# RF TEST REPORT

| | | |
|---|---|---|
| Test item | : | Pentouch Dongle |
| Model No. | : | AN-TD200 |
| Order No. | : | 1103-00270 |
| Date of receipt | : | 2011-03-02 |
| Test duration | : | 2011-03-07 ~ 2011-03-18 |
| Date of issue | : | 2011-03-28 |
| Use of report | : | FCC Original Grant |

Applicant : LG Electronics USA.
1000 Sylvan Avenue Englewood Cliffs, New Jersey, United States

Test laboratory : Digital EMC Co., Ltd.
683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Kyunggi-Do, 449-080, Korea

| | | |
|---|---|---|
| Test specification | : | FCC Part 15.249 Subpart C<br>ANSI C63.4-2003 |
| Test environment | : | See appended test report |
| Test result | : | ☒ Pass ☐ Fail |



| Tested by: | Witnessed by: | Reviewed by: |
|---|---|---|
| Engineer<br>D.C.Cha | N/A | Manager<br>W.J. Lee |

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# 1. Equipment information

## 1.1 Equipment description

| | |
|---|---|
| FCC Equipment Class | Part 15 Low Power Communication Device Transmitter |
| Equipment type | Pentouch Dongle |
| Equipment model name | AN-TD200 |
| Equipment add model name | N/A |
| Equipment serial no. | Identical prototype |
| Frequency band | 2402 ~ 2480MHz |
| Power | DC 5 V |
| Antenna type | Internal Type: PCB Antenna (Max. peak gain: 2.211 dBi) |

## 1.2 Ancillary equipment

| Equipment | Model No. | Serial No. | Manufacturer | Note |
|---|---|---|---|---|
| - | - | - | - | - |
| - | - | - | - | - |

# 2. Information about test items

## 2.1 Test mode

This device was tested in maximum duty and maximum power.

| | |
|---|---|
| **Test Case 1** | - |
| **Test Case 2** | - |
| **Test Case 3** | - |

## 2.2 Auxiliary equipment

| Equipment | Model No. | Serial No. | Manufacturer | Note |
|---|---|---|---|---|
| Notebook | X51RL | 85N0AS318314227 | ASUS | - |
| - | - | - | - | - |

## 2.3 Tested frequency

| | TX Frequency (MHz) | RX Frequency (MHz) |
|---|---|---|
| **Lowest Channel** | 2402 | 2402 |
| **Middle Channel** | 2439 | 2439 |
| **Highest Channel** | 2480 | 2480 |

## 2.4 Tested environment

| | | |
|---|---|---|
| **Temperature** | : | 21 ~ 23 °C |
| **Relative humidity content** | : | 36 ~ 55 % R.H. |
| **Details of power supply** | : | DC 5 V<br>AC-DC Adapter : AC 120 V 60 Hz |

## 2.5 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing
→ None

# 3. Test Report

## 3.1 Summary of tests

| FCC Part Section(s) | Parameter | Limit (Using in 2400 ~ 2483.5MHz) | Test Condition | Status Note 1 |
|---|---|---|---|---|
| **I. Transmit mode (Tx)** | | | | |
| 15.249 (a) | Field Strength Limits | Refer to the FCC 15.249(a) | Radiated | **C** Note.2 |
| 15.205, 15.209 | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | < FCC 15.209 limits | Radiated | **C** Note.2 |
| 15.207 | AC Conducted Emissions | < FCC 15.207 limits | Line Conducted | **C** |

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable

Note 2: This test item was performed in each axis. and the worst case data were reported.

The sample was tested according to the following specification:
ANSI C-63.4-2003

## 3.2 Transmitter requirements

### 3.2.1 AC Conducted Emissions

**- Procedure:**

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak and average detector mode with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

