FCC TEST REPORT

Reference No.	:	WTU13U0705252E
Applicant	:	Suzhou Switek Electronics&Technology Co, Ltd.
Address	:	No.86, South WuSong Road, Luzhi Town, Wuzhong District, Suzhou City.
Manufacturer	:	The same as above
Address	:	The same as above
Product Name	:	KVM over IP
Model No.	:	KI-3101,KI-3101C
FCC ID		ZQXKI-3101
Standards	:	FCC PART15.109_2010
Date of Receipt sample	:	July 04, 2013
Date of Test	:	Sep.08, 2013
Date of Issue	:	Sep.25, 2013
Test Report Form No.	:	FCC 15-1A
Test Result	:	**Pass ***

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.
The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
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Compiled by:

Mark.Gu / Project Engineer

Approved by:

Philo Zhong / Manager

1 Test Summary

Test Item	Test Requirement	Class	Test Method	Test Result
Conducted Emission (150KHz to 30MHz)	FCC PART15.107_2010	Class B	ANSI C63.4: 2003	Pass
Radiated Emission (30MHz to 1GHz)	FCC PART15.109_2010	Class B	ANSI C63.4: 2003	Pass

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object

2 Contents

3 General Information

3.1 General Description of E.U.T.

Product Name	:	**KVM over IP**
Model No.	:	**KI-3101,KI-3101C**
FCC ID.....		**ZQXKI-3101**
Remark	:	**The two models difference is appearance,others are the same**

3.2 Details of E.U.T.

Technical Data	:	Input:DC9~12V 1000mA,9~12W
The Highest Operation Frequency....	:	28.6363MHz

3.3 Description of Support Units

The EUT has been tested as an independent unit. KI-3101 is the test sample.

3.4 Standards Applicable for Testing

The tests were performed according to following standards:

FCC PART 15.109_2010 Electronic Code of Federal Regulations- Unintentional Radiators

3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A, July 12, 2012.

- **FCC – Registration No.: 880581**

Waltek Services (Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, May 26, 2011.

3.6 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

3.7 Abnormalities from Standard Conditions

None.

4 Equipment Used during Test

Conducted Emission						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	ROHDE& SCHWARZ	ESCI	101297	2013-07-19	2014-07-18
2.	Two-Line V-Network	ROHDE& SCHWARZ	ENV216	101538	2013-07-30	2014-07-29
3.	Manual RF SW	ESE	RSU-A41	-	-	-
4.	3m,50 ohms Cable	HUBER SUHNER	1016873	-	-	-
3m Semi-anechoic Chamber for Radiation						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	ROHDE& SCHWARZ	ESCI	101346	2013-07-19	2014-07-18
2.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	580	2013-09-08	2014-09-07
3.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	1092	2013-09-08	2014-09-07
4.	Broadband Preamplifier	SCHWARZBECK	BBV 9743	0069	2013-07-30	2014-07-29
5.	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2013-08-12	2014-08-11
6.	8m 50 Ohm Coaxial Cable with N-plug	HUBER SUHNER	1016873	-	-	-
7.	3m 50 Ohm Coaxial Cable with N-plug	HUBER SUHNER	1016873	-	-	-

4.1 easurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±3.64dB	(1)
Radiation	30MHz~1000MHz	±5.03dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5 Emission Test Results

5.1 Mains Terminals Disturbance Voltage, 150kHz to 30MHz

Test Requirement..... : FCC PART15.107_2010

Test Method..... : ANSI C63.4_2003

Test Result..... : Pass

Test Limit ..... : FCC PART 15, SUBPART B Section 15.107

Frequency Range..... : 150kHz to 30MHz

Class..... : Class B

5.1.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity..... : 33%RH

Atmospheric Pressure..... : 101Kbar

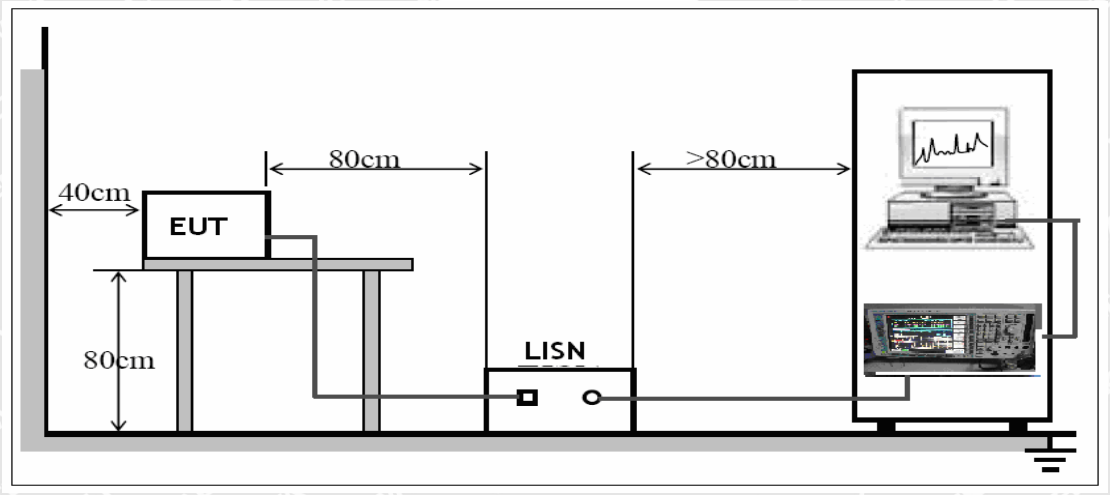
EUT Operation:

