

TEST REPORT

Reference No..... : WTX22X02023515W
FCC ID : 2AUHG-DIM-PULW-1
Applicant : ARTIKA FOR LIVING INC
Address..... : 1756 50th Avenue Lachine, Quebec Canada, H8T 2V5
Manufacturer : SHEN ZHEN HIDIN TECHNOLOGY CO., LTD
Address..... : 6th floor, No. 1301-59, Yinxing Industrial Park, Guanlan, Longhua district,
Shenzhen, Guangdong China
Product Name : Dimmer Switch Gradateur
Model No..... : DIM-PULW
Standards : FCC Part 15.247
Date of Receipt sample : 2022-02-22
Date of Test..... : 2022-02-22 to 2022-03-25
Date of Issue : 2022-03-30
Test Report Form No. : WTX_Part 15_247W
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

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Report version

Version No.	Date of issue	Description
Rev.00	2022-03-30	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Dimmer Switch Gradateur
Trade Name:	/
Model No.:	DIM-PULW
Adding Model(s):	/
Rated Voltage:	AC120V
Power Adapter Model:	/
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Support Standards:	802.11b, 802.11g, 802.11n-HT20
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20)
RF Output Power:	15.16dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20)
Channel Separation:	5MHz
Type of Antenna:	PCB Antenna
Antenna Gain:	3dBi
<i>Note: The Antenna Gain is provided by the customer and can affect the validity of results.</i>	

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

558074 D01 15.247 Meas Guidance v05r02: Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under section 15.247 of the Fcc rules.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, with a duty cycle equal to 100%, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11b	Low:2412MHz, Middle:2437MHz,High:2462MHz
TM2	802.11g	Low:2412MHz, Middle:2437MHz,High:2462MHz
TM3	802.11n-HT20	Low:2412MHz, Middle:2437MHz,High:2462MHz

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	45~55 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
AC Cable	1.0	Unshielded	Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Power Spectral Density	Conducted	$\pm 1.8\text{dB}$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$
Transmitter Spurious Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-26GHz $\pm 3.92\text{dB}$

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
SEMT-1075	Communication Tester	Rohde & Schwarz	CMW500	148650	2021-03-27	2022-03-26
SEMT-1063	GSM Tester	Rohde & Schwarz	CMU200	114403	2021-03-27	2022-03-26
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2021-03-27	2022-03-26
SEMT-1079	Spectrum Analyzer	Agilent	N9020A	US47140102	2021-03-27	2022-03-26
SEMT-1080	Signal Generator	Agilent	83752A	3610A01453	2021-03-27	2022-03-26
SEMT-1081	Vector Signal Generator	Agilent	N5182A	MY47070202	2021-03-27	2022-03-26
SEMT-1028	Power Divider	Weinschel	1506A	PM204	2021-03-27	2022-03-26
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	/	/
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	/	/
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	/	/
SEMT-C004	Cable	Zheng DI	2M0RFC	/	/	/
SEMT-C005	Cable	Zheng DI	1M0RFC	/	/	/
SEMT-C006	Cable	Zheng DI	1M0RFC	/	/	/
<input checked="" type="checkbox"/> Chamber A: Below 1GHz						
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2021-03-27	2022-03-26
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2021-03-27	2022-03-26
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2021-04-12	2022-04-11
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-19	2023-03-18
SEMT-1068	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2021-03-19	2023-03-18
<input checked="" type="checkbox"/> Chamber A: Above 1GHz						
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2021-03-27	2022-03-26
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2021-03-27	2022-03-26
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2021-04-12	2022-04-11
SEMT-1042	Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2021-04-27	2023-04-26
SEMT-1169	Pre-amplifier	Direction	PAP-2640	14145-1415	2021-04-27	2022-04-26

		Systems Inc.		3		
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2021-03-27	2022-03-26
<input type="checkbox"/> Chamber B: Below 1GHz						
SEMT-1068	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
SEMT-1067	Amplifier	Agilent	8447D	2944A10179	2021-04-12	2022-04-11
SEMT-1066	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2021-05-06	2022-05-05
<input type="checkbox"/> Chamber C: Below 1GHz						
SEMT-1319	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2021-12-03	2022-12-02
SEMT-1343	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2023-05-27
SEMT-1333	Amplifier	HP	8447F	2944A03869	2021-04-15	2022-04-14
<input checked="" type="checkbox"/> Conducted Room 1#						
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2021-04-12	2022-04-11
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2021-04-15	2022-04-14
SEMT-1003	AC LISN	Schwarz beck	NSLK8126	8126-224	2021-04-12	2022-04-11
<input type="checkbox"/> Conducted Room 2#						
SEMT-1334	EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2021-04-12	2022-04-11
SEMT-1336	LISN	Rohde & Schwarz	ENV 216	100097	2021-04-12	2022-04-11

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§15.203; §15.247(b)(4)(i)	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§15.207(a)	Conducted Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.247(a)(2)	DTS Bandwidth	Compliant
§15.247(b)(3)	RF Output Power	Compliant
§15.209(a)	Radiated Emission	Compliant
§15.247(d)	Band Edge (Out of Band Emissions)	Compliant

N/A: Not applicable.

3. Antenna Requirement

3.1 Standard Applicable

According to FCC Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Evaluation Information

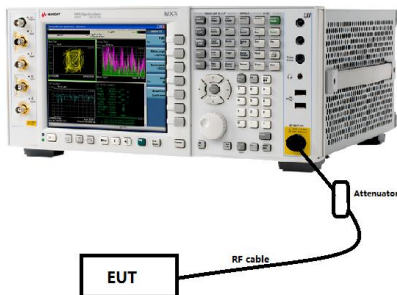
This product has a PCB antenna, fulfill the requirement of this section.

4. Power Spectral Density

4.1 Standard Applicable

According to 15.247(a)(1)(iii), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

4.2 Test Setup Block Diagram



4.3 Test Procedure

According to the KDB 558074 D01 v05r02 Subclause 8.4 and ANSI C63.10-2013 Subclause 11.10.3, such specifications require that the same method as used to determine the conducted output power shall also be used to determine the power spectral density. The test method of power spectral density as below:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set span to at least 1.5 times the OBW.
- c) Set RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$.
- d) Set VBW $\geq 3 \times \text{RBW}$.
- e) Detector = power averaging (RMS) or sample detector (when RMS not available).
- f) Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- g) Sweep time = auto couple.
- h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
- i) Use the peak marker function to determine the maximum amplitude level.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

4.4 Summary of Test Results/Plots

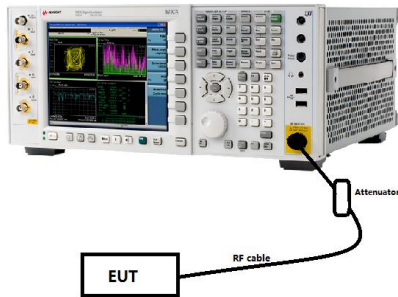
Please refer to Appendix A

5. DTS Bandwidth

5.1 Standard Applicable

According to 15.247(a)(2), systems using digital modulation techniques may operate in the 902–928MHz, 2400–2483.5MHz, and 5725–5850MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

5.2 Test Setup Block Diagram



5.3 Test Procedure

According to the KDB 558074 D01 v05r02 Subclause 8.2 and ANSI C63.10-2013 Subclause 11.8.1, the test method of DTS Bandwidth as below:

- a) Set RBW = 100kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.4 Summary of Test Results/Plots

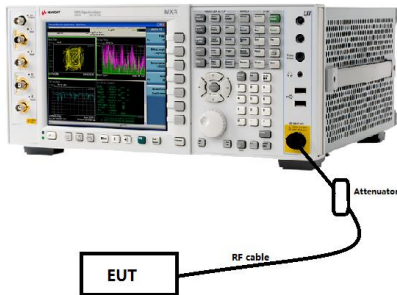
Please refer to Appendix B

6. RF Output Power

6.1 Standard Applicable

According to 15.247(b)(3), for systems using digital modulation in the 902–928MHz, 2400–2483.5MHz, and 5725–5850MHz bands: 1 Watt.

6.2 Test Setup Block Diagram



6.3 Test Procedure

According to the KDB-558074 D01 v05r02 Subclause 8.3.2.2 and ANSI C63.10-2013 Subclause 11.9.2.2, when this option is exercised, the measured power is to be referenced to the OBW rather than the DTS bandwidth.

- a) Set span to at least 1.5 times the OBW.
- b) Set RBW = 1-5% of the OBW, not to exceed 1MHz.
- c) Set VBW $\geq 3 \times$ RBW.
- d) Number of points in sweep $\geq 2 \times$ span / RBW. (This gives bin-to-bin spacing \leq RBW/2, so that narrowband signals are not lost between frequency bins.)
- e) Sweep time = auto.
- f) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- g) If transmit duty cycle < 98 %, use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 %, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.
- h) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- i) 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. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

6.4 Summary of Test Results/Plots

Please refer to Appendix C

7. Field Strength of Spurious Emissions

7.1 Standard Applicable

According to §15.247(d), 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

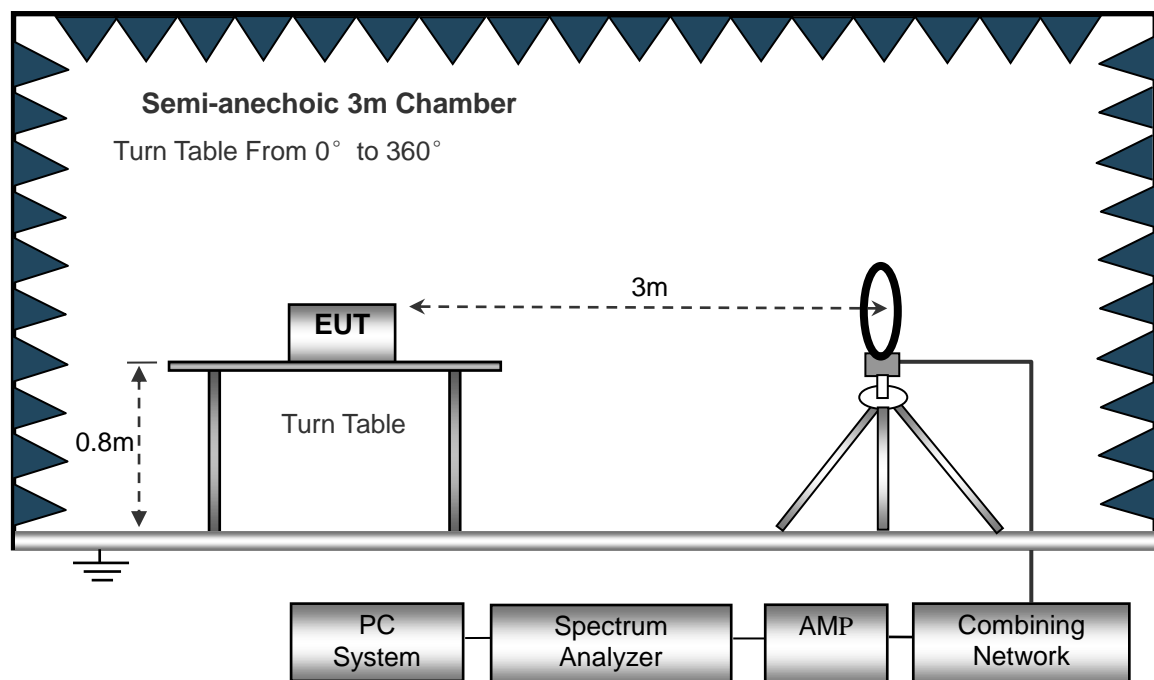
7.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

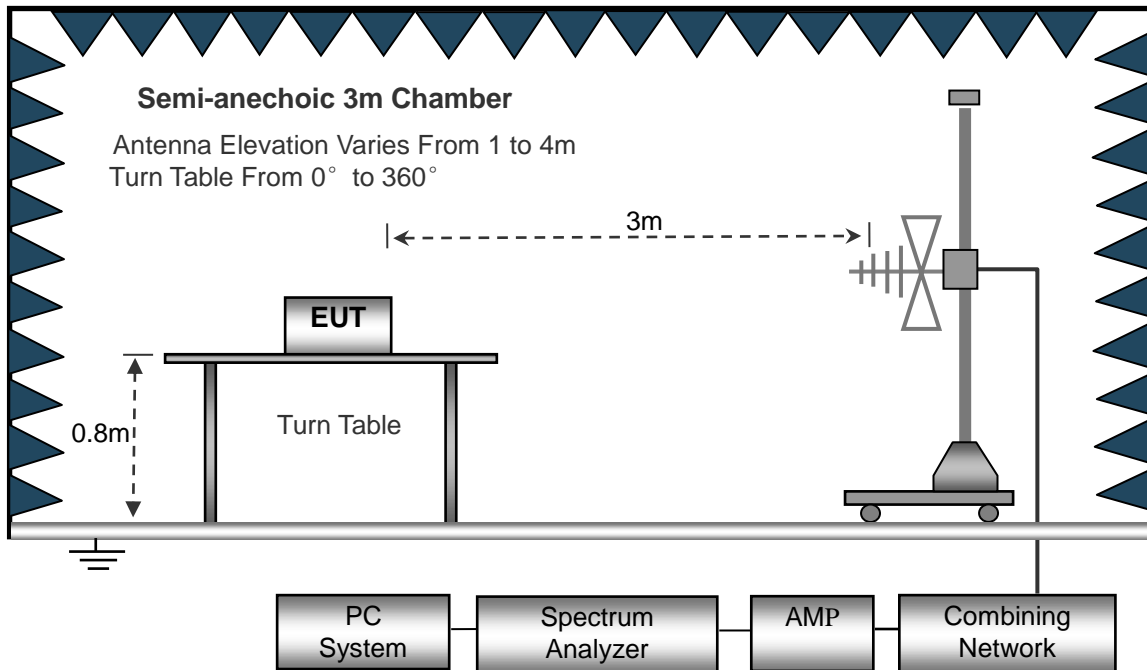
The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.

The spacing between the peripherals was 10cm.

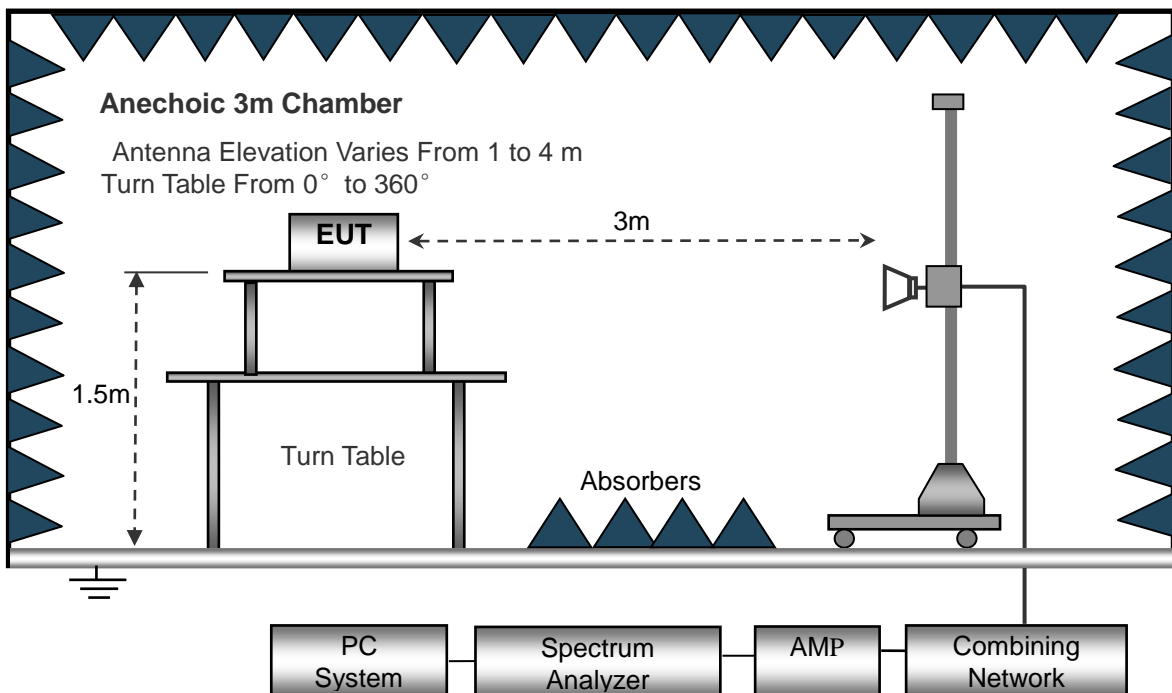
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30MHz to 1GHz.



The test setup for emission measurement above 1GHz.



Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

7.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit. The equation for margin calculation is as follows:

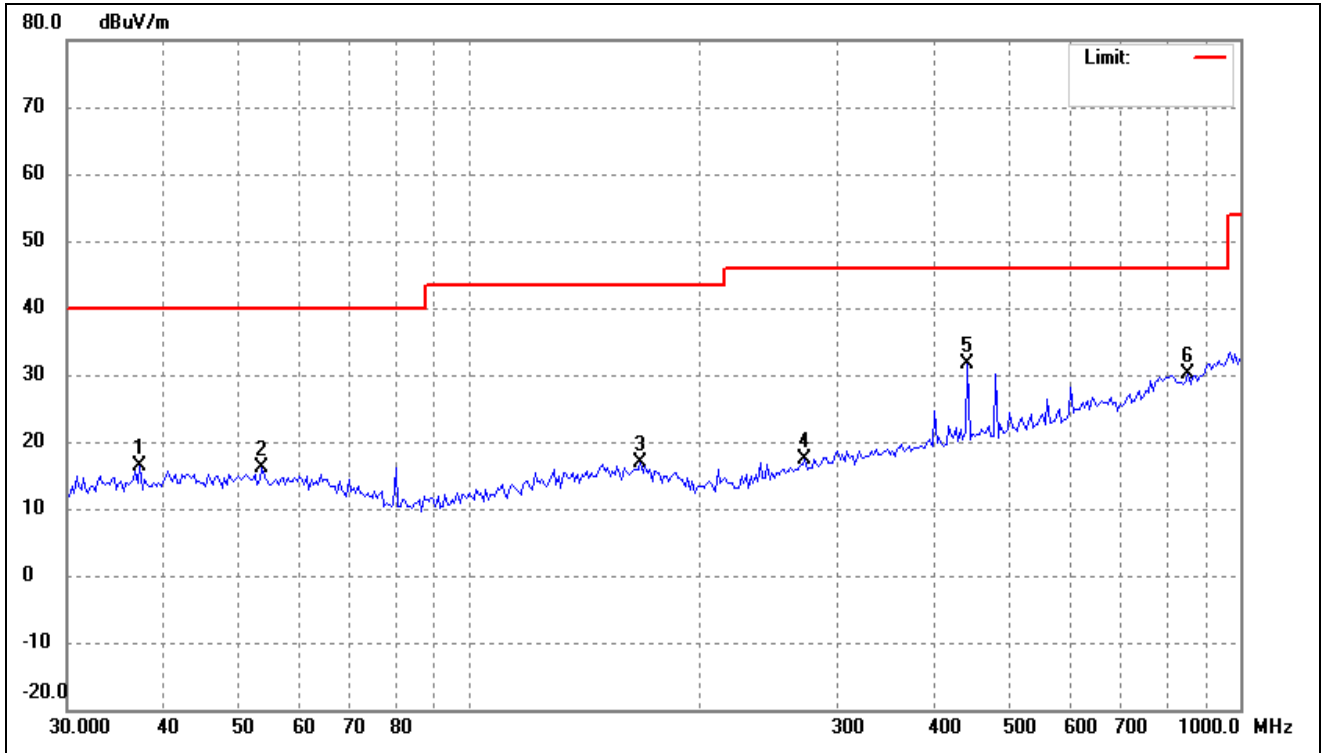
$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

7.4 Summary of Test Results/Plots

Note: 1.This EUT was tested in 3 orthogonal positions and the worst case position data was reported. All test modes (different data rate and different modulation) are performed, but only the worst case(802.11b_11Mbps) is recorded in this report.

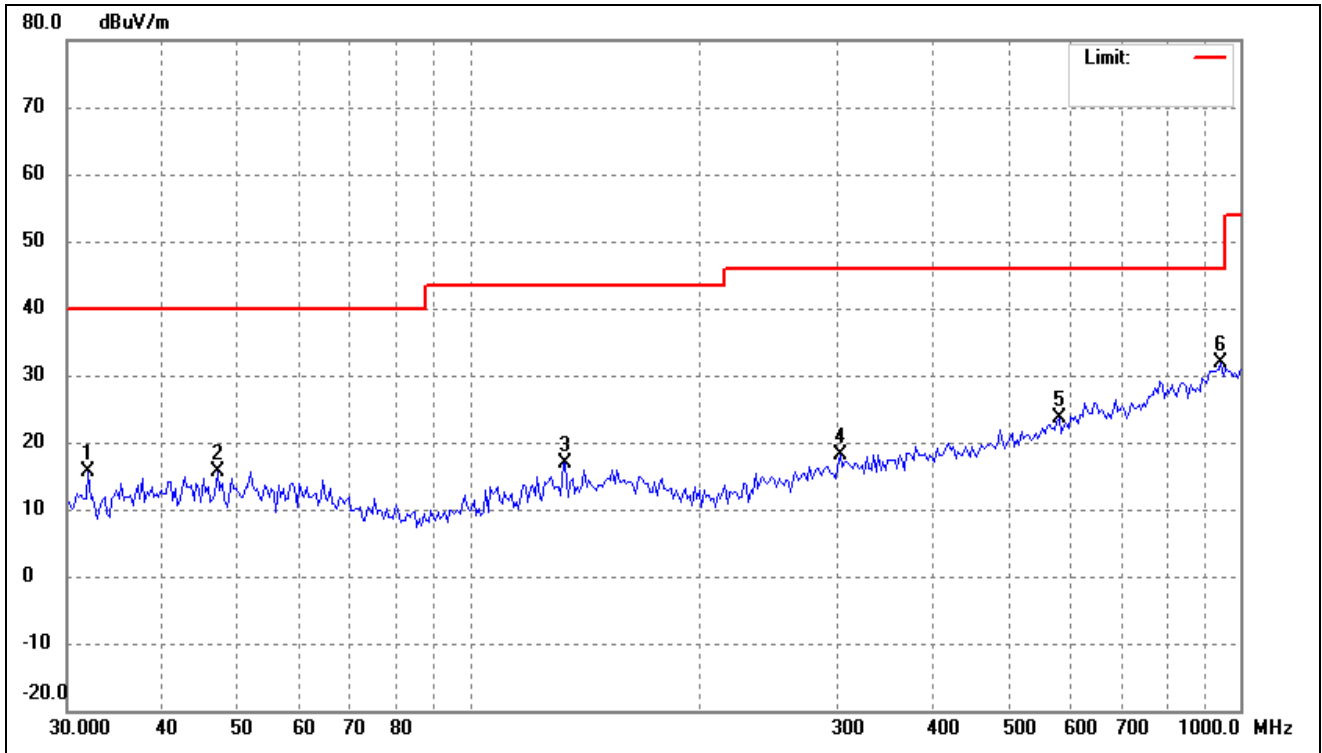
➤ Spurious Emissions Below 1GHz

802.11b_11Mbps			
Test Channel	Low	Polarity:	Horizontal



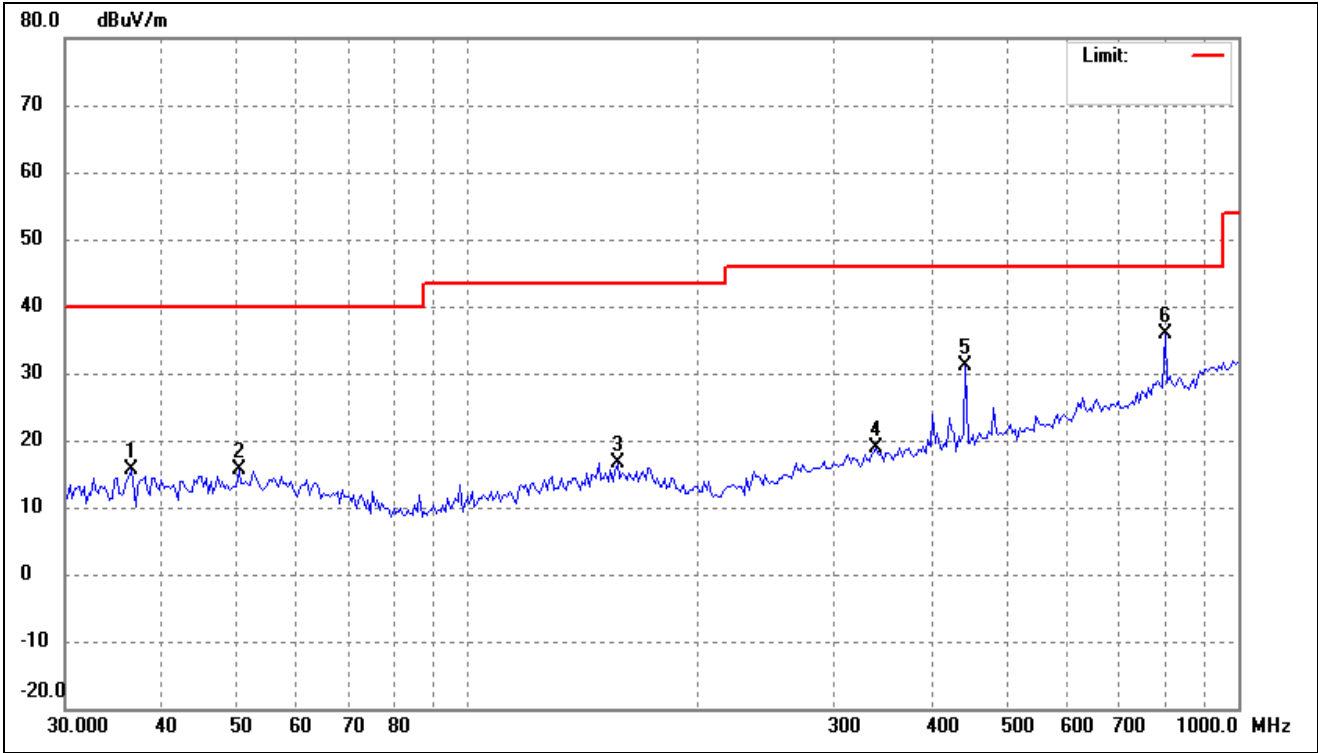
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	37.3017	30.23	-13.84	16.39	40.00	-23.61	-	-	peak
2	53.7559	30.09	-13.96	16.13	40.00	-23.87	-	-	peak
3	166.6385	30.82	-13.94	16.88	43.50	-26.62	-	-	peak
4	272.5246	31.61	-14.17	17.44	46.00	-28.56	-	-	peak
5	442.5722	42.40	-10.83	31.57	46.00	-14.43	-	-	peak
6	856.7597	34.24	-4.01	30.23	46.00	-15.77	-	-	peak

802.11b_11Mbps			
Test Channel	Low	Polarity:	Vertical



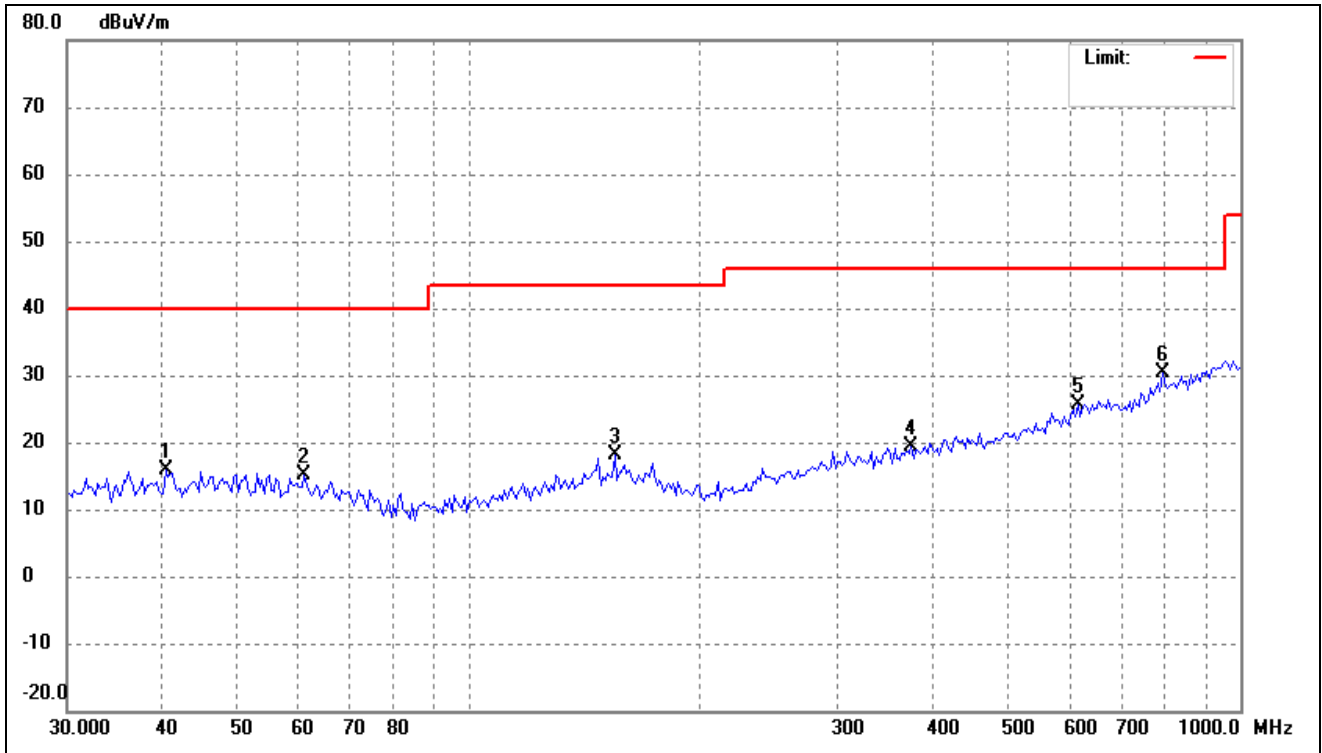
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	31.9586	30.03	-14.43	15.60	40.00	-24.40	-	-	peak
2	47.0371	29.22	-13.64	15.58	40.00	-24.42	-	-	peak
3	133.0809	31.93	-14.94	16.99	43.50	-26.51	-	-	peak
4	302.8193	31.03	-13.01	18.02	46.00	-27.98	-	-	peak
5	582.1122	31.50	-7.97	23.53	46.00	-22.47	-	-	peak
6	945.3336	34.48	-2.50	31.98	46.00	-14.02	-	-	peak

802.11b_11Mbps			
Test Channel	Middle	Polarity:	Horizontal



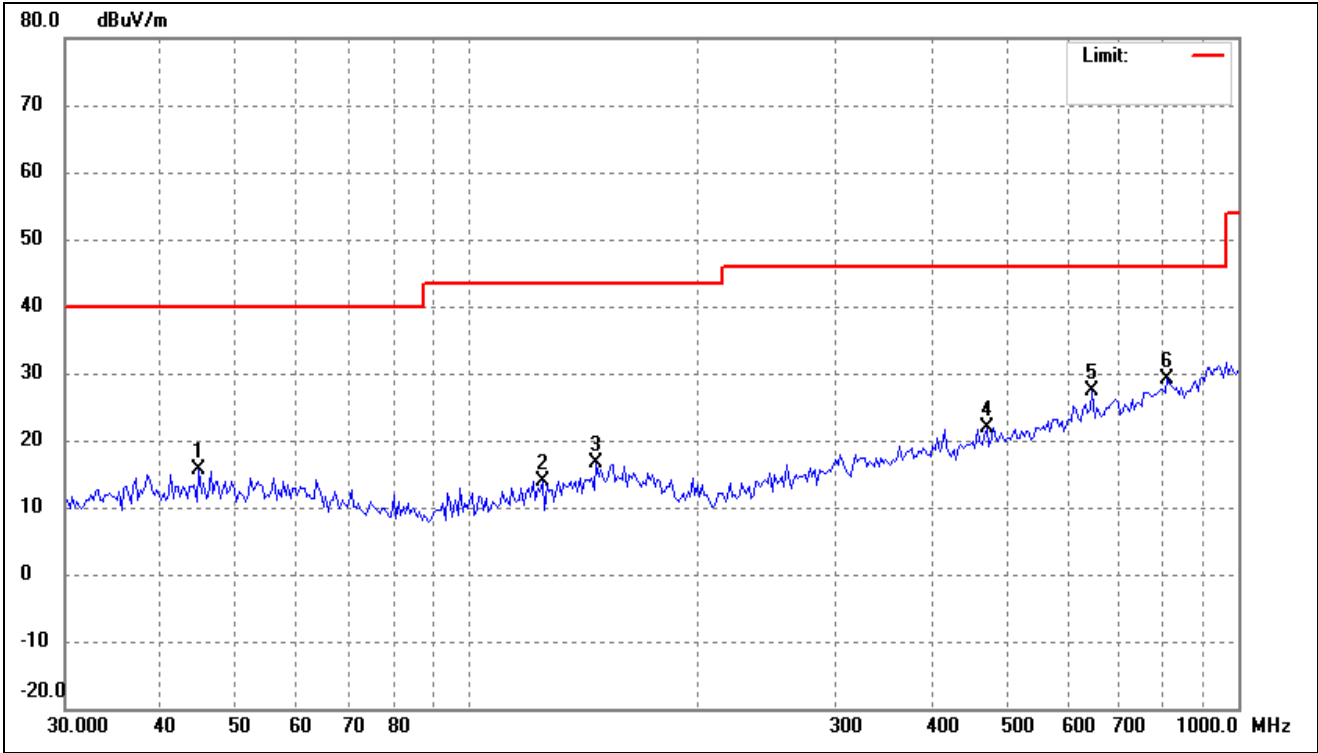
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	36.5236	29.66	-13.97	15.69	40.00	-24.31	-	-	peak
2	50.4614	29.25	-13.63	15.62	40.00	-24.38	-	-	peak
3	156.4259	30.41	-13.83	16.58	43.50	-26.92	-	-	peak
4	338.8546	31.35	-12.58	18.77	46.00	-27.23	-	-	peak
5	442.5722	41.97	-10.83	31.14	46.00	-14.86	-	-	peak
6	804.2523	40.03	-4.07	35.96	46.00	-10.04	-	-	peak

