



## FCC PART 15C

### TEST REPORT

For

### Hanwang Technology Co., Ltd

Hanvon Tower, Building No.5, Zhongguancun Software Park, Haidian District, Beijing, China

**FCC ID: XQI-FACEID-FX10**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Facial Recognition Terminal
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<b>Report Number:</b> <u>RB150615050-00A</u>	
<b>Report Date:</b> <u>2015-07-23</u>	
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## GENERAL INFORMATION

### Product Description for Equipment Under Test (EUT)

The *Hanwang Technology Co., Ltd*'s product, model number: *F910 (FCC ID: XQI-FACEID-FX10)* or ("EUT") in this report is a *Facial Recognition Terminal*, which was measured approximately: 21.5cm (L) x 9.5m (W) x 15.0 cm (H), rated input voltage: DC12V from adapter.

#### Adapter Information:

Model: XCX-CX1201140  
Input: AC100, 240V 50/60Hz  
Output: DC12V,1A

*Note: The series product, model F910, F910S, F910X, F710, F710S, F710X, F810, F810S, F810X, are electrically identical, the difference between them is just the model name, we selected F910 for fully testing, the details was explained in the attached declaration letter.*

*All measurement and test data in this report was gathered from production sample serial number: 150615050 (Assigned by Applicant). The EUT was received on 2015-06-09.*

### Objective

This Type approval report is prepared on behalf of *Hanwang Technology Co., Ltd* 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: XQI-FACEID-FX10.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, 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 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 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.: 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

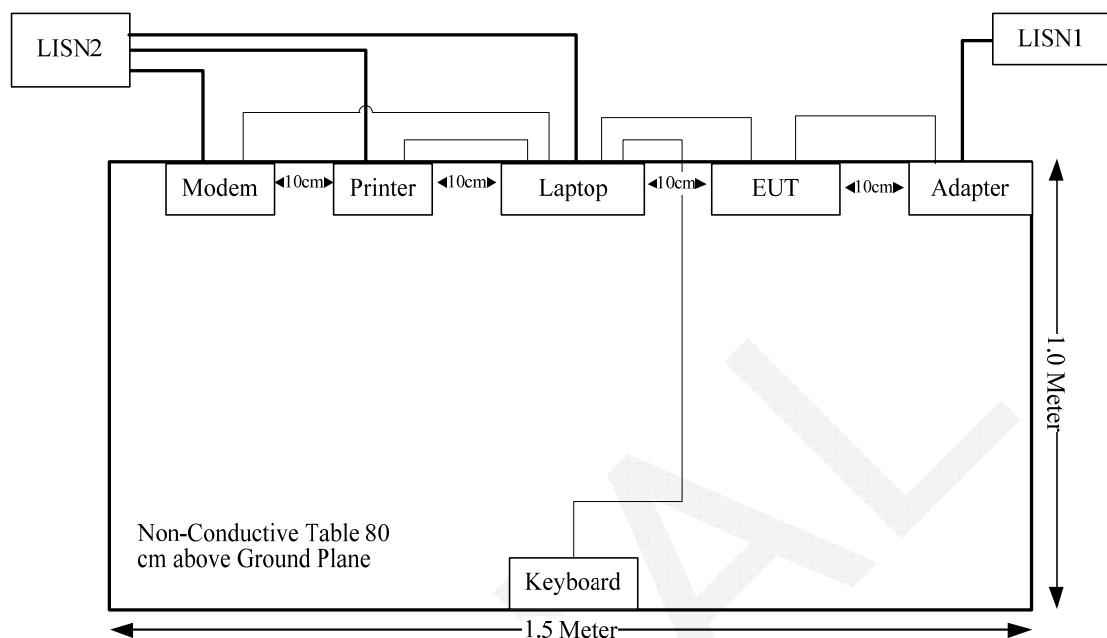
No software was performed under test.

### Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293
Kingston	USB disk	8 GB	/
/	Inductive Card	/	/

### Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	Yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	Yes	Yes	1.8	USB Port of Laptop	Keyboard
RJ45 Cable	No	No	1.0	Network Port of EUT	Laptop

**Block Diagram of Test Setup**

## **SUMMARY OF TEST RESULTS**

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

FINAL

## **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  $U_{\text{lab}}$  is less than or equal to  $U_{\text{cisp}}$  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  $U_{\text{lab}}$  is greater than  $U_{\text{cisp}}$  of Table 1, then:

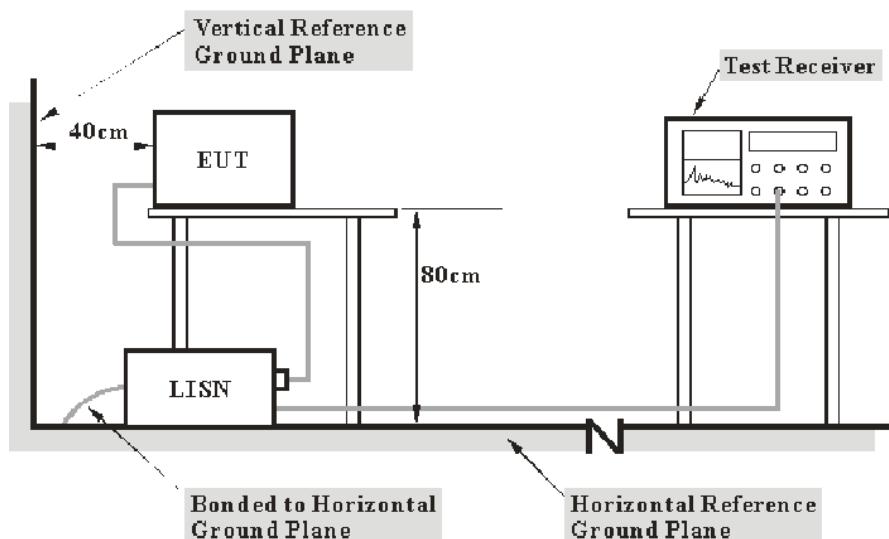
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{\text{lab}} - U_{\text{cisp}})$ , exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level, increased by  $(U_{\text{lab}} - U_{\text{cisp}})$ , exceeds the disturbance limit.

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 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of  $U_{\text{cisp}}$

Measurement	$U_{\text{cisp}}$
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 C63.4-2009 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	2014-10-20	2015-10-20
R&S	L.I.S.N	ESH2-Z5	892107/021	2015-06-09	2016-06-09
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
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:

**8.70 dB at 0.572086 MHz in the Neutral conducted mode**

## Test Data

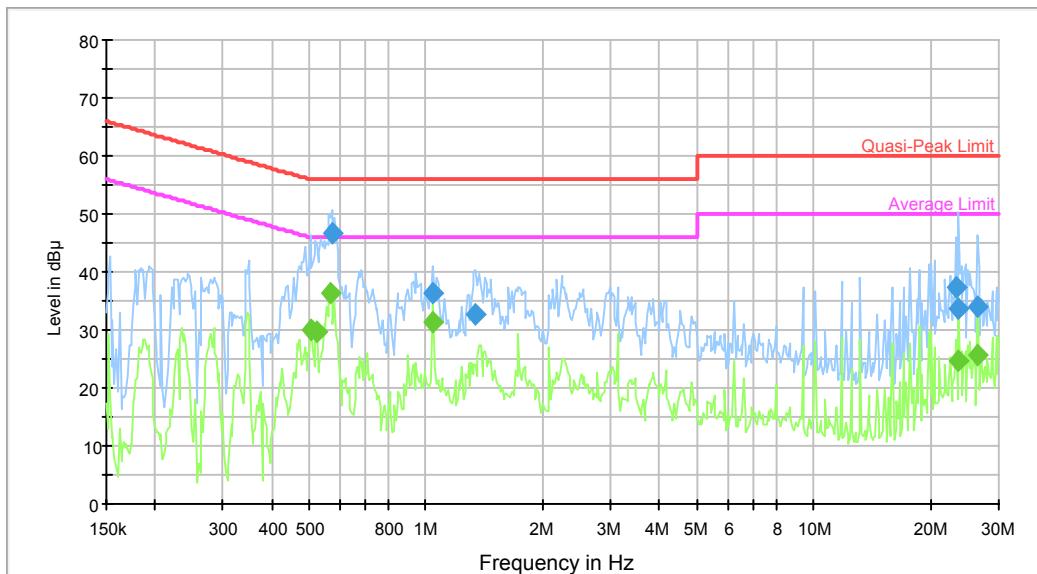
### Environmental Conditions

Temperature:	28.2 °C
Relative Humidity:	63 %
ATM Pressure:	100 kPa

\* The testing was performed by Lion Xiao on 2015-07-21.