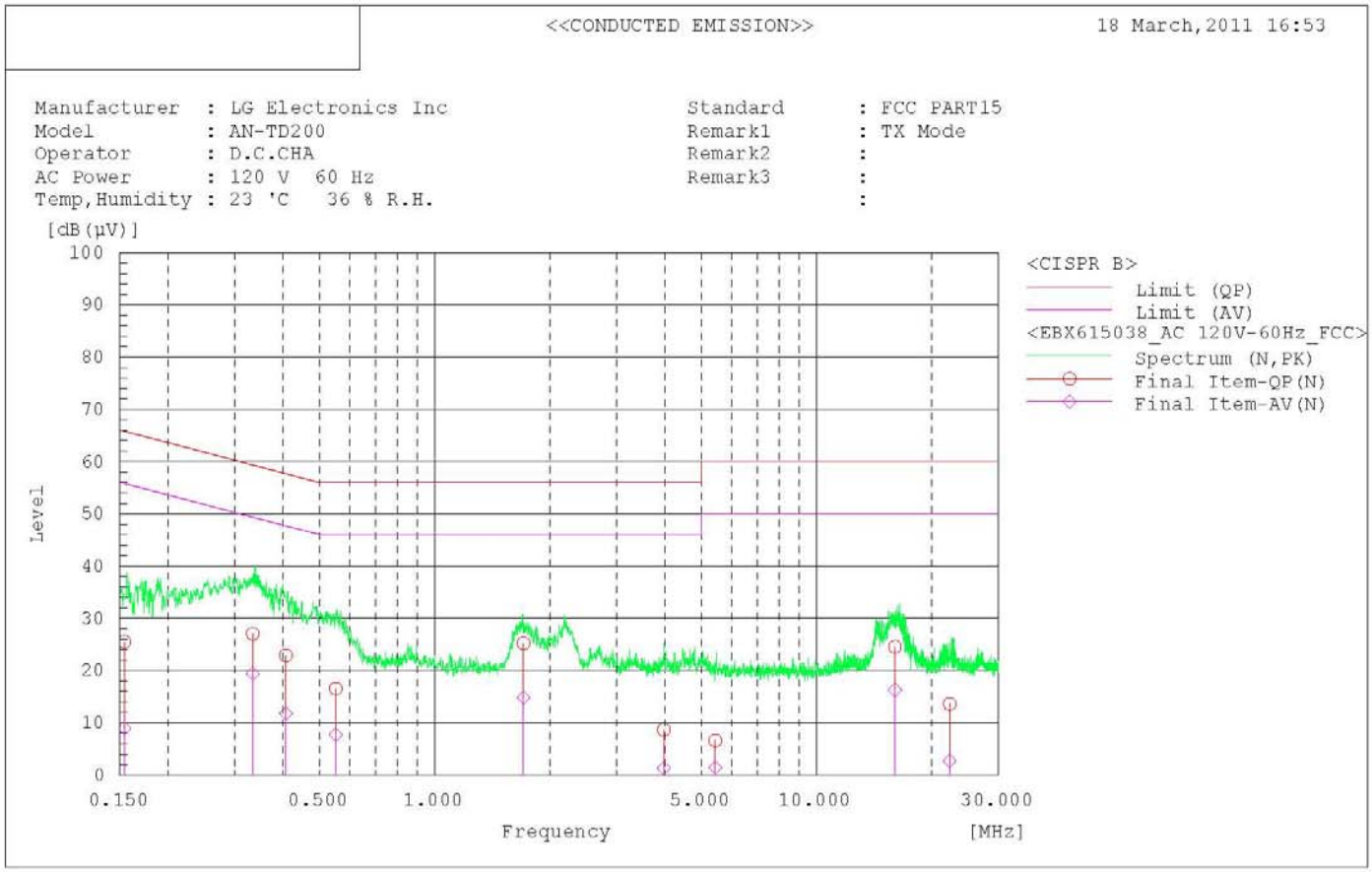
**- Measurement Data: Comply**

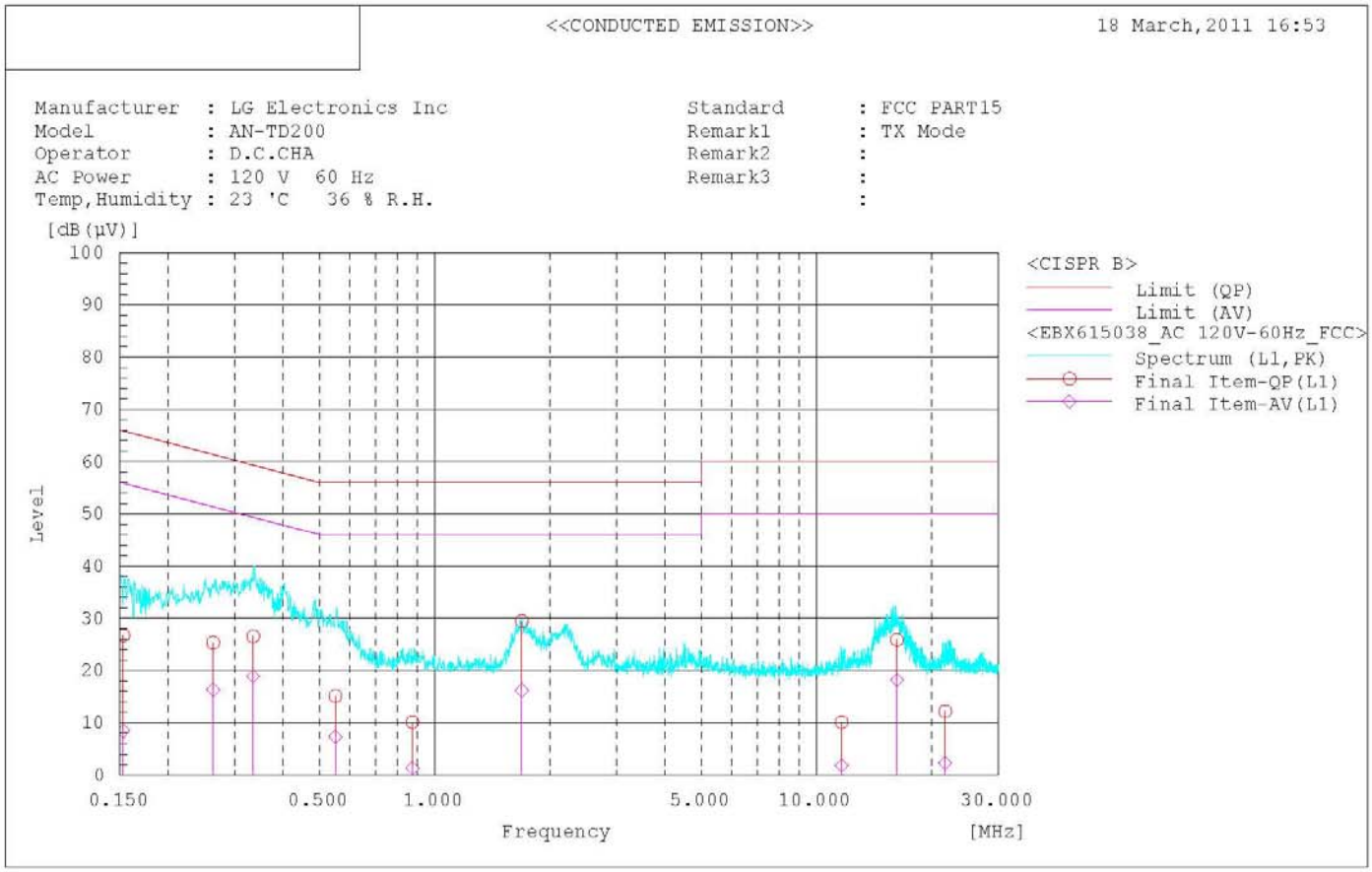
**Minimum Standard: FCC Part 15.207(a)**

