

**FCC 15.247 DTS
(Class II Permissive Change)
2.4 GHz Report**

for

Elitegroup Computer Systems Co., Ltd.

No. 239, Sec. 2, TiDing Blvd,
Taipei, Taiwan 11493

Brand : ECS
Product Name : Intelligent Gateway
Model Name : GWS-QX.
FCC ID : WL6GWS-QX

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



TABLE OF CONTENTS

Description	Page
TEST REPORT CERTIFICATION	4
1. REPORT HISTORY.....	4
2. SUMMARY OF TEST RESULTS	5
3. GENERAL INFORMATION	6
3.1. Description of EUT	6
3.2. Description of Key Component Lists	7
3.3. Antenna Information	7
3.4. EUT Specifications Assessed in Current Report	8
3.5. Data Rate Relative to Output Power	10
3.6. Test Configuration	11
3.7. Tested Supporting System List	12
3.8. Setup Configuration	12
3.9. Operating Condition of EUT	13
3.10. Description of Test Facility	13
3.11. Measurement Uncertainty	13
4. MEASUREMENT EQUIPMENT LIST	14
4.1. Conducted Emission Measurement	14
4.2. Radiated Emission Measurement	14
4.3. RF Conducted Measurement	14
5. CONDUCTED EMISSION MEASUREMENT	15
5.1. Block Diagram of Test Setup	15
5.2. Power Line Conducted Emission Limit	15
5.3. Test Procedure	15
5.4. Conducted Emission Measurement Results	16
6. RADIATED EMISSION MEASUREMENT	18
6.1. Block Diagram of Test Setup	18
6.2. Radiated Emission Limits	19
6.3. Test Procedure	20
6.4. Measurement Result Explanation	21
6.5. Test Results	21
7. MAXIMUM PEAK OUTPUT POWER MEASUREMENT	51
7.1. Block Diagram of Test Setup	51
7.2. Specification Limits	51
7.3. Test Procedure	51
7.4. Test Results	52
8. DEVIATION TO TEST SPECIFICATIONS.....	53
 APPENDIX A TEST PLOTS	

TEST REPORT CERTIFICATION (Class II Permissive Change)

Applicant : Elitegroup Computer Systems Co., Ltd.
Manufacture : Golden Elite Technology (SHENZHEN) CO., LTD.
Product Name : Intelligent Gateway
Model No. : GWS-QX.
Serial No. : N/A
Brand : ECS

Applicable Standards:

FCC Rules and Regulations 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. 02. 01 ~ 03

Date of Report: 2016. 06. 14

Producer: Sabrina Wang
(Sabrina Wang/Administrator)

Signatory: Ben Cheng
(Ben Cheng/Manager)

1. REPORT HISTORY

Revision	Date	Revision Summary	Report Number
0	2016. 06. 14	Original Report.	EM-F160087

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(b)	Maximum Peak Output Power	PASS
15.203	Antenna Requirement	PASS

3. GENERAL INFORMATION

3.1. Description of EUT

Product	Intelligent Gateway
Model Number	GWS-QX. (The dots "." in the model name can be 0 to 9, A to Z, a to z, "-", "_", "\", "/" or blank, for marketing use only.) The model GWS-QX is test in this report
Serial Number	N/A
Brand Name	ECS
Applicant	Elitegroup Computer Systems Co., Ltd. No. 239, Sec. 2., TiDing Blvd., Taipei, Taiwan 11493
Manufacturer	Golden Elite Technology (SHENZHEN) CO., LTD. No.1, Nan-Huan Rd., ShaJing, BaoAn, Shenzhen, China
RF Features	WLAN:802.11b/g/n Bluetooth: BT and BLE
Date of Receipt of Sample	2016. 01. 20
Information for Class II Change Permissive:	1. The difference with original FCC ID: WL6GWS-QX is as follow: (1) To add new Appearance for New Main Board, Adapter, Power Rating and remove Analog & Digital Board. (The difference original Appearance is to remove Analog & Digital IO) (2) To add new Main Board (Type B). (The difference original Main Board is modify component of original Main Board) (3) To add a new Adapter. (Asian Power Devices Inc., M/N: WA-15I05FU) (4) To add a new Power Rating. (DC 5V, 3A) (5) To remove Analog & Digital Board. 2. Due to difference can't influence on RF circuit

3.2. Description of Key Component Lists

Item	Supplier	Model / Type	Character
Main Board	ECS	GWB-QX	Type A
	ECS	GWB-QX*	Type B
CPU	Intel	Quark SoC X1021	400MHz
Memory	---	---	DDR3 1G (512MB x 2)
Storage	---	---	Mirco SD 8GB up to 32G
Wi-Fi +BT Combo Module	AzureWave (REALTEK)	AW-NB159H (RTL8723BE)	Wi-Fi with Bluetooth 4.0/3.0 + HS Combo Half Mini Card
AC Adapter	Asian Power Devices Inc.	DA-120B24	Input: AC 100-240V, 47-63Hz, 2.0A Output: DC 24V, 5A (For Main Board Type A Used)
	DC Power Cord: Unshielded, Undetachable, 1.8m AC Power Cord: Unshielded, Detachable, 1.8m (3C)		
	Asian Power Devices Inc.	WA-15I05FU*	Input: AC 100-240V, 50-60Hz, 0.5A Output: DC 5V, 3A (For Main Board Type B Used)
	DC Power Cord: Unshielded, Undetachable, 1.8m (Wall-mount, 2C)		
RS-232 Cable	Shielded, Detachable, 1.6m		
Note: “*” Standing for adding new configuration.			

Remark: For more detailed features description, please refer to the manufacturer's specifications or the user manual.

3.3. Antenna Information

Antenna Part Number	Manufacture	Antenna Type	Max Gain (dBi)
13-130-764090	VSO	External Dipole Antenna + RF Cable Assembly	3.1dBi

3.4. 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)	1/2/5.5/11
802.11g			OFDM (BPSK/QPSK/16QAM/ 64QAM)	6/9/12/18/24/36/ 48/54
802.11n-HT20				up to 150Mbps
802.11n-HT40	2422-2452	7		
BLE	2402-2480	40	GFSK	1

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

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

3.5. Data Rate Relative to Output Power

802.11b			
Channel	Modulation	Date Rate(Mbps)	Power(dBm)
1	DBPSK	1	18.09
1	DQPSK	2	17.86
1	CCK	5.5	17.98
1	CCK	11	17.74

802.11g			
Channel	Modulation	Date Rate(Mbps)	Power(dBm)
1	BPSK	6	22.33
1	BPSK	9	22.17
1	QPSK	12	22.09
1	QPSK	18	22.14
1	16-QAM	24	22.22
1	16-QAM	36	22.18
1	64-QAM	48	21.64
1	64-QAM	54	21.68

802.11n-HT20				802.11n-HT40			
Channel	Modulation	Date Rate (Mbps)	Power (dBm)	Channel	Modulation	Date Rate (Mbps)	Power (dBm)
1	BPSK	MCS0	21.37	3	BPSK	MCS0	21.51
1	QPSK	MCS1	21.15	3	QPSK	MCS1	21.38
1	QPSK	MCS2	20.88	3	QPSK	MCS2	21.22
1	16-QAM	MCS3	20.54	3	16-QAM	MCS3	21.54
1	16-QAM	MCS4	19.76	3	16-QAM	MCS4	20.47
1	64-QAM	MCS5	19.62	3	64-QAM	MCS5	20.66
1	64-QAM	MCS6	18.96	3	64-QAM	MCS6	19.97
1	64-QAM	MCS7	18.77	3	64-QAM	MCS7	19.14

Note: Above results are assessed in peak power.

BLE			
Channel	Modulation	Date Rate(Mbps)	Power(dBm)
0	DBPSK	1	9.24
0	DQPSK	2	9.01
0	CCK	5.5	9.13
0	CCK	11	9.19

Note: Above results are assessed in peak power.

3.6. Test Configuration

Mode	Duty Cycle (x)	T (ms)	Duty Cycle Factor (dB)
802.11b	1.00	N/A	N/A
802.11g	1.00	N/A	N/A
802.11n-HT20	1.00	N/A	N/A
802.11n-HT20	1.00	N/A	N/A
BLE	1.00	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.

Item		Mode	Data Rate	Test Channel
Radiated Test Case	Radiated Spurious Emission ^{Note1}	802.11b	1Mbps	30
		802.11g	6Mbps	6
		802.11n-HT20	MCS0	6
		802.11n-HT40	MCS0	6
		BLE	N/A	00/19/39
Conducted Test Case	Peak Output Power	802.11b	1Mbps	1/6/11
		802.11g	6Mbps	1/6/11
		802.11n-HT20	MCS0	1/6/11
		802.11n-HT40	MCS0	3/6/9
		BLE	N/A	00/19/39

Note 1:

☒ Mobile Device

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

☐ Lie

☐ Side

3.7. Tested Supporting System List

3.7.1. Support Peripheral Unit

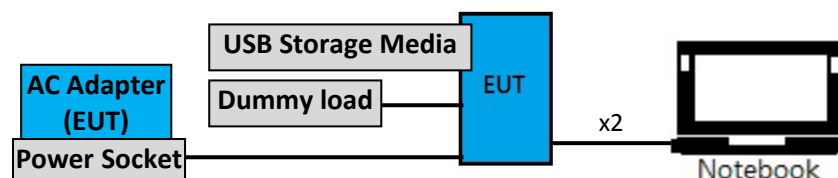
No.	Product	Brand	Model No.	Serial No.	Approval
1.	Notebook PC (For Power Line and Radiated Emission)	DELL	P20G	P20G001	FCC ID: PPD-AR5B-95
	Notebook PC (For Conducted)	acer	MS2362	N/A	FCC ID: PPD-AR5B22
2.	USB Storage Media	Toshiba	32GB	N/A	N/A
3.	Dummy load	N/A	N/A	N/A	N/A
4.	Power Socket	N/A	N/A	N/A	N/A

3.7.2. Cable Lists

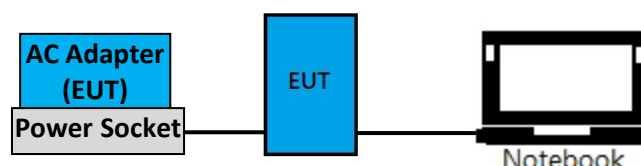
No.	Cable Description Of The Above Support Units
1.	USB Cable: Unshielded, Detachable, 1.5m LAN Cable: Unshielded, Detachable, 0.5m Adapter: Chicony, M/N CPA09-A065N1, DC Power Cord: Unshielded, Detachable, 1.8m AC Power Cord: Unshielded, Undetachable, 1.8m. Bonded a ferrite core
	LAN Cable: Unshielded, Detachable, 0.5m Adapter: ACBEL, M/N AA90PM111, DC Power Cord: Unshielded, Detachable, 1.8m AC Power Cord: Unshielded, Undetachable, 1.8m. Bonded a ferrite core
2.	---
3.	RS232 Cable: Unshielded, Detachable, 1.2m
4.	Power Cord: Unshielded, Undetachable, 1.8m

3.8. Setup Configuration

3.8.1. EUT Configuration for Power Line and Radiated Emission



3.8.2. EUT Configuration for Conducted Test Items



3.9. Operating Condition of EUT

Test program installed in EUT is used for enabling EUT WLAN and BLE function under continues transmitting and choosing data rate/ channel.

3.10. 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. 8 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

3.11. 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 = $k_{uc}(y)$

Test Item	Uncertainty
Maximum peak output power	± 0.33dB

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	ESCS 30	101265	2015. 08. 20	1 Year
2.	A.M.N.	R&S	ENV4200	100169	2015. 05. 08	1 Year
3.	Pulse Limiter	R&S	ESH3-Z2	100354	2016. 01. 17	1 Year
4.	Test Software	Audix	e3	V.6.120424	N.C.R.	N.C.R.

