

# FCC DTS REPORT

## Certification

**Applicant Name:**  
KAONMEDIA Co., Ltd.

**Address:**  
KAONMEDIA Building, 884-3, Seongnam-daero,  
Bundang-gu, Seongnam-si, Gyeonggi-do, South Korea

**Date of Issue:**  
May 17, 2018

**Test Site/Location:**  
HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-  
myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

**Report No.:** HCT-RF-1805-FC029-R1

**FCC ID:**                    **WQTAR4520**

**APPLICANT:**            **KAONMEDIA Co., Ltd.**

**Model(s):**                    AR4520

**EUT Type:**                    AP Router

**Average Output Power:**

Mode	Ant.0 (SISO)	Ant.1 (SISO)	Ant.2 (SISO)	Ant.3 (SISO)	MIMO
802.11b	13.94 dBm	13.77 dBm	13.92 dBm	14.28 dBm	19.98 dBm
802.11g	17.59 dBm	17.50 dBm	17.63 dBm	18.12 dBm	23.72 dBm
802.11n_HT20	17.54 dBm	17.35 dBm	17.50 dBm	18.15 dBm	23.61 dBm
802.11n_HT40	16.45 dBm	16.06 dBm	16.45 dBm	16.84 dBm	22.47 dBm

**Frequency Range:**            2412 MHz - 2462 MHz (2.4 GHz Band)

**Modulation type:**            CCK/DSSS/OFDM

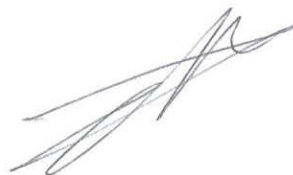
**FCC Classification:**            Digital Transmission System(DTS)

**FCC Rule Part(s):**            Part 15.247

**Engineering Statement:**

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

**Report prepared by : Se Wook Park**  
**Engineer of Telecommunication testing center**

**Approved by : Kwon Jeong**  
**Manager of Telecommunication testing center**

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## Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1805-FC029	May 15, 2018	- First Approval Report
HCT-RF-1805-FC029-R1	May 17, 2018	- Modify 802.11g average MIMO Calculation on page 4

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## 1. GENERAL INFORMATION

<b>Applicant:</b>	KAONMEDIA Co., Ltd.
<b>Address:</b>	KAONMEDIA Building, 884-3, Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, South Korea
<b>FCC ID:</b>	WQTAR4520
<b>EUT Type:</b>	AP Router
<b>Model:</b>	AR4520
<b>Date(s) of Tests:</b>	April 02, 2018 ~ May 08, 2018
<b>Place of Tests:</b>	HCT Co., Ltd. 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

## 2. EUT DESCRIPTION

<b>Model</b>	AR4520		
<b>EUT Type</b>	AP Router		
<b>Power Supply</b>	DC 12 V		
<b>Frequency Range</b>	TX: 2412 MHz ~ 2462 MHz RX: 2412 MHz ~ 2462 MHz		
<b>Max. RF Output Power</b>	Average	Ant. 0 (SISO)	Wi-Fi 802.11b(13.94 dBm) / Wi-Fi 802.11g (17.59 dBm) / Wi-Fi 802.11n_HT20 (17.54 dBm) Wi-Fi 802.11n_HT40 (16.45 dBm)
		Ant.1 (SISO)	Wi-Fi 802.11b(13.77 dBm) / Wi-Fi 802.11g (17.50 dBm) / Wi-Fi 802.11n_HT20 (17.35 dBm) Wi-Fi 802.11n_HT40 (16.06 dBm)
		Ant.2 (SISO)	Wi-Fi 802.11b(13.92 dBm) / Wi-Fi 802.11g (17.63 dBm) / Wi-Fi 802.11n_HT20 (17.50 dBm) Wi-Fi 802.11n_HT40 (16.45 dBm)
		Ant.3 (SISO)	Wi-Fi 802.11b(14.28 dBm) / Wi-Fi 802.11g (18.12 dBm) / Wi-Fi 802.11n_HT20 (18.15 dBm) Wi-Fi 802.11n_HT40 (16.84 dBm)
		MIMO	Wi-Fi 802.11b(19.98 dBm) / Wi-Fi 802.11g (23.72 dBm) / Wi-Fi 802.11n_HT20 (23.61 dBm) Wi-Fi 802.11n_HT40 (22.47 dBm)
	Peak	Ant. 0 (SISO)	Wi-Fi 802.11b(20.36 dBm) / Wi-Fi 802.11g (23.81 dBm) / Wi-Fi 802.11n_HT20 (23.95 dBm) Wi-Fi 802.11n_HT40 (23.08 dBm)
		Ant.1 (SISO)	Wi-Fi 802.11b(19.88 dBm) / Wi-Fi 802.11g (23.45 dBm) / Wi-Fi 802.11n_HT20 (23.67 dBm) Wi-Fi 802.11n_HT40 (22.60 dBm)
		Ant.2 (SISO)	Wi-Fi 802.11b(20.28 dBm) / Wi-Fi 802.11g (23.80 dBm) / Wi-Fi 802.11n_HT20 (23.74 dBm) Wi-Fi 802.11n_HT40 (22.96 dBm)
		Ant.3 (SISO)	Wi-Fi 802.11b(20.70 dBm) / Wi-Fi 802.11g (24.19 dBm) / Wi-Fi 802.11n_HT20 (24.13 dBm) Wi-Fi 802.11n_HT40 (23.57 dBm)
		MIMO	Wi-Fi 802.11b(26.28 dBm) / Wi-Fi 802.11g (29.77 dBm) / Wi-Fi 802.11n_HT20 (29.86 dBm) Wi-Fi 802.11n_HT40 (29.04 dBm)
<b>Modulation Type</b>	DSSS/CCK(802.11b), OFDM(802.11g, 802.11n)		
<b>Antenna Specification</b>	Antenna type: External Dipole Antenna Peak Gain : cf. Section 6		

## 2.1 EUT OPERATING MODE

### ▣ Operating mode

Mode	Operating Mode	Operating Ant.
802.11b/g/n	SISO	Ant. 0
		Ant. 1
		Ant. 2
		Ant. 3
802.11b/g/n	MIMO	Ant. 0 & 1 & 2 & 3

Note : We have done all test case. Worst case is MIMO(CDD) for 802.11b/g/n\_HT20, HT40 mode.  
So, we attached the result of MIMO for 802.11b/g/n mode.

### **3. TEST METHODOLOGY**

FCC KDB 558074 D01 DTS Meas Guidance v04 dated April 05, 2017 entitled "Guidance for Performing Compliance Measurements on Digital Transmission Systems(DTS) and the measurement procedure described in ANSI C63.10(Version : 2013) 'the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices'.

#### **3.1 EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### **3.2 EUT EXERCISE**

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

#### **3.3 GENERAL TEST PROCEDURES**

##### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10. (Version: 2013)

##### **Conducted Antenna Terminal**

See Section from 9.1 to 9.2.(KDB 558074 v04)

#### **3.4 DESCRIPTION OF TEST MODES**

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with highest data rate (worst case) is chosen for full testing.

## 4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

All equipments(spectrum, antenna, accessory, etc.) for measurement is calibrated in accordance with the requirements of C63.5 (Version: 2006).

## 5. FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 07, 2015 (Registration Number: 90661)

### 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

## 6. ANTENNA REQUIREMENTS

### According to FCC 47 CFR §15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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."

\*The antennas of this E.U.T are permanently attached.

\*The E.U.T Complies with the requirement of §15.203

**▣ Directional Gain Calculations**

- If all antennas have the same gain,  $G_{ANT}$

Directional gain =  $G_{ANT}$  + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices.

Array Gain =  $10 \log(N_{ANT}/N_{SS})$  dB. ( $N_{SS} = 1$ , Worst Case)

- For power measurements on IEEE 802.11 devices

Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;

**▣ Directional Gain (Power)**

2.4GHz Band

Antenna Gain(SISO)	Ant 0	5.49 dBi
	Ant 1	
	Ant 2	
	Ant 3	
Antenna Gain(MIMO)	Ant 0 & 1 & 2 & 3	

**▣ Directional Gain (PSD)**

2.4GHz Band

Antenna Gain(SISO)	Ant 0	5.49 dBi
	Ant 1	
	Ant 2	
	Ant 3	
Antenna Gain(MIMO)	Ant 0 & 1 & 2 & 3	11.51 dBi



## 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95 % level of confidence.

Parameter	Expanded Uncertainty ( $\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70

## 8. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	> 500 kHz	CONDUCTED	PASS
Conducted Maximum Peak Output Power	§15.247(b)(3)	< 1 Watt		PASS
Power Spectral Density	§15.247(e)	< 8 dBm / 3 kHz Band		PASS
Band Edge(Out of Band Emissions)	§15.247(d)	Conducted > 30 dBc		PASS
AC Power line Conducted Emissions	§15.207	cf. Section 9.7		PASS
Radiated Spurious Emissions	§15.205, 15.209	cf. Section 9.6.1	RADIATED	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 9.6.2		PASS

## 9. TEST RESULT

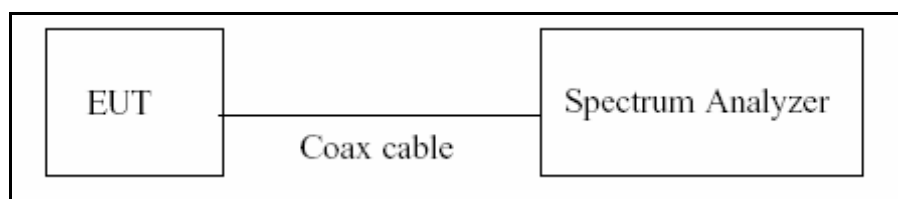
### 9.1 DUTY CYCLE

#### ▣ TEST PROCEDURE

According to Section 6.0)b) in KDB 558074 v04

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set  $RBW \geq OBW$  if possible; otherwise, set RBW to the largest available value. Set  $VBW \geq RBW$ . Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are  $> 50/T$  and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if  $T \leq 16.7$  microseconds.)

#### ▣ TEST CONFIGURATION



#### ▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. We tested according to the zero-span measurement method, 6.0)b) in KDB 558074 v04

The largest available value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if  $T \leq 6.25$  microseconds. ( $50/6.25 = 8$ )

The zero-span method was used because all measured T data are  $> 6.25$  microseconds and both RBW and VBW are  $> 50/T$ .

1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ( $\geq$  RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep  $> 100$
6. Trace mode = Clear write
7. Measure  $T_{total}$  and  $T_{on}$
8. Calculate Duty Cycle =  $T_{on}/T_{total}$  and Duty Cycle Factor =  $10 \cdot \log(1/\text{Duty Cycle})$

**■ Duty Cycle Factor**

Mode	Data Rate	T <sub>on</sub> (ms)	T <sub>total</sub> (ms)	Duty Cycle	Duty Cycle Factor (dB)
b	1 Mbps	12.418	13.079	0.94942274	0.225
	2 Mbps	6.211	6.533	0.95069238	0.220
	5.5 Mbps	2.321	2.437	0.95218028	0.213
	11 Mbps	1.208	1.267	0.95399749	0.205
g	6 Mbps	2.063	2.171	0.95010134	0.222
	9 Mbps	1.382	1.453	0.95068804	0.220
	12 Mbps	1.044	1.094	0.95406070	0.204
	18 Mbps	0.704	0.739	0.95306816	0.209
	24 Mbps	0.532	0.559	0.95226673	0.212
	36 Mbps	0.364	0.387	0.94170485	0.261
	48 Mbps	0.276	0.299	0.92263992	0.350
	54 Mbps	0.248	0.272	0.91267995	0.397
n_HT20	MCS 0	1.924	2.021	0.95171018	0.215
	MCS 1	0.980	1.029	0.95230690	0.212
	MCS 2	0.664	0.698	0.95164742	0.215
	MCS 3	0.508	0.532	0.95388927	0.205
	MCS 4	0.352	0.375	0.93816631	0.277
	MCS 5	0.272	0.296	0.91891892	0.367
	MCS 6	0.248	0.272	0.91385584	0.391
	MCS 7	0.228	0.251	0.90688054	0.424
n_HT40	MCS 0	0.944	1.043	0.90506329	0.433
	MCS 1	0.493	0.541	0.91194969	0.400
	MCS 2	0.340	0.373	0.91159143	0.402
	MCS 3	0.264	0.287	0.91874195	0.368
	MCS 4	0.188	0.212	0.88963806	0.508
	MCS 5	0.152	0.175	0.86685137	0.621
	MCS 6	0.140	0.163	0.85714111	0.669
	MCS 7	0.128	0.152	0.84486740	0.732

Note : Duty Cycle Factor =  $10 \cdot \log(1/\text{Duty Cycle})$ . where, Duty Cycle =  $T_{on} / T_{total}$

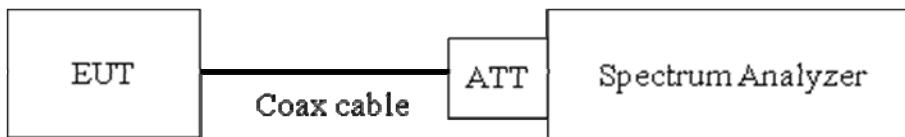
## 9.2 6dB BANDWIDTH

### Test Requirements and limit, §15.247(a)(2)

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

**The minimum permissible 6dB bandwidth is 500 kHz.**

### ■ TEST CONFIGURATION



### ■ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to (Procedure 8.1 in KDB 558074 v04)

RBW = 100 kHz

VBW  $\geq$  3 x RBW

Detector = Peak

Trace mode = max hold

Sweep = auto couple

Allow the trace to stabilize

Note : We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

**■ TEST RESULTS\_Ant.0**
**Conducted 6dB Bandwidth Measurements for 802.11b**

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	8.074	0.500	Pass
2437	6	7.592	0.500	Pass
2462	11	8.078	0.500	Pass