Input Voltage ..... : AC120V/60Hz

Operating Mode..... : Max power mode

5.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with the FCC PART 15, SUBPART B .



5.1.3 Measurement Data

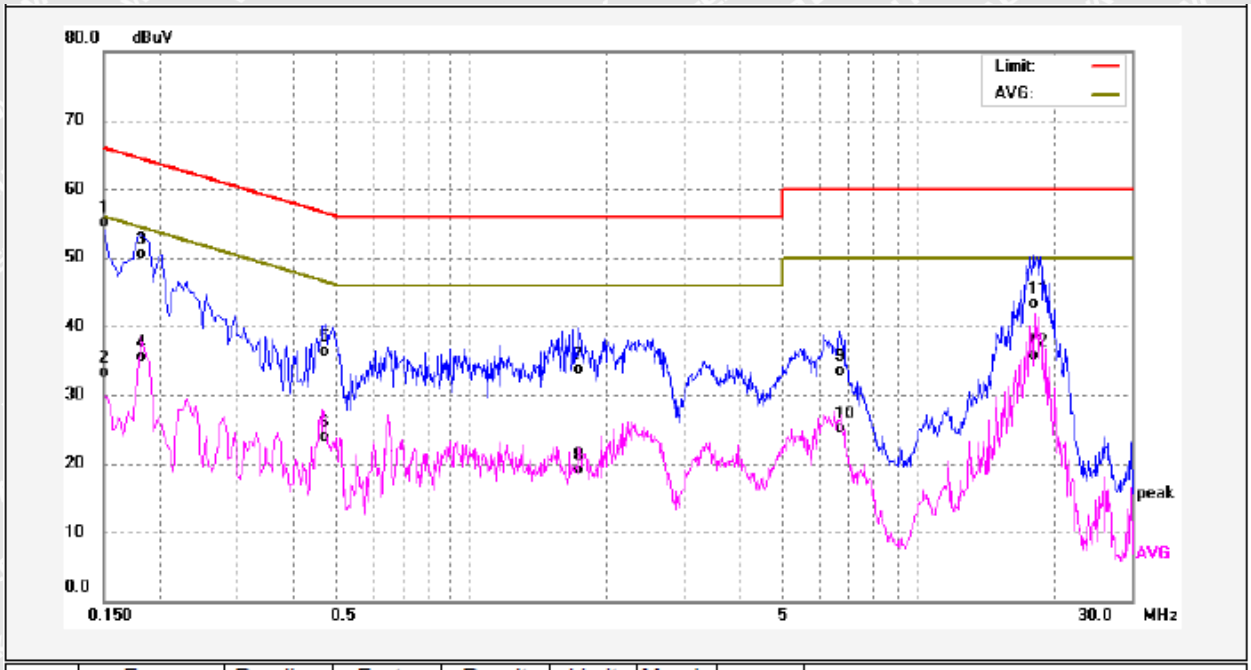
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line. According to the data in section 5.1.4, the EUT complied with the FCC PART 15, SUBPART B standards.

