FCC RADIO TEST REPORT
FCC ID: 2ABX2SE11D

Product：	2.4GHz Wireless receiver
Trade Name：	N/A
Model Name：	SE11D
Serial Model：	N/A
Report No.：	2014BZT0308272F

Prepared for

UCOMTEK CO., LTD

A Building, Baoshan Industrial Zone , New Village Area 2 of Dalang Baoshan, Longhua District , Shenzhen City,China

Prepared by

BZT Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China

TEST RESULT CERTIFICATION

Applicant's name	:	UCOMTEK CO., LTD
Address	:	A Building, Baoshan Industrial Zone , New Village Area 2 of Dalang Baoshan, Longhua District , Shenzhen City,China
Manufacturer's Name	:	UCOMTEK CO., LTD
Address	:	A Building, Baoshan Industrial Zone , New Village Area 2 of Dalang Baoshan, Longhua District , Shenzhen City,China
Product description		
Product name	:	2.4GHz Wireless receiver
Model and/or type reference	:	SE11D
Standards	:	FCC Part15B:2013 ANSI C63.4:2009

This device described above has been tested by BZT, 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	:	20 Feb. 2014 ~28 Feb. 2014
Date of Issue	:	28 Feb. 2014
Test Result	:	**Pass**

Testing Engineer : Apple Huang
(Apple Huang)

Technical Manager : Tom Zhang
(Tom Zhang)

Authorized Signatory : Bovey Yang
(Bovey Yang)

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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: 2009	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

BZT Testing Technology Co., Ltd.
Add.:1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.
FCC Registered No.: 701733

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 ~6GHz	5.0	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>2.4GHz Wireless receiver</td></tr>
<tr><td>Model Name</td><td>SE11D</td></tr>
<tr><td>Additional Model Number(s)</td><td>N/A</td></tr>
<tr><td>Model Difference</td><td>N/A</td></tr>
<tr><td>Product Description</td><td>The EUT is a 2.4GHz Wireless receiver.

<table><tr><td>Operating frequency:</td><td>2.403GHz-2.478GHz (It’s only Receiver, isn’t transmitter)</td></tr><tr><td>Connecting I/O port:</td><td>USB port</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 Rating</td><td>DC 5V by PC</td></tr>
</table>

2.2 DESCRIPTION OF TEST MODES

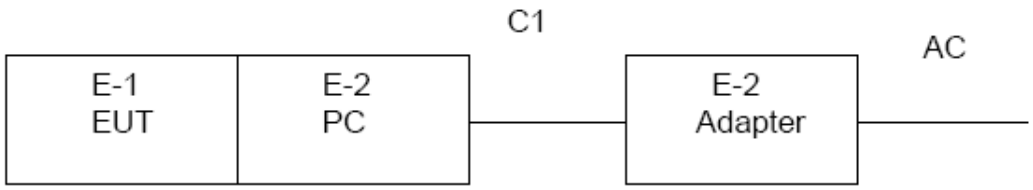
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration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

Pretest Mode	Description
Mode 1	USB Mode

For Conducted Test	
Final Test Mode	Description
Mode 1	USB Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	USB Mode

2.3 DESCRIPTION OF TEST SETUP



2.4 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	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	2.4GHz Wireless receiver	N/A	SE11D	N/A	EUT
E-2	Notebook computer	IBM	IBM	N/A	
E-3	Adapter	IBM	08K8202	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	120cm	
C-2	NO	NO	120cm	

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”.

2.5 MEASUREMENT INSTRUMENTS LIST

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2013.07.06	2014.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2013.06.07	2014.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2013.07.06	2014.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2013.06.07	2014.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2013.06.07	2014.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2013.07.06	2014.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2013.07.06	2014.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2013.12.22	2014.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2013.06.08	2014.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2013.07.06	2014.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2013.07.06	2014.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2013.06.06	2014.06.05	1 year
2	LISN	R&S	ENV216	101313	2013.08.24	2014.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2013.08.24	2014.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2013.06.07	2014.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2013.06.07	2014.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2013.06.08	2014.06.07	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.

