



### Test Report

Product Name	: Wireless Extender
Model No.	: BeamLink 5834, CT-5834, 5834, WL5538AP, WAP-5834
FCC ID.	: L9V-COMTREND5834

Applicant	:	Comtrend Corporation
Address	:	3F-1, 10 Lane 609, Chung Hsin Road, Section 5,
		San Chung City, Taipei County 24159, Taiwan

Date of Receipt	: 2010/06/17	
Issued Date	: 2010/09/17	
Report No.	: 106293R-RFUSP46V0	1
<b>Report Version</b>	: V1.0	

The test results relate only to the samples tested.

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### **Test Report Certification** Issued Date : 2010/09/17 : 106293R-RFUSP46V01 Report No. QuieTek Product Name : Wireless Extender : Comtrend Corporation Applicant : 3F-1, 10 Lane 609, Chung Hsin Road, Section 5, San Chung Address City, Taipei County 24159, Taiwan : Ayecom Technology Co., Ltd Manufacturer MODEL NO. : BeamLink 5834, CT-5834, 5834, WL5538AP, WAP-5834 FCC ID. : L9V-COMTREND5834 **EUT** Voltage : 100-120V~50/60 Hz Trade Name : BeamLink, Comtrend Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.407:2009 Test Result : Complied The test results relate only to the samples tested. The test report shall not be reproduced except in full without the written approval of QuieTek Corporation. Demi Chang Documented By 2 (Demi Chang / Engineering Adm. Specialist) Huang **REVIEWED BY** : (Ben Huang / Assistant Engineer) Wang RM Approved By • (Roy Wang / Manager)

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### 1. General Information

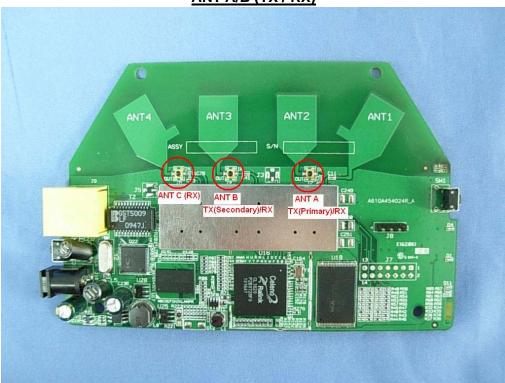
### 1.1. EUT Description

Product Name	Wireless Extender
Product Type	WLAN (1TX, 3RX)
Trade Name	BeamLink, Comtrend
Model No.	BeamLink 5834, CT-5834, 5834, WL5538AP, WAP-5834
Frequency Range -	5180~5240MHz
IEEE 802.11n (20MHz)	
Frequency Range-	5190~5230MHz
IEEE 802.11n (40MHz)	
Channel Number (IEEE 802.11b/g	4
& IEEE 802.11n (20MHz))	
Channel Number-	2
IEEE 802.11n (40MHz)	
Type of Modulation	Orthogonal Frequency Division Multiplexing (OFDM)
Data Speed (IEEE 802.11n)	Support a subset of the combination of GI, MCS 0~MCS 7
	and bandwidth defined in 802.11n
Antenna Gain	2dBi
Channel Control	Auto
Antenna Type	Printed Antenna

Component				
LAN Cable	Non-Shielded, 1.0m			
Power Adapter	DVE, DSA-12G-12 AUS 120120			
	I/P: 100-120V~50/60 Hz 0.3A			
	O/P: 12V===1A			
	Cable Out: Non-Shielded, 1.5m			

### ANT-TX / Rx & Bandwidth

ANT-TX / Rx	Т	Х	Rx	
Mode/ Channel Bandwidth	20MHz	40MHz	40MHz 20MHz	
IEEE802.11n	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$



#### <u>ANT A/B (TX / RX)</u>

### IEEE802.11n

		N <sub>CBPS</sub> N <sub>DBPS</sub>		BPS		Data Ra	ate(Mb/s)				
Modulation	Iodulation	R	N <sub>BPSCS</sub>					800ns GI		400ns GI (Note1)	
			ZUIVIHZ	40MHZ	ZUMHZ	40MHZ	20MHz	40MHz	20MHz	40MHz	
BPSK	1/2	1	52	108	26	54	6.5	13.5	7.2	15.0	
QPSK	1/2	2	104	216	52	108	13.0	27.0	14.4	30.0	
QPSK	3/4	2	104	216	78	162	19.5	40.5	21.7	45.0	
16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.9	60.0	
16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.3	90.0	
64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.8	120.0	
64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.0	135.0	
64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.2	150.0	
	BPSK QPSK QPSK 16-QAM 16-QAM 64-QAM 64-QAM	BPSK     1/2       QPSK     1/2       QPSK     3/4       16-QAM     1/2       16-QAM     3/4       64-QAM     2/3       64-QAM     3/4	BPSK         1/2         1           QPSK         1/2         2           QPSK         3/4         2           16-QAM         1/2         4           16-QAM         3/4         4           64-QAM         2/3         6           64-QAM         3/4         6	Aodulation         R         NBPSCS         20MHz           BPSK         1/2         1         52           QPSK         1/2         2         104           QPSK         3/4         2         104           QPSK         3/4         2         104           16-QAM         1/2         4         208           16-QAM         3/4         4         208           64-QAM         2/3         66         312           64-QAM         3/4         6         312	Aodulation         R         NBPSCS         20MHz         40MHz           BPSK         1/2         1         52         108           QPSK         1/2         2         104         216           QPSK         3/4         2         104         216           16-QAM         1/2         4         208         432           16-QAM         3/4         4         208         432           64-QAM         2/3         66         312         648           64-QAM         3/4         6         312         648	Addulation         R         NBPSCS         20MHz         40MHz         20MHz           BPSK $1/2$ 1 $52$ $108$ $26$ QPSK $1/2$ 2 $104$ $216$ $52$ QPSK $3/4$ 2 $104$ $216$ $78$ 16-QAM $1/2$ $4$ $208$ $432$ $104$ 16-QAM $3/4$ $4$ $208$ $432$ $104$ 16-QAM $3/4$ $4$ $208$ $432$ $156$ $64-QAM$ $2/3$ $6$ $312$ $648$ $208$	Aodulation         R         NBPSCS         20MHz         40MHz         20MHz         40MHz         40MHz         40MHz           BPSK         1/2         1         52         108         26         54           QPSK         1/2         2         104         216         52         108           QPSK         3/4         2         104         216         78         162           16-QAM         1/2         4         208         432         104         216           16-QAM         3/4         4         208         432         104         216           64-QAM         2/3         66         312         648         208         432           64-QAM         3/4         6         312         648         234         486	Aodulation         R         NBPSCS $20MHz$ $40MHz$ $20MHz$ $40MHz$ $40MHz$ $40MHz$ $800Hz$ BPSK         1/2         1         52         108         26         54         6.5           QPSK         1/2         2         104         216         52         108         13.0           QPSK         3/4         2         104         216         78         162         19.5           16-QAM         1/2         4         208         432         104         216         52.0         324         39.0           64-QAM         2/3         6         312         648         208         432         52.0           64-QAM         3/4         6         312         648         234         486         58.5	Addulation         R         N <sub>BPSCS</sub> $20MHz$ $40MHz$ $20MHz$ $40MHz$ $40MHz$ $300Hz$ <th< td=""><td>Addulation         R         NBPSCS         <math>20MHz</math> <math>40MHz</math> <math>20MHz</math> <math>40MHz</math> <math>40MHz</math> <math>40MHz</math> <math>40MHz</math> <math>40MHz</math> <math>20MHz</math> <math>40MHz</math> <math>20MHz</math> <math>40MHz</math> <math>20MHz</math> <math>40MHz</math> <math>20MHz</math> <math>40MHz</math> <math>20MHz</math> <math>20MHz</math> <math>40MHz</math> <math>20MHz</math> <math>20MHz</math> <math>40MHz</math> <math>20MHz</math> <math>20MHz</math> <math>20MHz</math> <math>40MHz</math> <math>20MHz</math> <math>20MLz</math> <math>20MLz</math></td></th<>	Addulation         R         NBPSCS $20MHz$ $40MHz$ $20MHz$ $40MHz$ $40MHz$ $40MHz$ $40MHz$ $40MHz$ $20MHz$ $40MHz$ $20MHz$ $40MHz$ $20MHz$ $40MHz$ $20MHz$ $40MHz$ $20MHz$ $20MHz$ $40MHz$ $20MHz$ $20MHz$ $40MHz$ $20MHz$ $20MHz$ $20MHz$ $40MHz$ $20MHz$ $20MLz$	

Note 1: Support of 400ns GI is optional on transmit and receive.

Table 1 – MCS parameters for TX Antenna number = 1

Symbol	Explanation
R	Code rate
N <sub>BPSC</sub>	Number of coded bits per single carrier
N <sub>CBPS</sub>	Number of coded bits per symbol
N <sub>DBPS</sub>	Number of data bits per symbol
GI	guard interval

#### IEEE 802.11n (20MHz)

Working Frequency of Each Channel								
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz	

#### IEEE 802.11n (40MHz)

Working Frequency of Each Channel							
Channel Frequency Channel Frequency							
38	5190MHz	46	5230MHz				

#### Note:

- This device is a Wireless Extender including 5.8GHz 802.11n (1x3) transmitting and receiving function. Only one antenna port will be transmitted and three antenna ports will be received signals at once. The Software will change the output antenna port according to the received signals.
- 2. The preliminary tests were performed in different antenna ports, and the antenna A is worse than Antenna. The test data of antenna A was shown in this test report only.
- 3. The variation of model number is for different strategy of marketing.
- 4. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.407.
- 5. Regards to the frequency band operation; the lowest v middle and highest frequency of channel were selected to perform the test, and then shown on this report.
- This device is a composite device in accordance with Part 15 regulations. The receiving function receiving was tested and its test report number is 106293R-RFUSP37V02 under Declaration of Conformity.

#### 1.3. **Test Mode**

QuieTek has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

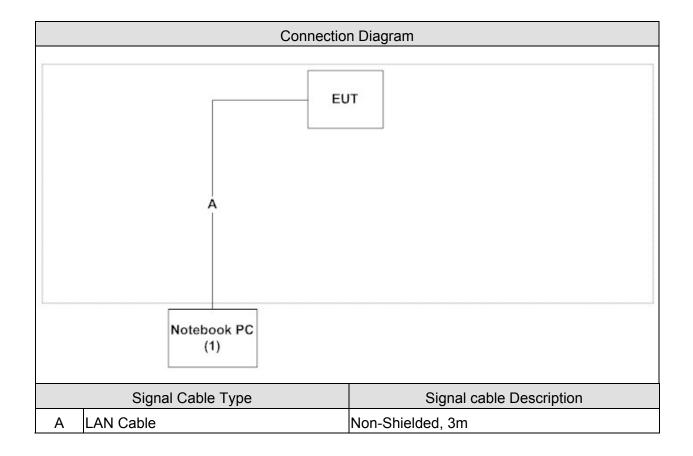
ТХ	Mode 1: Transmit		
Test Items	Mode	Channel	Result
Conducted Emission	11n(40MHz)	38	Complies
26dB Bandwidth	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Peak Transmit Power	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Peak Power Spectrum Density	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Power Excursion	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Radiated Emission	11n(20MHz)	36/44/48	Complies
	11n(40MHz)	38/46	Complies
Band Edge	11n(20MHz)	36/48	Complies
	11n(40MHz)	38/46	Complies
Frequency Stability	11n(20MHz)	36/48	Complies
	11n(40MHz)	38/46	Complies

### 1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	HP	HSTNN-146C	18253S1X	DoC	Non-Shielded, 1.8m

### 1.5. Configuration of tested System



### 1.6. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.5.
2	Turn on the power of all equipment.
3	Boot the Notebook PC from Hard Disk.
4	Data will communicate by connecting to LAN port of Notebook PC.
5	The computer's monitor will show the transmitting and receiving characteristics when the
	communication is success.
6	Repeat the above procedure (4) to (5).

