

File Number **19/31705308**



**TEST REPORT**  
FCC/ICES Test Report

**Petitioner's Reference: LIBELIUM S.L.**

Customer Address : Calle Escatrón, 16, 50014, Zaragoza

**Equipment: PARKING SPOT VEHICLE DETECTION NODE**

Brand:	LIBELIUM S.L.	Model:	SMART PARKING V2 (US model)
S/N:	--	Power Supply:	DC Internal Battery

**Result: complies**

It has been tested and complies the standard specifications Applicable / s  
See specifications applied on page 8

**Applicable Standards**

**Emission standard/s:** **FCC 47 CFR Part 15 Subpart B** Radio Frequency Devices (Unintentional Radiators)

**Date of issue:** Bellaterra, July 14, 2019

Fernando Rivas Fernández  
Technical Responsible  
Electrical and Electronics  
LGAI Technological Center S.A.

The results refer only and exclusively to the sample, product or material delivered for testing in "Received Material" section above. 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.  
This is the first page of the document, which consists of **20** pages of which 11 are annexes.

## INDEX

<b>1. EQUIPMENT RECEIVED AND TESTED .....</b>	<b>3</b>
1.1 TEST CONFIGURATION.....	3
1.2 AUXILIARY AND CONTROL EQUIPMENT .....	3
1.3 INPUT/OUTPUT WIRES.....	3
1.4 MODIFICATION PERFORMED .....	4
<b>2. APPLICABLE STANDARDS .....</b>	<b>5</b>
2.1. TEST APPLICABLE STANDARDS .....	5
2.2. USED EQUIPMENT.....	7
<b>3. RESULT .....</b>	<b>8</b>
<b>4. ANNEXES .....</b>	<b>9</b>
4.1. TEST RESULTS.....	9
4.1.1 Radiated Emissions .....	9

## 1. EQUIPMENT RECEIVED AND TESTED

### EQUIPMENT: PARKING SPOT VEHICLE DETECTION NODE

<b>Brand:</b>	LIBELIUM S.L.	<b>Model:</b>	SMART PARKING V2 (US model)
<b>S/N:</b>	--	<b>Power Supply:</b>	DC Internal Battery
<b>SW version:</b>	1.0	<b>HW Version:</b>	2.0

#### Highest Operating Frequency

60 GHz pulsed coherent radar (PCR), short-range device (SRD)

SMART PARKING V2 is a parking Spot Vehicle detection device.  
The main characteristics of equipment are:

- 902 - 928 MHz band radio frequency communications: Radio RN2903A, Brand: Microchip
- Built-In Lithium batteries
- The node provides OTA-S (Over-The-Air Setup).
- Antena: model 2J5115-PCB, Brand:2J. Conexión U.FL. Gain max=2.14 dBi
- Vehicle detection sensors:
  - Magnetic
  - Radar.

During its evaluation, only one RF channel was used to performed the tests

<b>Test product reception:</b>	2019-06-24
<b>Test initial date:</b>	2019-06-25
<b>Test final date:</b>	2019-06-26

#### 1.1 Test configuration

<b>Power Supply:</b>	DC Internal Battery
<b>Set-up:</b>	Tabletop
<b>Test exercise:</b>	During tests: EUT working in test operational mode. For emissions tests, detecting vehicles each 1 minute and sending a frame via RF 915MHz communication to LoRaWAN Base Station.
<b>Equipment size:</b>	200mm diameter, 37.25 mm height

#### 1.2 Auxiliary and control equipment

902 - 928 MHz LoRAWAN Base Station, ancillary computer with embedded SW with Libelium cloud application, metal plate to emulate vehicle detection.

#### 1.3 Input/output wires

The equipment does not have input-output wires

#### **1.4 Modification performed**

No modification was performed.

---

## 2. APPLICABLE STANDARDS

### 2.1. TEST APPLICABLE STANDARDS

**Standard:** FCC 47 CFR Part 15 Subpart B based on standards.

**Basic standard:** ANSI C63.4

Radio-frequency radiated emissions (30MHz -40000MHz)

#### 2.1.1. Acceptance criteria for the test

According to standard **FCC 47 CFR Part 15 Subpart B**

#### 2.1.2. Test facilities ID

FCC Test Firm Registration Number:	507478
ISED Assigned Code:	5766A

#### 2.1.3. 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/LE 894

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

Applus+ Laboratories guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at Applus+ Laboratories at the time of performance of the test.

Applus+ Laboratories is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test. The results presented in this Test Report apply only to the particular item under test established in this document.

**IMPORTANT:** No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of Applus+ Laboratories.

#### General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of Applus+ Laboratories.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of Applus+ Laboratories and the Accreditation Bodies.

#### **2.1.4. Test procedures**

Radio-frequency radiated emissions:	C5401665
-------------------------------------	----------

---

#### **2.1.5. Measuring uncertainties**

Radio-frequency radiated emissions:	$\pm 4,3$ dB
-------------------------------------	--------------

---

Expanded uncertainty measurement is obtained multiplying the typical uncertainty measurement with a coverage factor  $k=2$ , which corresponds to a confidence level of 95% for a normal distribution. The typical uncertainty measurement has been determined in accordance with document EA-4/02.

