



SINTEK LABORATORY CO., LTD.
TEL: +86-755-27604866 FAX: +86-755-27608359

FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For
RealEase Limited
Digital Photo Frame

Model: SG080, SG081, SG081A

Trade Name: SHOGO

Prepared for

RealEase Limited
15/F, Morrison Commercial Building, 31 Morrison Hill Road,
Wanchai Hong Kong

Prepared by

SINTEK LABORATORY CO., LTD.
No. 7, XINSHIDAI INDUSTRIAL, GUANTIAN VILLAGE,
SHIYAN TOWN, BAOAN DISTRICT, SHENZHEN, GUANGDONG, P.R.C.

TEL: 86-755-27604866
FAX: 86-755-27608359

***Note:** This report shall not be reproduced except in full, without the written approval of Sintek Laboratory CO., Ltd. This document may be altered or revised by Sintek Laboratory Co., Ltd. personnel only, and shall be noted in the revision section of the document.*



TABLE OF CONTENTS

| | |
|---|-----------|
| 1. TEST RESULT CERTIFICATION..... | 3 |
| 2. EUT DESCRIPTION | 4 |
| 3. TEST METHODOLOGY | 5 |
| 3.1 EUT CONFIGURATION | 5 |
| 3.2 EUT EXERCISE..... | 5 |
| 3.3 GENERAL TEST PROCEDURES..... | 5 |
| 3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS..... | 6 |
| 3.5 DESCRIPTION OF TEST MODES | 6 |
| 4. INSTRUMENT CALIBRATION..... | 7 |
| 5. FACILITIES AND ACCREDITATIONS | 8 |
| 5.1 FACILITIES | 8 |
| 5.2 EQUIPMENT..... | 8 |
| 5.3 LABORATORY ACCREDITATIONS AND LISTING..... | 8 |
| 6. SETUP OF EQUIPMENT UNDER TEST | 9 |
| 6.1 SETUP CONFIGURATION OF EUT..... | 9 |
| 6.2 SUPPORT EQUIPMENT | 9 |
| 7. FCC PART 15.249 REQUIREMENTS..... | 10 |
| 7.1 BAND EDGES MEASUREMENT | 10 |
| 7.2 RADIATED EMISSIONS | 13 |
| 7.3 POWER LINE CONDUCTED EMISSIONS | 20 |
| 8. APPENDIX 1 PHOTOGRPHS OF TEST SETUP | 23 |



1. TEST RESULT CERTIFICATION

Applicant: RealEase Limited
15/F, Morrison Commercial Building, 31 Morrison Hill Road,
Wanchai, Hong Kong

Equipment Under Test: Digital Photo Frame

Trade Name: SHOGO

Model: SG080, SG081, SG081A

Date of Test: Nov2 ~27, 2007

Report No. : ST0710037

FCC ID : VTXSG08

| APPLICABLE STANDARDS | |
|-----------------------|-------------------------|
| STANDARD | TEST RESULT |
| FCC Part 15 Subpart C | No non-compliance noted |

We hereby certify that:

The above equipment was tested by SINTEK LABORATORY CO., LTD.

The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2001 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.249.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

Reviewed by:







2. EUT DESCRIPTION

| | |
|-----------------------|---|
| Product | Digital Photo Frame |
| Trade Name | SHOGO |
| Model Number | SG080, SG081, SG081A |
| Model Discrepancy | N/A |
| Power Supply | DC 5.0V by adapter |
| Frequency Range | 2410 ~ 2480 MHz |
| Antenna Specification | The EUT'S antenna is integrated on the main PCB |
| Number of Channels | 71 Channels |

Note: This submittal(s) (test report) is intended for FCC ID: VTXSG08 filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, and 15.249.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.249 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2001, Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max emission, the relative positions of this hand-held transmitter (EUT) were rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2001.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2655 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | (²) |
| 13.36 - 13.41 | | | |

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

3.5 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low (2410MHz), Ch mid (2440MHz), Ch high (2480MHz), , with highest data rate (worst case) are chosen for full testing.



