

EMC TEST REPORT



For Electromagnetic Interference of

Report Reference No.: 11FA09002 02001

Tested by (name + signature).....: Simon Zeng

Reviewer by (name + signature): Brian Ni

Approved by (name + signature).....: King Wang

Date of issue: 2011-11-25

Testing Laboratory.....: ATT Product Service Co., Ltd

Address: 2F., B2/B3 Area, City Plaza, ChangAn Town, DongGuan City, GuangDong, P.R.China

Applicant's name: Keen Ocean Industrial Ltd

Address: Unit,26/F.,Shield Industrial Centre,84-92 Chai Wan Kok Street, Tsuen Wan,N,T.,Hong Kong

Manufacturer: Keen Ocean Industrial Ltd

Test specification:

Test item description.....: Switching Adaptor

Trade Mark: --

Model/Type reference: S05-024-xxxx-yyyyyZ
Refer to page 5 for details.

Ratings: I/P: 100-240V~ 50-60Hz, 0.8A Max
O/P: Refer to page 5 for details.

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1. CERTIFICATION

Testing Laboratory: ATT Product Service Co., Ltd
Address.....: 2F., B2/B3 Area, City Plaza, ChangAn Town,
DongGuan City, GuangDong,
P.R.China

Applicant's name: Keen Ocean Industrial Ltd
Address.....: Unit,26/F.,Shield Industrial Centre,84-92 Chai Wan Kok Street,
Tsuen Wan,N,T.,Hong Kong

Manufacturer: Same as applicant
Address.....: Same as applicant
Factory.....: HE YUAN SKY WEALTH ELECTRONIC AND PLASTIC CO
LTD
Address.....: The South Side of Keqi Road,The East Side of xinggong Road
of heyuan,Hi-tech Development Zone,Heyuan City,Guandong
Province,China.

Test specification:

Test item description.....: Switching Adaptor
Trade Mark: --
Model/Type reference: S05-024-xxxx-yyyyyZ
Refer to page 5 for details.
Test Sample: S05-024-0240-01000U,S05-024-0100-02400U
Ratings.....: I/P: 100-240V~ 50-60Hz, 0.8A Max
O/P: Refer to page 5 for details.
Tested Power: AC 120V 60Hz
Standards: 47 CFR FCC Part 15 Subpart B: 2009

The device described above was tested by ATT Product Service Co., Ltd to determine the maximum emission levels emanated from the device and severity levels of the device endure and its performance criterion. The measurement results are contained in this test report and ATT Product Service Co., Ltd assumes full responsibility for the accuracy and completeness of these measurements. This report shows the EUT is technically compliance with the Part 15 Subpart B, ANSI C63.4 and CISPR 22 official requirements. This report applies to the above sample only and shall not be reproduced in part without written approval of ATT Product Service Co., Ltd.

1.1 GENERAL PRODUCT INFORMATION

Model: S05-024-xxxx-yyyyyZ

Output: see the model list

Table A: defination of variables

Variable:	Range of variable:	Contect:
xxxx	0100-0240	4 digits, indicate 10 times output voltage in Vol., the minimum step is 0.1V .eg: 0100 = 10Vdc, 0240 = 24Vdc
yyyyy	00010-02400	5 digits, indicate output current in mA, the minimum step is 10mA.eg: 00010 = 0.01A, 01200= 1.2A
Z	G, B, U , K, S, C, J, A	Represents the plug type for different countries. G=Europe, B=British, U=America, K=Korea, S=Australia, C=China, J=Japan, A=Argentina

Table B: Output rating

Model No.	Output Voltage (V)	Output Curren (A)	Max.Output Power(W)	Transformer (T1)
S05-024-0100 –yyyyyZ - S05-024-0169 –yyyyyZ	10-16.9	0.01-2.4	24	TFE-23364-XX
S05-024-0170-yyyyyZ - S05-024-0240-yyyyyZ	17-24	0.01-1.41	24	TFE-23365-XX

Notes: All models have same circuit diagram and the same PCB layout, except for output rating and transformer T1 (total 2 transformers are used, those transformers has same construction except turns windings) . For the output voltage, the minimum step is 0.1V ; for the output current, the minimum step is 0.01A. The output current multiplied by output voltage should not exceed the max. output power.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
(1)FCC Part 15	Conducted Emission	Class B	PASS	
(2)Canadian ICES-003. Class B				
	Radiated Emission	Class B	PASS	

2.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	NOTE
OS02	ANSI	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	FULL LOAD

For Conducted Test	
Final Test Mode	Description
Mode 1	FULL LOAD

For Radiated Test	
Final Test Mode	Description
Mode 1	FULL LOAD

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-432	11/12/2011
2	Pulse Limiter	Agilent	11947A	3107A03668	11/12/2011
3	Test Cable	N/A	C01	N/A	11/12/2011
4	EMI Test Receiver	SCHWARZBECK MESS-ELEKTRONIK	FCKL1528	1528-184	11/12/2011

Remark: " N/A" denotes No Model No. , Serial No. or No Calibration specified.