## 2.2. Used Equipment

RADIO-FREQUENCY RADIATED EMISSIONS (LF)					
INSTRUMENT	MARK	MODEL	NUMBER	LAST CALIBRATION	NEXT CALIBRATION
ATTENUATOR 3dB	HUBER+SUHNER	6803.17.B	1042020	11/06/2018	11/06/2019
BILOGOPERIODIC ANTENNA	SCHWARZBECK	VULB 9162	1042229	24/04/2019	24/04/2020
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESW26	1042124	11/01/2019	11/01/2020
RF CABLE	HUBER+SUHNER	SF103/11N/16N/4000MM	1041909	06/02/2019	06/02/2020
RF CABLE	HUBER+SUHNER	CLR67 NANA 10000 P01 FR	1042114	30/01/2019	30/01/2020
RF CABLE	--	--	104572	25/05/2018	25/05/2019

RADIO-FREQUENCY RADIATED EMISSIONS (HF)					
EQUIPMENT	BRAND	MODEL	NUMBER	LAST CALIBRATION	NEXT CALIBRATION
LOGOPERIODIC ANTENNA	RHODE & SCHWARZ	HL050	1041226	12/03/2019	12/03/2022
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU 40	1041155	29/08/2018	29/08/2019
RF CABLE	HUBER+SUHNER	SUCOFLEX 100	1041627	22/03/2019	22/03/2020
RF CABLE	HUBER+SUHNER	SF103/11N/16N/4 000MM	1041909	06/02/2019	06/02/2020
RF CABLE	--	--	104572		
RF PREAMPLIFIER	BONN ELEKTRONIK	BLNA 0118-M	1041733	10/05/2019	10/05/2020
HORN ANTENNA	ASYSOL	ASYSGH-2640	1041342	05/04/2017	05/04/2020

### 3. RESULT

PRODUCT: PARKING SPOT VEHICLE DETECTION NODE			
<b>Brand:</b>	LIBELIUM S.L.	<b>Model:</b>	SMART PARKING V2 (US model)
<b>S/N:</b>	--	<b>Power Supply:</b>	DC Internal Battery
<b>Class:</b>	B	<b>Type of device:</b>	--
TESTING		RESULTS	
Radio-frequency radiated emissions		Pass	Note: 4
<b>1:</b> The measured results are above the upper limit, even considering the uncertainty interval. <b>2:</b> The measured results are above the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that non-compliance is more probable than compliance <b>3:</b> The measured results are below the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that compliance is more probable than non-compliance <b>4:</b> The measured results are within the limits, including the uncertainty interval.			

#### Service Quality Assurance

**Applus+**, guarantees that this work has been made in accordance with our Quality and Sustainability System, fulfilling the contractual conditions and legal norms.

Within our improvement program we would be grateful if you would send us any commentary that you consider opportune, to the person in charge who signs this document, or to the Quality Manager of Applus+, in the following e-mail address: [satisfaccion.cliente@applus.com](mailto:satisfaccion.cliente@applus.com)



## 4. ANNEXES

### 4.1. Test Results

#### 4.1.1 Radiated Emissions

##### Test Procedures

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4-2009

Up to 18GHz, the test distance is 3m.

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 30 MHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas conform to specifications ANSI C63. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

##### Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 m to 4 m.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

##### Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4.
- Based on antenna and turntable positions at which the peak values are measured the software maximizes the peaks by changing turntable position  $\pm 45^\circ$  and antenna height between 1 and 4 m.
- The final measurement is done with quasi-peak detector (as described in ANSI C 63.4) for 30MHz to 1GHz emissions test
- The final measurement is done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4) for 1GHz to 18GHz test.
- Final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is stored.

$$FS = UR + CA + AF$$

(FS-field strength; UR-voltage at the receiver; CA-loss of the signal path; AF-antenna factor)

Above 18GHz, the test distance is as appropriate.

##### Premeasurement

- The test antenna is handheld and moved carefully over the EUT to cover the EUT's whole sphere and different polarizations of the antenna.

##### Final measurement

- The final measurement is performed at the position and antenna orientation causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement and the limit is stored.

$$OP = AV + D - G$$

(OP-rad. output power; AV-analyzer value; D-free field attenuation of measurement distance; G-antenna gain)

**Far field consideration for measurements above 18 GHz**

$$D_{ff} = 2 \times D^2 / \lambda$$

With

Dff Far field distance  
D Antenna dimension  
 $\lambda$  wavelength

**Spurious emission measurements:**

Antenna frequency range in GHz	Highest measured frequency in GHz	D in cm	$\lambda$ in cm	Dff in cm
18-26	26	3.4	1.15	20.04
26-40	40	2.2	0.75	12.91

During the radiated emission test, the EMI receiver or the Spectrum Analyzer was set with the following configurations:

Frequency band (MHz)	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

**Limits:**

According to FCC Part 15.109(b):

Limits of Radiated Emission Measurement (Below 1000 MHz)

