

Report No.: SZ13070111E01



FCC TEST REPORT



Issued to

Corporativo Lanix S.A. de C.V.

For

Smartphone

Model Name: Ilium S215
Trade Name: Lanix
Brand Name: Lanix
FCC ID: ZC4S215
Standard: 47 CFR Part 15 Subpart B
Test date: July 19, 2013– July 31, 2013
Issue date: August 6, 2013

By

Shenzhen Morlab Communication Technology Co., Ltd.

Tested by Xiao Xiong
Xiao Xiong
(Test Engineer)

Date 2013.8.6

Approved by Zeng De
(Chief Engineer)

Date 2013.8.6

Review by Huang Pulong
(EMC Manager)

Date 2013.8.6



CTIA Authorized Test Lab

LAB CODE 20081223-00

IEEE 1725

OTA

OFTA

電訊管理局



GCF
Official Observer of
Global Certification Forum

Bluetooth

BQTF

FCC

Reg. No.
695796

The report refers only to the sample tested and does not apply to the bulk. This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen MORLAB Communication Technology Co., Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the Shenzhen MORLAB Telecommunication Co., Ltd to his customer. Supplier or others persons directly concerned. Shenzhen MORLAB Telecommunication Co., Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report. In the event of the improper use of the report, Shenzhen MORLAB Telecommunication Co., Ltd reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Shenzhen MORLAB Communication Technology Co., Ltd.

Tel: +86 755 36698555 Fax: +86 755 36698525

FL3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China 518101

TABLE OF CONTENTS

| | | |
|------------|--|-----------|
| 1. | GENERAL INFORMATION | 3 |
| 1.1 | EUT Description | 3 |
| 1.2 | Test Standards and Results | 4 |
| 1.3 | Facilities and Accreditations | 5 |
| 1.3.1 | Facilities | 5 |
| 1.3.2 | Test Environment Conditions | 5 |
| 1.3.3 | Measurement Uncertainty | 5 |
| 2. | TEST CONDITIONS SETTING..... | 6 |
| 2.1 | Test Mode | 6 |
| 2.2 | Test Setup and Equipments List..... | 7 |
| 2.2.1 | Conducted Emission..... | 7 |
| 2.2.2 | Radiated Emission..... | 8 |
| 3. | 47 CFR PART 15B REQUIREMENTS | 11 |
| 3.1 | Conducted Emission | 11 |
| 3.1.1 | Requirement | 11 |
| 3.1.2 | Test Description | 11 |
| 3.1.3 | Test Result | 11 |
| 3.2 | Radiated Emission | 13 |
| 3.2.1 | Requirement | 13 |
| 3.2.2 | Test Description | 13 |
| 3.2.3 | Frequency range of measurement | 13 |
| 3.2.4 | Test Result | 14 |

| Change History | | |
|----------------|----------------|-------------------|
| Issue | Date | Reason for change |
| 1.0 | August 6, 2013 | First edition |
| | | |
| | | |

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type..... Smartphone
 Serial No. (n.a., marked #1 by test site)
 Hardware Version V1.0
 Software Version..... V1
 Applicant..... Corporativo Lanix S.A. de C.V.
 Carretera Internacional Hermosillo-Nogales Km 8.5, Hermosillo
 Sonora, Mexico
 Manufacturer..... Tinno Mobile Technology Corp.
 4/F, H-3 Building, OCT Eastern industrial Park, No.1 XiangShan East
 Road., Nan Shan District, Shenzhen, P.R. China.
 Modulation Type..... GMSK,FHSS,DSSS,8PSK,QPSK,BPSK
 Power supply Battery
 Brand Name: LANIX
 Model No.: Ilium S215-BAT
 Serial No.: (n.a. marked #1 by test site)
 Capacitance: 1600mAh
 Rated Voltage: 3.7V
 Charge Limit: 4.2V
 Ancillary Equipment 1 AC Adapter (Charger for Battery)
 Brand Name: LANIX
 Model No.: Ilium S215-C
 Serial No.: (n.a. marked #1 by test site)
 Rated Input: ~ 100-240V, 150mA, 50/60Hz
 Rated Output: = 5V, 700mA
 Speed of the processor .. 1GHz (generated by the CPU)
 32KHz (generated by the crystal oscillator)

Note:

1. The EUT is a Smartphone which is equipped with a T-Flash card slot, a Micro-USB port which can be connected to the ancillary equipments supplied by the manufacturer e.g. the AC Adapter.
2. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

| No. | Identity | Document Title |
|-----|----------------|-------------------------|
| 1 | 47 CFR Part 15 | Radio Frequency Devices |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section | Description | Result |
|-----|---------|--------------------|--------|
| 1 | 15.107 | Conducted Emission | PASS |
| 2 | 15.109 | Radiated Emission | PASS |

NOTE: The tests were performed according to the method of measurements prescribed in ANSI C63.4 2009.