### 1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.407	15 - 35	20
Humidity (%RH)	Conducted Emission	25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407	15 - 35	25
Humidity (%RH)	26dB Bandwidth	25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407	15 - 35	25
Humidity (%RH)	Peak Transmit Power	25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407	15 - 35	24
Humidity (%RH)	Peak Power Spectrum	25 - 75	49
Barometric pressure (mbar)	Density	860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.407	15 - 35	25
Humidity (%RH)	Power Excursion	25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)		15 - 35	25
Humidity (%RH)	FCC PART 15 C 15.407 Radiated Emission	25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)		15 - 35	25
Humidity (%RH)	FCC PART 15 C 15.407	25 - 75	48
Barometric pressure (mbar)	Band Edge	860 - 1060	950-1000
Temperature (°C)		15 - 35	25
Humidity (%RH)	FCC PART 15 C 15.407	25 - 75	48
Barometric pressure (mbar)	Frequency Stability	860 - 1060	950-1000



#### Site Description:

January 24, 2005 File on Federal Communications Commission Laboratory Division 7435 Oakland Mills Road Columbia, MD 21046 Registration Number: 365520

Accredited by TAF Accreditation Number: 1313 Effective through: December 27, 2010

Accredited by NVLAP NVLAP Lab Code: 200347-0 Effective through: September 30, 2010







Site Name: Site Address:

Quietek Corporation No.75-1, Wang-Yeh Valley, Yung-Hsing, Chiung-Lin, Hsin-Chu County, Taiwan, R.O.C. TEL : 886-3-592-8858 / FAX : 886-3-592-8859 E-Mail : <u>service@quietek.com</u>

### 2. Conducted Emission

### 2.1. Test Equipment

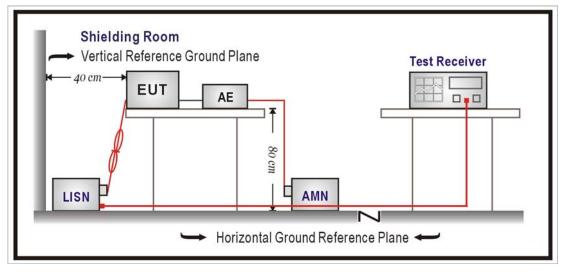
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
LISN	R&S	ENV216	100096	2010/09/27
LISN	R&S	ESH3-Z5	836679/022	2011/05/30
Test Receiver	R&S	ESCS 30	825442/017	2011/02/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 2.2. Test Setup





#### 2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)						
Frequency MHz	QP	AV				
0.15 - 0.50	66-56	56-46				
0.50 - 5.0	56	46				
5.0 - 30	60	50				

Remarks: In the above table, the tighter limit applies at the band edges.

### 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements.

### 2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2009

### 2.6. Uncertainty

The measurement uncertainty is defined as  $\pm$  2.26 dB.

### 2.7. Test Result

Site : SR3	Time : 2010/07/13 - 15:54
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR3_LISN(16A) - Line1	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190MHz(N-40M)



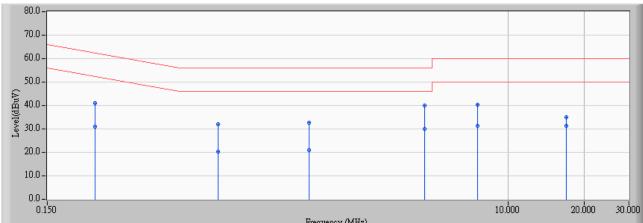
<ul> <li>Frequency (MHz)</li> </ul>
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		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.275	9.821	37.040	46.861	-14.105	60.966	QUASIPEAK
2		0.275	9.821	29.690	39.511	-11.455	50.966	AVERAGE
3		0.646	9.754	28.630	38.384	-17.616	56.000	QUASIPEAK
4		0.646	9.754	17.540	27.294	-18.706	46.000	AVERAGE
5		1.986	9.868	29.250	39.118	-16.882	56.000	QUASIPEAK
6		1.986	9.868	19.230	29.098	-16.902	46.000	AVERAGE
7		4.904	9.889	35.120	45.009	-10.991	56.000	QUASIPEAK
8	*	4.904	9.889	25.870	35.759	-10.241	46.000	AVERAGE
9		7.513	10.015	33.520	43.536	-16.464	60.000	QUASIPEAK
10		7.513	10.015	24.570	34.586	-15.414	50.000	AVERAGE
11		16.369	10.184	27.300	37.485	-22.515	60.000	QUASIPEAK
12		16.369	10.184	22.100	32.285	-17.715	50.000	AVERAGE

Note:

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " \* ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	Time : 2010/07/13 - 15:57
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR3_LISN(16A) - Line2	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190MHz(N-40M)



Frequency	(MHz)

		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.232	9.835	31.210	41.045	-21.331	62.377	QUASIPEAK
2		0.232	9.835	21.160	30.995	-21.381	52.377	AVERAGE
3		0.709	9.755	22.130	31.885	-24.115	56.000	QUASIPEAK
4		0.709	9.755	10.620	20.375	-25.625	46.000	AVERAGE
5		1.627	9.829	22.750	32.579	-23.421	56.000	QUASIPEAK
6		1.627	9.829	11.330	21.159	-24.841	46.000	AVERAGE
7		4.662	9.900	30.200	40.100	-15.900	56.000	QUASIPEAK
8	*	4.662	9.900	20.220	30.120	-15.880	46.000	AVERAGE
9		7.556	10.045	30.380	40.426	-19.574	60.000	QUASIPEAK
10		7.556	10.045	21.160	31.206	-18.794	50.000	AVERAGE
11		16.993	10.320	24.640	34.960	-25.040	60.000	QUASIPEAK
12		16.993	10.320	20.950	31.270	-18.730	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.

2. " \* ", means this data is the worst emission level.

3. Measurement Level = Reading Level + Correct Factor.

### 3. 26dB Bandwidth

### 3.1. Test Equipment

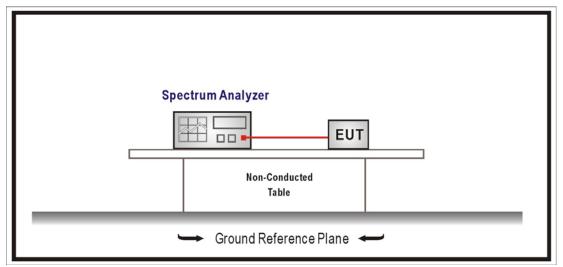
The following test equipments are used during the radiated emission tests:

26dB	Bandwidth	1	SR7
2000	Danawiati	'	0111

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2010/11/1

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 3.2. Test Setup



### 3.3. Limits

No Required

### 3.4. Test Procedure

The EUT was tested according to FCC Public Notice DA 02-2138, AUGUST 2002. Set RBW 1% of the emission bandwidth, VBW equal to 3 times the RBW.

### 3.5. Uncertainty

The measurement uncertainty is defined as  $\pm 150$ Hz

### 3.6. Test Result

Product	Wireless Extender		
Test Item	26dB Bandwidth		
Test Mode	Transmit		
Date of Test	2010/08/10	Test Site	No.7 Sheilding Room

IEEE 802.11n(20MHz)								
Channel No.	Frequency	26dB BW	Required Limit	Decult				
	(MHz)	(MHz)	(MHz)	Result				
36	5180	19.85		NA				
44	5220	19.85		NA				
48	5240	19.85		NA				

	gilent S	Spect		Analyzer - Sv	wept SA										
IXI RB	w a	300	50 s	z			AC	SEN		Avg Typ	e: Log-Pwr	TRAC	M Aug 10, 2010 CE 1 2 3 4 5 6 PE M WWWWW		BW
				Inpu	ut: RF F IF	PNO: Fast Gain:Low	ц.	#Atten: 30		Ext Gain	: -1.50 dB	D	ET P N N N N N		Res BW
	م@div Ref 21.50 dBm -0.72 dB										300 kHz <u>Man</u>				
Log								1					*		Video BW
1.50						1000	man	entrony	1 mar - Marine	mana and and and and and and and and and				0	1.0 MHz
-8.50			_			1								Auto	Man
-18.5										1	2∆3		-21.13 dBm	VBV	V:3dB RBW
-28.5	-		-	- man	mantenal	///3					Jon a have	a margane			1.0
-38.5	i dan	HAM	forthe	were the more than		-				-		Whater	want hut when	Auto	Man
-48.5	5		-											Sna	n:3dB RBW
-58.5						-								Spai	106
-68.5														Auto	Man
Cer	nter	5.18	300	0 GHz			20					Span 5	0.00 MHz		
#Re	es Bl	WЗ	00	kHz		#V	BW -				#Sweep	500 ms (	1001 pts)		W Control
	MODE				×			Y		NCTION FI	JNCTION WIDTH	FUNCTI	DN VALUE	[Gaus	ssian,-3 dB]
1	Ν Δ3	1	f	(Δ)		85 GHz 85 MHz	(Δ)	4.87 dE						1	
3	F	1	f		5.170	15 GHz		-21.17 dE	3m						
5															
6 7				2					_						
89	-														
<u>9</u> 10	_								_						
11															
12															
MSG											STATU	5			



Agilent Spectrum Analyzer	- Swept SA									
50 Ω 3W 300 kHz			AC SEN	VSE:INT	Aug Typ	ALIGNAUTO e: Log-Pwr		M Aug 10, 2010		BW
	nput: RF F	NO: Fast 🔾	🚽 Trig: Free				TYP	EMWWWWW	-	
	. IF	Gain:Low	#Atten: 30	dB	Ext Gain		printer and a second			Res B 300 k
						∆∿	/lkr2 19.		Auto	300 K
dB/div Ref 21.50	dBm						-	0.01 dB		
5				1				*		Video B
0		n and	mon	Ymm	and the second sec					1.0 M
		5			2				Auto	M
8		1			Ì	2∆3				
j	7.40	₩3				1		20.87 dBm	VBW	1:3dB RE
Mullulman and the the and the	and makes make					under	Mulmund		Auto	1 N
a whole many the the participation		-					· horasa	station through	Auto	IV.
				1					0	
5						_			spar	1:3dB RE
									~~~	1
		_							Auto	
5									<u>Auto</u>	
nter 5.22000 GHz		#\(B)	M			#Sween		0.00 MHz		N
nter 5.22000 GHz es BW 300 kHz		#VBV	x = (1 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -				500 ms (	1001 pts)	RB	N Contro
nter 5.22000 GHz es BW 300 kHz	× 5 220		Y		CTION	#Sweep	500 ms (		RB	N Contro
hter 5.22000 GHz ss BW 300 kHz Model 1760 S04 N 1 f Δ3 1 f (Δ)	<u>5.220</u> 19.8	75 GHz 85 MHz (Δ)	5.13 dE	3m dB	CTION FU		500 ms (	1001 pts)	RB	N Contro
nter 5.22000 GHz es BW 300 kHz Mode TRC SQ	<u>5.220</u> 19.8	75 GHz	Y 5.13 dE	3m dB	CTION FU		500 ms (	1001 pts)	RB	N Contro
hter 5.22000 GHz es BW 300 kHz Model TR6 SQL N 1 f Δ3 1 f (Δ)	<u>5.220</u> 19.8	75 GHz 85 MHz (Δ)	5.13 dE	3m dB	CTION		500 ms (	1001 pts)	RB	N Contro
5 nter 5.22000 GHz es BW 300 kHz Model TEC SQL N 1 f Δ3 1 f (Δ)	<u>5.220</u> 19.8	75 GHz 85 MHz (Δ)	5.13 dE	3m dB	CTION FU		500 ms (	1001 pts)	RB	N Contro
5 nter 5.22000 GHz es BW 300 kHz MODE IFIC SCU N 1 f Δ3 1 f F 1 f F 1 f A 4 F 1 d	<u>5.220</u> 19.8	75 GHz 85 MHz (Δ)	5.13 dE	3m dB	CTION		500 ms (	1001 pts)	RB	N Contro
5 nter 5.22000 GHz es BW 300 kHz MODE FRC SCL N 1 f Δ3 1 f (Δ)	<u>5.220</u> 19.8	75 GHz 85 MHz (Δ)	5.13 dE	3m dB	CTION FU		500 ms (	1001 pts)	RB	N Contro
5 nter 5.22000 GHz es BW 300 kHz M 1 f Δ3 1 f F 1 f F 1 f 	<u>5.220</u> 19.8	75 GHz 85 MHz (Δ)	5.13 dE	3m dB	CTION FL		500 ms (	1001 pts)	RB	M N Contro
5 nter 5.22000 GHz es BW 300 kHz 10005 ffic scu N 1 f Δ3 1 f (Δ)	<u>5.220</u> 19.8	75 GHz 85 MHz (Δ)	5.13 dE	3m dB	CTION FL		500 ms (	1001 pts)	RB	11 M Contro sian,-3 dB

### 26dB Bandwidth - Channel 44

🗊 Agilent Spectrum Analyzer - Swept					
70 Ω RBW 300 kHz			: Log-Pwr TRA	PM Aug 10, 2010 CE 1 2 3 4 5 6 PE MWWWWW	BW
Input: RF	PNO: Fast Free IFGain:Low #Atten: 30			PNNNN	Res BW 300 kHz
10 dB/div Ref 21.50 dBm			∆Mkr2 19	.85 MHz A -0.47 dB	uto <u>Man</u>
11.5		_1		*	Video BW
1.50	pagaonen	Kunning		A	1.0 MHz uto Man
-8.50	1		2Δ3		
-18.5	3		Lon.		VBW:3dB RBW
-28.5			Car Jako and Malinary	A	1.0 <u>uto</u> Man
-48.5					
-58.5					Span:3dB RBW 106
-68.5				A	<u>uto</u> Man
Center 5.24000 GHz #Res BW 300 kHz	#VBW		Span : #Sweep 500 ms	50.00 MHz	RBW Control
MKR MODE TRC SCL					[Gaussian,-3 dB]
	240 70 GHz 5.38 dB 19.85 MHz (Δ) -0.47 c	m			
3 F 1 f 5	230 15 GHz -21.20 dB	m			
5					
7 8					
9					
11					
MSG	1		STATUS		

