



RF TEST REPORT

Applicant	Starry, Inc.
FCC ID	2AGZ3S00111
Product	Starry Station
Model	S00111
Report No.	RXA1602-0024RF02
Issue Date	March 28, 2016

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C(2015)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Lingling Kang

Reviewed by: Lingling Kang

Kai Xu

Approved by: Kai Xu



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Summary of measurement results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Maximum peak conducted output power	15.247(b)(3)	PASS
2	6 dB bandwidth	15.247(a)(2)	PASS
3	Maximum power spectral density	15.247(e)	PASS
4	Band Edge	15.247(d)	PASS
5	Spurious RF Conducted Emissions	15.247(d)	PASS
6	Radiated Emissions in restricted frequency bands	15.247(d),15.205,15.209	PASS
7	Radiated Emissions	15.247(d),15.205,15.209	PASS
8	Conducted Emissions	15.207	PASS
Date of Testing: December 28, 2015 ~ March 23, 2016			

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of TA technology (shanghai) co., Ltd).The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by CNAS or any government agencies.

1.2. Test facility

CNAS (accreditation number:L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA(Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
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E-mail: xukai@ta-shanghai.com

2. General Description of Equipment under Test

Client Information

Applicant	Starry, Inc.
Applicant address	745 Atlantic Ave Fl 8, Boston, MA, United States
Manufacturer	Flextronics Manufacturing(Zhuhai) Co. Ltd
Manufacturer address	XinQing Science&Technology Industrial Park, Doumen County.Zhuhai

General information

Model:	S00111
IMEI:	0010000997
Hardware Version:	1.9
Software Version:	1.0
Power Supply:	AC adapter
Antenna Type:	Internal Antenna
Test Mode:	Bluetooth(Low Energy) Zigbee 802.11b 802.11g, 802.11n(HT20/HT40);
Modulation Type:	BLE :GFSK Zigbee:MSK 802.11b: DSSS 802.11g/n(HT20/HT40): OFDM
Max. Conducted Power	Wi-Fi 2.4G: 24.33 dBm BLE: 0.137 dBm Zigbee: 21.80 dBm
Operating Frequency Range(s)	2400 ~ 2483.5 MHz
Note: The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details.	



3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR47 Part 15C (2015) Radio Frequency Devices

ANSI C63.10 (2013)

KDB 558074 D01 DTS Meas Guidance v03r04

KDB 662911 D01 Multiple Transmitter Output v02r01

4. Test Configuration

Test Mode

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Band	Data Rate				
	Antenna1	Antenna2	Antenna3	Antenna4	MIMO
802.11b	1 Mbps	1 Mbps	1 Mbps	1 Mbps	/
802.11g	6 Mbps	6 Mbps	6 Mbps	6 Mbps	/
802.11n HT20	MCS0	MCS0	MCS0	MCS0	MCS8
802.11n HT40	MCS0	MCS0	MCS0	MCS0	MCS8
The device supports non-beamforming and beamforming function in 802.11n, after pre-testing, beamforming mode has the worst emission value, so the worst case was recorded.					

The EUT is 4x4 MIMO antennas, for RE&CE, In order to find the worst antenna; Pre-tests are needed at the presence of different antenna. And the worst antenna was recorded for RE&CE.

The worst case Antenna mode for each of the following tests for Wi-Fi:

Test Cases	Antenna 1	Antenna 2	Antenna 3	Antenna 4	MIMO
Maximum peak conducted output power	O	O	O	O	802.11n HT20/40
6 dB bandwidth	O	-	-	-	-
Maximum power spectral density	O	-	-	-	802.11n HT20/40
Band Edge	O	-	-	-	-
Spurious RF Conducted Emissions	O	O	O	O	802.11n HT20/40
Radiated Emissions in restricted frequency bands	802.11b/g	-	-	-	802.11n HT20/40
Radiated Emissions	802.11b/g	-	-	-	802.11n HT20/40
Conducted Emissions	O	-	-	-	-
Note: "O": test all bands					

5. Test Case Results

5.1. Peak Power Output –Conducted

Ambient condition

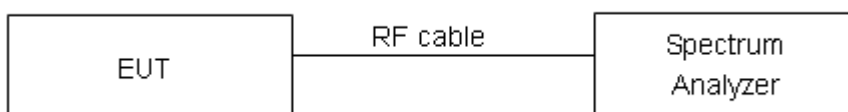
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the spectrum analyzer with a known loss. The EUT is max power transmission with proper modulation. The peak detector is used. We use Maximum Peak Conducted Output Power Level Method in KDB 558074 D01 for this test.

The conducted Power is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test Setup



Limits

Rule Part 15.247 (b) (3) specifies that “For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz: 1 Watt.”

Peak Output Power	$\leq 1W$ (30dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.44$ dB.

Test Results

Antenna 1

Network Standards	Carrier frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Conclusion
Power Tx Setup		24		
802.11b	2412	23.68	30	PASS
	2437	23.32	30	PASS
	2462	22.72	30	PASS
802.11g	2412	24.01	30	PASS
	2437	23.50	30	PASS
	2462	23.13	30	PASS
802.11n HT20	2412	24.10	30	PASS
	2437	23.71	30	PASS
	2462	23.34	30	PASS
802.11n HT40	2422	23.74	30	PASS
	2437	23.53	30	PASS
	2452	23.14	30	PASS

Antenna 2

Network Standards	Carrier frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Conclusion
Power Tx Setup		24		
802.11b	2412	23.77	30	PASS
	2437	23.44	30	PASS
	2462	22.87	30	PASS
802.11g	2412	24.22	30	PASS
	2437	23.61	30	PASS
	2462	23.21	30	PASS
802.11n HT20	2412	24.33	30	PASS
	2437	23.92	30	PASS
	2462	23.46	30	PASS
802.11n HT40	2422	23.99	30	PASS
	2437	23.67	30	PASS
	2452	23.31	30	PASS

Antenna 3

Network Standards	Carrier frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Conclusion
Power Tx Setup		24		
802.11b	2412	23.57	30	PASS
	2437	23.15	30	PASS
	2462	22.85	30	PASS
802.11g	2412	23.88	30	PASS
	2437	23.43	30	PASS
	2462	23.34	30	PASS
802.11n HT20	2412	24.05	30	PASS
	2437	23.88	30	PASS
	2462	23.41	30	PASS
802.11n HT40	2422	23.64	30	PASS
	2437	23.72	30	PASS
	2452	23.22	30	PASS

Antenna 4

Network Standards	Carrier frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Conclusion
Power Tx Setup		24		
802.11b	2412	23.42	30	PASS
	2437	23.41	30	PASS
	2462	22.78	30	PASS
802.11g	2412	23.95	30	PASS
	2437	23.41	30	PASS
	2462	23.16	30	PASS
802.11n HT20	2412	24.05	30	PASS
	2437	23.84	30	PASS
	2462	23.41	30	PASS
802.11n HT40	2422	23.81	30	PASS
	2437	23.58	30	PASS
	2452	23.21	30	PASS

MIMO

Network Standards	Carrier frequenc (MHz)	Peak Output Powe (dBm)	Limit (dBm)	Conclusion
Power Tx Setup		20		
802.11n HT20	2412	20.40	30	PASS
	2437	20.32	30	PASS
	2462	20.80	30	PASS
Power Tx Setup		24	/	/
802.11n HT40	2422	22.12	30	PASS
	2437	22.63	30	PASS
	2452	22.59	30	PASS

Network Standards	Carrier frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Conclusion
Bluetooth (Low Energy)	2402	-0.124	30	PASS
	2440	-0.218	30	PASS
	2480	0.137	30	PASS
Zigbee	2405	21.80	30	PASS
	2440	20.05	30	PASS
	2475	19.01	30	PASS

5.2. 6dB Bandwidth

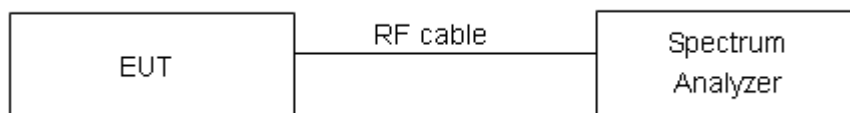
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100 kHz; VBW is set to 300 kHz on spectrum analyzer.

Test Setup



Limits

Rule Part 15.247 (a) (2) specifies that “Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

minimum 6 dB bandwidth	≥ 500 kHz
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936$ Hz.

Test Results:
Antenna 1

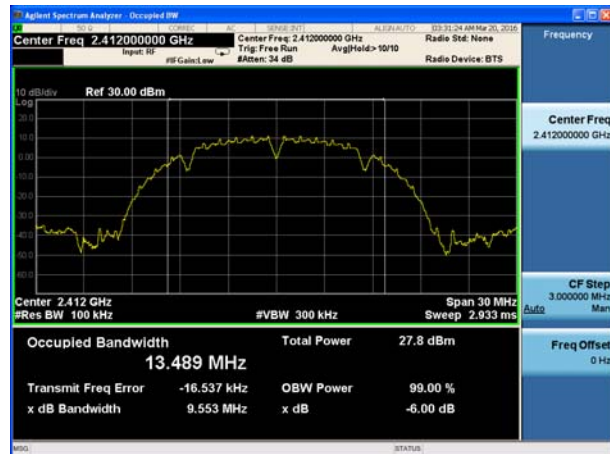
Network Standards	Carrier frequency (MHz)	Minimum 6 dB bandwidth (MHz)	Limit(kHz)	Conclusion
802.11b	2412	9.553	500	PASS
	2437	9.566	500	PASS
	2462	9.563	500	PASS
802.11g	2412	16.57	500	PASS
	2437	16.56	500	PASS
	2462	15.58	500	PASS
802.11n HT20	2412	17.68	500	PASS
	2437	17.74	500	PASS
	2462	17.71	500	PASS
802.11n HT40	2422	36.47	500	PASS
	2437	36.45	500	PASS
	2452	36.46	500	PASS

Network Standards	Carrier frequency (MHz)	Minimum 6 dB bandwidth (MHz)	Limit(kHz)	Conclusion
Bluetooth (Low Energy)	2402	0.6601	500	PASS
	2440	0.6599	500	PASS
	2480	0.6710	500	PASS
Zigbee	2405	1.593	500	PASS
	2440	1.580	500	PASS
	2475	1.578	500	PASS

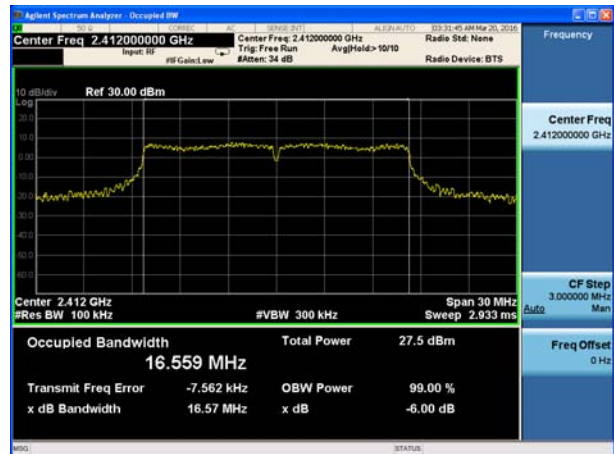


Antenna 1

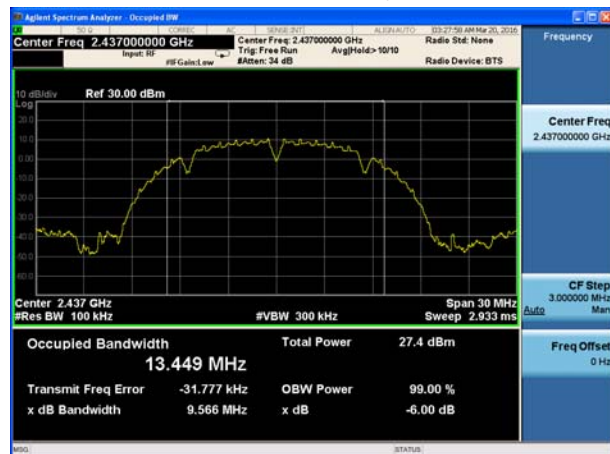
802.11b, Carrier frequency (MHz): 2412



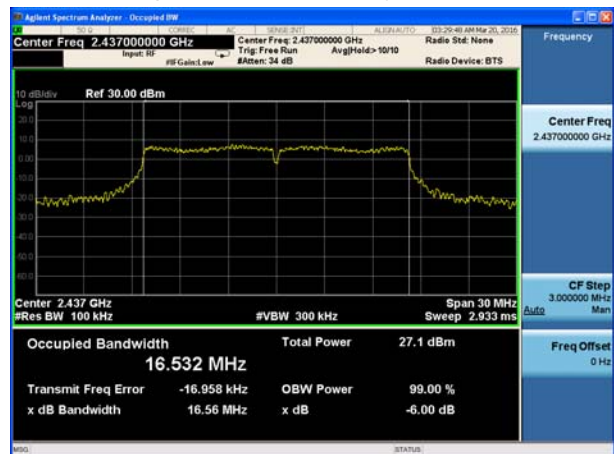
802.11g, Carrier frequency (MHz): 2412



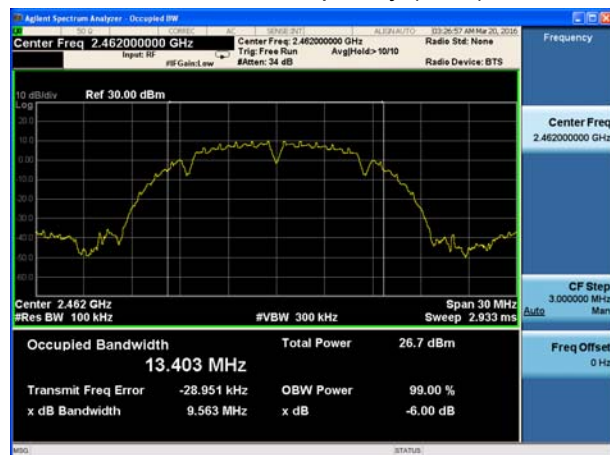
802.11b, Carrier frequency (MHz): 2437



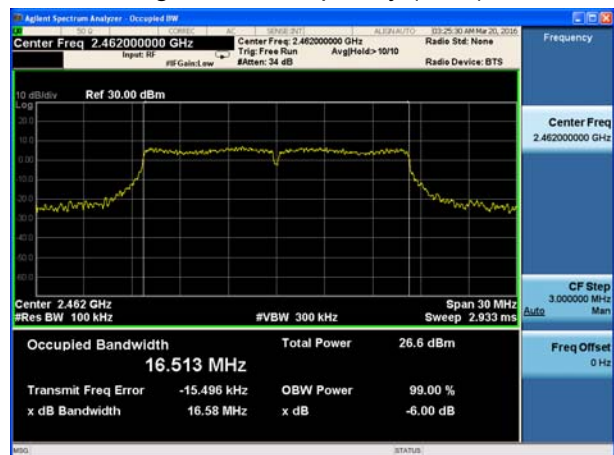
802.11g, Carrier frequency (MHz): 2437



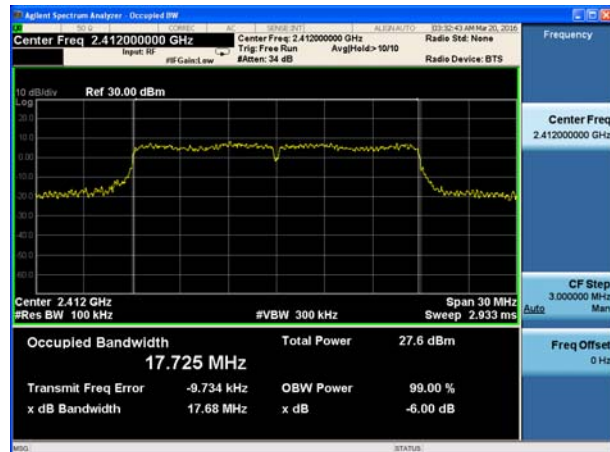
802.11b, Carrier frequency (MHz): 2462



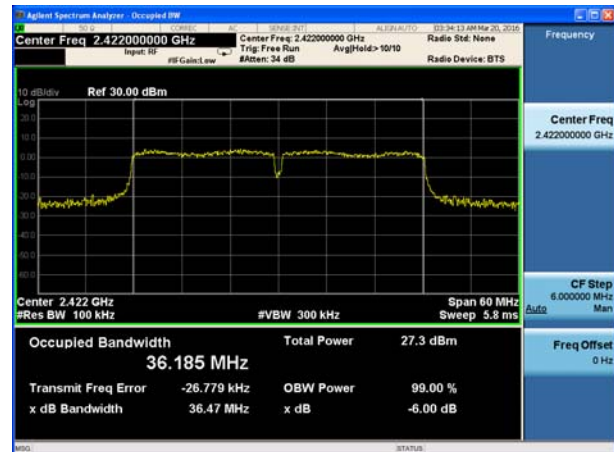
802.11g, Carrier frequency (MHz): 2462



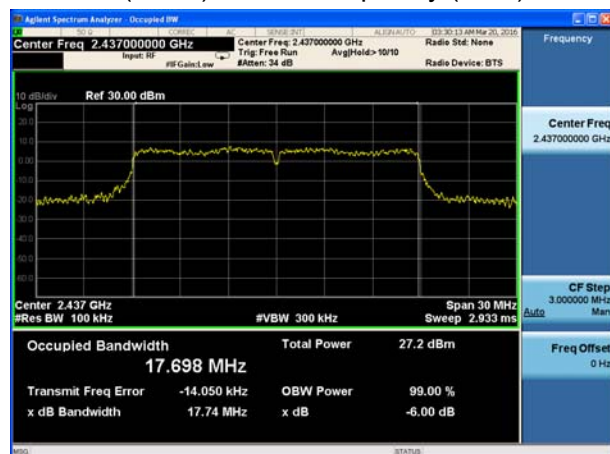
802.11n(HT20), Carrier frequency (MHz): 2412



