

***FCC 15.247***  
**2.4 GHz Report**

***for***

**Dyaco International Inc.**

**12F, No. 111, Songjiang Road,  
Taipei, Taiwan**

**Product Name : ENT CONSOLE**  
**Model Name : (1)WT002 (2)WB001**  
**FCC ID : 2AHVL-IEITB1DYACO**

**Prepared by: : AUDIX Technology Corporation,  
EMC Department**



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APPENDIX A TEST DATA and PLOTS  
APPENDIX A TEST PHOTOGRAPHS

## TEST REPORT CERTIFICATION

Applicant : Dyaco International Inc.  
Manufacture : Dyaco Canada Inc.  
Product Name : ENT CONSOLE  
Model No. : (1)WT002 (2)WB001  
Serial No. : N/A  
Power Supply : DC 12V

Applicable Standards:

47 CFR FCC Part 15 Subpart C: 2016  
ANSI C63.10:2013  
KDB 558074 D01 DTS Meas Guidance v03r05

**AUDIX Technology Corp.** tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report. **AUDIX Technology Corp.** does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Test: 2016. 11. 02 ~ 21

Date of Report: 2016. 12. 16

Producer:

  
(Tina Huang/Administrator)

Signatory:

  
(Ben Cheng/Manager)

## 1. REPORT HISTORY

Revision	Date	Revision Summary	Report Number
0	2016. 12. 16	Original Report.	EM-F160856

## 2. SUMMARY OF TEST RESULTS

Rule	Description	Results
15.207	Conducted Emission	<b>PASS</b>
15.247(d)/15.205	Radiated Band Edge and Radiated Spurious Emission	<b>PASS</b>
15.247(a)(2)	6dB Bandwidth	<b>PASS</b>
15.247(b)(3)	Maximum Peak Output	<b>PASS</b>
15.247(d)	Conducted Band Edges and Conducted Spurious Emission	<b>PASS</b>
15.247 (e)	Peak Power Spectral Density	<b>PASS</b>
15.203	Antenna Requirement	<b>PASS</b>

### 3. GENERAL INFORMATION

#### 3.1. Description of EUT

Product	ENT CONSOLE											
Model Number	<p>(1)WT002 (2)WB001</p> <p>Above two models difference are in inch of LCD panel and antenna gain, otherwise include RF circuit are identical. Please to refer following list:</p> <table><tr><td>Model</td><td>Inch of LCD Panel</td></tr><tr><td>WT002</td><td>15.6” (SM5D2TV001)</td></tr><tr><td>WB001</td><td>10.2”</td></tr></table> <p>Both two models are test in conducted and radiated emission measurement and model WT002 (max. antenna gain) is only test in all RF conducted test items.</p>		Model	Inch of LCD Panel	WT002	15.6” (SM5D2TV001)	WB001	10.2”				
Model	Inch of LCD Panel											
WT002	15.6” (SM5D2TV001)											
WB001	10.2”											
Serial Number	N/A											
Applicant	Dyaco International Inc. 12F, No. 111, Songjiang Road, Taipei, Taiwan.											
Manufacture	Dyaco Canada Inc. 5955 Don Murie Street Niagara Falls ON L2G 0A9 Canada											
RF Features	WLAN:802.11b/g/n Bluetooth: BT and BLE											
Transmit Type	<table><tr><td colspan="2">2.4 GHz</td></tr><tr><td>802.11b</td><td>1T1R</td></tr><tr><td>802.11g</td><td>1T1R</td></tr><tr><td>802.11n-HT20</td><td>1T1R</td></tr><tr><td>BT/BLE</td><td>1T1R</td></tr></table>		2.4 GHz		802.11b	1T1R	802.11g	1T1R	802.11n-HT20	1T1R	BT/BLE	1T1R
2.4 GHz												
802.11b	1T1R											
802.11g	1T1R											
802.11n-HT20	1T1R											
BT/BLE	1T1R											
Date of Receipt of Sample	2016. 10. 19											

### 3.2. Antenna Information

Model: WT002					
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)
1	32505-001900-100-RS	SAN JOSE Technology, Inc.	PIFA	2400	<b>0.84</b>
				2450	<b>1.89</b>
				2500	<b>0.84</b>

Model: WB001					
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)
2	32505-003501-100-RS	SAN JOSE Technology, Inc.	PIFA	2400	<b>1.74</b>
				2450	<b>1.36</b>
				2500	<b>1.20</b>

### 3.3. EUT Specifications Assessed in Current Report

Mode	Fundamental Range (MHz)	Channel Number	Modulation	Data Rate (Mbps)
802.11b	2412-2462	11	DSSS (DBPSK/DQPSK/CCK)	Up to 11
802.11g		11	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 54
802.11n-HT20				Up to 150
BLE	2402-2480	40	GFSK	1

Channel List	
802.11 b/g/n-HT20	
Channel Number	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462



Channel List			
BLE			
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
37	2402	18	2442
00	2404	19	2444
01	2406	20	2446
02	2408	21	2448
03	2410	22	2450
04	2412	23	2452
05	2414	24	2454
06	2416	25	2456
07	2418	26	2458
08	2420	27	2460
09	2422	28	2462
10	2424	29	2464
38	2426	30	2466
11	2428	31	2468
12	2430	32	2470
13	2432	33	2472
14	2434	34	2474
15	2436	35	2476
16	2438	36	2478
17	2440	39	2480

### 3.4. Data Rate Relative to Output Power

802.11b			
Channel	Modulation	Date Rate(Mbps)	Power(dBm)
1	DBPSK	1	15.95
1	DQPSK	2	15.88
1	CCK	5.5	15.74
1	CCK	11	15.71

802.11g			
Channel	Modulation	Date Rate(Mbps)	Power(dBm)
1	BPSK	6	21.77
1	BPSK	9	21.12
1	QPSK	12	21.35
1	QPSK	18	20.91
1	16-QAM	24	21.25
1	16-QAM	36	21.50
1	64-QAM	48	21.30
1	64-QAM	54	21.32

802.11n-HT20			
Channel	Modulation	Date Rate(Mbps)	Power(dBm)
1	BPSK	MCS8	21.60
1	QPSK	MCS9	20.91
1	QPSK	MCS10	21.43
1	16-QAM	MCS11	21.23
1	16-QAM	MCS12	20.98
1	64-QAM	MCS13	21.05
1	64-QAM	MCS14	20.81
1	64-QAM	MCS15	21.11

BLE			
Channel	Modulation	Date Rate(Mbps)	Power(dBm)
0	GFSK	1	4.57

Note: Above results are assessed in peak power.

### 3.5. Test Configuration

Mode	Duty Cycle (x)	T (ms)	Duty Cycle Factor (dB)
802.11b	0.99	---	0.04
802.11g	0.95	2.05	0.22
802.11n-HT20	0.94	1.90	0.27
BLE	0.14	0.0858	8.54

Note: When duty cycle is less than 98% (0.98) that duty cycle factor  $10\log(1/x)$  is needed to add in conducted test items measured in average detector.

AC Conduction	
Test Case	Normal operation

Item		Mode	Data Rate	Test Channel
Radiated Test Case	Radiated Band Edge <small>Note1</small>	802.11b	1Mbps	1/11
		802.11g	6Mbps	1/11
		802.11n-HT20	MCS8	1/11
		BLE	1Mbps	37/39
	Radiated Spurious Emission <small>Note1 &amp; 2</small>	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		BLE	1Mbps	37/17/39
Conducted Test Case	6dB Bandwidth	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		BLE	1Mbps	37/17/39
	Peak Power Spectral Density	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		BLE	1Mbps	37/17/39
	Peak Output Power	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		BLE	1Mbps	37/17/39
	Band Edge	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		BLE	1Mbps	37/39
	Spurious Emission	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		BLE	1Mbps	37/17/39

Note 1:

☒ Mobile Device, and 3 axis were assessed. The worst scenario for Radiated Spurious Emission as follow:

☒ Lie      ☐ Side      ☐ Stand

☐ Portable Device, and 3 axis were assessed. The worst scenario for Radiated Spurious Emission as follow:

☐ Lie      ☐ Side      ☐ Stand

Note 2: Low, mid, and high channels were measured, only the worst channel of each modulation was presented in this report.

### 3.6. Tested Supporting System List

#### 3.6.1. Support Peripheral Unit

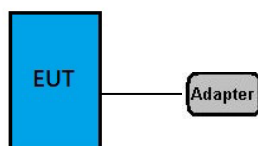
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	AC/DC Adapter	FSP	FSP060-DBAB1	N/A	N/A

#### 3.6.2. Cable Lists

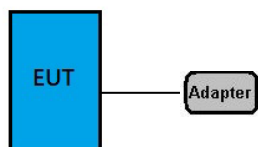
No.	Cable Description Of The Above Support Units
1.	DC Power Cord: Unshielded, Detachable, 1.5m, Bonded a ferrite core AC Power Cord: Unshielded, Detachable, 1.8m

### 3.7. Setup Configuration

#### 3.7.1. EUT Configuration for Power Line & Radiated Emission



#### 3.7.2. EUT Configuration for Conducted Test Items



### 3.8. Operating Condition of EUT

To set EUT on WLAN function under continues transmitting and choosing data rate/channel.

### 3.9. Description of Test Facility

Name of Test Firm	Audix Technology Corporation / EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099303 Website : www.audixtech.com Contact e-mail: sales@audixtech.com
Accreditations	The laboratory is accredited by following organizations under ISO/IEC 17025:2005 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724 (3) FCC OET Designation No. TW1004 & TW1090 (4) VCCI (Japan) Member No. 0237
Test Facilities	(1) No. 8 Shielding Room (2) No. 1 3m Semi-Anechoic Chamber (IC Test Site Registration No: 5183B-1) (3) Fully Anechoic Chamber (IC Test Site Registration No: 5183B-4)

### 3.10. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	±3.5dB
Radiation Test (Distance: 3m)	30MHz~1000MHz	± 3.68dB
	Above 1GHz	± 5.82dB

Remark : Uncertainty =  $k_{uc}(y)$

Test Item	Uncertainty
6dB Bandwidth	± 0.05kHz
Maximum peak output power	± 0.33dB
Power spectral density	± 0.13dB
Conducted Emission Limitations	± 0.13dB

## 4. MEASUREMENT EQUIPMENT LIST

### 4.1. Conducted Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESR3	101774	2016. 02. 04	1 Year
2.	A.M.N.	R&S	ENV4200	825358/003	2016. 04. 21	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-855-9	2016. 12. 23	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	100354	2016. 01. 17	1 Year
5.	Test Software	Audix	e3	V.120619C	N.C.R.	N.C.R.

### 4.2. Radiated Emission Measurement

#### 4.2.1. Frequency Range 9kHz~1000MHz (Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2016. 09. 19	1 Year
2.	Test Receiver	R & S	ESCS30	100338	2016. 06. 22	1 Year
3.	Amplifier	HP	8447D	2944A06305	2016. 02. 23	1 Year
4.	Bilog Antenna	CHASE	CBL6112D	33821	2016. 01. 30	1 Year
5.	Loop Antenna	R&S	HFH2-Z2	891847/27	2015. 12. 24	1 Year
6.	Test Software	Audix	e3	V.120619C	N.C.R.	N.C.R.

#### 4.2.2. Frequency Range Above 1GHz (Fully Anechoic Chamber)

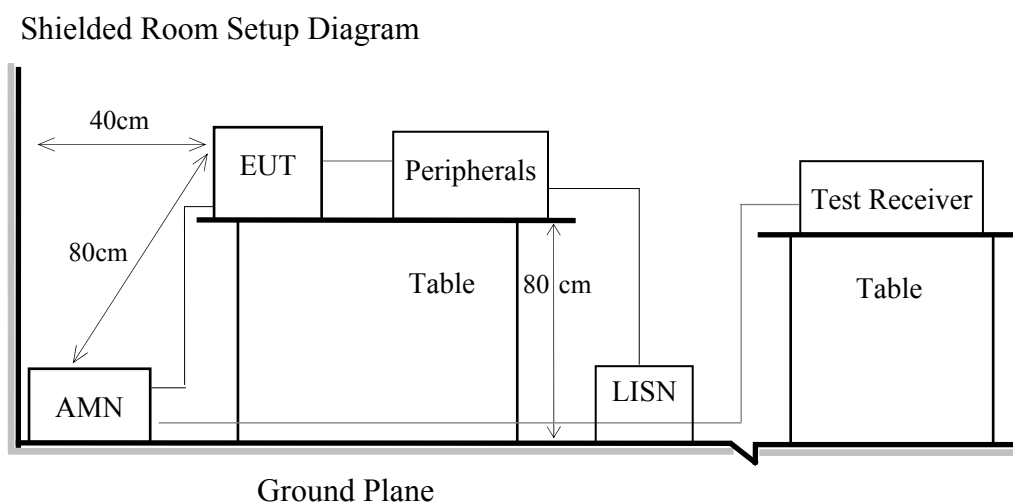
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	2016. 08. 19	1 Year
2.	Amplifier	Sonoma	310N	187161	2016. 06. 14	1 Year
3.	2.4GHz Notch Filter	K&L	7NSL10-2441.5E130.5-00	1	2016. 07. 27	1 Year
4.	Horn Antenna	ETS-Lindgren	3117	00135902	2016. 03. 05	1 Year
5.	Horn Antenna	EMCO	3116	2653	2016. 10. 24	1 Year
6.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

### 4.3. RF Conducted Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9030A-526	US51350140	2016. 06. 07	1 Year
2.	Power Meter	Anritsu	ML2495A	1145008	2016. 10. 27	1 Year
3.	Power Sensor	Anritsu	MA2411B	1126096	2016. 10. 27	1 Year

## 5. CONDUCTED EMISSION MEASUREMENT

### 5.1. Block Diagram of Test Setup



### 5.2. Power Line Conducted Emission Limit

Frequency	Conducted Limit	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB $\mu$ V	56 ~ 46 dB $\mu$ V
500kHz ~ 5MHz	56 dB $\mu$ V	46 dB $\mu$ V
5MHz ~ 30MHz	60 dB $\mu$ V	50 dB $\mu$ V

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.

2.: The lower limit applies to the band edges.

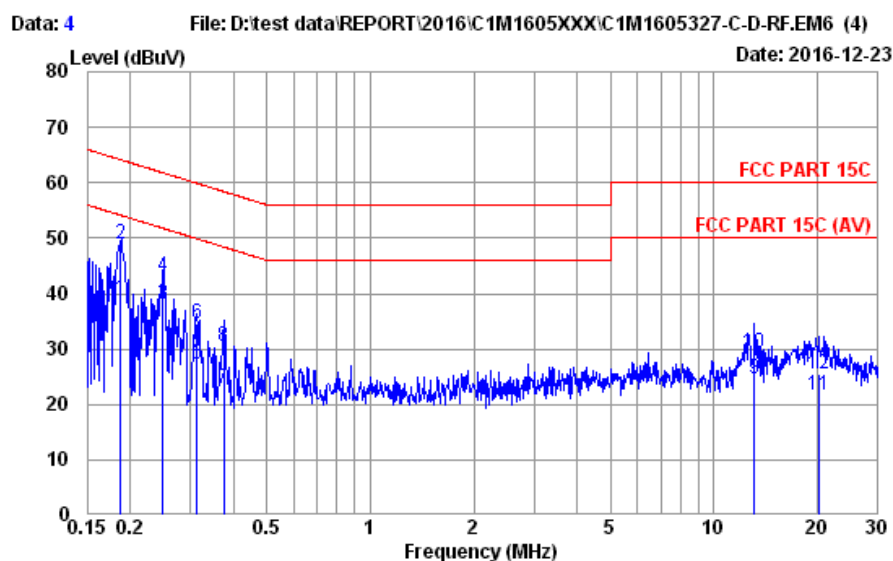
### 5.3. Test Procedure

- 5.3.1. To set up the EUT as indicated in ANSI C 63.10. The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.
- 5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).
- 5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)
- 5.3.4. Checking frequency range from 150 kHz to 30 MHz and record the emission which does not have 20 dB below limit.

## 5.4. Conducted Emission Measurement Results

PASSED.

Test Date	2016/12/23	Temp./Hum.	24°C/46%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)	Test Model	WT002



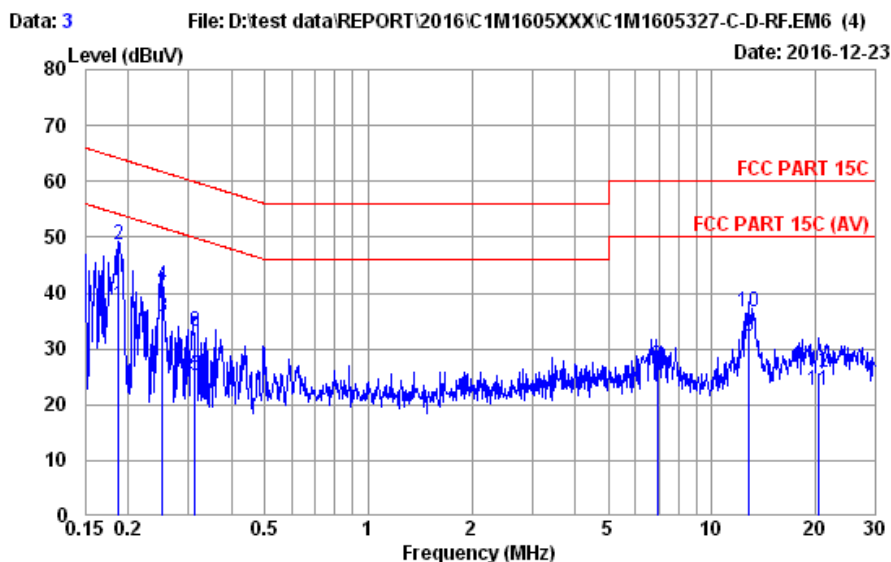
Site no. : No.8 Shielded Room Data no. : 4  
Condition : ENV4200 358/003 LISN Phase : NEUTRAL  
Limit : FCC PART 15C  
Env. / Ins. : 24°C / 46% ESR3 (1774) Engineer : Jemy  
EUT : WT002  
Power Rating : 120Vac/60Hz  
Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.188	10.32	0.03	9.86	18.72	38.93	54.14	15.21	Average
2	0.188	10.32	0.03	9.86	28.65	48.86	64.14	15.28	QP
3	0.249	10.32	0.03	9.86	17.88	38.09	51.80	13.71	Average
4	0.249	10.32	0.03	9.86	22.88	43.09	61.80	18.71	QP
5	0.313	10.30	0.04	9.86	6.98	27.18	49.89	22.71	Average
6	0.313	10.30	0.04	9.86	14.28	34.48	59.89	25.41	QP
7	0.375	10.29	0.04	9.86	2.57	22.76	48.39	25.63	Average
8	0.375	10.29	0.04	9.86	10.17	30.36	58.39	28.03	QP
9	13.110	10.22	0.22	9.89	4.27	24.60	50.00	25.40	Average
10	13.110	10.22	0.22	9.89	8.83	29.16	60.00	30.84	QP
11	20.162	10.14	0.27	9.93	1.21	21.55	50.00	28.45	Average
12	20.162	10.14	0.27	9.93	5.29	25.63	60.00	34.37	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.  
2. If the average limit is met when using a quasi-peak detector,  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.



Test Date	2016/12/23	Temp./Hum.	24°C/46%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)	Test Model	WT002

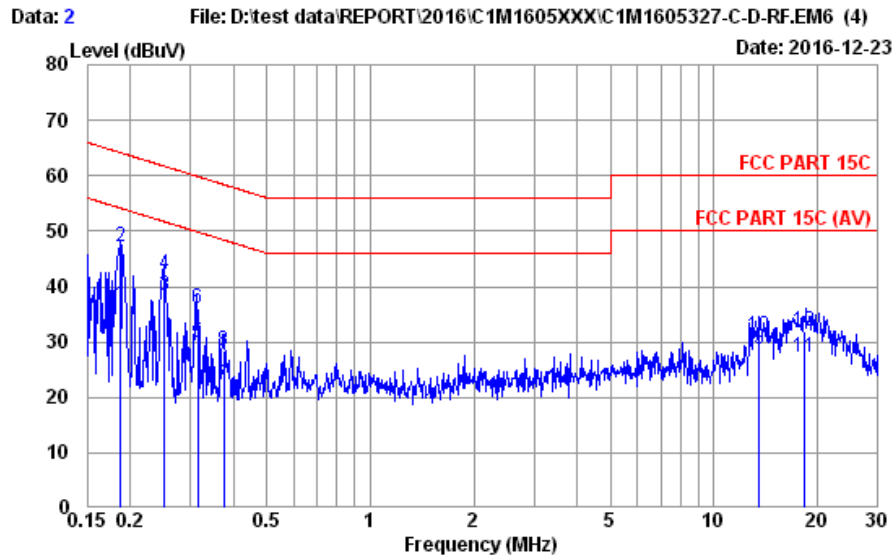


Site no. : No.8 Shielded Room Data no. : 3  
Condition : ENV4200 358/003 LISN Phase : LINE  
Limit : FCC PART 15C  
Env. / Ins. : 24°C / 46% ESR3 (1774) Engineer : Jemy  
EUT : WT002  
Power Rating : 120Vac/60Hz  
Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.187	10.26	0.03	9.86	17.79	37.94	54.16	16.22	Average
2	0.187	10.26	0.03	9.86	28.36	48.51	64.16	15.65	QP
3	0.252	10.27	0.03	9.86	15.60	35.76	51.69	15.93	Average
4	0.252	10.27	0.03	9.86	21.25	41.41	61.69	20.28	QP
5	0.314	10.26	0.04	9.86	5.17	25.33	49.87	24.54	Average
6	0.314	10.26	0.04	9.86	12.88	33.04	59.87	26.83	QP
7	6.935	10.22	0.15	9.87	4.44	24.68	50.00	25.32	Average
8	6.935	10.22	0.15	9.87	6.74	26.98	60.00	33.02	QP
9	12.800	10.16	0.22	9.89	11.93	32.20	50.00	17.80	Average
10	12.800	10.16	0.22	9.89	16.27	36.54	60.00	23.46	QP
11	20.486	10.09	0.27	9.93	2.23	22.52	50.00	27.48	Average
12	20.486	10.09	0.27	9.93	5.45	25.74	60.00	34.26	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.  
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

Test Date	2016/12/23	Temp./Hum.	24°C/46%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)	Test Model	WB001

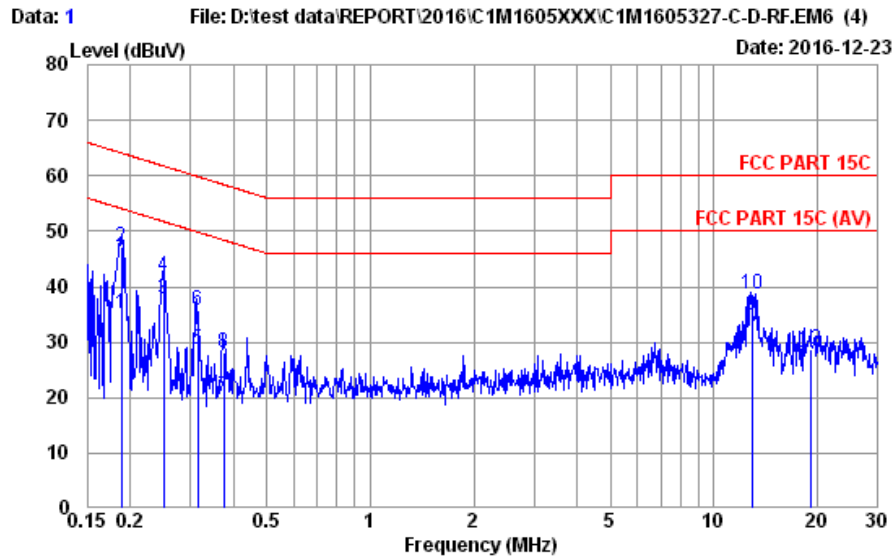


Site no. : No.8 Shielded Room Data no. : 2  
Condition : ENV4200 358/003 LISN Phase : NEUTRAL  
Limit : FCC PART 15C  
Env. / Ins. : 24°C / 46% ESR3 (1774) Engineer : Jemy  
EUT : WB001  
Power Rating : 120Vac/60Hz  
Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.188	10.32	0.03	9.86	16.30	36.51	54.13	17.62	Average
2	0.188	10.32	0.03	9.86	26.94	47.15	64.13	16.98	QP
3	0.251	10.32	0.03	9.86	18.08	38.29	51.71	13.42	Average
4	0.251	10.32	0.03	9.86	21.94	42.15	61.71	19.56	QP
5	0.314	10.30	0.04	9.86	9.76	29.96	49.87	19.91	Average
6	0.314	10.30	0.04	9.86	15.85	36.05	59.87	23.82	QP
7	0.374	10.29	0.04	9.86	2.21	22.40	48.42	26.02	Average
8	0.374	10.29	0.04	9.86	8.36	28.55	58.42	29.87	QP
9	13.551	10.21	0.22	9.89	8.41	28.73	50.00	21.27	Average
10	13.551	10.21	0.22	9.89	10.66	30.98	60.00	29.02	QP
11	18.230	10.15	0.26	9.92	6.92	27.25	50.00	22.75	Average
12	18.230	10.15	0.26	9.92	11.50	31.83	60.00	28.17	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.  
2. If the average limit is met when using a quasi-peak detector,  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.

Test Date	2016/12/23	Temp./Hum.	24°C/46%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)	Test Model	WB001



Site no. : No.8 Shielded Room Data no. : 1  
Condition : ENV4200 358/003 LISN Phase : LINE  
Limit : FCC PART 15C  
Env. / Ins. : 24°C / 46% ESR3 (1774) Engineer : Jemy  
EUT : WB001  
Power Rating : 120Vac/60Hz  
Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.189	10.26	0.03	9.86	15.15	35.30	54.08	18.78	Average
2	0.189	10.26	0.03	9.86	26.90	47.05	64.08	17.03	QP
3	0.251	10.27	0.03	9.86	17.60	37.76	51.73	13.97	Average
4	0.251	10.27	0.03	9.86	21.81	41.97	61.73	19.76	QP
5	0.314	10.26	0.04	9.86	8.56	28.72	49.86	21.14	Average
6	0.314	10.26	0.04	9.86	15.50	35.66	59.86	24.20	QP
7	0.374	10.26	0.04	9.86	0.21	20.37	48.41	28.04	Average
8	0.374	10.26	0.04	9.86	8.12	28.28	58.41	30.13	QP
9	12.930	10.16	0.22	9.89	14.72	34.99	50.00	15.01	Average
10	12.930	10.16	0.22	9.89	18.39	38.66	60.00	21.34	QP
11	19.050	10.09	0.26	9.92	6.20	26.47	50.00	23.53	Average
12	19.050	10.09	0.26	9.92	8.41	28.68	60.00	31.32	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.  
2. If the average limit is met when using a quasi-peak detector,  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.

