# CONFORMANCE TEST REPORT
# FOR
# FCC 47 CFR, Part 15 Subpart B

**Report No.: 10-03-MAS-176-01**

| | |
|---|---|
| Client: | OpenPeak Inc. |
| Product: | 1) OpenFrame 7EZE<br>2) OpenFrame 7EZ |
| Model: | 1) OPOF7E120E<br>2) OPOF7E120 |
| Manufacturer/supplier: | Hon Hai Precision Industry Ltd. |

| | |
|---|---|
| Date test item received: | 2010/03/19 |
| Date test campaign completed: | 2010/04/06 |
| Date of issue: | 2010/04/12 |



*Total number of pages of this test report: 17 pages*

*Total number of pages of this test photos: 2 pages*

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| | |
|---|---|
| Client | : OpenPeak Inc. |
| Address | : 1750 Clint Moore Road, Boca Raton, FL 33487 USA |
| Manufacturer | : Hon Hai Precision Industry Ltd. |
| Address | : 2 Zihyou Street, Tucheng City, Taipei County 236 Taiwan |
| EUT | : 1) OpenFrame 7EZE<br>2) OpenFrame 7EZ |
| Trade name | : OPENPEAK |
| Model No. | : 1) OPOF7E120E<br>2) OPOF7E120 |
| Power Source | : Adapter (LFS054000D-A8S)<br>Input: 90-132VAC，60Hz，1.0A<br>Output: 5V dc，4A |
| Regulations applied | : FCC 47 CFR, §15.107 (2008) |
| Test Specifications | : Class B |

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

The compliance test is only certified for the test equipment and the results of the testing report relate only to the item tested. The compliance test of this report was conducted in accordance with the appropriate standards. It's not intention to assure the quality and performance of the product. This report shall not be reproduced except in full, without the approval of ETC. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

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② ISO/IEC 17025: BSMI, CNLA, NCC, NVLAP, CCIBLAC, UL, Compliance

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④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through TAF

⑤ FCC Registration Number: 90588, 91094, 91095

⑥ Industry Canada Site Regisitation number: IC 2949A-1

NVLAP Lab Code 200133-0

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# 1. GENERAL INFORMATION

## 1.1 Product Description

**Device Name** : OpenFrame 7EZE

**Model No.** : OPOF7E120E

**Brand Name** : OPENPEAK

**Fundamental Frequency** : 2.4 GHz

The EUT can be described as a media phone with Energy applications. The Frame Base unit has WiFi and Ethernet capabilities for VoIP functionalities. The wireless module used provides 802.11b/g/n WLAN and Bluetooth functions, where the WLAN and Bluetooth coexist and share the same antennas to transmit and receive. The WLAN and Bluetooth implementation uses modular PCIE card connected to the main board. The Ethernet port allows connection to high speed LAN (10/100/1000 Mbps) for data and video transmission. The build-in ZigBee (802.14.5) hardware on the Frame Base unit (acting as a ZigBee device) allows access to ZigBee networks such as ZigBee enabled utility equipment and systems. In addition, the Base Station has one USB 2.0 Host port that can be used to interface to home devices such as printers, flash memory stick, or any compatible USB 2.0 device. There is also a stereo audio jack which allows connection to external audio output devices such as speakers. A 7" LCD with capacitive touch screen provides an intuitive user interface for all the applications that run in the Base.

| Model No. / Difference Item | Series Model | Series Mode (Worse for test) | Original Model | Series Model: |
|---|---|---|---|---|
| | OPOF7E120E with WiFi/BT | OPOF7E120E with WiFi | OPOF7E120 with WiFi/BT | OPOF7E120 with WiFi |
| PCB Layout and The Circuit Diagram | O | O | Remove ERT module | Remove ERT module |
| Components | ERT module WiFi/BT module | ERT module WiFi module | WiFi/BT module | WiFi module |
| Material | O | O | O | O |
| Function | O | without BT | without ERT | without ERT,BT |
| Shape & Color | O | O | O | O |
| Other | O | O | O | O |

## 1.2 Test Methodology

Both conducted and radiated emissions were performed according to the procedures in ANSI C63.4（2003）.