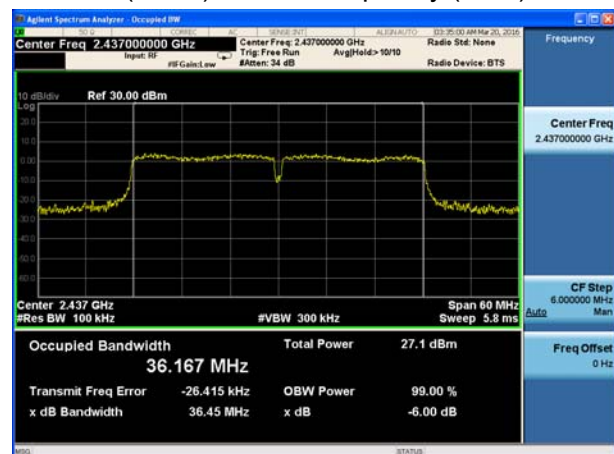
802.11n(HT40), Carrier frequency (MHz): 2422



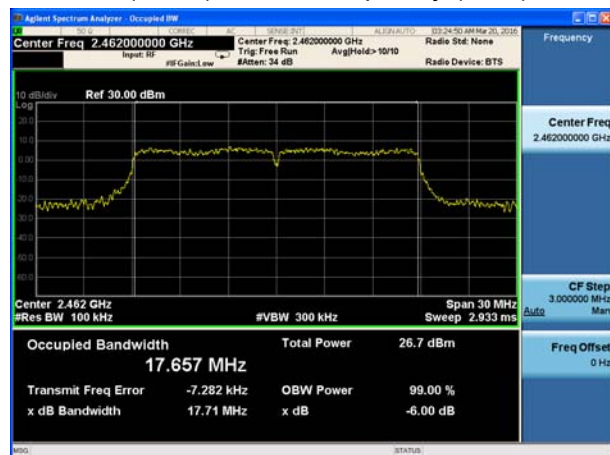
802.11n(HT20), Carrier frequency (MHz): 2437



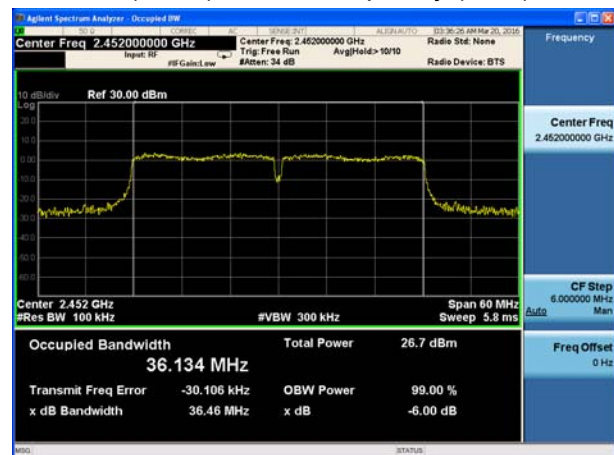
802.11n(HT40), Carrier frequency (MHz): 2437



802.11n(HT20), Carrier frequency (MHz): 2462

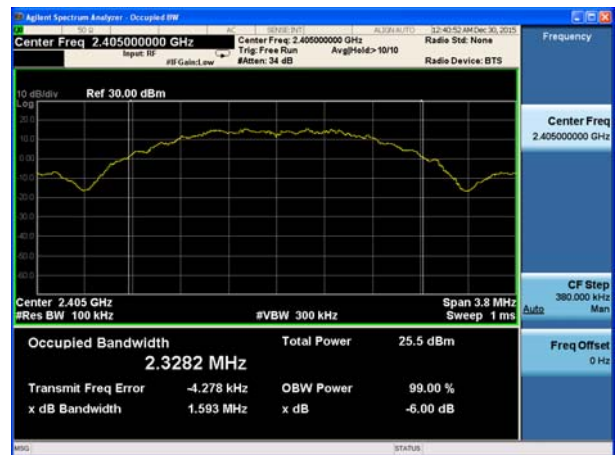


802.11n(HT40), Carrier frequency (MHz): 2452

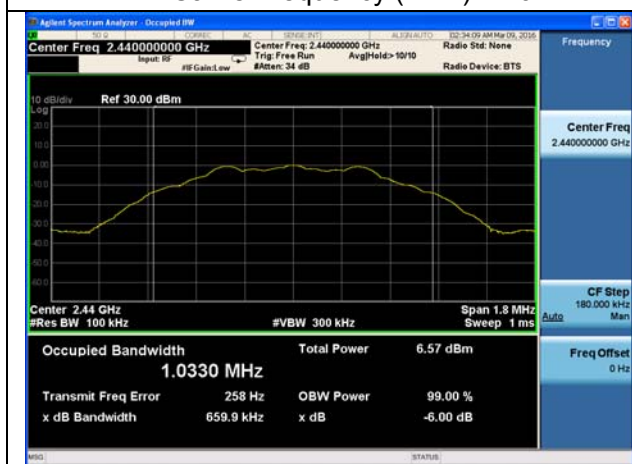




BLE Carrier frequency (MHz): 2402



Zigbee, Carrier frequency (MHz): 2405



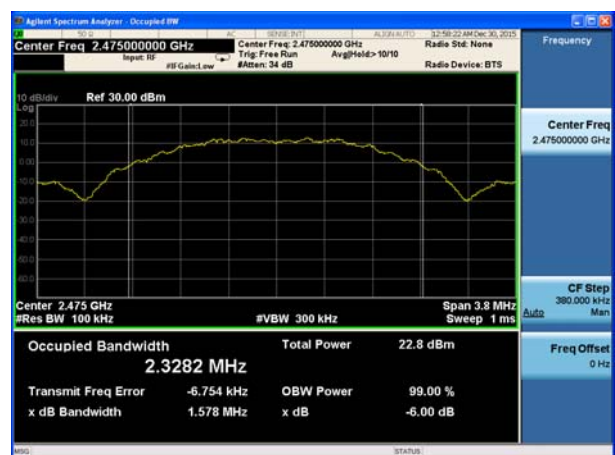
BLE Carrier frequency (MHz): 2440



Zigbee, Carrier frequency (MHz): 2440



BLE Carrier frequency (MHz): 2480



Zigbee, Carrier frequency (MHz): 2475

5.3. Band Edge

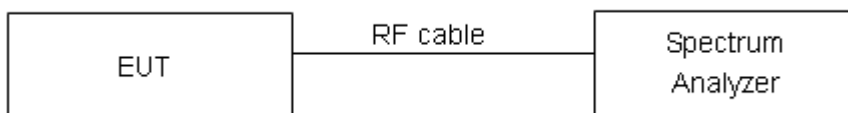
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 15.247(d) specifies that “In any 100 kHz 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 20 dB below that in the 100 kHz 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.”

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

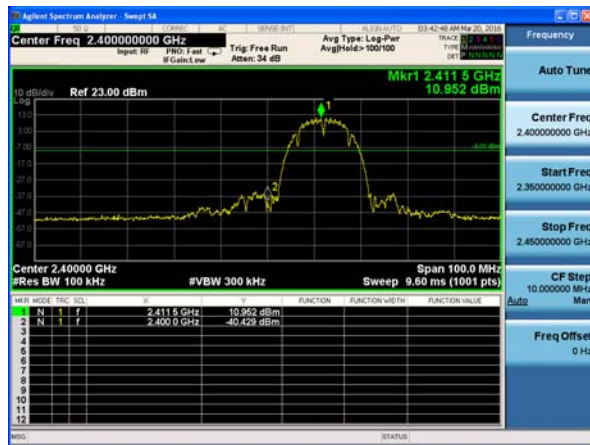
Frequency	Uncertainty
2GHz-3GHz	1.407 dB



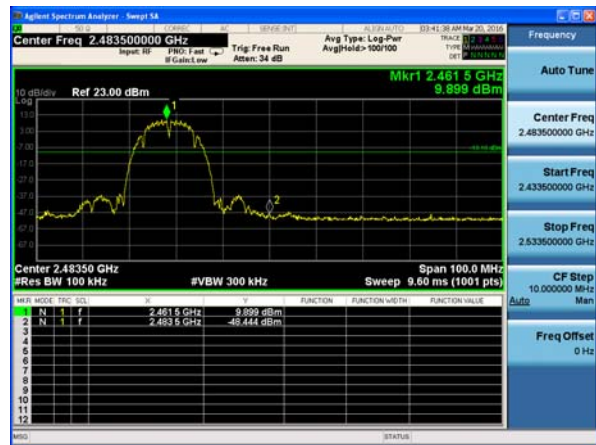
Test Results: PASS

Antenna 1

802.11b, Channel No.: 1



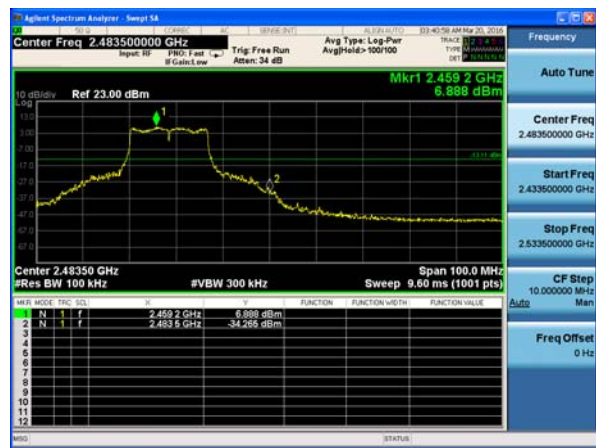
802.11b, Channel No.: 11



802.11g, Channel No.: 1



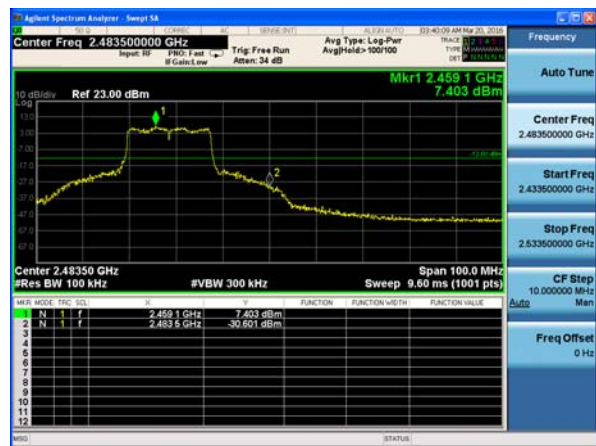
802.11g, Channel No.: 11



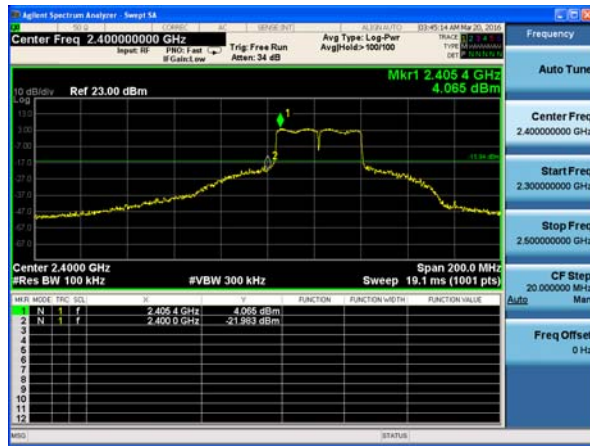
802.11n(HT20), Channel No.: 1



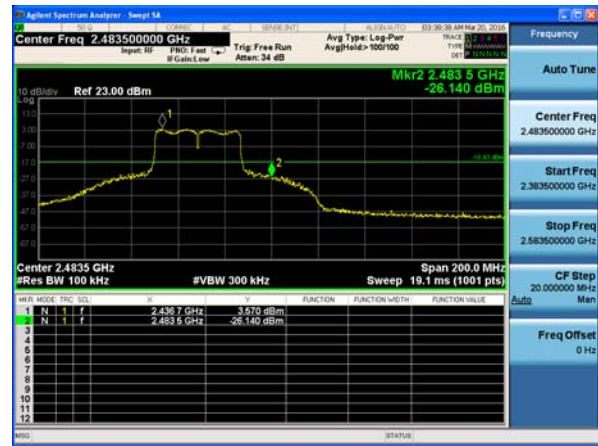
802.11n(HT20), Channel No.: 11



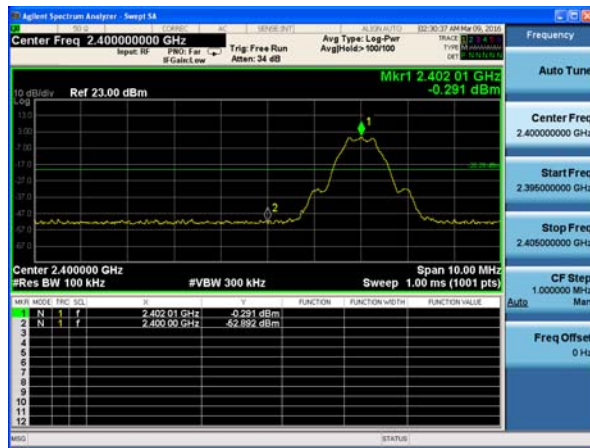
802.11n(HT40), Channel No.: 3



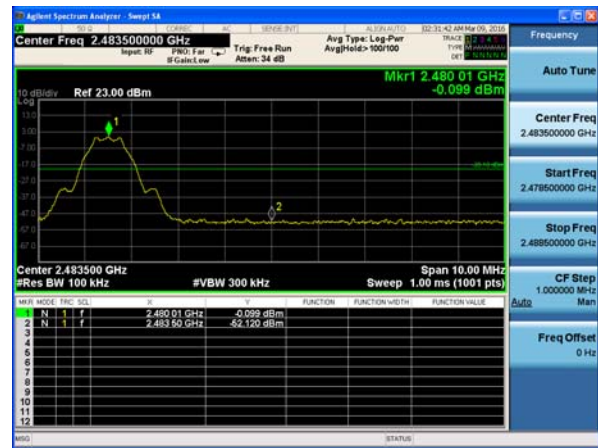
802.11n(HT40), Channel No.: 9



BLE, Channel No.: 0



BLE, Channel No.: 39



Zigbee, Channel No.: 11



Zigbee, Channel No.: 25



5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

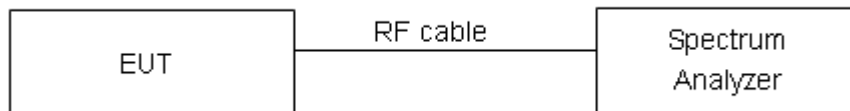
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

RBW is set to 3 kHz and VBW is set to 10 kHz on spectrum analyzer.

Set the span to 1.5 times the DTS channel bandwidth. Sweep time = auto couple. Trace mode = max hold. The peak power spectral density is recorded.

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test setup



Limits

Rule Part 15.247(e) specifies that” For digitally modulated systems, 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. ”

Limits	$\leq 8 \text{ dBm} / 3\text{kHz}$
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.75\text{dB}$.