4.2. Radiated Emission Measurement

4.2.1. Frequency Range 9kHz~1000MHz

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

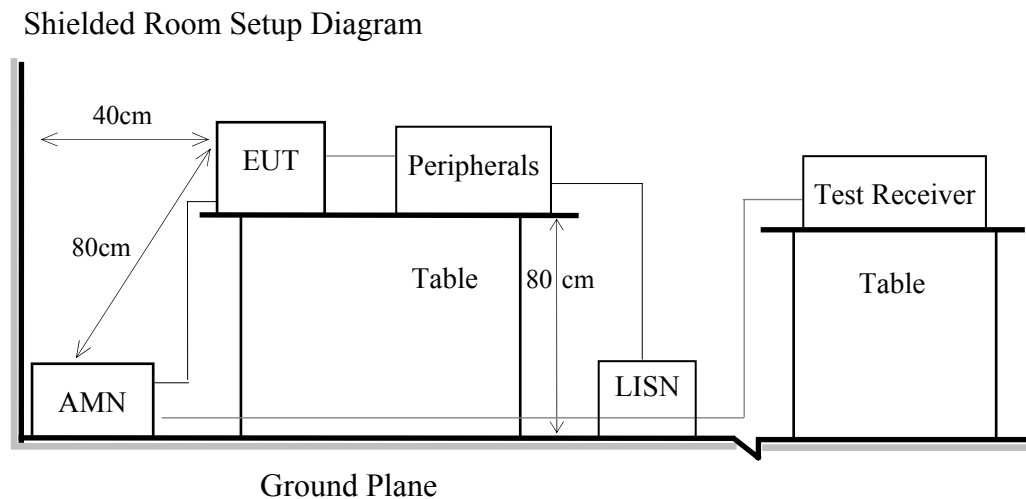
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	2015. 08. 20	1 Year
2.	Amplifier	Sonoma	310N	187161	2015. 06. 17	1 Year
3.	2.4GHz Notch Filter	K&L	7NSL10-244 1.5E130.5-00	1	2015. 07. 28	1 Year
4.	Horn Antenna	ETS-Lindgren	3117	00135902	2016. 03. 05	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.

4.3. RF Conducted Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Power Meter	Anritsu	ML2495A	1145008	2015. 10. 23	1 Year
2.	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.

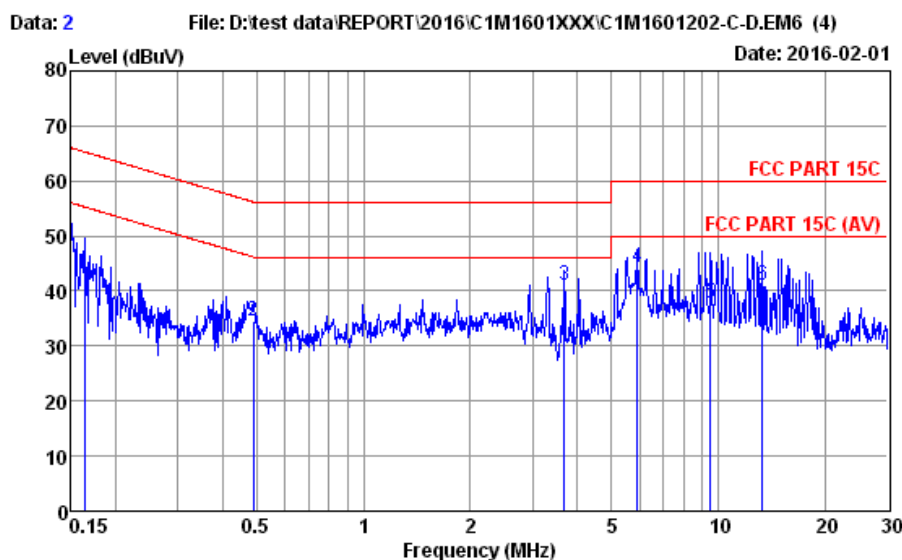
5.3. Test Procedure

- 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	2016/02/01	Temp./Hum.	22°C/52%
Test Voltage	AC 120V, 60Hz		



Site no. : No.8 Shielded Room Data no. : 2
Condition : ENV4200 100169 Phase : NEUTRAL
Limit : FCC PART 15C
Env. / Ins. : 22°C / 52% ESCS (265) Engineer : Tim
EUT : GWS-QX
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	0.163	11.38	0.03	9.87	21.71	42.99	65.30	22.31	QP
2	0.489	10.99	0.03	9.88	13.73	34.63	56.19	21.56	QP
3	3.681	11.15	0.12	9.88	19.80	40.95	56.00	15.05	QP
4	5.898	11.55	0.16	9.90	22.73	44.34	60.00	15.66	QP
5	9.502	12.03	0.20	9.90	15.58	37.71	60.00	22.29	QP
6	13.267	12.95	0.23	9.91	17.80	40.89	60.00	19.11	QP

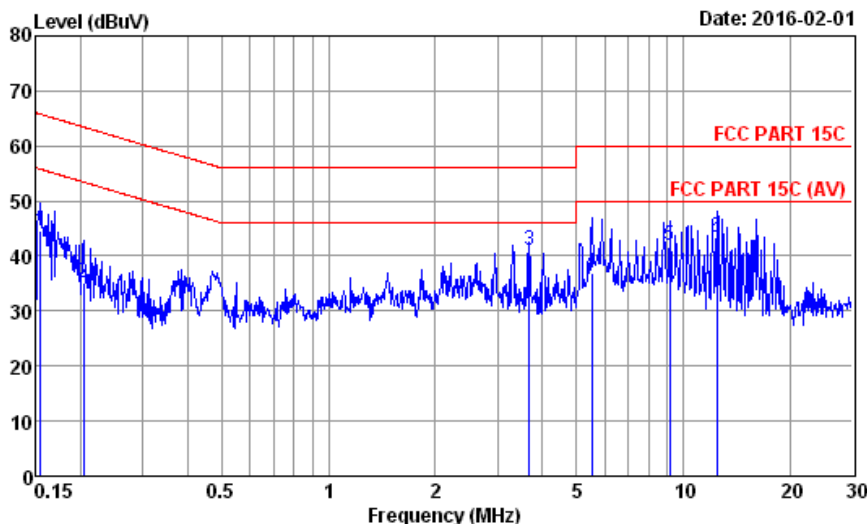
Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

AUDIX Technology Corp.
No. 53-11, Dingfu, Linkou, Dist.,
New Taipei City244, Taiwan

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

Test Date	2016/02/01	Temp./Hum.	22°C/52%
Test Voltage	AC 120V, 60Hz		

Data: 1 File: D:\test data\REPORT\2016\C1M1601XXX\C1M1601202-C-D.EM6 (4)



Site no. : No.8 Shielded Room Data no. : 1
Condition : ENV4200 100169 Phase : LINE
Limit : FCC PART 15C
Env. / Ins. : 22°C / 52% ESCS (265) Engineer : Tim
EUT : GWS-QX
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	0.154	10.75	0.03	9.87	23.83	44.48	65.78	21.30	QP
2	0.204	10.68	0.03	9.87	14.57	35.15	63.45	28.30	QP
3	3.681	10.64	0.12	9.88	20.43	41.07	56.00	14.93	QP
4	5.505	10.85	0.15	9.90	16.07	36.97	60.00	23.03	QP
5	9.156	11.16	0.20	9.90	20.73	41.99	60.00	18.01	QP
6	12.449	11.81	0.23	9.91	21.39	43.34	60.00	16.66	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.

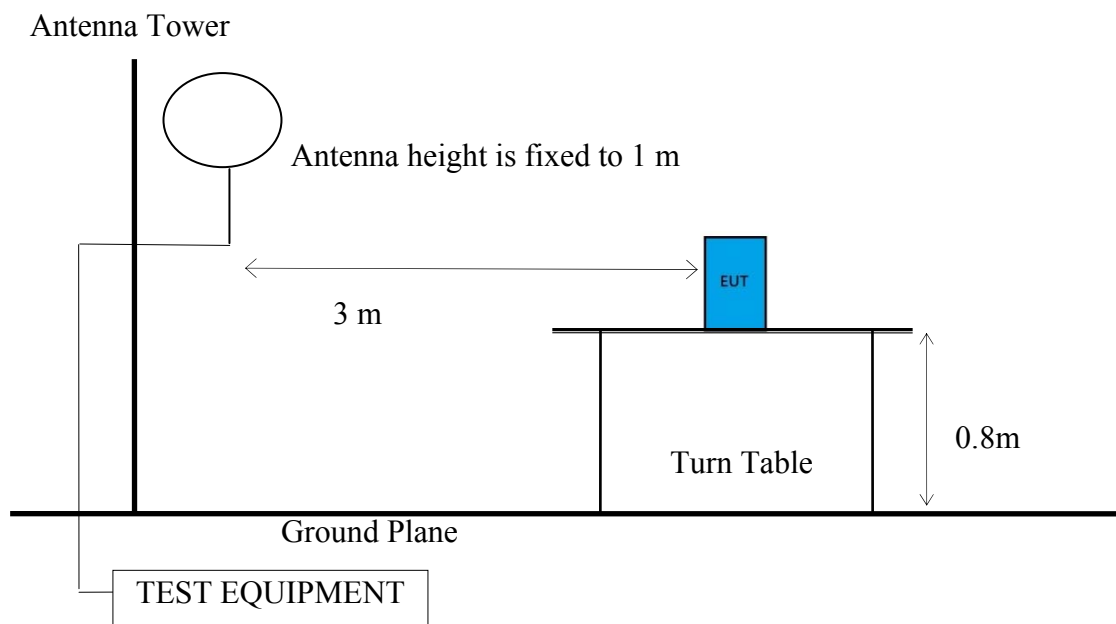
6. RADIATED EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup

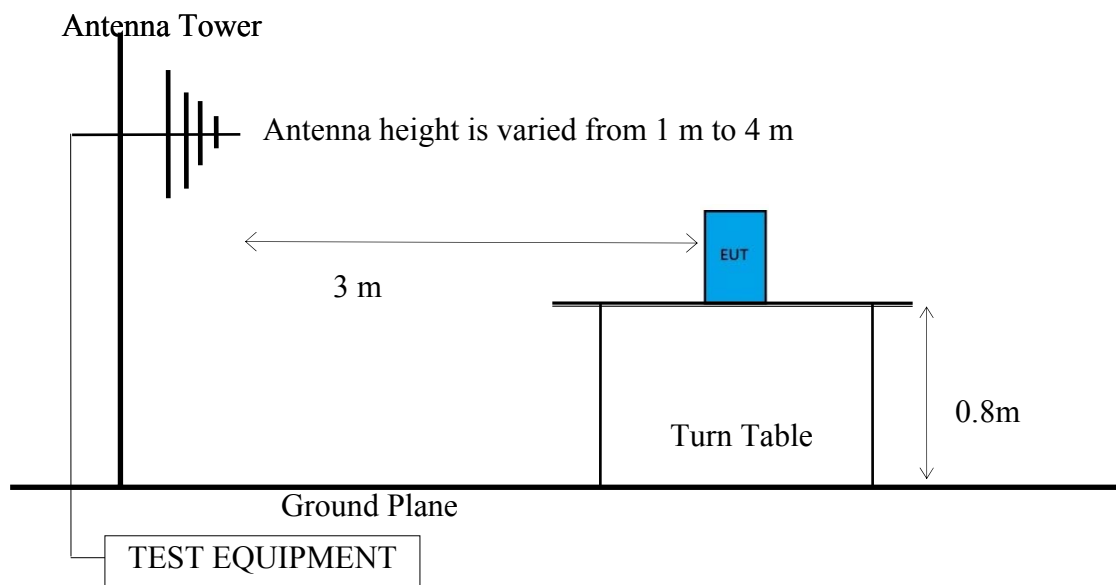
6.1.1. Block Diagram of connection between EUT and simulators

