

FCC TEST REPORT

For

UMTS Mobile Phone

Model Number: HUAWEI SCL-U23, SCL-U23

FCC ID: QISSCL-U23

Report Number : WT158002965

Test Laboratory : Shenzhen Academy of Metrology and Quality
Inspection
National Digital Electronic Product Testing Center
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TEST REPORT DECLARATION

Applicant : Huawei Technologies Co.,Ltd

Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District Shenzhen China

Manufacturer : Huawei Technologies Co.,Ltd

Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District Shenzhen China

EUT Description : UMTS Mobile Phone

Model No : HUAWEI SCL-U23,SCL-U23

Trade mark : HUAWEI

Serial Number : BSL0115515000200

FCC ID : QISSCL-U23

Test Standards:

FCC Part 15 Subpart B 15.107, 15.109 (2014)

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

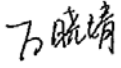
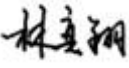
Project Engineer:	 (Wan Xiaojing)	Date:	<u>July.06.2015</u>
Checked by:	 (Lin Yixiang 林奕翔)	Date:	<u>July.06.2015</u>
Approved by:	 (Lin Bin)	Date:	<u>July.06.2015</u>

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1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	FCC Rules	Test Results
Conducted Disturbance	15.107	Pass
Radiation Emission	15.109	Pass

Remark: "N/A" means "Not applicable."

2. GENERAL INFORMATION

2.1. Report information

- 2.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.
- 2.1.2. The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.
- 2.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Committee for Laboratories (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is L0579.

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number are 446246 806614 994606 (semi anechoic chamber).

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is IC4174.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

Measurement Uncertainty

2.3. Measurement Uncertainty

Conducted Emission
9kHz~30MHz 3.5dB

Radiated Emission
30MHz~1000MHz 4.5dB
1GHz~18GHz 4.6dB

3. PRODUCT DESCRIPTION

3.1. EUT Description

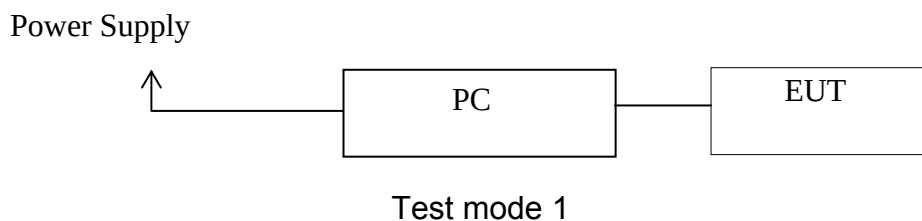
Table 2 Specification of the Equipment under Test

Product Type:	HUAWEI SCL-U23,SCL-U23
Hardware Version:	HL3SCALEM
Software Version :	SCL-U23V100R001900B006
FCC-ID:	QISSCL-U23
Frequency:	GSM 850: 824-849MHz; PCS 1900: 1850-1910MHz WCDMA Band II: 1850MHz To 1910MHz WCDMA Band IV: 1710MHz To 1755MHz WCDMA Band V: 824MHz To 849MHz
Type(s) of Modulation:	GSM/WCDMA: GMSK; 8-PSK; QPSK
Operating voltage:	DC3.8V

Remark:

1. HUAWEI SCL-U23 compared with SCL-U23, only have different model number. All of the models' circuit theory, electrical design and the key pieces are the same. The differences do not affect the EMC and safety performance. Unless otherwise specified, the model HUAWEI SCL-U23 was chosen as representative model to perform all the tests.
2. Adapters have four kinds of configuration, USA, European, British and Australian respectively. Each configuration just has different plug. And also adapters have two manufacturers. Each manufacturer's adapter has different circuit board.

3.2. Block Diagram of EUT Configuration



3.3. Operating Condition of EUT

Test Mode 1: Data transmitter with PC USB port

Test Mode 2: Adapter + Earphone + Camera On + Idle

Test Mode 3: Adapter + Earphone + Playing + Idle

Test Mode 4: Adapter + Earphone + Traffic

The Radiated emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).

Remark:

If there is one kind of accessories with different models, each one should be applied throughout the compliance test respectively, however, only the worst case mode will be recorded in this report.

