



FCC PART 15B, CLASS B

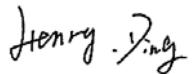
MEASUREMENT AND TEST REPORT

For

ELECTRONICS TECHNOLOGY (DONG GUAN) COMPANY LIMITED

No.161, Xin Min Road, Tong Luo Wei Industrial Zone, Jin Xia, Chang An Town, Dong Guan City, Guang Dong Province, China

FCC ID: ZL9-M75D

Report Type: Original Report	Product Type: MID
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Report Number: <u>RSZ130321008-00A</u>	
Report Date: <u>2013-04-12</u>	
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Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ELECTRONICS TECHNOLOGY (DONG GUAN) COMPANY LIMITED*'s product, model number: *M75Y2L* (*FCC ID: ZL9-M75D*) or the "EUT" as referred to in this report was a *MID*, which was measured approximately: 191.0 mm(L) x 116.5 mm (W) x 11.0 mm (H), rated input voltage: DC 3.7V battery and DC 5V charging from adapter. The highest operating frequency is 1 GHz.

Adapter information

Model: SK02G-0500200U

Input: AC100-240V~ 50/60Hz 0.35A max

Output: DC 5.0V 2A

Note: The series product, model M75Y2L, M75D2L, M75Q2L, M75Y2L-BF, M75Q2L-BF, M75Q2L-MF, M75Q2L-TF, M75K2L, M75A2L, M75G2L, M75S2L, SN7006 and 4SPN752QP, they are electrically identical and different in model number due to marketing purposes. Model M75Y2L was selected for fully testing, the detailed information can be referred to the attached product similarity declaration letter that stated and guaranteed by the applicant.

** All measurement and test data in this report was gathered from production sample serial number: 1303083 (Assigned by the BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-03-21.*

Objective

This report is prepared on behalf of *ELECTRONICS TECHNOLOGY (DONG GUAN) COMPANY LIMITED* in accordance with Part 2-Subpart J, Part 15- Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15B, Class B.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submission with FCC ID: ZL9-M75D.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located on 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 Laboratories 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 December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical mode which is provided by manufacturer.

EUT operation mode: Downloading

EUT Exercise Software

“winthrax” exercise software was used for downloading mode testing.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

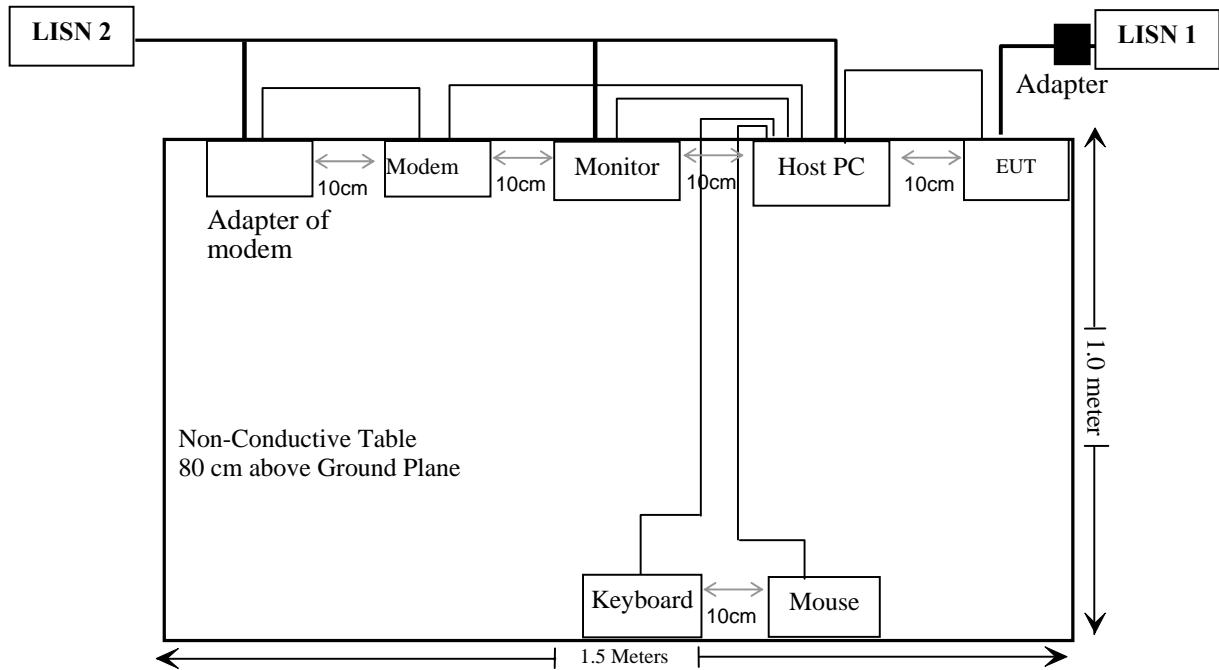
Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL04TY
DELL	Mouse	MOC5UO	G1B0096D
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
AST	Modem	AEM-2100	0293

External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable K/B Cable	1.5	Host PC	Keyboard
Shielded Detachable Mouse Cable	1.5	Host PC	Mouse
Shielded Detachable Serial Cable	1.2	Host PC	Modem
Shielded Detachable VGA Cable	1.5	Host PC	Monitor
Shielded Detachable USB Cable	1.0	Host PC	EUT
Shielded Detachable Power Cable	1.2	EUT	Adapter

Block Diagram of Test Setup

For AC line conducted emissions



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance

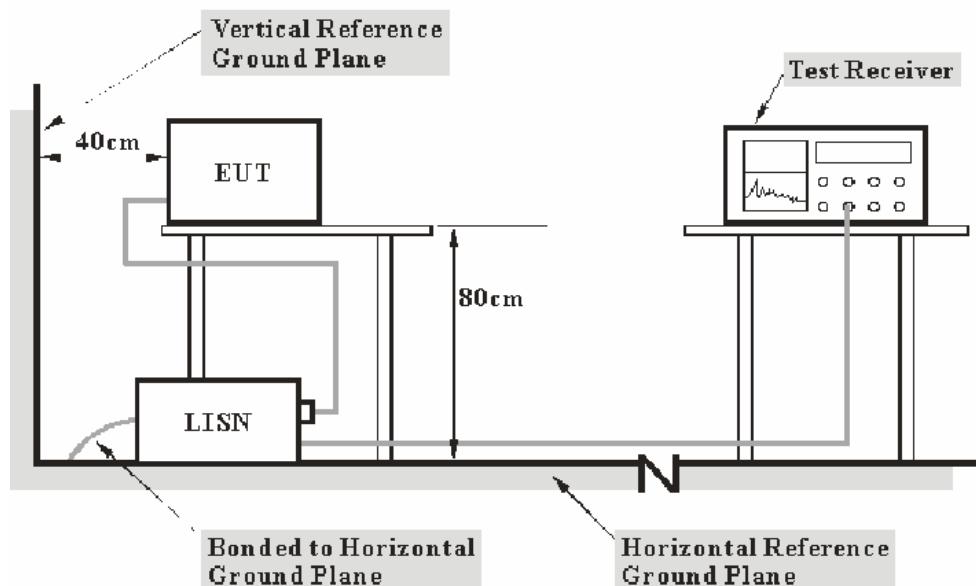
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

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 CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 2.4 dB.(k=2, 95% level of confidence), and the uncertainty will not be taken into consideration for the test data recorded in the report.

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 measurement procedure of EUT setup is according with ANSI C63.4-2009. The related limit was specified in FCC Part 15.107 Class B.

The spacing between the peripherals was 10 cm.

The adapter was connected to an AC 120V/60 Hz 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 Procedure

During the conducted emissions, the adapter was connected to the first LISN, the host PC, monitor and the adapter of modem were connected to the second 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2012-11-24	2013-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2012-08-22	2013-08-21
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2012-08-09	2013-08-09
BACL	CE Test software	BACL-CE	V1.0	-	-

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Pulse Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Pulse Limiter Attenuation}$$

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 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107, with the worst margin reading of:

0.54 dB at 14.415 MHz in the **Neutral** conducted mode for downloading mode

Test Data

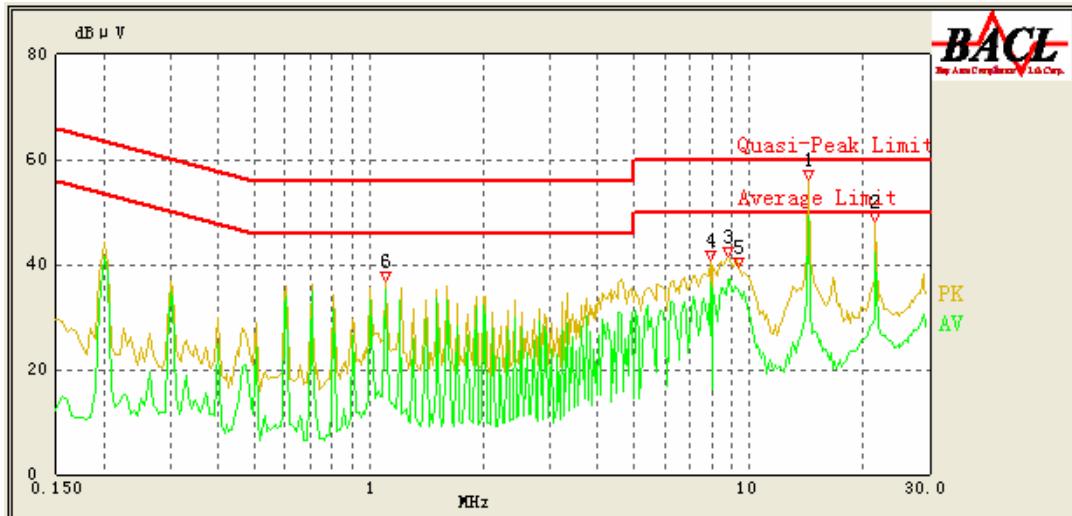
Environmental Conditions

Temperature:	25°C
Relative Humidity:	48%
ATM Pressure:	100.0 kPa

The testing was performed by Henry Ding on 2013-04-09.

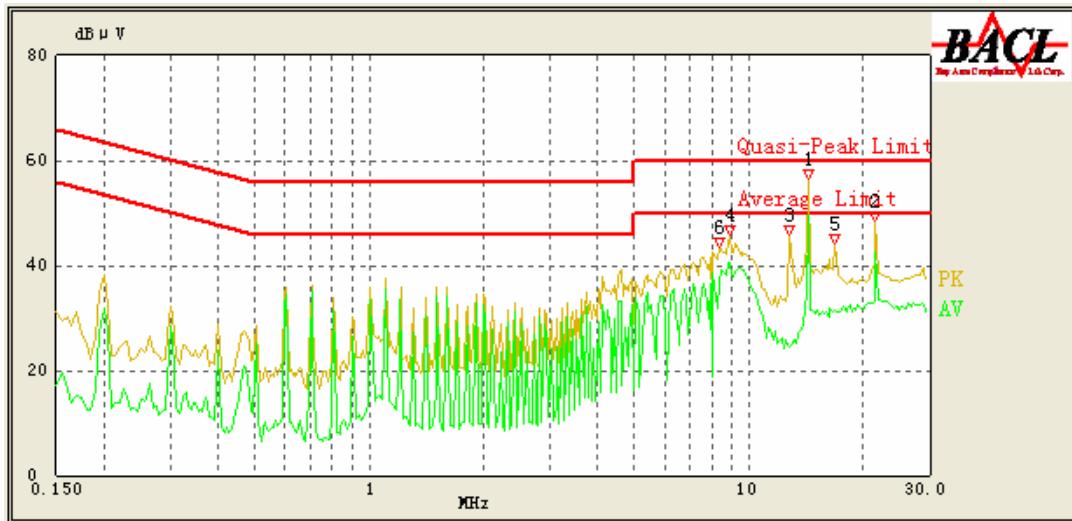
EUT operation mode: Downloading

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)	Detector (PK/ QP/Ave.)
14.415	49.33	10.58	50.00	0.67	Ave.
14.415	53.97	10.58	60.00	6.03	QP
21.600	42.24	10.78	50.00	7.76	Ave.
1.105	35.04	10.20	46.00	10.96	Ave.
8.850	37.14	10.36	50.00	12.86	Ave.
7.940	36.55	10.33	50.00	13.45	Ave.
21.600	46.31	10.78	60.00	13.69	QP
9.355	35.16	10.38	50.00	14.84	Ave.
1.105	35.24	10.20	56.00	20.76	QP
8.845	37.34	10.36	60.00	22.66	QP
7.940	37.02	10.33	60.00	22.98	QP
9.355	36.79	10.38	60.00	23.21	QP

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)	Detector (PK / QP / Ave.)
14.415	49.46	10.56	50.00	0.54	Ave.
14.415	54.49	10.56	60.00	5.51	QP
21.600	42.45	10.68	50.00	7.55	Ave.
8.950	40.43	10.30	50.00	9.57	Ave.
8.345	36.97	10.30	50.00	13.03	Ave.
21.600	46.65	10.68	60.00	13.35	QP
8.950	42.10	10.30	60.00	17.90	QP
16.795	31.58	10.60	50.00	18.42	Ave.
8.345	39.48	10.30	60.00	20.52	QP
12.775	24.44	10.47	50.00	25.56	Ave.
16.890	32.92	10.60	60.00	27.08	QP
12.845	26.17	10.47	60.00	33.83	QP

FCC §15.109 - RADIATED EMISSIONS

Applicable Standard

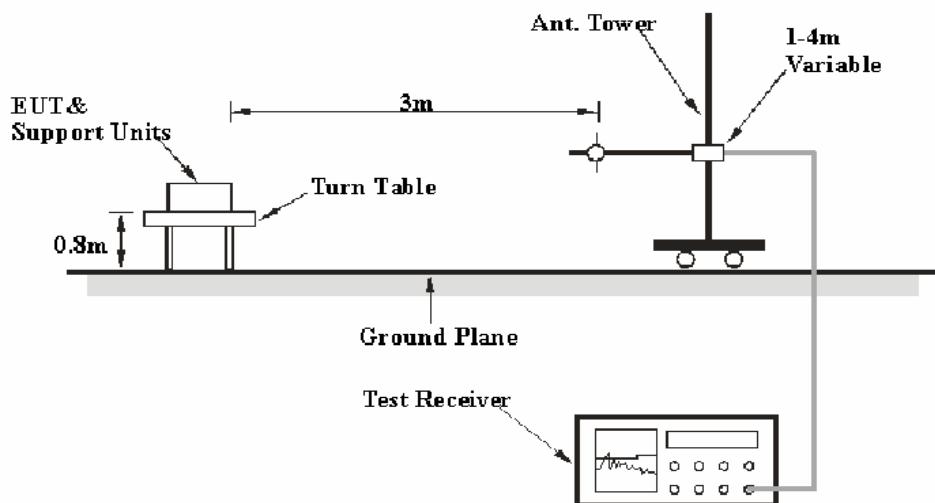
According to FCC §15.109

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 CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB. (k=2, 95% level of confidence), and the uncertainty will not be taken into consideration for the test data recorded in the report.

EUT Setup



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to an AC 120V/60 Hz power source

EMI Test Receiver Setup

The system was investigated from 30 MHz to 5000 MHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

During the radiated emissions, the adapter of EUT, host PC, the monitor and adapter of modem were connected to the AC floor outlet.

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

All data was recorded in the Quasi-peak detection mode from 30 MHz to 1 GHz, Peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2012-11-24	2013-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2012-08-08	2013-08-07
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Mini-Circuits	Amplifier	ZVA-213+	N/A	2012-11-24	2013-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2014-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
R&S	Auto test Software	EMC32	V6.30	-	-

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Amplitude & Margin Calculation

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

$$\text{Correction Factor} = \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.109, with the worst margin reading of:

1.9 dB at 240.000250 MHz in the **Horizontal** polarization for downloading mode

Test Data

Environmental Conditions

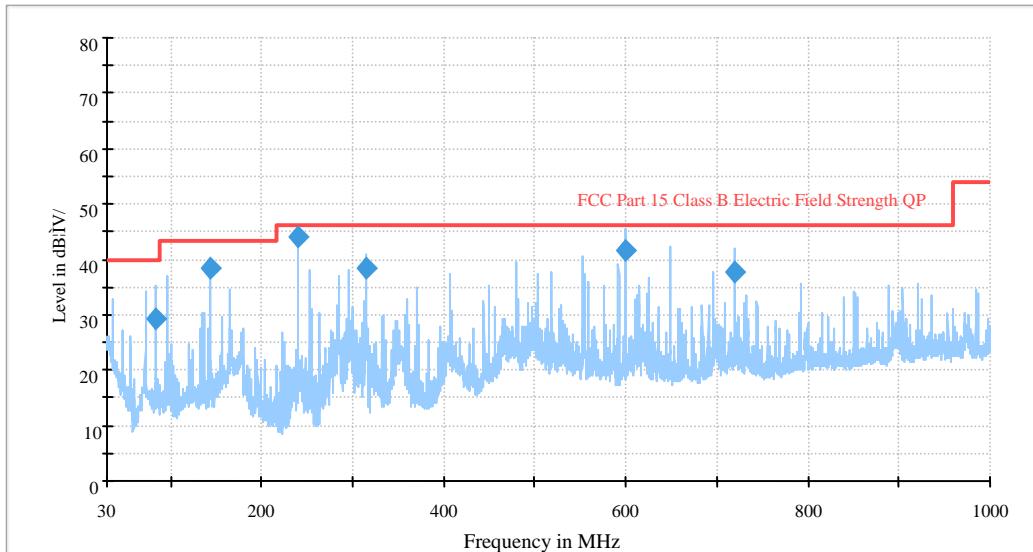
Temperature:	25°C
Relative Humidity:	48%
ATM Pressure:	100.0 kPa

The testing was performed by Henry Ding on 2013-04-09.

EUT operation mode: Downloading Mode

1) 30 MHz~1000 MHz

Auto Test (FCC part 15 Class B)



Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Antenna Height (cm)	Ant. Polarity (H/V)	Turntable Position (degree)	Correction Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
240.000250	44.1	140.0	H	178.0	-15.9	46.0	1.9
600.014600	41.4	206.0	H	263.0	-9.4	46.0	4.6
143.998850	38.5	100.0	V	3.0	-14.5	43.5	5.0
314.659000	38.5	100.0	H	84.0	-13.8	46.0	7.5
720.087600	37.8	140.0	V	47.0	-6.6	46.0	8.2
83.988050	29.3	135.0	V	179.0	-19.9	40.0	10.7

Note:

- 1) Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain
The corrected factor has been input into the transducer of the test software.
- 2) Corrected Amplitude = Meter Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

1-5 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dB μ V/m)	FCC Part 15.109	
	Reading (dB μ V)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dB μ V/m)	Margin (dB)
1861.2	62.11	PK	35	1.1	H	2.63	64.74	74	9.26
1851.2	53.47	PK	81	1.3	V	2.63	56.10	74	17.90
2392.8	47.27	PK	112	1.2	H	6.13	53.40	74	20.60
1861.2	30.43	Ave.	35	1.1	H	2.63	33.06	54	20.94
2392.8	26.88	Ave.	112	1.2	H	6.13	33.01	54	20.99
1851.2	30.27	Ave.	81	1.3	V	2.63	32.90	54	21.10
2372.7	26.21	Ave.	36	1.2	V	6.13	32.34	54	21.66
2372.7	42.93	PK	36	1.2	V	6.13	49.06	74	24.94

Note:

- 1) Corrected Amplitude = Corrected Factor + Reading
- 2) Corrected Factor=Antenna factor (RX) + Cable loss – Amplifier factor
- 3) Margin = Limit - Corrected Amplitude

PRODUCT SIMILARITY DECLARATION



ELECTRONICS TECHNOLOGY(DONG GUAN)COMPANY LIMITED
No.161, Xin Min Road, Tong Luo Wei Industrial Zone, Jin Xia, Chang An Town, Dong Guan City,
Guang Dong Province, China

2013-3-28

Product Similarity Declaration

To Whom It May Concern,

We, ELECTRONICS TECHNOLOGY(DONG GUAN)COMPANY LIMITED hereby declare that our MID, Model Number: M75D2L,M75Q2L,M75Y2L-BF,M75Q2L-BF,M75Q2L-MF,M75Q2L-TF,M75K2L,M75A2L,M75G2L,M75S2L,SN7006, 4SPN752QP are electrically identical with M75Y2L that was certified by BACL. They are only different in model names due to marketing purposes.

Please contact me if you have any question.

Signature:

A handwritten signature in blue ink, appearing to read "Xiaona Liu".

Xiaona Liu
Quality Manager

*******END OF REPORT*******