Product	Wireless Extender		
Test Item	26dB Bandwidth		
Test Mode	Transmit		
Date of Test	2010/08/10	Test Site	No.7 Sheilding Room

IEEE 802.11n(40MHz)								
Channel No.	Frequency (MHz)	26dB BW (MHz)	Required Limit (MHz)	Result				
38	5190	39		NA				
46	5230	39		NA				

D Agilent		n Analyzer -	Swept SA									
RBW 3							Avg Type	ALIGNAUTO e: Log-Pwr	TRAC	4 Aug 10, 2010 E 1 2 3 4 5 6 E M WWWWW		BW
		In		NO: Fast C Gain:Low	Atten: 30		Ext Gain:	-1.50 dB	DE	PNNNNN		Res BW
10 dB/di	v R	ef 21.50	dBm					Δ		).0 MHz 0.70 dB	Auto	300 kHz <u>Man</u>
Log 11.5										*		Video BW
1.50			-	mand	many	mon	Marcel and				Auto	1.0 MHz Man
-8.50				1				2∆3				
-18.5				∦3						-21.07 dBm	VBW	1:3dB RBW
-28.5		James Mill	where where we have a start where we have a					a constration where	and have been and the		Auto	1.0 Man
-48.5	or housed approved	Aurol								and should be the		
-58.5											Spar	1:3dB RBW 106
-68.5											<u>Auto</u>	Man
Center #Res B					w			# <b>O</b>		00.0 MHz		N Comtrol
MKR MODE			×	#VB	άΛ	eu.		#Sweep		1001 pts)		N Control
1 N	1 f		5.187	8 GHz	4.93 d	3m		NCTION WIDTH	FONCTIO	IN VALUE	-	
2 <u>∆3</u> 3 F	1 f 1 f			.0 MHz (/ 6 GHz	<u>4) -0.70</u> -21.70 dl	dB 3m						
4 5		-										
6												
8												
10		0										
12 MSG								STATUS				
								Sintibe				



	<u>20u</u>	Danuwiul	<u>h – Channel 4</u>	+0		
Agilent Spectrum Analyzer -	Swept SA					
50 Ω 3W 300 kHz	nput: RF PNO: Fast 🔾	AC SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	01:49:29 PM Aug 11, 2010 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N	B	N
Ref Offset 1. dB/div Ref 21.50	IFGain:Low	#Atten: 30 dB	Ext Gain: -1.50 dB	Vkr2 39.0 MHz -1.50 dB	Auto	800 kH
				*	V	deo B
0	- Constraints	www. www.	Mar Marine 1		Auto	1.0 Mi <u>M</u> i
5	3		2Δ3	-19.43 dBm	VBW:3	
5 Milmuthen Mynthonish	WWW. MARCH MARCH MARCH		- mailed and a mailed and an	That water and the state of the	<u>Auto</u>	1 M
					Span:3	
					<u>Auto</u>	10 M
nter 5.23000 GHz es BW 300 kHz	#VBW	·	Sweep 1	Span 100.0 MHz .07 ms (1001 pts)	RBW	ontro
Mode TRC SCL N 1 f	× 5.232 2 GHz	Y FL 6.565 dBm	INCTION FUNCTION WIDTH	FUNCTION VALUE	[Gaussia	n,-3 dB
Δ3 1 f (Δ) F 1 f	5.232 2 GH2 39.0 MHz (Δ) 5.210 8 GHz	-1.50 dB -20.06 dBm				

### 4. Peak Transmit Power

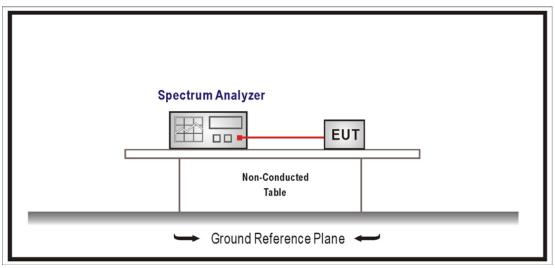
### 4.1. Test Equipment

The following test equipments are used during the radiated emission tests:

Peak Transmit Output / SR7								
Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date				
Spectrum Analyzer	Agilent	N9010A	US47140172	2010/11/01				

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 4.2. Test Setup



### 4.3. Limits

- For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- 3. For the band 5.725-5.825 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W or 17 dBm + 10log B, where B is the 26dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

### 4.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements. The Method #1 of the Peak conducted transmit output power was used.

Set RBW=1MHz, VBW=3MHz with sample detector and trace average 100 traces in power averaging mode. Set span to encompass the entire emission bandwidth (EBW) of the signal. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

### 4.5. Uncertainty

The measurement uncertainty is defined as  $\pm$  1.27 dB

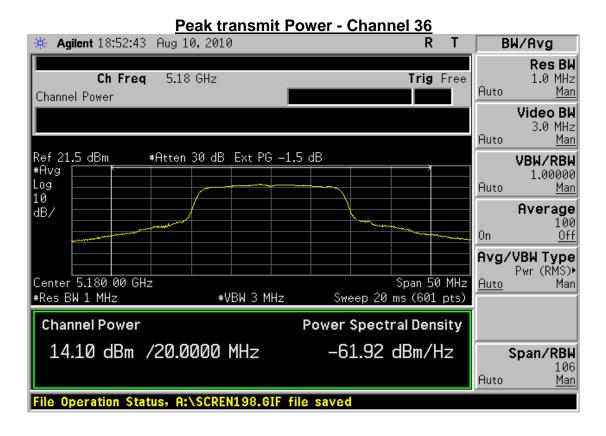
### 4.6. Test Result

Product	WIRELESS EXTENDER		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/09	Test Site	No.7 Sheilding Room

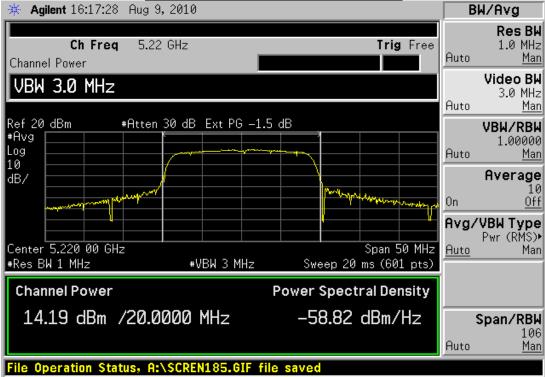
IEEE 802.11n(20MHz)										
	Frequency	26dB Bandwidth	Output Power	Require						
Channel No.	(MHz)		(MHz) (dBm)		4+10logB	Result				
			(abiii)	(dBm)	Limit (dBm)					
36	5180	19.85	14.10	≤ 17	≤ 16.97	Pass				
44	5220	19.85	14.19	≤ 17	≤ 16.97	Pass				
48	5240	19.85	14.02	≤ 17	≤ 16.97	Pass				

The worst emission of data rate is 6.5 Mbps.

	Peak Power Output (dBm)									
MC	MCS Index 0 1 2 3 4 5 6 7									De auvine d
Channel	Channel Frequency Data Rate								Required	
No	(MHz)	6.5	13	19.5	26	39	52	58.5	65	Limit
36	5180	14.10	13.77	12.03	11.98	10.07	9.85	8.06	7.88	≦17
44	5220	14.19	13.94	12.29	12.04	10.16	10.08	8.05	7.80	≦17
48	5240	14.02	13.95	12.02	11.85	9.78	9.56	7.58	7.38	≦17



Peak transmit Power - Channel 44



Pea	<u>ak transmit Po</u>	wer - Channel 48		
🔆 Agilent 16:20:26 Aug 9	,2010		B	W/Avg
Ch Freq 5.24 Channel Power	GHz	Trig Free	Auto	<b>Res BW</b> 1.0 MHz <u>Man</u>
VBW 3.0 MHz			Auto	Video BW 3.0 MHz <u>Man</u>
Ref 20 dBm #Atten #Avg Log 10	30 dB Ext PG -1.5		Auto	VBW/RBW 1.00000 <u>Man</u>
dB/			On	Average 10 <u>Off</u>
Center 5.240 00 GHz		Span 50 MHz	Avg/	Y <b>BW Type</b> Pwr (RMS)► Man
#Res BW 1 MHz Channel Power		Sweep 20 ms (601 pts) Power Spectral Density		
14.02 dBm /20.0	000 MHz	-58.99 dBm/Hz	Auto	Span/RBW 106 <u>Man</u>
File Operation Status, A:	SCREN187.GIF file	e saved		

### Peak transmit Power - Channel 48

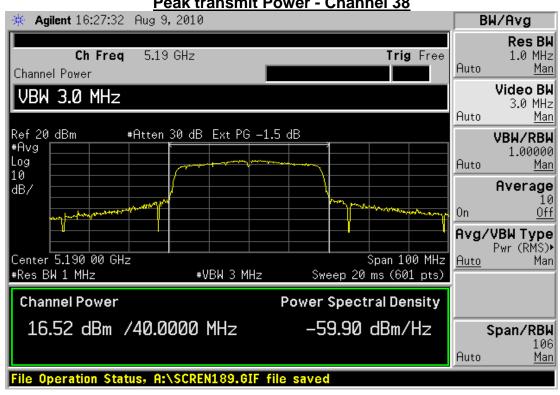
Product	WIRELESS EXTENDER		
Test Item	Peak Transmit Output		
Test Mode	Transmit		
Date of Test	2010/08/05	Test Site	No.7 Sheilding Room

### IEEE 802.11n(40MHz)

	,					
	Frequency	26dD Dopdwidth	Output Dowor	Require		
Channel No.	Frequency	26dB Bandwidth	Output Power	Fixed Limit 4+10logB		Result
	(MHz) (MHz) (dBm)		(dBm)	Limit (dBm)		
38	5190	39	16.52	≤ 17	≤ 19.91	Pass
46	5230	39	16.58	≤ 17	≤ 19.91	Pass

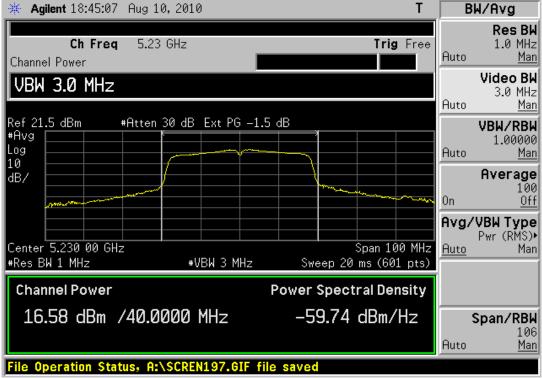
The worst emission of data rate is 0 Mbps.

	Peak Power Output (dBm)									
MCS Index 0 1 2 3 4 5 6 7								Descriptions		
Channel	Frequency		Data Rate							Required
No	(MHz)	13.5	27	40.5	54	81	108	121.5	135	Limit
39	5190	16.52	15.89	13.79	13.23	12.77	12.02	10.87	9.01	≦17
46	5230	16.58	15.99	14.11	13.17	12.65	11.79	10.34	9.54	≦17



#### **Peak transmit Power - Channel 38**





### 5. Peak Power Spectrum Density

#### 5.1. Test Equipment

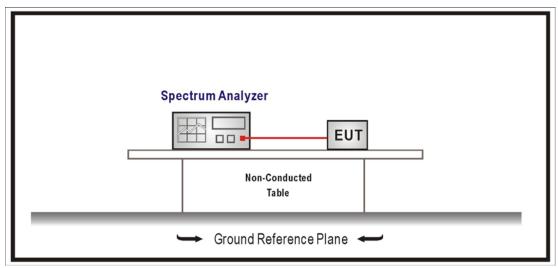
The following test equipments are used during the radiated emission tests:

Peak Power Spectrum Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2010/11/01

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 5.2. Test Setup



#### 5.3. Limits

- 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 antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- 3. For the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

### 5.4. Test Procedure

The EUT was setup to ANSI C63.4: 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements. The Method #2 of the Peak power spectral density (PPSD) was used.

Set RBW=1MHz, VBW=3MHz with sample detector. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging.

