



Shenzhen CTL Electromagnetic Technology Co., Ltd.
Tel: +86-755-89486194 Fax: +86-755-89486187

FCC PART 15 SUBPART C TEST REPORT

FCC PART 15B

Report Reference No......: **CTL1102006-R**

Compiled by

(position+printed name+signature)...: File administrators Andy Zhang

Andy Zhang

Name of the organization performing the tests

Test Engineer Kendy Wang

Kendy Wang

(position+printed name+signature)...:

Approved by

(position+printed name+signature)...: Manager Tracy Qi

Tracy Qi

Date of issue.....: February 28, 2011

Testing Laboratory Name: **Shenzhen CTL Electromagnetic Technology Co., Ltd.**

Address.....: Zone B, 4/F, Block 20, Guangqian Industrial Park, Longzhu Road, Nanshan, Shenzhen 518055 China.

Test Firm.....: **Bontek Compliance Testing Laboratory Ltd**

Address.....: 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

Applicant's name.....: **J.B. Industrial (Shen Zhen) Co., Ltd.**

Address.....: J.B. Industrial Center, Beishandao YanTian, Shenzhen P.R.China.

Test specification:

Standard: **FCC Part 15B**

ANSI C63.4: 2003

TRF Originator.....: Shenzhen CTL Electromagnetic Technology Co., Ltd.

Master TRF.....: Dated 2011-01

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Test item description: F-PG20-11

Operation Frequency.....: 315MHz

Modulation mode:: ASK

Trade Mark: 

Model/Type reference.....: CN-F2K349-7R

Listed Models: /

Power Supply.....: DC 3V

Antenna Type.....: Integral without external RF Port

Result.....: **Positive**

FCC ID.....: **X9V-CN-F2K349-7R**

TEST REPORT

Test Report No. : CTL1102006-R	February 28, 2011 Date of issue
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Equipment under Test : F-PG20-11

Model /Type : CN-F2K349-7R

Listed Models : /

Difference description: /

Applicant : J.B. Industrial (Shen Zhen) Co., Ltd.

Address : J.B. Industrial Center, Beishandao YanTian, Shenzhen
P.R.China.

Manufacturer : J.B. Industrial (Shen Zhen) Co., Ltd.

Address : J.B. Industrial Center, Beishandao YanTian, Shenzhen
P.R.China.

Test Result according to the
standards on page 4:

Positive

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15 Subpart B - Unintentional Radiators](#)

[ANSI C63.4: 2003](#)



2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : February 21, 2011

Testing commenced on : February 23, 2011

Testing concluded on : February 25, 2011

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : ☐ 120V / 60 Hz ☐ 115V / 60Hz
☐ 12 V DC ☐ 24 V DC
☒ Other (specified in blank below)

DC 3V from battery

2.3. Short description of the Equipment under Test (EUT)

315MHz Receiver

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

The EUT has been tested under typical operating condition.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

☐ - supplied by the manufacturer

☐ - supplied by the lab

☐ Power Cable Length (m) : /

Shield : /

Detachable : /

☐ Multimeter Manufacturer : /

Model No. : /

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: X9V-CN-F2K349-7R** filing to comply with the FCC Part 15, Subpart B Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. Test Result Summary

Test Item	Test Requirement	Standard Paragraph	Result
Radiated Emission	FCC PART 15	Section 15.109	PASS
Conducted Emission	FCC PART 15	Section 15.107	N/A



3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 24, 2008.

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2008.

3.3. Environmental conditions

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

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



Table 2-1 Equipment Used in Tested System

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~12.75GHz	4.32dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

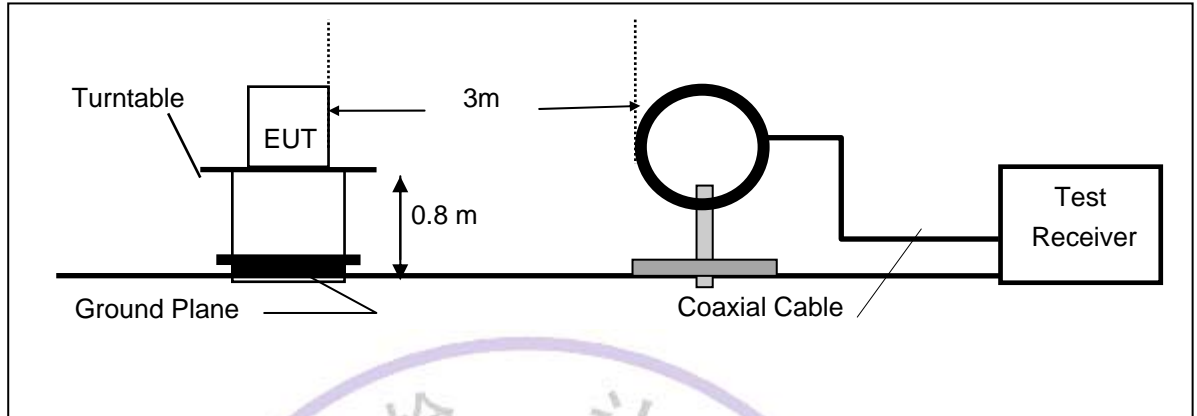
Radiated Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
1	ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2010/04	2011/04
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2010/04	2011/04
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	2010/04	2011/04
4	TURNTABLE	ETS	2088	2149	2010/04	2011/04
5	ANTENNA MAST	ETS	2075	2346	2010/04	2011/04
6	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	2010/04	2011/04
7	Loop Antenna	ROHDE & SCHWARZ	HFH2-Z2	8335211/0035	2010/04	2011/04

