Lab Code: 200707-0

FCC PART 18
MEASUREMENT AND TEST REPORT

For

Gain International Enterprise Limited

Flat/Room 2006, 20/F, Tung Chun Commercial Centre 438-444, Shanghai Street,

Mongkok, Kowloon, Hong Kong

FCC ID: ZEOPF99BALLAST

Report Type:	**Product Type:**
Original Report	Ballast

Test Engineer:	Phase Zhang
Report Number:	RSZ10120252
Report Date:	2011-03-25
Reviewed By:	Lisa Zhu EMC Engineer
Prepared By:	Bay Area Compliance Laboratories 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 *Gain International Enterprise Limited*'s model: *QT2X32-SC/YD2X32-SC; QT3X32-SC/YD3X32-SC; QT4X32-SC/YD4X32-SC; QT2X59-SC/YD2X59-SC (FCC ID: ZEOPF99BALLAST)*, or the "EUT" as referred to in this report are *BALLASTS*, which measures approximately*:* 24.0 cm (L) x 4.0 cm (W) x 3.0 cm (H) for *QT2X32-SC/YD2X32-SC;* 24.0 cm (L) x 4.0 cm (W) x 3.0 cm (H) for *QT3X32-SC/YD3X32-SC;* 24.0 cm (L) x 4.0 cm (W) x 3.0 cm (H) for *QT4X32-SC/YD4X32-SC;* 24.0 cm (L) x 4.0 cm (W) x 3.0 cm (H) for *QT2X59-SC/YD2X59-SC*, rated input voltage: AC 120V/60Hz.

Note: the series product, model QT2X32-SC/YD2X32-SC; QT3X32-SC/YD3X32-SC; QT4X32-SC/YD4X32-SC; QT2X59-SC/YD2X59-SC are electrically identical, and their differences please refer to the attached delclaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 1012003 (Assigned by BACL, Shenzhen). The EUT was received on 2010-12-02.*

Objective

The following test report is prepared on behalf of *Gain International Enterprise Limited in* accordance with Part 2, Subpart J, and Part 18, Subparts A, B and C of the Federal Communication Commissions rules and regulations.

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

Related Submittal(s)/Grant(s)

No related submittal(s).

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 measurement was performed at Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories 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 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.

Additionally, Bay Area Compliance Laboratories 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/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

N/A

Special Accessories

The special accessories were supplied by Bay Area Compliance Laboratories Corp.

Equipment Modifications

No modifications were made to the unit tested.

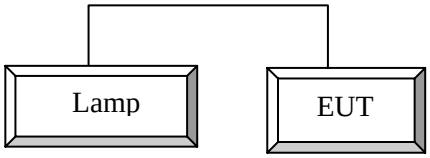
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
N/A	Lamp	N/A	N/A	N/A

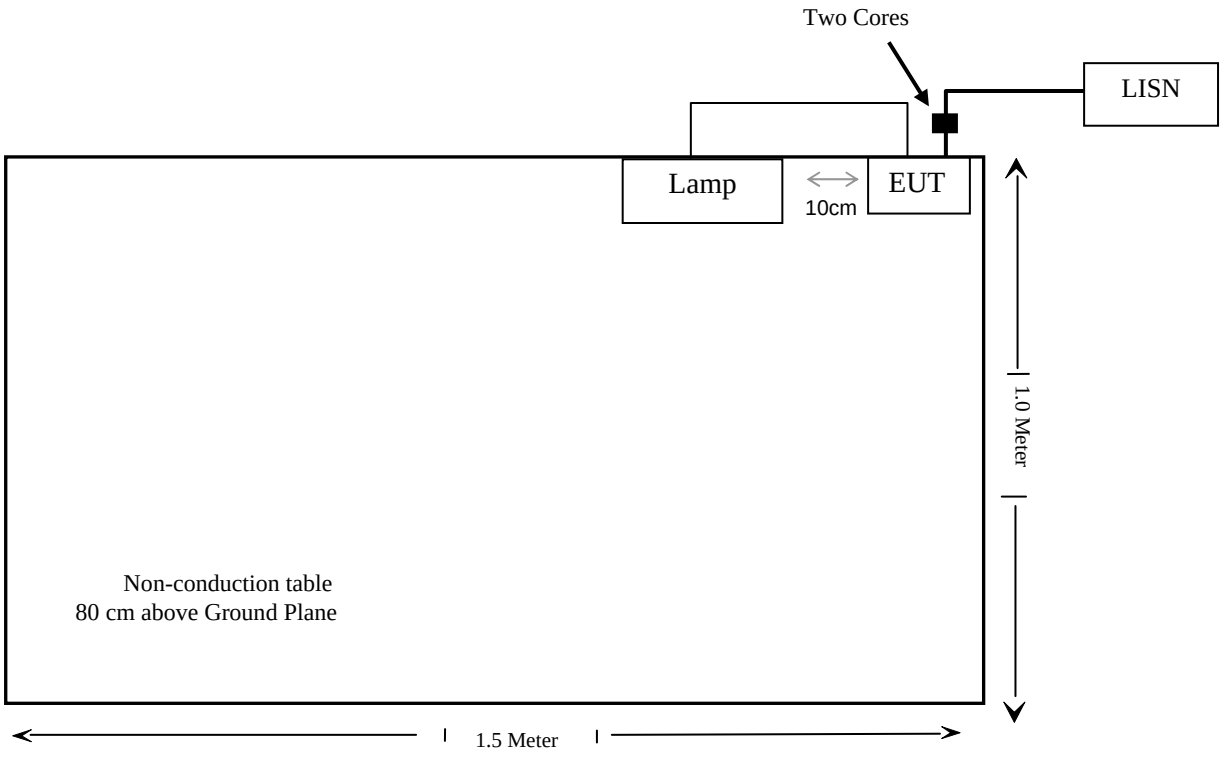
External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Detachable AC Cable (Input)	1.2	EUT	LISN
Unshielded Detachable AC Cable with Two Cores(Output)	0.75	EUT	Lamp

