

FCC Test Report

Equipment : Wireless Power Bank
Brand Name : CWT
Model No. : 2AAT010B, WCB005V
FCC ID : 2AC3U-2AAT010B
Standard : 47 CFR FCC Part 15.209
Operating Band : 110-205 kHz
FCC Classification : DCD (for 110-205kHz only)
Equipment Type : Wireless Power Transfer for Consumer Devices
Output power : 5W (from Each Primary Coil)
Applicant : **Channel Well Technology Co., Ltd.**
No.222, Sec.2, Nankan Rd., Lujhu Township,
Taiwan 33855 Taiwan
Manufacturer 1 : **Channel Well Technology (Guangzhou) Co., Ltd**
Bld.B, Eastern Hi-tech Industrial Base, Zengjiang Street,
Zengcheng, Guangzhou, Guangdong 511300, P.R. China
Manufacturer 2 : **Ningbo ISO Electronic CO., LTD**
No.10 Chuang-Ye Rd, The West of Ningbo Free Trade Zone
Ningbo, China

The product sample received on Nov. 21, 2014 and completely tested on Jan. 14, 2015. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:


Vic Hsiao / Supervisor



Table of Contents

| | | |
|---------------------------------------|---|-----------|
| 1 | GENERAL DESCRIPTION | 5 |
| 1.1 | Information..... | 5 |
| 1.2 | Accessories and Support Equipment..... | 7 |
| 1.3 | Testing Applied Standards | 7 |
| 1.4 | Testing Location Information..... | 8 |
| 1.5 | Measurement Uncertainty | 8 |
| 2 | TEST CONFIGURATION OF EUT | 9 |
| 2.1 | The Worst Case Configuration | 9 |
| 2.2 | The Worst Charger Frequencies Configuration | 9 |
| 2.3 | The Worst Case Measurement Configuration..... | 9 |
| 2.4 | Test Setup Diagram | 11 |
| 3 | TRANSMITTER TEST RESULT | 13 |
| 3.1 | AC Power-line Conducted Emissions | 13 |
| 3.2 | Transmitter Radiated Emissions | 17 |
| 3.3 | Emission Bandwidth | 30 |
| 4 | TEST EQUIPMENT AND CALIBRATION DATA | 32 |
| APPENDIX A. TEST PHOTOS | | |
| APPENDIX B. PHOTOGRAPHS OF EUT | | |

Summary of Test Result

| Conformance Test Specifications | | | | | |
|---------------------------------|------------------|-----------------------------------|--|------------|----------|
| Report Clause | Ref. Std. Clause | Description | Measured | Limit | Result |
| 1.1.3 | 15.203 | Antenna Requirement | Antenna connector mechanism complied | FCC 15.203 | Complied |
| 3.1 | 15.207 | AC Power-line Conducted Emissions | [dBuV]:0.1532130 MHz 29.29 (Margin 26.53dB) - AV 52.27 (Margin 13.55dB) - QP | FCC 15.207 | Complied |
| 3.2 | 15.209 | Transmitter Radiated Emissions | [dBuV/m at 3m]:1.24kHz 59.93 (Margin 5.80dB) - PK | FCC 15.209 | Complied |
| 3.3 | 15.215(c) | Emission Bandwidth | 20dB Bandwidth 2.70 [kHz] | N/A | Complied |

Revision History

[illegible]

1 General Description

1.1 Information

1.1.1 Product Details

The difference of above models is in sales marketing and appearance.

1.1.2 General Information

| Wireless Power Transfer General Information | | | |
|---|-------------------------------------|----------------------------|-------------------------|
| Frequency Range | Mode | Charging Freq. (kHz) | Field Strength (dBuV/m) |
| 110-205 kHz | WPC Qi | 110-205 | 89.39 |
| Power Transfer Method | Output power from each primary coil | Max. coupling surface area | Charging Method |
| Magnetic induction and only single primary coil coupling secondary coil | 5W | 20 cm ² | Client directly contact |
| Note 1: Field strength performed peak level at 3m. | | | |

1.1.3 Antenna Information

| Antenna Category | |
|-------------------------------------|---|
| <input type="checkbox"/> | Equipment placed on the market without antennas |
| <input checked="" type="checkbox"/> | Integral antenna (antenna permanently attached) |
| <input type="checkbox"/> | External antenna (dedicated antennas) |

1.1.4 Type of EUT

| Identify EUT | |
|-------------------------------------|---|
| EUT Serial Number | N/A |
| Presentation of Equipment | <input type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input checked="" type="checkbox"/> Prototype |
| Type of EUT | |
| <input checked="" type="checkbox"/> | Stand-alone |
| <input type="checkbox"/> | Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: ... |
| <input type="checkbox"/> | Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ... |
| <input type="checkbox"/> | Other: |

1.1.5 Test Signal Duty Cycle

| | |
|---|---|
| Operated Mode for Worst Duty Cycle | |
| <input type="checkbox"/> | Operated normally mode for worst duty cycle |
| <input checked="" type="checkbox"/> | Operated test mode for worst duty cycle |
| Test Signal Duty Cycle (x) | |
| <input checked="" type="checkbox"/> | 100% |

1.1.6 EUT Operational Condition

| | | | |
|--------------------------|--|---|--|
| Supply Voltage | <input checked="" type="checkbox"/> AC mains | <input checked="" type="checkbox"/> DC | |
| Type of DC Source | <input type="checkbox"/> Internal DC supply | <input checked="" type="checkbox"/> External DC adapter | <input checked="" type="checkbox"/> System |

1.2 Accessories and Support Equipment

| Accessories Information | | | | |
|-------------------------|--------------|---|------------|--------------|
| AC Adapter | Brand Name | CWT | Model Name | 2ABD015B |
| | Power Rating | I/P: 100 - 240 Vac, 500 mA, O/P: 5.24 Vdc, 3000mA | | |
| USB Cable | Brand Name | CWT | | |
| Battery | Brand Name | SAMSUNG | Model Name | ICR18650-26F |
| Wireless Charging Pad | Brand Name | CWT | Model Name | WCH003A |

Reminder: Regarding to more detail and other information, please refer to user manual.

| Support Equipment | | | |
|-------------------|------------------|------------|------------|
| No. | Equipment | Brand Name | Model Name |
| 1 | Notebook | DELL | E5530 |
| 2 | WPC Charging Pad | CWT | WCH003A |
| 3 | Load | - | - |

Note: Load provided by the Customer.

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2009

1.4 Testing Location Information

| Testing Location | | | |
|-------------------------------------|---------------|--|------------------|
| <input checked="" type="checkbox"/> | HWA YA | ADD : No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055 | |
| Test Condition | Test Site No. | Test Engineer | Test Environment |
| AC Conduction | CO04-HY | Zeus | 23°C / 46% |
| RF Conducted | TH01-HY | Candy | 23°C / 62% |
| Radiated Emission | 03CH02-HY | Joe | 22.6°C / 58.2% |
| Test Site Registration Number | | | |
| 636805 | | | |

1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

| Measurement Uncertainty | | |
|-----------------------------------|---------------|-------------|
| Test Item | | Uncertainty |
| AC power-line conducted emissions | | ±2.2 dB |
| Emission bandwidth | | ±1.4 % |
| Unwanted emissions, conducted | 9 – 150 kHz | ±0.3 dB |
| | 0.15 – 30 MHz | ±0.4 dB |
| | 30 – 1000 MHz | ±0.5 dB |
| All emissions, radiated | 9 – 150 kHz | ±2.4 dB |
| | 0.15 – 30 MHz | ±2.2 dB |
| | 30 – 1000 MHz | ±2.5 dB |
| Temperature | | ±0.8 °C |
| Humidity | | ±3 % |
| DC and low frequency voltages | | ±3 % |
| Time | | ±1.4 % |
| Duty Cycle | | ±1.4 % |

2 Test Configuration of EUT

2.1 The Worst Case Configuration


| Modulation Mode | Field Strength (dBuV/m at 3 m) |
|---|--------------------------------|
| Full charging loading | 89.39 |
| Wireless charger were performed all charging conditions including variable loading and non-charging operation, the worst mode is full charging loading. | |

