
FCC / Certification Test Report

Hanwang Technology Co. Ltd

FaceID (Time attendance and access control terminal)

Model: FXXX series

REPORT# 13WB1112065F Rev 0

FCC ID: XQI-FACEID-F

Dec.09, 2013

Prepared for:

Hanwang Technology Co. Ltd

Hanwang Tower, Building 5, Zhongguancun Software Park,

Haidian District, Beijing 100193

Prepared By:

Washington International Technology Limited

FCC / Certification Test Report

For the
Hanwang Technology Co. Ltd
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MODEL: FXXX series
WLL REPORT# 13WB1112065F Rev 0
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Dec.09, 2013

Henry Guo

Henry guo

Reviewed by:

Steven yang

Steven yang

Abstract

This report has been prepared on behalf of Hanwang Technology Co. Ltd to document compliance with the limits for a Class B digital device required under Part 15 (7/2008) of the FCC Rules and Regulations This Federal Communication Commission (FCC) Test Report documents the test configuration and test results for the Hanwang Technology Co. Ltd FaceID (Time attendance and access control terminal) .Testing was performed on Audix Technology (Shenzhen) Co., Ltd. has been accepted by the FCC, the FCC Registration Number is 90454

The Hanwang Technology Co. Ltd FaceID (Time attendance and access control terminal) complies with the requirements for a Class B device.

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1 Introduction

1.1 Compliance Statement

After the modifications listed in Section 2.7 were installed:

The Hanwang Technology Co. Ltd FaceID (Time attendance and access control terminal) complied with the requirements for a Class B digital device under Part 15 (7/2012) of the FCC Rules and Regulations

1.2 Test Scope Summary

Tests for radiated and conducted emissions were performed. All measurements were performed according to the 2009 version of ANSI C63.4. The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation.

Test Specification	Specific Description	Date Completed	Result	Test location	Modifications (Y/N)
CFR47 Part 15.107	Class B Conducted Emissions at the Mains Port	Dec.04, 2013	Complied	Audix Technology (Shenzhen) Co., Ltd.	N
CFR47 Part 15.109	Class B Radiated Emissions	Nov.30, 2013	Complied	Audix Technology (Shenzhen) Co., Ltd.	N

1.3 Contract Information

Customer: Hanwang Technology Co. Ltd

Hanwang Tower, Building 5, Zhongguancun Software Park, Haidian District, Beijing 100193 District, Beijing, China

Abbreviations

A	A mpere
ac	a lternating current
AM	A mplitude Modulation
Amps	A mperes
b/s	b its per second
BW	B and W idth
CE	C onducted E mission
cm	c entimeter
CW	C ontinuous W ave
dB	d eci B el
dc	d irect current
EMI	E lectromagnetic I nterference
EUT	E quipment Under T est
FM	F requency M odulation
G	g iga - prefix for 10^9 multiplier
Hz	H ertz
IF	I ntermediate F requency
k	k ilo - prefix for 10^3 multiplier
LISN	L ine I mpedance S tabilization N etwork
M	M ega - prefix for 10^6 multiplier
m	m eter
μ	m icro - prefix for 10^{-6} multiplier
NB	N arrow b and
QP	Q uasi- P eak
RE	R adiated E missions
RF	R adio F requency
rms	r oot- m ean- s quare
SN	S erial N umber
S/A	S pectrum A nalyzer
V	V olt

2 Equipment Under Test

2.1 EUT Identification

The results obtained relate only to the item(s) tested.

Table 1: Overview of FaceID (Time attendance and access control terminal), Equipment Under Test

Model(s) Tested:	FaceID (Time attendance and access control terminal) F110
EUT Specifications:	12V DC from adaptor 120V AC input/12V DC output Equipment Emissions Class: CLASS B
Test Date(s):	Nov.30~Dec.04, 2013

2.2 EUT Description

Product Name:FaceID (Time attendance and access control terminal)

Model No.: F110

EUT Rated Voltage: 12V DC from adaptor 120V AC input/12V DC output, 1A

Adaptor: AK12G-1200100U, 100-240V AC 50/60Hz 0.5A input, 12V DC 1A output

2.3 Test Configuration

The Hanwang Technology Co. Ltd FaceID (Time attendance and access control terminal), Equipment Under Test (EUT), was operated from AC power supply.

EUT connect to the Adapter, Running test soft and PC running ping to EUT, Check or Repair it.

The FaceID (Time attendance and access control terminal) was configured as below:

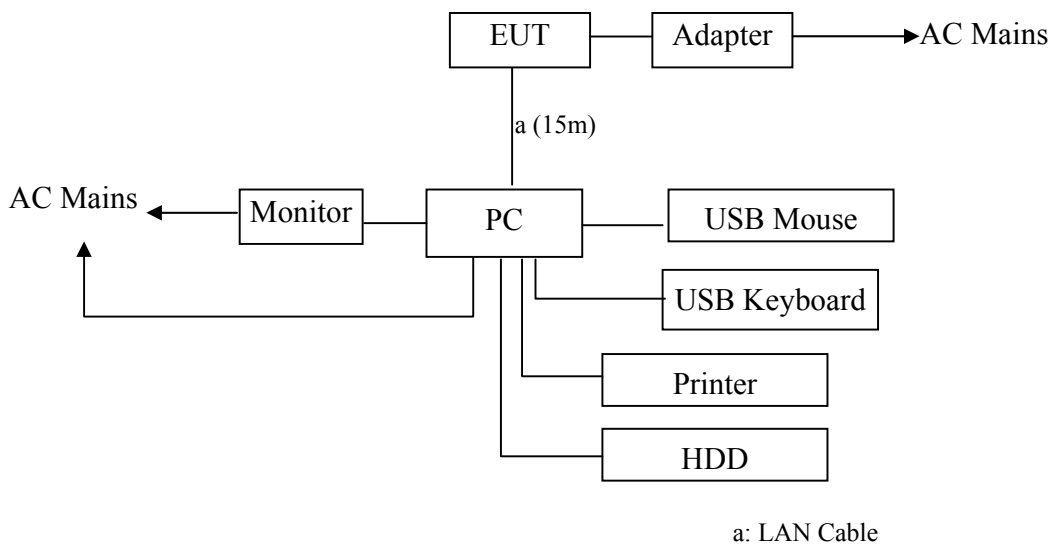


Figure 1: Test Configuration

2.4 Equipment Configuration

The EUT was set up as outlined in Figure 1. The EUT was comprised of the following equipment. (All Modules, PCBs, etc. listed were considered as part of the EUT, as tested.)

Table 2: Equipment Configuration

Slot #	Name / Description	Model Number	Part Number	Serial Number	Revision
1.	FaceID (Time attendance and access control terminal)	F110	/	/	/

2.5 Tested Supporting System Details

Table 3: Tested Supporting System Details

Slot #	Port Identification	Connector Type	Cable Length	Shielded (Y/N)	Termination Point
1.	LAN Cable	Shielded, Detachable	15m	N	AE
2.	Power Cord	Shielded, Detachable	1.5m	N	AE

2.6 Support Equipment

【PC system which transmitting #1】

No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1	Personal Computer	Test PC H	DELL	DCTA	7XLD22X	<input checked="" type="checkbox"/> FCC DoC <input checked="" type="checkbox"/> BSMI ID:R33002
		Power Cord: Unshielded, Detachable, 1.8m				
2	USB Keyboard	ACS-EMC- K02R	DELL	SK-8115	CN-ORH656-65890-686-007J	<input checked="" type="checkbox"/> FCC DoC <input checked="" type="checkbox"/> BSMI ID: T3A002
		USB Cable: shielded, Undetachable, 2.0m				
3	USB Mouse	ACS-EMC-M09R	FUJITSU	M-U0002-FSC1	S26381-K426-V102	<input type="checkbox"/> FCC ID <input type="checkbox"/> BSMI ID
		USB Cable: shielded, Undetachable, 2.0m				
4	Monitor	ACS-EMC-LM02R	DELL	1907FPt	CN-009759-71618-6CG-BDWW	<input checked="" type="checkbox"/> FCC DoC <input checked="" type="checkbox"/> BSMI ID: R3A002
		Power Cord: Unshielded, Detachable, 1.8m VGA Cable: Shielded, Detachable, 2.0m (with two cores)				
5	Printer	ACS-EMC-PT04	HP	C9079A	-	<input type="checkbox"/> FCC ID <input checked="" type="checkbox"/> BSMI ID :R33001
		USB Cable: shielded, Detachable, 1.5m Power Cord: Unshielded, Detachable, 1.8m Power Adaptor: HP, 0957-2119, DC Cable: Unshielded, Detachable, 1.5m				
6	HDD	ACS-EMC-HDD03	Terasys	F12-UF	A0100215-5390030	<input checked="" type="checkbox"/> FCC DoC <input checked="" type="checkbox"/> BSMI ID: 4912A022
		USB Cable: shielded, Detachable, 1.0m Data Cable : Shielded, Undetachable, 4.0m				

2.7 EUT Modifications

- (1) R41, R49, R11 change to 300 ohm, R16 change to 600 ohm, RN12 change to 600 ohm.
- (2) J13 cable and screen cable shield grounding. Add conductive cloth on the screen shell.
- (3) Add 103P capacitance to power cord, Add 102P capacitance to speaker and GND.
- (4) Conductive paint spraying on shell.
- (5) Add conductive cloth and foam on the USB port, and connect grounding.
- (6) Main board connects grounding with shell.

2.8 Testing Algorithm

The FaceID (Time attendance and access control terminal) was operated continuously by normal operating conditions.

Test Configuration: The FaceID (Time attendance and access control terminal) connect to the surrounding for all port, such as USB , VGA, DVI etc. The test engineer made the decisions by the test soft.

2.9 Test Location

NAME: Audix Technology (Shenzhen) Co., Ltd. by CNAS. The CNAS Registration No.: L4117.

FCC Registration Number is 90454

Address: No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen,
Guangdong, China

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(Registration No. CNAS L4117)

Audix Technology (Shenzhen) Co., Ltd.
No.6, Kefeng Road, Block 52, Nantou Science & Industry Park,
Shenzhen, Guangdong, China

is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence of testing.

