

FCC PART 22H & 24E

MEASUREMENT AND TEST REPORT

For

**SHENZHEN CARSCOP ELEC CO, LTD.**

Buliding A1, YuanLing North Road, EGongLing Village,  
PingHu Town, Shenzhen, Guangdong, China.

**FCC ID: WVOCCTR700**

<b>Report Type:</b> Original Report	<b>Product Type:</b> GPS TRACKER
<b>Test Engineer:</b> <u>Felix Li</u> <i>Felix Li</i>	
<b>Report Number:</b> <u>RSZ10012703</u>	
<b>Report Date:</b> <u>2010-11-03</u>	
<b>Reviewed By:</b> <u>EMC Engineer</u> <i>Merry Zhao</i>	
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, NIST, or any agency of the Federal Government.

\* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "\*" (Rev.2)

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## GENERAL INFORMATION

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### Product Description for Equipment Under Test (EUT)

The *SHENZHEN CARSCOP ELEC CO, LTD.*'s product, model number: *CCTR-700* (FCC ID: *WVOCCTR700*) or the "EUT" as referred to in this report is a *GPS TRACKER*, which measures approximately: 7.0 cm (L) x 5.0 cm (W) x 3.0 cm (H), rated input voltage: DC 3.7V battery.

\*Note: The serial products model *CCTR-700/CCTR-600/CCTR-800*, we select *CCTR-700* to test, the all models are electrically identical, only their model names have differences, which were explained in the attached declaration letter.

*\* All measurement and test data in this report was gathered from production sample serial number: 1001074 (Assigned by BACL, Shenzhen). The EUT was received on 2010-01-27.*

### Objective

This type approval report is prepared on behalf of *SHENZHEN CARSCOP ELEC CO, LTD.* in accordance with Part 2, Subpart J, Part 22 Subpart H, and Part 24 Subpart E of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability, band edge and radiated margin.

### Related Submittal(s)/Grant(s)

FCC Part 22H&24E submission with FCC ID: UDV-0912142009007.

### Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services  
Part 24 Subpart E - Personal Communication Services

Applicable Standards: TIA/EIA 603-C, ANSI C63.4-2003.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 21, 2007. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

## SYSTEM TEST CONFIGURATION

### Justification

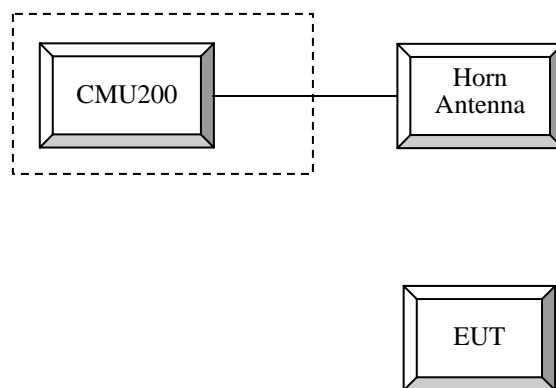
The EUT was configured for testing according to TIA/EIA-603-C.

The GSM/PCS item test was performed with the EUT operating at normal mode.