Indicated as section 3.7

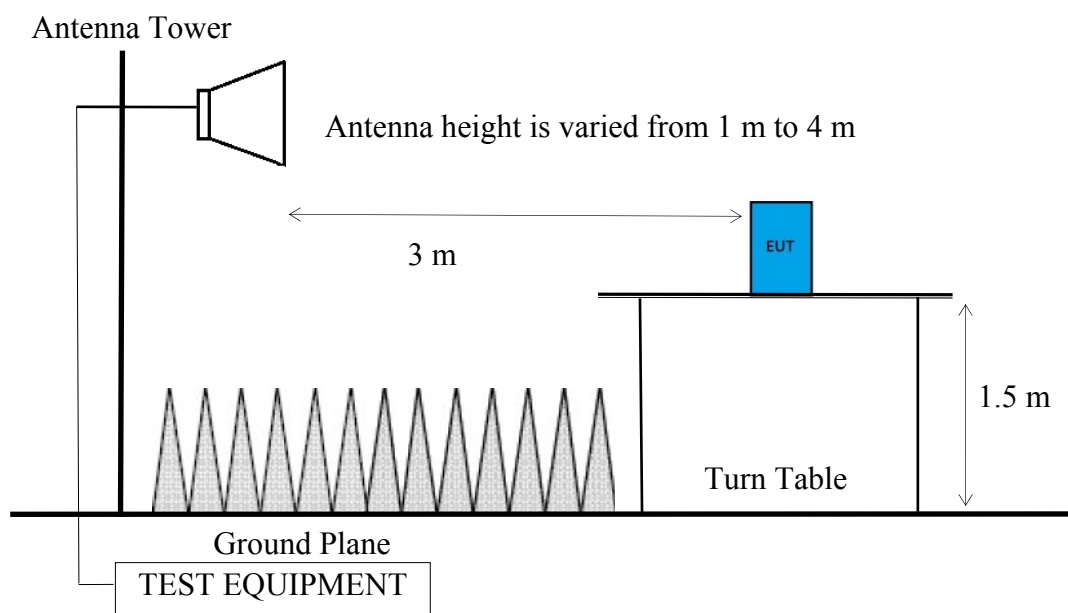
6.1.2. Semi Anechoic Chamber (3m) Setup Diagram for 9kHz-30MHz



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 Section 8.10 table 6, must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance (m)	Limits	
		dBμV/m	μV/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 dBμV/m (Peak) 54.0 dBμV/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 (Hz)	VBW Setting
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
BLE	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

□ EPR = Peak Emission Level - 95.2dB - 2.14dB

6.5. Test Results**PASSED.**

Test Date	2016/02/03	Temp./Hum.	22°C/58%
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 Below 1 GHz

Mode	802.11b	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
233.70	11.42	4.22	28.26	43.90	46.00	2.10	Peak
480.08	16.71	6.30	17.03	40.04	46.00	5.96	Peak
720.64	19.04	6.82	13.93	39.79	46.00	6.21	Peak
900.09	20.58	7.54	12.62	40.74	46.00	5.26	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
82.38	7.83	3.02	27.04	37.89	40.00	2.11	Peak
116.33	12.06	3.34	26.24	41.64	43.50	1.86	Peak
599.39	18.32	6.50	16.86	41.68	46.00	4.32	Peak
828.31	20.18	7.27	11.11	38.56	46.00	7.44	Peak

Mode	802.11g	Frequency	TX 2437MHz
------	---------	-----------	------------

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
234.67	11.52	4.23	28.14	43.89	46.00	2.11	Peak
480.08	16.71	6.30	17.39	40.40	46.00	5.60	Peak
717.73	18.97	6.80	13.19	38.96	46.00	7.04	Peak
831.22	20.20	7.28	12.21	39.69	46.00	6.31	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
82.38	7.83	3.02	27.03	37.88	40.00	2.12	Peak
118.27	12.19	3.36	26.81	42.36	43.50	1.14	Peak
597.45	18.29	6.50	16.40	41.19	46.00	4.81	Peak
831.22	20.20	7.28	11.82	39.30	46.00	6.70	Peak

Mode	802.11n-HT20	Frequency		TX 2437MHz			
Antenna at Horizontal Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
235.64	11.57	4.24	27.98	43.79	46.00	2.21	Peak
480.08	16.71	6.30	17.22	40.23	46.00	5.77	Peak
829.28	20.20	7.28	11.71	39.19	46.00	6.81	Peak
900.09	20.58	7.54	12.84	40.96	46.00	5.04	Peak
Antenna at Vertical Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
82.38	7.83	3.02	26.81	37.66	40.00	2.34	Peak
115.36	12.00	3.34	24.59	39.93	43.50	3.57	Peak
599.39	18.32	6.50	14.97	39.79	46.00	6.21	Peak
830.25	20.20	7.28	11.53	39.01	46.00	6.99	Peak

Mode	802.11n-HT40			Frequency	TX 2437MHz		
Antenna at Horizontal Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
236.61	11.62	4.24	27.86	43.72	46.00	2.28	Peak
480.08	16.71	6.30	16.79	39.80	46.00	6.20	Peak
698.33	18.73	6.72	14.30	39.75	46.00	6.25	Peak
828.31	20.18	7.27	13.18	40.63	46.00	5.37	Peak
Antenna at Vertical Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
82.38	7.83	3.02	27.06	37.91	40.00	2.09	Peak
116.33	12.06	3.34	24.21	39.61	43.50	3.89	Peak
597.45	18.29	6.50	16.59	41.38	46.00	4.62	Peak
827.34	20.18	7.27	13.35	40.80	46.00	5.20	Peak

Mode	BLE		Frequency		TX 2402MHz		
Antenna at Horizontal Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
236.61	11.62	4.24	27.65	43.51	46.00	2.49	Peak
482.02	16.73	6.32	16.69	39.74	46.00	6.26	Peak
700.27	18.73	6.72	17.46	42.91	46.00	3.09	Peak
829.28	20.20	7.28	12.35	39.83	46.00	6.17	Peak
Antenna at Vertical Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
82.38	7.83	3.02	26.68	37.53	40.00	2.47	Peak
117.30	12.14	3.35	24.91	40.40	43.50	3.10	Peak
597.45	18.29	6.50	16.95	41.74	46.00	4.26	Peak
830.25	20.20	7.28	12.80	40.28	46.00	5.72	Peak

Mode	BLE		Frequency		TX 2440MHz		
Antenna at Horizontal Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
233.70	11.42	4.22	27.95	43.59	46.00	2.41	Peak
482.02	16.73	6.32	16.69	39.74	46.00	6.26	Peak
700.27	18.73	6.72	17.46	42.91	46.00	3.09	Peak
828.31	20.18	7.27	13.57	41.02	46.00	4.98	Peak
Antenna at Vertical Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
82.38	7.83	3.02	27.61	38.46	40.00	1.54	Peak
115.36	12.00	3.34	24.50	39.84	43.50	3.66	Peak
597.45	18.29	6.50	18.68	43.47	46.00	2.53	Peak
827.34	20.18	7.27	13.65	41.10	46.00	4.90	Peak

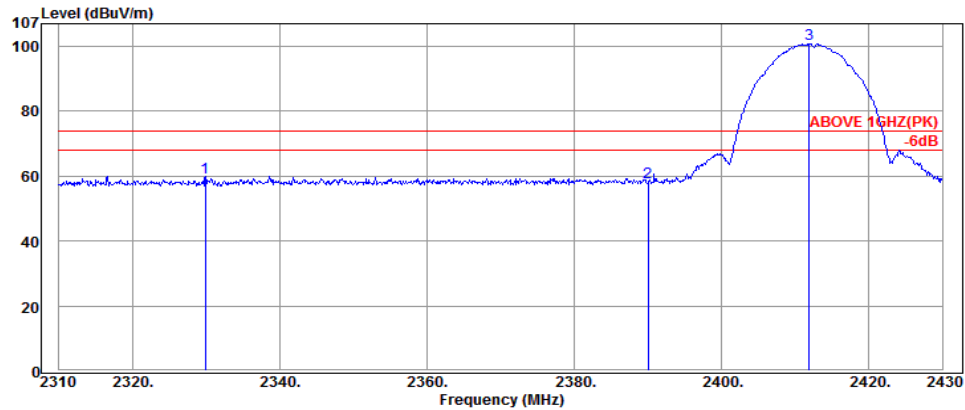
Mode		BLE		Frequency		TX 2480MHz	
Antenna at Horizontal Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
234.67	11.52	4.23	27.95	43.70	46.00	2.30	Peak
480.08	16.71	6.30	16.24	39.25	46.00	6.75	Peak
727.43	19.10	6.85	12.81	38.76	46.00	7.24	Peak
829.28	20.20	7.28	12.06	39.54	46.00	6.46	Peak
Antenna at Vertical Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
82.38	7.83	3.02	27.17	38.02	40.00	1.98	Peak
114.39	11.95	3.33	24.25	39.53	43.50	3.97	Peak
598.42	18.32	6.50	17.76	42.58	46.00	3.42	Peak
830.25	20.20	7.28	13.39	40.87	46.00	5.13	Peak

6.5.1.3. Frequency Above 1 GHz to 10th harmonics

Band Edge:

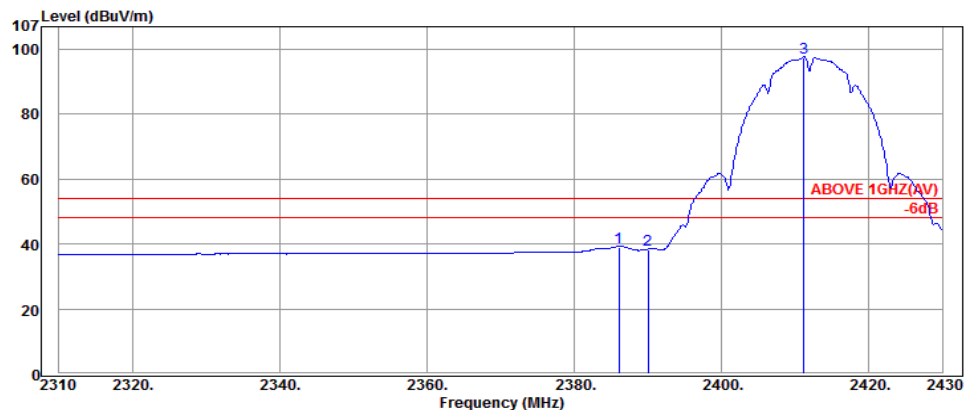
Mode	802.11b	Frequency	TX 2412MHz
------	---------	-----------	------------

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
2329.92	28.34	5.15	26.22	59.71	74.00	14.29	Peak
2390.04	28.40	5.24	24.51	58.15	74.00	15.85	Peak
2411.88	28.42	5.27	67.14	100.83	---	---	Peak

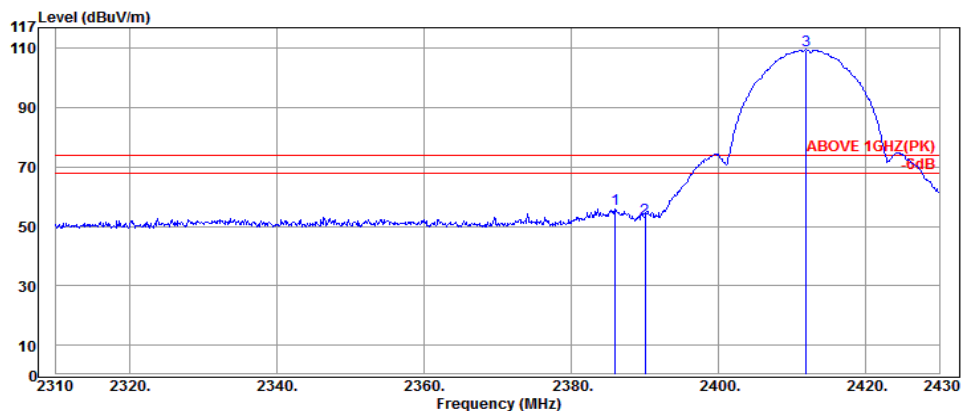
Antenna at Horizontal Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2386.08	28.40	5.23	5.42	39.05	54.00	14.95	Average
2390.04	28.40	5.24	4.53	38.17	54.00	15.83	Average
2411.16	28.42	5.27	63.75	97.44	---	---	Average

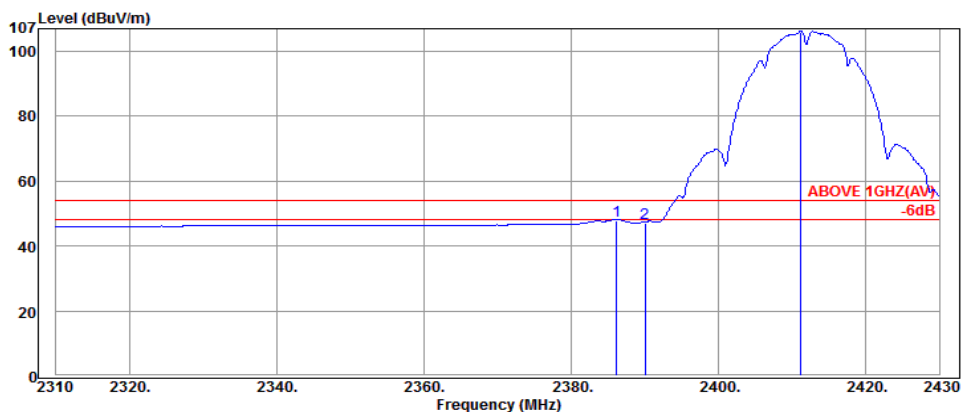
Mode	802.11b	Frequency	TX 2412MHz
------	---------	-----------	------------