1.3 Facilities and Accreditations

1.3.1 Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China 518101. The test site is constructed in conformance with the requirements of ANSI C63.4(2009) and CISPR Publication 22(2010); the FCC registration number is 695796.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

| | |
|-----------------------------|---------|
| Temperature (°C): | 15 - 35 |
| Relative Humidity (%): | 30 - 60 |
| Atmospheric Pressure (kPa): | 86 -106 |

1.3.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

| | |
|------------------------------------|--------|
| Uncertainty of Conducted Emission: | ±1.8dB |
| Uncertainty of Radiated Emission: | ±3.1dB |

2. TEST CONDITIONS SETTING

2.1 Test Mode

The test mode (Data Transmission)

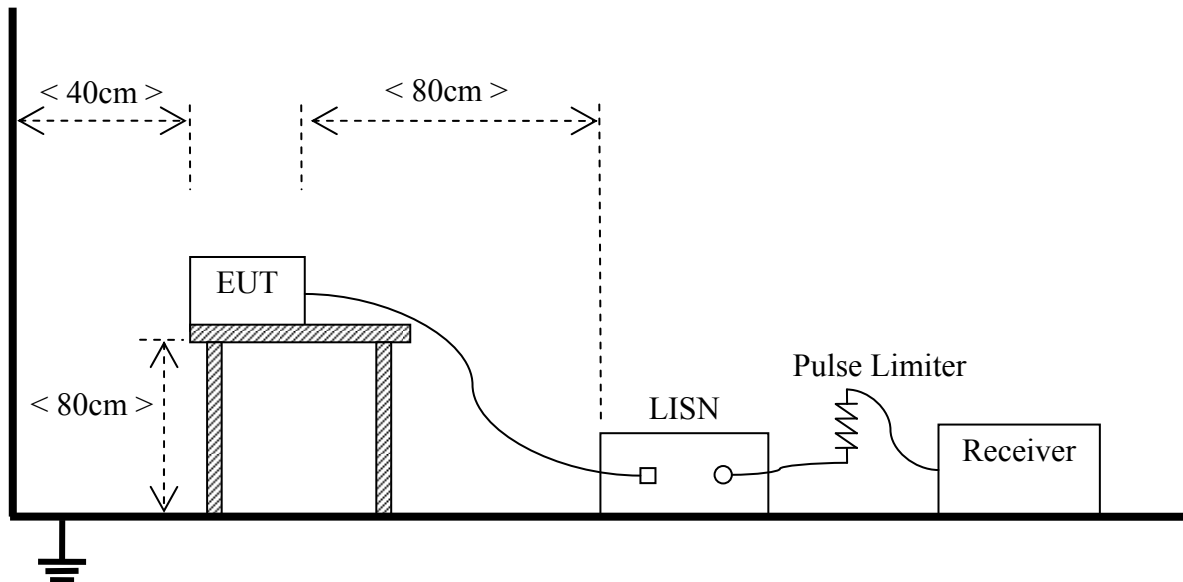
The EUT configuration of the emission tests is EUT + TransFlash Card + Battery + PC.

During the measurement, the EUT with a TransFlash Card embedded was connected with a PC via the Micro-USB port, the data is transmitting between the PC and the TransFlash Card of the EUT.

