FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

Yun Tong Electionic(ShenZhen)Co., Ltd

UWSB-System 2.1x-W

Model No.: UWSB-50X-1; UWSB-50X;
UWSP-50X; UWSP-50X-1;
UWIW-50X; UWIW-50X-1

FCC ID: P44UWSB-P-50X-1

Prepared for : Yun Tong Electionic(ShenZhen)Co., Ltd
Building 3, No.2 Industry Zone, ShangHeng Lang HuaXing Road, Da Lang Street, Bao An District, Shen Zhen City, Guang Dong Province, China.

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number : ACS-F12240

Date of Test : Nov.02~09, 2012

Date of Report : Nov.16, 2012

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TEST REPORT CERTIFICATION

Applicant	:	Yun Tong Electionic(ShenZhen)Co., Ltd
Manufacturer	:	Yun Tong Electionic(ShenZhen)Co., Ltd
EUT Description	:	UWSB-System 2.1x-W
FCC ID	:	P44UWSB-P-50X-1
(A) MODEL NO.	:	UWSB-50X-1; UWSB-50X; UWSP-50X; UWSP-50X-1; UWIW-50X; UWIW-50X-1
(B) SERIAL NO.	:	N/A
(C) POWER SUPPLY	:	DC 24V
(D) TEST VOLTAGE	:	DC 24V Adapter Input AC 120V/60Hz

Tested for comply with:
FCC Rules and Regulations Part 15 Subpart C: 2011

Test procedure used:
ANSI C63.10:2009

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements. The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC and IC requirements. This report contains data that are not covered by the NVLAP accreditation.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Nov.02~09, 2012 Report of date: Nov.16, 2012

Prepared by : June Shao
June Shao / Assistant

Reviewed by :
Sunny Lu / Assistant Manager

AUDIX® 信華科技（深圳）有限公司
Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章
Stamp only for EMC Dept. Report
Signature: Ken Lu 11/16/12

Approved & Authorized Signer :
Ken Lu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	**Standard**	**Results**
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10: 2009	PASS
Radiated Emission	FCC Part 15: 15.209 ANSI C63.10: 2009	PASS
Band Edge Compliance	FCC Part 15: 15.247 ANSI C63.10: 2009	PASS
26dB and 20dB Bandwidth Test	FCC Part 15: 15.407(a) FCC Part15.215	PASS
Output Power Test	FCC Part 15: 15.407(a)	PASS
Power Spectral Density Test	FCC Part 15: 15.407(a)	PASS
Peak Excursion	FCC Part 15: 15.407(a)	PASS
Frequency Stability	FCC Part 15: 15.407(g) ANSI C63.10: 2009	PASS
Antenna requirement	FCC Part 15: 15.203	PASS

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

Product Name : UWSB-System 2.1x-W

Model Number : UWSB-50X-1; UWSB-50X; UWSP-50X; UWSP-50X-1; UWIW-50X; UWIW-50X-1
Model difference：Those models use the same wireless module, please see below table for the only difference,According to exploratory test,UWSB-50X-1 have the maximum emission,so report it in the report.

Model	PCB components	amplifier output	SUB line out jack	DC assembly panel	DC connected wire
UWSB-50X	same	ribbon wire	no	yes	yes
UWSB-50X-1	same	ribbon wire	in back panel	yes	yes
UWSP-50X	same	speaker terminal on front panel	no	no	no
UWSP-50X-1	same	speaker terminal on front panel	on front panel	no	no
UWIW-50X	same	speaker terminal in back panel	no	no	no
UWIW-50X-1	same	speaker terminal in back panel	on front panel	no	no

FCC ID : P44UWSB-P-50X-1

Operation Frequency : 5180MHz-5240MHz

Modulation Technology : QPSK

Antenna Assembly Gain : PCB antenna, PK gain 3dBi

Applicant : Yun Tong Electionic(ShenZhen)Co., Ltd
Building 24(floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

Manufacturer : Yun Tong Electionic(ShenZhen)Co., Ltd
Building 24(floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

Power Adapter : Manufacture: WASP M/N: GPE603-240250W
Cable: Shielded,Detachable,2.0m

Date of Test : Nov.02~09,2012

Date of Receipt : Oct.29, 2012

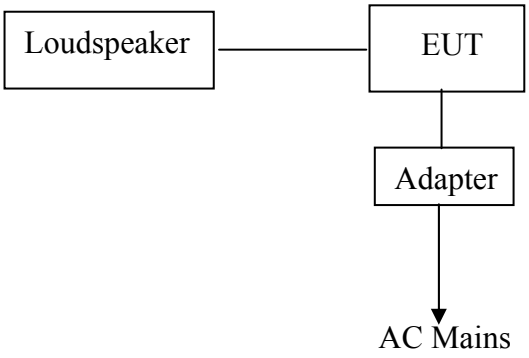
Sample Type : Prototype production

2.2.Test Information

A special test software was used to control EUT work in Continuous TX mode(100% duty cycle), and select test channel, wireless mode and data rate.

This device have two antennas , and those two antennas can not transmit simultaneously. According to exploratory test. Antenna B has Max output and radiated emission, so choose Ant B for radiated emission and Band edge test.

2.3.Block Diagram of Test Setup



(EUT: UWSB-System 2.1x-W)

2.4. Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park,Nantou, Shenzhen, Guangdong, China

3m Anechoic Chamber : Certificated by FCC, USA
Registration Number: 90454
Valid Date: Feb.22, 2015

3m & 10m Anechoic Chamber : Certificated by FCC, USA
Registration Number: 794232
Valid Date: Dec.30, 2012

EMC Lab. : Certificated by Industry Canada
Registration Number: IC 5183A-1
Valid Date: Jun.13, 2014

: Certificated by DAkkS, Germany
Registration No: D-PL-12151-01-01
Valid Date: Feb.01, 2014

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Valid Date: Mar.31, 2013

2.5. Measurement Uncertainty (95% confidence levels, k=2)

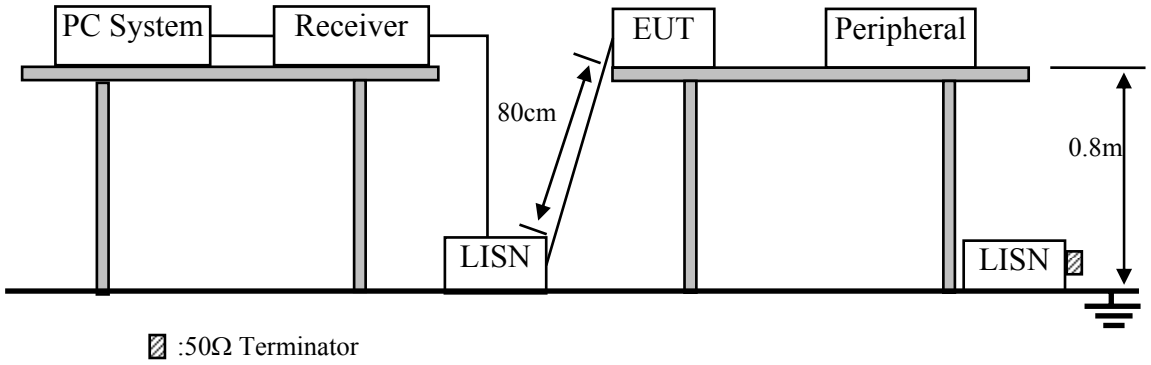
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.6dB(9KHz to 150KHz)
	3.2dB (150KHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	3.6 dB(30~200MHz, Polarize: H)
	3.8 dB(30~200MHz, Polarize: V)
	4.2 dB(200M~1GHz, Polarize: H)
	3.8 dB(200M~1GHz, Polarize: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz-18GHz)	3.1dB (Distance: 3m Polarize: V)
	3.7 dB (Distance: 3m Polarize: H)
Uncertainty for Radiated Spurious Emission test in RF chamber	3.57 dB
Uncertainty for Conduction Spurious emission test	2.00 dB
Uncertainty for Output power test	0.73 dB
Uncertainty for Power density test	2.00 dB
Uncertainty for Frequency range test	$7x10^{-8}$
Uncertainty for Bandwidth test	83 kHz
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.6℃
	3%

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Oct.31, 12	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Oct.31, 12	1 Year
3.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 12	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 12	1 Year
5.	Terminator	Hubersuhner	50Ω	No. 2	May.08, 12	1 Year
6.	RF Cable	Fujikura	3D-2W	No.1	May.08, 12	1Year
7.	Coaxial Switch	Anritsu	MP59B	M50564	May.08, 12	1 Year
8.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 12	1 Year

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. UWSB-System 2.1x-W (EUT)

Model Number : UWSB-50X-1
Serial Number : N/A

3.4.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turned on the power of all equipment.

3.5.3. PC run test software to control EUT work in Tx mode.

3.6. Test Procedure

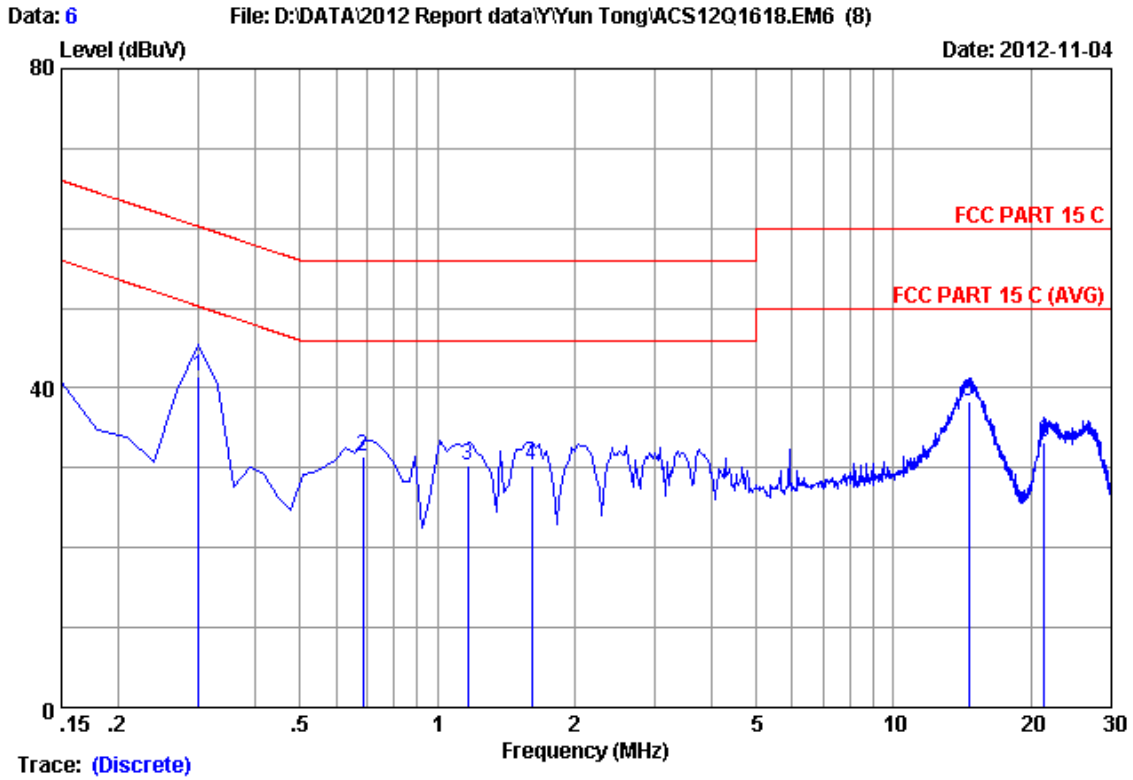
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2009 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESHS10) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.7. Power Line Conducted Emission Test Results

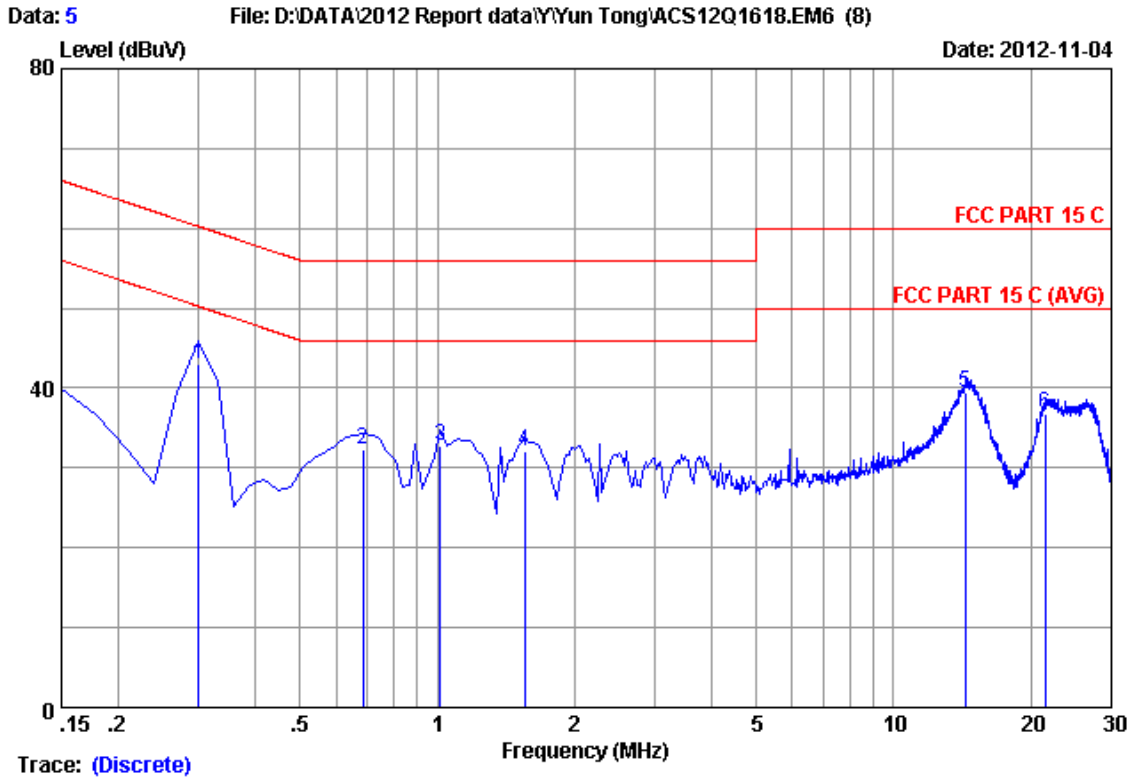
PASS. **(**All emissions not reported below are too low against the prescribed limits.)



Site no :1#conduction Data No :6
Dis./Ant. :** 2012 ESH2-Z5 LINE
Limit :FCC PART 15 C
Env./Ins. :27.5*C/59% Engineer :Leo-Li
EUT :UWSB-System 2.1x-W
Power Rating :DC 24V Form Adapter Input AC 120V/60Hz
Test Mode :Tx Mode
M/N :UWSB-50X-1

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.29925	0.15	9.95	31.42	41.52	60.26	18.74	QP
2	0.68730	0.16	9.95	21.37	31.48	56.00	24.52	QP
3	1.165	0.18	9.94	20.10	30.22	56.00	25.78	QP
4	1.613	0.19	9.94	20.13	30.26	56.00	25.74	QP
5	14.597	0.39	9.99	27.90	38.28	60.00	21.72	QP
6	21.433	0.59	10.07	22.63	33.29	60.00	26.71	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



Site no :1#conduction Data No :5
Dis./Ant. :** 2012 ESH2-Z5 NEUTRAL
Limit :FCC PART 15 C
Env./Ins. :27.5*C/59% Engineer :Leo-Li
EUT :UWSB-System 2.1x-W
Power Rating :DC 24V Form Adapter Input AC 120V/60Hz
Test Mode :Tx Mode
M/N :UWSB-50X-1

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.29925	0.14	9.95	32.88	42.97	60.26	17.29	QP
2	0.68730	0.16	9.95	22.17	32.28	56.00	23.72	QP
3	1.016	0.17	9.94	22.63	32.74	56.00	23.26	QP
4	1.553	0.19	9.94	22.05	32.18	56.00	23.82	QP
5	14.359	0.32	9.99	29.09	39.40	60.00	20.60	QP
6	21.493	0.39	10.07	26.38	36.84	60.00	23.16	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4. RADIATED EMISSION TEST

4.1.Test Equipment

4.1.1. For frequency range 30MHz~1000MHz (At Anechoic Chamber)

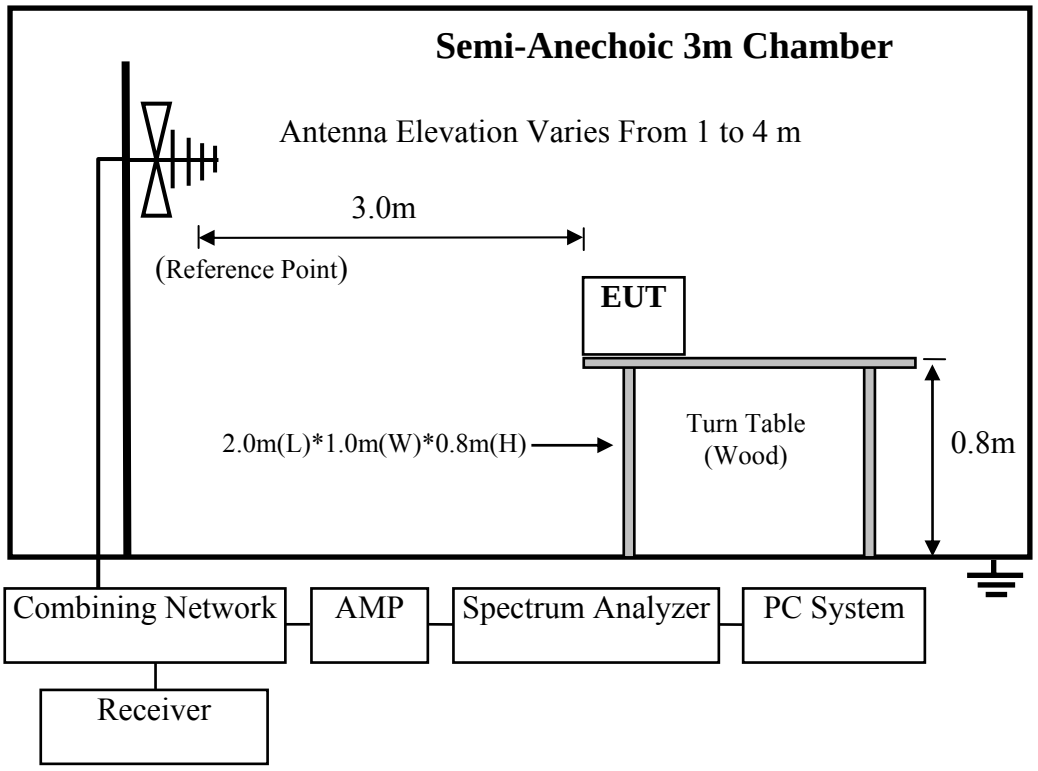
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Nov.28,11	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 12	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 12	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 12	1 Year
5	Bilog Antenna	Schaffner	CBL6111C	2598	Dec.26, 10	2.0 Year
6	RF Cable	MIYAZAKI	CFD400-NL	3# Chamber No.1	May.08, 12	1 Year
7	Coaxial Switch	Anritsu	MP59B	M74389	May.08, 12	1 Year

4.1.2. For frequency range 1GHz~25GHz (At Anechoic Chamber)

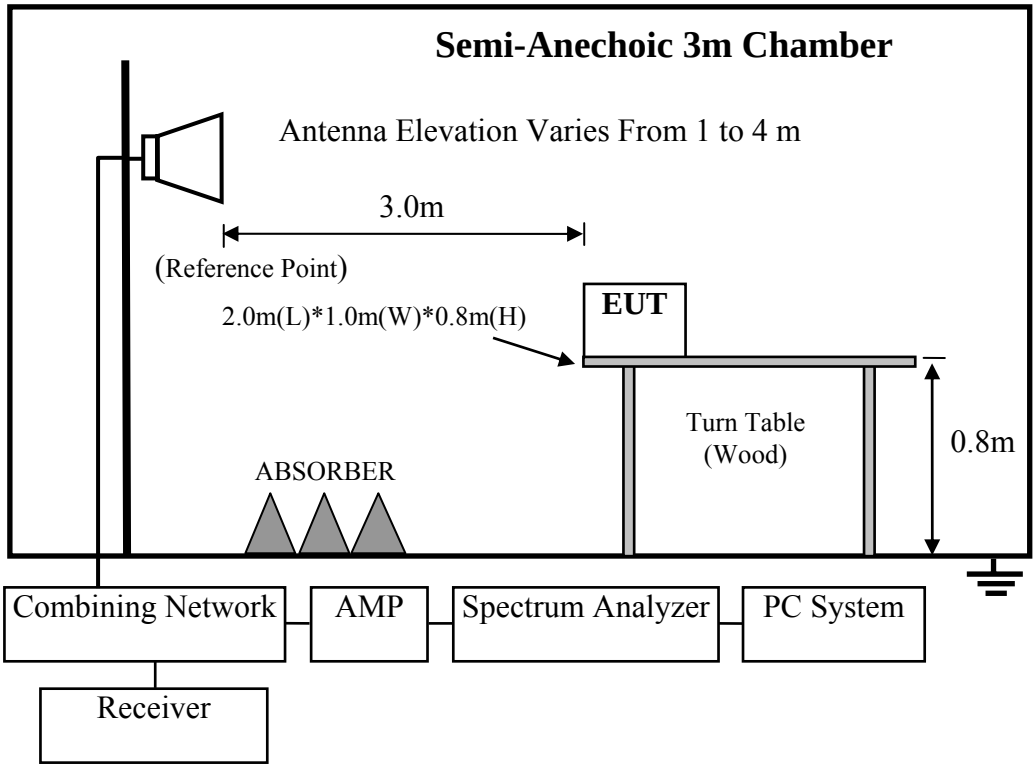
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	May.08, 12	1 Year
2	Horn Antenna	EMCO	3115	9510-4580	June.05, 12	1 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 12	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX106	77980/6	May.08, 12	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX106	77977/6	May.08, 12	1 Year
6	Horn Antenna	EMCO	3116	00060089	Nov.25,11	1.5 Year

4.2.Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range 1GHz-25GHz



4.3.Radiated Emission Limit

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
Unwanted emissions below 1 GHz and those emissions appearing within 15.205 restricted frequency bands must comply with the general field strength limits set forth in Section 15.209

4.3.1. 15.209 limits

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark： (1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.3.2. 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

4.4. EUT Configuration on Test

The configurations of EUT are listed in Section 3.5.

4.5. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 4.2.

4.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) used for below 1GHz and Horn antenna used for above 1GHz. Both horizontal and vertical polarization of the antenna are set on test.

For emissions below 1GHz and those emissions appearing within 15.205 restricted frequency bands use below procedure:

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz.

For the emissions above 1GHz and not appearing within 15.205 restricted frequency bands use below procedure:

(1).The maximum emission at 3m distance was measured and recorded with receive antenna in both vertical and horizontal by rotating the turntable and by lowering the receive antenna.

(2. Find the field strength of the maximum emission frequency Pmax,then use the formual in KDB789033.EIRP(dBm)=E(dBuV/m)-95.2 (distance=3m) can get the EIRP of the maxim Um emission,then compare this EIRP level with the limit -27dBm.

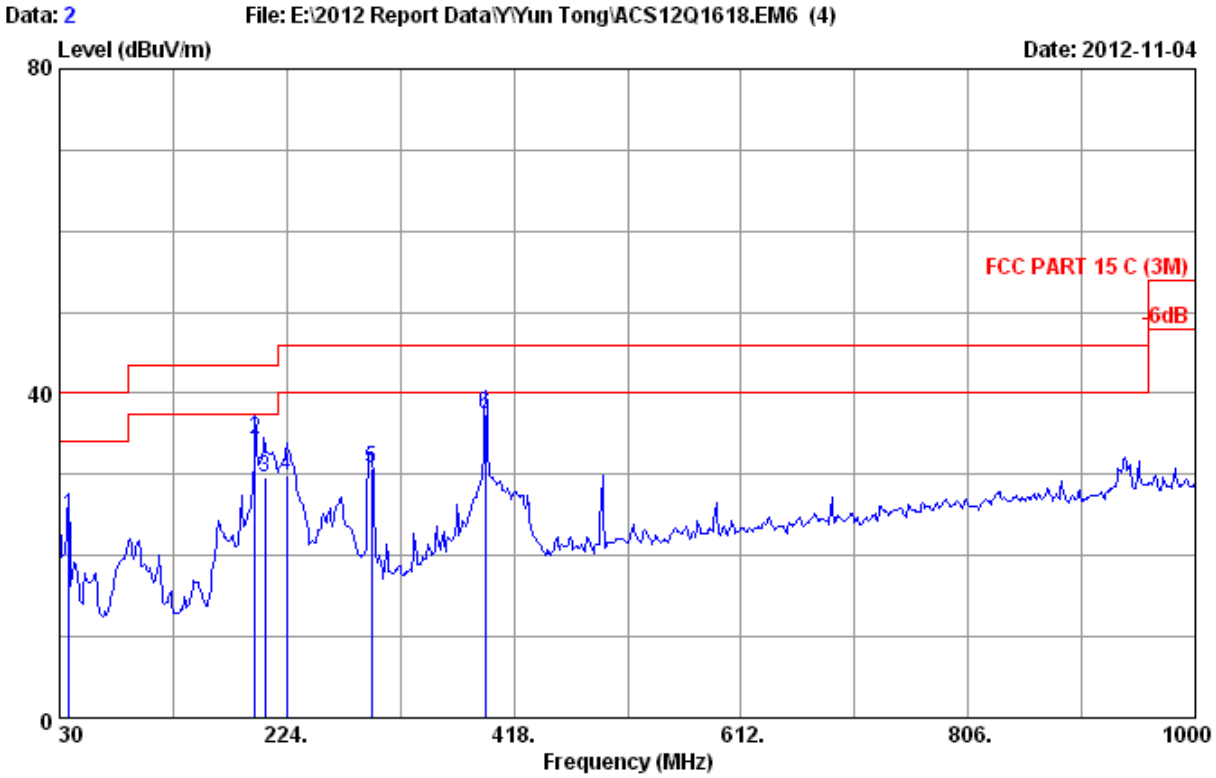
Note:All emission outside 15.205 restricted frequency bands,their EIRP level lower than the Limit -27dBm.

4.7.Radiated Emission Test Results

PASS.

All the emissions from 30MHz to 1 GHz were comply with 15.209 limits.
No any emissions above 9GHz located in 15.205 restricted frequency bands
All other emission comply with 15.407 (b)(1) requirements.

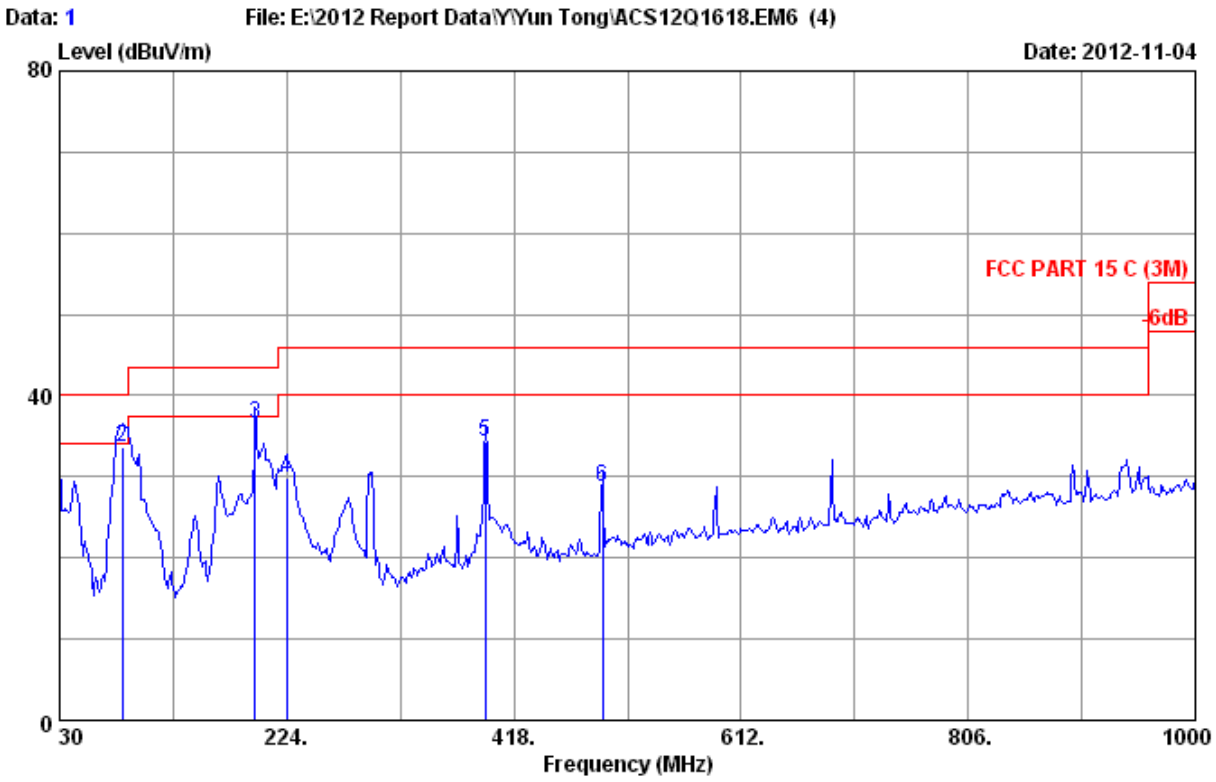
Frequency: 30MHz~1GHz



Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m 2012 CBL6111C 2598 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24*C/56% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power rating : DC 24V From Adapter Input AC 120V/60Hz
Test Mode : Tx Mode
M/N:UWSB-50X-1

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	37.760	14.44	0.51	10.09	25.04	40.00	14.96	QP
2	196.840	9.13	1.06	24.04	34.23	43.50	9.27	QP
3	205.570	9.73	1.08	18.86	29.67	43.50	13.83	QP
4	224.000	10.31	1.12	18.39	29.82	46.00	16.18	QP
5	296.750	13.75	1.27	15.76	30.78	46.00	15.22	QP
6	393.750	16.50	1.54	19.29	37.33	46.00	8.67	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

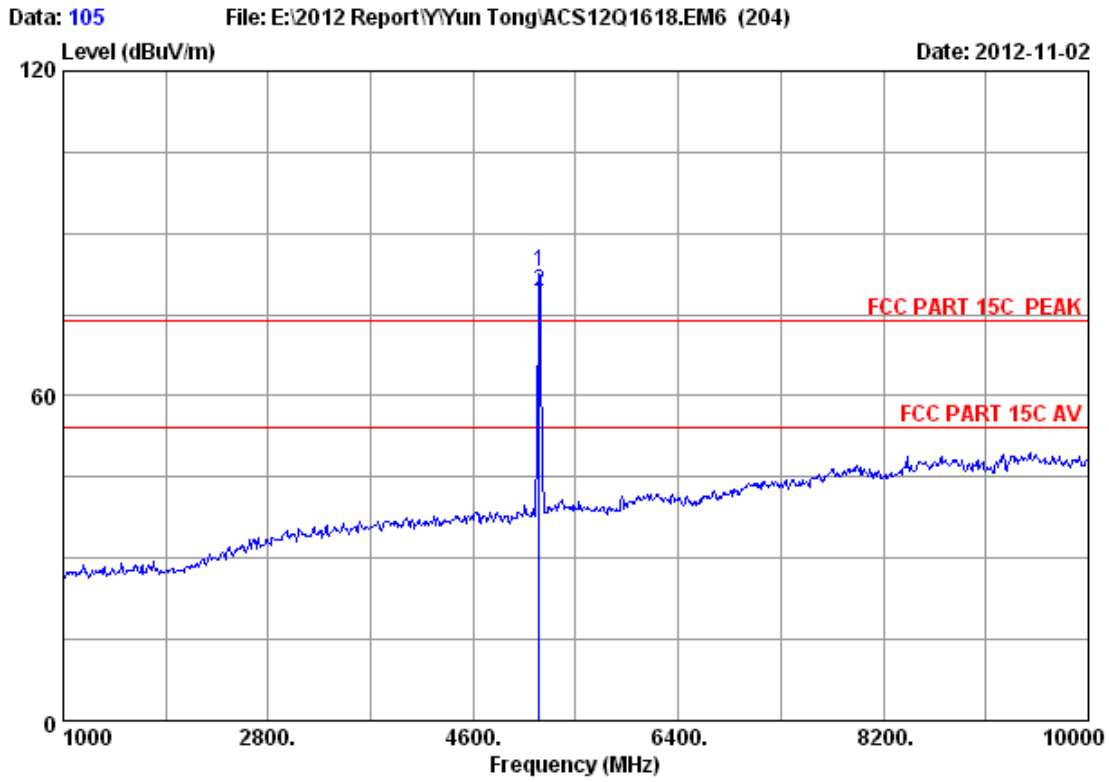


Site no. : 3m Chamber Data no. : 1
Dis. / Ant. : 3m 2012 CBL6111C 2598 Ant. pol. : VERTICAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24*C/56% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power rating : DC 24V From Adapter Input AC 120V/60Hz
Test Mode : Tx Mode
M/N:UWSB-50X-1