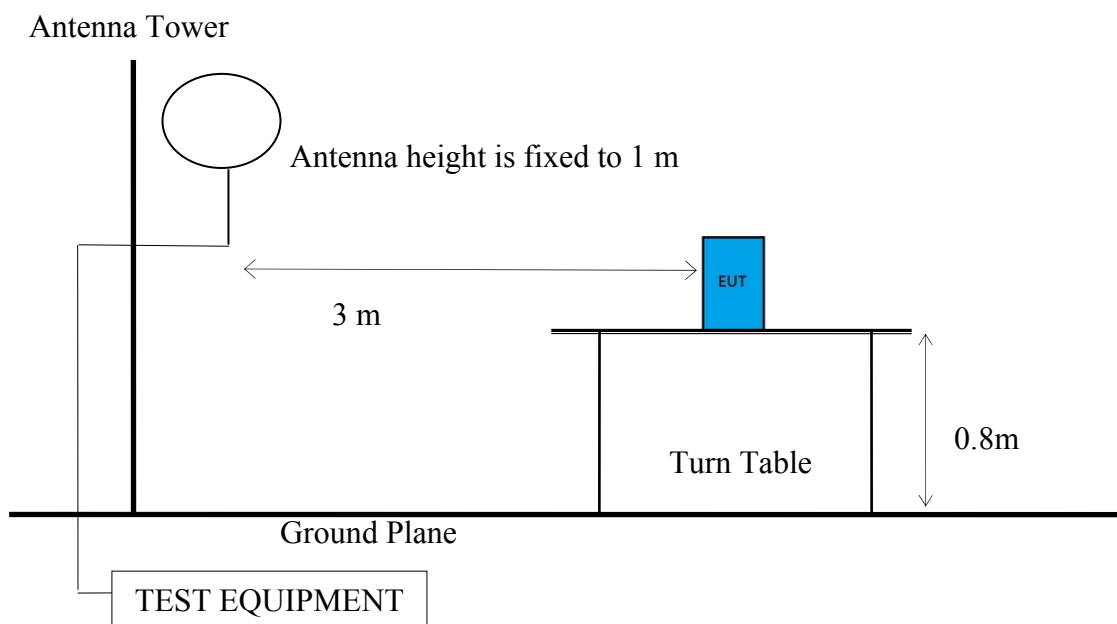
## 6. RADIATED EMISSION MEASUREMENT

### 6.1. Block Diagram of Test Setup

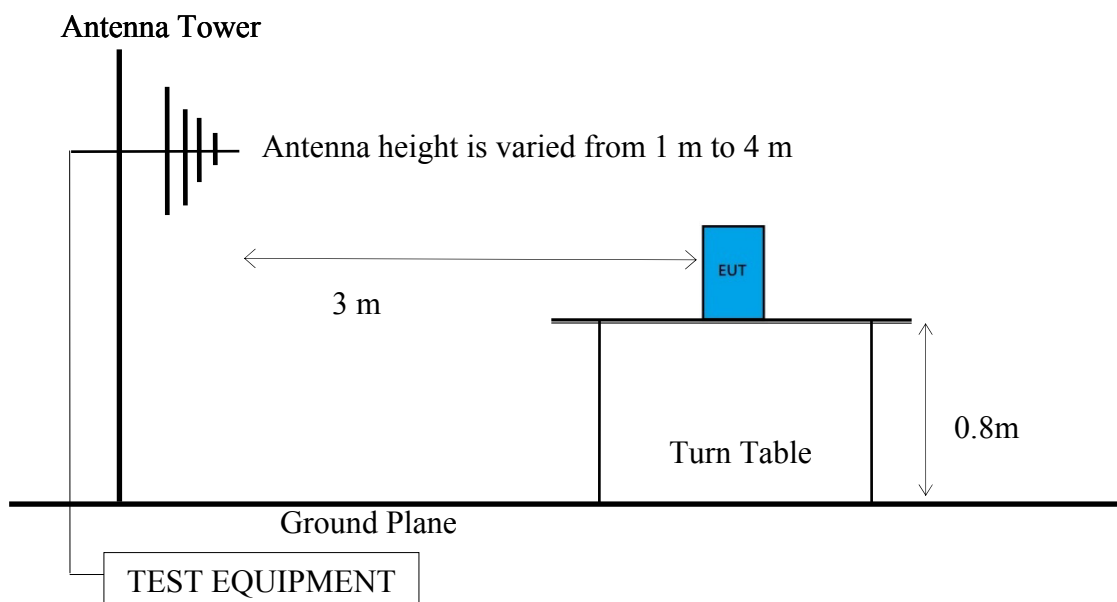
#### 6.1.1. Block Diagram of connection between EUT and simulators

Indicated as section 3.7

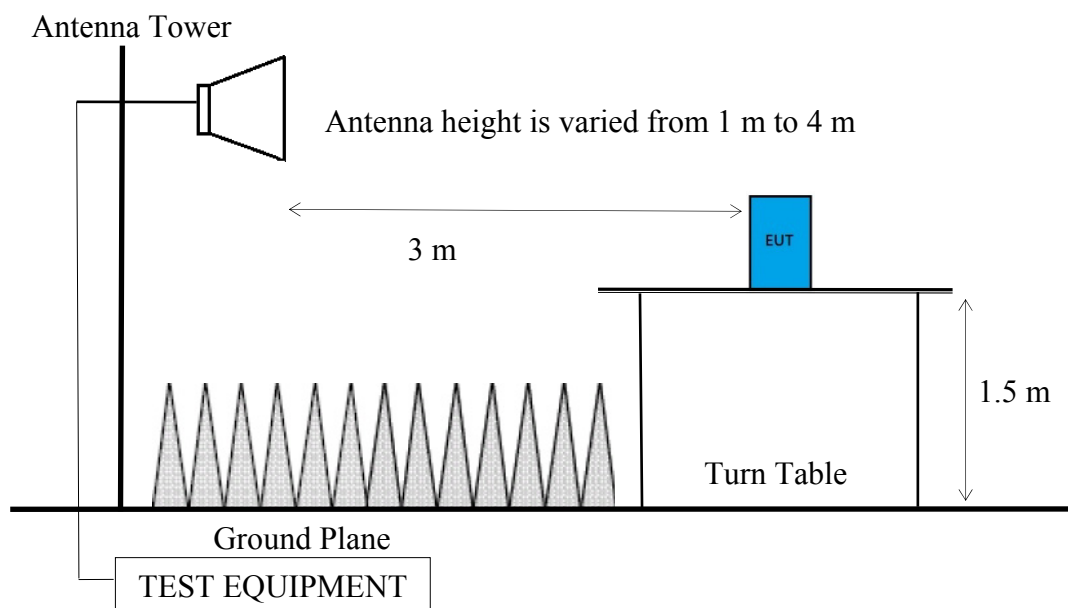
#### 6.1.2. Semi Anechoic Chamber (3m) Setup Diagram for 9kHz-30MHz



#### 6.1.3. Semi Anechoic Chamber (3m) Setup Diagram for 30-1000 MHz



#### 6.1.4. Fully Anechoic Chamber (3m) Setup Diagram for above 1GHz



### 6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance (m)	Limits	
		dB $\mu$ V/m	$\mu$ V/m
0.009 - 0.490	300	67.6	2400/kHz
0.490 - 1.705	30	87.6	24000/kHz
1.705 - 30	30	29.5	30
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
Above 960	3	54.0	500
Above 1000	3	74.0 dB $\mu$ V/m (Peak) 54.0 dB $\mu$ V/m (Average)	

Remark : (1)  $\text{dB}\mu\text{V/m} = 20 \log (\mu\text{V/m})$

- (2) The tighter limit applies to the edge between two frequency bands.
- (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.
- (4) Fundamental and emission fall within operation band are exempted from this section.
- (5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

### 6.3. Test Procedure

#### Frequency Range 9kHz~30MHz:

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

- (1) RBW = 9kHz with peak and average detector.
- (2) Detector: average and peak (9kHz-490kHz)  
Q.P. (490kHz-30MHz)

#### Frequency Range 30MHz ~ 40GHz:

The EUT setup on the turn find table which has 80 cm (for 30-1000 MHz) and 1.5m (for above 1GHz) height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

#### Frequency below 1 GHz:

Spectrum Analyzer is used for pre-testing with following setting:

- (1) RBW = 120KHz
- (2) VBW  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required. Otherwise using Q.P. for finally measurement.

#### Frequency above 1GHz to 10th harmonic:

##### Peak Detector:

- (1) RBW = 1MHz
- (2) VBW  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the average detector is not required. Otherwise using average for finally measurement.

**Average Detector:****■ Option 1:**

- (1) RBW = 1MHz
- (2) VBW  $\geq 1/T$ .

Modulation Type	T (ms)	1/ T (kHz)	VBW Setting(kHz)
802.11b	---	--	---
802.11g	2.05	0.487	0.487
802.11n-HT20	1.90	0.526	0.526
BLE	0.0858	11.655	11.655

N/A: 1/ T is not implemented when duty cycle presented in section 3.5 is  $\geq 98\%$ .

- (1) Detector = Peak.
- (2) Sweep time = auto.
- (3) Trace mode = max hold.
- (4) Allow sweeps to continue until the trace stabilizes.

**□ Option 2:**

Average Emission Level= Peak Emission Level+ D.C.C.F.

**6.4. Measurement Result Explanation**

- Peak Emission Level=Antenna Factor + Cable Loss + Meter Reading
- Average Emission Level=Antenna Factor + Cable Loss + Meter Reading
- Average Emission Level= Peak Emission Level+ DCCF  
Duty Cycle Correction Factor (DCCF)=  $20\log(TX_{on}/TX_{on+off})$  presented in section 3.5
- EPR= Peak Emission Level-95.2dB-2.14dB

**6.5. Test Results**

**PASSED.**

Test Date	2016/11/21	Temp./Hum.	25°C/60%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)		

### 6.5.1. Emissions within Restricted Frequency Bands

#### 6.5.1.1. Frequency 9kHz~30MHz

**The emissions (9kHz~30MHz) not reported for there is no emission be found.**

#### 6.5.1.2. Frequency Below 1 GHz

Worst mode as representative

#### Test Model: WT002

Mode	802.11g	Frequency	TX 2462MHz
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#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
147.37	10.72	3.58	11.06	25.36	43.50	18.14	Peak
211.39	10.05	4.07	14.09	28.21	43.50	15.29	Peak
319.06	13.63	4.87	13.13	31.63	46.00	14.37	Peak
399.57	15.53	5.65	16.09	37.27	46.00	8.73	Peak
584.84	18.14	6.49	10.96	35.59	46.00	10.41	Peak
816.67	20.12	7.23	8.33	35.68	46.00	10.32	Peak

#### Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
76.56	7.16	2.95	19.90	30.01	40.00	9.99	Peak
108.57	11.55	3.29	12.54	27.38	43.50	16.12	Peak
211.39	10.05	4.07	12.28	26.40	43.50	17.10	Peak
351.07	14.43	5.20	12.60	32.23	46.00	13.77	Peak
584.84	18.14	6.49	19.25	43.88	46.00	2.12	Peak
850.62	20.32	7.36	8.67	36.35	46.00	9.65	Peak



Mode	BLE	Frequency	TX 2440MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
147.37	10.72	3.58	10.14	24.44	43.50	19.06	Peak
216.24	10.35	4.10	12.45	26.90	46.00	19.10	Peak
351.07	14.43	5.20	11.82	31.45	46.00	14.55	Peak
399.57	15.53	5.65	15.69	36.87	46.00	9.13	Peak
584.84	18.14	6.49	10.93	35.56	46.00	10.44	Peak
889.42	20.53	7.51	7.77	35.81	46.00	10.19	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
76.56	7.16	2.95	19.70	29.81	40.00	10.19	Peak
148.34	10.65	3.59	14.10	28.34	43.50	15.16	Peak
236.61	11.62	4.24	9.54	25.40	46.00	20.60	Peak
351.07	14.43	5.20	11.92	31.55	46.00	14.45	Peak
584.84	18.14	6.49	19.22	43.85	46.00	2.15	Peak
865.17	20.40	7.42	8.89	36.71	46.00	9.29	Peak

**Test Model: WB001**

Mode	802.11g	Frequency	TX 2462MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
101.78	11.03	3.23	10.21	24.47	43.50	19.03	Peak
214.30	10.25	4.09	22.63	36.97	43.50	6.53	Peak
336.52	14.08	5.05	20.59	39.72	46.00	6.28	Peak
356.89	14.58	5.26	18.11	37.95	46.00	8.05	Peak
471.35	16.60	6.24	13.30	36.14	46.00	9.86	Peak
718.70	19.00	6.81	8.58	34.39	46.00	11.61	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
56.19	7.02	2.69	18.58	28.29	40.00	11.71	Peak
214.30	10.25	4.09	18.71	33.05	43.50	10.45	Peak
336.52	14.08	5.05	12.80	31.93	46.00	14.07	Peak
471.35	16.60	6.24	16.47	39.31	46.00	6.69	Peak
569.32	17.92	6.48	11.59	35.99	46.00	10.01	Peak
696.39	18.72	6.71	10.97	36.40	46.00	9.60	Peak

Mode	BLE	Frequency	TX 2440MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
101.78	11.03	3.23	9.88	24.14	43.50	19.36	Peak
214.30	10.25	4.09	23.77	38.11	43.50	5.39	Peak
336.52	14.08	5.05	20.40	39.53	46.00	6.47	Peak
443.22	16.20	6.02	14.28	36.50	46.00	9.50	Peak
602.30	18.33	6.51	8.13	32.97	46.00	13.03	Peak
793.39	19.95	7.14	8.34	35.43	46.00	10.57	Peak

**Antenna at Vertical Polarization**

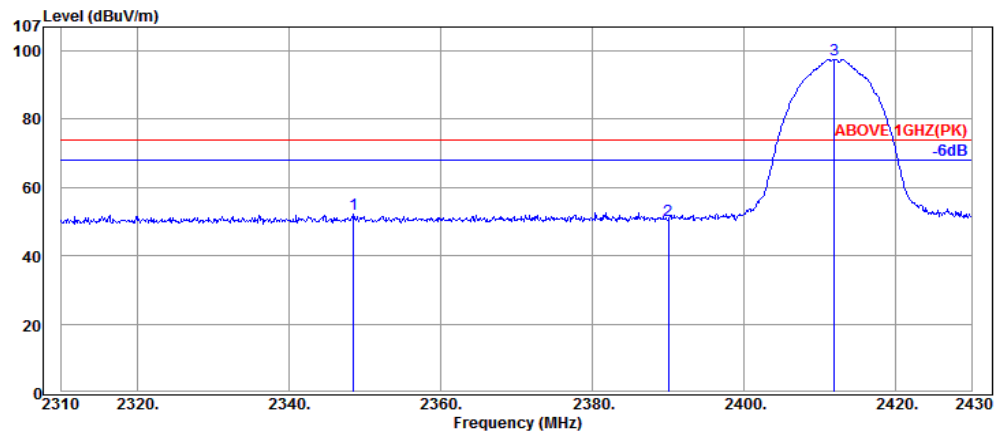
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
54.25	7.43	2.68	18.30	28.41	40.00	11.59	Peak
214.30	10.25	4.09	22.24	36.58	43.50	6.92	Peak
336.52	14.08	5.05	13.85	32.98	46.00	13.02	Peak
471.35	16.60	6.24	16.52	39.36	46.00	6.64	Peak
570.29	17.95	6.48	11.52	35.95	46.00	10.05	Peak
696.39	18.72	6.71	11.64	37.07	46.00	8.93	Peak

## 6.5.2. Frequency Above 1 GHz to 10<sup>th</sup> harmonics

### Band Edge:

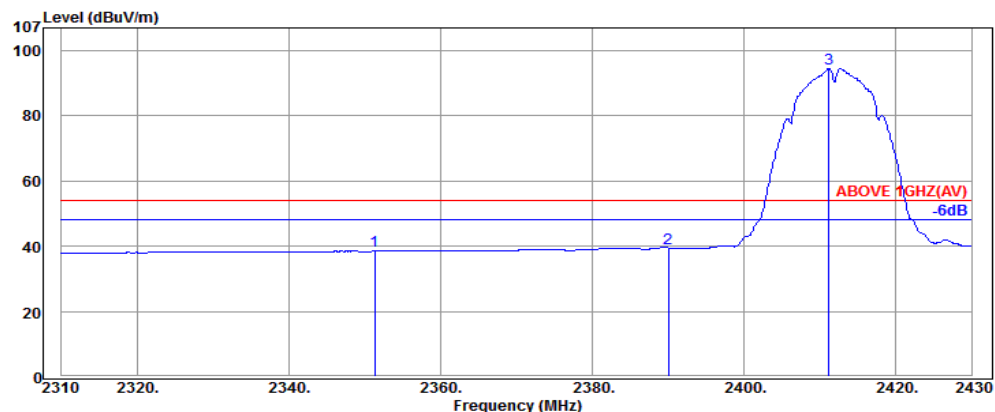
### Test Model: WT002

Mode	802.11b	Frequency	TX 2412MHz
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### Antenna at Horizontal Polarization

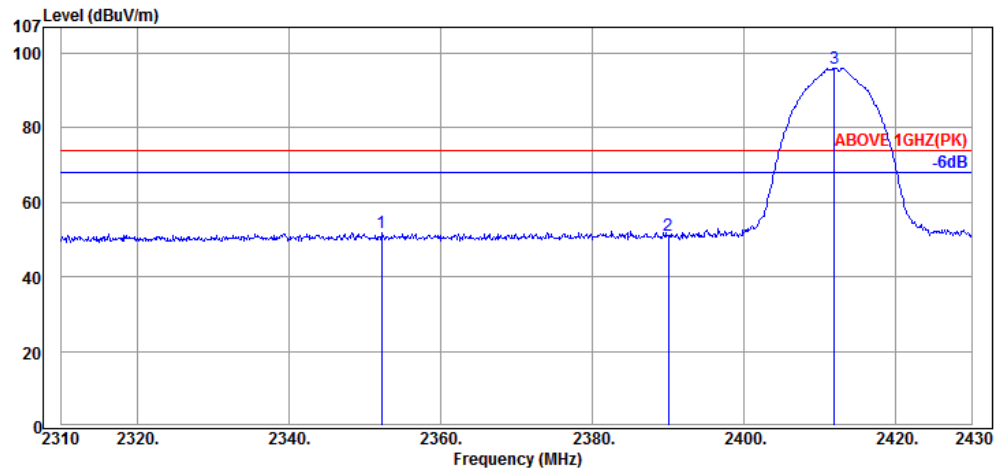
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2348.52	32.08	6.03	13.93	52.04	74.00	21.96	Peak
2390.04	32.16	6.08	12.15	50.39	74.00	23.61	Peak
2411.88	32.18	6.11	59.25	97.54	---	---	Peak



### Antenna at Horizontal Polarization

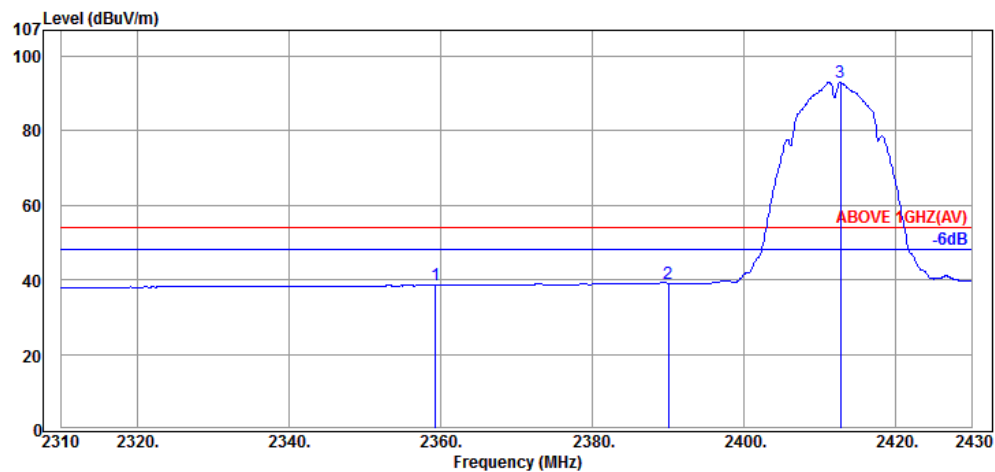
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2351.28	32.08	6.03	0.38	38.49	54.00	15.51	Average
2390.04	32.16	6.08	1.22	39.46	54.00	14.54	Average
2411.16	32.18	6.11	56.33	94.62	---	---	Average

Mode	802.11b	Frequency	TX 2412MHz
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#### Antenna at Vertical Polarization

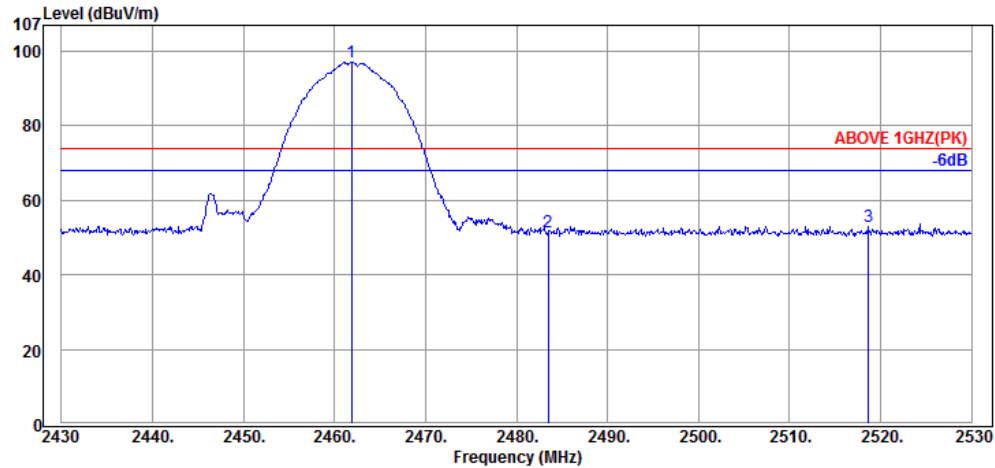
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	imits (dBμV/m)	Margin (dB)	Detector
2352.24	32.11	6.03	13.63	51.77	74.00	22.23	Peak
2390.04	32.16	6.08	12.85	51.09	74.00	22.91	Peak
2411.88	32.18	6.11	57.65	95.94	---	---	Peak



#### Antenna at Vertical Polarization

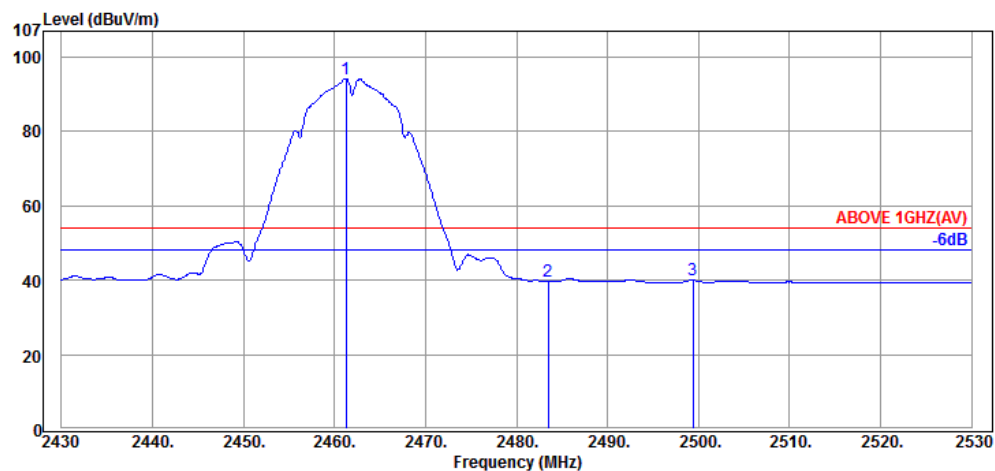
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2359.32	32.11	6.04	0.46	38.61	54.00	15.39	Average
2390.04	32.16	6.08	0.83	39.07	54.00	14.93	Average
2412.72	32.18	6.11	54.82	93.11	---	---	Average

Mode	802.11b	Frequency	TX 2462Hz
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#### Antenna at Horizontal Polarization

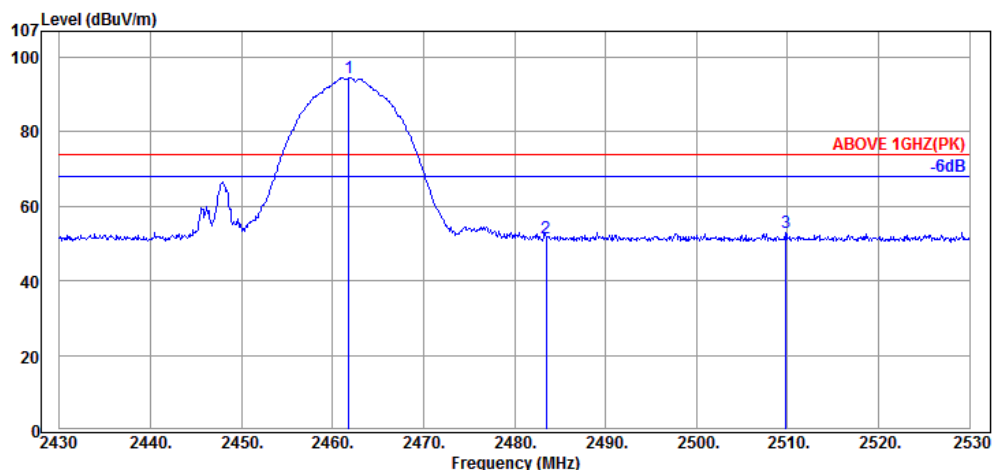
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.90	32.25	6.16	58.63	97.04	---	---	Peak
2483.50	32.28	6.19	12.84	51.31	74.00	22.69	Peak
2518.70	32.32	6.23	14.52	53.07	74.00	20.93	Peak



#### Antenna at Horizontal Polarization

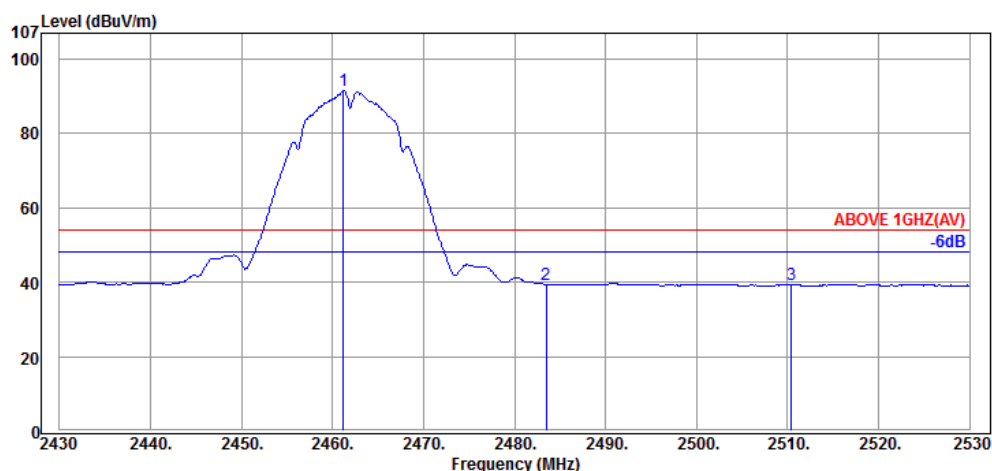
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.30	32.25	6.16	55.84	94.25	---	---	Average
2483.50	32.28	6.19	1.30	39.77	54.00	14.23	Average
2499.40	32.30	6.21	1.50	40.01	54.00	13.99	Average

Mode	802.11b	Frequency	TX 2462MHz
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## Antenna at Vertical Polarization

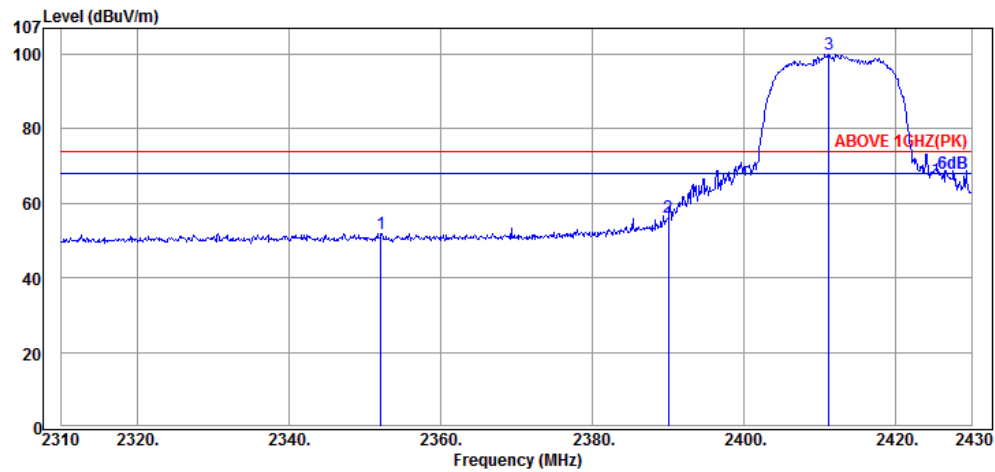
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	imits (dBμV/m)	Margin (dB)	Detector
2461.80	32.25	6.16	56.10	94.51	---	---	Peak
2483.50	32.28	6.19	13.14	51.61	74.00	22.39	Peak
2509.80	32.32	6.22	14.36	52.90	74.00	21.10	Peak



## Antenna at Vertical Polarization

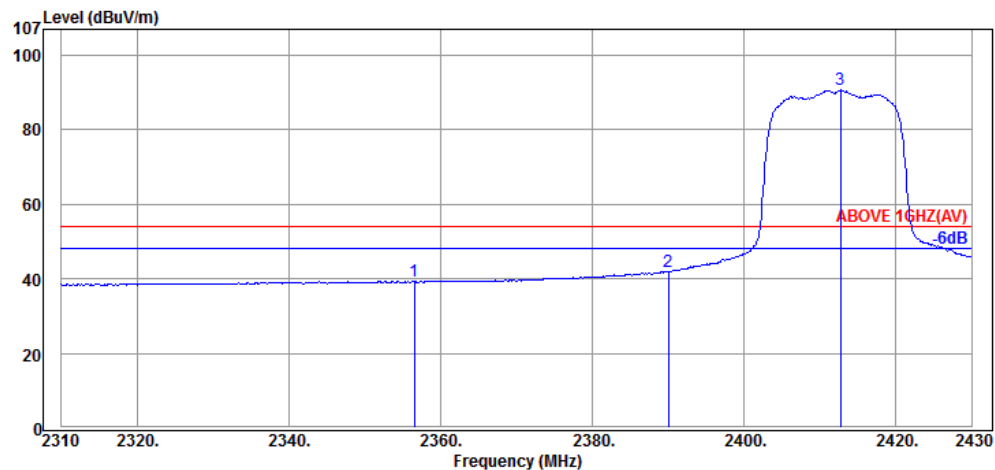
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.20	32.25	6.16	53.05	91.46	---	---	Average
2483.50	32.28	6.19	0.96	39.43	54.00	14.57	Average
2510.40	32.32	6.22	0.71	39.25	54.00	14.75	Average

Mode	802.11g	Frequency	TX 2412MHz
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#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2352.12	32.11	6.03	13.77	51.91	74.00	22.09	Peak
2390.04	32.16	6.08	18.19	56.43	74.00	17.57	Peak
2411.16	32.18	6.11	61.85	100.14	---	---	Peak

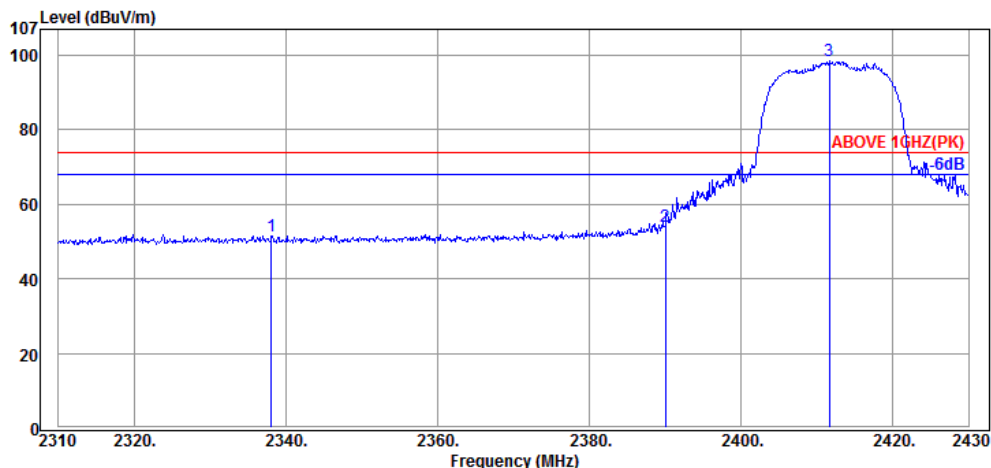


#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2356.56	32.11	6.04	1.26	39.41	54.00	14.59	Average
2390.04	32.16	6.08	3.66	41.90	54.00	12.10	Average
2412.72	32.18	6.11	52.44	90.73	---	---	Average

