

FCC 15.247 2.4 GHz Report

for

ASUSTeK Computer Inc.

4F., No. 150, Li-Te Rd., Pietou, Taipei, Taiwan

Brand : ASUS
Product Name : Dual-band Wireless-AC750 Router
Model Name : (1)RT-AC51U (2)RT-AC750
FCC ID : MSQ-RTDV00

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



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TEST REPORT CERTIFICATION

Applicant : ASUSTeK Computer Inc.
Manufacture : Taicang T&W Electronics. Co., Ltd
Product Name : Dual-band Wireless-AC750 Router
Model No. : (1)RT-AC51U (2)RT-AC750
Serial No. : N/A
Brand : ASUS

Applicable Standards:

47 CFR FCC Part 15 Subpart C: 2015
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. 06. 16 ~ 28

Date of Report: 2016. 06. 29

Producer: 
(Annie Yu/Administrator)

Signatory: 
(Ben Cheng/Manager)

1. REPORT HISTORY

Edition No.	Date of Rev.	Revision Summary	Report No.
0	2016. 06. 29	Original Report.	EM-F160401

2. SUMMARY OF TEST RESULTS

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

3. GENERAL INFORMATION

3.1. Description of EUT

Product	Dual-band Wireless-AC750 Router																				
Model Number	(1)RT-AC51U (2)RT-AC750 All models are identical except for designation of marketing purpose. The model RT-AC51U was tested in this report.																				
Serial Number	N/A																				
Brand Name	ASUS																				
Applicant	ASUSTeK Computer Inc. 4F., No. 150, Li-Te Rd., Pietou, Taipei, Taiwan																				
Manufacture	Taicang T&W Electronics. Co., Ltd Jiangnan Road 89, Ludu Town, Taicang, Suzhou, Jiangsu, 215412, P.R.China																				
RF Features	802.11a/b/g/n/ac																				
Transmit Type	<table border="1"> <thead> <tr> <th colspan="2">2.4 GHz</th> </tr> </thead> <tbody> <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>2T2R</td> </tr> <tr> <td>802.11n-HT40</td> <td>2T2R</td> </tr> <tr> <th colspan="2">UNII Bands</th> </tr> <tr> <td>802.11a</td> <td>1T1R</td> </tr> <tr> <td>802.11n-HT20/ 802.11ac-VHT20</td> <td>1T1R</td> </tr> <tr> <td>802.11n-HT40/ 802.11ac-VHT40</td> <td>1T1R</td> </tr> <tr> <td>802.11ac-VHT80</td> <td>1T1R</td> </tr> </tbody> </table>	2.4 GHz		802.11b	1T1R	802.11g	1T1R	802.11n-HT20	2T2R	802.11n-HT40	2T2R	UNII Bands		802.11a	1T1R	802.11n-HT20/ 802.11ac-VHT20	1T1R	802.11n-HT40/ 802.11ac-VHT40	1T1R	802.11ac-VHT80	1T1R
2.4 GHz																					
802.11b	1T1R																				
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802.11n-HT40	2T2R																				
UNII Bands																					
802.11a	1T1R																				
802.11n-HT20/ 802.11ac-VHT20	1T1R																				
802.11n-HT40/ 802.11ac-VHT40	1T1R																				
802.11ac-VHT80	1T1R																				
Switching Adapter #1 (2C)	Shenzhen Gongjin, M/N: S12B22-120A100-C4 I/P: 100-240V~, 50/60Hz, max 0.5A O/P: 12V, 1A Cord: Unshielded, Undetachable, 1.5m																				
Switching Adapter #2 (2C)	ShenZhen SOY, M/N: SUN-1200100US I/P: 100-240V~, 50/60Hz, 0.3A O/P: 12V, 1.0A Cord: Unshielded, Undetachable, 1.5m																				
Date of Receipt of Sample	2016. 06. 07																				

3.2. 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 300
802.11n-HT40	2422-2452	7		

Channel List			
802.11 b/g/n-HT20		802.11n-HT40	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
8	2447		
9	2452		
10	2457		
11	2462		

3.3. Antenna Information

2.4G Antenna						
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency	Max Gain (dBi)	Directional Gain (dBi)
1	RFDPA141015NNA B301 (Antenna 0)	PSA	Dipole Antenna	2.4GHz	5	7.07 ^{Note1}
2	TA2430DBE (Antenna 1)	T&W Electronics	PIFA Antenna	2.4GHz	3	

Note 1. Directional gain = $10 \log[(10^{5/20} + 10^{3/20})^2 / 2] = 7.07\text{dBi}$

5G Antenna					
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency	Max Gain (dBi)
1	RFDPA141010NN5 B301	PSA	Dipole Antenna	5GHz	5

3.4. Data Rate Relative to Output Power

802.11b							
Channel	Modulation		Date Rate (Mbps)	Power (dBm)			
1	DBPSK		1	17.57			
1	DQPSK		2	17.51			
1	CCK		5.5	17.45			
1	CCK		11	17.33			
802.11g							
Channel	Modulation		Date Rate (Mbps)	Power (dBm)			
1	BPSK		6	14.15			
1	BPSK		9	14.11			
1	QPSK		12	14.06			
1	QPSK		18	13.99			
1	16-QAM		24	13.91			
1	16-QAM		36	13.82			
1	64-QAM		48	13.75			
1	64-QAM		54	13.70			
802.11n-HT20				802.11n-HT40			
Channel	Modulation	Date Rate	Power (dBm)	Channel	Modulation	Date Rate	Power (dBm)
1	BPSK	MCS8	14.69	3	BPSK	MCS8	15.18
1	QPSK	MCS9	14.65	3	QPSK	MCS9	15.13
1	QPSK	MCS10	14.61	3	QPSK	MCS10	15.07
1	16-QAM	MCS11	14.55	3	16-QAM	MCS11	15.01
1	16-QAM	MCS12	14.48	3	16-QAM	MCS12	14.97
1	64-QAM	MCS13	14.43	3	64-QAM	MCS13	14.92
1	64-QAM	MCS14	14.37	3	64-QAM	MCS14	14.86
1	64-QAM	MCS15	14.31	3	64-QAM	MCS15	14.81

Note: Above results are assessed in average power.

3.5. Test Configuration

Mode	Duty Cycle (x)	T (ms)	Duty Cycle Factor (dB)
802.11b	1	N/A	N/A
802.11g	1	N/A	N/A
802.11n-HT20	1	N/A	N/A
802.11n-HT40	1	N/A	N/A

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 Note3	Radiated Band Edge Note1	802.11b	1Mbps	1/11
		802.11g	6Mbps	1/11
		802.11n-HT20	MCS8	1/11
		802.11n-HT40	MCS8	3/9
	Radiated Spurious Emission Note1 & 2	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT40	MCS8	3/6/9
Conducted Test Case Note3	6dB Bandwidth	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		802.11n-HT40	MCS8	3/6/9
	Peak Power Spectral Density	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		802.11n-HT40	MCS8	3/6/9
	Peak Output Power	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		802.11n-HT40	MCS8	3/6/9
	Band Edge	802.11b	1Mbps	1/11
		802.11g	6Mbps	1/11
		802.11n-HT20	MCS8	1/11
		802.11n-HT40	MCS8	3/9
	Spurious Emission	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS8	1/6/11
		802.11n-HT40	MCS8	3/6/9

Note 1:

Mobile Device

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.

Note 3: We performed testing of the worst Switching Adapter: Shenzhen Gongjin, M/N S12B22-120A100-C4.

3.6. Tested Supporting System List

3.6.1. Support Peripheral Unit

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Notebook PC	acer	MS2343	N/A	HLZ-AR5B97
2.	Power Socket	N/A	N/A	N/A	N/A

3.6.2. Cable Lists

No.	Cable Description Of The Above Support Units
1.	LAN Cable: Unshielded, Detachable, 0.6m Adapter: DELTA, M/N ADP-90CDDDB AC Power Cord: Unshielded, Detachable, 1.8m DC Power Cord: Unshielded, Detachable, 1.8m, Bonded a ferrite core
2.	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

Test program "MT7620QA" is used for enabling EUT WLAN function under continues transmitting and choosing data rate/ channel.

3.9. Description of Test Facility

Test Firm Name	:	AUDIX Technology Corporation EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan
Test Location & Facility	:	No. 7 Shielded Room & Semi-Anechoic Chamber & Fully Anechoic Chamber No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724
FCC OET Designation	:	TW1004 & TW1090

3.10. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	±3.50dB
Radiation Test (Distance: 3m)	30MHz~1000MHz	± 3.68dB
	Above 1GHz	± 5.82dB

Remark : Uncertainty = $ku_c(y)$

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	ESCI	101276	2016. 03. 31	1 Year
2.	A.M.N.	R&S	ESH2-Z5	100366	2016. 03. 15	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-881-13	2016. 01. 07	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	101495	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	2015. 09. 14	1 Year
2.	Test Receiver	R & S	ESCS30	100338	2015. 06. 24	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.6.110601	N.C.R.	N.C.R.

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

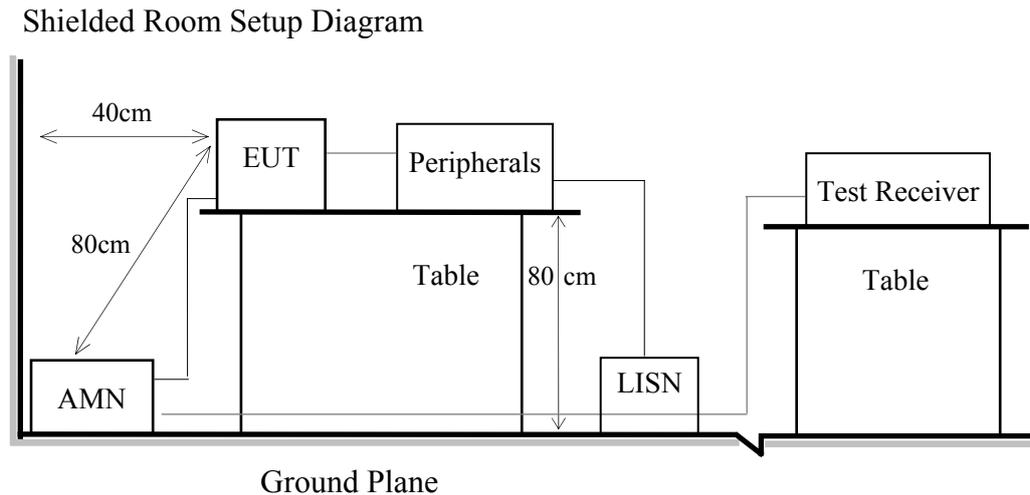
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	2015. 08. 20	1 Year
2.	Amplifier	HP	8449B	3008A02678	2016. 03. 04	1 Year
3.	Horn Antenna	ETS-Lindgren	3117	00135902	2016. 03. 09	1 Year
4.	Horn Antenna	EMCO	3116	2653	2015. 10. 20	1 Year
5.	2.4GHz Notch Filter	K&L	7NSL10-244 1.5E130.5-00	1	2015. 07. 28	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	MY53310269	2015. 11. 28	1 Year
2.	Power Meter	Anritsu	ML2495A	1145008	2015. 10. 23	1 Year
3.	Power Sensor	Anritsu	MA2411B	1126096	2015. 10. 23	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 μ V	56 ~ 46 dB μ V
500kHz ~ 5MHz	56 dB μ V	46 dB μ V
5MHz ~ 30MHz	60 dB μ V	50 dB μ 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.

