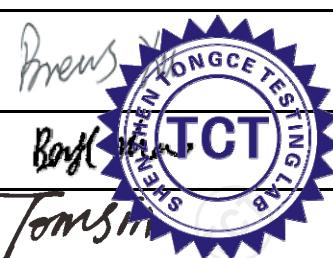


TEST REPORT

| | |
|--------------------------------------|---|
| FCC ID. | NBGFS197R |
| Test Report No. | TCT231226E010 |
| Date of issue. | Feb. 09, 2024 |
| Testing laboratory | SHENZHEN TONGCE TESTING LAB |
| Testing location/ address: | TCT Testing Industrial Park Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District Shenzhen, Guangdong, 518103, People's Republic of China |
| Applicant's name..... | HELLA GmbH & Co. KGaA |
| Address..... | Rixbecker Strasse 75, Lippstadt D-59552, Germany |
| Manufacturer's name ... | HELLA GmbH & Co. KGaA |
| Address..... | Rixbecker Strasse 75, Lippstadt D-59552, Germany |
| Factory's name | HELLA GmbH & Co. KGaA |
| Address..... | Römerstraße 66 59075 Hamm Germany |
| Standard(s) | FCC CFR Title 47 Part 15 Subpart F |
| Product Name..... | Passive Entry-Passive Start Radio Identification Device |
| Trade Mark | HELLA |
| Model/Type reference..... | FS197R |
| Rating(s) | DC 3V |
| Date of receipt of test item | Dec. 26, 2023 |
| Date (s) of performance of test..... | Dec. 26, 2023 - Feb. 09, 2024 |
| Tested by (+signature) ... | Brews Xu |
| Check by (+signature).... | Beryl Zhao |
| Approved by (+signature): | Tomsin |


General disclaimer:

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Appendix A: Photographs of Test Setup

Appendix B: Photographs of EUT

1. General Product Information

1.1. EUT description

| | |
|------------------------------------|---|
| Product Name | Passive Entry-Passive Start Radio Identification Device |
| Model/Type reference | FS197R |
| Sample Number | TCT231226E010-0101 |
| Operation Frequency | 6988.8MHz, 7488MHz |
| Modulation Technology | BPM-BPSK |
| Antenna Type | PCB Integrated Monopole Antenna |
| Antenna Gain | 0dBi |
| Rating(s) | DC 3V |

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

None.

1.3. Operation Frequency

| Channel Number | Center frequencies |
|----------------|--------------------|
| 6 | 6988.8 MHz |
| 8 | 7488 MHz |

2. Test Result Summary

| Requirement | CFR 47 Section | Result |
|---------------------|---|--------|
| Antenna requirement | §15.203 & §15.519(a)(2) | PASS |
| Conduction Emission | §15.207 | N/A |
| UWB Bandwidth | §15.503(a) & §15.519(b) & §15.503(d) | PASS |
| Dwell Time | §15.519(a)(1) | PASS |
| Spurious Emission | §15.519(c) | PASS |
| EIRP | §15.519(e) & §15.521(g) | PASS |

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

3. General Information

3.1. Test environment and mode

| Operating Environment: | |
|------------------------|--|
| Condition | Radiated Emission |
| Temperature: | 25.0 °C |
| Humidity: | 55 % RH |
| Atmospheric Pressure: | 1010 mbar |
| Test Mode: | |
| Engineering mode: | Keep the EUT in transmitting by select channel and modulations |

The sample was placed 0.8m & 1.5m for the measurement below & above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case(Z axis) are shown in Test Results of the following pages.

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Equipment | Model No. | Serial No. | FCC ID | Trade Name |
|-----------|-----------|------------|--------|------------|
| / | / | / | / | / |

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

4. Facilities and Accreditations

4.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

SHENZHEN TONGCE TESTING LAB

CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB

Address: TCT Testing Industrial Park, Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

4.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

| No. | Item | MU |
|-----|---|----------------|
| 1 | Conducted Emission | ± 3.10 dB |
| 2 | RF power, conducted | ± 0.12 dB |
| 3 | Spurious emissions, conducted | ± 0.11 dB |
| 4 | Occupied Bandwidth | ± 0.25 KHz |
| 5 | All emissions, radiated(<1 GHz) | ± 4.56 dB |
| 6 | All emissions, radiated(1 GHz - 18 GHz) | ± 4.22 dB |
| 7 | All emissions, radiated(18 GHz- 40 GHz) | ± 4.36 dB |

5. Test Results and Measurement Data

5.1. Antenna requirement

| | |
|---|--|
| Standard requirement: | FCC Part15 C Section 15.203 & 15.519(a)(2) |
| 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. | |
| 15.519(a)(2) requirement: The use of antennas mounted on outdoor structures, e.g., antennas mounted on the outside of a building or on a telephone pole, or any fixed outdoors infrastructure is prohibited. Antennas may be mounted only on the hand held UWB device. | |

E.U.T Antenna:

The antenna is PCB Integrated Monopole Antenna which permanently attached, and the best case gain of the antenna is 0dBi.

5.2. Conducted Emission

5.2.1. Test Specification

| Test Requirement: | FCC Part15 Section 15.207 | | | | | | | | | | | | | | |
|--------------------------|---|--------------------------|--------------|--|------------|---------|----------|-----------|-----------|-------|----|----|------|----|----|
| Test Method: | ANSI C63.10:2013 | | | | | | | | | | | | | | |
| Frequency Range: | 150 kHz to 30 MHz | | | | | | | | | | | | | | |
| Receiver setup: | RBW=9 kHz, VBW=30 kHz, Sweep time=auto | | | | | | | | | | | | | | |
| Limits: | <table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> | Frequency range (MHz) | Limit (dBuV) | | Quasi-peak | Average | 0.15-0.5 | 66 to 56* | 56 to 46* | 0.5-5 | 56 | 46 | 5-30 | 60 | 50 |
| Frequency range (MHz) | Limit (dBuV) | | | | | | | | | | | | | | |
| | Quasi-peak | Average | | | | | | | | | | | | | |
| 0.15-0.5 | 66 to 56* | 56 to 46* | | | | | | | | | | | | | |
| 0.5-5 | 56 | 46 | | | | | | | | | | | | | |
| 5-30 | 60 | 50 | | | | | | | | | | | | | |
| Test Setup: | <p>Reference Plane</p> <p>Test table/Insulation plane</p> <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p> | | | | | | | | | | | | | | |
| Test Mode: | N/A | | | | | | | | | | | | | | |
| Test Procedure: | <ol style="list-style-type: none"> 1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. | | | | | | | | | | | | | | |
| Test Result: | N/A; The product is powered by battery. | | | | | | | | | | | | | | |

5.3. UWB Bandwidth (10dB Bandwidth)

5.3.1. Test Specification

| | |
|--------------------------|--|
| Test Requirement: | FCC Part 15F Section 15.503(a) |
| Test Method: | ANSI C63.10:2013 |
| Limit: | UWB bandwidth \geq 500MHz; The UWB bandwidth of a device operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz. |
| Test Setup: |  <p>The diagram illustrates the test setup. A green rectangular box labeled "Spectrum Analyzer" is connected to a yellow rectangular box labeled "EUT" via a horizontal line representing a coaxial cable. There is a small white square component on the line between the two boxes.</p> |
| Test Mode: | Refer to item 3.1 |
| Test Procedure: | <ol style="list-style-type: none">1. Set to the maximum power setting and enable the EUT transmit continuously.2. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1MHz. Set the Video bandwidth (VBW) = 3MHz. In order to make an accurate measurement. The 10dB bandwidth must be greater than 500 MHz.3. Measure and record the results in the test report. |
| Test Result: | PASS |