If EUT has more than one typical operation, only the worst test mode will be recorded in this report.

3.4. Support Equipment List

Name	Model No	S/N	Manufacturer
Notebook	R51	--	IBM
Adaptor for Notebook	02K6654	--	IBM
Adaptor for EUT	HW-050100U2 W	--	Shen Zhen Huntkey Electronic Co., Ltd.
		--	Huizhou BYD Electronic Co., Ltd.
Adaptor for EUT	HW-050100E2 W	--	Shen Zhen Huntkey Electronic Co., Ltd.
		--	Huizhou BYD Electronic Co., Ltd.
Adaptor for EUT	HW-050100B2 W	--	Shen Zhen Huntkey Electronic Co., Ltd.
		--	Huizhou BYD Electronic Co., Ltd.
Adaptor for EUT	HW-050100A2 W	--	Shen Zhen Huntkey Electronic Co., Ltd.
		--	Huizhou BYD Electronic Co., Ltd.
Rechargeable Li-ion for EUT	HB4342A1RBC	--	SCUD (FUJIAN) Electronics Co., Ltd.
		--	Sunwoda Electronic Co., LTD.
Data cable	LSA00570	--	Unirise Communication Technology Co Ltd.
Data cable	2450989	--	CONNREX(SHENZHEN)INDUSTRIAL., LTD.
Data cable	130-25076	--	CHANGSHU HONGLIN TECHNOLOGY CO.,LTD.
Data cable	H09-00369	--	SHEN ZHEN PANG NGAI INDUSTRIAL CO.,LTD.
Data cable	130-41040	--	CHANGSHU HONGLIN TECHNOLOGY CO.,LTD.
Data cable	H09-000473	--	SHEN ZHEN PANG NGAI INDUSTRIAL CO., LTD.
Earphone	HA1-3	--	GoerTek Inc.
Earphone	1293#+3283# 3.5MM-150	--	BOLUO COUNTY QUANCHENG ELECTRONIC CO., LTD.
Earphone	MEMD1532B52 8000	--	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.
Earphone	EMC323-011-01	--	MERRY ELECTRONICS CO., LTD.
Earphone	HG-04A	--	GoerTek Inc.

3.5. Test Conditions

Date of test: June.29, 2015 - June.30, 2015

Date of EUT Receive: June.24, 2015

Temperature: 25-28 °C

Relative Humidity: 35-45%

3.6. Modifications

No modification was made.

4. TEST EQUIPMENT USED

4.1. Test Equipment Used to Measure Conducted Disturbance

Table 2 Conducted Disturbance Test Equipment

No.	Equipment	Manufacturer	Model No.	LAST CALIB	Period
SB3319	EMI Test Receiver	R&S	ESCS30	Dec.29,2014	1 Year
SB4357	AMN	R&S	ENV216	Oct.14,2014	1 Year
SB3441	Universal Communication Tester	R&S	CMU200	Mar.10, 2015	1 Year
SB9054/02	Wideband Radio Communication Tester	R&S	CMW500	Oct.27, 2014	1 Year

4.2. Test Equipment Used to Measure Radiated Disturbance

Table 3 Radiated Disturbance Test Equipment

No.	Equipment	Manufacturer	Model No.	LAST CALIB	Period
SB3436	EMI Test Receiver	R&S	ESI26	Dec.29,2014	1 Year
SB8501/09	EMI Test Receiver	R&S	ESU40	Mar.19,2015	1 Year
SB5472/02	Trilog Broadband Antenna(30M-3GHz)	SCHWARZBECK	VULB9163	Jan.19,2015	1 Year
SB3435	Double-Ridged Waveguide Horn Antenna(1G~18GHz)	R&S	HF906	Jan.19,2015	1 Year
SB3441	Universal Communication Tester	R&S	CMU200	Mar.10, 2015	1 Year
SB9054/02	Wideband Radio Communication Tester	R&S	CMW500	Oct.27, 2014	1 Year

5. CONDUCTED DISTURBANCE TEST

5.1. Test Standard and Limit

5.1.1. Test Standard

FCC Part 15: Section 15.107

5.1.2. Test Limit

Table 4 Conducted Disturbance Test Limit (Class B)

Frequency	Power Port limits (dB μ V)	
	Quasi-peak	Average
0.15MHz ~ 0.5MHz	66~56*	56~46*
0.5MHz ~ 5 MHz	56	46
5 MHz ~ 30MHz	60	50

* Decreasing linearly with logarithm of the frequency

5.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

5.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

5.4. Test Data

The emissions don't show in following result tables are more than 20dB below the limits, the test curves are shown in the next page.