Test Results:

Antenna 1

Network Standards	Channel Number	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11b	1	-7.630	8	PASS
	6	-8.280	8	PASS
	11	-8.862	8	PASS
802.11g	1	-6.700	8	PASS
	6	-7.164	8	PASS
	11	-7.663	8	PASS
802.11n HT20	1	-6.240	8	PASS
	6	-6.562	8	PASS
	11	-6.872	8	PASS
802.11n HT40	3	-8.564	8	PASS
	6	-9.299	8	PASS
	9	-9.187	8	PASS

MIMO

Network Standards	Channel Number	SUM (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11n HT20	1	-7.626	8	PASS
	6	-8.434	8	PASS
	11	-6.614	8	PASS
802.11n HT40	3	-10.815	8	PASS
	6	-10.181	8	PASS
	9	-9.311	8	PASS

Network Standards	Channel Number	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
Bluetooth (Low Energy)	0	-14.923	8	PASS
	19	-14.365	8	PASS
	39	-14.709	8	PASS
Zigbee	11	3.252	8	PASS
	18	0.767	8	PASS
	25	0.709	8	PASS



Antenna 1

802.11b, Channel No.: 1



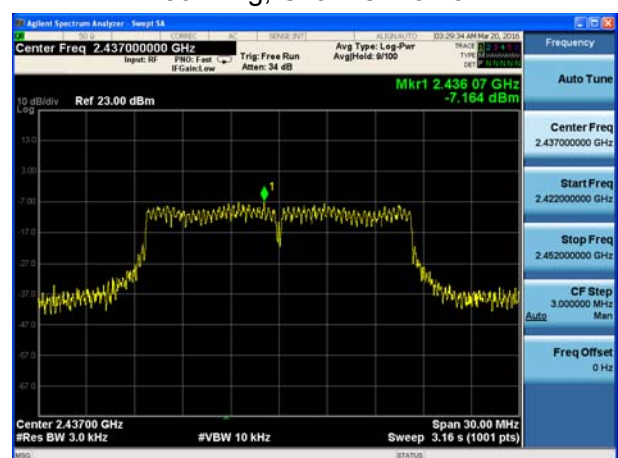
802.11g, Channel No.: 1



802.11b, Channel No.: 6



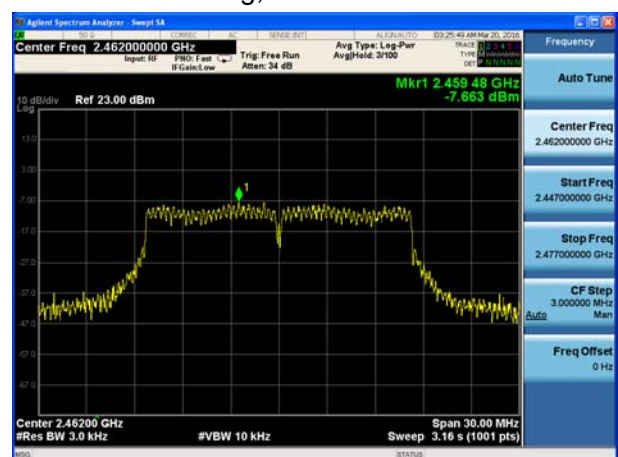
802.11g, Channel No.: 6



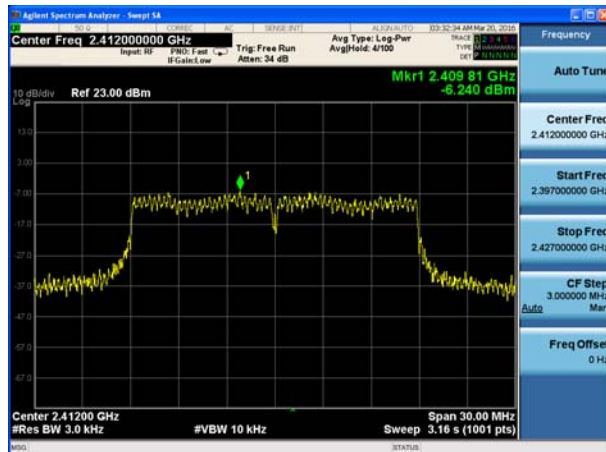
802.11b, Channel No.: 11



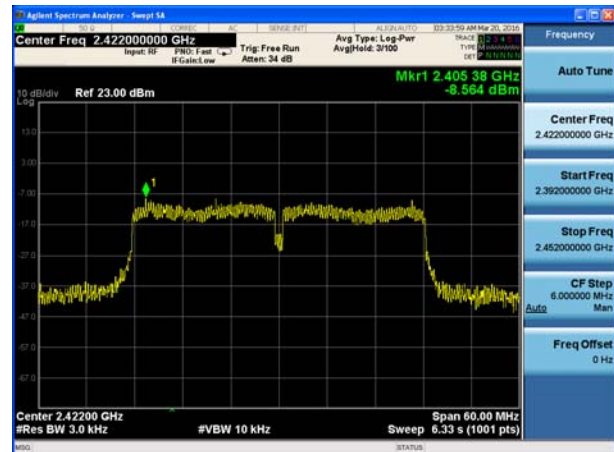
802.11g, Channel No.: 11



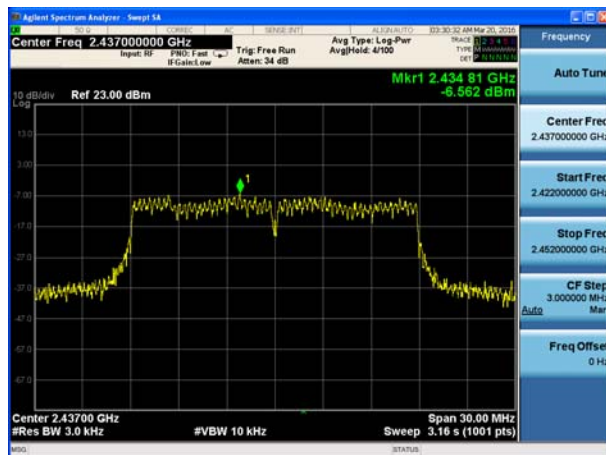
802.11n(HT20), Channel No. 1



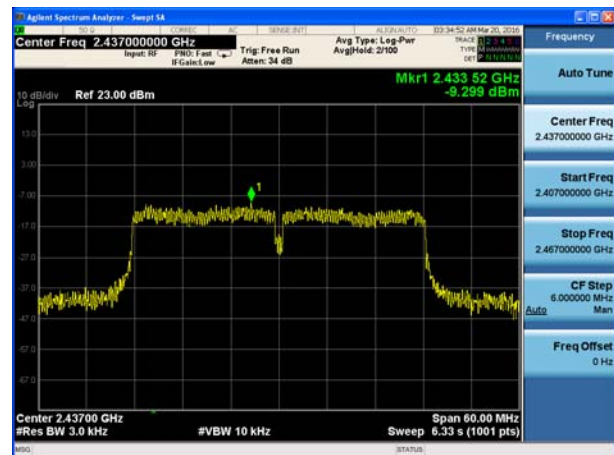
802.11n(HT40), Channel No. 3



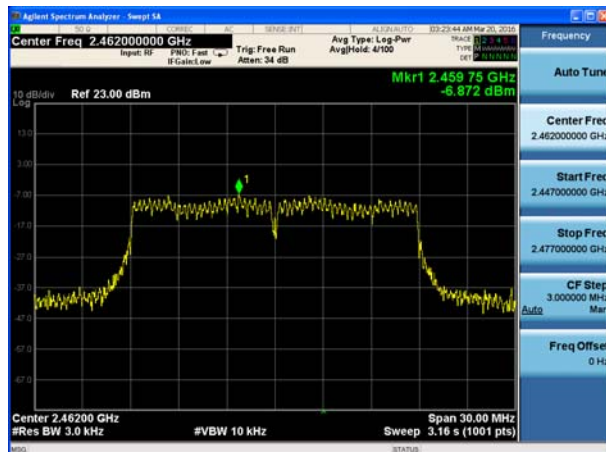
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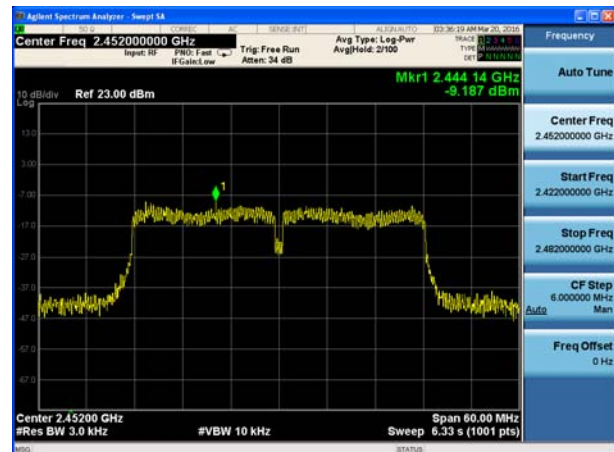
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802.11n(HT20), Channel No. 11



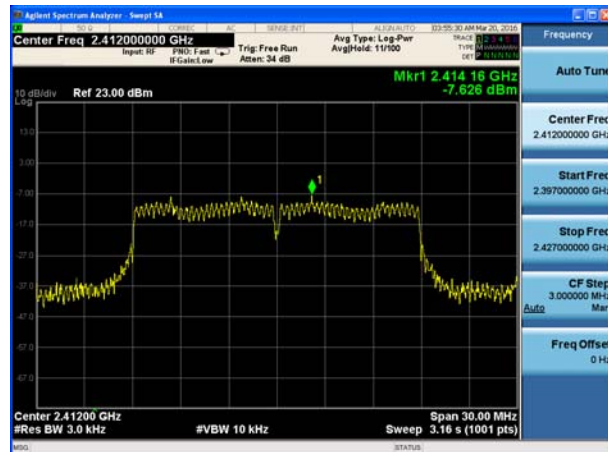
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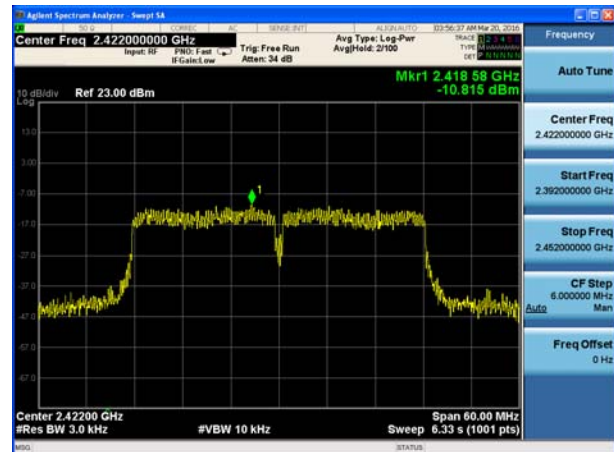


MIMO

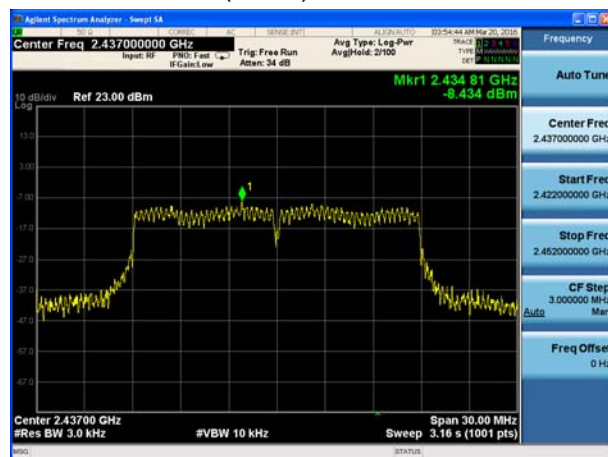
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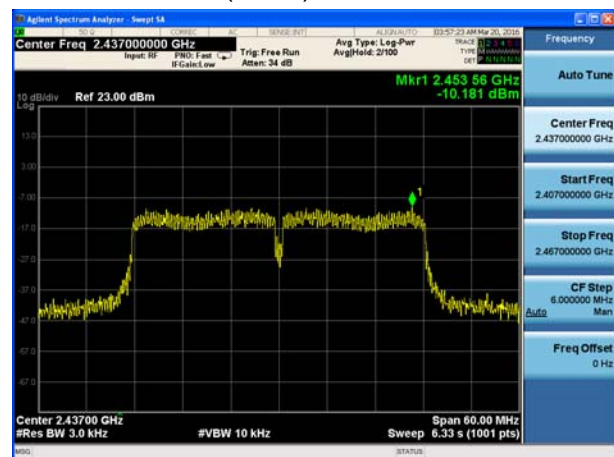
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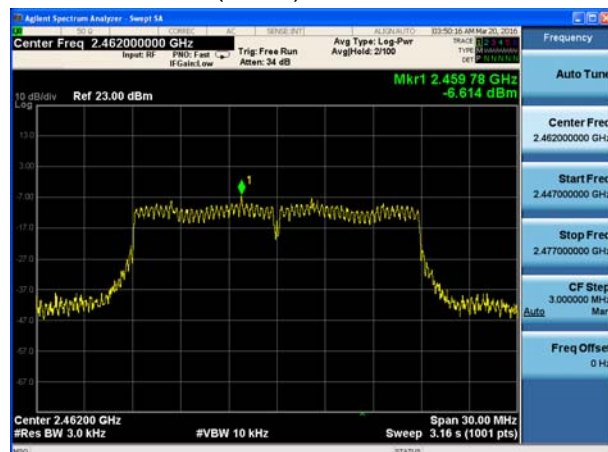
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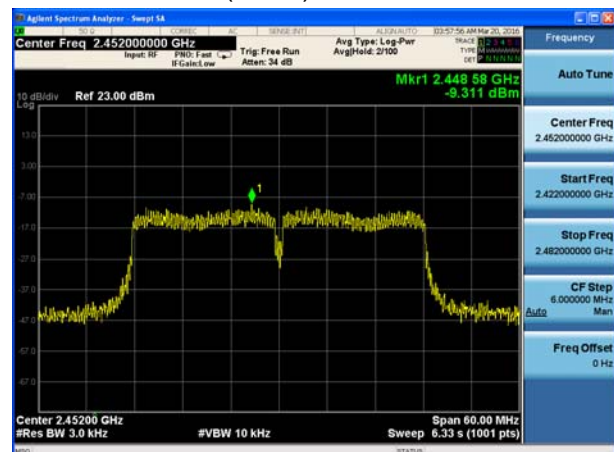
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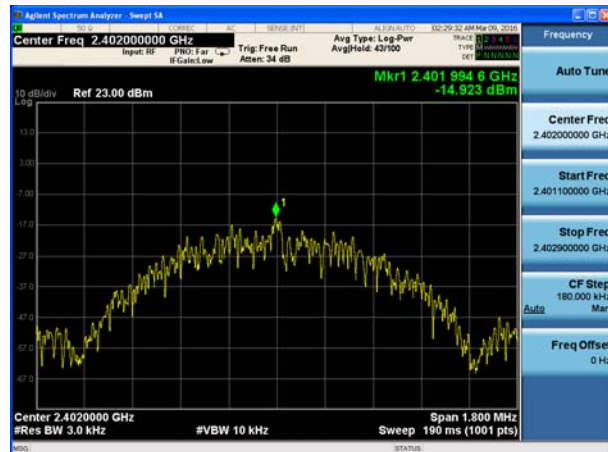
802.11n(HT20), Channel No. 11



802.11n(HT40), Channel No. 9



BLE, Channel No.: 0



Zigbee, Channel No.: 11



BLE, Channel No.: 19



Zigbee, Channel No.: 18



BLE, Channel No.: 39



Zigbee, Channel No.: 25



5.5. Spurious RF Conducted Emissions

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

The test is in transmitting mode.

Test setup



Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.”

Antenna 1

Network Standards	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	1.562	-18.438
	2437	-4.127	-24.127
	2462	-1.196	-21.196
802.11g	2412	-1.914	-21.914
	2437	-5.777	-25.777
	2462	-1.676	-21.676
802.11n HT20	2412	0.346	-19.654
	2437	-4.450	-24.450
	2462	-2.109	-22.109
802.11n HT40	2422	-4.627	-24.627
	2437	-6.948	-26.948
	2452	-5.807	-25.807

Antenna 2

Network Standards	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	4.591	-15.409
	2437	-5.052	-25.052
	2462	-1.069	-21.069
802.11g	2412	-1.778	-21.778
	2437	-5.050	-25.050
	2462	-2.231	-22.231
802.11n HT20	2412	0.406	-19.594
	2437	-9.046	-29.046
	2462	-5.752	-25.752
802.11n HT40	2422	-5.048	-25.048
	2437	-5.155	-25.155
	2452	-3.640	-23.640

Antenna 3

Network Standards	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	-4.964	-24.964
	2437	-4.761	-24.761
	2462	-1.941	-21.941
802.11g	2412	-0.448	-20.448
	2437	-8.466	-28.466
	2462	-2.755	-22.755
802.11n HT20	2412	-0.334	-20.334
	2437	-7.720	-27.720
	2462	-3.211	-23.211
802.11n HT40	2422	-6.890	-26.890
	2437	-4.630	-24.630
	2452	-5.550	-25.550

Antenna 4

Network Standards	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	0.400	-19.600
	2437	-6.260	-26.260
	2462	-2.190	-22.190
802.11g	2412	-2.260	-22.260
	2437	-9.140	-29.140

	2462	-3.200	-23.200
802.11n HT20	2412	-0.150	-20.150
	2437	-7.930	-27.930
	2462	-3.170	-23.170
802.11n HT40	2422	-6.580	-26.580
	2437	-2.820	-22.820
	2452	-2.710	-22.710

MIMO

Network Standards	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11n HT20	2412	12.082	-7.918
	2437	4.490	-15.510
	2462	10.069	-9.931
802.11n HT40	2422	3.160	-16.840
	2437	3.430	-16.570
	2452	6.290	-13.710

Network Standards	Carrier frequency (MHz)	Reference value (dBm)	Limit
Bluetooth (Low Energy)	2402	4.804	-15.196
	2440	-6.657	-26.657
	2480	-7.902	-27.902
Zigbee	2405	14.691	-5.31
	2440	9.271	-10.73
	2475	6.977	-13.02

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

**Test Results:**

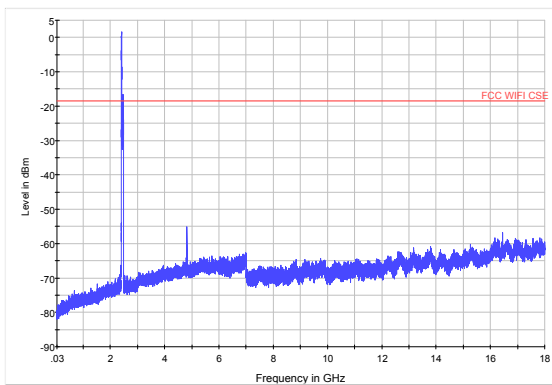
If disturbances were found more than 20dB below limit line, the mark is not required for the EUT.
The signal beyond the limit is carrier.

