



TEST REPORT

No. I18D00107-EMC01

For

Client : MobiWire SAS

Production: 3G Feature Phone

Brand Name: Vodafone

Model Name : VFD 121,VFD120

Hardware Version: V01

Software Version: Vodafone_Sakari_SKU3_L_V03_17050

9_MP

FCC ID: QPN-SAKARI

Issued date: 2018-07-17

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:

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Revision Version

Report Number	Revision	Date	Memo
I18D00107-EMC01	00	2018-07-17	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

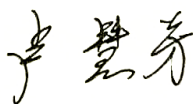
1.2. Testing Environment

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

1.3. Project data

Project Leader: Yu Anlu
Testing Start Date: 2018-06-27
Testing End Date: 2018-06-29

1.4. Signature



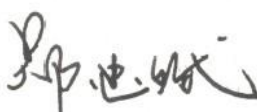
Lu Huifang

(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: MobiWire SAS
Address : 79AVENUE FRANCOIS ARAGO 92017 NANTERRE CEDEX France.
Telephone: +33 1 78 14 09 58
Post: France 92017

1.7. Manufacturer Information

Company Name: Vodafone
Address : Vodafone Procurement Company S.a.r.l., 15 rue Edward Steichen,
 L-2540 Luxembourg, Grand-Duché de Luxembourg
Telephone: /
Post: L-2540

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

2.1. About EUT

EUT Description	3G Feature Phone
Model name	VFD 121,VFD120
HW Version	V01
SW Version	Vodafone_Sakari_SKU3_L_V03_170509_MP
Additional Communication Function	BT 2.1,EDR,3.0,4.0,BLE/WIFI 802.11b,g,n/GPS/FM

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N01	358260090003896	V01	Vodafone_Sakari_SKU3_L_V03_170509_MP	2018.06.27

*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
CA01	TRAVEL CHARGER	WUK550mA5V00-02 (UK)	/
CB01	TRAVEL CHARGER	WAU550mA5V00-02 (AU)	/
BA03	Battery	178100170	36758V8051400771
AE1	Desktop PC	OptiPlex 790 DT	X8RP1 A01 APCC
AE2	Notebook PC	ThinkPad Edge E430	0B65911
AE3	LAN Cable	NA	NA
AE4	VGA Cable	NA	NA
AE5	RS232 Cable	NA	NA
AE6	Keyboard	KB212-B	CN-0Y88XT-65890-12I-005Q-A00
AE7	Mouse	MS111-P	CN-011D3V-71581-19J-1A64
AE8	Adapter	NA	NA
AE9	Earphone	NA	NA
AE10	Monitor	Dell E1709Wc	NA
AE11	USB Cable	NA	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	AC Conducted Emission	15.107(a)	Pass

5.2 Statements

The 3G Feature Phone manufactured by Vodafone is a variant product for testing. ECIT 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

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

6.1 AC Conducted Emission Equipment list

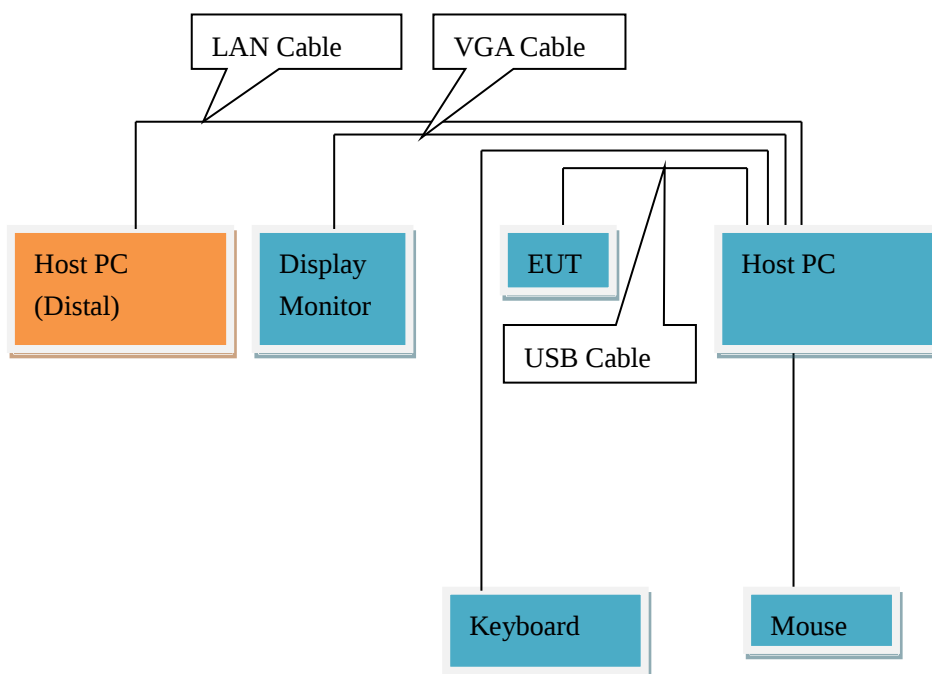
No.	Name	Type	Series Number	Producer	Cal. Date	Cal. interval
1	Universal Radio	CMU200	123123	R&S	2018-05-11	1 Year
2	Test Receiver	ESCI	101235	R&S	2018-05-11	1 Year
3	2-Line V-Network	ENV216	101380	R&S	2018-05-11	1 Year
4	EMI Test Software	EMC32 V9.12	NA	R&S	NA	NA

