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No: EM/2009/50056C

## VERIFICATION OF COMPLIANCE

Product Name : 2 Mega-pixel Day and Night Network Camera(2 Mega-pixel Network Camera)

Brand Name : VIVOTEK

Model No. : IP7161

Added Model(s) : IP7160

Applicant : VIVOTEK INC.

Address of Applicant : 6F, No. 192, Lien-Cheng Rd., Chung-Ho City, Taipei County, Taiwan, R.O.C.

Manufacture : VIVOTEK INC.

Address of Manufacture : 5F, No.168, Lien-Cheng Rd., Chung-Ho City, Taipei County, Taiwan, R.O.C.

Based on SGS EMC Test : EM/2009/50056

Report Number(s)

Date of Issue : Jun. 05, 2009

Applicable Standards : EN55022 : 2006+A1:2007 Class B, EN61000-3-2 : 2006,  
EN61000-3-3 : 1995+A1:2001+A2:2005,  
EN55024 : 1998+A1:2001+A2:2003,  
IEC 61000-4-2 : 1995+A1:1998+A2:2000, IEC61000-4-3 : 2006,  
IEC 61000-4-4 : 2004, IEC 61000-4-5:2005,  
IEC61000-4-6 : 2003+A1:2004+A2:2006,  
IEC61000-4-8 : 1993+A1:2000, IEC 61000-4-11:2004.

### Conclusion

Based upon a review of the Technical Construction File, the apparatus is in compliance with below requirements of:

**EMC Directive 2004/108/EC**

**Authorized Signatory:**

**SGS TAIWAN LTD.**  
Victor Wen



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# TEST REPORT

**Test Report No. : EM/2009/50056**
**Applicant : VIVOTEK INC.**
**Address : 6F, No. 192, Lien-Cheng Rd., Chung-Ho City, Taipei County, Taiwan, R.O.C.**
**Manufacturer : VIVOTEK INC.**
**Address of Manufacturer : 5F, No.168, Lien-Cheng Rd., Chung-Ho City, Taipei County, Taiwan, R.O.C.**
**Equipment Under Test (EUT) :**
**Name : 2 Mega-pixel Day and Night Network Camera(2 Mega-pixel Network Camera)**
**Brand Name : VIVOTEK**
**Model No. : IP7161**
**Added Model(s) : IP7160**
**Standards:**

EN55022 : 2006+A1:2007 Class B	EN61000-3-2 : 2006
EN61000-3-3 : 1995+A1:2001+A2:2005	
EN55024 : 1998+A1:2001+A2:2003	IEC61000-4-2 : 1995+A1:1998+A2:2000
IEC61000-4-3 : 2006	IEC61000-4-4 : 2004
IEC61000-4-5 : 2005	IEC61000-4-6 : 2003+A1:2004+A2:2006
IEC61000-4-8 : 1993+A1:2000	IEC61000-4-11 : 2004

In the configuration tested, the EUT complied with the standards specified above.

**Date of Receipt : Mar. 06, 2009**
**Date of Test : Mar. 06 ~ May 21, 2009**
**Date of Issue : Jun. 05, 2009**
**Remarks:**

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.


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**Test By:**
  
**Wisely Huang(Engineer)**
**Date**

Jun. 05, 2009

**Prepared By:**
  
**Jessie Li(Clerk)**
**Date**

Jun. 05, 2009

**Approved By**
  
**Victor Wen(Assistant Manager)**
**Date**

Jun. 05, 2009

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# 1. General Description

## 1.1 General Description of EUT

Name of EUT	: 2 Mega-pixel Day and Night Network Camera (2 Mega-pixel Network Camera)
Brand Name	: VIVOTEK
Model No.(s)	: IP7161
Added Model(s)	: IP7160
Variant Description:	Focal Length; F value; IR-Cut filter; Day & Night; Interface; Power Requirement; Adjustment ring are different

## 1.2 Details of EUT

Power Supply	: Model : 1. 3A-181WP12 ; 2. AH1812-S. Input : AC 100~240V/50~60Hz Output from adaptor : DC 12V/1.5A
Power Cord	: Unshielded
Modes/Function	: 1. EUT+ENG Adapter. 2. ENT+JENTEC Adapter. 3. ENG Adapter+Lan. 4. POE.

## 1.3 Description of Support Units

PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
NOTEBOOK	IBM	R61	L3A9050
USB Mouse	HP	M-UAE96	390938-001
Printer	HP	DJ3820	CN34L181B1
EARPhone	Ergotech	N/A	N/A
SD CARD	Transcend	4G	N/A

## 1.4 Operation Procedure

1. Set down EUT with support units and turn on the power of all equipment.
2. Pre-test the EUT in all modes by each model, then figure the worst case out.
3. Tests under the normal operation pattern.

### 1.5 The worst case of the EUT

EUT will be carried out in the worst case as followings:

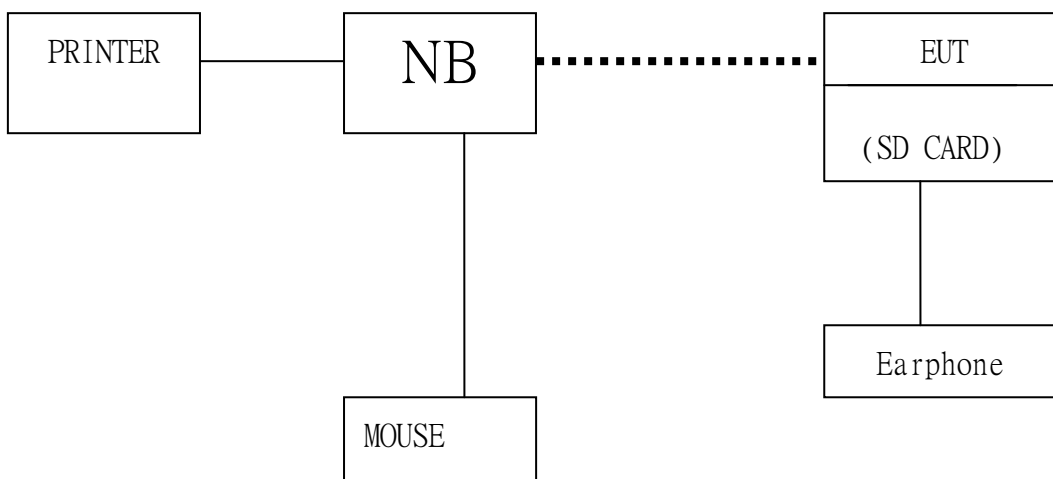
Model No.: IP7161

Mode : ENT+JENTEC Adapter

### 1.6 Modification List

No modification by SGS Taiwan Electronics & Communication Laboratory.

### 1.7 Configuration of Tested System



### 1.8 Cable List

Cable Type	Length	Shield
Earphone cable	1.85m	Non-shielding
JENTEC Adapter cable	1.85m	Non-shielding
ENG Adapter cable	1.72m	Non-shielding
ENG Adapter(core near power out)	1.8m	Non-shielding



### 1.9 Summary of Results

Highest Emission					
Standard	Test Type	Result	Phase/Polar.	Frequency(MHz)	Margin(dB)
EN55022 : 2006+A1:2007 Class B	Conducted Emission	Pass	Line (JENTEC)	0.7667	-6.82(AVG)
			Neutral (JENTEC)	0.7087	-4.39(AVG)
	Radiated Emission	Pass	Hor.	500.4500	-1.67(QP)
EN 61000-3-2: 2006	Harmonic current emissions	Pass	Meet the requirements		
EN 61000-3-3: 1995+A1:2001 +A2:2005	Voltage changes, voltage fluctuations & flicker	Pass	Meet the requirements		

Immunity (EN 55024:1998+A1:2001+A2:2003)				
Standard	Test Type	Result	Performance Criteria	Test Judgment
IEC61000-4-2:1995 +A1:1998 +A2:2000	ESD test	PASS	Criterion B	Meets the requirements of Performance Criterion A
IEC 61000-4-3:2006	RS test	PASS	Criterion A	Meets the requirements of Performance Criterion A
IEC61000-4-4:2004	EFT Test	PASS	Criterion B	Meets the requirements of Performance Criterion A
IEC61000-4-5:2005	Surge Test	PASS	Criterion B	Meets the requirements of Performance Criterion B
IEC61000-4-6:2003 +A1:2004 +A2:2006	CS Test	PASS	Criterion A	Meets the requirements of Performance Criterion A
IEC61000-4-8:1993 +A1:2000	PMF test	PASS	Criterion A	Meets the requirements of Performance Criterion A
IEC61000-4-11:2004	DIP Test	PASS	Criterion C/C/B	Meets the requirements of Performance Criterion B/A/A

## 2. Radio Disturbance

EN55022 : 2006+A1:2007 Class B

### 2.1 Test Results

EN55022 Class B	Result
Conducted Emission	<b>PASS</b>
Radiated Emission	<b>PASS</b>

### 2.2 Limit

#### Maximum permissible level of Line Conducted Emission

FREQUENCY (MHz)	Class A(dBuV)		Class B(dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

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

#### Maximum permissible level of Common Mode Conducted Emission (Telecommunication Ports)

##### CLASS A

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	97 - 87	84 - 74	53 - 43	40 - 30
0.5 - 30.0	87	74	43	30

##### CLASS B

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	84 - 74	74 - 64	40 - 30	30 - 20
0.5 - 30.0	74	64	30	20

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

#### Maximum permissible level of Radiated Emission measured at 10 meter

FREQUENCY (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	40	30
230 - 1000	47	37

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

**Limits above 1 GHz****Limits for radiated disturbance of Class A ITE at a measurement distance of 3m**

Frequency range GHz	Average Limit dB( $\mu$ V/m)	Peak Limit dB( $\mu$ V/m)
1 to 3	56	76
3 to 6	60	80

Note : The lower limit applies at the transition frequency.

**Limits for radiated disturbance of Class B ITE at a measurement distance of 3m**

Frequency range GHz	Average Limit dB( $\mu$ V/m)	Peak Limit dB( $\mu$ V/m)
1 to 3	50	70
3 to 6	54	76

Note : The lower limit applies at the transition frequency.

**2.3 Methods and Procedures**

Standard	Date	Description
EN55022	2006+A1:2007 Class B	Limits and methods of measurement of radio interference characteristics of information technology equipment.

**2.4. Test of Conducted Emission & ISN****2.4.1 Test Instruments**

Description & Manufacturer	Model No.	Serial No.	Date of Calibration
EMI Test Receiver	ESCS 30	828985/004	Sep. 16, 2008
Coaxial Cables	WK CE Cable	N/A	Nov. 29, 2008
L.I.S.N	NNB-2/16Z	99012	Feb. 18, 2009
L.I.S.N	FCC-LISN-50/250-25-2-01	04034	Feb. 18, 2009
ISN	FCC-TLISN-T4	20228	Feb. 03, 2009

**2.4.2 Test Site**

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### **2.4.3 EUT Operating Condition**

Environment :

Temperature	Humidity
24 °C	61 %RH

Test setup : Please refer to photo of CE,ISN testing set-up

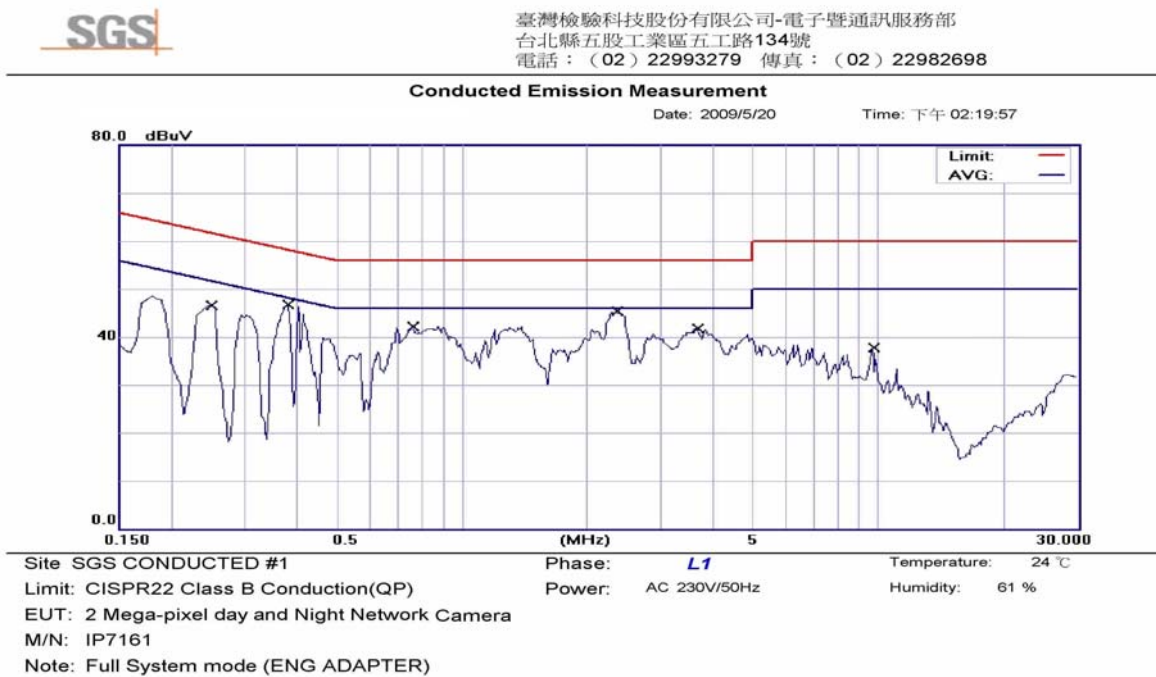
### **2.4.4 Uncertainty of Conducted Emission**

Expanded uncertainty (k=2) of Conducted Emission measurement is 2.3dB.

