

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO AND INDUSTRY CANADA RSS-210 REQUIREMENT

OF

**Product Name:** scala-driver Passenger

**Brand Name:** scala

**Model Name:** scala-driver Passenger

**IC Number:** 4668A-ER03

**Report No.:** EF/2006/40018

**Issue Date:** May 22, 2006

**Rule Part:** RSS-210 issue 6:2005, Annex 2.9

**Prepared for** Cardo Systems Inc.  
100 High Tower St., Pittsburgh PA 15205,  
USA

**Prepared by** SGS Taiwan Ltd.  
No. 134, Wu Kung Rd., Wuku Industrial Zone,  
Taipei County, Taiwan.



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## VERIFICATION OF COMPLIANCE

**Applicant:** Cardo Systems Inc.  
100 High Tower St., Pittsburgh PA 15205, USA

**Equipment Under Test:** scala-driver Passenger

**Brand Name:** scala

**IC Number:** 4668A-ER03

**Model No.:** scala-driver Passenger

**Model Difference:** N/A

**File Number:** EF/2006/40018

**Date of test:** Apr. 18, 2006 ~ May, 11, 2006

**Date of EUT Received:** Apr. 17, 2006

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15C:2005, §15.249 and RSS-210 issue 6: 2005 Annex 2.9.

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

**Test By:**

Danny Yeh

**Date**

May. 22, 2006

\_\_\_\_\_  
Danny Yeh**Prepared By:**

Gigi yeh

**Date**

May. 22, 2006

\_\_\_\_\_  
Gigi Yeh**Approved By:**

Vincent Su

**Date**

May. 22, 2006

\_\_\_\_\_  
Vincent Su

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## Version

Version No.	Date
00	May. 22, 2006

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**PHOTOGRAPHS OF EUT.....30**

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## 1. GENERAL INFORMATION

### 1.1 Product Description

The Cardo Systems Inc., Model: scala-driver Passenger (referred to as the EUT in this report) is a 2.4GHz Headsets.

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 2402MHz, 1 channel
- B). Modulation Type: TDMA
- C). Antenna Designation: PIFA Antenna, 2 dBi, Non-User Replaceable (Fixed)
- D). Power Supply: 9Vdc from AC/DC power adaptor, model: YLT-TCA or  
3.7 Vdc from re-chargeable battery.

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

This submittal(s) (test report) is intended for IC: **4668A-ER03** filing to comply with Industry Canada RSS-210 issue 6: 2005 Annex 2.9.

### 1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003) and RSS-Gen: 2005. Radiated testing was performed at an antenna to EUT distance 3 meters.

### 1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the address of SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and CISPR 22/EN 55022 requirements. Site No. 1(3 &10 meters) Registration Number: 94644, Both OATS and Anechoic chamber (3 meters) was accredited by CNLA (0513).

### 1.5 Special Accessories

Not available for this EUT intended for grant.

### 1.6 Equipment Modifications

Not available for this EUT intended for grant.

## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

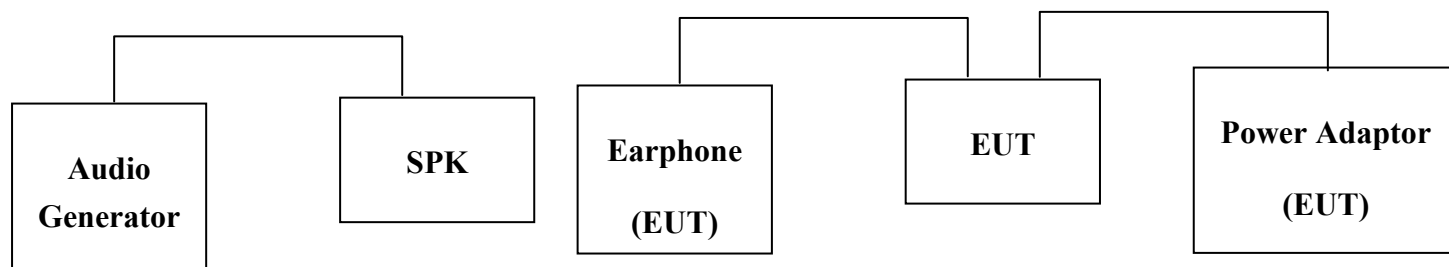
The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 7, 13 of ANSI C63.4-2003 and RSS-Gen:2005. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

#### 2.3.2 Radiated Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 8, 13 of ANSI C63.4-2003 and RSS-Gen:2005.

## 2.4 Configuration of Tested System

**Fig. 2-1 Configuration of TX**



**Table 2-2 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/ Type No.	FCC ID	Series No.	Data Cable	Power Cord
1.	Adaptor	YALITONG	YLT-TCA	N/A	N/A	NA/	N/A
2.	Earphone	N/A	PRO.2	N/A	N/A	N/A	N/A
3.	Audio Gen- erator	TOPWARD	TFG-8104	N/A	853330	N/A	N/A
4	Speaker	GENIUNE	GS2240	N/A	AK11369169 31208	N/A	N/A

**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.

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### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)/ RSS-Gen §7.2.2	Conducted Emission	Compliant
§15.249(a) RSS-210 issue 6, §A2.9(1)(2)	Field Strength Measurement	Compliant
RSS-Gen §4.4.1	99% Power Bandwidth	Compliant

### 4. DESCRIPTION OF TEST MODES

The EUT has been tested under normal operating mode with 1kHz audio signal

Frequency 2402MHz is chosen for full testing.