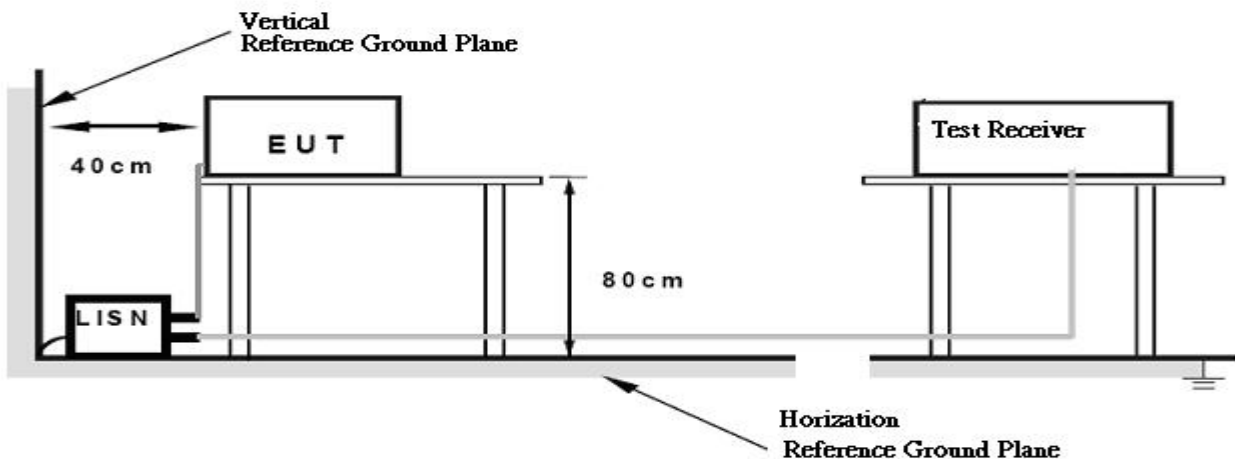
3.1.3 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



3.1.6 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use.

3.1.7 TEST RESULTS

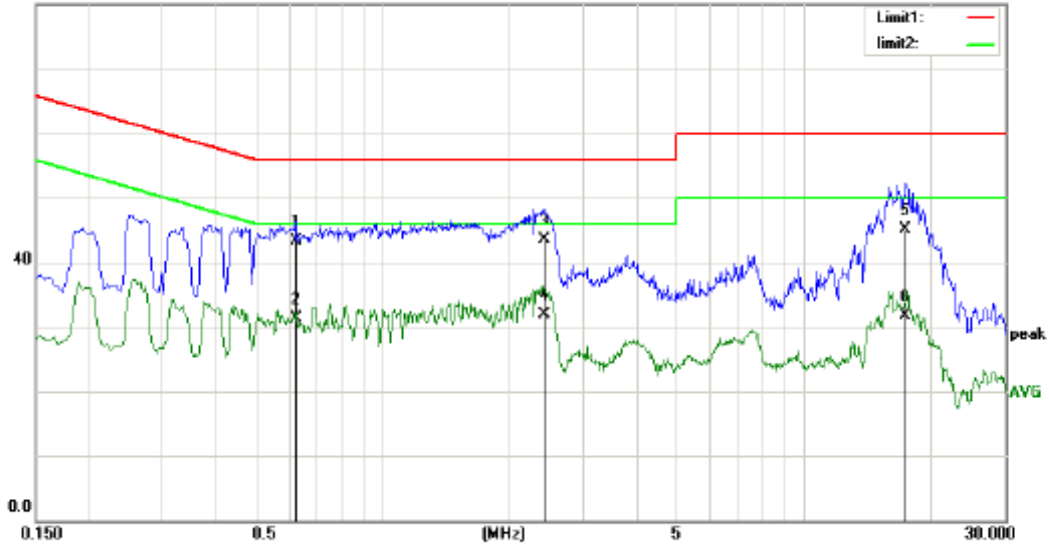
EUT :	Switching Adaptor	Model No. :	S05-024-0100-02400U
Temperature :	26°C	Relative Humidity :	48 %
Pressure :	1008 hPa	Test Power :	AC 120V/60Hz
Test Mode :	Full Load		

Remark

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz : SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz,VBW=10Hz, Swp. Time =0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a “ * ” marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.

Conducted Emission Measurement

File : 侨洋 0906 Data : #1 Date : 2011-9-8 Time : 9:54:57



Site : ATT Conducted Emission Test Site Phase: *L1* Temperature: 26
 Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dB	Over dB	Detector	Comment
1		0.6215	33.21	10.14	43.35	56.00	-12.65	QP	
2		0.6215	21.12	10.14	31.26	46.00	-14.74	AVG	
3	*	2.4200	33.48	10.12	43.60	56.00	-12.40	QP	
4		2.4200	21.77	10.12	31.89	46.00	-14.11	AVG	
5		17.3644	34.87	10.16	45.03	60.00	-14.97	QP	
6		17.3644	21.51	10.16	31.67	50.00	-18.33	AVG	

