



Shenzhen Certification Technologh Service Co., Ltd  
3F, Bldg27,Area A, Tanglang Industrial Zone, Xili Town,  
Nanshan District, ShenZhen, Guang dong, P.R.  
China.

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# TEST REPORT

## FCC ID: X3U-TK210

Applicant : TOPTEN ELECTRONICS TECHNOLOGY LIMITED

Address : Room 2007, Tower B, Gaoke Building, 908 Tianhe North Road,  
Guangzhou, China

Equipment Under Test (EUT):

Name : Wireless GPS Car Alarm

Model : TK210, TK210-R

In Accordance with: FCC PART 2; FCC PART 22H; FCC PART PART 24E

Report No : STE111124117

Date of Test : December 1-7, 2011

Date of Issue : December 8, 2011

Test Result: **PASS**

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

Authorized Signature

(Mark Zhu)

General Manager

The manufacture should ensure that all the 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 Shenzhen Certification Technology Service Co., Ltd. Or test done by Shenzhen Certification Technology Service Co., Ltd. Approvals in connection with, distribution or use of the product described in this report must be approved by Shenzhen Certification Technology Service Co., Ltd. Approvals in writing.

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## 1. General Information

### 1.1. Description of Device (EUT)

EUT : Wireless GPS Car Alarm

Model No. : TK210, TK210-R  
Note: No any difference with each model.

Trade Name : TOPTEN

Power supply : DC 12V Supply by battery

Radio Technology : GSM/GPRS 850/900/1800/1900

GPRS Multislot Class : Class 10

Power class : GSM/GPRS 850/900: Class 4  
GSM/GPRS 1800/1900: Class 1

FCC Operation frequency : 824.2MHz—848.8MHz and 1850.2MHz—1909.8MHz

Modulation : GMSK

Antenna Type : external antenna, 3dBi Peak Gain. (The antenna is non-standard SMA antenna, cable Length: 150cm.)  
manufacturer: TOPTEN ELECTRONICS TECHNOLOGY LIMITED  
model: GSM-0121001

Applicant : TOPTEN ELECTRONICS TECHNOLOGY LIMITED

Address : Room 2007, Tower B, Gaoke Building, 908 Tianhe North Road, Guangzhou, China

Manufacturer : GUANGZHOU TOPTEN ELECTRONICS FACTORY

Address : Building #28, No.128 Xiaoping Section, Huangshi Road, Baiyun District, Guangzhou, China

### 1.2. Test Lab information

Shenzhen Certification Technology Service Co.,Ltd.  
3F, Bldg.27, Area A, Tanglang Industrial Zone, Xili Town, Nanshan District,  
Shenzhen 518055, Guangdong, P.R. China  
FCC Registered No.:305283

## 2. Summary of test

### 2.1. Summary of test result

Description of Test Item	Standard	Results
Conducted Output power	FCC PART 2: 2.1046 FCC PART 22H: 22.913 (a) FCC PART 24E: 24.232 (c)	PASS
Radiated Output power(erp/eirp)	FCC PART 22H:22.913 (a) FCC PART 24E:24.232(c)	PASS
Occupied bandwidth	FCC PART 2: 2.1049 FCC PART 22H: 22.917 (b) FCC PART 24E: 24.238 (b)	PASS
Frequency stability	FCC PART 2: 2.1055 FCC PART 22H: 22.355 FCC PART 24E: 24.235	PASS
Conducted spurious emission (Antenna terminal)	FCC PART 2: 2.1051 FCC PART 22H: 22.917 FCC PART 24E: 24.238	PASS
Radiated spurious emissions	FCC PART 2: 2.1053 FCC PART 22H: 22.917 FCC PART 24E: 24.238	PASS
Block edge compliance	FCC PART 22H: 22.917 (b) FCC PART 24E: 24.238 (b)	PASS
Power Line Conducted Emission Test	FCC Part 15: 15.207 ANSI C63.4: 2003	N/A

Note: The Radiated spurious emissions Test with our Shenzhen Certification Technology Service Co.,Ltd. lab. Other test Refer to original test report SH09070021AR02.