The scope of accreditation is detailed in the attached appendices bearing the same registration number as above. The appendices form an integral part of this certificate.

Date of Issue: 2013-02-04
Date of Expiry: 2016-02-03
Date of Initial Accreditation: 2009-07-16
Date of Update: 2013-02-04



Signed on behalf of China National Accreditation Service
for Conformity Assessment

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CACA) to operate the national accreditation schemes for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC-MRA) and Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC-MRA).

No.CNAS AL 2 0006379

2.10 Measurements

2.10.1 Measurement Method

All measurements herein were performed according to the 2009 version of ANSI C63.4. The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation. Calibration checks are made periodically to verify proper performance of the measuring instrumentation.

2.11 Measurement Uncertainty

All results reported herein relate only to the equipment tested. The basis for uncertainty calculation uses ANSI/NCSL Z540-2-1997 with a type B evaluation of the standard uncertainty. Elements contributing to the standard uncertainty are combined using the method described in Equation 1 to arrive at the total standard uncertainty. The standard uncertainty is multiplied by the coverage factor to determine the expanded uncertainty which is generally accepted for use in commercial, industrial, and regulatory applications and when health and safety are concerned (see Equation 2). A coverage factor was selected to yield a 95% confidence in the uncertainty estimation.

Equation 1: Standard Uncertainty

$$u_c = \pm \sqrt{\frac{a^2}{div_a^2} + \frac{b^2}{div_b^2} + \frac{c^2}{div_c^2} + \dots}$$

where u_c = standard uncertainty

a, b, c, \dots = individual uncertainty elements

$div_{a, b, c}$ = the individual uncertainty element divisor based on the probability distribution

divisor = 1.732 for rectangular distribution

divisor = 2 for normal distribution

divisor = 1.414 for trapezoid distribution

Equation 2: Expanded Uncertainty

$$U = ku_c$$

where U = expanded uncertainty
k = coverage factor
k ≤ 2 for 95% coverage (ANSI/NCSL Z540-2 Annex G)
u_c = standard uncertainty

The measurement uncertainty complies with the maximum allowed uncertainty from CISPR 16-4-2. Measurement uncertainty is not used to adjust the measurements to determine compliance. The expanded uncertainty values for the various scopes in the WLL accreditation are provided in Table 4 below.

Table 4: Expanded Uncertainty List

Scope	Standard(s)	Expanded Uncertainty
Conducted Emissions	FCC Part 15	7.13 dB
Radiated Emissions	FCC Part 15	4.71dB

3 Test Results

3.1 Conducted Emissions

3.1.1 Requirements

Test Arrangement: Table Top

Compliance Standard: FCC Part 15 (7/2012), Class B

Compliance Limits		
Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz~500kHz	66 ~ 56	56 ~ 46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

3.1.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Receiver	Rohde & Schwarz	ESHS20	836600/006	May.08, 13	1 Year
2	L.I.S.N.#1	Rohde & Schwarz	ENV4200	100041	May.08, 13	1 Year
3	L.I.S.N.#2	Kyoritsu	KNW-407	8-1628-5	May.08, 13	1 Year
4	Terminator	Hubersuhner	50Ω	No. 1	May.08, 13	1 Year
5	Terminator	Hubersuhner	50Ω	No. 2	May.08, 13	1 Year
6	RF Cable	Fujikura	3D-2W	No.2	May.08, 13	1 Year
7	Coaxial Switch	Anritsu	MP59B	6200298346	May.08, 13	1 Year
8	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100340	May.08, 13	1 Year

3.1.3 Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #1). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2009 on conducted Emission test.

The bandwidth of the R&S Test Receiver ESHS20 was set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.1.4 Radiated Data Reduction and Reporting

To convert the raw spectrum analyzer radiated data into a form that can be compared with the FCC limits, it is necessary to account for various calibration factors that are supplied with the antennas and other measurement accessories. These factors are included into the antenna factor (AF) column of the table and in the cable factor (CF) column of the table. The AF (in dB/m) and the CF (in dB) is algebraically added to the raw Spectrum Analyzer Voltage in dB μ V to obtain the Radiated Electric Field in dB μ V/m. This logarithm amplitude is converted to a linear amplitude, then compared to the FCC limit. Example:

Spectrum Analyzer Voltage: VdB μ V

Antenna Correction Factor: dB/m

Electric Field: EdB μ V/m = V dB μ V + AFdB/m + CFdB - GdB

To convert to linear units of measure: EdBV/m/20 Inv log

3.1.5 Test Data

The EUT FaceID (Time attendance and access control terminal) complied with the Class B Radiated Emissions requirements. Table 5 provides the test results for radiated conducted emissions.

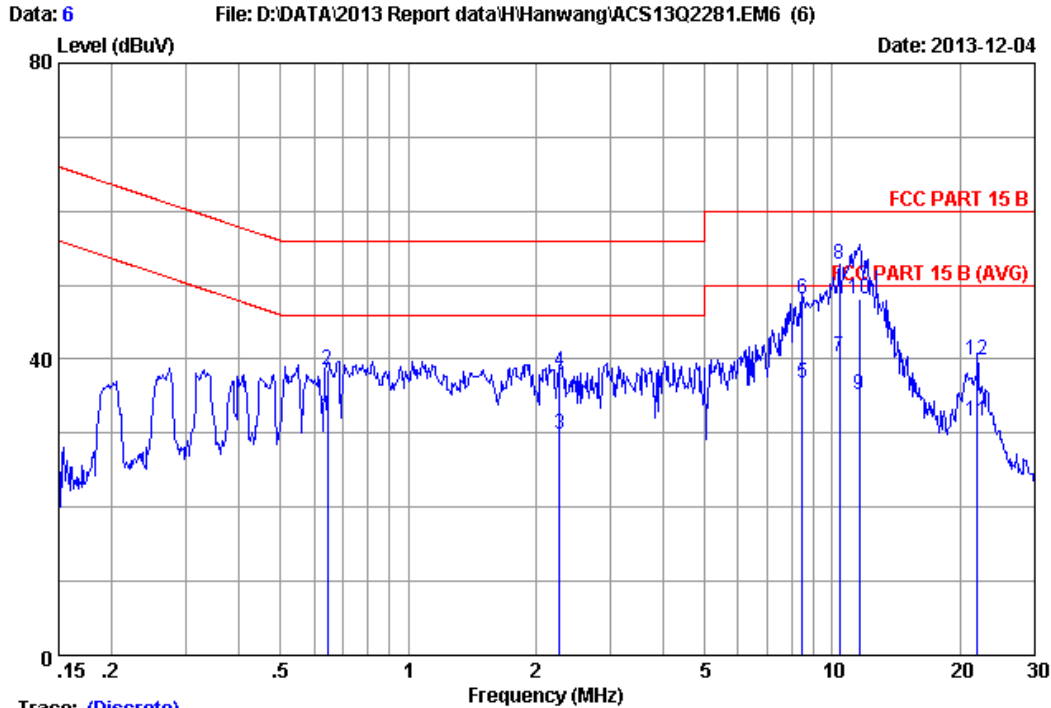
Photograph 1 and Photograph 2 shows the radiated emission test configuration.

Test Engineer(s): Nick Huang

Test Date(s): 2013/12/04

Test Location: Audix Technology (Shenzhen) Co., Ltd.

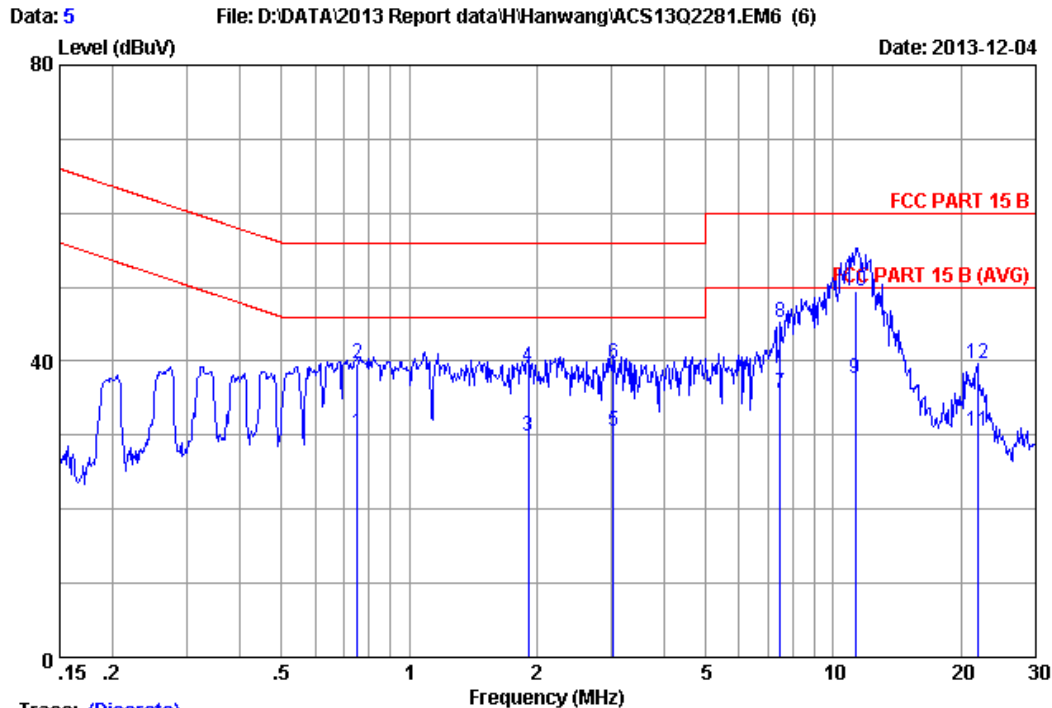
Table 5: Conducted Emissions Test Data



Trace: (Discrete)
 Site no :1#conduction Data No :6
 Dis./Ant. **: 2013 ESH2-Z5 LINE
 Limit :FCC PART 15 B
 Env./Ins. :26.6°C/41% Engineer :Nick_Huang
 EUT :FaceID(Time attendance and access control terminal)
 Power Rating :DC 12V Adapter Input AC 120V/60Hz
 Test Mode :Running
 :M/N:F110

