



FCC PART 15 CLASS B

TEST REPORT

For

Dongguan Mosaic Electronics Fty

Xingye 3 Road, Xiabian, Changan, Dongguan, Guangdong, China

FCC ID: N4XHA28

Report Type: Original Report	Product Type: Help Alarm(Receiver)
Test Engineer: <u>Gardon Zhang</u> 	
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Reviewed By: Alvin Huang <u>EMC Engineer</u>	
Test Laboratory: 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 www.baclcorp.com.cn	

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* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk “★” (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Dongguan Mosaic Electronics Fty*'s product, model number: *HA28 (FCC ID: N4XHA28)* (the "EUT") in this report is a *Help Alarm*, which was measured approximately: 16 cm (L) x 14.5 cm (W) x 5.0 cm (H), rated input voltage: DC 6V adapter, the highest operating frequency is 3.58MHz.

Switching Adapter Information:

Model: FJ-SW0600150U;

Input: AC 100-240VAC~50/60Hz, 0.35A;

Output: DC 6V 150mA

All measurement and test data in this report was gathered from production sample serial number: 1204031 (Assigned by BACL, Shenzhen). The EUT was received on 2012-04-13.

Objective

This report is prepared on behalf of *Dongguan Mosaic Electronics Fty* in accordance with Part 2, Subpart J, and 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 15 Class B.

Related Submittal(s)/Grant(s)

FCC Part 15.231 DSC, the transmitter part of the system submission with FCC ID: N4XKF23.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). 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 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.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by 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 (FCC §15.27)

Description of Test Configuration

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

EUT Exercise Software

No exercise software.

Equipment Modifications

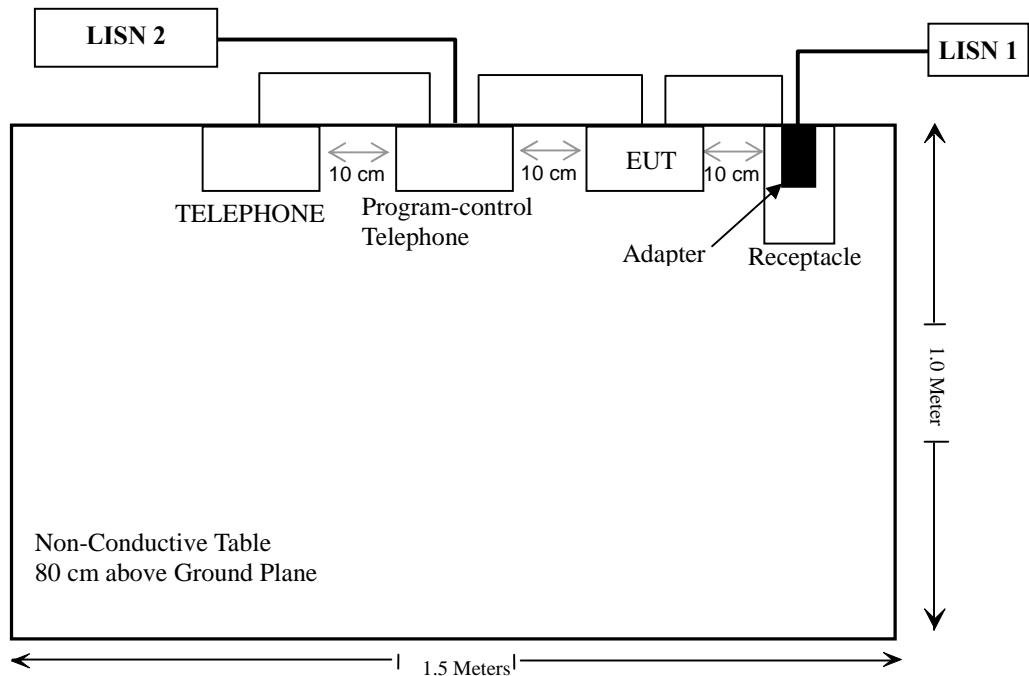
No modifications were made to the EUT tested.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Ke Wang	Program-control Telephone Exchange	TC-104L	N/A
TIAONIAO	PHONE	TL2201	N/A

External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Detachable DC Cable	1.8	EUT	Adapter
Unshielded Detachable AC Cable	1.0	Adapter	LISN

Block Diagram of Test Setup

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance
§15.33	Frequency range of radiated measurements	Compliance
§15.27	Special Accessories	Compliance

