



TEST REPORT

No. I19D00113-EMC01

For

Client : Shanghai Sunmi Technology Co.,Ltd.

Production : POS Base

Model Name : ND0A0

Brand Name: SUNMI

FCC ID: 2AH25-ND0A0

Hardware Version: V1.1

Software Version: V1.0

Issued date: 2019-08-16

NOTE

1. The test results in this test report relate only to the devices specified in this report.
2. This report shall not be reproduced except in full without the written approval of East China Institute of Telecommunications
3. The measurement uncertainty is not taken into account when deciding conformity, and the results of measurement (or the average of measurement results) are directly used as the criterion for the stating conformity.

Test Laboratory:

East China Institute of Telecommunications

Add: 7-8F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

Tel: +862163843300

FAX: +862163843301

E-Mail: welcome@ecit.org.cn

Revision Version

Report Number	Revision	Date	Memo
I19D00113-EMC01	00	2019-08-16	Initial creation of test report

CONTENTS

1. TEST LABORATORY	6
1.1. TESTING LOCATION	6
1.2. TESTING ENVIRONMENT	6
1.3. PROJECT DATA	6
1.4. SIGNATURE	6
2. CLIENT INFORMATION	7
2.1. APPLICANT INFORMATION	7
2.2. MANUFACTURER INFORMATION	7
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	8
3.1. ABOUT EUT	8
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	8
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	8
4. REFERENCE DOCUMENTS	9
4.1 REFERENCE DOCUMENTS FOR TESTING	9
5. TEST RESULTS	10
5.1 SUMMARY OF TEST RESULTS	10
5.2 STATEMENTS	10
6. TEST EQUIPMENT UTILIZED	11
6.1 RADIATED EMISSION EQUIPMENT LIST	11
6.1 AC CONDUCTED EMISSION EQUIPMENT LIST	11
7. SYSTEM CONFIGURATION DURING TEST	12
7.1 TEST MODE	12
7.2 CONNECTION DIAGRAM OF TEST SYSTEM	12
8. MEASUREMENT RESULTS	13
8.1 RADIATED EMISSION 30MHZ-18GHZ	13

8.2 AC CONDUCTED EMISSION.....	17
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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: 958356

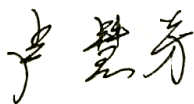
1.2. Testing Environment

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

1.3. Project data

Project Leader: Zhang Heng
Testing Start Date: 2019-07-15
Testing End Date: 2019-07-26

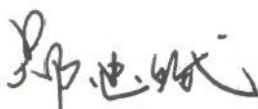
1.4. Signature



Lu Huifang
(Prepared this test report)



You Jinjun
(Reviewed this test report)



Zheng Zhongbin
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Shanghai Sunmi Technology Co.,Ltd.
Address : Room 605, Block 7, KIC Plaza, No.388 Song Hu Road Yang Pu
District, Shanghai, China
Telephone: /
Post Code: /

2.2. Manufacturer Information

Company Name: Shanghai Sunmi Technology Co.,Ltd.
Address : Room 605, Block 7, KIC Plaza, No.388 Song Hu Road Yang Pu
District, Shanghai, China
Telephone: /
Post Code: /

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

3.1. About EUT

Product Name	POS Base
Model name	ND0A0
Additional Communication Function	/

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N01	NH01D96M60026	V1.1	V1.0	2019-07-12

*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
AE1	Adapter	TPA-46050200VU	/
AE2	USB Cable	/	/
AE3	Smart POS system	P2	PB03D60160048
AE4	Keyboard	KB212-B	CN-0Y88XT-65890-12I-005Q-A00
AE5	Mouse	MS111-P	CN-011D3V-71581-19J-1A64

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

*The AE were provided by the lab.

