



## Test Report

Product Name : GP Smile51  
Model No. : NAV-51  
FCC ID. : RJINAV-51XX

Applicant : Holux Technology, Inc.

Address : 1F, No.30, R&D Rd. II, Hsinchu City 300, Science-based  
Industrial Park Taiwan (R.O.C.)

Date of Receipt : 2005/08/11  
Issued Date : 2005/08/26  
Report No. : 058H056F

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

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# Test Report Certification

Issued Date : 2005/08/26

Report No. : 058H056F



Product Name : GPSmile51  
 Applicant : Holux Technology, Inc.  
 Address : 1F, No.30, R&D Rd. II, Hsinchu City 300, Science-based  
 Industrial Park Taiwan (R.O.C.)  
 Manufacturer : Holux Technology, Inc.  
 Model No. : NAV-51  
 FCC ID. : RJINAV-51XX  
 Rated Voltage : AC 120 V / 60 Hz  
 EUT Voltage : AC 120 V / 60 Hz  
 Trade Name : HOLUX  
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart B: 2004,  
 CISPR 22 Edition 4.1: 2004  
 Classification : B  
 Test Result : Complied



The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.  
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : Demi Chang

(Demi Chang)

Tested By : Ken su

(Ken Su)

Approved By : Bob Fang

(Bob Fang)

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## 1. General Information

### 1.1. EUT Description

Product Name	GPSmile51
Trade Name	HOLUX
Model No.	NAV-51

Component	
GPS Antenna Cable	Shielded, 5.0m
Earphone Cable	Non-Shielded, 1.2m
Power Adapter	Chentai, YFAF23073001 Cable Out: Non-Shielded, 1.2m

Note:

This EUT is a GPSmile51.

**1.2. Test Mode**

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

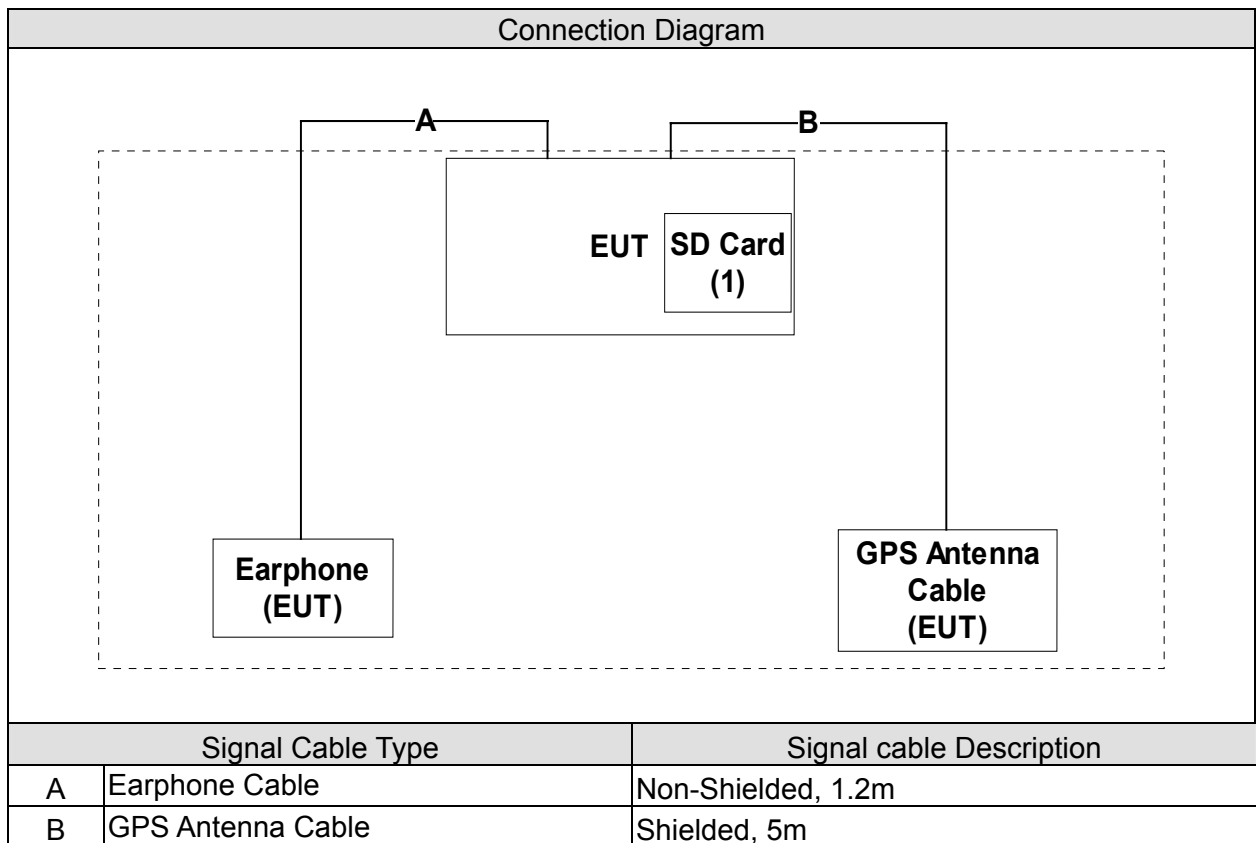
Pre-Test Mode	
EMI	Mode 1: Normal Operation
Final Test Mode	
EMI	Mode 1: Normal Operation

**1.3. Tested System Details**

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1   SD Card	Transcend	6451AB	117436 31820523	DoC	--

**1.4. Configuration of tested System**



**1.5. EUT Exercise Software**

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	The EUT will play the function from GPS program and MP3 Player.
4	Verify the model operation.
5	Repeat the above procedure (3) to (4).