### 5.5. Uncertainty

The measurement uncertainty is defined as  $\pm$  1.27 dB

### 5.6. Test Result

Product	Wireless Extender		
Test Item	Peak Power Spectral Density		
Test Mode	Transmit		
Date of Test	2010/08/09	Test Site	No.7 Sheilding Room

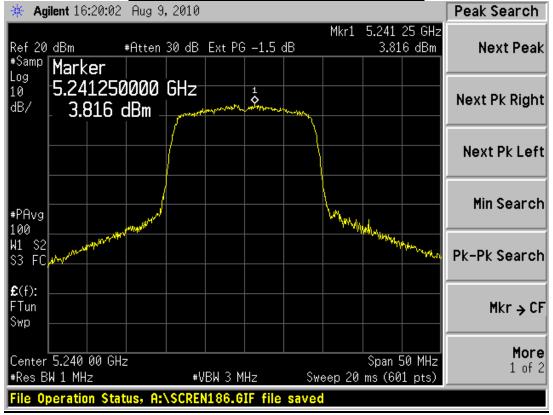
IEEE 802.11n(20MHz)										
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result						
36	5180	3.831	≤ 4	Pass						
44	5220	3.825	≤ 4	Pass						
48	5240	3.816	≤ 4	Pass						

🔆 Ag	<b>ilent</b> 16:11	L:28	Aug 9	,2010							Peak Search
Ref 20	dBm		#Atten	30 dB	Ext PG	-1.5	dB	Mkr1		42 GHz 1 dBm	Next Peak
#Samp Log 10 dB/	Marker 5.181 3.83	420		GHz	and the second second	1	Margaret				Next Pk Righ
											Next Pk Lef
#PAvg			Arcothe					Wennerto			Min Search
100 41 S2 S3 FC	Harringalinghagailte	y-ANGUN	Charlenger						<sup>W</sup> MWWW	hay Mary Marina	Pk-Pk Searcl
€(f): FTun Swp											Mkr → C
	5.180 00 W 1 MHz	GHz	2	#\	ВМ З М	Hz	Sw	eep 20		50 MHz 1 pts)	More 1 of 3

Page: 34 of 105

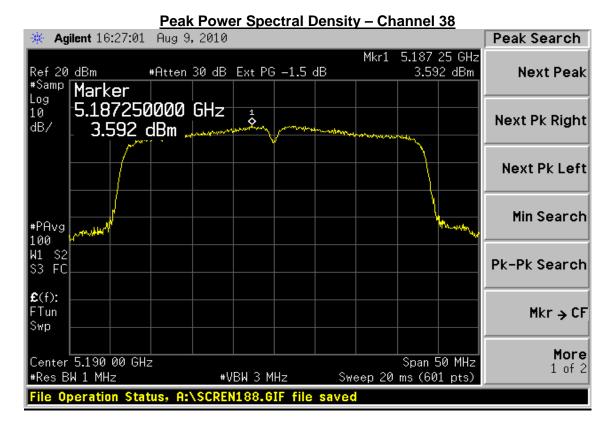


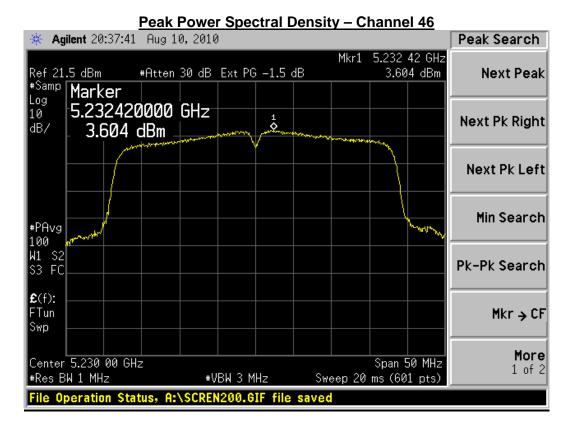
Peak Power Spectral Density – Channel 48



Product	Wireless Extender						
Test Item	Peak Power Spectral Density						
Test Mode	Transmit						
Date of Test	2010/08/09	Test Site	No.7 Sheilding Room				

IEEE 802.11n(40MHz)							
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result			
38	5190	3.592	≤ 4	Pass			
46	5230	3.604	≤ 4	Pass			





### 6. Peak Excursion

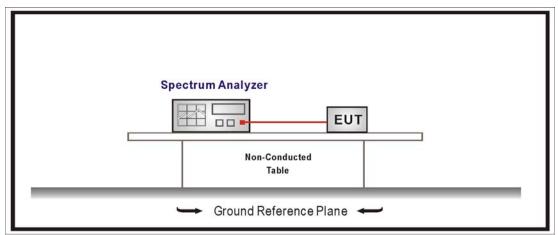
### 6.1. Test Equipment

The following test equipments are used during the radiated emission tests:

Peak Excursion / SR7							
Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date			
Spectrum Analyzer	Agilent	N9010A	US47140172	2010/11/01			

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 6.2. Test Setup



#### 6.3. Limits

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

#### 6.4. Test Procedure

The EUT was setup to ANSI C63.4: 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements. 1<sup>st</sup> Trace:

Set RBW = 1MHz, VBW = 3MHz with peak detector and max-hold settings.

2<sup>nd</sup> Trace:

Set RBW = 1MHz, VBW = 3MHz with sample detector and trace average 100 traces in power averaging mode.

#### 6.5. Uncertainty

The measurement uncertainty is defined as  $\pm$  1.27 dB

### 6.6. Test Result

Product	Wireless Extender		
Test Item	Power Excursion		
Test Mode	Transmit		
Date of Test	2010/08/13	Test Site	No.7 Sheilding Room

IEEE 802.11n_20M (ANT.A)							
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result			
36	5180	7.58	≤ 13	Pass			
44	5220	7.837	≤ 13	Pass			
48	5240	7.89	≤ 13	Pass			

📭 Agilent Spectrum Analyzer -	Swept SA				
50 Ω RBW 1.0 MHz		AC SENSE:INT	ALIGN AUTO #Avg Type: Pwr(RMS)	01:27:37 PM Sep 09, 2010 TRACE 1 2 3 4 5 6	BW
In	put: RF PNO: Fast G IFGain:Low	, 」 Trig: Free Run #Atten: 30 dB	Ext Gain: -1.50 dB	DET P P N N N N	NCS DW
10 dB/div Ref 21.50 (	dBm		Mkr2	5.178 875 GHz 0.18 dBm	1.0 MHz Auto <u>Man</u>
11.5		2		*	Video BW
-8.50					30 H: Auto <u>Mar</u>
-18.5				The second	VBW:3dB RBW
-28.5					1.0
-38.5					<u>Auto</u> Mar
-58.5					Span:3dB RBV
-68.5					106 <u>Auto</u> Mar
Center 5.18000 GHz #Res BW 1.0 MHz	#VB\	V 30 Hz	Sweep	Span 25.00 MHz 650 ms (1001 pts)	RBW Control
MKR MODE TRC SCL	×		CTION FUNCTION WIDTH	FUNCTION VALUE	[Gaussian,-3 dB]
1 N 1 f 2 N 2 f	5.181 650 GHz 5.178 875 GHz	7.76 dBm 0.18 dBm			
3 4					
5 6					
7 8 9					
10 11					
12					
ISG			STATUS		

_					<u> </u>		ouror			<u> </u>			
D Agilent S	Spectri	im Analy	rzer - Sv	vept SA									
		50 Ω				AC	SENSE:INT		ALIGN AUTO		M Sep 09, 2010		BW
RBW 1	1.0 N	IHZ	luur	ıt: RF P	NO: Fast	Tria: F	ree Run	#Avg	Type: Pwr(RMS	TY	CE 1 2 3 4 5 6 PE MM <del>WWW</del>		
			Inpl	ICRF P	Gain:Low	#Atten		Ext Ga	ain: -1.50 dB	D	FPPNNNN		Res BW
									Mkr1	5 221 8	800 GHz		1.0 MHz
10 dB/div	. 6	tef 21.	50 di	9m					ivint i	8	23 dBm	Auto	Man
Log	γ Γ		.J0 ui	DIII			1	1					
11.5					-			)'			*		Video BW
1.50			m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			mana		and the factor of the second	many			30 Hz
-8.50		1 de	-							No.		Auto	<u>Man</u>
20320-025		100/								/	N		
-18.5	الر الر	#//						-			NW N	VBV	V:3dB RBW
-28.5 WW	und"	X					-				Thomasta		1.0
-38.5			-				-					Auto	Man
-48.5							_						
-58.5												Spa	n:3dB RBW
-68.5													106
-68.5												<u>Auto</u>	Man
Center	5 22	000 GI	Hz			20	-		<i>a</i>	Snan 2	5.00 MHz		
#Res B					#VE	3W 30 Hz			Sweep		1001 pts)		W Control
Durel Drage													ssian,-3 dB]
MKR MODE		f		5.221 80	0 GHz	8.23	dBm	UNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE		
2 N		f		5.221 50			dBm						
3													
5													
6													
7		-											
8					1								
10					1								
11 12					1								
MSG									CTATUS				
MSG									STATUS	·			

#### **Power Excursion – Channel 44**

D Ag	ilent S	Spect	rum	Analyzer - !	Swept SA										
RB	W 1	.0	50 S MH	z				SENSE:INT	#A	vg Typ	ALIGNAUTO e: Pwr(RMS)	TRAC	M Sep 09, 2010 E 1 2 3 4 5 6		BW
				Inj	put: RF F IF	NO: Fast Gain:Low	Trig: Fr #Atten:		Ex	t Gain:	-1.50 dB	DI			Res BW 1.0 MHz
10 d	B/div	,	Ref	f 21.50 d	dBm						Mkr2	5.241 3 0.	50 GHz 19 dBm	Auto	Man
Log 11.6									1		-		*		Video BW
1.50			+	6								$\geq$		Auto	30 Hz <u>Man</u>
-8.50 -18.5			1	1								J	h.		
-28.5		~~~~~^^	\$	/									hite and the		1:3dB RBW
-38.5			4					_	_					<u>Auto</u>	Man
-48.5 -58.5														Spar	n:3dB RBW 106
-68.5									-					<u>Auto</u>	Man
				0 GHz								Span 2	5.00 MHz		
	s Bl					#V	BW 30 Hz						1001 pts)		sian,-3 dB]
1	MODE N	1	f		× 5.241 47			dBm	FUNCTION	FU	NCTION WIDTH	FUNCTI	ON VALUE		
2	Ν	2	f		5.241 3	50 GHz	0.19	dBm							
4															
6 7			<i></i>												
8															
10 11															
12															
MSG											STATUS				

Product	Wireless Extender		
Test Item	Power Excursion		
Test Mode	Transmit		
Date of Test	2010/08/13	Test Site	No.7 Sheilding Room

IEEE 802.11n(40MHz)							
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result			
38	5190	7.52	≤ 13	Pass			
46	5230	7.89	≤ 13	Pass			

50 Ω	Swept SA				
RBW 1.0 MHz		AC SENSE:INT	ALIGNAUTO #Avg Type: Pwr(RMS)	01:38:42 PM Sep 09, 2010 TRACE 1 2 3 4 5 6	BW
In	nput: RF PNO: Fast C IFGain:Low	Trig: Free Run #Atten: 30 dB	Ext Gain: -1.50 dB	DET P P N N N N	Kes Di
10 dB/div Ref 21.50	dBm		Mkr1	5.192 85 GHz 10.38 dBm	1.0 MHz Auto <u>Mar</u>
Log 11.5		- Alter		*	Video BV
1.50	www.www.www.www.		a ad alastra later a later a later a	- Joh	30 H Auto <u>Ma</u> r
-8.50 -18.5 -28.5 White bas and white				The manufactures	VBW:3dB RBV
20.0					1.0 Auto Ma
-38.5					
-58.5					Span:3dB RB
-68.5					106 <u>Auto</u> Ma
Center 5.19000 GHz #Res BW 1.0 MHz	#VB	W 30 Hz	Sweep	Span 50.00 MHz 1.30 s (1001 pts)	
MKR MODE TRC SCL	×		NCTION FUNCTION WIDTH	FUNCTION VALUE	[Gaussian,-3 dB]
1 N 1 f 2 N 2 f	5.192 85 GHz 5.192 05 GHz	10.38 dBm 2.86 dBm			
1 N 1 f 2 N 2 f 3 4					
N         1         f           2         N         2         f           3         -         -           4         -         -           5         -         -           6         -         -					
1 N 1 f 2 N 2 f 3					
1         N         1         f           2         N         2         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -           7         -         -         -					
N         1         f           2         N         2         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -           7         -         -         -           8         -         -         -           9         -         -         -					

								P0V	ver Exe	curs	sion	- L	nan	nei 4	<u> </u>				
	gilent	Spec	rum	Analyzer	- Sw	ept SA													
RB	w	1.0	50 S MH	z						ENSE:IN		#Avg		IGN AUTO Pwr(RMS		TRACE	1 Sep 09, 2010 1 2 3 4 5 6 MM <del>WWWW</del>	•	BW
					Input	: RF	PNO: F IFGain:L	ast 🕞 .ow	#Atten: 3			Ext G	ain: -1	.50 dB		DET	PPNNNN		Res BW 1.0 MHz
10 c	Mkr2 5.232 05 GHz 10 dB/div Ref 21.50 dBm 3.32 dBm 3.32 dBm										Auto	Man							
11.6										1	2	and the second sec					*		Video BW
1.50				1					`	Ţ-						JA I		Auto	30 Hz <u>Man</u>
-8.50 -18.6	5	<b>։ ի</b> նելերի	w.xm	1	-					-						14	∽₩₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽	VBW	:3dB RBW
-28.6 -38.6	5		7		-													<u>Auto</u>	1.0 Man
-48.5 -58.5	2									_								Spar	n:3dB RBW 106
-68.5	5		-		+													<u>Auto</u>	Man
	nter es B			0 GHz /IHz	1		#	¢νв₩	/ 30 Hz					Sweep			).00 MHz  001 pts)		N Control
MKR	MODE	TRC	SCL			×			Y		FUNC	TION	FUNC	TION WIDTH	FUN	истіоі	N VALUE	[Gaus	sian,-3 dB]
1	N	1	f f				2 85 GH 2 05 GH		11.21 d 3.32 d										
3 4 5																			
6 7																			
89																			
10 11 12										-									
MSG								_					I	STATUS	;				
-	6														-				