The signal beyond the limit is carrier

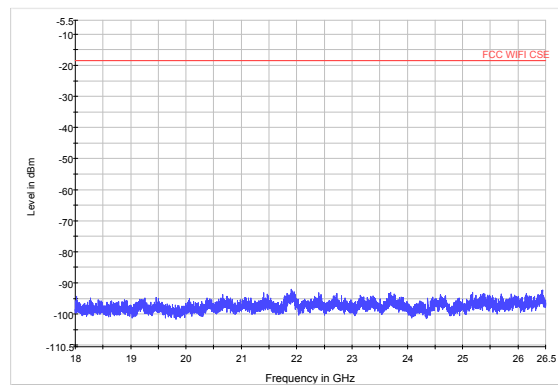
Test Data File Name	Frequency (MHz)	Peak (dBm)	Margin (dB)	Limit
CSE_S00111_BT EDR CH19_0.03-18GHz	7320.0	-41.0	14.4	-26.657
CSE_S00111_BT EDR CH39_0.03-18GHz	7439.3	-38.1	10.2	-27.902

Antenna 1

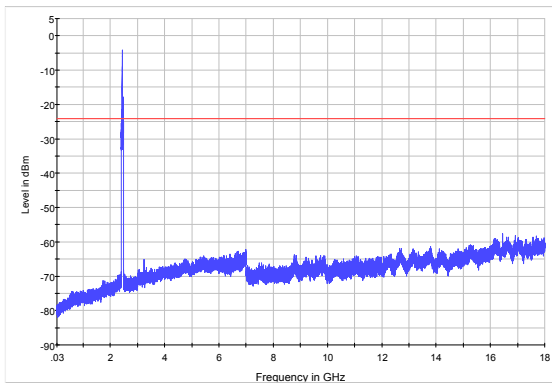
802.11b CH1 30MHz to 18GHz



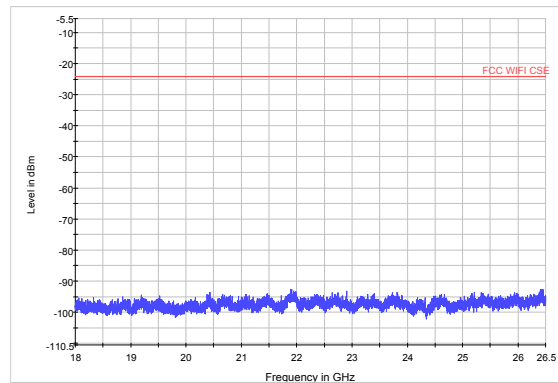
802.11b CH1 18GHz to 26.5GHz



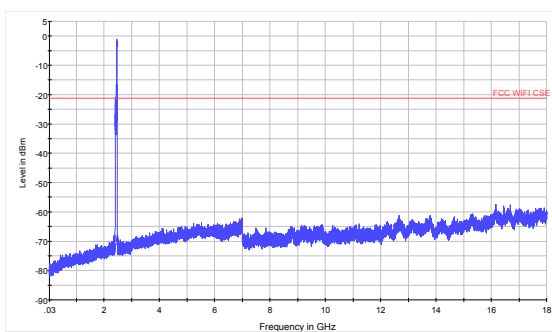
802.11b CH6 30MHz to 18GHz



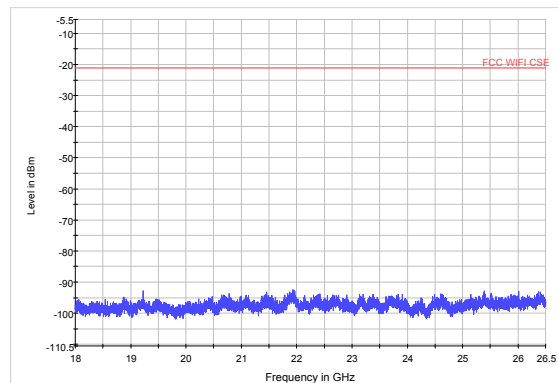
802.11b CH6 18GHz to 26.5GHz



802.11b CH11 30MHz to 18GHz

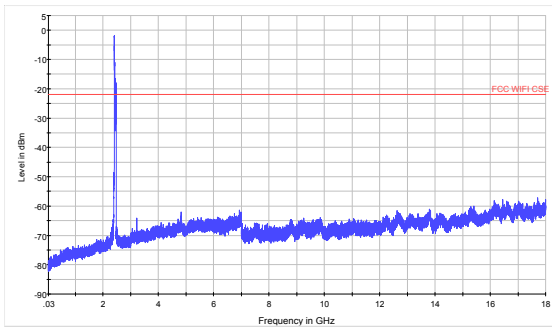


802.11b CH11 18GHz to 26.5GHz

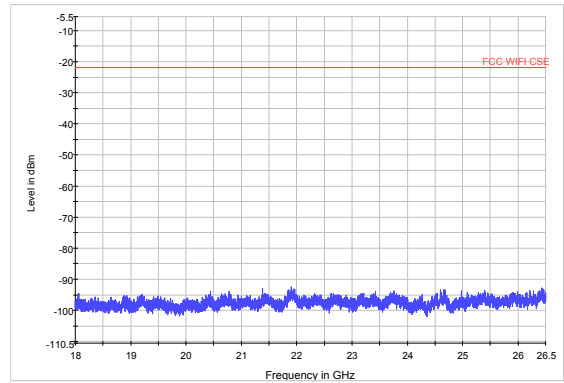




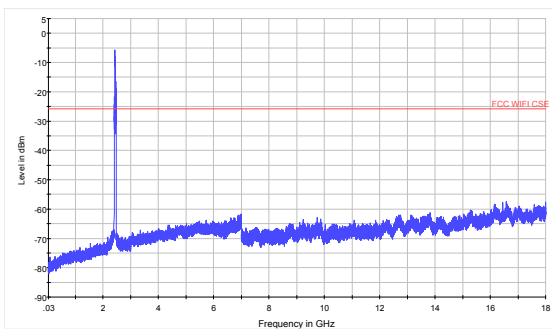
802.11g CH1 30MHz to 18GHz



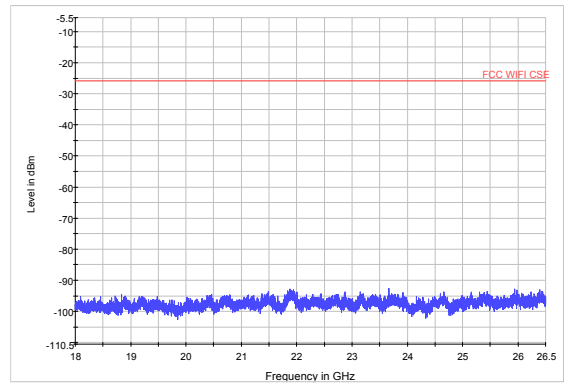
802.11g CH1 18GHz to 26.5GHz



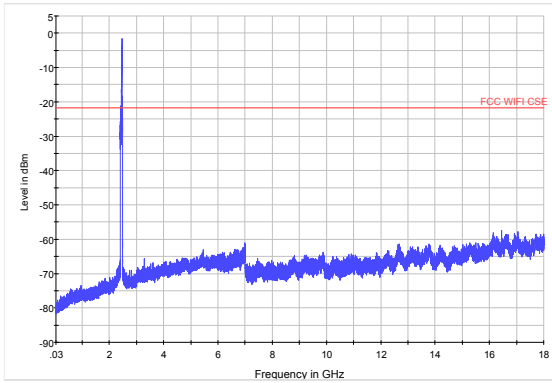
802.11g CH6 30MHz to 18GHz



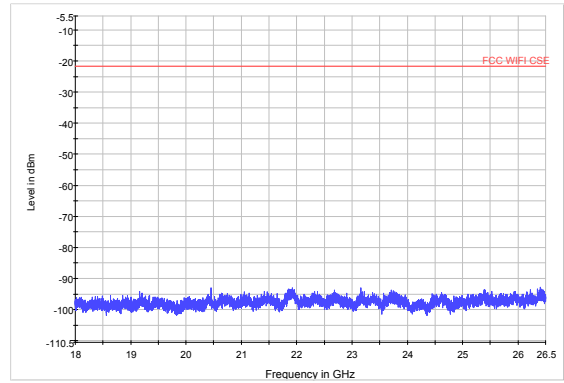
802.11g CH6 18GHz to 26.5GHz



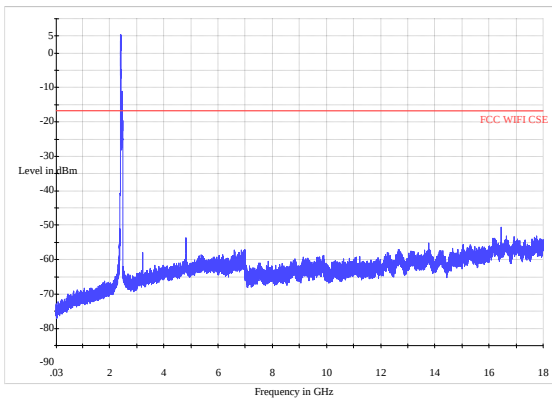
802.11g CH11 30MHz to 18GHz



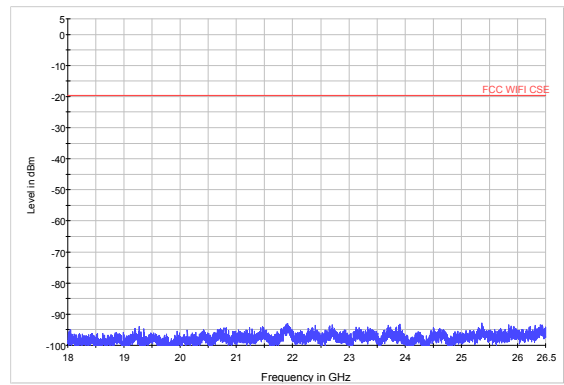
802.11g CH11 18GHz to 26.5GHz



802.11n (HT20) CH1 30MHz to 18GHz

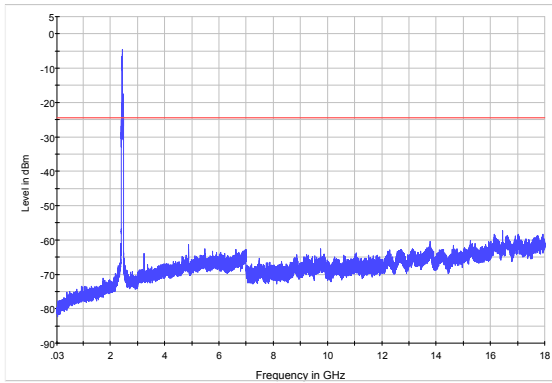


802.11n (HT20) CH1 18GHz to 26.5GHz

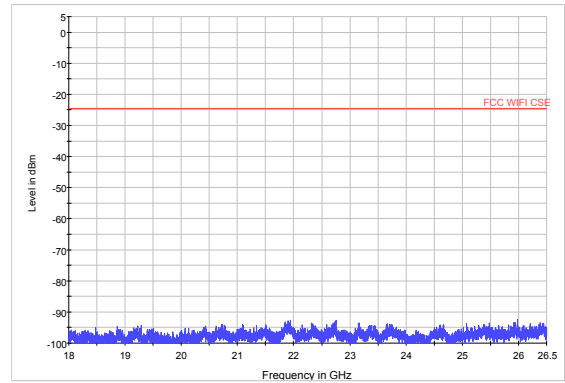




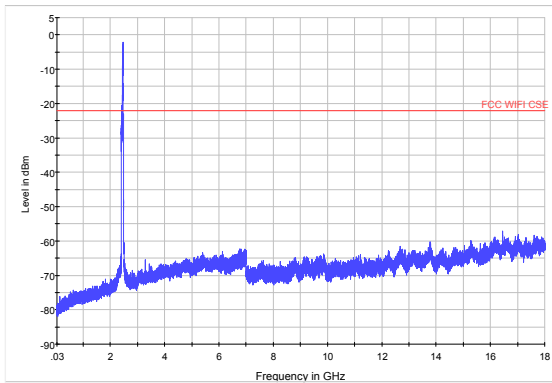
802.11n (HT20) CH6 30MHz to 18GHz



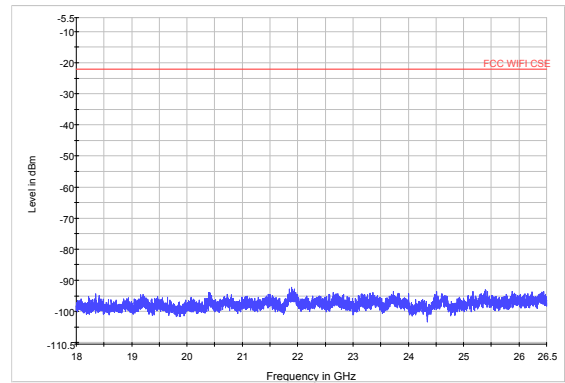
802.11n (HT20) CH6 18GHz to 26.5GHz



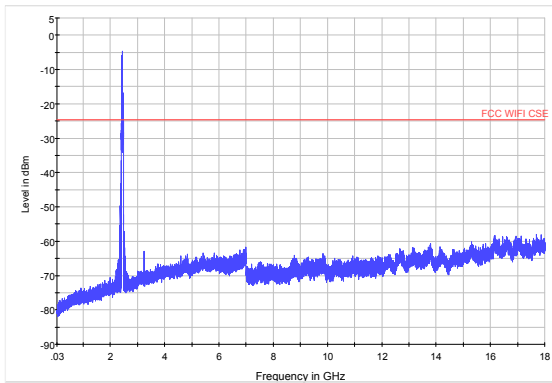
802.11n (HT20) CH11 30MHz to 18GHz



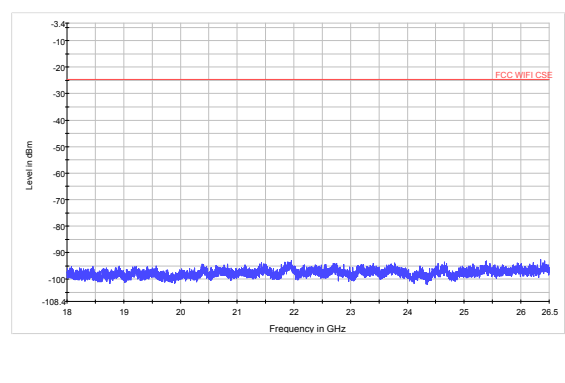
802.11n (HT20) CH11 18GHz to 26.5GHz



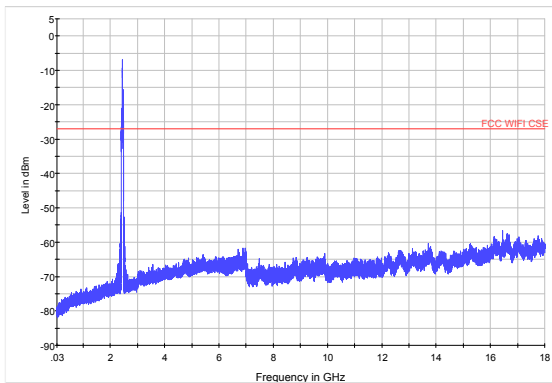
802.11n (HT40) CH3 30MHz to 18GHz



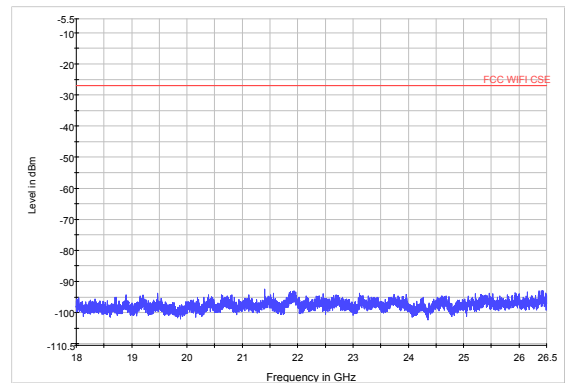
802.11n (HT40) CH3 18GHz to 26.5GHz