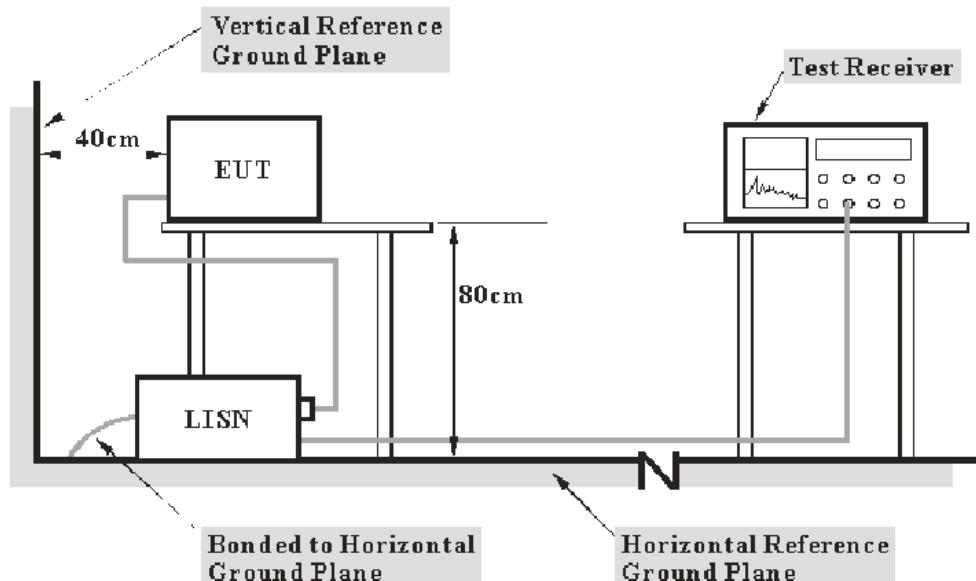
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

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)

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 ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.107 Class B limits.

The spacing between the peripherals was 10 cm.

The adapter 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 150 kHz to 30 MHz.

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

<u>Frequency Range</u>	<u>IF B/W</u>
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	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-11-17	2012-11-16
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2011-07-08	2012-07-07

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

Test Procedure

During the conducted emission test, the adapter 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 15.107](#), with the worst margin reading of:

19.14 dB at 16.230 MHz in the Line conducted mode

Test Data

Environmental Conditions

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

The testing was performed by Gardon Zhang on 2012-04-25.

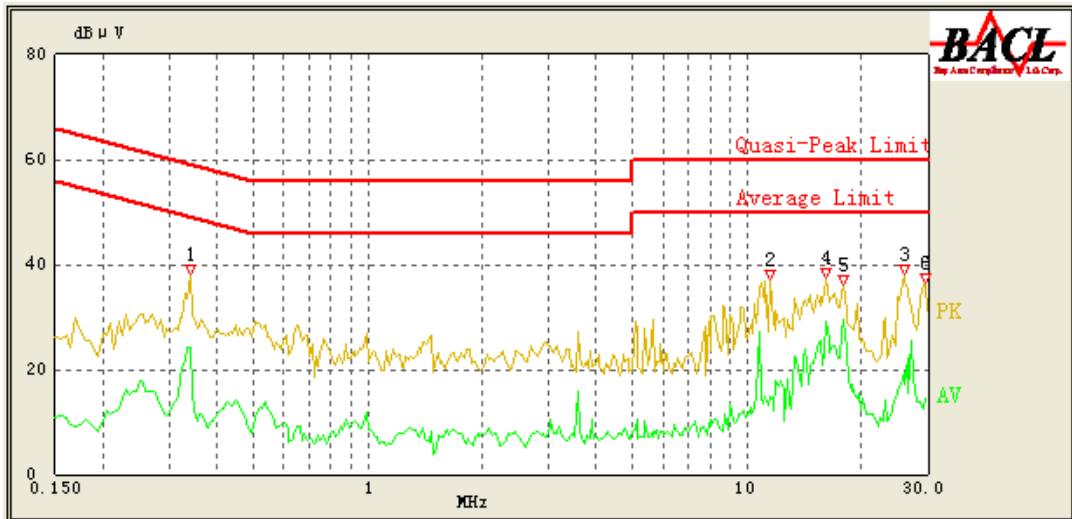
Test Mode: Receiving

AC 120V/60 Hz, Line



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Amplitude (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)	Remark (PK/ QP/Ave.)
16.230	30.86	11.37	50.00	19.14	Ave.
17.905	30.68	11.87	50.00	19.32	Ave.
16.230	34.18	11.37	60.00	25.82	QP
17.905	32.31	11.87	60.00	27.69	QP
10.950	19.86	10.19	50.00	30.14	Ave.
0.330	30.01	9.61	60.86	30.85	QP
0.330	19.13	9.61	50.86	31.73	Ave.
26.855	17.32	11.60	50.00	32.68	Ave.
8.770	13.98	9.95	50.00	36.02	Ave.
26.855	21.07	11.60	60.00	38.93	QP
10.935	20.70	10.19	60.00	39.30	QP
8.820	19.38	9.95	60.00	40.62	QP

AC 120V/60 Hz, Neutral



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Amplitude (dB μ V)	Correction Factor (dB)	Limit (dB μ V)	Margin (dB)	Remark (PK/ QP/Ave.)
17.905	29.44	11.87	50.00	20.56	Ave.
16.170	29.31	11.35	50.00	20.69	Ave.
0.340	24.07	9.61	50.57	26.50	Ave.
17.905	32.31	11.87	60.00	27.69	QP
16.170	32.06	11.35	60.00	27.94	QP
25.880	19.62	11.76	50.00	30.38	Ave.
0.340	27.49	9.61	60.57	33.08	QP
11.530	14.76	10.31	50.00	35.24	Ave.
29.535	14.42	11.17	50.00	35.58	Ave.
25.930	23.38	11.75	60.00	36.62	QP
29.460	23.18	11.19	60.00	36.82	QP
11.440	21.66	10.29	60.00	38.34	QP

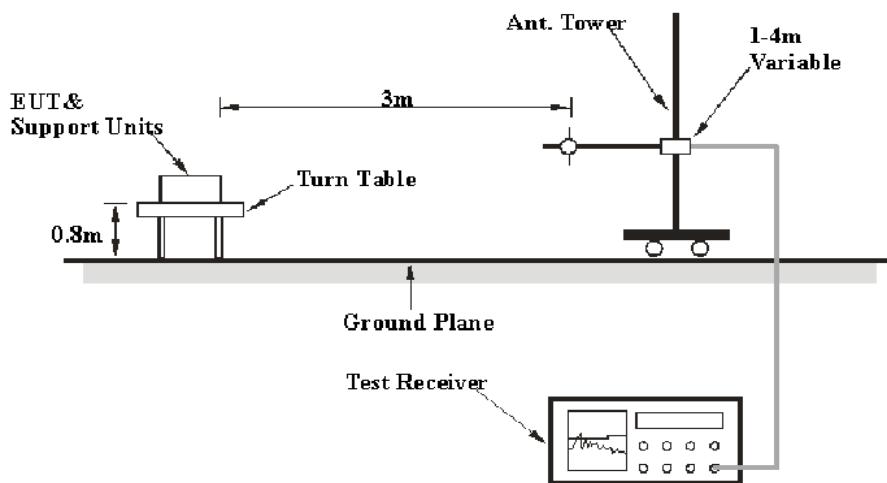
FCC§15.109 - RADIATED EMISSIONS

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 CISPR 16-4-2, 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 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 a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

According to FCC 15.33 requirements, the system was measured from 30 MHz to 2 GHz.

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

Frequency Range	RBW	VBW	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 2000MHz	1MHz	3MHz	

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
HP	Amplifier	HP8447E	1937A01046	2011-11-24	2012-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07
Mini-Circuits	Pre-amplifier	ZVA-213+	N/A	2011-11-24	2012-11-23
SUNOL SCIENCES	Horn Antenna	DRH-118	A052604	2011-12-01	2012-12-01

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

Test Procedure

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

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

Corrected Amplitude & Margin 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:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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 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 data in the following table, the EUT complied with the FCC Part 15.109 Class B, with the worst margin reading of:

11.1 dB at 56.492500 MHz in the Vertical polarization

Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	50 %
ATM Pressure:	100.0 kPa

The testing was performed by Gardon Zhang on 2012-04-25.

Test Mode: Receiving

30MHz ~ 2GHz:

Frequency (MHz)	Detector (PK/QP/Ave.)	Corrected Amplitude (dB μ V/m)	Antenna height (cm)	Antenna Polarity	Turntable position (deg)	Correction Factor (dB)	Limit (dB μ V/m)	Margin (dB)
56.492500	QP	28.9	102.0	V	0.0	-18.2	40.0	11.1
60.885500	QP	25.4	124.0	V	37.0	-18.6	40.0	14.6
49.650000	QP	23.0	204.0	V	33.0	-17.1	40.0	17.0
94.862250	QP	24.9	223.0	H	165.0	-16.1	43.5	18.6
33.780750	QP	20.4	103.0	V	221.0	-8.0	40.0	19.6
42.035750	QP	20.0	102.0	V	112.0	-13.4	40.0	20.0

****END OF REPORT****