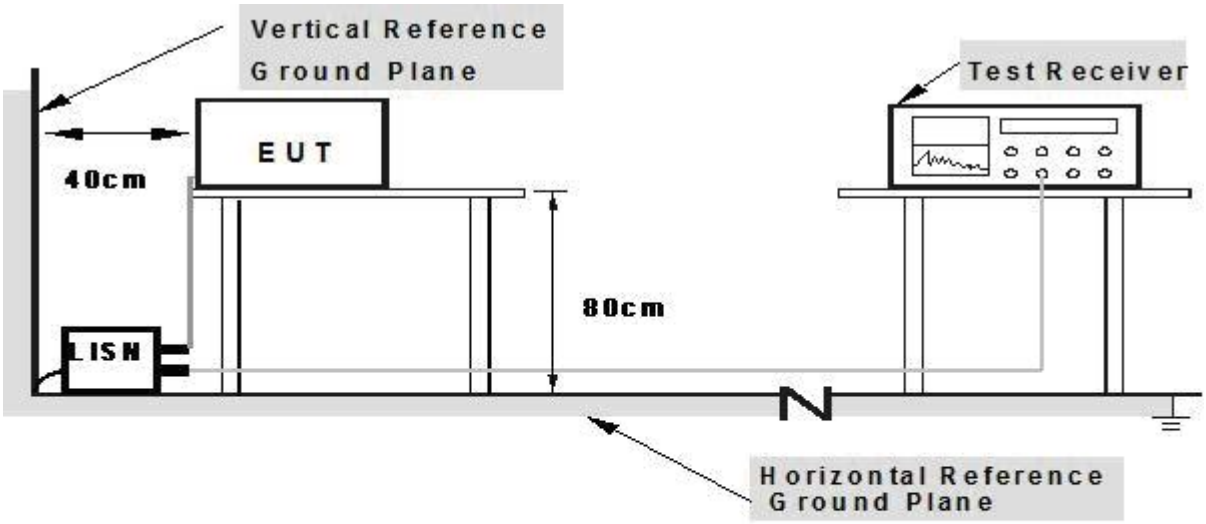
The following table is the setting of the receiver

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

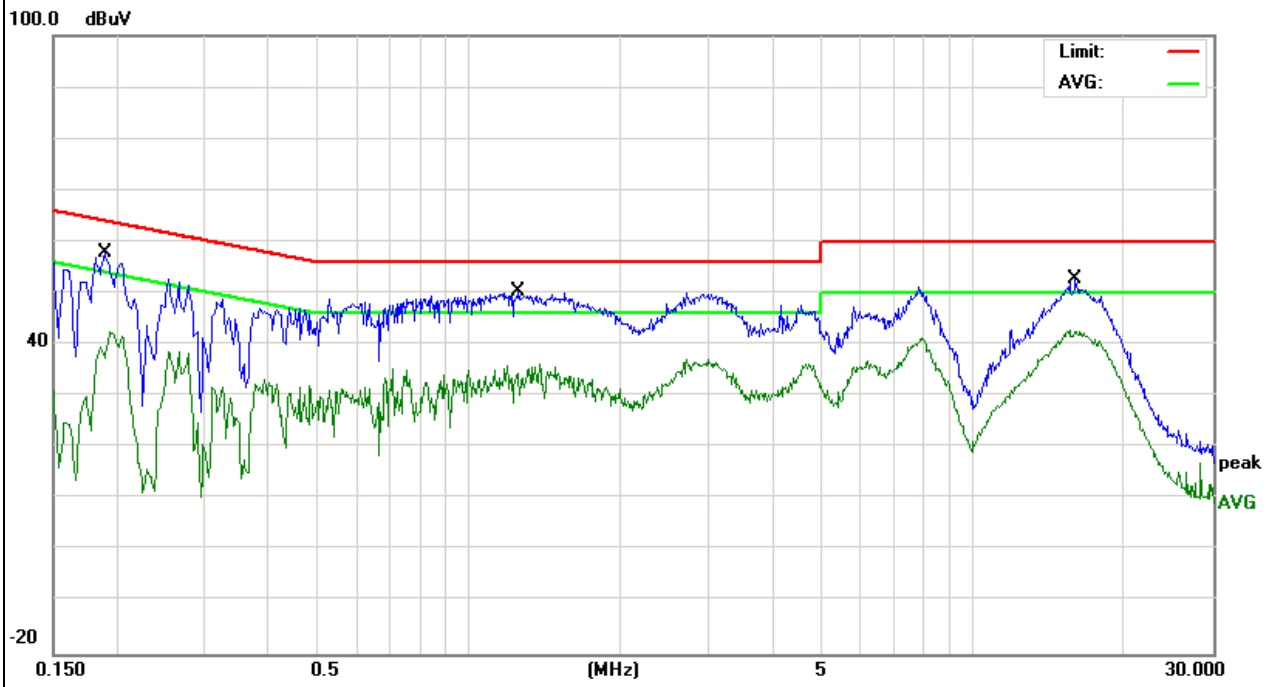
The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.5 TEST RESULTS

