FCC RADIO TEST REPORT
FCC ID: 2AAPVX-988

Product： Wireless Barcode Scanner

Trade Name： SPYPOINT

Model Name： X-988

Serial Model： X-600, X-620, X-610

Report No.： BZT130705121RF

Prepared for

Foshan Xincode Electronics Technology Co., Ltd.

3rd Floor, 4th Block, Yuxi Industrial Zone, Shi Hu Zhou, Sanshui District, Foshan, Guangdong, China

Prepared by

BZT Testing Technology Co., Ltd

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

TEST RESULT CERTIFICATION

Applicant's name ..... :	Foshan Xincode Electronics Technology Co., Ltd.
Address ..... :	3rd Floor, 4th Block, Yuxi Industrial Zone, Shi Hu Zhou, Sanshui District, Foshan, Guangdong, China
Manufacture's Name ..... :	Foshan Xincode Electronics Technology Co., Ltd.
Address ..... :	3rd Floor, 4th Block, Yuxi Industrial Zone, Shi Hu Zhou, Sanshui District, Foshan, Guangdong, China

Product description

Product name..... :	Wireless Barcode Scanner
Model and/or type reference :	X-988
Serial Model：	X-600, X-620 X-610
Rating(s)..... :	DC 3.7V from battery or DC 4.2V from adapter with AC 120V/60Hz
Standards ..... :	FCC Part15.249
Test procedure	ANSI C63.4-2003

This device described above has been tested by BZT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. 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..... :	05 July. 2013 ~26 July. 2013
Date of Issue..... :	27 July. 2013
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. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.249)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.249	Radiated Spurious Emission	Pass	
15.205	Band Edge Emission	Pass	
15.249	Occupied Bandwidth	Pass	

NOTE:

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

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 Registration 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** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>Wireless Barcode Scanner</td></tr>
<tr><td>Trade Name</td><td>SPYPOINT</td></tr>
<tr><td>Model Name</td><td>X-988</td></tr>
<tr><td>Serial Model</td><td>X-600, X-620 X-610</td></tr>
<tr><td>Model Difference</td><td>All the model are the same circuit and RF module, except the model name, test mode is X-988.</td></tr>
<tr><td>Product Description</td><td>The EUT is a Wireless Barcode Scanner

<table><tr><td>Operation Frequency:</td><td>2402~2478MHz</td></tr><tr><td>Modulation Type:</td><td>GFSK</td></tr><tr><td>Antenna Designation:</td><td>PCB Antenna</td></tr><tr><td>Antenna Gain(Peak)</td><td>1.0 dBi</td></tr><tr><td>EIRP</td><td>88.39 dbuv/m@3m</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>Channel List</td><td>Please refer to the Note 2.</td></tr>
<tr><td>Adapter</td><td>Output: DC 4.2V</td></tr>
<tr><td>Battery</td><td>DC 3.7V</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

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2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452		
24	2426	51	2453		
25	2427	52	2454		
26	2428	53	2455		

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	PCB Antenna	NA	1.0	Antenna

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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	CH00
Mode 2	CH38
Mode 3	CH76
Mode 4	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 4	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH38
Mode 3	CH76

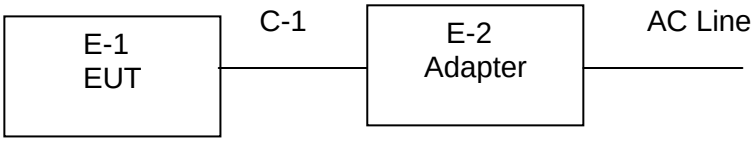
Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

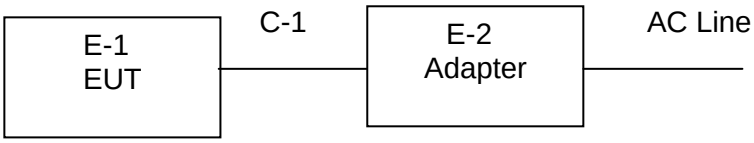
(2) The EUT use new battery.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Spurious Emission Test



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2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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	Wireless Barcode Scanner	N/A	X-988	N/A	EUT
E-2	Adapter	SOLARENA	JD-T05	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	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.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

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	Jul. 06. 2014	1 year
2	Test Receiver	R&S	ESPI	101318	2013.07.06	Jul. 06. 2014	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2013.07.06	Jul. 06. 2014	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2013.07.06	Jul. 06. 2014	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2013.07.06	Jul. 06. 2014	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2013.07.06	Jul. 06. 2014	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2013.07.06	Jul. 06. 2014	1 year
8	Amplifier	EM	EM-30180	060538	2013.07.06	Jul. 06. 2014	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2013.07.06	Jul. 06. 2014	1 year
10	Power Meter	R&S	NRVS	100696	2013.07.06	Jul. 06. 2014	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2013.07.06	Jul. 06. 2014	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	2013.07.06	Jul. 06. 2014	1 year
2	LISN	R&S	ENV216	101313	2013.07.06	Jul. 06. 2014	1 year
3	LISN	EMCO	3816/2	00042990	2013.07.06	Jul. 06. 2014	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2013.07.06	Jul. 06. 2014	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2013.07.06	Jul. 06. 2014	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2013.07.06	Jul. 06. 2014	1 year

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3. ANTENNA REQUIREMENT

3.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

3.2 EUT ANTENNA

The antennas used in this product are detachable antenna, using a reverse SMA connector (Provided by non-manufacturers will use the product can not work), The maximum Gain of the antenna is 2dBi, fulfill the requirement of this section.

3.3 CONDUCTED EMISSION MEASUREMENT

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

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

0.15 -0.5			66 - 56 *	56 - 46 *	LP002.
0.50 -5.0			56.00	46.00	LP002.
5.0 -30.0			60.00	50.00	LP002.

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

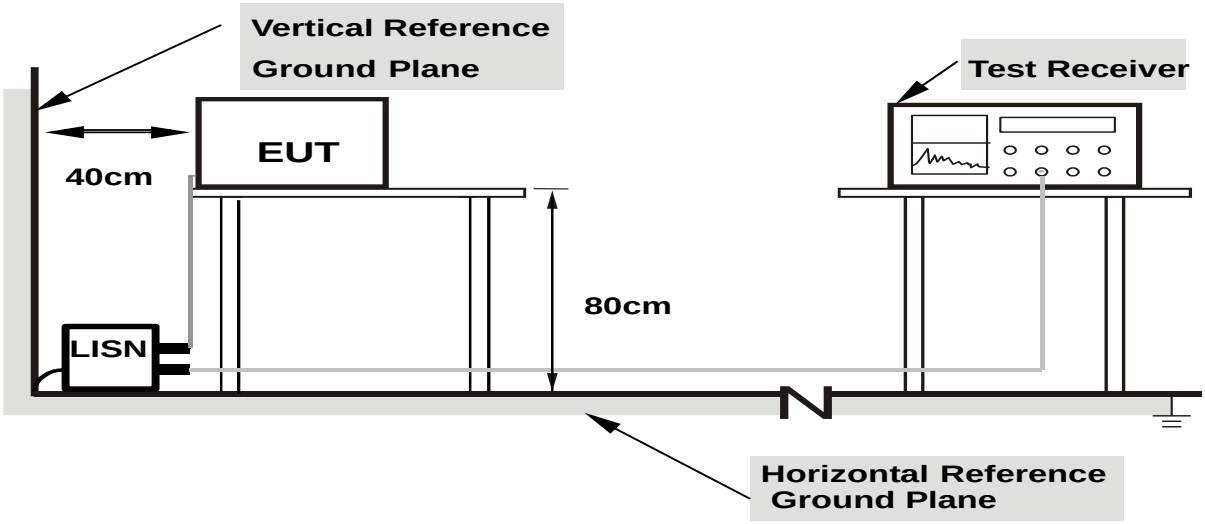
3.3.2 TEST PROCEDURE

a. 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.
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.

