FCC Test Report

FCC ID: 2AC8NS8PRO

Product： TV Box

Trade Name： N/A

Model Number： S8 pro

Serial Model： S802, S812, A9, M8

Report No.： NTEK-2014NT0928495F1

Prepared for

Shenzhen Tayun Smart Technology Co.,Ltd.

431.433# District 3 Building B,Mingyou Products Procurement Center,
NO.168 Baoyuan Rd, Xixiang, Baoan, Shenzhen, China

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Tayun Smart Technology Co.,Ltd.
Address	:	431.433# District 3 Building B,Mingyou Products Procurement Center, NO.168 Baoyuan Rd, Xixiang, Baoan, Shenzhen, China
Manufacturer's Name	:	Shenzhen Tayun Smart Technology Co.,Ltd.
Address	:	431.433# District 3 Building B,Mingyou Products Procurement Center, NO.168 Baoyuan Rd, Xixiang, Baoan, Shenzhen, China

Product description

Product name	:	TV Box
Model and/or type reference	:	S8 pro
Standards	:	FCC Part15B:01 Oct.2013 ANSI C63.4:2003

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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Date of Test	:	
Date (s) of performance of tests	:	28 Sep. 2014 ~23 Oct. 2014
Date of Issue	:	23 Oct. 2014
Test Result	:	**Pass**

Testing Engineer : Kyle Xu

(Kyle Xu)

Technical Manager : Brown Lu

(Brown Lu)

Authorized Signatory : Bill Yao

(Bill Yao)

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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part15B:2013 ANSI C63.4: 2003	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	

NOTE:

(1) 'N/A' denotes test is not applicable in this Test Report

(2) For client's request and manual description, the test will not be executed.

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd
Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.
FCC Registration Number:238937; IC Registration Number:9270A-1
CNAS Registration Number:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended 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
NTEKC01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
NTEKA01	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~12.4GHz	5.0	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>TV Box</td></tr>
<tr><td>Model Name</td><td>S8 pro</td></tr>
<tr><td>Additional Model Number(s)</td><td>S802, S812, A9, M8</td></tr>
<tr><td>Model Difference</td><td>All the model are the same circuit and RF module,
except the model name and colour.</td></tr>
<tr><td>Product Description</td><td>The EUT is a TV Box.

<table><tr><td>Connecting I/O port:</td><td>HDMI</td></tr><tr><td>Operation Frequency:</td><td>WIFI:
802.11b/g/n(20MHz): 2412~2462MHz
802.11a/n20MHz: 5725 ~ 5850 MHz</td></tr><tr><td>Modulation Type:</td><td>WIFI: CCK/OFDM/DBPSK
OFDM (BPSK / QPSK /
16QAM / 64QAM)</td></tr></table>
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.</td></tr>
<tr><td>Power Source</td><td>DC Voltage</td></tr>
<tr><td>Adapter</td><td>Model:ZB-01-5020US
Input: 100-240V,50/60 Hz,0.5A max
Output: 5.0V⎓, 2000mA</td></tr>
<tr><td>Battery</td><td>N/A</td></tr>
</table>

2.1.1 DESCRIPTION OF TEST MODES

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

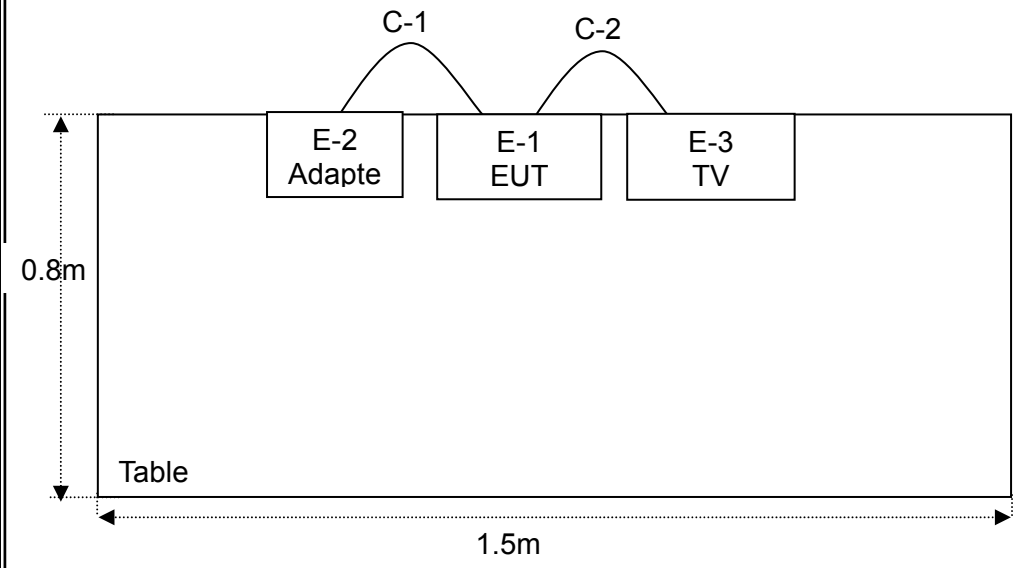
Pretest Mode	Description
Mode 1	Normal Operating

