



FCC PART 15C

TEST REPORT

For

Lathem Time Corporation

200 Selig Drive SW, Atlanta, Georgia, United States

FCC ID: UP3-PX2500

Report Type: Original Report	Product Type: Facial Recognition Terminal
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Report Number: <u>RB160411051-00A</u>	
Report Date: <u>2016-05-19</u>	
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Lathem Time Corporation*'s product, model number: *CT74 (FCC ID: UP3-PX2500)* (the "EUT") in this report was a *Facial Recognition Terminal*, which was measured approximately: 22.56 cm (L) x 9.43 m (W) x 18.62 cm (H), rated input voltage: DC12V from adapter.

Adapter Information:

Model: SOY024A-1200150US

Input: AC100~240V 50/60Hz 0.6A Max

Output: DC 12V, 1.5A

All measurement and test data in this report was gathered from production sample serial number: 160411051 (Assigned by BACL, Dongguan). The EUT was received on 2016-04-12.

Objective

This Type approval report is prepared on behalf of *Lathem Time Corporation* in accordance with Part 2, Subpart J, and Part 15, Subparts A, B and C of the Federal Communications Commission's rules.

The objective is to determine the compliance of the EUT with FCC rules, section 15.203, 15.205, 15.207, and 15.209.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: UP3-PX2500.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications 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 February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. 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

Justification

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

EUT Exercise Software

No software was performed under test.

Support Equipment List and Details

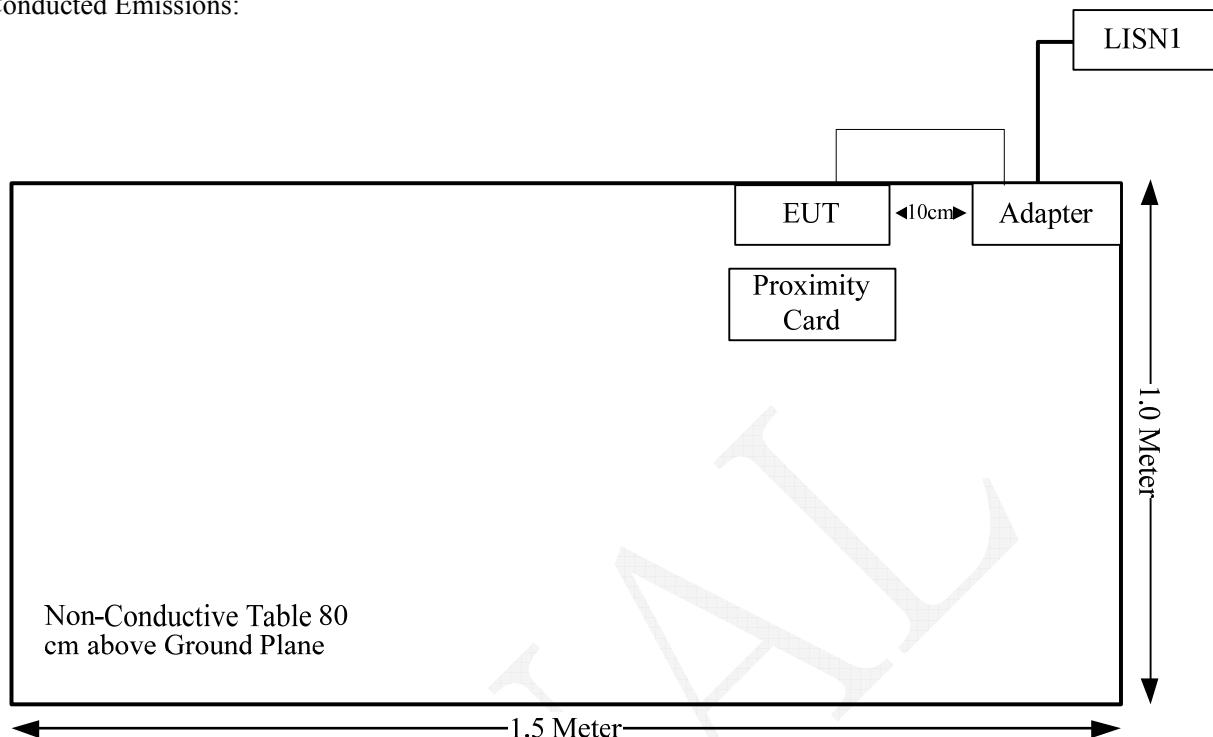
Manufacturer	Description	Model	Serial Number
/	/	/	/

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
Adapter Cable	No	Yes	1.5	EUT	Adapter

Block Diagram of Test Setup

Conducted Emissions:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207	AC Line Conducted Emission	Compliance
§15.209 §15.205	Radiated Emission Test	Compliance

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

Antenna Connected Construction

This EUT has one integral antenna arrangement which fulfills the requirement of this section, please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

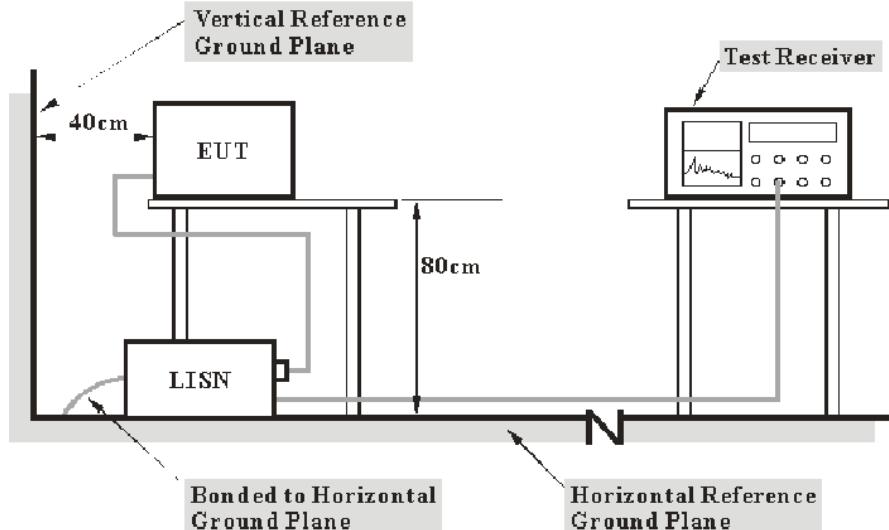
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{\text{lab}} - U_{\text{cisp}})$, exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level, increased by $(U_{\text{lab}} - U_{\text{cisp}})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 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 ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 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:

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

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first 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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_c + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_c : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The “Margin” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2015-12-10	2016-12-09
R&S	L.I.S.N	ESH2-Z5	892107/021	2015-07-16	2016-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2015-11-26	2016-11-25
N/A	Coaxial Cable	1.8m	N/A	2016-03-06	2017-03-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

14.6 dB at 6.873010 MHz in the Neutral conducted mode

Test Data

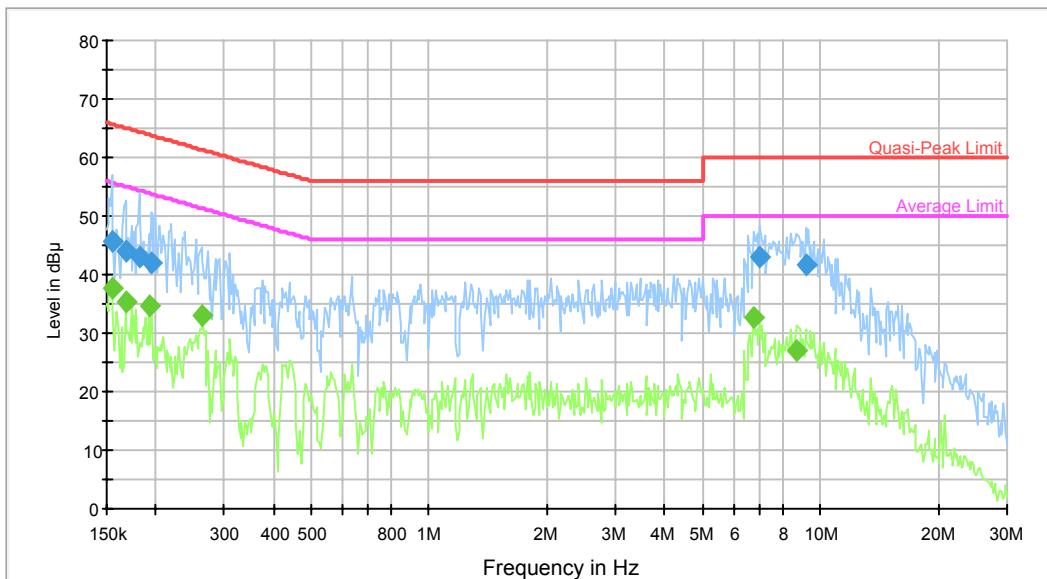
Environmental Conditions

Temperature:	28.9 °C
Relative Humidity:	56 %
ATM Pressure:	100.3 kPa

* The testing was performed by Lion Xiao on 2016-05-10.