Remark: Test Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

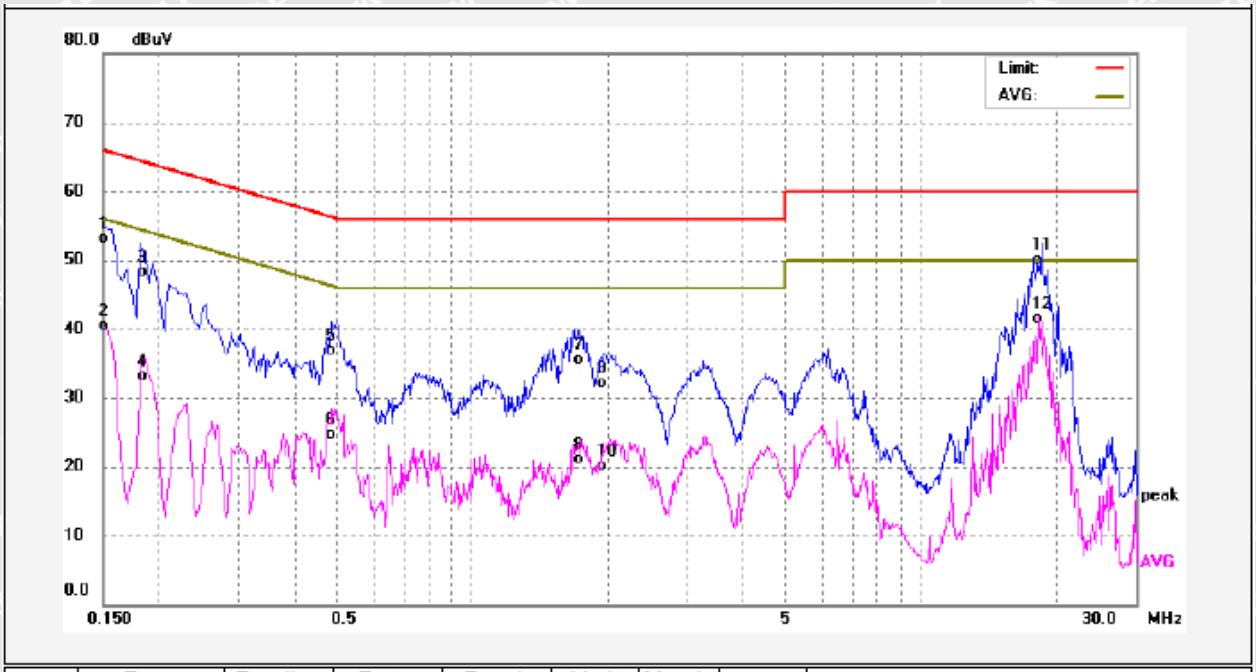
5.1.4 Mains Terminals Disturbance Voltage Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	45.37	9.76	55.13	65.99	-10.86	QP	
2	0.1500	23.48	9.76	33.24	55.99	-22.75	AVG	
3	0.1819	40.80	9.74	50.54	64.39	-13.85	QP	
4	0.1819	25.68	9.74	35.42	54.39	-18.97	AVG	
5	0.4740	26.68	9.68	36.36	56.44	-20.08	QP	
6	0.4740	14.30	9.68	23.98	46.44	-22.46	AVG	
7	1.7420	23.94	9.70	33.64	56.00	-22.36	QP	
8	1.7420	9.35	9.70	19.05	46.00	-26.95	AVG	
9	6.6580	23.69	9.78	33.47	60.00	-26.53	QP	
10	6.6580	15.27	9.78	25.05	50.00	-24.95	AVG	
11	18.2260	33.43	9.95	43.38	60.00	-16.62	QP	
12	18.2260	25.74	9.95	35.69	50.00	-14.31	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	43.58	9.62	53.20	65.99	-12.79	QP	
2	0.1500	30.80	9.62	40.42	55.99	-15.57	AVG	
3	0.1819	38.76	9.63	48.39	64.39	-16.00	QP	
4	0.1819	23.48	9.63	33.11	54.39	-21.28	AVG	
5	0.4860	27.16	9.68	36.84	56.24	-19.40	QP	
6	0.4860	15.04	9.68	24.72	46.24	-21.52	AVG	
7	1.7180	25.85	9.69	35.54	56.00	-20.46	QP	
8	1.7180	11.43	9.69	21.12	46.00	-24.88	AVG	
9	1.9620	22.32	9.69	32.01	56.00	-23.99	QP	
10	1.9620	10.34	9.69	20.03	46.00	-25.97	AVG	
11	18.4660	40.03	9.99	50.02	60.00	-9.98	QP	
12	18.4660	31.57	9.99	41.56	50.00	-8.44	AVG	

5.2 Radiation Emission Data For 9kHz to 1000MHz

Test Requirement..... : FCC PART15.109_2010

Test Method..... : ANSI C63.4_2003

Test Limit..... : FCC PART 15, SUBPART B Section 15.109

Test Result..... : Pass

Frequency Range..... : 9kHz to 1000MHz

Class...... : Class B

Measurement Distance..... 3m

5.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity..... : 33%RH

Atmospheric Pressure..... : 101Kbar

EUT Operation:

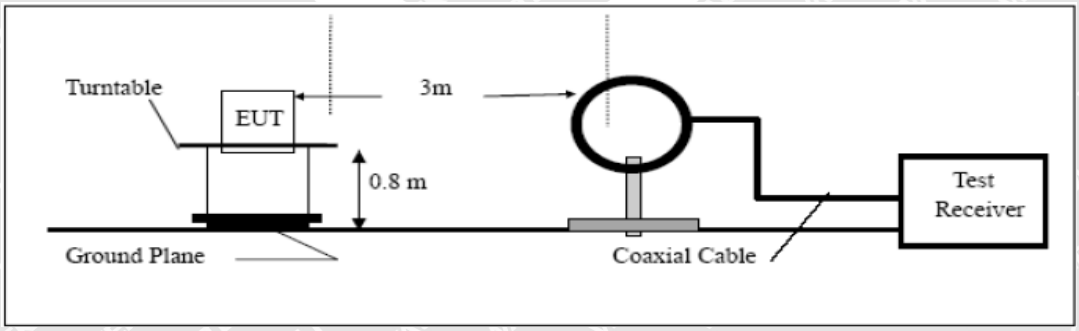
Input Voltage ..... : AC120V/60Hz

Operating Mode..... : Full load mode

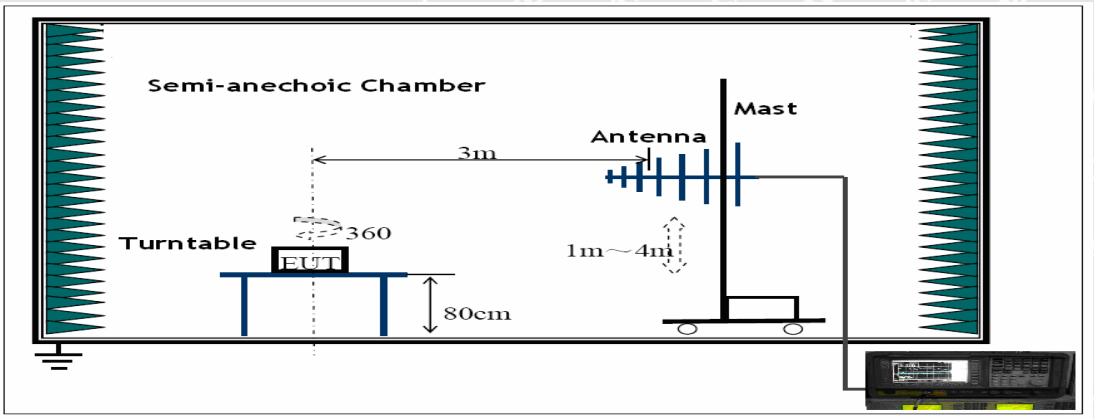
5.2.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the FCC PART 15, SUBPART B.

Below 30MHz



30MHz ~ 1000MHz



5.2.3 Test Procedure

1. **a) Test Procedure (below 30MHz)**

   (1) The EUT is placed on a turntable, which is 0.8m above ground plane.

   (2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

   (3) EUT is set 3m away from the receiving antenna.

   (4) Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

   (5) Repeat above procedures until the measurements for all frequencies are complete.

   (6) AC source used during test.

   b) Test Procedure (above 30MHz)

   (1) The EUT is placed on a turntable, which is 0.8m above ground plane.

   (2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

   (3) EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum 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 the measurements for all frequencies are complete.

   (7) The radiation measurements are performed in X,Y,Z axes position, the worst is X position.

   (8) AC source used during test.

2. Operating Mode:Full Load Mode (EUT power supplied DC 9-12V from the adaptor,The EUT one side connect PC1 with network port, the other side connect PC2 with DB15 cable.during the test ,PC1 is out of the test chamber, PC2 and EUT are in the test chamber, PC1 remote control PC2 by the soft of KVMviewer.exe that was been loading from the EUT)

3. Test software: Audix EZ-EMC

4. Peak sweep refresh time: 100us

5. QP reading time:1s

5.2.4 Measurement Data

According to the data in section 5.2.4, the EUT complied with the FCC PART 15, SUBPART B standards.

Remark :

(1)The test Frequency range judgment basis:

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

(2) The test Limit :