## 1.3 Test Facility

The Semi-Anechoic Chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.
This site has been accreditation as a FCC filing site.

# 2. PROVISIONS APPLICABLE

## 2.1 Definition

**Unintentional radiator:**

A device that intentionally generates radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

**Class B Digital Device:**

A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business and industrial environment. Examples of such devices include, but are not limited to, personal computers, calculators, and similar electronic devices that are marketed for use by the general public.

Note: A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

## 2.2 Requirement for Compliance

**(1) Conducted Emission Requirement**

For unintentional device, according to **FCC§15.107(a)** Line Conducted Emission Limits class B is as following:

| Frequency MHz | Quasi Peak dBµV | Average dBµV |
|---|---|---|
| 0.15 - 0.5 | 66-56 | 56-46 |
| 0.5 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

For unintentional device, according to **CISPR 22** Line Conducted Emission Limits class B is as following:

| Frequency MHz | Quasi Peak dBµV | Average dBµV |
|---|---|---|
| 0.15 - 0.5 | 66-56 | 56-46 |
| 0.5 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

For unintentional device, according to **AS/NZS 3548** Line Conducted Emission Limits class B is as following:

| Frequency MHz | Quasi Peak dB $\mu$V | Average dB $\mu$V |
|---|---|---|
| 0.15 - 0.5 | 66-56 | 56-46 |
| 0.5 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

**(2) Radiated Emission Requirement**

For unintentional device, according to **FCC §15.109(a)**, the field strength of radiated emissions from unintentional except for class A digital device radiators at a distance of 3 meters shall not exceed the following values:

| Frequency MHz | Distance Meters | Radiated $\mu$V/m | Radiated dB $\mu$V/m |
|---|---|---|---|
| 30 - 88 | 3 | 100 | 40.0 |
| 88 - 216 | 3 | 150 | 43.5 |
| 216 - 960 | 3 | 200 | 46.0 |
| above 960 | 3 | 500 | 54.0 |

For unintentional device, according to **CISPR 22** Radiated Emission Limits class B is as following:

| Frequency MHz | Distance Meters | Radiated dB $\mu$V/m |
|---|---|---|
| 30 to 230 | 10 | 30 |
| 230 to 1000 | 10 | 37 |

For unintentional device, according to **AS/ NZS 3548** Radiated Emission Limits class B is as following:

| Frequency MHz | Distance Meters | Radiated dB $\mu$V/m |
|---|---|---|
| 30 to 230 | 10 | 30 |
| 230 to 1000 | 10 | 37 |

## 2.3 Labelling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## 2.4 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

# 3. SYSTEM TEST CONFIGURATION

## 3.1 EUT configuration and operating

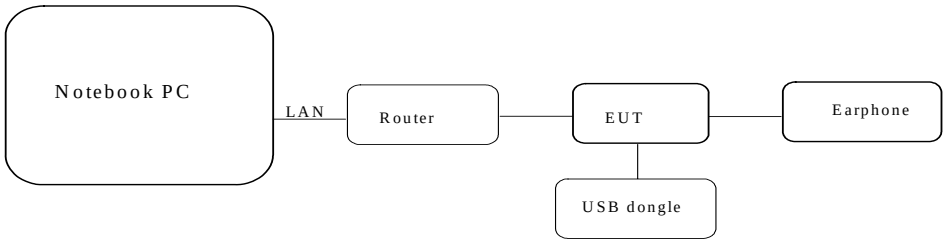
Test operation mode: Operating Mode.