802.11b_11Mbps			
Test Channel	Middle	Polarity:	Vertical



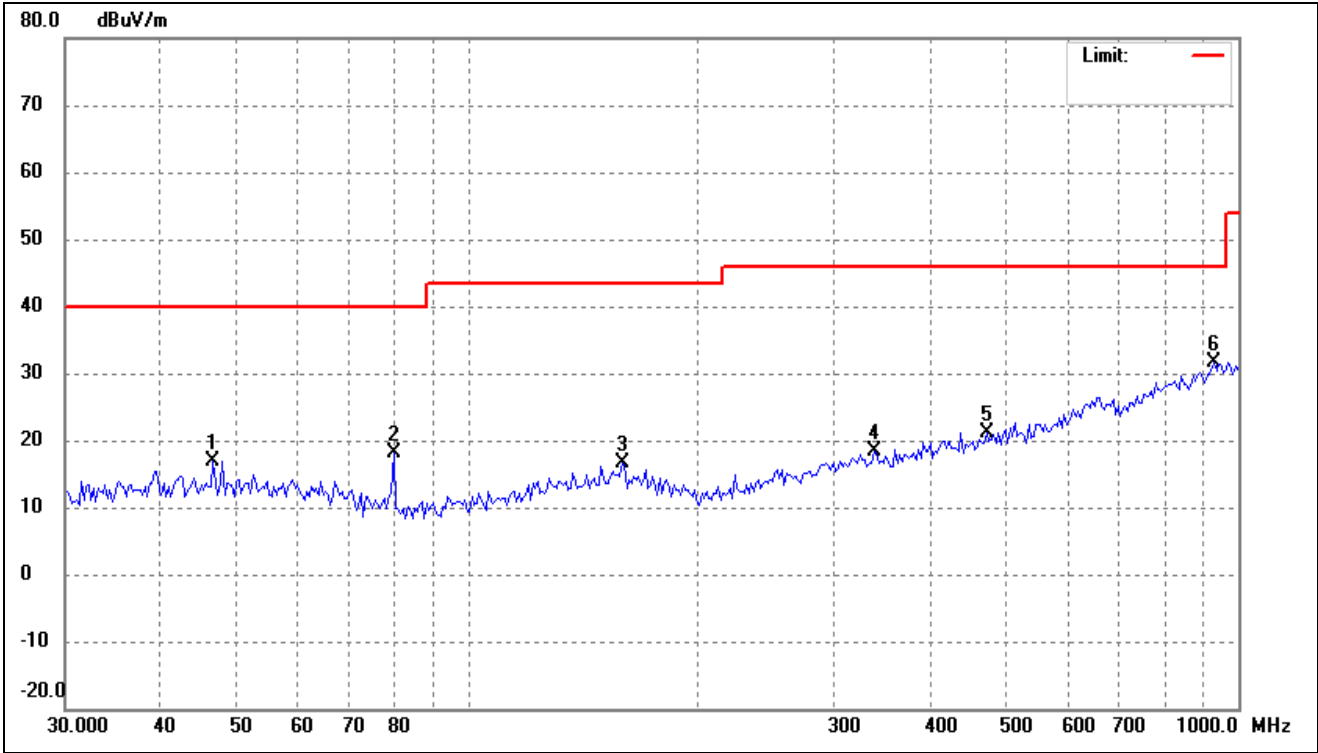
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	40.2995	29.32	-13.44	15.88	40.00	-24.12	-	-	peak
2	61.0041	29.58	-14.50	15.08	40.00	-24.92	-	-	peak
3	154.2428	32.10	-13.85	18.25	43.50	-25.25	-	-	peak
4	373.8861	31.29	-11.87	19.42	46.00	-26.58	-	-	peak
5	615.7743	32.68	-6.99	25.69	46.00	-20.31	-	-	peak
6	793.0281	34.65	-4.21	30.44	46.00	-15.56	-	-	peak

802.11b_11Mbps			
Test Channel	High	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	44.7793	29.25	-13.69	15.56	40.00	-24.44	-	-	peak
2	124.9249	29.39	-15.39	14.00	43.50	-29.50	-	-	peak
3	146.8392	30.72	-14.14	16.58	43.50	-26.92	-	-	peak
4	471.4665	32.30	-10.45	21.85	46.00	-24.15	-	-	peak
5	646.8217	33.78	-6.43	27.35	46.00	-18.65	-	-	peak
6	809.9238	33.09	-4.08	29.01	46.00	-16.99	-	-	peak

802.11b_11Mbps			
Test Channel	High	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	46.7077	30.54	-13.65	16.89	40.00	-23.11	-	-	peak
2	80.2383	36.39	-18.16	18.23	40.00	-21.77	-	-	peak
3	158.6399	30.42	-13.82	16.60	43.50	-26.90	-	-	peak
4	336.4817	30.89	-12.60	18.29	46.00	-27.71	-	-	peak
5	471.4665	31.69	-10.45	21.24	46.00	-24.76	-	-	peak
6	932.1405	34.28	-2.76	31.52	46.00	-14.48	-	-	peak

Remark: '-' Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

- Spurious Emissions Above 1GHz
- Test Mode: 802.11b_11Mbps (worst case)

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	53.89	-3.87	50.02	74	-23.98	H	PK
4824.000	50.17	-3.87	46.30	54	-7.70	H	AV
7236.000	56.27	1.14	57.41	74	-16.59	H	PK
7236.000	37.05	1.19	38.24	54	-15.76	H	AV
4824.000	54.96	-3.86	51.10	74	-22.90	V	PK
4824.000	47.96	-3.86	44.10	54	-9.90	V	AV
7236.000	54.13	1.10	55.23	74	-18.77	V	PK
7236.000	36.50	1.10	37.60	54	-16.40	V	AV
Middle Channel-2437MHz							
4874.000	54.04	-3.74	50.30	74	-23.70	H	PK
4874.000	48.61	-3.74	44.87	54	-9.13	H	AV
7311.000	54.74	1.47	56.21	74	-17.79	H	PK
7311.000	36.02	1.47	37.49	54	-16.51	H	AV
4874.000	54.99	-3.74	51.25	74	-22.75	V	PK
4874.000	48.53	-3.74	44.79	54	-9.21	V	AV
7311.000	53.32	1.47	54.79	74	-19.21	V	PK
7311.000	37.01	1.47	38.48	54	-15.52	V	AV
High Channel-2462MHz							
4924.000	52.15	-3.59	48.56	74	-25.44	H	PK
4924.000	47.51	-3.59	43.92	54	-10.08	H	AV
7386.000	55.43	1.79	57.22	74	-16.78	H	PK
7386.000	36.11	1.79	37.90	54	-16.10	H	AV
4924.000	51.68	-3.59	48.09	74	-25.91	V	PK
4924.000	47.25	-3.59	43.66	54	-10.34	V	AV
7386.000	53.07	1.79	54.86	74	-19.14	V	PK
7386.000	37.91	1.79	39.70	54	-14.30	V	AV

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8. Out of Band Emissions

8.1 Standard Applicable

According to §15.247(d), 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

8.2 Test Procedure

According to the KDB 558074D01 v05r02 Subclause 8.4 and ANSI C63.10-2013 Subclause 11.11, the Emissions in nonrestricted frequency bands test method as follows:

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100kHz.
- c) Set the VBW $\geq [3 \times \text{RBW}]$.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

According to the KDB 558074 D01 v05r02 Subclause 8.5 and ANSI C63.10-2013 Subclause 11.12, the Emissions in restricted frequency bands test method as follows:

A. Radiated emission measurements:

Set span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation (2310MHz to 2420MHz for low bandedge, 2460MHz to 2500MHz for the high bandedge)

RBW = 1MHz, VBW = 1MHz for peak value measured

RBW = 1MHz, VBW = 10Hz for average value measured

Sweep = auto; Detector function = peak/average; Trace = max hold

All the trace to stabilize, set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. Those emission must comply with the 15.209 limit for fall in the restricted bands listed in section 15.205. Note that the method of measurement

KDB publication number: 913591 may be used for the radiated bandedge measurements.

B. Antenna-port conducted measurements

Peak emission levels are measured by setting the instrument as follows:

- a) RBW = as specified in Table 9.
- b) VBW \geq $[3 \times \text{RBW}]$.
- c) Detector = peak.
- d) Sweep time = auto.
- e) Trace mode = max hold.
- f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be lengthened for low-duty-cycle applications.)

Table 9—RBW as a function of frequency

Frequency	RBW
9 kHz to 150 kHz	200 Hz to 300 Hz
0.15 MHz to 30 MHz	9 kHz to 10 kHz
30 MHz to 1000 MHz	100 kHz to 120 kHz
>1000 MHz	1 MHz

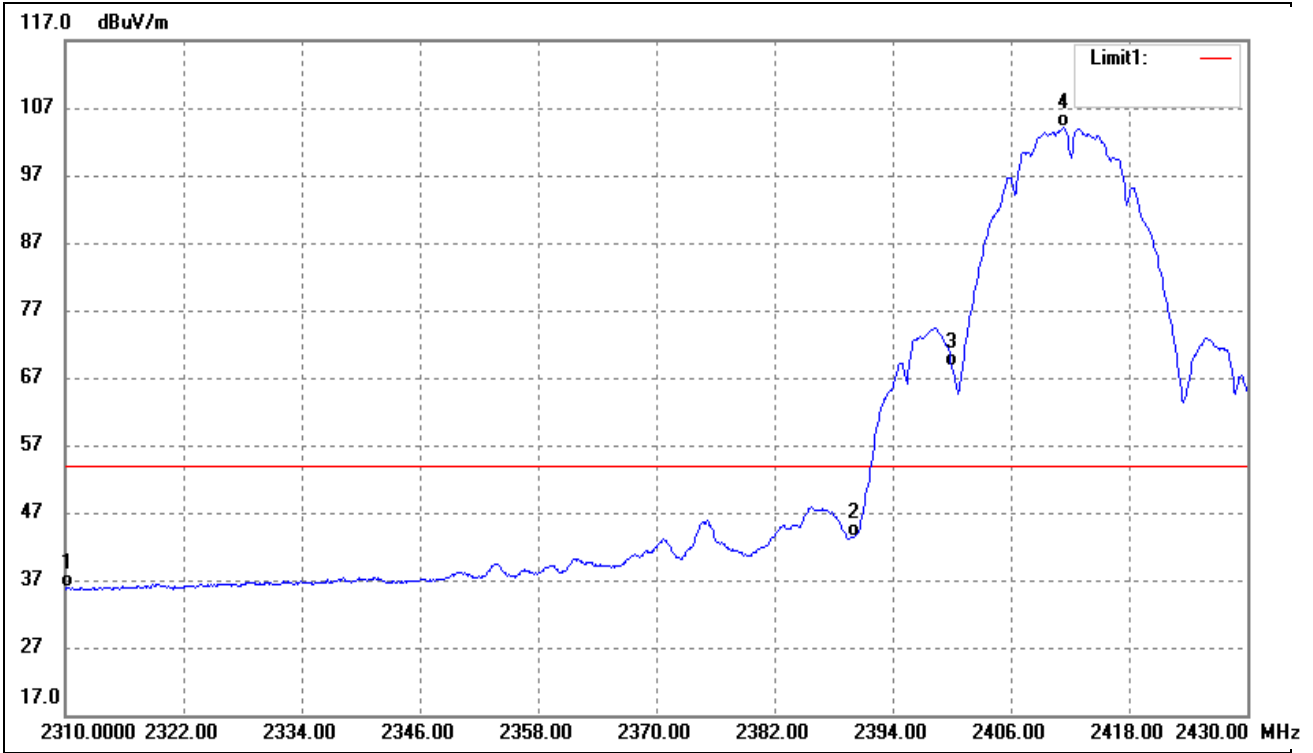
If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in section 8.1. Report the three highest emissions relative to the limit.

8.3 Summary of Test Results/Plots

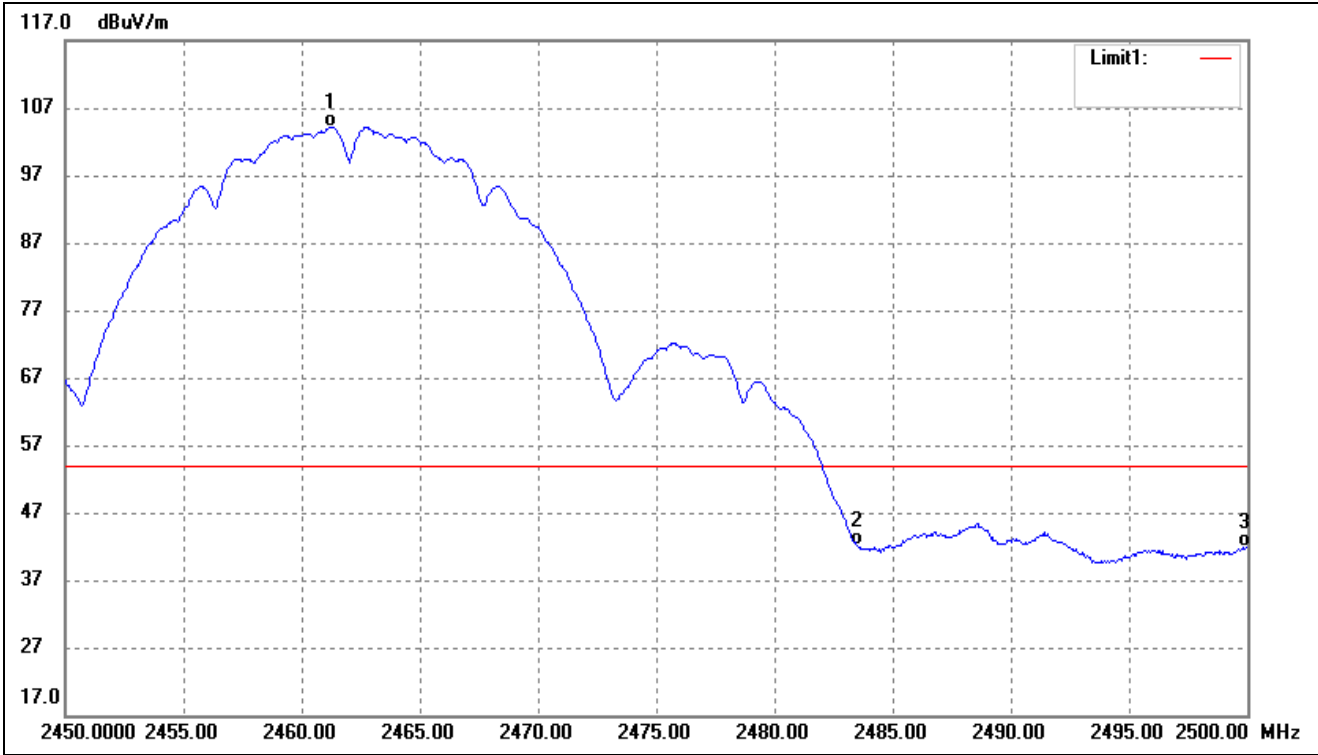
➤ Radiated test

802.11b_11Mbps			
Test Channel	Low	Polarity:	Vertical(worst case)



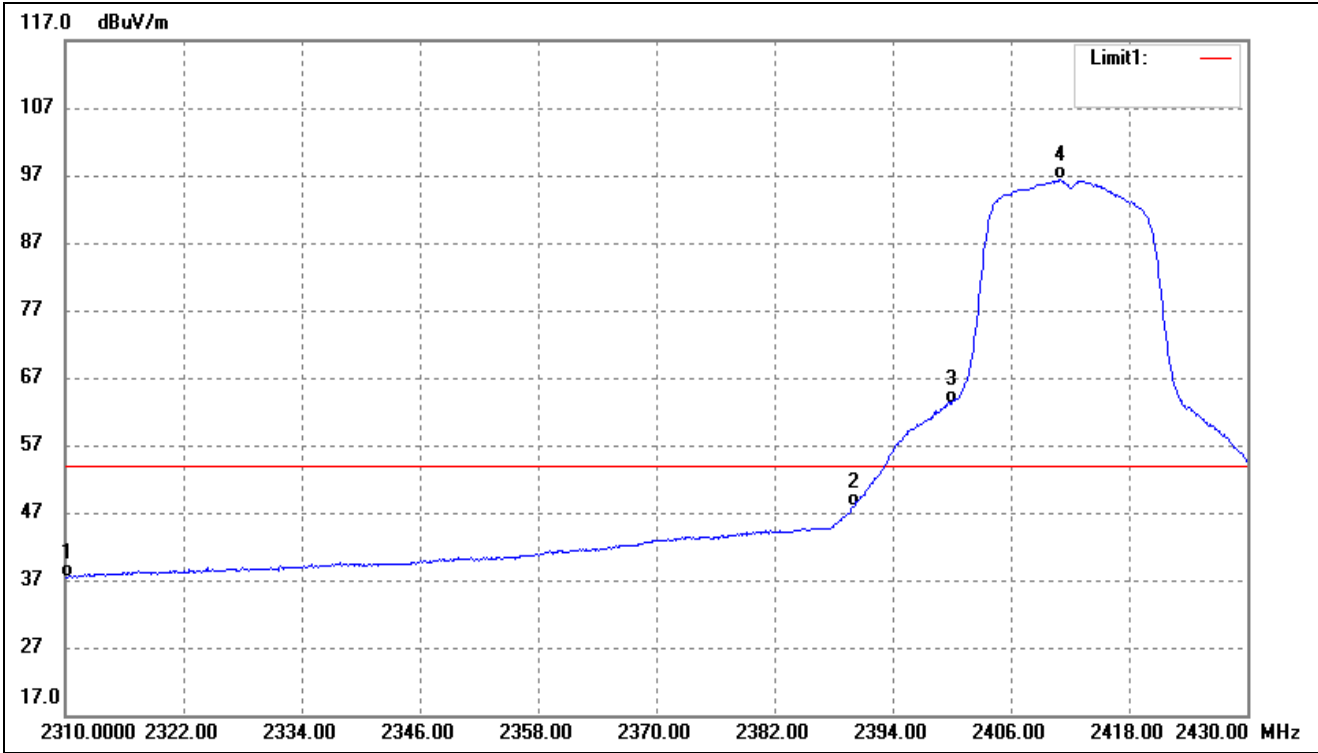
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	41.01	-5.20	35.81	54.00	-18.19	Average Detector
	2310.000	52.87	-5.20	47.67	74.00	-26.33	Peak Detector
2	2390.000	48.61	-5.14	43.47	54.00	-10.53	Average Detector
	2390.000	59.69	-5.14	54.55	74.00	-19.45	Peak Detector
3	2400.000	73.82	-5.13	68.69	Delta=35.39dBc		Average Detector
4	2411.400	109.20	-5.12	104.08			Average Detector

