FCC TEST REPORT

For

Wearable Data Terminal

Model Number: U2

FCC ID: SWSU2

Report Number : WT178005934

Test Laboratory	:	Shenzhen Academy of Metrology and Quality Inspection National Digital Electronic Product Testing Center
Site Location	:	NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China
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TEST REPORT DECLARATION

Applicant	:	UROVO TECHNOLOGY CO., LTD
Address	:	A701-710, Zondy Cyber Building, Yuexing Road, Nanshan District, Shenzhen, China
Manufacturer	:	UROVO TECHNOLOGY CO., LTD
Address	:	A701-710, Zondy Cyber Building, Yuexing Road, Nanshan District, Shenzhen, China
EUT Description	:	Wearable Data Terminal
Model No	:	U2
Trade mark	:	UROVO
Serial Number	:	/
FCC ID	:	SWSU2

Test Standards:

FCC Part 15 Subpart B 15.107, 15.109 （2016）

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:	(Chen Silin 陈司林)	Date:	Oct.23, 2017
Checked by:	(Lin Yixiang 林奕翔)	Date:	Oct.23, 2017
Approved by:	(Lin Bin 林斌)	Date:	Oct.23, 2017

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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

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.

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.

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 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 NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

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

The Laboratory is accreditated by the United States of American Federal Communic ations Commission (FCC), and the registration number is 582918.

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 11177A-1 11177A-2.

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

2.3. Measurement Uncertainty

Conducted Emission
9kHz~30MHz 3.5dB

Radiated Emission
30MHz~1000MHz 4.5dB
1GHz~26.5GHz 4.6dB

3. PRODUCT DESCRIPTION

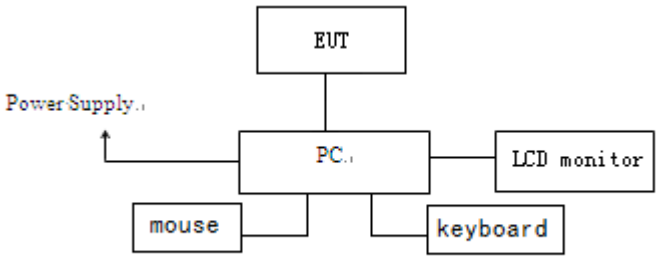
3.1. EUT Description

Table 2 Specification of the Equipment under Test

Product Type:	Wearable Data Terminal
Hardware Version:	SQ46/PCB/SQ46W_MB_V01,8 Layer
Software Version :	SQ46_P1_00WE_YBXX_AU816_404_R_0_170526_01
FCC-ID:	SWSU2
Frequency:	GSM850: TX 824MHz~849MHz RX 869MHz~894MHz PCS1900: TX 1850MHZ~1910MHz RX 1930MHz~1990MHz WCDMA 850: TX 824MHz~849MHz RX 869MHz~894MHz WCDMA 1700: TX: 1710MHz~1755MHz RX 2110MHz~2155MHz WCDMA 1900: TX 1850MHZ~1910MHz RX 1930MHz~1990MHz LTE Band 2: TX 1850MHZ~1910MHz RX 1930MHz~1990MHz LTE Band 4: TX: 1710MHz~1755MHz RX 2110MHz~2155MHz LTE Band 5: TX 824MHz~849MHz RX 869MHz~894MHz LTE Band 7: TX 2500MHz~2570MHz RX 2620MHz~2690MHz WiFi:2412MHz~2462MHz BT:2402MHz~2480MHz
Type(s) of Modulation:	GSM850/PCS1900:GMSK 8PSK WCDMA:QPSK LTE:QPSK, 16QAM DSSS (DBPSK, DQPSK, CCK) for 802.11b OFDM (BPSK, QPSK, 16QAM, 64QAM) for 802.11a/g/n BT：GFSK, pi/4-DQPSK, 8DPSK
Antenna Type:	GSM/WCDMA/LTE: PIFA ANTENNA 824MHz~849MHz:-2dBi 1710MHz~1780MHz:-1 dBi 1850MHZ~1910MHz:-1 dBi 2500MHz~2570MHz: -1 dBi WiFi: PIFA ANTENNA -1dBi BT: PIFA ANTENNA -1.6dBi
Operating voltage:	Internal battery, 120V AC Adapter 3.5V (Low)/3.7V (Nominal)/ 4.35V (Max)

Remark: --

3.2. Block Diagram of EUT Configuration



Test mode 1

3.3. Operating Condition of EUT

Test mode 1: connected to a pc and data transmission.

