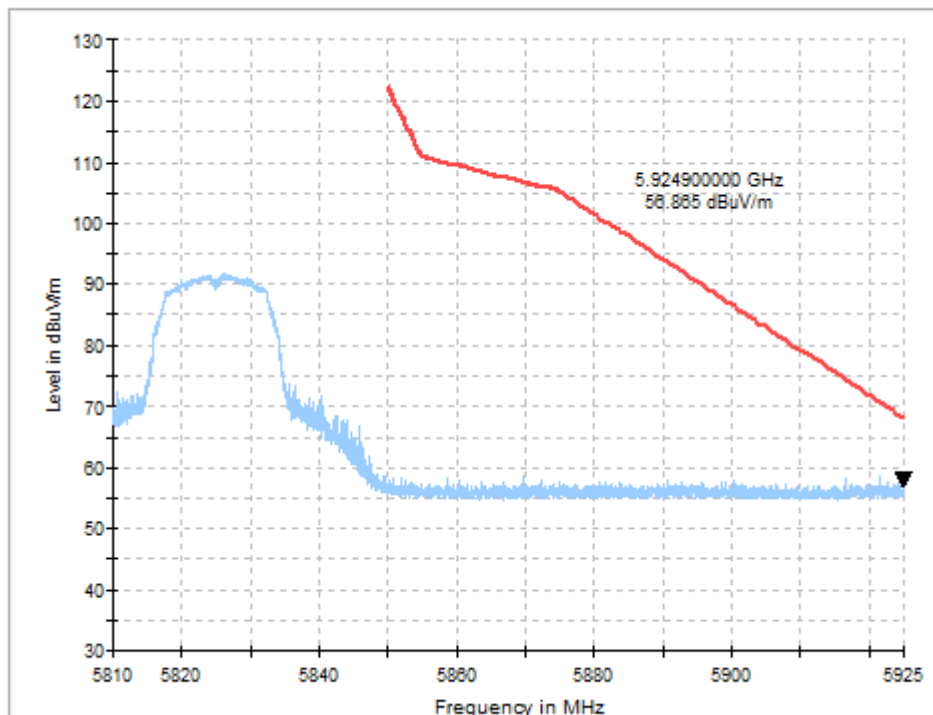
| Mode             | Channel  | Test Results | Conclusion |
|------------------|----------|--------------|------------|
| 802.11a          | 5745 MHz | Fig.10       | P          |
|                  | 5825 MHz | Fig.11       | P          |
| 802.11n<br>HT20  | 5745 MHz | Fig.12       | P          |
|                  | 5825 MHz | Fig.13       | P          |
| 802.11n<br>HT40  | 5755 MHz | Fig.14       | P          |
|                  | 5795 MHz | Fig.15       | P          |
| 802.11ac<br>HT20 | 5745 MHz | Fig.16       | P          |
|                  | 5825 MHz | Fig.17       | P          |
| 802.11ac<br>HT40 | 5755 MHz | Fig.18       | P          |
|                  | 5795 MHz | Fig.19       | P          |
| 802.11ac<br>HT80 | 5775 MHz | Fig.20       | P          |
|                  | 5775 MHz | Fig.21       | P          |