For Conducted Test	
Final Test Mode	Description
Mode 1	Normal Operating

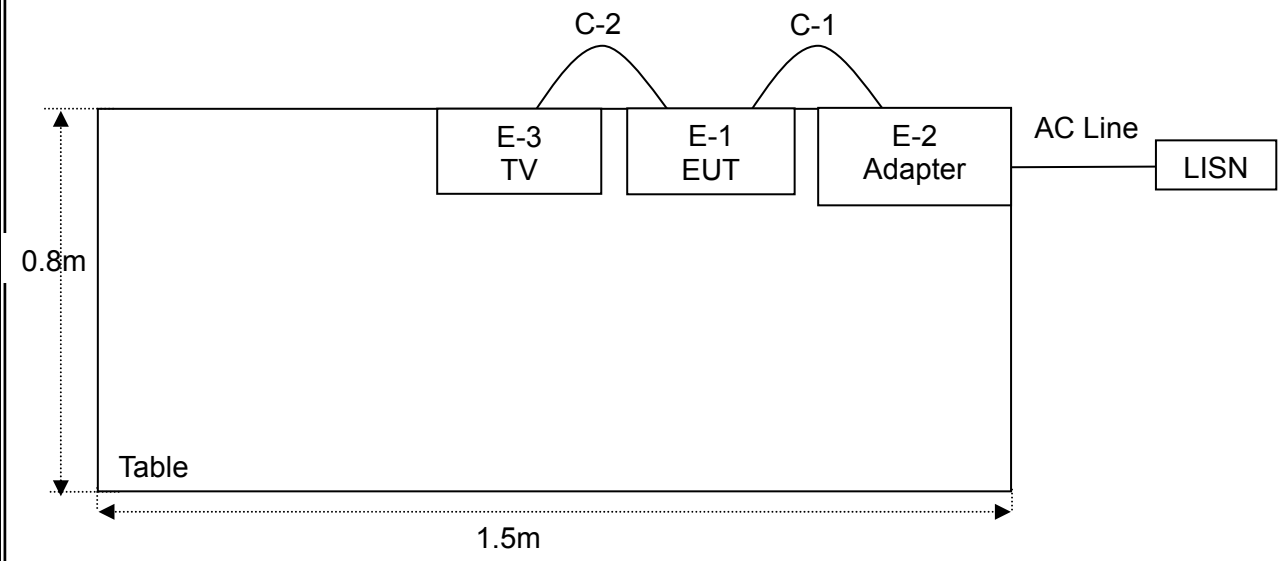
For Radiated Test	
Final Test Mode	Description
Mode 1	Normal Operating

2.2 DESCRIPTION OF TEST SETUP

RE



CE



2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	TV Box	N/A	S8 pro	N/A	EUT
E-2	Adapter	N/A	ZB-01-5020US	N/A	
E-3	TV	SONY	KDL-24EX520	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.2m	
C-2	NO	NO	1.2m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” means “shielded” “with core”; “NO” means “unshielded” “without core”.

2.4 MEASUREMENT INSTRUMENTS LIST

2.4.1 CONDUCTED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	R&S	ENV216	101313	Jul. 06, 2014	Jul. 05, 2015	1 year
2	LISN	SCHWARZBECK	NNLK 8129	8129245	Dec. 25, 2013	Dec. 24, 2014	1 year
3	Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	Dec. 25, 2013	Dec. 24, 2014	1 year
4	50Ω Switch	ANRITSU CORP	MP59B	6200983704	Jul. 06, 2014	Jul. 05, 2015	1 year
5	Test Cable	N/A	C01	N/A	Jul. 06, 2014	Jul. 05, 2015	1 year
6	Test Cable	N/A	C02	N/A	Jul. 06, 2014	Jul. 05, 2015	1 year
7	Test Cable	N/A	C03	N/A	Jul. 06, 2014	Jul. 05, 2015	1 year
8	EMI Test Receiver	R&S	ESCI	101160	Jul. 06, 2014	Jul. 05, 2015	1 year
9	Passive Voltage Probe	ESH2-Z3	R&S	100196	Jul. 06, 2014	Jul. 05, 2015	1 year
10	Absorbing Clamp	R&S	MDS-21	100423	Jul. 08, 2014	Jul. 07, 2015	1 year

2.4.2 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 06, 2014	Jul. 05, 2015	1 year
2	Test Cable	N/A	R-01	N/A	Dec. 25, 2013	Dec. 24, 2014	1 year
3	Test Cable	N/A	R-02	N/A	Dec. 25, 2013	Dec. 24, 2014	1 year
4	EMI Test Receiver	R&S	ESCI-7	101318	Jul. 06, 2014	Jul. 05, 2015	1 year
5	Antenna Mast	EM	SC100_1	N/A	N/A	N/A	N/A
6	Turn Table	EM	SC100	060531	N/A	N/A	N/A
7	50Ω Switch	Anritsu Corp	MP59B	6200983705	Jul. 06, 2014	Jul. 05, 2015	1 year
8	Spectrum Analyzer	Aglient	E4407B	MY45108040	Jul. 06, 2014	Jul. 05, 2015	1 year
9	Horn Antenna	EM	EM-AH-10180	2011071402	Jul. 06, 2014	Jul. 05, 2015	1 year
10	Amplifier	EM	EM-30180	060538	Jul. 06, 2014	Jul. 05, 2015	1 year
11	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06, 2014	Jul. 05, 2015	1 year

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.