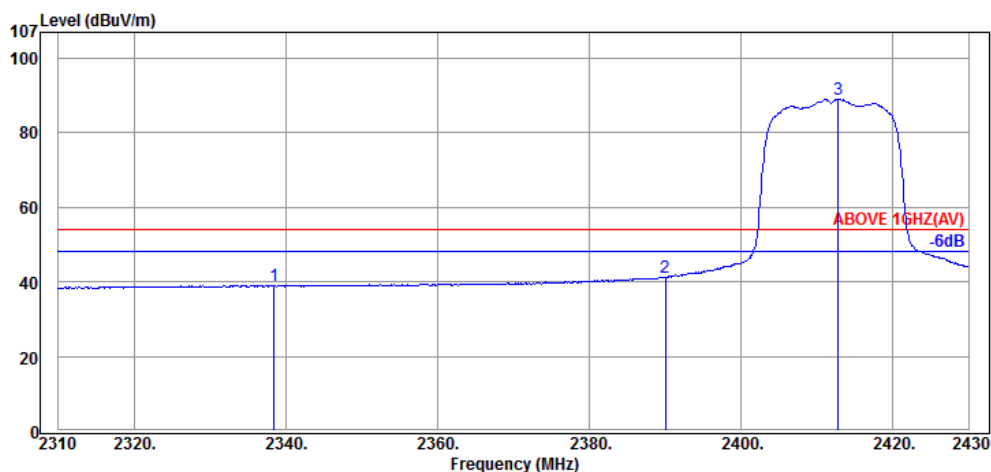


Mode	802.11g	Frequency	TX 2412MHz
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## Antenna at Vertical Polarization

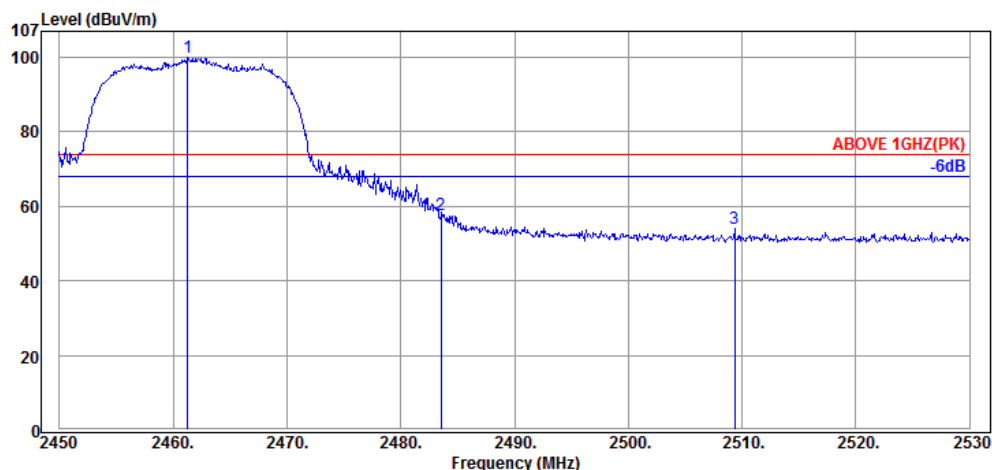
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2338.08	32.08	6.01	13.46	51.55	74.00	22.45	Peak
2390.04	32.16	6.08	15.64	53.88	74.00	20.12	Peak
2411.64	32.18	6.11	60.13	98.42	---	---	Peak



## Antenna at Vertical Polarization

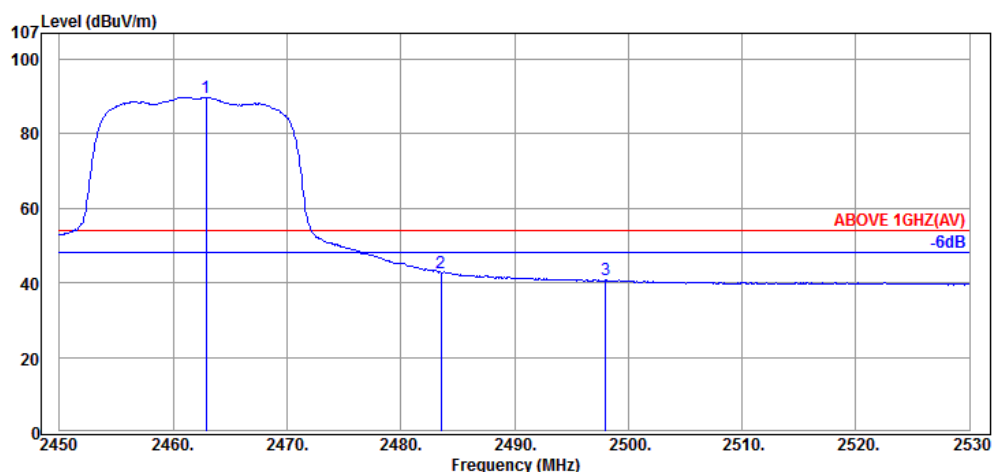
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2338.44	32.08	6.01	1.06	39.15	54.00	14.85	Average
2390.04	32.16	6.08	3.09	41.33	54.00	12.67	Average
2412.84	32.18	6.11	50.78	89.07	---	---	Average

Mode	802.11g	Frequency	TX 2462MHz
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## Antenna at Horizontal Polarization

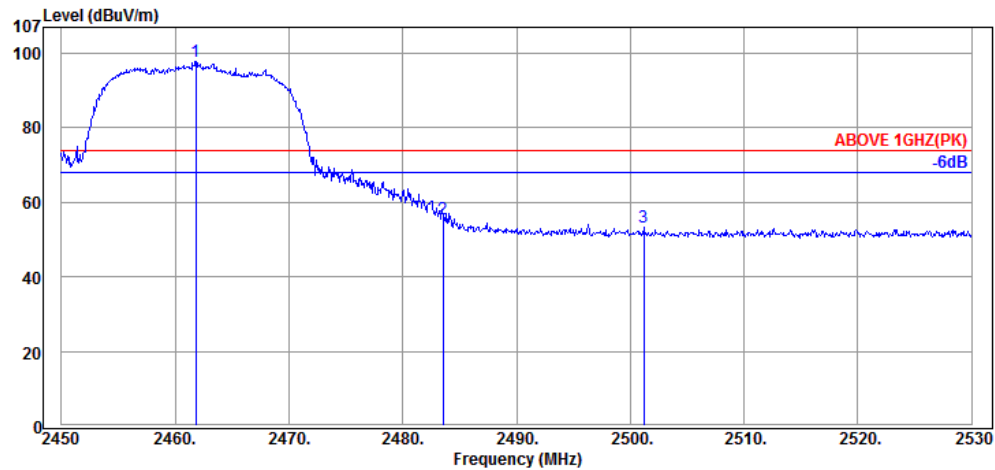
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.28	32.25	6.16	61.51	99.92	---	---	Peak
2483.52	32.28	6.19	19.36	57.83	74.00	16.17	Peak
2509.36	32.32	6.22	15.41	53.95	74.00	20.05	Peak



## Antenna at Horizontal Polarization

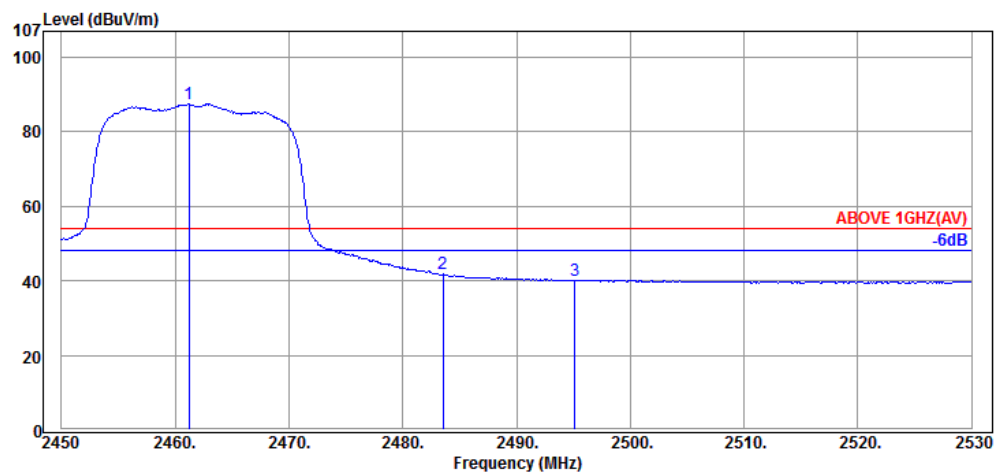
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2462.88	32.25	6.16	51.45	89.86	---	---	Average
2483.52	32.28	6.19	4.30	42.77	54.00	11.23	Average
2498.00	32.30	6.20	2.25	40.75	54.00	13.25	Average

Mode	802.11g	Frequency	TX 2462MHz
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## Antenna at Vertical Polarization

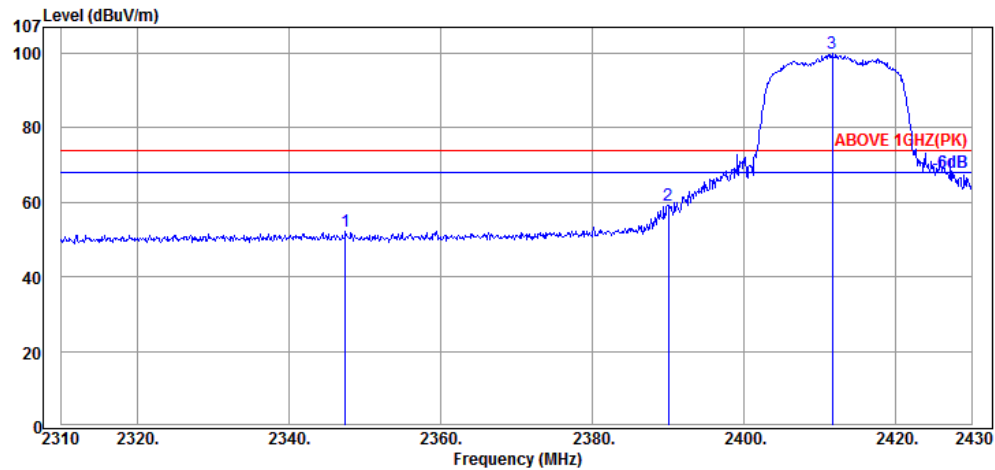
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.84	32.25	6.16	59.45	97.86	---	---	Peak
2483.52	32.28	6.19	17.20	55.67	74.00	18.33	Peak
2501.20	32.30	6.21	14.72	53.23	74.00	20.77	Peak



## Antenna at Vertical Polarization

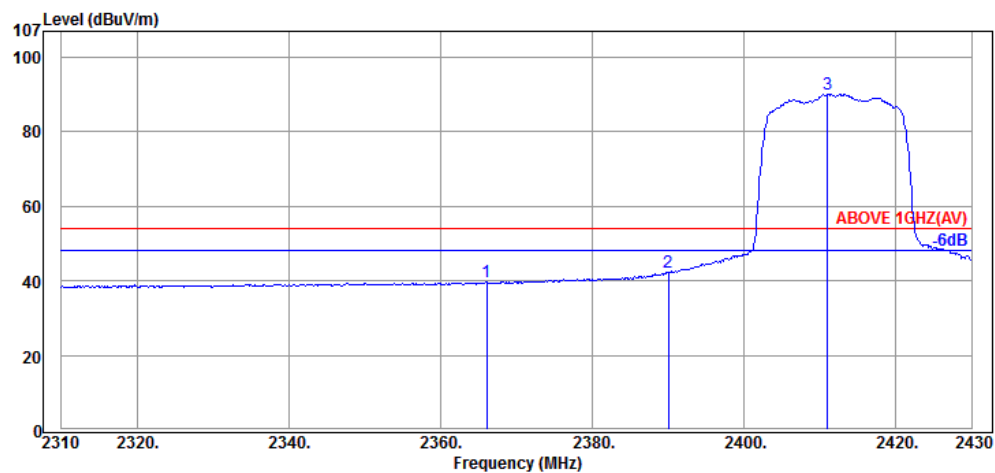
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.20	32.25	6.16	49.05	87.46	---	---	Average
2483.52	32.28	6.19	3.34	41.81	54.00	12.19	Average
2495.12	32.30	6.20	1.72	40.22	54.00	13.78	Average

Mode	802.11n-HT20	Frequency	TX 2412MHz
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#### Antenna at Horizontal Polarization

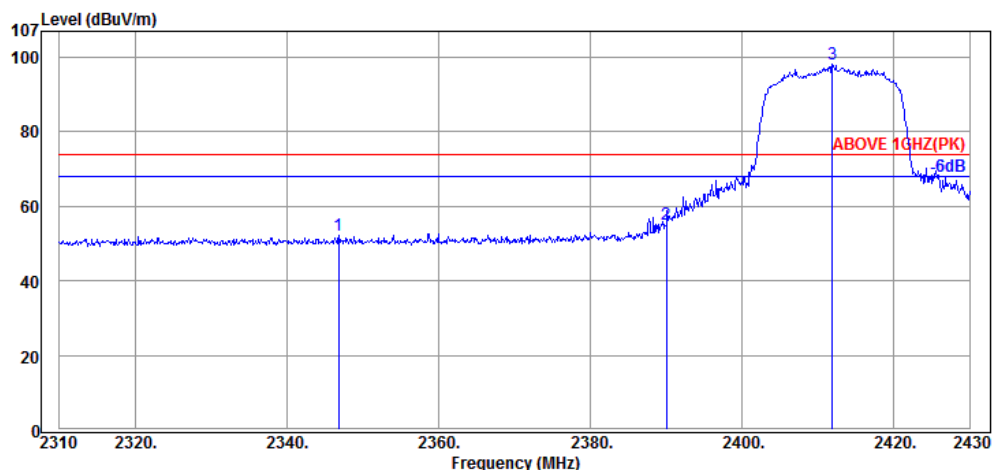
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2347.44	32.08	6.02	14.01	52.11	74.00	21.89	Peak
2390.04	32.16	6.08	20.94	59.18	74.00	14.82	Peak
2411.64	32.18	6.11	61.62	99.91	---	---	Peak



#### Antenna at Horizontal Polarization

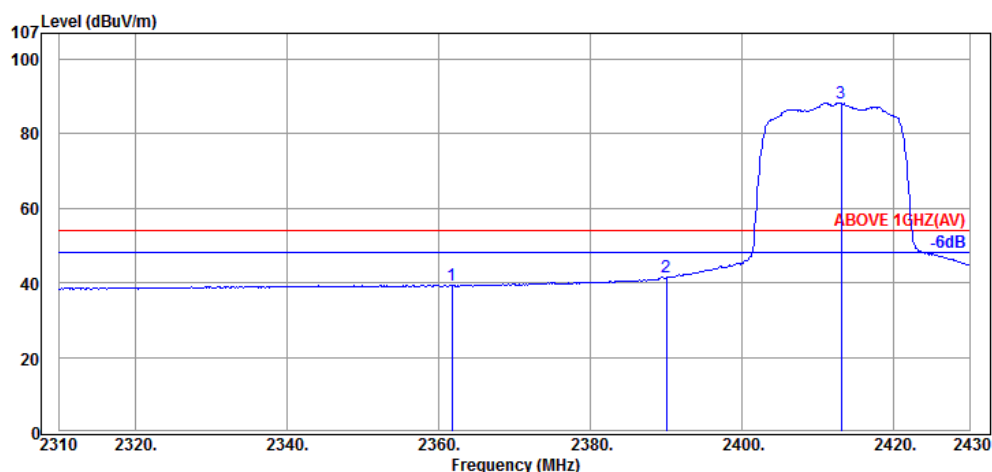
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2366.04	32.11	6.05	1.50	39.66	54.00	14.34	Average
2390.04	32.16	6.08	4.14	42.38	54.00	11.62	Average
2411.04	32.18	6.11	51.74	90.03	---	---	Average

Mode	802.11n-HT20	Frequency	TX 2412MHz
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## Antenna at Vertical Polarization

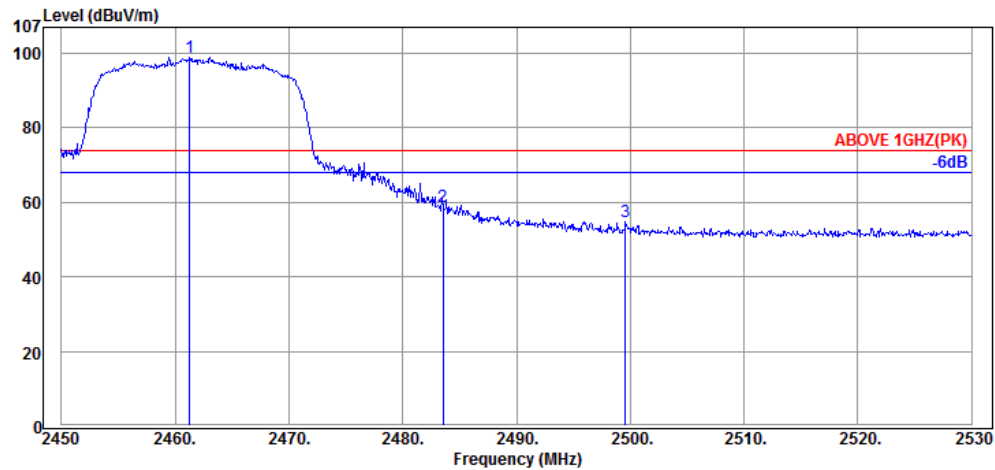
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2346.84	32.08	6.02	14.18	52.28	74.00	21.72	Peak
2390.04	32.16	6.08	16.94	55.18	74.00	18.82	Peak
2411.88	32.18	6.11	59.85	98.14	---	---	Peak



## Antenna at Vertical Polarization

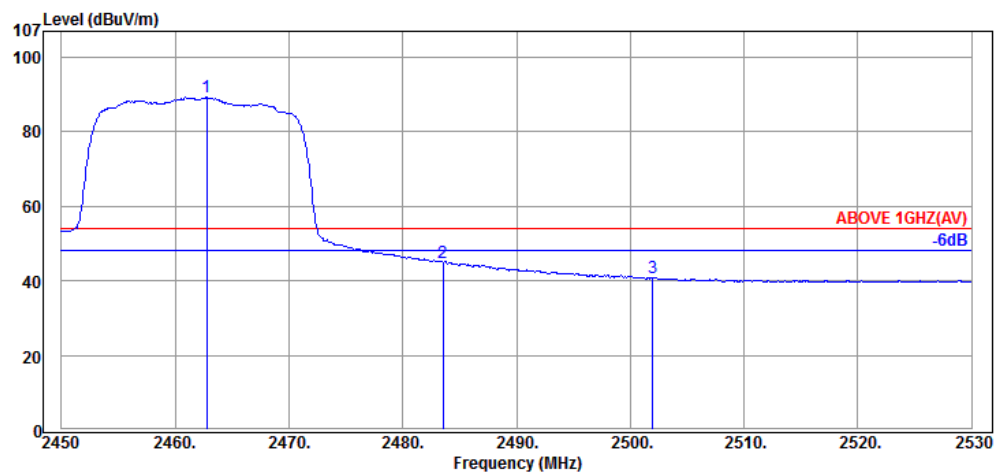
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2361.72	32.11	6.04	1.19	39.34	54.00	14.66	Average
2390.04	32.16	6.08	3.14	41.38	54.00	12.62	Average
2413.08	32.18	6.11	49.98	88.27	---	---	Average

Mode	802.11n-HT20	Frequency	TX 2462MHz
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#### Antenna at Horizontal Polarization

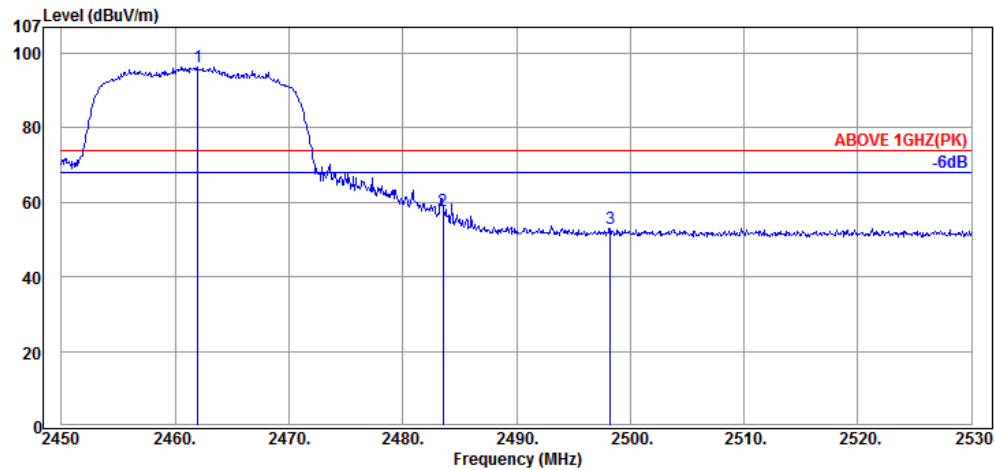
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.28	32.25	6.16	60.60	99.01	---	---	Peak
2483.52	32.28	6.19	20.54	59.01	74.00	14.99	Peak
2499.60	32.30	6.21	16.34	54.85	74.00	19.15	Peak



#### Antenna at Horizontal Polarization

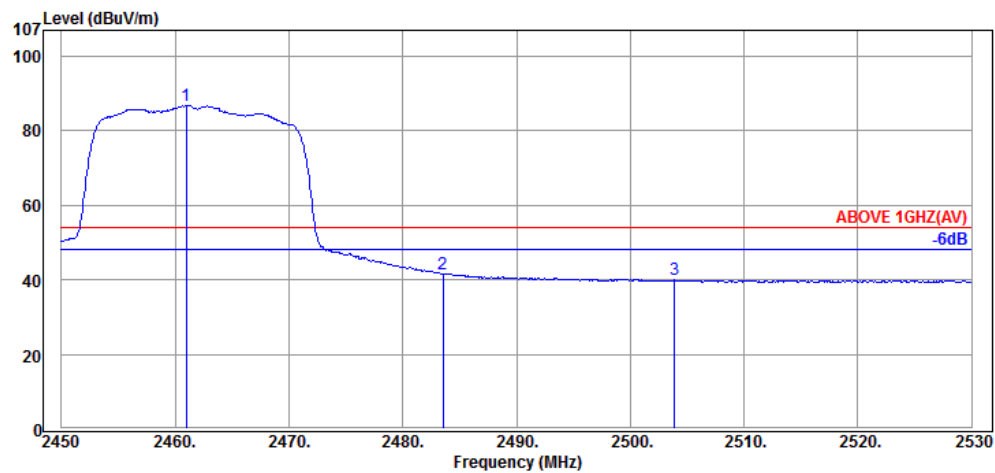
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2462.80	32.25	6.16	50.94	89.35	---	---	Average
2483.52	32.28	6.19	6.53	45.00	54.00	9.00	Average
2502.00	32.30	6.21	2.38	40.89	54.00	13.11	Average

Mode	802.11n-HT20	Frequency	TX 2462MHz
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## Antenna at Vertical Polarization

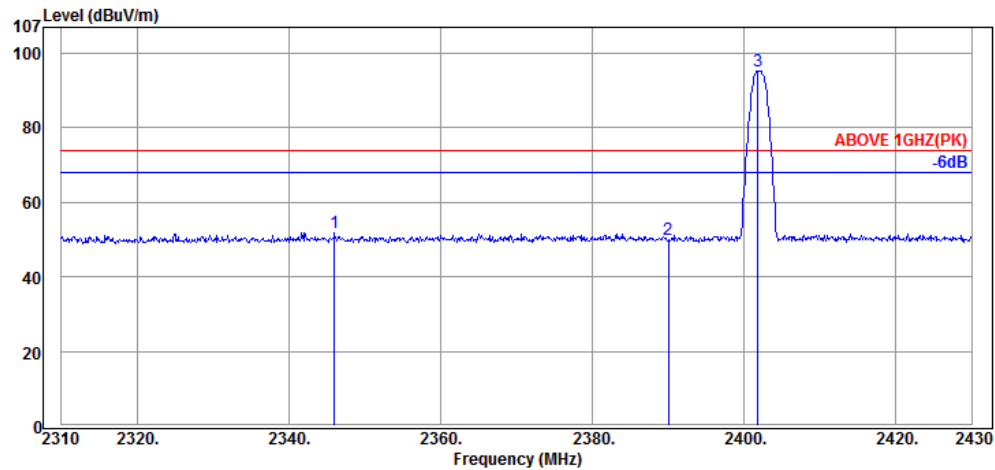
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2462.00	32.25	6.16	57.95	96.36	---	---	Peak
2483.52	32.28	6.19	19.35	57.82	74.00	16.18	Peak
2498.24	32.30	6.20	14.45	52.95	74.00	21.05	Peak



## Antenna at Vertical Polarization

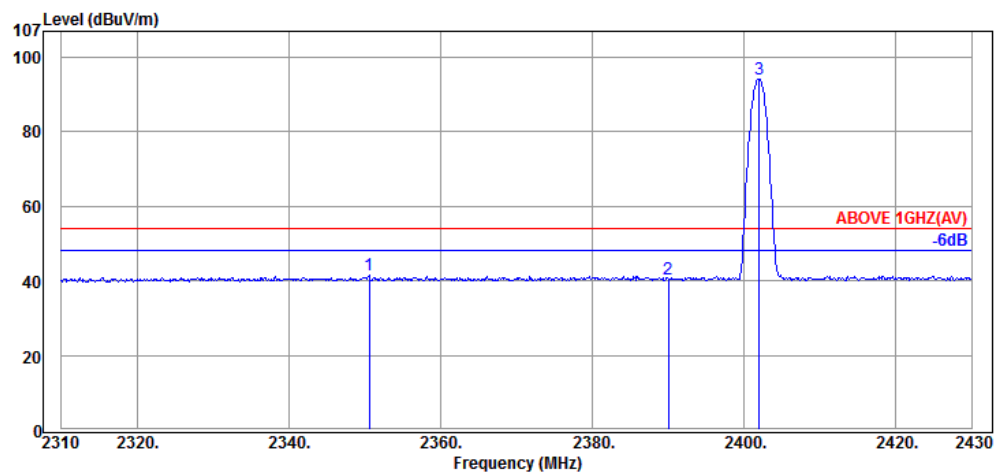
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2460.96	32.25	6.16	48.46	86.87	---	---	Average
2483.52	32.28	6.19	3.11	41.58	54.00	12.42	Average
2503.92	32.30	6.21	1.44	39.95	54.00	14.05	Average

Mode	BLE	Frequency	TX 2402MHz
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#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2346.00	32.08	5.68	14.16	51.92	74.00	22.08	Peak
2390.04	32.16	5.72	12.09	49.97	74.00	24.03	Peak
2401.80	32.16	5.72	57.39	95.27	---	---	Peak

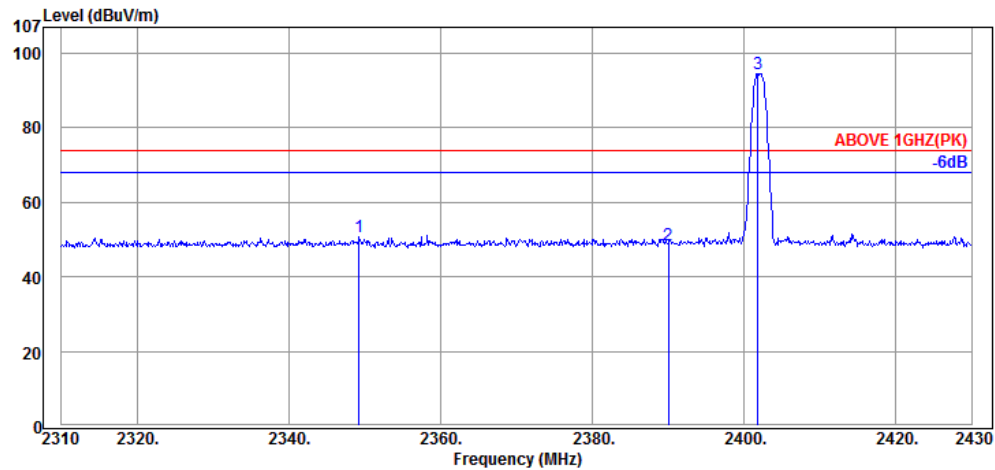


#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2350.56	32.08	5.68	3.65	41.41	54.00	12.59	Average
2390.04	32.16	5.72	2.41	40.29	54.00	13.71	Average
2402.04	32.16	5.72	56.32	94.20	---	---	Average

