

FCC PART 15 Test Report

For

Pupil/Face Recognition Door Security Intelligence

Model Name: MR48

Brand Name: ASTRO IMPERIAL

FCC ID:XC3MR48

Report No.: AGC11090904ZS04E5

Date of Issue: Apr.30, 2009

Prepared For

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1. VERIFICATION OF COMPLIANCE

Equipment Under Test: Pupil/Face Recognition Door Security Intelligence

Model Name: MR48

Applicant: ZHONGSHAN TIESHEN LOCK INDUSTRIAL CO., LTD.
NO.13, Xiaolan Industrial Road, North, Xiaolan Zhongshan,
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ASTRO IMPERIAL TECHNOLOGY CO., LTD.

Manufacturer: No.11, III Floor, 1, South Industrial Building, 217-225 Main Road Avenida
De Venceslau de Morais

Type of Test: FCC Class B

Measurement Procedure: ANSI C63.4: 2003

File Number: AGC11090904ZS04E5

Date of test: Apr.26~Apr.30, 2009

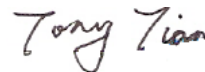
Deviation: None

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, the measurement procedure according to ANSI C63.4:2003 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.

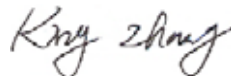
Checked By :



Tony Tian

Apr.30, 2009

Authorized By :



King Zhang

Apr.30, 2009

2. PRODUCT INFORMATION

Housing Type: Metal

Rating Voltage: AC 120V/60Hz

I/O Port Information (☒Applicable ☐Not Applicable)

I/O Port of EUT			
I/O Port Type	Q'TY	Cable	Tested with
AC INPUT PORT	1	1	1
RJ45	1	1	1

3. TEST FACILITY

Location:	1-2/F, Dachong Keji Building, No.28 of Tonggu Road, Nanshan District.
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:	Accredited by TUV Rheinland Shenzhen, May 10, 2004 FCC register No.: 276008 and IC register No.: 7700A-1
Instrument	All measuring equipment is in accord with ANSI C63.4 requirements that meet industry
Tolerance:	regulatory agency and accreditation agency requirement.

Ground Plane:	<p>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.</p>
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4. SUPPORT EQUIPMENT LIST

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
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****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.

5. SYSTEM DESCRIPTION

TEST PROCEDURE:

MODEL 1: STAND ALONE

1. Power on the EUT, the EUT begins to work.
2. Make sure the EUT operates normally during the test.

MODEL 2: PC CONNECTING

1. Connect EUT and peripheral devices.
2. Power on the EUT, the EUT begins to work.
3. Make sure the EUT operates normally during the test.

6. FCC LINE CONDUCTED EMISSION TEST

6.1. TEST EQUIPMENT OF LINE CONDUCTED EMISSION TEST

Description	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESCS30	04/16/2009	04/15/2010
LISN	AFJ	LS16	04/16/2009	04/15/2010

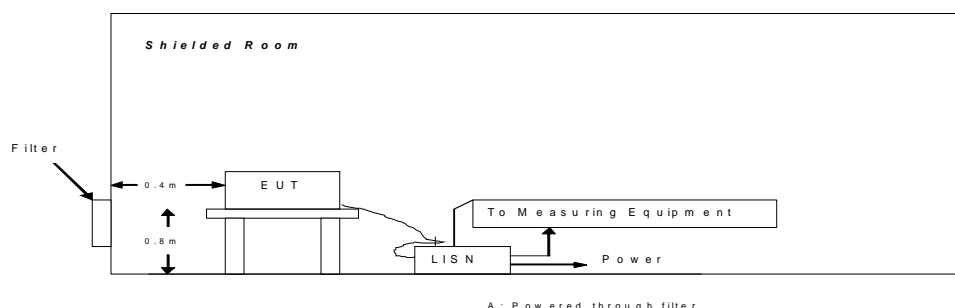
6.2 .LIMITS OF LINE CONDUCTED EMISSION TEST

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

6.3. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



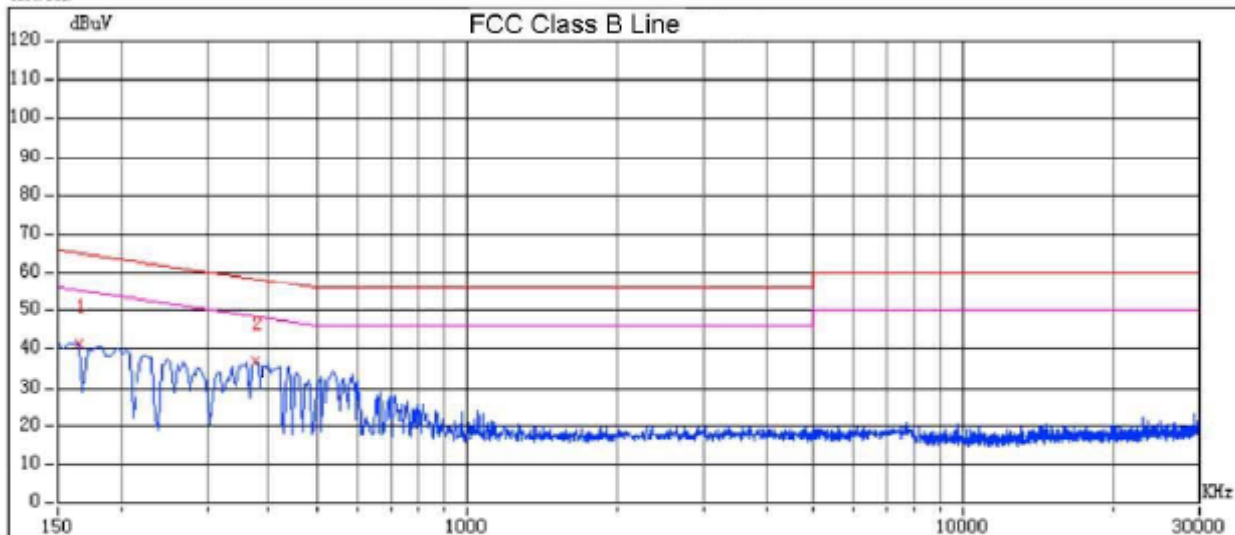
6.4. PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 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 AC120V 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) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
- 10) 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.
- 11) The test data of the worst case condition(s) was reported on the Summary Data page.

