

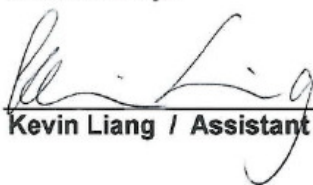
# FCC Test Report

**Equipment** : GRAPHICS TABLET COMPUTER  
**Brand Name** : Wacom  
**Model No.** : DTH-W1620  
**FCC ID** : HV4DTHW1620  
**Standard** : 47 CFR FCC Part 15.247  
**RF Specification** : Bluetooth LE  
**Frequency** : 2400 MHz – 2483.5 MHz  
**FCC Classification** : DTS  
**Applicant / Manufacturer** : Wacom Co., Ltd.  
2-510-1 Toyonodai, Kazo-shi, Saitama 349-1148 Japan

The product sample received on Jun. 29, 2016 and completely tested on Sep. 22, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 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:

  
Kevin Liang / Assistant Manager



## Table of Contents

|          |                                                  |           |
|----------|--------------------------------------------------|-----------|
| <b>1</b> | <b>GENERAL DESCRIPTION .....</b>                 | <b>5</b>  |
| 1.1      | Information.....                                 | 5         |
| 1.2      | Testing Applied Standards .....                  | 7         |
| 1.3      | Testing Location Information .....               | 7         |
| 1.4      | Measurement Uncertainty .....                    | 8         |
| <b>2</b> | <b>TEST CONFIGURATION OF EUT.....</b>            | <b>9</b>  |
| 2.1      | The Worst Case Modulation Configuration .....    | 9         |
| 2.2      | Test Channel Mode .....                          | 9         |
| 2.3      | The Worst Case Measurement Configuration.....    | 10        |
| 2.4      | Accessories and Support Equipment .....          | 11        |
| 2.5      | Test Setup Diagram .....                         | 12        |
| <b>3</b> | <b>TRANSMITTER TEST RESULT .....</b>             | <b>13</b> |
| 3.1      | AC Power-line Conducted Emissions .....          | 13        |
| 3.2      | DTS Bandwidth.....                               | 15        |
| 3.3      | Fundamental Emission Output Power.....           | 16        |
| 3.4      | Power Spectral Density .....                     | 18        |
| 3.5      | Transmitter Radiated Bandedge Emissions.....     | 20        |
| 3.6      | Transmitter Radiated Unwanted Emissions .....    | 23        |
| <b>4</b> | <b>TEST EQUIPMENT AND CALIBRATION DATA .....</b> | <b>27</b> |

**Appendix I. Test Result of AC Power-line Conducted Emissions**

**Appendix A. Test Result of Emission Bandwidth**

**Appendix B. Test Result of Maximum Conducted Output Power**

**Appendix C. Test Result of Power Spectral Density**

**Appendix D. Test Result of Transmitter Radiated Bandedge Emissions**

**Appendix E. Transmitter Radiated Unwanted Emissions**

**Appendix F. Test Photos**

**Appendix G. Photographs of EUT**

## Summary of Test Result

| Conformance Test Specifications |                  |                                                        |                                                                                                                                                                   |                                                               |          |
|---------------------------------|------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------|
| Report Clause                   | Ref. Std. Clause | Description                                            | Measured                                                                                                                                                          | Limit                                                         | Result   |
| 1.1.2                           | 15.203           | Antenna Requirement                                    | Antenna connector mechanism complied                                                                                                                              | FCC 15.203                                                    | Complied |
| 3.1                             | 15.207           | AC Power-line Conducted Emissions                      | [dBuV]: 0.4711010MHz<br>40.41 (Margin 6.08dB) - AV<br>41.95 (Margin 14.54dB) - QP                                                                                 | FCC 15.207                                                    | Complied |
| 3.2                             | 15.247(a)        | DTS Bandwidth                                          | Refer as Appendix A                                                                                                                                               | ≥500kHz                                                       | Complied |
| 3.3                             | 15.247(b)        | Fundamental Emission Output Power                      | Refer as Appendix B                                                                                                                                               | Power [dBm]:30                                                | Complied |
| 3.4                             | 15.247(e)        | Power Spectral Density                                 | Refer as Appendix C                                                                                                                                               | PSD [dBm/3kHz]:8                                              | Complied |
| 3.5                             | 15.247(d)        | Test Result of Transmitter Radiated Bandedge Emissions | Non-Restricted Bands:<br>2393.028 MHz: 47.25 dB<br>Restricted Bands<br>[dBuV/m at 3m]: 2489.92 MHz<br>61.48 (Margin 12.52 dB) - PK<br>47.84 (Margin 6.16 dB) - AV | Non-Restricted Bands:> 20 dBc<br>Bands: FCC 15.209            | Complied |
| 3.6                             | 15.247(d)        | Transmitter Radiated Unwanted Emissions                | Restricted Bands<br>[dBuV/m at 3m]: 532.46 MHz<br>39.68 (Margin 6.32dB) - PK                                                                                      | Non-Restricted Bands:> 20 dBc<br>Restricted Bands: FCC 15.209 | Complied |

## Revision History

[illegible]

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

| Band | Mode  | BWch (MHz) | Channel Number | Nss-Min | Nant |
|------|-------|------------|----------------|---------|------|
| 2.4G | BT-LE | 1          | 0-39[40]       | 1       | 1    |

Note:

- 2.4G is the 2.4GHz Band (2.4-2.4835GHz).
- Bluetooth LE (Low Energy) using GFSK modulation for DTS digital modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs.

### 1.1.2 Antenna Information

| Antenna Category                    |                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | Integral antenna (antenna permanently attached)                                                                                                                                                                                                                                                                   |
| <input checked="" type="checkbox"/> | Temporary RF connector provided                                                                                                                                                                                                                                                                                   |
| <input type="checkbox"/>            | No temporary RF connector provided<br>Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path. |
| <input type="checkbox"/>            | External antenna (dedicated antennas)                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/>            | Single power level with corresponding antenna(s).                                                                                                                                                                                                                                                                 |
| <input type="checkbox"/>            | Multiple power level and corresponding antenna(s).                                                                                                                                                                                                                                                                |

| Antenna General Information |           |           |            |
|-----------------------------|-----------|-----------|------------|
| No.                         | Ant. Cat. | Ant. Type | Gain (dBi) |
| 1                           | Integral  | PIFA      | 0.9        |
| 2                           | Integral  | PIFA      | -1.76      |

**1.1.3 Type of EUT**

| Identify EUT                        |                                                                                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| EUT Serial Number                   | N/A                                                                                                                               |
| Presentation of Equipment           | <input checked="" type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input 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)<br>Combined Equipment - Brand Name / Model No.: ... |
| <input type="checkbox"/>            | Plug-in radio (EUT intended for a variety of host systems)<br>Host System - Brand Name / Model No.: ...                           |
| <input type="checkbox"/>            | Other:                                                                                                                            |

**1.1.4 Mode Test Duty Cycle**

| Operated Mode for Worst Duty Cycle                                          |                                       |
|-----------------------------------------------------------------------------|---------------------------------------|
| <input checked="" type="checkbox"/> Operated test mode for worst duty cycle |                                       |
| Test Signal Duty Cycle (x)                                                  | Power Duty Factor [dB] – (10 log 1/x) |
| <input checked="" type="checkbox"/> 63.4% - test mode single channel – LE   | 1.98                                  |

**1.1.5 EUT Operational Condition**

|                          |                                                         |                                           |                                             |
|--------------------------|---------------------------------------------------------|-------------------------------------------|---------------------------------------------|
| <b>Supply Voltage</b>    | <input checked="" type="checkbox"/> AC mains            | <input checked="" type="checkbox"/> DC    |                                             |
| <b>Type of DC Source</b> | <input checked="" type="checkbox"/> External AC adapter | <input type="checkbox"/> From Host System | <input checked="" type="checkbox"/> Battery |

**1.1.6 EUT Operate Information**

| Items                       | Description                         |                           |                                     |                      |
|-----------------------------|-------------------------------------|---------------------------|-------------------------------------|----------------------|
| <b>Beamforming Function</b> | <input type="checkbox"/>            | With beamforming          | <input checked="" type="checkbox"/> | Without beamforming  |
| <b>Operate Condition</b>    | <input checked="" type="checkbox"/> | Point-to-multipoint (P2M) | <input type="checkbox"/>            | Point-to-point (P2P) |

## 1.2 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 C63.10-2013
- ♦ FCC KDB 558074 D01 v03r05

## 1.3 Testing Location Information

| Testing Location                    |               |                                                                                                                                                                           |                  |            |
|-------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|
| <input checked="" type="checkbox"/> | <b>HWA YA</b> | <b>ADD</b> : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.<br><b>TEL</b> : 886-3-327-3456 <b>FAX</b> : 886-3-327-0973 |                  |            |
| Test Condition                      | Test Site No. | Test Engineer                                                                                                                                                             | Test Environment | Test Date  |
| AC Conduction                       | CO04-HY       | Ryan                                                                                                                                                                      | 22°C / 54%       | 09/08/2016 |
| RF Conducted                        | TH01-HY       | Ryan                                                                                                                                                                      | 24.5°C / 66.5%   | 22/09/2016 |
| Radiated                            | 03CH09-HY     | Thor                                                                                                                                                                      | 24.4°C / 61.3%   | 18/08/2016 |

Test site registered number [ 553509 ] with FCC.

## 1.4 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 |               | ±2.3 dB     |
| Emission bandwidth, 6dB bandwidth |               | ±0.6 %      |
| RF output power, conducted        |               | ±0.1 dB     |
| Power density, conducted          |               | ±0.6 dB     |
| Unwanted emissions, conducted     | 9 – 150 kHz   | ±0.4 dB     |
|                                   | 0.15 – 30 MHz | ±0.4 dB     |
|                                   | 30 – 1000 MHz | ±0.6 dB     |
|                                   | 1 – 18 GHz    | ±0.5 dB     |
|                                   | 18 – 40 GHz   | ±0.5 dB     |
|                                   | 40 – 200 GHz  | N/A         |
| All emissions, radiated           | 9 – 150 kHz   | ±2.5 dB     |
|                                   | 0.15 – 30 MHz | ±2.3 dB     |
|                                   | 30 – 1000 MHz | ±2.6 dB     |
|                                   | 1 – 18 GHz    | ±3.6 dB     |
|                                   | 18 – 40 GHz   | ±3.8 dB     |
|                                   | 40 – 200 GHz  | N/A         |
| Temperature                       |               | ±0.8 °C     |
| Humidity                          |               | ±5 %        |
| DC and low frequency voltages     |               | ±0.9%       |
| Time                              |               | ±1.4 %      |
| Duty Cycle                        |               | ±0.6 %      |

## 2 Test Configuration of EUT

### 2.1 The Worst Case Modulation Configuration

| Worst Modulation Used for Conformance Testing                                                                                                                             |                                    |           |                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------|-----------------|
| Bluetooth Version                                                                                                                                                         | Transmit Chains (N <sub>TX</sub> ) | Data Rate | Modulation Mode |
| LE                                                                                                                                                                        | 1                                  | 1 Mbps    | LE-1Mbps        |
| Note 1: Bluetooth LE (Low Energy) using GFSK modulation for DTS digital modulation.<br>Note 2: Modulation modes consist below configuration : DSSS LE-1Mbps: GFSK (1Mbps) |                                    |           |                 |

### 2.2 Test Channel Mode

| Test Software Version |          | DRTU V1.8.9-03151 |         |      |           |       |               |
|-----------------------|----------|-------------------|---------|------|-----------|-------|---------------|
| Band                  | Mode     | BWch (MHz)        | Nss-Min | Nant | Ch. (MHz) | Range | Power Setting |
| 2.4G                  | LE-1Mbps | 20                | 1       | 1    | 2402      | L     | Default       |
| 2.4G                  | LE-1Mbps | 20                | 1       | 1    | 2440      | M     | Default       |
| 2.4G                  | LE-1Mbps | 20                | 1       | 1    | 2480      | H     | Default       |

#### Abbreviation Explanation

| Band | Mode   | BWch (MHz) | Nss-Min | Nant | Ch. (MHz) | Range | Test Cond. | Abbreviation                |
|------|--------|------------|---------|------|-----------|-------|------------|-----------------------------|
| 2.4G | BT-LE, | 1          | 1       | 1    | 2402      | L     | TN,VN      | 2.4G;BT-LE;1;1;1;2480;TN,VN |

**Note:**

- ♦ Test range channel consist of L (Low Ch.), M (Middle Ch.), H (High Ch.), S (Single Ch).
- ♦ Test range temperature consist of L (Low Temp.), N (Normal Temp.), H(High Temp.)
- ♦ Test range Voltage consist of L (Low Voltage.), N (Normal Voltage), H(High .Voltage).

