SGS-CSTC Standards Technical Services Co., Ltd.

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057
Telephone: +86 (0) 755 2601 2053
Fax: +86 (0) 755 2671 0594
Email: ee.shenzhen@sgs.com

SAR Evaluation Report

Application No.:	SZEM1411006090HR
Applicant:	Aspenta International FZ-LLC
Product Name:	GPS Tracker
Model No.(EUT):	CIT-001
Trade Mark:	aspenta Redefining Connectivity
FCC ID:	2ADTO-CIT-001
Standards:	47 CFR Part 2.1093 (2014) KDB447498D01 General RF Exposure Guidance v05 Tracking Number: 340466
Date of Receipt:	2014-11-06
Date of Test:	2014-12-16 to 2015-01-08
Date of Issue:	2015-04-23
Test Result :	**PASS***

* In the configuration tested, the EUT complied with the standards specified above.

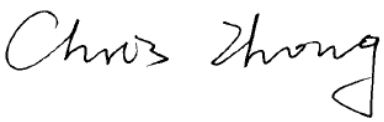
Authorized Signature:

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00		2015-04-23		Original

Authorized for issue by:				
Tested By		 **(Chris Zhong) /Project Engineer**		2015-01-08 **Date**
Prepared By		 **(Hedy Wen) /Clerk**		2015-04-23 **Date**
Checked By		 **(Emen Li) /Reviewer**		2015-04-23 **Date**

3 Contents

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.:	CIT-001
Trade Mark:	aspenta Redefining Connectivity
Sample Type:	Portable production
Antenna Type:	Integral
Antenna Gain:	Bluetooth:3.4dBi
	GSM850:2.5dBi GSM1900:2.5dBi
Battery:	Li recharge battery 3.7V 300mAh
Power Supply:	DC 12V

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.

SGS-CSTC EMC LAB SHEN ZHEN SGS 深圳

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 v05

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:

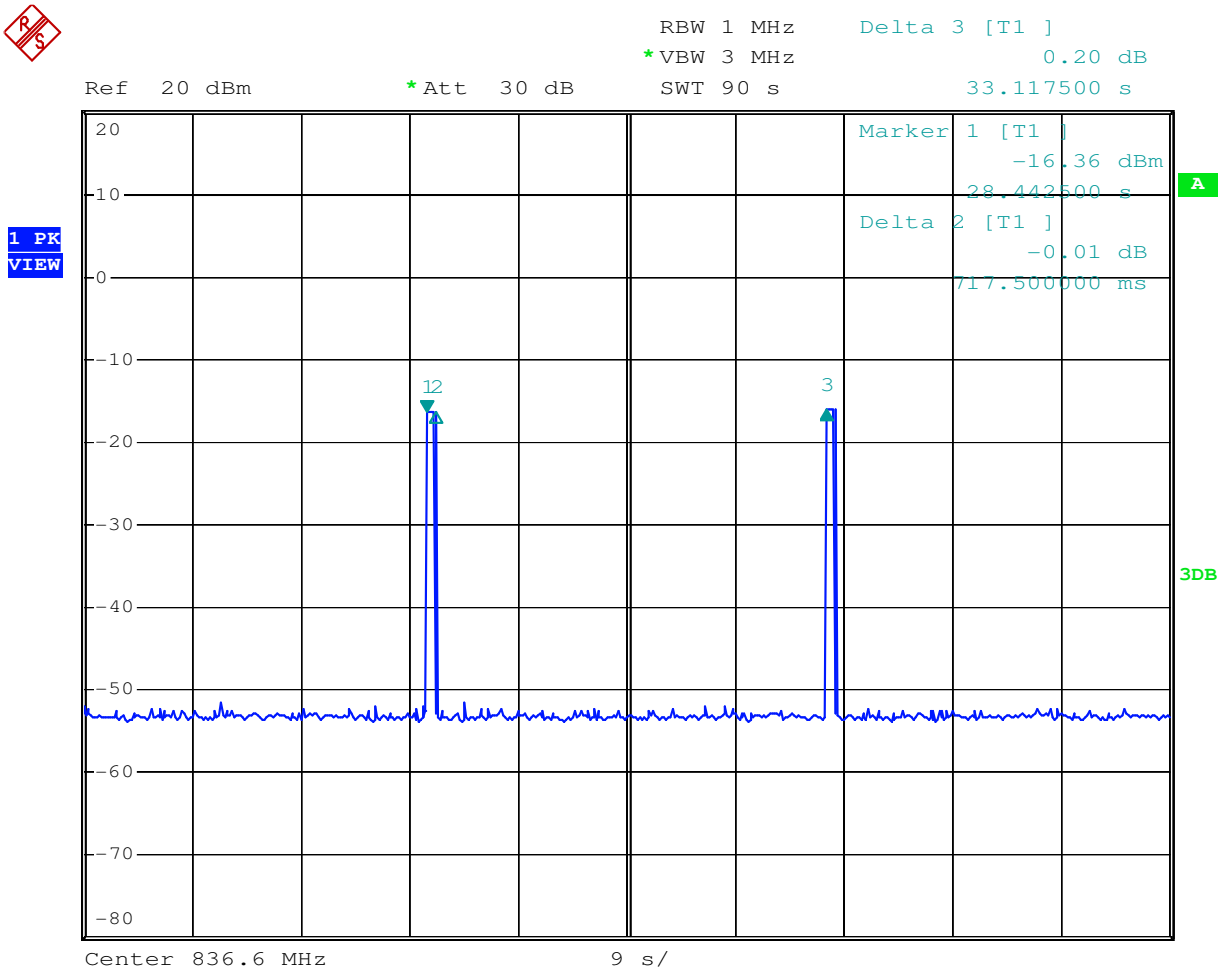
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(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