2.2 The Worst Charger Frequencies Configuration

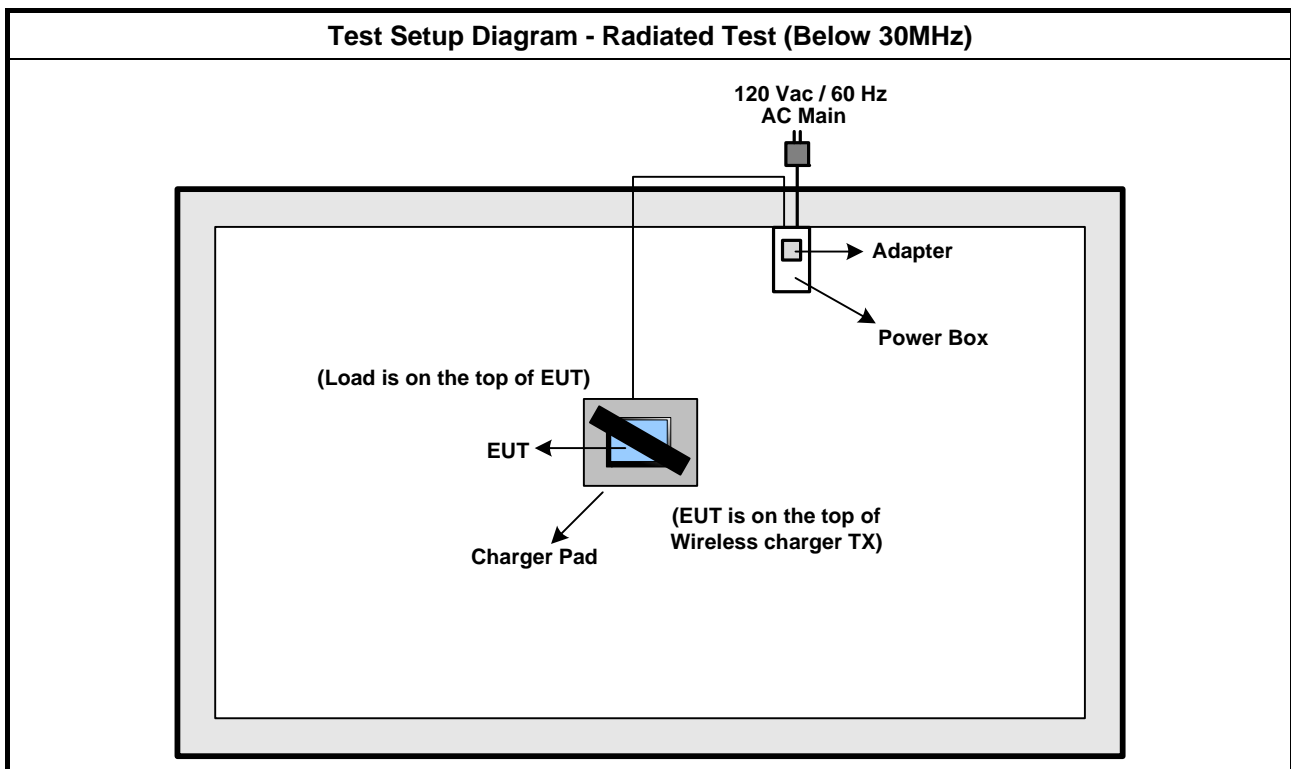
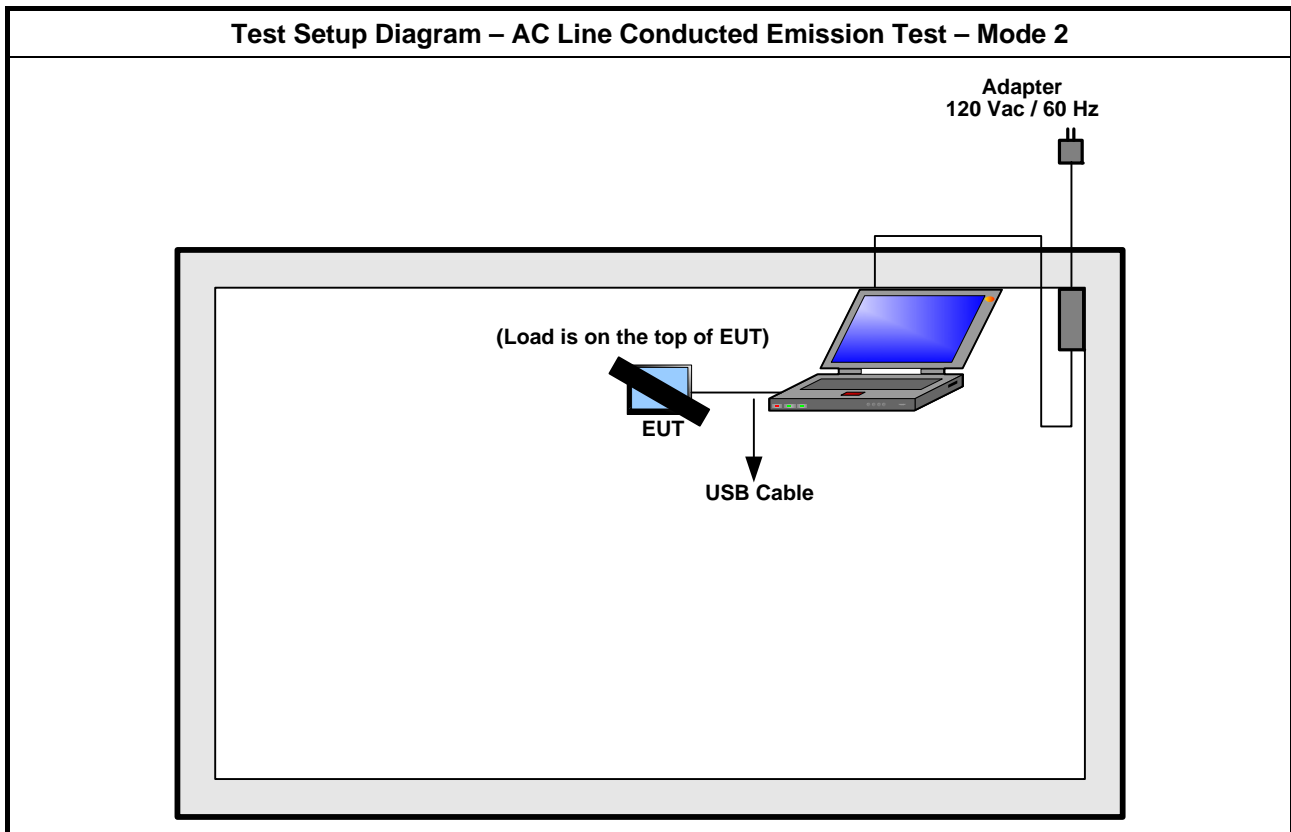
| Modulation Mode | Worst Charger Frequencies (kHz) |
|--|---------------------------------|
| Full charging loading | 110 kHz (F1) |
| Wireless charger frequencies are variable frequency range (110-205 kHz) and depend on charging loading. The worst charging frequency is 110 kHz. | |

2.3 The Worst Case Measurement Configuration

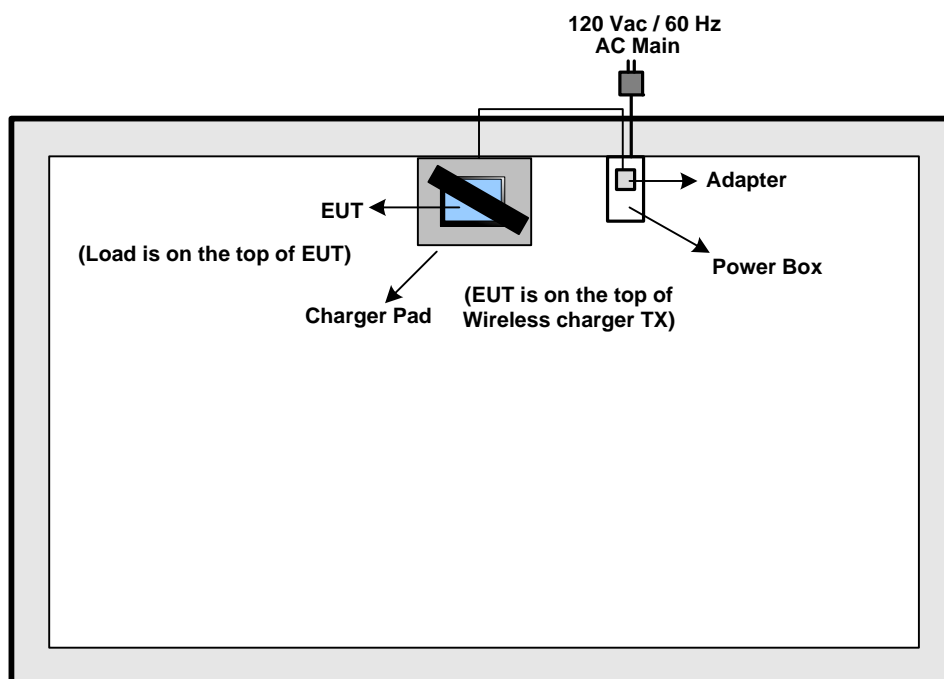
| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| Tests Item | AC power-line conducted emissions |
| Condition | AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz |
| Operating Mode | Operating Mode Description |
| 1 | Adapter Mode |
| 2 | USB Mode |
| For operating mode 2 is the worst case and it was record in this test report. | |

| The Worst Case Mode for Following Conformance Tests | |
|--|--|
| Tests Item | Transmitter Radiated Emissions, Emission Bandwidth |
| Test Condition | Radiated measurement |
| User Position | <input type="checkbox"/> EUT will be placed in fixed position at X plane. |
| | <input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. |
| | <input checked="" type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. |
| Operating Mode Below 30MHz | Full charging loading |
| Operating Mode 30MHz ~ 1GHz | 1. Adapter Mode |
| | 2. USB Mode |
| Modulation Mode | Full charging loading |
| Orthogonal Planes of EUT | X Plane |
| |  |
| Worst Planes of EUT | V |