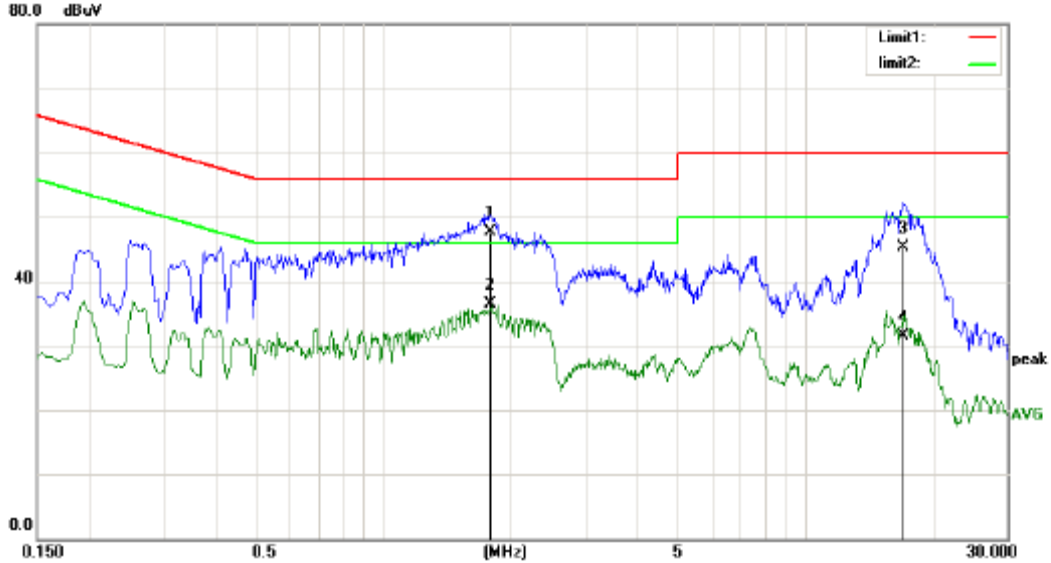
Conducted Emission Measurement

File : 拆洋 0906

Data : #2

Date: 2011-9-6

Time: 9:58:46



Site : ATT Conducted Emission Test Site
 Limit: (CE)FCC PART 15 class B_QP

Phase: N
 Power: AC 120V/60Hz

Temperature: 26
 Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dB	Over dB	Detector	Comment
1	*	1.7956	37.66	10.11	47.77	56.00	-8.23	QP	
2		1.7956	26.44	10.11	36.55	46.00	-9.45	AVG	
3		17.0293	35.20	10.16	45.36	60.00	-14.64	QP	
4		17.0293	21.30	10.16	31.46	50.00	-18.54	AVG	

3.1.8 TEST RESULTS

EUT :	Switching Adaptor	Model No. :	S05-024-0240-01000U
Temperature :	26°C	Relative Humidity :	48 %
Pressure :	1008 hPa	Test Power :	AC 120V/60Hz
Test Mode :	Full Load		

Remark

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz : SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz,VBW=10Hz, Swp. Time =0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a “ * ” marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.

Conducted Emission Measurement

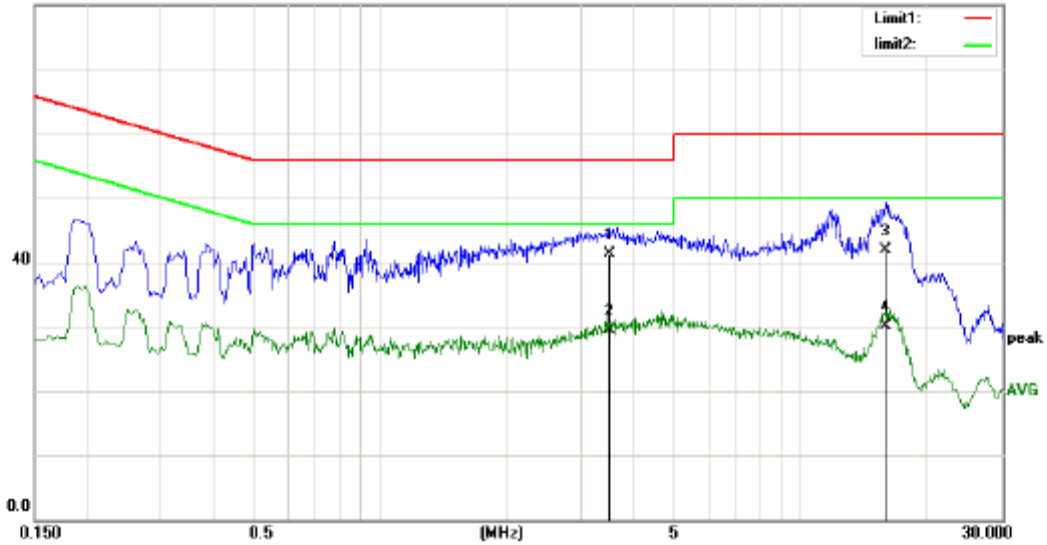
File : 拆洋 0906

Data : #7

Date: 2011-9-8

Time: 16:31:26

80.0 dBuV



Site : ATT Conducted Emission Test Site

Phase: L1

Temperature: 26

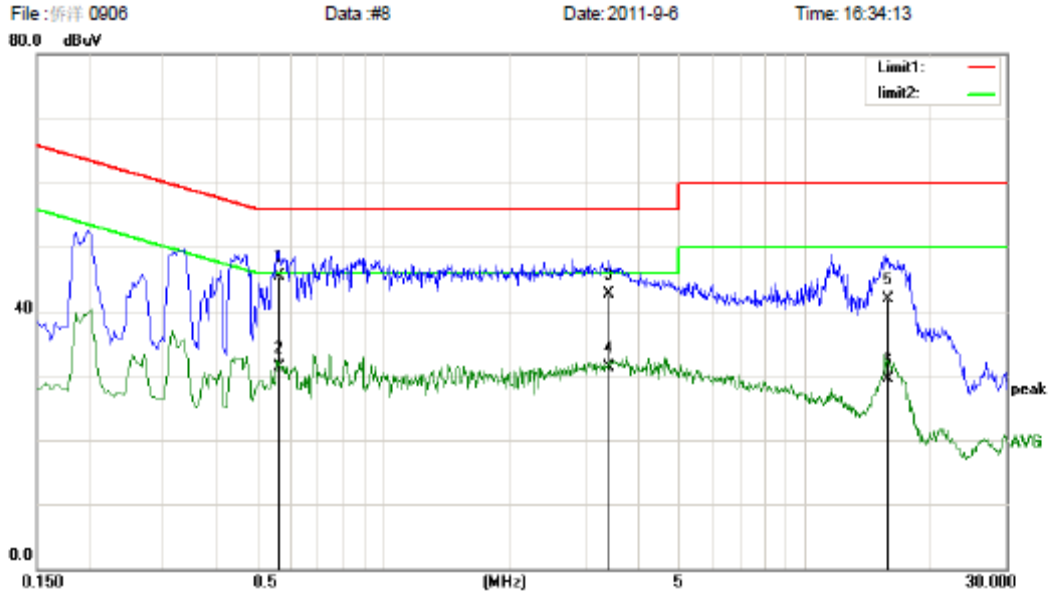
Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dB	Over dB	Detector	Comment
1	*	3.5021	31.13	10.14	41.27	56.00	-14.73	QP	
2		3.5021	19.41	10.14	29.55	46.00	-16.45	AVG	
3		15.9410	31.73	10.16	41.89	60.00	-18.11	QP	
4		15.9410	19.87	10.16	30.03	50.00	-19.97	AVG	