2.2 Test Setup and Equipments List

2.2.1 Conducted Emission

A. Test Setup:



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

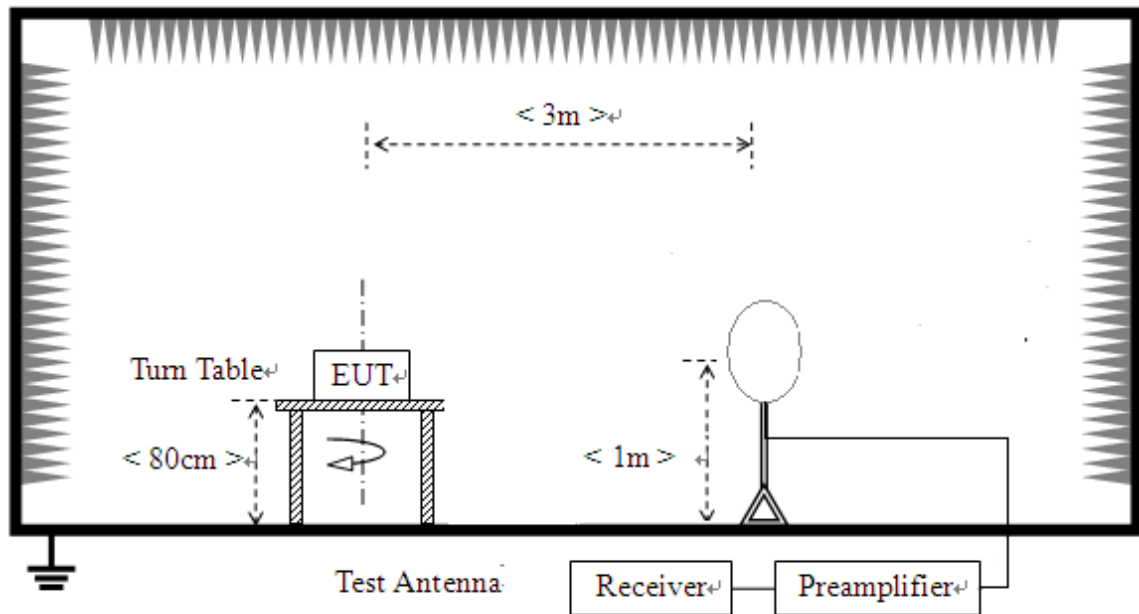
B. Equipments List:

| Description | Manufacturer | Model | Serial No. | Cal. Date | Due. Date |
|----------------------|--------------|----------------|------------|------------|------------|
| Receiver | Narda | PMM 9010 | 595WX11007 | 12/11/2012 | 11/11/2013 |
| EMC Analyzer | Agilent | E7405A | US44210471 | 12/05/2013 | 11/05/2014 |
| LISN | Schwarzbeck | NSLK 8127 | 812744 | 12/05/2013 | 11/05/2014 |
| Pulse Limiter (20dB) | Schwarzbeck | VTSD 9561-D | 9391 | (n.a.) | (n.a.) |
| System Simulator | Agilent | E5515C | GB43130131 | 12/05/2013 | 11/05/2014 |
| T-Flash Card | SanDisk | 256MB | (n.a.) | (n.a.) | (n.a.) |
| PC | Lenovo | ThinkPadT61 | ZZF3077 | (n.a.) | (n.a.) |