7. System Configuration during Test

7.1 Test Mode

Test Item	Function Type
AC Conducted Emission	Mode 1: USB cable (Data Link with PC) <Figure 1> Mode 2: Adapter charging+CA01<Figure 2> Mode 3: Adapter charging+CB01<Figure 2>
Radiated Emission	Mode 1: USB cable (Data Link with PC) <Figure 1> Mode 2: Adapter charging+CA01<Figure 2> Mode 3: Adapter charging+CB01<Figure 2>
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>



<Figure 2>

8. Measurement Results

Only the worst test result was shown in this report.

8.1 Radiated Emission 30MHz-18GHz

Method of Measurement

For 30-1000MHz, 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 1000-18000MHz, 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

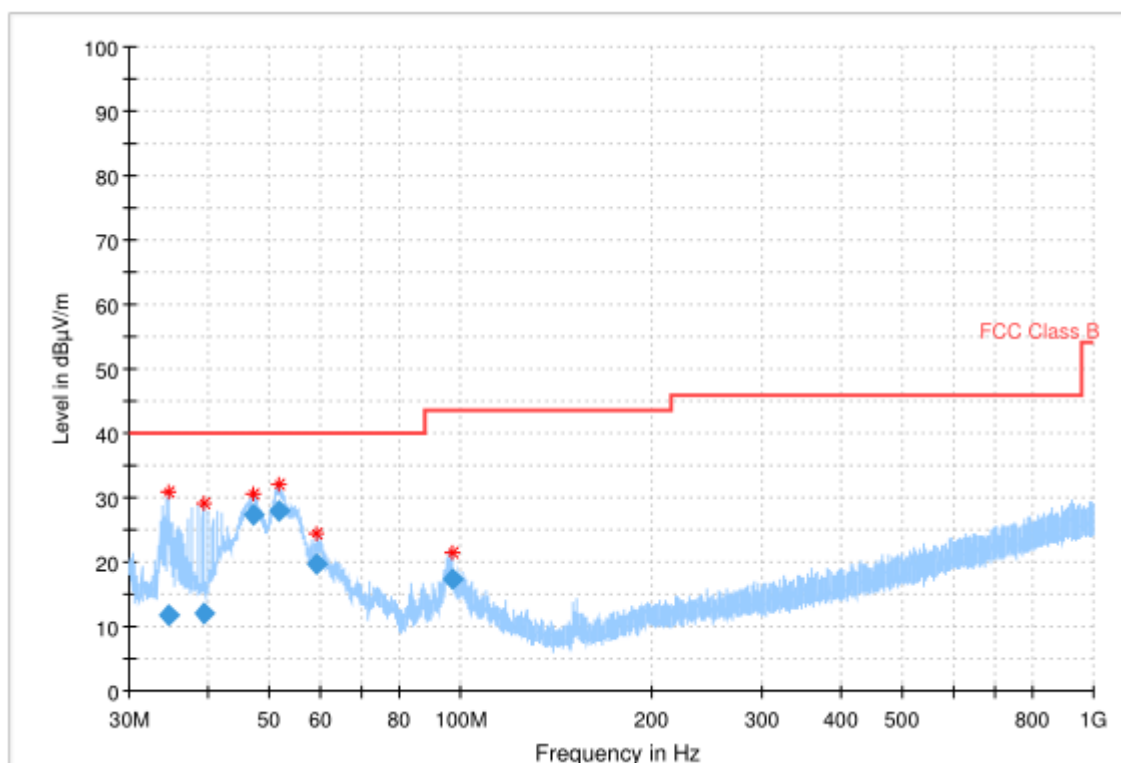
The measurement uncertainty (30MHz-1000MHz) is 5.48 dB (k=2).