4. TEST CONDITIONS AND RESULTS

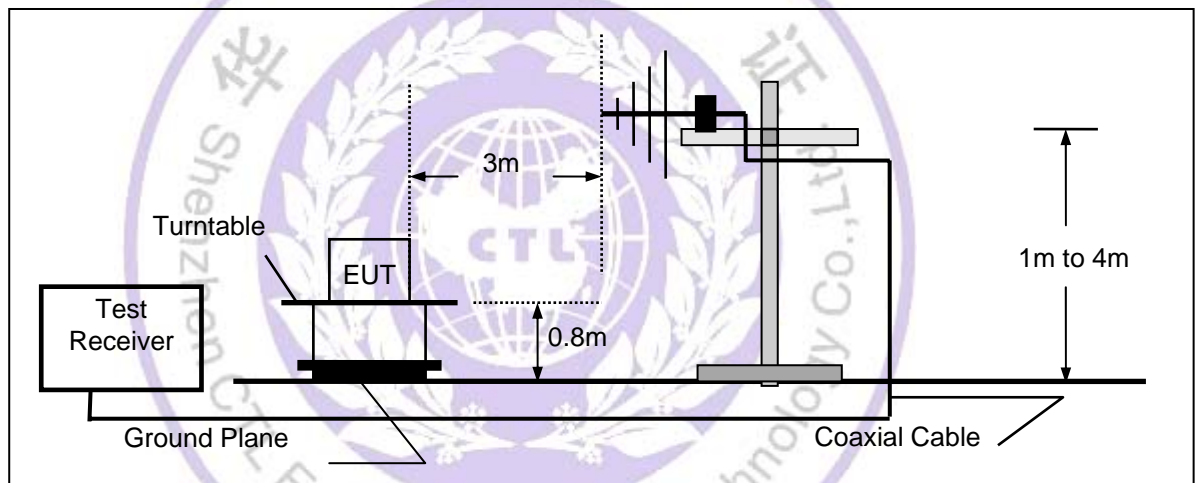
4.1. Radiated Emission Test

TEST CONFIGURATION

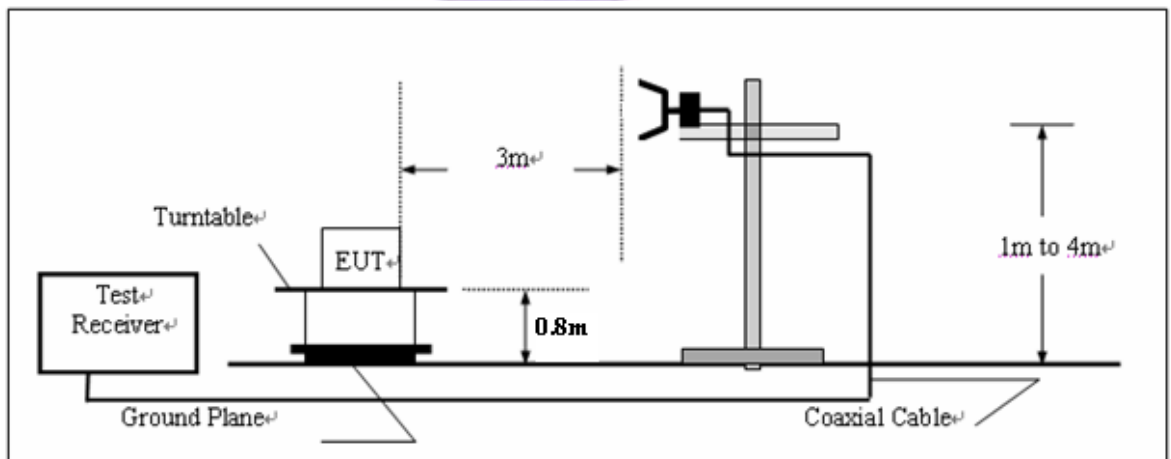
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