**Conclusion: PASS**

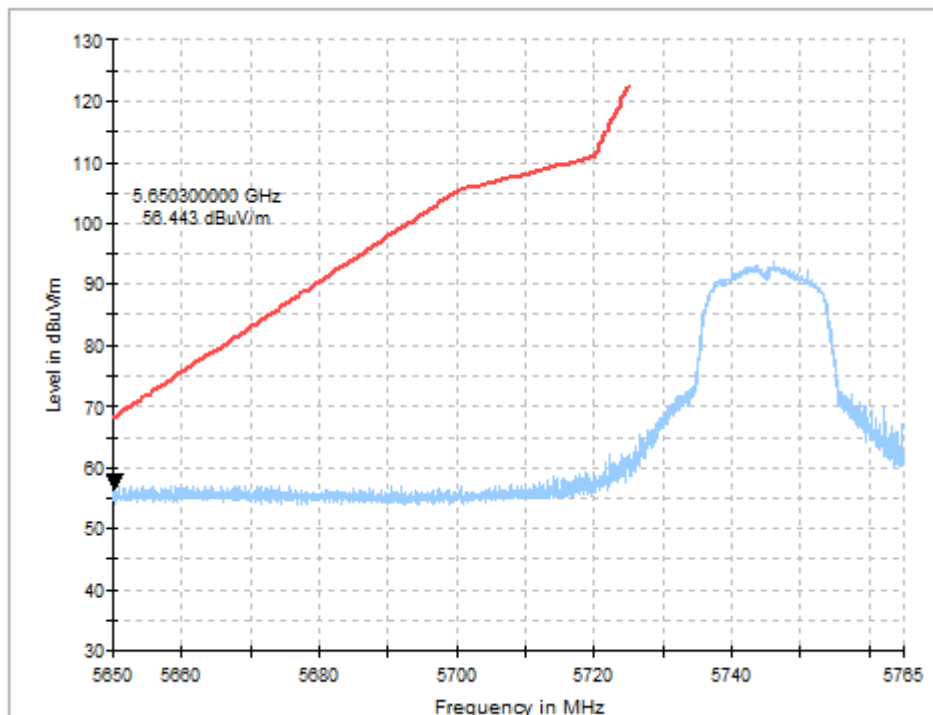
**Test graphs as below:**



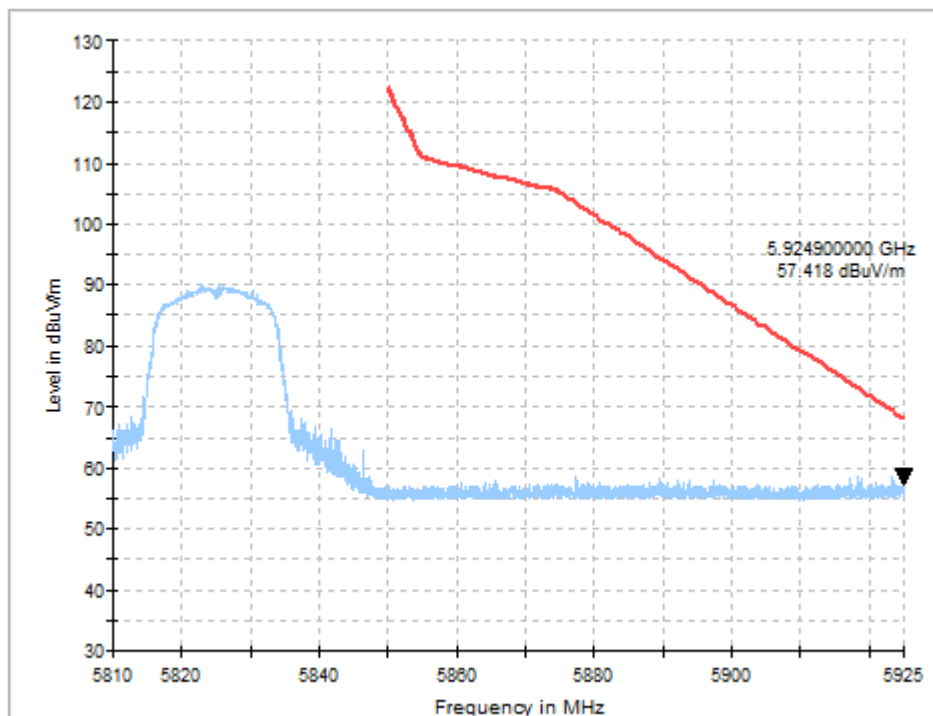
**Fig. 10 Band Edges (802.11a Ch149,5745MHz)**



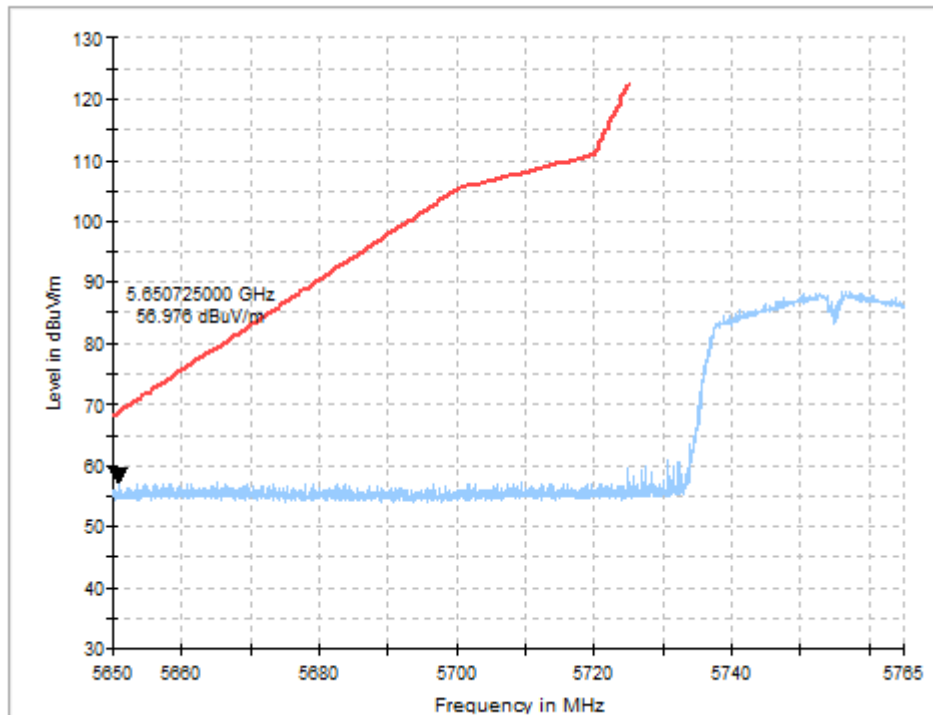
**Fig. 11 Band Edges (802.11a Ch165, 5825MHz)**