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP



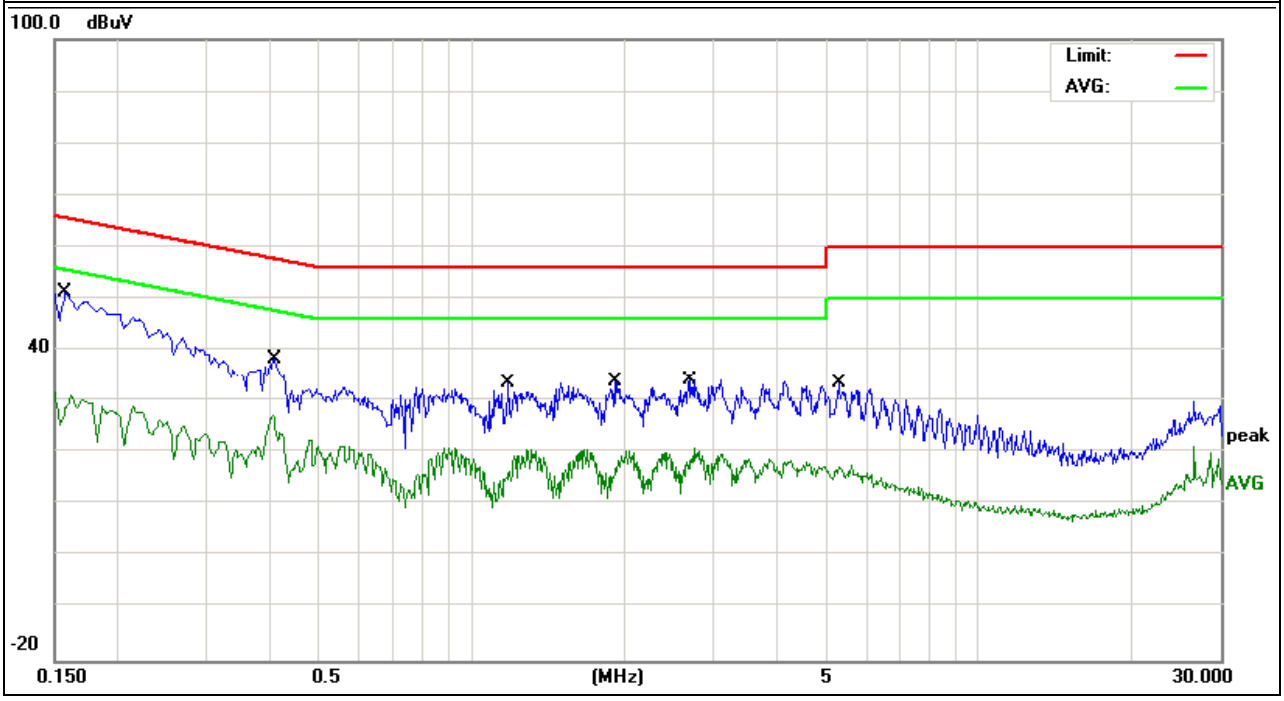
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.2.5 TEST RESULT

EUT：	Wireless Barcode Scanner	Model Name. ：	X-988
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	Mode 4	Phase：	L

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
0.158	41.32	9.88	51.2	65.56	-14.36	QP
0.158	19.39	9.88	29.27	55.56	-26.29	AVG
0.406	28.06	10.2	38.26	57.73	-19.47	QP
0.406	16.99	10.2	27.19	47.73	-20.54	AVG
1.182	23.35	10.17	33.52	56	-22.48	QP
1.182	9.26	10.17	19.43	46	-26.57	AVG
1.918	23.54	10.24	33.78	56	-22.22	QP
1.918	9.1	10.24	19.34	46	-26.66	AVG
2.694	23.98	10.27	34.25	56	-21.75	QP
2.694	10.55	10.27	20.82	46	-25.18	AVG
5.2979	23.29	10.34	33.63	60	-26.37	QP
5.2979	7.1	10.34	17.44	50	-32.56	AVG

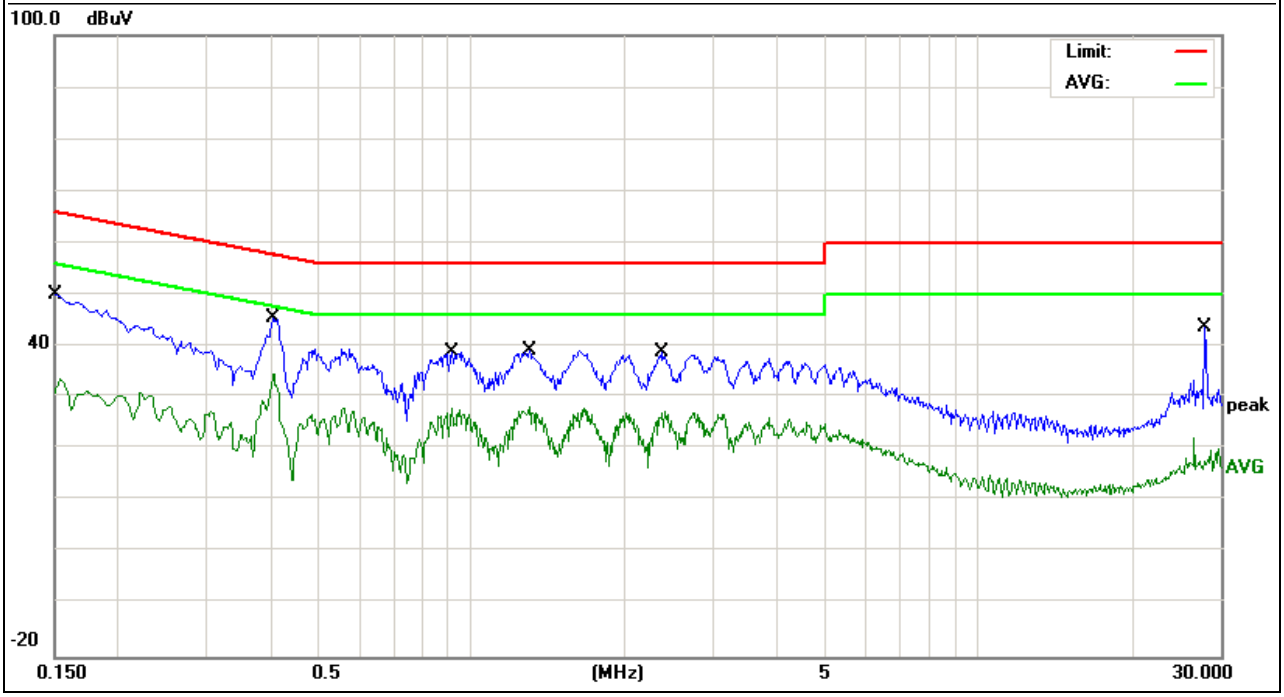
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Wireless Barcode Scanner	Model Name. ：	X-988
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	Mode 4	Phase：	N

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
0.15	40.16	9.82	49.98	65.99	-16.01	QP
0.15	23.69	9.82	33.51	55.99	-22.48	AVG
0.406	35.29	10.2	45.49	57.73	-12.24	QP
0.406	24.22	10.2	34.42	47.73	-13.31	AVG
0.918	28.91	10.18	39.09	56	-16.91	QP
0.918	17.57	10.18	27.75	46	-18.25	AVG
1.298	29.2	10.18	39.38	56	-16.62	QP
1.298	17.98	10.18	28.16	46	-17.84	AVG
2.374	28.63	10.26	38.89	56	-17.11	QP
2.374	16.91	10.26	27.17	46	-18.83	AVG
27.8939	33.22	10.59	43.81	60	-16.19	QP
27.8939	9.53	10.59	20.12	50	-29.88	AVG

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



3.4 RADIATED EMISSION MEASUREMENT

3.4.1 Radiated Emission Limits (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note:

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

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

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.249)

Frequency of Emission (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
2400 - 2483.5	50	500

Notes:

(1) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

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3.4.2 TEST PROCEDURE

a. The measuring distance of at 3 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 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.
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.

