TEST REPORT

Applicant	Sonim Technologies, Inc.
Address:	1825 S Grant St , Suite 200, San Mateo, CA 94402 United States

Manufacturer or Supplier	Sonim Technologies, Inc.
Address	1825 S Grant St , Suite 200, San Mateo, CA 94402 United States
Product	GSM/WCDMA Mobile Phone
Brand Name	Sonim
Model	Sonim XP1520-A-R1(P35B008AA)
Additional Model & Model Difference	Sonim XP1520-A-R2(P35B008AA), Sonim XP1520-A-R3(P35B008AA) see section 3.1
Date of tests	Jan. 17 ~ Jan. 31, 2013

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

☒ **FCC Part 15, Subpart B, Class B**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tesed by Kent Liu Project Engineer / EMC Department	Approved by Sam Tung Manager/ EMC Department
	 Date: Feb. 1, 2013

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV130116N005	Original release	Feb. 1, 2013

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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart B			
Standard Section	**Test Item**	**Result**	**Remark**
15.107	Conducted Emission Test	PASS	Meet the requirement of limit. Minimum passing margin is --9.53dB at 0.63828MHz.
15.109	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -3.12dB at 486.02MHz
	Radiated Emission Test (Above 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -5.7dB at 5562.00MHz

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	+/-2.94 dB
Radiated emissions	30MHz ~ 1GHz	+/-3.64 dB
	1GHz~ 18GHz	+/-2.20 dB

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	GSM/WCDMA Mobile Phone
MODEL NO.	Sonim XP1520-A-R1 (P35B008AA)
POWER SUPPLY	5.0Vdc (adapter or host equipment) ; 3.7Vdc (battery)
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB Cable: Non-Shielded, Detachable,with 2 cores,1.1m Earphone Cable: Non-Shielded, Detachable,1.5m
THE HIGHEST OPERATING FREQUENCY	2.5GHz

NOTE:

1 The EUT was powered by the following adapter:

Adapter	
Brand:	SONIM
Model:	3202
Input:	AC 100-240V, 50/60Hz, 150mA
Output:	DC 5V, 700mA
DC line:	Non-Shielded, Detachable,with 2 cores, 1.1m

2 For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

3 Additional models Sonim XP1520-A-R2(P35B008AA), Sonim XP1520-A-R3(P35B008AA), are identical with the test model Sonim XP1520-A-R1(P35B008AA) except the generic device with updated application and SW customizations.

4 For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

2.2 DESCRIPTION OF TEST MODES

The EUT was tested under the following mode.And the final worst mode is marked in boldface and recorded in this report.

For conducted emission test:

Mode 1	GSM850 Idle +battery+USB cable+Adapter + BT Idle+earphone+GPS Rx
Mode 2	PCS1900 Idle+battery+USB cable+Adapter + BT Idle+earphone+Camera
Mode 3	**WCDMA 850 Idle + battery+USB cable +USB link+BT Idle+earphone+MPEG4**

For radiated emission test:

Mode 1	GSM850 Idle +battery+USB cable+Adapter + BT Idle+earphone+GPS Rx
Mode 2	PCS1900 Idle+battery+USB cable+Adapter + BT Idle+earphone+Camera
Mode 3	**WCDMA 850 Idle + battery+USB cable +USB link+BT Idle+earphone+MPEG4**

2.3 DESCRIPTION OF SUPPORT UNITS

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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Universal Radio Communication Tester	R&S	CMU200	123259	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1.	N/A

NOTE:
1. All power cords of the above support units are non-shielded (1.8m).
2. Items 1 acted as communication partners to transfer data.

3 EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

NOTE: 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
EMI Test Receiver Rohde&Schwarz	ESU 26	100005	May 15,12	May 14,13
Artificial Mains Network Rohde&Schwarz	ENV216	101173	May 15,12	May 14,13
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	May 15,12	May 14,13
Impedance Stabilization Network	TESEQ	ISN T800	Oct.10,12	Oct. 09,13
Test software	ADT_Cond_V7.3.7	N/A	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA and NIM/CHINA