Only the worst test result was shown in this report.

Table 5 Conducted Disturbance Test Data at mains Port

Model No.: HUAWEI SCL-U23								
Test mode: Data transmitter with PC USB port								
	Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
			Reading (dB μ V)	Emission Level (dB μ V)	Limits (dB μ V)	Reading (dB μ V)	Emission Level (dB μ V)	Limits (dB μ V)
Line	0.186	9.7	47.6	57.3	64.2	25.7	35.4	54.2
	0.278	9.7	36.7	46.4	60.9	14.4	24.1	50.9
	0.366	9.7	27.6	37.3	58.6	5.3	15.0	48.6
	0.738	9.8	26.0	35.8	56.0	11.6	21.4	46.0
	3.316	9.9	23.2	33.1	56.0	7.5	17.4	46.0
	3.796	9.9	23.4	33.3	56.0	6.4	16.3	46.0
Neutral	0.182	9.7	47.2	56.9	64.4	22.4	32.1	54.4
	0.274	9.7	36.2	45.9	61.0	12.4	22.1	51.0
	0.370	9.7	27.0	36.7	58.5	5.3	15.0	48.5
	0.690	9.8	21.6	31.4	56.0	2.0	11.8	46.0
	3.776	9.9	21.0	30.9	56.0	5.3	15.2	46.0
	4.244	9.9	19.5	29.4	56.0	5.2	15.1	46.0

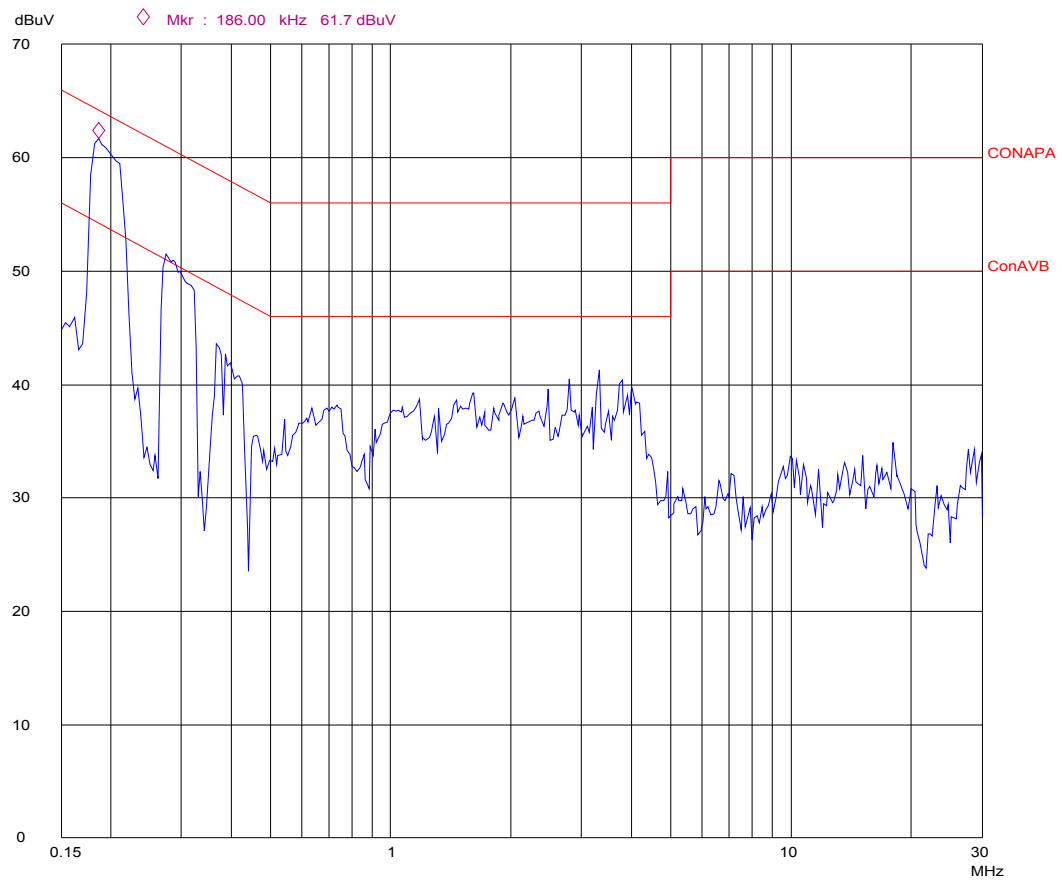
REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)

