NVLAP LAB CODE 200707-0

FCC PART 18
EMI MEASUREMENT AND TEST REPORT

For

Whirlpool Microwave Products Development Ltd

16/F, Paliburg Plaza, 68 Ye Wo Street, Causeway Bay, Hong Kong

FCC ID: PR4MH1170X

This Report Concerns:	Equipment Type:
☒ Class II permissive change	Microwave Oven

Test Engineer:	Simon Mo simon mo
Report Number:	RSZ07030851
Test Date:	2007-03-20 to 2007-04-13
Report Date:	2007-4-16
Reviewed By:	EMC Manager: Boni Baniqued
Prepared By:	Bay Area Compliance Laboratory Corp. (Shenzhen). 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong,China Tel: +86-755-33320018 Fax: +86-755-33320008

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Whirlpool Microwave Products Development Ltd*'s model: MH1170 series or the "EUT" as referred to in this report is a Microwave Oven which measures approximately 76.0 cm L x 40.0cm W x 45.0cm H, rated input voltage: AC 120 V/60 Hz.

* *The test data gathered are from production sample, serial number: 0703114, provided by the manufacturer, we received the EUT on 2007-03-08*

Objective

The following test report is prepared on behalf of *Whirlpool Microwave Products Development Ltd* in accordance with Part 2, Subpart J, and Part 18, Subparts A, B and C of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine compliance with FCC Part 18 limits.

This is the C2PC application of the device. The difference between the original device and the current one is as follows:

HV Transformer	Original	New
Manufacturer	Eledex	DPC
Model	EDX-JK1013A	DW-1000

For the changes made to the device, conducted emission testing and Radiated emission testing were performed.

The new transformer information:

Manufacturer: DIGITAL POWER COMMUNICATIONS CO., LTD
Model: DW-1000; Input: 120V/60Hz

Related Submittal(s)/Grant(s)

This is a C2PC application. The original application was granted on 200512-2.

Test Methodology

All measurements contained in this report were conducted with MP-5, FCC Methods of Measurements of Radio Noise Emissions from ISM Equipment, February 1986. All measurements were performed at Bay Area Compliance Laboratory Corporation. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratory Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratory Corp. (Shenzhen). has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corp. (Shenzhen). is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm

External Cable List and Details

Cable Description	Length (M)	From/Port	To
Unshielded Undetachable AC Cable	1.0	EUT	AC Power

OPERATING CONDITION/TEST CONFIGURATION

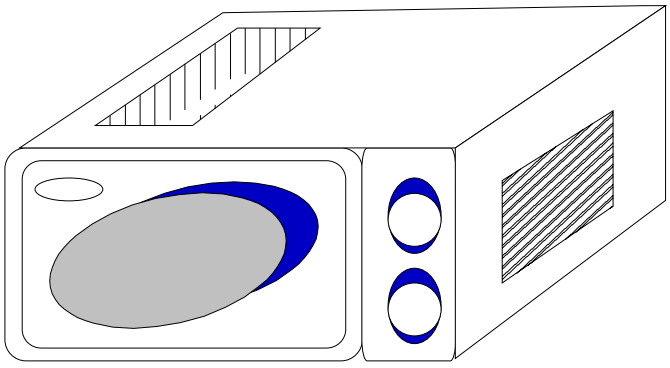
Justification

The EUT was provided for tests as a stand-alone device. It was prepared for testing in accordance with the manufacturer's instructions. The EUT was operated at maximum (continuous) RF output power. The loads consisted of water in a glass beaker in the amounts specified in the test procedure.