6.5 TEST RESULT OF LINE CONDUCTED EMISSION TEST

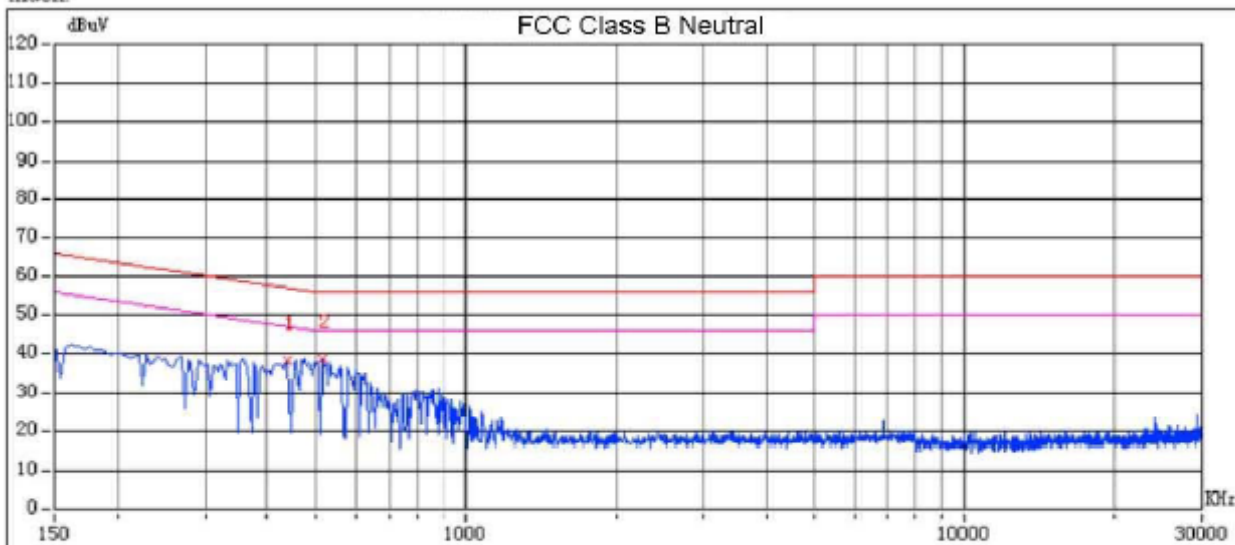
Mode1

Index:



	Freq(KHz)	Peak Amptd(dBuV)	QP Amptd(dBuV)	Avg Amptd(dBuV)	QP Limit(dBuV)	Avg Limit(dBuV)	Margin(dB)	Factor(dB)
1	164.8297	41.48	31.47	14.73	65.58	55.58	-34.11	11.14
2	372.4449	36.78	25.86	7.94	59.64	49.64	-33.78	11.67

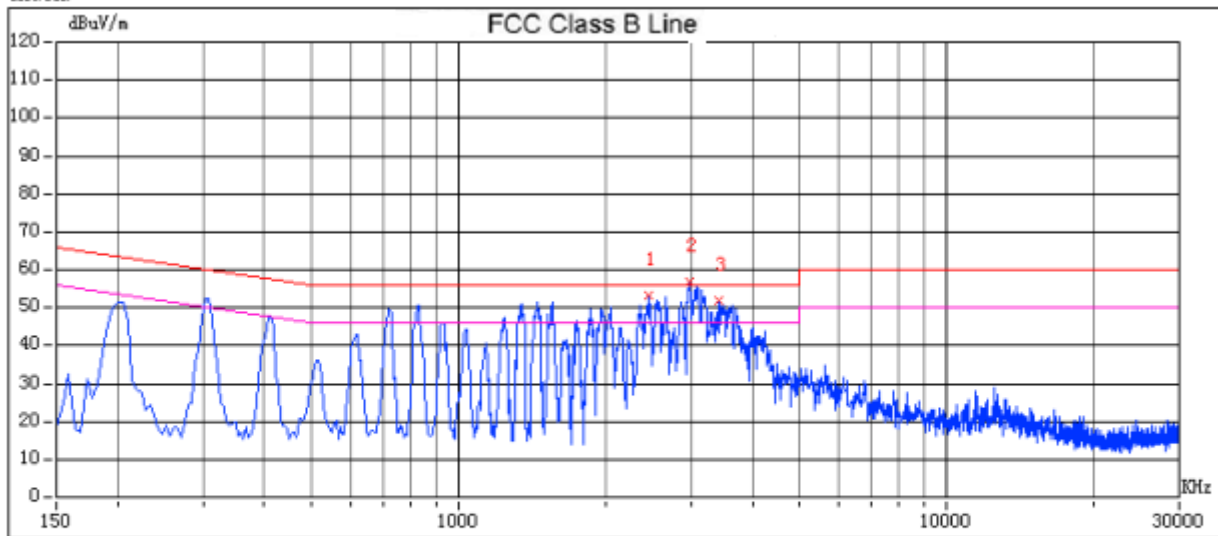
Index:



	Freq(KHz)	Peak Amptd(dBuV)	QP Amptd(dBuV)	Avg Amptd(dBuV)	QP Limit(dBuV)	Avg Limit(dBuV)	Margin(dB)	Factor(dB)
1	439.1784	38.36	28.35	8.61	57.74	47.74	-29.39	11.64
2	517.0341	38.70	27.70	10.98	56.00	46.00	-28.30	11.54

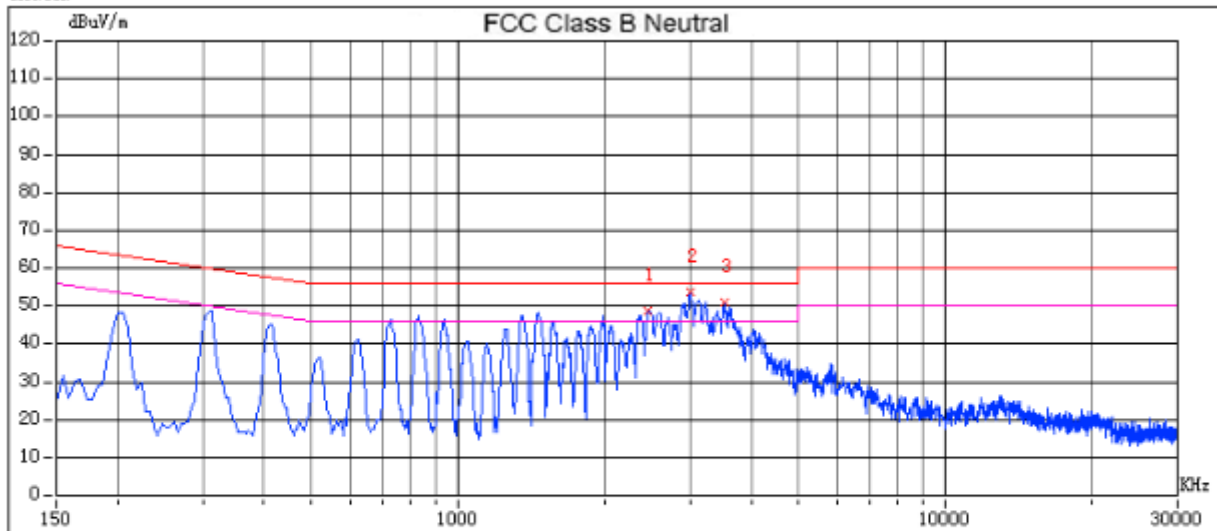
Mode2

Index:



	Freq(KHz)	Peak Amptd(dBuV)	QP Amptd(dBuV)	Avg Amptd(dBuV)	QP Limit(dBuV)	Avg Limit(dBuV)	Margin(dB)	Factor(dB)
1	2456.6200	53.25	47.82	32.47	56.00	46.00	-8.18	1.31
2	2973.9250	57.01	50.93	34.46	56.00	46.00	-5.07	1.35
3	3438.4450	51.72	43.38	19.81	56.00	46.00	-12.62	1.36

Index:



	Freq(KHz)	Peak Amptd(dBuV)	QP Amptd(dBuV)	Avg Amptd(dBuV)	QP Limit(dBuV)	Avg Limit(dBuV)	Margin(dB)	Factor(dB)
1	2459.2650	48.84	46.34	33.98	56.00	46.00	-9.66	1.27
2	2992.7850	53.51	48.39	37.10	56.00	46.00	-7.61	1.38
3	3502.0800	50.87	45.33	33.69	56.00	46.00	-10.67	1.33