## 1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	ANSI.C63.4 CE	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	ANSI.C63.4 RE	15 -35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

January 24, 2005 File on  
 Federal Communications Commission  
 Laboratory Division  
 7435 Oakland Mills Road  
 Columbia, MD 21046  
 Registration Number: 365520



Accredited by CNLA  
 Accreditation Number: 1313  
 Effective through: September 27, 2007



1313  
 ILAC MRA

Accredited by NVLAP  
 NVLAP Lab Code: 200347-0  
 Effective through: September 30 , 2005



Site Name: Quietek Corporation

Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,  
 Chiung-Lin, Hsin-Chu County,  
 Taiwan, R.O.C.

TEL : 886-3-592-8858 / FAX : 886-3-592-8859  
 E-Mail : [service@quietek.com](mailto:service@quietek.com)



**2. Conducted Emission**

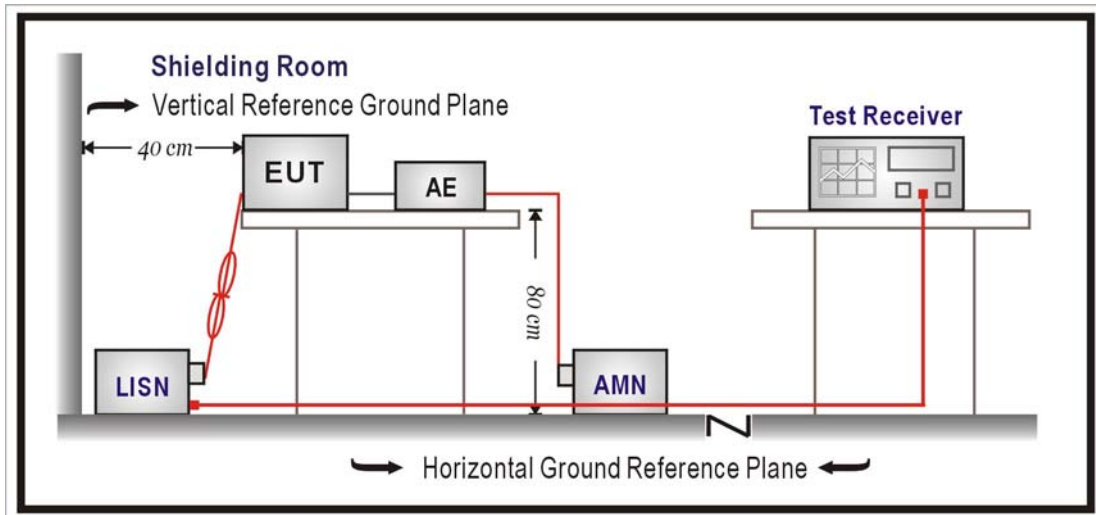
**2.1. Test Equipment**

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/018	Sep., 2004	
2	Artificial Mains Network	R & S	ENV4200/848411/10	Feb., 2005	Peripherals
3	LISN	R & S	ESH3-Z5/825562/002	Feb., 2005	EUT
4	Pulse Limiter	R & S	ESH3-Z2/357.8810.52	Feb., 2005	
5	No.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

**2.2. Test Setup**



**2.3. Limits**

<b>FCC Part 15 Subpart B Paragraph 15.107 Limits (dBuV)</b>				
Frequency MHz	Class A		Class B	
	QP	AV	QP	AV
0.15 - 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 - 30	73	60	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

**2.4. Test Procedure**

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

**2.5. Test Specification**

According to FCC CFR Title 47 Part 15 Subpart B: 2004, CISPR 22 Edition 4.1: 2004

**2.6. Test Result**

Product	GPSmile51		
Test Item	Conducted Emission		
Test Mode	Mode 1: Normal Operation		
Date of Test	2005/08/15	Test Site	No.2 Shielded Room

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level dBuV	Emission Level dBuV	Limits dBuV
=====					
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.162	0.00	0.10	50.73	50.83	65.38
0.193	0.01	0.10	50.97	51.08	63.91
0.252	0.03	0.10	47.14	47.27	61.71
* 0.377	0.05	0.10	46.76	46.91	58.35
0.716	0.08	0.10	44.00	44.18	56.00
2.041	0.14	0.10	35.97	36.22	56.00
<b>Average</b>					
* 0.162	0.00	0.10	45.10	45.20	55.36
0.193	0.01	0.10	41.50	41.61	53.91
0.252	0.03	0.10	39.60	39.73	51.69
0.377	0.05	0.10	37.30	37.45	48.35
0.716	0.08	0.10	34.10	34.28	46.00
2.041	0.14	0.10	25.80	26.05	46.00

Note:

1. All Reading Levels are Quasi-Peak and Average value.
2. " \* ", means this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable Loss.