The X, Y and Z-axis of EUT were pre-test; X mode is the worst case and reported.

## 5. CONDUCTED EMISSION TEST

### 5.1 Standard Applicable

According to §15.207 and RSS-Gen §7.2.2, frequency range within 150KHz to 30MHz shall not exceed the Limit table as below.

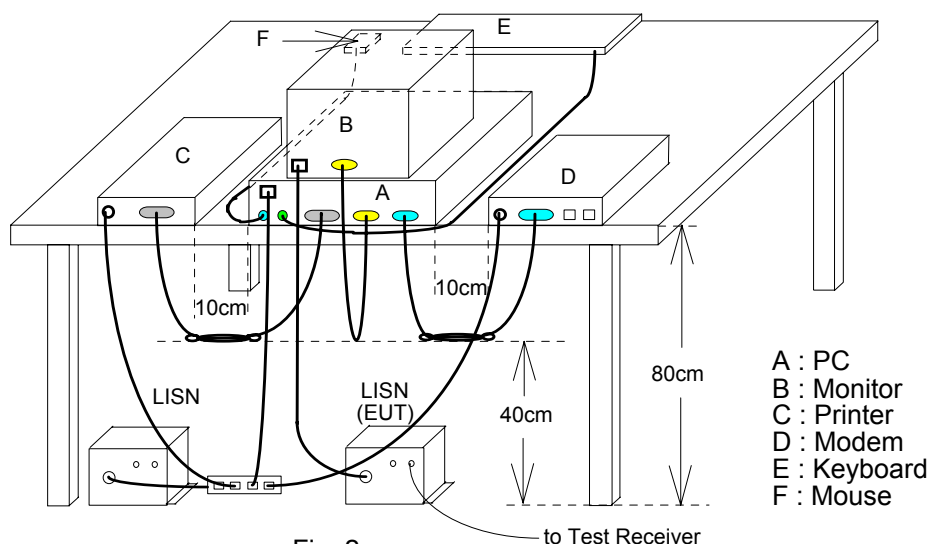
Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note		
1.The lower limit shall apply at the transition frequencies		
2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

## 6. Conducted Emissions Test (Not applicable in this report)

### 6.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

## 6.2 Test SET-UP (Block Diagram of Configuration)



## 6.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMC Analyzer	HP	8594EM	3624A00203	09/02/2005	09/03/2006
EMI Test Receiver	R&S	ESCS30	828985/004	06/09/2005	06/10/2006
Transient Limiter	HP	11947A	3107A02062	09/02/2005	09/03/2006
LISN	Rolf-Heine	NNB-2/16Z	99012	12/31/2005	12/30/2006
LISN	Rolf-Heine	NNB-2/16Z	99013	12/24/2005	12/23/2006
Coaxial Cables	N/A	No. 3, 4	N/A	12/01/2005	12/01/2206

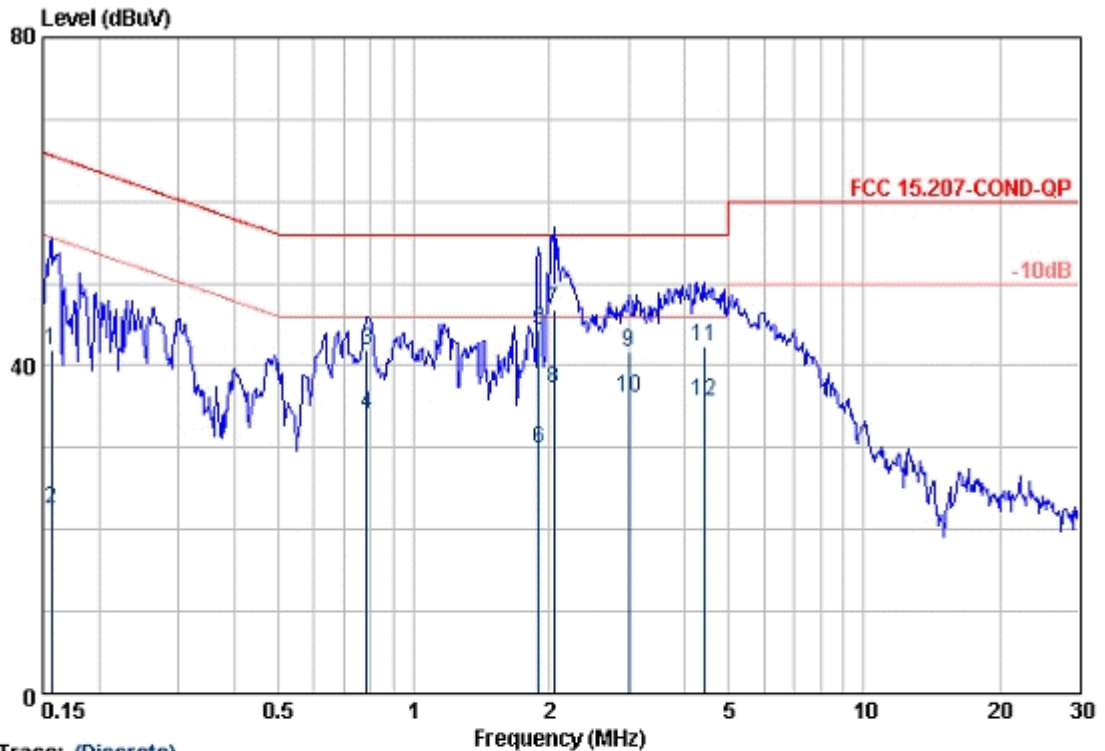
## 6.4 Measurement Result:

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

## AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	OPERATION & CHARGE MODE		Test Date:	May. 10, 2006	
Temperature:	25 °C	Humidity:	65%	Test By:	Danny

Data: 1



Trace: (Discrete)

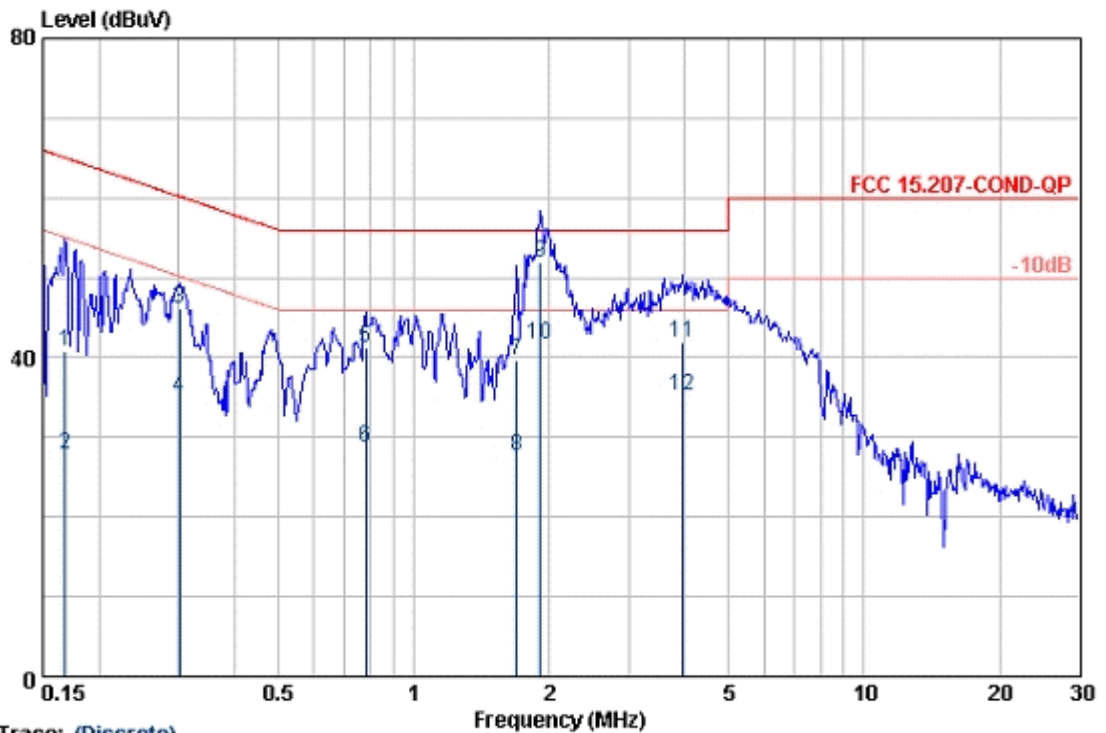
Site : RF Site  
Condition : FCC 15.207-COND-QP NNB-2/16Z(99012) LINE  
Project No. : EF-2006-40016  
Applicant : CARDO SYSTEM  
EUT Description : SCALA-DRIVER PASSENGER  
EUT Model : SCALA-DRIVER PASSENGER  
Test Mode : operation and charge  
Temp./Humid. : 25/65  
Operator : denny

	Freq	Pol/Phase	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz		dBuV	dB	dBuV	dBuV	dB	
1	0.16	LINE	41.77	0.20	41.97	65.65	-23.68	QP
2	0.16	LINE	22.22	0.20	22.42	65.65	-43.23	AVERAGE
3	0.79	LINE	41.75	0.21	41.96	56.00	-14.04	QP
4	0.79	LINE	33.82	0.21	34.03	56.00	-21.97	AVERAGE
5	1.89	LINE	44.21	0.22	44.43	56.00	-11.57	QP
6	1.89	LINE	29.73	0.22	29.95	56.00	-26.05	AVERAGE
7	2.04	LINE	46.51	0.22	46.73	56.00	-9.27	QP
8	2.04	LINE	36.95	0.22	37.17	56.00	-18.83	AVERAGE
9	3.01	LINE	41.40	0.28	41.68	56.00	-14.32	QP
10	3.01	LINE	35.77	0.28	36.05	56.00	-19.95	AVERAGE
11	4.41	LINE	41.96	0.35	42.31	56.00	-13.69	QP
12	4.41	LINE	35.21	0.35	35.56	56.00	-20.44	AVERAGE

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Operation Mode:	OPERATION & CHARGE MODE			Test Date:	May. 10, 2006
Temperature:	25 °C	Humidity:	65%	Test By:	Danny

Data: 2



Trace: (Discrete)