## 2.3 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests |                                                                                         |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------|
| <b>Tests Item</b>                                   | AC power-line conducted emissions                                                       |
| <b>Condition</b>                                    | AC power-line conducted measurement for line and neutral<br>Test Voltage: 120Vac / 60Hz |
| <b>Operating Mode</b>                               | Operating Mode Description                                                              |
| 1                                                   | 1M 2440MHz, Adapter with charging mode                                                  |

| The Worst Case Mode for Following Conformance Tests |                                                                          |
|-----------------------------------------------------|--------------------------------------------------------------------------|
| <b>Tests Item</b>                                   | DTS Bandwidth, Fundamental Emission Output Power, Power Spectral Density |
| <b>Test Condition</b>                               | Conducted measurement at transmit chains                                 |

| The Worst Case Mode for Following Conformance Tests |                                                                                                                                    |                                                                                      |                                                                                       |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Tests Item</b>                                   | Emissions in Restricted Frequency Bands<br>Emissions in Non-restricted Frequency Bands                                             |                                                                                      |                                                                                       |
| <b>Test Condition</b>                               | Radiated measurement                                                                                                               |                                                                                      |                                                                                       |
| <b>User Position</b>                                | <input type="checkbox"/> EUT will be placed in fixed position.                                                                     |                                                                                      |                                                                                       |
|                                                     | <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. |                                                                                      |                                                                                       |
| <b>Operating Mode &lt; 1GHz</b>                     | <input checked="" type="checkbox"/> 1. 1M 2440MHz, Adapter with charging mode                                                      |                                                                                      |                                                                                       |
| <b>Orthogonal Planes of EUT</b>                     | <b>X Plane</b>                                                                                                                     | <b>Y Plane</b>                                                                       | <b>Z Plane</b>                                                                        |
|                                                     |                                                 |  |  |
| <b>Worst Planes of EUT</b>                          |                                                                                                                                    | V                                                                                    |                                                                                       |

## 2.4 Accessories and Support Equipment

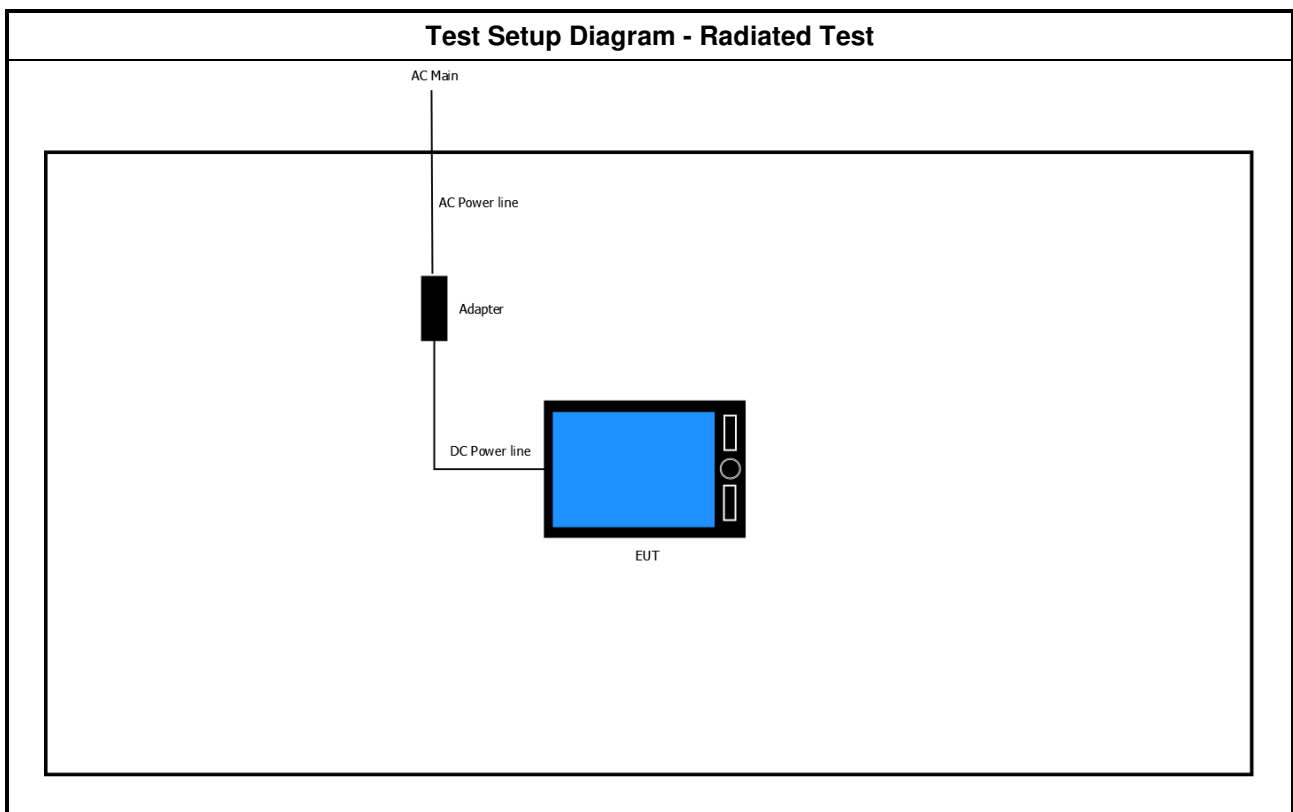
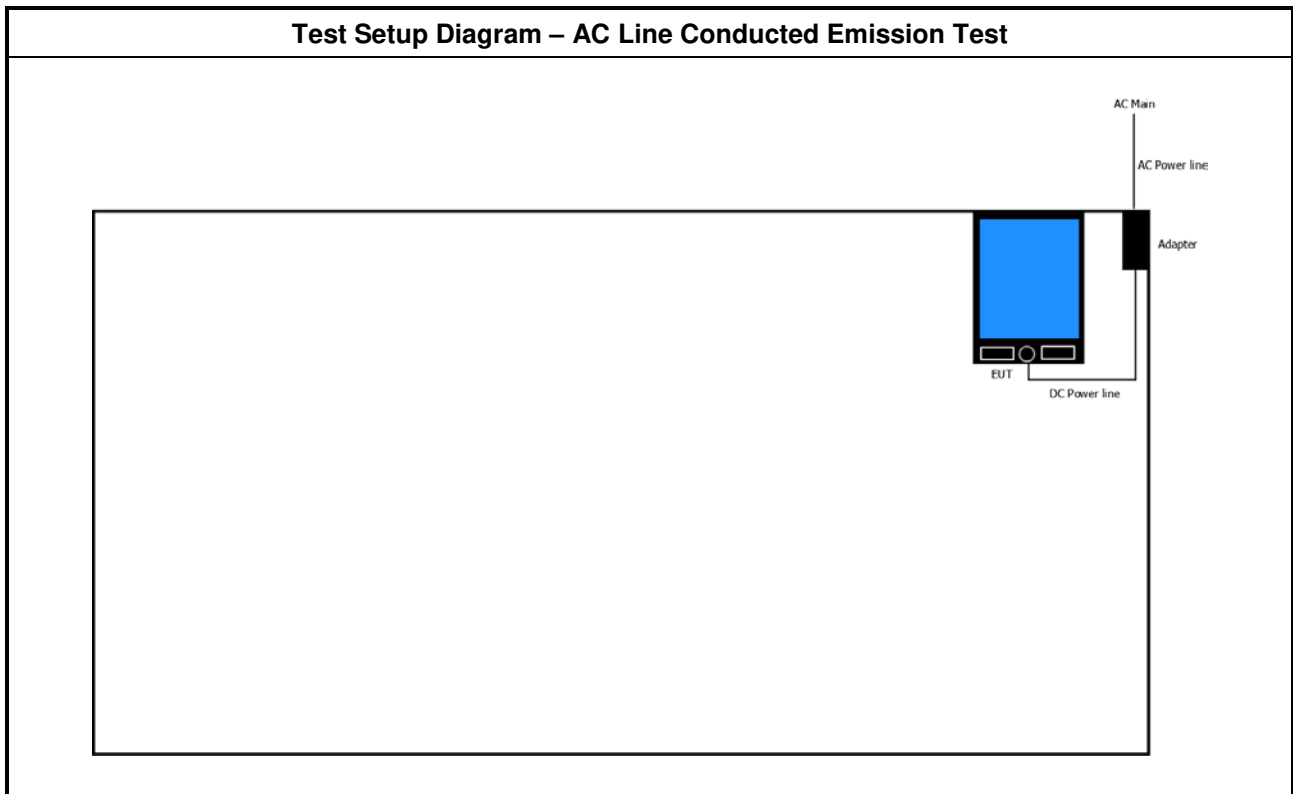
| Accessories    |              |                                              |            |             |
|----------------|--------------|----------------------------------------------|------------|-------------|
| AC Adapter     | Brand Name   | DELTA                                        | Model Name | ADP-100PB B |
|                | Power Rating | I/P: 100 -240Vac, 1.8A, O/P: 5V/3A or 20V/5A |            |             |
| Touch Pen      | Brand Name   | Wacom                                        | Model Name | KP-504E     |
| WLAN/BT Module | Brand Name   | Intel                                        | Model Name | 8260NGW     |
| GPS chip       | Brand Name   | BROADCOM                                     | Model Name | BCM4752IFBG |

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

| Support Equipment - RF Conducted |           |            |            |
|----------------------------------|-----------|------------|------------|
| No.                              | Equipment | Brand Name | Model Name |
| 1                                | -         | -          | -          |

| Support Equipment - AC Conduction and Radiated Emission |           |            |            |
|---------------------------------------------------------|-----------|------------|------------|
| No.                                                     | Equipment | Brand Name | Model Name |
| 1                                                       | -         | -          | -          |

## 2.5 Test Setup Diagram



### 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.

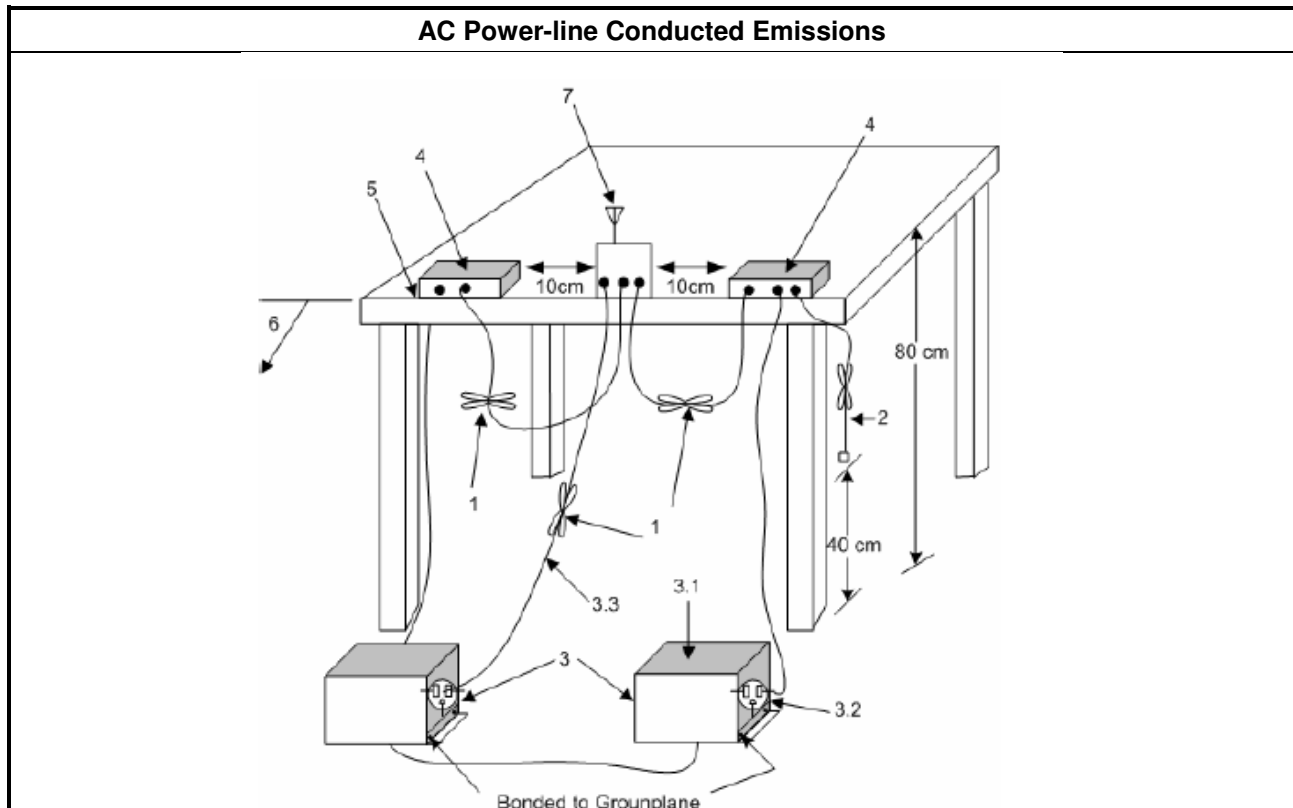
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

| Test Method                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.</li> </ul> |

##### 3.1.4 Test Setup





### **3.1.5 Test Result of AC Power-line Conducted Emissions**

Refer as Appendix I

## 3.2 DTS Bandwidth

### 3.2.1 6dB Bandwidth Limit

| 6dB Bandwidth Limit                                 |                                |
|-----------------------------------------------------|--------------------------------|
| <b>Systems using digital modulation techniques:</b> |                                |
| ▪                                                   | 6 dB bandwidth $\geq$ 500 kHz. |

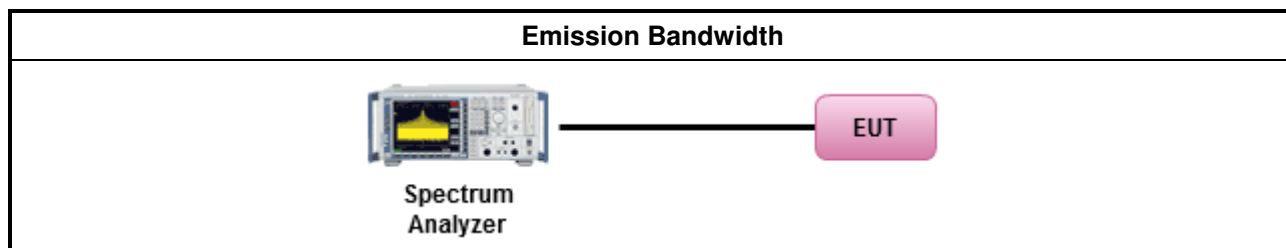
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

| Test Method                         |                                                                              |
|-------------------------------------|------------------------------------------------------------------------------|
| ▪                                   | For the emission bandwidth shall be measured using one of the options below: |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement. |
| <input type="checkbox"/>            | Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement. |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.           |

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix A

### 3.3 Fundamental Emission Output Power

#### 3.3.1 Fundamental Emission Output Power Limit

| Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit                                                                                                                              |                                                                                                  |                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| ▪ 2400-2483.5 MHz Band:                                                                                                                                                                                  |                                                                                                  |                                                                                                      |
|                                                                                                                                                                                                          | ▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)                                       |                                                                                                      |
|                                                                                                                                                                                                          | ▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm |                                                                                                      |
|                                                                                                                                                                                                          | ▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm    |                                                                                                      |
|                                                                                                                                                                                                          | ▪ Smart antenna system (SAS):                                                                    |                                                                                                      |
|                                                                                                                                                                                                          |                                                                                                  | - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm                         |
|                                                                                                                                                                                                          |                                                                                                  | - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm                        |
|                                                                                                                                                                                                          |                                                                                                  | - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm |
| e.i.r.p. Power Limit:                                                                                                                                                                                    |                                                                                                  |                                                                                                      |
| ▪ 2400-2483.5 MHz Band                                                                                                                                                                                   |                                                                                                  |                                                                                                      |
|                                                                                                                                                                                                          | ▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)                                |                                                                                                      |
|                                                                                                                                                                                                          | ▪ Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm           |                                                                                                      |
|                                                                                                                                                                                                          | ▪ Smart antenna system (SAS)                                                                     |                                                                                                      |
|                                                                                                                                                                                                          |                                                                                                  | - Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm                                  |
|                                                                                                                                                                                                          |                                                                                                  | - Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm                                 |
|                                                                                                                                                                                                          |                                                                                                  | - Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm           |
| $P_{Out}$ = maximum peak conducted output power or maximum conducted output power in dBm,<br>$G_{TX}$ = the maximum transmitting antenna directional gain in dBi.<br>$P_{eirp}$ = e.i.r.p. Power in dBm. |                                                                                                  |                                                                                                      |