Configuration of Test Setup



Block Diagram of Test Setup



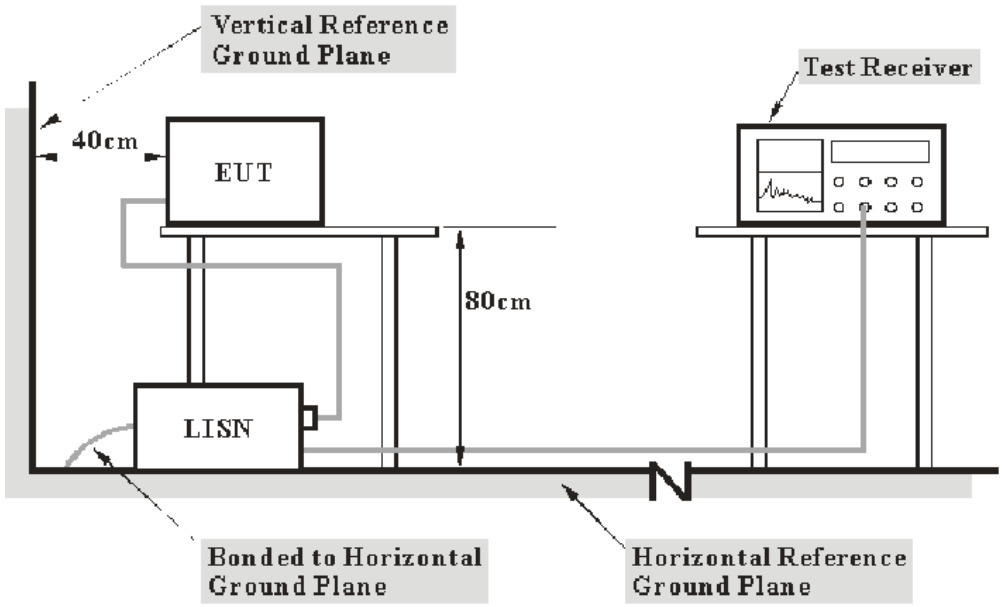
FCC §18.307 - CONDUCTED EMISSIONS

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 Laboratories Corp. is ±2.4 dB (k=2, 95% level of confidence).

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 MP-5: 1986 measurement procedure. Specification used was with the FCC Part 18.307 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 EUT was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 450 kHz to 30 MHz.

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

Frequency Range	***IFBW***
450 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the EUT 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 detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2011-03-03	2012-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-03-09	2012-03-08

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

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:

4.13 dB at **24.130MHz** in the **Line** conductor mode for model **QT2X32-SC/YD2X32-SC**
2.92 dB at **16.170 MHz** in the **Neutral** conductor mode for model **QT3X32-SC/YD3X32-SC**
5.98 dB at **17.450MHz** in the **Neutral** conductor mode for model **QT4X32-SC/YD4X32-SC**
1.61 dB at **14.090 MHz** in the **Line** conductor mode for model **QT2X59-SC/YD2X59-SC**