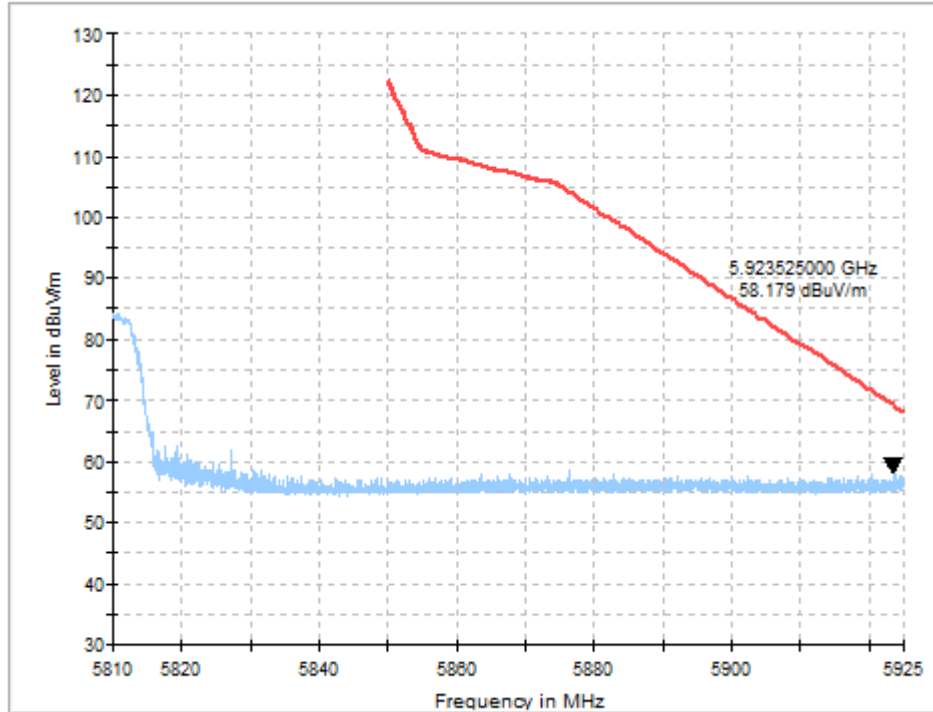
**Fig. 12 Band Edges (802.11n-HT20 Ch149, 5745MHz)**



