Radio Test Report

Report No: STS2404114H02

Issued for

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

Sevket Ozcelik sok. No29 Alsancak izmir Turkey

Product Name:	430 Collision Warning System
Brand Name:	Litum
Model Name:	430
Series Model(s):	4300000001, 4300000002, 4300000003
FCC ID:	2AW7W430
Test Standard:	FCC 47CFR §2.1093

Test Report Certification

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		
Product Name	:	430 Collision Warning System
Brand Name	:	Litum
Model Name	:	430
Series Model(s)	:	4300000001, 4300000002, 4300000003
Standards	:	FCC 47CFR §2.1093

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	:	22 Feb. 2022
Date (s) of performance of tests	:	22 Feb. 2022 ~03 Mar. 2022
Date of Issue	:	12 June 2024
Test Result	:	**Pass**

Testing Engineer : Aaron Bu

(Aaron Bu)

Technical Manager : Chris Chen

(Chris Chen)

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	03 Mar. 2022	STS2201129H02	ALL	Initial Issue
00	12 June 2024	STS2404114H02	ALL	Add two UWB frequency points: 3494.4MHz and 4492.8MHz

1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

<table>
<tr><td>Product Name</td><td>430 Collision Warning System</td></tr>
<tr><td>Brand Name</td><td>Litum</td></tr>
<tr><td>Model Name</td><td>430</td></tr>
<tr><td>Series Model(s)</td><td>4300000001, 4300000002, 4300000003</td></tr>
<tr><td>Model Difference</td><td>Only difference in model name.</td></tr>
<tr><td>Product Description</td><td>The EUT is 430 Collision Warning System
<table>
<tr><td>Operation Frequency:</td><td>6489.6MHz, 3494.4MHz,4492.8MHz</td></tr>
<tr><td>Modulation Type:</td><td>BPM with BPSK</td></tr>
<tr><td>Antenna gain:</td><td>Ceramic Antenna</td></tr>
<tr><td>Antenna Designation:</td><td>3.3dBi</td></tr>
</table></td></tr>
<tr><td>Rating</td><td>Input: 9-30V</td></tr>
<tr><td>Hardware version number</td><td>AFA01-01-02</td></tr>
<tr><td>Software version number</td><td>1.15.15.0</td></tr>
</table>

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 §2.1093 REQUIREMENT

2.1 DETERMINATION OF EXEMPTION

For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of Part 1.1307. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

RF Source frequency (MHz)	Threshold ERP(watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

2.2 TEST RESULT

TURN UP POWER

Mode	Field Strength	Power (dBm)	Turn up Power
UWB	60.05dBuV/m	-35.18	-35±1dBm
2.4G SRD	94.26dBuV/m	-0.94	-1±1dBm

Remark: dBm= dBuV/m-95.2

ANT Gain (G)

Antenna Gain: 3.3dBi (gain of antenna in linear scale=2.14)

Protocol	**Fre. (GHz)**	**Separation distance (cm)**	**Max Turn up power (dBm)**	**Max ERP (dBm)**	**Max ERP (mW)**	**Limit (mW)**	**Ratio**	**Result**
UWB	6.4896	20	-34	-36.15	0.0002	1.0000	0.0002	Pass
2.4G SRD	2.475	20	0	-2.15	0.6095	1.0000	0.6095	Pass

Multiple transmission:

UWB +2.4G =0.0002+0.6095=**0.6097<1**

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

2. ERP=EIRP-2.15

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