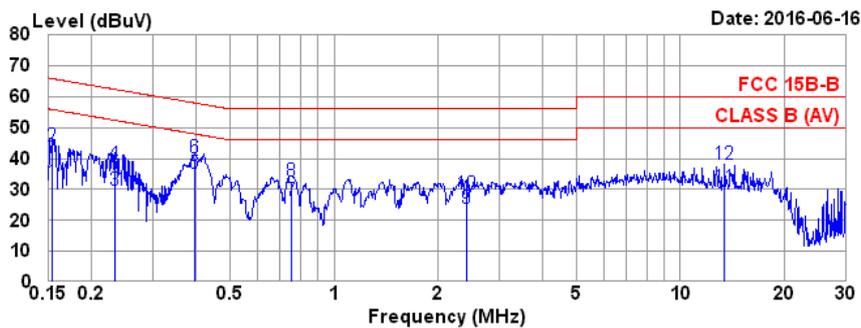
5.3. Test Procedure

- 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	2016/06/16	Temp./Hum.	25 /65%
Test Voltage	AC 120V, 60Hz		

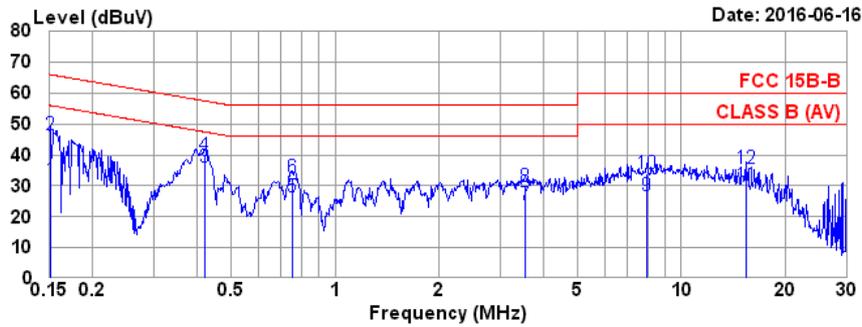


Site no. : No.7 Shielded Room Data no. : 2
 Condition : ESH2-Z5 366 Phase : NEUTRAL
 Limit : FCC 15B-B
 Env. / Ins. : 25°C / 65% ESCI (1276) Engineer : Nick Du
 EUT : RT-AC51U
 Power Rating : 120Vac/60Hz
 Test Mode : Operating
 ADP:S12B22-120A100-C4

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.153	0.17	0.03	9.85	22.38	32.43	55.82	23.39	Average
2	0.153	0.17	0.03	9.85	34.06	44.11	65.82	21.71	QP
3	0.234	0.18	0.03	9.85	19.69	29.75	52.30	22.55	Average
4	0.234	0.18	0.03	9.85	28.20	38.26	62.30	24.04	QP
5	0.398	0.19	0.03	9.85	25.16	35.23	47.90	12.67	Average
6	0.398	0.19	0.03	9.85	30.18	40.25	57.90	17.65	QP
7	0.755	0.20	0.04	9.88	16.38	26.50	46.00	19.50	Average
8	0.755	0.20	0.04	9.88	22.64	32.76	56.00	23.24	QP
9	2.409	0.24	0.07	9.94	13.50	23.75	46.00	22.25	Average
10	2.409	0.24	0.07	9.94	18.06	28.31	56.00	27.69	QP
11	13.408	0.60	0.16	9.89	19.90	30.55	50.00	19.45	Average
12	13.408	0.60	0.16	9.89	27.56	38.21	60.00	21.79	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

Test Date	2016/06/16	Temp./Hum.	25 /65%
Test Voltage	AC 120V, 60Hz		

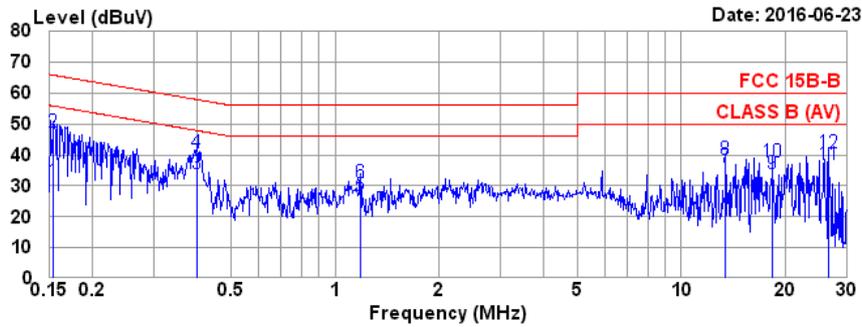


Site no. : No.7 Shielded Room Data no. : 1
 Condition : ESH2-Z5 366 Phase : LINE
 Limit : FCC 15B-B
 Env. / Ins. : 25°C / 65% ESCI (1276) Engineer : Nick Du
 EUT : RT-AC51U
 Power Rating : 120Vac/60Hz
 Test Mode : Operating
 ADP:S12B22-120A100-C4

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.151	0.17	0.03	9.85	21.85	31.90	55.96	24.06	Average
2	0.151	0.17	0.03	9.85	36.58	46.63	65.96	19.33	QP
3	0.421	0.17	0.03	9.85	25.94	35.99	47.42	11.43	Average
4	0.421	0.17	0.03	9.85	29.76	39.81	57.42	17.61	QP
5	0.755	0.17	0.04	9.88	16.41	26.50	46.00	19.50	Average
6	0.755	0.17	0.04	9.88	22.75	32.84	56.00	23.16	QP
7	3.528	0.29	0.08	9.90	13.48	23.75	46.00	22.25	Average
8	3.528	0.29	0.08	9.90	19.68	29.95	56.00	26.05	QP
9	7.935	0.38	0.13	9.87	16.35	26.73	50.00	23.27	Average
10	7.935	0.38	0.13	9.87	23.69	34.07	60.00	25.93	QP
11	15.388	0.61	0.17	9.90	19.58	30.26	50.00	19.74	Average
12	15.388	0.61	0.17	9.90	25.02	35.70	60.00	24.30	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

Test Date	2016/06/23	Temp./Hum.	25 /65%
Test Voltage	AC 120V, 60Hz		

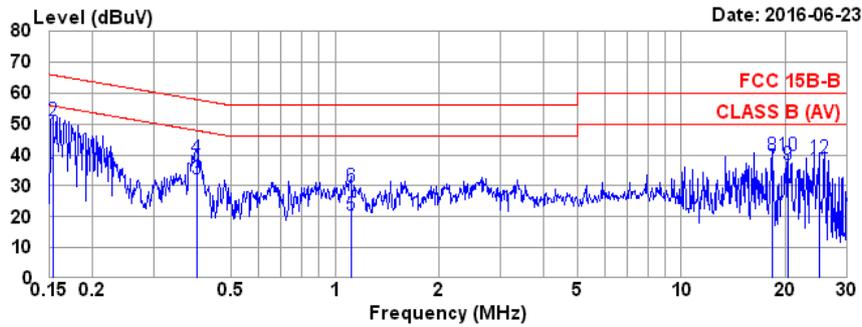


Site no. : No.7 Shielded Room Data no. : 4
 Condition : ESH2-Z5 366 Phase : NEUTRAL
 Limit : FCC 15B-B
 Env. / Ins. : 25°C / 65% ESCI (1276) Engineer : Nick Du
 EUT : RT-AC51U
 Power Rating : 120Vac/60Hz
 Test Mode : Operating
 ADP:SUN-1200100US

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.154	0.17	0.03	9.85	21.30	31.35	55.78	24.43	Average
2	0.154	0.17	0.03	9.85	37.35	47.40	65.78	18.38	QP
3	0.400	0.19	0.03	9.85	24.05	34.12	47.86	13.74	Average
4	0.400	0.19	0.03	9.85	30.56	40.63	57.86	17.23	QP
5	1.184	0.21	0.05	9.92	16.58	26.76	46.00	19.24	Average
6	1.184	0.21	0.05	9.92	20.97	31.15	56.00	24.85	QP
7	13.420	0.60	0.16	9.89	25.35	36.00	50.00	14.00	Average
8	13.420	0.60	0.16	9.89	28.05	38.70	60.00	21.30	QP
9	18.360	0.75	0.20	9.92	23.02	33.89	50.00	16.11	Average
10	18.360	0.75	0.20	9.92	26.90	37.77	60.00	22.23	QP
11	26.610	0.65	0.25	9.98	26.03	36.91	50.00	13.09	Average
12	26.610	0.65	0.25	9.98	29.90	40.78	60.00	19.22	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

Test Date	2016/06/23	Temp./Hum.	25 /65%
Test Voltage	AC 120V, 60Hz		



Site no. : No.7 Shielded Room Data no. : 3
 Condition : ESH2-Z5 366 Phase : LINE
 Limit : FCC 15B-B
 Env. / Ins. : 25°C / 65% ESCI (1276) Engineer : Nick Du
 EUT : RT-AC51U
 Power Rating : 120Vac/60Hz
 Test Mode : Operating
 ADP:SUN-1200100US

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.153	0.17	0.03	9.85	23.66	33.71	55.82	22.11	Average
2	0.153	0.17	0.03	9.85	41.07	51.12	65.82	14.70	QP
3	0.400	0.17	0.03	9.85	22.26	32.31	47.86	15.55	Average
4	0.400	0.17	0.03	9.85	29.02	39.07	57.86	18.79	QP
5	1.111	0.18	0.05	9.91	10.20	20.34	46.00	25.66	Average
6	1.111	0.18	0.05	9.91	19.81	29.95	56.00	26.05	QP
7	18.370	0.69	0.20	9.92	25.40	36.21	50.00	13.79	Average
8	18.370	0.69	0.20	9.92	28.92	39.73	60.00	20.27	QP
9	20.320	0.73	0.21	9.93	26.14	37.01	50.00	12.99	Average
10	20.320	0.73	0.21	9.93	28.89	39.76	60.00	20.24	QP
11	24.960	0.74	0.24	9.97	24.43	35.38	50.00	14.62	Average
12	24.960	0.74	0.24	9.97	28.22	39.17	60.00	20.83	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