802.11b_11Mbps			
Test Channel	High	Polarity:	Vertical(worst case)



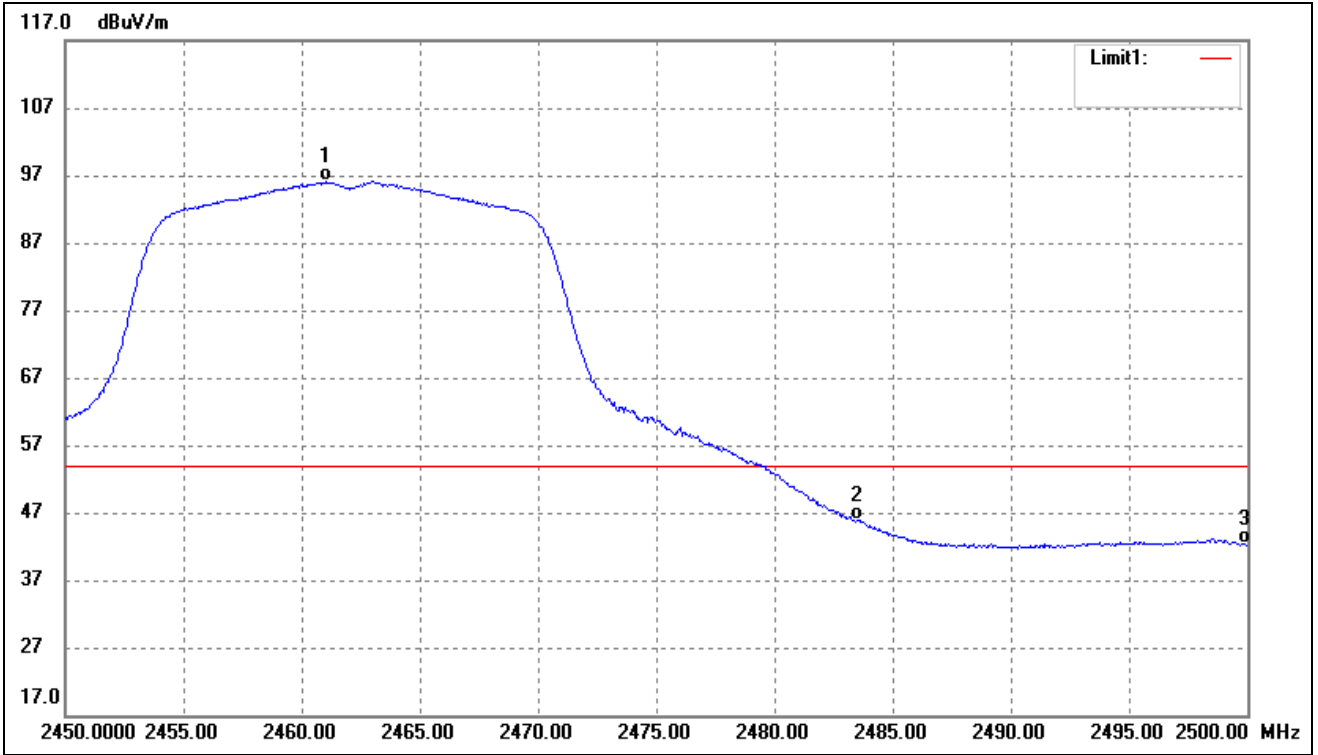
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.250	109.23	-5.08	104.15	/	/	Average Detector
	2460.850	113.59	-5.08	108.51	/	/	Peak Detector
2	2483.500	47.15	-5.07	42.08	54.00	-11.92	Average Detector
	2483.500	58.28	-5.07	53.21	74.00	-20.79	Peak Detector
3	2500.000	46.96	-5.05	41.91	54.00	-12.09	Average Detector
	2500.000	57.53	-5.05	52.48	74.00	-21.52	Peak Detector

802.11g_54Mbps			
Test Channel	Low	Polarity:	Vertical(worst case)



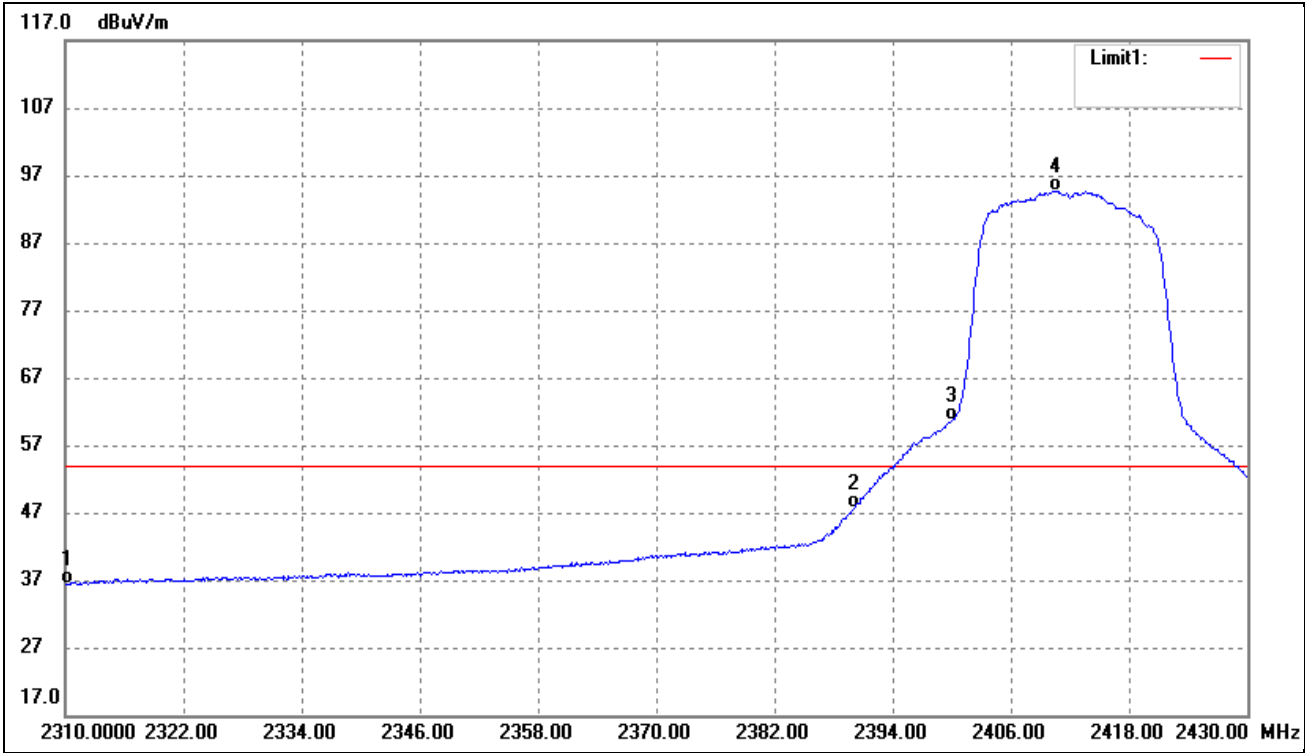
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	42.68	-5.20	37.48	54.00	-16.52	Average Detector
	2310.000	54.98	-5.20	49.78	74.00	-24.22	Peak Detector
2	2390.000	52.96	-5.14	47.82	54.00	-6.18	Average Detector
	2390.000	67.97	-5.14	62.83	74.00	-11.17	Peak Detector
3	2400.000	68.37	-5.13	63.24	Delta=33.03dBc		Average Detector
4	2411.040	101.39	-5.12	96.27			Average Detector

802.11g_54Mbps			
Test Channel	High	Polarity:	Vertical(worst case)



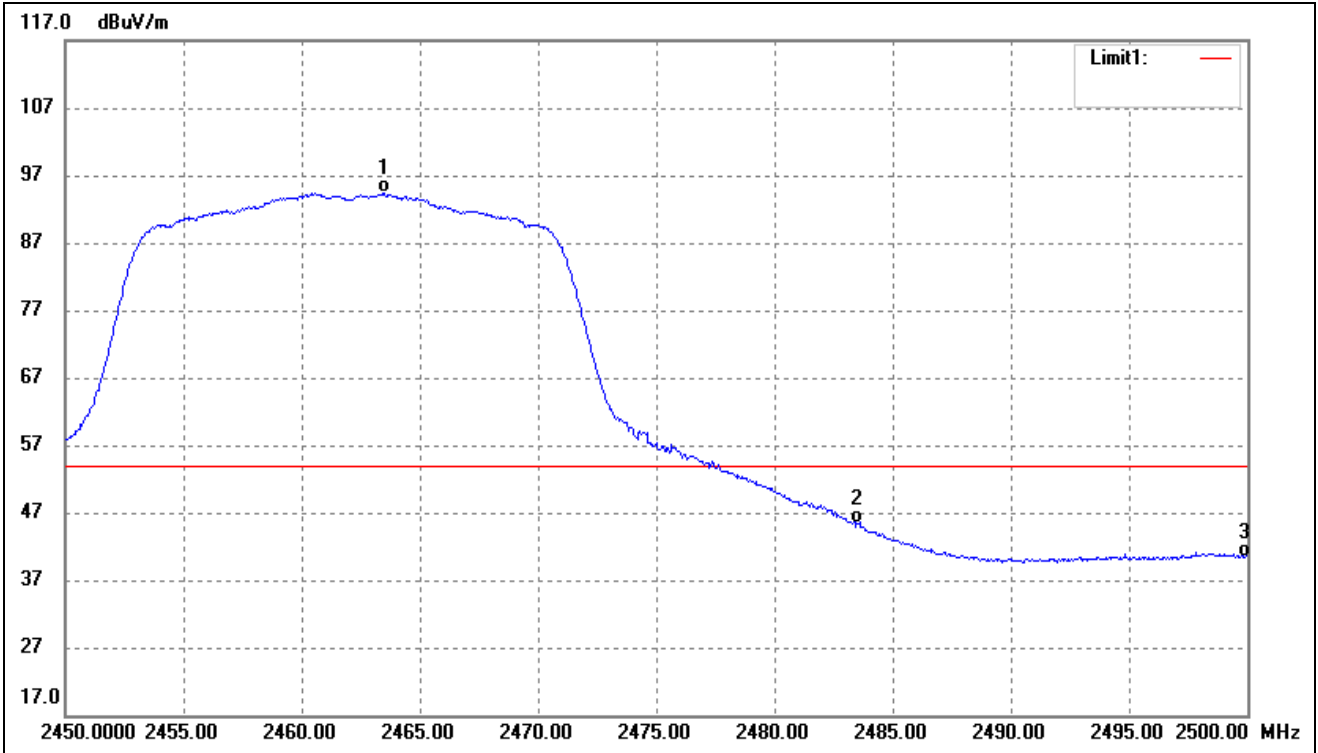
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.000	101.13	-5.08	96.05	/	/	Average Detector
	2463.150	111.24	-5.08	106.16	/	/	Peak Detector
2	2483.500	50.86	-5.07	45.79	54.00	-8.21	Average Detector
	2483.500	67.10	-5.07	62.03	74.00	-11.97	Peak Detector
3	2500.000	47.54	-5.05	42.49	54.00	-11.51	Average Detector
	2500.000	59.07	-5.05	54.02	74.00	-19.98	Peak Detector

802.11n-HT20_MCS7			
Test Channel	Low	Polarity:	Vertical(worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	41.52	-5.20	36.32	54.00	-17.68	Average Detector
		53.31	-5.20	48.11	74.00	-25.89	Peak Detector
2	2390.000	52.67	-5.14	47.53	54.00	-6.47	Average Detector
		68.20	-5.14	63.06	74.00	-10.94	Peak Detector
3	2400.000	65.65	-5.13	60.52	Delta=34.21dBc		Average Detector
4	2410.560	99.85	-5.12	94.73			Average Detector

802.11n-HT20_MCS7			
Test Channel	High	Polarity:	Vertical(worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2463.500	99.41	-5.08	94.33	/	/	Average Detector
	2460.700	109.78	-5.08	104.70	/	/	Peak Detector
2	2483.500	50.36	-5.07	45.29	54.00	-8.71	Average Detector
	2483.500	67.01	-5.07	61.94	74.00	-12.06	Peak Detector
3	2500.000	45.34	-5.05	40.29	54.00	-13.71	Average Detector
	2500.000	56.96	-5.05	51.91	74.00	-22.09	Peak Detector

➤ Conducted test

Please refer to Appendix D

9. Conducted Emissions

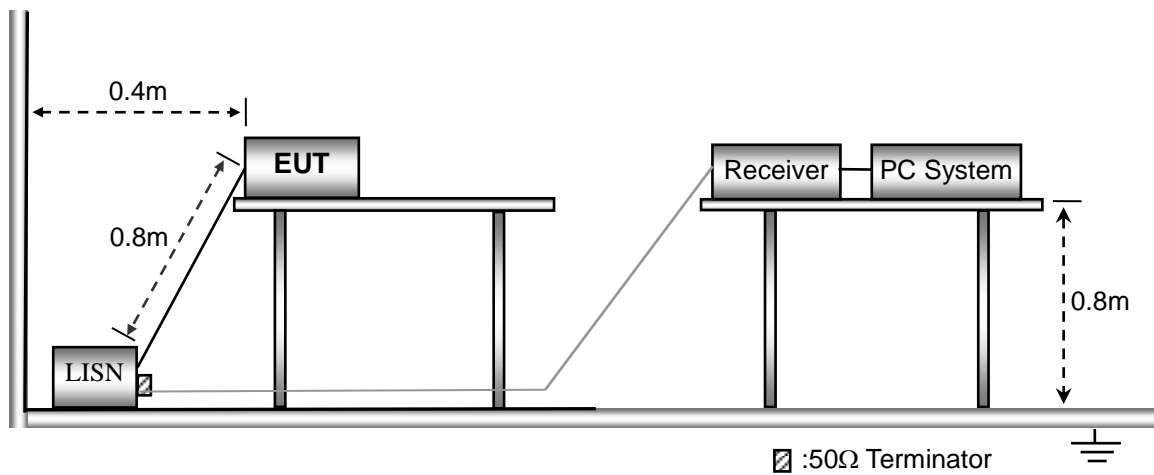
9.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.

The spacing between the peripherals was 10cm.

9.2 Basic Test Setup Block Diagram



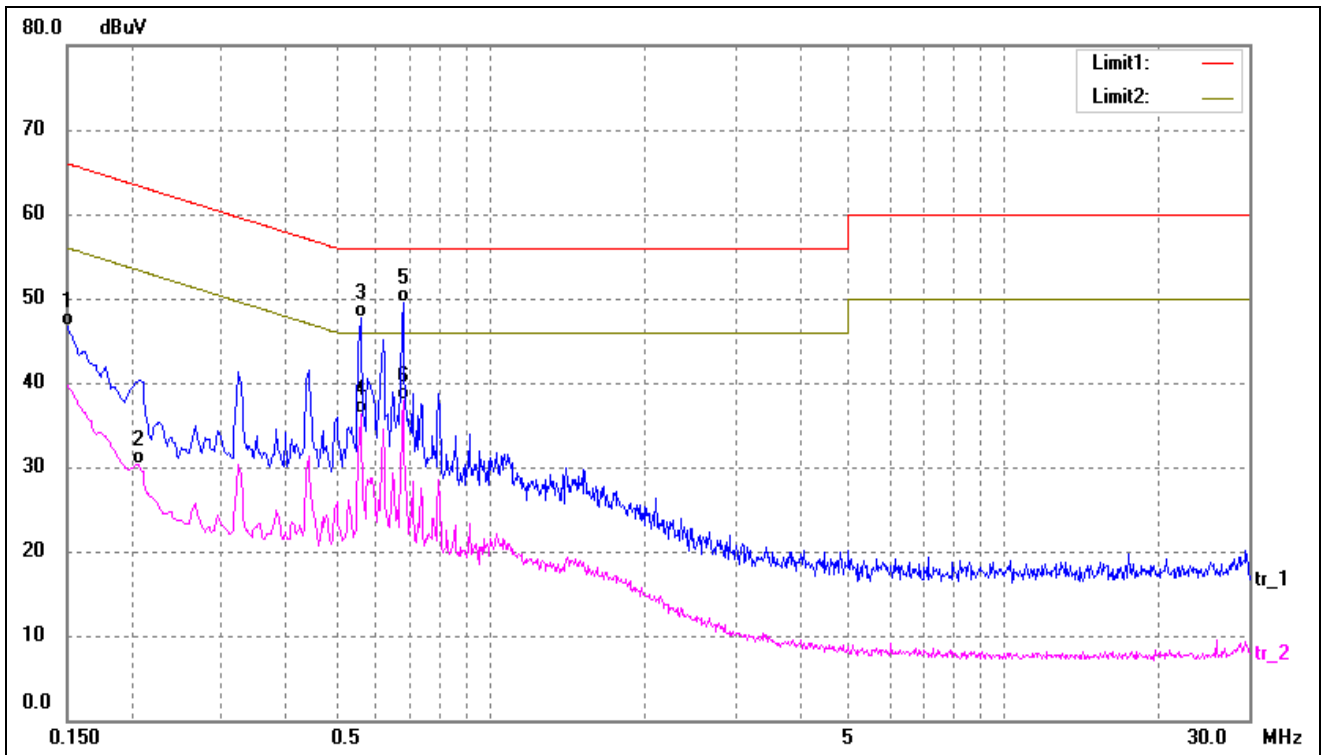
9.3 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency	150kHz
Stop Frequency	30MHz
Sweep Speed	Auto
IF Bandwidth.....	10kHz
Quasi-Peak Adapter Bandwidth	9kHz
Quasi-Peak Adapter Mode	Normal