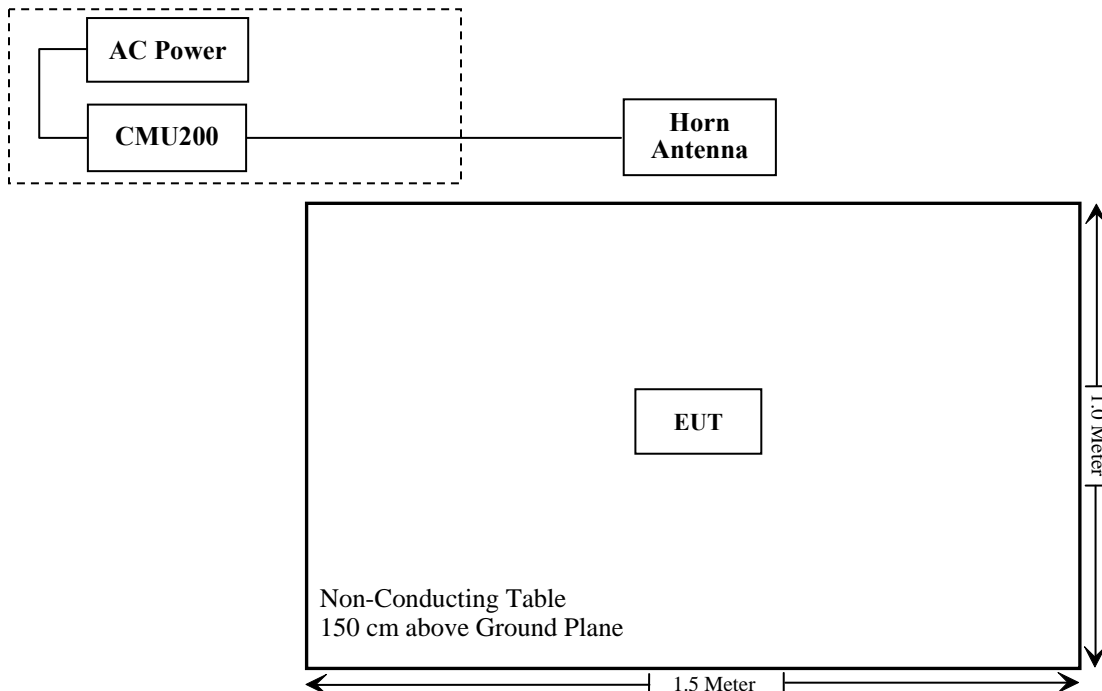
### Equipment Modifications

No modifications were made to the EUT.

### Configuration of Test Setup



### Block Diagram of Test Setup



## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b)(1), §2.1091	Maximum Permissible exposure (MPE)	Compliance*
§2.1046; §22.913 (a); §24.232 (c)	RF Output Power	Compliance
§2.1047	Modulation Characteristics	N/A
§2.1049; §22.905 §22.917; §24.238	99% & -26 dB Occupied Bandwidth	Compliance*
§2.1051, §22.917 (a); §24.238 (a)	Spurious Emissions at Antenna Terminal	Compliance*
§2.1053 §22.917 (a); §24.238 (a)	Field Strength of Spurious Radiation	Compliance
§22.917 (a); §24.238 (a)	Out of band emission, Band Edge	Compliance*
§2.1055 §22.355; §24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance*

Note: Compliance\* please refer to FCC ID: UDV-0912142009007 granted on 2010-02-23, report number: SHEMO09120140807, which was issued by SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. dated on 2010-02-08.

**FCC §1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)****Applicable Standard**

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Note: f = frequency in MHz

\* = Plane-wave equivalent power density

**Test Data**

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = output power to antenna

G= Antenna Gain

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

Radio Band	Antenna Gain		Conducted Power				Time-Averaged Transmit Power (mW)	Evaluation Distance (cm)	Calculated Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
	(dBi)	(numeric)	Time Slot	(dBm)	(mW)	Duty factor				
GSM850	-2.97	0.505	1 slot	33.1	2042	1/8	255.25	20	0.0256	0.55
	-2.97	0.505	2 slot	33.1	2042	1/4	510.5	20	0.0513	0.55
PCS1900	-1.97	0.635	1 slot	30.5	1122	1/8	140.25	20	0.0177	1.0
	-1.97	0.635	2 slot	30.3	1072	1/4	268	20	0.0339	1.0

**Result:** The MPE of device complies at 20 cm distance.

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## **FCC §2.1047 - MODULATION CHARACTERISTIC**

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According to FCC §2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.



## FCC § 2.1046, § 22.913 (a) & § 24.232 (c) - RF OUTPUT POWER

### Applicable Standard

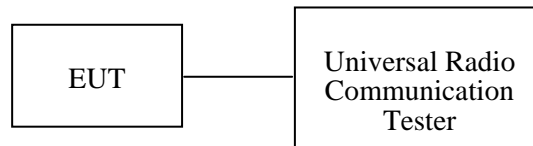
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (c), in no case may the peak output power of a base station transmitter exceed 2 watt EIRP.

### Test Procedure

#### *Conducted method:*

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



#### *Radiated method:*

TIA 603-C section 2.2.17

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2010-05-05	2011-05-04
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-03-11	2011-03-11
HP	Amplifier	2VA-213+	T-E27H	2010-03-08	2011-03-07
HP	Signal Generator	HP8657A	2849U00982	2009-10-28	2010-10-27
HP	Amplifier	HP8447D	2944A09795	2010-08-02	2011-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2009-11-07	2010-11-06
COM POWER	Dipole Antenna	AD-100	041000	2010-09-25	2011-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2010-05-17	2011-05-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2010-06-11	2011-06-10

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Data****Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.0kPa

The testing was performed by Felix Li on 2010-10-21.

**Conducted Power:**

Please refer to FCC ID: UDV-0912142009007.

**ERP & EIRP:****ERP for Cellular Band (Part 22H)**

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Cord. (dBd)	Cable Loss (dB)	Absolute Level (dBm)	Part 22H Limit (dBm)
Frequency (MHz)	S.A. Reading (dBμV/m)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Polar (H/V)				
High Channel											
848.8	93.72	245	2.0	H	848.8	24.85	H	0	0.9	23.95	38.45
848.8	95.21	220	2.0	V	848.8	27.94	V	0	0.9	27.04	38.45

**EIRP for PCS Band (Part 24E)**

Indicated		Table Angle Degree	Test Antenna		Substituted			Antenna Gain Cord. (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Part 24E Limit (dBm)
Frequency (MHz)	S.A. Reading (dBμV/m)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Polar (H/V)				
High Channel											
1909.8	92.21	330	1.9	H	1909.8	20.20	H	6.2	1.10	25.3	33
1909.8	95.47	74	1.2	V	1909.8	23.87	V	6.2	1.10	28.97	33

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## **FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH**

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### **Applicable Standards**

FCC §2.1049, §22.917, §22.905 and §24.238.

