Report No.: GZ11041190-2

TEST REPORT

Applicant Name & Address	:	Hong Kong China Electric Manufacture Co., Ltd 12/F Mongkok Harbour Centre, 638 Shanghai Street, Hong Kong
Manufacturing Site	:	Zhongshan Kong Luen Electrical Appliance Science And Technology Development Zone, Ming Zhong Town, Zhong Shan City

Sample Description

Product	:	Ceiling suspended fan
Model No.	:	DCM70-5B/2L
Electrical Rating	:	120V, 60Hz, Class I
FCC ID	:	ZJF-DCM70-5B-2L

Date Received	:	25 April 2011
Date Test Conducted	:	07 May 2011 to 09 May 2011
Test standards	:	**FCC Part 15, Subpart B:2010**
Test Result	:	Pass
Conclusion	:	The submitted samples complied with the above rules/standards.
Remark	:	None.

**********End of Page**********

Prepared and Checked By:

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Approved By:

Signature

Carrie Chen
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14 July 2011 ***Date***

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1 TEST RESULTS SUMMARY

Classification of EUT: Class B

Test Item	Standard	Result
Conducted Emission	FCC Part 15, Subpart B: 2010	Pass
Radiated Emission	FCC Part 15, Subpart B: 2010	Pass

Remark: 1. The symbol "N/A" in above table means Not Applicable.
2. When determining the test results, measurement uncertainty of tests has been considered.

2 Test Results Conclusion
(with Justification)

RE: EMC Testing Pursuant to FCC Part 15, Subpart B: 2010 Performed On the Ceiling suspended fan, Model: DCM70-5B/2L.

We tested the Ceiling suspended fan, Model: DCM70-5B/2L, to determine if it was in compliance with the relevant FCC rules as marked on the Test Results Summary. We found that the unit met the requirement of FCC Part 15, Subpart B: 2010 when tested as received. The worst case's test data was presented in this test report. Test items Conducted Emission and Radiated Emission were subcontracted.

The Equipment Under Test (EUT) is Ceiling suspended fan, model: DCM70-5B/2L. It is controlled by a controller, the controller is an intentional radiator using 315MHz frequency.

Antenna Type: Integral wire antenna.

The controller option of this receiver is subject to Certification procedure.

The data on the below test result table lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

According 15.107, the worst case conducted emission at 0.390MHz and 0.334 MHz

Judgement: Passed by -0.5 dB

According 15.109, the worst case radiated emission at 54.670 MHz
Judgement: Passed by -3.9 dB

The production units are required to conform to the initial sample as received when the units are placed on the market.

3 LABORATORY MEASUREMENTS

Configuration Information

Equipment Under Test (EUT):	Ceiling suspended fan
Model:	DCM70-5B/2L
Serial No.	Not Labelled
Support Equipment:	A controller
Rated Voltage:	120V/60Hz
Condition of Environment:	Temperature : 15~35°C Relative Humidity: 35~60% Atmosphere Pressure 86~106kPa

Notes:

1. EUT Grounding

The unit was grounded as normally used.

2. Test Environment

If ambient levels of emissions exceed the appropriate limit, the following steps were taken to assure compliance. First, the measurement bandwidth was reduced, if this did not affect the peak readings. Such a reduction can allow much closer examination of emissions close to local ambient signals. Second, the antenna could be brought closer to the EUT. Finally, in severe cases, testing was re-performed at night or other times when the offending signal was off the air. The measurements were made at nominal room temperature ($25^{o}C \pm 10^{o}C$).

3. Test Site

Conducted Emission test and Radiated Emission test were subcontracted to Intertek Testing Services Shenzhen ltd. Kejiyuan Branch and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District Shenzhen, P.R.China. This test facility and site measurement data have been fully placed on file with File Number 242492

4. Test Platform

Radiated emission test was made on 0.8m high, 1m x 1.5m wide non-conductive platform. Conducted emission test was made on 0.8m high non-metallic table above earthed ground plane (Ground Reference Plane). The vertical conducting plane or wall of a screened room shall be located 40 cm to the rear of the EUT. All other surfaces of tabletop EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

5. Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

4 TEST RESULTS

4.1 Conducted Emission Test

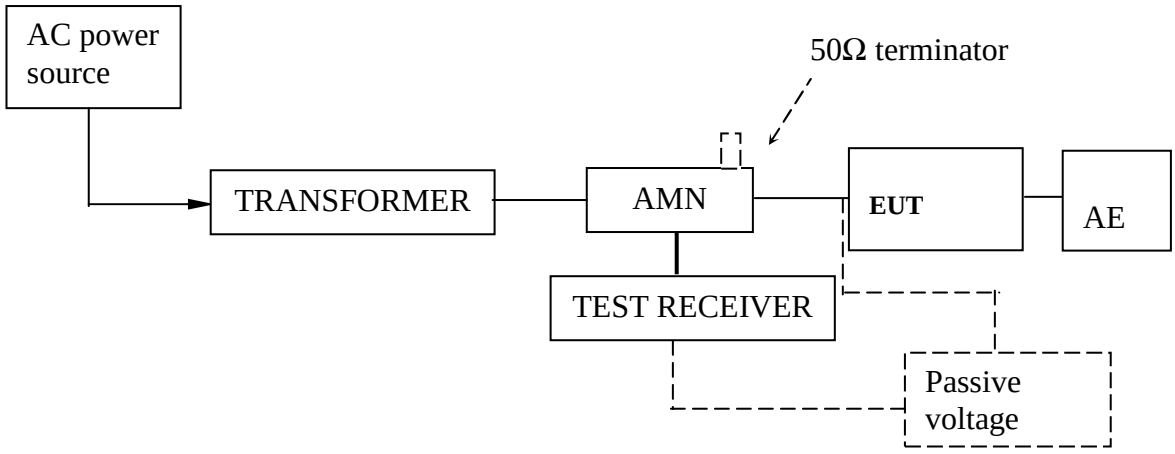
Date of test: 09 May 2011

Test Result: Pass

4.1.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer	Serial No.	Cal. Date	Due Date
SZ185-02	EMI Test Receiver	ESCI	R&S	100692	12-Nov-10	12-Nov-11
SZ187-01	LISN	ENV216	R&S	100072	12-Nov-10	12-Nov-11
SZ066-01	Isolation Transformer	ISO TRAN	Erika Fiedler OHG	89	11-Jan-11	11-Jan-12
SZ067-02	Matching Pad	RAM	R&S	101056	08-Mar-11	08-Mar-12
SZ062-09	RF Cable	RG58/AU	MIZU		/	/
SZ188-03	Shielding Room	ETS	RFD-100	4100	16-Sep-10	16-Sep-11

4.1.2 Block Diagram of Test Setup



4.1.3 Test Setup and Procedure

Test was performed according to ANSI C63.4: 2003. The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provides a 50Ω linear impedance Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The vertical conducting plane or wall of a screened room shall be located 40 cm to the rear of the EUT. All other surfaces of tabletop EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs The table-top EUT was placed on a 0.8m high non-metallic table above earthed ground plane(Ground Reference Plane).And for floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

The bandwidth of test receiver was set at 9 kHz. The frequency range from 150 kHz to 30MHz was checked.

4.1.4 Test Data

At main terminal: Pass

Operation Mode: fan on

L line:

