



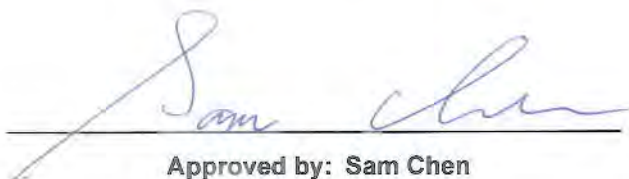
# FCC RADIO TEST REPORT

**FCC ID** : Q87-EA8300  
**Equipment** : Linksys Tri-Band Wireless-AC Router  
**Brand Name** : Linksys  
**Model Name** : EA8300, EA8250, MR8300, MR8250  
**Applicant** : Linksys LLC  
121 Theory, Irvine CA 92617, United States  
**Standard** : 47 CFR FCC Part 15.407

The product was received on Jul. 27, 2018, and testing was started from Jul. 31, 2018 and completed on Aug. 28, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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



Approved by: Sam Chen

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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## History of this test report

TEL : 886-3-656-9065  
FAX : 886-3-656-9085  
Report Template No.: CB Ver1.0

Page Number : 3 of 20  
Issued Date : Aug. 31, 2018  
Report Version : 01



## Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items                        | Result (PASS/FAIL) | Remark |
|---------------|-----------------|-----------------------------------|--------------------|--------|
| 1.1.2         | 15.203          | Antenna Requirement               | PASS               | -      |
| 3.1           | 15.207          | AC Power-line Conducted Emissions | PASS               | -      |
| 3.2           | 15.407(b)       | Unwanted Emissions                | PASS               | -      |

**Reviewed by: Sam Chen**

**Report Producer: Sandy Chuang**



# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

| Frequency Range (MHz) | IEEE Std. 802.11        | Ch. Frequency (MHz) | Channel Number |
|-----------------------|-------------------------|---------------------|----------------|
| 5150-5250             | a, n (HT20), ac (VHT20) | 5180-5240           | 36-48 [4]      |
| 5250-5350             |                         | 5260-5320           | 52-64 [4]      |
| 5470-5725             |                         | 5500-5700           | 100-140 [11]   |
| 5725-5850             |                         | 5745-5825           | 149-165 [5]    |
| 5150-5250             | n (HT40), ac (VHT40)    | 5190-5230           | 38-46 [2]      |
| 5250-5350             |                         | 5270-5310           | 54-62 [2]      |
| 5470-5725             |                         | 5510-5670           | 102-134 [5]    |
| 5725-5850             |                         | 5755-5795           | 151-159 [2]    |
| 5150-5250             | ac (VHT80)              | 5210                | 42 [1]         |
| 5250-5350             |                         | 5290                | 58 [1]         |
| 5470-5725             |                         | 5530-5610           | 106-122 [2]    |
| 5725-5850             |                         | 5775                | 155 [1]        |



| Band          | Mode              | BWch (MHz) | Nant |
|---------------|-------------------|------------|------|
| 5.15-5.25GHz  | 802.11a           | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11a-BF        | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11n HT20      | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11n HT20-BF   | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT20    | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT20-BF | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11n HT40      | 40         | 2TX  |
| 5.15-5.25GHz  | 802.11n HT40-BF   | 40         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT40    | 40         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT40-BF | 40         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT80    | 80         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT80-BF | 80         | 2TX  |
| 5.25-5.35GHz  | 802.11a           | 20         | 2TX  |
| 5.25-5.35GHz  | 802.11a-BF        | 20         | 2TX  |
| 5.25-5.35GHz  | 802.11n HT20      | 20         | 2TX  |
| 5.25-5.35GHz  | 802.11n HT20-BF   | 20         | 2TX  |
| 5.25-5.35GHz  | 802.11ac VHT20    | 20         | 2TX  |
| 5.25-5.35GHz  | 802.11ac VHT20-BF | 20         | 2TX  |
| 5.25-5.35GHz  | 802.11n HT40      | 40         | 2TX  |
| 5.25-5.35GHz  | 802.11n HT40-BF   | 40         | 2TX  |
| 5.25-5.35GHz  | 802.11ac VHT40    | 40         | 2TX  |
| 5.25-5.35GHz  | 802.11ac VHT40-BF | 40         | 2TX  |
| 5.25-5.35GHz  | 802.11ac VHT80    | 80         | 2TX  |
| 5.25-5.35GHz  | 802.11ac VHT80-BF | 80         | 2TX  |
| 5.47-5.725GHz | 802.11a           | 20         | 2TX  |
| 5.47-5.725GHz | 802.11a-BF        | 20         | 2TX  |
| 5.47-5.725GHz | 802.11n HT20      | 20         | 2TX  |
| 5.47-5.725GHz | 802.11n HT20-BF   | 20         | 2TX  |
| 5.47-5.725GHz | 802.11ac VHT20    | 20         | 2TX  |
| 5.47-5.725GHz | 802.11ac VHT20-BF | 20         | 2TX  |
| 5.47-5.725GHz | 802.11n HT40      | 40         | 2TX  |
| 5.47-5.725GHz | 802.11n HT40-BF   | 40         | 2TX  |
| 5.47-5.725GHz | 802.11ac VHT40    | 40         | 2TX  |
| 5.47-5.725GHz | 802.11ac VHT40-BF | 40         | 2TX  |