### 2.4.5 Measurement Data(CE)

#### ENG Adaptor Mode

L:



No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2500	46.36	0.11	46.47	61.76	-15.29	QP	
2		0.3800	46.66	0.08	46.74	58.28	-11.54	QP	
3		0.7600	41.97	0.08	42.05	56.00	-13.95	QP	
4	*	2.3500	45.27	0.13	45.40	56.00	-10.60	QP	
5		3.6800	41.64	0.15	41.79	56.00	-14.21	QP	
6		9.7200	37.27	0.41	37.68	60.00	-22.32	QP	

N:

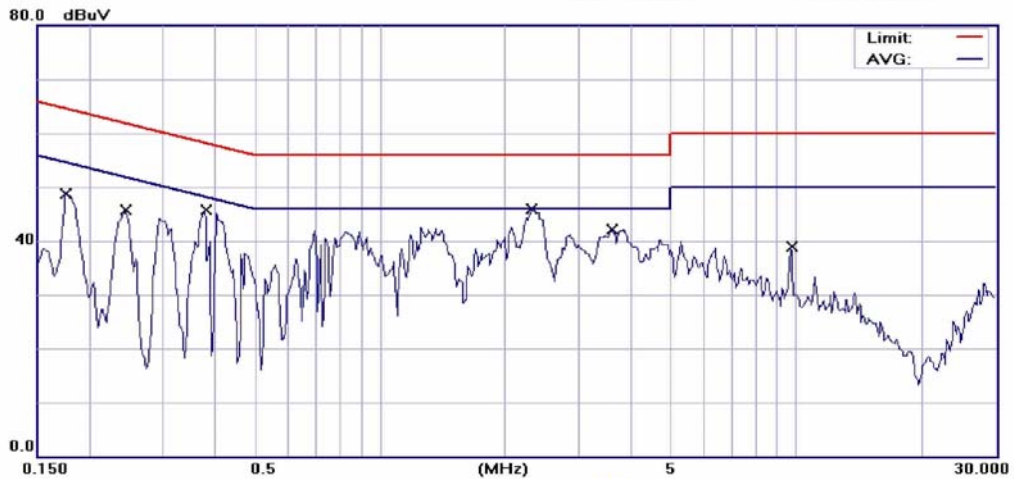


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 台北縣五股工業區五工路134號  
 電話：(02) 22993279 傳真：(02) 22982698

Conducted Emission Measurement

Date: 2009/5/20

Time: 下午 02:22:10



Site SGS CONDUCTED #1 Phase: **N** Temperature: 24 °C  
 Limit: CISPR22 Class B Conduction(QP) Power: AC 230V/50Hz Humidity: 61 %  
 EUT: 2 Mega-pixel day and Night Network Camera  
 M/N: IP7161  
 Note: Full System mode (ENG ADAPTER)

No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1750	48.47	0.17	48.64	64.72	-16.08	QP	
2		0.2450	45.60	0.13	45.73	61.92	-16.19	QP	
3		0.3800	45.54	0.11	45.65	58.28	-12.63	QP	
4	*	2.3200	45.73	0.15	45.88	56.00	-10.12	QP	
5		3.6000	41.99	0.17	42.16	56.00	-13.84	QP	
6		9.7400	38.39	0.43	38.82	60.00	-21.18	QP	

JENTEC Adaptor Mode

L:

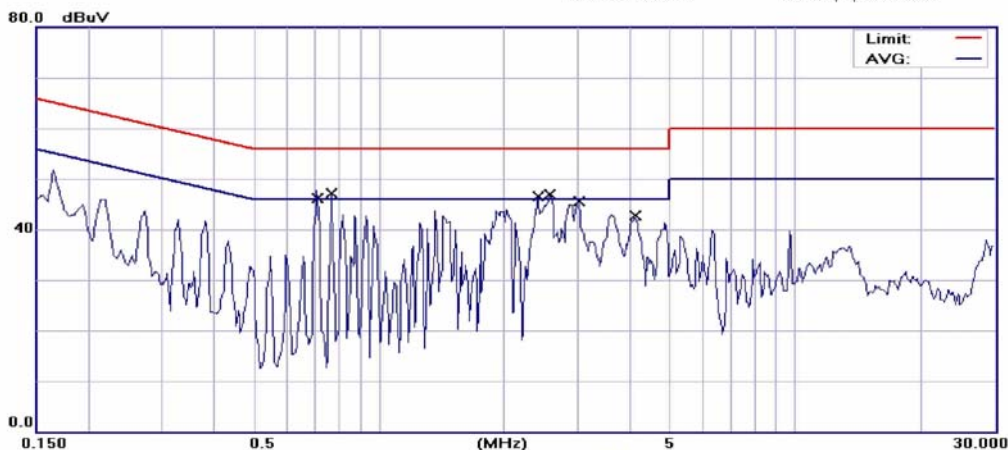


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 台北縣五股工業區五工路134號  
 電話：(02) 22993279 傳真：(02) 22982698

Conducted Emission Measurement

Date: 2009/5/20

Time: 下午 03:24:43



Site: SGS CONDUCTED #1

Phase: L1

Temperature: 24 °C

Limit: CISPR22 Class B Conduction(QP)

Power: AC 230V/50Hz

Humidity: 61 %

EUT: 2 Mega-pixel day and Night Network Camera

M/N: IP7161

Note: Full System mode (JENTEC ADAPTER)

No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.7180	42.90	0.08	42.98	56.00	-13.02	QP	
2		0.7180	34.00	0.08	34.08	46.00	-11.92	AVG	
3		0.7667	44.80	0.08	44.88	56.00	-11.12	QP	
4	*	0.7667	39.10	0.08	39.18	46.00	-6.82	AVG	
5		2.4057	42.90	0.13	43.03	56.00	-12.97	QP	
6		2.4057	30.10	0.13	30.23	46.00	-15.77	AVG	
7		2.5790	43.40	0.14	43.54	56.00	-12.46	QP	
8		2.5790	30.50	0.14	30.64	46.00	-15.36	AVG	
9		3.0149	40.80	0.14	40.94	56.00	-15.06	QP	
10		3.0149	28.90	0.14	29.04	46.00	-16.96	AVG	
11		4.1182	39.00	0.15	39.15	56.00	-16.85	QP	
12		4.1182	26.60	0.15	26.75	46.00	-19.25	AVG	

N:

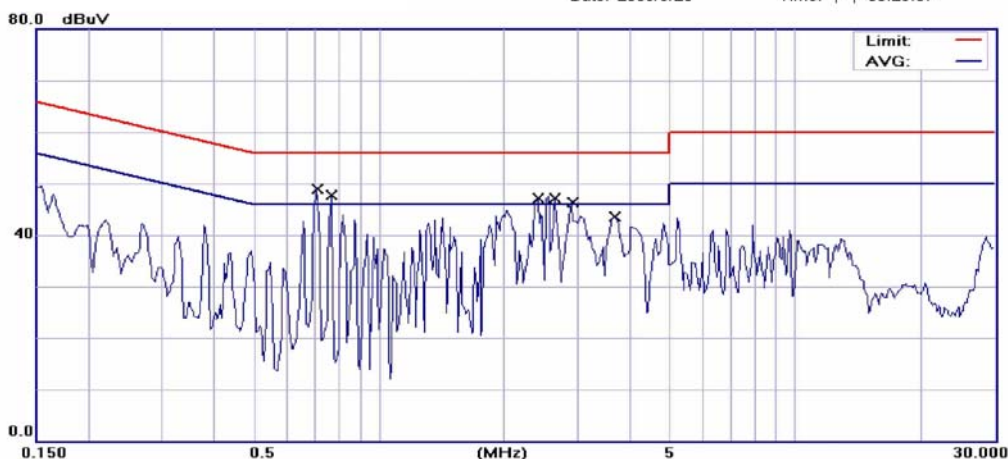


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 台北縣五股工業區五工路134號  
 電話：(02) 22993279 傳真：(02) 22982698

Conducted Emission Measurement

Date: 2009/5/20

Time: 下午 03:29:07



Site SGS CONDUCTED #1

Phase: N

Temperature: 24 °C

Limit: CISPR22 Class B Conduction(QP)

Power: AC 230V/50Hz

Humidity: 61 %

EUT: 2 Mega-pixel day and Night Network Camera

M/N: IP7161

Note: Full System mode (JENTEC ADAPTER)

No.	Mk.	Freq.	Reading Level	Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.7087	47.80	0.11	47.91	56.00	-8.09	QP	
2	*	0.7087	41.50	0.11	41.61	46.00	-4.39	AVG	
3		0.7657	44.90	0.11	45.01	56.00	-10.99	QP	
4		0.7657	39.50	0.11	39.61	46.00	-6.39	AVG	
5		2.4054	42.60	0.15	42.75	56.00	-13.25	QP	
6		2.4054	30.10	0.15	30.25	46.00	-15.75	AVG	
7		2.6459	41.80	0.16	41.96	56.00	-14.04	QP	
8		2.6459	23.90	0.16	24.06	46.00	-21.94	AVG	
9		2.9053	42.60	0.16	42.76	56.00	-13.24	QP	
10		2.9053	28.20	0.16	28.36	46.00	-17.64	AVG	
11		3.6793	39.80	0.17	39.97	56.00	-16.03	QP	
12		3.6793	26.10	0.17	26.27	46.00	-19.73	AVG	



### 2.4.6 Measurement Data(ISN)

ENG Adaptor Mode  
ISN

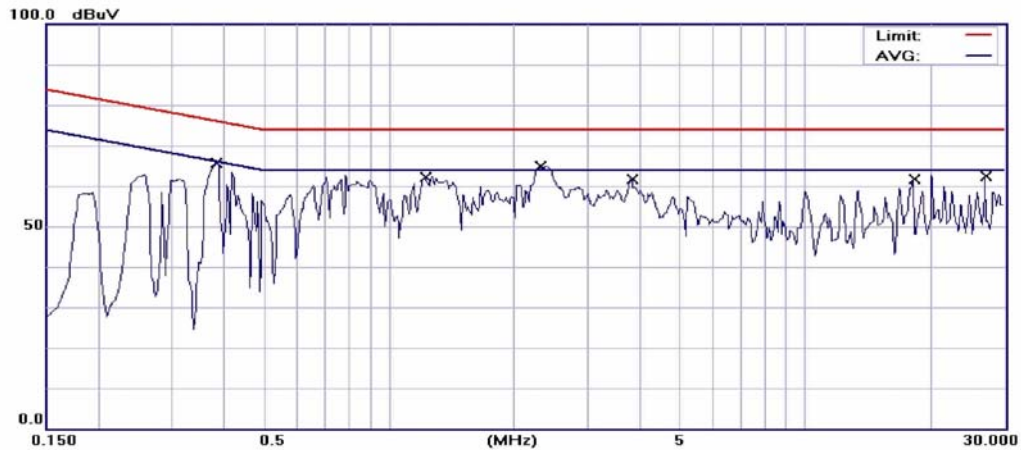


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台北縣五股工業區五工路134號  
電話：(02) 22993279 傳真：(02) 22982698

#### Conducted Emission Measurement

Date: 2009/5/20

Time: 下午 04:22:57



Site: SGS CONDUCTED #1  
Limit: EN55022 ISN Voltage - Class B (QP)  
EUT: 2 Mega-pixel day and Night Network Camera  
M/N: IP7161  
Note: LAN+ ENG ADAPTER

Phase: \_\_\_\_\_ Temperature: ODE °C  
Power: AC 230V/50Hz | Humidity: 61 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.3877	54.70	9.78	64.48	76.11	-11.63	QP	
2	*	0.3877	50.40	9.78	60.18	66.11	-5.93	AVG	
3		1.2327	49.70	9.78	59.48	74.00	-14.52	QP	
4		1.2327	41.20	9.78	50.98	64.00	-13.02	AVG	
5		2.2975	49.50	9.80	59.30	74.00	-14.70	QP	
6		2.2975	39.20	9.80	49.00	64.00	-15.00	AVG	
7		3.8800	45.30	9.80	55.10	74.00	-18.90	QP	
8		3.8800	36.80	9.80	46.60	64.00	-17.40	AVG	
9		18.2152	12.60	9.83	22.43	74.00	-51.57	QP	
10		18.2152	5.00	9.83	14.83	64.00	-49.17	AVG	
11		27.1785	23.70	9.89	33.59	74.00	-40.41	QP	
12		27.1785	16.10	9.89	25.99	64.00	-38.01	AVG	

JENTEC Adaptor Mode  
ISN

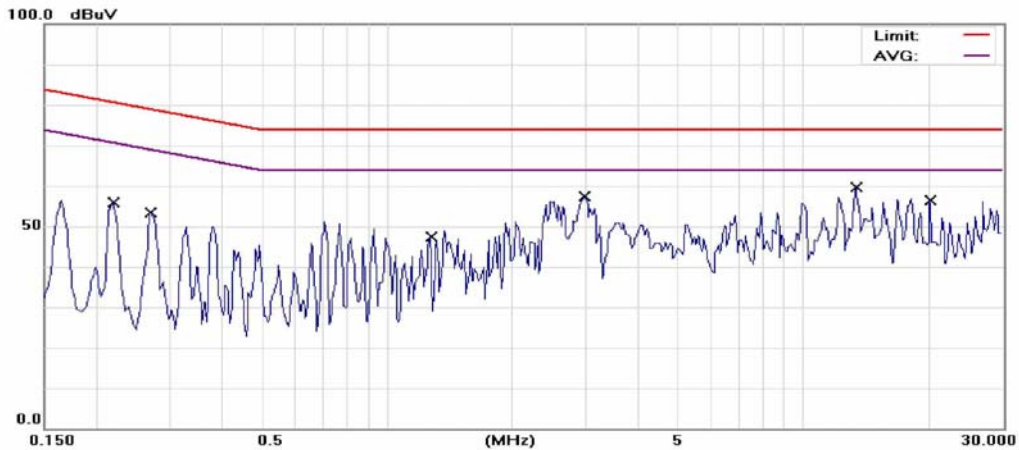


臺灣檢驗科技股份有限公司-電子暨通訊服務部  
台北縣五股工業區五工路134號  
電話：(02) 22993279 傳真：(02) 22982698

Conducted Emission Measurement

Date: 2009/05/21

Time: 下午 04:01:53



Site SGS CONDUCTED #1

Phase:

Temperature: 25 °C

Limit: EN55022 ISN Voltage - Class B (QP)

Power: AC 230V/50Hz

Humidity: 62 %

EUT: 2 Mega-pixel day and Night Network Camera

M/N: IP7161

Note: LAN+JENTEC ADAPTER

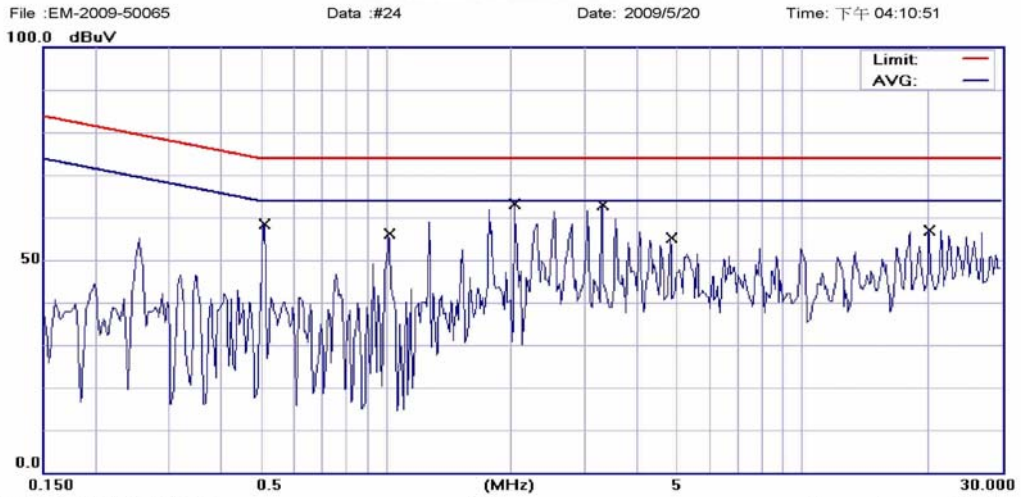
No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2200	45.99	9.81	55.80	80.82	-25.02	QP	
2		0.2700	43.67	9.80	53.47	79.12	-25.65	QP	
3		1.2700	37.49	9.78	47.27	74.00	-26.73	QP	
4		2.9800	47.56	9.80	57.36	74.00	-16.64	QP	
5	*	13.4200	49.65	9.97	59.62	74.00	-14.38	QP	
6		20.2600	46.73	9.77	56.50	74.00	-17.50	QP	