EUT：	2.4GHz Wireless receiver	Model Name. ：	SE11D
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date：	2014-02-27
Test Mode：	Running	Phase：	L
Test Voltage ：	AC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.1900	47.61	10.12	57.73	64.03	-6.30	QP
0.1900	32.42	10.12	42.54	54.03	-11.49	AVG
1.2579	40.05	10.18	50.23	56.00	-5.77	QP
1.2579	26.09	10.18	36.27	46.00	-9.73	AVG
16.0180	42.14	10.57	52.71	60.00	-7.29	QP
16.0180	32.18	10.57	42.75	50.00	-7.25	AVG

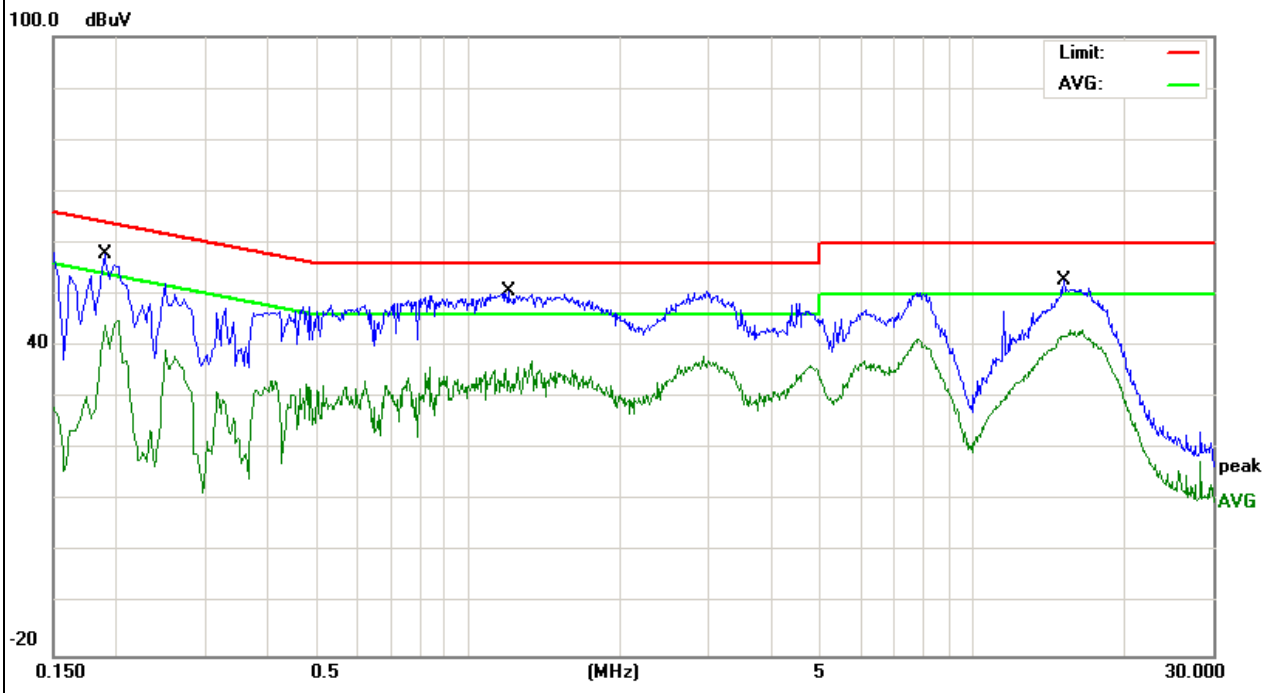
Remark:
Factor = Insertion Loss + Cable Loss.