| Band          | Mode              | BWch (MHz) | Nant |
|---------------|-------------------|------------|------|
| 5.47-5.725GHz | 802.11ac VHT80    | 80         | 2TX  |
| 5.47-5.725GHz | 802.11ac VHT80-BF | 80         | 2TX  |
| 5.725-5.85GHz | 802.11a           | 20         | 2TX  |
| 5.725-5.85GHz | 802.11a-BF        | 20         | 2TX  |
| 5.725-5.85GHz | 802.11n HT20      | 20         | 2TX  |
| 5.725-5.85GHz | 802.11n HT20-BF   | 20         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT20    | 20         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT20-BF | 20         | 2TX  |
| 5.725-5.85GHz | 802.11n HT40      | 40         | 2TX  |
| 5.725-5.85GHz | 802.11n HT40-BF   | 40         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT40    | 40         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT40-BF | 40         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT80    | 80         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT80-BF | 80         | 2TX  |

**Note:**

- ♦ 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- ♦ VHT20, VHT40 and VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- ♦ BWch is the nominal channel bandwidth.
- ♦ Nss-Min is the minimum number of spatial streams.
- ♦ Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

**1.1.2 Antenna Information**

| Ant. | Brand     | P/N                 | Type   | Connector | Gain (dBi)     |                |
|------|-----------|---------------------|--------|-----------|----------------|----------------|
|      |           |                     |        |           | 2.4GHz         | 5GHz Band 3, 4 |
| 1    | ARISTOTLE | RFA-52-F90S-240-165 | Dipole | I-PEX     | 2.70           | 3.14           |
| 2    | ARISTOTLE | RFA-52-F90-195-105  | Dipole | I-PEX     | 2.06           | 3.47           |
| Ant. | Brand     | P/N                 | Type   | Connector | 5GHz Band 1, 2 |                |
| 3    | ARISTOTLE | RFA-05-F90-120      | Dipole | I-PEX     | 3.59           |                |
| 4    | ARISTOTLE | RFA-05-F90S-165     | Dipole | I-PEX     | 3.49           |                |
| Ant. | Brand     | P/N                 | Type   | Connector | Bluetooth      |                |
| 5    | PSA       | RFMTA271200NNAB003  | PIFA   | N/A       | 2.54           |                |

Note: The EUT has five antennas.

**For WLAN 2.4GHz (2TX/2RX):**

Ant. 1 (Port 1) and Ant. 2 (Port 2) could transmit/receive simultaneously.

**For WLAN 5GHz (2TX/2RX):**

For 5GHz Band 3, 4: Ant. 1 (Port 1) and Ant. 2 (Port 2) could transmit/receive simultaneously.

For 5GHz Band 1, 2: Ant. 3 (Port 1) and Ant. 4 (Port 2) could transmit/receive simultaneously.

**For Bluetooth (1TX/1RX):**

Only Ant. 5 (Port 1) can be used as transmitting/receiving antenna.

**1.1.3 EUT Operational Condition**

|                             |                                                          |                   |                                     |                      |
|-----------------------------|----------------------------------------------------------|-------------------|-------------------------------------|----------------------|
| <b>EUT Power Type</b>       | From power adapter                                       |                   |                                     |                      |
| <b>Beamforming Function</b> | <input checked="" type="checkbox"/>                      | With beamforming  | <input type="checkbox"/>            | Without beamforming  |
|                             | The product has beamforming function for 802.11a/g/n/ac. |                   |                                     |                      |
| <b>Weather Band</b>         | <input checked="" type="checkbox"/>                      | With 5600~5650MHz | <input type="checkbox"/>            | Without 5600~5650MHz |
| <b>Function</b>             | <input type="checkbox"/>                                 | Outdoor P2M       | <input checked="" type="checkbox"/> | Indoor P2M           |
|                             | <input type="checkbox"/>                                 | Fixed P2P         | <input type="checkbox"/>            | Client               |
| <b>TPC Function</b>         | <input checked="" type="checkbox"/>                      | With TPC          | <input type="checkbox"/>            | Without TPC          |



