

File Number **24/36405325****TECHNICAL REPORT****Human exposure****Petitioner's Reference:** Lock Up Smart Doors S.L.

Company Address: Escritor Jeronimo Tristante, N10, 3B. 30100- Murcia – Spain.

Represented by: Juan Jesús Pinuaga Cascales

PMN: Access controller - Lock up smart door

Brand: OPERTO HMN: OC1-EXT

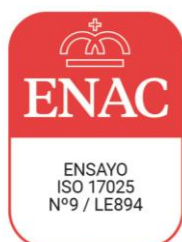
Sample #1: 45013 Applus Id: 22053-002

Result: **complies**

It has been tested and complies with the applicable standard. See test result summary section.

Applicable Standard:EMF standard/s: **FCC 47 CFR Part 2 Subpart J¹**
RSS-102 Issue 5¹The latest modifications of the standard, published at the date of the tests reported in this document, have been considered.**Dates and Test Site:** Applus Barcelona, Bellaterra

Equipment Reception Date March 7, 2024

Test Manager: Javier Miguel Nadales Lisbona**Date of issue:** Bellaterra, December 12, 2024EMC & Wireless Technical Manager
Electrical and Electronics
LGAI Technological Center S.A.

The results refer only and exclusively to the sample, product or material delivered for testing, and tested under conditions stipulated in this document. The equipment has been tested under conditions stipulated by standard(s) quoted in this document. This document will not be reproduced otherwise than in full.
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2.1 EQUIPMENT DESCRIPTION

This information has been provided by the customer and it is not covered by the accreditation. LGAI does not assume any responsibility from it.

EQUIPMENT DESCRIPTION			
Description	The device is WiFi and BLE access system controller used to interact with a variety of access systems as can be common doors, entrance doors, electrical strikes, parking barriers, and elevators among others.		
EUT Version	FVIN		HVIN
	7.6.2		LockUpAIR_V4
Power supply	+/-	12 V	-- Hz
Equipment Size	Length	Width	Height
	80 mm	80 mm	30 mm
Modulation	GFSK		
Operating Frequency Band	2400MHz - 2483.5 MHz		
Maximum RF Output Power [dBm]	5		
Operating Channel(s) Width(s) [MHz]	1		
Equipment Type	DTS		
Number of Hopping Channels	N/A		
Emission Designator	1M1G1D		
FCC ID			

Table 1: Equipment description

RF FEATURES					
Description	Communication Technology	Radio Chipset	Brand	Module Model	Antenna Gain [dBi]
	Bluetooth	CC2640	TI	Not provided	3.3

Table 2: RF Features

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2.2 TEST CONFIGURATION

DUT Operation Modes	
Mode #	Description
1	The customer provides instructions for setting up the sample in test mode with continuously modulated transmission operating on a single channel through the RF Smart Studio software.