6. RADIATED EMISSION MEASUREMENT

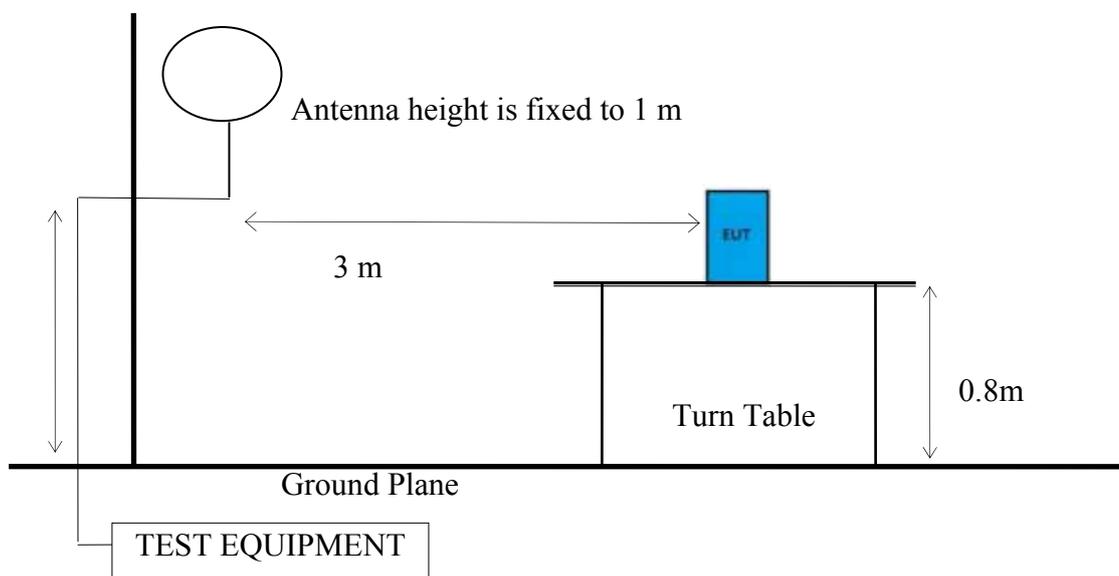
6.1. Block Diagram of Test Setup

6.1.1. Block Diagram of connection between EUT and simulators

Indicated as section 3.7

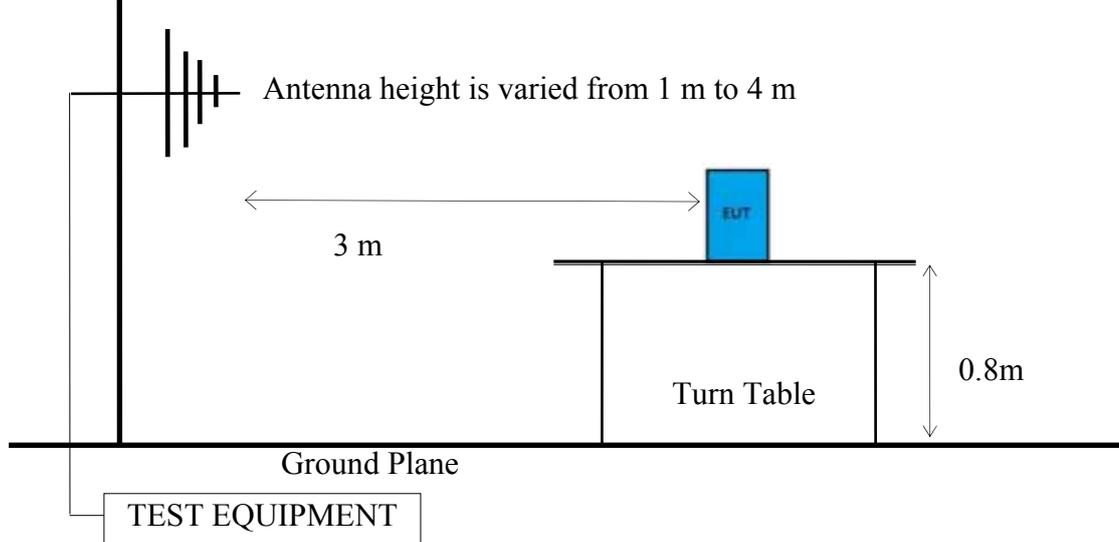
6.1.2. Semi Anechoic Chamber (3m) Setup Diagram for 9kHz-30MHz

Antenna Tower

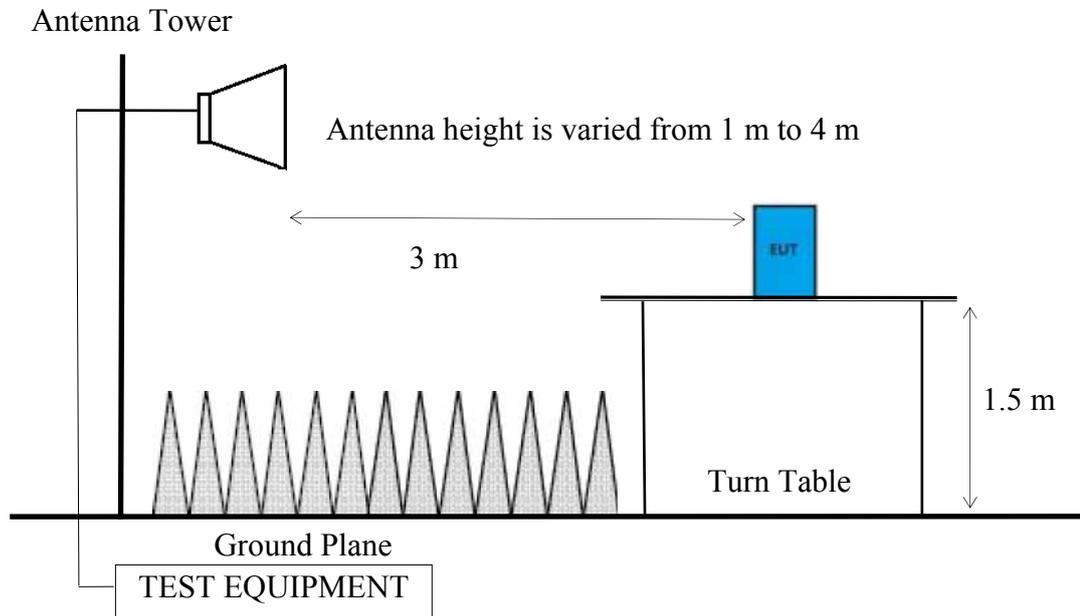


6.1.3. Semi Anechoic Chamber (3m) Setup Diagram for 30-1000 MHz

Antenna Tower



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 μ V/m	μ 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 μ V/m (Peak) 54.0 dB μ V/m (Average)	

Remark : (1) dB μ V/m = 20 log (μ 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 x 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 x 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	N/A	N/A	10 Hz
802.11g	N/A	N/A	10 Hz
802.11n-HT20	N/A	N/A	10 Hz
802.11n-HT40	N/A	N/A	10 Hz

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

ERP= Peak Emission Level-95.2dB-2.14dB

6.5. Test Results

PASSED.

Test Date	2016/06/21	Temp./Hum.	29 /52%
Test Voltage	AC 120V, 60Hz		

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 30MHz~1000MHz

[Note: We performed testing of the worst switching adapter]

Mode	802.11b	Frequency	TX 2437MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
240.49	11.86	4.27	27.62	43.75	46.00	2.25	Peak
414.12	15.78	5.78	14.49	36.05	46.00	9.95	Peak
828.31	20.18	7.27	12.08	39.53	46.00	6.47	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
43.58	11.52	2.56	23.89	37.97	40.00	2.03	Peak
484.93	16.77	6.34	11.48	34.59	46.00	11.41	Peak
831.22	20.20	7.28	14.02	41.50	46.00	4.50	Peak

Mode	802.11g	Frequency	TX 2437MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
236.61	11.62	4.24	26.17	42.03	46.00	3.97	Peak
415.09	15.78	5.78	14.80	36.36	46.00	9.64	Peak
831.22	20.20	7.28	10.91	38.39	46.00	7.61	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
51.34	8.08	2.65	26.65	37.38	40.00	2.62	Peak
484.93	16.77	6.34	11.09	34.20	46.00	11.80	Peak
830.25	20.20	7.28	14.72	42.20	46.00	3.80	Peak

Mode	802.11n-HT20	Frequency	TX 2437MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
240.49	11.86	4.27	27.85	43.98	46.00	2.02	Peak
414.12	15.78	5.78	14.29	35.85	46.00	10.15	Peak
830.25	20.20	7.28	10.99	38.47	46.00	7.53	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
47.46	9.56	2.61	25.49	37.66	40.00	2.34	Peak
482.99	16.73	6.32	10.33	33.38	46.00	12.62	Peak
831.22	20.20	7.28	13.29	40.77	46.00	5.23	Peak

Mode	802.11n-HT40	Frequency	TX 2437MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
240.49	11.86	4.27	27.10	43.23	46.00	2.77	Peak
484.93	16.77	6.34	13.98	37.09	46.00	8.91	Peak
828.31	20.18	7.27	12.90	40.35	46.00	5.65	Peak

Antenna at Vertical Polarization

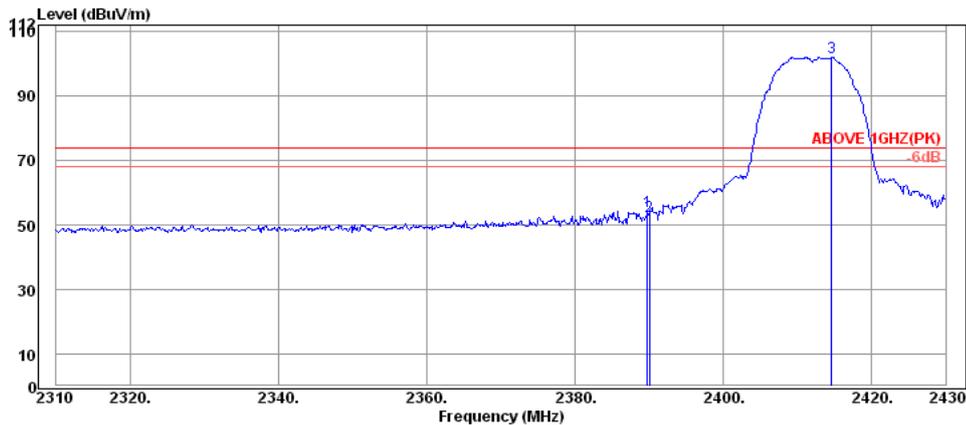
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
51.34	8.08	2.65	26.88	37.61	40.00	2.39	Peak
482.99	16.73	6.32	11.08	34.13	46.00	11.87	Peak
829.28	20.20	7.28	13.85	41.33	46.00	4.67	Peak

6.5.2. Frequency Above 1 GHz to 10th harmonics

Band Edge:

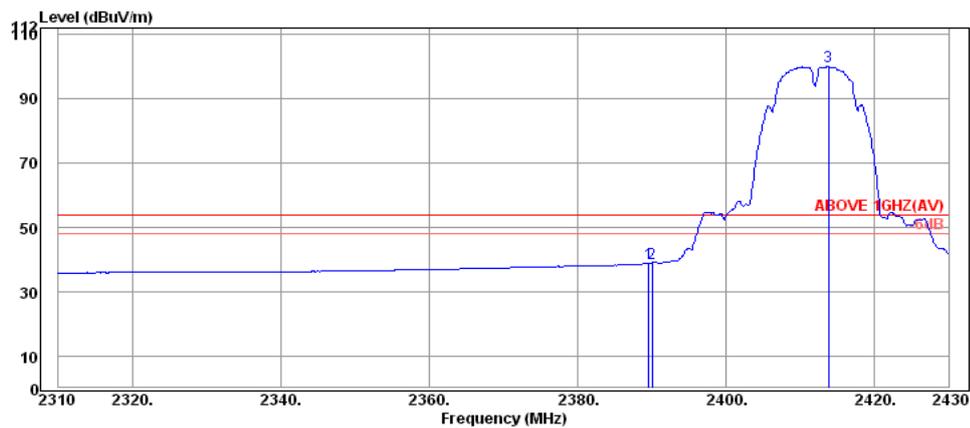
[Note: We performed testing of the worst switching adapter]

