TEST REPORT

APPLICANT	:	Reliance Communications LLC
PRODUCT NAME	:	Orbic Tab8 5G
MODEL NAME	:	R8L5T
BRAND NAME	:	Orbic
FCC ID	:	2ABGH-R8L5T
STANDARD(S)	:	47 CFR Part 15 Subpart B
RECEIPT DATE	:	2021-07-26
TEST DATE	:	2021-08-02 to 2021-08-03
ISSUE DATE	:	2021-10-11

Edited by: He sinuo

He Sinuo(Rapporteur)

Approved by: Xiao Xiong

Xiao Xiong(Supervisor)

MORLAB

Shenzhen Morlab Communications Technology Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen ,GuangDong Province, P. R. China

Tel: 86-755-36698555 Fax: 86-755-36698525
Http://www.morlab.cn E-mail: service@morlab.cn

DIRECTORY

Change History		
Version	**Date**	**Reason for Change**
1.0	2021-10-11	First edition

1. Technical Information

Note: Provide by applicant

1.1. Applicant and Manufacturer Information

Applicant:	Reliance Communications LLC
Applicant Address:	91 Colin Drive, Unit 1, HOLBROOK, New York 11741, United States
Manufacturer:	ZJY RIGHT SOURCE INDIA PRIVATE LIMITED
Manufacturer Address:	MIDC industrial Area, Shiravane, Nerul, India

1.2. Equipment Under Test (EUT) Description

Product Name:	Orbic Tab8 5G
EUT No:	1#
Hardware Version:	V1.1
Software Version:	ORB8L5T_v1.0.28_BVZ
Tx Frequency:	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA BandIV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 48: 3550 MHz ~ 3700MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n77: 3300 MHz ~ 4200 MHz 5G NR n260: 37000 MHz ~ 40000 MHz 5G NR n261: 27500 MHz ~ 28350MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz;5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz;5745 MHz ~ 5825 MHz

Rx Frequency:	WCDMA Band II: 1930 MHz ~ 1990 MHz WCDMA BandIV: 2110 MHz ~ 2155 MHz WCDMA Band V: 869 MHz ~ 894 MHz LTE Band 2: 1930 MHz ~ 1990 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 12: 729 MHz ~ 746 MHz LTE Band 13: 746 MHz ~ 756 MHz LTE Band 48: 3550 MHz ~ 3700MHz LTE Band 66: 2110 MHz ~ 2200 MHz 5G NR n2: 1930 MHz ~ 1990 MHz 5G NR n5: 869 MHz ~ 894 MHz 5G NR n66: 2110 MHz ~ 2200 MHz 5G NR n77: 3300 MHz ~ 4200 MHz 5G NR n260: 37000 MHz ~ 40000 MHz 5G NR n261: 27500 MHz ~ 28350 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz;5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz;5745MHz ~ 5825MHz	
Ancillary Equipment:	**AC Adapter**	
	Brand Name:	Orbic
	Model No.:	BLJ-QC06HU
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V~ 50/60Hz, 0.5A
	Rated Output:	5V⎓3A ,9V⎓2A ,12V⎓1.5A
	Manufacturer:	Zhongshan Baolijin Electronic Co., Ltd.
	Battery	
	Brand Name:	Orbic
	Model No.:	BTE-6001
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	6000mAh
	Rated Voltage:	3.85V
	Charge Limit:	4.4V
	Manufacturer:	HUIZHOU DXDRAGON INC

Note:

1. For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.

2. Test Results

2.1. Applied Reference Documents

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Method Determination Remark
1	15.107	Conducted Emission	2021.08.03	Su Zhan	PASS	No deviation
2	15.109	Radiated Emission	2021.08.02	Yin Xiaogang	PASS	No deviation

Note 1: Additions to, deviation, or exclusions from the method shall be judged in the “method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 2: When the test result is a critical value,we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

2.2. EUT Setup and Operating Conditions

Note: All of the following test modes are tested in all the test items.