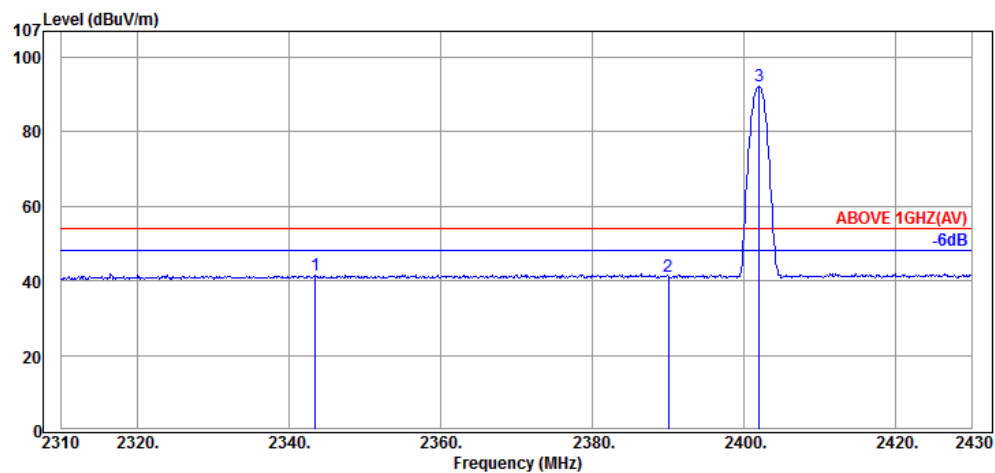


Mode	BLE	Frequency	TX 2402MHz
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### Antenna at Vertical Polarization

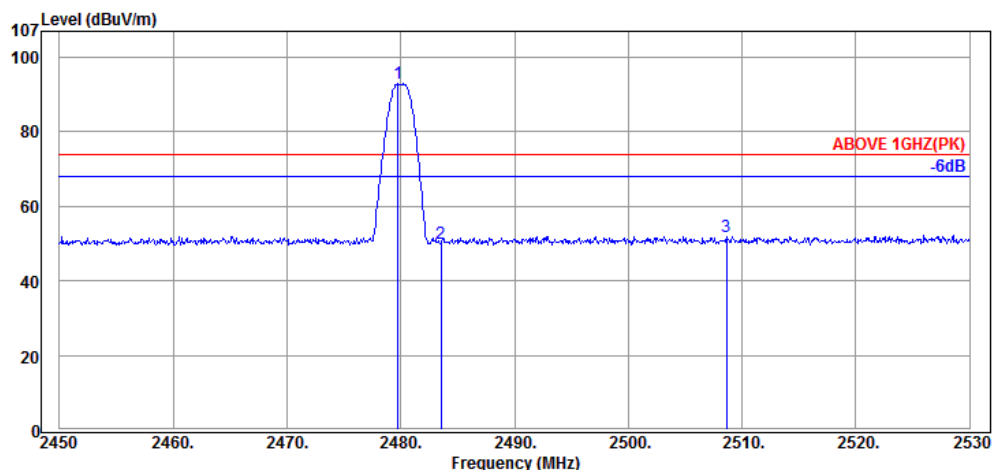
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2349.24	32.08	5.68	13.05	50.81	74.00	23.19	Peak
2390.04	32.16	5.72	10.80	48.68	74.00	25.32	Peak
2401.80	32.16	5.72	56.52	94.40	---	---	Peak



### Antenna at Vertical Polarization

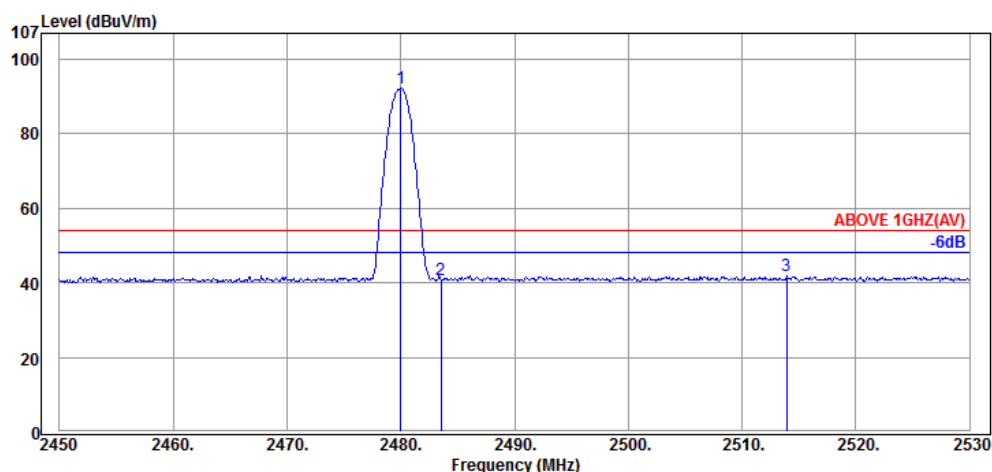
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2343.48	32.08	5.68	3.81	41.57	54.00	12.43	Average
2390.04	32.16	5.72	3.45	41.33	54.00	12.67	Average
2402.04	32.16	5.72	54.28	92.16	---	---	Average

Mode	BLE	Frequency	TX 2480MHz
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## Antenna at Horizontal Polarization

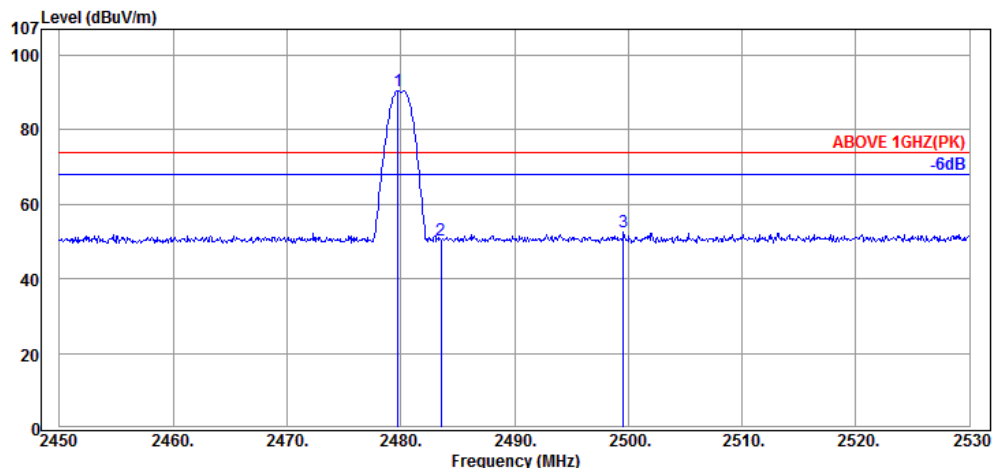
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2479.76	32.28	5.82	54.79	92.89	---	---	Peak
2483.52	32.28	5.82	11.77	49.87	74.00	24.13	Peak
2508.64	32.32	5.87	13.80	51.99	74.00	22.01	Peak



## Antenna at Horizontal Polarization

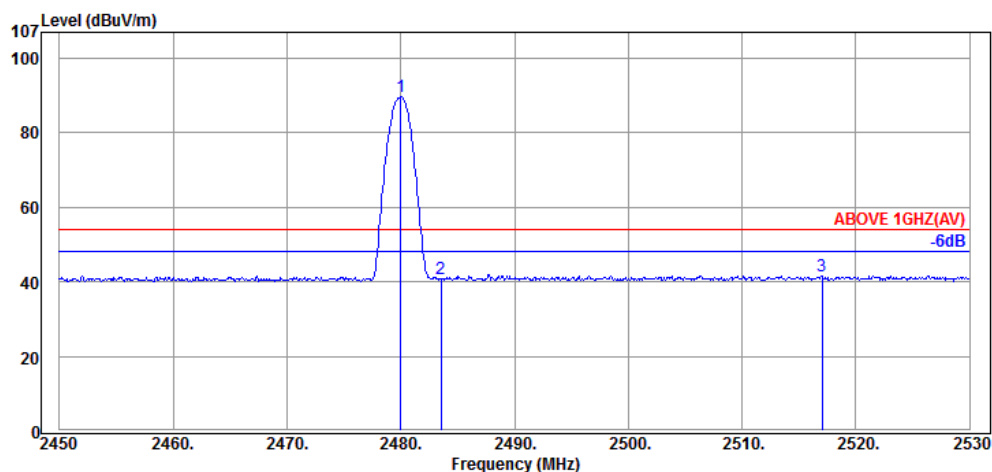
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	5.82	54.12	92.22	---	---	Average
2483.52	32.28	5.82	2.88	40.98	54.00	13.02	Average
2513.92	32.32	5.87	3.69	41.88	54.00	12.12	Average

Mode	BLE	Frequency	TX 2480MHz
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## Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2479.76	32.28	5.82	52.38	90.48	---	---	Peak
2483.52	32.28	5.82	12.28	50.38	74.00	23.62	Peak
2499.60	32.30	5.84	14.61	52.75	74.00	21.25	Peak

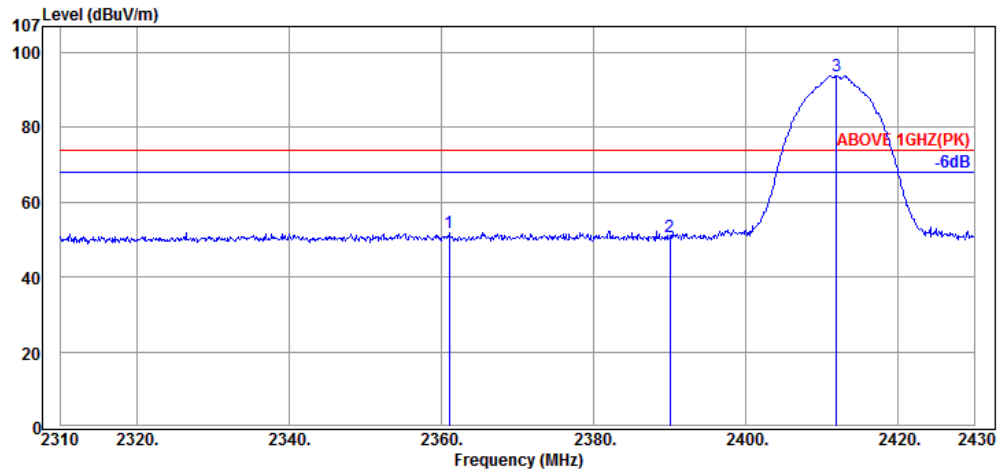


## Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	5.82	51.60	89.70	---	---	Average
2483.52	32.28	5.82	2.83	40.93	54.00	13.07	Average
2517.04	32.32	5.87	3.52	41.71	54.00	12.29	Average

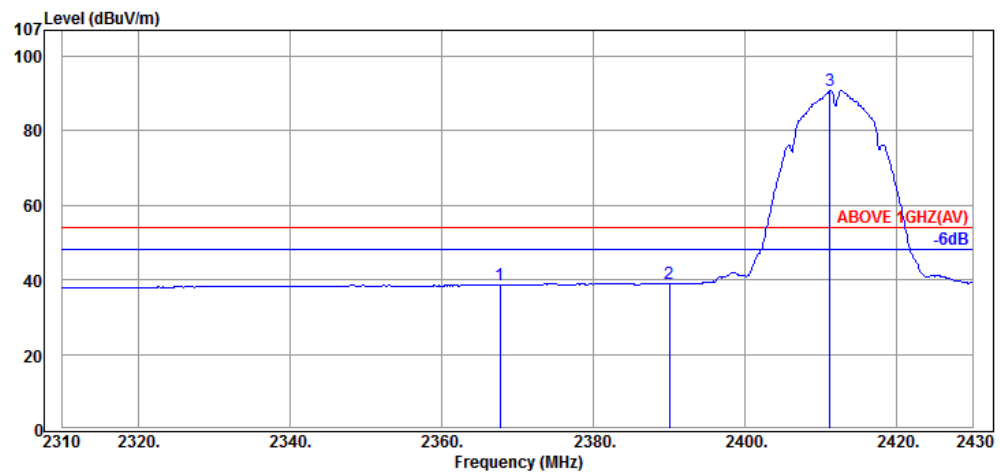
### Test Model: WB001

Mode	802.11b	Frequency	TX 2412MHz
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### Antenna at Horizontal Polarization

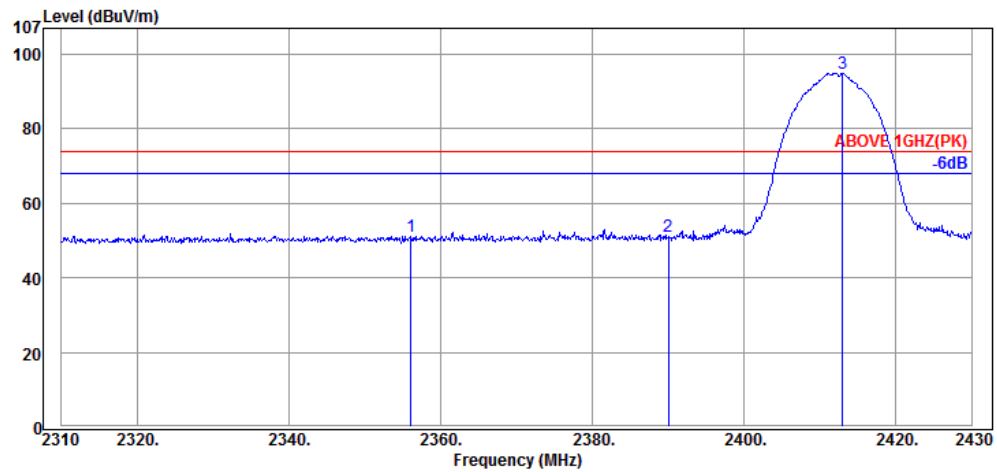
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2361.00	32.11	6.04	13.87	52.02	74.00	21.98	Peak
2390.04	32.16	6.08	12.32	50.56	74.00	23.44	Peak
2411.88	32.18	6.11	55.43	93.72	---	---	Peak



### Antenna at Horizontal Polarization

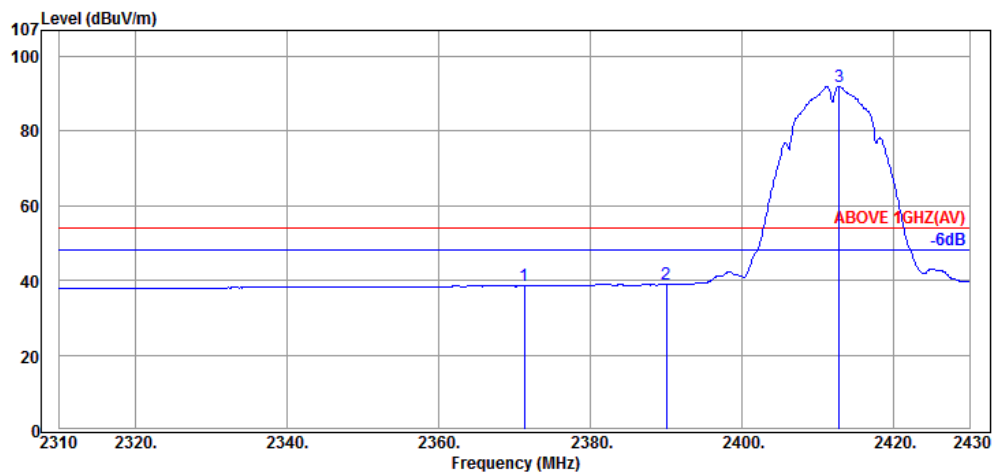
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2367.72	32.11	6.05	0.41	38.57	54.00	15.43	Average
2390.04	32.16	6.08	0.75	38.99	54.00	15.01	Average
2411.16	32.18	6.11	52.54	90.83	---	---	Average

Mode	802.11b	Frequency	TX 2412MHz
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### Antenna at Vertical Polarization

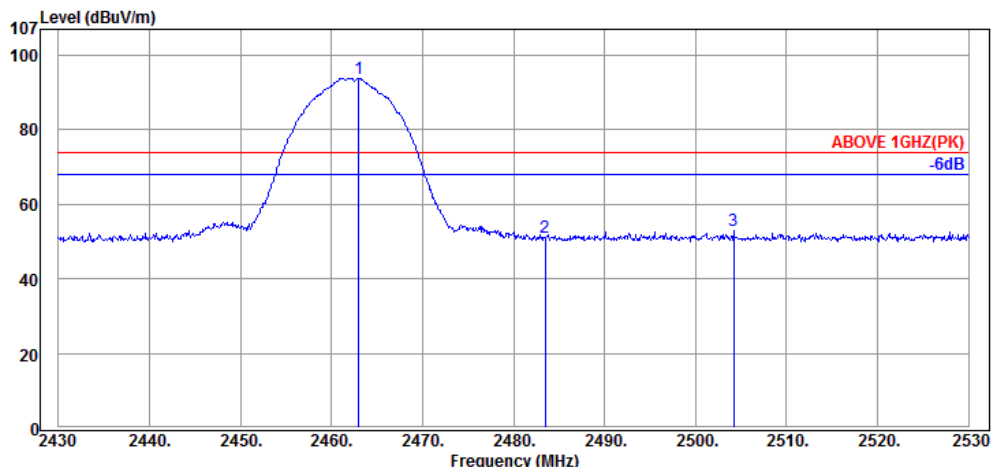
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	imits (dBμV/m)	Margin (dB)	Detector
2356.08	32.11	6.04	13.13	51.28	74.00	22.72	Peak
2390.04	32.16	6.08	12.88	51.12	74.00	22.88	Peak
2412.96	32.18	6.11	56.65	94.94	---	---	Peak



### Antenna at Vertical Polarization

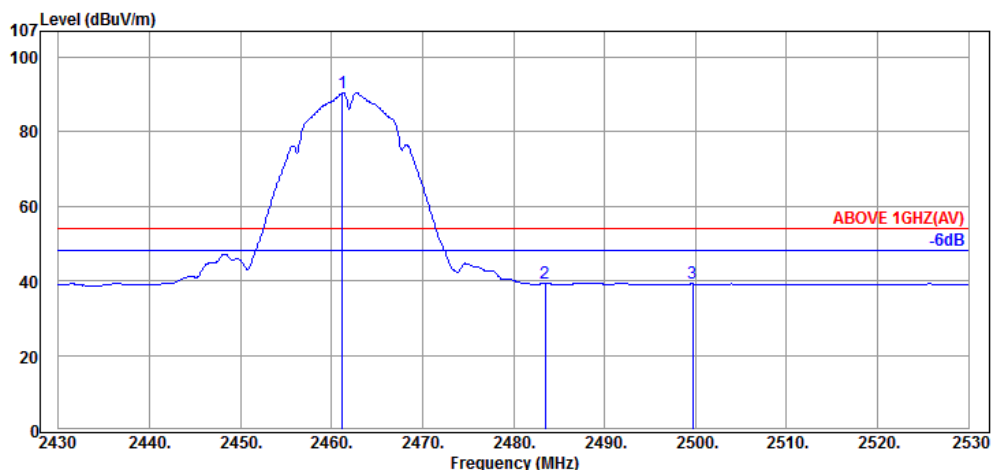
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2371.32	32.13	6.05	0.39	38.57	54.00	15.43	Average
2390.04	32.16	6.08	0.72	38.96	54.00	15.04	Average
2412.84	32.18	6.11	53.82	92.11	---	---	Average

Mode	802.11b	Frequency	TX 2462Hz
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## Antenna at Horizontal Polarization

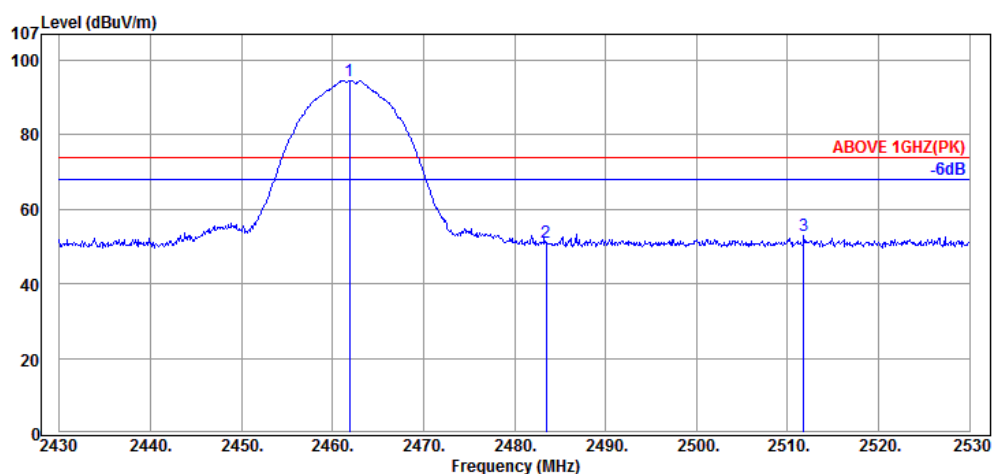
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2463.00	32.25	6.16	55.53	93.94	---	---	Peak
2483.50	32.28	6.19	12.62	51.09	74.00	22.91	Peak
2504.20	32.30	6.21	14.26	52.77	74.00	21.23	Peak



## Antenna at Horizontal Polarization

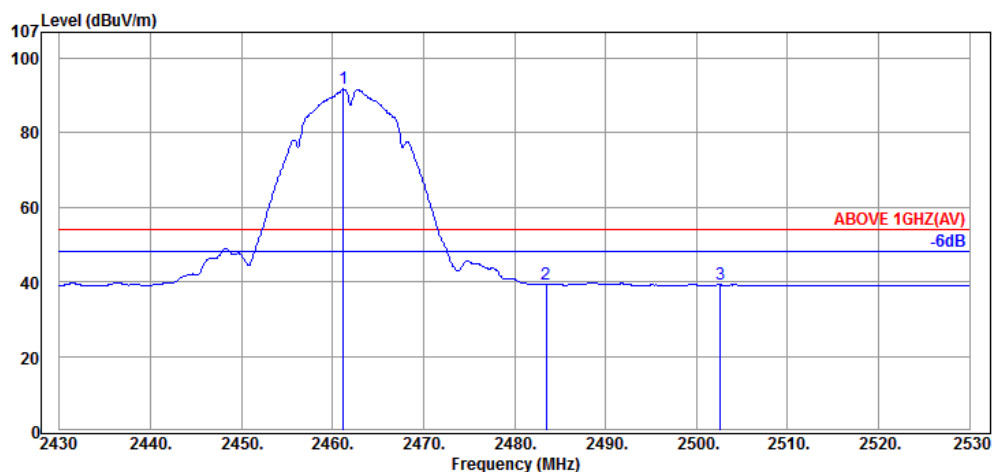
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.20	32.25	6.16	52.14	90.55	---	---	Average
2483.50	32.28	6.19	0.79	39.26	54.00	14.74	Average
2499.70	32.30	6.21	0.68	39.19	54.00	14.81	Average

Mode	802.11b	Frequency	TX 2462MHz
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## Antenna at Vertical Polarization

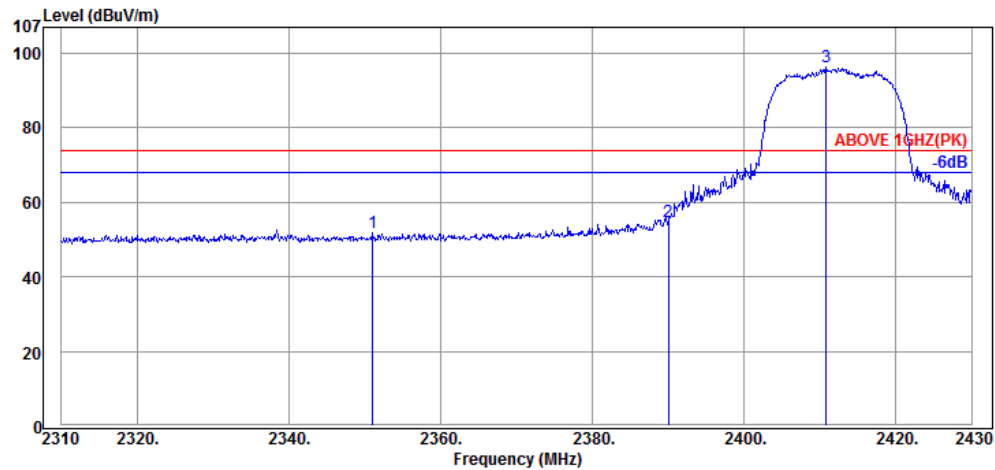
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.90	32.25	6.16	56.19	94.60	---	---	Peak
2483.50	32.28	6.19	12.56	51.03	74.00	22.97	Peak
2511.80	32.32	6.22	14.33	52.87	74.00	21.13	Peak



## Antenna at Vertical Polarization

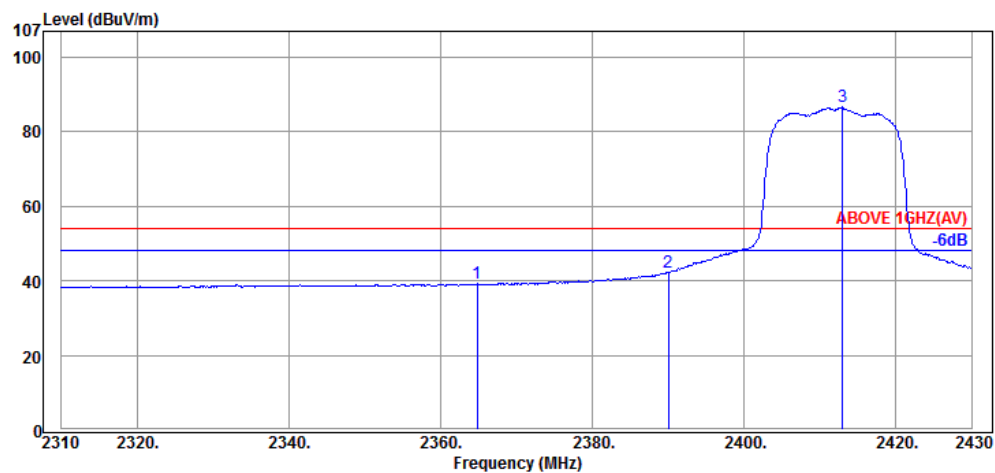
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.20	32.25	6.16	53.51	91.92	---	---	Average
2483.50	32.28	6.19	0.95	39.42	54.00	14.58	Average
2502.60	32.30	6.21	0.68	39.19	54.00	14.81	Average

Mode	802.11g	Frequency	TX 2412MHz
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#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2351.04	32.08	6.03	13.73	51.84	74.00	22.16	Peak
2390.04	32.16	6.08	16.37	54.61	74.00	19.39	Peak
2410.80	32.18	6.11	57.93	96.22	---	---	Peak

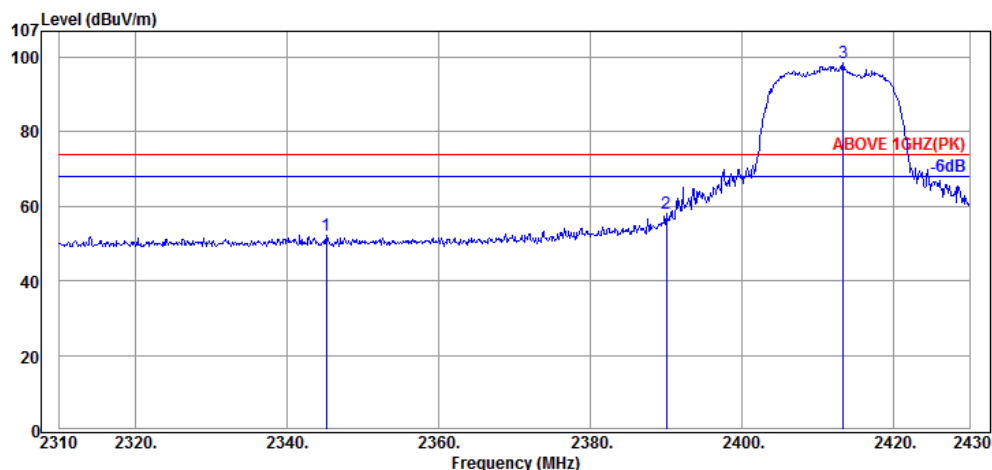


#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2364.84	32.11	6.05	1.00	39.16	54.00	14.84	Average
2390.04	32.16	6.08	3.99	42.23	54.00	11.77	Average
2412.96	32.18	6.11	48.39	86.68	---	---	Average

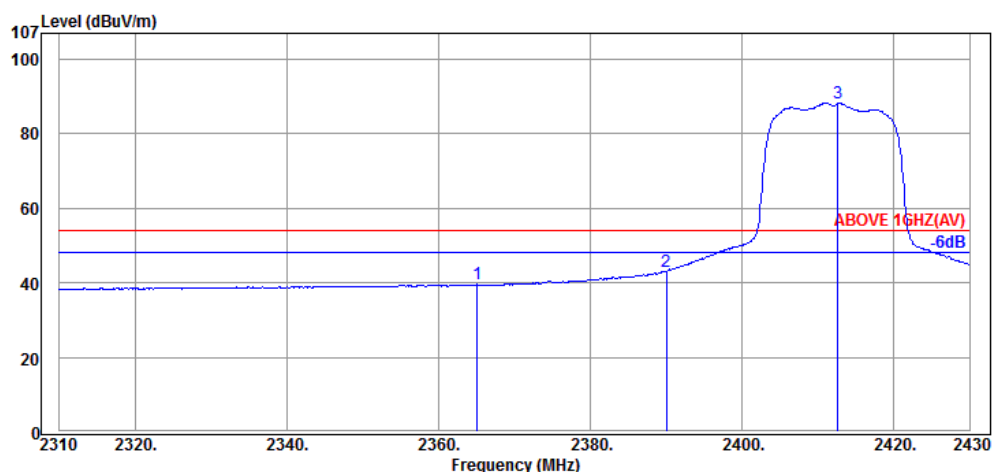


Mode	802.11g	Frequency	TX 2412MHz
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## Antenna at Vertical Polarization