The test mode mentioned above is identified as worst case for this EUT and the test results for this mode are recorded in this report.

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).

3.4. Support Equipment List

Table 3 Support Equipment List

Name	Model No	S/N	Manufacturer
Battery for EUT	HBLU2	--	ICON ENERGY SYSTEM(SHEN ZHEN) CO.,LTD
USB for EUT	--	--	--

Table 4 Support Equipment List

Name	Model No	S/N	Manufacturer	FCC
Notebook	ThinkPadE460	--	Lenovo	DOC
Keyboard (USB)	Y-U0009	1651MG00L068	Logitech	DOC
Mouse (USB)	M-U0026	--	Logitech	DOC

3.5. Test Conditions

Date of test：Oct.12, 2017- Oct.15, 2017
Date of EUT Receive：Sep.21, 2017
Temperature: 18-24 ℃
Relative Humidity: 39-61%

3.6. Modifications

No modification was made.

4. TEST EQUIPMENT USED

4.1. Test Equipment Used to Measure Conducted Disturbance

Table 3 Conducted Disturbance Test Equipment

No.	Equipment	Manufacturer	Model No.	LAST CALIB	Period
SB3319	EMI Test Receiver	R&S	ESCS30	Nov.29,2016	1 Year
SB4357	AMN	R&S	ENV216	Sep.22,2017	1 Year

4.2. Test Equipment Used to Measure Radiated Disturbance

Table 4 Radiated Disturbance Test Equipment

No.	Equipment	Manufacturer	Model No.	LAST CALIB	Period
SB3436	EMI Test Receiver	R&S	ESI26	Nov.29,2016	1 Year
SB3955	Trilog Broadband Antenna (30M-3GHz)	Schwarzbeck	VULB9163	Mar.22,2017	1 Year
SB9422/16	Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	Mar.19,2017	1 Year
SB8501/17	Preamplifier	Rohde & Schwarz	SCU-18	Mar.06, 2017	1 Year
SB8501/16	Preamplifier	Rohde & Schwarz	SCU-26	Mar.06, 2017	1 Year
SB9059	Preamplifier	Rohde & Schwarz	SCU-40	Sep.13,2017	1 Year
SB8501/11	Horn Antenna	ETS-Lindgren	3160-09	Mar.21,2017	3 Year
SB8501/12	Horn Antenna	ETS-Lindgren	3160-10	Mar.21,2017	3 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 5 Conducted Disturbance Test Limit (Class B)

Frequency	Power Port limits (dBμV)	
	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.