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.000	18.74	0.45	9.12	28.31	40.00	11.69	QP
2	83.350	7.41	0.76	25.38	33.55	40.00	6.45	QP
3	196.840	9.13	1.06	26.36	36.55	43.50	6.95	QP
4	224.000	10.31	1.12	18.34	29.77	46.00	16.23	QP
5	393.750	16.50	1.54	16.36	34.40	46.00	11.60	QP
6	493.660	18.65	1.81	8.29	28.75	46.00	17.25	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

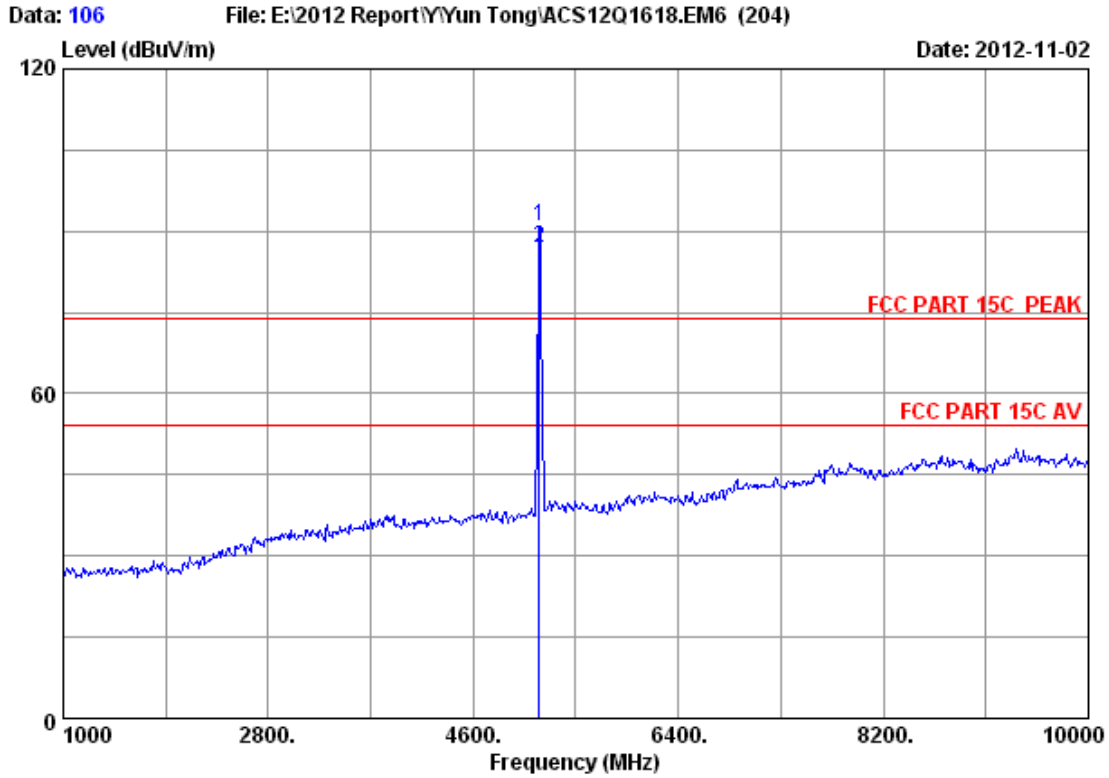
Frequency: 1GHz~18GHz



Site no. : 3m Chamber Data no. : 105
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5180MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5180.000	33.15	9.01	35.59	76.35	82.92	74.00	-8.92	Peak
2	5180.000	33.15	9.01	35.59	72.59	79.16	54.00	-25.16	Average

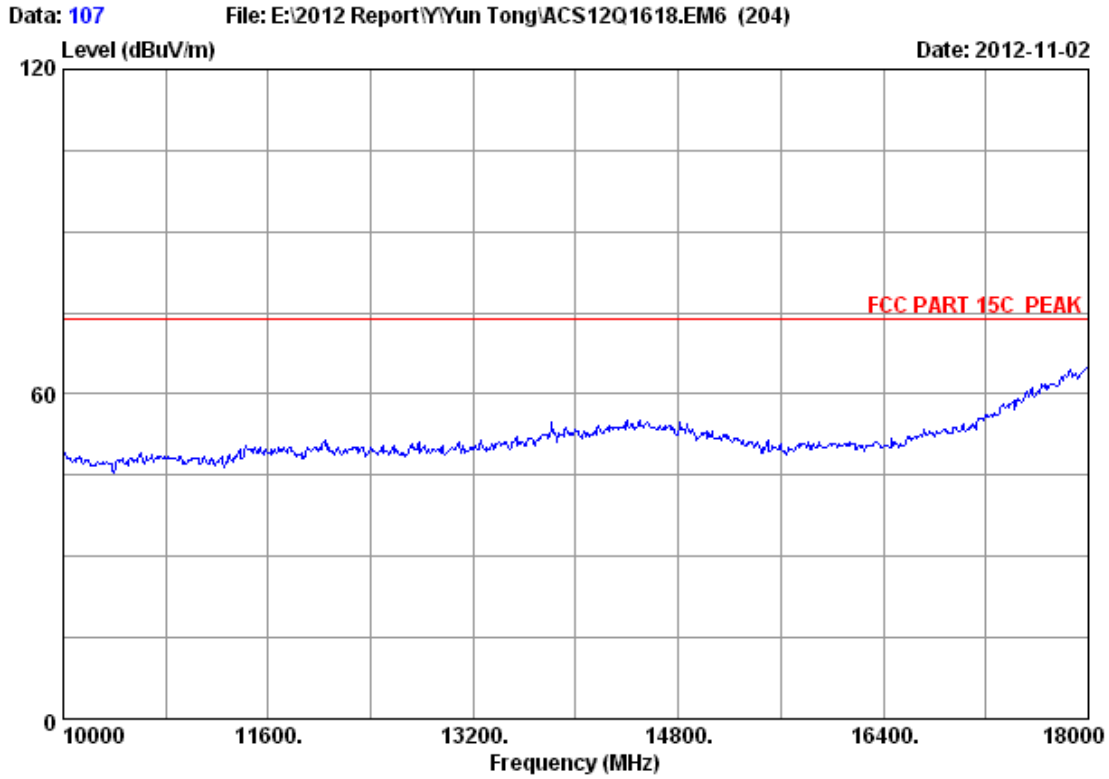
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



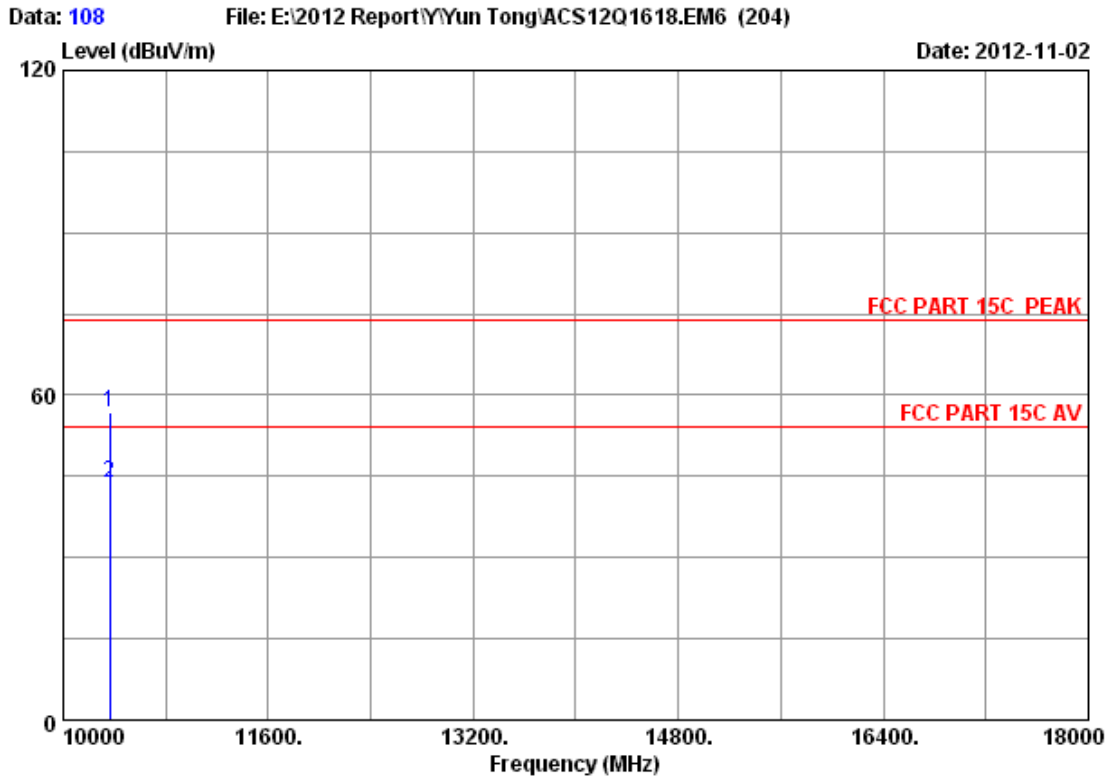
Site no. : 3m Chamber Data no. : 106
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5180MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5180.000	33.15	9.01	35.59	84.27	90.84	74.00	-16.84	Peak
2	5180.000	33.15	9.01	35.59	80.46	87.03	54.00	-33.03	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



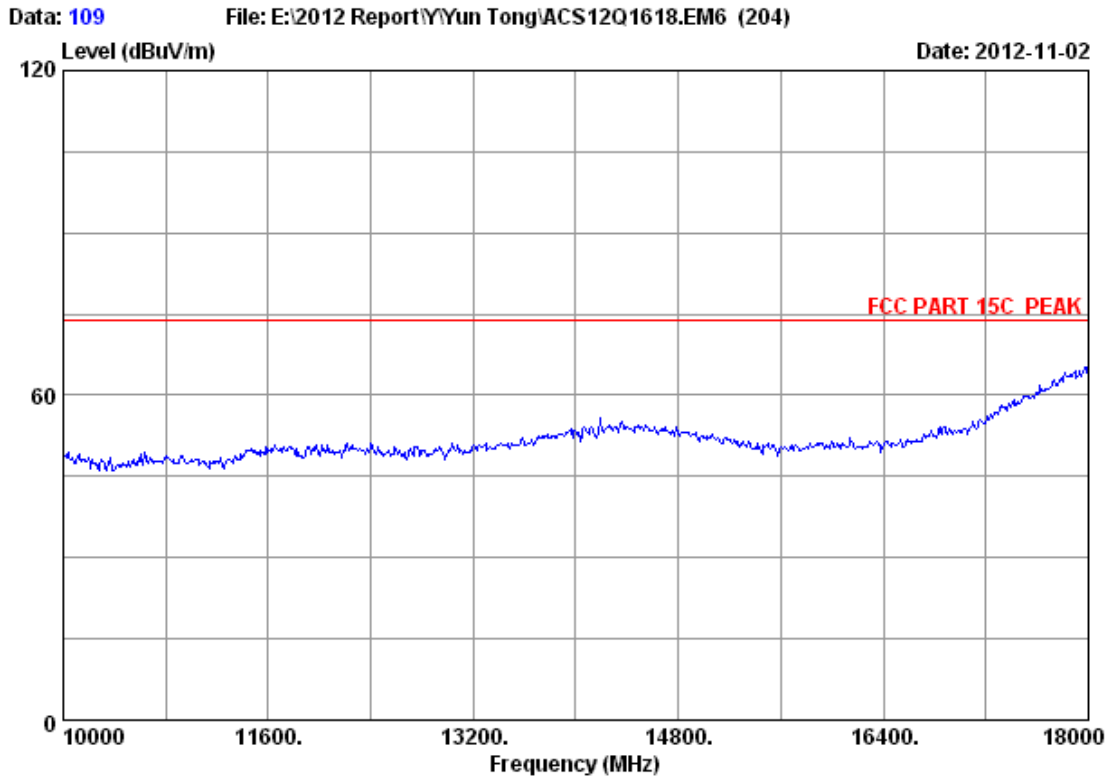
Site no.	: 3m Chamber	Data no.	: 107
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: UWSB-System 2.1x-W		
Power supply	: DC 24V From Adapter Input AC 120V/60Hz		
Test mode	: 5180MHz Tx		
M/N	: UWSB-50X-1		



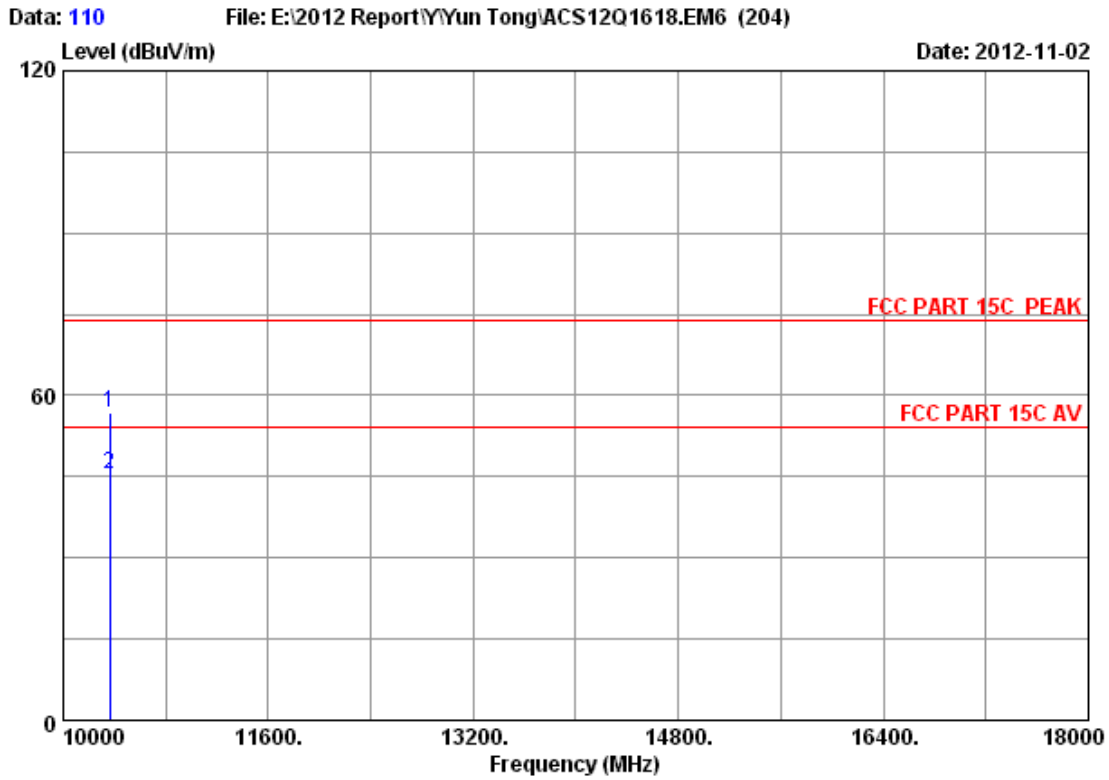
Site no. : 3m Chamber Data no. : 108
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5180MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	10360.000	38.17	12.20	34.84	41.31	56.84	74.00	17.16	Peak
2	10360.000	38.17	12.20	34.84	28.18	43.71	54.00	10.29	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



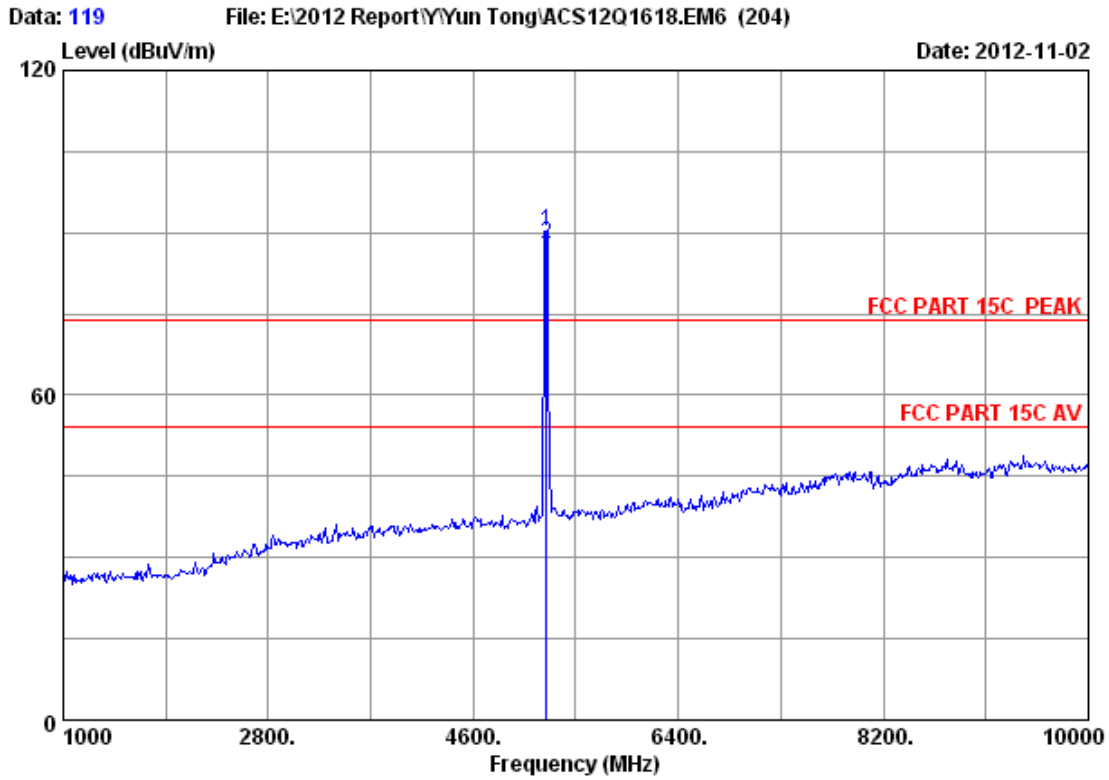
Site no.	: 3m Chamber	Data no.	: 109
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: UWSB-System 2.1x-W		
Power supply	: DC 24V From Adapter Input AC 120V/60Hz		
Test mode	: 5180MHz Tx		
M/N	: UWSB-50X-1		



Site no. : 3m Chamber Data no. : 110
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5180MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	10360.000	38.17	12.20	34.84	41.20	56.73	74.00	17.27	Peak
2	10360.000	38.17	12.20	34.84	29.79	45.32	54.00	8.68	Average

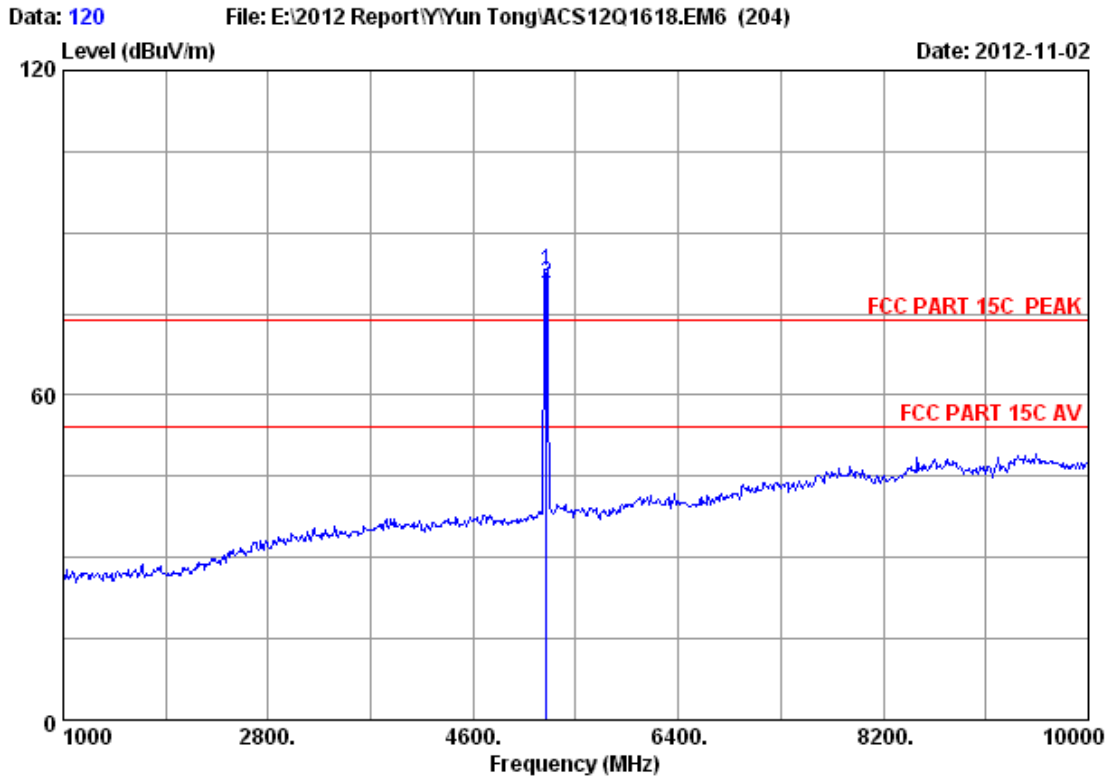
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 119
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5240MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5240.000	33.24	9.06	35.57	83.61	90.34	74.00	-16.34	Peak
2	5240.000	33.24	9.06	35.57	81.24	87.97	54.00	-33.97	Average

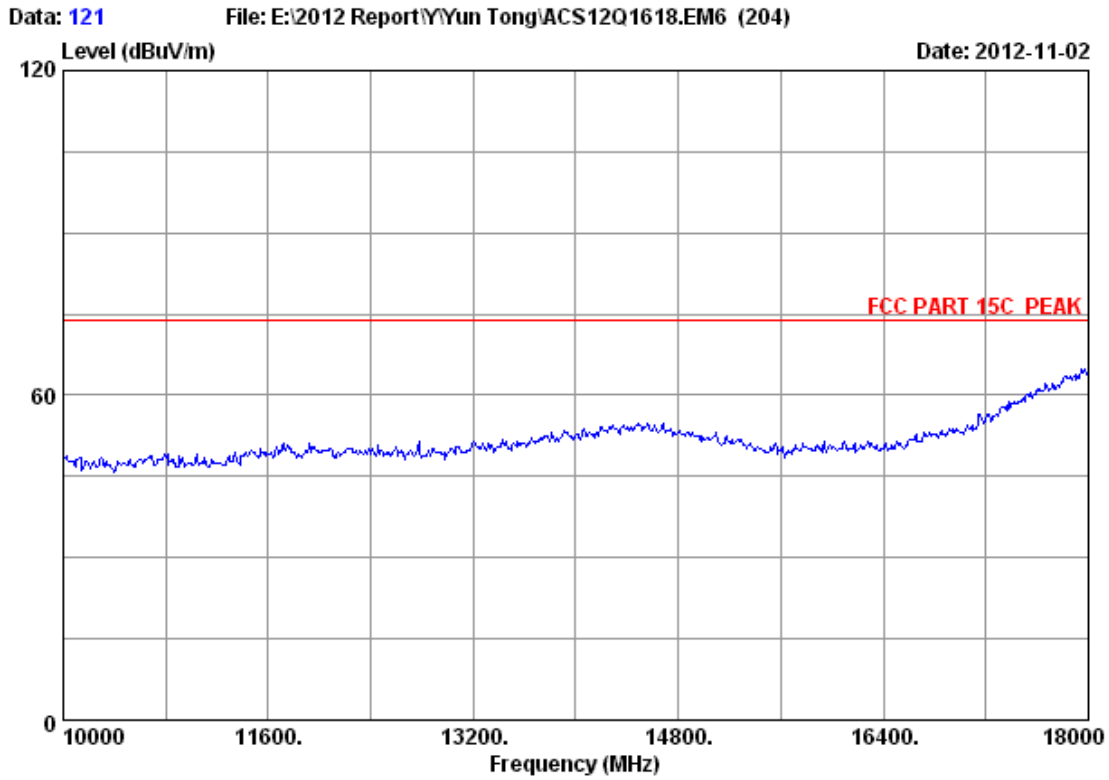
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



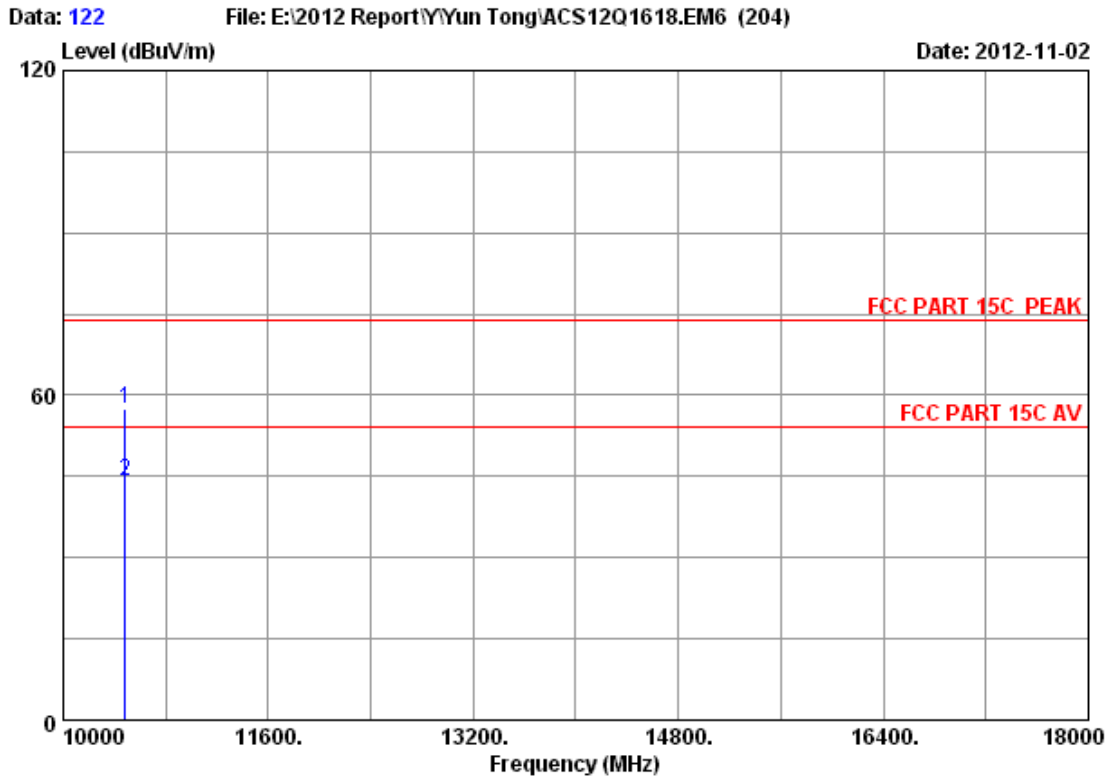
Site no. : 3m Chamber Data no. : 120
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5240MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5240.000	33.24	9.06	35.57	76.32	83.05	74.00	-9.05	Peak
2	5240.000	33.24	9.06	35.57	73.68	80.41	54.00	-26.41	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



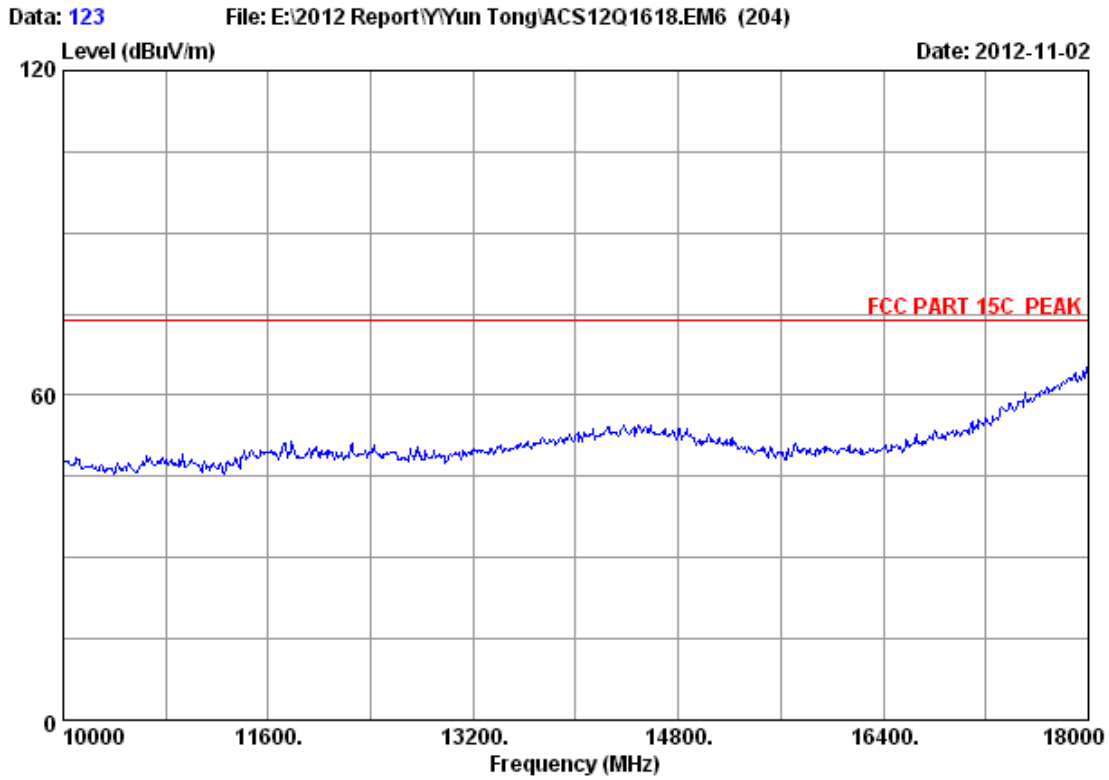
Site no.	: 3m Chamber	Data no.	: 121
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: UWSB-System 2.1x-W		
Power supply	: DC 24V From Adapter Input AC 120V/60Hz		
Test mode	: 5240MHz Tx		
M/N	: UWSB-50X-1		