Test Modes	
Mode 1 :	WCDMA Band II Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 2 :	WCDMA Band IVIdle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 3 :	WCDMA BandV Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 4 :	LTE Band 2 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 5 :	LTE Band 4 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 6 :	LTE Band 5 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 7 :	LTE Band 12Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 8 :	LTE Band 13Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 9 :	LTE Band 48 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 10 :	LTE Band 66 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 11 :	SA_n2 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 12 :	SA_n5 Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 13 :	SA_n66 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 14 :	NSA_2A_n2A Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 15 :	NSA_2A_n5A Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 16 :	NSA_2A_n66A Idle + Bluetooth Idle + 2.4G WLAN Idle + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card + 5.8G SRD Link
Mode 17 :	**NSA_2A_n77A Idle + Bluetooth Idle + 5G WLAN Idle + Camera + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card**

Mode 18 :	NSA_2A_n260A Idle + Bluetooth Idle + 2.4G WLAN Idle + MP4 + Battery + USB Cable(Charging from Adapter) + Earphone + Adapter + SIM Card
Mode 19 :	**NSA_2A_n261A Idle + Bluetooth Idle + 5G WLAN Idle+ PC(data transfer) + Battery + Earphone + USB Cable + SIM Card + PC Adapter**
Remark: The above test mode in boldface (Mode 17) was the worst case of conducted emission test, only the test data of these modes were reported. The above test mode in boldface (Mode 19) was the worst case of radiated emission test, only the test data of these modes were reported.	

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106

3. 47 CFR Part 15B Requirements

3.1. Conducted Emission

3.1.1. Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the ACpower line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

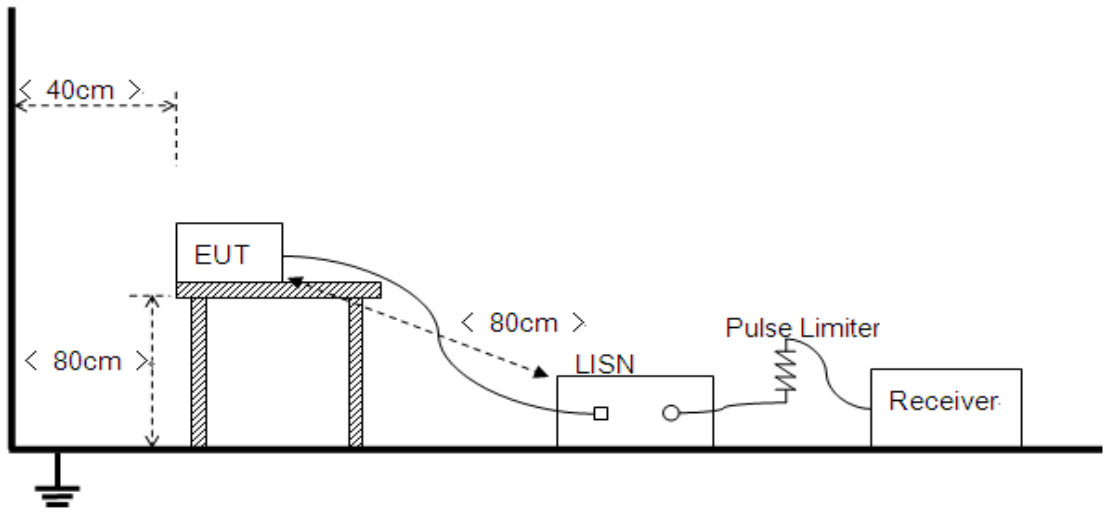
a) The limit subjects to the Class B digital device.

b) The lower limit shall apply at the band edges.

c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.1.2. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.