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	2019/6/21
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	AC Conducted Emission	15.107(a)	Pass

5.2 Statements

The ND0A0, manufactured by Shanghai Sunmi Technology Co.,Ltd. is a variant 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 Equipment Utilized

6.1 Radiated Emission Equipment list

Item	Instrument Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Test Receiver	ESU40	100307	R&S	2019-05-10	1 year
2	Trilog Antenna	VULB9163	VULB9163-5 15	Schwarzbeck	2017-02-25	3 years
3	Double Ridged Guide	ETS-3117	00135885	ETS	2017-01-11	3 years
4	EMI Test Software	EMC32 V9.15	NA	R&S	NA	NA

6.1 AC Conducted Emission Equipment list

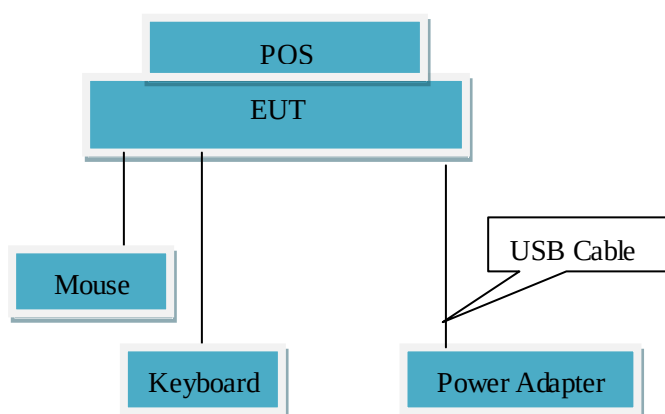
Item	Instrument Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Test Receiver	ESCI	101235	R&S	2019-05-10	1 year
2	2-Line V-Network	ENV216	101380	R&S	2019-05-10	1 year
3	EMI Test Software	EMC32 V10.35.02	NA	R&S	NA	NA

7. System Configuration during Test

7.1 Test Mode

Test Item	Function Type
AC Conducted Emission	Mode 1: Charging mode+AE1+AE2+AE3(Camera)+AE4+AE5 <Figure 1>
Radiated Emission	Mode 1: Charging mode+AE1+AE2+AE3(Camera)+AE4+AE5 <Figure 1>
Remark: /	

7.2 Connection Diagram of Test System



<Figure 1> Mode 1

8. Measurement Results

Only the worst test result was shown in this report.

8.1 Radiated Emission 30MHz-18GHz

Method of Measurement

For 30MHz -1000MHz, the EUT was placed on the top of a rotating 0.8m 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 1000MHz -18000MHz, 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