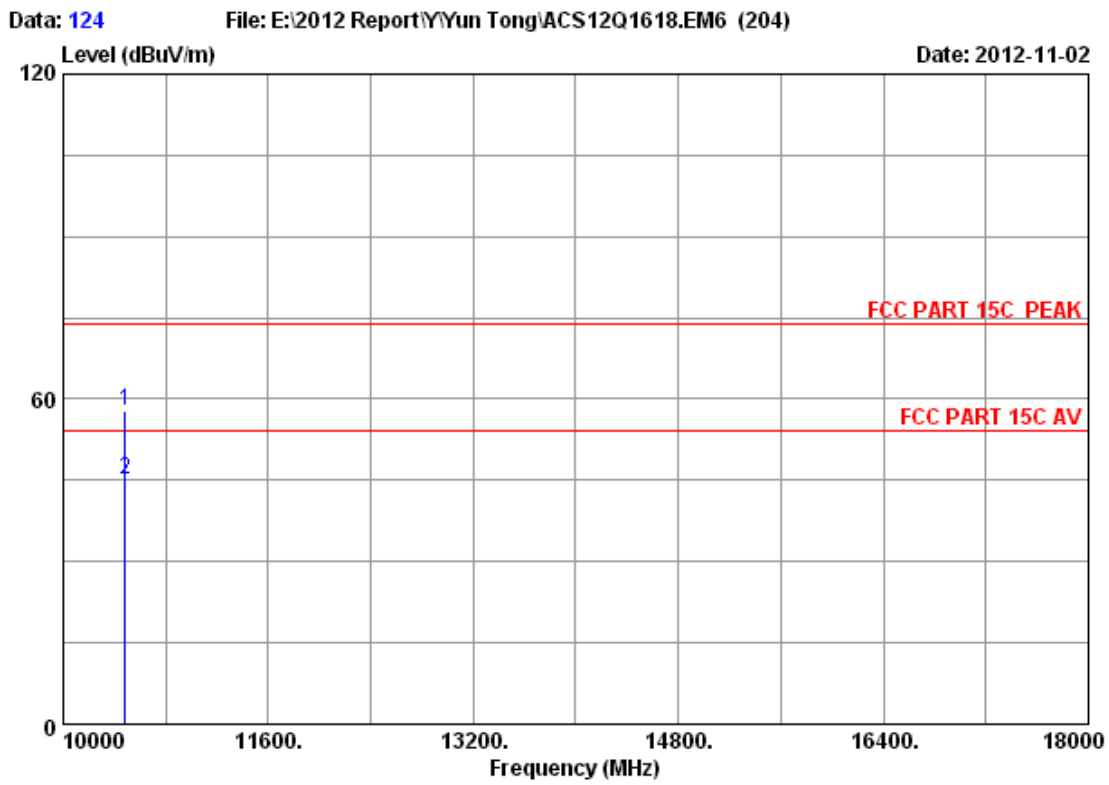
Site no. : 3m Chamber Data no. : 122
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5240MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	10480.000	38.20	12.26	34.85	41.86	57.47	74.00	16.53	Peak
2	10480.000	38.20	12.26	34.85	28.55	44.16	54.00	9.84	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



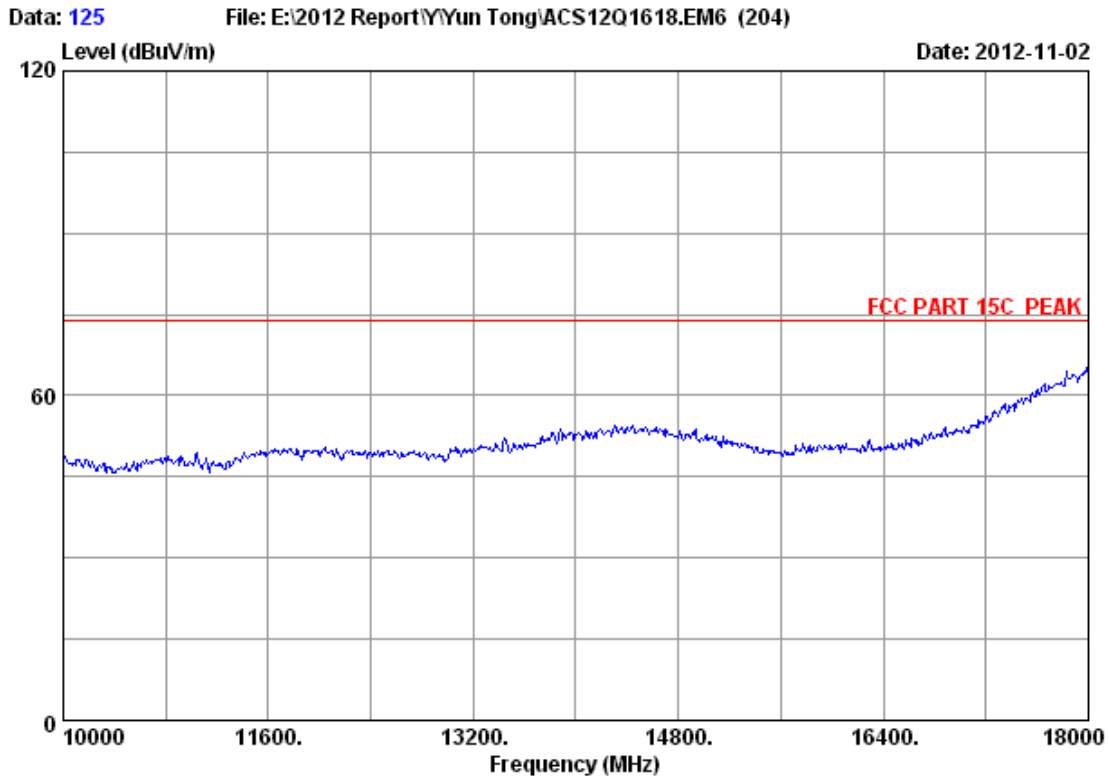
Site no.	: 3m Chamber	Data no.	: 123
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: UWSB-System 2.1x-W		
Power supply	: DC 24V From Adapter Input AC 120V/60Hz		
Test mode	: 5240MHz Tx		
M/N	: UWSB-50X-1		



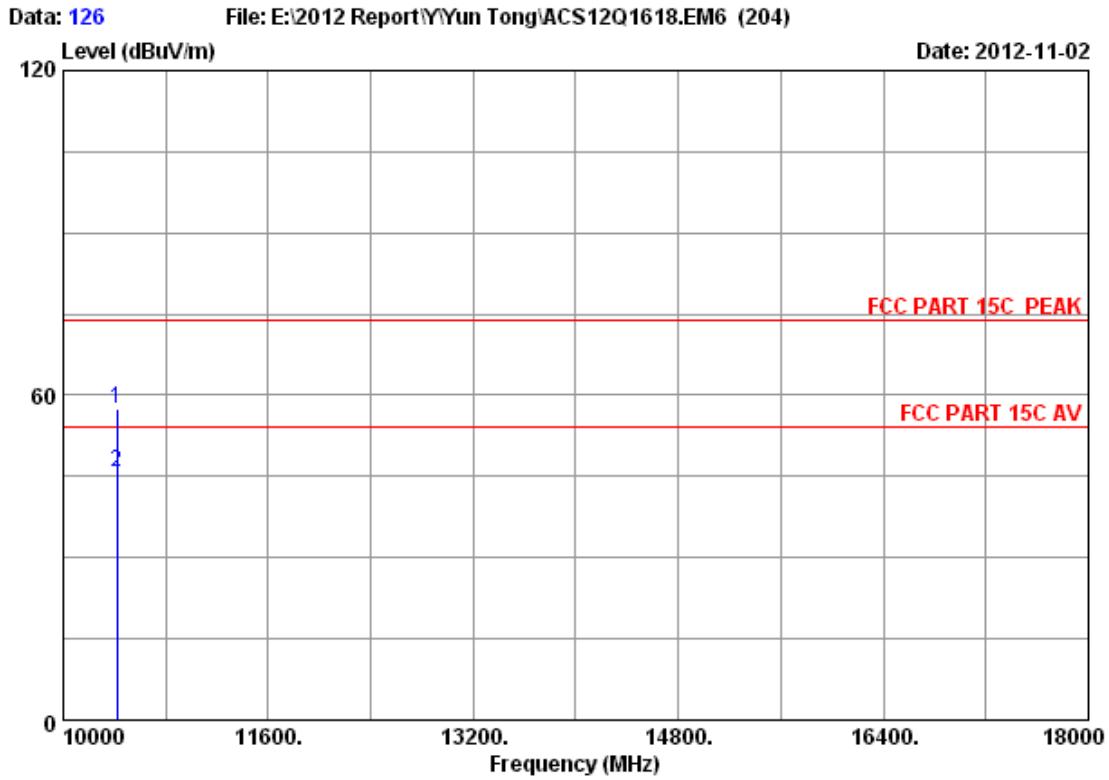
Site no. : 3m Chamber Data no. : 124
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5240MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	10480.000	38.20	12.26	34.85	42.16	57.77	74.00	16.23	Peak
2	10480.000	38.20	12.26	34.85	29.36	44.97	54.00	9.03	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



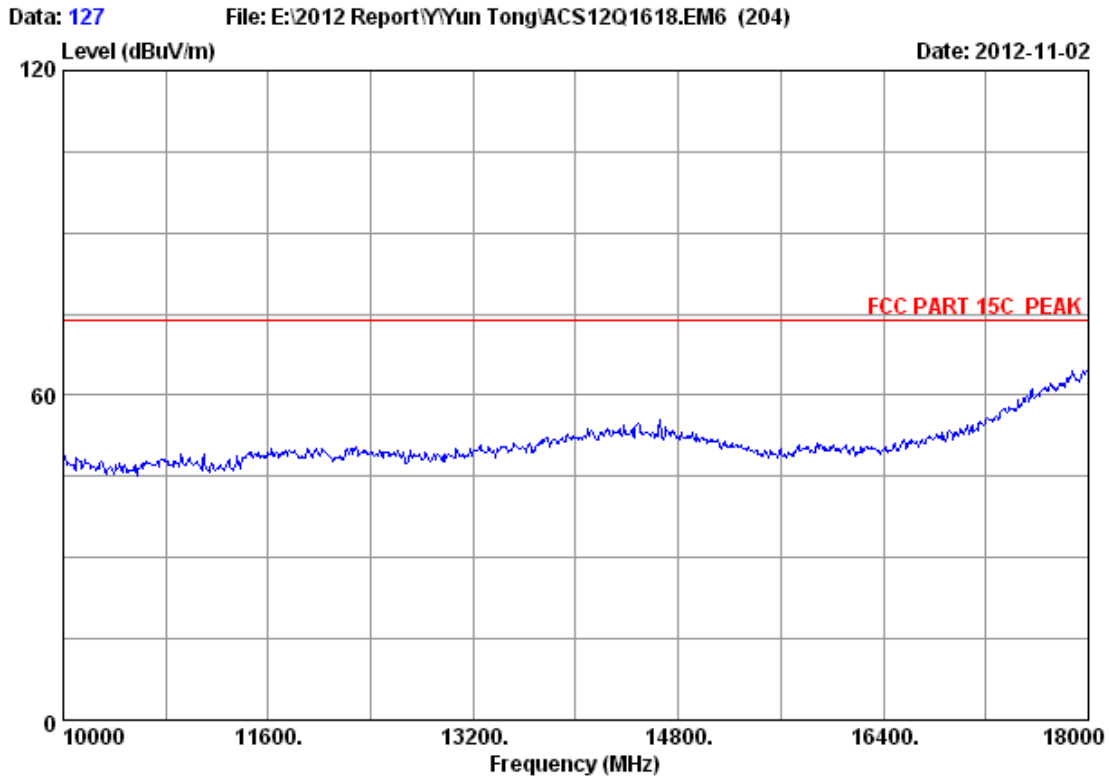
Site no.	: 3m Chamber	Data no.	: 125
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: UWSB-System 2.1x-W		
Power supply	: DC 24V From Adapter Input AC 120V/60Hz		
Test mode	: 5210MHz Tx		
M/N	: UWSB-50X-1		



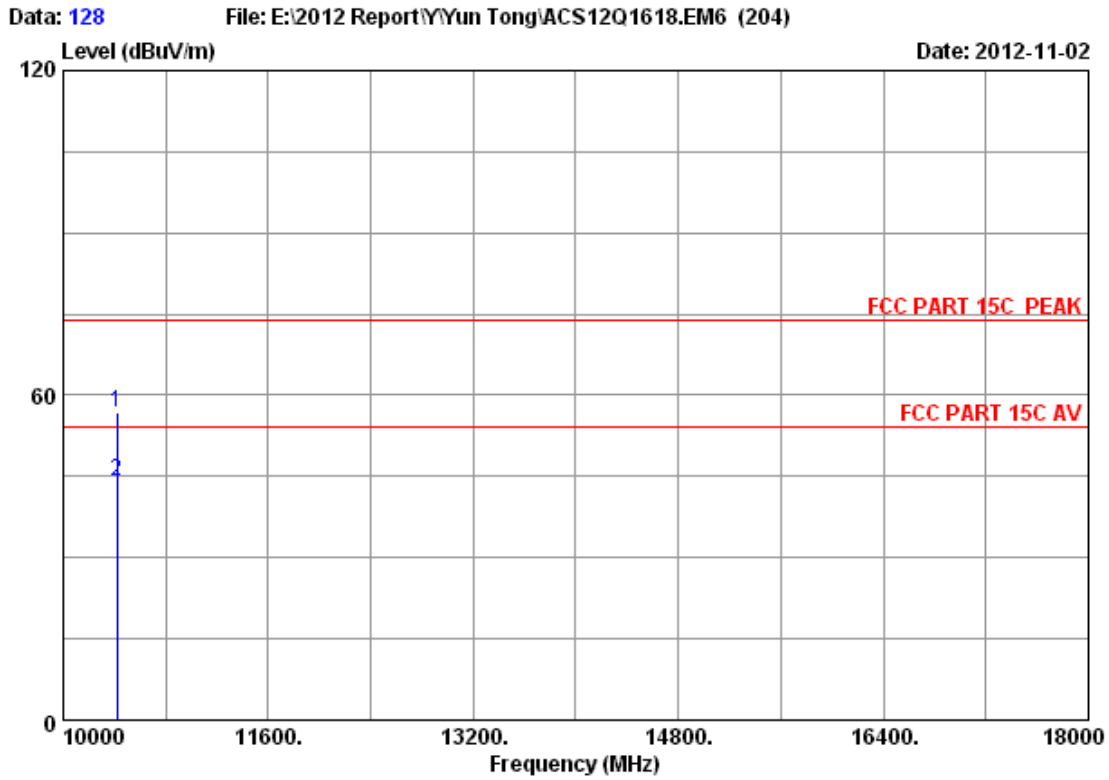
Site no. : 3m Chamber Data no. : 126
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5210MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	10420.000	38.18	12.23	34.84	42.03	57.60	74.00	16.40	Peak
2	10420.000	38.18	12.23	34.84	30.18	45.75	54.00	8.25	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



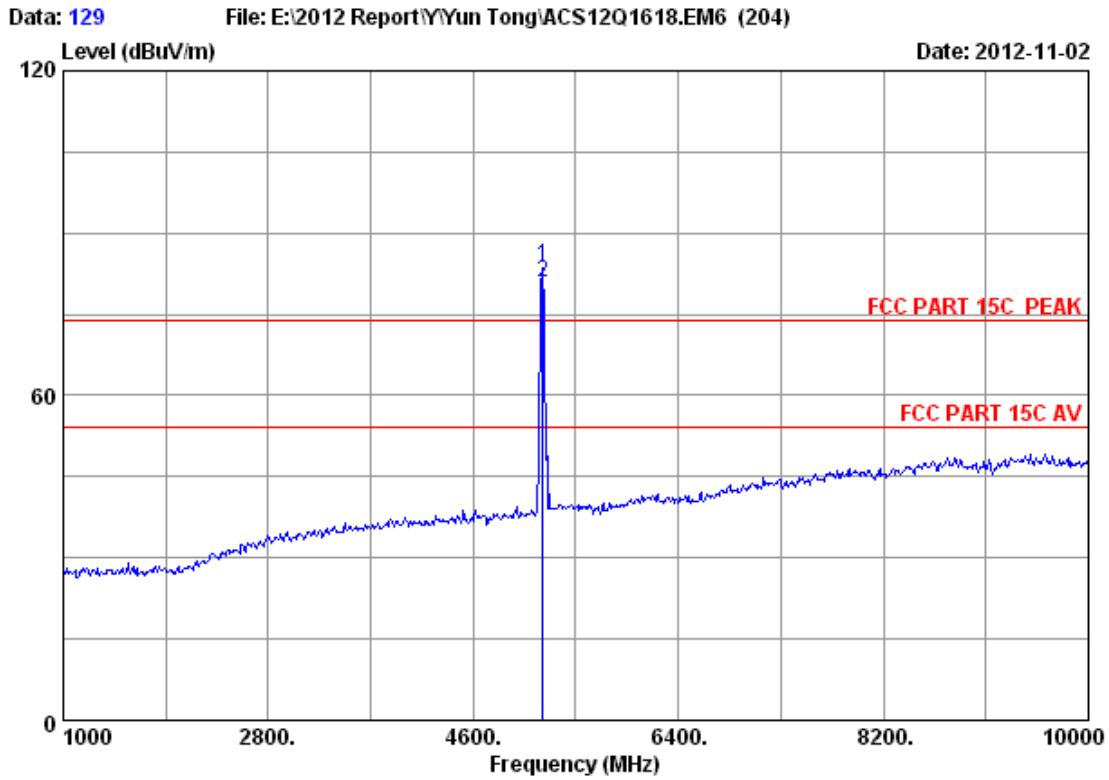
Site no.	: 3m Chamber	Data no.	: 127
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: Leo-Li
EUT	: UWSB-System 2.1x-W		
Power supply	: DC 24V From Adapter Input AC 120V/60Hz		
Test mode	: 5210MHz Tx		
M/N	: UWSB-50X-1		



Site no. : 3m Chamber Data no. : 128
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5210MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	10420.000	38.18	12.23	34.84	41.32	56.89	74.00	17.11	Peak
2	10420.000	38.18	12.23	34.84	28.69	44.26	54.00	9.74	Average

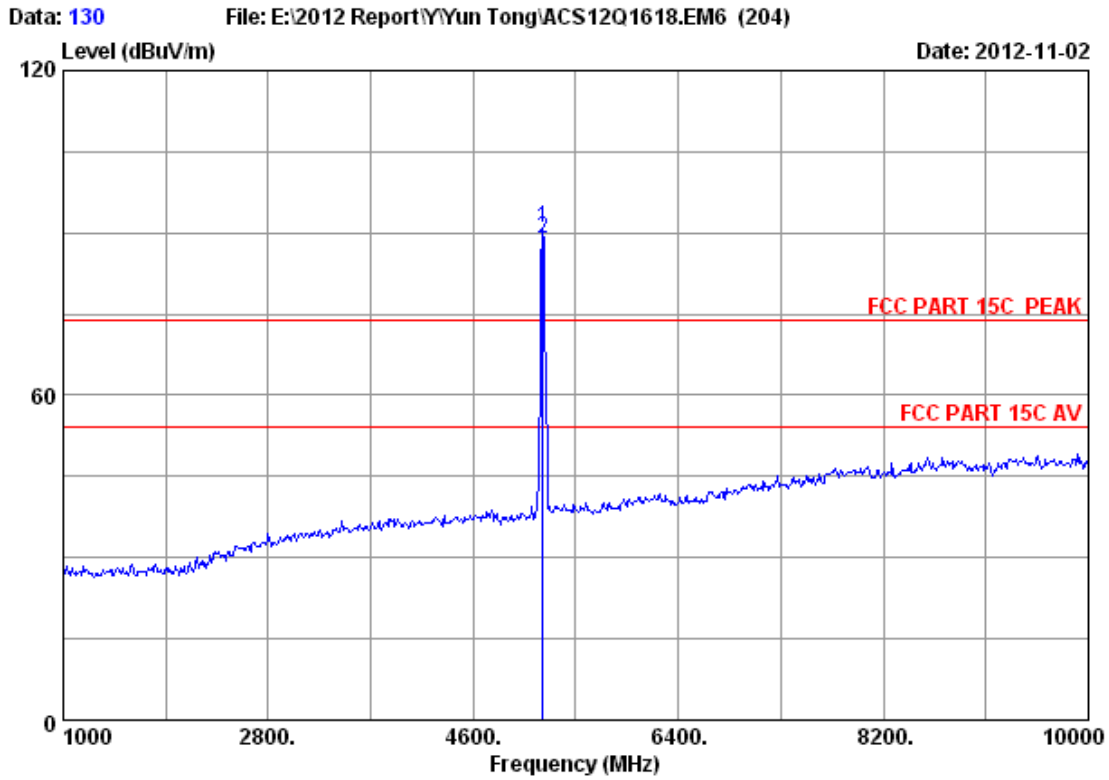
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 129
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5210MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5210.000	33.19	9.03	35.58	77.33	83.97	74.00	-9.97	Peak
2	5210.000	33.19	9.03	35.58	74.09	80.73	54.00	-26.73	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 130
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5210MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5210.000	33.19	9.03	35.58	84.29	90.93	74.00	-16.93	Peak
2	5210.000	33.19	9.03	35.58	82.38	89.02	54.00	-35.02	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

5. BAND EDGE COMPLIANCE TEST

5.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	May.08, 12	1 Year
2.	Amp	HP	8449B	3008A08495	May.08, 12	1 Year
3.	Antenna	EMCO	3115	9510-4580	May.08, 12	1Year
4.	HF Cable	Hubersuhne	Sucoflex104	-	May.08, 12	1 Year

5.2.Limit

All the lower and upper band-edges emissions appearing within restricted frequency bands shall not exceed the limits shown in 15.209, all the emissions outside operation frequency band shall company with 15.407(b)(1) requirement.

5.3.Test Produce

1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

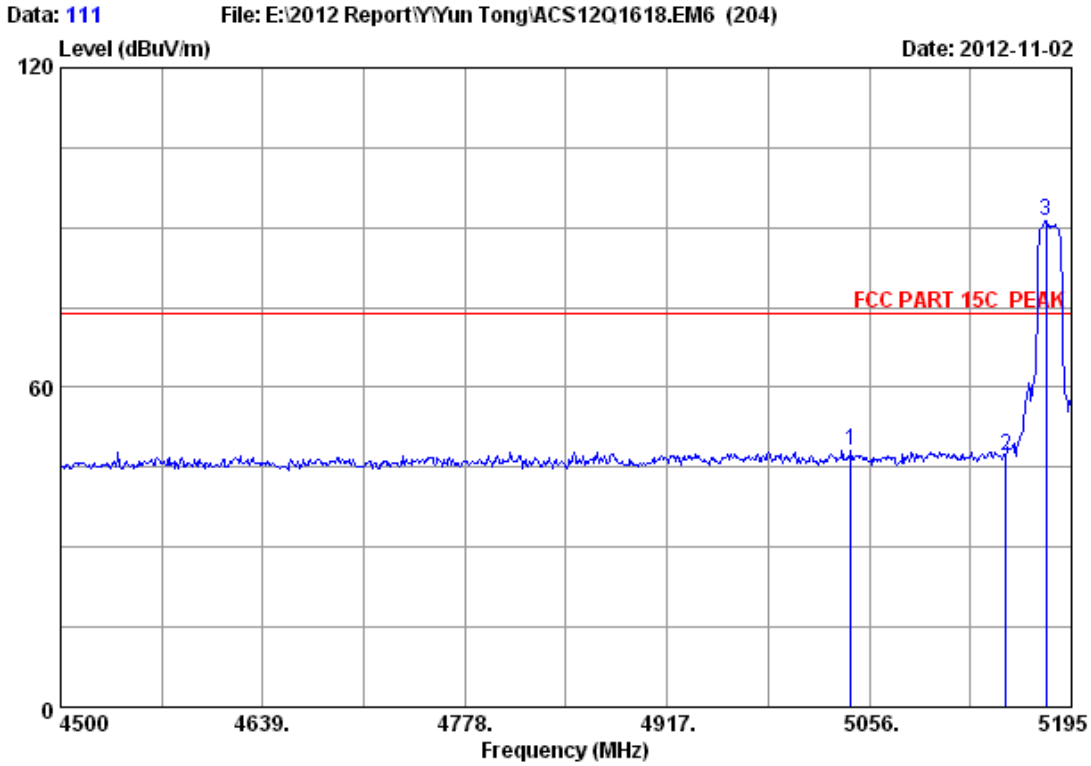
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

(a) PEAK: RBW=1MHz; VBW=3MHz; Sweep=AUTO
(b) AVERAGE: RBW=1MHz; VBW=10Hz; Sweep=AUTO

Note：According above measurememt,all emission comply with 15.209 requirement,This item can also refer KDB789033,Use the formula EIRP(dBm)=E(dBuV/m)-95.2,The test distance is 3m,and choose the worst case emission level is 62.34dBuV/m at 5250.38MHz,and the EIRP level=62.34-95.2= -32.86dBm which lower than limit -27dBm and comply with 15.407(b)(1) Requirement.

5.4.Test Results

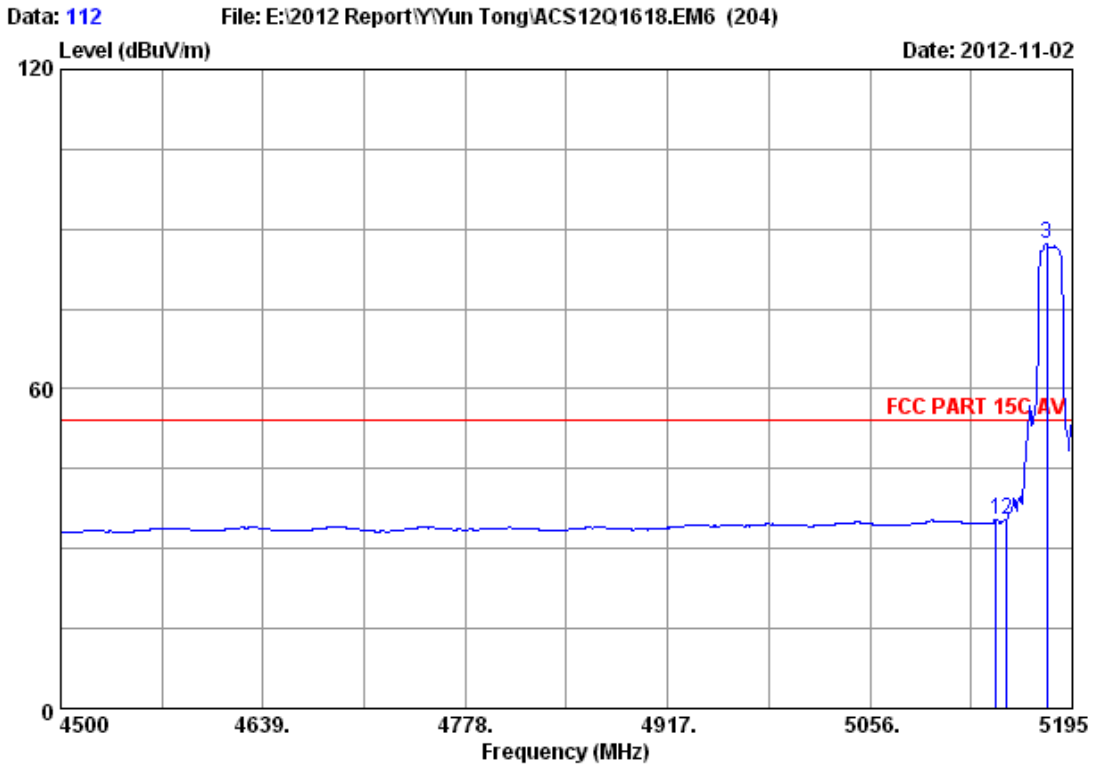
Pass (The testing data was attached in the next pages.)



Site no. : 3m Chamber Data no. : 111
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5180MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5043.490	32.96	8.88	35.63	41.90	48.11	74.00	25.89	Peak
2	5150.000	33.11	8.98	35.60	40.78	47.27	74.00	26.73	Peak
3	5177.625	33.15	9.01	35.59	84.68	91.25	74.00	-17.25	Peak

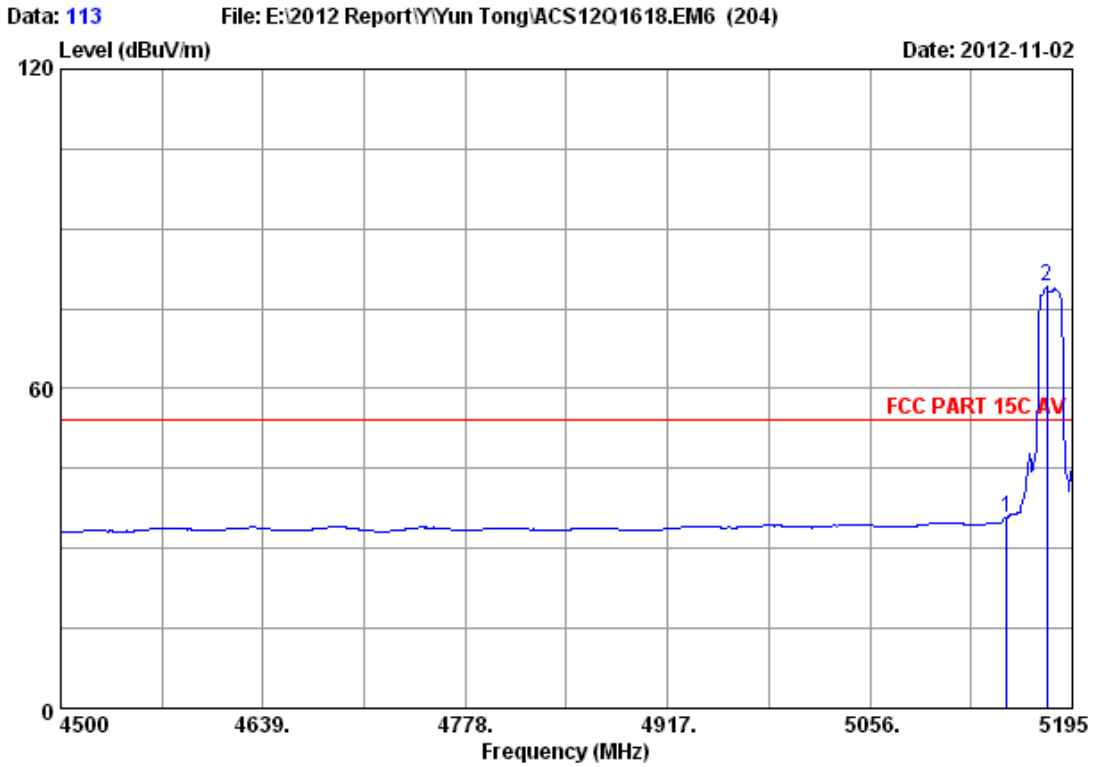
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 112
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5180MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5142.875	33.10	8.97	35.60	28.92	35.39	54.00	18.61	Average
2	5150.000	33.11	8.98	35.60	28.87	35.36	54.00	18.64	Average
3	5177.625	33.15	9.01	35.59	80.81	87.38	54.00	-33.38	Average

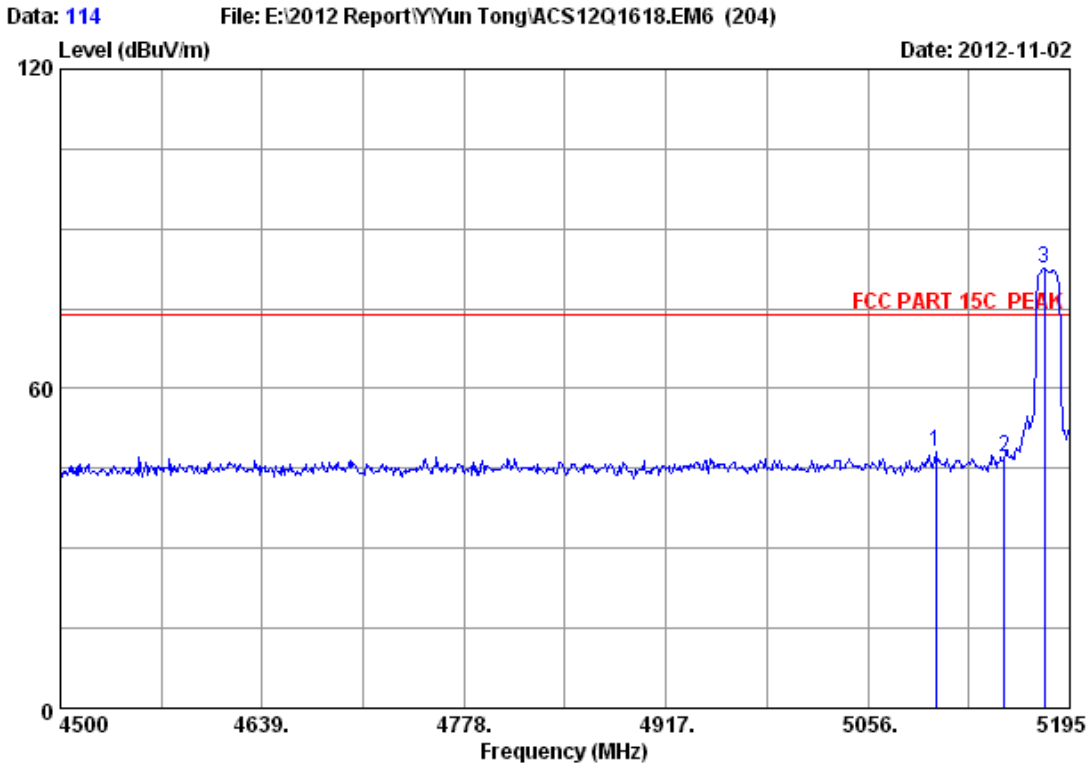
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 113
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C AV
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5180MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5150.000	33.11	8.98	35.60	29.16	35.65	54.00	18.35	Average
2	5177.625	33.15	9.01	35.59	72.49	79.06	54.00	-25.06	Average