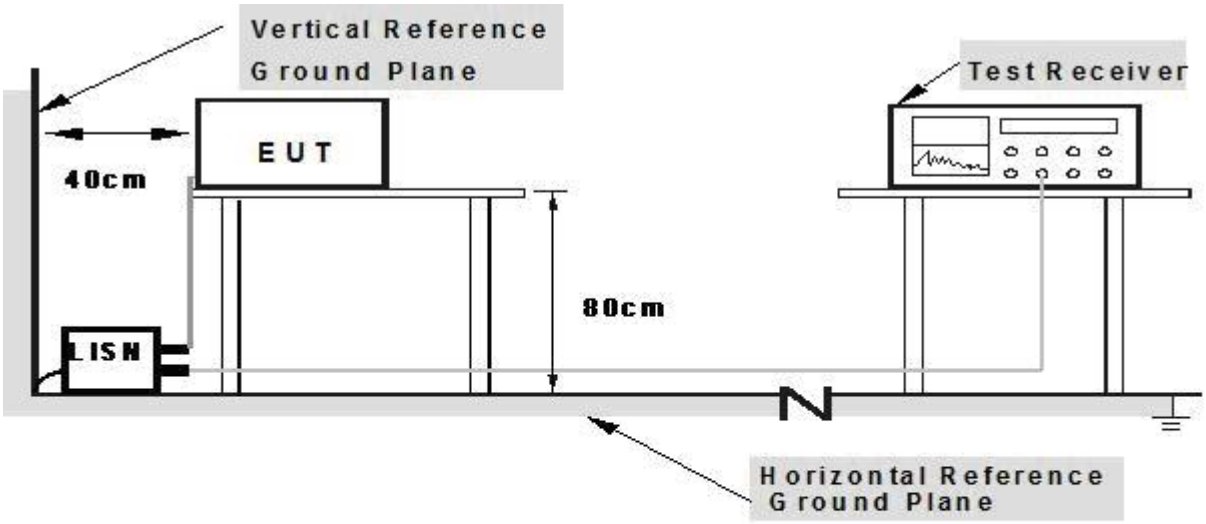
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 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.
b. 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.
c. 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.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

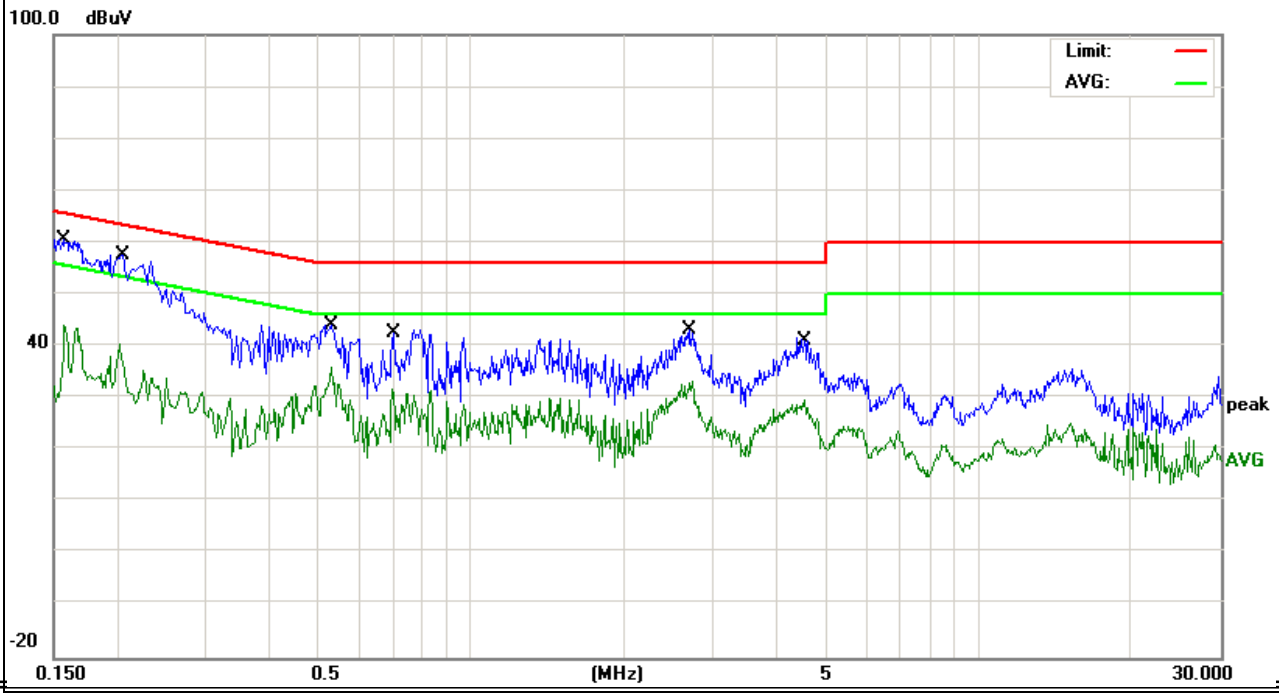
3.1.5 TEST RESULTS

EUT：	TV Box	Model Name. ：	S8 pro
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date：	2014-10-21
Test Mode：	Mode 1	Phase：	L
Test Voltage ：	DC 5V From ADAPTER AC 120V/60Hz		