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

Test Results

Mode 2: Adapter charging +CA01

Frequency Range: 30MHz – 1GHz



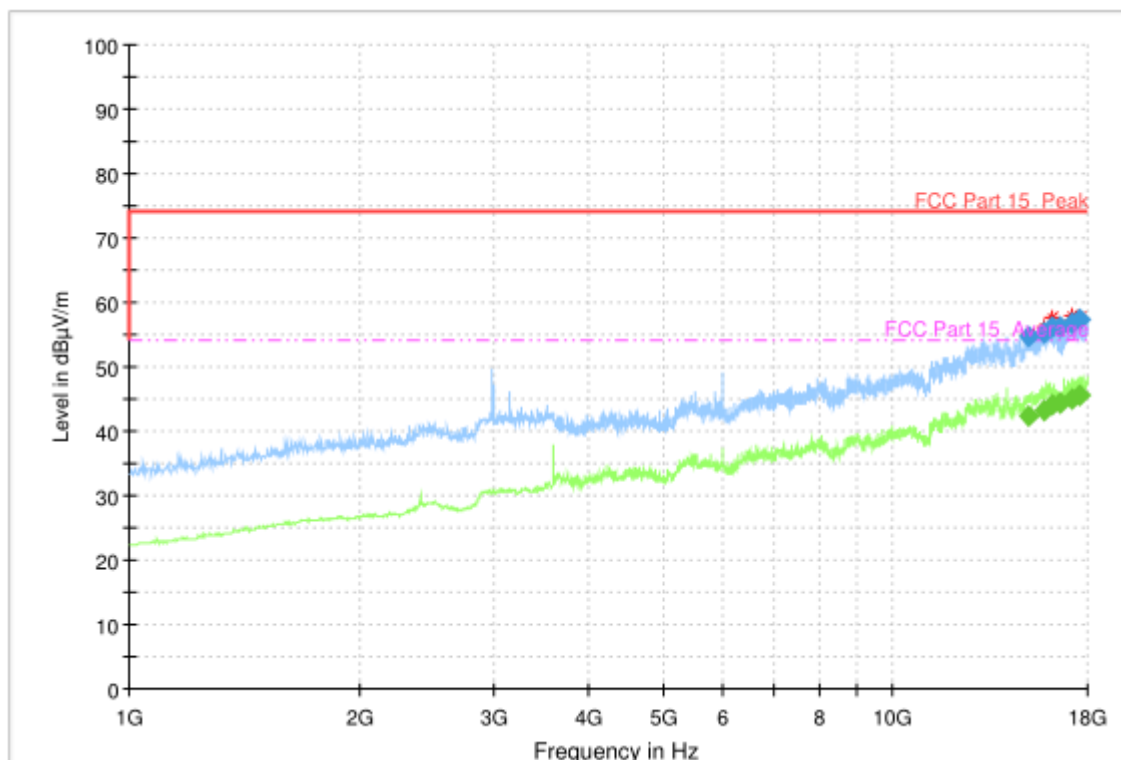
Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth h (deg)	Corr. (dB)
34.667576	11.70	40.00	28.30	1000.0	120.000	100.0	V	117.0	-22.0
39.326363	12.06	40.00	27.94	1000.0	120.000	100.0	V	103.0	-21.0
47.252459	27.47	40.00	12.53	1000.0	120.000	100.0	V	201.0	-20.1
51.690293	27.86	40.00	12.14	1000.0	120.000	100.0	V	146.0	-20.4
59.171643	19.85	40.00	20.15	1000.0	120.000	100.0	V	218.0	-22.1
96.947829	17.37	43.50	26.13	1000.0	120.000	213.0	H	-28.0	-24.0

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: USB cable (Data Link with PC)