2. The test was performed in Dongguan Shielded Room 553.

3.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

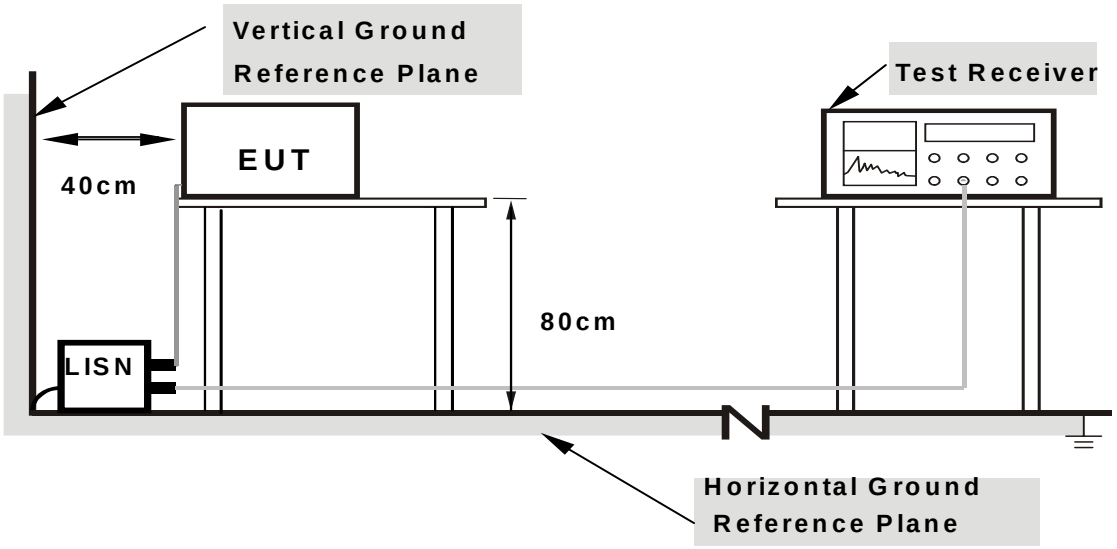
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.6 EUT OPERATING CONDITIONS

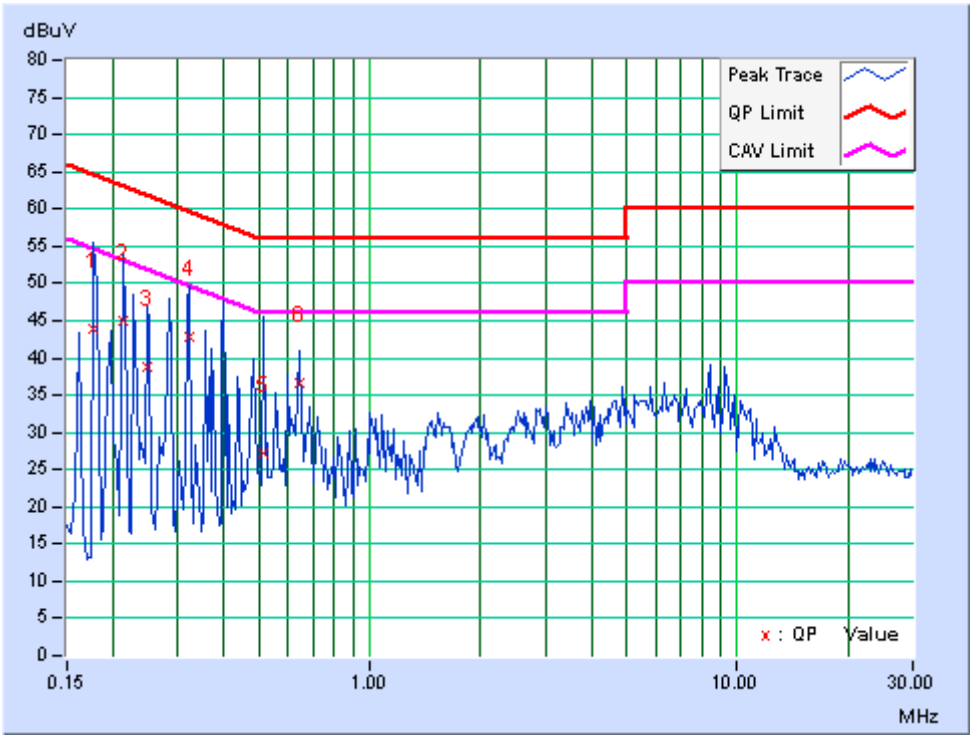
a. Turned on the power and connected of all equipment.
b. EUT was operated according to the use type which was described in the manufacturer's specifications or the user's manual.