Product	GPSmile51		
Test Item	Conducted Emission		
Test Mode	Mode 1: Normal Operation		
Date of Test	2005/08/15	Test Site	No.2 Shielded Room

Frequency	Cable Loss	LISN Factor	Reading Level	Emission Level	Limits
MHz	dB	dB	dBuV	dBuV	dBuV

=====

**Line 2**

**Quasi-Peak**

*	0.205	0.02	0.10	51.74	51.86	63.42
	0.263	0.03	0.10	45.69	45.82	61.33
	0.404	0.05	0.10	44.29	44.44	57.77
	0.599	0.07	0.10	43.02	43.19	56.00
	0.806	0.09	0.10	40.97	41.16	56.00
	1.228	0.11	0.10	37.27	37.48	56.00

**Average**

*	0.205	0.02	0.10	44.20	44.32	53.41
	0.263	0.03	0.10	37.80	37.93	51.34
	0.404	0.05	0.10	35.40	35.55	47.77
	0.599	0.07	0.10	33.90	34.07	46.00
	0.806	0.09	0.10	32.10	32.29	46.00
	1.228	0.11	0.10	30.60	30.81	46.00

Note:

1. All Reading Levels are Quasi-Peak and Average value.
2. " \* ", means this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable Loss.

## 2.7. Test Photo

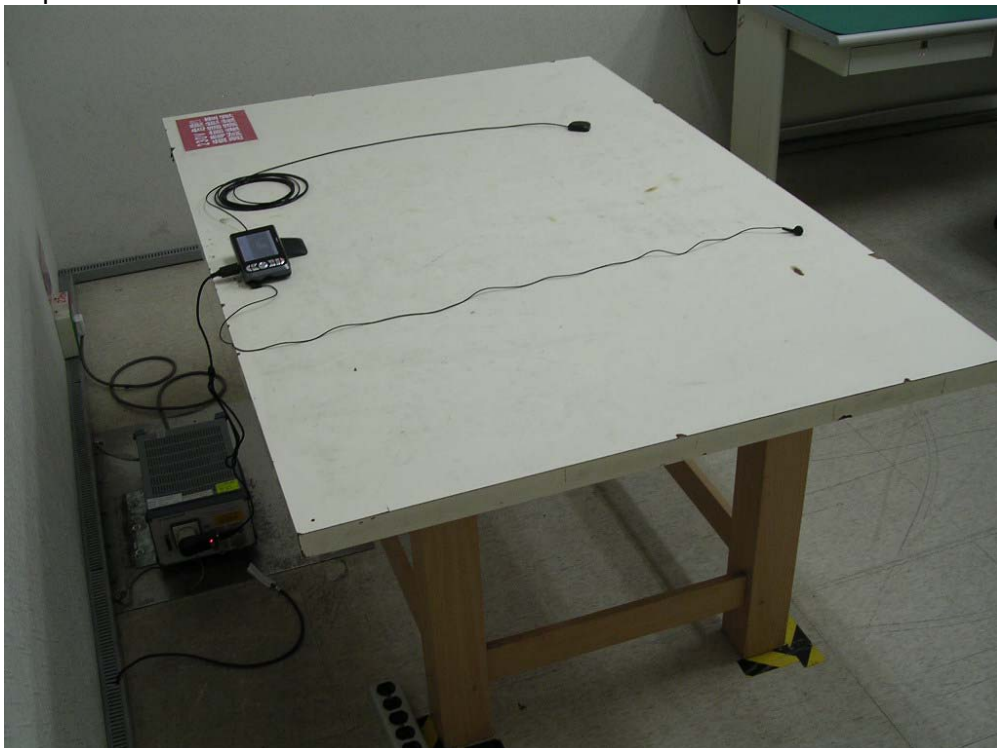
Test Mode : Mode 1: Normal Operation

Description : Front View of Conducted Emission Test Setup



Test Mode : Mode 1: Normal Operation

Description : Back View of Conducted Emission Test Setup



### 3. Radiated Emission

#### 3.1. Test Equipment

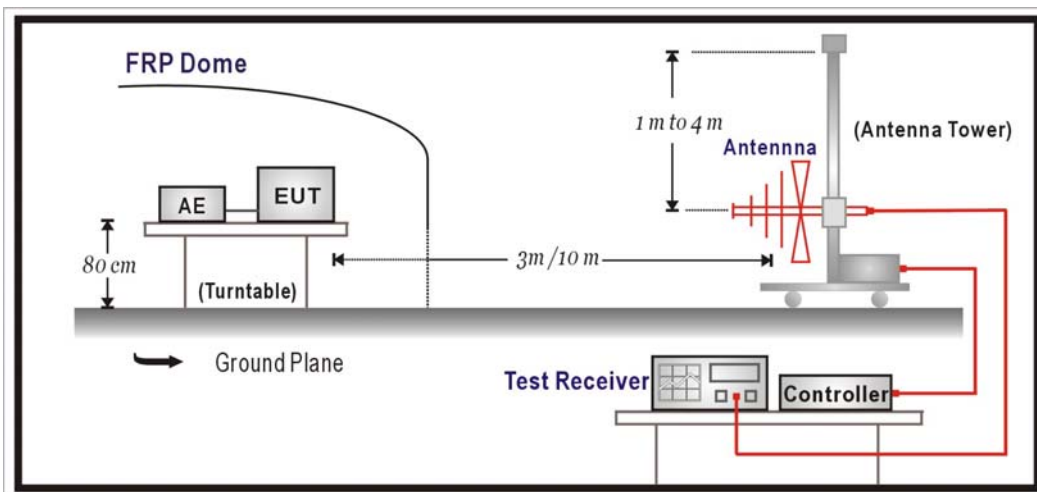
The following test equipment are used during the test:

Item		Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Test Receiver	R & S	ESCS 30 / 825442/017	Jan., 2005
2	X	Spectrum Analyzer	Advantest	R3261C / 81720266	N/A
3	X	Pre-Amplifier	HP	8447D / 2944A09276	N/A
4	X	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2004
5	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2005
6	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2005
7	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Jul., 2005
8		No.1 OATS			Sep., 2004

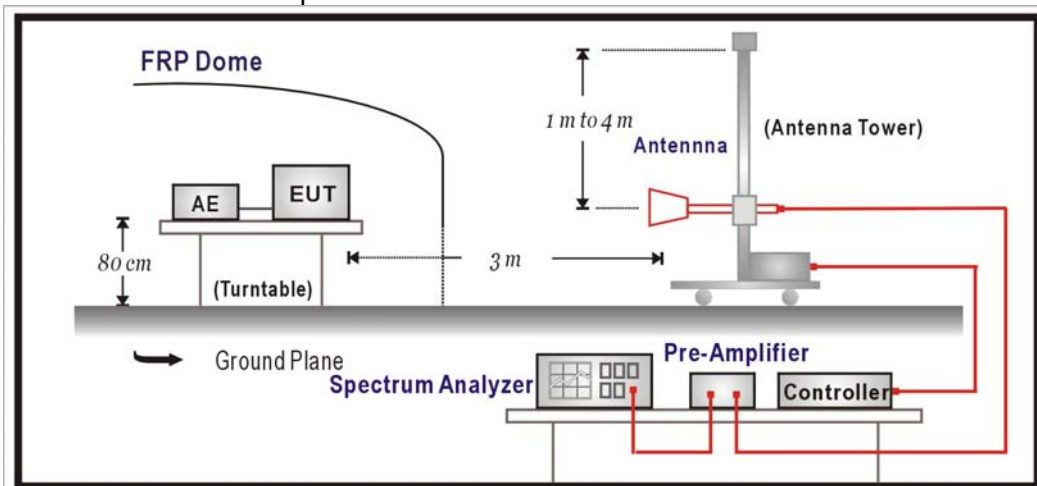
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.  
2. Mark "X" test instruments are used to measure the final test results.

#### 3.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



**3.3. Limits**

Under 1GHz test shall not exceed the following value:

<b>CISPR 22 Limits (dBuV/m)</b>				
Frequency MHz	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 – 230	10	40	10	30
230 – 1000	10	47	10	37

- Remark: 1. The tighter limit shall apply at the edge between two frequency bands.  
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.  
 3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

Above 1GHz test shall not exceed the following value:

<b>FCC Part 15 Subpart B Paragraph 15.109 Limits (dBuV/m)</b>				
Frequency MHz	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30-88	10	39	3	40
88-216	10	43.5	3	43.5
216-960	10	46.4	3	46
Above 960	10	49.5	3	54

- Remark: 1. In the Above Table, the tighter limit applies at the band edges.  
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.  
 3. RF Voltage (dBuV) = 20 log RF Voltage (uV)

**3.4. Test Procedure**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. For class A, the EUT was positioned such that the distance from antenna to the EUT was 10 meters for under 1GHz and above 1GHz.

For class B, the EUT was positioned such that the distance from antenna to the EUT was 10 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 120 kHz and above 1GHz is 1MHz.

**3.5. Test Specification**

According to FCC CFR Title 47 Part 15 Subpart B: 2004, CISPR 22 Edition 4.1: 2004



3.6. Test Result

Product	GPSmile51		
Test Item	Radiated Emission		
Test Mode	Mode 1: Normal Operation		
Date of Test	2005/10/28	Test Site	No.1 OATS

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
MHz	Loss	Factor	dB	Level	Level	dB	dBuV/m
	dB	dB/m		dBuV	dBuV/m		

Horizontal:

Quasi-Peak Detector:

126.000	2.07	11.67	0.00	6.54	20.29	9.71	30.00
168.000	2.48	9.59	0.00	10.75	22.81	7.19	30.00
213.000	2.92	9.03	0.00	10.08	22.03	7.97	30.00
219.000	2.97	9.38	0.00	11.95	24.31	5.69	30.00
225.000	3.03	9.83	0.00	5.62	18.48	11.52	30.00
372.000	4.13	14.84	0.00	5.97	24.94	12.06	37.00
384.000	4.19	15.11	0.00	8.11	27.41	9.59	37.00
420.000	4.38	16.52	0.00	6.43	27.33	9.67	37.00
540.000	5.00	18.87	0.00	3.94	27.81	9.19	37.00
576.000	5.20	18.72	0.00	4.81	28.72	8.28	37.00
672.000	5.70	19.09	0.00	2.69	27.48	9.52	37.00
700.450	5.83	19.19	0.00	4.00	29.02	7.98	37.00
* 864.000	6.69	20.73	0.00	6.00	33.42	3.58	37.00