4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at No. 7, Xinshidai industrial, Guantian Village, Shiyan Town, Baoan District Shenzhen, China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 LABORATORY ACCREDITATIONS AND LISTING

Site on file with the FCC: The certificate registration number is 963441 for 3&10M OATS

Site listed with the VCCI: The certificate registration number is R-2023 and c-2178 for 3&10M OATS

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

| No. | Equipment | Model # | Serial # | Trade Name | Data Cable | Power Cord |
|-----|-----------|----------------|-------------------|------------------|----------------|------------------|
| 1. | PC | PC2 | N/A | N/A | N/A | Unshielded, 1.8m |
| 2. | Printer | P320A | DQYK006399 | EPSON STYLUS C60 | Shielded 1.5m | Unshielded 1.8m |
| 3. | Mouse | 3D SWW-22 | N/A | SHUANGFEIYAN | Shielded 1.5m | N/A |
| 4. | Modem | EDVM-CF56T HCF | G9TTAI-25564-M5-E | WONDA | Shielded 1.5 m | Unshielded 1.8 m |
| 5 | Monitor | 170X5 | BZ000526110036 | PHILIPS | Shielded 1.5 m | Unshielded 1.8m |

Notes:

All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

7. FCC PART 15.249 REQUIREMENTS

7.1 BAND EDGES MEASUREMENT

LIMIT

According to §15.249(d), Emissions radiated outside of the specified frequency band, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in section 15.209, whichever is the lesser attenuation.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|-------|---------------|-----------------|
| Spectrum Analyzer | ADVANTEST | R3132 | 140301570 | 06/12/2007 |

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Set the spectrum analyzer as RBW = 1MHz, VBW = RBW, Sweep = auto.