802.11n (HT40) CH6 30MHz to 18GHz

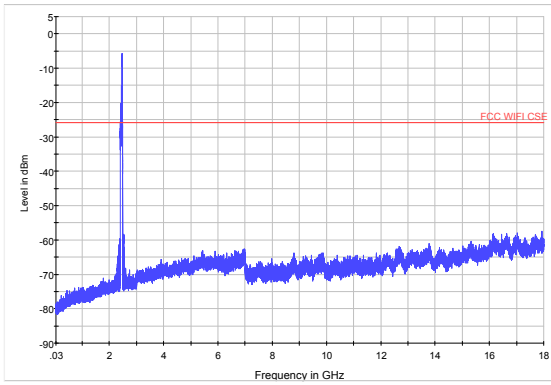


802.11n (HT40) CH6 18GHz to 26.5GHz

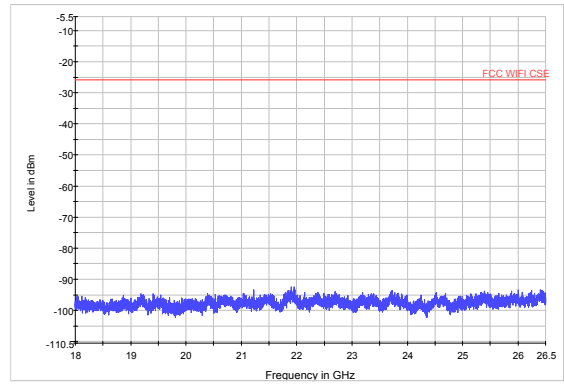




802.11n (HT40) CH9 30MHz to 18GHz

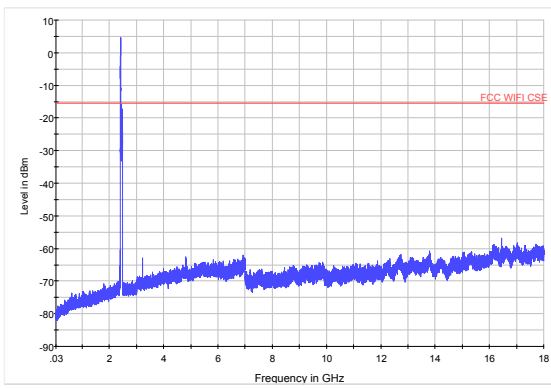


802.11n (HT40) CH9 18GHz to 26.5GHz

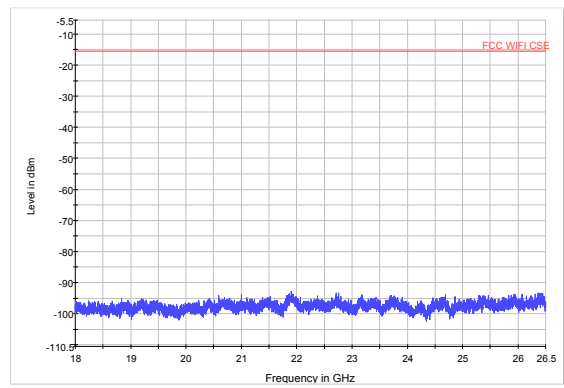


Antenna 2

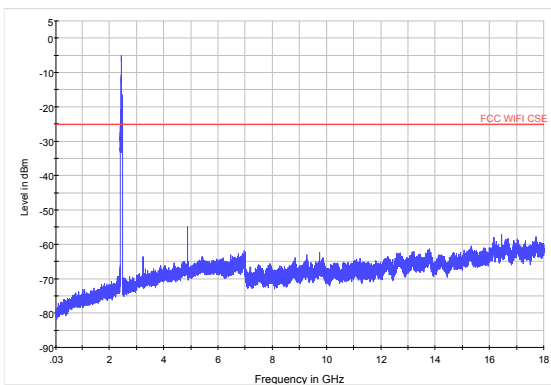
802.11b CH1 30MHz to 18GHz



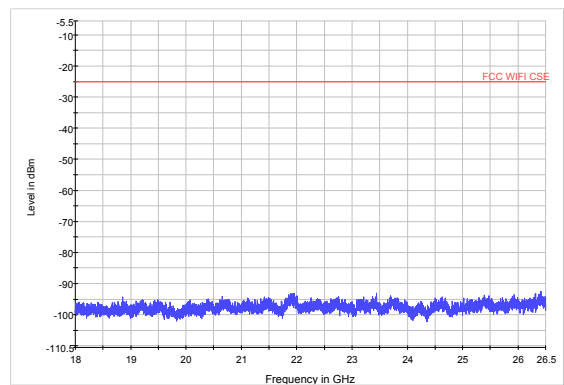
802.11b CH1 18GHz to 26.5GHz



802.11b CH6 30MHz to 18GHz

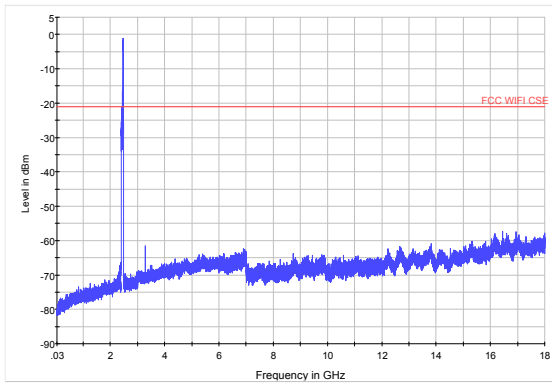


802.11b CH6 18GHz to 26.5GHz

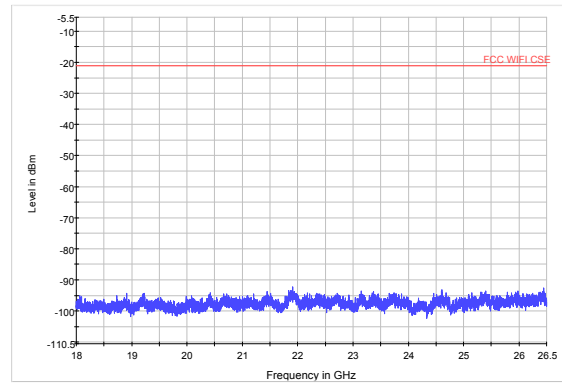




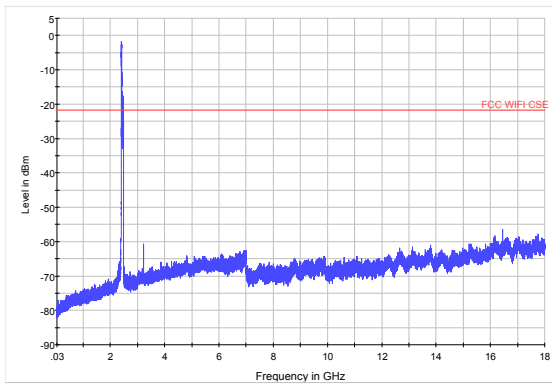
802.11b CH11 30MHz to 18GHz



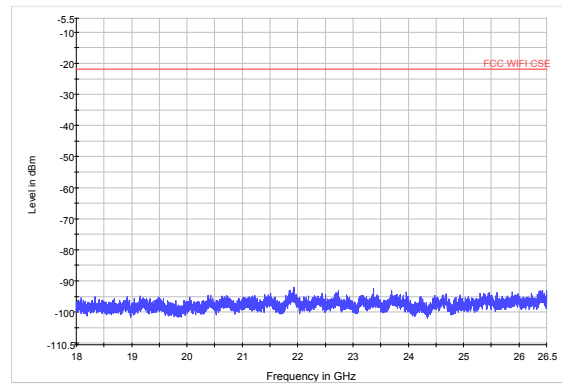
802.11b CH11 18GHz to 26.5GHz



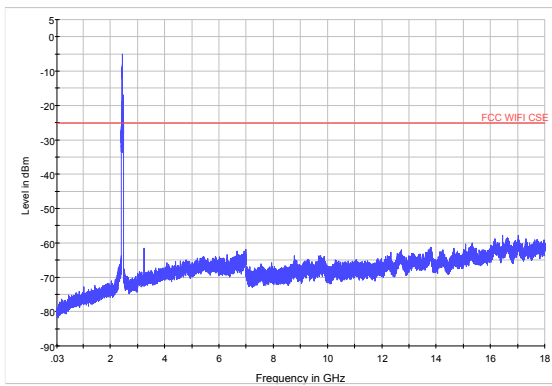
802.11g CH1 30MHz to 18GHz



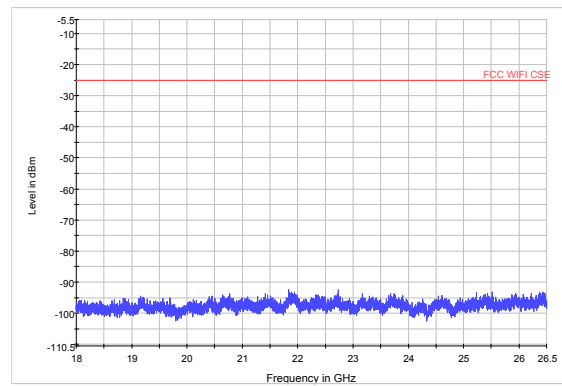
802.11g CH1 18GHz to 26.5GHz



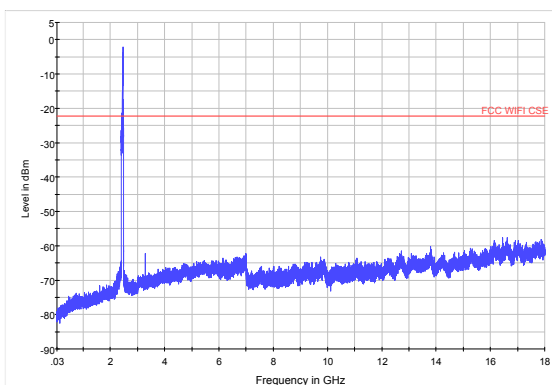
802.11g CH6 30MHz to 18GHz



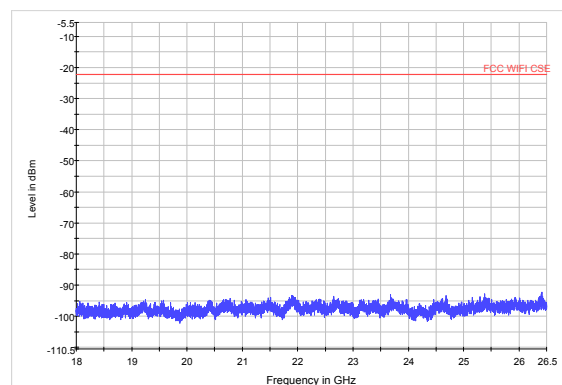
802.11g CH6 18GHz to 26.5GHz



802.11g CH11 30MHz to 18GHz

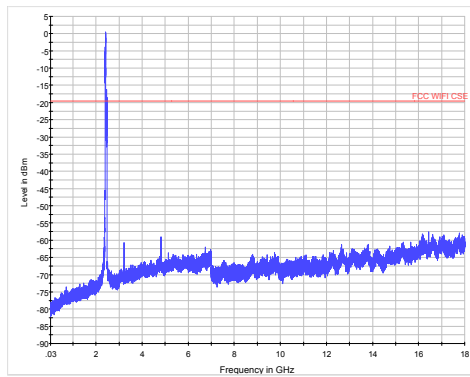


802.11g CH11 18GHz to 26.5GHz

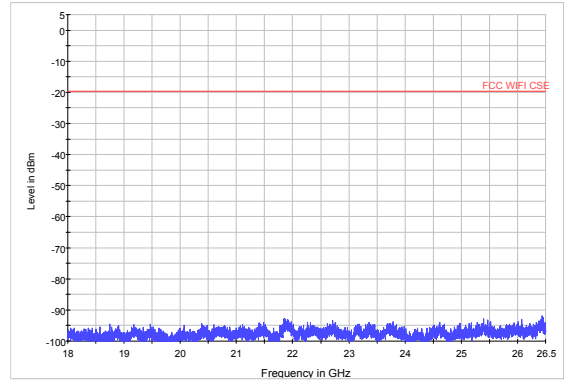




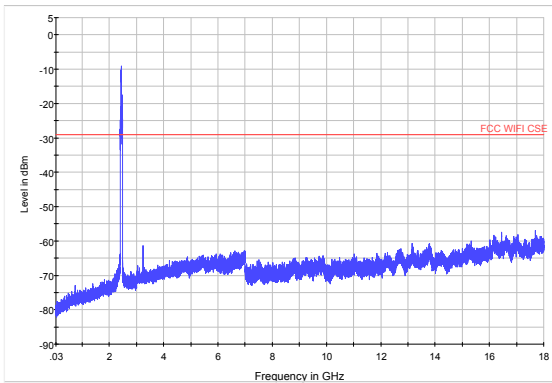
802.11n (HT20) CH1 30MHz to 18GHz



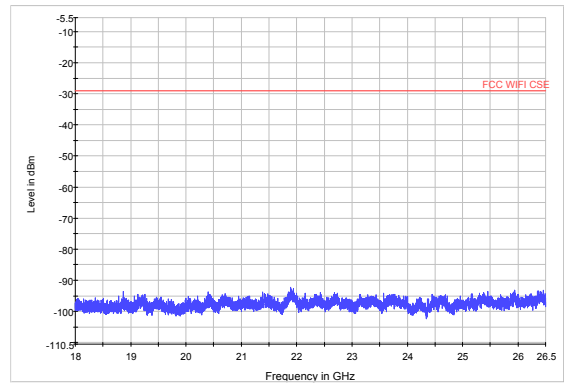
802.11n (HT20) CH1 18GHz to 26.5GHz



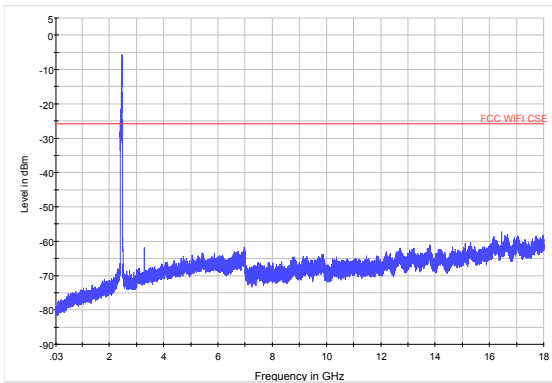
802.11n (HT20) CH6 30MHz to 18GHz



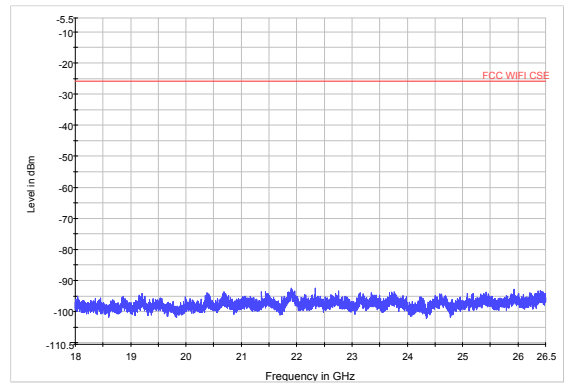
802.11n (HT20) CH6 18GHz to 26.5GHz



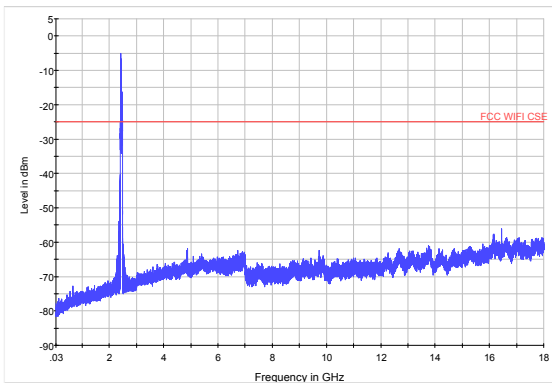
802.11n (HT20) CH11 30MHz to 18GHz



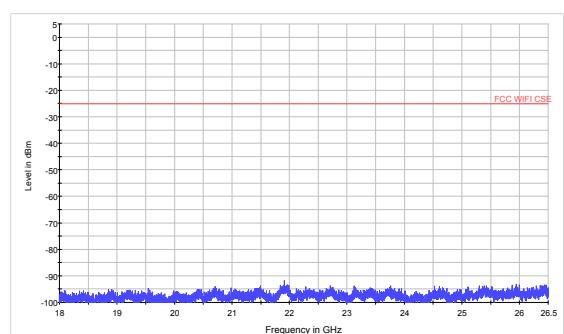
802.11n (HT20) CH11 18GHz to 26.5GHz



802.11n (HT40) CH3 30MHz to 18GHz

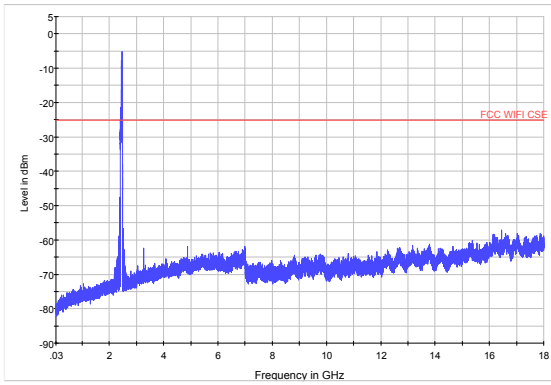


802.11n (HT40) CH3 18GHz to 26.5GHz