**Conducted 6dB Bandwidth Measurements for 802.11g**

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.15	0.5	Pass
2437	6	15.26	0.5	Pass
2462	11	15.14	0.5	Pass

**Conducted 6dB Bandwidth Measurements for 802.11n\_HT20**

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.11	0.5	Pass
2437	6	15.11	0.5	Pass
2462	11	15.47	0.5	Pass

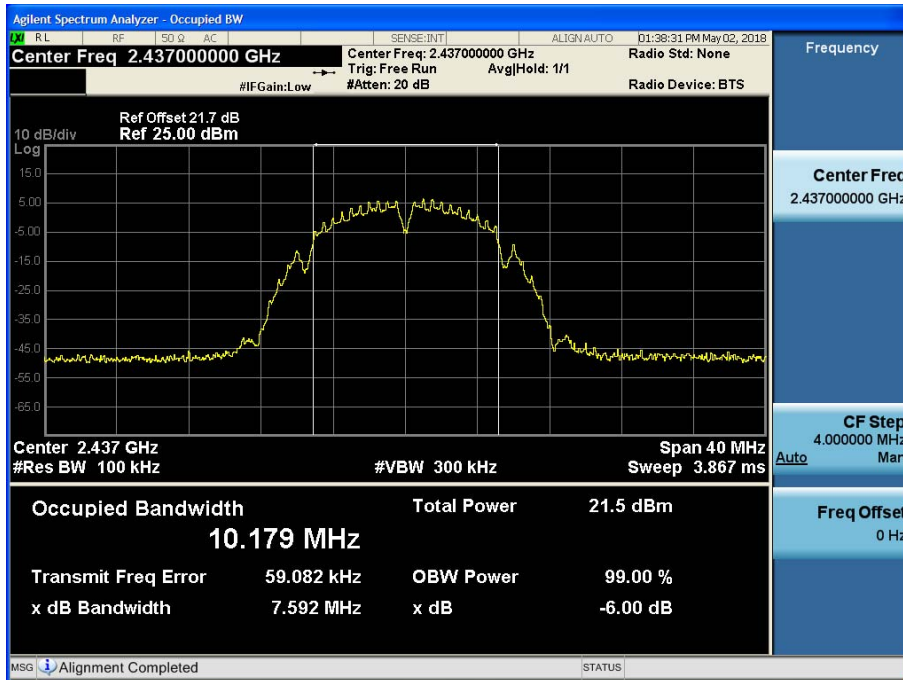
**Conducted 6dB Bandwidth Measurements for 802.11n\_HT40**

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2422	3	36.45	0.5	Pass
2437	6	36.08	0.5	Pass
2452	9	36.08	0.5	Pass

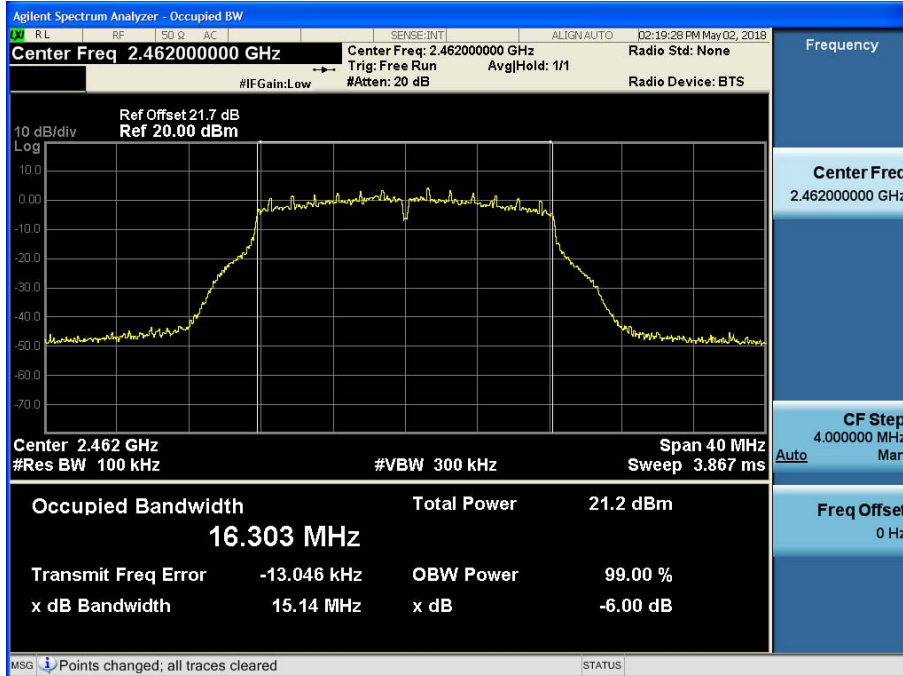
Note : In order to simplify the report, attached plots were only the most narrow 6 dB BW channel.

▣ RESULT PLOTS

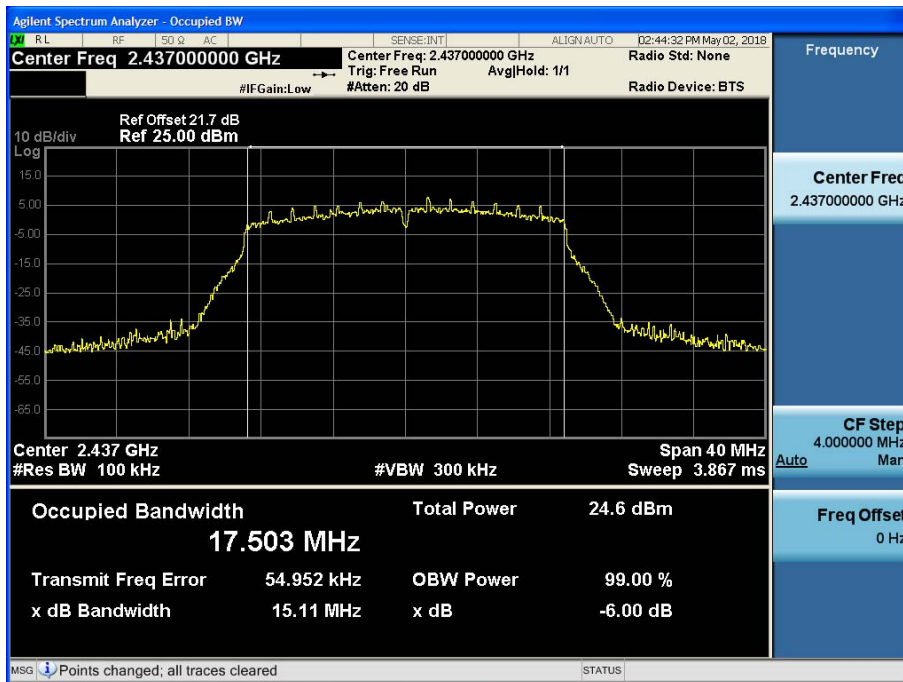
**6dB Bandwidth plot (802.11b-CH 6)**



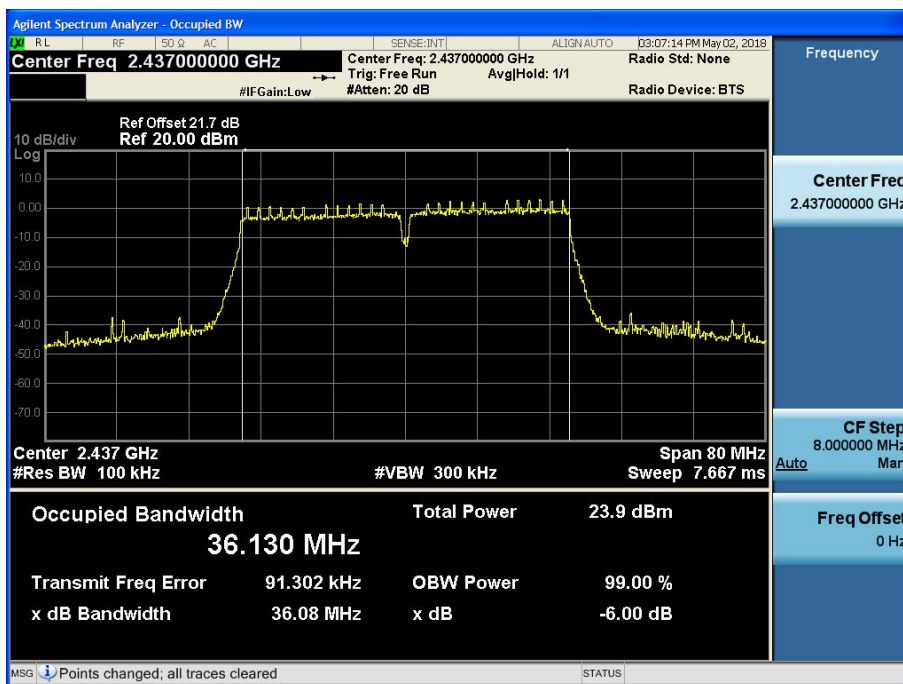
**6dB Bandwidth plot (802.11g-CH 11)**



**6dB Bandwidth plot (802.11n\_HT20-CH 6)**



**6dB Bandwidth plot (802.11n\_HT40-CH 6)**





■ TEST RESULTS\_Ant.1

Conducted 6dB Bandwidth Measurements for 802.11b

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	8.087	0.500	Pass
2437	6	8.070	0.500	Pass
2462	11	7.612	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11g

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.14	0.500	Pass
2437	6	15.13	0.500	Pass
2462	11	15.13	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11n\_HT20

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.17	0.500	Pass
2437	6	15.15	0.500	Pass
2462	11	15.13	0.500	Pass

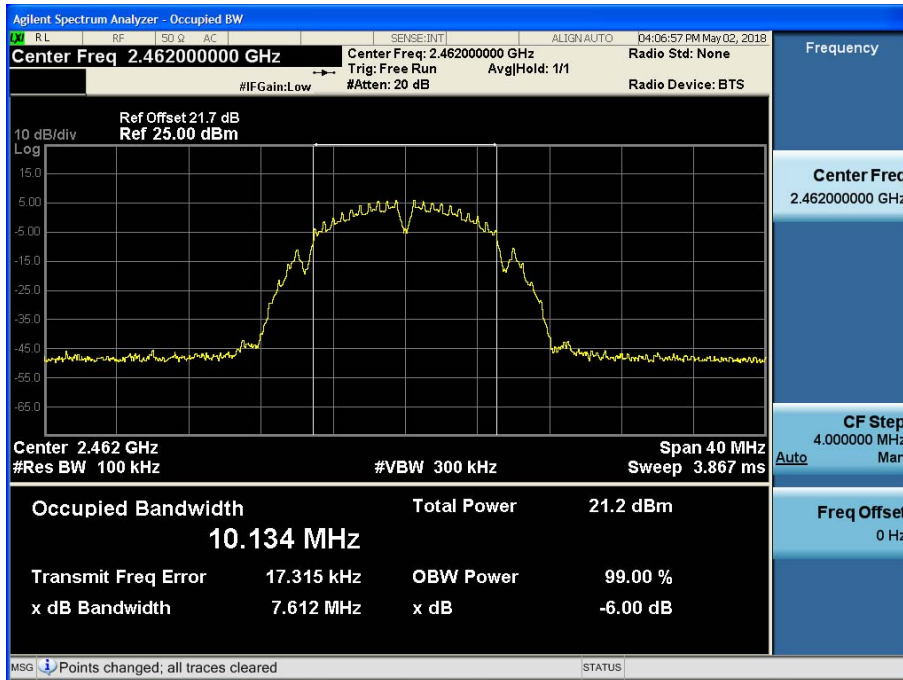
Conducted 6dB Bandwidth Measurements for 802.11n\_HT40

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2422	3	36.41	0.500	Pass
2437	6	36.03	0.500	Pass
2452	9	36.15	0.500	Pass

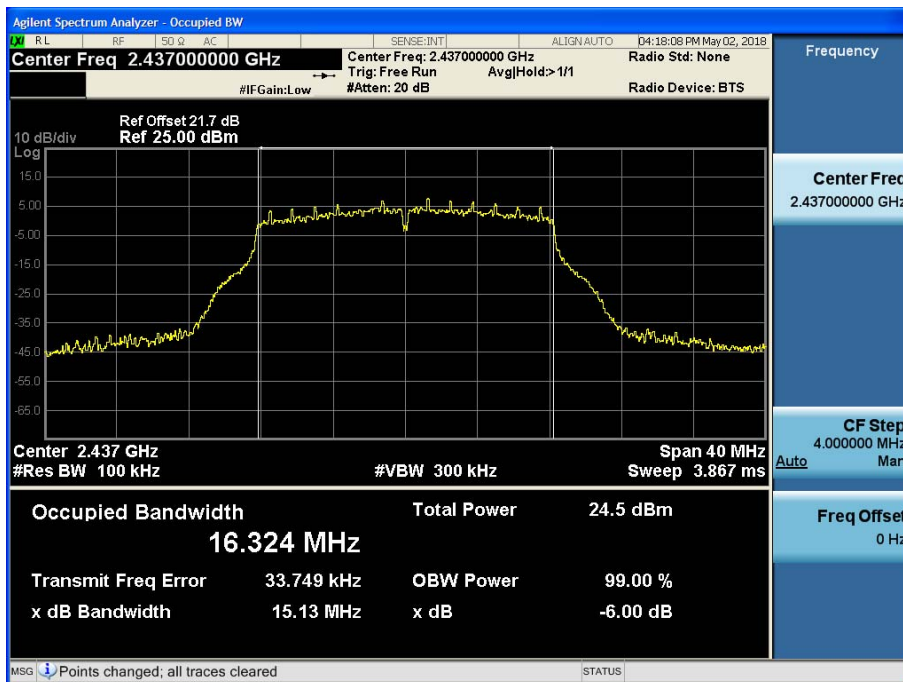
Note : In order to simplify the report, attached plots were only the most narrow 6 dB BW channel.