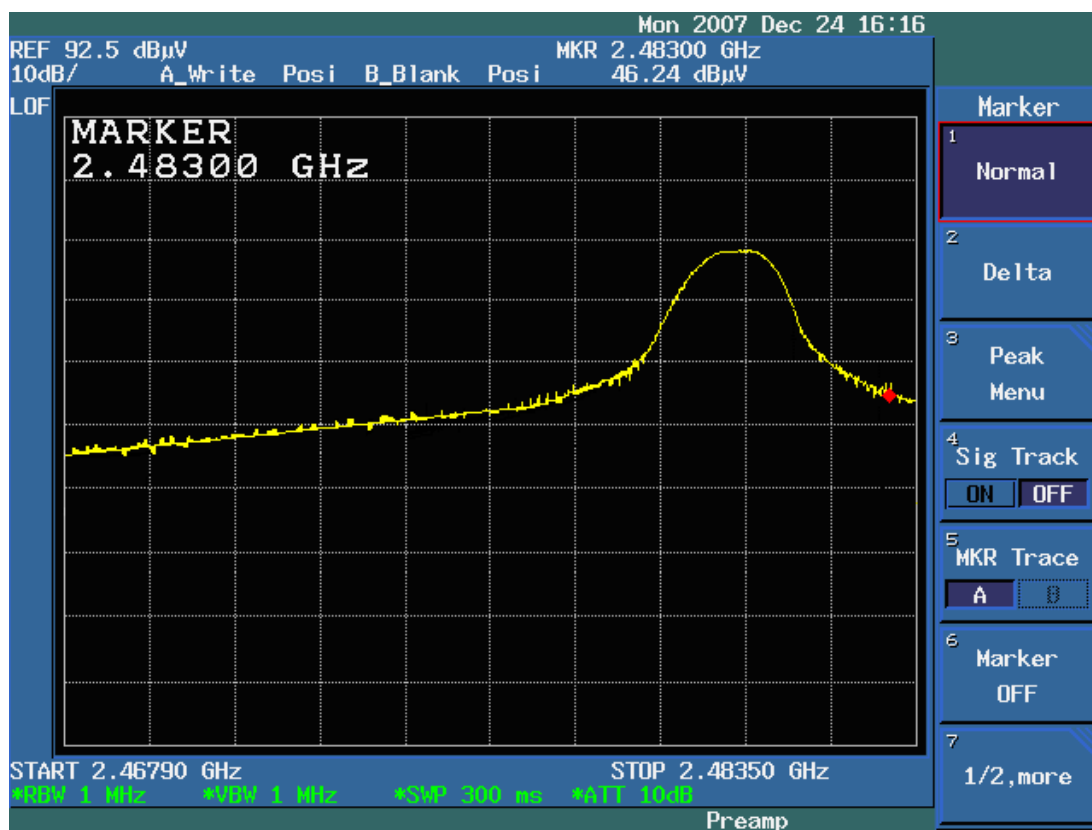
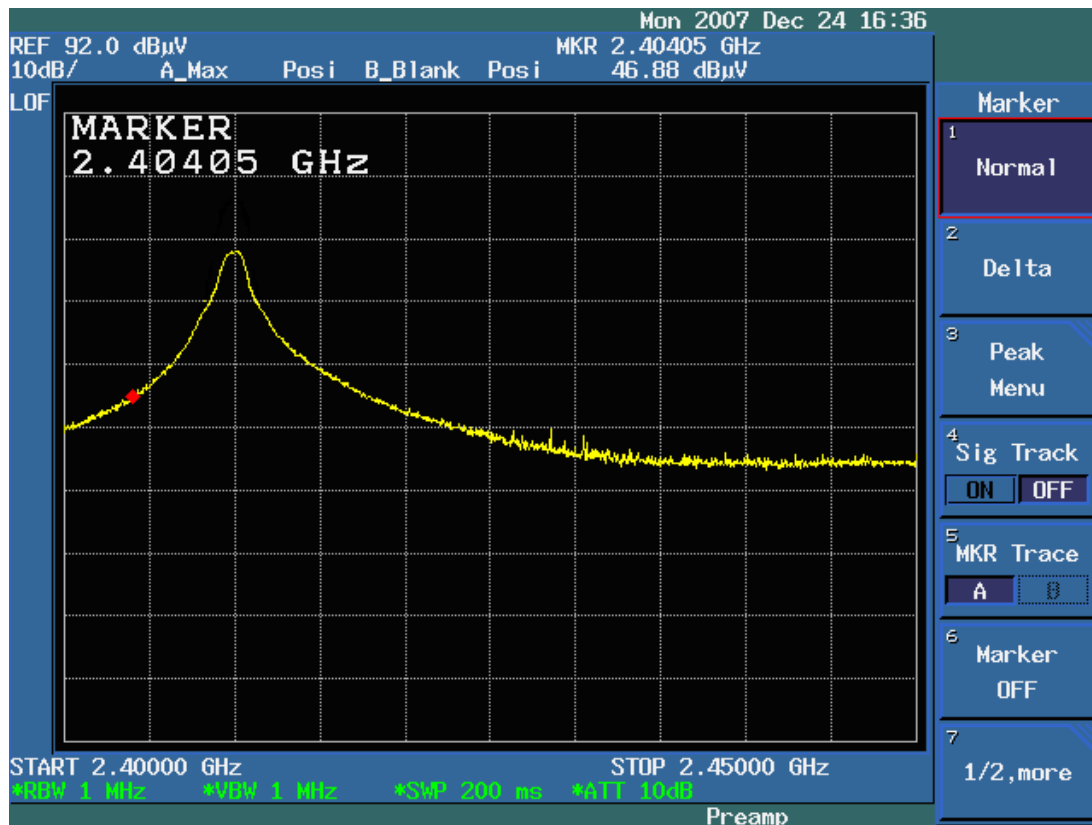
Repeat until all the rest channels are investigated.

