FCC TEST REPORT

Applicant	BenQ Corporation
Address	16 Jihu Road, Neihu, Taipei 114, Taiwan

Manufacturer or Supplier	BenQ Corporation
Address	16 Jihu Road, Neihu, Taipei 114, Taiwan
Product	Interactive Flat Panel
Brand Name	BenQ
Model	RP8603
Additional Model & Model Difference	RP8603*, VA8603* (* means 0~9, A~Z or blank); See item 2.1
Date of tests	May 06, 2022 ~ May 26, 2022 Sep. 29, 2022 ~ Nov. 07, 2022 Mar. 20, 2023 ~ Jun. 21, 2023

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

☒ **FCC Part 15, Subpart B, Class B (sDoC)**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Andy Zhu Supervisor / EMC Department	Approved by Madison Luo Assistant Manager / EMC Department
	 Date: Jul. 05, 2023

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Table of Contents

RELEASE CONTROL RECORD 3

1 SUMMARY OF TEST RESULTS 4
1.1 MEASUREMENT UNCERTAINTY 4

2 GENERAL INFORMATION 5
2.1 GENERAL DESCRIPTION OF EUT 5
2.2 DESCRIPTION OF TEST MODES 7
2.3 DESCRIPTION OF SUPPORT UNITS 10

3 EMISSION TEST 11
3.1 CONDUCTED EMISSION MEASUREMENT 11
3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT 11
3.1.2 TEST INSTRUMENTS 11
3.1.3 TEST PROCEDURE 12
3.1.4 DEVIATION FROM TEST STANDARD 12
3.1.5 TEST SETUP 13
3.1.6 EUT OPERATING CONDITIONS 13
3.1.7 TEST RESULTS 14
3.2 RADIATED EMISSION MEASUREMENT 16
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT 16
3.2.2 TEST INSTRUMENTS 18
3.2.3 TEST PROCEDURE 19
3.2.4 DEVIATION FROM TEST STANDARD 20
3.2.5 TEST SETUP 21
3.2.6 EUT OPERATING CONDITIONS 21
3.2.7 TEST RESULTS (BELOW 1GHz) 22
3.2.8 TEST RESULTS (ABOVE 1GHz) 24

4 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB 26

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FS2205WDG0019	Original release	Jun. 23, 2022
FS2209WDG0163	Based on the report FS2205WDG0019, 1. added a new mainboard(Main Board type B) 2. added a new front panel(Front board type B) 3. added two OPS boards (OPS Board type B & OPS Board type C) It needs to be retested all test items after engineer evaluated.	Nov. 24, 2022
FS2212WDG0201	Based on the original report FS2209WDG0163 add 5.8GHz Microwave Radar Module, aim at 5.8G Microwave Radar Module function it needed to be retest all items after engineer evaluated.	Jul. 05, 2023

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD			
Standard Section	**Test Item**	**Result**	**Remark**
FCC Part 15, Subpart B, Class B (sDoC)	Conducted test	PASS	Meets limits minimum passing margin is -3.55dB at 0.33002MHz
	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets limits minimum passing margin is -4.04dB at 72.68MHz
	Radiated Emission Test (Above 1GHz)	PASS	Meets limits minimum passing margin is -4.76dB at 29000.00MHz

Remark: 1.Please refer to FCC part 2 2.1077 for sDoC compliance information requirement.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emission test	0.15MHz ~ 30MHz	+/- 3.05 dB
Radiated emissions	30MHz ~ 1GHz	+/-4.62 dB
	Above 1GHz	+/-4.96 dB

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Interactive Flat Panel
MODELS NO.	RP8603
ADDITIONAL MODELS	RP8603*, VA8603* (* means 0~9, A~Z or blank)
FCC ID	JVPRP7503NFC
FCC ID	2AQ5R-RDWM15209
POWER SUPPLY	AC 100-240V 50/60Hz
CABLE SUPPLIED	Power cord*7: Unshielded, Detachable 3m HDMI Cable: Shielded, Detachable 3m with two cores Touch USB Cable: Shielded, Detachable 3m VGA Cable: Shielded, Detachable 3m with two cores USB Type-C Cable: Shielded, Detachable 1.5m
THE HIGHEST OPERATING FREQUENCY	1.8GHz
ACCESSORY	IR Remote Control; Touch Pen; Wireless USB Adapter

NOTES:

1. This is a supplementary report of Report No.: FS2209WDG0163. The differences between them are as below information:

Report No.		Sample configuration No.	Difference	Test item
Original	FS2205WDG0019	#1	Main Board type A, Front board type A, OPS Board type A	Full test
The first supplementary	FS2209WDG0163	#2	Main Board type B, Front board type B, OPS Board type B	Full test
		#3	Main Board type B, Front board type B, OPS Board type C	Partial test (RE)
The second supplementary	FS2212WDG0201	#1	Main Board type A, Front board type A, OPS Board type A, Add a 5.8GHz Microwave Radar Module	5.8GHz Microwave Radar function full test
		#2	Main Board type B, Front board type B, OPS Board type B, Add a 5.8GHz Microwave Radar Module	5.8GHz Microwave Radar function full test
		#3	Main Board type B, Front board type B, OPS Board type C, Add a 5.8GHz Microwave Radar Module	5.8GHz Microwave Radar function Partial test (RE)

2. All the above test items met the requirements. But only the worst case was shown in test report.
3. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
4. Please refer to the EUT photo document (Reference No.: 2212WDG0201) for detailed product photo.
5. Additional models (see above table) are identical with the test model RP8603 except model number for trading purpose.

6. Details of the remote control are as follows:

Remote control	Brand:	BenQ
	Model:	TRY01
	Power Supply:	DC3V(AAA/1.5V*2) from battery

7. Details of the Wireless USB Adapter are as follows:

Wireless USB Adapter 1	Brand:	BenQ
	Model:	TDY31
	Power Supply:	DC 5V From USB Host Unit
Wireless USB Adapter 2	Brand:	BenQ
	Model:	WD02AT
	Power Supply:	DC 5V From USB Host Unit

2.2 DESCRIPTION OF TEST MODES

The EUT was tested under the following modes. And the final worst mode was marked in boldface and recorded in this report.

◆ **FOR CONDUCTED EMISSION TEST FOR AC MAINS POWER PORT:**

NO.	Test Mode	Sample No.	Test Voltage
1	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + VGA In (1920*1080, 60Hz) + PC Audio In + MIC In+ PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out	#1, **#2**	**AC 120/60Hz**
2	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
3	**RJ45 1 Data Transmitting 10Mbps (More than 10%) + VGA In (640*480, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out**		
4	RJ45 2 Data Transmitting 1000Mbps (More than 10%) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
5	WD02AT(WIFI Link Data Transmitting) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + NFC		
6	TWY31(WIFI Link Data Transmitting) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + NFC		
7	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
8	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (1920*1080, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
9	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (640*480, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
10	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI1 In (3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
11	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI2 In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
12	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + DP In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
13	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + Type-C(Front) In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
14	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (3840*2160, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
15	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (1920*1080, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
16	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (640*480, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
17	RJ45 1 Data Transmitting 1000Mbps (More than 10%)+ USB 3.0*5 Data Transmitting + USB 2.0*2 Data Transmitting + Type-C(Back) Data Transmitting + stand-alone MP4 Playing + MIC In + Touch(32767x32767)		
18	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + Audio out		
19	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + SPDIF out		
20	Standby		
21	5.8G Radio determination		

◆ FOR RADIATED EMISSIONS TEST (BELOW 1GHz) :

NO.	Test Mode	Sample No.	Test Voltage
1	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + VGA In (1920*1080, 60Hz) + PC Audio In + MIC In+ PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out	#1, #2	AC 120/60Hz
2	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
3	RJ45 1 Data Transmitting 10Mbps (More than 10%) + VGA In (640*480, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
4	RJ45 2 Data Transmitting 1000Mbps (More than 10%) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
5	WD02AT(WIFI Link Data Transmitting) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + NFC		
6	TWY31(WIFI Link Data Transmitting) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + NFC		
7	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
8	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (1920*1080, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
9	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (640*480, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
10	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI1 In (3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
11	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI2 In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
12	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + DP In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
13	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + Type-C(Front) In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
14	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (3840*2160, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
15	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (1920*1080, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
16	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (640*480, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
17	RJ45 1 Data Transmitting 1000Mbps (More than 10%)+ USB 3.0*5 Data Transmitting + USB 2.0*2 Data Transmitting + Type-C(Back) Data Transmitting + stand-alone MP4 Playing + MIC In + Touch(32767x32767)		
18	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + Audio out		
19	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + SPDIF out		
20	Standby		
21	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (3840*2160, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out	#3	
22	**5.8G Radio determination**	#1, **#2,** #3	

◆ FOR RADIATED EMISSIONS TEST (ABOVE 1GHz) :