▣ RESULT PLOTS

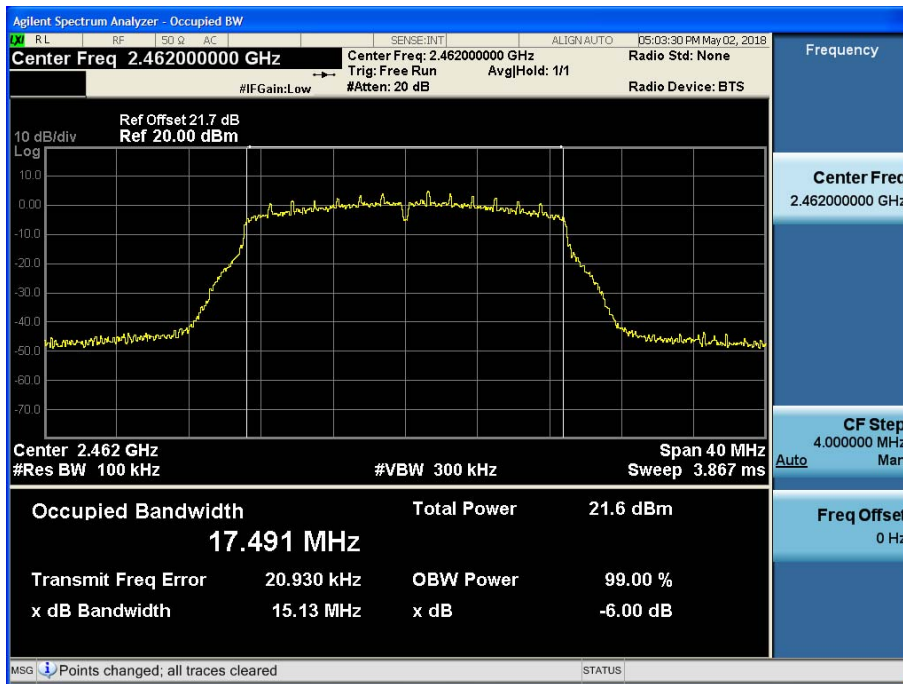
**6dB Bandwidth plot (802.11b-CH 11)**



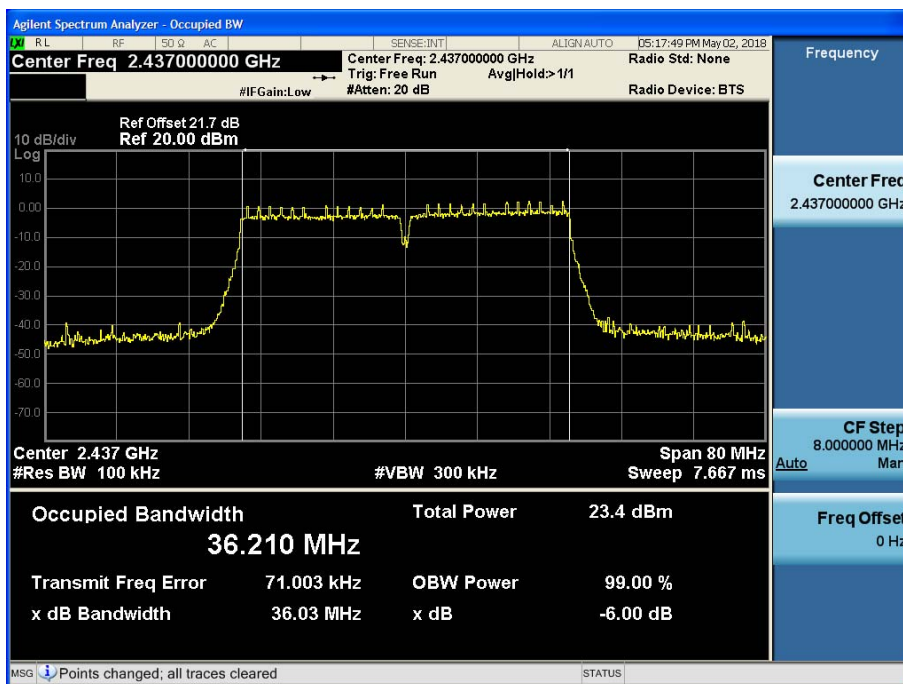
**6dB Bandwidth plot (802.11g-CH 6)**



**6dB Bandwidth plot (802.11n\_HT20-CH 11)**



**6dB Bandwidth plot (802.11n\_HT40-CH 6)**



■ TEST RESULTS\_Ant.2

Conducted 6dB Bandwidth Measurements for 802.11b

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	8.061	0.500	Pass
2437	6	7.609	0.500	Pass
2462	11	8.074	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11g

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.15	0.500	15.148
2437	6	15.45	0.500	Pass
2462	11	15.09	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11n\_HT20

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.13	0.500	Pass
2437	6	15.04	0.500	Pass
2462	11	15.13	0.500	Pass

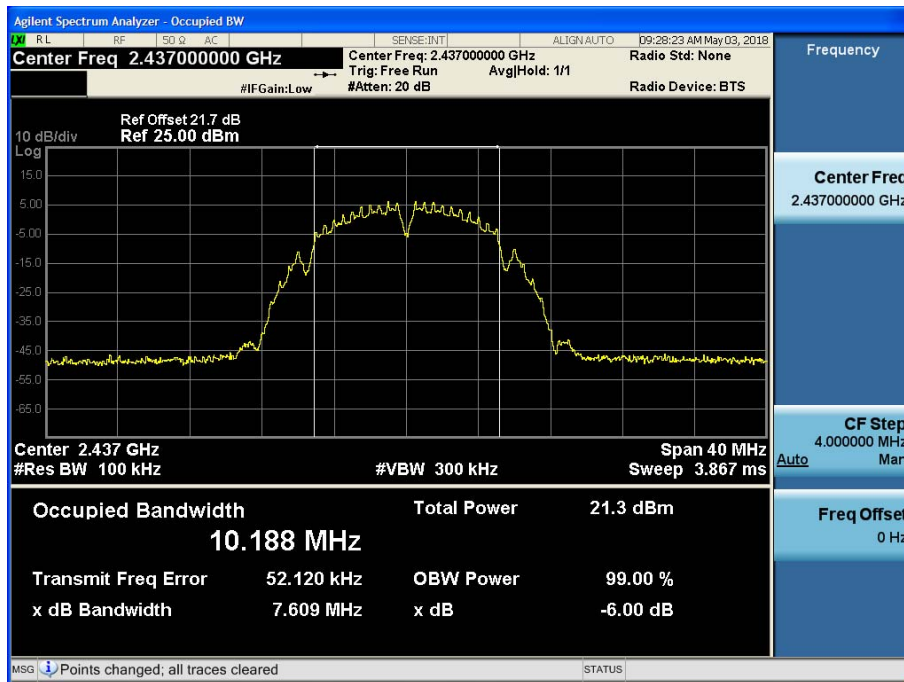
Conducted 6dB Bandwidth Measurements for 802.11n\_HT40

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2422	3	36.41	0.500	Pass
2437	6	36.11	0.500	Pass
2452	9	36.12	0.500	Pass

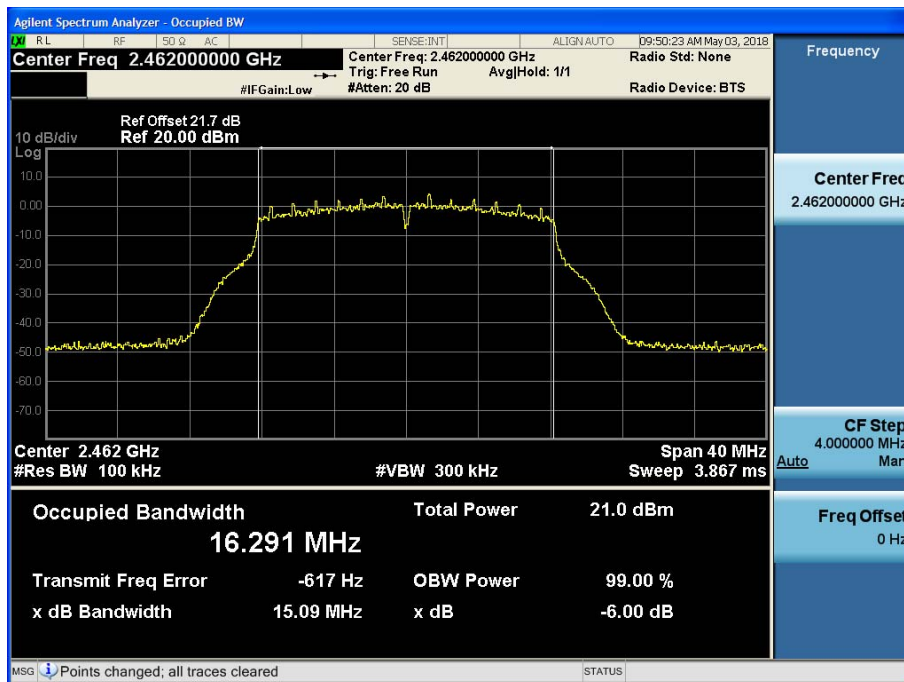
Note : In order to simplify the report, attached plots were only the most narrow 6 dB BW channel.

▣ RESULT PLOTS

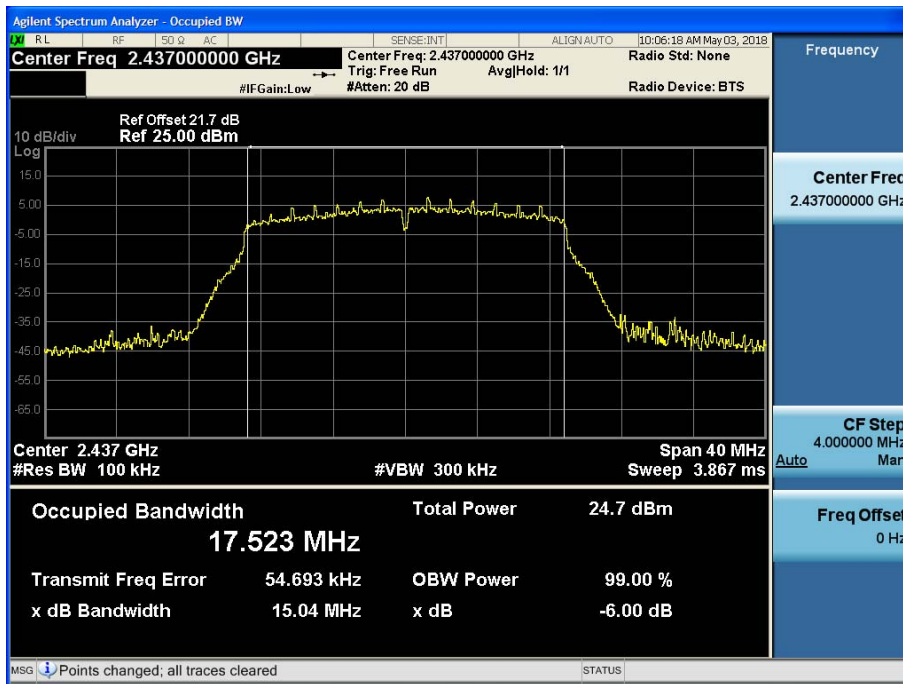
**6dB Bandwidth plot (802.11b-CH 6)**



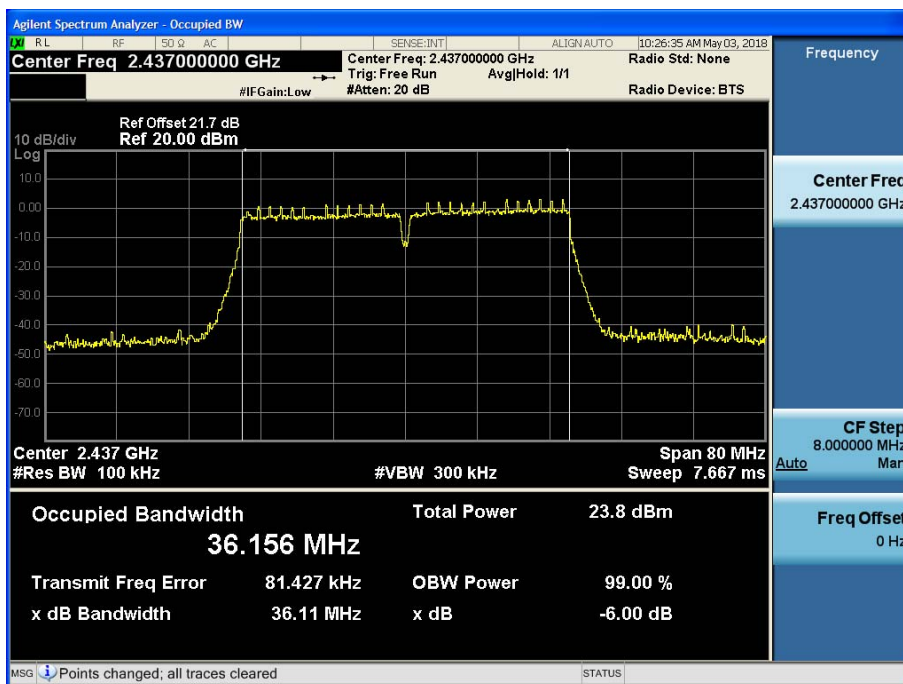
**6dB Bandwidth plot (802.11g-CH 11)**



**6dB Bandwidth plot (802.11n\_HT20-CH 6)**



**6dB Bandwidth plot (802.11n\_HT40-CH 6)**



**■ TEST RESULTS\_Ant.3**
**Conducted 6dB Bandwidth Measurements for 802.11b**

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	7.589	0.500	Pass
2437	6	7.607	0.500	Pass
2462	11	8.067	0.500	Pass