Frequency Range: 1GHz –18GHz

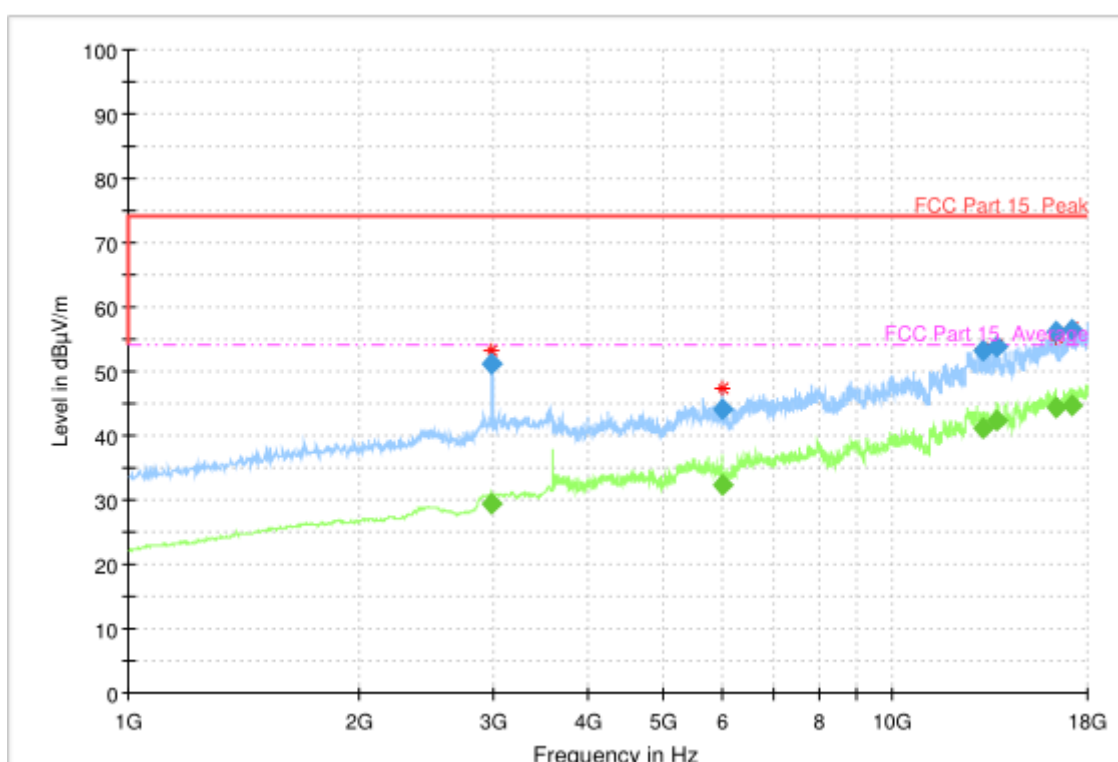


Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
15051.600000	---	42.40	54.00	11.60	50.0	1000.000	200.0	V	179.0
15051.600000	54.80	---	74.00	19.20	50.0	1000.000	200.0	V	179.0
15817.400000	---	43.27	54.00	10.73	50.0	1000.000	200.0	V	16.0
15817.400000	55.34	---	74.00	18.66	50.0	1000.000	200.0	V	16.0
16126.800000	---	44.06	54.00	9.94	50.0	1000.000	100.0	V	248.0
16126.800000	56.07	---	74.00	17.93	50.0	1000.000	100.0	V	248.0
16599.400000	56.13	---	74.00	17.87	50.0	1000.000	200.0	V	121.0
16599.400000	---	44.38	54.00	9.62	50.0	1000.000	200.0	V	121.0
17189.800000	56.86	---	74.00	17.14	50.0	1000.000	100.0	V	341.0
17189.800000	---	44.99	54.00	9.01	50.0	1000.000	100.0	V	341.0
17530.600000	---	45.64	54.00	8.36	50.0	1000.000	200.0	V	0.0
17530.600000	57.25	---	74.00	16.75	50.0	1000.000	200.0	V	0.0

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)
2988.800000	---	29.36	54.00	24.64	50.0	1000.000	100.0	H	43.0
2988.800000	51.13	---	74.00	22.87	50.0	1000.000	100.0	H	43.0
5988.400000	44.24	---	74.00	29.76	50.0	1000.000	200.0	H	306.0
5988.400000	---	32.50	54.00	21.50	50.0	1000.000	200.0	H	306.0
13114.800000	53.15	---	74.00	20.85	50.0	1000.000	200.0	H	201.0
13114.800000	---	41.05	54.00	12.95	50.0	1000.000	200.0	H	201.0
13677.600000	53.90	---	74.00	20.10	50.0	1000.000	100.0	H	77.0
13677.600000	---	42.25	54.00	11.75	50.0	1000.000	100.0	H	77.0
16390.800000	---	44.28	54.00	9.72	50.0	1000.000	100.0	H	43.0
16390.800000	56.25	---	74.00	17.75	50.0	1000.000	100.0	H	43.0
17138.800000	56.61	---	74.00	17.39	50.0	1000.000	200.0	H	201.0
17138.800000	---	44.78	54.00	9.22	50.0	1000.000	200.0	H	201.0

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

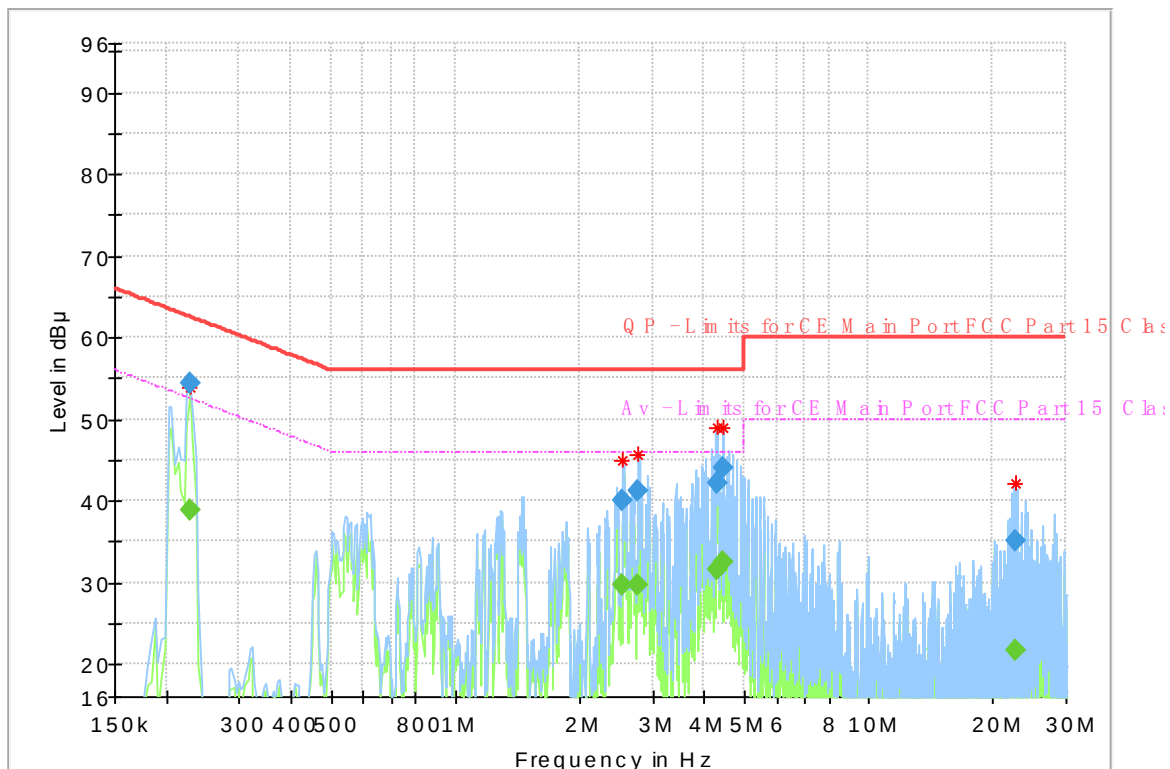
Uncertainty Measurement

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

Test Results

Mode 2: Adapter charging + CA01

Frequency Range: 150kHz – 30MHz



Frequency (MHz)	QuasiPeak (dB μV)	Average (dB μV)	Limit (dB μV)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.228356	54.41	---	62.51	8.10	1000.0	9.000	N	ON	9.7
0.228356	---	38.87	52.51	13.64	1000.0	9.000	N	ON	9.7
2.545462	40.06	---	56.00	15.94	1000.0	9.000	L1	ON	9.7
2.545462	---	29.68	46.00	16.32	1000.0	9.000	L1	ON	9.7
2.773069	41.27	---	56.00	14.73	1000.0	9.000	L1	ON	9.7
2.773069	---	29.76	46.00	16.24	1000.0	9.000	L1	ON	9.7
4.287956	42.22	---	56.00	13.78	1000.0	9.000	L1	ON	9.7
4.287956	---	31.46	46.00	14.54	1000.0	9.000	L1	ON	9.7
4.448400	---	32.37	46.00	13.63	1000.0	9.000	N	ON	9.7
4.448400	43.94	---	56.00	12.06	1000.0	9.000	N	ON	9.7
22.541231	---	21.65	50.00	28.35	1000.0	9.000	N	ON	10.0
22.541231	35.04	---	60.00	24.96	1000.0	9.000	N	ON	10.0

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*****