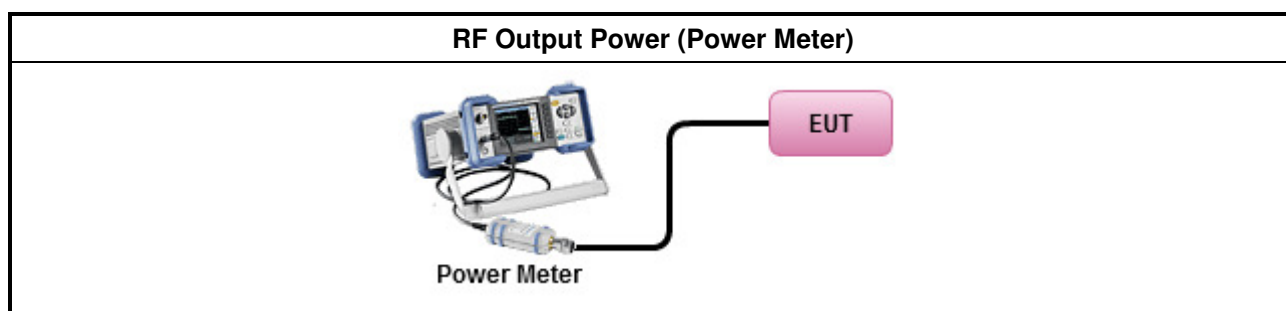
#### 3.3.2 Measuring Instruments

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

### 3.3.3 Test Procedures

| Test Method                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Maximum Peak Conducted Output Power</li> </ul>                                                                                                                                                                                                                                                                                                        |                                                                                       |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                     | Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).                    |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                          | Refer as FCC KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)    |
| <ul style="list-style-type: none"> <li>Maximum Conducted Output Power</li> </ul>                                                                                                                                                                                                                                                                                                             |                                                                                       |
| Duty cycle ≥ 98%                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                     | Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).    |
| Duty cycle < 98%                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                     | Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)        |
| RF power meter and average over on/off periods with duty factor or gated trigger                                                                                                                                                                                                                                                                                                             |                                                                                       |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                          | Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM (using an RF average power meter). |
| <ul style="list-style-type: none"> <li>For conducted measurement.</li> </ul>                                                                                                                                                                                                                                                                                                                 |                                                                                       |
| <ul style="list-style-type: none"> <li>If the EUT supports multiple transmit chains using options given below:<br/>Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.</li> </ul>                       |                                                                                       |
| <ul style="list-style-type: none"> <li>If multiple transmit chains, EIRP calculation could be following as methods:<br/> <math display="block">P_{\text{total}} = P_1 + P_2 + \dots + P_n</math>                     (calculated in linear unit [mW] and transfer to log unit [dBm])<br/> <math display="block">\text{EIRP}_{\text{total}} = P_{\text{total}} + \text{DG}</math> </li> </ul> |                                                                                       |

### 3.3.4 Test Setup



### 3.3.5 Test Result of Maximum Peak Conducted Output Power

Refer as Appendix B

### 3.3.6 Test Result of Maximum Average Conducted Output Power

Refer as Appendix B

### 3.4 Power Spectral Density

#### 3.4.1 Power Spectral Density Limit

| Power Spectral Density Limit |                                                |
|------------------------------|------------------------------------------------|
| ▪                            | Power Spectral Density (PSD) $\leq 8$ dBm/3kHz |

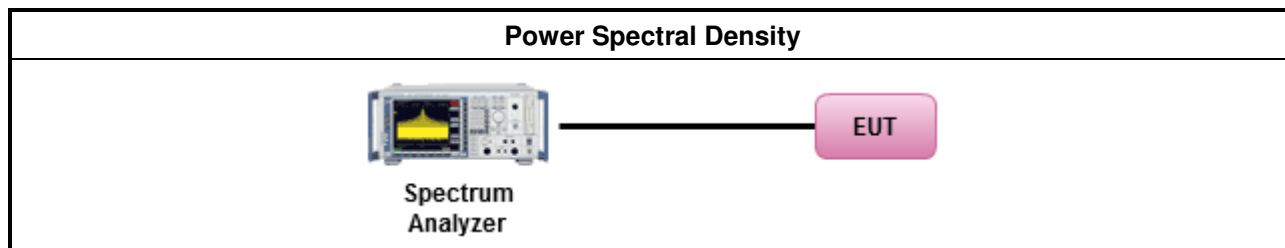
#### 3.4.2 Measuring Instruments

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

#### 3.4.3 Test Procedures

| Test Method                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ▪                                   | Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).                                                                                                                            |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                     | Duty cycle $\geq 98\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <input type="checkbox"/>            | Refer as FCC KDB 558074, clause 10.5 Method AVGPSPD-1 (spectral trace averaging).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                     | Duty cycle $< 98\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/>            | Refer as FCC KDB 558074, clause 10.6 Method AVGPSPD-2 Alt. (slow sweep speed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ▪                                   | For conducted measurement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ▪                                   | If The EUT supports multiple transmit chains using options given below:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <input type="checkbox"/>            | Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the $N_{TX}$ output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace. |
| <input type="checkbox"/>            | Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,                                                                                                                                                                                                              |
| <input type="checkbox"/>            | Option 3: Measure and add $10 \log(N)$ dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with $10 \log(N)$ . Or each transmit chains shall be add $10 \log(N)$ to compared with the limit.                                                                                                                                                                                                                                                                                                             |

### 3.4.4 Test Setup

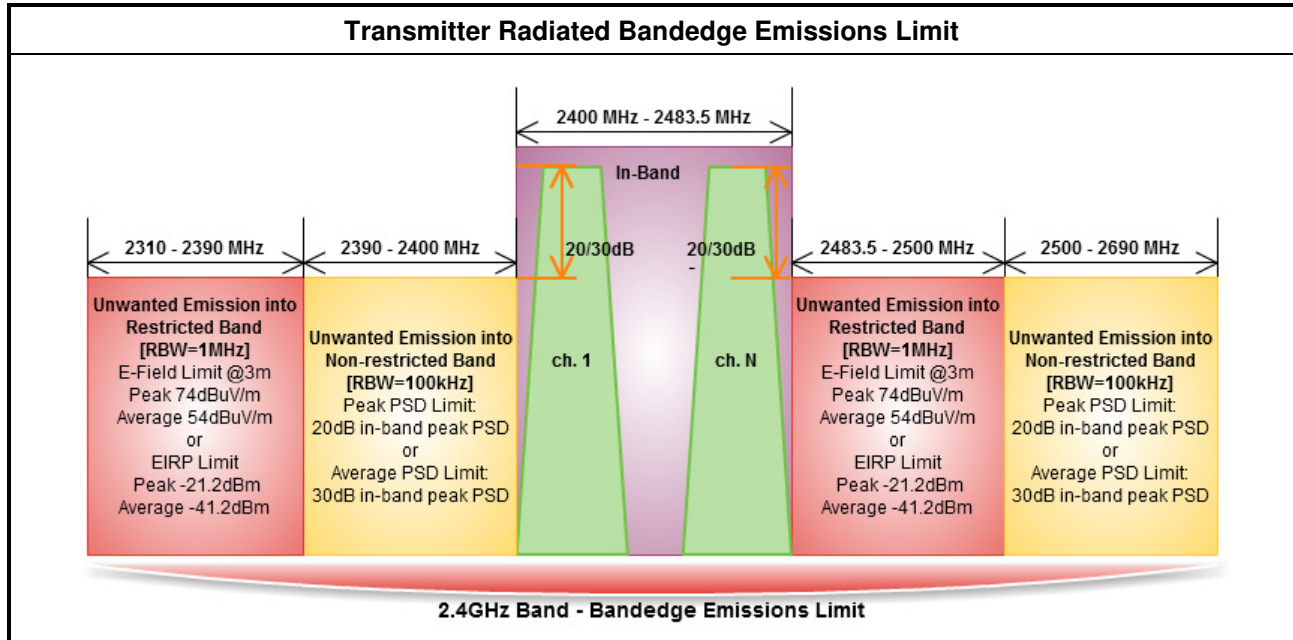


### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix C

### 3.5 Transmitter Radiated Bandedge Emissions

#### 3.5.1 Transmitter Radiated Bandedge Emissions Limit



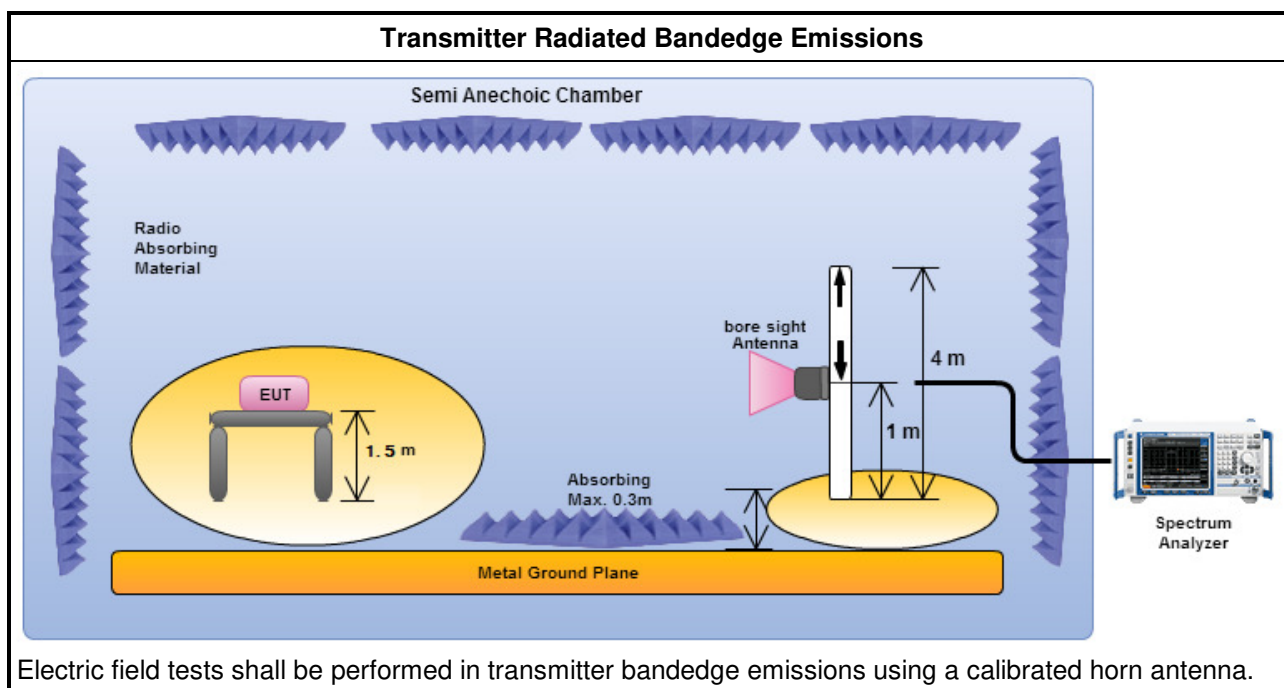
#### 3.5.2 Measuring Instruments

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

### 3.5.3 Test Procedures

| Test Method                         |                                                                                                                                                                        |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | The average emission levels shall be measured in [duty cycle $\geq 98$ or duty factor].                                                                                |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.10 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band. |
| <input checked="" type="checkbox"/> | For the transmitter unwanted emissions shall be measured using following options below:                                                                                |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.                                                                                   |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.                                                                                       |
| <input type="checkbox"/>            | Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$ )                                                                        |
| <input type="checkbox"/>            | Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).                                                                                     |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$ ).                                                                                           |
| <input type="checkbox"/>            | Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW $\geq 1/T$ , where T is pulse time.                                                                          |
| <input type="checkbox"/>            | Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.                                                                                              |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 11.3 and 12.2.4 measurement procedure peak limit.                                                                                      |
| <input checked="" type="checkbox"/> | For the transmitter bandedge emissions shall be measured using following options below:                                                                                |
| <input type="checkbox"/>            | Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).                    |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.10 for band-edge testing.                                                                                                               |
| <input type="checkbox"/>            | Refer as ANSI C63.10, clause 6.10.6.2 for marker-delta method for band-edge measurements.                                                                              |
| <input checked="" type="checkbox"/> | For radiated measurement, refer as FCC KDB 558074, clause 12.2.7 and ANSI C63.10, clause 6.6. Test distance is 3m.                                                     |

### 3.5.4 Test Setup





### **3.5.5 Test Result of Emissions in Non-restricted Frequency Bands**

Refer as Appendix D

### 3.6 Transmitter Radiated Unwanted Emissions

#### 3.6.1 Transmitter in Radiated Unwanted Emissions Limit

| Restricted Band 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.

| Un-restricted Band Emissions Limit |            |
|------------------------------------|------------|
| RF output power procedure          | Limit (dB) |
| Peak output power procedure        | 20         |
| Average output power procedure     | 30         |

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

#### 3.6.2 Measuring Instruments

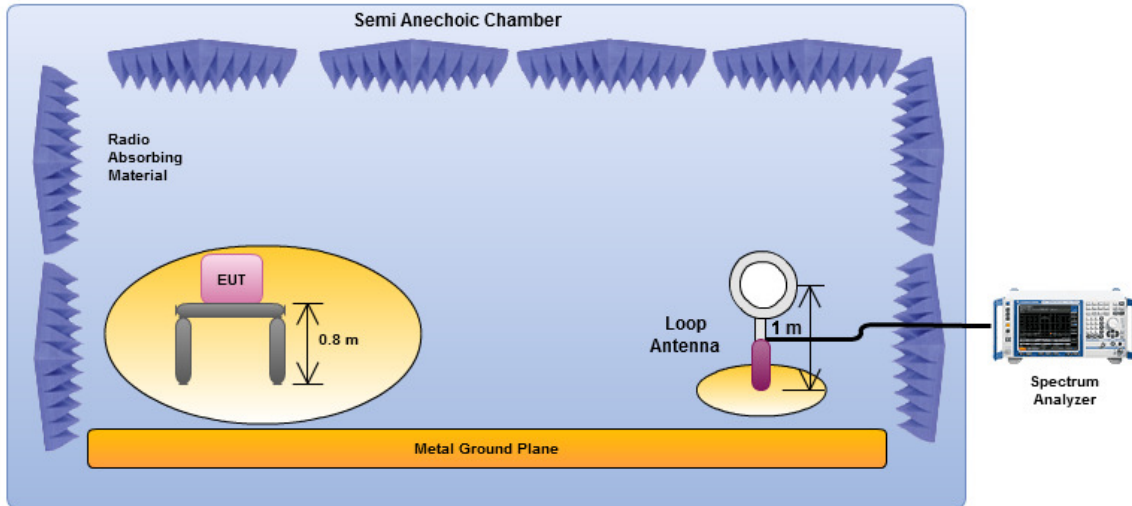
Refer a test equipment and calibration data table in this test report.