| Frequency Range (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15 ~ 0.5 | 66 to 56 * | 56 to 46 * |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

* Decreases with the logarithm of the frequency

## AC Line Conducted Emissions (Graph)



## AC Line Conducted Emissions (Data List)

<<CONDUCTED EMISSION>>

18 March,2011 16:53

Standard : FCC PART15
Manufacturer : LG Electronics Inc
Model : AN-TD200
Operator : D.C.CHA
AC Power : 120 V 60 Hz
Temp,Humidity : 23 'C 36 % R.H.
Remark1 : TX Mode
Remark2 :
Remark3 :
:

Final Result

--- N Phase ---

| No. | Frequency [MHz] | Reading QP [dB(μV)] | Reading AV [dB(μV)] | c.f [dB] | Result QP [dB(μV)] | Result AV [dB(μV)] | Limit QP [dB(μV)] | Limit AV [dB(μV)] | Margin QP [dB] | Margin AV [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.154 | 25.4 | 8.8 | 0.1 | 25.5 | 8.9 | 65.8 | 55.8 | 40.3 | 46.9 | |
| 2 | 0.408 | 22.8 | 11.7 | 0.1 | 22.9 | 11.8 | 57.7 | 47.7 | 34.8 | 35.9 | |
| 3 | 0.334 | 26.9 | 19.3 | 0.1 | 27.0 | 19.4 | 59.4 | 49.4 | 32.4 | 30.0 | |
| 4 | 0.551 | 16.4 | 7.6 | 0.1 | 16.5 | 7.7 | 56.0 | 46.0 | 39.5 | 38.3 | |
| 5 | 1.709 | 25.0 | 14.6 | 0.2 | 25.2 | 14.8 | 56.0 | 46.0 | 30.8 | 31.2 | |
| 6 | 3.984 | 8.3 | 1.0 | 0.3 | 8.6 | 1.3 | 56.0 | 46.0 | 47.4 | 44.7 | |
| 7 | 5.431 | 6.2 | 1.0 | 0.4 | 6.6 | 1.4 | 60.0 | 50.0 | 53.4 | 48.6 | |
| 8 | 16.038 | 23.6 | 15.4 | 0.9 | 24.5 | 16.3 | 60.0 | 50.0 | 35.5 | 33.7 | |
| 9 | 22.313 | 12.2 | 1.3 | 1.4 | 13.6 | 2.7 | 60.0 | 50.0 | 46.4 | 47.3 | |