Peak Detector:

1588.000	0.00	21.27	31.65	42.60	32.22	41.78	74.00
* 1946.000	0.00	22.84	31.70	55.66	46.80	27.20	74.00
2012.000	0.00	23.25	31.75	49.20	40.70	33.30	74.00
3555.000	0.00	26.46	31.58	45.83	40.70	33.30	74.00
5042.000	0.00	29.59	31.61	35.63	33.60	40.40	74.00
6605.000	0.00	30.48	32.20	40.12	38.40	35.60	74.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	GPSmile51		
Test Item	Radiated Emission		
Test Mode	Mode 1: Normal Operation		
Date of Test	2005/10/28	Test Site	No.1 OATS

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
MHz	Loss	Factor	dB	Level	Level	dB	dBuV/m
	dB	dB/m		dBuV	dBuV/m		

=====

**Vertical:**

**Quasi-Peak Detector:**

*	36.000	1.21	14.68	0.00	6.10	21.98	8.02	30.00
	66.000	1.50	5.83	0.00	6.73	14.06	15.94	30.00
	85.900	1.69	8.56	0.00	7.77	18.02	11.98	30.00
	120.000	2.02	11.56	0.00	3.82	17.40	12.60	30.00
	150.000	2.31	10.43	0.00	5.70	18.44	11.56	30.00
	162.000	2.42	10.23	0.00	8.09	20.74	9.26	30.00
	219.000	2.97	9.19	0.00	5.73	17.89	12.11	30.00

**Peak Detector:**

	1585.000	0.00	22.07	31.65	46.38	36.80	37.20	74.00
	2004.000	0.00	21.59	31.75	48.66	38.50	35.50	74.00
*	3550.000	0.00	26.46	31.58	45.23	40.10	33.90	74.00
	4380.000	0.00	26.40	31.66	43.76	38.50	35.50	74.00
	5220.000	0.00	28.29	31.63	38.85	35.50	38.50	74.00
	6802.000	0.00	31.46	32.00	37.64	37.10	36.90	74.00

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ \* ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss – PreAMP.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