3.1.7 TEST RESULTS

TEST MODE	Mode 3	**6DB BANDWIDTH**	9 kHz
TEST VOLTAGE	DC 5V From Adapter Input AC 120V/60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	23deg. C, 56% RH	**TESTED BY**	Bin

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	5.95	38.08	7.73	44.03	13.68	64.61	54.61	-20.58	-40.93
2	0.2125	9.1	35.85	5.26	44.95	14.36	63.11	53.11	-18.15	-38.74
3	0.24766	9.2	29.7	6.1	38.9	15.3	61.84	51.84	-22.93	-36.53
4	0.32188	9.41	33.36	18.43	42.77	27.84	59.66	49.66	-16.89	-21.82
5	0.51328	9.9	17.25	4.06	27.15	13.96	56	46	-28.85	-32.04
6	0.64219	9.9	26.77	22.19	36.67	32.09	56	46	-19.33	-13.91

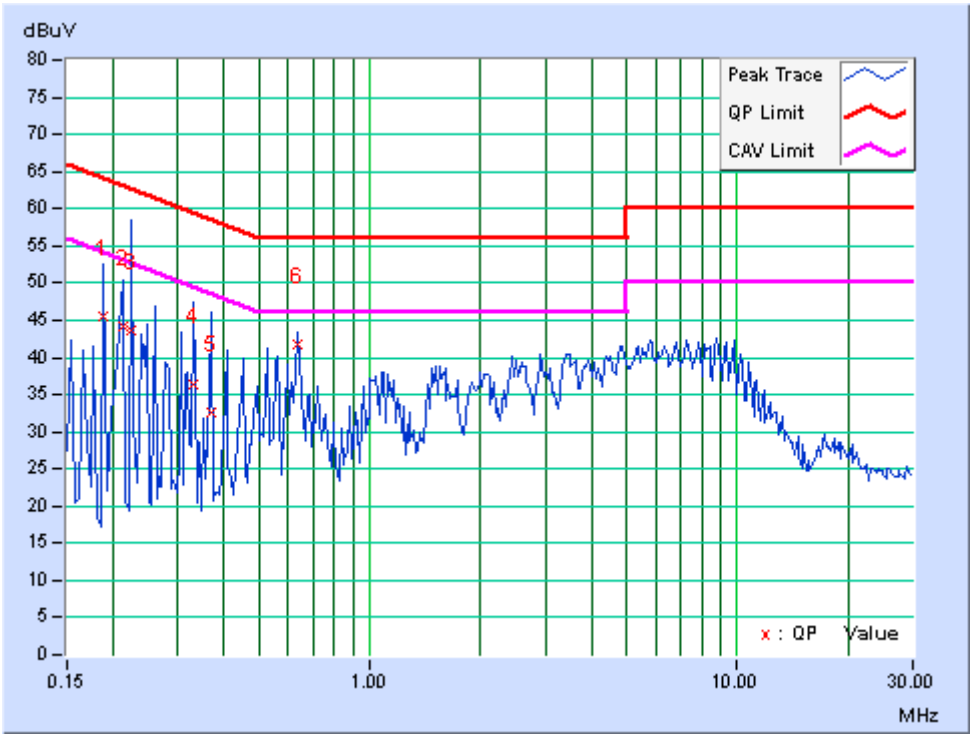
REMARKS: The emission levels of other frequencies were very low against the limit.



TEST MODE	Mode 3	**6DB BANDWIDTH**	9 kHz
TEST VOLTAGE	DC 5V From Adapter Input AC 120V/60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	23deg. C, 56% RH	**TESTED BY**	Bin

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18906	7.54	37.93	7.42	45.47	14.96	64.08	54.08	-18.61	-39.12
2	0.2125	9.08	35.06	5.45	44.14	14.53	63.11	53.11	-18.97	-38.58
3	0.22422	9.11	34.66	5.11	43.77	14.22	62.66	52.66	-18.89	-38.44
4	0.32969	9.43	27	1.93	36.43	11.36	59.46	49.46	-23.03	-38.1
5	0.37266	9.56	23.16	-2.79	32.72	6.77	58.44	48.44	-25.72	-41.67
6	**0.63828**	**9.95**	**31.7**	**26.52**	**41.65**	**36.47**	**56**	**46**	**-14.35**	**-9.53**

REMARKS: The emission levels of other frequencies were very low against the limit.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
30 – 88	90	39.1	100	40.0
88 – 216	150	43.5	150	43.5
216 – 960	210	46.4	200	46.0
960 – 1000	300	49.5	500	54.0

Based on FCC part 15 clause 15.109(g). As an alternative to the radiated emission limits to comply with the standards contained in CISPR 22.