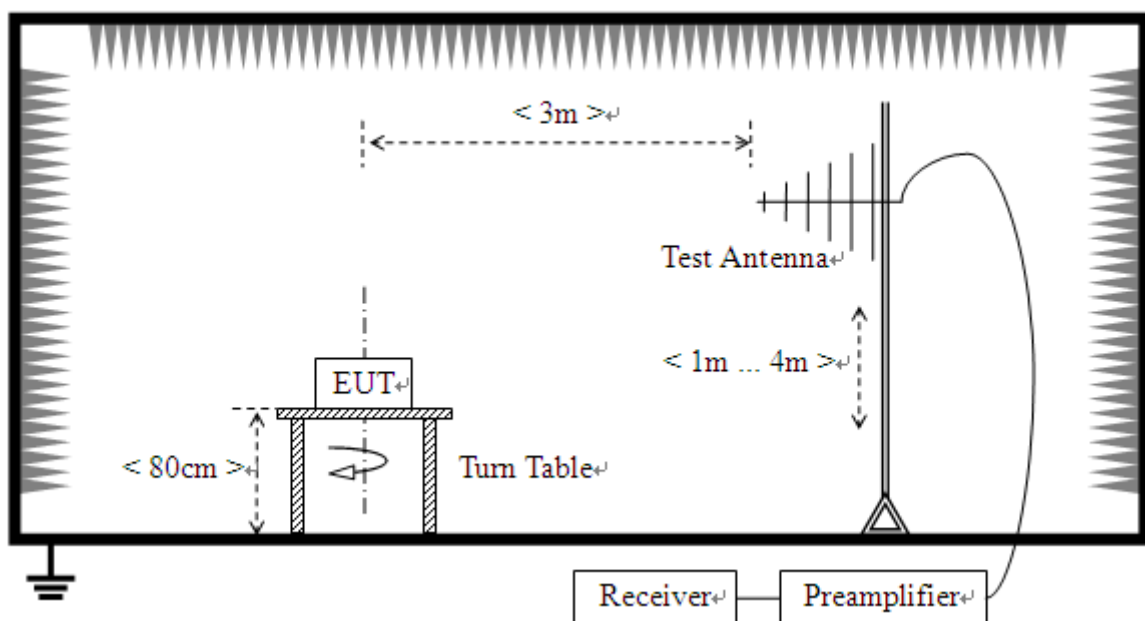
2.2.2 Radiated Emission

A. Test Setup:

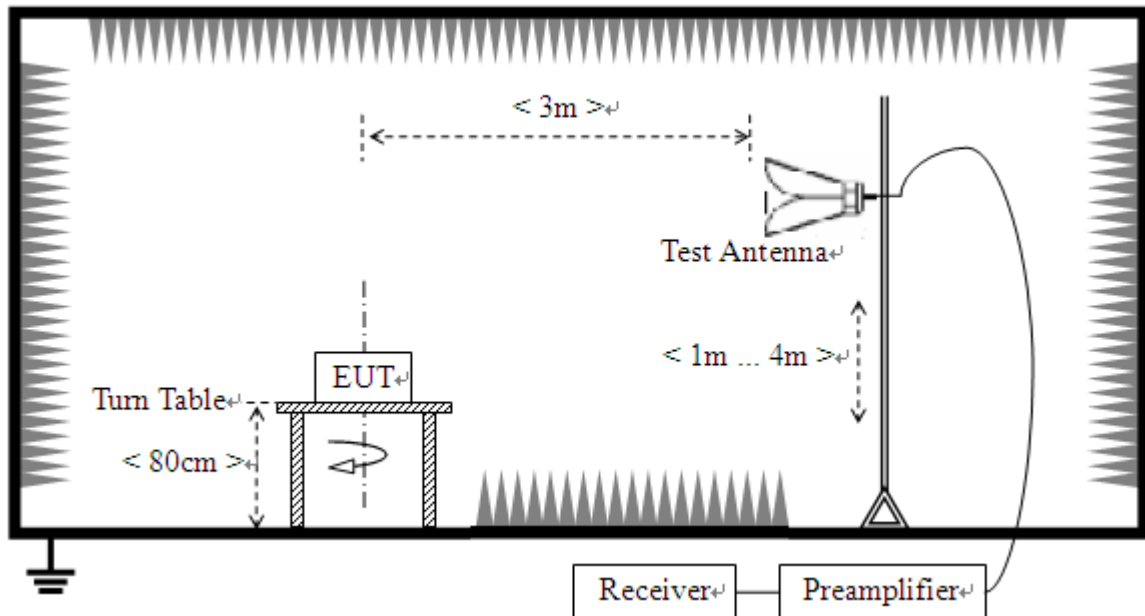
- 1) For radiated emissions from 9kHz to 30MHz



- 2) For radiated emissions from 30MHz to 1GHz



3) For radiated emissions above 1GHz



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

- 1) In the frequency range of 9KHz to 30MHz, magnetic field is measured with Loop Test Antenna.

The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

- 2) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

B. Equipments List:

| Description | Manufacturer | Model | Serial No. | Cal. Date | Due. Date |
|-----------------------|--------------|------------|------------|------------|------------|
| EMC Analyzer | Agilent | E7405A | US44210471 | 12/05/2013 | 11/05/2014 |
| Semi-Anechoic Chamber | Albatross | 9m*6m*6m | (n.a.) | 12/05/2012 | 11/05/2014 |
| Test Antenna - Bi-Log | Schwarzbeck | VULB 9163 | 9163-274 | 12/05/2012 | 11/05/2014 |
| Test Antenna - Horn | Schwarzbeck | BBHA 9120D | 9120D-963 | 12/05/2012 | 11/05/2014 |



| Description | Manufacturer | Model | Serial No. | Cal. Date | Due. Date |
|--------------------|--------------|-------------|------------|------------|------------|
| Test Antenna -Loop | Schwarzbeck | FMZB 1519 | 1519-022 | 12/05/2012 | 11/05/2014 |
| T-Flash Card | SanDisk | 256MB | (n.a.) | (n.a.) | (n.a.) |
| PC | Lenovo | ThinkPadT61 | ZZF3077 | (n.a.) | (n.a.) |