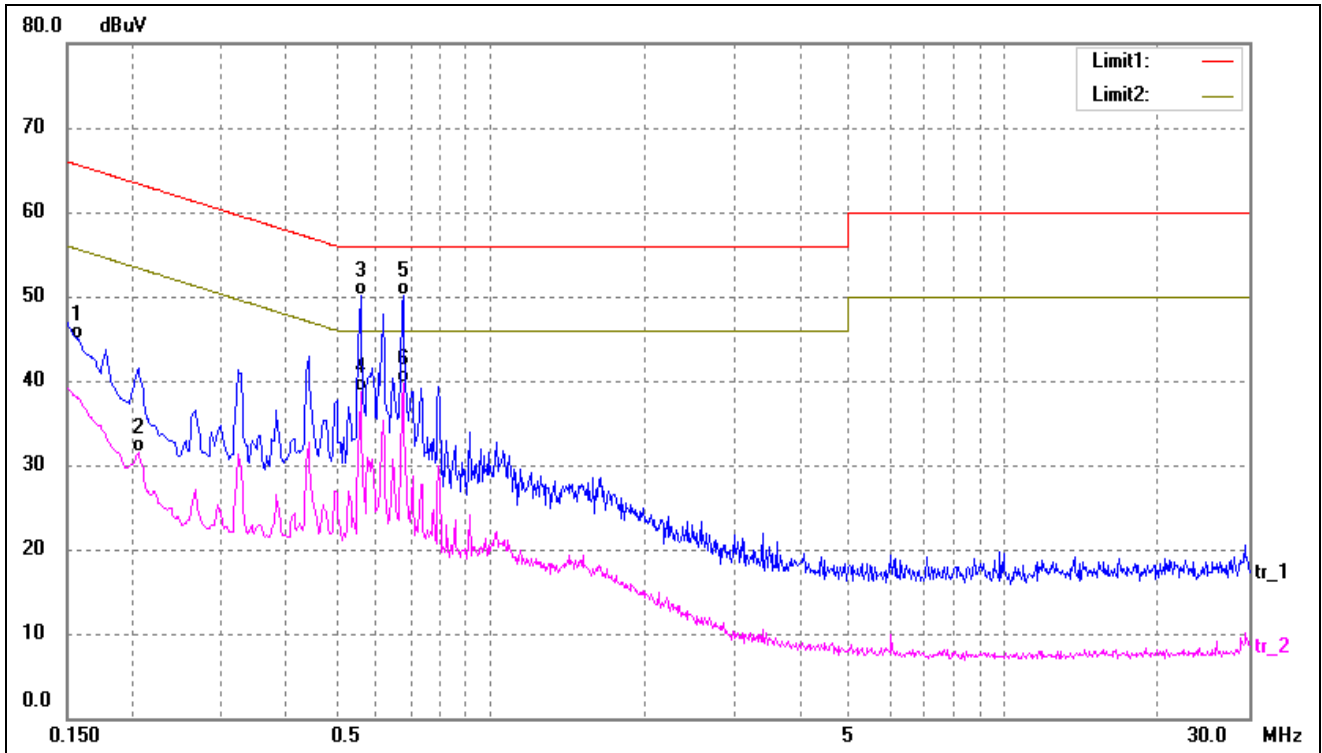
9.4 Summary of Test Results/Plots

Test Mode	Communication	AC120V 60Hz	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	36.23	10.38	46.61	66.00	-19.39	QP
2	0.2060	19.93	10.37	30.30	53.37	-23.07	AVG
3	0.5580	37.33	10.29	47.62	56.00	-8.38	QP
4	0.5580	25.96	10.29	36.25	46.00	-9.75	AVG
5*	0.6780	39.10	10.37	49.47	56.00	-6.53	QP
6	0.6780	27.44	10.37	37.81	46.00	-8.19	AVG

Test Mode	Communication	AC120V 60Hz	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1580	34.46	10.37	44.83	65.57	-20.74	QP
2	0.2060	21.21	10.37	31.58	53.37	-21.79	AVG
3	0.5580	39.78	10.29	50.07	56.00	-5.93	QP
4	0.5580	28.33	10.29	38.62	46.00	-7.38	AVG
5*	0.6780	39.71	10.37	50.08	56.00	-5.92	QP
6	0.6780	29.24	10.37	39.61	46.00	-6.39	AVG

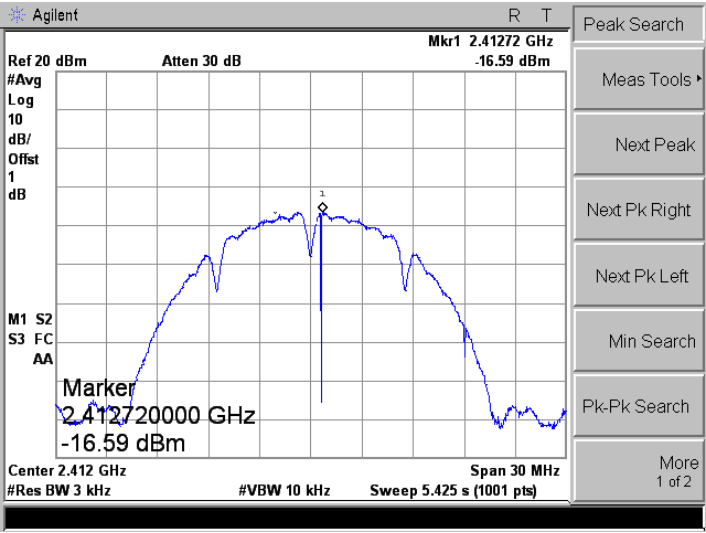
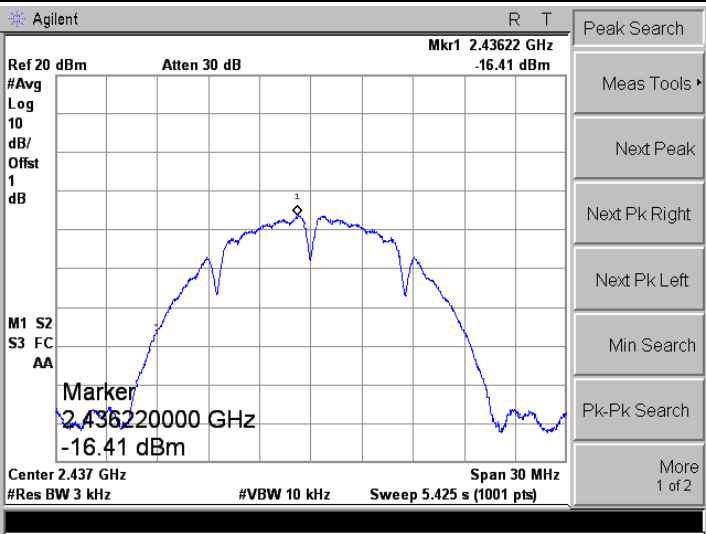
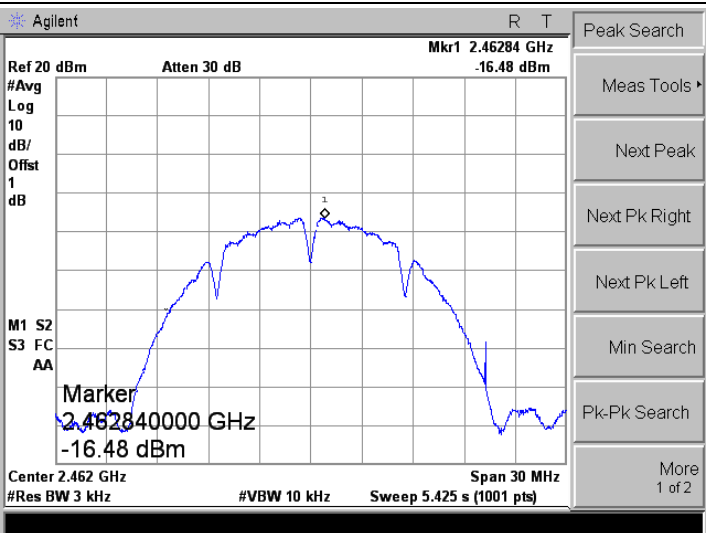
APPENDIX SUMMARY

Project No.	WTX22X02023515W	Test Engineer	BAIdi
Start date	2022/3/27	Finish date	2022/3/27
Temperature	21.9°C	Humidity	56%
RF specifications	WIFI-2.4G		

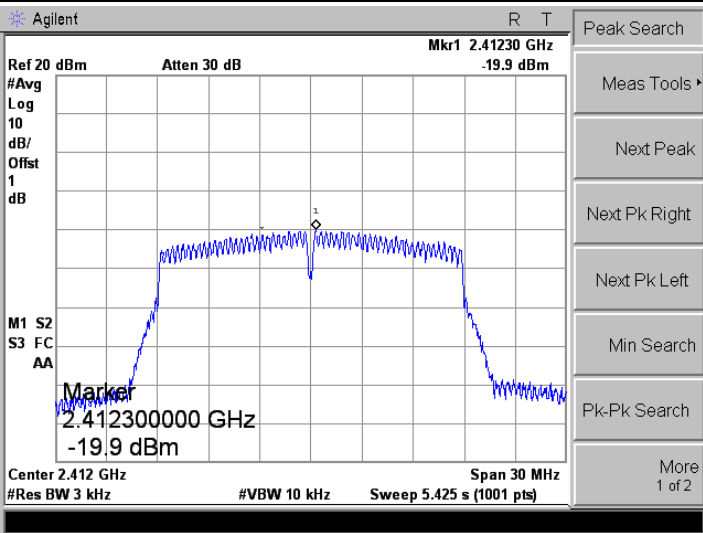
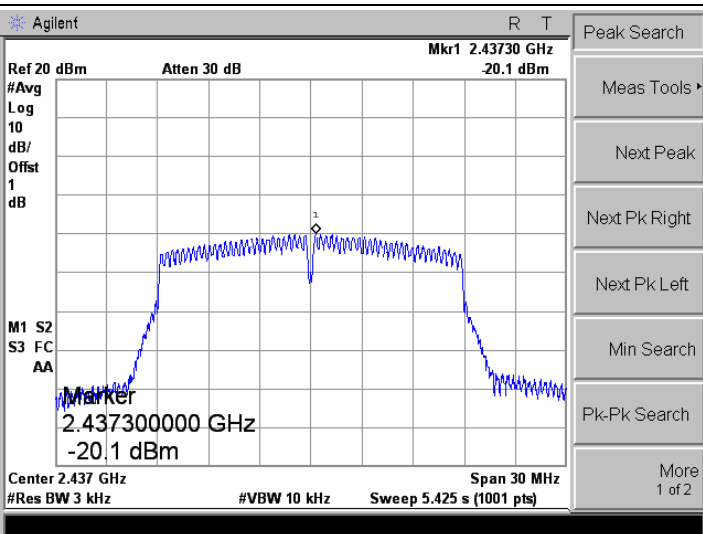
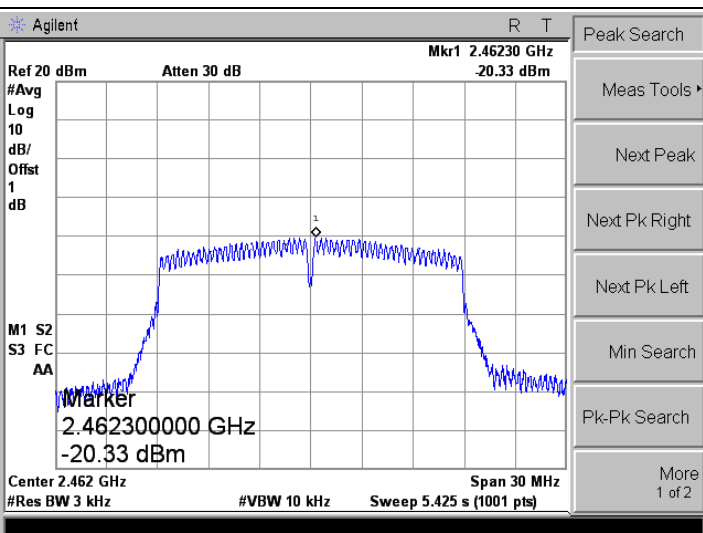
APPENDIX	Description of Test Item	Result
A	Power Spectral Density	Compliant
B	DTS Bandwidth	Compliant
C	RF Output Power	Compliant
D	Conducted Out of Band Emissions	Compliant

APPENDIX A

Power Spectral Density			
Test Mode	Test Channel MHz	Power Spectral Density dBm/3kHz	Limit dBm/3kHz
802.11b_11Mbps	2412	-16.59	8
	2437	-16.41	8
	2462	-16.48	8
802.11g_54Mbps	2412	-19.53	8
	2437	-19.18	8
	2462	-19.63	8
802.11n-HT20_MCS7	2412	-19.9	8
	2437	-20.1	8
	2462	-20.33	8

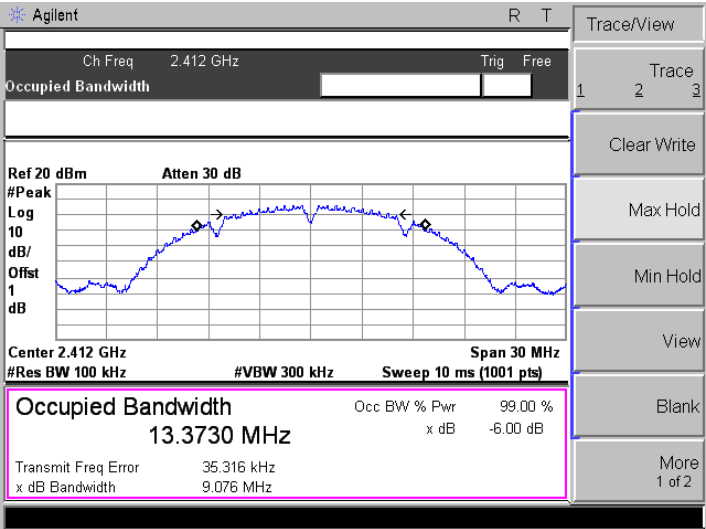
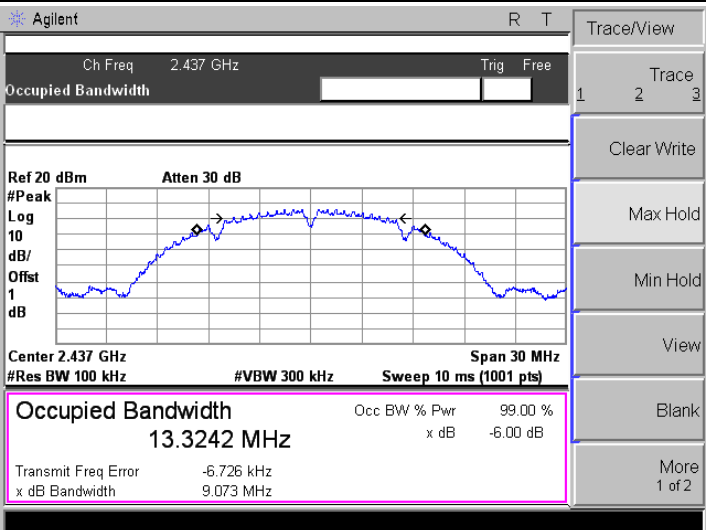
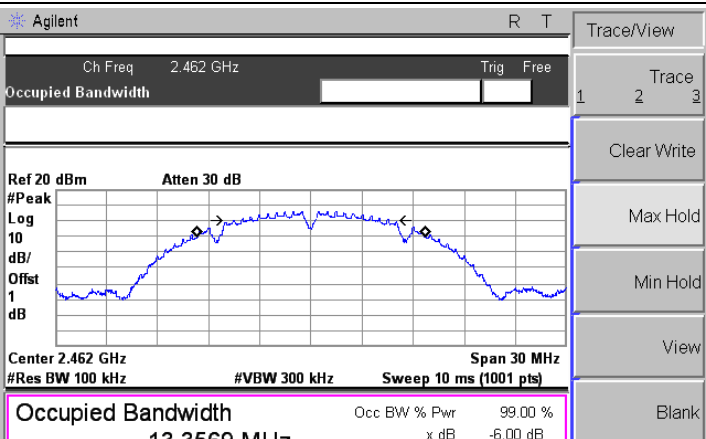
<p>802.11b-Low</p>	 <p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.41272 GHz -16.59 dBm #Avg 10 Log dB/ Offst 1 dB M1 S2 S3 FC AA Marker 2.412720000 GHz -16.59 dBm Center 2.412 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>
<p>802.11b-Middle</p>	 <p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.43622 GHz -16.41 dBm #Avg 10 Log dB/ Offst 1 dB M1 S2 S3 FC AA Marker 2.436220000 GHz -16.41 dBm Center 2.437 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>
<p>802.11b-High</p>	 <p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.46284 GHz -16.48 dBm #Avg 10 Log dB/ Offst 1 dB M1 S2 S3 FC AA Marker 2.462840000 GHz -16.48 dBm Center 2.462 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>