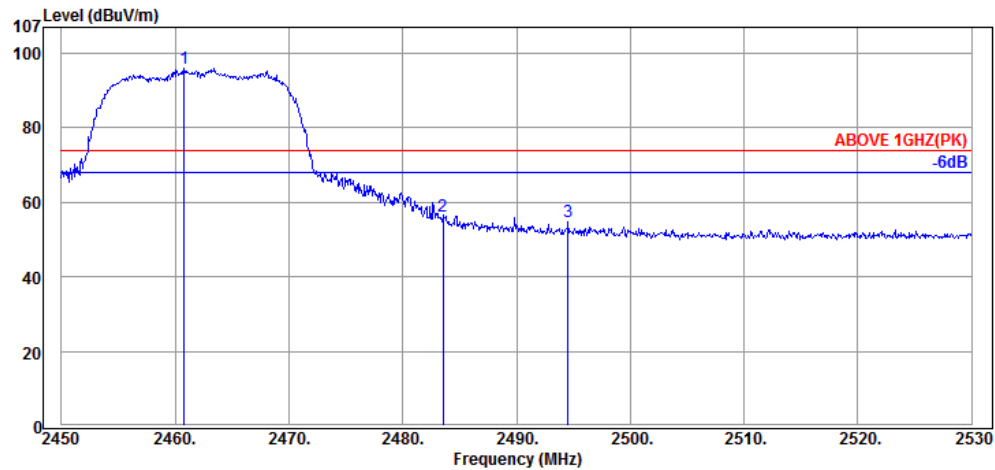
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2345.16	32.08	6.02	14.26	52.36	74.00	21.64	Peak
2390.04	32.16	6.08	19.80	58.04	74.00	15.96	Peak
2413.32	32.18	6.11	60.18	98.47	---	---	Peak



## Antenna at Vertical Polarization

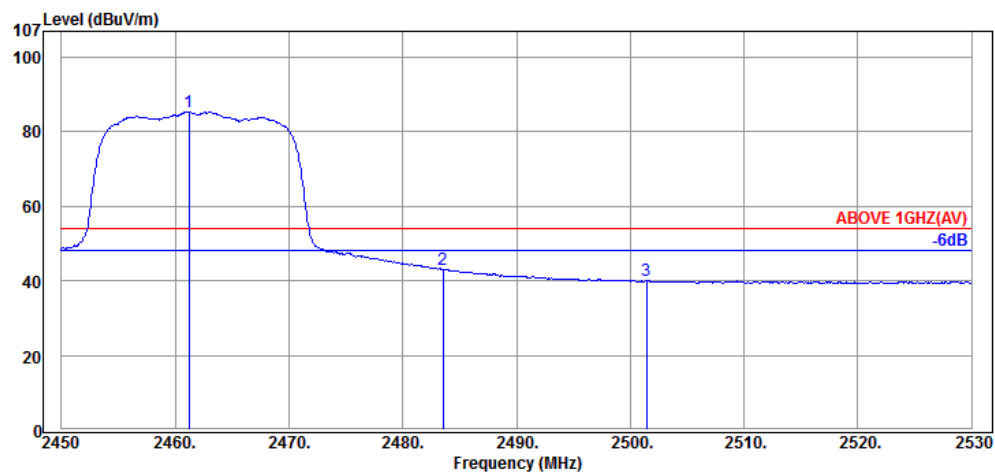
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2365.08	32.11	6.05	1.45	39.61	54.00	14.39	Average
2390.04	32.16	6.08	4.94	43.18	54.00	10.82	Average
2412.60	32.18	6.11	50.02	88.31	---	---	Average

Mode	802.11g	Frequency	TX 2462MHz
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## Antenna at Horizontal Polarization

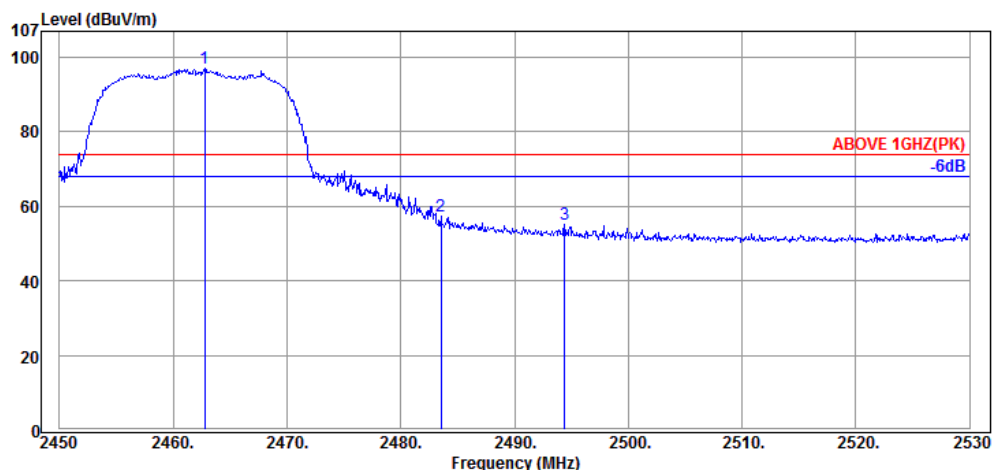
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2460.80	32.25	6.16	57.59	96.00	---	---	Peak
2483.52	32.28	6.19	17.61	56.08	74.00	17.92	Peak
2494.56	32.30	6.20	16.16	54.66	74.00	19.34	Peak



## Antenna at Horizontal Polarization

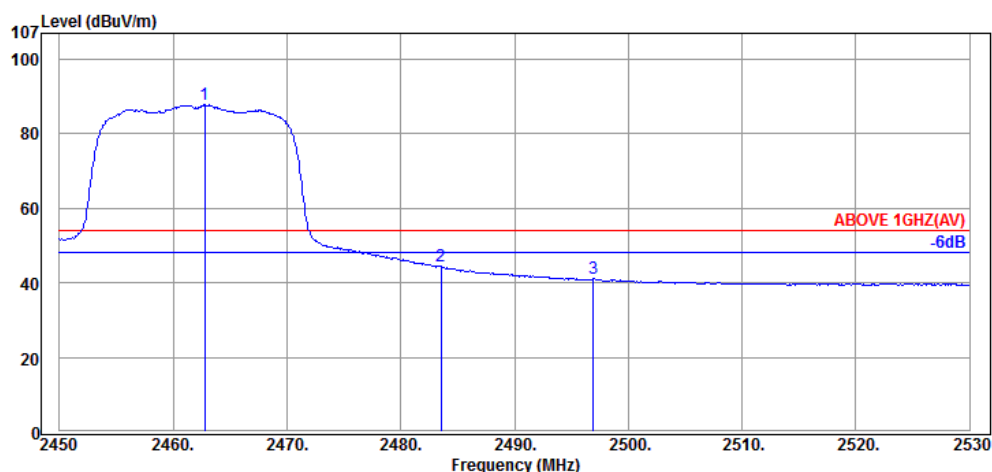
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.20	32.25	6.16	46.97	85.38	---	---	Average
2483.52	32.28	6.19	4.56	43.03	54.00	10.97	Average
2501.44	32.30	6.21	1.48	39.99	54.00	14.01	Average

Mode	802.11g	Frequency	TX 2462MHz
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## Antenna at Vertical Polarization

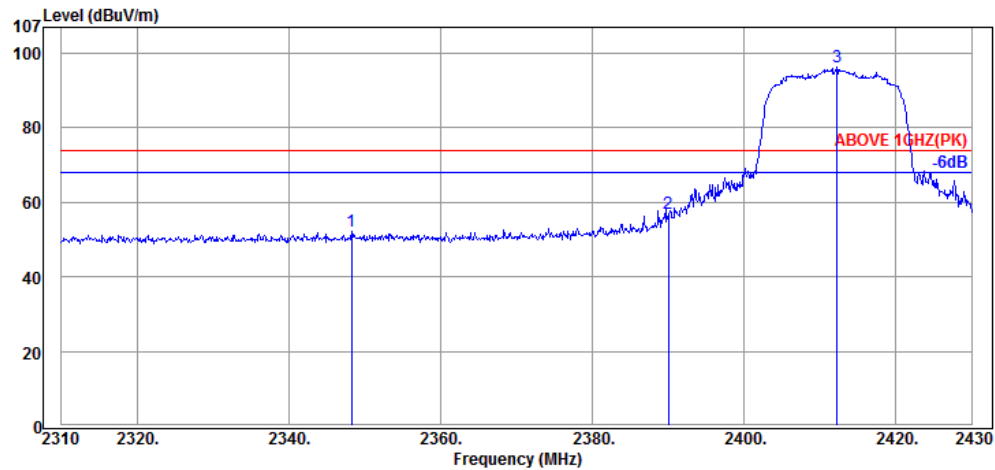
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2462.80	32.25	6.16	58.61	97.02	---	---	Peak
2483.52	32.28	6.19	18.83	57.30	74.00	16.70	Peak
2494.40	32.30	6.20	16.47	54.97	74.00	19.03	Peak



## Antenna at Vertical Polarization

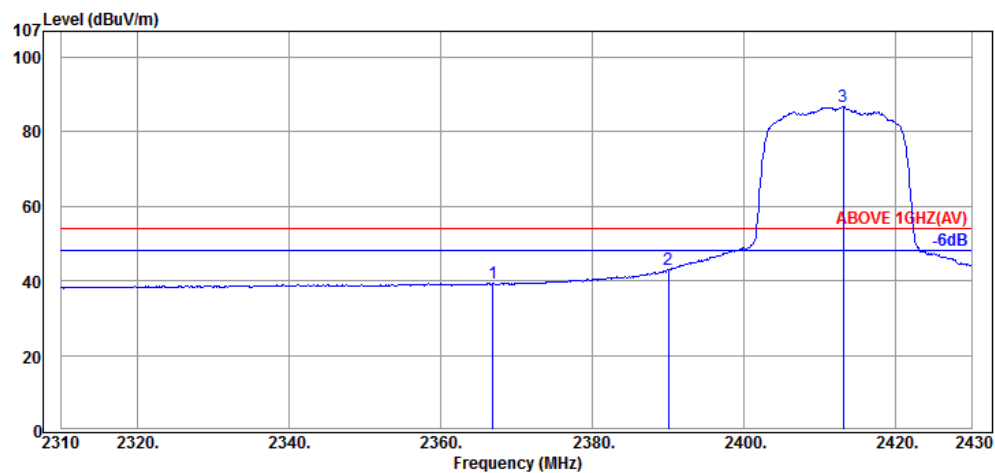
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2462.80	32.25	6.16	49.38	87.79	---	---	Average
2483.52	32.28	6.19	5.84	44.31	54.00	9.69	Average
2496.96	32.30	6.20	2.59	41.09	54.00	12.91	Average

Mode	802.11n-HT20	Frequency	TX 2412MHz
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#### Antenna at Horizontal Polarization

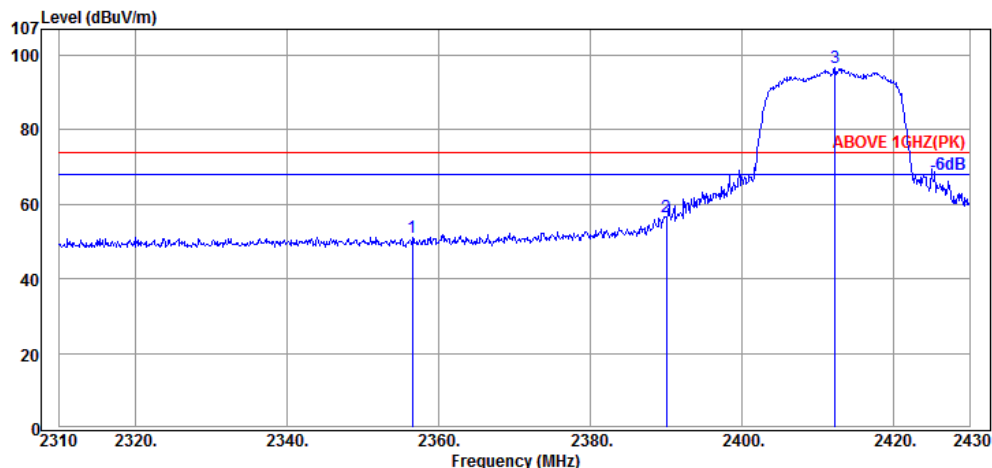
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2348.28	32.08	6.02	13.93	52.03	74.00	21.97	Peak
2390.04	32.16	6.08	18.76	57.00	74.00	17.00	Peak
2412.24	32.18	6.11	57.91	96.20	---	---	Peak



#### Antenna at Horizontal Polarization

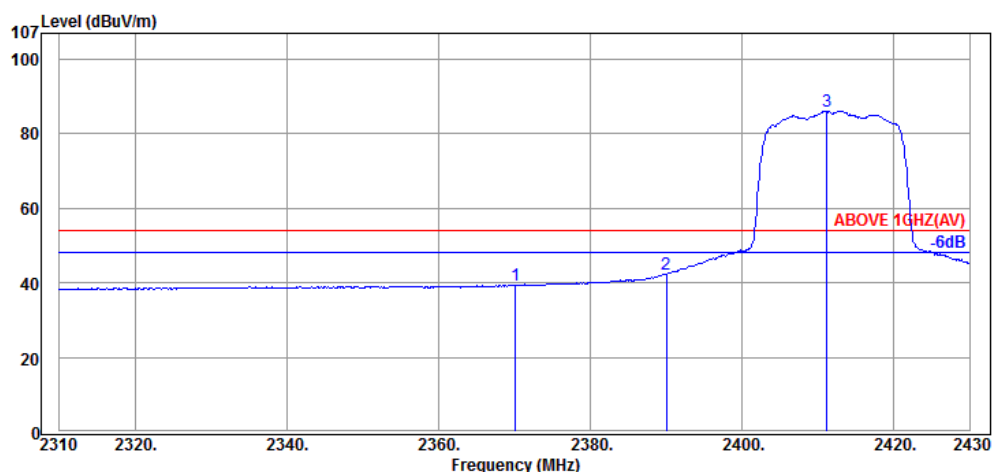
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2366.88	32.11	6.05	1.08	39.24	54.00	14.76	Average
2390.04	32.16	6.08	4.88	43.12	54.00	10.88	Average
2413.08	32.18	6.11	48.47	86.76	---	---	Average

Mode	802.11n-HT20	Frequency	TX 2412MHz
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### Antenna at Vertical Polarization

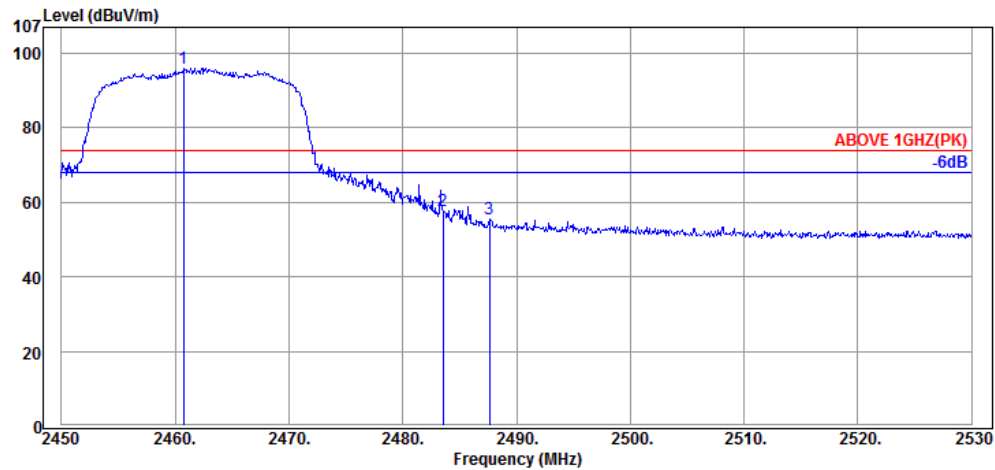
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2356.56	32.11	6.04	13.09	51.24	74.00	22.76	Peak
2390.04	32.16	6.08	18.36	56.60	74.00	17.40	Peak
2412.24	32.18	6.11	58.28	96.57	---	---	Peak



### Antenna at Vertical Polarization

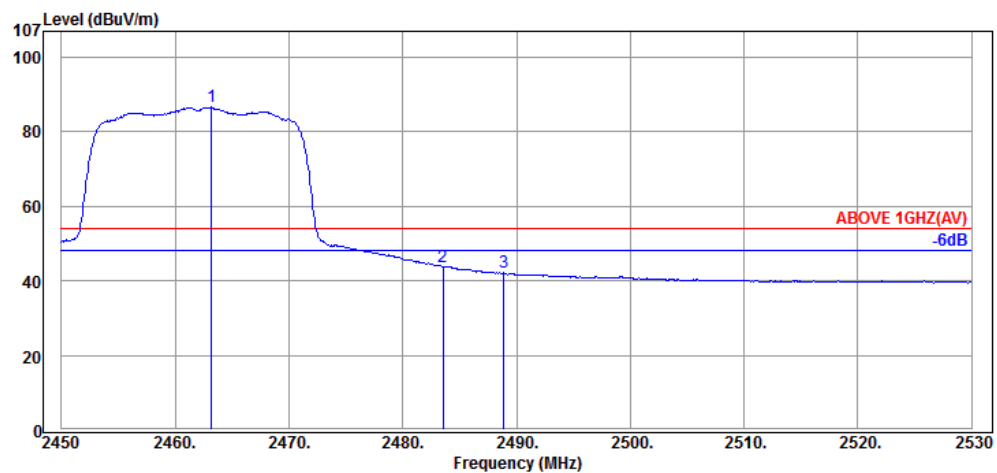
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2370.12	32.13	6.05	1.17	39.35	54.00	14.65	Average
2390.04	32.16	6.08	4.06	42.30	54.00	11.70	Average
2411.16	32.18	6.11	47.86	86.15	---	---	Average

Mode	802.11n-HT20	Frequency	TX 2462MHz
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## Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2460.72	32.25	6.16	57.63	96.04	---	---	Peak
2483.52	32.28	6.19	19.08	57.55	74.00	16.45	Peak
2487.60	32.30	6.19	16.99	55.48	74.00	18.52	Peak

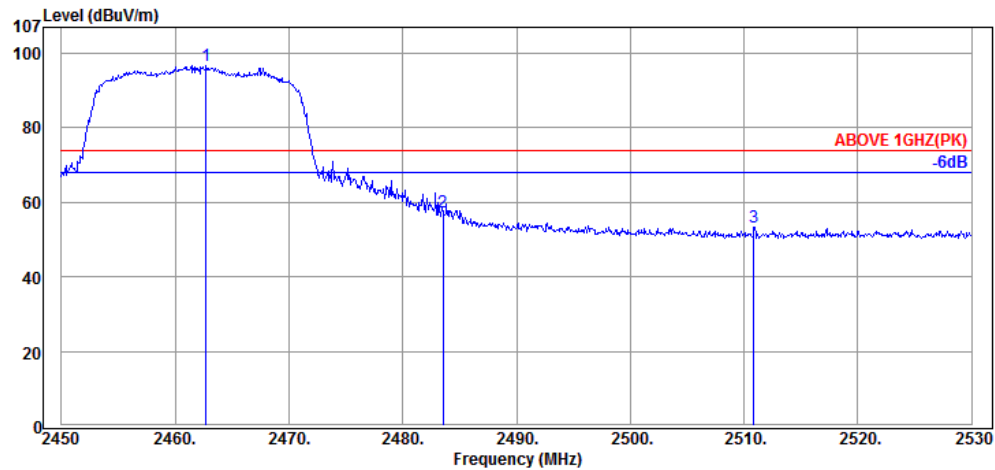


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## Antenna at Horizontal Polarization

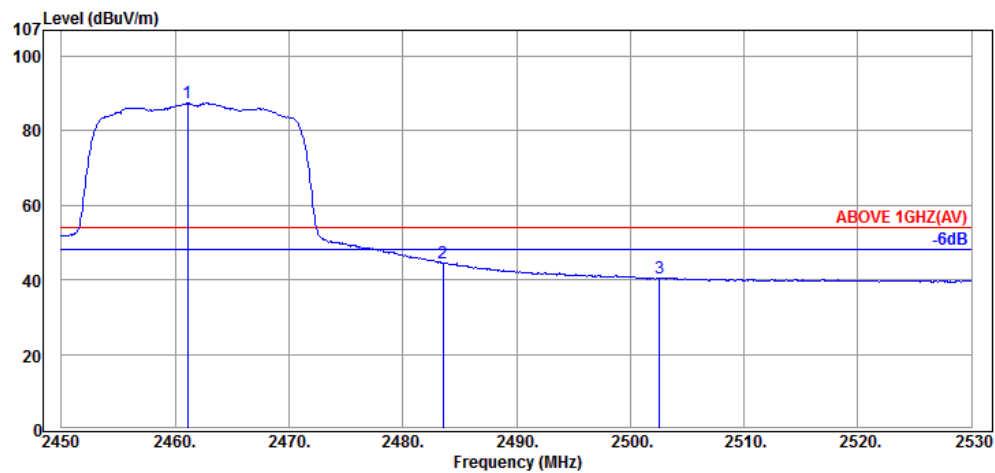
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2463.20	32.25	6.16	48.24	86.65	---	---	Average
2483.52	32.28	6.19	5.33	43.80	54.00	10.20	Average
2488.88	32.30	6.19	3.67	42.16	54.00	11.84	Average

Mode	802.11n-HT20	Frequency	TX 2462MHz
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## Antenna at Vertical Polarization

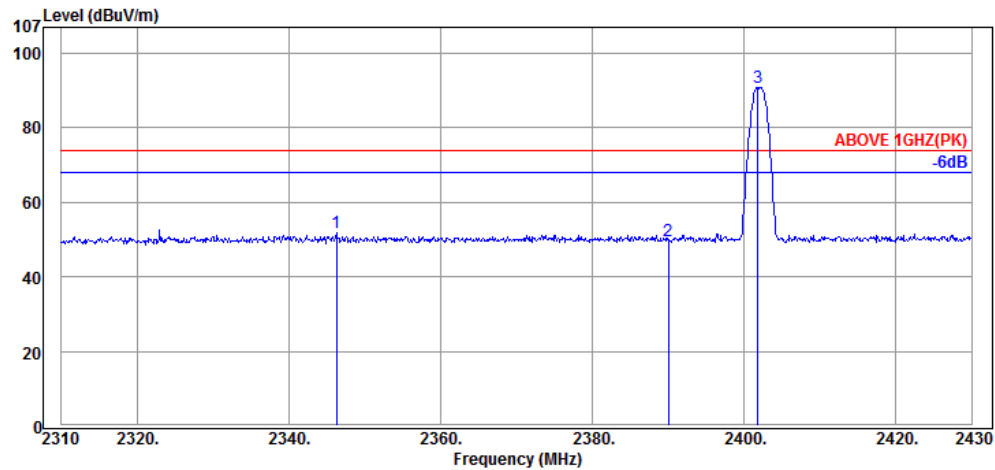
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2462.72	32.25	6.16	58.39	96.80	---	---	Peak
2483.52	32.28	6.19	19.03	57.50	74.00	16.50	Peak
2510.88	32.32	6.22	14.77	53.31	74.00	20.69	Peak



## Antenna at Vertical Polarization

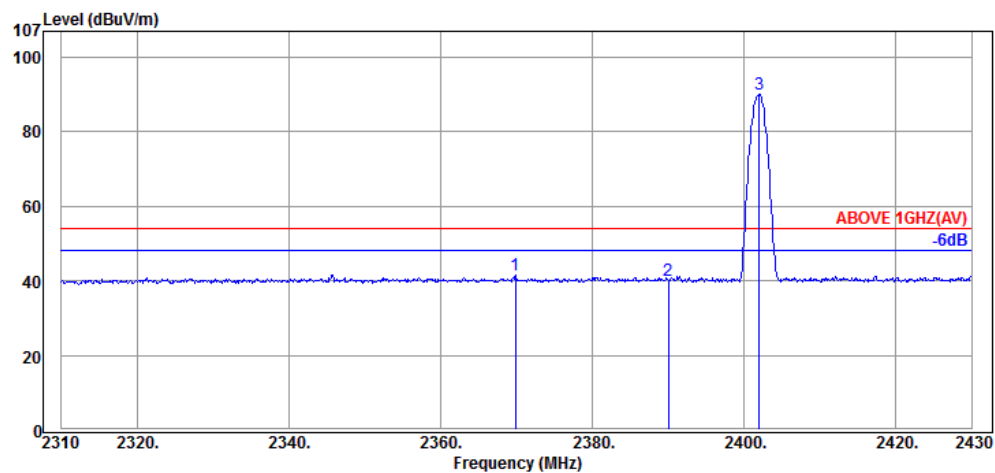
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2461.12	32.25	6.16	49.01	87.42	---	---	Average
2483.52	32.28	6.19	6.00	44.47	54.00	9.53	Average
2502.56	32.30	6.21	1.88	40.39	54.00	13.61	Average

Mode	BLE	Frequency	TX 2402MHz
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#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2346.24	32.08	5.68	14.08	51.84	74.00	22.16	Peak
2390.04	32.16	5.72	11.85	49.73	74.00	24.27	Peak
2401.80	32.16	5.72	52.89	90.77	---	---	Peak

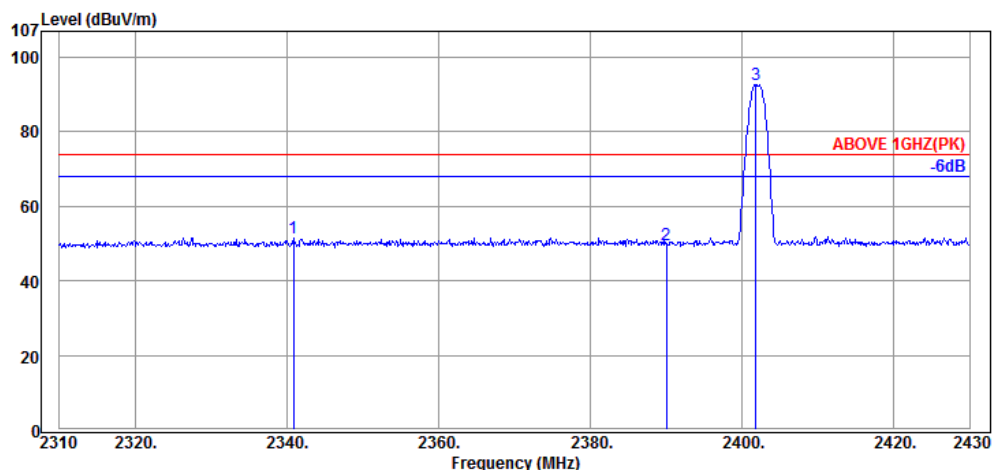


#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2369.88	32.13	5.71	3.66	41.50	54.00	12.50	Average
2390.04	32.16	5.72	2.25	40.13	54.00	13.87	Average
2402.04	32.16	5.72	52.21	90.09	---	---	Average

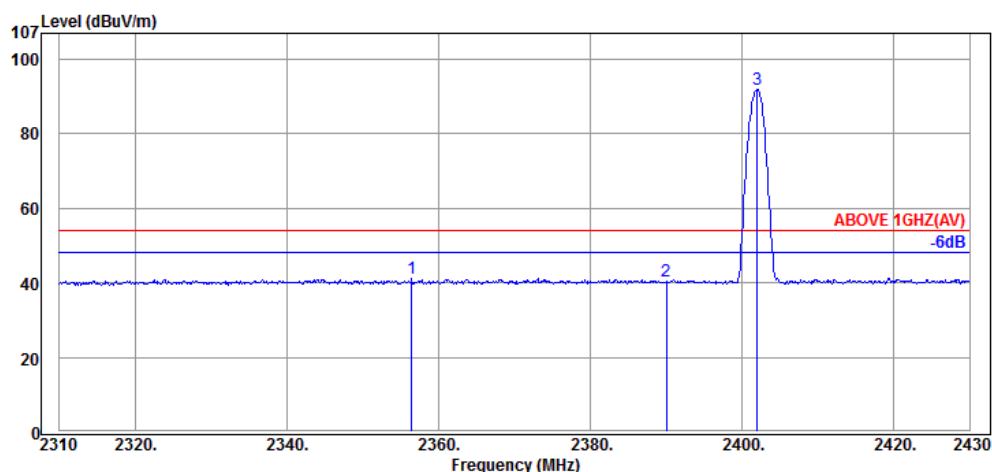


Mode	BLE	Frequency	TX 2402MHz
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## Antenna at Vertical Polarization

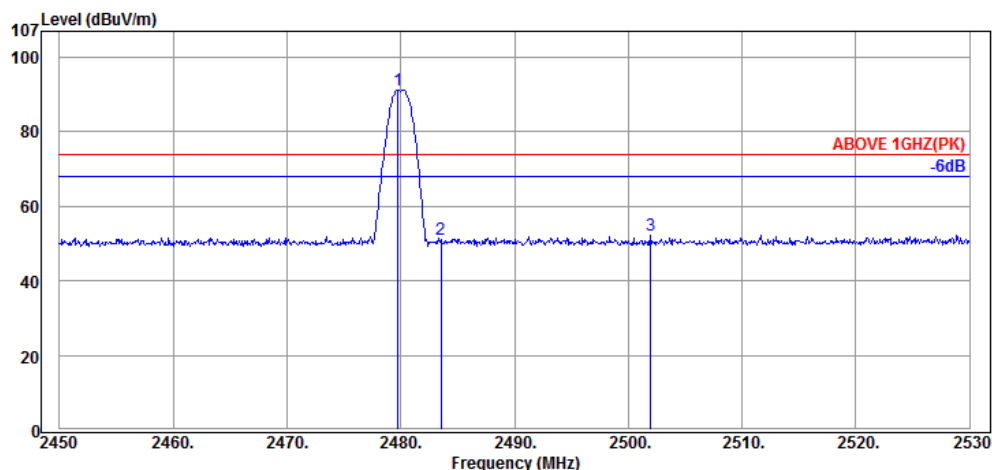
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2340.84	32.08	5.68	13.54	51.30	74.00	22.70	Peak
2390.04	32.16	5.72	11.80	49.68	74.00	24.32	Peak
2401.80	32.16	5.72	54.75	92.63	---	---	Peak



