

MPE REPORT

FCC ID: 2AQ3N-TK318

Date of issue: Sept. 03, 2018

Report Number:	MTi180828E127
Sample Description:	GPS Tracker
Model(s):	TK318, TK309, TK312, TK315, GT02E, W208, W408, W608, W808
Applicant:	Dongguan SmartTrack Electronic Technology Co., Ltd.
Address:	No525, Jinxing Road, Juhui E Valley High Tech Industrial Park, Dongguan, Guangdong, China.
Date of Test:	June 23, 2018 to Sept. 03, 2018

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

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TEST RESULT CERTIFICATION	
Applicant's name:	Dongguan SmartTrack Electronic Technology Co., Ltd.
Address:	No525, Jinxing Road, Juhui E Valley High Tech Industrial Park, Dongguan, Guangdong, China.
Manufacture's Name:	Dongguan SmartTrack Electronic Technology Co., Ltd.
Address:	No525, Jinxing Road, Juhui E Valley High Tech Industrial Park, Dongguan, Guangdong, China.
Product name:	GPS Tracker
Trademark:	N/A
Model and/or type reference .:	TK318
Series model	TK309, TK312, TK315, GT02E, W208, W408, W608, W808
RF Exposure Procedures.....:	KDB 447498 D01 v06

This device described above has been tested by Shenzhen Microtest Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:

Leo Su

Leo Su

Sept. 03 , 2018

Reviewed by:

Blue Zheng

Blue Zheng

Sept. 03 , 2018

Approved by:

Smith Chen

Smith Chen

Sept. 03 , 2018

RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) 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
300-1,500			f/300	6
1,500-100,000			5	6
(B) 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
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm(20cm)

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

2G:

Operation Frequency: 2G GSM/GPRS 850:820-850MHZ,

GSM/GPRS 1900:1850-1910MHZ,

3G BAND II:1850-1910MHZ,

BAND V:824-850MHZ,

Power density limited: 1mW/ cm²

Antenna Type: 2G/3G Antenna: PIFA Antenna;

2G/3G antenna gain: 1.1dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(1.1/10)}=1.29$

Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
GSM 850	GSM(GMSK)	32.77	32±1	33	1995.262315	1.29	0.51206	0.55
GPRS 850	GPRS(GMSK, 1 Tx slot)	31.76	31±1	32	1584.893192	1.29	0.40674	0.55
	GPRS(GMSK, 2 Tx slot)	31.84	31±1	32	1584.893192	1.29	0.40674	0.55
	GPRS(GMSK, 3 Tx slot)	31.21	31±1	32	1584.893192	1.29	0.40674	0.55
	GPRS(GMSK, 4 Tx slot)	31.88	31±1	32	1584.893192	1.29	0.40674	0.55
GSM1900	GSM(GMSK)	32.17	32±1	33	1995.262315	1.29	0.51206	1
GPRS 1900	GPRS(GMSK, 1 Tx slot)	31.17	31±1	32	1584.893192	1.29	0.40674	1
	GPRS(GMSK, 2 Tx slot)	31.02	31±1	32	1584.893192	1.29	0.40674	1
	GPRS(GMSK, 3 Tx slot)	31.04	31±1	32	1584.893192	1.29	0.40674	1
	GPRS(GMSK, 4 Tx slot)	31.77	31±1	32	1584.893192	1.29	0.40674	1

Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm2)	(mW/cm2)
		Ant A	Ant A	(dBm)	(mW)	Numeric		
WCDMA 1900	RMC(QPSK)	27.17	27±1	28	630.9573445	1.29	0.16193	1
	HSDPA(QPSK, 1 Tx slot)	29.45	29±1	30	1000	1.29	0.25664	1
	HSDPA(QPSK, 2 Tx slot)	28.85	28±1	29	794.3282347	1.29	0.20385	1
	HSDPA(QPSK, 3 Tx slot)	28.81	28±1	29	794.3282347	1.29	0.20385	1
	HSDPA(QPSK, 4 Tx slot)	28.85	28±1	29	794.3282347	1.29	0.20385	1
	HSUPA(QPSK, 1 Tx slot)	26.96	26±1	27	501.1872336	1.29	0.12862	1
	HSUPA(QPSK, 2 Tx slot)	26.65	26±1	27	501.1872336	1.29	0.12862	1
	HSUPA(QPSK, 3 Tx slot)	26.71	26±1	27	501.1872336	1.29	0.12862	1
	HSUPA(QPSK, 4 Tx slot)	26.83	26±1	27	501.1872336	1.29	0.12862	1

Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm2)	(mW/cm2)
		Ant A	Ant A	(dBm)	(mW)	Numeric		
WCDMA 850	RMC(QPSK)	25.70	25±1	26	398.1071706	1.29	0.10217	0.56
	HSDPA(QPSK, 1 Tx slot)	24.47	24±1	25	316.227766	1.29	0.08116	0.56
	HSDPA(QPSK, 2 Tx slot)	23.74	23±1	24	251.1886432	1.29	0.06446	0.56
	HSDPA(QPSK, 3 Tx slot)	23.90	23±1	24	251.1886432	1.29	0.06446	0.56
	HSDPA(QPSK, 4 Tx slot)	23.95	23±1	24	251.1886432	1.29	0.06446	0.56
	HSUPA(QPSK, 1 Tx slot)	20.86	20±1	21	125.8925412	1.29	0.03231	0.56
	HSUPA(QPSK, 2 Tx slot)	20.62	20±1	21	125.8925412	1.29	0.03231	0.56
	HSUPA(QPSK, 3 Tx slot)	20.71	20±1	21	125.8925412	1.29	0.03231	0.56
	HSUPA(QPSK, 4 Tx slot)	20.67	20±1	21	125.8925412	1.29	0.03231	0.56

Conclusion:

For the max result : $0.51206 \leq 0.55$ for 1g SAR, No SAR is required.

----END OF REPORT----