

Issue Date: February 25, 2014 Ref. Report No. ISL-14HE045FA

Product Name : Fanless Embedded Controller

Models : xAEC-6913x (x - Where x may be any combination of alphanumeric characters or

"-"or blank.)

Applicant : AAEON Technology Inc.

Address : 5F,NO.135,Lane 235,Pao Chiao Rd. Hsin-Tien Dist,New Tapei

City, Taiwan, R.O.C.

#### We, International Standards Laboratory, hereby certify that:

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified. (refer to Test Report if any modifications were made for compliance).

#### **Standards:**



FCC CFR Title 47 Part 15 Subpart B: 2010- Section 15.107 and 15.109 ANSI C63.4-2009

#### Class A

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

#### **International Standards Laboratory**

Jim Chu / Director

**⋈** Hsi-Chih LAB:

No. 65, Gu Dai Keng St., Hsichih District, New Taipei City 22179, Taiwan

Tel: 886-2-2646-2550; Fax: 886-2-2646-4641







# FCC TEST REPORT

of

# CFR 47 Part 15 Subpart B Class A

**Product: Fanless Embedded Controller** 

Models: xAEC-6913x (x - Where x may be any

combination of alphanumeric characters or

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Applicant: **AAEON Technology Inc.** 

Address: 5F,NO.135,Lane 235,Pao Chiao Rd.

**Hsin-Tien Dist, New Tapei** 

City, Taiwan, R.O.C.

#### Test Performed by:

#### **International Standards Laboratory**

<Hsi-Chih LAB>

\*Site Registration No.

BSMI:SL2-IN-E-0037; SL2-R1/R2-E-0037; TAF: 1178 FCC: TW1067; IC: IC4067A-1; NEMKO: ELA 113A VCCI: <Conduction01>C-354, T-1749, <OATS01>R-341,

<Chamber01>G-443

\*Address:

No. 65, Gu Dai Keng St.

Hsichih District, New Taipei City 22179, Taiwan \*Tel: 886-2-2646-2550; Fax: 886-2-2646-4641

Report No.: **ISL-14HE045FA**Issue Date: **February 25, 2014** 

This report totally contains 26 pages including this cover page and contents page.

Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.

This report must not be used to claim product endorsement by NVLAP, NIST or any other Government agency.

This test report shall not be reproduced except in full, without the written approval of International Standards Laboratory.





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#### 1. General

#### 1.1 Certification of Accuracy of Test Data

**Standards:** FCC CFR Title 47 Part 15 Subpart B: 2010- Section

15.107 and 15.109 ANSI C63.4-2009

**Equipment Tested:** Fanless Embedded Controller

**Model:** xAEC-6913x (x - Where x may be any combination of

alphanumeric characters or "-"or blank.)

**Applicant:** AAEON Technology Inc.

**Sample received Date:** February 24, 2014

**Final test Date:** refer to the date of test data

**Test Site:** International Standards Laboratory

OATS 01; Chamber 01; Conduction 01

**Test Distance:** 10M; 3M (above1GHz)

**Temperature:** refer to each site test data

**Humidity:** refer to each site test data

**Input power:** Conduction input power: AC 120 V / 60 Hz

Radiation input power: AC 120 V / 60 Hz

**Report Number: ISL-14HE045FA** 

**Test Result:** PASS

**Report Engineer:** Winnie Huang

**Test Engineer:** 

Stanley Tsai

**Approved By:** 

Eddy Hsiung



## 1.2 Description of EUT

## **EUT**

Description	Fanless Embedded Controller
Condition	Pre-Production
Model	xAEC-6913x (x - Where x may be any combination of alphanumeric characters or "-"or blank)
Serial Number	N/A
CPU	Intel(R) Atom(TM) D2550@1.86GHz
Power supply	FSP (Model: FSP120-AAB)
	INPUT:100-240V~2A 50-60Hz
	OUTPUT: 19V6.32A
	S/N: H00000664(WITH CORE)
Main Board	COM -KBx
CPU Board	COM-CV REV.B1.0
Carrier Board	DTXP6950/6913 A0.2
Solid State Drive	TOSHIBA(Model MK1060GSC)100GB
USB 2.0 Port	Four 4-pins
USB 3.0 Port	Two 9-pins
CFast slot	One 24-pins
RJ45 Port	Two 8-pins (10/100/1000M bps)
DIO Port	One
DVI Port	One 39-pins
Microphone Port	One
Headphone Port	One
Line-in Port	One
COM Port	Eight 9-pins
DC Power Port	One
Power button	One
Reset button	One
DIMM Memory	4GB DDR3 1333
Maximum Resolution	1920*1080
Maximum Operating Frequency	1.86GHz