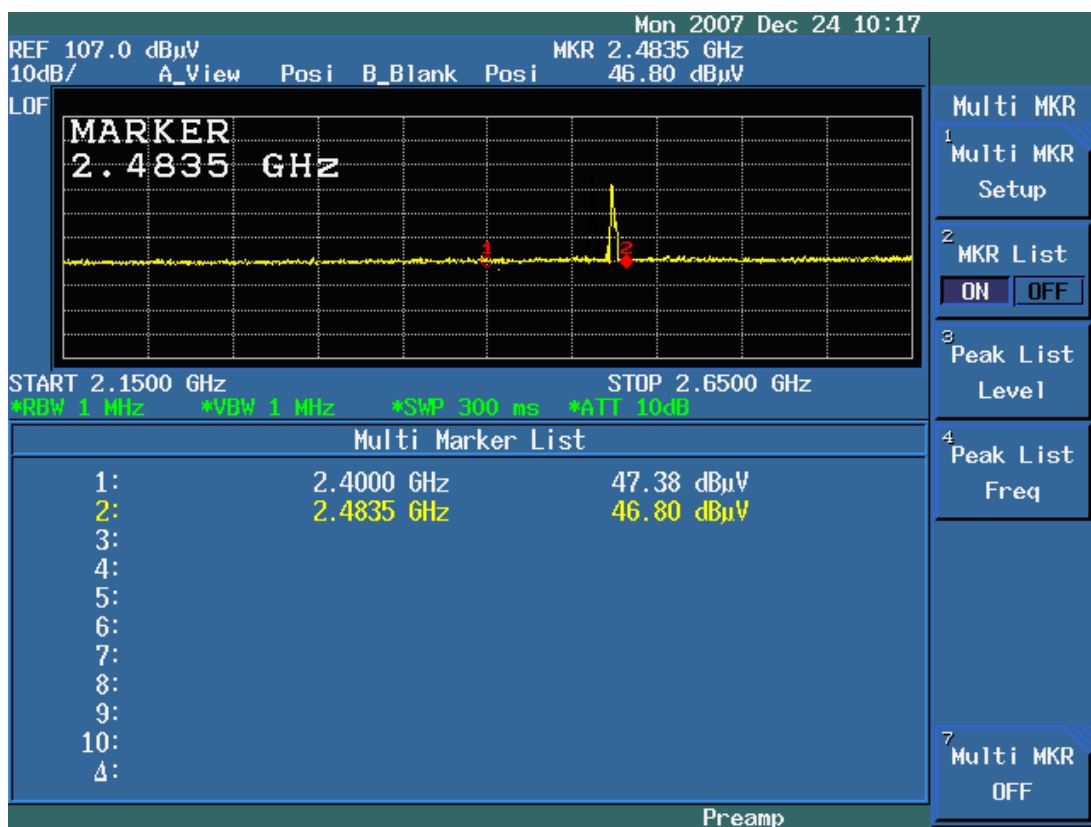
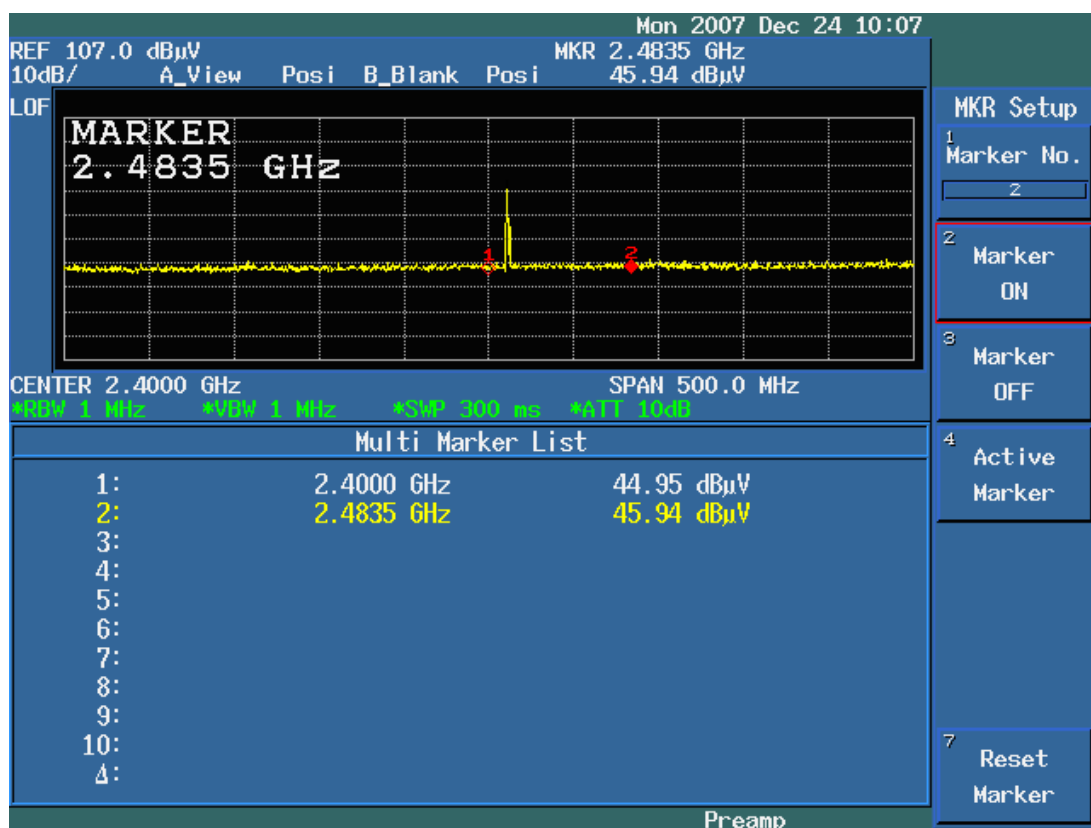
TEST RESULTS