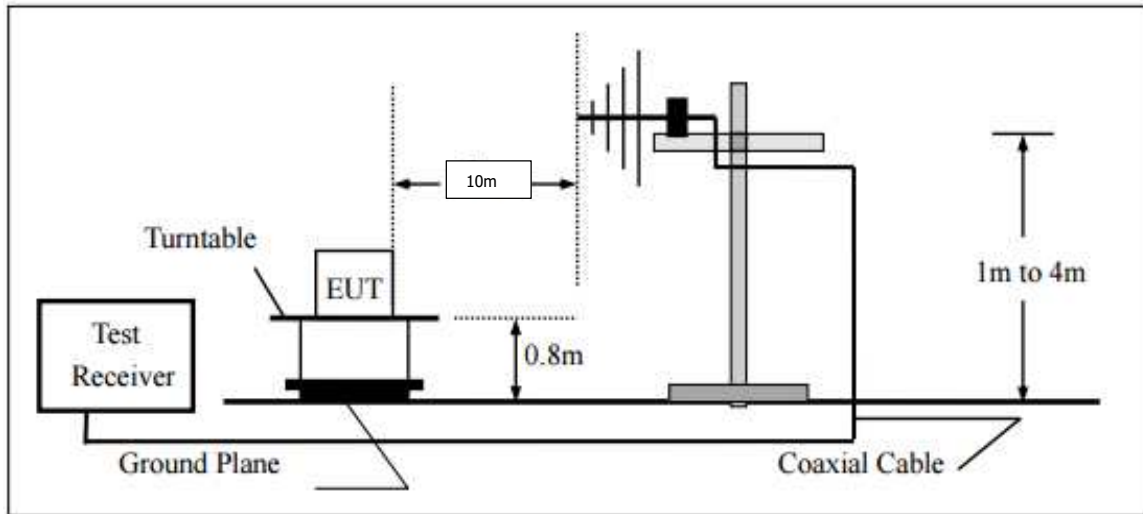
Frequency (MHz)	Class B (dBuV/m) (at 3m)	
	QuasiPeak	
30 – 88	39	
88 – 216	44	
216 – 960	46	
960 – 1000	50	

Limits of Radiated Emission Measurement (Above 1000 MHz)

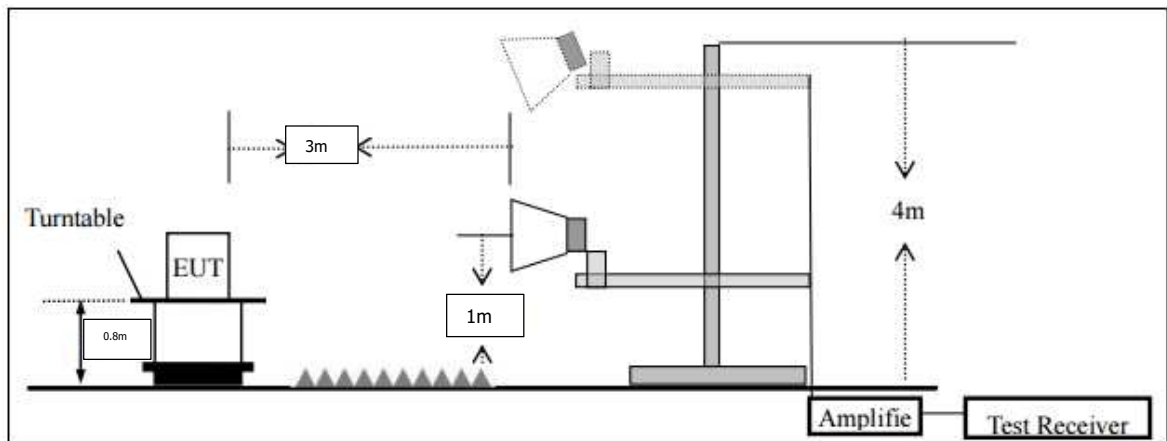
Frequency (MHz)	Class B (dBuV/m) (at 3m)	
	Peak	Average
Above 1000	74	54

### Test Configuration

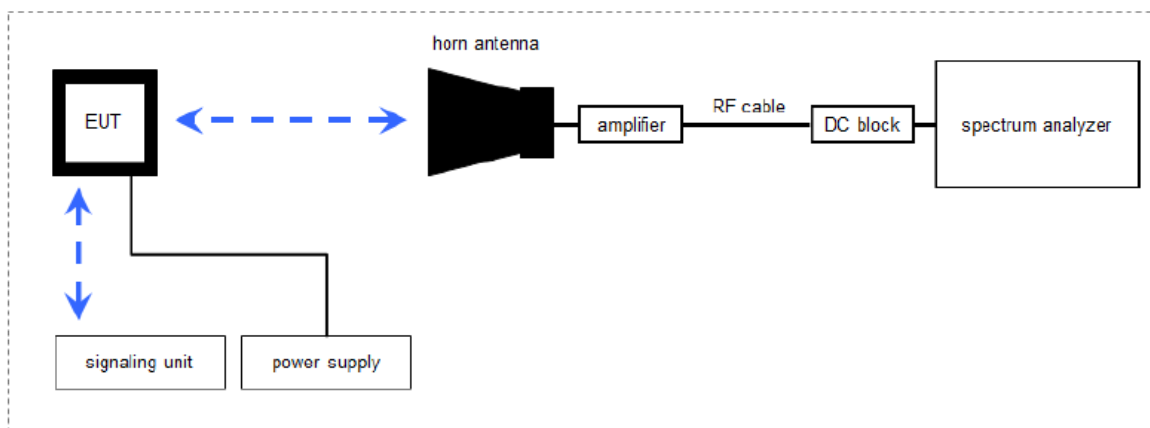
- For radiated emissions from 30MHz to 1000MHz:



- For radiated emissions above 1000MHz up to 18GHz:



- For radiated emissions above 18GHz:



RADIO-FREQUENCY RADIATED EMISSIONS														
<b>Device under test:</b> PARKING SPOT VEHICLE <b>DETECTION NODE</b> <b>Model:</b> SMART PARKING V2 (US model) <b>Auxiliary equipment:</b> 902 - 928 MHz LoRAWAN Base Station, ancillary computer with embedded SW with Libelium cloud application, metal plate to emulate vehicle detection. <b>DUT exercise:</b> During tests: EUT working in test operational mode. For emissions tests, detecting vehicles each 1 minute and sending a frame via RF 915MHz communication to LoRaWAN Base Station.		<b>Brand:</b> LIBELIUM S.L.  <b>Serial number:</b> --  <b>Supply:</b> DC Internal Battery  <b>Input/output cable:</b> The equipment does not have input-output wires												
<b>Technician:</b> Leonardo Tolve <b>Test date:</b> 2019-06-25 <b>Measurement equipment:</b> Receiver EMI R&S ESW26		<b>Frequency range:</b> 30MHz – 1 GHz <b>Procedure:</b> C5400277 <b>Test Area:</b> Semi-Anechoic chamber, SAC-2												
<b>Basic standard: ANSI C63.4</b>														
<table border="1"> <tr> <td><b>Temperature:</b></td> <td>24.1</td> <td>°C</td> </tr> <tr> <td><b>Humidity:</b></td> <td>54.2</td> <td>%</td> </tr> <tr> <td><b>Atm. Pressure:</b></td> <td>1003.4</td> <td>hPa</td> </tr> </table>		<b>Temperature:</b>	24.1	°C	<b>Humidity:</b>	54.2	%	<b>Atm. Pressure:</b>	1003.4	hPa				
<b>Temperature:</b>	24.1	°C												
<b>Humidity:</b>	54.2	%												
<b>Atm. Pressure:</b>	1003.4	hPa												
<b>EUT:</b>	<b>Class</b>	<b>Test Area</b>	<b>Distance</b>	<b>PreScan</b>	<b>Evaluation</b>									
Tabletop	B	SAC2	3m (30 MHz – 1 GHz)	8 faces(45° step)	Individual									
<b>RESULTS:</b> Pass														
<b>Identification</b>		<b>Emissions</b>		<b>Main emission source and type</b>										
DUT: Device under test AUX: Auxiliary Devices SYS: DUT + AUX BB : Broad-band NB : Narrow-band QP: Quasi-peak		QP < Limit - I  I=Uncertainty		DUT, NB										
<b>Comments</b>														

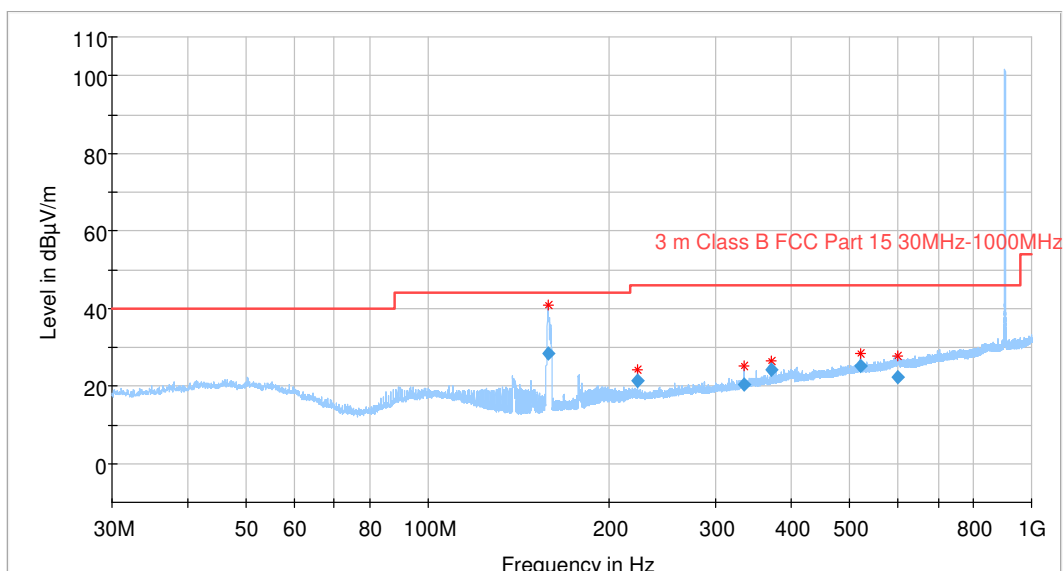
**RADIO-FREQUENCY RADIATED EMISSIONS I**

**Device under test:** PARKING SPOT VEHICLE  
**DETECTION NODE**  
**Model:** SMART PARKING V2 (US model)  
**Brand:** LIBELIUM S.L.  
**Serial number:** --

**Procedure:** C5401665

**Basic standard:** ANSI C63.4

**PRESCAN 30 MHz -1 GHz**



— Preview Result 1-PK+      \* Critical\_Freqs PK+  
 — 3 m Class B FCC Part 15 30MHz-1000MHz      ◆ Final\_Result QPK

**FINAL MEASUREMENTS**

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
158.070000	28.50	44.00	15.50	318.0	H	77.0
222.750000	21.25	46.00	24.75	193.0	H	323.0
334.140000	20.31	46.00	25.69	118.0	H	332.0
371.250000	24.36	46.00	21.64	106.0	H	311.0
519.720000	25.16	46.00	20.84	179.0	H	324.0
600.060000	22.35	46.00	23.65	275.0	V	340.0

**Comments:**

NOTE: Fundamental frequency of the EUT detected 903.57 MHz. Excluded from the scope of the test.