### 2.2. Assistant equipment used for test

N/A

### 2.3. Test mode

During all testing, EUT is in link mode with base station emulator at maximum power level in each test mode and channel as below:

Mode	Channel	Frequency(MHz)
GSM 850	128	824.2
	190	836.6
	251	848.8
PCS 1900	512	1850.2
	661	1880.0
	810	1909.8

### 2.4. Test Environment Conditions

Temperature range	21-25 °C
Humidity range	40-75%
Pressure range	86-106kPa

### 2.5. Measurement Uncertainty (95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.42dB	
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB	Polarize: V
	4.1dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V
Uncertainty for radio frequency	1×10-9	
Uncertainty for conducted RF Power	0.65dB	
Uncertainty for temperature	0.2 °C	
Uncertainty for humidity	1%	
Uncertainty for DC and low frequency voltages	0.06%	

## 2.6. Test Equipment

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	04/06/2011	1 Year
Spectrum analyzer	Agilent	E4443A	MY46185649	06/06/2011	1 Year
Receiver	R&S	ESCI	100492	04/06/2011	1 Year
Receiver	R&S	ESCI	101202	07/01/2011	1 Year
Bilog Antenna	Sunol	JB3	A121206	04/06/2011	1 Year
Horn Antenna	EMCO	3115	640201028-06	04/06/2011	1 Year
Power Meter	Anritsu	ML2487A	6K00001491	02/23/2011	1 Year
ETS Horn Antenna	ETS	3160	SEL0076	08/12/2011	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	04/06/2011	1 Year
Cable	Resenberger	N/A	No.1	04/06/2011	1 Year
Cable	SCHWARZBEC K	N/A	No.2	04/06/2011	1 Year
Cable	SCHWARZBEC K	N/A	No.3	04/06/2011	1 Year
Pre-amplifier	R&S	AFS42-00101 800-25-S-42	SEL0081	04/06/2011	1 Year
Pre-amplifier	R&S	AFS33-18002 650-30-8P-44	SEL0080	04/06/2011	1 Year
Base station	Agilent	E5515C	GB44300243	04/06/2011	1 Year
Temperature controller	Terchy	MHQ	120	04/06/2011	1 Year
Power divider	Anritsu	K240C	020346	04/06/2011	1 Year
Signal Generator	HP	83732B	VS3449051	04/06/2011	1 Year
Attenuator	Agilent	8491B	MY39262165	04/06/2011	1 Year
GPS Signal	Welnavigate	GS50	6423517	N/A	N/A

### **3. Conducted Output power**

Refer to original test report SH09070021AR02, Page 15.

## 4. Radiated Output power

### 4.1. Limit

Cellular Telephone 850MHz	PCS 1900MHz
38.5dBm(ERP)	33dBm(EIRP)

Refer to original conducted output power test report SH09070021AR02, Page 15.

See original test report SH09070021AR02 Page 15 ,The original output power test result :

Band	Channel	Frequency (MHz)	Measured Output Power		Rated Output Power		Verdict
			dBm	Refer to Plot	dBm	Tolerance (dB)	
GSM 850MHz	128	824.2	33.08	Plot A1	33	$\pm 3$	PASS
	190	836.6	33.24	Plot B1			PASS
	251	848.8	33.05	Plot C1			PASS
GSM 1900MHz	512	1850.2	29.39	Plot D1	30	$\pm 3$	PASS
	661	1880.0	29.58	Plot E1			PASS
	810	1909.8	29.86	Plot F1			PASS
GPRS 850MHz	128	824.2	29.53	Plot A2	33	$\pm 3$	PASS
	190	836.6	29.58	Plot B2			PASS
	251	848.8	29.41	Plot C2			PASS
GPRS 1900MHz	512	1850.2	26.45	Plot D2	30	$\pm 3$	PASS
	661	1880.0	26.59	Plot E2			PASS
	810	1909.8	26.95	Plot F2			PASS

The GSM 850 max out power is 33.24 dBm,

EIRP=out power +antenna gain, ERP=EIRP-2.15, so the GSM 850 max ERP= 34.09 dBm.

The PCS 1900 max out power is 29.86 dBm,

EIRP=out power +antenna gain, so the PCS 1900 max EIRP= 32.86 dBm.

Note: antenna gain is 3dBi.

## **5. Occupied Bandwidth**

Refer to original test report SH09070021AR02, Page 22.

