



REPORT No. : SZ21110373W02

TEST REPORT

APPLICANT : Reliance Communications LLC

PRODUCT NAME : Orbic Turbo 4G MHS

MODEL NAME : RC440L

BRAND NAME : Orbic

FCC ID : 2ABGH-RC440L

STANDARD(S) : 47 CFR Part 22, Subpart H
47 CFR Part 24, Subpart E
47 CFR Part 27, Subpart F&H
47 CFR Part 27, Subpart L&M&N

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MORLAB

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Change History		
Version	Date	Reason for change
1.0	2022-01-19	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 Turbo 4G MHS	
Sample No.:	1#	
Hardware Version:	V1.0	
Software Version:	ORB440L_v1.0.1_BVT-NA	
Modulation Type:	QPSK, 16QAM, 64QAM	
Carrier Aggregation:	CA_7C, CA_41C.	
Operation Band:	Band 2 / 4 / 5 / 7 / 12 / 13 / 17 / 25 / 26 / 41 / 66 / 71 Band 29 only support receiver	
Frequency Range:	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
	LTE Band 12	Tx: 699MHz–716MHz
		Rx: 729MHz–746MHz
	LTE Band 13	Tx: 777MHz–787MHz
		Rx: 746MHz–756MHz



Frequency Range:	LTE Band 17	Tx: 704MHz–716MHz
		Rx: 734MHz–746MHz
	LTE Band 25	Tx: 1850MHz–1915MHz
		Rx: 1930MHz–1995MHz
	LTE Band 26	Tx: 824MHz–849MHz
		Rx: 869MHz–894MHz
	LTE Band 29	Rx: 717MHz–728MHz
	LTE Band 41	Tx: 2555MHz–2655MHz
		Rx: 2555MHz–2655MHz
	LTE Band 66	Tx: 1710MHz –1780MHz
		Rx: 2110MHz –2200MHz
Channel Bandwidth:	LTE Band 71	Tx: 663MHz –698MHz
		Rx: 617MHz –652MHz
	LTE Band 2	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 4	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 5	1.4MHz, 3MHz, 5MHz, 10MHz
	LTE Band 7	5 MHz, 10MHz, 15 MHz, 20 MHz
	LTE Band 12	1.4MHz, 3 MHz, 5 MHz, 10MHz
	LTE Band 13	5 MHz, 10MHz
	LTE Band 17	5 MHz, 10MHz
	LTE Band 25	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 26	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
	LTE Band 41	5 MHz, 10MHz, 15MHz, 20MHz
	LTE Band 66	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
	LTE Band 71	5MHz, 10MHz, 15MHz, 20MHz
Antenna Type:	PIFA Antenna	
Antenna Gain:	LTE Band 2	2.30dBi
	LTE Band 4	2.10dBi
	LTE Band 5	-0.30dBi
	LTE Band 7	2.70dBi
	LTE Band 12	-2.80dBi
	LTE Band 13	-0.70dBi
	LTE Band 17	-2.80dBi
	LTE Band 25	2.30dBi
	LTE Band 26	-0.30dBi
	LTE Band 41	2.70dBi



Antenna Gain:	LTE Band 66	2.10dBi
	LTE Band 71	-4.50dBi
Accessory Information:	Battery	
	Brand Name:	Orbic
	Model No.:	BTE-3401
	Serial No.:	N/A
	Capacity:	3400mAh
	Rated Voltage:	3.8V
	Charge Limit:	4.35V
	Manufacturer:	Phenix New Energy (Huizhou) Co., Ltd
	AC Adapter	
	Brand Name:	N/A
	Model No.:	TPA-5950100UU
	Serial No.:	N/A
	Rated Output:	5V=1A
	Rated Input:	100-240V~50/60Hz, 0.2A
	Manufacturer:	Shenzhen kingfulin Technology Co.,Ltd

Note 1: These items please refer to the 4G module report SZ21080277W02(LTE) which The FCC ID is 2ABGH-RC101ML and the 4G module has been certified by Shenzhen Morlab Communications Technology Co., Ltd. on 01/10/2022.

Note 2: There is no more evaluation for host RSE because the hosts are the same between hotspot and module when RSE test. For all test results, please refer to Report No.: SZ21080277W02.