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1580	50.90	9.60	60.50	65.56	-5.06	QP
0.1580	34.36	9.60	43.96	55.56	-11.60	AVG
0.2020	47.59	9.49	57.08	63.52	-6.44	QP
0.2020	30.99	9.49	40.48	53.52	-13.04	AVG
0.5300	34.46	9.51	43.97	56.00	-12.03	QP
0.5300	26.32	9.51	35.83	46.00	-10.17	AVG
0.6980	31.33	9.53	40.86	56.00	-15.14	QP
0.6980	22.33	9.53	31.86	46.00	-14.14	AVG
2.7260	32.94	9.56	42.50	56.00	-13.50	QP
2.7260	23.60	9.56	33.16	46.00	-12.84	AVG
4.5339	31.40	9.60	41.00	56.00	-15.00	QP
4.5339	20.16	9.60	29.76	46.00	-16.24	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

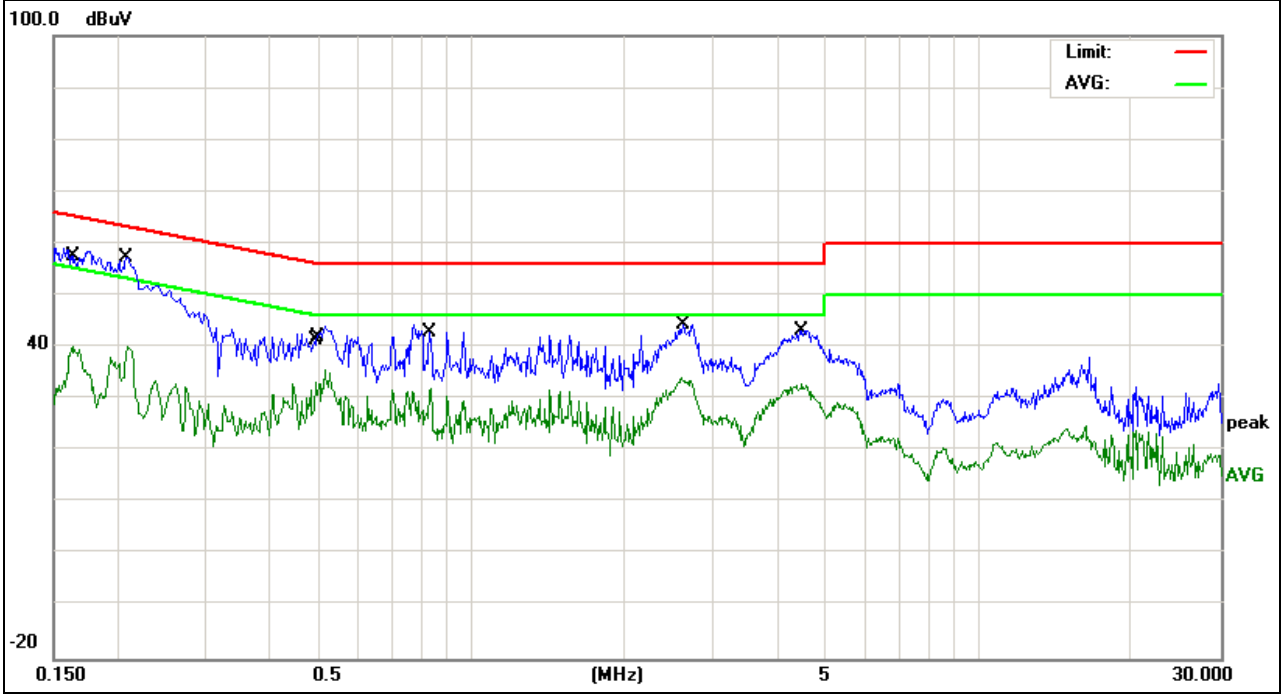


EUT：	TV Box	Model Name. ：	S8 pro
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date：	2014-10-21
Test Mode：	Mode 1	Phase：	N
Test Voltage ：	DC 5V From ADAPTER AC 120V/60Hz		

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1641	47.99	9.61	57.60	65.25	-7.65	QP
0.1641	30.63	9.61	40.24	55.25	-15.01	AVG
0.2100	47.70	9.50	57.20	63.20	-6.00	QP
0.2100	30.56	9.50	40.06	53.20	-13.14	AVG
0.4900	31.49	9.53	41.02	56.17	-15.15	QP
0.4940	23.69	9.53	33.22	46.10	-12.88	AVG
0.8340	31.53	9.54	41.07	56.00	-14.93	QP
0.8340	22.63	9.54	32.17	46.00	-13.83	AVG
2.6060	33.14	9.57	42.71	56.00	-13.29	QP
2.6060	24.54	9.57	34.11	46.00	-11.89	AVG
4.4779	33.63	9.60	43.23	56.00	-12.77	QP
4.4779	23.43	9.60	33.03	46.00	-12.97	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Notes:

(1) The limit for radiated test was performed according to as following: FCC PART 15B /ICES-003.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

Test Arrangement for Radiated Emissions up to 1 GHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

Test Arrangement for Radiated Emissions above 1 GHz.