### 3.6.3 Test Procedures

| Test Method                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | 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). |
| <input checked="" type="checkbox"/> | The average emission levels shall be measured in [duty cycle $\geq 98$ or duty factor].                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <input checked="" type="checkbox"/> | For the transmitter unwanted emissions shall be measured using following options below:                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <input type="checkbox"/>            | Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$ )                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/>            | Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$ ).                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <input type="checkbox"/>            | Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW $\geq 1/T$ , where T is pulse time.                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <input type="checkbox"/>            | Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 11.3 and 12.2.4 measurement procedure peak limit.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 12.2.3 measurement procedure Quasi-Peak limit.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <input checked="" type="checkbox"/> | For radiated measurement, refer as FCC KDB 558074, clause 12.2.7.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <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 30 dB below the permissible value has no need to be reported.                                                                                                                                                                                                                                                                                                                                                                                          |

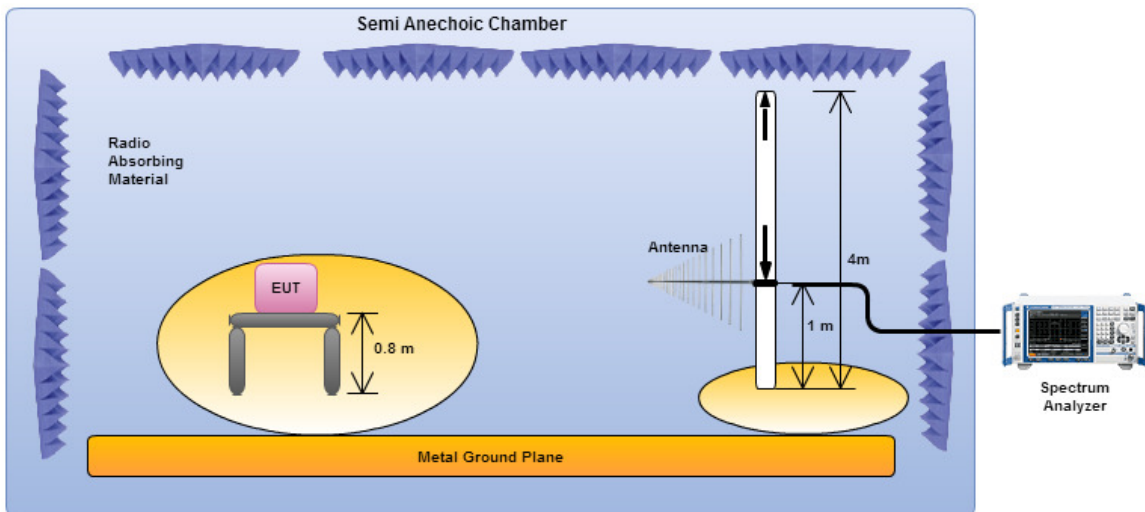
### 3.6.4 Test Setup

#### Transmitter Spurious and Out of Band Emissions (9 kHz - 30 MHz)

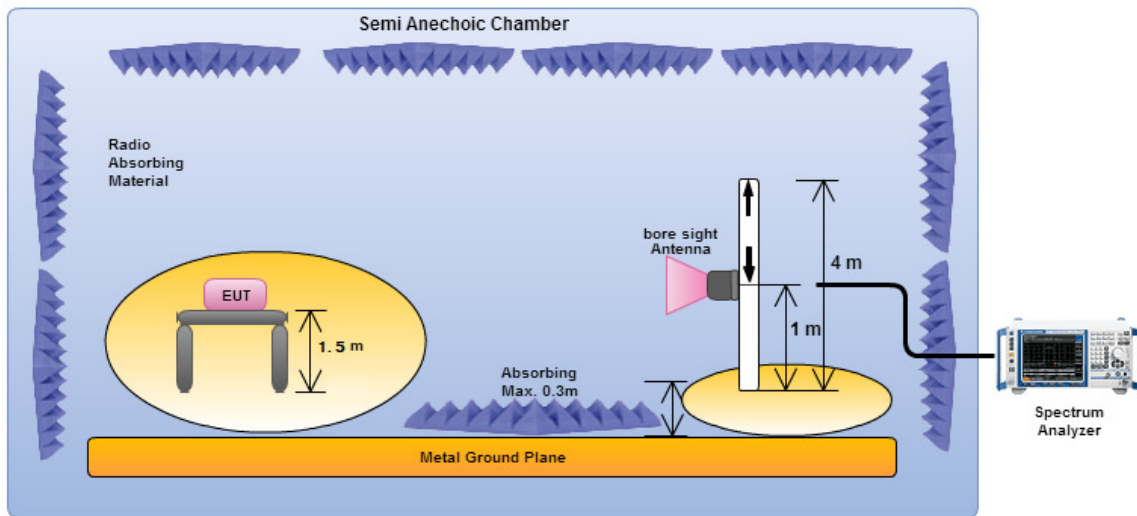


Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna.

#### Transmitter Radiated Unwanted Emissions (below 1GHz)



Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna.

**Transmitter Radiated Unwanted Emissions (Above 1GHz)**


Electric field tests shall be performed in the frequency range of 1 GHz to 10th harmonic of highest fundamental frequency or 40 GHz using a calibrated horn antenna.

**3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)**

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. Any spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.

**3.6.6 Transmitter Radiated Unwanted Emissions**

Refer as Appendix E

## 4 Test Equipment and Calibration Data

### Instrument for AC Conduction

| Instrument             | Manufacturer                   | Model No. | Serial No.     | Characteristics | Calibration Last Cal. | Calibration Due Date |
|------------------------|--------------------------------|-----------|----------------|-----------------|-----------------------|----------------------|
| EMC Receiver           | KEYSIGHT                       | N9038A    | MY54130031     | 20Hz ~ 8.4GHz   | 14/04/2016            | 13/04/2017           |
| LISN                   | SCHWARZBECK<br>MESS-ELEKTRONIK | NSLK 8127 | 8127-477       | 9kHz ~ 30MHz    | 26/01/2016            | 25/01/2017           |
| LISN<br>(Support Unit) | R&S                            | ENV216    | 101295         | 9kHz ~ 30MHz    | 04/11/2015            | 03/11/2016           |
| RF Cable-CON           | HUBER+SUHNER                   | RG213/U   | 07611832020001 | 9kHz ~ 30MHz    | 30/10/2015            | 29/10/2016           |
| EMI Filter             | LINDGREN                       | LRE-2030  | 2651           | < 450 Hz        | NCR                   | NCR                  |

NCR: No Calibration Require.

### Instrument for Conducted Test

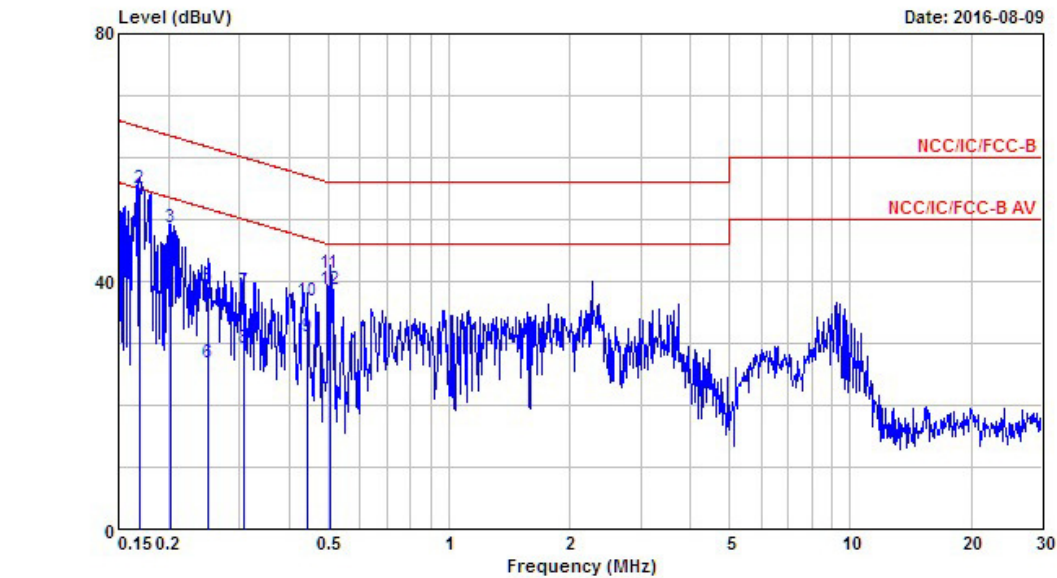
| Instrument        | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Last Cal. | Calibration Due Date |
|-------------------|--------------|-----------|------------|-----------------|-----------------------|----------------------|
| Spectrum Analyzer | R&S          | FSV 40    | 101500     | 9KHz~40GHz      | 12/05/2016            | 11/05/ 2017          |
| Power Sensor      | Anritsu      | MA2411B   | 917017     | 300MHz ~ 40GHz  | 04/02/2016            | 03/02/2017           |
| Power Meter       | Anritsu      | ML2495A   | 949003     | 300MHz ~ 40GHz  | 04/02/2016            | 03/02/2017           |
| Signal Generator  | R&S          | SMR40     | 100116     | 10MHz ~ 40GHz   | 21/07/2016            | 20/07/2017           |

### Instrument for Radiated Test

| Instrument                     | Manufacturer  | Model No.           | Serial No.         | Characteristics    | Calibration Last Cal. | Calibration Due Date |
|--------------------------------|---------------|---------------------|--------------------|--------------------|-----------------------|----------------------|
| 3m Semi Anechoic Chamber       | TDK           | SAC-3M              | 03CH09-HY          | 30MHz ~ 1GHz<br>3m | 25/04/2016            | 24/04/2017           |
| 3m Semi Anechoic Chamber       | TDK           | SAC-3M              | 03CH09-HY          | 1GHz ~ 18GHz<br>3m | 30/06/2016            | 29/06/2017           |
| Amplifier                      | EMC           | EMC9135             | 980232             | 9kHz ~ 1.0GHz      | 29/01/2016            | 28/01/2017           |
| Amplifier                      | Agilent       | 8449B               | 3008A02096         | 1GHz ~ 26.5GHz     | 11/04/2016            | 10/04/2017           |
| Spectrum                       | KEYSIGHT      | N9010A              | MY54200885         | 10Hz ~ 44GHz       | 04/07/2016            | 03/07/2017           |
| Bilog Antenna & 5dB Attenuator | TESEQ & MTJ   | CBL 6111D & MTJ6102 | 35418              | 30MHz ~ 1GHz       | 31/03/2016            | 30/03/2017           |
| Horn Antenna                   | SCHWARZBECK   | BBHA 9120D          | BBHA 9120D<br>1534 | 1GHz ~ 18GHz       | 22/04/2016            | 21/04/2017           |
| Horn Antenna                   | SCHWARZBECK   | BBHA9170            | BBHA9170614        | 18GHz ~ 40GHz      | 04/01/2016            | 03/01/2017           |
| Loop Antenna                   | ROHDE&SCHWARZ | HFH2-Z2             | 100330             | 9 kHz~30 MHz       | 10/11/2014            | 09/11/2016           |

### AC Power-line Conducted Emissions Result

|                    |                                        |             |         |
|--------------------|----------------------------------------|-------------|---------|
| Operating Mode     | 1                                      | Power Phase | Neutral |
| Operating Function | 1M 2440MHz, Adapter with charging mode |             |         |

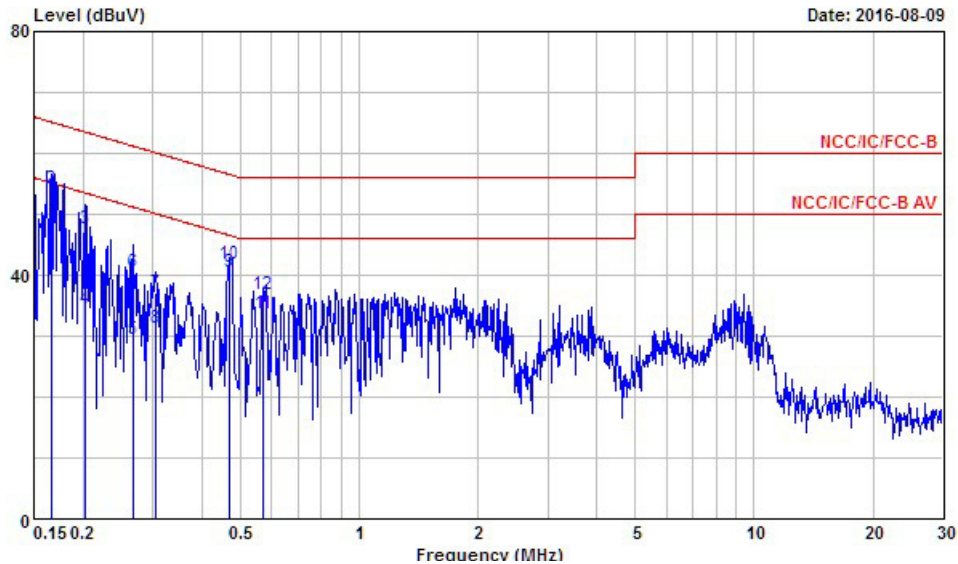


|    | Freq      | Level | Over   | Limit | Read  | LISN   | Cable |         |
|----|-----------|-------|--------|-------|-------|--------|-------|---------|
|    | MHz       | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|    |           |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1  | 0.1694400 | 41.83 | -13.16 | 54.99 | 41.47 | 0.11   | 0.25  | Average |
| 2  | 0.1694400 | 55.02 | -9.97  | 64.99 | 54.66 | 0.11   | 0.25  | QP      |
| 3  | 0.2028850 | 48.78 | -14.71 | 63.49 | 48.37 | 0.11   | 0.30  | QP      |
| 4  | 0.2028850 | 38.88 | -14.61 | 53.49 | 38.47 | 0.11   | 0.30  | Average |
| 5  | 0.2507790 | 39.26 | -22.47 | 61.73 | 38.92 | 0.11   | 0.23  | QP      |
| 6  | 0.2507790 | 26.82 | -24.91 | 51.73 | 26.48 | 0.11   | 0.23  | Average |
| 7  | 0.3083410 | 38.33 | -21.69 | 60.02 | 38.04 | 0.12   | 0.17  | QP      |
| 8  | 0.3083410 | 29.27 | -20.75 | 50.02 | 28.98 | 0.12   | 0.17  | Average |
| 9  | 0.4420810 | 31.12 | -15.90 | 47.02 | 30.90 | 0.12   | 0.10  | Average |
| 10 | 0.4420810 | 36.80 | -20.22 | 57.02 | 36.58 | 0.12   | 0.10  | QP      |
| 11 | 0.5046930 | 41.37 | -14.63 | 56.00 | 41.15 | 0.12   | 0.10  | QP      |
| 12 | 0.5046930 | 38.76 | -7.24  | 46.00 | 38.54 | 0.12   | 0.10  | Average |

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.)

