Radio Test Report

Report No: STS2307032H02

Issued for

Litum bilgi teknolojileri san. Ve dis tic. A.S

Sevket Ozcelik sok. No29 Alsancak izmir 35000 Turkey

Product Name:	Orbit
Brand Name:	Litum
Model Name:	7600000002
Series Model(s):	760
FCC ID:	2AW7W-760
Test Standard:	FCC 47CFR §2.1091

TEST REPORT

Applicant's Name	:	Litum bilgi teknolojileri san. Ve dis tic. A.S
Address	:	Sevket Ozcelik sok. No29 Alsancak izmir 35000 Turkey
Manufacturer's Name	:	Litum bilgi teknolojileri san. Ve dis tic. A.S
Address	:	Sevket Ozcelik sok. No29 Alsancak izmir 35000 Turkey
Product Description		
Product Name	:	Orbit
Brand Name	:	Litum
Model Name	:	7600000002
Series Model(s)	:	760
Test Standards	:	FCC 47CFR §2.1091 447498 D04 Interim General RF Exposure Guidance v01

Date of Test	:	
Date of receipt of test item	:	07 July 2023
Date (s) of performance of tests	:	07 July 2023 ~ 04 Aug. 2023
Date of Issue	:	04 Aug. 2023
Test Result	:	**Pass**

Testing Engineer : Aaron Bu

(Aaron Bu)

Technical Manager : Sean She

(Sean she)

Authorized Signatory : Chris Chen

(Chris Chen)

SHENZHEN STS TEST SERVICES CO., LTD. TESTING APPROVAL

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Revision History

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00	04 Aug. 2023	STS2307032H02	ALL	Initial Issue

1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Orbit
Brand	Litum
Model Number	7600000002
Series Model(s)	760
Model Difference	Just different model names, everything else is the same.
Product Description	The EUT is Orbit Operation Frequency: UWB:6489.6MHz BLE: 2402-2480MHz Modulation Type: UWB:BPM with BPSK BLE: GFSK Antenna gain: UWB:3.3dBi BLE:0.23 dBi Antenna Designation: UWB:Ceramic antenna BLE: Internal antenna
Rating	Input: DC 5.0V by USB port
Hardware Version	AFA01-01-03
Software Version	LT_04_02_USBGW_28070502

1.2 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD
Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

2. FCC 47CFR §2.1091 REQUIREMENT

2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.
Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

Friss Formula

Friss Transmission Formula: $Pd = (Pout * G) / (4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

2.3 TEST RESULT

Turn up

Mode	Field Strength	Detector	Turn up Power
UWB	60.35 dBuV/m	--	-35±1dBm
BLE	--	AV	7±1dBm

Remark: dBm= dBuV/m-95.2

Protocol	Fre. (MHz)	Separation distance (cm)	Max AVG Power (dBm)	ANT Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
UWB	6489.6	20	-34.85	3.3	-30.70	0.001	0.00000017	1	Pass
BLE	2480	20	7.49	0.23	8.23	6.653	0.00132352	1	Pass

Multiple transmission:

UWB/1+BLE/1=0.00000017/1+0.001324/1=0.001324＜1

Note: 1. The Maxinum power is less than the limit, complies with the exemption requirements.

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