Test Data

Environmental Conditions

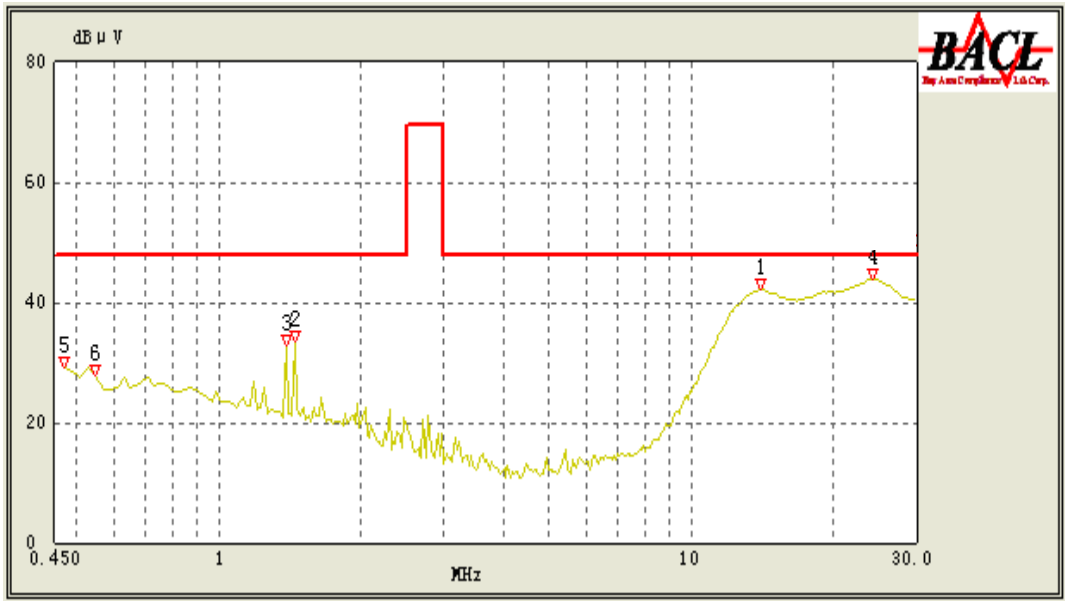
Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

Testing was performed by Phase Zhang on 2011-03-10.

Test Mode: On (Max power)

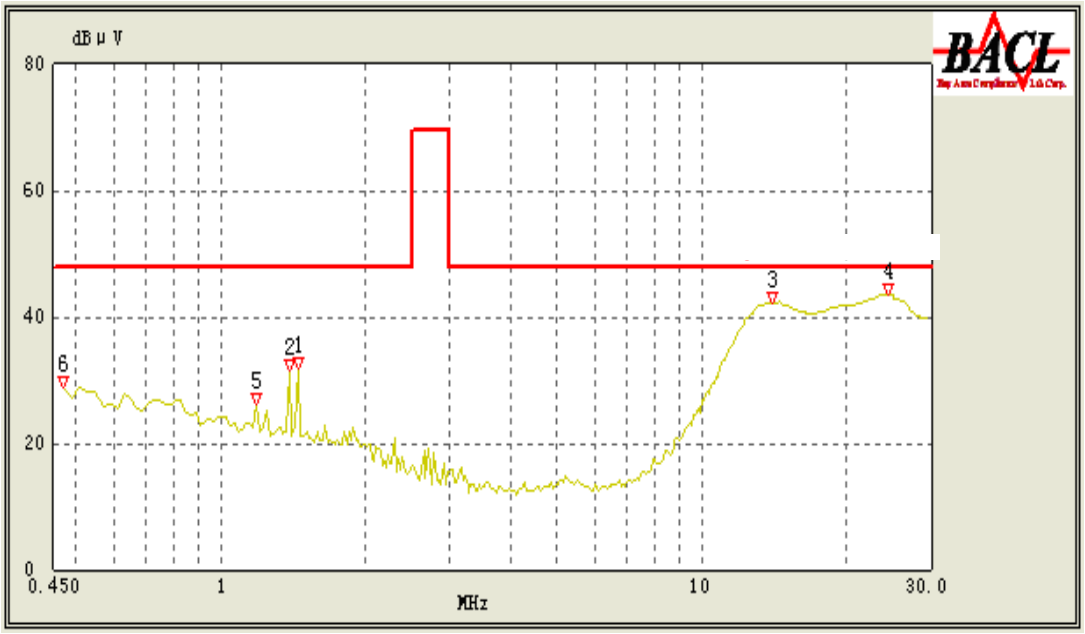
Model: QT2X32-SC/YD2X32-SC

AC 120V/60 Hz, Line:



Frequency (MHz)	Cord. Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)
24.130	43.87	10.10	48.00	4.13
14.010	42.10	10.10	48.00	5.90
1.450	33.39	10.10	48.00	14.61
1.390	32.90	10.10	48.00	15.10
0.470	29.18	10.10	48.00	18.82
0.550	27.72	10.10	48.00	20.28