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.64398	0.17	0.02	32.20	32.39	46.00	13.61	Average
2	0.64398	0.17	0.02	38.45	38.64	56.00	17.36	QP
3	2.273	0.23	0.04	29.60	29.87	46.00	16.13	Average
4	2.273	0.23	0.04	38.04	38.31	56.00	17.69	QP
5	8.501	0.48	0.09	36.25	36.82	50.00	13.18	Average
6	8.501	0.48	0.09	47.51	48.08	60.00	11.92	QP
7	10.397	0.58	0.10	39.60	40.28	50.00	9.72	Average
8	10.397	0.58	0.10	52.19	52.87	60.00	7.13	QP
9	11.559	0.68	0.11	34.49	35.28	50.00	14.72	Average
10	11.559	0.68	0.11	47.29	48.08	60.00	11.92	QP
11	21.946	1.89	0.15	29.60	31.64	50.00	18.36	Average
12	21.946	1.89	0.15	37.79	39.83	60.00	20.17	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



Trace: (Discrete)
 Site no :1#conduction Data No :5
 Dis./Ant. **: 2013 ESH2-Z5 NEUTRAL
 Limit :FCC PART 15 B
 Env./Ins. :26.6°C/41% Engineer :Nick_Huang
 EUT :FaceID(Time attendance and access control terminal)
 Power Rating :DC 12V Adapter Input AC 120V/60Hz
 Test Mode :Running
 :M/N:F110

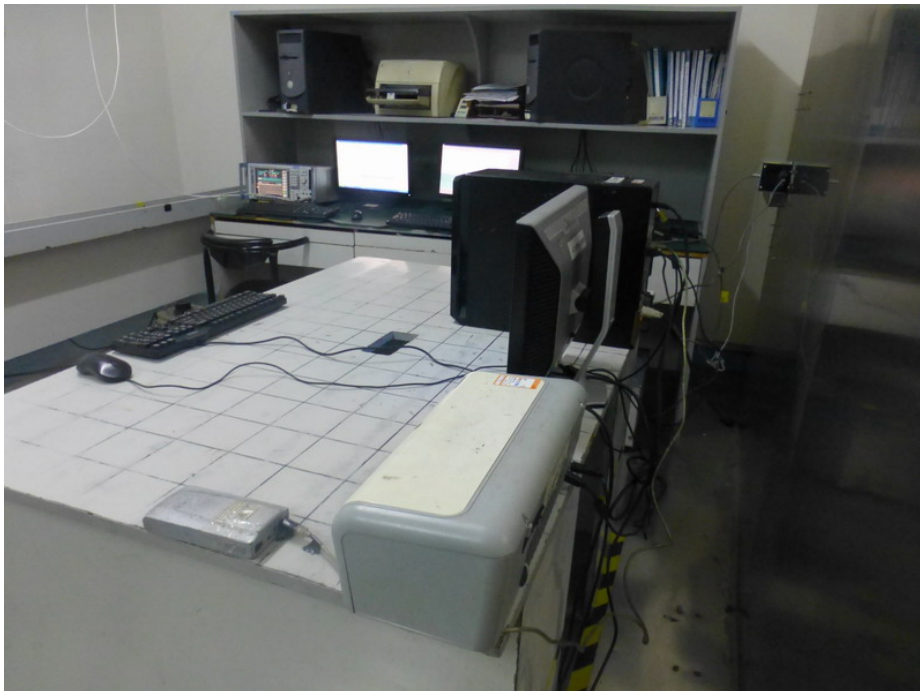
No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.75493	0.27	0.03	30.10	30.40	46.00	15.60	Average
2	0.75493	0.27	0.03	39.35	39.65	56.00	16.35	QP
3	1.908	0.26	0.04	29.60	29.90	46.00	16.10	Average
4	1.908	0.26	0.04	38.95	39.25	56.00	16.75	QP
5	3.025	0.29	0.05	30.20	30.54	46.00	15.46	Average
6	3.025	0.29	0.05	39.42	39.76	56.00	16.24	QP
7	7.486	0.42	0.08	35.11	35.61	50.00	14.39	Average
8	7.486	0.42	0.08	44.84	45.34	60.00	14.66	QP
9	11.257	0.56	0.11	36.89	37.56	50.00	12.44	Average
10	11.257	0.56	0.11	48.69	49.36	60.00	10.64	QP
11	21.830	1.33	0.15	29.10	30.58	50.00	19.42	Average
12	21.830	1.33	0.15	38.25	39.73	60.00	20.27	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

Photograph 1: Conducted Emissions Front



Photograph 2: Conducted Emissions Back



3.2 Radiated Emissions

3.2.1 Requirements

Test Arrangement: Table Top

Compliance Standard: FCC Part 15 (7/2012), Class B (3 meter)

FCC Compliance Limits	
Frequency	Limits
30-88 MHz	100 μ V/m
88-216 MHz	150 μ V/m
216-960 MHz	200 μ V/m
>960MHz (3 meters)	500 μ V/m

3.2.2 Test Equipment

For frequency range 30MHz~1000MHz (At Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	10m Chamber	AUDIX	N/A	N/A	Nov.25,13	1 Year
2	EMC Analyzer	Agilent	E7405A	MY42000131	Oct.31, 13	1 Year
3	EMC Analyzer	Agilent	E7405A	MY45116588	Oct.31, 13	1 Year
4	Test Receiver	Rohde & Schwarz	ESCI	100843	Nov.08, 13	1 Year
5	Amplifier	Agilent	8447D	2944A10684	May.08, 13	1Year
6	Amplifier	Agilent	8447D	2944A11140	May.08, 13	1 Year
7	Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-493	Mar.14, 13	1 Year
8	Trilog-Broadband Antenna	TESEQ	CBL6112D	25237	May.30, 13	1 Year
9	RF Cable	MIYAZAKI	CFD400-NL	10m Chamber No.1	May.08, 13	1 Year
10	RF Cable	MIYAZAKI	CFD400-NL	10m Chamber No.2	May.08, 13	1 Year
11	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 13	1 Year
12	Coaxial Switch	Anritsu	MP59B	6200766905	May.08, 13	1 Year
13	Coaxial Switch	Anritsu	MP59B	6200313662	May.08, 13	1 Year

For frequency range 1GHz~6GHz (At Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	May.08, 13	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	Aug.28, 13	1 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 13	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX106	77980/6	May.08, 13	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX106	77977/6	May.08, 13	1 Year

3.2.3 Test Procedure

The requirements of FCC Part 15 (7/2012) call for the EUT to be placed on an 80 cm high 1 X 1.5 meters non-conductive motorized turntable for radiated testing on a 10-meter open field test site. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. Bi-conical and log periodic broadband antennas were mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna was varied between 1 and 4 meters. The output of the antenna was connected to the input of the spectrum analyzer and the emissions in the frequency range of 30 MHz to 1 GHz were measured. The peripherals were placed on the table in accordance with ANSI C63.4-2009. Cables were varied in position to produce maximum emissions. Both the horizontal and vertical field components were measured.

The output from the antenna was connected, via a preamplifier, to the input of the spectrum analyzer. The detector function was set to quasi-peak or peak, as appropriate. Above 1GHz average measurement are recorded. The measurement bandwidth of the spectrum analyzer system was set to at least 120 kHz, with all post-detector filtering no less than 10 times the measurement bandwidth. Frequencies above 1GHz were performed using a measurement bandwidth of 1MHz with a video bandwidth setting of 10 Hz for the average measurement.

3.2.4 Radiated Data Reduction and Reporting

To convert the raw spectrum analyzer radiated data into a form that can be compared with the FCC limits, it is necessary to account for various calibration factors that are supplied with the antennas and other measurement accessories. These factors are included into the antenna factor (AF) column of the table and in the cable factor (CF) column of the table. The AF (in dB/m) and the CF (in dB) is algebraically added to the raw Spectrum Analyzer Voltage in dBμV to obtain the Radiated Electric Field in dBμV/m. This logarithm amplitude is converted to a linear amplitude, then compared to the FCC limit. Example:

Spectrum Analyzer Voltage: VdBμV

Antenna Correction Factor: dB/m

Electric Field: EdBμV/m = V dBμV + AFdB/m + CFdB - GdB

To convert to linear units of measure: EdBV/m/20 Inv log

3.2.5 *Test Data*

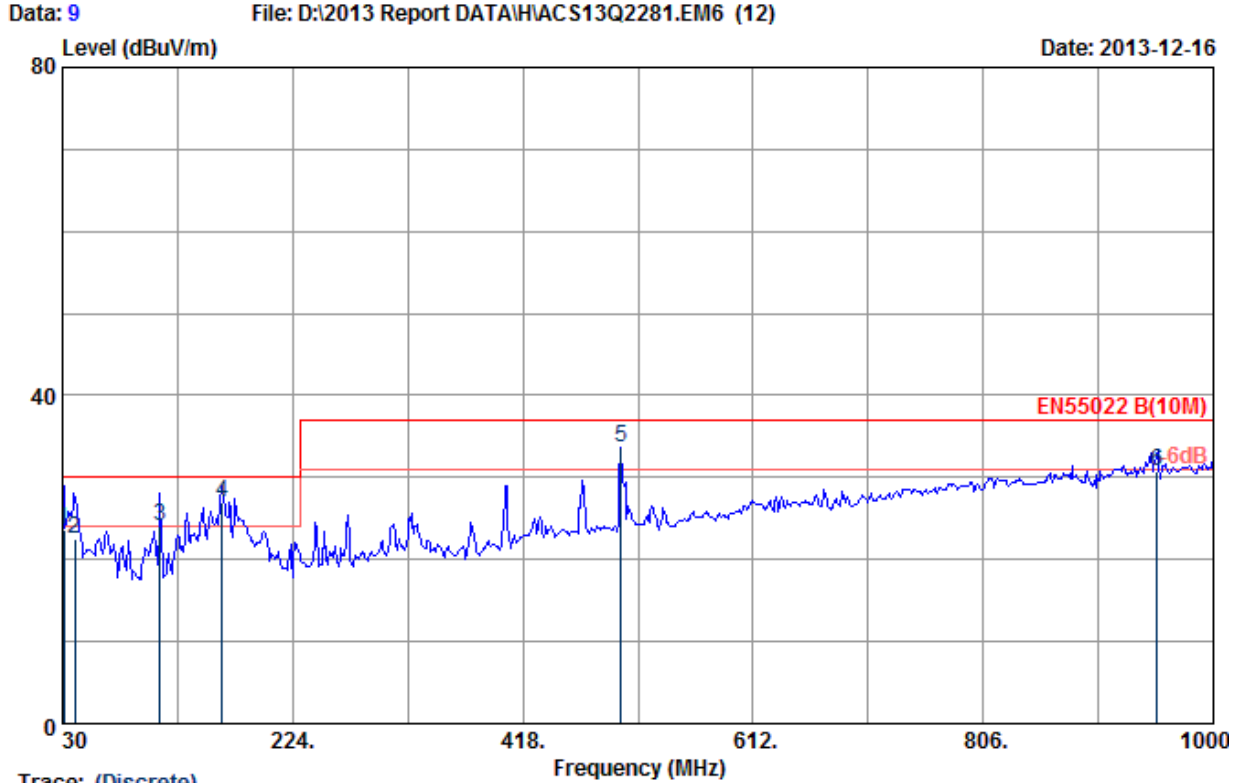
The EUT complied with the Class B Radiated Emissions requirements. Table 6,7 provided the test results for radiated emissions. Photograph 3 Photograph 4 Photograph 4 show the radiated emission test configuration.