### AC Power-line Conducted Emissions Result

|                    |                                        |             |      |
|--------------------|----------------------------------------|-------------|------|
| Operating Mode     | 1                                      | Power Phase | Line |
| Operating Function | 1M 2440MHz, Adapter with charging mode |             |      |



|    | Freq      | Level | Over   | Limit | Read  | LISN   | Cable |         |
|----|-----------|-------|--------|-------|-------|--------|-------|---------|
|    | MHz       | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|    | MHz       | dBuV  | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1  | 0.1667680 | 42.19 | -12.93 | 55.12 | 41.84 | 0.10   | 0.25  | Average |
| 2  | 0.1667680 | 54.29 | -10.83 | 65.12 | 53.94 | 0.10   | 0.25  | QP      |
| 3  | 0.2018130 | 47.54 | -16.00 | 63.54 | 47.13 | 0.11   | 0.30  | QP      |
| 4  | 0.2018130 | 34.38 | -19.16 | 53.54 | 33.97 | 0.11   | 0.30  | Average |
| 5  | 0.2672410 | 29.56 | -21.64 | 51.20 | 29.23 | 0.11   | 0.22  | Average |
| 6  | 0.2672410 | 40.53 | -20.67 | 61.20 | 40.20 | 0.11   | 0.22  | QP      |
| 7  | 0.3050910 | 37.02 | -23.08 | 60.10 | 36.72 | 0.12   | 0.18  | QP      |
| 8  | 0.3050910 | 31.30 | -18.80 | 50.10 | 31.00 | 0.12   | 0.18  | Average |
| 9  | 0.4711010 | 40.41 | -6.08  | 46.49 | 40.19 | 0.12   | 0.10  | Average |
| 10 | 0.4711010 | 41.95 | -14.54 | 56.49 | 41.73 | 0.12   | 0.10  | QP      |
| 11 | 0.5728110 | 33.80 | -12.20 | 46.00 | 33.58 | 0.12   | 0.10  | Average |
| 12 | 0.5728110 | 36.92 | -19.08 | 56.00 | 36.70 | 0.12   | 0.10  | 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.)



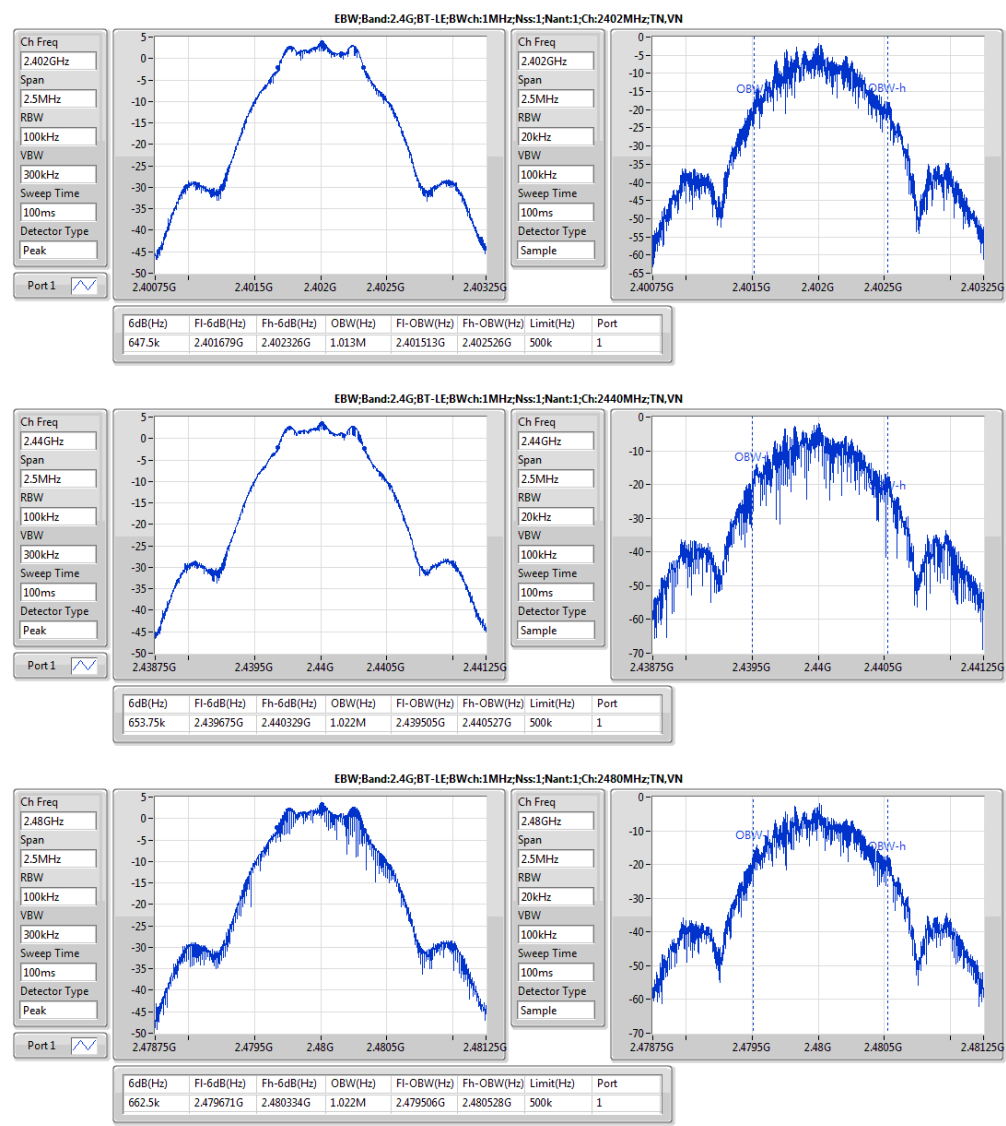
Summary

| Mode             | Max-N dB<br>(Hz) | Max-OBW<br>(Hz) | ITU-Code | Min-N dB<br>(Hz) | Min-OBW<br>(Hz) |
|------------------|------------------|-----------------|----------|------------------|-----------------|
| 2.4G;BT-LE;1;1;1 | 662.5k           | 1.022M          | 1M02F1D  | 647.5k           | 1.013M          |



Result

| Mode                          | Result | Limit | P1-N dB<br>(Hz) | P1-OBW<br>(Hz) |
|-------------------------------|--------|-------|-----------------|----------------|
| 2.4G;BT-LE;1;1;1;2402;L;TN,VN | Pass   | 500k  | 647.5k          | 1.013M         |
| 2.4G;BT-LE;1;1;1;2440;M;TN,VN | Pass   | 500k  | 653.75k         | 1.022M         |
| 2.4G;BT-LE;1;1;1;2480;H;TN,VN | Pass   | 500k  | 662.5k          | 1.022M         |





Summary

| Mode             | Sum<br>(dBm) | Sum<br>(W) | EIRP<br>(dBm) | EIRP<br>(W) |
|------------------|--------------|------------|---------------|-------------|
| 2.4G;BT-LE;1;1;1 | 3.77         | 0.00238    | 4.67          | 0.00293     |



Result

| Mode                          | Result | DG<br>(dBi) | Sum<br>(dBm) | Sum Lim.<br>(dBm) | EIRP<br>(dBm) | EIRP Lim.<br>(dBm) | P1<br>(dBm) |
|-------------------------------|--------|-------------|--------------|-------------------|---------------|--------------------|-------------|
| 2.4G;BT-LE;1;1;1;2402;L;TN,VN | Pass   | 0.90        | 3.19         | 30.00             | 4.09          | 36.00              | 3.19        |
| 2.4G;BT-LE;1;1;1;2440;M;TN,VN | Pass   | 0.90        | 3.53         | 30.00             | 4.43          | 36.00              | 3.53        |
| 2.4G;BT-LE;1;1;1;2480;H;TN,VN | Pass   | 0.90        | 3.77         | 30.00             | 4.67          | 36.00              | 3.77        |



Summary

| Mode             | Sum<br>(dBm) | Sum<br>(W) | EIRP<br>(dBm) | EIRP<br>(W) |
|------------------|--------------|------------|---------------|-------------|
| 2.4G;BT-LE;1;1;1 | 3.49         | 0.00223    | 4.39          | 0.00275     |



Result

| Mode                          | Result | DG<br>(dBi) | Sum<br>(dBm) | Sum Lim.<br>(dBm) | EIRP<br>(dBm) | EIRP Lim.<br>(dBm) | P1<br>(dBm) |
|-------------------------------|--------|-------------|--------------|-------------------|---------------|--------------------|-------------|
| 2.4G;BT-LE;1;1;1;2402;L;TN,VN | Pass   | 0.90        | 3.18         | 30.00             | 4.08          | 36.00              | 3.18        |
| 2.4G;BT-LE;1;1;1;2440;M;TN,VN | Pass   | 0.90        | 3.45         | 30.00             | 4.35          | 36.00              | 3.45        |
| 2.4G;BT-LE;1;1;1;2480;H;TN,VN | Pass   | 0.90        | 3.49         | 30.00             | 4.39          | 36.00              | 3.49        |



Summary

| Mode             | PD<br>(dBm/RBW) | EIRP.PD<br>(dBm/RBW) |
|------------------|-----------------|----------------------|
| 2.4G;BT-LE;1;1;1 | -11.65          | -10.34               |

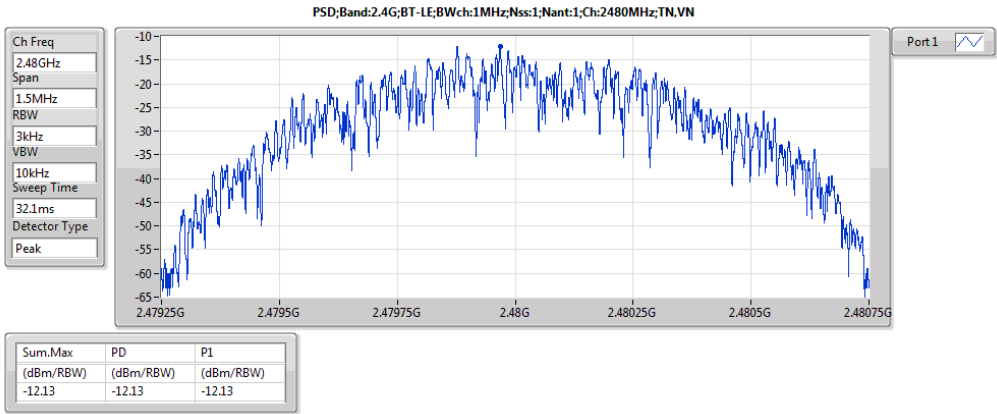
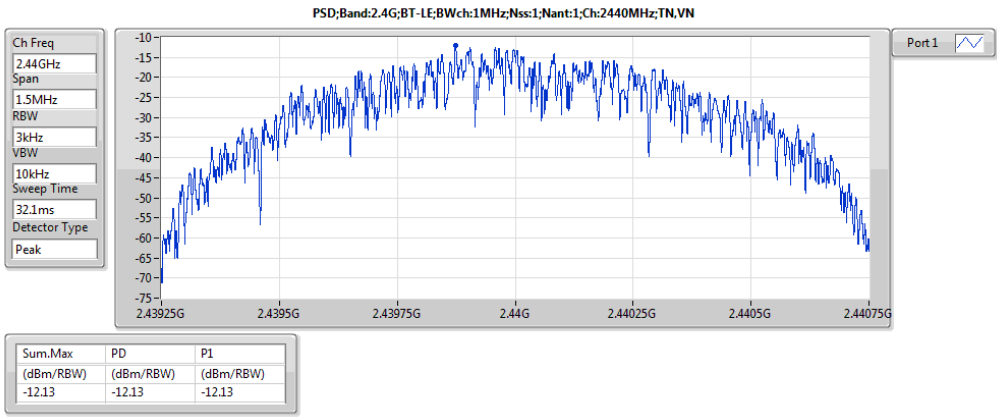
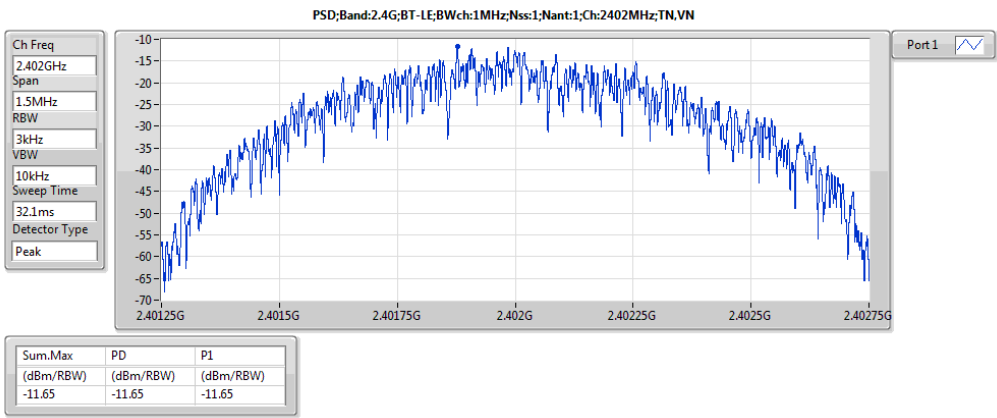


Result

| Mode                          | Result | Meas.RBW<br>(Hz) | Lim.RBW<br>(Hz) | BWCF<br>(dB) | DG<br>(dBi) | PD<br>(dBm/RBW) | PD.Limit<br>(dBm/RBW) | EIRP.PD<br>(dBm/RBW) | EIRP.PD.Li<br>m<br>(dBm/RBW) | P1<br>(dBm/RBW) |
|-------------------------------|--------|------------------|-----------------|--------------|-------------|-----------------|-----------------------|----------------------|------------------------------|-----------------|
| 2.4G;BT-LE;1;1;1;2402;L;TN,VN | Pass   | 3k               | 3k              | 0.00         | 1.31        | -11.65          | 8.00                  | -10.34               | Inf                          | -11.65          |
| 2.4G;BT-LE;1;1;1;2440;M;TN,VN | Pass   | 3k               | 3k              | 0.00         | 1.31        | -12.13          | 8.00                  | -10.82               | Inf                          | -12.13          |
| 2.4G;BT-LE;1;1;1;2480;H;TN,VN | Pass   | 3k               | 3k              | 0.00         | 1.31        | -12.13          | 8.00                  | -10.82               | Inf                          | -12.13          |



PSD-DTS Result



### 2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)

| Modulation | N <sub>TX</sub> | Test Freq. (MHz) | In-band PSD [i] (dBuV/100kHz) | Freq. (MHz) | Out-band PSD [o] (dBuV/100kHz) | [i] – [o] (dB) | Limit (dB) | Pol. |
|------------|-----------------|------------------|-------------------------------|-------------|--------------------------------|----------------|------------|------|
| LE-1Mbps   | 1               | 2402             | 94.40                         | 2393.028    | 47.15                          | 47.25          | 20         | V    |
| LE-1Mbps   | 1               | 2480             | 98.14                         | 2511.200    | 48.74                          | 49.40          | 20         | V    |