5.3.2. Test Instruments

| RF Test Room | | | | |
|--------------------------|--------------|--------|---------------|-----------------|
| Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | R&S | FSQ40 | 200061 | Jun. 29, 2024 |
| RF cable (9kHz-40GHz) | TCT | RE-06 | N/A | Jun. 29, 2024 |
| Antenna Connector | TCT | RFC-01 | N/A | Jun. 29, 2024 |

5.3.3. Test data

| Test channel | FL (MHz) | FH (MHz) | Fm (MHz) | 10dB Bandwidth (MHz) | Limit (MHz) | Result |
|--------------|----------|----------|----------|----------------------|-------------|--------|
| 6 | 6725 | 7284 | 7106 | 559 | ≥500 | PASS |
| 8 | 7221 | 7759 | 7364 | 538 | | |

Test plots as follows:

Lowest channel

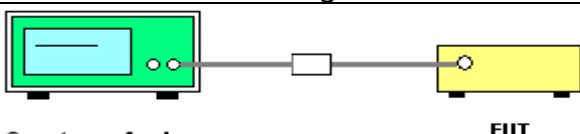


Highest channel



5.4. Dwell Time

5.4.1. Test Specification

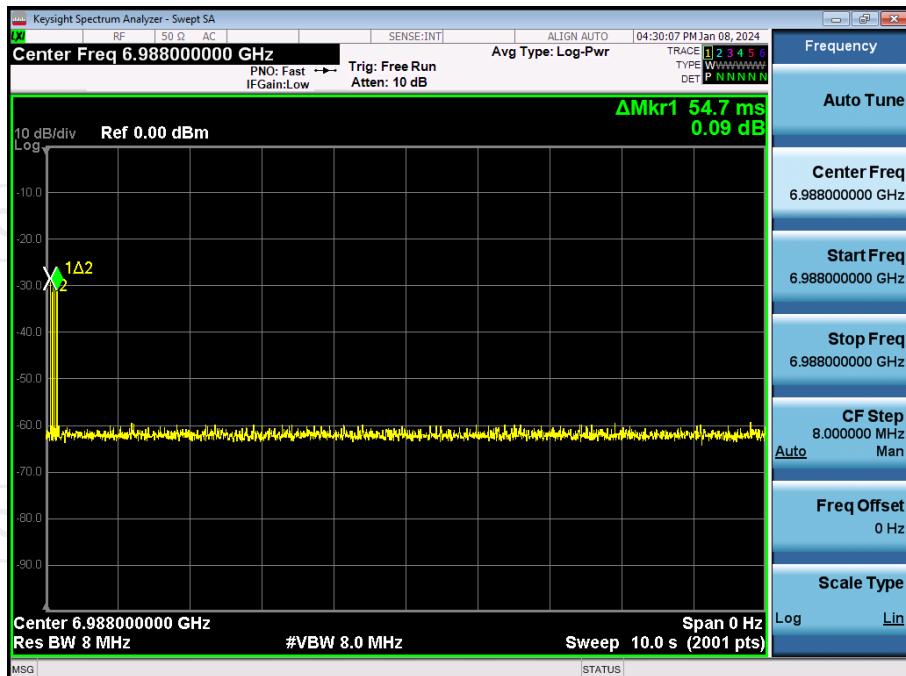
| | |
|--------------------------|---|
| Test Requirement: | FCC Part15F Section 15.519(a)(1) |
| Test Method: | ANSI C63.10:2013 |
| Limit: | The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received |
| Test Setup: |  <p>Spectrum Analyzer EUT</p> |
| Test Mode: | Refer to item 3.1 |
| Test Procedure: | <ol style="list-style-type: none"> 1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 2. Connect establishment EUT and receiver. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW)= 1MHz. Video bandwidth VBW=1MHz. Sweep time=10s 4. Close the receiver. 5. Measure and record the results in the test report. |
| Test Result: | PASS |

5.4.2. Test Instruments

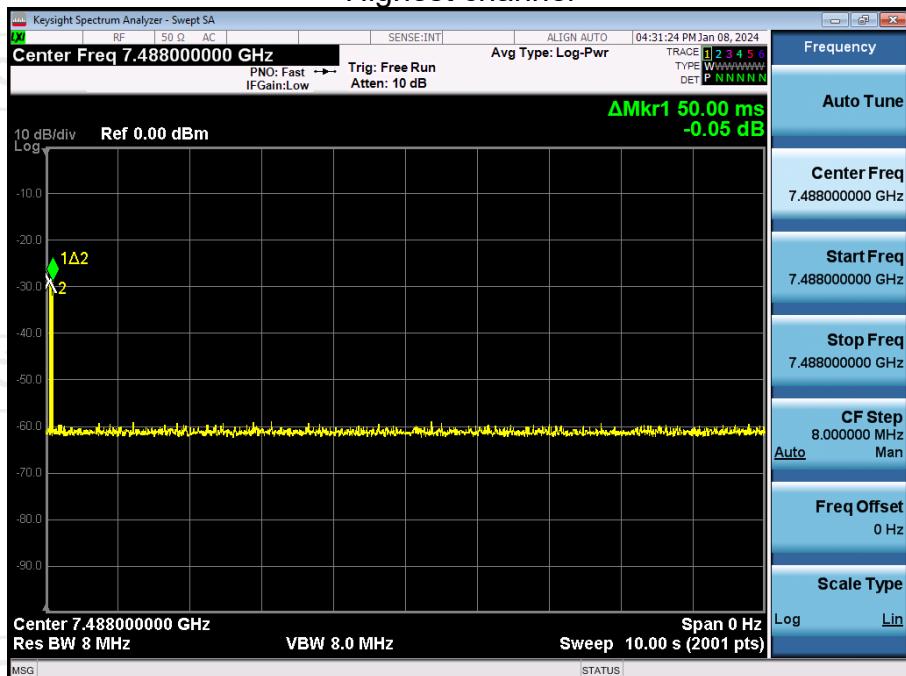
| RF Test Room | | | | |
|----------------------------|--------------|--------|---------------|-----------------|
| Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | R&S | FSQ40 | 200061 | Jun. 29, 2024 |
| RF cable (9kHz-26.5GHz) | TCT | RE-06 | N/A | Jun. 29, 2024 |
| Antenna Connector | TCT | RFC-01 | N/A | Jun. 29, 2024 |