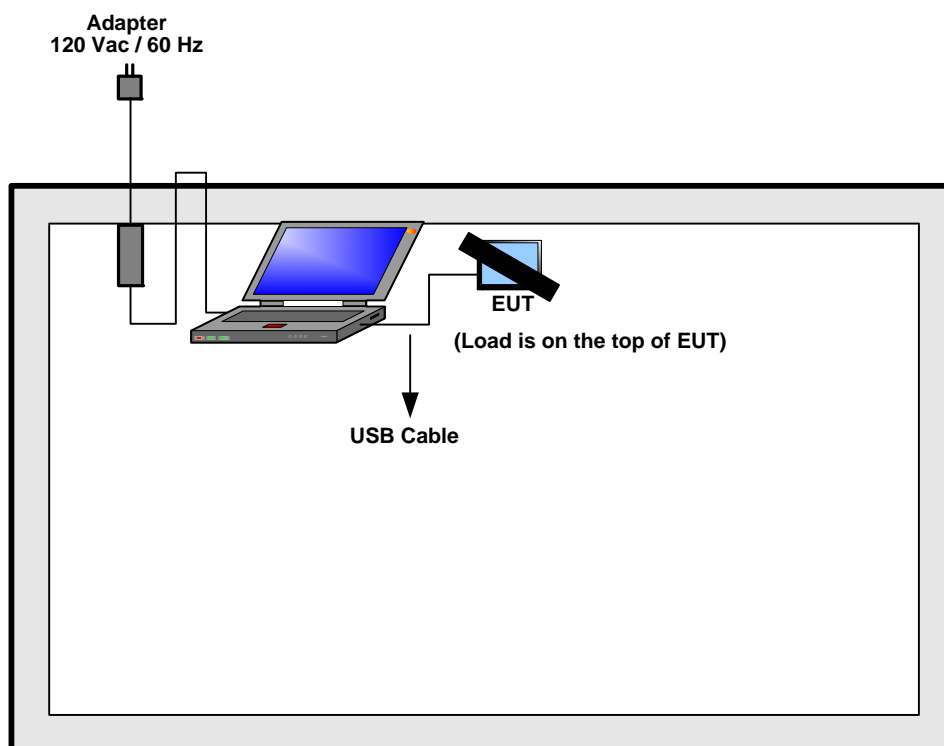
2.4 Test Setup Diagram



Test Setup Diagram - Radiated Test (30MHz ~ 1GHz)- Mode 1



Test Setup Diagram - Radiated Test (30MHz ~ 1GHz)- Mode 2



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

| AC Power-line Conducted Emissions Limit | | |
|---|------------|-----------|
| Frequency Emission (MHz) | Quasi-Peak | Average |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

Note 1: * Decreases with the logarithm of the frequency.

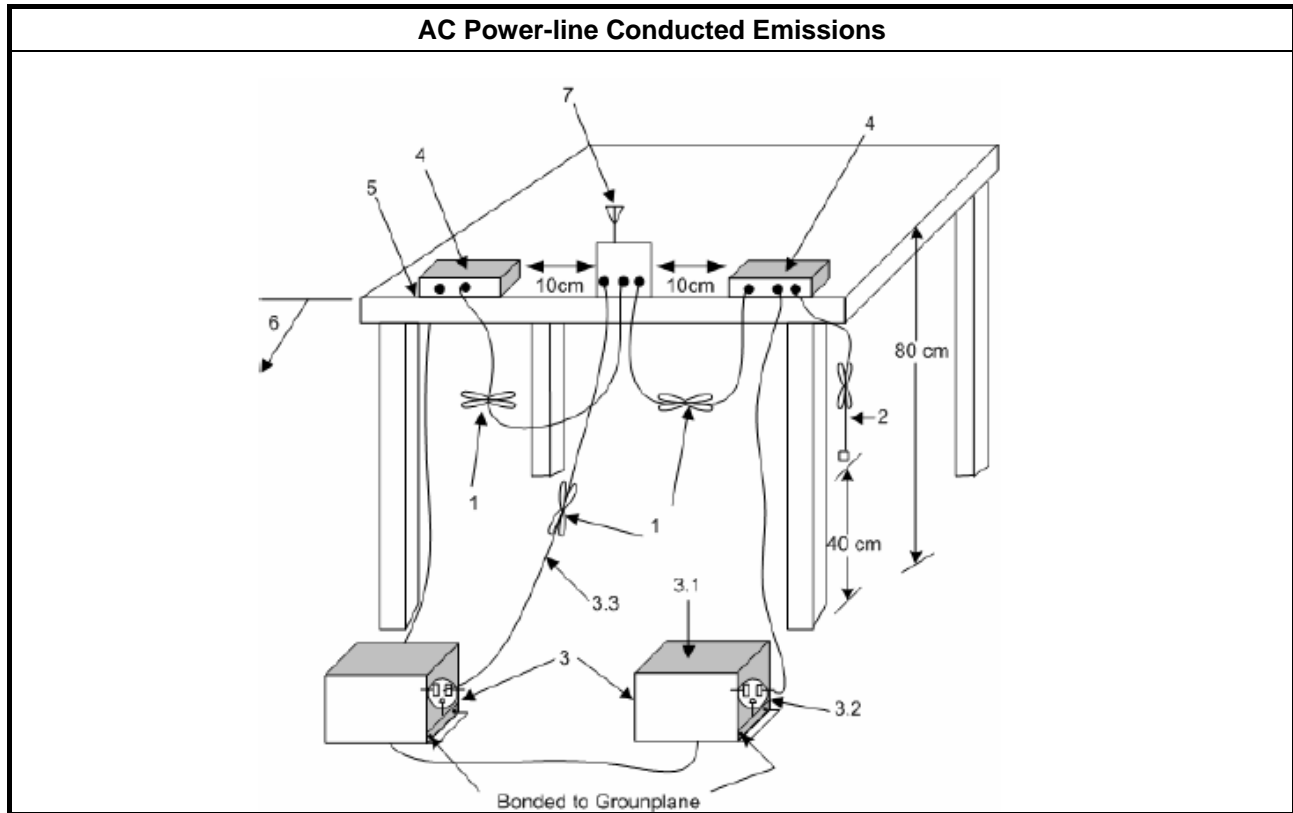
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

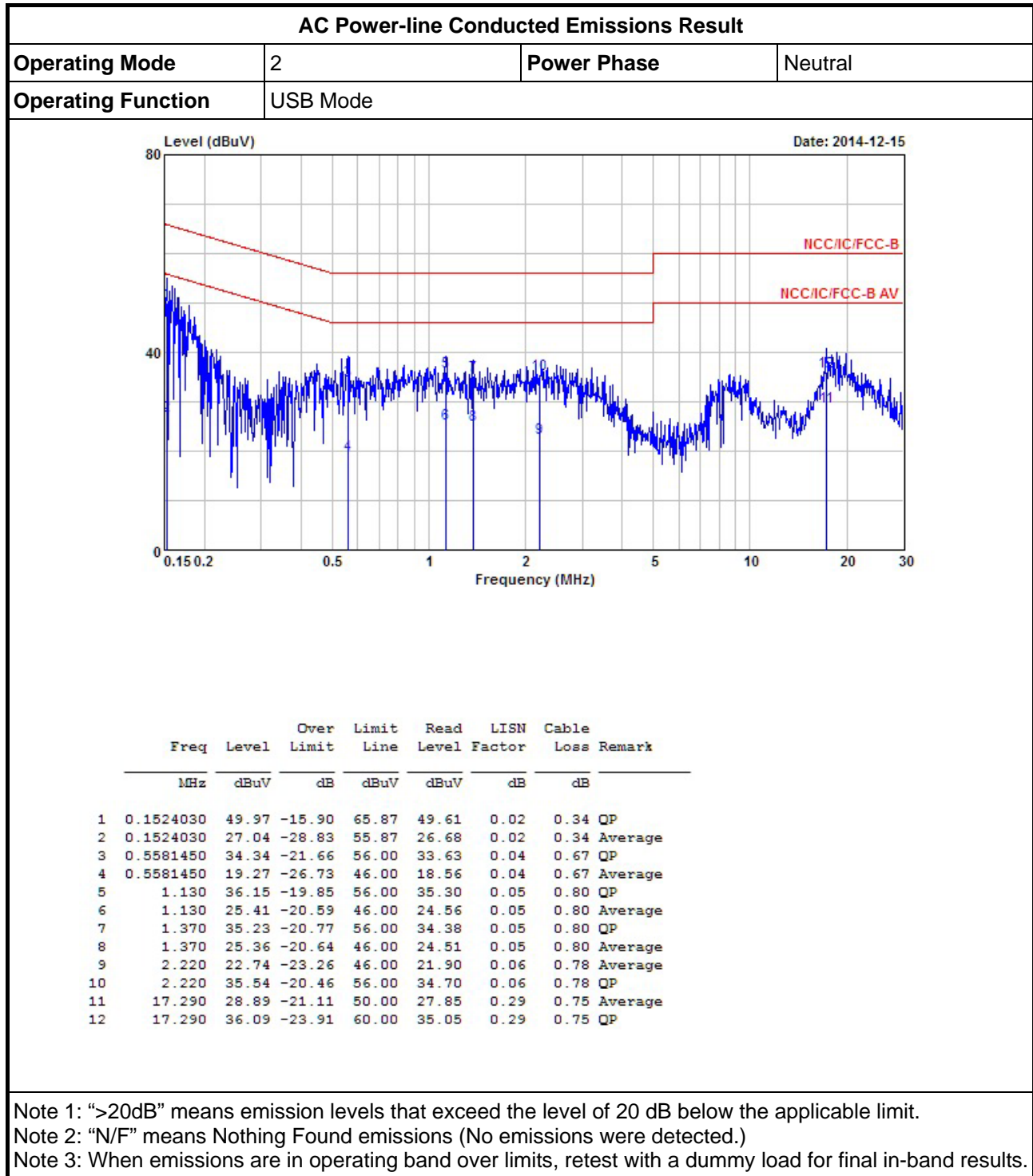
3.1.3 Test Procedures

| Test Method | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions. |
| <input checked="" type="checkbox"/> | If AC conducted emissions fall in operating band, then following below test method confirm final result. |
| <input type="checkbox"/> | Accept measurements done with a suitable dummy load replacing the antenna under the following conditions: (1) Perform the AC line conducted tests with the antenna connected to determine compliance with FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load to determine compliance with FCC 15.207 limits within the transmitter's fundamental emission band. |
| <input checked="" type="checkbox"/> | For a device with a permanent antenna operating at or below 30 MHz, accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) Perform the AC line conducted tests with the permanent antenna to determine compliance with the FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load in lieu of the permanent antenna to determine compliance with the FCC 15.207 limits within the transmitter's fundamental emission band. |