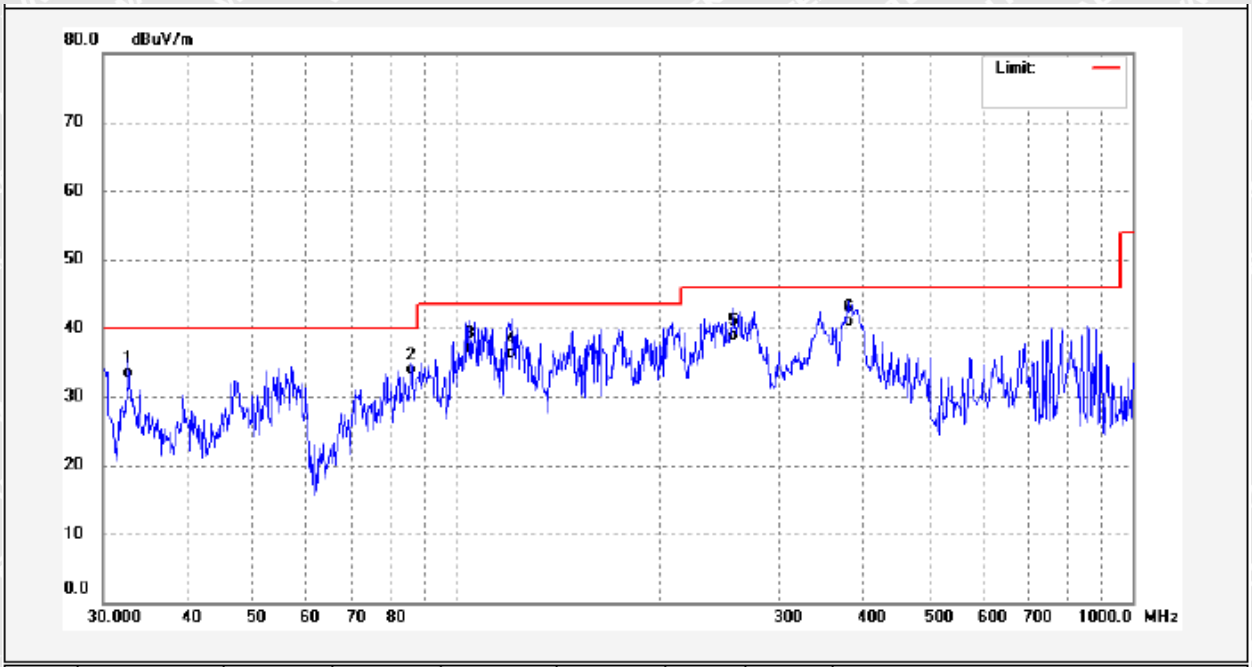
Frequency of emission (MHz)	Field strength (microvolts/meter)
0.009 ~ 0.490	10000 * 2400/F(kHz)
0.490 ~ 1.705	100 * 24000/F(kHz)
1.705 ~ 30	100 * 30
30–88	100
88–216	150
216–960	200
Above 960	500

(1)Radiated Emission test datas, below 30MHz:

Frequency (kHz)	Detector	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Distance (m)
10.503	peak	92.22	127	-34.78	3
No suspicious signal found in other frequency that other emissions are more than 20dB below the limit,the data do not report .					

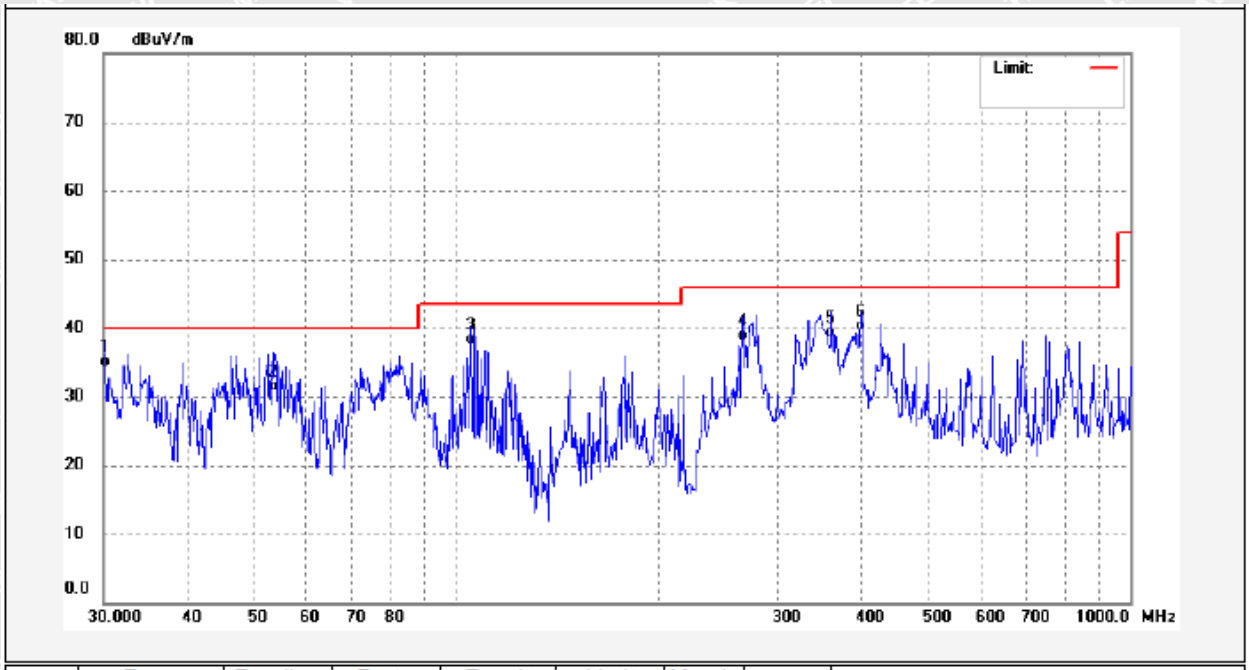
(2)Radiated Emission test datas,30MHz to 1000MHz:

Antenna Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.7486	50.42	-16.99	33.43	40.00	-6.57	QP	
2	85.5976	52.95	-19.02	33.93	40.00	-6.07	QP	
3	104.9032	52.87	-15.82	37.05	43.50	-6.45	QP	
4	120.2766	54.20	-17.90	36.30	43.50	-7.20	QP	
5	256.5210	53.07	-14.12	38.95	46.00	-7.05	QP	
6	379.9141	51.79	-10.87	40.92	46.00	-5.08	QP	

Antenna Vertical



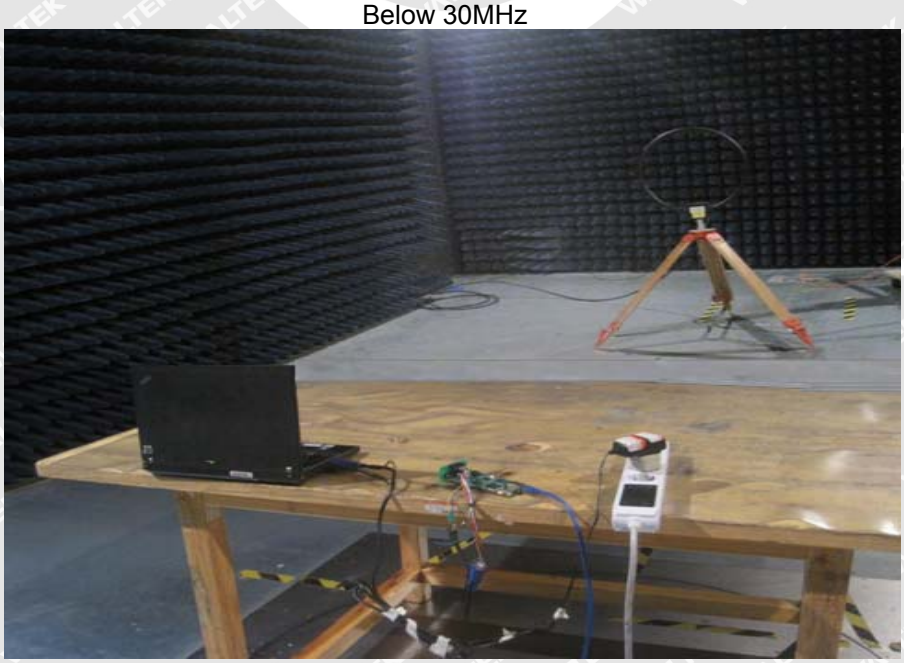
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	30.1053	51.95	-16.79	35.16	40.00	-4.84	QP	
2	53.6931	45.65	-14.16	31.49	40.00	-8.51	QP	
3	105.2717	54.04	-15.83	38.21	43.50	-5.29	QP	
4	266.6089	52.86	-13.90	38.96	46.00	-7.04	QP	
5	360.4476	50.54	-11.24	39.30	46.00	-6.70	QP	
6	399.0302	50.72	-10.34	40.38	46.00	-5.62	QP	