5.4.3. Test data

Lowest channel



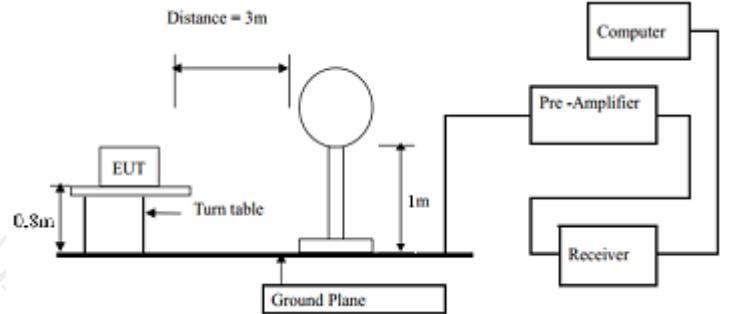
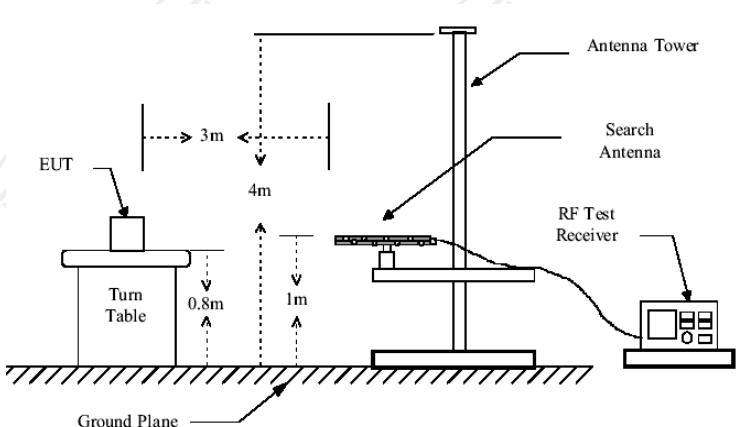
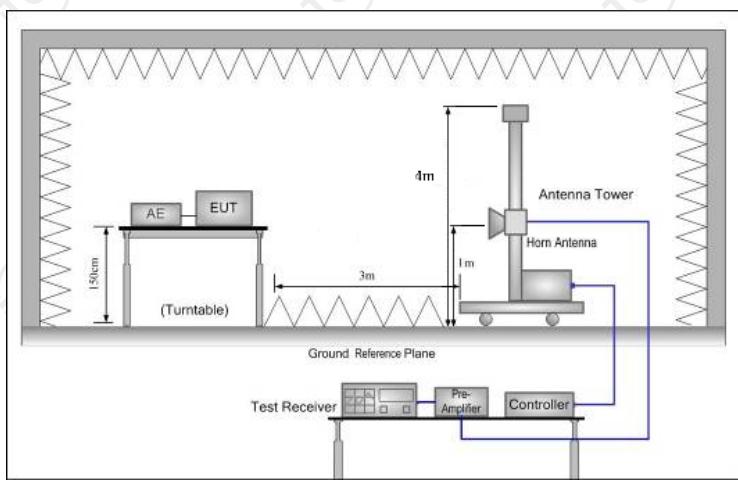
Highest channel



5.5. EIRP&Radiated Spurious Emission Measurement

5.5.1. Test Specification

| | | | | | |
|------------------------------|---|-----------------------------------|--------|-------------------------------|------------------|
| Test Requirement: | FCC Part15 F Section 15.519 (c)(d)/15.209 | | | | |
| Test Method: | ANSI C63.10: 2013 | | | | |
| Frequency Range: | 9 kHz to 40 GHz | | | | |
| Measurement Distance: | 3 m | | | | |
| Antenna Polarization: | Horizontal & Vertical | | | | |
| Operation mode: | Refer to item 3.1 | | | | |
| Receiver Setup: | Frequency | Detector | RBW | VBW | Remark |
| | 9kHz- 150kHz | Quasi-peak | 200Hz | 1kHz | Quasi-peak Value |
| | 150kHz- 30MHz | Quasi-peak | 9kHz | 30kHz | Quasi-peak Value |
| | 30MHz-1GHz | Quasi-peak | 120KHz | 300KHz | Quasi-peak Value |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak Value |
| | | Peak | 1MHz | 10Hz | Average Value |
| Limit: | 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 | 30 | | 30 | |
| | 30-88 | 100 | | 3 | |
| | 88-216 | 150 | | 3 | |
| | 216-960 | 200 | | 3 | |
| | 960-1610 | -75.3dBm (EIRP, RBW=1MHz) | | 3 | |
| | 1610-1990 | -63.3 dBm (EIRP, RBW=1MHz) | | 3 | |
| | 1990-3100 | -61.3 dBm (EIRP, RBW=1MHz) | | 3 | |
| | 3100MHz-10600MHz | -41.3 dBm (EIRP, RBW=1MHz) | | 3 | |
| | 3100MHz-10600MHz | 0 dBm (EIRP, RBW=50MHz) | | 3 | |
| | Above 10600MHz | -61.3 dBm (EIRP, RBW=1MHz) | | 3 | |
| | 1164MHz-1240MHz | -85.3dBm (EIRP, RBW=1kHz) | | 3 | |
| | 1559MHz-1610MHz | -85.3 dBm (EIRP, RBW=1kHz) | | 3 | |

| | |
|------------------------|--|
| Test setup: | <p>For radiated emissions below 30MHz</p>  <p>30MHz to 1GHz</p>  <p>Above 1GHz</p>  |
| Test Procedure: | <ol style="list-style-type: none"> 1. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. <p>For the radiated emission test above 1GHz:</p> |

| | |
|----------------------|--|
| | <p>Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.</p> <p>2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level</p> <p>3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.</p> |
| Test mode: | Refer to section 4.1 for details |
| Test results: | PASS |

| Frequency | Limit | | Detector | Measurement Distance |
|------------------|------------------|-------------------------|----------|----------------------|
| | EIRP (dBm) | Field Strength (dBuV/m) | | |
| 960MHz-1610MHz | -75.3 (RBW=1MHz) | 20.00 | RMS | 3 |
| 1610MHz-1990MHz | -63.3 (RBW=1MHz) | 32.00 | RMS | 3 |
| 1990MHz-3100MHz | -61.3 (RBW=1MHz) | 34.00 | RMS | 3 |
| 3100MHz-10600MHz | -41.3 (RBW=1MHz) | 54.00 | RMS | 3 |
| 3100MHz-10600MHz | 0 (RBW=50MHz) | 95.3 | Peak | 3 |
| Above 10600MHz | -61.3 (RBW=1MHz) | 34.00 | RMS | 3 |
| 1164MHz-1240MHz | -85.3 (RBW=1kHz) | 10.00 | RMS | 3 |
| 1559MHz-1610MHz | -85.3 (RBW=1kHz) | 10.00 | RMS | 3 |

Note: E (dBuV/m) = EIRP(dBm) + 95.3

5.5.2. Test Instruments

| Radiated Emission Test Site (966) | | | | |
|-----------------------------------|---------------------|---------------|-----------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| EMI Test Receiver | R&S | ESIB7 | 100197 | Jun. 29, 2024 |
| Spectrum Analyzer | R&S | FSV40-N | 102188 | Feb. 20, 2024 |
| Pre-amplifier | SKET | LNPA_0118G-45 | SK2021012 102 | Feb. 20, 2024 |
| Pre-amplifier | SKET | LNPA_1840G-50 | SK2021092 03500 | Feb. 20, 2024 |
| Pre-amplifier | HP | 8447D | 2727A05017 | Jun. 27, 2024 |
| Loop antenna | Schwarzbeck | FMZB1519B | 00191 | Jul. 02, 2024 |
| Broadband Antenna | Schwarzbeck | VULB9163 | 340 | Jul. 01, 2024 |
| Horn Antenna | Schwarzbeck | BBHA 9120D | 631 | Jul. 01, 2024 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | 00956 | Feb. 24, 2024 |
| Coaxial cable | SKET | RC-18G-N-M | / | Feb. 24, 2024 |
| Coaxial cable | SKET | RC_40G-K-M | / | Feb. 24, 2024 |
| EMI Test Software | Shurples Technology | EZ-EMC | / | / |

5.5.3. Test Data

Peak Power

| Field Strength for fundamental @ RBW=1MHz | | | | |
|---|-------------------|-------------|----------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Factor (dB) | Level (dBuV/m) | Polarization |
| 6988.8 | 46.88 | -4.4 | 51.28 | Horizontal |
| 6988.8 | 43.15 | -4.4 | 47.55 | Vertical |

| Calculated Field Strength of fundamental @ RBW=50MHz | | | | | | |
|--|---|--|---|----------------|-----------------|--------------|
| Frequency (MHz) | Measured Field Strength of fundamental (FSM) (dBuV/m) | Calculated factor for RBW=10MHz to RBW=50MHz | Calculated Field Strength of fundamental (FSC) (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Polarization |
| 6988.8 | 51.28 | 33.98 | 85.26 | 95.3 | -10.04 | Horizontal |
| 6988.8 | 47.55 | 33.98 | 81.53 | 95.3 | -13.77 | Vertical |