### 1.1.4 Table for Multiple Listing

The EUT has four model names which are identical to each other in all aspects except for the following table:

| EUT | Model name | Support 256QAM | Software Versions | Equip Adapter | LED design                             | Support Function | Description                                                                                   |
|-----|------------|----------------|-------------------|---------------|----------------------------------------|------------------|-----------------------------------------------------------------------------------------------|
| 1   | EA8300     | Yes            | 1.1.1.179884      | Adapter 1~4   | Please refer to the Photographs of EUT | AP, Bridge       | All models are identical except for the EA8300 supports 256QAM and the EA8250 disable 256QAM. |
| 2   | EA8250     | No             |                   |               | Same as EUT 1                          | AP, Bridge       |                                                                                               |
| 3   | MR8300     | Yes            | 1.1.1.189701      | Adapter 1~4   | Please refer to the Photographs of EUT | AP               | All models are identical; different models serve as marketing strategy.                       |
| 4   | MR8250     |                |                   |               | Same as EUT 3                          | AP               |                                                                                               |

From the above models, model: EA8300 (EUT 1) and MR8300 (EUT 3) were selected as representative model for the test and its data was recorded in this report.

### 1.1.5 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR710901AB and FR710901-01

Below is the table for the change of the product with respect to the original one.

| Modifications                                                                                                                                                                                                                                                                               | Performance Checking                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 1. Change the software version to "1.1.1.189701" for the two new model names: MR8300 and MR8250.<br>2. Removing the bridge Mode for the two new model names: MR8300 and MR8250.                                                                                                             | Do not effect the test results.                              |
| 3. Adding a new adapter 4 (Model: KSA-24W-120200HU).<br>4. Change the LED design for the two new model names: MR8300 and MR8250.<br>5. Adding two model names: MR8300 and MR8250. The difference between old and new model names, please refer to section 1.1.4 Table for Multiple Listing. | 1. Conducted Emissions<br>2. Unwanted Emissions (Below 1GHz) |



## 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 789033 D02 v02r01
- ♦ FCC KDB 662911 D01 v02r01

## 1.3 Testing Location Information

| Testing Location                    |        |                                                                                  |                      |                      |
|-------------------------------------|--------|----------------------------------------------------------------------------------|----------------------|----------------------|
| <input type="checkbox"/>            | HWA YA | ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)        | TEL : 886-3-327-3456 | FAX : 886-3-327-0973 |
| <input checked="" type="checkbox"/> | JHUBEI | ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. | TEL : 886-3-656-9065 | FAX : 886-3-656-9085 |

| Test Condition | Test Site No. | Test Engineer         | Test Environment | Test Date                   |
|----------------|---------------|-----------------------|------------------|-----------------------------|
| Radiated       | 03CH01-CB     | Lance Wu / KJ Huang   | 22°C / 54%       | Jul. 31, 2018~Aug. 28, 2018 |
| AC Conduction  | CO01-CB       | Deven Huang / Max Lin | 23°C / 60%       | Aug. 03, 2018~Aug. 28, 2018 |

Test site Designation No. TW0006 with FCC

Test site registered number IC 4086D with Industry Canada.

## 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))

| Test Items                           | Uncertainty | Remark                   |
|--------------------------------------|-------------|--------------------------|
| Conducted Emission (150kHz ~ 30MHz)  | 3.2 dB      | Confidence levels of 95% |
| Radiated Emission (30MHz ~ 1,000MHz) | 3.6 dB      | Confidence levels of 95% |



## 2 Test Configuration of EUT

### 2.1 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests                           |                                                          |
|-------------------------------------------------------------------------------|----------------------------------------------------------|
| Tests Item                                                                    | AC power-line conducted emissions                        |
| Condition                                                                     | AC power-line conducted measurement for line and neutral |
| Operating Mode                                                                | Normal Link                                              |
| 1                                                                             | EUT 1 with Adapter 4                                     |
| 2                                                                             | EUT 3 with Adapter 1                                     |
| 3                                                                             | EUT 3 with Adapter 2                                     |
| 4                                                                             | EUT 3 with Adapter 3                                     |
| 5                                                                             | EUT 3 with Adapter 4                                     |
| For operating mode 2 is the worst case and it was record in this test report. |                                                          |

| The Worst Case Mode for Following Conformance Tests                                                                           |                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tests Item                                                                                                                    | Unwanted Emissions                                                                                                                                                                                                                                  |
| Test Condition                                                                                                                | Radiated measurement<br>If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type. |
| Operating Mode                                                                                                                | Normal Link                                                                                                                                                                                                                                         |
| 1                                                                                                                             | Place EUT 1 in Z axis with Adapter 4                                                                                                                                                                                                                |
| 2                                                                                                                             | Place EUT 1 in Y axis with Adapter 4                                                                                                                                                                                                                |
| Mode 1 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3~6 will follow this same test mode. |                                                                                                                                                                                                                                                     |
| 3                                                                                                                             | Place EUT 3 in Z axis with Adapter 1                                                                                                                                                                                                                |
| 4                                                                                                                             | Place EUT 3 in Z axis with Adapter 2                                                                                                                                                                                                                |
| 5                                                                                                                             | Place EUT 3 in Z axis with Adapter 3                                                                                                                                                                                                                |
| 6                                                                                                                             | Place EUT 3 in Z axis with Adapter 4                                                                                                                                                                                                                |
| Mode 1 generated the worst test result, so it was recorded in this report.                                                    |                                                                                                                                                                                                                                                     |