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength.Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

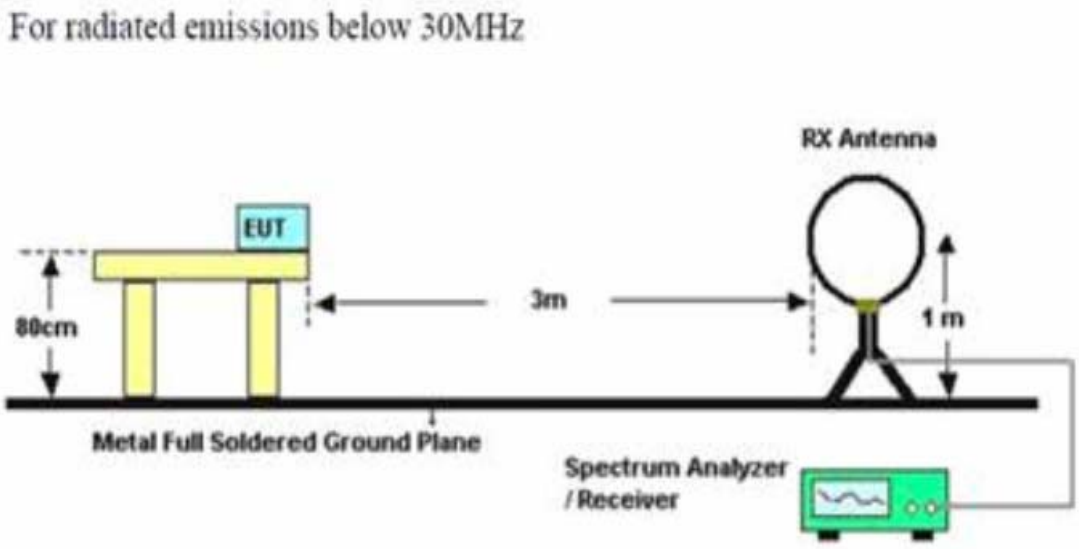
Note：For the hand-held device, the EUT should be measured for all 3 axes and only the worst case is recorded in the report

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

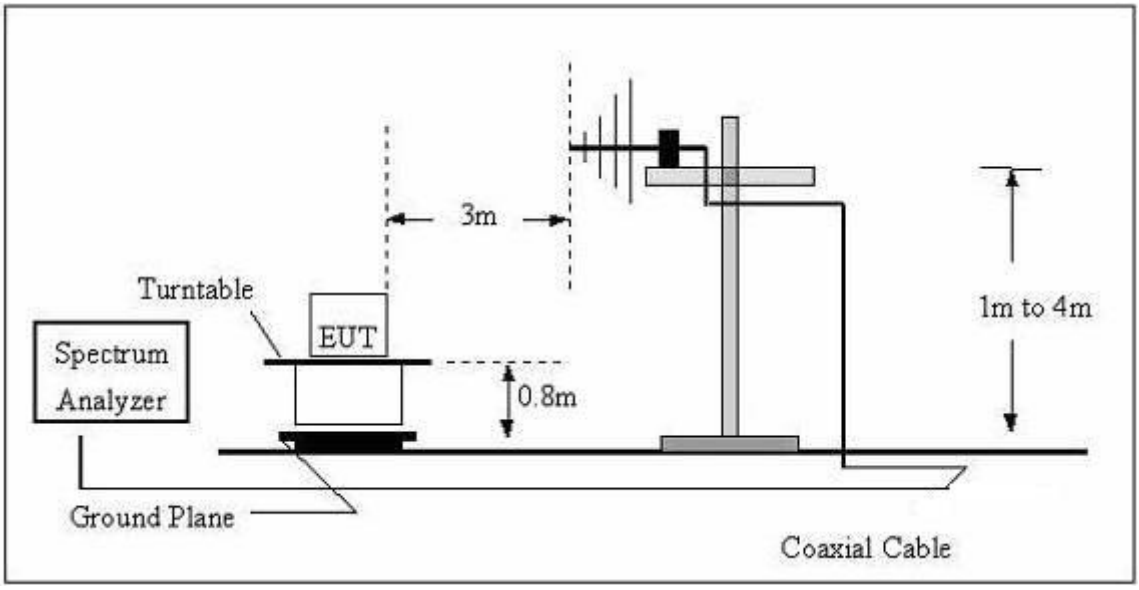
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Peak	1 MHz	10 Hz