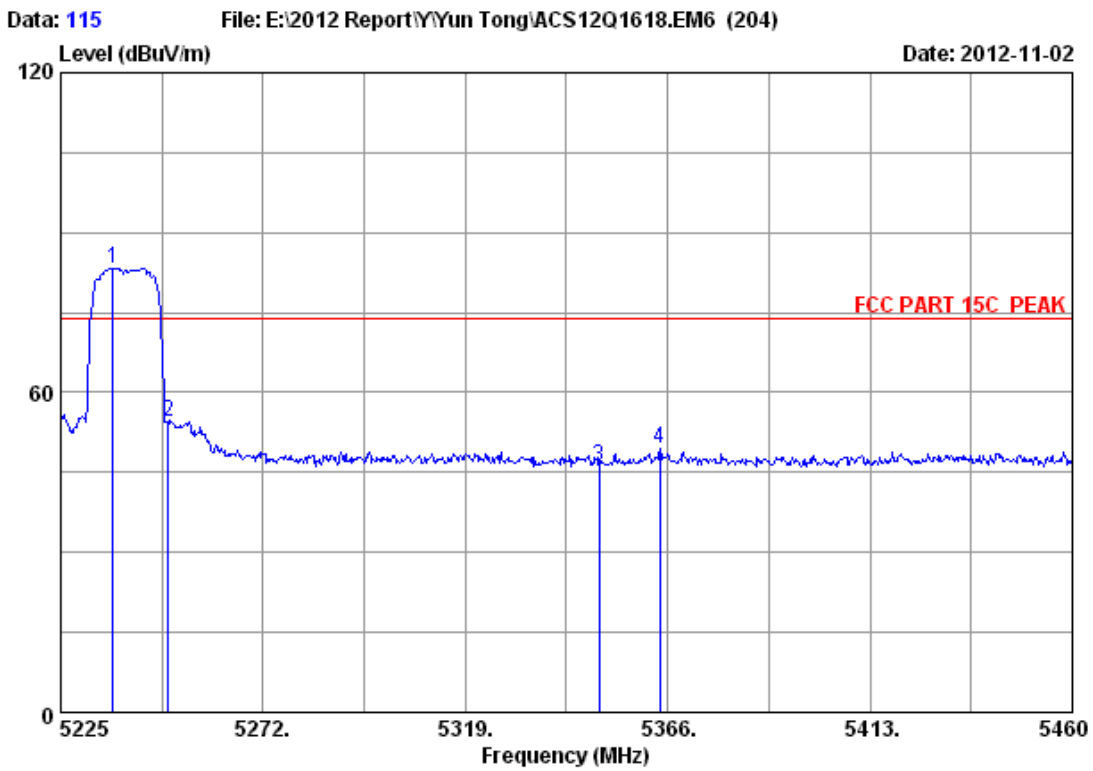
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 114
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5180MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5102.565	33.04	8.94	35.61	41.81	48.18	74.00	25.82	Peak
2	5150.000	33.11	8.98	35.60	40.53	47.02	74.00	26.98	Peak
3	5177.625	33.15	9.01	35.59	76.07	82.64	74.00	-8.64	Peak

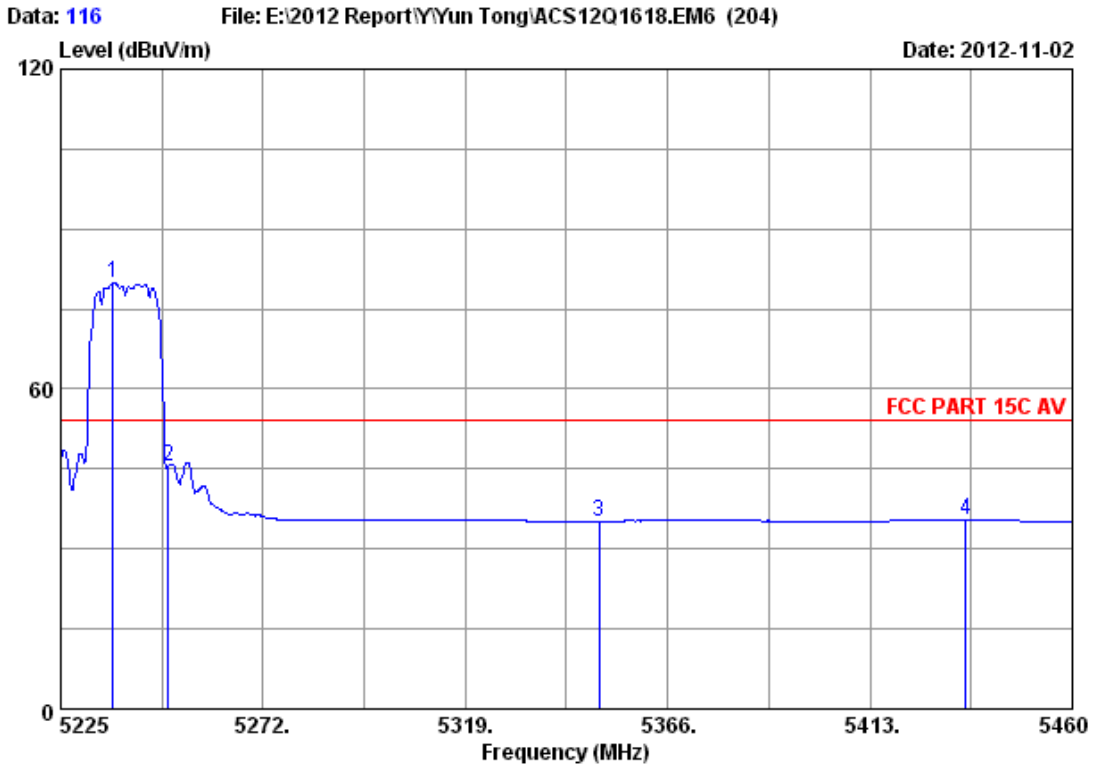
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 115
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5240MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5237.220	33.23	9.06	35.57	76.58	83.30	74.00	-9.30	Peak
2	5250.000	33.25	9.07	35.56	47.83	54.59	74.00	19.41	Peak
3	5350.000	33.39	9.16	35.53	39.12	46.14	74.00	27.86	Peak
4	5364.120	33.41	9.17	35.52	42.27	49.33	74.00	24.67	Peak

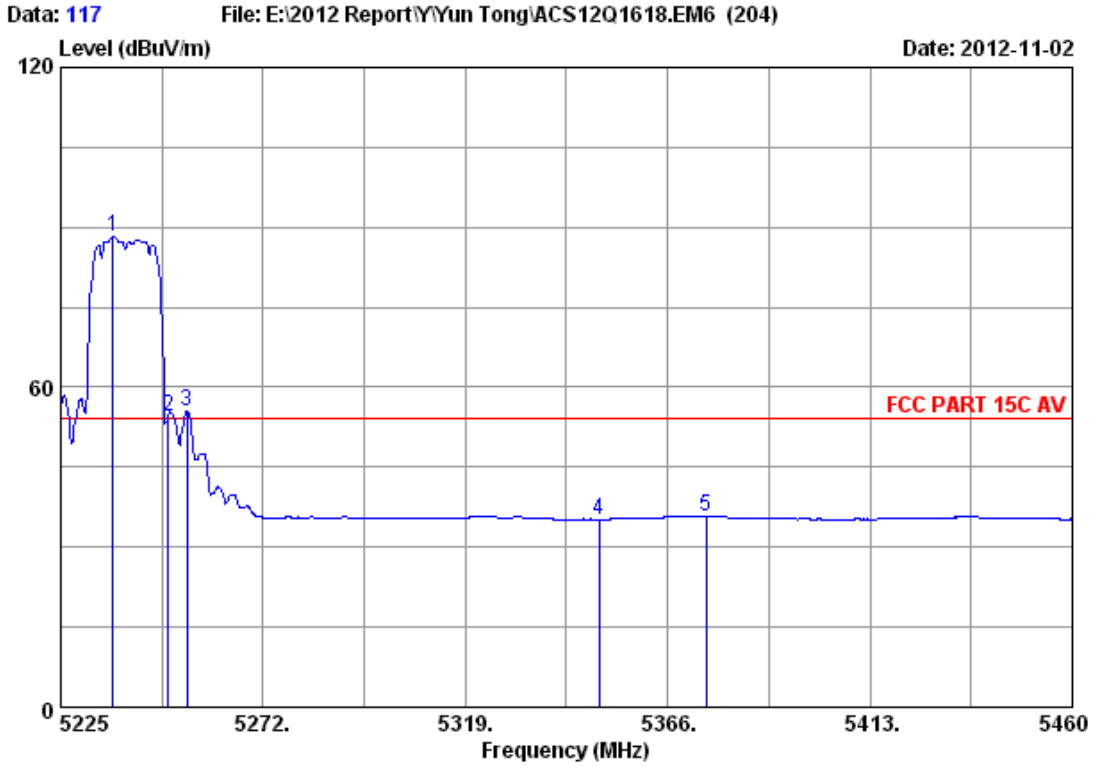
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 116
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15C AV
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5240MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5237.220	33.23	9.06	35.57	73.13	79.85	54.00	-25.85	Average
2	5250.000	33.25	9.07	35.56	38.53	45.29	54.00	8.71	Average
3	5350.000	33.39	9.16	35.53	28.14	35.16	54.00	18.84	Average
4	5435.325	33.51	9.24	35.50	28.29	35.54	54.00	18.46	Average

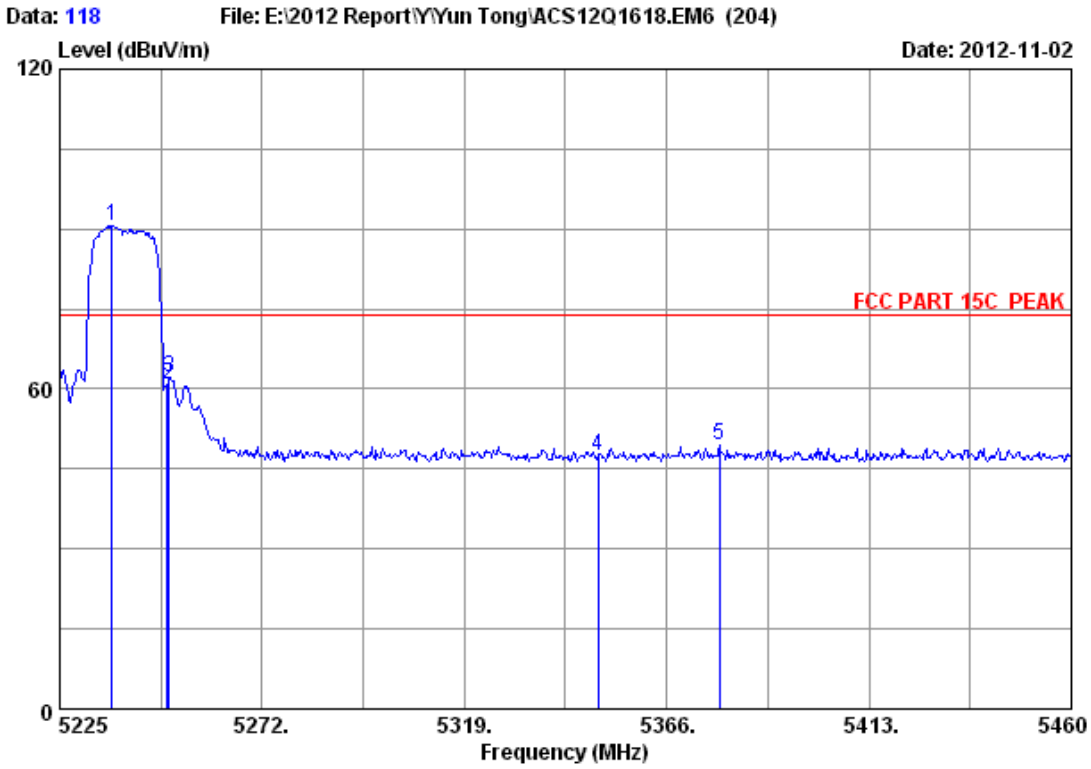
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 117
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5240MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5237.220	33.23	9.06	35.57	81.49	88.21	54.00	-34.21	Average
2	5250.000	33.25	9.07	35.56	47.80	54.56	54.00	-0.56	Average
3	5254.375	33.26	9.07	35.56	48.81	55.58	54.00	-1.58	Average
4	5350.000	33.39	9.16	35.53	28.24	35.26	54.00	18.74	Average
5	5374.930	33.42	9.18	35.52	28.80	35.88	54.00	18.12	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 118
Dis. / Ant. : 3m 2012 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : Leo-Li
EUT : UWSB-System 2.1x-W
Power supply : DC 24V From Adapter Input AC 120V/60Hz
Test mode : 5240MHz Tx
M/N : UWSB-50X-1

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5237.220	33.23	9.06	35.57	83.76	90.48	74.00	-16.48	Peak
2	5250.000	33.25	9.07	35.56	54.14	60.90	74.00	13.10	Peak
3	5250.380	33.25	9.07	35.56	55.58	62.34	74.00	11.66	Peak
4	5350.000	33.39	9.16	35.53	40.52	47.54	74.00	26.46	Peak
5	5378.220	33.43	9.19	35.52	42.29	49.39	74.00	24.61	Peak

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

6. 26DB AND 20DB BANDWIDTH TEST

6.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	May.08, 12	1 Year
2.	Amp	HP	8449B	3008A08495	May.08, 12	1 Year
3.	Antenna	EMCO	3115	9510-4580	May.08, 12	1Year
4.	HF Cable	Hubersuhner	Sucoflex104	-	May.08, 12	1 Year

6.2.Limit

No limit

6.3.Test Procedure

The transmitter output was connected to a spectrum analyzer, The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300kHz RBW and 1 MHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

.

6.4.Test Results

26dB Bandwidth

EUT: UWSB-System 2.1x-W		
M/N: UWSB-50X-1		
Test date: 2012-11-09	Pressure: 101.1±1.0 kpa	Humidity: 53.5±3.0%
Tested by: Leo-Li	Test site: RF Site	Temperature：23.1±0.6 ℃

Cable loss: 2 dB				
Test Mode	CH (MHz)	26dB bandwidth (MHz)		Limit (KHz)
		ANT A	ANT B	
Tx	5180	16.334	16.344	≧ 500
	5210	16.373	16.326	≧ 500
	5240	16.359	16.343	≧ 500
Conclusion：PASS				

20dB Bandwidth

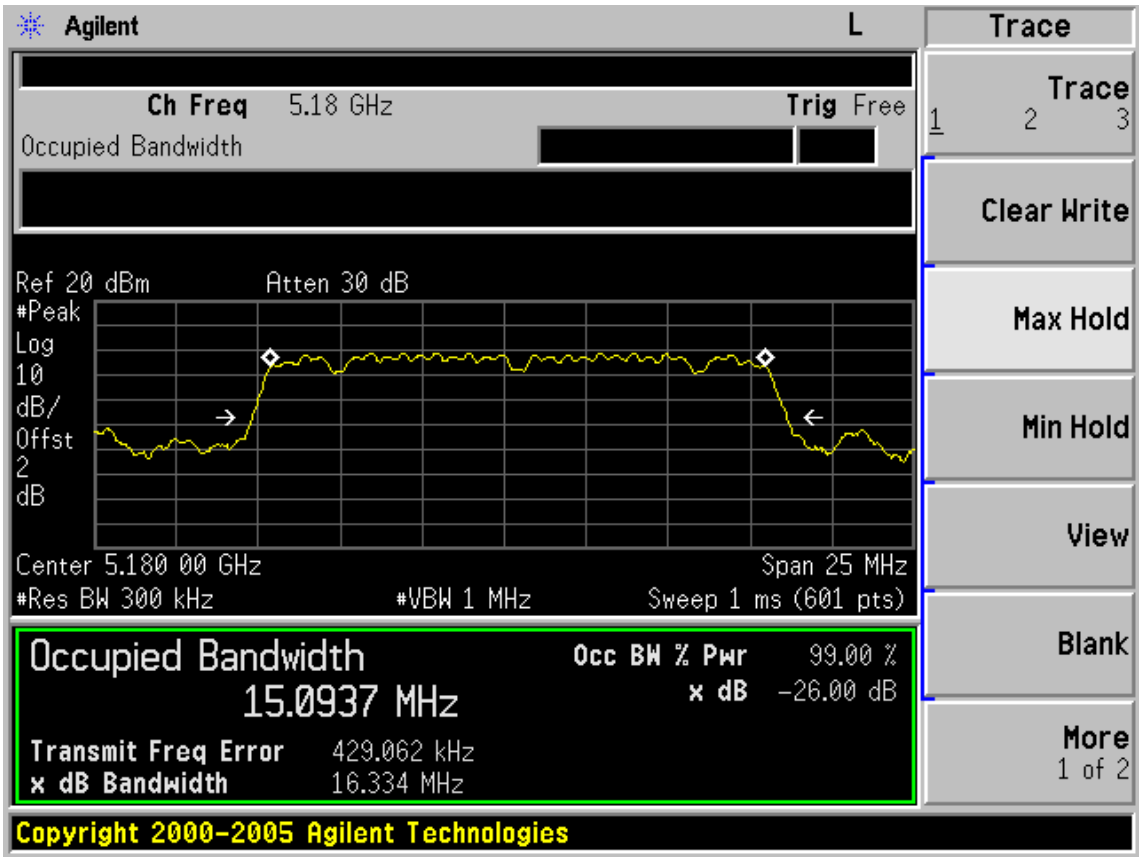
EUT: UWSB-System 2.1x-W		
M/N: UWT-201X		
Test date: 2012-11-29	Pressure: 101.1±1.0 kpa	Humidity: 52.5±3.0%
Tested by: Leo-Li	Test site: RF Site	Temperature：21.9±0.6 ℃

Cable loss: 2 dB		Attenuator loss: 30 dB		
Test Mode	CH (MHz)	20dB bandwidth (MHz)		Limit (KHz)
		ANT A	ANT B	
Tx	5180	15.965	15.955	N/A
	5210	15.947	15.955	N/A
	5240	15.954	15.978	N/A
Conclusion：PASS				