NO.	Test Mode	Sample No.	Test Voltage
1	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + VGA In (1920*1080, 60Hz) + PC Audio In + MIC In+ PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out	#1, #2	AC 120/60Hz
2	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
3	RJ45 1 Data Transmitting 10Mbps (More than 10%) + VGA In (640*480, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
4	RJ45 2 Data Transmitting 1000Mbps (More than 10%) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
5	WD02AT(WIFI Link Data Transmitting) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + NFC		
6	TWY31(WIFI Link Data Transmitting) + VGA In (1920*1080, 60Hz) + Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + NFC		
7	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
8	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (1920*1080, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
9	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI In (640*480, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
10	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI1 In (3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
11	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + HDMI2 In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
12	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + DP In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
13	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + Type-C(Front) In(3840*2160,60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
14	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (3840*2160, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
15	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (1920*1080, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out		
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17	RJ45 1 Data Transmitting 1000Mbps (More than 10%)+ USB 3.0*5 Data Transmitting + USB 2.0*2 Data Transmitting + Type-C(Back) Data Transmitting + stand-alone MP4 Playing + MIC In + Touch(32767x32767)		
18	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + Audio out		
19	RJ45 1 Data Transmitting 100Mbps (More than 10%) + VGA In (1024*768, 60Hz) + PC Audio In + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out + SPDIF out		
20	Standby		
21	RJ45 1 Data Transmitting 1000Mbps (More than 10%) + OPS (3840*2160, 60Hz) + MIC In + PC Touch(32767x32767) + RS232 Data Transmitting + HDMI Out	#3	
22	**5.8G Radio determination**	#1, **#2,** #3	

2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Personal Computer	DELL	Vostro 230	357PV2X	N/A
2	Notebook	DELL	E6420	9H12FS1	N/A
3	Mouse	DELL	MOC5UO	J0Z008H3	N/A
4	Keyboard	DELL	L100	CN-0RH656-65890-14P-04AX	N/A
5	Printer	HP	hp LaserJet 1300	CNSJF75989	N/A
6	Monitor	Lenovo	L2364wA	0ML0041C3224759	N/A
7	Speaker	Lenovo	C3630	OS1186521101945	N/A
8	Microphone	WEISRE	M-6900	N/A	N/A
9	Monitor	Lenovo	T2054pC	VNA1ZPFD	N/A
10	2.0HDD	WD	WD3200BUCT	WXD1EB3UKK17	N/A
11	2.0HDD	WD	WD3200BUCT	WXA1A2489961	N/A
12	3.0 HDD	WD	WDBPCK5000ABK	WX11AB2P3094	N/A
13	3.0 HDD	WD	WDBPCK5000ABK	WX11AB2L0899	N/A
14	USB Driver 3.0(16G)	Kingston	DTSE9G2/16GB	YVLP9-B8HTAQ-XXAYB	N/A
15	USB Driver 3.0(16G)	Kingston	DTSE9G2/16GB	AQLJC-M8CTFB-UXTNB	N/A
16	USB Driver 3.0(16G)	Kingston	DTSE9G2/16GB	BQL94-F8HT4C-KX266	N/A
17	Type-C Driver 32GB	Kingston	DTDU03C	NVLC2-C84TDX-XXD4F	N/A
18	OPS	BenQ	IE1004	ISIE1004X203K0003	N/A

NO.	DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.8m, RJ45 Line: Non-shielded Detachable
2	AC Line: Unshielded, Detachable 0.8m, DC Line: Unshielded, Detachable 1.5m.
3	USB Line: Shielded, Non-Detachable 1.8m.
4	USB Line: Shielded, Non-Detachable 1.8m.
5	AC Line: Unshielded, Detachable 1.8m, USB Line: Unshielded, Detachable 1.5m.
6	AC Line: Unshielded, Detachable 1.8m, HDMI Line: Shielded, Detachable 1.8m.
7	AC Line: Unshielded, Detachable 1.8m, Audio Line: Unshielded, Detachable 1.5m. SPDIF Line: Unshielded, Detachable 1.5m.
8	Microphone Line: Unshielded, Non-Detachable 1.5m.
9	AC Line: Unshielded, Detachable 1.8m.
10 ~ 11	USB Line: Shielded, Detachable 0.8m.
12 ~ 13	USB Line: Shielded, Detachable 0.8m.
14 ~ 18	N/A

Remarks: Radiated emission test used 0.5m and 10m Shielded RJ45 Cat 7e line, Conducted emission test used 0.5m and 3.0m RJ45 line.

3 EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTES: (1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Jan. 10,24
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Jan. 11,24
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Jan. 10,24
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jul. 27, 23
Coaxial RF Cable	/	CE CABLE	C2310066DG	Jul. 24, 23
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A

NOTES: 1. The test was performed at Shielded Room 553.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

3.1.3 TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2014 amended as per ANSI C63.4a:2017.

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20dB) were not recorded.