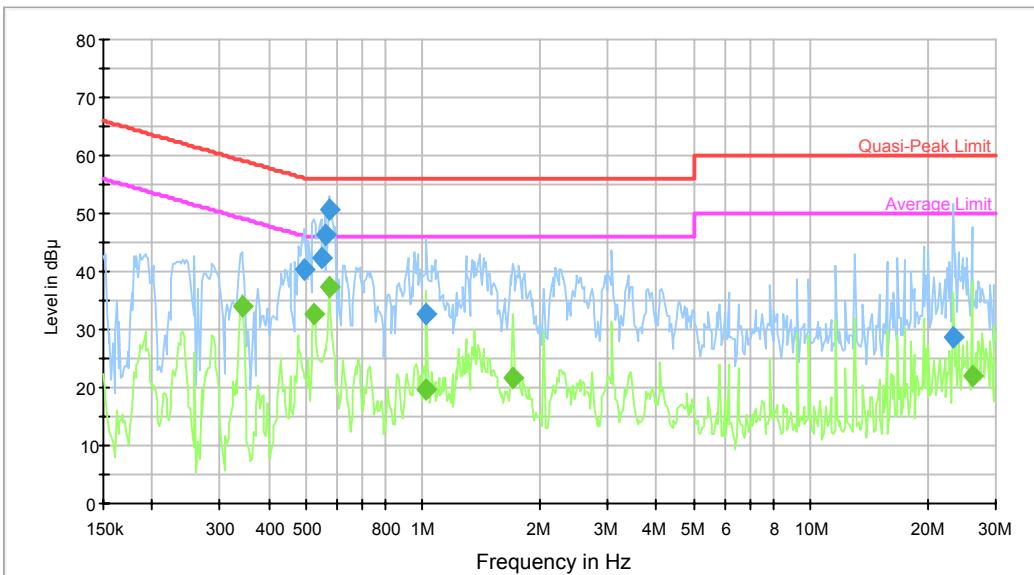
*Test Mode: Transmitting*

**AC120 V, 60 Hz, Line:**



Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.572086	46.7	9.000	L1	10.2	9.3	56.0	Compliance
1.039922	36.4	9.000	L1	10.4	19.6	56.0	Compliance
1.341955	32.7	9.000	L1	10.4	23.3	56.0	Compliance
23.259928	37.3	9.000	L1	10.8	22.7	60.0	Compliance
23.633576	33.5	9.000	L1	10.8	26.5	60.0	Compliance
26.422681	34.0	9.000	L1	10.9	26.0	60.0	Compliance

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.503608	30.0	9.000	L1	10.1	16.0	46.0	Compliance
0.524077	29.8	9.000	L1	10.1	16.2	46.0	Compliance
0.567545	36.2	9.000	L1	10.2	9.8	46.0	Compliance
1.039922	31.2	9.000	L1	10.4	14.8	46.0	Compliance
23.633576	24.6	9.000	L1	10.8	25.4	50.0	Compliance
26.422681	25.7	9.000	L1	10.9	24.3	50.0	Compliance

**AC120 V, 60 Hz, Neutral:**

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.495646	40.2	9.000	N	10.1	15.9	56.1	Compliance
0.545378	42.3	9.000	N	10.1	13.7	56.0	Compliance
0.558572	46.4	9.000	N	10.1	9.6	56.0	Compliance
0.572086	50.6	9.000	N	10.2	5.4	56.0	Compliance
1.023481	32.8	9.000	N	10.4	23.2	56.0	Compliance
23.259928	28.5	9.000	N	10.9	31.5	60.0	Compliance

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.340821	34.1	9.000	N	10.3	15.1	49.2	Compliance
0.524077	32.8	9.000	N	10.1	13.2	46.0	Compliance
0.572086	37.3	9.000	N	10.2	8.7	46.0	Compliance
1.023481	19.6	9.000	N	10.4	26.4	46.0	Compliance
1.704331	21.6	9.000	N	10.4	24.4	46.0	Compliance
26.004938	22.0	9.000	N	11.0	28.0	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  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