ISN-POE



臺灣檢驗科技股份有限公司-電子暨通訊服務部  
 台北縣五股工業區五工路134號  
 電話：(02) 22993279 傳真：(02) 22982698

Conducted Emission Measurement



Site SGS CONDUCTED #1 Phase: Temperature: 24 °C  
 Limit: EN55022 ISN Voltage - Class B (QP) Power: FROM SYSTEM Humidity: 61 %  
 EUT: 2 Mega-pixel day and Night Network Camera Distance: Air Pressure: hpa  
 M/N: IP7161  
 Note: ISN ( POE MODE )

No.	Mk.	Freq.	Reading Level	Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.5100	48.56	9.93	58.49	74.00	-15.51	QP	
2		1.0200	46.17	9.92	56.09	74.00	-17.91	QP	
3	*	2.0400	53.10	9.92	63.02	74.00	-10.98	QP	
4		3.3100	52.96	9.93	62.89	74.00	-11.11	QP	
5		4.8400	45.07	9.95	55.02	74.00	-18.98	QP	
6		20.2600	46.77	10.03	56.80	74.00	-17.20	QP	

## 2.5 Test of Radiated Emission

### 2.5.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100335	Feb. 05, 2009
RF-Amplifier	Agilent	8447D	2944A09469	Nov. 29, 2008
Broadband Antenna	SCHWAZBECK	VULB9160	9160-3224	Mar. 03, 2009
Coaxial Cables	N/A	OS RE Cable	N/A	Nov. 29, 2008
Antenna Master	HD GmbH	MA 240	240/515	N/A
Turn Table	HD GmbH	DT420	420/542	N/A
Controller	HD GmbH	HD 100	100/589	N/A

### 2.5.2 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No. 29, Pau-Tou-Tsuo Valley, Chia-Pau Tsuen, Linkou Hsiang, Taipei County 244,  
Taiwan (R.O.C.)

### 2.5.3 EUT Operating Condition

Environment :

Temperature	Humidity
23 °C	60 %RH

Test setup : Please refer to photo of RE testing set-up

### 2.5.4 Uncertainty of Radiated Emission

Expanded uncertainty (k=2) of radiated emission measurement is 3.09dB.

### 2.5.5 Measurement Data

#### ENG Adaptor Mode

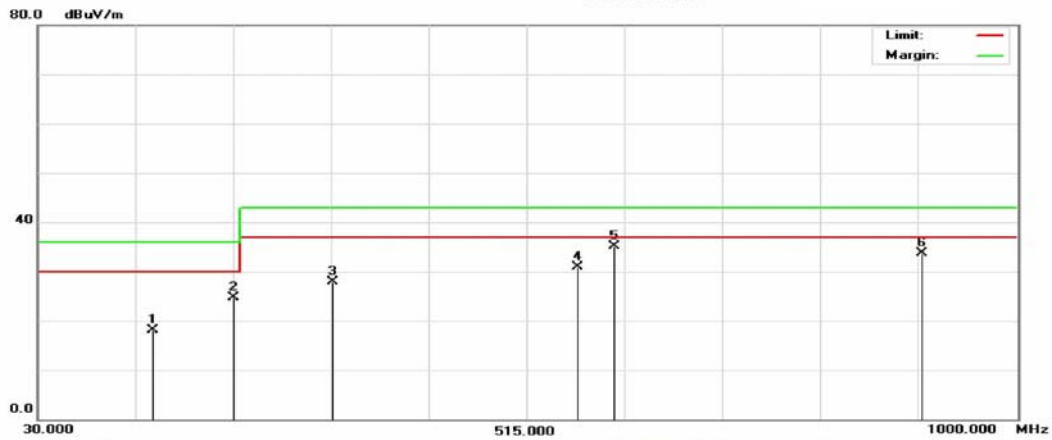
#### 2.5.5.1 Horizontal polarization



臺灣檢驗科技股份有限公司 - 電子暨通訊實驗室  
Address : 台北縣五股工業區五工路 134 號  
Tel:02-2299-3279 Fax:02-2298-2698

#### Radiated Emission Measurement

Date:2009/5/12



Site : 10M Open Site      Polarization: **Horizontal**      Temperature: 23 °C  
Limit: CISPR22 Class B 10M Radiation      Power: AC230V/50Hz      Humidity: 60%  
EUT: 2 Mega-pixel day and Night Network Camera  
M/N: IP7161  
Note: Full System Operation (ENG Adapter)

No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		143.5500	40.63	-22.44	18.19	30.00	-11.81	QP	
2		223.5600	45.25	-20.64	24.61	30.00	-5.39	QP	
3		323.3600	43.63	-15.79	27.84	37.00	-9.16	QP	
4		565.2400	44.36	-13.37	30.99	37.00	-6.01	QP	
5	*	600.8750	46.36	-11.28	35.08	37.00	-1.92	QP	
6		905.6240	43.23	-9.58	33.65	37.00	-3.35	QP	

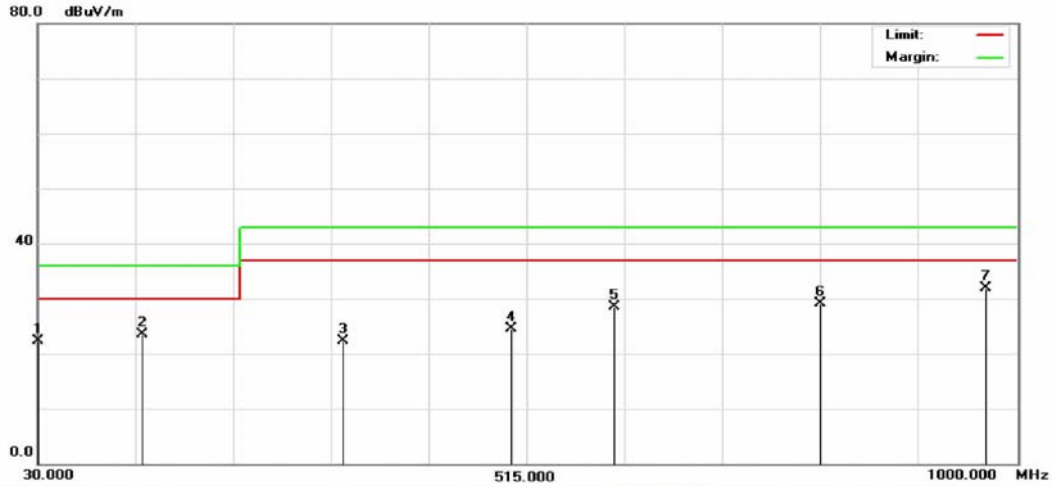
2.5.5.2 Vertical polarization



臺灣檢驗科技股份有限公司 - 電子暨通訊實驗室  
 Address : 台北縣五股工業區五工路 134 號  
 Tel: 02-2299-3279 Fax: 02-2298-2698

Radiated Emission Measurement

Date: 2009/5/12



Site : 10M Open Site      Polarization: **Vertical**      Temperature: 23 °C  
 Limit: CISPR22 Class B 10M Radiation      Power: AC230V/50Hz      Humidity: 60%  
 EUT: 2 Mega-pixel day and Night Network Camera  
 M/N: IP7161  
 Note: Full System Operation (ENG Adapter)

No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		32.2530	50.36	-28.01	22.35	30.00	-7.65	QP	
2		133.8500	42.93	-19.51	23.42	30.00	-6.58	QP	
3		331.2520	40.31	-17.96	22.35	37.00	-14.65	QP	
4		500.4500	40.36	-15.81	24.55	37.00	-12.45	QP	
5		600.3650	43.25	-14.76	28.49	37.00	-8.51	QP	
6		805.1500	40.19	-11.12	29.07	37.00	-7.93	QP	
7	*	968.5350	41.27	-9.40	31.87	37.00	-5.13	QP	

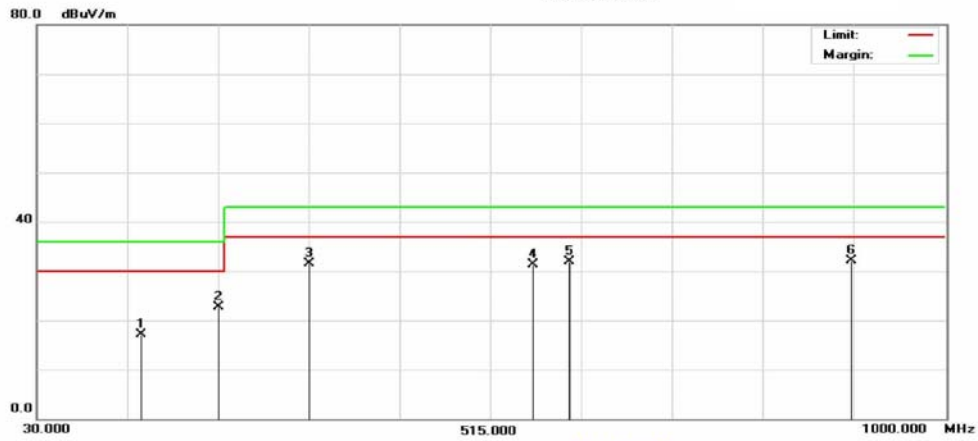
JENTEC Adaptor Mode  
 2.5.5.3 Horizontal polarization



臺灣檢驗科技股份有限公司 - 電子暨通訊實驗室  
 Address : 台北縣五股工業區五工路 134 號  
 Tel:02-2299-3279 Fax:02-2298-2698

Radiated Emission Measurement

Date: 2009/5/12



Site : 10M Open Site Polarization: **Horizontal** Temperature: 23 °C  
 Limit: CISPR22 Class B 10M Radiation Power: AC 230V/50Hz Humidity: 60%  
 EUT: 2 Mega-pixel day and Night Network Camera  
 M/N: IP7161  
 Note: Full System Operation (JENTEC Adapter)

No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		141.5500	39.87	-22.78	17.09	30.00	-12.91	QP	
2		224.0000	43.39	-20.60	22.79	30.00	-7.21	QP	
3		321.0000	47.23	-15.72	31.51	37.00	-5.49	QP	
4		561.0750	44.79	-13.53	31.26	37.00	-5.74	QP	
5		599.8750	43.27	-11.29	31.98	37.00	-5.02	QP	
6	*	900.5750	41.51	-9.41	32.10	37.00	-4.90	QP	

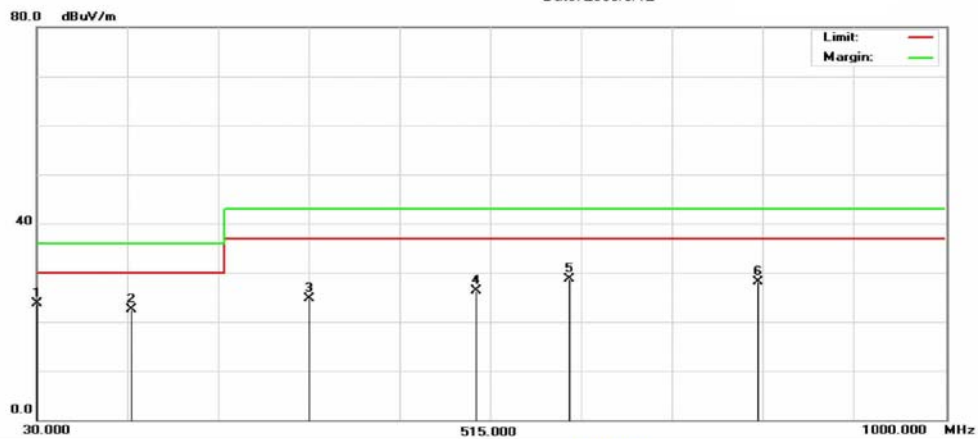
### 2.5.5.4 Vertical polarization



臺灣檢驗科技股份有限公司 -電子暨通訊實驗室  
 Address :台北縣五股工業區五工路 134 號  
 Tel:02-2299-3279 Fax:02-2298-2698

#### Radiated Emission Measurement

Date: 2009/5/12



Site : 10M Open Site  
 Limit: CISPR22 Class B 10M Radiation  
 EUT: 2 Mega-pixel day and Night Network Camera  
 M/N: IP7161  
 Note: Full System Operation (JENTEC Adapter)

Polarization: **Vertical**  
 Power: AC 230V/50Hz  
 Temperature: 23 °C  
 Humidity: 60%

No.	Mk.	Freq. MHz	Reading Level		Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
			dBuV	dB					
1	*	30.0500	51.87	-28.21	23.66	30.00	-6.34	QP	
2		131.8500	42.02	-19.55	22.47	30.00	-7.53	QP	
3		321.0000	42.08	-17.47	24.61	37.00	-12.39	QP	
4		500.4500	42.03	-15.81	26.22	37.00	-10.78	QP	
5		599.8750	43.41	-14.78	28.63	37.00	-8.37	QP	
6		801.1500	38.99	-10.93	28.06	37.00	-8.94	QP	



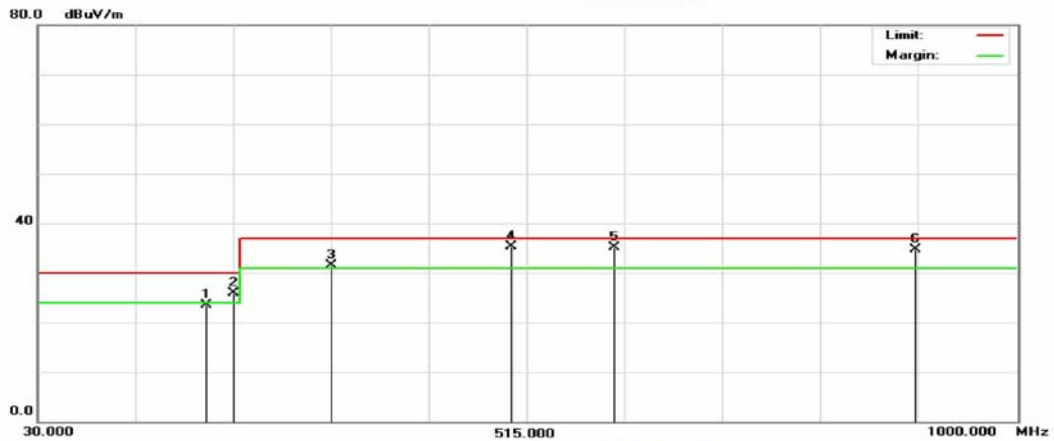
POE Mode  
 2.5.5.5 Horizontal polarization