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
2385.96	28.40	5.23	22.21	55.84	74.00	18.16	Peak
2390.04	28.40	5.24	19.01	52.65	74.00	21.35	Peak
2411.88	28.42	5.27	75.75	109.44	---	---	Peak

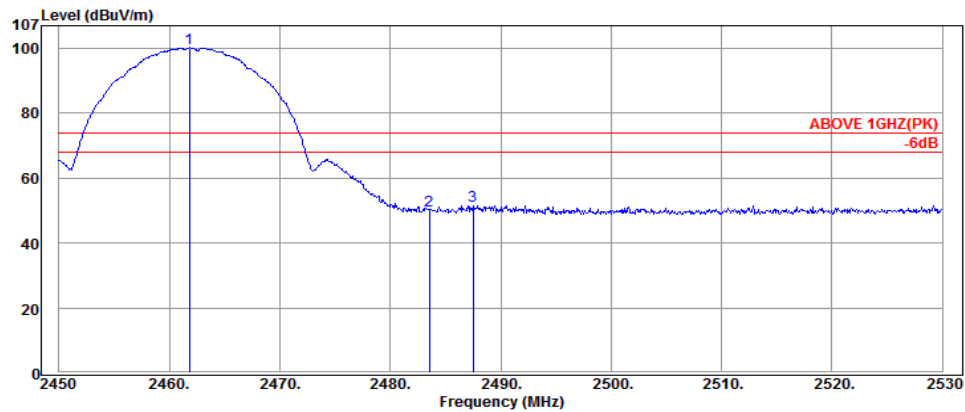
Antenna at Vertical Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2386.20	28.40	5.23	14.21	47.84	54.00	6.16	Average
2390.04	28.40	5.24	13.58	47.22	54.00	6.78	Average
2411.16	28.42	5.27	72.32	106.01	---	---	Average

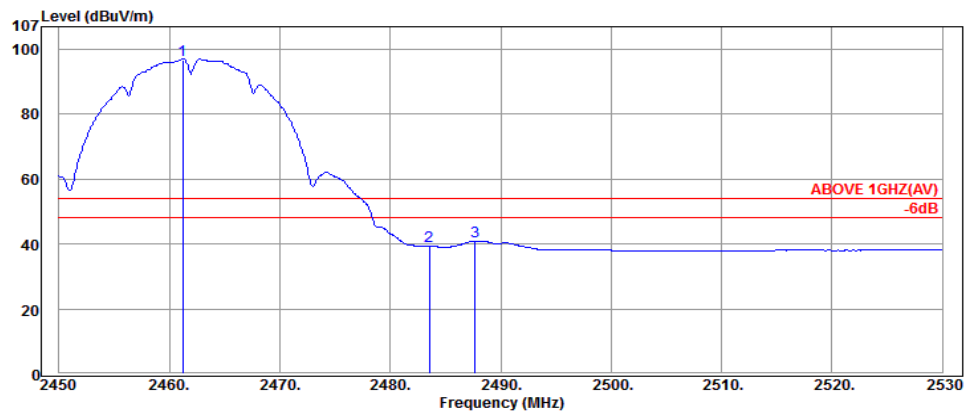
Mode	802.11b	Frequency	TX 2462MHz
------	---------	-----------	------------

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
2461.84	28.47	5.34	66.24	100.05	---	---	Peak
2483.52	28.49	5.37	16.01	49.87	74.00	24.13	Peak
2487.52	28.49	5.37	17.52	51.38	74.00	22.62	Peak

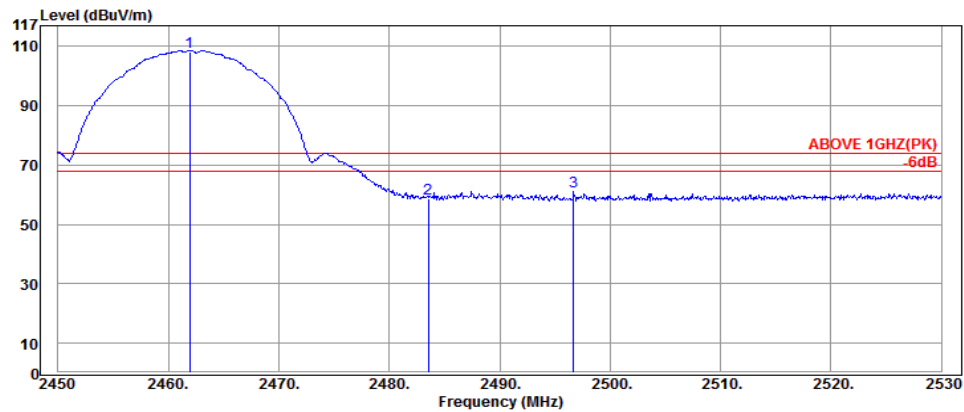
Antenna at Horizontal Polarization



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	28.47	5.34	63.03	96.84	---	---	Average
2483.52	28.49	5.37	5.51	39.37	54.00	14.63	Average
2487.68	28.49	5.37	7.05	40.91	54.00	13.09	Average

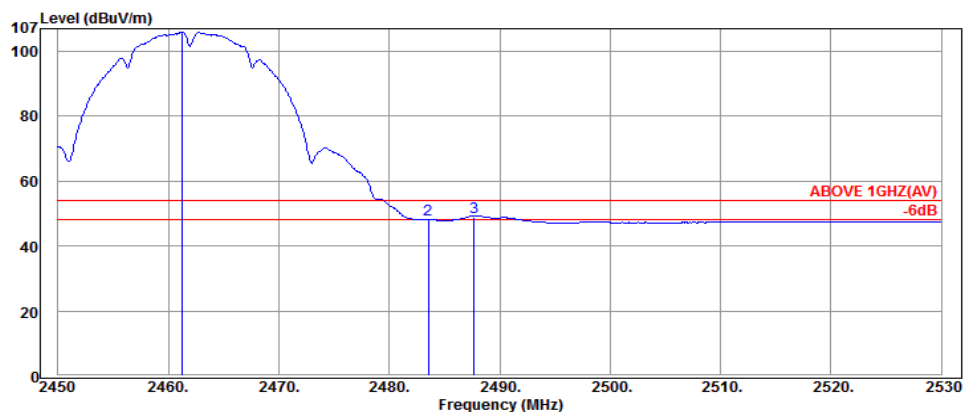
Mode	802.11b	Frequency	TX 2462MHz
------	---------	-----------	------------

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
2461.92	28.47	5.34	74.52	108.33	---	---	Peak
2483.52	28.49	5.37	25.02	58.88	74.00	15.12	Peak
2496.72	28.50	5.38	27.13	61.01	74.00	12.99	Peak

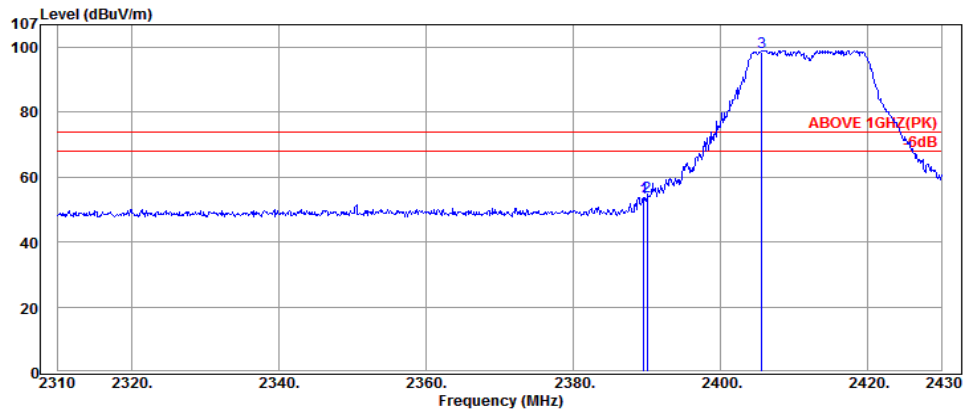
Antenna at Vertical Polarization



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	28.47	5.34	72.01	105.82	---	---	Average
2483.52	28.49	5.37	14.27	48.13	54.00	5.87	Average
2487.68	28.49	5.37	15.12	48.98	54.00	5.02	Average

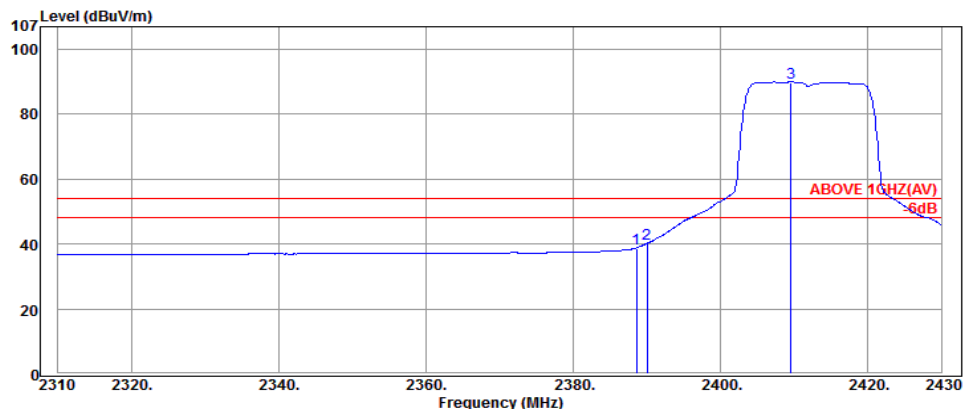
Mode	802.11g	Frequency	TX 2412MHz
------	---------	-----------	------------

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	28.40	5.24	20.00	53.64	74.00	20.36	Peak
2390.04	28.40	5.24	20.56	54.20	74.00	19.80	Peak
2405.64	28.42	5.26	65.03	98.71	---	---	Peak

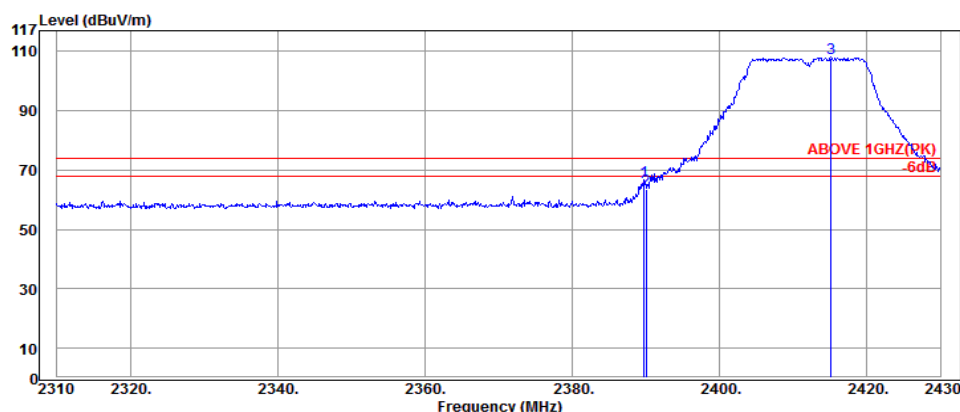
Antenna at Horizontal Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2388.60	28.40	5.24	5.03	38.67	54.00	15.33	Average
2390.04	28.40	5.24	6.31	39.95	54.00	14.05	Average
2409.60	28.42	5.27	56.14	89.83	---	---	Average

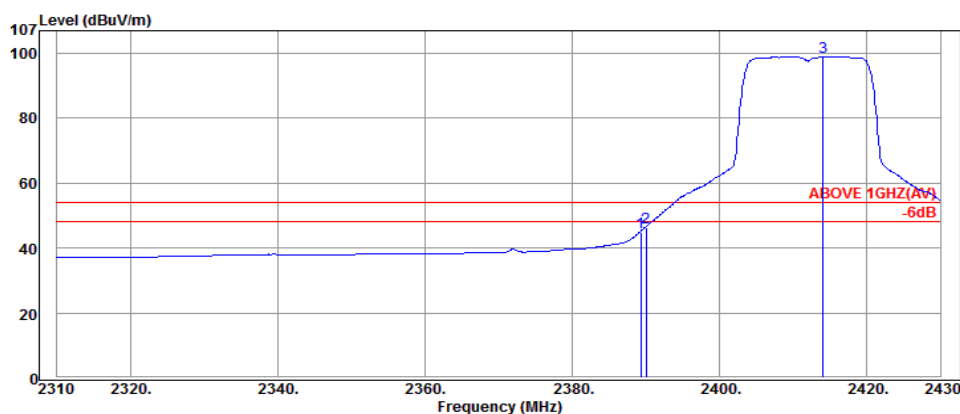
Mode	802.11g	Frequency	TX 2412MHz
------	---------	-----------	------------

