

# TEST REPORT

Reference No..... : WTH21X10105914W-2  
FCC ID ..... : XOMD236H19-A-I  
Applicant ..... : SHENZHEN QIYUE OPTRONICS COMPANY LIMITED  
Address..... : Flat3,Tower 3, Excellence Meilin Center Plaza, Zhongkang Road 128,  
Shangmeilin, Futian District, Shenzhen , China  
Product Name ..... : 24" LED HD TV  
Test Model. .... : D236H19-A-I  
Standards ..... : FCC Part 15.247  
Date of Receipt sample .... : Oct. 08, 2021  
Date of Test..... : Oct. 08, 2021 to Oct. 25, 2021  
Date of Issue ..... : Oct. 25, 2021  
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 compiler and approver.

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**Report version**

Version No.	Date of issue	Description
Rev.00	Oct. 25, 2021	Original
/	/	/

## 1. GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: SHENZHEN QIYUE OPTRONICS COMPANY LIMITED  
 Address of applicant: Flat3,Tower 3, Excellence Meilin Center Plaza, Zhongkang Road 128, Shangmeilin, Futian District, Shenzhen , China

Manufacturer: SHENZHEN QIYUE OPTRONICS COMPANY LIMITED  
 BRANCH  
 Address of manufacturer: A/B/C/D Building, Xitian Industrial Park, Dashuikeng Community,Guanlan Street, Longhua New District, Shenzhen City, China

General Description of EUT	
Product Name:	24" LED HD TV
Trade Name:	Norcent
Model No.:	D236H19-A-I
Adding Model(s):	N24H-S1, XXXXXXXXXXXX24XXXXXXXXXXXXXXXX (Where "X" can be any alphanumeric of A-Z or 0-9 or blank or -, indicates different client)
Rated Voltage:	AC120V/60Hz
Power Adapter Model:	/
<p><i>Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model D236H19-A-I, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	Antenna 1: 15.60dBm (Conducted) Antenna 2: 16.13dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	2 dBi

## 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.

**662911 D01 Multiple Transmitter Output v02r01**: Emissions Testing of Transmitters with Multiple Outputs in the Same Band.

**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, KDB 662911 D01 Multiple Transmitter Output v02r01

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
TM4	802.11n-HT40	Low:2422MHz, Middle:2437MHz,High:2452MHz

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
AC Cable	1.6	Unshielded	Without Ferrite

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
HDMI	1.5	Shielded	Without Ferrit

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Computer	Dell	9MMJ442	/

**1.6 Measurement Uncertainty**

<b>Measurement uncertainty</b>		
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-1082	Power Divider	RF-Lambda	RFLT4W5M18G	14110400027	2021-03-27	2022-03-26
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-1043	Amplifier	C&D	PAP-1G18	2002	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
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 Systems Inc.	PAP-2640	14145-14153	2021-04-27	2022-04-26
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2021-03-27	2022-03-26
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2021-03-27	2022-03-26
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2021-03-19	2023-03-18
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	/	/	/



<b>Software List</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Version</b>
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

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<b>FCC Rules</b>	<b>Description of Test Item</b>	<b>Result</b>
§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**

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#### **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 two integral antennas, fulfill the requirement of this section. And the signals at the antennas are completely uncorrelated.

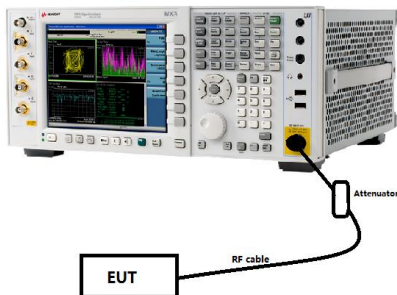
## 4. Power Spectral Density

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### 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 3kHz) 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

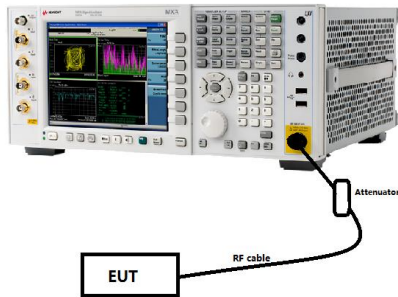
## 5. DTS Bandwidth

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### 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 6dB 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 6dB relative to the maximum level measured in the fundamental emission.

### 5.4 Summary of Test Results/Plots

Please refer to Appendix B

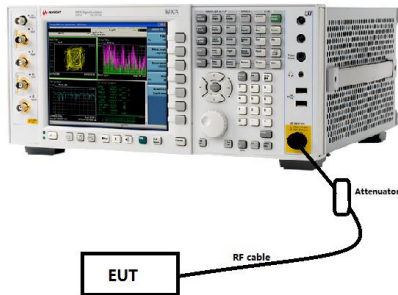
## 6. RF Output Power

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### 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  $\geq 98$  %, 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.

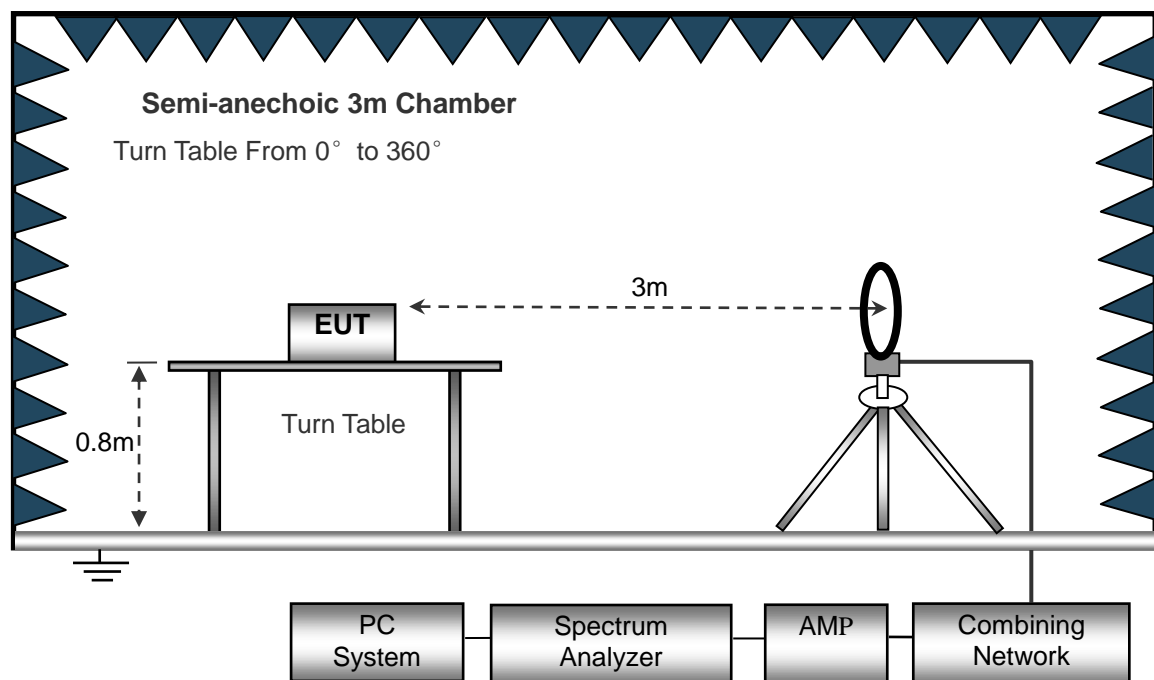
### 7.2 Test Procedure

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.

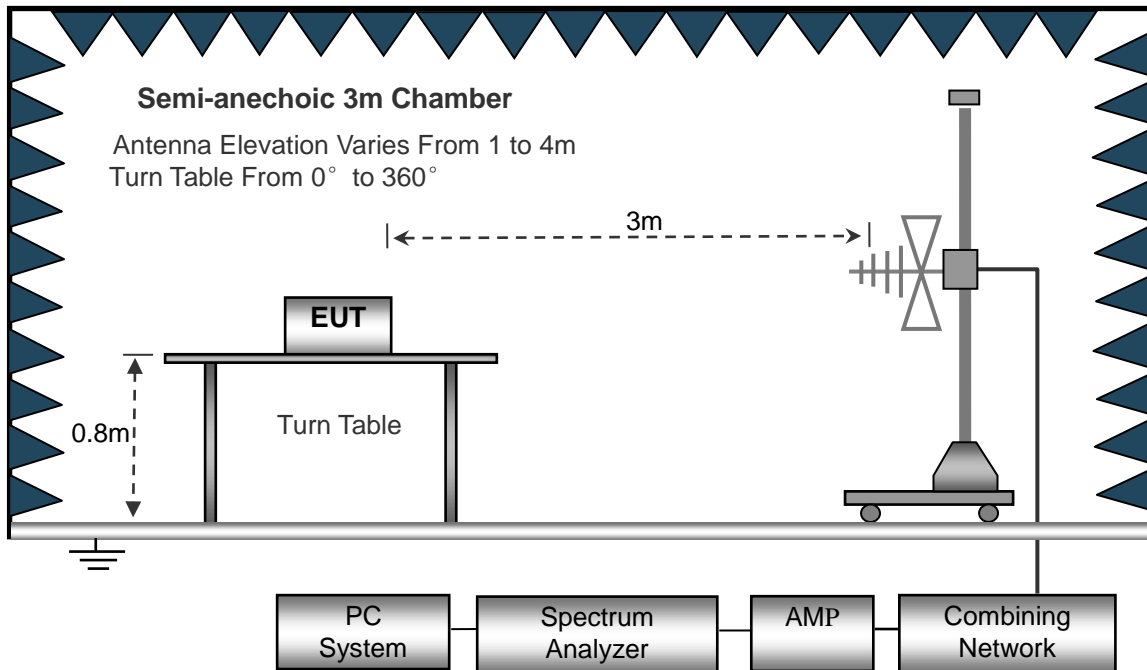
The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.

The spacing between the peripherals was 10cm.

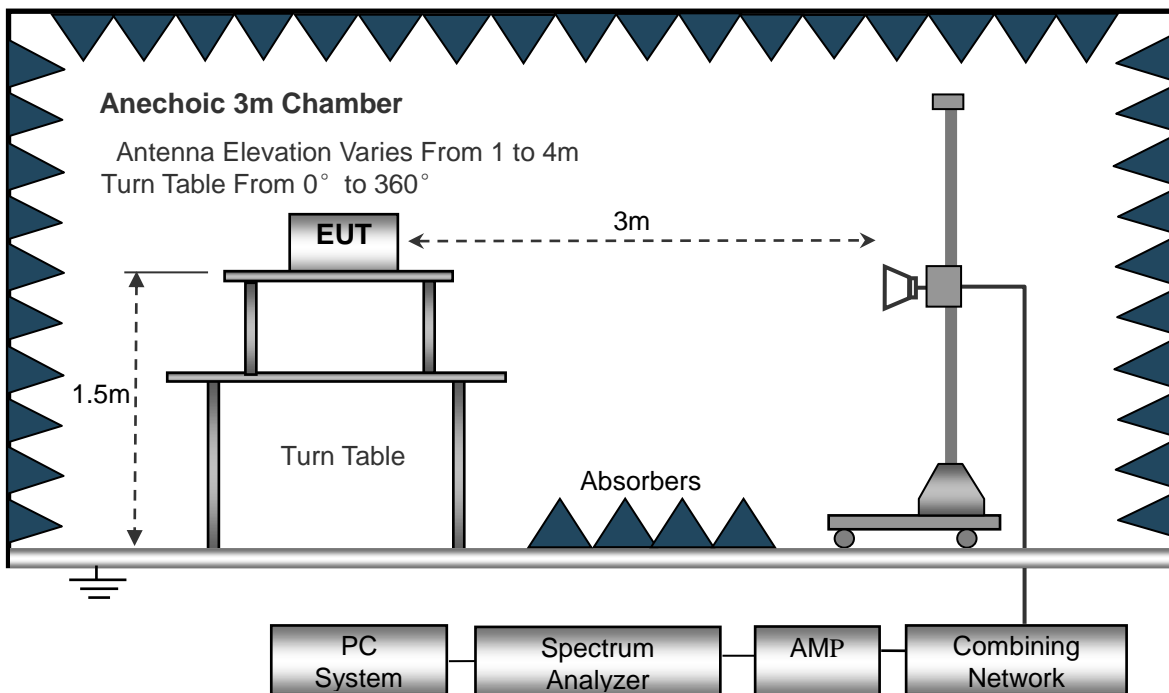
The test setup for emission measurement below 30MHz.



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 $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit. The equation for margin calculation is as follows:

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

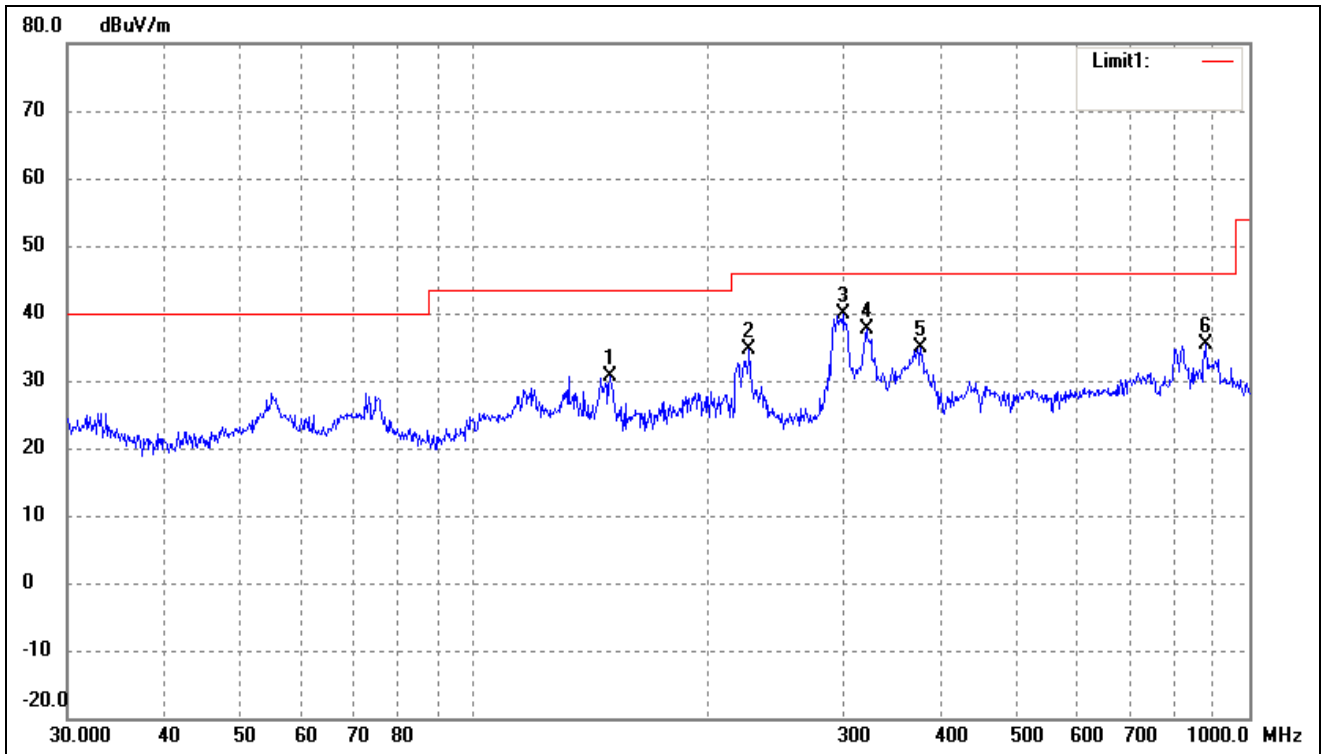
### 7.4 Summary of Test Results/Plots

*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.*

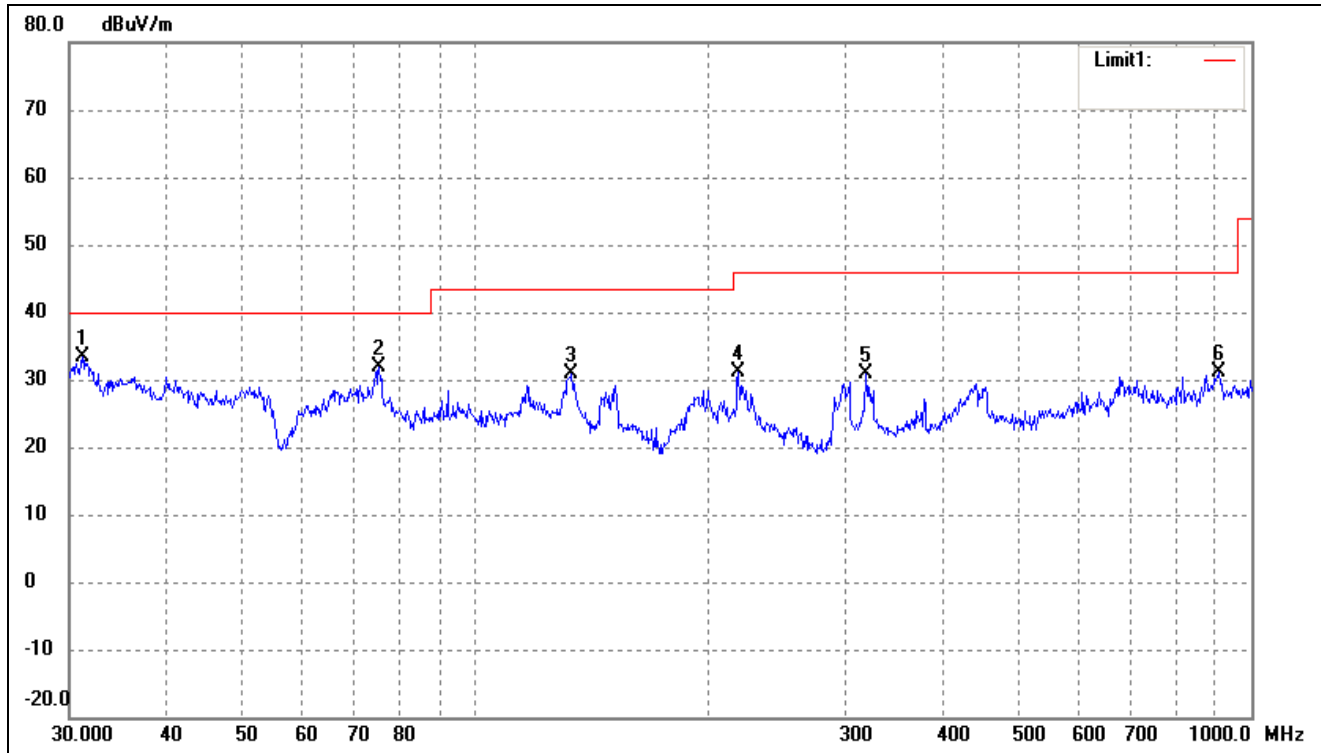
- Spurious Emissions Below 1GHz
- Worst case Antenna 1

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



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Detector
1	150.0107	43.25	-12.61	30.64	43.50	-12.86	-	-	peak
2	226.8934	43.66	-8.96	34.70	46.00	-11.30	-	-	peak
3*	299.3158	46.74	-6.98	39.76	46.00	-6.24	-	-	peak
4	321.0605	44.00	-6.30	37.70	46.00	-8.30	-	-	peak
5	377.2590	39.49	-4.59	34.90	46.00	-11.10	-	-	peak
6	878.3214	32.68	2.59	35.27	46.00	-10.73	-	-	peak

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



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Detector
1*	31.1798	42.48	-9.16	33.32	40.00	-6.68	-	-	peak
2	75.1821	42.23	-10.46	31.77	40.00	-8.23	-	-	peak
3	133.1511	42.46	-11.69	30.77	43.50	-12.73	-	-	peak
4	218.3085	40.23	-9.20	31.03	46.00	-14.97	-	-	peak
5	318.8170	37.27	-6.37	30.90	46.00	-15.10	-	-	peak
6	909.6666	28.50	2.72	31.22	46.00	-14.78	-	-	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
- Antenna 1
- Test Mode: 802.11b\_11Mbps (worst case)

Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel-2412MHz							
4824.000	58.42	-3.86	54.56	74	-19.44	H	PK
4824.000	41.70	-3.86	37.84	54	-16.16	H	AV
7236.000	58.14	1.10	59.24	74	-14.76	H	PK
7236.000	40.23	1.10	41.33	54	-12.67	H	AV
4824.000	60.14	-3.86	56.28	74	-17.72	V	PK
4824.000	45.02	-3.86	41.16	54	-12.84	V	AV
7236.000	55.82	1.10	56.92	74	-17.08	V	PK
7236.000	38.74	1.10	39.84	54	-14.16	V	AV
Middle Channel-2437MHz							
4874.000	59.35	-3.86	55.49	74	-18.51	H	PK
4874.000	43.13	-3.86	39.27	54	-14.73	H	AV
7311.000	57.01	1.10	58.11	74	-15.89	H	PK
7311.000	38.02	1.10	39.12	54	-14.88	H	AV
4874.000	60.78	-3.86	56.92	74	-17.08	V	PK
4874.000	44.23	-3.86	40.37	54	-13.63	V	AV
7311.000	53.97	1.10	55.07	74	-18.93	V	PK
7311.000	38.03	1.10	39.13	54	-14.87	V	AV
High Channel-2462MHz							
4924.000	59.10	-3.63	55.47	74	-18.53	H	PK
4924.000	43.59	-3.63	39.96	54	-14.04	H	AV
7386.000	56.89	1.62	58.51	74	-15.49	H	PK
7386.000	41.04	1.62	42.66	54	-11.34	H	AV
4924.000	60.77	-3.63	57.14	74	-16.86	V	PK
4924.000	45.82	-3.63	42.19	54	-11.81	V	AV
7386.000	55.07	1.62	56.69	74	-17.31	V	PK
7386.000	41.17	1.62	42.79	54	-11.21	V	AV

## ➤ Antenna 2

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	59.32	-3.86	55.46	74	-18.54	H	PK
4824.000	43.23	-3.86	39.37	54	-14.63	H	AV
7236.000	54.81	1.10	55.91	74	-18.09	H	PK
7236.000	41.50	1.10	42.60	54	-11.40	H	AV
4824.000	60.51	-3.86	56.65	74	-17.35	V	PK
4824.000	44.05	-3.86	40.19	54	-13.81	V	AV
7236.000	60.50	1.10	61.60	74	-12.40	V	PK
7236.000	41.19	1.10	42.29	54	-11.71	V	AV
Middle Channel-2437MHz							
4874.000	63.60	-3.74	59.86	74	-14.14	H	PK
4874.000	41.45	-3.74	37.71	54	-16.29	H	AV
7311.000	56.13	1.47	57.60	74	-16.40	H	PK
7311.000	40.27	1.47	41.74	54	-12.26	H	AV
4874.000	61.81	-3.74	58.07	74	-15.93	V	PK
4874.000	46.24	-3.74	42.50	54	-11.50	V	AV
7311.000	55.23	1.47	56.70	74	-17.30	V	PK
7311.000	40.93	1.47	42.40	54	-11.60	V	AV
High Channel-2462MHz							
4924.000	63.27	-3.63	59.64	74	-14.36	H	PK
4924.000	43.07	-3.63	39.44	54	-14.56	H	AV
7386.000	55.18	1.62	56.80	74	-17.20	H	PK
7386.000	41.64	1.62	43.26	54	-10.74	H	AV
4924.000	59.30	-3.63	55.67	74	-18.33	V	PK
4924.000	45.81	-3.63	42.18	54	-11.82	V	AV
7386.000	54.41	1.62	56.03	74	-17.97	V	PK
7386.000	42.12	1.62	43.74	54	-10.26	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

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### 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