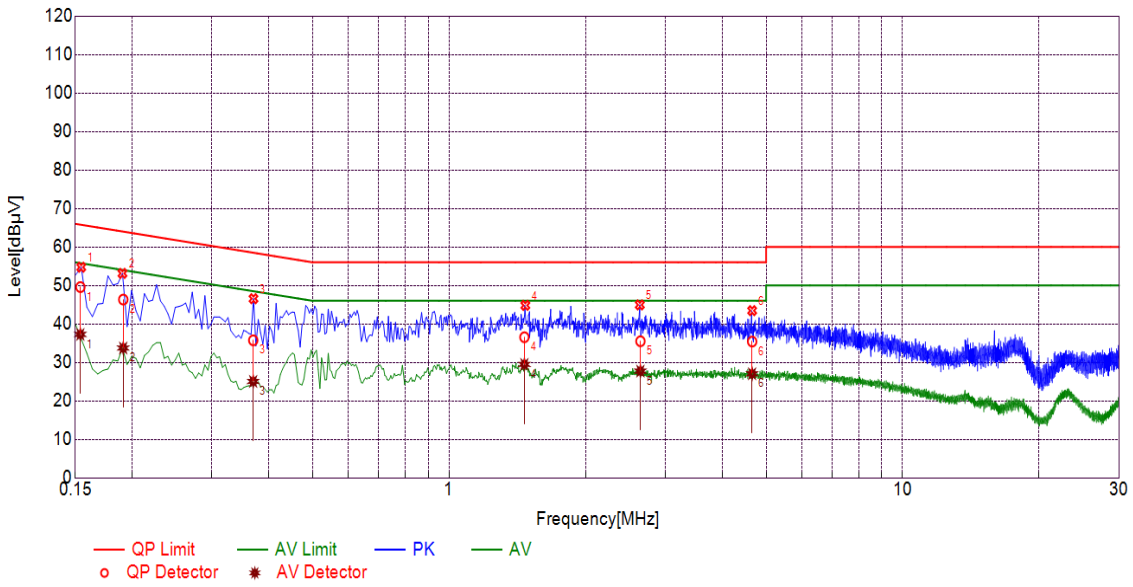
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

The power strip or extension cord has been investigated to make sure that the LISN integrity inma intained with respect to the impedance characteristics as prescribed in ANSI C63.4-2014 at Clause 4.3.

3.1.3. Test Result

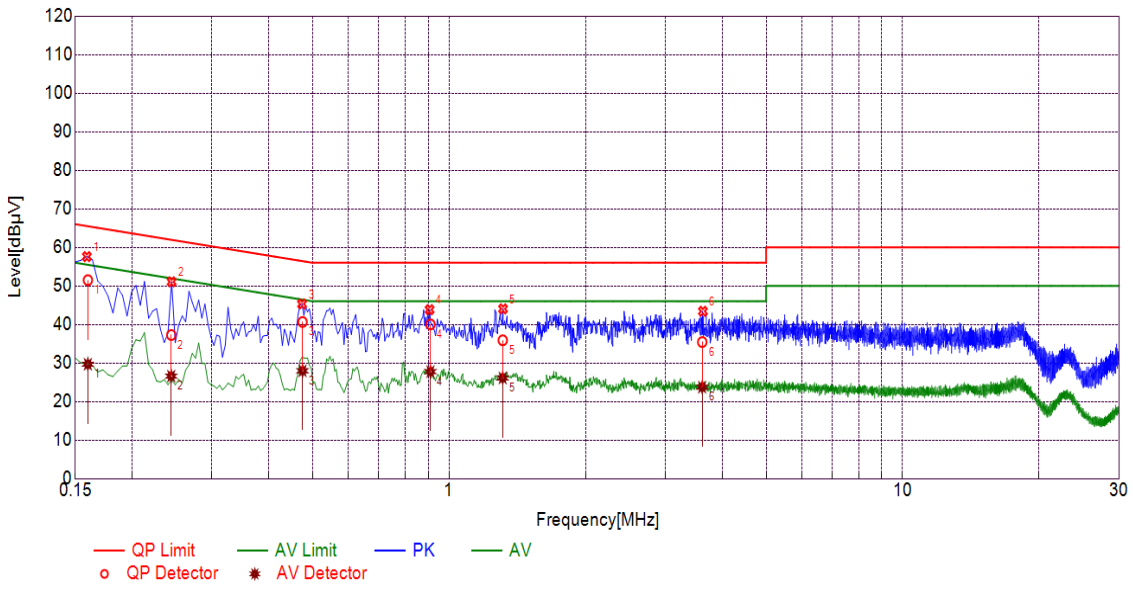
Set RBW=9 kHz, VBW=30 kHz.The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