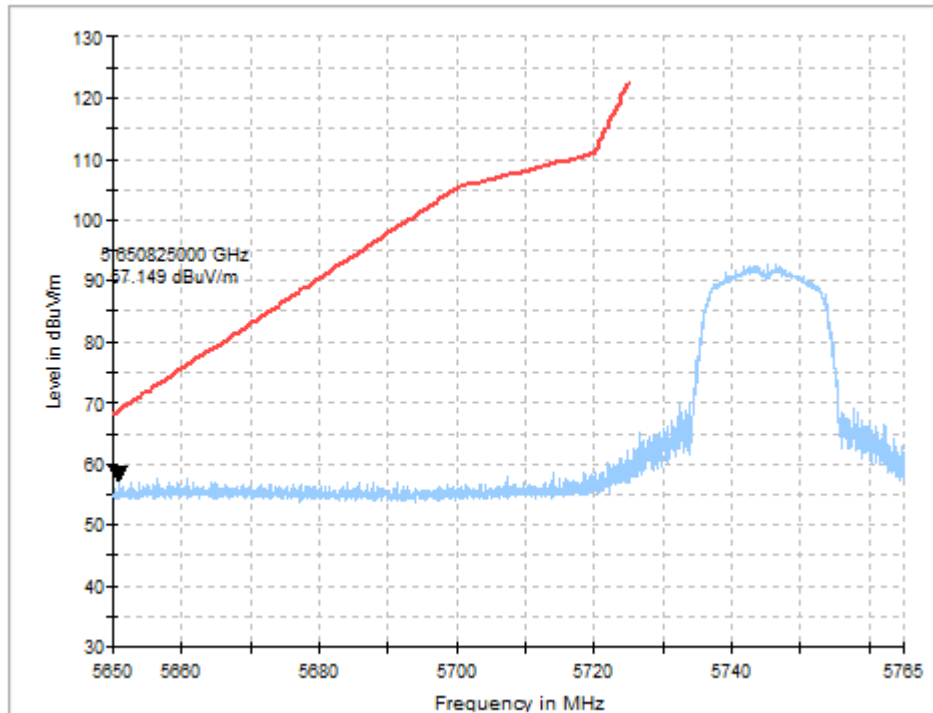
**Fig. 13 Band Edges (802.11n-HT20 Ch165, 5825MHz)**



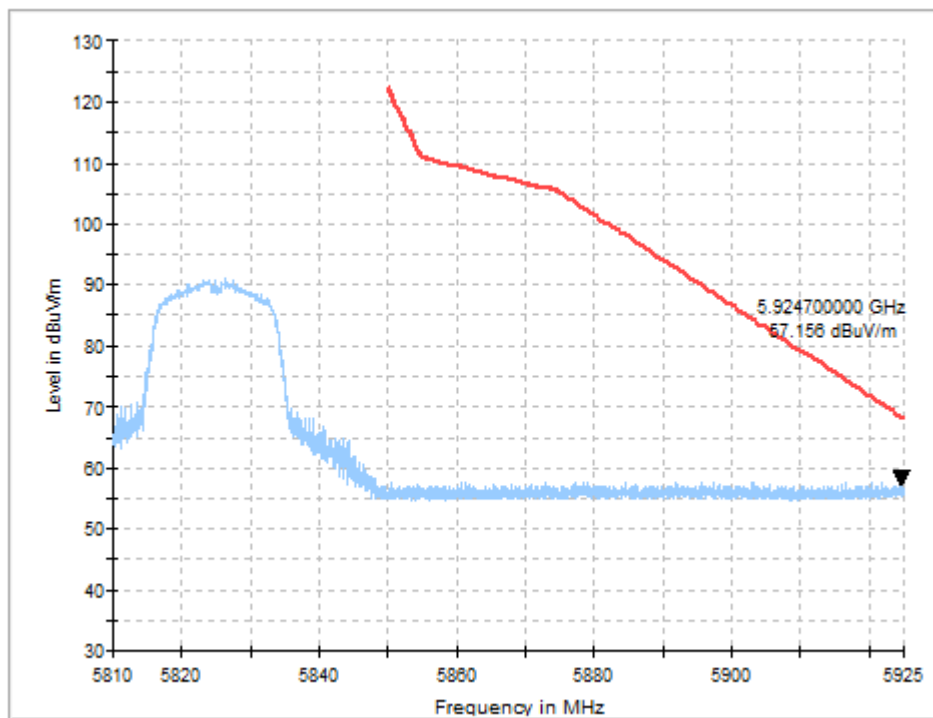
**Fig. 14 Band Edges (802.11n-HT40 Ch151, 5755MHz)**



