

FCC Part 15

TEST REPORT

For

Bluetooth GPS Receiver

**Model Name: GR29, GR30, GR31, GR32, GR33, GR34, GR35,
GR36, GR37, GR38, GR39, GR40**

FCC ID: WA9GR29

Report No.: SZAGC164080501E5

Date of Issue: May 14, 2008

Prepared For

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1. VERIFICATION OF COMPLIANCE

Equipment Under Test: Bluetooth GPS Receiver

Brand Name: --

Model Number: GR29, GR30, GR31, GR32, GR33, GR34, GR35, GR36, GR37, GR38, GR39, GR40

Difference of models They are the same with different color

Applicant: SHENZHEN SUNKIN TECH CO., LTD.
2806 Room, West Tower, Nanshan Digital and Culture Industrial Base,
No.10128, Shennan Road, Nanshan District, Shenzhen, China

Manufacturer: SHENZHEN SUNKIN TECH CO., LTD.
2806 Room, West Tower, Nanshan Digital and Culture Industrial Base,
No.10128, Shennan Road, Nanshan District, Shenzhen, China

Type of Test: FCC Class B (Declaration)

Measurement Procedure: ANSI C63.4: 2003

File Number: SZAGC164080501E5

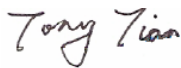

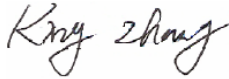
Date of test: May 06, 2008 to May 13, 2008

Deviation: None

Condition of Test Sample: Normal

The above equipment was tested by Shenzhen Attestation Of Global Compliance Science & Technology Co., Ltd. For compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedure according to ANSI C63.4. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Prepared By	 _____ Tony Tian May 14, 2008
Checked By	 _____ Randy He May 14, 2008
Authorized By	 _____ King Zhang May 14, 2008

2. PRODUCT INFORMATION

Housing Type: Plastic

EUT Rating Voltage: DC 5.0V By Battery

Frequency of OSC: 16 MHz

I/O Ports of EUT

I/O Port Type	Q'TY	Tested with
USB Port	1	1
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3. TEST FACILITY

Location:	WorldStandardizationCertification&Testing Co., Ltd. 1-2/F, Dachong Keji Building, No.28 of Tonggu Road, Nanshan District, Shenzhen, China
Description:	There is one 3m semi-anechoic chamber for final test, the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.
Site Filing:	FCC Registration Number: 989301
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4 and CISPR 22 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For radiated emission test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

4. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at Compliance Certification Services (Shenzhen) Inc. for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0GHz or above.

Equipment used during the tests:

3m semi-anechoic chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
EMI Test Receiver	R&S	ESCS30	100343	04/16/2008	04/15/2009
AMPLIFIER	HP	HP8447E	2945A02715	04/16/2008	04/15/2009
ANTENNA	Sunol Sciences Corp.	JB3	A021907	04/16/2008	04/15/2009

Note: The measure uncertainty is less than $\pm 2.5078\text{dB}$, which is evaluated as per the UKAS LAB34 and CISPR/A/291/CDV.

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
EMI Test Receiver	HP	8546A/85460A	3625A00349 3448A00325	10/17/2008	10/16/2009
LISN	AFJ	LS16	16010222119	04/03/2008	04/02/2009

Note: The measure uncertainty is less than $\pm 2.2318\text{dB}$, which is evaluated as per the UKAS LAB34 and CISPR/A/291/CDV.

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

5. SUPPORT EQUIPMENT LIST

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
NOTEBOOK	HP	520	--	--	--

****Note:** All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

6. SYSTEM DESCRIPTION

EUT test procedure:

USB Mode:

1. Connect EUT to NOTEBOOK.
2. Power on the NOTEBOOK, then run software Copy Test, the EUT begins to work.
3. Make sure the EUT operates normally during the test.