Table 6 Conducted Disturbance Test Data at mains Port

Model No.: U2

Test mode: Test Mode 1

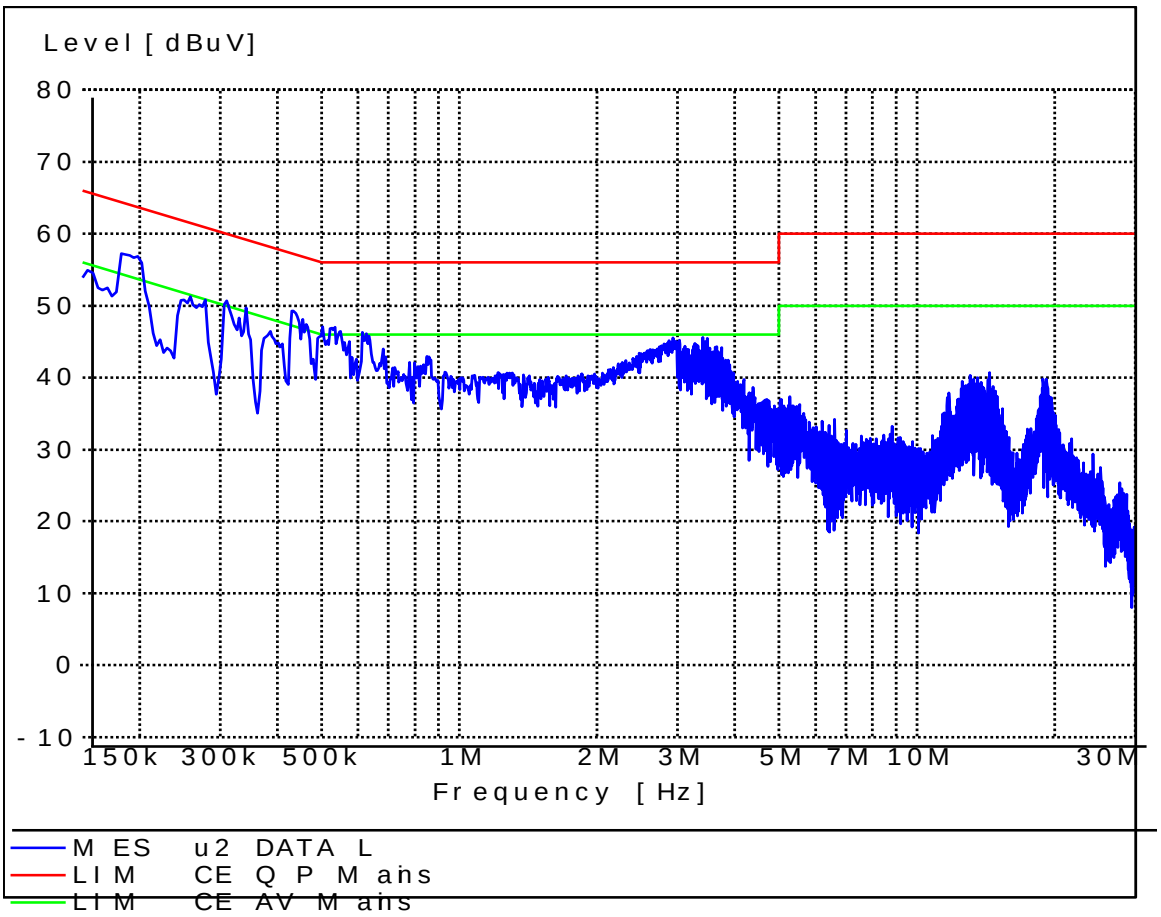
	Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
			Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)
Line	0.182	9.7	43.1	52.8	64.4	24.3	34.0	54.4
	0.310	9.7	36.4	46.1	60.0	19.6	29.3	50.0
	0.430	9.9	32.6	42.5	57.3	18.2	28.1	47.3
	0.530	9.9	31.7	41.6	56	16.5	26.4	46
	0.634	9.9	32.2	42.1	56	17.2	27.1	46
	2.930	9.9	30.5	40.4	56	20.8	30.7	46
Neutral	0.186	9.7	42.4	52.1	64.2	27.1	36.8	54.2
	0.278	9.7	34.3	44.0	60.9	15.7	25.4	50.9
	0.430	9.7	33.5	43.2	57.3	17.4	27.1	47.3
	0.514	9.8	32.7	42.5	56	18.4	28.2	46
	2.914	9.9	29.7	39.6	56	20.8	30.7	46
	18.948	9.9	29.4	39.3	60	23.9	33.8	50

