

TEST REPORT

Product : PANEL PC
Trade mark : 
Model/Type reference : IOVU-210AD-RK39
Serial Model : /
Report Number : EED39N00008306
FCC ID : RFH-IOVU-210AD
Date of Issue : July 16, 2021

| Test Standards | Result |
|--|--------|
| <input checked="" type="checkbox"/> 47 CFR Part 15.225 | PASS |

Prepared for:

IEI INTEGRATION CORP.**NO.29,ZHONGXING RD.,XIZHI DIST.,NEW TAIPEI CITY 22161,TAIWAN**

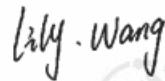
Prepared by:

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检验检测专用章
Inspection & Testing Services

Compiled by:



Reviewed by:



Approved by:



Date:

16 July 2021

Check No.: 3915514199

Report No. : EED39N00008306

Modification Record

| No. | Last Report No. | Modification Description |
|-----|-----------------|--------------------------|
| 1 | EED39N00008306 | First report |

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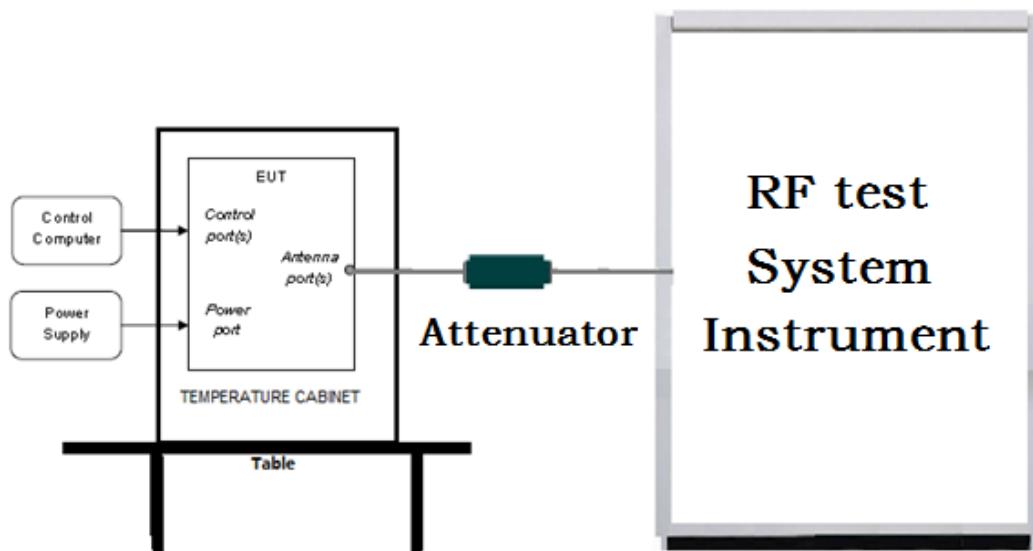
1. Test Summary

| Test item | FCC Rules | Result |
|--|---|--------|
| Antenna Requirement | 47 CFR Part 15Subpart C Section 15.203/15.247 (c) | PASS |
| AC Power Line Conducted Emission | 47 CFR Part 15Subpart C Section 15.207 | PASS |
| Transmitter Fundamental Field Strength | 47 CFR Part 15Subpart C Section Part 15.225(a)(b)(c)(d) | PASS |
| Radiated Emissions | Part 15.209(a), 15.225(c)(d) | PASS |
| Transmitter 20 dB Bandwidth | Part 15.215 | PASS |
| Frequency Stability | 15.225(e) | PASS |

2. Test Requirement

2.1. Test Setup

For Conducted Test Setup



For Radiated Emissions Test Setup

Radiated Emissions setup:

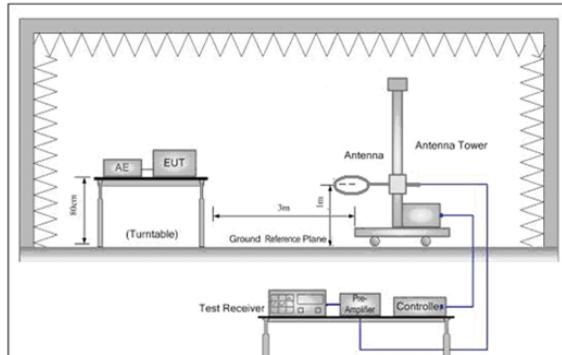


Figure 1. Below 30MHz

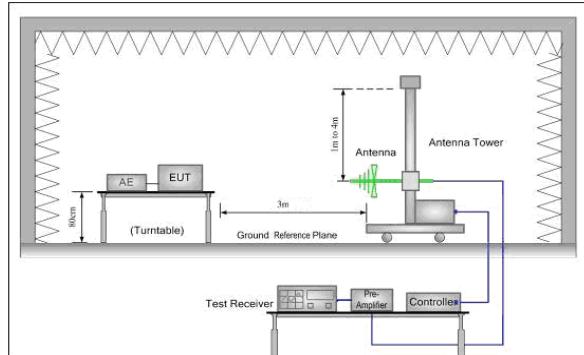


Figure 2. 30MHz to 1GHz

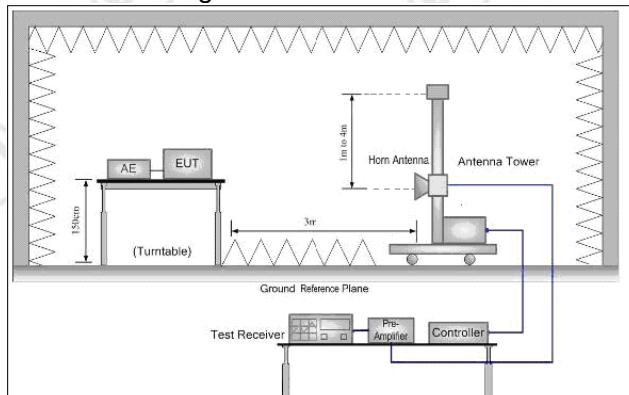
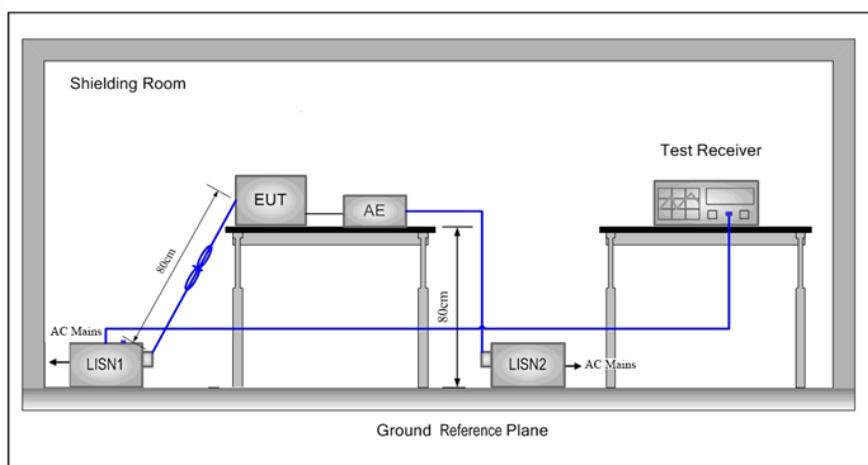