Note: $FS_C = FS_M + 20\log(50\text{MHz}/1\text{MHz}) = FS_M + 33.98$

| Field Strength for fundamental @ RBW=1MHz | | | | |
|---|-------------------|-------------|----------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Factor (dB) | Level (dBuV/m) | Polarization |
| 7488 | 54.26 | -0.32 | 54.58 | Horizontal |
| 7488 | 48.22 | -0.32 | 48.54 | Vertical |

| Calculated Field Strength of fundamental @ RBW=50MHz | | | | | | |
|--|---|--|---|----------------|----------------|--------------|
| Frequency (MHz) | Measured Field Strength of fundamental (FSM) (dBuV/m) | Calculated factor for RBW=10MHz to RBW=50MHz | Calculated Field Strength of fundamental (FSC) (dBuV/m) | Limit (dBuV/m) | Over Limit(dB) | Polarization |
| 7488 | 54.58 | 33.98 | 88.56 | 95.3 | -6.74 | Horizontal |
| 7488 | 48.54 | 33.98 | 82.52 | 95.3 | -12.78 | Vertical |

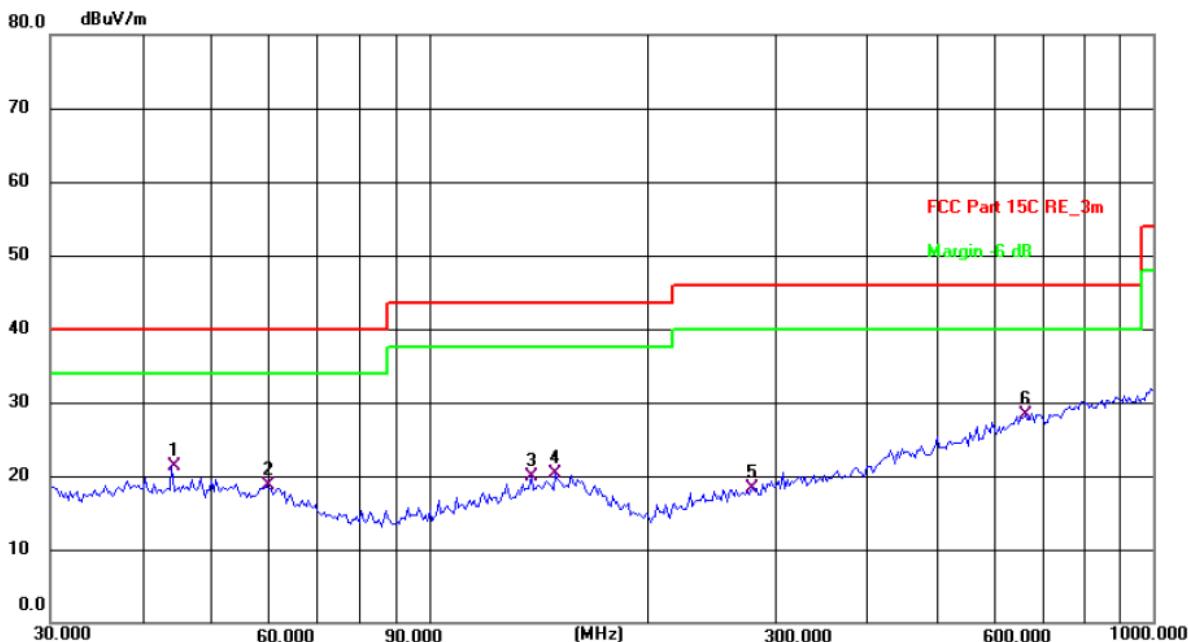
Note: $FS_C = FS_M + 20\log(50\text{MHz}/1\text{MHz}) = FS_M + 33.98$

Spurious Emissions

Please refer to following diagram for individual

Below 1GHz

Horizontal:



Site: #1 3m Anechoic Chamber

Polarization: **Horizontal**

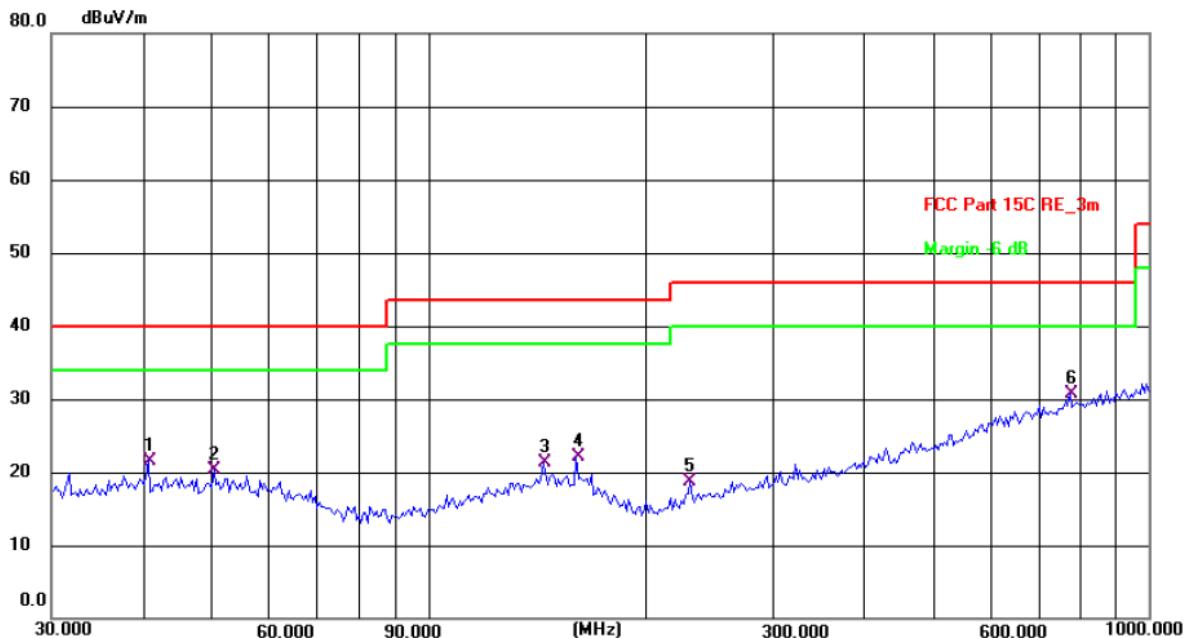
Temperature: 24.2(C) Humidity: 51 %

Limit: FCC Part 15C RE_3m

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 | 44.1202 | 7.42 | 13.83 | 21.25 | 40.00 | -18.75 | QP | P | |
| 2 | 59.6493 | 5.63 | 12.98 | 18.61 | 40.00 | -21.39 | QP | P | |
| 3 | 138.3873 | 6.13 | 13.74 | 19.87 | 43.50 | -23.63 | QP | P | |
| 4 | 149.4857 | 5.80 | 14.46 | 20.26 | 43.50 | -23.24 | QP | P | |
| 5 | 279.0436 | 5.12 | 13.28 | 18.40 | 46.00 | -27.60 | QP | P | |
| 6 * | 665.8034 | 6.42 | 21.80 | 28.22 | 46.00 | -17.78 | QP | P | |

Vertical:



Site: #1 3m Anechoic Chamber

 Polarization: **Vertical**

Temperature: 24.2(C)

Humidity: 51 %

Limit: FCC Part 15C RE_3m

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dB μ V) | Factor (dB/m) | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------------|---------------|----------------------|----------------------|-------------|----------|-----|--------|
| 1 | 40.8445 | 7.45 | 14.15 | 21.60 | 40.00 | -18.40 | QP | P | |
| 2 | 50.4089 | 6.66 | 13.62 | 20.28 | 40.00 | -19.72 | QP | P | |
| 3 | 144.3347 | 7.30 | 14.08 | 21.38 | 43.50 | -22.12 | QP | P | |
| 4 | 160.3456 | 7.47 | 14.55 | 22.02 | 43.50 | -21.48 | QP | P | |
| 5 | 230.9067 | 6.65 | 12.03 | 18.68 | 46.00 | -27.32 | QP | P | |
| 6 * | 776.8778 | 7.68 | 23.10 | 30.78 | 46.00 | -15.22 | QP | P | |

Note: 1. The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported

2. Measurements were conducted in all channels (high, low), and the worst case Mode (Highest channel) was submitted only.