7. FCC RADIATED EMISSION TEST

7.1. TEST EQUIPMENT OF RADIATED EMISSION

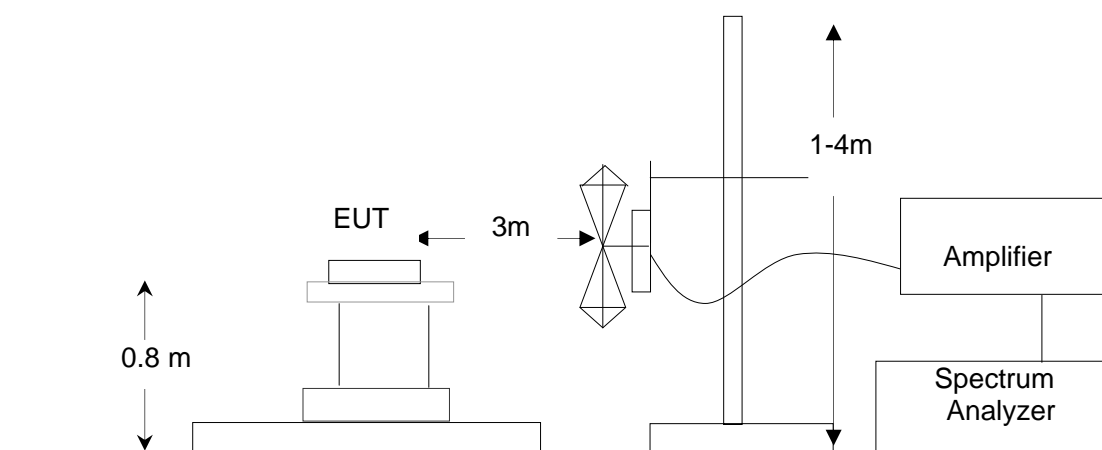
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI test receiver	R&S	ESCS30	100343	04/16/2009	04/15/2010
Amplifier	H.P.	HP8447E	2945A02715	04/16/2009	04/15/2010
Antenna	Sunol Sciences Corp.	JB3	A021907	04/16/2009	04/15/2010
CABLE	TIME MICROWAVE	LMR-400	N/A	06/29/2008	06/28/2009

7.2. 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.

7.3 BLOCK DIAGRAM OF RADIATED EMISSION TEST



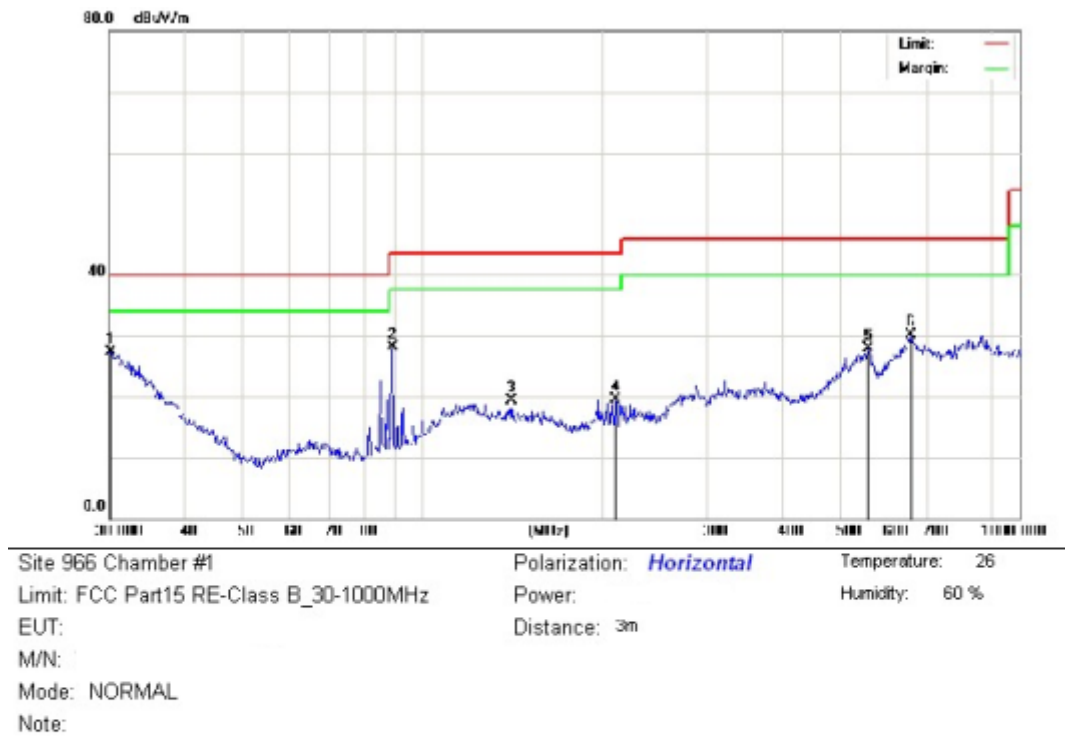
7.4 PROCEDURE OF RADIATED EMISSION TEST

- 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 DC12V 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 test mode(s) were scanned during the test:
- 8) 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.

7.5 TEST RESULT OF RADIATED EMISSION TEST

Mode1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Detector	Comment
1	*	30.2111	22.56	4.74	27.30	40.00	-12.70			peak	
2		89.2764	38.55	-10.47	28.08	43.50	-15.42			peak	
3		141.3298	25.60	-6.23	19.37	43.50	-24.13			peak	
4		211.5265	26.58	-7.08	19.50	43.50	-24.00			peak	
5		558.7302	24.94	2.92	27.86	46.00	-18.14			peak	
6		656.5300	24.52	5.49	30.01	46.00	-15.99			peak	



Site 966 Chamber #1

Limit: FCC Part15 RE-Class B_30-1000MHz

EUT:

M/N:

Mode: NORMAL

Note:

Polarization: *Vertical*

Power:

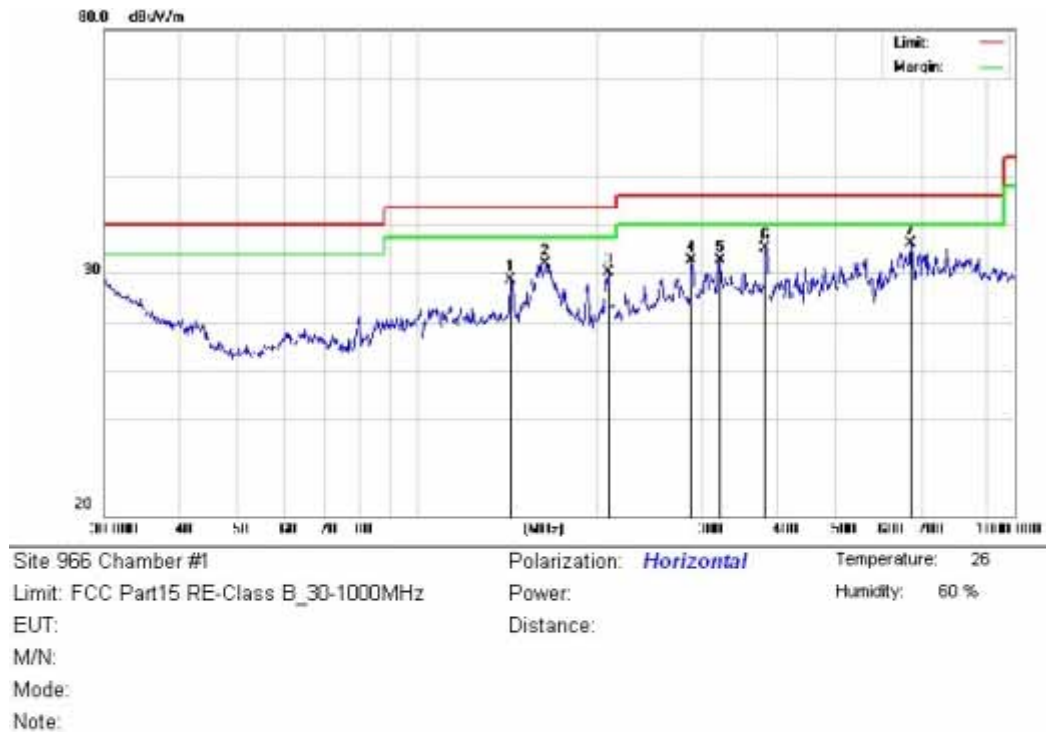
Distance: 3m

Temperature: 26

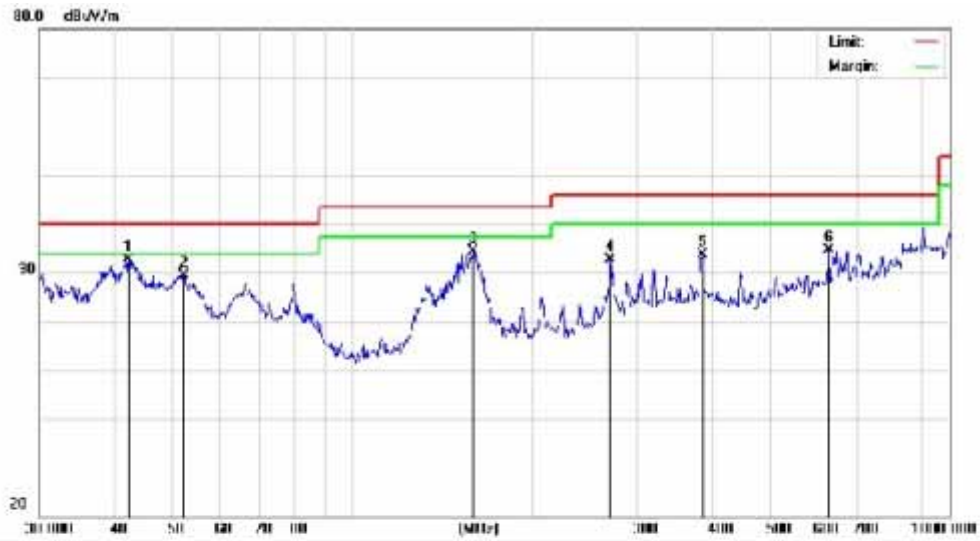
Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1	*	30.0000	23.08	1.47	24.55	40.00	-15.45	peak			
2		32.4059	25.05	-0.62	24.43	40.00	-15.57	peak			
3		39.9942	24.89	-1.73	23.16	40.00	-16.84	peak			
4		134.0882	24.05	-5.49	18.56	43.50	-24.94	peak			
5		303.5437	24.40	-1.34	23.06	46.00	-22.94	peak			
6		416.1791	25.02	0.25	25.27	46.00	-20.73	peak			

Mode2



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		143.3261	34.88	-6.28	28.60	43.50	-14.90	peak			
2		164.3302	38.54	-6.62	31.92	43.50	-11.58	peak			
3		209.3129	37.23	-7.17	30.06	43.50	-13.44	peak			
4		287.9904	35.41	-2.84	32.57	46.00	-13.43	peak			
5		322.1886	35.07	-2.42	32.65	46.00	-13.35	peak			
6		382.5879	37.86	-2.85	35.01	46.00	-10.99	peak			
7	*	670.4893	31.36	4.72	36.08	46.00	-9.92	peak			



Site 966 Chamber #1

Limit: FCC Part15 RE-Class B_30-1000MHz

EUT:

M/N:

Mode:

Note:

Polarization: *Vertical*

Power:

Distance:

Temperature: 26

Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	*	42.3022	37.01	-4.50	32.51	40.00	-7.49	peak			
2		52.3913	41.06	-11.56	29.50	40.00	-10.50	peak			
3		159.7844	40.10	-5.61	34.49	43.50	-9.01	peak			
4		270.3748	34.84	-2.13	32.71	46.00	-13.29	peak			
5		386.6338	33.37	0.35	33.72	46.00	-12.28	peak			
6		627.2738	33.49	1.03	34.52	46.00	-11.48	peak			