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	28.40	5.24	32.85	66.49	74.00	7.51	Peak
2390.04	28.40	5.24	29.95	63.59	74.00	10.41	Peak
2415.12	28.42	5.27	74.13	107.82	---	---	Peak

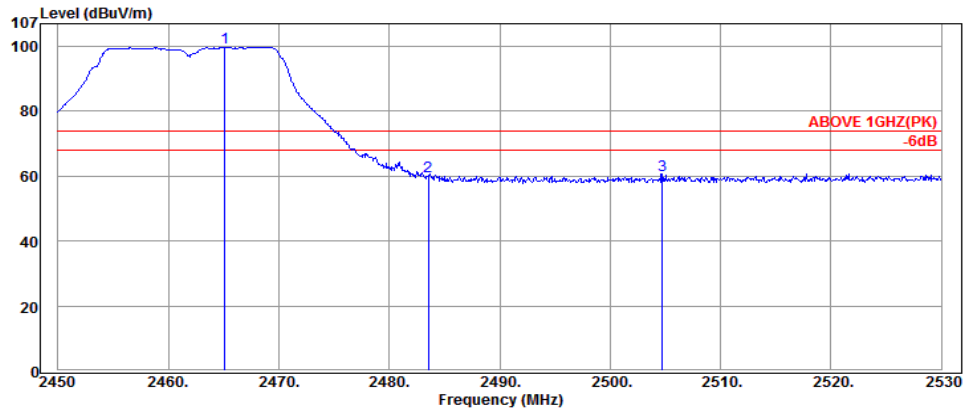
Antenna at Vertical Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.32	28.40	5.24	11.35	44.99	54.00	9.01	Average
2390.04	28.40	5.24	12.74	46.38	54.00	7.62	Average
2414.04	28.42	5.27	65.16	98.85	---	---	Average

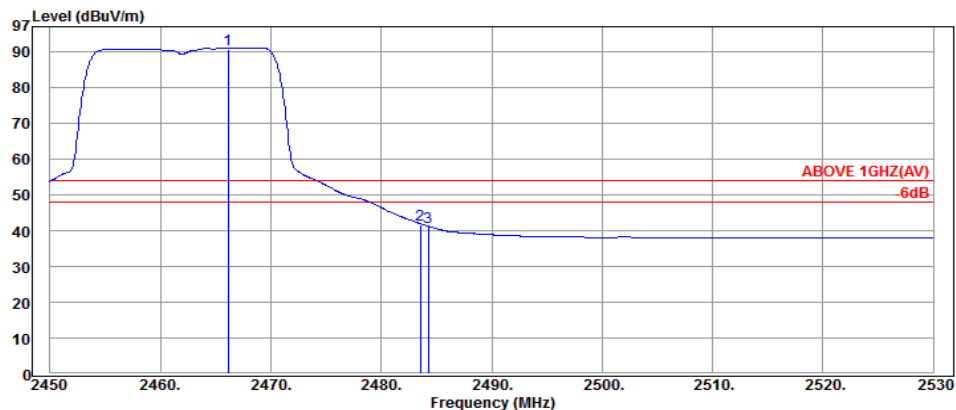
Mode	802.11g	Frequency	TX 2462MHz
------	---------	-----------	------------

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
2465.12	28.47	5.34	65.71	99.52	---	---	Peak
2483.52	28.49	5.37	26.06	59.92	74.00	14.08	Peak
2504.72	28.53	5.39	26.51	60.43	74.00	13.57	Peak

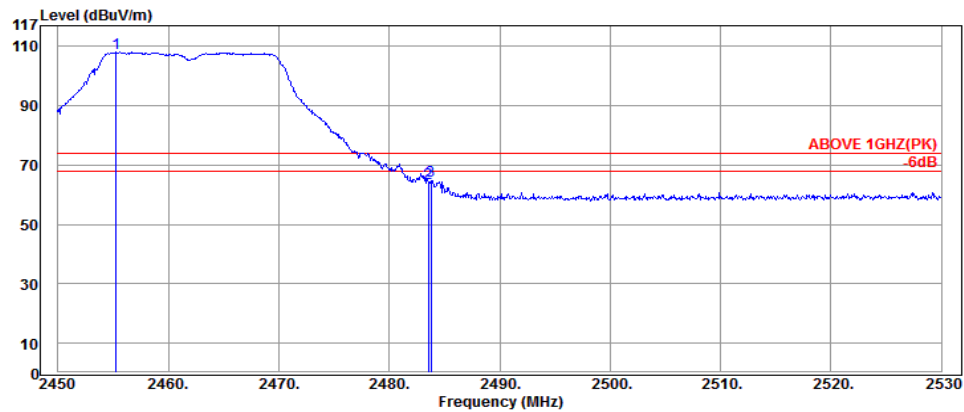
Antenna at Horizontal Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2466.16	28.47	5.34	56.95	90.76	---	---	Average
2483.52	28.49	5.37	7.75	41.61	54.00	12.39	Average
2484.24	28.49	5.37	7.03	40.89	54.00	13.11	Average

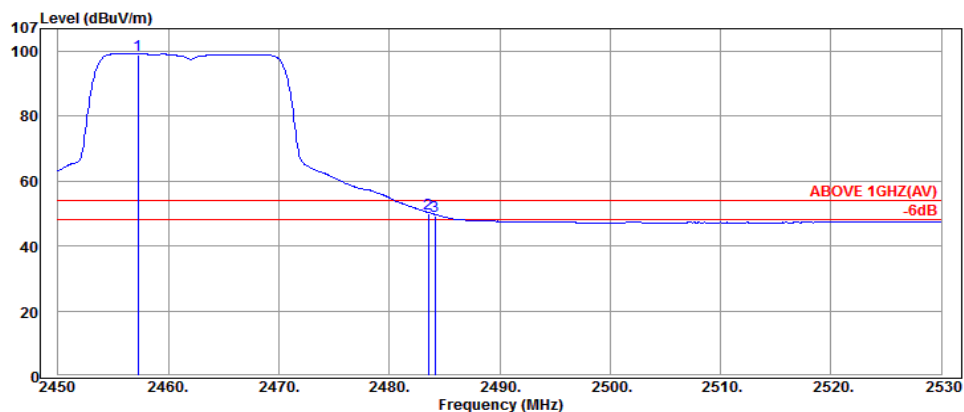
Mode	802.11g	Frequency	TX 2462MHz
------	---------	-----------	------------

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
2455.28	28.46	5.33	74.06	107.85	---	---	Peak
2483.52	28.49	5.37	30.03	63.89	74.00	10.11	Peak
2483.76	28.49	5.37	30.71	64.57	74.00	9.43	Peak

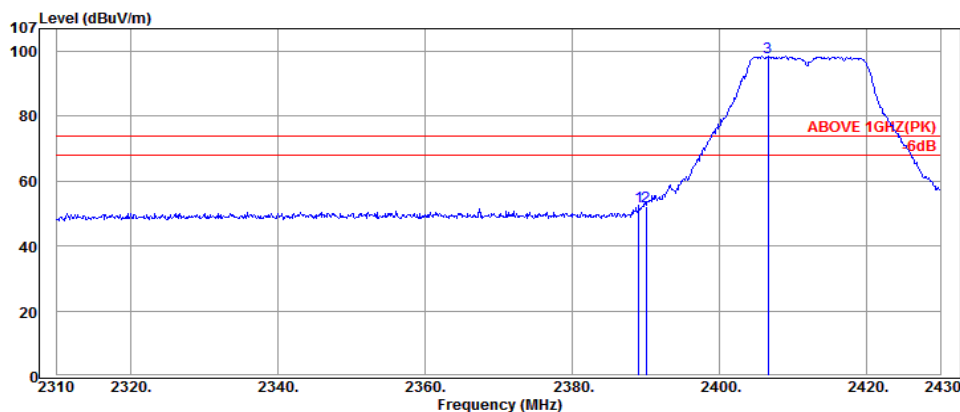
Antenna at Vertical Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2457.28	28.46	5.33	65.12	98.91	---	---	Average
2483.52	28.49	5.37	16.16	50.02	54.00	3.98	Average
2484.16	28.49	5.37	15.42	49.28	54.00	4.72	Average

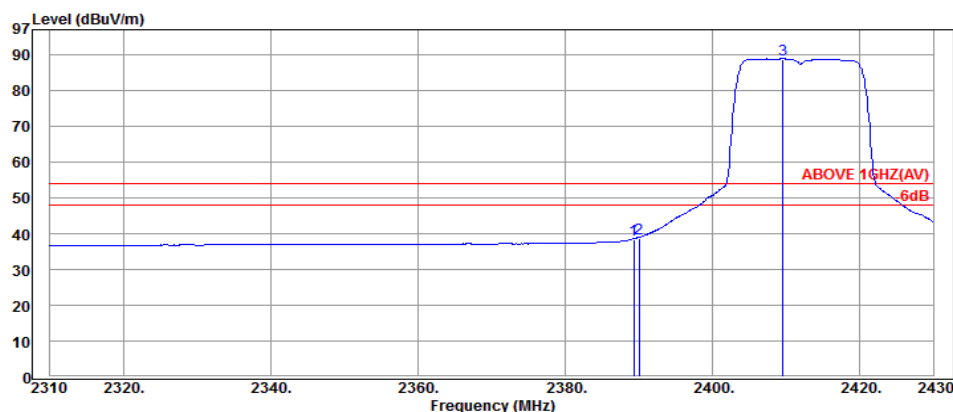
Mode	802.11n-HT20	Frequency	TX 2412MHz
------	--------------	-----------	------------

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
2389.08	28.40	5.24	18.51	52.15	74.00	21.85	Peak
2390.04	28.40	5.24	18.53	52.17	74.00	21.83	Peak
2406.60	28.42	5.26	64.32	98.00	---	---	Peak

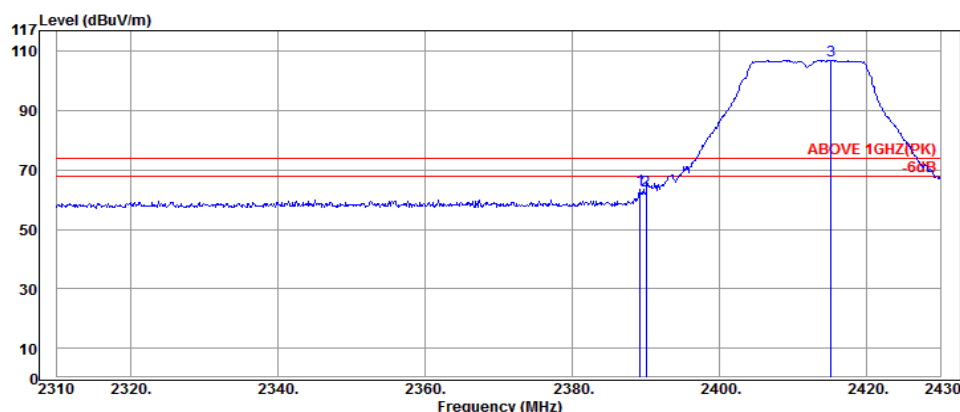
Antenna at Horizontal Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.32	28.40	5.24	4.53	38.17	54.00	15.83	Average
2390.04	28.40	5.24	5.02	38.66	54.00	15.34	Average
2409.60	28.42	5.27	55.03	88.72	---	---	Average