Note: The customer designated the AP mode to perform all test and its test result was written in the report.



## 2.2 EUT Operation during Test

During the test, the EUT operation to normal function.

## 2.3 Accessories

| Power                             | Brand | Model                   | Rating                                             |
|-----------------------------------|-------|-------------------------|----------------------------------------------------|
| Adapter 1                         | LEI   | MU24-Y120200-A1         | Input: 100-240V~50/60Hz, 0.7A<br>Output: 12V, 2.0A |
| Adapter 2                         | DVE   | DSA-24PFM-12 FUS 120200 | Input: 100-240V~50/60Hz, 0.8A<br>Output: +12V, 2A  |
| Adapter 3                         | DVE   | DSA-24PFM-12 FCA 120200 | Input: 100-240V, 50/60Hz, 0.8A<br>Output: 12V, 2A  |
| Adapter 4                         | Ktec  | KSA-24W-120200HU        | Input: 100-240V~50/60Hz, 0.6A<br>Output: 12V, 2.0A |
| Others                            |       |                         |                                                    |
| Plug*1 (for adapter 3 use only)   |       |                         |                                                    |
| RJ-45 Cable*1: Non-Shielded, 0.9m |       |                         |                                                    |

## 2.4 Support Equipment

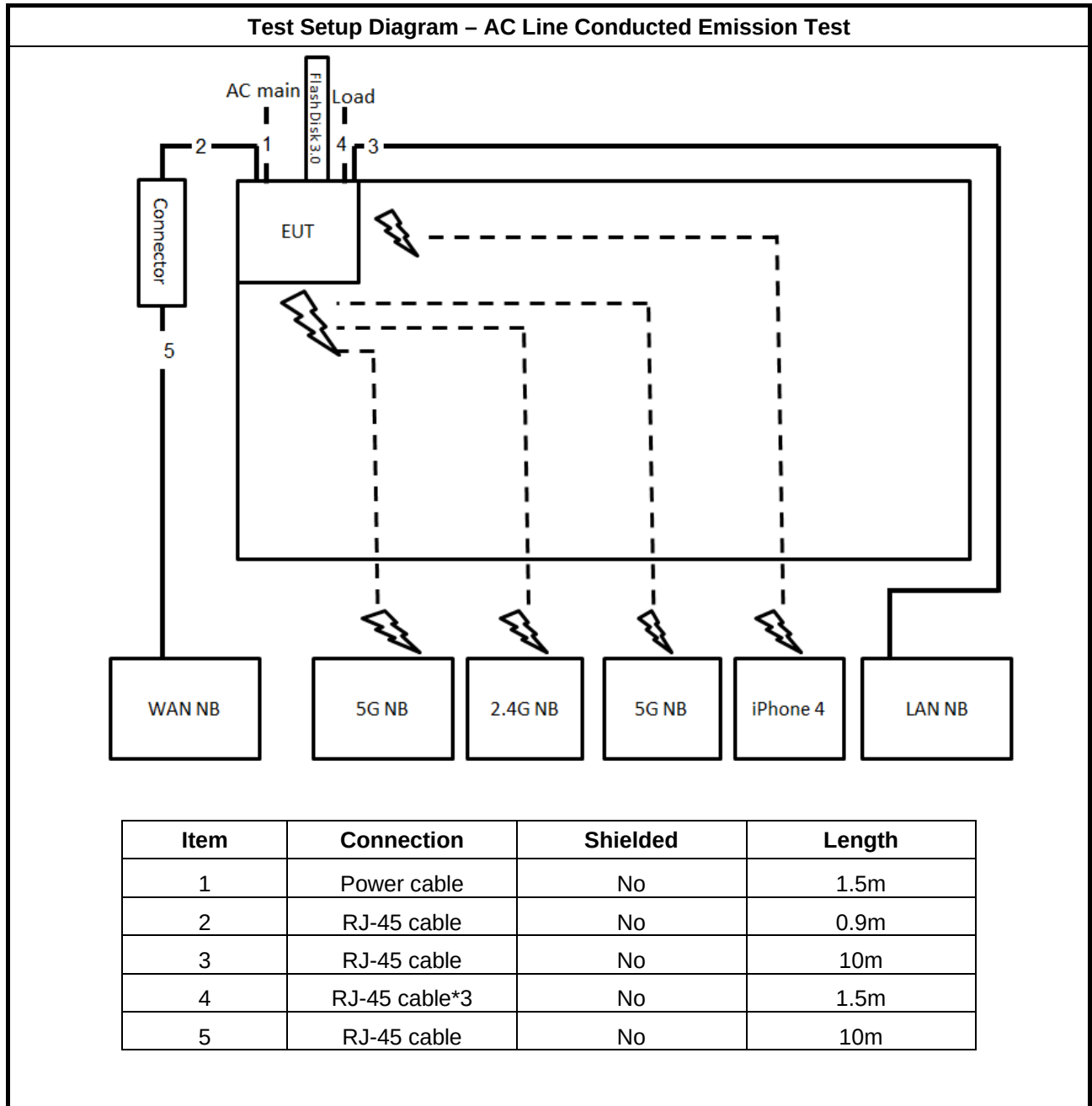
For Test Site No: CO01-CB

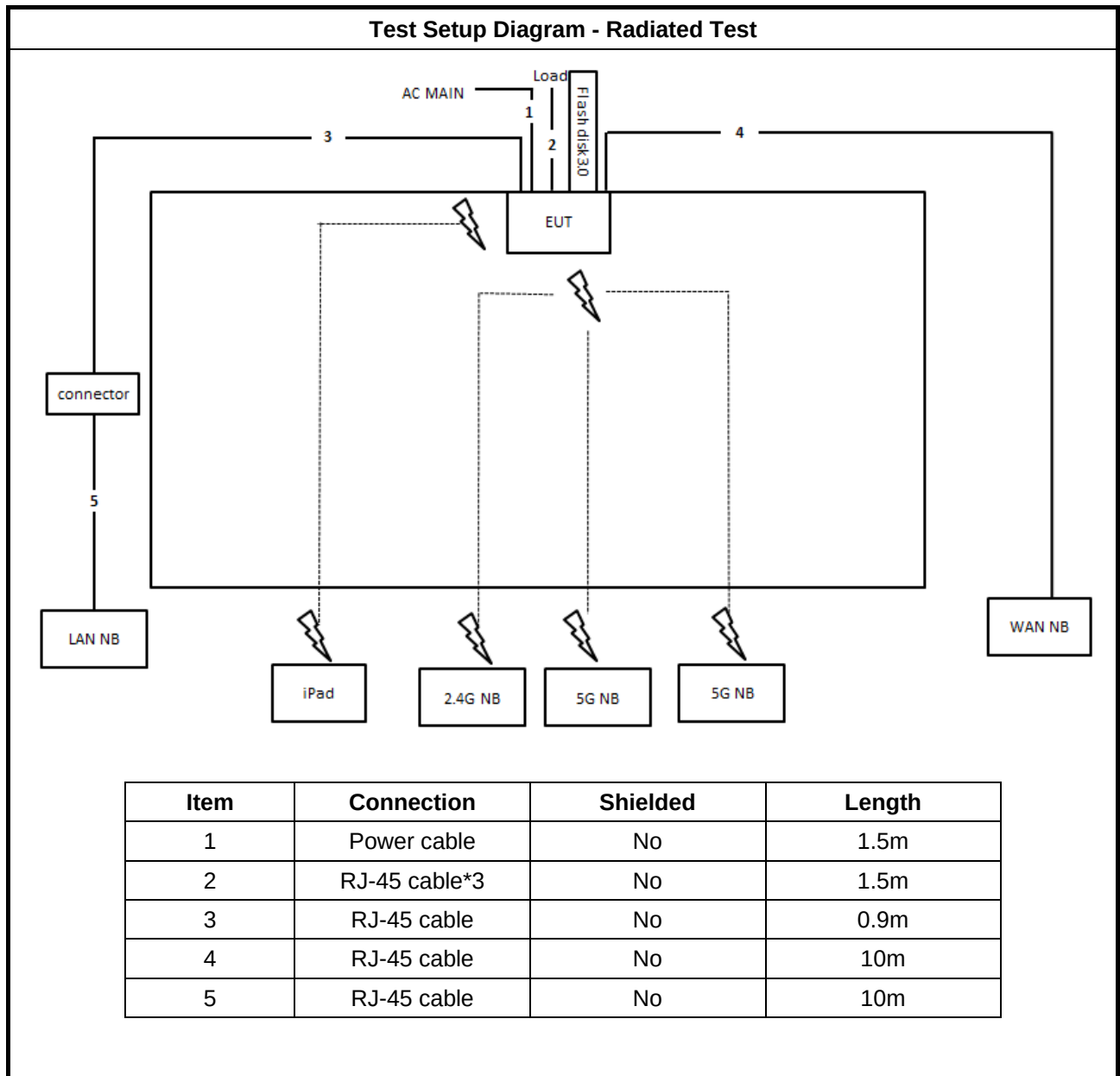
| Support Equipment |               |            |              |        |
|-------------------|---------------|------------|--------------|--------|
| No.               | Equipment     | Brand Name | Model Name   | FCC ID |
| 1                 | NB*5          | DELL       | E6430        | N/A    |
| 2                 | iPhone 4      | Apple      | A1332        | N/A    |
| 3                 | Flash disk3.0 | Transcend  | JetFlash-700 | N/A    |