Mode	802.11b	Frequency	TX 2412MHz
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Antenna at Horizontal Polarization

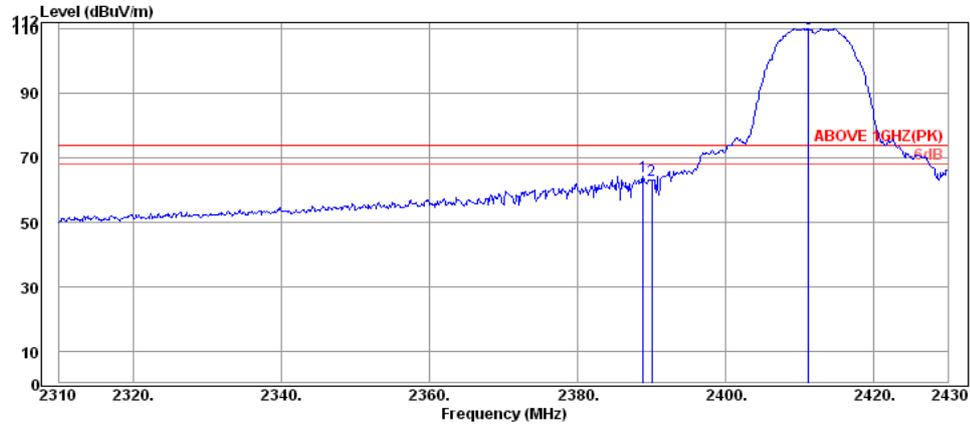
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.80	32.16	6.08	16.13	54.37	74.00	19.63	Peak
2390.04	32.16	6.08	14.52	52.76	74.00	21.24	Peak
2414.64	32.18	6.11	63.81	102.10	---	---	Peak



Antenna at Horizontal Polarization

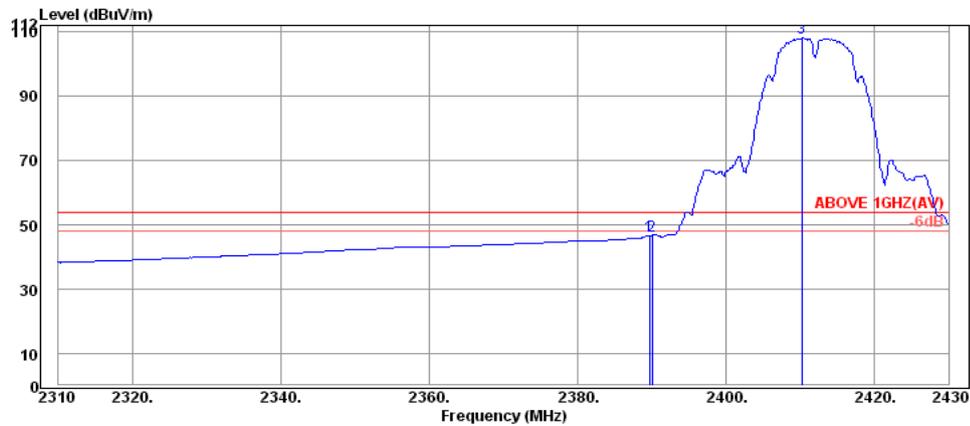
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.56	32.16	6.08	0.65	38.89	54.00	15.11	Average
2390.04	32.16	6.08	0.78	39.02	54.00	14.98	Average
2413.80	32.18	6.11	61.70	99.99	---	---	Average

Mode	802.11b	Frequency	TX 2412MHz
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Antenna at Vertical Polarization

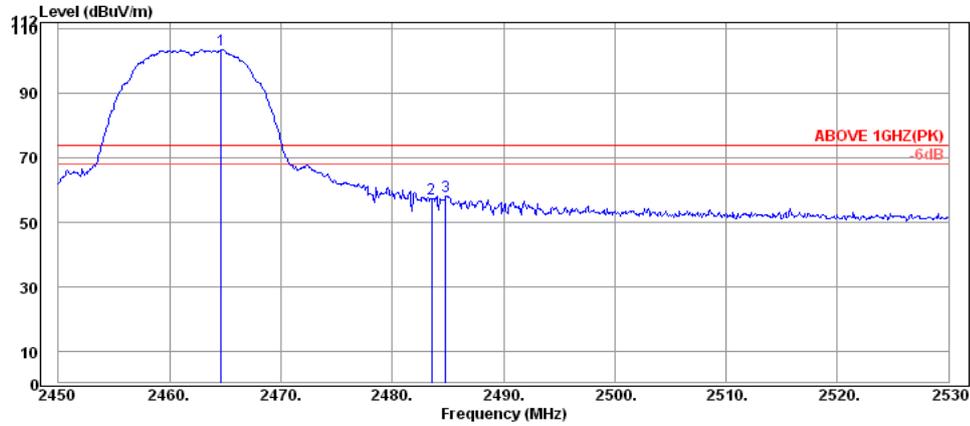
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2388.84	32.16	6.08	26.10	64.34	74.00	9.66	Peak
2390.04	32.16	6.08	24.82	63.06	74.00	10.94	Peak
2411.16	32.18	6.11	71.76	110.05	---	---	Peak



Antenna at Vertical Polarization

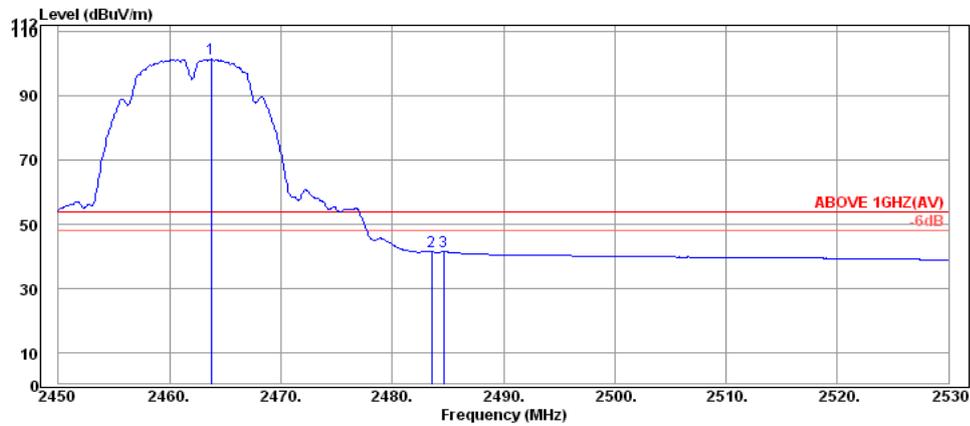
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.68	32.16	6.08	8.22	46.46	54.00	7.54	Average
2390.04	32.16	6.08	8.43	46.67	54.00	7.33	Average
2410.20	32.18	6.10	69.80	108.08	---	---	Average

Mode	802.11b	Frequency	TX 2462MHz
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Antenna at Horizontal Polarization

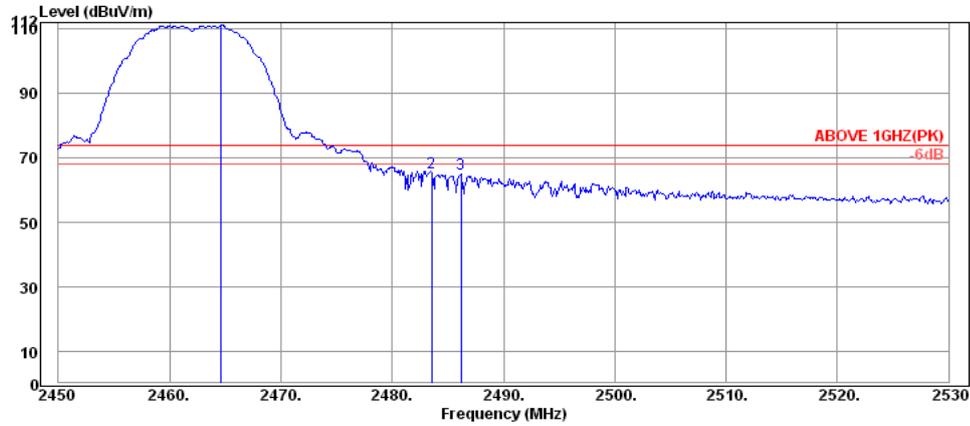
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2464.64	32.25	6.16	65.16	103.57	---	---	Peak
2483.52	32.28	6.19	18.84	57.31	74.00	16.69	Peak
2484.80	32.28	6.19	19.73	58.20	74.00	15.80	Peak



Antenna at Horizontal Polarization

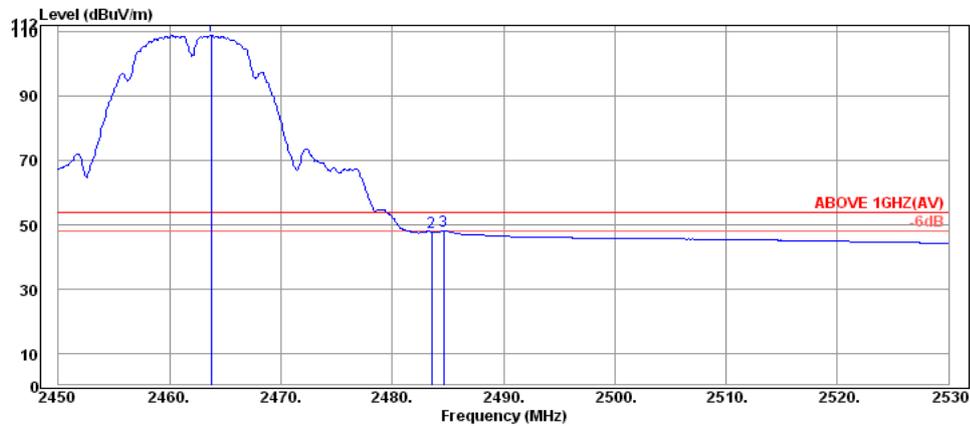
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2463.76	32.25	6.16	63.02	101.43	---	---	Average
2483.52	32.28	6.19	2.99	41.46	54.00	12.54	Average
2484.64	32.28	6.19	2.98	41.45	54.00	12.55	Average

Mode	802.11b	Frequency	TX 2462MHz
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Antenna at Vertical Polarization

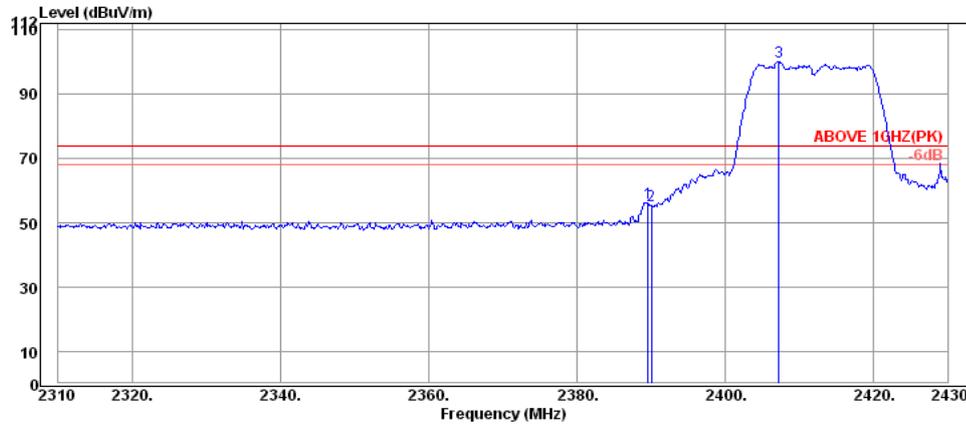
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2464.64	32.25	6.16	72.77	111.18	---	---	Peak
2483.52	32.28	6.19	26.79	65.26	74.00	8.74	Peak
2486.16	32.28	6.19	26.49	64.96	74.00	9.04	Peak