2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)

3. The other emission levels were are more than 20dB below the limits.

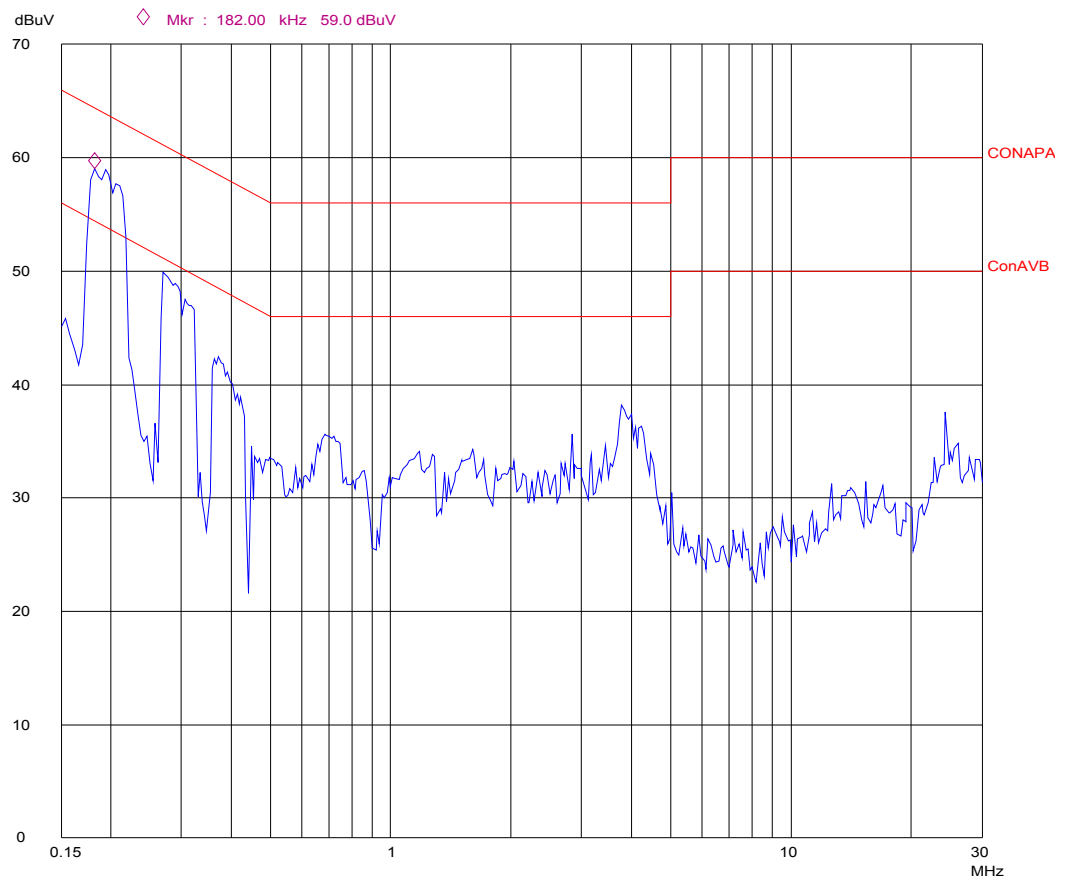
Conducted Disturbance

EUT: HUAWEI SCL-U23
Op Cond: Data transmitter with PC USB port
Test Spec: L
Comment: AC 120V/60Hz



Conducted Disturbance

EUT: HUAWEI SCL-U23
Op Cond: Data transmitter with PC USB port
Test Spec: N
Comment: AC 120V/60Hz



6. RADIATION DISTURBANCE TEST

6.1. Test Standard and Limit

6.1.1. Test Standard

FCC Part 15: Section 15.109

6.1.2. Test Limit

Table 7 Radiation Disturbance Test Limit for FCC (Class B)

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

* The lower limit shall apply at the transition frequency.