## **6. Frequency stability**

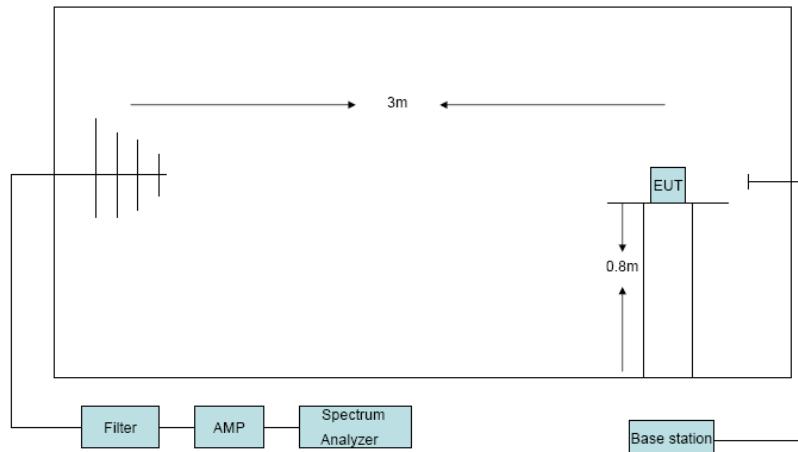
Refer to original test report SH09070021AR02, Page 29.

## **7. Conducted spurious emissions**

Refer to original test report SH09070021AR02, Page 31.

## 8. Radiated Spurious emissions

### 8.1. Block Diagram of Test Setup



### 8.2. Limit

The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency outside the frequency band by at least  $(43 + 10 \log P)$  dB, in this case, -13dBm.

### 8.3. Test Procedure

1. The EUT was placed on a non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated spurious emissions from 30MHz to 10<sup>th</sup> harmonics of fundamental frequency were measured at 3m with a test antenna and a spectrum analyzer with RBW= 1MHz, VBW= 1MHz, peak detector settings.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. All the spurious emissions (record as LVL) at 3m were measured by rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Final spurious emissions levels were measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (for frequency below 1GHz) or Horn antenna (for frequency above 1GHz) at same location with same polarization of receiver antenna and then a known power of each measured frequency from S.G. was applied into the dipole antenna or Horn antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna.

## 8.4. Test Result

EUT: Wireless GPS Car Alarm		M/N: TK210											
Power: DC 12V													
Test Date: 2011-12-05		Test site: RF Chamber			Tested by: Simple								
Ambient Temperature: 24 °C		Relative Humidity: 60%											
Conclusion: PASS													
Test result													
Test Mode: GSM 850 CH128													
Frequency (MHz)	Antenna polarization	S.G. (dBm)	Cable loss(dB)	Substitution antenna gain (dBd)	Result (ERP)(dBm)	Limit (dBm)	Margin (dB)						
1648.4	H	-61.76	2.71	11.74	-52.73	-13	39.37						
1648.4	V	-59.05	2.71	11.74	-50.02	-13	37.02						
Test Mode: GSM 850 CH190													
1673.2	H	-60.66	3.12	11.63	-52.15	-13	39.15						
2509.8	H	/	/	/	/	-13	/						
1673.2	V	-57.28	3.12	11.63	-48.77	-13	35.77						
2509.8	V	/	/	/	/	-13	/						
Test mode: GSM 850 CH251													
1697.6	H	-56.83	3.38	11.42	-48.79	-13	35.79						
2546.4	H	/	/	/	/	-13	/						
1697.6	V	-54.32	3.38	11.42	-46.28	-13	33.28						
2546.4	V	/	/	/	/	-13	/						

Note: Result =S.G.-Cable loss + Substitution antenna gain.

EUT: Wireless GPS Car Alarm		M/N: TK210												
Power: DC 12V														
Test Date: 2011-12-05	Test site: RF Chamber			Tested by: Simple										
Ambient Temperature: 24 °C	Relative Humidity: 60%													
Conclusion: PASS														
Test result														
Test Mode: GPRS 850 CH128														
Frequency (MHz)	Antenna polarization	S.G. (dBm)	Cable loss(dB)	Substitution antenna gain (dBd)	Result (ERP)(dBm)	Limit (dBm)	Margin (dB)							
1648.4	H	-62.71	2.71	11.74	-53.68	-13	40.68							
1648.4	V	-60.77	2.71	11.74	-51.74	-13	38.74							
Test Mode: GSM 850 CH190														
1673.2	H	-63.07	3.12	11.63	-54.56	-13	41.56							
2509.8	H	/	/	/	/	-13	/							
1673.2	V	-58.34	3.12	11.63	-49.83	-13	36.83							
2509.8	V	/	/	/	/	-13	/							
Test mode: GSM 850 CH251														
1697.6	H	-57.61	3.38	11.42	-49.57	-13	36.57							
2546.4	H	/	/	/	/	-13	/							
1697.6	V	-58.36	3.38	11.42	-50.32	-13	37.32							
2546.4	V	/	/	/	/	-13	/							