3. Freq. = Emission frequency in MHz

Measurement (dB μ V/m) = Reading level (dB μ V) + Corr. Factor (dB)

Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

Limit (dB μ V/m) = Limit stated in standard

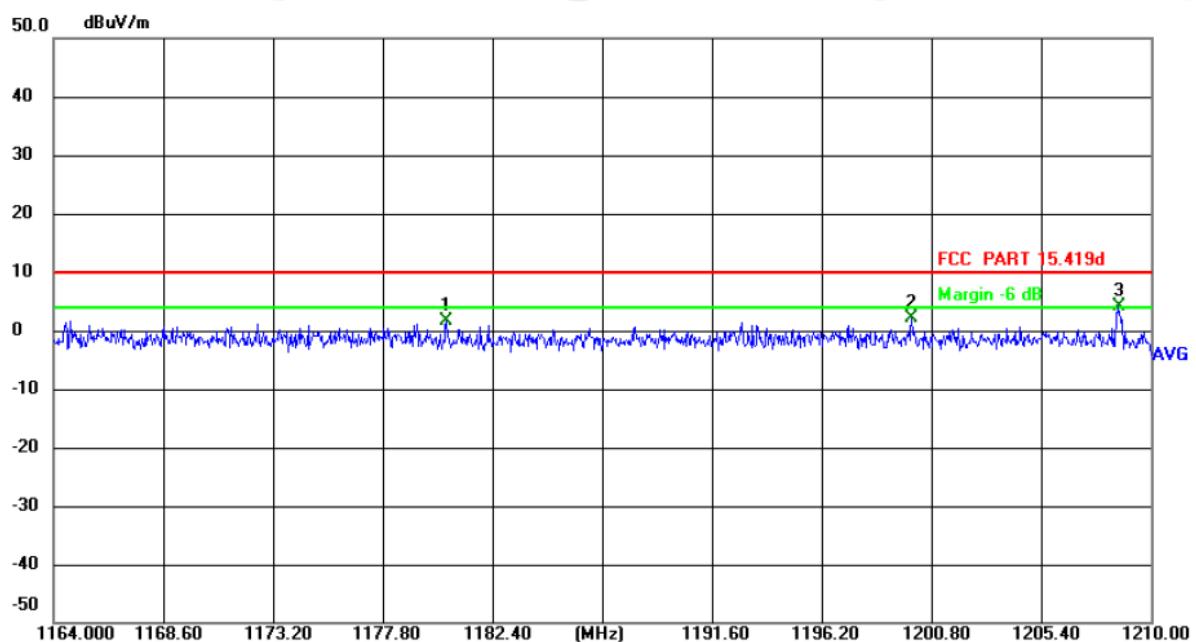
Margin (dB) = Measurement (dB μ V/m) – Limits (dB μ V/m)

Any value more than 10dB below limit have not been specifically reported

* is meaning the worst frequency has been tested in the test frequency range

1164MHz-1240MHz & 1559MHz-1610MHz

CH6 6988.8MHz



Site: 3m Anechoic Chamber

Polarization: **Horizontal**

Temperature: 23.3(°C)

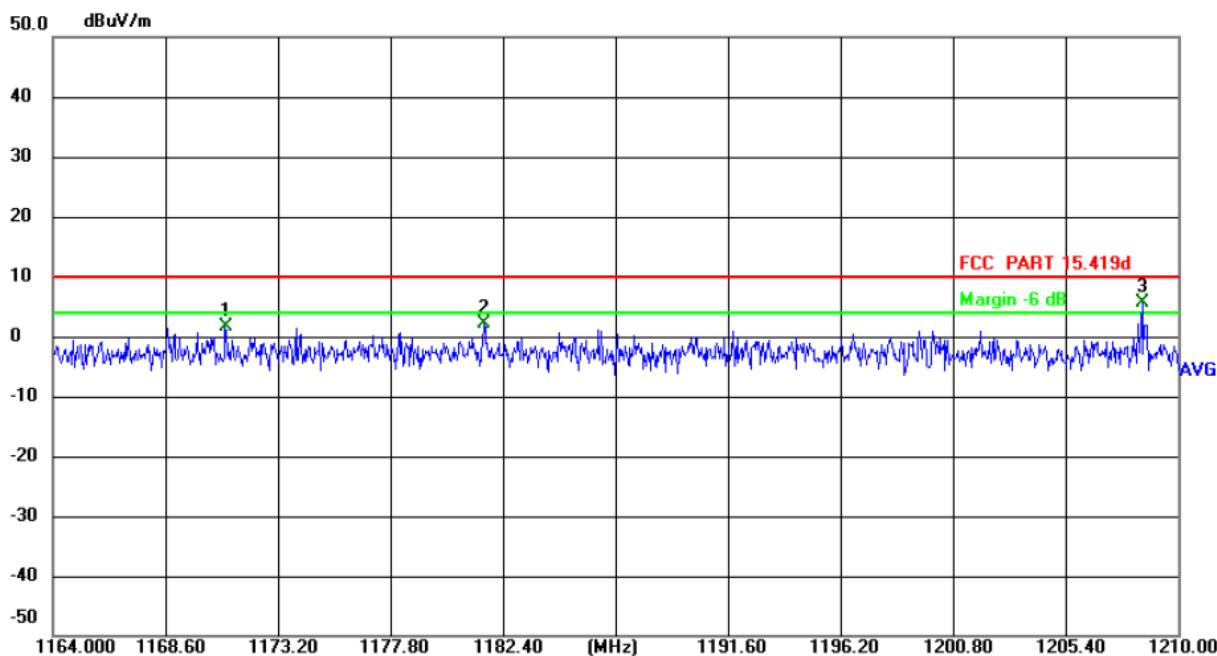
Humidity: 52 %

Limit: FCC PART 15.419d

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 X | 1180.468 | 14.62 | -12.99 | 1.63 | 10.00 | -8.37 | Peak | P | |
| 2 X | 1199.989 | 15.12 | -12.95 | 2.17 | 10.00 | -7.83 | Peak | P | |
| 3 * | 1208.626 | 17.96 | -12.36 | 5.60 | 10.00 | -4.40 | Peak | P | |

Vertical



Site: 3m Anechoic Chamber

 Polarization: **Vertical**

Temperature: 23.3(°C)