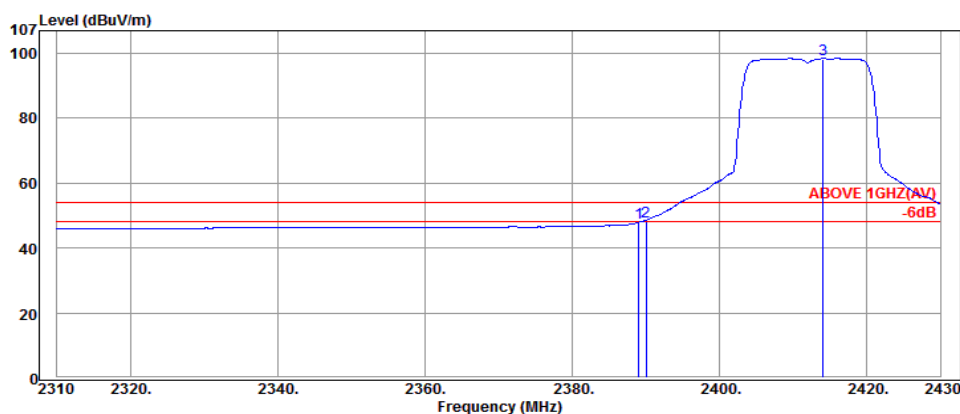
Mode	802.11n-HT20	Frequency	TX 2412MHz
------	--------------	-----------	------------

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	28.40	5.24	29.84	63.48	74.00	10.52	Peak
2390.04	28.40	5.24	29.35	62.99	74.00	11.01	Peak
2415.12	28.42	5.27	73.24	106.93	---	---	Peak

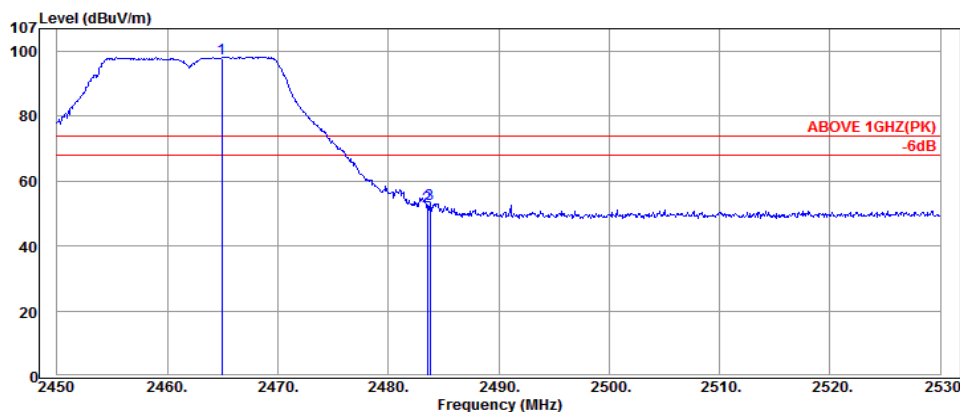
Antenna at Vertical Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.08	28.40	5.24	14.02	47.66	54.00	6.34	Average
2390.04	28.40	5.24	14.68	48.32	54.00	5.68	Average
2414.04	28.42	5.27	64.53	98.22	---	---	Average

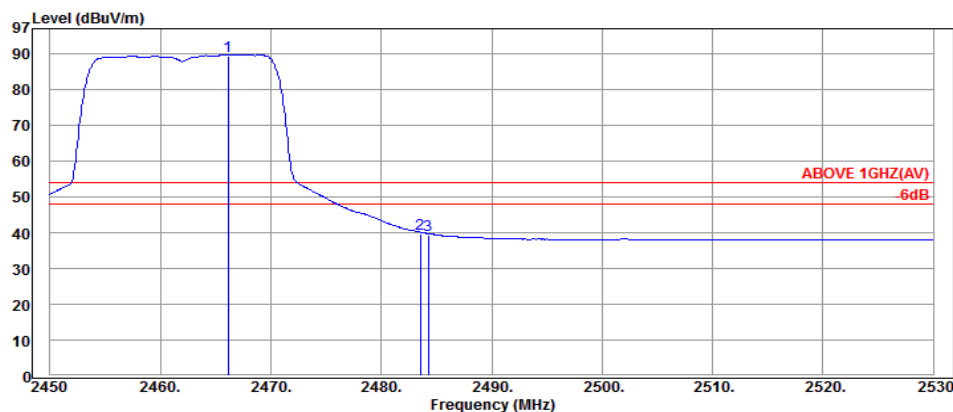
Mode	802.11n-HT20	Frequency	TX 2462MHz
------	--------------	-----------	------------

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
2464.96	28.47	5.34	64.12	97.93	---	---	Peak
2483.52	28.49	5.37	18.47	52.33	74.00	21.67	Peak
2483.76	28.49	5.37	19.17	53.03	74.00	20.97	Peak

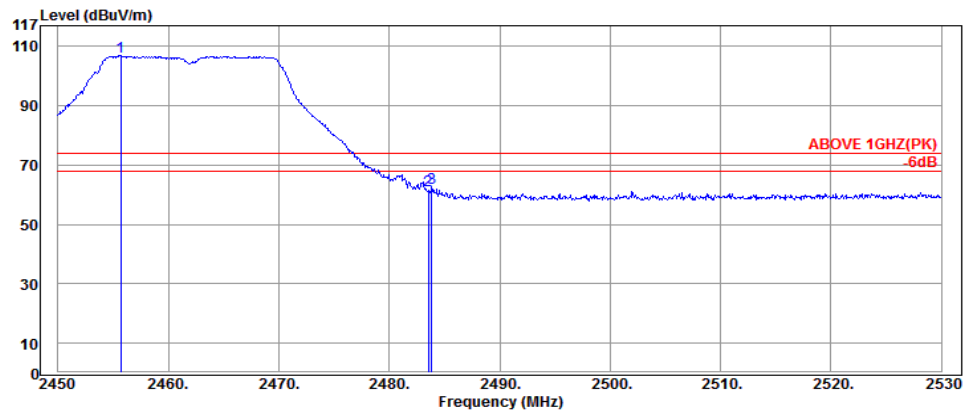
Antenna at Horizontal Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2466.16	28.47	5.34	55.46	89.27	---	---	Average
2483.52	28.49	5.37	5.93	39.79	54.00	14.21	Average
2484.24	28.49	5.37	5.53	39.39	54.00	14.61	Average

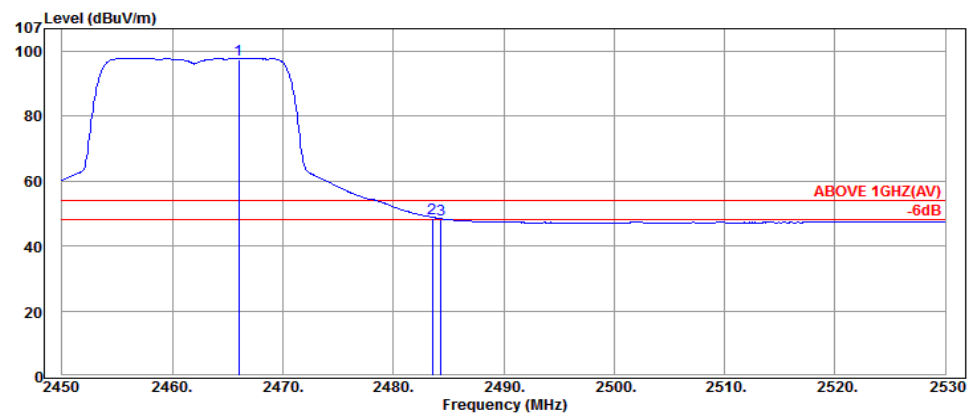
Mode	802.11n-HT20	Frequency	TX 2462MHz
------	--------------	-----------	------------

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
2455.68	28.46	5.33	67.21	101.00	---	---	Peak
2483.52	28.49	5.37	27.47	61.33	74.00	12.67	Peak
2483.84	28.49	5.37	28.51	62.37	74.00	11.63	Peak

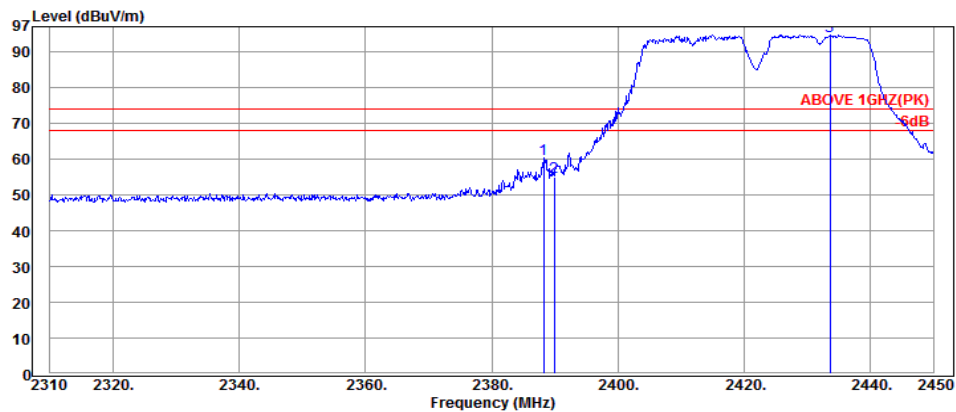
Antenna at Vertical Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2466.00	28.47	5.34	63.62	97.43	---	---	Average
2483.52	28.49	5.37	14.84	48.70	54.00	5.30	Average
2484.32	28.49	5.37	14.27	48.13	54.00	5.87	Average

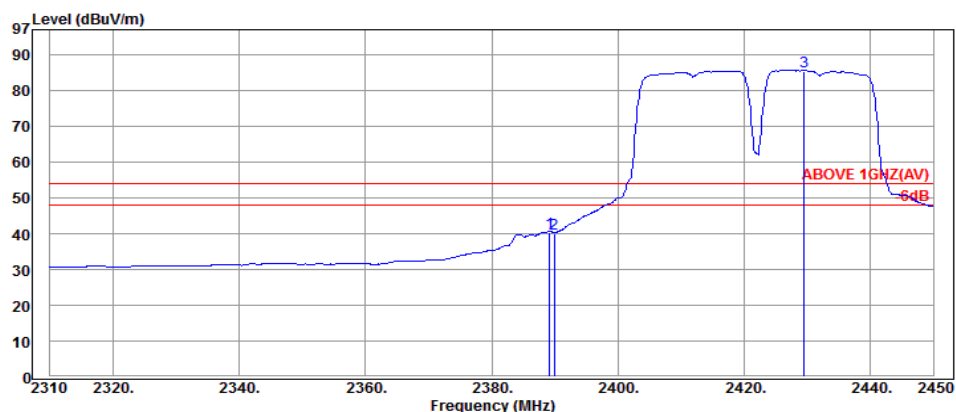
Mode	802.11n-HT40	Frequency	TX 2422MHz
------	--------------	-----------	------------

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
2388.26	28.40	5.24	26.35	59.99	74.00	14.01	Peak
2389.94	28.40	5.24	21.42	55.06	74.00	18.94	Peak
2433.62	28.44	5.30	60.61	94.35	---	---	Peak

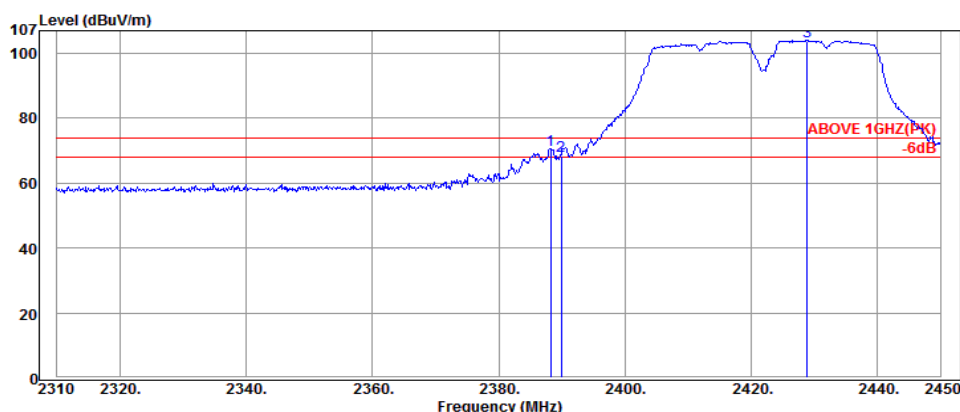
Antenna at Horizontal Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.24	28.40	5.24	6.62	40.26	54.00	13.74	Average
2389.94	28.40	5.24	6.42	40.06	54.00	13.94	Average
2429.56	28.44	5.29	51.63	85.36	---	---	Average