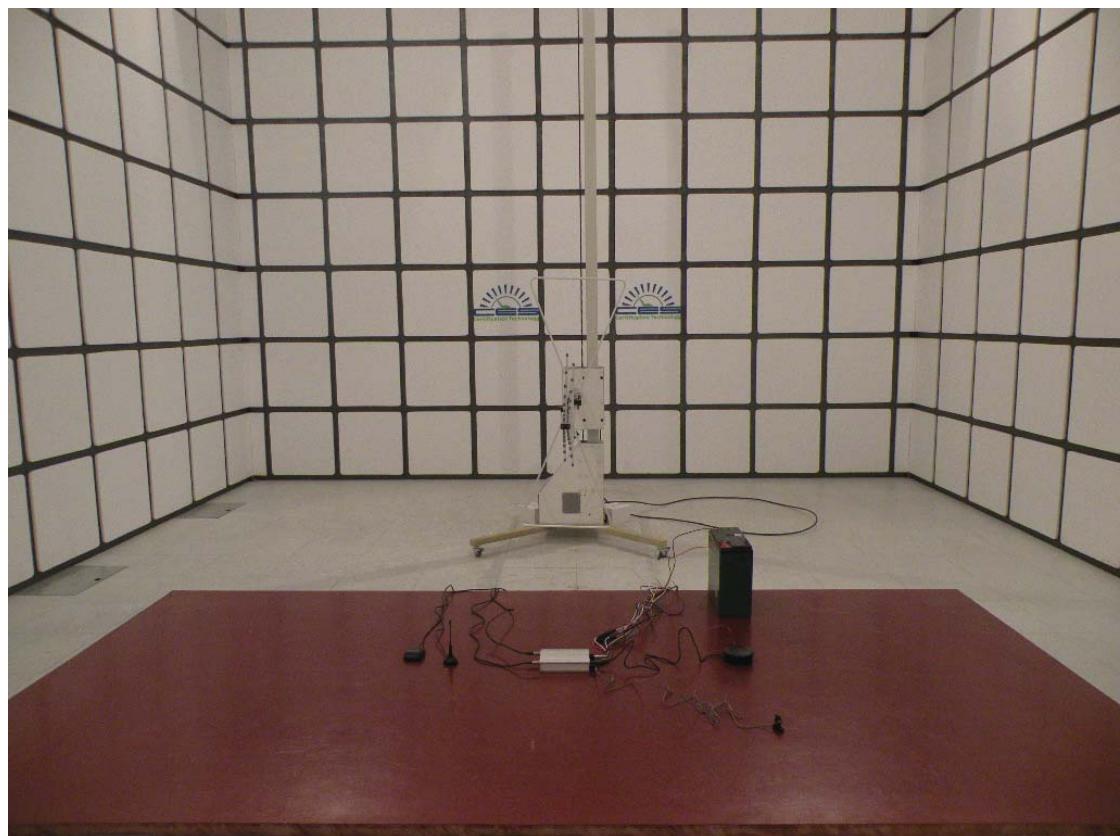
Test Mode: GSM 1900 CH512							
Frequency (MHz)	Antenna polarization	S.G. (dBm)	Cable loss(dB)	Substitution antenna gain (dBi)	Result (EIRP)(dBm)	Limit (dBm)	Margin (dB)
3700.4	H	-45.93	4.75	6.54	-44.14	-13	31.34
5550.6	H	/	/	/	/	-13	/
3700.4	V	-44.08	4.75	6.54	-42.29	-13	29.49
5550.6	V	/	/	/	/	-13	/
Test Mode: GSM 1900 CH661							
3760	H	-44.21	4.86	6.33	-42.74	-13	29.74
5640	H	/	/		/	-13	/
3760	V	-40.24	4.86	6.33	-38.77	-13	25.77
5640	V	/	/	/	/	-13	/
Test mode: GSM 1900 CH810							
3819.6	H	-46.96	4.89	6.18	-45.67	-13	32.64
5729.4	H	/	/	/	/	-13	/
3819.6	V	-42.2	4.89	6.18	-40.91	-13	27.91
5729.4	V	/	/	/	/	-13	/
Note: All the other emissions not recorded were too low to read, and deemed to comply with limit.							
Note: Result =S.G.-Cable loss + Substitution antenna gain.							