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

FCC Line Conducted Emission Test Setup

Mode1



Mode2

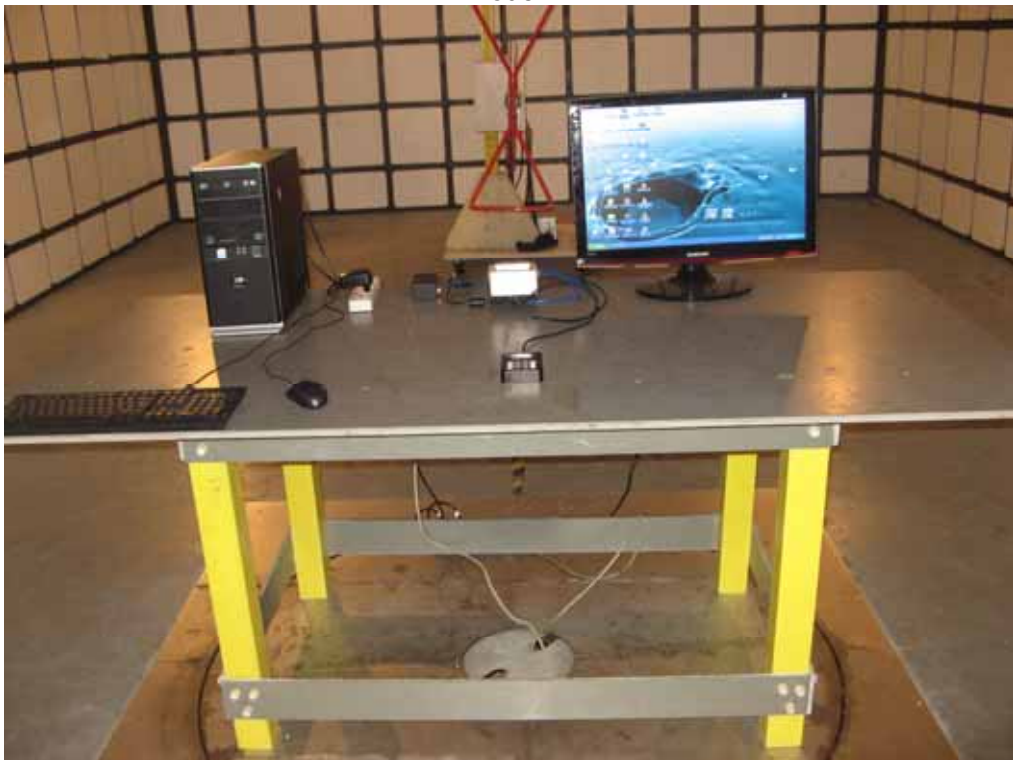


FCC Radiated Emission Test Setup

Mode1



Mode2



APPENDIX 2 EXTERNAL PHOTOGRAPHS OF EUT

ALL View of EUT



Front View of EUT 1



Back View of EUT 1



Left View of EUT 1



Right View of EUT 1



Up View of EUT 1



