

FCC Part 15B

Measurement and Test Report

For

Shenzhen Concox Information Technology Co., Ltd

Floor 4th, Building B, Gaoxinqi Industrial Park, Liuxian 1st Road,
District 67, Bao'an, Shenzhen, China

FCC ID: X7IGT800

Test Rule(s):	<u>FCC Part 15 Subpart B</u>
Product Description:	<u>Vehicle GPS Tracker</u>
Tested Model:	<u>GT800</u>
Report No.:	<u>STR17058334I-2</u>
Tested Date:	<u>2017-05-24 to 2017-06-02</u>
Issued Date:	<u>2017-06-10</u>
Tested By:	<u>Iven Guo / Engineer</u> <i>Iven Guo</i>
Reviewed By:	<u>Silin Chen / EMC Manager</u> <i>Silin Chen</i>
Approved & Authorized By:	<u>Jandy So / PSQ Manager</u> <i>Jandy So</i>
Prepared By:	

Shenzhen SEM.Test Technology Co., Ltd.
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C. (518101)
Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Shenzhen Concox Information Technology Co., Ltd
Address of applicant: Floor 4th, Building B, Gaoxinqi Industrial Park, Liuxian 1st Road, District 67, Bao'an, Shenzhen, China

Manufacturer: Shenzhen Concox Information Technology Co., Ltd
Address of manufacturer: Floor 4th, Building B, Gaoxinqi Industrial Park, Liuxian 1st Road, District 67, Bao'an, Shenzhen, China

General Description of EUT	
Product Name:	Vehicle GPS Tracker
Trade Name:	/
Model No.:	GT800
Adding Model(s):	GT800N, GT850, GT860, GT880
<i>Note: 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 GT800, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V
Rated Current:	800mAh
Rated Power:	/
Power Adapter Model:	/
Highest Internal Frequency:	260MHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen Concox Information Technology Co., Ltd in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. 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 and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Downloading & Charging	Connect to PC

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
power Cable	2.0	Unshielded	Without Ferrite
SOS cable	2.0	Unshielded	Without Ferrite
Microphone cable	3.0	Unshielded	Without Ferrite
speaker cable	2.0	Unshielded	Without Ferrite
control cable	2.0	Unshielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
PC	DELL	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2016-06-04	2017-06-03
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2016-06-04	2017-06-03
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-04	2017-06-03
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2016-06-04	2017-06-03
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-04	2017-06-03
SEMT-1042	Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-04	2017-06-03
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-04	2017-06-03
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2016-06-04	2017-06-03
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-04	2017-06-03