**Conducted 6dB Bandwidth Measurements for 802.11g**

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.12	0.500	Pass
2437	6	15.14	0.500	Pass
2462	11	15.12	0.500	Pass

**Conducted 6dB Bandwidth Measurements for 802.11n\_HT20**

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	15.15	0.500	Pass
2437	6	15.15	0.500	Pass
2462	11	15.15	0.500	Pass

**Conducted 6dB Bandwidth Measurements for 802.11n\_HT40**

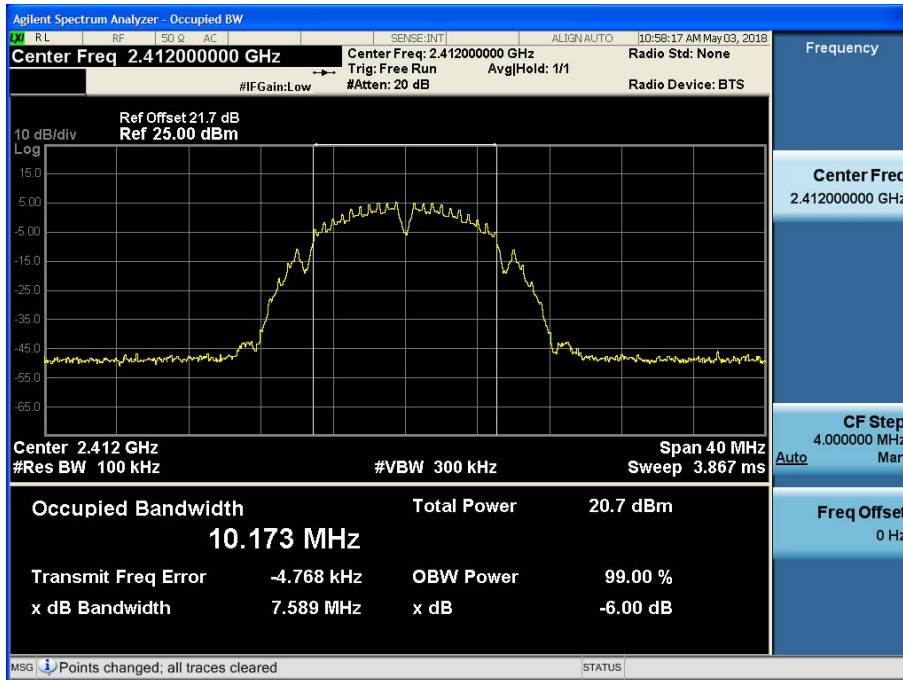
802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2422	3	36.44	0.500	Pass
2437	6	36.17	0.500	Pass
2452	9	36.35	0.500	Pass

Note : In order to simplify the report, attached plots were only the most narrow 6 dB BW channel.

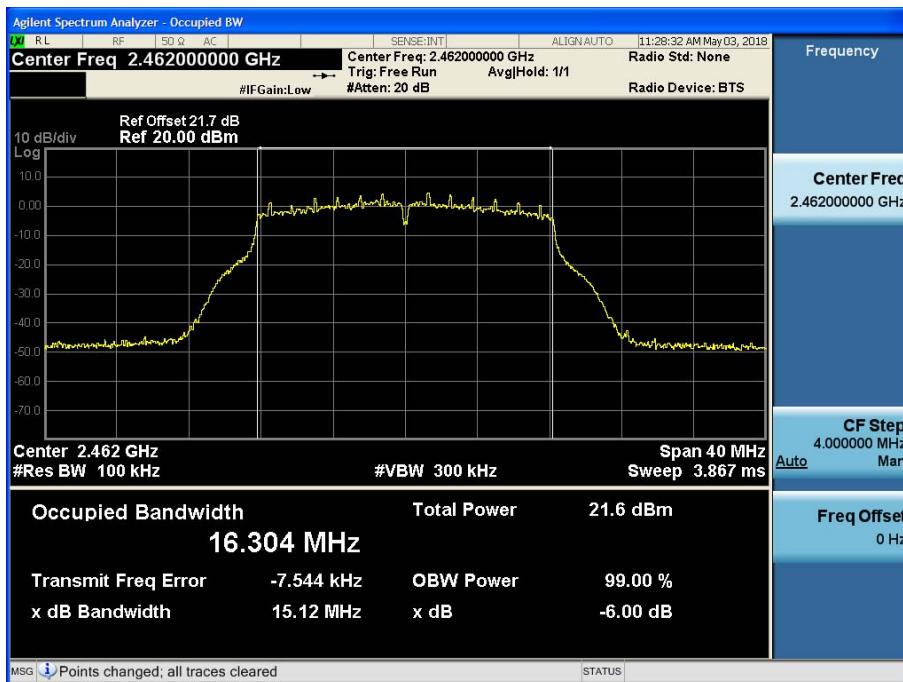


▣ RESULT PLOTS

**6dB Bandwidth plot (802.11b-CH 1)**

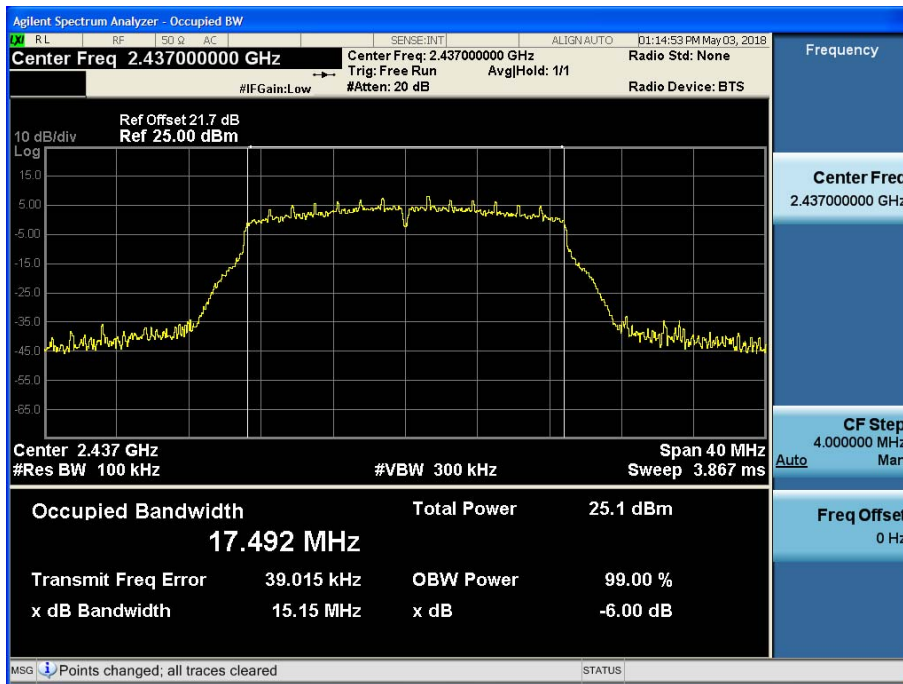


**6dB Bandwidth plot (802.11g-CH 11)**

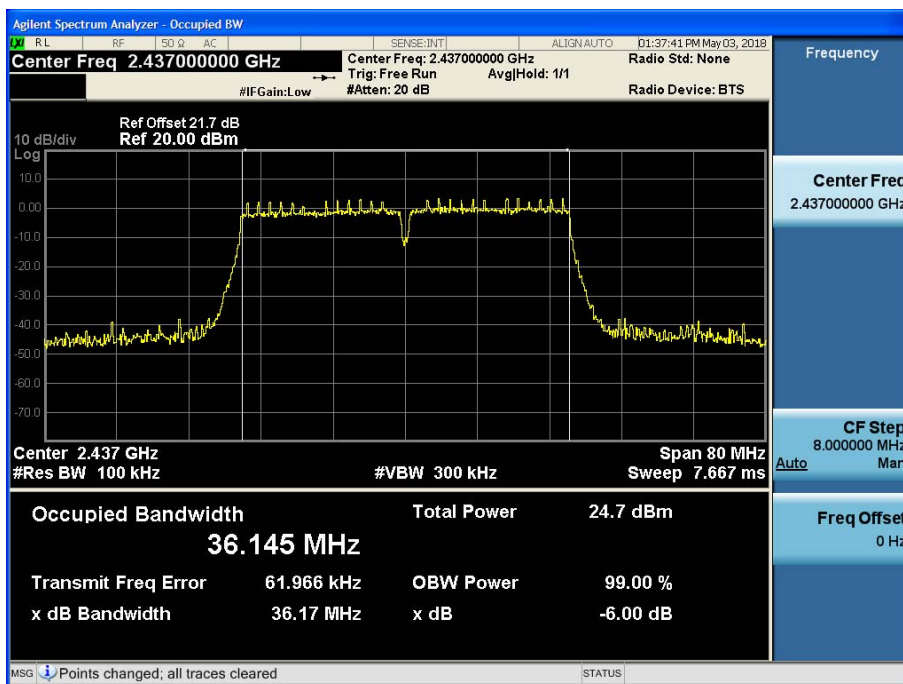




**6dB Bandwidth plot (802.11n\_HT20-CH 6)**



**6dB Bandwidth plot (802.11n\_HT40-CH 6)**



### 9.3 OUTPUT POWER (802.11b/g/n)

#### Test Requirements and limit, §15.247(b)(3)

The transmitter output is connected to the input of an RF power sensor. Measurement is made using a broadband power meter capable of making peak and average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

**The maximum permissible conducted output power is 1 Watt.**

#### ■ Limit(CDD)

Maximum Conducted Output Power

Operating Mode	Band	Mode	Ant. Port	Ant. Gain (dBi)	Limit (dBm)
SISO	2.4 GHz	802.11b/g/n	0	5.49 dBi	30.00
			1		
			2		
			3		
MIMO(4 TX)		802.11g/n	0 & 1 & 2 & 3		

Note : 1. If all antennas have the same gain,  $G_{ANT}$

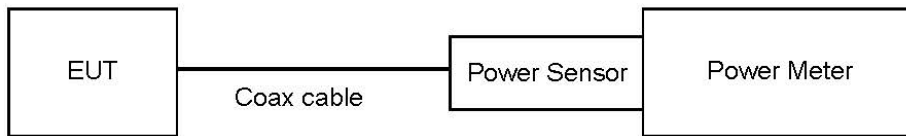
Directional gain =  $G_{ANT}$  + Array Gain, where Array Gain is as follows.

For power measurements on IEEE 802.11 devices

Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;

(according to KDB662911 D01 v02r01)

2. Limit is calculated by antenna gain.

**■ TEST CONFIGURATION(20 MHz BW)****■ TEST PROCEDURE(20 MHz BW)**

- Peak Power ( Procedure 9.1.3 in KDB 558074 v04)
  1. Measure the peak power of the transmitter.
- Average Power ( Procedure 9.2.3.1 in KDB 558074 v04)
  1. Measure the duty cycle.
  2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
  3. Add  $10 \log (1/x)$ , where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

**Note :**

1. We apply to the offset in the 2.4 GHz range that was rounded off to the closest 10dB or 20 dB.
2. We apply the offset of 2.4 GHz band is 21.7 dB  
(Actual value of loss for the attenuator and cable combination)
3. MIMO output power results are calculated by each antenna output power on MIMO operating mode.  
So, in case of MIMO output power, we attached only MIMO output power except each antenna power result.

**■ Sample Calculation**

ANT.0

Output Power = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

Ex) Output Power = 10 dBm + 20 dB + 0.61 dB + 0.2 dB = 31.0 dBm

ANT.1

Output Power = Reading Value + ATT loss + Cable loss(2 ea) + Duty Cycle Factor

Ex) Output Power = 10 dBm + 20 dB + 1.28 dB + 0.2 dB = 31.7 dBm

■ TEST RESULTS-Peak

■ TEST RESULTS\_Ant.0

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	15.53	30
		2 Mbps	15.87	30
		5.5 Mbps	17.21	30
		11 Mbps	18.94	30
2437	6	1 Mbps	16.67	30
		2 Mbps	16.61	30
		5.5 Mbps	18.17	30
		11 Mbps	18.15	30
2462	11	1 Mbps	16.80	30
		2 Mbps	17.08	30
		5.5 Mbps	18.43	30
		11 Mbps	20.36	30

■ TEST RESULTS\_Ant.1

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	14.96	30
		2 Mbps	15.48	30
		5.5 Mbps	17.16	30
		11 Mbps	18.96	30
2437	6	1 Mbps	16.37	30
		2 Mbps	16.72	30
		5.5 Mbps	18.04	30
		11 Mbps	19.88	30
2462	11	1 Mbps	16.24	30
		2 Mbps	16.54	30
		5.5 Mbps	18.15	30
		11 Mbps	19.82	30

■ TEST RESULTS\_Ant.2

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate	Measured	Limit
Frequency[MHz]	Channel No.	[Mbps]	Power[dBm]	[dBm]
2412	1	1 Mbps	15.33	30
		2 Mbps	15.76	30
		5.5 Mbps	17.18	30
		11 Mbps	18.89	30
2437	6	1 Mbps	16.41	30
		2 Mbps	16.50	30
		5.5 Mbps	17.99	30
		11 Mbps	19.94	30
2462	11	1 Mbps	16.63	30
		2 Mbps	16.97	30
		5.5 Mbps	18.43	30
		11 Mbps	20.28	30

