



TEST REPORT

No. I17D00262-EMC01

For

Client : Shanghai Sunmi Technology Co.,Ltd.

Production: Wireless data POS System

Model Name : W5920

Hardware Version: 2.0

Software Version: 1.1.0

FCC ID: 2AH25V1SNFC

Issued date: 2018-01-12

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of ECIT Shanghai.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

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Revision Version

Report Number	Revision	Date	Memo
I17D00262-EMC01	00	2018-01-12	Initial creation of test report

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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: 489729

1.2. Testing Environment

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

1.3. Project data

Project Leader: Zhou Yan
Testing Start Date: 11-12, 2017
Testing End Date: 31-12, 2017

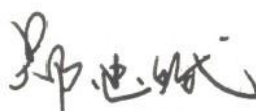
1.4. Signature



Tong Daocheng
(Prepared this test report)



You Jinjun
(Reviewed this test report)



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

1.5. Client Information**1.6. 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: 18721763396
Post: 200433

1.7. 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: 18721763396
Post: 200433

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

2.1. About EUT

EUT Description	Wireless data POS System
Model name	W5920
GSM Frequency Band	GSM900/GSM1800/GSM850/GSM1900
UMTS Frequency Band	WCDMA Band I / Band II / Band V / Band VIII
Additional Communication Function	BT4.0,BLE;WIFI 802.11b,g,n;NFC;GPS

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N02	865150030317082	2.0	1.1.0	2017-11-23

*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	Remark
CB01	Adapter	TPA-46050200UU	NA	NA
BA02	Battery	SMBP001	NA	NA
BB01	Battery	SM-18650B4-1S2P	NA	NA
UA01	USB Cable	NA	NA	NA
AE1	Desktop PC	OptiPlex 790 DT	X8RP1 A01 APCC	NA
AE2	Notebook PC	ThinkPad Edge E430	0B65911	NA
AE3	LAN Cable	NA	NA	NA
AE4	VGA Cable	NA	NA	NA
AE5	RS232 Cable	NA	NA	NA
AE6	Keyboard	KB212-B	CN-0Y88XT-65890-12I-005Q-A00	NA
AE7	Mouse	MS111-P	CN-011D3V-71581-19J-1A64	NA
AE8	USB Cable	NA	NA	Used to test the DATA LINK mode

*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 W5920, supporting GSM/WCDMA, 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.

Note: The project changed based on the CCISE170603505 FCC 15B original report, test content for the original report of the worst mode, embodied in the report data is the worst mode. Other information reference original report.

6. Test Equipment Utilized

6.1 Radiated Emission Equipment list

No.	Name	Type	Series Number	Producer	Cal. Date	Cal. interval
1	Universal Radio Communication	CMU200	123126	R&S	2017-05-11	1 Year
2	Test Receiver	ESU40	100307	R&S	2017-05-11	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

6.1 AC Conducted Emission Equipment list

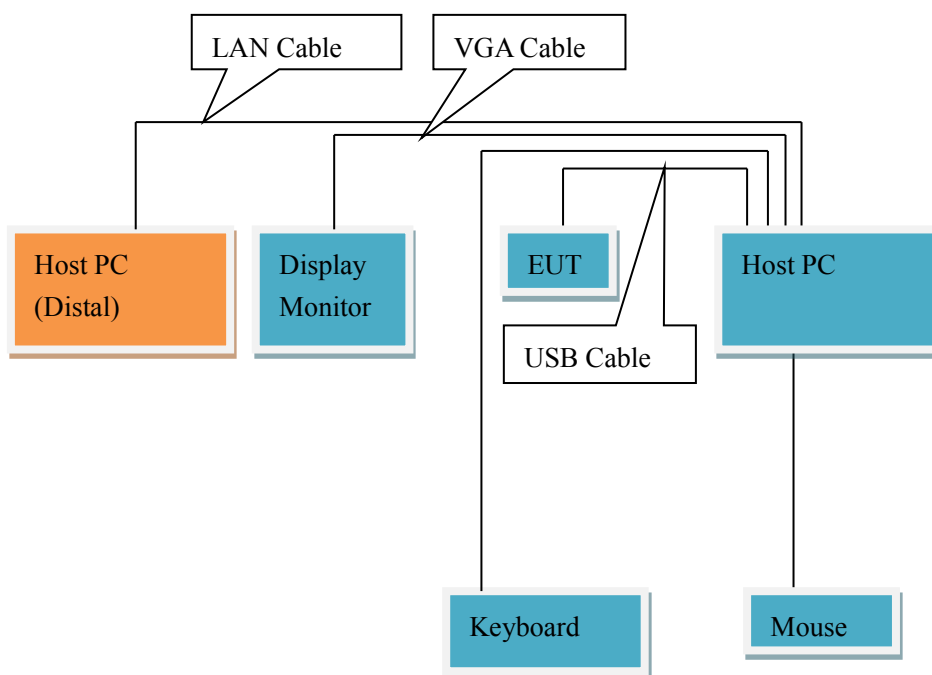
No.	Name	Type	Series Number	Producer	Cal. Date	Cal. interval
1	Universal Radio	CMU200	123123	R&S	2017-05-11	1 Year
2	Test Receiver	ESCI	101235	R&S	2017-05-11	1 Year
3	2-Line V-Network	ENV216	101380	R&S	2017-05-11	1 Year
4	EMI Test Software	EMC32 V9.15	NA	R&S	NA	NA