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

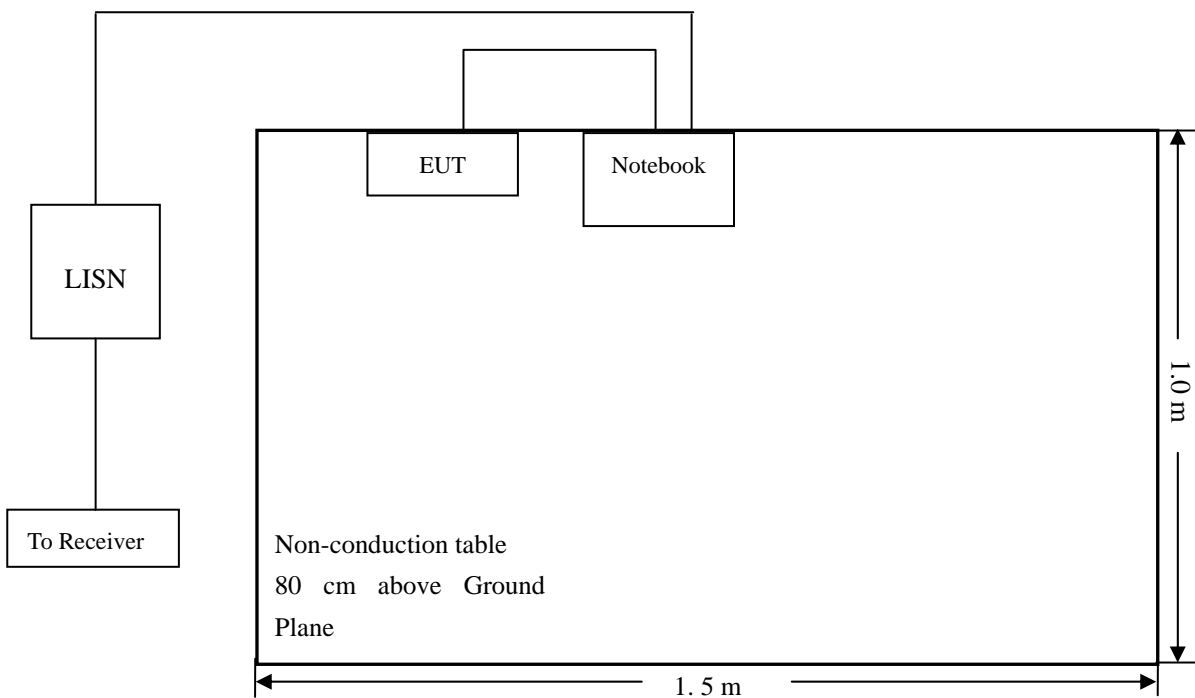
N/A: not applicable

3. Conducted Emissions

3.1 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.4 Summary of Test Results/Plots

According to the data in section 3.5, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

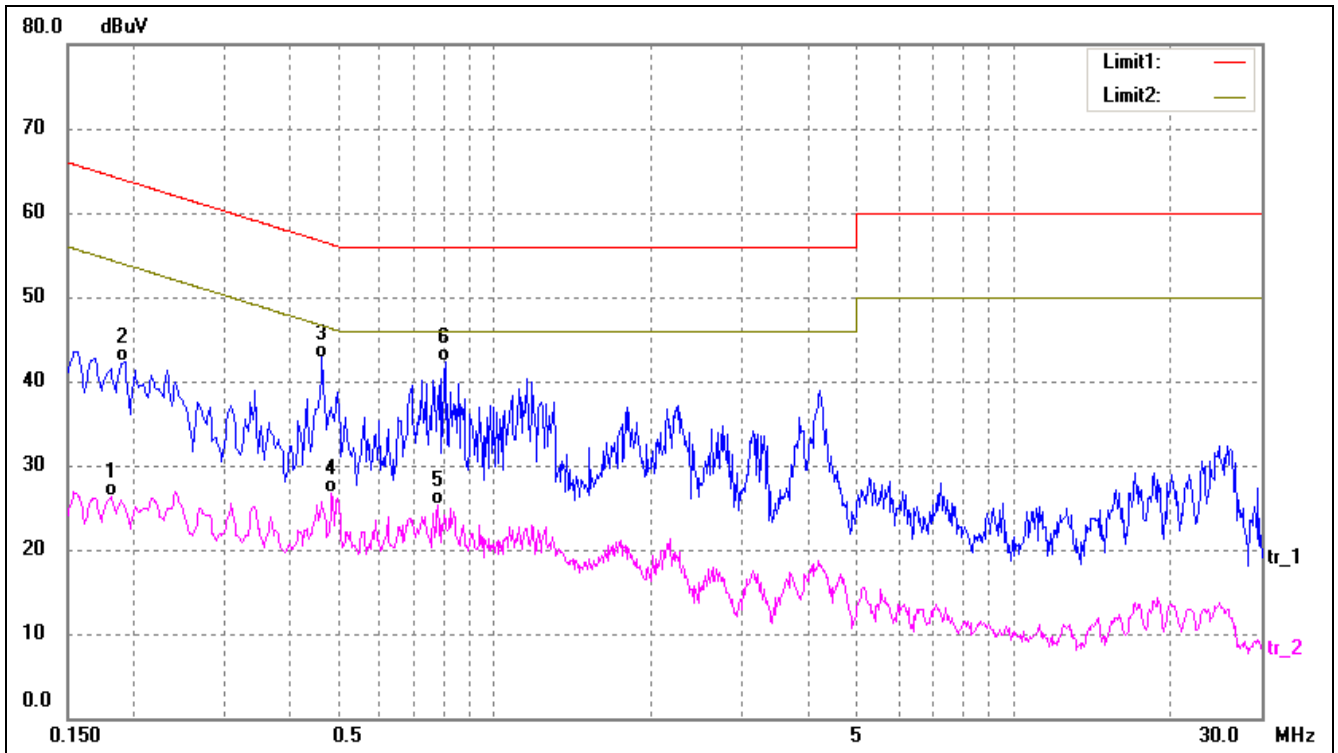
-9.99 dB at 0.4620 MHz in the Line, QP detector, 0.15-30MHz