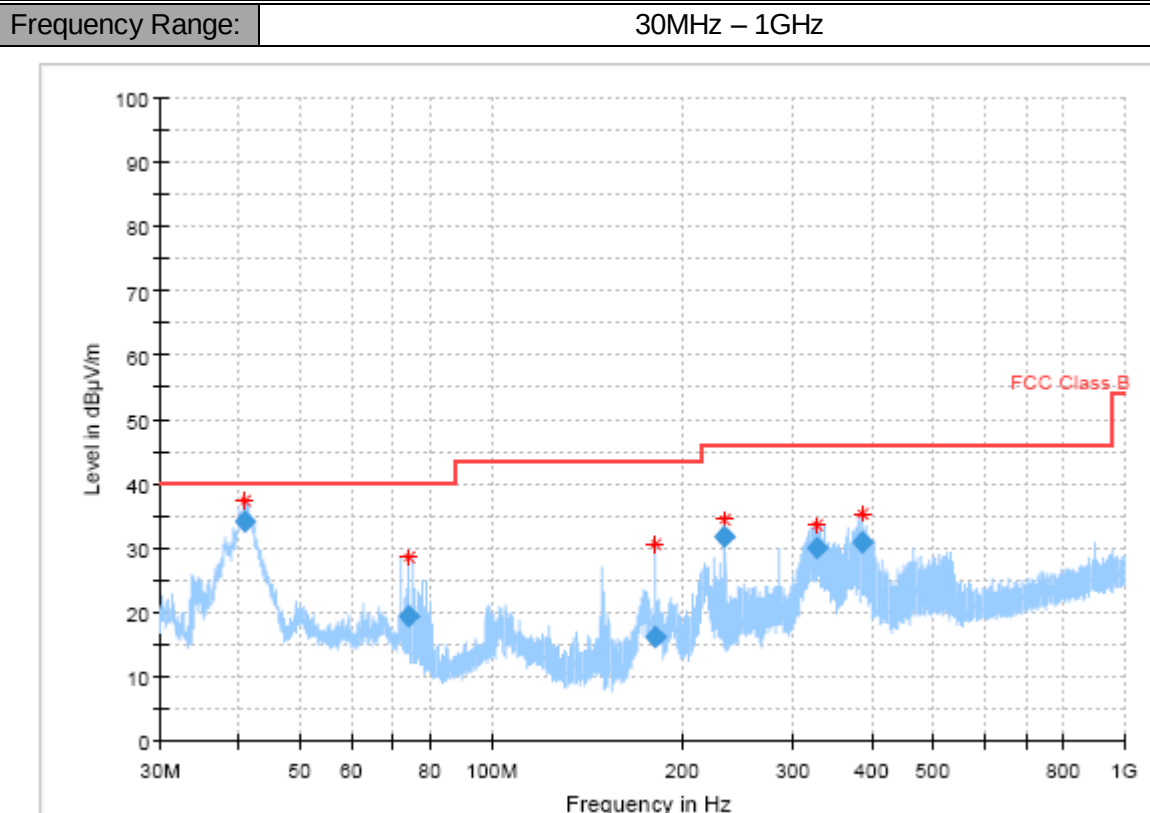
The measurement uncertainty (30MHz-1000MHz) is 4.98 dB (k=2).

The measurement uncertainty (1000MHz-18000MHz) is 5.06 dB (k=2).

Test Results

Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier, the Emissions in the frequency band 18GHz-40GHz is more than 20dB below the limit are not report.

