TEST REPORT

No. I18D00082-EMC01

For

Client : **Shanghai Sunmi Technology Co.,Ltd.**

Production: **Smart POS system**

Model Name : **W6900**

Hardware Version: **V1.1**

Software Version: **B0451_C1BOM_SMT_V1.0.1_2017 1225**

FCC ID: **2AH25W6900**

Issued date: **2018-06-01**

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

Add: 7F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

Tel: (+86)-021-63843300, E-Mail: welcome@ecit.org.cn

Revision Version

Report Number	Revision	Date	Memo
I18D00082-EMC01	00	2018-06-01	Initial creation of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7F, G Area,No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	86-21-63843300
Fax:	86-21-63843301
FCC registration No:	489729

1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	30-60%RH

1.3. Project data

Project Leader:	Yu Anlu
Testing Start Date:	2018-05-09
Testing End Date:	2018-05-23

1.4. Signature

QinYabin
(Prepared this test report)

You Jinjun
(Reviewed this test report)

Zheng Zhongbin
Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Shanghai Sunmi Technology Co.,Ltd.
Address:	Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Tel:	18721763396
Postcode:	200433

2.2. Manufacturer Information

Company Name:	Shanghai Sunmi Technology Co.,Ltd.
Address:	Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Tel:	18721763396
Postcode:	200433

3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

ProductName	Smart POS system
Model name	W6900
GSM Frequency Band	GSM850/GSM900/GSM1800/GSM1900
CDMA Frequency Band	CDMA BC0/BC1
UMTS Frequency Band	WCDMA Band Ⅰ/Ⅱ/Ⅳ/Ⅴ
LTE Frequency Band	LTE2/4/7/17/28
Additional Communication Function	BT3.0,4.0; WIFI 802.11a,b,g,n;GPS;NFC

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N04	A100005F400057	V1.1	B0451_C1BOM_SMT_V1.0.1_20171225	2018-05-09

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	SN
UA06	USB cable	NA	NA
CA04	Adapter	TPA-46050200UU	NA
BB04	Battery	SM-INR18650M26-1S2P	NA
BA04	Battery	SM-18650B4-1S2P	NA
AE1	Notebook PC	ThinkPad Edge E430	0B65911
AE2	LAN Cable	NA	NA
AE3	VGA Cable	NA	NA
AE4	RS232 Cable	NA	NA
AE5	Keyboard	KB212-B	CN-0Y88XT-65890-12I-005Q-A00
AE6	Mouse	MS111-P	CN-011D3V-71581-19J-1A64
AE7	Monitor	Dell E1709Wc	NA

*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices	10-1-10 Edition
ANSI C63.4	Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

5. Test Results

5.1. Summary of Test Results

Items	Test List	Clause in FCC rules	Verdict
1	Radiated Emission	15.109(a)	Pass
2	Conducted Emission	15.107(a)	Pass

5.2. Statements

The W6900, manufactured by Shanghai Sunmi Technology Co.,Ltd. Is a new product for testing. ECIT only performed test cases which identified with Pass/Fail/Inc result in section 5.1.

ECIT has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

6. Test Equipments Utilized

6.1 Radiated Emission Equipments list

No.	Name	Type	Series Number	Producer	Cal. Date	Cal. interval
1	Universal Radio Communication	CMU200	123126	R&S	2018-05-11	1 Year
2	Test Receiver	ESU40	100307	R&S	2018-05-11	1 Year
3	Trilog Antenna	VULB9163	VULB9163-515	Schwarzbeck	2017-02-25	3 Year
4	Double Ridged Guide	ETS-3117	00135885	ETS	2017-01-11	3 Year
5	EMI Test Software	EMC32 V9.15	NA	R&S	NA	NA

6.2 AC Conducted Emission Equipments list

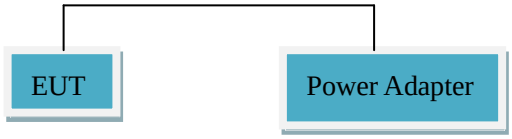
No.	Name	Type	Series Number	Producer	Cal. Date	Cal. interval
1	Universal Radio	CMU200	123123	R&S	2018-05-11	1 Year
2	Test Receiver	ESCI	101235	R&S	2018-05-11	1 Year
3	2-Line V-Network	ENV216	101380	R&S	2018-05-11	1 Year
4	EMI Test Software	EMC32 V9.15	NA	R&S	NA	NA