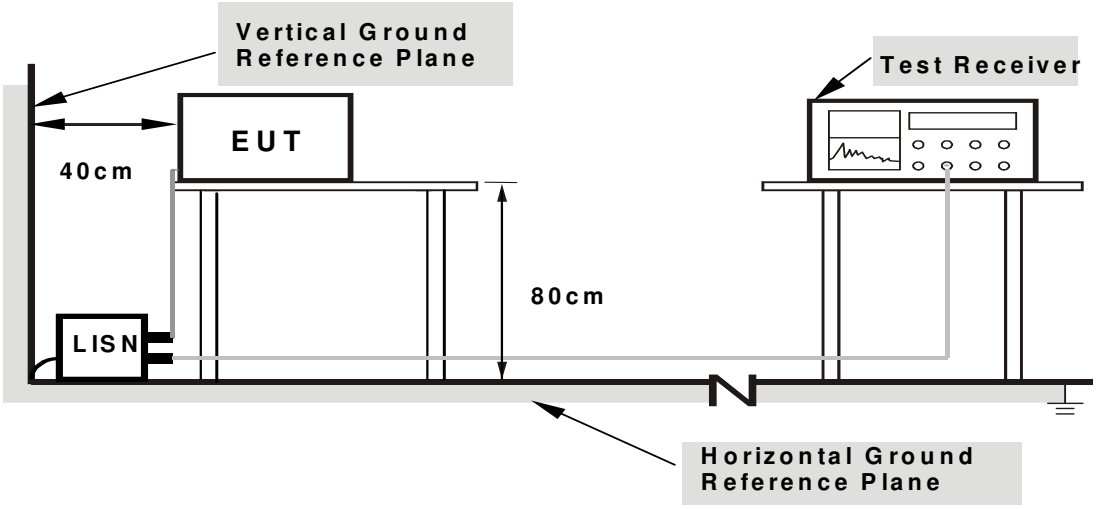
NOTES:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.

3.1.6 EUT OPERATING CONDITIONS

a. Turned on the power of all equipment.

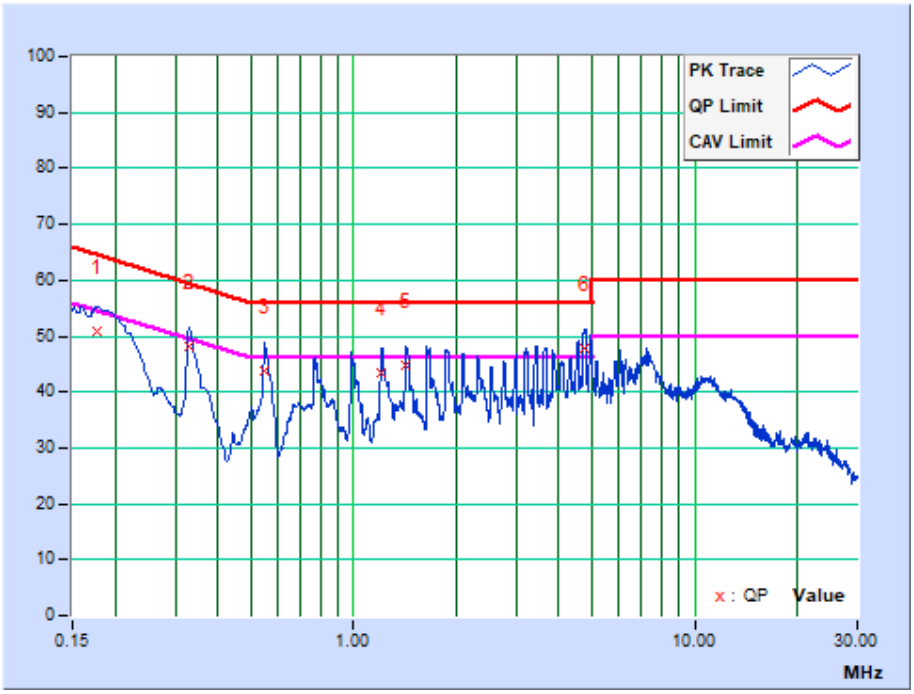
b. EUT was operated according to the type description in manufacturer's specifications or the User's Manual.