Site : RF Site  
Condition : FCC 15.207-COND-QP NNB-2/16Z(99012) NEUTRAL  
Project No. : EF-2006-40016  
Applicant : CARDO SYSTEM  
EUT Description : SCALA-DRIVER PASSENGER  
EUT Model : SCALA-DRIVER PASSENGER  
Test Mode : operation and charge  
Temp./Humid. : 25/65  
Operator : denny

	Freq	Pol/Phase	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz		dBuV	dB	dBuV	dBuV	dB	
1	0.17	NEUTRAL	40.53	0.20	40.73	65.03	-24.30	QP
2	0.17	NEUTRAL	27.54	0.20	27.74	65.03	-37.29	AVERAGE
3	0.30	NEUTRAL	45.94	0.20	46.14	60.19	-14.05	QP
4	0.30	NEUTRAL	34.85	0.20	35.05	60.19	-25.14	AVERAGE
5	0.78	NEUTRAL	40.98	0.21	41.19	56.00	-14.81	QP
6	0.78	NEUTRAL	28.54	0.21	28.75	56.00	-27.25	AVERAGE
7	1.69	NEUTRAL	39.34	0.22	39.56	56.00	-16.44	QP
8	1.69	NEUTRAL	27.40	0.22	27.62	56.00	-28.38	AVERAGE
9	1.91	NEUTRAL	51.62	0.22	51.84	56.00	-4.16	QP
10	1.91	NEUTRAL	41.49	0.22	41.71	56.00	-14.29	AVERAGE
11	3.96	NEUTRAL	41.48	0.34	41.82	56.00	-14.18	QP
12	3.96	NEUTRAL	34.90	0.34	35.24	56.00	-20.76	AVERAGE

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## 7. FIELD STRENGTH TEST

### 7.1 Standard Applicable

According to RSS-210 issue 6, §A2.9(1)

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
2400 – 2483.5	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3

RSS-210 issue 6, §A2.9(2)

Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to Table 2 Limits, whichever is the less stringent.

Table 2.

Frequency (MHz)	Field strength $\mu\text{V/m}$	Distance (m)	Field strength at 3m dB $\mu\text{V/m}$
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Remark: 1. Emission level in dBuV/m=20 log (uV/m)

## 7.2 EUT Setup

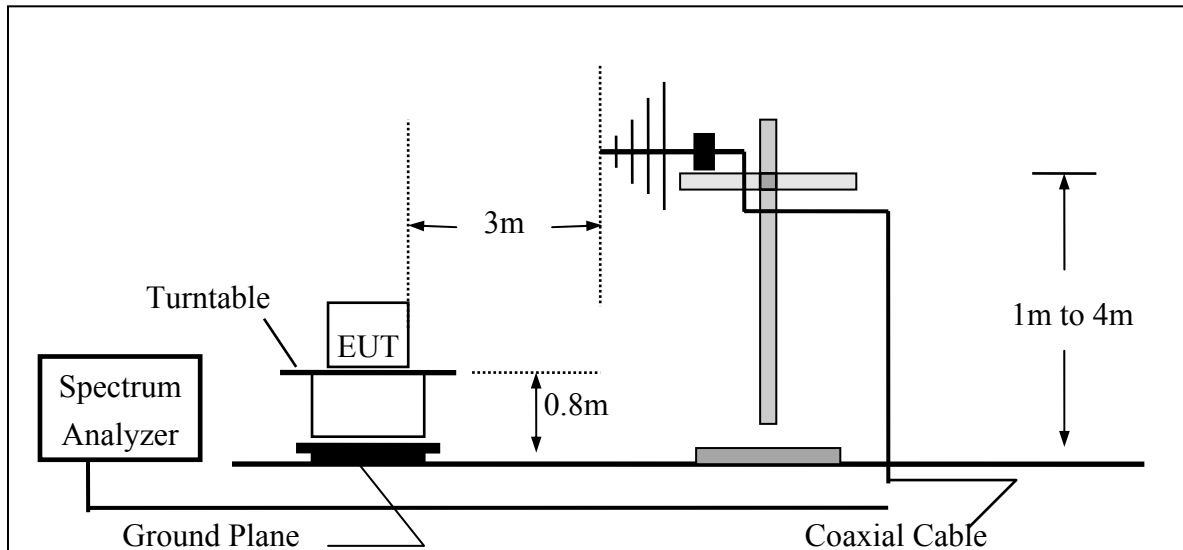
1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-2003.
2. The EUT was put in the front of the test table. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The spacing between the peripherals was 10 centimeters.
4. External I/O cables were draped along the edge of the test table and bundle when necessary.