3.5 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

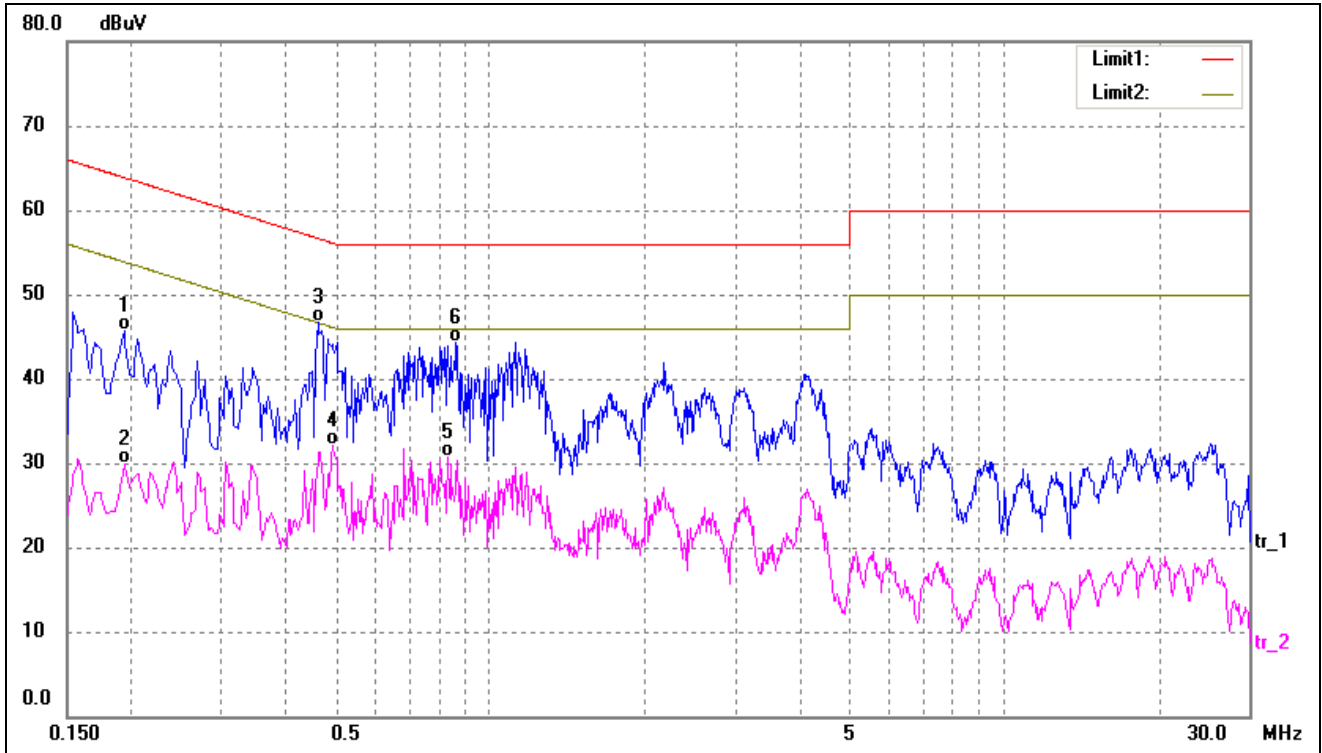
EUT: *Vehicle GPS Tracker*
 Tested Model: *GT800*
 Operating Condition: *TM1*
 Comment: *AC 120V/60Hz; USB 5V*

Test Specification: *Neutral*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1820	16.49	9.82	26.31	54.39	-28.08	AVG
2	0.1940	32.49	9.81	42.30	63.86	-21.56	QP
3	0.4660	33.00	9.80	42.80	56.58	-13.78	QP
4	0.4860	16.84	9.80	26.64	46.24	-19.60	AVG
5	0.7780	15.52	9.78	25.30	46.00	-20.70	AVG
6*	0.8060	32.50	9.78	42.28	56.00	-13.72	QP