Figure 3. Above 1GHz

For Conducted Emissions Test Setup**Conducted Emissions setup:****2.2. Test Environment****Operating Environment:**

| | |
|-----------------------|----------|
| Temperature: | 19.8 °C |
| Humidity: | 55 % RH |
| Atmospheric Pressure: | 1019mbar |

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3. General Information

3.1. Client Information

| | |
|--------------------------|--|
| Applicant: | IEI INTEGRATION CORP. |
| Address of Applicant: | NO.29,ZHONGXING RD.,XIZHI DIST.,NEW TAIPEI CITY 22161,TAIWAN |
| Manufacturer: | IEI INTEGRATION CORP. |
| Address of Manufacturer: | NO.29,ZHONGXING RD.,XIZHI DIST.,NEW TAIPEI CITY 22161,TAIWAN |
| Factory: | Armorlink SH Corp. |
| Address of Factory: | No.515,Shenfu Rd,Xinzhuang Industrial Development Zone,Minhang District,Shanghai,P.R.China |

3.2. General Description of EUT

| | |
|----------------------------------|--|
| Product Name: | PANEL PC |
| Model No.(EUT): | IOVU-210AD-RK39 |
| Trade Mark: |  |
| EUT Supports Radios application: | 2.4G WIFI: IEEE802.11b/g/n(20MHz), 2412MHz-2462MHz 5G WIFI: IEEE802.11a/ac(HT20)/ac(HT40)/ac(HT80),5150-5350MHz,5470-5725MHz, 5725-5850MHz. Bluetooth BR+EDR & Bluetooth V4.1 BLE NFC13.56MHz |
| Power Supply: | Model No: FSP060-DHAN3 Input: AC100-240V 1.8A, 50/60Hz Output: DC 12V 5.0A |
| Sample Received Date: | Feb 09, 2021 |
| Sample tested Date: | Feb 09, 2021 to Apr 13, 2021 |

3.3. Product Specification subjective to this standard

| | |
|----------------------|-------------------|
| Operation Frequency: | 13.56MHz |
| Number of Channel: | 1 |
| Sample Type: | Mobile production |
| Antenna Type: | PCB Antenna |
| Test Voltage: | AC120V/60Hz |

3.4. Description of Support Units

The EUT has been tested independently.

3.5. Test Location

All test facilities used to collect the test data are located at Building 18, Zhihui New Town Ecological Industrial Park, No. 1206, Jinyang East Road, Lujia Town, Kunshan, Jiangsu, China.

3.6. Test Facility

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

A2LA-Lab Cert. No. 5734.01

Centre Testing International (Suzhou) CO., LTD. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in

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compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration. Laboratories and any additional program requirements in the identified field of testing.

FCC-Designation No.:CN1290

Centre Testing International Group Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The American association for Centre Testing International Group Co., Ltd. EMC laboratory accreditation Designation No.:CN1290

3.7. Deviation from Standards

None.

3.8. Abnormalities from Standard Conditions

None.

3.9. Other Information Requested by the Customer

None.

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3.10. Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item | Measurement Uncertainty |
|-----|------------------------------------|---|
| 1 | Occupied Bandwidth | 0.56% |
| 2 | RF Power conducted | 0.59 dB |
| 3 | Power Spectral Density, conducted | 2.37 dB |
| 4 | Unwanted Emission, conducted | 2.68 dB |
| 5 | All Emission, radiated | 4.41 dB(30MHz-1GHz) 4.99 dB(1GHz-18GHz) 5.307 dB(18GHz-40GHz) |
| 6 | Temperature test | 0.54°C |
| 7 | Humidity test | 1.62% |
| 8 | DC and low frequency voltages test | 1.14% |

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4. Equipment List

| RF test system | | | | | |
|---------------------------------|----------------------|---------------|---------------|------------------------|----------------------------|
| Equipment | Manufacturer | Mode No. | Serial Number | Cal. Date (mm-dd-yyyy) | Cal. Due date (mm-dd-yyyy) |
| Signal Generator | R&S | SMB100A | 182002 | 2020-10-23 | 2021-10-22 |
| Communication test set test set | R&S | CMW500 | 107929 | 2020-04-27 | 2021-04-26 |
| Spectrum Analyzer | R&S | FSV40 | 101588 | 2020-10-23 | 2021-10-22 |
| Vector signal generator | R&S | SMBV100B | 101985 | 2020-10-23 | 2021-10-22 |
| Temperature/Humidity Indicator | testo | 608-H1 | 1945222628 | 2020-12-10 | 2021-11-08 |
| Switch Automatic control | R&S | OSP-B157W8 | 101111 | 2020-10-23 | 2021-10-22 |
| High-low temperature chamber | GIANT FORCE | GTH-800-40-CP | MAA1908-003 | 2020-12-08 | 2021-12-07 |
| Automatic test software | Shenzhen JS TONSCEND | / | V2.6.77.0518 | / | / |

| 966 Semi-anechoic Chamber | | | | | |
|----------------------------|--------------|-------------------|---------------|------------------------|----------------------------|
| Equipment | Manufacturer | Mode No. | Serial Number | Cal. Date (mm-dd-yyyy) | Cal. Due date (mm-dd-yyyy) |
| Receiver | R&S | ESU8 | 100537 | 2020-12-10 | 2021-12-09 |
| Spectrum analyzer | R&S | FSV40 | 101185 | 2020-12-10 | 2021-12-09 |
| Preamplifier (30MHz~1GHz) | SONOMA | 317 | 393347 | 2020-12-04 | 2021-12-03 |
| Preamplifier (1GHz~18GHz) | R&S | SCU-18D | 1987397 | 2020-12-10 | 2021-12-09 |
| Preamplifier (18GHz~40GHz) | / | MTLNA1804003 0235 | 12009007 | 2020-10-23 | 2021-10-22 |
| Loop Antenna (9kHz~30MHz) | TESEQ | HLA6121 | 54575 | 2021-02-27 | 2022-02-26 |
| Antenna (30MHz~1GHz) | SCHWARZBEC K | VULB9163 | 9163-965 | 2020-10-16 | 2021-10-15 |
| Antenna (1GHz~18GHz) | R&S | HF907 | 102524 | 2020-12-15 | 2021-12-14 |
| Antenna (18GHz~40GHz) | R&S | BBHA9170 | 1032 | 2020-10-23 | 2021-10-22 |
| Band rejection filter | Xi'an xingbo | XBLBQ-DZA81 | 200827-1-02 | / | / |

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5. Radio Technical Requirements Specification

5.1. Reference Documents for Testing

| No. | Identity | Document Title |
|-----|------------------|--|
| 1 | FCC Part15C | Subpart C-Intentional Radiators |
| 2 | ANSI C63.10-2013 | American National Standard for Testing Unlicensed Wireless Devices |