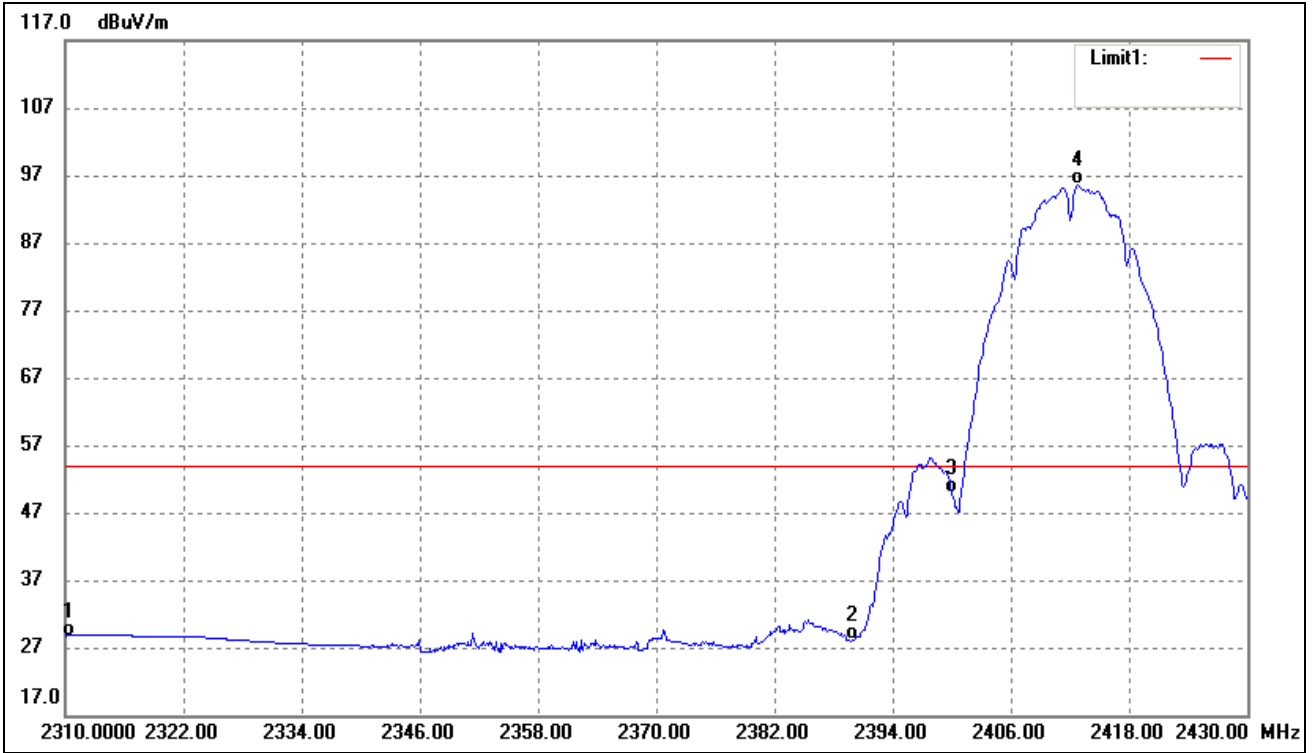
If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

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
- Antenna 1(worst case)

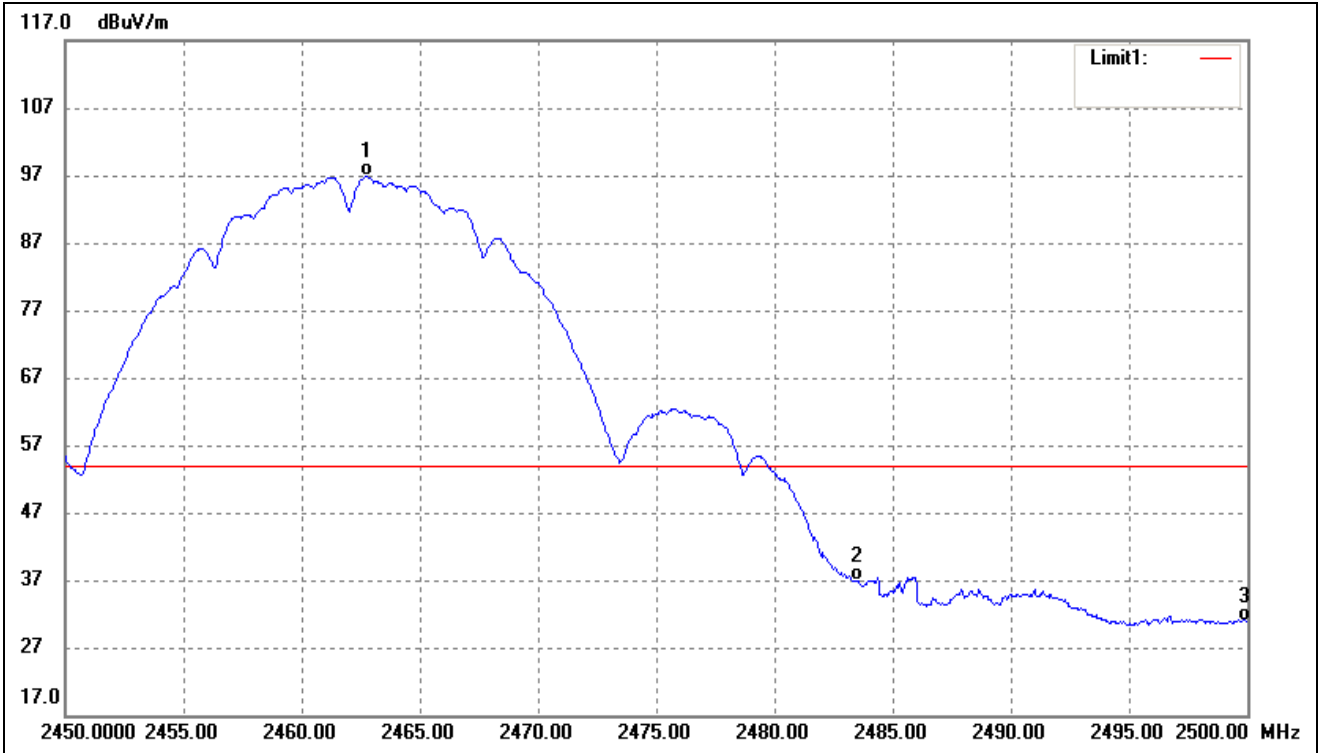
802.11b_11Mbps			
Test Channel	Low	Polarity:	Horizontal (worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	39.57	-10.82	28.75	54.00	-25.25	Average Detector
		53.78	-10.82	42.96	74.00	-31.04	Peak Detector
2	2390.000	38.90	-10.70	28.20	54.00	-25.80	Average Detector
		52.63	-10.70	41.93	74.00	-32.07	Peak Detector
3	2400.000	60.51	-10.69	49.82	Delta=45.79dBc		Average Detector
4	2412.840	106.28	-10.67	95.61			Average Detector

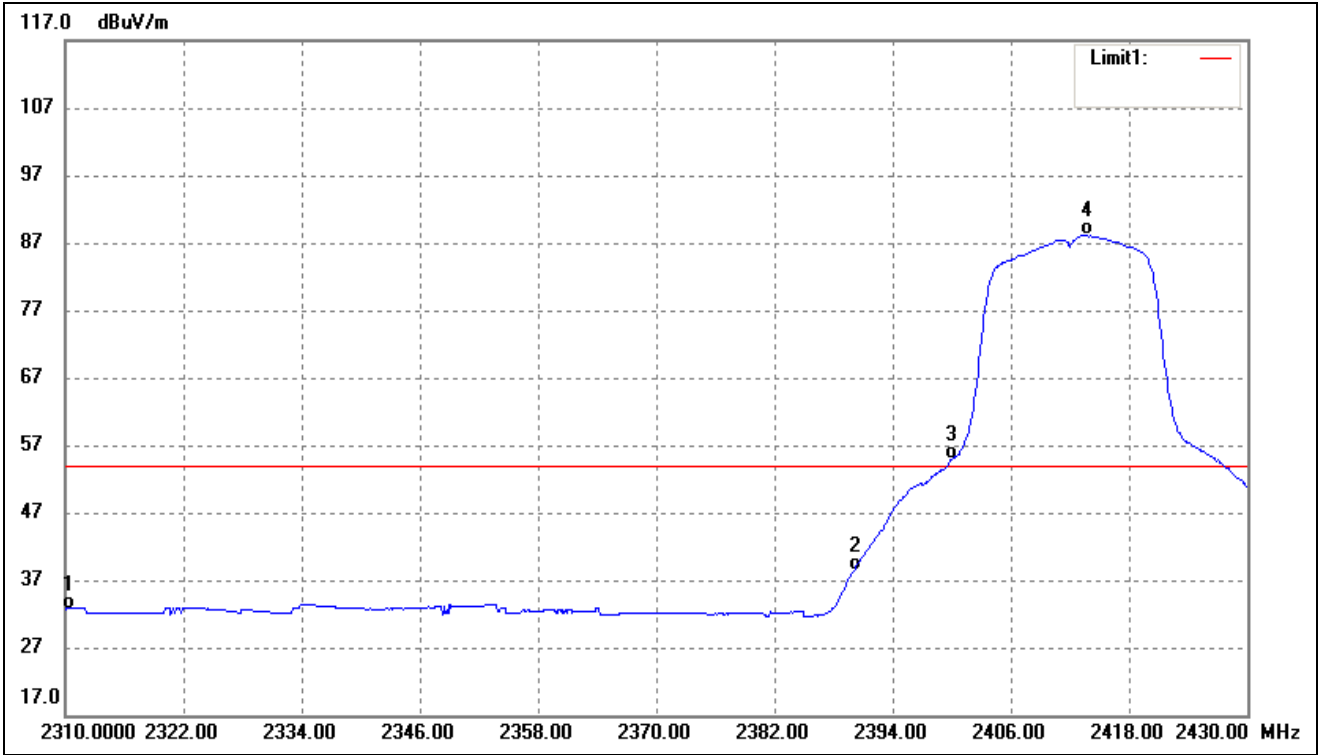


802.11b_11Mbps			
Test Channel	High	Polarity:	Horizontal (worst case)



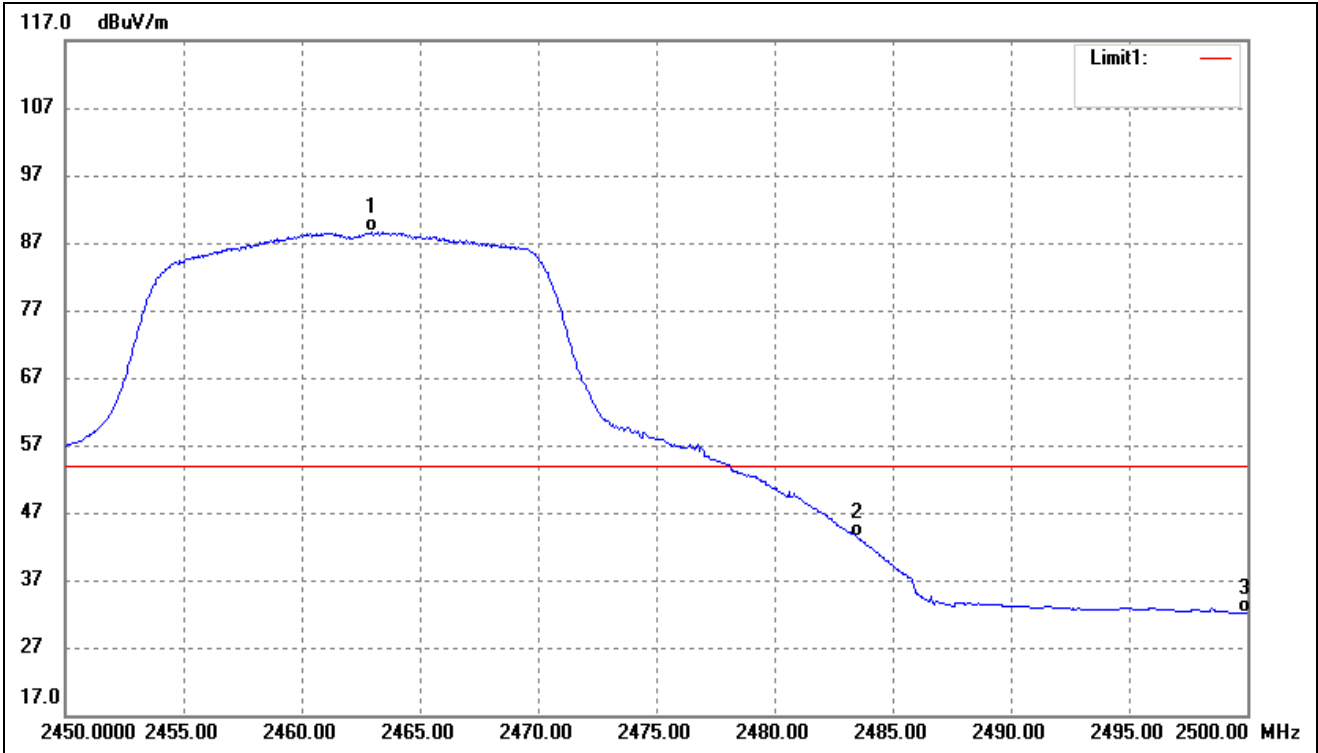
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2462.700	107.37	-10.60	96.77	/	/	Average Detector
	2463.050	111.16	-10.60	100.56	/	/	Peak Detector
2	2483.500	47.44	-10.58	36.86	54.00	-17.14	Average Detector
	2483.500	57.49	-10.58	46.91	74.00	-27.09	Peak Detector
3	2500.000	41.34	-10.55	30.79	54.00	-23.21	Average Detector
	2500.000	53.26	-10.55	42.71	74.00	-31.29	Peak Detector

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



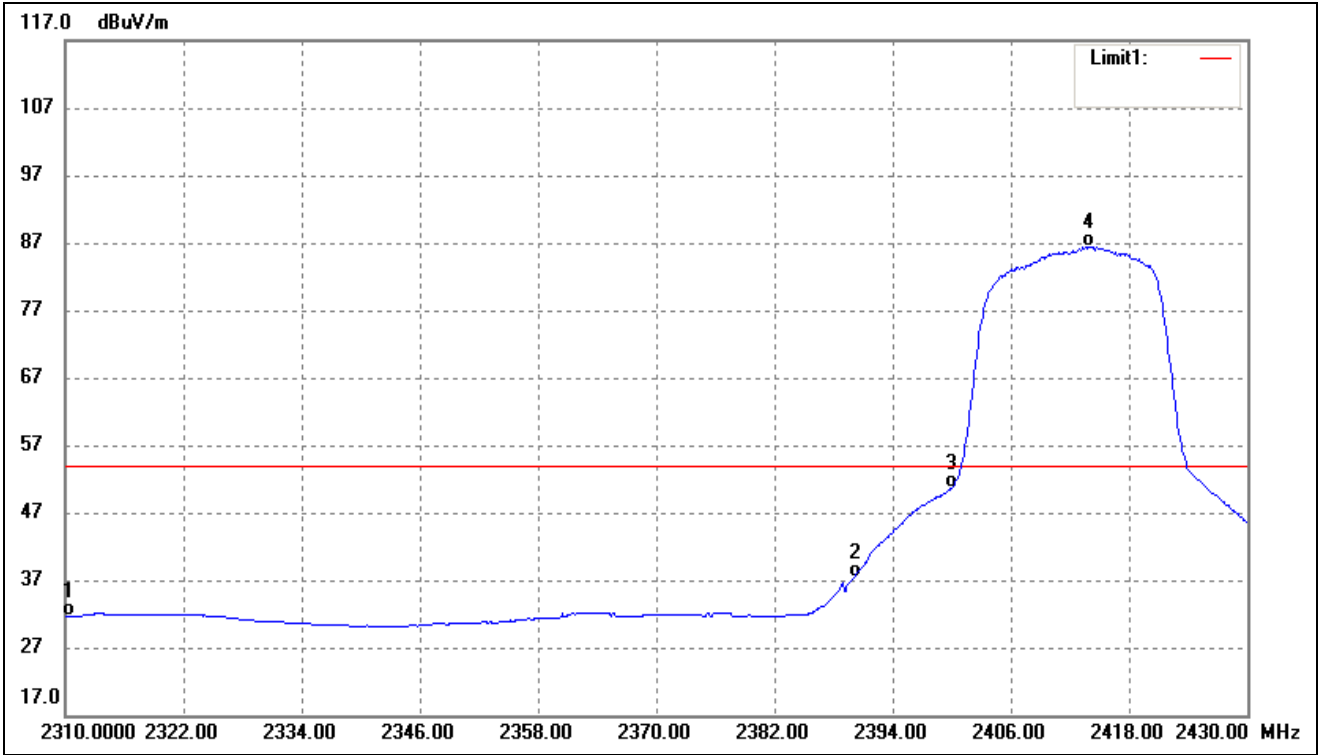
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	43.55	-10.82	32.73	54.00	-21.27	Average Detector
		55.05	-10.82	44.23	74.00	-29.77	Peak Detector
2	2390.000	49.06	-10.70	38.36	54.00	-15.64	Average Detector
		67.29	-10.70	56.59	74.00	-17.41	Peak Detector
3	2400.000	65.62	-10.69	54.93	Delta=33.19dBc		Average Detector
4	2413.680	98.78	-10.66	88.12			Average Detector

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



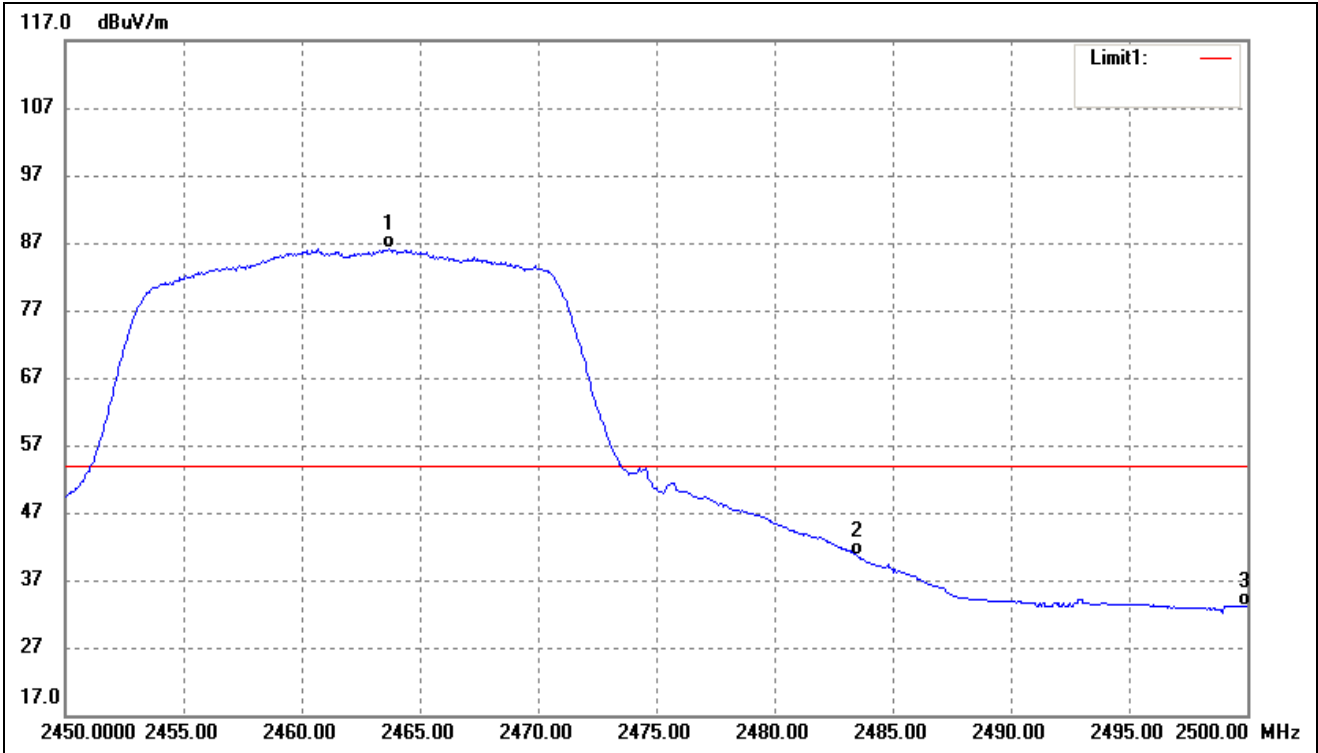
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2462.950	99.18	-10.60	88.58	/	/	Average Detector
	2463.500	110.24	-10.60	99.64	/	/	Peak Detector
2	2483.500	53.85	-10.58	43.27	54.00	-10.73	Average Detector
	2483.500	73.97	-10.58	63.39	74.00	-10.61	Peak Detector
3	2500.000	42.63	-10.55	32.08	54.00	-21.92	Average Detector
	2500.000	57.62	-10.55	47.07	74.00	-26.93	Peak Detector

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



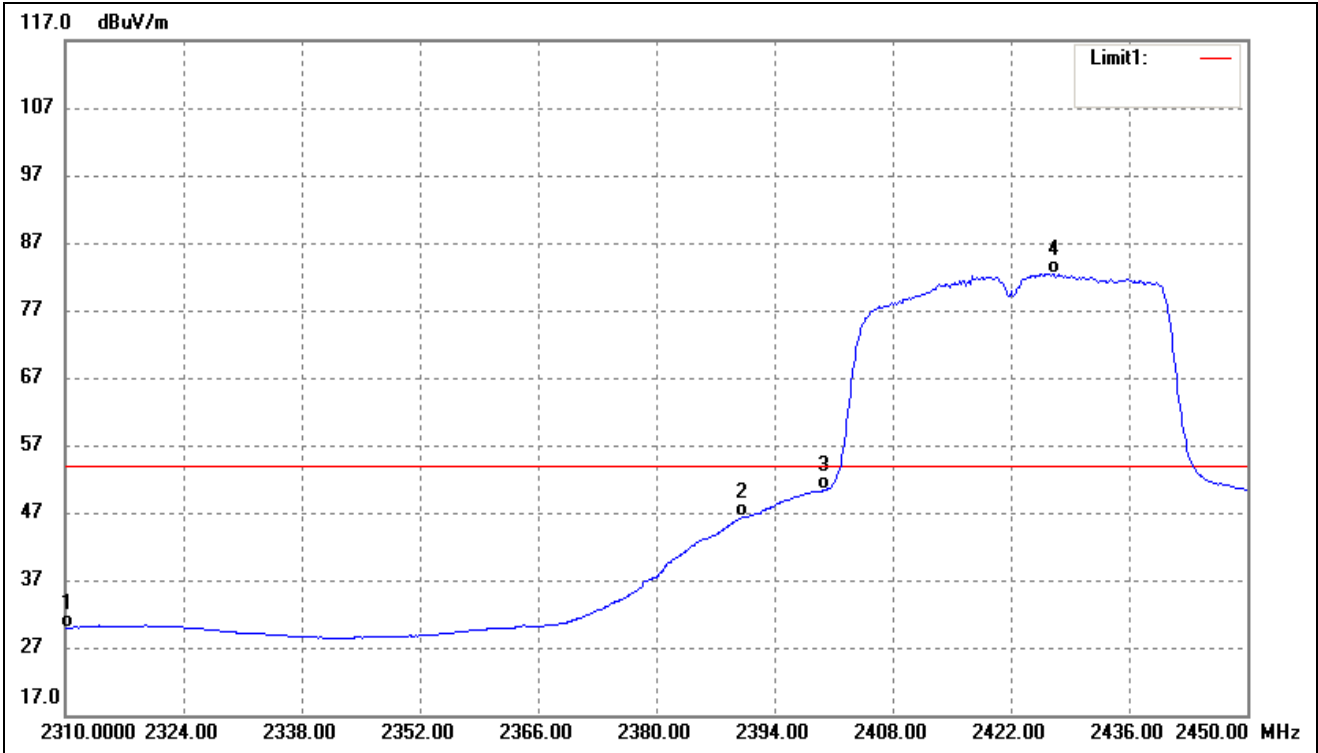
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	42.40	-10.82	31.58	54.00	-22.42	Average Detector
		53.83	-10.82	43.01	74.00	-30.99	Peak Detector
2	2390.000	48.08	-10.70	37.38	54.00	-16.62	Average Detector
		65.87	-10.70	55.17	74.00	-18.83	Peak Detector
3	2400.000	61.43	-10.69	50.74	Delta=35.75dBc		Average Detector
4	2413.920	97.15	-10.66	86.49			Average Detector

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



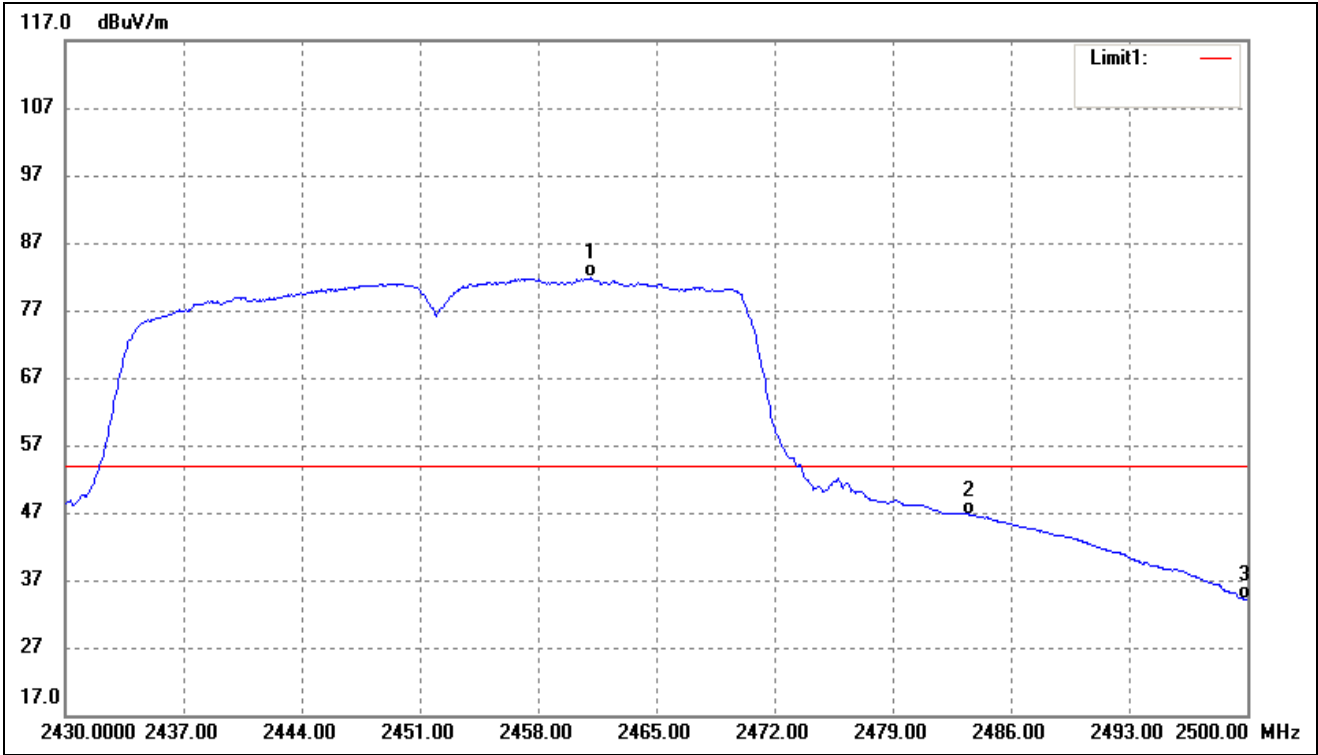
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2463.700	96.74	-10.60	86.14	/	/	Average Detector
	2460.500	108.60	-10.61	97.99	/	/	Peak Detector
2	2483.500	51.14	-10.58	40.56	54.00	-13.44	Average Detector
	2483.500	70.36	-10.58	59.78	74.00	-14.22	Peak Detector
3	2500.000	43.57	-10.55	33.02	54.00	-20.98	Average Detector
	2500.000	54.36	-10.55	43.81	74.00	-30.19	Peak Detector