A. Test Plot and Suspicious Points:



(Plot A:L Phase)

NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1538	49.56	37.27	65.79	55.79	Line	PASS
2	0.1912	46.33	33.73	63.99	53.99		PASS
3	0.3699	35.74	25.05	58.50	48.50		PASS
4	1.4656	36.54	29.48	56.00	46.00		PASS
5	2.6416	35.50	27.73	56.00	46.00		PASS
6	4.6576	35.42	27.04	56.00	46.00		PASS



(Plot B: N Phase)

NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1598	51.50	29.68	65.48	55.48	Neutral	PASS
2	0.2440	37.26	26.59	61.96	51.96		PASS
3	0.4752	40.64	27.98	56.42	46.42		PASS
4	0.9097	40.02	27.77	56.00	46.00		PASS
5	1.3129	35.90	26.11	56.00	46.00		PASS
6	3.6146	35.43	23.72	56.00	46.00		PASS

3.2. Radiated Emission

3.2.1. Requirement

According to FCC section 15.109 (a), the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency Range (MHz)	Field Strength Limitation at 3m Measurement Dist	
	(μV/m)	(dBμV/m)
30.0 - 88.0	100	20log 100
88.0 - 216.0	150	20log 150
216.0 - 960.0	200	20log 200
Above 960.0	500	20log 500

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Note:

1) The tighter limit shall apply at the boundary between two frequency range.
2) Limitation expressed indBμV/m is calculated by 20log Emission Level(μV/m).

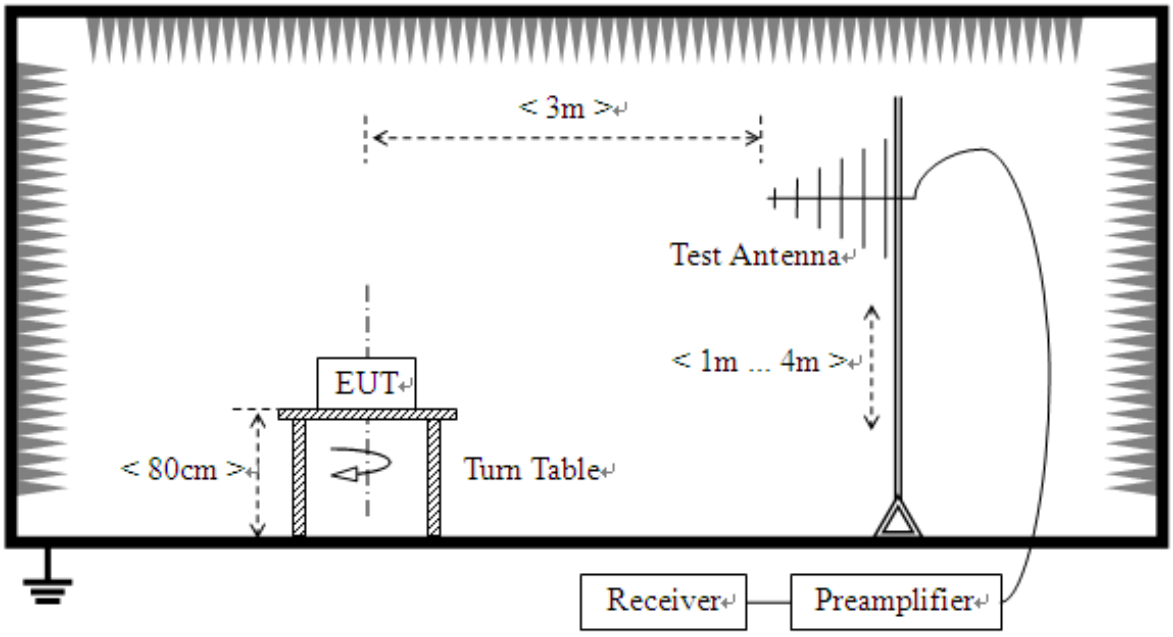
3.2.2. Frequency Range of Measurement

According to 15.33(b)(1), the frequency range of radiated measurement for the EUT is listed in the following table:

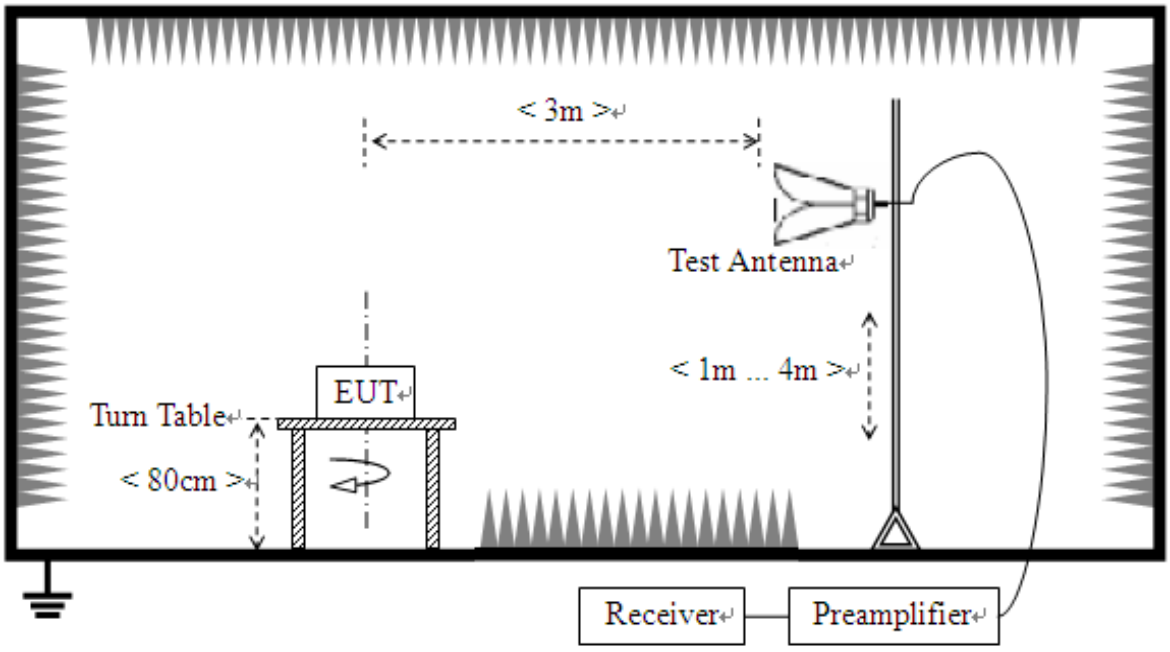
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705–108	1000.
108–500	2000.
500–1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

3.2.3. Test Setup

1) For radiated emissions from 30MHz to1GHz



2) For radiated emissions above 1GHz



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on variable-height antenna master tower.

For the test Antenna:

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

For measurements below 1GHz the resolution bandwidth is set to 120 kHz for peak detectionmeasurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

