

# RF TEST REPORT

For

**SHEN ZHEN AUTOPRO TECHNOLOGY CO., LTD.**  
**Product Name: HD Digital Wireless Observation System, HD**  
**Digital Backup Camera**  
**Test Model(s): IRVCM1**

**Report Reference No.** : POCE230828003RF001

**FCC ID** : VUD-IRVCM1

**Applicant's Name** : SHEN ZHEN AUTOPRO TECHNOLOGY CO., LTD.

**Address** : Bldg H2, Area A, Hongfa Technology Industrial Zone Shiyan Town, Bao  
An District, Shen Zhen, Guangdong China

**Testing Laboratory** : Shenzhen POCE Technology Co., Ltd.

**Address** : 102 Building H1 & 1/F., Building H, Hongfa Science & Technology Park,  
Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China

**Test Specification Standard** : 47 CFR Part 15.249

**Date of Receipt** : August 28, 2023

**Date of Test** : October 9, 2023 to October 9, 2023

**Data of Issue** : October 9, 2023

**Result** : Pass

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## Revision History Of Report

| Version | Description | REPORT No.         | Issue Date      |
|---------|-------------|--------------------|-----------------|
| V1.0    | Original    | POCE230828003RF001 | October 9, 2023 |
|         |             |                    |                 |
|         |             |                    |                 |
|         |             |                    |                 |
|         |             |                    |                 |

**NOTE1:**

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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# 1 TEST SUMMARY

## 1.1 Test Standards

The tests were performed according to following standards:

**47 CFR Part 15.249:** Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz

## 1.2 Summary of Test Result

| Item                                      | Standard           | Method                          | Requirement                                              | Result |
|-------------------------------------------|--------------------|---------------------------------|----------------------------------------------------------|--------|
| Antenna requirement                       | 47 CFR Part 15.249 |                                 | 47 CFR Part 15.203                                       | Pass   |
| Occupied Bandwidth                        | 47 CFR Part 15.249 | ANSI C63.10-2013, section 6.9.2 | 47 CFR 15.215(c)                                         | Pass   |
| Field strength of fundamental             | 47 CFR Part 15.249 | ANSI C63.10-2013 section 6.6    | 47 CFR 15.249(a)<br>47 CFR 15.249(b)(1)                  | Pass   |
| Band edge emissions (Radiated)            | 47 CFR Part 15.249 | ANSI C63.10-2013 section 6.6.4  | 47 CFR 15.249(d)                                         | Pass   |
| Emissions in frequency bands (below 1GHz) | 47 CFR Part 15.249 | ANSI C63.10-2013 section 6.5    | 47 CFR 15.249(a)<br>47 CFR 15.249(d)<br>47 CFR 15.249(e) | Pass   |
| Emissions in frequency bands (above 1GHz) | 47 CFR Part 15.249 | ANSI C63.10-2013 section 6.6    | 47 CFR 15.249(a)<br>47 CFR 15.249(d)<br>47 CFR 15.249(e) | Pass   |

## 2 GENERAL INFORMATION

### 2.1 Client Information

**Applicant's Name** : SHEN ZHEN AUTOPRO TECHNOLOGY CO., LTD.  
**Address** : Bldg H2, Area A, Hongfa Technology Industrial Zone Shiyan Town, Bao An District, Shen Zhen, Guandong China

**Manufacturer** : SHEN ZHEN AUTOPRO TECHNOLOGY CO., LTD.  
**Address** : Bldg H2, Area A, Hongfa Technology Industrial Zone Shiyan Town, Bao An District, Shen Zhen, Guandong China

### 2.2 Description of Device (EUT)

|                       |                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:         | HD Digital Wireless Observation System,HD Digital Backup Camera                                                                                              |
| Model/Type reference: | IRVCM1                                                                                                                                                       |
| Series Model:         | RV01, PTCM1, ARCM1                                                                                                                                           |
| Model Difference:     | The product has many models, only the model name is different, and the other parts such as the circuit principle, pcb and electrical structure are the same. |
| Trade Mark:           | iRV Technologies, ProAuto, Aurarism                                                                                                                          |
| Power Supply:         | DC:12V/0.3A                                                                                                                                                  |
| Power Adaptor:        | N/A                                                                                                                                                          |
| Operation Frequency:  | 2408MHz-2475MHz                                                                                                                                              |
| Number of Channels:   | 18                                                                                                                                                           |
| Modulation Type:      | GFSK                                                                                                                                                         |
| Antenna Type:         | External                                                                                                                                                     |
| Antenna Gain:         | 3dBi                                                                                                                                                         |
| Hardware Version:     | V1.0                                                                                                                                                         |
| Software Version:     | V1.0                                                                                                                                                         |

Note:

#: The antenna gain provided by the applicant, and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---------|----------------|---------|----------------|
| 1       | 2408           | 10      | 2445           |
| 2       | 2411           | 11      | 2448           |
| 3       | 2415           | 12      | 2452           |
| 4       | 2418           | 13      | 2455           |
| 5       | 2422           | 14      | 2458           |
| 6       | 2425           | 15      | 2465           |
| 7       | 2428           | 16      | 2468           |
| 8       | 2432           | 17      | 2472           |
| 9       | 2442           | 18      | 2475           |

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Test channel    | Frequency (MHz) |
|-----------------|-----------------|
|                 | GFSK            |
| Lowest channel  | 2408MHz         |
| Middle channel  | 2442MHz         |
| Highest channel | 2475MHz         |

## 2.3 Description of Test Modes

| No  | Title           | Description                                                                                       |
|-----|-----------------|---------------------------------------------------------------------------------------------------|
| TM1 | Lowest channel  | Keep the EUT works in continuously transmitting mode with GFSK modulation.(Duty cycle $\geq$ 98%) |
| TM2 | Middle channel  | Keep the EUT works in continuously transmitting mode with GFSK modulation.(Duty cycle $\geq$ 98%) |
| TM3 | Highest channel | Keep the EUT works in continuously transmitting mode with GFSK modulation.(Duty cycle $\geq$ 98%) |

## 2.4 Description of Support Units

| Title   | Manufacturer | Model No. | Serial No. |
|---------|--------------|-----------|------------|
| Battery | N/A          | DC 12v    | /          |

## 2.5 Equipments Used During The Test

| Occupied Bandwidth                  |                                                    |                     |              |            |              |
|-------------------------------------|----------------------------------------------------|---------------------|--------------|------------|--------------|
| Equipment                           | Manufacturer                                       | Model No            | Inventory No | Cal Date   | Cal Due Date |
| RF Test Software                    | TACHOY                                             | RTS-01              | V2.0.0.0     | /          | /            |
| High Pass filter                    | ZHINAN                                             | OQHPF1-M1.5-18G-224 | 6210075      | /          | /            |
| Power divider                       | MIDEWEST                                           | PWD-2533            | SMA-79       | 2023-05-11 | 2026-05-10   |
| DC power                            | HP                                                 | 66311B              | 38444359     | /          | /            |
| RF Sensor Unit                      | Tachoy Information Technology(she nzheng) Co.,Ltd. | TR1029-2            | 000001       | /          | /            |
| Wideband radio communication tester | R&S                                                | CMW500              | 113410       | 2023-06-13 | 2024-06-12   |
| Vector signal generator             | Keysight                                           | N5181A              | MY48180415   | 2022-12-10 | 2023-12-09   |
| Signal generator                    | Keysight                                           | N5182A              | MY50143455   | 2022-12-29 | 2023-12-28   |
| Spectrum Analyzer                   | Keysight                                           | N9020A              | MY53420323   | 2022-12-29 | 2023-12-28   |