Antenna at Vertical Polarization

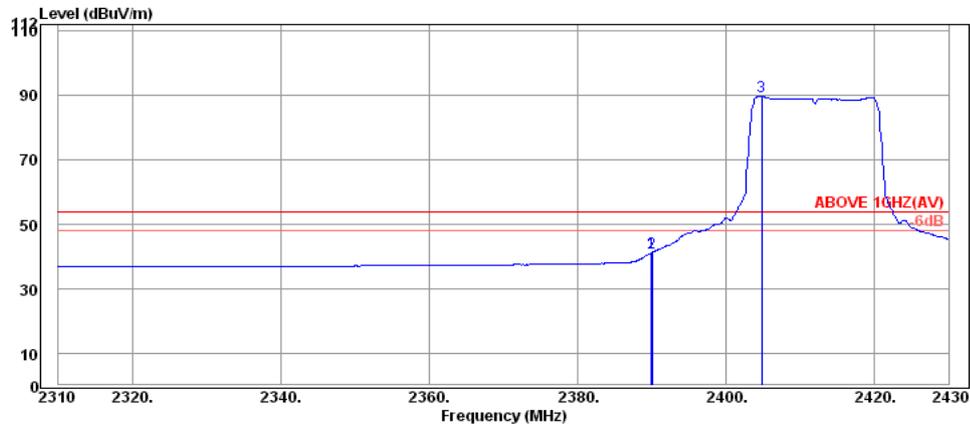
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2463.76	32.25	6.16	70.46	108.87	---	---	Average
2483.52	32.28	6.19	9.40	47.87	54.00	6.13	Average
2484.64	32.28	6.19	9.67	48.14	54.00	5.86	Average

Mode	802.11g	Frequency	TX 2412MHz
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Antenna at Horizontal Polarization

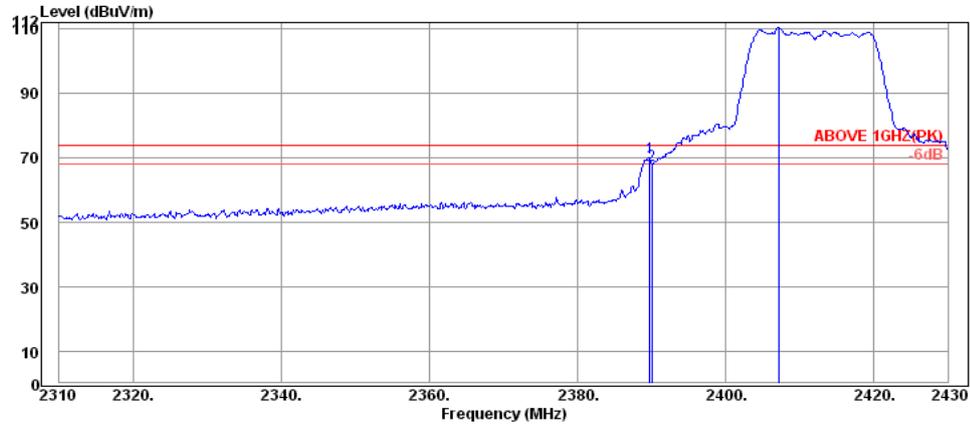
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.56	32.16	6.08	18.14	56.38	74.00	17.62	Peak
2390.04	32.16	6.08	17.11	55.35	74.00	18.65	Peak
2407.20	32.18	6.10	61.90	100.18	---	---	Peak



Antenna at Horizontal Polarization

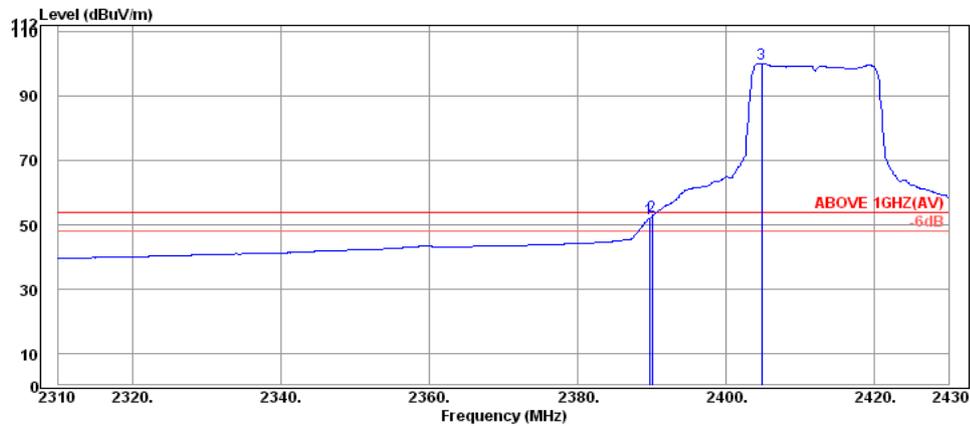
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.92	32.16	6.08	2.78	41.02	54.00	12.98	Average
2390.04	32.16	6.08	2.95	41.19	54.00	12.81	Average
2404.80	32.18	6.10	51.48	89.76	---	---	Average

Mode	802.11g	Frequency	TX 2412MHz
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Antenna at Vertical Polarization

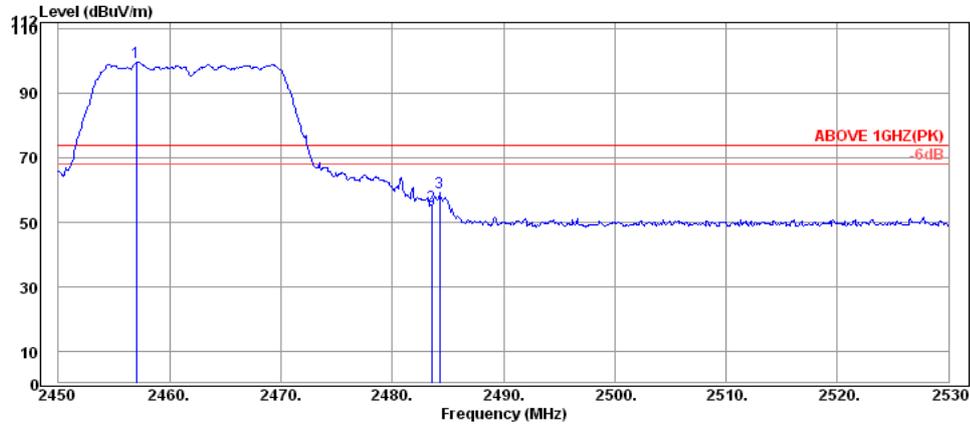
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.80	32.16	6.08	31.70	69.94	74.00	4.06	Peak
2390.04	32.16	6.08	29.65	67.89	74.00	6.11	Peak
2407.20	32.18	6.10	72.04	110.32	---	---	Peak



Antenna at Vertical Polarization

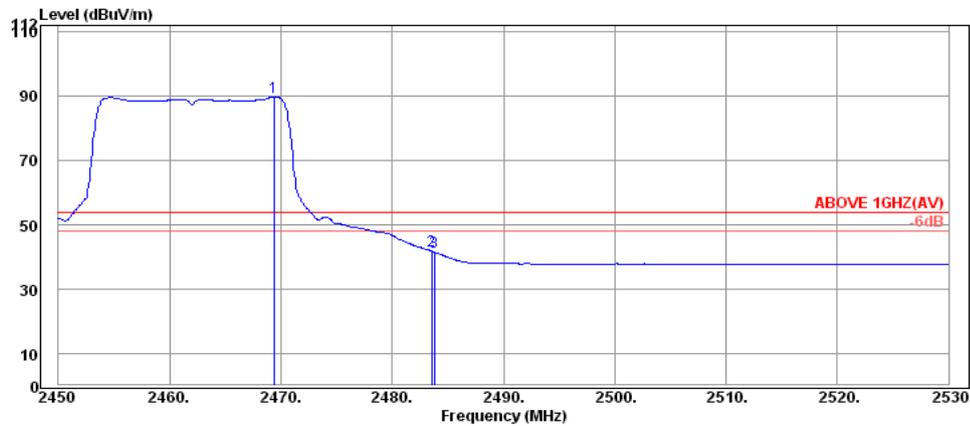
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.68	32.16	6.08	13.73	51.97	54.00	2.03	Average
2390.04	32.16	6.08	14.30	52.54	54.00	1.46	Average
2404.80	32.18	6.10	61.98	100.26	---	---	Average

Mode	802.11g	Frequency	TX 2462MHz
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Antenna at Horizontal Polarization

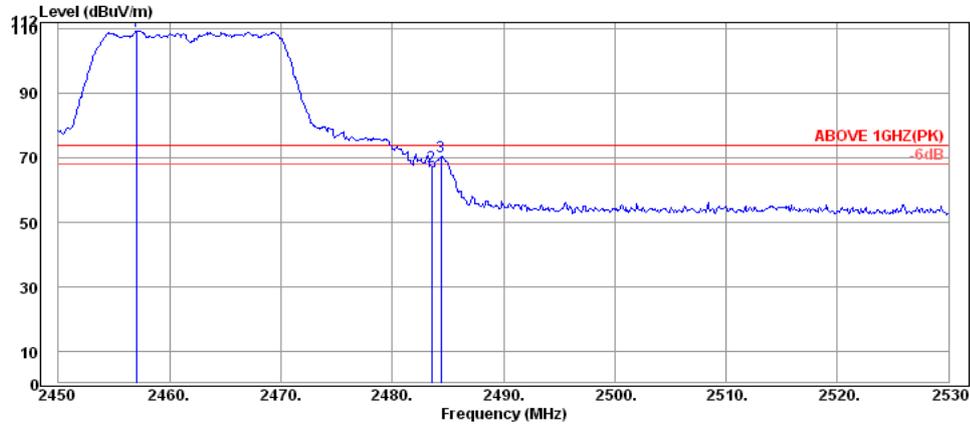
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2457.04	32.25	6.15	61.17	99.57	---	---	Peak
2483.52	32.28	6.19	16.71	55.18	74.00	18.82	Peak
2484.24	32.28	6.19	20.90	59.37	74.00	14.63	Peak