For Test Site No: 03CH01-CB

| Support Equipment |               |            |              |        |
|-------------------|---------------|------------|--------------|--------|
| No.               | Equipment     | Brand Name | Model Name   | FCC ID |
| 1                 | NB*2          | DELL       | E4300        | N/A    |
| 2                 | NB*3          | Apple      | Mac Book     | N/A    |
| 3                 | iPad          | Apple      | A1430        | N/A    |
| 4                 | Flash disk3.0 | Transcend  | JetFlash-700 | N/A    |

## 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.

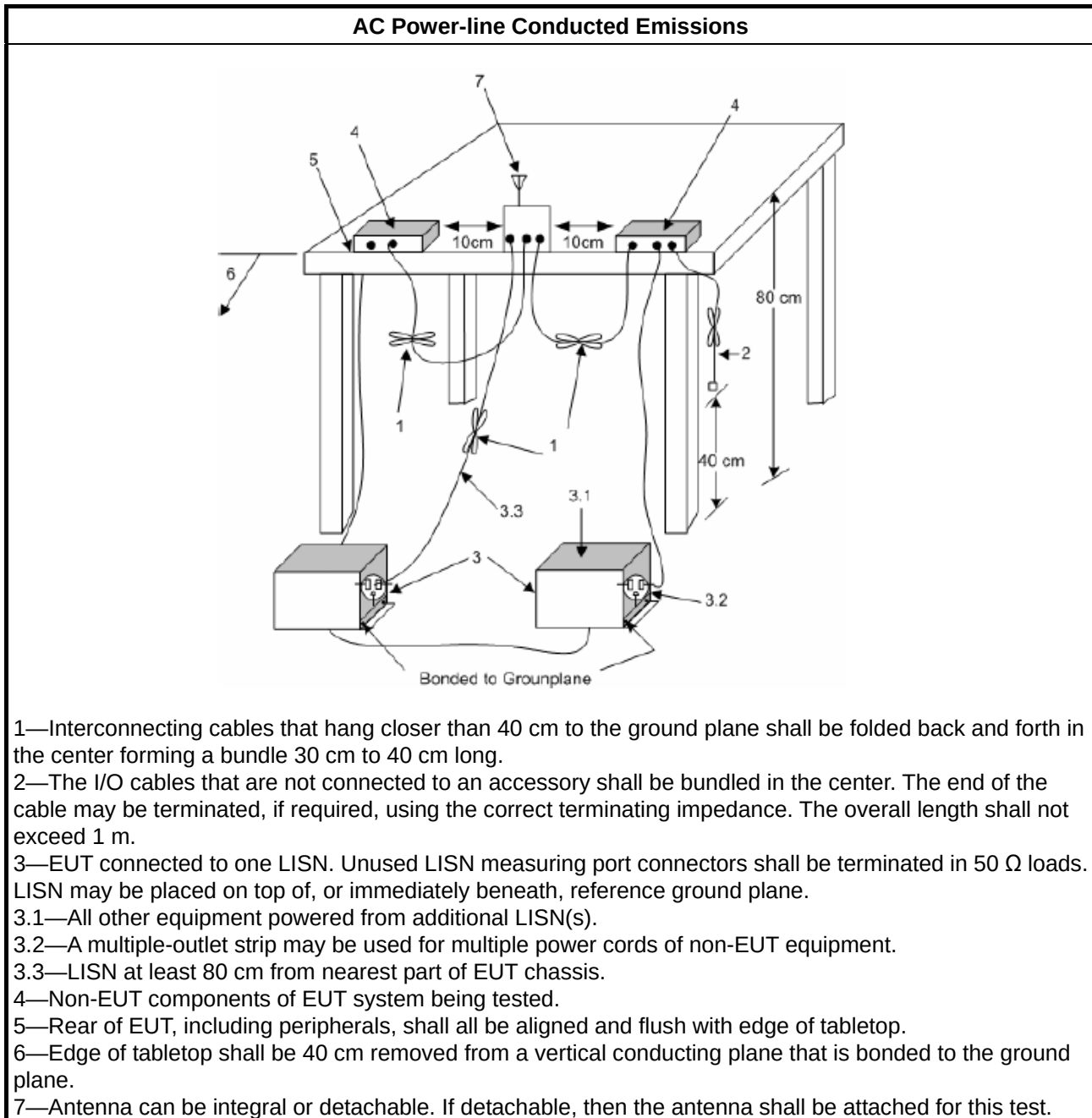
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

| Test Method                                                                                                      |
|------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions. |