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

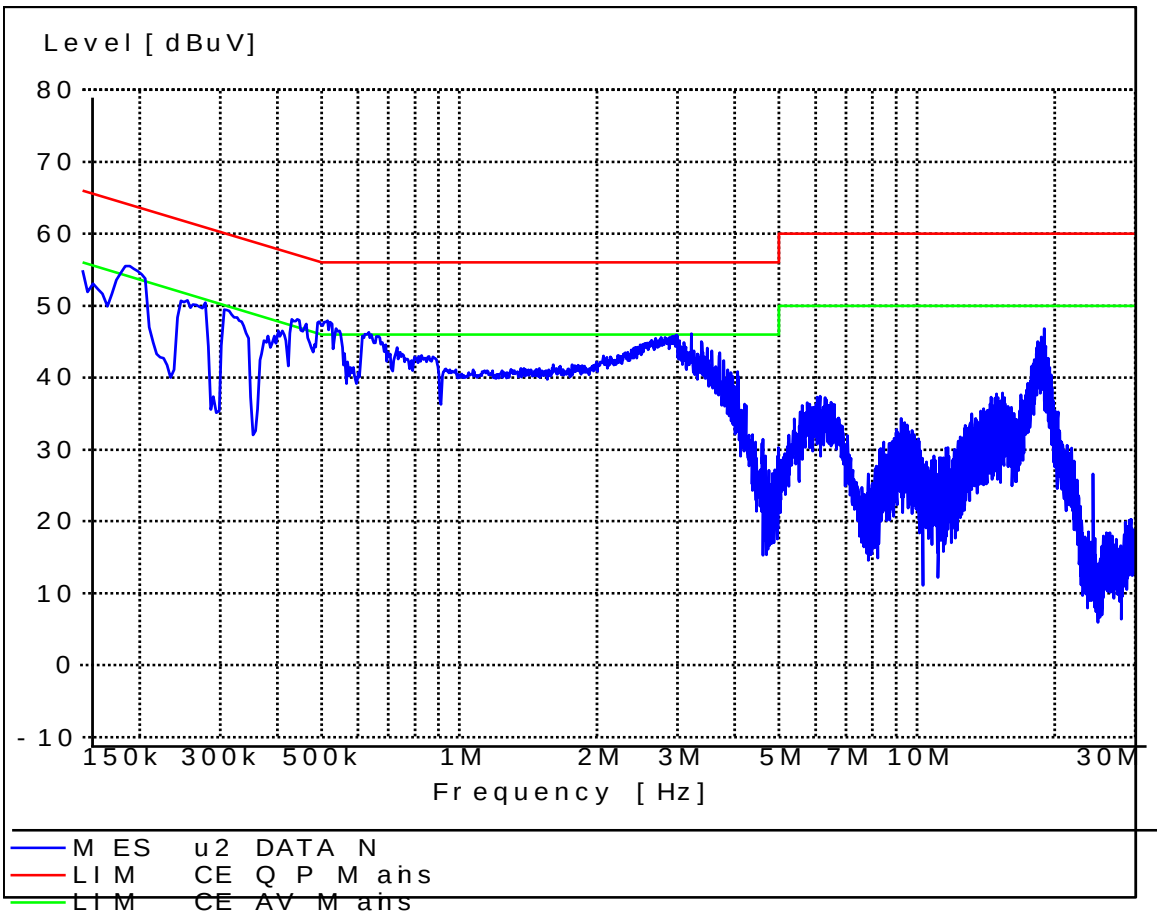
2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)

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

EUT: U2
Operating Condition: Test mode 1
Test Specification: L
Comment: AC 120V/60Hz



EUT: U2
Operating Condition: Test mode 1
Test Specification: 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)(9KHz-1GHz)

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
960~1000	500	3

Table 8 Radiation Disturbance Test Limit for FCC (Class B)(Above 1G)

Frequency (MHz)	(dBuV/m) (at 3 meters)	
	PEAK	AVERAGE
Above 1000	74	54

* 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 >= 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.