3.1.4 Test Setup

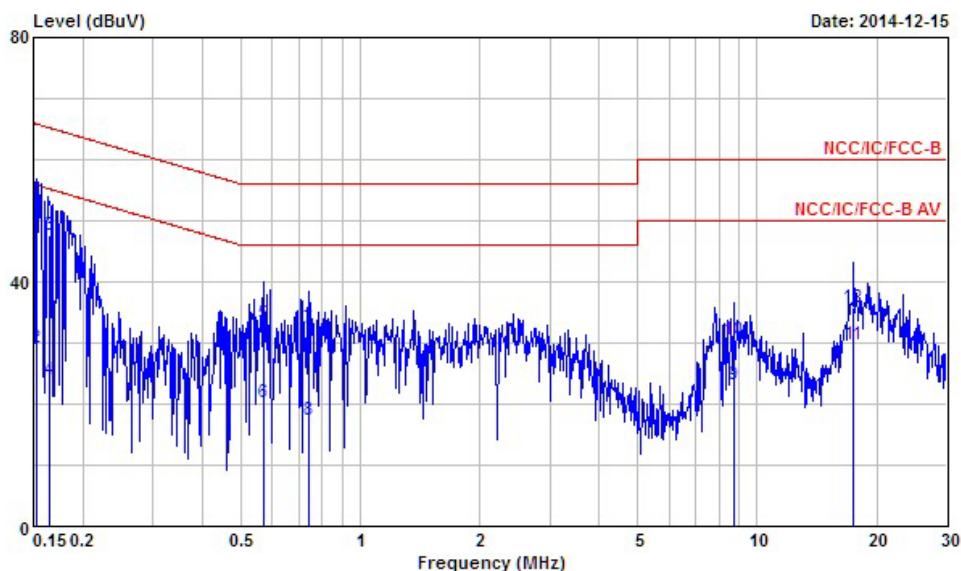


3.1.5 Test Result of AC Power-line Conducted Emissions



AC Power-line Conducted Emissions Result

| | | | |
|--------------------|----------|-------------|------|
| Operating Mode | 2 | Power Phase | Line |
| Operating Function | USB Mode | | |



| | Freq | Level | Over | Limit | Read | LISN | Cable | |
|----|-----------|-------|--------|-------|-------|--------|-------|---------|
| | MHz | dBuV | Limit | Line | Level | Factor | Loss | Remark |
| | | | dB | dBuV | dBuV | dB | dB | |
| 1 | 0.1532130 | 52.27 | -13.55 | 65.82 | 51.90 | 0.03 | 0.34 | QP |
| 2 | 0.1532130 | 29.29 | -26.53 | 55.82 | 28.92 | 0.03 | 0.34 | Average |
| 3 | 0.1650100 | 47.74 | -17.47 | 65.21 | 47.32 | 0.03 | 0.39 | QP |
| 4 | 0.1650100 | 23.92 | -31.29 | 55.21 | 23.50 | 0.03 | 0.39 | Average |
| 5 | 0.5731280 | 33.17 | -22.83 | 56.00 | 32.45 | 0.04 | 0.68 | QP |
| 6 | 0.5731280 | 20.35 | -25.65 | 46.00 | 19.63 | 0.04 | 0.68 | Average |
| 7 | 0.7430230 | 32.26 | -23.74 | 56.00 | 31.48 | 0.05 | 0.73 | QP |
| 8 | 0.7430230 | 17.31 | -28.69 | 46.00 | 16.53 | 0.05 | 0.73 | Average |
| 9 | 8.730 | 23.17 | -26.83 | 50.00 | 22.21 | 0.18 | 0.78 | Average |
| 10 | 8.730 | 30.47 | -29.53 | 60.00 | 29.51 | 0.18 | 0.78 | QP |
| 11 | 17.470 | 29.81 | -20.19 | 50.00 | 28.77 | 0.29 | 0.75 | Average |
| 12 | 17.470 | 35.72 | -24.28 | 60.00 | 34.68 | 0.29 | 0.75 | QP |

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

Note 3: When emissions are in operating band over limits, retest with a dummy load for final in-band results.

3.2 Transmitter Radiated Emissions

3.2.1 Transmitter Radiated Emissions Limit

| Transmitter Radiated Emissions Limit | | | |
|--------------------------------------|-----------------------|-------------------------|----------------------|
| Frequency Range (MHz) | Field Strength (uV/m) | Field Strength (dBuV/m) | Measure Distance (m) |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 1GHz measurements employing a CISPR quasi-peak detector.

3.2.2 Measuring Instruments

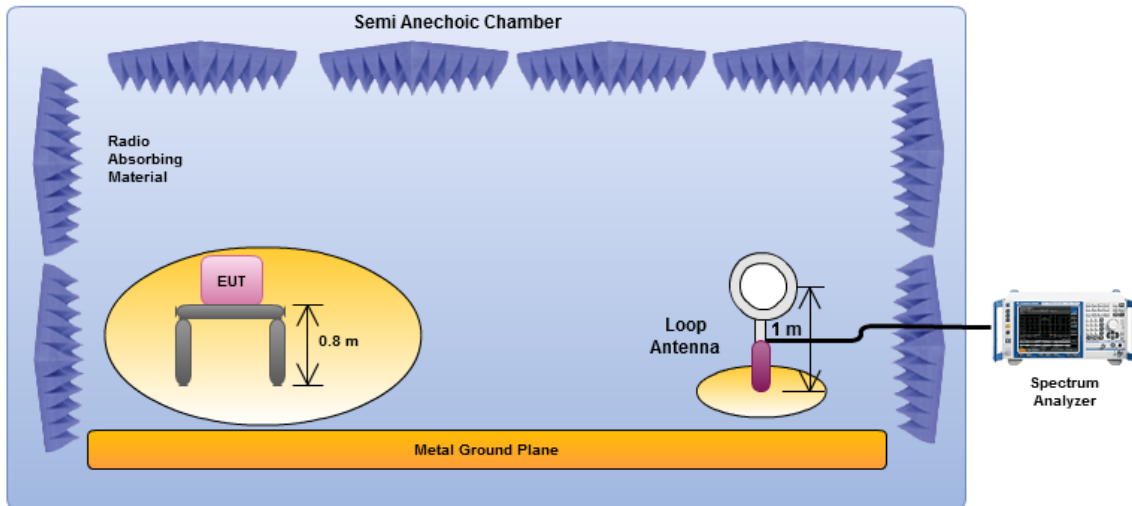
Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

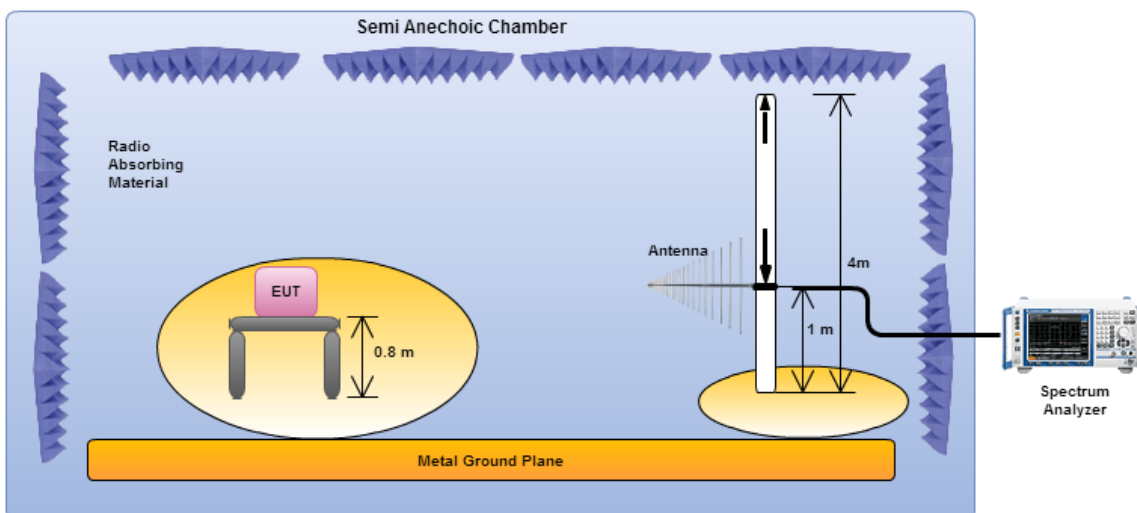
| Test Method | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m. |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. The frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 30MHz measurements employing a CISPR quasi-peak detector. Test distance is 3m. |
| <input checked="" type="checkbox"/> | At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods. |
| <input type="checkbox"/> | The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor. |
| <input checked="" type="checkbox"/> | The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade). |
| <input checked="" type="checkbox"/> | For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level. |
| <input checked="" type="checkbox"/> | The any unwanted emissions level shall not exceed the fundamental emission level. |
| <input checked="" type="checkbox"/> | All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported. |