FOR FREQUENCY BELOW 1000 MHz

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

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	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

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

Note: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.2.2 TEST INSTRUMENTS

For frequency below 1G

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	May 02,12	May 01,13
EMI Test Receiver	Rohde&Schwarz	ESVD	847398/003	May 15,12	May 14,13
Bilog Antenna	Teseq	CBL 6111D	27089	Jul. 16,12	Jul. 15,13
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8.8m	NSEMC006	Mar. 24,12	Mar. 23,13
Pre-Amplifier (20MHz-3GHz)	EMCI	EMC 330	980095	Nov. 02,12	Nov.01,13
Test Software	ADT	ADT_Radiated_V7.6.15	N/A	N/A	N/A

For frequency above 1G

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	EMCO	3117	00062558	Oct.18,12	Oct.17,13
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 04,13	Jan. 03,14
Spectrum Analyzer	Agilent	E4446A	MY46180622	May 02,12	May 01,13
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 31,12	May 30,13
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,12	Nov. 03,13
Test Software	ADT	ADT_Radiated_V7.6.15	N/A	N/A	N/A
Horn Antenna	EMCO	3117	00062558	Oct.18,12	Oct.17,13

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA and NIM/CHINA.
2. The test was performed in Chamber 10m.

3.2.3 TEST PROCEDURE

<Frequency Range below 1GHz>

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna 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 turn table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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

<Frequency Range above 1GHz>

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter 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.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

NOTE:

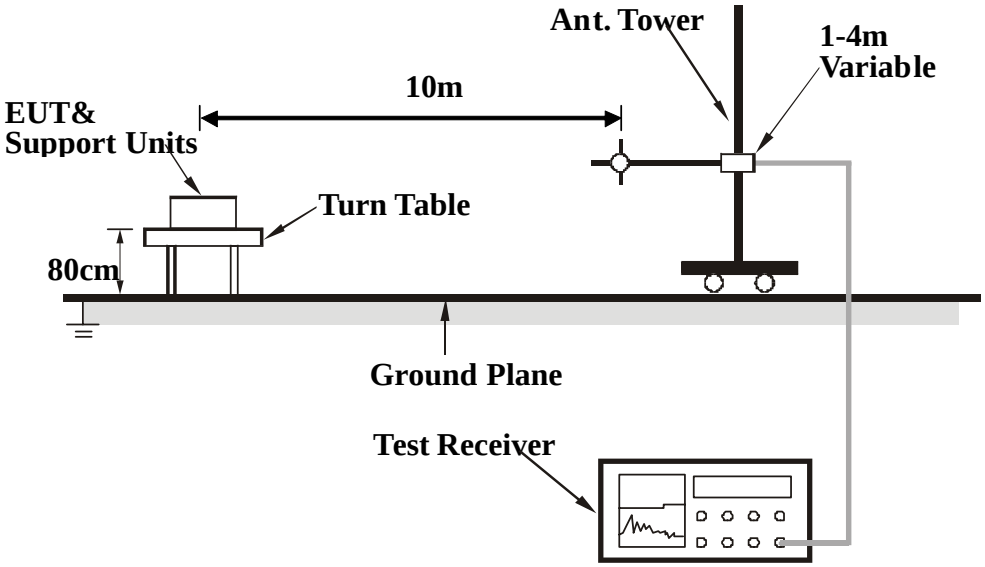
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.