Table 9 Radiated Disturbance Test Data

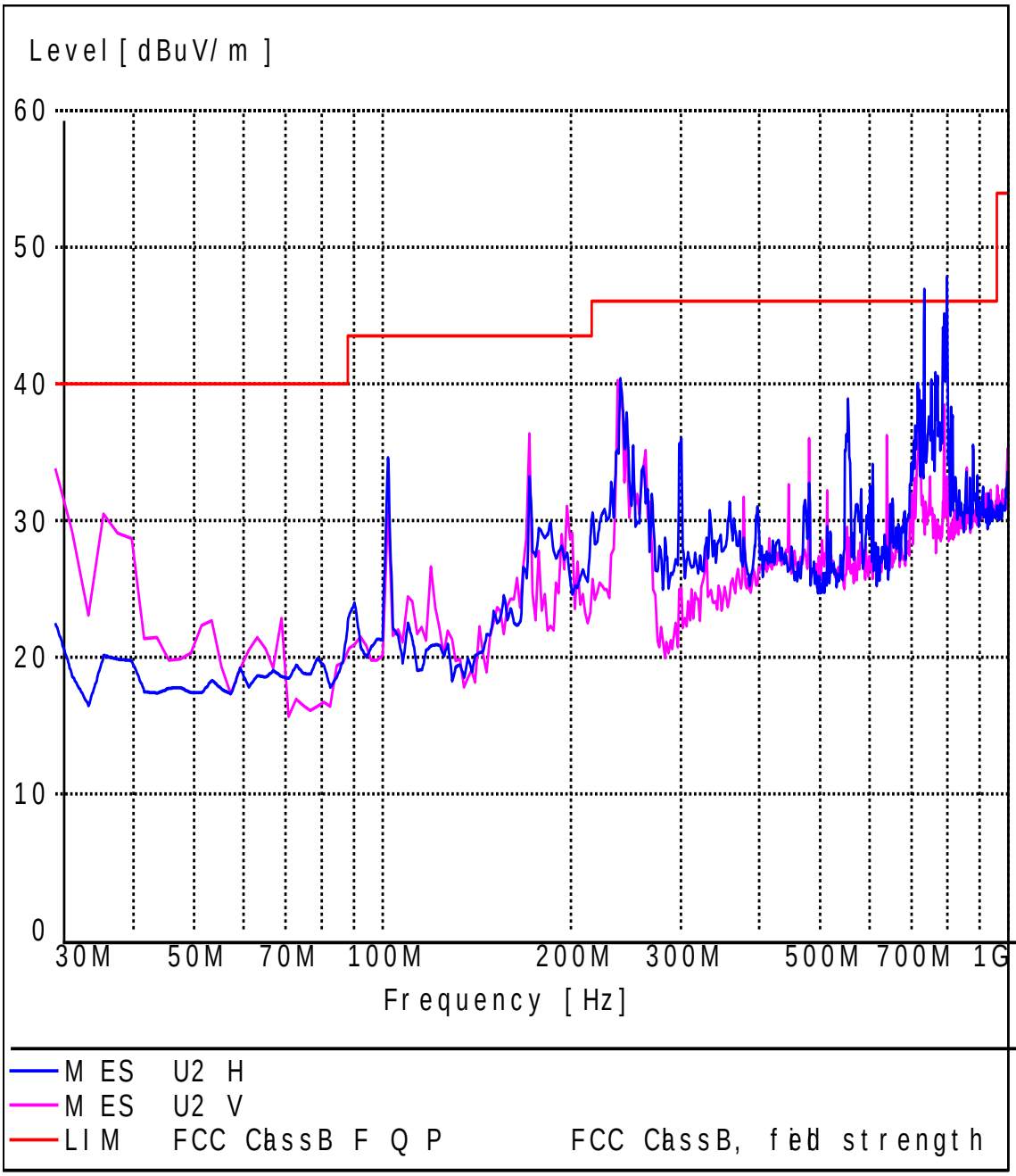
Model No.: U2

Test mode: Test Mode 1

Frequency (MHz)	Cable Loss +preamp(dB)	Antenna Factor (dB)	Readings (dBμV/m)	Level (dBμV/m)	Polarity (H/V)	Turntable Angle(deg)	Antenna Height (cm)	Limits(dBμV/m)	Margin (dB)
30.016	0.6	12.3	18.9	31.8	V	67	100	40	8.2
101.924	1.1	13.2	14.4	28.7	V	360	100	43.5	14.8
171.905	1.5	9.0	22.6	33.1	V	271	100	43.5	10.4
237.996	1.8	11.2	25.2	38.2	V	44	100	46	7.8
263.267	1.9	12.1	20.2	34.2	V	183	100	46	11.8
720.080	3.4	18.8	15.0	37.2	V	277	100	46	8.8
101.924	1.1	13.2	17.3	31.6	H	298	100	43.5	11.9
171.904	1.5	9.0	20.7	31.2	H	110	100	43.5	12.3
239.940	1.9	11.2	25.3	38.4	H	70	100	46	7.6
554.850	2.9	16.6	17.4	36.9	H	161	100	46	9.1
733.687	3.5	18.8	17.8	40.1	H	99	100	46	5.9
796.013	3.6	18.8	15.1	37.5	H	71	100	46	8.5
PK									
1199.168	-41.0	24.4	67.8	51.2	H	120	100	74	22.8
1440.886	-40.8	25.1	58.8	43.1	H	60	100	74	30.9
1681.362	-40.7	26.7	56.7	42.7	H	50	100	74	31.3
1791.583	-40.5	26.7	58.0	44.2	H	120	100	74	29.8
2162.324	-40.3	28.6	53.3	41.6	H	60	100	74	32.4
5318.637	-38.6	33.9	57.3	52.6	H	50	100	74	21.4
1200.408	-40.9	24.3	67.7	51.1	V	30	100	74	22.9
1688.337	-40.7	26.7	57.7	43.7	V	50	100	74	30.3
1792.566	-40.5	26.7	61.6	47.8	V	30	100	74	26.2
2282.565	-40.3	28.3	55.2	43.2	V	50	100	74	30.8
3785.577	-39.2	32	54.1	46.9	V	30	100	74	27.1
4496.557	-39.3	33.7	52.3	46.7	V	20	100	74	27.3
AV									
1199.168	-41.0	24.4	41.3	24.7	H	120	100	54	29.3
1440.886	-40.8	25.1	38.3	22.6	H	60	100	54	31.4
1681.362	-40.7	26.7	35.5	21.5	H	50	100	54	32.5
1791.583	-40.5	26.7	39.4	25.6	H	120	100	54	28.4
2162.324	-40.3	28.6	34.8	23.1	H	60	100	54	30.9
5318.637	-38.6	33.9	31.5	26.8	H	50	100	54	27.2
1200.408	-40.9	24.3	41.4	24.8	V	30	100	54	29.2
1688.337	-40.7	26.7	37.9	23.9	V	50	100	54	30.1
1792.566	-40.5	26.7	39.4	25.6	V	30	100	54	28.4
2282.565	-40.3	28.3	36.1	24.1	V	50	100	54	29.9
3785.577	-39.2	32	29.9	22.7	V	30	100	54	31.3
4496.557	-39.3	33.7	29.0	23.4	V	20	100	54	30.6