Test Engineer(s): Rick Li

Test Date(s): Nov.30, 2013

Test Location: Audix Technology (Shenzhen) Co., Ltd.

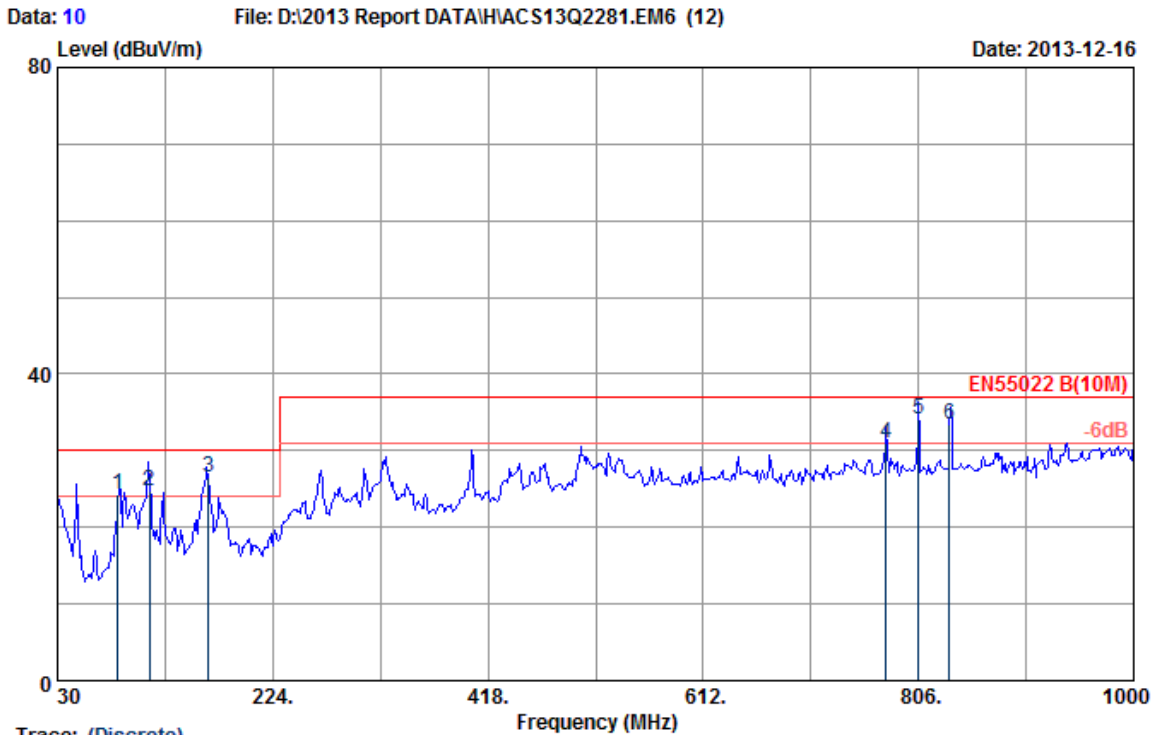
Table 6: Radiated Emission Test Data (Below 1GHz)



Trace: (Discrete)
 Site no :10m Chamber Data No :9
 Dis./Ant. :10m 2013 9168-493 Ant.pol :VERTICAL
 Limit :EN55022 B(10M)
 Env./Ins. :24°C/56% Engineer :rick_li
 EUT :Face ID(Time attendance and access control terminal)
 Power Rating :DC 12V Adapter Input AC 230V/50Hz
 Test Mode :Running
 M/N:F110

No	Freq (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.250	12.34	3.69	7.50	23.53	30.00	6.47	QP
2	40.150	13.31	3.75	5.49	22.55	30.00	7.45	QP
3	112.450	10.35	4.05	37.27	24.10	30.00	5.90	QP
4	164.830	13.06	4.26	36.87	26.94	30.00	3.06	QP
5	500.450	17.71	5.20	10.71	33.62	37.00	3.38	QP
6	952.450	23.95	6.35	0.50	30.80	37.00	6.20	QP

Remarks: 1.Emission Level=Antenna Factor+Cable Loss+Reading.
 2.The emission Levels that are 20db below the official limit are not reported

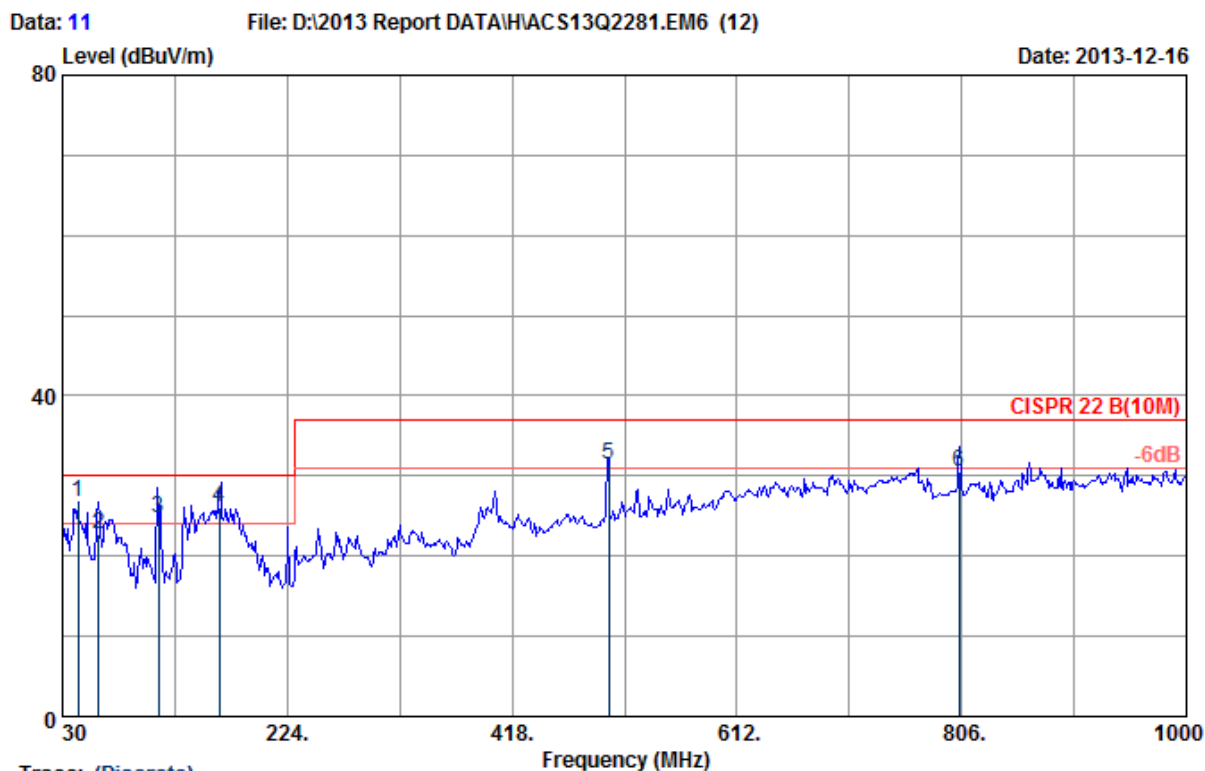


Trace: (Discrete)

Site no :10m Chamber Data No :10
 Dis./Ant. :10m 2013 9168-493 Ant.pol :HORIZONTAL
 Limit :EN55022 B(10M)
 Env./Ins. :24°C/56% Engineer :rick_li
 EUT :Face ID(Time attendance and access control terminal)
 Power Rating :DC 12V Adapter Input AC 230V/50Hz
 Test Mode :Running
 M/N:F110

No	Freq (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	84.700	8.49	3.62	12.20	24.31	30.00	5.69	QP
2	112.900	10.39	3.78	10.50	24.67	30.00	5.33	QP
3	165.800	13.01	4.06	9.34	26.41	30.00	3.59	QP
4	776.900	22.00	6.03	2.95	30.98	37.00	6.02	QP
5	806.000	22.22	6.10	5.68	34.00	37.00	3.00	QP
6	834.025	22.50	6.10	4.80	33.40	37.00	3.60	QP

Remarks: 1.Emission Level=Antenna Factor+Cable Loss+Reading.
 2.The emission Levels that are 20db below the official limit are not reported