3.1.7 TEST RESULTS

TEST MODE	See section 2.2	**6DB BANDWIDTH**	9 kHz
TEST VOLTAGE	AC 120V 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 58% RH	**TESTED BY**	Joany

No.	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17605	9.83	41.16	32.46	50.99	42.29	64.67	54.67	-13.68	-12.38
2	0.32915	9.89	38.40	35.70	48.29	45.59	59.47	49.47	-11.18	-3.88
3	0.54934	9.93	33.78	28.65	43.71	38.58	56.00	46.00	-12.29	-7.42
4	1.20525	9.97	33.61	25.27	43.58	35.24	56.00	46.00	-12.42	-10.76
5	1.42800	9.99	34.70	27.00	44.69	36.99	56.00	46.00	-11.31	-9.01
6	4.74989	10.12	37.60	23.30	47.72	33.42	56.00	46.00	-8.28	-12.58

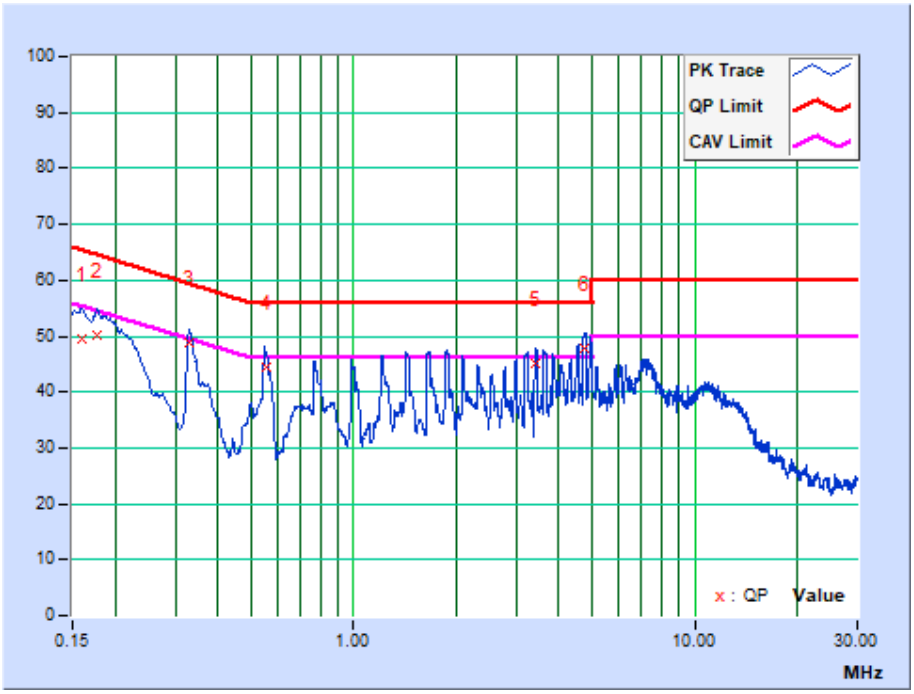
REMARK: The emission levels of other frequencies were very low against the limit.



TEST MODE	See section 2.2	**6DB BANDWIDTH**	9 kHz
TEST VOLTAGE	AC 120V 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 58% RH	**TESTED BY**	Joany

No.	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15924	9.76	39.76	30.90	49.52	40.66	65.50	55.50	-15.98	-14.84
2	0.17698	9.77	40.42	31.47	50.19	41.24	64.63	54.63	-14.44	-13.39
3	**0.33002**	**9.80**	**39.00**	**36.10**	**48.80**	**45.90**	**59.45**	**49.45**	**-10.65**	**-3.55**
4	0.55330	9.82	34.50	30.70	44.32	40.52	56.00	46.00	-11.68	-5.48
5	3.43274	9.88	35.10	24.00	44.98	33.88	56.00	46.00	-11.02	-12.12
6	4.76244	9.92	37.80	22.90	47.72	32.82	56.00	46.00	-8.28	-13.18

REMARK: The emission levels of other frequencies were very low against the limit.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

Radiated Emissions Limits at 10 meters (dBμV/m)				
Frequencies (MHz)	**FCC 15B Class A**	**FCC 15B Class B**	**CISPR 22, Class A**	**CISPR 22, Class B**
30-88	39	29.5	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960			47	37
960-1000	49.5	43.5		

Radiated Emissions Limits at 3 meters (dBμV/m)		
Frequencies (MHz)	**FCC 15B, Class A**	**FCC 15B, Class B**
30-88	49.5	40
88-216	54	43.5
216-230	56.9	46
230-960		
960-1000	60	54
1000-3000	Avg: 60 Peak: 80	Avg: 54 Peak: 74
Above 3000		

FREQUENCY RANGE OF RADIATED MEASUREMENT
(For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Notes: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.2.2 TEST INSTRUMENTS

FREQUENCY RANGE BELOW 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU26	100005	Apr. 19, 24
EMI Test Receiver	Rohde&Schwarz	ESR7	101564	Jan. 10, 24
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-555	Jan. 08, 24
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-554	Jan. 08, 24
Preamplifier	EMCI	EMC1135	980378	Mar. 06, 24
Preamplifier	EMCI	EMC1135	980423	Mar. 06, 24
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8.8 m	NSEMC006	Oct. 15, 23
Coaxial RF Cable	/	10m Below 1GHz	C2310084DG	Jul. 26, 23
Coaxial RF Cable	/	10m Below 1GHz	C2310085DG	Jul. 26, 23
Test Software	ADT	ADT_Radiated_V 8.7.07	N/A	N/A

NOTES: 1. The test was performed in 10m Chamber.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The FCC Site Registration No. is 749762.