臺灣檢驗科技股份有限公司 - 電子暨通訊實驗室  
 Address : 台北縣五股工業區五工路 134 號  
 Tel:02-2299-3279 Fax:02-2298-2698

Radiated Emission Measurement

Date:2009/5/12



Site : 10M Open Site Polarization: **Horizontal** Temperature: 22 °C  
 Limit: CISPR22 Class B 10M Radiation Power: FromSystem Humidity: 59%  
 EUT: 2 Mega-pixel day and Night Network Camera  
 M/N: IP7161  
 Note: POE Mode;

No.	Mk.	Freq. MHz	Reading Level dBuV	Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		197.3250	40.69	-17.24	23.45	30.00	-6.55	QP	
2	!	224.0000	42.12	-16.16	25.96	30.00	-4.04	QP	
3	!	321.0000	43.37	-11.86	31.51	37.00	-5.49	QP	
4	*	500.4500	43.33	-8.00	35.33	37.00	-1.67	QP	
5	!	600.0250	40.36	-5.34	35.02	37.00	-1.98	QP	
6	!	899.9630	34.16	0.57	34.73	37.00	-2.27	QP	

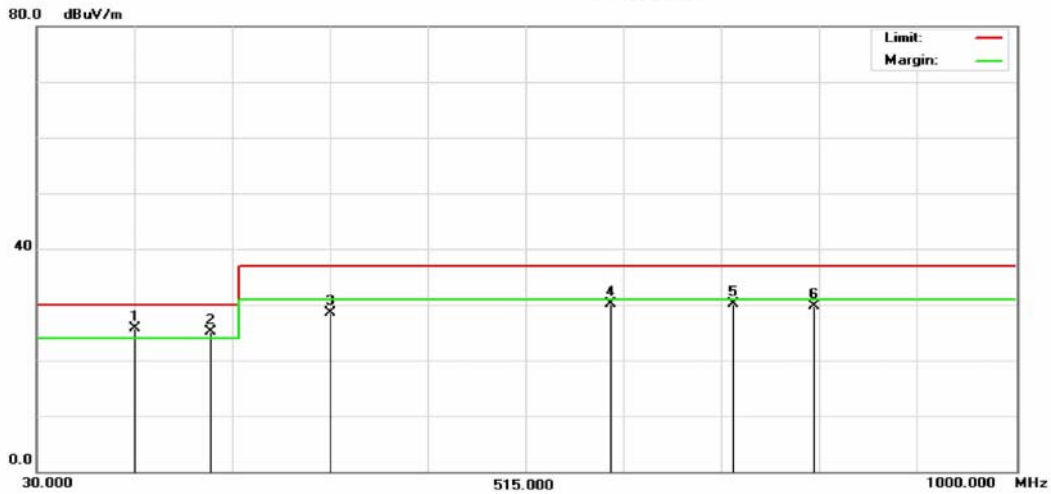
2.5.5.6 Vertical polarization



臺灣檢驗科技股份有限公司 - 電子暨通訊實驗室  
 Address : 台北縣五股工業區五工路 134 號  
 Tel:02-2299-3279 Fax:02-2298-2698

Radiated Emission Measurement

Date:2009/5/12



Site : 10M Open Site      Polarization: **Vertical**      Temperature: 22 °C  
 Limit: CISPR22 Class B 10M Radiation      Power: FromSystem      Humidity: 59%  
 EUT: 2 Mega-pixel day and Night Network Camera  
 M/N: IP7161  
 Note: POEMode;

No.	Mk.	Freq. MHz	Reading	Factor	Measure-	Limit	Over		Detector	Comment
			Level dBuV		ment dBuV/m		dB	dB		
1	*	127.0000	41.63	-15.85	25.78	30.00	-4.22	QP		
2	!	202.1750	42.52	-17.34	25.18	30.00	-4.82	QP		
3		321.0000	40.32	-11.86	28.46	37.00	-8.54	QP		
4		599.8750	35.36	-5.34	30.02	37.00	-6.98	QP		
5		721.1250	33.18	-3.02	30.16	37.00	-6.84	QP		
6		801.1500	31.10	-1.37	29.73	37.00	-7.27	QP		

## 3.Harmonics

EN61000-3-2:2006

### 3.1 Test Results

EN61000-3-2:2006	<b>PASS</b>
------------------	-------------

### 3.2 Methods and Procedures

Standard	Date	Description
EN61000-3-2	2006	Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)

### 3.3 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
Power Analyzer	EMC Partner	HAR1000-1P	151	May 09, 2008

### 3.4 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### 3.5 EUT Operating Condition

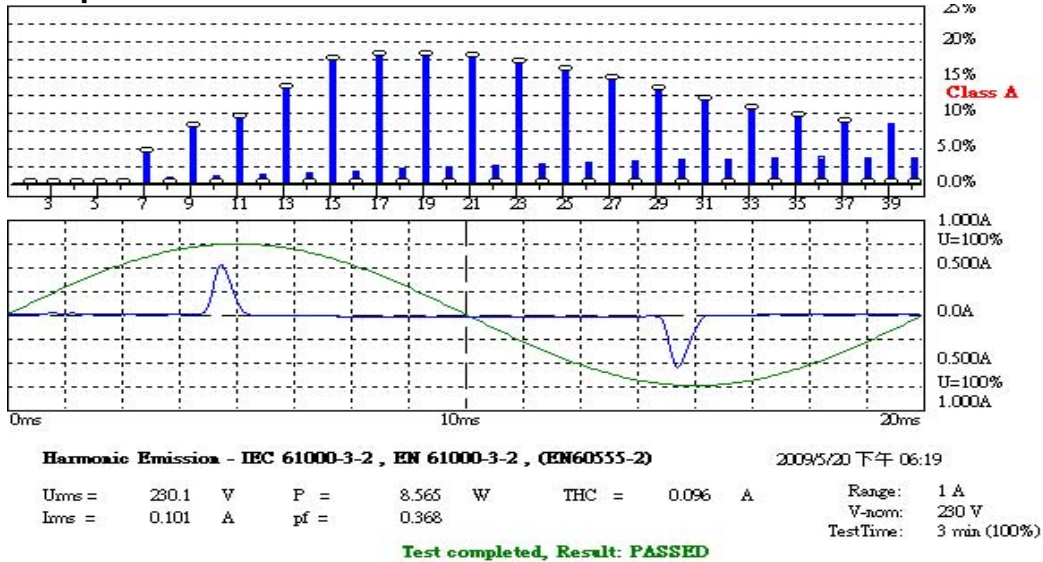
Environment :

Temperature	Humidity
28 °C	59 %RH

Test setup : Please refer to photo of HARMONIC testing set-up

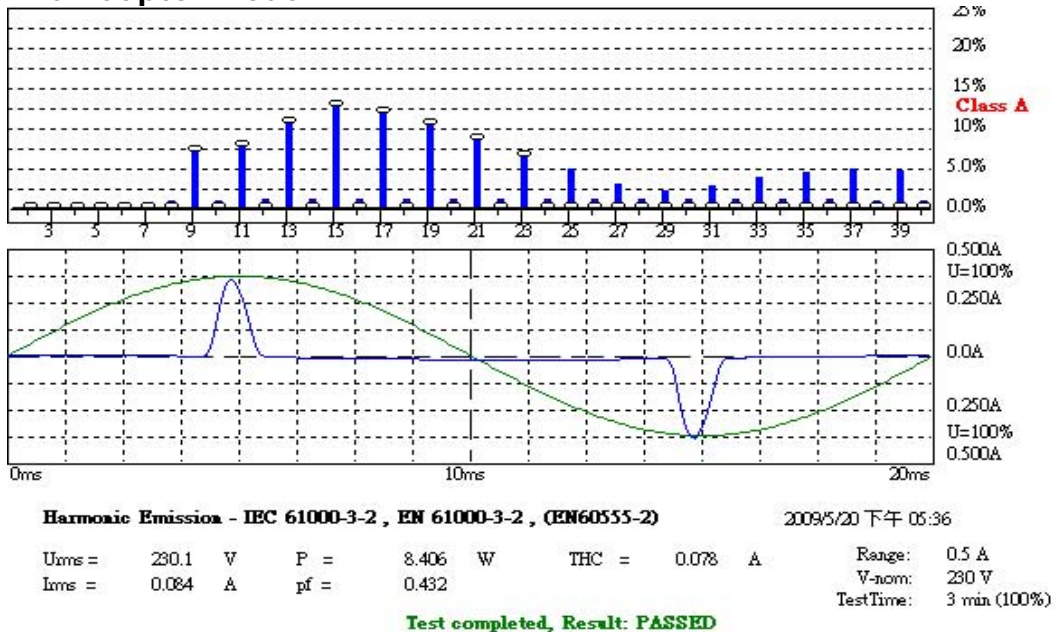
### 3.6 Measurement Data (1)

#### 1. ENG Adaptor Mode



EMC-1000 EMC-Return

#### 2. JENTEC Adaptor Mode



EMC-1000 EMC-Return

**1. ENG Adaptor Mode.**

Urms =	230.1V	Freq =	49.987	Range:	1 A		
Irms =	0.101A	Ipk =	0.560A	cf =	5.541		
P =	8.565W	S =	23.26VA	pf =	0.368		
THDi =	91.8 %	THDu =	0.10 %	Class A			
Test - Time : 3min ( 100 %)							
Test completed, Result: PASSED							
Order	Freq.	Iavg	Iavg%L	Imax	Imax%L	Limit	Status
	[Hz]	[A]	[%]	[A]	[%]	[A]	
1	50	0.0414		0.0417			
2	100	0.0000	0.0000	0.0015	0.1413	1.0800	
3	150	0.0349	1.5169	0.0350	1.5206	2.3000	
4	200	0.0000	0.0000	0.0015	0.3549	0.4300	
5	250	0.0343	3.0045	0.0344	3.0143	1.1400	
6	300	0.0000	0.0000	0.0015	0.5086	0.3000	
7	350	0.0333	4.3186	0.0333	4.3279	0.7700	
8	400	0.0000	0.0000	0.0016	0.6900	0.2300	
9	450	0.0319	7.9668	0.0319	7.9803	0.4000	
10	500	0.0000	0.0000	0.0016	0.8956	0.1840	
11	550	0.0302	9.1492	0.0303	9.1738	0.3300	
12	600	0.0000	0.0000	0.0016	1.0747	0.1533	
13	650	0.0282	13.448	0.0283	13.457	0.2100	
14	700	0.0000	0.0000	0.0017	1.3003	0.1314	
15	750	0.0261	17.385	0.0261	17.415	0.1500	
16	800	0.0000	0.0000	0.0018	1.5391	0.1150	
17	850	0.0238	17.964	0.0238	17.985	0.1324	
18	900	0.0000	0.0000	0.0018	1.7912	0.1022	
19	950	0.0214	18.064	0.0214	18.091	0.1184	
20	1000	0.0000	0.0000	0.0018	1.9903	0.0920	
21	1050	0.0190	17.711	0.0190	17.773	0.1071	
22	1100	0.0000	0.0000	0.0019	2.2623	0.0836	
23	1150	0.0166	16.969	0.0167	17.033	0.0978	
24	1200	0.0000	0.0000	0.0019	2.4679	0.0767	
25	1250	0.0143	15.910	0.0143	15.937	0.0900	
26	1300	0.0000	0.0000	0.0020	2.7599	0.0708	

27	1350	0.0122	14.626	0.0123	14.722	0.0833
28	1400	0.0000	0.0000	0.0019	2.8793	0.0657
29	1450	0.0103	13.212	0.0103	13.295	0.0776
30	1500	0.0000	0.0000	0.0019	3.0849	0.0613
31	1550	0.0086	11.798	0.0086	11.857	0.0726
32	1600	0.0000	0.0000	0.0018	3.1844	0.0575
33	1650	0.0072	10.492	0.0072	10.563	0.0682
34	1700	0.0000	0.0000	0.0018	3.3835	0.0541
35	1750	0.0061	9.4156	0.0061	9.4944	0.0643
36	1800	0.0000	0.0000	0.0018	3.4631	0.0511
37	1850	0.0052	8.6260	0.0053	8.7321	0.0608
38	1900	0.0000	0.0000	0.0016	3.4034	0.0484
39	1950	0.0000	0.0000	0.0048	8.2520	0.0577
40	2000	0.0000	0.0000	0.0016	3.4498	0.0460

**2. JENTEC Adaptor Mode.**

Urms =	230.1V	Freq =	49.987	Range:	0.5 A		
Irms =	0.084A	Ipk =	0.391A	cf =	4.624		
P =	8.406W	S =	19.44VA	pf =	0.432		
THDi =	90.1 %	THDu =	0.10 %	Class A			
Test - Time : 3min ( 100 %)							
Test completed, Result: PASSED							
Order	Freq.	Iavg	Iavg%L	Imax	Imax%L	Limit	Status
	[Hz]	[A]	[%]	[A]	[%]	[A]	
1	50	0.0378		0.0379			
2	100	0.0000	0.0000	0.0016	0.1526	1.0800	
3	150	0.0340	1.4784	0.0341	1.4821	2.3000	
4	200	0.0000	0.0000	0.0016	0.3761	0.4300	
5	250	0.0328	2.8759	0.0329	2.8831	1.1400	
6	300	0.0000	0.0000	0.0015	0.5086	0.3000	
7	350	0.0309	4.0166	0.0310	4.0267	0.7700	
8	400	0.0000	0.0000	0.0014	0.6236	0.2300	
9	450	0.0285	7.1277	0.0286	7.1411	0.4000	
10	500	0.0000	0.0000	0.0013	0.7132	0.1840	
11	550	0.0257	7.7746	0.0257	7.7866	0.3300	
12	600	0.0000	0.0000	0.0012	0.7762	0.1533	
13	650	0.0225	10.704	0.0225	10.725	0.2100	
14	700	0.0000	0.0000	0.0011	0.8127	0.1314	
15	750	0.0191	12.748	0.0192	12.777	0.1500	
16	800	0.0000	0.0000	0.0009	0.8226	0.1150	
17	850	0.0157	11.870	0.0157	11.898	0.1324	
18	900	0.0000	0.0000	0.0008	0.8061	0.1022	
19	950	0.0124	10.459	0.0124	10.489	0.1184	
20	1000	0.0000	0.0000	0.0008	0.8293	0.0920	
21	1050	0.0093	8.6383	0.0093	8.6873	0.1071	
22	1100	0.0000	0.0000	0.0007	0.8392	0.0836	
23	1150	0.0064	6.5802	0.0065	6.6135	0.0978	
24	1200	0.0000	0.0000	0.0007	0.8757	0.0767	
25	1250	0.0000	0.0000	0.0041	4.5098	0.0900	