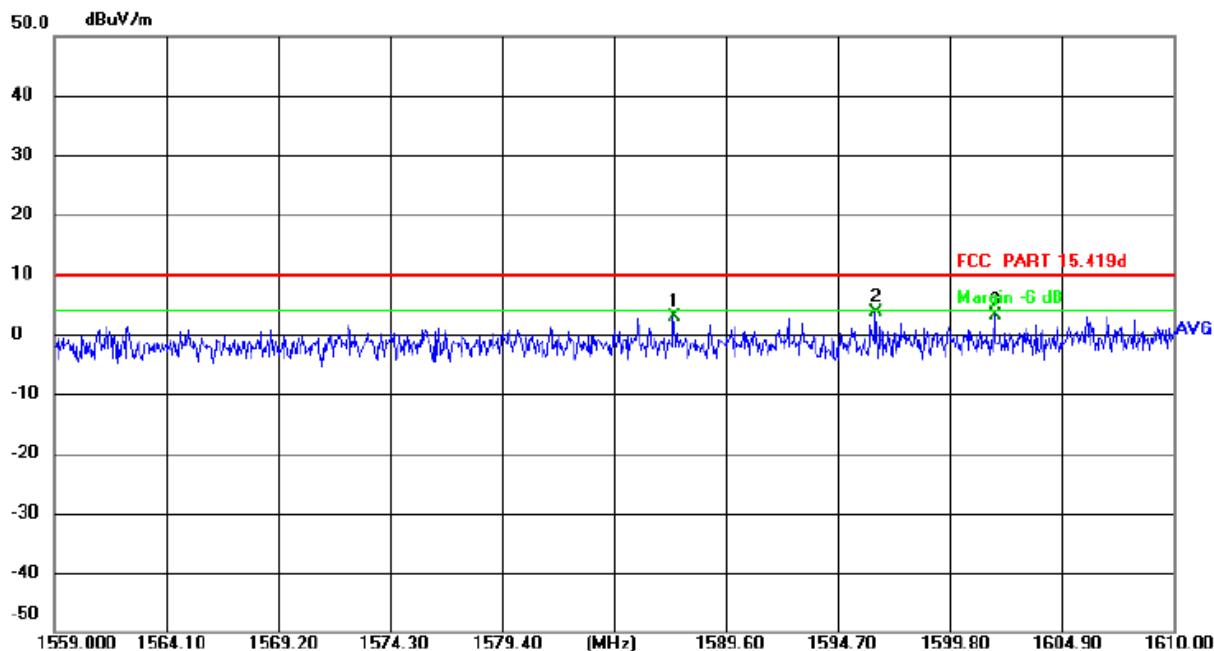
Humidity: 52 %

Limit: FCC PART 15.419d

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 X | 1171.067 | 14.63 | -13.02 | 1.61 | 10.00 | -8.39 | Peak | P | |
| 2 X | 1181.658 | 15.00 | -12.99 | 2.01 | 10.00 | -7.99 | Peak | P | |
| 3 * | 1208.628 | 18.64 | -12.36 | 6.28 | 10.00 | -3.72 | Peak | P | |

Horizontal



Site: 3m Anechoic Chamber

 Polarization: **Horizontal**

Temperature: 23.3(°C)

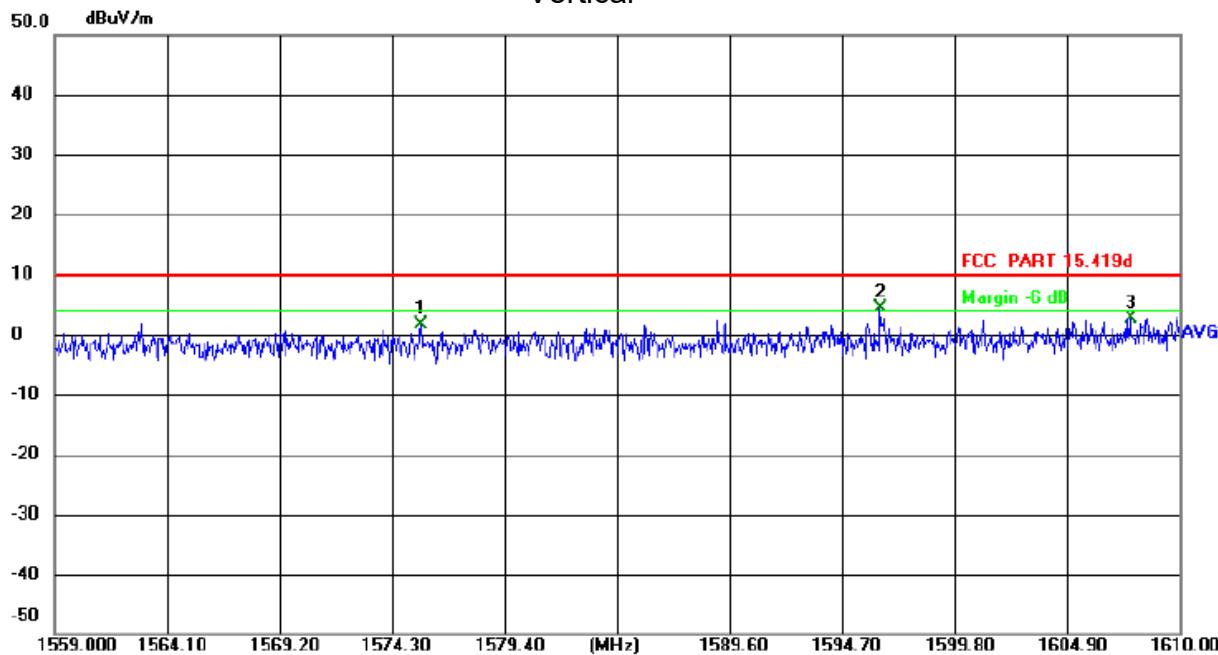
Humidity: 52 %

Limit: FCC PART 15.419d

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 X | 1587.248 | 15.63 | -12.80 | 2.83 | 10.00 | -7.17 | Peak | P | |
| 2 * | 1596.378 | 15.22 | -11.58 | 3.64 | 10.00 | -6.36 | Peak | P | |
| 3 X | 1601.859 | 14.72 | -11.50 | 3.22 | 10.00 | -6.78 | Peak | P | |

Vertical



Site: 3m Anechoic Chamber

 Polarization: **Vertical**

Temperature: 23.3(°C)

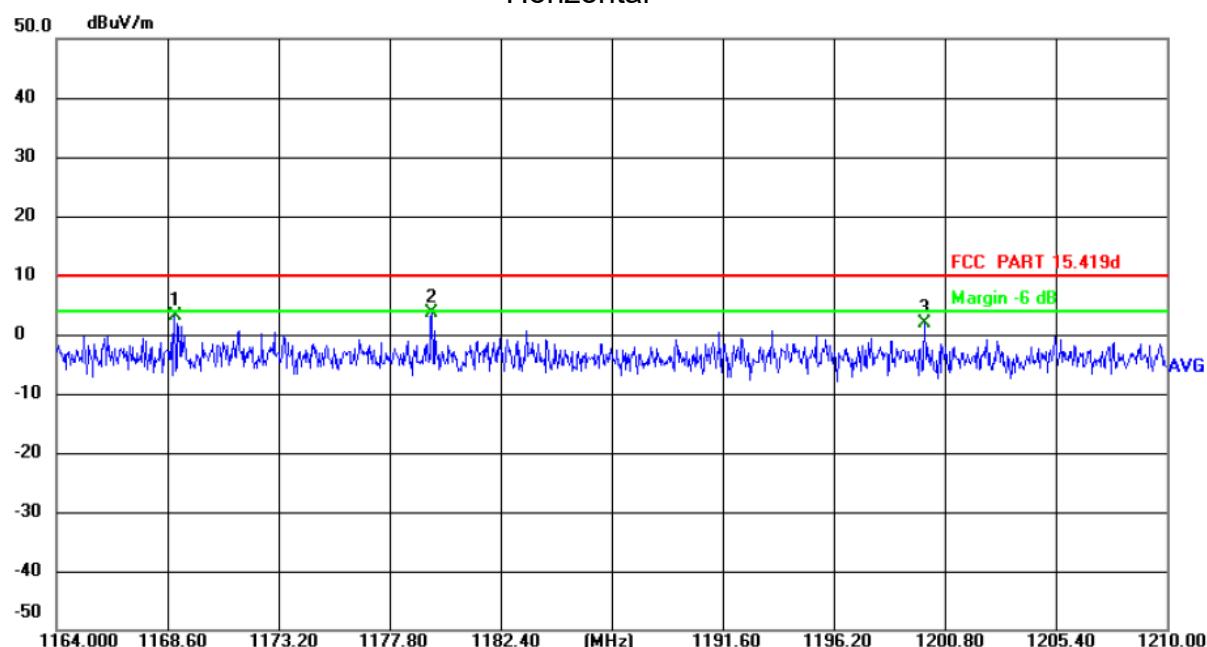
Humidity: 52 %

Limit: FCC PART 15.419d

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 X | 1575.651 | 14.88 | -13.32 | 1.56 | 10.00 | -8.44 | Peak | P | |
| 2 * | 1596.376 | 15.27 | -11.58 | 3.69 | 10.00 | -6.31 | Peak | P | |
| 3 X | 1607.769 | 13.44 | -10.73 | 2.71 | 10.00 | -7.29 | Peak | P | |