### 7. Radiated Emission

### 7.1. Test Equipment

The following test equipment are used during the radiated emission test:

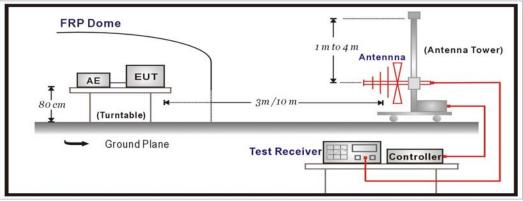
Radiated	Emission	/ CB1
ruululou		, 001

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2011/08/13
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/14
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2010/12/03
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2011/03/25
Spectrum Analyzer	Agilent	E4440A	MY46187335	2011/01/14
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

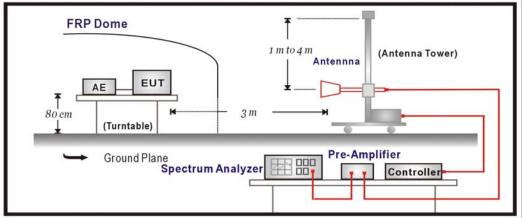
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 7.2. Test Setup

Under 1GHz Test Setup:







### 7.3. Limits

#### General Radiated Emission Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section. Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits								
Frequency MHz	uV/m @3m	dBuV/m@3m						
30-88	100	40						
88-216	150	43.5						
216-960	200	46						
Above 960	500	54						

Remark:

- 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

#### > Unwanted Emission out of the restricted bands Limits

FCC Part 15 Subpart C Paragraph 15.407(b) Limits				
Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (dBuV/m@3m)		
5150~5250	-27	68.3		
5250~5350	-27	68.3		
5470~5725	-27	68.3		
5725~5825	-27 (Note1)	68.3		
0720~0020	-17 (Note2)	78.3		

Remark:

- 1. For frequencies more than 10 MHz above or below the band edges.
- 2. For frequency range from the band edges to 10 MHz above or below the band edges.

3. 
$$uV/m = \frac{1000000\sqrt{30 \times EIRP}}{3}$$
, RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

### 7.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to

ANSI C63.4: 2003on radiated measurement.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field dtrength of harmonics measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30 )is 120 KHz, above 1GHz are 1 MHz.

The frequency range from 30MHz to 10th harminics is checked.

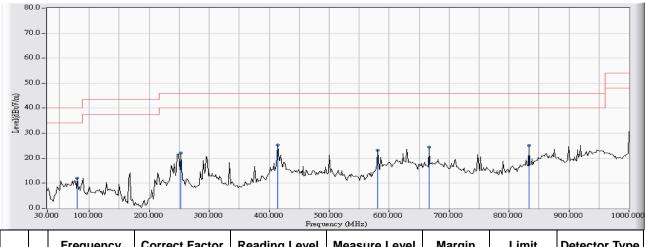
### 7.5. Uncertainty

The measurement uncertainty 30MHz $\sim$ 1GHz as  $\pm$ 3.43dB 1GHz $\sim$ 26.5Ghz as  $\pm$ 3.65dB

### 7.6. Test Result

#### 30MHz-1GHz Spurious

Site : CB1	Time : 2010/07/07 - 13:42
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5220MHz(N-20M)



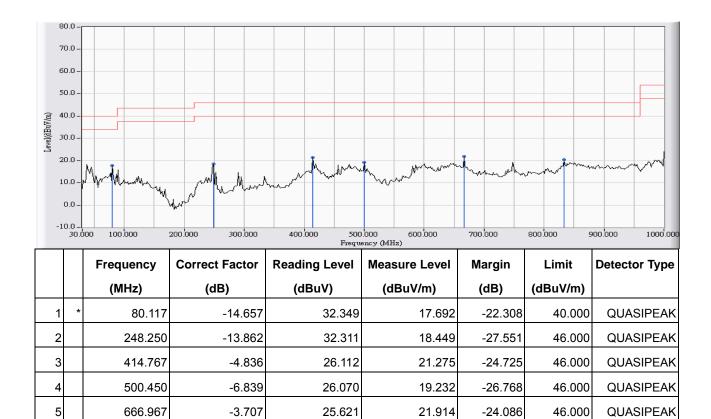
		Frequency	<b>Correct Factor</b>	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		80.117	-16.141	28.062	11.921	-28.079	40.000	QUASIPEAK
2		253.100	-12.866	34.923	22.057	-23.943	46.000	QUASIPEAK
3	*	414.767	-4.821	30.145	25.324	-20.676	46.000	QUASIPEAK
4		581.283	-5.896	29.083	23.187	-22.813	46.000	QUASIPEAK
5		666.967	-3.698	28.100	24.402	-21.598	46.000	QUASIPEAK
6		833.483	-3.793	28.850	25.057	-20.943	46.000	QUASIPEAK

- 1. All Reading Levels are Quasi-Peak value.
- 2. "\*", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor.

46.000

QUASIPEAK

Site : CB1	Time : 2010/07/07 - 13:46
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5220MHz(N-20M)



23.543

20.361

-25.639

Note:

6

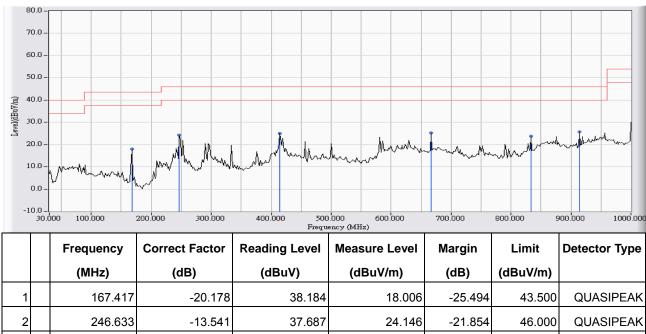
833.483

- 1. All Reading Levels are Quasi-Peak value.
- 2. "\*", means this data is the worst emission level.

-3.182

3. Measurement Level = Reading Level + Correct Factor.

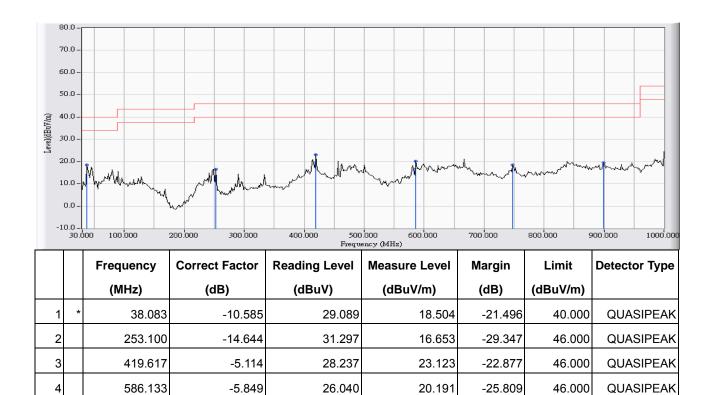
Site : CB1	Time : 2010/07/07 - 14:00
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190MHz(N-40M)



2		246.633	-13.541	37.687	24.146	-21.854	46.000	QUASIPEAK
3		414.767	-4.821	29.822	25.001	-20.999	46.000	QUASIPEAK
4		666.967	-3.698	28.918	25.220	-20.780	46.000	QUASIPEAK
5		833.483	-3.793	27.485	23.692	-22.308	46.000	QUASIPEAK
6	*	914.317	-1.737	27.390	25.653	-20.347	46.000	QUASIPEAK

- 1. All Reading Levels are Quasi-Peak value.
- 2. "\*", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2010/07/07 - 14:03
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190MHz(N-40M)



24.174

23.455

18.538

19.475

-27.462

-26.525

46.000

46.000

QUASIPEAK

QUASIPEAK

Note:

5

6

747.800

899.767

- 1. All Reading Levels are Quasi-Peak value.
- 2. "\*", means this data is the worst emission level.

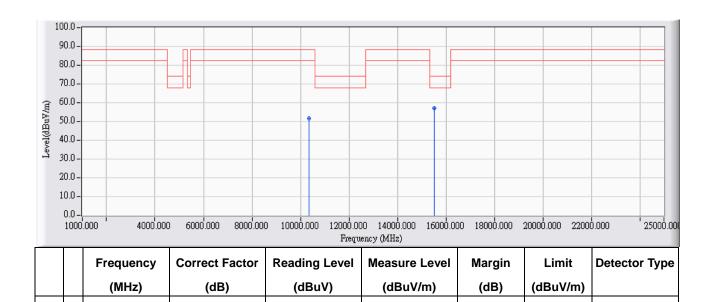
-5.637

-3.980

3. Measurement Level = Reading Level + Correct Factor.

#### Harmonic & Spurious:

Site : CB1	Time : 2010/08/10 - 15:09
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5180_802.11n(20MHz)



Note:

1

#

10359.170

15535.580

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

51.863

57.012

-36.437

-16.988

88.300

74.000

PEAK

PEAK

- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.

42.430

45.460

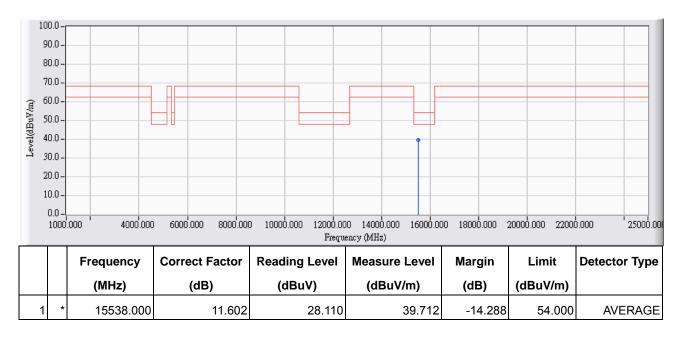
5. "#", means the frequency is out of the restricted band.

9.433

11.552

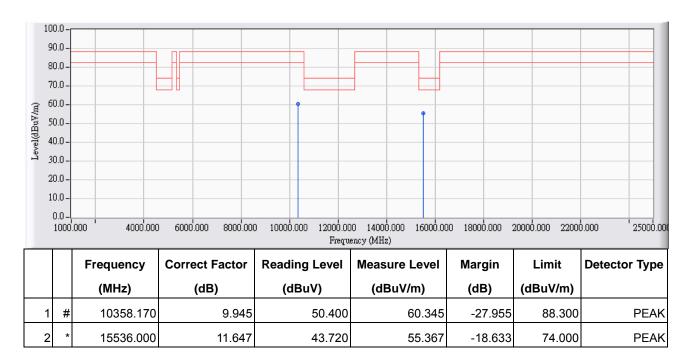
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 15:09
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5180_802.11n(20MHz)



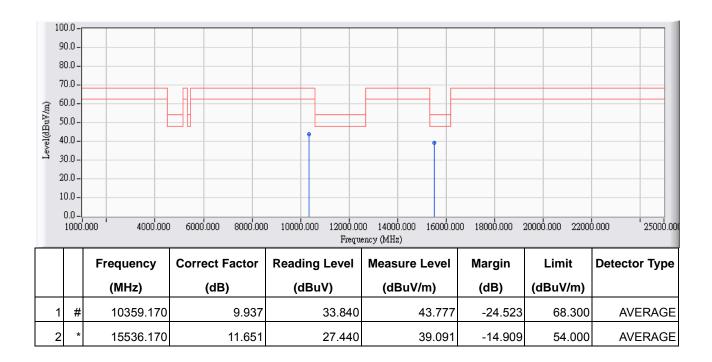
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 15:12
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5180_802.11n(20MHz)



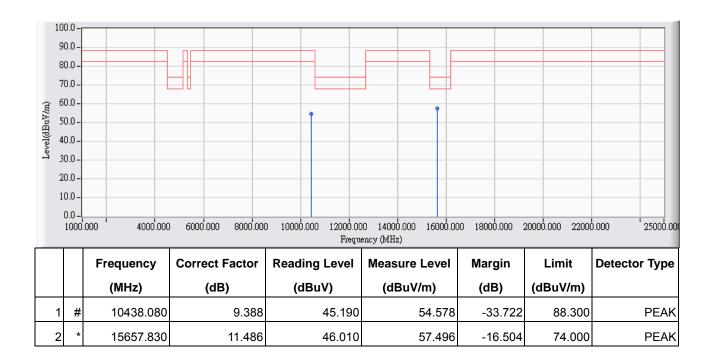
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 15:13
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5180_802.11n(20MHz)