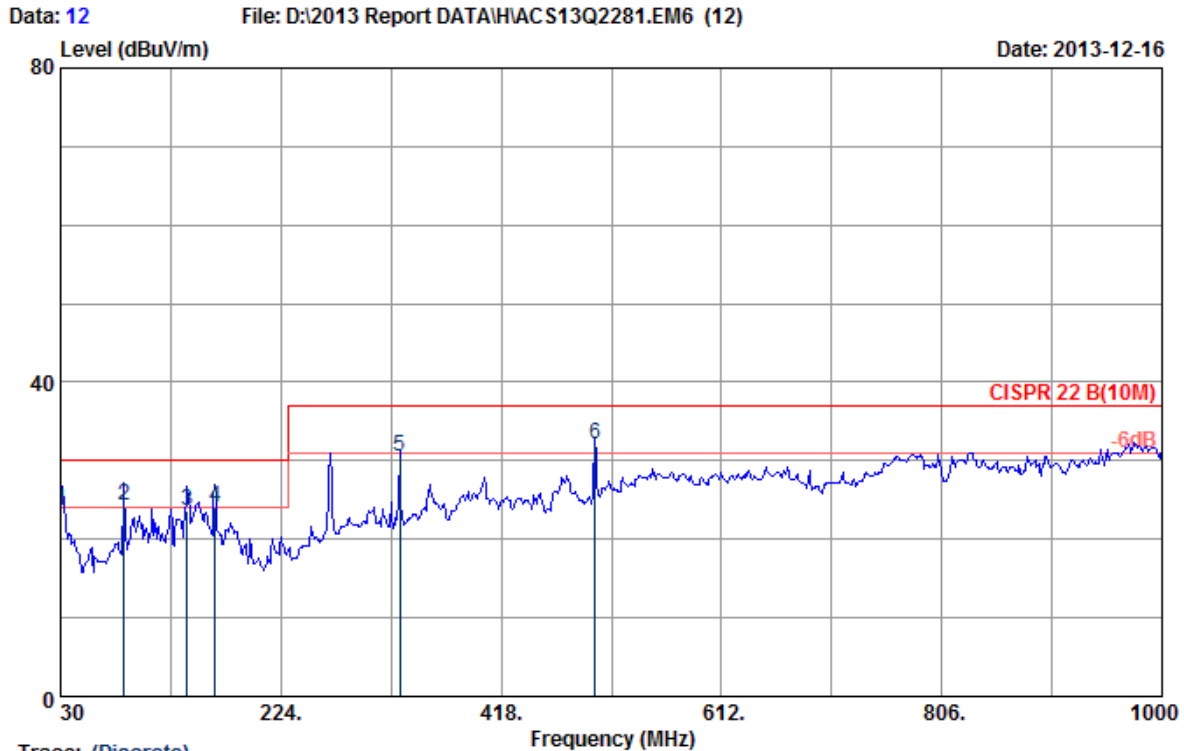


Trace: (Discrete)

Site no :10m Chamber Data No :11
 Dis./Ant. :10m 2013 25237 10M Ant.pol :VERTICAL
 Limit :CISPR 22 B(10M)
 Env./Ins. :24*C/56% Engineer :rick_li
 EUT :Face ID(Time attendance and access control terminal)
 Power Rating :DC 12V Adapter Input AC 120V/60Hz
 Test Mode :Running
 M/N:F110

No	Freq (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	43.580	11.13	3.14	12.52	26.79	30.00	3.21	QP
2	61.040	12.90	3.85	5.98	22.73	30.00	7.27	QP
3	112.900	10.39	4.05	10.33	24.77	30.00	5.23	QP
4	165.350	13.03	4.26	8.80	26.09	30.00	3.91	QP
5	501.420	17.43	5.00	8.93	31.36	37.00	5.64	QP
6	804.060	22.18	5.88	2.50	30.56	37.00	6.44	QP

Remarks: 1.Emission Level=Antenna Factor+Cable Loss+Reading.
 2.The emission Levels that are 20db below the official limit are not reported

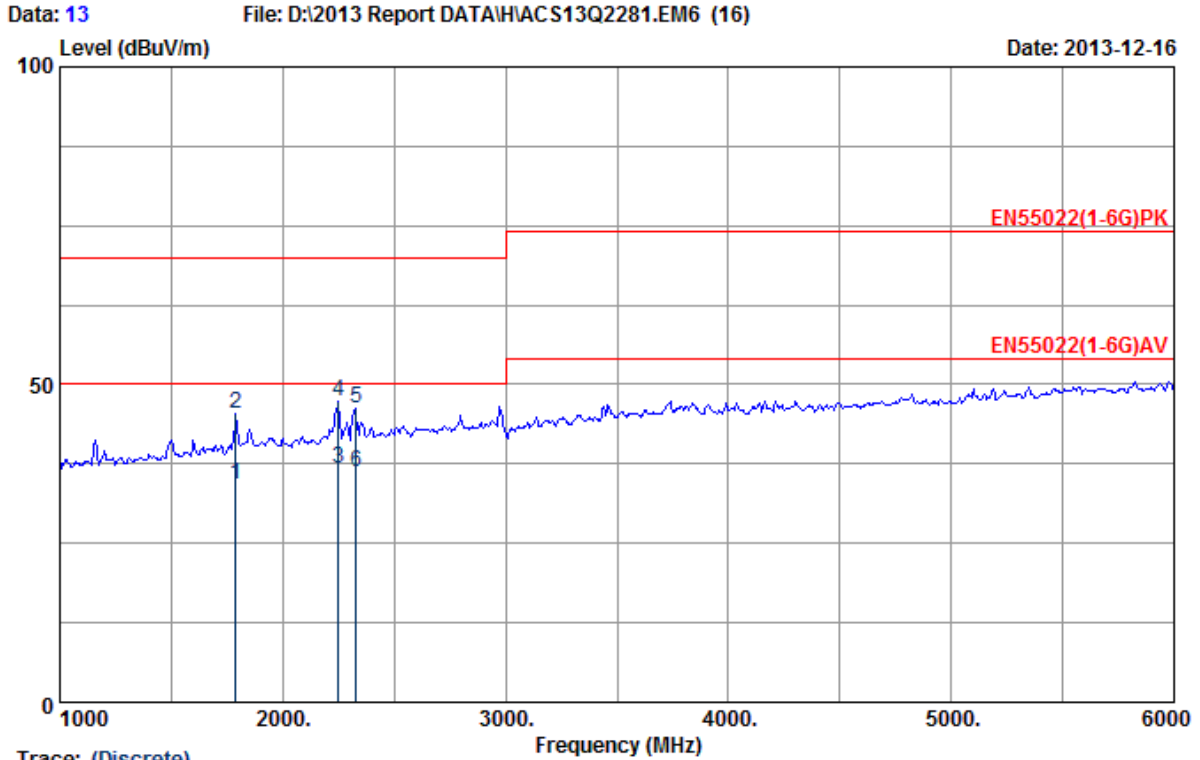


Trace: (Discrete)
 Site no :10m Chamber Data No :12
 Dis./Ant. :10m 2013 25237 10M Ant.pol :HORIZONTAL
 Limit :CISPR 22 B(10M)
 Env./Ins. :24*C/56% Engineer :rick_li
 EUT :Face ID(Time attendance and access control terminal)
 Power Rating :DC 12V Adapter Input AC 120V/60Hz
 Test Mode :Running
 M/N:F110

No	Freq (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.000	12.47	3.84	7.39	23.70	30.00	6.30	QP
2	86.260	8.63	4.15	11.40	24.18	30.00	5.82	QP
3	141.550	12.86	4.40	6.40	23.66	30.00	6.34	QP
4	165.800	12.83	4.50	6.66	23.99	30.00	6.01	QP
5	328.760	13.78	4.32	12.35	30.45	37.00	6.55	QP
6	500.450	17.41	5.00	9.63	32.04	37.00	4.96	QP

Remarks: 1.Emission Level=Antenna Factor+Cable Loss+Reading.
 2.The emission Levels that are 20db below the official limit are not reported

Table 7: Radiated Emission Test Data (Above 1GHz)



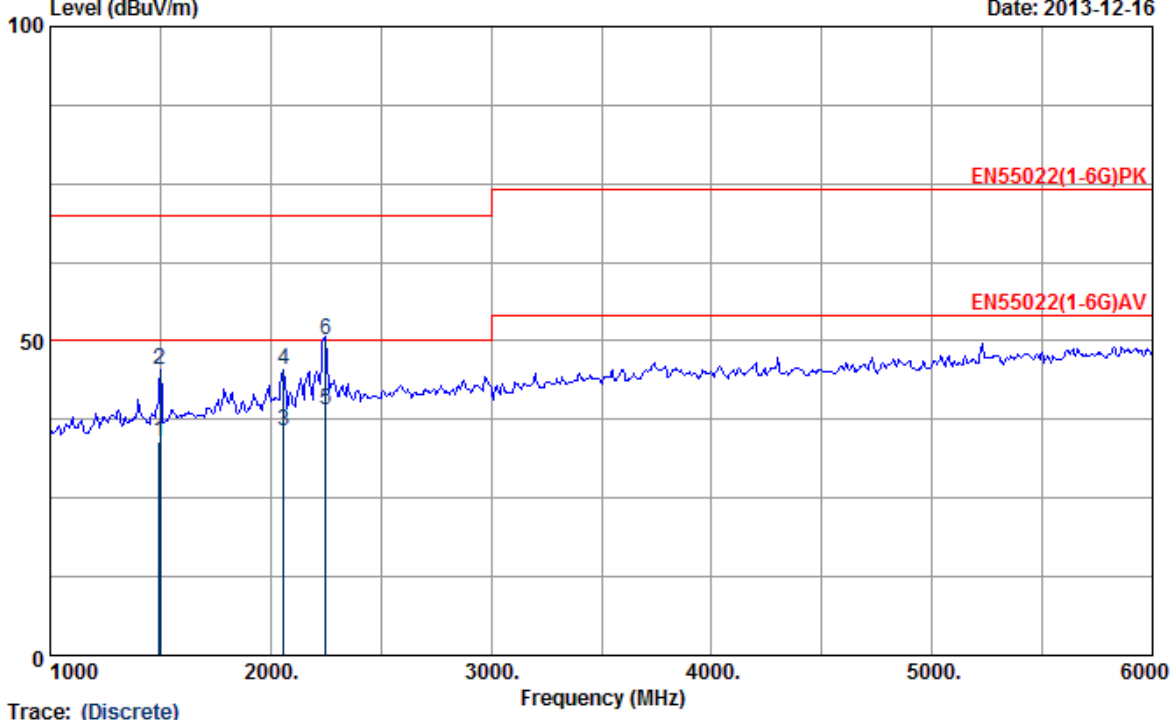
Trace: (Discrete)