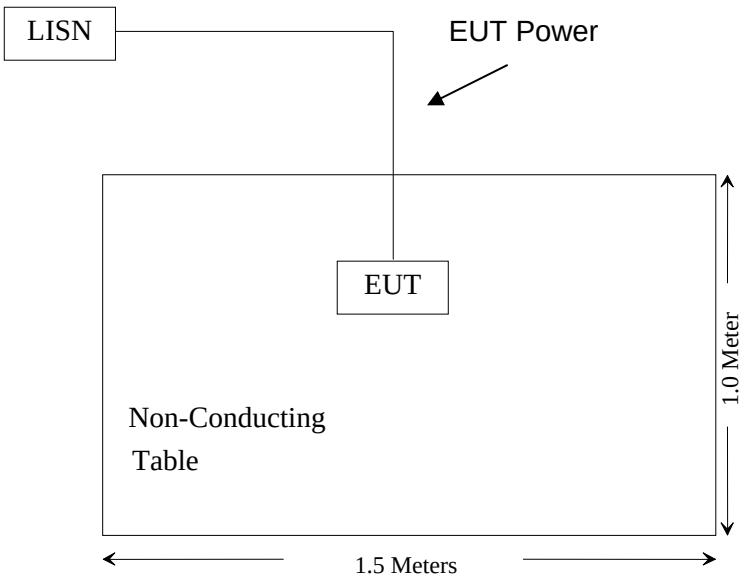
Equipment Modifications

Bay Area Compliance Laboratory Corp. (Shenzhen). has not done any modification on the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



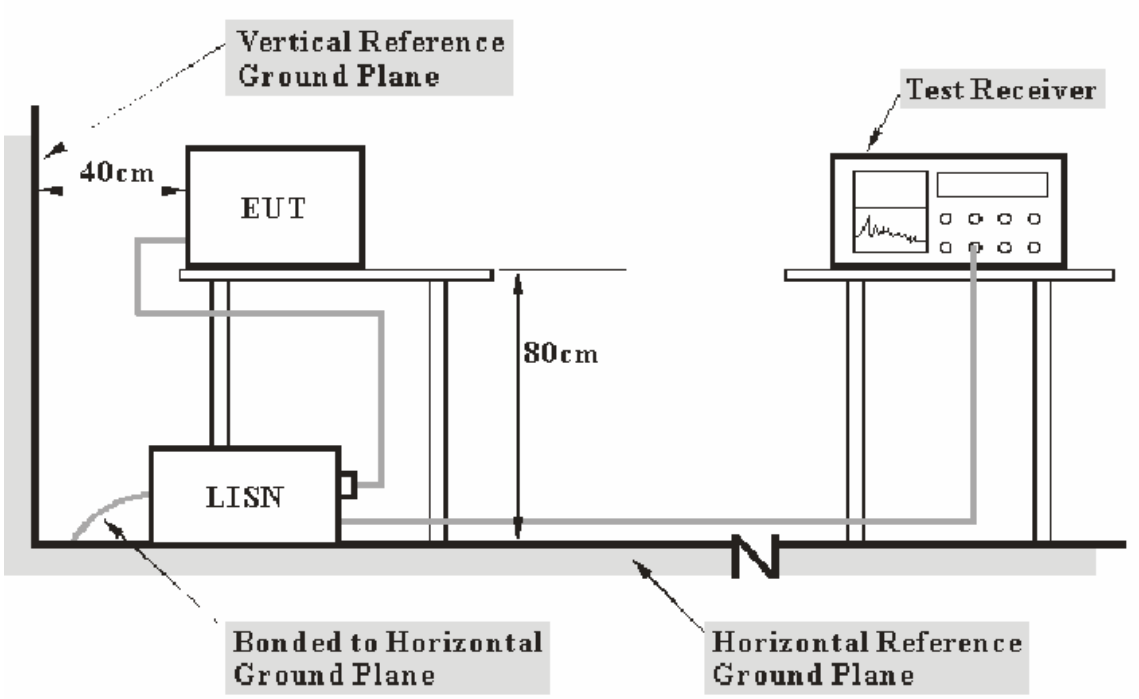
CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen). is ±2.4 dB.

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per MP-5: 1986 measurement procedure. Specification used was with the FCC Part 18.

The EUT was connected to a 120 VAC/ 60Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***IF B/W***
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2007-03-20	2008-03-19
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2007-03-01	2008-03-01

***** Com-Power's LISN were used as the supporting equipment.
*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen). attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the EUT power cord was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC PART 18, with the worst margin reading of:

4.10 dB at **1.680 MHz** in the **Live** conductor mode.

Test Data

Environmental Conditions

Temperature:	25° C
Relative Humidity:	54%
ATM Pressure:	1000mbar

Testing was performed by Simon Mo on 2007-03-20.

Test mode: MAX Power

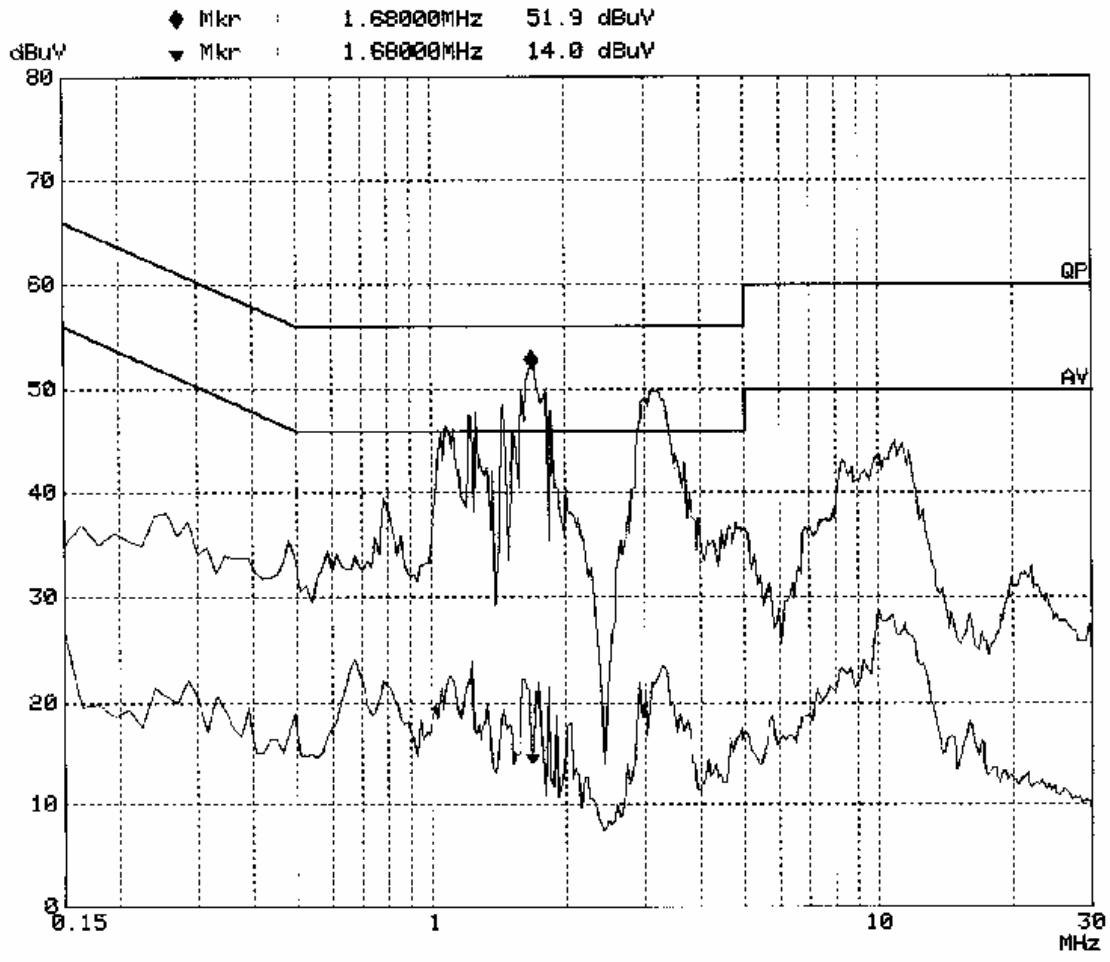
LINE CONDUCTED EMISSIONS				FCC PART 18	
Frequency (MHz)	**Amplitude (dBµV)**	**Detector (QP/AV)**	**Phase (Live/Neutral)**	**Limit (dBµV)**	**Margin (dB)**
1.680	51.90	QP	Live	56.00	4.10
1.680	50.80	QP	Neutral	56.00	5.20
3.240	50.00	QP	Live	56.00	6.00
3.060	49.30	QP	Neutral	56.00	6.70
1.035	48.80	QP	Neutral	56.00	7.20
1.215	47.50	QP	Live	56.00	8.50
0.615	46.30	QP	Neutral	56.00	9.70
11.655	47.40	QP	Neutral	60.00	12.60
10.950	45.10	QP	Live	60.00	14.90
0.780	39.40	QP	Live	56.00	16.60
0.360	41.20	QP	Neutral	58.73	17.53
11.655	27.90	AV	Neutral	50.00	22.10
3.060	23.80	AV	Neutral	46.00	22.20
3.240	23.50	AV	Live	46.00	22.50
10.950	26.80	AV	Live	50.00	23.20
0.255	38.00	QP	Live	61.59	23.59
0.780	22.20	AV	Live	46.00	23.80
1.215	21.90	AV	Live	46.00	24.10
1.035	20.60	AV	Neutral	46.00	25.40
0.615	20.40	AV	Neutral	46.00	25.60
0.360	18.60	AV	Neutral	48.73	30.13
0.255	20.70	AV	Live	51.59	30.89
1.680	14.00	AV	Live	46.00	32.00
1.680	13.30	AV	Neutral	46.00	32.70

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

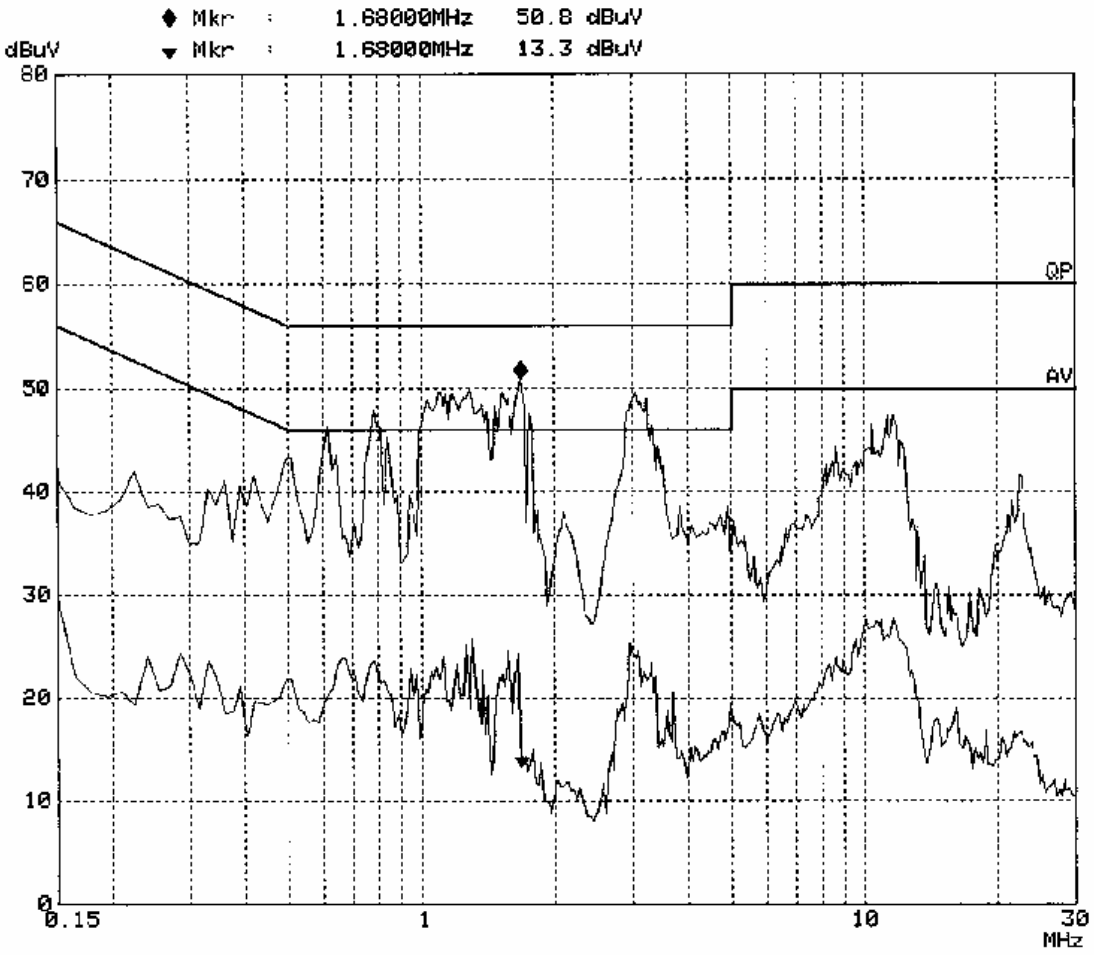
Conduction Emission Test
FCC Part18

EUT:	MICROWAVE OVEN M/N:MH1170 SERIES
Manuf:	WHIRLPOOL
Op Cond:	RUNNING(MAX POWER)
Operator:	SIMON
Test Spec:	AC 120V/60Hz L
Comment:	Temp:25'C Humi:56%
Date:	20. Mar 07 22:19



Conduction Emission Test
FCC PART 18

EUT: MICROWAVE OVEN M/N:MH1170 SERIES
Manuf: WHIRLPOOL
Op Cond: RUNNING(MAX POWER)
Operator: SIMON
Test Spec: AC 120V/60Hz N
Comment: Temp:25'C Humi:56%
Date: 20. Mar 07 22:55



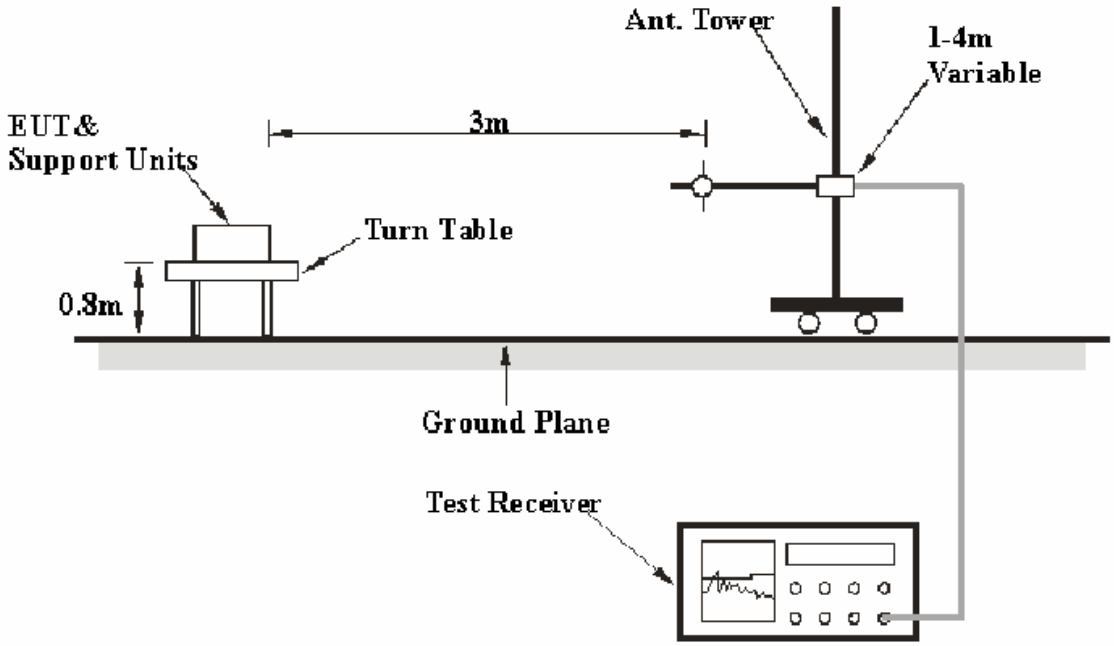
RADIATED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen). is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the FCC MP - 5. The specification used was the FCC part 18 limits.

The EUT was connected to 120 VAC/60 Hz power source.

EMI Test Receiver Setup and Spectrum Analyzer Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***R B/W***	***Video B/W***	***IF B/W***
30 – 1000 MHz	100 kHz	300 kHz	120 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2006-11-15	2007-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2006-08-14	2007-08-14
Sunol Sciences	System Controller	SC99V	041304-1	N/A	N/A

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen). attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the EUT power cord was connected to the AC floor outlet.

Maximizing procedure was performed on the six (6) highest emissions to ensure that the EUT complied with all installation combinations.

The EUT was in the normal (naïve) operating mode during the final qualification test to represent the worst results.

All data was recorded in the Quasi-peak detection mode from 30 MHz to 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit; the equation for margin calculation is as follows:

Margin = Limit –Corr. Ampl.

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 18, with the worst margin reading of:

13.1 dB at **426.715250 MHz** in the **Horizontal** polarization.

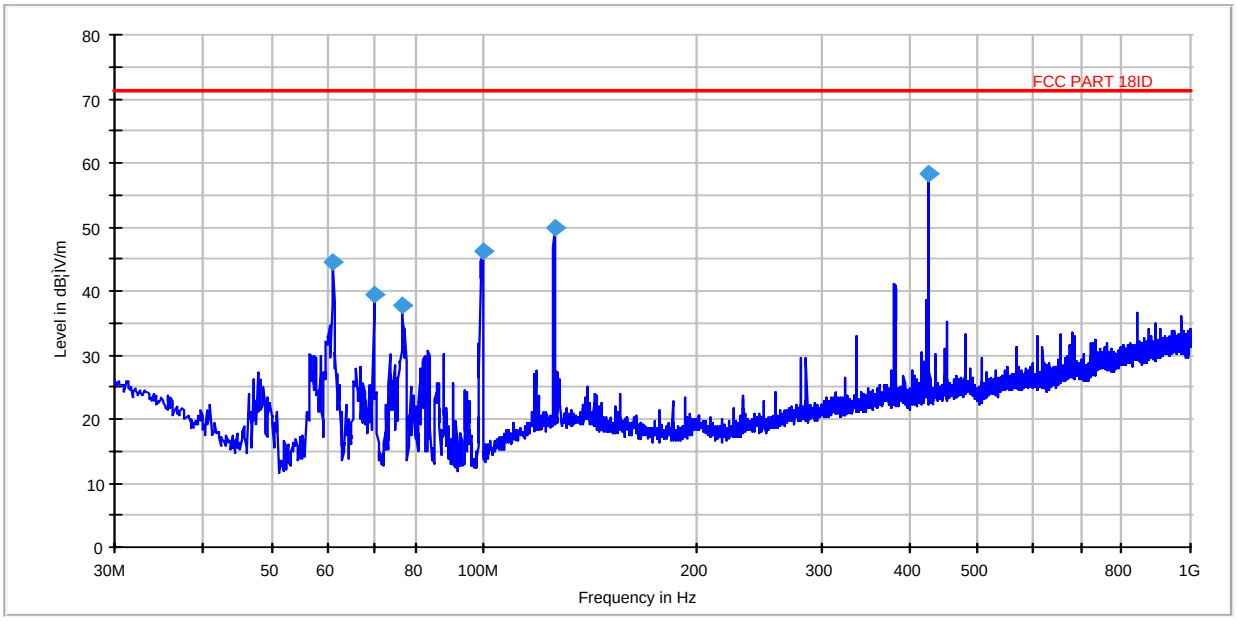
Test Data and Plots

Environmental Conditions

Temperature:	24° C
Relative Humidity:	53%
ATM Pressure:	1009 mbar

Testing was performed by Simon Mo on 2007-04-13.

Test mode: MAX Power



Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)
426.715250	58.2	262.0	H	145.0	-6.8	71.3	13.1
125.891875	49.9	128.0	H	217.0	-10.9	71.3	20.4
99.395312	46.3	100.0	V	311.0	-16.4	71.3	25.0
61.020500	44.6	224.0	V	197.0	-18.1	71.3	26.7
69.726438	39.3	304.0	V	117.0	-17.5	71.3	32.0
76.566750	37.7	334.0	V	126.0	-17.5	71.3	33.6