Antenna at Horizontal Polarization

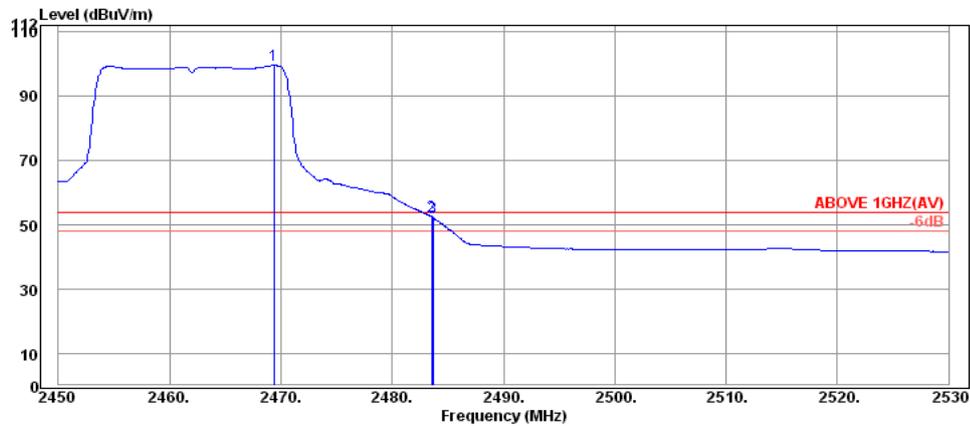
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2469.36	32.25	6.17	51.19	89.61	---	---	Average
2483.52	32.28	6.19	3.46	41.93	54.00	12.07	Average
2483.76	32.28	6.19	3.23	41.70	54.00	12.30	Average

Mode	802.11g	Frequency	TX 2462MHz
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Antenna at Vertical Polarization

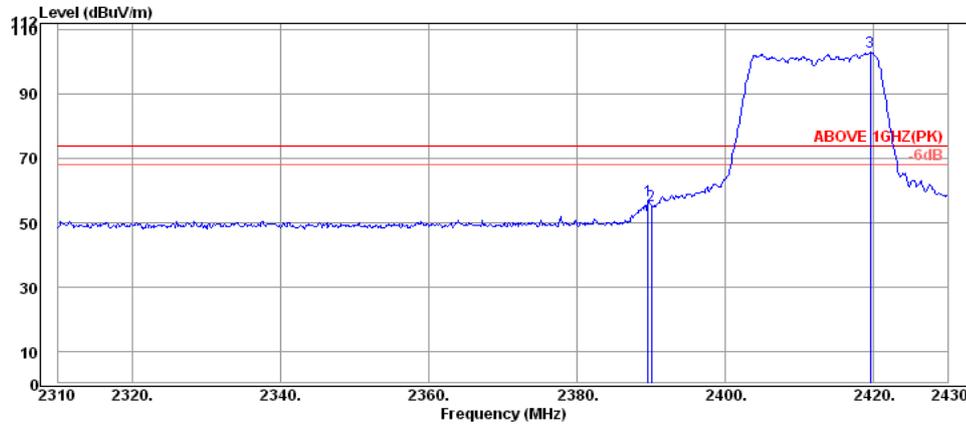
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2457.04	32.25	6.15	71.06	109.46	---	---	Peak
2483.52	32.28	6.19	29.05	67.52	74.00	6.48	Peak
2484.40	32.28	6.19	31.90	70.37	74.00	3.63	Peak



Antenna at Vertical Polarization

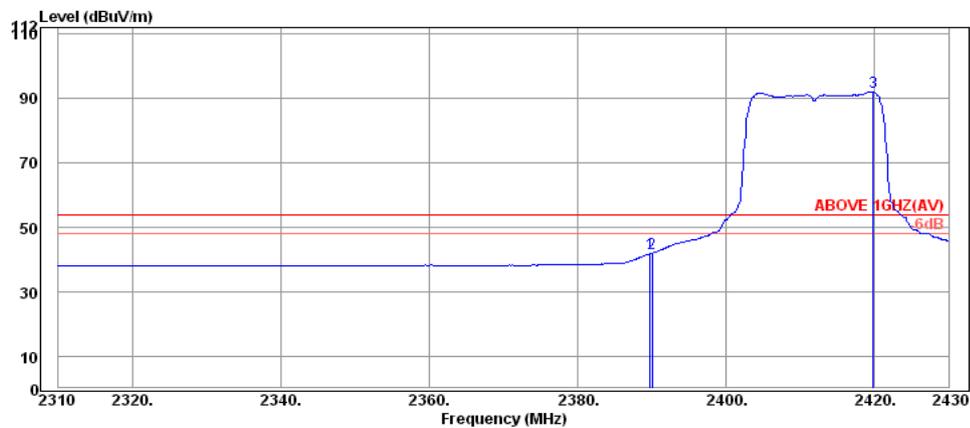
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2469.36	32.25	6.17	61.12	99.54	---	---	Average
2483.52	32.28	6.19	14.09	52.56	54.00	1.44	Average
2483.68	32.28	6.19	13.75	52.22	54.00	1.78	Average

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

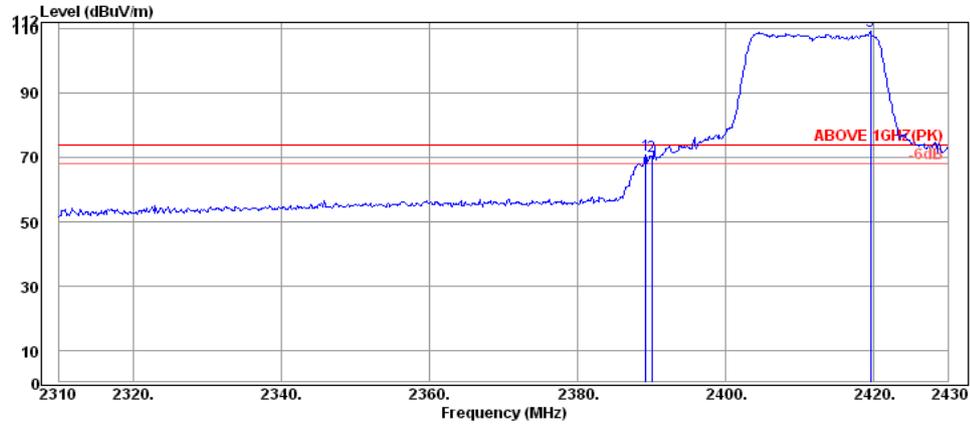
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.56	32.16	6.08	18.82	57.06	74.00	16.94	Peak
2390.04	32.16	6.08	17.13	55.37	74.00	18.63	Peak
2419.56	32.20	6.12	64.73	103.05	---	---	Peak



Antenna at Horizontal Polarization

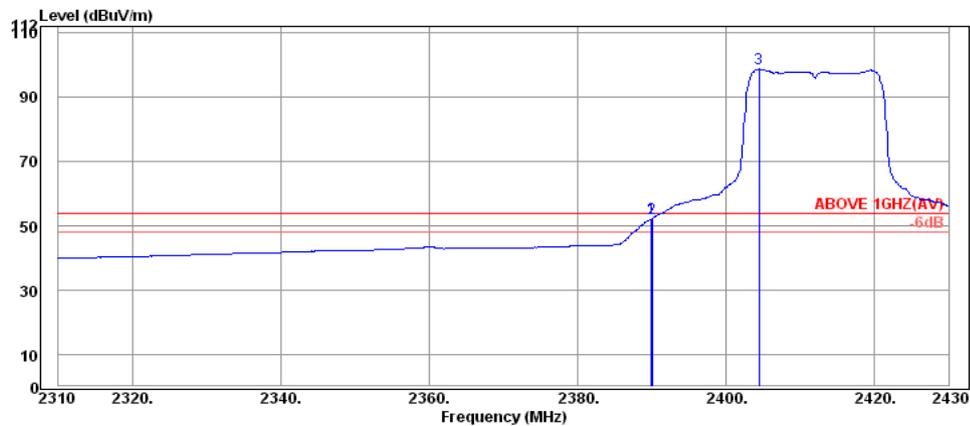
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.80	32.16	6.08	3.63	41.87	54.00	12.13	Average
2390.04	32.16	6.08	3.73	41.97	54.00	12.03	Average
2419.80	32.20	6.12	53.75	92.07	---	---	Average

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

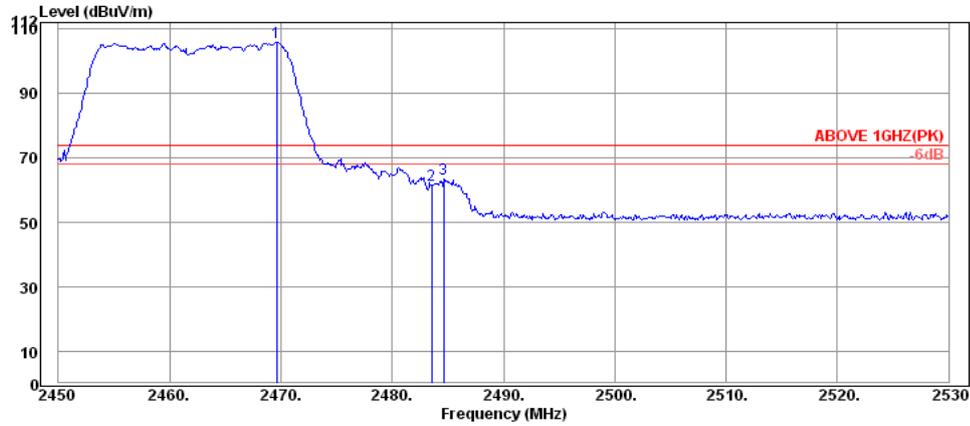
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.20	32.16	6.08	32.70	70.94	74.00	3.06	Peak
2390.04	32.16	6.08	32.11	70.35	74.00	3.65	Peak
2419.56	32.20	6.12	70.84	109.16	---	---	Peak



Antenna at Vertical Polarization

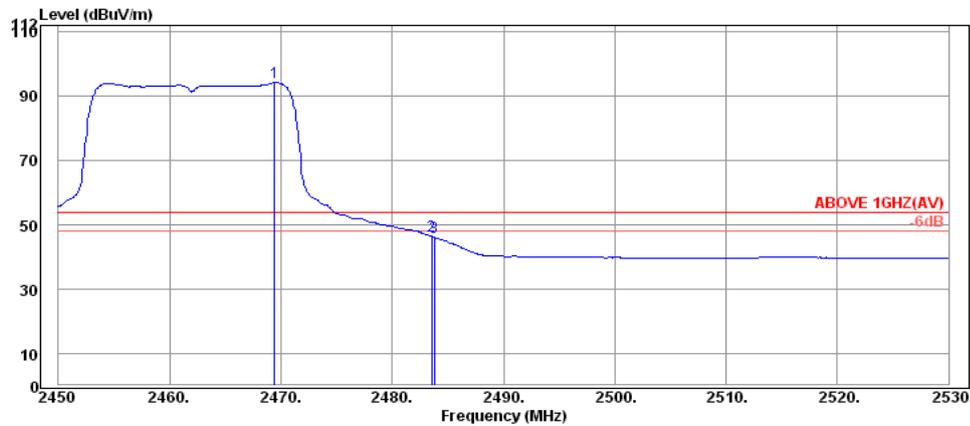
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.92	32.16	6.08	14.10	52.34	54.00	1.66	Average
2390.04	32.16	6.08	14.20	52.44	54.00	1.56	Average
2404.44	32.18	6.10	60.45	98.73	---	---	Average