Refer to attach spectrum analyzer data chart

| PLOT | Freq. (MHz) | Detector Mode (PK/AV) | Reading (dBuV) | Factor (dB) | Actual FS (dBuV/m) | RESULTS |
|------|-------------|-----------------------|----------------|-------------|--------------------|---------|
| 1 | 2404.05 | Peak | 46.88 | 1.101 | 47.981 | pass |
| 2 | 2483.00 | Peak | 46.24 | 1.510 | 47.750 | pass |
| 3 | 2400.00 | Peak | 44.95 | 1.100 | 46.050 | pass |
| | 2483.50 | Peak | 45.94 | 1.511 | 47.451 | pass |
| 4 | 2400.00 | Peak | 47.38 | 1.100 | 48.480 | pass |
| | 2483.50 | Peak | 46.80 | 1.511 | 48.311 | pass |

Band Edges (Detector mode: Peak)





7.2 RADIATED EMISSIONS

LIMIT

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FCC PART 15 subpart C section 15.209 :

| Frequency (MHz) | Field Strength ($\mu\text{V/m}$) | Measurement Distance (m) |
|-----------------|------------------------------------|--------------------------|
| 30-88 | 100* | 3 |
| 88-216 | 150* | 3 |
| 216-960 | 200* | 3 |
| Above 960 | 500 | 3 |

FCC PART 15 subpart C section 15.249:

| Frequency (MHz) | Field Strength | | Measurement Distance (m) |
|-----------------|------------------------------|------------------------------|--------------------------|
| | Fundamental(mV/m) | Harmonies($\mu\text{V/m}$) | |
| 2400-2483.5 | 50 | 500 | 3 |

***Note:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

In the above emission table, the tighter limit applies at the band edges.

| Frequency (MHz) | Field Strength ($\mu\text{V/m}$ at 3-meter) | Field Strength ($\text{dB}\mu\text{V/m}$ at 3-meter) |
|-----------------|--|---|
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