3.2.3 TEST SETUP

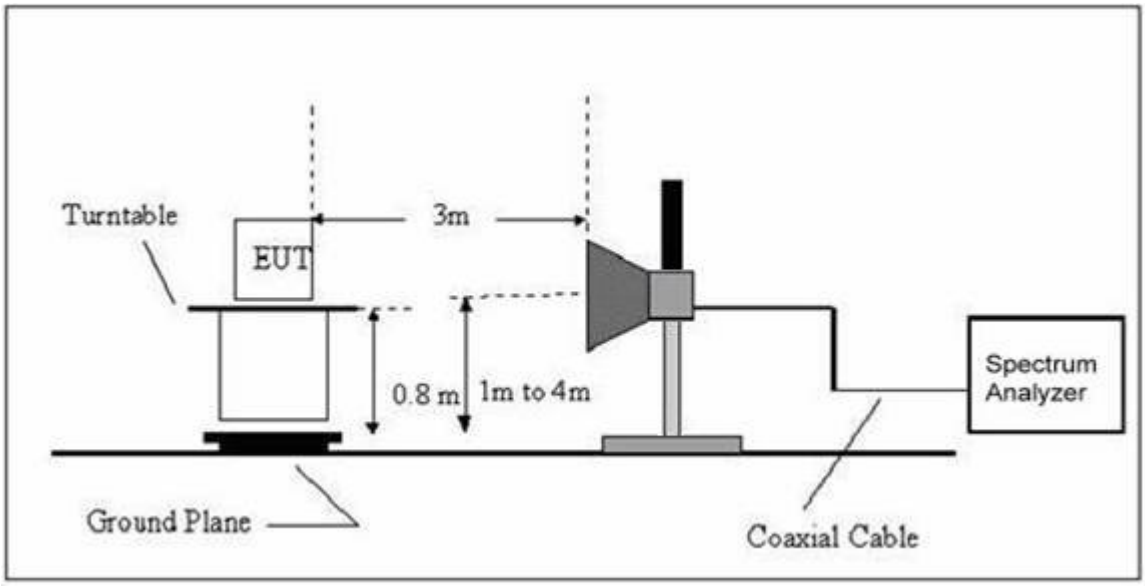
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



For Radiated Emission 30~1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.5 TEST RESULTS

TEST RESULTS (Below 30 MHz)

EUT：	TV Box	Model Name ：	S8 pro
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	---
Test Mode ：	TX	Polarization :	---

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =20 log (specific distance/test distance)(dB);

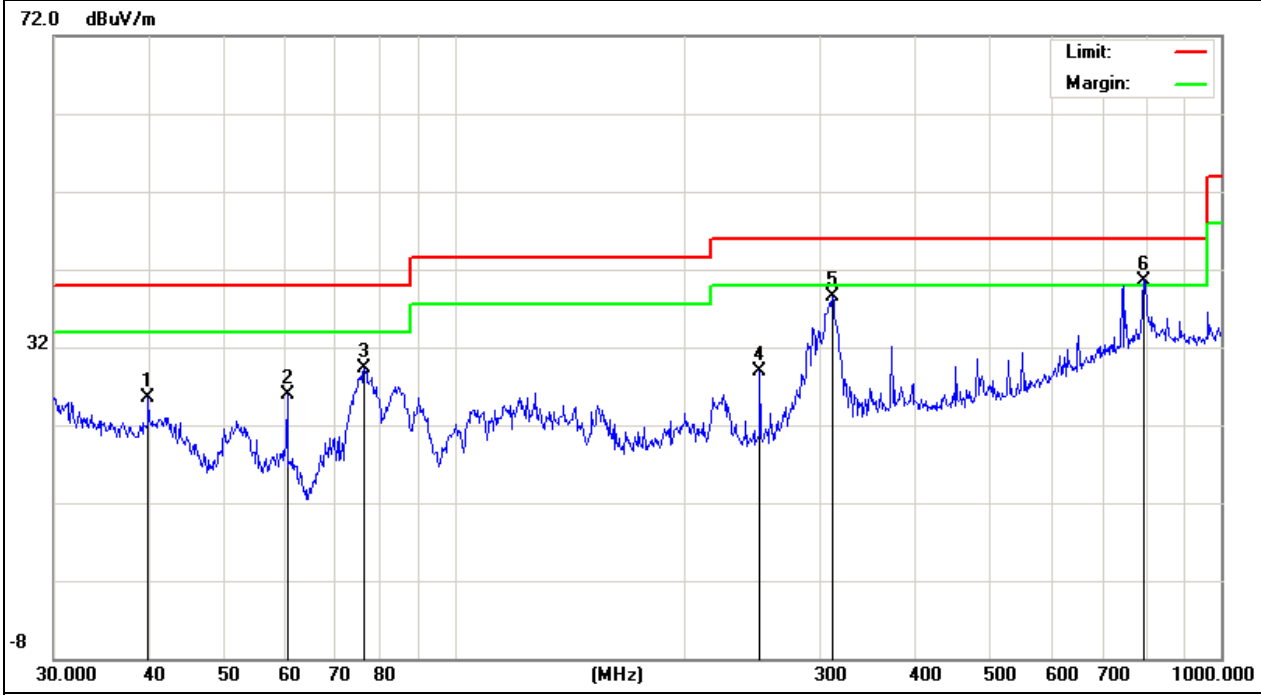
Limit line = specific limits(dBuv) + distance extrapolation factor.