--- L1 Phase ---

| No. | Frequency [MHz] | Reading QP [dB(μV)] | Reading AV [dB(μV)] | c.f [dB] | Result QP [dB(μV)] | Result AV [dB(μV)] | Limit QP [dB(μV)] | Limit AV [dB(μV)] | Margin QP [dB] | Margin AV [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.153 | 26.4 | 8.1 | 0.3 | 26.7 | 8.4 | 65.8 | 55.8 | 39.1 | 47.4 | |
| 2 | 0.263 | 25.0 | 16.0 | 0.3 | 25.3 | 16.3 | 61.3 | 51.3 | 36.0 | 35.0 | |
| 3 | 0.335 | 26.2 | 18.6 | 0.3 | 26.5 | 18.9 | 59.3 | 49.3 | 32.8 | 30.4 | |
| 4 | 0.550 | 14.8 | 7.0 | 0.3 | 15.1 | 7.3 | 56.0 | 46.0 | 40.9 | 38.7 | |
| 5 | 0.875 | 9.8 | 1.0 | 0.3 | 10.1 | 1.3 | 56.0 | 46.0 | 45.9 | 44.7 | |
| 6 | 1.692 | 29.2 | 15.9 | 0.3 | 29.5 | 16.2 | 56.0 | 46.0 | 26.5 | 29.8 | |
| 7 | 11.627 | 9.3 | 1.0 | 0.8 | 10.1 | 1.8 | 60.0 | 50.0 | 49.9 | 48.2 | |
| 8 | 16.243 | 24.9 | 17.2 | 1.0 | 25.9 | 18.2 | 60.0 | 50.0 | 34.1 | 31.8 | |
| 9 | 21.716 | 10.9 | 1.0 | 1.3 | 12.2 | 2.3 | 60.0 | 50.0 | 47.8 | 47.7 | |

### 3.2.2 Radiated Emission

**- Procedure:**

The EUT was placed on a 0.8m high wooden table inside a semi anechoic chamber. An antenna was placed at 3m distance from the EUT. Measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed on OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions

The spectrum analyzer is set to:

Frequency Range = 30 MHz ~ 10$^{th}$ harmonic.

RBW = 100 kHz ( 30MHz ~ 1 GHz) VBW ≥ RBW
= 1 MHz (1 GHz ~ 10$^{th}$ harmonic )

Distance = 3m Detector function = peak

Trace = max hold Sweep = auto

**Measurement Data: Comply**

Note 1: See next pages for actual measured spectrum plots and data.

**Fundamental / Harmonics emission: FCC Part 15.249(a)**

| Frequency (MHz) | Limit @ 3m | |
|---|---|---|
| | Fundamental (mV/m) | Harmonics (uV/m) |
| 2400 ~ 2483.5 | 50 | 500 |

**General Standard: FCC Part 15.209(a)**

| Frequency (MHz) | Limit (uV/m) @ 3m |
|---|---|
| 30 ~ 88 | 100 ** |
| 88 ~ 216 | 150 ** |
| 216 ~ 960 | 200 ** |
| Above 960 | 500 |

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ **FCC Part 15.205 (a):** Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | MHz | GHz | GHz |
|---|---|---|---|---|---|
| 0.009 ~ 0.110 | 12.29 ~ 12.293 | 149.9 ~ 150.05 | 1645.5 ~ 1646.5 | 4.5 ~ 5.15 | 14.47 ~ 14.5 |
| 0.495 ~ 0.505 | 12.51975 ~ 12.52025 | 156.52475 ~ 156.52525 | 1660 ~ 1710 | 5.35 ~ 5.46 | 15.35 ~ 16.2 |
| 2.1735 ~ 2.1905 | 12.57675 ~ 12.57725 | 156.7 ~ 156.9 | 1718.8 ~ 1722.2 | 7.25 ~ 7.75 | 17.7 ~ 21.4 |
| 4.125 ~ 4.128 | 13.36 ~ 13.41 | 162.0125 ~ 167.17 | 2200 ~ 2300 | 8.025 ~ 8.5 | 22.01 ~ 23.12 |
| 4.17725 ~ 4.17775 | 16.42 ~ 16.423 | 167.72 ~ 173.2 | 2310 ~ 2390 | 9.0 ~ 9.2 | 23.6 ~ 24.0 |
| 4.20725 ~ 4.20775 | 16.69475 ~ 16.69525 | 240 ~ 285 | 2483.5 ~ 2500 | 9.3 ~ 9.5 | 31.2 ~ 31.8 |
| 6.215 ~ 6.218 | 16.80425 ~ 16.80475 | 322 ~ 335.4 | 2655 ~ 2900 | 10.6 ~ 12.7 | 36.43 ~ 36.5 |
| 6.26775 ~ 6.26825 | 25.5 ~ 25.67 | 399.90 ~ 410 | 3260 ~ 3267 | 13.25 ~ 13.4 | Above 38.6 |
| 6.31175 ~ 6.31225 | 37.5 ~ 38.25 | 608 ~ 614 | 3332 ~ 3339 | | |
| 8.291 ~ 8.294 | 73 ~ 74.6 | 960 ~ 1240 | 3345.8 ~ 3358 | | |
| 8.362 ~ 8.366 | 74.8 ~ 75.2 | 1300 ~ 1427 | 3600 ~ 4400 | | |
| 8.37625 ~ 8.38675 | 108 ~ 121.94 | 1435 ~ 1626.5 | | | |
| 8.41425 ~ 8.41475 | 123 ~ 138 | | | | |

▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

## 30MHz ~ 25GHz Radiated Spurious Emissions

▪ Lowest Channel

| Freq. (MHz) | ANT Pol | The worst case EUT Position | Detector Mode | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 265.369 | H | X axis | QP | 43.50 | -5.20 | 38.30 | 46.00 | 7.70 |
| 2401.620 | H | Z axis | PK | 100.99 | -2.91 | 98.08 | 114.00 | 15.92 |
| 2402.050 | H | Z axis | AV | 84.34 | -2.91 | 81.43 | 94.00 | 12.57 |
| 2401.640 | V | X axis | PK | 99.96 | -2.91 | 97.05 | 114.00 | 16.95 |
| 2402.045 | V | Y axis | AV | 82.58 | -2.91 | 79.67 | 94.00 | 14.33 |
| 2390.000 | H | Y axis | PK | 65.32 | -2.81 | 62.51 | 74.00 | 11.49 |
| 2388.320 | H | Y axis | AV | 36.12 | -2.81 | 33.31 | 54.00 | 20.69 |
| 2390.000 | V | X axis | PK | 64.19 | -2.81 | 61.38 | 74.00 | 12.62 |
| 2386.080 | V | X axis | AV | 34.76 | -2.81 | 31.95 | 54.00 | 22.05 |
| 4803.695 | H | Z axis | PK | 46.02 | 5.14 | 51.16 | 74.00 | 22.84 |
| 4803.975 | H | Z axis | AV | 34.37 | 5.14 | 39.51 | 54.00 | 14.49 |
| 4805.580 | V | X axis | PK | 46.23 | 5.14 | 51.37 | 74.00 | 22.63 |
| 4804.005 | V | Y axis | AV | 34.23 | 5.14 | 39.37 | 54.00 | 14.63 |
| 7205.970 | H | X axis | PK | 51.90 | 9.73 | 61.63 | 74.00 | 12.37 |
| 7205.820 | H | X axis | AV | 39.52 | 9.73 | 49.25 | 54.00 | 4.75 |
| 7205.930 | V | Z axis | PK | 54.40 | 9.73 | 64.13 | 74.00 | 9.87 |
| 7206.010 | V | Z axis | AV | 41.68 | 9.73 | 51.41 | 54.00 | 2.59 |

**Note.**

1. No other spurious and harmonic emissions were detected greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 30MHz ~ 25GHz Radiated Spurious Emissions

▪ Middle Channel

| Freq. (MHz) | ANT Pol | The worst case EUT Position | Detector Mode | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 265.339 | H | X axis | QP | 43.47 | -5.20 | 38.27 | 46.00 | 7.73 |
| 2438.770 | H | Z axis | PK | 101.55 | -2.82 | 98.73 | 114.00 | 15.27 |
| 2439.015 | H | Z axis | AV | 84.64 | -2.82 | 81.82 | 94.00 | 12.18 |
| 2439.460 | V | X axis | PK | 100.35 | -2.82 | 97.53 | 114.00 | 16.47 |
| 2438.955 | V | X axis | AV | 83.14 | -2.82 | 80.32 | 94.00 | 13.68 |
| 4878.605 | H | Y axis | PK | 47.05 | 5.32 | 52.37 | 74.00 | 21.63 |
| 4877.960 | H | Z axis | AV | 35.97 | 5.32 | 41.29 | 54.00 | 12.71 |
| 4877.865 | V | X axis | PK | 46.15 | 5.32 | 51.47 | 74.00 | 22.53 |
| 4878.040 | V | X axis | AV | 34.84 | 5.32 | 40.16 | 54.00 | 13.84 |
| 7316.965 | H | Y axis | PK | 50.67 | 10.12 | 60.79 | 74.00 | 13.21 |
| 7316.745 | H | Y axis | AV | 38.23 | 10.12 | 48.35 | 54.00 | 5.65 |
| 7316.670 | V | Z axis | PK | 53.77 | 10.12 | 63.89 | 74.00 | 10.11 |
| 7316.910 | V | Z axis | AV | 41.36 | 10.12 | 51.48 | 54.00 | 2.52 |

**Note.**

1. No other spurious and harmonic emissions were detected greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 30MHz ~ 25GHz Radiated Spurious Emissions