## 3.2 Devices for Tested System

| Device | Manufacture | Model No. | Cable Description |
|---|---|---|---|
| OpenFrame 7EZE* | Hon Hai Precision Industry Ltd. | OPOF7E120E | 1.8m*1, Unshielded Power Line |
| Earphone | N/A | N/A | 1.0m Unshielded Signal Line |
| Notebook PC | Dell | PP26L | 1.0m Unshielded LAN Cable |
| USB Dongle | Transcend | JetFlash | N/A |

Note:

Remark "*" means equipment under test.




## 3.3 Deviation Statement

(If any deviation from additions to or exclusions from test method must be stated)

N/A

## 3.4 Modification Record

N/A

# 4. RADIATED EMISSION MEASUREMENT

## 4.1 Applicable Standard

For unintentional radiator digital devices, the radiated emission shall comply with § 15.109(a). And according to §15.109 (g), as an alternative to the radiated emission limits is CISPR 22.

## 4.2 Measurement Procedure

1. Setup the configuration per figure 1 and figure 2.
2. For emission frequencies measured, a pre-scan is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions then each selected frequency is precisely measured.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that the highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Check the frequency of the highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

Figure 1: Frequencies measured below 1 GHz configuration

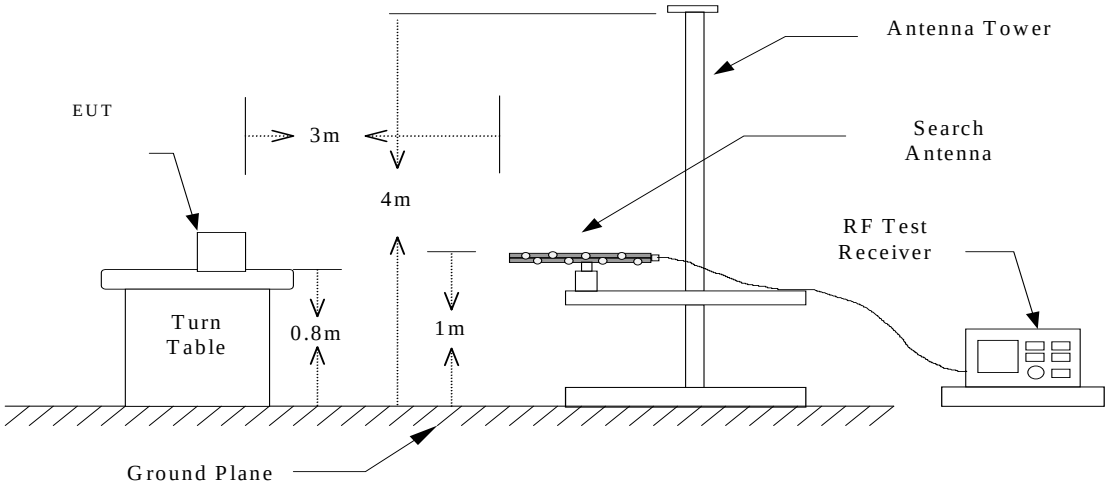
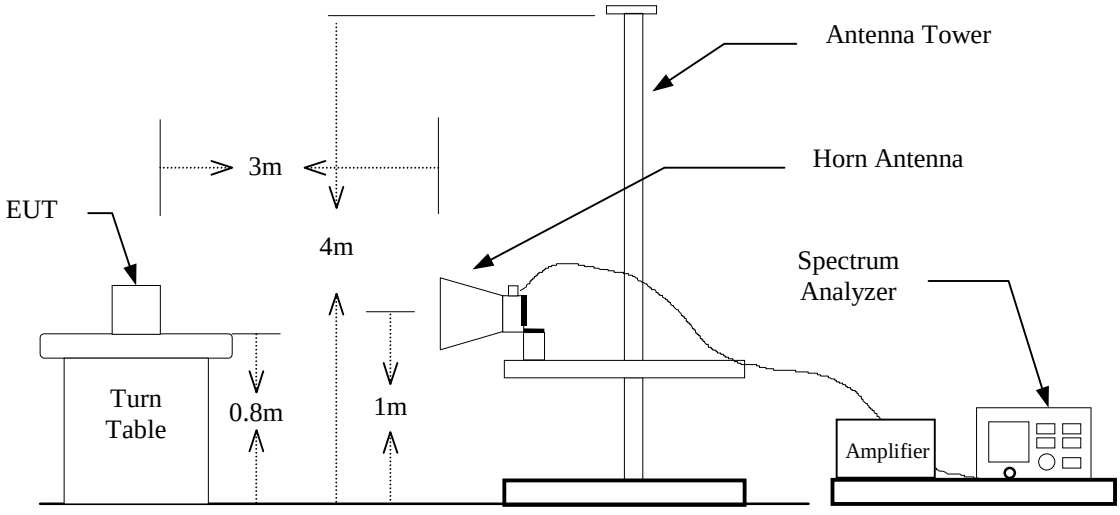