EUT：	2.4GHz Wireless receiver	Model Name. ：	SE11D
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date：	2014-02-27
Test Mode：	Running	Phase：	N
Test Voltage ：	AC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.1900	47.68	10.12	57.80	64.03	-6.23	QP
0.1900	34.95	10.12	45.07	54.03	-8.96	AVG
1.2020	40.34	10.17	50.51	56.00	-5.49	QP
1.2020	27.13	10.17	37.30	46.00	-8.70	AVG
15.1500	42.33	10.52	52.85	60.00	-7.15	QP
15.1500	32.76	10.52	43.28	50.00	-6.72	AVG

Remark:
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

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 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.

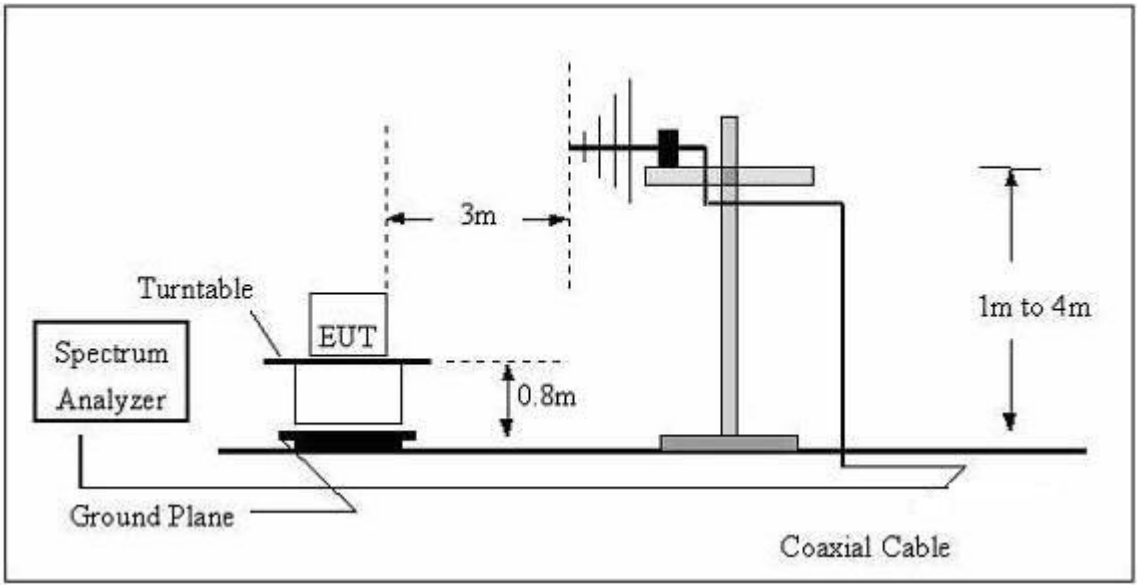
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.

e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.