### Field strength of fundamental Band edge emissions (Radiated) Emissions in frequency bands (below 1GHz) Emissions in frequency bands (above 1GHz)

| Equipment                           | Manufacturer   | Model No            | Inventory No           | Cal Date   | Cal Due Date |
|-------------------------------------|----------------|---------------------|------------------------|------------|--------------|
| EMI Test software                   | Farad          | EZ -EMC             | V1.1.42                | /          | /            |
| Positioning Controller              | /              | MF-7802             | /                      | /          | /            |
| High Pass filter                    | ZHINAN         | OQHPF1-M1.5-18G-224 | 6210075                | /          | /            |
| Amplifier(18-40G)                   | COM-POWER      | AH-1840             | 10100008-1             | 2022-04-05 | 2025-04-04   |
| Horn antenna                        | COM-POWER      | AH-1840 (18-40G)    | 10100008               | 2023-04-05 | 2025-04-04   |
| Loop antenna                        | ZHINAN         | ZN30900C            | ZN30900C               | 2021-07-05 | 2024-07-04   |
| Cable(LF)#2                         | Schwarzbeck    | /                   | /                      | 2023-02-27 | 2024-02-26   |
| Cable(LF)#1                         | Schwarzbeck    | /                   | /                      | 2023-02-27 | 2024-02-26   |
| Cable(HF)#2                         | Schwarzbeck    | AK9515E             | 96250                  | 2023-02-28 | 2024-02-27   |
| Cable(HF)#1                         | Schwarzbeck    | SYV-50-3-1          | /                      | 2023-02-27 | 2024-02-26   |
| Power amplifier(LF)                 | Schwarzbeck    | BBV9743             | 9743-151               | 2023-06-13 | 2024-06-12   |
| Power amplifier(HF)                 | Schwarzbeck    | BBV9718             | 9718-282               | 2023-06-13 | 2024-06-12   |
| Wideband radio communication tester | R&S            | CMW500              | 113410                 | 2023-06-13 | 2024-06-12   |
| Spectrum Analyzer                   | R&S            | FSP30               | 1321.3008K40-101729-jR | 2023-06-14 | 2024-06-13   |
| Horn Antenna                        | Sunol Sciences | DRH-118             | A091114                | 2023-05-13 | 2025-05-12   |
| Broadband Antenna                   | Sunol Sciences | JB6 Antenna         | A090414                | 2023-05-21 | 2025-05-20   |
| Test Receiver                       | R&S            | ESCI                | 102109                 | 2023-06-13 | 2024-06-12   |

## 2.6 Statement Of The Measurement Uncertainty

| Test Item                                                                                                                                            | Measurement Uncertainty |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Conducted Disturbance (0.15~30MHz)                                                                                                                   | $\pm 3.41\text{dB}$     |
| Occupied Bandwidth                                                                                                                                   | $\pm 3.63\%$            |
| RF conducted power                                                                                                                                   | $\pm 0.733\text{dB}$    |
| RF power density                                                                                                                                     | $\pm 0.234\%$           |
| Conducted Spurious emissions                                                                                                                         | $\pm 1.98\text{dB}$     |
| Radiated Emission (Above 1GHz)                                                                                                                       | $\pm 5.46\text{dB}$     |
| Radiated Emission (Below 1GHz)                                                                                                                       | $\pm 5.79\text{dB}$     |
| Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$ . |                         |

## 2.7 Identification of Testing Laboratory

|               |                                                                                                                                        |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Company Name: | Shenzhen POCE Technology Co., Ltd.                                                                                                     |
| Address:      | 101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China |
| Phone Number: | +86-13267178997                                                                                                                        |
| Fax Number:   | 86-755-29113252                                                                                                                        |

### Identification of the Responsible Testing Location

|                                |                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Company Name:                  | Shenzhen POCE Technology Co., Ltd.                                                                                                     |
| Address:                       | 101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China |
| Phone Number:                  | +86-13267178997                                                                                                                        |
| Fax Number:                    | 86-755-29113252                                                                                                                        |
| FCC Registration Number:       | 0032847402                                                                                                                             |
| Designation Number:            | CN1342                                                                                                                                 |
| Test Firm Registration Number: | 778666                                                                                                                                 |
| A2LA Certificate Number:       | 6270.01                                                                                                                                |

## 2.8 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by POCE and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

### 3 Evaluation Results (Evaluation)

#### 3.1 Antenna requirement

|                   |                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

##### 3.1.1 Conclusion:



ANT

## 4 Radio Spectrum Matter Test Results (RF)

### 4.1 Occupied Bandwidth

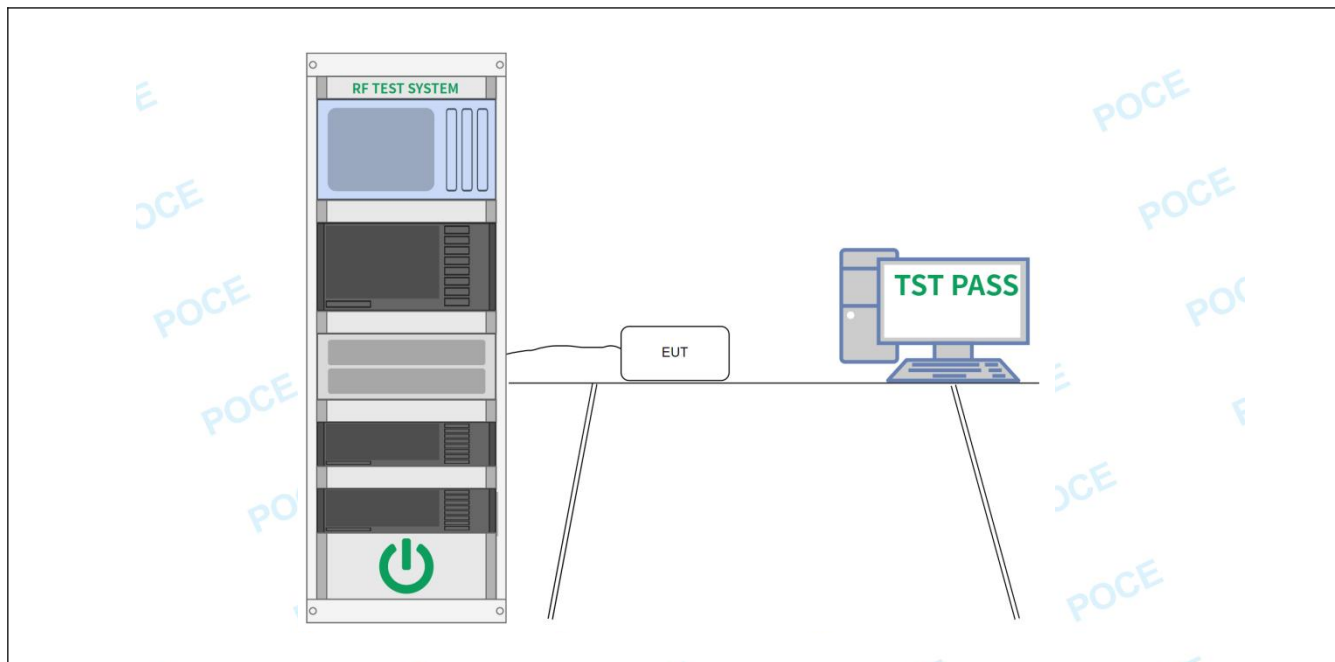
|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | 47 CFR 15.215(c)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Test Limit:       | Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Test Method:      | ANSI C63.10-2013, section 6.9.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Procedure:        | <p>a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.</p> <p>b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.</p> <p>c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than <math>[10 \log (OBW/RBW)]</math> below the reference level. Specific guidance is given in 4.1.5.2.</p> <p>d) Steps a) through c) might require iteration to adjust within the specified tolerances.</p> <p>e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.</p> <p>f) Set detection mode to peak and trace mode to max hold.</p> <p>g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).</p> <p>h) Determine the “-xx dB down amplitude” using <math>[(\text{reference value}) - xx]</math>. Alternatively, this calculation may be made by using the marker-delta function of the instrument.</p> <p>i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).</p> <p>j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-xx dB down amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “-xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.</p> <p>k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).</p> |