■ TEST RESULTS\_Ant.3

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	15.74	30
		2 Mbps	16.06	30
		5.5 Mbps	17.63	30
		11 Mbps	19.38	30
2437	6	1 Mbps	16.66	30
		2 Mbps	17.19	30
		5.5 Mbps	18.62	30
		11 Mbps	20.70	30
2462	11	1 Mbps	17.05	30
		2 Mbps	17.34	30
		5.5 Mbps	18.79	30
		11 Mbps	20.56	30

■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3

Conducted Output Power Measurements (802.11b MIMO Mode)

802.11b Mode		Rate [Mbps]	Sum Power of Ant.0 & 1 & 2 & 3 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	21.42	30
		2 Mbps	21.82	30
		5.5 Mbps	23.32	30
		11 Mbps	25.07	30
2437	6	1 Mbps	22.55	30
		2 Mbps	22.78	30
		5.5 Mbps	24.23	30
		11 Mbps	25.74	30
2462	11	1 Mbps	22.71	30
		2 Mbps	23.01	30
		5.5 Mbps	24.47	30
		11 Mbps	26.28	30



■ TEST RESULTS\_Ant.0

Conducted Output Power Measurements (802.11g SISO Mode)

802.11g Mode		Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	18.84	30
		9 Mbps	18.93	30
		12 Mbps	18.84	30
		18 Mbps	19.07	30
		24 Mbps	19.32	30
		36 Mbps	19.33	30
		48 Mbps	19.52	30
		54 Mbps	19.38	30
2437	6	6 Mbps	23.59	30
		9 Mbps	23.58	30
		12 Mbps	23.45	30
		18 Mbps	23.29	30
		24 Mbps	23.65	30
		36 Mbps	23.60	30
		48 Mbps	23.81	30
		54 Mbps	23.58	30
2462	11	6 Mbps	21.79	30
		9 Mbps	21.63	30
		12 Mbps	21.56	30
		18 Mbps	21.49	30
		24 Mbps	21.71	30
		36 Mbps	21.95	30
		48 Mbps	22.31	30
		54 Mbps	22.15	30

■ TEST RESULTS\_Ant.1

Conducted Output Power Measurements (802.11g SISO Mode)

802.11g Mode		Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	18.69	30
		9 Mbps	18.83	30
		12 Mbps	18.69	30
		18 Mbps	18.91	30
		24 Mbps	18.90	30
		36 Mbps	19.09	30
		48 Mbps	19.29	30
		54 Mbps	19.03	30
2437	6	6 Mbps	23.12	30
		9 Mbps	23.12	30
		12 Mbps	22.91	30
		18 Mbps	23.08	30
		24 Mbps	23.28	30
		36 Mbps	23.38	30
		48 Mbps	23.45	30
		54 Mbps	23.34	30
2462	11	6 Mbps	21.32	30
		9 Mbps	21.33	30
		12 Mbps	21.17	30
		18 Mbps	21.30	30
		24 Mbps	21.41	30
		36 Mbps	21.72	30
		48 Mbps	21.62	30
		54 Mbps	21.54	30

■ TEST RESULTS\_Ant.2

Conducted Output Power Measurements (802.11g SISO Mode)

802.11g Mode		Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	18.93	30
		9 Mbps	19.01	30
		12 Mbps	18.75	30
		18 Mbps	19.01	30
		24 Mbps	18.98	30
		36 Mbps	19.35	30
		48 Mbps	19.44	30
		54 Mbps	19.27	30
2437	6	6 Mbps	23.20	30
		9 Mbps	23.45	30
		12 Mbps	23.25	30
		18 Mbps	23.43	30
		24 Mbps	23.29	30
		36 Mbps	23.44	30
		48 Mbps	23.80	30
		54 Mbps	23.62	30
2462	11	6 Mbps	21.64	30
		9 Mbps	22.04	30
		12 Mbps	21.32	30
		18 Mbps	21.61	30
		24 Mbps	21.47	30
		36 Mbps	21.84	30
		48 Mbps	21.94	30
		54 Mbps	21.74	30

■ TEST RESULTS\_Ant.3

Conducted Output Power Measurements (802.11g SISO Mode)

802.11g Mode		Rate [Mbps]	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	19.60	30
		9 Mbps	19.55	30
		12 Mbps	19.56	30
		18 Mbps	19.82	30
		24 Mbps	19.68	30
		36 Mbps	19.85	30
		48 Mbps	19.94	30
		54 Mbps	19.68	30
2437	6	6 Mbps	23.59	30
		9 Mbps	23.75	30
		12 Mbps	23.68	30
		18 Mbps	23.65	30
		24 Mbps	24.02	30
		36 Mbps	23.99	30
		48 Mbps	23.92	30
		54 Mbps	24.19	30
2462	11	6 Mbps	22.14	30
		9 Mbps	21.96	30
		12 Mbps	21.95	30
		18 Mbps	22.09	30
		24 Mbps	22.23	30
		36 Mbps	22.46	30
		48 Mbps	22.49	30
		54 Mbps	22.30	30

■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3

Conducted Output Power Measurements (802.11g MIMO Mode)

802.11g Mode		Rate [Mbps]	Sum Power of Ant.0 & 1 & 2 & 3 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	25.04	30
		9 Mbps	25.11	30
		12 Mbps	24.99	30
		18 Mbps	25.23	30
		24 Mbps	25.25	30
		36 Mbps	25.43	30
		48 Mbps	25.57	30
		54 Mbps	25.36	30
2437	6	6 Mbps	29.40	30
		9 Mbps	29.50	30
		12 Mbps	29.35	30
		18 Mbps	29.39	30
		24 Mbps	29.59	30
		36 Mbps	29.63	30
		48 Mbps	29.77	30
		54 Mbps	29.71	30
2462	11	6 Mbps	27.75	30
		9 Mbps	27.77	30
		12 Mbps	27.53	30
		18 Mbps	27.65	30
		24 Mbps	27.73	30
		36 Mbps	28.02	30
		48 Mbps	28.12	30
		54 Mbps	27.96	30

■ TEST RESULTS\_Ant.0

Conducted Output Power Measurements (802.11n\_HT20 SISO Mode)

802.11n Mode		MCS Index	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	0	17.80	30
		1	18.25	30
		2	18.41	30
		3	18.70	30
		4	18.75	30
		5	18.65	30
		6	19.03	30
		7	18.95	30
2437	6	0	23.14	30
		1	23.23	30
		2	23.30	30
		3	22.66	30
		4	23.90	30
		5	23.87	30
		6	23.80	30
		7	23.95	30
2462	11	0	21.53	30
		1	21.57	30
		2	21.46	30
		3	21.91	30
		4	22.11	30
		5	22.16	30
		6	22.16	30
		7	22.01	30

■ TEST RESULTS\_Ant.1

Conducted Output Power Measurements (802.11n\_HT20 SISO Mode)

802.11n Mode		MCS Index	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	0	17.44	30
		1	17.84	30
		2	18.01	30
		3	18.45	30
		4	18.26	30
		5	18.42	30
		6	18.34	30
		7	18.62	30
2437	6	0	23.18	30
		1	23.07	30
		2	23.09	30
		3	23.50	30
		4	23.51	30
		5	23.59	30
		6	23.63	30
		7	23.67	30
2462	11	0	20.72	30
		1	20.97	30
		2	20.93	30
		3	21.46	30
		4	21.47	30
		5	21.46	30
		6	21.53	30
		7	21.57	30

■ TEST RESULTS\_Ant.2

Conducted Output Power Measurements (802.11n\_HT20 SISO Mode)

802.11n Mode		MCS Index	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	0	17.45	30
		1	18.12	30
		2	18.07	30
		3	18.22	30
		4	18.54	30
		5	18.62	30
		6	18.67	30
		7	18.59	30
2437	6	0	22.89	30
		1	22.93	30
		2	23.14	30
		3	23.62	30
		4	23.58	30
		5	23.68	30
		6	23.74	30
		7	23.61	30
2462	11	0	20.89	30
		1	21.00	30
		2	21.08	30
		3	21.40	30
		4	21.53	30
		5	21.68	30
		6	21.67	30
		7	21.62	30



■ TEST RESULTS\_Ant.3

Conducted Output Power Measurements (802.11n\_HT20 SISO Mode)

802.11n Mode		MCS Index	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2412	1	0	18.26	30
		1	18.58	30
		2	18.66	30
		3	19.12	30
		4	19.17	30
		5	19.40	30
		6	19.29	30
		7	19.48	30
2437	6	0	23.46	30
		1	23.43	30
		2	23.51	30
		3	23.96	30
		4	23.97	30
		5	24.09	30
		6	24.12	30
		7	24.13	30
2462	11	0	21.47	30
		1	21.61	30
		2	21.48	30
		3	22.07	30
		4	22.11	30
		5	22.14	30
		6	22.08	30
		7	22.14	30

■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3

Conducted Output Power Measurements (802.11n\_HT20 MIMO Mode)

802.11n Mode		MCS Index	Sum Power of Ant.0 & 1 & 2 & 3 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	0	23.76	30
		1	24.22	30
		2	24.31	30
		3	24.65	30
		4	24.71	30
		5	24.80	30
		6	24.86	30
		7	24.94	30
2437	6	0	29.19	30
		1	29.19	30
		2	29.28	30
		3	29.47	30
		4	29.76	30
		5	29.83	30
		6	29.85	30
		7	29.86	30
2462	11	0	27.18	30
		1	27.31	30
		2	27.26	30
		3	27.74	30
		4	27.83	30
		5	27.89	30
		6	27.88	30
		7	27.86	30

■ TEST RESULTS\_Ant.0

Conducted Output Power Measurements (802.11n\_HT40 SISO Mode)

802.11n Mode		MCS Index	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2422	3	0	18.07	30
		1	18.41	30
		2	18.27	30
		3	18.78	30
		4	18.74	30
		5	19.03	30
		6	18.94	30
		7	19.04	30
2437	6	0	22.31	30
		1	22.51	30
		2	22.50	30
		3	22.94	30
		4	22.88	30
		5	23.08	30
		6	23.07	30
		7	22.98	30
2452	9	0	21.21	30
		1	21.44	30
		2	21.44	30
		3	21.73	30
		4	21.83	30
		5	21.86	30
		6	22.10	30
		7	22.04	30

■ TEST RESULTS\_Ant.1

Conducted Output Power Measurements (802.11n\_HT40 SISO Mode)

802.11n Mode		MCS Index	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2422	3	0	17.53	30
		1	17.97	30
		2	17.78	30
		3	18.29	30
		4	18.39	30
		5	18.47	30
		6	18.55	30
		7	18.60	30
2437	6	0	22.09	30
		1	21.97	30
		2	21.96	30
		3	22.50	30
		4	22.53	30
		5	22.60	30
		6	22.44	30
		7	22.48	30
2452	9	0	20.89	30
		1	21.20	30
		2	21.12	30
		3	21.65	30
		4	21.71	30
		5	21.84	30
		6	21.79	30
		7	21.80	30

■ TEST RESULTS\_Ant.2

Conducted Output Power Measurements (802.11n\_HT40 SISO Mode)

802.11n Mode		MCS Index	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2422	3	0	17.86	30
		1	18.16	30
		2	18.24	30
		3	18.66	30
		4	18.81	30
		5	18.85	30
		6	18.85	30
		7	18.95	30
2437	6	0	22.13	30
		1	22.21	30
		2	22.31	30
		3	22.80	30
		4	22.70	30
		5	22.94	30
		6	22.96	30
		7	22.94	30
2452	9	0	21.09	30
		1	21.30	30
		2	21.38	30
		3	21.71	30
		4	21.89	30
		5	21.86	30
		6	21.92	30
		7	21.96	30

■ TEST RESULTS\_Ant.3

Conducted Output Power Measurements (802.11n\_HT40 SISO Mode)

802.11n Mode		MCS Index	Measured Power[dBm]	Limit [dBm]
Frequency[MHz]	Channel No.			
2422	3	0	18.45	30
		1	18.71	30
		2	19.20	30
		3	19.13	30
		4	19.48	30
		5	19.84	30
		6	19.74	30
		7	19.72	30
2437	6	0	22.76	30
		1	22.81	30
		2	23.02	30
		3	23.18	30
		4	23.32	30
		5	23.36	30
		6	23.57	30
		7	23.54	30
2452	9	0	21.66	30
		1	22.05	30
		2	21.83	30
		3	22.46	30
		4	22.30	30
		5	22.54	30
		6	22.48	30
		7	22.67	30

■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3

Conducted Output Power Measurements (802.11n\_HT40 MIMO Mode)

802.11n Mode		MCS Index	Sum Power of Ant.0 & 1 & 2 & 3 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2422	3	0	24.00	30
		1	24.34	30
		2	24.41	30
		3	24.74	30
		4	24.88	30
		5	25.08	30
		6	25.05	30
		7	25.11	30
2437	6	0	28.35	30
		1	28.40	30
		2	28.48	30
		3	28.88	30
		4	28.88	30
		5	29.02	30
		6	29.04	30
		7	29.01	30
2452	9	0	27.24	30
		1	27.52	30
		2	27.47	30
		3	27.91	30
		4	27.96	30
		5	28.05	30
		6	28.10	30
		7	28.14	30

■ TEST RESULTS-Average

■ TEST RESULTS\_Ant.0

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	1 Mbps	12.47	0.225	12.69	30
		2 Mbps	12.58	0.220	12.80	30
		5.5 Mbps	12.45	0.213	12.66	30
		11 Mbps	12.36	0.205	12.57	30
2437	6	1 Mbps	13.47	0.225	13.70	30
		2 Mbps	13.50	0.220	13.72	30
		5.5 Mbps	13.43	0.213	13.65	30
		11 Mbps	13.42	0.205	13.63	30
2462	11	1 Mbps	13.59	0.225	13.81	30
		2 Mbps	13.66	0.220	13.88	30
		5.5 Mbps	13.68	0.213	13.89	30
		11 Mbps	13.74	0.205	13.94	30