5.2. Test Results List

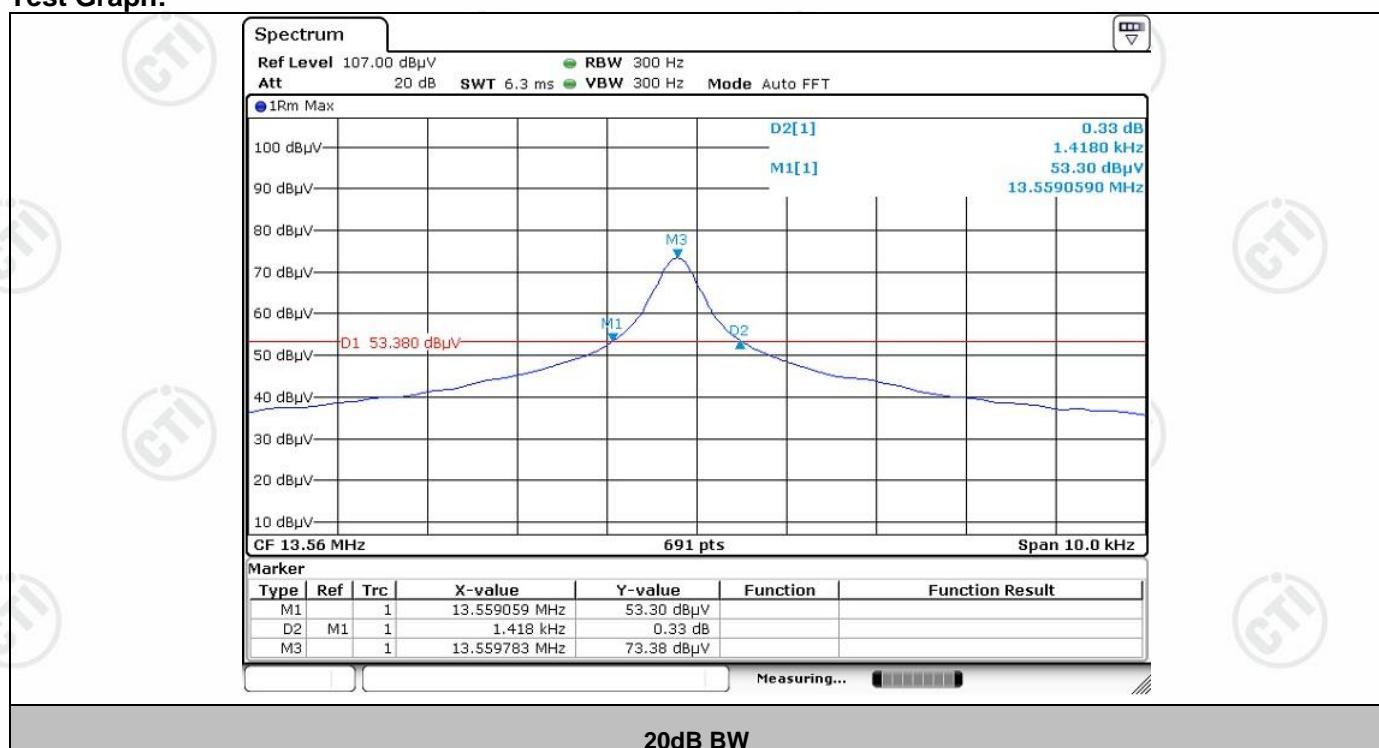
| Test requirement | Test item | Verdict | Note |
|--|--|---------|-------------|
| FCC Part 15.215 | Transmitter 20 dB Bandwidth | PASS | Appendix A) |
| Part15C Section 15.203/15.247 (c) | Antenna Requirement | PASS | Appendix B) |
| Part15C Section 15.207 | AC Power Line Conducted Emission | PASS | Appendix C) |
| Part 15Subpart C Section Part 15.225(a)(b)(c)(d) | Transmitter Fundamental Field Strength | PASS | Appendix D) |
| Part 15.209(a), 15.225(c)(d) | Radiated Emissions | PASS | Appendix E) |
| 15.225(e) | Frequency Stability | PASS | Appendix F) |

Appendix A): Transmitter 20 dB Bandwidth

Result Table:

| Frequency (MHz) | 20dB BW (KHz) |
|-----------------|---------------|
| 13.56 | 1.418 |

Test Graph:



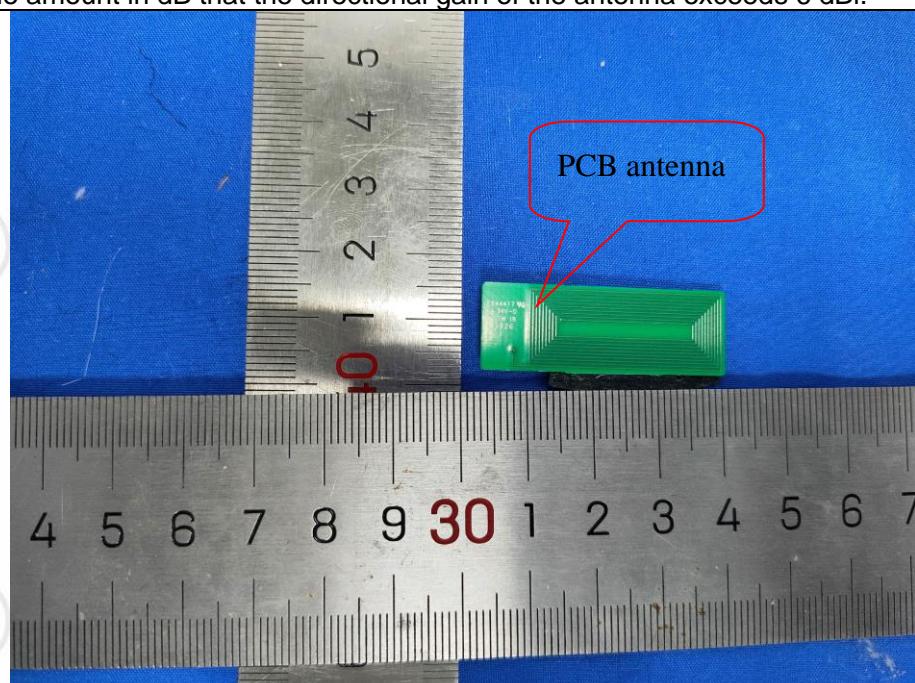
Appendix B): Antenna Requirement

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement.