Conducted Emission Measurement



Site :ATT Conducted Emission Test Site Phase: *N* Temperature: 26
 Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dB	Over dB	Detector	Comment
1	*	0.5654	35.42	10.16	45.58	56.00	-10.42	QP	
2		0.5654	21.06	10.16	31.22	46.00	-14.78	AVG	
3		3.4299	32.60	10.14	42.74	56.00	-13.26	QP	
4		3.4299	21.14	10.14	31.28	46.00	-14.72	AVG	
5		15.7056	31.82	10.16	41.98	60.00	-18.02	QP	
6		15.7056	19.44	10.16	29.60	50.00	-20.40	AVG	

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

CISPR 22 Class B Limit at 10m

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 10m)	
	dBuV/m		dBuV/m	
30 – 230	40		30	
230 – 1000	47		37	

Notes:

- (1) The limit for radiated test was performed according to as following:
CISPR 22/ FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For FCC)

FCC Class B Limit at 3m

Frequency	Distance	Field Strength	
		μ V/m	dB μ V/m
MHz	Meter		
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0

FCC Class A Limit at 10m

Frequency	Distance	Field Strength	
		μ V/m	dB μ V/m
MHz	Meter		
30 to 88	10	90	39.0
88 to 216	10	150	43.5
216 to 960	10	210	46.4
Above 960	10	300	49.5

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	SCHWARZBECK	VuLB9168	9168-192	11/12/2011
2	Test Cable	N/A	10M_OS01	N/A	11/12/2011
3	Test Cable	N/A	C01-1/-2	N/A	11/12/2011
4	Pre-Amplifier	HP	8447D	2944A09491	11/29/2011
5	Spectrum Analyzer	HP	8591A	10201103	11/29/2011
6	Test Receiver	R&S	ESVS 10	825475/002	11/29/2011
7	Antenna Mast	N/A	N/A	N/A	N/A
8	Turn Table	N/A	N/A	N/A	N/A

Remark: " N/A" denotes No Model No. / Serial No. and No Calibration specified.

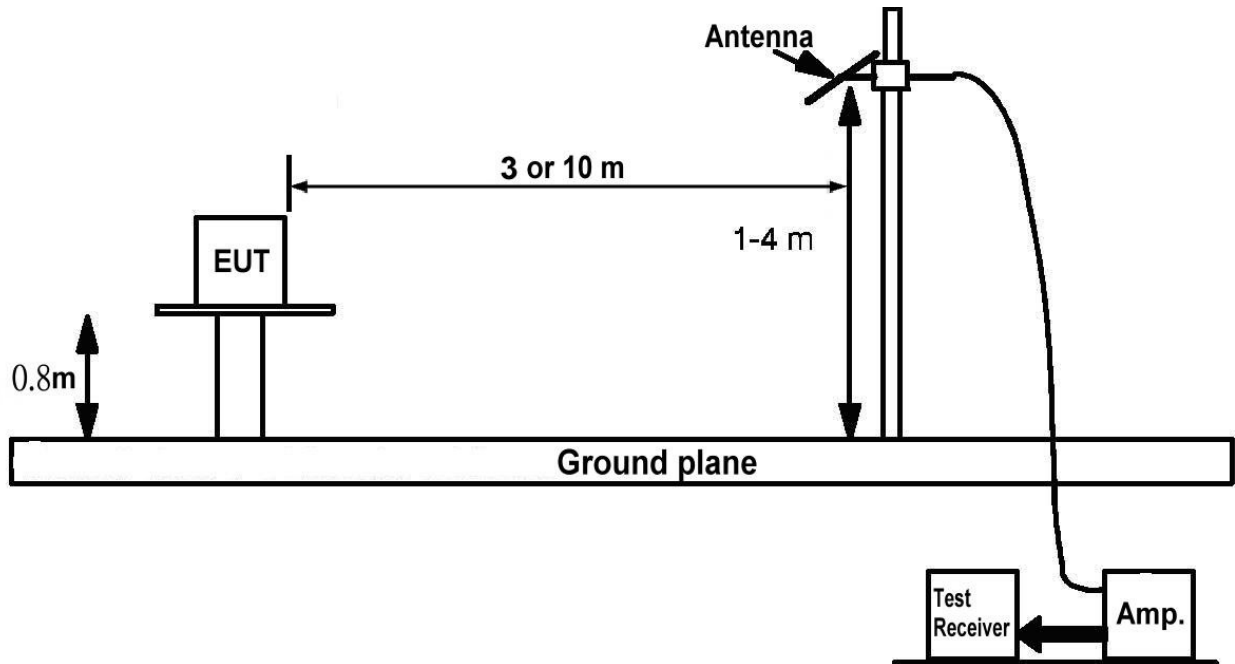
3.2.3 TEST PROCEDURE

- a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP



3.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.7 TEST RESULTS

EUT :	Switching Adaptor	Model No. :	S05-024-0240-01000U
Temperature :	26 °C	Relative Humidity :	48 %
Pressure :	1009 hPa	Test Power :	AC 120V/60Hz
Test Mode :	Full Load		