■ TEST RESULTS\_Ant.1

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	1 Mbps	11.94	0.225	12.17	30
		2 Mbps	12.29	0.220	12.51	30
		5.5 Mbps	12.22	0.213	12.43	30
		11 Mbps	12.29	0.205	12.49	30
2437	6	1 Mbps	12.98	0.225	13.20	30
		2 Mbps	13.21	0.220	13.43	30
		5.5 Mbps	13.31	0.213	13.52	30
		11 Mbps	13.23	0.205	13.43	30
2462	11	1 Mbps	13.31	0.225	13.54	30
		2 Mbps	13.32	0.220	13.54	30
		5.5 Mbps	13.56	0.213	13.77	30
		11 Mbps	13.41	0.205	13.61	30

■ TEST RESULTS\_Ant.2

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	1 Mbps	12.31	0.225	12.53	30
		2 Mbps	12.46	0.220	12.68	30
		5.5 Mbps	12.34	0.213	12.55	30
		11 Mbps	12.35	0.205	12.56	30
2437	6	1 Mbps	13.36	0.225	13.58	30
		2 Mbps	13.34	0.220	13.56	30
		5.5 Mbps	13.36	0.213	13.57	30
		11 Mbps	13.42	0.205	13.63	30
2462	11	1 Mbps	13.45	0.225	13.67	30
		2 Mbps	13.69	0.220	13.91	30
		5.5 Mbps	13.70	0.213	13.91	30
		11 Mbps	13.72	0.205	13.92	30

■ TEST RESULTS\_Ant.3

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	1 Mbps	12.85	0.225	13.08	30
		2 Mbps	12.94	0.220	13.16	30
		5.5 Mbps	12.95	0.213	13.16	30
		11 Mbps	13.12	0.205	13.33	30
2437	6	1 Mbps	13.72	0.225	13.95	30
		2 Mbps	14.02	0.220	14.24	30
		5.5 Mbps	14.03	0.213	14.24	30
		11 Mbps	13.96	0.205	14.16	30
2462	11	1 Mbps	14.03	0.225	14.26	30
		2 Mbps	14.06	0.220	14.28	30
		5.5 Mbps	14.06	0.213	14.27	30
		11 Mbps	14.02	0.205	14.23	30

■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3

Conducted Output Power Measurements (802.11b MIMO Mode)

802.11b Mode		Rate (Mbps)	Sum Power of Ant.0 & 1 & 2 & 3 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	18.64	30
		2 Mbps	18.81	30
		5.5 Mbps	18.73	30
		11 Mbps	18.76	30
2437	6	1 Mbps	19.63	30
		2 Mbps	19.76	30
		5.5 Mbps	19.77	30
		11 Mbps	19.74	30
2462	11	1 Mbps	19.84	30
		2 Mbps	19.93	30
		5.5 Mbps	19.98	30
		11 Mbps	19.95	30

■ TEST RESULTS\_Ant.0

Conducted Output Power Measurements (802.11g SISO Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	6 Mbps	10.72	0.222	10.94	30
		9 Mbps	10.99	0.220	11.21	30
		12 Mbps	11.00	0.204	11.21	30
		18 Mbps	11.18	0.209	11.39	30
		24 Mbps	11.18	0.212	11.40	30
		36 Mbps	11.09	0.261	11.35	30
		48 Mbps	11.17	0.350	11.52	30
		54 Mbps	11.13	0.397	11.53	30
2437	6	6 Mbps	17.19	0.222	17.41	30
		9 Mbps	17.23	0.220	17.45	30
		12 Mbps	17.35	0.204	17.55	30
		18 Mbps	17.21	0.209	17.42	30
		24 Mbps	17.18	0.212	17.39	30
		36 Mbps	17.32	0.261	17.58	30
		48 Mbps	17.22	0.350	17.57	30
		54 Mbps	17.19	0.397	17.59	30
2462	11	6 Mbps	13.72	0.222	13.95	30
		9 Mbps	13.57	0.220	13.79	30
		12 Mbps	13.69	0.204	13.89	30
		18 Mbps	13.58	0.209	13.79	30
		24 Mbps	13.57	0.212	13.78	30
		36 Mbps	13.67	0.261	13.93	30
		48 Mbps	13.74	0.350	14.09	30
		54 Mbps	13.67	0.397	14.06	30

■ TEST RESULTS\_Ant.1

Conducted Output Power Measurements (802.11g SISO Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	6 Mbps	10.59	0.222	10.81	30
		9 Mbps	10.58	0.220	10.80	30
		12 Mbps	10.61	0.204	10.81	30
		18 Mbps	10.75	0.209	10.96	30
		24 Mbps	10.62	0.212	10.83	30
		36 Mbps	10.70	0.261	10.96	30
		48 Mbps	10.94	0.350	11.29	30
		54 Mbps	10.77	0.397	11.16	30
2437	6	6 Mbps	17.11	0.222	17.33	30
		9 Mbps	17.19	0.220	17.41	30
		12 Mbps	17.10	0.204	17.31	30
		18 Mbps	17.14	0.209	17.35	30
		24 Mbps	17.17	0.212	17.38	30
		36 Mbps	17.15	0.261	17.41	30
		48 Mbps	17.09	0.350	17.44	30
		54 Mbps	17.10	0.397	17.50	30
2462	11	6 Mbps	13.30	0.222	13.52	30
		9 Mbps	13.24	0.220	13.46	30
		12 Mbps	13.29	0.204	13.49	30
		18 Mbps	13.28	0.209	13.48	30
		24 Mbps	13.25	0.212	13.47	30
		36 Mbps	13.37	0.261	13.63	30
		48 Mbps	13.22	0.350	13.57	30
		54 Mbps	13.13	0.397	13.52	30

■ TEST RESULTS\_Ant.2

Conducted Output Power Measurements (802.11g SISO Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	6 Mbps	10.89	0.222	11.11	30
		9 Mbps	10.94	0.220	11.16	30
		12 Mbps	10.83	0.204	11.03	30
		18 Mbps	10.97	0.209	11.18	30
		24 Mbps	10.83	0.212	11.04	30
		36 Mbps	10.95	0.261	11.21	30
		48 Mbps	11.07	0.350	11.42	30
		54 Mbps	10.94	0.397	11.33	30
2437	6	6 Mbps	17.02	0.222	17.25	30
		9 Mbps	17.28	0.220	17.50	30
		12 Mbps	17.19	0.204	17.39	30
		18 Mbps	17.27	0.209	17.47	30
		24 Mbps	17.25	0.212	17.46	30
		36 Mbps	17.23	0.261	17.49	30
		48 Mbps	17.28	0.350	17.63	30
		54 Mbps	17.19	0.397	17.59	30
2462	11	6 Mbps	13.55	0.222	13.77	30
		9 Mbps	13.43	0.220	13.65	30
		12 Mbps	13.43	0.204	13.64	30
		18 Mbps	13.61	0.209	13.82	30
		24 Mbps	13.37	0.212	13.58	30
		36 Mbps	13.56	0.261	13.83	30
		48 Mbps	13.61	0.350	13.96	30
		54 Mbps	13.46	0.397	13.85	30

■ TEST RESULTS\_Ant.3

Conducted Output Power Measurements (802.11g SISO Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	6 Mbps	11.45	0.222	11.67	30
		9 Mbps	11.39	0.220	11.61	30
		12 Mbps	11.58	0.204	11.78	30
		18 Mbps	11.59	0.209	11.80	30
		24 Mbps	11.52	0.212	11.73	30
		36 Mbps	11.55	0.261	11.81	30
		48 Mbps	11.61	0.350	11.96	30
		54 Mbps	11.41	0.397	11.80	30
2437	6	6 Mbps	17.61	0.222	17.83	30
		9 Mbps	17.81	0.220	18.03	30
		12 Mbps	17.80	0.204	18.00	30
		18 Mbps	17.79	0.209	18.00	30
		24 Mbps	17.73	0.212	17.95	30
		36 Mbps	17.72	0.261	17.98	30
		48 Mbps	17.77	0.350	18.12	30
		54 Mbps	17.70	0.397	18.10	30
2462	11	6 Mbps	14.05	0.222	14.27	30
		9 Mbps	13.95	0.220	14.17	30
		12 Mbps	14.03	0.204	14.24	30
		18 Mbps	14.08	0.209	14.29	30
		24 Mbps	14.08	0.212	14.29	30
		36 Mbps	14.03	0.261	14.29	30
		48 Mbps	14.10	0.350	14.45	30
		54 Mbps	13.96	0.397	14.36	30



■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3

Conducted Output Power Measurements (802.11g MIMO Mode)

802.11g Mode		Rate (Mbps)	Sum Power of Ant.0 & 1 & 2 & 3 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	17.16	30
		9 Mbps	17.22	30
		12 Mbps	17.24	30
		18 Mbps	17.36	30
		24 Mbps	17.28	30
		36 Mbps	17.36	30
		48 Mbps	17.57	30
		54 Mbps	17.48	30
2437	6	6 Mbps	23.48	30
		9 Mbps	23.62	30
		12 Mbps	23.59	30
		18 Mbps	23.58	30
		24 Mbps	23.57	30
		36 Mbps	23.64	30
		48 Mbps	23.71	30
		54 Mbps	23.72	30
2462	11	6 Mbps	19.90	30
		9 Mbps	19.79	30
		12 Mbps	19.84	30
		18 Mbps	19.87	30
		24 Mbps	19.81	30
		36 Mbps	19.94	30
		48 Mbps	20.04	30
		54 Mbps	19.97	30

■ TEST RESULTS\_Ant.0

Conducted Output Power Measurements (802.11n\_HT20 SISO Mode)

802.11n Mode		MCS Index	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	0	9.83	0.215	10.05	30
		1	10.08	0.212	10.29	30
		2	10.08	0.215	10.29	30
		3	10.13	0.205	10.34	30
		4	10.02	0.277	10.29	30
		5	9.83	0.367	10.20	30
		6	10.06	0.391	10.45	30
		7	10.05	0.424	10.48	30
2437	6	0	16.96	0.215	17.17	30
		1	17.18	0.212	17.39	30
		2	17.06	0.215	17.27	30
		3	17.31	0.205	17.51	30
		4	17.10	0.277	17.37	30
		5	17.17	0.367	17.53	30
		6	17.15	0.391	17.54	30
		7	17.06	0.424	17.48	30
2462	11	0	14.17	0.215	14.38	30
		1	14.31	0.212	14.52	30
		2	14.25	0.215	14.46	30
		3	14.40	0.205	14.60	30
		4	14.23	0.277	14.50	30
		5	14.29	0.367	14.66	30
		6	14.36	0.391	14.75	30
		7	14.27	0.424	14.70	30

■ TEST RESULTS\_Ant.1

Conducted Output Power Measurements (802.11n\_HT20 SISO Mode)

802.11n Mode		MCS Index	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	0	9.45	0.215	9.66	30
		1	9.65	0.212	9.86	30
		2	9.79	0.215	10.01	30
		3	9.83	0.205	10.03	30
		4	9.62	0.277	9.89	30
		5	9.59	0.367	9.95	30
		6	9.54	0.391	9.93	30
		7	9.59	0.424	10.01	30
2437	6	0	16.84	0.215	17.05	30
		1	16.98	0.212	17.19	30
		2	17.03	0.215	17.25	30
		3	17.08	0.205	17.29	30
		4	17.00	0.277	17.28	30
		5	16.90	0.367	17.27	30
		6	16.96	0.391	17.35	30
		7	16.85	0.424	17.28	30
2462	11	0	13.99	0.215	14.21	30
		1	14.03	0.212	14.24	30
		2	14.00	0.215	14.21	30
		3	14.02	0.205	14.22	30
		4	14.17	0.277	14.45	30
		5	13.99	0.367	14.36	30
		6	13.95	0.391	14.34	30
		7	13.97	0.424	14.40	30

■ TEST RESULTS\_Ant.2

Conducted Output Power Measurements (802.11n\_HT20 SISO Mode)

802.11n Mode		MCS Index	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	0	9.43	0.215	9.65	30
		1	9.76	0.212	9.97	30
		2	9.81	0.215	10.02	30
		3	9.68	0.205	9.89	30
		4	9.89	0.277	10.17	30
		5	9.70	0.367	10.07	30
		6	9.68	0.391	10.07	30
		7	9.85	0.424	10.28	30
2437	6	0	17.05	0.215	17.26	30
		1	17.07	0.212	17.28	30
		2	17.18	0.215	17.39	30
		3	17.04	0.205	17.25	30
		4	17.04	0.277	17.32	30
		5	17.02	0.367	17.39	30
		6	16.96	0.391	17.35	30
		7	17.07	0.424	17.50	30
2462	11	0	14.25	0.215	14.47	30
		1	14.16	0.212	14.38	30
		2	14.18	0.215	14.40	30
		3	14.24	0.205	14.44	30
		4	14.18	0.277	14.46	30
		5	14.17	0.367	14.54	30
		6	14.13	0.391	14.52	30
		7	14.21	0.424	14.63	30

■ TEST RESULTS\_Ant.3

Conducted Output Power Measurements (802.11n\_HT20 SISO Mode)

802.11n Mode		MCS Index	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	0	10.19	0.215	10.41	30
		1	10.49	0.212	10.70	30
		2	10.48	0.215	10.69	30
		3	10.49	0.205	10.70	30
		4	10.48	0.277	10.75	30
		5	10.58	0.367	10.95	30
		6	10.52	0.391	10.91	30
		7	10.60	0.424	11.02	30
2437	6	0	17.45	0.215	17.67	30
		1	17.61	0.212	17.82	30
		2	17.60	0.215	17.81	30
		3	17.67	0.205	17.88	30
		4	17.56	0.277	17.83	30
		5	17.62	0.367	17.99	30
		6	17.61	0.391	18.01	30
		7	17.65	0.424	18.07	30
2462	11	0	17.61	0.215	17.83	30
		1	17.76	0.212	17.97	30
		2	17.78	0.215	18.00	30
		3	17.78	0.205	17.98	30
		4	17.81	0.277	18.09	30
		5	17.78	0.367	18.15	30
		6	17.76	0.391	18.15	30
		7	17.70	0.424	18.12	30