3.2.4 Test Setup

Transmitter Radiated Emissions

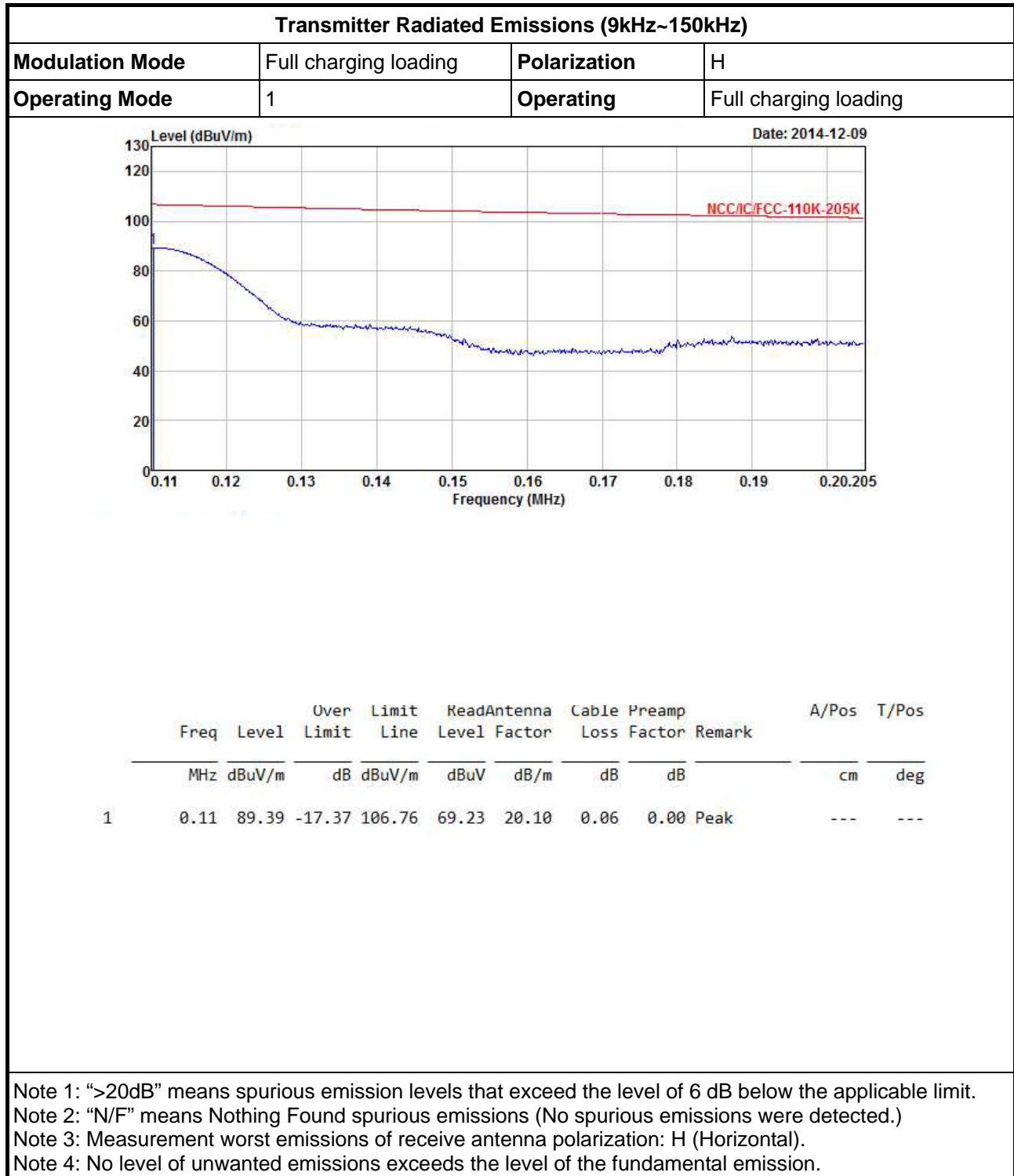


Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. The center of the loop shall be 1 m above the ground.



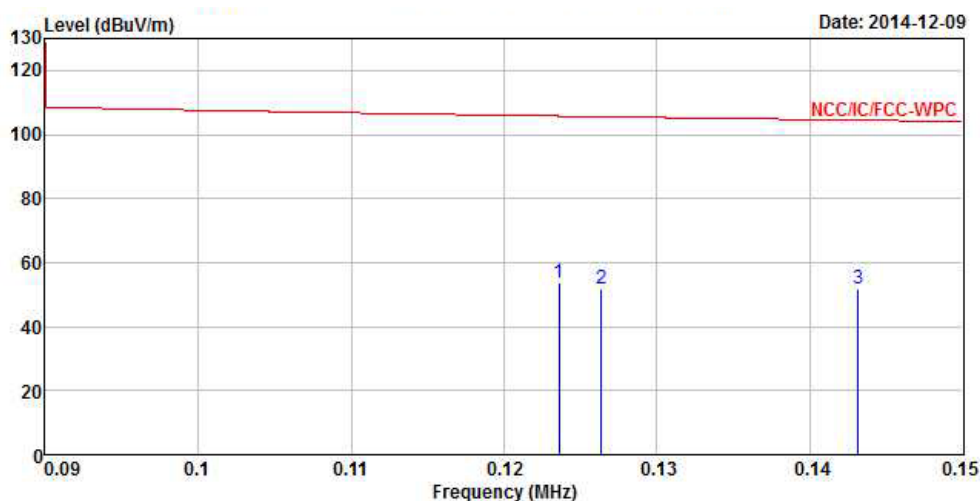
Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna. the antenna height shall be varied from 1 m to 4 m.

3.2.5 Transmitter Radiated Emissions (Below 30MHz)



Transmitter Radiated Emissions (9kHz~150kHz)

| | | | |
|------------------------|-----------------------|---------------------|-----------------------|
| Modulation Mode | Full charging loading | Polarization | H |
| Operating Mode | 1 | Operating | Full charging loading |



| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|------|--------|------------|------------|-------------------|------------|---------------|-----------|-------|-------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg |
| 1 | 0.12 | 53.83 | -51.94 | 105.77 | 33.62 | 20.15 | 0.06 | 0.00 Peak | --- | --- |
| 2 | 0.13 | 51.67 | -53.91 | 105.58 | 31.46 | 20.15 | 0.06 | 0.00 Peak | --- | --- |
| 3 | 0.14 | 51.96 | -52.53 | 104.49 | 31.75 | 20.15 | 0.06 | 0.00 Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

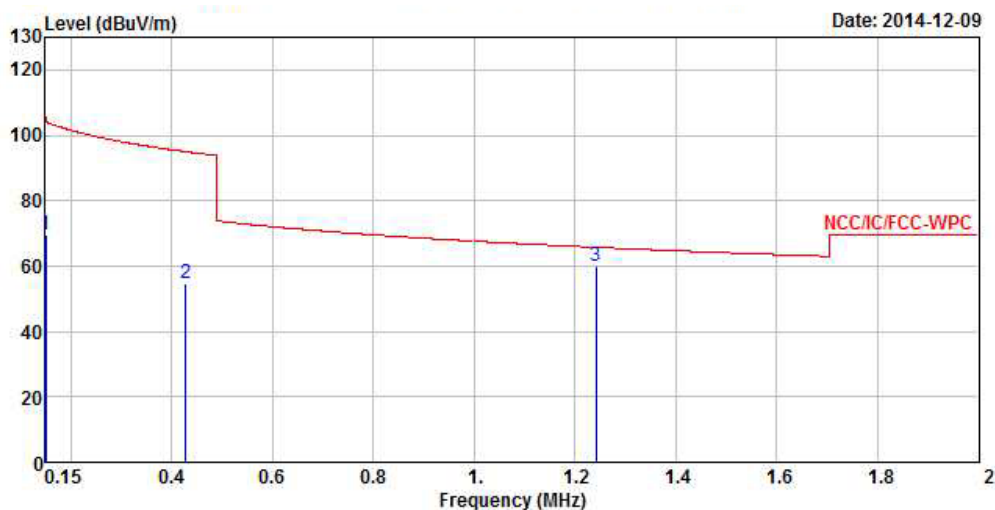
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Emissions (150kHz~2MHz)

| | | | |
|------------------------|-----------------------|---------------------------|-----------------------|
| Modulation Mode | Full charging loading | Polarization | H |
| Operating Mode | 1 | Operating Function | Full charging loading |



| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Cable Factor | Preamplifier Loss | Remark | A/Pos | T/Pos |
|---|------|--------|------------|------------|-------------------|--------------|-------------------|-----------|-------|-------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg |
| 1 | 0.15 | 69.77 | -34.32 | 104.09 | 49.51 | 20.20 | 0.06 | 0.00 Peak | --- | --- |
| 2 | 0.43 | 54.83 | -40.16 | 94.99 | 34.67 | 20.10 | 0.06 | 0.00 Peak | --- | --- |
| 3 | 1.24 | 59.93 | -5.80 | 65.73 | 39.88 | 19.95 | 0.10 | 0.00 Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