7. System Configuration during Test

7.1 Test Mode

Test Item	Function Type
AC Conducted Emission	Mode1: Data link mode with PC+BA02 Mode2: Data link mode with PC+BB01
Radiated Emission	Mode1: Data link mode with PC+BA02 Mode2: Data link mode with PC+BB01
Remark: 1.All test modes are performed, only the worst cases test data are recorded in this report. 2.Data Link with PC means data application transferred mode between EUT and PC.	

7.2 Connection Diagram of Test System



<Figure 1>

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
1000-12750	1MHz/3MHz	Auto

Uncertainty Measurement

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

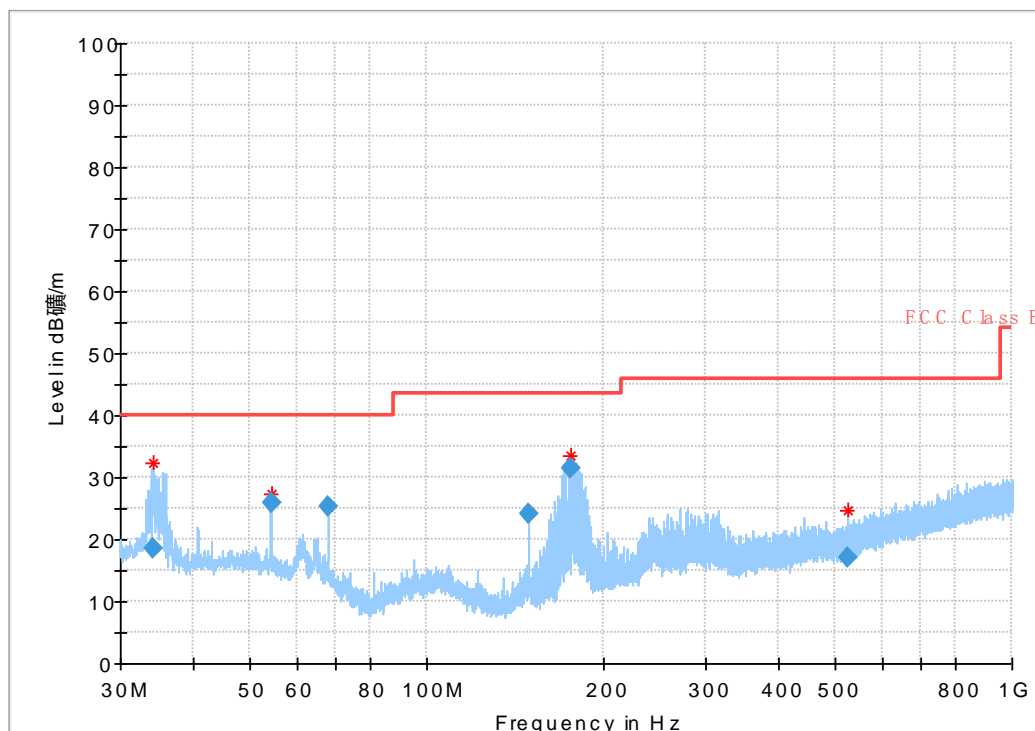
The measurement uncertainty(1000MHz-6000MHz) is 5.20 dB (k=2).