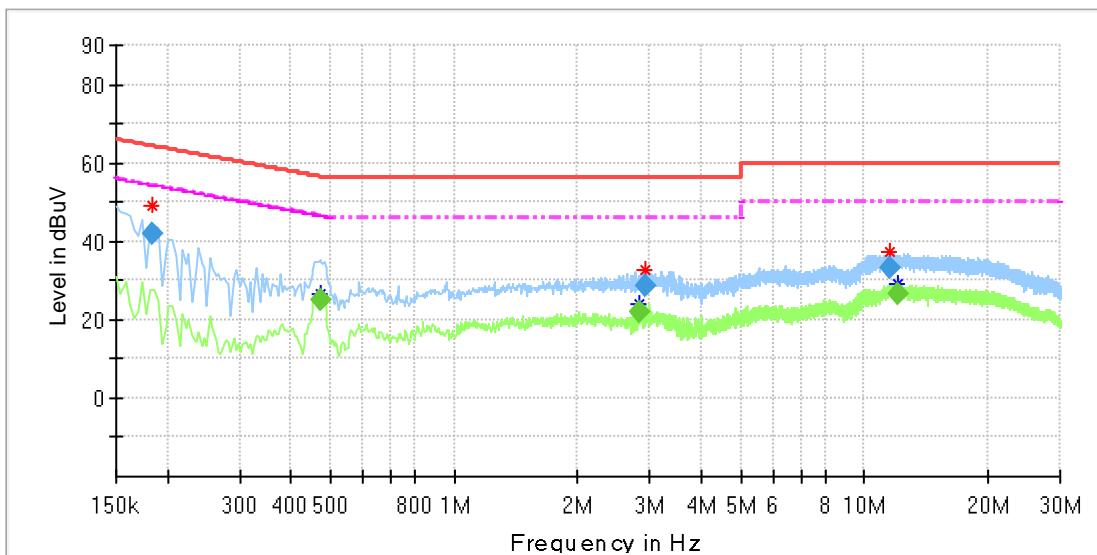
Appendix C): AC Power Line Conducted Emission

| Test Procedure: | <p>Test frequency range :150KHz-30MHz</p> <ol style="list-style-type: none"> The mains terminal disturbance voltage test was conducted in a shielded room. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 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 on conducted measurement. | | | | | | | | | | | | | | |
|------------------------|--|-----------------------|--------------------|--|------------|---------|----------|-----------|-----------|-------|----|----|------|----|----|
| Limit: | <table border="1" data-bbox="477 1113 1335 1281"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBμV)</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> <p>* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.</p> <p>NOTE: The lower limit is applicable at the transition frequency</p> | Frequency range (MHz) | Limit (dB μ V) | | 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 (dB μ V) | | | | | | | | | | | | | | |
| | Quasi-peak | Average | | | | | | | | | | | | | |
| 0.15-0.5 | 66 to 56* | 56 to 46* | | | | | | | | | | | | | |
| 0.5-5 | 56 | 46 | | | | | | | | | | | | | |
| 5-30 | 60 | 50 | | | | | | | | | | | | | |

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.



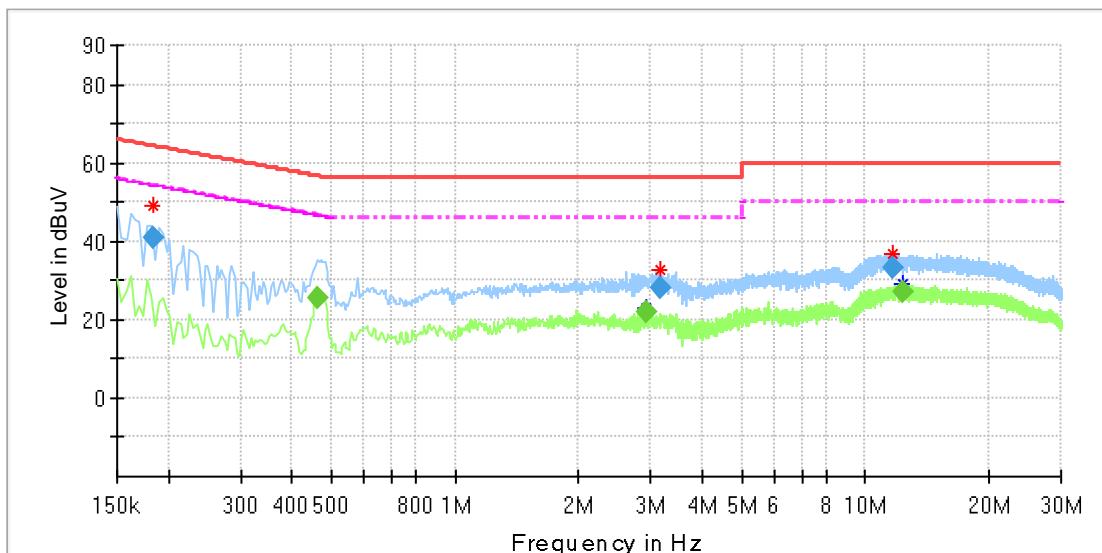
Final_Result

| Frequency (MHz) | QuasiPeak (dbuV) | Average (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.183381 | 41.66 | --- | 64.33 | 22.67 | 1000.0 | 9.000 | L1 | 20.0 |
| 0.470750 | --- | 24.99 | 46.50 | 21.51 | 1000.0 | 9.000 | L1 | 20.1 |
| 2.841048 | --- | 21.74 | 46.00 | 24.26 | 1000.0 | 9.000 | L1 | 20.2 |
| 2.919872 | 28.62 | --- | 56.00 | 27.38 | 1000.0 | 9.000 | L1 | 20.2 |
| 11.512544 | 33.42 | --- | 60.00 | 26.58 | 1000.0 | 9.000 | L1 | 20.0 |
| 12.054350 | --- | 26.61 | 50.00 | 23.39 | 1000.0 | 9.000 | L1 | 20.1 |

Notes:1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

Neutral line:



Final_Result

| Frequency (MHz) | QuasiPeak (dBuV) | Average (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.183957 | 40.99 | --- | 64.31 | 23.31 | 1000.0 | 9.000 | N | 19.9 |
| 0.460320 | --- | 25.36 | 46.69 | 21.33 | 1000.0 | 9.000 | N | 19.9 |
| 2.925850 | --- | 21.86 | 46.00 | 24.14 | 1000.0 | 9.000 | N | 19.9 |
| 3.152028 | 27.84 | --- | 56.00 | 28.16 | 1000.0 | 9.000 | N | 19.9 |
| 11.688332 | 33.27 | --- | 60.00 | 26.73 | 1000.0 | 9.000 | N | 19.8 |
| 12.328840 | --- | 26.93 | 50.00 | 23.07 | 1000.0 | 9.000 | N | 19.8 |