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. Test Standards and Results

The objective of the report is to perform testing according to Part 2, Part 22, Part 24 and Part 27 for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22	Public Mobile Services
3	47 CFR Part 24	Personal Communications Services
4	47 CFR Part 27	Miscellaneous Wireless Communications Services

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

Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
2.1046 22.913(a)(2) 24.232(c) 27.50(b)(10) 27.50(c)(10) 27.50(d)(4) 27.50(h)(2)	Transmitter Conducted Output Power and E.R.P./E.I.R.P.	N/A	N/A ^{Note1}	N/A	N/A
2.1049	Occupied Bandwidth	N/A	N/A ^{Note1}	N/A	N/A
2.1055 22.355 24.235 27.54	Frequency Stability	N/A	N/A ^{Note1}	N/A	N/A
24.232(d), 27.50(d)(5)	Peak to Average Radio	N/A	N/A ^{Note1}	N/A	N/A
2.1051 22.917(a) 24.238(a) 27.53(c)(2) 27.53(g) 27.53(h) 27.53(m)(4) 27.53(l)(2)	Conducted Spurious Emissions	N/A	N/A ^{Note1}	N/A	N/A
2.1051	Band Edge	N/A	N/A ^{Note1}	N/A	N/A



22.917(a) 24.238(a) 27.53(c)(2) 27.53(g) 27.53(h) 27.53(m)(4) 27.53(l)(2)					
2.1051 22.917(a) 24.238(a) 27.53(c)(2) 27.53(g) 27.53(h) 27.53(m)(4) 27.53(l)(2)	Radiated Spurious Emissions	N/A	N/A ^{Note1}	N/A	N/A

Note 1: These items please refer to the 4G module report SZ21080277W02(LTE) which The FCC ID is 2ABGH-RC101ML and the 4G module has been certified by Shenzhen Morlab Communications Technology Co., Ltd. on 01/10/2022.

Note 2: The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 and ANSI/TIA-603-E-2016.

Note 3: The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 24.5dB contains two parts that cable loss 14.5dB and Attenuator 10dB.

Note 4: 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 5: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

1.4. Environmental Conditions

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

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



Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test Items	Uncertainty
Output Power	± 2.22 dB
Bandwidth	$\pm 5\%$
Conducted Spurious Emission	± 2.77 dB
Band Edge	± 2.77 dB
Equivalent Isotropic Radiated Power	± 2.22 dB
Radiated Spurious Emissions	± 6 dB

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



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. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Power Splitter	NW521	1506A	Weinschel	N/A	N/A
Attenuator 1	(N/A)	10dB	Resnet	N/A	N/A
Attenuator 2	(N/A)	3dB	Resnet	N/A	N/A
EXA Signal Analyzer	MY51511149	N9020A	Agilent	2021.07.26	2022.07.25
USB Power Sensor	MY54210011	U2021XA	Agilent	2020.10.23	2021.10.22
				2021.10.21	2022.10.20
System Simulator	6200995016	MT8820C	Anritsu	2020.10.28	2021.10.27
				2021.10.21	2022.10.20
System Simulator	6261830572	MT8821C	Anritsu	2021.02.25	2022.02.24
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Temperature Chamber	20171112102	HZ-2019	Dongguan Lixian Instrument Technology Co., Ltd	2020.10.26	2021.10.25
				2021.10.20	2022.10.19
Computer	T430i	Think Pad	Lenovo	N/A	N/A
Software Version: Morlab FCC Test System V2.8					

4.2 List of Software Used

Description	Manufacturer	Software Version
Morlab FCC Test System	MORLAB	V2.8
MORLAB EMCR V1.2	MORLAB	V1.0



4.3 Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
System Simulator	152038	CMW500	R&S	2020.11.19	2021.11.18
				2021.10.21	2022.10.20
System Simulator	6200995016	MT8820C	Anritsu	2020.10.28	2021.10.27
				2021.10.21	2022.10.20
Receiver	MY54130016	N9038A	Agilent	2021.07.16	2022.07.15
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2019.05.24	2022.05.23
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2019.07.26	2022.07.25
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2019.07.26	2022.07.25
Coaxial cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L3203	Tonscend	2021.07.15	2022.07.14
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2021.07.15	2022.07.14
26-40GHz pre-Amplifier	56774	S40M400L4002	Tonscend	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE B2	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE B4	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE B5	Wainwright	2021.07.15	2022.07.14



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Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Notch Filter	N/A	WRCGV -LTE B12	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE B13	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE 25	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE 26	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE 30	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE B41	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE B66	Wainwright	2021.07.15	2022.07.14
Notch Filter	N/A	WRCGV -LTE 71	Wainwright	2021.07.15	2022.07.14
Anechoic Chamber	N/A	9m*6m*6m	CRT	2019.07.13	2022.07.12

_____ END OF REPORT _____