6 Photographs – Test Setup

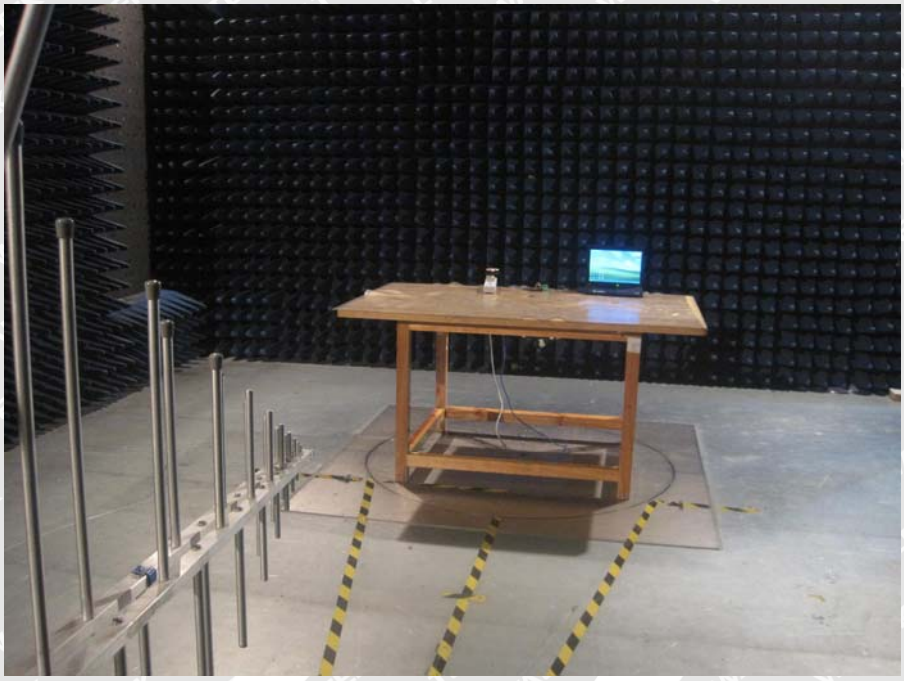
6.1 Photograph –Disturbance Voltage Test Setup