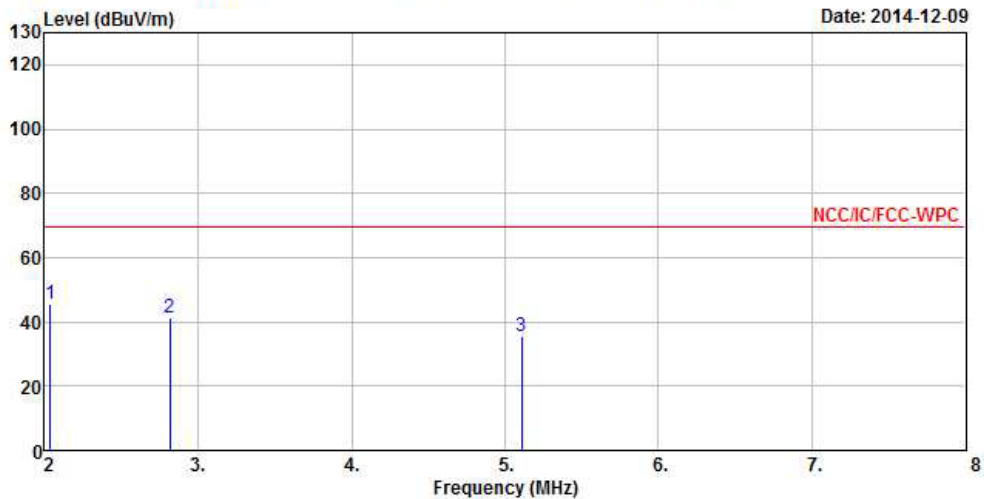
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Emissions (2MHz~8MHz)

| | | | |
|------------------------|-----------------------|---------------------------|-----------------------|
| Modulation Mode | Full charging loading | Polarization | H |
| Operating Mode | 1 | Operating Function | Full charging loading |



| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|------|--------|------------|------------|-------------------|------------|---------------|-----------|-------|-------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg |
| 1 | 2.04 | 45.37 | -24.17 | 69.54 | 25.22 | 20.00 | 0.15 | 0.00 Peak | --- | --- |
| 2 | 2.82 | 41.18 | -28.36 | 69.54 | 20.99 | 20.00 | 0.19 | 0.00 Peak | --- | --- |
| 3 | 5.11 | 35.71 | -33.83 | 69.54 | 15.40 | 20.05 | 0.26 | 0.00 Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

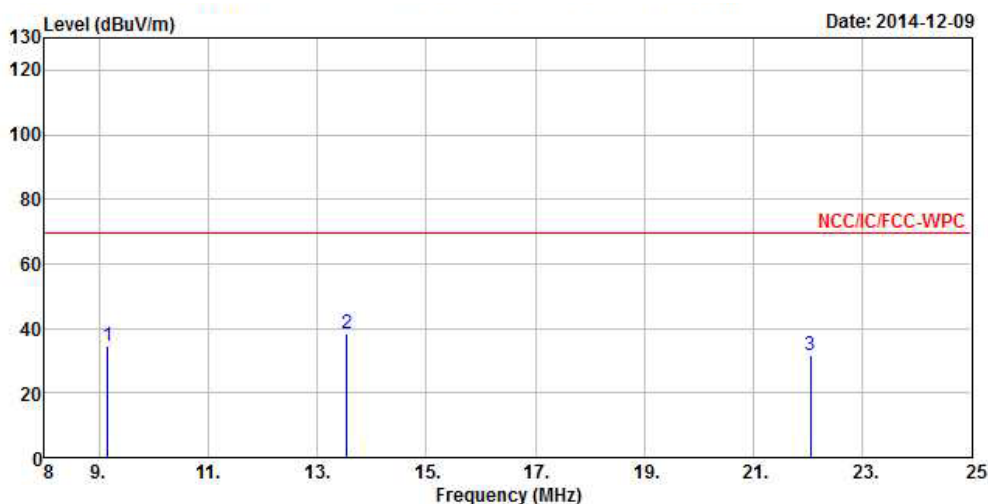
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Emissions (8MHz~25MHz)

| | | | |
|------------------------|-----------------------|---------------------------|-----------------------|
| Modulation Mode | Full charging loading | Polarization | H |
| Operating Mode | 1 | Operating Function | Full charging loading |



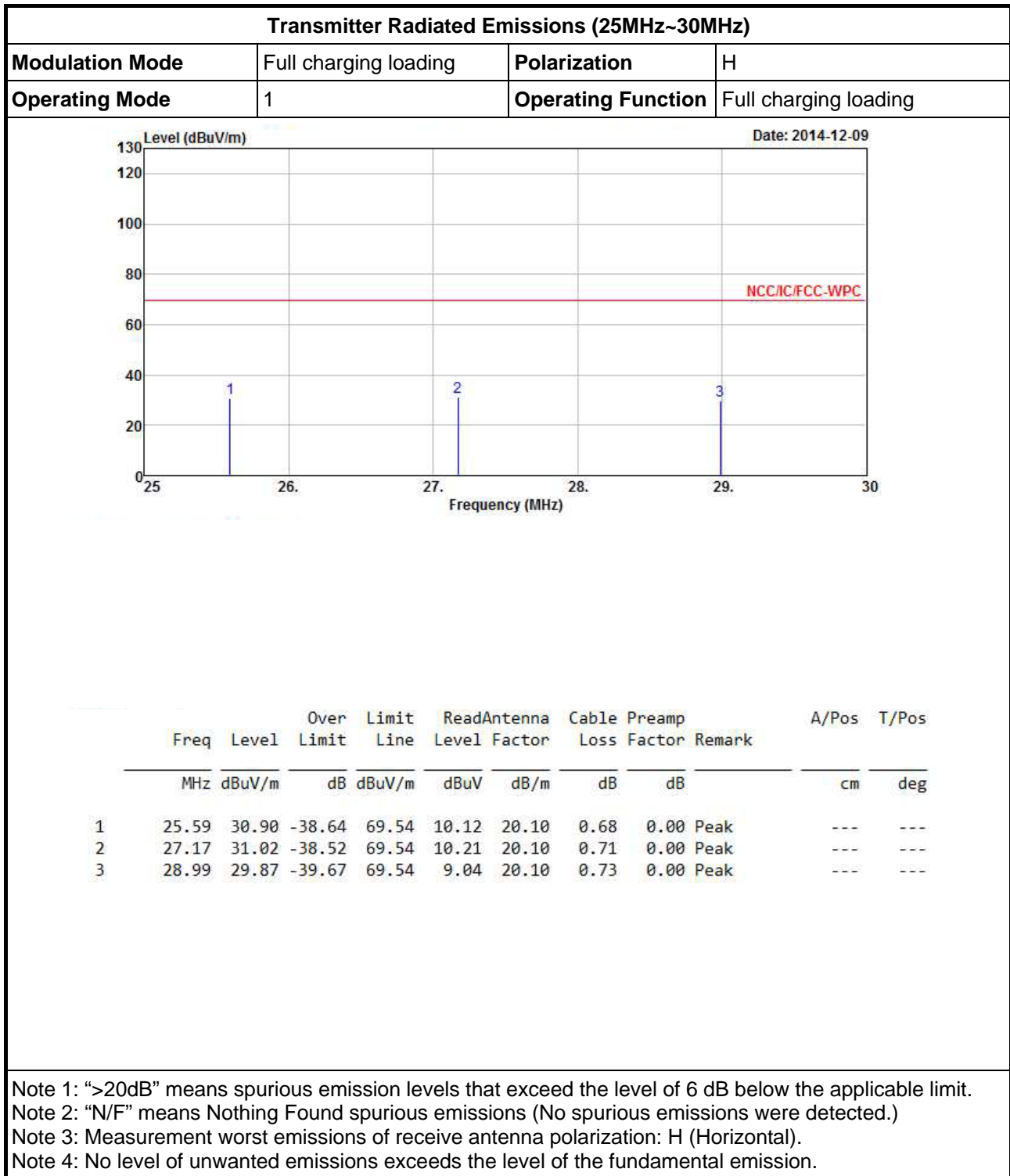
| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Cable Factor | Preamp Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|-------|--------|------------|------------|-------------------|--------------|-------------|---------------|--------|-------|-------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 9.16 | 34.62 | -34.92 | 69.54 | 14.15 | 20.10 | 0.37 | 0.00 | Peak | --- | --- |
| 2 | 13.54 | 38.20 | -31.34 | 69.54 | 17.62 | 20.10 | 0.48 | 0.00 | Peak | --- | --- |
| 3 | 22.04 | 31.89 | -37.65 | 69.54 | 11.10 | 20.16 | 0.63 | 0.00 | Peak | --- | --- |