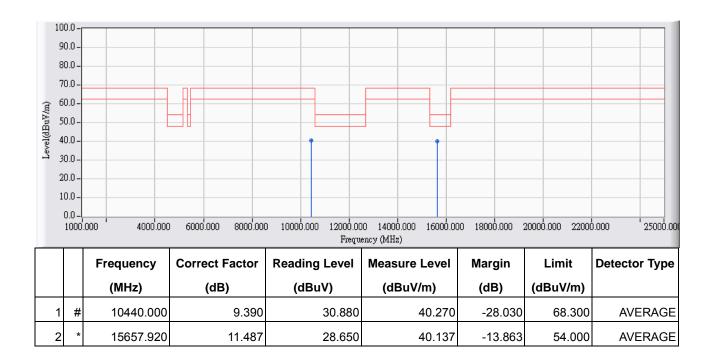
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 15:26
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5220_802.11n(20MHz)



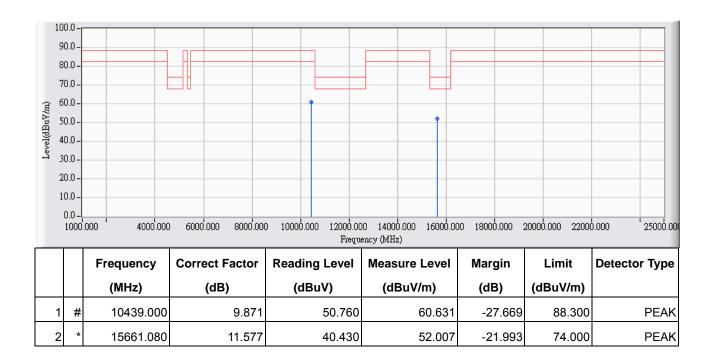
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 15:27
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5220_802.11n(20MHz)



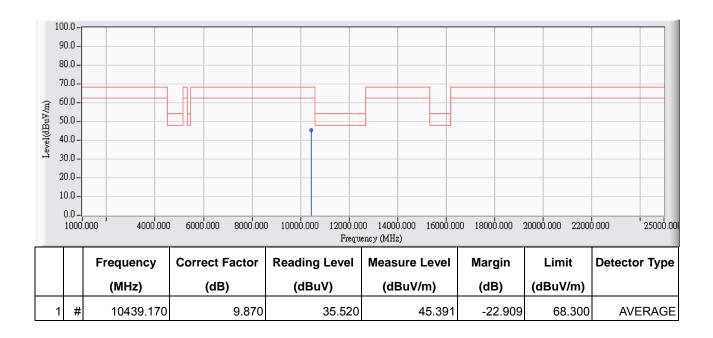
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 15:34
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5220_802.11n(20MHz)



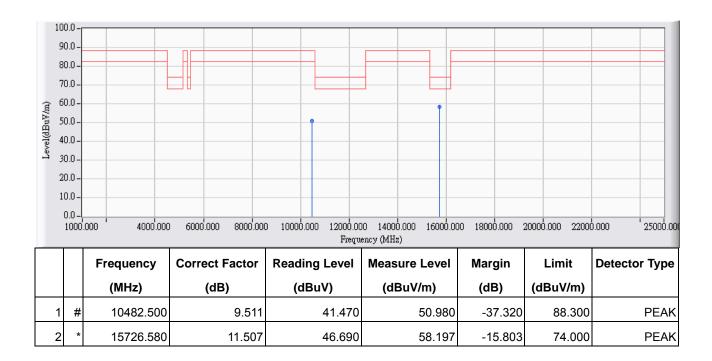
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 15:34
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit5220_802.11n(20MHz)



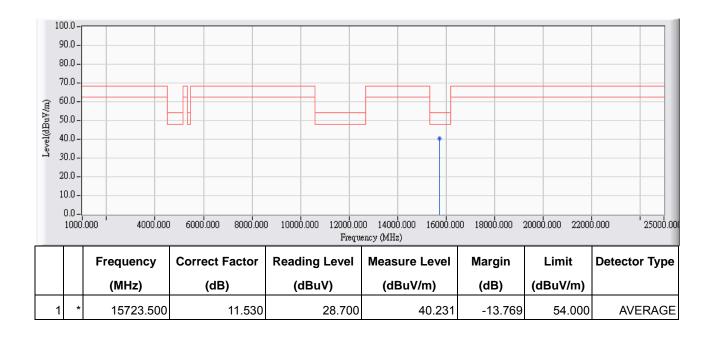
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:02
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5240_802.11n(20MHz)



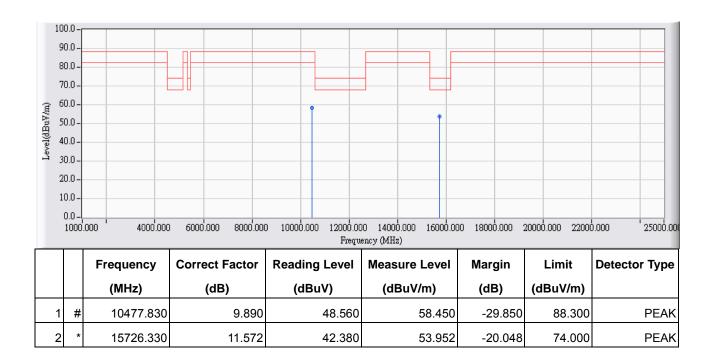
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:02
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5240_802.11n(20MHz)



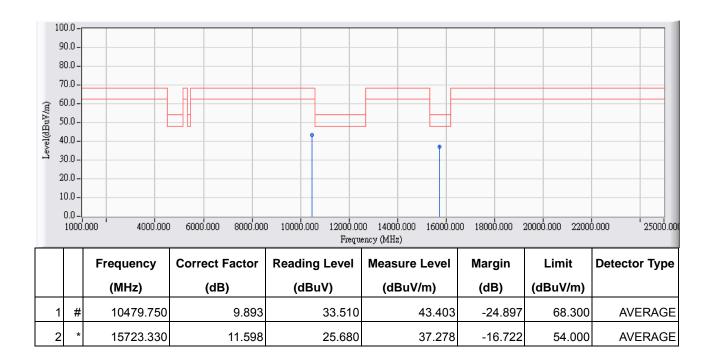
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:06
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5240_802.11n(20MHz)



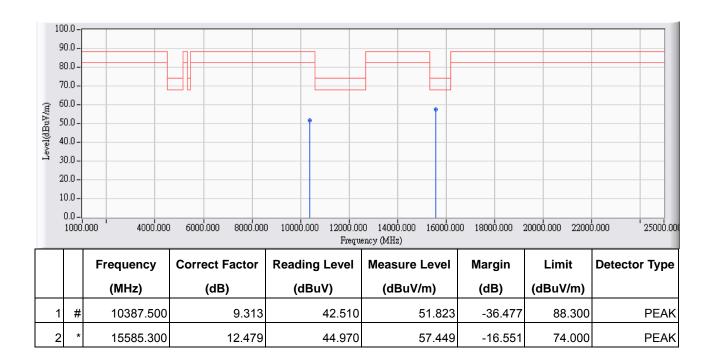
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:07
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5240_802.11n(20MHz)



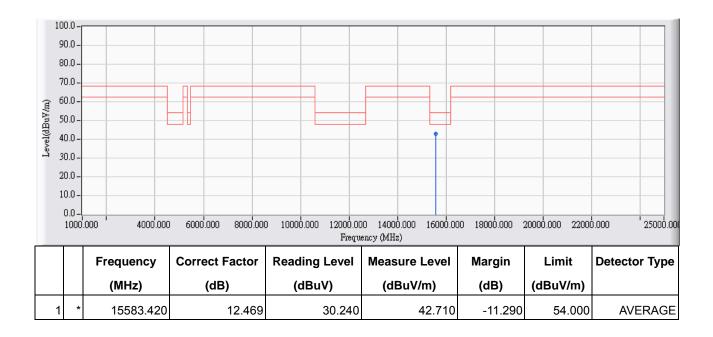
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:26
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190_802.11n(40MHz)



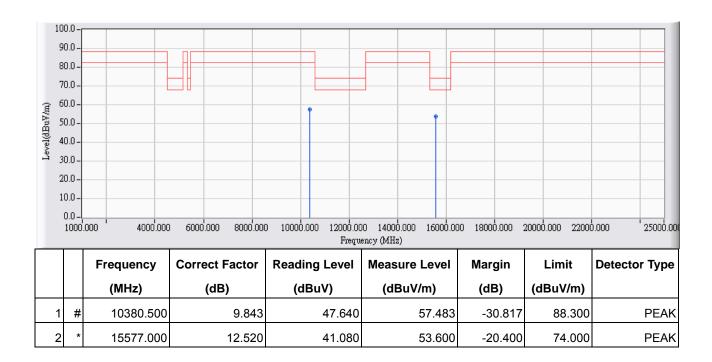
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:27
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190_802.11n(40MHz)



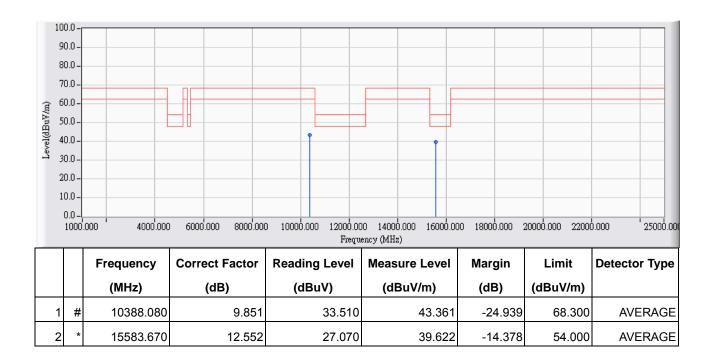
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.
- В

Site : CB1	Time : 2010/08/10 - 16:30
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190_802.11n(40MHz)



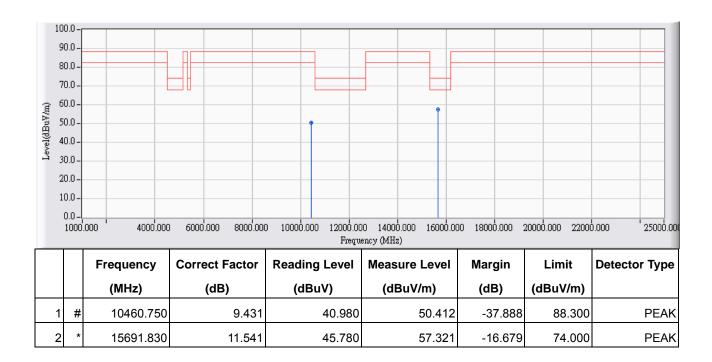
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:31
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190_802.11n(40MHz)



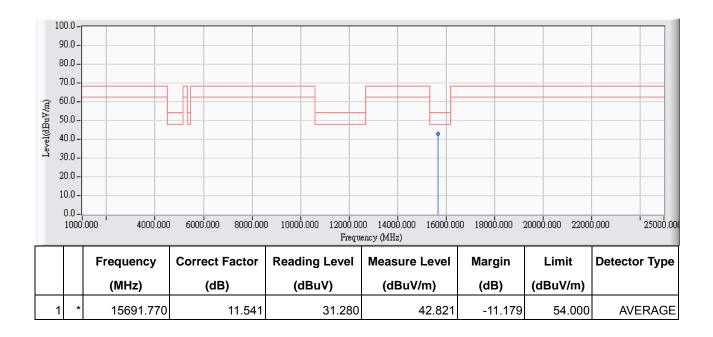
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:48
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5230_802.11n(40MHz)



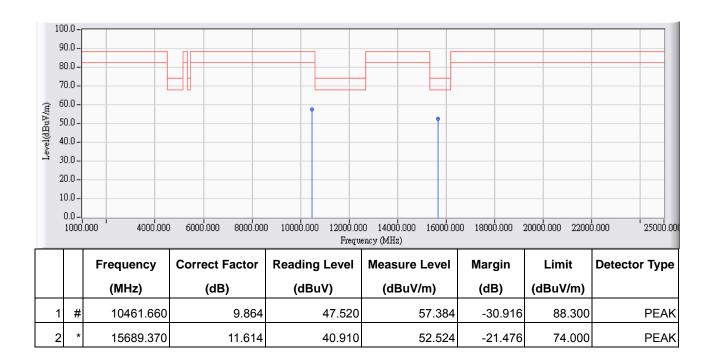
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:49
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5230_802.11n(40MHz)



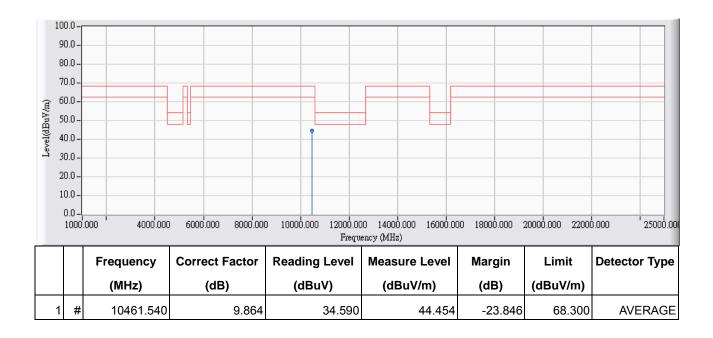
- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:53
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5230_802.11n(40MHz)



- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/10 - 16:54
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2009-11) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5230_802.11n(40MHz)



- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the too weak instrument of signal is unable to test.
- 5. "#", means the frequency is out of the restricted band.
- 6. Measurement Level = Reading Level + Correct Factor.
- 7. The average measurement was not performed when the peak measured data under the limit of average detection.