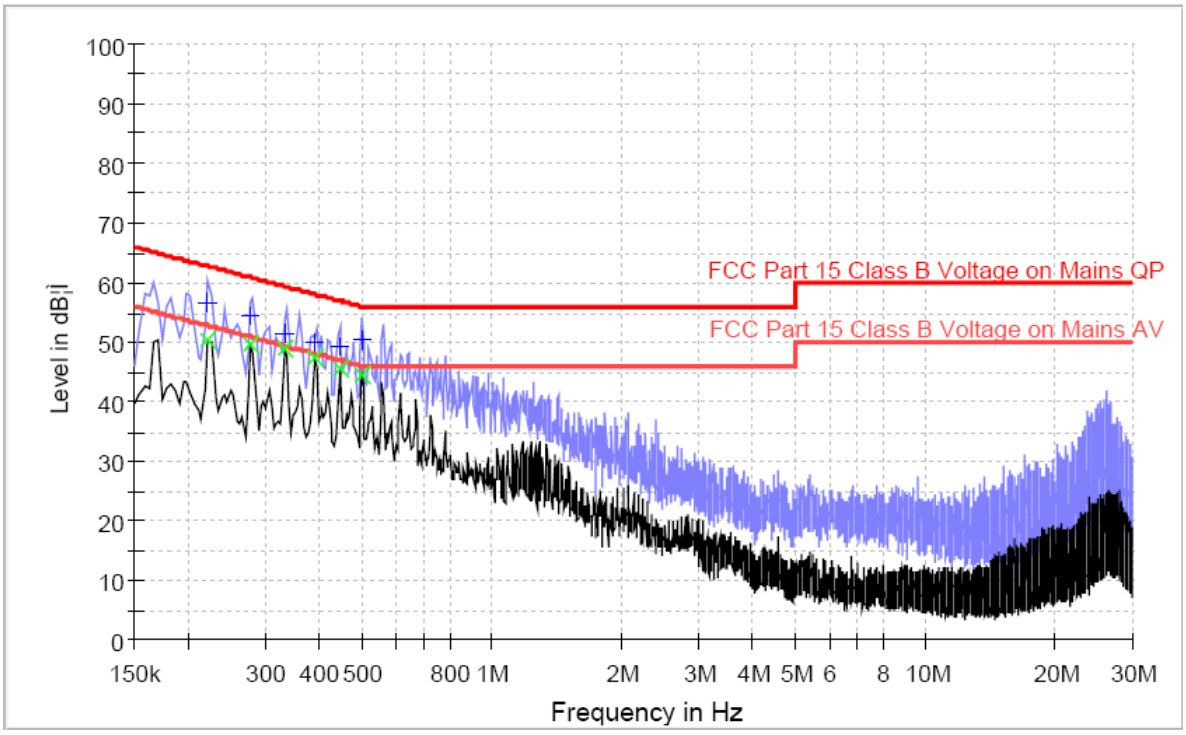
Frequency	Quasi-Peak		Average	
MHz	Disturbance Level dBuV	Permitted limit dBuV	Disturbance Level dBuV	Permitted limit dBuV
0.278000	54.5	60.9	49.4	50.9
0.334000	51.5	59.4	48.8	49.4
0.390000	50.1	58.1	47.6	48.1
0.446000	49.1	56.9	45.5	46.9

N line:

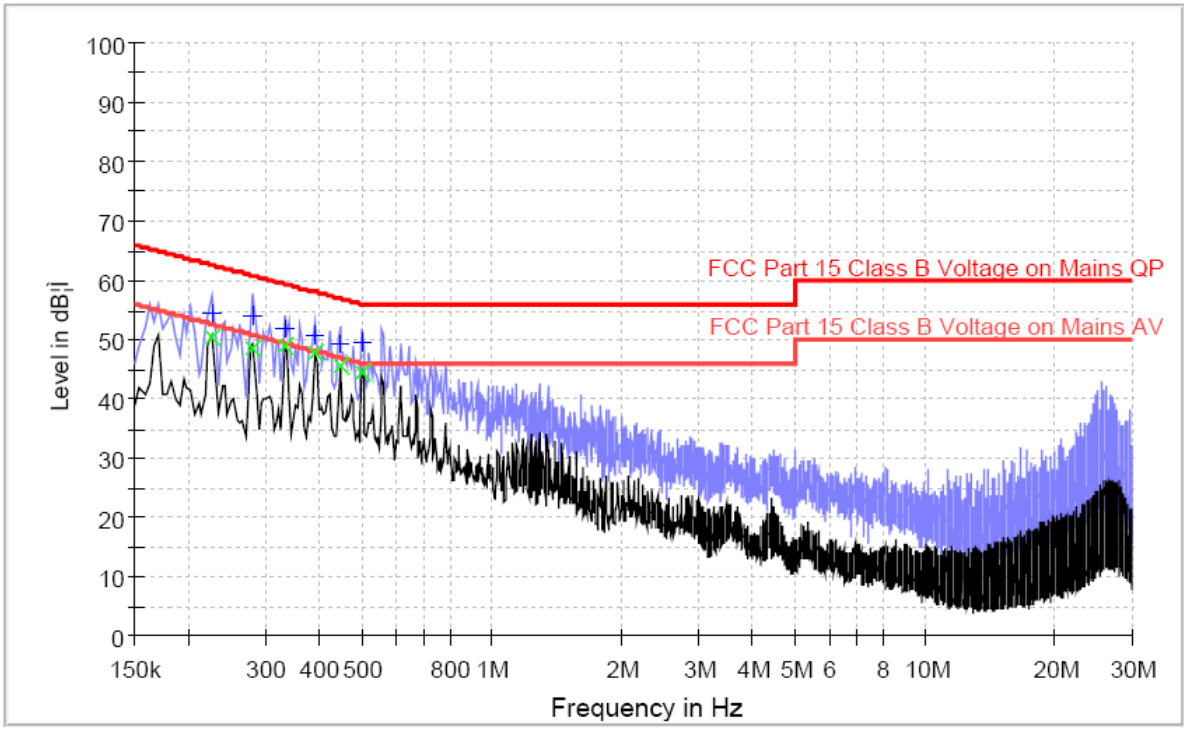
Frequency	Quasi-Peak		Average	
MHz	Disturbance Level dBuV	Permitted limit dBuV	Disturbance Level dBuV	Permitted limit dBuV
0.334000	51.9	59.4	48.9	49.4
0.390000	50.6	58.1	47.6	48.1
0.446000	49.2	56.9	45.4	46.9
0.502000	49.7	56.0	44.5	46.0