7. System Configuration during Test

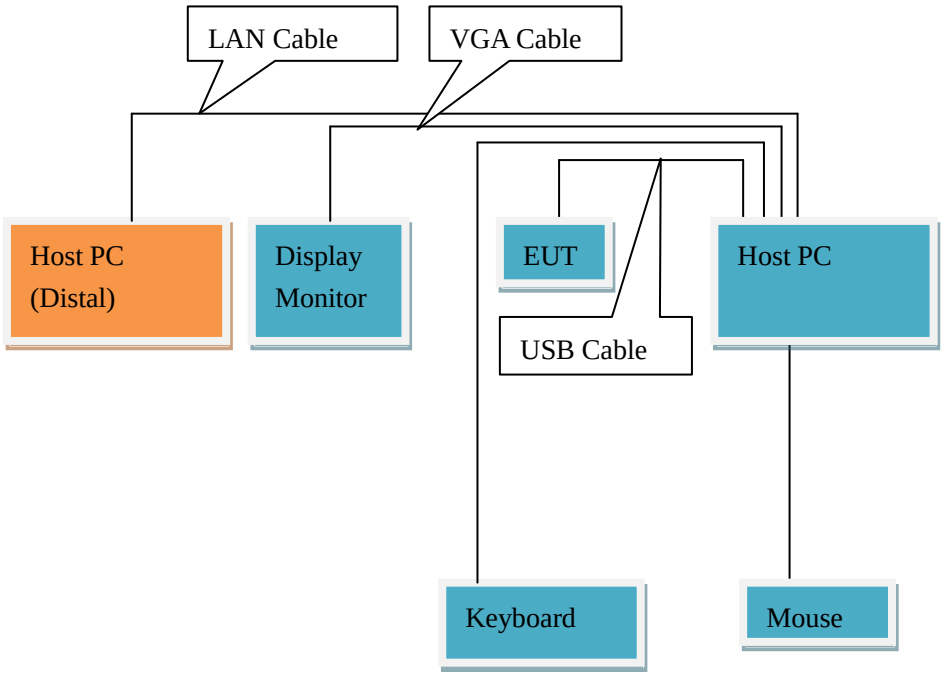
7.1 Test Mode

Test Item	Function Type
Radiated emission	Mode 1:Charge mode+CA04+BA04<Figure 1> Mode 2:Charge mode+CA04+BB04<Figure 1> Mode 3:Data link mode <Figure 2>
AC Conducted emission	Mode 1:Charge mode+CA04+BA04<Figure 1> Mode 2:Charge mode+CA04+BB04<Figure 1> Mode 3:Data link mode <Figure 2>
Remark: 1. All test modes are performed, only the worst cases test data are recorded in this report.	

7.2 Connection Diagram of Test System



<Figure 1>



<Figure 2>

8. Measurement Results

Only the worst test result was shown in this report.

8.1 Radiated Emission 30MHz-12.75GHz

Method of Measurement

For 30-1000MHz, the EUT was placed on the top of a rotating 0.8-m table above the ground at a semi-anechoic chamber. The distance between the EUT and the received antenna was 3 meters. The table was rotated 360 degree and the received antenna mounted on a variable-height antenna tower was varied from 1m to 4m to find the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement. Tested in accordance with the procedures of ANSI C63.4-2014, section 8.3.

For 1000-12750MHz,The maximal emission value was acquired by adjusting the antenna height, The table was rotated 360 degree to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement.

Limits for Radiated Emission at a measuring distance of 3m

Frequency Range (MHz)	Quasi-Peak (dBuV/m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Frequency Range (MHz)	Peak (dBuV/m)	Average (dBuV/m)
Above 1000	74	54

Test conditions

Frequency Range (MHz)	RBW/VBW	Sweep Time (s)
30-1000	120KHz/300KHz	Auto
1000-18000	1MHz/3MHz	Auto