Notes:1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

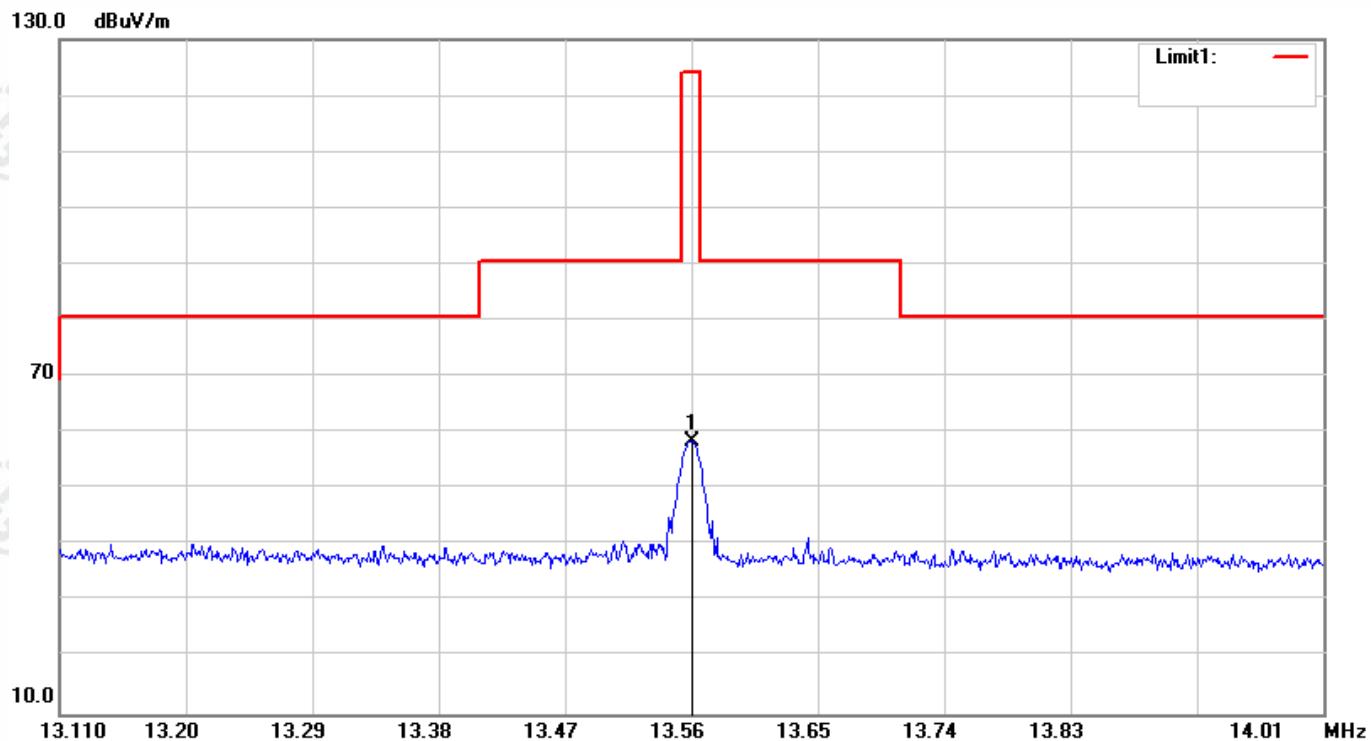
Appendix D): Transmitter Fundamental Field Strength

Limit:

Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters. The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

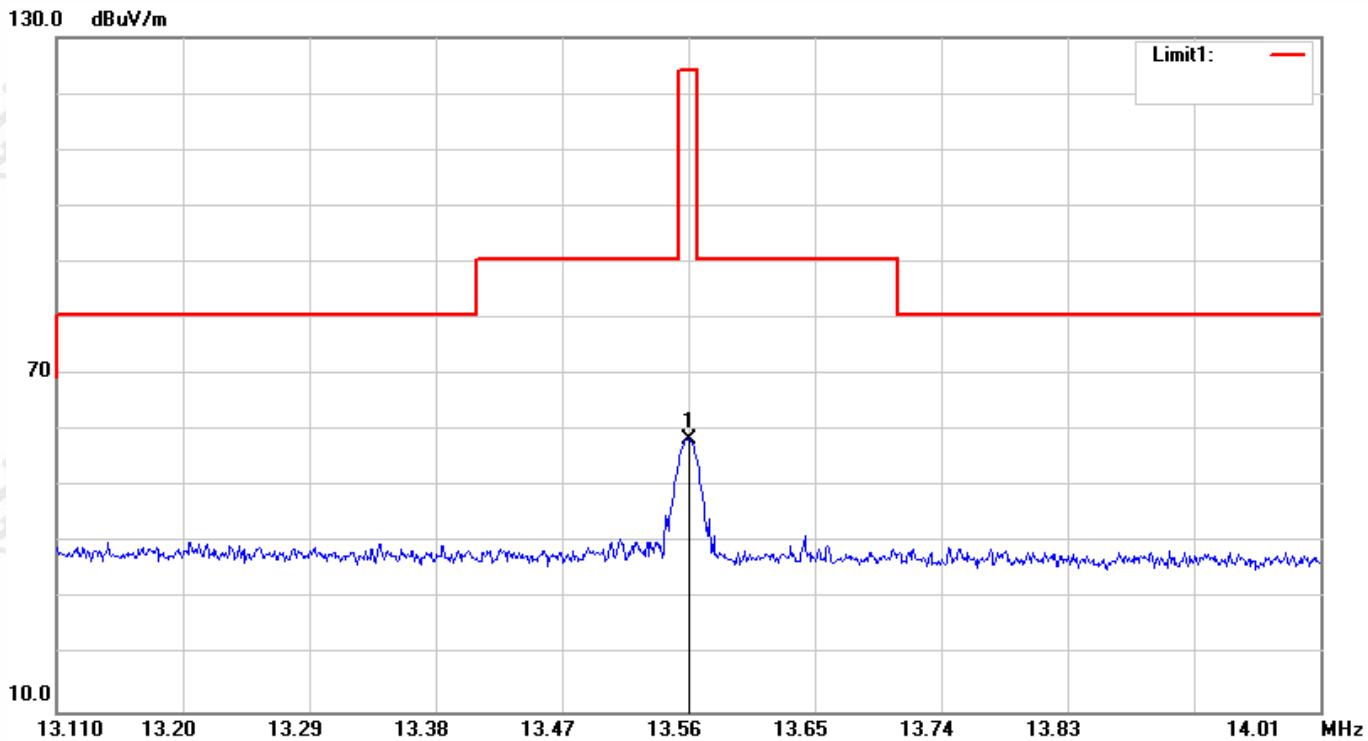
Test result:

| | | | |
|---------|------------|----------|-------|
| Mode: | NFC | Channel: | 13.56 |
| Remark: | Horizontal | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1 | 13.5600 | 37.15 | 21.38 | 58.53 | 124.00 | -65.47 | 100 | 34 | peak |

| | | | |
|---------|----------|----------|-------|
| Mode: | NFC | Channel: | 13.56 |
| Remark: | Vertical | | |



| No. | Frequency (MHz) | Reading (dB _{uV}) | Correct Factor(dB/m) | Result (dB _{uV/m}) | Limit (dB _{uV/m}) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|--------------------|--------------------------------|-------------------------|---------------------------------|--------------------------------|----------------|----------------|------------------|--------|
| 1 | 13.5600 | 37.15 | 21.38 | 58.53 | 124.00 | -65.47 | 100 | 34 | peak |

Note:

- 1) The field strength is calculated by adding the correct Factor. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Reading} + \text{Correct Factor}$$

$$\text{Correct Factor} = \text{Preamplifier Factor} - \text{Antenna Factor} - \text{Cable Factor}$$