Note:

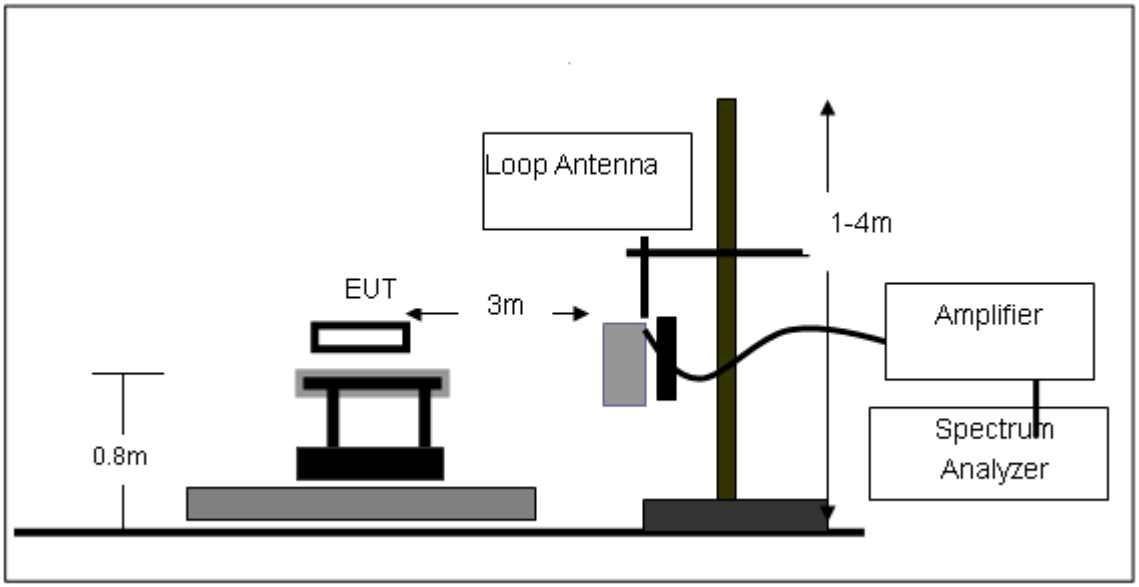
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.4.3 DEVIATION FROM TEST STANDARD

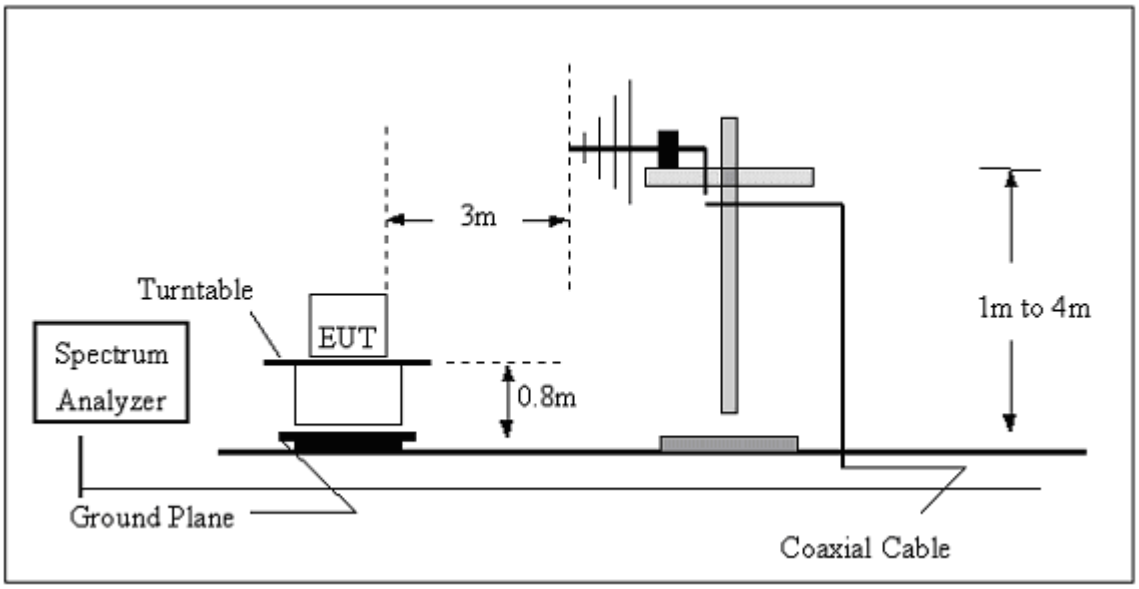
No deviation

3.4.4 TEST SETUP

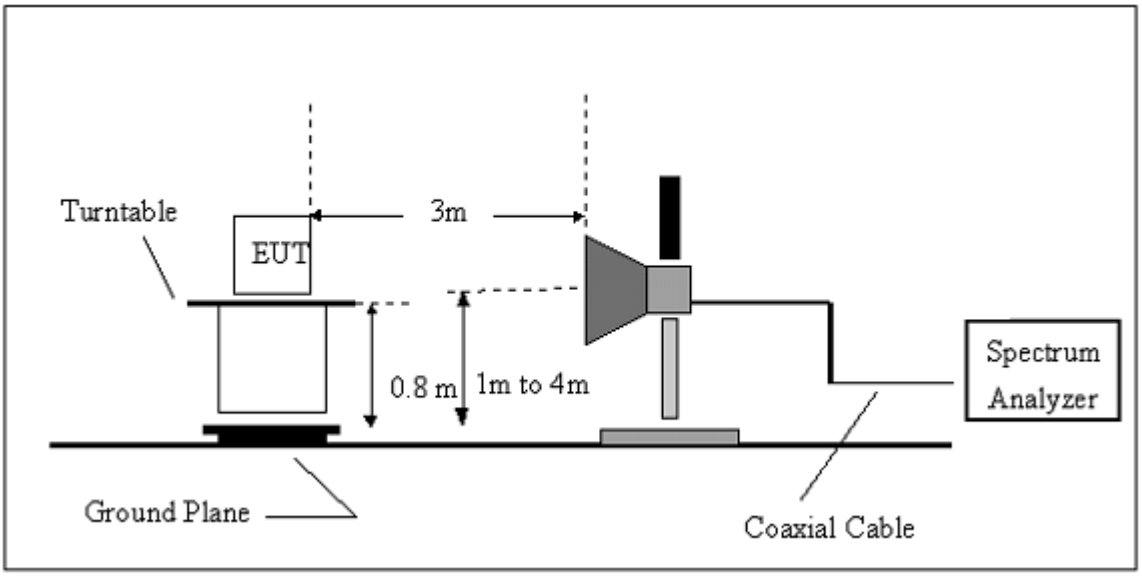
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.4.5 TEST RESULTS (BLOW 30MHz)

EUT：	Wireless Barcode Scanner	Model Name. ：	X-988
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX	Polarization :	--

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

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.