## 7.3 Measurement Procedure

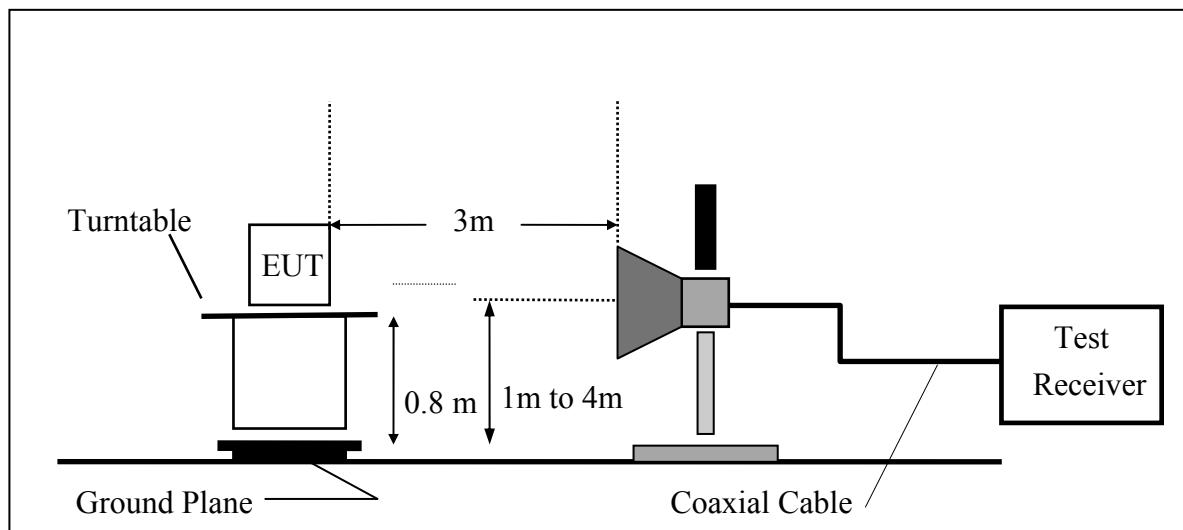
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until all frequency measured were complete.

## 7.4 Test SET-UP (Block Diagram of Configuration)

### (A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



### (B) Radiated Emission Test Set-UP Frequency Over 1 GHz



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## 7.5 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007
Spectrum Analyzer	Agilent	E7405A	US41160416	08/27/2005	08/26/2006
Bilog Antenna	SCHWAZBECK	VULB9163	152	06/03/2005	06/02/2006
Horn antenna	Schwarzbeck	BBHA 9120D	309/320	08/16/2005	08/15/2006
Horn antenna	Schwarzbeck	BBHA 9170	184/185	07/04/2005	07/03/2006
Pre-Amplifier	HP	8447D	2944A09469	07/19/2005	07/18/2006
Pre-Amplifier	HP	8449B	3008A00578	02/26/2006	02/25/2007
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	10/09/2005	10/08/2006
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2005	10/08/2006
Site NSA	SGS	966 chamber	N/A	11/17/2005	11/16/2006

## 7.6 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

## 7.7 Measurement Result

Refer to attach tabular data sheets.

# Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode TX CH Low  
Fundamental Frequency 2402MHz  
Temperature 25 °C  
Humidity 65 %

Test Date May. 10, 2006  
Test By Danny  
Pol Ver./Hor

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBUV)	Factor (dB)	Actual FS (dBUV/m)	Limit3m (dBUV/m)	Safe Margin (dB)
33.88	V	Peak	46.18	-15.12	31.06	40.00	-8.94
56.19	V	Peak	48.2	-14.95	33.25	40.00	-6.75
33.88	H	Peak	41.17	-15.12	26.05	40.00	-13.95

## Remark :

- (1) Measuring frequencies from 30 MHz to the 1GHz °
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBUV)	Factor (dB)	Actual FS (dBUV/m)	Limit3m (dBUV/m)	Safe Margin (dB)
33.88	V	Peak	46.18	-15.12	31.06	40.00	-8.94
56.19	V	Peak	48.2	-14.95	33.25	40.00	-6.75
33.88	H	Peak	41.17	-15.12	26.05	40.00	-13.95

### Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	TX CH Low	Test Date	May. 10, 2006
Fundamental Frequency	2402 MHz	Test By	Danny
Temperature	25 °C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF(dB)	Actual FS		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
				Peak (dBuV/m)	AV (dBuV/m)				
2402.0	82.97	----	-3.40	79.57	----	74.00	94.00	-14.43	Peak
2400.0	47.66	----	-3.40	44.26	----	74.00	94.00	-49.74	Peak
2331.8	54.78	35.10	-3.71	51.07	31.39	74.00	54.00	-22.61	AV
2383.8	53.63	35.03	-3.49	50.14	31.54	74.00	54.00	-22.46	AV
2411.4	54.28	----	-3.34	50.94	----	74.00	94.00	-43.06	Peak
2440.4	52.39	----	-3.20	49.19	----	74.00	94.00	-44.81	Peak
7206.0	----								
9608.0	----								
12010.0	----								
14412.0	----								
16814.0	----								
19216.0	----								
21618.0	----								
24020.0	----								

#### Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency ◦
- 2 Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column ◦
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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### Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	TX CH Low	Test Date	May. 10, 2006
Fundamental Frequency	2402 MHz	Test By	Danny
Temperature	25 °C	Pol	Hor
Humidity	65 %		