RADIO-FREQUENCY RADIATED EMISSIONS														
<b>Device under test:</b> PARKING SPOT VEHICLE		<b>Brand:</b> LIBELIUM S.L.												
<b>DETECTION NODE</b>		<b>Serial number:</b> --												
<b>Model:</b> SMART PARKING V2 (US model)		<b>Supply:</b> DC Internal Battery												
<b>Auxiliary equipment:</b> 902 - 928 MHz LoRAWAN Base Station, ancillary computer with embedded SW with Libelium cloud application, metal plate to emulate vehicle detection.		<b>Input/output cable:</b> The equipment does not have input-output wires												
<b>DUT exercise:</b> During tests: EUT working in test operational mode. For emissions tests, detecting vehicles each 1 minute and sending a frame via RF 915MHz communication to LoRaWAN Base Station.														
<b>Technician:</b> Oliana Cintas / Jose M. Llauradó		<b>Frequency range:</b> 1-18 GHz												
<b>Test date:</b> 2019-06-25		<b>Procedure:</b> C5400277												
<b>Measurement equipment:</b> Receiver EMI RS ESU40		<b>Test Area:</b> Semi-Anechoic chamber, SAC-2												
<b>Basic standard: ANSI C63.4</b>														
<table border="1" style="width: 100%;"> <tr> <td><b>Temperature:</b></td> <td>23.0</td> <td>°C</td> </tr> <tr> <td><b>Humidity:</b></td> <td>58.0</td> <td>%</td> </tr> <tr> <td><b>Atm. Pressure:</b></td> <td>999.7</td> <td>hPa</td> </tr> </table>						<b>Temperature:</b>	23.0	°C	<b>Humidity:</b>	58.0	%	<b>Atm. Pressure:</b>	999.7	hPa
<b>Temperature:</b>	23.0	°C												
<b>Humidity:</b>	58.0	%												
<b>Atm. Pressure:</b>	999.7	hPa												
EUT:	Class	Test Area	Distance	PreScan	Evaluation									
Tabletop	B	SAC2	3m (1 - 18 GHz)	8 faces(45° step)	Individual									
<b>RESULTS:</b> Pass														
Identification	Emissions		Main emission source and type											
DUT: Device under test AUX: Auxiliary Devices SYS: DUT + AUX BB : Broad-band NB : Narrow-band PK: Peak, AVG: Average	Final PK and AVG < Limits - I  I=Uncertainty		EUT, BB											
Comments														

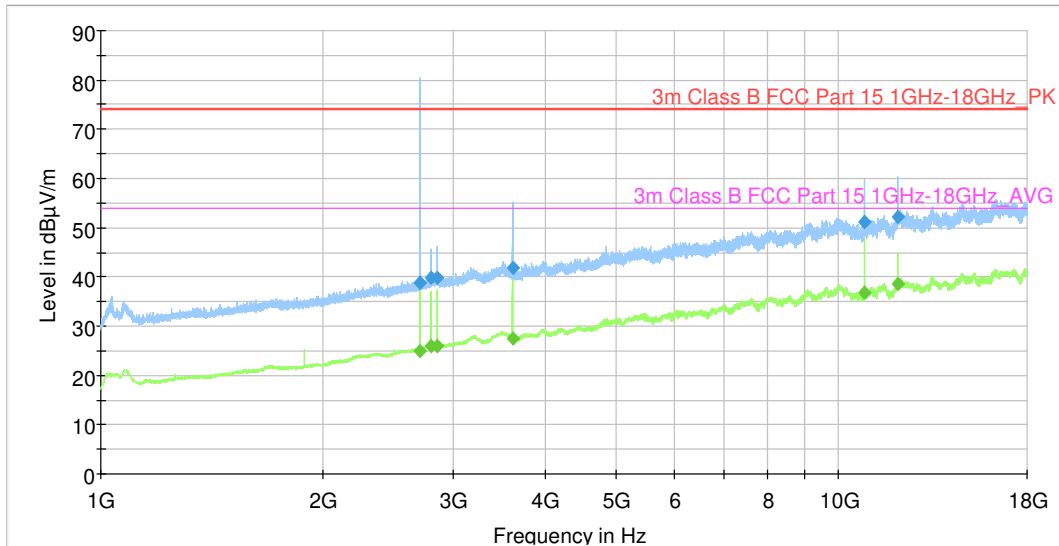
**RADIO-FREQUENCY RADIATED EMISSIONS I**

**Device under test:** PARKING SPOT VEHICLE      **Brand:** LIBELIUM S.L.  
**DETECTION NODE**  
**Model:** SMART PARKING V2      **Serial number:** --  
 (US model)