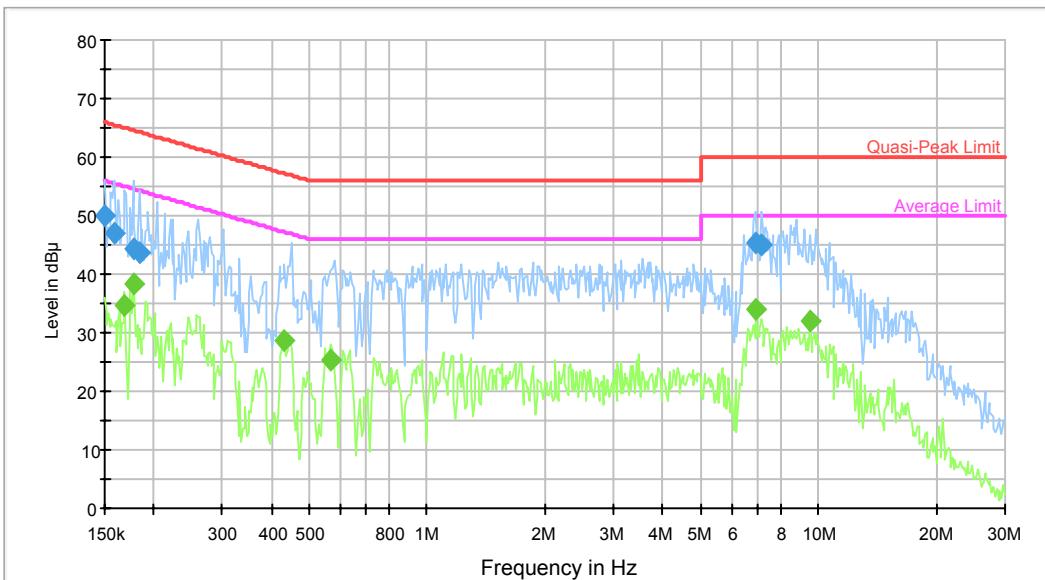
Test Mode: Transmitting

AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.154858	45.7	9.000	L1	10.2	20.0	65.7	Compliance
0.167702	43.9	9.000	L1	10.1	21.2	65.1	Compliance
0.181612	43.0	9.000	L1	10.2	21.4	64.4	Compliance
0.195114	42.1	9.000	L1	10.2	21.7	63.8	Compliance
6.983418	43.1	9.000	L1	10.6	16.9	60.0	Compliance
9.156429	41.6	9.000	L1	10.6	18.4	60.0	Compliance

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.154858	37.6	9.000	L1	10.2	18.1	55.7	Compliance
0.167702	35.3	9.000	L1	10.1	19.8	55.1	Compliance
0.192030	34.6	9.000	L1	10.2	19.3	53.9	Compliance
0.264113	33.1	9.000	L1	10.2	18.2	51.3	Compliance
6.764347	32.7	9.000	L1	10.6	17.3	50.0	Compliance
8.728968	27.0	9.000	L1	10.6	23.0	50.0	Compliance

AC120 V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.150000	50.0	9.000	N	10.2	16.0	66.0	Compliance
0.158604	47.0	9.000	N	10.1	18.5	65.5	Compliance
0.177322	44.5	9.000	N	10.1	20.1	64.6	Compliance
0.184529	43.6	9.000	N	10.1	20.7	64.3	Compliance
6.873010	45.4	9.000	N	10.6	14.6	60.0	Compliance
7.152364	45.0	9.000	N	10.6	15.0	60.0	Compliance

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.169044	34.7	9.000	N	10.1	20.3	55.0	Compliance
0.177322	38.3	9.000	N	10.1	16.3	54.6	Compliance
0.432855	28.8	9.000	N	10.1	18.4	47.2	Compliance
0.567545	25.4	9.000	N	10.1	20.6	46.0	Compliance
6.927994	33.9	9.000	N	10.6	16.1	50.0	Compliance
9.528593	31.9	9.000	N	10.6	18.1	50.0	Compliance

§15.205 & §15.209 - RADIATED EMISSIONS TEST

Applicable Standard

FCC §15.209, (a) except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 **	3
88-216	150 **	3
216-960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{\text{lab}} - U_{\text{cispr}})$, exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level, increased by $(U_{\text{lab}} - U_{\text{cispr}})$, exceeds the disturbance limit.

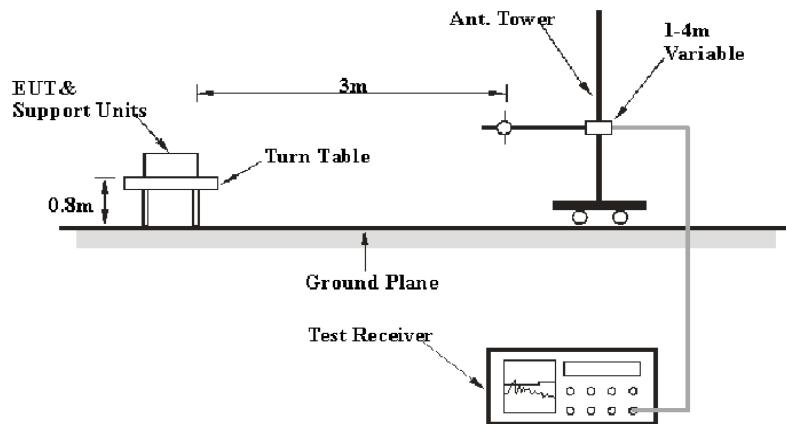
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 10m at Bay Area Compliance Laboratories Corp. (Dongguan) is:30M~200MHz: 4.55 dB for Horizontal, 4.57 dB for Vertical; 200M~1GHz: 4.66 dB for Horizontal, 4.56 dB for Vertical; measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB

Table 1 – Values of U_{cispr}

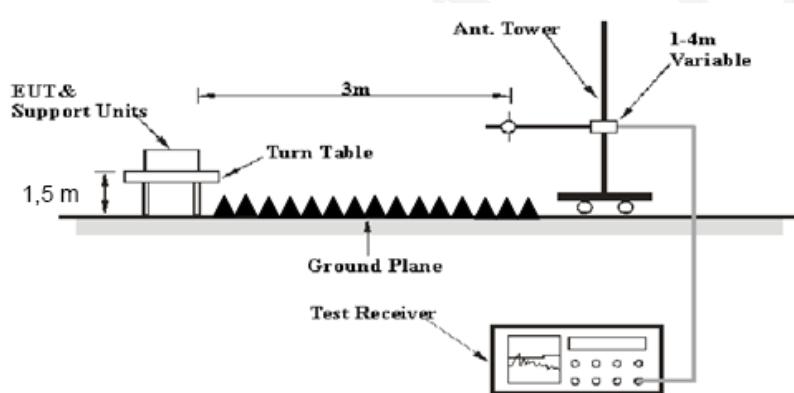
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3-meter chamber a test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

The system was investigated to 6000 MHz.

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

Frequency Range	RBW	Video B/W	Detector
9kHz – 150 kHz	300 Hz	1 kHz	QP
150KHz – 30 MHz	10 kHz	30 kHz	QP
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
Above 1 GHz	1MHz	3 MHz	PK
	1MHz	10 Hz	Ave.

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:

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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 maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corr. Amp.}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100035	2015-07-28	2016-07-27
Sunol Sciences	Antenna	JB3	A060611-2	2014-08-27	2017-08-26
HP	Amplifier	8447D	2727A05902	2015-09-01	2016-09-01
The Electro-Mechanics Company	Passive Loop Antenna	6512	9706-1206	2014-11-30	2017-11-29
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2016-02-19	2017-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09
N/A	Coaxial Cable	14m	N/A	2015-05-06	2016-05-06
N/A	Coaxial Cable	8m	N/A	2015-05-06	2016-05-06

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

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	66 %
ATM Pressure:	100.3 kPa

* The testing was performed by Lion Xiao on 2016-05-11.

Test mode: Transmitting

1) 9 kHz~30 MHz:

Frequency (MHz)	Receiver		Factor (dB(1/m))	Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude @ 3m (dB μ V/m)	Limit @ 3m (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	Detector (PK/QP/AV)						
0.125	43.1	AV	64.75	0.02	20.98	86.89	105.67	18.78
0.698	29.4	QP	49.43	0.05	22.12	56.76	70.73	13.97
4.405	28.3	QP	35.97	0.20	21.46	43.01	69.54	26.53
10.266	25.5	QP	32.26	0.31	21.42	36.65	69.54	32.89
21.150	24.3	QP	31.39	0.41	21.44	34.66	69.54	34.88

2) 30 MHz ~1 GHz:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dB μ V	PK/QP/AV	H/V	dB(1/m)	dB	dB	dB μ V/m	dB μ V/m	dB
82.38	33.1	QP	H	7.83	1.13	21.41	20.65	40.00	19.35
192.96	35.4	QP	H	11.69	1.68	21.46	27.31	43.50	16.19
222.06	34.1	QP	H	11.61	1.79	21.47	26.03	46.00	19.97
338.46	36.7	QP	H	14.80	2.19	21.62	32.07	46.00	13.93
383.08	36.0	QP	H	15.80	2.37	21.73	32.44	46.00	13.56
82.38	36.9	QP	V	7.83	1.13	21.41	24.45	40.00	15.55
138.64	35.7	QP	V	13.36	1.43	21.42	29.07	43.50	14.43
152.22	34.1	QP	V	12.80	1.50	21.43	26.97	43.50	16.53
293.84	36.3	QP	V	13.94	2.07	21.52	30.79	46.00	15.21
315.18	33.9	QP	V	14.42	2.19	21.56	28.95	46.00	17.05
429.64	34.5	QP	V	16.74	2.50	21.84	31.90	46.00	14.10

Note: Above 1 GHz, no emissions were detected. The fundamental frequency is 1.2GHz.

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