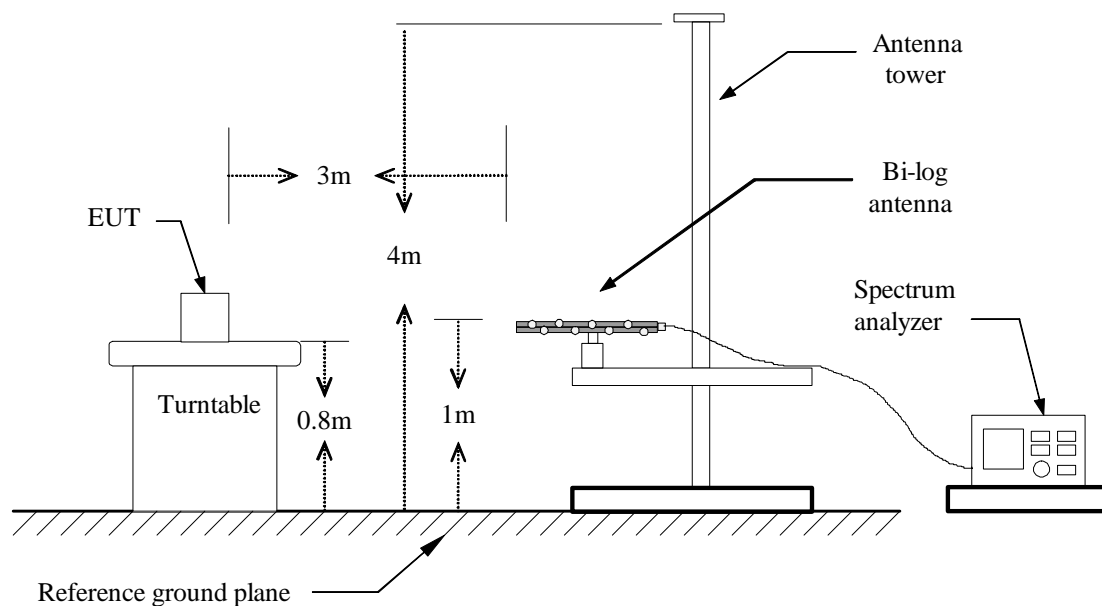
MEASUREMENT EQUIPMENT USED

| Open Area Test Site | | | | |
|---------------------|--------------|----------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | ADVANTEST | R3271A | 85060231 | 06/12/2007 |
| Spectrum Analyzer | ADVANTEST | R3132 | 140301570 | 06/12/2007 |
| EMI Test Receiver | SCHAFFNER | SCR3501 | 464 | 06/12/2007 |
| Pre-Amplifier | COM-POWER | PA-103 | 161062 | 06/12/2007 |
| Bi-log Antenna | SCHAFFNER | CBL6111C | 2775 | 06/12/2007 |
| Turn Table | SINTEK | N/A | N/A | N.C.R |
| Antenna Tower | SINTEK | N/A | N/A | N.C.R |
| Controller | SINTEK | N/A | N/A | N.C.R |
| RF Switch | ANRITSU | MP59B | M53867 | N.C.R |
| Horn antenna | EMCO | 3115 | 9602-4659 | 06/12/2007 |
| Pre-Amplifier | HP | 8449B | 3008B00965 | 06/12/2007 |

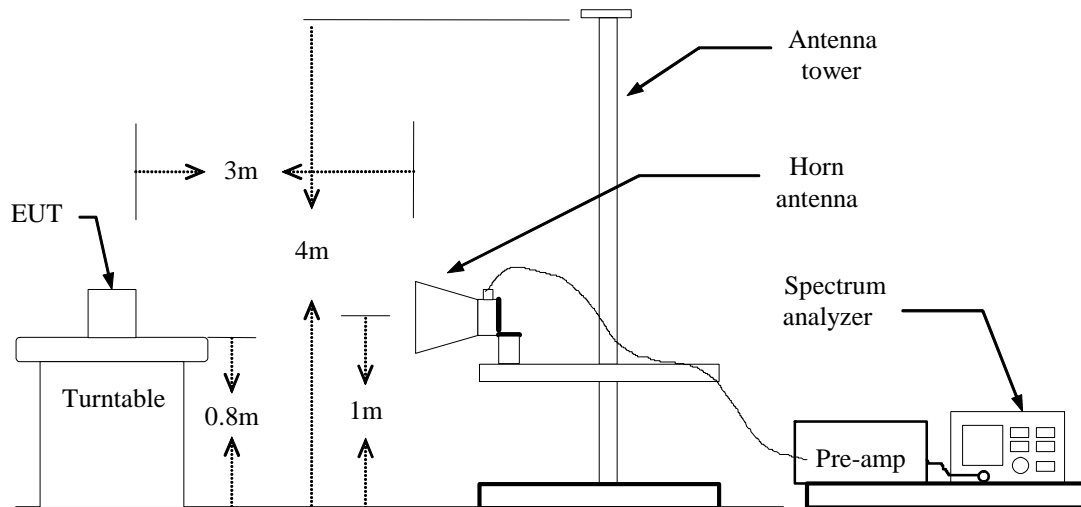
Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration

Below 1 GHz



Above 1 GHz



TEST PROCEDURE

The EUT is placed on a turntable, which is 0.8m above ground plane.