RADIATION LIMIT

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

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

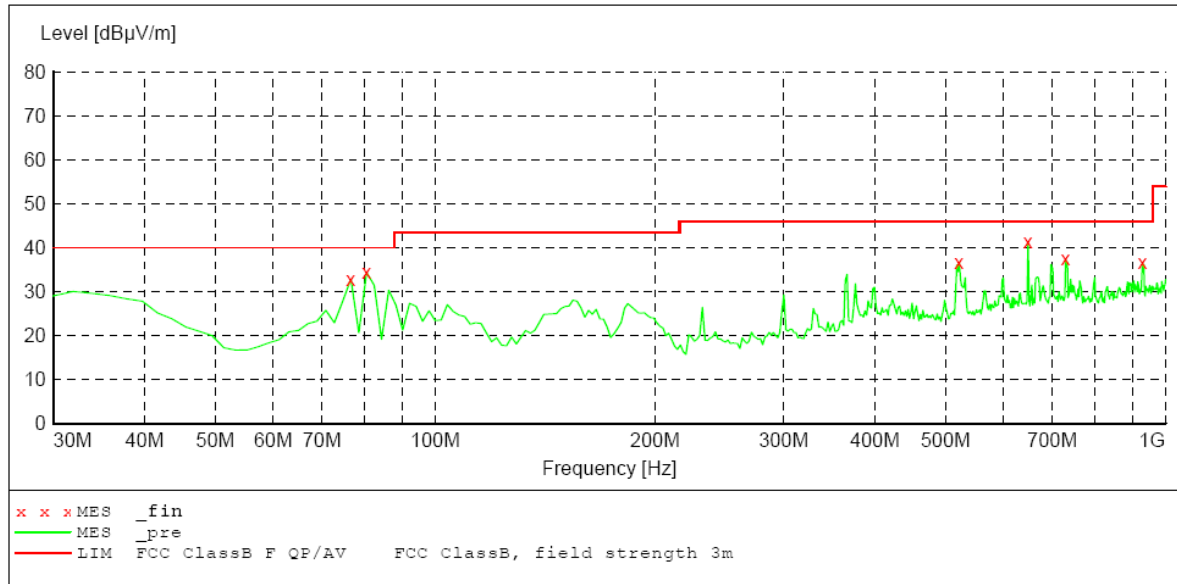
Note:

Three axes are chosen for pretest, the Z axis is the worst mode for final test.

For battery operated equipment, the equipment tests shall be performed using a new battery.

Radiation Test Result**SCAN TABLE: "test Field(30M-1G)QP"**

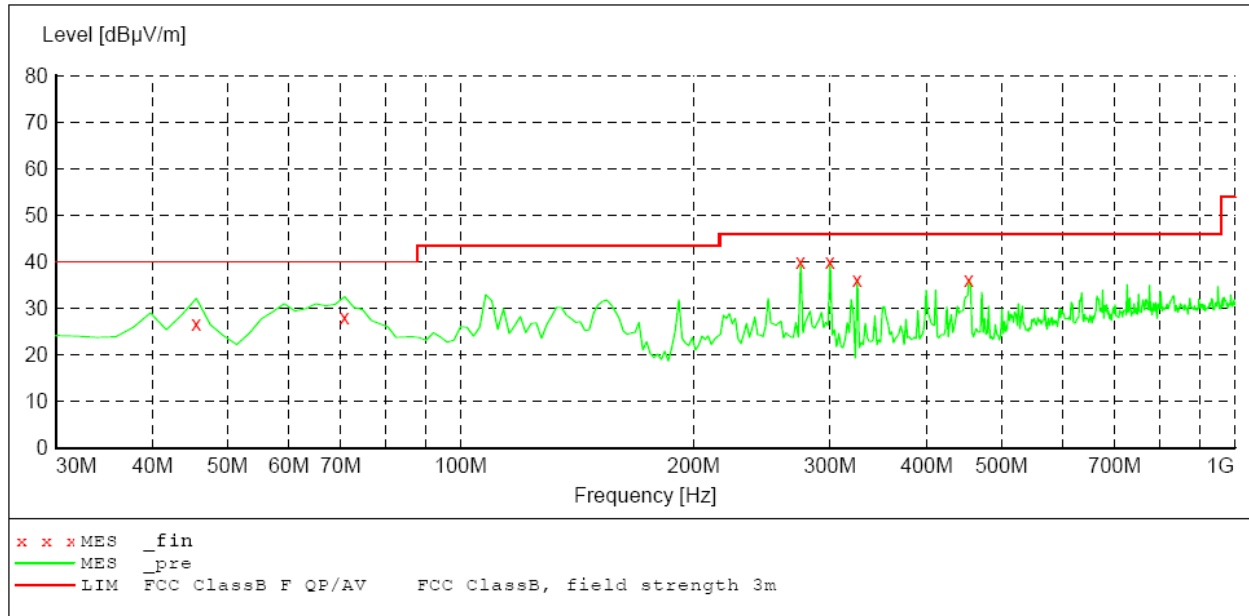
Short Description:		Field Strength(30M-1G)				
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562 10