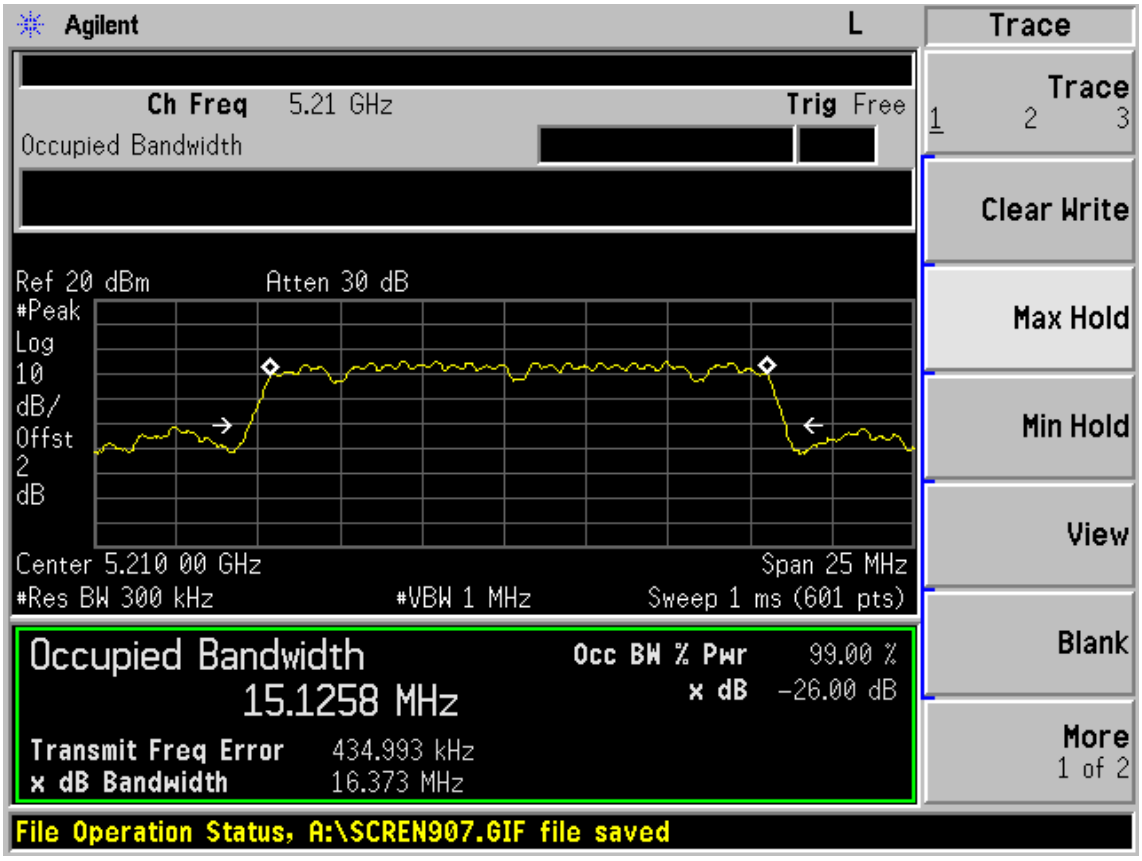
26dB Bandwidth

ANT A

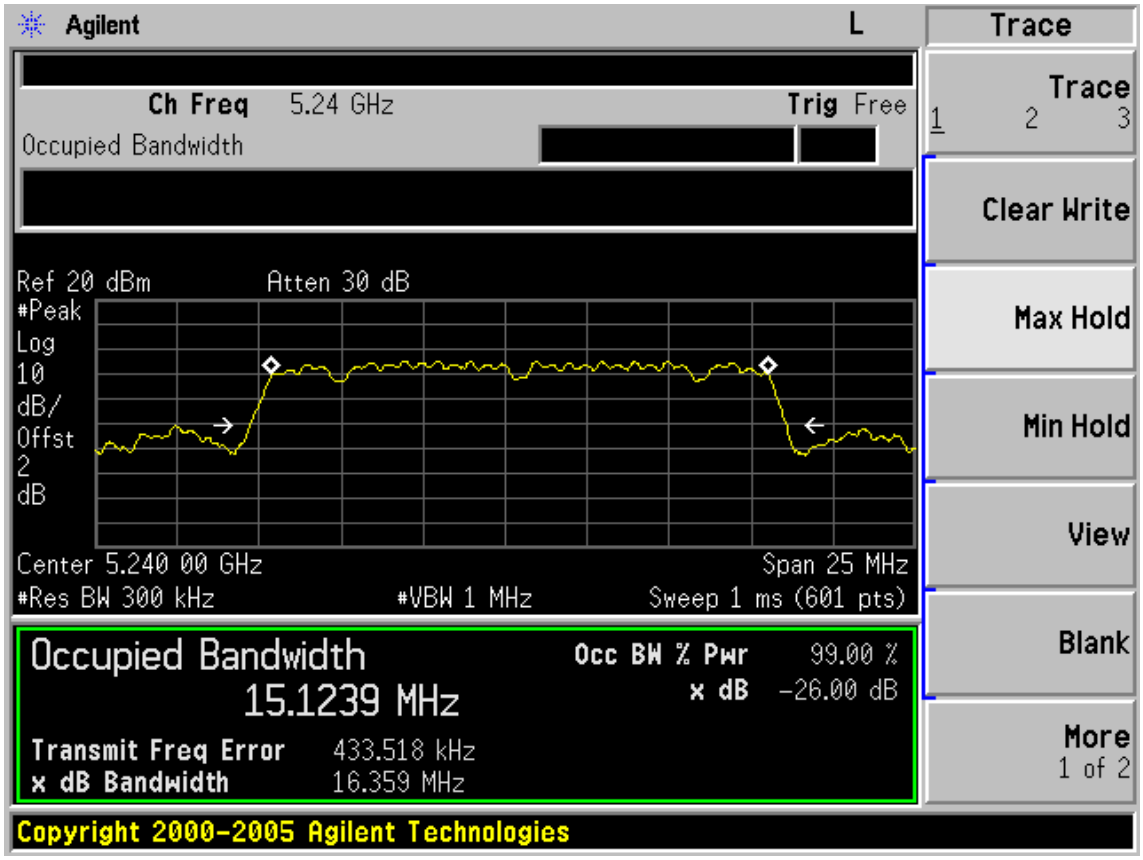
5180MHz



5210MHz

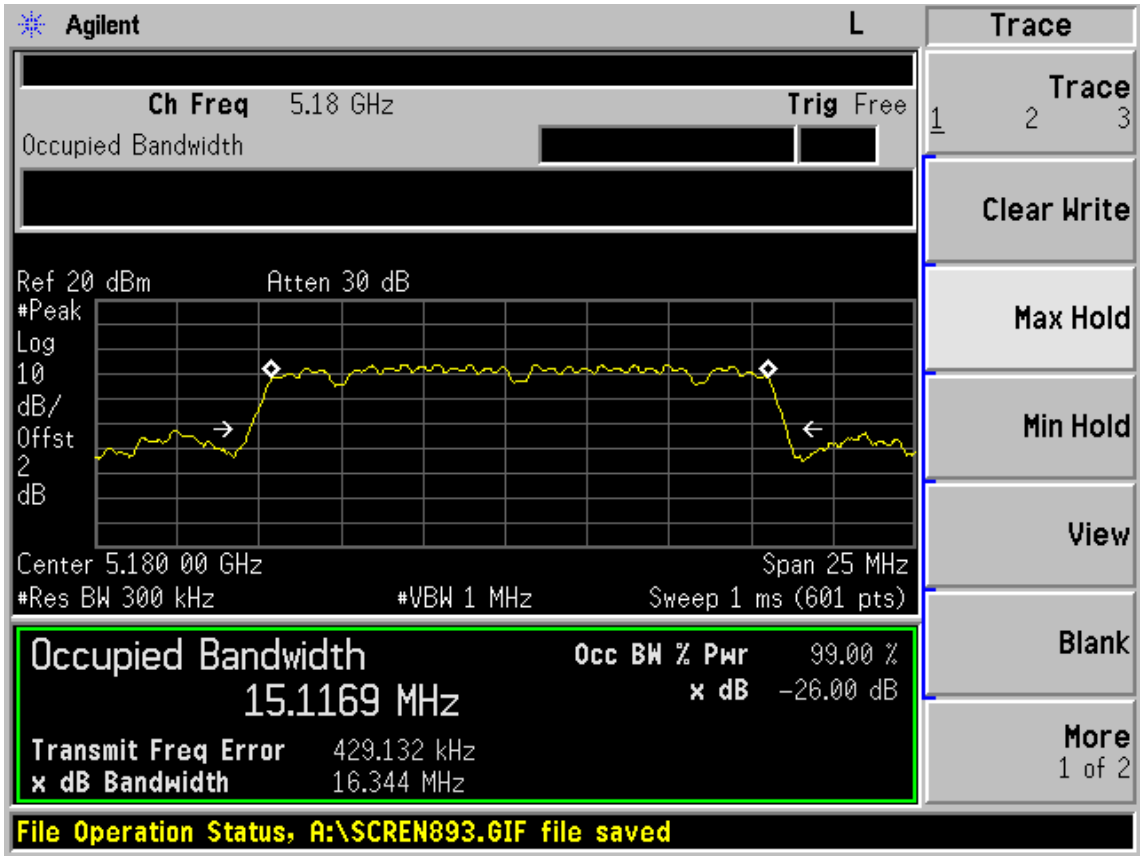


5240MHz

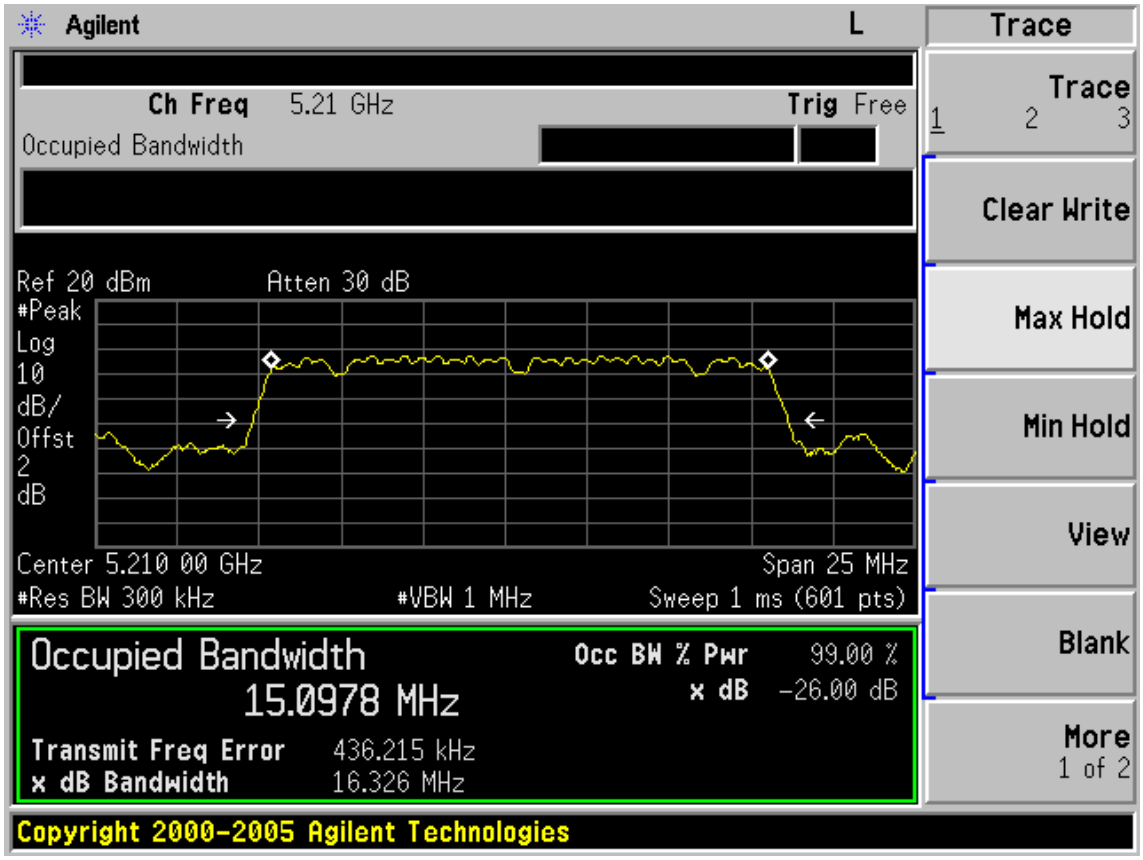


ANT B

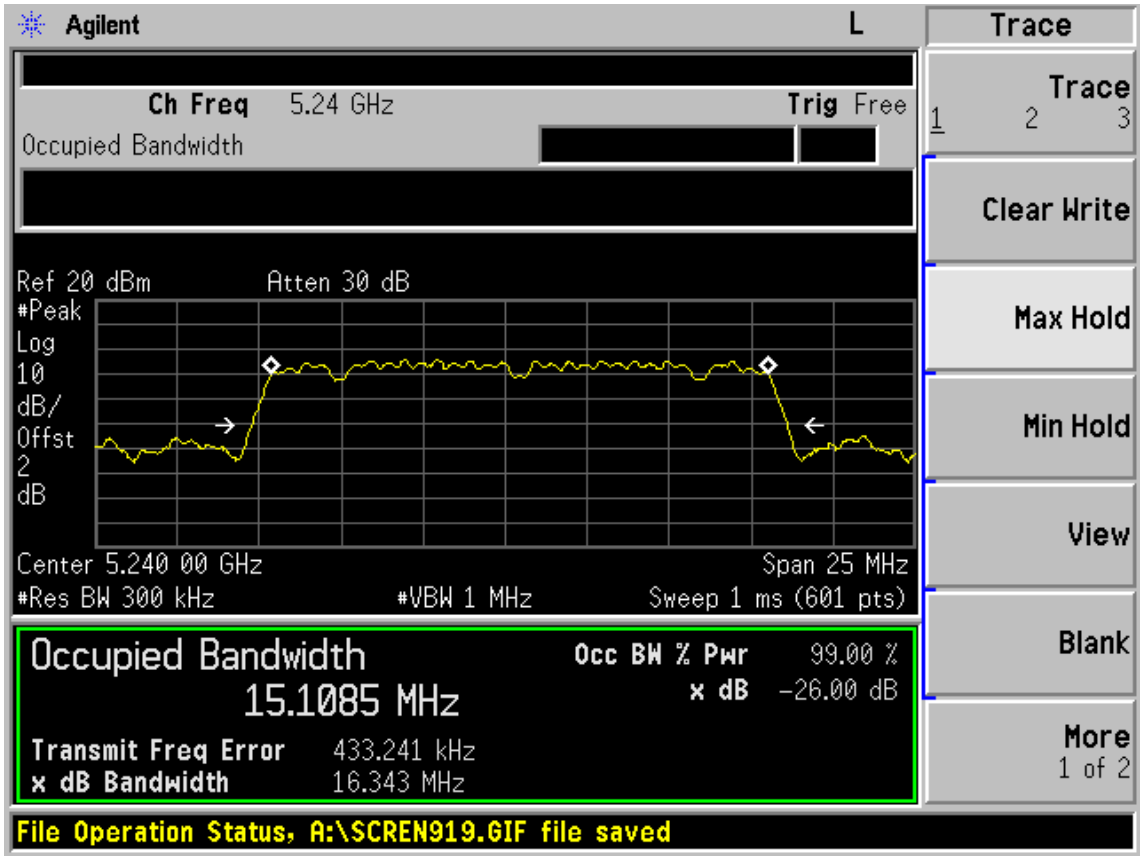
5180MHz



5210MHz



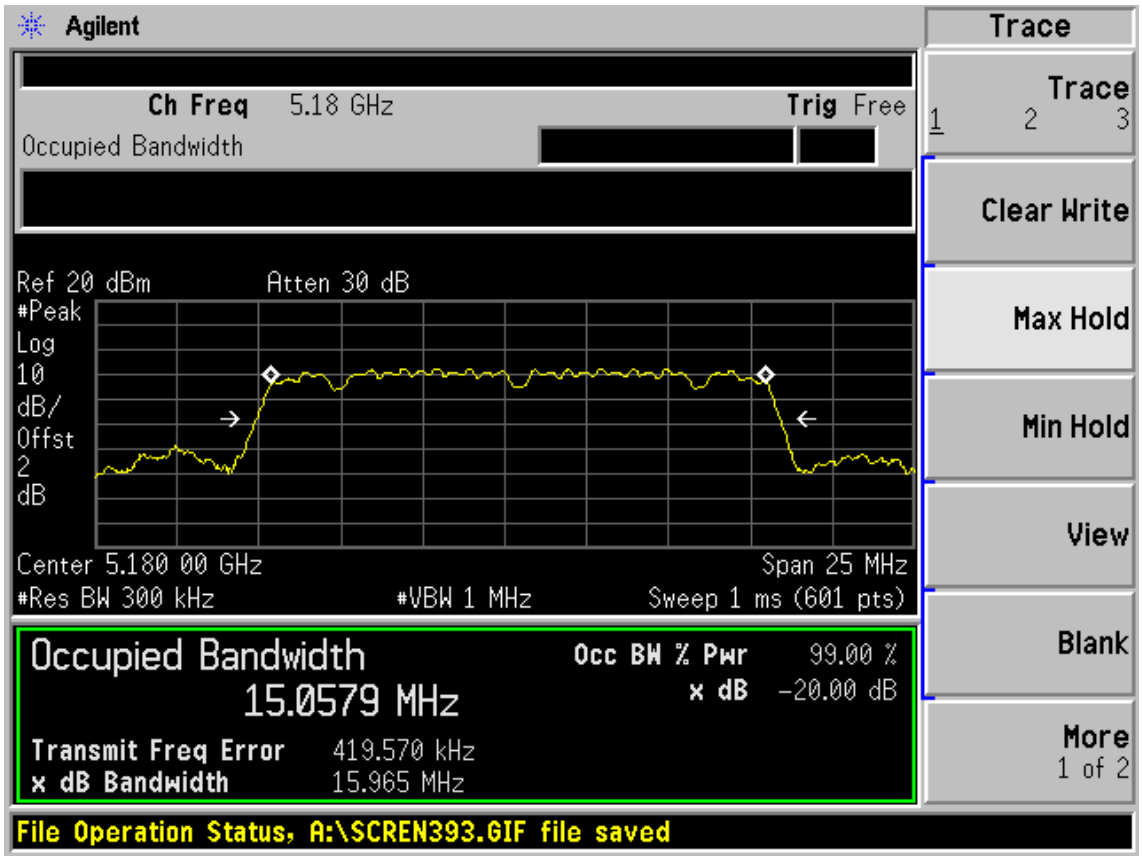
5240MHz



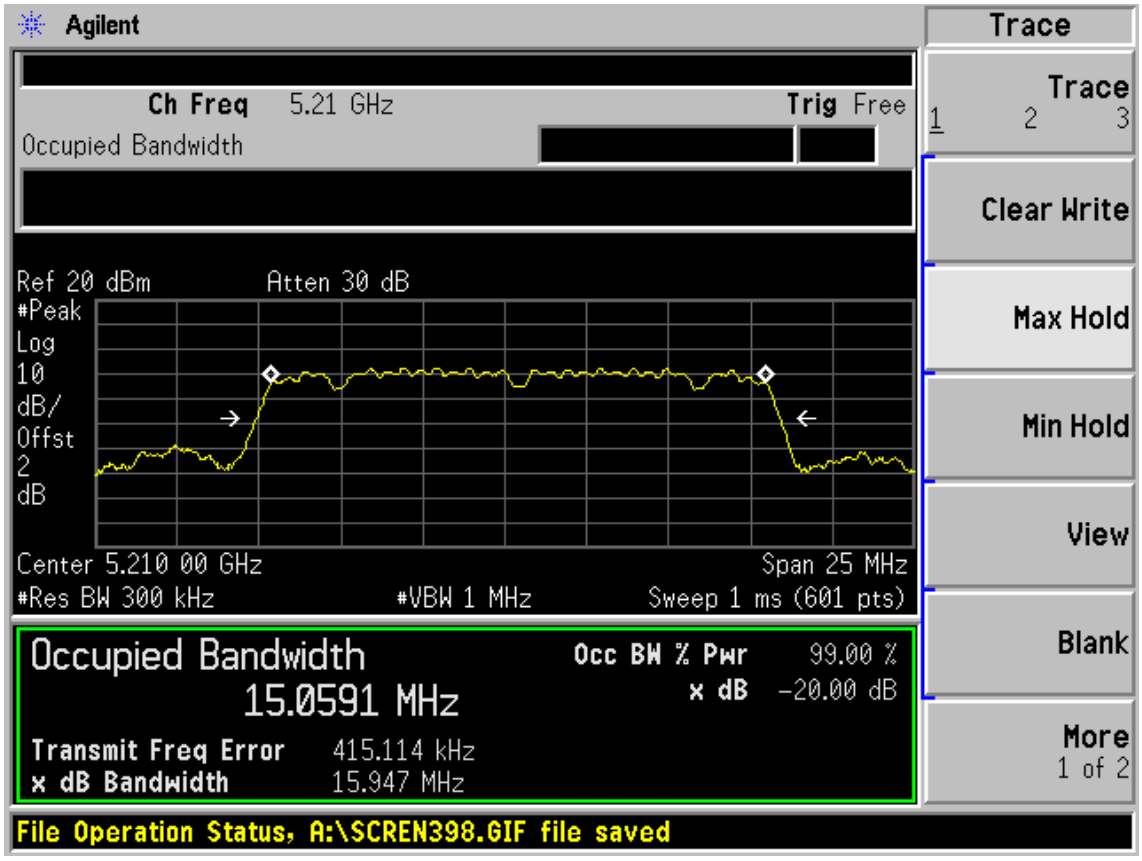
20dB Bandwidth

ANT A

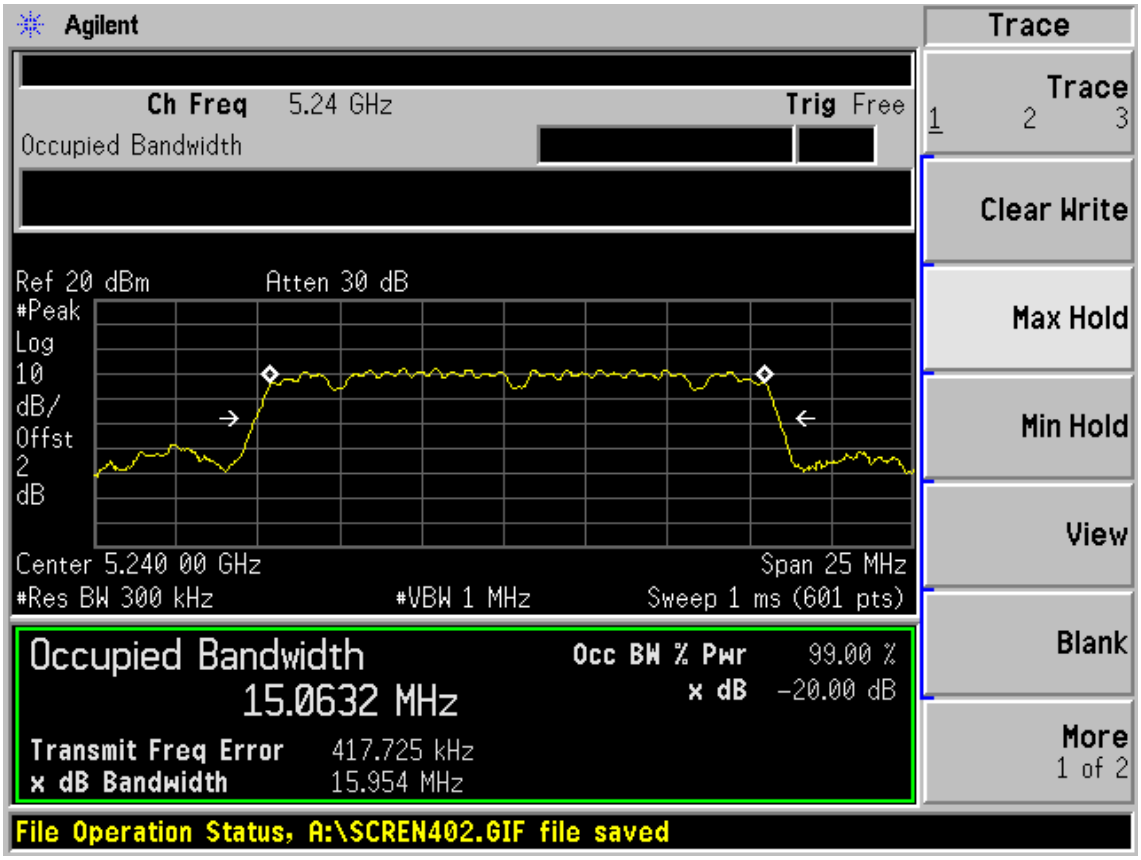
5180MHz



5210MHz

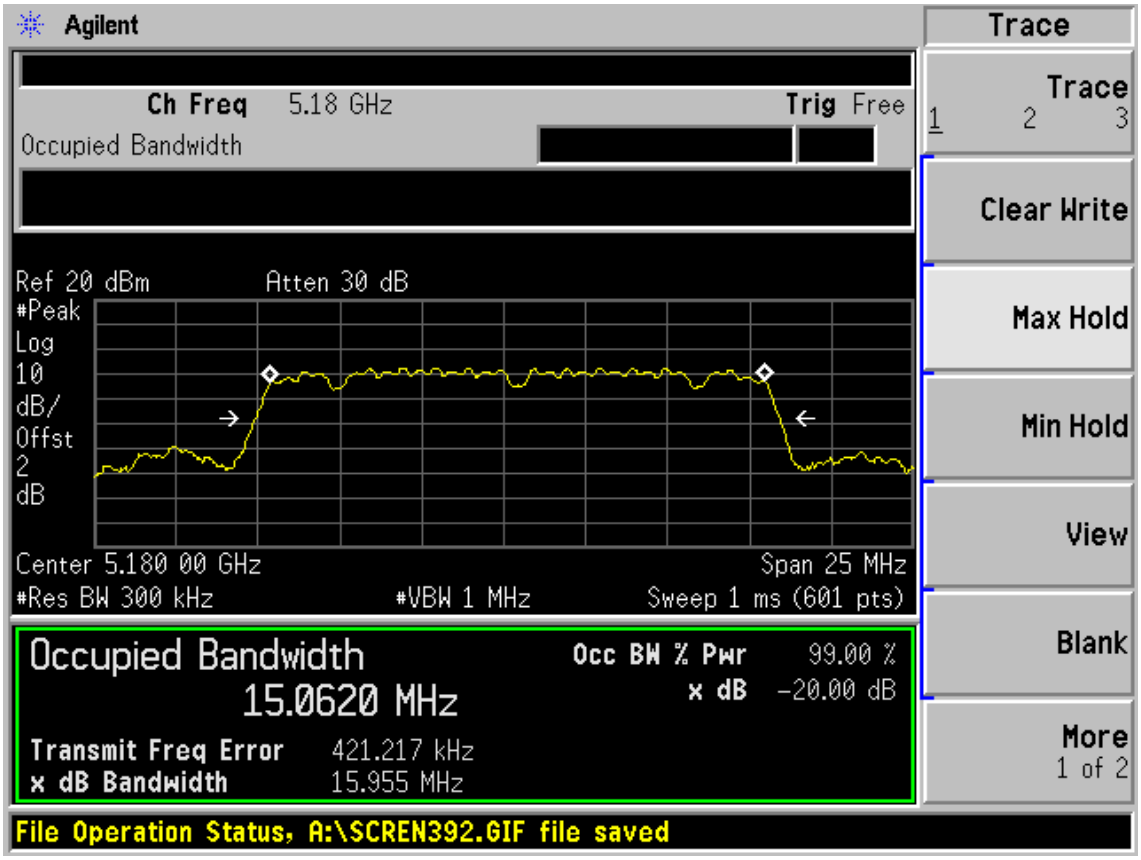


5240MHz

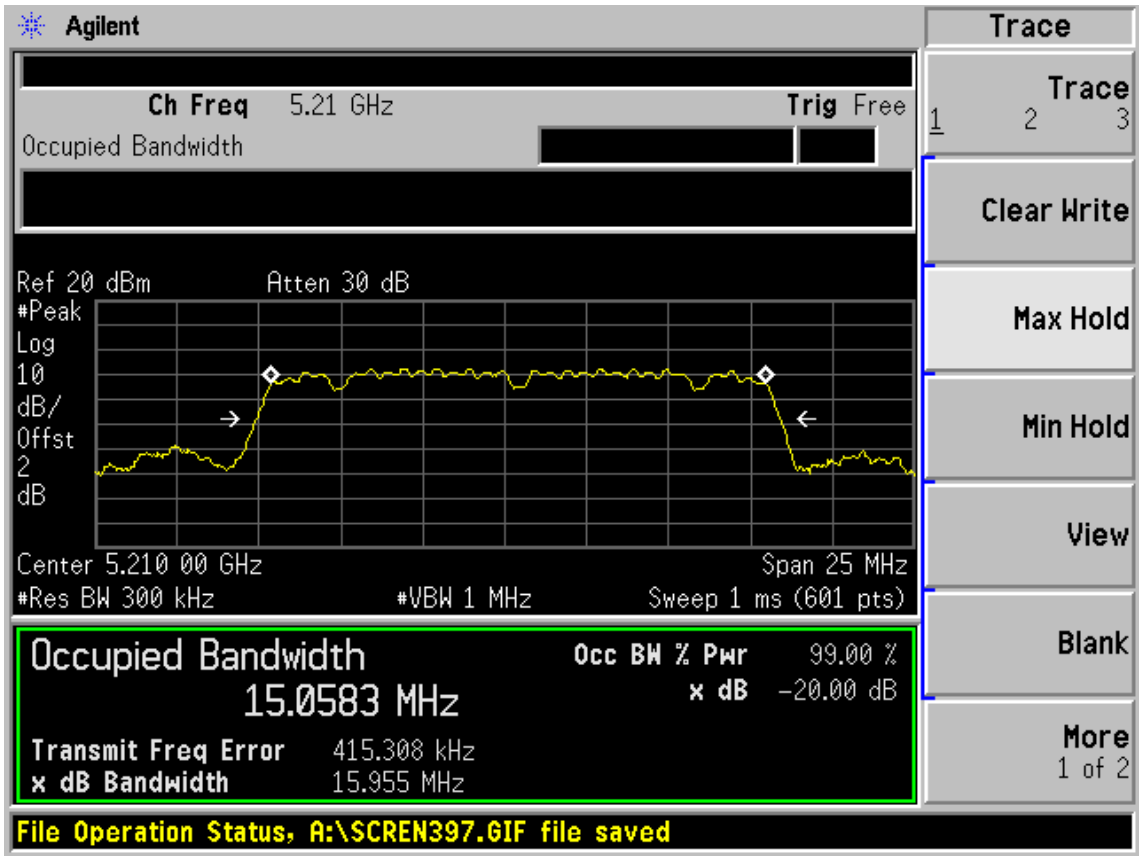


ANT B

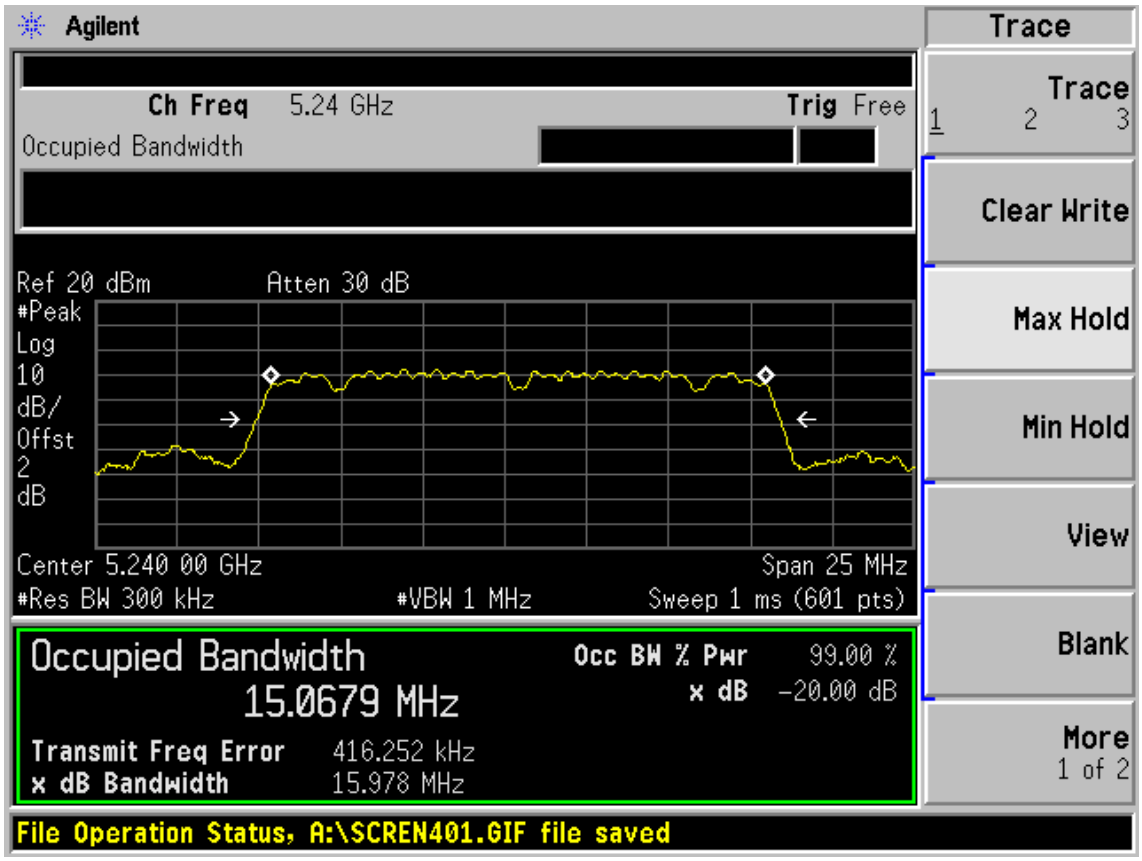
5180MHz



5210MHz



5240MHz



7. OUTPUT POWER TEST

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	May.08, 12	1 Year
2.	Amp	HP	8449B	3008A08495	May.08, 12	1 Year
3.	Antenna	EMCO	3115	9510-4580	May.08, 12	1Year
4.	HF Cable	Hubersuhne	Sucoflex104	-	May.08, 12	1 Year
5.	Power Meter	Anritsu	ML2487A	6K00002472	May.08, 12	1Year
6.	Power Sensor	Anritsu	MA2491A	033005	May.08, 12	1Year

7.2. Limit

For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.3. Test Procedure

The transmitter output was connected to a spectrum analyzer by suitable attenuation, the channel power measure function of spectrum Analyzer was used to measure out the PK output power of device

7.4.Test Results

EUT: UWSB-System 2.1x-W			
M/N: UWSB-50X-1			
Test date: 2012-11-09	Pressure: 101.2±1.0 kpa	Humidity: 52.2±3.0%	
Tested by: Leo-Li	Test site: RF Site	Temperature：23.9±0.6℃	
Cable loss: 2 dB			
Test Mode	CH (MHz)	Peak output Power (dBm)	Limit (dBm)
		Chain A	Chain B
Tx	5180	7.35	12.21	16
	5210	8.42	11.25	16
	5240	8.53	9.18	16
Conclusion: PASS			

8. POWER SPECTRAL DENSITY TEST

8.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	May.08, 12	1 Year
2.	Amp	HP	8449B	3008A08495	May.08, 12	1 Year
3.	Antenna	EMCO	3115	9510-4580	May.08, 12	1Year
4.	HF Cable	Hubersuhne	Sucoflex104	-	May.08, 12	1 Year

8.2.Limit

For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.3.Test Procedure

The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW

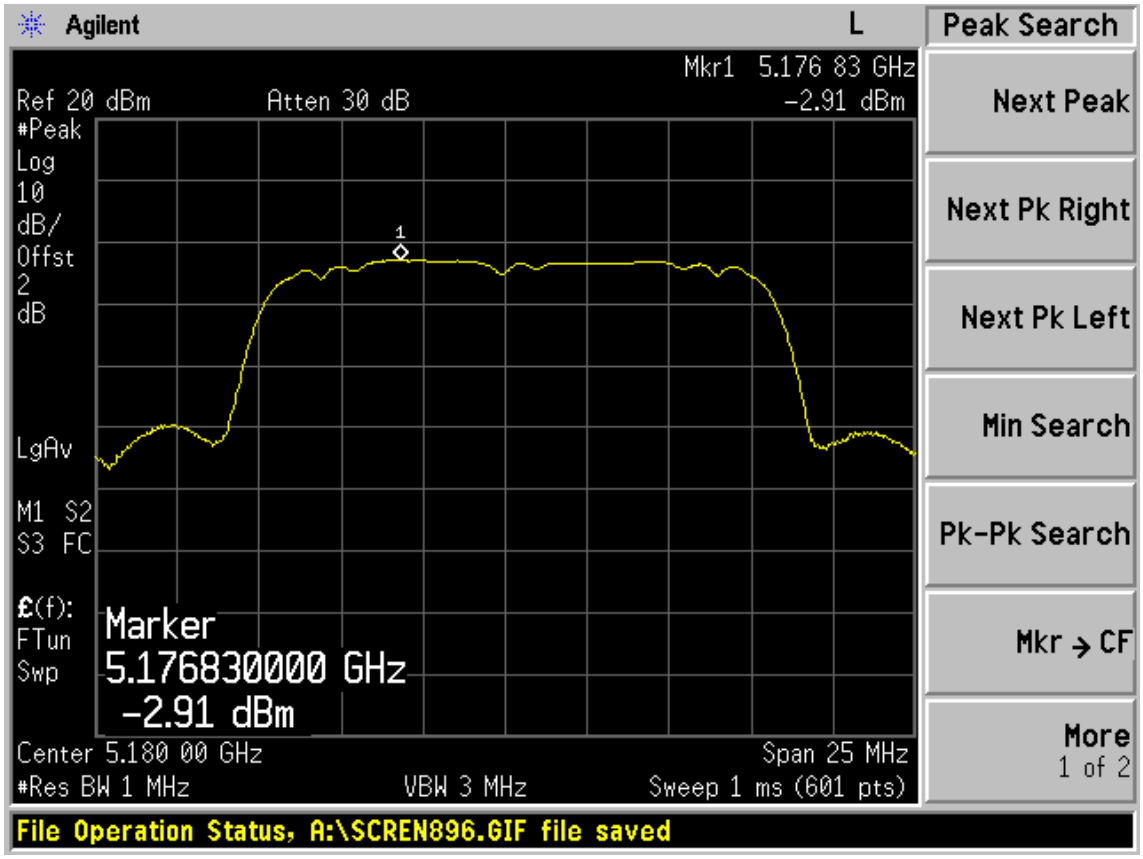
8.4.Test Results

EUT: UWSB-System 2.1x-W		
M/N: UWSB-50X-1		
Test date: 2012-11-09	Pressure: 101.2±1.0 kpa	Humidity: 54.3±3.0%
Tested by: Leo-Li	Test site: RF Site	Temperature：24.2±0.6℃

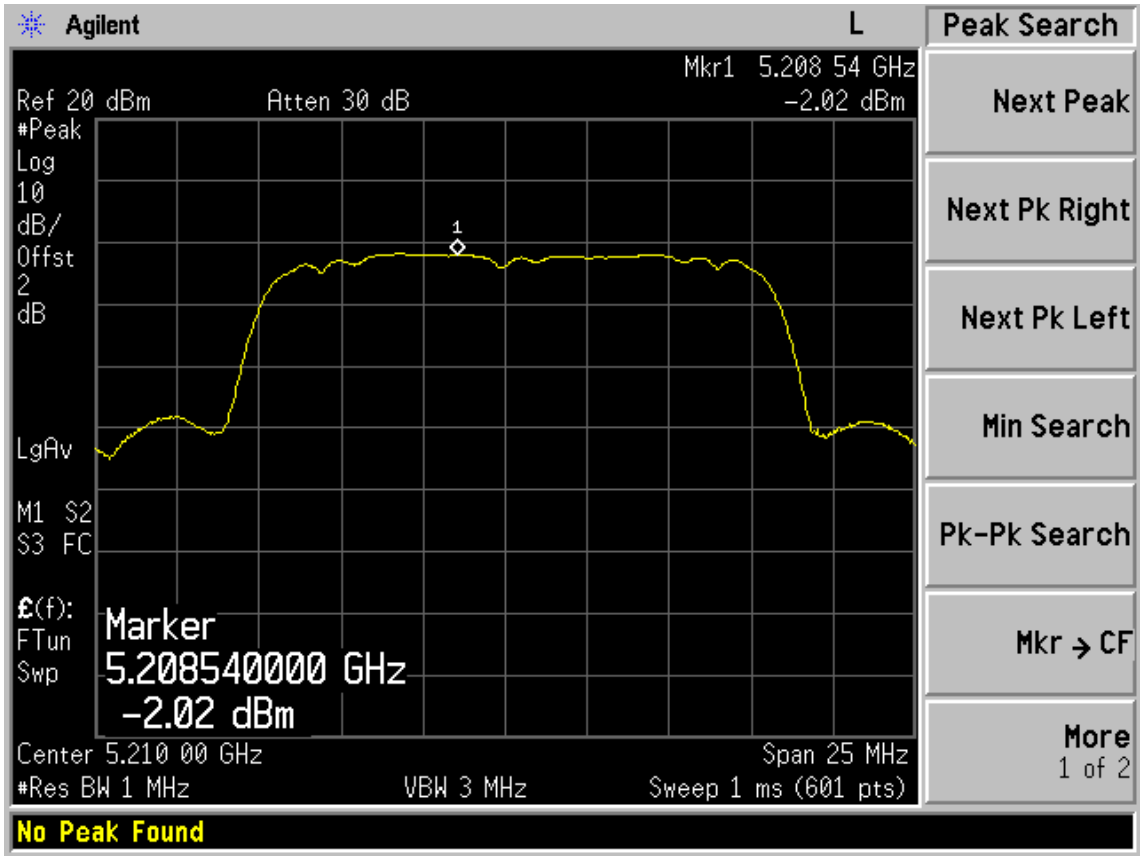
Cable loss: 2 dB				
Test Mode	CH (MHz)	Power density（dBm/MHz）		Limit (dBm/MHz)
		ANT A	ANT B	
Tx	5180	-2.91	1.74	4
	5210	-2.02	0.72	4
	5240	-1.65	0.12	4
Conclusion：PASS				