TEST RESULTS (30~1000 MHz)

EUT：	TV Box	Model Name ：	S8 pro
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Date：	2014-10-21
Test Mode ：	Mode 1	Polarization：	Horizontal
Test Power ：	DC 5V From ADAPTER AC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Remark
39.8542	11.83	13.63	25.46	40.00	-14.54	QP
60.4919	18.10	7.72	25.82	40.00	-14.18	QP
76.2442	23.49	5.74	29.23	40.00	-10.77	QP
250.3012	15.25	13.59	28.84	46.00	-17.16	QP
311.0867	23.89	14.62	38.51	46.00	-7.49	QP
793.3958	13.36	27.24	40.60	46.00	-5.40	QP

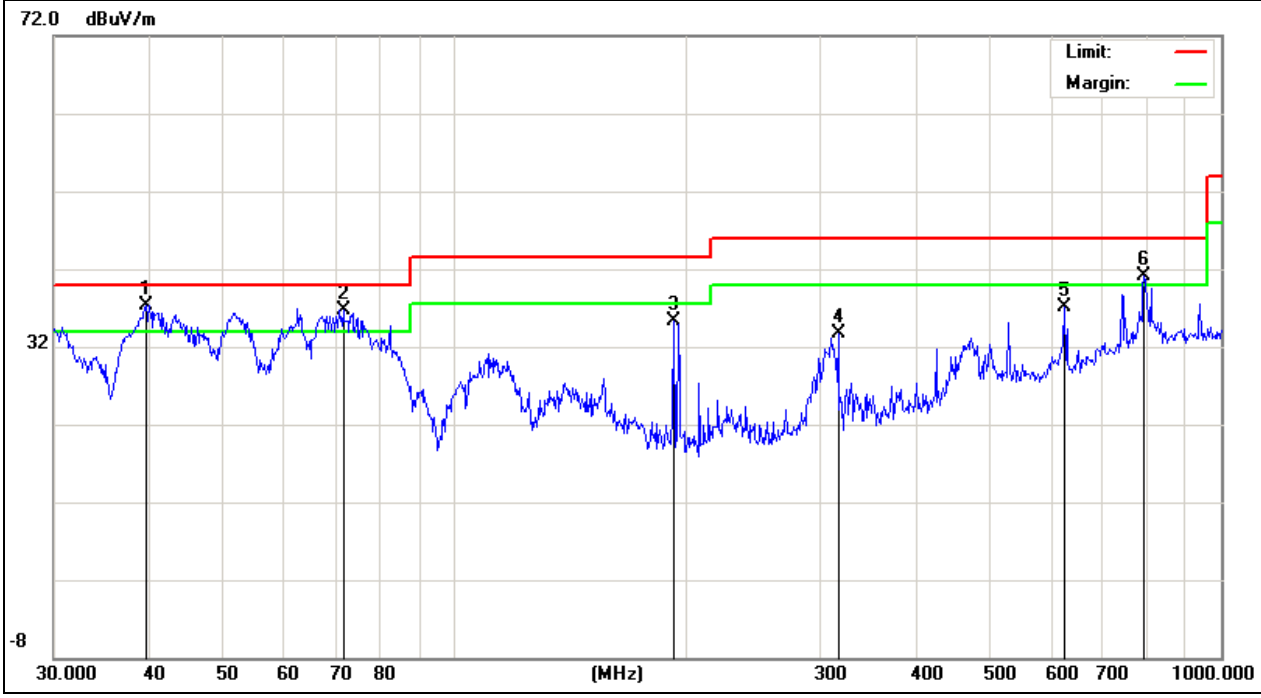
Remark:
Factor = Antenna Factor + Cable Loss - Amplifier.



EUT：	TV Box	Model Name ：	S8 pro
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Date：	2014-10-21
Test Mode ：	Mode 1	Polarization：	Vertical
Test Power ：	DC 5V From ADAPTER AC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Remark
39.5756	23.49	13.81	37.30	40.00	-2.70	QP
71.5806	31.03	5.62	36.65	40.00	-3.35	QP
193.0945	24.62	10.72	35.34	43.50	-8.16	QP
316.5889	18.79	14.85	33.64	46.00	-12.36	QP
625.0778	14.17	22.91	37.08	46.00	-8.92	QP
793.3958	13.96	27.24	41.20	46.00	-4.80	QP

Remark:
Factor = Antenna Factor + Cable Loss - Amplifier.