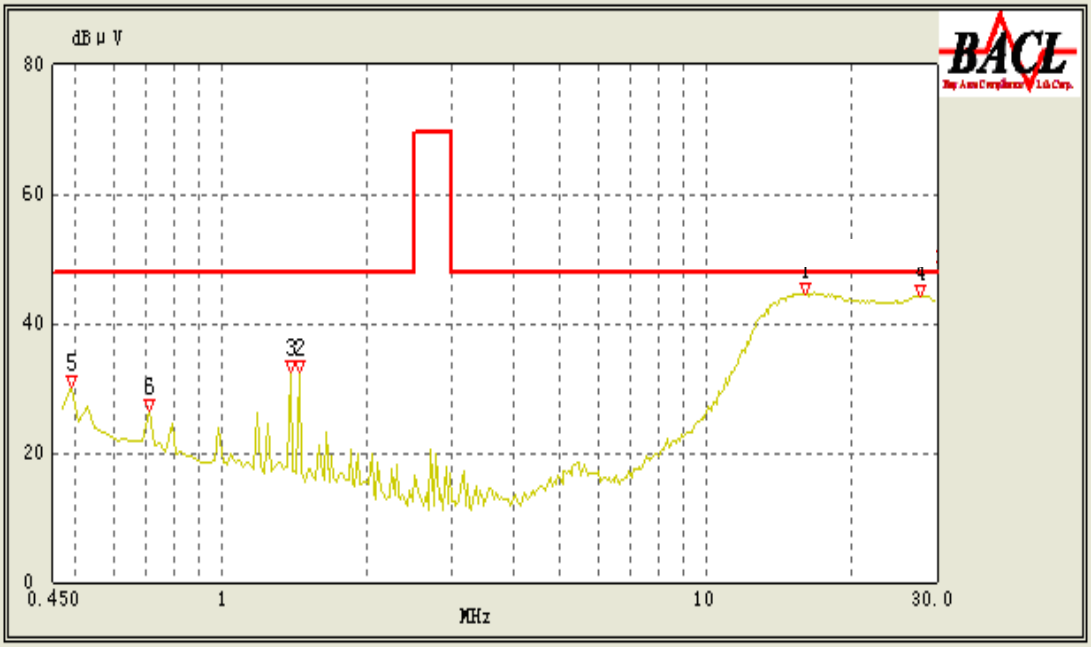
AC 120V/ 60 Hz, Neutral:



Frequency (MHz)	Cord. Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)
24.410	43.68	10.10	48.00	4.32
13.970	42.70	10.10	48.00	5.30
1.450	32.97	10.10	48.00	15.03
1.390	31.84	10.10	48.00	16.16
0.470	29.70	10.10	48.00	18.30
1.190	26.67	10.10	48.00	21.33

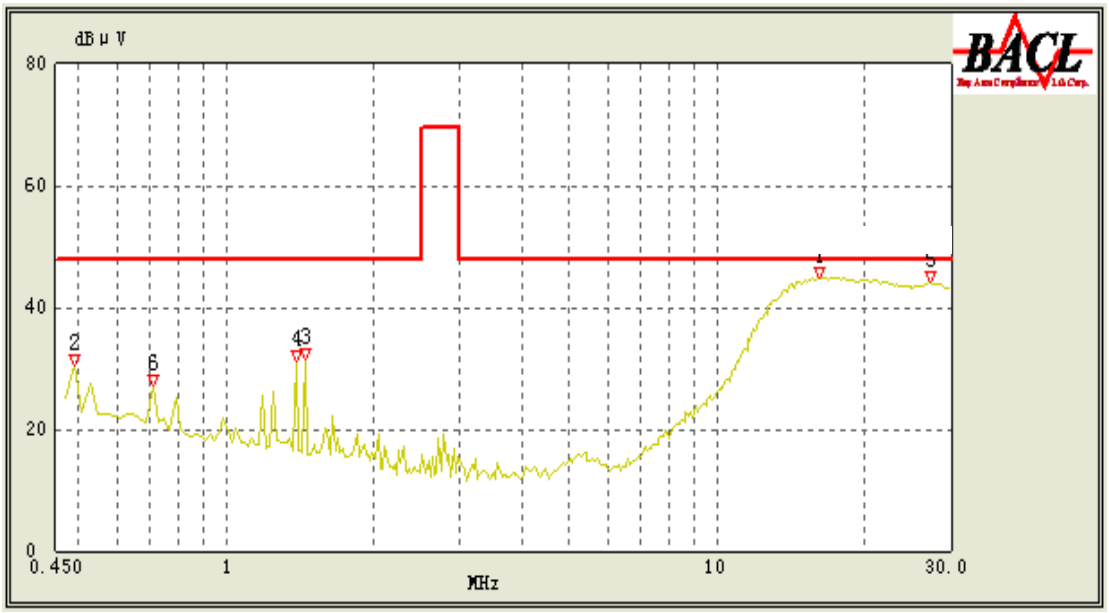
Model: QT3X32-SC/YD3X32-SC

AC 120V/60 Hz, Line:



Frequency (MHz)	Cord. Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)
27.750	44.52	10.10	48.00	3.48
16.110	44.21	10.10	48.00	3.79
1.390	32.19	10.10	48.00	15.81
1.450	32.11	10.10	48.00	15.89
0.490	30.88	10.10	48.00	17.12
0.710	28.04	10.10	48.00	19.96

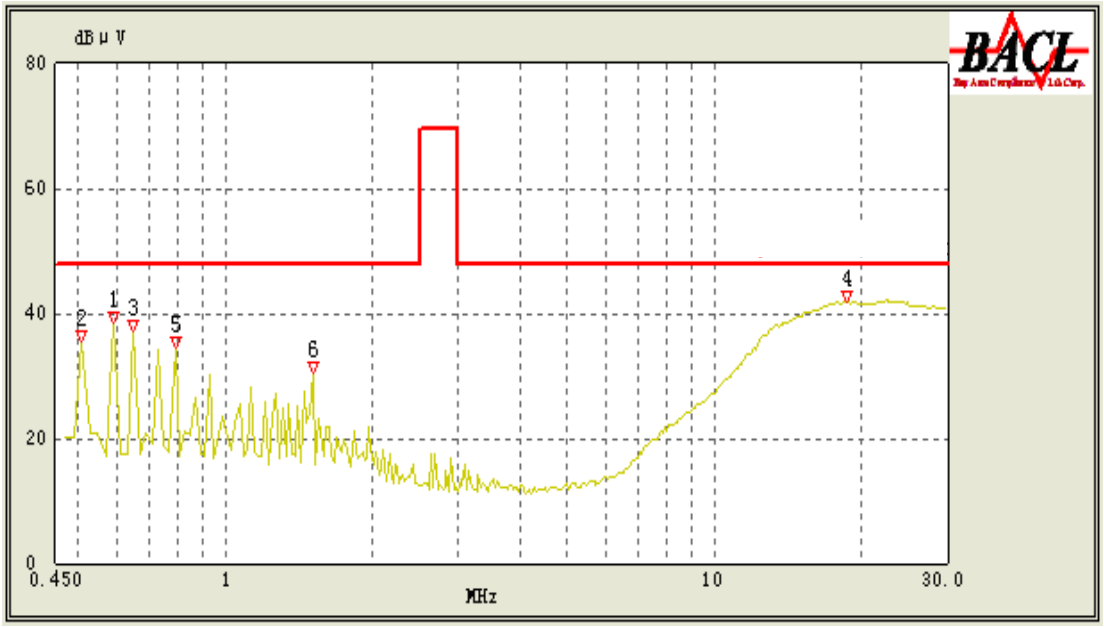
AC 120V/ 60 Hz, Neutral:



Frequency (MHz)	Cord. Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)
16.170	45.08	10.10	48.00	2.92
27.210	44.53	10.10	48.00	3.47
1.450	32.20	10.10	48.00	15.80
1.390	31.74	10.10	48.00	16.26
0.490	30.62	10.10	48.00	17.38
0.710	27.78	10.10	48.00	20.22