### 3.1.4 Test Setup



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

Refer as Appendix A





## 3.2 Unwanted Emissions

### 3.2.1 Transmitter Radiated Unwanted Emissions Limit

| Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit |                       |                         |                      |
|-------------------------------------------------------------------------------|-----------------------|-------------------------|----------------------|
| Frequency Range (MHz)                                                         | Field Strength (uV/m) | Field Strength (dBuV/m) | Measure Distance (m) |
| 0.009~0.490                                                                   | 2400/F(kHz)           | 48.5 - 13.8             | 300                  |
| 0.490~1.705                                                                   | 24000/F(kHz)          | 33.8 - 23               | 30                   |
| 1.705~30.0                                                                    | 30                    | 29                      | 30                   |
| 30~88                                                                         | 100                   | 40                      | 3                    |
| 88~216                                                                        | 150                   | 43.5                    | 3                    |
| 216~960                                                                       | 200                   | 46                      | 3                    |
| Above 960                                                                     | 500                   | 54                      | 3                    |

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

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

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.



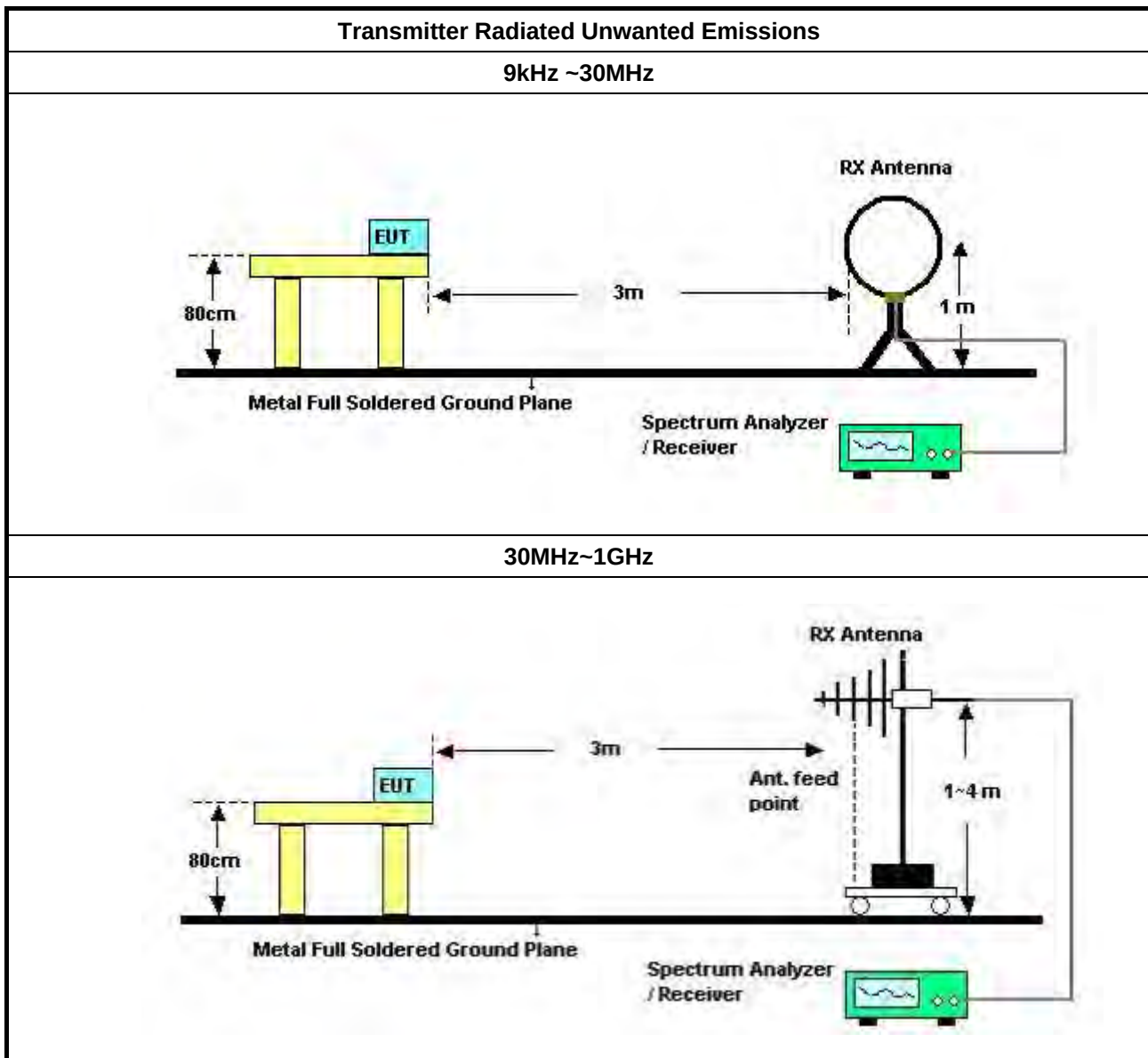
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