26	1300	0.0000	0.0000	0.0006	0.8625	0.0708
27	1350	0.0000	0.0000	0.0022	2.6733	0.0833
28	1400	0.0000	0.0000	0.0006	0.8824	0.0657
29	1450	0.0000	0.0000	0.0014	1.8094	0.0776
30	1500	0.0000	0.0000	0.0005	0.8459	0.0613
31	1550	0.0000	0.0000	0.0018	2.5228	0.0726
32	1600	0.0000	0.0000	0.0005	0.8492	0.0575
33	1650	0.0000	0.0000	0.0024	3.5360	0.0682
34	1700	0.0000	0.0000	0.0004	0.7895	0.0541
35	1750	0.0000	0.0000	0.0027	4.2725	0.0643
36	1800	0.0000	0.0000	0.0004	0.7762	0.0511
37	1850	0.0000	0.0000	0.0028	4.5668	0.0608
38	1900	0.0000	0.0000	0.0003	0.6933	0.0484
39	1950	0.0000	0.0000	0.0026	4.4434	0.0577
40	2000	0.0000	0.0000	0.0003	0.6634	0.0460



## 4.Flicker

EN61000-3-3:1995+A1:2001+A2:2005

### 4.1 Test Results

EN61000-3-3:1995+A1:2001+A2:2005	<b>PASS</b>
----------------------------------	-------------

### 4.2 Methods and Procedures

Standard	Date	Description
EN61000-3-3	1995+A1:2001 +A2:2005	Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16$ A per phase and not subject to conditional connection

### 4.3 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
Power Analyzer	EMC Partner	HAR1000-1P	151	May 09, 2008

### 4.4 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### 4.5 EUT Operating Condition

Environment :

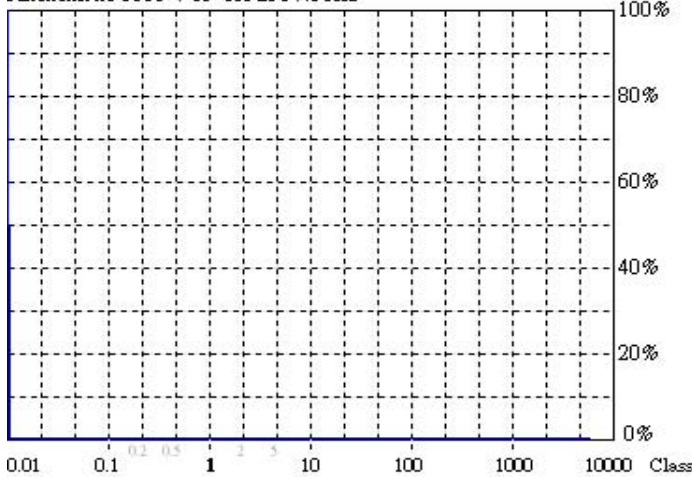
Temperature	Humidity
28 °C	59 %RH

Test setup : Please refer to photo of FLICKER testing set-up

### 4.6 Measurement Data

#### 1. ENG Adaptor Mode.

Flickermeter 1000-4-15 for 230V/50Hz



**Actual Flicker (Fli): 0.00**  
**Short-term Flicker (Pst): 0.07**  
 Limit (Pst): 1.00  
**Long-term Flicker (Plt): 0.07**  
 Limit (Plt): 0.65  
**Maximum Relative Volt. Change (dmax): 0.00%**  
 Limit (dmax): 4.00%  
**Relative Steady-state Voltage Change (dc): 0.01%**  
 Limit (dc): 3.30%  
**Maximum Interval exceeding 3.30% (dt): 0.00ms**  
 Limit (dt>Lim): 500ms

**Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)**

U<sub>rms</sub> = 230.1 V P = 8.565 W  
 I<sub>rms</sub> = 0.098 A pf = 0.379

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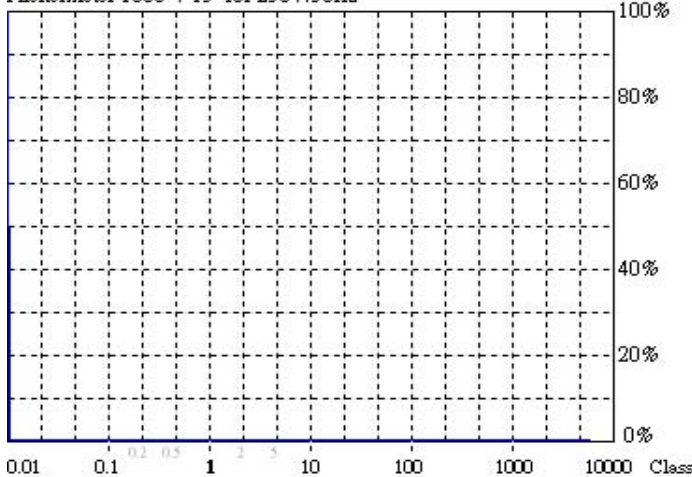
Range: 1 A  
 V<sub>nom</sub>: 230 V  
 TestTime: 10 min (100%)

**Test completed, Result: PASSED**

HR:1000 EMC-Factor

#### 2. JENTEC Adaptor Mode.

Flickermeter 1000-4-15 for 230V/50Hz



**Actual Flicker (Fli): 0.00**  
**Short-term Flicker (Pst): 0.07**  
 Limit (Pst): 1.00  
**Long-term Flicker (Plt): 0.07**  
 Limit (Plt): 0.65  
**Maximum Relative Volt. Change (dmax): 0.00%**  
 Limit (dmax): 4.00%  
**Relative Steady-state Voltage Change (dc): 0.00%**  
 Limit (dc): 3.30%  
**Maximum Interval exceeding 3.30% (dt): 0.00ms**  
 Limit (dt>Lim): 500ms

**Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)**

U<sub>rms</sub> = 229.9 V P = 8.430 W  
 I<sub>rms</sub> = 0.084 A pf = 0.437

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Range: 0.5 A  
 V<sub>nom</sub>: 230 V  
 TestTime: 10 min (100%)

**Test completed, Result: PASSED**

HR:1000 EMC-Factor

## 5.IMMUNITY

EN55024:1998+A1:2001+A2:2003

### 5.1 Test Results

Test Standard	Performance Criteria	Result
IEC61000-4-2:1995+A1:1998+A2:2000	B	PASS
IEC61000-4-3:2006	A	PASS
IEC61000-4-4:2004	B	PASS
IEC61000-4-5:2005	B	PASS
IEC61000-4-6:2003+A1:2004+A2:2006	A	PASS
IEC61000-4-8:1993+A1:2000	A	PASS
IEC61000-4-11:2004	C/B/C	PASS

### 5.2 Performance Criteria Description

Criterion A - The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

### 5.3 Test of IEC61000-4-2

#### 5.3.1 Methods and Procedures

Standard	Date	Description
IEC61000-4-2	1995+A1:1998+A2:2000	Electrostatic Discharge (ESD)

#### 5.3.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
ESD Simulator	NoiseKen	ESS-100L/ TC-815R	ESS0635368	Jun. 19, 2008
HCP	N/A	1.6 x 0.8 m	N/A	N/A
VCP	N/A	0.5 x 0.5 m	N/A	N/A
Ground Reference Plane	N/A	6.5 x 3.5 m	N/A	N/A

#### 5.3.3 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

#### 5.3.4 EUT Operating Condition

Environment :

Temperature	Humidity
27 °C	58 %RH

Test setup : Please refer to photo of ESD testing set-up

### 5.3.5 Results of Electrostatic Discharge Test (ESD)

Basic Standard : IEC61000-4-2  
Discharge Impedance : 330 ohm / 150 pF  
Discharge Voltage : Air Discharge :  $\pm 2, 4, 8$  kV  
Contact Discharge :  $\pm 2, 4$  kV  
HCP/VCP :  $\pm 2, 4$  kV  
Polarity : Positive/Negative  
Number of Discharge : 25 times at each test point  
Discharge Mode : Single Discharge  
Discharge Period : 1 second

**Note 1** : For contact discharge, the EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity. All tests according to sec. 4.2.1 of EN55024 : 1998+A1:2001+A2:2003.

**(1.)ENG Adaptor Mode; (2.) JENTEC Adaptor Mode.**

#### A. Observations :

**Test points:** 1. Case/screw/bracket. 2. MIC Jack. 3. Speaker Jack.  
4. Line port. 5. DC input jack. 6. CCD.

Direct Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
2, 4, 8	+/-	1	N/A	A
2, 4	+/-	1 ~ 6	A	N/A

**Remark:** A : No degradation of performance or loss of function.  
N/A : Not Applicable.

#### B. Observations :

**Test points:** 1. Front side. 2. Rear side. 3. Left side. 4. Right side.

Indirect Application			Test Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
2, 4	+/-	1 - 4	A	A

**Remark:** A : No degradation of performance or loss of function.  
N/A : Not Applicable.

## 5.4 Test of IEC61000-4-3

### 5.4.1 Methods and Procedures

Standard	Date	Description
IEC61000-4-3	2006	Radio-Frequency Electromagnetic Field Susceptibility Test, RS

### 5.4.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
RS Test Site	Chance Most	8*4*4 Chamber	N/A	Apr. 10, 2009
Signal Generator	Agilent	E4438C	MY45093613	May. 22 , 2009
Power Amplifier(20-1000MHz)	OPHIR	5127FE	1050	N/A
Power Amplifier(80-2500MHz)	FRANKONIA	FLG-50B	1011	N/A
Power Amplifier(1000-3000MHz)	OPHIR	3814FE	N/A	N/A
Relay Switching Unit	FRANKONIA	RSU-3203	113A3122	N/A
Remote RF Switch	Audix	r2S1216	2008040801	N/A
Turn Table	Chance Most	N/A	N/A	N/A
Antenna Tower	Chance Most	N/A	N/A	N/A
Controller	Chance Most	886	N/A	N/A
Log-Per Broad band Antenna	Schwarzbeck	VUSLP9111E	N/A	N/A
Strength Field Meter	Wandel & Goltermann	EMR-30	M-0006	Feb. 20, 2009

### 5.4.3 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### 5.4.4 EUT Operating Condition

Environment :

Temperature	Humidity
27 °C	58 %RH

Test setup : Please refer to photo of RS testing set-up

#### 5.4.5 Results of Radiated Radio Frequency Electromagnetic (RS)

**(1.)ENG Adaptor Mode; (2.) JENTEC Adaptor Mode.**

Basic Standard : IEC61000-4-3  
 Frequency range : 80 MHz – 1000 MHz  
 Field strength : 3 V/m  
 Modulation : 80% AM (1KHz)  
 Frequency step : 1 % of fundamental  
 Polarity of Antenna : Horizontal and Vertical  
 Dwell Time : 3 seconds  
 Test distance : 3 m

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 – 1000	Vertical/Horizontal	A	0 degree
2	80 – 1000	Vertical/Horizontal	A	90 degree
3	80 – 1000	Vertical/Horizontal	A	180 degree
4	80 – 1000	Vertical/Horizontal	A	270 degree

**Remark:** A : No degradation of performance or loss of function.

N/A : Not Applicable.

## 5.5 Test of IEC61000-4-4

### 5.5.1 Methods and Procedures

Standard	Date	Description
IEC61000-4-4	2004	Electrical fast transient/burst requirements

### 5.5.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
EMS Multi-Tester	EMC Partner	TRANSIENT 2000	648	Feb. 02, 2009
Clamp	EMC Partner	CN-EFT1000	469	N/A

### 5.5.3 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### 5.5.4 EUT Operating Condition

Environment :

Temperature	Humidity
27 °C	59 %RH

Test setup : Please refer to photo of EFT testing set-up



### 5.5.5 Results of Electrical Fast Transient (EFT)

#### (1.)ENG Adaptor Mode; (2.) JENTEC Adaptor Mode.

Basic Standard : IEC61000-4-4  
Test Voltage : AC Input/Output :  $\pm 1$  Kv  
Signal/Comm. :  $\pm 0.5$  Kv  
Polarity : Positive/Negative  
Impulse Frequency : 5 kHz  
Tr/Tn : 5/50ns  
Burst : 15ms/300ms

#### Observation :

Test Point	Polarity	Test Level (Kv)	Results
L	+/-	1	A
N	+/-	1	A
PE	+/-	1	N/A
L-N	+/-	1	A
L-PE	+/-	1	N/A
N-PE	+/-	1	N/A
L-N-PE	+/-	1	N/A
Signal/Comm.	+/-	0.5	A

**Remark:** A : No degradation of performance or loss of function.  
N/A : Not Applicable.

## 5.6 Test of IEC61000-4-5

### 5.6.1 Methods and Procedures

Standard	Date	Description
IEC61000-4-5	2005	Surge immunity test

### 5.6.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
EMS Multi-Tester	EMC Partner	TRANSIENT 2000	648	Feb. 02, 2009
Universal Surge CDN	EMC Partner	CDN-UTP	015	Feb. 02, 2009

### 5.6.3 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
 No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### 5.6.4 EUT Operating Condition

Environment :

Temperature	Humidity
27 °C	58 %RH

Test setup : Please refer to photo of SURGE testing set-up

### 5.6.5 Results of Surge Test

**(1.) ENG Adaptor Mode; (2.) JENTEC Adaptor Mode.**

Test Rate : 1 pulse every minute

No. of Tests : 5 positive and 5 negative pulses

**Observation Description**

AC Power line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	0, 90, 180, 270	+/-	1	A
L – PE	0, 90, 180, 270	+/-	2	N/A
N – PE	0, 90, 180, 270	+/-	2	N/A
Signal	0, 90, 180, 270	+/-	1	B

**Remark:** A : No degradation of performance or loss of function.

B : During test, the EUT's function degradation. After test, it recovery by itself.

N/A : Not Applicable.

## 5.7 Test of IEC61000-4-6

### 5.7.1 Methods and Procedures

Standard	Date	Description
IEC61000-4-6	2003+A1:2004 +A2:2006	Immunity to conducted disturbances, induced by radio-frequency fields.