* The test distance is 3m.

6.2. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set **3 meters** away from the receiving antenna, which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. Set RBW=100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Detector function = peak; Set RBW = 1 MHz, VBW= 3MHz for $f > 1$ GHz for peak measurement.

6.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

6.4. Test Data

The emissions don't show in following result tables are more than 20dB below the limits, the test curves are shown in the next page.

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

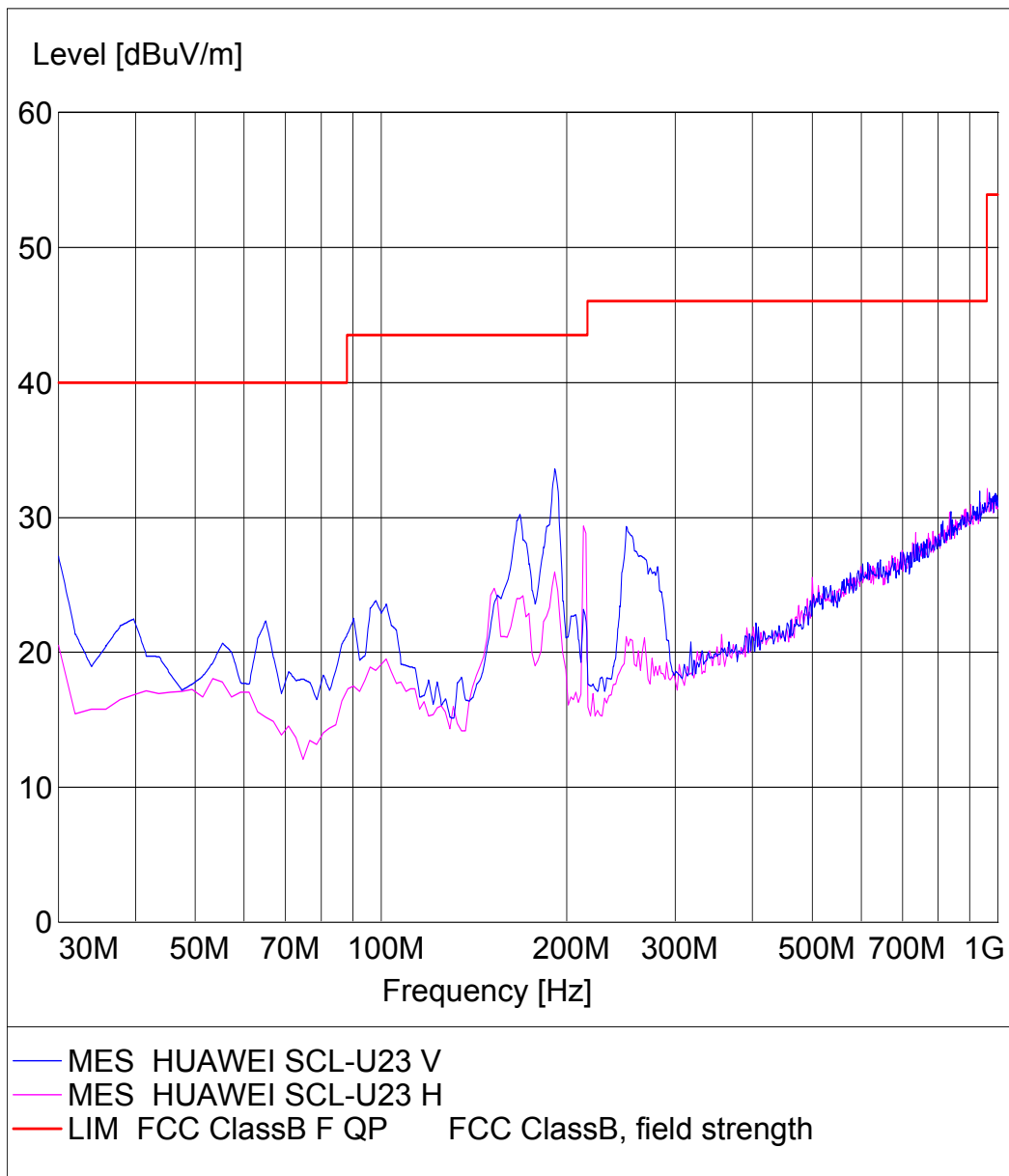
Only the worst test result was shown in this report.