■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3

Conducted Output Power Measurements (802.11n\_HT20 MIMO Mode)

802.11n Mode		MCS Index	Sum Power of Ant.0 & 1 & 2 & 3 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	0	15.97	30
		1	16.23	30
		2	16.28	30
		3	16.27	30
		4	16.30	30
		5	16.32	30
		6	16.37	30
		7	16.48	30
2437	6	0	23.31	30
		1	23.44	30
		2	23.45	30
		3	23.51	30
		4	23.47	30
		5	23.57	30
		6	23.59	30
		7	23.61	30
2462	11	0	21.38	30
		1	21.45	30
		2	21.44	30
		3	21.48	30
		4	21.55	30
		5	21.60	30
		6	21.61	30
		7	21.63	30

■ TEST RESULTS\_Ant.0

Conducted Output Power Measurements (802.11n\_HT40 SISO Mode)

802.11n Mode		MCS Index	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2422	3	0	9.46	0.433	9.89	30
		1	9.74	0.400	10.14	30
		2	9.67	0.402	10.07	30
		3	9.69	0.368	10.05	30
		4	9.71	0.508	10.22	30
		5	9.61	0.621	10.23	30
		6	9.57	0.669	10.24	30
		7	9.55	0.732	10.28	30
2437	6	0	15.85	0.433	16.28	30
		1	15.90	0.400	16.30	30
		2	15.84	0.402	16.24	30
		3	15.88	0.368	16.25	30
		4	15.87	0.508	16.38	30
		5	15.79	0.621	16.41	30
		6	15.73	0.669	16.40	30
		7	15.72	0.732	16.45	30
2452	9	0	12.62	0.433	13.05	30
		1	12.78	0.400	13.18	30
		2	12.81	0.402	13.22	30
		3	12.74	0.368	13.11	30
		4	12.74	0.508	13.24	30
		5	12.57	0.621	13.19	30
		6	12.69	0.669	13.36	30
		7	12.61	0.732	13.34	30

■ TEST RESULTS\_Ant.1

Conducted Output Power Measurements (802.11n\_HT40 SISO Mode)

802.11n Mode		MCS Index	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2422	3	0	9.04	0.433	9.47	30
		1	9.28	0.400	9.68	30
		2	9.12	0.402	9.52	30
		3	9.13	0.368	9.50	30
		4	9.21	0.508	9.72	30
		5	9.14	0.621	9.76	30
		6	9.14	0.669	9.81	30
		7	9.22	0.732	9.95	30
2437	6	0	15.34	0.433	15.78	30
		1	15.61	0.400	16.01	30
		2	15.53	0.402	15.93	30
		3	15.58	0.368	15.95	30
		4	15.47	0.508	15.98	30
		5	15.40	0.621	16.02	30
		6	15.39	0.669	16.06	30
		7	15.33	0.732	16.06	30
2452	9	0	12.39	0.433	12.83	30
		1	12.54	0.400	12.94	30
		2	12.53	0.402	12.93	30
		3	12.57	0.368	12.94	30
		4	12.60	0.508	13.11	30
		5	12.46	0.621	13.08	30
		6	12.41	0.669	13.08	30
		7	12.40	0.732	13.13	30



■ TEST RESULTS\_Ant.2

Conducted Output Power Measurements (802.11n\_HT40 SISO Mode)

802.11n Mode		MCS Index	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2422	3	0	9.35	0.433	9.78	30
		1	9.51	0.400	9.91	30
		2	9.58	0.402	9.98	30
		3	9.57	0.368	9.94	30
		4	9.52	0.508	10.03	30
		5	9.43	0.621	10.05	30
		6	9.41	0.669	10.08	30
		7	9.46	0.732	10.20	30
2437	6	0	15.76	0.433	16.20	30
		1	15.78	0.400	16.18	30
		2	15.93	0.402	16.33	30
		3	15.87	0.368	16.24	30
		4	15.76	0.508	16.27	30
		5	15.68	0.621	16.30	30
		6	15.64	0.669	16.31	30
		7	15.72	0.732	16.45	30
2452	9	0	12.56	0.433	12.99	30
		1	12.66	0.400	13.06	30
		2	12.75	0.402	13.15	30
		3	12.67	0.368	13.03	30
		4	12.74	0.508	13.24	30
		5	12.52	0.621	13.14	30
		6	12.57	0.669	13.24	30
		7	12.62	0.732	13.35	30

■ TEST RESULTS\_Ant.3

Conducted Output Power Measurements (802.11n\_HT40 SISO Mode)

802.11n Mode		MCS Index	Measured Power(dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
2422	3	0	9.89	0.433	10.32	30
		1	10.14	0.400	10.54	30
		2	10.19	0.402	10.59	30
		3	10.11	0.368	10.48	30
		4	10.12	0.508	10.62	30
		5	10.24	0.621	10.86	30
		6	10.20	0.669	10.87	30
		7	9.97	0.732	10.70	30
2437	6	0	16.22	0.433	16.65	30
		1	16.37	0.400	16.77	30
		2	16.26	0.402	16.66	30
		3	16.31	0.368	16.68	30
		4	16.26	0.508	16.77	30
		5	16.19	0.621	16.81	30
		6	16.14	0.669	16.81	30
		7	16.11	0.732	16.84	30
2452	9	0	13.12	0.433	13.55	30
		1	13.25	0.400	13.65	30
		2	13.25	0.402	13.65	30
		3	13.32	0.368	13.69	30
		4	13.22	0.508	13.73	30
		5	13.17	0.621	13.79	30
		6	13.11	0.669	13.78	30
		7	13.12	0.732	13.85	30

■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3

Conducted Output Power Measurements (802.11n\_HT40 MIMO Mode)

802.11n Mode		MCS Index	Sum Power of Ant.0 & 1 & 2 & 3 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2422	3	0	15.89	30
		1	16.09	30
		2	16.07	30
		3	16.02	30
		4	16.17	30
		5	16.26	30
		6	16.28	30
		7	16.31	30
2437	6	0	22.25	30
		1	22.34	30
		2	22.31	30
		3	22.30	30
		4	22.38	30
		5	22.41	30
		6	22.42	30
		7	22.47	30
2452	9	0	19.13	30
		1	19.23	30
		2	19.26	30
		3	19.22	30
		4	19.35	30
		5	19.33	30
		6	19.39	30
		7	19.44	30

### 9.4 POWER SPECTRAL DENSITY (802.11b/g/n)

#### Test Requirements and limit, §15.247(e)

The peak power spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

**Minimum Standard – the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.**

■ **Limit**

Operating Mode	Band	Mode	Ant. Port	Ant. Gain (dBi)	Limit (dBm)
SISO	2.4 GHz	802.11b/g/n	0	5.49	8.00
			1	5.49	8.00
			2	5.49	8.00
			3	5.49	8.00
MIMO(4 TX)		802.11b/g/n	0 & 1 & 2 & 3	11.51	2.49

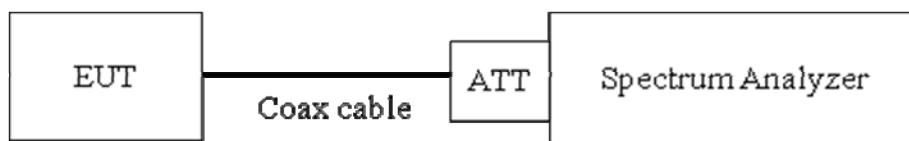
Note :

1. If all antennas have the same gain,  $G_{ANT}$

Directional gain =  $G_{ANT}$  + Array Gain, where Array Gain is as follows.

2. For power spectral density (PSD) measurements on all devices.

Array Gain =  $10 \log(N_{ANT}/N_{SS})$  dB. ( $N_{SS} = 1$ , Worst Case)

**■ TEST CONFIGURATION****■ TEST PROCEDURE**

We tested according to Procedure 10.2 in KDB 558074 v04

The spectrum analyzer is set to :

Set analyzer center frequency to DTS channel center frequency.

Span = 1.5 times the DTS channel bandwidth.

RBW = 3 kHz ≤ RBW ≤ 100 kHz.

VBW ≥ 3 × RBW.

Sweep = auto couple

Detector = power averaging (RMS) or sample detector (when RMS not available).

Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.

Employ trace averaging (RMS) mode over a minimum of 100 traces.

Use the peak marker function to determine the maximum amplitude level.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

**■ Sample Calculation**

PSD = Reading Value + ATT loss + Cable loss(1 ea)

Note :

1. Spectrum reading values are not plot data. The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest 10dB or 20 dB.
3. We apply the offset of 2.4 GHz band is 21.7 dB  
(Actual value of loss for the attenuator and cable combination)
4. MIMO output power results are calculated by each antenna output power on MIMO operating mode.  
So, in case of MIMO output power, we attached only MIMO output power except each antenna power result.

**■ TEST RESULTS\_Ant.0**
**Conducted Power Density Measurements**

Frequency (MHz)	Channel No.	Mode	Test Result		
			PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1	802.11b (SISO)	-9.615	8	Pass
2437	6		-8.848	8	Pass
2462	11		-6.910	8	Pass
2412	1	802.11g ( SISO )	-13.999	8	Pass
2437	6		-7.211	8	Pass
2462	11		-11.181	8	Pass
2412	1	802.11n	-13.602	8	Pass
2437	6	HT20	-6.030	8	Pass
2462	11	( SISO )	-9.432	8	Pass
2422	3	802.11n	-16.367	8	Pass
2437	6	HT40	-10.914	8	Pass
2452	9	( SISO )	-14.375	8	Pass

**■ TEST RESULTS\_Ant.1**
**Conducted Power Density Measurements**

Frequency (MHz)	Channel No.	Mode	Test Result		
			PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1	802.11b (SISO)	-9.984	8	Pass
2437	6		-8.167	8	Pass
2462	11		-9.025	8	Pass
2412	1	802.11g ( SISO )	-14.619	8	Pass
2437	6		-8.497	8	Pass
2462	11		-11.385	8	Pass
2412	1	802.11n	-15.160	8	Pass
2437	6	HT20	-7.897	8	Pass
2462	11	( SISO )	-10.064	8	Pass
2422	3	802.11n	-17.780	8	Pass
2437	6	HT40	-11.202	8	Pass
2452	9	( SISO )	-14.436	8	Pass

■ TEST RESULTS\_Ant.2

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1	802.11b (SISO)	-8.942	8	Pass
2437	6		-8.818	8	Pass
2462	11		-8.329	8	Pass
2412	1	802.11g (SISO)	-13.951	8	Pass
2437	6		-8.203	8	Pass
2462	11		-10.968	8	Pass
2412	1	802.11n	-14.139	8	Pass
2437	6	HT20	-7.515	8	Pass
2462	11	(SISO)	-9.578	8	Pass
2422	3	802.11n	-16.604	8	Pass
2437	6	HT40	-10.248	8	Pass
2452	9	(SISO)	-14.461	8	Pass

■ TEST RESULTS\_Ant.3

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1	802.11b (SISO)	-8.734	8	Pass
2437	6		-8.215	8	Pass
2462	11		-7.682	8	Pass
2412	1	802.11g (SISO)	-13.348	8	Pass
2437	6		-7.767	8	Pass
2462	11		-10.820	8	Pass
2412	1	802.11n	-13.138	8	Pass
2437	6	HT20	-6.365	8	Pass
2462	11	(SISO)	-5.451	8	Pass
2422	3	802.11n	-16.889	8	Pass
2437	6	HT40	-10.572	8	Pass
2452	9	(SISO)	-13.872	8	Pass

**■ TEST RESULTS\_Sum Data of Ant.0, 1, 2, 3**
**Conducted Power Density Measurements**

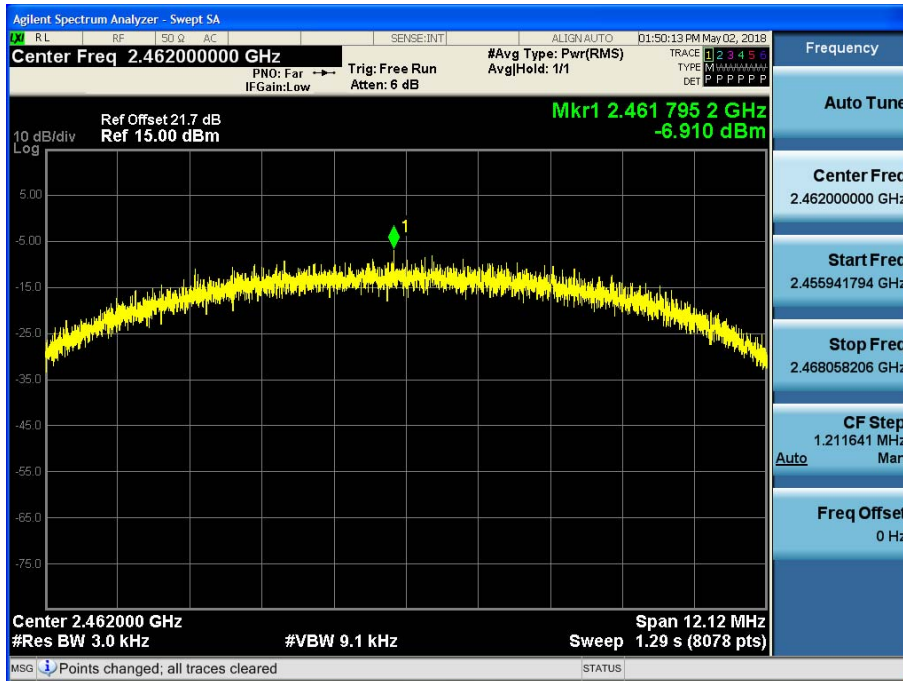
Frequency (MHz)	Channel No.	Mode	Test Result		
			PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1	802.11b (MIMO)	-3.28	2.49	Pass
2437	6		-2.49		Pass
2462	11		-1.93		Pass
2412	1	802.11g (MIMO)	-7.95	2.49	Pass
2437	6		-1.89		Pass
2462	11		-5.07		Pass
2412	1	802.11n HT20 (MIMO)	-7.96	2.49	Pass
2437	6		-0.90		Pass
2462	11		-2.40		Pass
2422	3	802.11n HT40 (MIMO)	-10.87	2.49	Pass
2437	6		-4.71		Pass
2452	9		-8.26		Pass

Note : In order to simplify the report, attached plots were only the highest PSD channel.