Note 1: Measurement worst emissions of receive antenna polarization

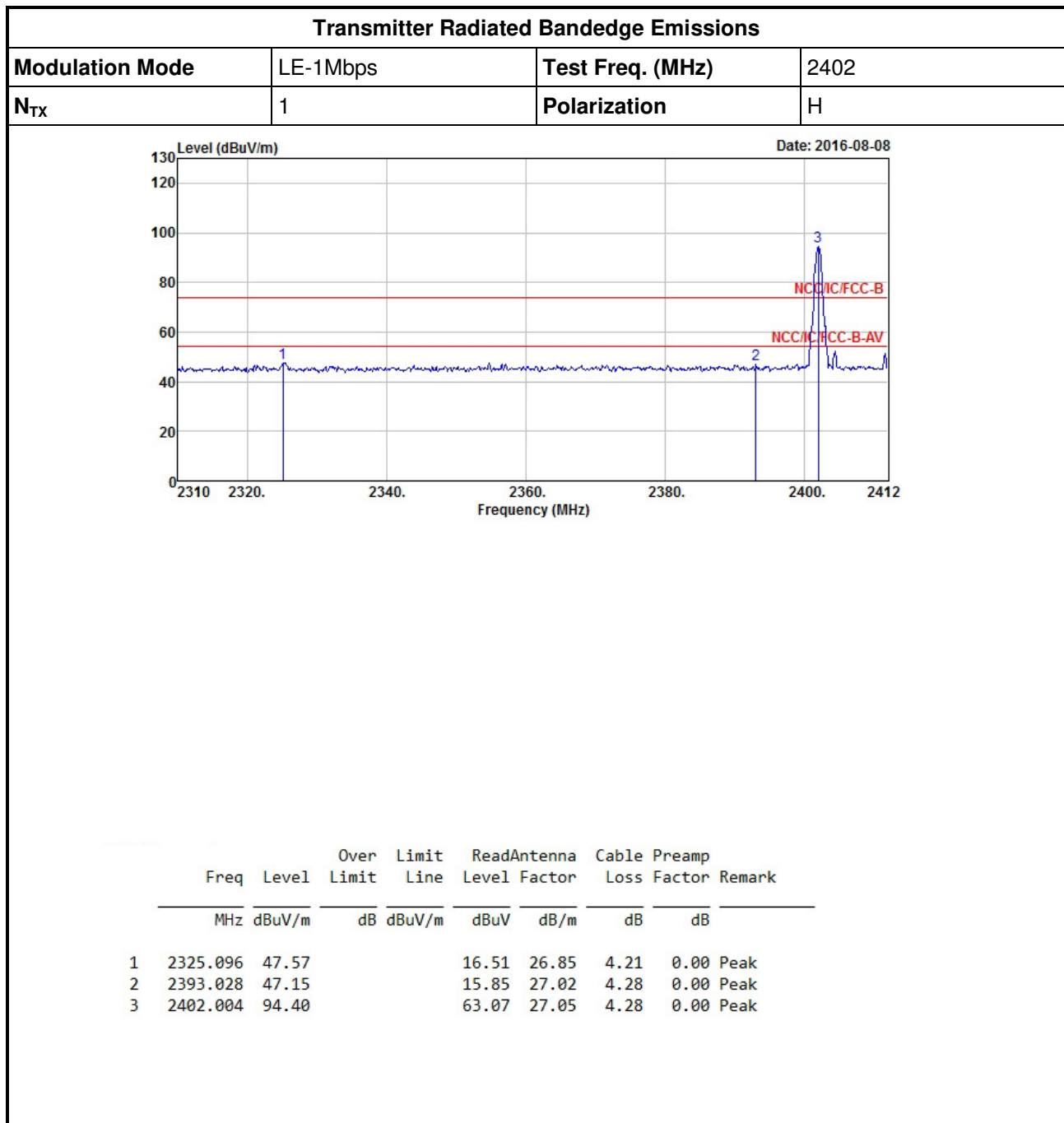
### 2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)

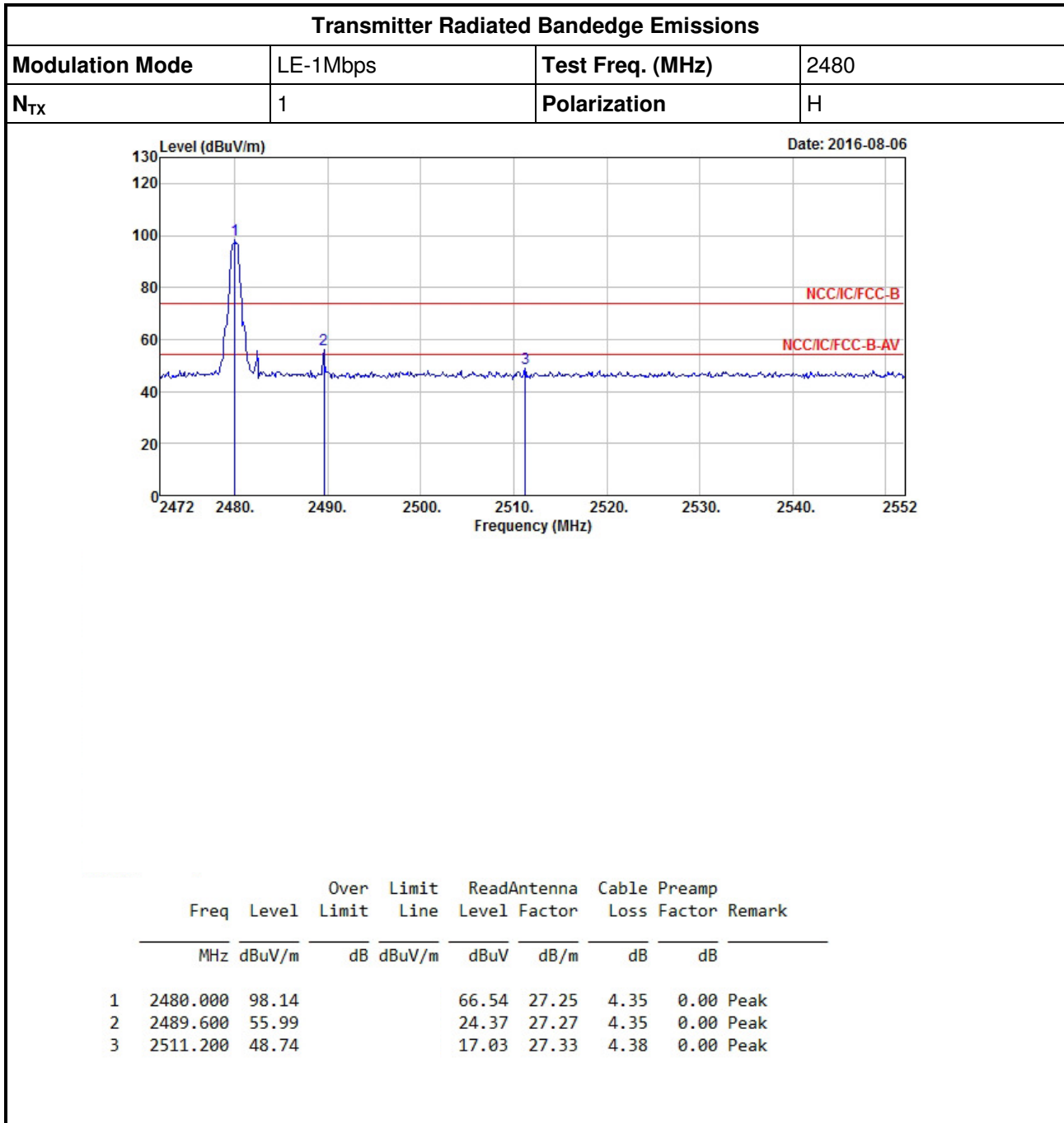
| Modulation Mode | N <sub>TX</sub> | Freq. (MHz) | Measure Distance (m) | Freq. (MHz) PK | Level (dBuV/m) PK | Limit (dBuV/m) PK | Freq. (MHz) AV | Level (dBuV/m) AV | Limit (dBuV/m) AV | Pol. |
|-----------------|-----------------|-------------|----------------------|----------------|-------------------|-------------------|----------------|-------------------|-------------------|------|
| LE-1Mbps        | 1               | 2402        | 3                    | 2325.300       | 58.31             | 74                | 2325.300       | 47.81             | 54                | V    |
| LE-1Mbps        | 1               | 2480        | 3                    | 2489.920       | 61.48             | 74                | 2489.280       | 47.84             | 54                | V    |

Note 1: Measurement worst emissions of receive antenna polarization.

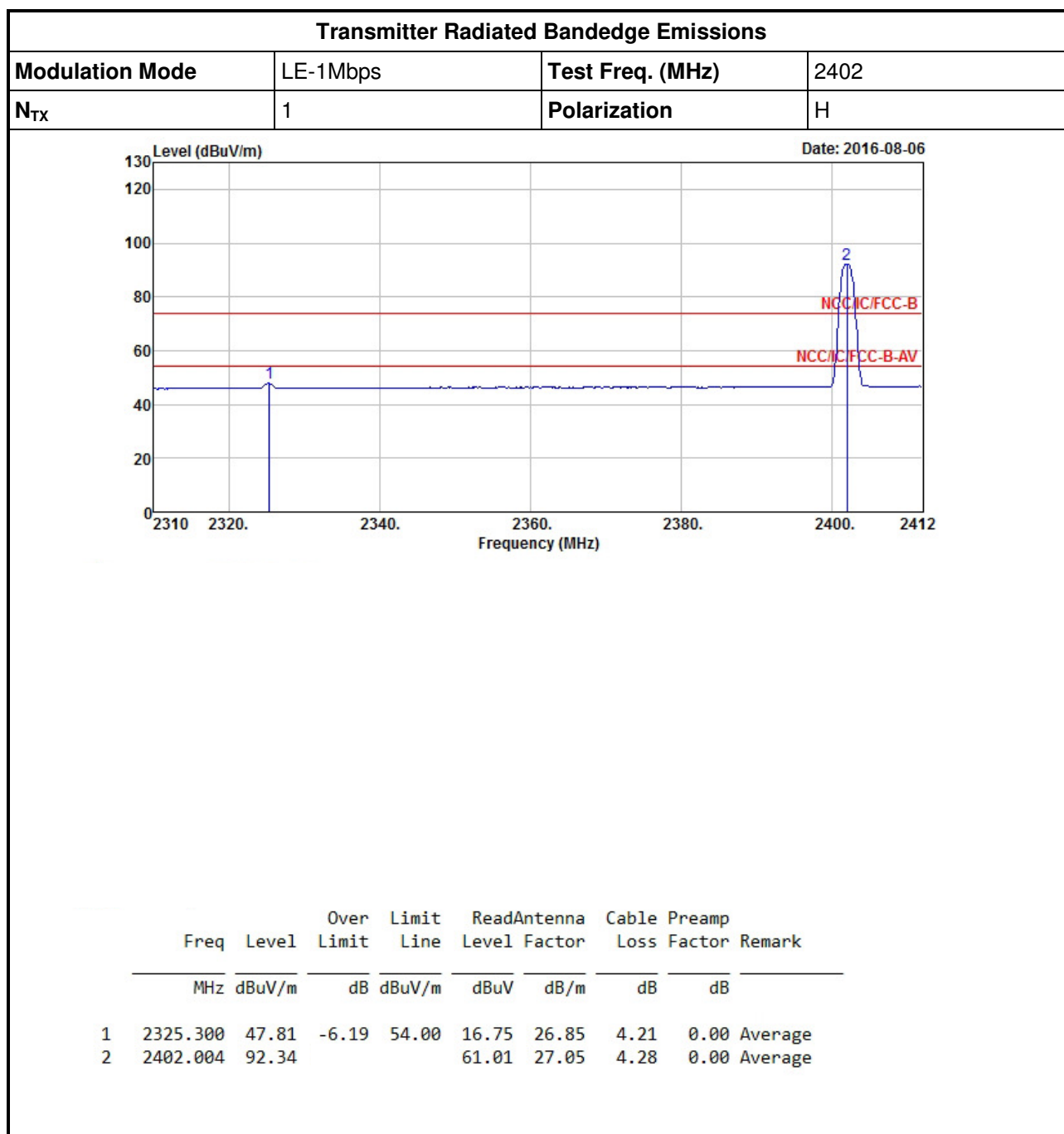
Note 2: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., LE VBW≥1/625us, VBW=3kHz.