**Procedure:** C5401665

**Basic standard:** ANSI C63.4

**PRESCAN 1 - 18 GHz**



—◆ Preview Result 2-AVG      —◆ Preview Result 1-PK+  
— 3m Class B FCC Part 15 1GHz-18GHz\_PK      — 3m Class B FCC Part 15 1GHz-18GHz\_AVG  
◆ Final\_Result PK+      ◆ Final\_Result AVG

**FINAL MEASUREMENTS**

Frequency (MHz)	MaxPeak (dBµV/m)	Limit PK (dBµV/m)	Margin PK (dB)	Average (dBµV/m)	Limit AVG (dBµV/m)	Margin AVG (dB)	Height (cm)	Pol	Azimuth (deg)
2708.250000	38.83	74.00	35.17	25.06	54.00	28.94	209.0	V	77.0
2802.750000	39.77	74.00	34.23	25.89	54.00	28.11	243.0	H	55.0
2860.000000	39.90	74.00	34.10	25.90	54.00	28.10	284.0	V	125.0
3613.250000	41.75	74.00	32.25	27.54	54.00	26.46	312.0	H	102.0
10835.250000	51.15	74.00	22.85	36.70	54.00	17.30	109.0	H	88.0
12009.750000	52.10	74.00	21.90	38.58	54.00	15.42	207.0	V	306.0

**Comments:**

Emission Level = Antenna Factor + Cable Loss + Read Level – Preamp Factor



RADIO-FREQUENCY RADIATED EMISSIONS														
<b>Device under test:</b> PARKING SPOT VEHICLE <b>DETECTION NODE</b> <b>Model:</b> SMART PARKING V2 (US model) <b>Auxiliary equipment:</b> 902 - 928 MHz LoRAWAN Base Station, ancillary computer with embedded SW with Libelium cloud application, metal plate to emulate vehicle detection. <b>DUT exercise:</b> During tests: EUT working in test operational mode. For emissions tests, detecting vehicles each 1 minute and sending a frame via RF 915MHz communication to LoRaWAN Base Station.		<b>Brand:</b> LIBELIUM S.L.  <b>Serial number:</b> --  <b>Supply:</b> DC Internal Battery  <b>Input/output cable:</b> The equipment does not have input-output wires												
<b>Technician:</b> Leonardo Tolve <b>Test date:</b> 2019-06-26 <b>Measurement equipment:</b> Receiver EMI RS ESU40		<b>Frequency range:</b> 18-26GHz <b>Procedure:</b> C5400277 <b>Test Area:</b> Semi-Anechoic chamber, SAC-2												
<b>Basic standard: ANSI C63.4</b>														
<table border="1"> <tr> <td><b>Temperature:</b></td> <td>22.9</td> <td>°C</td> </tr> <tr> <td><b>Humidity:</b></td> <td>55.0</td> <td>%</td> </tr> <tr> <td><b>Atm. Pressure:</b></td> <td>1003.4</td> <td>hPa</td> </tr> </table>		<b>Temperature:</b>	22.9	°C	<b>Humidity:</b>	55.0	%	<b>Atm. Pressure:</b>	1003.4	hPa				
<b>Temperature:</b>	22.9	°C												
<b>Humidity:</b>	55.0	%												
<b>Atm. Pressure:</b>	1003.4	hPa												
EUT:	Class	Test Area	Distance	PreScan	Evaluation									
Tabletop	B	SAC2	1m (18 - 26 GHz)	Full faces Max. Search	Individual									
<b>RESULTS:</b> Pass														
Identification		Emissions		Main emission source and type										
DUT: Device under test AUX: Auxiliary Devices SYS: DUT + AUX BB : Broad-band NB : Narrow-band PK: Peak, AVG: Average		Final PK and AVG < Limits - I  I=Uncertainty		EUT										
Comments														
Far field considerations taken into account														