**3.7. Test Photo**

Test Mode : Mode 1: Normal Operation

Description : Front View of Radiated Emission Test Setup



Test Mode : Mode 1: Normal Operation

Description : Back View of Radiated Emission Test Setup



Test Mode : Mode 1: Normal Operation

Description : Front View of High Frequency Radiated Test Setup





## Attachement

### ➤ EUT Photograph

(1) EUT Photo



(2) EUT Photo



(3) EUT Photo



(4) EUT Photo

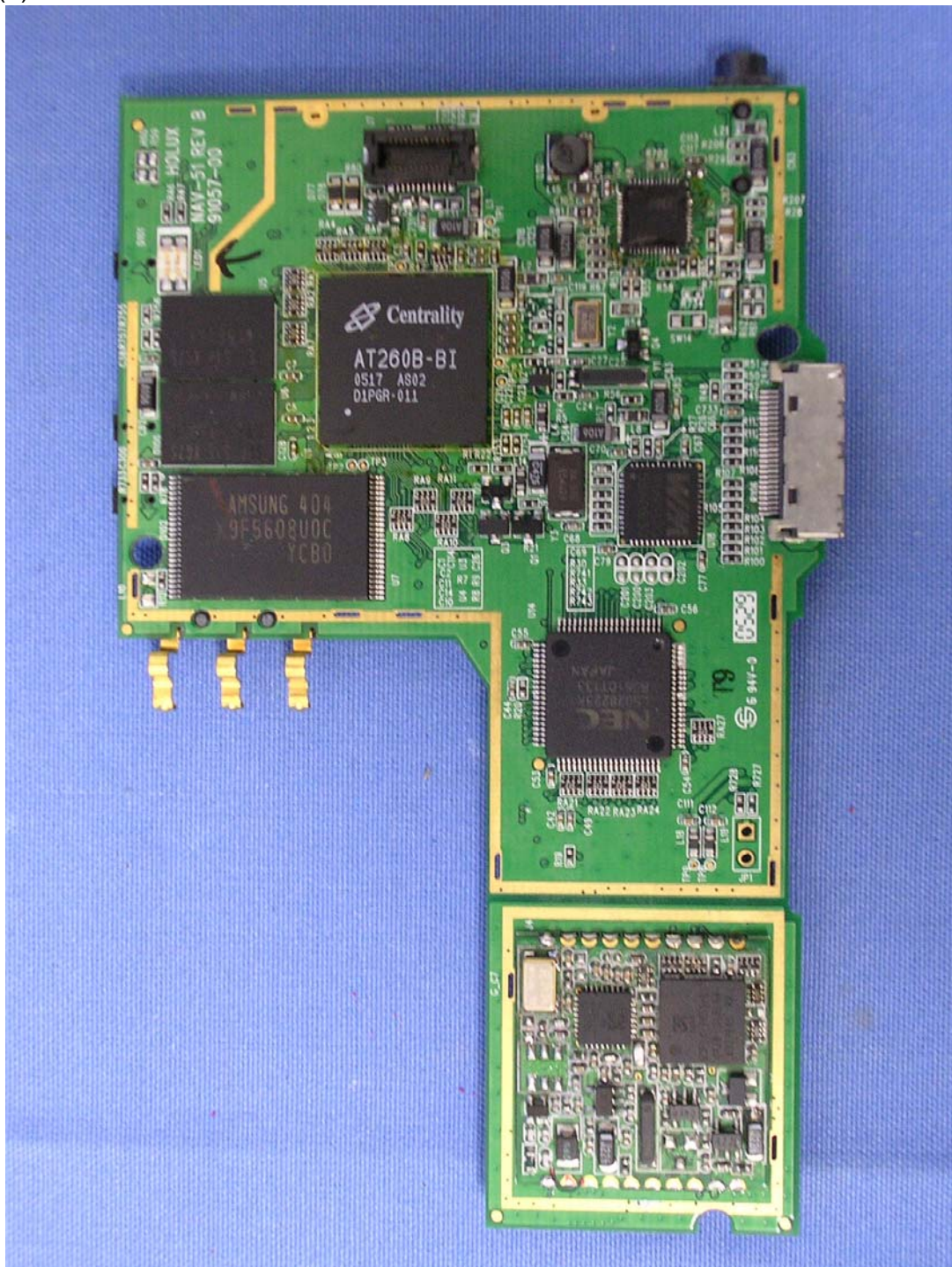




(5) EUT Photo

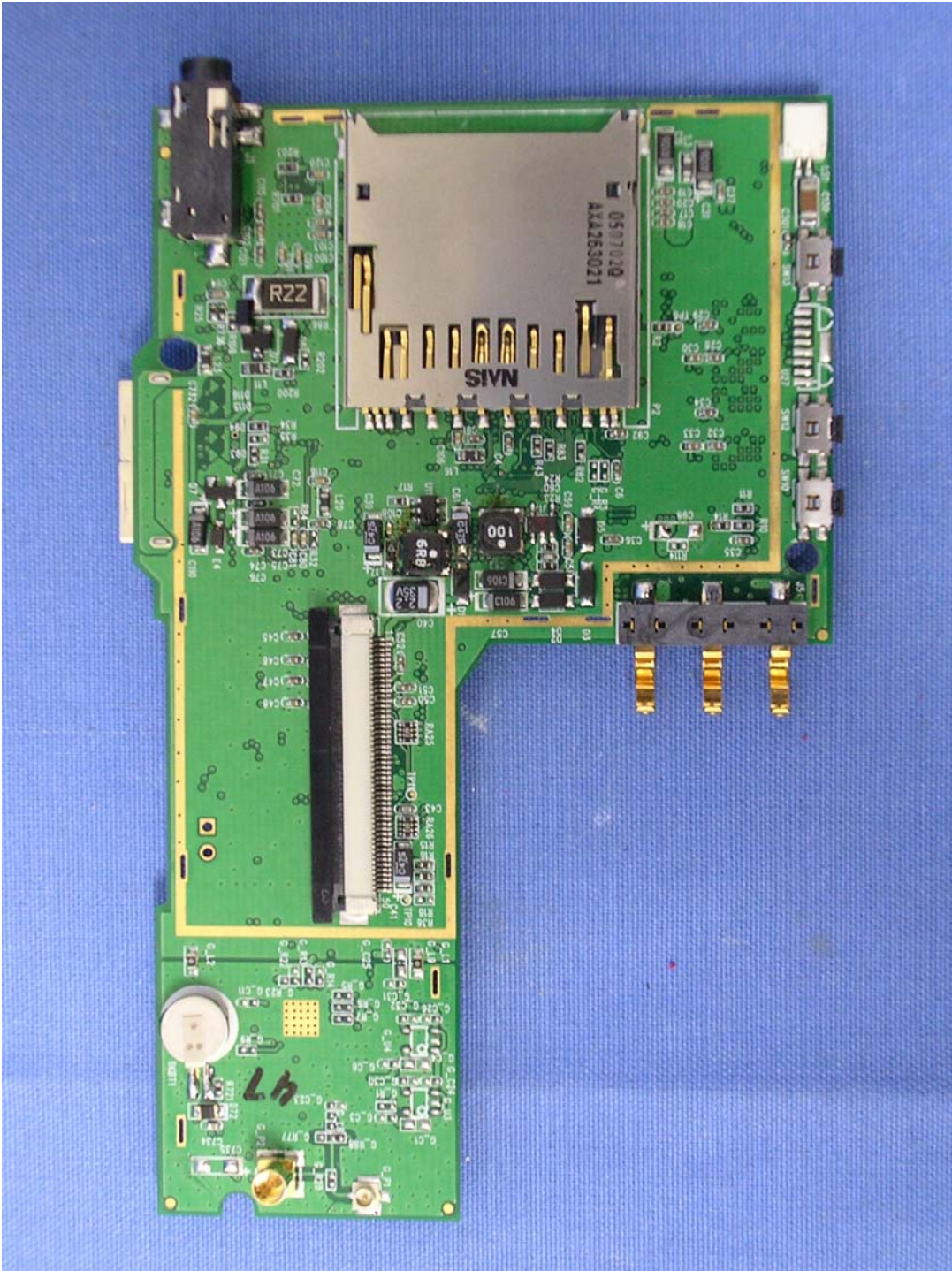


(6) EUT Photo

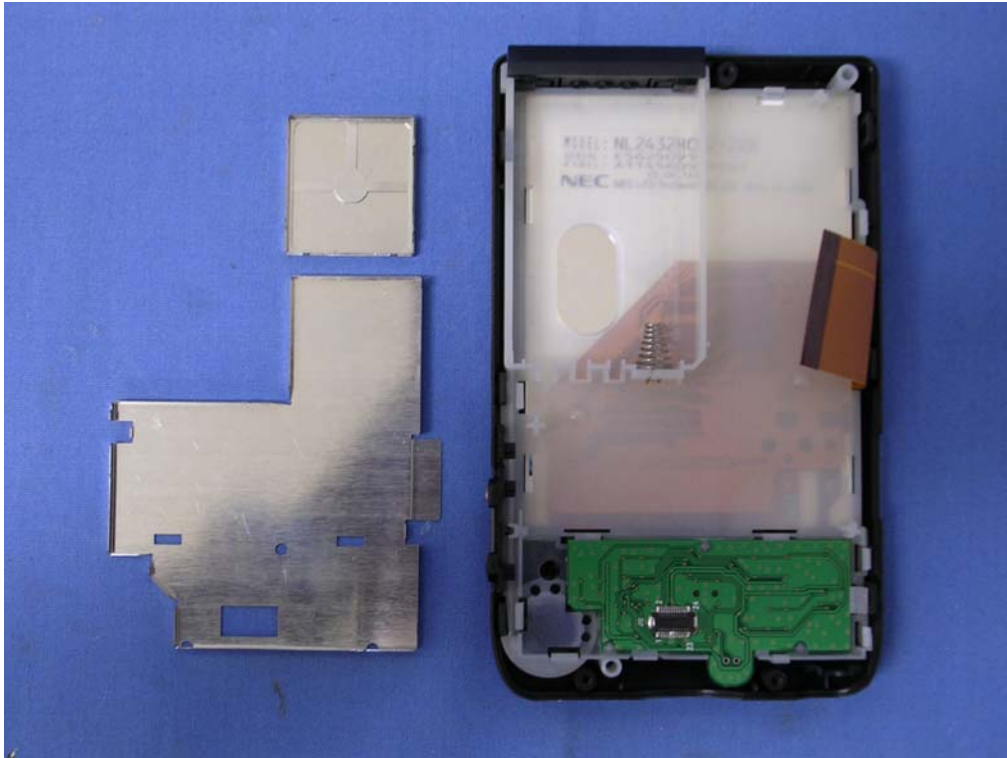




(7) EUT Photo



(8) EUT Photo

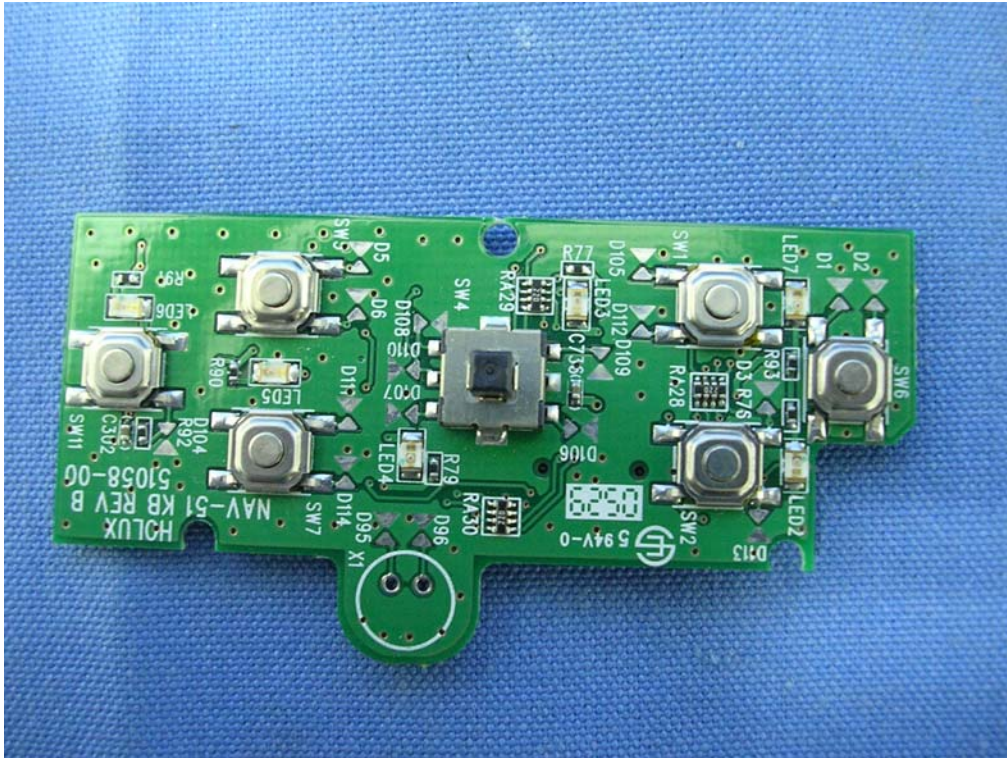