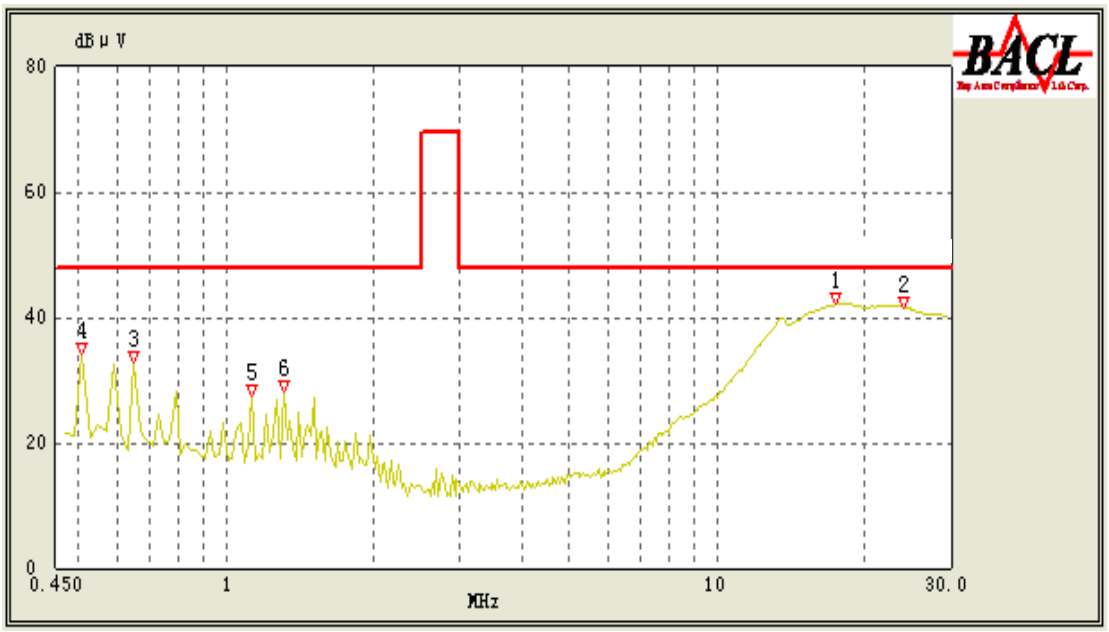
Model: QT4X32-SC/YD4X32-SC

AC 120V/60 Hz, Line:



Frequency (MHz)	Cord. Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)
18.610	41.71	10.10	48.00	6.29
0.590	38.31	10.10	48.00	9.69
0.650	37.29	10.10	48.00	10.71
0.510	35.71	10.10	48.00	12.29
0.790	34.89	10.10	48.00	13.11
1.510	28.35	10.10	48.00	19.65

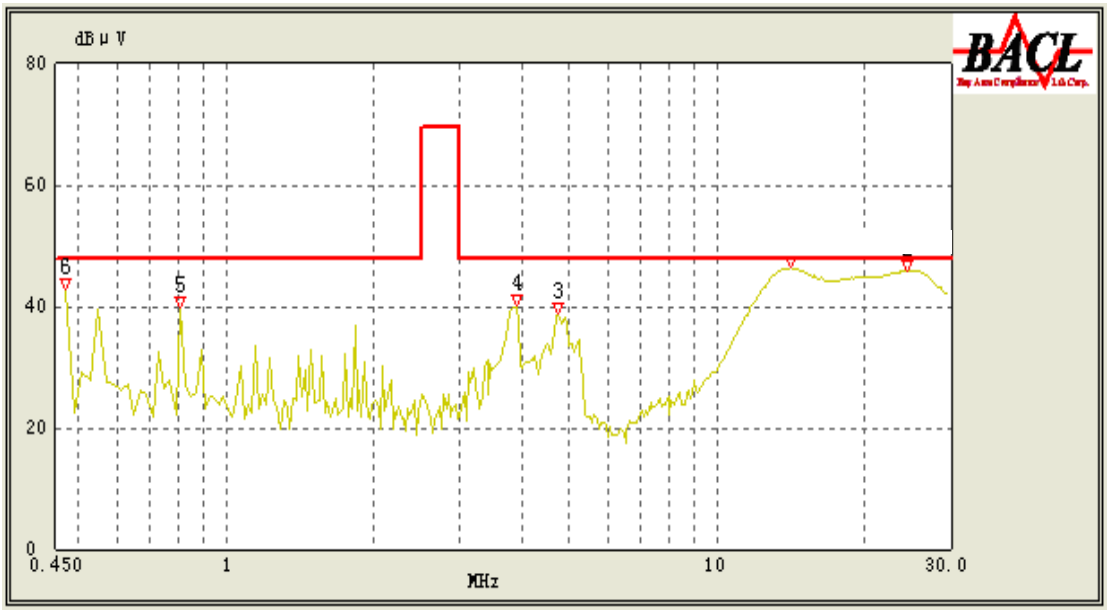
AC 120V/ 60 Hz, Neutral:



Frequency (MHz)	Cord. Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)
17.450	42.02	10.10	48.00	5.98
24.070	41.41	10.10	48.00	6.59
0.650	35.91	10.10	48.00	12.09
0.510	34.76	10.10	48.00	13.24
1.130	27.14	10.10	48.00	20.86
1.310	25.11	10.10	48.00	22.89