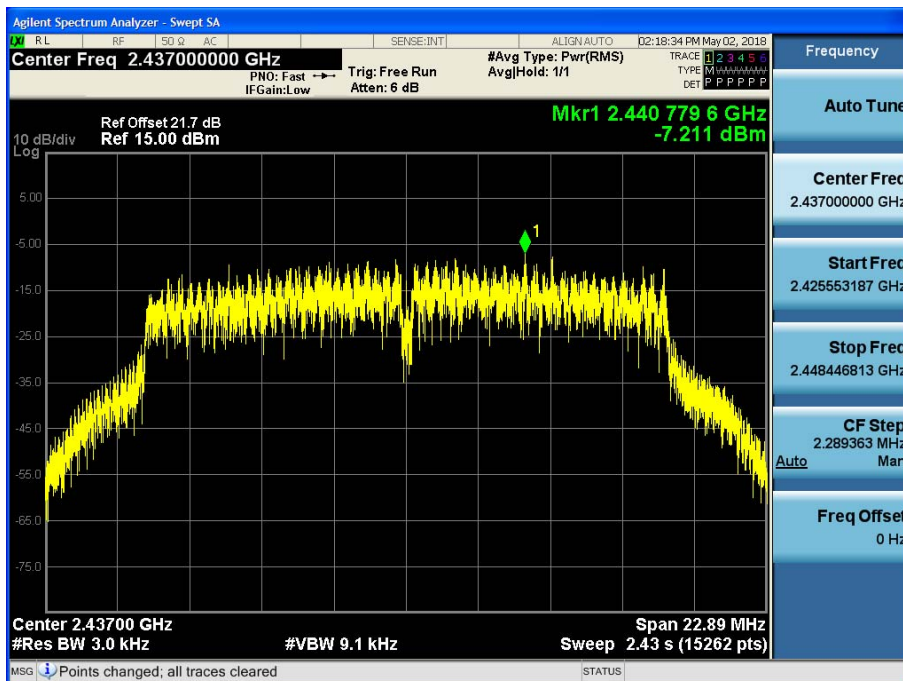


▣ RESULT PLOTS\_Ant.0

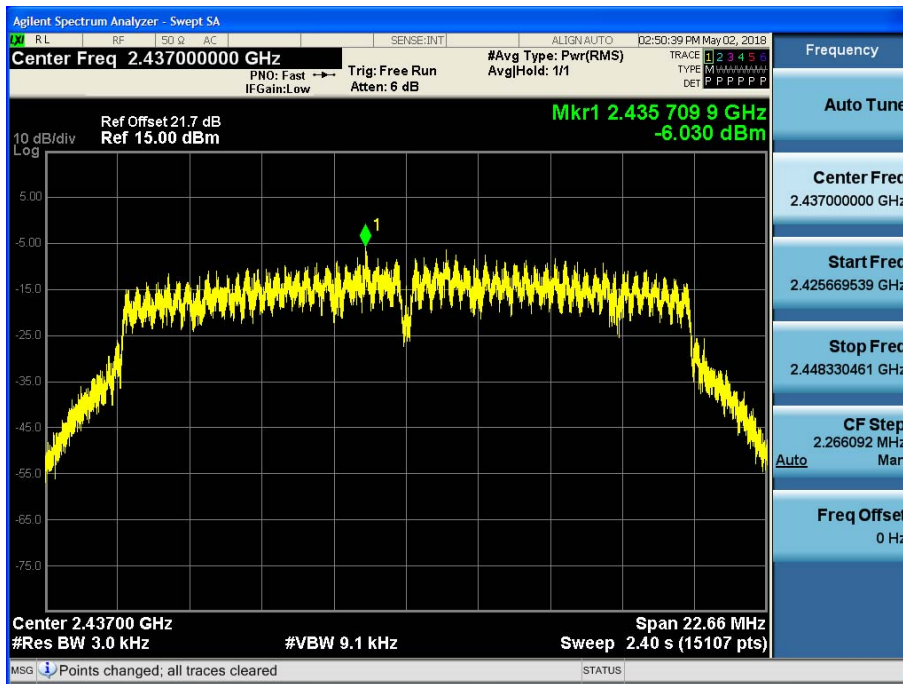
**Power Spectral Density (802.11b-CH 11)**



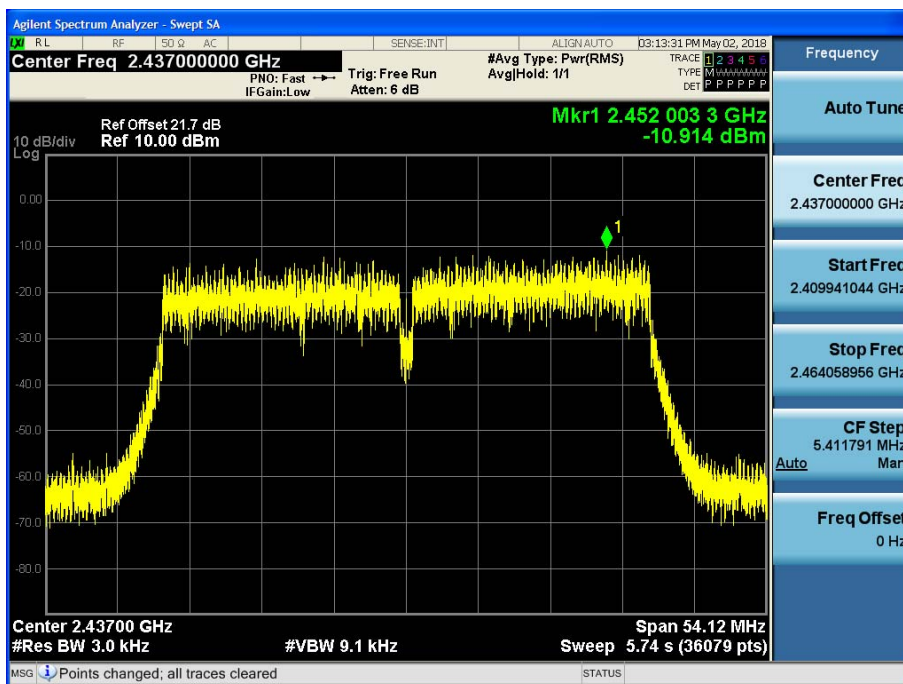
**Power Spectral Density (802.11g-CH 6)**



**Power Spectral Density (802.11n\_HT20 -CH 6)**

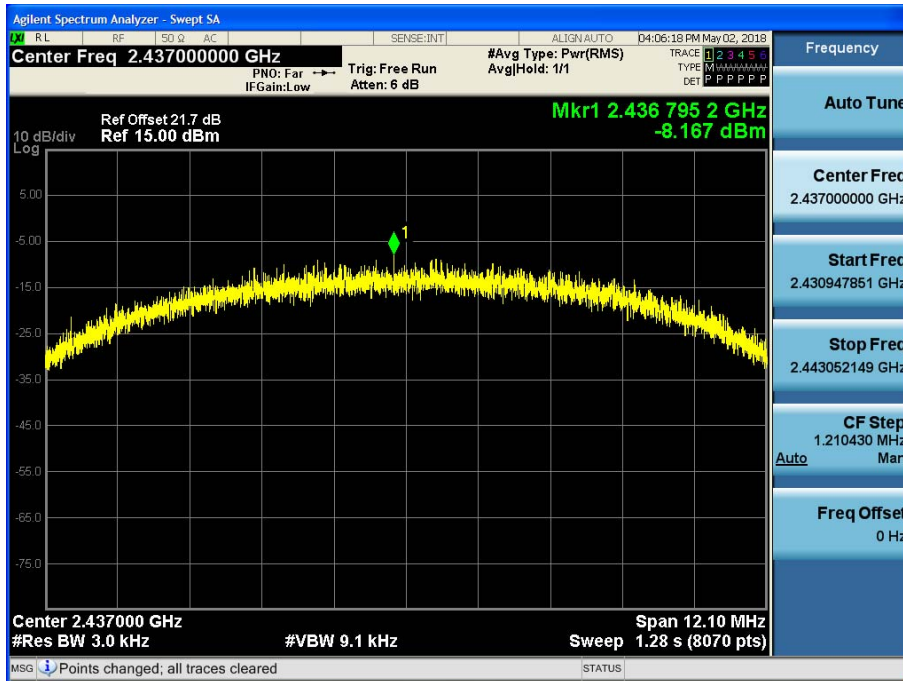


**Power Spectral Density (802.11n\_HT40 -CH 6)**

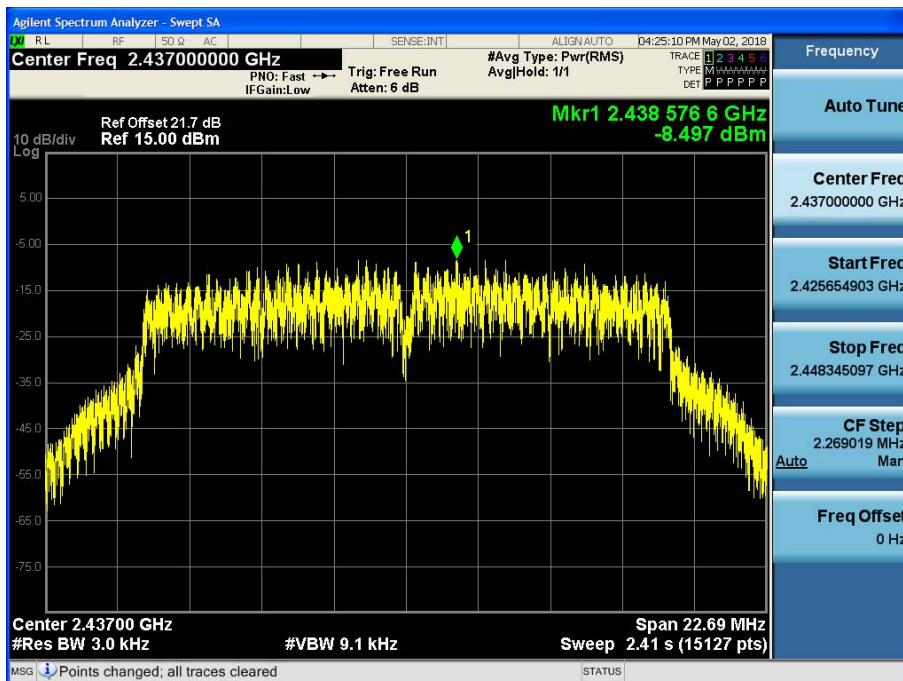


▣ RESULT PLOTS\_Ant.1

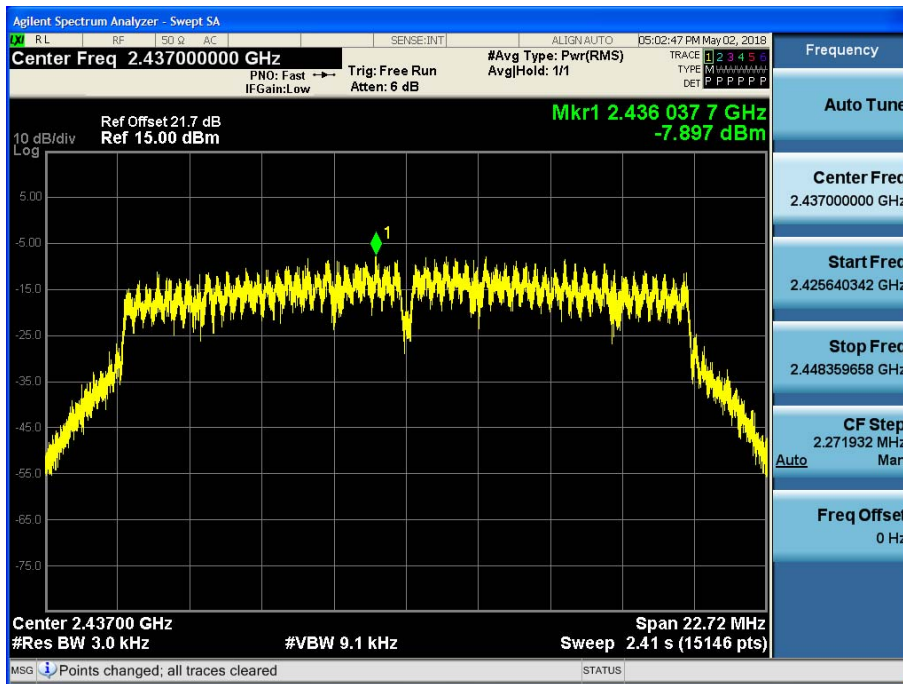
**Power Spectral Density (802.11b-CH 6)**



**Power Spectral Density (802.11g-CH 6)**



**Power Spectral Density (802.11n\_HT20 -CH 6)**



**Power Spectral Density (802.11n\_HT40 -CH 6)**