Mode 1: Charging mode+AE1+AE2+AE3(Camera)+AE4+AE5 <Figure 1>

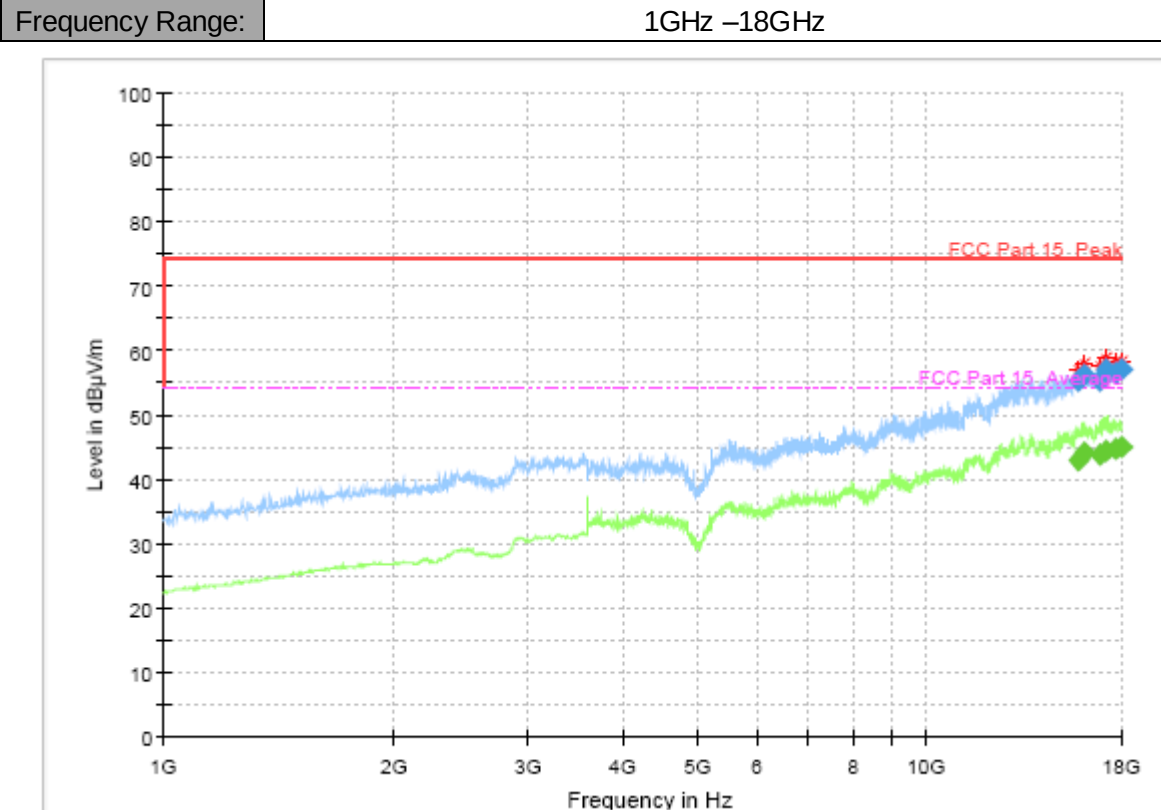


Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
40.842045	34.05	40.00	5.95	1000.0	120.000	100.0	V	279.0	-25.8
74.213717	19.46	40.00	20.54	1000.0	120.000	125.0	V	116.0	-30.4
181.480936	16.31	43.50	27.19	1000.0	120.000	197.0	H	1.0	-29.0
233.991136	31.84	46.00	14.16	1000.0	120.000	197.0	V	314.0	-27.2
326.403880	29.90	46.00	16.10	1000.0	120.000	105.0	V	26.0	-25.0
384.428525	30.91	46.00	15.09	1000.0	120.000	100.0	H	64.0	-23.6

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: Charging mode+AE1+AE2+AE3(Camera)+AE4+AE5 <Figure 1>