802.11n-HT40_MCS7			
Test Channel	Low	Polarity:	Horizontal (worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	40.71	-10.82	29.89	54.00	-24.11	Average Detector
		56.27	-10.82	45.45	74.00	-28.55	Peak Detector
2	2390.000	56.99	-10.70	46.29	54.00	-7.71	Average Detector
		77.43	-10.70	66.73	74.00	-7.27	Peak Detector
3	2400.000	61.02	-10.69	50.33	Delta=32.12dBc	Average Detector	
4	2427.040	93.10	-10.65	82.45		Average Detector	

802.11n-HT40_MCS7			
Test Channel	High	Polarity:	Horizontal (worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.150	92.37	-10.61	81.76	/	/	Average Detector
	2460.100	104.73	-10.61	94.12	/	/	Peak Detector
2	2483.500	57.28	-10.58	46.70	54.00	-7.30	Average Detector
	2483.500	80.06	-10.58	69.48	74.00	-4.52	Peak Detector
3	2500.000	44.59	-10.55	34.04	54.00	-19.96	Average Detector
	2500.000	62.10	-10.55	51.55	74.00	-22.45	Peak Detector

➤ Conducted test

**Please refer to Appendix D**

## 9. Conducted Emissions

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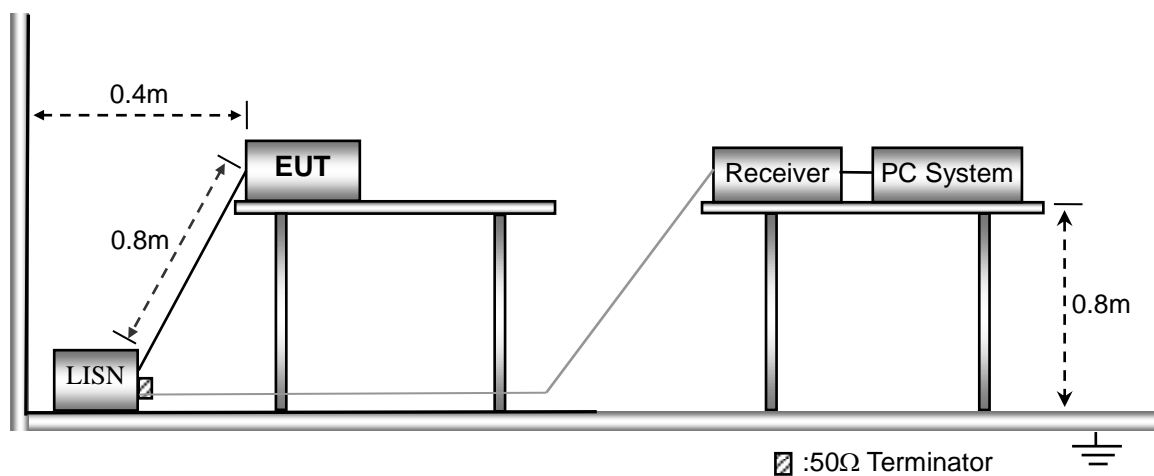
### 9.1 Test Procedure

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

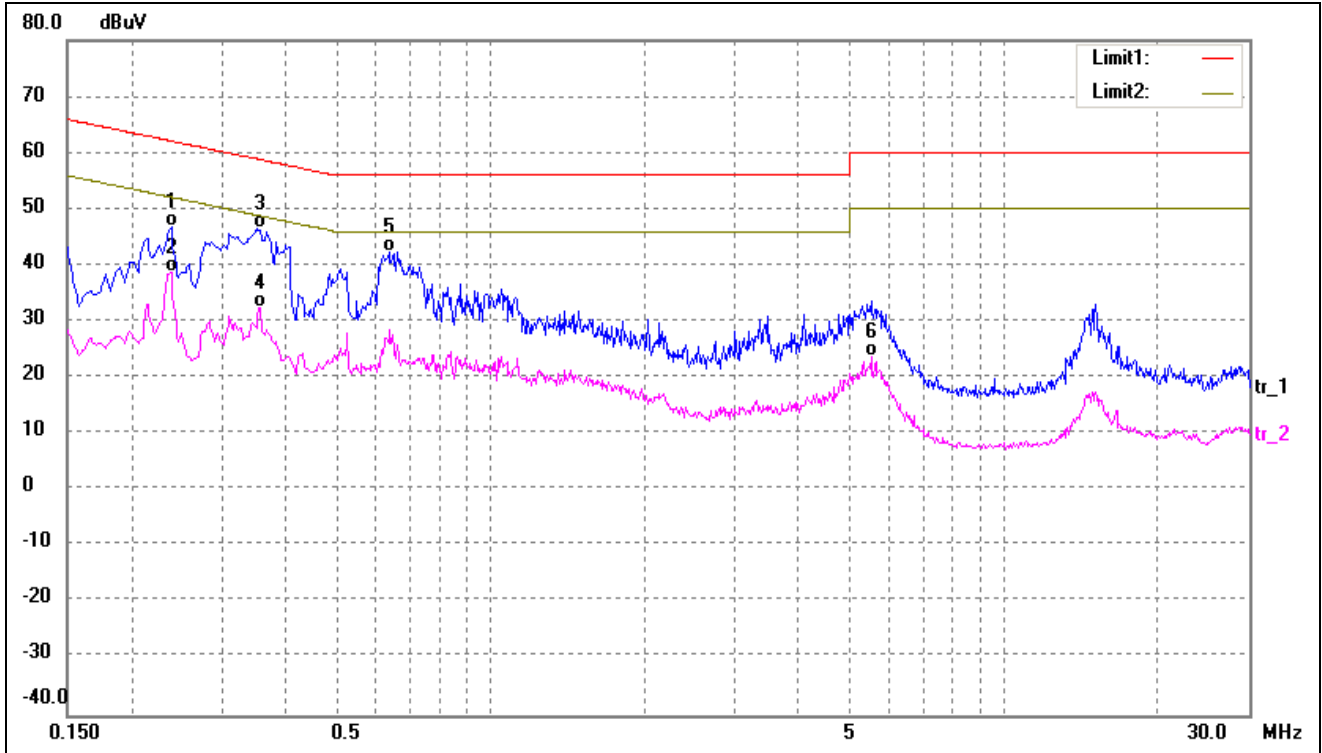
During the conducted emission test, the test receiver was set with the following configurations:

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

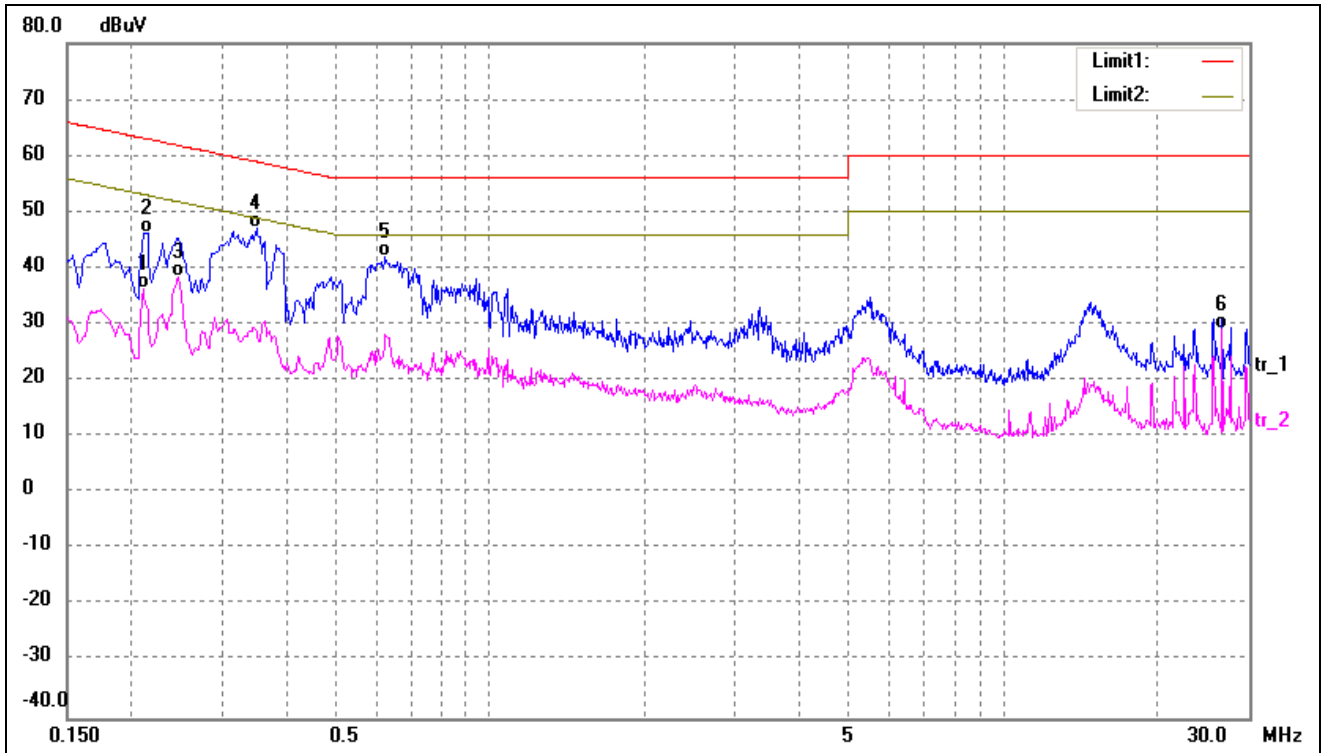


Test Mode	Communication	AC120V 60Hz	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2380	36.39	10.36	46.75	62.16	-15.41	QP
2	0.2380	28.50	10.36	38.86	52.16	-13.30	AVG
3*	0.3500	36.13	10.32	46.45	58.96	-12.51	QP
4	0.3540	22.18	10.31	32.49	48.87	-16.38	AVG
5	0.6340	31.98	10.34	42.32	56.00	-13.68	QP
6	5.5180	13.80	9.99	23.79	50.00	-26.21	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	0.2100	26.06	10.37	36.43	53.20	-16.77	AVG
2	0.2140	35.99	10.37	46.36	63.04	-16.68	QP
3	0.2460	28.09	10.35	38.44	51.89	-13.45	AVG
4*	0.3500	36.70	10.32	47.02	58.96	-11.94	QP
5	0.6260	31.86	10.34	42.20	56.00	-13.80	QP
6	26.6220	18.80	10.22	29.02	50.00	-20.98	AVG

**APPENDIX SUMMARY**

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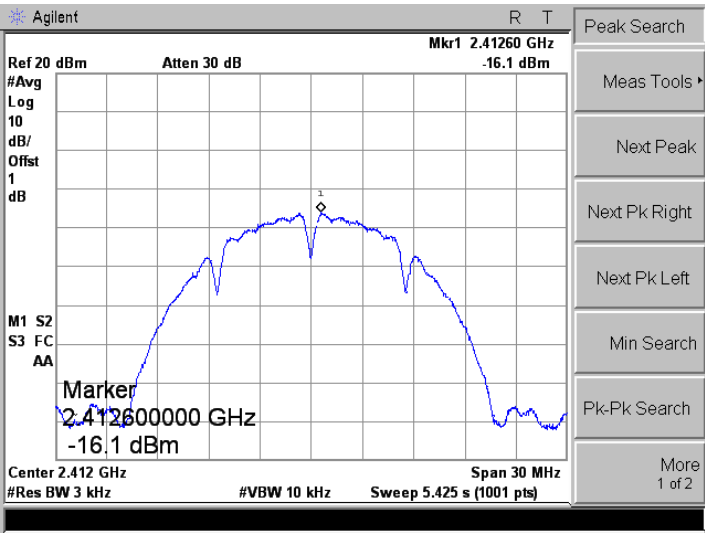
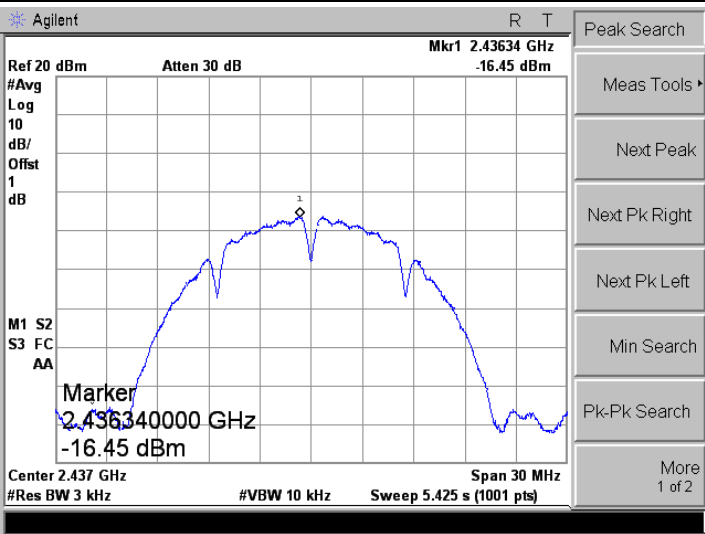
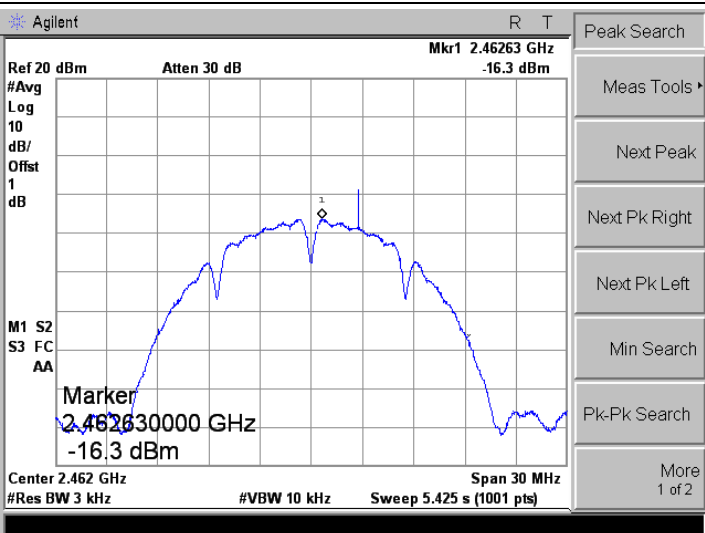
Project No.	WTH21X10105914W	Test Engineer	Gala
Start date	2021/10/21	Finish date	2021/10/21
Temperature	23°C	Humidity	45%
RF specifications	BT-BR/EDR		

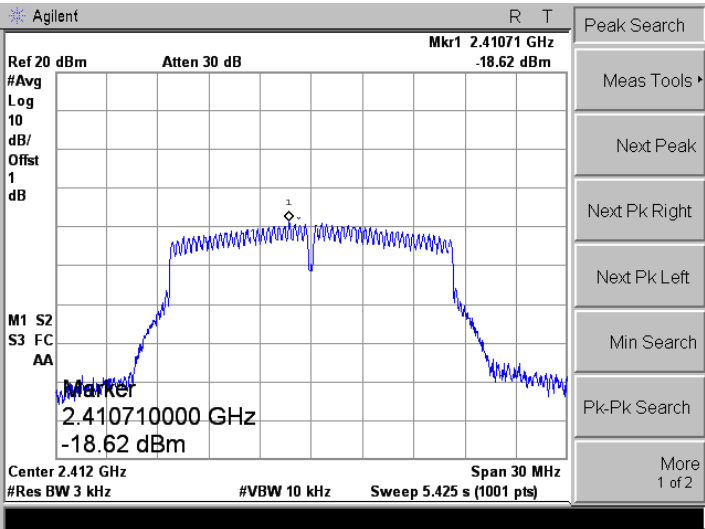
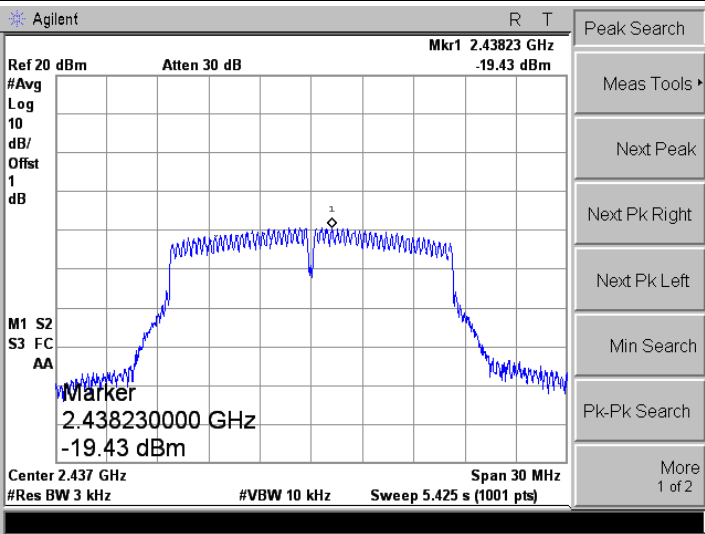
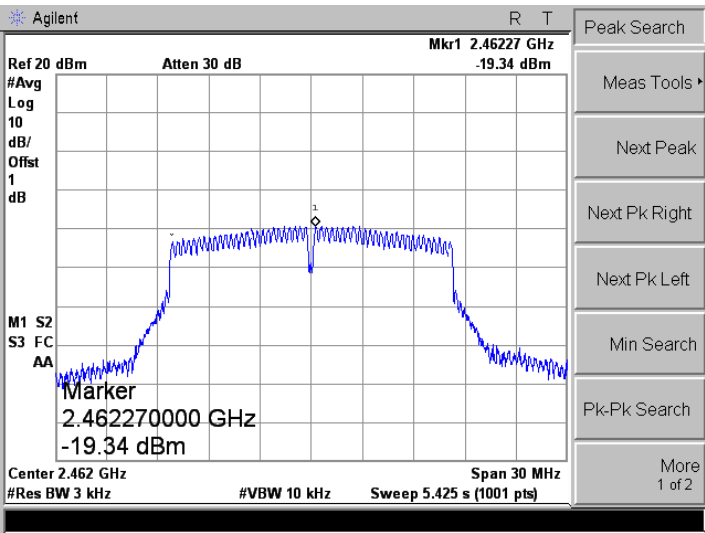
<b>APPENDIX</b>	<b>Description of Test Item</b>	<b>Result</b>
A	Power Spectral Density	Compliant
B	DTS Bandwidth	Compliant
C	RF Output Power	Compliant
D	Conducted Out of Band Emissions	Compliant

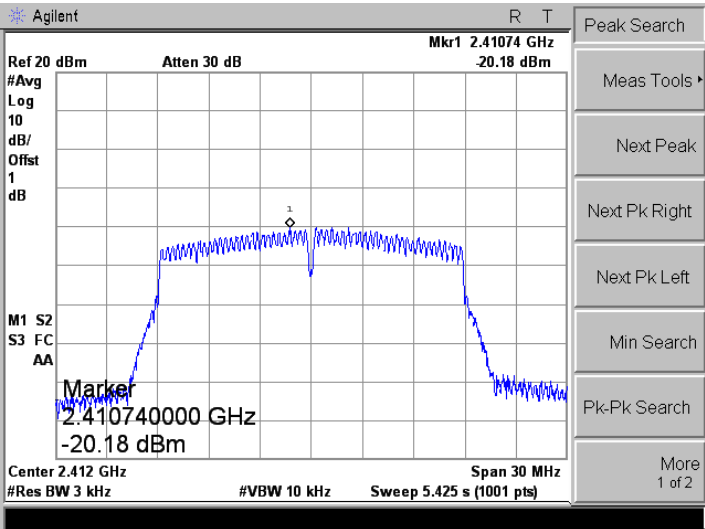
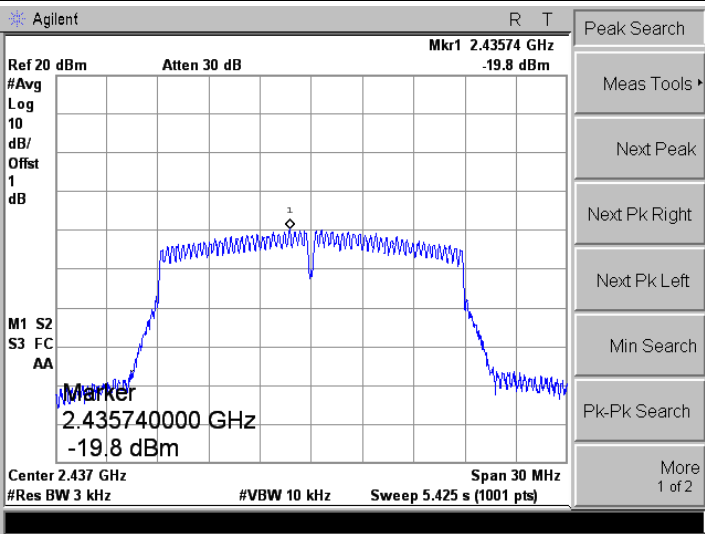
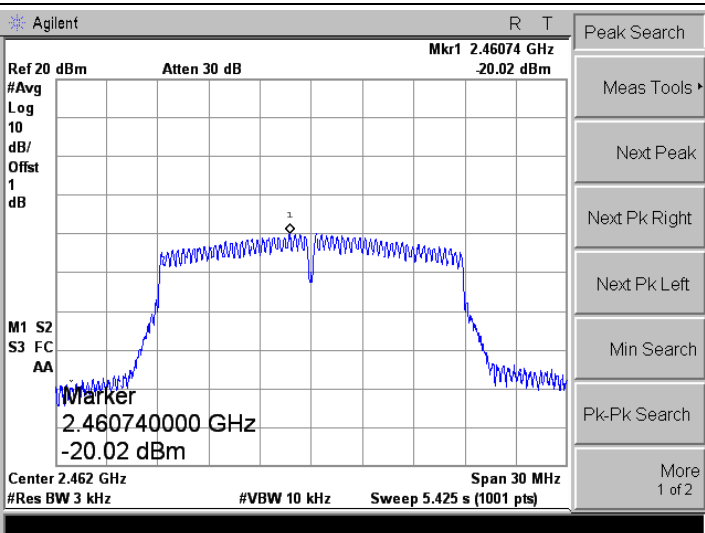
**APPENDIX A**