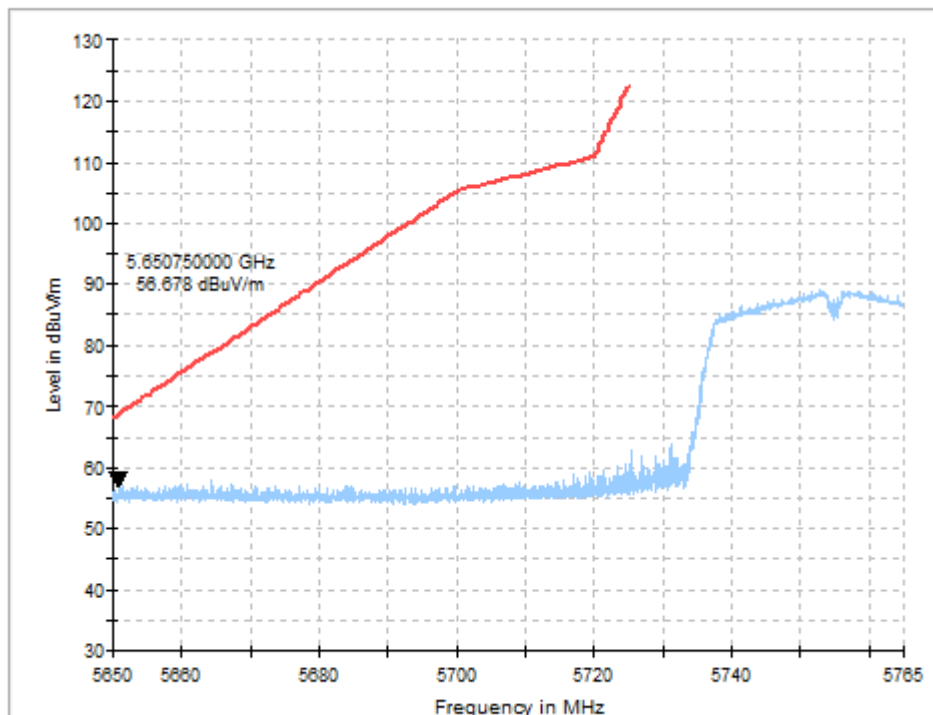
**Fig. 15 Band Edges (802.11n-HT40 Ch159, 5795MHz)**



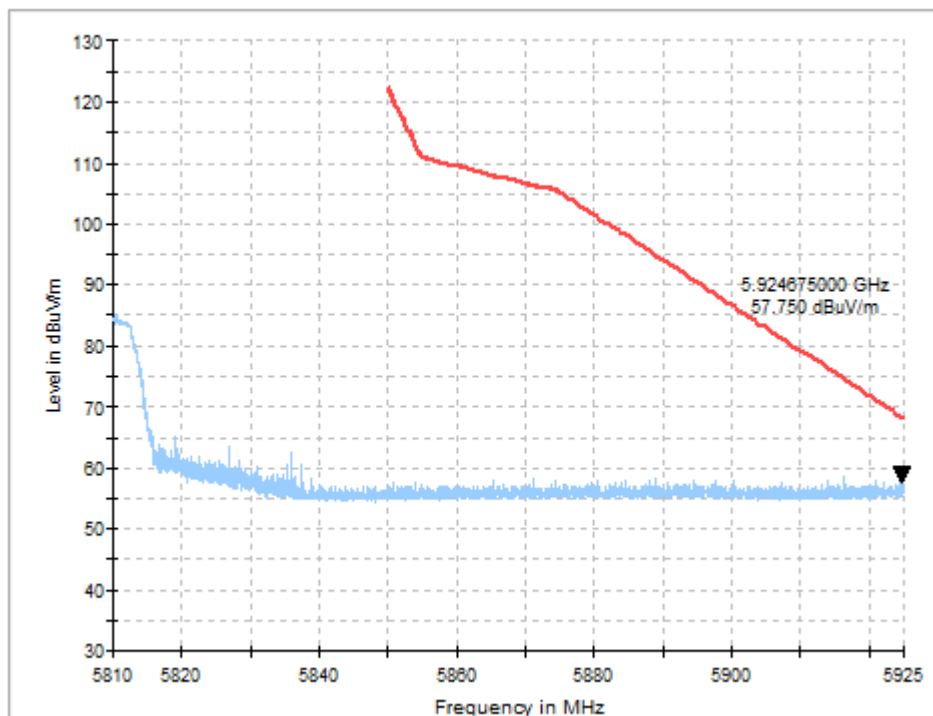
**Fig. 16 Band Edges (802.11ac-HT20 Ch149, 5745MHz)**