Test Mode: GPRS 1900 CH512							
Frequency (MHz)	Antenna polarization	S.G. (dBm)	Cable loss(dB)	Substitution antenna gain (dBi)	Result (EIRP)(dBm)	Limit (dBm)	Margin (dB)
3700.4	H	-50.53	4.75	6.54	-48.74	-13	35.74
5550.6	H	/	/	/	/	-13	/
3700.4	V	-49.35	4.75	6.54	-47.56	-13	34.56
5550.6	V	/	/	/	/	-13	/
Test Mode: GSM 1900 CH661							
3760	H	-50.68	4.86	6.33	-49.21	-13	36.21
5640	H	/	/		/	-13	/
3760	V	-48.00	4.86	6.33	-46.53	-13	33.53
5640	V	/	/	/	/	-13	/
Test mode: GSM 1900 CH810							
3819.6	H	-50.46	4.89	6.18	-49.17	-13	36.17
5729.4	H	/	/	/	/	-13	/
3819.6	V	-49.53	4.89	6.18	-48.24	-13	35.24
5729.4	V	/	/	/	/	-13	/
Note: All the other emissions not recorded were too low to read, and deemed to comply with limit.							
Note: Result =S.G.-Cable loss + Substitution antenna gain.							

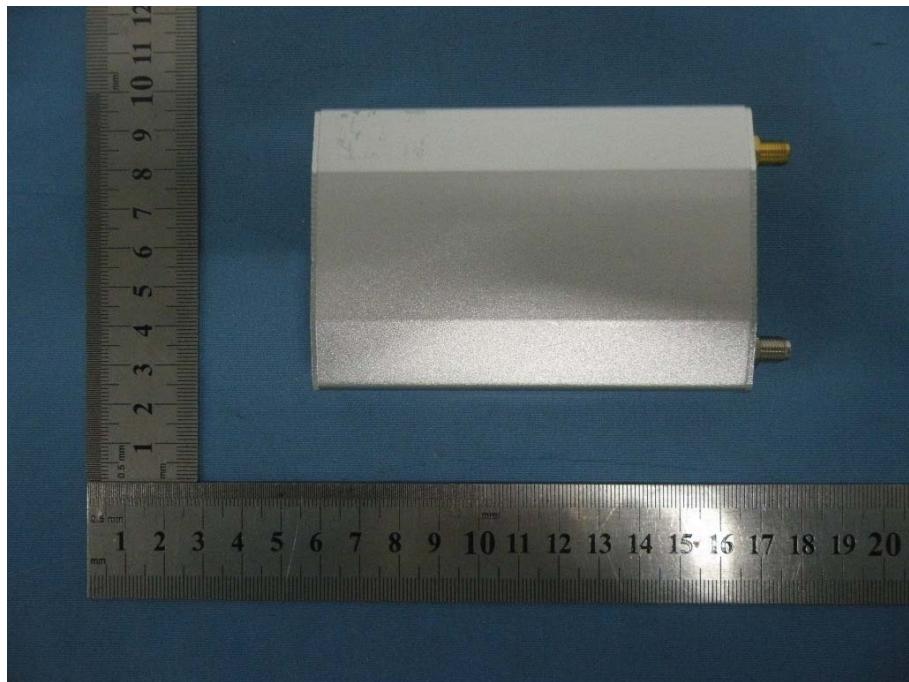
## **9. Band Edge Compliance**

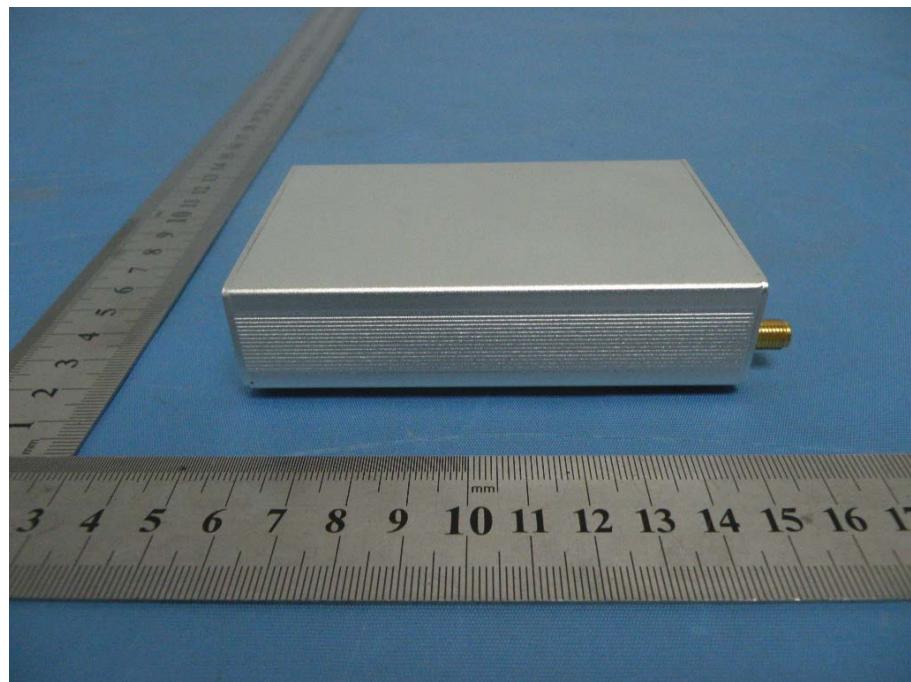
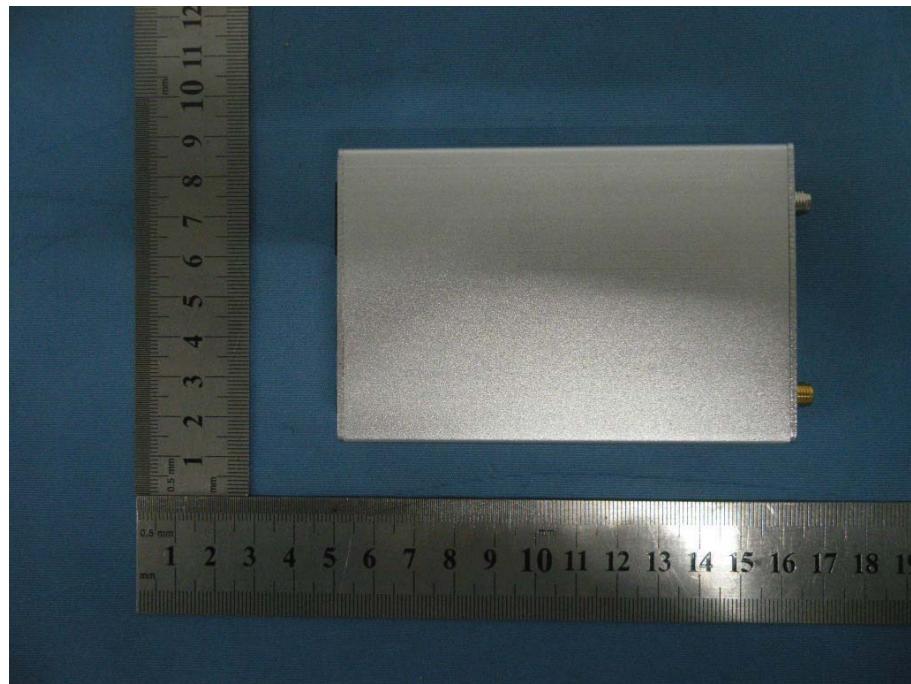
Refer to original test report SH09070021AR02, Page 44.