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are Peak unless otherwise stated QP in column of 『Note 』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

Radiated Emission Measurement

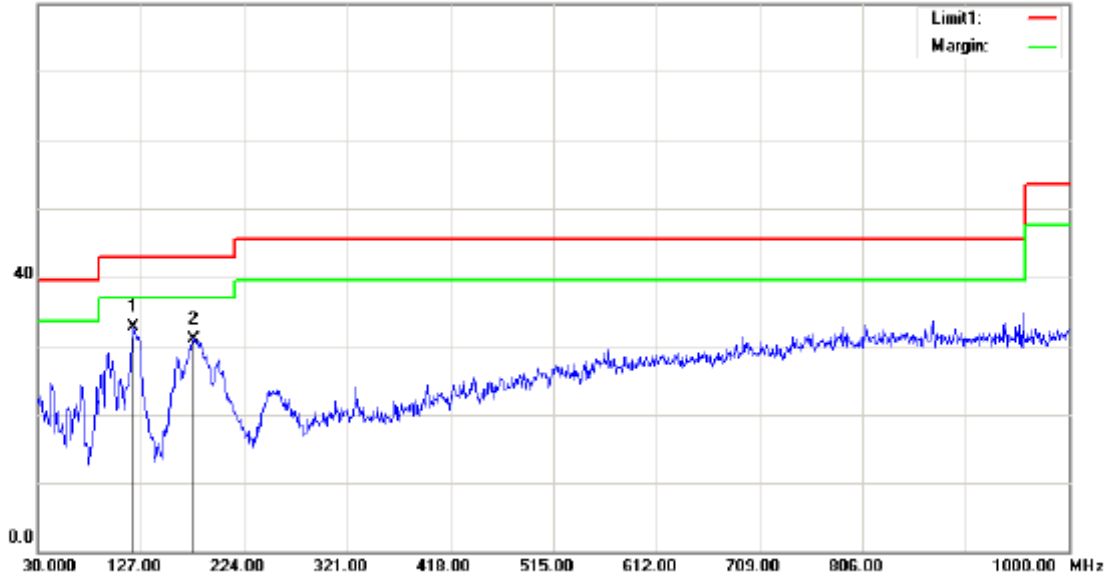
File : 侨洋 0906

Data : #3

Date: 2011-9-6

Time: 10:04:10

80.0 dBuV/m



Site :ATT Radiated Emission Test Site
Limit: (RE)FCC PART 15 class B 3m

Polarization: *Horizontal*
Power: AC 120V/60Hz

Temperature: 26
Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	120.2100	48.30	-15.66	32.64	43.00	-10.36	QP		
2		176.4700	42.24	-11.24	31.00	43.00	-12.00	QP		

Radiated Emission Measurement

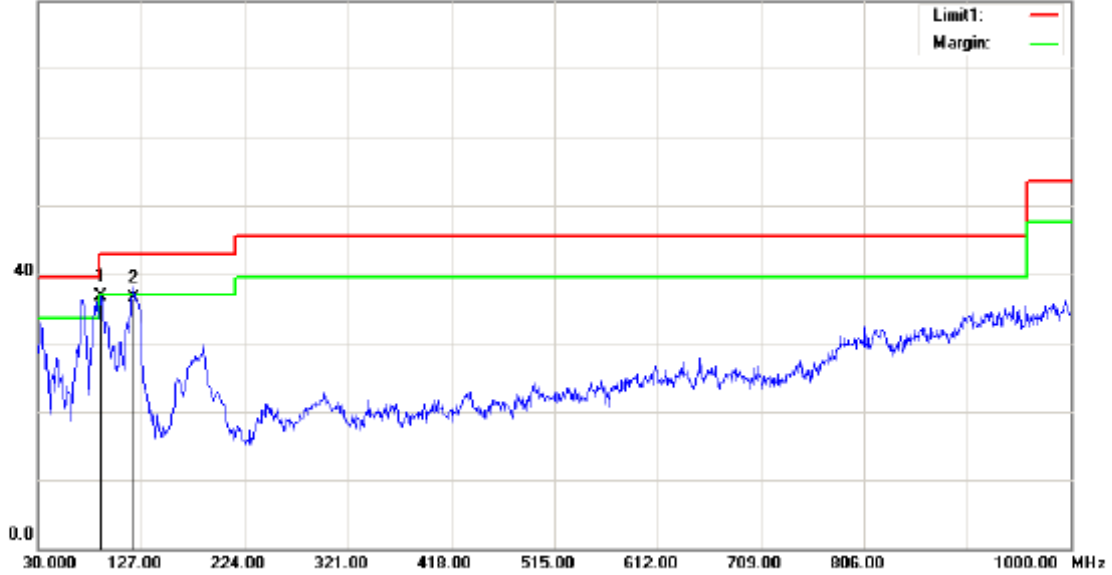
File : 侨洋 0906

Data : #4

Date: 2011-9-6

Time: 10:05:07

80.0 dBuV/m



Site :ATT Radiated Emission Test Site

Polarization: *Vertical*

Temperature: 26

Limit: (RE)FCC PART 15 class B 3m

Power: AC 120V/60Hz

Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	89.1700	48.46	-11.75	36.71	43.00	-6.29	QP		
2		120.2100	44.52	-8.04	36.48	43.00	-6.52	QP		