▪ Highest Channel

| Freq. (MHz) | ANT Pol | The worst case EUT Position | Detector Mode | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 265.468 | H | X axis | QP | 42.99 | -5.20 | 37.79 | 46.00 | 8.21 |
| 2479.665 | H | Z axis | PK | 99.38 | -2.72 | 96.66 | 114.00 | 17.34 |
| 2480.040 | H | Z axis | AV | 82.89 | -2.72 | 80.17 | 94.00 | 13.83 |
| 2479.675 | V | Y axis | PK | 93.56 | -2.72 | 90.84 | 114.00 | 23.16 |
| 2480.035 | V | X axis | AV | 80.62 | -2.72 | 77.90 | 94.00 | 16.10 |
| 2483.500 | H | Z axis | PK | 74.07 | -2.47 | 71.60 | 74.00 | 2.40 |
| 2483.500 | H | Z axis | AV | 36.64 | -2.47 | 34.17 | 54.00 | 19.83 |
| 2483.500 | V | X axis | PK | 71.32 | -2.47 | 68.85 | 74.00 | 5.15 |
| 2483.500 | V | X axis | AV | 35.44 | -2.47 | 32.97 | 54.00 | 21.03 |
| 4959.595 | H | Z axis | PK | 48.21 | 5.90 | 54.11 | 74.00 | 19.89 |
| 4960.005 | H | Z axis | AV | 37.92 | 5.90 | 43.82 | 54.00 | 10.18 |
| 4959.615 | V | X axis | PK | 47.06 | 5.90 | 52.96 | 74.00 | 21.04 |
| 4960.005 | V | X axis | AV | 36.07 | 5.90 | 41.97 | 54.00 | 12.03 |
| 7441.220 | H | Y axis | PK | 46.98 | 10.62 | 57.60 | 74.00 | 16.40 |
| 7439.735 | H | Y axis | AV | 35.05 | 10.62 | 45.67 | 54.00 | 8.33 |
| 7440.840 | V | Z axis | PK | 49.34 | 10.62 | 59.96 | 74.00 | 14.04 |
| 7439.800 | V | Z axis | AV | 37.30 | 10.62 | 47.92 | 54.00 | 6.08 |

**Note.**

1. No other spurious and harmonic emissions were detected greater than listed emissions on above table.
2. Sample Calculation.
   Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
   Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

### 3.2.3 Antenna Requirements

**- Procedure:**

Describe how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT.

**- Conclusion:** **Comply**

The antenna is permanently attached by PCB. (Refer to Internal Photo file.)

**- Minimum Standard:**

| |
|---|
| 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. |

# APPENDIX

## TEST EQUIPMENT FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

| | Type | Manufacturer | Model | Cal.Date (yy/mm/dd) | Next.Cal.Date (yy/mm/dd) | S/N |
|---|---|---|---|---|---|---|
| ☒ | Spectrum Analyzer | Agilent | E4440A | 10/09/30 | 11/09/30 | MY45304199 |
| ☐ | Spectrum Analyzer | Rohde Schwarz | FSQ26 | 11/01/11 | 12/01/11 | 200445 |
| ☐ | Spectrum analyzer | Agilent | E4404B | 11/03/08 | 12/03/08 | US41061134 |
| ☐ | Spectrum Analyzer(RE) | H.P | 8563E | 10/10/04 | 11/10/04 | 3551A04634 |
| ☐ | MXA Signal Analyzer | Agilent Technologies, Inc | N9020A | 11/01/07 | 12/01/07 | MY49100833 |
| ☐ | Power Meter | H.P | EPM-442A | 10/07/01 | 11/07/01 | GB37170413 |
| ☐ | Power Sensor | H.P | 8481A | 10/07/01 | 11/07/01 | 3318A96332 |
| ☐ | Power Divider | Agilent | 11636B | 10/10/05 | 11/10/05 | 56471 |
| ☐ | 4-Way Power Divider | ET Industries | D-0526-4 | 10/12/24 | 11/12/24 | 210195001 |
| ☐ | Power Splitter | Anritsu | K241B | 10/10/05 | 11/10/05 | 020611 |
| ☐ | Power Splitter | Anritsu | K241B | 10/07/01 | 11/07/01 | 017060 |
| ☐ | Power Splitters & Dividers | Aeroflex/Weinschel | 1594 | 11/02/21 | 12/02/21 | 1177 |
| ☐ | Frequency Counter | H.P | 5342A | 10/07/01 | 11/07/01 | 2119A04450 |
| ☐ | TEMP & HUMIDITY Chamber | JISCO | KR-100/J-RHC2 | 10/10/04 | 11/10/04 | 30604493/021031 |
| ☐ | Digital Multimeter | H.P | 34401A | 11/03/07 | 12/03/07 | 3146A13475, US36122178 |
| ☐ | Multifunction Synthesizer | HP | 8904A | 10/10/11 | 11/10/11 | 3633A08404 |
| ☐ | Signal Generator | Rohde Schwarz | SMR20 | 11/03/08 | 12/03/08 | 101251 |
| ☐ | Signal Generator | H.P | ESG-3000A | 10/07/01 | 11/07/01 | US37230529 |
| ☐ | Vector Signal Generator | Rohde Schwarz | SMJ100A | 11/01/11 | 12/01/11 | 100148 |
| ☐ | Vector Signal Generator | Rohde Schwarz | SMBV100A | 11/01/11 | 12/01/11 | 255571 |
| ☐ | Audio Analyzer | H.P | 8903B | 10/07/02 | 11/07/02 | 3011A09448 |
| ☐ | Modulation Analyzer | H.P | 8901B | 10/07/01 | 11/07/01 | 3028A03029 |
| ☐ | 8960 Series 10 Wireless Comms. Test Set | Agilent | E5515C | 11/03/07 | 12/03/07 | GB43461134 |
| ☐ | Universal Radio communication Tester | Rohde Schwarz | CMU200 | 11/03/07 | 12/03/07 | 106760 |
| ☐ | Bluetooth Tester | TESCOM | TC-3000B | 10/07/01 | 11/07/01 | 3000B000268 |
| ☐ | Thermo hygrometer | BODYCOM | BJ5478 | 11/01/13 | 12/01/13 | 090205-3 |
| ☐ | Thermo hygrometer | BODYCOM | BJ5478 | 11/01/13 | 12/01/13 | 090205-2 |
| ☐ | Thermo hygrometer | BODYCOM | BJ5478 | 11/01/13 | 12/01/13 | 090205-4 |
| ☐ | AC Power supply | DAEKWANG | 5KVA | 11/03/08 | 12/03/08 | 20060321-1 |
| ☐ | DC Power Supply | HP | 6622A | 11/03/07 | 12/03/07 | 3448A03760 |
| ☐ | DC Power Supply | HP | 6633A | 11/03/07 | 12/03/07 | 3524A06634 |
| ☐ | DC Power Supply | Protek | PWS-3010D | 10/10/04 | 11/10/04 | 4072702 |
| ☐ | BAND Reject Filter | Microwave Circuits | N0308372 | 10/10/05 | 11/10/05 | 3125-01DC0352 |
| ☐ | BAND Reject Filter | Wainwright | WRCG1750 | 10/10/05 | 11/10/05 | 2 |
| ☐ | High-Pass Filter | ANRITSU | MP526D | 10/10/04 | 11/10/04 | M27756 |
| ☐ | High-pass filter | Wainwright | WHNX2.1 | N/A | N/A | 1 |
| ☒ | High-pass filter | Wainwright | WHNX3.0 | N/A | N/A | 9 |
| ☐ | High-pass filter | Wainwright | WHNX5.0 | N/A | N/A | 8 |