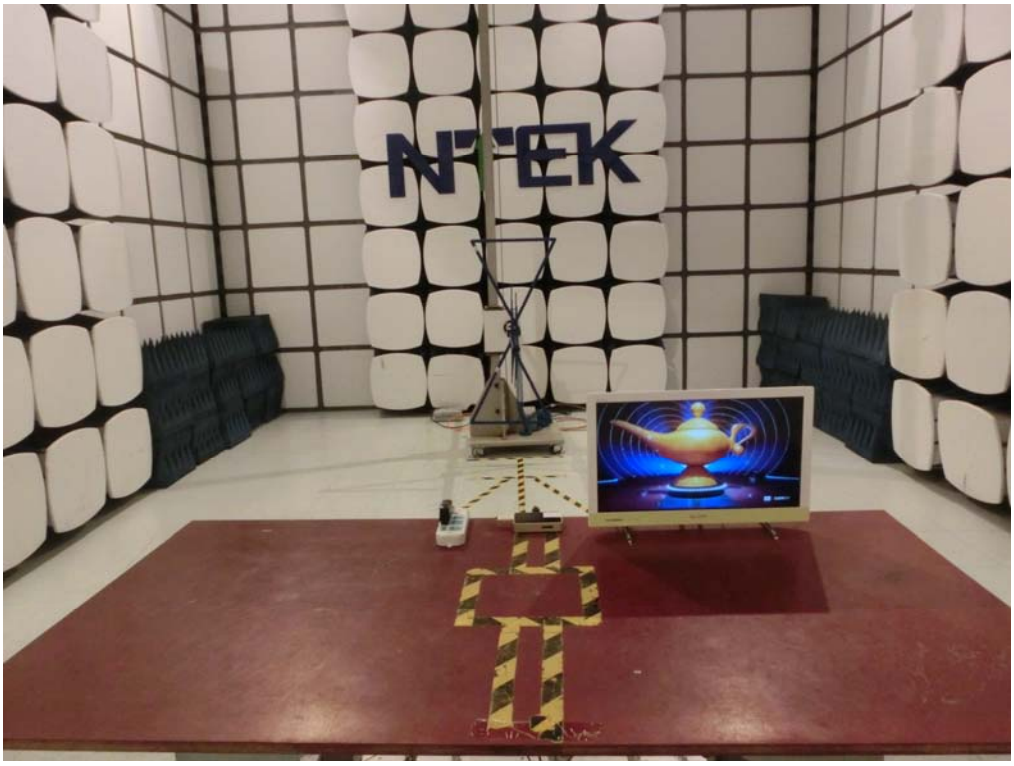
3.2.6 TEST RESULTS(1000~12400MHz)

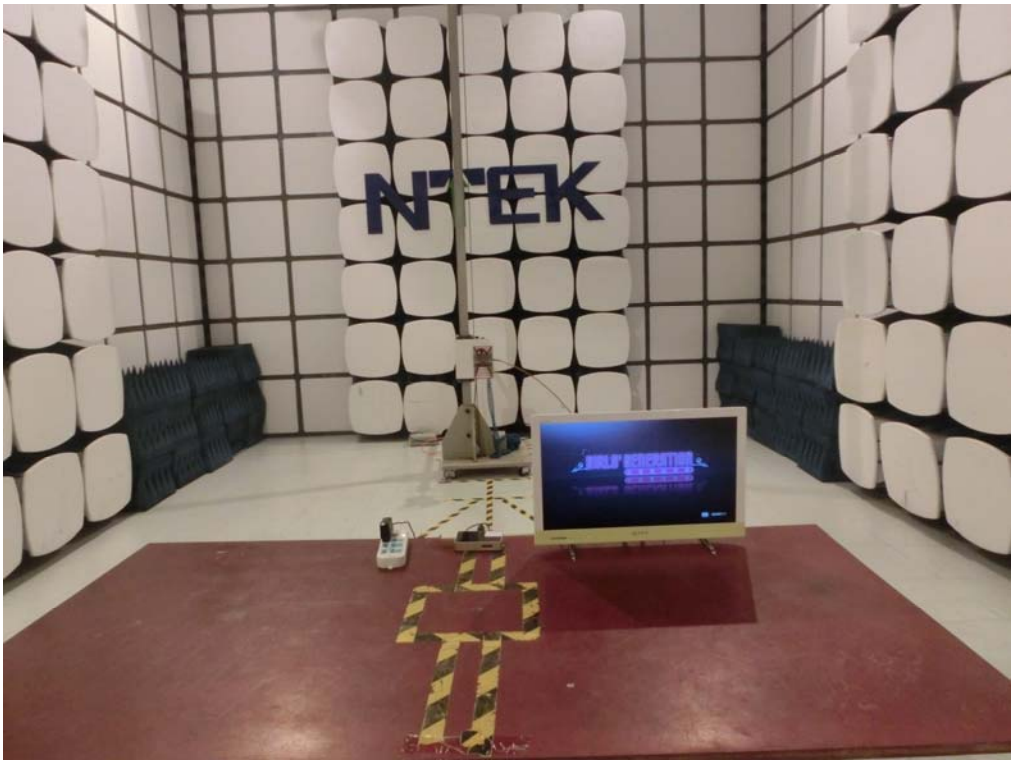
Polar (H/V)	Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Remark
V	1818.834	79.84	-14.84	65.00	74.00	-9.00	peak
V	1818.834	52.94	-14.84	38.10	54.00	-15.90	AVG
V	2937.620	76.63	-12.03	64.60	74.00	-9.40	peak
V	2937.620	52.63	-12.03	40.60	54.00	-13.40	AVG
V	4964.150	66.72	-3.62	63.10	74.00	-10.90	peak
V	4964.150	39.72	-3.62	36.10	54.00	-17.90	AVG
H	2034.86	77.33	-12.63	64.70	74.00	-9.30	peak
H	2034.86	52.33	-12.63	39.70	54.00	-14.30	AVG
H	3819.74	70.97	-7.47	63.50	74.00	-10.50	peak
H	3819.74	43.17	-7.47	35.70	54.00	-18.30	AVG
H	5028.31	66.73	-3.83	62.90	74.00	-11.10	peak
H	5028.31	39.93	-3.83	36.10	54.00	-17.90	AVG

Remark:
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

4. EUT TEST PHOTO

Radiated Measurement Photos





Conducted Measurement Photos