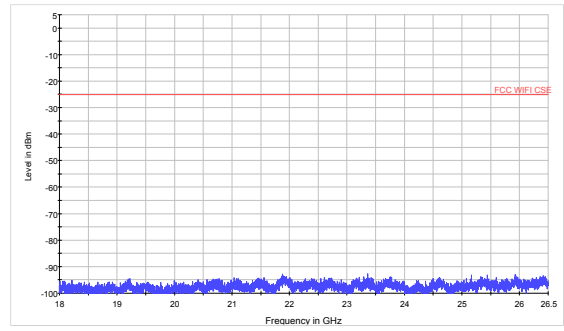




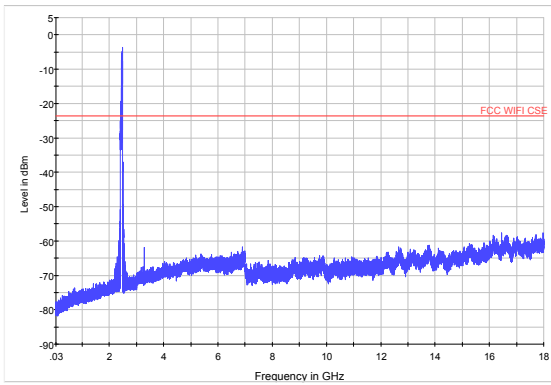
802.11n (HT40) CH6 30MHz to 18GHz



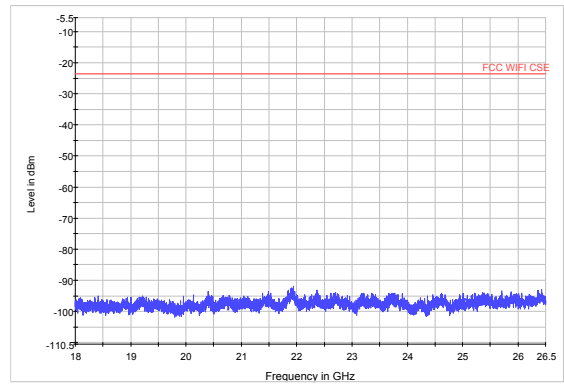
802.11n (HT40) CH6 18GHz to 26.5GHz



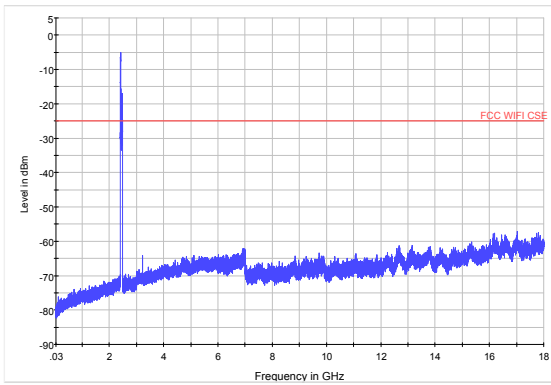
802.11n (HT40) CH9 30MHz to 18GHz



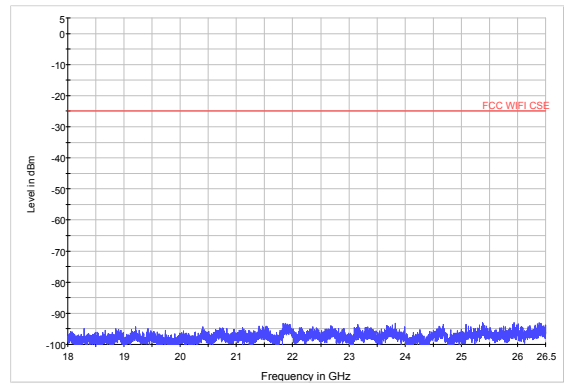
802.11n (HT40) CH9 18GHz to 26.5GHz

**Antenna 3**

802.11b CH1 30MHz to 18GHz

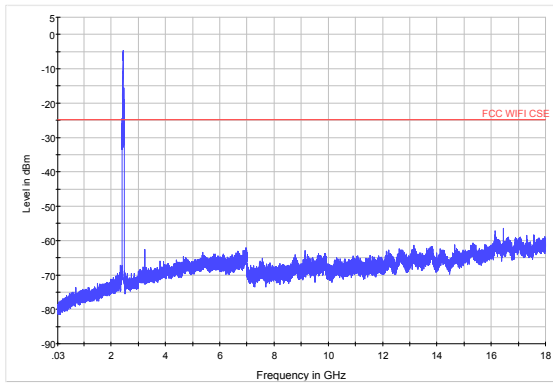


802.11b CH1 18GHz to 26.5GHz

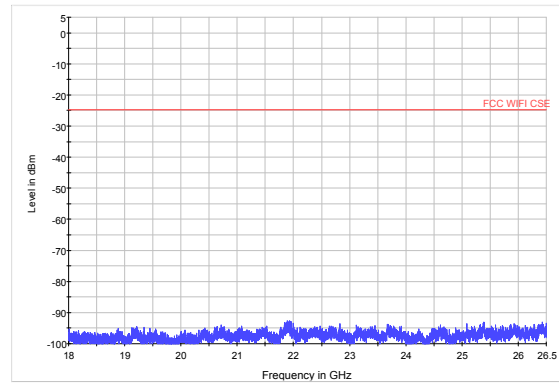




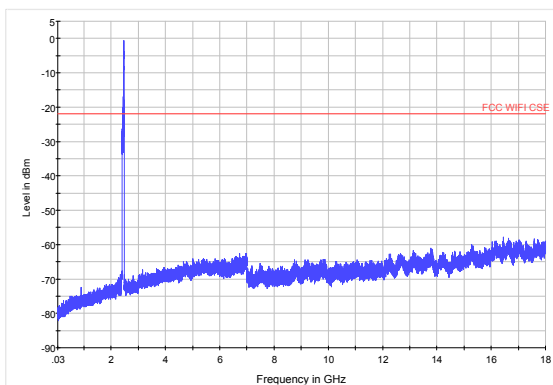
802.11b CH6 30MHz to 18GHz



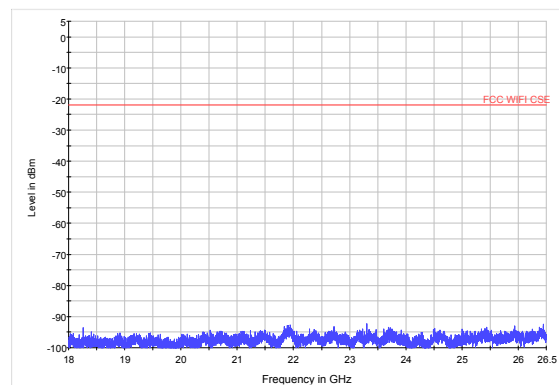
802.11b CH6 18GHz to 26.5GHz



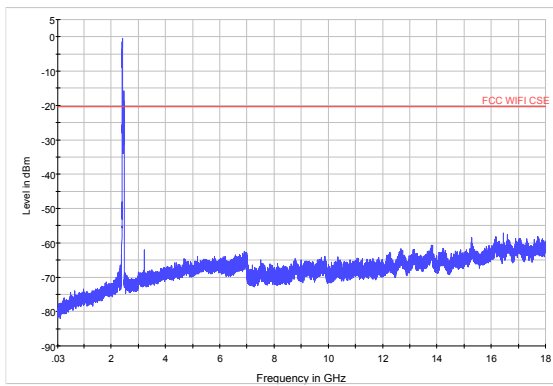
802.11b CH11 30MHz to 18GHz



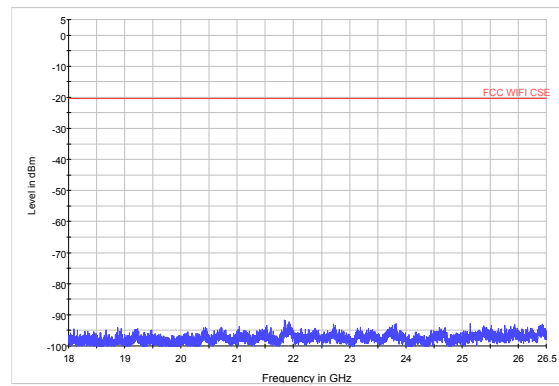
802.11b CH11 18GHz to 26.5GHz



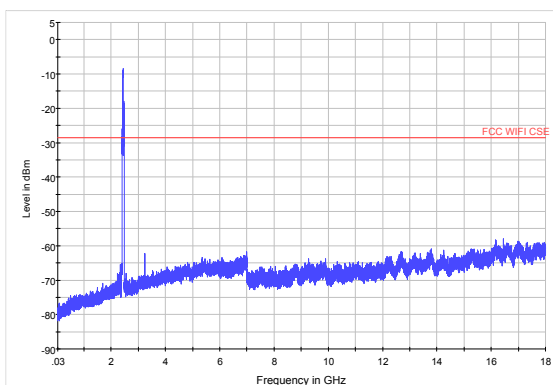
802.11g CH1 30MHz to 18GHz



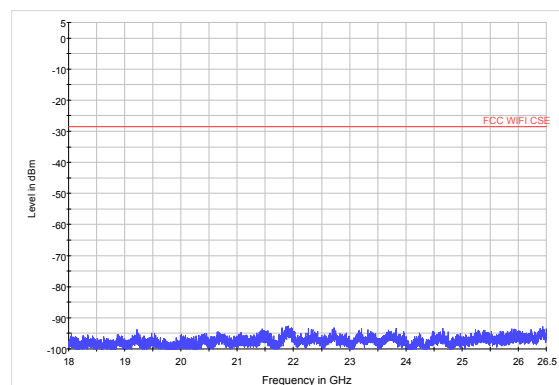
802.11g CH1 18GHz to 26.5GHz



802.11g CH6 30MHz to 18GHz

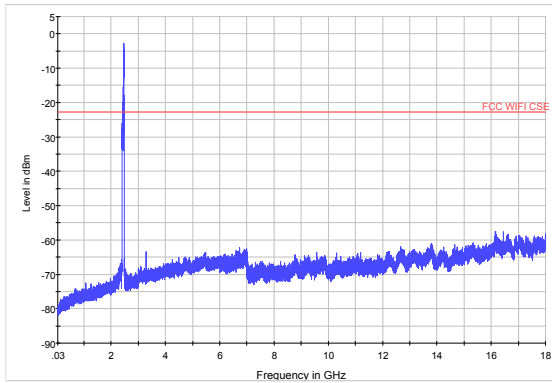


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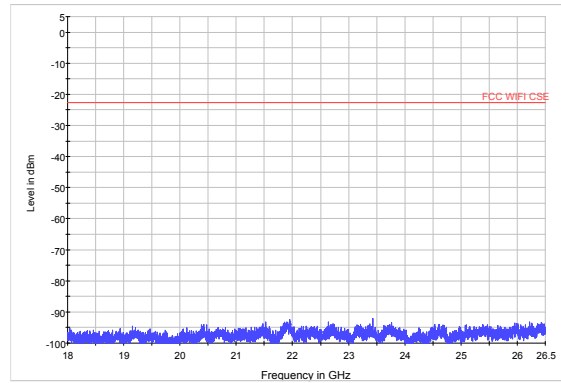




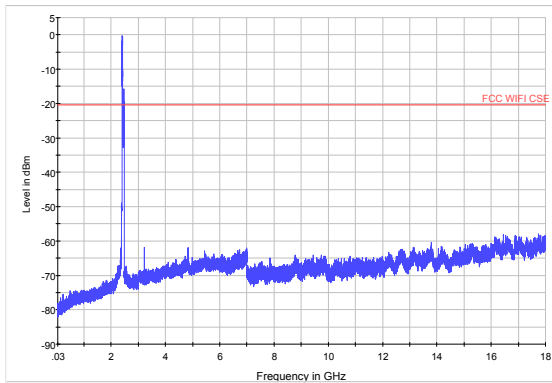
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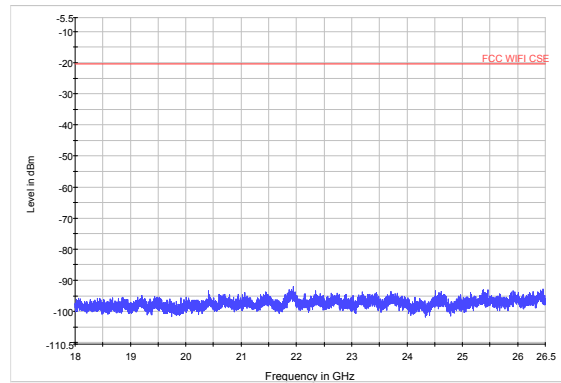
802.11g CH11 18GHz to 26.5GHz



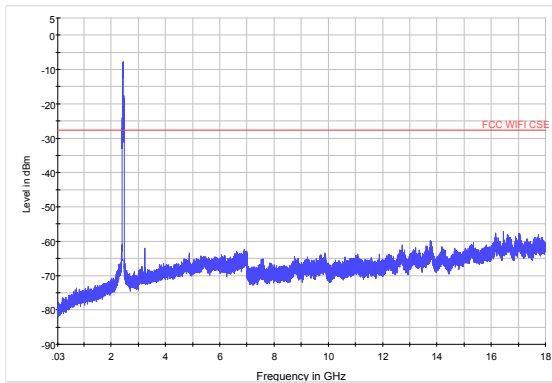
802.11n (HT20) CH1 30MHz to 18GHz



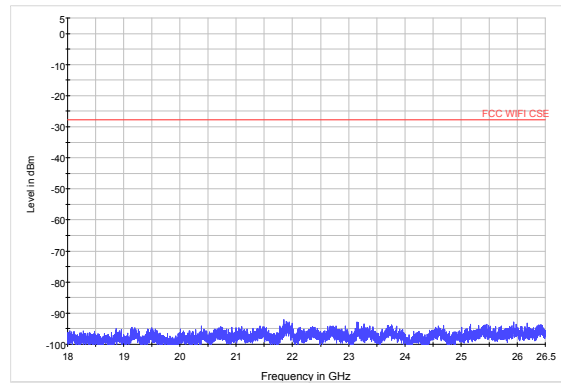
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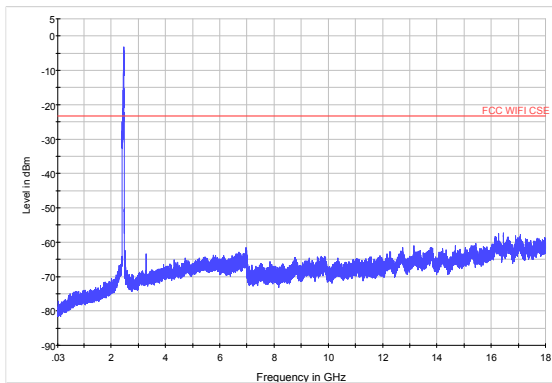
802.11n (HT20) CH6 30MHz to 18GHz



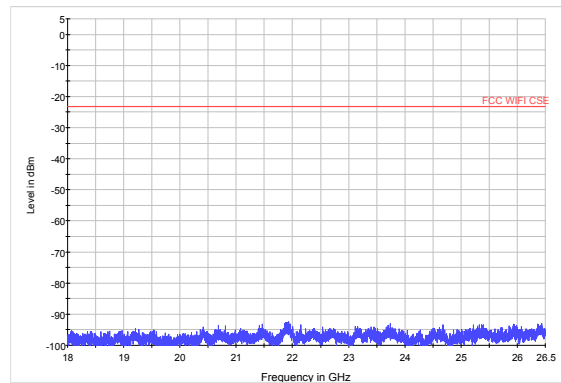
802.11n (HT20) CH6 18GHz to 26.5GHz



802.11n (HT20) CH11 30MHz to 18GHz

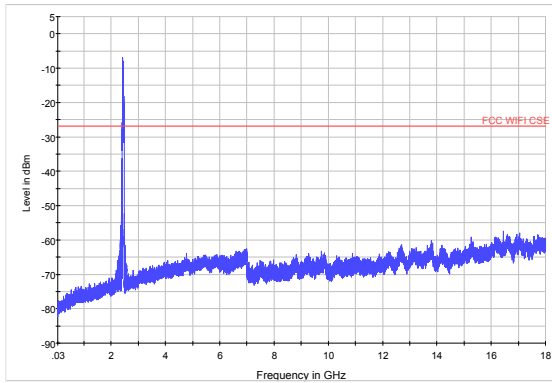


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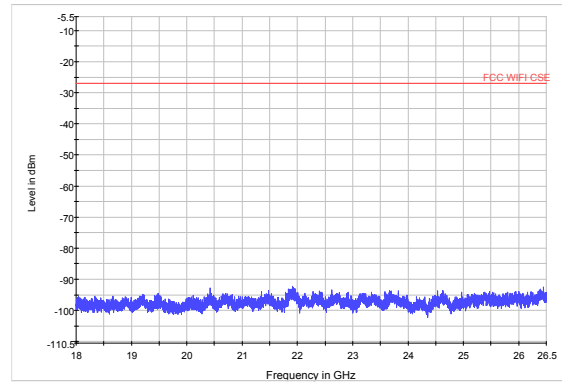