### 5.7.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
CS Test Site	N/A	N/A	N/A	Apr. 10, 2009
Signal Generator	ROHDE&SCHWARZ	SMY01	844146/016	Dec. 12, 2008
RF Power Amplifier	Kalmus	116FC-CE	8380-1	N/A
6dB-PowerAttenuator	Bird	25-A-MFN-06	9731	N/A
Coaxial Cables	N/A	No. 15-17, 21-23	N/A	N/A
CDN (2 Pin)	COMTEST	4412-16	9743	Feb. 23, 2009
EM Injection Clamp	FCC	F-2031-23MM	479	N/A

### 5.7.3 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### 5.7.4 EUT Operating Condition

Environment :

Temperature	Humidity
28 °C	59 %RH

Test setup : Please refer to photo of CS testing set-up

### 5.7.5 Results of Immunity to Conducted Disturbances (CS)

#### (1.)ENG Adaptor Mode; (2.) JENTEC Adaptor Mode.

Basic Standard : IEC61000-4-6  
Frequency range : 0.15 MHz - 80 MHz  
Field strength : 3 V/rms  
Modulation : 80% AM, 1 kHz Sinewave  
Frequency step : 1 % of fundamental  
Dwell Time : 3 seconds  
Coupling Method : CDN 2 Lines/Clamp

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	A

Signal Ports

Cable Description	Frequency (MHz)	Observation
Signal/Comm.	0.15 – 80	A

**Remark:** A : No degradation of performance or loss of function.

N/A : Not Applicable.

## 5.8 Test of IEC61000-4-8

### 5.8.1 Methods and Procedures

Standard	Date	Description
IEC61000-4-8	1993+A1:2000	Power Frequency Magnetic Field Immunity Test

### 5.8.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
EMS Multi-Tester	EMC Partner	Transient 2000	648	Feb. 02, 2009
PMF Antenna	EMC Partner	MF-1000	MF-1000-2 -07	Feb. 02, 2009

### 5.8.3 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### 5.8.4 EUT Operating Condition

Environment :

Temperature	Humidity
28 °C	56 %RH

Test setup : Please refer to photo of PRMF testing set-up

### 5.8.5 Result of Immunity to power Frequency Magnetic

#### (1.)ENG Adaptor Mode; (2.) JENTEC Adaptor Mode.

Basic Standard: IEC61000-4-8 : 1993+A1:2000

Power Frequency:50 Hz

Magnetic Field: 1 A/m

Observation: A

**Remark:** A : No degradation of performance or loss of function.

N/A : Not Applicable.

## 5.9 Test of IEC61000-4-11

### 5.9.1 Methods and Procedures

Standard	Date	Description
IEC61000-4-11	2004	Voltage dips, short interruptions and voltage variations immunity tests

### 5.9.2 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Date of Calibration
EMS Multi-Tester	EMC Partner	TRANSIENT 2000	648	Feb. 02 , 2009

### 5.9.3 Test Site

SGS Taiwan LTD. Electronics & Communication Laboratory  
No.134, Wu Kung Road. Wuku Industrial Zone, Taipei County 248, Taiwan (R.O.C.)

### 5.9.4 EUT Operating Condition

Environment :

Temperature	Humidity
27 °C	58 %RH

Test setup : Please refer to photo of DIP testing set-up

### 5.9.5 Results of Voltage Dips Immunity Test

#### (1.)ENG Adaptor Mode; (2.) JENTEC Adaptor Mode.

EUT Rated Voltage : 230 Volts.

Voltage : 30, 95 % Ut

Phase Angle : 0,180 degree

Total events: 3 dropouts

Event interval : 10 seconds

Environmental phenomena	Test specification	Duration (in periods of the rated frequency)	Observation
Interruptions	>95	250	B
Voltage dips	>95	0.5	A
	30	25	A

**Remark:** A : No degradation of performance or loss of function.

B : During test, the EUT's function degradation. After test, it recovery by itself.

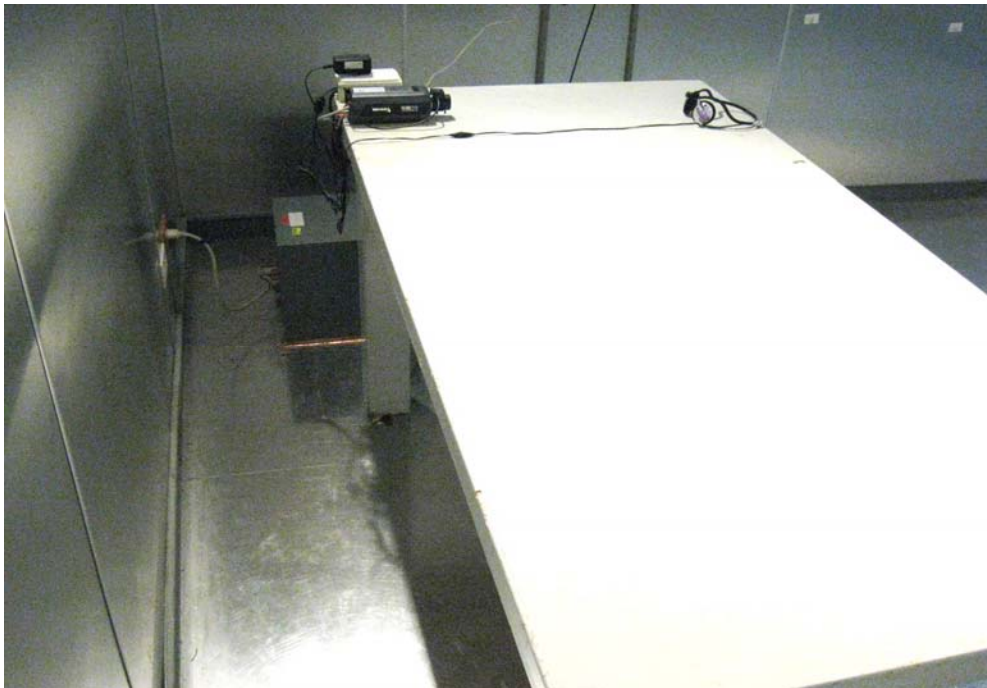
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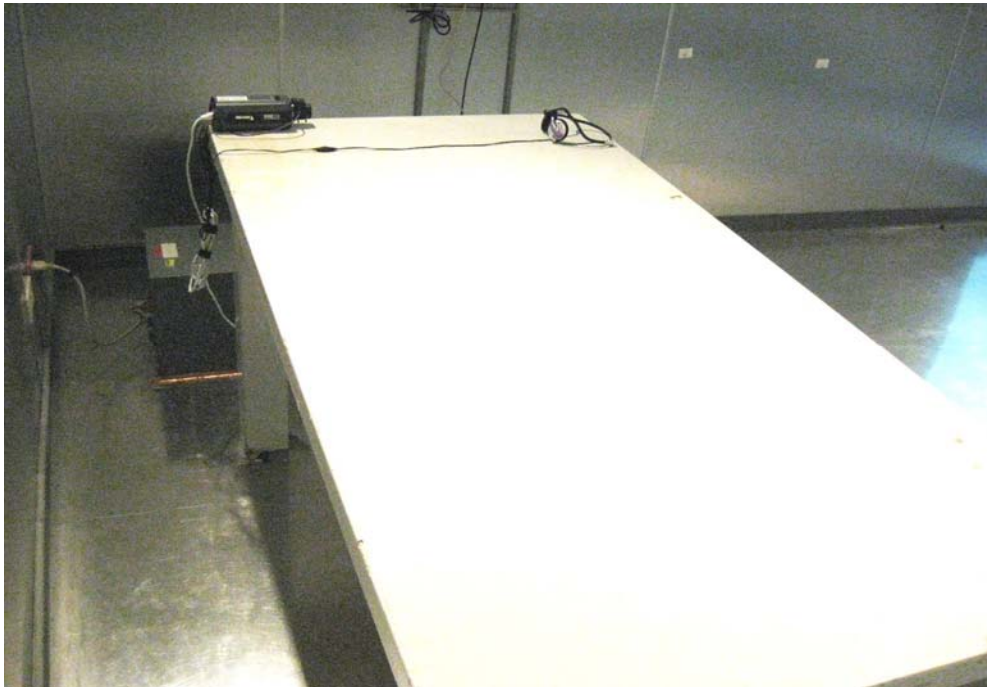
**APPENDIX - Constructional Details**

Photograph of Testing General Set-up.....	49-66
Photographs of Product.....	67-82