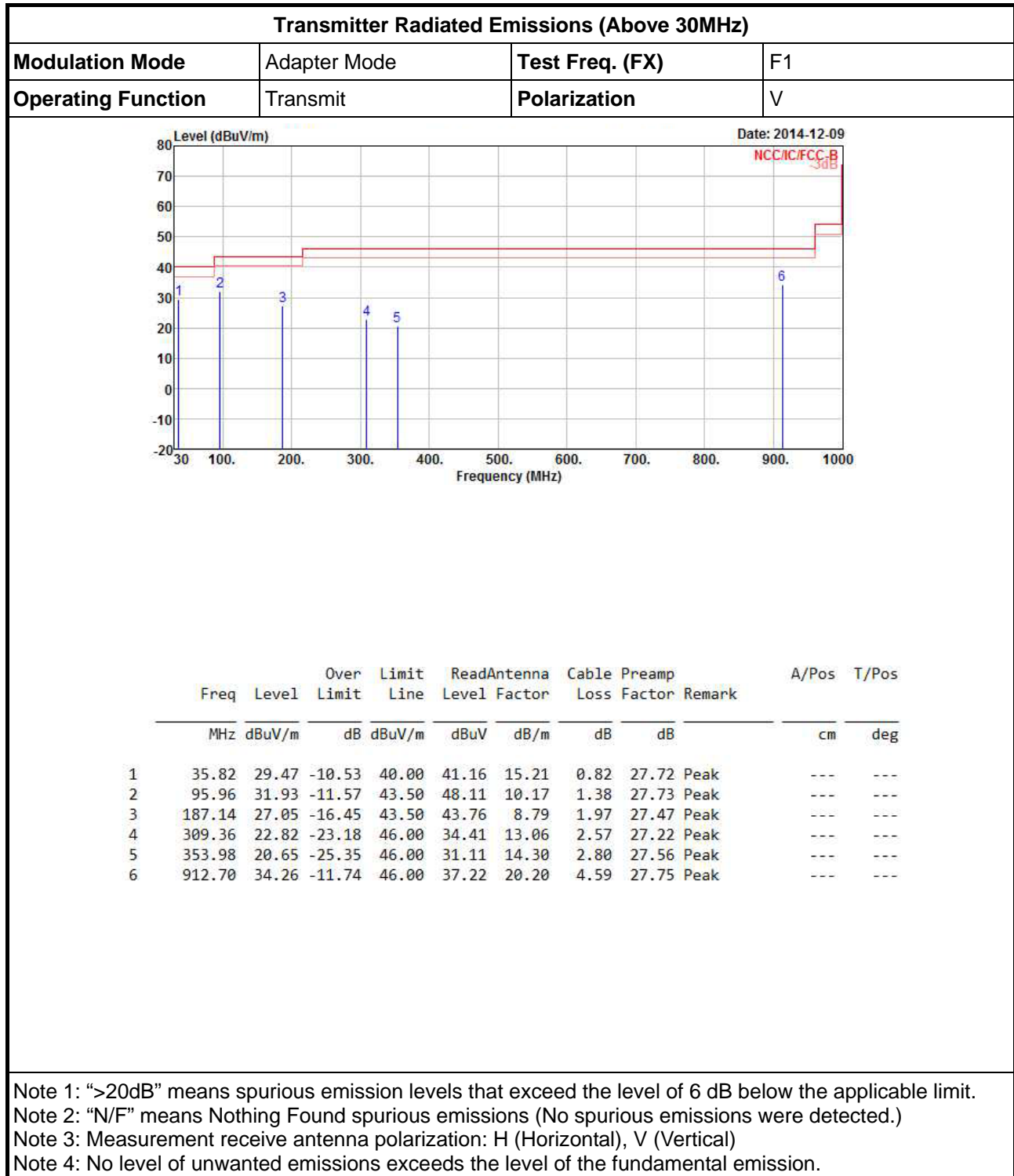
Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).

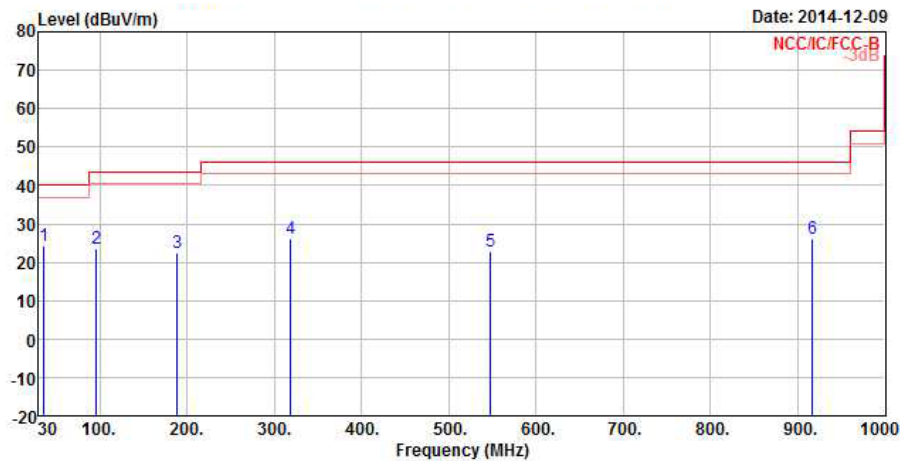
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.



3.2.6 Transmitter Radiated Emissions (Above 30MHz)


Transmitter Radiated Emissions (Above 30MHz)

| | | | |
|---------------------------|--------------|------------------------|----|
| Modulation Mode | Adapter Mode | Test Freq. (FX) | F1 |
| Operating Function | Transmit | Polarization | H |



| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|--------|--------|------------|------------|-------------------|----------------|------------|---------------|--------|-------|-------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 35.82 | 24.11 | -15.89 | 40.00 | 35.80 | 15.21 | 0.82 | 27.72 | Peak | --- | --- |
| 2 | 95.96 | 23.49 | -20.01 | 43.50 | 39.67 | 10.17 | 1.38 | 27.73 | Peak | --- | --- |
| 3 | 189.08 | 22.47 | -21.03 | 43.50 | 39.16 | 8.78 | 1.99 | 27.46 | Peak | --- | --- |
| 4 | 319.06 | 26.14 | -19.86 | 46.00 | 37.62 | 13.20 | 2.62 | 27.30 | Peak | --- | --- |
| 5 | 547.98 | 22.91 | -23.09 | 46.00 | 29.45 | 18.41 | 3.52 | 28.47 | Peak | --- | --- |
| 6 | 916.58 | 25.96 | -20.04 | 46.00 | 28.88 | 20.22 | 4.61 | 27.75 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

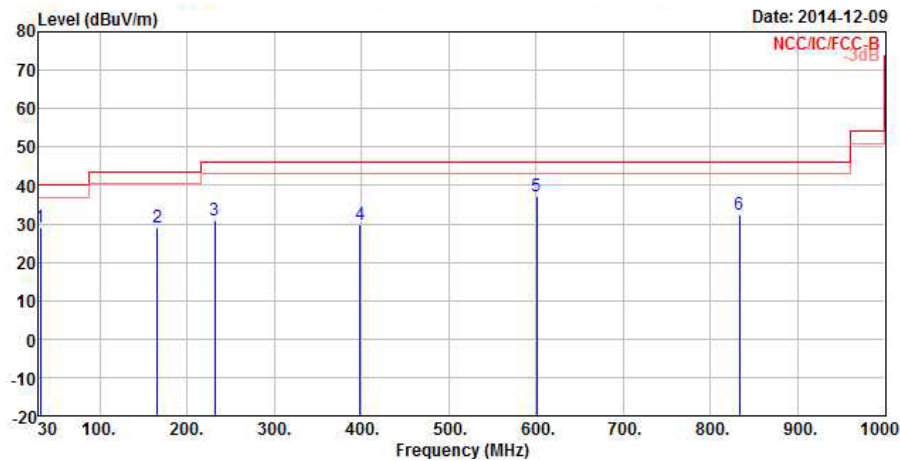
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Emissions (Above 30MHz)

| | | | |
|---------------------------|----------|------------------------|----|
| Modulation Mode | USB Mode | Test Freq. (FX) | F1 |
| Operating Function | Transmit | Polarization | V |



| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Cable Factor | Preamp Loss | Remark | A/Pos | T/Pos |
|---|--------|--------|------------|------------|-------------------|--------------|-------------|------------|-------|-------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg |
| 1 | 31.94 | 29.00 | -11.00 | 40.00 | 39.08 | 16.93 | 0.76 | 27.77 Peak | --- | --- |
| 2 | 165.80 | 29.26 | -14.24 | 43.50 | 45.14 | 9.80 | 1.86 | 27.54 Peak | --- | --- |
| 3 | 231.76 | 30.92 | -15.08 | 46.00 | 46.00 | 10.03 | 2.23 | 27.34 Peak | --- | --- |
| 4 | 398.60 | 29.68 | -16.32 | 46.00 | 39.29 | 15.37 | 2.91 | 27.89 Peak | --- | --- |
| 5 | 600.36 | 37.32 | -8.68 | 46.00 | 43.84 | 18.28 | 3.70 | 28.50 Peak | --- | --- |
| 6 | 833.16 | 32.58 | -13.42 | 46.00 | 36.22 | 19.88 | 4.45 | 27.97 Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

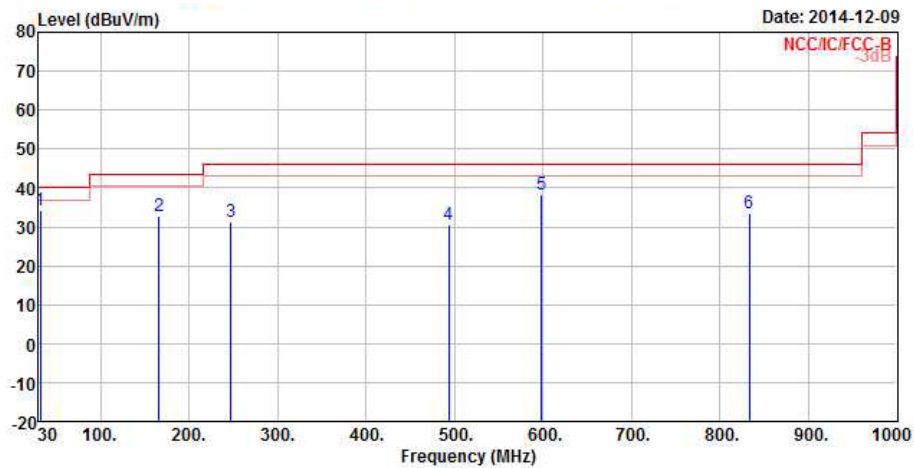
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Emissions (Above 30MHz)

| | | | |
|---------------------------|----------|------------------------|----|
| Modulation Mode | USB Mode | Test Freq. (FX) | F1 |
| Operating Function | Transmit | Polarization | H |



| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Cable Factor | Preamp Loss | Remark | A/Pos | T/Pos |
|---|--------|--------|------------|------------|-------------------|--------------|-------------|--------|-------|-------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg |
| 1 | 31.94 | 34.20 | -5.80 | 40.00 | 44.28 | 16.93 | 0.76 | 27.77 | Peak | --- |
| 2 | 165.80 | 32.89 | -10.61 | 43.50 | 48.77 | 9.80 | 1.86 | 27.54 | Peak | --- |
| 3 | 247.28 | 31.32 | -14.68 | 46.00 | 44.49 | 11.82 | 2.31 | 27.30 | Peak | --- |
| 4 | 493.66 | 30.53 | -15.47 | 46.00 | 38.58 | 17.13 | 3.22 | 28.40 | Peak | --- |
| 5 | 598.42 | 38.23 | -7.77 | 46.00 | 44.76 | 18.28 | 3.69 | 28.50 | Peak | --- |
| 6 | 833.16 | 33.44 | -12.56 | 46.00 | 37.08 | 19.88 | 4.45 | 27.97 | Peak | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