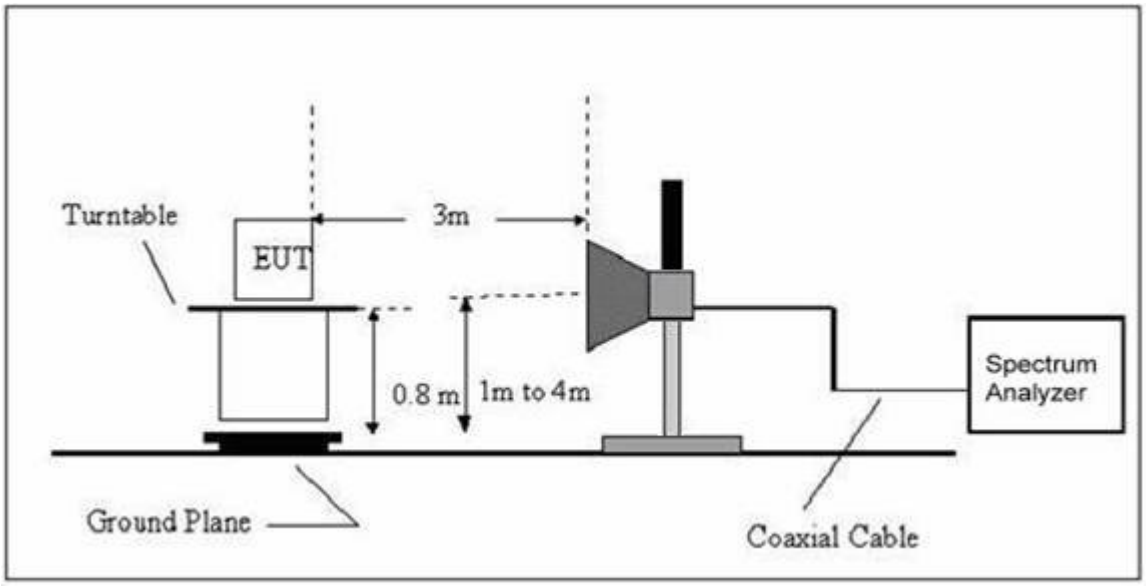
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

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



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



3.2.4 EUT OPERATING CONDITIONS

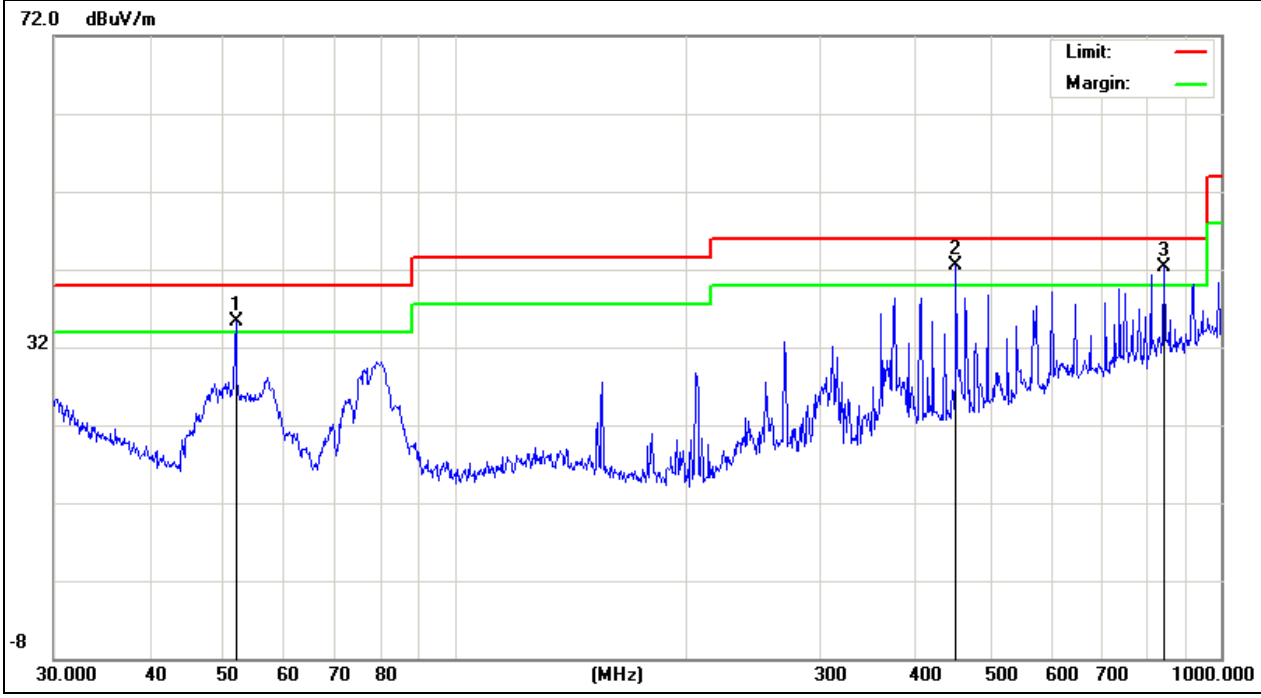
The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.5 TEST RESULTS