3. 47 CFR PART 15B REQUIREMENTS

3.1 Conducted Emission

3.1.1 Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

| Frequency range (MHz) | Conducted Limit (dB μ V) | |
|-----------------------|------------------------------|----------|
| | Quasi-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

NOTE:

- The limit subjects to the Class B digital device.
- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.1.2 Test Description

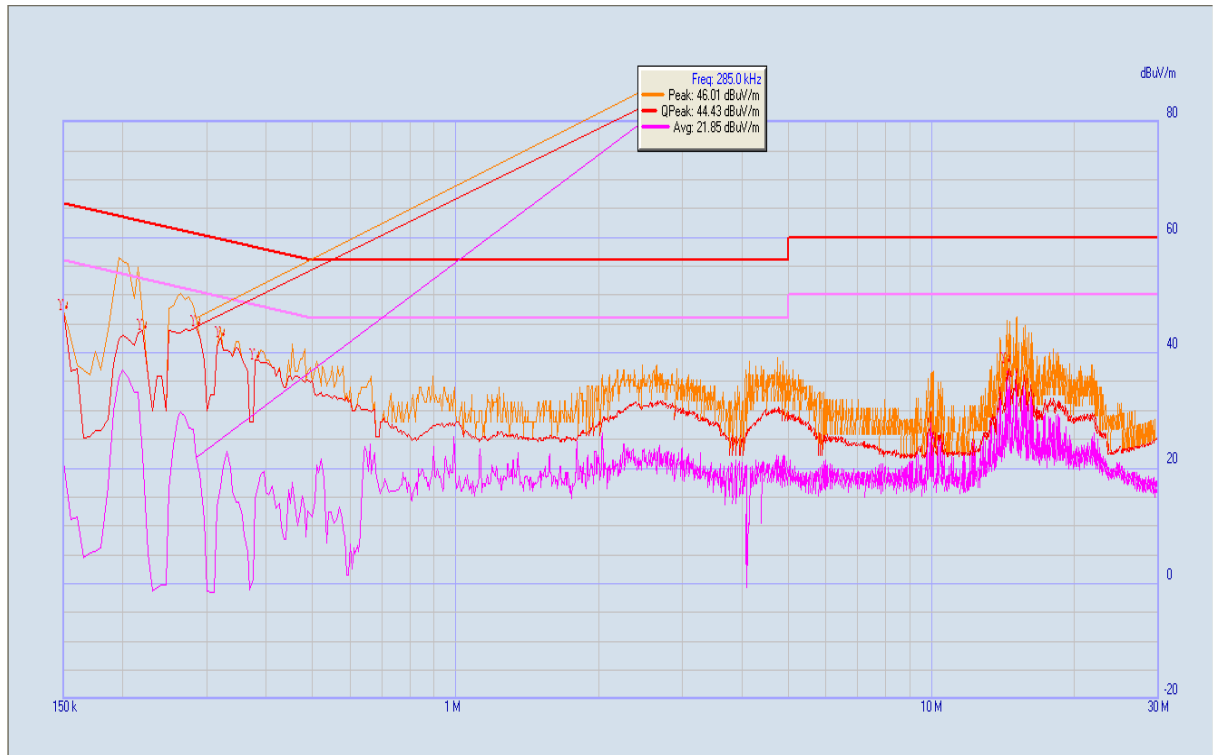
See section 2.2.1 of this report.