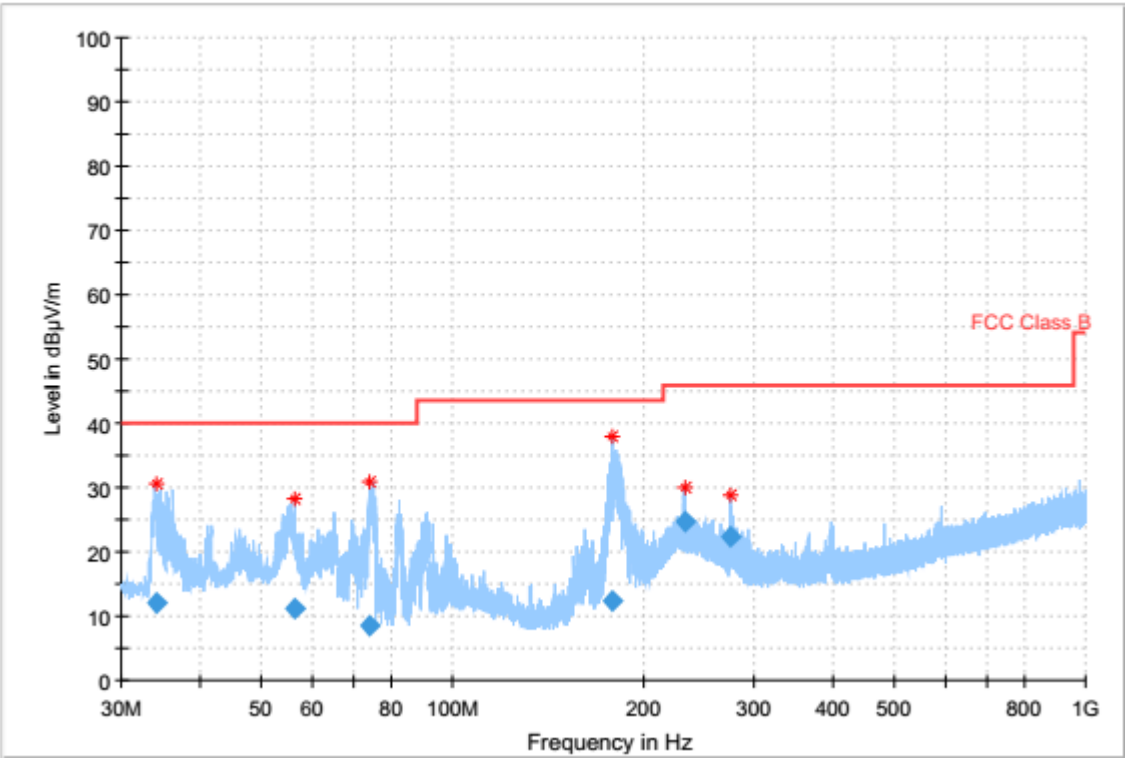
Uncertainty Measurement

The measurement uncertainty is 5.48dB (30 MHz -1000MHz) and 5.20dB（1000MHz-18000MHz）(k=2).

Test Results

Mode 3: Data link mode<Figure 2>

Frequency Range:	30MHz – 1GHz



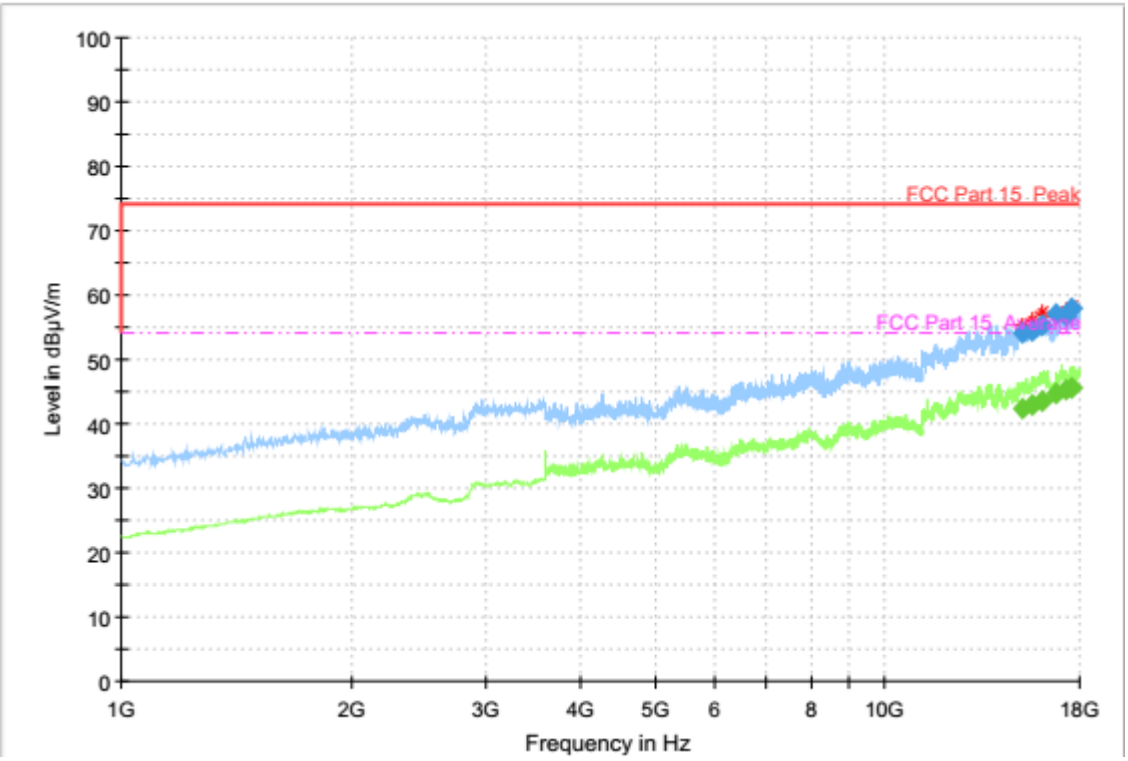
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.029757	11.94	40.00	28.06	1000.0	120.000	100.0	V	300.0	-22.0
56.524072	11.24	40.00	28.76	1000.0	120.000	223.0	V	30.0	-21.6
73.959403	8.65	40.00	31.35	1000.0	120.000	204.0	V	0.0	-26.0
178.817445	12.21	43.50	31.29	1000.0	120.000	181.0	V	133.0	-25.9
233.205456	24.60	46.00	21.40	1000.0	120.000	175.0	V	130.0	-23.6
276.013909	22.41	46.00	23.59	1000.0	120.000	223.0	V	334.0	-22.5