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1940	35.87	9.81	45.68	63.86	-18.18	QP
2	0.1940	20.11	9.81	29.92	53.86	-23.94	AVG
3*	0.4620	36.87	9.80	46.67	56.66	-9.99	QP
4	0.4940	22.24	9.80	32.04	46.10	-14.06	AVG
5	0.8300	20.91	9.77	30.68	46.00	-15.32	AVG
6	0.8580	34.48	9.77	44.25	56.00	-11.75	QP

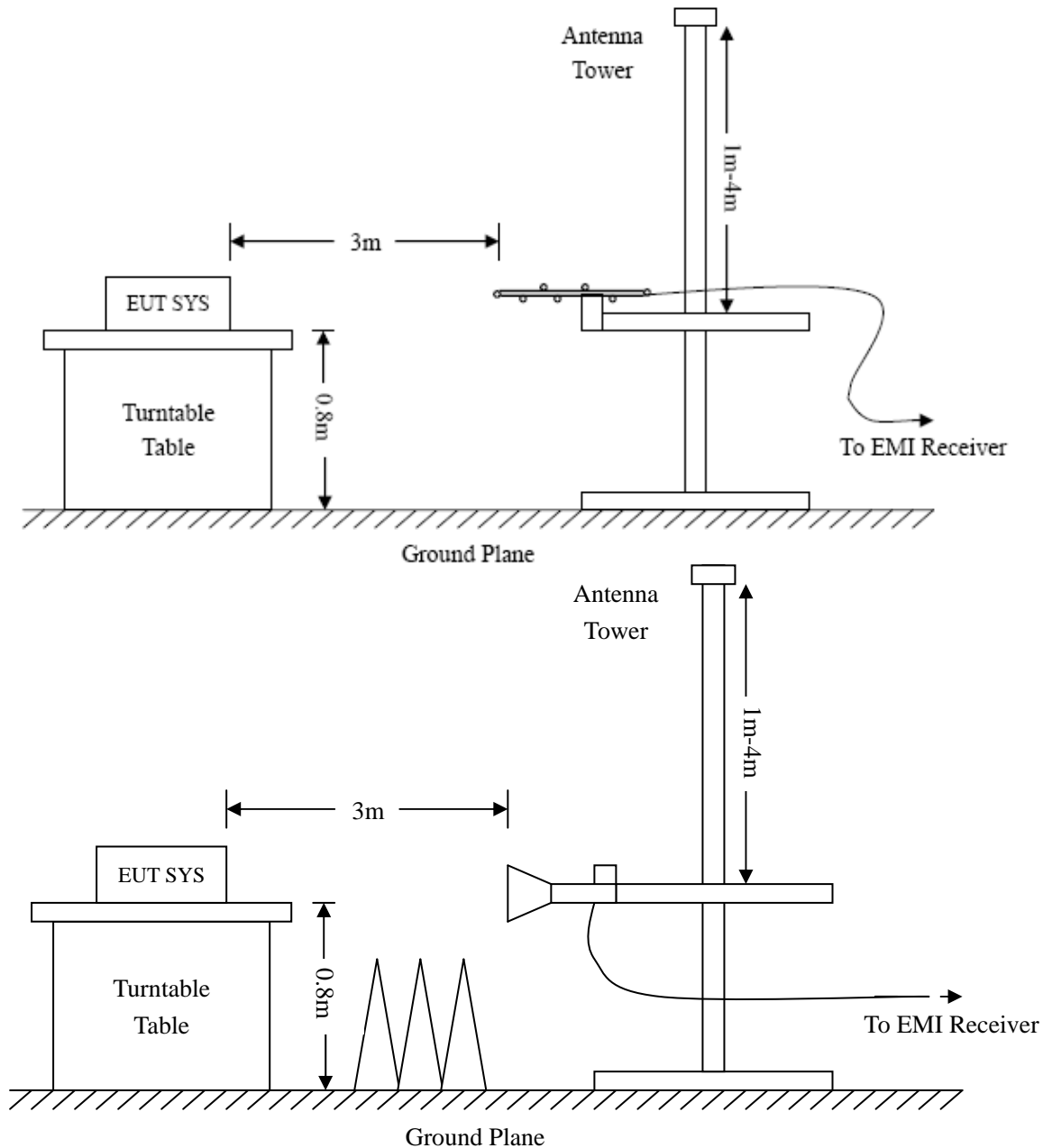
4. Radiated Emissions

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



4.2 Test Receiver Setup

Frequency :9kHz-30MHz
 RBW=10KHz,
 VBW =30KHz
 Sweep time= Auto
 Trace = max hold
 Detector function = peak