Appendix E): Radiated Emissions

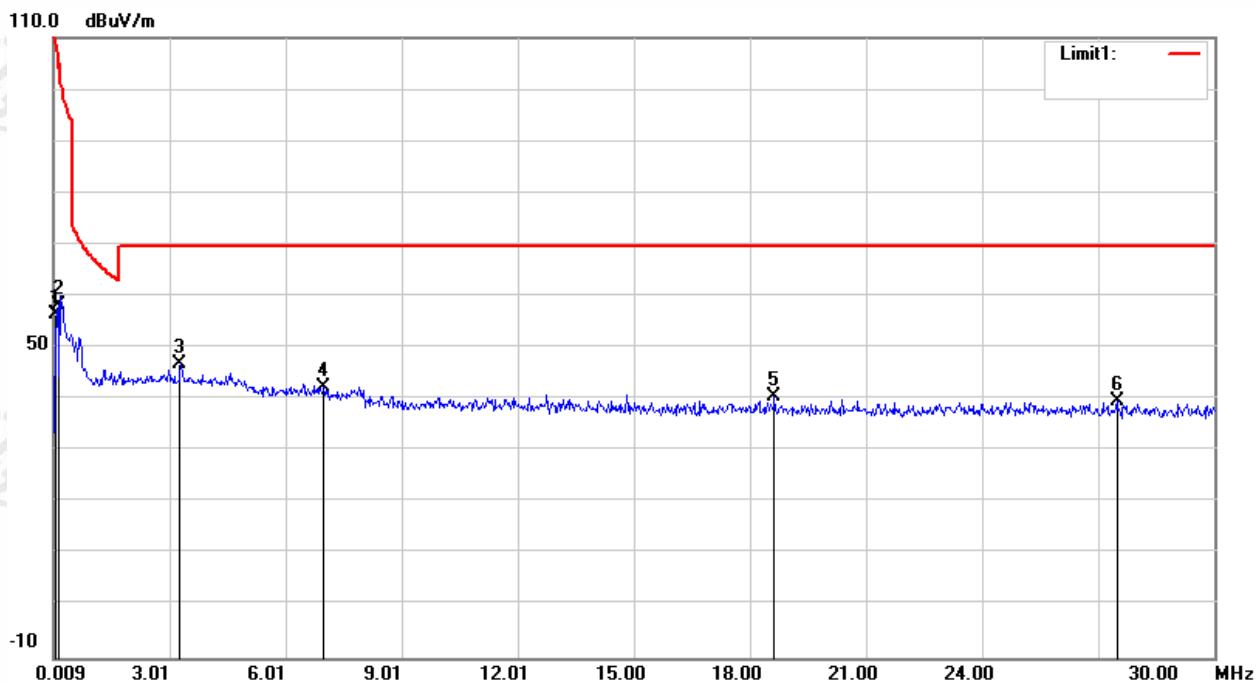
| Receiver Setup: | <table border="1"> <thead> <tr> <th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr> </thead> <tbody> <tr> <td>0.009MHz-0.090MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr> <tr> <td>0.009MHz-0.090MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr> <tr> <td>0.090MHz-0.110MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr> <tr> <td>0.110MHz-0.490MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr> <tr> <td>0.110MHz-0.490MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr> <tr> <td>0.490MHz -30MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr> <tr> <td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak</td></tr> </tbody> </table> | | | | | Frequency | Detector | RBW | VBW | Remark | 0.009MHz-0.090MHz | Peak | 10kHz | 30kHz | Peak | 0.009MHz-0.090MHz | Average | 10kHz | 30kHz | Average | 0.090MHz-0.110MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak | 0.110MHz-0.490MHz | Peak | 10kHz | 30kHz | Peak | 0.110MHz-0.490MHz | Average | 10kHz | 30kHz | Average | 0.490MHz -30MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak | 30MHz-1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak | | | | | |
|-------------------|--|-------------------------|------------|-----------------------------|--|-----------|------------------------------------|-------------------------|--------|-----------------------------|-------------------|-------------|-------|-------|------|-------------------|--------------|-------|-------|---------|-------------------|------------|-------|-------|------------|-------------------|------|-------|------------|------|-------------------|---------|-------|------------|---------|-----------------|------------|-------|------------|------------|-------------|------------|--------|------------|------------|------------|-----|------|---------|---|
| Frequency | Detector | RBW | VBW | Remark | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.009MHz-0.090MHz | Peak | 10kHz | 30kHz | Peak | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.009MHz-0.090MHz | Average | 10kHz | 30kHz | Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.090MHz-0.110MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.110MHz-0.490MHz | Peak | 10kHz | 30kHz | Peak | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.110MHz-0.490MHz | Average | 10kHz | 30kHz | Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.490MHz -30MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30MHz-1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Procedure: | <p>Below 1GHz test procedure as below:</p> <p>a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Limit: | <table border="1"> <thead> <tr> <th>Frequency</th><th>Field strength microvolt/meter)</th><th>Limit (dBμV/m)</th><th>Remark</th><th>Measurement distance (m)</th></tr> </thead> <tbody> <tr> <td>0.009MHz-0.490MHz</td><td>2400/F(kHz)</td><td>-</td><td>-</td><td>300</td></tr> <tr> <td>0.490MHz-1.705MHz</td><td>24000/F(kHz)</td><td>-</td><td>-</td><td>30</td></tr> <tr> <td>1.705MHz-30MHz</td><td>30</td><td>-</td><td>-</td><td>30</td></tr> <tr> <td>30MHz-88MHz</td><td>100</td><td>40.0</td><td>Quasi-peak</td><td>3</td></tr> <tr> <td>88MHz-216MHz</td><td>150</td><td>43.5</td><td>Quasi-peak</td><td>3</td></tr> <tr> <td>216MHz-960MHz</td><td>200</td><td>46.0</td><td>Quasi-peak</td><td>3</td></tr> <tr> <td>960MHz-1GHz</td><td>500</td><td>54.0</td><td>Quasi-peak</td><td>3</td></tr> <tr> <td>Above 1GHz</td><td>500</td><td>54.0</td><td>Average</td><td>3</td></tr> </tbody> </table> <p>Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.</p> | | | | | Frequency | Field strength microvolt/meter) | Limit (dB μ V/m) | Remark | Measurement distance (m) | 0.009MHz-0.490MHz | 2400/F(kHz) | - | - | 300 | 0.490MHz-1.705MHz | 24000/F(kHz) | - | - | 30 | 1.705MHz-30MHz | 30 | - | - | 30 | 30MHz-88MHz | 100 | 40.0 | Quasi-peak | 3 | 88MHz-216MHz | 150 | 43.5 | Quasi-peak | 3 | 216MHz-960MHz | 200 | 46.0 | Quasi-peak | 3 | 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 | Above 1GHz | 500 | 54.0 | Average | 3 |
| Frequency | Field strength microvolt/meter) | Limit (dB μ V/m) | Remark | Measurement distance (m) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.009MHz-0.490MHz | 2400/F(kHz) | - | - | 300 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.490MHz-1.705MHz | 24000/F(kHz) | - | - | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.705MHz-30MHz | 30 | - | - | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30MHz-88MHz | 100 | 40.0 | Quasi-peak | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 88MHz-216MHz | 150 | 43.5 | Quasi-peak | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 216MHz-960MHz | 200 | 46.0 | Quasi-peak | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Above 1GHz | 500 | 54.0 | Average | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Report No. : EED39M00008306

Radiated Spurious Emissions test Data:

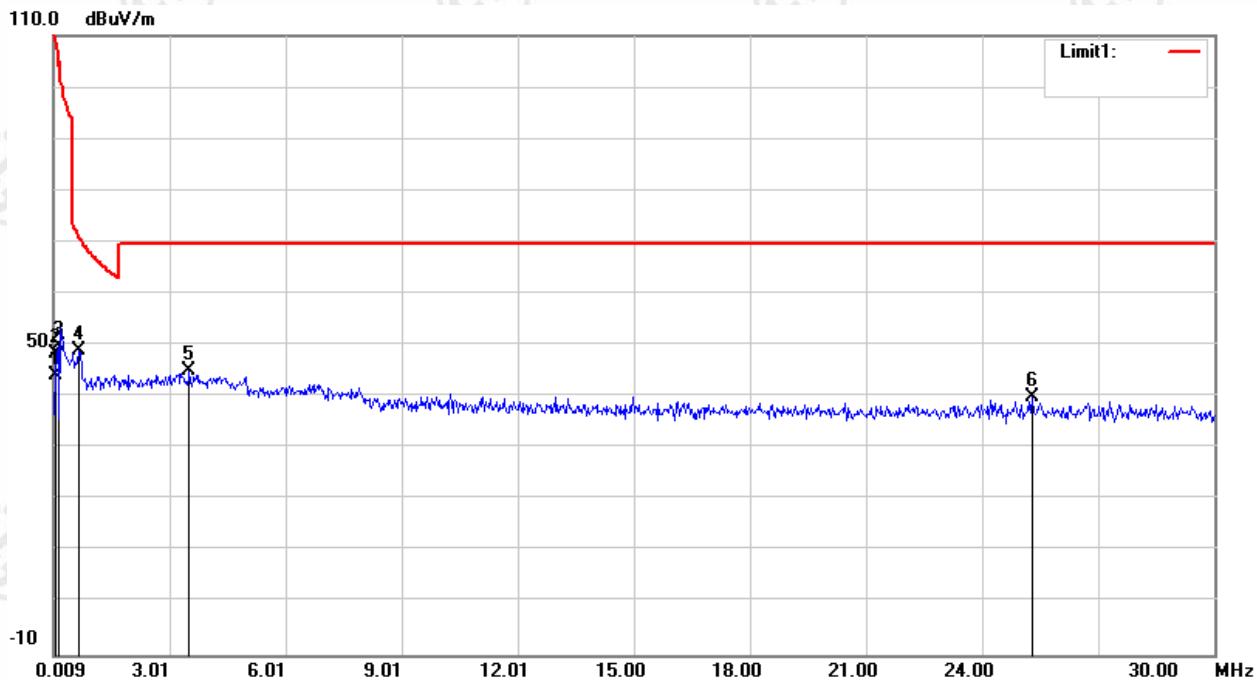
Radiated Emission below 30MHz:

| | | | |
|---------|------------|----------|-------|
| Mode: | NFC | Channel: | 13.56 |
| Remark: | Horizontal | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1 | 0.0793 | 35.43 | 20.95 | 56.38 | 110.09 | -53.71 | 100 | 203 | peak |
| 2 | 0.1190 | 36.62 | 21.63 | 58.25 | 106.26 | -48.01 | 100 | 11 | peak |
| 3 | 3.2843 | 25.40 | 21.56 | 46.96 | 69.54 | -22.58 | 100 | 335 | peak |
| 4 | 6.9855 | 21.01 | 21.43 | 42.44 | 69.54 | -27.10 | 100 | 101 | peak |
| 5 | 18.6270 | 19.46 | 21.02 | 40.48 | 69.54 | -29.06 | 100 | 187 | peak |
| 6 | 27.4627 | 18.91 | 20.71 | 39.62 | 69.54 | -29.92 | 100 | 78 | peak |

| | | | |
|---------|----------|----------|-------|
| Mode: | NFC | Channel: | 13.56 |
| Remark: | Vertical | | |

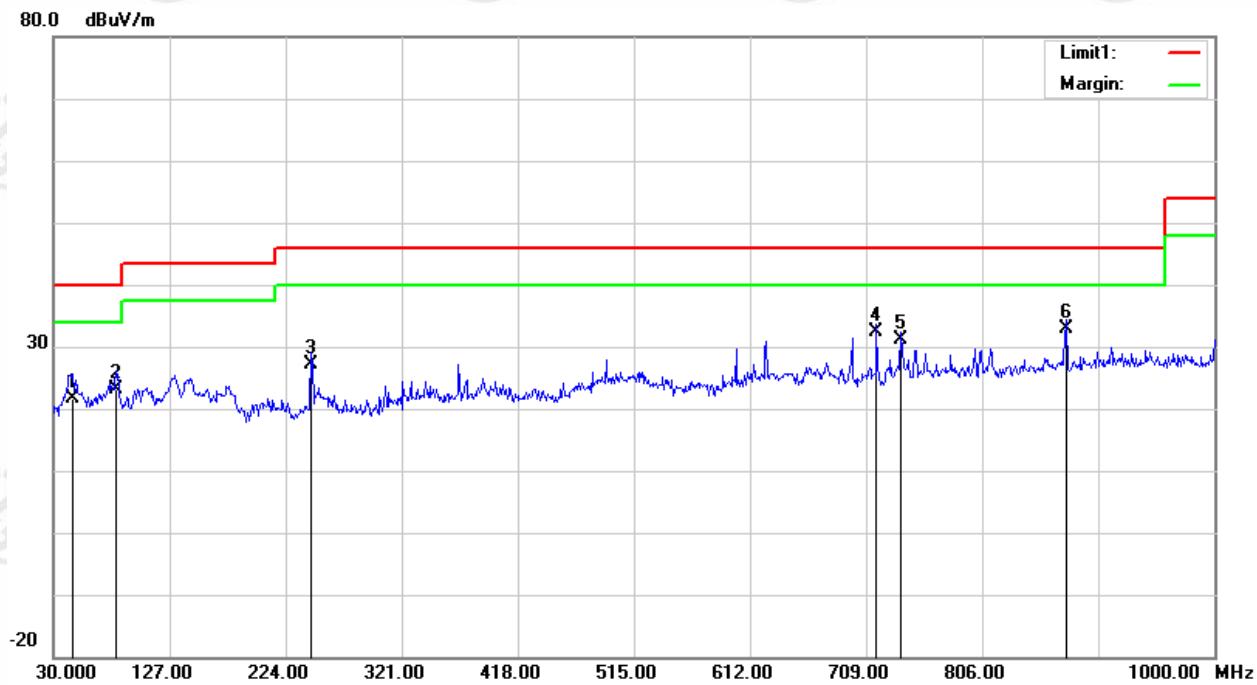


| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1 | 0.0396 | 24.46 | 19.63 | 44.09 | 116.38 | -72.29 | 100 | 143 | peak |
| 2 | 0.0793 | 27.52 | 20.95 | 48.47 | 110.09 | -61.62 | 100 | 22 | peak |
| 3 | 0.1190 | 28.26 | 21.63 | 49.89 | 106.26 | -56.37 | 100 | 185 | peak |
| 4 | 0.6574 | 27.26 | 21.57 | 48.83 | 71.25 | -22.42 | 100 | 227 | peak |
| 5 | 3.4932 | 23.48 | 21.56 | 45.04 | 69.54 | -24.50 | 100 | 331 | peak |
| 6 | 25.2837 | 40.09 | 0.00 | 40.09 | 69.54 | -29.45 | 100 | 46 | peak |