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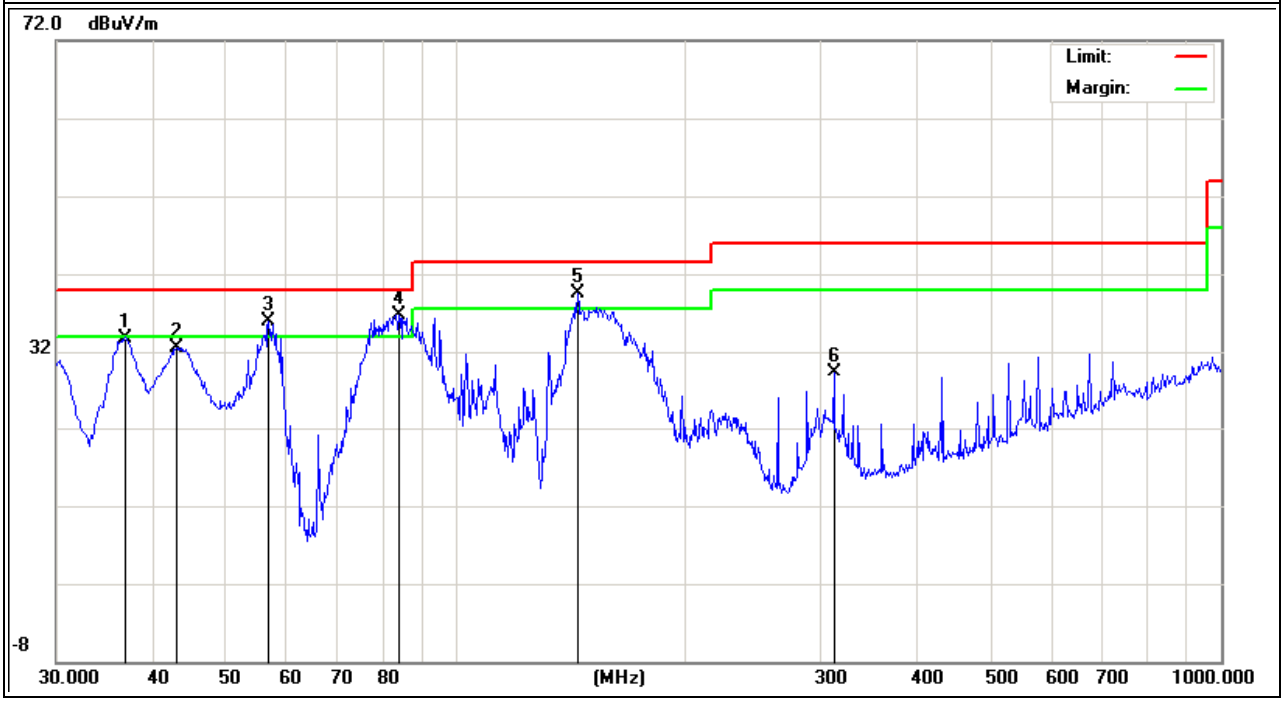
3.4.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX	Polarization：	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
36.8952	18.87	14.93	33.8	40	-6.2	QP
43.0504	20.81	11.66	32.47	40	-7.53	QP
56.7916	30.05	5.83	35.88	40	-4.12	QP
84.1098	28.17	8.53	36.7	40	-3.3	QP
143.8291	27.4	12.06	39.46	43.5	-4.04	QP
312.1792	14.12	15.13	29.25	46	-16.75	QP

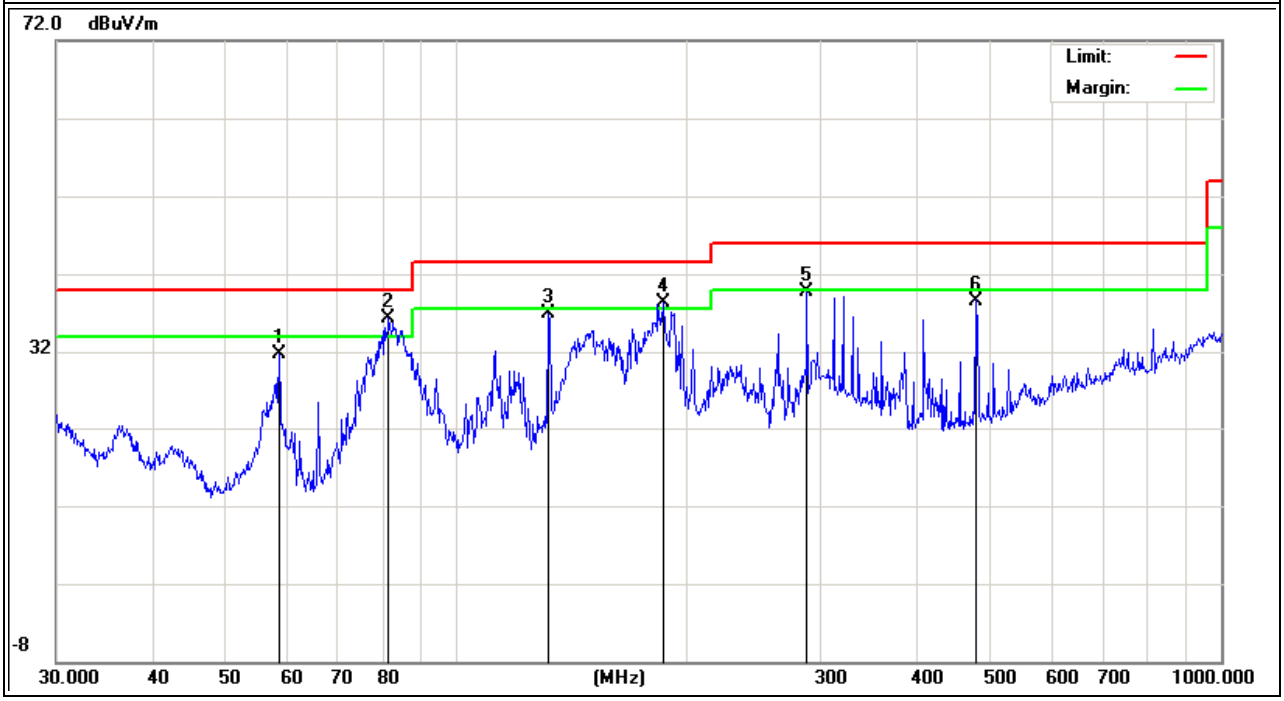
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX	Polarization：	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
58.6126	26.17	5.5	31.67	40	-8.33	QP
81.4967	28.3	8.02	36.32	40	-3.68	QP
131.7573	24.62	12.22	36.84	43.5	-6.66	QP
187.0954	28.82	9.41	38.23	43.5	-5.27	QP
287.9904	25.45	14.3	39.75	46	-6.25	QP
478.8455	18.62	19.98	38.6	46	-7.4	QP

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



3.4.7 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2402MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2402	98.55	-12.99	85.56	114.0 0	-28.44	peak
2402	92.02	-12.99	79.03	94	-14.97	AVG
4804	57.61	-3.57	54.04	74	-19.96	peak
4804	46.19	-3.57	42.62	54	-11.38	AVG
9608	49.69	1.78	51.47	74	-22.53	peak
9608	39.43	1.78	41.21	54	-12.79	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission detected above 18GHz.