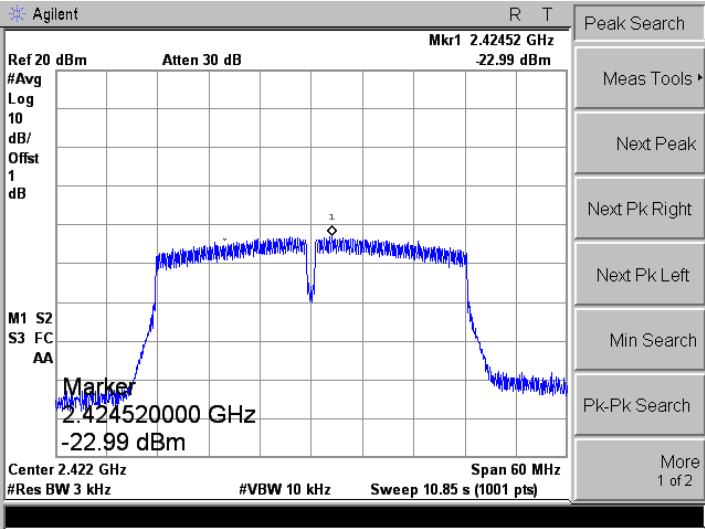
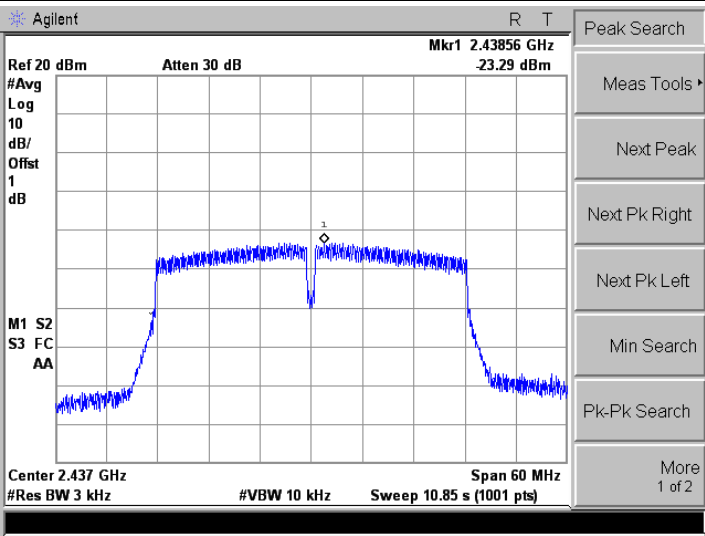
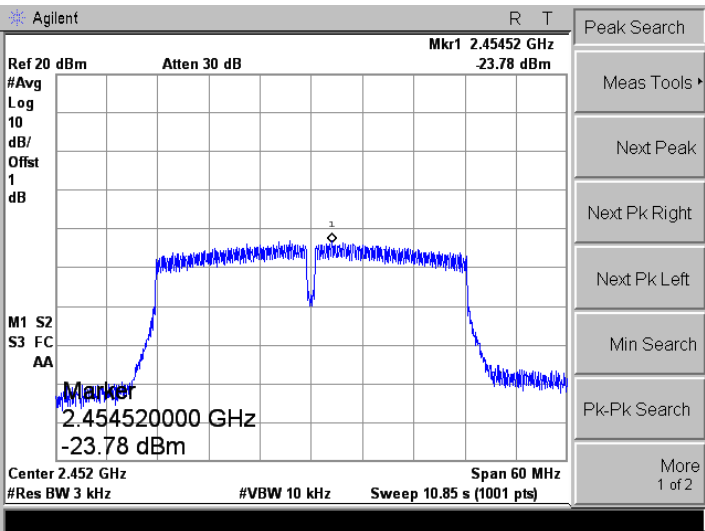
Power Spectral Density					
Test Mode	Test Channel MHz	Test Result(dBm/3kHz)		Total dBm	Limit dBm/3kHz
		Antenna 1	Antenna 2		
802.11b_1Mbps	2412	-16.10	-15.63	/	8
	2437	-16.45	-15.15	/	8
	2462	-16.30	-15.76	/	8
802.11g_6Mbps	2412	-18.62	-18.30	/	8
	2437	-19.43	-18.62	/	8
	2462	-19.34	-19.22	/	8
802.11n-HT20_MCS0	2412	-20.18	-20.01	-17.08	8
	2437	-19.80	-19.73	-16.75	8
	2462	-20.02	-19.20	-16.58	8
802.11n-HT40_MCS0	2422	-22.99	-23.25	-20.11	8
	2437	-23.29	-22.92	-20.09	8
	2452	-23.78	-24.18	-20.97	8

**Antenna 1**

<p>802.11b-Low</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 2.41260 GHz -16.1 dBm          #Avg Log 10 dB/ Offst 1 dB          M1 S2 S3 FC AA          Marker 2.412600000 GHz -16.1 dBm          Center 2.412 GHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts) Span 30 MHz          Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11b-Middle</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 2.43634 GHz -16.45 dBm          #Avg Log 10 dB/ Offst 1 dB          M1 S2 S3 FC AA          Marker 2.436340000 GHz -16.45 dBm          Center 2.437 GHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts) Span 30 MHz          Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11b-High</p>	 <p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 2.46263 GHz -16.3 dBm          #Avg Log 10 dB/ Offst 1 dB          M1 S2 S3 FC AA          Marker 2.462630000 GHz -16.3 dBm          Center 2.462 GHz #Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts) Span 30 MHz          Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>

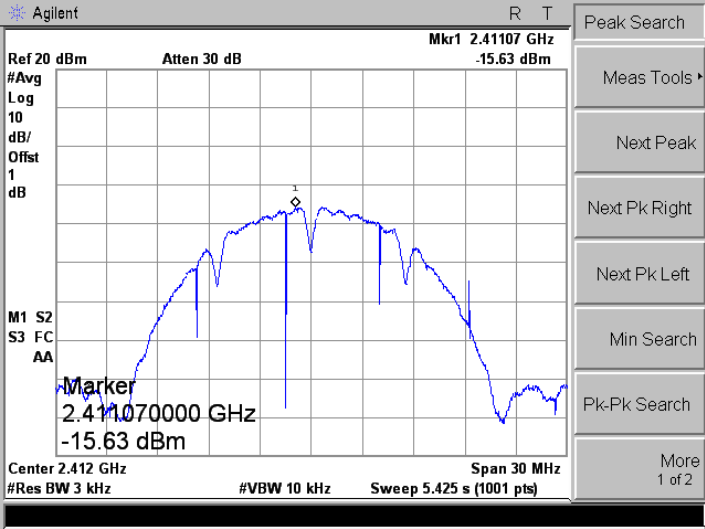
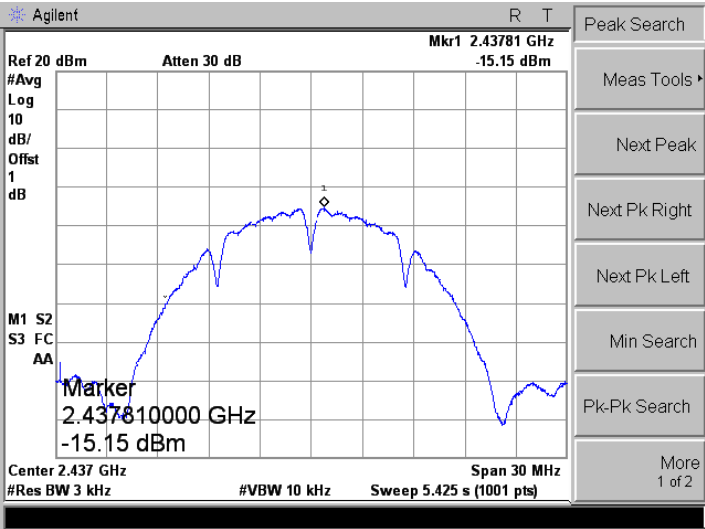
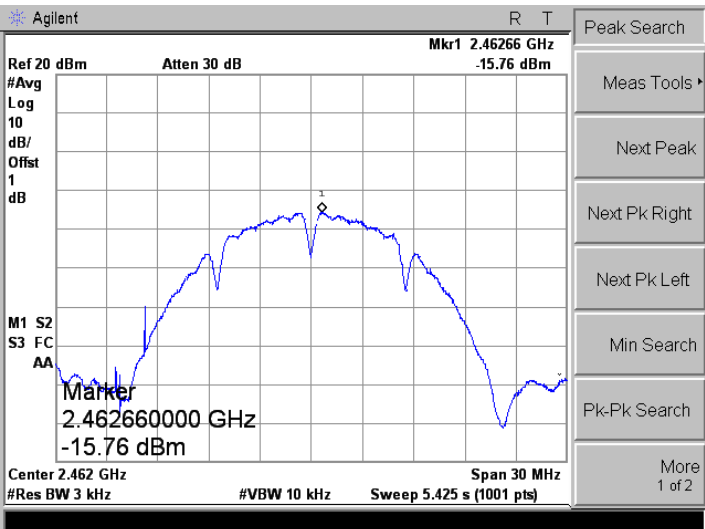
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<p>802.11g-High</p>	

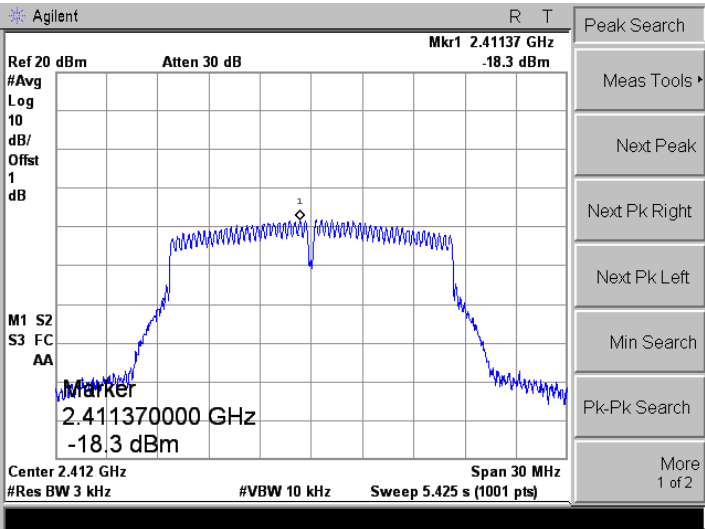
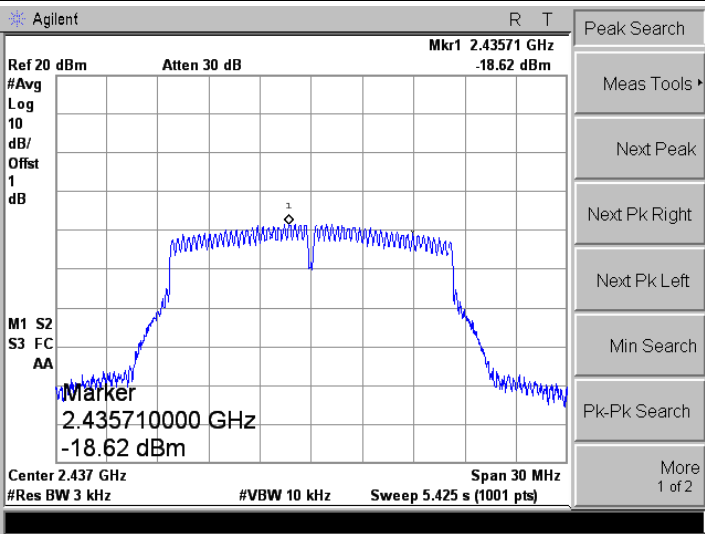
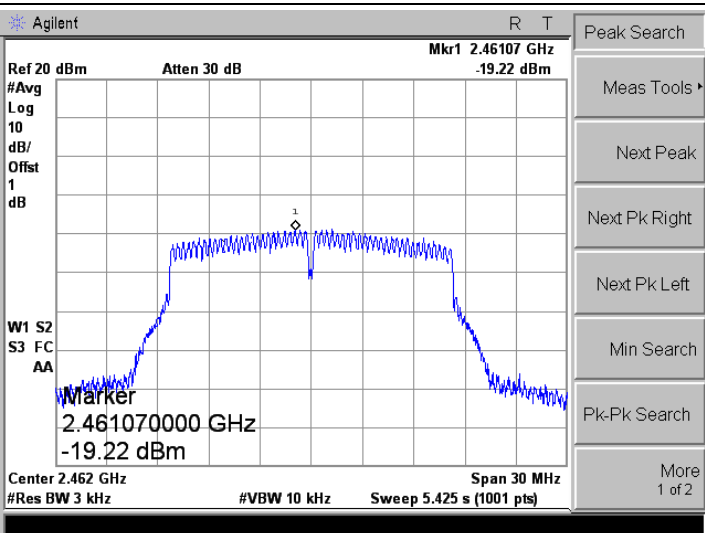
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<p>802.11n-HT20-Middle</p>	
<p>802.11n-HT20-High</p>	

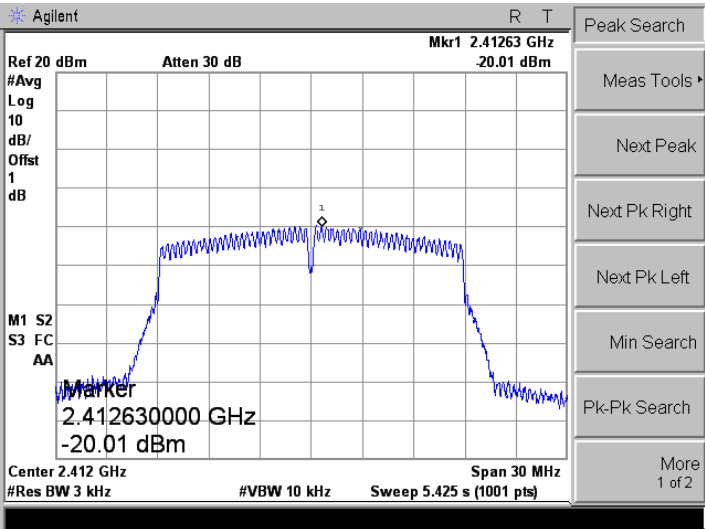
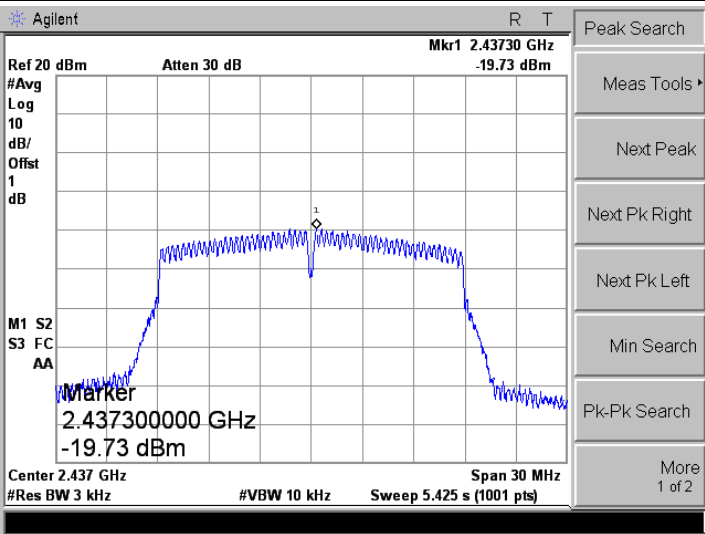
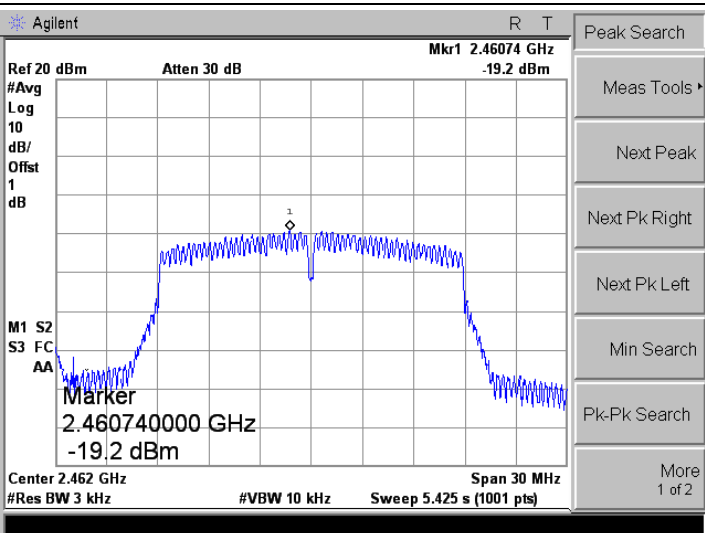
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<p>802.11n-HT40-Middle</p>	
<p>802.11n-HT40-High</p>	

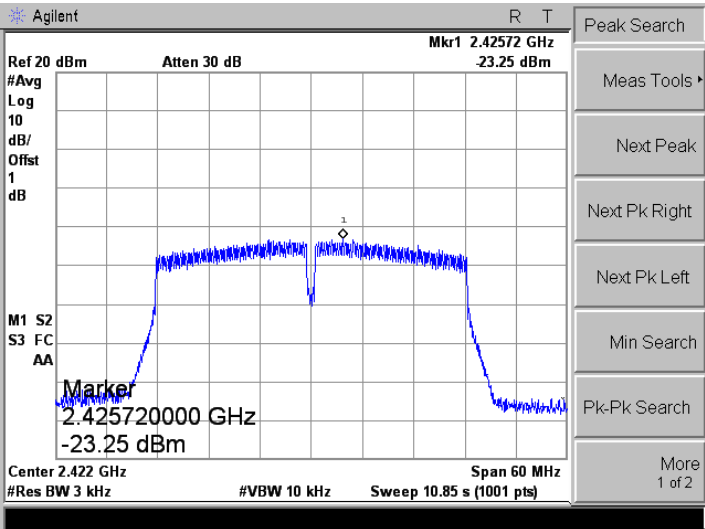
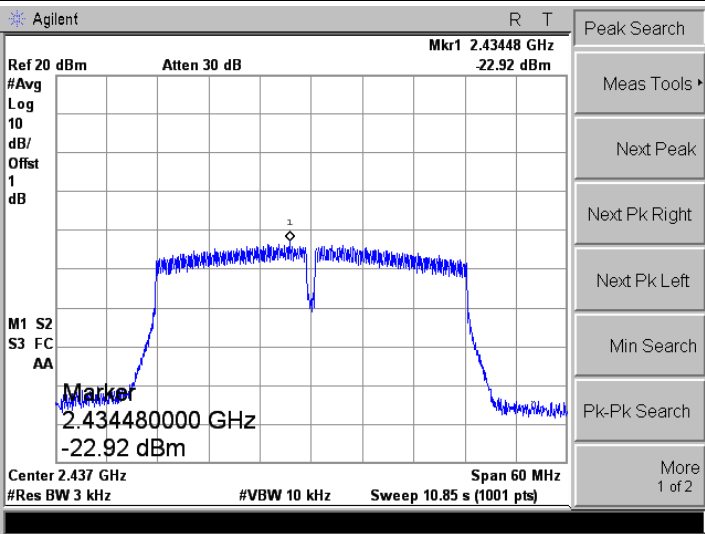
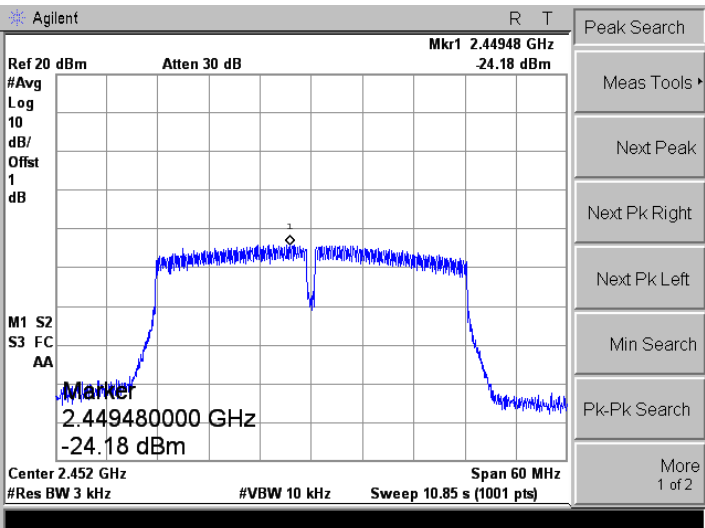


Antenna 2

<p>802.11b-Low</p>	 <p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.41107 GHz -15.63 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 2.411070000 GHz -15.63 dBm</p> <p>Center 2.412 GHz Span 30 MHz</p> <p>#Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11b-Middle</p>	 <p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.43781 GHz -15.15 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 2.437810000 GHz -15.15 dBm</p> <p>Center 2.437 GHz Span 30 MHz</p> <p>#Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>
<p>802.11b-High</p>	 <p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.46266 GHz -15.76 dBm</p> <p>#Avg Log 10 dB/ Offst 1 dB</p> <p>M1 S2 S3 FC AA</p> <p>Marker 2.462660000 GHz -15.76 dBm</p> <p>Center 2.462 GHz Span 30 MHz</p> <p>#Res BW 3 kHz #VBW 10 kHz Sweep 5.425 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>

<p>802.11g-Low</p>	
<p>802.11g-Middle</p>	
<p>802.11g-High</p>	

<p>802.11n-HT20-Low</p>	
<p>802.11n-HT20-Middle</p>	
<p>802.11n-HT20-High</p>	

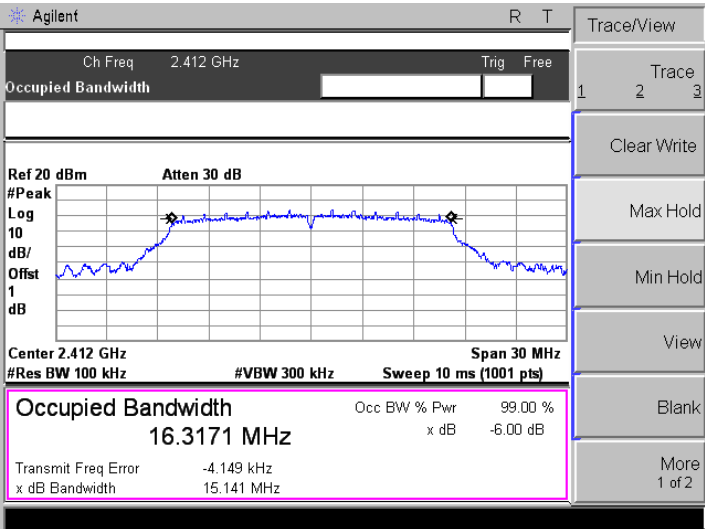
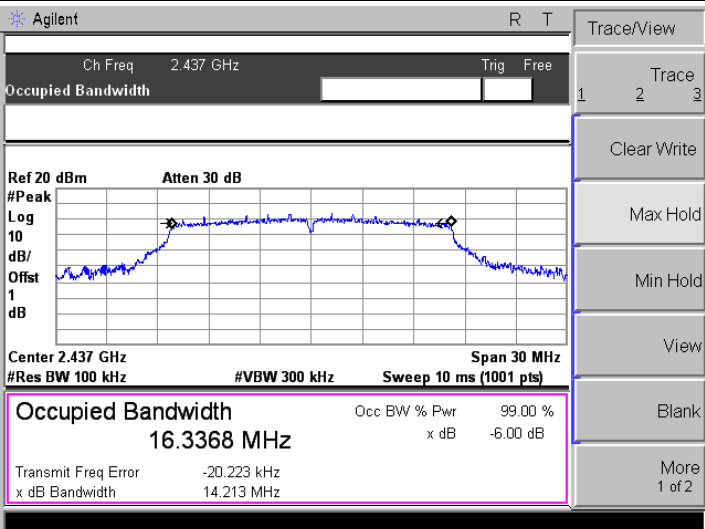
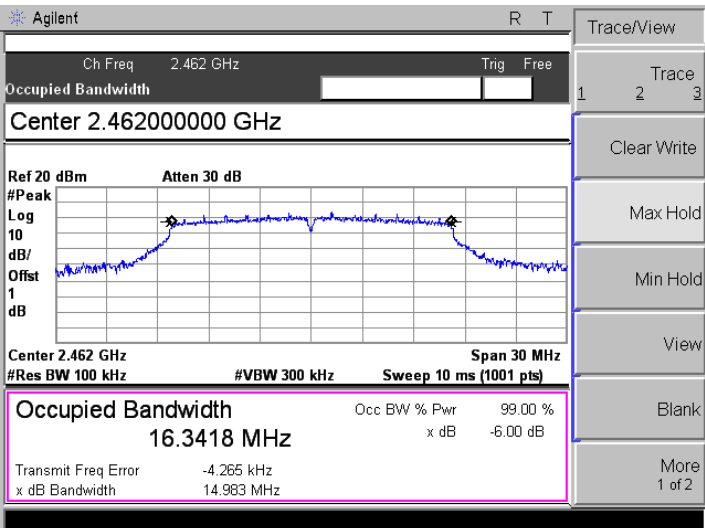
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<p>802.11n-HT40-Middle</p>	
<p>802.11n-HT40-High</p>	