3.1.3 Test Result

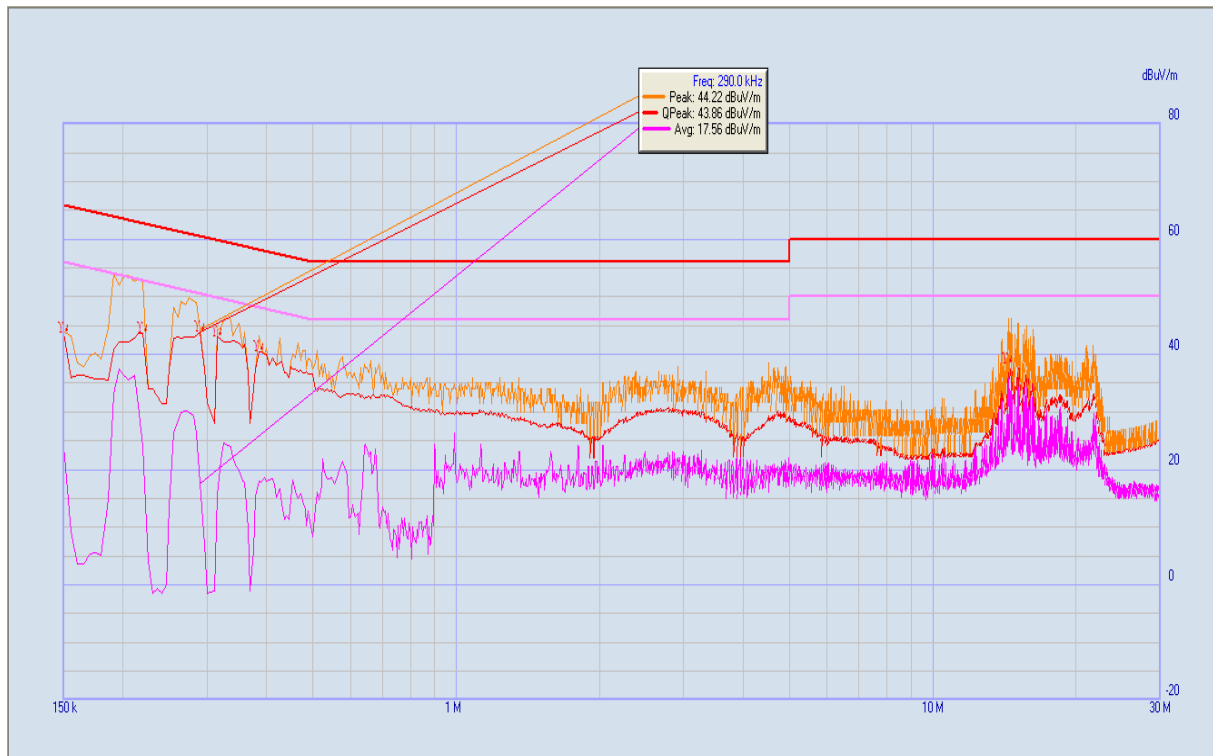
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

3.1.3.1 Test Mode

A. Test Plot and Suspicious Points:



(Plot A: L Phase)



(Plot B: N Phase)

Test Result: PASS

3.2 Radiated Emission

3.2.1 Requirement

According to FCC section 15.109(a)(e), the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Frequency range (MHz) | Field Strength | | Field Strength Limitation at 3m Measurement Dist | |
|-----------------------|----------------------|------|--|----------------------------------|
| | $\mu\text{V/m}$ | Dist | ($\mu\text{V/m}$) | (dBuV/m) |
| 0.009 - 0.490 | $2400/F(\text{KHz})$ | 300m | $10000 * 2400/F(\text{KHz})$ | $20\log 2400/F(\text{KHz}) + 80$ |
| 0.490 - 1.705 | $2400/F(\text{KHz})$ | 30m | $100 * 2400/F(\text{KHz})$ | $20\log 2400/F(\text{KHz}) + 40$ |
| 1.705 - 30.00 | 30 | 30m | $100 * 30$ | $20\log 30 + 40$ |
| 30.0 - 88.0 | 100 | 3m | 100 | $20\log 100$ |
| 88.0 - 216.0 | 150 | 3m | 150 | $20\log 150$ |
| 216.0 - 960.0 | 200 | 3m | 200 | $20\log 200$ |
| Above 960.0 | 500 | 3m | 500 | $20\log 500$ |

Note: The limits of frequency below 30MHz is quoted from the FCC section 15.209.

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Note:

- 1) The tighter limit shall apply at the boundary between two frequency range.
- 2) Limitation expressed in dBuV/m is calculated by $20\log \text{Emission Level}(\mu\text{V/m})$.
- 3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $Ld1 = Ld2 * (d2/d1)^2$.

Example:

F.S Limit at 30m distance is $30\mu\text{V/m}$, then F.S Limitation at 3m distance is adjusted as

$$Ld1 = L1 = 30\mu\text{V/m} * (10)^2 = 100 * 30\mu\text{V/m}$$

3.2.2 Test Description

See section 2.2.2 of this report.