#### **EMI Noise Source**:

CPU Board	27MHz
	27 MHz
	25 MHz
	14.318 MHz
	24 MHz
	32.768KHz
Ca boarrrierd Crystal	25MHz
	48MHz
	48MHz

#### **EMI Solution:**

Solution	Quantity	SPEC	Location
Core	1	King core 13*23*5.2mm	The same as Photo EUT-4



## 1.3 Description of Support Equipment

Unit	Unit Model Serial No.		Power Cord	FCC ID
Notebook Personal Computer	U36J S/N: N/A	ASUS	Non-shielded, Detachable	FCC DOC
24" LED Monitor	ST2420L S/N: CN-0X0K27-74261-27E-131U	DELL	Non-shielded, Detachable	FCC DOC
Mouse	MO71KC S/N: 511092011	DELL	N/A	FCC DOC
Keyboard	SK-8115, S/N: MY-05N456-38843-2BK-331 5	DELL	N/A	FCC DOC
Headphone & Microphone	CD-85	JS	Non-shielded, Detachable	FCC DOC
Radio Cassette Player	RQ-L11	Panasonic	Non-shielded, Detachable	FCC DOC
USB2.0 External HDD Enclosure	Ipod nano S/N: N/A	Apple	N/A	FCC DOC
USB3.0 External HDD Enclosure*2	WDBACY5000ABK-PESN S/N: XH1E31FSV80	WD	N/A	FCC DOC
CFast Card	D150Q	innoDisk	N/A	FCC DOC
Modem*8	DM1414 S/N: 0301000557	Aceex	Non-shielded, Without Grounding Pin	IFAXDM1414
Printer	LQ-300+II S/N: G88Y109612	EPSON	Non-shielded, Detachable	FCC DOC
Rack mountable Switch	DGS-1008D	D-Link	D-Link (Model:AF-1205-B)	FCC DOC



#### 1.4 Software for Controlling Support Unit

Test programs exercising various part of EUT were used. The programs were executed as follows:

- A. R/W to the Solid State Drive.
- B. R/W USB3.0 External HDD Enclosure from EUT USB2.0 Port.
- C. R/W USB2.0 External HDD Enclosure from EUT USB3.0 Port.
- D. R/W CFast Card from CFast solt.
- E. Send audio signal to the Microphone and HeadSet through Headphone port.
- F. Receive audio signal from Microphone and HeadSet through Microphone port.
- G. Receive audio signal from walkman.
- H. Send H pattern to the video port device (Monitor).
- I. Send H pattern to the serial port device (Modem).
- J. Send H pattern to the parallel port device (Printer).
- K. Receive and transmit package of EUT to the Rack mountable Switch HUB through LAN port.

- L. Used Tfgen.exe to send signal to EUT RJ45 port through PC RJ45 port.
- M. Repeat the above steps.

	Filename	<b>Issued Date</b>
LAN	Tfgen.exe	06/23/1999
LAN	ping.exe	05/05/1999
Monitor	Intel EMCTEST.exe	09/04/2000
ATA Microphone and HeadSet	Windows Media player.exe	02/18/2006
USB2.0 External HDD Enclosure	Intel EMCTEST.exe	09/04/2000
USB3.0 External HDD Enclosure	Intel EMCTEST.exe	09/04/2000
Cfast Card	Intel EMCTEST.exe	09/04/2000
EUT	Intel EMCTEST.exe	09/04/2000
Modem	Intel EMCTEST.exe	9/04/2000
Printer	Wordpad.exe	11/11/1999