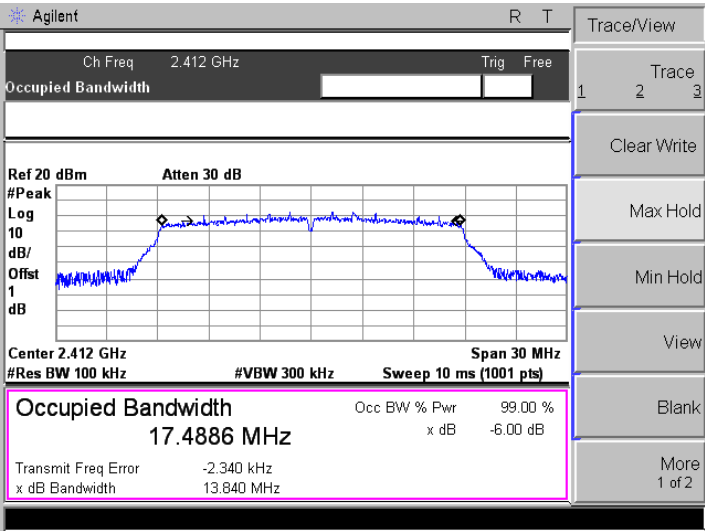
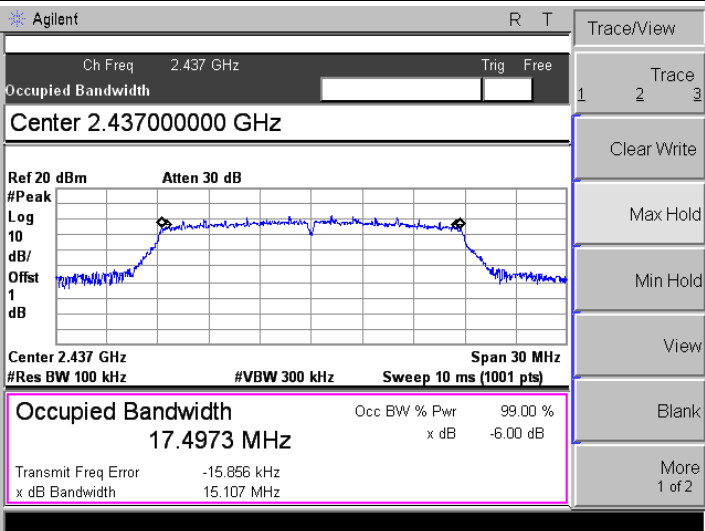
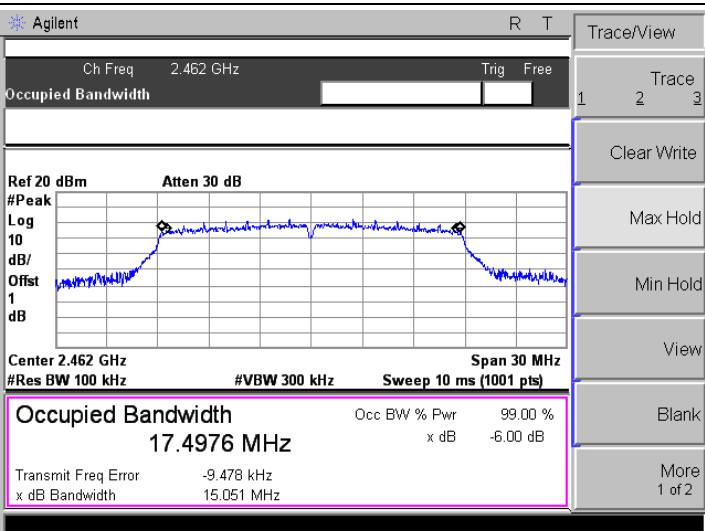
**APPENDIX B**

DTS Bandwidth				
Test Mode	Test Channel MHz	Test Result(MHz)		Limit kHz
		Antenna 1	Antenna 2	
802.11b_1Mbps	2412	9.0720	9.0800	≥500
	2437	9.0250	9.0820	≥500
	2462	9.0400	9.0440	≥500
802.11g_6Mbps	2412	15.141	15.137	≥500
	2437	14.213	15.116	≥500
	2462	14.963	15.129	≥500
802.11n-HT20_MCS0	2412	13.840	15.083	≥500
	2437	15.107	15.083	≥500
	2462	15.051	15.043	≥500
802.11n-HT40_MCS0	2422	35.136	35.112	≥500
	2437	35.154	35.116	≥500
	2452	35.160	35.045	≥500

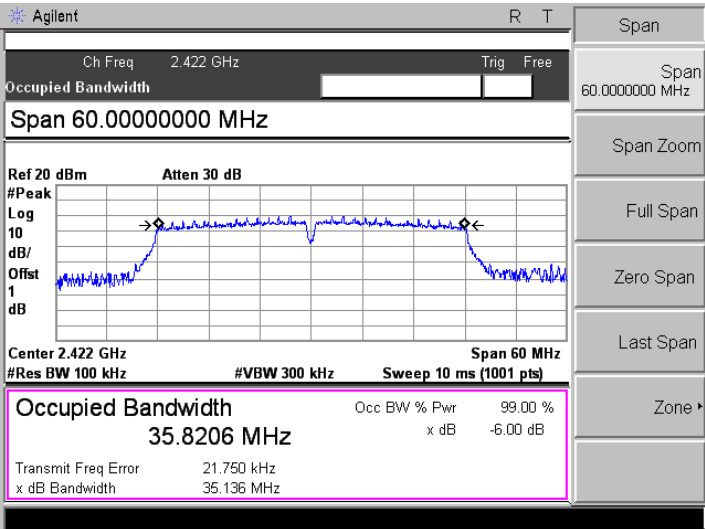
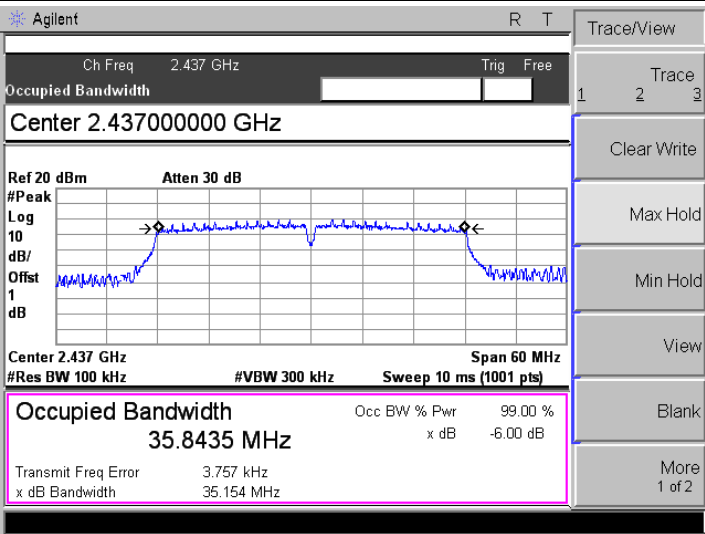
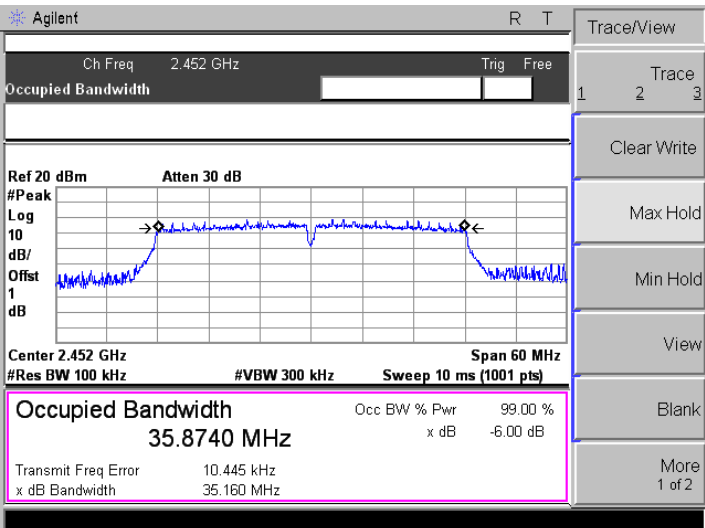
**Antenna 1**

<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/Offset 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><b>Occupied Bandwidth</b></td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>13.3715 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>41.337 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>9.072 MHz</td> <td></td> </tr> </table> <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>	<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %	13.3715 MHz	x dB	-6.00 dB	Transmit Freq Error	41.337 kHz		x dB Bandwidth	9.072 MHz	
<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %											
13.3715 MHz	x dB	-6.00 dB											
Transmit Freq Error	41.337 kHz												
x dB Bandwidth	9.072 MHz												
<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>Center 2.43700000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offset 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><b>Occupied Bandwidth</b></td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>13.3522 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-17.975 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>9.025 MHz</td> <td></td> </tr> </table> <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>	<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %	13.3522 MHz	x dB	-6.00 dB	Transmit Freq Error	-17.975 kHz		x dB Bandwidth	9.025 MHz	
<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %											
13.3522 MHz	x dB	-6.00 dB											
Transmit Freq Error	-17.975 kHz												
x dB Bandwidth	9.025 MHz												
<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/Offset 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><b>Occupied Bandwidth</b></td> <td>Occ BW % Pwr</td> <td>99.00 %</td> </tr> <tr> <td>13.3592 MHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>Transmit Freq Error</td> <td>20.117 kHz</td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>9.040 MHz</td> <td></td> </tr> </table> <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>	<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %	13.3592 MHz	x dB	-6.00 dB	Transmit Freq Error	20.117 kHz		x dB Bandwidth	9.040 MHz	
<b>Occupied Bandwidth</b>	Occ BW % Pwr	99.00 %											
13.3592 MHz	x dB	-6.00 dB											
Transmit Freq Error	20.117 kHz												
x dB Bandwidth	9.040 MHz												

<p>802.11g-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><b>Occupied Bandwidth</b> Occ BW % Pwr 99.00 %</p> <p><b>16.3171 MHz</b> x dB -6.00 dB</p> <p>Transmit Freq Error -4.149 kHz</p> <p>x dB Bandwidth 15.141 MHz</p> <p>Trace/View: 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 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><b>Occupied Bandwidth</b> Occ BW % Pwr 99.00 %</p> <p><b>16.3368 MHz</b> x dB -6.00 dB</p> <p>Transmit Freq Error -20.223 kHz</p> <p>x dB Bandwidth 14.213 MHz</p> <p>Trace/View: 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 Trace/View</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 2.462000000 GHz</b></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><b>Occupied Bandwidth</b> Occ BW % Pwr 99.00 %</p> <p><b>16.3418 MHz</b> x dB -6.00 dB</p> <p>Transmit Freq Error -4.265 kHz</p> <p>x dB Bandwidth 14.983 MHz</p> <p>Trace/View: 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>

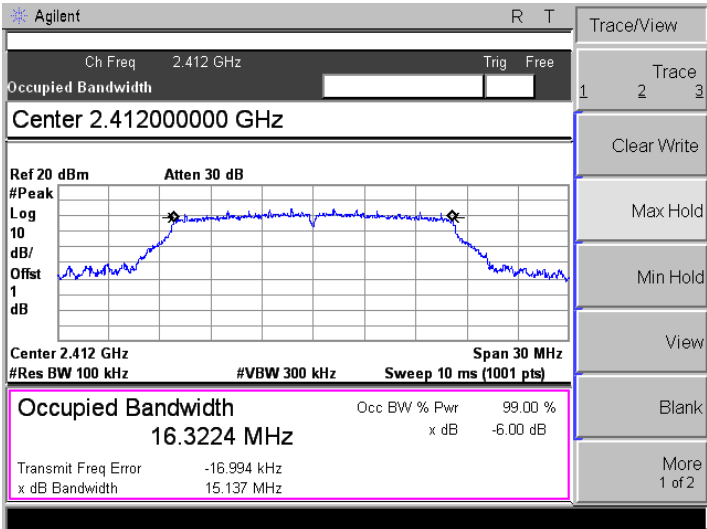
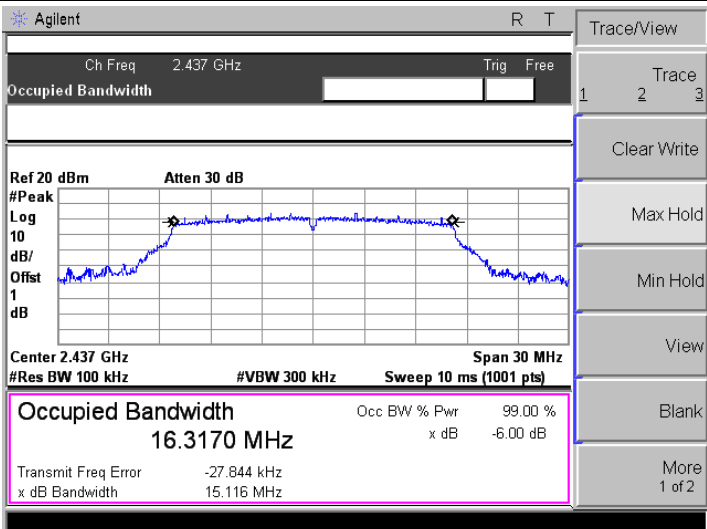
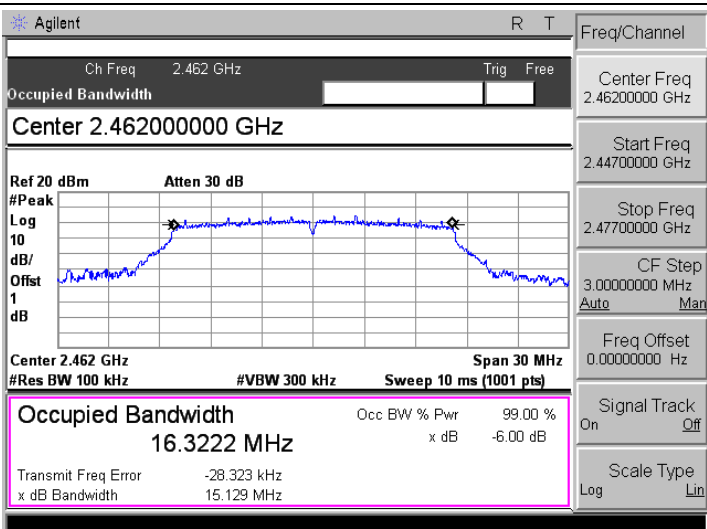
<p>802.11n-HT20-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/ Offst 1 dB</p> <p>Center 2.412 GHz Span 30 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth</b> 17.4886 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -2.340 kHz</p> <p>x dB Bandwidth 13.840 MHz</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><b>Center 2.43700000 GHz</b></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><b>Occupied Bandwidth</b> 17.4973 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -15.856 kHz</p> <p>x dB Bandwidth 15.107 MHz</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>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><b>Occupied Bandwidth</b> 17.4976 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -9.478 kHz</p> <p>x dB Bandwidth 15.051 MHz</p>

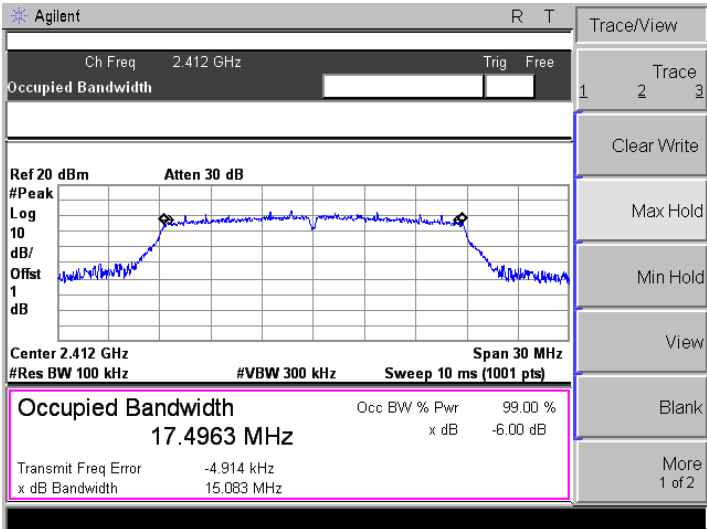
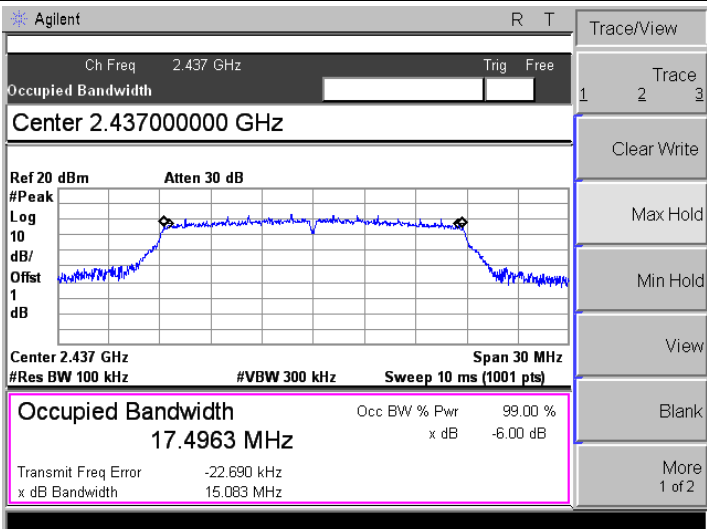
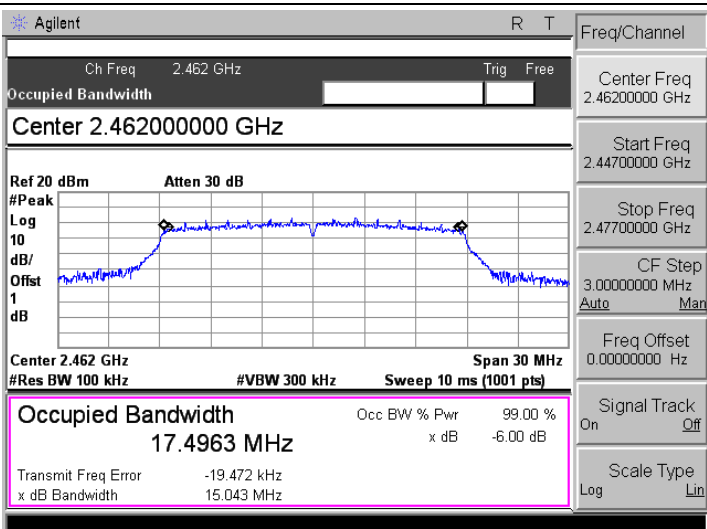


<p>802.11n-HT40-Low</p>	
<p>802.11n-HT40-Middle</p>	
<p>802.11n-HT40-High</p>	

Antenna 2

<p>802.11b-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 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><b>Occupied Bandwidth 13.4673 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error 37.965 kHz</p> <p>x dB Bandwidth 9.080 MHz</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>802.11b-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 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><b>Occupied Bandwidth 13.5227 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -38.728 kHz</p> <p>x dB Bandwidth 9.082 MHz</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>802.11b-High</p>	<p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 2.46200000 GHz</b></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><b>Occupied Bandwidth 13.5800 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -39.473 kHz</p> <p>x dB Bandwidth 9.044 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</p> <p>Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</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>Center 2.41200000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log</p> <p>10 dB/</p> <p>Offst</p> <p>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 16.3224 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -16.994 kHz</p> <p>x dB Bandwidth 15.137 MHz</p> <p>Trace/View</p> <p>1 2 3</p> <p>Trace</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>Occupied Bandwidth</p> <p>Center 2.437 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log</p> <p>10 dB/</p> <p>Offst</p> <p>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 16.3170 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -27.844 kHz</p> <p>x dB Bandwidth 15.116 MHz</p> <p>Trace/View</p> <p>1 2 3</p> <p>Trace</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>Occupied Bandwidth</p> <p>Center 2.46200000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak</p> <p>Log</p> <p>10 dB/</p> <p>Offst</p> <p>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 16.3222 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -28.323 kHz</p> <p>x dB Bandwidth 15.129 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>

<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>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><b>Occupied Bandwidth</b> 17.4963 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -4.914 kHz x dB Bandwidth 15.083 MHz</p> <p>Trace/View</p> <p>1 2 3 Trace</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 2.43700000 GHz</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><b>Occupied Bandwidth</b> 17.4963 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -22.690 kHz x dB Bandwidth 15.083 MHz</p> <p>Trace/View</p> <p>1 2 3 Trace</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 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><b>Occupied Bandwidth</b> 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>

<p>802.11n-HT40-Low</p>	<p>Agilent R T</p> <p>Ch Freq 2.422 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 2.422 GHz Span 60 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 35.7988 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -22.413 kHz x dB Bandwidth 35.112 MHz</p> <p>Trace/View</p> <p>1 2 3</p> <p>Trace</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-HT40-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p><b>Center 2.43700000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Peak Log 10 dB/Offst 1 dB</p> <p>Center 2.437 GHz Span 60 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 35.8387 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -42.979 kHz x dB Bandwidth 35.116 MHz</p> <p>Freq/Channel</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.40700000 GHz</p> <p>Stop Freq 2.46700000 GHz</p> <p>CF Step 6.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p>
<p>802.11n-HT40-High</p>	<p>Agilent R T</p> <p>Ch Freq 2.452 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 2.452 GHz Span 60 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p><b>Occupied Bandwidth 35.8748 MHz</b></p> <p>Occ BW % Pwr 99.00 % x dB -6.00 dB</p> <p>Transmit Freq Error -47.997 kHz x dB Bandwidth 35.045 MHz</p> <p>Trace/View</p> <p>1 2 3</p> <p>Trace</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>

## APPENDIX C

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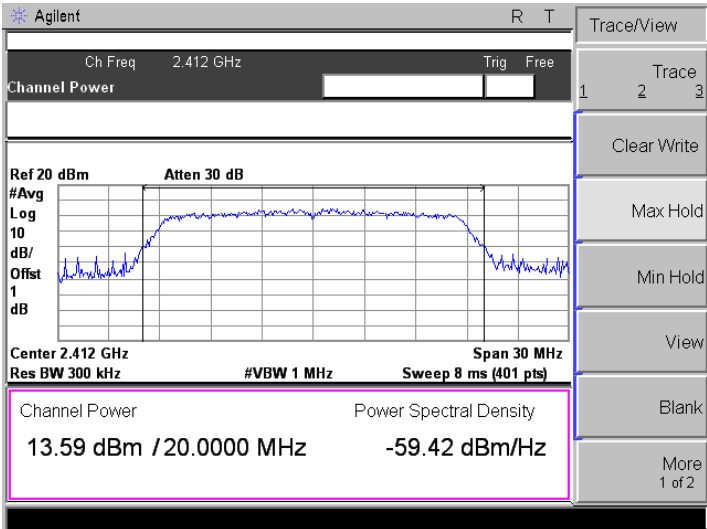
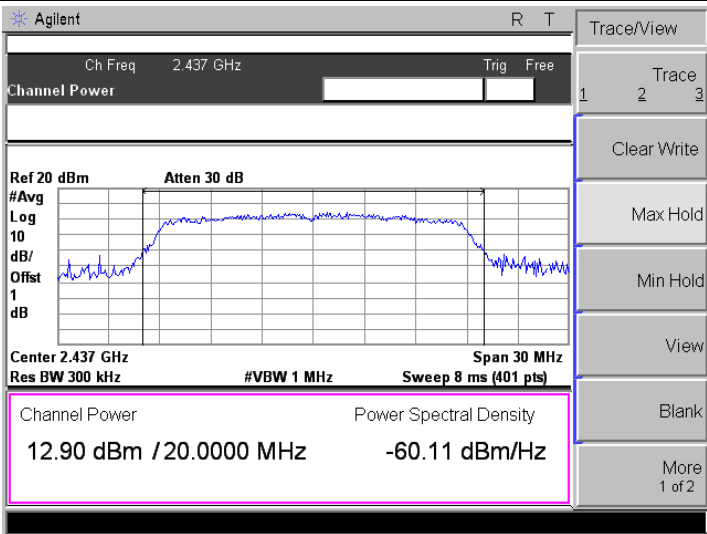
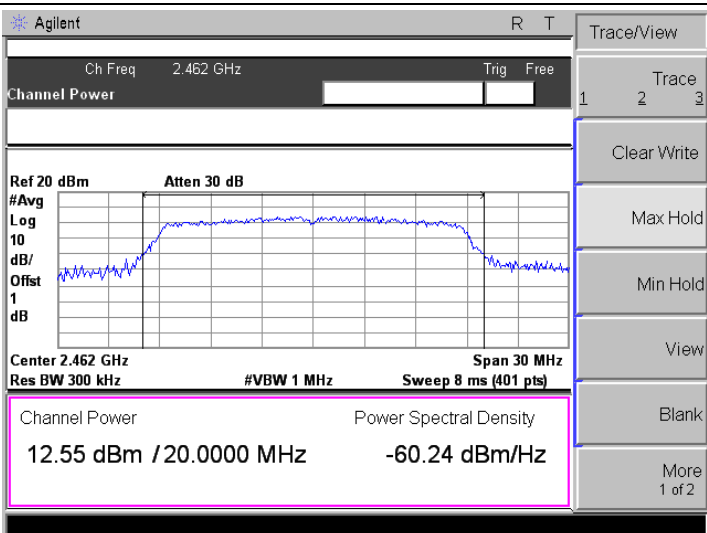
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802.11b_1Mbps	2412	15.30	15.89	/	30.00
	2437	15.60	15.78	/	30.00
	2462	15.14	16.13	/	30.00
802.11g_6Mbps	2412	13.19	14.45	/	30.00
	2437	13.37	14.19	/	30.00
	2462	13.78	14.41	/	30.00
802.11n HT20_MCS0	2412	13.59	13.16	16.39	30.00
	2437	12.90	13.08	16.00	30.00
	2462	12.55	12.62	15.60	30.00
802.11n HT40_MCS0	2422	12.34	12.14	15.25	30.00
	2437	12.39	11.96	15.19	30.00
	2452	12.41	11.45	14.97	30.00