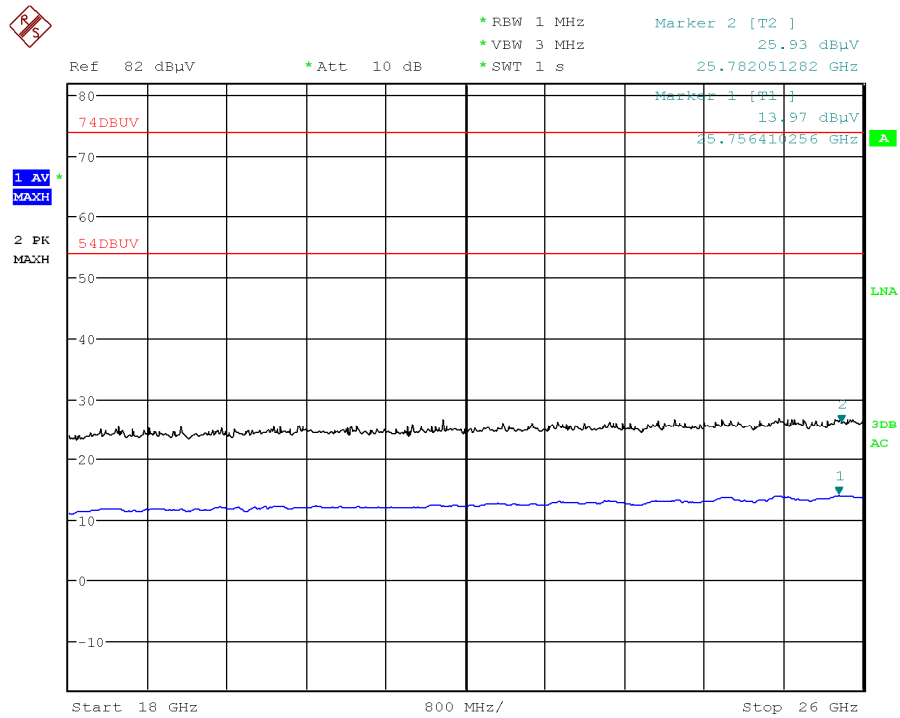
**RADIO-FREQUENCY RADIATED EMISSIONS I**

**Device under test:** PARKING SPOT VEHICLE      **Brand:** LIBELIUM S.L.  
**DETECTION NODE**  
**Model:** SMART PARKING V2      **Serial number:** --  
 (US model)

**Procedure:** C5401665

**Basic standard:** FCC 47 CFR Part 15 Subpart B

**PRESCAN 18-26 GHz**



Date: 26.JUN.2019 11:42:38

**Comments:**

OP = AV + D - G  
 (OP-rad. output power; AV-analyzer value; D-free field attenuation of measurement distance; G-antenna gain)

RADIO-FREQUENCY RADIATED EMISSIONS														
<b>Device under test:</b> PARKING SPOT VEHICLE		<b>Brand:</b> LIBELIUM S.L.												
<b>DETECTION NODE</b>		<b>Serial number:</b> --												
<b>Model:</b> SMART PARKING V2 (US model)		<b>Supply:</b> DC Internal Battery												
<b>Auxiliary equipment:</b> 902 - 928 MHz LoRAWAN Base Station, ancillary computer with embedded SW with Libelium cloud application, metal plate to emulate vehicle detection.		<b>Input/output cable:</b> The equipment does not have input-output wires												
<b>DUT exercise:</b> During tests: EUT working in test operational mode. For emissions tests, detecting vehicles each 1 minute and sending a frame via RF 915MHz communication to LoRaWAN Base Station.														
<b>Technician:</b> Leonardo Tolve		<b>Frequency range:</b> 26-40GHz												
<b>Test date:</b> 2019-06-26		<b>Procedure:</b> C5400277												
<b>Measurement equipment:</b> Receiver EMI RS ESU40		<b>Test Area:</b> Semi-Anechoic chamber, SAC-2												
<b>Basic standard: ANSI C63.4</b>														
<table border="1" style="width: 100%;"> <tr> <td><b>Temperature:</b></td> <td>22.9</td> <td>°C</td> </tr> <tr> <td><b>Humidity:</b></td> <td>55.0</td> <td>%</td> </tr> <tr> <td><b>Atm. Pressure:</b></td> <td>1003.4</td> <td>hPa</td> </tr> </table>						<b>Temperature:</b>	22.9	°C	<b>Humidity:</b>	55.0	%	<b>Atm. Pressure:</b>	1003.4	hPa
<b>Temperature:</b>	22.9	°C												
<b>Humidity:</b>	55.0	%												
<b>Atm. Pressure:</b>	1003.4	hPa												
EUT:	Class	Test Area	Distance	PreScan	Evaluation									
Tabletop	B	SAC2	0.3m (26-40 GHz)	Full faces Max. Search	Individual									
<b>RESULTS:</b> Pass														
Identification	Emissions		Main emission source and type											
DUT: Device under test AUX: Auxiliary Devices SYS: DUT + AUX BB : Broad-band NB : Narrow-band PK: Peak, AVG: Average	Final PK and AVG < Limits - I  I=Uncertainty		EUT, BB											
<b>Comments</b>														
Far field considerations taken into account														

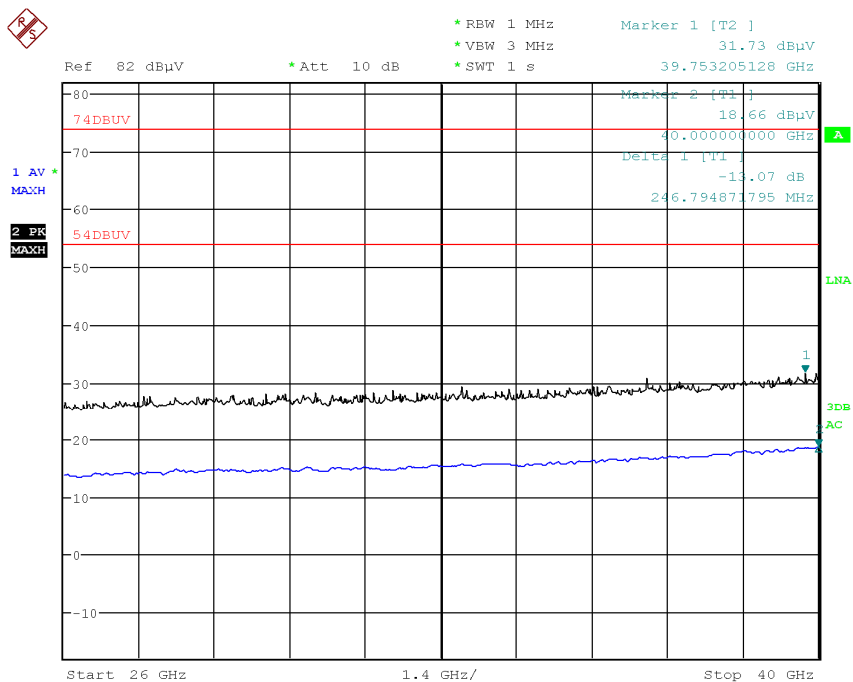
**RADIO-FREQUENCY RADIATED EMISSIONS I**

**Device under test:** PARKING SPOT VEHICLE      **Brand:** LIBELIUM S.L.  
**DETECTION NODE**  
**Model:** SMART PARKING V2      **Serial number:** --  
 (US model)