Report No. : EED39M00008306

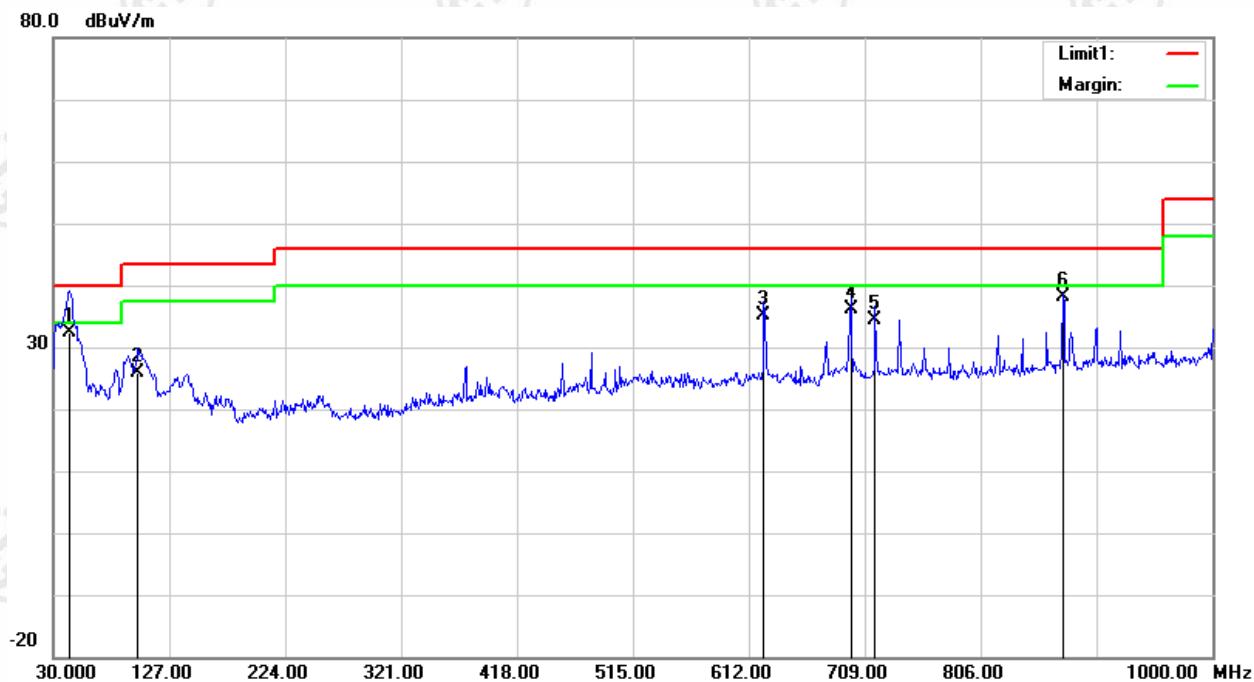
Radiated Emission 30MHz~1000MHz:

| | | | |
|---------|------------|----------|-------|
| Mode: | NFC | Channel: | 13.56 |
| Remark: | Horizontal | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1 | 46.4900 | 43.92 | -22.25 | 21.67 | 40.00 | -18.33 | 100 | 131 | QP |
| 2 | 82.3800 | 50.44 | -27.24 | 23.20 | 40.00 | -16.80 | 200 | 197 | QP |
| 3 | 245.3400 | 50.12 | -22.91 | 27.21 | 46.00 | -18.79 | 100 | 225 | QP |
| 4 | 717.7300 | 48.17 | -15.83 | 32.34 | 46.00 | -13.66 | 100 | 41 | QP |
| 5 | 738.1000 | 46.39 | -15.31 | 31.08 | 46.00 | -14.92 | 200 | 187 | QP |
| 6 | 876.8100 | 46.98 | -14.10 | 32.88 | 46.00 | -13.12 | 100 | 282 | QP |

| | | | |
|---------|----------|----------|-------|
| Mode: | NFC | Channel: | 13.56 |
| Remark: | Vertical | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (deg.) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|------------------|--------|
| 1 | 43.5800 | 54.87 | -22.55 | 32.32 | 40.00 | -7.68 | 100 | 19 | QP |
| 2 | 100.8100 | 48.44 | -22.47 | 25.97 | 43.50 | -17.53 | 100 | 336 | QP |
| 3 | 624.6100 | 51.72 | -16.50 | 35.22 | 46.00 | -10.78 | 100 | 182 | QP |
| 4 | 697.3600 | 52.39 | -16.31 | 36.08 | 46.00 | -9.92 | 100 | 54 | QP |
| 5 | 717.7300 | 50.15 | -15.83 | 34.32 | 46.00 | -11.68 | 100 | 360 | QP |
| 6 | 874.8700 | 52.22 | -14.13 | 38.09 | 46.00 | -7.91 | 100 | 77 | QP |

Note:

1) The field strength is calculated by adding the correct Factor. The basic equation with a sample calculation is as follows:

Final Test Level = Reading +Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix F): Frequency Stability

Limit:

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Result Table:

Maximum frequency error of the EUT with variations in ambient temperature:

| Temperature (°C) | Nominal Frequency (MHz) | Measured Frequency (MHz) | Deviation (Hz) | Limit (%) | Limit (Hz) | Verdict |
|------------------|-------------------------|--------------------------|----------------|-----------|------------|---------|
| -20 | 13.56 | 13.56019 | 190 | 0.01 | 1356 | PASS |
| -10 | 13.56 | 13.56022 | 220 | 0.01 | 1356 | PASS |
| 0 | 13.56 | 13.56010 | 100 | 0.01 | 1356 | PASS |
| 10 | 13.56 | 13.56008 | 80 | 0.01 | 1356 | PASS |
| 20 | 13.56 | 13.56014 | 140 | 0.01 | 1356 | PASS |
| 30 | 13.56 | 13.56.13 | 130 | 0.01 | 1356 | PASS |
| 40 | 13.56 | 13.56016 | 160 | 0.01 | 1356 | PASS |
| 50 | 13.56 | 13.56015 | 150 | 0.01 | 1356 | PASS |

Maximum frequency error of the EUT with variations in nominal operating voltage at an ambient temperature of 20°C (the power supply of PC is AC 120V):

| Supply Voltage (V) | Nominal Frequency (MHz) | Measured Frequency (MHz) | Deviation (Hz) | Limit (%) | Limit (Hz) | Verdict |
|--------------------|-------------------------|--------------------------|----------------|-----------|------------|---------|
| 120V | 13.56 | 13.56014 | 140 | 0.01 | 1356 | PASS |
| 120V | 13.56 | 13.56012 | 120 | 0.01 | 1356 | PASS |
| 102V | 13.56 | 13.56011 | 110 | 0.01 | 1356 | PASS |
| 138V | 13.56 | 13.56011 | 110 | 0.01 | 1356 | PASS |

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Refer to Report No. EED39N00008301 for test setup photos.

APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

Refer to Report No. EED39N00008301 for EUT external and internal photos.

The testing data and results in this report are just for scientific research, education, internal quality control and product development etc.

*** End of Report ***

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