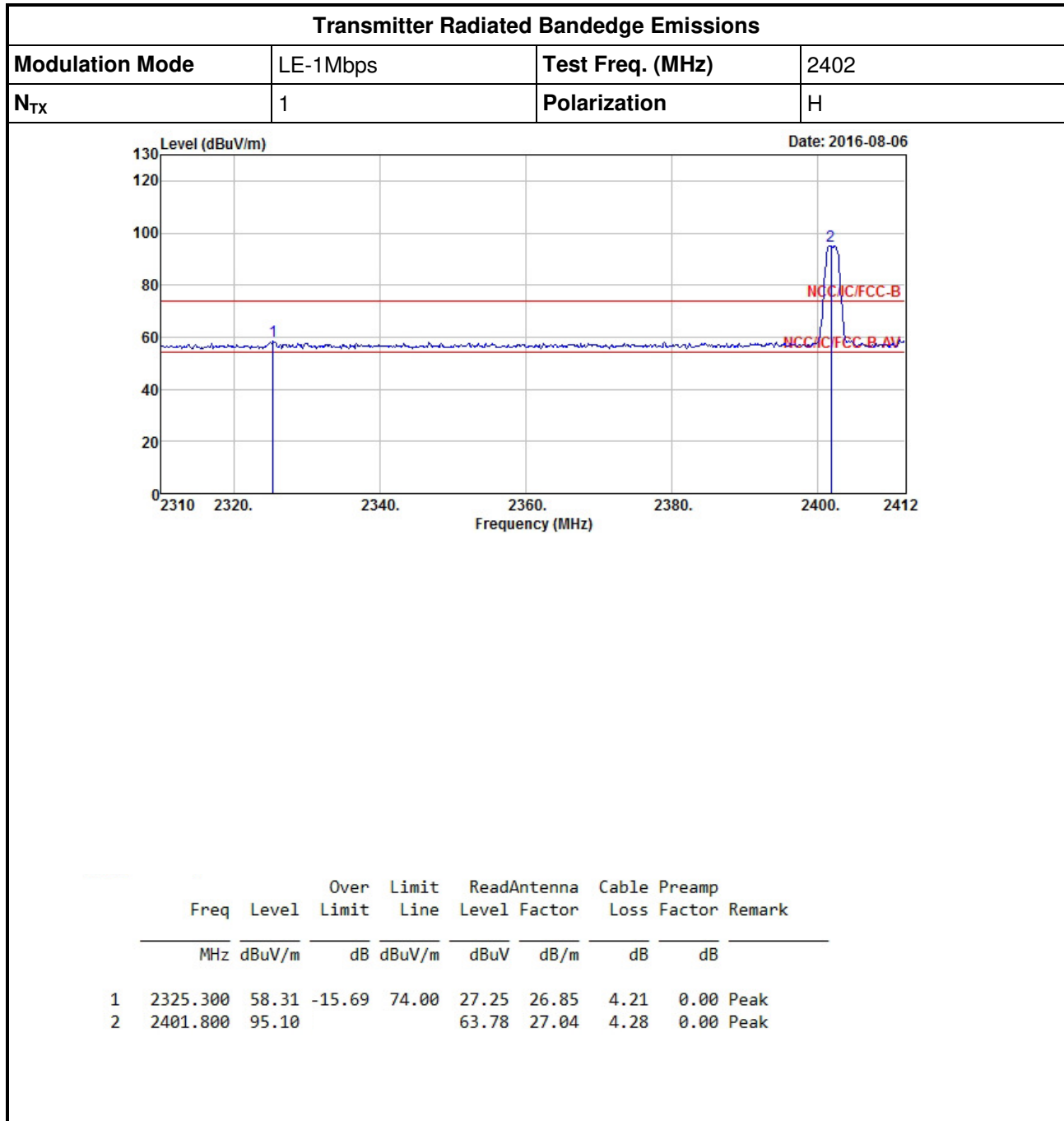
### Transmitter Radiated Bandedge Emissions (Non-restricted Band)

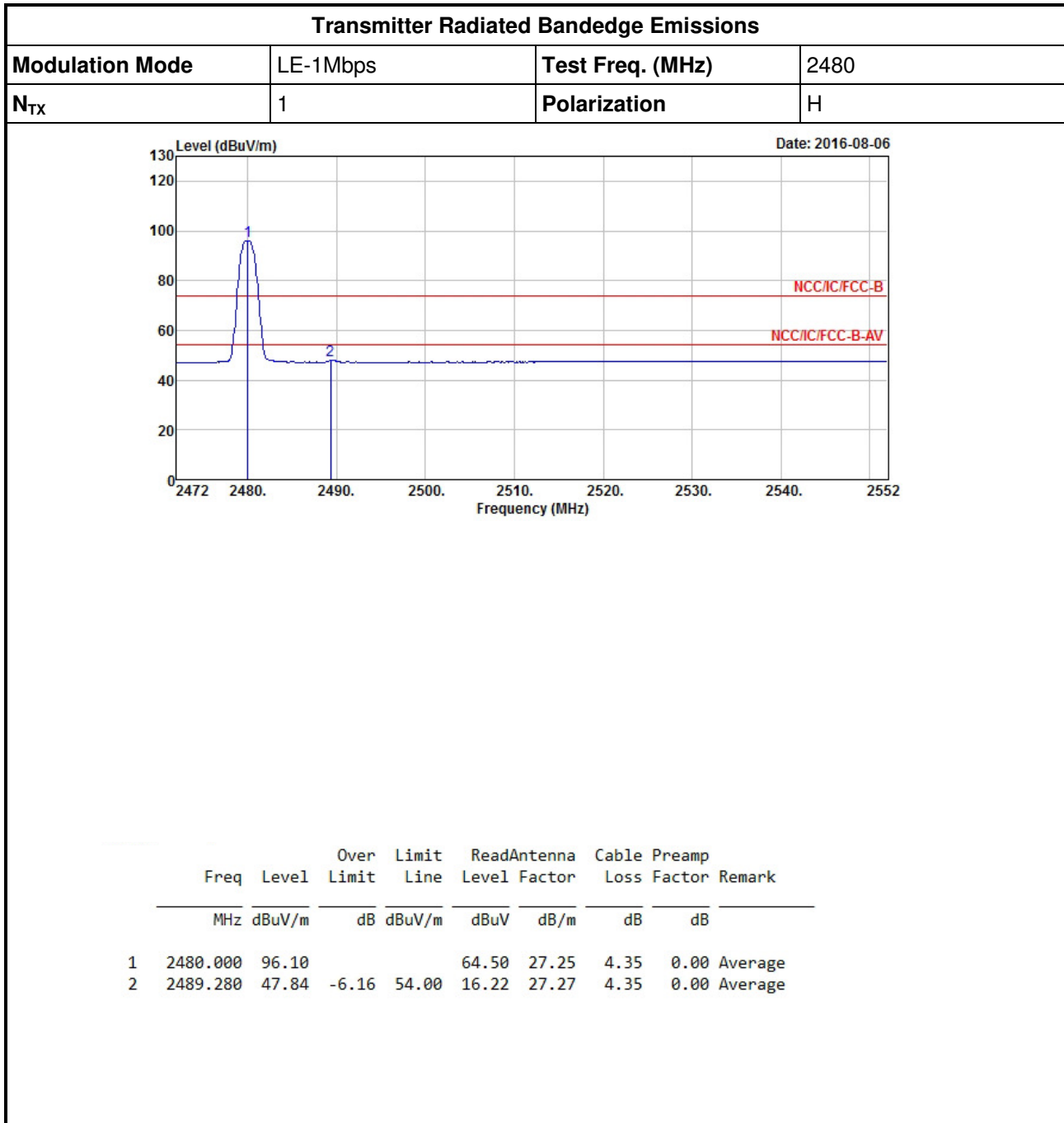




### Transmitter Radiated Bandedge Emissions (Restricted Band)

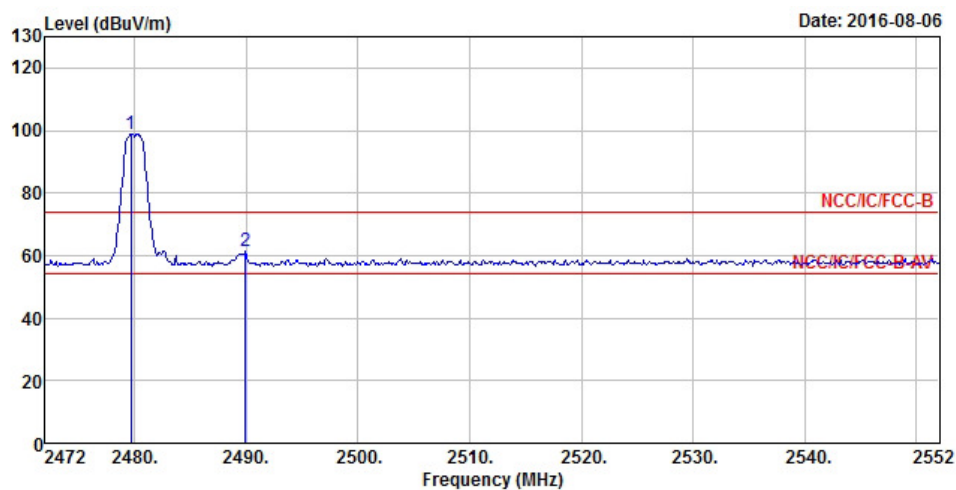






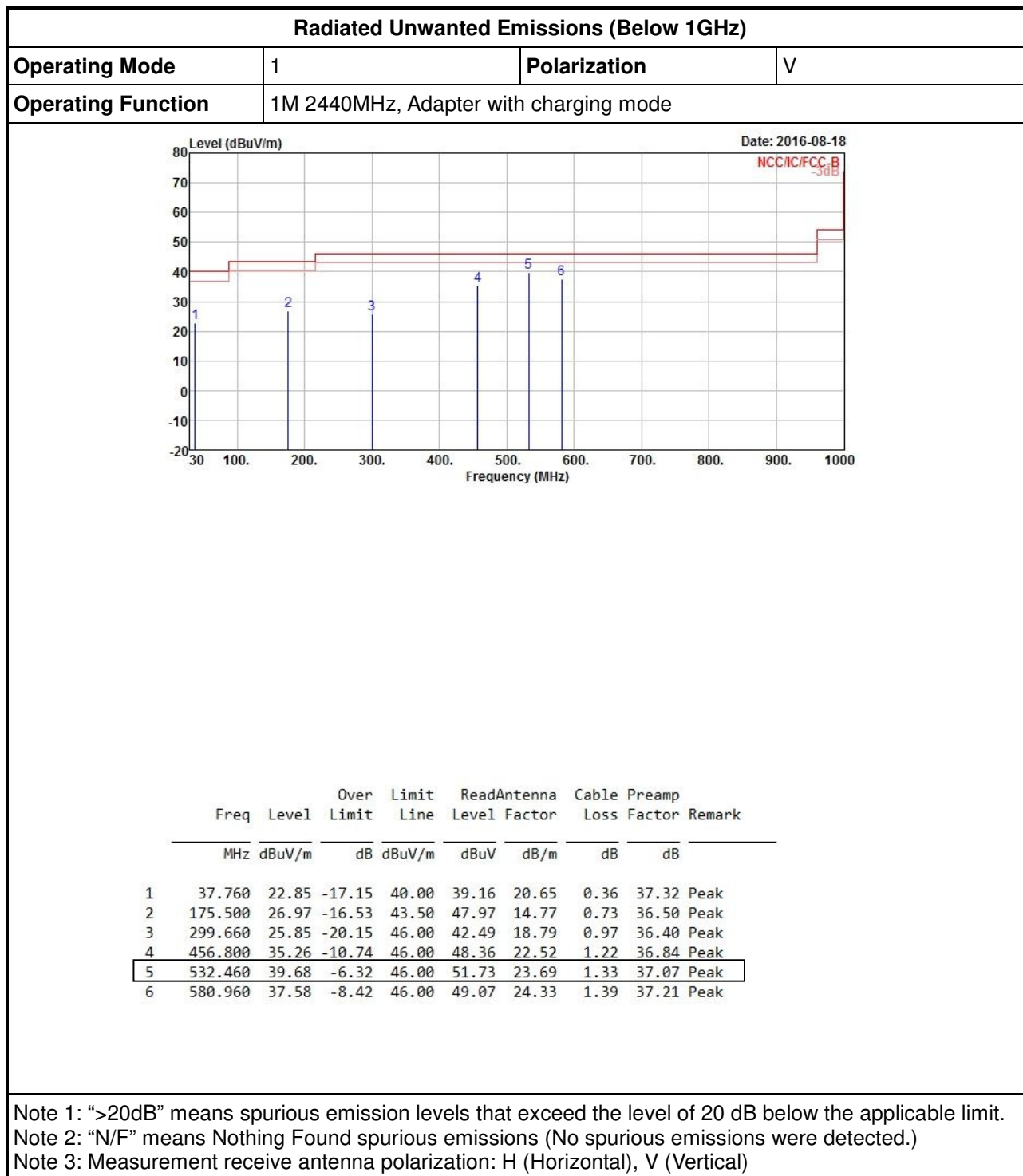
### Transmitter Radiated Bandedge Emissions

|                 |          |                  |      |
|-----------------|----------|------------------|------|
| Modulation Mode | LE-1Mbps | Test Freq. (MHz) | 2480 |
| N <sub>TX</sub> | 1        | Polarization     | H    |



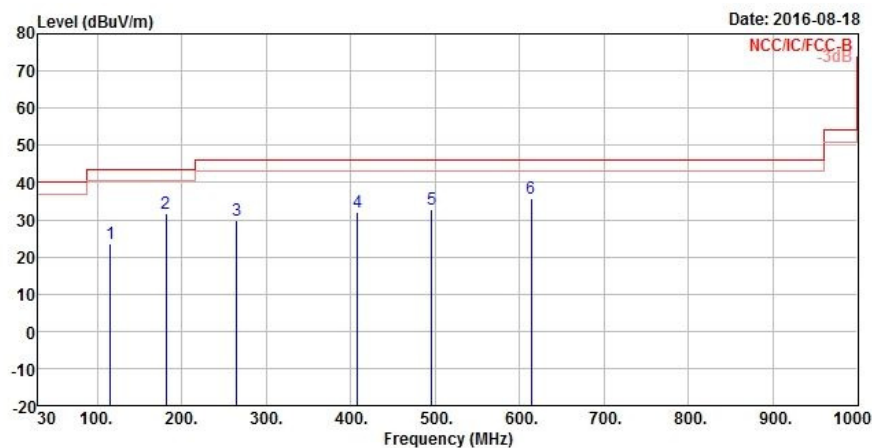
|   | Freq     | Level  | Over<br>Limit | Limit<br>Line | ReadAntenna<br>Level Factor | Cable<br>Loss | Preamp<br>Factor | Remark    |
|---|----------|--------|---------------|---------------|-----------------------------|---------------|------------------|-----------|
|   | MHz      | dBuV/m | dB            | dBuV/m        | dBuV                        | dB/m          | dB               | dB        |
| 1 | 2479.680 | 98.85  |               |               | 67.25                       | 27.25         | 4.35             | 0.00 Peak |
| 2 | 2489.920 | 61.48  | -12.52        | 74.00         | 29.86                       | 27.27         | 4.35             | 0.00 Peak |

### Transmitter Radiated Unwanted Emissions (Below 1GHz)



### Radiated Unwanted Emissions (Below 1GHz)

|                    |                                        |              |   |
|--------------------|----------------------------------------|--------------|---|
| Operating Mode     | 1                                      | Polarization | H |
| Operating Function | 1M 2440MHz, Adapter with charging mode |              |   |



|   | Freq    | Level  | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamplifier | Remark |
|---|---------|--------|------------|------------|-------------------|----------------|------------|--------------|--------|
|   | MHz     | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m           | dB         | dB           |        |
| 1 | 115.360 | 23.40  | -20.10     | 43.50      | 42.95             | 16.62          | 0.59       | 36.76        | Peak   |
| 2 | 181.320 | 31.58  | -11.92     | 43.50      | 52.78             | 14.51          | 0.76       | 36.47        | Peak   |
| 3 | 264.740 | 30.00  | -16.00     | 46.00      | 46.68             | 18.81          | 0.91       | 36.40        | Peak   |
| 4 | 408.300 | 32.13  | -13.87     | 46.00      | 46.04             | 21.65          | 1.13       | 36.69        | Peak   |
| 5 | 495.600 | 32.94  | -13.06     | 46.00      | 45.41             | 23.22          | 1.28       | 36.97        | Peak   |
| 6 | 613.940 | 35.74  | -10.26     | 46.00      | 46.79             | 24.82          | 1.43       | 37.30        | Peak   |