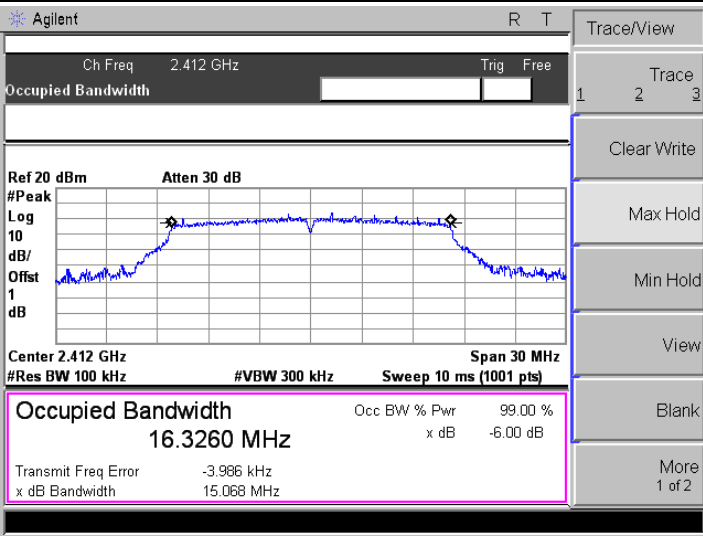
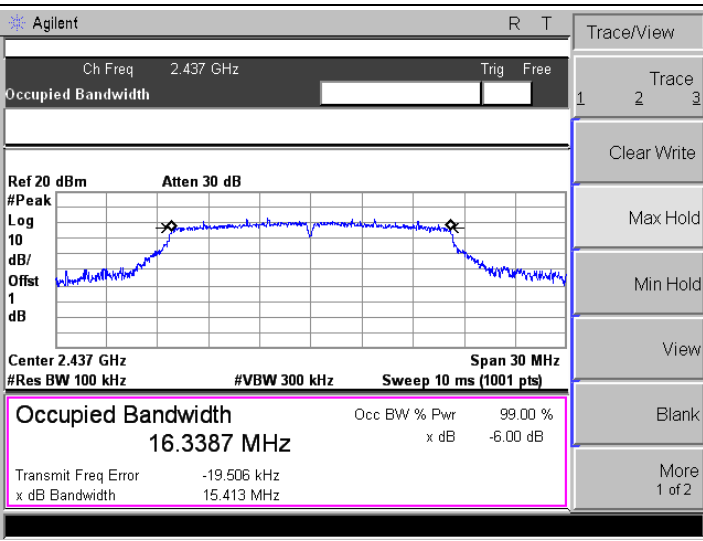
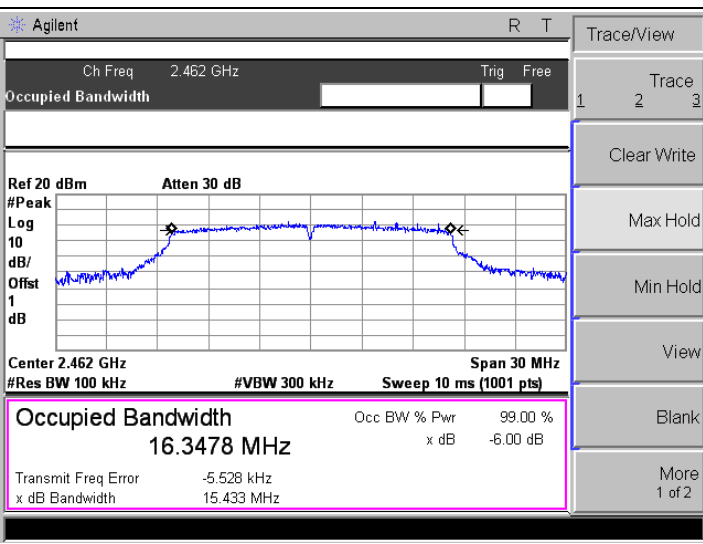
<p>802.11g-Low</p>	<p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.41167 GHz -19.53 dBm #Avg 10 Log dB/ Offst 1 dB M1 S2 S3 FC AA Marker 2.411670000 GHz -19.53 dBm Center 2.412 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>
<p>802.11g-Middle</p>	<p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.43481 GHz -19.18 dBm #Avg 10 Log dB/ Offst 1 dB M1 S2 S3 FC AA Marker 2.434810000 GHz -19.18 dBm Center 2.437 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>
<p>802.11g-High</p>	<p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.46137 GHz -19.63 dBm #Avg 10 Log dB/ Offst 1 dB M1 S2 S3 FC AA Marker 2.461370000 GHz -19.63 dBm Center 2.462 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>

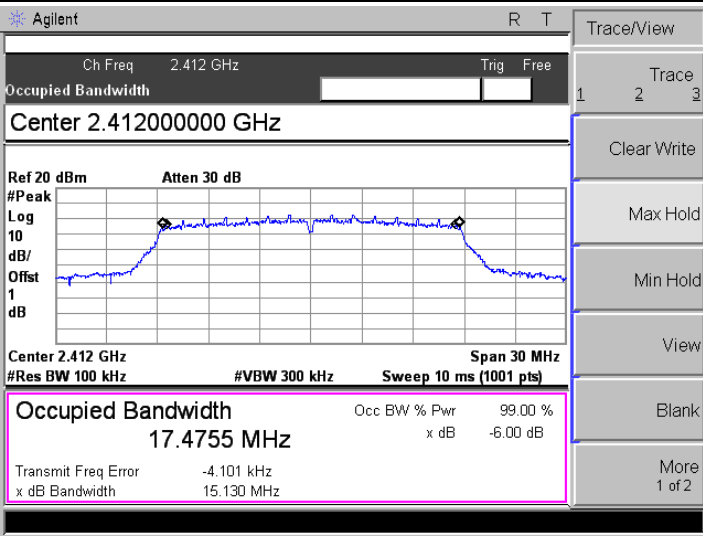
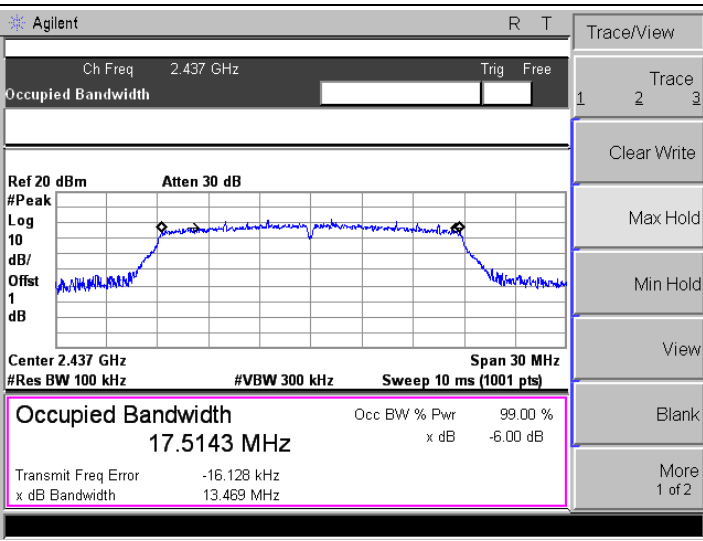
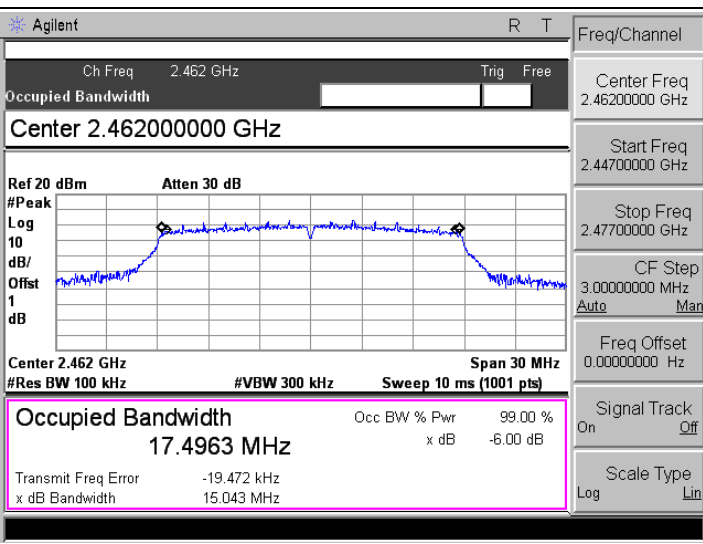
<p>802.11n-HT20-Low</p>	 <p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.41230 GHz -19.9 dBm #Avg 10 Log dB/Offst 1 dB M1 S2 S3 FC AA Marker 2.412300000 GHz -19.9 dBm Center 2.412 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.43730 GHz -20.1 dBm #Avg 10 Log dB/Offst 1 dB M1 S2 S3 FC AA Marker 2.437300000 GHz -20.1 dBm Center 2.437 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T Ref 20 dBm Atten 30 dB Mkr1 2.46230 GHz -20.33 dBm #Avg 10 Log dB/Offst 1 dB M1 S2 S3 FC AA Marker 2.462300000 GHz -20.33 dBm Center 2.462 GHz Span 30 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p>

APPENDIX B

DTS Bandwidth			
Test Mode	Test Channel MHz	6 dB Bandwidth MHz	Limit kHz
802.11b_11Mbps	2412	9.076	≥500
	2437	9.073	≥500
	2462	9.076	≥500
802.11g_54Mbps	2412	15.068	≥500
	2437	15.413	≥500
	2462	15.433	≥500
802.11n-HT20_MCS7	2412	15.130	≥500
	2437	13.469	≥500
	2462	15.043	≥500

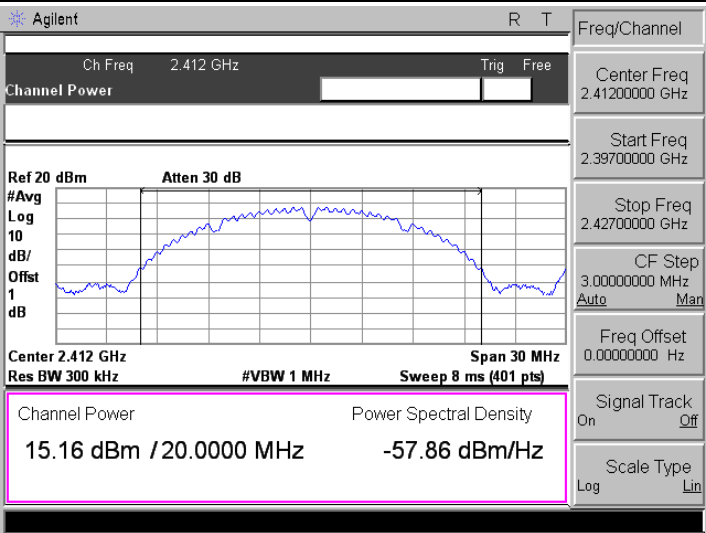
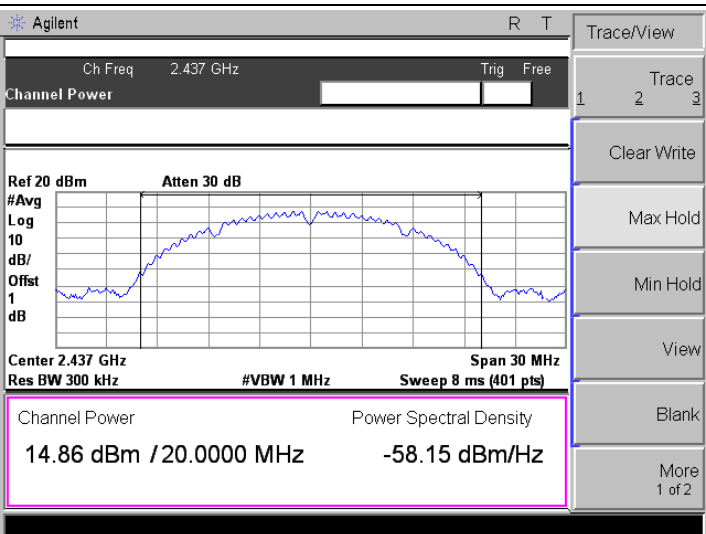
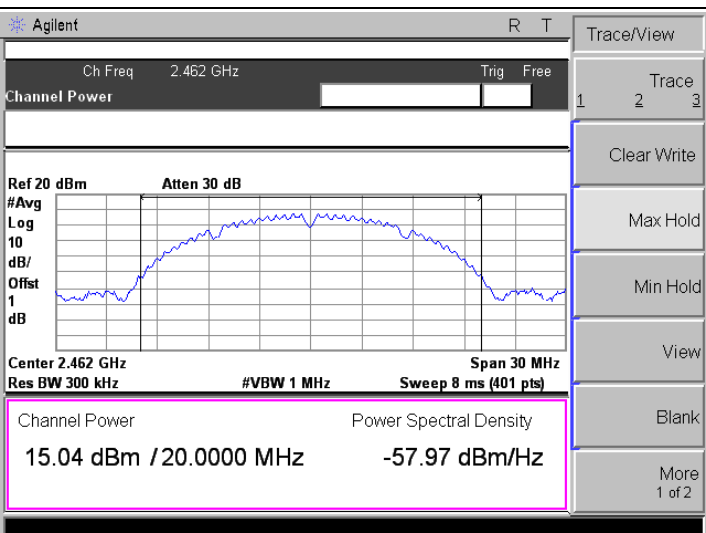
<p>802.11b-Low</p>	 <p>Agilent R T Trace/View</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 2.412 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 13.3730 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 35.316 kHz x dB Bandwidth 9.076 MHz</p> <p>Trace/View: Trace 1 2 3, Clear Write, Max Hold, Min Hold, View, Blank, More 1 of 2</p>
<p>802.11b-Middle</p>	 <p>Agilent R T Trace/View</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 2.437 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 13.3242 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -6.726 kHz x dB Bandwidth 9.073 MHz</p> <p>Trace/View: Trace 1 2 3, Clear Write, Max Hold, Min Hold, View, Blank, More 1 of 2</p>
<p>802.11b-High</p>	 <p>Agilent R T Trace/View</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 2.462 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 13.3569 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 15.410 kHz x dB Bandwidth 9.076 MHz</p> <p>Trace/View: Trace 1 2 3, Clear Write, Max Hold, Min Hold, View, Blank, More 1 of 2</p>

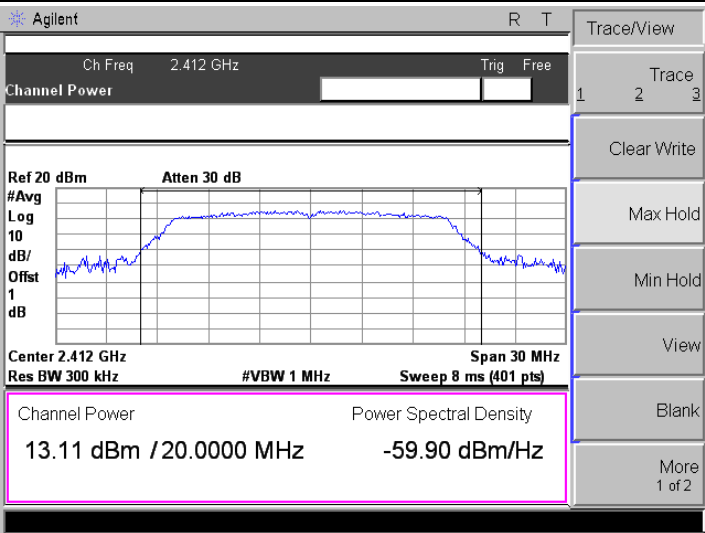
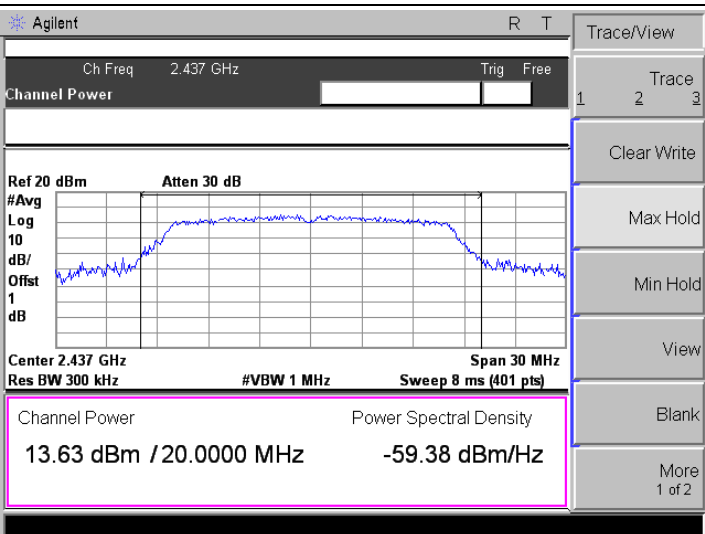
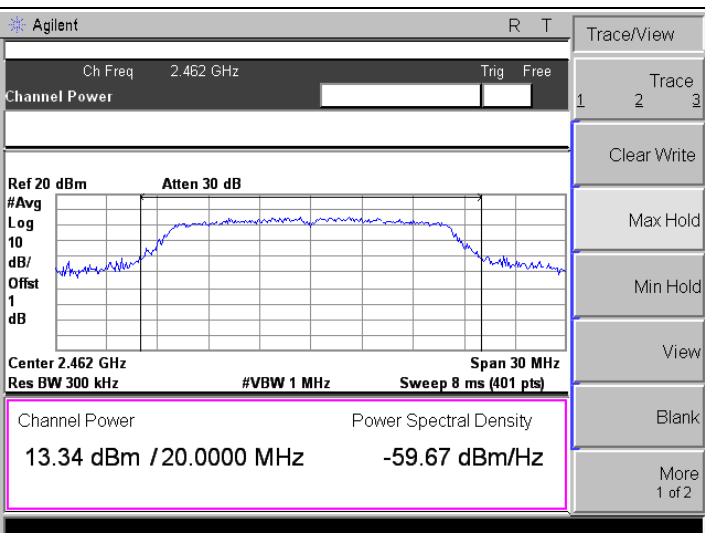
<p>802.11g-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10 dB/ Offst 1 dB</p> <p>Center 2.412 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>16.3260 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>-3.986 kHz</td> <td></td> <td></td> </tr> <tr> <td>15.068 MHz</td> <td></td> <td></td> </tr> </table> <p>Trace/View</p> <p>1 Trace 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>	Occupied Bandwidth	Occ BW % Pwr	99.00 %	16.3260 MHz	x dB	-6.00 dB	Transmit Freq Error			x dB Bandwidth			-3.986 kHz			15.068 MHz		
Occupied Bandwidth	Occ BW % Pwr	99.00 %																	
16.3260 MHz	x dB	-6.00 dB																	
Transmit Freq Error																			
x dB Bandwidth																			
-3.986 kHz																			
15.068 MHz																			
<p>802.11g-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10 dB/ Offst 1 dB</p> <p>Center 2.437 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>16.3387 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>-19.506 kHz</td> <td></td> <td></td> </tr> <tr> <td>15.413 MHz</td> <td></td> <td></td> </tr> </table> <p>Trace/View</p> <p>1 Trace 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>	Occupied Bandwidth	Occ BW % Pwr	99.00 %	16.3387 MHz	x dB	-6.00 dB	Transmit Freq Error			x dB Bandwidth			-19.506 kHz			15.413 MHz		
Occupied Bandwidth	Occ BW % Pwr	99.00 %																	
16.3387 MHz	x dB	-6.00 dB																	
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<p>802.11g-High</p>	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10 dB/ Offst 1 dB</p> <p>Center 2.462 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>16.3478 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>-5.528 kHz</td> <td></td> <td></td> </tr> <tr> <td>15.433 MHz</td> <td></td> <td></td> </tr> </table> <p>Trace/View</p> <p>1 Trace 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>	Occupied Bandwidth	Occ BW % Pwr	99.00 %	16.3478 MHz	x dB	-6.00 dB	Transmit Freq Error			x dB Bandwidth			-5.528 kHz			15.433 MHz		
Occupied Bandwidth	Occ BW % Pwr	99.00 %																	
16.3478 MHz	x dB	-6.00 dB																	
Transmit Freq Error																			
x dB Bandwidth																			
-5.528 kHz																			
15.433 MHz																			