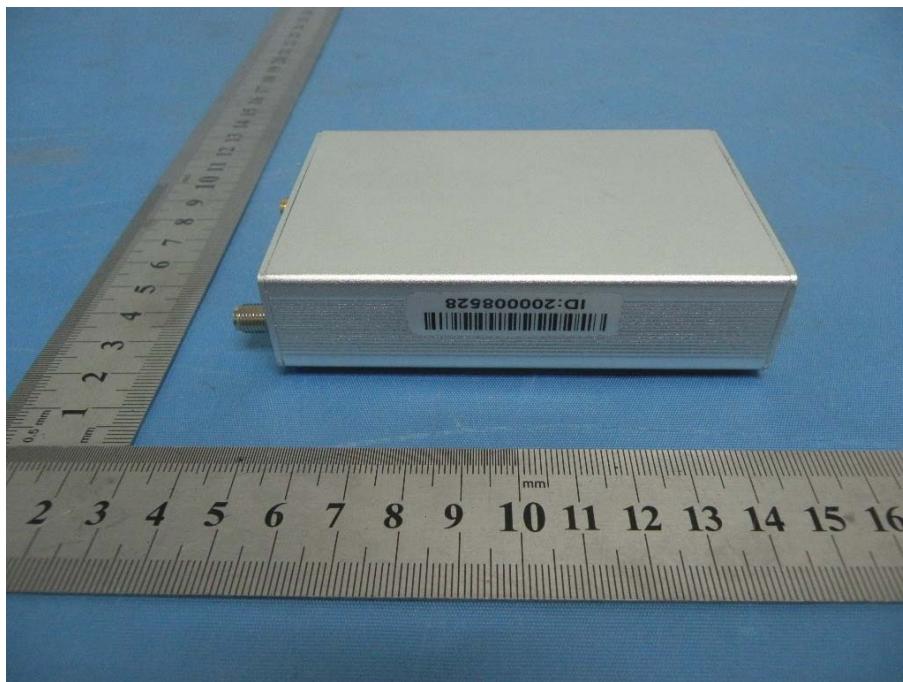
## 10. Testsetup photo

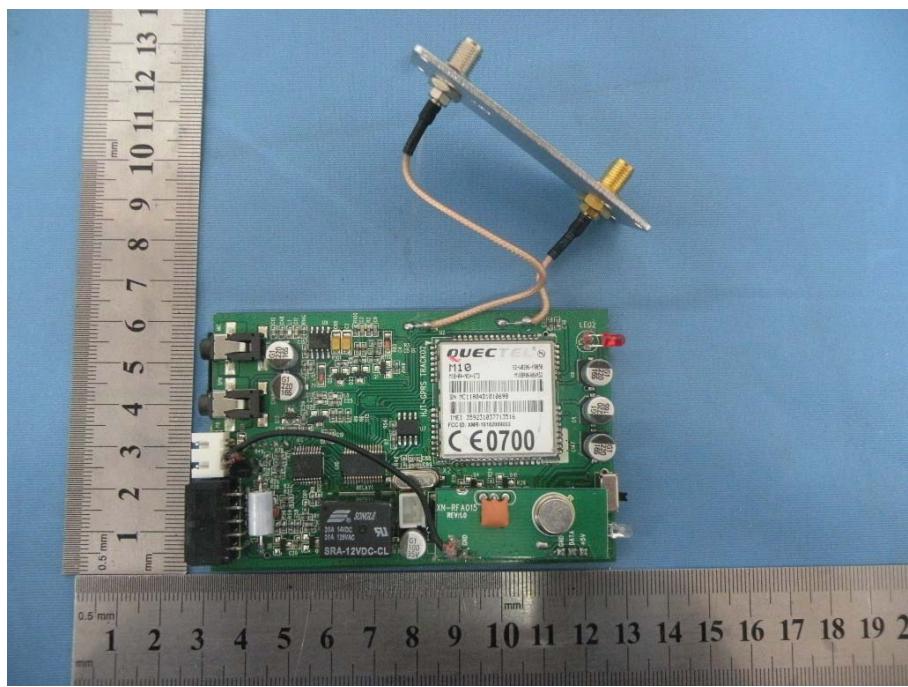


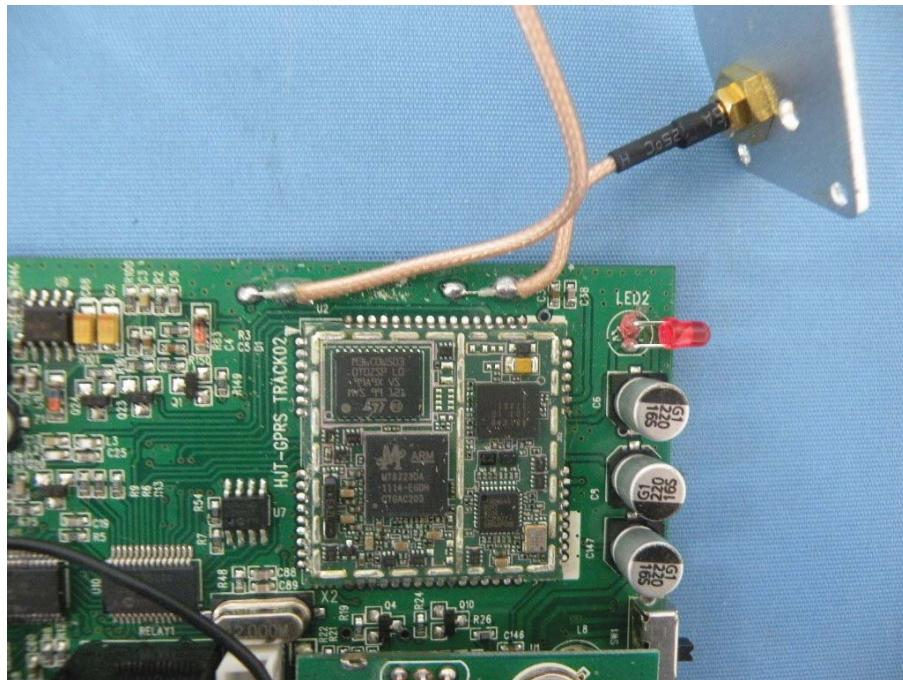