**Photograph of Testing General Set-up**  
**ENG Adaptor Mode**  
**CE Testing Set-up**



**ISN, POE Testing Set-up**



RE Testing Set-up



**HARMONIC & FLICEKR Testing Set-up**



**ESD Testing Set-up**



**RS Testing Set-up**



**EFT Testing Set-up**



**EFT Testing Set-up(Clamp)**



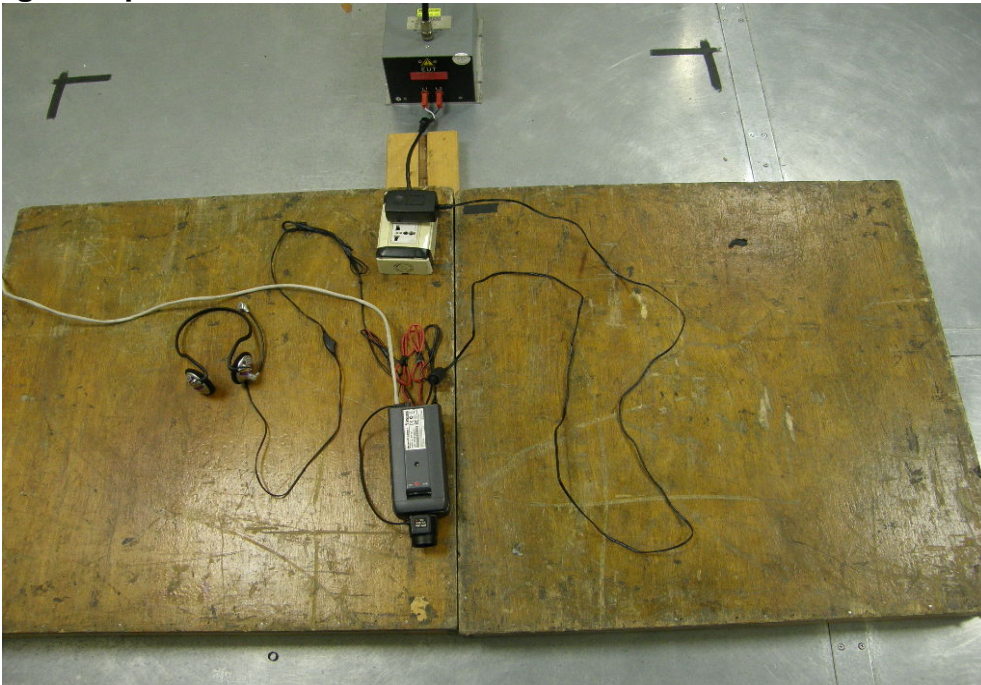
**SURGE Testing Set-up**



**SURGE Testing Set-up-Line**



**CS Testing Set-up**





**CS Testing Set-up(Clamp)**



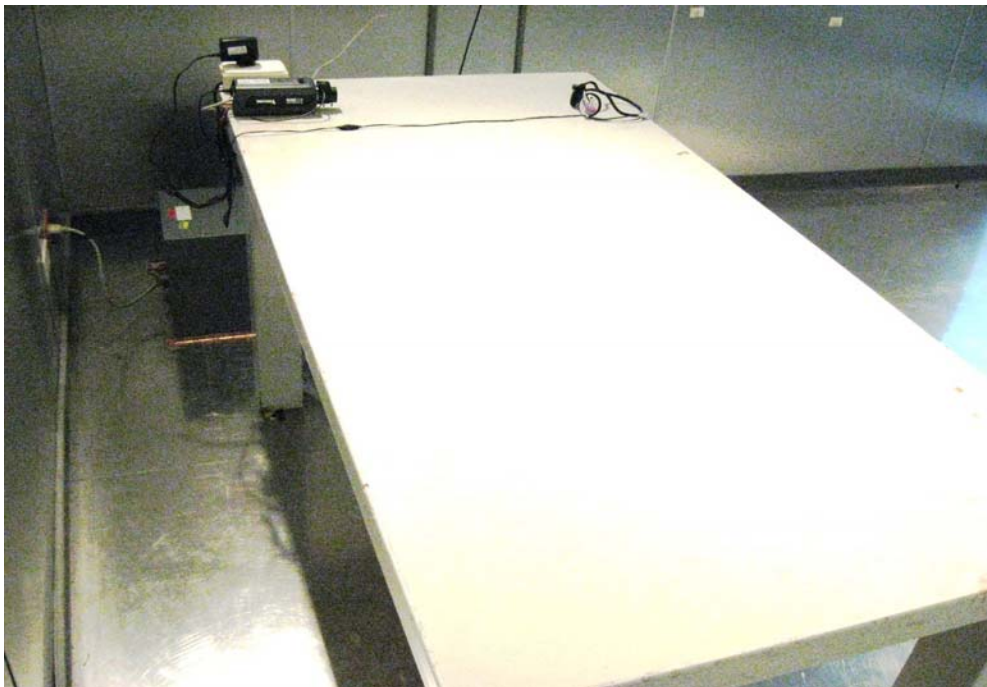
**PMF Testing Set-up**



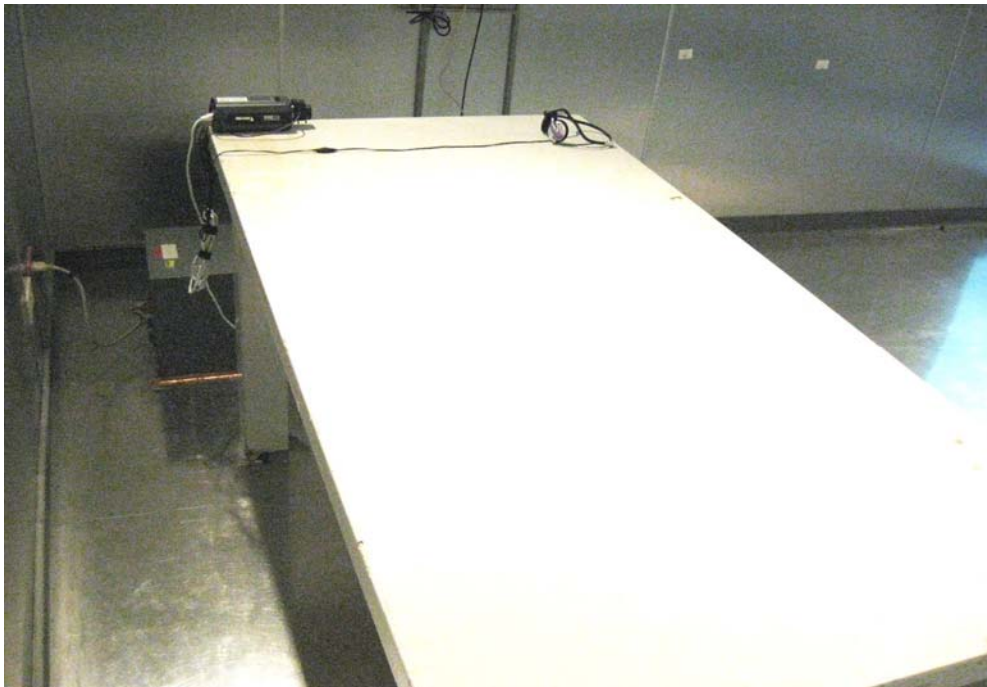
**DIP Testing Set-up**



**JENTEC Adaptor Mode  
CE Testing Set-up**



**ISN, POE Testing Set-up**



RE Testing Set-up



**HARMONIC & FLICEKR Testing Set-up**



**ESD Testing Set-up**



RS Testing Set-up



EFT Testing Set-up



**EFT Testing Set-up(Clamp)**

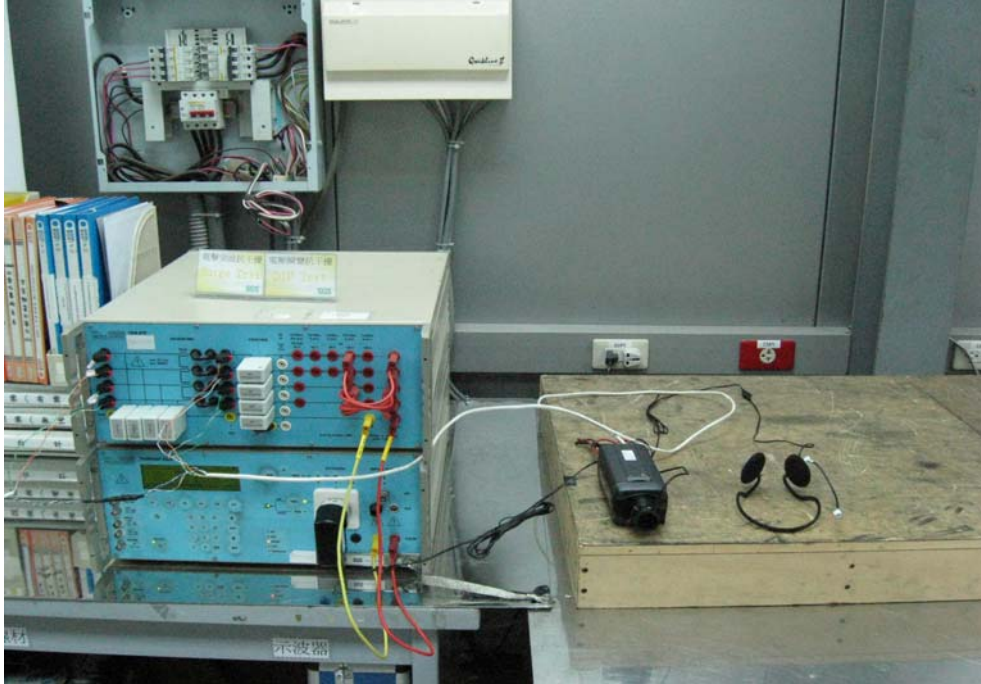


**SURGE Testing Set-up**

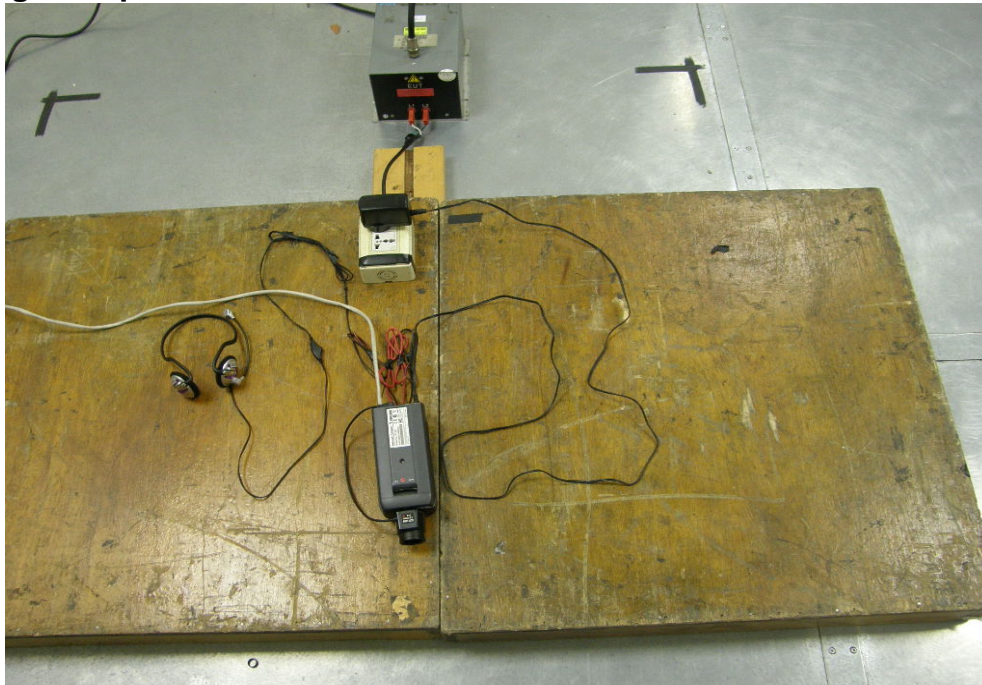




**SURGE Testing Set-up-Line**



**CS Testing Set-up**



**CS Testing Set-up(Clamp)**



**PMF Testing Set-up**



**DIP Testing Set-up**



**Photographs of EUT Unit**

**Exterior:**

**Model No. : IP7161**















Added Model(s) : IP7160





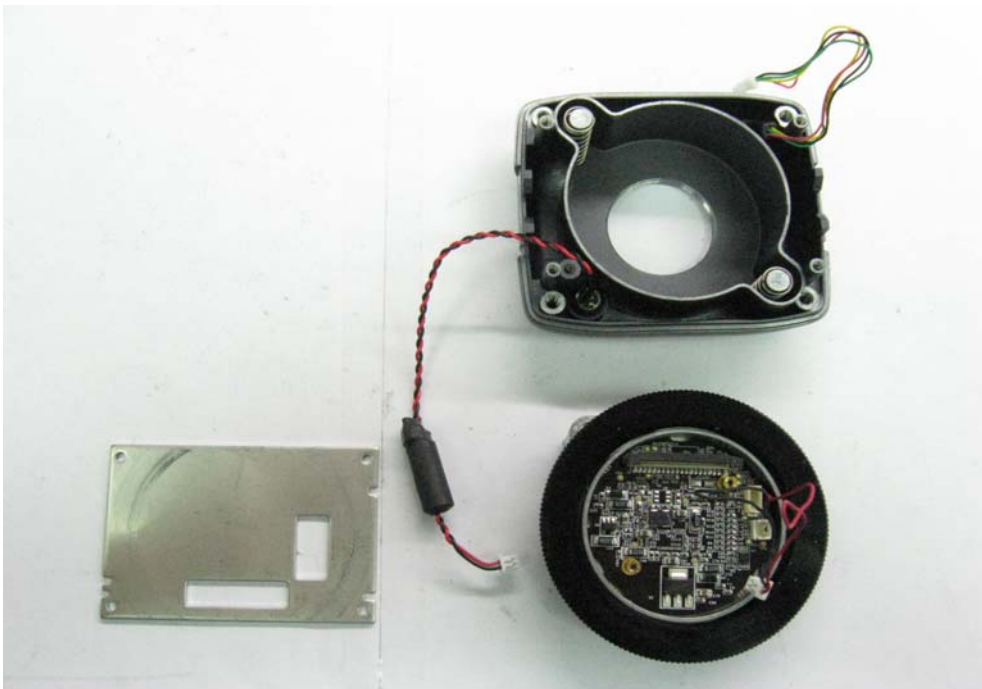
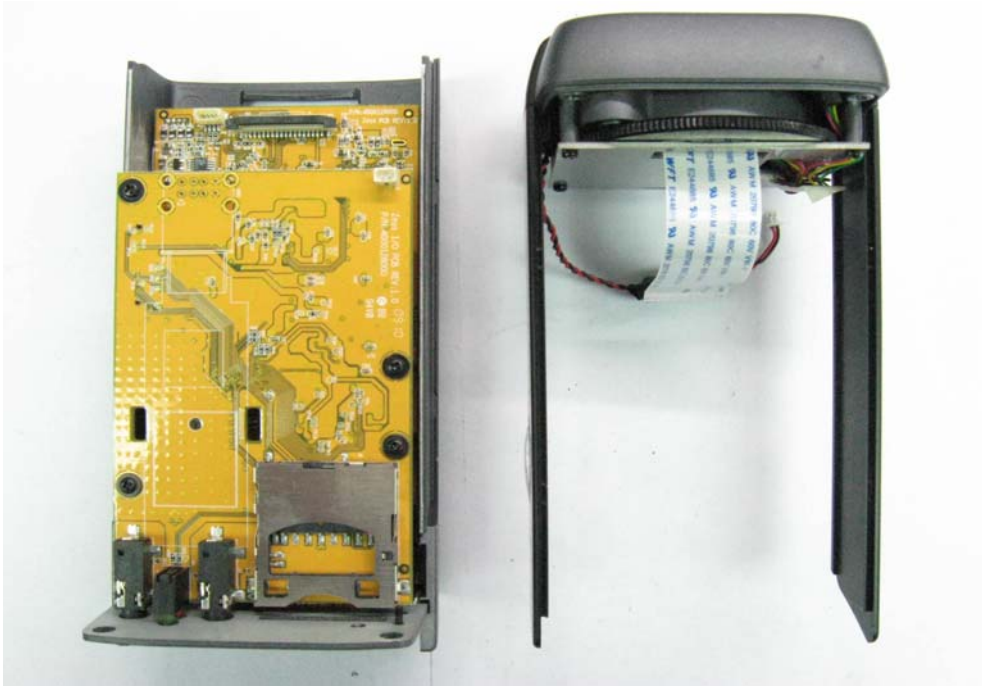
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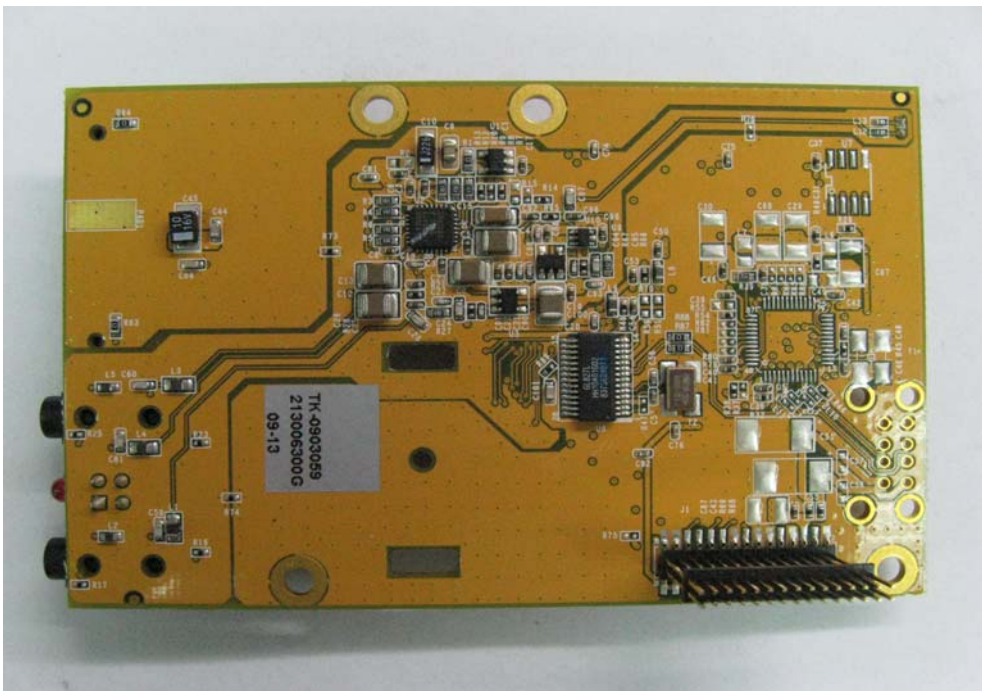
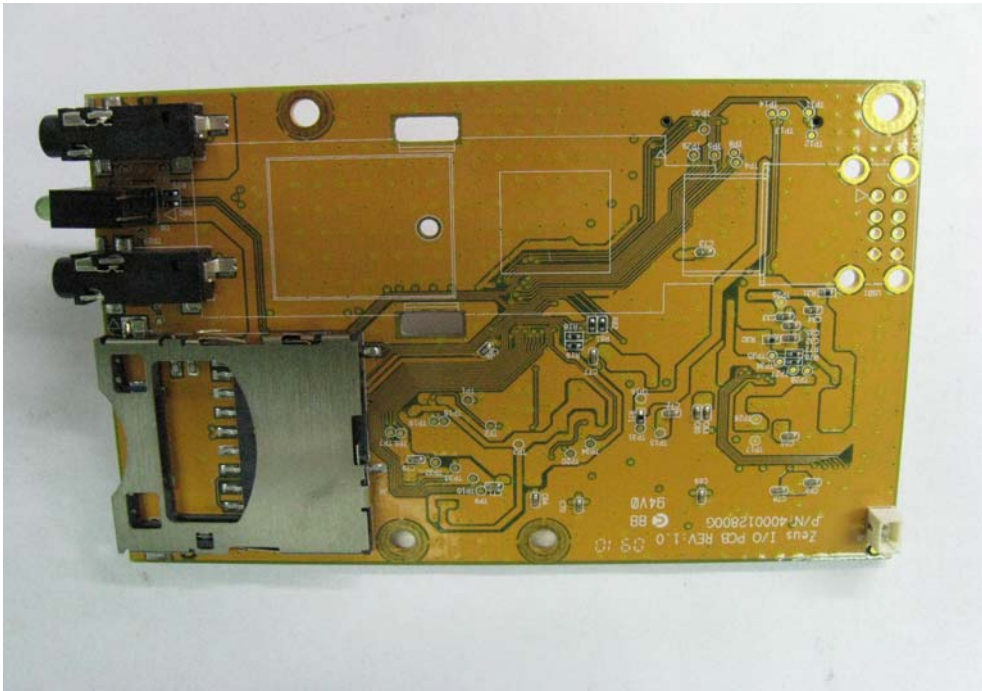