4.1.5 Emission Curve

Tested Wire: Live



Tested Wire: Neutral



4.1.6 Measurement Uncertainty

Uncertainty: 1.7 dB at a level of confidence of 95%

4.2 Radiated Emission

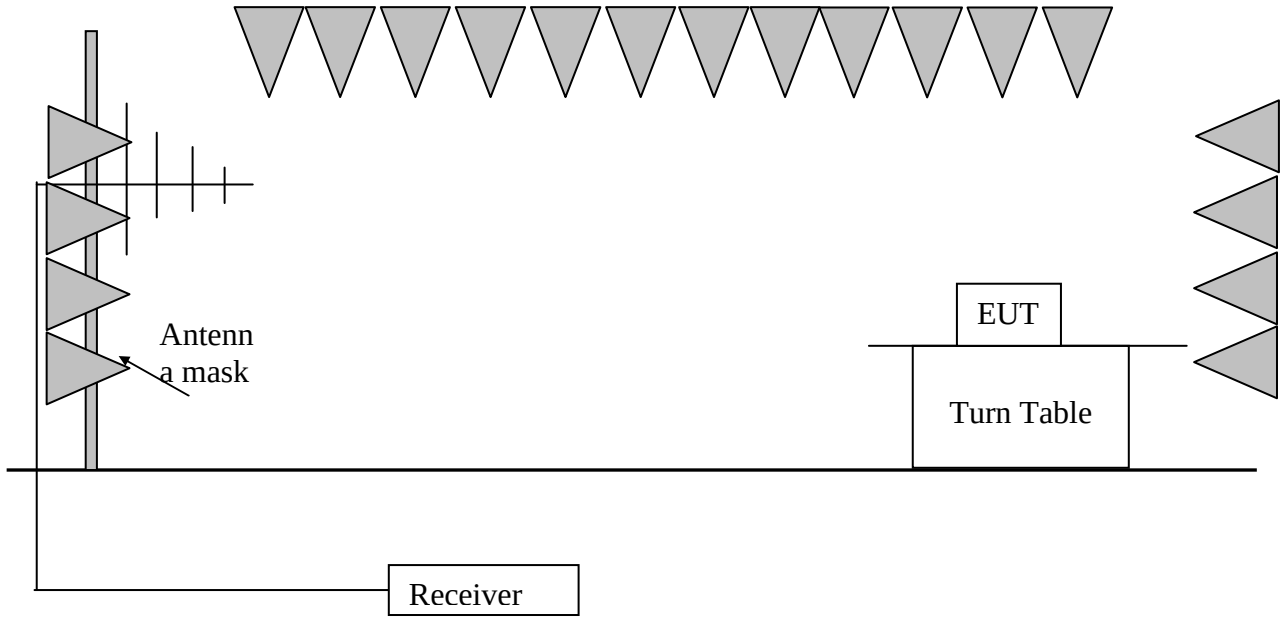
Date of test: 07 May 2011

Test Result: Pass

4.2.1 Used Test Equipment

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	02-Jul-09	02-Jul-11
SZ061-08	Horn Antenna	ETS	3115	00092346	15-Mar-10	15-Sep-11
SZ185-01	EMI Receiver	R&S	ESCI	100547	08-Mar-11	08-Mar-12
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	08-Mar-11	08-Mar-12
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	06-Mar-11	06-Mar-12
SZ062-04	RF Cable	RADIALL	RG 213U	--	25-Mar-11	25-Sep-11
SZ062-06	RF Cable	RADIALL	0.04-26.5GHz	--	16-Sep-10	16-Sep-11

4.2.2 Block Diagram of Test Setup



4.2.3 Field Strength Calculation

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

FS = RA + AF + CF - AG - AV
where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:
FS = RR + LF
where FS = Field Strength in dBμV/m
RR = RA - AG - AV in dBμV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV/m
AF = 7.4 dB RR = 18.0 dBμV
CF = 1.6 dB LF = 9.0 dB
AG = 29.0 dB
AV = 5.0 dB
FS = RR + LF
FS = 18 + 9 = 27 dBμV/m

Level in μV/m = Common Antilogarithm [(27 dBμV/m)/20] = 22.4 μV/m

4.2.4 Test Setup and Procedure

The measurement was applied in a 3 m semi-anechoic chamber. The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mask. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

Broadband antenna was used as receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2003 requirement during radiated test. The bandwidth setting on R&S Test Receiver was 120 kHz below 1000MHz, and it was 1MHz above 1000MHz. The frequency range from 30MHz to 2000MHz was checked

4.2.5 Test Data

Radiated Emissions
Pursuant to FCC 15.109: Emissions Requirement: 30MHz-1GHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (-dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	31.455	4.8	-	18.3	-	23.1	40.0	-16.9
Horizontal	37.275	4.9	-	14.7	-	19.6	40.0	-20.4
Horizontal	53.765	8.5	-	8.7	-	17.2	40.0	-22.8
Vertical	30.208	15.3	-	18.9	-	34.2	40.0	-5.8
Vertical	36.790	17.7	-	15.1	-	32.8	40.0	-7.2
Vertical	54.670	27.5	-	8.6	-	36.1	40.0	-3.9

1GHz-2GHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Average Factor (-dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	1326.480	38.9	36.9	24.4	-	26.4	54	-27.6
Horizontal	1578.251	40.8	36.4	25.3	-	29.7	54	-24.3
Horizontal	1745.657	40.2	36.5	26.5	-	30.2	54	-23.8
Vertical	1136.454	38.0	36.9	24.3	-	25.4	54	-28.6
Vertical	1255.112	38.9	36.9	24.4	-	26.4	54	-27.6
Vertical	1289.145	39.2	36.9	24.4	-	26.7	54	-27.3

Notes:
1. At frequencies equal to or less than 1000MHz, quasi-peak detector was used, Above 1000MHz, average and peak detectors were used.

2. All measurements were made at 3 meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

4.2.6 Measurement uncertainty

Uncertainty: 4.8 dB in the frequency range of 30-2000 MHz at a level of confidence of 95%

5 Appendix III - Document List

Exhibit type	File Description	Filename
Test Report	Test Report	GZ11041190-2(receiver).pdf
Block Diagram	Block Diagram	Block Diagram.pdf
Schematics for lamp part	Circuit Diagram-lamp	Electric circuit-lamp.pdf
Schematics for motor part	Circuit Diagram-motor	Electric circuit-motor.pdf
Operation Description	Technical Description	Technical Description.pdf
ID Label/Location	Label Artwork and Location	Label and Location.pdf
User Manual	User Manual	User Manual.pdf
Cover Letter	Letter of Agency	Letter of Agency.pdf
731 Form	731 Form	731 Form.pdf
External photos	External photos	External photos.pdf
Internal photos	Internal photos	Internal photos.pdf
TCB agreement	TCB agreement	TCB agreement.pdf
Test Setup Photos (Conducted Emission)	Test Setup Photos (Conducted Emission)	Test Setup Photos (Conducted Emission).pdf
Test Setup Photos (Radiated Emission)	Test Setup Photos (Radiated Emission)	Test Setup Photos (Radiated Emission).pdf

6 Appendix IIV - Nameplate

FCC LABELLING AND
INSTRUCTION MANUAL REQUIREMENTS

Devices subject to FCC Part 15, Subpart B: 2010 verification must be labeled with the following statement. The label can be affixed at any space external to the product except the battery door or detachable parts. If the label too small to hold the statement, this statement can be written into instruction manual.

> **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.**

In addition, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

> **Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**

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 instructions, may cause harmful interference to radio communications. 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.**