




FCC ISED RF Exposure Evaluation Report

Test Report Number	GLS-21120843-LC-FCC-IC-RF Exposure	
FCC ID	2AH4HATD530	
ISED ID	21385-ATD530	
Applicant	Mobilogix	
Applicant Address	5500 Trabuco Road, Suite 150, Irvine, CA 92620	
Product Name	BAT-SUR	
Model (s)	ATD530D	
Date of Receipt	12/09/2021	
Date of Test	12/13/2021-12/21/2021	
Report Issue Date	12/22/2021	
Test Standards	47 CFR §1.1307(b), 47 CFR §1.1310	
	RSS-102 Issue 5: Feb 2021	
Test Result	PASS	
	Issued by:	
	<p>Vista Compliance Laboratories 1261 Puerta Del Sol, San Clemente, CA 92673 USA www.vista-compliance.com</p>	
 <hr/> <p>Devin Tai (Test Engineer)</p>	 <hr/> <p>David Zhang (Technical Manager)</p>	
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REVISION HISTORY

Report Number	Version	Description	Issued Date
GLS-21120843-LC-FCC-IC-RF Exposure	01	Initial report	12/22/2021

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1 General Information

1.1 Applicant

Applicant	Mobilogix, Inc.
Applicant address	5500 Trabuco Road, Suite 150, Irvine, CA 92620
Manufacturer	Mobilogix, Inc.
Manufacturer Address	5500 Trabuco Road, Suite 150, Irvine, CA 92620

1.2 Product information

Product Name	BAT-SUR
Model Number	Single-use Recyclable Global Tracker with NIST Traceable Sensors
Family Models	ATD530D
Serial Number	866456054323306
Frequency Band	GSM/GPRS/EDGE 850: 824 MHz ~ 849MHz GSM/GPRS/EDGE 1900: 1850 MHz ~ 1910MHz LTE Band 2: 1850~1910MHz LTE Band 4: 1710~1755MHz LTE Band 12: 699~716MHz LTE Band 13: 777~787MHz LTE Band 25: 1850~1915MHz LTE Band 26: 814~849MHz NB-IOT Band 2: 1850~1910MHz NB-IOT Band 4: 1710~1755MHz NB-IOT Band 5: 824~849MHz NB-IOT Band 12: 699~716MHz NB-IOT Band 13: 777~787MHz NB-IOT Band 71: 663~698MHz
Type of modulation	GSM/GPRS/EDGE: GMSK, 8PSK LTE CAT-M1: QPSK, 16QAM LTE NB-IOT: BPSK, QPSK
Equipment Class	PCB
Antenna Information	Internal LPWA Antenna (P/N: AVX/Ethertronics 1004795) GSM 850: -3.2dBi, PCS 1900:0.83dBi LTE B2/B4/B25: 0.83dBi LTE B5/B12/B13/B26/B71: -3.2dBi
Clock Frequencies	N/A
Input Power	3 VDC (battery powered, 2 x AA batteries)
Power Adapter Manufacturer/Model	N/A
Power Adapter SN	N/A
Hardware version	N/A
Software version	N/A
Simultaneous Transmission	N/A
Additional Info	EUT contains cellular module that has received FCC and ISED single modular approval. (FCC ID: 2AJYU-8VC0001 / ISED ID: 23761-8VC0001). There isn't any other transmitter that co-locates with this module.

1.3 Test standard and method

Test standard	47 CFR §1.1307(b), 47 CFR §1.1310 RSS-102 Issue 5: Feb 2021
Test method	47 CFR §1.1307(b), 47 CFR §1.1310 RSS-102 Issue 5: Feb 2021

2 Test Site Information

Lab performing tests	Vista Laboratories, Inc.
Lab Address	1261 Puerta Del Sol, San Clemente, CA 92673 USA
Phone Number	+1 (949) 393-1123
Website	www.vista-compliance.com

3 Test Results

3.1 FCC MPE CALCULATION

RF Exposure Requirements:

47 CFR §1.1307(b)

RF Radiation Exposure Limits:

47 CFR §1.1310

RF Radiation Exposure Guidelines:

FCC OST/OET Bulletin Number 65

EUT Frequency Band:

GSM/GPRS/EDGE 850: 824 MHz ~ 849MHz
 GSM/GPRS/EDGE 1900: 1850 MHz ~ 1910MHz
 LTE CAT-M1 Band 2: 1850~1910MHz
 LTE CAT-M1 Band 4: 1710~1755MHz
 LTE CAT-M1 Band 12: 699~716MHz
 LTE CAT-M1 Band 13: 777~787MHz
 LTE CAT-M1 Band 25: 1850~1915MHz
 LTE CAT-M1 Band 26: 814~849MHz
 NB-IOT Band 2: 1850~1910MHz
 NB-IOT Band 4: 1710~1755MHz
 NB-IOT Band 5: 824~849MHz
 NB-IOT Band 12: 699~716MHz
 NB-IOT Band 13: 777~787MHz
 NB-IOT Band 71: 663~698MHz