3.2.8 TEST RESULTS

EUT :	Switching Adaptor	Model No. :	S05-024-0100-02400U
Temperature :	26 °C	Relative Humidity :	48 %
Pressure :	1009 hPa	Test Power :	AC 120V/60Hz
Test Mode :	Full Load		

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are Peak unless otherwise stated QP in column of 『Note 』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

Radiated Emission Measurement

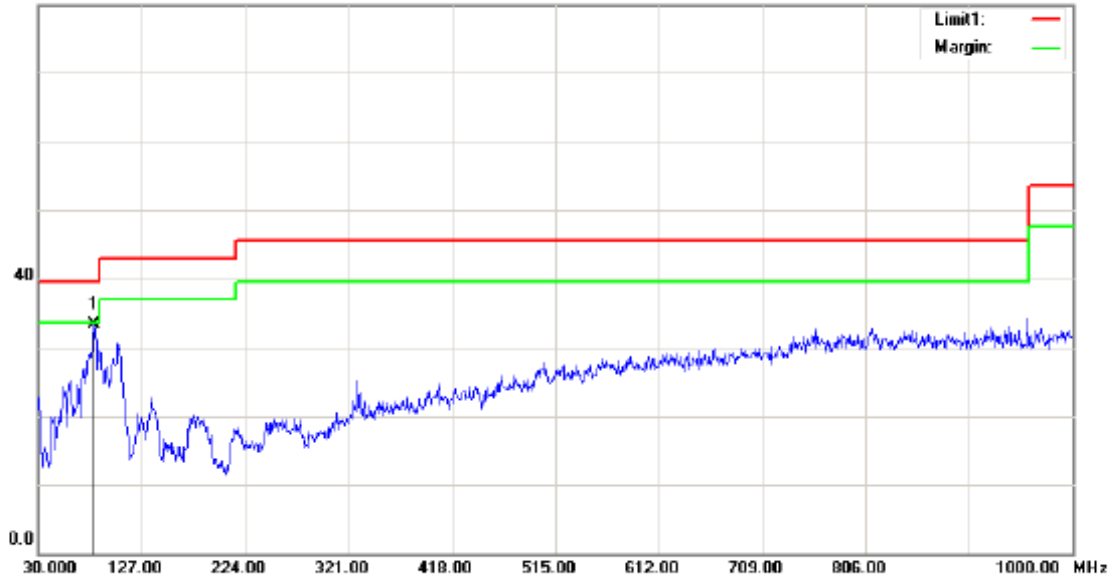
File : 侨洋 0915

Data #9

Date: 2011-9-15

Time: 13:39:08

90.0 dBuV/m



Site :ATT Radiated Emission Test Site

Polarization: *Horizontal*

Temperature: 26

Limit: (RE)FCC PART 15 class B 3m

Power: AC 120V/60Hz

Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	*	82.3800	52.81	-19.48	33.33	39.50	-6.17	QP			