Freq. (MHz)	Peak Reading	AV Reading	Ant./CL CF(dB)	Actual FS		Peak Limit	AV Limit	Margin (dB)	
	(dBuV)	(dBuV)		Peak (dBuV/m)	AV (dBuV/m)	(dBuV/m)	(dBuV/m)		
2402.0	82.91	----	3.40	86.31	----	74.00	54.00	32.31	Peak
2400.0	46.69	----	-3.40	43.29	----	74.00	54.00	-10.71	Peak
1188.5	41.84	----	-8.65	33.19	----	74.00	54.00	-20.81	Peak
2331.8	54.59	35.21	-3.71	50.88	31.50	74.00	54.00	-22.50	AV
2383.8	53.63	34.89	-3.49	50.14	31.40	74.00	54.00	-22.60	AV
2443.0	43.20	----	-3.17	40.03	----	74.00	54.00	-13.97	Peak
4796.0	56.04	33.82	2.96	59.00	36.78	74.00	54.00	-17.22	AV
7206.0	----								
9608.0	----								
12010.0	----								
14412.0	----								
16814.0	----								
19216.0	----								
21618.0	----								
24020.0	----								

#### Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。
- 2 Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。
- 4 Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.
- 5 Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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**Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode	RX CH Low	Test Date	May. 10, 2006
Fundamental Frequency	2402MHz	Test By	Danny
Temperature	25 °C	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
33.88	V	Peak	45.58	-15.21	30.37	40.00	-9.63
56.19	V	Peak	42.8	-14.95	27.85	40.00	-12.15
33.88	H	Peak	45.82	-15.12	30.70	40.00	-9.30
56.19	H	Peak	48.66	-14.95	33.71	40.00	-6.29

## Remark :

- (1) Measuring frequencies from 30 MHz to the 1GHz °
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

### Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	RX CH Low	Test Date	May 15, 2006
Fundamental Frequency	2402 MHz	Test By	Danny
Temperature	25°C	Pol	Ver.
Humidity	65 %		

Freq. (MHz)	Peak Reading	AV Reading	Ant./CL CF(dB)	Actual FS		Peak Limit	AV Limit	Margin (dB)	
	(dBuV)	(dBuV)		Peak (dBuV/m)	AV (dBuV/m)	(dBuV/m)	(dBuV/m)		
2748.5	43.65	----	-2.48	41.17	----	74.00	54.00	-12.83	Peak
4804.0	----								
7206.0	----								
9608.0	----								
12010.0	----								
14412.0	----								
16814.0	----								
19216.0	----								
21618.0	----								
24020.0	----								

#### Remark :

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 3MHz, VBW= 1MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

**Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode RX CH Low  
 Fundamental Frequency 2402 MHz  
 Temperature 25 °C  
 Humidity 65 %

Test Date May 15, 2006  
 Test By Danny  
 Pol Hor

Freq. (MHz)	Peak	AV	Ant./CL CF(dB)	Actual FS		Peak	AV	Margin (dB)	
	Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
2748.5	49.73	----	-2.48	47.25	----	74.00	54.00	-6.75	Peak
4804.0	----								
7206.0	----								
9608.0	----								
12010.0	----								
14412.0	----								
16814.0	----								
19216.0	----								
21618.0	----								
24020.0	----								

**Remark :**

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Datas of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 3MHz, VBW= 1MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

## 8. 99% Bandwidth Measurement

### 8.1 Standard Applicable

RSS-Gen §4.4.1, the transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

The span between the two recorded frequencies is the occupied bandwidth.

### 8.2 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2006	03/28/2007
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2005	11/10/2006
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A
Attenuator	Mini-Circuit	BW-S10W5	N/A	10/07/2005	10/06/2006
Attenuator	Mini-Circuit	BW-S6W5	N/A	10/07/2005	10/06/2006
Splitter	Agilent	Power Biviber	51818	01/05/2006	01/04/2007

### 8.3 Test Set-up:

Refer to section 2.4.



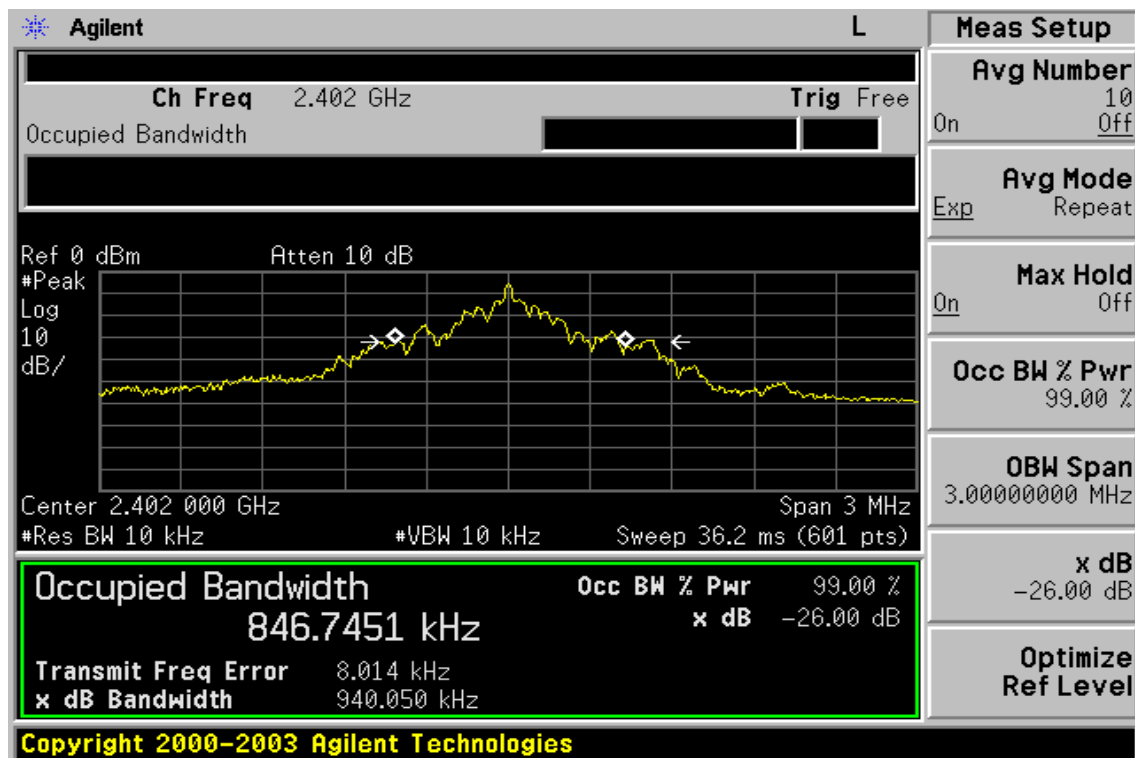
#### 8.4 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=1% of the approximate emission bandwidth, VBW = 3 times RBW, Span= approximately 20dB below the peak level. Sweep=auto
4. Turn on the 99% bandwidth function, max reading..
5. Repeat above procedures until all frequency measured were complete.