## 1.5 I/O Cable Condition of EUT and Support Units

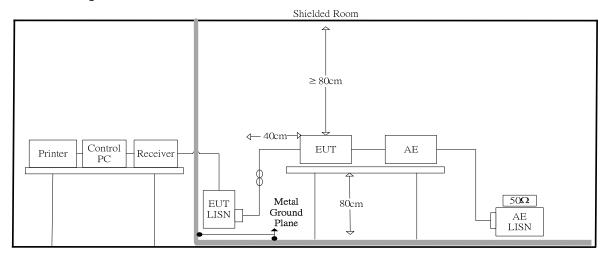
Description	Path	Cable Length	Cable Type	Connector Type
AC Power Cord	110V (~240V) to EUT SPS	1.8M	Non-shielded, Detachable	Plastic Head
RJ45 Data Cable	Switch HUB LAN Port to NB LAN Port	1.0M	Non-shielded, Detachable	RJ-45, with Plastic Head
RJ45 Data Cable*2	Switch HUB LAN Port to EUT RJ45 Port	10M	Non-shielded, Detachable	RJ-45, with Plastic Head
LCD Monitor DVI Data Cable	LCD Monitor DVI Port to EUT DVI Port	1.98M	Shielded, Detachable (with cord)	Metal Head
Mouse Data Cable	Mouse to EUT USB2.0 port	1.8M	Non-shielded, Un-detachable	Metal Head
Keyboard Data Cable	Keyboard to EUT USB2.0 Port	2.0M	Non-shielded, Un-detachable	Metal Head
Microphone& Audio Data Cable	Microphone to EUT Microphone Port	1.9M	Non-shielded, Un-detachable	Plastic Head
Audio Data Cable	EUT Line in Port to Radio Cassette Player	1.5M	Non-shielded, Detachable	Metal Head
USB3.0 Data Cable*2	USB3.0 External HDD Enclosure USB 3.0 Port to EUT USB 3.0 Port	1M	Shielded, Detachable	Metal Head
USB2.0 Data Cable	USB2.0 External HDD Enclosure USB2.0 Port to EUT USB2.0 Port	1M	Shielded, Detachable	Metal Head
Modem Data Cable*8	Modem to EUT COM Port	1.5M	Shielded, Detachable	Metal Head
Printer USB Data Cable	Printer to EUT USB2.0 Port	1.5M	Shielded, Detachable	Metal Head
IDO Data Cable	With dummy	1.8M	Non-shielded, Detachable	Metal Head



#### 2. Powerline Conducted Emissions

#### 2.1 Test Setup and Procedure

#### 2.1.1 Test Setup



#### 2.1.2 Test Procedure

The measurements are performed in a  $3.5 \text{m} \times 3.4 \text{m} \times 2.5 \text{m}$  shielded room, which referred as Conduction 01 test site, or a  $3 \text{m} \times 3 \text{m} \times 2.3 \text{m}$  test site, which referred as Conduction 02 test site. The EUT was placed on non-conduction  $1.0 \text{m} \times 1.5 \text{m}$  table, which is 0.8 meters above an earth-grounded.

Power to the EUT was provided through the LISN which has the Impedance (500hm/50uH) vs. Frequency Characteristic in accordance with the standard. Power to the LISNs were filtered to eliminate ambient signal interference and these filters were bonded to the ground plane. Peripheral equipment required to provide a functional system (support equipment) for EUT testing was powered from the second LISN through a ganged, metal power outlet box which is bonded to the ground plane at the LISN.

The interconnecting cables were arranged and moved to get the maximum measurement. Both the line of power cord, hot and neutral, were measured. All of the interface cables were manipulated according to ANSI C63.4 requirements.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

**Report Number: ISL-14HE045FA** 

#### 2.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range: 150KHz~30MHz

Detector Function: Quasi-Peak / Average Mode

Resolution Bandwidth: 9KHz

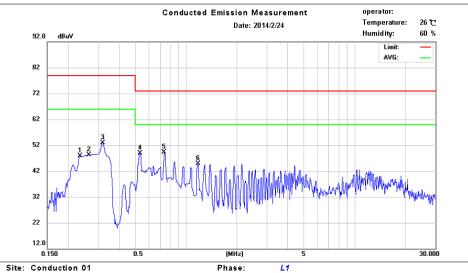


#### 2.2 Conduction Test Data: Configuration 1

#### **Table 2.2.1 Power Line Conducted Emissions (Line)**



Test LAB:International Standards Laboratory (Hsichih Site) Tel:886-2-26462550 Fax:886-2-26464641