#### 4.1.1 E.U.T. Operation:

|                        |         |           |        |                       |         |
|------------------------|---------|-----------|--------|-----------------------|---------|
| Operating Environment: |         |           |        |                       |         |
| Temperature:           | 22.2 °C | Humidity: | 52.2 % | Atmospheric Pressure: | 102 kPa |

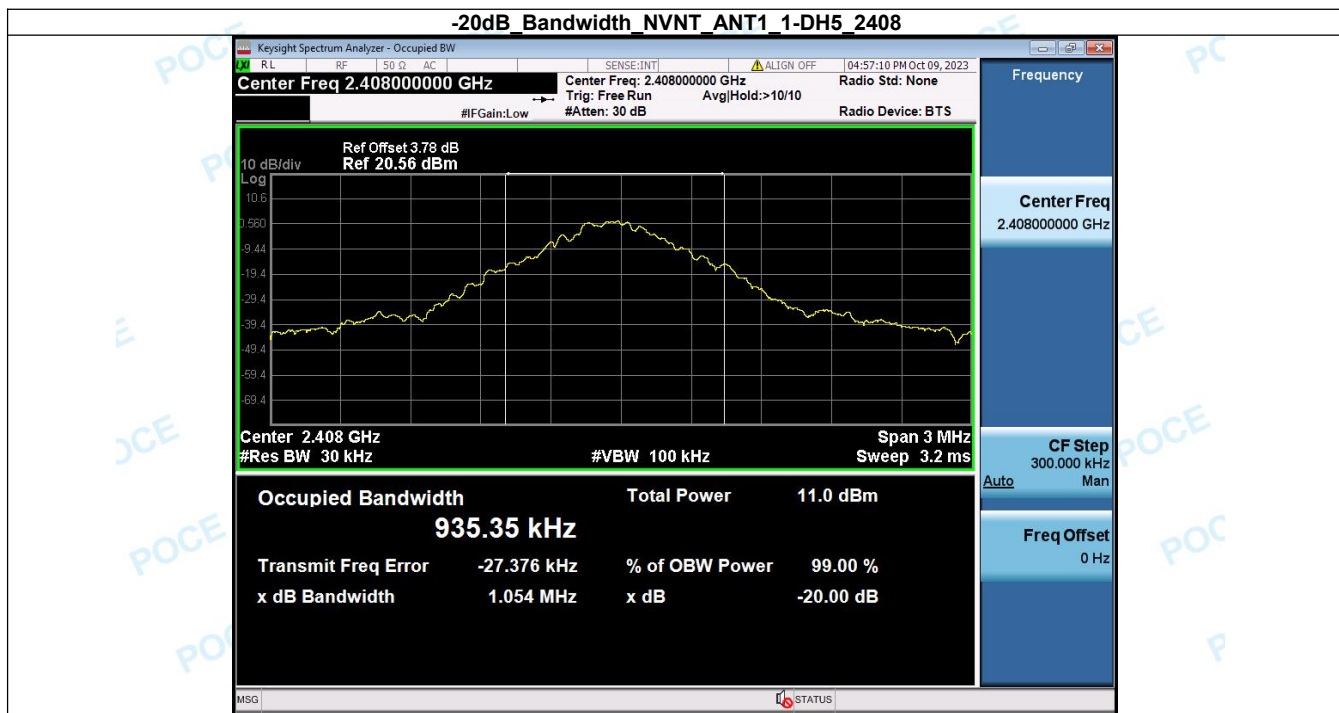
|                  |               |
|------------------|---------------|
| Pre test mode:   | TM1, TM2, TM3 |
| Final test mode: | TM1, TM2, TM3 |