7. FCC LINE CONDUCTED EMISSION TEST

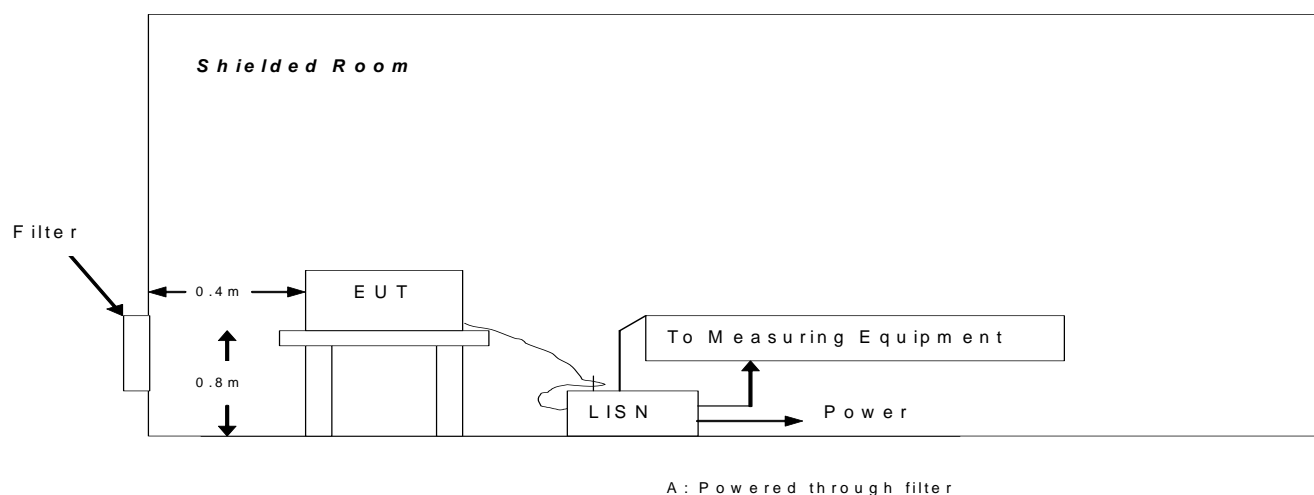
7.1 LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

**Note: 1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

7.2 BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



7.3 PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received power through a Line Impedance Stabilization Network (LISN) that was grounded to the protect earth.
- 5) All support equipments received AC power from a second LISN, if any.
- 6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8) During the above scans, the emissions were maximized by cable manipulation.
- 9) The following test mode(s) were scanned during the preliminary test:

Preliminary Line Conducted Emission Test				
Frequency Range Investigated		150 KHz TO 30 MHz		
Mode of operation	Date	Report No.	Data#	Worst Mode
USB	05.06	SZAGC164080501E5	0(L,N)	<input checked="" type="checkbox"/>
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Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

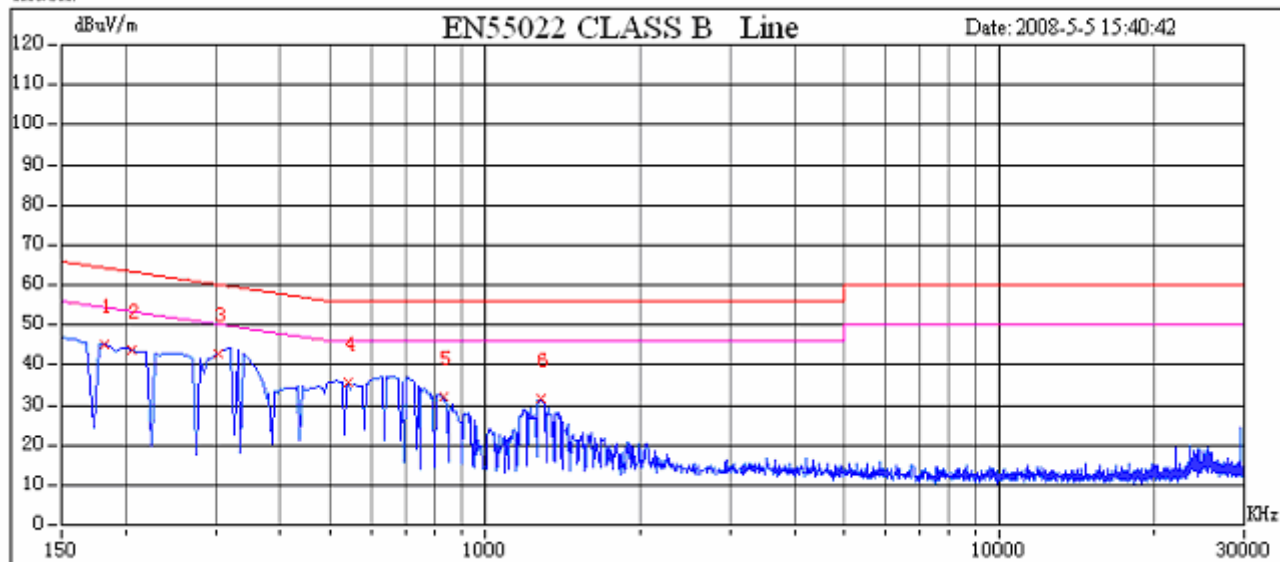
7.4 FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1) EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.
- 2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3) The test data of the worst case condition(s) was reported on the Summary Data page.

7.5 TEST RESULT OF LINE CONDUCTED EMISSION TEST

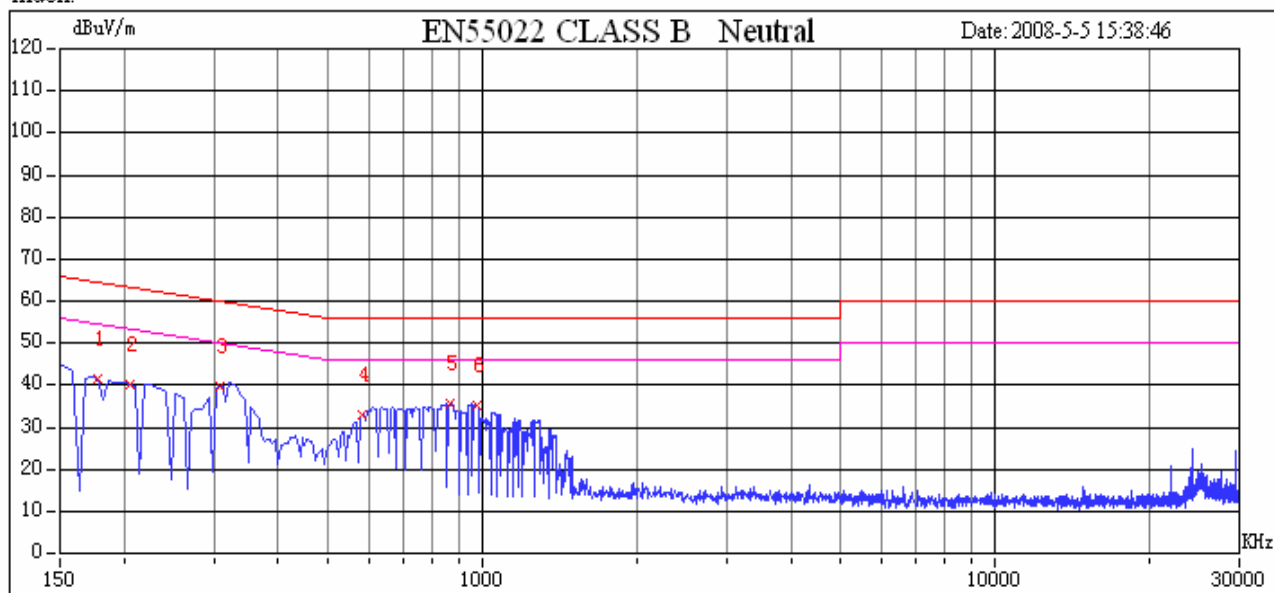
LINE CONDUCTED EMISSION TEST – L1

Index:



LINE CONDUCTED EMISSION TEST – L2

Index:



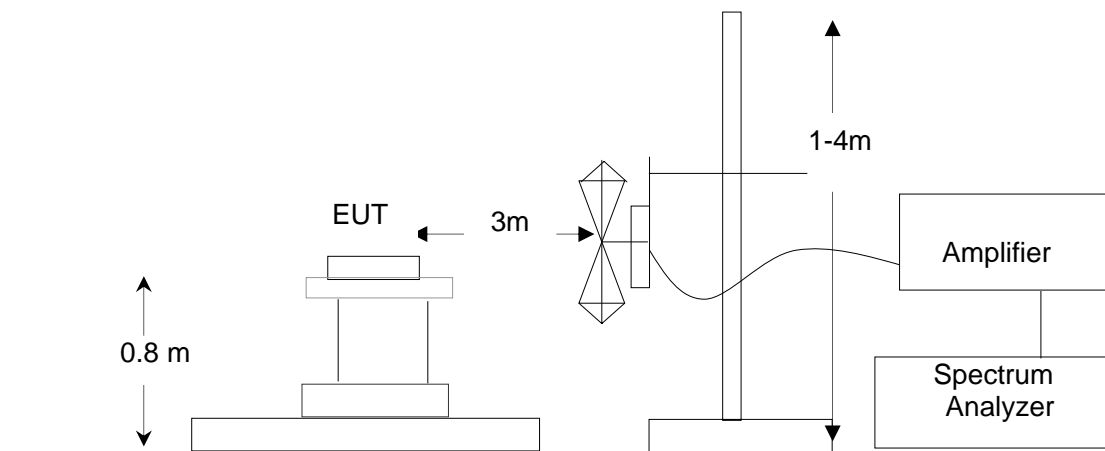
8. FCC RADIATED EMISSION TEST

8.1 LIMITS OF RADIATED EMISSION TEST

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30~88	3	40.0
88~216	3	43.5
216~960	3	46.0
Above 960	3	54.0

**Note: The lower limit shall apply at the transition frequency.

8.2 BLOCK DIAGRAM OF RADIATED EMISSION TEST



8.3 PRELIMINARY PROCEDURE OF RADIATED EMISSION TEST

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT received DC5V from the adapter. All support equipments received AC 120V/60Hz power from socket under the turntable, if any.
- 5) The antenna was placed at 3 meter away from the EUT as stated in FCC Part 15. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- 6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 7) The following test mode(s) were scanned during the preliminary test:

Preliminary Radiated Emission Test				
Frequency Range Investigated			30 MHz TO 1000 MHz	
Mode of operation	Date of test	Report No.	Data#	Worst Mode
USB	05.06	SZAGC164080501E5	0(H,V)	<input checked="" type="checkbox"/>
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Then, the EUT and cable(s) configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for final testing.

8.4 FINAL PROCEDURE OF RADIATED EMISSION TEST

EUT and support equipment were set up on the turntable as per step 7 of the preliminary test.

The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P/Peak. reading is presented.

The test data of the worst case condition(s) was reported on the Summary Data page.

8.5 TEST RESULT OF RADIATED EMISSION TEST

EUT: Bluetooth GPS Receiver

Power: DC 5.0 V

M/N: GR29

Temperature: 26°C

Mode: USB

Humidity: 60%

Radiated Emission Test Result													
Frequency	Reading Level (dBuv)			Factor	Emission Level (dBuV/m)			Limits (dBuV/m)			Margin	Result	Remarks
(MHz)	Peak	Q.P.	Avg.	dB	Peak	Q.P.	Avg.	Peak	Q.P.	Avg.	(dB)	(P/F)	(H/V)
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(The chart below shows the highest readings taken from the final data)

Note:

- | | |
|-------------------|---|
| 1) Freq. | = Emission frequency in MHz |
| 2) Reading Level | = Uncorrected Analyzer / Receiver reading |
| 3) Factor | = Correction factors of antenna factor and cable loss |
| 4) Emission Level | = Reading Level + Factor |
| 5) Limit | = Limit stated in standard |
| 6) Margin | = Reading Level in reference to limit |
| 7) QP | =Quasi-peak |

APPENDIX 1
PHOTOGRAPHS OF TEST SETUP
Test Setup of Radiated Emission



Test Setup of Conducted Emission



APPENDIX 2
PHOTOGRAPHS OF EUT

Front View of EUT



Back View of EUT



Left View of EUT



Right View of EUT



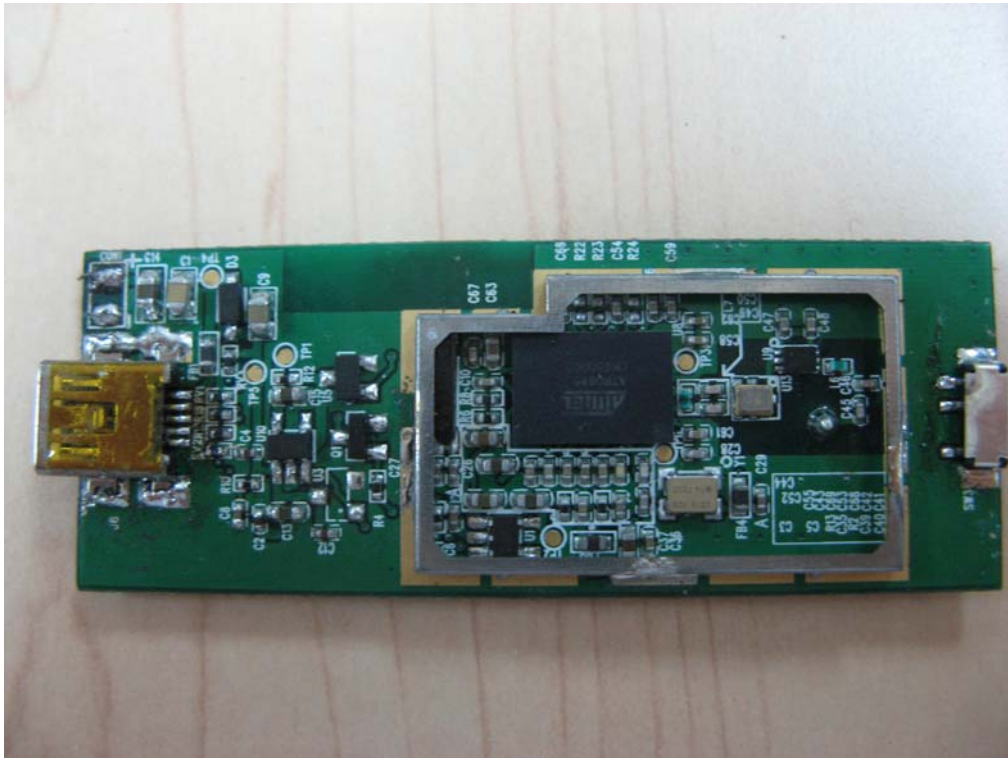
Top View of EUT



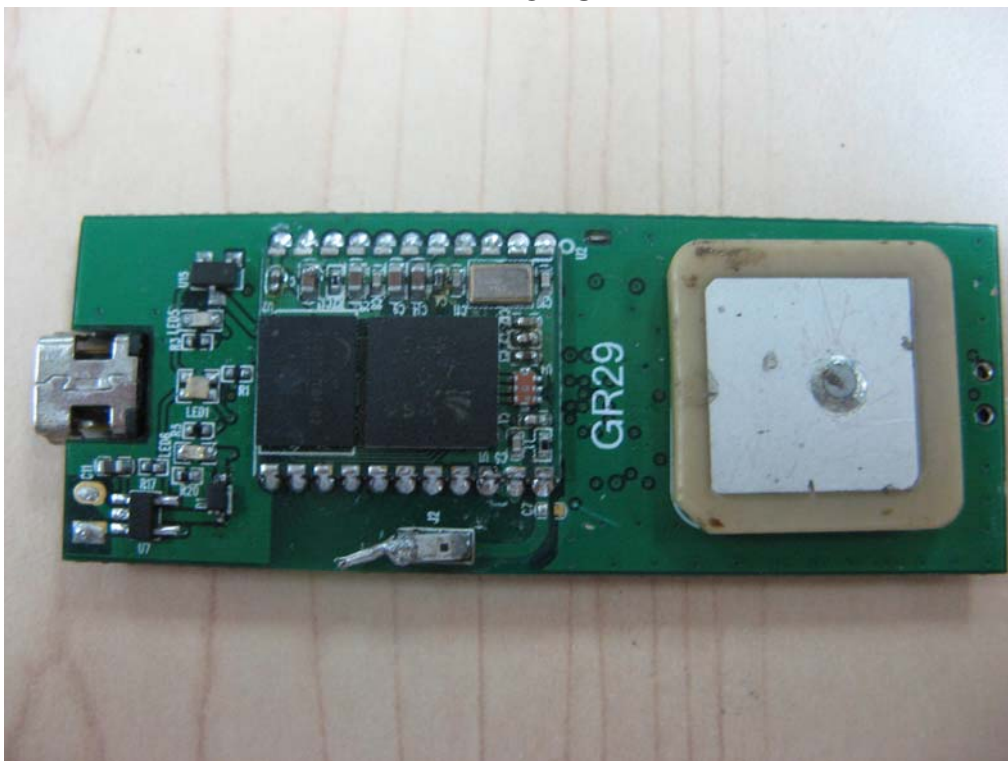
Bottom View of EUT



INTERNAL VIEW OF SAMPLE – 1



INTERNAL VIEW OF SAMPLE – 2



-----END OF REPORT-----