## Antenna at Vertical Polarization

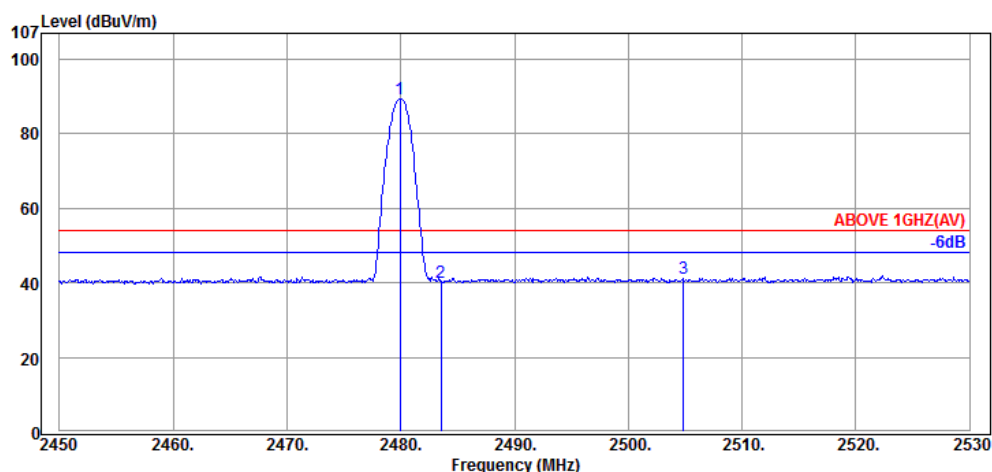
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2356.44	32.11	5.69	3.43	41.23	54.00	12.77	Average
2390.04	32.16	5.72	2.50	40.38	54.00	13.62	Average
2402.04	32.16	5.72	53.98	91.86	---	---	Average

Mode	BLE	Frequency	TX 2480MHz
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## Antenna at Horizontal Polarization

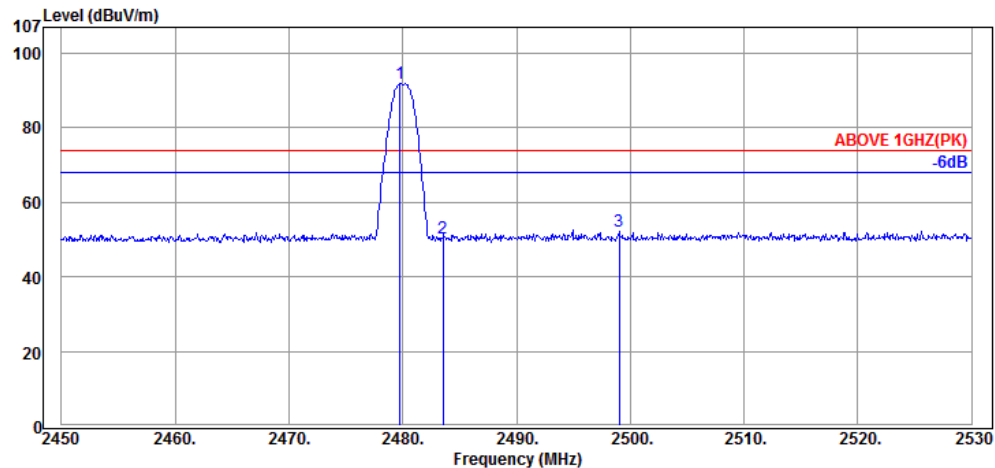
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2479.76	32.28	5.82	53.12	91.22	---	---	Peak
2483.52	32.28	5.82	13.05	51.15	74.00	22.85	Peak
2502.00	32.30	5.84	14.13	52.27	74.00	21.73	Peak



## Antenna at Horizontal Polarization

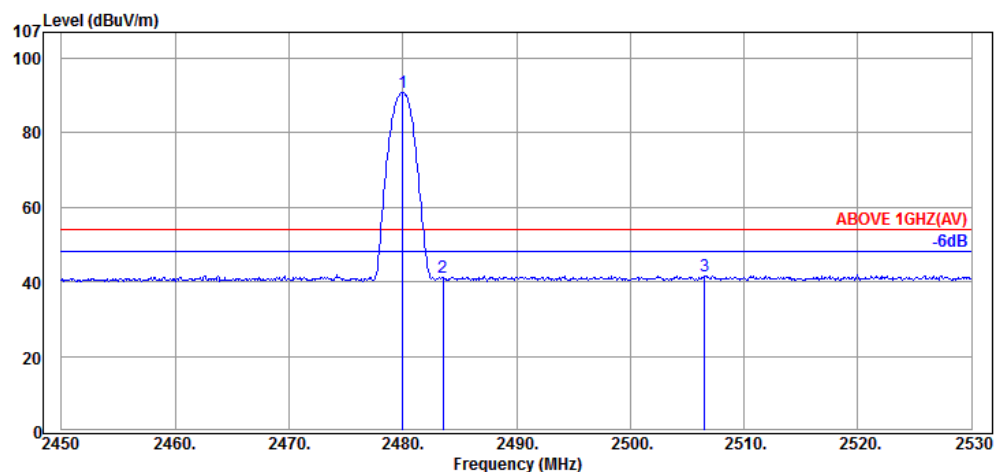
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2479.92	32.28	5.82	51.41	89.51	---	---	Average
2483.52	32.28	5.82	1.97	40.07	54.00	13.93	Average
2504.88	32.32	5.87	3.06	41.25	54.00	12.75	Average

Mode	BLE	Frequency	TX 2480MHz
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#### Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2479.76	32.28	5.82	53.74	91.84	---	---	Peak
2483.52	32.28	5.82	12.17	50.27	74.00	23.73	Peak
2499.04	32.30	5.84	14.00	52.14	74.00	21.86	Peak



#### Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	5.82	52.82	90.92	---	---	Average
2483.52	32.28	5.82	3.15	41.25	54.00	12.75	Average
2506.56	32.32	5.87	3.33	41.52	54.00	12.48	Average

**6.5.3. Emissions outside the frequency band:**

The emissions (up to 25GHz) not reported for there is no emission be found.

**Test Model: WT002**

Mode	802.11b	Frequency	TX 2462MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	0.67	44.18	54.00	9.82	Peak
7385.00	35.80	12.26	-3.17	44.89	54.00	9.11	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	0.54	44.05	54.00	9.95	Peak
7385.00	35.80	12.26	-2.19	45.87	54.00	8.13	Peak

Mode	802.11g	Frequency	TX 2462MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	0.02	43.53	54.00	10.47	Peak
7385.00	35.80	12.26	-2.44	45.62	54.00	8.38	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	0.00	43.51	54.00	10.49	Peak
7385.00	35.80	12.26	-2.35	45.71	54.00	8.29	Peak

Mode	802.11n-HT20	Frequency	TX 2462MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	-0.01	43.50	54.00	10.50	Peak
7385.00	35.80	12.26	-1.63	46.43	54.00	7.57	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	-0.31	43.20	54.00	10.80	Peak
7385.00	35.80	12.26	-2.56	45.50	54.00	8.50	Peak

Mode	BLE	Frequency	TX 2402MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4805.00	34.22	7.86	1.46	43.54	54.00	10.46	Peak
7205.00	35.80	9.22	-0.90	44.12	54.00	9.88	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4805.00	34.22	7.86	0.15	42.23	54.00	11.77	Peak
7205.00	35.80	9.22	-0.68	44.34	54.00	9.66	Peak

Mode	BLE	Frequency	TX 2440MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.25	8.35	1.29	43.89	54.00	10.11	Peak
7320.00	35.80	9.89	-2.57	43.12	54.00	10.88	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.25	8.35	0.55	43.15	54.00	10.85	Peak
7320.00	35.80	9.89	-1.92	43.77	54.00	10.23	Peak

Mode	BLE	Frequency	TX 2480MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	8.68	1.01	43.98	54.00	10.02	Peak
7440.00	35.80	10.40	-2.91	43.29	54.00	10.71	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	8.68	1.81	44.78	54.00	9.22	Peak
7440.00	35.80	10.40	-2.66	43.54	54.00	10.46	Peak

**Test Model: WB001**

Mode	802.11b	Frequency	TX 2462MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	0.85	44.36	54.00	9.64	Peak
7385.00	35.80	12.26	-2.88	45.18	54.00	8.82	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	2.45	45.96	54.00	8.04	Peak
7385.00	35.80	12.26	-1.81	46.25	54.00	7.75	Peak

Mode	802.11g	Frequency	TX 2462MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	0.20	43.71	54.00	10.29	Peak
7385.00	35.80	12.26	-2.53	45.53	54.00	8.47	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	1.67	45.18	54.00	8.82	Peak
7385.00	35.80	12.26	-2.63	45.43	54.00	8.57	Peak

Mode	802.11n-HT20	Frequency	TX 2462MHz
------	--------------	-----------	------------

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	-0.36	43.15	54.00	10.85	Peak
7385.00	35.80	12.26	-1.84	46.22	54.00	7.78	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4925.00	34.27	9.24	2.43	45.94	54.00	8.06	Peak
7385.00	35.80	12.26	-2.23	45.83	54.00	8.17	Peak

Mode	BLE	Frequency	TX 2402MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4805.00	34.22	7.86	-0.06	42.02	54.00	11.98	Peak
7205.00	35.80	9.22	-1.29	43.73	54.00	10.27	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4805.00	34.22	7.86	0.56	42.64	54.00	11.36	Peak
7205.00	35.80	9.22	-1.33	43.69	54.00	10.31	Peak



Mode	BLE	Frequency	TX 2440MHz
------	-----	-----------	------------

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.25	8.35	0.65	43.25	54.00	10.75	Peak
7320.00	35.80	9.89	-2.92	42.77	54.00	11.23	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.25	8.35	0.57	43.17	54.00	10.83	Peak
7320.00	35.80	9.89	-1.91	43.78	54.00	10.22	Peak

Mode	BLE	Frequency	TX 2480MHz
------	-----	-----------	------------

**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	8.68	0.03	43.00	54.00	11.00	Peak
7440.00	35.80	10.40	-2.97	43.23	54.00	10.77	Peak

**Antenna at Vertical Polarization**

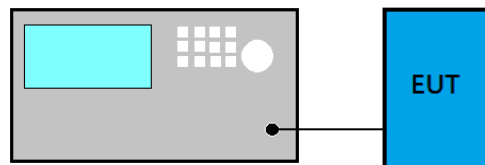
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	8.68	1.15	44.12	54.00	9.88	Peak
7440.00	35.80	10.40	-2.45	43.75	54.00	10.25	Peak

#### 6.5.4. Emissions in Non-restricted Frequency Bands

Pursuant to KDB 558074 D01 v03r05 that emission levels below the 15.209 general radiated emissions limits is not required.

## 7. 6dB BANDWIDTH MEASUREMENT

### 7.1. Block Diagram of Test Setup



### 7.2. Specification Limits

The minimum 6dB bandwidth shall be at least 500kHz.

### 7.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r05:

■ Option 2

- (1) Set RBW = 100 kHz.
- (2) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Trace mode = max hold.
- (5) Sweep = auto couple.
- (6) Allow the trace to stabilize.
- (7) Setting channel bandwidth function x dB to -6 dB to record the final bandwidth.

### 7.4. Test Results

Please refer to Appendix A

## 8. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

### 8.1. Block Diagram of Test Setup



### 8.2. Specification Limits

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is : 1Watt. (30dBm), and E.I.R.P.: 4Watt (36dBm)

### 8.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r05:

#### ☒ PKPM1 Peak power meter method:

EUT is connected to power sensor and record the maximum output power.

#### ☐ Method AVGPM (Measurement using an RF average power meter):

EUT is connected to power sensor and record the maximum average output power and duty cycle factor is added when duty cycle presented in section 3.5 is < 98%.

#### ☐ Method AVGSA-2 (Spectrum channel power)

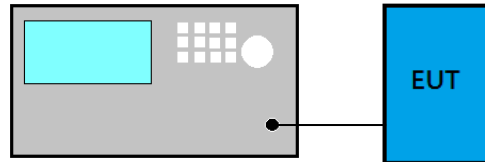
- (1) Set span to at least 1.5 times the OBW
- (2) Set RBW = 1 -5% of OBW
- (3) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- (4) Detector = RMS.
- (5) Trace mode = trace average at least 100 traces
- (6) Sweep = auto couple.
- (7) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.
- (8) Duty cycle factor is added when duty cycle presented in section 3.5 is < 98%.

### 8.4. Test Results

Please refer to Appendix A

## 9. EMISSION LIMITATIONS MEASUREMENT

### 9.1. Block Diagram of Test Setup



### 9.2. Specification Limits

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).

### 9.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r05:

#### ■ Reference Level

- (1) Set analyzer center frequency to DTS channel center frequency.
- (2) Set the span to 1.5 times the DTS bandwidth.
- (3) Set the RBW to: 100 kHz.
- (4) Set the VBW  $\geq 3 \times$  RBW.
- (5) Detector = peak.
- (6) Sweep time = auto couple.
- (7) Trace mode = max hold.
- (8) Allow trace to fully stabilize to find the max PSD as reference level.

#### ■ Emission Level Measurement

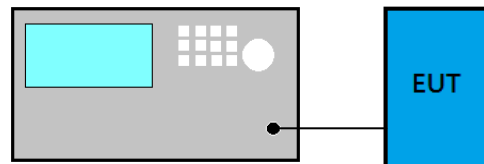
- (1) Set analyzer center frequency to DTS channel center frequency.
- (2) Set the span to 1.5 times the DTS bandwidth.
- (3) Set the RBW to: 100 kHz.
- (4) Set the VBW  $\geq 3 \times$  RBW.
- (5) Detector = peak.
- (6) Sweep time = auto couple.
- (7) Trace mode = max hold.
- (8) Allow trace to fully stabilize to find the max level.

### 9.4. Test Results

Please refer to Appendix A

## 10. POWER SPECTRAL DENSITY

### 10.1. Block Diagram of Test Setup



### 10.2. Specification Limits

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

### 10.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r05:

#### ☒ Method PKPSD (peak PSD)

- (1) Set analyzer center frequency to DTS channel center frequency.
- (2) Set the span to 1.5 times the DTS bandwidth.
- (3) Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- (4) Set the VBW  $\geq 3 \times \text{RBW}$ .
- (5) Detector = peak.
- (6) Sweep time = auto couple.
- (7) Trace mode = max hold.
- (8) Allow trace to fully stabilize.
- (9) Use the peak marker function to determine the maximum amplitude level.
- (10) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

#### ☐ Method AVGPSD-2

- (1) Using peak PSD procedure step 1 to step 4.
- (2) Detector = RMS detector
- (3) Sweep time = auto couple
- (4) Trace mode = trace averaging over a minimum of 100 traces
- (5) Use the peak marker function to determine the maximum amplitude level.
- (6) Duty cycle factor is added when duty cycle presented in section 3.5 < 98%.
- (7) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 10.4. Test Results

Please refer to Appendix A

## **11.DEVIATION TO TEST SPECIFICATIONS**

**【NONE】**





**AUDIX Technology Corp.**  
*No. 53-11, Dingfu, Linkou, Dist.,  
New Taipei City 244, Taiwan*

**APPENDIX A**

**Tel: +886 2 26099301**  
**Fax: +886 2 26099303**

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# APPENDIX A

## TEST DATA and PLOTS

(Model: WT002)

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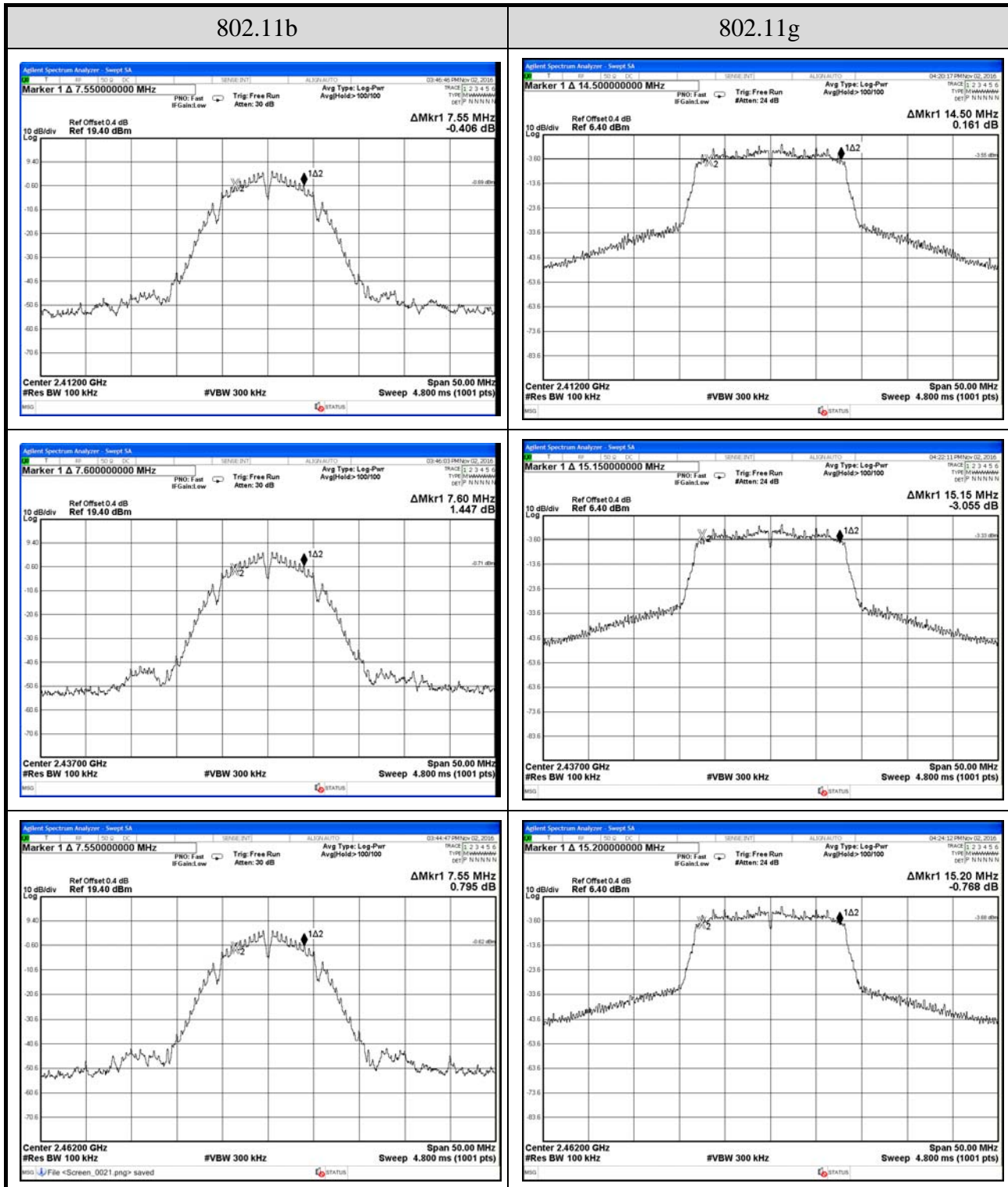
## A.1 6dB BANDWIDTH MEASUREMENT

Test Date	2016/11/02 ~ 14	Temp./Hum.	24°C/55%
Cable Loss	WLAN: 0.4dB BLE: 0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

### A.1.1 6dB Bandwidth Result

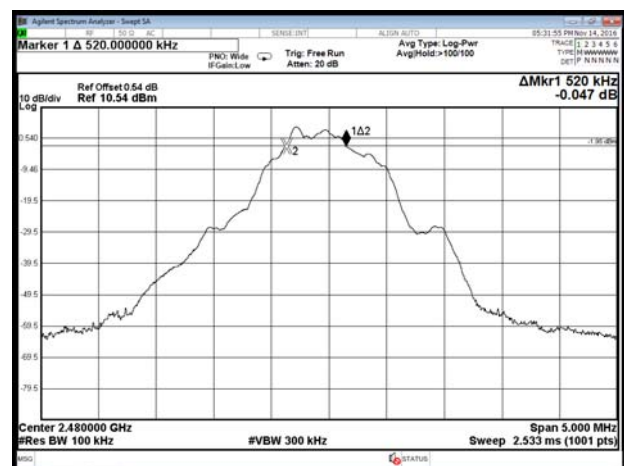
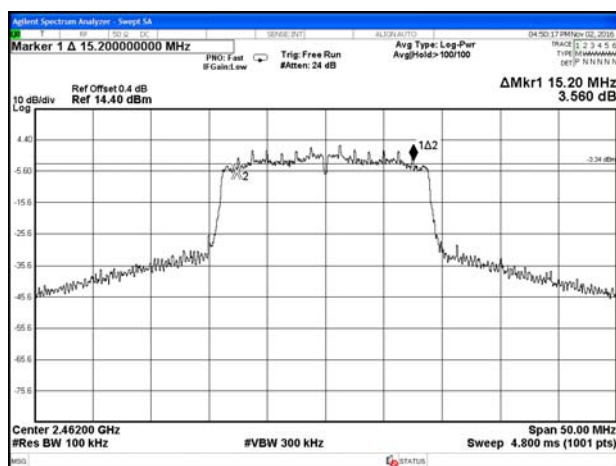
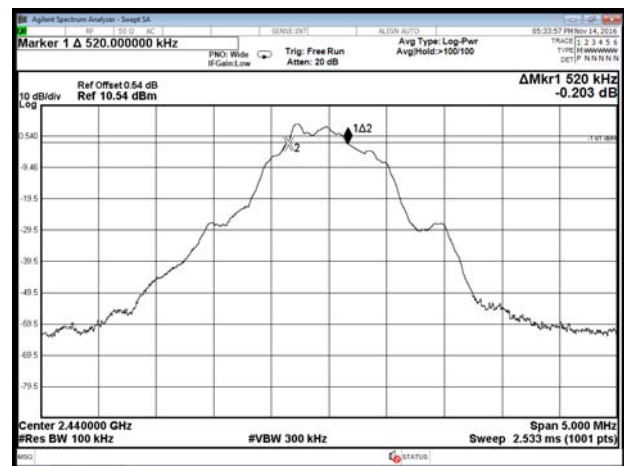
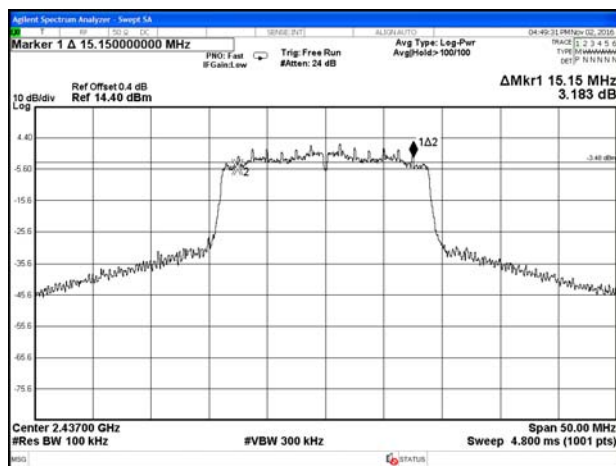
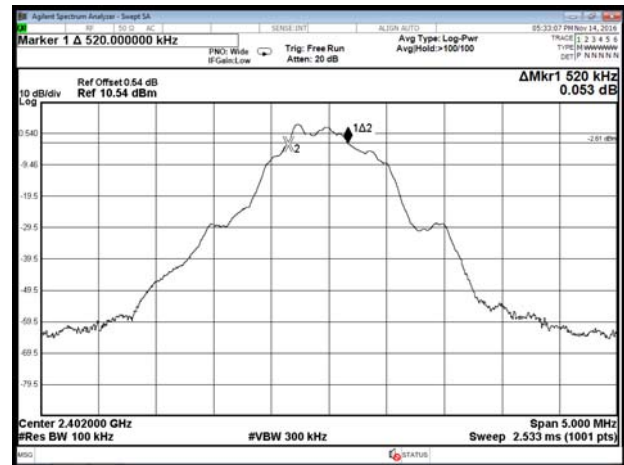
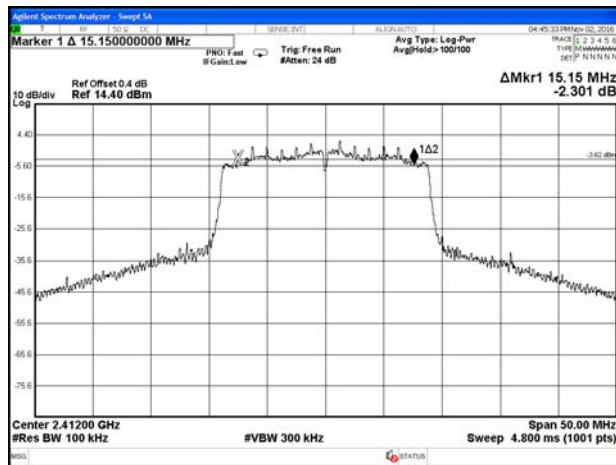
Modulation Type	Centre Frequency (MHz)	6 dB Bandwidth (MHz)	Limit
802.11b	2412	7.55	>500kHz
	2437	7.60	
	2462	7.55	
802.11g	2412	14.50	
	2437	15.15	
	2462	15.20	
802.11n-HT20	2412	15.15	
	2437	15.15	
	2462	15.20	
BLE	2402	0.520	
	2440	0.520	
	2480	0.520	

## A.1.2 Measurement Plots



## 802.11n-HT20

## BLE



## A.2 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

Test Date	2016/11/14	Temp./Hum.	24°C/55%
Cable Loss	WLAN: 0.4dB BLE: 0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

### A.2.1 Peak Output Power

Modulation Type	Centre Frequency (MHz)	Maximum Output Power		Limit
		(dBm)	(W)	
802.11b	2412	15.87	<b>0.0386</b>	Maximum Output Power: < 30dBm (1W)
	2437	15.90	<b>0.0389</b>	
	2462	15.95	<b>0.0394</b>	
802.11g	2412	21.19	<b>0.1315</b>	
	2437	21.59	<b>0.1442</b>	
	2462	21.77	<b>0.1503</b>	
802.11n-HT20	2412	21.16	<b>0.1306</b>	
	2437	21.34	<b>0.1361</b>	
	2462	21.60	<b>0.1445</b>	
BLE	2402	3.711	<b>0.0024</b>	
	2440	4.570	<b>0.0029</b>	
	2480	4.390	<b>0.0027</b>	

Note: The results have been included cable loss.

### A.2.2 Average Output Power (Reporting only)

Modulation Type	Centre Frequency (MHz)	Maximum Output Power (dBm)	10log (1/X)	Maximum Output Power		Limit
				(dBm)	(W)	
802.11b	2412	12.88	---	12.88	0.0194	Maximum Output Power: < 30dBm (1W)
	2437	12.96		12.96	0.0198	
	2462	13.03		13.03	0.0201	
802.11g	2412	12.66	0.22	12.88	0.0194	
	2437	12.87		13.09	0.0204	
	2462	12.79		13.01	0.0200	
802.11n-HT20	2412	12.43	0.27	12.70	0.0186	
	2437	12.49		12.76	0.0189	
	2462	12.59		12.86	0.0193	

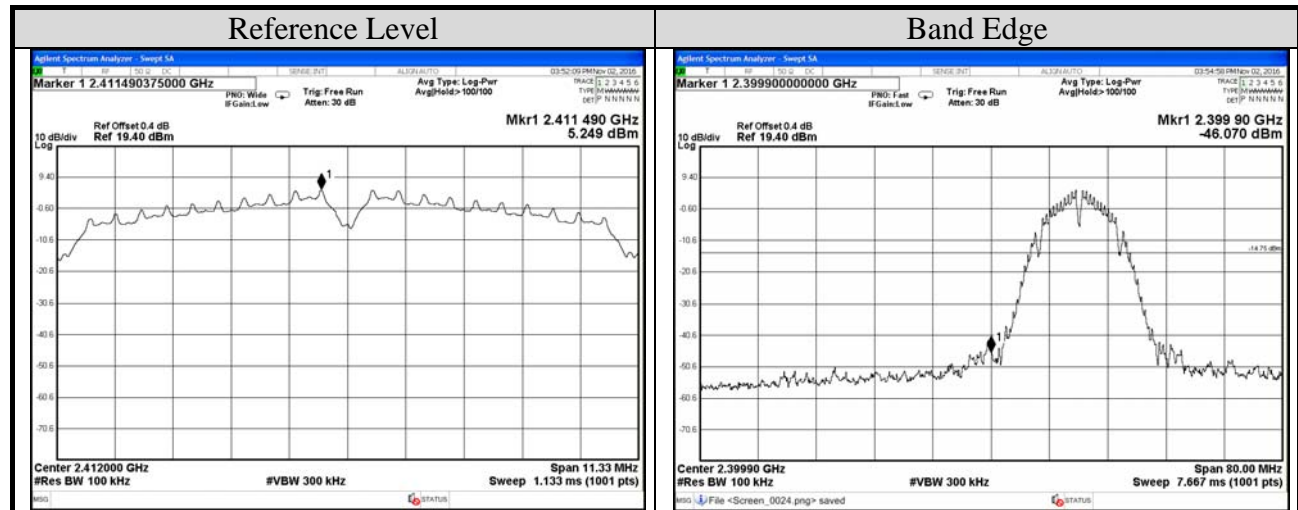
Note: The results have been included cable loss presented in section.