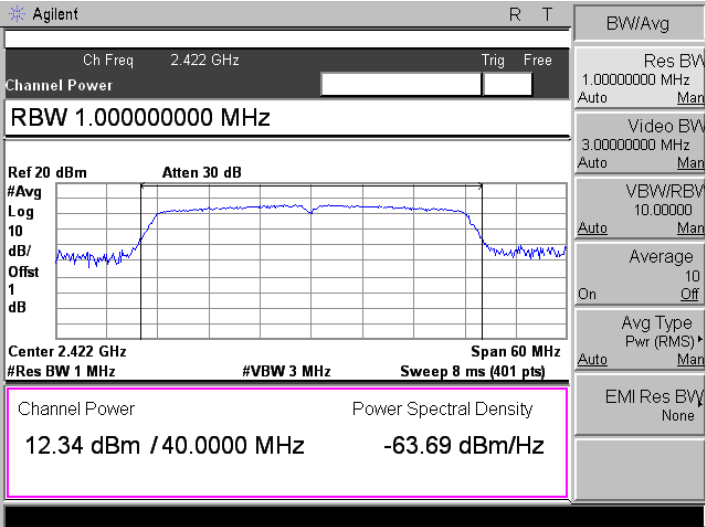
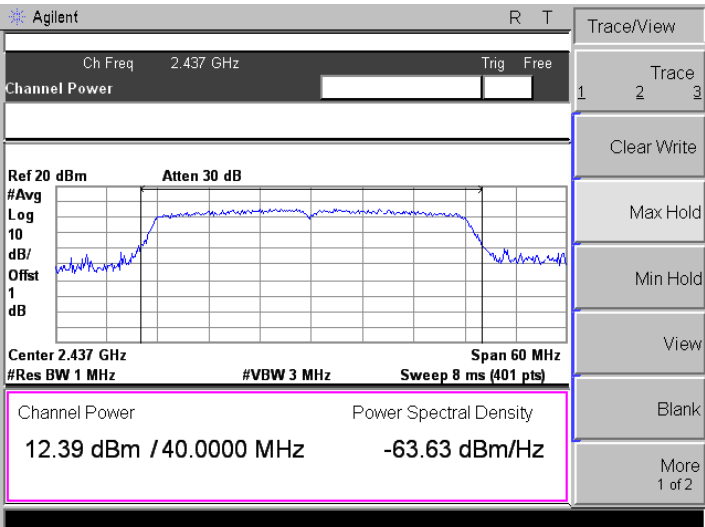
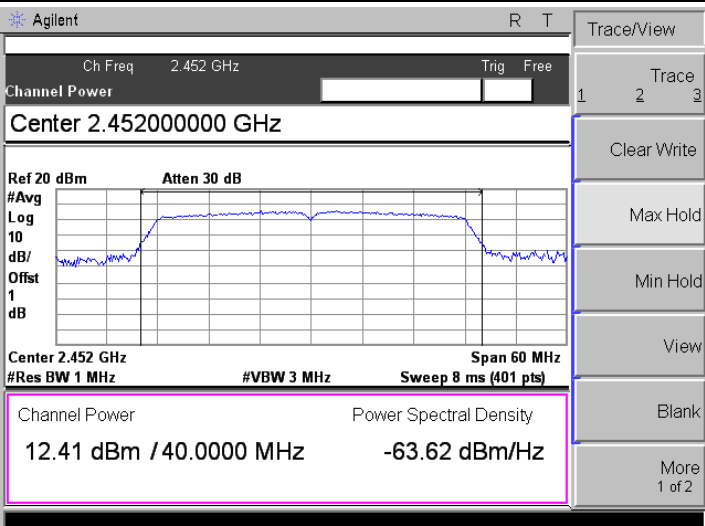
**Antenna 1**

<p>802.11b-Low</p>	<p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Channel Power</p> <p><b>Center 2.41200000 GHz</b></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 <b>15.30 dBm / 20.0000 MHz -57.71 dBm/Hz</b></p> <p>Freq/Channel</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 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>
<p>802.11b-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Channel Power</p> <p><b>Center 2.43700000 GHz</b></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 <b>15.60 dBm / 20.0000 MHz -58.22 dBm/Hz</b></p> <p>Freq/Channel</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 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>
<p>802.11b-High</p>	<p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Channel Power</p> <p><b>Center 2.462 GHz</b></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 <b>15.14 dBm / 20.0000 MHz -57.87 dBm/Hz</b></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>

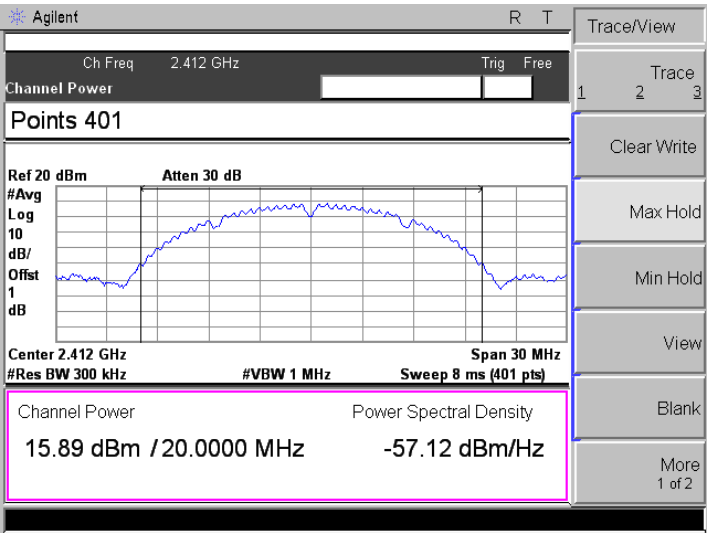
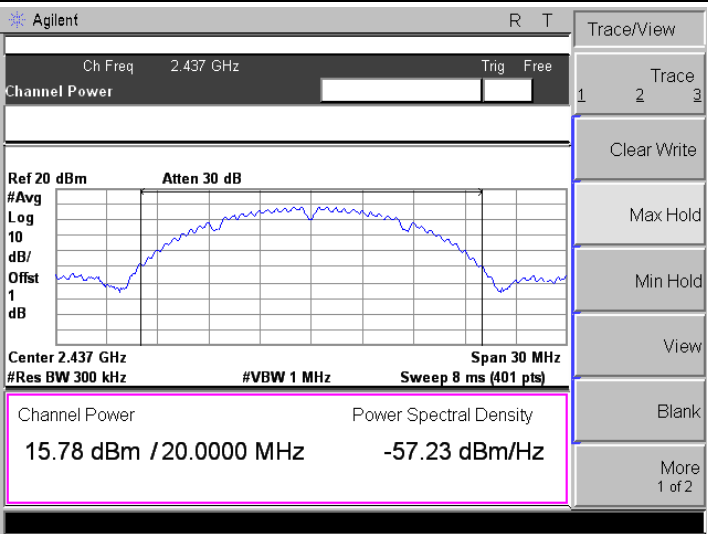
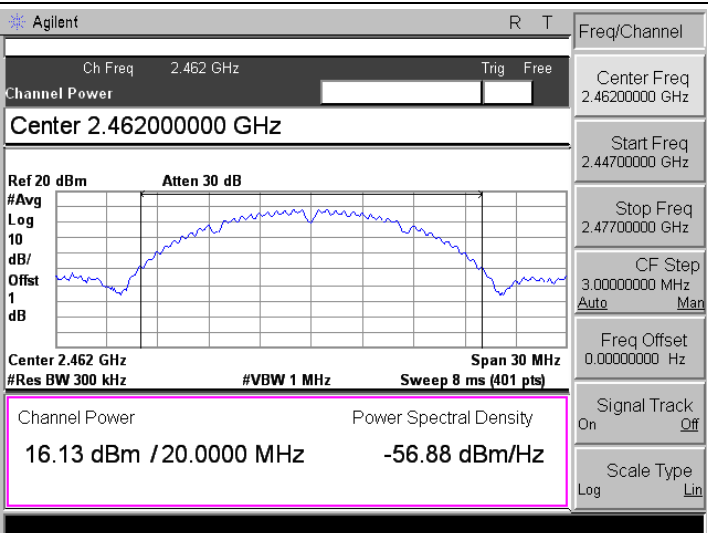
<p>802.11g-Low</p>	<p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Channel Power</p> <p><b>Center 2.41200000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 2.412 GHz Span 30 MHz Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density <b>13.19 dBm / 20.0000 MHz -59.82 dBm/Hz</b></p> <p>Freq/Channel</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 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>
<p>802.11g-Middle</p>	<p>Agilent R T</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Channel Power</p> <p><b>Points 401</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 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 <b>13.37 dBm / 20.0000 MHz -59.64 dBm/Hz</b></p> <p>Sweep</p> <p>Sweep Time 8.000 ms Auto Man</p> <p>Single Sweep Cont</p> <p>Auto Sweep Coupling SR SA</p> <p>Points 401</p> <p>Segmented ▶</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><b>Center 2.46200000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 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 <b>13.78 dBm / 20.0000 MHz -59.23 dBm/Hz</b></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>



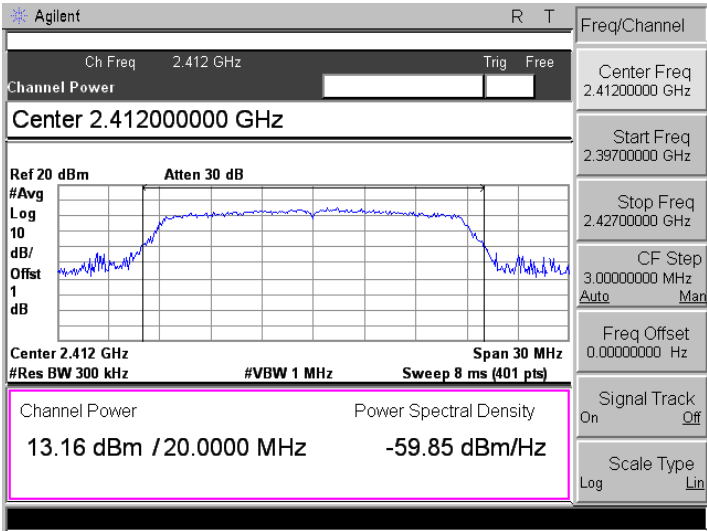
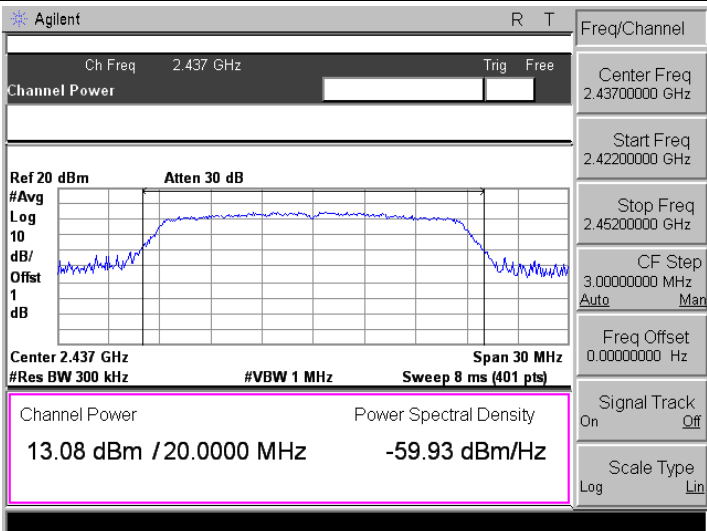
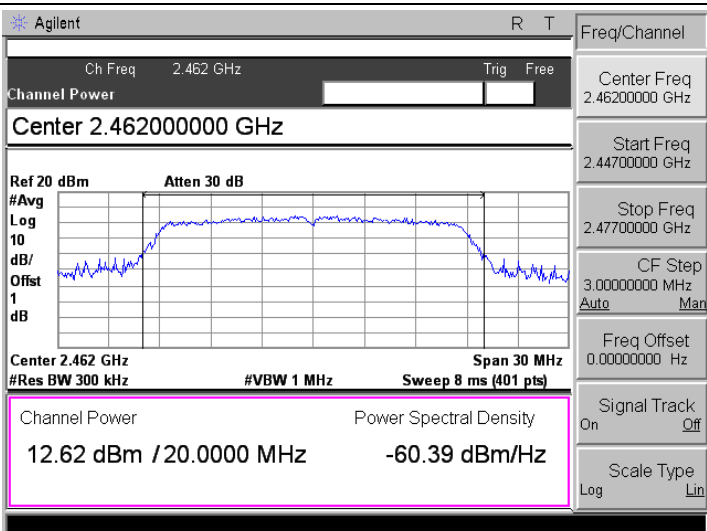
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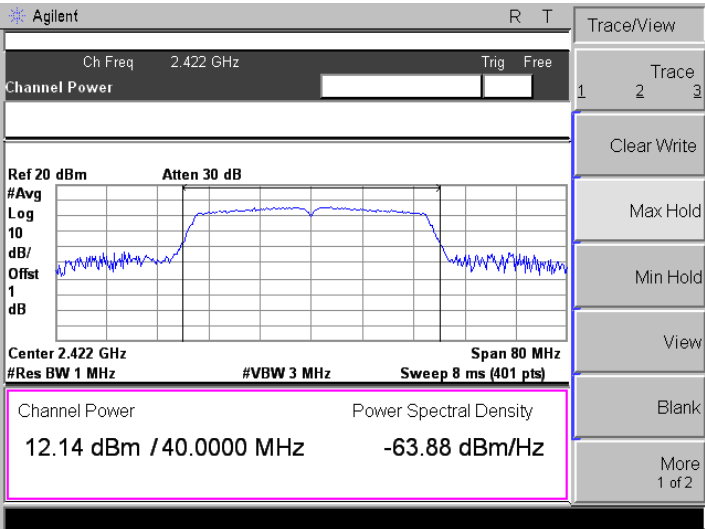
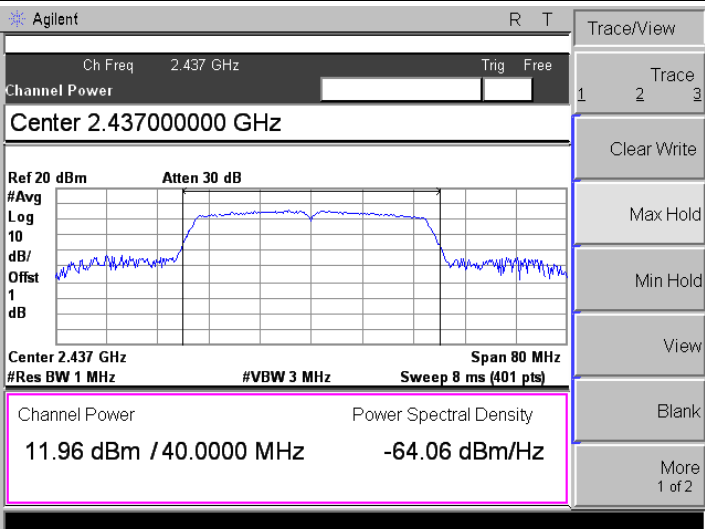
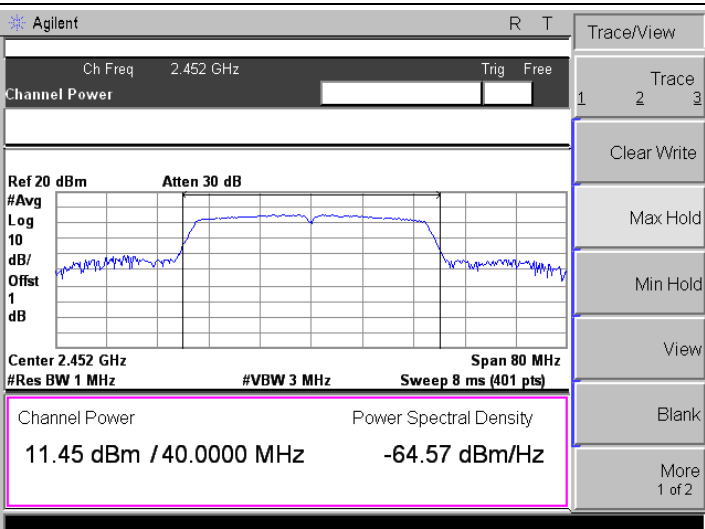
<p>802.11n-HT40-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 2.422 GHz Trig Free</p> <p>Channel Power</p> <p><b>RBW 1.000000000 MHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 2.422 GHz Span 60 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p><b>12.34 dBm / 40.0000 MHz -63.69 dBm/Hz</b></p> <p>BW/Avg</p> <p>Res BW 1.00000000 MHz Auto Man</p> <p>Video BW 3.00000000 MHz Auto Man</p> <p>VBW/RBW 10.00000 Auto Man</p> <p>Average 10 On Off</p> <p>Avg Type Pwr (RMS) Auto Man</p> <p>EMI Res BW None</p>
<p>802.11n-HT40-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/Offset 1 dB</p> <p>Center 2.437 GHz Span 60 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p><b>12.39 dBm / 40.0000 MHz -63.63 dBm/Hz</b></p> <p>Trace/View</p> <p>1 2 3</p> <p>Trace</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-HT40-High</p>	 <p>Agilent R T</p> <p>Ch Freq 2.452 GHz Trig Free</p> <p>Channel Power</p> <p><b>Center 2.452000000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 2.452 GHz Span 60 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p><b>12.41 dBm / 40.0000 MHz -63.62 dBm/Hz</b></p> <p>Trace/View</p> <p>1 2 3</p> <p>Trace</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>

Antenna 2

<p>802.11b-Low</p>	 <p>Agilent R T</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Channel Power</p> <p>Points 401</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</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>15.89 dBm / 20.0000 MHz -57.12 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>802.11b-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 Log 10 dB/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>15.78 dBm / 20.0000 MHz -57.23 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>802.11b-High</p>	 <p>Agilent R T</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Channel Power</p> <p>Center 2.46200000 GHz</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</p> <p>#Res BW 300 kHz #VBW 1 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>16.13 dBm / 20.0000 MHz -56.88 dBm/Hz</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>

<p>802.11g-Low</p>	
<p>802.11g-Middle</p>	
<p>802.11g-High</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><b>Center 2.41200000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 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><b>13.16 dBm / 20.0000 MHz -59.85 dBm/Hz</b></p> <p>Freq/Channel</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.39700000 GHz</p> <p>Stop Freq 2.42700000 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>
<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><b>Center 2.43700000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 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><b>13.08 dBm / 20.0000 MHz -59.93 dBm/Hz</b></p> <p>Freq/Channel</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.42200000 GHz</p> <p>Stop Freq 2.45200000 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>
<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><b>Center 2.46200000 GHz</b></p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 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><b>12.62 dBm / 20.0000 MHz -60.39 dBm/Hz</b></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>

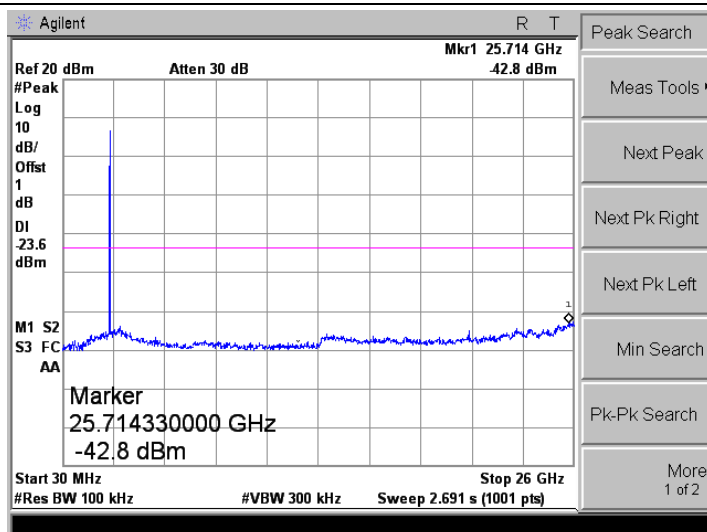
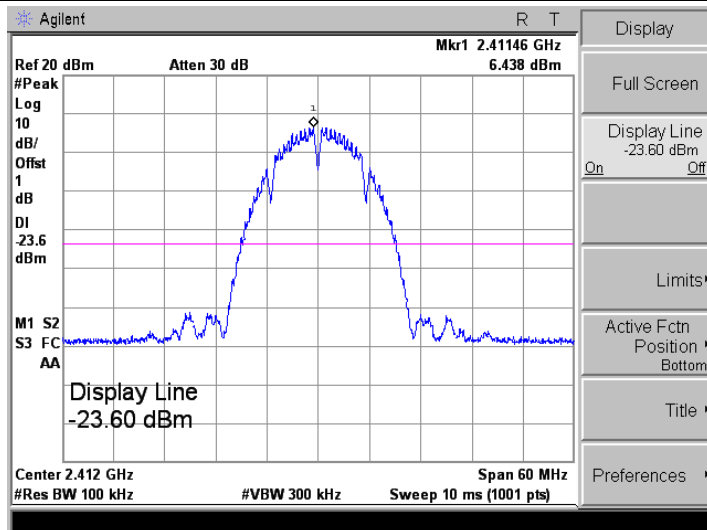
<p>802.11n-HT40-Low</p>	 <p>Agilent R T Trace/View</p> <p>Ch Freq 2.422 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 2.422 GHz Span 80 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>12.14 dBm / 40.0000 MHz -63.88 dBm/Hz</p> <p>Trace/View</p> <p>1 2 3 Trace</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-HT40-Middle</p>	 <p>Agilent R T Trace/View</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Channel Power</p> <p>Center 2.43700000 GHz</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 2.437 GHz Span 80 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>11.96 dBm / 40.0000 MHz -64.06 dBm/Hz</p> <p>Trace/View</p> <p>1 2 3 Trace</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-HT40-High</p>	 <p>Agilent R T Trace/View</p> <p>Ch Freq 2.452 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 20 dBm Atten 30 dB</p> <p>#Avg Log 10 dB/Offset 1 dB</p> <p>Center 2.452 GHz Span 80 MHz</p> <p>#Res BW 1 MHz #VBW 3 MHz Sweep 8 ms (401 pts)</p> <p>Channel Power Power Spectral Density</p> <p>11.45 dBm / 40.0000 MHz -64.57 dBm/Hz</p> <p>Trace/View</p> <p>1 2 3 Trace</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>

# APPENDIX D

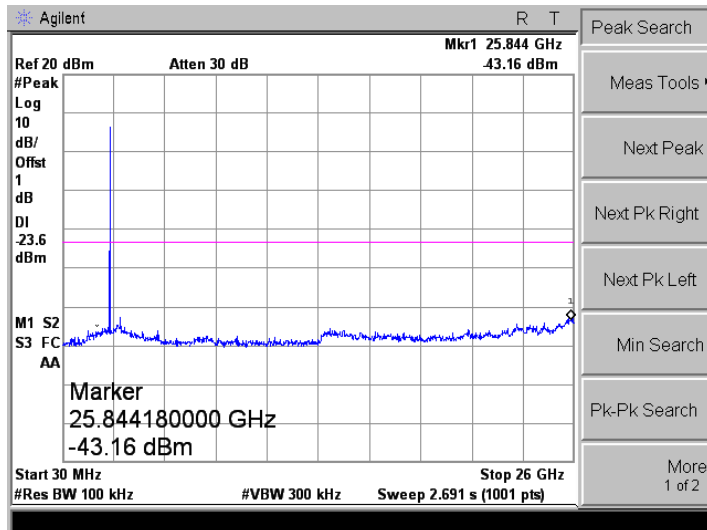
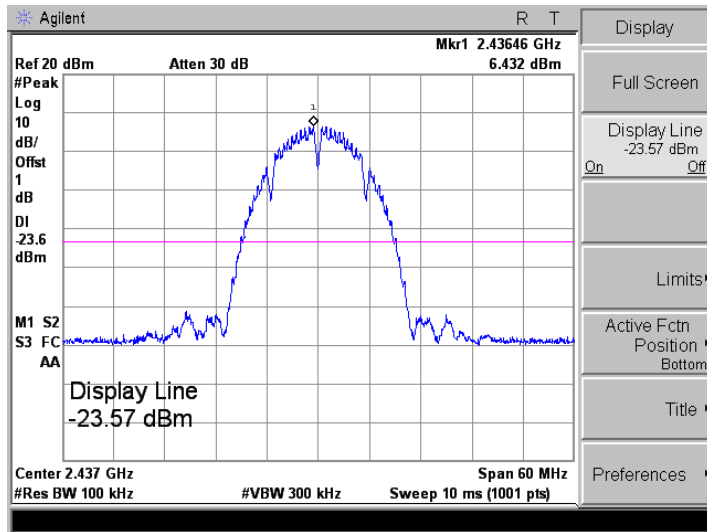
Conducted Out of Band Emissions