#### 4.1.2 Test Setup Diagram:

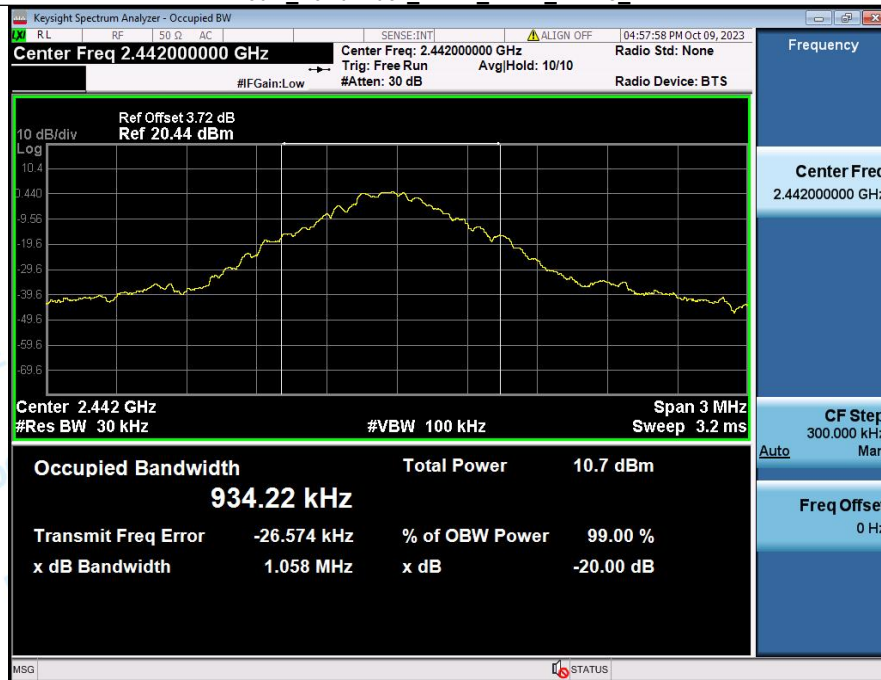


#### 4.1.3 Test Data:

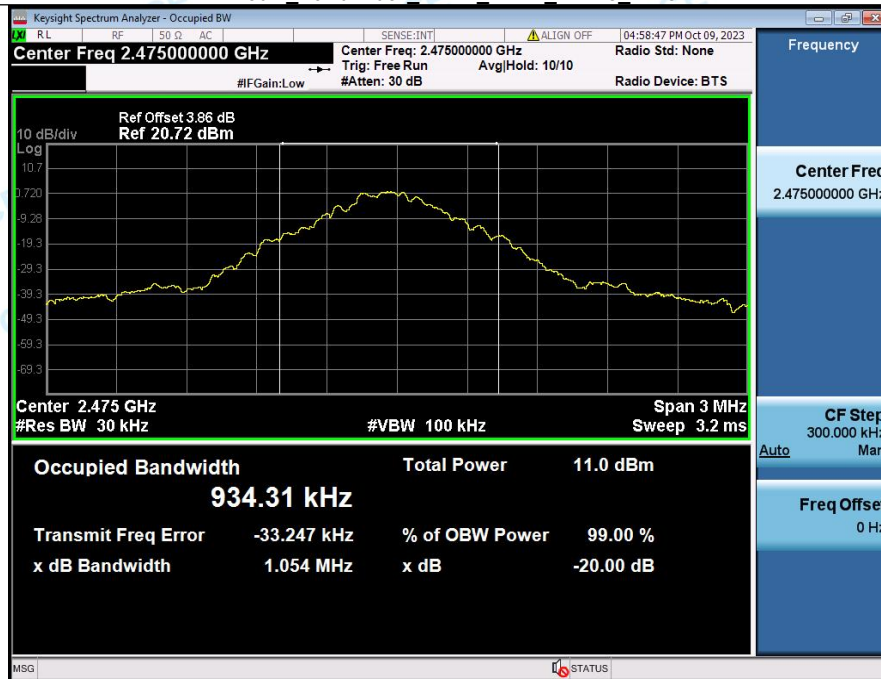
| Condition | Antenna | Modulation | Frequency (MHz) | -20dB BW(MHz) | if larger than CFS |
|-----------|---------|------------|-----------------|---------------|--------------------|
| NVNT      | ANT1    | 1-DH5      | 2408.00         | 1.054         | Yes                |
| NVNT      | ANT1    | 1-DH5      | 2442.00         | 1.058         | Yes                |
| NVNT      | ANT1    | 1-DH5      | 2475.00         | 1.054         | Yes                |



### -20dB\_Bandwidth\_NVNT\_ANT1\_1-DH5\_2442



### -20dB\_Bandwidth\_NVNT\_ANT1\_1-DH5\_2475



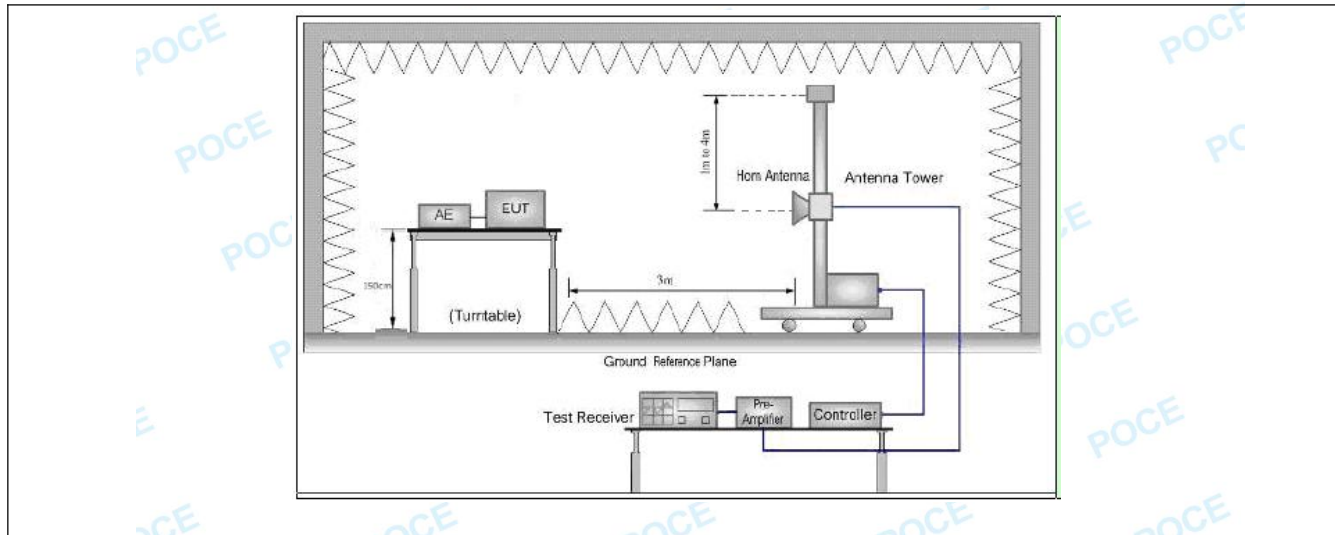
## 4.2 Field strength of fundamental

| Test Requirement:     | <p>Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:</p> <table><tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr><tr><td>902-928 MHz</td><td>50</td><td>500</td></tr><tr><td>2400-2483.5 MHz</td><td>50</td><td>500</td></tr><tr><td>5725-5875 MHz</td><td>50</td><td>500</td></tr><tr><td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr></table> <p>The field strength of emissions in this band shall not exceed 2500 millivolts/meter.</p> | Fundamental frequency                          | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) | 902-928 MHz | 50 | 500 | 2400-2483.5 MHz | 50 | 500 | 5725-5875 MHz | 50 | 500 | 24.0-24.25 GHz | 250 | 2500 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------|------------------------------------------------|-------------|----|-----|-----------------|----|-----|---------------|----|-----|----------------|-----|------|
| Fundamental frequency | Field strength of fundamental (millivolts/meter)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Field strength of harmonics (microvolts/meter) |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |
| 902-928 MHz           | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 500                                            |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |
| 2400-2483.5 MHz       | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 500                                            |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |
| 5725-5875 MHz         | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 500                                            |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |
| 24.0-24.25 GHz        | 250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2500                                           |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |
| Test Method:          | ANSI C63.10-2013 section 6.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |
| Procedure:            | ANSI C63.10-2013 section 6.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |

### 4.2.1 E.U.T. Operation:

|                        |         |               |        |                       |         |
|------------------------|---------|---------------|--------|-----------------------|---------|
| Operating Environment: |         |               |        |                       |         |
| Temperature:           | 22.2 °C | Humidity:     | 52.2 % | Atmospheric Pressure: | 102 kPa |
| Pre test mode:         |         | TM1, TM2, TM3 |        |                       |         |
| Final test mode:       |         | TM1, TM2, TM3 |        |                       |         |

### 4.2.2 Test Setup Diagram:



#### 4.2.3 Test Data:

| Frequency (MHz) | Emission (dBUV/m) | PK/AV | Ant. Pol. | Limits PK/AV (dBUV/m) | Margin (dB) |
|-----------------|-------------------|-------|-----------|-----------------------|-------------|
| 2408            | 92.51             | Peak  | H         | 114                   | -21.49      |
| 2408            | 84.57             | AV    | H         | 94                    | -9.43       |
| 2408            | 96.58             | Peak  | V         | 114                   | -17.42      |
| 2408            | 85.32             | AV    | V         | 94                    | -8.68       |
| 2442            | 90.45             | Peak  | H         | 114                   | -23.55      |
| 2442            | 80.41             | AV    | H         | 94                    | -13.59      |
| 2442            | 93.54             | Peak  | V         | 114                   | -20.46      |
| 2442            | 84.54             | AV    | V         | 94                    | -9.46       |
| 2475            | 96.41             | Peak  | H         | 114                   | -17.59      |
| 2475            | 84.74             | AV    | H         | 94                    | -9.26       |
| 2475            | 91.27             | Peak  | V         | 114                   | -22.73      |
| 2475            | 83.65             | AV    | V         | 94                    | -10.35      |