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2402MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2402	97.77	-12.99	84.78	114.0 0	-29.22	peak
2402	90.68	-12.99	77.69	94	-16.31	AVG
4804	57.34	-3.59	53.75	74	-20.25	peak
4804	45.66	-3.59	42.07	54	-11.93	AVG
7206	53.28	-0.96	52.32	74	-21.68	peak
7206	42.10	-0.96	41.14	54	-12.86	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission detected above 18GHz.

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EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2440 MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2440	101.50	-12.93	88.57	114.0 0	-25.43	peak
2440	93.29	-12.93	80.36	94	-13.64	AVG
4880	54.97	-3.55	51.42	74	-22.58	peak
4880	44.61	-3.55	41.06	54	-12.94	AVG
7320	52.96	-0.72	52.24	74	-21.76	peak
7320	41.83	-0.72	41.11	54	-12.89	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission detected above 18GHz.

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2440 MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2440	97.39	-12.93	84.46	114.0 0	-29.54	peak
2440	94.25	-12.93	81.32	94	-12.68	AVG
4880	54.83	-3.55	51.28	74	-22.72	peak
4880	44.40	-3.55	40.85	54	-13.15	AVG
7320	54.03	-0.72	53.31	74	-20.69	peak
7320	42.25	-0.72	41.53	54	-12.47	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission detected above 18GHz.

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EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2478 MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2478	94.09	-12.92	81.17	114.0 0	-32.83	peak
2478	93.35	-12.92	80.43	94	-13.57	AVG
4956	54.46	-3.55	50.91	74	-23.09	peak
4956	45.06	-3.55	41.51	54	-12.49	AVG
7434	53.85	-0.68	53.17	74	-20.83	peak
7434	40.90	-0.68	40.22	54	-13.78	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission detected above 18GHz.

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2478 MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2478	98.66	-12.92	85.74	114.0 0	-28.26	peak
2478	94.46	-12.92	81.54	94	-12.46	AVG
4956	57.27	-3.8	53.47	74	-20.53	peak
4956	45.99	-3.8	42.19	54	-11.81	AVG
7434	54.71	-0.68	54.03	74	-19.97	peak
7434	42.20	-0.68	41.52	54	-12.48	AVG

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
No emission detected above 18GHz.

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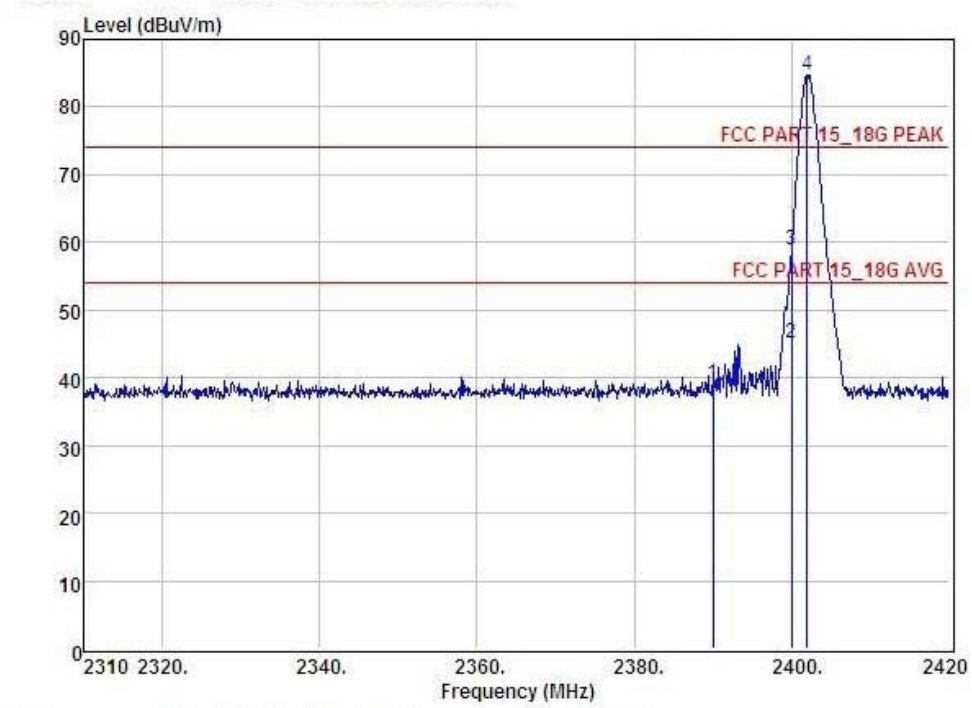
3.4.8 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2402MHz	Polarization :	Vertical

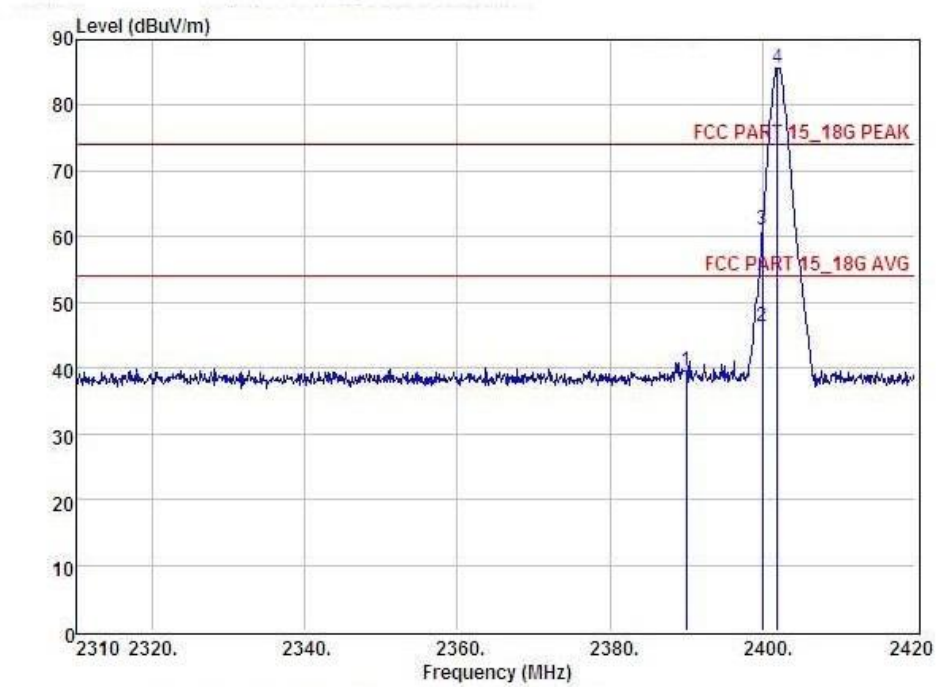


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	42.64	27.62	34.97	3.92	39.21	74.00	-34.79	Peak
2	2400.00	48.54	27.62	34.97	3.94	45.13	54.00	-8.87	Average
3	2400.00	62.33	27.62	34.97	3.94	58.92	74.00	-15.08	Peak
4	2402.00	68.19	27.62	34.97	3.94	64.78			Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2402MHz	Polarization :	Horizontal