6.2 Photograph –Radiated Emission Test Setup

Below 30MHz

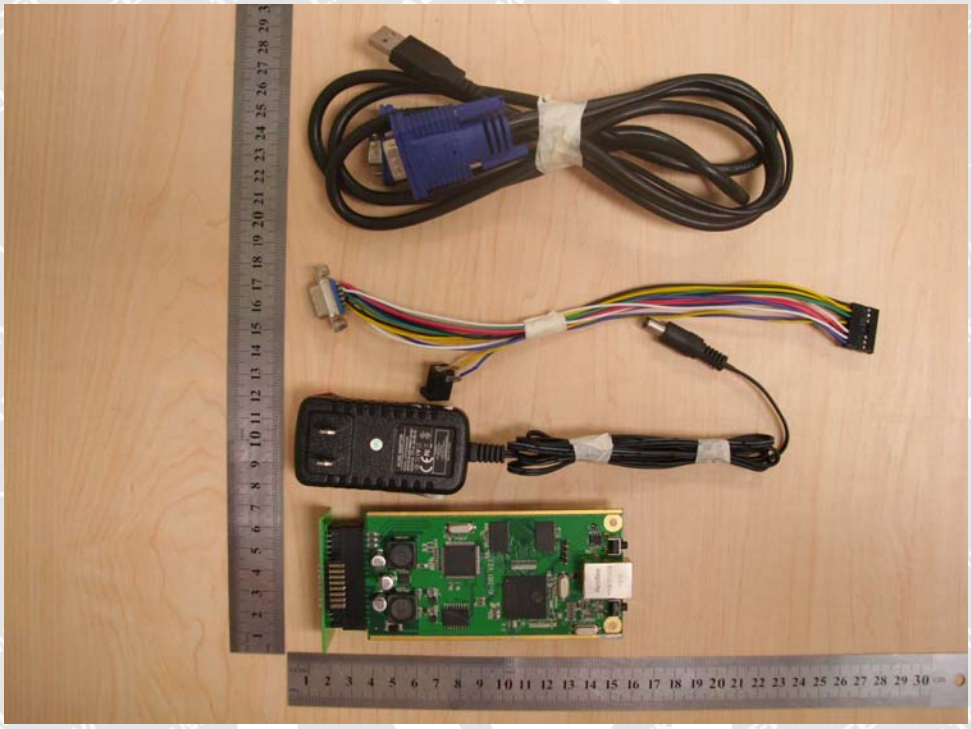


Above 30MHz



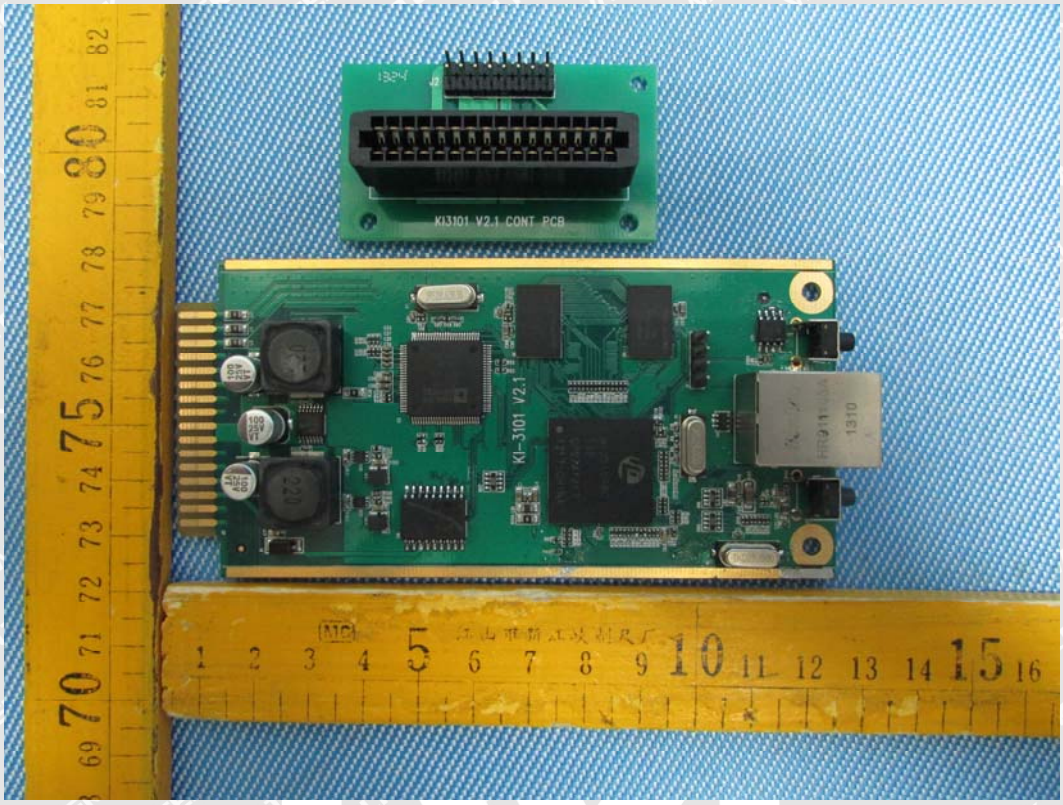
7 Photographs – Constructional Details

7.1 EUT – Front View

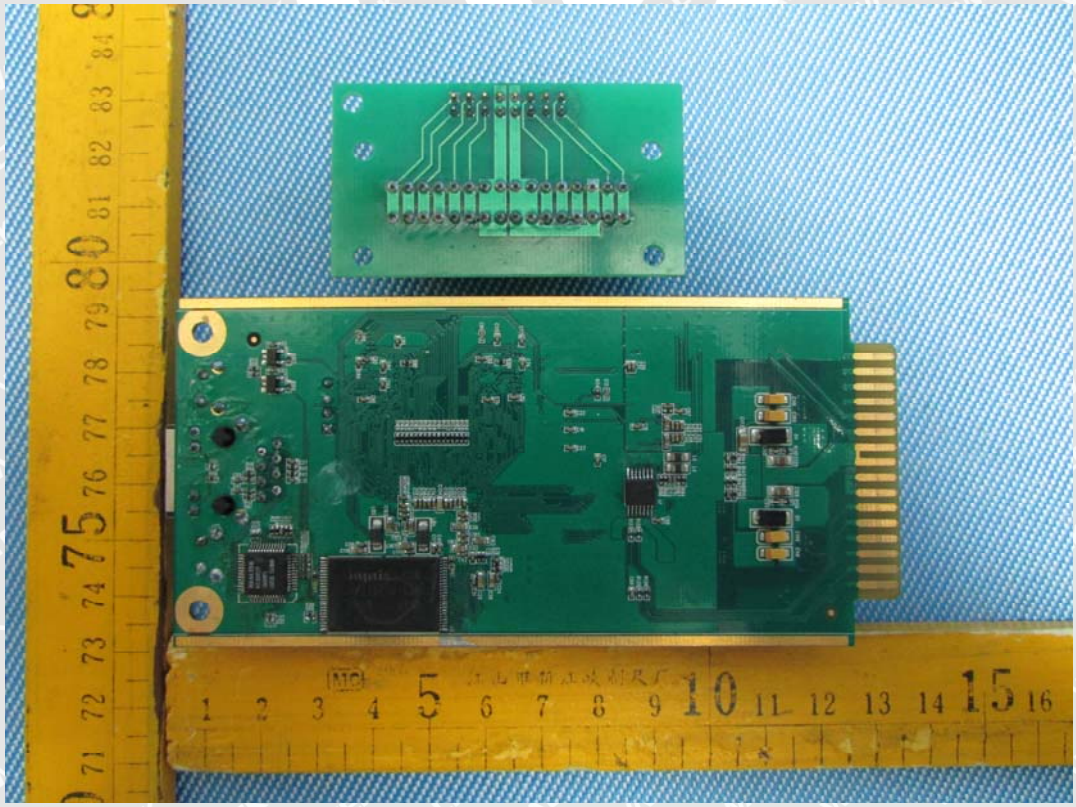


7.2 EUT – Back View

7.3 EUT – PCB-Front View



7.4 EUT – PCB- Back View



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