Note:

1. Emission level(QP)=Raw value by receiver + Corr(Antenna factor + cable loss - preamplifier gain)
2. The raw value is used to calculate by software which is not shown in the sheet.
3. Margin=limit value – emission level.

Mode 1: Charge mode+CA04+BA04<Figure1>

Frequency Range:	1GHz –18GHz



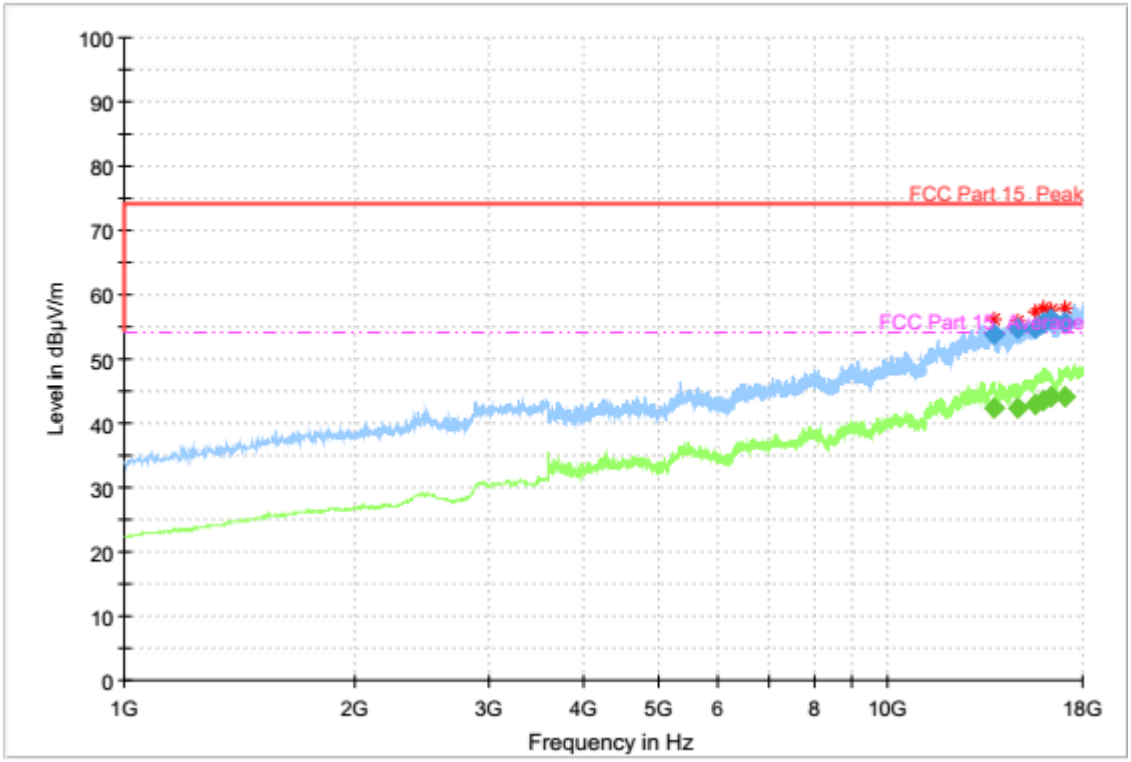
Vertical

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/	Limit (dBµV/m)	Margin	Meas. Time	Bandwidth	Height (cm)	Pol	Azimuth	Corr. (dB)
15106.000000	---	42.50	54.00	11.50	50.0	1000.000	100.0	V	348.0	20.6
15106.000000	54.14	---	74.00	19.86	50.0	1000.000	100.0	V	348.0	20.6
15621.000000	---	42.88	54.00	11.12	50.0	1000.000	200.0	V	0.0	21.4
15621.000000	54.44	---	74.00	19.56	50.0	1000.000	200.0	V	0.0	21.4
16035.000000	55.21	---	74.00	18.79	50.0	1000.000	200.0	V	26.0	22.5
16035.000000	---	43.65	54.00	10.35	50.0	1000.000	200.0	V	26.0	22.5
16746.000000	---	44.58	54.00	9.42	50.0	1000.000	200.0	V	259.0	23.5
16746.000000	57.04	---	74.00	16.96	50.0	1000.000	200.0	V	259.0	23.5
17221.600000	---	45.23	54.00	8.77	50.0	1000.000	100.0	V	291.0	24.2
17221.600000	56.78	---	74.00	17.22	50.0	1000.000	100.0	V	291.0	24.2
17578.200000	57.85	---	74.00	16.15	50.0	1000.000	300.0	V	58.0	24.6
17578.200000	---	45.56	54.00	8.44	50.0	1000.000	300.0	V	58.0	24.6

Note:

1. Emission level(peak or average)=Raw value by receiver + Corr(Antenna factor+ cable loss preamplifier gain)