3.2.4 DEVIATION FROM TEST STANDARD

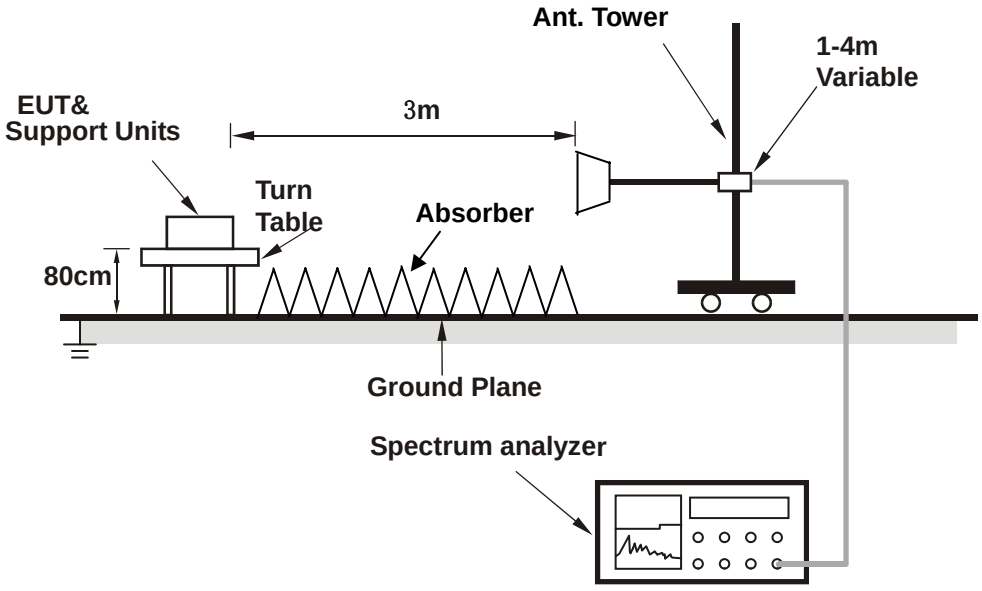
No deviation

3.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>

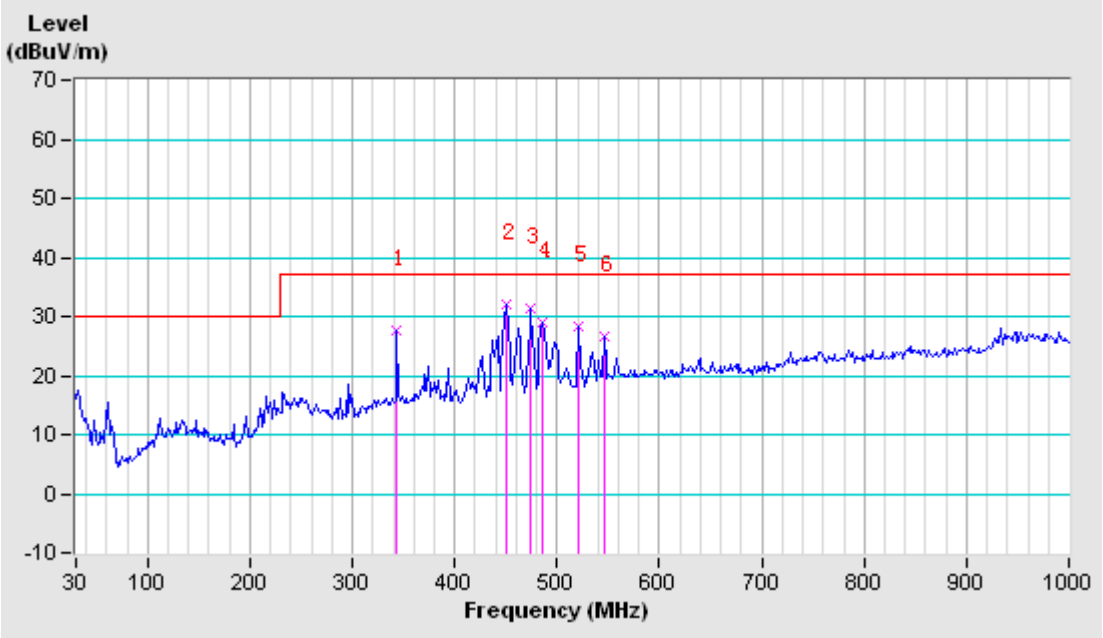


3.2.6 TEST RESULTS (BELOW 1GHz)

TEST MODE	Mode 3	**FREQUENCY RANGE**	30-1000MHz
TEST VOLTAGE	DC 5V From PC Input AC 120V/60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	24deg. C, 58% RH	**TESTED BY**: Venless	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	343.63	16.94	10.67	27.61	37	-9.39	359	247
2	450.33	19.85	12.28	32.13	37	-4.87	400	275
3	474.58	20.58	10.82	31.4	37	-5.6	400	296
4	485.9	20.87	8.16	29.03	37	-7.97	341	268
5	521.47	21.4	7.06	28.46	37	-8.54	379	225
6	545.72	22.73	3.82	26.55	37	-10.45	400	176