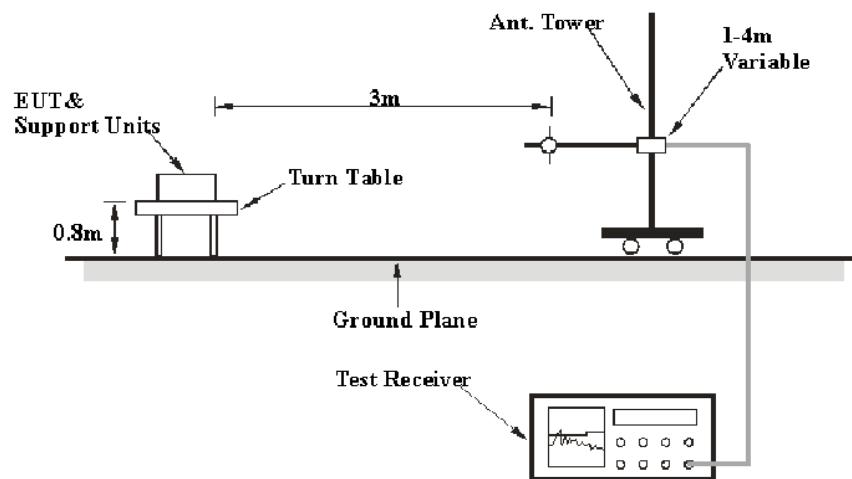
1G~6GHz: 4.45 dB

6G~18GHz: 5.23 dB

Table 1 – Values of  $U_{\text{cisp}}$ 

Measurement	$U_{\text{cisp}}$
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



The radiated emission tests were performed in the 3-meter chamber a test site, using the setup accordance with the ANSI C63.4-2003. 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 1000 MHz.

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

Frequency Range	RBW	Video B/W	Detector
9 kHz – 150 kHz	300 Hz	1 kHz	QP
150KHz – 30 MHz	10 kHz	30 kHz	QP
30 MHz – 1000 MHz	100 kHz	300 kHz	QP

## 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	100224	2015-05-09	2016-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
The Electro-Mechanics Company	Passive Loop Antenna	6512	9706-1206	2014-11-30	2017-11-29

\* **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 data in the following table, the EUT complied with the FCC Part 15.209 with the worst margin reading of:

**7.00 dB at 500.31 MHz**

## Test Data

### Environmental Conditions

Temperature:	27.7 °C
Relative Humidity:	43 %
ATM Pressure:	99.2 kPa

\* The testing was performed by Lion Xiao on 2015-07-09.

Test mode: Transmitting

1) 9 kHz~30 MHz:

Frequency	Receiver		Factor (dB(1/m))	Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude @ 3m (dB $\mu$ V/m)	Limit @ 3m (dB $\mu$ V/m)	Margin (dB)
(MHz)	Reading (dB $\mu$ V)	Detector (PK/QP/AV)						
0.125	21	QP	64.75	0.02	0.00	85.77	105.7	19.93
0.669	15.7	QP	49.80	0.05	0.00	65.55	71.1	5.55
1.961	18.1	QP	41.01	0.13	0.00	59.24	69.5	10.26
3.128	20.3	QP	38.32	0.16	0.00	58.78	69.5	10.72

2) 30 MHz ~1 GHz:

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dB $\mu$ V	PK/QP/AV	H/V	dB(1/m)	dB	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
162.79	38.1	QP	H	12.59	1.56	21.44	30.81	43.50	12.69
178.92	39.4	QP	H	11.37	1.61	21.45	30.93	43.50	12.57
247.9	41.6	QP	H	12.19	1.90	21.49	34.20	43.50	9.30
321.59	40.7	QP	H	14.57	2.17	21.57	35.87	46.00	10.13
399.14	41	QP	H	16.15	2.43	21.77	37.81	46.00	8.19
500.31	40.2	QP	H	18.10	2.72	22.02	39.00	46.00	7.00
95.82	34.7	QP	V	9.31	1.22	21.40	23.83	40.00	16.17
177.69	40.9	QP	V	11.39	1.61	21.45	32.45	40.00	7.55
197.9	40.2	QP	V	12.41	1.70	21.46	32.85	43.50	10.65
290.88	41.1	QP	V	13.94	2.06	21.51	35.59	46.00	10.41
321.7	41.8	QP	V	14.57	2.17	21.57	36.97	46.00	9.03
545.13	39.5	QP	V	18.56	2.81	22.13	38.74	46.00	7.26

## **DECLARATION OF SIMILARITY**



Hanwang Technology Co., Ltd  
Add: 3rd Floor, Building 5, No. 8 Dongbeiwang West Road Haidian District,  
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### **DECLARATION OF SIMILARITY**

Date: 2015-7-1

Dear Sir or Madam:

We, Hanwang Technology Co., Ltd, Hereby declare that product: Facial Recognition Terminal, model(s): F910, F910S, F910X, F710, F710S, F710X, F810, F810S, F810X, are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics. with the model F910 that were tested by BACL, the results of which are featured in BACL projects.

Their differences as the following:

The models: F910, F910S, F910X, F710, F710S, F710X, F810, F810S, F810X, share same PCB layout and schematic, they just have different model name. Please contact me should there be need for any additional clarification or information.

Best Regards,

Signature: A handwritten signature in black ink that appears to read "Shen Yuan".

Printed Name: Shen Yuan

Title: QA Manager

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