**MEASUREMENT RESULT:**

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
76.650000	32.80	11.2	40.0	7.2	QP	300.0	197.00	HORIZONTAL
80.540000	34.40	11.4	40.0	5.6	QP	300.0	197.00	HORIZONTAL
521.800000	36.70	20.7	46.0	9.3	QP	100.0	140.00	HORIZONTAL
648.150000	41.30	23.4	46.0	4.7	QP	100.0	140.00	HORIZONTAL
729.790000	37.40	23.9	46.0	8.6	QP	100.0	210.00	HORIZONTAL
930.020000	36.70	25.5	46.0	9.3	QP	300.0	229.00	HORIZONTAL

SCAN TABLE: "test Field(30M-1G)QP"

Short Description:			Field Strength(30M-1G)			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562 10

**MEASUREMENT RESULT:**

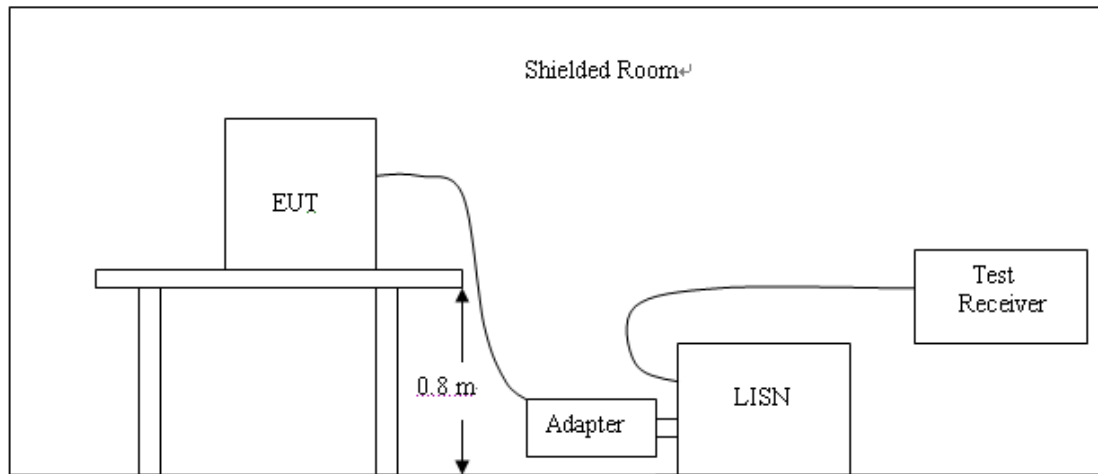
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
45.550000	27.20	12.6	40.0	12.8	QP	300.0	158.00	VERTICAL
70.820000	28.50	10.7	40.0	11.5	QP	300.0	58.00	VERTICAL
274.920000	40.00	13.0	46.0	6.0	QP	100.0	209.00	VERTICAL
300.200000	40.00	13.8	46.0	6.0	QP	100.0	209.00	VERTICAL
325.470000	36.00	15.6	46.0	10.0	QP	100.0	209.00	VERTICAL
453.760000	36.10	20.1	46.0	9.9	QP	100.0	209.00	VERTICAL

Remark:

- (1) Measuring frequencies from 30 MHz to the 1 GHz.
- (2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (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 EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz
- (5) Radiated emission test above 1GHz up to 2GHz was verified, and no any emission was found except system noise floor.

4.2. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
- 2 Support equipment, if needed, was placed as per ANSI C63.4.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4 The EUT received DC6V power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

Conducted Power Line Emission Limit

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

Frequency (MHz)	Maximum RF Line Voltage (dBµV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

TEST RESULTS

Owing to the DC operation of EUT, this test item is not performed.

5. Test Setup Photos of the EUT



6. External and Internal Photos of the EUT

External Photos



Internal Photos



.....End of Report.....