Figure 2 : Frequencies measured above 1 GHz configuration



## 4.3 Radiated Emission Data

**File:** OPENPEARK **Data:** #3 **Date:** 2010/3/29 **Temperature:** 26 ℃

**Time:** PM 12:20:38 **Humidity:** 60 %

**Condition:** FCC Class B 3M Radiation **Polarization:** Horizontal

| No. | Frequency (MHz) | Reading (dBuV/m) | Detector | Corrected dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| 1 | 286.4233 | 30.51 | QP | 15.00 | 45.51 | 46.00 | -0.49 |
| 2 | 356.5731 | 23.47 | peak | 16.82 | 40.29 | 46.00 | -5.71 |
| 3 | 568.4570 | 20.09 | peak | 21.49 | 41.58 | 46.00 | -4.42 |
| 4 | 714.2485 | 19.75 | peak | 24.00 | 43.75 | 46.00 | -2.25 |
| 5 | 803.6672 | 17.58 | peak | 25.46 | 43.04 | 46.00 | -2.96 |
| 6 | 889.1983 | 12.68 | peak | 26.51 | 39.19 | 46.00 | -6.81 |

**Condition:** FCC Class B 3M Radiation **Polarization:** Vertical

| No. | Frequency (MHz) | Reading (dBuV/m) | Detector | Corrected dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| 1 | 33.1874 | 27.70 | QP | 11.20 | 38.90 | 40.00 | -1.10 |
| 2 | 53.3267 | 26.43 | peak | 12.42 | 38.85 | 40.00 | -1.15 |
| 3 | 290.4810 | 28.79 | peak | 15.14 | 43.93 | 46.00 | -2.07 |
| 4 | 434.3287 | 20.06 | peak | 18.97 | 39.03 | 46.00 | -6.97 |
| 5 | 550.9620 | 23.17 | peak | 21.12 | 44.29 | 46.00 | -1.71 |
| 6 | 801.7233 | 17.17 | peak | 25.45 | 42.62 | 46.00 | -3.38 |

**Note:**

1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The symbol of "#" means the noise was too low, so record the peak value.
4. The estimated measurement uncertainty of the result measurement is
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±2.9dB (1GHz≦f<18GHz).
   ±3.4dB (18GHz≦f≦40GHz).

## 4.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

***Result = Reading + Corrected Factor***

where

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

## 4.5 Radiated Measuring Instrument

The following instrument are used for radiated emissions measurement:

| Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|---|---|---|---|---|
| EMI Receiver | R&S | ESIB 7 | 100328 | Jul. 19, 2010 |
| BiLog Antenna | Schaffner | CBL 6112B | 2927 | Aug. 18, 2010 |
| Horn Antenna | EMCO | 3115 | 9107-3729 | Dec. 10, 2010 |
| PRE-Amplifier | Agilent | 8449B | 3008A01648 | Oct. 11, 2010 |
| Spectrum Analyzer | R&S | FSU46 | 13040904-001 | Nov. 18, 2010 |
| Spectrum Analyzer | Agilent | 8564EC | 4123A00585 | Oct. 10, 2010 |

Note: The standards used to perform this calibration are traceable to NML/ROC and NIST/USA.