Site no :10m Chamber Data No :13
 Dis./Ant. :3m 2013 3115 9607-4877 Ant.pol :HORIZONTAL
 Limit :EN55022 (1-6G) PK
 Env./Ins. :24°C/56% Engineer :rick_li
 EUT :Face ID(Time attendance and access
 Power Rating :DC 12V Adapter Input AC 230V/50Hz
 Test Mode :Running
 M/N:F110

No	Freq (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	AMP Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1788.245	25.89	2.19	35.11	41.35	34.32	50.00	15.68	Average
2	1790.879	25.89	2.19	35.11	52.50	45.47	70.00	24.53	Peak
3	2248.263	26.80	2.64	34.76	42.14	36.82	50.00	13.18	Average
4	2250.885	26.80	2.65	34.76	52.72	47.41	70.00	22.59	Peak
5	2328.557	27.02	2.71	34.75	51.20	46.18	70.00	23.82	Peak
6	2329.524	27.02	2.71	34.75	41.30	36.28	50.00	13.72	Average

Remarks: 1.Emission Level=Antenna Factor+Cable Loss+Reading-Amp factor.
 2.The emission Levels that are 20db below the official limit are not reported

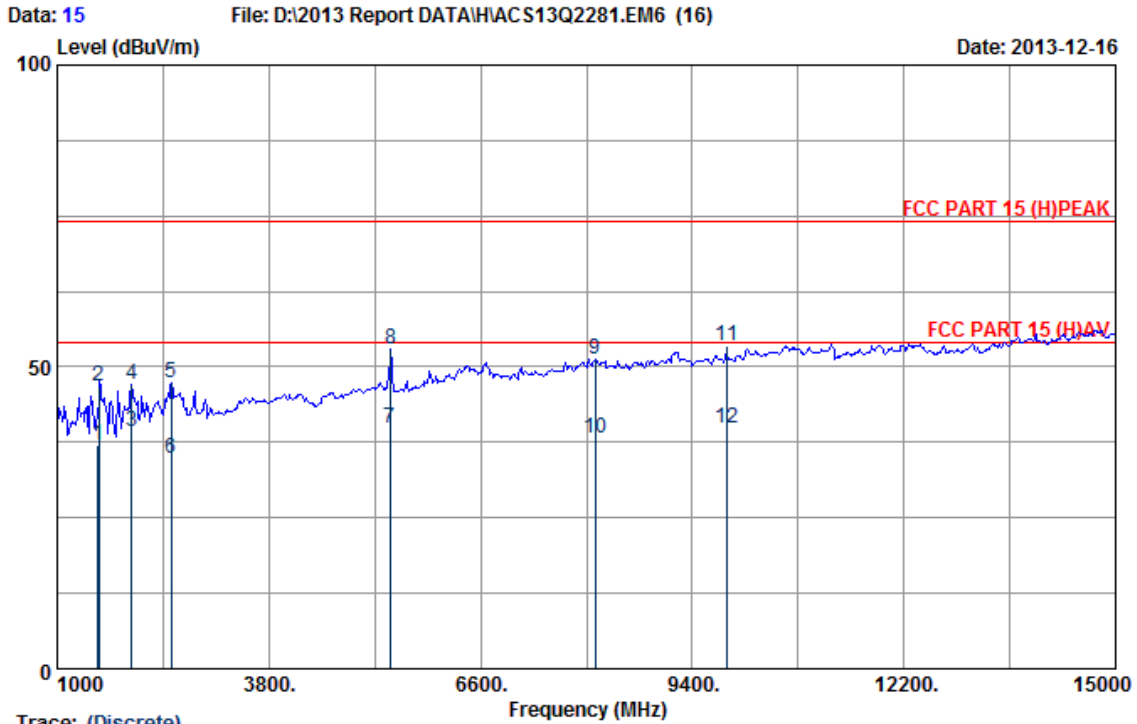
Data: 14 File: D:\2013 Report DATA\HACS13Q2281.EM6 (16) Date: 2013-12-16



Trace: (Discrete)
 Site no :10m Chamber Data No :14
 Dis./Ant. :3m 2013 3115 9607-4877 Ant.pol :VERTICAL
 Limit :EN55022(1-6G)PK
 Env./Ins. :24*C/56% Engineer :rick_li
 EUT :Face ID(Time attendance and access
 Power Rating :DC 12V Adapter Input AC 230V/50Hz
 Test Mode :Running
 M/N:F110

No	Freq (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	AMP Factor (dB)	Reading (dBuV)	Emission			Remark
						Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1	1496.775	25.59	1.86	35.57	42.17	34.05	50.00	15.95	Average
2	1500.752	25.60	1.86	35.53	53.60	45.53	70.00	24.47	Peak
3	2058.347	26.26	2.48	34.79	41.78	35.73	50.00	14.27	Average
4	2060.564	26.27	2.48	34.79	51.39	45.35	70.00	24.65	Peak
5	2248.651	26.80	2.64	34.76	44.33	39.01	50.00	10.99	Average
6	2250.846	26.80	2.65	34.76	55.53	50.22	70.00	19.78	Peak

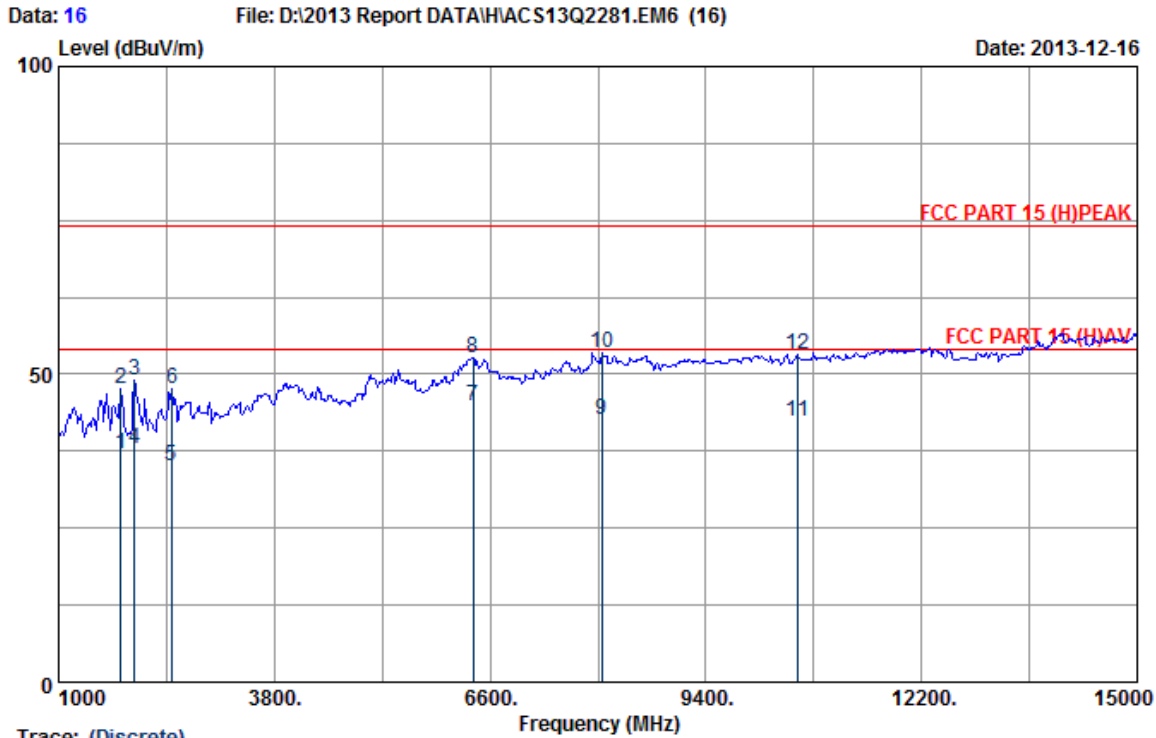
Remarks: 1.Emission Level=Antenna Factor+Cable Loss+Reading-Amp factor.
 2.The emission Levels that are 20db below the official limit are not reported



Trace: (Discrete)
 Site no :10m Chamber Data No :15
 Dis./Ant. :3m 2013 3115 9607-4877 Ant.pol :VERTICAL
 Limit :FCC PART 15 (H) PEAK
 Env./Ins. :24°C/56% Engineer :rick_li
 EUT :Face ID(Time attendance and access
 Power Rating :DC 12V Adapter Input AC 120V/60Hz
 Test Mode :Running
 M/N:F110

No	Freq (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	AMP Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1540.007	25.64	1.91	35.49	45.00	37.06	54.00	16.94	Average
2	1546.000	25.65	1.91	35.49	54.78	46.85	74.00	27.15	Peak
3	1980.150	26.08	2.41	34.84	45.60	39.25	54.00	14.75	Average
4	1980.230	26.08	2.41	34.84	53.38	47.03	74.00	26.97	Peak
5	2512.213	27.53	2.86	34.72	51.58	47.25	74.00	26.75	Peak
6	2512.213	27.53	2.86	34.72	39.23	34.90	54.00	19.10	Average
7	5396.200	33.77	4.54	34.71	36.20	39.80	54.00	14.20	Average
8	5410.120	33.80	4.55	34.71	49.38	53.02	74.00	20.98	Peak
9	8112.260	36.71	5.98	34.81	43.40	51.28	74.00	22.72	Peak
10	8113.260	36.71	5.98	34.81	30.22	38.10	54.00	15.90	Average
11	9848.025	37.90	6.31	34.98	44.32	53.55	74.00	20.45	Peak
12	9849.125	37.90	6.31	34.98	30.65	39.88	54.00	14.12	Average

Remarks: 1.Emission Level=Antenna Factor+Cable Loss+Reading-Amp factor.
 2.The emission Levels that are 20db below the official limit are not reported