ANT A

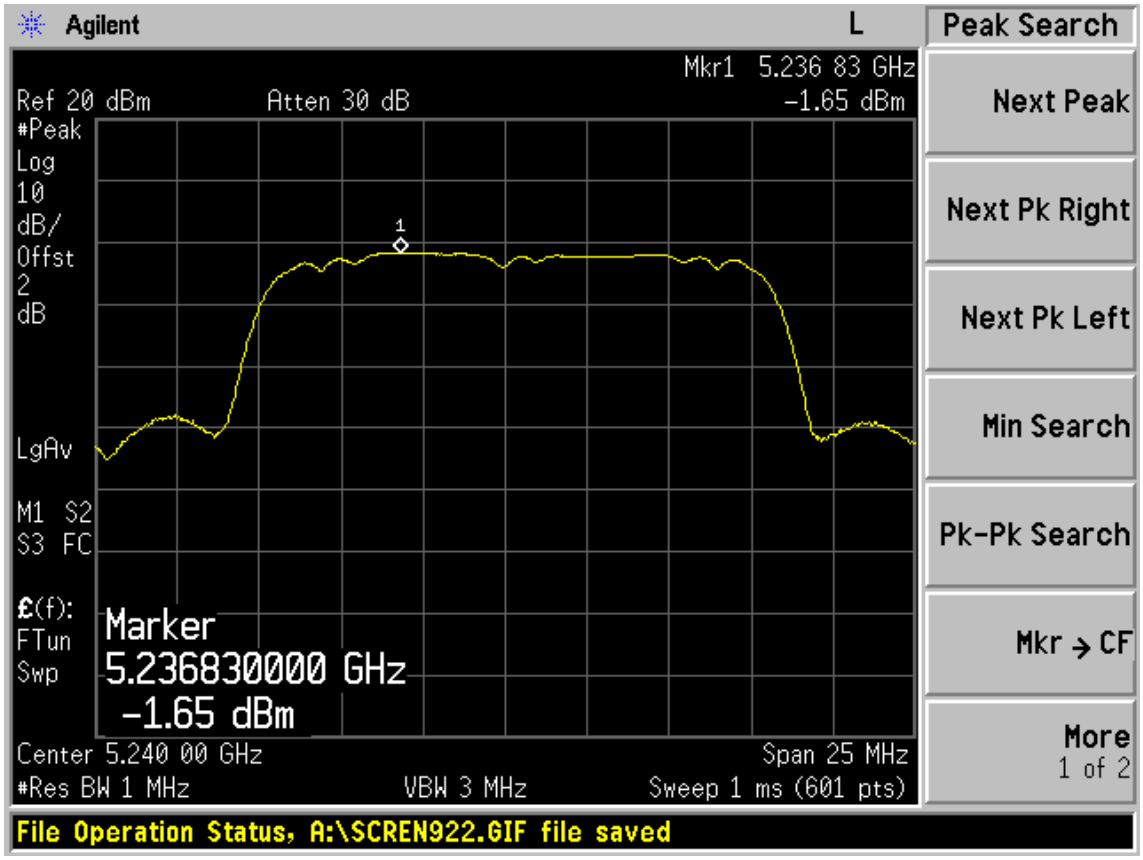
5180MHz



5210MHz

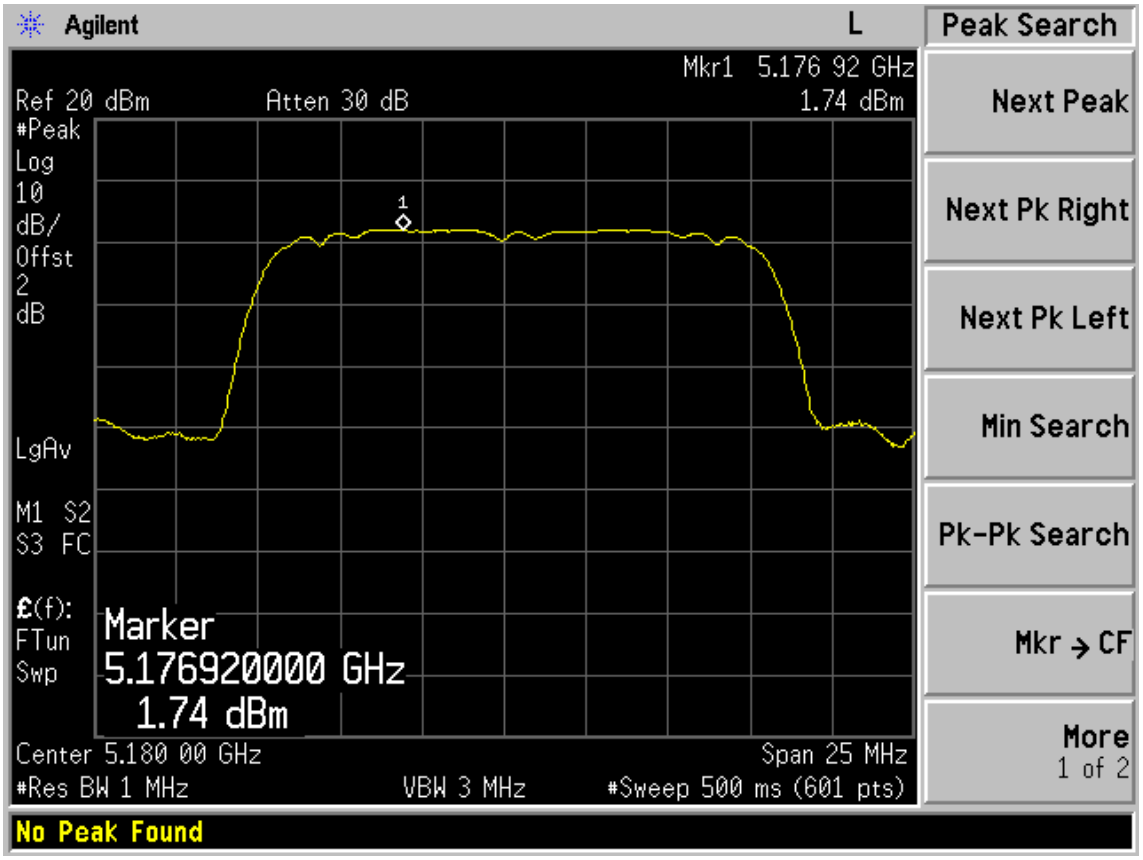


5240MHz

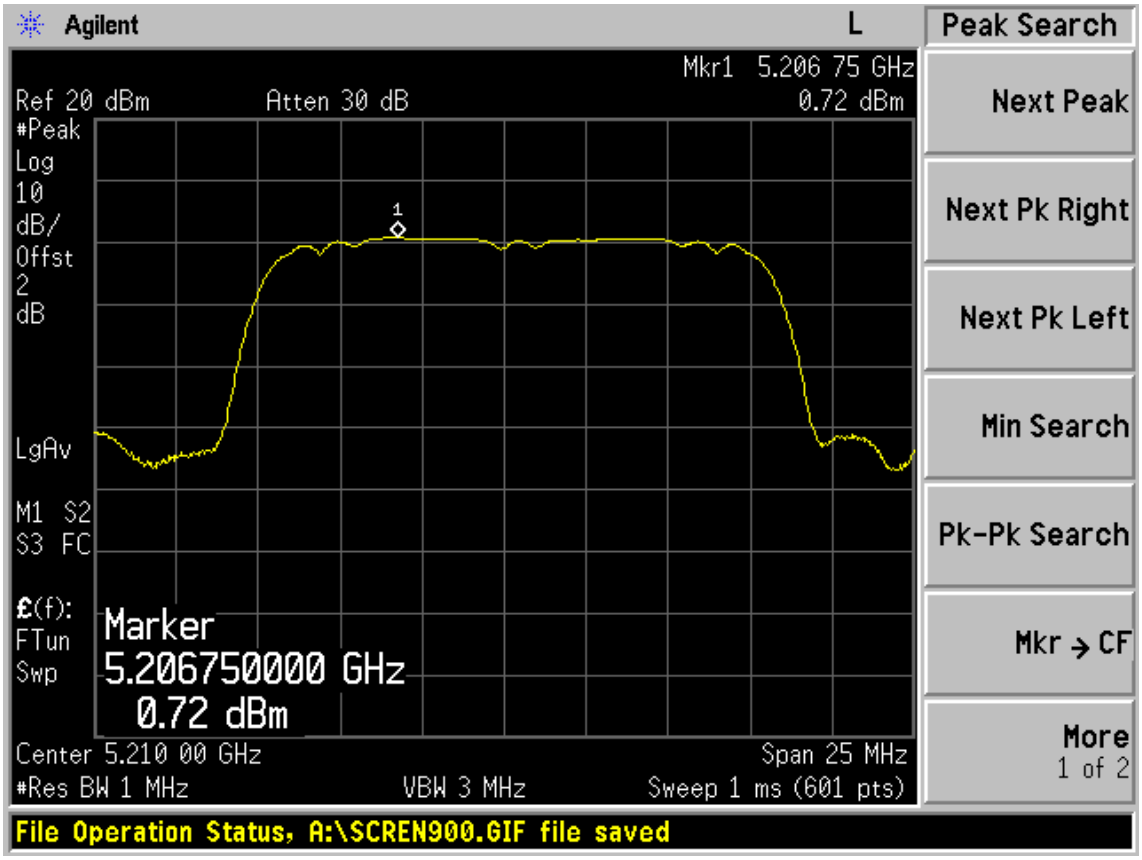


ANT B

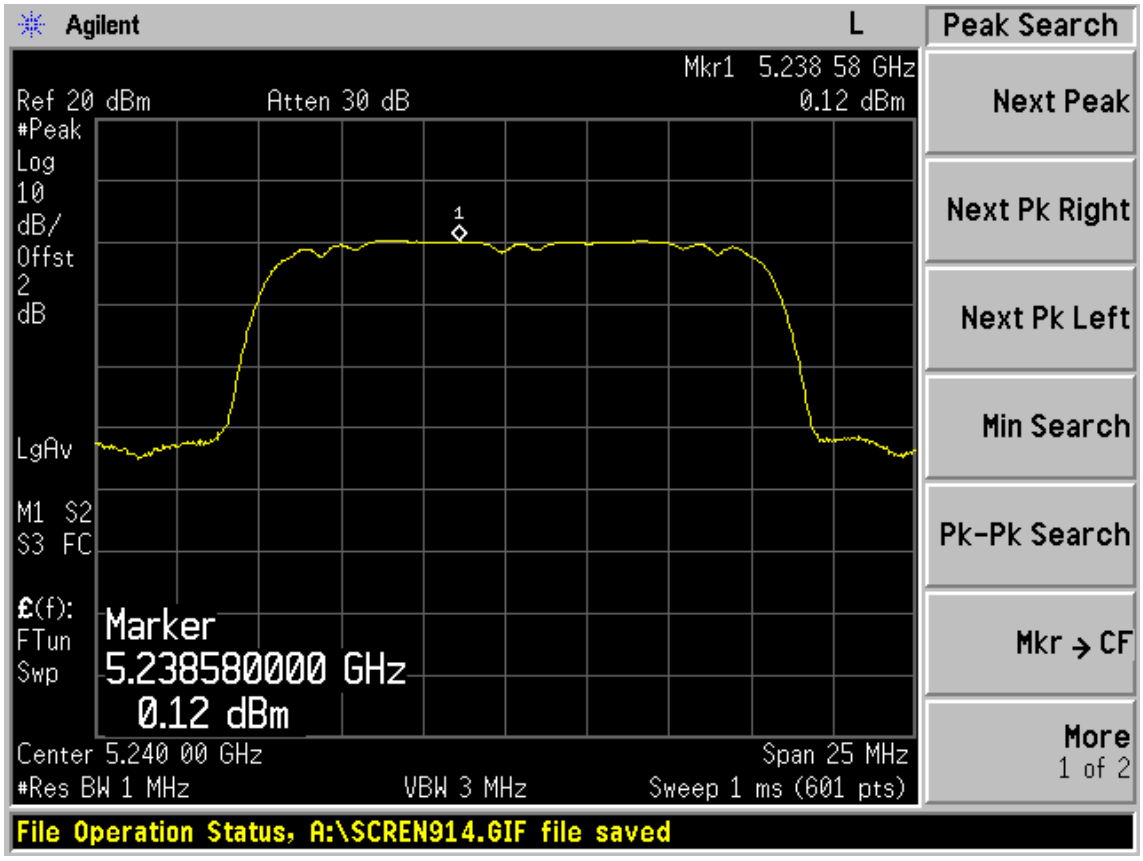
5170MHz



5210MHz



5240MHz



9. PEAK EXCURSION MEASUREMENT

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	May.08, 12	1 Year
2.	Amp	HP	8449B	3008A08495	May.08, 12	1 Year
3.	Antenna	EMCO	3115	9510-4580	May.08, 12	1Year
4.	HF Cable	Hubersuhne	Sucoflex104	-	May.08, 12	1 Year

9.2. Limit

The ratio of the peak excursion of modulation envelope (measured using a peak hold function) to the maximum conducted power (measured as specified above) shall not exceed 13 dB across any 1MHz bandwidth whichever is less.

9.3. Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set the spectrum analyzer span to view the entire emissions bandwidth. The largest difference between the following two traces (Peak Trace and Average Trace) must be ≤ 13 dB for all frequencies across the emissions bandwidth. Submit a plot.
3. Peak Trace: Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and max-hold settings.
4. Average Trace: Method #3—video averaging with max hold--and sum power across the band. Set span to encompass the entire emissions bandwidth (EBW) of the signal. Set sweep trigger to “free run”. Set RBW = 1 MHz. Set VBW ≥ 1/T (Draft n VBW = 300kHz ≥ 1/4μ s). Use sample detector mode if bin width (i.e., span/number of points in spectrum) < 0.5 RBW. Otherwise use peak detector mode. Set max hold. Allow max hold to run for 60 seconds.

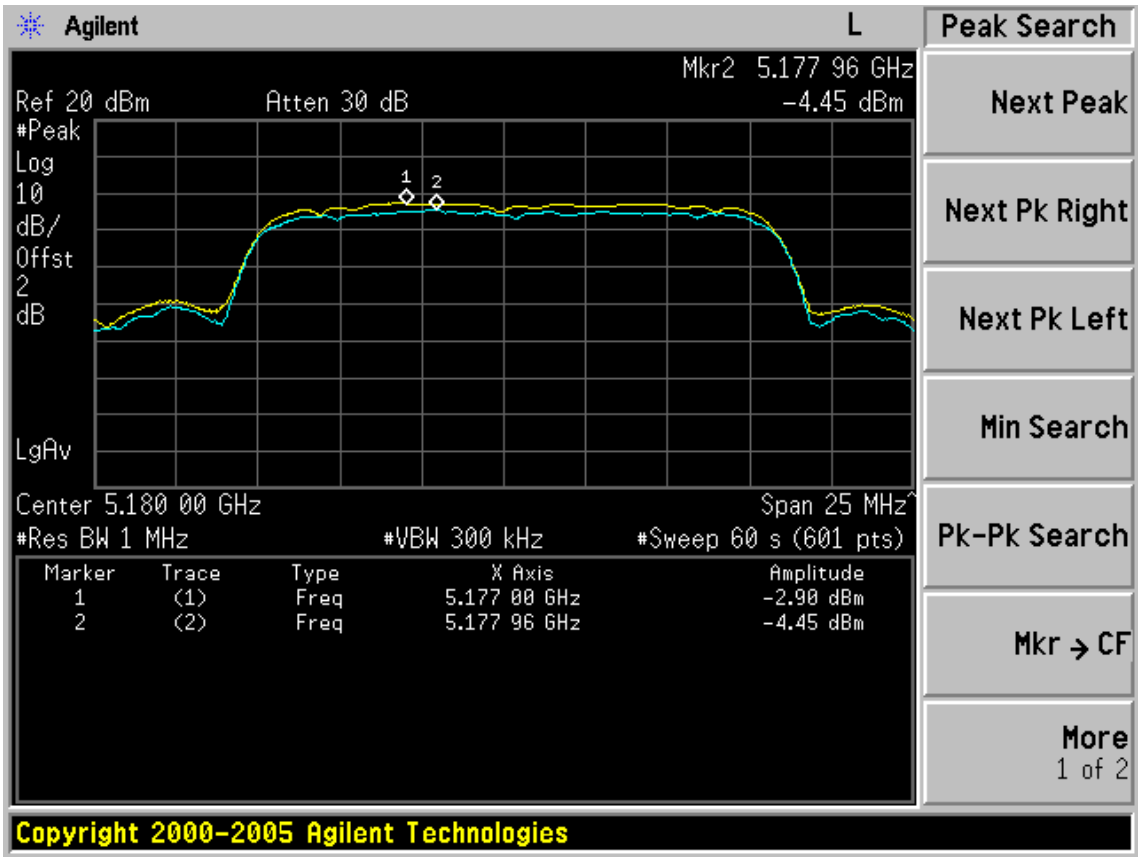
9.4.Test Results

EUT: UWSB-System 2.1x-W		
M/N: UWSB-50X-1		
Test date: 2012-11-09	Pressure: 101.1±1.0 kpa	Humidity: 51.7±3.0%
Tested by: Leo-Li	Test site: RF Site	Temperature：23.8±0.6℃

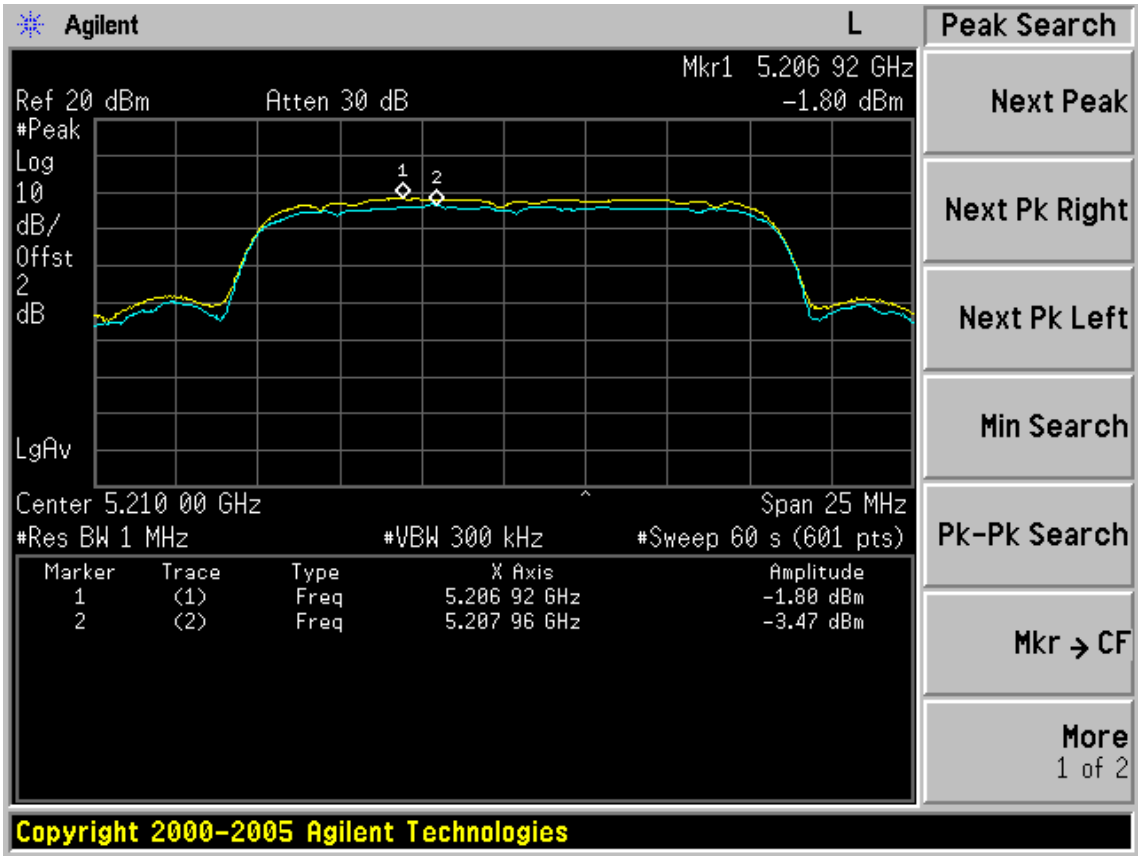
Cable loss: 2 dB				
Test Mode	CH (MHz)	Power excursion（dB）		Limit (dB)
		ANT A	ANT B	
Tx	5180	1.55	1.47	13
	5210	1.67	1.65	13
	5240	1.65	2.13	13
Conclusion：PASS				

ANT A

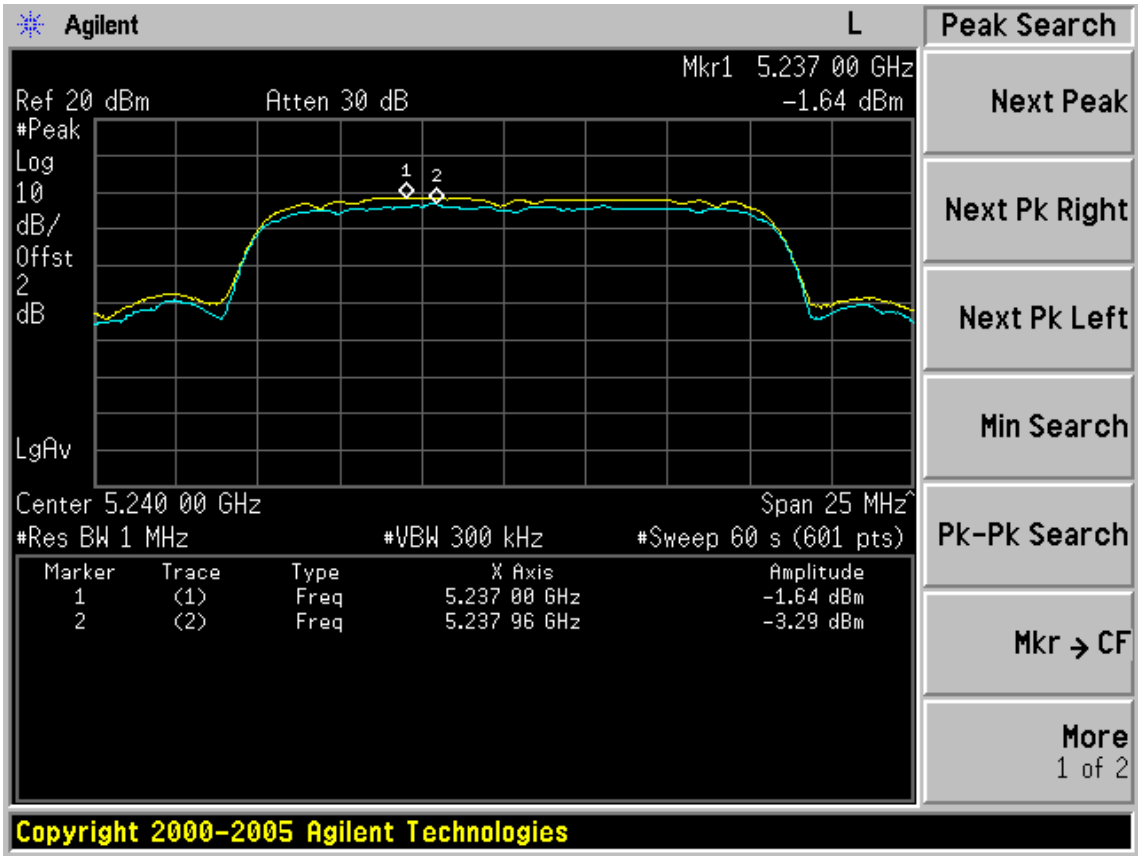
5180MHz



5210MHz

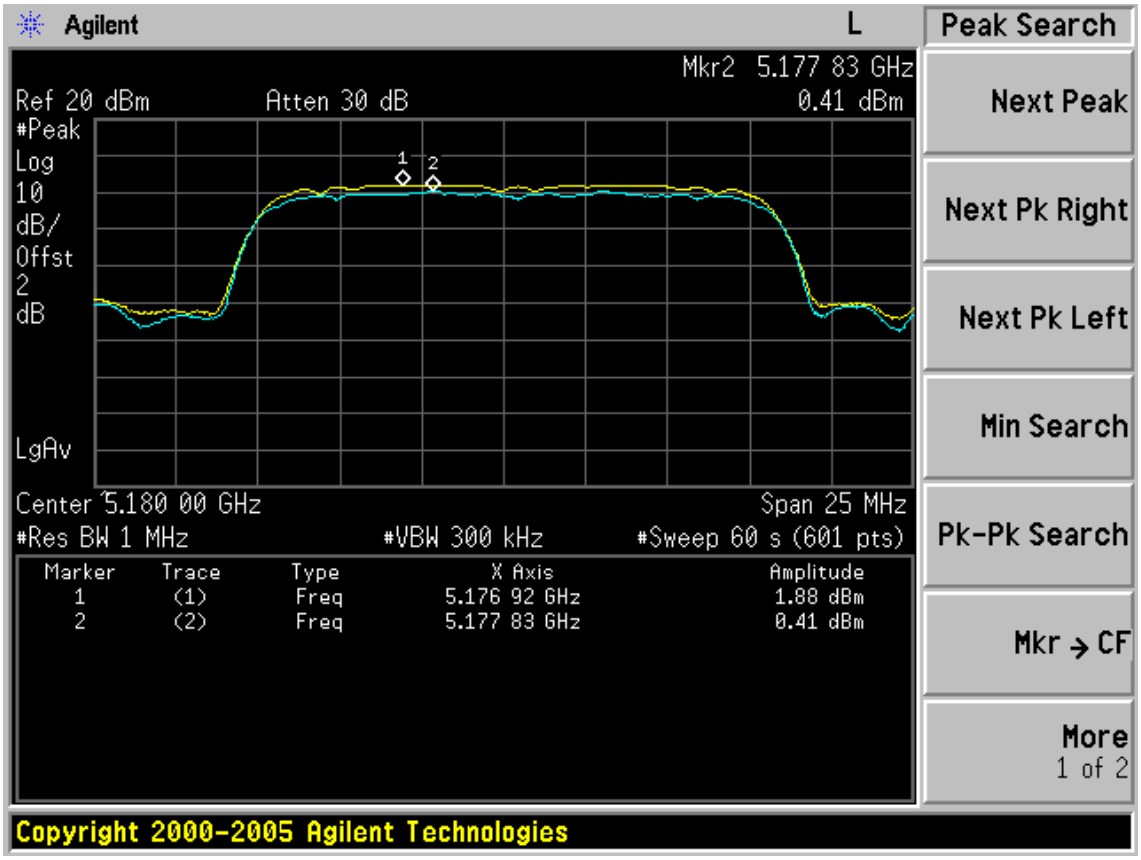


5240MHz

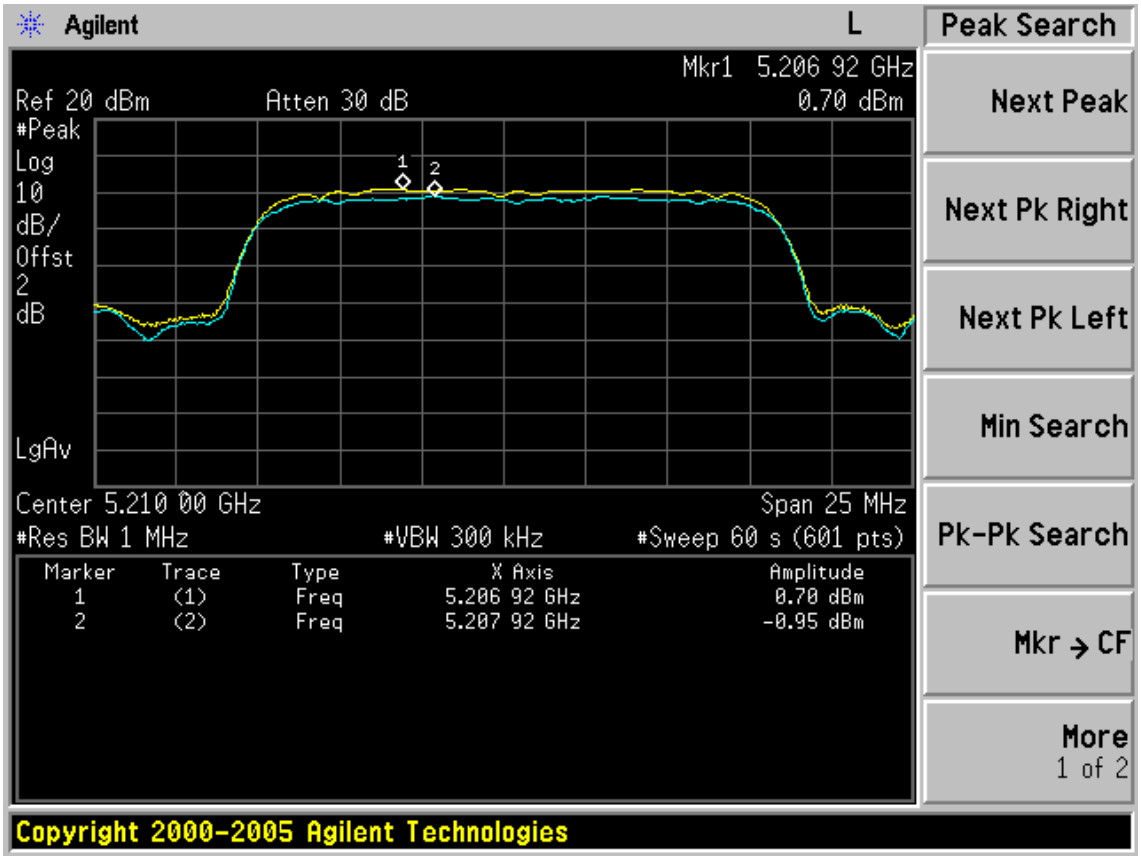


ANT B

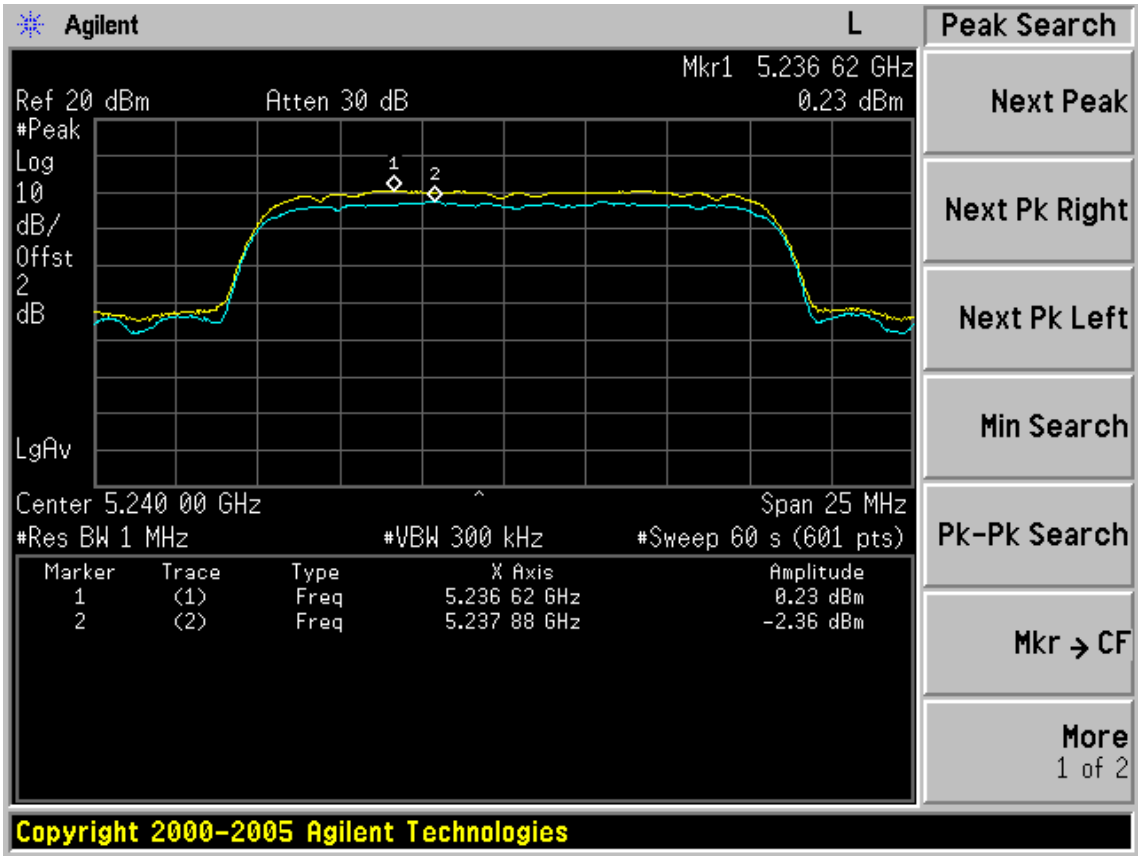
5180MHz



5210MHz



5240MHz



10. FREQUENCY STABILITY MEASUREMENT

10.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	May.08, 12	1 Year
2.	Amp	HP	8449B	3008A08495	May.08, 12	1 Year
3.	Antenna	EMCO	3115	9510-4580	May.08, 12	1Year
4.	HF Cable	Hubersuhne	Sucoflex104	-	May.08, 12	1 Year

10.2.Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emissions is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or ±20ppm

10.3.Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyser. EUT have transmitted absence of modulation signal and fixed channelize. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
2. Extreme temperature rule is -30°C~50°C.

