



RF EXPOSURE REPORT

Applicant Name : Shenzhen Mictrack Electronics Co.,Ltd.
Address : 706,United Building, Donghuan 1st Road, Longhua District,
Shenzhen, China
Report Number : SZ4220615-26461E
FCC ID: 2A7CE-MT700

Test Standard (s)
FCC PART 1.1307 (b)

Sample Description

Product: Asset GPS Tracker
Trade Mark: N/A
Tested Model: MT700
Multiple Model: MT700-N, MT700-W, MT700-NW
Date Received: 2022-06-15
Report Date: 2022-07-04

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Edgar.Wang

Edgar.Wang
EMC Engineer

Approved By:

Robert Li

Robert Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".

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Shenzhen Accurate Technology Co., Ltd.

1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86 755-26503290

Fax: +86 755-26503396

Web: www.atc-lab.com

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Asset GPS Tracker
Tested Model	MT700
Multiple Model	MT700-N, MT700-W, MT700-NW
Model difference	Please refer to DOS
Frequency Range	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Cat M1 / NB-IoT: Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) Band 5: 824-849MHz(TX); 869-894MHz(RX) Band 12: 699-716MHz(TX); 729-746MHz(RX) Band 13: 777-787MHz(TX); 746-756MHz(RX) Band 26: 814-849MHz(TX); 859-894MHz(RX) 2.4G Wi-Fi: 2412-2462/2422-2452MHz (TX/RX)
Modulation Technique	GSM: GMSK, 8PSK LTE Cat M1 / NB-IoT: BPSK, QPSK, 16QAM 2.4G Wi-Fi: DSSS, OFDM
Voltage Range	DC 5V
Sample serial number	SZ4220615-26461E-EM-S1 (Assigned by ATC)
Sample/EUT Status	Good condition

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189.

Accredited by American Association for Laboratory Accreditation (A2LA). The Certificate Number is 4297.01

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0016. The Registration Number is 5077A.

FCC § 1.1307(b) – RF EXPOSURE

Applicable Standard

According to §1.1307(b), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D04 Interim General RF Exposure Guidance v01, clause 2.1.3.1-SAR-Based Exemption:

A more comprehensive exemption, considering a variable power threshold that depends on both the separation distance and power, is provided in § 1.1307(b)(3)(i)(B). This exemption is applicable to the frequency range between 300 MHz and 6 GHz, with test separation distances between 0.5 cm and 40 cm, and for all RF sources in fixed, mobile, and portable device exposure conditions.

Accordingly, a RF source is considered an RF exempt device if its available maximum time-averaged (matched conducted) power or its effective radiated power (ERP), whichever is greater, are below a specified threshold. This exemption threshold was derived based on general population 1-g SAR requirements and is detailed in Appendix C.

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

Where

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

and

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

d = the separation distance (cm);

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th}, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

P_{th,i} = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

ERP_j = the ERP of fixed, mobile, or portable RF source j.

ERP_{th,j} = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least λ/2π according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

Evaluated_k = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

Exposure Limit_k = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from § 1.1310 of this chapter.

Result

For worst case:

For Wi-Fi Module:

Mode	Frequency	Tune-Up Maximum Power	Antenna Gain		ERP		ERP _{20cm}	Distance	SAR-Based Exclusion Threshold	SAR-Based Exclusion
	MHz	dBm	dBi	dBd	dBm	mW	mW	mm	(mW)	
2.4G Wi-Fi	2412-2462	18	0	-2.15	15.85	38.46	3060	200	3060	Yes

For LTE module:

Mode	Frequency	Tune-Up Maximum Time based Average Power	Antenna Gain		ERP		ERP _{20cm}	Distance	SAR-Based Exclusion Threshold	SAR-Based Exclusion
	MHz	dBm	dBi	dBd	dBm	mW	mW	mm	mW	
GSM850	824-849	23.97	3.27	1.12	25.09	322.85	2040f	200	1680	Yes
PCS1900	1850-1910	20.97	2.71	0.56	21.53	142.23	3060	200	3060	Yes
LTE Cat M1 Band 2	1850-1910	24	2.71	0.56	24.56	285.76	3060	200	3060	Yes
LTE Cat M1 Band 4	1710-1755	23	0.32	-1.83	21.17	130.92	3060	200	3060	Yes
LTE Cat M1 Band 5	824-849	24	3.27	1.12	25.12	325.09	2040f	200	1680	Yes
LTE Cat M1 Band 12	699-716	24	3.13	0.98	24.98	314.77	2040f	200	1425	Yes
LTE Cat M1 Band 13	777-787	24	3.52	1.37	25.37	344.35	2040f	200	1585	Yes
LTE Cat M1 Band 26	814-849	24	3.27	1.12	25.12	325.09	2040f	200	1660	Yes
LTE NB-IoT Band 2	1850-1910	25	2.71	0.56	25.56	359.75	3060	200	3060	Yes
LTE NB-IoT Band 4	1710-1755	25	0.32	-1.83	23.17	207.49	3060	200	3060	Yes
LTE NB-IoT Band 5	824-849	25	3.27	1.12	26.12	409.26	2040f	200	1680	Yes
LTE NB-IoT Band 12	699-716	25	3.13	0.98	25.98	396.28	2040f	200	1425	Yes
LTE NB-IoT Band 13	777-787	25	3.52	1.37	26.37	433.51	2040f	200	1585	Yes
LTE NB-IoT Band 26	814-849	25	3.27	1.12	26.12	409.26	2040f	200	1660	Yes

Note 1: 0dBd=2.15dBi.

Note 2: f = frequency in GHz.

Note 3: About the Tune-up power, please refer to FCC ID: 2AQ5K-M169 for 2.4G Wi-Fi module, and FCC ID: XMR201707BG96 for LTE module.

Note 4: The Wi-Fi can transmit at the same time with the WWAN.

Simultaneous transmitting consideration: (Worst case)

$$\text{The ratio} = \text{ERP}_{2.4\text{G Wi-Fi}} / \text{limit} + \text{ERP}_{\text{NB-IoT Band 12}} / \text{limit} = 38.46 / 3060 + 396.28 / 1425 = 0.291 < 1.0$$

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant.

******* END OF REPORT *******