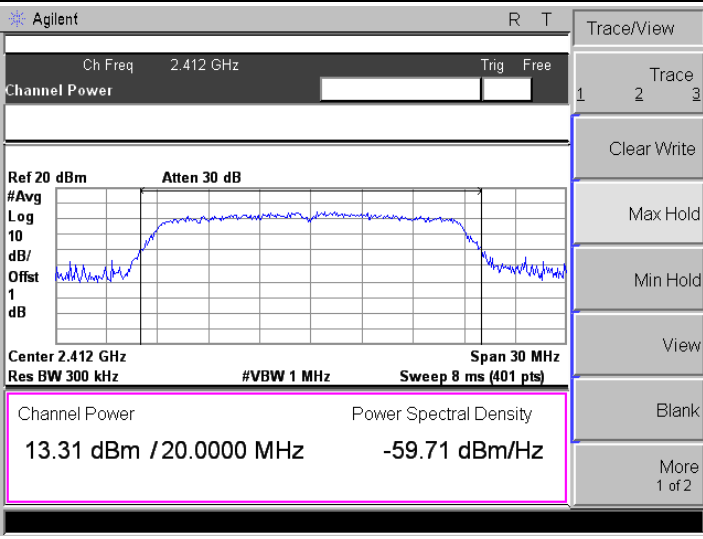
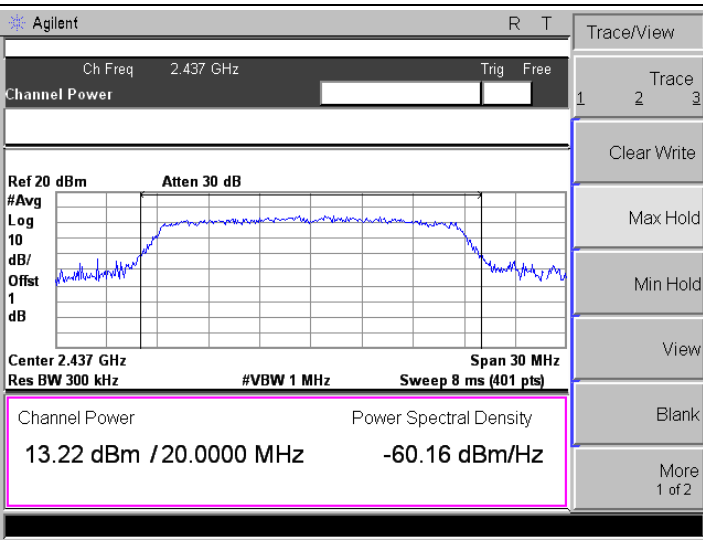
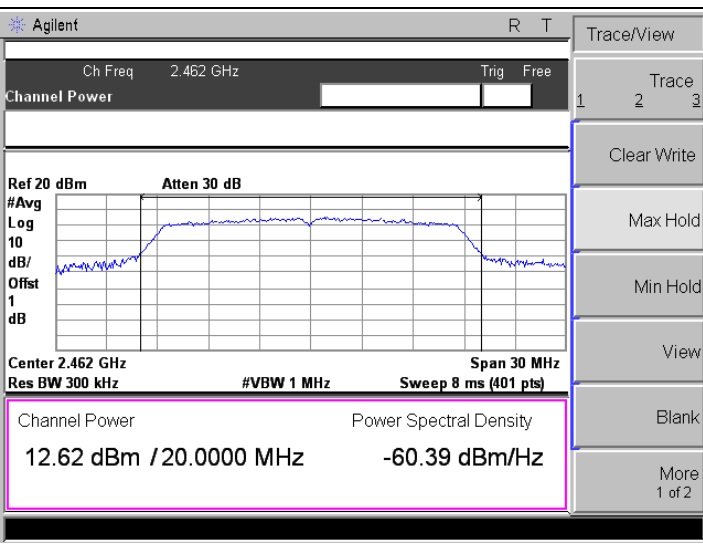
<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 2.41200000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10 dB/</p> <p>Offst 1 dB</p> <p>Center 2.412 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.4755 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -4.101 kHz x dB Bandwidth 15.130 MHz</p> <p>Trace/View</p> <p>1 Trace 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 2.437 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10 dB/</p> <p>Offst 1 dB</p> <p>Center 2.437 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.5143 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -16.128 kHz x dB Bandwidth 13.469 MHz</p> <p>Trace/View</p> <p>1 Trace 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Center 2.46200000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log 10 dB/</p> <p>Offst 1 dB</p> <p>Center 2.462 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 17.4963 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -19.472 kHz x dB Bandwidth 15.043 MHz</p> <p>Freq/Channel</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.44700000 GHz</p> <p>Stop Freq 2.47700000 GHz</p> <p>CF Step 3.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>

APPENDIX C

Test Mode	Frequency MHz	Reading dBm	Limit dBm
802.11b _ 11Mbps	2412	15.16	30.00
	2437	14.86	30.00
	2462	15.04	30.00
802.11g_54Mbps	2412	13.11	30.00
	2437	13.63	30.00
	2462	13.34	30.00
802.11n HT20_MCS7	2412	13.31	30.00
	2437	13.22	30.00
	2462	12.62	30.00

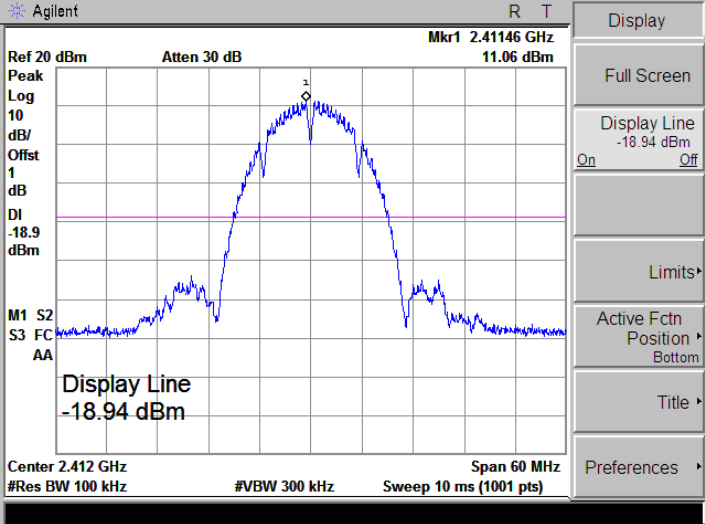
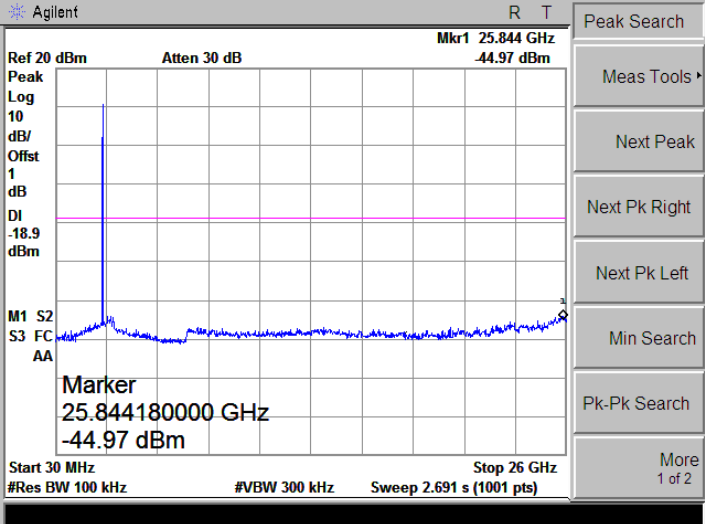
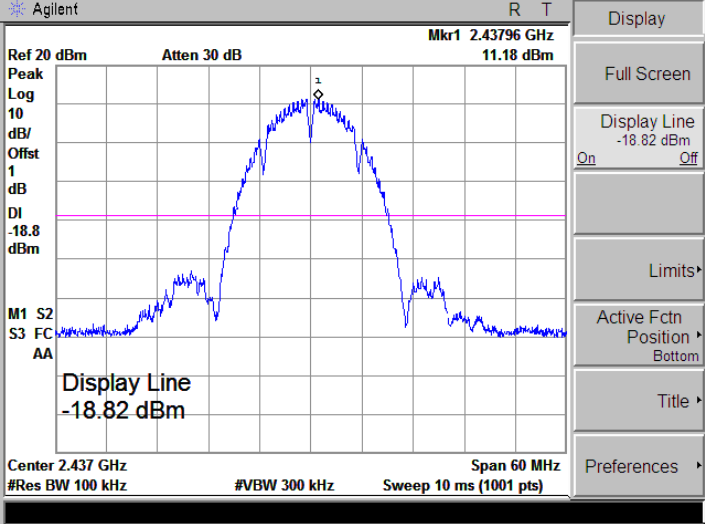
<p>802.11b-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg 10</p> <p>Log dB/</p> <p>Offst 1 dB</p> <p>Center 2.412 GHz Span 30 MHz</p> <p>Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>15.16 dBm / 20.0000 MHz -57.86 dBm/Hz</p> <p>Freq/Channel</p> <p>Center Freq 2.4120000 GHz</p> <p>Start Freq 2.3970000 GHz</p> <p>Stop Freq 2.4270000 GHz</p> <p>CF Step 3.0000000 MHz</p> <p>Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11b-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg 10</p> <p>Log dB/</p> <p>Offst 1 dB</p> <p>Center 2.437 GHz Span 30 MHz</p> <p>Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>14.86 dBm / 20.0000 MHz -58.15 dBm/Hz</p> <p>Trace/View</p> <p>1 Trace 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>
<p>802.11b-High</p>	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg 10</p> <p>Log dB/</p> <p>Offst 1 dB</p> <p>Center 2.462 GHz Span 30 MHz</p> <p>Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>15.04 dBm / 20.0000 MHz -57.97 dBm/Hz</p> <p>Trace/View</p> <p>1 Trace 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>

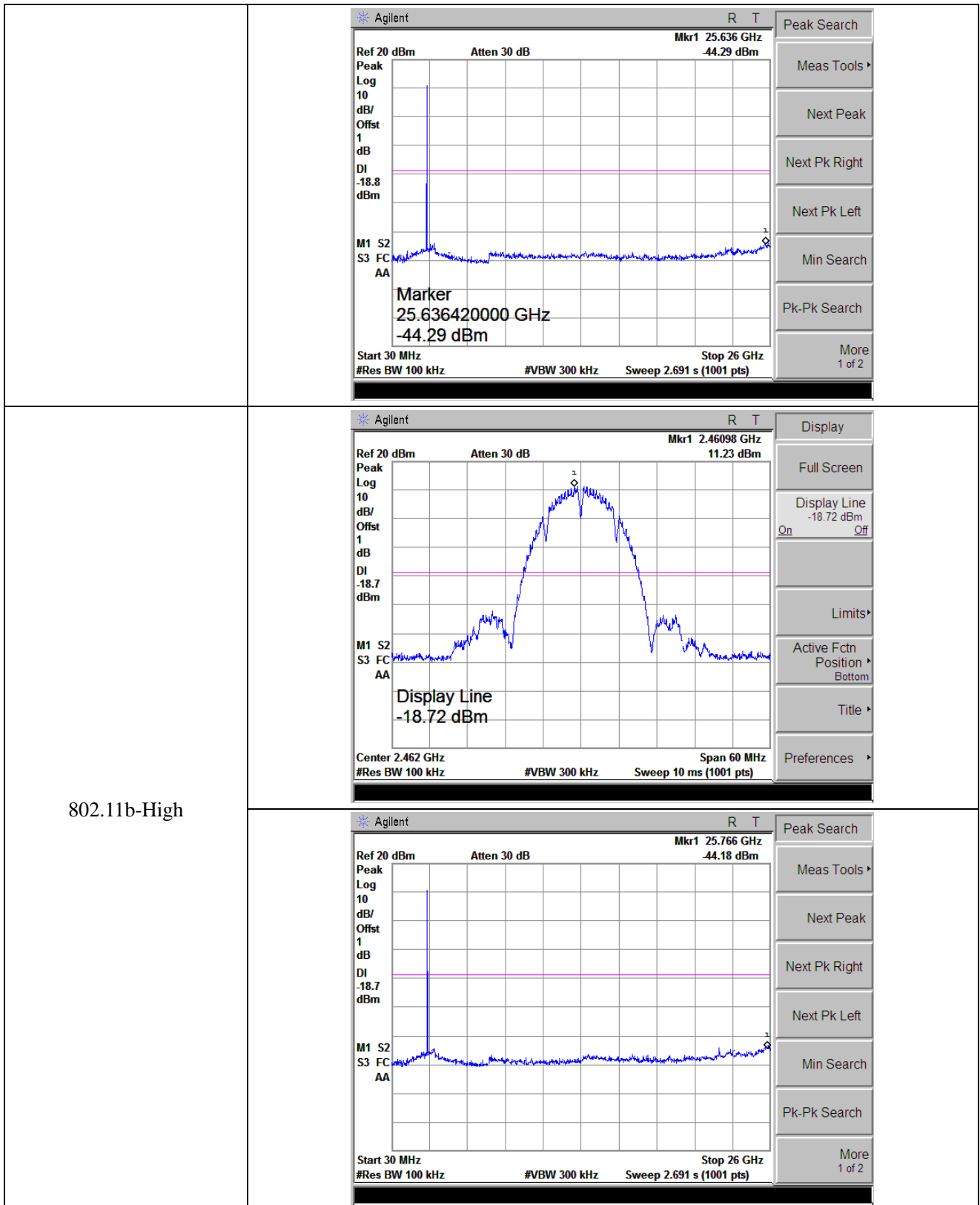
<p>802.11g-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg 10 Log dB/ Offst 1 dB</p> <p>Center 2.412 GHz Span 30 MHz Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>13.11 dBm / 20.0000 MHz -59.90 dBm/Hz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>
<p>802.11g-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg 10 Log dB/ Offst 1 dB</p> <p>Center 2.437 GHz Span 30 MHz Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>13.63 dBm / 20.0000 MHz -59.38 dBm/Hz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>
<p>802.11g-High</p>	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg 10 Log dB/ Offst 1 dB</p> <p>Center 2.462 GHz Span 30 MHz Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>13.34 dBm / 20.0000 MHz -59.67 dBm/Hz</p> <p>Trace/View</p> <p>Trace 1 2 3</p> <p>Clear Write</p> <p>Max Hold</p> <p>Min Hold</p> <p>View</p> <p>Blank</p> <p>More 1 of 2</p>

<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 2.412 GHz Span 30 MHz Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density 13.31 dBm / 20.0000 MHz -59.71 dBm/Hz</p> <p>Trace/View 1 Trace 2 3 Clear Write Max Hold Min Hold View Blank More 1 of 2</p>
<p>802.11n-HT20-Middle</p>	 <p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 2.437 GHz Span 30 MHz Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density 13.22 dBm / 20.0000 MHz -60.16 dBm/Hz</p> <p>Trace/View 1 Trace 2 3 Clear Write Max Hold Min Hold View Blank More 1 of 2</p>
<p>802.11n-HT20-High</p>	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>Center 2.462 GHz Span 30 MHz Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density 12.62 dBm / 20.0000 MHz -60.39 dBm/Hz</p> <p>Trace/View 1 Trace 2 3 Clear Write Max Hold Min Hold View Blank More 1 of 2</p>