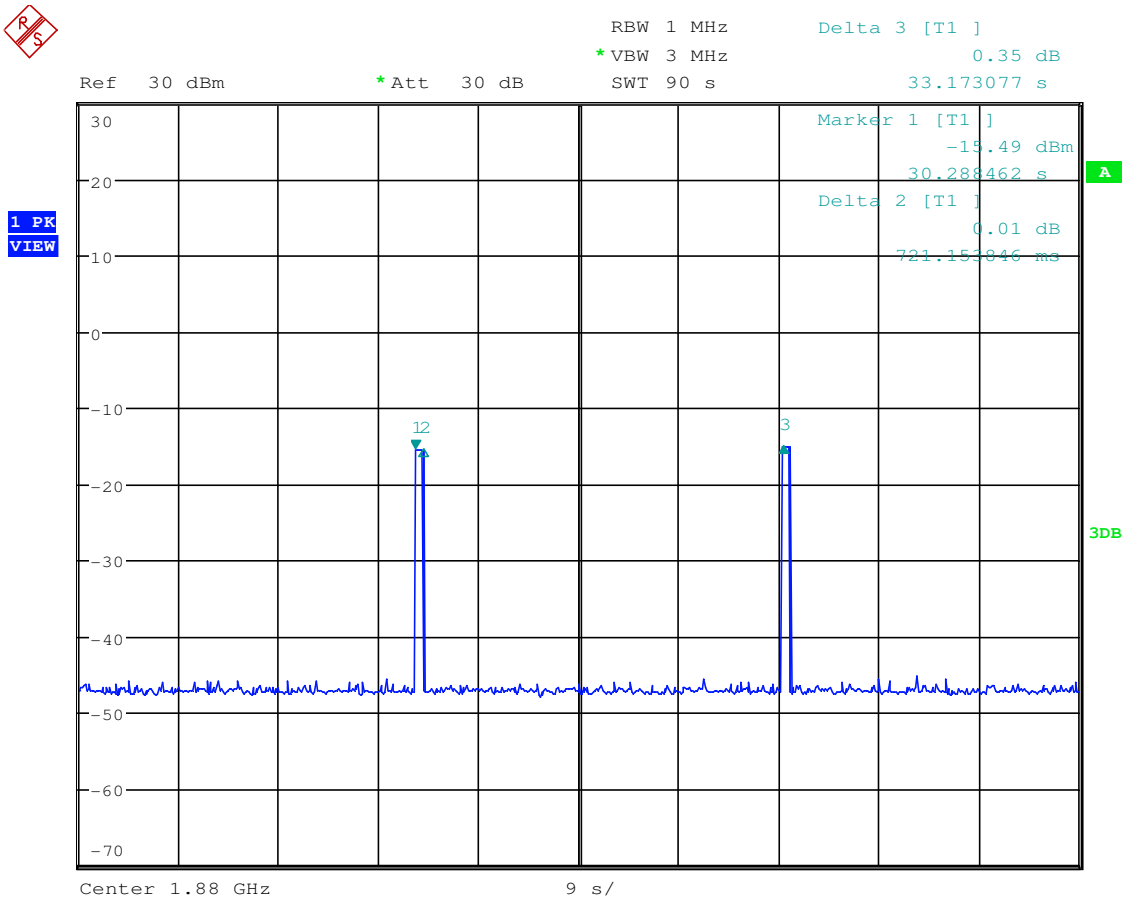
The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

5.1.3 Duty Cycle Measurement

GSM 850:



GSM 1900:



For GSM 850 , it supports GSM only,contains 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 33.1175s

So the **Duty Factor=10log(0.576875/33117.5) = -47.59dB**

For GSM GSM1900 , it supports GSM only,contains 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 33.173077s

So the **Duty Factor=10log(0.576875/33173.077) = -47.60dB**

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	32.37	33	-47.59	-14.59	0.035
	190/836.6	32.36				
	251/848.8	32.30				
GSM1900 (GSM only)	512/1850.2	30.13	31	-47.60	-16.6	0.022
	661/1880	29.35				
	810/1909.8	29.27				
BT	0/2402	-0.12	0	0	0	1
	19/2440	-0.96				
	39/2480	**-1.6**				

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; [(0.035/5)* √0.8488] = 0.006＜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; [(0.022/5)* √1.9098] = 0.006＜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; [(1.0/5)* √2.480] = 0.31＜3.0