MPE Report

Report No.: STS2506098H02

Issued for

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

Sevket Ozcelik sok. No29 Alsancak izmir Turkey

Product Name:	Microwave Radar
Brand Name:	Litum
Model Name:	M303
Series Model(s):	M303-0005(without gyro-single radar), M303-0017(without gyro-double radar), M303-0053(full product-single radar), M303-0054(full product-double radar)
FCC ID:	2AW7W-M303
Test Standards:	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 Turkey
Manufacturer's Name	:	Litum bilgi teknolojileri san. Ve dis tic. A.S
Address	:	Sevket Ozcelik sok. No29 Alsancak izmir Turkey
Product Description		
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Test Standards	:	FCC 47CFR §2.1091 447498 D01 Interim General RF Exposure Guidance v06

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

Date of Test	:	
Date of receipt of test item	:	14 June 2025
Date (s) of performance of tests	:	14 June 2025~15 Aug. 2025
Date of Issue	:	15 Aug. 2025
Test Result	:	**Pass**

Testing Engineer : Rain.Liu

(Rain Liu)

Technical Manager : Skylar.Li

(Skylar Li)

Authorized Signatory : Bovey Yang

(Bovey Yang)

SHENZHEN STS TEST SERVICES CO., LTD. TESTING APPROVAL

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	15 Aug. 2025	STS2506098H02	ALL	Initial Issue

1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Microwave Radar
Brand	Litum
Model Name	M303
Series Model(s)	M303-0005(without gyro-single radar), M303-0017(without gyro-double radar), M303-0053(full product-single radar), M303-0054(full product-double radar)
Model Difference	M303-0005 is only a single reverse rear radar; M303-0017 is a dual radar consisting of two M303-0005s, one front and one rear; M303-0053 consists of a single rear radar and 4300000078; M303-0054 consists of a complete set of front and rear dual radars and 4300000078.
Product Description	The EUT is Microwave Radar Operation Frequency: 77-81GHz Modulation Type: FMCW Chirp Time: 87.28 μs Antenna Designation: PCB Antenna Gain(Peak): 12dBi
Power Rating	Input: DC 24V
Adapter	N/A
Battery	N/A
Hardware Version	V1.4
Software Version	V1.4

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
3.0-30	1842/f	4.89/f	*($900/f^2$)
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1.34-30	824/f	2.19/f	*($180f^2$)
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

Tune up

Mode	frequency	Maximum Output Power	Tune up tolerance	Max Tune up
	GHz	dBm	dBm	dBm
FMCW	80.664	10.52	10±1	11

RF Function	Frequency (GHz)	Max Tune up (dBm)	Max Tune up (mW)	Power Density (mW/cm²)	Limit (mW/cm²)	Ratio	Result
77G-81GHz	80.664	11	12.589	0.0025	1	0.003	Pass

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

2. ERP=EIRP-2.15

※※※※※END OF THE REPORT※※※※※