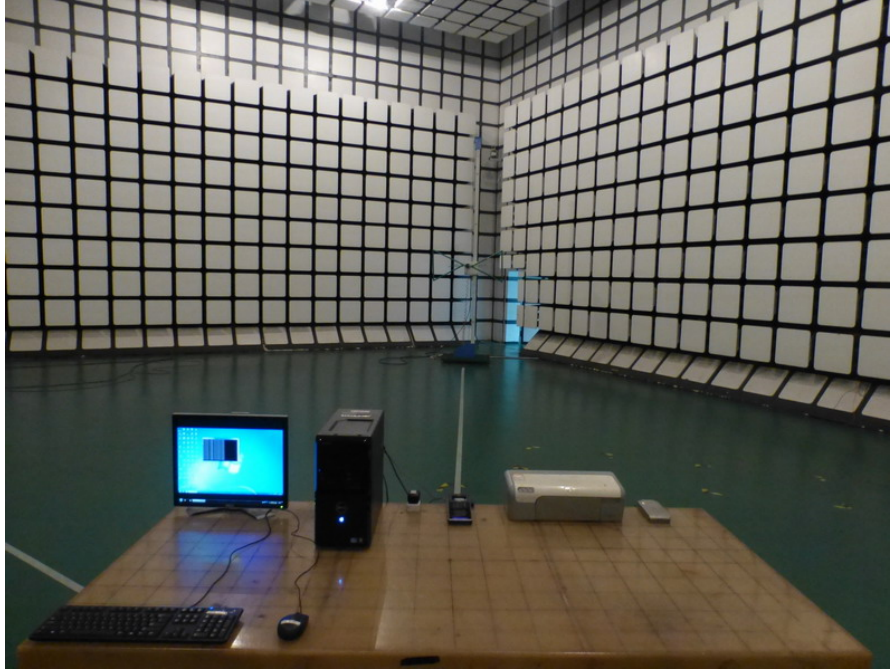


Trace: (Discrete)
 Site no :10m Chamber Data No :16
 Dis./Ant. :3m 2013 3115 9607-4877 Ant.pol :HORIZONTAL
 Limit :FCC PART 15 (H) PEAK
 Env./Ins. :24*C/56% Engineer :rick_li
 EUT :Face ID(Time attendance and access
 Power Rating :DC 12V Adapter Input AC 120V/60Hz
 Test Mode :Running
 M/N:F110

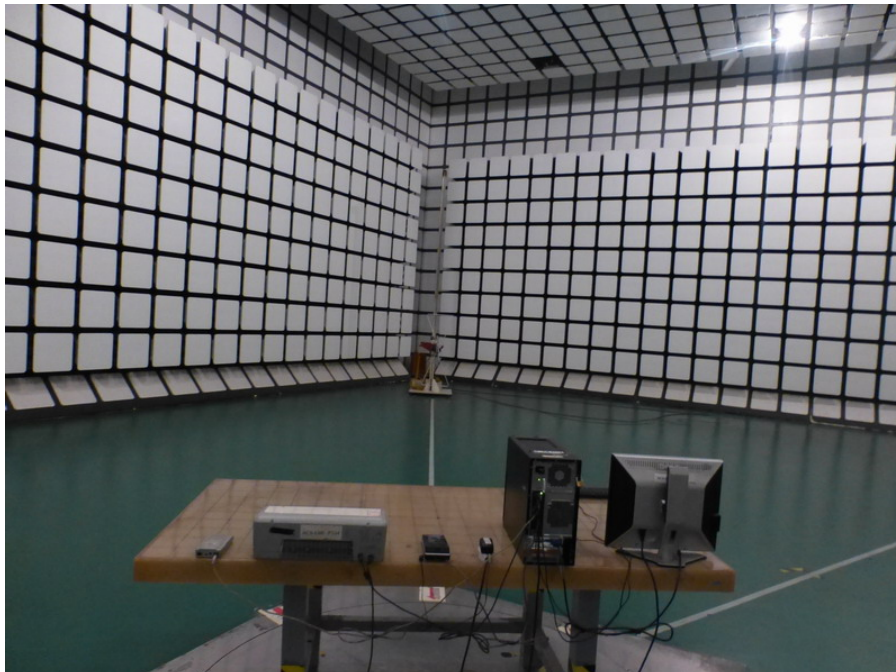
No	Freq (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	AMP Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1811.200	25.91	2.21	35.07	43.91	36.96	54.00	17.04	Average
2	1812.160	25.91	2.22	35.07	54.55	47.61	74.00	26.39	Peak
3	1980.290	26.08	2.41	34.84	55.51	49.16	74.00	24.84	Peak
4	1980.290	26.08	2.41	34.84	44.20	37.85	54.00	16.15	Average
5	2468.900	27.41	2.83	34.73	39.61	35.12	54.00	18.88	Average
6	2470.360	27.42	2.83	34.73	52.17	47.69	74.00	26.31	Peak
7	6375.800	34.88	5.19	34.80	39.63	44.90	54.00	9.10	Average
8	6376.260	34.88	5.19	34.80	47.43	52.70	74.00	21.30	Peak
9	8055.100	36.66	5.97	34.81	34.78	42.60	54.00	11.40	Average
10	8056.160	36.66	5.97	34.81	45.69	53.51	74.00	20.49	Peak
11	10590.110	38.42	6.46	34.76	32.19	42.31	54.00	11.69	Average
12	10590.130	38.42	6.46	34.76	43.17	53.29	74.00	20.71	Peak

Remarks: 1.Emission Level=Antenna Factor+Cable Loss+Reading-Amp factor.
 2.The emission Levels that are 20db below the official limit are not reported

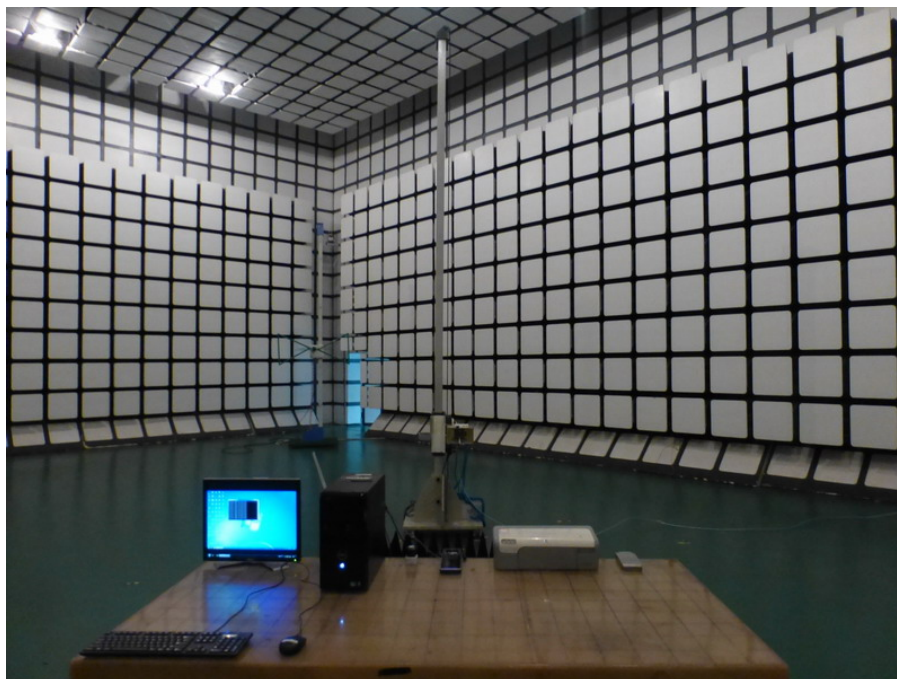
Photograph 3: Radiated Emission Test Configuration, (Below 1GHz) Front



Photograph 4: Radiated Emission Test Configuration, (Below 1GHz) Back



Photograph 5: Radiated Emission Test Configuration, (Above 1GHz)



Labeling Requirements

Each digital device which has been verified as complying with the Class B limits shall have permanently attached in a conspicuous location for the user to observe, a label with the following statement:

**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.**

The device should affix FCC ID info on the label as below:

FCC ID: XQI-FACEID-F

3.3 Information to User

The following warning or similar statement shall be provided in a conspicuous location in the operator's manual so that the user of a Class B digital device is aware of its interference potential. Additional information about corrective measures may also be provided to the user at the manufacturer's option.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable

protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- o Reorient or relocate the receiving antenna**
- o Increase the separation between the equipment and receiver**
- o Connect the equipment into an outlet on a circuit different from that to which the receiver is connected**
- o Consult the dealer or an experienced radio/TV technician for help**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The instruction manual for a Class B computer peripheral that is separately marketed shall also include sufficient information to insure that the complete system is capable of complying with the requirements for a Class B computing device. The manual should also caution the user that changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. Finally, the manual should instruct the user to use any special accessories, i.e. shielded cables, necessary for compliance with the standards.

In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required above may be included in the manual in that alternative form, provided that the user can be reasonably expected to have the capability to access information in that form.