Horizontal



Site: 3m Anechoic Chamber

Polarization: **Horizontal**

Temperature: 23.3(°C)

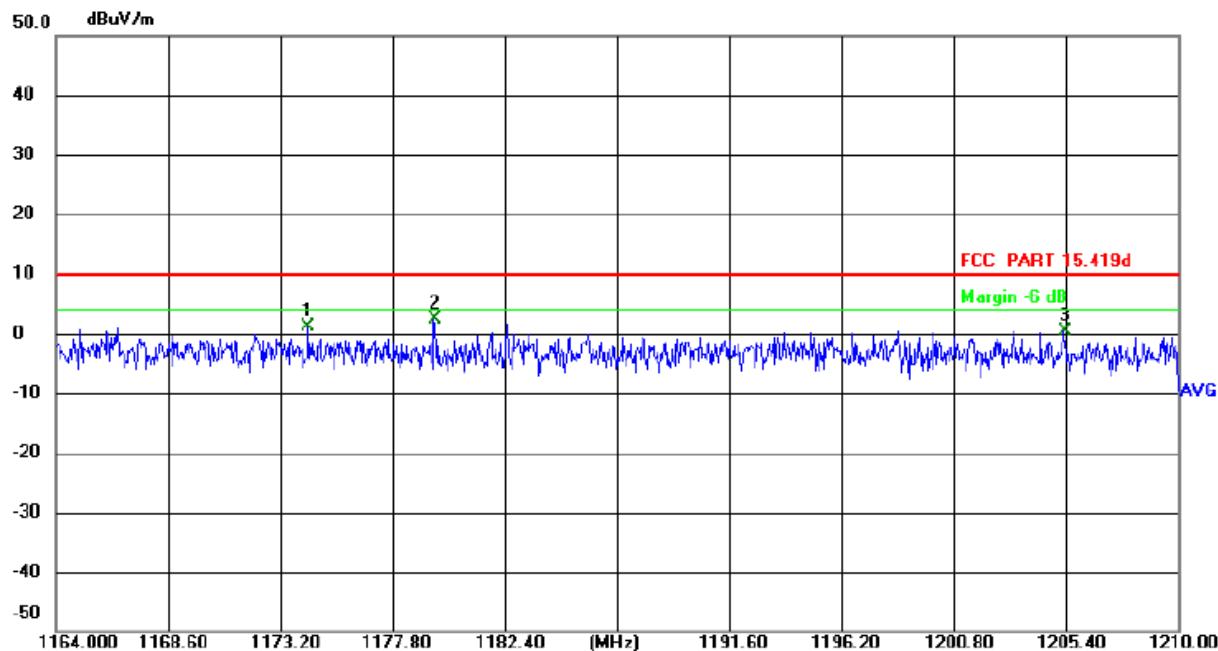
Humidity: 52 %

Limit: FCC PART 15.419d

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 X | 1168.882 | 16.13 | -13.02 | 3.11 | 10.00 | -6.89 | Peak | P | |
| 2 * | 1179.558 | 16.85 | -12.86 | 3.99 | 10.00 | -6.01 | Peak | P | |
| 3 X | 1199.989 | 14.55 | -12.75 | 1.80 | 10.00 | -8.20 | Peak | P | |

Vertical



Site: 3m Anechoic Chamber

 Polarization: **Vertical**

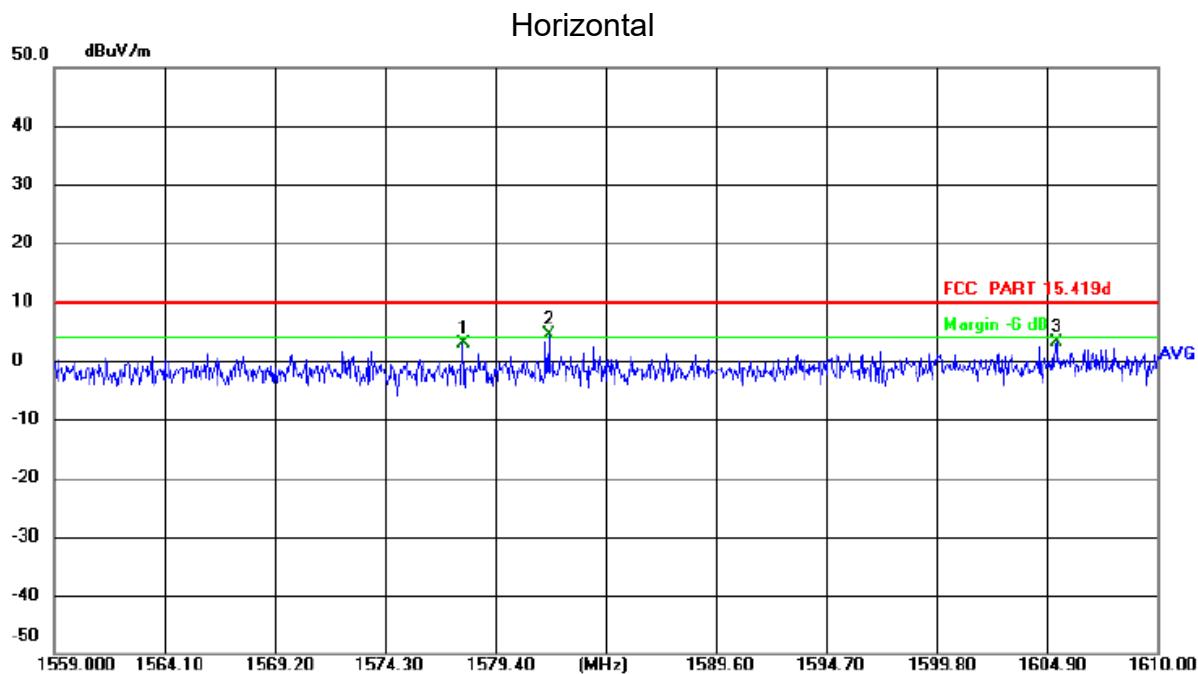
Temperature: 23.3(°C)

Humidity: 52 %

Limit: FCC PART 15.419d

Power:DC 3 V

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 X | 1174.361 | 14.24 | -13.01 | 1.23 | 10.00 | -8.77 | Peak | P | |
| 2 * | 1179.561 | 17.08 | -12.86 | 4.22 | 10.00 | -5.78 | Peak | P | |
| 3 X | 1205.331 | 13.25 | -12.82 | 0.43 | 10.00 | -9.57 | Peak | P | |



Site: 3m Anechoic Chamber

Polarization: **Horizontal**

Temperature: 23.3(°C)