EUT：	2.4GHz Wireless receiver	Model Name ：	SE11D
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Date：	2014-02-27
Test Mode ：	Running	Polarization：	Horizontal
Test Power ：	AC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
51.8430	28.02	7.31	35.33	40.00	-4.67	QP
451.1349	24.27	18.30	42.57	46.00	-3.43	QP
842.1295	17.08	25.32	42.40	46.00	-3.60	QP

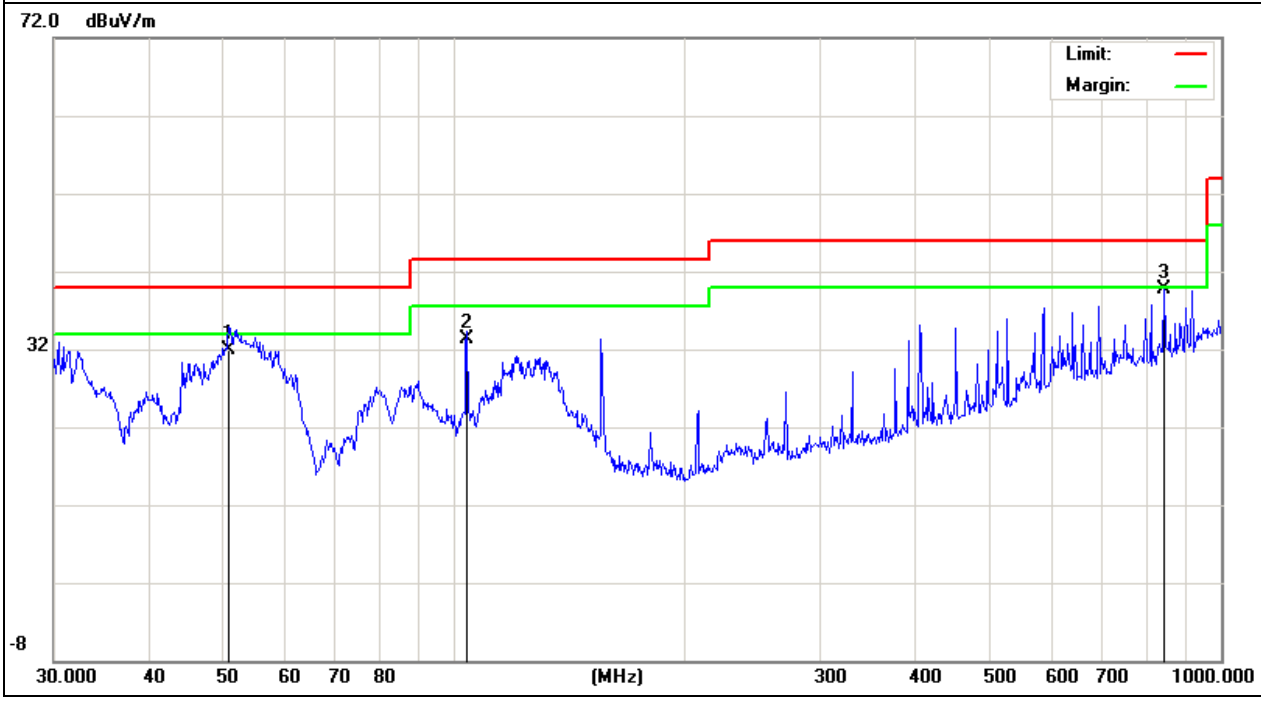
Remark:
Factor = Antenna Factor + Cable Loss.