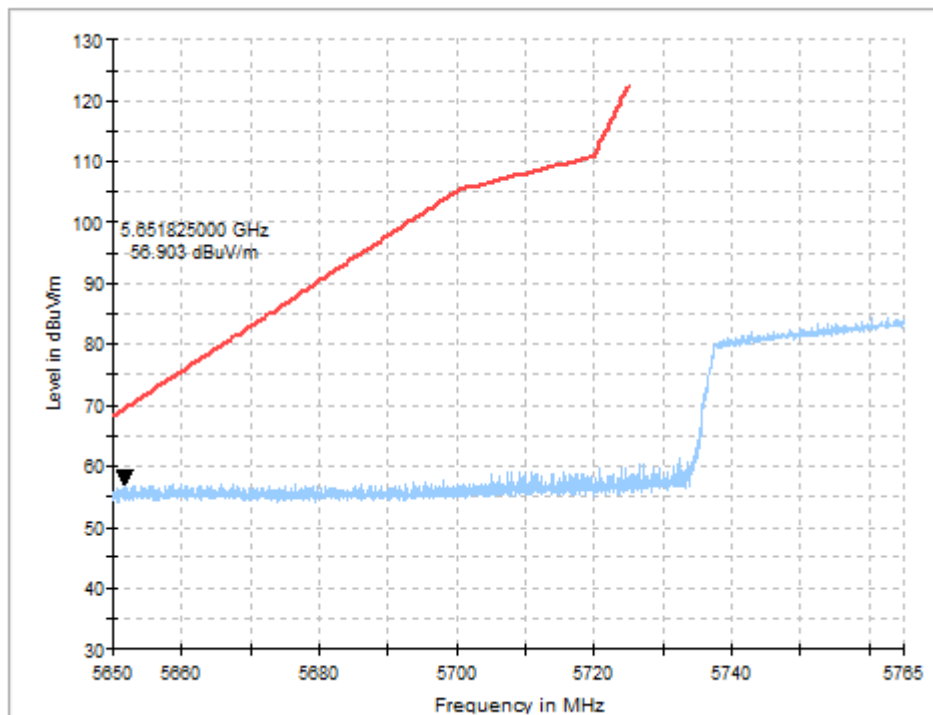
**Fig. 17 Band Edges (802.11ac-HT20 Ch165, 5825MHz)**



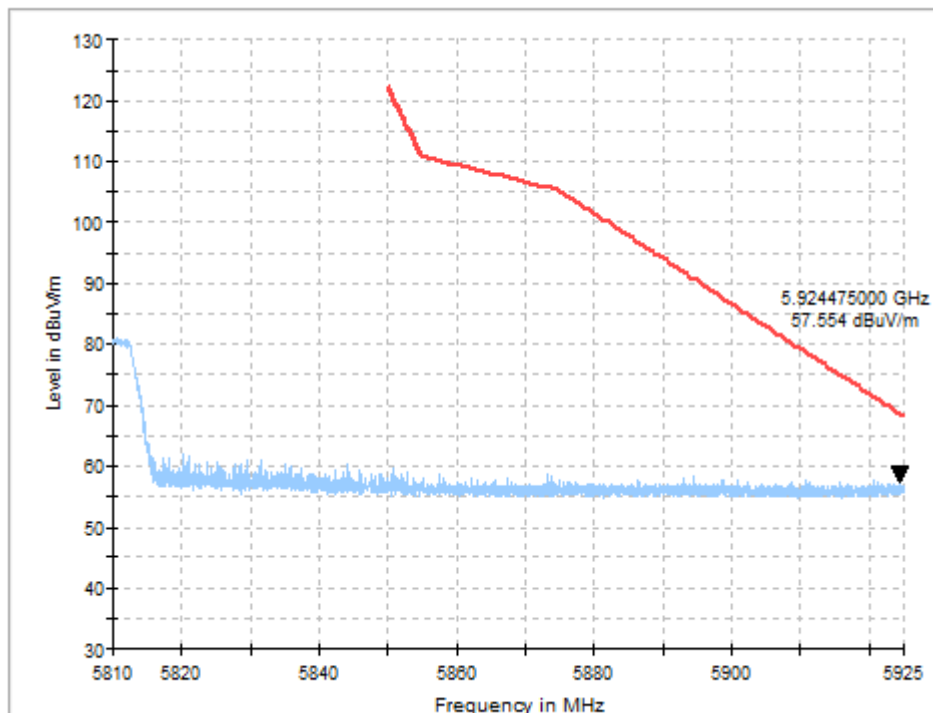
**Fig. 18 Band Edges (802.11ac-HT40 Ch151, 5755MHz)**



**Fig. 19 Band Edges (802.11ac-HT40 Ch159, 5795MHz)**



**Fig. 20 Band Edges (802.11ac-HT80 Ch155, 5775MHz)**



**Fig. 21 Band Edges (802.11ac-HT80 Ch155, 5775MHz)**

### A.7. AC Powerline Conducted Emission

**Test Condition:**

| Voltage (V) | Frequency (Hz) |
|-------------|----------------|
| 110         | 60             |