Down View of EUT 1



Up View of EUT 2



Down View of EUT 2



Front View of EUT 2



Back View of EUT 2



Front View of EUT 3

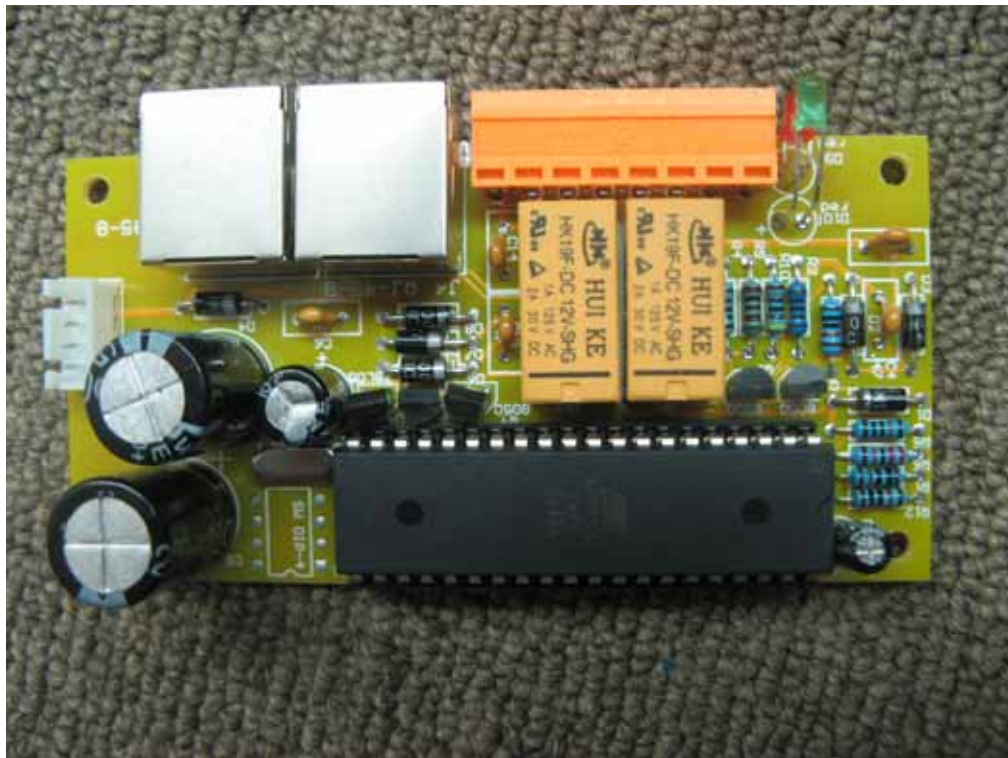


Back View of EUT3

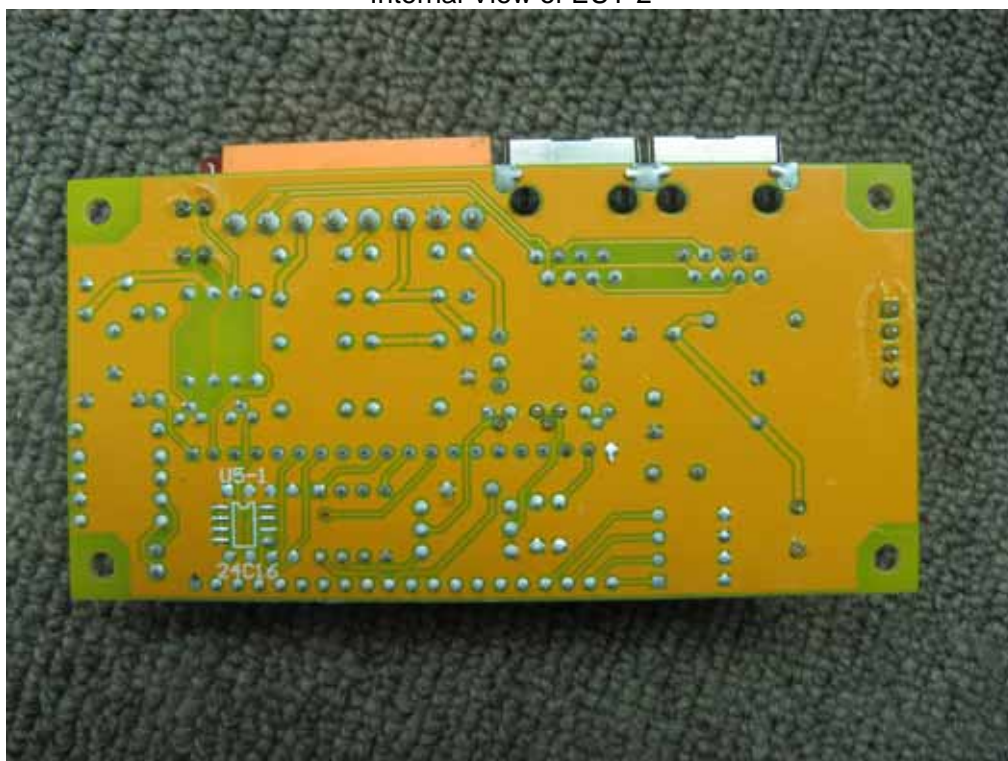


APPENDIX 3 INTERNAL PHOTOGRAPHS OF EUT

Internal View of EUT-1



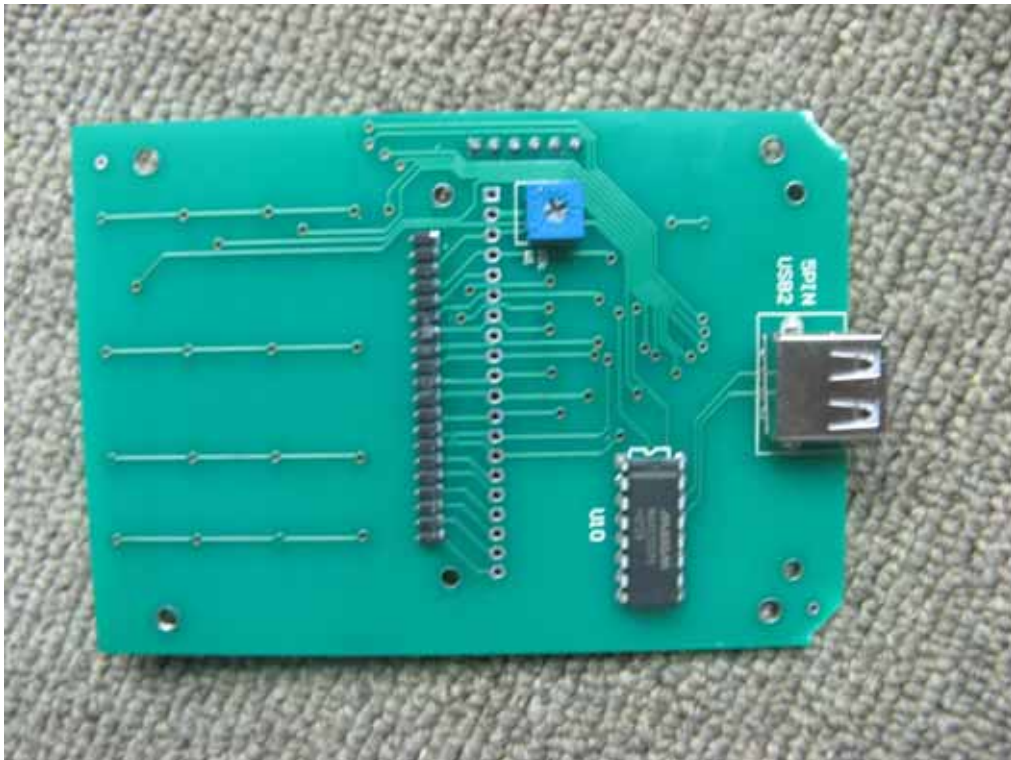
Internal View of EUT-2