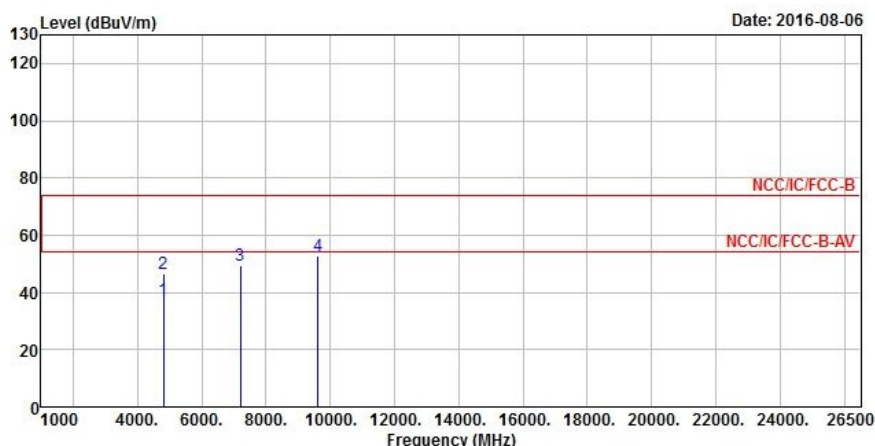
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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

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

### Transmitter Radiated Unwanted Emissions (Above 1GHz)

| Transmitter Radiated Unwanted Emissions (Above 1GHz) |          |                  |      |
|------------------------------------------------------|----------|------------------|------|
| Modulation Mode                                      | LE-1Mbps | Test Freq. (MHz) | 2402 |
| Operating Function                                   | Transmit | Polarization     | V    |



|   | Freq     | Level  | Over<br>Limit | Limit<br>Line | ReadAntenna<br>Level | Cable<br>Factor | Preamp<br>Loss | Preamp<br>Factor | Remark  |
|---|----------|--------|---------------|---------------|----------------------|-----------------|----------------|------------------|---------|
|   | MHz      | dBuV/m | dB            | dBuV/m        | dBuV                 | dB/m            | dB             | dB               |         |
| 1 | 4804.000 | 37.60  | -16.40        | 54.00         | 35.52                | 31.13           | 6.11           | 35.16            | Average |
| 2 | 4804.000 | 46.69  | -27.31        | 74.00         | 44.61                | 31.13           | 6.11           | 35.16            | Peak    |
| 3 | 7206.000 | 49.21  |               |               | 41.22                | 35.84           | 7.56           | 35.41            | Peak    |
| 4 | 9608.000 | 52.82  |               |               | 41.36                | 38.66           | 8.75           | 35.95            | Peak    |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 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)

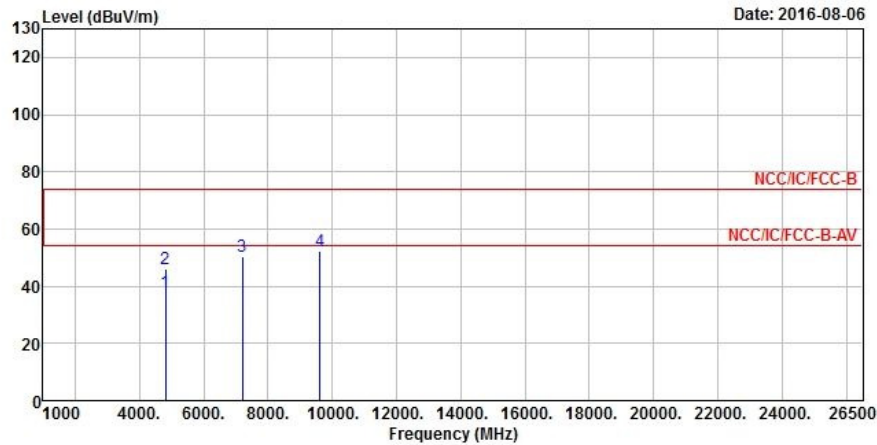
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (92.34 dBuV/m).

Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

### Transmitter Radiated Unwanted Emissions (Above 1GHz)

|                    |          |                  |      |
|--------------------|----------|------------------|------|
| Modulation Mode    | LE-1Mbps | Test Freq. (MHz) | 2402 |
| Operating Function | Transmit | Polarization     | H    |



|   | Freq     | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Preamp Loss | Factor | Remark        |
|---|----------|--------|------------|------------|-------------------|-------------------|--------|---------------|
|   | MHz      | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m              | dB     | dB            |
| 1 | 4804.000 | 37.82  | -16.18     | 54.00      | 35.74             | 31.13             | 6.11   | 35.16 Average |
| 2 | 4804.000 | 46.25  | -27.75     | 74.00      | 44.17             | 31.13             | 6.11   | 35.16 Peak    |
| 3 | 7206.000 | 50.59  |            |            | 42.60             | 35.84             | 7.56   | 35.41 Peak    |
| 4 | 9608.000 | 52.43  |            |            | 40.97             | 38.66             | 8.75   | 35.95 Peak    |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 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)

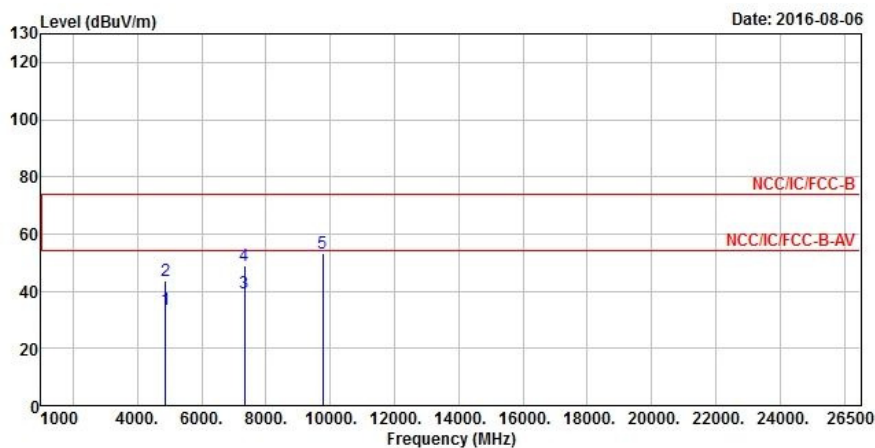
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (92.34dBuV/m).

Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

### Transmitter Radiated Unwanted Emissions (Above 1GHz)

|                    |          |                  |      |
|--------------------|----------|------------------|------|
| Modulation Mode    | LE-1Mbps | Test Freq. (MHz) | 2440 |
| Operating Function | Transmit | Polarization     | V    |



|   | Freq     | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Loss | Preamp Factor | Remark        |
|---|----------|--------|------------|------------|-------------------|------------|---------------|---------------|
|   | MHz      | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m       | dB            | dB            |
| 1 | 4880.000 | 33.56  | -20.44     | 54.00      | 31.35             | 31.23      | 6.13          | 35.15 Average |
| 2 | 4880.000 | 43.49  | -30.51     | 74.00      | 41.28             | 31.23      | 6.13          | 35.15 Peak    |
| 3 | 7320.000 | 39.53  | -14.47     | 54.00      | 31.22             | 36.13      | 7.60          | 35.42 Average |
| 4 | 7320.000 | 48.93  | -25.07     | 74.00      | 40.62             | 36.13      | 7.60          | 35.42 Peak    |
| 5 | 9760.000 | 53.37  |            |            | 41.63             | 38.76      | 8.94          | 35.96 Peak    |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 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)

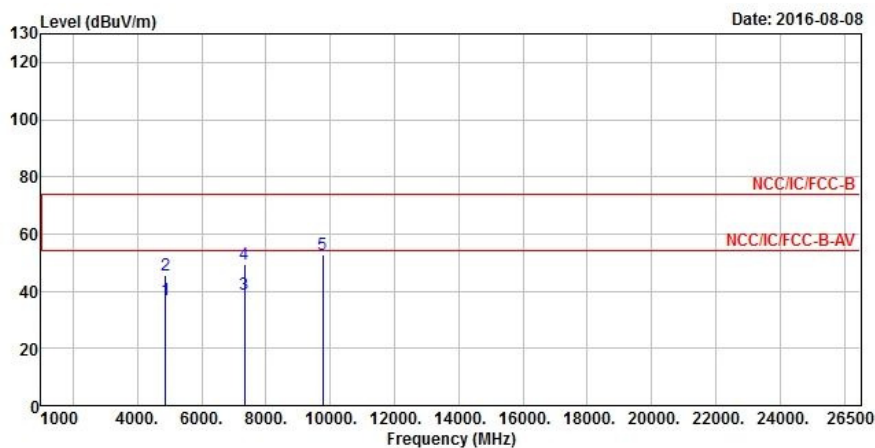
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (92.98 dBuV/m).

Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

### Transmitter Radiated Unwanted Emissions (Above 1GHz)

|                    |          |                  |      |
|--------------------|----------|------------------|------|
| Modulation Mode    | LE-1Mbps | Test Freq. (MHz) | 2440 |
| Operating Function | Transmit | Polarization     | H    |



|   | Freq     | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Loss | Preamp Factor | Remark        |
|---|----------|--------|------------|------------|-------------------|------------|---------------|---------------|
|   | MHz      | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m       | dB            | dB            |
| 1 | 4880.000 | 36.73  | -17.27     | 54.00      | 34.52             | 31.23      | 6.13          | 35.15 Average |
| 2 | 4880.000 | 45.54  | -28.46     | 74.00      | 43.33             | 31.23      | 6.13          | 35.15 Peak    |
| 3 | 7320.000 | 39.03  | -14.97     | 54.00      | 30.72             | 36.13      | 7.60          | 35.42 Average |
| 4 | 7320.000 | 49.63  | -24.37     | 74.00      | 41.32             | 36.13      | 7.60          | 35.42 Peak    |
| 5 | 9760.000 | 52.93  |            |            | 41.19             | 38.76      | 8.94          | 35.96 Peak    |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 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)

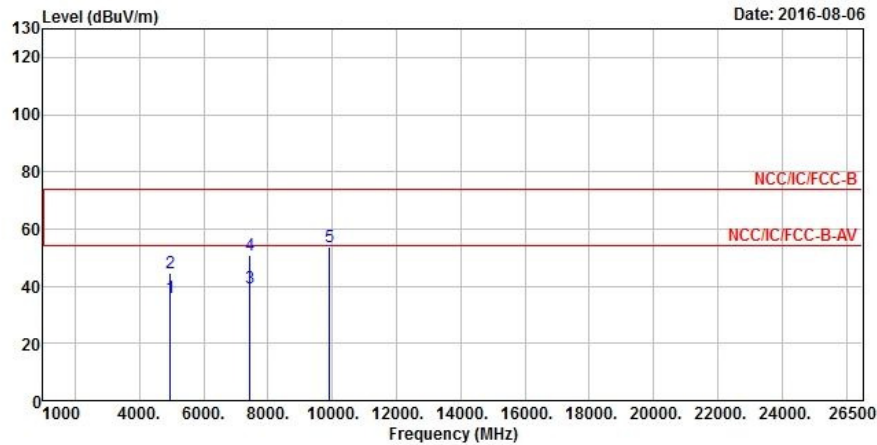
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (92.98 dBuV/m).

Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

### Transmitter Radiated Unwanted Emissions (Above 1GHz)

|                    |          |                  |      |
|--------------------|----------|------------------|------|
| Modulation Mode    | LE-1Mbps | Test Freq. (MHz) | 2480 |
| Operating Function | Transmit | Polarization     | V    |



|   | Freq     | Level  | Over Limit | Limit Line | ReadAntenna Level | Cable Factor | Preamp Loss | Preamp Factor | Remark  |
|---|----------|--------|------------|------------|-------------------|--------------|-------------|---------------|---------|
|   | MHz      | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m         | dB          | dB            |         |
| 1 | 4960.000 | 35.88  | -18.12     | 54.00      | 33.50             | 31.34        | 6.19        | 35.15         | Average |
| 2 | 4960.000 | 44.55  | -29.45     | 74.00      | 42.17             | 31.34        | 6.19        | 35.15         | Peak    |
| 3 | 7440.000 | 39.27  | -14.73     | 54.00      | 30.62             | 36.44        | 7.64        | 35.43         | Average |
| 4 | 7440.000 | 50.85  | -23.15     | 74.00      | 42.20             | 36.44        | 7.64        | 35.43         | Peak    |
| 5 | 9920.000 | 53.85  |            |            | 41.83             | 38.85        | 9.13        | 35.96         | Peak    |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 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)

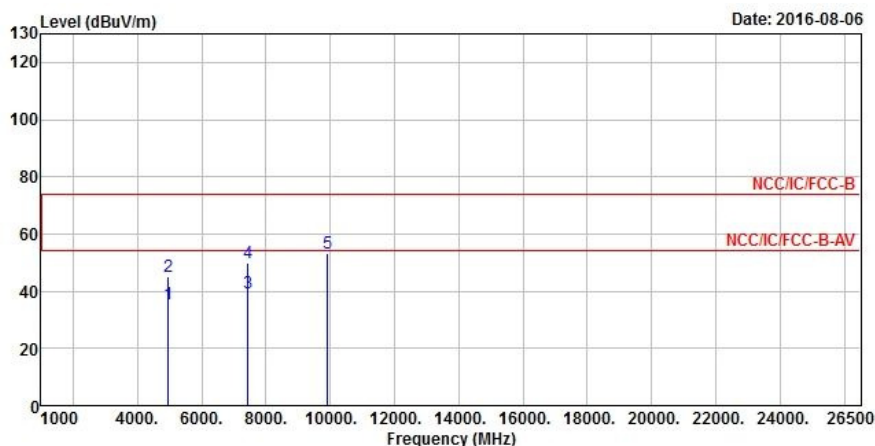
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least **20** dB relative to the maximum measured in-band level (96.10 dBuV/m).

Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

### Transmitter Radiated Unwanted Emissions (Above 1GHz)

|                    |          |                  |      |
|--------------------|----------|------------------|------|
| Modulation Mode    | LE-1Mbps | Test Freq. (MHz) | 2480 |
| Operating Function | Transmit | Polarization     | H    |



|   | Freq     | Level  | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Remark  |
|---|----------|--------|------------|------------|-------------------|----------------|------------|---------------|---------|
|   | MHz      | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m           | dB         | dB            |         |
| 1 | 4960.000 | 35.50  | -18.50     | 54.00      | 33.12             | 31.34          | 6.19       | 35.15         | Average |
| 2 | 4960.000 | 45.14  | -28.86     | 74.00      | 42.76             | 31.34          | 6.19       | 35.15         | Peak    |
| 3 | 7440.000 | 39.57  | -14.43     | 54.00      | 30.92             | 36.44          | 7.64       | 35.43         | Average |
| 4 | 7440.000 | 49.97  | -24.03     | 74.00      | 41.32             | 36.44          | 7.64       | 35.43         | Peak    |
| 5 | 9920.000 | 53.44  |            |            | 41.42             | 38.85          | 9.13       | 35.96         | Peak    |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 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: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (96.10dBuV/m).

Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.