The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

Below 1 GHz

Operation Mode: Normal

Test Date: Dec 24, 2007

Temperature: 20°C

Tested by: Tracy

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. H/V | Reading (RA) (dBuV) | Corr.Factor (CF) (dB) | Measured (FS) (dBuV/m) | Limits (QP) (dBuV/m) | Safe Margins (dBuV/m) | Detector Mode (PK/QP) |
|----------------|-------------|---------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|-----------------------------|
| 108.81 | V | 25.18 | 13.31 | 38.49 | 43.5 | -5.01 | P |
| 167.74 | V | 24.80 | 12.28 | 37.08 | 43.5 | -6.42 | P |
| 224.00 | V | 25.75 | 15.16 | 40.91 | 46 | -5.09 | P |
| 234.67 | V | 26.46 | 17.21 | 43.67 | 46 | -2.33 | Q |
| 335.55 | V | 24.21 | 16.75 | 40.96 | 46 | -5.04 | P |
| 559.62 | V | 17.19 | 23.63 | 40.82 | 46 | -5.18 | P |
| 234.67 | H | 32.71 | 12.27 | 44.98 | 46 | -1.02 | Q |
| 268.62 | H | 27.40 | 17.12 | 44.52 | 46 | -1.48 | Q |
| 301.60 | H | 26.26 | 18.36 | 44.62 | 46 | -1.38 | Q |
| 335.55 | H | 25.08 | 18.82 | 43.9 | 46 | -2.1 | Q |
| 369.50 | H | 21.35 | 21 | 42.35 | 46 | -3.65 | P |
| 559.62 | H | 17.45 | 24.11 | 41.56 | 46 | -4.44 | P |

Notes:

- 1. Measuring frequencies from 30 MHz to the 1GHz.*
- 2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.*
- 3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
- 4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.*

Above 1 GHz

Operation Mode: Ch low (2410MHz)

Test Date: Dec 24, 2007

Temperature: 20°C

Tested by: Tracy

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|----------------|-----------------|---------------------------|-------------------------|-------------------------|------------------|----------------|---------------------------|-------------------------|----------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 2410.00 | V | 73.28 | --- | 1.48 | 74.76 | --- | 114.00 | 94.00 | -19.24 | Peak |
| 4820.10 | V | 37.14 | --- | 3.28 | 40.42 | --- | 74.00 | 54.00 | -13.58 | Peak |
| 9640.33 | V | 29.64 | --- | 7.83 | 37.47 | --- | 74.00 | 54.00 | -16.53 | Peak |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| 2410.00 | H | 73.23 | --- | 1.48 | 74.71 | | 114.00 | 94.00 | -19.29 | Peak |
| 4820.10 | H | 37.65 | --- | 2.75 | 40.40 | --- | 74.00 | 54.00 | -13.60 | Peak |
| 9640.33 | H | 35.62 | --- | 3.86 | 39.48 | --- | 74.00 | 54.00 | -14.52 | Peak |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.

Above 1 GHz

Operation Mode: Ch mid (2440MHz)

Test Date: Dec 24, 2007

Temperature: 20°C

Tested by: Tracy

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|----------------|-----------------|---------------------------|-------------------------|-------------------------|------------------|----------------|---------------------------|-------------------------|----------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 2440.07 | V | 72.54 | --- | 1.49 | 74.03 | --- | 114.00 | 94.00 | -19.97 | Peak |
| 4880.14 | V | 36.85 | --- | 3.30 | 40.15 | --- | 74.00 | 54.00 | -13.85 | Peak |
| 9760.28 | V | 32.56 | --- | 7.83 | 40.39 | --- | 74.00 | 54.00 | -13.61 | Peak |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| 2440.07 | H | 74.35 | --- | 1.49 | 75.84 | | 114.00 | 94.00 | -18.16 | Peak |
| 4880.14 | H | 35.68 | --- | 2.75 | 38.43 | --- | 74.00 | 54.00 | -15.57 | Peak |
| 9760.28 | H | 35.63 | --- | 3.86 | 39.49 | --- | 74.00 | 54.00 | -14.51 | Peak |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.