FREQUENCY RANGE ABOVE 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Horn Antenna	ETS-Lindgren	3117	00085519	Nov. 05, 23
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170147	Apr. 28, 24
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101003	Jan. 11, 24
Broadband Preamplifier (1~18GHz)	SCHWARZBECK	BBV 9718C	00101	Nov. 27, 23
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Jan. 16, 24
Coaxial RF Cable	/	10m Above 1GHz	C2310041DG	Dec .13, 23
Test Software	ADT	ADT_Radiated_V8 .7.07	N/A	N/A

NOTES: 1. The test was performed in 10m Chamber.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The FCC Site Registration No. is 749762.

3.2.3 TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2014 amended as per ANSI C63.4a:2017.

<Frequency Range below 1GHz>

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

NOTES:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier)
4. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier)
5. Margin value = Emission level – Limit value

<Frequency Range above 1GHz>

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna can be varied from one meter-to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. The bore sight should be used during the test above 1GHz.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test receiver/spectrum was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

NOTES:

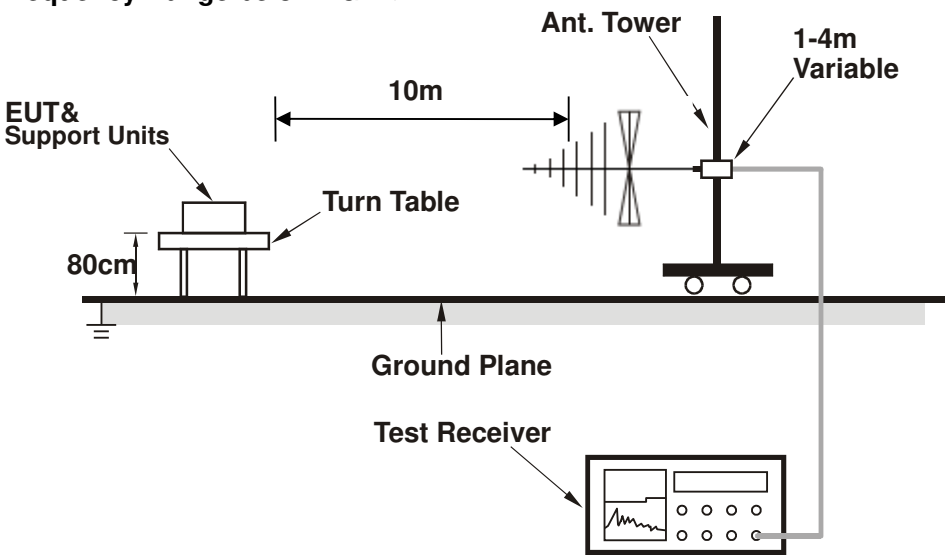
1. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
2. For measurement of frequency above 1000 MHz, the EUT was set 10 meters away from the receiver antenna.
3. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
4. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier)
5. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier).
6. Margin value = Emission level – Limit value

3.2.4 DEVIATION FROM TEST STANDARD

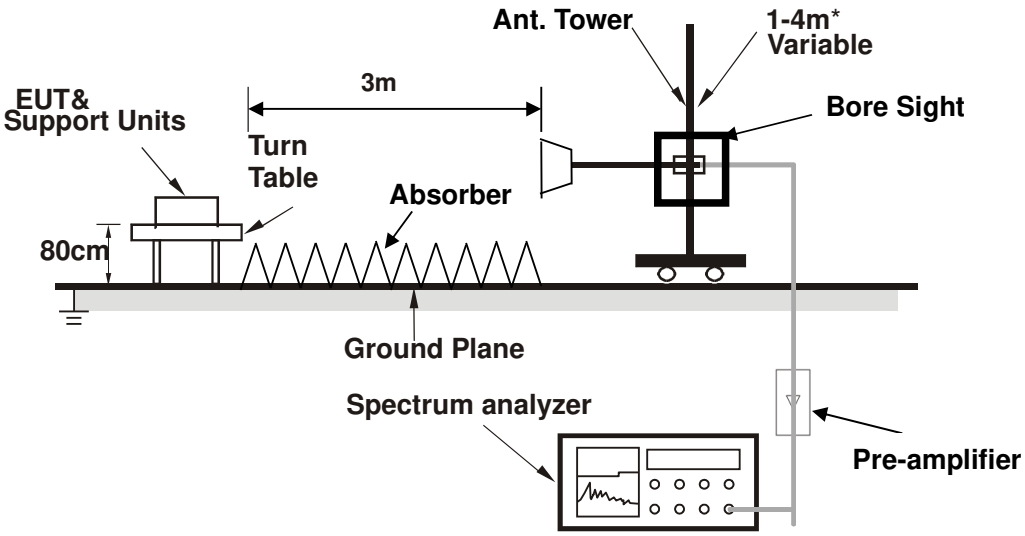
No deviation.