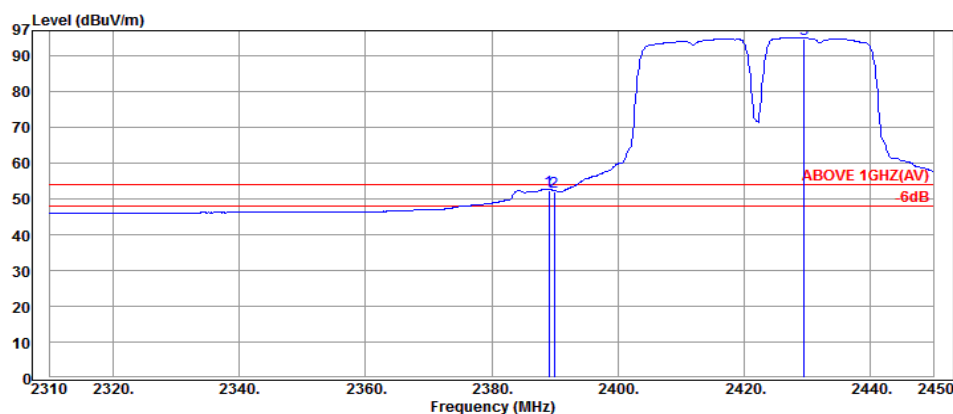
Mode	802.11n-HT40	Frequency	TX 2422MHz
------	--------------	-----------	------------

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
2388.26	28.40	5.24	36.41	70.05	74.00	3.95	Peak
2389.94	28.40	5.24	34.59	68.23	74.00	5.77	Peak
2428.86	28.44	5.29	70.05	103.78	---	---	Peak

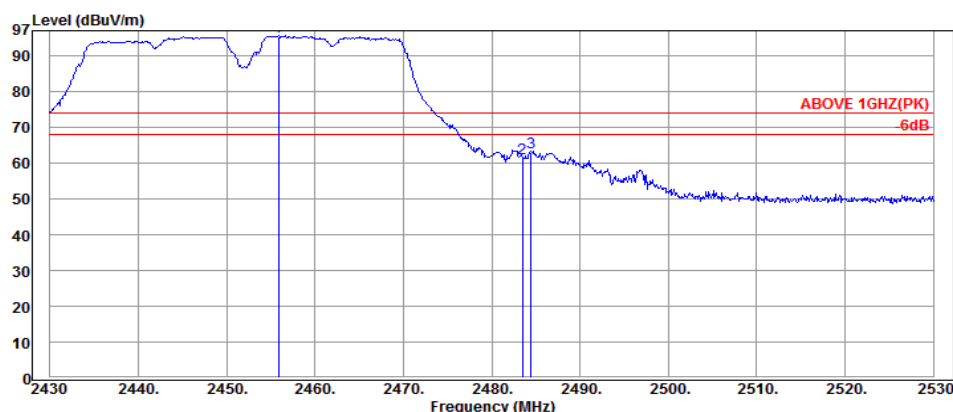
Antenna at Vertical Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2389.10	28.40	5.24	18.65	52.29	54.00	1.71	Average
2389.94	28.40	5.24	18.35	51.99	54.00	2.01	Average
2429.56	28.44	5.29	61.03	94.76	---	---	Average

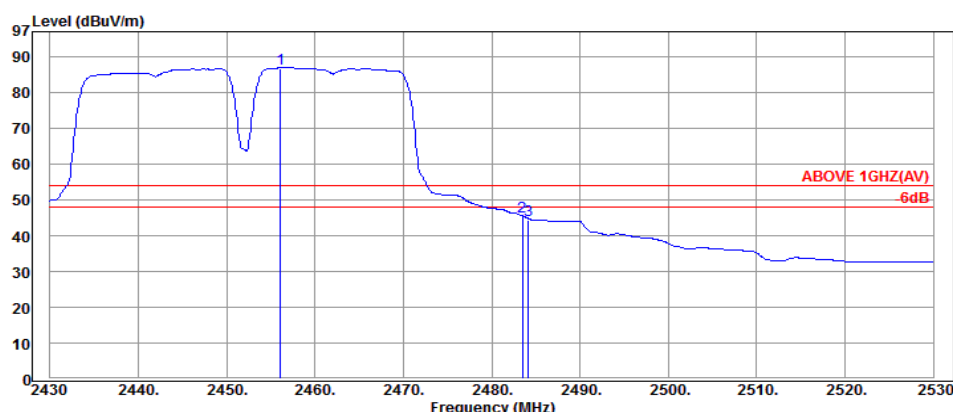
Mode	802.11n-HT40	Frequency	TX 2452MHz
------	--------------	-----------	------------

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
2455.90	28.46	5.33	61.53	95.32	---	---	Peak
2483.50	28.49	5.37	27.35	61.21	74.00	12.79	Peak
2484.50	28.49	5.37	29.10	62.96	74.00	11.04	Peak

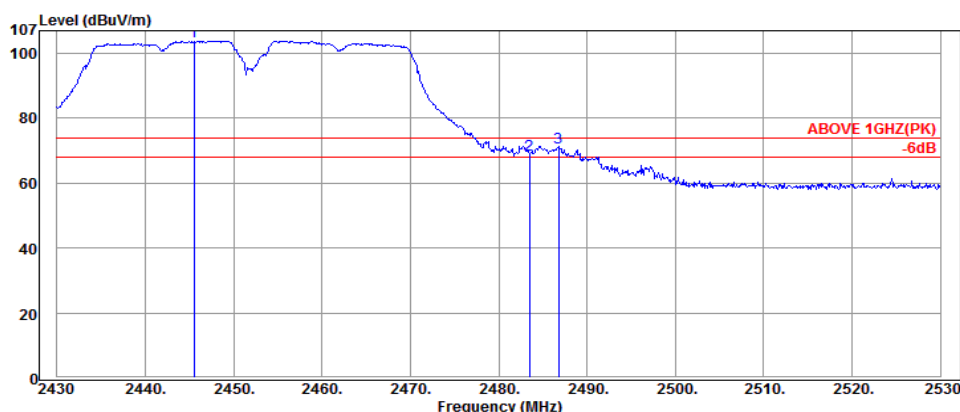
Antenna at Horizontal Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2456.10	28.46	5.33	52.84	86.63	---	---	Average
2483.50	28.49	5.37	11.37	45.23	54.00	8.77	Average
2484.20	28.49	5.37	10.51	44.37	54.00	9.63	Average

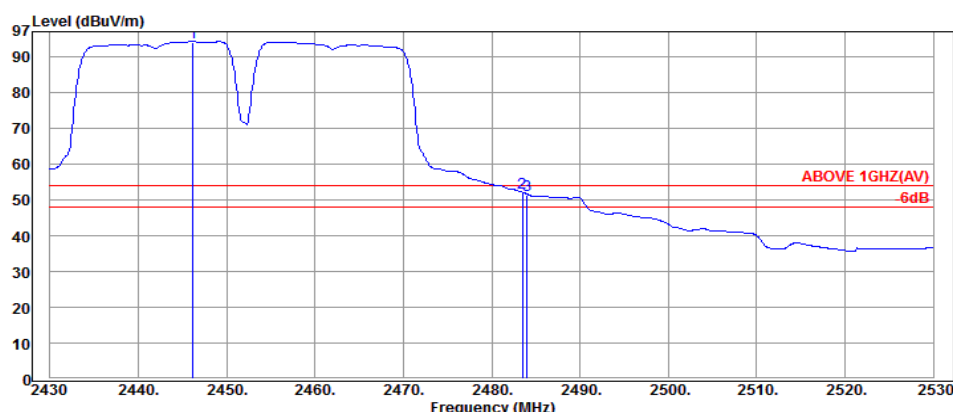
Mode	802.11n-HT40	Frequency	TX 2452MHz
------	--------------	-----------	------------

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
2445.50	28.45	5.32	69.75	103.52	---	---	Peak
2483.50	28.49	5.37	34.95	68.81	74.00	5.19	Peak
2486.80	28.49	5.37	37.25	71.11	74.00	2.89	Peak

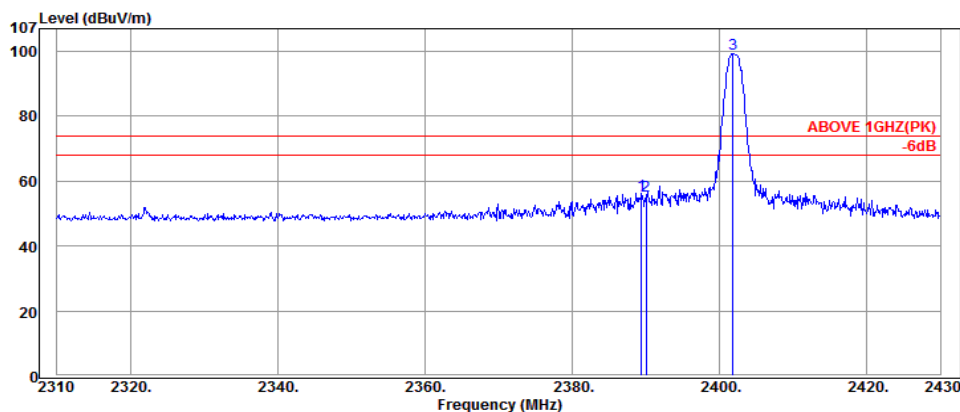
Antenna at Vertical Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2446.20	28.45	5.32	60.15	93.92	---	---	Average
2483.50	28.49	5.37	18.00	51.86	54.00	2.14	Average
2484.00	28.49	5.37	17.52	51.38	54.00	2.62	Average

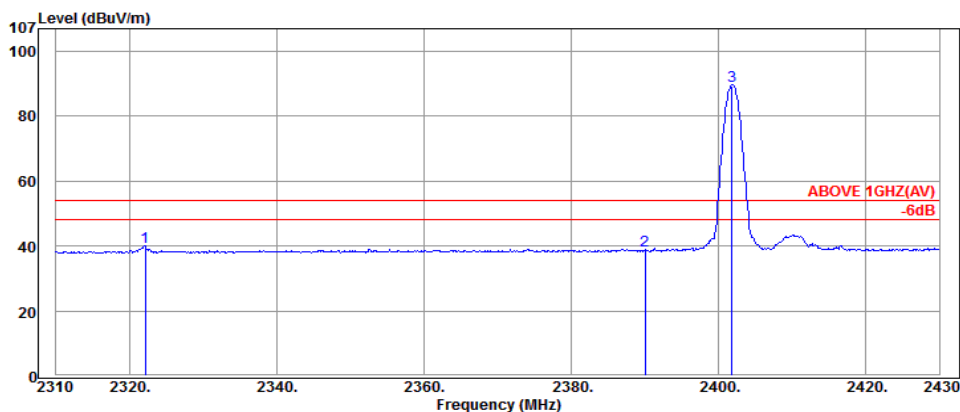
Mode	BLE	Frequency	TX 2402MHz
------	-----	-----------	------------

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
2389.44	28.40	5.24	22.32	55.96	74.00	18.04	Peak
2390.04	28.40	5.24	21.84	55.48	74.00	18.52	Peak
2401.80	28.41	5.25	65.56	99.22	---	---	Peak

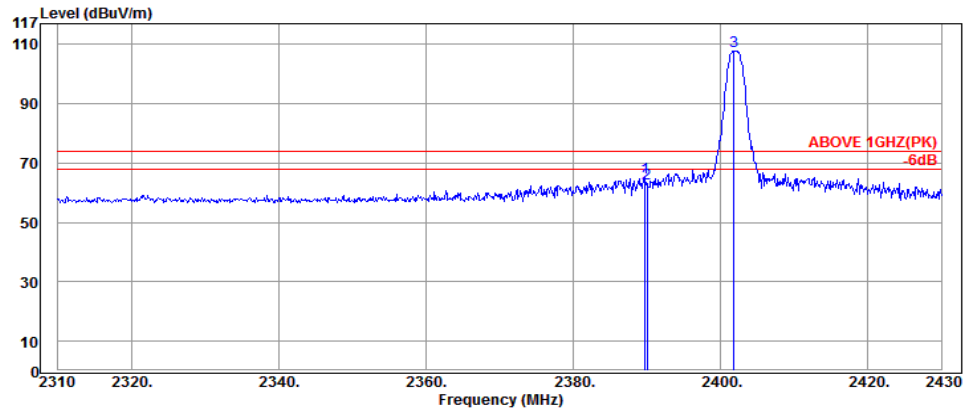
Antenna at Horizontal Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2322.12	28.33	5.14	6.16	39.63	54.00	14.37	Average
2390.04	28.40	5.24	4.85	38.49	54.00	15.51	Average
2401.80	28.41	5.25	55.75	89.41	---	---	Average