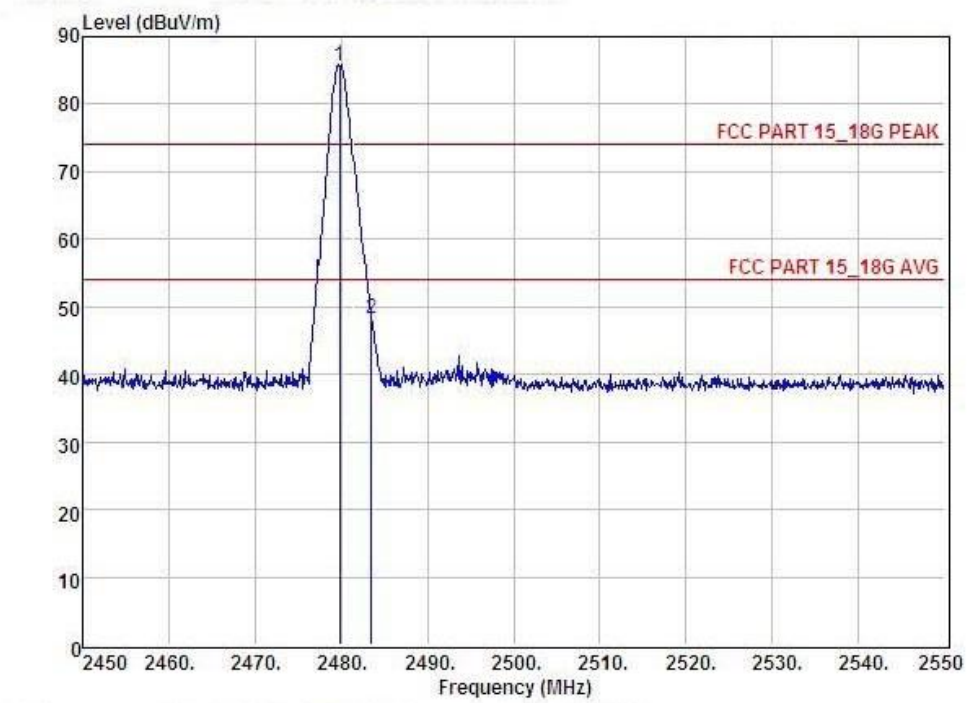


Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2390.00	42.92	27.62	34.97	3.92	39.49	74.00	-34.51	Peak
2	2400.00	49.73	27.62	34.97	3.94	46.32	54.00	-7.68	Average
3	2400.00	64.34	27.62	34.97	3.94	60.93	74.00	-13.07	Peak
4	2402.00	88.97	27.62	34.97	3.94	85.56			Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2478MHz	Polarization :	Vertical

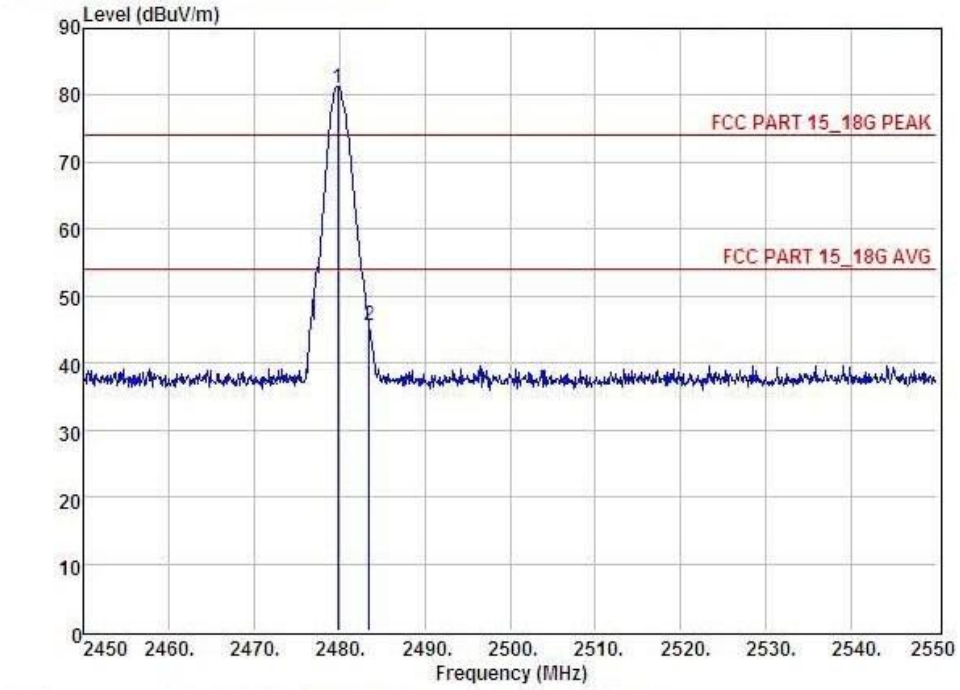


Condition : FCC PART 15_18G PEAK 3m POL: VERTICAL

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2478.00	89.12	27.59	34.97	4.00	85.74			Peak
2	2483.50	51.76	27.59	34.97	4.00	48.38	74.00	-25.62	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX /2478MHz	Polarization :	Horizontal



Condition : FCC PART 15_18G PEAK 3m POL: HORIZONTAL

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2478.00	84.55	27.59	34.97	4.00	81.17			Peak
2	2483.50	49.05	27.59	34.97	4.00	45.67	74.00	-28.33	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

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4. BANDWIDTH TEST

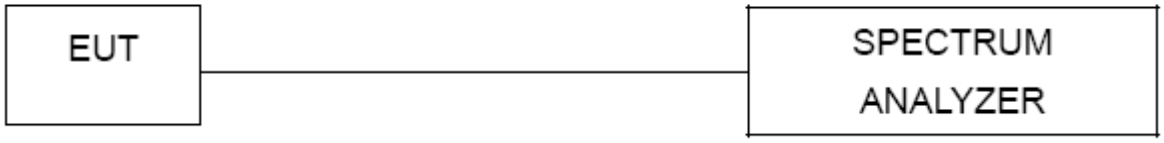
4.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW≧RBW, Sweep time = Auto.

4.2 DEVIATION FROM STANDARD

No deviation.