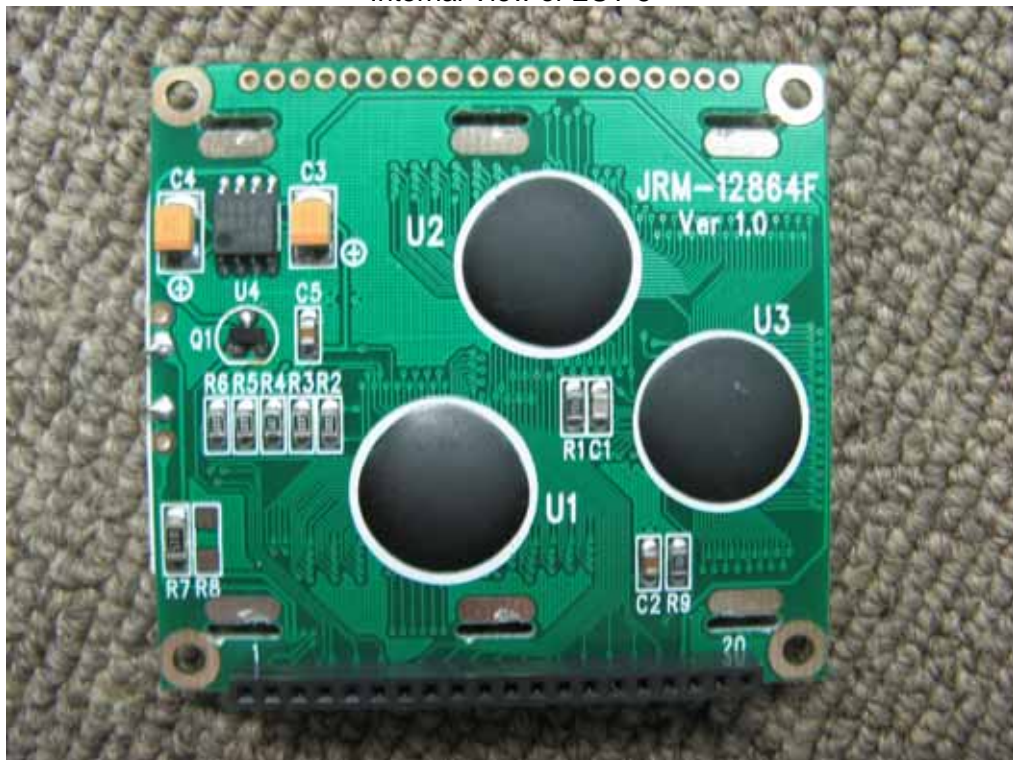
Internal View of EUT-3



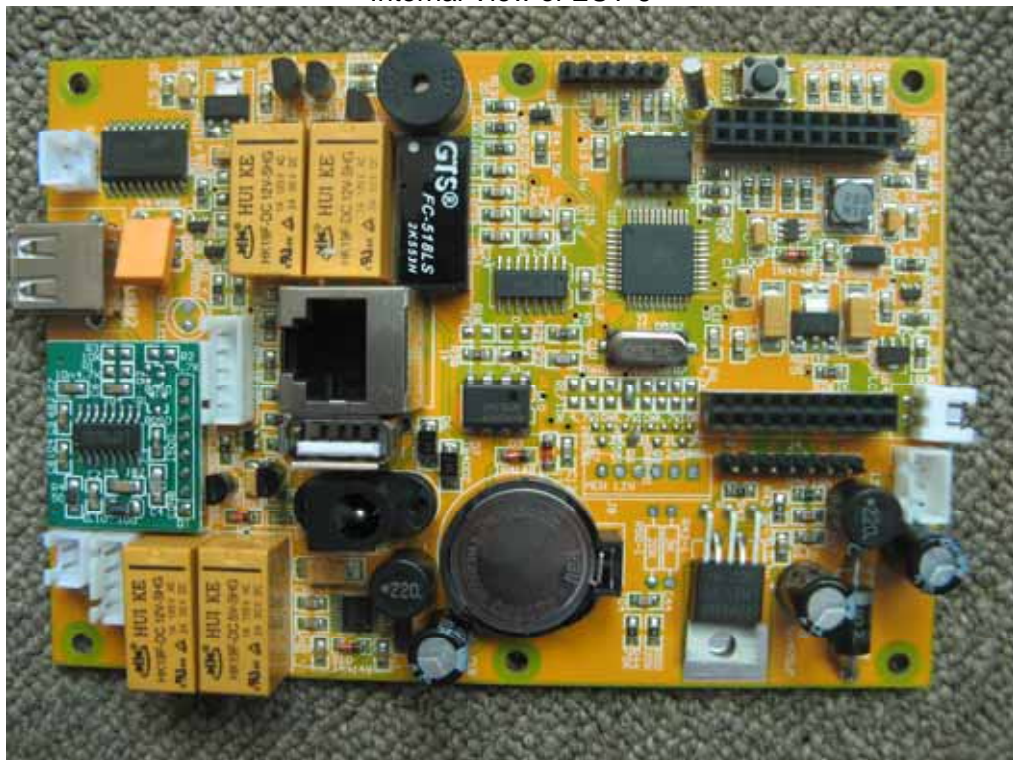
Internal View of EUT-4



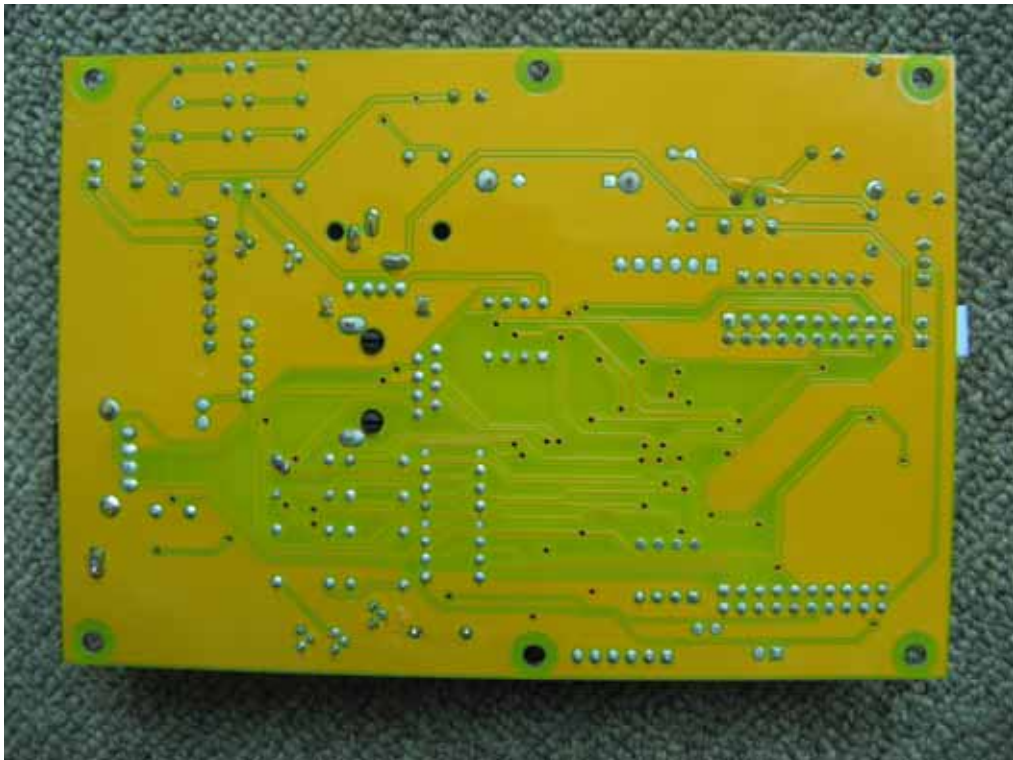
Internal View of EUT-5



Internal View of EUT-6



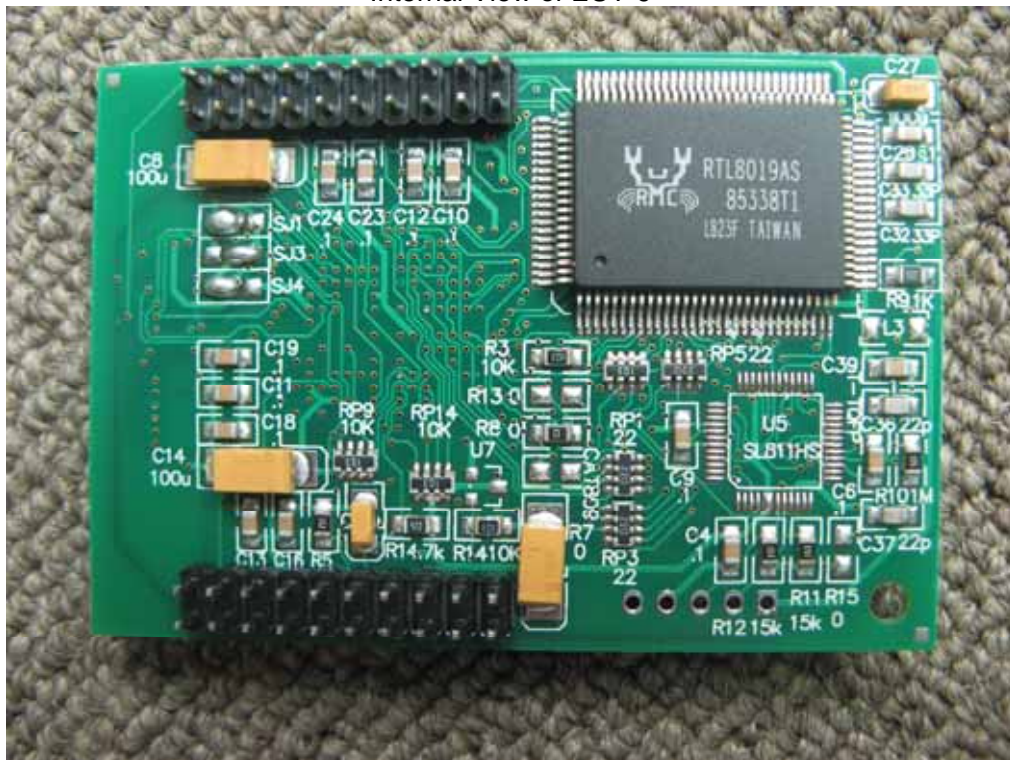
Internal View of EUT-7



Internal View of EUT-8



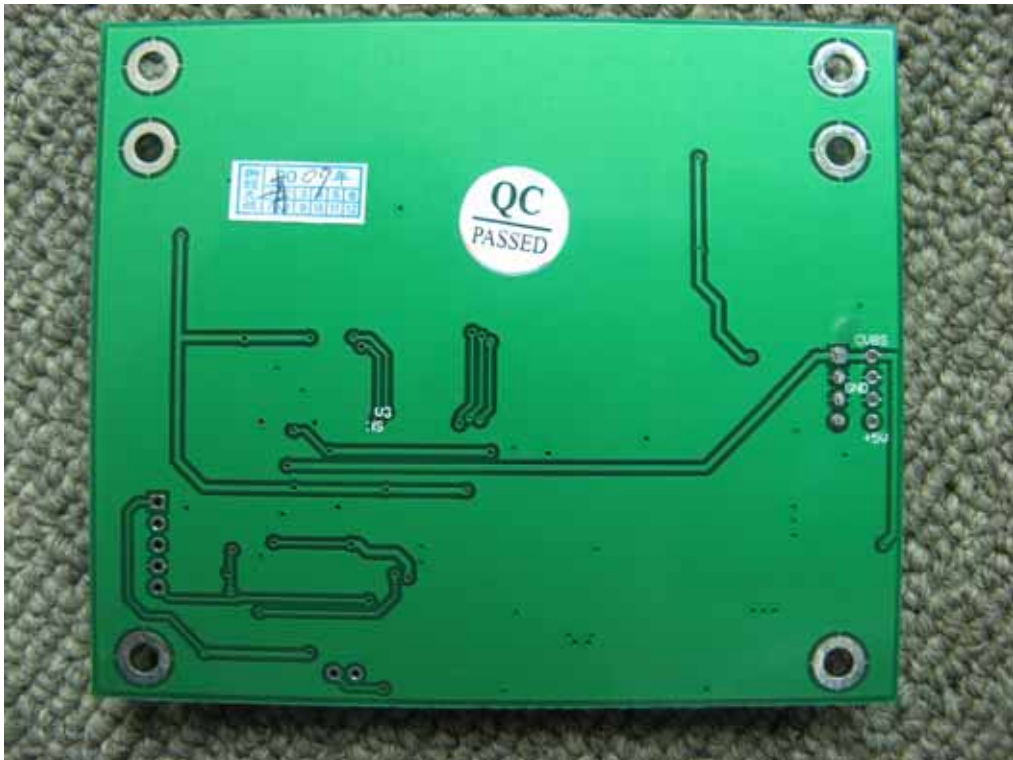