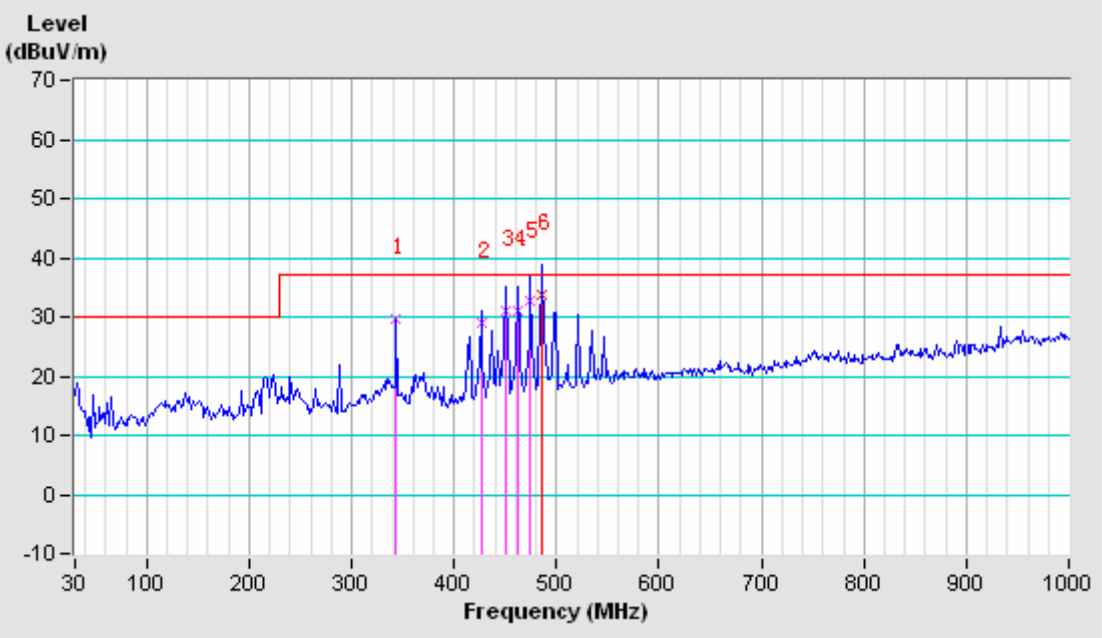
REMARKS: The emission levels of other frequencies were very low against the limit.



TEST MODE	Mode 3	**FREQUENCY RANGE**	30-1000MHz
TEST VOLTAGE	DC 5V From PC Input AC 120V/60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	24deg. C, 58% RH	**TESTED BY**: Venless	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	343.63	16.94	12.85	29.79	37	-7.21	183	0
2	426.08	19.45	9.56	29.01	37	-7.99	124	184
3	450.33	19.85	11.29	31.14	37	-5.86	100	94
4	461.65	20.23	10.9	31.13	37	-5.87	100	73
5	474.58	20.58	12	32.58	37	-4.42	124	42
6	**486.02**	**20.88**	**13**	**33.88**	**37**	**-3.12**	**112**	**360**

REMARKS: The emission levels of other frequencies were very low against the limit.



3.2.7 TEST RESULTS (ABOVE 1GHz)

TEST MODE	Mode 3	**FREQUENCY RANGE**	1000-13000MHz
TEST VOLTAGE	DC 5V From PC Input AC 120V/60Hz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	AV/Peak, 1MHz
ENVIRONMENTAL CONDITIONS	24deg. C, 58% RH	**TESTED BY**: Endy Xie	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	3663.00	52.8 PK	74.0	-21.2	1.00 H	118	9.10	43.74
2	3663.00	43.0 AV	54.0	-11.0	1.00 H	118	-0.74	43.74
3	4485.00	57.1 PK	74.0	-16.9	1.00 H	56	8.32	48.74
4	4485.00	46.3 AV	54.0	-7.7	1.00 H	56	-2.44	48.74
5	5562.00	58.8 PK	74.0	-15.2	1.00 H	209	8.86	49.90
6	**5562.00**	**48.3 AV**	**54.0**	**-5.7**	**1.00 H**	**209**	**-1.60**	**49.90**
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	3890.00	54.5 PK	74.0	-19.5	1.00 V	150	9.21	45.25
2	3890.00	44.1 AV	54.0	-9.9	1.00 V	150	-1.15	45.25
3	4570.00	59.0 PK	74.0	-15.1	1.00 V	313	10.13	48.82
4	4570.00	47.5 AV	54.0	-6.5	1.00 V	313	-1.32	48.82
5	5363.00	58.9 PK	74.0	-15.2	1.00 V	90	9.13	49.72
6	5363.00	47.8 AV	54.0	-6.2	1.00 V	90	-1.92	49.72

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

See test setup photo document.

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

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