3.2.3 Frequency range of measurement

Highest frequency generated or used in the device is the highest speed of the processor, lowest

frequency generated or used in the device is the lowest frequency of the oscillator. According to 15.33(b)(1), the frequency range of radiated measurement for the EUT is listed in the following table:

| Frequency | Frequency generated or used in the device | Frequency range of radiated measurement in the report |
|-----------|---|---|
| Highest | 1GHz | 5GHz |
| Lowest | 32KHz | 9KHz |

3.2.4 Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

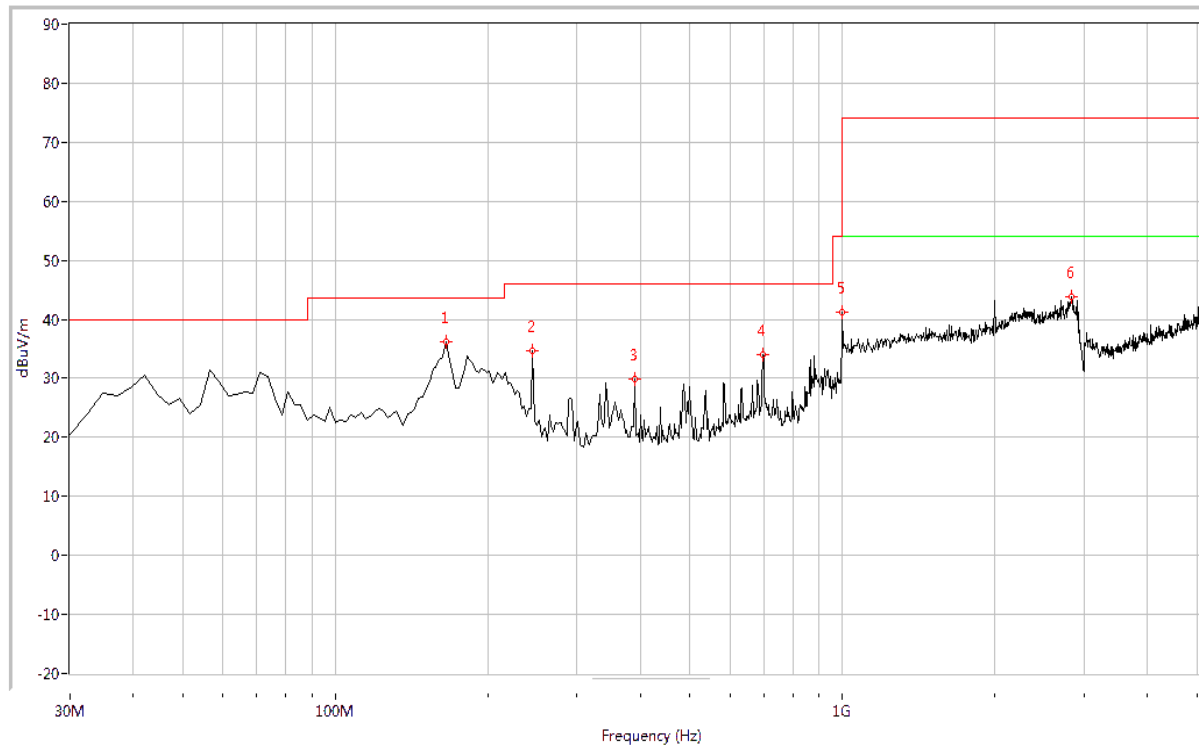
Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.

A. Test Plots and Suspicious Points:

NOTE: The emissions are too small to be measured and are at least 6 dB below the limit, So all the data of marked are pass.