Internal View of EUT-9



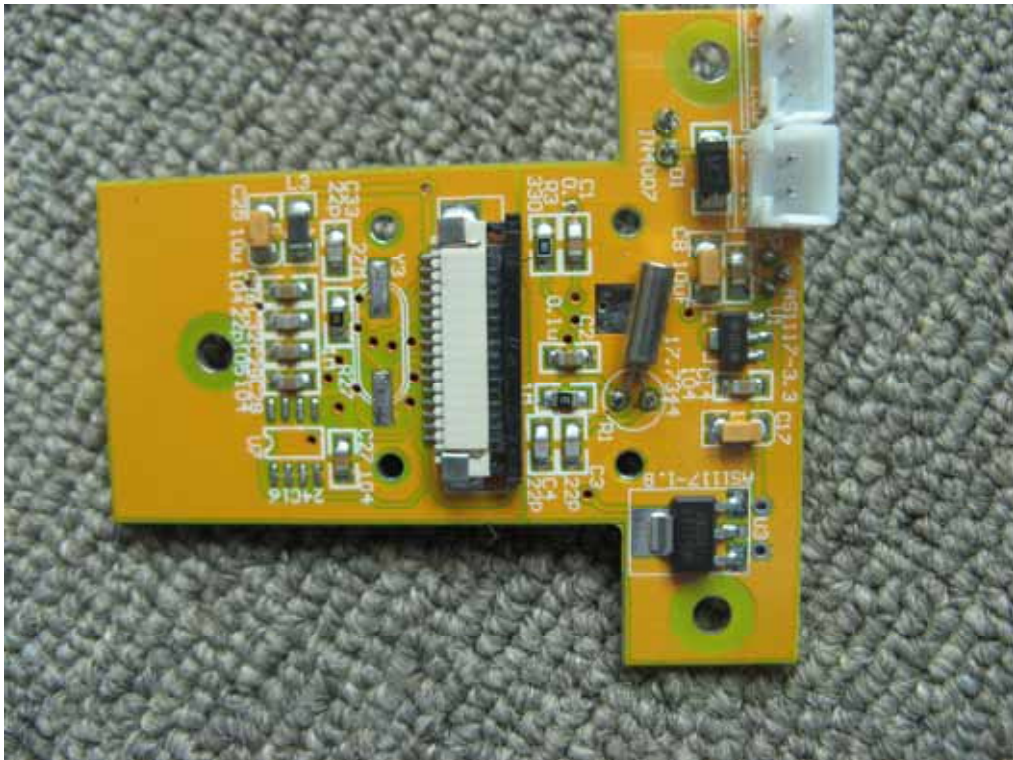
Internal View of EUT-10



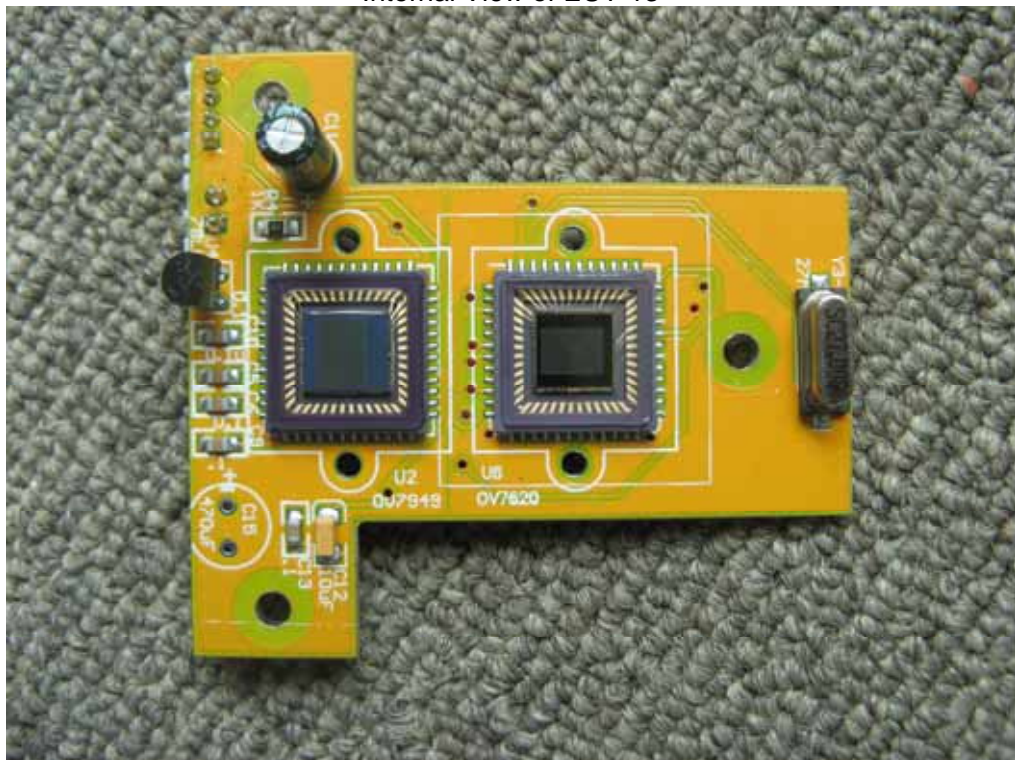
Internal View of EUT-11



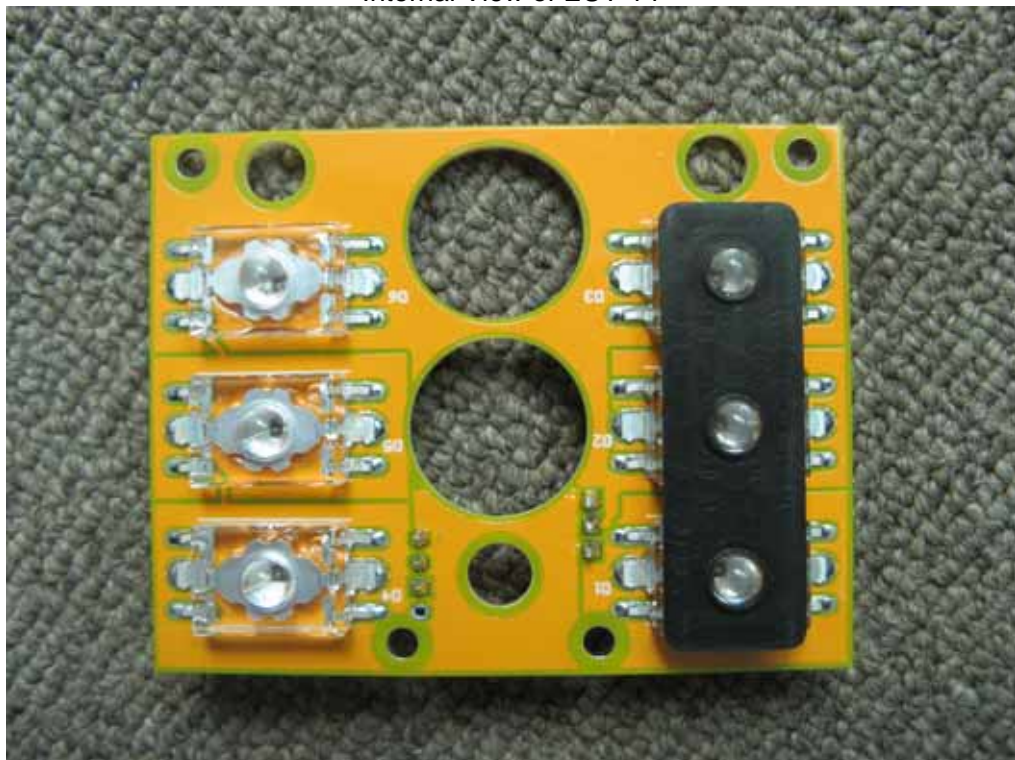
Internal View of EUT-12



Internal View of EUT-13



Internal View of EUT-14



Internal View of EUT-15



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