Measuring instrument setup in measured frequency band when specified detector function is used:

| Frequency Band (MHz) | Instrument | Function | Resolution Bandwidth | Video Bandwidth |
|---|---|---|---|---|
| 30 to 1000 | RF Test Receiver | Quasi-Peak | 120 kHz | 300 kHz |
| above 1000 | Spectrum Analyzer | Peak | 1 MHz | 1 MHz |

# 5. CONDUCTED EMISSION MEASUREMENT

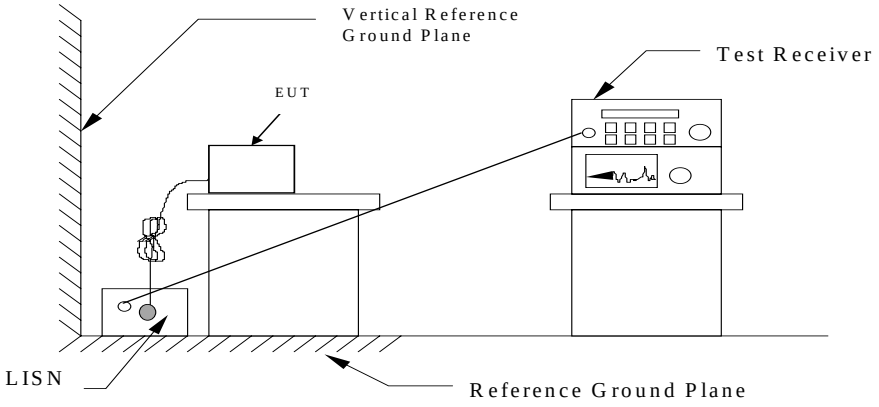
## 5.1 Applicable Standard

For unintentional digital devices, Line Conducted Emission Limits are in accordance to §15.107(a) . And according to §15.107(e), an alternative to the conducted limits is CISPR 22.

## 5.2 Measurement Procedure

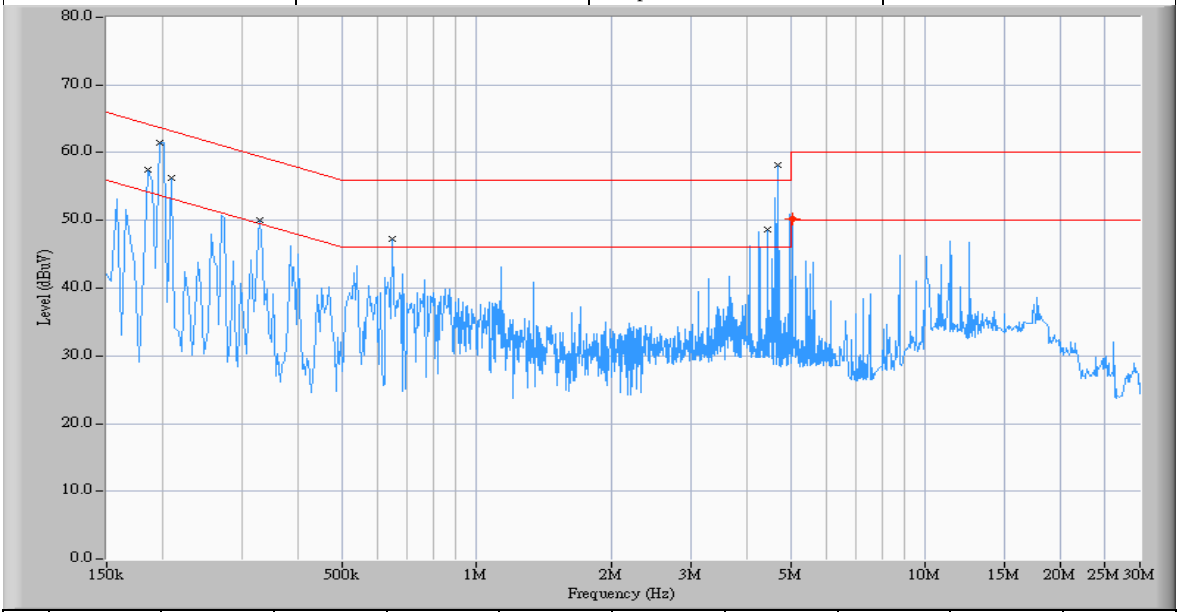
1. Setup the configuration per figure 3.
2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
3. Record the 4 to 8 highest emissions relative to the limit.
4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
5. Confirm the highest emissions with variation of the EUT cable configuration and record the final data.
6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3 : Conducted emissions measurement configuration