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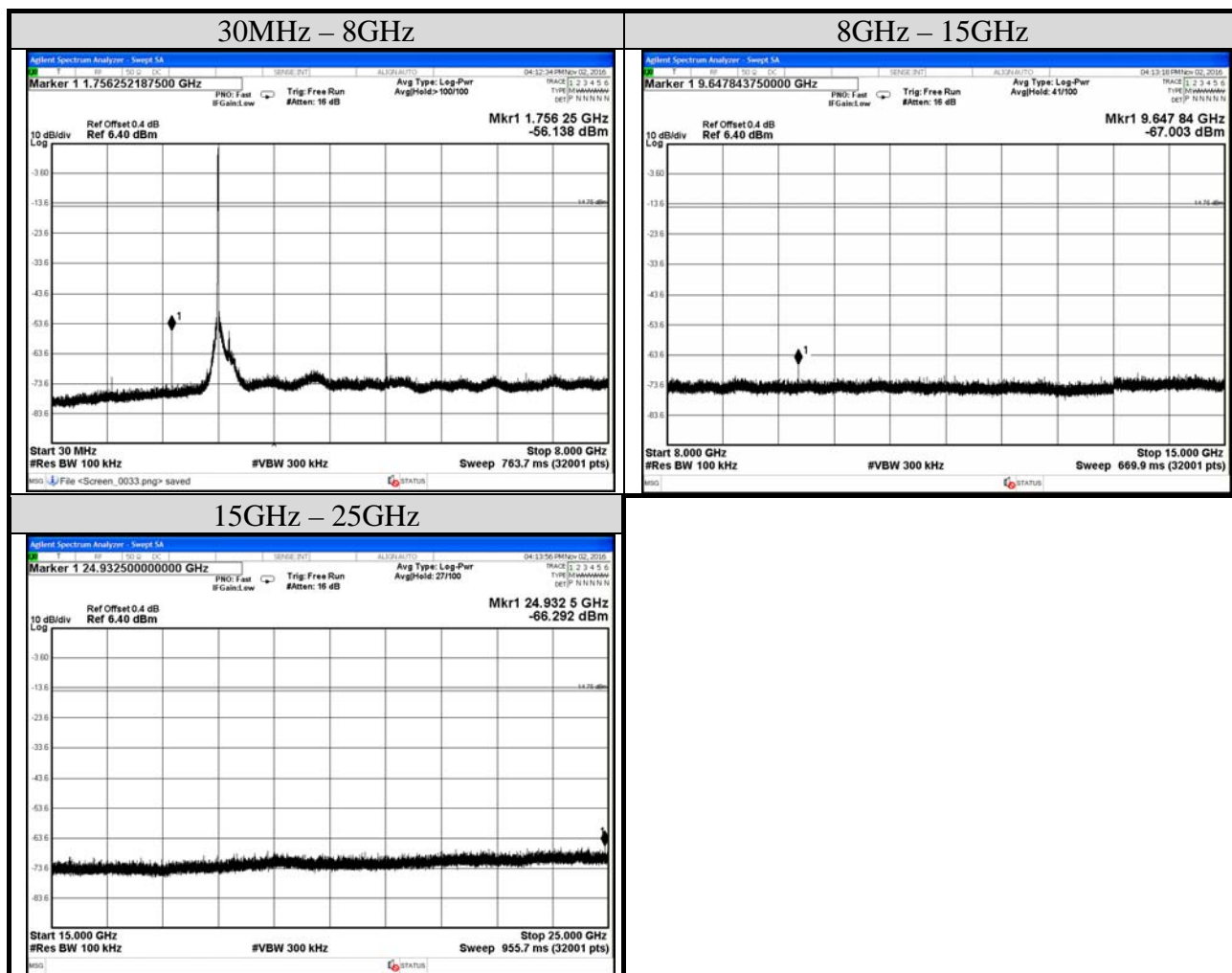
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Fax: +886 2 26099303

## A.3 EMISSION LIMITATIONS MEASUREMENT

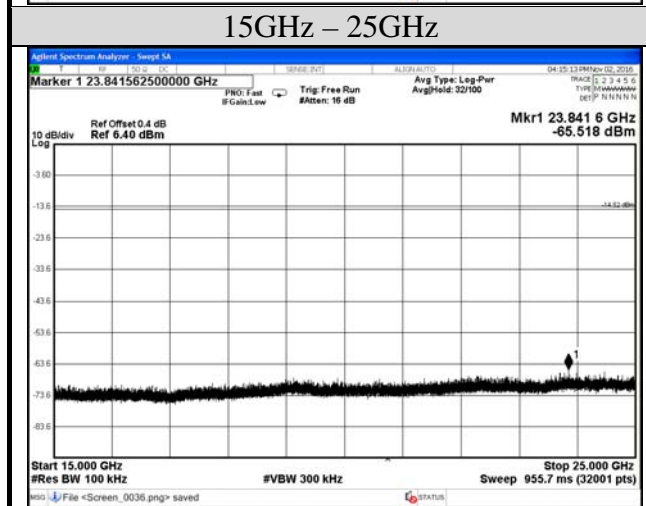
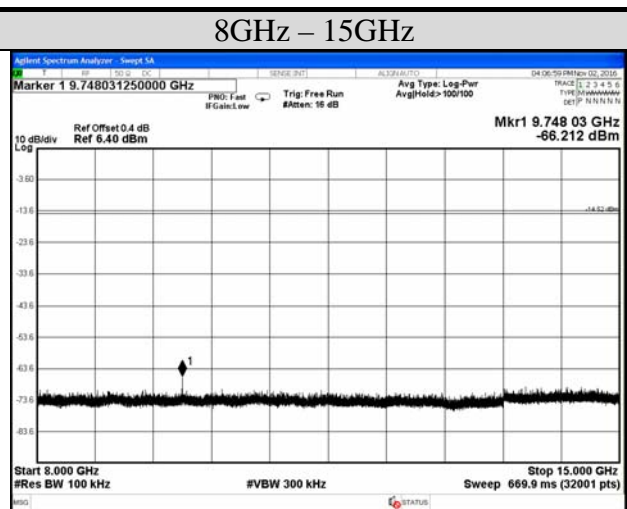
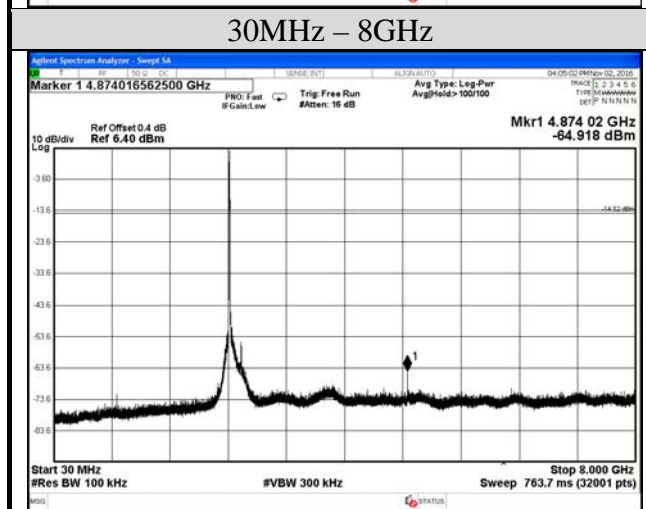
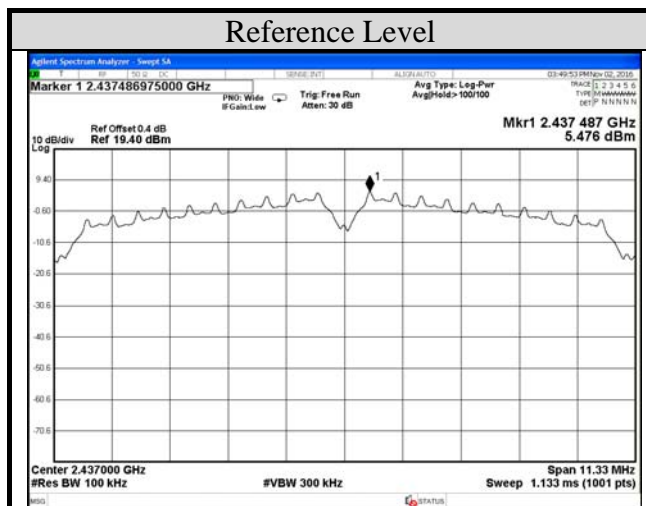
Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11b	Frequency	TX 2412MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0



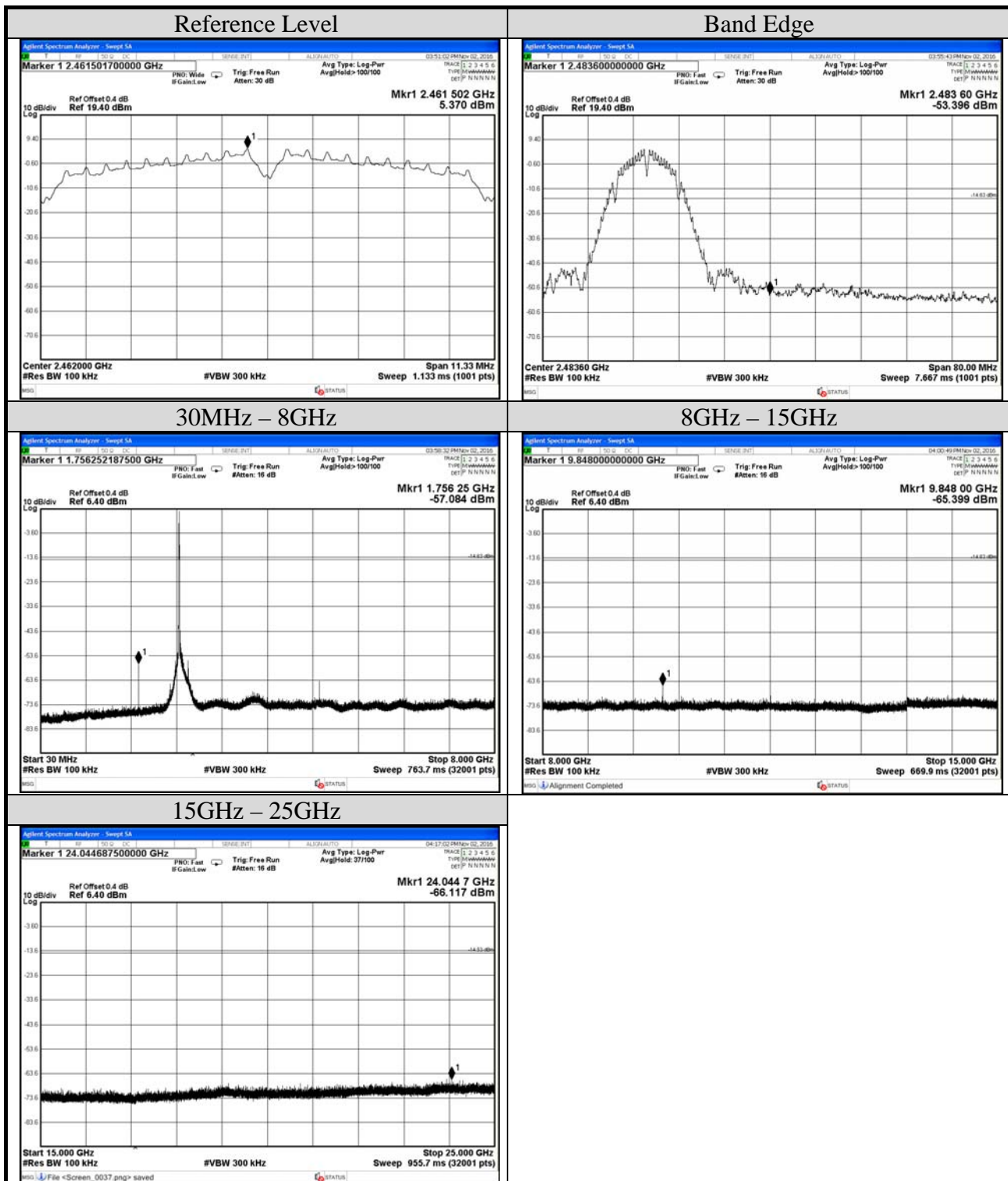




Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11b	Frequency	TX 2437MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0



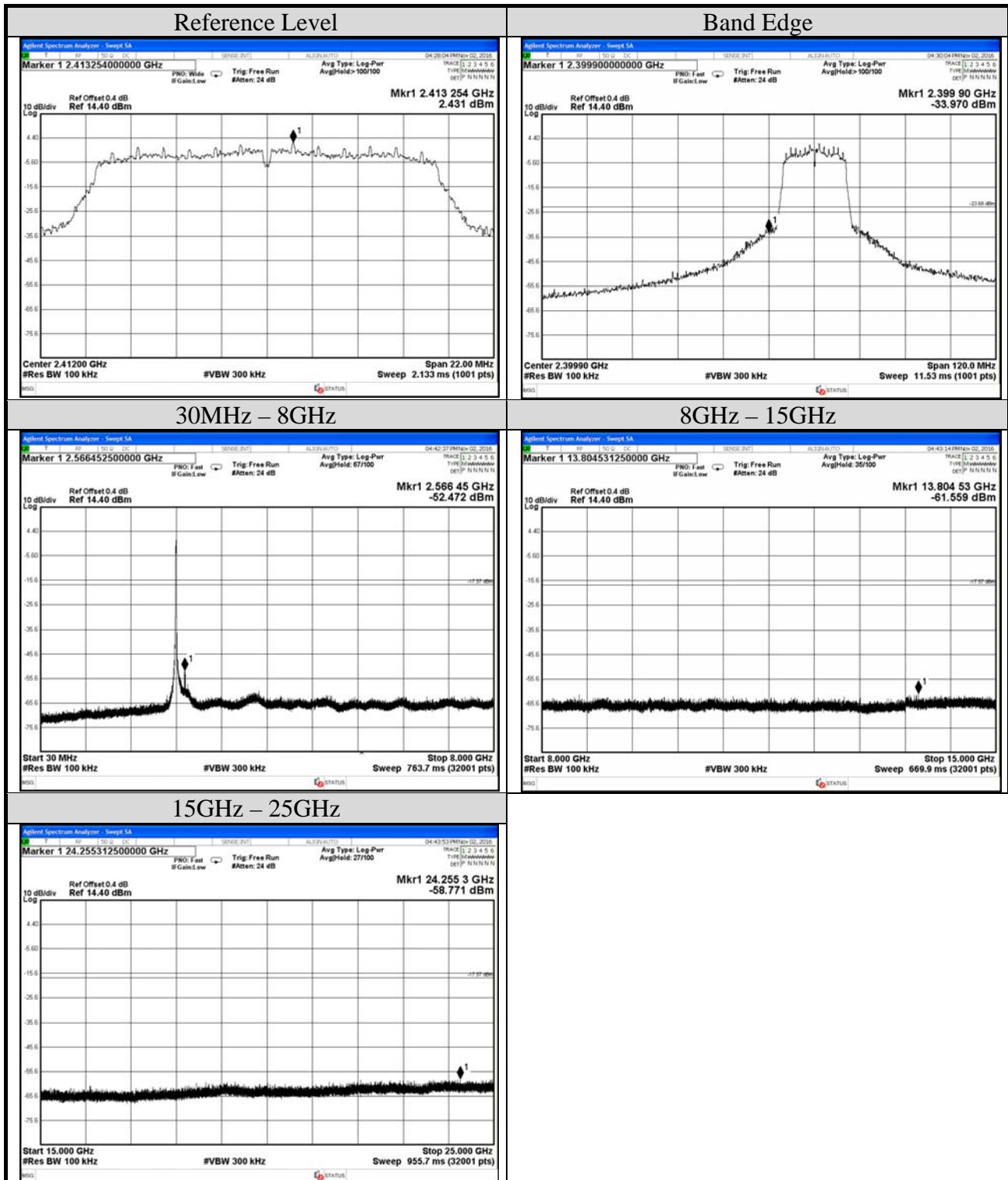
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Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11b	Frequency	TX 2462MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0



AUDIX Technology Corp.  
No. 53-11, Dingfu, Linkou, Dist.,  
New Taipei City 244, Taiwan

Tel: +886 2 26099301  
Fax: +886 2 26099303

Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11g	Frequency	TX 2412MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0

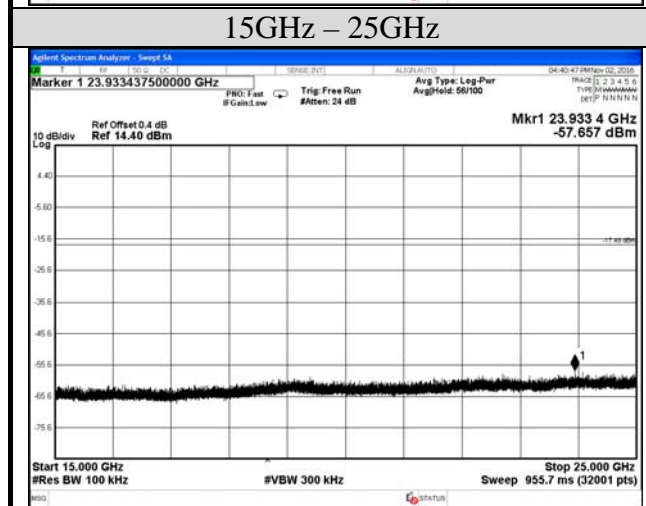
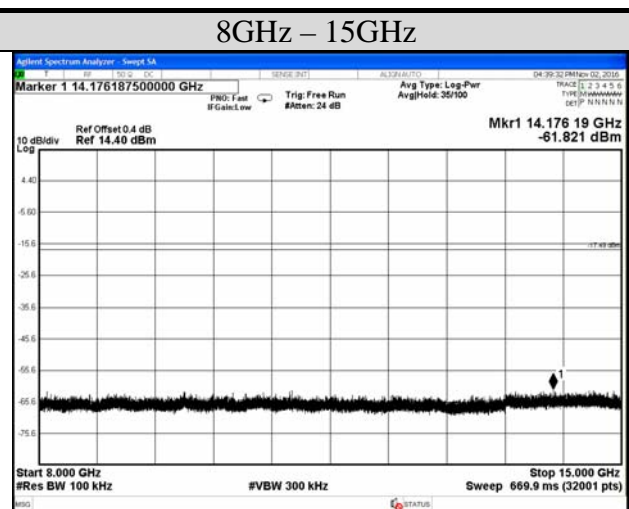
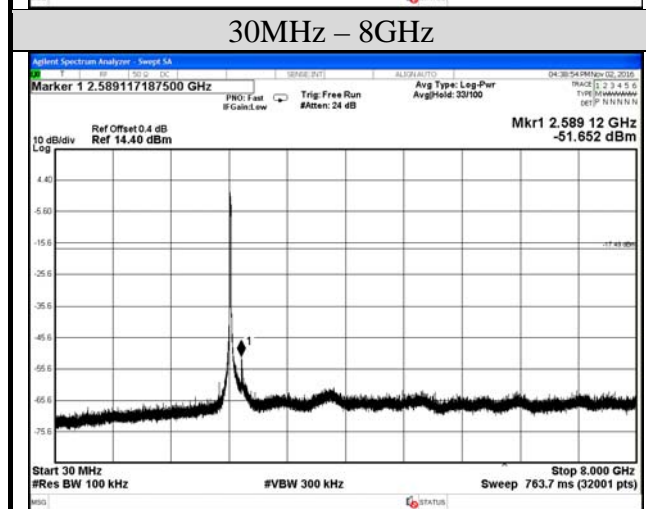
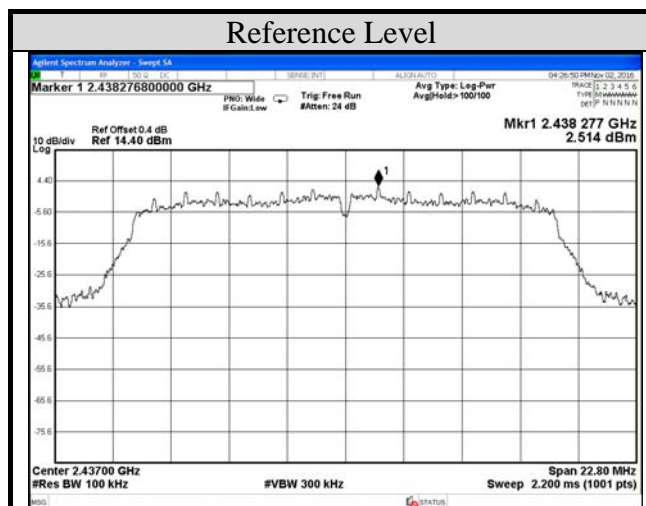


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Report Number: EM-F160856

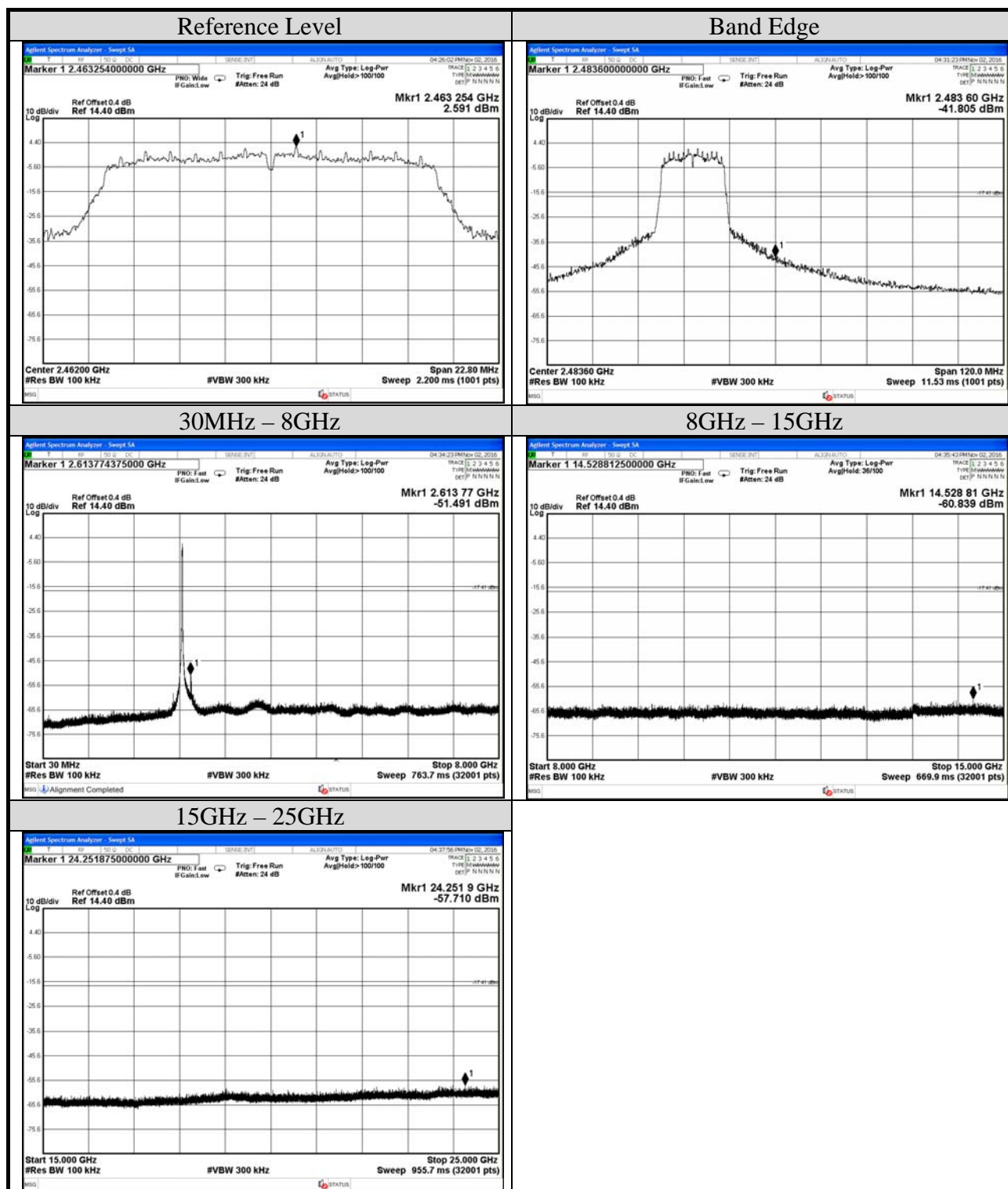
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Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11g	Frequency	TX 2437MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0

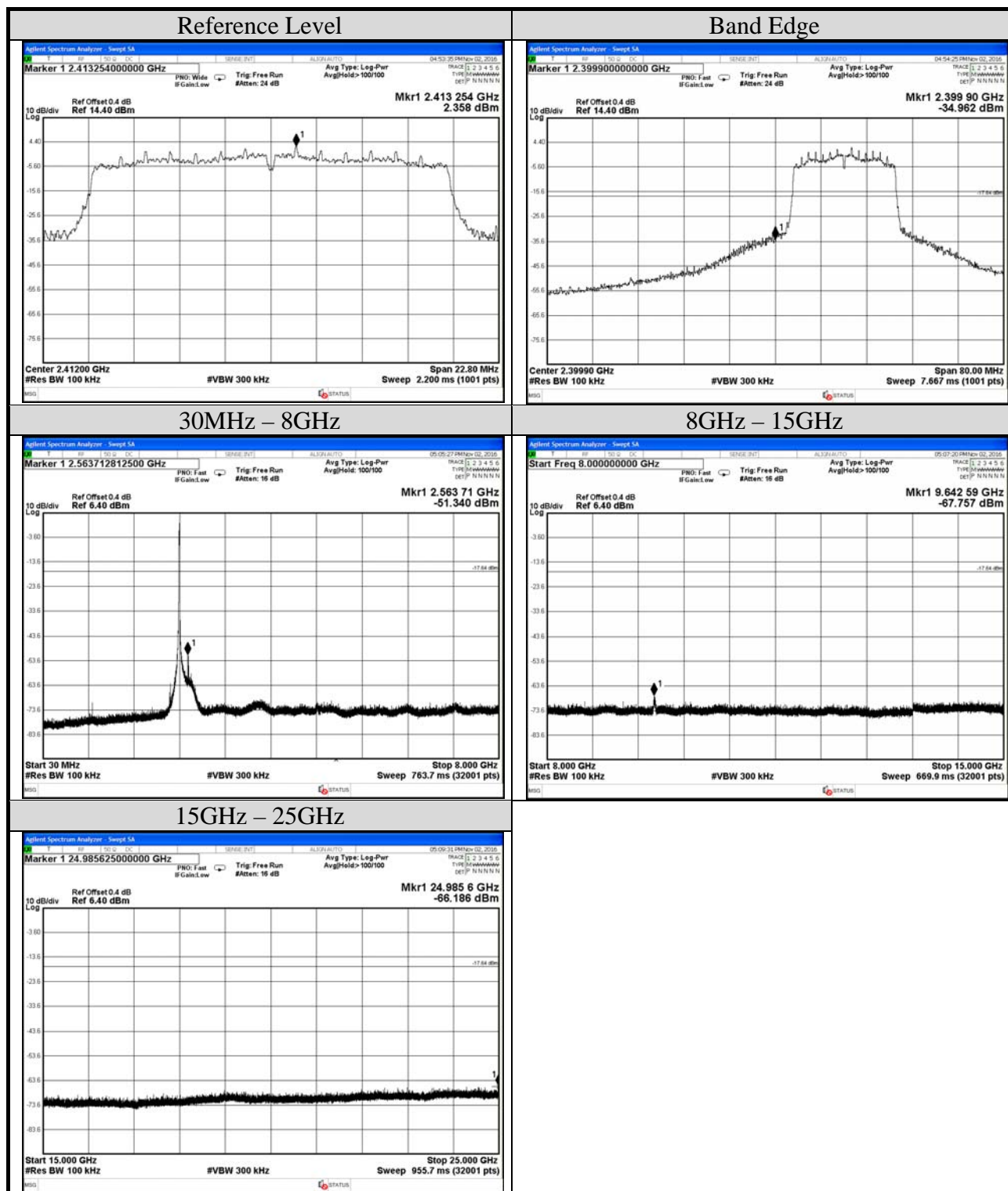




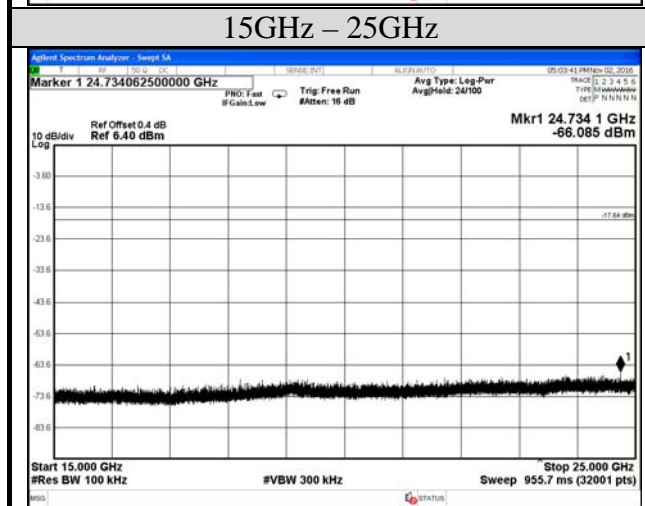
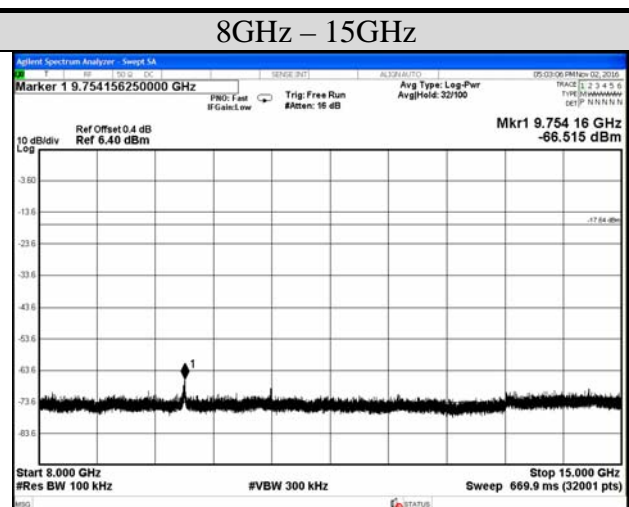
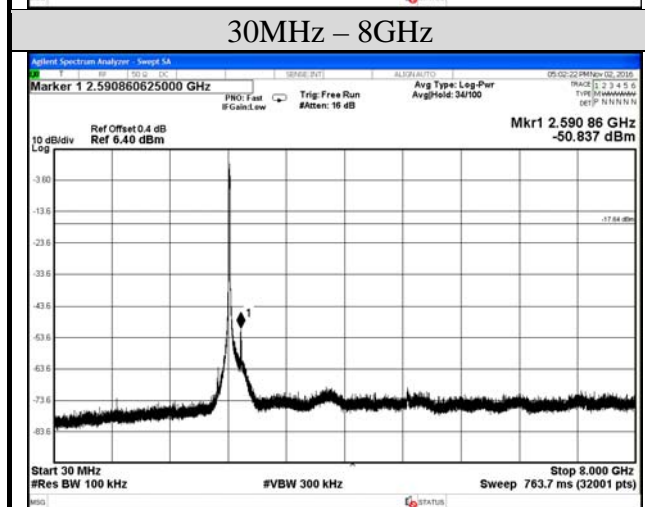
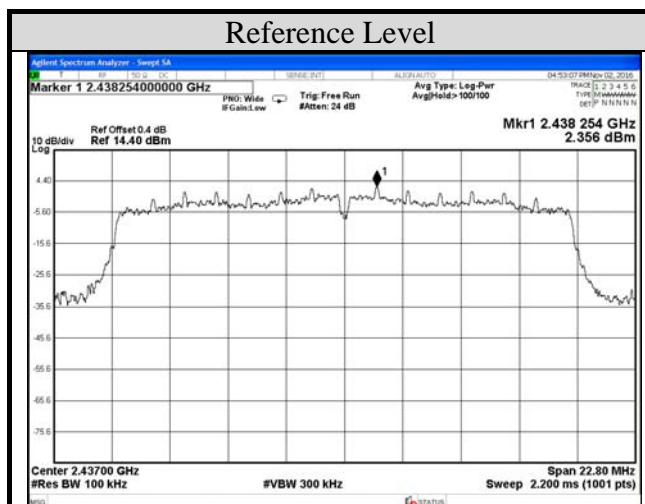
Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11g	Frequency	TX 2462MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0



Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11n-HT20	Frequency	TX 2412MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0

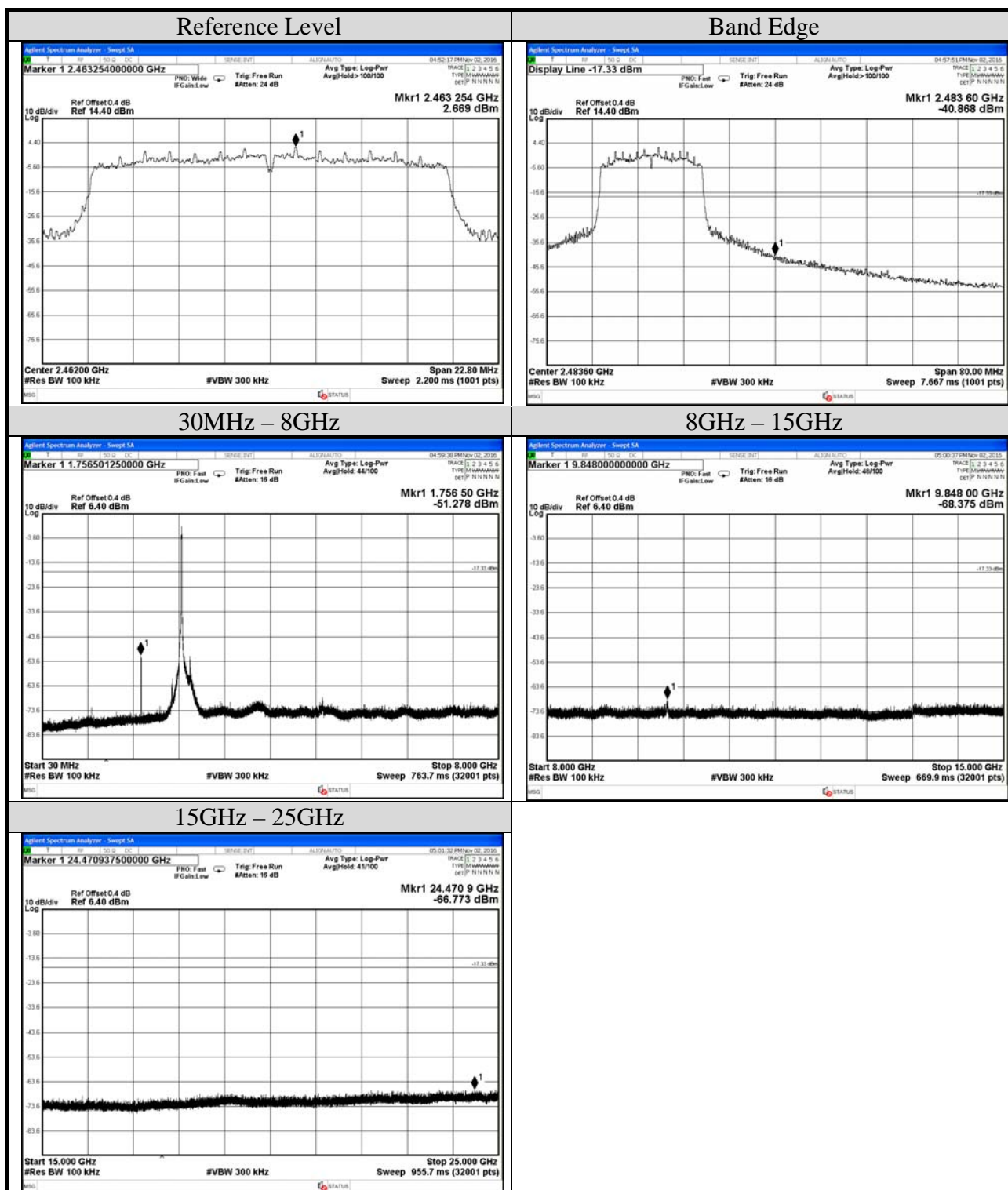


Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11n-HT20	Frequency	TX 2437MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0

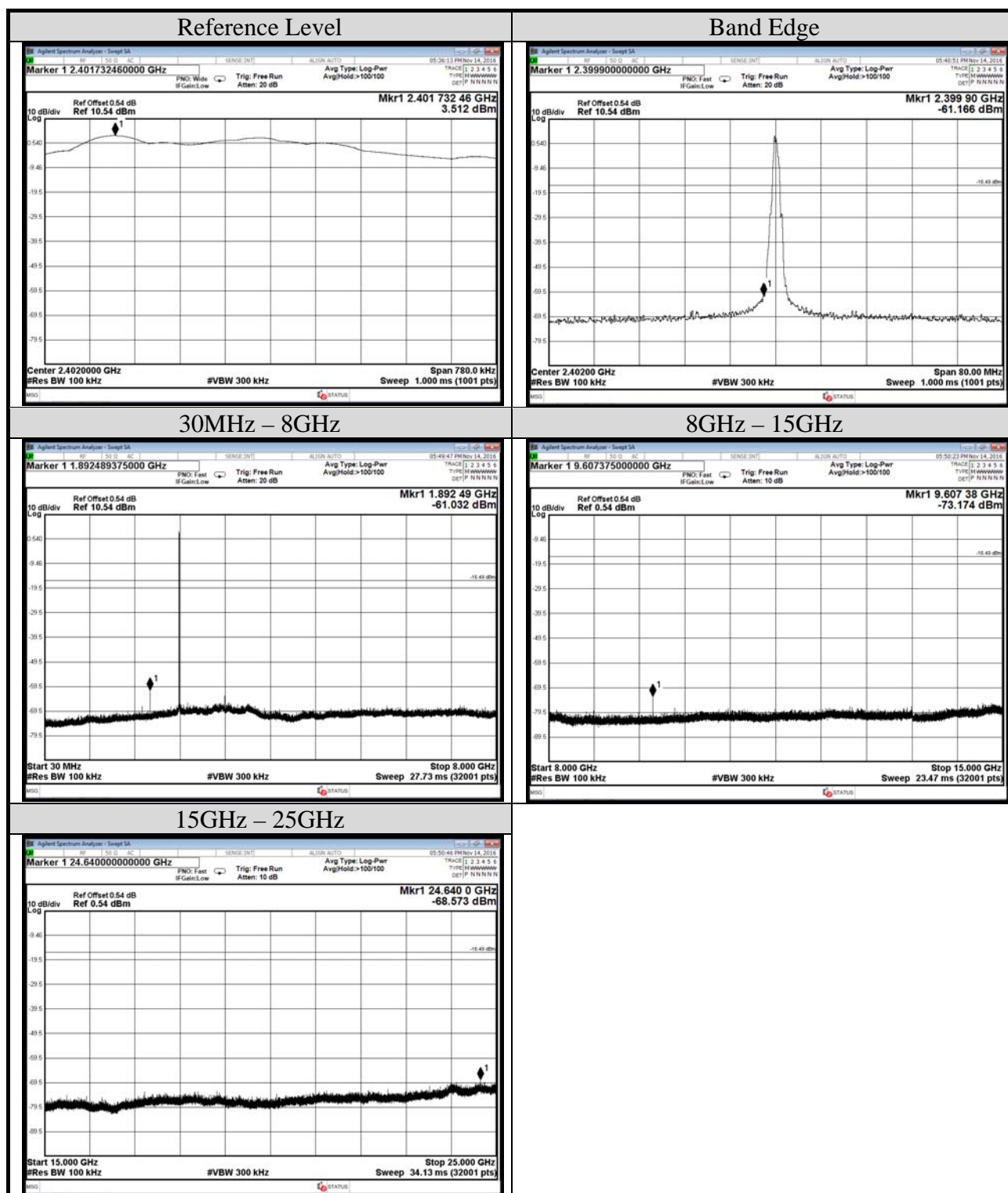




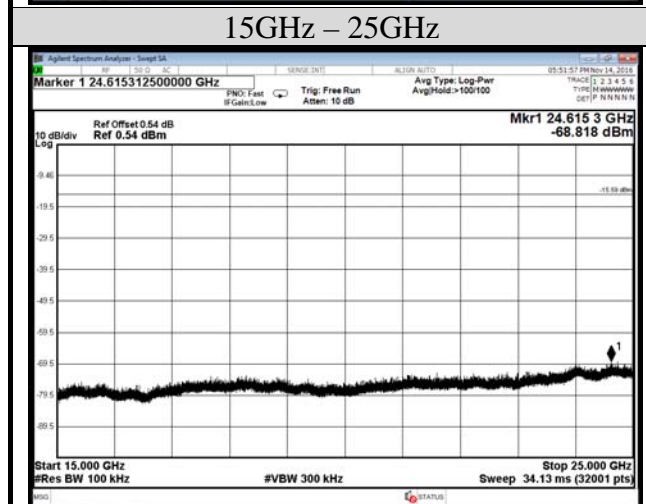
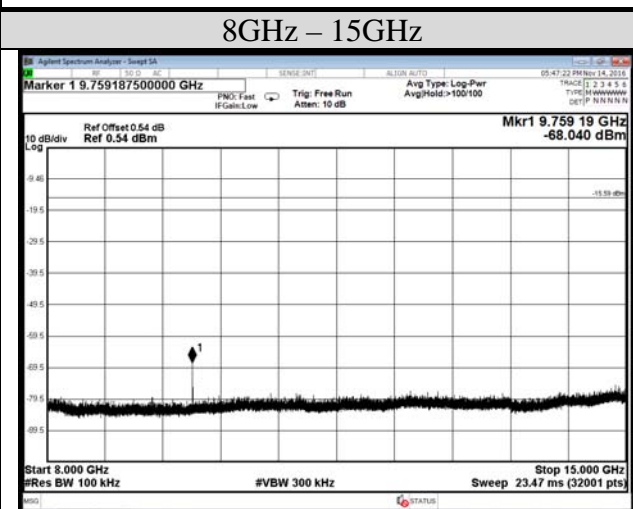
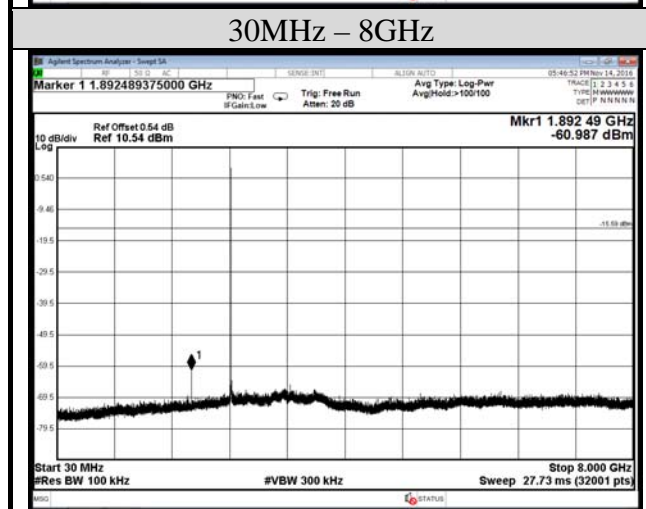
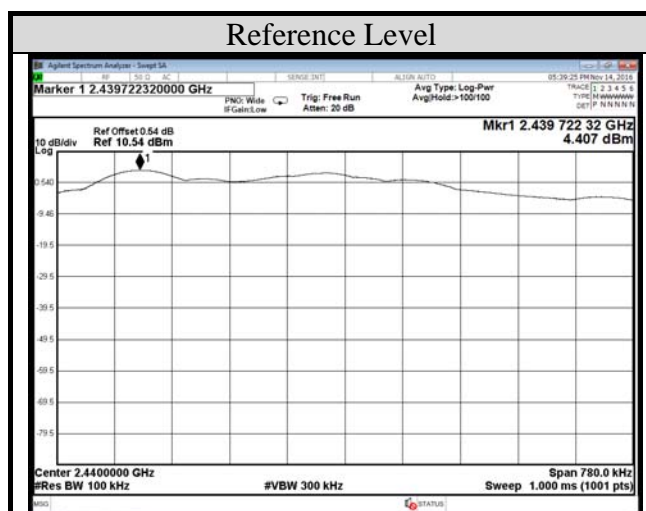
Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.4dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	802.11n-HT20	Frequency	TX 2462MHz
Test Model	WT002		
Simultaneous Factor	10 log(n) (Note: "n" is antenna number)		0



Test Date	2016/11/14	Temp./Hum.	24°C/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	BLE	Frequency	TX 2402MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0



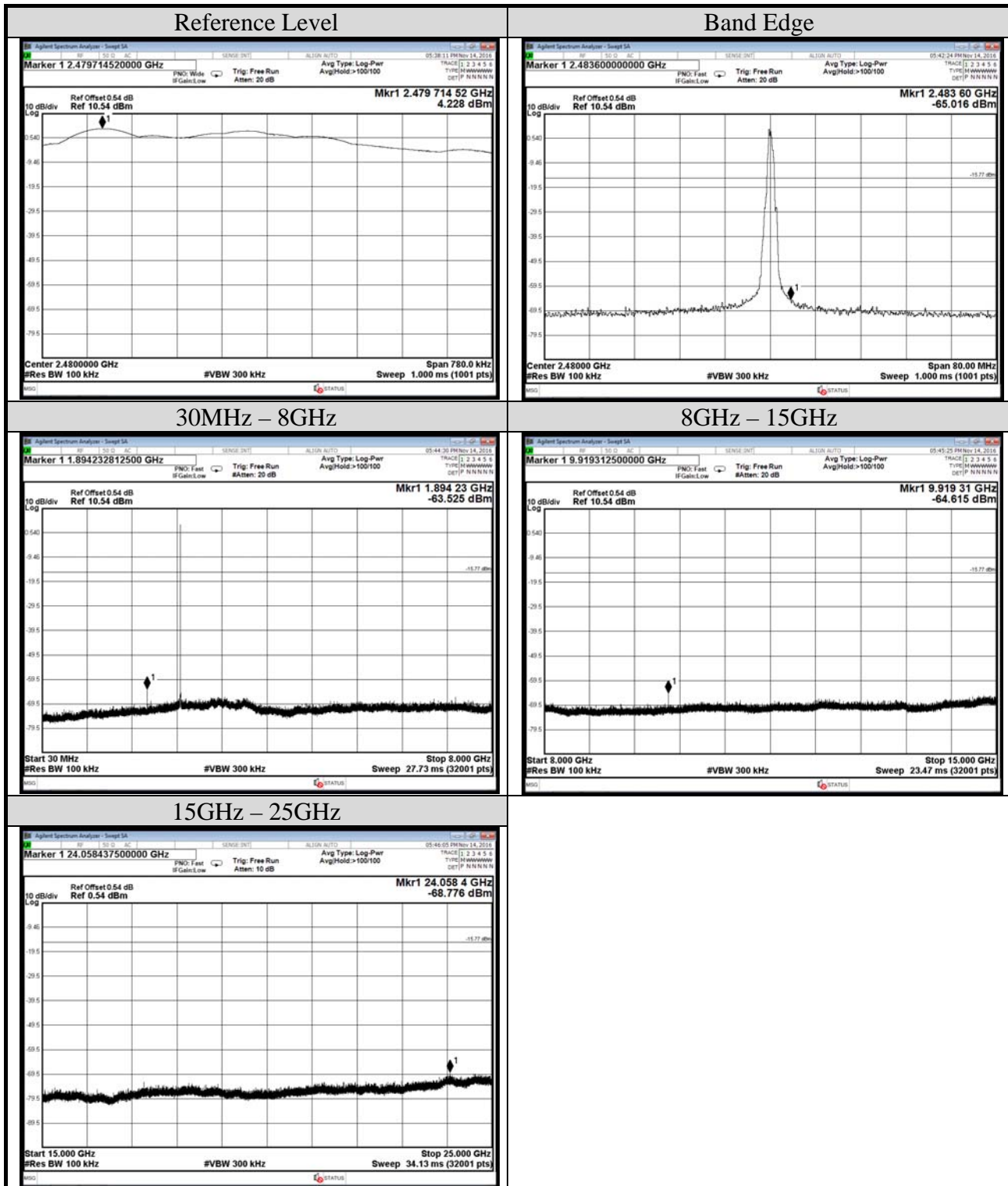
Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	BLE	Frequency	TX 2440MHz
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0



AUDIX Technology Corp.  
No. 53-11, Dingfu, Linkou, Dist.,  
New Taipei City 244, Taiwan

Tel: +886 2 26099301  
Fax: +886 2 26099303

Test Date	2016/11/02	Temp./Hum.	24°C/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Mode	BLE	Frequency	TX 2480MHz
Test Model	WT002		
Simultaneous Factor	10 log(n) (Note: "n" is antenna number)	0	



File Number: C1M1605327

Report Number: EM-F160856

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## A.4 POWER SPECTRAL DENSITY

Test Date	2016/11/02~ 14	Temp./Hum.	24°C/55%
Cable Loss	WLAN: 0.4dB BLE: 0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		
Simultaneous Factor 10 log(n) (Note: "n" is antenna number)			0

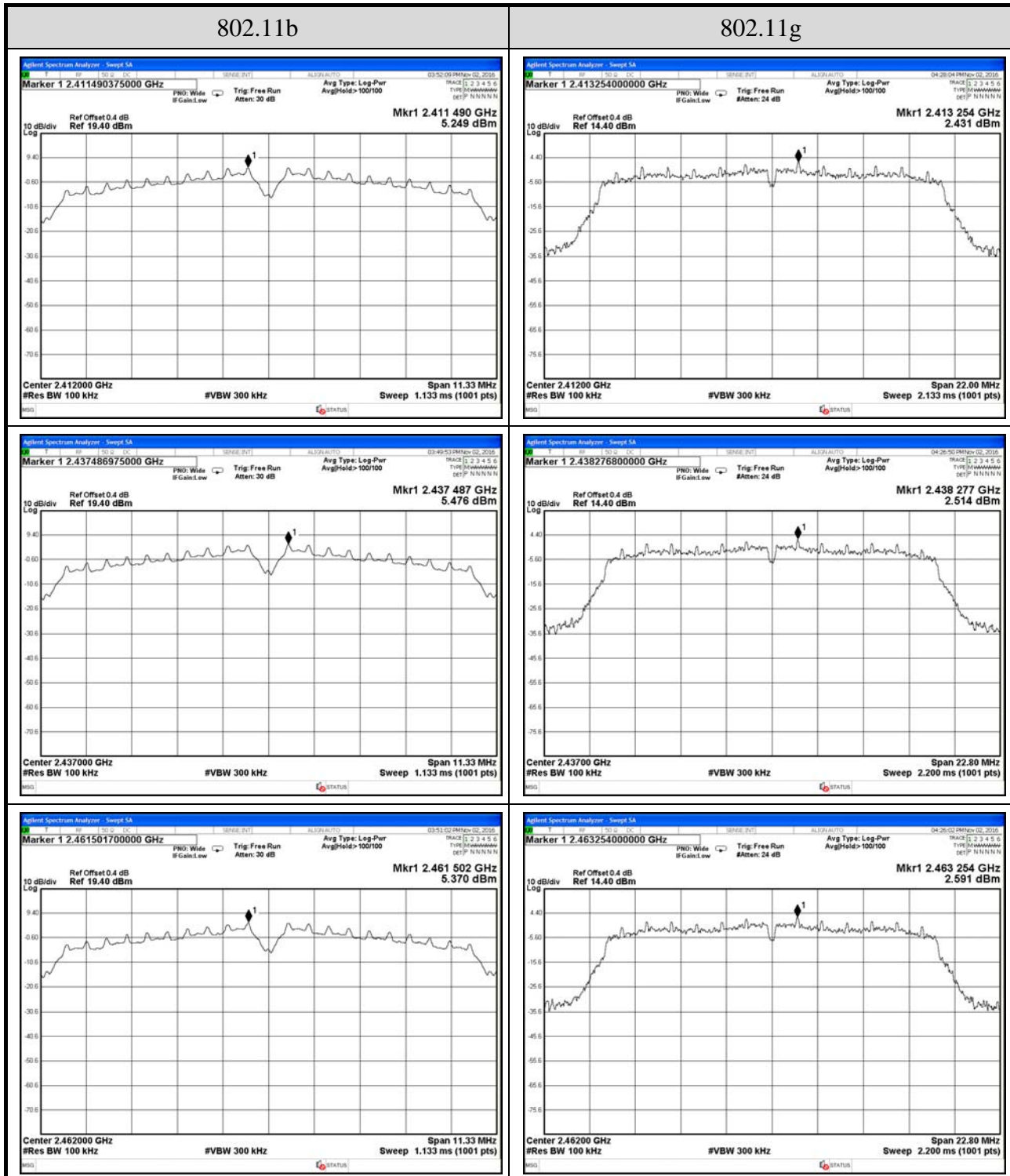
### A.4.1 Power Spectral Density Result

Modulation Type	Centre Frequency (MHz)	Power Spectral Density (dBm)	Limit
802.11b	2412	5.249	< 8 dBm/3kHz
	2437	5.476	
	2462	5.370	
802.11g	2412	2.431	
	2437	2.514	
	2462	2.591	
802.11n-HT20	2412	2.358	
	2437	2.356	
	2462	2.669	
BLE	2402	3.512	
	2440	4.407	
	2480	4.228	

Note: All results have been included cable loss and Simultaneous Factor.

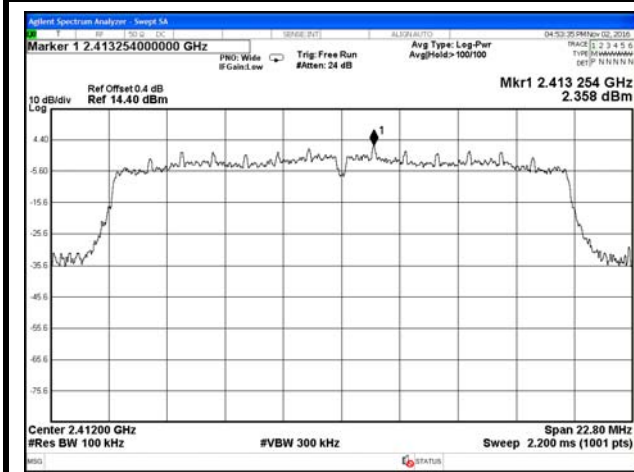


## A.4.2 Measurement Plots

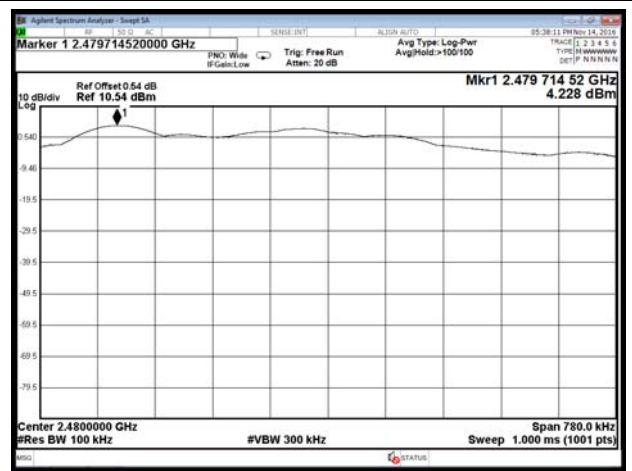
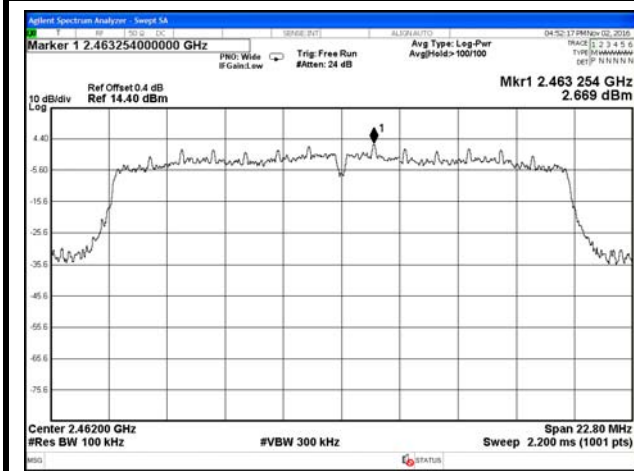
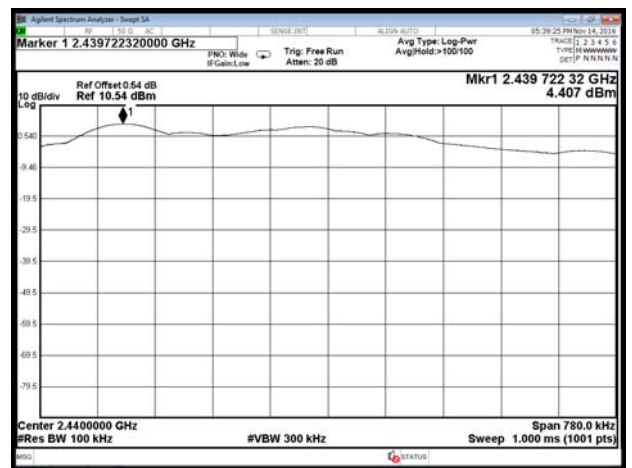
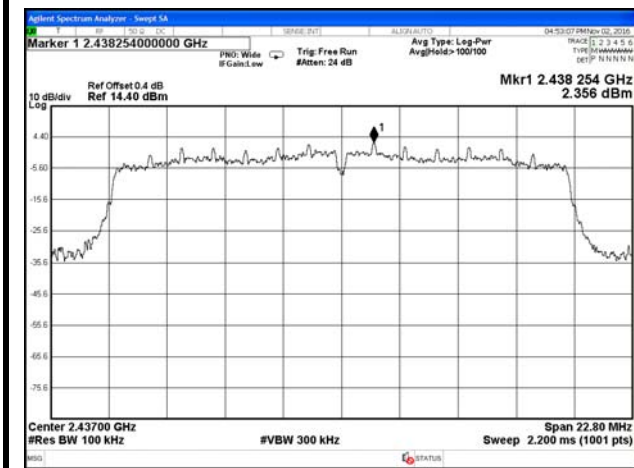
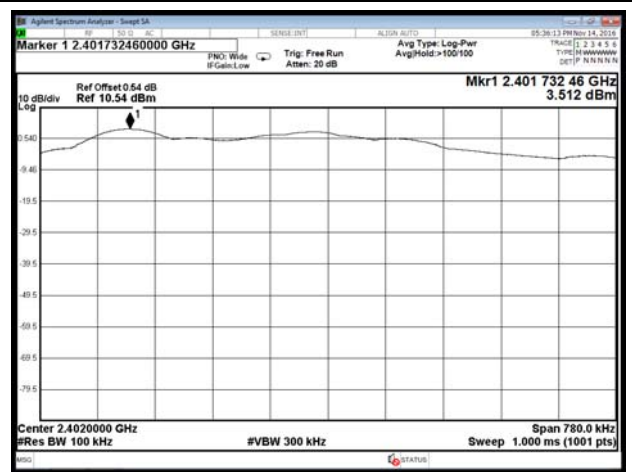


Note: All results have been included cable loss and Simultaneous Factor.

## 802.11n-HT20



## BLE



Note: All results have been included cable loss and Simultaneous Factor.