(9) EUT Photo

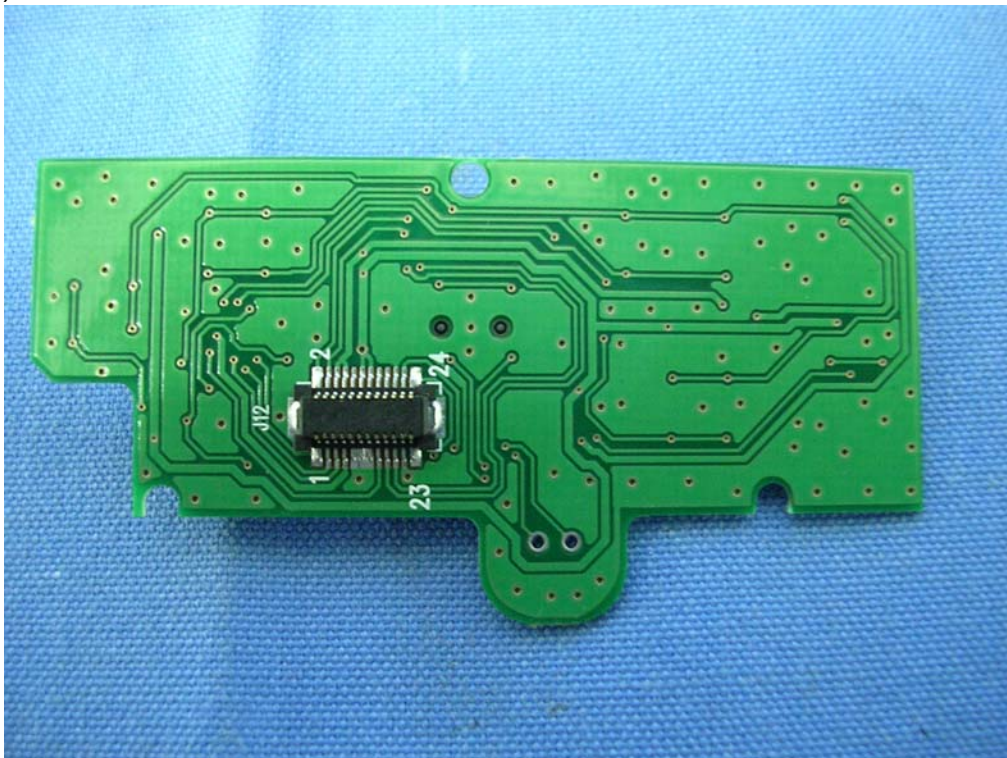




(10) EUT Photo



(11) EUT Photo



(12) EUT Photo



(13) EUT Photo

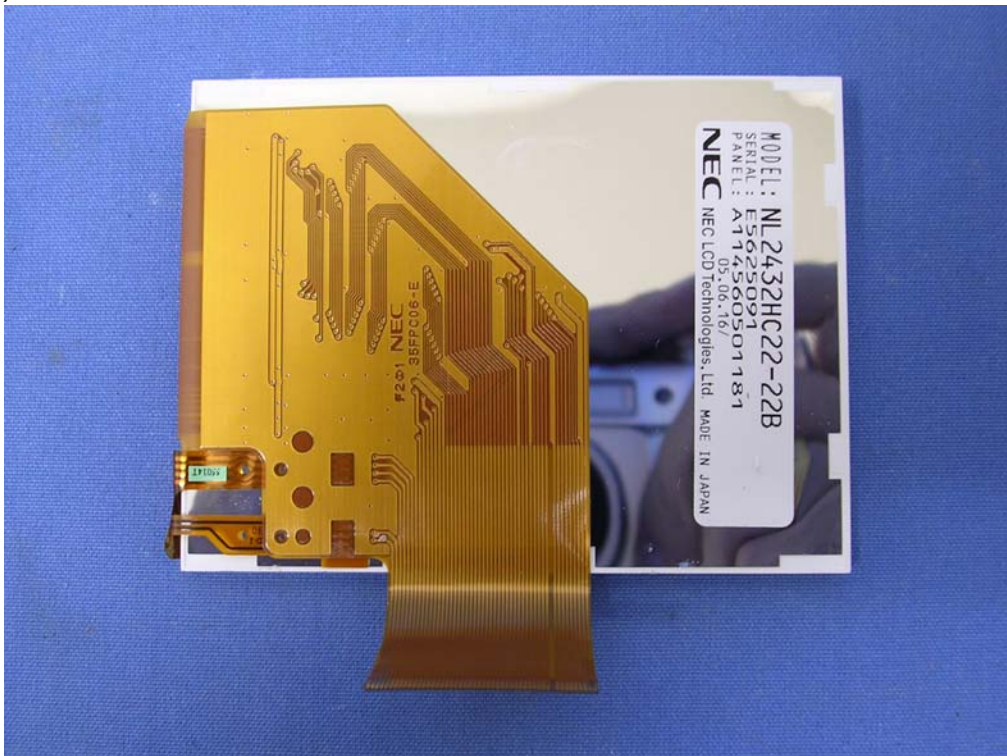




(14) EUT Photo



(15) EUT Photo



(16) EUT Photo



(17) EUT Photo





(18) EUT Photo



(19) EUT Photo









(22) EUT Photo