| | Type | Manufacturer | Model | Cal.Date (yy/mm/dd) | Next.Cal.Date (yy/mm/dd) | S/N |
|---|---|---|---|---|---|---|
| ☐ | High-Pass Filter | Wainwright | WHKX8.5 | N/A | N/A | 1 |
| ☐ | High-Pass Filter | Wainwright | D82346 | N/A | N/A | 9 |
| ☐ | Tunable Notch Filter | Wainwright | WRCT800.0 /960.0-0.2/40-8SSK | N/A | N/A | 32 |
| ☐ | Tunable Notch Filter | Wainwright | WRCD1700.0 /2000.0-0.2/40-10SSK | N/A | N/A | 53 |
| ☐ | Tunable Notch Filter | Wainwright | WRCT1900.0/ 2200.0-5/40-10SSK | N/A | N/A | 30 |
| ☒ | HORN ANT | ETS | 3115 | 10/10/04 | 11/10/04 | 21097 |
| ☐ | HORN ANT | ETS | 3115 | 10/07/14 | 11/07/14 | 6419 |
| ☐ | HORN ANT | A.H.Systems | SAS-574 | 09/06/10 | 11/06/10 | 154 |
| ☐ | HORN ANT | A.H.Systems | SAS-574 | 09/06/10 | 11/06/10 | 155 |
| ☐ | HORN ANT | SCHWARZBECK | BBHA9120A | 10/04/13 | 12/04/13 | 322 |
| ☐ | Dipole Antenna | Schwarzbeck | VHA9103 | 10/11/29 | 11/11/29 | 2116 |
| ☐ | Dipole Antenna | Schwarzbeck | VHA9103 | 10/11/29 | 11/11/29 | 2117 |
| ☐ | Dipole Antenna | Schwarzbeck | UHA9105 | 10/11/29 | 11/11/29 | 2261 |
| ☐ | Dipole Antenna | Schwarzbeck | UHA9105 | 10/11/29 | 11/11/29 | 2262 |
| ☐ | LOOP Antenna | ETS | 6502 | 10/11/29 | 11/11/29 | 3471 |
| ☐ | Coaxial Fixed Attenuators | Agilent | 8491B | 10/07/01 | 11/07/01 | MY39260700 |
| ☐ | Attenuator (3dB) | WEINSCHEL | 56-3 | 10/10/05 | 11/10/05 | Y2342 |
| ☐ | Attenuator (3dB) | WEINSCHEL | 56-3 | 10/10/05 | 11/10/05 | Y2370 |
| ☐ | Attenuator (10dB) | WEINSCHEL | 23-10-34 | 10/10/01 | 11/10/01 | BP4386 |
| ☐ | Attenuator (10dB) | WEINSCHEL | 23-10-34 | 11/01/11 | 12/01/11 | BP4387 |
| ☐ | Attenuator (10dB) | WEINSCHEL | 86-10-11 | 10/10/05 | 11/10/05 | 446 |
| ☐ | Attenuator (10dB) | WEINSCHEL | 86-10-11 | 10/10/05 | 11/10/05 | 408 |
| ☐ | Attenuator (20dB) | WEINSCHEL | 86-20-11 | 10/10/05 | 11/10/05 | 432 |
| ☐ | Attenuator (30dB) | JFW | 50FH-030-300 | 11/03/07 | 12/03/07 | 060320-1 |
| ☐ | Attenuator (40dB) | WEINSCHEL | 57-40-33 | 10/10/01 | 11/10/01 | NN837 |
| ☐ | Termination | H.P | HP-909D | 10/07/02 | 11/07/02 | 02750 |
| ☐ | Termination | H.P | HP-909D | 10/07/02 | 11/07/02 | 02702 |
| ☐ | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0088CAN | 10/07/01 | 11/07/01 | 788 |
| ☐ | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0185CAN | 10/07/01 | 11/07/01 | 790 |
| ☐ | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0215CAN | 10/07/01 | 11/07/01 | 112 |
| ☐ | Amplifier (30dB) | Agilent | 8449B | 11/03/07 | 12/03/07 | 3008A01590 |
| ☒ | Amplifier (30dB) | H.P | 8449B | 11/03/07 | 12/03/07 | 3008A00370 |
| ☐ | Amplifier | EMPOWER | BBS3Q7ELU | 10/10/04 | 11/10/04 | 1020 |
| ☐ | RF Power Amplifier | OPHIRRF | 5069F | 10/07/01 | 11/07/01 | 1006 |
| ☒ | EMI TEST RECEIVER | R&S | ESU | 11/01/20 | 12/01/20 | 100014 |
| ☐ | BILOG ANTENNA | SCHAFFNER | CBL6112B | 10/07/14 | 11/07/14 | 2737 |
| ☐ | Amplifier (22dB) | H.P | 8447E | 11/01/11 | 12/01/11 | 2945A02865 |
| ☐ | EMI TEST RECEIVER | R&S | ESCI | 11/03/08 | 12/03/08 | 100364 |