## 5.3 Conducted Emission Data

| | | | |
|---|---|---|---|
| EUT : open peak | Model : | Status : | |
| Condition : Line 1 | Date : 2010/4/2 | Temp. : 19℃ | Humi. : 58% |

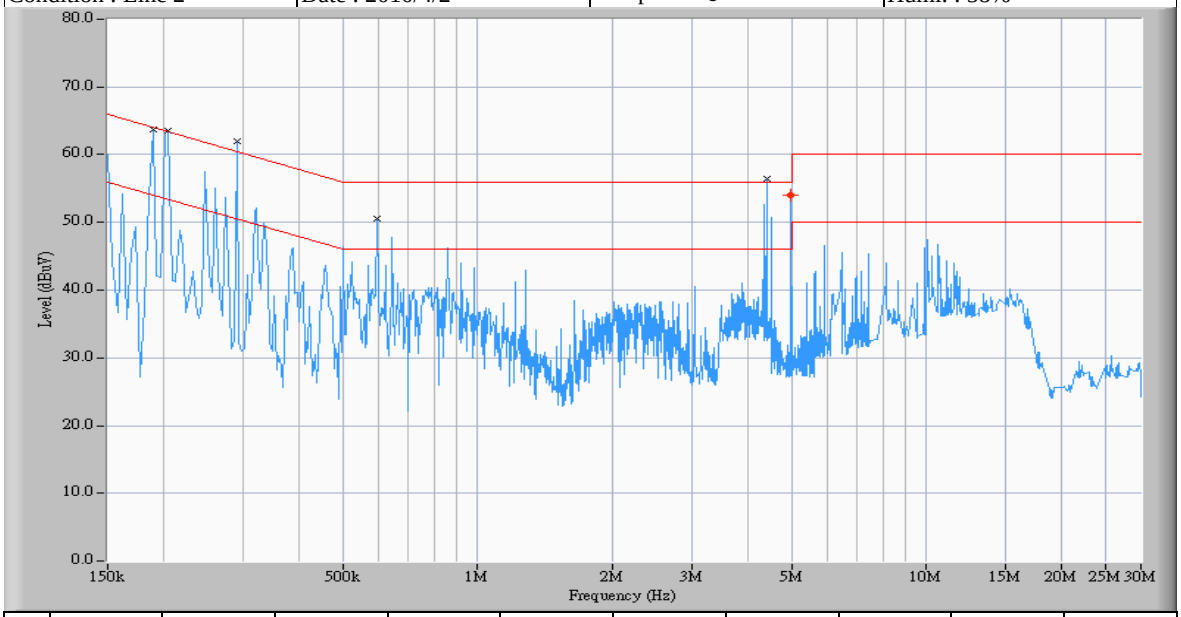



| | Freq (MHz) | QP Level (dBuV) | AVG Level (dBuV) | Factor (dB) | QP Result (dBuV) | AVG Result (dBuV) | QP Limit (dBuV) | AVG Limit (dBuV) | QP Margin (dB) | AVG Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.185 | 57.5 | 38.5 | 0.2 | 57.7 | 38.7 | 64.3 | 54.3 | -6.6 | -15.6 |
| 2 | 0.197 | 61.5 | 45.4 | 0.2 | 61.7 | 45.6 | 63.7 | 53.7 | -2.0 | -8.1 |
| 3 | 0.209 | 56.2 | 35.2 | 0.2 | 56.4 | 35.4 | 63.2 | 53.2 | -6.8 | -17.8 |
| 4 | 0.330 | 50.0 | 35.9 | 0.2 | 50.2 | 36.1 | 59.5 | 49.5 | -9.3 | -13.4 |
| 5 | 0.650 | 47.3 | 29.5 | 0.2 | 47.5 | 29.7 | 56.0 | 46.0 | -8.5 | -16.3 |
| 6 | 4.447 | 48.7 | 23.7 | 0.2 | 48.9 | 23.9 | 56.0 | 46.0 | -7.1 | -22.1 |
| 7 | 4.673 | 38.8 | 23.2 | 0.2 | 39.0 | 23.4 | 56.0 | 46.0 | -17.0 | -22.6 |
| 8 | 5.060 | 50.3 | 22.7 | 0.2 | 50.5 | 22.9 | 60.0 | 50.0 | -9.5 | -27.1 |

Note:

1. Place of measurement: EMC LAB. of the ETC.
2. The full frequency range scanning test data is shown in next two pages.
3. “***” means the value was too low to be measured.
4. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
5. The estimated measurement uncertainty of the result measurement is ±2.5dB.

| EUT : open peak | Model : | Status : | |
|---|---|---|---|
| Condition : Line 2 | Date : 2010/4/2 | Temp. : 19℃ | Humi. : 58% |