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

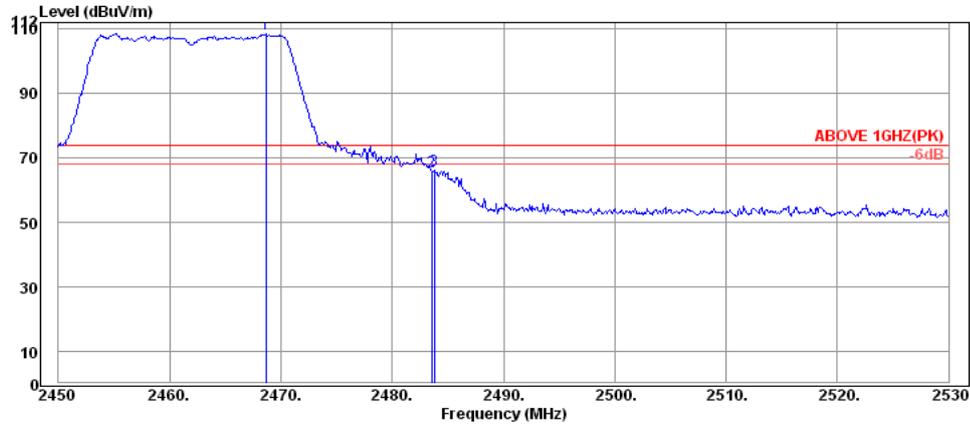
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2469.60	32.25	6.17	67.48	105.90	---	---	Peak
2483.52	32.28	6.19	23.24	61.71	74.00	12.29	Peak
2484.64	32.28	6.19	25.20	63.67	74.00	10.33	Peak



Antenna at Horizontal Polarization

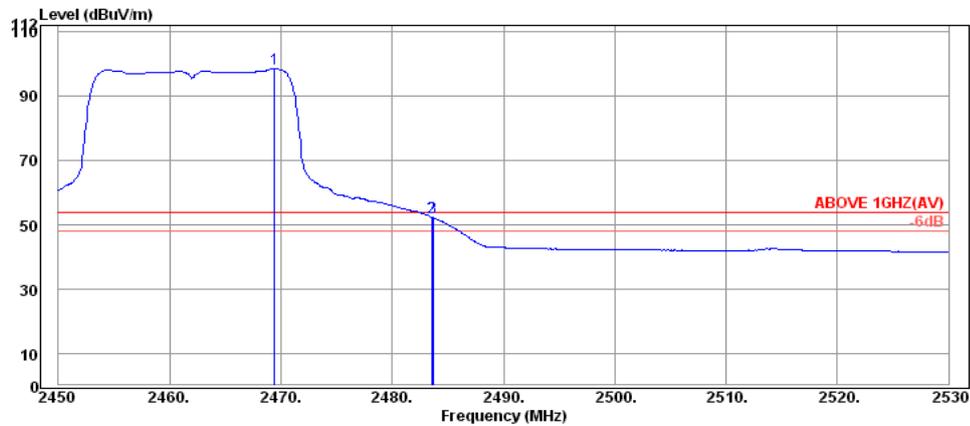
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2469.44	32.25	6.17	55.76	94.18	---	---	Average
2483.52	32.28	6.19	7.92	46.39	54.00	7.61	Average
2483.76	32.28	6.19	7.68	46.15	54.00	7.85	Average

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

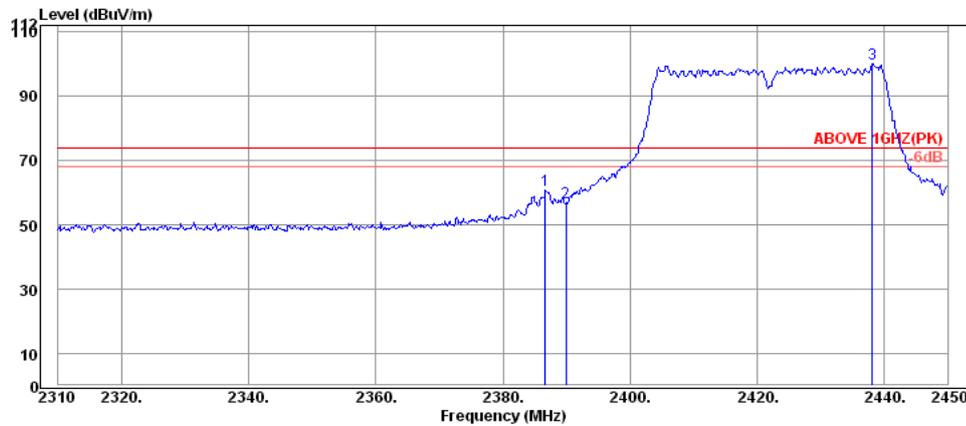
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2468.64	32.25	6.17	70.17	108.59	---	---	Peak
2483.52	32.28	6.19	27.39	65.86	74.00	8.14	Peak
2483.76	32.28	6.19	27.81	66.28	74.00	7.72	Peak



Antenna at Vertical Polarization

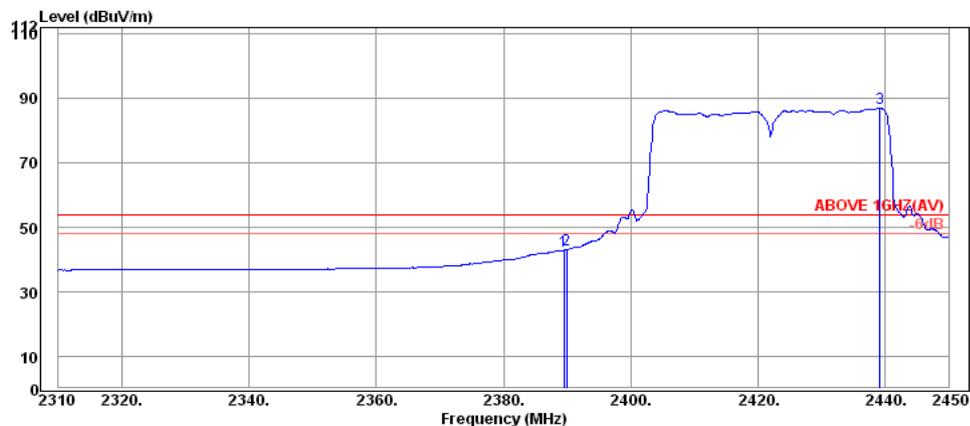
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2469.44	32.25	6.17	60.07	98.49	---	---	Average
2483.52	32.28	6.19	13.91	52.38	54.00	1.62	Average
2483.68	32.28	6.19	13.69	52.16	54.00	1.84	Average

Mode	802.11n-HT40	Frequency	TX 2422MHz
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Antenna at Horizontal Polarization

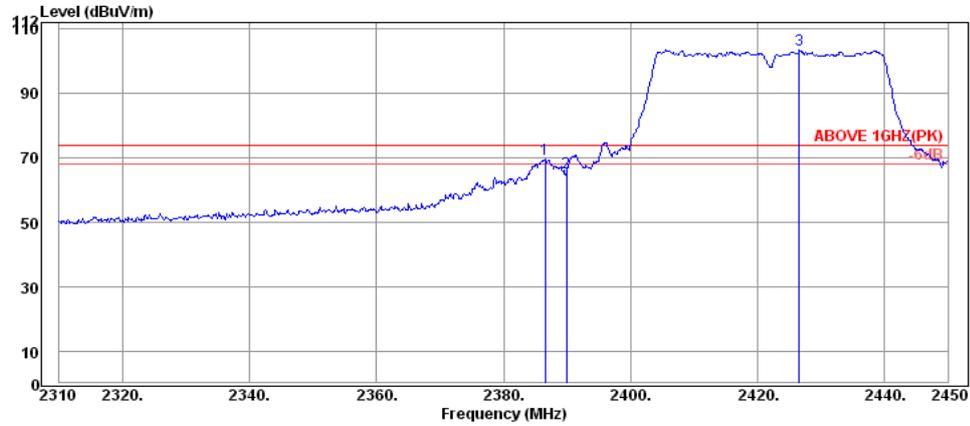
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2386.72	32.16	6.07	22.39	60.62	74.00	13.38	Peak
2389.94	32.16	6.08	18.54	56.78	74.00	17.22	Peak
2438.10	32.23	6.13	61.81	100.17	---	---	Peak



Antenna at Horizontal Polarization

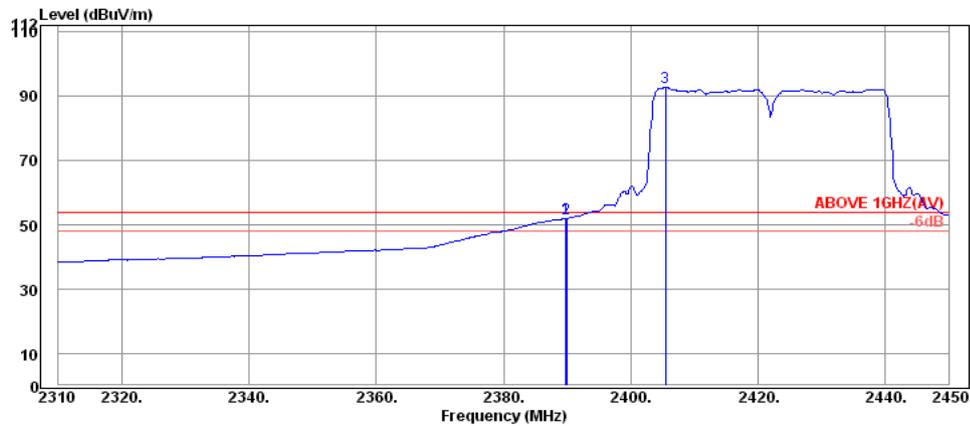
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.52	32.16	6.08	4.66	42.90	54.00	11.10	Average
2389.94	32.16	6.08	4.78	43.02	54.00	10.98	Average
2439.22	32.23	6.13	48.64	87.00	---	---	Average

Mode	802.11n-HT40	Frequency	TX 2422MHz
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Antenna at Vertical Polarization

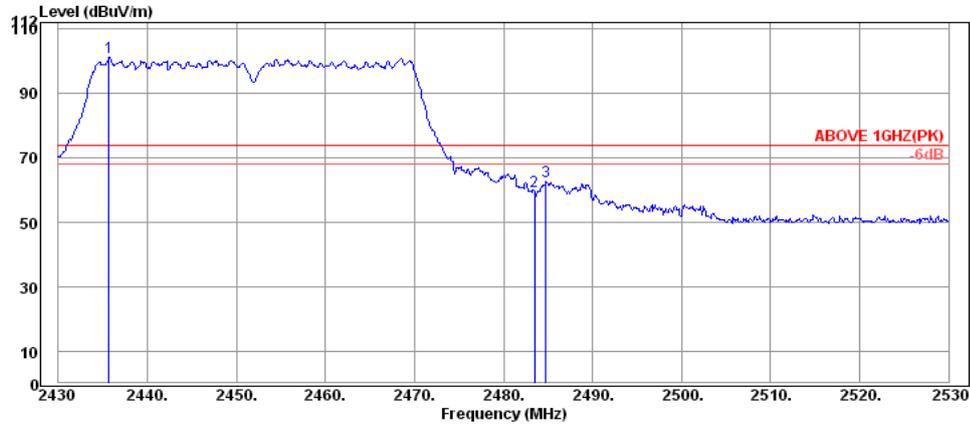
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2386.58	32.16	6.07	31.40	69.63	74.00	4.37	Peak
2389.94	32.16	6.08	27.11	65.35	74.00	8.65	Peak
2426.62	32.20	6.13	65.20	103.53	---	---	Peak