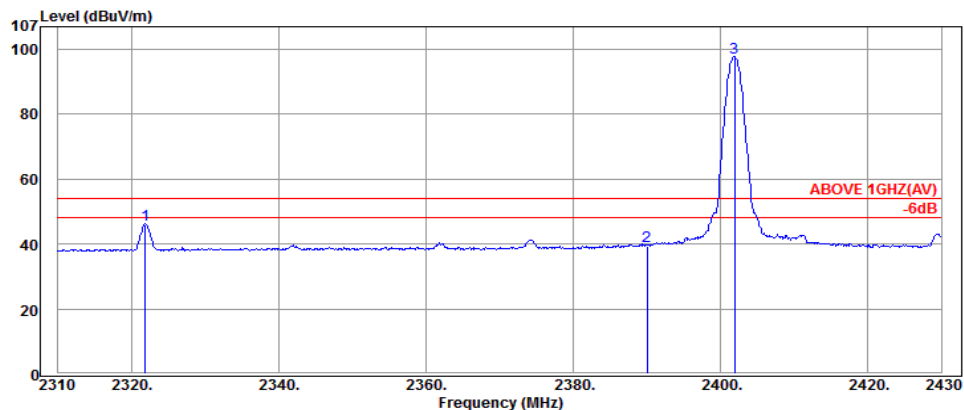
Mode	BLE	Frequency	TX 2402MHz
------	-----	-----------	------------

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	28.40	5.24	31.34	64.98	74.00	9.02	Peak
2390.04	28.40	5.24	29.36	63.00	74.00	11.00	Peak
2401.80	28.41	5.25	74.02	107.68	---	---	Peak

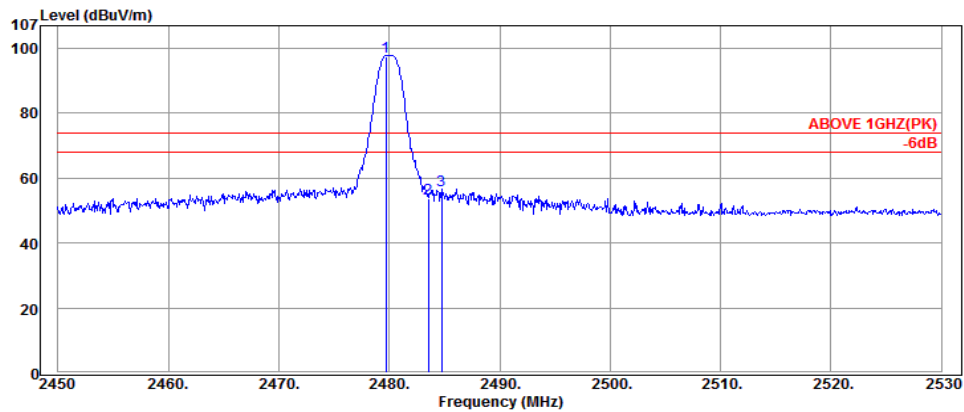
Antenna at Vertical Polarization



Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2321.88	28.33	5.14	12.52	45.99	54.00	8.01	Average
2390.04	28.40	5.24	5.72	39.36	54.00	14.64	Average
2401.92	28.41	5.26	63.95	97.62	---	---	Average

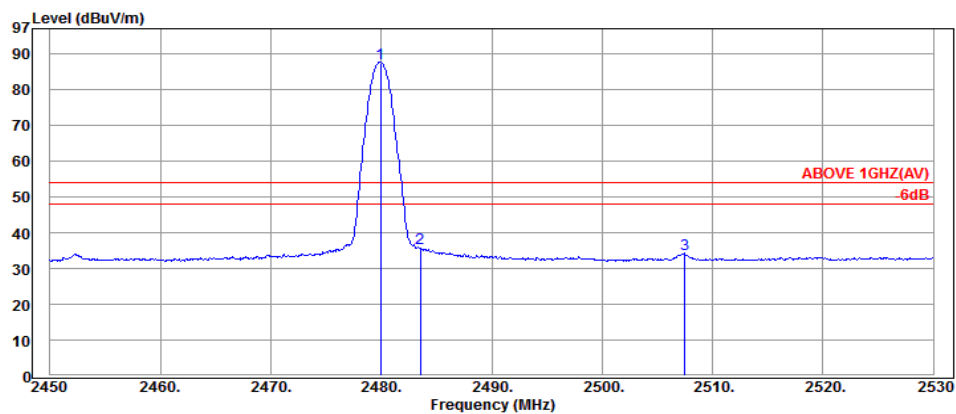
Mode	BLE	Frequency	TX 2480MHz
------	-----	-----------	------------

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
2479.68	28.48	5.36	63.76	97.60	---	---	Peak
2483.52	28.49	5.37	20.00	53.86	74.00	20.14	Peak
2484.72	28.49	5.37	22.55	56.41	74.00	17.59	Peak

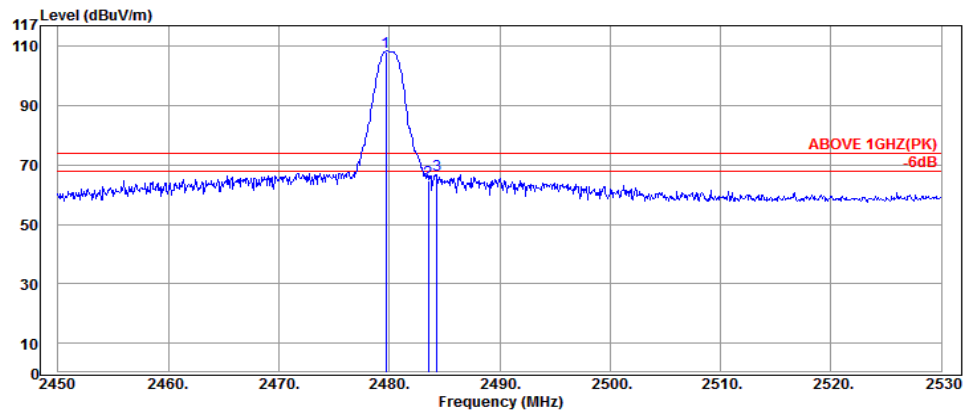
Antenna at Horizontal Polarization



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	28.48	5.36	53.35	87.19	---	---	Average
2483.52	28.49	5.37	1.75	35.61	54.00	18.39	Average
2507.52	28.53	5.41	0.15	34.09	54.00	19.91	Average

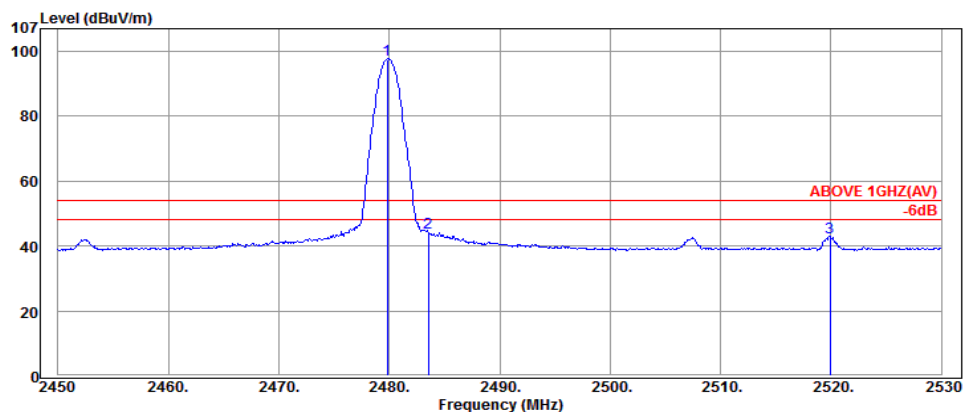
Mode	BLE	Frequency	TX 2480MHz
------	-----	-----------	------------

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
2479.68	28.48	5.36	74.43	108.27	---	---	Peak
2483.52	28.49	5.37	30.95	64.81	74.00	9.19	Peak
2484.32	28.49	5.37	32.84	66.70	74.00	7.30	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
2479.84	28.48	5.36	63.54	97.38	---	---	Average
2483.52	28.49	5.37	10.25	44.11	54.00	9.89	Average
2519.92	28.58	5.44	8.72	42.74	54.00	11.26	Average

6.5.2. Emissions outside the frequency band:

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

Mode		802.11b		Frequency		TX 2462MHz	
Antenna at Horizontal Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
3310.00	32.84	6.78	3.23	42.85	54.00	11.15	Peak
5340.00	34.63	8.66	-0.81	42.48	54.00	11.52	Peak
Antenna at Vertical Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
3310.00	32.84	6.78	6.93	46.55	54.00	7.45	Peak
4990.00	34.30	8.78	1.60	44.68	54.00	9.32	Peak

Mode	802.11g			Frequency	TX 2437MHz		
Antenna at Horizontal Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
4285.00	33.75	8.01	0.96	42.72	54.00	11.28	Peak
7235.00	35.80	9.42	0.14	45.36	54.00	8.64	Peak
Antenna at Vertical Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
3310.00	32.84	6.78	4.86	44.48	54.00	9.52	Peak
6985.00	35.81	9.69	-0.39	45.11	54.00	8.89	Peak

Mode	802.11n-HT20	Frequency	TX 2437MHz
------	--------------	-----------	------------

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
4990.00	34.30	8.78	0.02	43.10	54.00	10.90	Peak
6735.00	35.97	10.09	-1.31	44.75	54.00	9.25	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
3310.00	32.84	6.78	5.23	44.85	54.00	9.15	Peak
4990.00	34.30	8.78	1.16	44.24	54.00	9.76	Peak

Mode	802.11n-HT40	Frequency	TX 2437MHz
------	--------------	-----------	------------

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
4975.00	34.29	8.73	0.67	43.69	54.00	10.31	Peak
6615.00	36.04	9.90	-1.71	44.23	54.00	9.77	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
3310.00	32.84	6.78	5.97	45.59	54.00	8.41	Peak
5000.00	34.30	8.78	1.67	44.75	54.00	9.25	Peak

Mode	BLE	Frequency	TX 2402MHz
------	-----	-----------	------------

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
3225.00	32.86	6.53	3.50	42.89	54.00	11.11	Peak
4985.00	34.29	8.73	1.35	44.37	54.00	9.63	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
3200.00	32.86	6.43	4.23	43.52	54.00	10.48	Peak
4990.00	34.30	8.78	2.29	45.37	54.00	8.63	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
3165.00	32.87	6.41	3.21	42.49	54.00	11.51	Peak
6585.00	36.05	9.84	-1.75	44.14	54.00	9.86	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
3200.00	32.86	6.43	3.25	42.54	54.00	11.46	Peak
4990.00	34.30	8.78	3.11	46.19	54.00	7.81	Peak

Mode	BLE			Frequency	TX 2480MHz		
Antenna at Horizontal Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
4235.00	33.67	8.00	1.71	43.38	54.00	10.62	Peak
6800.00	35.92	9.94	-0.47	45.39	54.00	8.61	Peak
Antenna at Vertical Polarization							
Emission Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Limits	Margin	Detector
(MHz)	(dB/m)	(dB)	(dBμV)	(dBμV/m)	(dBμV/m)	(dB)	
4985.00	34.29	8.73	1.32	44.34	54.00	9.66	Peak
5325.00	34.62	8.70	0.71	44.03	54.00	9.97	Peak

6.5.3. 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. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. 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)

7.3. 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%.

7.4. Test Results

Test Date	2016/02/03	Temp./Hum.	23°C/48%
Test Voltage	AC 120V, 60Hz		

Modulation Type	Centre Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	
802.11b	2412	18.09	0.064417	< 30dBm (1W)
	2437	17.98	0.062806	
	2462	18.31	0.067764	
802.11g	2412	22.33	0.171002	
	2437	23.43	0.220293	
	2462	22.68	0.185353	
802.11n-HT20	2412	21.37	0.137088	
	2437	23.09	0.203704	
	2462	21.65	0.146218	
802.11n-HT40	2422	21.51	0.141579	
	2437	23.11	0.204644	
	2452	21.66	0.146555	
BLE	2402	6.70	0.004677	
	2440	6.84	0.004831	
	2480	6.63	0.004603	

Note: The results have been included cable loss.

8. DEVIATION TO TEST SPECIFICATIONS

【NONE】