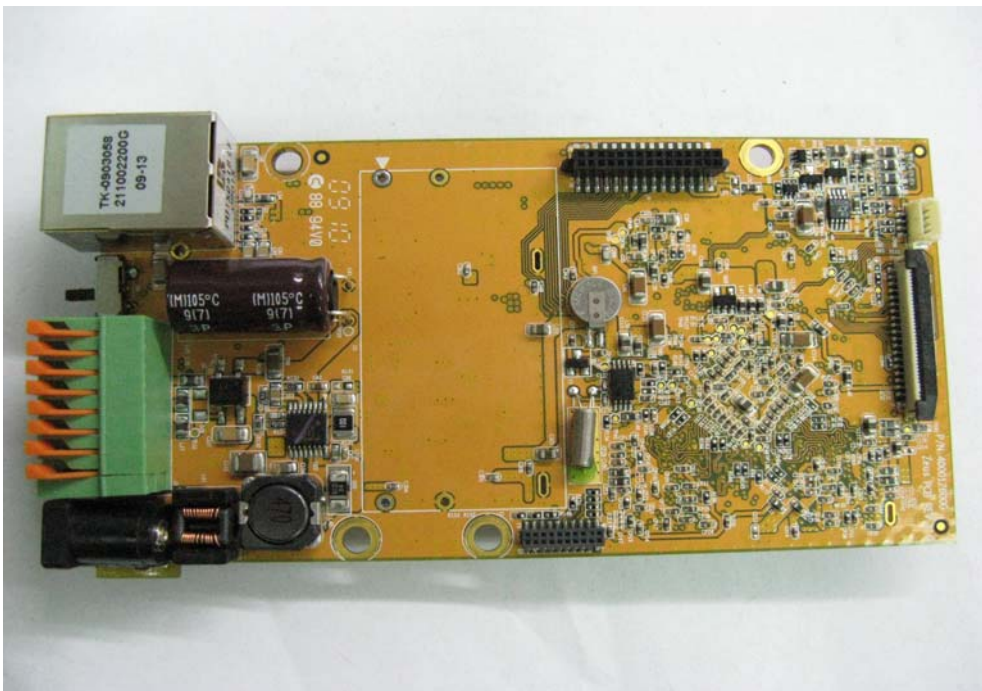
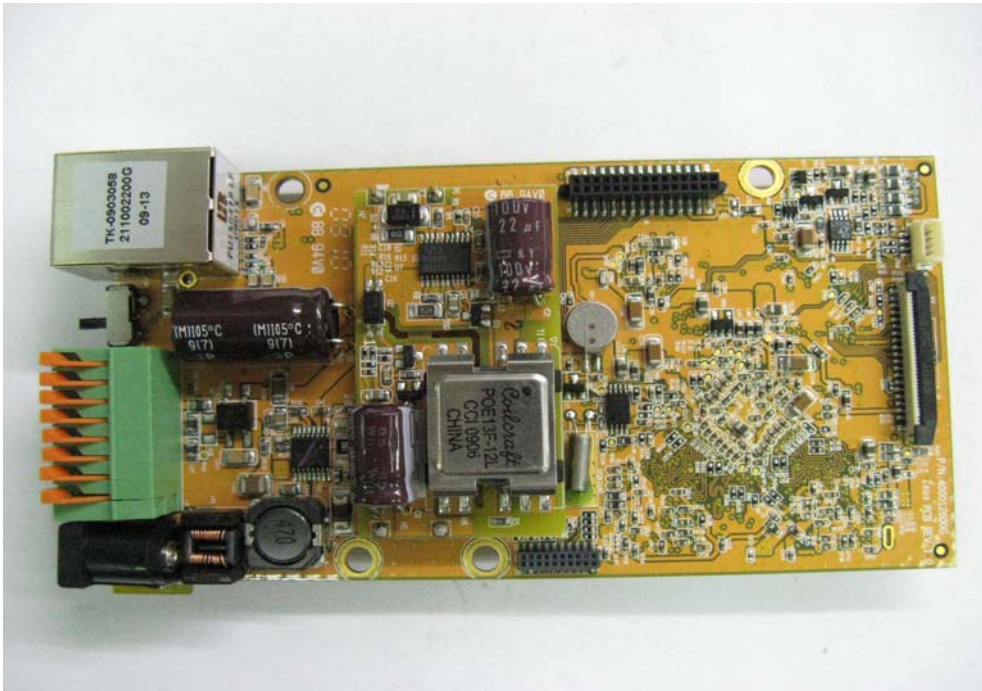
Interior:



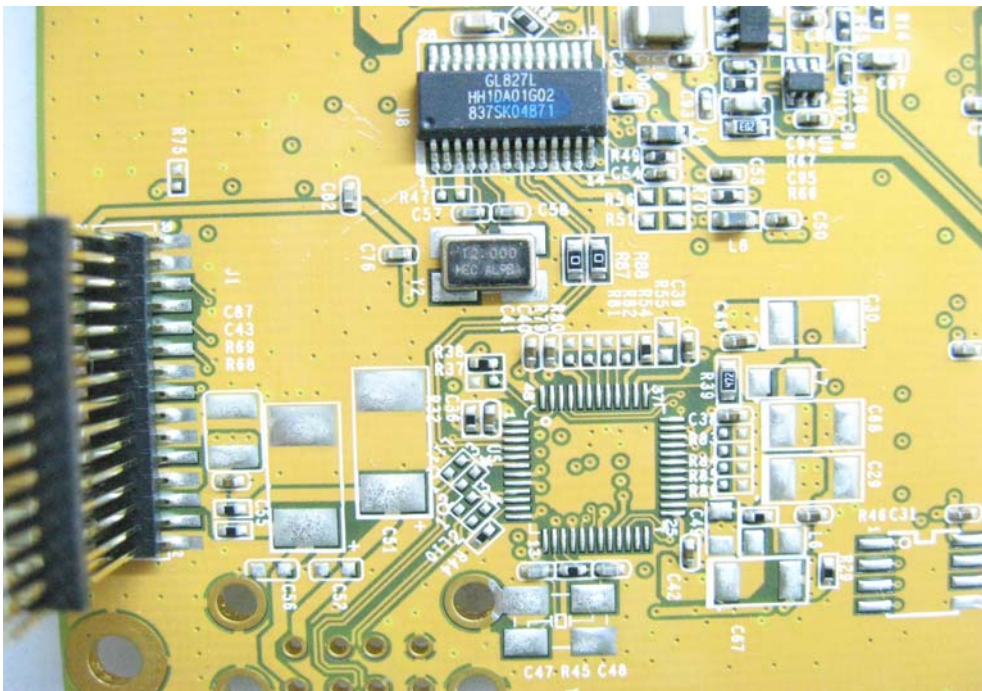
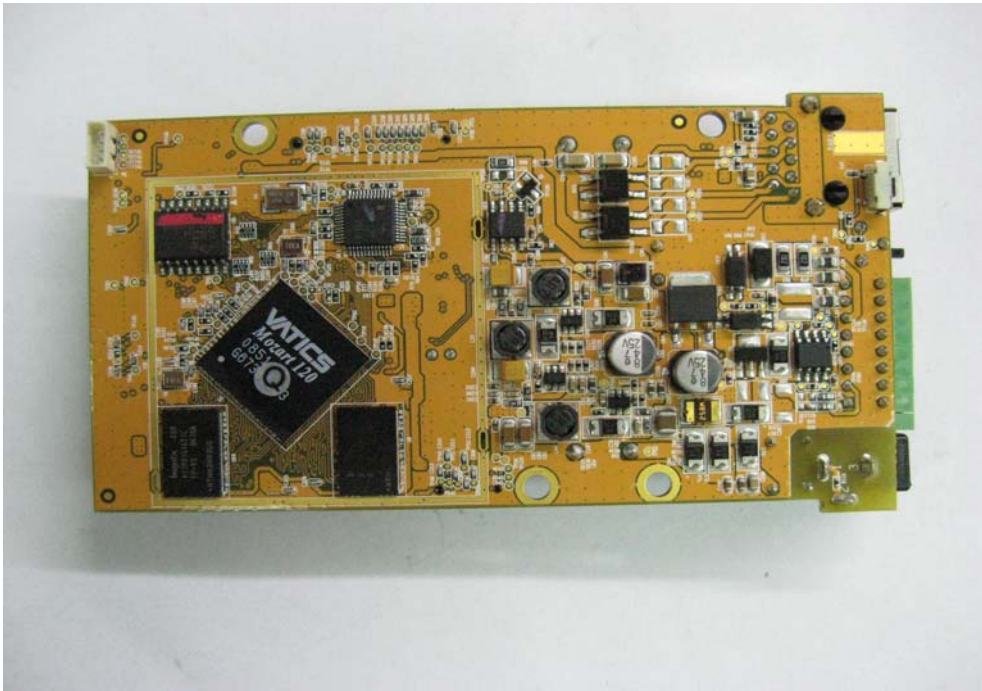


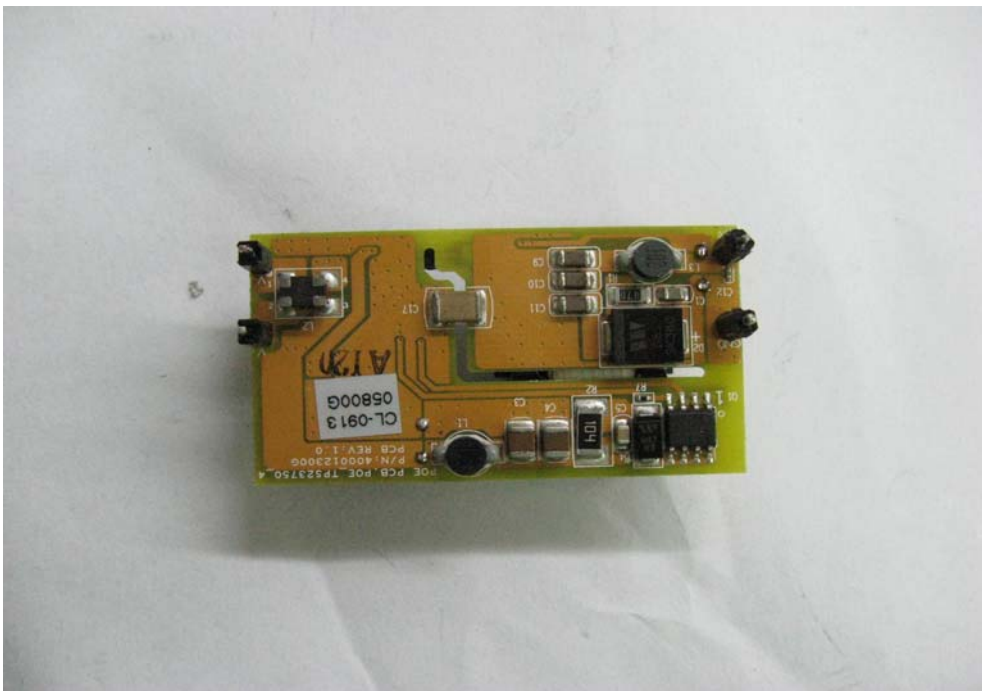
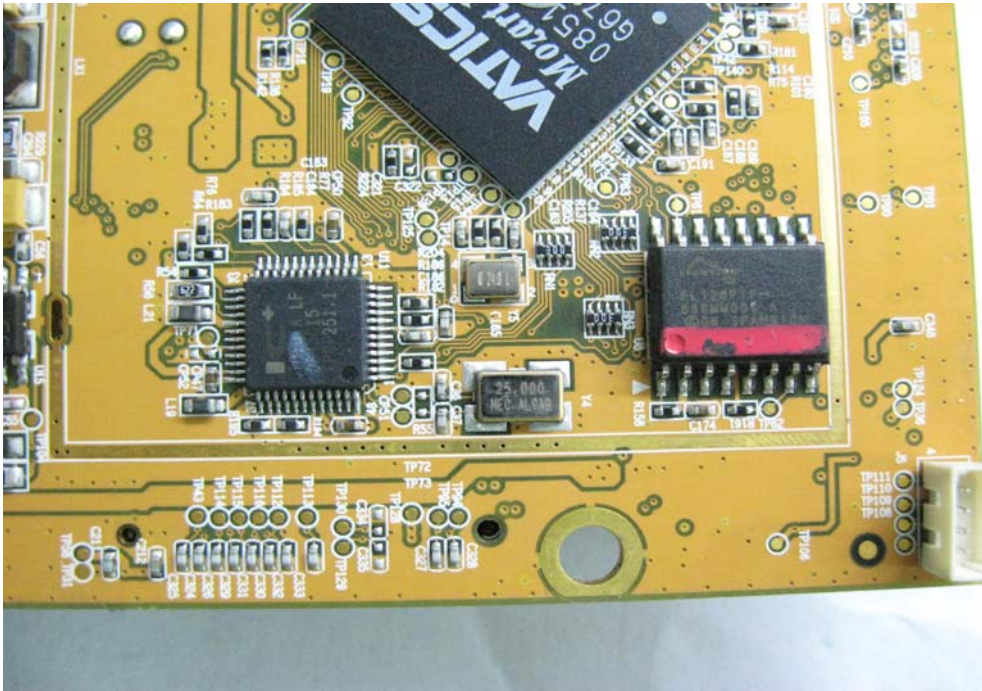


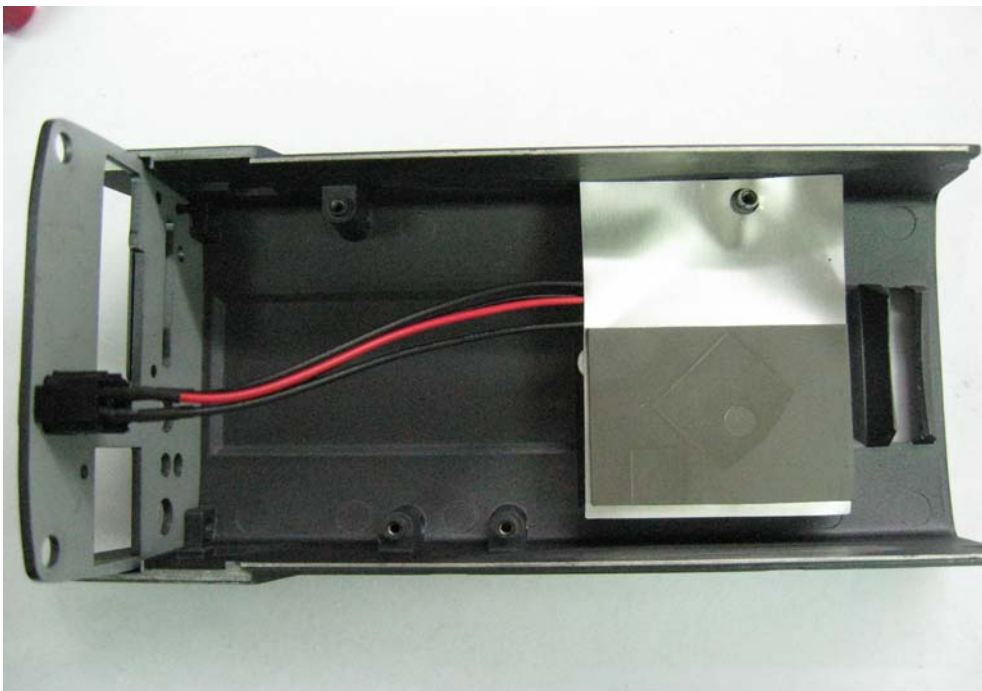












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