Test Results

Mode 1: Data link mode with PC+BA02

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)
34.030885	18.67	40.00	21.33	1000.0	120.000	100.0	V	243.0	-22.0
54.229835	25.94	40.00	14.06	1000.0	120.000	100.0	V	285.0	-20.9
67.809483	25.17	40.00	14.83	1000.0	120.000	100.0	V	172.0	-24.5
149.177173	24.21	43.50	19.29	1000.0	120.000	223.0	H	71.0	-28.0
175.997549	31.42	43.50	12.08	1000.0	120.000	125.0	H	100.0	-26.0
524.147221	16.92	46.00	29.08	1000.0	120.000	181.0	V	-12.0	-16.5

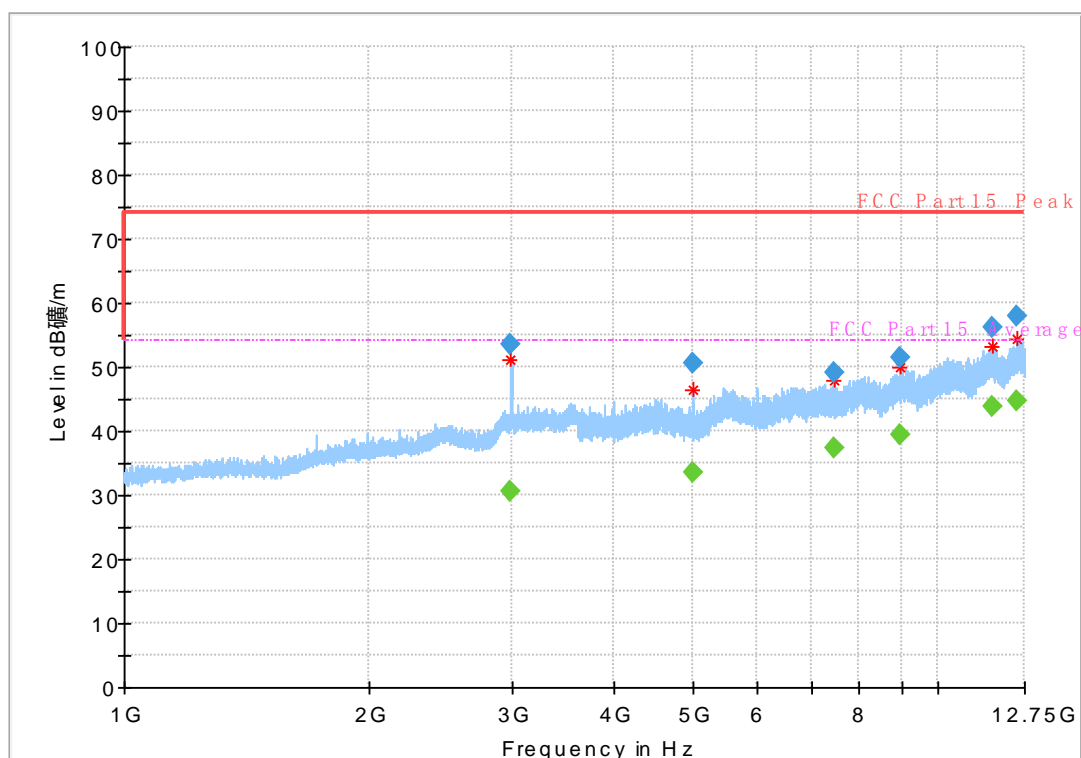
Note:

- 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: Data link mode with PC+BA02

Frequency Range:

1GHz –12.75GHz

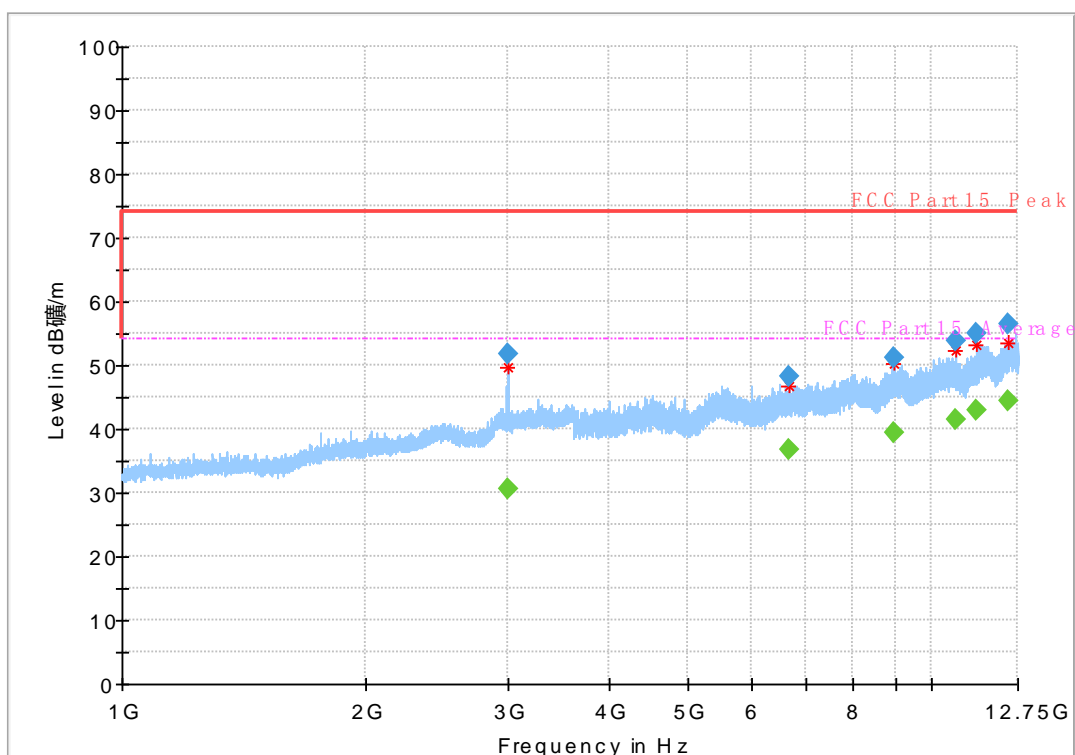


Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
2986.632000	53.65	---	74.00	20.35	50.0	1000.000	100.0	H	278.0
2986.632000	---	30.51	54.00	23.49	50.0	1000.000	100.0	H	278.0
4990.515466	50.55	---	74.00	23.45	50.0	1000.000	200.0	H	202.0
4990.515466	---	33.65	54.00	20.35	50.0	1000.000	200.0	H	202.0
7428.607400	49.17	---	74.00	24.83	50.0	1000.000	200.0	H	22.0
7428.607400	---	37.22	54.00	16.78	50.0	1000.000	200.0	H	22.0
8992.142600	---	39.46	54.00	14.54	50.0	1000.000	100.0	H	139.0
8992.142600	51.33	---	74.00	22.67	50.0	1000.000	100.0	H	139.0
11637.566467	56.05	---	74.00	17.95	50.0	1000.000	100.0	H	229.0
11637.566467	---	43.79	54.00	10.21	50.0	1000.000	100.0	H	229.0
12499.606200	---	44.83	54.00	9.17	50.0	1000.000	100.0	H	294.0
12499.606200	57.82	---	74.00	16.18	50.0	1000.000	100.0	H	294.0

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)
2992.497733	---	30.54	54.00	23.46	50.0	1000.000	200.0	V	349.0
2992.497733	51.79	---	74.00	22.21	50.0	1000.000	200.0	V	349.0
6649.141934	48.25	---	74.00	25.75	50.0	1000.000	200.0	V	-18.0
6649.141934	---	36.71	54.00	17.29	50.0	1000.000	200.0	V	-18.0
8990.491867	51.13	---	74.00	22.87	50.0	1000.000	200.0	V	335.0
8990.491867	---	39.43	54.00	14.57	50.0	1000.000	200.0	V	335.0
10670.613733	---	41.55	54.00	12.45	50.0	1000.000	100.0	V	20.0
10670.613733	53.96	---	74.00	20.04	50.0	1000.000	100.0	V	20.0
11334.847134	54.90	---	74.00	19.10	50.0	1000.000	100.0	V	88.0
11334.847134	---	42.87	54.00	11.13	50.0	1000.000	100.0	V	88.0
12423.689733	56.40	---	74.00	17.60	50.0	1000.000	100.0	V	273.0
12423.689733	---	44.52	54.00	9.48	50.0	1000.000	100.0	V	273.0