#### 8.5 Measurement Result

CH	99% Bandwidth (kHz)
Lower	846.7451

## 99% Band Width Test Data CH-Low



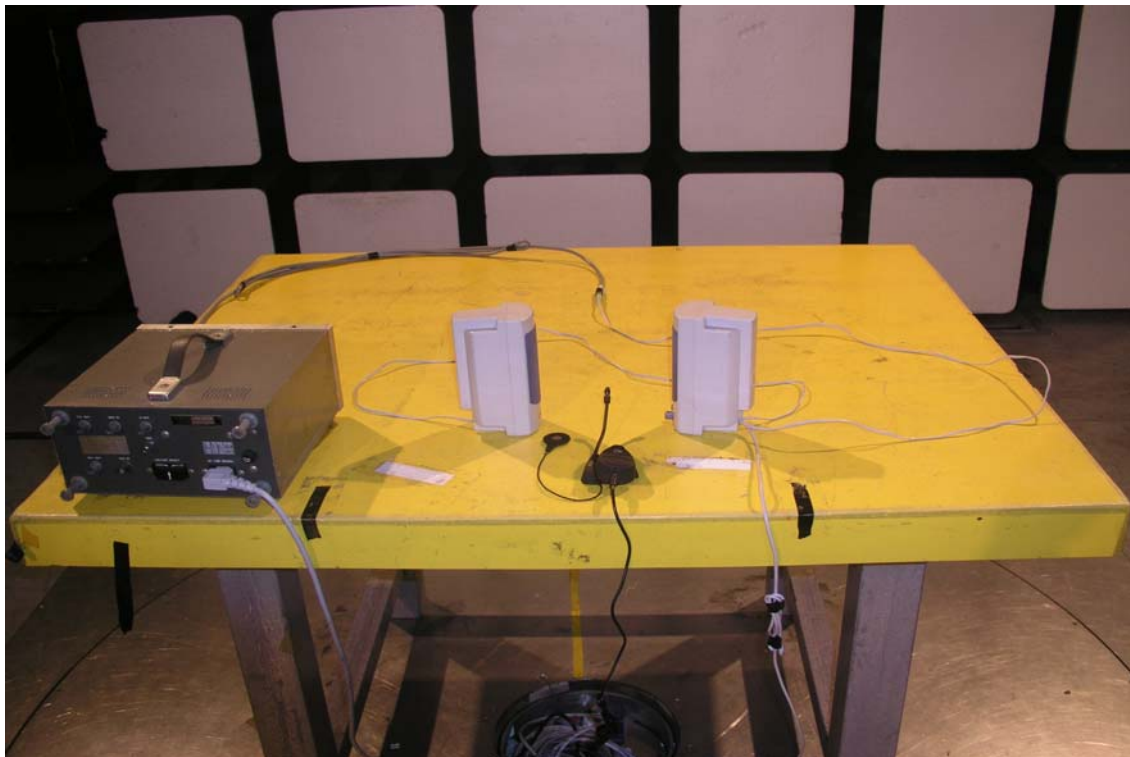
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# APPENDIX 1

## PHOTOGRPHS OF SET UP

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## Radiated Emission Setup Photos (TX)



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## Conducted Emission Set up Photos