4.3 TEST SETUP

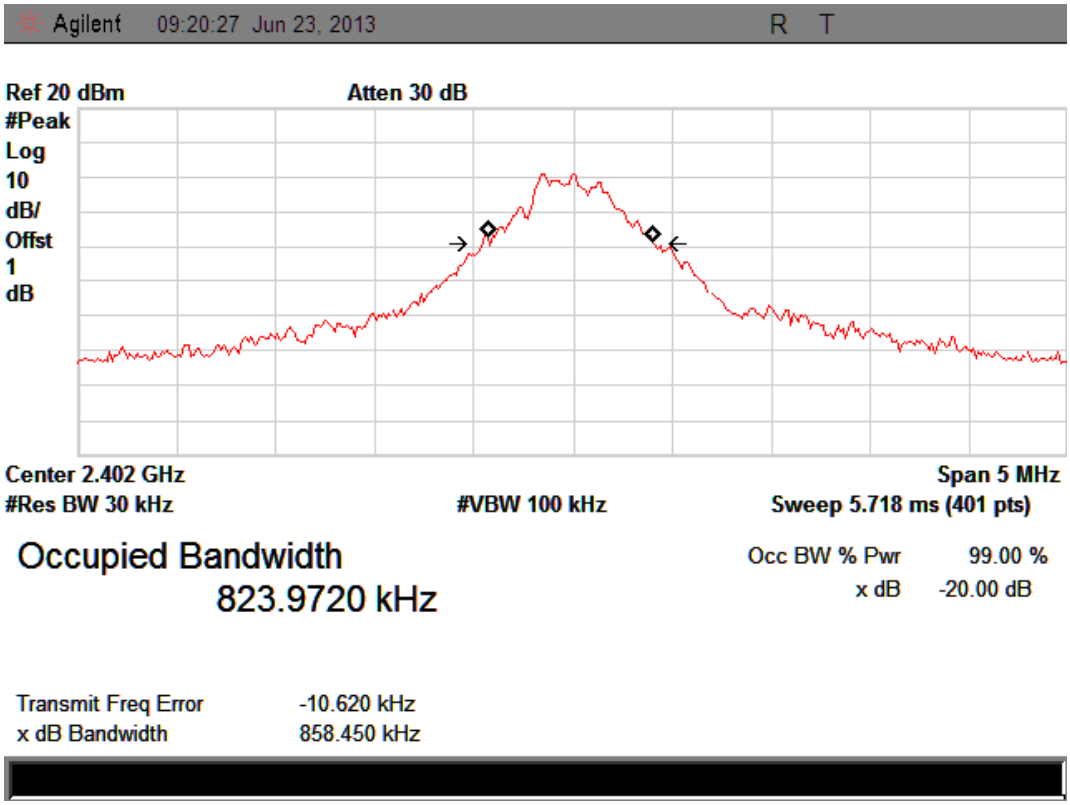


4.4 TEST RESULTS

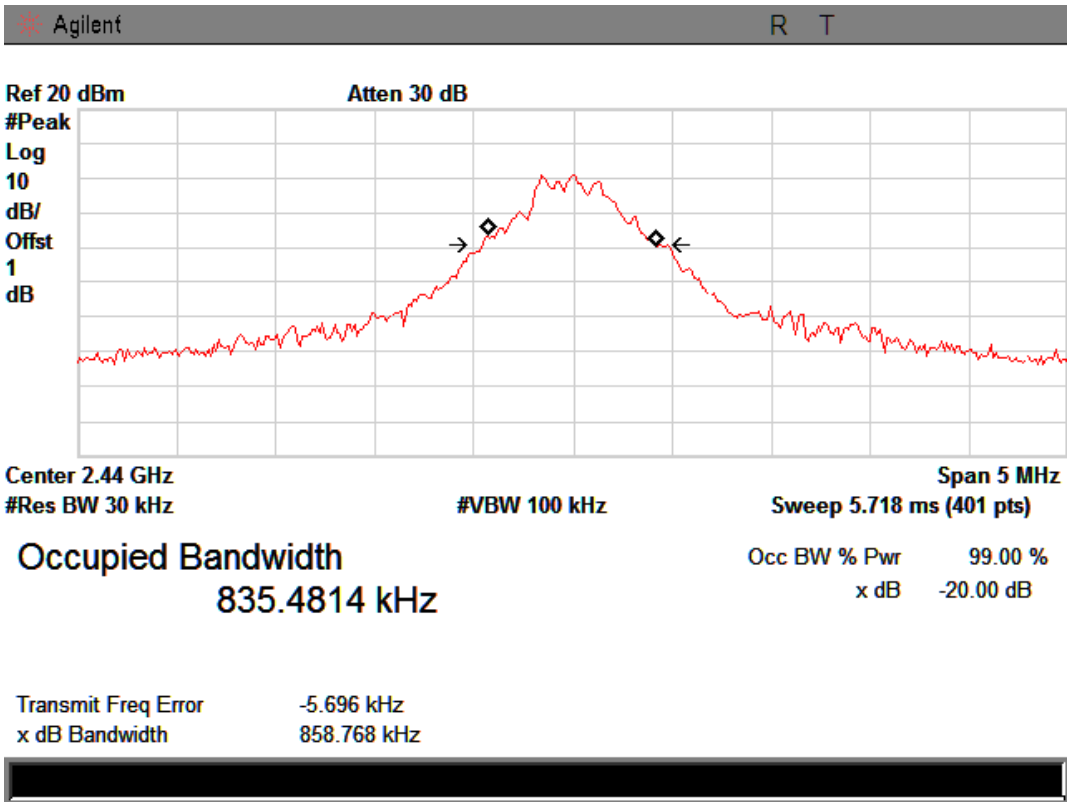
EUT：	Wireless Barcode Scanner	Model Name ：	X-988
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 4.2V from adapter with AC 120V/60Hz
Test Mode ：	TX CH 00/38/76		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)
CH00	2402	0.858
CH38	2440	0.859
CH76	2478	0.931