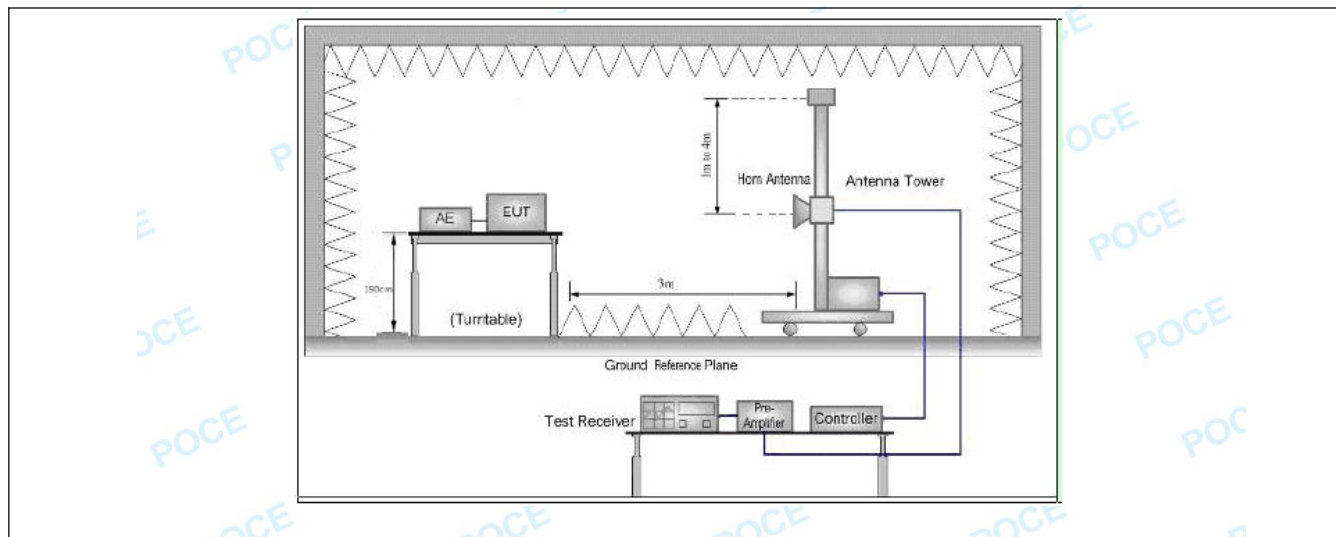
### 4.3 Band edge emissions (Radiated)

|                   |                                                                                                                                                                                                                                                                                                                                                 |                                   |                               |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------|
| Test Requirement: | Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.                                                                                        |                                   |                               |
| Test Limit:       | Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.                                                                                        |                                   |                               |
|                   | Frequency (MHz)                                                                                                                                                                                                                                                                                                                                 | Field strength (microvolts/meter) | Measurement distance (meters) |
|                   | 0.009-0.490                                                                                                                                                                                                                                                                                                                                     | 2400/F(kHz)                       | 300                           |
|                   | 0.490-1.705                                                                                                                                                                                                                                                                                                                                     | 24000/F(kHz)                      | 30                            |
|                   | 1.705-30.0                                                                                                                                                                                                                                                                                                                                      | 30                                | 30                            |
|                   | 30-88                                                                                                                                                                                                                                                                                                                                           | 100 **                            | 3                             |
|                   | 88-216                                                                                                                                                                                                                                                                                                                                          | 150 **                            | 3                             |
|                   | 216-960                                                                                                                                                                                                                                                                                                                                         | 200 **                            | 3                             |
|                   | Above 960                                                                                                                                                                                                                                                                                                                                       | 500                               | 3                             |
|                   | ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. |                                   |                               |
| Test Method:      | ANSI C63.10-2013 section 6.6.4                                                                                                                                                                                                                                                                                                                  |                                   |                               |
| Procedure:        | ANSI C63.10-2013 section 6.6.4                                                                                                                                                                                                                                                                                                                  |                                   |                               |

#### 4.3.1 E.U.T. Operation:

|                        |          |           |        |                       |         |
|------------------------|----------|-----------|--------|-----------------------|---------|
| Operating Environment: |          |           |        |                       |         |
| Temperature:           | 22.2 °C  | Humidity: | 52.2 % | Atmospheric Pressure: | 102 kPa |
| Pre test mode:         | TM1, TM3 |           |        |                       |         |
| Final test mode:       | TM1, TM3 |           |        |                       |         |

#### 4.3.2 Test Setup Diagram:



### 4.3.3 Test Data:

TM1/ Band: 2.4G / BW: 1.2 / CH: L

| Frequency | Meter Reading | Factor | Emission Level | Limits   | Over   | Detector Type | Ant. Pol. |
|-----------|---------------|--------|----------------|----------|--------|---------------|-----------|
| (MHz)     | (dBμV)        | (dB)   | (dBμV/m)       | (dBμV/m) | (dB)   |               | H/V       |
| 2390      | 60.68         | -7.53  | 53.15          | 74       | -20.85 | peak          | H         |
| 2390      | 43.90         | -7.53  | 36.37          | 54       | -17.63 | AVG           | H         |
| 2400      | 64.69         | -7.53  | 57.16          | 74       | -16.84 | peak          | H         |
| 2400      | 47.09         | -7.53  | 39.56          | 54       | -14.44 | AVG           | H         |
| 2390      | 60.51         | -7.38  | 53.13          | 74       | -20.87 | peak          | V         |
| 2390      | 44.51         | -7.38  | 37.13          | 54       | -16.87 | AVG           | V         |
| 2400      | 63.73         | -7.38  | 56.35          | 74       | -17.65 | peak          | V         |
| 2400      | 45.01         | -7.38  | 37.63          | 54       | -16.37 | AVG           | V         |

TM3 / Band: 2.4G / BW: 1.2 / CH: L

| Frequency | Meter Reading | Factor | Emission Level | Limits   | Over   | Detector Type | Ant. Pol. |
|-----------|---------------|--------|----------------|----------|--------|---------------|-----------|
| (MHz)     | (dBμV)        | (dB)   | (dBμV/m)       | (dBμV/m) | (dB)   |               | H/V       |
| 2483.5    | 59.52         | -6.47  | 53.05          | 74       | -20.95 | peak          | H         |
| 2483.5    | 45.57         | -6.47  | 39.10          | 54       | -14.90 | AVG           | H         |
| 2500      | 65.73         | -6.43  | 59.30          | 74       | -14.70 | peak          | H         |
| 2500      | 49.50         | -6.43  | 43.07          | 54       | -10.93 | AVG           | H         |
| 2483.5    | 59.04         | -6.47  | 52.57          | 74       | -21.43 | peak          | V         |
| 2483.5    | 46.00         | -6.47  | 39.53          | 54       | -14.47 | AVG           | V         |
| 2500      | 62.05         | -6.43  | 55.62          | 74       | -18.38 | peak          | V         |
| 2500      | 49.13         | -6.43  | 42.70          | 54       | -11.30 | AVG           | V         |

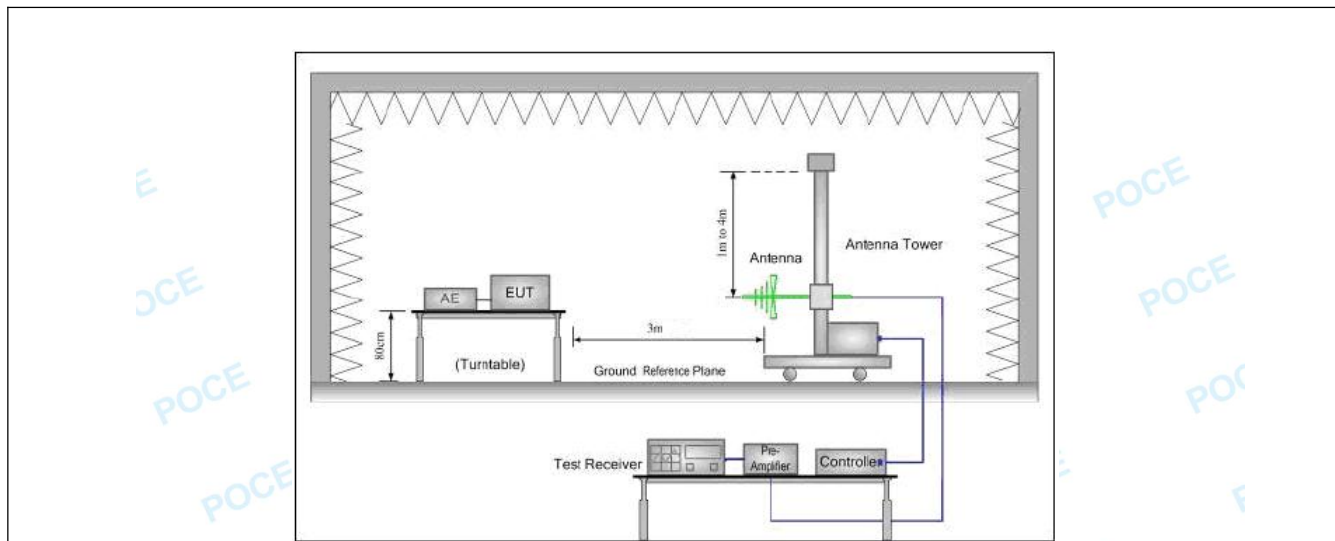
#### 4.4 Emissions in frequency bands (below 1GHz)

| Test Requirement:     | 47 CFR 15.249(a)<br>47 CFR 15.249(d)<br>47 CFR 15.249(e)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------------|--------------------------------------------------|------------------------------------------------|-------------|----|-----|-----------------|----|-----|---------------|----|-----|----------------|-----|------|-----------------|-----------------------------------|-------------------------------|-------------|-------------|-----|-------------|--------------|----|------------|----|----|-------|--------|---|--------|--------|---|---------|--------|---|-----------|-----|---|
| Test Limit:           | <p>Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:</p> <table border="1"> <thead> <tr> <th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr> </thead> <tbody> <tr> <td>902-928 MHz</td><td>50</td><td>500</td></tr> <tr> <td>2400-2483.5 MHz</td><td>50</td><td>500</td></tr> <tr> <td>5725-5875 MHz</td><td>50</td><td>500</td></tr> <tr> <td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr> </tbody> </table> <p>Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.</p> <table border="1"> <thead> <tr> <th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr> </thead> <tbody> <tr> <td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr> <tr> <td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr> <tr> <td>1.705-30.0</td><td>30</td><td>30</td></tr> <tr> <td>30-88</td><td>100 **</td><td>3</td></tr> <tr> <td>88-216</td><td>150 **</td><td>3</td></tr> <tr> <td>216-960</td><td>200 **</td><td>3</td></tr> <tr> <td>Above 960</td><td>500</td><td>3</td></tr> </tbody> </table> <p>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.</p> <p>As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.</p> |                                                | Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) | 902-928 MHz | 50 | 500 | 2400-2483.5 MHz | 50 | 500 | 5725-5875 MHz | 50 | 500 | 24.0-24.25 GHz | 250 | 2500 | Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) | 0.009-0.490 | 2400/F(kHz) | 300 | 0.490-1.705 | 24000/F(kHz) | 30 | 1.705-30.0 | 30 | 30 | 30-88 | 100 ** | 3 | 88-216 | 150 ** | 3 | 216-960 | 200 ** | 3 | Above 960 | 500 | 3 |
| Fundamental frequency | Field strength of fundamental (millivolts/meter)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Field strength of harmonics (microvolts/meter) |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 902-928 MHz           | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 500                                            |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 2400-2483.5 MHz       | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 500                                            |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 5725-5875 MHz         | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 500                                            |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 24.0-24.25 GHz        | 250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2500                                           |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| Frequency (MHz)       | Field strength (microvolts/meter)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Measurement distance (meters)                  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 0.009-0.490           | 2400/F(kHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 300                                            |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 0.490-1.705           | 24000/F(kHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30                                             |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 1.705-30.0            | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 30                                             |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 30-88                 | 100 **                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3                                              |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 88-216                | 150 **                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3                                              |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 216-960               | 200 **                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3                                              |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| Above 960             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3                                              |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| Test Method:          | ANSI C63.10-2013 section 6.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| Procedure:            | ANSI C63.10-2013 section 6.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |

##### 4.4.1 E.U.T. Operation:

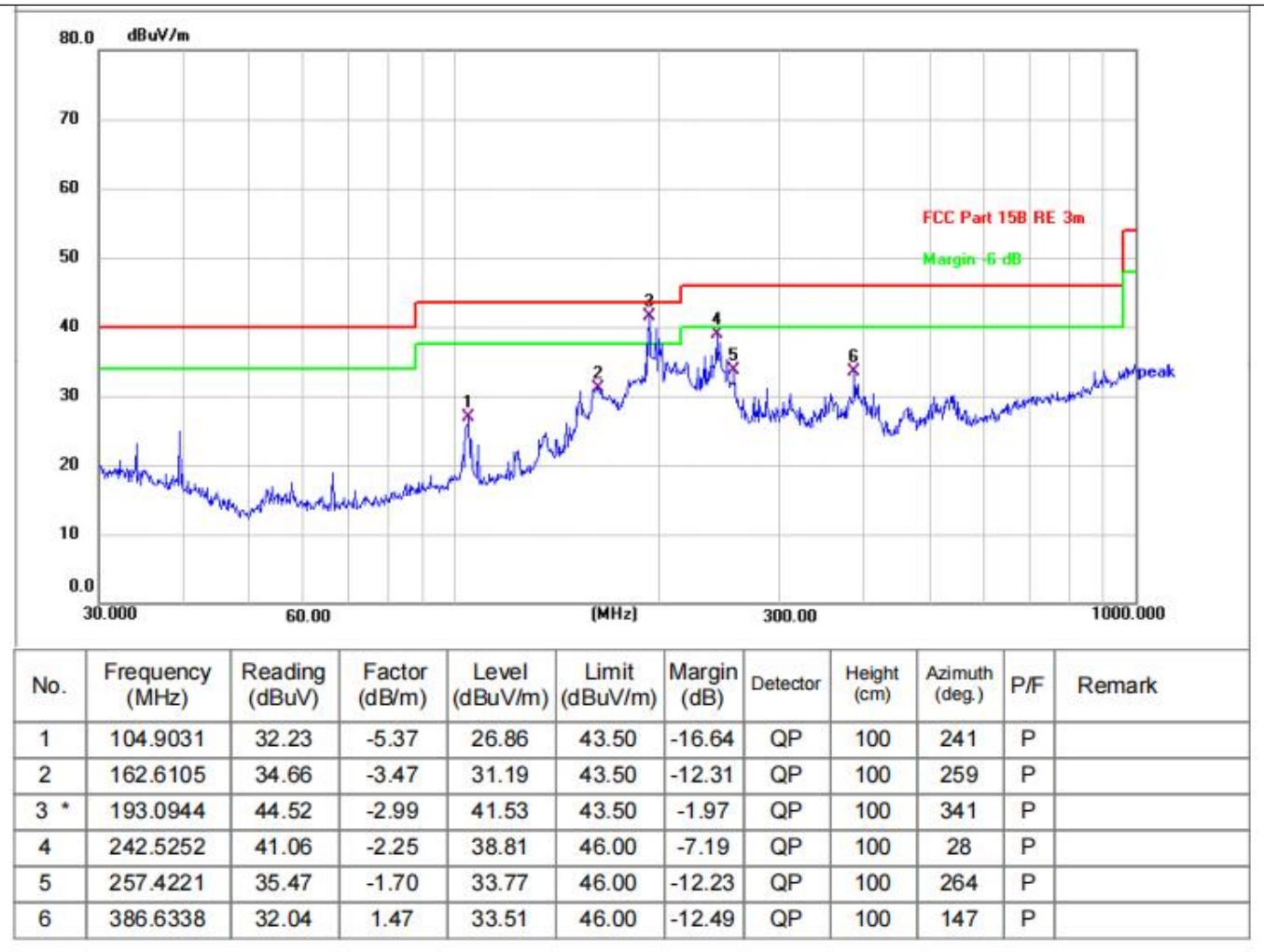
|                        |         |           |        |                       |         |
|------------------------|---------|-----------|--------|-----------------------|---------|
| Operating Environment: |         |           |        |                       |         |
| Temperature:           | 22.2 °C | Humidity: | 52.2 % | Atmospheric Pressure: | 102 kPa |
| Pre test mode:         | TM1     |           |        |                       |         |
| Final test mode:       | TM1     |           |        |                       |         |

#### 4.4.2 Test Setup Diagram:



#### 4.4.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2.4G / BW: 1.2 / CH: L



TM1 / Polarization: Vertical / Band: 2.4G / BW: 1.2 / CH: L



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-------------|----------------|-----|--------|
| 1   | 134.5591        | 36.88          | -4.31         | 32.57          | 43.50          | -10.93      | QP       | 100         | 289            | P   |        |
| 2   | 153.2003        | 37.49          | -3.67         | 33.82          | 43.50          | -9.68       | QP       | 100         | 345            | P   |        |
| 3   | 169.0053        | 40.47          | -3.34         | 37.13          | 43.50          | -6.37       | QP       | 100         | 146            | P   |        |
| 4 * | 197.8928        | 45.11          | -2.96         | 42.15          | 43.50          | -1.35       | QP       | 100         | 47             | P   |        |
| 5   | 245.0900        | 36.85          | -2.20         | 34.65          | 46.00          | -11.35      | QP       | 100         | 241            | P   |        |
| 6   | 955.4381        | 23.59          | 9.21          | 32.80          | 46.00          | -13.20      | QP       | 100         | 241            | P   |        |

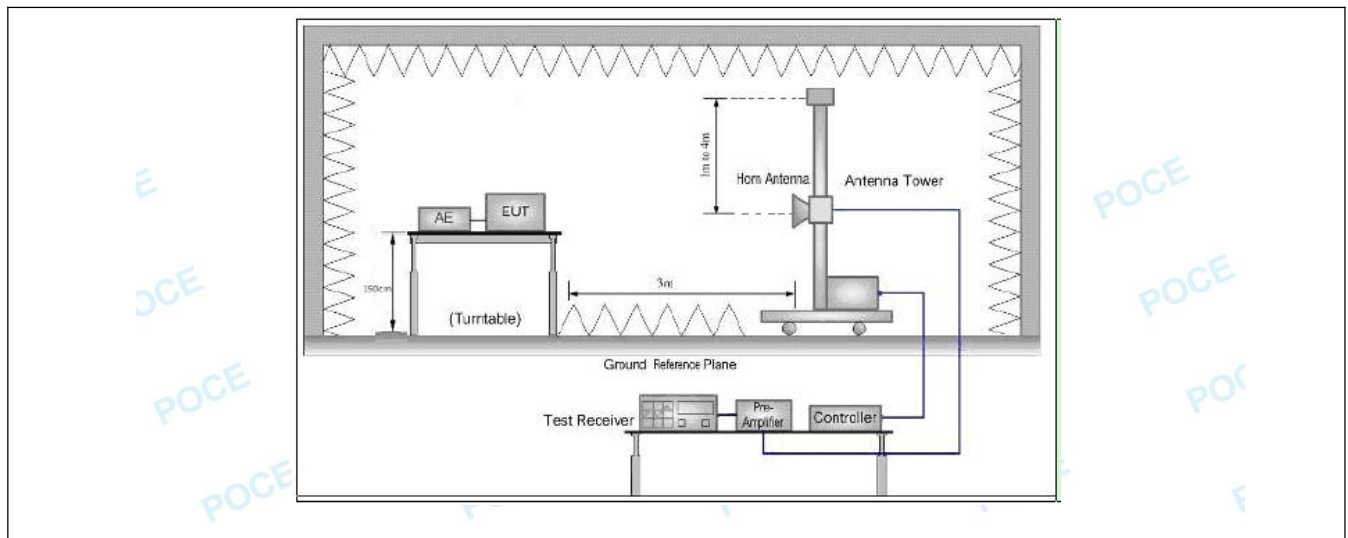
## 4.5 Emissions in frequency bands (above 1GHz)