Radiated Emission Measurement

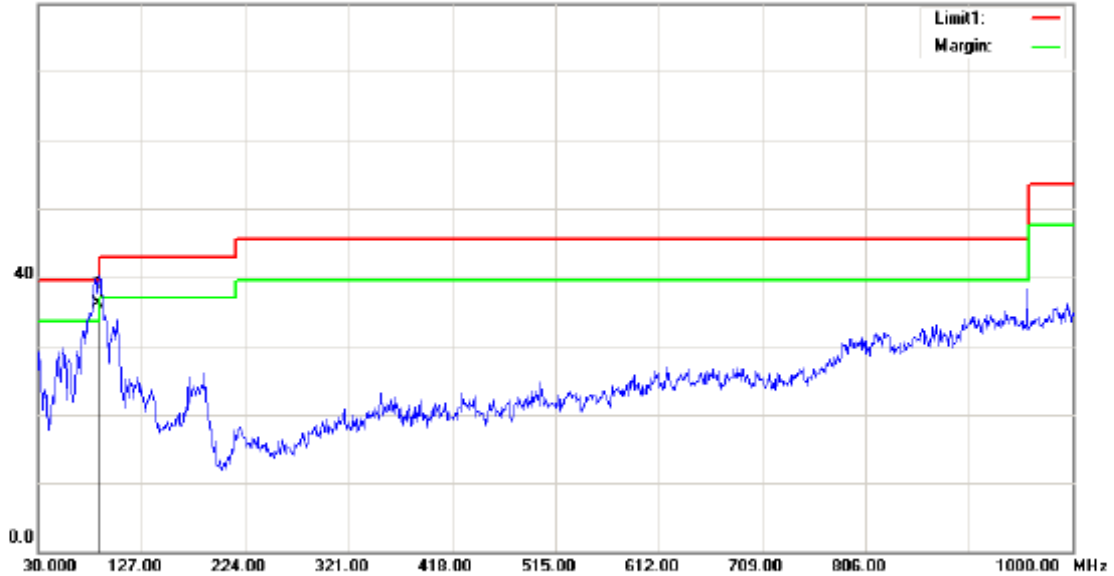
File : 侨洋 0915

Data : #10

Date: 2011-9-15

Time: 13:40:06

80.0 dBuV/m



Site :ATT Radiated Emission Test Site

Polarization: *Vertical*

Temperature: 26

Limit: (RE)FCC PART 15 class B 3m

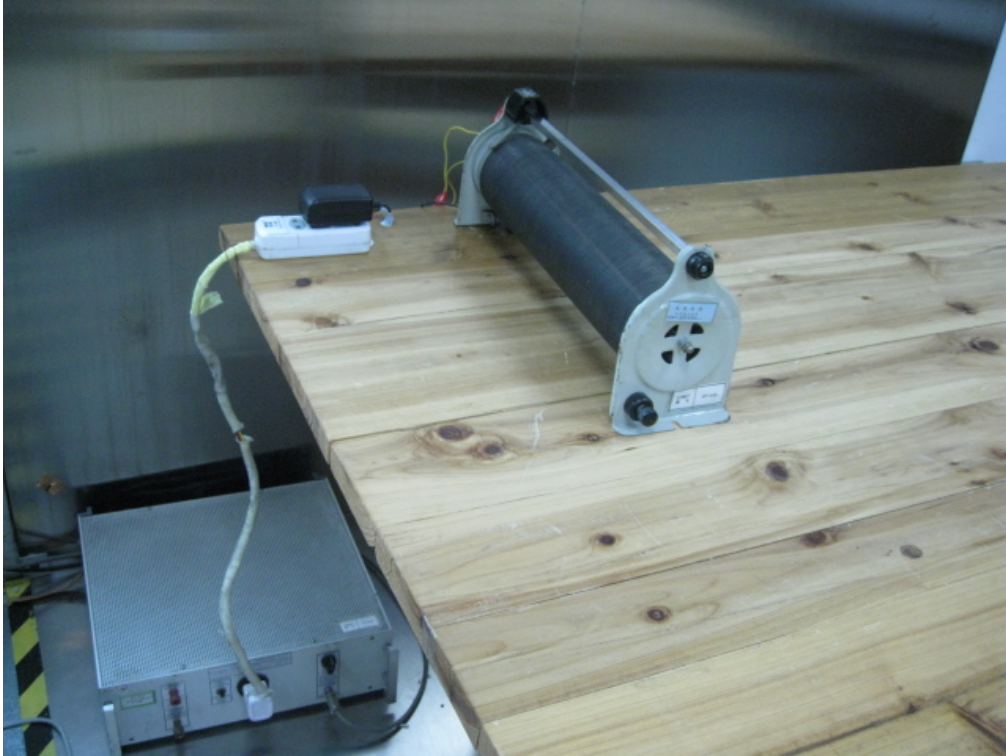
Power: AC 120V/60Hz

Humidity: 60 %

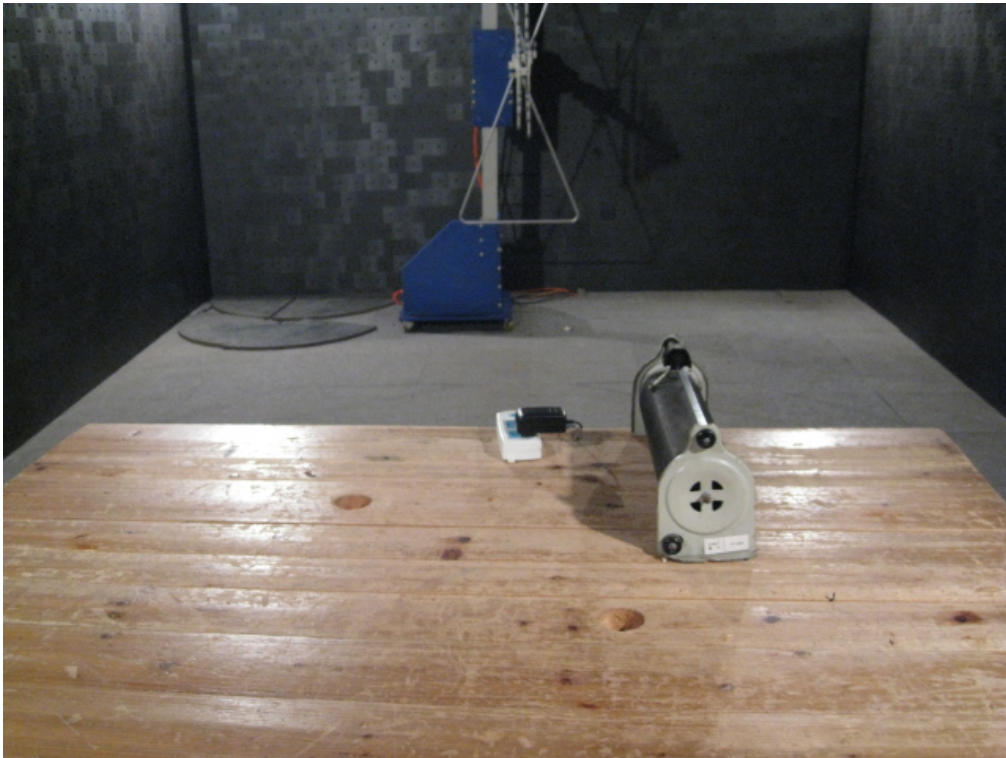
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1	*	86.2600	47.86	-11.68	36.18	39.50	-3.32	QP		