Table 8 Radiated Disturbance Test Data

Frequency MHz	Cable Loss +pre amp (dB)	Antenna Factor (dB)	Readings (dB μ V/m)	Level (dB μ V/m)	Polarity (H/V)	Turntable Angle (deg)	Antenna Height (cm)	Limits (dB μ V/m)	Margin (dB)
30.000	0.6	12.3	5.6	18.5	H	306	200	40.0	21.5
101.923	1.1	13.2	5.0	19.3	H	38	200	43.5	24.2
152.464	1.4	8.3	13.0	22.7	H	17	200	43.5	20.8
169.959	1.5	8.7	12.2	22.4	H	8	200	43.5	21.1
191.342	1.6	10.6	11.7	23.9	H	340	100	43.5	19.6
212.725	1.6	10.6	16.2	28.4	H	351	100	43.5	15.1
30.000	0.6	12.3	12.2	25.1	V	345	100	40	14.9
39.719	0.6	12.3	9.5	22.4	V	360	100	40	17.6
64.989	0.9	12.7	8.7	22.3	V	16	100	40	17.7
168.016	1.5	8.7	18.0	28.2	V	33	100	43.5	15.3
191.342	1.6	10.6	19.4	31.6	V	36	100	43.5	11.9
249.659	1.9	12.1	12.3	26.3	V	317	100	46	19.7
PK									
1190.380	-41.0	24.4	52.4	35.8	H	315	100	74	38.2
1330.613	-40.8	24.3	50.8	34.3	H	326	100	74	39.7
1501.002	-40.8	25.1	50.5	34.8	H	110	100	74	39.2
1651.302	-40.6	26.7	53.5	39.6	H	156	100	74	34.4
3104.208	-39.0	30.4	48.5	39.9	H	300	100	74	34.1
4266.533	-39.2	33.6	48.3	42.7	H	46	100	74	31.3
1330.661	-40.8	24.3	55.8	39.3	V	31	100	74	34.7
1501.002	-40.8	25.1	55.4	39.7	V	344	100	74	34.3
1661.322	-40.6	26.7	57.8	43.9	V	56	100	74	30.1
1711.422	-40.5	26.7	53.9	40.1	V	178	100	74	33.9
1999.983	-40.4	26.9	61.1	47.6	V	169	100	74	26.4
2322.645	-40.1	28.3	51.2	39.4	V	306	100	74	34.6
AV									
1190.380	-41.0	24.4	38.2	21.6	H	315	100	54	32.4
1330.613	-40.8	24.3	37.3	20.8	H	326	100	54	33.2
1501.002	-40.8	25.1	36.8	21.1	H	110	100	54	32.9
1651.302	-40.6	26.7	36.8	22.9	H	156	100	54	31.1
3104.208	-39.0	30.4	32.2	23.6	H	300	100	54	30.4
4266.533	-39.2	33.6	29.9	24.3	H	46	100	54	29.7
1330.661	-40.8	24.3	40.3	23.8	V	31	100	54	30.2
1501.002	-40.8	25.1	40.1	24.4	V	344	100	54	29.6
1661.322	-40.6	26.7	39.7	25.8	V	56	100	54	28.2
1711.422	-40.5	26.7	38.2	24.4	V	178	100	54	29.6
1999.983	-40.4	26.9	43.3	29.8	V	169	100	54	24.2
2322.645	-40.1	28.3	34.2	22.4	V	306	100	54	31.6