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 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

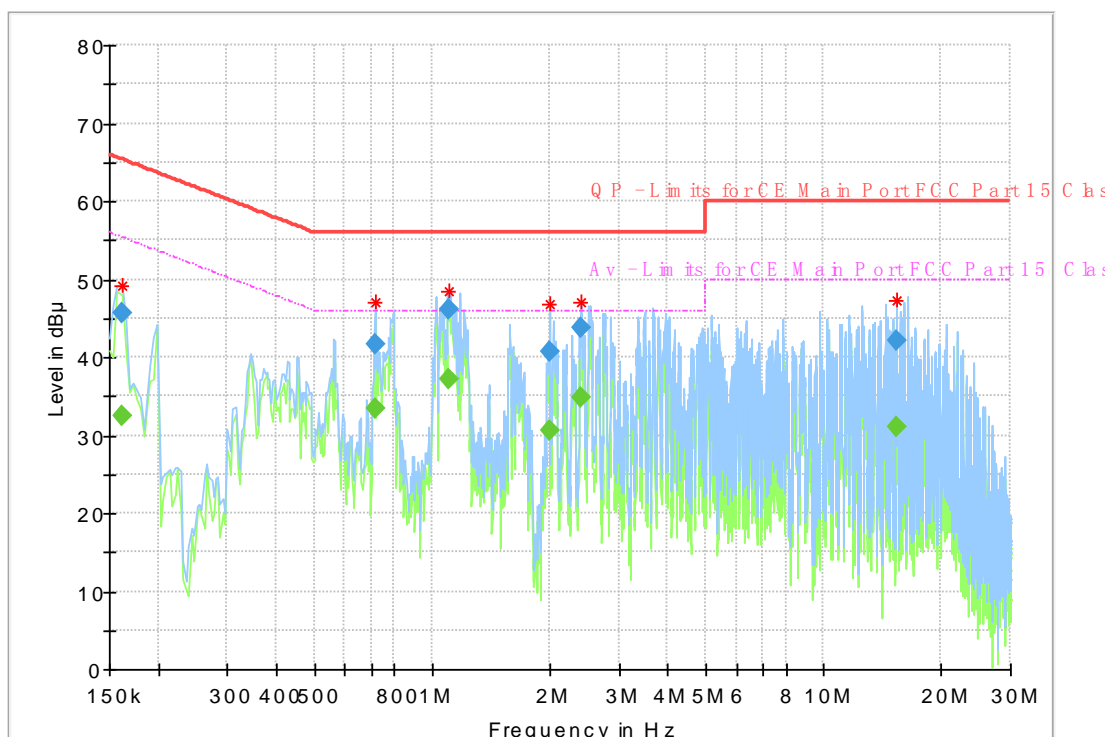
The measurement uncertainty is 3.68dB (k=2).

Test Results

Mode 2: Data link mode with PC+BB01

Frequency Range:

150kHz – 30MHz



Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.161194	45.74	---	65.40	19.66	1000.0	9.000	N	ON	9.6
0.161194	---	32.43	55.40	22.97	1000.0	9.000	N	ON	9.6
0.713419	41.75	---	56.00	14.25	1000.0	9.000	L1	ON	9.7
0.713419	---	33.31	46.00	12.69	1000.0	9.000	L1	ON	9.7
1.108931	46.08	---	56.00	9.92	1000.0	9.000	L1	ON	9.7
1.108931	---	37.09	46.00	8.91	1000.0	9.000	L1	ON	9.7
1.996969	40.64	---	56.00	15.36	1000.0	9.000	L1	ON	9.7
1.996969	---	30.68	46.00	15.32	1000.0	9.000	L1	ON	9.7
2.403675	43.66	---	56.00	12.34	1000.0	9.000	L1	ON	9.7
2.403675	---	34.88	46.00	11.12	1000.0	9.000	L1	ON	9.7
15.422006	42.01	---	60.00	17.99	1000.0	9.000	L1	ON	9.8
15.422006	---	31.09	50.00	18.91	1000.0	9.000	L1	ON	9.8

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.

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