4 Attachment (EUT Photograph)

EUT Model: F110

EUT Photo #1 Front View



EUT Photo #2 Back View



EUT Photo #3 Right-Side View



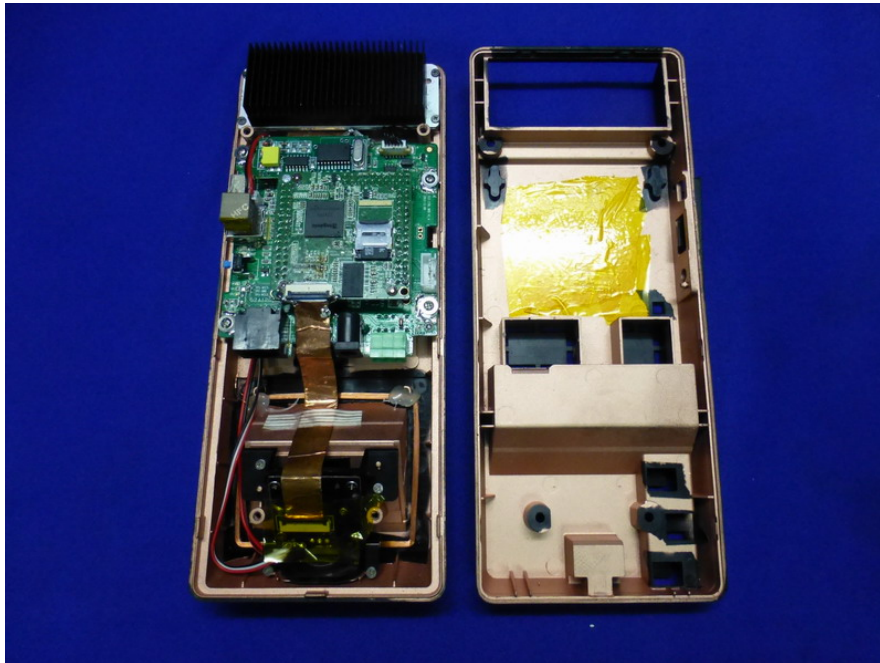
EUT Photo #4 Left-Side View



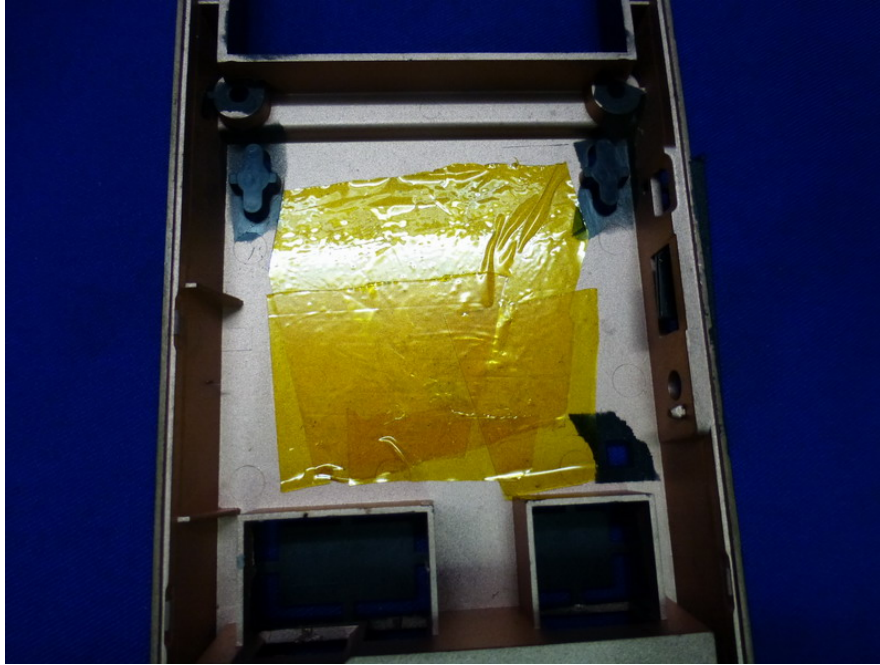
EUT Photo #5 Label of the EUT View



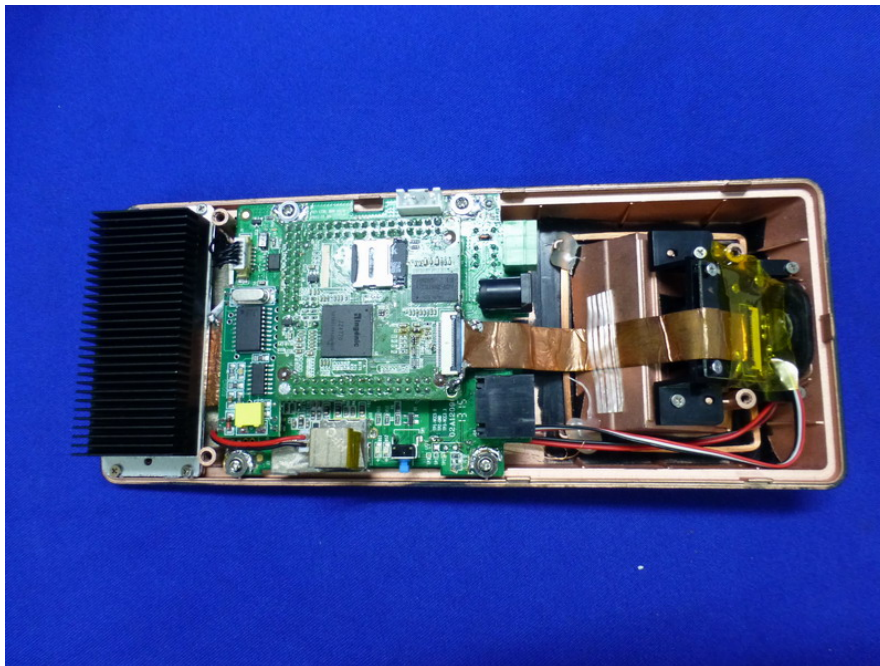
EUT Photo #6 - Inside View



EUT Photo #7 - Inside View



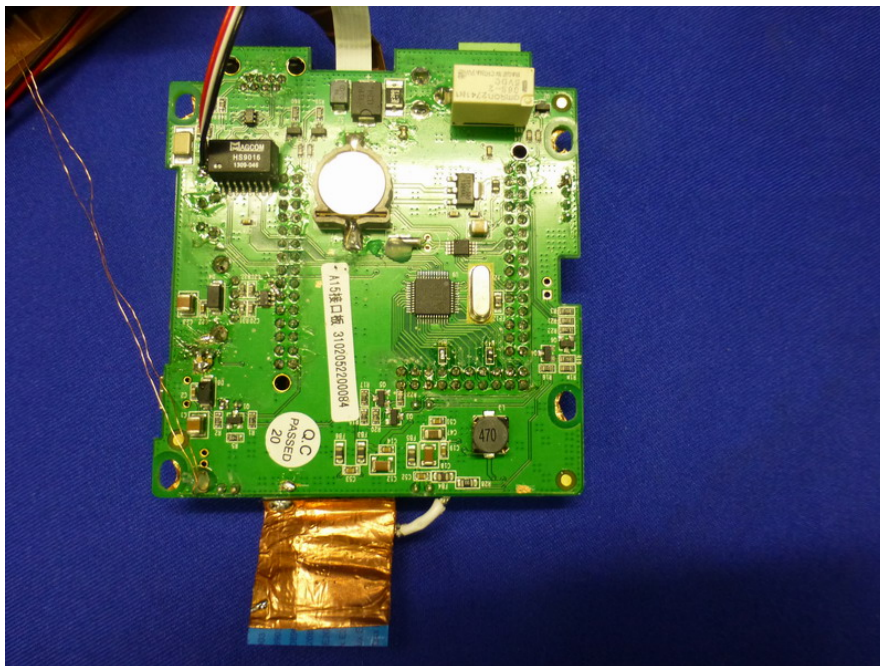
EUT Photo #8 - Inside View



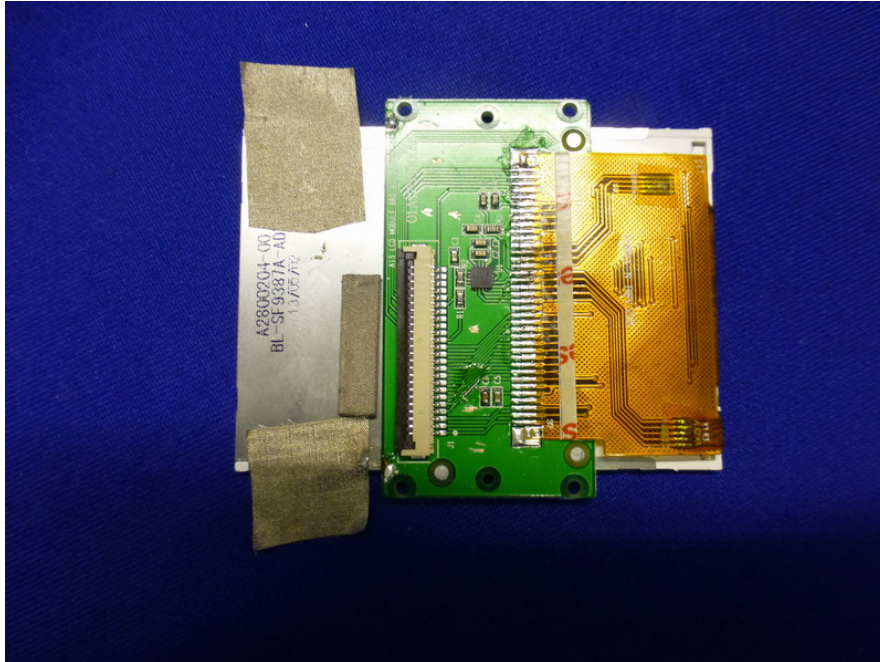
EUT Photo #9 - Main Board View



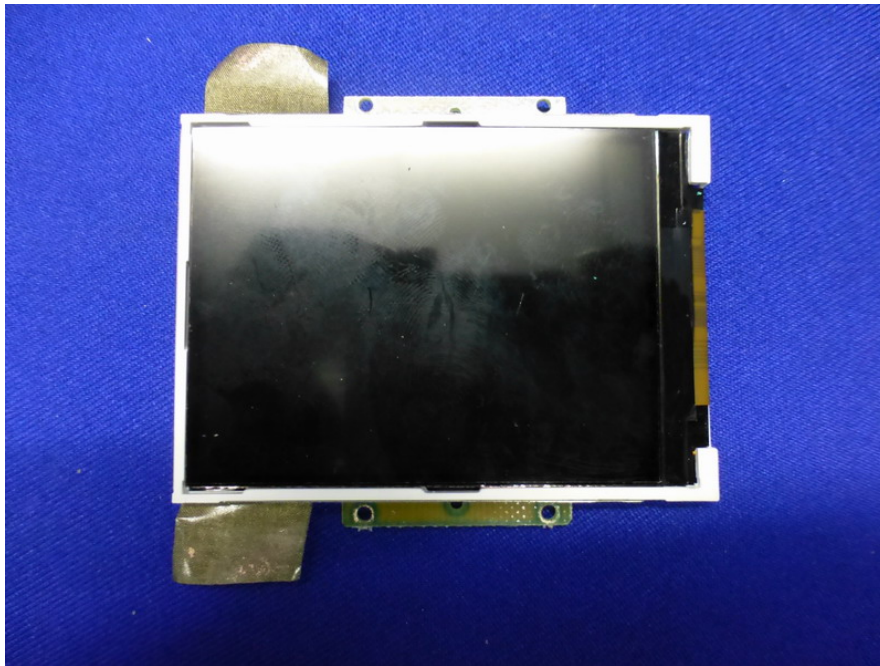
EUT Photo #10 - Main Board View



EUT Photo #11 - Main Board View



EUT Photo #12 - Main Board View



EUT Photo #13 - Power Adapter



EUT Photo #14 - Power Adapter