**Procedure:** C5401665

**Basic standard:** FCC 47 CFR Part 15 Subpart B

**PRESCAN 26-40 GHz**



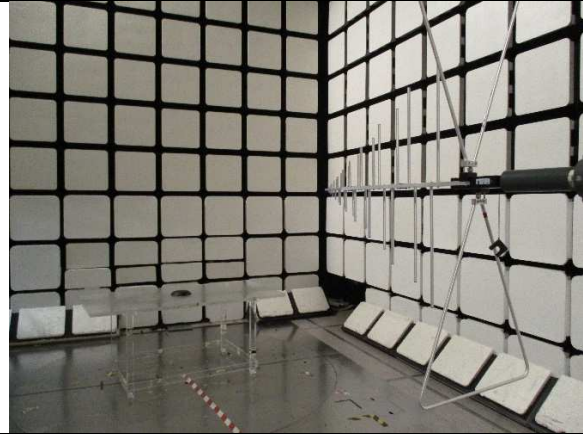
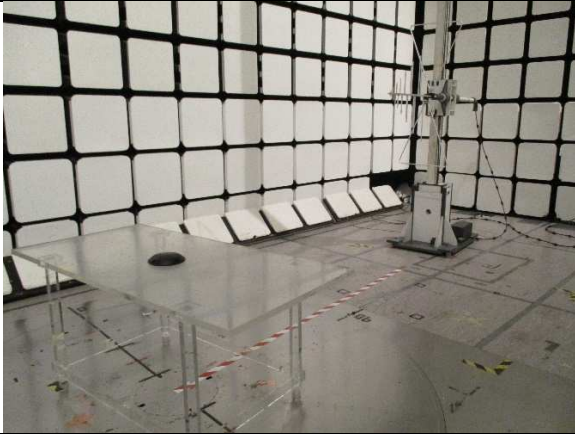
Date: 26.JUN.2019 12:15:19

**Comments:**

OP = AV + D - G  
 (OP-rad. output power; AV-analyzer value; D-free field attenuation of measurement distance; G-antenna gain)

### Test Setup Configuration

From file number: 19/31705308



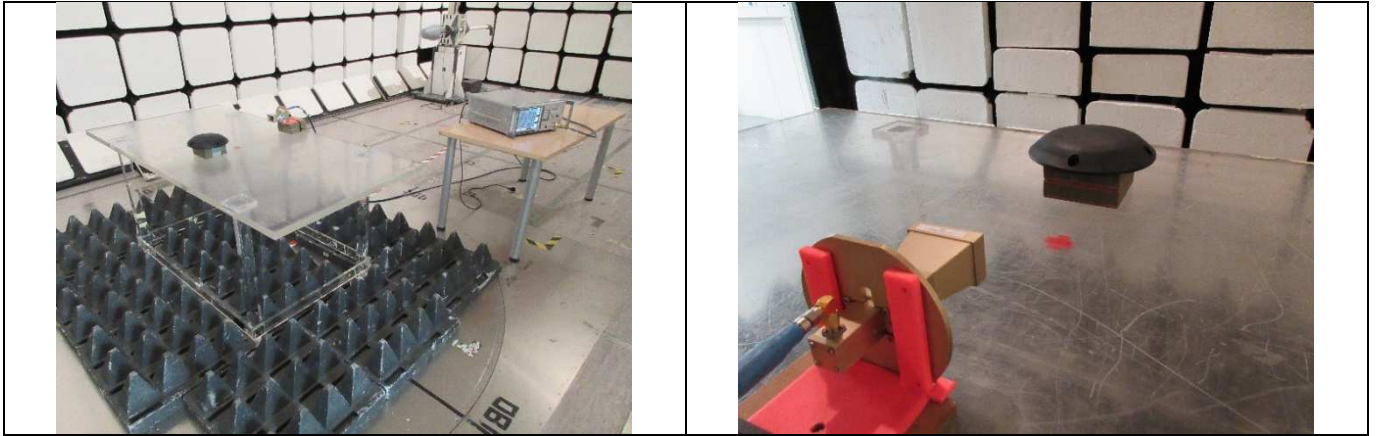
Radio-frequency radiated emissions 30MHz to 1GHz



Radio-frequency radiated emissions 1GHz to 18GHz



Radio-frequency radiated emissions 18GHz to 26GHz



Radio-frequency radiated emissions 26GHz to 40GHz



### Identification pictures

From file number: 19/31705308



Frontal view



Rear view



Auxiliary equipment I



Auxiliary Equipment II