Antenna 1

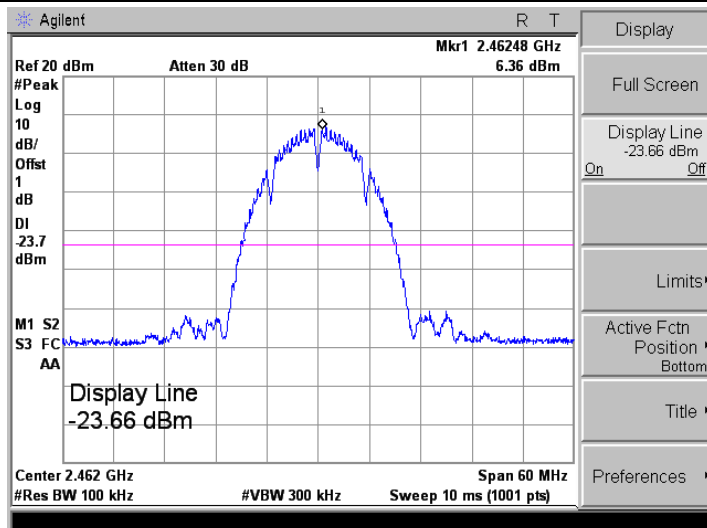
802.11b-Low



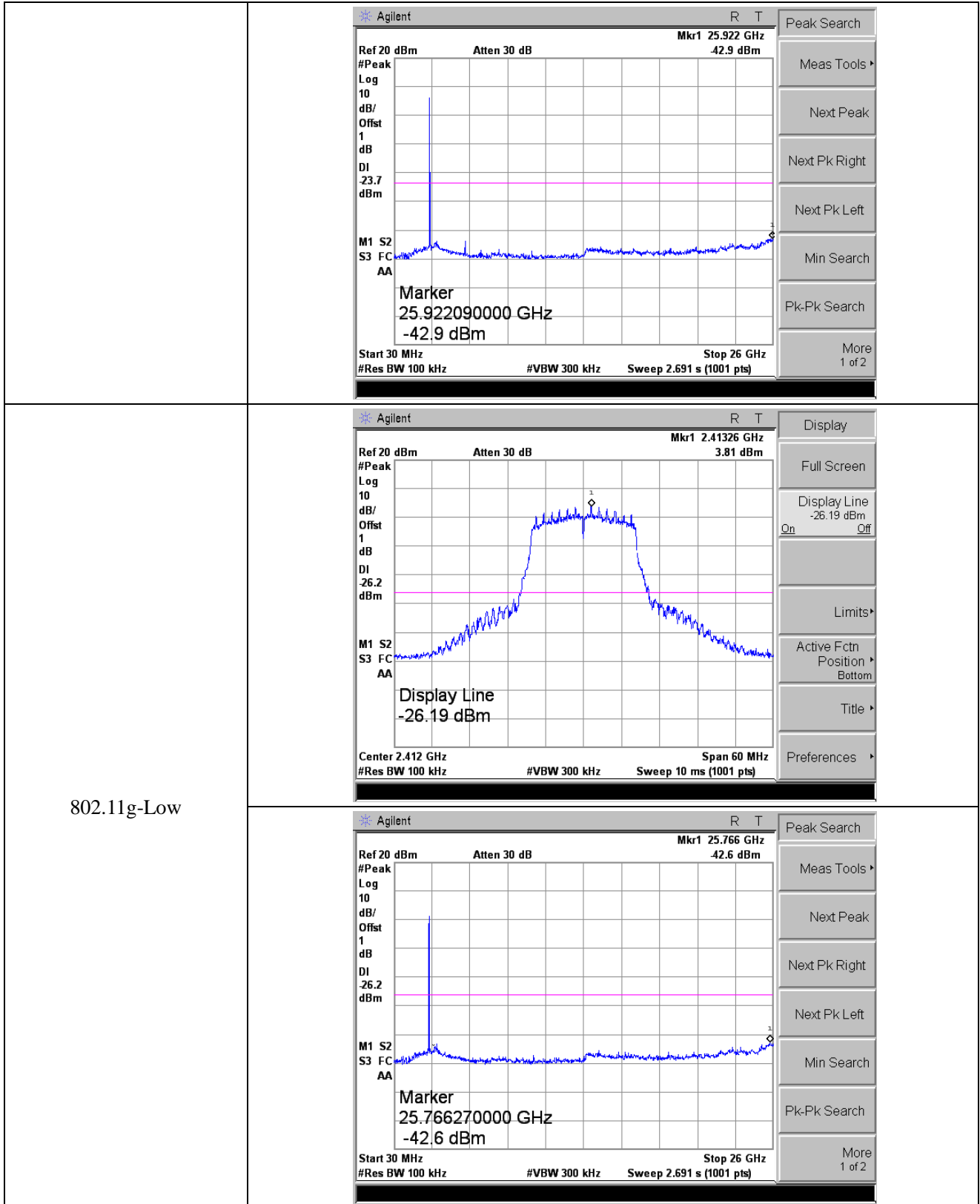
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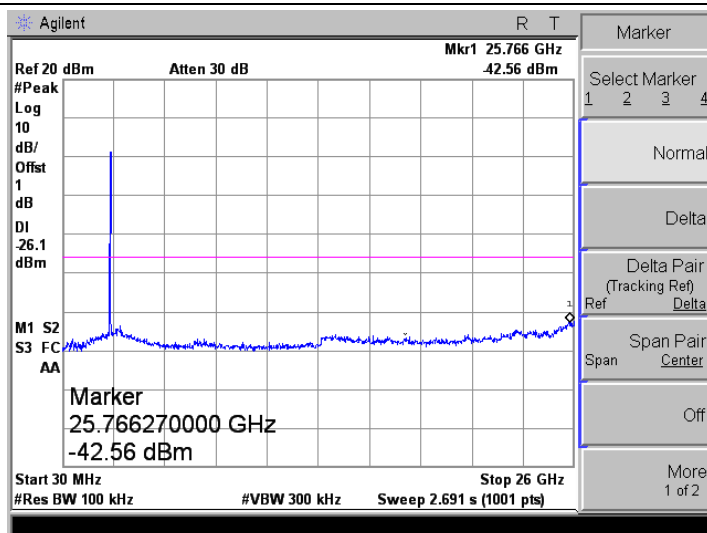
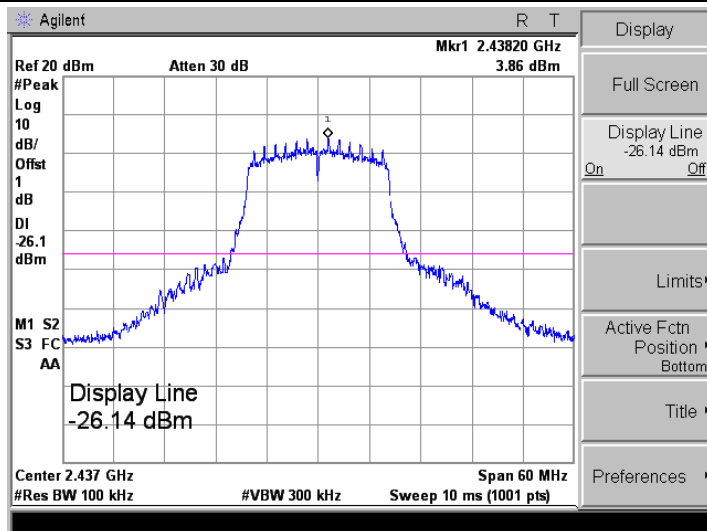
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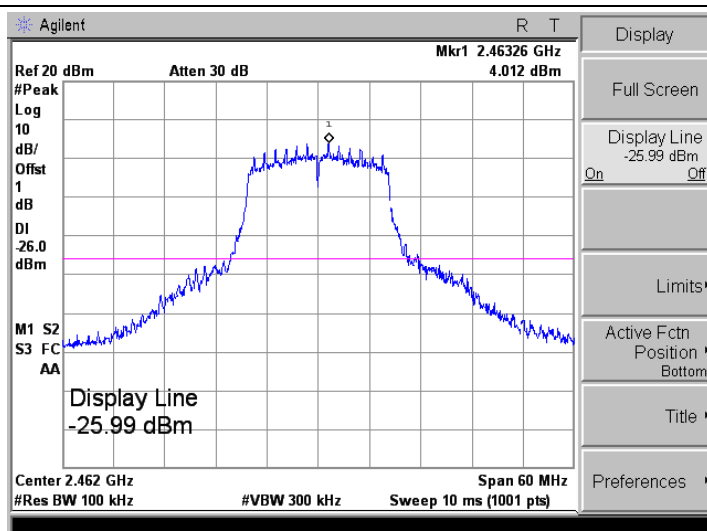




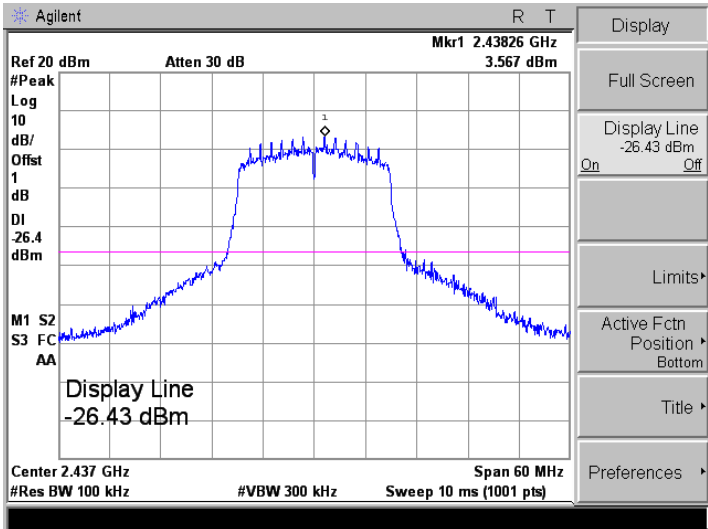
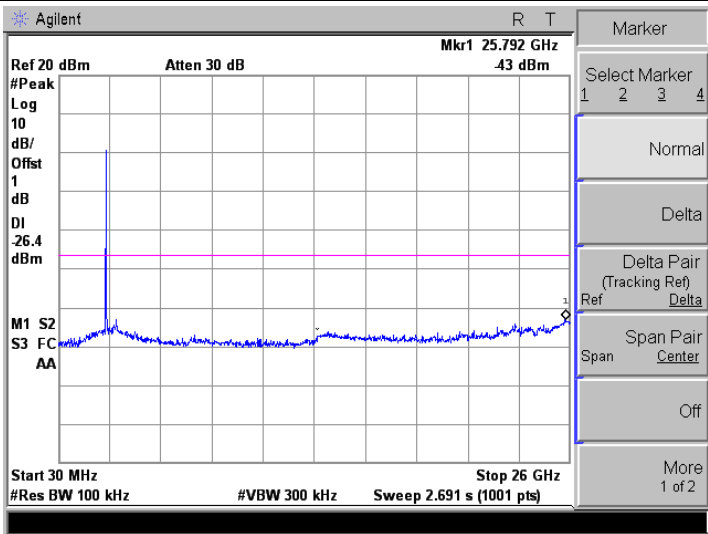
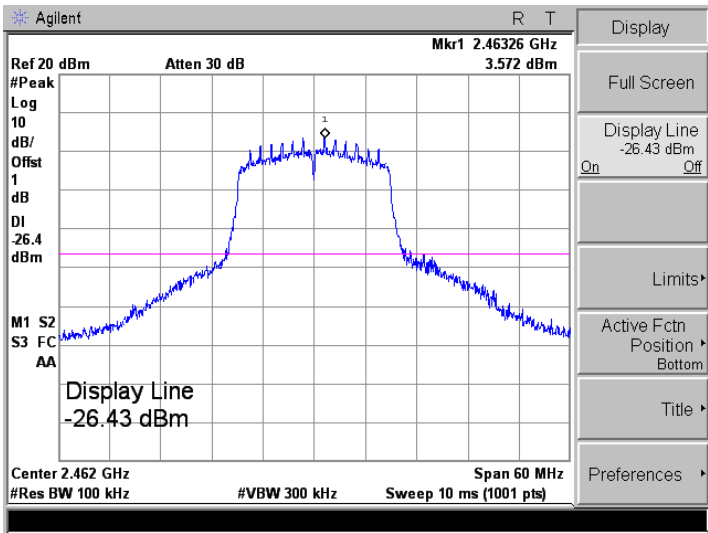
802.11g-Middle

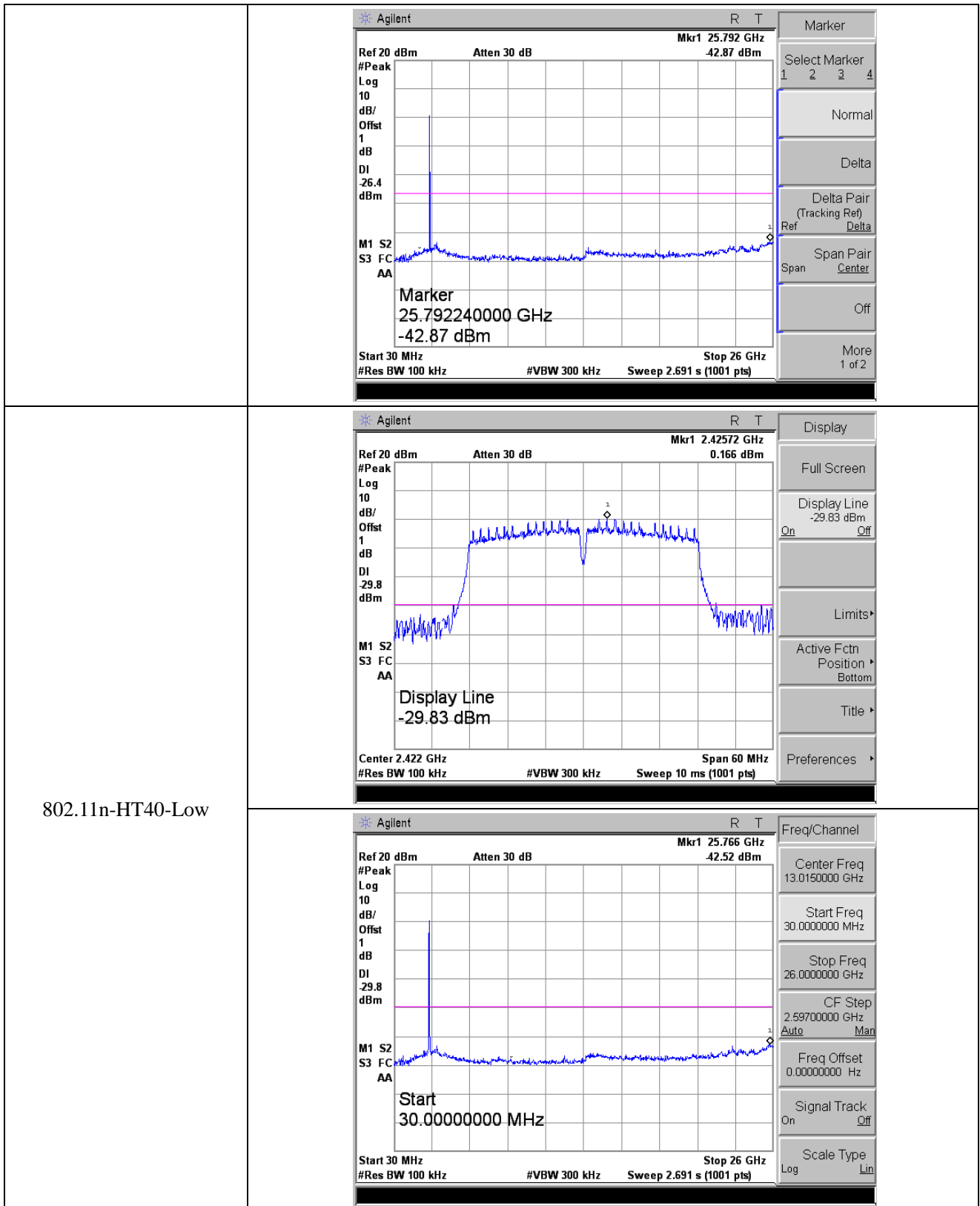


802.11g-High

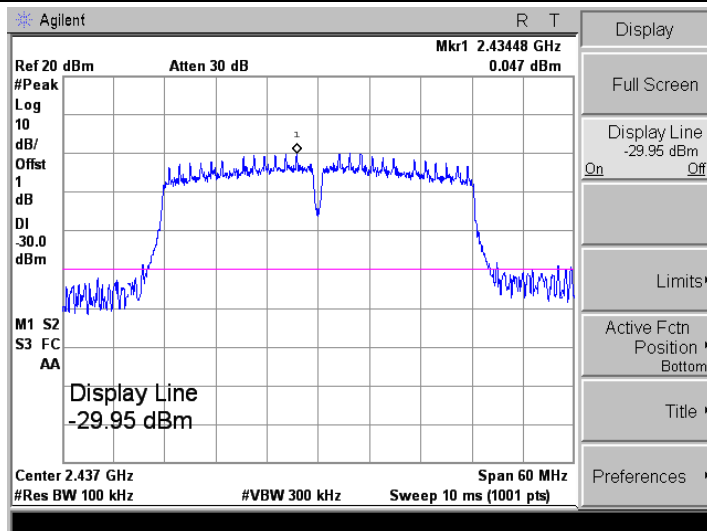


	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 25.662 GHz 42.85 dBm</p> <p>#Peak Log 10 dB/ Offst 1 dB DI -26.0 dBm</p> <p>M1 S2 S3 FC AA</p> <p>Marker 25.662390000 GHz -42.85 dBm</p> <p>Start 30 MHz Stop 26 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.691 s (1001 pts)</p> <p>Marker 1 2 3 4 Normal Delta Delta Pair (Tracking Ref) Ref Delta Span Pair Span Center Off More 1 of 2</p>
<p>802.11n-HT20-Low</p>	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 2.41326 GHz 3.552 dBm</p> <p>#Peak Log 10 dB/ Offst 1 dB DI -26.4 dBm</p> <p>M1 S2 S3 FC AA</p> <p>Display Line -26.45 dBm</p> <p>Center 2.412 GHz Span 60 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Display Full Screen Display Line -26.45 dBm On Off Limits Active Fctn Position Bottom Title Preferences</p>
	<p>Agilent R T</p> <p>Ref 20 dBm Atten 30 dB Mkr1 25.896 GHz 42.81 dBm</p> <p>#Peak Log 10 dB/ Offst 1 dB DI -26.4 dBm</p> <p>M1 S2 S3 FC AA</p> <p>Marker 25.896120000 GHz -42.81 dBm</p> <p>Start 30 MHz Stop 26 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.691 s (1001 pts)</p> <p>Peak Search Meas Tools Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search More 1 of 2</p>

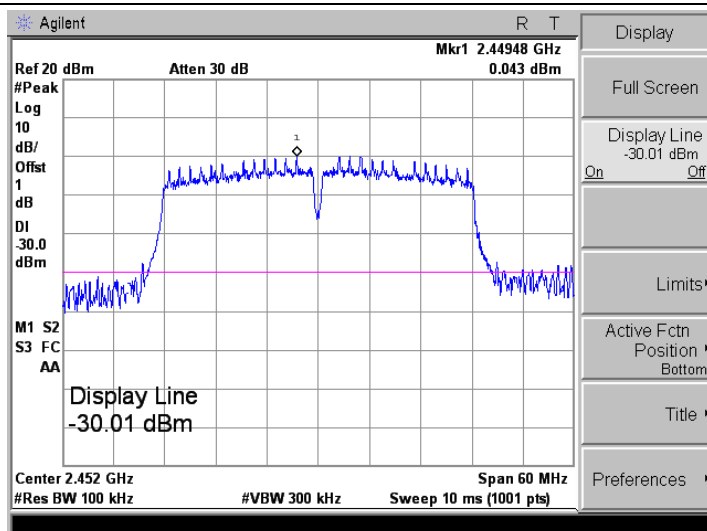
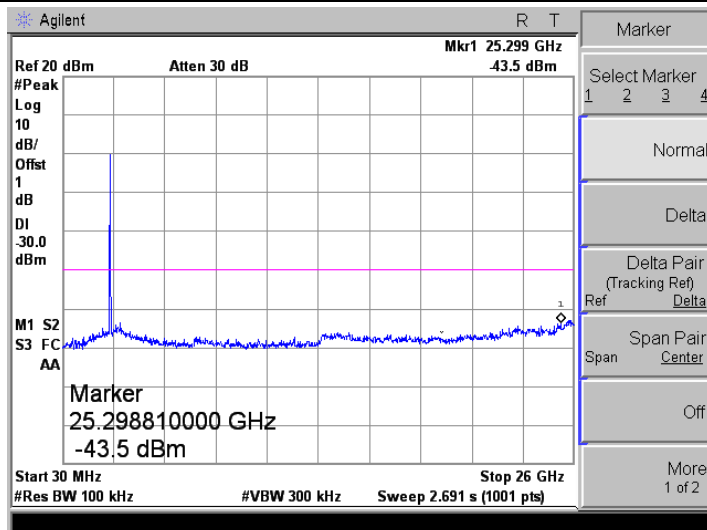
<p>802.11n-HT20-Middle</p>	
	