10.4.Test Result

EUT: UWSB-System 2.1x-W		
M/N: UWSB-50X-1		
Power: DC 24V From Adapter Input AC 120V/60Hz		
Test Date: 2012-11-09	Test site: RF Chamber	Tested by: Leo-Li
Ambient Temperature: 23.2±1.0℃	Relative Humidity: 52.8±1.0%	Pressure:101.2±1.0 kpa

Frequency stability VS Voltage (Temperature:20℃)

Supply Voltage (V)	Test frequency (MHz)	Test result (MHz)	Max Deviation (MHz)	Max Deviation (ppm)	Limit (ppm)	Conclusion
102V	5180	5180.012500	0.024600	4.75	+/-20	PASS
120V	5180	5180.021500				
138V	5180	5180.024600				
102V	5210	5210.012000	0.025000	4.80	+/-20	
120V	5210	5210.021300				
138V	5210	5210.025000				
102V	5240	5240.014200	0.022500	4.29	+/-20	
120V	5240	5240.019200				
138V	5240	5240.022500				

Frequency stability VS Temperature (supply voltage AC 120V/60Hz)

Temperature (℃)	Test frequency (MHz)	Test result (MHz)	Max Deviation (MHz)	Max Deviation (ppm)	Limit (ppm)	Conclusion
-30℃	5180	5180.061200	0.061200	11.81	+/-20	PASS
-20℃	5180	5180.061100				
-10℃	5180	5180.051300				
0℃	5180	5180.020600.				
10℃	5180	5179.987500				
20℃	5180	5179.986800				
30℃	5180	5179.979600				
40℃	5180	5179.975800				
50℃	5180	5179.978600				

Frequency stability VS Temperature (supply voltage AC 120V/60Hz)						
Temperature (℃)	Test frequency (MHz)	Test result (MHz)	Max Deviation (MHz)	Max Deviation (ppm)	Limit (ppm)	Conclusion
-30℃	5210	5210.042300	0.067600	12.98	+/-20	PASS
-20℃	5210	5210.035200				
-10℃	5210	5210.024100				
0℃	5210	5210.010500				
10℃	5210	5209.987600				
20℃	5210	5209.964100.				
30℃	5210	5209.941200				
40℃	5210	5209.937800				
50℃	5210	5209.932400				
Frequency stability VS Temperature (supply voltage AC 120V/60Hz)						
Temperature (℃)	Test frequency (MHz)	Test result (MHz)	Max Deviation (MHz)	Max Deviation (ppm)	Limit (ppm)	Conclusion
-30℃	5240	5240.034800	0.057500	10.97	+/-20	PASS
-20℃	5240	5240.034100				
-10℃	5240	5240.024600				
0℃	5240	5240.014500				
10℃	5240	5239.997800				
20℃	5240	5239.982400				
30℃	5240	5239.972500				
40℃	5240	5239.964500				
50℃	5240	5239.942500				

11. ANTENNA REQUIREMENT

11.1. STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2. ANTENNA CONNECTED CONSTRUCTION

The antennas used for this product are PCB antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 3dBi.

12.MPE ESTIMATION

12.1.Limit for General Population/ Uncontrolled Exposures

Frequency	**Power density (mW/ cm^2)**	**Averaging time(minutes)**
300MHz----1.5GHz	F/1500	30
1.5GHz---100GHz	1.0	30

Frequency(MHz)	**Power density (mW/ cm^2)**	**Averaging time(minutes)**
2412	1	30
2437	1	30
2462	1	30

Note: F= Frequency in MHz

12.2. Estimation Result

EUT: UWSB-System 2.1x-W		
M/N: UWSB-50X-1		
Test date:2012-11-07	Pressure: 101.2±1.0 kpa	Humidity: 52.6±3.0%
Tested by: Leo-Li	Test site: RF Site	Temperature：23.3±0.6 ℃

Cable loss: 1 dB		Attenuator loss: 20 dB			Antenna Gain:3dBi	
Antenna	Frequency (MHz)	Peak Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (Linear)	MPE
Antenna A	5180	7.35	5.43	3	2.00	0.0022
	5210	8.42	6.95	3	2.00	0.0028
	5240	8.53	7.13	3	2.00	0.0028
Antenna B	5180	12.21	16.63	3	2.00	0.0066
	5210	11.25	13.34	3	2.00	0.0053
	5240	9.18	8.28	3	2.00	0.0033

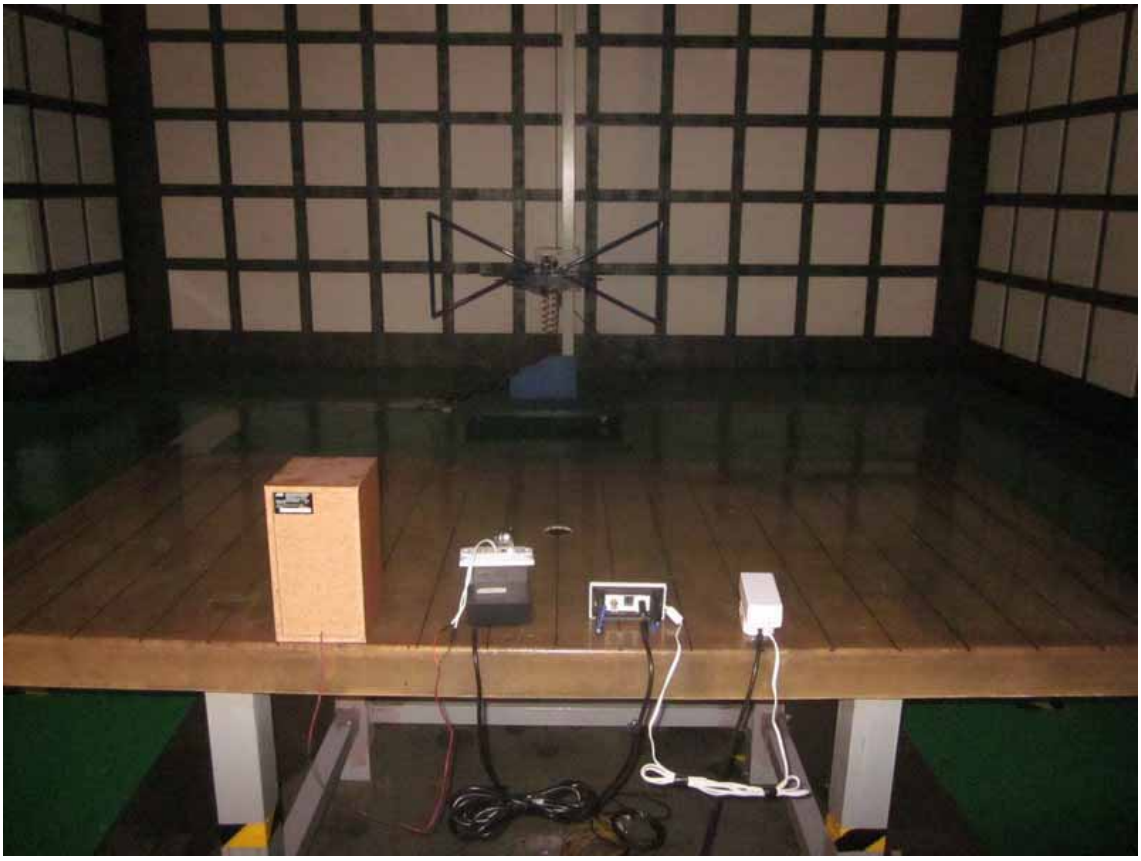
13.DEVIATION TO TEST SPECIFICATIONS

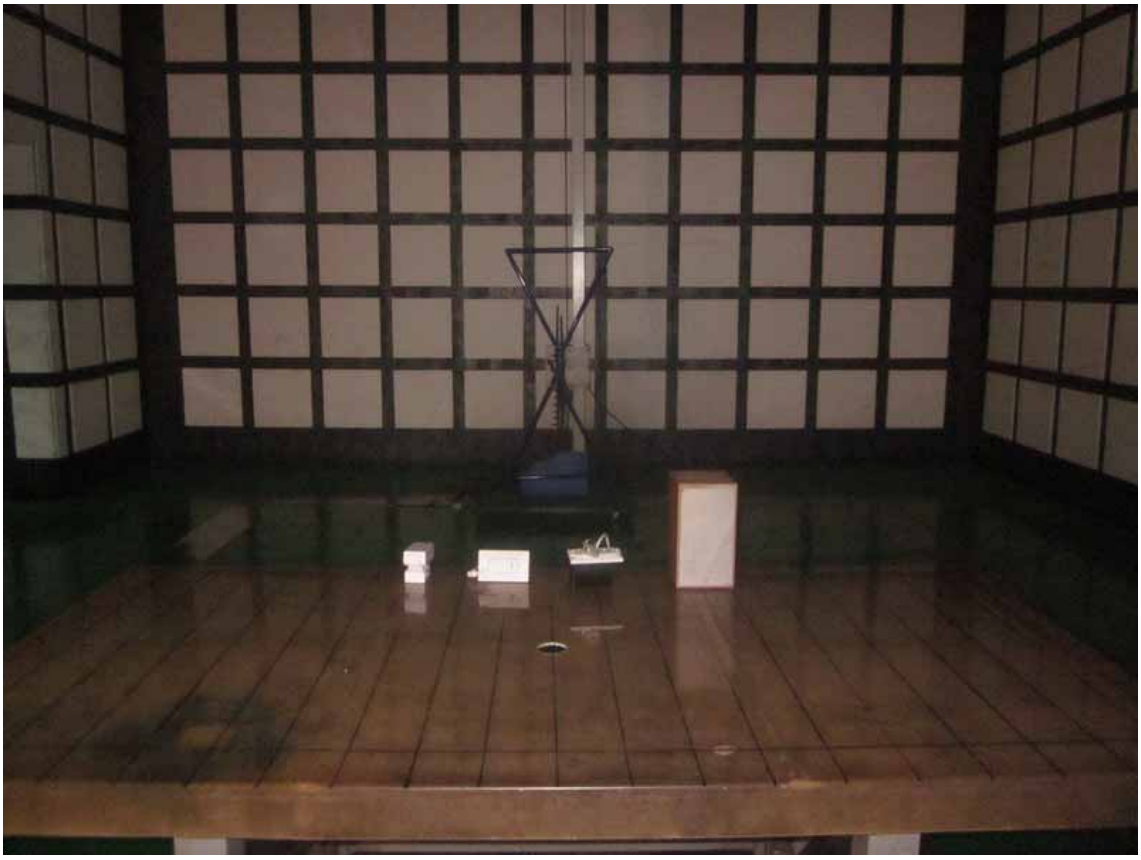
[NONE]

14.PHOTOGRAPH OF TEST

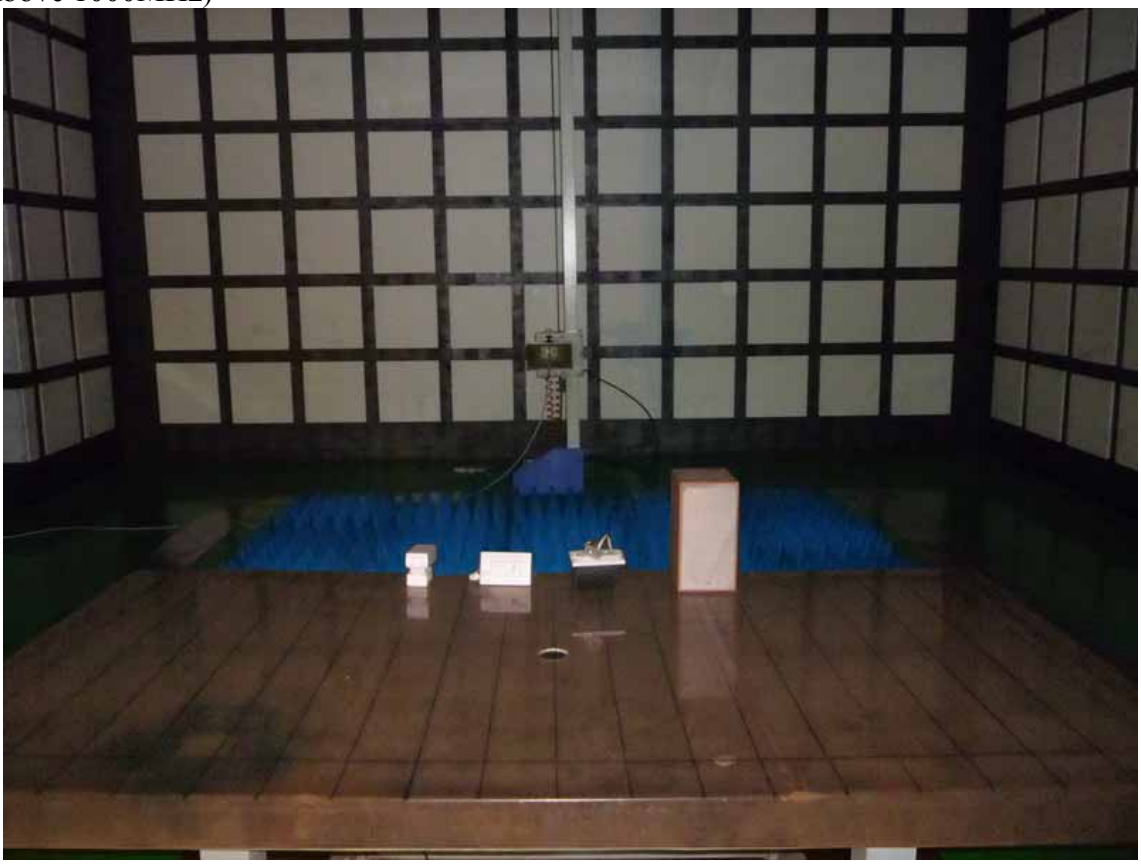
14.1.Photos of Power Line Conducted Emission Test

14.2.Photos of Radiated Emission Test





(Above 1000MHz)