Limit: CISPR22 ClassA Conduction

No.	Frequency	Correct Factor	QP Emission	QP Limit	QP Margin	AVG Emission	AVG Limit	AVG Margin	Note
NU.	(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	Note
1	0.23	9.67	43.95	79.00	-35.05	25.56	66.00	-40.44	
2	0.26	9.67	45.64	79.00	-33.36	28.04	66.00	-37.96	
3	0.32	9.67	48.75	79.00	-30.25	43.84	66.00	-22.16	
4	0.54	9.67	45.28	73.00	-27.72	42.67	60.00	-17.33	
5	0.74	9.67	45.93	73.00	-27.07	43.53	60.00	-16.47	
6	1.18	9.67	43.01	73.00	-29.99	41.82	60.00	-18.18	

Note:

Margin = QP/AVG Emission - Limit

 $QP/AVG\ Emission = Receiver\ Reading + Correct\ Factor$ 

Correct Factor = LISN Loss + Cable Loss

A margin of -8dB means that the emission is 8dB below the limit

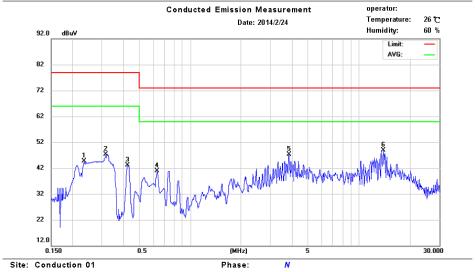
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result. If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead. The CISPR 22 limits would be applied to all FCC Part 15 devices.



**Table 2.2.2 Power Line Conducted Emissions (Neutral)** 



Test LAB:International Standards Laboratory (Hsichih Site) Tel:886-2-26462550 Fax:886-2-26464641



Limit: CISPR22 ClassA Conduction

No.	Frequency (MHz)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)	Note
1	0.23	9.75	41.21	79.00	-37.79	23.31	66.00	-42.69	
2	0.32	9.75	40.31	79.00	-38.69	35.02	66.00	-30.98	
3	0.43	9.75	42.35	79.00	-36.65	42.42	66.00	-23.58	
4	0.64	9.75	35.45	73.00	-37.55	32.43	60.00	-27.57	
5	3.83	9.81	41.31	73.00	-31.69	33.60	60.00	-26.40	
6	13.90	9.91	40.54	73.00	-32.46	32.93	60.00	-27.07	

Note:

 $Margin = QP/AVG\ Emission\ \hbox{-}\ Limit$ 

 $QP/AVG\ Emission = Receiver\ Reading + Correct\ Factor$ 

Correct Factor = LISN Loss + Cable Loss

A margin of -8dB means that the emission is 8dB below the limit

The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result. If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead. The CISPR 22 limits would be applied to all FCC Part 15 devices.