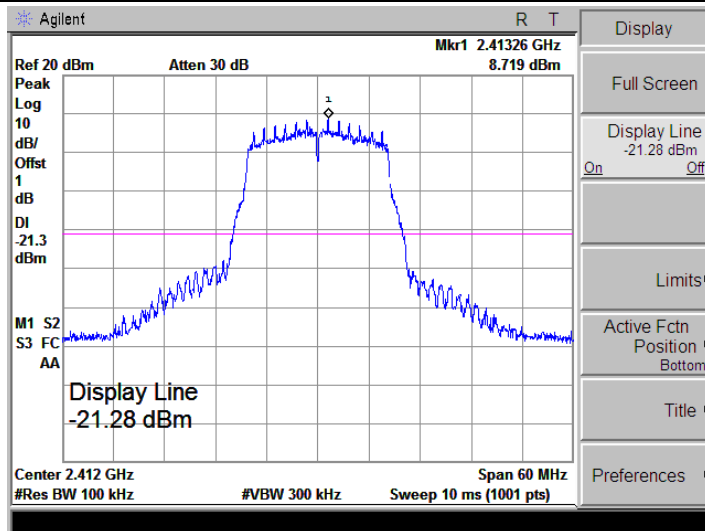
APPENDIX D

Conducted Out of Band Emissions

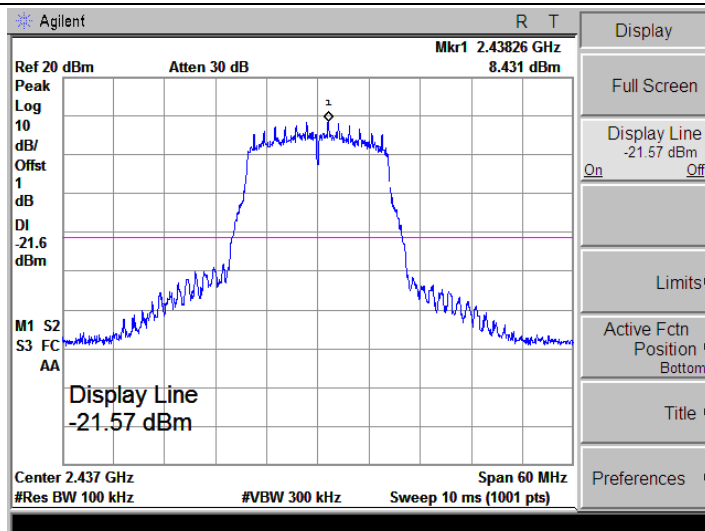
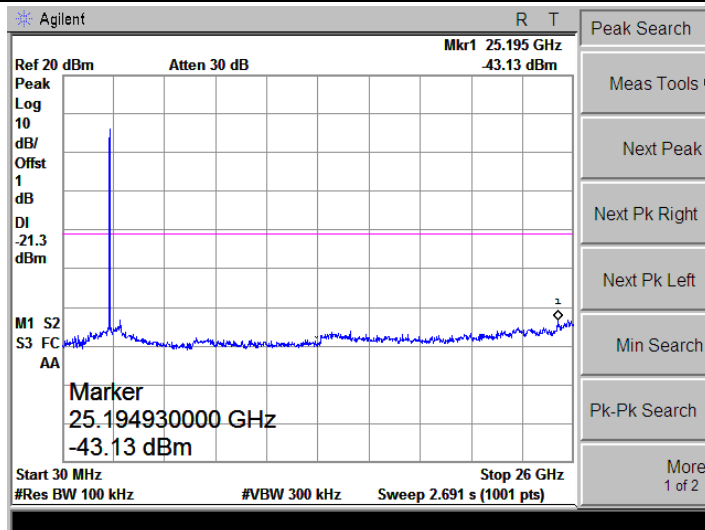
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<p>802.11b-High</p>	

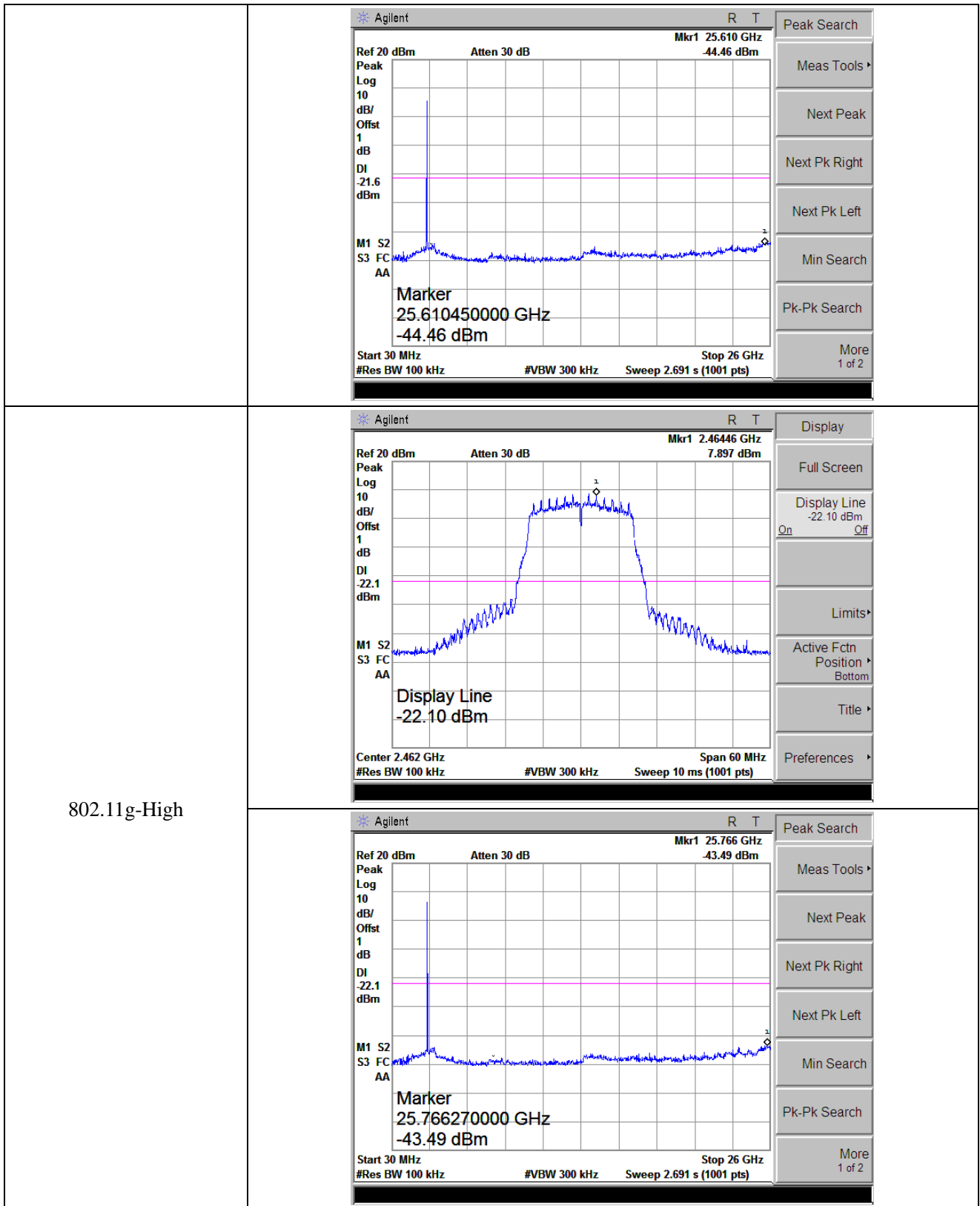


802.11g-Low

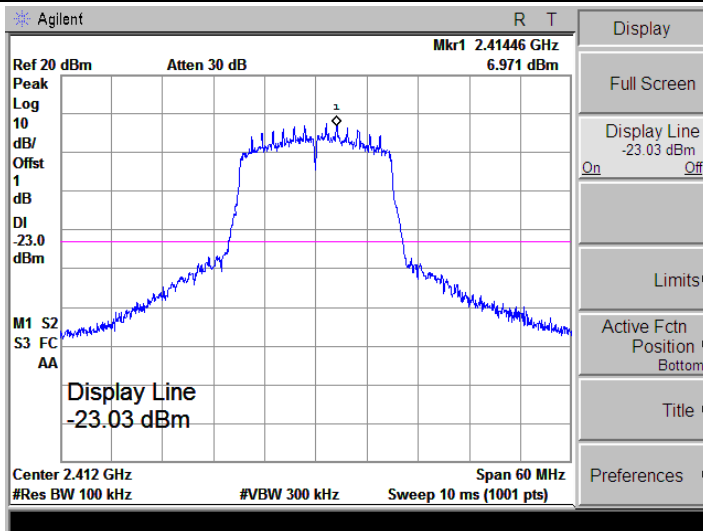


802.11g-Middle

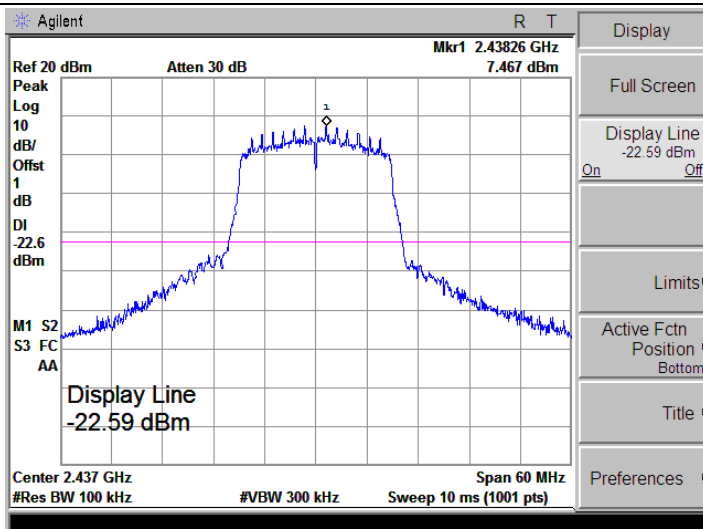
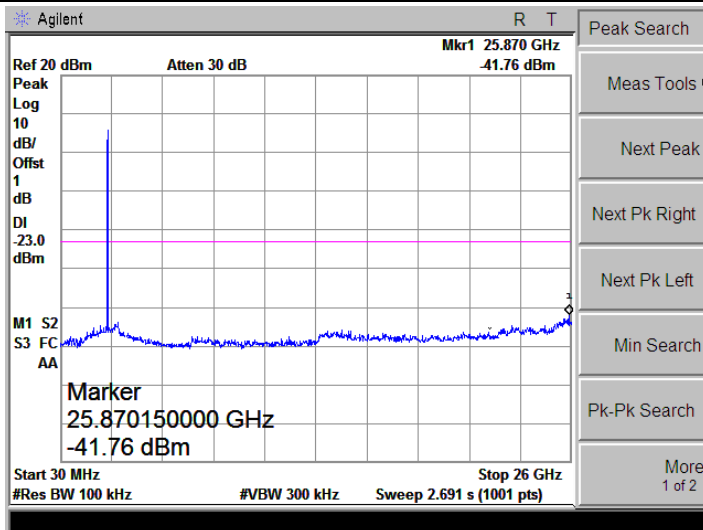


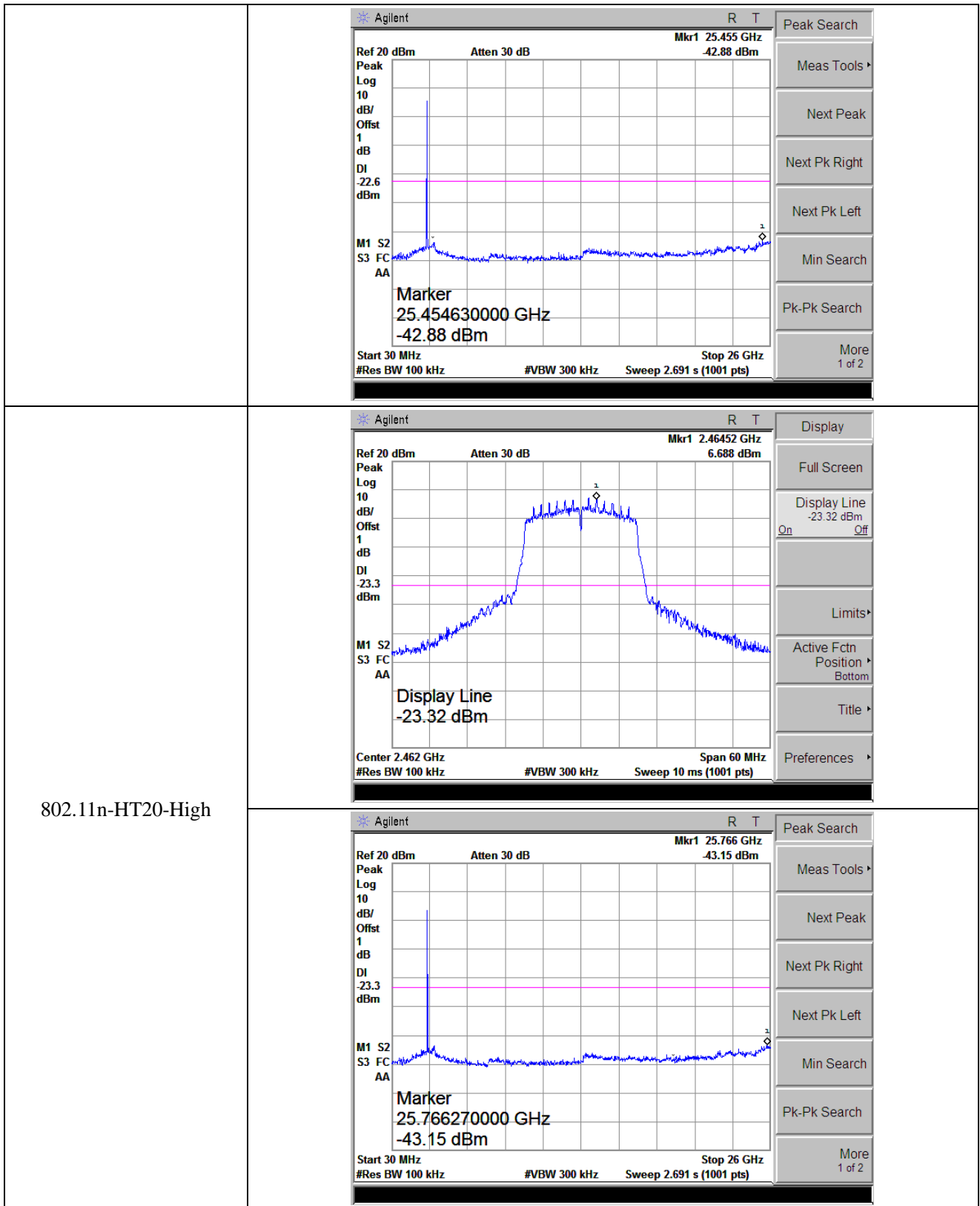


802.11n-HT20-Low

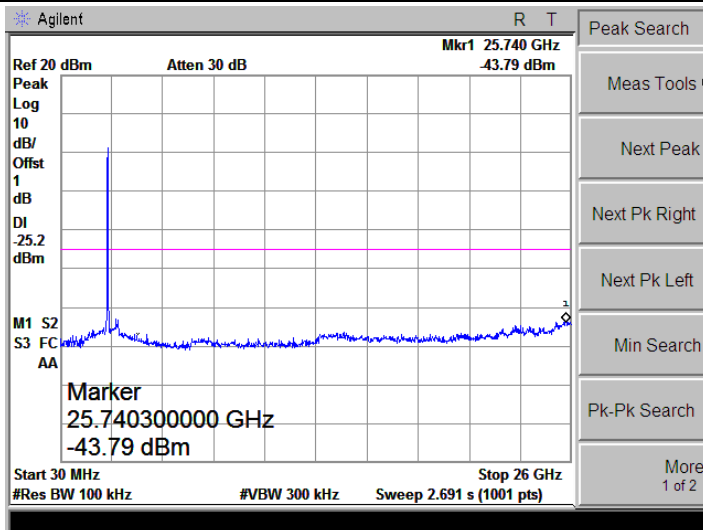
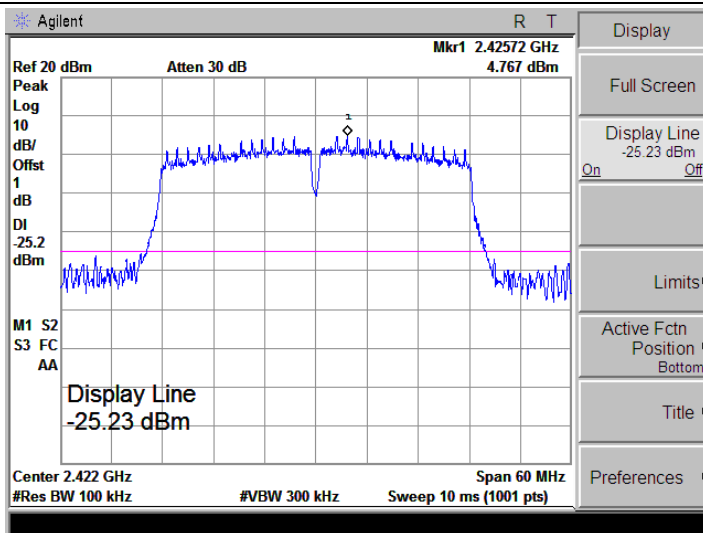


802.11n-HT20-Middle





802.11n-HT40-Low



APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

******* END OF REPORT *******