Table 3. Test Configuration

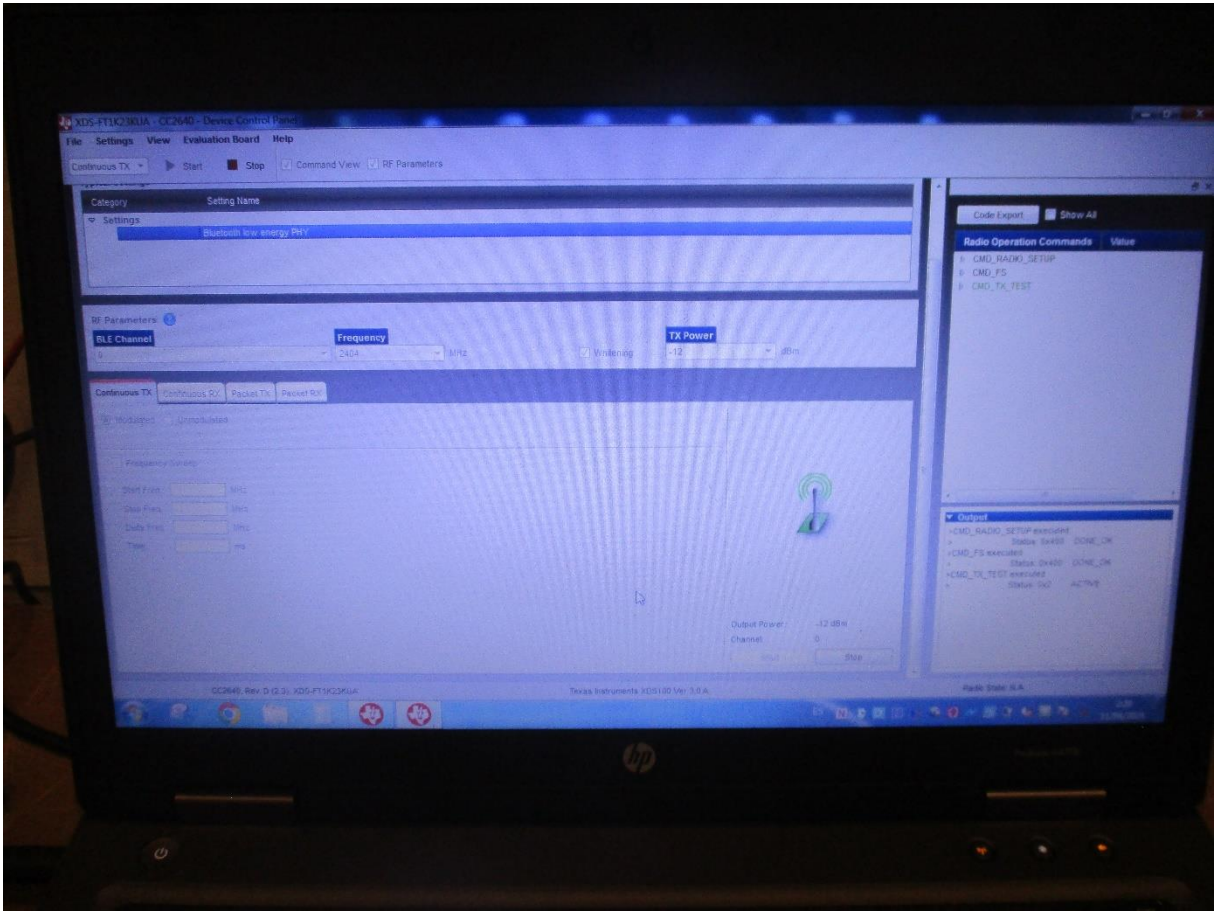


Fig. 1: – Sample Configuration

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2.3 PHOTOGRAPHS

Photographs identifying the equipment under test and its auxiliaries, as well as assembly photographs for radiated and conducted tests, can be found in the document: *24/36405327*

2.4 TEST FACILITIES ID

TEST FACILITIES ID	
FCC Test Firm Registration Number:	507478
ISED Assigned Code:	5766A
CABID	ES0001

Table 4: Test facilities ID

2.5 COMPETENCES AND GUARANTEES

LGAI Technological Center, S.A. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 9/LE894.

In order to assure the traceability to other national and international laboratories, Applus+ Laboratories has a calibration and maintenance program for its measurement equipment.

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3 TEST RESULTS

3.1 HUMAN EXPOSURES STANDARDS

3.1.1 Test Parameters

According to the standard FCC 47 CFR Part 2 Subpart J KDB 447498 D01.

3.1.1.1 Requirements

For operations within the frequency range of 300 kHz and 6 GHz (inclusive), the limits for maximum permissible exposure (MPE), derived from whole-body SAR limits and listed in Table 1 in paragraph (e)(1) of this section, may be used instead of whole-body SAR limits as set forth in paragraphs (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in § 1.1307(b) of this part, except for portable devices as defined in § 2.1093 of this chapter as these evaluations shall be performed according to the SAR provisions in § 2.1093.

Frequency Range [MHz]	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm ²]	Avering time [minutes]
Limits for Occupational / Controlled Exposure				
0.3 – 3.0	614	1.63	*(100)	≤6
3.0 - 30	1842/f	4.89/f	*(900/f ²)	<6
30 - 300	61.4	0.163	1.0	<6
300 - 1500	--	--	f/300	<6
1500 - 100000	--	--	5	<6
Limits for General Population / Uncontrolled Exposure				
0.3 – 1.34	614	1.63	*(100)	<30
1.34 - 30	824/f	2.19/f	*(180/f ²)	<30
30 - 300	27.5	0.073	0.2	<30
300 - 1500	--	--	f/1500	<30
1500 - 100000	--	--	1.0	<30

Table 5: Requirements – Human exposure

f=frequency

*=Plane-wave equivalent power density

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3.1.2 Test Results

For the evaluation of the RF exposure, the maximum conducted output power of BLE technology is obtained from the following test reports: 24/36405324

Technology	Operating Frequency [MHz]	Maximum Conducted Peak Power [dBm]	Antenna gain [dBi]	EIRP [dBm]
BLE	2402	8.6	3.3	11.9
	2440	7.4		10.7
	2480	4.6		7.9

Table 6: Maximum Conducted Output Power – BLE

Therefore, through the following equation, is computed the power density at each frequency transmitted band for a minimum distance of 20 cm between the DUT and the person to comply with the power density limit.

$$S = \frac{EIRP}{4 * \pi * d^2}$$

Where:

S = Power density (mW/cm²)

EIRP = Radiated output power of an isotropic antenna (mW)

d = Distance to the center of radiation of the antenna (cm). Limit for MPE = 20 cm.

According to Radiofrequency radiation exposure limits of FCC Part 1 Section §1.1310 paragraph (e), the maximum permissible exposure (MPE) for 1500 – 100000 MHz, which the DUT is operating is:

Technology	Operating Frequency [MHz]	Power Density at 20 cm [mW/cm ²]	Power Density Limit [mW/cm ²]	Result
BLE	2402	0.0014	1	PASS
	2440	0.0011		PASS
	2480	0.0005		PASS

Table 7: Power Density Level at 20 cm – BLE

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