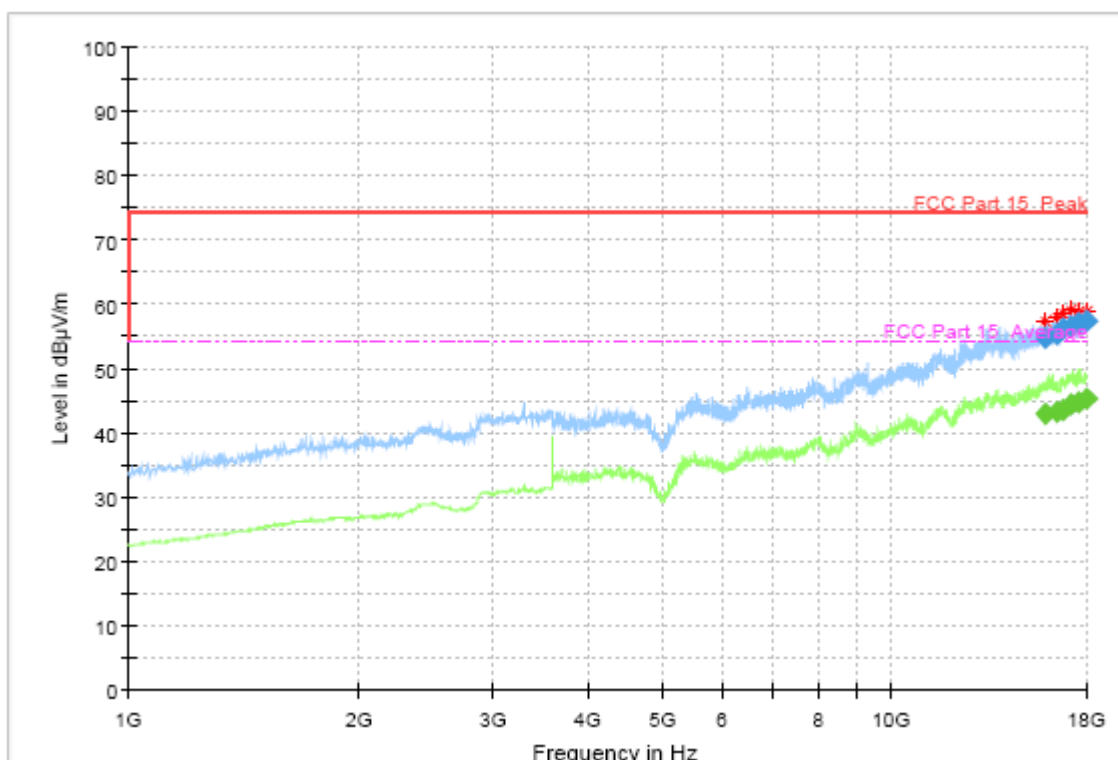


Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
15765.600000	55.40	---	74.00	18.60	100.0	1000.000	200.0	V	272.0
15765.600000	---	43.04	54.00	10.96	100.0	1000.000	200.0	V	272.0
16045.600000	56.26	---	74.00	17.74	100.0	1000.000	200.0	V	220.0
16045.600000	---	44.23	54.00	9.77	100.0	1000.000	200.0	V	220.0
16814.000000	55.37	---	74.00	18.63	100.0	1000.000	100.0	V	169.0
16814.000000	---	43.70	54.00	10.30	100.0	1000.000	100.0	V	169.0
17157.800000	---	44.50	54.00	9.50	100.0	1000.000	200.0	V	42.0
17157.800000	57.04	---	74.00	16.96	100.0	1000.000	200.0	V	42.0
17706.800000	56.44	---	74.00	17.56	100.0	1000.000	200.0	V	240.0
17706.800000	---	44.58	54.00	9.42	100.0	1000.000	200.0	V	240.0
17999.800000	---	44.90	54.00	9.10	100.0	1000.000	200.0	V	334.0
17999.800000	56.93	---	74.00	17.07	100.0	1000.000	200.0	V	334.0

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.



Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
15844.200000	54.70	---	74.00	19.30	100.0	1000.000	200.0	H	169.0
15844.200000	---	43.00	54.00	11.00	100.0	1000.000	200.0	H	169.0
16423.000000	---	43.19	54.00	10.81	100.0	1000.000	200.0	H	252.0
16423.000000	55.21	---	74.00	18.79	100.0	1000.000	200.0	H	252.0
16780.400000	56.31	---	74.00	17.69	100.0	1000.000	100.0	H	58.0
16780.400000	---	43.60	54.00	10.40	100.0	1000.000	100.0	H	58.0
17153.600000	---	44.50	54.00	9.50	100.0	1000.000	100.0	H	69.0
17153.600000	56.39	---	74.00	17.61	100.0	1000.000	100.0	H	69.0
17553.600000	---	44.85	54.00	9.15	100.0	1000.000	100.0	H	0.0
17553.600000	57.04	---	74.00	16.96	100.0	1000.000	100.0	H	0.0
17959.000000	---	45.15	54.00	8.85	100.0	1000.000	100.0	H	141.0
17959.000000	57.29	---	74.00	16.71	100.0	1000.000	100.0	H	141.0