| Test Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>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. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. 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).</li></ul> |                                                                                                                                                  |
| <ul style="list-style-type: none"><li>The average emission levels shall be measured in [duty cycle <math>\geq</math> 98 or duty factor].</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                  |
| <ul style="list-style-type: none"><li>For the transmitter unwanted emissions shall be measured using following options below:</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>Refer as FCC KDB 789033, clause H)2) for unwanted emissions into non-restricted bands.</li></ul>           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>Refer as FCC KDB 789033, clause H)1) for unwanted emissions into restricted bands.</li></ul>               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Refer as FCC KDB 789033, H)6) Method AD (Trace Averaging).                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input checked="" type="checkbox"/> Refer as FCC KDB 789033, H)6) Method VB (Reduced VBW).                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW $\geq$ 1/T, where T is pulse time.                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause H)5) measurement procedure peak limit.                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.                                                |
| <ul style="list-style-type: none"><li>For radiated measurement.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.</li></ul>    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.</li></ul> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.</li></ul>                              |
| <ul style="list-style-type: none"><li>The any unwanted emissions level shall not exceed the fundamental emission level.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                  |
| <ul style="list-style-type: none"><li>All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                  |

### 3.2.4 Test Setup



### 3.2.5 Transmitter Unwanted Emissions (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

### 3.2.6 Test Result of Transmitter Unwanted Emissions

Refer as Appendix B



## 4 Test Equipment and Calibration Data

| Instrument                        | Manufacturer | Model No.         | Serial No.       | Characteristics | Calibration Date | Calibration Due Date | Remark                |
|-----------------------------------|--------------|-------------------|------------------|-----------------|------------------|----------------------|-----------------------|
| EMI Receiver                      | Agilent      | N9038A            | My52260123       | 9kHz ~ 8.45GHz  | Jan. 31, 2018    | Jan. 30, 2019        | Conduction (CO01-CB)  |
| LISN                              | F.C.C.       | FCC-LISN-50-16-2  | 04083            | 150kHz ~ 100MHz | Dec. 20, 2017    | Dec. 19, 2018        | Conduction (CO01-CB)  |
| LISN                              | Schwarzbeck  | NSLK 8127         | 8127647          | 9kHz ~ 30MHz    | Dec. 29, 2017    | Dec. 28, 2018        | Conduction (CO01-CB)  |
| COND Cable                        | Woken        | Cable             | Low cable-CO01   | 150kHz ~ 30MHz  | May 22, 2018     | May 21, 2019         | Conduction (CO01-CB)  |
| Software                          | Audix        | E3                | 6.120210n        | -               | N.C.R.           | N.C.R.               | Conduction (CO01-CB)  |
| BILOG ANTENNA with 6dB Attenuator | TESEQ & EMCI | CBL6112D & N-6-06 | 37880 & AT-N0609 | 20MHz ~ 2GHz    | Aug. 30, 2017    | Aug. 29, 2018        | Radiation (03CH01-CB) |
| Loop Antenna                      | Teseq        | HLA 6120          | 24155            | 9kHz - 30 MHz   | Mar. 16, 2018    | Mar. 15, 2019        | Radiation (03CH01-CB) |
| Pre-Amplifier                     | EMCI         | EMC330N           | 980332           | 20MHz ~ 3GHz    | May 02, 2018     | May 01, 2019         | Radiation (03CH01-CB) |
| Spectrum Analyzer                 | R&S          | FSP40             | 100056           | 9kHz ~ 40GHz    | Nov. 23, 2017    | Nov. 22, 2018        | Radiation (03CH01-CB) |
| EMI Test                          | R&S          | ESCS              | 100354           | 9kHz ~ 2.75GHz  | Dec. 08, 2017    | Dec. 07, 2018        | Radiation (03CH01-CB) |
| RF Cable-low                      | Woken        | Low Cable-16+17   | N/A              | 30 MHz ~ 1 GHz  | Oct. 11, 2017    | Oct. 10, 2018        | Radiation (03CH01-CB) |

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

N.C.R. means Non-Calibration required.