EUT：	2.4GHz Wireless receiver	Model Name ：	SE11D
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Date：	2014-02-27
Test Mode ：	Running	Polarization：	Vertical
Test Power ：	AC 120V/60Hz		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
50.7637	24.16	7.82	31.98	40.00	-8.02	QP
103.8054	22.34	10.87	33.21	43.50	-10.29	QP
842.1295	14.36	25.32	39.68	46.00	-6.32	QP

Remark:
Factor = Antenna Factor + Cable Loss.



3.2.6 TEST RESULTS(Above 1GHz)

EUT：	2.4GHz Wireless receiver	Model Name ：	SE11D
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Date :	2014-02-27
Test Mode ：	Running	Polarization :	Horizontal
Test Power ：	DC 5V From Adapter AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1825.733	61.43	-14.79	46.64	74	-27.36	peak
2435.123	64.32	-12.94	51.38	74	-22.62	peak

Remark:
1. All readings are Peak and Average values.
2. Factor = Antenna Factor + Cable Loss - Amplifier.
3. N/A means All Data have pass Limit

EUT：	2.4GHz Wireless receiver	Model Name ：	SE11D
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Date :	2014-02-27
Test Mode ：	Running	Polarization :	Vertical
Test Power ：	AC 120V/60Hz		

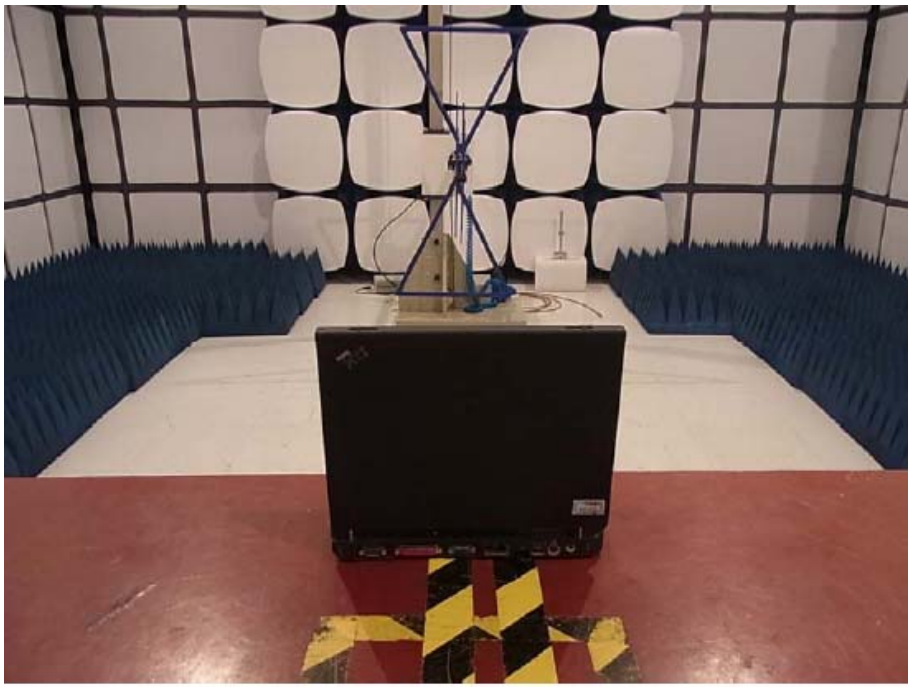
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1824.581	59.11	-14.79	44.32	74	-29.68	peak
3062.356	55.42	-11.54	43.88	74	-30.12	peak
4769.345	57.18	-4.10	53.08	74	-20.92	peak

Remark:

1. All readings are Peak and Average values.
2. Factor = Antenna Factor + Cable Loss - Amplifier.
3. N/A means All Data have pass Limit

4. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos