REPORT No.: SZ21040156E01

TEST REPORT

APPLICANT	:	Reliance Communications LLC
PRODUCT NAME	:	Orbic Smart Wrist
MODEL NAME	:	RC178LWRT
BRAND NAME	:	Orbic
STANDARD(S)	:	47 CFR Part 15 Subpart B
FCC ID	:	2ABGH-RC178LWRT
RECEIPT DATE	:	2021-01-06
TEST DATE	:	2021-01-14 to 2021-01-15
ISSUE DATE	:	2021-04-26

Edited by: He sinuo

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DIRECTORY

Change History		
Version	**Date**	**Reason for change**
1.0	2021-04-26	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:	Unimaxcomm
Manufacturer Address:	Room 602, Floor 6th, Building B, Software Park T3,Hi-Tech Park South, Nanshan District, Shenzhen, P.R. China

1.2. Equipment Under Test (EUT) Description

Product Name:	Orbic Smart Wrist
Serial No.:	(N/A, marked #1 by test site)
Hardware Version:	V1.1
Software Version:	ORB178LWRT_v1.0.10_BVZRT
Tx Frequency:	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 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 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz Bluetooth4.2: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz
Rx Frequency:	WCDMA Band II: 1930 MHz ~ 1990 MHz WCDMA Band IV: 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 66: 2110 MHz ~ 2200 MHz

	LTE Band 71: 617 MHz ~ 652 MHz Bluetooth4.2: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz	
Ancillary Equipment:	**Battery**	
	Brand Name:	Orbic
	Model No.:	BTE-430
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	420mAh
	Rated Voltage:	3.87 V
	Charge Limit:	4.45 V
	Manufacturer:	JIADE ENERGY TECHNOLOGY(ZHUHAI)CO.,LTD
	Charging Base	
	Brand Name:	UNI
	Model No.:	W1-U01
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	5V⎓2.0A
	Rated Output:	5V⎓1.5A
	Manufacturer:	JIADE ENERGY TECHNOLOGY(ZHUHAI)CO.,LTD

Note:

1. This test report is variant from the original report (Report No.: SZ20110391E01, Model: RC178LW) based on the similarity between before, only change model name, software version and FCC ID, the others are the same as before. We evaluated the above changes, which had no impact on the test results. The test results in this report still refer to the test results of the original test report.

2. 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	2021.01.15	Huang Zhiye	PASS[Note 4]	No deviation
2	15.109	Radiated Emission	2021.01.14	Lin Jiayong	PASS[Note 4]	No deviation

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.4-2014.

Note 2: 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 3: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% risk level.

Note 4: The test results of these test items in this report refer to the test report (Report No.: SZ20110391E01).

2.2. EUT Setup and Operating Conditions

Test Items	
Radiated Emission	
Mode 1 :	EUT + Adapter + Charging + WWAN idle + Bluetooth idle + WLAN idle
Mode 2 :	**EUT + WWAN idle + Bluetooth idle + WLAN idle + APP work**
Conducted Emission	
Mode 1 :	EUT + Adapter + Charging + WWAN idle + Bluetooth idle + WLAN idle
Remark: The above test mode in boldface (Mode 2) 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 AC power 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:

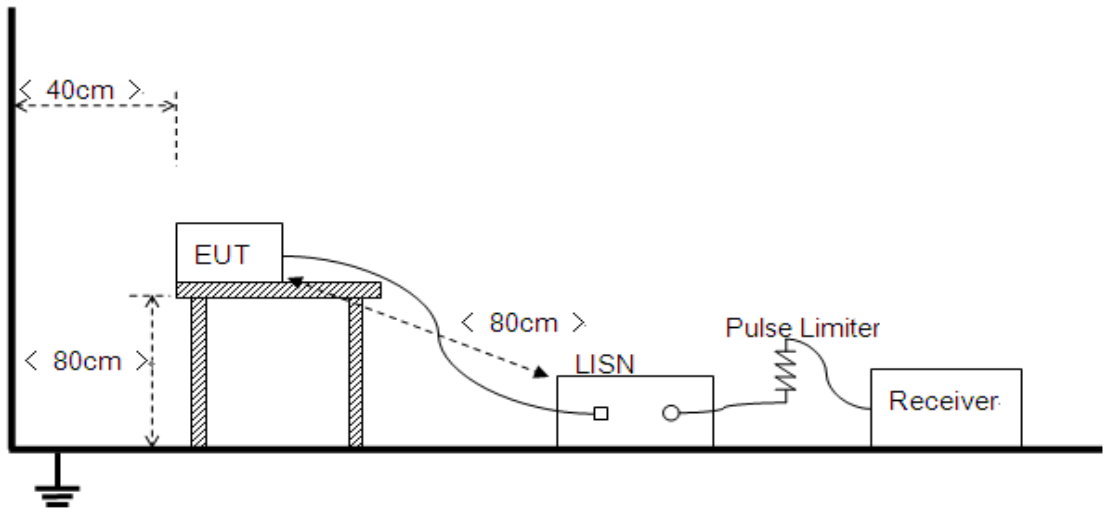
a) The limit subjects to the Class B digital device.

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.



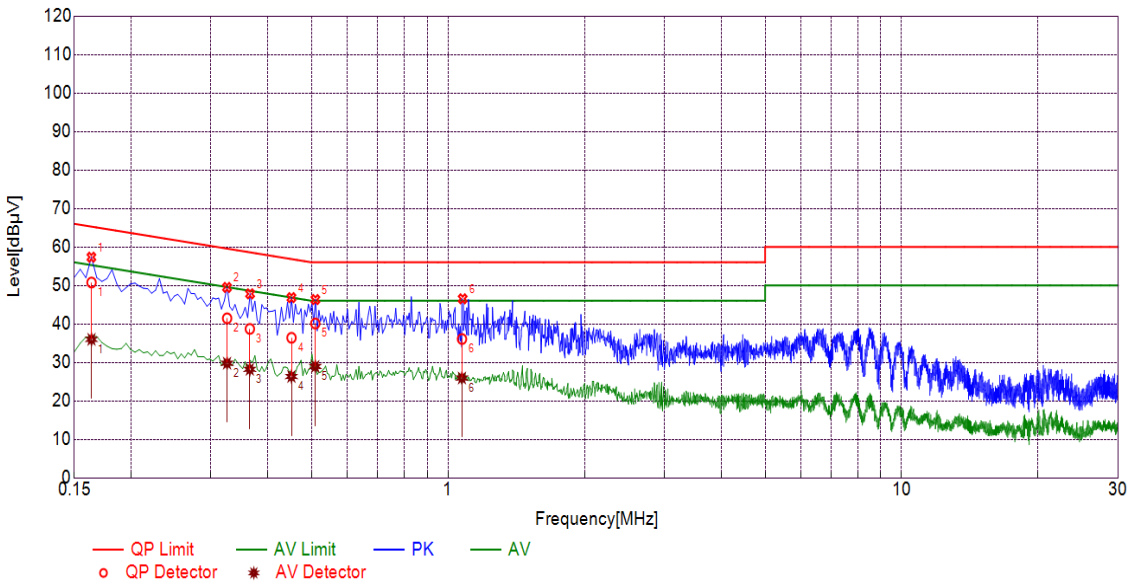
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. A Pulse Limiter is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

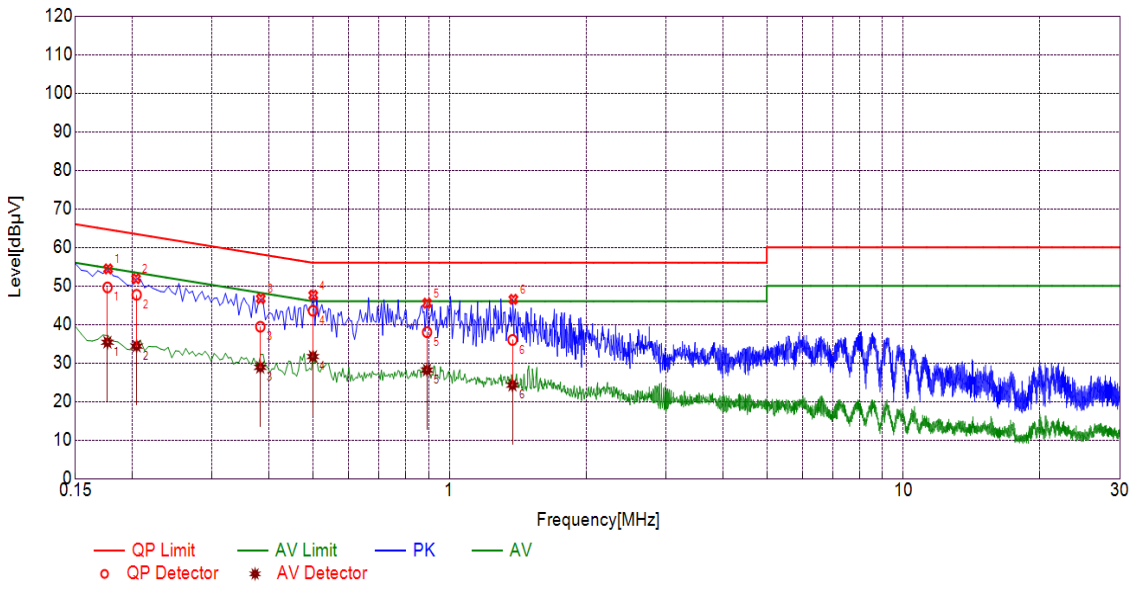
Set RBW=9 kHz, VBW=30 kHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors.Tests for both 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	0.1636	50.76	35.98	65.28	55.28	Line	PASS
2	0.3256	41.46	29.79	59.56	49.56		PASS
3	0.3655	38.70	28.20	58.60	48.60		PASS
4	0.4515	36.40	26.34	56.85	46.85		PASS
5	0.5096	40.11	28.95	56.00	46.00		PASS
6	1.0730	36.07	25.94	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	0.1764	49.61	35.38	64.65	54.65	Neutral	PASS
2	0.2045	47.70	34.38	63.43	53.43		PASS
3	0.3830	39.41	28.89	58.21	48.21		PASS
4	0.5003	43.55	31.67	56.00	46.00		PASS
5	0.8923	38.00	28.17	56.00	46.00		PASS
6	1.3767	35.98	24.26	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 in dBμV/m is calculated by 20log Emission Level(μV/m).

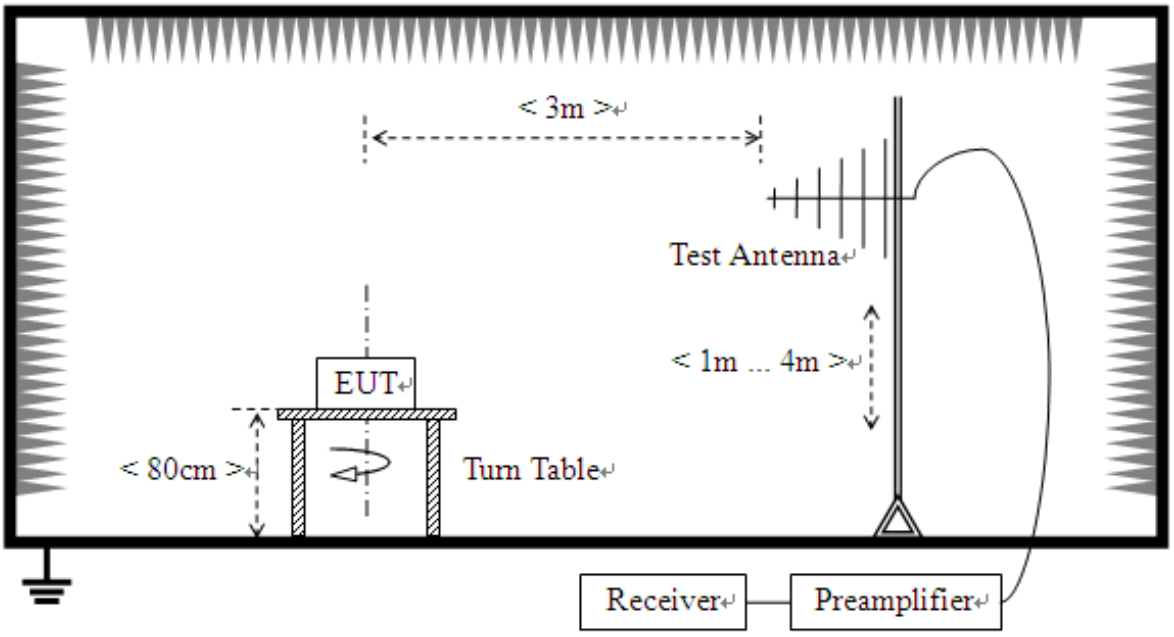
3.2.2. Frequency Range of Measurement

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

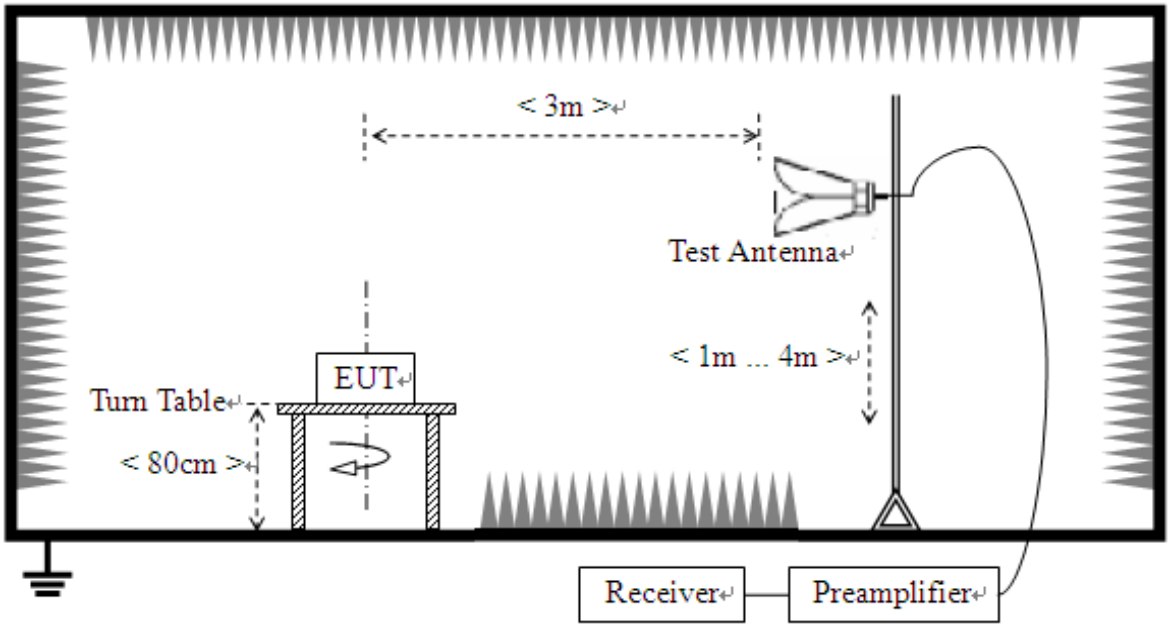
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705–108	1000.
108–500	2000.
500–1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

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 a 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 detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

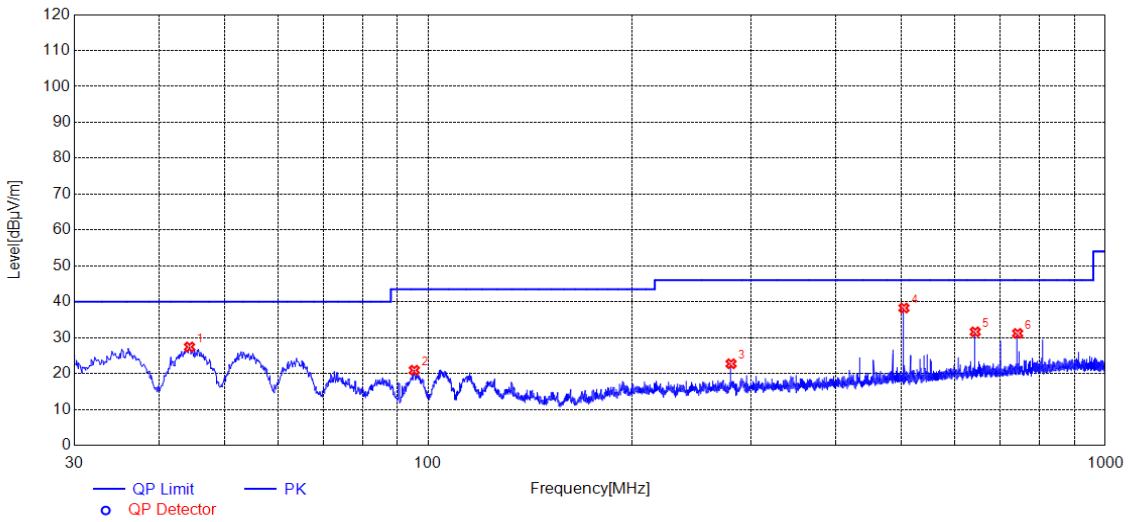
For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video bandwidth is set to 3MHz for peak measurements and as applicable for average measurements.

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.

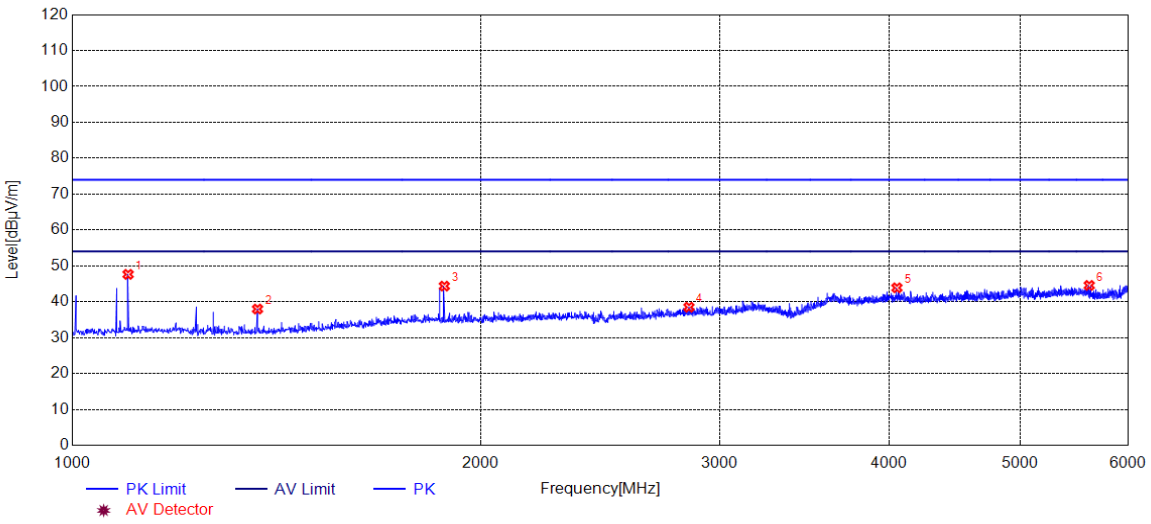
The amplitude of emissions(6GHz-12.5GHz) which are attenuated more than 20 dB below the permissible value need not be reported.

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.



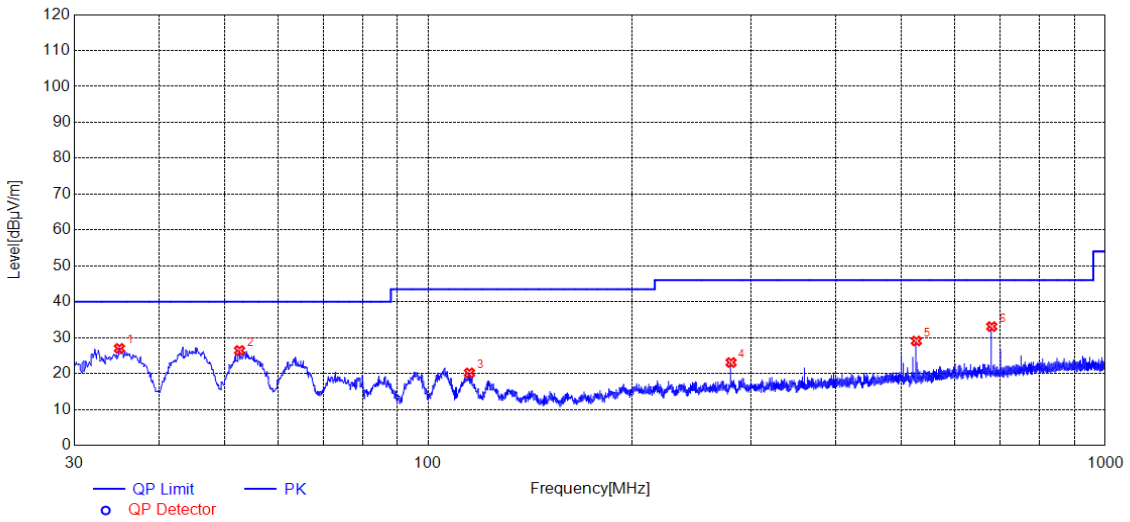
(Plot A: ANT-Vertical,30MHz - 1GHz)

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	44.3574	27.42	N.A.	N.A.	N.A.	40.00	N.A.	V	PASS
2	95.2875	20.93	N.A.	N.A.	N.A.	43.50	N.A.	V	PASS
3	279.9940	22.73	N.A.	N.A.	N.A.	46.00	N.A.	V	PASS
4	504.0864	38.26	N.A.	N.A.	N.A.	46.00	N.A.	V	PASS
5	642.5193	31.62	N.A.	N.A.	N.A.	46.00	N.A.	V	PASS
6	742.0512	31.19	N.A.	N.A.	N.A.	46.00	N.A.	V	PASS



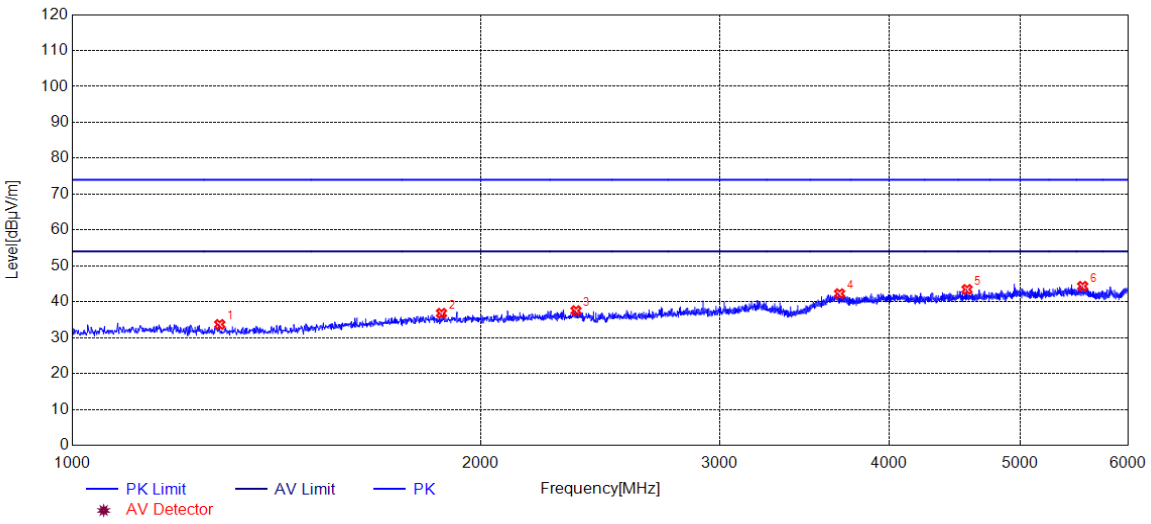
(Plot B: ANT-Vertical,1GHz - 6GHz)

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	1099.0198	47.64	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
2	1369.0738	37.97	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
3	1880.1760	44.36	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
4	2848.3697	38.49	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
5	4054.6109	43.88	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
6	5620.9242	44.56	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	34.9475	27.00	N.A.	N.A.	N.A.	40.00	N.A.	H	PASS
2	52.6033	26.44	N.A.	N.A.	N.A.	40.00	N.A.	H	PASS
3	114.9805	20.17	N.A.	N.A.	N.A.	43.50	N.A.	H	PASS
4	279.9940	23.07	N.A.	N.A.	N.A.	46.00	N.A.	H	PASS
5	525.8166	29.07	N.A.	N.A.	N.A.	46.00	N.A.	H	PASS
6	679.4799	33.08	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	1284.0568	33.69	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
2	1871.1742	36.80	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
3	2351.2703	37.53	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
4	3678.5357	42.26	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
5	4567.7135	43.44	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
6	5558.9118	44.32	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:	Morlab Laboratory of 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:	Morlab Laboratory of 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	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
MXE EMI Receiver	Agilent	N9038A	MY54130016	2020.07.21	2021.07.20
Test Receiver	R&S	ESPI	101052	2020.07.21	2021.07.20
LISN	Schwarzbeck	NSLK 8127	8127449	2020.03.26	2021.03.25
Pulse Limiter (10dB)	Schwarzbeck	VTSD 9561-F	VTSD 9561 F-B #206	2020.07.24	2021.07.23
Radiated Disturbance Preamplifier	rflight	S020180L3203	61171/61172	2020.07.21	2021.07.20
Radiated Disturbance Preamplifier	rflight	S10M100L3802	46732	2020.07.21	2021.07.20
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-519	2019.05.24	2022.05.23
Test Antenna - Horn	Schwarzbeck	BBHA 9120D	01774	2019.07.26	2022.07.25
Semi-Anechoic Chamber	CRT	9m*6m*6m	N/A	2020.01.06	2023.01.05

6. Ancillary Equipment Utilized

Description	Manufacturer	Model	Serial No.
Adapter	HUAWEI	HW050200C01	H785LBJBY16392

END OF REPORT