Model: QT2X59-SC/YD2X59-SC

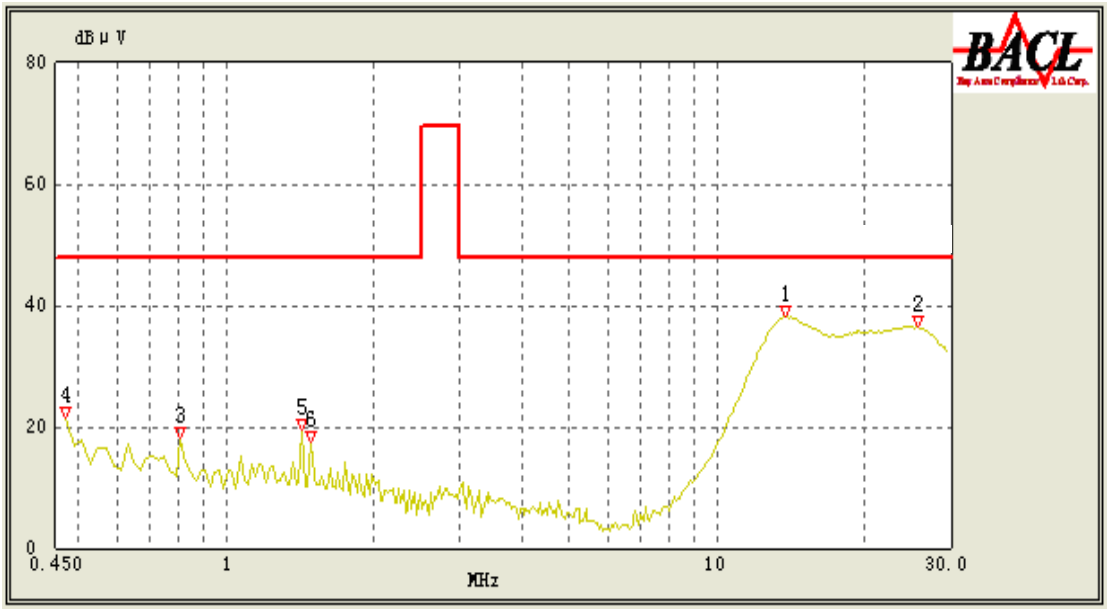
AC 120V/60 Hz, Line:



Frequency (MHz)	Cord. Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)
14.090	46.39	10.10	48.00	1.61*
24.430	45.95	10.10	48.00	2.05*
0.470	42.95	10.10	48.00	5.05
3.910	40.29	10.10	48.00	7.71
0.810	39.89	10.10	48.00	8.11
4.730	38.80	10.10	48.00	9.20

*Within measurement uncertainty.

AC 120V/ 60 Hz, Neutral:



Frequency (MHz)	Cord. Result (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)
13.810	38.63	10.10	48.00	9.37
25.750	36.58	10.10	48.00	11.42
0.470	22.54	10.10	48.00	25.46
0.810	20.45	10.10	48.00	27.55
1.430	17.36	10.10	48.00	30.64
1.490	14.37	10.10	48.00	33.63

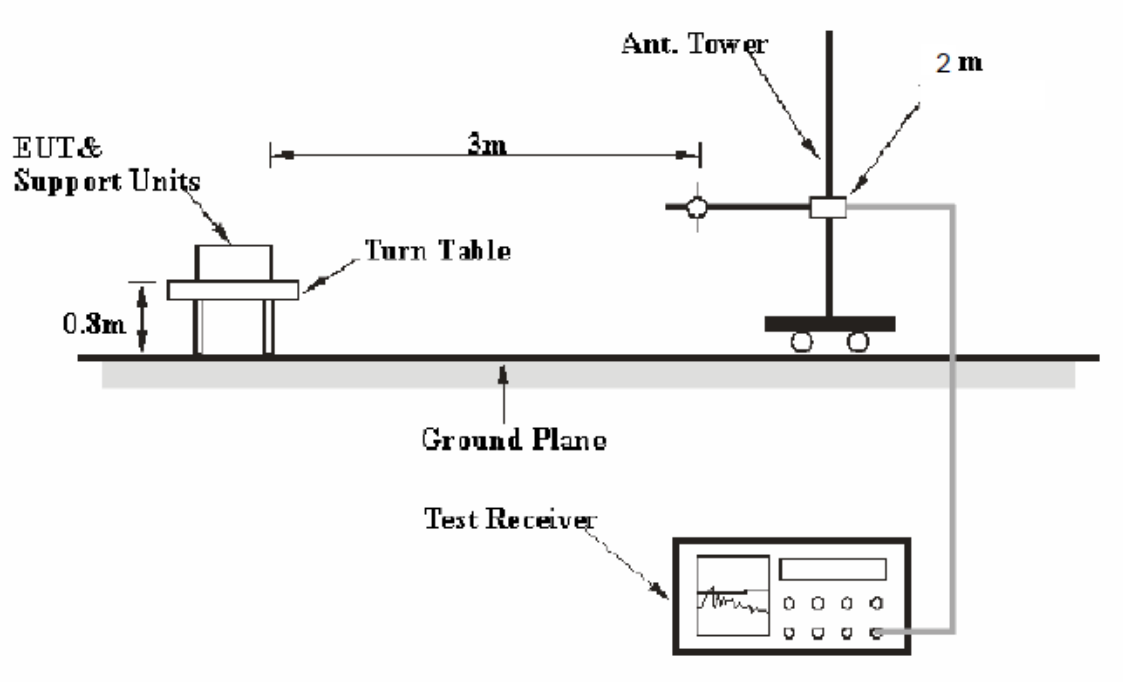
FCC §18.305 – FIELD STRENGTH

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 Laboratories Corp. (Shenzhen) is ±4.0 dB.(k=2, 95% level of confidence)

EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the FCC MP-5.