3.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



* : depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

3.2.6 EUT OPERATING CONDITIONS

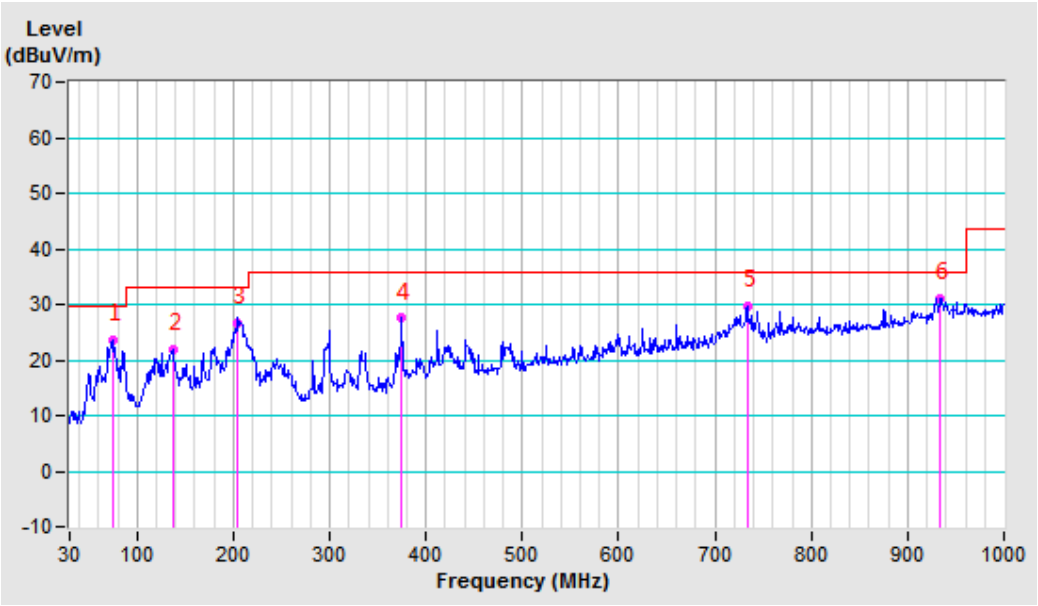
See items 3.1.6.

3.2.7 TEST RESULTS (BELOW 1GHz)

TEST MODE	See section 2.2	**FREQUENCY RANGE**	30-1000MHz
TEST VOLTAGE	AC 120V 60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	22deg. C, 58% RH	**TESTED BY**: Alex	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	74.26	-23.15	46.66	23.51	29.50	-5.99	400	84
2	137.67	-20.26	42.10	21.84	33.10	-11.26	400	110
3	204.24	-22.09	48.71	26.62	33.10	-6.48	400	326
4	374.96	-16.34	43.88	27.54	35.60	-8.06	200	158
5	733.86	-8.00	37.60	29.60	35.60	-6.00	400	244
6	934.40	-4.52	35.69	31.17	35.60	-4.43	400	43