15. PHOTOS OF THE EUT

Figure 1
General Appearance of the EUT

Figure 2
General Appearance of the EUT

Figure 3
General Appearance of the EUT

Figure 4
General Appearance of the EUT

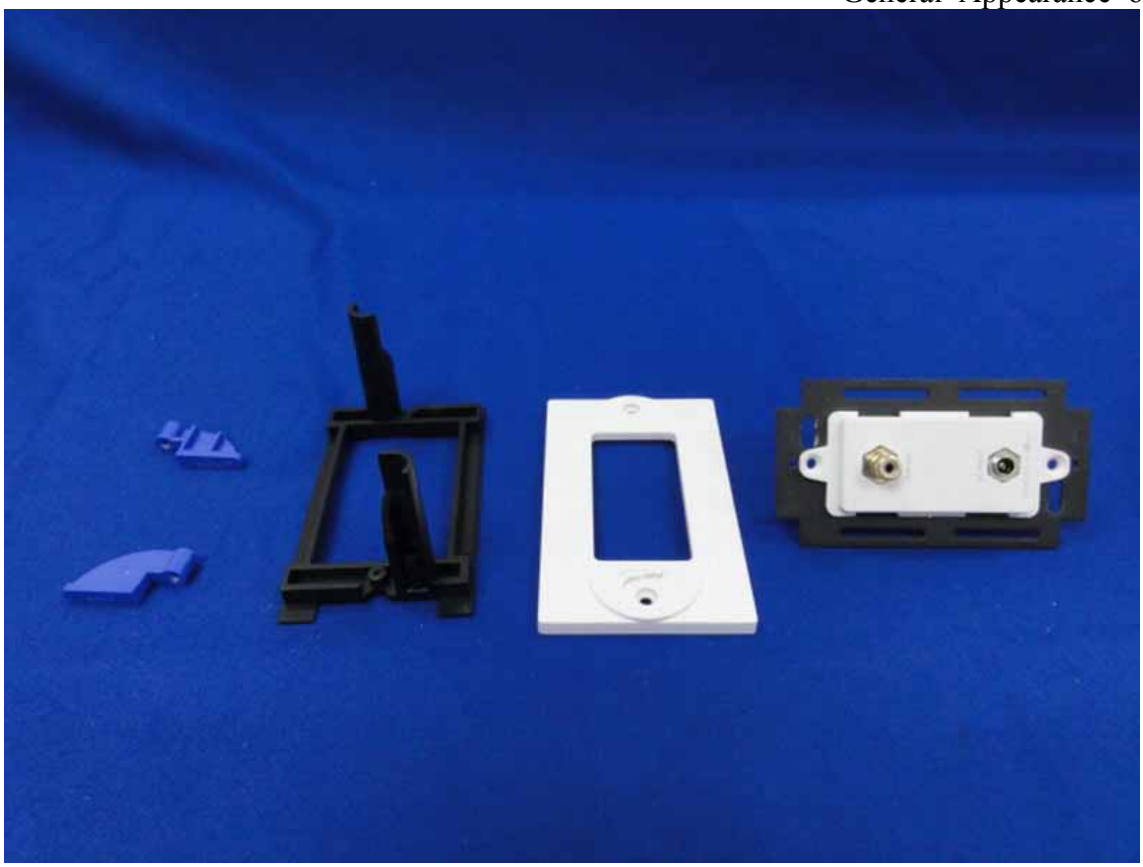


Figure 5
General Appearance of the EUT

Figure 6
General Appearance of the EUT

Figure 7
General Appearance of the EUT

Figure 8
General Appearance of the EUT

Figure 9
General Appearance of the EUT

Figure 10
General Appearance of the EUT

Figure 11
Inside of the EUT

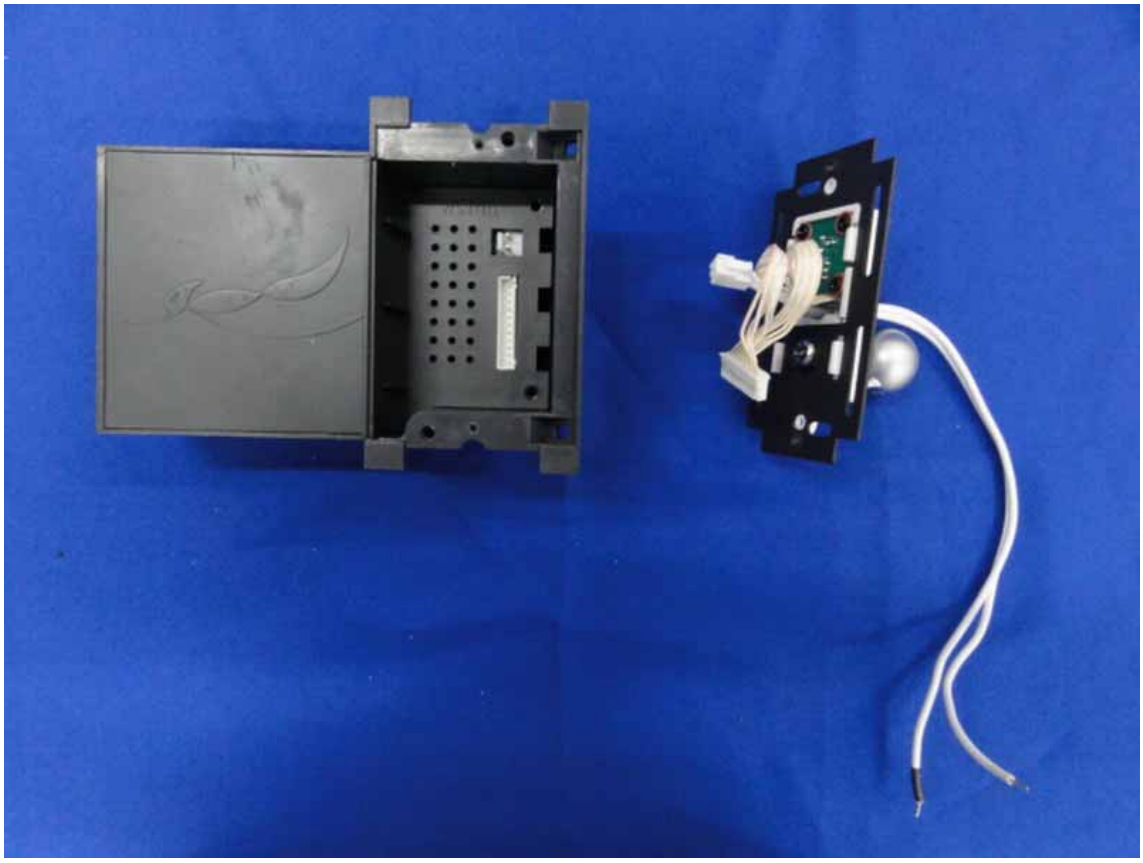


Figure 12
Inside of the EUT

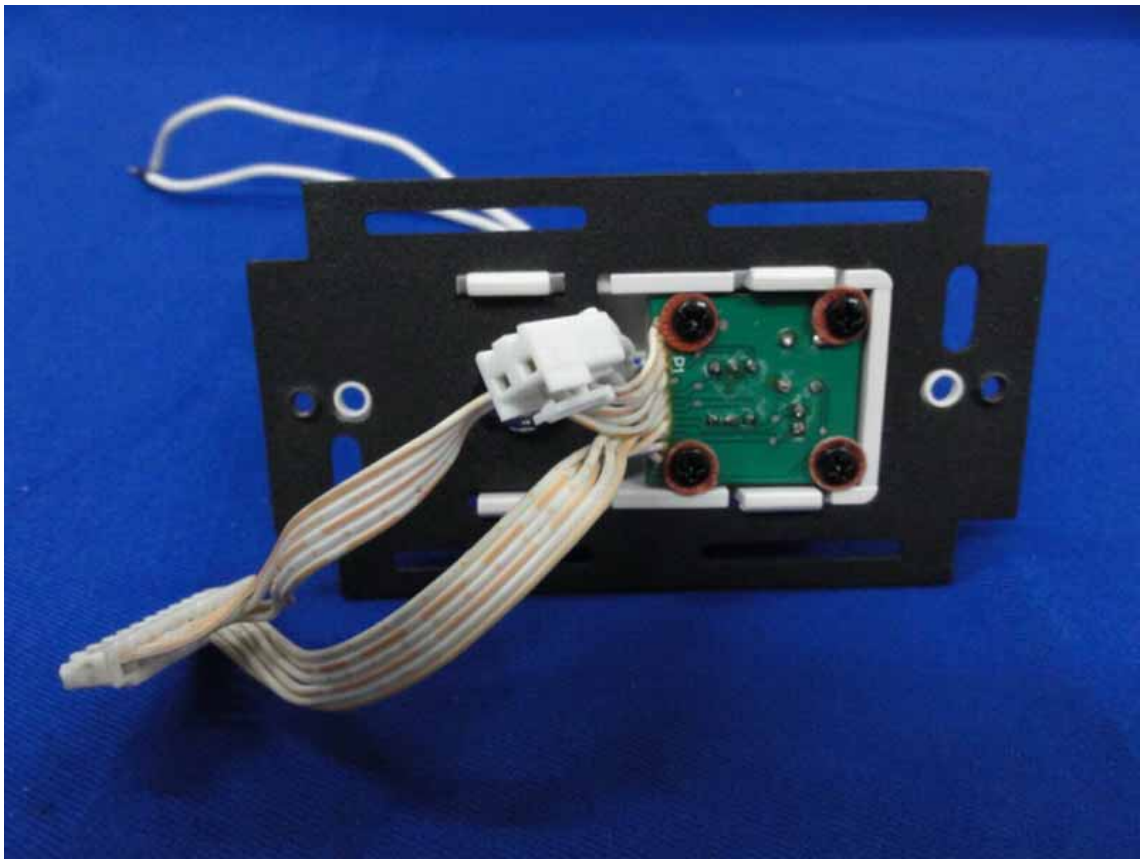


Figure 13
Inside of the EUT

Figure 14
Inside of the EUT

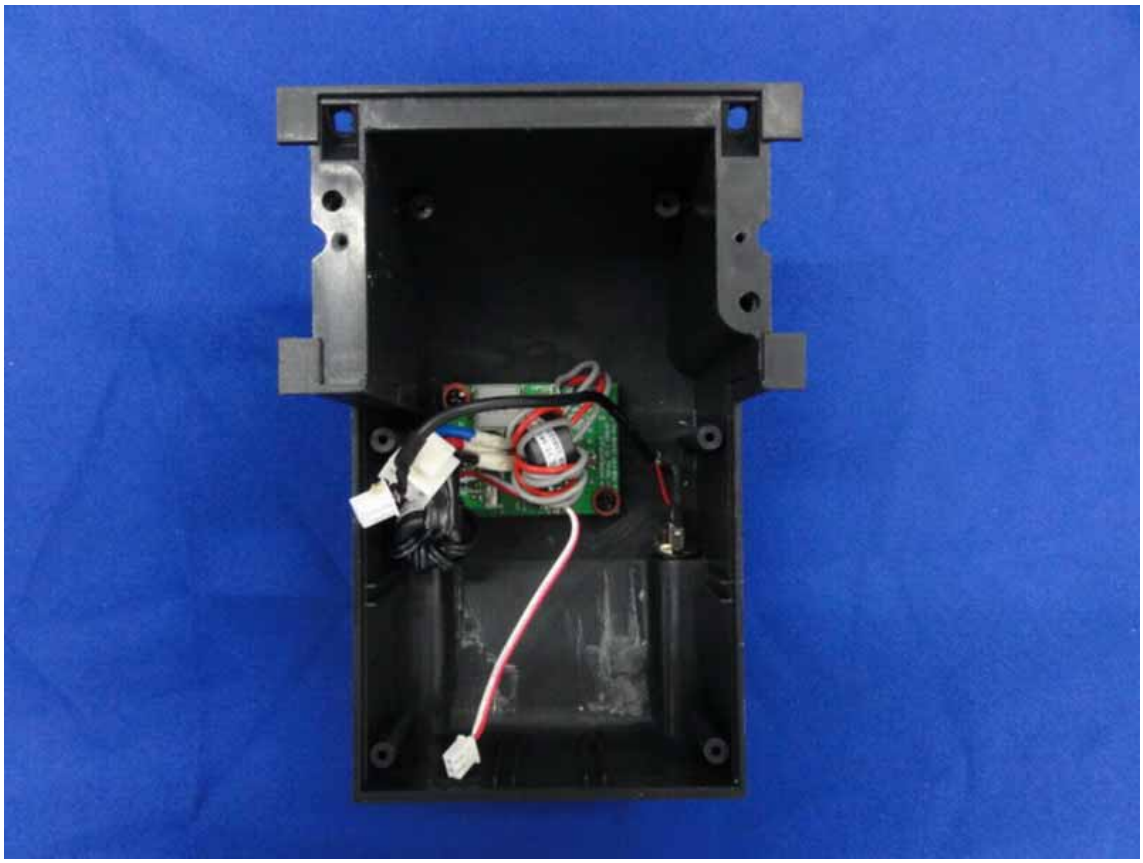


Figure 15
Component of the PCB

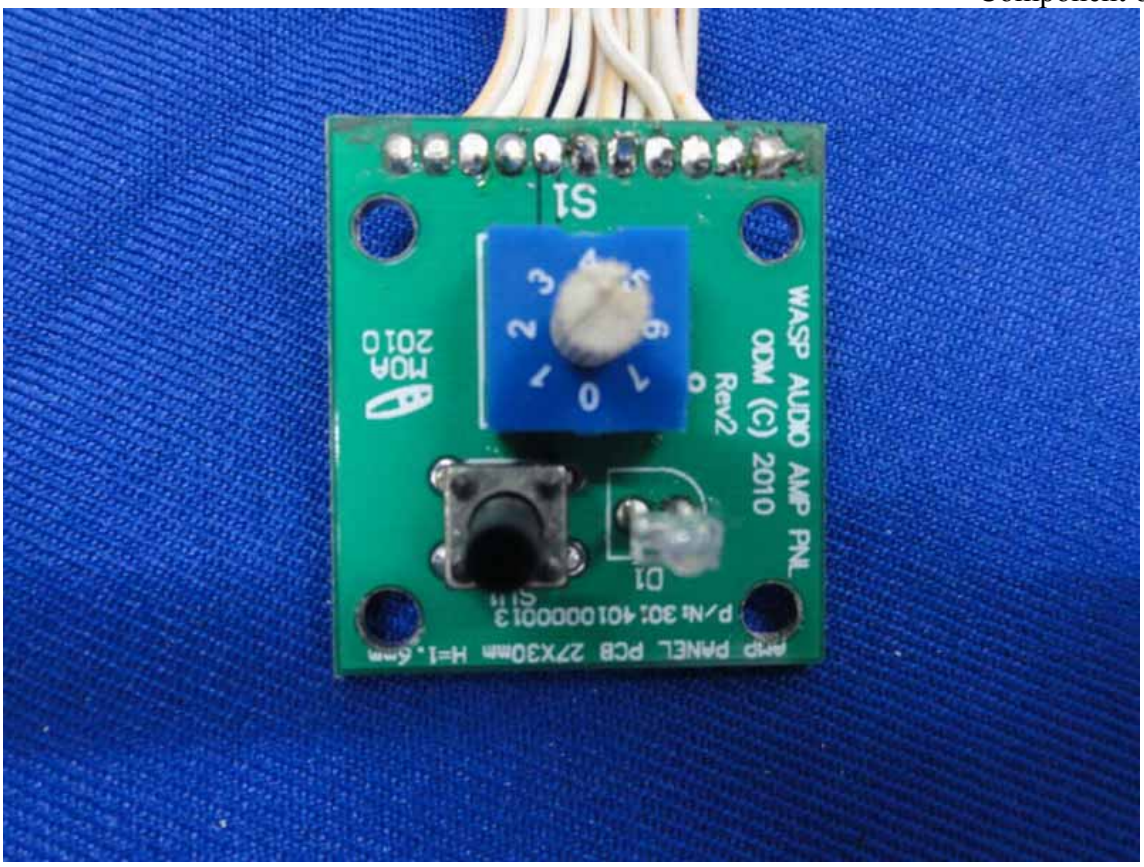


Figure 16
Component of the PCB

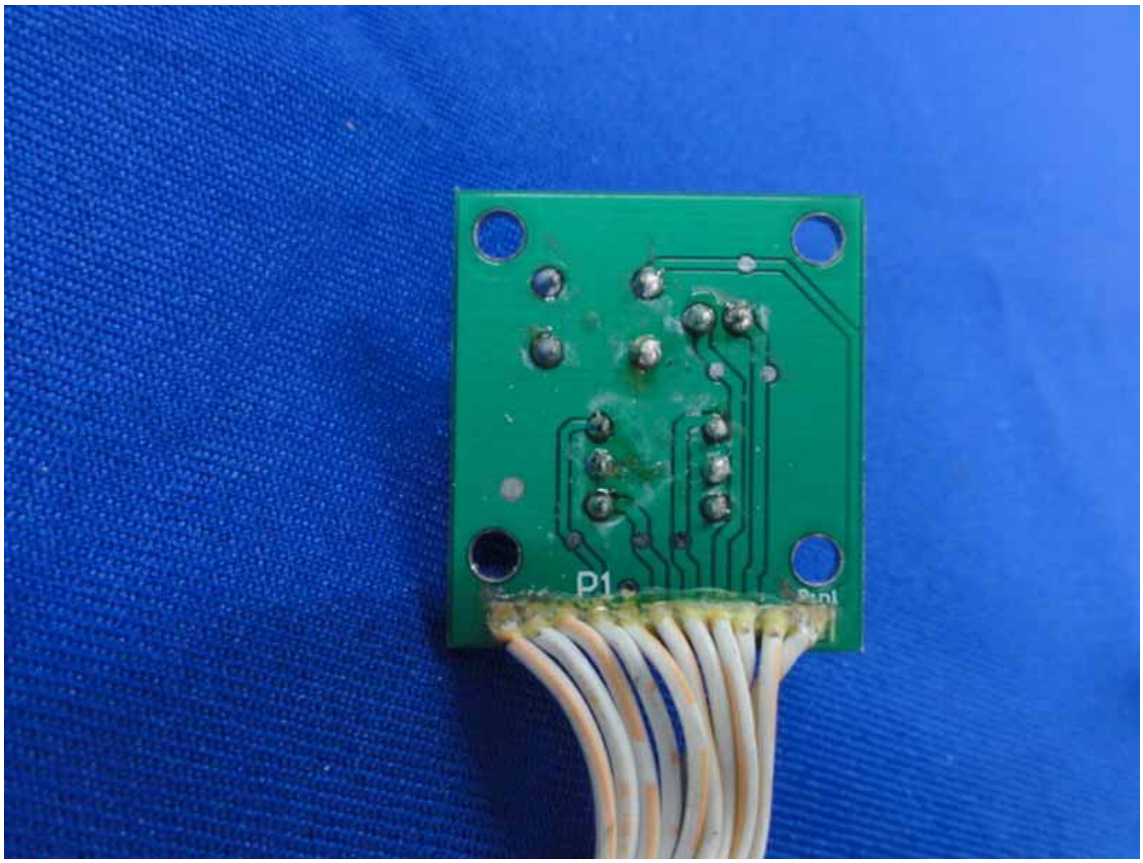


Figure 17
Component of the PCB

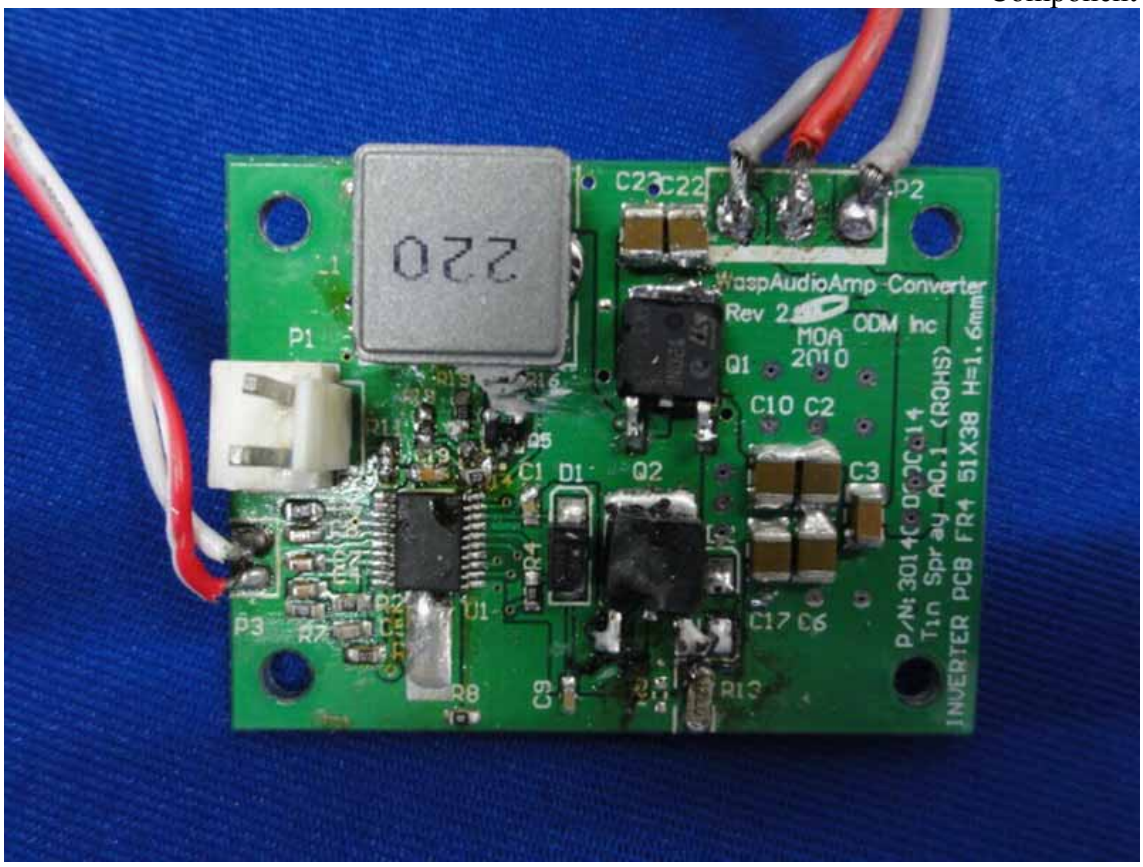


Figure 18
Component of the PCB

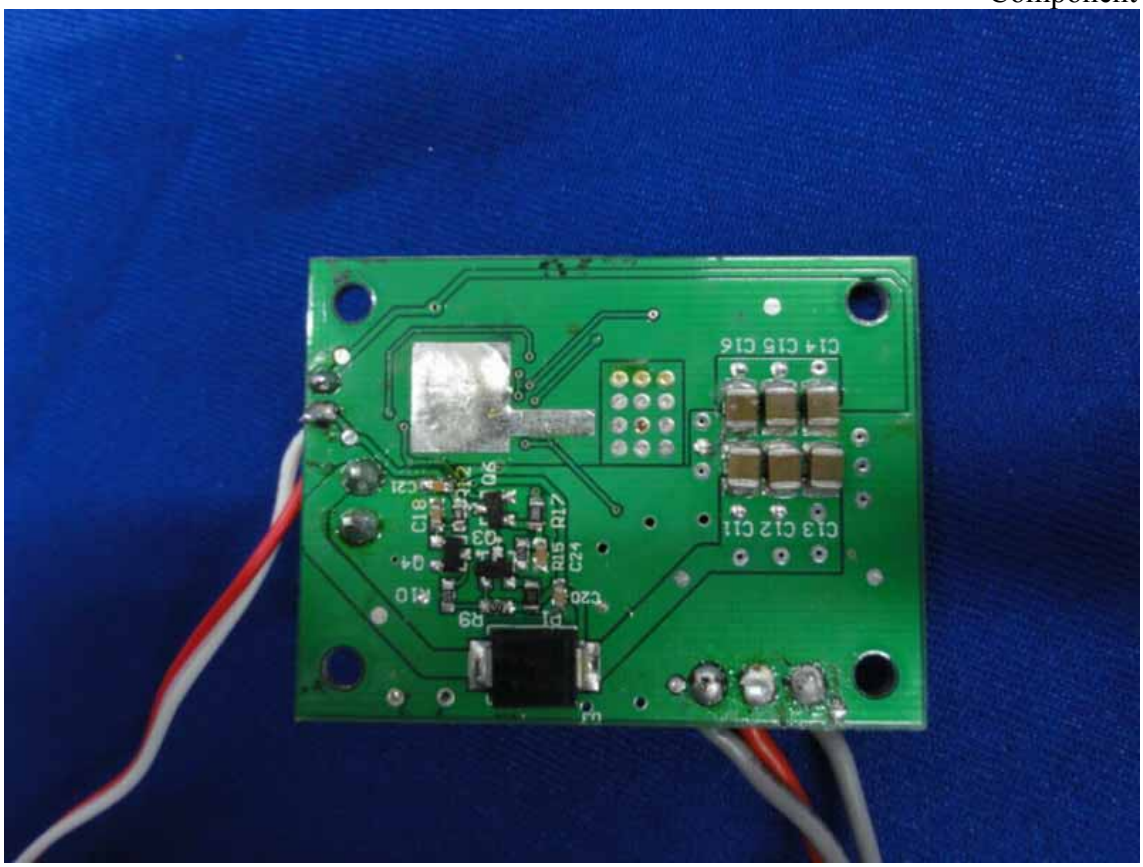


Figure 19
Component of the PCB

Figure 20
Component of the PCB

Figure 21
Component of the PCB

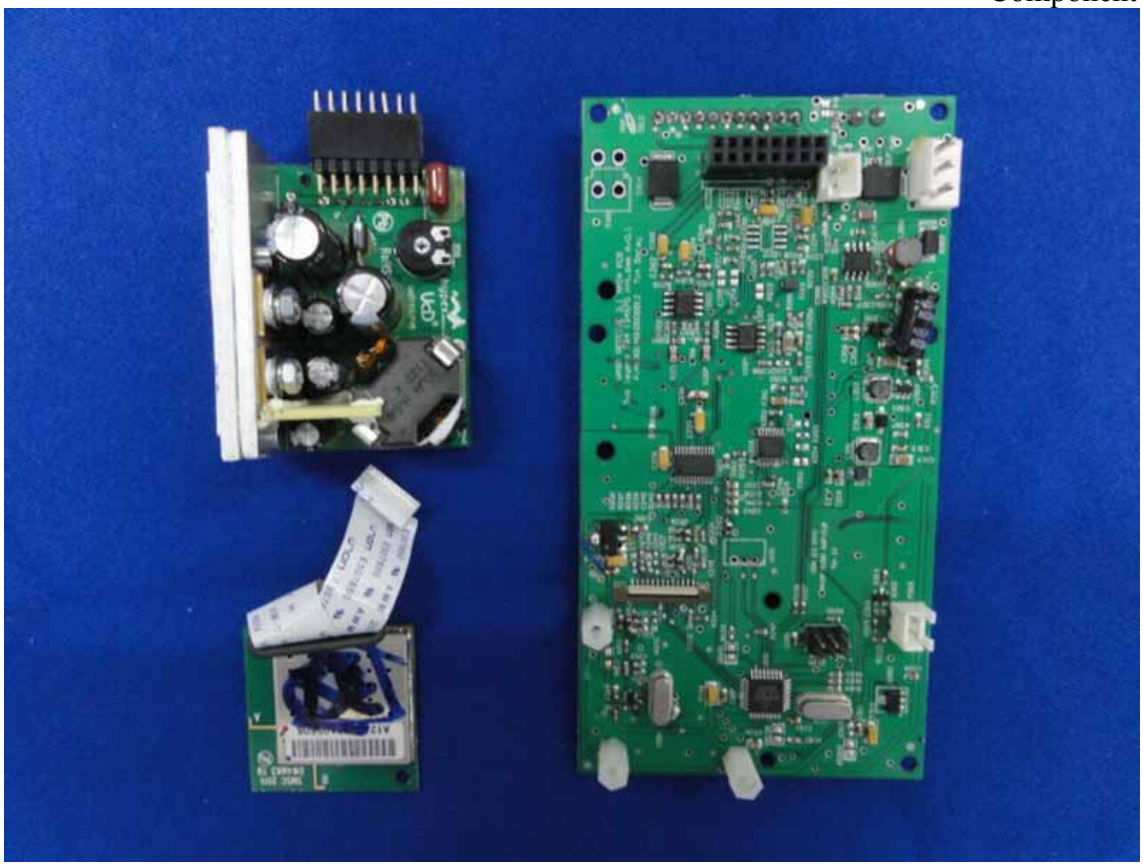


Figure 22
Component of the PCB

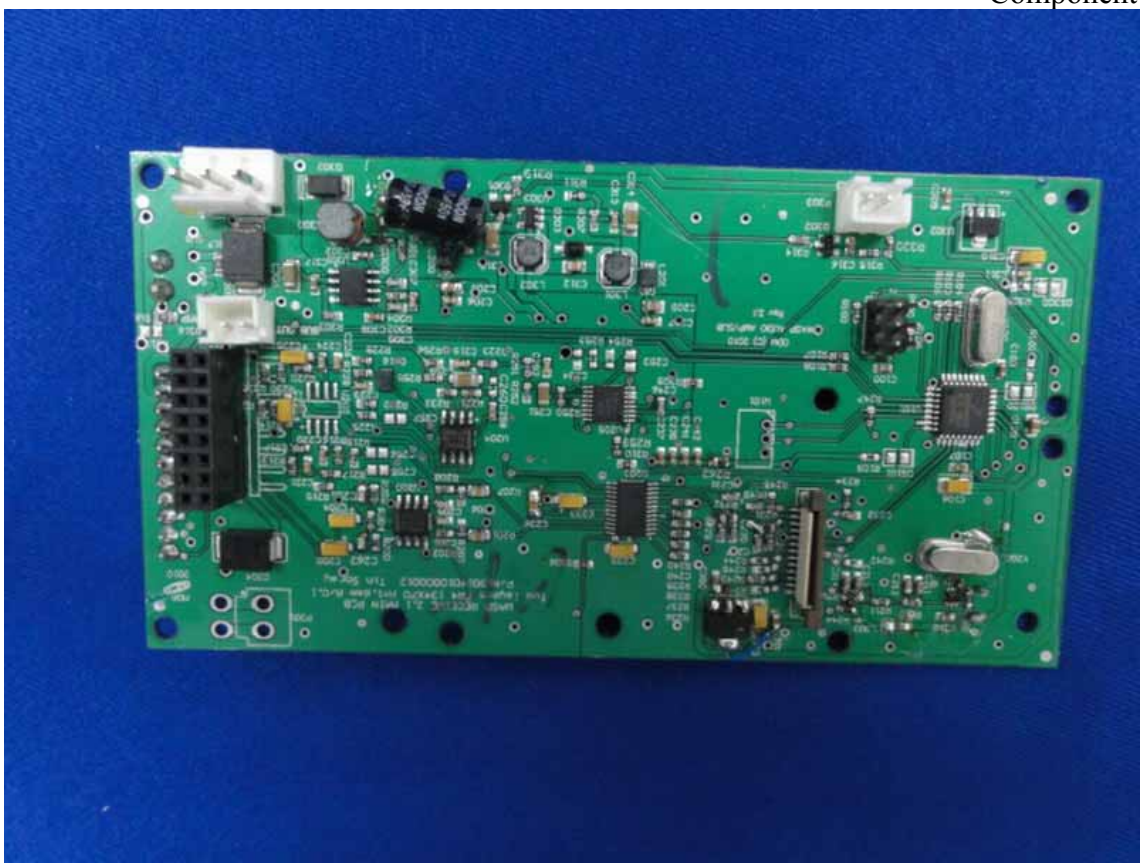


Figure 23
Component of the PCB

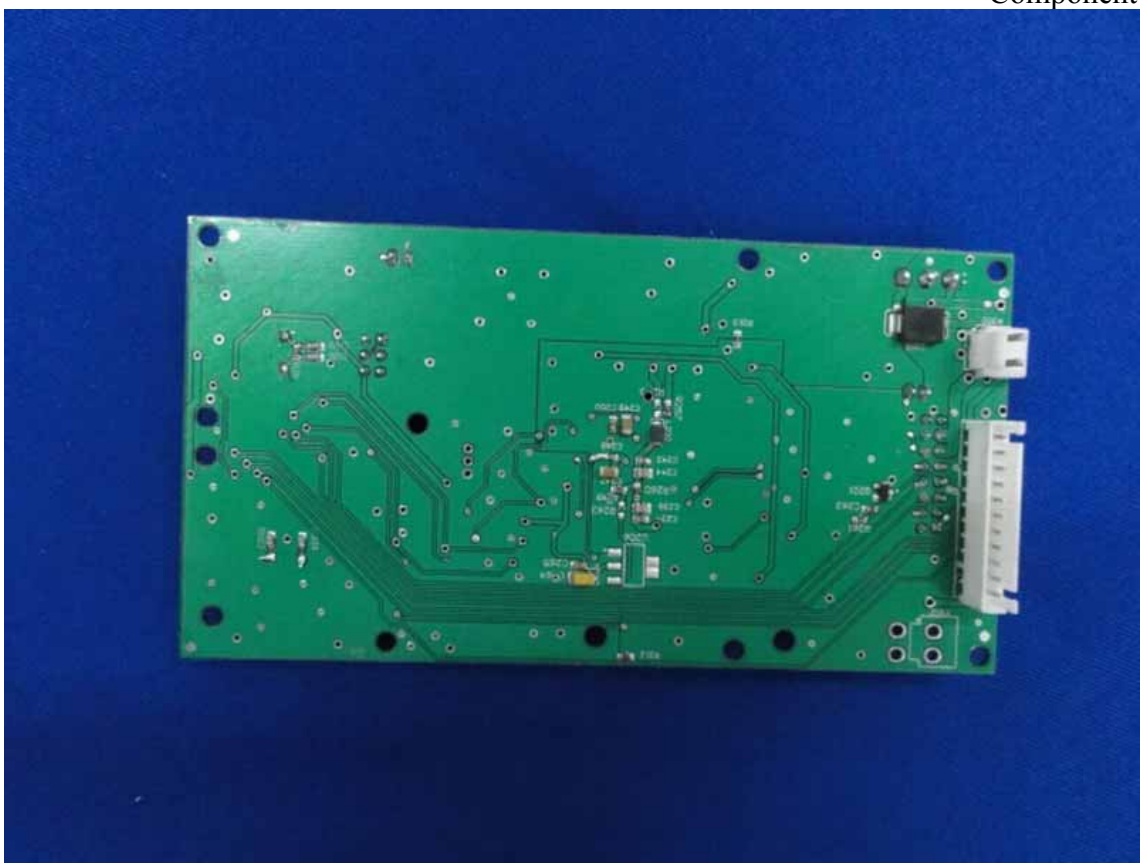


Figure 24
Component of the PCB

Figure 25
Component of the PCB

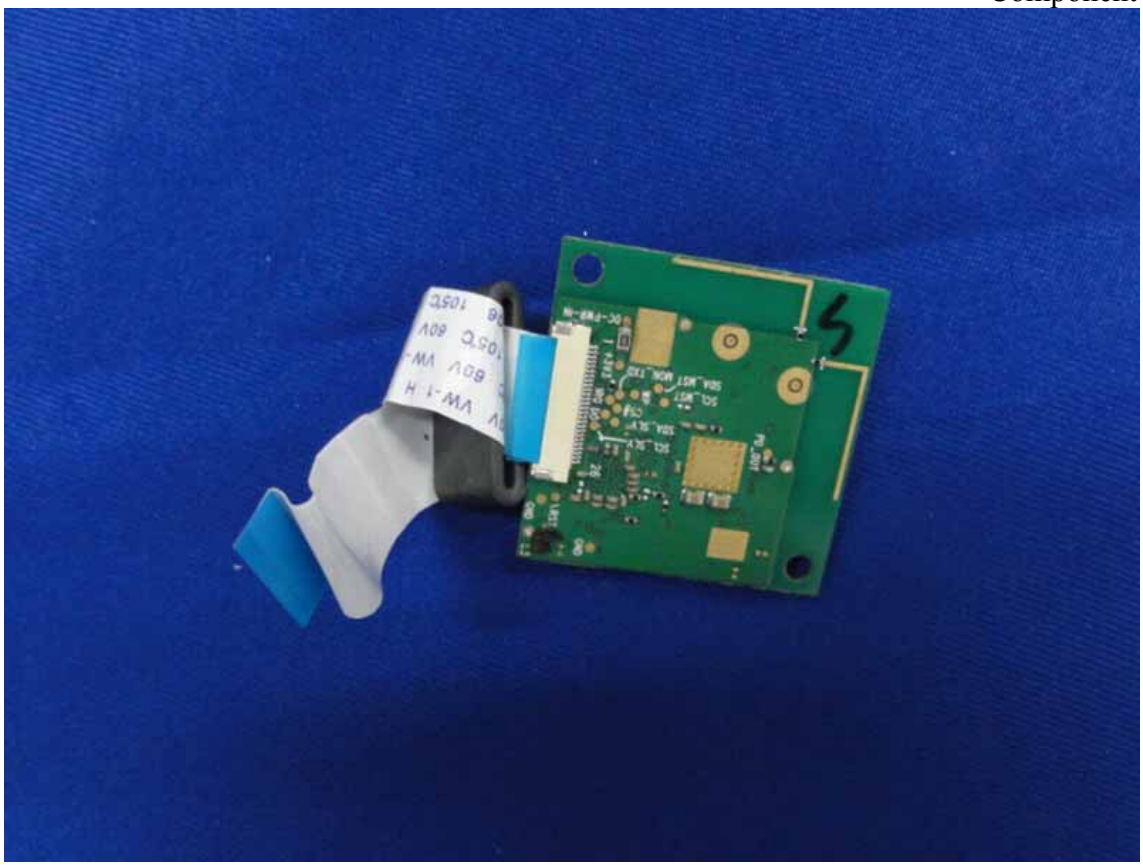


Figure 26
Component of the PCB

Figure 27
Component of the PCB

Figure 28
Component of the PCB

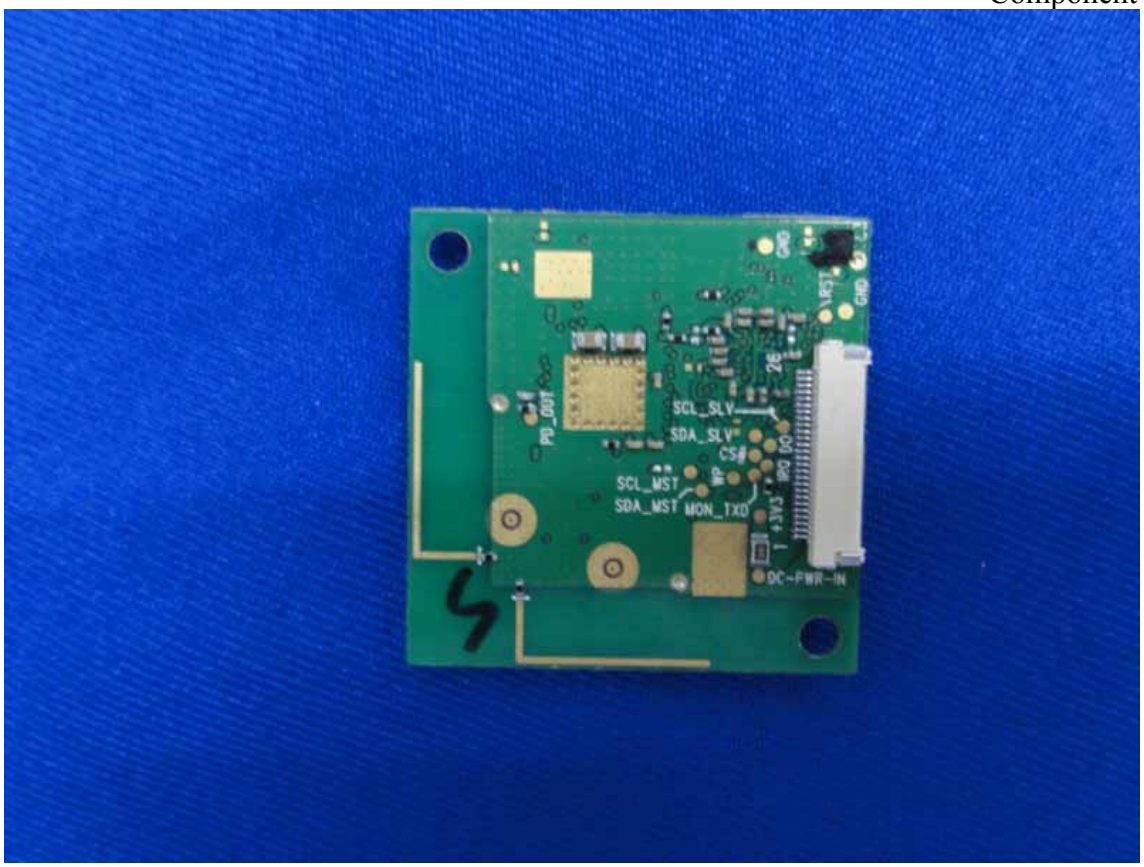


Figure 29
Component of the PCB

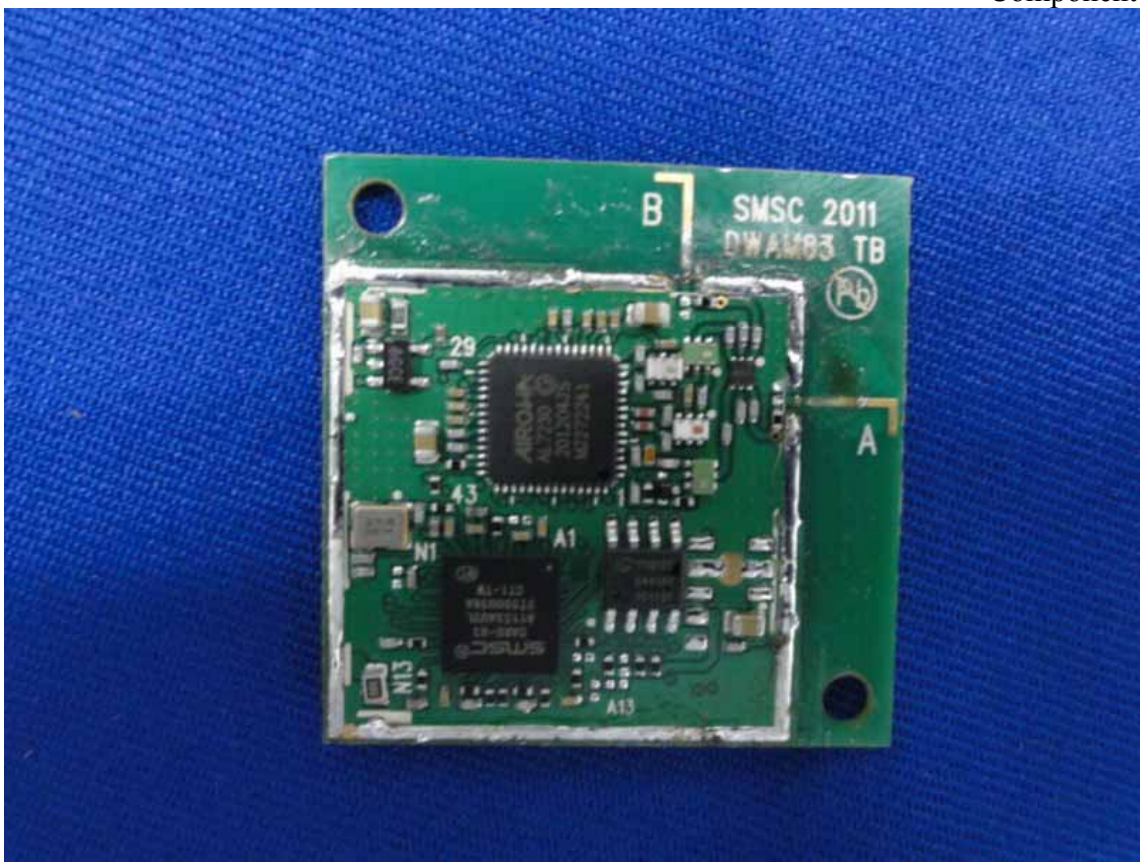


Figure 30
Component of the PCB

Figure 31
Component of the PCB

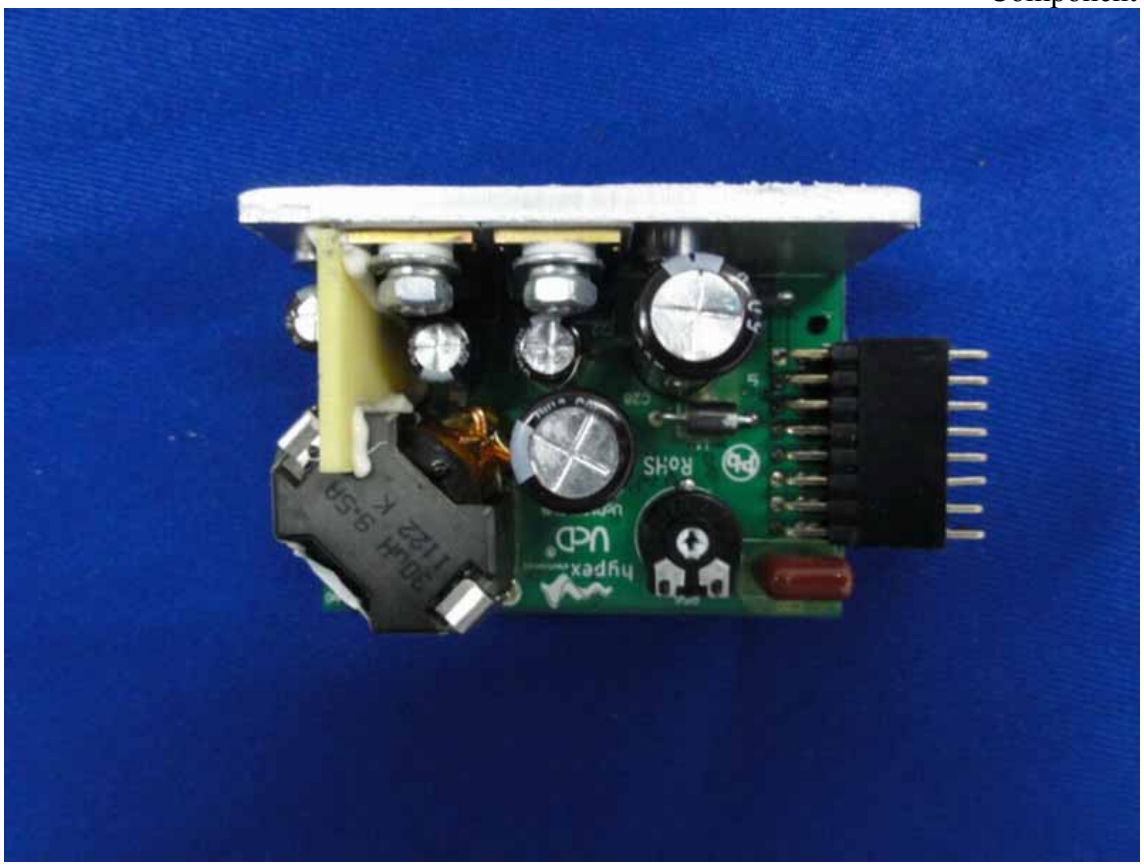


Figure 32
Component of the PCB

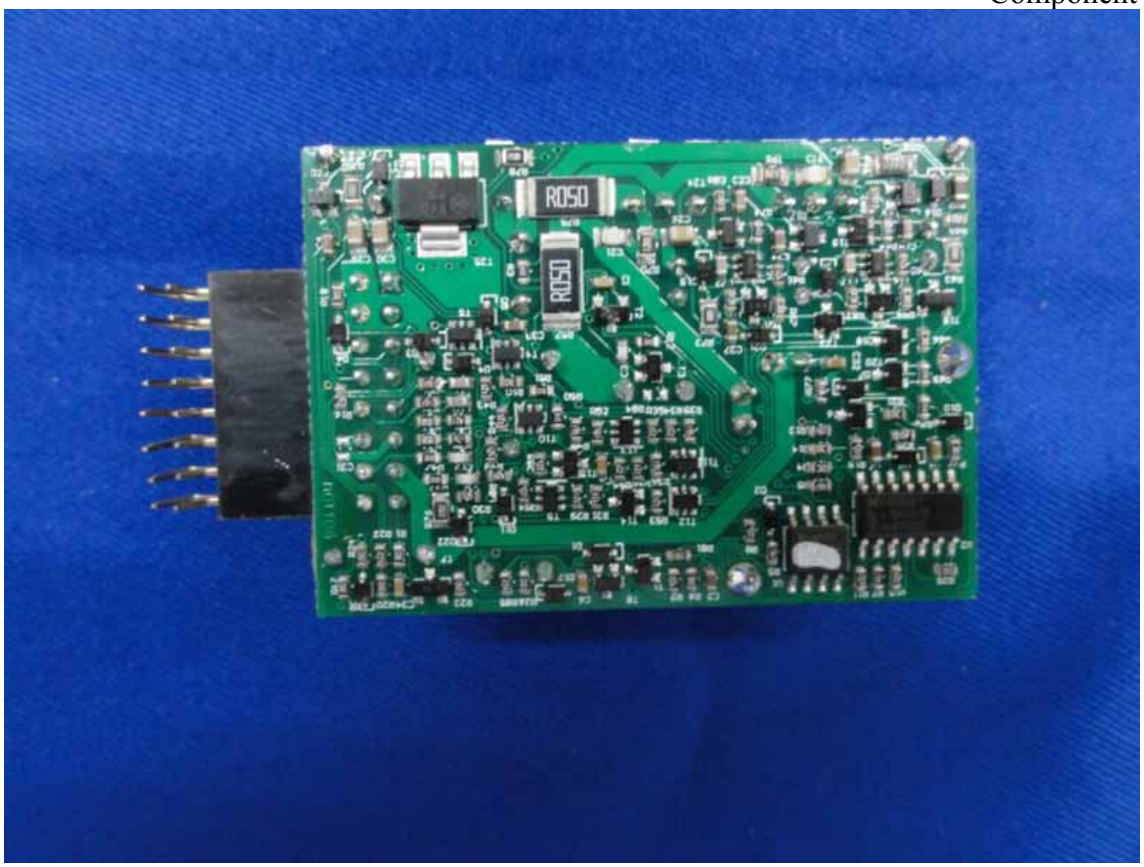


Figure 33
DC Power Cable

Figure 34
DC Power Cable

Figure 35
DC Power Cable