### 8. Band Edge

### 8.1. Test Equipment

The following test equipments are used during the band edge tests:

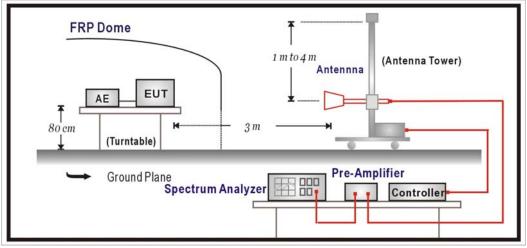
Radiated Emission Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/14
Spectrum Analyzer	Agilent	E4440A	MY46187335	2011/01/14
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 8.2. Test Setup

RF Radiated Measurement:



### 8.3. Limits

#### General Radiated Emission Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section. Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remark:

- 4. RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 5. In the Above Table, the tighter limit applies at the band edges.
- 6. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

#### > Unwanted Emission out of the restricted bands Limits

FCC Part 15 Subpart C Paragraph 15.407(b) Limits		
Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (dBuV/m@3m)
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27 (Note1)	68.3
0720~0020	-17 (Note2)	78.3

Remark:

- 4. For frequencies more than 10 MHz above or below the band edges.
- 5. For frequency range from the band edges to 10 MHz above or below the band edges.

6. 
$$uV/m = \frac{1000000\sqrt{30 \times EIRP}}{3}$$
, RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

### 8.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30 )is 120 KHz, above 1GHz are 1 MHz.

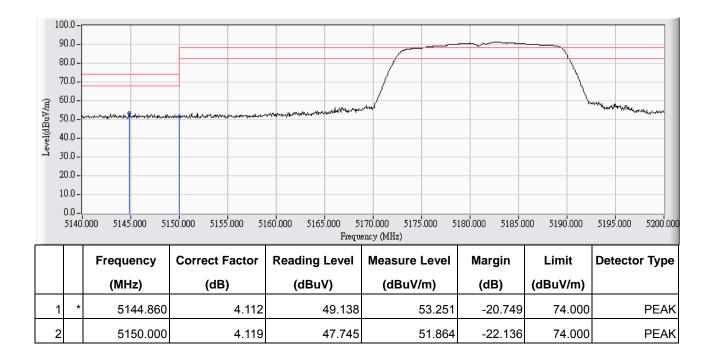
### 8.5. Uncertainty

The measurement uncertainty is defined as ± 3.65dB

### 8.6. Test Result

#### Radiated is defined as

Site : CB1	Time : 2010/08/13 - 19:12
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5180_802.11n(20MHz)

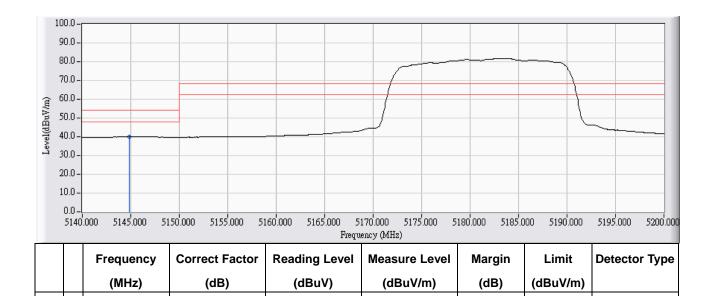


- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

54.000

AVERAGE

Site : CB1	Time : 2010/08/13 - 19:12
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5180_802.11n(20MHz)



Note:

1

5144.860

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.

35.768

- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.

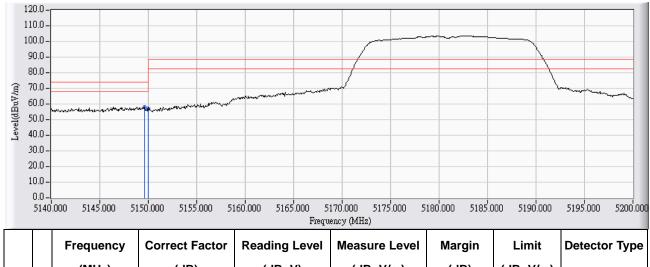
4.112

- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

39.881

-14.119

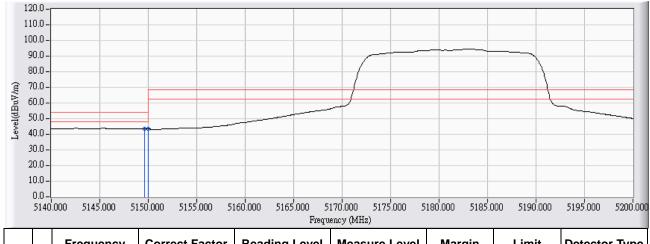
Site : CB1	Time : 2010/08/13 - 19:16
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5180_802.11n(20MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		5149.600	6.036	51.815	57.850	-16.150	74.000	PEAK
2	*	5150.000	6.036	51.204	57.240	-16.760	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

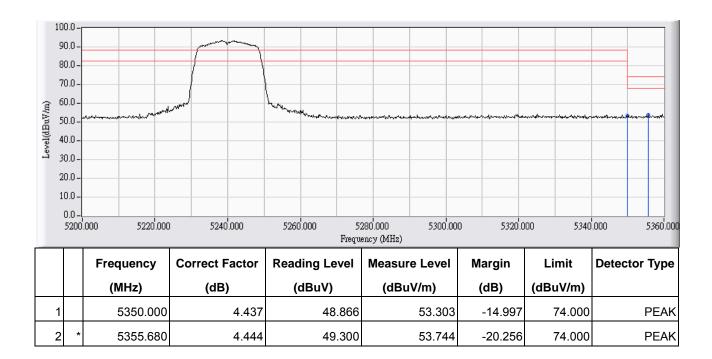
Site : CB1	Time : 2010/08/13 - 19:16
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5180_802.11n(20MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	5149.600	6.036	37.464	43.499	-10.501	54.000	AVERAGE
2		5150.000	6.036	37.312	43.348	-10.652	54.000	AVERAGE

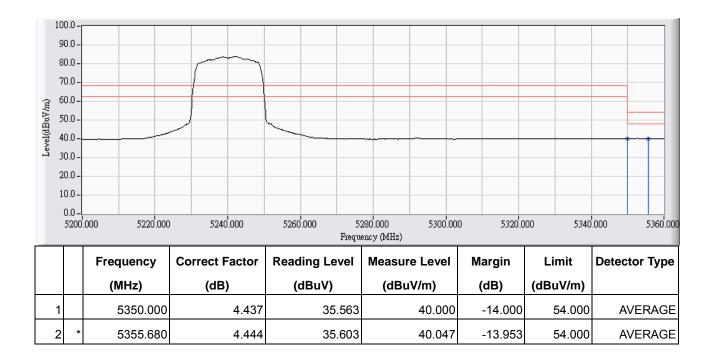
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 19:29
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5240_802.11n(20MHz)



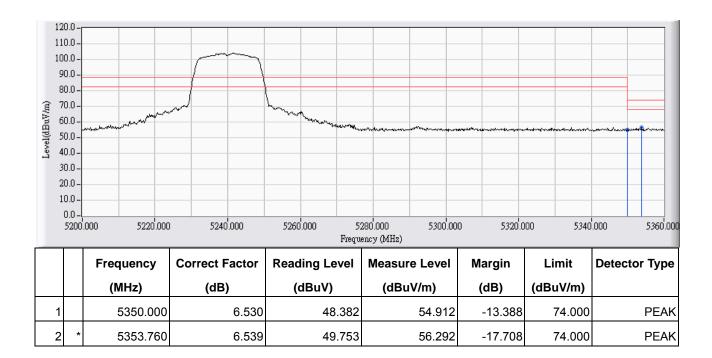
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 – 19:30
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5240_802.11n(20MHz)



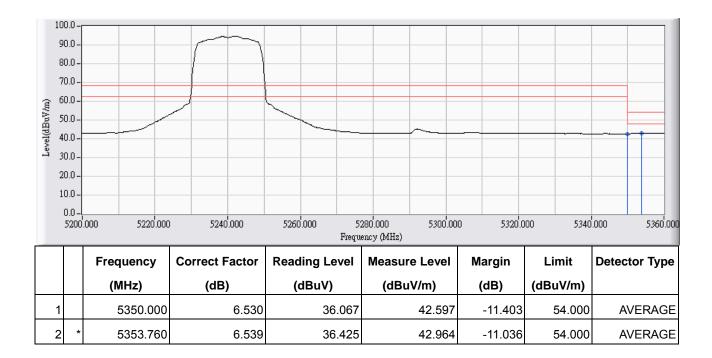
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 19:33
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5240_802.11n(20MHz)



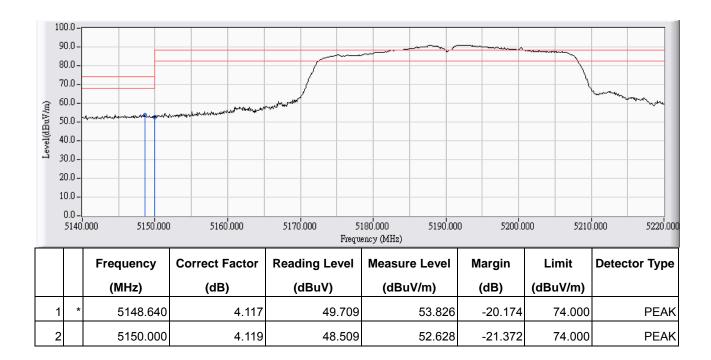
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 19:34
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5240_802.11n(20MHz)



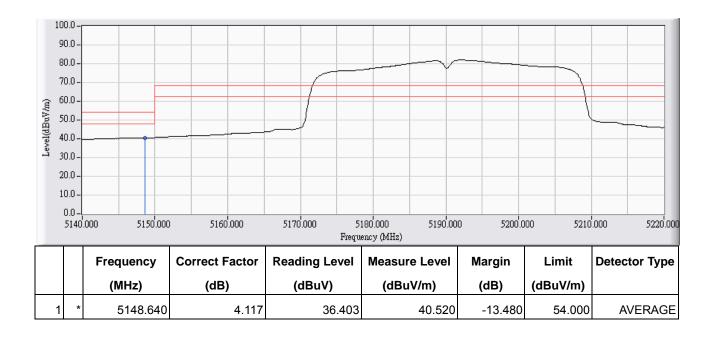
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 20:02
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190_802.11n(40MHz)



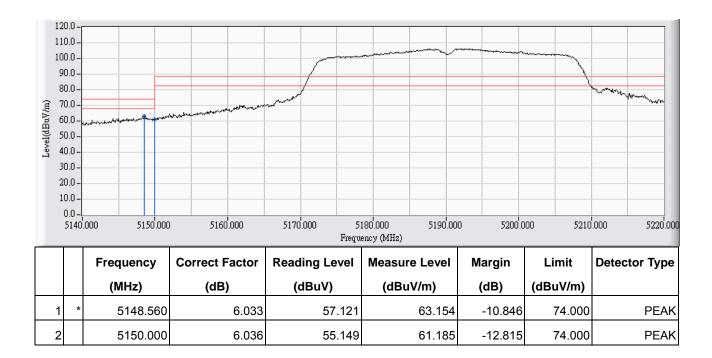
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 20:03
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190_802.11n(40MHz)



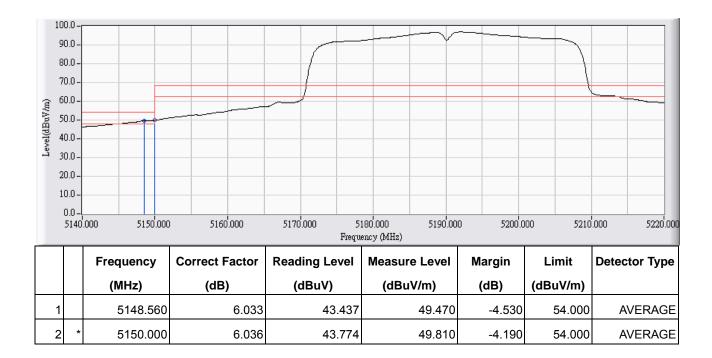
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. " \* ", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 20:07
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190_802.11n(40MHz)