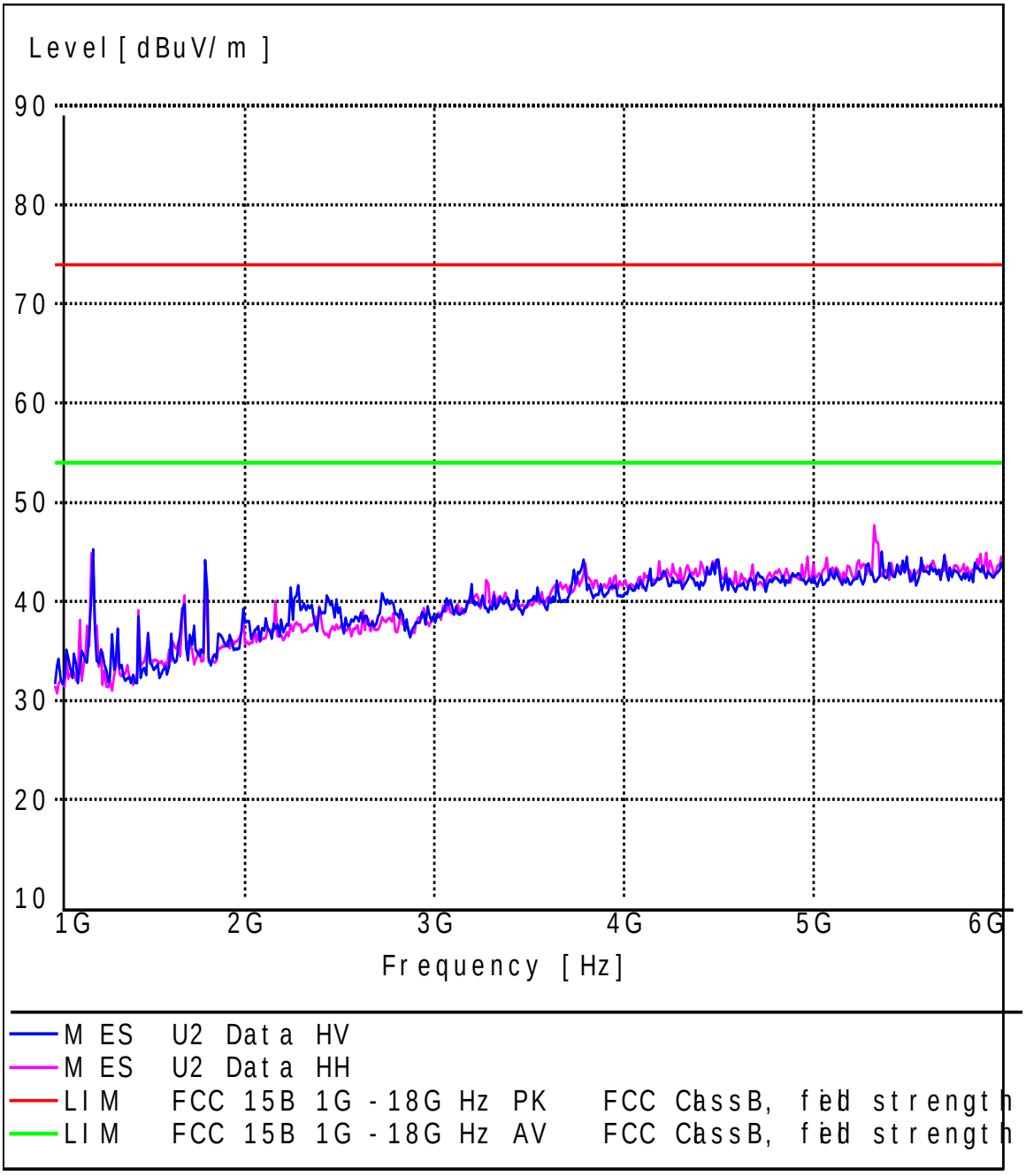
Emission level(dBuV)=Read Value(dBuV/m) + Antenna Factor(dB)+ Cable Loss +preamp(dB)