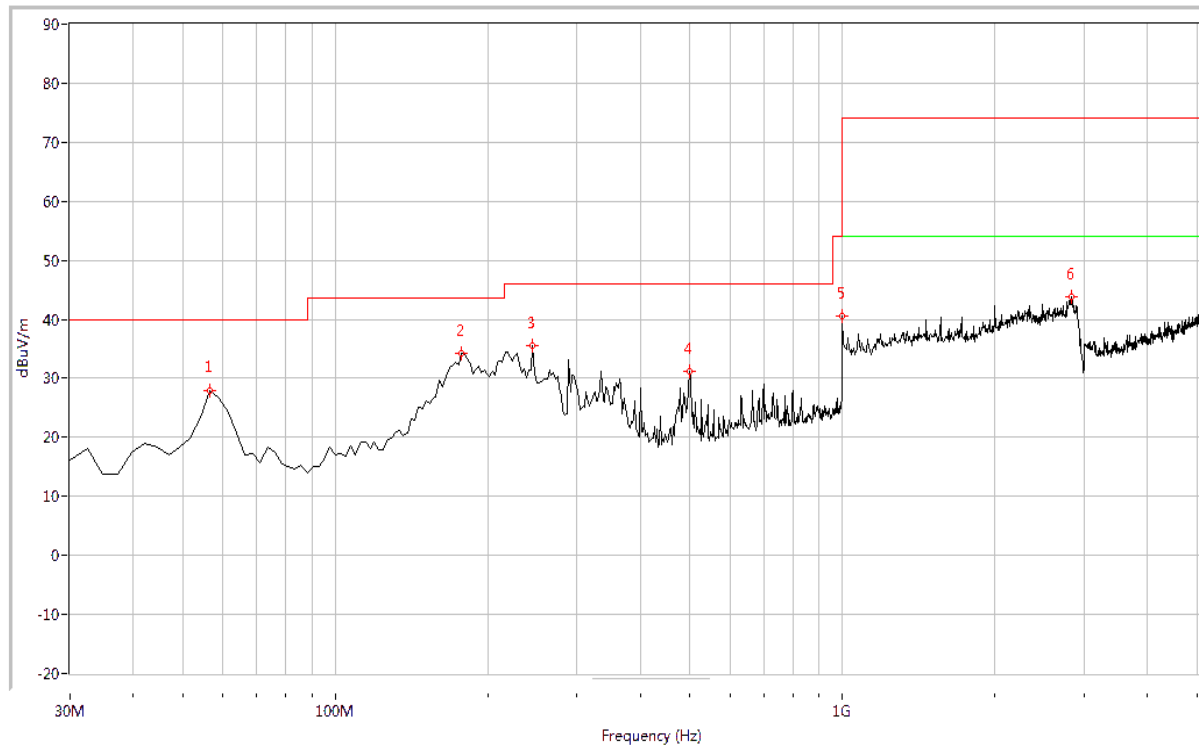


(Plot A: 9K – 30M)



(Plot A: 30MHz – 5GHz, Test Antenna Vertical)

| NO. | Fre. (MHz) | Pk | QP | AV | Limit- PK | Limit- QP | Limit- AV | Antenna | Verdict |
|-----|---------------|-------|-------|-------|--------------|--------------|--------------|----------|---------|
| 1 | 165.461 | N.A | 36.29 | N.A | N.A | 43.5 | N.A | Vertical | Pass |
| 2 | 245.287 | N.A | 34.66 | N.A | N.A | 46.0 | N.A | Vertical | Pass |
| 3 | 390.424 | N.A | 29.91 | N.A | N.A | 46.0 | N.A | Vertical | Pass |
| 4 | 697.631 | N.A | 33.97 | N.A | N.A | 46.0 | N.A | Vertical | Pass |
| 5 | 1000.000 | N.A | 41.22 | N.A | N.A | 74.0 | N.A | Vertical | Pass |
| 6 | 2835.411 | 43.91 | N.A | 34.26 | 74.0 | N.A | 54.0 | Vertical | Pass |



(Plot B: 30MHz – 5GHz, Test Antenna Horizontal)

| NO. | Fre. (MHz) | Pk | QP | AV | Limit- PK | Limit- QP | Limit- AV | Antenna | Verdict |
|-----|---------------|-------|-------|-------|--------------|--------------|--------------|------------|---------|
| 1 | 56.608 | N.A | 27.85 | N.A | N.A | 40.0 | N.A | Horizontal | Pass |
| 2 | 177.556 | N.A | 34.24 | N.A | N.A | 43.5 | N.A | Horizontal | Pass |
| 3 | 245.287 | N.A | 24.73 | N.A | N.A | 46.0 | N.A | Horizontal | Pass |
| 4 | 499.277 | N.A | 31.11 | N.A | N.A | 46.0 | N.A | Horizontal | Pass |
| 5 | 1000.000 | N.A | 40.45 | N.A | N.A | 74.0 | N.A | Horizontal | Pass |
| 6 | 2835.411 | 43.86 | N.A | 37.54 | 74.0 | N.A | 54.0 | Horizontal | Pass |

Test Result: Pass

**** END OF REPORT ****