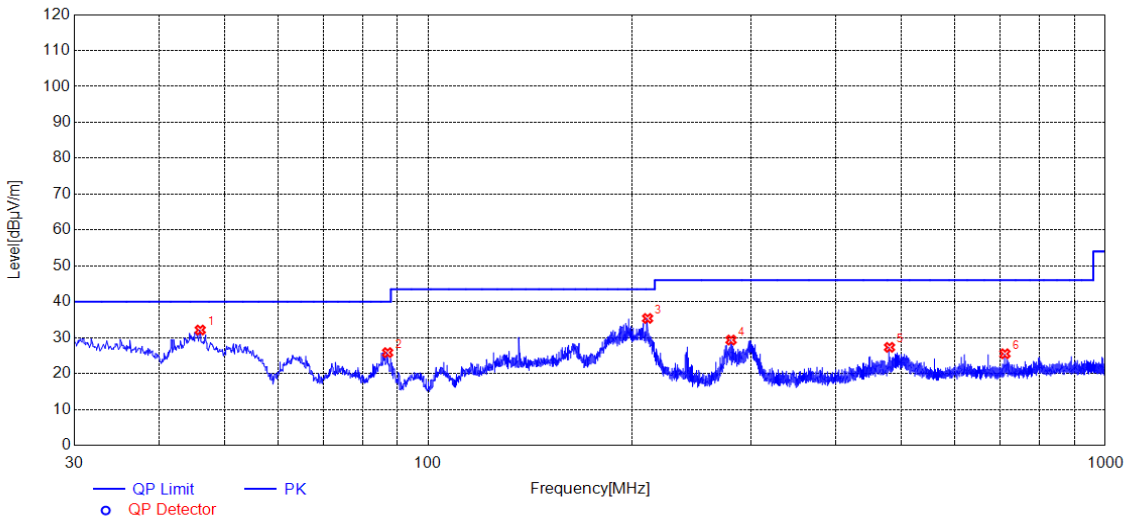
For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video bandwidthis set to 3MHz for peak measurements and as applicable for average measurements.

3.2.4. Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

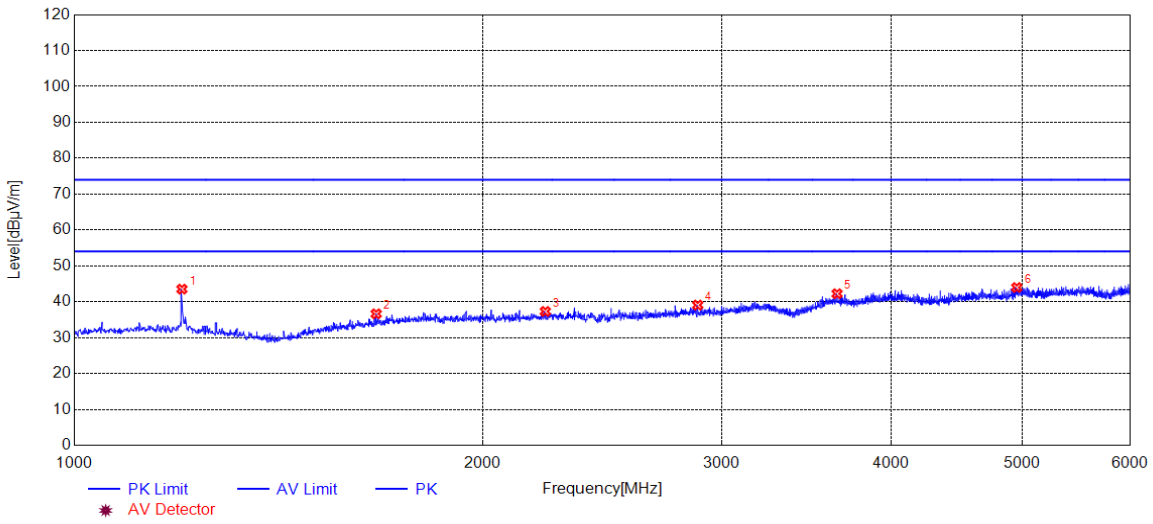
The amplitude of emissions which (6GHz-40GHz) are attenuated more than 20 dB below the permissible value need not be reported.

Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.