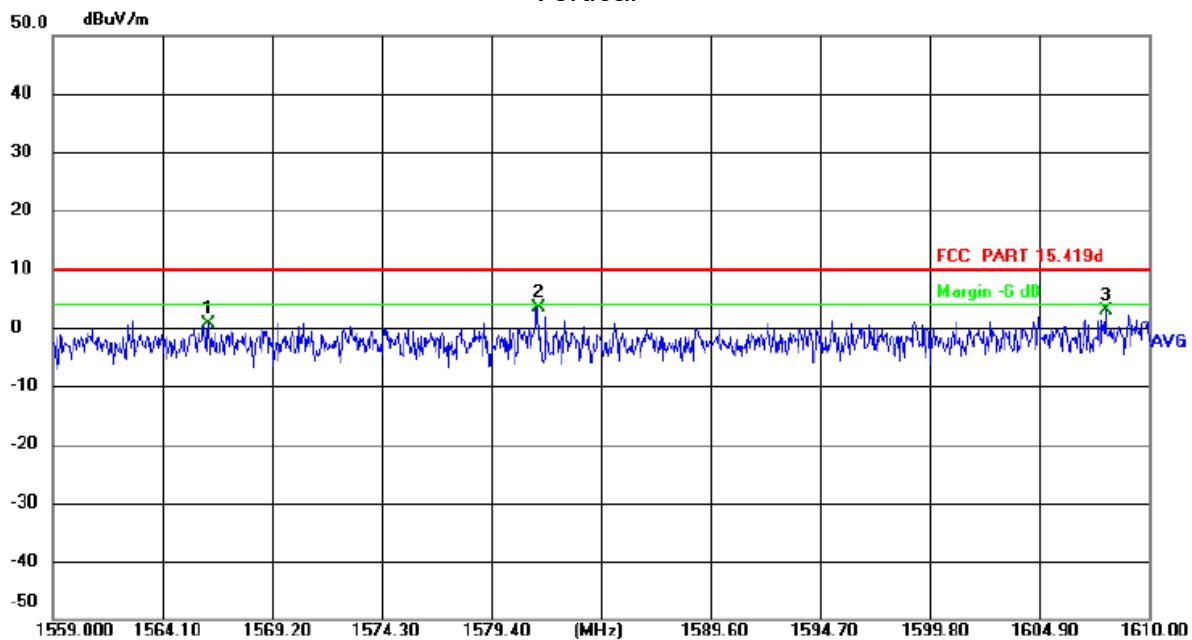
Humidity: 52 %

Limit: FCC PART 15.419d

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 X | 1577.883 | 15.85 | -12.97 | 2.88 | 10.00 | -7.12 | Peak | P | |
| 2 * | 1581.736 | 16.85 | -12.86 | 3.99 | 10.00 | -6.01 | Peak | P | |
| 3 X | 1605.308 | 14.59 | -11.43 | 3.16 | 10.00 | -6.84 | Peak | P | |

Vertical



Site: 3m Anechoic Chamber

 Polarization: **Vertical**

Temperature: 23.3(°C)

Humidity: 52 %

Limit: FCC PART 15.419d

Power: DC 3 V

| No. | Frequency (MHz) | Reading (dB μ V) | Factor (dB/m) | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------------|---------------|----------------------|----------------------|-------------|----------|-----|--------|
| 1 X | 1566.248 | 12.40 | -11.72 | 0.68 | 10.00 | -9.32 | Peak | P | |
| 2 * | 1581.738 | 16.32 | -11.63 | 4.69 | 10.00 | -5.31 | Peak | P | |
| 3 X | 1607.979 | 14.37 | -11.52 | 2.85 | 10.00 | -7.15 | Peak | P | |

Note:

1. Freq. = Emission frequency in MHz
 $\text{Measurement (dB}\mu\text{V/m)} = \text{Reading level (dB}\mu\text{V)} + \text{Corr. Factor (dB)}$
 $\text{Correction Factor} = \text{Antenna Factor} + \text{Cable loss} - \text{Pre-amplifier}$
 $\text{Limit (dB}\mu\text{V/m)} = \text{Limit stated in standard}$
 $\text{Margin (dB)} = \text{Measurement (dB}\mu\text{V/m)} - \text{Limits (dB}\mu\text{V/m)}$
 $\text{Any value more than 10dB below limit have not been specifically reported}$
 * is meaning the worst frequency has been tested in the test frequency range

Other emission Above 1GHz

CH6 6988.8MHz

960MHz ≤ f ≤ 3100MHz

| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dB μ V) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
|-----------------|---------------|---------------------------|-------------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 1063.27 | H | 19.63 | --- | -12.44 | 7.19 | --- | 40 | 20 | -12.81 |
| 2271.43 | H | 22.57 | --- | -10.05 | 12.52 | --- | 54 | 34 | -21.48 |
| --- | H | --- | --- | --- | --- | --- | --- | --- | --- |
| 1063.27 | V | 18.76 | --- | -12.44 | 6.32 | --- | 40 | 20 | -13.68 |
| 2271.43 | V | 21.64 | --- | -10.05 | 11.59 | --- | 54 | 34 | -22.41 |
| --- | V | --- | --- | --- | --- | --- | --- | --- | --- |

f > 3100MHz

| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dB μ V) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
|-----------------|---------------|---------------------------|-------------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 7251.63 | H | 26.42 | --- | 2.11 | 28.53 | --- | 74 | 54 | -25.47 |
| 13256.74 | H | 20.36 | --- | 10.42 | 30.78 | --- | 54 | 34 | -3.22 |
| --- | H | --- | --- | --- | --- | --- | --- | --- | --- |
| 7251.63 | V | 27.03 | --- | 2.11 | 29.14 | --- | 74 | 54 | -24.86 |
| 13256.74 | V | 20.58 | --- | 10.42 | 31 | --- | 54 | 34 | -3.00 |
| --- | V | --- | --- | --- | --- | --- | --- | --- | --- |

CH8 7488MHz

960MHz ≤ f ≤ 3100MHz

| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dB μ V) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
|-----------------|---------------|---------------------------|-------------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 1122.24 | H | 20.75 | --- | -12.58 | 8.17 | --- | 40 | 20 | -11.83 |
| 1969.87 | H | 22.96 | --- | -9.88 | 13.08 | --- | 54 | 34 | -20.92 |
| --- | H | --- | --- | --- | --- | --- | --- | --- | --- |
| 1122.24 | V | 19.11 | --- | -12.58 | 6.53 | --- | 40 | 20 | -13.47 |
| 1969.87 | V | 21.37 | --- | -9.88 | 11.49 | --- | 54 | 34 | -22.51 |
| --- | V | --- | --- | --- | --- | --- | --- | --- | --- |

f > 3100MHz

| Frequency (MHz) | Ant. Pol. H/V | Peak reading (dB μ V) | AV reading (dB μ V) | Correction Factor (dB/m) | Emission Level | | Peak limit (dB μ V/m) | AV limit (dB μ V/m) | Margin (dB) |
|-----------------|---------------|---------------------------|-------------------------|--------------------------|---------------------|-------------------|---------------------------|-------------------------|-------------|
| | | | | | Peak (dB μ V/m) | AV (dB μ V/m) | | | |
| 7182.69 | H | 25.96 | --- | 1.98 | 27.94 | --- | 74 | 54 | -26.06 |
| 12142.87 | H | 21.08 | --- | 11.36 | 32.44 | --- | 54 | 34 | -1.56 |
| --- | H | --- | --- | --- | --- | --- | --- | --- | --- |
| 7182.69 | V | 26.83 | --- | 1.98 | 28.81 | --- | 74 | 54 | -25.19 |
| 12142.87 | V | 21.57 | --- | 11.36 | 32.93 | --- | 54 | 34 | -1.07 |
| --- | V | --- | --- | --- | --- | --- | --- | --- | --- |

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dB μ V/m)-Average limit (dB μ V/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Data of measurement shown “---”in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.
5. All the restriction bands are compliance with the limit of 15.209.

Appendix A: Photographs of Test Setup

Refer to the Appendix A

Appendix B: Photographs of EUT

Refer to the Appendix B

*******END OF REPORT*******