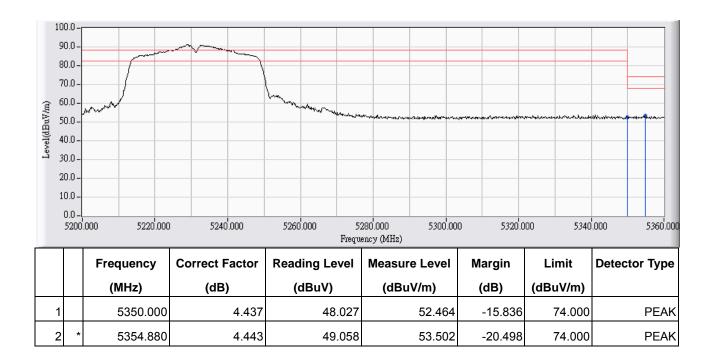
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 20:08
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5190_802.11n(40MHz)



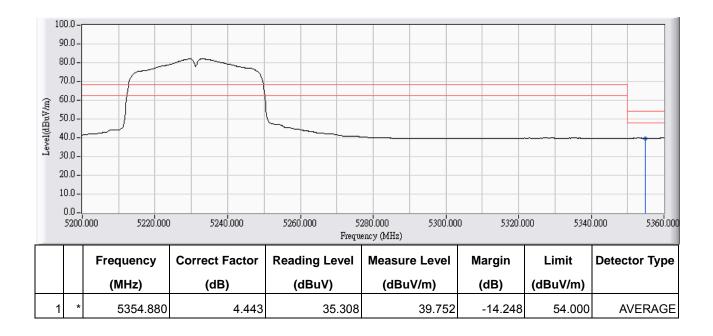
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 20:15
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5230_802.11n(40MHz)



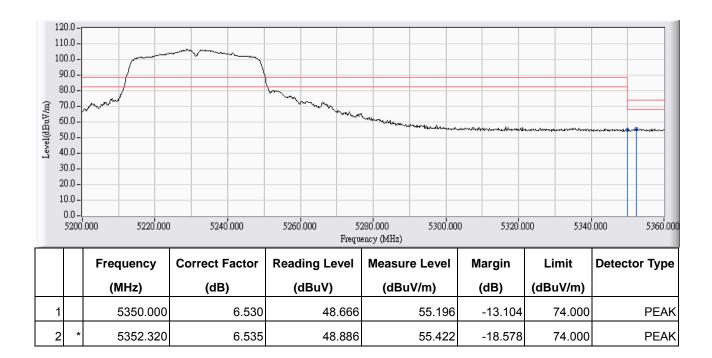
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 20:16
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5230_802.11n(40MHz)



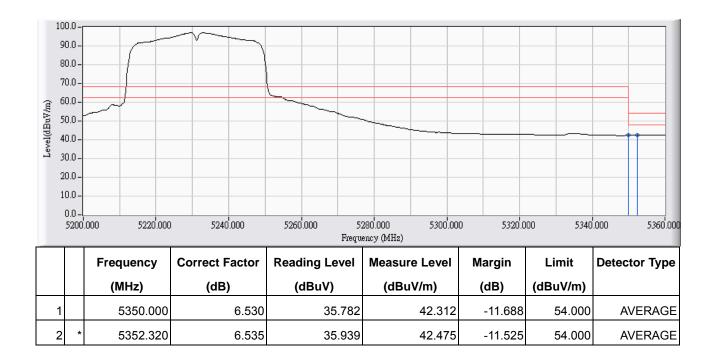
- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 20:20
Limit : FCC_SpartE_15.407_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5230_802.11n(40MHz)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Site : CB1	Time : 2010/08/13 - 20:21
Limit : FCC_SpartE_15.407_H_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-07) - VERTICAL	Power : AC 120V/60Hz
EUT : Wireless Extender	Note : Mode 1: Transmit-5230_802.11n(40MHz)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 1MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "\*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

### 9. Frequency Stability

### 9.1. Test Equipment

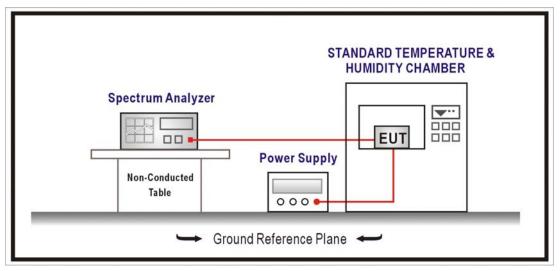
The following test equipments are used during the radiated emission tests:

Frequency Stability / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2010/11/01
STANDARD				
TEMPERATURE	WIT	TH-1S-B	1082101	2011/02/03
& HUMIDITY CHAMBER				

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 9.2. Test Setup



### 9.3. Limits

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

### 9.4. Test Procedure

The EUT was setup to ANSI C63.4: 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements.

### 9.5. Uncertainty

The measurement uncertainty is defined as  $\pm$  150 Hz

### 9.6. Test Result

Product	Wireless Extender		
Test Item	Frequency Stability		
Test Mode	Transmit - 802.11n(20MHz) - 5180MHz		
Date of Test	2010/08/11	Test Site	No.7 Sheilding Room

#### Startup

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5180.7620	147.1019	Pass
-10		5180.0391	7.5546	Pass
0		5180.2671	51.5680	Pass
10	120	5180.4184	80.7770	Pass
20	120	5180.7210	139.1814	Pass
30		5180.8350	161.1909	Pass
40		5180.7170	138.4158	Pass
50		5180.0753	14.5362	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5180.7614	146.9876	Pass
25	120	5180.3758	72.5553	Pass
	138	5180.1500	28.9575	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5180.7335	141.6102	Pass
-10		5180.0290	5.5971	Pass
0		5180.8758	169.0795	Pass
10	120	5180.5237	101.1013	Pass
20	120	5180.4289	82.8074	Pass
30		5180.5153	99.4736	Pass
40		5180.5274	101.8215	Pass
50		5180.7963	153.7201	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5180.6470	124.9013	Pass
25	120	5180.0855	16.5039	Pass
	138	5180.3350	64.6706	Pass

#### 5 Minute

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5180.6013	116.0719	Pass
-10		5180.0673	12.9862	Pass
0		5180.3528	68.1155	Pass
10	120	5180.1426	27.5237	Pass
20	120	5180.4308	83.1691	Pass
30		5180.7034	135.8009	Pass
40		5180.7966	153.7834	Pass
50		5180.0580	11.1925	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5180.0825	15.9206	Pass
25	120	5180.2621	50.5945	Pass
	138	5180.6077	117.3181	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5180.7345	141.7948	Pass
-10		5180.0033	0.6387	Pass
0		5180.6830	131.8565	Pass
10	120	5180.1932	37.2898	Pass
20	120	5180.8263	159.5265	Pass
30		5180.4216	81.3810	Pass
40		5180.8276	159.7599	Pass
50		5180.6877	132.7559	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5180.8594	165.9014	Pass
25	120	5180.0866	16.7162	Pass
	138	5180.5443	105.0764	Pass

Product	Wireless Extender		
Test Item	Frequency Stability		
Test Mode	Transmit - 802.11n(20MHz) - 5240MHz		
Date of Test	2010/08/11	Test Site	No.7 Sheilding Room

Startup

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5240.2831	54.0256	Pass
-10		5240.2642	50.4244	Pass
0		5240.3848	73.4339	Pass
10	120	5240.1070	20.4130	Pass
20	120	5240.1577	30.0982	Pass
30		5240.4437	84.6823	Pass
40		5240.6754	128.8941	Pass
50		5240.4490	85.6952	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5240.3646	69.5760	Pass
25	120	5240.0338	6.4459	Pass
	138	5240.6152	117.4021	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5240.3397	64.8348	Pass
-10		5240.5148	98.2422	Pass
0		5240.8519	162.5812	Pass
10	120	5240.8260	157.6257	Pass
20	120	5240.7258	138.5056	Pass
30		5240.6696	127.7805	Pass
40		5240.0219	4.1856	Pass
50		5240.6168	117.7188	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5240.6497	123.9859	Pass
25	120	5240.7616	145.3393	Pass
	138	5240.1164	22.2214	Pass

#### 5 Minute

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5240.3983	76.0164	Pass
-10		5240.4389	83.7626	Pass
0		5240.5607	107.0126	Pass
10	120	5240.1379	26.3207	Pass
20	120	5240.7148	136.4203	Pass
30		5240.0058	1.1115	Pass
40		5240.1238	23.6179	Pass
50		5240.7771	148.3080	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5240.1471	28.0728	Pass
25	120	5240.4822	92.0174	Pass
	138	5240.1363	26.0186	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5240.6936	132.3577	Pass
-10		5240.7566	144.3841	Pass
0		5240.8976	171.2896	Pass
10	120	5240.2202	42.0198	Pass
20	120	5240.5291	100.9729	Pass
30		5240.8532	162.8286	Pass
40		5240.3879	74.0361	Pass
50		5240.3905	74.5172	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5240.2153	41.0790	Pass
25	120	5240.6332	120.8347	Pass
	138	5240.0857	16.3558	Pass

Product	Wireless Extender		
Test Item	Frequency Stability		
Test Mode	Transmit - 802.11n_40M - 5190MHz		
Date of Test	2010/08/11	Test Site	No.7 Sheilding Room

Startup

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5190.1279	24.6445	Pass
-10		5190.3122	60.1456	Pass
0		5190.7818	150.6316	Pass
10	120	5190.8326	160.4148	Pass
20		5190.8769	168.9511	Pass
30		5190.6789	130.8068	Pass
40		5190.5362	103.3227	Pass
50		5190.1773	34.1684	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5190.5493	105.8463	Pass
25	120	5190.5853	112.7723	Pass
	138	5190.2441	47.0421	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5190.6703	129.1448	Pass
-10		5190.7746	149.2423	Pass
0		5190.0468	9.0234	Pass
10	120	5190.3723	71.7421	Pass
20		5190.6771	130.4650	Pass
30		5190.3480	67.0585	Pass
40		5190.6900	132.9416	Pass
50		5190.6521	125.6496	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5190.6418	123.6660	Pass
25	120	5190.3511	67.6531	Pass
	138	5190.2982	57.4657	Pass

#### 5 Minute

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5190.6541	126.0354	Pass
-10		5190.6176	118.9984	Pass
0		5190.1360	26.2013	Pass
10	120	5190.4325	83.3380	Pass
20	120	5190.7730	148.9411	Pass
30		5190.7563	145.7140	Pass
40		5190.8638	166.4398	Pass
50		5190.7373	142.0571	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5190.1532	29.5195	Pass
25	120	5190.4183	80.6063	Pass
	138	5190.6327	121.9013	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5190.3538	68.1630	Pass
-10		5190.5235	100.8576	Pass
0		5190.1311	25.2621	Pass
10	120	5190.1723	33.1964	Pass
20	120	5190.4371	84.2287	Pass
30		5190.7315	140.9477	Pass
40		5190.8485	163.4954	Pass
50		5190.1963	37.8281	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5190.3960	76.3059	Pass
25	120	5190.0508	9.7857	Pass
	138	5190.5947	114.5825	Pass

Product	Wireless Extender		
Test Item	Frequency Stability		
Test Mode	Transmit - 802.11n_40M - 5230MHz		
Date of Test	2010/08/11	Test Site	No.7 Sheilding Room

Startup

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5230.8992	171.9306	Pass
-10		5230.0082	1.5691	Pass
0		5230.6826	130.5202	Pass
10	120	5230.6683	127.7759	Pass
20		5230.3179	60.7809	Pass
30		5230.0198	3.7925	Pass
40		5230.0796	15.2165	Pass
50		5230.8507	162.6590	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5230.6083	116.3056	Pass
25	120	5230.7914	151.3269	Pass
	138	5230.3436	65.6898	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20		5240.0199	3.7995	Pass
-10		5240.4074	77.7447	Pass
0		5240.3430	65.4512	Pass
10	120	5240.0378	7.2176	Pass
20		5240.8969	171.1559	Pass
30		5240.1150	21.9377	Pass
40		5240.0667	12.7347	Pass
50		5240.5927	113.1107	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5240.8996	171.6789	Pass
25	120	5240.5158	98.4267	Pass
	138	5240.6722	128.2878	Pass

#### 5 Minute

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5240.7531	143.7297	Pass
-10		5240.7203	137.4699	Pass
0		5240.0868	16.5716	Pass
10		5240.3115	59.4556	Pass
20		5240.4022	76.7462	Pass
30		5240.6865	131.0055	Pass
40		5240.6180	117.9310	Pass
50		5240.8667	165.4056	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
	102	5240.0191	3.6356	Pass
25	120	5240.5080	96.9476	Pass
	138	5240.7707	147.0828	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
-20	120	5240.1600	30.5349	Pass
-10		5240.4570	87.2052	Pass
0		5240.5087	97.0861	Pass
10		5240.5047	96.3231	Pass
20		5240.8483	161.8944	Pass
30		5240.5156	98.4026	Pass
40		5240.8233	157.1204	Pass
50		5240.7078	135.0839	Pass

Temperature Interval (°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Result
25	102	5240.1999	38.1492	Pass
	120	5240.4042	77.1339	Pass
	138	5240.8827	168.4603	Pass