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

EMI Test Receiver Setup and Spectrum Analyzer Setup

The system was investigated from 9 kHz to 30 MHz.

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	***R B/W***	***Video B/W***	***IF B/W***
9kHz– 150kHz	300 Hz	1 kHz	200Hz
150kHz– 30 MHz	100 kHz	300 kHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS	Passive Loop Antenna	6512	00029604	2010-05-27	2011-05-27
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-11	2011-11-10
Sunol Sciences	System Controller	SC99V	041304-1	N/A	N/A

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

Test Procedure

For the radiated emissions test, the EUT 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 operating mode during the final qualification test to represent the worst results.

All data was recorded in the Average detection mode from 9 kHz to 30 MHz.

Corrected Amplitude Calculation

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

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Phase Zhang on 2011-02-29

Test Mode: On

Frequency (MHz)	Corrected Amplitude (dBμA/m)	Detector (PK/QP/Ave)	Turntable Direction (Degree)	Test Antenna		Cable Loss (dB)	Result	
				Height (m)	Factor (dB/m)		(dBμA/m)	(dBμV/m)
Model: QT2X32-SC/YD2X32-SC.								
0.042	-14.27	QP	180.0	2.00	76.4	0.1	61.33	112.83
0.067	-33.26	QP	180.0	2.00	70.2	0.1	36.14	87.64
0.126	-23.67	QP	180.0	2.00	64.1	0.1	39.63	91.13
1.225	-20.24	QP	180.0	2.00	44.5	0.1	23.46	74.96
10.359	-20.99	QP	180.0	2.00	32.2	0.1	10.41	61.91
20.329	-19.94	QP	180.0	2.00	31.5	0.1	10.76	62.26
Model: QT3X32-SC/YD3X32-SC								
0.0118	-29.08	QP	180.0	2.00	86.3	0.1	56.42	107.92
0.0375	-21.31	QP	180.0	2.00	77.1	0.1	54.99	106.49
0.1128	-27.77	QP	180.0	2.00	64.7	0.1	36.13	87.63
6.7767	-20.22	QP	180.0	2.00	34.2	0.1	13.18	64.68
19.9107	-21.25	QP	180.0	2.00	31.6	0.1	9.55	61.05
29.8806	-19.67	QP	180.0	2.00	30.3	0.1	9.83	61.33
Model: QT4X32-SC/YD4X32-SC								
0.0344	-16.86	QP	180.0	2.00	77.1	0.1	59.44	110.94
0.0668	-31.46	QP	180.0	2.00	71.6	0.1	39.34	90.84
0.1029	-26.26	QP	180.0	2.00	65.6	0.1	38.54	90.04
0.1500	-18.75	QP	180.0	2.00	63.4	0.1	43.85	95.35
13.4034	-19.88	QP	180.0	2.00	32.1	0.1	11.42	62.92
21.3435	-21.14	QP	180.0	2.00	32.5	0.1	10.56	62.06
Model: QT2X59-SC/YD2X59-SC								
0.012102	-28.50	QP	180.0	2.00	87.0	0.1	57.6	109.10
0.022536	-30.81	QP	180.0	2.00	80.6	0.1	48.89	100.39
0.066810	-31.07	QP	180.0	2.00	71.4	0.1	39.43	90.93
0.150000	-20.04	QP	180.0	2.00	62.9	0.1	41.96	93.46
6.478200	-20.86	QP	180.0	2.00	34.3	0.1	12.54	64.04
23.85090	-20.13	QP	180.0	2.00	31.1	0.1	10.07	61.57

Note: *dBμV/m = dBμA/m +51.5

PRODUCT SIMILARITY DECLARATION LETTER

Gain International Enterprise Limited
Flat/Rm 2006, 20/F, Tung Chun Commercial Centre 438-444, Shanghai Street, Mongkok
KowLoon Hong Kong.
Tel: 0852-23745841
Fax: 0852-23745943

Different Declaration

We Gain International Enterprise Limited, hereby declare that our BALLAST , the Model name: QT2X32-SC/YD2X32-SC ; QT3X32-SC/YD3X32-SC ; QT4X32-SC/YD4X32-SC ; QT2X59-SC/YD2X59-SC were tested by BACL.They have the same circuit and PCB board, only different in By changing the switching transformer, high voltage transformers, transistors and FET transistor parameters of the different components to achieve a variety of output power combined QT2X32W-SC with two 32W tubes, QT3X32-SC with three 32W tubes, QT4X32-SC with four 32W tubes, QT2X59-SC with two 59W tubes.

Thank you!

Please contact me if you have any question.

Sincerely.

Signature: GUO SHAOMIN

Print name:GUO SHAO MIN

Title: Director

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