

RF Exposure Report

Project Number: 4926553**Proposal Number:** 06072022NG-1.1**Report Number:** 4926553EMC04**Revision Level:** 0**Client:** Airgo Systems, LLC**Equipment Under Test:** Large Vehicle Monitoring Telematics**Model Name:** AirBoxOne**Model Number:** Drov-ABO**FCC ID:** 2AYTU-EG91-NA-ABO**Contains FCC ID:** VPYLB1YM
2AKNO-VOLJN5179M16
SH6MDBT50Q
2ADWC-S76S**Applicable Standards:** 47 CFR §§ 2.1091


FCC KDB 447498 D01 General RF Exposure Guidance v06

FCC OET Bulletin 65

Report issued on: 12 June 2023**Result:** Compliant

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER: 3212.01

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1 General Information

1.1 *Client Information*

Name: Airgo Systems, LLC.
Address: 8232 SW 23rd Place
City, State, Zip, Country: Oklahoma City, OK 73128, USA

1.2 *Test Laboratory*

Name: SGS North America, Inc.
Address: 620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country: Suwanee, GA 30024, USA

Accrediting Body: A2LA
Type of lab: Testing Laboratory
Certificate Number: 3212.01

1.3 General Information of EUT

Type of Product: Large Vehicle Monitoring Telematics
Model Number: Drov-ABO
Serial Number: FCC 9083 (on label), 2017100031 (DC on pcb)
Module Models: EG91NA

Frequency Ranges: 699-716 MHz (LTE Band 12); 1710-1754 MHz (LTE Band 4)
777-787 MHz (LTE Band 13); 1850-1910 MHz (LTE Band 2)
824-849 MHz (LTE Band 5)
2412-2462 MHz (WLAN); 5180-5825 MHz (WLAN)
902.3-914.9 MHz (LoRa); 2405-2480 MHz (Zigbee)
2402-2480 MHz (Bluetooth)

Antenna Gain¹: FPC, 699-849 MHz – 3.5dBi*
FPC, 1710-1910 MHz – 6.0dBi*
FPC, 2412-2462 MHz – 2.5dBi*
FPC, 2402-2480 MHz – 1.0dBi*
FPC, 5180 – 5825 MHz – 3.5dBi*
FPC, 902.3-914.9 MHz – 0.0dBi

Max Conducted Output Power: LTE Band 2: 24.44 dBm*
LTE Band 4: 24.31 dBm*
LTE Band 5: 24.23 dBm*
LTE Band 12: 24.23 dBm*
LTE Band 13: 23.94 dBm*
Bluetooth BDR: 8.2 dBm*
Bluetooth LE: 8.2 dBm*
WLAN 2.4GHz: 28.13 dBm*
WLAN 5GHz U-NII-1: 14.9 dBm*
WLAN 5GHz U-NII-2A: 19.0 dBm*
WLAN 5GHz U-NII-2C: 18.9 dBm*
WLAN 5GHz U-NII-3: 20.0 dBm*
Zigbee 2.4GHz: 25.53 dBm*
LoRa 900MHz: 17.25 dBm*

**Data was not measured by SGS laboratory and therefore not responsible for accuracy. Data obtained via customer, specification sheet, previous regulatory filing or other.*

Note¹: Antenna and gain is not the original for each transmitter.

1.4 Operating Modes and Conditions

Maximum power levels were utilized for all calculations. Simultaneous transmission is possible with one LTE band, one WLAN band, Zigbee, LoRa and Bluetooth.

2 RF Exposure

2.1 Test Results

Test Description	Product Specific Standard	Test Result
RF Exposure	FCC Part 1.1310	Compliant

2.2 Test Method

The formula below calculates power density.

$$S = \frac{PG}{4\pi R^2} \quad \text{Or} \quad S = \frac{EIRP}{4\pi R^2}$$

Where;

S = Power density (mW/cm²)

P = Maximum sourced based average power delivered to antenna port (mW)

G = Maximum power gain of the antenna in the direction of interest relative to an isotropic radiator (dBi)

R = Distance between by-stander and antenna (cm)

EIRP = Equivalent (or effective) isotropically radiated power

2.3 Single transmission RF Exposure Levels (mW/cm²)

Band of Operation		Conducted Power w/tolerance	Antenna Gain	Cable Loss	Average EIRP		Distance (R)	Power Density EIRP _{avg} /(4πR ²)	FCC	% of Limit	Verdict
Type	MHz	dBm			dBm	mW	cm	mW/cm ²	mW/cm ²		
LTE Band 2	1850-1910	24.4	6.0	0.0	30.4	1107	20	0.220	1.00	22%	Pass
LTE Band 4	1710-1755	24.3	6.0	0.0	30.3	1076	20	0.214	1.00	21%	Pass
LTE Band 5	824-849	24.2	3.5	0.0	27.7	593	20	0.118	0.55	21%	Pass
LTE Band 12	699-716	24.2	3.5	0.0	27.7	593	20	0.118	0.47	25%	Pass
LTE Band 13	777-787	24.0	3.5	0.0	27.5	556	20	0.111	0.52	21%	Pass
WLAN 2.4	2412-2462	28.1	2.5	0.0	30.6	1156	20	0.230	1.00	23%	Pass
Bluetooth	2400-2483.5	8.2	1.0	0.0	9.2	8	20	0.002	1.00	0%	Pass
WLAN 5 GHz (UNII-1)	5180-5240	14.9	3.5	0.0	18.4	69	20	0.014	1.00	1%	Pass
WLAN 5 GHz (UNII-2)	5260-5700	19.0	3.5	0.0	22.5	178	20	0.035	1.00	4%	Pass
WLAN 5 GHz (UNII-3)	5745-5825	20.0	3.5	0.0	23.5	224	20	0.045	1.00	4%	Pass
LoRa	902.3-914.9	17.3	0.0	0.0	17.3	53	20	0.011	0.60	2%	Pass
Zigbee	2405-2480	25.5	1.0	0.0	26.5	450	20	0.089	1.00	9%	Pass
Bluetooth LE	2402-2480	8.2	1.0	0.0	9.2	8	20	0.002	1.00	0%	Pass

2.4 Simultaneous Conditions

Simultaneous transmissions are evaluated using the equation and highest results from each technology.

$$\frac{S_1}{S_1 \text{ Limit}} + \frac{S_2}{S_2 \text{ Limit}} + \dots + \frac{S_n}{S_n \text{ Limit}} \leq 1.0$$

Calculation

LTE Band 12 = 25%

WLAN 2.4 = 23 %

Zigbee = 9%

LoRa = 2%

BLE = 0%

Bluetooth BDR = 0%

Total Simultaneous = 59% which is < 100% - Compliant

3 Revision History

Revision Level	Description of changes	Revision Date
0	Initial Release	01 May 2023
1	Updated distance to 20cm	12 June 2023