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

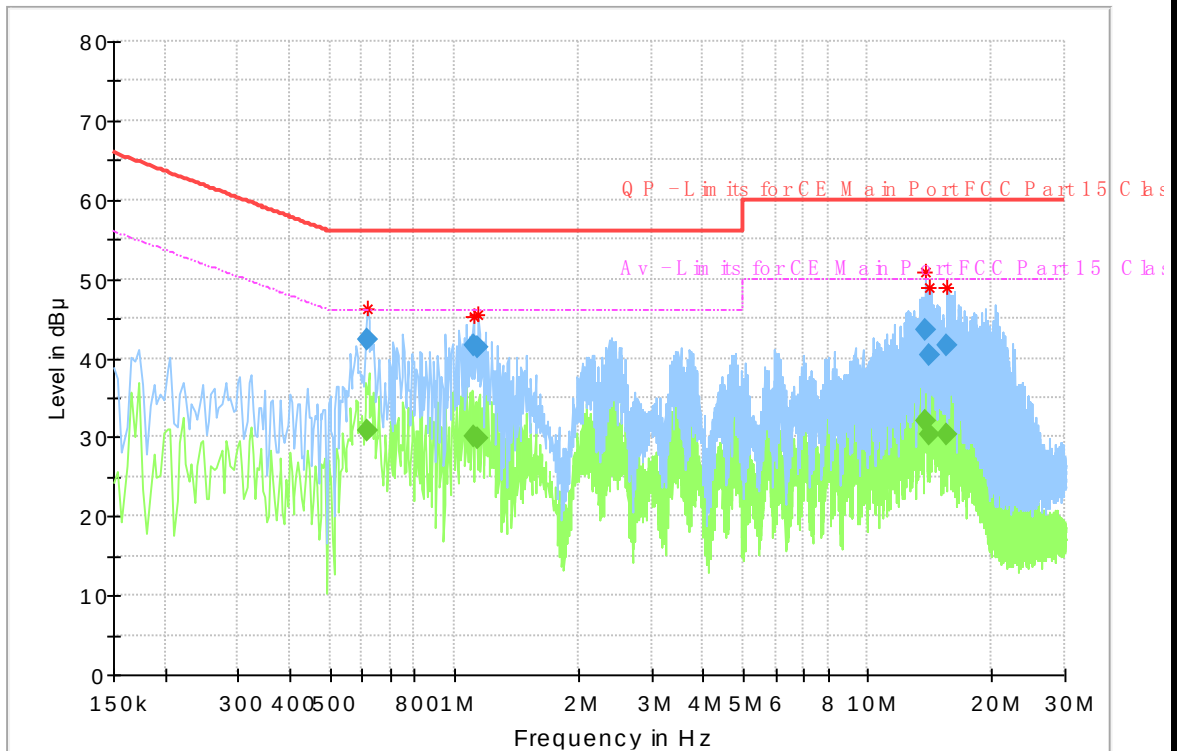
The measurement uncertainty is 3.66dB (k=2).

Test Results

Mode 1: Charging mode+AE1+AE2+AE3(Camera)+AE4+AE5 <Figure 1>

Frequency Range:

150kHz – 30MHz



Frequency (MHz)	QuasiPeak (dBμ V)	Average (dBμ V)	Limit (dBμ V)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.616406	---	30.71	46.00	15.29	15000.	9.000	L1	ON	9.8
0.616406	42.29	---	56.00	13.71	15000.	9.000	L1	ON	9.8
1.112663	---	30.20	46.00	15.80	15000.	9.000	L1	ON	9.9
1.112663	41.48	---	56.00	14.52	15000.	9.000	L1	ON	9.9
1.146244	---	29.95	46.00	16.05	15000.	9.000	L1	ON	9.9
1.146244	41.40	---	56.00	14.60	15000.	9.000	L1	ON	9.9
13.810106	---	31.94	50.00	18.06	15000.	9.000	L1	ON	12.4
13.810106	43.51	---	60.00	16.49	15000.	9.000	L1	ON	12.4
14.145919	---	30.33	50.00	19.67	15000.	9.000	L1	ON	12.5
14.145919	40.28	---	60.00	19.72	15000.	9.000	L1	ON	12.5
15.586181	---	30.28	50.00	19.72	15000.	9.000	L1	ON	12.9
15.586181	41.65	---	60.00	18.35	15000.	9.000	L1	ON	12.9

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*****