| | Freq (MHz) | QP Level (dBuV) | AVG Level (dBuV) | Factor (dB) | QP Result (dBuV) | AVG Result (dBuV) | QP Limit (dBuV) | AVG Limit (dBuV) | QP Margin (dB) | AVG Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.189 | 63.8 | 44.3 | 0.2 | 64.0 | 44.5 | 64.1 | 54.1 | -0.1 | -9.6 |
| 2 | 0.205 | 62.9 | 42.6 | 0.2 | 63.1 | 42.8 | 63.4 | 53.4 | -0.3 | -10.6 |
| 3 | 0.291 | 48.3 | 27.5 | 0.2 | 48.5 | 27.7 | 60.5 | 50.5 | -12.0 | -22.8 |
| 4 | 0.595 | 41.0 | 31.9 | 0.2 | 41.2 | 32.1 | 56.0 | 46.0 | -14.8 | -13.9 |
| 5 | 4.396 | 38.7 | 25.4 | 0.2 | 38.9 | 25.6 | 56.0 | 46.0 | -17.1 | -20.4 |
| 6 | 4.982 | 51.0 | 20.4 | 0.2 | 51.2 | 20.6 | 56.0 | 46.0 | -4.8 | -25.4 |

Note:

1. Place of measurement: EMC LAB. of the ETC.
2. The full frequency range scanning test data is shown in next two pages.
3. “***” means the value was too low to be measured.
4. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
5. The estimated measurement uncertainty of the result measurement is ±2.5dB.

## 5.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

***RESULT = READING + LISN FACTOR***

## 5.5 Conducted Measurement Equipment

The following test equipment are used during the conducted test .

| Equipment | Manufacturer | Model No. | Serial No. | Calibrated until |
|---|---|---|---|---|
| Test Receiver | R&S | ESCS30 | 13054411-001 | Aug. 22, 2010 |
| LISN | EMCO | 37100/2M | 13057702-001 | Mar. 04, 2011 |

Note: The standards used to perform this calibration are traceable to NML/ROC and NIST/USA.