



**TEST REPORT
FOR
IEC 61000-6-1 / IEC 61000-6-3
EN 61000-6-1 / EN 61000-6-3**

Report No.: 14-07-MAS-219-01

According to:

- ☒ Electromagnetic Compatibility Directive: 2004/108/EC
- ☐ Low Voltage Directive: 2006/95/EC
- ☐ Radio Equipment and Telecommunications Terminal Equipment: 1999/5/EC
- ☐ Machinery Directives: 2006/42/EC

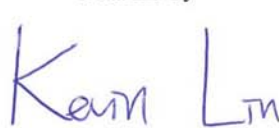

Client: **Allis Communications**
Product: **GPS ANTENNA**
Model No.: **M827B**
Comment Issues: **M812B; M820B; U820B**
Manufacturer/supplier: **Allis Communications**

Date test item received: 2014/07/25
Date test campaign completed: 2014/08/13
Date of issue: 2014/08/29

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Total number of pages of this test report: 15 pages

Total number of pages of this test photos: 8 pages

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1 TEST REPORT CERTIFICATION

Client : Allis Communications

Address : 10F.-3, No.31-1, Lane 169, Kangning St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

Manufacturer : Allis Communications

Address : 10F.-3, No.31-1, Lane 169, Kangning St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

EUT : GPS ANTENNA

Trade Name : ALLISCOM

Model No. : M827B

Comment Issues : M812B; M820B; U820B

Test Standard : Emissions
IEC61000-6-3:2006/A1:2010
EN 61000-6-3:2007/A1:2011
CISPR16-2-3:2010

Immunity
IEC61000-6-1:2005
EN 61000-6-1:2007
IEC 61000-4-2:2008
IEC 61000-4-3:2006/A1:2007/A2:2010
IEC 61000-4-4:2012
IEC 61000-4-6:2008
IEC 61000-4-8:2009

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

2 GENERAL INFORMATION

2.1 Description of EUT:

GPS Navigation.

2.2 Related Information of EUT:

Power Supply : DC 2.7V~6.0V

Power Line : ☐ Nonshielded ☐ Shielded ☒ None , length: _____ m

Signal Line : ☐ Nonshielded ☐ Shielded ☒ None , length: _____ m

Control Line : ☐ Nonshielded ☐ Shielded ☒ None , length: _____ m

Data Line : ☐ Nonshielded ☐ Shielded ☒ None , length: _____ m

* For more detailed features, please refer to User's Manual.

2.3 Tested Configuration:

The EUT connected with the following peripheral devices.

Following peripheral devices and interface cables were connected during the measurement:

Product	Manufacturer	Model No.	I/O Cable
Note Book	LENOVO	N/A	N/A
GPS	Simulator	ADIVIC/MP6220	N/A
Note Book	DELL	Latitude3340	N/A

2.4 Deviation Record:

(If any deviation from additions to or exclusions from test method must be stated)

N/A

2.5 Modification Record:

No modifications were required. (That is the EUT complied with the requirement as tested.)

3 SUMMARY OF TEST RESULTS

3.1 Emissions:

3.1.1 Radiated Emissions

■ -PASS

Peak EMI value to the limit: -0.4 dB at 30.385 MHz

3.2 Immunity:

3.2.1 Immunity Criteria:

The results of all of the immunity tests performed on the EUT were evaluated according to the following criteria, and according to the manufacturer's specifications for the EUT:

Performance criterion A: The EUT continued to operate as intended. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended.

Performance criterion B: The EUT continued to operate as intended after the test. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended. During the test, degradation of performance was however allowed. No change of actual operating state or stored data was allowed.

Performance criterion C: Temporary loss of function was allowed, provided the function was self recoverable or could be restored by the operation of the controls.

3.2.1 Electrostatic Discharge Immunity:

- ☒ - No Degradation of Function
- ☐ - Distortion of Function
- ☐ - Error of Function

Requirement: Criterion B (or better)

- Satisfies Criterion A
- Satisfies Criterion B
- Satisfies Criterion C

3.2.2 RF Radiated Fields Immunity:

- ☒ - No Degradation of Function
- ☐ - Distortion of Function
- ☐ - Error of Function

Requirement: Criterion A

- Satisfies Criterion A
- Satisfies Criterion B
- Satisfies Criterion C

3.2.3 EFT/Burst Immunity:

- ☒ - No Degradation of Function
- ☐ - Distortion of Function
- ☐ - Error of Function

Requirement: Criterion B (or better)

- Satisfies Criterion A
- Satisfies Criterion B
- Satisfies Criterion C

3.2.4 RF Common Mode Immunity:

- ☒ - No Degradation of Function
- ☐ - Distortion of Function
- ☐ - Error of Function

Requirement: Criterion A

- Satisfies Criterion A
- Satisfies Criterion B
- Satisfies Criterion C

3.2.5 Power Frequency Magnetic Field Immunity:

- ☒ - No Degradation of Function
- ☐ - Distortion of Function
- ☐ - Error of Function

Requirement: Criterion A

- Satisfies Criterion A
- Satisfies Criterion B
- Satisfies Criterion C

4 TEST DATA & RELATED INFORMATION

4.1 Emissions:

4.1.1 Radiated Emissions Test:

4.1.1.1 Radiated Emissions Test Data:

A. Operating Conditions of The EUT: Operation Mode

Test Model: M827B

Test Date: Aug. 08, 2014

Test Specification	CISPR16-2-3	
Climatic Condition	Ambient Temperature: <u>26</u> °C	Relative Humidity: <u>60%</u> RH
Power Supply System	DC Power: <u>6</u> V	

Test data see the next pages.

Horizontal

Emission Frequency (MHz)	Meter Reading (dBuV)	CORR'd Factor (dB/m)	Results (dBuV/m)	Limit @10m (dBuV/m)	Margins (dB)
53.3173	32.96	-15.72	17.24	30.00	-12.76
143.4776	29.45	-8.02	21.43	30.00	-8.57
166.7949	30.87	-7.18	23.69	30.00	-6.31
180.7853	32.63	-10.59	22.04	30.00	-7.96
233.6378	35.08	-13.56	21.52	37.00	-15.48
317.5801	31.36	-10.58	20.78	37.00	-16.22

Vertical

Emission Frequency (MHz)	Meter Reading (dBuV)	CORR'd Factor (dB/m)	Results (dBuV/m)	Limit @10m (dBuV/m)	Margins (dB)
55.2705	36.22	-18.81	17.41	30.00	-12.59
143.9855	37.93	-10.94	26.99	30.00	-3.01
166.0721	29.50	-10.37	19.13	30.00	-10.87
181.6232	37.52	-14.34	23.18	30.00	-6.82
315.7515	34.94	-14.23	20.71	37.00	-16.29
399.3387	41.23	-11.79	29.44	37.00	-7.56

- Notes: 1) Place of measurement: EMC LAB. of the ETC (1F)
 2) Measurement Distance: 10 m
 3) Height of Receiving Antenna: 1 - 4 m
 4) Example Calculation: result for 53.3173 MHz $32.96 + (-15.72) = 17.24 \text{ dB } \mu\text{V/m}$
 5) The estimated measurement uncertainty of the result measurement is
 + 4.5dB / - 4.6dB ($30\text{MHz} \leq f \leq 300\text{MHz}$)
 + 4.3dB / - 4.3dB ($300\text{MHz} \leq f \leq 1\text{GHz}$)

4.2 Immunity:**4.2.1 Electrostatic Discharge Immunity Test:****4.2.1.1 Electrostatic Discharge Immunity Test Data:****A. Operating Conditions of The EUT: Operation Mode**

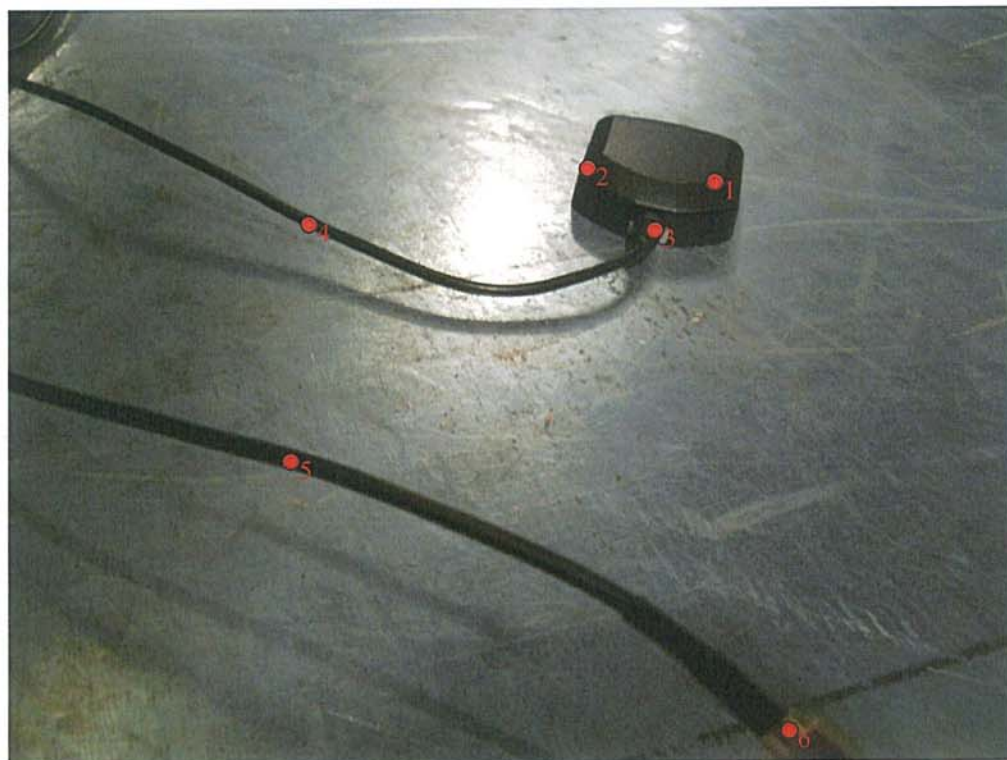
Test Date: Aug. 13, 2014

Test Specification	IEC 61000-4-2
Climatic Condition	Ambient Temperature: <u>21</u> °C Relative Humidity: <u>43</u> % RH Atmospheric Pressure: <u>986</u> mbar
Power Supply System	DC Power: <u>6</u> V

Test Points	Contact Discharge (kV) Criterion			Air Discharge (kV) Criterion			Test times and voltage at each condition	
1.EUT-VCP	<input checked="" type="checkbox"/> 2: <u>A</u>	<input checked="" type="checkbox"/> 4: <u>A</u>	<input type="checkbox"/> 6: _	<input type="checkbox"/> 2: _	<input type="checkbox"/> 4: _	<input type="checkbox"/> 8: _	<input checked="" type="checkbox"/> 10..neg	<input checked="" type="checkbox"/> 10..pos
2.EUT-HCP	<input checked="" type="checkbox"/> 2: <u>A</u>	<input checked="" type="checkbox"/> 4: <u>A</u>	<input type="checkbox"/> 6: _	<input type="checkbox"/> 2: _	<input type="checkbox"/> 4: _	<input type="checkbox"/> 8: _	<input checked="" type="checkbox"/> 10..neg	<input checked="" type="checkbox"/> 10..pos
3.EUT-1~5	<input type="checkbox"/> 2: <u>A</u>	<input type="checkbox"/> 4: <u>A</u>	<input type="checkbox"/> 6: _	<input checked="" type="checkbox"/> 2: <u>A</u>	<input checked="" type="checkbox"/> 4: <u>A</u>	<input checked="" type="checkbox"/> 8: <u>A</u>	<input checked="" type="checkbox"/> 10..neg	<input checked="" type="checkbox"/> 10..pos
2.EUT-6	<input checked="" type="checkbox"/> 2: <u>A</u>	<input checked="" type="checkbox"/> 4: <u>A</u>	<input type="checkbox"/> 6: _	<input type="checkbox"/> 2: _	<input type="checkbox"/> 4: _	<input type="checkbox"/> 8: _	<input checked="" type="checkbox"/> 10..neg	<input checked="" type="checkbox"/> 10..pos

Result:	<input checked="" type="checkbox"/> Complied	<input type="checkbox"/> Does not comply
Criterion Required:	<u>B</u>	Criterion Met: <u>A</u>

Note: "A" means the EUT continued to operate as intended. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended.

TEST POINT

4.2.1 RF Radiated Fields Immunity Test:**4.2.1.1 RF Radiated Fields Immunity Test Data:****A. Operating Conditions of the EUT: Operation Mode**

Test Date: Aug. 09, 2014

Test Specification	IEC 61000-4-3	
Climatic Condition	Ambient Temperature: <u>23</u> °C	Relative Humidity: <u>58</u> % RH
Power Supply System	DC Power: <u>6</u> V	

Frequency Range : <u>80</u> MHz ~ <u>1000</u> MHz		Field Strength: <u>3</u> V/m	Modulation (AM 1kHz 80%)
<u>1400</u> MH z ~ <u>2000</u> MHz			
Frequency Range : <u>2000</u> MHz ~ <u>2700</u> MHz		Field Strength: <u>1</u> V/m	
Sweep Rate: $\leq 1.5 \times 10^{-3}$ decades/s	Step Size: ≤ 1 % of preceding frequency value		Dwell Time: <u>3.0</u> s
Frequency Range (MHz)	Polarization of Device	Test Result	
80~1000	Vertical	A	
80~1000	Horizontal	A	
1400~2700	Vertical	A	
1400~2700	Horizontal	A	
2000~2700	Vertical	A	
2000~2700	Horizontal	A	

Note: "A" means the EUT continued to operate as intended. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended.

4.2.2 EFT/Burst Immunity Test:**4.2.2.1 EFT/Burst Immunity Test Data:**A. Operating Conditions of The EUT: Operation Mode

Test Date: Aug. 04, 2014

Test Specification	IEC 61000-4-4		
Climatic Condition	Ambient Temperature: <u>21</u> °C		Relative Humidity: <u>52</u> % RH
	Atmospheric Pressure: <u>986</u> mbar		
Power Supply System	DC Power: <u>6</u> V		

Pulse: 5 /50ns Burst: 15ms /300ms		Repetition Rate: <u>2.5kHz</u> above 2.0kV <u>5kHz</u> below and equal 2.0kV		Test time: <u>1</u> min/each condition	
\Voltage\Polarity\		<u>0.5</u> kV		<u>--</u> kV	
\Test Point\Mode\Result\		+	—	+	—
Signal Line		A	A	----	----

Note: "A" means the EUT continued to operate as intended. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended.

4.2.3 RF Common Mode Immunity Test:**4.2.3.1 RF Common Mode Immunity Test Data:****A. Operating Conditions of The EUT: Operation Mode**

Test Date: Aug. 05, 2014

Test Specification	IEC 61000-4-6	
Climatic Condition	Ambient Temperature: <u>24</u> °C	Relative Humidity: <u>58</u> % RH
Power Supply System	DC Power: <u>6</u> V	

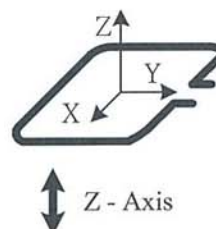
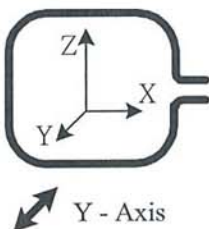
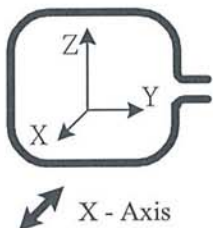
Frequency Range : <u>0.15</u> MHz ~ <u>80</u> MHz	Test Voltage : <u>3</u> V	Modulation (AM 1kHz 80%)
Sweep Rate : $\leq 1.5 \times 10^{-3}$ decades/s	Step Size : ≤ 1 % of preceding frequency value	Dwell Time : <u>2.9</u> s
Frequency Range (MHz)	Tested Line	Test Result
<u>0.15</u> MHz ~ <u>80</u> MHz	Signal (Clamp)	A

Note: "A" means the EUT continued to operate as intended. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended.

4.2.1 Power Frequency Magnetic Field Immunity Test:**4.2.1.1 Power Frequency Magnetic Field Immunity Test Data:**A. Operating Conditions of the EUT: Operation Mode

Test Date : Aug. 04, 2014

Test Specification	IEC 61000-4-8	
Climatic Condition	Ambient Temperature: <u>23</u> °C	Relative Humidity: <u>54</u> % RH
Power Supply System	DC Power: <u>6</u> V	



Magnetic field frequency: <u>50/60</u> Hz		Continuous magnetic field strength: <u>3</u> A/m	
Magnetic field direction		Testing result	
X - Axis		A	
Y - Axis		A	
Z - Axis		A	

Result:	<input checked="" type="checkbox"/> Complied <input type="checkbox"/> Does not comply	
Criterion Required:	<u>A</u>	Criterion Met: <u>A</u>

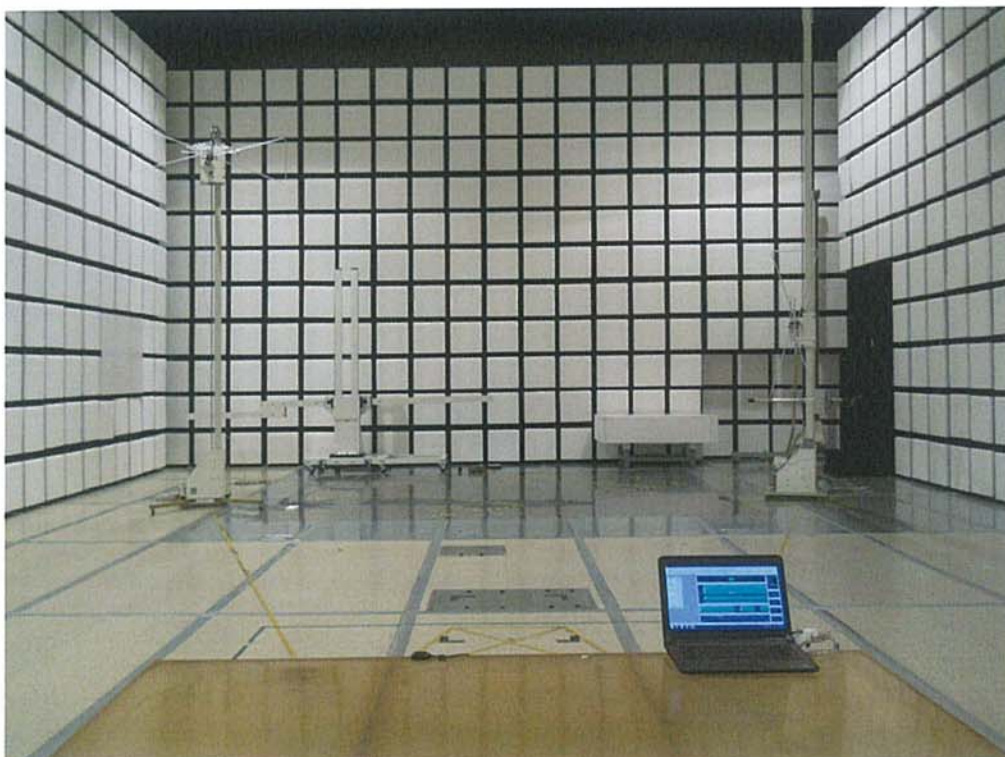
Note: "A" means the EUT continued to operate as intended. No degradation of performance or loss of function was allowed below a performance level specified by the manufacturer, when the EUT was used as intended.

5 EQUIPMENTS LIST FOR TESTING

Item	Name	Manufacturer	Model	Calibration Date	Recommended Recal. Date
1	EMI Test Receiver	R&S	ESIB 7	Jul. 26, 2014	Jul. 25, 2015
2	Antenna	Schwarzbeck	VULB9161	Jul. 28, 2014	Jul. 27, 2015
3	Electrostatic Discharge Simulator	Noiseken	ESS-2000-G365	Jun. 24, 2014	Jun. 23, 2015
4	RF Power Amplifier	AR	120S1G4M1	Jun. 23, 2014	Jun. 22, 2015
5	RF Power Amplifier	AR	250W1000A	Jun. 23, 2014	Jun. 22, 2015
6	IMS TEST SYSTEM	R&S	IMS	Jun. 23, 2014	Jun. 22, 2015
7	Magnetic fielded immunity test System	FCC	F-1000-4-8-G125A/1000A	N.C.R.	N.C.R.
8	DC/AC Clamp Meter	TES	3050	Jun. 20, 2014	Jun. 19, 2015
9	EFT Generator	Noiseken	FNS-AXII B50	Aug. 28, 2013	Aug. 27, 2014
10	806-6 EM Injection Clamp	FCC	F-203I-23mm	Sep. 03, 2013	Sep. 02, 2014

ANNEX A: PHOTOS

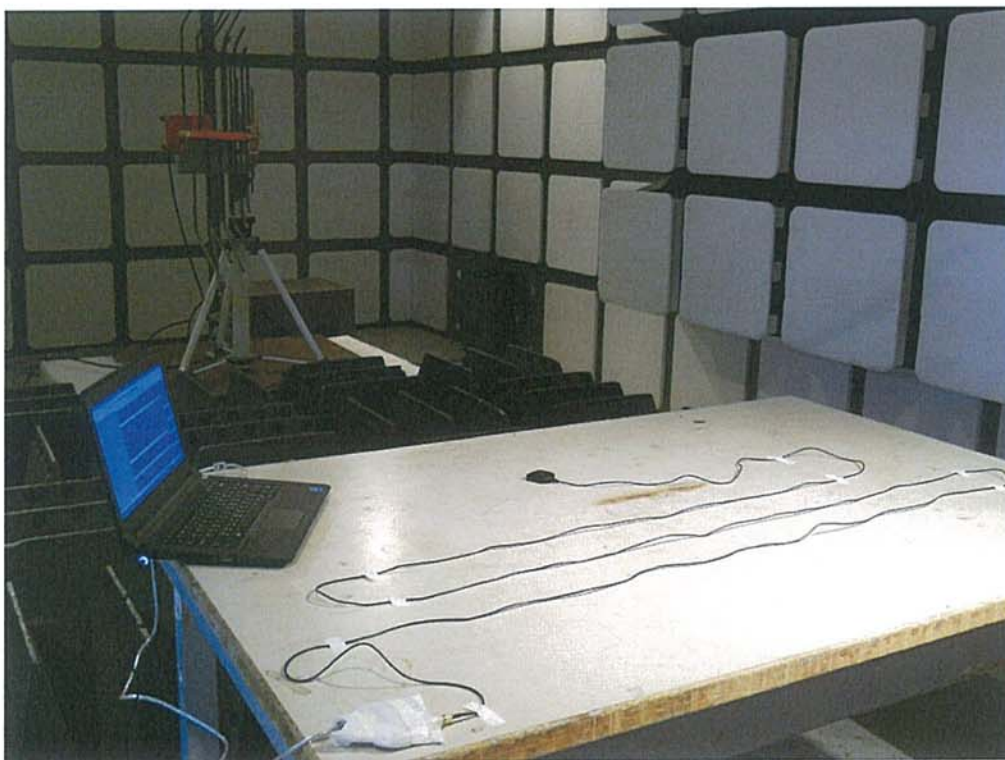
1. Radiated Emissions Test Setup Photos

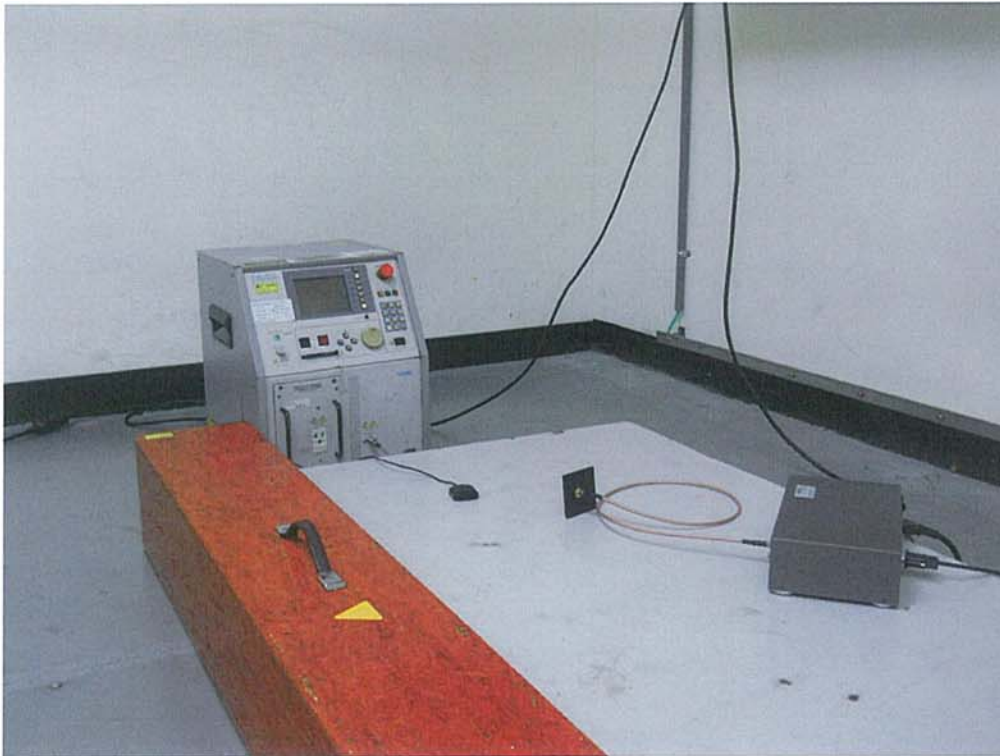
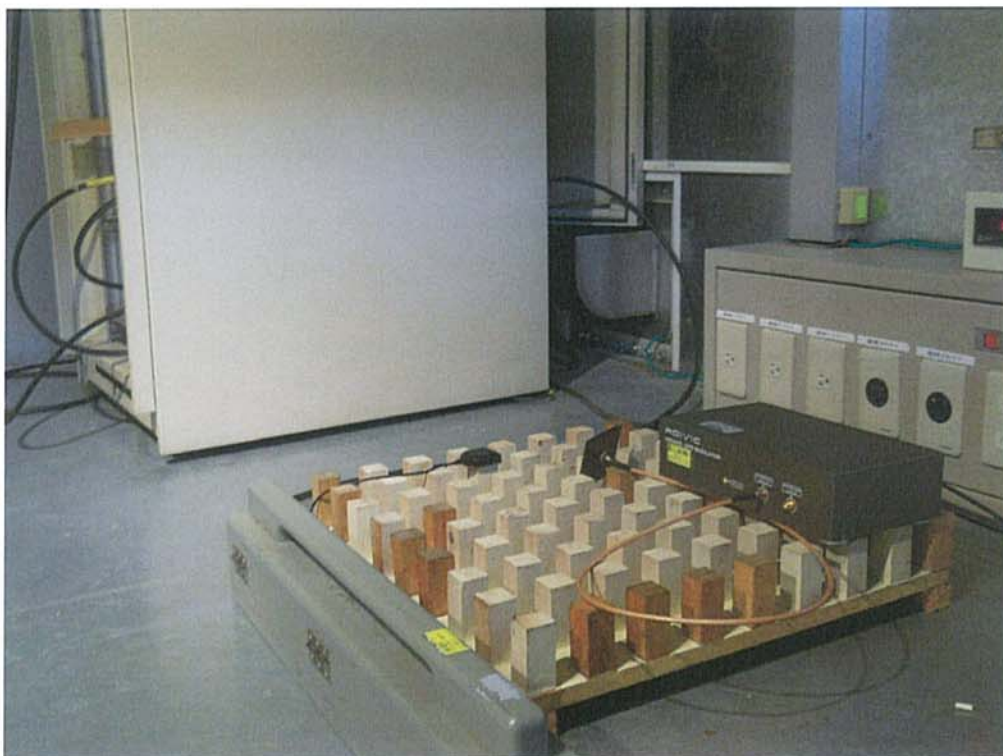


2. Electrostatic Discharge Immunity Test Setup Photo



3. RF Radiated Fields Immunity Test Setup Photo



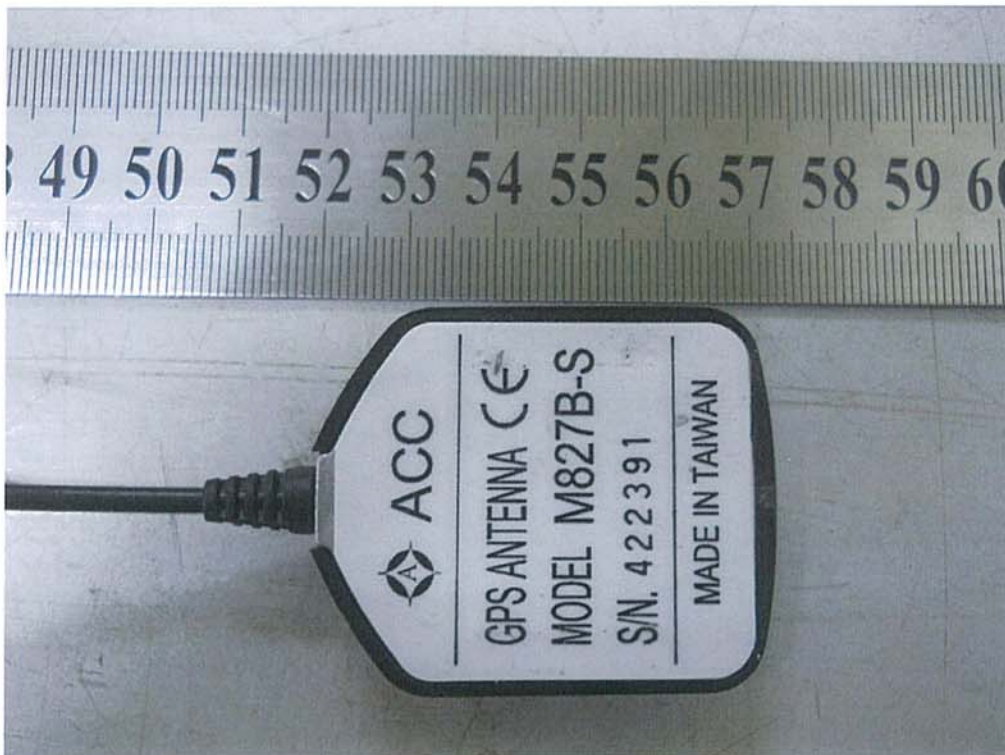
4. EFT/Burst Immunity Test Setup Photo**5. RF Common Mode Immunity Test Setup Photo**

6. Power Frequency Magnetic Field Immunity Test Setup Photo

7. Outside view 1 of EUT

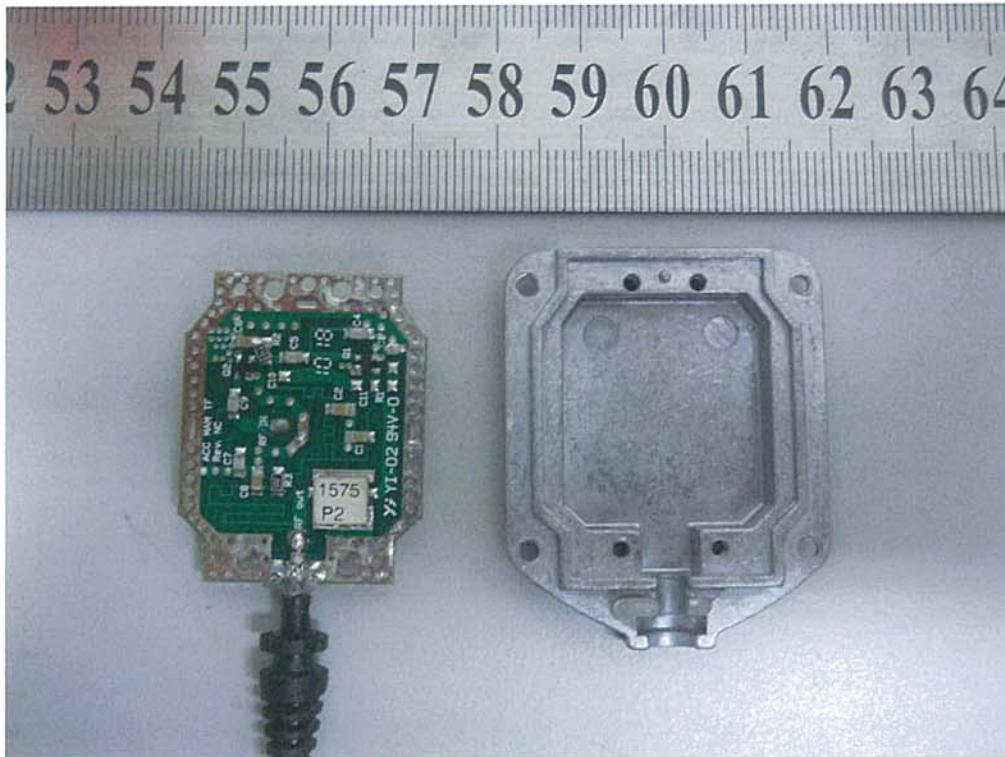


8. Outside view 2 of EUT

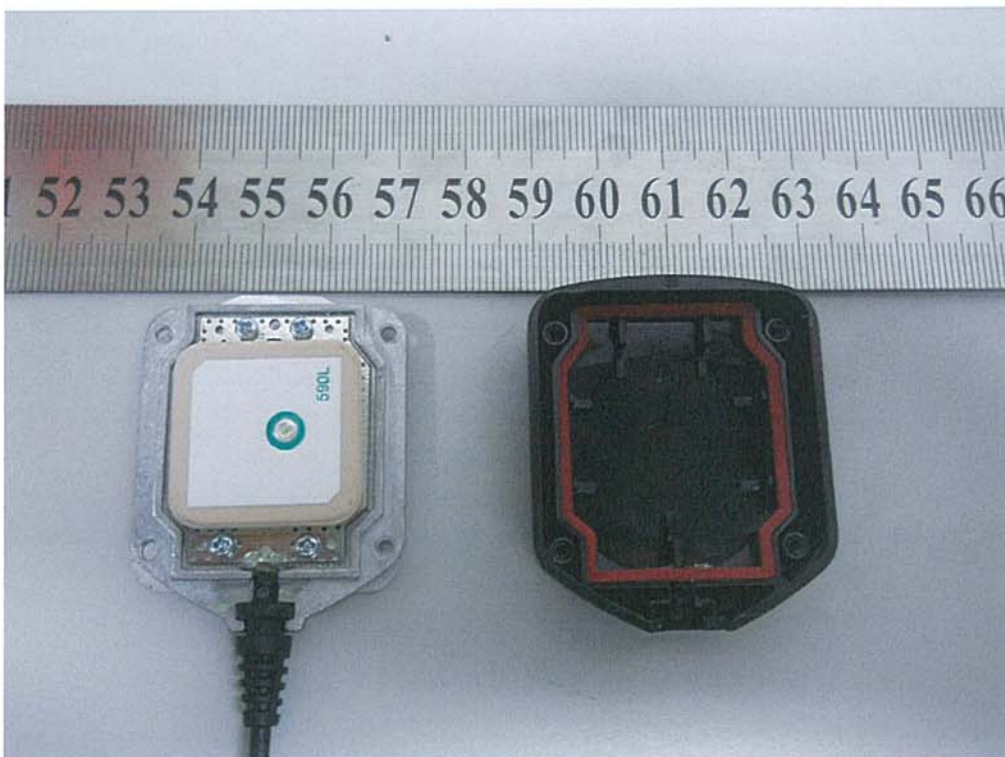


9. Outside view 3 of EUT

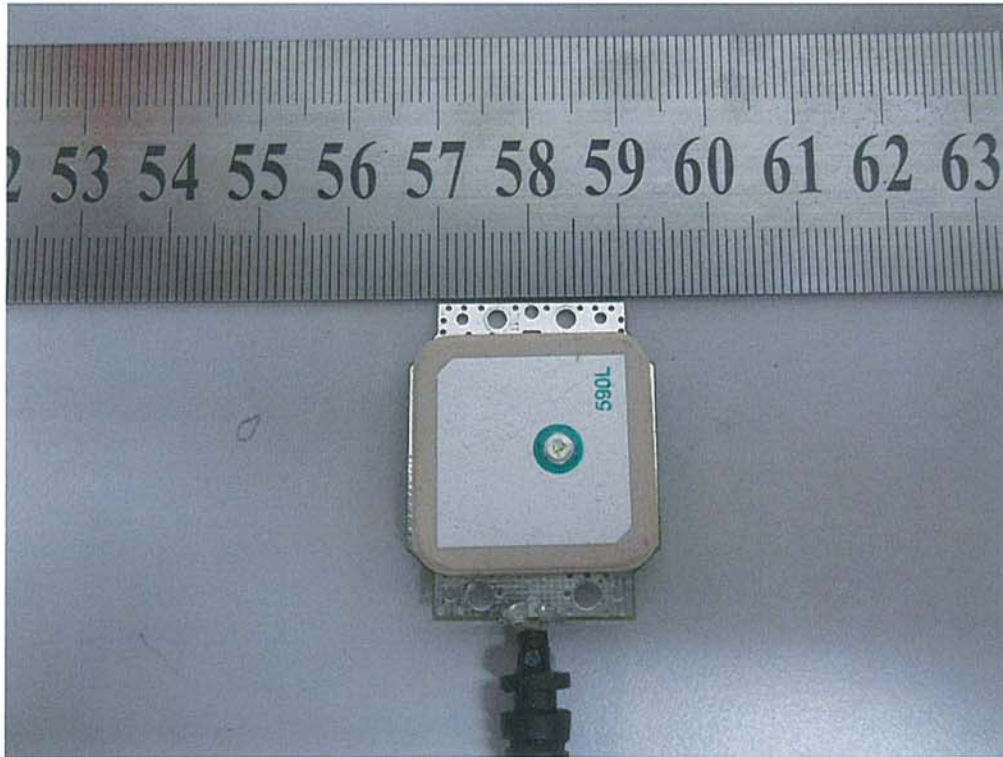
10. Inside view 1 of EUT



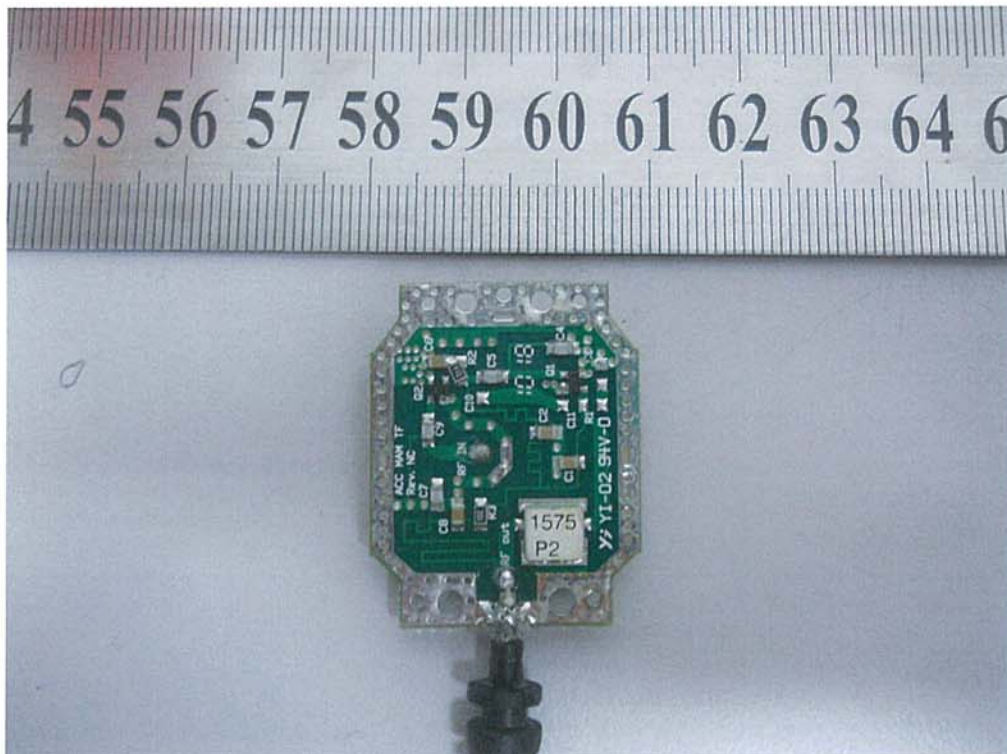
11. Inside view 2 of EUT



12. Front view of PCB1



13. Rear view of PCB1



ANNEX B: DIFFERENCE INFORMATION OF SERIES MODEL

1. Test Model (Main Model): M827B
2. Test Model (Series Model):
3. The Model without test (Series Model): M812B 、 M820B 、 U820B

The Difference Information:

Model No.	Main Model:	Series Model:	Series Model:	Series Model:
Difference Item	M827B	M812B	M820B	U820B
PCB Layout and The Circuit Diagram	O	O	O	O
Components	O	R3 resistor is different with M827B	R3 resistor is different with M827B	R3 resistor is different with M827B
Material	O	O	O	O
Function	O	O	O	O
Shape & Color	O	O	O	X The Housing is different with M827B
Other	O	O	O	O
Notes: (1) "O" means the item is same with Main model.				
(2) "X" means the item is different with main model. And please explain it.				

- Remark: 1. The multiple listing recognized without test basis is according to information supplied by manufacturer.
2. The manufacturer or supplier's quality system shall ensure that the tested model or apparatus is representative of the series-produced apparatus concerned.

Manufacturer / SupplierCompany Name : Allis CommunicationsSignature : Lucy LeeName : Lucy Lee Date : 2014.08.27