3.3 Emission Bandwidth

3.3.1 Emission Bandwidth Limit

| Emission Bandwidth Limit |
|--------------------------|
| N/A |

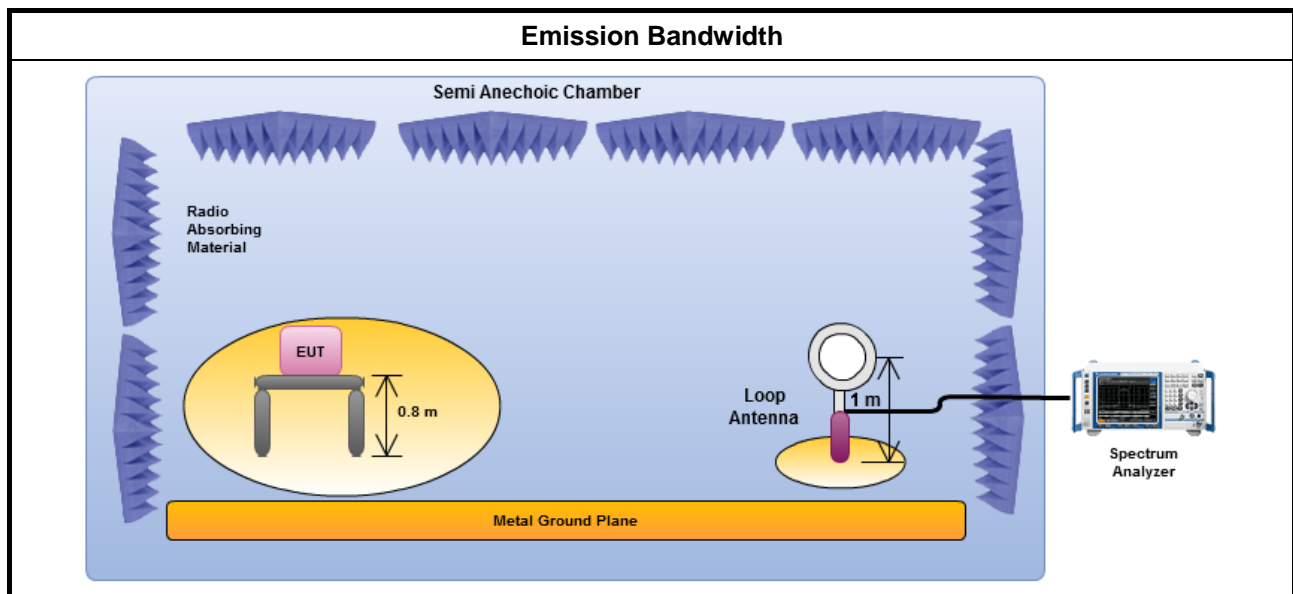
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

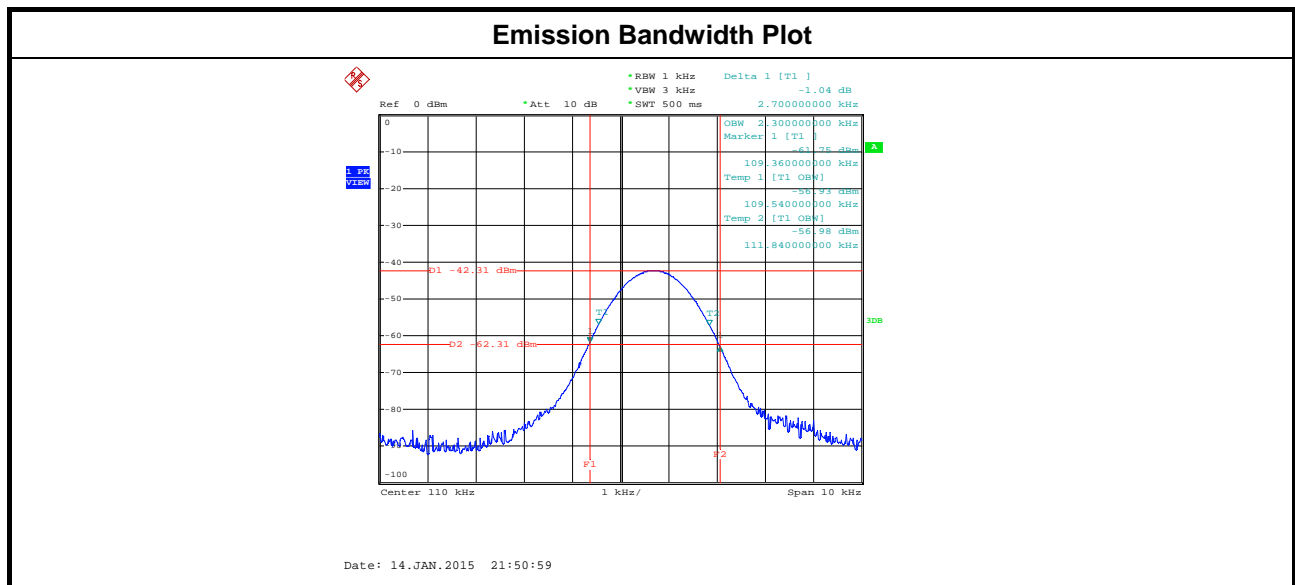
| Test Method |
|---|
| <input checked="" type="checkbox"/> For the emission bandwidth refer ANSI C63.10, clause 6.9.1 for occupied bandwidth testing. |
| <input checked="" type="checkbox"/> For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level. |

3.3.4 Test Setup



3.3.5 Test Result of Emission Bandwidth

| Occupied Channel Bandwidth Result | | | | | |
|-----------------------------------|-----------------|----------------------|---------------------------------|---------------------------------|---------------------|
| Modulation Mode | Frequency (kHz) | 20dB Bandwidth (kHz) | F _L at 20dB BW (kHz) | F _H at 20dB BW (kHz) | 99% Bandwidth (kHz) |
| Full charging loading | 110-205 | 2.7 | 109.36 | 112.06 | 2.3 |
| Limit | | N/A | N/A | N/A | N/A |
| Result | | Complied | | | |



4 Test Equipment and Calibration Data

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|-------------------|--------------|-----------|------------|-----------------|------------------|---------------------|
| Spectrum Analyzer | R&S | FSV 40 | 101013 | 9kHz ~ 40GHz | Jan. 25, 2014 | Conducted (TH01-HY) |

Note: Calibration Interval of instruments listed above is one year.

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|--------------|--------------------------------|-----------|----------------|-----------------|------------------|----------------------|
| EMC Receiver | R&S | ESCS 30 | 100174 | 9kHz ~ 2.75GHz | Apr. 14, 2014 | Conduction (CO04-HY) |
| LISN | SCHWARZBECK MESS-ELEKTRONIK | NSLK 8127 | 8127-477 | 9kHz ~ 30MHz | Jan. 22, 2014 | Conduction (CO04-HY) |
| RF Cable-CON | HUBER+SUHNER | RG213/U | 07611832020001 | 9kHz ~ 30MHz | Oct. 31, 2014 | Conduction (CO04-HY) |
| EMI Filter | LINDGREN | LRE-2030 | 2651 | < 450 Hz | N/A | Conduction (CO04-HY) |

Note: Calibration Interval of instruments listed above is one year.

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|--------------------------|-------------------------|-----------|-------------|--------------------|------------------|-----------------------|
| Spectrum Analyzer | R&S | FSP40 | 100593 | 9kHz ~ 40GHz | Oct. 02, 2014 | Radiation (03CH02-HY) |
| 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH02-HY | 30MHz ~ 1GHz 3m | May 11, 2014 | Radiation (03CH02-HY) |
| Amplifier | Agilent | 8447D | 2944A11149 | 100kHz ~ 1.3GHz | Jul. 22, 2014 | Radiation (03CH02-HY) |
| RF Cable-R03m | Jye Bao | RG142 | CB021 | 9kHz ~ 1GHz | Nov. 08, 2014 | Radiation (03CH02-HY) |
| Turn Table | Chaintek Instruments | 3000 | MF7802058 | 0 ~ 360 degree | N/A | Radiation (03CH02-HY) |
| Antenna Mast | MF | MF7802 | MF780208205 | 1 ~ 4 m | N/A | Radiation (03CH02-HY) |

Note: Calibration Interval of instruments listed above is one year.

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|--------------|-----------------|-----------|------------|-----------------|------------------|-----------------------|
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100315 | 9kHz ~ 30MHz | Jul. 28, 2014 | Radiation (03CH02-HY) |

Note: Calibration Interval of instruments listed above is two years.