EUT Name: U2
Operating Condition: Test Mode 1
Test site: SMQ NETC EMC Lab.3m Chamber
Antenna Position: Horizontal & Vertical
Comment: AC 120V60Hz



Radiated Emission

EUT Name: U2
Operating Condition: Test Mode 1
Test site: SMQ NETC EMC Lab.3m Chamber
Antenna Position: Vertical & Horizontal
Comment: AC 120V/60Hz



Radiated Emission

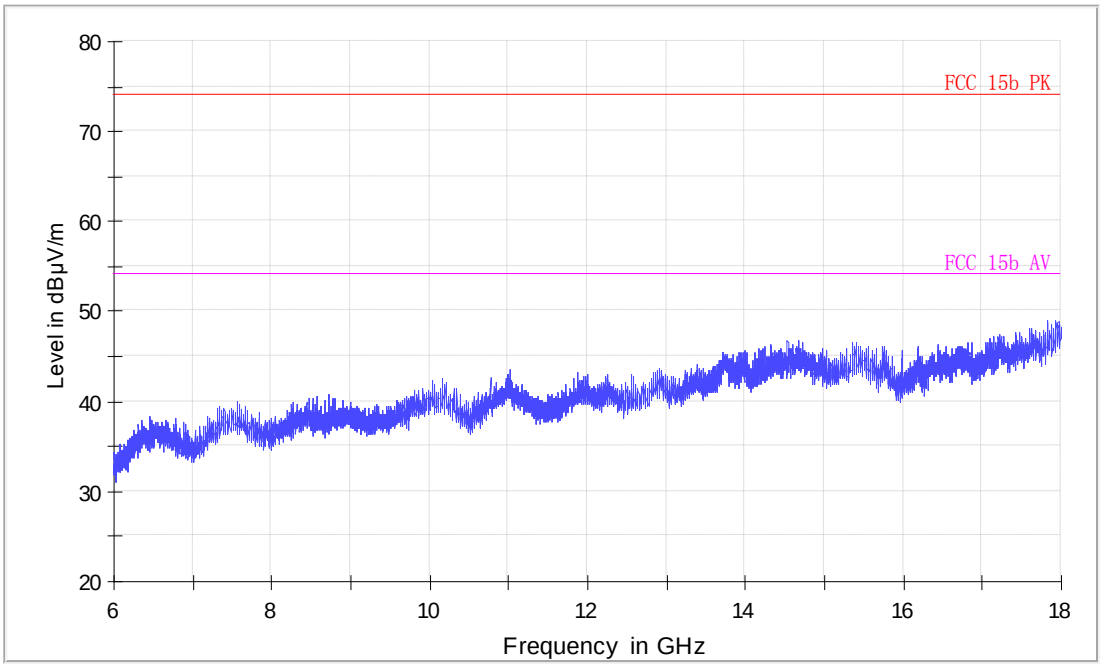
EUT Information

EUT Model name:	U2
Operator Mode:	Test Mode 1
Comment:	

Common Information

Test Description:	SMQ NETC EMC Lab.3m Chamber
Customer	
Antenna Position:	Horizontal
Operator Name:	
Comment1:	AC 120V/60Hz
Comment2:	

Copy (2) of FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

EUT Information

EUT Model name:	U2
Operator Mode:	Test Mode 1
Comment:	

Common Information

Test Description:	SMQ NETC EMC Lab.3m Chamber
Customer	
Antenna Position:	Vertical
Operator Name:	
Comment1:	AC 120V/60Hz
Comment2:	

Copy (2) of FCC Electric Field Strength 1-18GHz operate on 2.4GHz