2. The raw value is used to calculate by software which is not shown in the sheet.
3. Margin=limit value – emission level.



Horizontal

Final Result

Frequency (MHz)	MaxPeak (dBµV/m	Average (dBµV/m	Limit (dBµV/m	Margin (dB)	Meas. Time	Bandwidth	Height	Pol	Azimuth (deg)	Corr. (dB)
13767.600000	53.87	---	74.00	20.13	50.0	1000.000	400.0	H	0.0	18.8
13767.600000	---	42.21	54.00	11.79	50.0	1000.000	400.0	H	0.0	18.8
14818.600000	---	42.33	54.00	11.67	50.0	1000.000	400.0	H	13.0	20.0
14818.600000	54.84	---	74.00	19.16	50.0	1000.000	400.0	H	13.0	20.0
15646.200000	54.75	---	74.00	19.25	50.0	1000.000	300.0	H	0.0	21.5
15646.200000	---	42.94	54.00	11.06	50.0	1000.000	300.0	H	0.0	21.5
16007.800000	55.70	---	74.00	18.30	50.0	1000.000	199.0	H	238.0	22.4
16007.800000	---	43.44	54.00	10.56	50.0	1000.000	199.0	H	238.0	22.4
16358.800000	---	44.25	54.00	9.75	50.0	1000.000	199.0	H	226.0	22.9
16358.800000	56.29	---	74.00	17.71	50.0	1000.000	199.0	H	226.0	22.9
17034.600000	55.51	---	74.00	18.49	50.0	1000.000	100.0	H	26.0	23.9
17034.600000	---	44.07	54.00	9.93	50.0	1000.000	100.0	H	26.0	23.9

Note:

1. Emission level(peak or average)=Raw value by receiver + Corr(Antenna factor+ cable loss - preamplifier gain)
2. The raw value is used to calculate by software which is not shown in the sheet.
3. Margin=limit value – emission level.