<p>802.11n-HT20-High</p>	

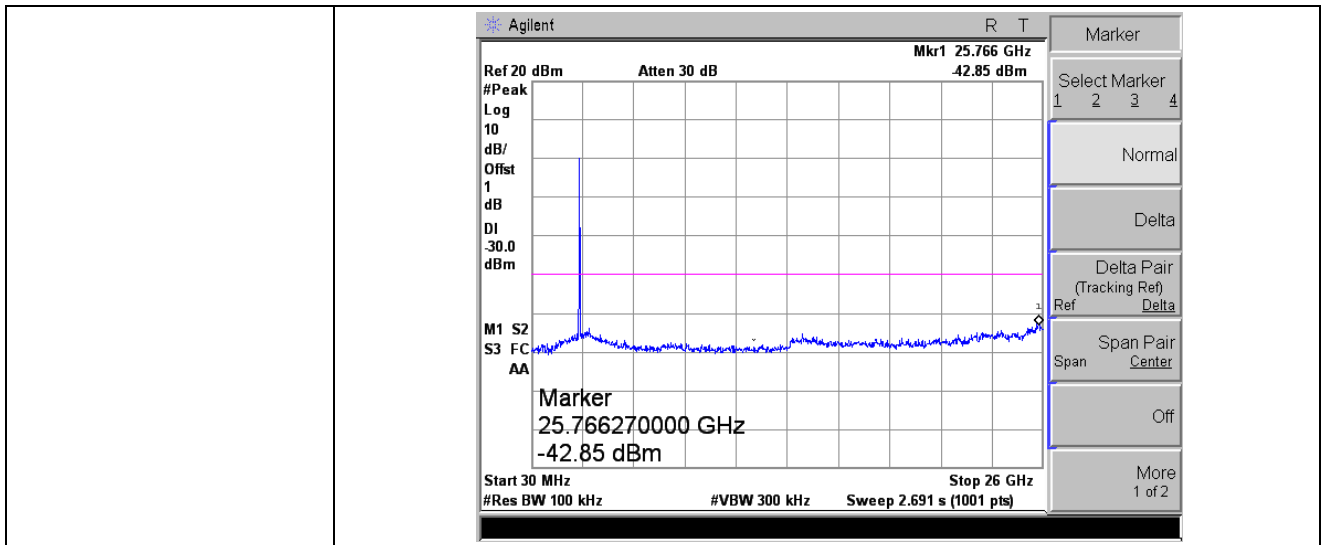


802.11n-HT40-Middle



802.11n-HT40-High

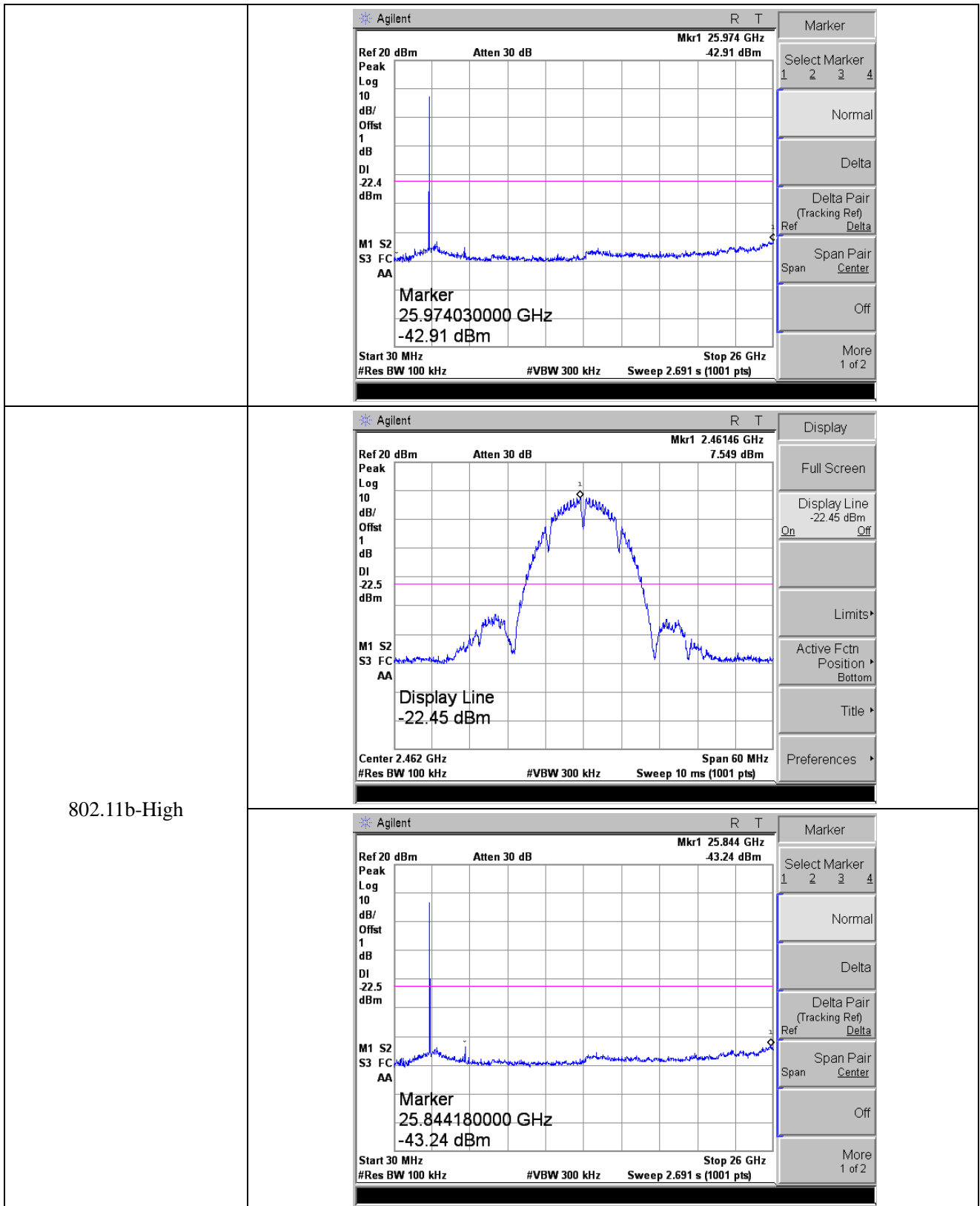




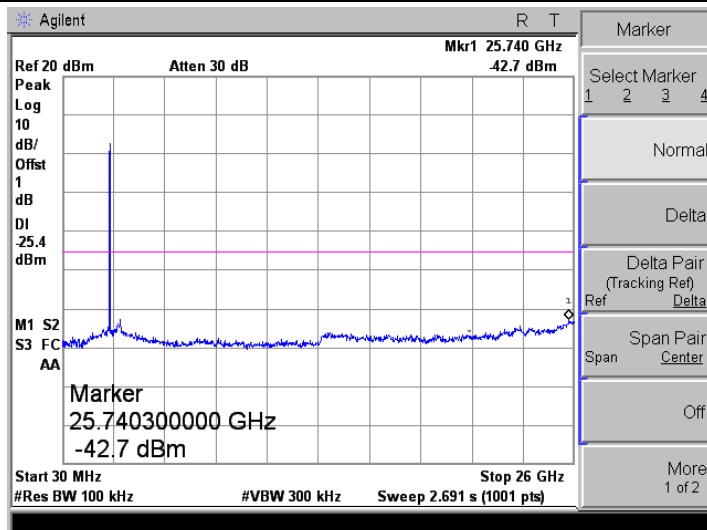
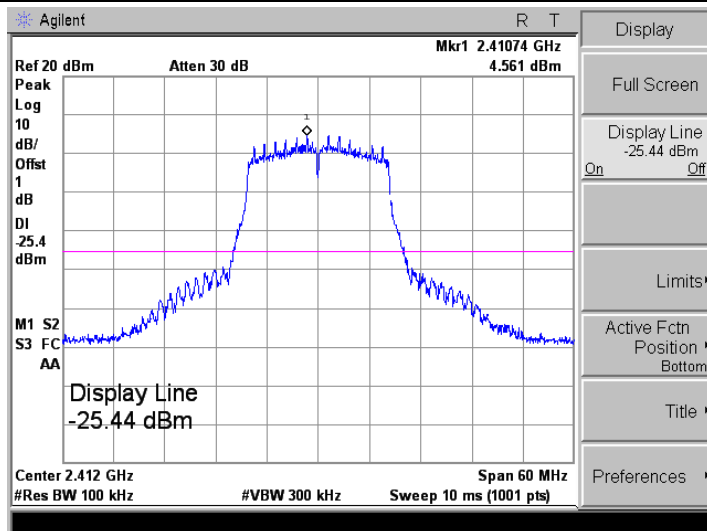
Antenna 2

<p>802.11b-Low</p>	<p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 2.41146 GHz 7.65 dBm          Peak Log 10 dB/Offst 1 dB DI -22.4 dBm          M1 S2 S3 FC AA          Display Line -22.35 dBm          Center 2.412 GHz Span 60 MHz          #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p>
<p>802.11b-Middle</p>	<p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 25.922 GHz 42.97 dBm          Peak Log 10 dB/Offst 1 dB DI -22.4 dBm          M1 S2 S3 FC AA          Marker 25.922090000 GHz -42.97 dBm          Start 30 MHz Stop 26 GHz          #Res BW 100 kHz #VBW 300 kHz Sweep 2.691 s (1001 pts)</p>
<p>802.11b-Middle</p>	<p>Agilent R T          Ref 20 dBm Atten 30 dB Mkr1 2.43748 GHz 7.59 dBm          Peak Log 10 dB/Offst 1 dB DI -22.4 dBm          M1 S2 S3 FC AA          Display Line -22.41 dBm          Center 2.437 GHz Span 60 MHz          #Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p>

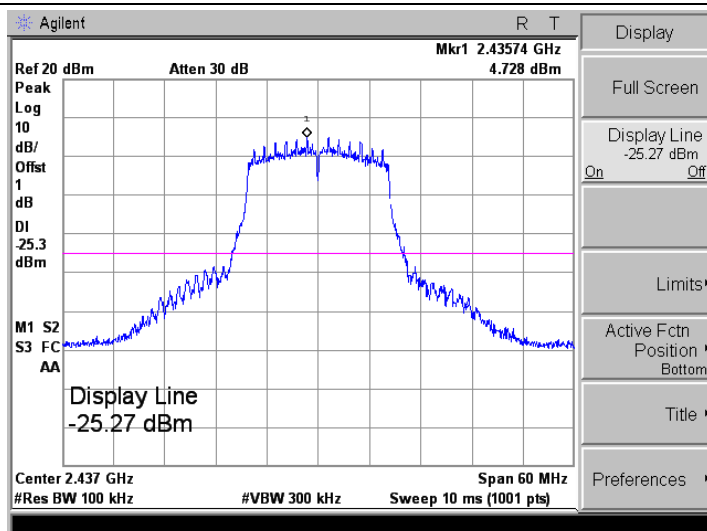


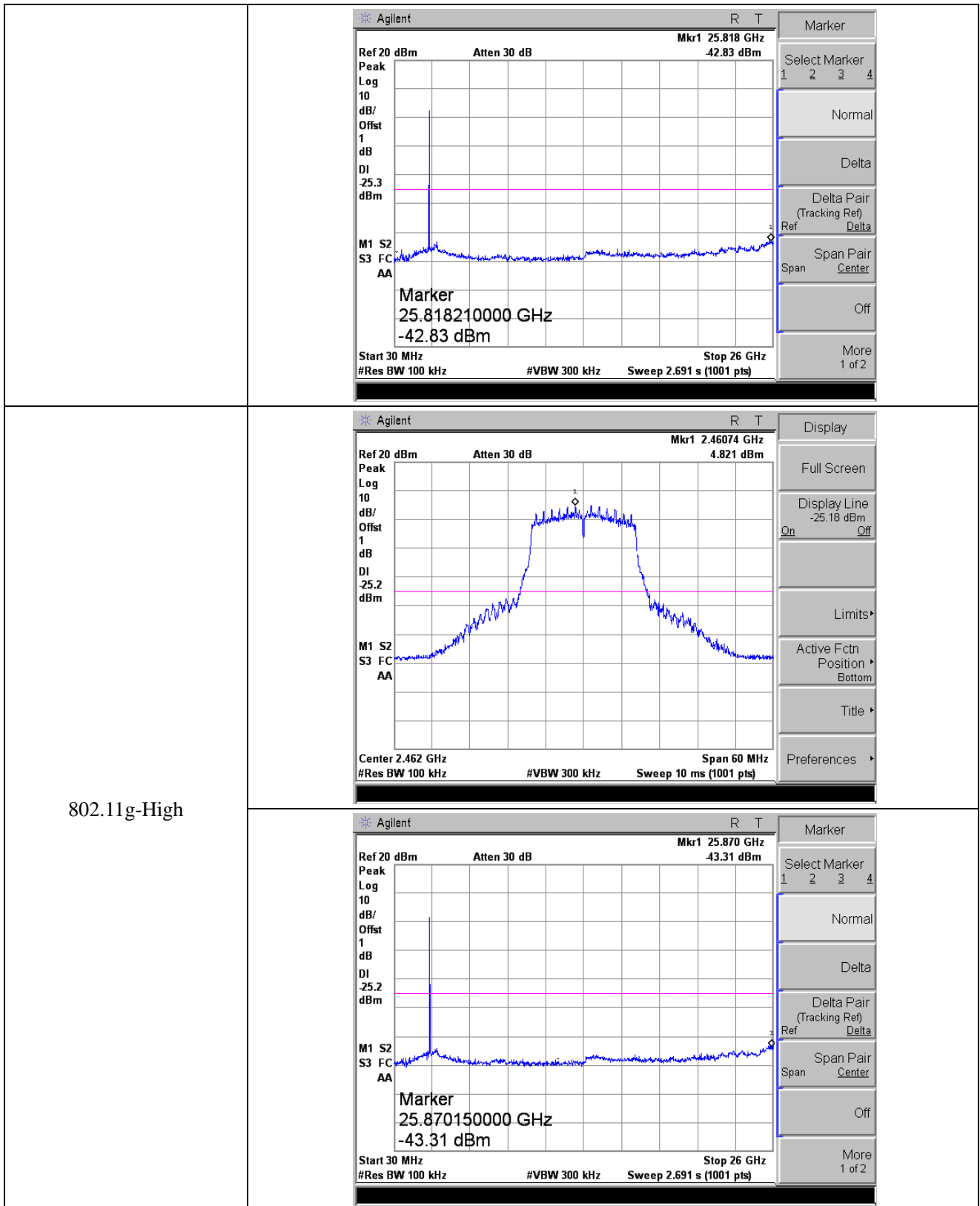


802.11g-Low

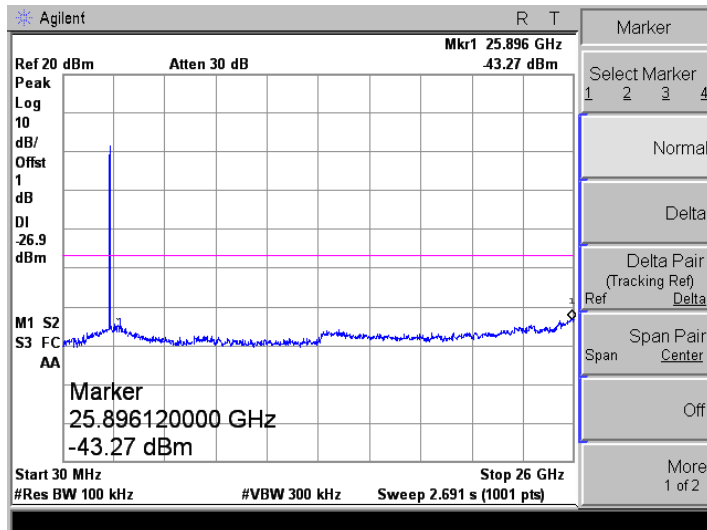
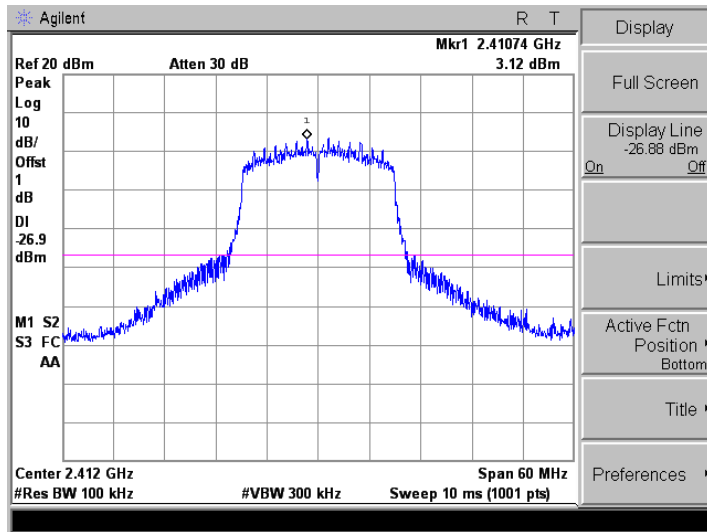


802.11g-Middle

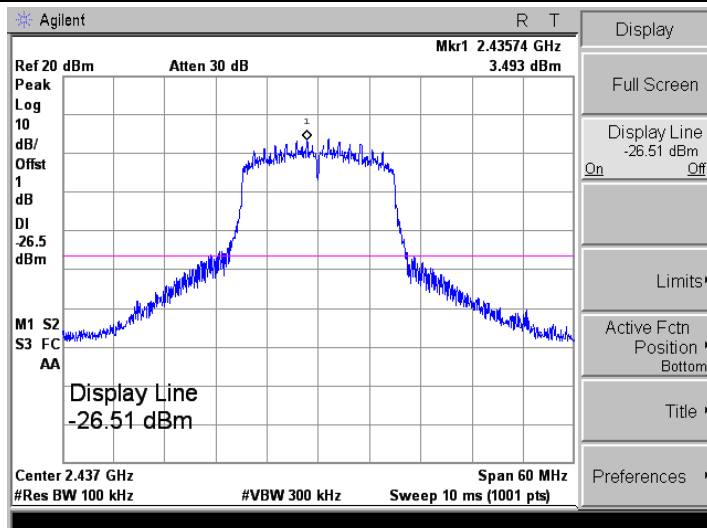


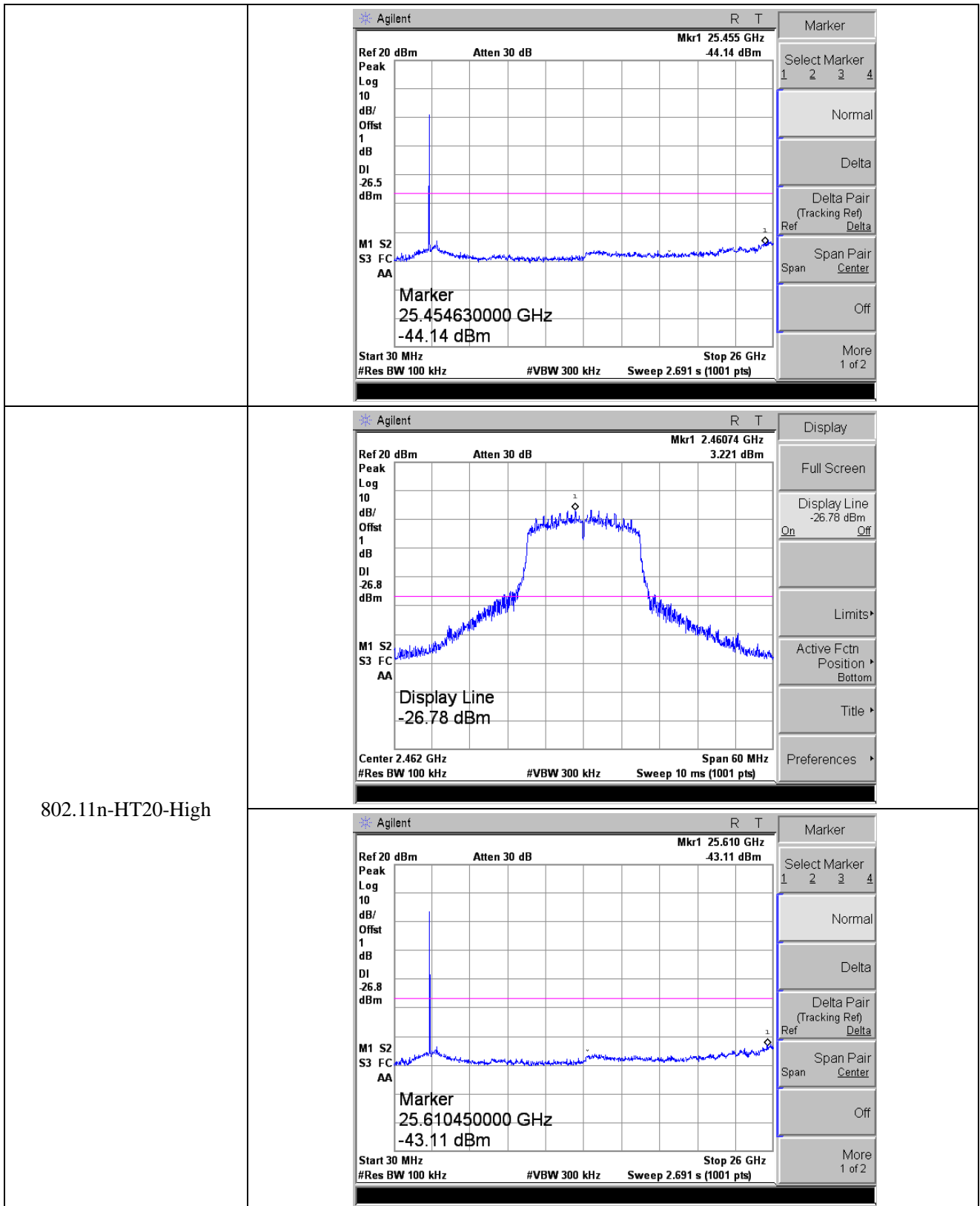


802.11n-HT20-Low

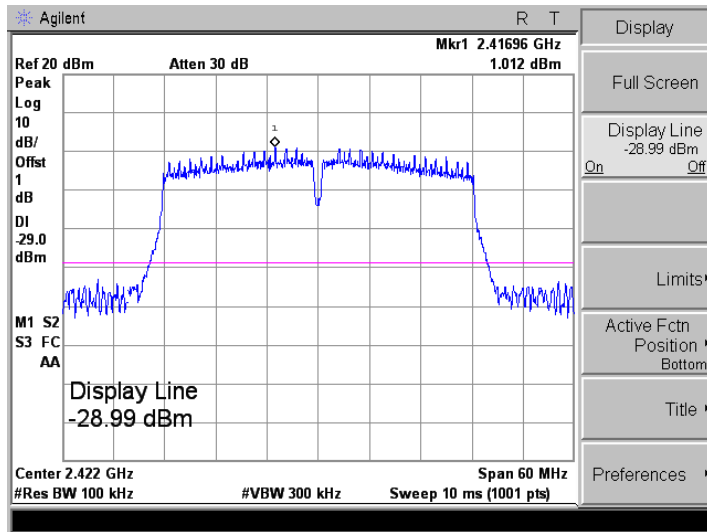


802.11n-HT20-Middle

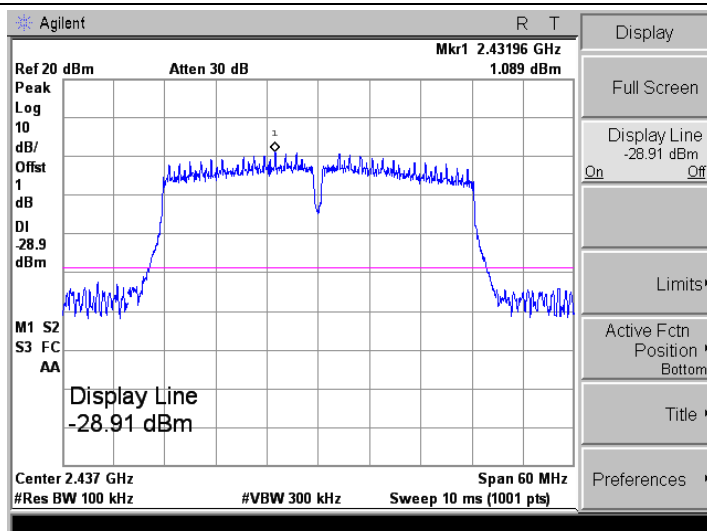
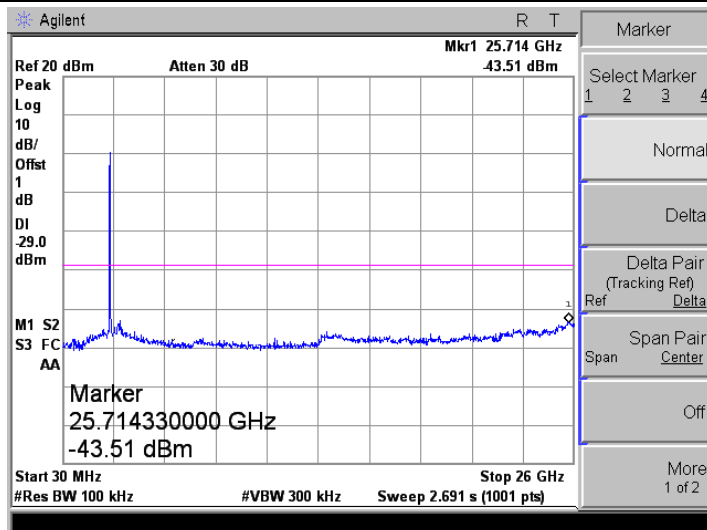


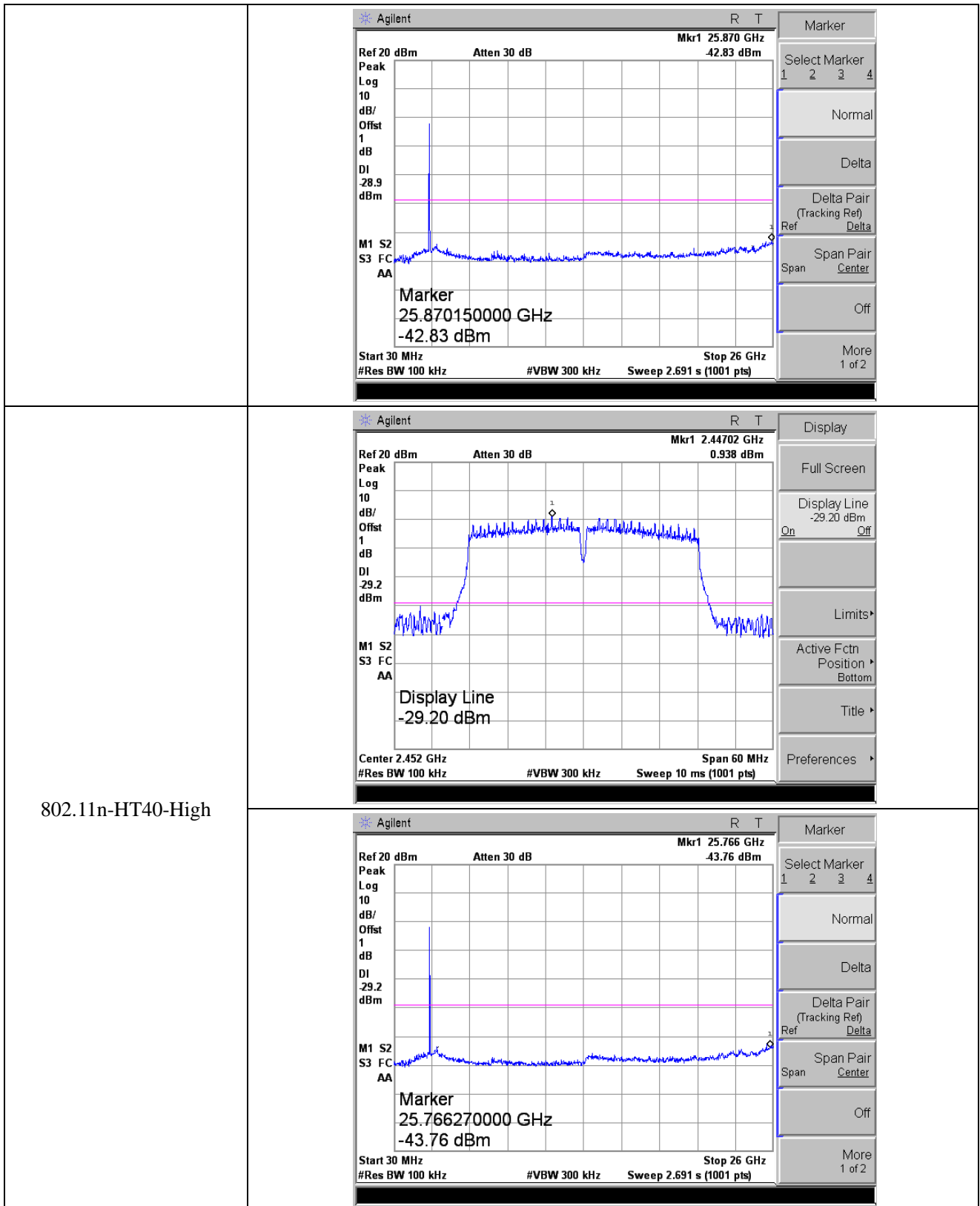


802.11n-HT40-Low



802.11n-HT40-Middle





## **APPENDIX PHOTOGRAPHS**

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**Please refer to “ANNEX”**

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