**Measurement Result and limit:**

WLAN (Quasi-peak Limit)

| Frequency range<br>(MHz)                                                                                 | Quasi-peak<br>Limit (dBμV) | Result (dBμV) |        | Conclusion |
|----------------------------------------------------------------------------------------------------------|----------------------------|---------------|--------|------------|
|                                                                                                          |                            | With charger  |        |            |
|                                                                                                          |                            | 802.11a       | Idle   |            |
| 0.15 to 0.5                                                                                              | 66 to 56                   | Fig.22        | Fig.23 | <b>P</b>   |
| 0.5 to 5                                                                                                 | 56                         |               |        |            |
| 5 to 30                                                                                                  | 60                         |               |        |            |
| NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz. |                            |               |        |            |

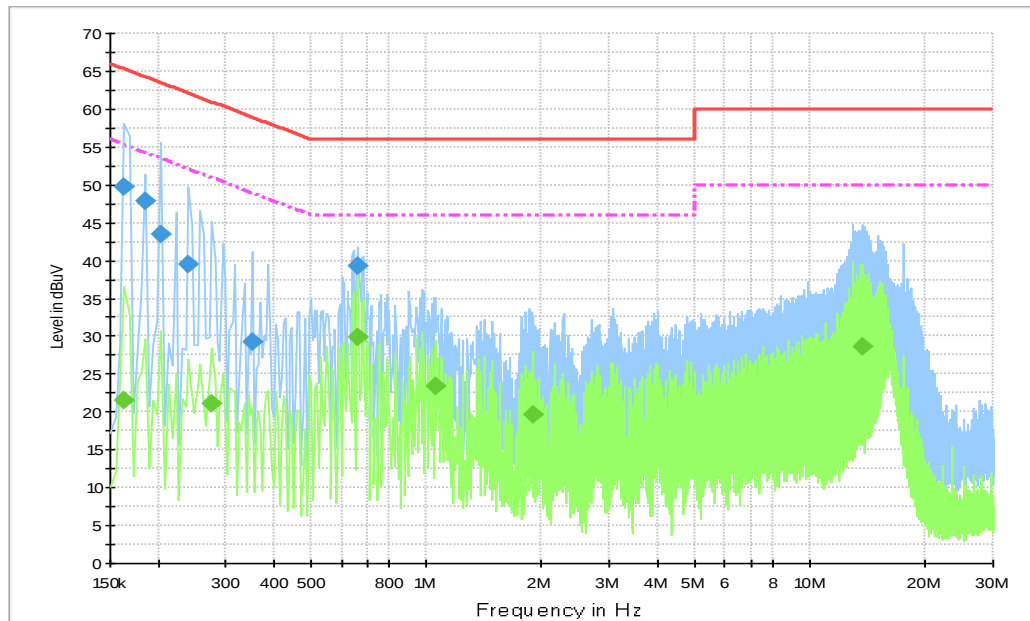
WLAN (Average Limit)

| Frequency range<br>(MHz)                                                                                 | Average Limit<br>(dBμV) | Result (dBμV) |        | Conclusion |
|----------------------------------------------------------------------------------------------------------|-------------------------|---------------|--------|------------|
|                                                                                                          |                         | With charger  |        |            |
|                                                                                                          |                         | 802.11a       | Idle   |            |
| 0.15 to 0.5                                                                                              | 56 to 46                | Fig.22        | Fig.23 | <b>P</b>   |
| 0.5 to 5                                                                                                 | 46                      |               |        |            |
| 5 to 30                                                                                                  | 50                      |               |        |            |
| NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz. |                         |               |        |            |

The measurement is made according to ANSI C63.10 .