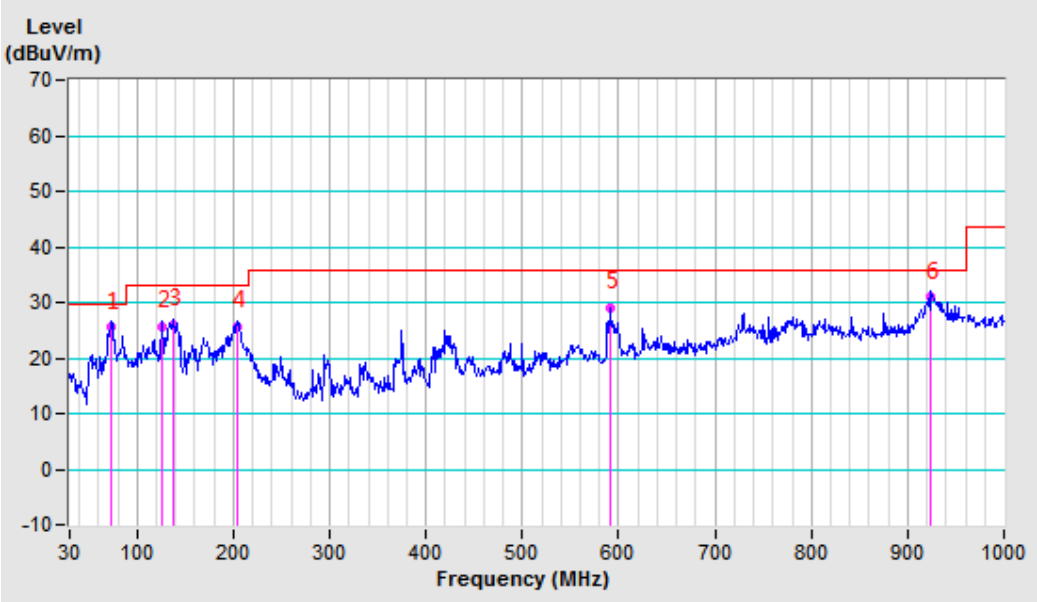
REMARKS:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions significantly above equipment noise floor are reported.



TEST MODE	See section 2.2	**FREQUENCY RANGE**	30-1000MHz
TEST VOLTAGE	AC 120V 60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	22deg. C, 58% RH	**TESTED BY**: Alex	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	**72.68**	**-23.51**	**48.97**	**25.46**	**29.50**	**-4.04**	**100**	**293**
2	124.97	-21.27	47.01	25.74	33.10	-7.36	100	236
3	136.90	-20.31	46.20	25.89	33.10	-7.21	100	173
4	203.78	-22.16	47.70	25.54	33.10	-7.56	100	256
5	591.27	-10.24	39.38	29.14	35.60	-6.46	300	344
6	924.48	-4.69	35.61	30.92	35.60	-4.68	100	304

REMARKS:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions significantly above equipment noise floor are reported.



3.2.8 TEST RESULTS (ABOVE 1GHz)

TEST MODE	See section 2.2	**FREQUENCY RANGE**	1GHz to 18GHz
TEST VOLTAGE	AC 120V 60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak, Average 1MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 58% RH	**TESTED BY**: Alex	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	2792.00PK	3.31	55.19	58.50	74.00	-15.50	100	46
2	2792.00AV	3.31	33.79	37.10	54.00	-16.90	100	46
3	3891.00PK	6.03	49.57	55.60	74.00	-18.40	100	35
4	3891.00AV	6.03	32.77	38.80	54.00	-15.20	100	35
5	4687.00PK	8.03	48.27	56.30	74.00	-17.70	100	77
6	4687.00AV	8.03	27.17	35.20	54.00	-18.80	100	77
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	2517.00PK	2.30	55.90	58.20	74.00	-15.80	100	44
2	**2517.00AV**	**2.30**	**37.20**	**39.50**	**54.00**	**-14.50**	**100**	**44**
3	3364.00PK	4.73	54.77	59.50	74.00	-14.50	100	64
4	3364.00AV	4.73	33.67	38.40	54.00	-15.60	100	64
5	4871.00PK	8.21	48.89	57.10	74.00	-16.90	100	154
6	4871.00AV	8.21	29.99	38.20	54.00	-15.80	100	154

REMARKS: 1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 1GHz to 18GHz.
4. Only emissions significantly above equipment noise floor are reported.

TEST MODE	See section 2.2	**FREQUENCY RANGE**	18GHz to 40GHz
TEST VOLTAGE	AC 120V 60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak, Average 1MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 58% RH	**TESTED BY**: Alex	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	23200.00PK	-3.12	61.41	58.29	74.00	-15.71	124	233
2	23200.00AV	-3.12	50.01	46.89	54.00	-7.11	124	233
3	29000.00PK	-0.92	62.18	61.26	74.00	-12.74	156	27
4	29000.00AV	-0.92	48.81	47.89	54.00	-6.11	156	27
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	23220.00PK	-3.12	64.50	61.38	74.00	-12.62	103	139
2	23220.00AV	-3.12	49.40	46.28	54.00	-7.72	103	139
3	29000.00PK	-0.92	62.16	61.24	74.00	-12.76	120	24
4	**29000.00AV**	**-0.92**	**50.16**	**49.24**	**54.00**	**-4.76**	**120**	**24**

REMARKS: 1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 18GHz to 40GHz.
4. Only emissions significantly above equipment noise floor are reported.

4 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

---END---