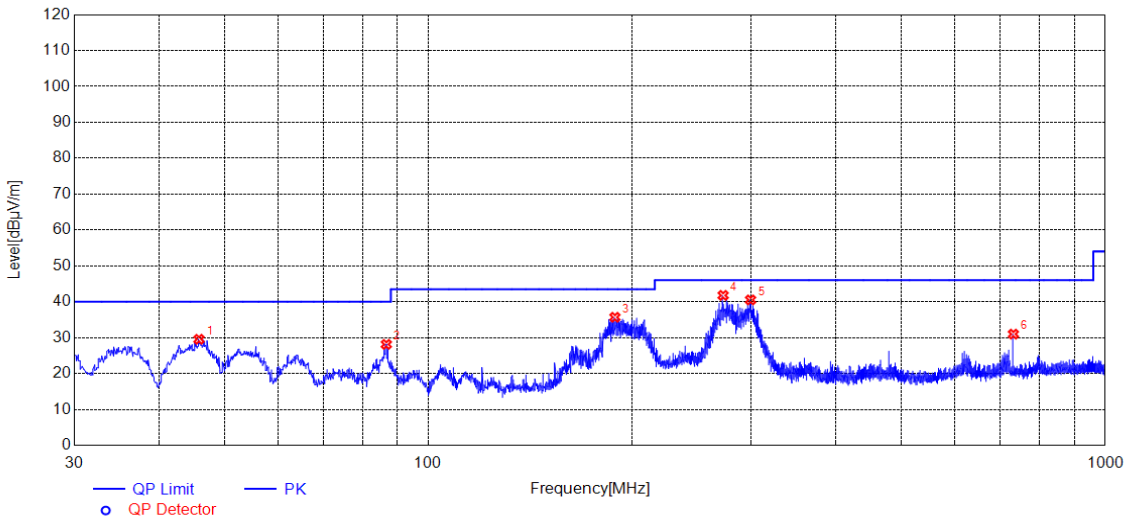
(Plot A: ANT-Vertical,30MHz - 1GHz)

No.	Fre. MHz	PK dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	46.0066	32.13	N.A	N.A	N.A	40.00	N.A	V	PASS
2	87.0417	25.83	N.A	N.A	N.A	40.00	N.A	V	PASS
3	210.7291	35.36	N.A	N.A	N.A	43.50	N.A	V	PASS
4	279.9940	29.33	N.A	N.A	N.A	46.00	N.A	V	PASS
5	479.9310	27.30	N.A	N.A	N.A	46.00	N.A	V	PASS
6	710.7171	25.51	N.A	N.A	N.A	46.00	N.A	V	PASS



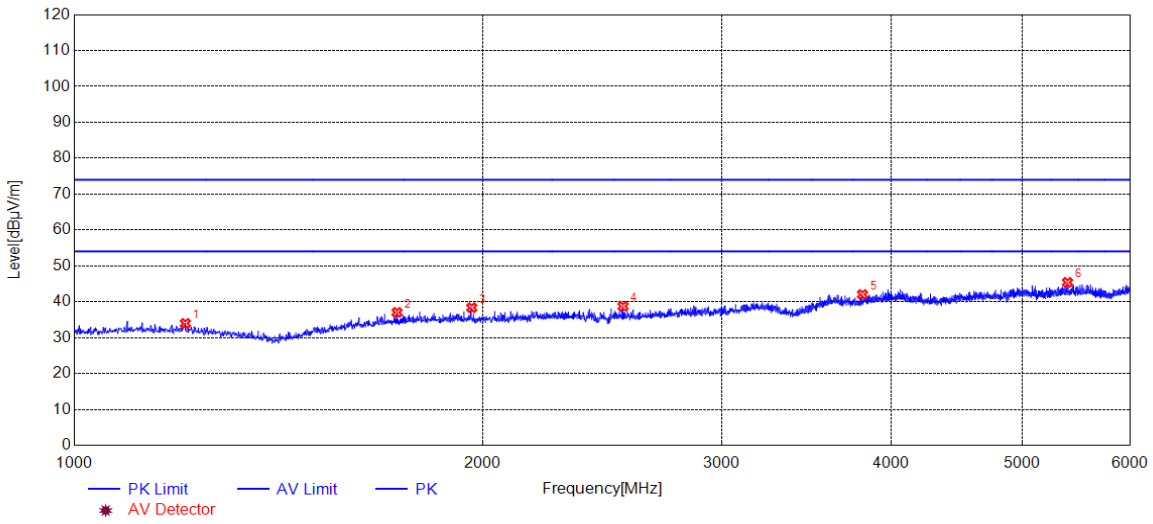
(Plot B: ANT-Vertical,1GHz - 6GHz)

