1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant:	Shenzhen Benway Technology Co., Limited
Address of applicant:	2nd floor, No 1 factory building, LianYi Street, Liuyue, Henggang, Longgang, ShenZhen, China.
Manufacturer:	Shenzhen Benway Technology Co., Limited
Address of manufacturer:	2nd floor, No 1 factory building, LianYi Street, Liuyue, Henggang, Longgang, ShenZhen, China.

General Description of EUT:

Product Name:	GPS TRACKER
Brand Name:	Benway
Model No.:	ET300
Adding Model(s):	BW02, BW08, BW10, GT02D
FCC ID:	2AM8F-BW
Rated Voltage:	DC 9-100V, Battery DC 3.7V for backup

Technical Characteristics of EUT:

Support Networks:	GSM, GPRS
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS 850: 824~849MHz GSM/GPRS 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS 850: 869~894MHz GSM/GPRS 1900: 1930~1990MHz
Max RF Output Power:	GSM850: 31.74dBm, GSM1900: 29.05dBm
Type of Modulation:	GMSK
Type of Antenna:	Integral Antenna
Antenna Gain:	0dBi
GPRS Class:	Class 12
Device Category:	Mobile Device

Note 1: The EUT Main board support GSM850/900/DCS1800/PCS1900 function. It is intended for Multimedia Message Service (MMS) transmission. It is equipped with GPRS class 12 for GSM850/900/DCS1800/PCS1900, GPS functions.

Note 2: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model ET300, but the circuit and the electronic construction do not change, declared by the manufacturer.

1.2 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density

1.3 MPE Calculation Method

$S = (30*P*G) / (377*R^2)$

S = power density (in appropriate units, e.g., mw/cm^2)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

For GSM850:
Maximum Tune-Up output power: 32.0 (dBm)
Maximum peak output power at antenna input terminal: 1584.89 (mW)
Prediction distance: >20(cm)
Prediction frequency: 824.2 (MHz)
Antenna gain: 0 (dBi)
Directional gain (numeric gain):1.0
The worst case is power density at prediction frequency at 20cm: 0.32(mw/cm^2)
MPE limit for general population exposure at prediction frequency: 0.55 (mw/cm^2)

For GSM1900:
Maximum Tune-Up output power: 29.5 (dBm)
Maximum peak output power at antenna input terminal: 891.25 (mW)
Prediction distance: >20(cm)
Prediction frequency: 1850.2 (MHz)
Antenna gain: 0 (dBi)
Directional gain (numeric gain): 1.0
The worst case is power density at prediction frequency at 20cm: 0.18(mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Result: Pass

1.5 Test Setup Photos