Frequency :30MHz-1GHz
 RBW=120KHz,
 VBW=300KHz
 Sweep time= Auto
 Trace = max hold
 Detector function = peak, QP

Frequency :Above 1GHz
 RBW=1MHz,
 VBW=3MHz(Peak), 10Hz(AV)
 Sweep time= Auto
 Trace = max hold
 Detector function = peak, AV

4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.4 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.5 Summary of Test Results/Plots

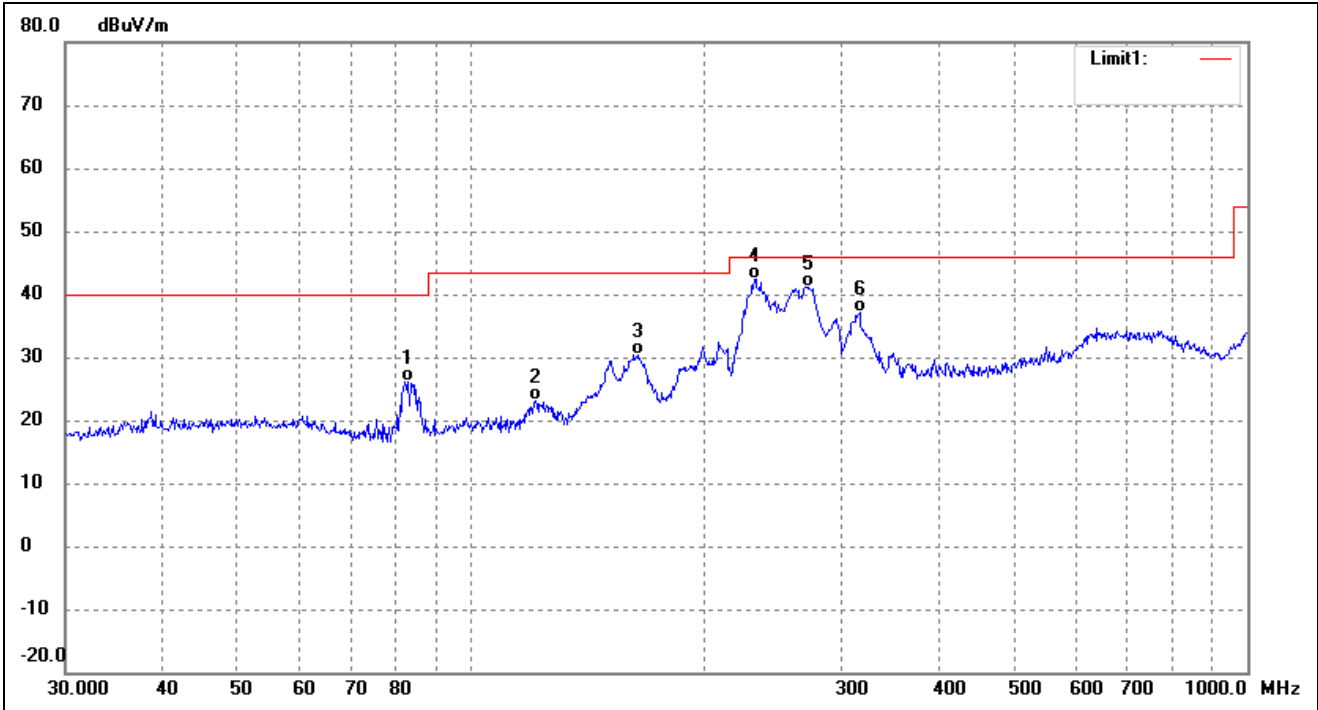
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-3.58 dB at 231.7179 MHz in the Horizontal polarization, 30MHz to 10 GHz, 3Meters