No.	Fre. MHz	PK dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1200.0400	43.52	N.A	N.A	74.00	N.A	54.00	V	PASS
2	1669.1338	36.64	N.A	N.A	74.00	N.A	54.00	V	PASS
3	2224.2448	37.31	N.A	N.A	74.00	N.A	54.00	V	PASS
4	2881.3763	39.08	N.A	N.A	74.00	N.A	54.00	V	PASS
5	3650.5301	42.24	N.A	N.A	74.00	N.A	54.00	V	PASS
6	4952.7906	43.97	N.A	N.A	74.00	N.A	54.00	V	PASS



(Plot C:ANT- Horizontal, 30MHz - 1GHz)

No.	Fre. MHz	PK dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	45.8126	29.55	N.A	N.A	N.A	40.00	N.A	H	PASS
2	86.6537	28.13	N.A	N.A	N.A	40.00	N.A	H	PASS
3	188.6109	35.68	N.A	N.A	N.A	43.50	N.A	H	PASS
4	272.5243	41.78	N.A	N.A	N.A	46.00	N.A	H	PASS
5	299.2019	40.52	N.A	N.A	N.A	46.00	N.A	H	PASS
6	731.4771	30.99	N.A	N.A	N.A	46.00	N.A	H	PASS



(Plot D:ANT- Horizontal, 1GHz - 6GHz)

No.	Fre. MHz	PK dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1207.0414	33.96	N.A	N.A	74.00	N.A	54.00	H	PASS
2	1729.1458	37.03	N.A	N.A	74.00	N.A	54.00	H	PASS
3	1963.1926	38.35	N.A	N.A	74.00	N.A	54.00	H	PASS
4	2538.3077	38.73	N.A	N.A	74.00	N.A	54.00	H	PASS
5	3811.5623	42.02	N.A	N.A	74.00	N.A	54.00	H	PASS
6	5398.8798	45.40	N.A	N.A	74.00	N.A	54.00	H	PASS

Annex A Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	9kHz-150kHz	±3.3dB
	150kHz-30MHz	±2.8dB

Uncertainty of Radiated Emission Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	30MHz-200MHz	±5.06dB
	200MHz-1000MHz	±5.04dB
	1GHz-6GHz	±5.18dB
	6GHz-18GHz	±5.48dB

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Accreditation Certificate

Accredited Testing Laboratory:	The FCC designation number is CN1192. Test firm registration number is 226174. (Shenzhen Morlab Communications Technology Co., Ltd.)

4. Test Software Utilized

Model	Version Number	Producer
JS32-RE	Version 2.0.2.0	Tonscend
TS+ -[JS32-CE]	Version2.5.0.0	Tonscend

5. Test Equipments Utilized

Description	Model	Serial No.	Manufacturer	Cal. Date	Due. Date
Bi-Log Antenna	VULB 9163	9163-519	SCHWARZBECK	2019/5/24	2022/5/23
Horn Antenna	BBHA 9120D	01774	SCHWARZBECK	2019/7/26	2022/7/25
Horn Antenna	BBHA 9170	BBHA 9170#773	SCHWARZBECK	2019/7/26	2022/7/25
Receiver	N9038A	MY56400093	KEYSIGHT	2021/3/9	2022/3/8
6db Attenuator	BW-N6W5+	E191001	Mini-circuits	2020/10/20	2021/10/19
Preamplifier	S020180L3203	61171/61172	LUCIX CORP.	2021/7/15	2022/7/14
Preamplifier	S10M100L3802	46732	LUCIX CORP.	2021/7/15	2022/7/14
Receiver	ESPI	101052	R&S	2021/7/16	2022/7/15
LISN	NSLK 8127	8127449	Schwarzbeck	2021/3/9	2022/3/8
10dB Pulse Limiter	VTSD 9561-F	VTSD 9561 F-B #206	SCHWARZBECK	2021/7/21	2022/7/20

6. Ancillary Equipment Utilized

Description	Manufacturer	Model	Serial No.
PC	APPLE	A1370	N/A
PC Adapter	APPLE	A1374	N/A
Earphone	N/A	N/A	N/A

END OF REPORT