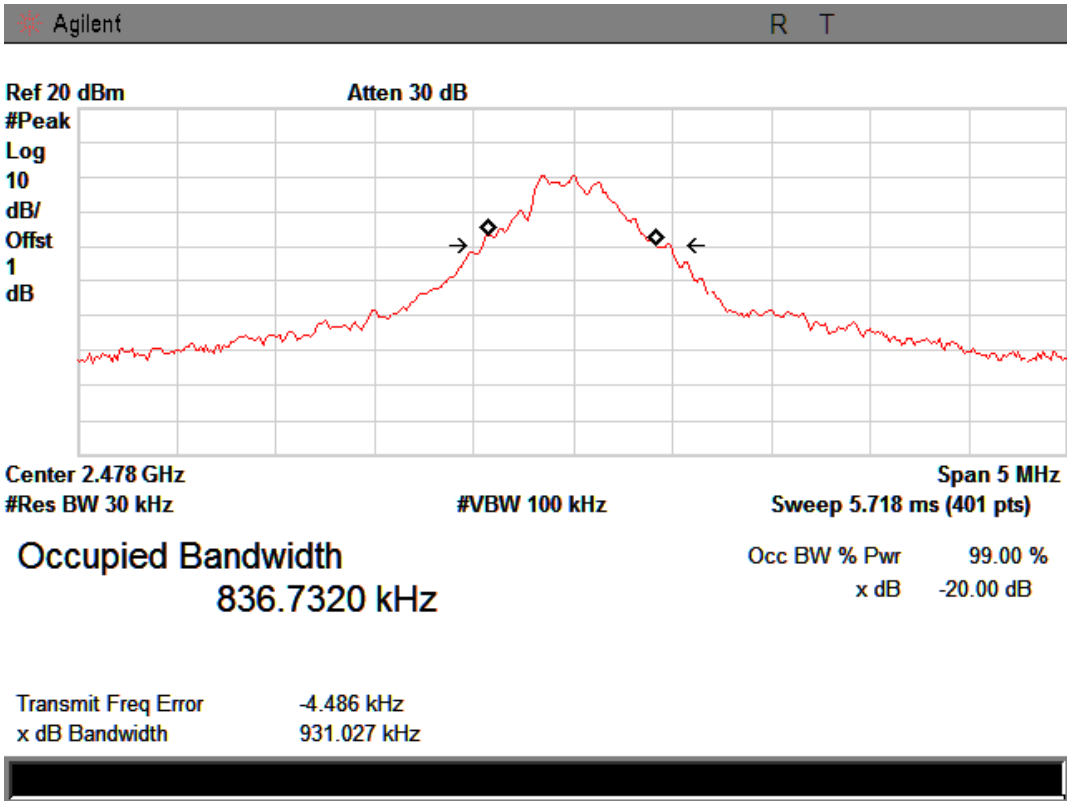
The Lowest Channel:2402MHz



The Middle Channel: 2440MHz

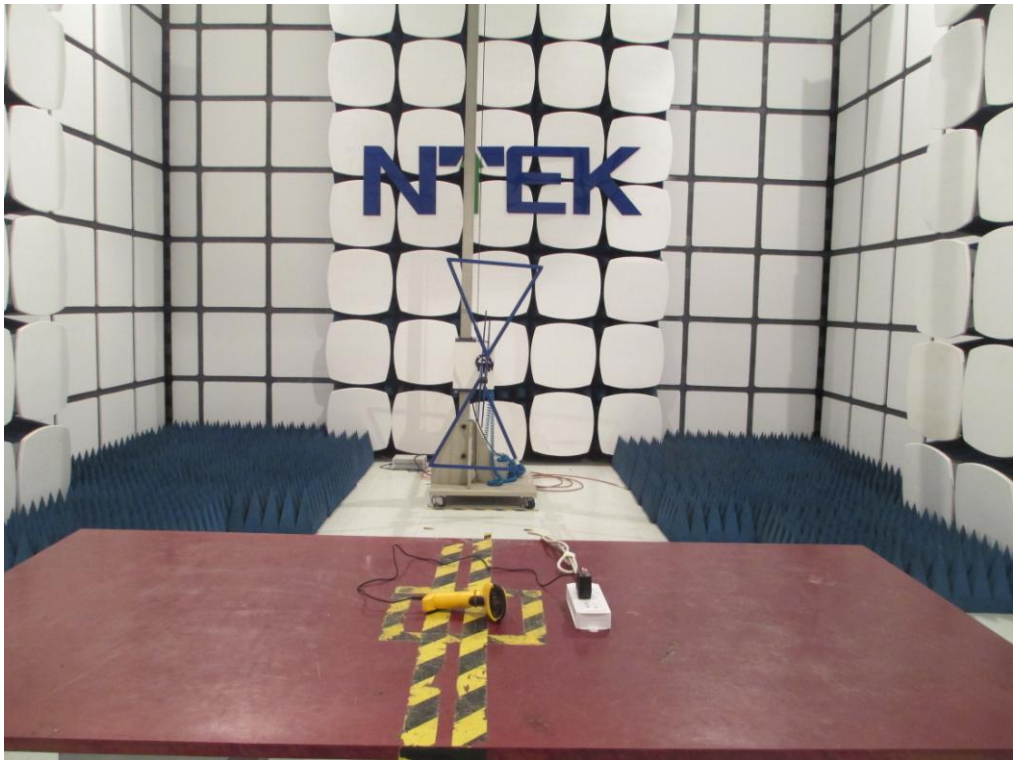


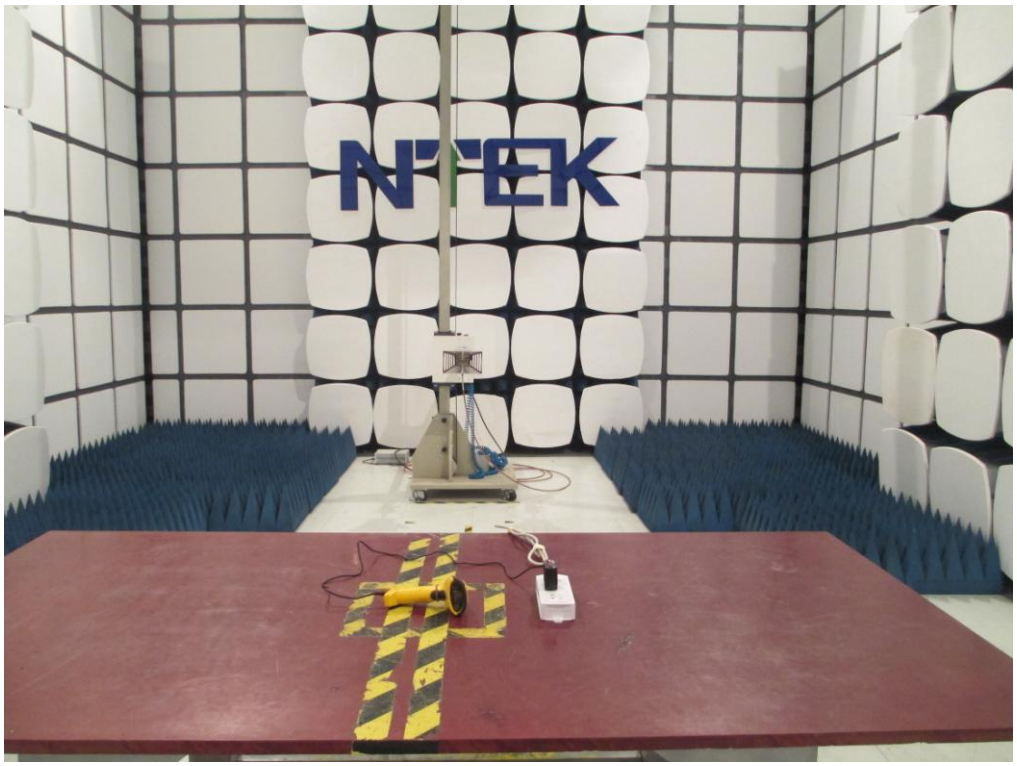
The High Channel:2478MHz



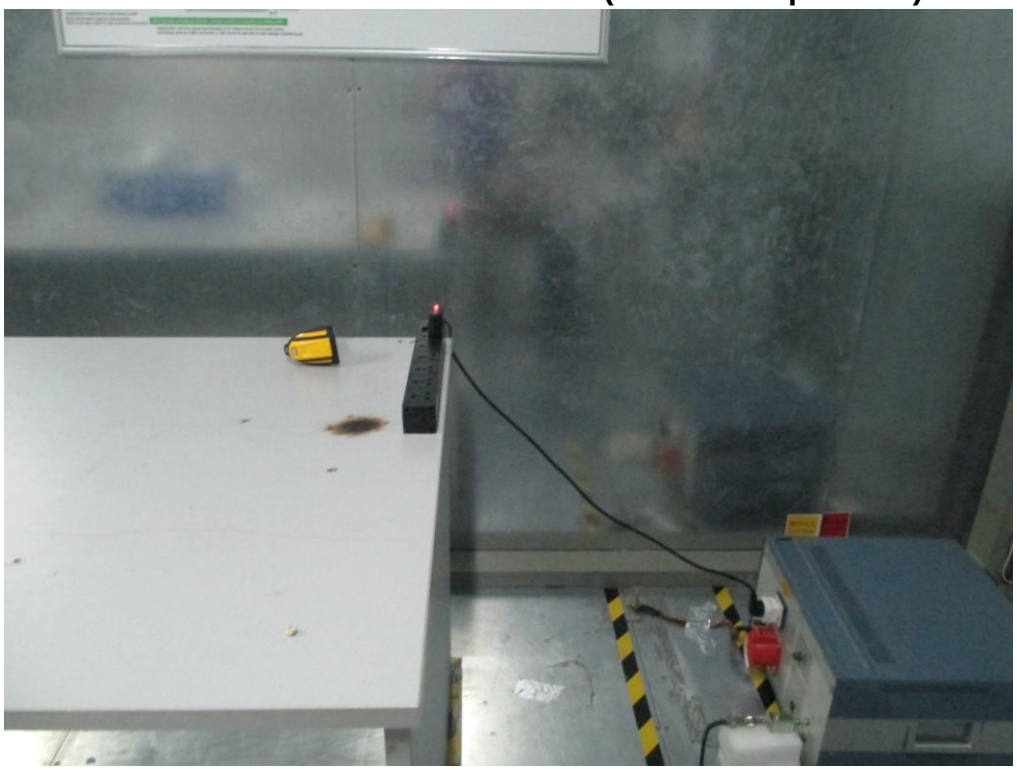
5. EUT TEST PHOTO

Radiated Measurement Photos(worst case position)





Comducted Measurement Photos(worst case position)



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