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## APPENDIX 2

# PHOTOGRAPHS OF EUT

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*All View of EUT*



*Adaptor-YLT-TCA*



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*Front View of EUT*



*Back View of EUT*



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*Top View of EUT*



*Bottom View of EUT*



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*Right View of EUT*



*Left View of EUT*

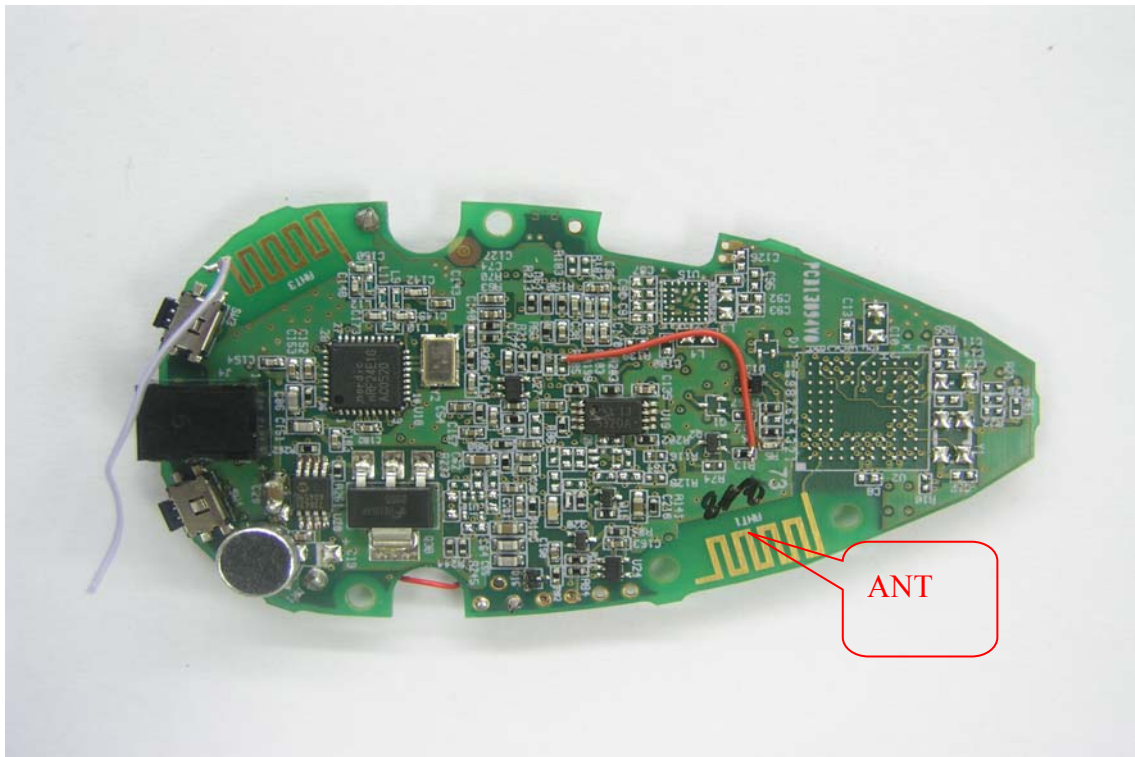


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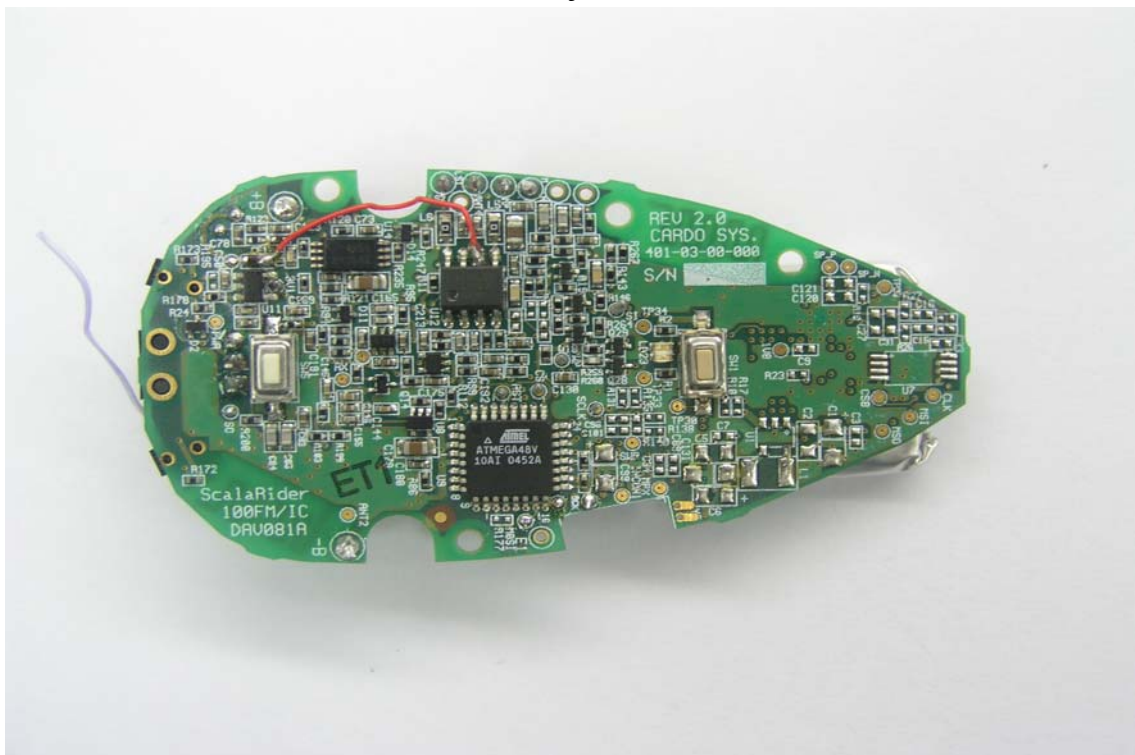
*Open View of EUT**Internal of EUT – 1*

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*Internal of EUT – 2*



*Internal of EUT – 3*



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