8.2 AC Conducted Emission

Method of Measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies with the band 150 kHz to 30MHz shall not exceed the limits. Both lines of the power mains connected to the EUT were checked for maximum conducted interference. Tested in accordance with the procedures of ANSI C63.4-2014, section 7.3

Limit of Conducted Emission

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

Test Condition in Charging Mode

Voltage (V)	Frequency (Hz)	RBW	Sweep Time (s)
120	60	9 kHz	Auto

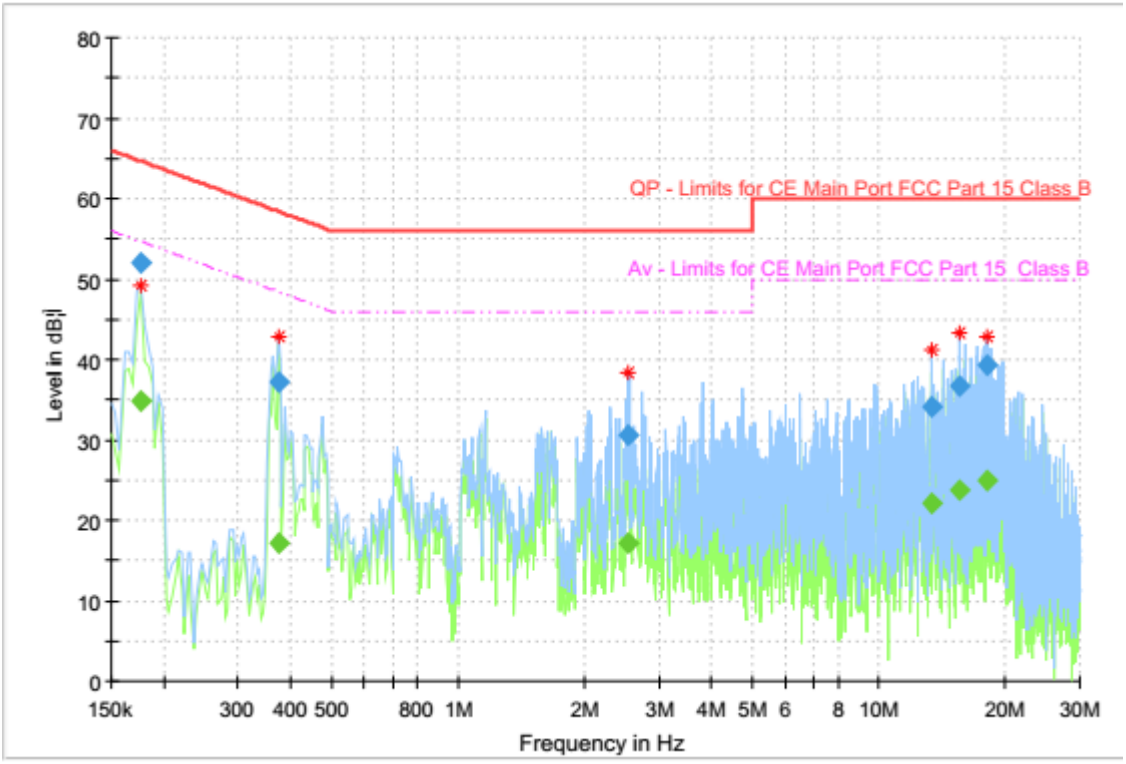
Uncertainty Measurement

The measurement uncertainty is 3.68dB (k=2).

Test Results

Mode 1: Charge mode+CA04+BA04<Figure1>

Frequency Range:	150kHz – 30MHz



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.176119	---	34.77	54.67	19.90	1000.0	9.000	N	ON	9.6
0.176119	52.06	---	64.67	12.61	1000.0	9.000	N	ON	9.6
0.373875	37.25	---	58.41	21.16	1000.0	9.000	L1	ON	9.6
0.373875	---	17.20	48.41	31.21	1000.0	9.000	L1	ON	9.6
2.523075	30.58	---	56.00	25.42	1000.0	9.000	N	ON	9.7
2.523075	---	17.18	46.00	28.82	1000.0	9.000	N	ON	9.7
13.366088	34.10	---	60.00	25.90	1000.0	9.000	L1	ON	9.8
13.366088	---	22.16	50.00	27.84	1000.0	9.000	L1	ON	9.8
15.601106	---	23.72	50.00	26.28	1000.0	9.000	N	ON	9.9
15.601106	36.71	---	60.00	23.29	1000.0	9.000	N	ON	9.9
18.089850	39.19	---	60.00	20.81	1000.0	9.000	L1	ON	9.9
18.089850	---	24.86	50.00	25.14	1000.0	9.000	L1	ON	9.9

Note:

1. Emission level(quasi-peak or Average peak)=Raw value by receiver + Corr(Insertion loss+ cable loss)
2. The raw value is used to calculate by software which is not shown in the sheet.
3. Margin=limit value – emission level.
4. L1 and N line is all have been tested , the result of them is synthesized in the above data diagram.

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