Antenna at Vertical Polarization

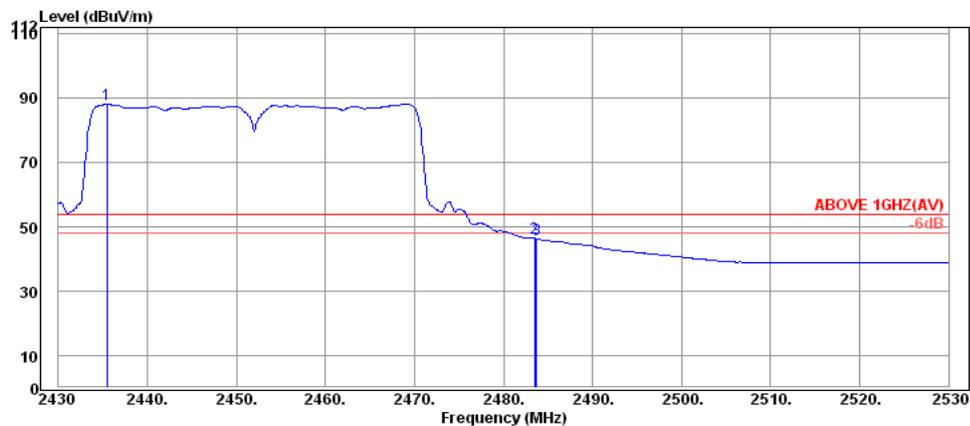
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.80	32.16	6.08	13.83	52.07	54.00	1.93	Average
2389.94	32.16	6.08	13.81	52.05	54.00	1.95	Average
2405.48	32.18	6.10	54.41	92.69	---	---	Average

Mode	802.11n-HT40	Frequency	TX 2452MHz
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Antenna at Horizontal Polarization

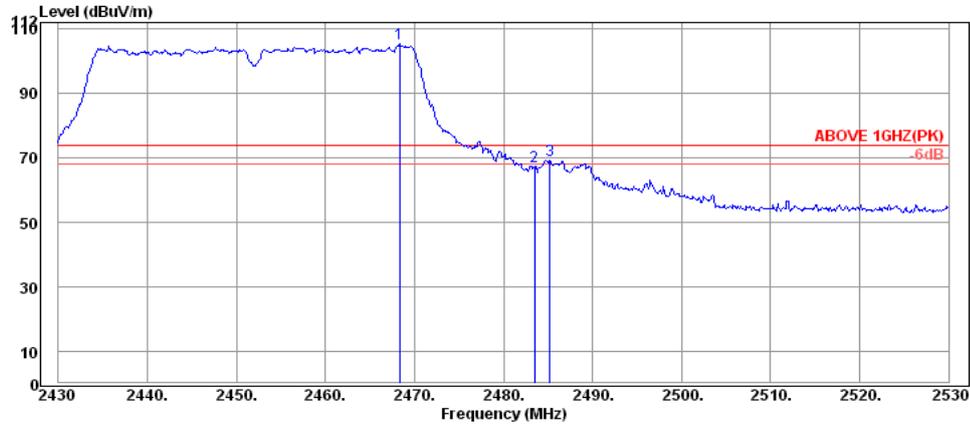
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2435.70	32.20	6.13	63.01	101.34	---	---	Peak
2483.50	32.28	6.19	21.13	59.60	74.00	14.40	Peak
2484.80	32.28	6.19	24.19	62.66	74.00	11.34	Peak



Antenna at Horizontal Polarization

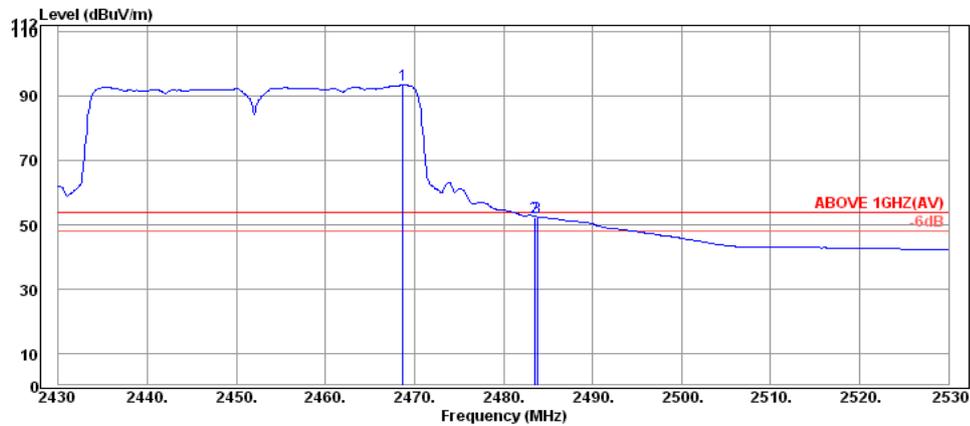
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2435.50	32.20	6.13	49.90	88.23	---	---	Average
2483.50	32.28	6.19	7.92	46.39	54.00	7.61	Average
2483.70	32.28	6.19	7.83	46.30	54.00	7.70	Average

Mode	802.11n-HT40	Frequency	TX 2452MHz
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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
2468.30	32.25	6.17	67.03	105.45	---	---	Peak
2483.50	32.28	6.19	28.72	67.19	74.00	6.81	Peak
2485.20	32.28	6.19	30.94	69.41	74.00	4.59	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
2468.70	32.25	6.17	54.94	93.36	---	---	Average
2483.50	32.28	6.19	13.91	52.38	54.00	1.62	Average
2483.80	32.28	6.19	13.75	52.22	54.00	1.78	Average

6.5.3. Emissions outside the frequency band:

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

[Note: We performed testing of the worst switching adapter]

Mode	802.11b	Frequency	TX 2437MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
3250.00	32.85	7.40	4.89	45.14	54.00	8.86	Average
3250.00	32.85	7.40	6.94	47.19	74.00	26.81	Peak
4874.00	34.25	9.09	2.21	45.55	54.00	8.45	Average
4874.00	34.25	9.09	4.23	47.57	74.00	26.43	Peak
7310.00	35.80	11.80	-3.87	43.77	54.00	10.23	Average
7310.00	35.80	11.80	-1.80	45.80	74.00	28.20	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
3250.00	32.85	7.40	8.94	49.19	54.00	4.81	Average
3250.00	32.85	7.40	10.96	51.21	74.00	22.79	Peak
4874.00	34.25	9.09	8.23	51.67	54.00	2.23	Average
4874.00	34.25	9.09	10.27	53.61	74.00	20.39	Peak
7310.00	35.80	11.80	-1.54	46.06	54.00	7.94	Average
7310.00	35.80	11.80	0.49	48.09	74.00	25.91	Peak

Mode	802.11g	Frequency	TX 2437MHz
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Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
3250.00	32.85	7.40	-2.14	38.11	54.00	15.89	Average
3250.00	32.85	7.40	7.91	48.16	74.00	25.84	Peak
4876.00	34.25	9.09	4.75	48.09	54.00	5.91	Average
4876.00	34.25	9.09	14.79	58.13	74.00	15.87	Peak
7301.00	35.80	11.80	-9.57	38.03	54.00	15.97	Average
7301.00	35.80	11.80	0.50	48.10	74.00	25.90	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
3250.00	32.85	7.40	1.77	42.02	54.00	11.98	Average
3250.00	32.85	7.40	11.72	51.97	74.00	22.03	Peak
4874.00	34.25	9.09	8.33	51.67	54.00	2.33	Average
4874.00	34.25	9.09	18.35	61.69	74.00	12.31	Peak
7295.00	35.80	11.65	-4.48	42.97	54.00	11.03	Average
7295.00	35.80	11.65	5.56	53.01	74.00	20.99	Peak

Mode	802.11n-HT20	Frequency	TX 2437MHz
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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
3250.00	32.85	7.40	-3.75	36.50	54.00	17.50	Average
3250.00	32.85	7.40	6.23	46.48	74.00	27.52	Peak
4874.00	34.25	9.09	5.23	48.54	54.00	5.47	Average
4874.00	34.25	9.09	15.28	58.62	74.00	15.38	Peak
7295.00	35.80	11.65	-8.36	39.09	54.00	14.91	Average
7295.00	35.80	11.65	1.62	49.07	74.00	24.93	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
3250.00	32.85	7.40	-0.99	39.26	54.00	14.74	Average
3250.00	32.85	7.40	9.03	49.28	74.00	24.72	Peak
4870.00	34.25	9.09	8.50	51.84	54.00	2.16	Average
4870.00	34.25	9.09	18.59	61.93	74.00	12.07	Peak
7295.00	35.80	11.65	-4.67	42.78	54.00	11.22	Average
7295.00	35.80	11.65	5.39	52.84	74.00	21.16	Peak

Mode	802.11n-HT40	Frequency	TX 2437MHz
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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
3250.00	32.85	7.40	-2.82	37.43	54.00	16.57	Average
3250.00	32.85	7.40	7.69	47.94	74.00	26.06	Peak
4876.00	34.25	9.09	4.18	47.52	54.00	6.48	Average
4876.00	34.25	9.09	14.65	57.99	74.00	16.01	Peak
7295.00	35.80	11.65	-9.35	38.10	54.00	15.90	Average
7295.00	35.80	11.65	1.12	48.57	74.00	25.43	Peak

Antenna at Vertical Polarization

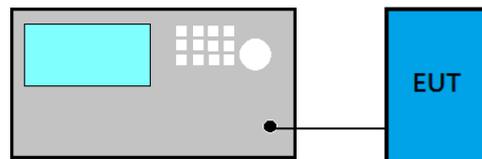
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
3250.00	32.85	7.40	0.06	40.31	54.00	13.69	Average
3250.00	32.85	7.40	10.57	50.82	74.00	23.18	Peak
4864.00	34.24	9.09	8.10	51.43	54.00	2.57	Average
4864.00	34.24	9.09	18.69	62.02	74.00	11.98	Peak
7289.00	35.80	11.65	-5.21	42.24	54.00	11.76	Average
7289.00	35.80	11.65	5.34	52.79	74.00	21.21	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)

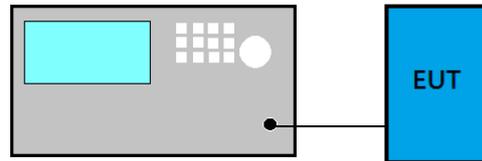
- (1) Set span to at least 1.5 times the OBW
- (2) Set RBW = 1 -5% of OBW
- (3) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- (4) Detector = RMS.
- (5) Trace mode = trace average at least 100 traces
- (6) Sweep = auto couple.
- (7) Compute power by integrating the spectrum across the OBW of the 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

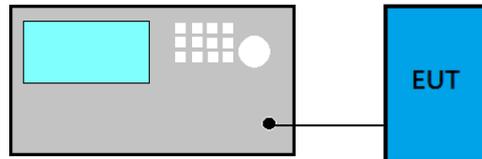
- (1) Set analyzer center frequency to DTS channel center frequency.
- (2) Set the span to 1.5 times the DTS bandwidth.
- (3) Set the RBW to: 100 kHz.
- (4) Set the VBW $\geq 3 \times$ RBW.
- (5) Detector = peak.
- (6) Sweep time = auto couple.
- (7) Trace mode = max hold.
- (8) Allow trace to fully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