4. EUT TEST PHOTO

Conducted Measurement Photos



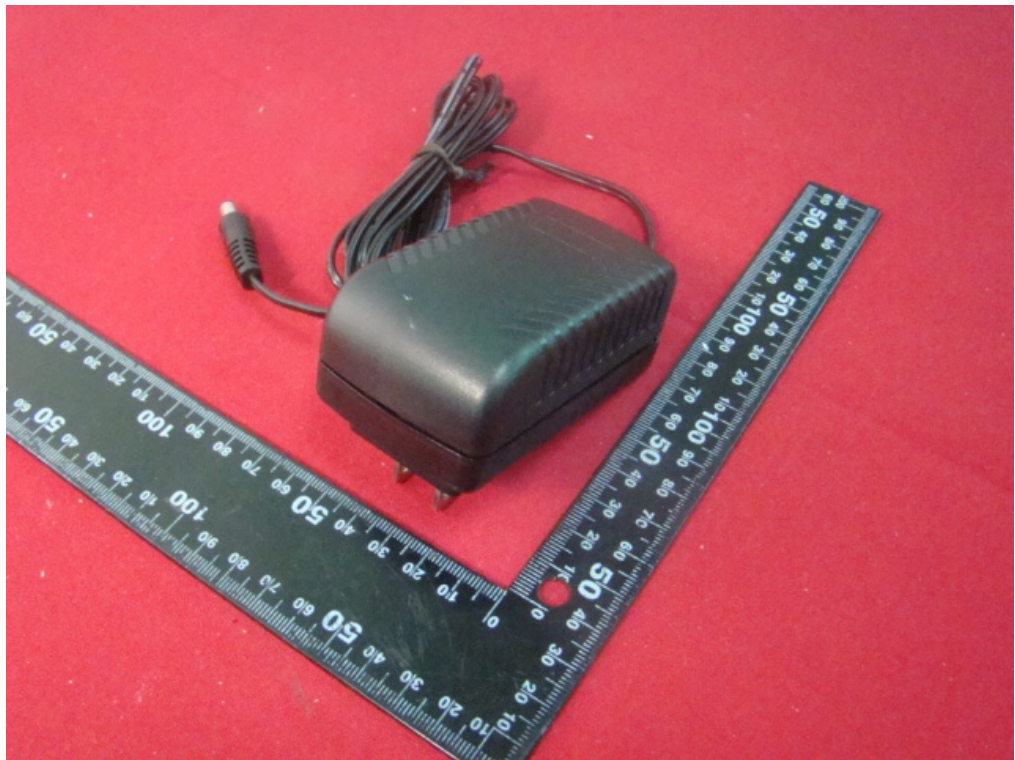
Radiated Measurement Photos



EUT Photo

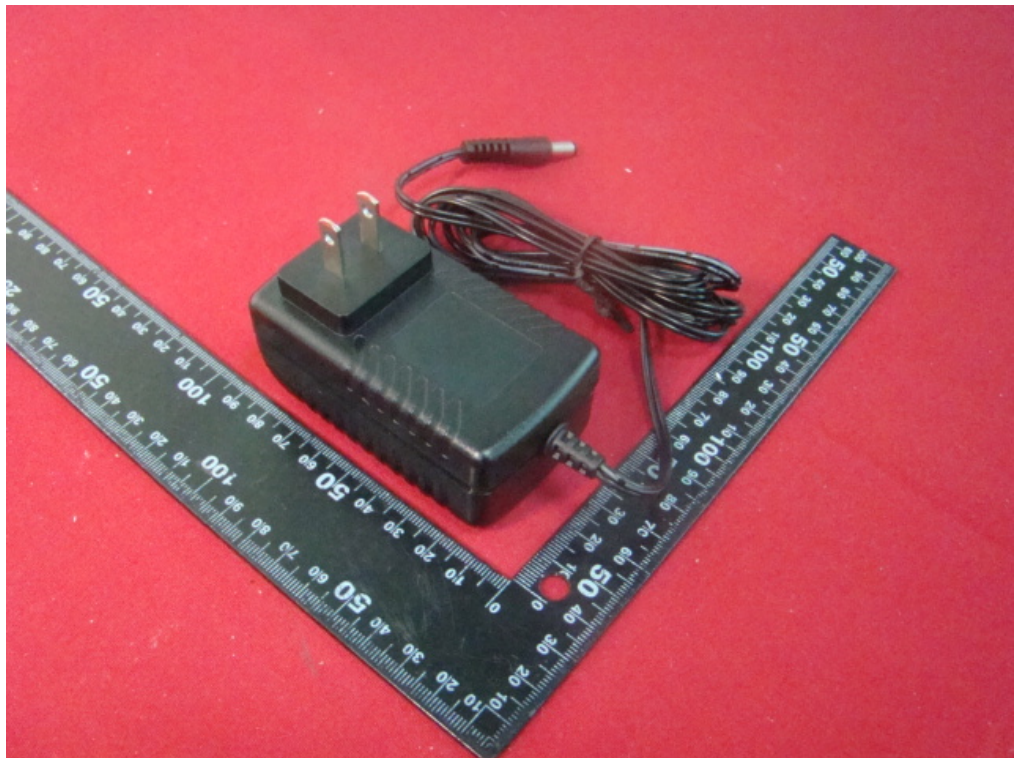
View:

- [x] general
- [] front
- [] rear
- [] right
- [] left
- [] top
- [] bottom



View:

- [x] general
- [] front
- [] rear
- [] right
- [] left
- [] top
- [] bottom



View:

general

front

rear

right

left

top

bottom



View:

general

front

rear

right

left

top

bottom