Above 1 GHz

Operation Mode: Ch high (2480MHz)

Test Date: Dec 24, 2007

Temperature: 20°C

Tested by: Tracy

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|----------------|-----------------|---------------------------|-------------------------|-------------------------|------------------|----------------|---------------------------|-------------------------|----------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 2480.07 | V | 71.86 | --- | 1.51 | 73.37 | --- | 114.00 | 94.00 | -20.63 | Peak |
| 4940.10 | V | 36.52 | --- | 3.5 | 40.02 | --- | 74.00 | 54.00 | -13.98 | Peak |
| 9880.31 | V | 30.95 | --- | 7.83 | 38.78 | --- | 74.00 | 54.00 | -15.22 | Peak |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| 2470.05 | H | 74.65 | --- | 1.51 | 76.16 | | 114.00 | 94.00 | -17.84 | Peak |
| 4940.10 | H | 38.45 | --- | 2.75 | 41.20 | --- | 74.00 | 54.00 | -12.80 | Peak |
| 9880.31 | H | 35.29 | --- | 3.86 | 39.15 | --- | 74.00 | 54.00 | -14.85 | Peak |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |
| N/A | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.

7.3 POWER LINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

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

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|---------|---------------|-----------------|
| EMI Test Receiver | SCHAFFNER | SCR3501 | 464 | 06/12/2007 |
| Spectrum Analyzer | ADVANTEST | R3132 | 140301570 | 06/12/2007 |
| LISN | COM-POWER | LI115 | 2027 | 06/12/2007 |
| LISN | COM-POWER | LI115 | 2029 | 06/12/2007 |

Remark: Each piece of equipment is scheduled for calibration once a year.



Test Configuration

The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4: 2001

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

The EUT was placed on a table, which is 0.8m above ground plane.

Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Operation Mode: normal Test Date: Dec 24, 2007
Temperature: 21°C Tested by: Tracy
Humidity: 68% RH

| FREQ KHz | PEAK RAW dBuV | Q.P. RAW dBuV | AVG RAW dBuV | Q.P. Limit dBuV | AVG Limit dBuV | Q.P. Margin dB | AVG Margin dB | NOTE |
|-------------|---------------------|---------------------|--------------------|-----------------------|----------------------|----------------------|---------------------|------|
| 187.000 | 55.60 | --- | 42.57 | 64.94 | 54.94 | -9.34 | -12.37 | L1 |
| 251.750 | 45.31 | --- | --- | 63.09 | 53.09 | -17.78 | -7.78 | L1 |
| 316.500 | 41.67 | --- | --- | 61.24 | 51.24 | -19.57 | -9.57 | L1 |
| 377.550 | 40.16 | --- | --- | 59.50 | 49.50 | -19.34 | -9.34 | L1 |
| 568.100 | 38.14 | --- | --- | 56.00 | 46.00 | -17.86 | -7.86 | L1 |
| 2783.196 | 39.69 | --- | --- | 56.00 | 46.00 | -16.31 | -6.31 | L1 |
| 188.850 | 54.01 | --- | 41.36 | 64.89 | 54.89 | -10.88 | -13.53 | L2 |
| 249.900 | 44.38 | --- | --- | 63.15 | 53.15 | -18.77 | -8.77 | L2 |
| 379.400 | 39.89 | --- | --- | 59.45 | 49.45 | -19.55 | -9.55 | L2 |
| 631.000 | 36.15 | --- | --- | 56.00 | 46.00 | -19.85 | -9.85 | L2 |
| 1515.300 | 38.28 | --- | --- | 56.00 | 46.00 | -17.72 | -7.72 | L2 |
| 2843.211 | 39.04 | --- | --- | 56.00 | 46.00 | -16.96 | -6.96 | L2 |

Note:

Measuring frequencies from 0.15 MHz to 30MHz.

The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.

“---” denotes the emission level was or more than 2dB below the Average limit

The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;

L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

8. APPENDIX 1 PHOTOGRPHS OF TEST SETUP

Radiated Emission Set up Photos



conducted Emission Set up Photos