| | Type | Manufacturer | Model | Cal.Date (yy/mm/dd) | Next.Cal.Date (yy/mm/dd) | S/N |
|---|---|---|---|---|---|---|
| ☒ | BICONICAL ANT. | Schwarzbeck | VHA 9103 | 10/11/29 | 11/11/29 | 91032789 |
| ☒ | LOG-PERIODIC ANT. | Schwarzbeck | UHALP9108A1 | 10/11/29 | 12/11/29 | 1098 |
| ☐ | BICONICAL ANT. | Schwarzbeck | VHA 9103 | 10/12/21 | 12/12/21 | 91031946 |
| ☐ | LOG-PERIODIC ANT. | Schwarzbeck | UHALP9108A1 | 10/07/07 | 11/07/07 | 0590 |
| ☒ | Low Noise Pre Amplifier | TSJ | MLA-100K01-B01-2 | 11/03/07 | 12/03/07 | 1252741 |
| ☐ | Low Noise Pre Amplifier | TSJ | MLA-00108-B02-36 | 11/01/11 | 12/01/11 | 1518831 |
| ☐ | Amplifier (25dB) | Agilent | 8447D | 11/03/07 | 12/03/07 | 2944A10144 |
| ☐ | Amplifier (25dB) | Agilent | 8447D | 10/07/01 | 11/07/01 | 2648A04922 |
| ☒ | Spectrum Analyzer(CE) | H.P | 8591E | 11/03/07 | 12/03/07 | 3649A05889 |
| ☐ | LISN | Kyoritsu | KNW-407 | 11/01/11 | 12/01/11 | 8-317-8 |
| ☒ | LISN | Kyoritsu | KNW-242 | 10/07/02 | 11/07/02 | 8-654-15 |
| ☒ | CVCF | NF Electronic | 4420 | 11/03/08 | 12/03/08 | 304935/337980 |
| ☒ | 50 ohm Terminator | HME | CT-01 | 11/01/11 | 12/01/11 | N/A |
| ☒ | RFI/FIELD Intensity Meter | Kyoritsu | KNM-2402 | 10/07/02 | 11/07/02 | 4N-170-3 |
| ☐ | Wideband Radio Communication Tester | R&S | CMW500 | 10/10/21 | 11/10/21 | 100988 |