Plot of Radiated Emissions Test Data

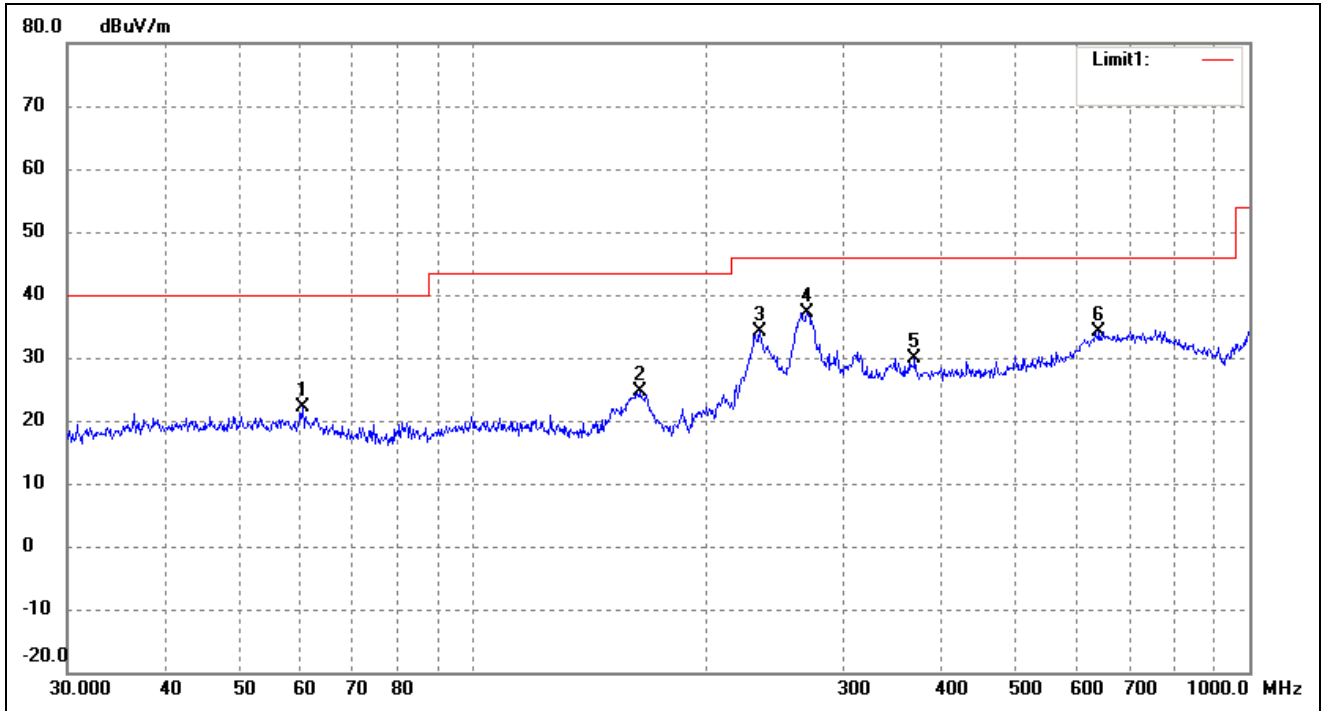
EUT: *Vehicle GPS Tracker*
 Tested Model: *GT800*
 Operating Condition: *TM1*
 Comment: *AC 120V/60Hz; USB 5V*

Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	82.9385	24.04	2.21	26.25	40.00	-13.75	70	100	QP
2	121.1231	18.45	4.72	23.17	43.50	-20.33	338	100	QP
3	164.3302	28.04	2.44	30.48	43.50	-13.02	72	100	QP
4	231.7179	34.02	8.40	42.42	46.00	-3.58	184	100	QP
5	271.3246	30.66	10.51	41.17	46.00	-4.83	127	100	QP
6	316.5890	25.17	11.96	37.13	46.00	-8.87	208	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	60.2801	17.09	4.98	22.07	40.00	-17.93	168	100	QP
2	163.7550	22.07	2.44	24.51	43.50	-18.99	167	100	QP
3	234.1684	25.48	8.56	34.04	46.00	-11.96	57	100	QP
4	269.4284	26.78	10.37	37.15	46.00	-8.85	203	100	QP
5	370.7023	18.14	11.84	29.98	46.00	-16.02	78	100	QP
6	640.6110	16.01	18.05	34.06	46.00	-11.94	224	100	QP

Note: Testing is carried out with frequency rang 30MHz to the 10GHz, which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

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