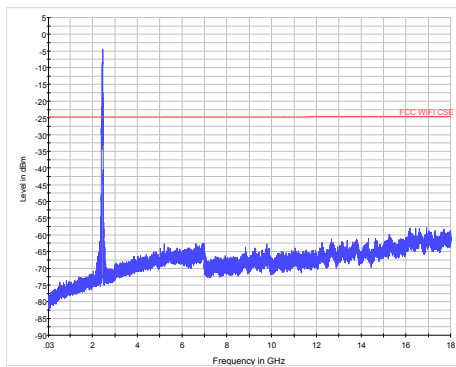
802.11n (HT40) CH3 30MHz to 18GHz



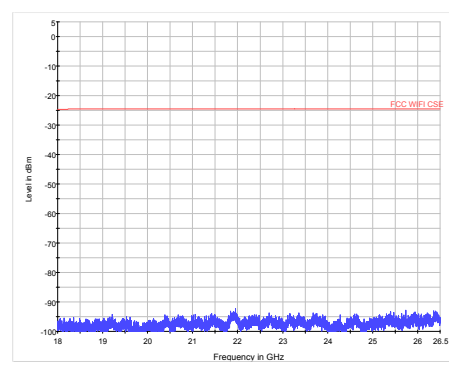
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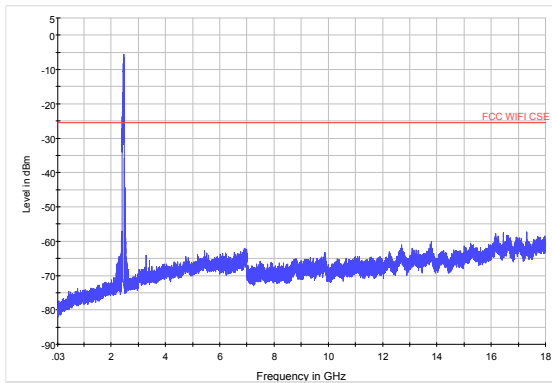
802.11n (HT40) CH6 30MHz to 18GHz



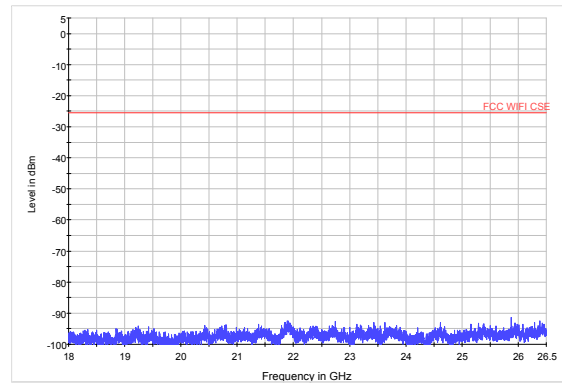
802.11n (HT40) CH6 18GHz to 26.5GHz



802.11n (HT40) CH9 30MHz to 18GHz



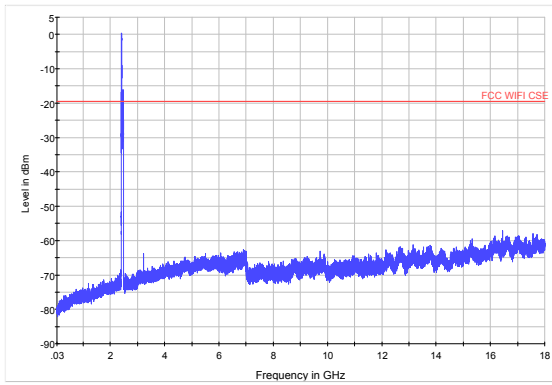
802.11n (HT40) CH9 18GHz to 26.5GHz



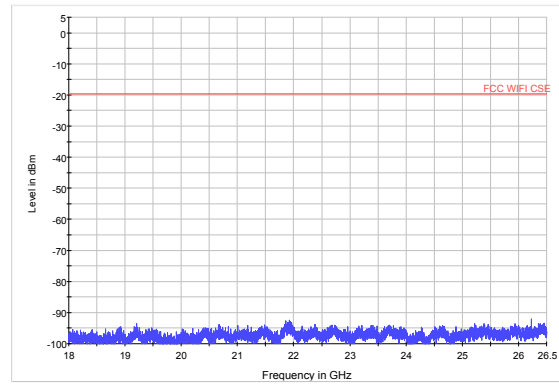


Antenna 4

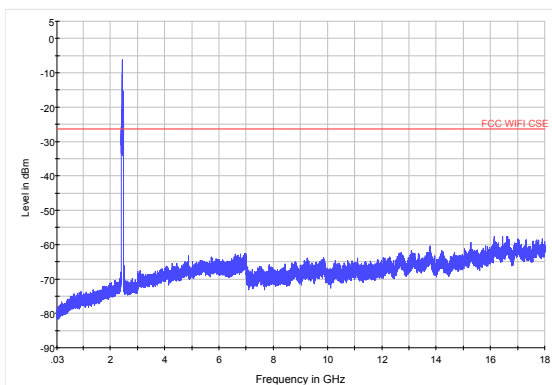
802.11b CH1 30MHz to 18GHz



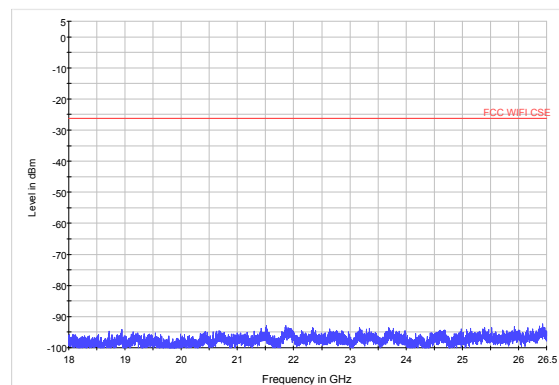
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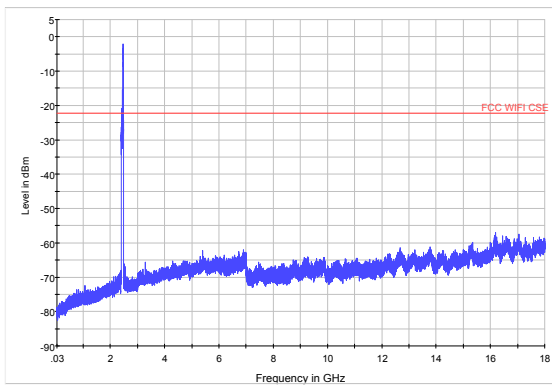
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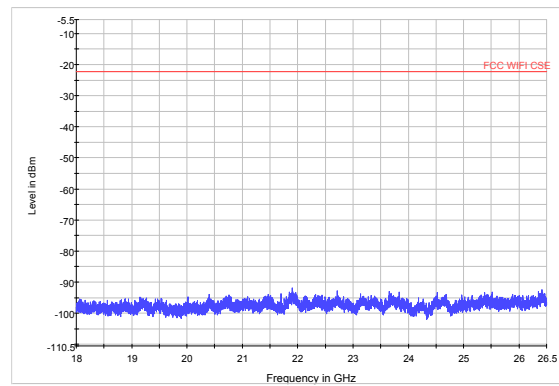
802.11b CH6 18GHz to 26.5GHz



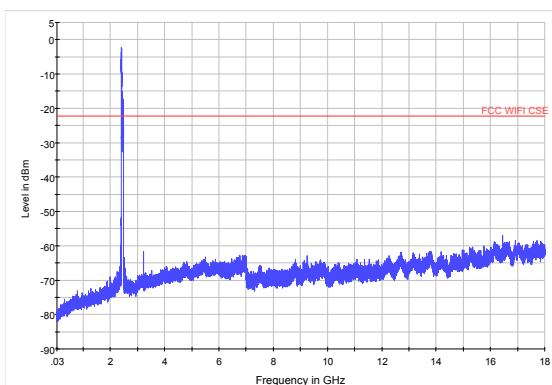
802.11b CH11 30MHz to 18GHz



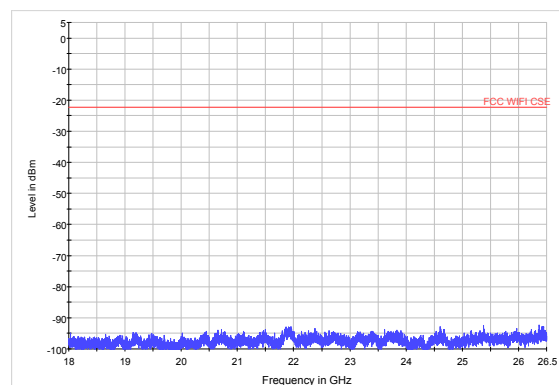
802.11b CH11 18GHz to 26.5GHz



802.11g CH1 30MHz to 18GHz

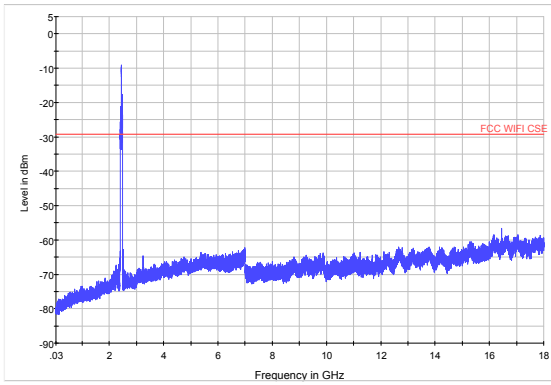


802.11g CH1 18GHz to 26.5GHz

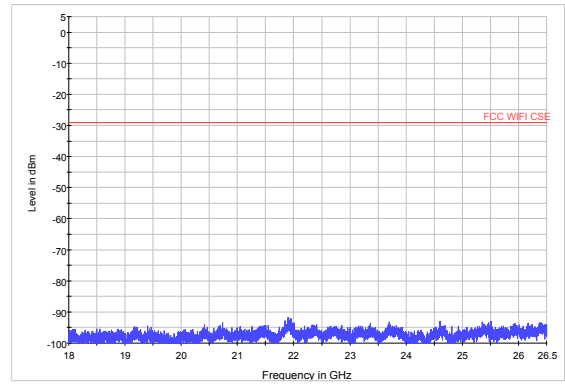




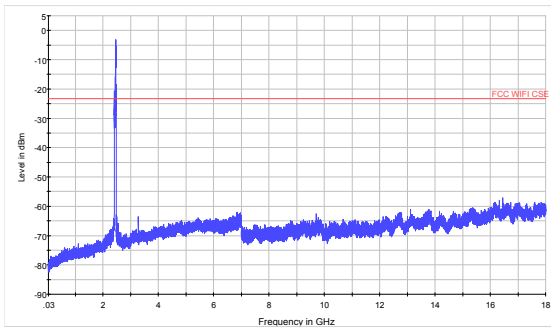
802.11g CH6 30MHz to 18GHz



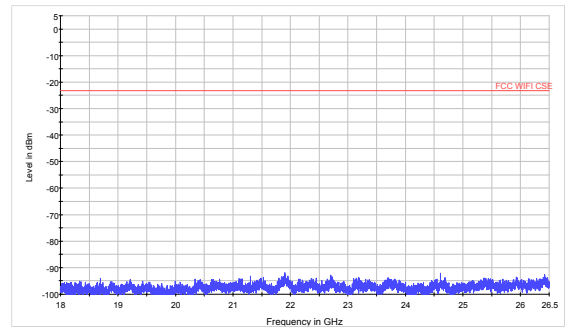
802.11g CH6 18GHz to 26.5GHz



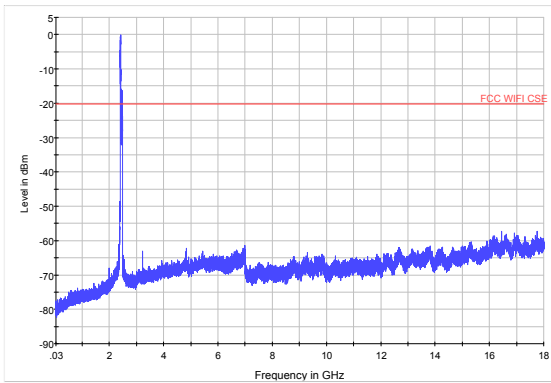
802.11g CH11 30MHz to 18GHz



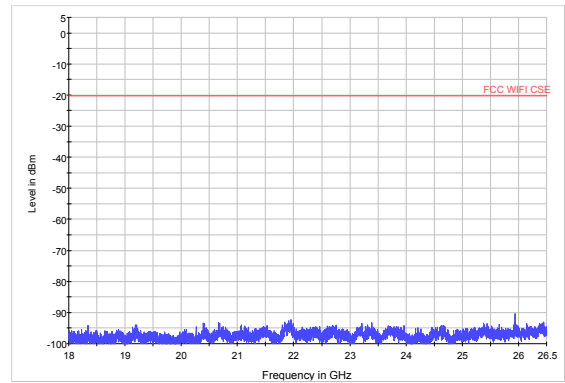
802.11g CH11 18GHz to 26.5GHz



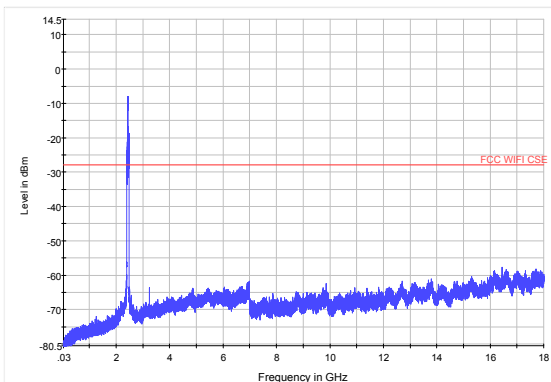
802.11n (HT20) CH1 30MHz to 18GHz



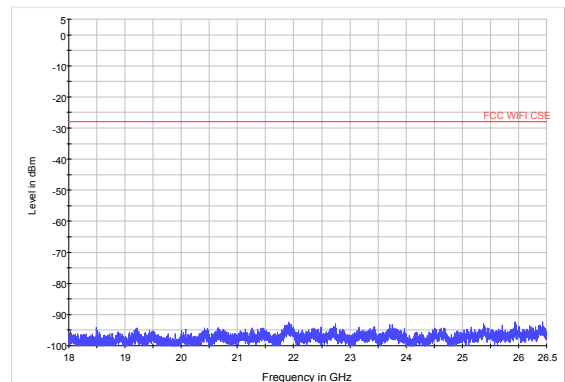
802.11n (HT20) CH1 18GHz to 26.5GHz



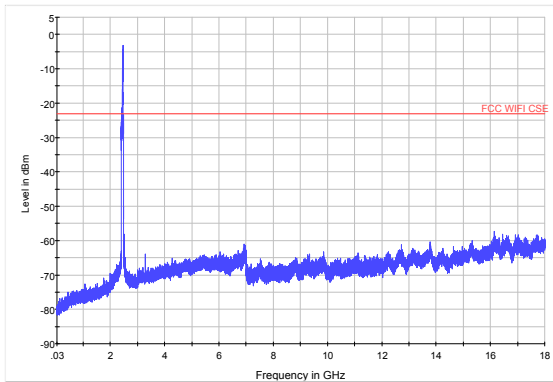
802.11n (HT20) CH6 30MHz to 18GHz



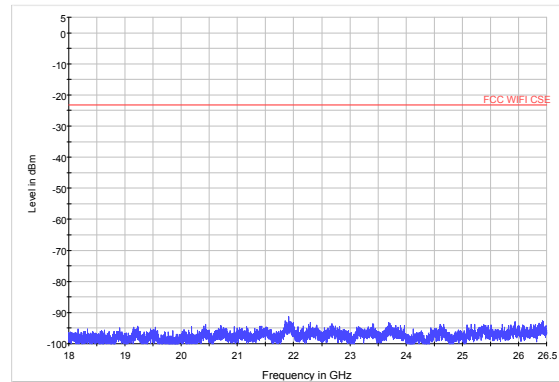
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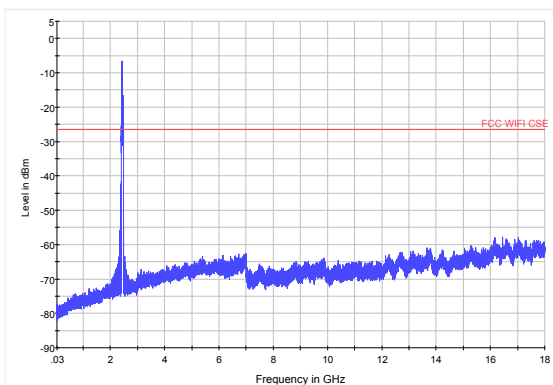
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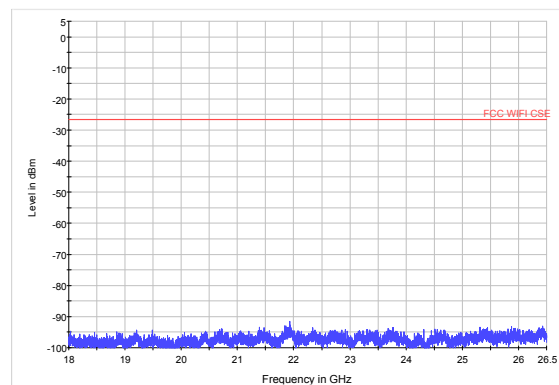
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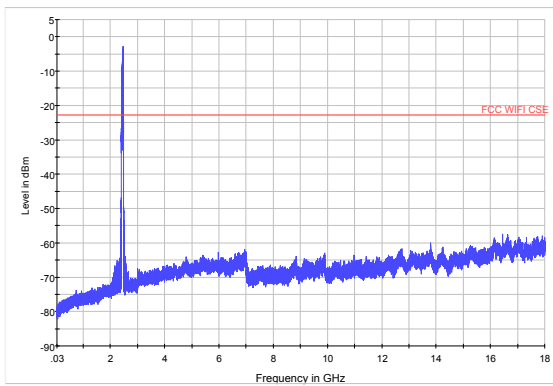
802.11n (HT40) CH3 30MHz to 18GHz