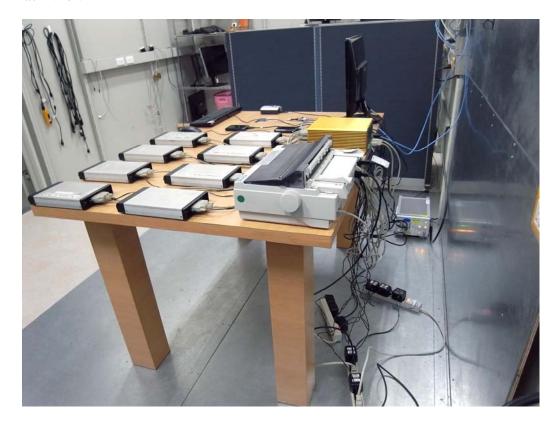
# 2.3 Test Setup Photo

Front View





Back View



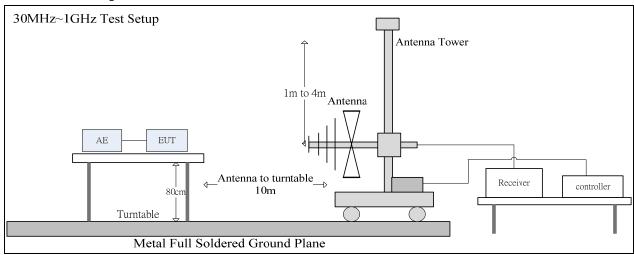


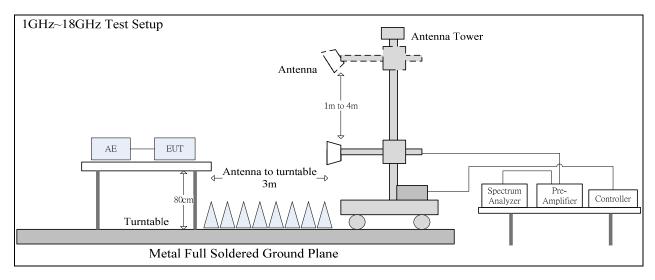


#### 3. Radiated Emissions

#### 3.1 Test Setup and Procedure

#### 3.1.1 Test Setup





#### 3.1.2 Test Procedure

The radiated emissions test will then be repeated on the open site or chamber to measure the amplitudes accurately and without the multiple reflections existing in the shielded room. The EUT and support equipment are set up on the turntable of one of 10 meter open field sites or 10 meter chamber. Desktop EUT are set up on a wooden stand 0.8 meter above the ground or floor-standing arrangement shall be placed on the horizontal ground reference plane. The test volume for a height of up to 30 cm may be obstructed by absorber placed on the ground plane.

For the initial measurements, the receiving antenna is varied from 1-4 meter height and is changed in the vertical plane from vertical to horizontal polarization at each frequency. The highest emissions between 30 MHz to 1000 MHz were analyzed in details by operating the spectrum analyzer and/or EMI receiver in quasi-peak mode to determine the precise amplitude of the emissions. The highest emissions between 1 GHz to 40 GHz were analyzed in details by



operating the spectrum analyzer in peak and average mode to determine the precise amplitude of the emissions.

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the antenna in the cone of radiation from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response. At the highest amplitudes observed, the EUT is rotated in the horizontal plane while changing the antenna polarization in the vertical plane to maximize the reading. The interconnecting cables were arranged and moved to get the maximum measurement. Once the maximum reading is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings. All of the interface cables were manipulated according to ANSI C63.4 requirements.

The highest internal source of the EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less. Spectrum Analyzer Configuration (for the frequencies tested).

**Report Number: ISL-14HE045FA** 

#### **3.1.3** Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range: 30MHz--1000MHz Detector Function: Quasi-Peak Mode

Resolution Bandwidth: 120KHz

Frequency Range: Above 1000MHz
Detector Function: Peak/Average Mode

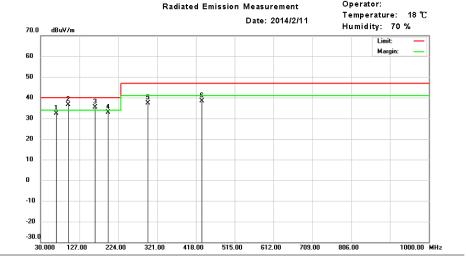
Resolution Bandwidth: 1MHz



# 3.2 Radiation Test Data: Configuration 1 Table 3.2.1 Radiated Emissions (Horizontal)



Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641



Site : OATS 01

Condition: CISPR22 ClassA 10M Radiation Polarization: Horizontal

Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	68.8000	23.16	9.25	32.41	40.00	-7.59	305	338	QP
2	98.8700	25.36	11.26	36.62	40.00	-3.38	290	162	QP
3	165.8000	21.95	13.44	35.39	40.00	-4.61	198	269	QP
4	198.7800	18.48	14.32	32.80	40.00	-7.20	100	230	QP
5	298.6900	22.08	15.26	37.34	47.00	-9.66	269	151	QP
6	432.5500	19.49	18.78	38.27	47.00	-8.73	315	293	QP

\* Note:

Margin = Emission - Limit

Emission = Radiated Amplitude + Correct Factor

Correct Factor = Antenna Correction Factor + Cable Loss

A margin of -8dB means that the emission is 8dB below the limit

BILOG Antenna Distance: 10 meters

The CISPR 22 limits would be applied to all FCC Part 15 devices.

Below 1GHz test, if the peak measured value meets the QP limit, it is unnecessary to perform the QP measurement. measurement.





Test LAB:International Standards Laboratory (Hsichih Site) Tel:886-2-26462550 Fax:886-2-26464641



Site: Chamber 01

Condition : FCC ClassA 3M above1GHz Radiation

Polarization: Horizontal

**Report Number: ISL-14HE045FA** 

Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	1485.200	77.67	-20.60	57.07	80.00	-22.93	121	151	peak
2	2071.000	68.39	-16.11	52.28	80.00	-27.72	100	53	peak
3	2227.200	70.79	-15.83	54.96	80.00	-25.04	115	195	peak
4	3108.000	63.50	-14.12	49.38	80.00	-30.62	133	308	peak
5	6423.000	60.96	-9.16	51.80	80.00	-28.20	100	1	peak
6	8922.000	60.22	-6.96	53.26	80.00	-26.74	151	157	peak

#### \* Note:

Margin = Emission - Limit

Emission = Radiated Amplitude + Correct Factor

 $Correct\ Factor = Antenna\ Correction\ Factor + Cable\ Loss - Pre-Amplifier\ Gain$ 

A margin of -8dB means that the emission is 8dB below the limit

Horn Antenna Distance: 3 meters

The CISPR 22 limits would be applied to all FCC Part 15 devices.

Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.



#### **Table 3.2.2 Radiated Emissions (Vertical)**



Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641



Site : OATS 01

Condition : CISPR22 ClassA 10M Radiation

Polarization: Ver

Vertical

**Report Number: ISL-14HE045FA** 

Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	34.8540	17.20	18.70	35.90	40.00	-4.10	353	73	QP
2	65.8900	25.26	9.09	34.35	40.00	-5.65	365	161	QP
3	98.8700	24.13	11.26	35.39	40.00	-4.61	100	185	QP
4	132.8200	18.74	14.98	33.72	40.00	-6.28	122	40	QP
5	198.7800	20.05	14.32	34.37	40.00	-5.63	143	19	QP
6	298.6900	19.04	15.26	34.30	47.00	-12.70	223	197	QP

\* Note:

Margin = Emission - Limit

Emission = Radiated Amplitude + Correct Factor

Correct Factor = Antenna Correction Factor + Cable Loss

A margin of -8dB means that the emission is 8dB below the limit

BILOG Antenna Distance: 10 meters

The CISPR 22 limits would be applied to all FCC Part 15 devices.

Below 1GHz test, if the peak measured value meets the QP limit, it is unnecessary to perform the QP measurement. measurement.





Test LAB:International Standards Laboratory (Hsichih Site) Tel:886-2-26462550 Fax:886-2-26464641



Site: Chamber 01

Condition : FCC ClassA 3M above1GHz Radiation

Vertical

**Report Number: ISL-14HE045FA** 

Polarization:

Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	1485.035	78.40	-20.60	57.80	80.00	-22.20	100	219	peak
2	2079.100	70.04	-16.10	53.94	80.00	-26.06	103	153	peak
3	2227.380	70.26	-15.83	54.43	80.00	-25.57	100	201	peak
4	2972.000	64.54	-14.29	50.25	80.00	-29.75	148	194	peak
5	6491.000	60.93	-9.05	51.88	80.00	-28.12	142	179	peak
6	8922.000	59.87	-6.96	52.91	80.00	-27.09	100	303	peak

\* Note:

Margin = Emission - Limit

Emission = Radiated Amplitude + Correct Factor

Correct Factor = Antenna Correction Factor + Cable Loss - Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit

Horn Antenna Distance: 3 meters

The CISPR 22 limits would be applied to all FCC Part 15 devices.

Above 1GHz test, if the peak measured value meets the average limit, it is unnecessary to perform the average measurement.



## 3.3 Test Setup Photo

Front View



Back View

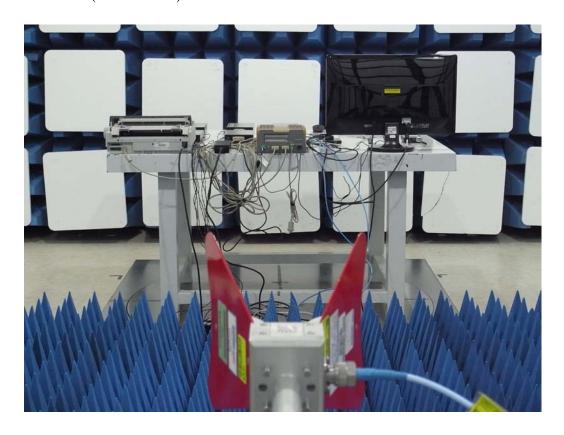




Front View (above 1GHz)



Back View (above 1GHz)





# 4. Appendix

#### 4.1 Appendix A: Warning Labels

#### **Label Requirements**

A Class A digital device subject to Verification of FCC shall carry a warning label which includes the following statement:

\* \* \* W A R N I N G \* \* \*

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



#### **4.2** Appendix B: Warning Statement

#### **Statement Requirements**

The operators' manual for a Class A digital device shall contain the following statements or their equivalent:

#### \* \* \* \* W A R N I N G \* \* \*

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and uses in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equivalent.

\* \* \* \* \* \* \* \*

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If the EUT was tested with special shielded cables the operators manual for such product shall also contain the following statements or their equivalent:

Shielded interface cables and/or AC power cord, if any, must be used in order to comply with the emission limits.



## **4.3** Appendix C: Test Equipment

## 4.3.1 Test Equipment List

Location	<b>Equipment Name</b>	Brand	Model	S/N	Last Cal.	Next Cal.
CON01					Date	Date
Conduction	Coaxial Cable 1F-C1	HUBER SUHNER	RG214U	389942	10/25/2013	10/25/2014
Conduction	LISN 21	ROHDE & SCHWARZ	ENV216	101476	05/14/2013	05/14/2014
Conduction	LISN 22	ROHDE & SCHWARZ	ENV216	101478	05/14/2013	05/14/2014
Conduction	ISN T2 03	FCC	FCC-TLISN-T 2-02	20618	08/13/2013	08/13/2014
Conduction	ISN T4 05	FCC	FCC-TLISN-T 4-02	20619	08/13/2013	08/13/2014
Conduction	INS T8 07	Teseq GmbH	ISN T800	30834	06/01/2013	06/01/2014
Conduction	ISN T8 06 (Shielding)	Teseq GmbH	ISN ST08	33999	08/10/2013	08/10/2014
Conduction	EMI Receiver 15	ROHDE & SCHWARZ	ESCI	101166	04/30/2013	04/30/2014

Location	<b>Equipment Name</b>	Brand	Model	S/N	Last Cal.	Next Cal.
OATS01					Date	Date
Radiation	BILOG Antenna 10	Sumol	ЈВ1	A013004-1	07/10/2013	07/10/2014
		Sciences				
Radiation	Coaxial Cable 3F-10M	EMCI	CFD400-NL	ISL-R001	03/15/2013	03/15/2014
Radiation	EMI Receiver 13	ROHDE &	ESCI	101015	02/26/2013	02/26/2014
		SCHWARZ				

Location	<b>Equipment Name</b>	Brand	Model	S/N	Last Cal.	Next Cal.
Chamber 01					Date	Date
Rad. above 1Ghz	Horn Antenna 11	ETS-LINDGR EN	3117	00114397	03/18/2013	03/18/2014
Rad. above 1Ghz	Horn Antenna 03	COM-Power	AH-826	08010	04/01/2013	04/01/2015
Rad. above 1Ghz	Horn Antenna 05	Com-Power	AH-640	100A	01/09/2013	01/09/2015
Rad. above 1Ghz	Microwave Cable-16	HUBER SUHNER	SUCFLEX 104	345761/4	01/06/2014	01/06/2015
Rad. above 1Ghz	Preamplifier 20	EMCI	EMC051845	980084	11/06/2013	11/06/2014
Rad. above 1Ghz	Microwave Cable-19	HUBER SUHNER	SUCFLEX 102	MY 2151/2	05/09/2013	05/09/2014
Rad. above 1Ghz	Preamplifier 22	EMCI	EMC184045	980124	04/02/2013	04/02/2014
Rad. above 1Ghz	Spectrum Analyzer 23	ROHDE & SCHWARZ	FSU43	101255	11/07/2013	11/07/2014



## 4.3.2 Software for Controlling Spectrum/Receiver and Calculating Test Data

Site	Filename	Version	Issue Date	
Conduction/Radiation	EZ EMC	ISL-03A2	3/6/2013	



#### 4.4 Appendix D: Uncertainty of Measurement

The measurement uncertainty refers to CISPR 16-4-2:2011. The coverage factor k=2 yields approximately a 95 % level of confidence.

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<Conduction 01> AMN: ±3.28dB ISN T2: ±3.86dB ISN T4: ±4.27dB ISN T8: ±3.86dB

<OATS 01 (10M)> Horizontal

 $30 MHz \sim 200 MHz$ :  $\pm 3.36 dB$   $200 MHz \sim 1000 MHz$ :  $\pm 4.08 dB$ 

Vertical

30MHz~200MHz: ±3.99dB 200MHz~1000MHz: ±4.16dB

<Chamber 01 (3M)>

1GHz~6GHz: ±4.70dB 6GHz~18GHz: ±4.91dB 18GHz~26.5GHz: ±4.34dB 18GHz~26.5GHz: ±4.38dB