## 11. Photos of EUT

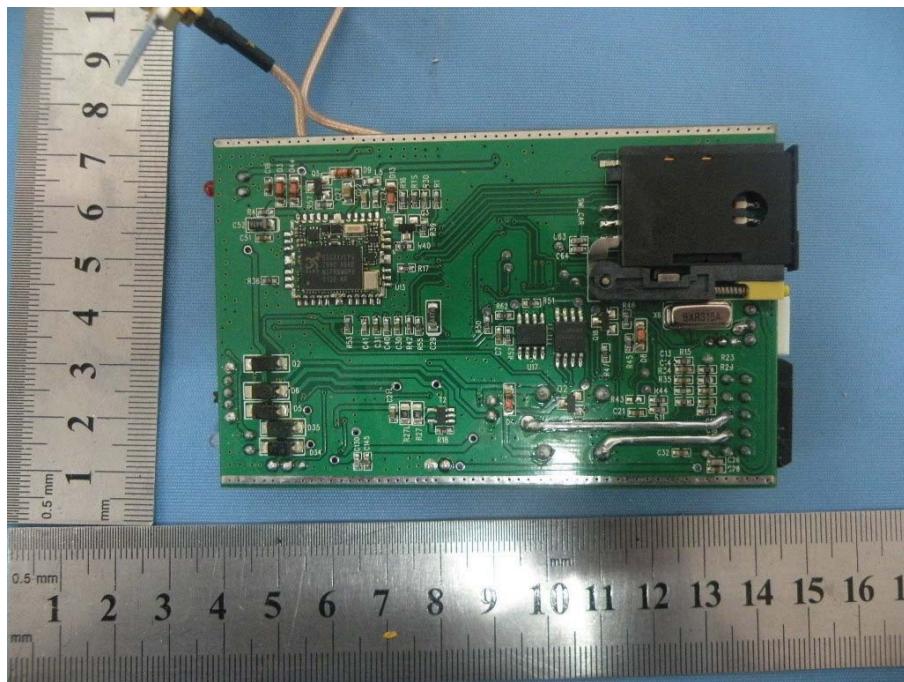
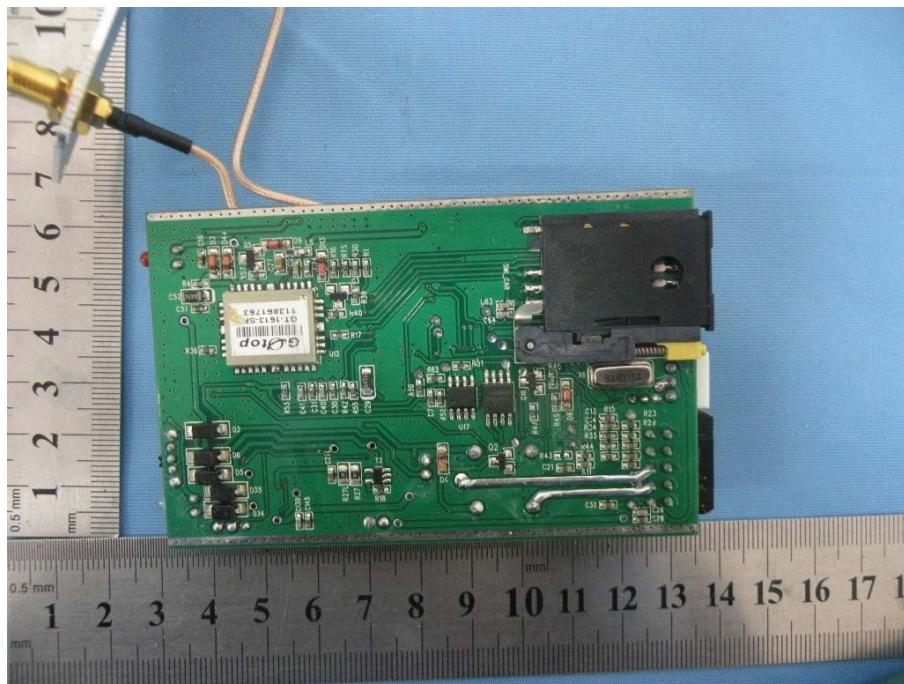












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