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Report No.: SZEM141100608803
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SAR Evaluation Report

Application No: SZEM1411006088HR
Applicant: Aspenta International FZ-LLC
Product Name: GPS Tracker
Model No.(EUT): PST-001

Trade Mark:



FCC ID: 2ADTO-PST-001
Standards: 47 CFR Part 2.1093 (2014)
KDB447498D01 General RF Exposure Guidance v05r20
Tracking Number: 340466
Date of Receipt: 2015-02-02
Date of Test: 2015-02-03 to 2015-02-06
Date of Issue: 2015-02-10

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

Authorized Signature:



Jack Zhang
EMC Laboratory Manager

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2015-02-10		Original

Authorized for issue by:				
Tested By		 (Chris Zhong)/Project Engineer		2015-02-06
				Date
Prepared By		 (Sade Luo) /Clerk		2015-02-10
				Date
Checked By		 (Emen Li) /Reviewer		2015-02-10
				Date





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4 General Information

4.1 Client Information

Applicant:	Aspenta International FZ-LLC
Address of Applicant:	Premises:155 Floor:01 building:17 Dubai, United Arab Emirates

4.2 General Description of EUT

Product Name:	GPS Tracker
Model No.:	PST-001
Trade Mark:	
EUT Function:	GPS; GSM 850/1900; BT
Operation Frequency:	GSM850 824MHz~849MHz; 869MHz~894MHz PCS1900 1850MHz~1910MHz; 1930MHz~1990MHz Bluetooth 2402MHz~2480MHz GPS 1.575GHz
Bluetooth Version:	4.0
Modulation Type:	GSM: GMSK, QPSK BT: GFSK
Sample Type:	Portable production
Antenna Type:	Integral
Antenna Gain:	900MHz : 3dBi 1800MHz : 3dBi 2.4GHz : 3.4dBi
Battery	Li recharge battery 3.7V 300mAh
Power Supply:	Input:AC110-240V 50/60Hz 0.15A Output:DC5V 500mA
USB cable:	80cm unshield

4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

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4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1 & 4620C-2.

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.



5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v05r20

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

5.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

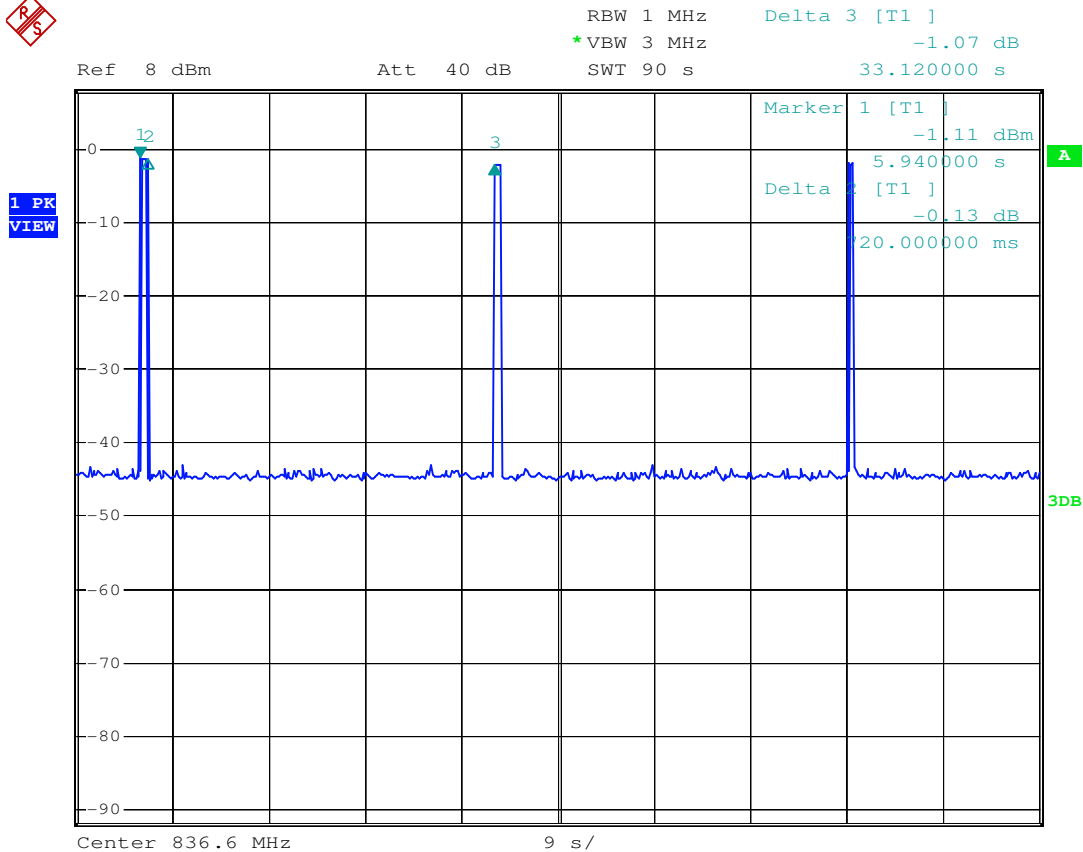
The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion



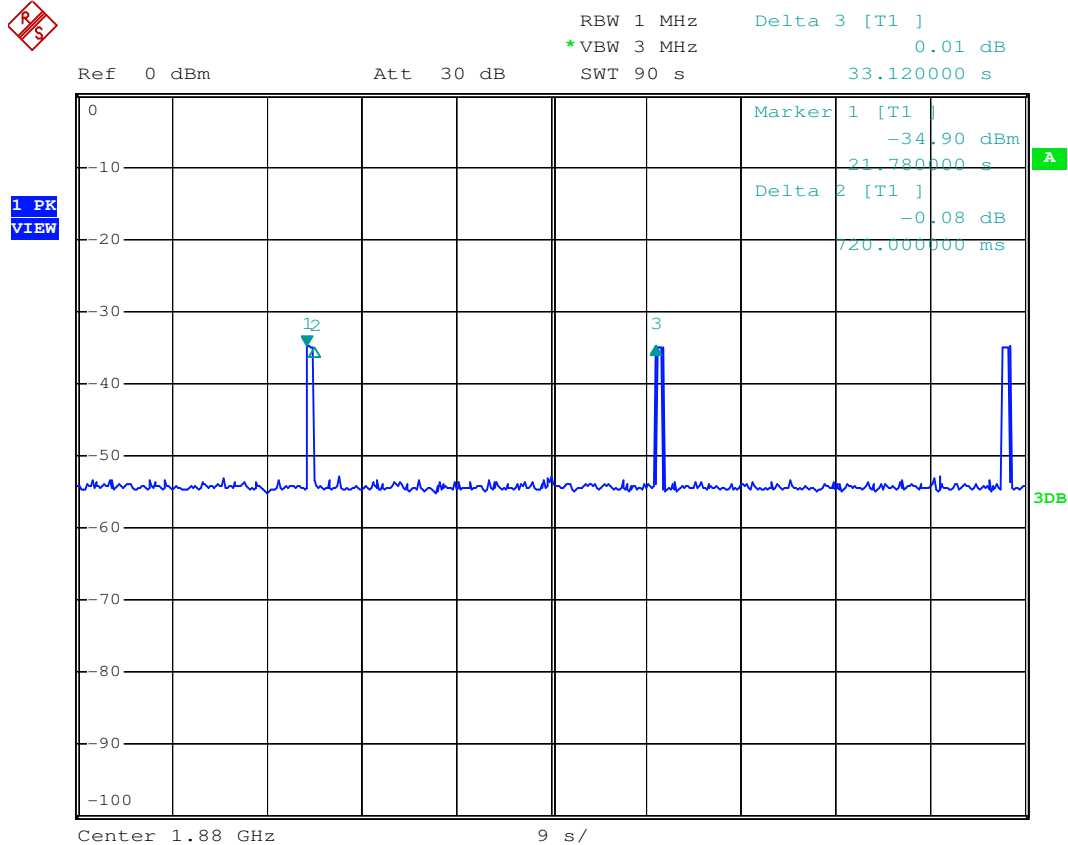
5.1.3 Duty Cycle Measurement

GSM 850:





GSM 1900:



For GSM 850 and GSM1900 , it support GSM only,contain 1 time slot. The time of a frame for GSM network is 4.615ms, every frame contains 8 timeslots, so the maximum transmission time is $4.615/8=0.576875$ ms,and the minimum time (shortest interval) between transmissions is 33.12s

So the **Duty Factor**= $10\log(0.576875/33120)=-47.59\text{dB}$



5.1.4 Conducted power measurement and calculation

Frequency band	Test ch./Freq.	Coducted Output Power(dBm)	Tune Up Max. Power(dBm)	Duty Cycle(dB)	Max. Average Output Power(dBm)	Max. Average Output Power(mW)
GSM850 (GSM only)	128/824.2	32.56	34	-47.59	-13.59	0.044
	190/836.6	32.53				
	251/848.8	32.49				
GSM1900 (GSM only)	512/1850.2	28.86	32	-47.59	-15.59	0.028
	661/1880	28.69				
	810/1909.8	28.61				
BT	0/2402	-0.28	1	0	1	1.259
	19/2440	-0.59				
	39/2480	-0.87				

5.1.5 Stand-alone SAR test evaluation

Per FCC KDB 447498 D01 v05r02, the SAR exclusion threshold for distances <50mm is defined by the following equation:

$$\frac{\text{Max Power of Channel(mW)}}{\text{Test Separation Dist(mm)}} * \sqrt{\text{Frequency(GHz)}} \leq 3.0$$

Note:

When the minimum *test separation distance* is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

- 1) Based on the Max. Average Output Power of GSM 850 and the antenna to use separation distance 5mm, Stand-alone SAR evaluation is not required for GSM 850; $[(0.044/5) * \sqrt{0.8488}] = 0.008 < 3.0$.
- 2) Based on the Max. Average Output Power of GSM 1900 and the antenna to use separation distance 5mm, Stand-alone SAR evaluation is not required for GSM 1900; $[(0.028/5) * \sqrt{1.9098}] = 0.008 < 3.0$
- 3) Based on the Max. Average Output Power of BT and the antenna to use separation distance 5mm, Stand-alone SAR evaluation is not required for BT; $[(1.259/5) * \sqrt{2.480}] = 0.4 < 3.0$