| Test Requirement:     | 47 CFR 15.249(a)<br>47 CFR 15.249(d)<br>47 CFR 15.249(e)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--|-----------------------|--------------------------------------------------|------------------------------------------------|-------------|----|-----|-----------------|----|-----|---------------|----|-----|----------------|-----|------|-----------------|-----------------------------------|-------------------------------|-------------|-------------|-----|-------------|--------------|----|------------|----|----|-------|--------|---|--------|--------|---|---------|--------|---|-----------|-----|---|
| Test Limit:           | <p>Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:</p> <table><tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr><tr><td>902-928 MHz</td><td>50</td><td>500</td></tr><tr><td>2400-2483.5 MHz</td><td>50</td><td>500</td></tr><tr><td>5725-5875 MHz</td><td>50</td><td>500</td></tr><tr><td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr></table> <p>Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.</p> <table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> <p>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.</p> <p>As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.</p> |                                                |  | Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) | 902-928 MHz | 50 | 500 | 2400-2483.5 MHz | 50 | 500 | 5725-5875 MHz | 50 | 500 | 24.0-24.25 GHz | 250 | 2500 | Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) | 0.009-0.490 | 2400/F(kHz) | 300 | 0.490-1.705 | 24000/F(kHz) | 30 | 1.705-30.0 | 30 | 30 | 30-88 | 100 ** | 3 | 88-216 | 150 ** | 3 | 216-960 | 200 ** | 3 | Above 960 | 500 | 3 |
| Fundamental frequency | Field strength of fundamental (millivolts/meter)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Field strength of harmonics (microvolts/meter) |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 902-928 MHz           | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 500                                            |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 2400-2483.5 MHz       | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 500                                            |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 5725-5875 MHz         | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 500                                            |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 24.0-24.25 GHz        | 250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2500                                           |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| Frequency (MHz)       | Field strength (microvolts/meter)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Measurement distance (meters)                  |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 0.009-0.490           | 2400/F(kHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 300                                            |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 0.490-1.705           | 24000/F(kHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 30                                             |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 1.705-30.0            | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 30                                             |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 30-88                 | 100 **                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3                                              |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 88-216                | 150 **                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3                                              |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| 216-960               | 200 **                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3                                              |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| Above 960             | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3                                              |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| Test Method:          | ANSI C63.10-2013 section 6.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |
| Procedure:            | ANSI C63.10-2013 section 6.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                |  |                       |                                                  |                                                |             |    |     |                 |    |     |               |    |     |                |     |      |                 |                                   |                               |             |             |     |             |              |    |            |    |    |       |        |   |        |        |   |         |        |   |           |     |   |

### 4.5.1 E.U.T. Operation:

|                        |               |           |        |                       |         |
|------------------------|---------------|-----------|--------|-----------------------|---------|
| Operating Environment: |               |           |        |                       |         |
| Temperature:           | 22.2 °C       | Humidity: | 52.2 % | Atmospheric Pressure: | 102 kPa |
| Pre test mode:         | TM1, TM2, TM3 |           |        |                       |         |
| Final test mode:       | TM1, TM2, TM3 |           |        |                       |         |

#### 4.5.2 Test Setup Diagram:



#### 4.5.3 Test Data:

TM1 / Band: 2.4G / BW: 1.2 / CH: L

| Frequency | Meter Reading | Factor | Emission Level | Limits   | Over   | Detector Type | Ant. Pol. |
|-----------|---------------|--------|----------------|----------|--------|---------------|-----------|
| (MHz)     | (dBμV)        | (dB)   | (dBμV/m)       | (dBμV/m) | (dB)   |               | H/V       |
| 4816      | 52.48         | -0.9   | 51.58          | 74       | -22.42 | peak          | H         |
| 4816      | 38.76         | -0.9   | 37.86          | 54       | -16.14 | AVG           | H         |
| 7224      | 53.52         | 4.13   | 57.65          | 74       | -16.35 | peak          | H         |
| 7224      | 39.40         | 4.13   | 43.53          | 54       | -10.47 | AVG           | H         |
| 9632      | 53.63         | 8.09   | 61.72          | 74       | -12.28 | peak          | H         |
| 9632      | 41.59         | 8.09   | 49.68          | 54       | -4.32  | AVG           | H         |
| 4816      | 52.93         | -0.9   | 52.03          | 74       | -21.97 | peak          | V         |
| 4816      | 38.49         | -0.9   | 37.59          | 54       | -16.41 | AVG           | V         |
| 7224      | 55.15         | 4.13   | 59.28          | 74       | -14.72 | peak          | V         |
| 7224      | 40.00         | 4.13   | 44.13          | 54       | -9.87  | AVG           | V         |
| 9632      | 56.43         | 8.09   | 64.52          | 74       | -9.48  | peak          | V         |
| 9632      | 42.23         | 8.09   | 50.32          | 54       | -3.68  | AVG           | V         |

TM2 / Band: 2.4G / BW: 1.2 / CH: M

| Frequency | Meter Reading | Factor | Emission Level | Limits   | Over   | Detector Type | Ant. Pol. |
|-----------|---------------|--------|----------------|----------|--------|---------------|-----------|
| (MHz)     | (dBμV)        | (dB)   | (dBμV/m)       | (dBμV/m) | (dB)   |               | H/V       |
| 4884      | 51.45         | -0.64  | 50.81          | 74       | -23.19 | peak          | H         |
| 4884      | 38.52         | -0.64  | 37.88          | 54       | -16.12 | AVG           | H         |
| 7326      | 54.01         | 4.31   | 58.32          | 74       | -15.68 | peak          | H         |
| 7326      | 39.62         | 4.31   | 43.93          | 54       | -10.07 | AVG           | H         |
| 9768      | 54.18         | 8.09   | 62.27          | 74       | -11.73 | peak          | H         |
| 9768      | 42.06         | 8.09   | 50.15          | 54       | -3.85  | AVG           | H         |
| 4884      | 51.33         | -0.64  | 50.69          | 74       | -23.31 | peak          | V         |
| 4884      | 39.45         | -0.64  | 38.81          | 54       | -15.19 | AVG           | V         |

|      |       |      |       |    |        |      |   |
|------|-------|------|-------|----|--------|------|---|
| 7326 | 53.05 | 4.31 | 57.36 | 74 | -16.64 | peak | V |
| 7326 | 41.58 | 4.31 | 45.89 | 54 | -8.11  | AVG  | V |
| 9768 | 54.91 | 8.09 | 63.00 | 74 | -11.00 | peak | V |
| 9768 | 41.61 | 8.09 | 49.70 | 54 | -4.30  | AVG  | V |

| TM2 / Band: 2.4G / BW: 1.2 / CH: M |               |        |                |          |        |               |           |
|------------------------------------|---------------|--------|----------------|----------|--------|---------------|-----------|
| Frequency                          | Meter Reading | Factor | Emission Level | Limits   | Over   | Detector Type | Ant. Pol. |
| (MHz)                              | (dBμV)        | (dB)   | (dBμV/m)       | (dBμV/m) | (dB)   |               | H/V       |
| 4950                               | 52.94         | -0.37  | 52.57          | 74       | -21.43 | peak          | H         |
| 4950                               | 39.04         | -0.37  | 38.67          | 54       | -15.33 | AVG           | H         |
| 7425                               | 54.95         | 4.49   | 59.44          | 74       | -14.56 | peak          | H         |
| 7425                               | 41.24         | 4.49   | 45.73          | 54       | -8.27  | AVG           | H         |
| 9900                               | 53.12         | 8.08   | 61.20          | 74       | -12.80 | peak          | H         |
| 9900                               | 41.93         | 8.08   | 50.01          | 54       | -3.99  | AVG           | H         |
| 4950                               | 52.35         | -0.37  | 51.98          | 74       | -22.02 | peak          | V         |
| 4950                               | 38.36         | -0.37  | 37.99          | 54       | -16.01 | AVG           | V         |
| 7425                               | 52.82         | 4.49   | 57.31          | 74       | -16.69 | peak          | V         |
| 7425                               | 39.15         | 4.49   | 43.64          | 54       | -10.36 | AVG           | V         |
| 9900                               | 55.51         | 8.08   | 63.59          | 74       | -10.41 | peak          | V         |
| 9900                               | 40.16         | 8.08   | 48.24          | 54       | -5.76  | AVG           | V         |

## 5 TEST SETUP PHOTOS

Please refer to Setup Photo file

## 6 PHOTOS OF THE EUT

Please refer to external photos file and internal photos file

\*\*\*\*\* End of Report \*\*\*\*\*