**Conclusion: PASS**

**Test graphs as below:**



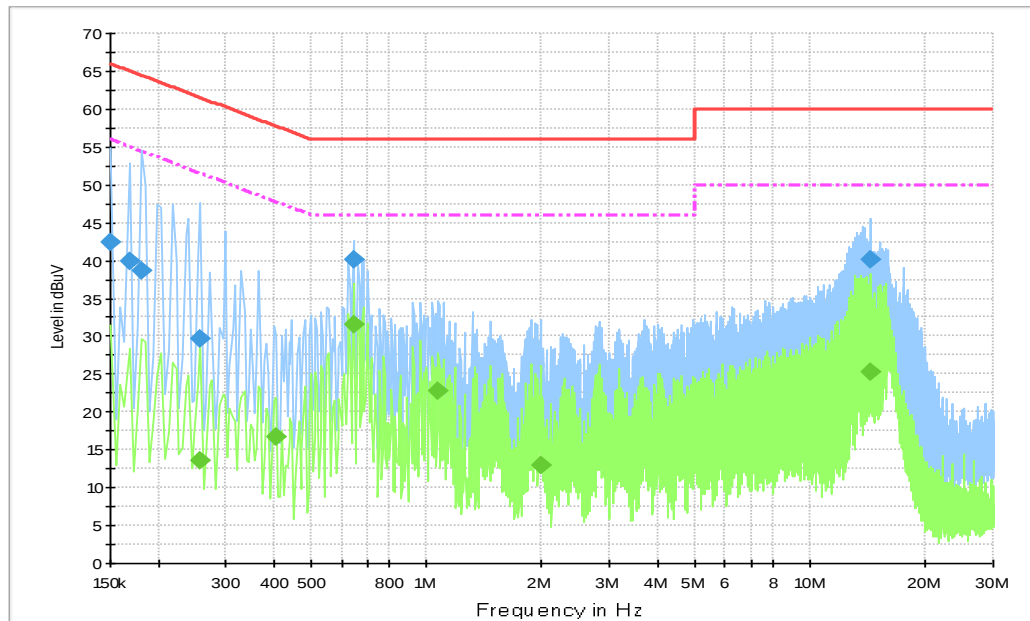
**Fig. 22 AC Powerline Conducted Emission-802.11a**

Measurement Result:

| Frequency (MHz) | QuasiPeak (dBμV) | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|------|------------|-------------|--------------|
| 0.163500        | 49.7             | N    | 19.5       | 15.6        | 65.3         |
| 0.186000        | 47.9             | N    | 19.5       | 16.3        | 64.2         |
| 0.204000        | 43.4             | L1   | 19.4       | 20.0        | 63.4         |
| 0.240000        | 39.4             | L1   | 19.5       | 22.7        | 62.1         |
| 0.352500        | 29.3             | L1   | 19.4       | 29.6        | 58.9         |
| 0.663000        | 39.3             | L1   | 19.5       | 16.7        | 56.0         |

Measurement Result:

| Frequency (MHz) | CAverage (dBuV) | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|------|------------|-------------|--------------|
| 0.163500        | 21.5            | N    | 19.5       | 33.8        | 55.3         |
| 0.276000        | 21.2            | L1   | 19.4       | 29.8        | 50.9         |
| 0.663000        | 29.9            | L1   | 19.5       | 16.1        | 46.0         |
| 1.054500        | 23.4            | L1   | 19.5       | 22.6        | 46.0         |
| 1.891500        | 19.7            | L1   | 19.5       | 26.3        | 46.0         |
| 13.780500       | 28.6            | L1   | 19.8       | 21.4        | 50.0         |



**Fig. 23 AC Powerline Conducted Emission-Idle**

Measurement Result:

| Frequency (MHz) | QuasiPeak (dBμV) | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|------|------------|-------------|--------------|
| 0.150000        | 42.5             | N    | 19.4       | 23.5        | 66.0         |
| 0.168000        | 39.9             | L1   | 19.5       | 25.1        | 65.1         |
| 0.181500        | 38.7             | N    | 19.5       | 25.7        | 64.4         |
| 0.258000        | 29.6             | L1   | 19.4       | 31.9        | 61.5         |
| 0.645000        | 40.1             | L1   | 19.5       | 15.9        | 56.0         |
| 14.428500       | 40.1             | L1   | 19.8       | 19.9        | 60.0         |

Measurement Result:

| Frequency (MHz) | CAverage (dBuV) | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-----------------|------|------------|-------------|--------------|
| 0.258000        | 13.5            | N    | 19.4       | 38.0        | 51.5         |
| 0.406500        | 16.8            | L1   | 19.5       | 30.9        | 47.7         |
| 0.645000        | 31.6            | L1   | 19.5       | 14.4        | 46.0         |
| 1.072500        | 22.9            | L1   | 19.5       | 23.1        | 46.0         |
| 1.986000        | 12.9            | N    | 19.5       | 33.1        | 46.0         |
| 14.428500       | 25.4            | N    | 19.8       | 24.6        | 50.0         |

## **ANNEX B: EUT parameters**

Disclaimer: The antenna gain and worse case provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

## **ANNEX C: Accreditation Certificate**



\*\*\* END OF REPORT BODY \*\*\*