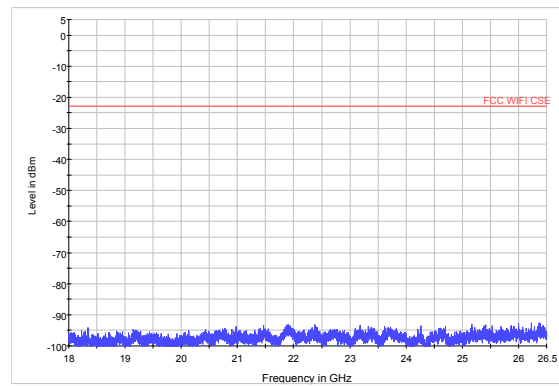
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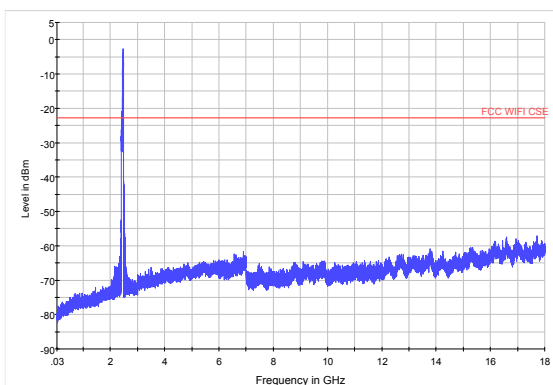
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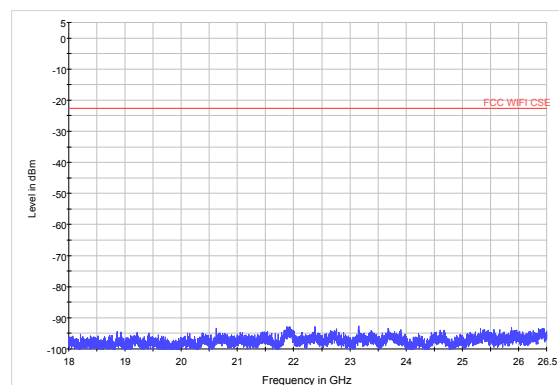
802.11n (HT40) CH6 18GHz to 26.5GHz



802.11n (HT40) CH9 30MHz to 18GHz



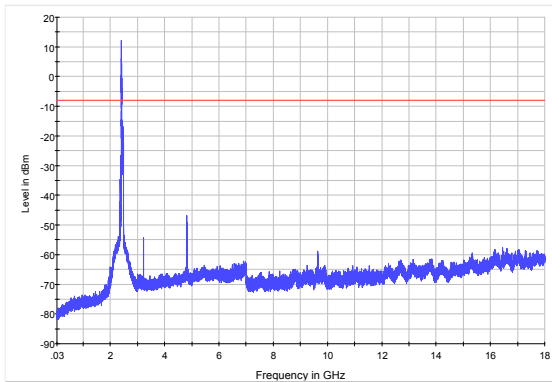
802.11n (HT40) CH9 18GHz to 26.5GHz



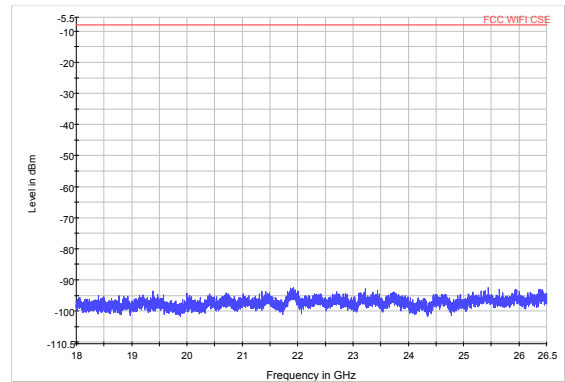


MIMO

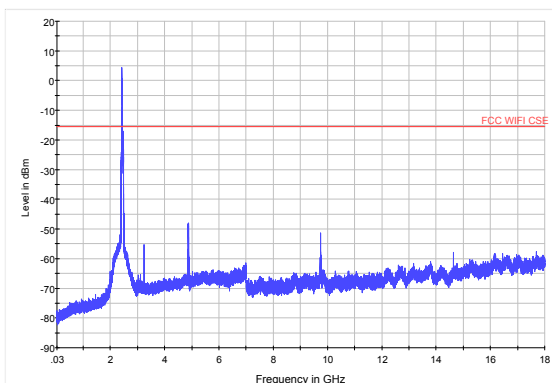
802.11n (HT20) CH1 30MHz to 18GHz



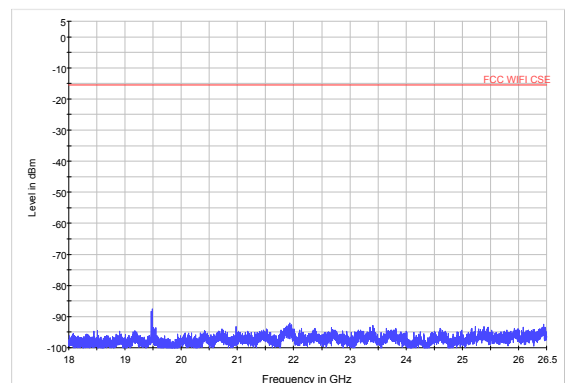
802.11n (HT20) CH1 18GHz to 26.5GHz



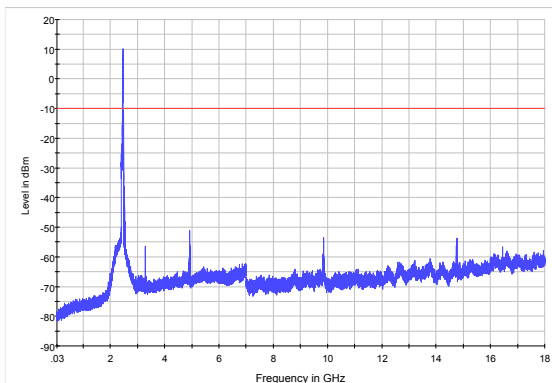
802.11n (HT20) CH6 30MHz to 18GHz



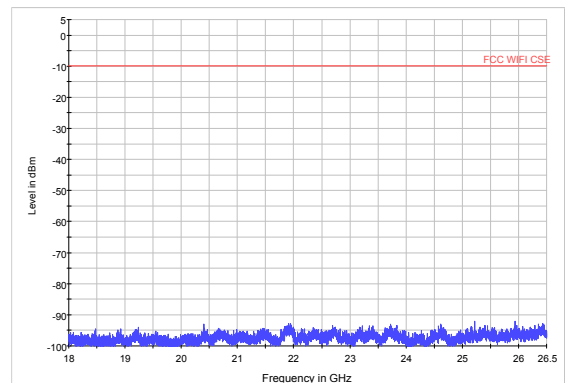
802.11n (HT20) CH6 18GHz to 26.5GHz



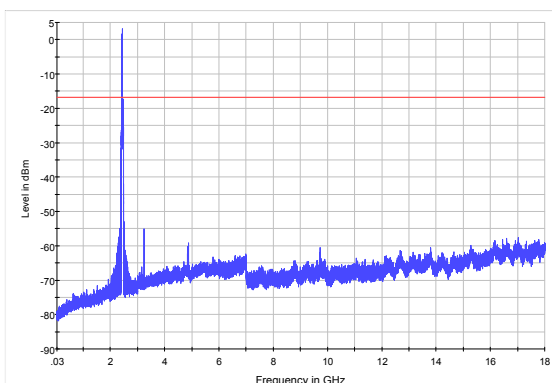
802.11n (HT20) CH11 30MHz to 18GHz



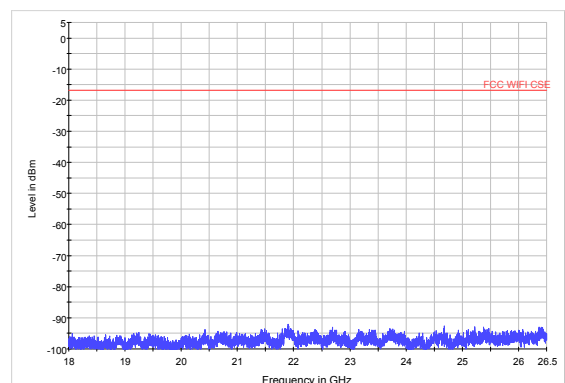
802.11n (HT20) CH11 18GHz to 26.5GHz



802.11n (HT40) CH3 30MHz to 18GHz

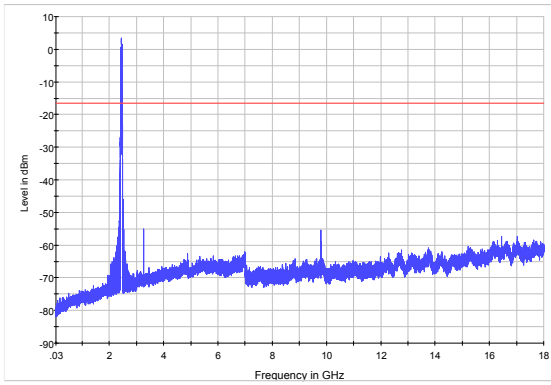


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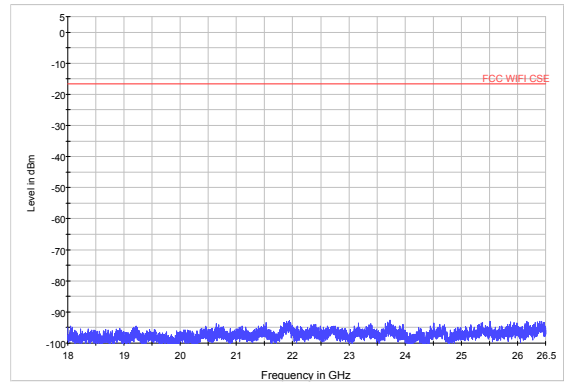




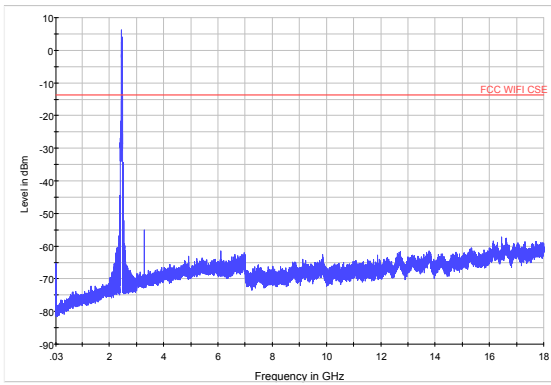
802.11n (HT40) CH6 30MHz to 18GHz



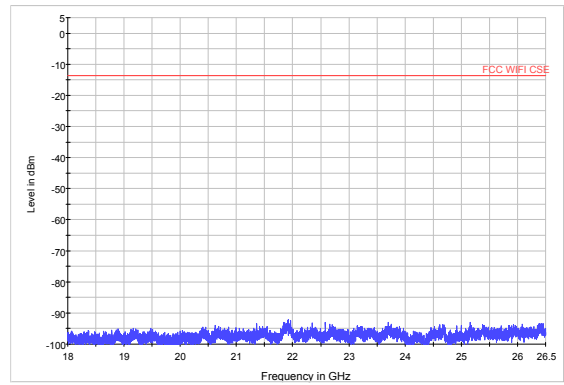
802.11n (HT40) CH6 18GHz to 26.5GHz



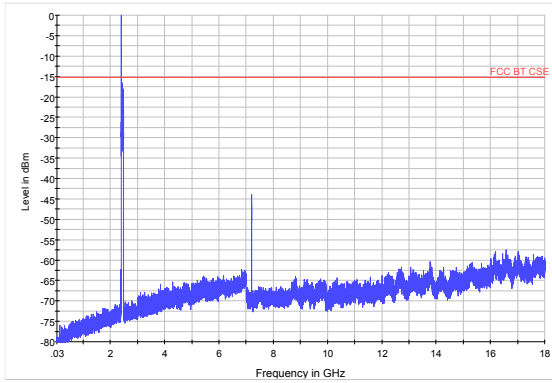
802.11n (HT40) CH9 30MHz to 18GHz



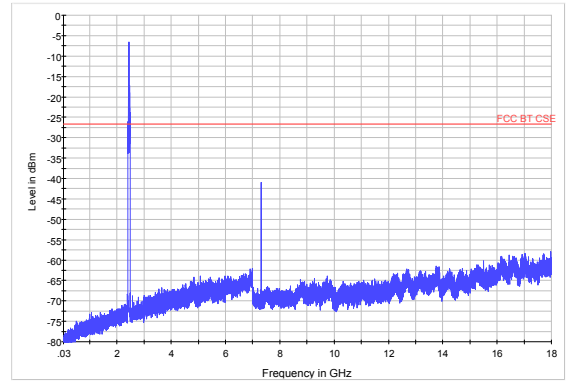
802.11n (HT40) CH9 18GHz to 26.5GHz



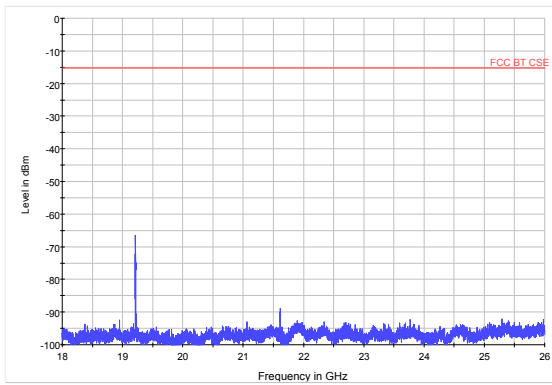
BLE CH0 30MHz to 18GHz



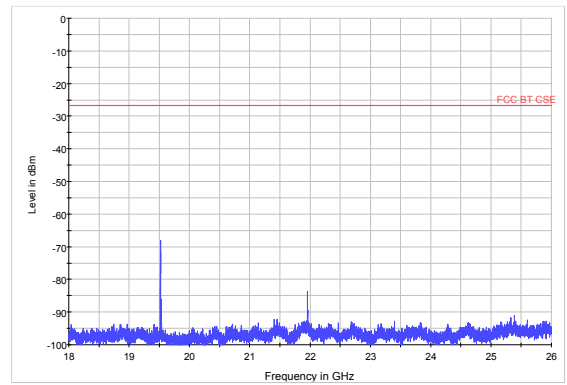
BLE CH19 30MHz to 18GHz



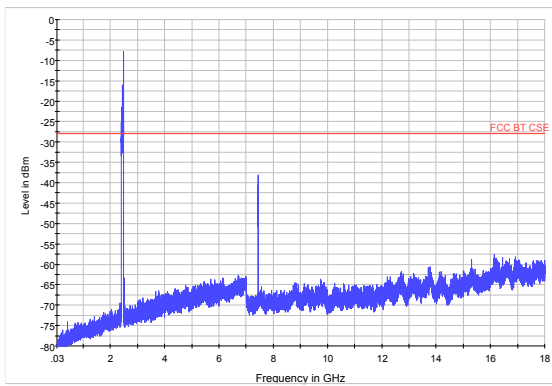
BLE CH0 18GHz to 26.5GHz



BLE CH19 18GHz to 26.5GHz



BLE CH39 30MHz to 18GHz



BLE CH39 18GHz to 26.5GHz