### **Test Data**

Please refer to FCC ID: UDV-0912142009007.

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## **FCC §2.1051, §22.917(a) & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS**

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### **Applicable Standards**

FCC §2.1051, §22.917(a) and §24.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

### **Test Data**

Please refer to FCC ID: UDV-0912142009007.

## FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS

### Applicable Standards

FCC §2.1053, §22.917 and §24.238.

### Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB =  $10 \lg (\text{TXpwr in Watts}/0.001)$  – the absolute level

Spurious attenuation limit in dB =  $43 + 10 \text{ Log}_{10} (\text{power out in Watts})$

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2010-05-05	2011-05-04
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-03-11	2011-03-11
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07
HP	Amplifier	2VA-213+	T-E27H	2010-03-08	2011-03-07
HP	Signal Generator	HP8657A	2849U00982	2009-10-28	2010-10-27
HP	Amplifier	HP8447D	2944A09795	2010-08-02	2011-08-02
HP	Synthesized Sweeper	8341B	2624A00116	2009-11-07	2010-11-06
COM POWER	Dipole Antenna	AD-100	041000	2010-09-25	2011-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2010-05-17	2011-05-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2010-06-11	2011-06-10

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

**Test Data****Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.0kPa

The testing was performed by Felix Li on 2010-10-21.

Test mode: Transmitting

**Cellular Band (Part 22H)**

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain (dBi)	Cable Loss (dB)			
2509.8	56.67	56	1.4	V	2509.8	-41.4	7.3	1.73	-35.83	-13	22.83
1673.2	57.97	230	1.5	V	1673.2	-41.6	6.2	1.17	-36.57	-13	23.57
2509.8	57.55	120	1.8	H	2509.8	-43.5	7.3	1.73	-37.93	-13	24.93
3346.6	52.42	200	1.2	V	3346.6	-45.5	6.7	1.44	-40.24	-13	27.24
1673.2	55.09	235	2.0	H	1673.2	-47.9	6.2	1.17	-42.87	-13	29.87
3346.6	46.38	136	1.6	H	3346.6	-52.2	6.7	1.44	-46.94	-13	33.94
597.86	49.58	156	2.0	V	597.86	-48.5	0	0.57	-49.07	-13	36.07
531.46	46.58	325	1.7	H	531.46	-52.3	0	0.57	-52.87	-13	39.87

**PCS Band (Part 24E)**

Indicated		Table Angle Degree	Test Antenna		Substituted				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Ant. Gain (dBi)	Cable Loss (dB)			
5640	59.58	360	1.3	H	5640	-34.6	8.3	2.18	-28.48	-13	15.48
5640	53.97	256	1.5	V	5640	-38.4	8.3	2.18	-32.28	-13	19.28
7520	49.80	117	2.1	H	7520	-36.7	7.6	3.36	-32.46	-13	19.46
7520	45.13	0	1.5	V	7520	-41.8	7.6	3.36	-37.56	-13	24.56
3760	50.38	225	2.2	V	3760	-46.6	6.9	2.0	-41.70	-13	28.70
3760	51.31	223	1.5	H	3760	-46.7	6.9	2.0	-41.80	-13	28.80
465.04	51.47	200	1.5	V	465.04	-47.6	0	0.47	-48.07	-13	35.07
332.15	54.40	0	2.2	H	332.15	-50.3	0	0.36	-50.66	-13	37.66

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**FCC §22.917(a) & §24.238(a) - BAND EDGES**

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**Applicable Standards**

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

**Test Data**

Please refer to FCC ID: UDV-0912142009007.

**FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY****Applicable Standard**

FCC §2.1055 (a), § 2.1055 (d), §22.355, §24.235

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

**Test Data**

Please refer to FCC ID: UDV-0912142009007.



## PRODUCT SIMILARITY DECLARATION LETTER



Company Address: Building A1, YuanLing North Road, EGongLing village, PingHu town, Shenzhen, China.  
Tel: 86 755 33835288  
Fax: 86 755 33823966

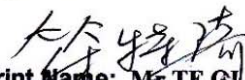
### Product Similarity Declaration

To Whom It May Concern,

We, SHENZHEN CARSCOP ELEC CO, LTD., hereby declare that our  
GPS TRACKER, Model Number: CCTR-600 and CCTR-800 are electrically  
identical with the Model Number: CCTR-700 that was certified by BACL.  
CCTR-600 、CCTR-800and CCTR-700 are with different Model No. due to  
marketing purposes.

Please contact me if you have any question.

Signature:

  
Print Name: Mr TE QI FU

Title: Deputy General Manager

Date:2010-10-27

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