Limits for General Population/Uncontrolled Exposure in the band of:

300 - 1500 MHz,

Power Density Limit:

f/1500 mW/cm²

Limits for General Population/Uncontrolled Exposure in the band of:

1500 - 100,000 MHz

Power Density Limit:

1 mW / cm²

Equation: $S = PG / 4\pi R^2$ or $R = \sqrt{PG / 4\pi S}$

Where, S = Power Density

P = Power Input to Antenna

G = Antenna Gain

R = distance to the center of radiated antenna

Prediction distance 20 cm

Radio	Frequency (MHz)	Max Conducted Output Power (dBm)	Antenna Gain (dBi)	Separation distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
GSM850	824-849	30.34	-3.2	20	0.103	0.549
GSM1900	1850-1910	30.38	0.83	20	0.263	1
LTE CAT-M1 Band 2	1850-1910	23.9	0.83	20	0.059	1
LTE CAT-M1 Band 4	1710-1755	23.25	0.83	20	0.051	1
LTE CAT-M1 Band 12	699-716	24.31	-3.2	20	0.026	0.466
LTE CAT-M1 Band 13	777-787	23.84	-3.2	20	0.023	0.518
LTE CAT-M1 Band 25	1850-1915	23.87	0.83	20	0.059	1
LTE CAT-M1 Band 26	814-849	24.87	-3.2	20	0.029	0.543
NB-IOT Band 2	1850-1910	21.55	0.83	20	0.034	1
NB-IOT Band 4	1710-1755	21.61	0.83	20	0.035	1
NB-IOT Band 5	824-849	23.12	-3.2	20	0.020	0.549
NB-IOT Band 12	699-716	22.75	-3.2	20	0.018	0.466
NB-IOT Band 13	777-787	21.93	-3.2	20	0.015	0.518
NB-IOT Band 71	663-698	23.05	-3.2	20	0.019	0.442

The above results show that the device complies with the MPE requirement.

3.2 ISED RF Exposure Evaluation

RF Exposure Requirements:

RF Radiation Exposure Limits:

RF Radiation Exposure Guidelines:

EUT Frequency Band:

RSS-102 Issue 5: Mar 2015 (Amd1 2021)

RSS-102 Issue 5: Mar 2015 (Amd1 2021)

RSS-102 Issue 5: Mar 2015 (Amd1 2021)

GSM/GPRS/EDGE 850: 824 MHz ~ 849MHz
 GSM/GPRS/EDGE 1900: 1850 MHz ~ 1910MHz
 LTE CAT-M1 Band 2: 1850~1910MHz
 LTE CAT-M1 Band 4: 1710~1755MHz
 LTE CAT-M1 Band 12: 699~716MHz
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 LTE CAT-M1 Band 25: 1850~1915MHz
 LTE CAT-M1 Band 26: 814~849MHz
 NB-IOT Band 2: 1850~1910MHz
 NB-IOT Band 4: 1710~1755MHz
 NB-IOT Band 5: 824~849MHz
 NB-IOT Band 12: 699~716MHz
 NB-IOT Band 13: 777~787MHz
 NB-IOT Band 71: 663~698MHz

Limits for General Population/Uncontrolled Exposure in the band of: 300 - 6,000 MHz

Exemption limit for Routine Evaluation: $1.31 \times 10^{-2} f_{0.6834} W$

Radio	Frequency (MHz)	Max Conducted Output Power (dBm)	Antenna Gain (dBi)	Max E.I.R.P (dBm)	Max E.I.R.P (W)	MPE Limit (mW/ cm ²)
GSM850	824-849	30.34	-3.2	27.14	0.518	1.288
GSM1900	1850-1910	30.38	0.83	31.21	1.321	2.239
LTE CAT-M1 Band 2	1850-1910	23.90	0.83	24.73	0.297	2.239
LTE CAT-M1 Band 4	1710-1755	23.25	0.83	24.08	0.256	2.122
LTE CAT-M1 Band 12	699-716	24.31	-3.2	21.11	0.129	1.151
LTE CAT-M1 Band 13	777-787	23.84	-3.2	20.64	0.116	1.238
LTE CAT-M1 Band 25	1850-1915	23.87	0.83	24.7	0.295	2.239
LTE CAT-M1 Band 26	814-849	24.76	-3.2	21.56	0.143	1.278
NB-IOT Band 2	1850-1910	21.55	0.83	22.38	0.173	2.239
NB-IOT Band 4	1710-1755	21.61	0.83	22.44	0.175	2.122
NB-IOT Band 5	824-849	23.12	-3.2	19.92	0.098	1.288
NB-IOT Band 12	699-716	22.75	-3.2	19.55	0.090	1.151
NB-IOT Band 13	777-787	21.93	-3.2	18.73	0.075	1.238
NB-IOT Band 71	663-698	23.05	-3.2	19.85	0.097	1.110

The above results show that the E.I.R.P of this device is below the exemption limit for Routine Evaluation.