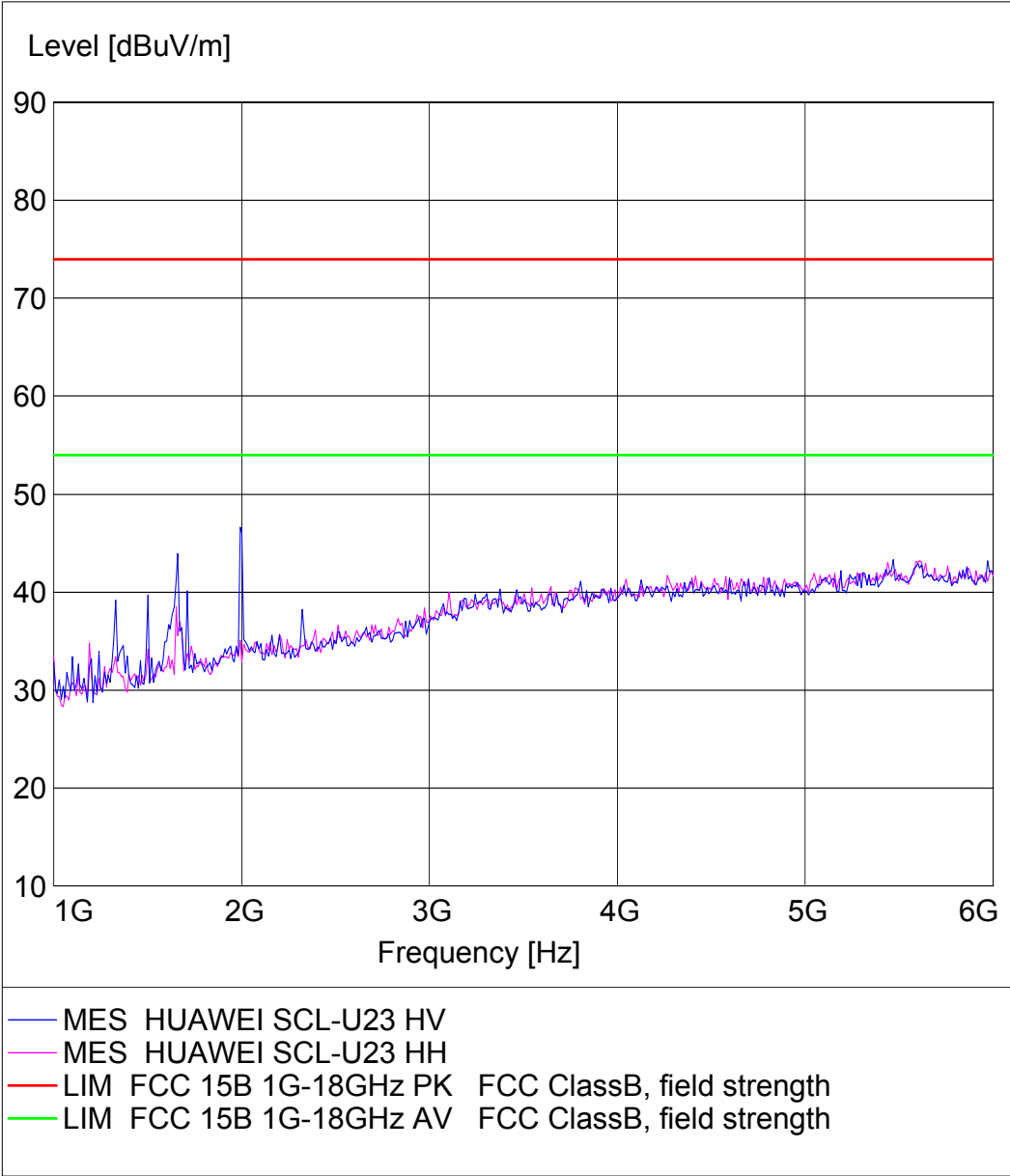
Radiated Emission

EUT Name: HUAWEI SCL-U23
Operating Condition: Data transmitter with PC USB port
Test site: SMQ NETC EMC Lab.3m Chamber
Antenna Position: Horizontal & Vertical
Comment: AC 120V/60Hz



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