HCT CO.,LTD.

74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
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FCC DTS REPORT

FCC Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Date of Issue:
February 03, 2017

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

Report No.: HCT-R-1702-F007

HCT FRN: 0005866421

FCC ID	**: A3LSMW727V**
APPLICANT	**: SAMSUNG Electronics Co., Ltd.**

Model(s): SM-W727V

EUT Type: Tablet

Average Output Power:

Mode	Ant.0(SISO)	Ant.1(SISO)	Ant.0 & 1 (MIMO)
802.11b	14.20 dBm	14.31 dBm	-
802.11g	12.09 dBm	12.13 dBm	15.12 dBm
802.11n_HT20	12.12 dBm	12.19 dBm	15.17 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
: Kyung Soo Kang
Test Engineer of RF Team

Approved by
: Jong Seok Lee
Manager of RF Team

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1702-F007	February 03, 2017	- First Approval Report

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1. GENERAL INFORMATION

Applicant:	SAMSUNG Electronics Co.,Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMW727V
EUT Type:	Tablet
Model (s):	SM-W727V
Date(s) of Tests:	December 22, 2016 ~ February 3, 2017
Place of Tests:	HCT Co., Ltd. 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

2. EUT DESCRIPTION

Model	SM-W727V		
EUT Type	Tablet		
Power Supply	DC 7.7 V		
Battery Information	Model: EB-BW720ABA Type: Li-ion Battery		
Frequency Range	TX: 2412 MHz ~ 2462 MHz RX: 2412 MHz ~ 2462 MHz		
Max. RF Output Power	Peak	Ant. 0 (SISO)	Wi-Fi 802.11b(19.83 dBm) / Wi-Fi 802.11g (20.74 dBm) / Wi-Fi 802.11n_HT20 (20.12 dBm)
		Ant.1 (SISO)	Wi-Fi 802.11b(19.94 dBm) / Wi-Fi 802.11g (20.73 dBm) / Wi-Fi 802.11n_HT20 (20.69 dBm)
		Ant.0 & 1 (MIMO)	Wi-Fi 802.11g (23.75 dBm) / Wi-Fi 802.11n_HT20 (23.42 dBm)
	Average	Ant.0 (SISO)	Wi-Fi 802.11b(14.20 dBm) / Wi-Fi 802.11g (12.09 dBm) / Wi-Fi 802.11n_HT20 (12.12 dBm)
		Ant.1 (SISO)	Wi-Fi 802.11b(14.31 dBm) / Wi-Fi 802.11g (12.13 dBm) / Wi-Fi 802.11n_HT20 (12.19 dBm)
		Ant.0 & 1 (MIMO)	Wi-Fi 802.11g (15.12 dBm) / Wi-Fi 802.11n_HT20 (15.17 dBm)
Modulation Type	DSSS/CCK(802.11b), OFDM(802.11g, 802.11n)		
Antenna Specification	Manufacturer: Ethertronics, Inc. Antenna type: INTERNAL 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
802.11g/n	MIMO	Ant. 0 & 1

Note : In case of radiation test, we have done all test case. Worst case is MIMO(CDD) for 802.11g/n_HT20 mode and Ant.0(SISO) for 802.11b mode. So, we attached the result of MIMO for 802.11g/n mode and Ant.0(SISO) for 802.11b mode.

3. TEST METHODOLOGY

FCC KDB 558074 D01 DTS Meas Guidance v03r05 dated April 08, 2016 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 v03r05)

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 any transmit signals are correlated with each other(802.11g/n_HT20),**

Directional gain = $10*\log[(10^{G1/20} + 10^{G2/20}+\ldots+10^{GN/20})^2/N]$ dBi

▣ Antenna Gain

2.4 GHz Band

Antenna Gain	802.11b/g/n	Ant 0	-0.75 dBi
		Ant 1	-1.28 dBi
Directional Antenna Gain	802.11g/n_HT20	Ant 0 & 1	2.00 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. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±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)	6.07

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

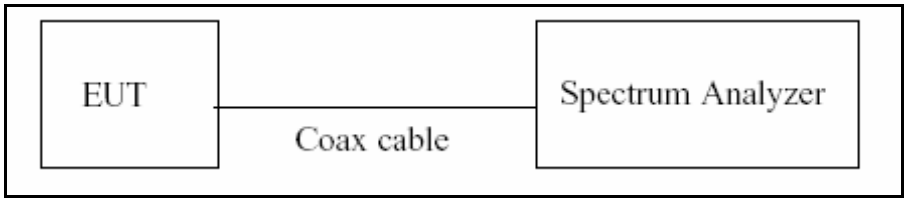
9.1 DUTY CYCLE

▣ TEST PROCEDURE

According to Section 6.0)b) in KDB 558074 v03r05

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 ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ 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 ≤ 16.7 microseconds.)

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. We tested accroding to the zero-span measurement method, 6.0)b) in KDB 558074 v03r05

The largest availble 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 ≤ 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 availble value)
2. VBW = 8 MHz (≥ 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*log(1/Duty Cycle)

▣ **Duty Cycle Factor**

Mode	Data Rate	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
b	1 Mbps	12.430	12.544	0.99087228	0.040
	2 Mbps	6.311	6.419	0.98329854	0.073
	5.5 Mbps	2.417	2.527	0.95646444	0.193
	11 Mbps	1.304	1.410	0.92501082	0.339
g	6 Mbs	2.064	2.181	0.94620185	0.240
	9 Mbs	1.383	1.495	0.92542137	0.337
	12 Mbs	1.043	1.160	0.89985340	0.458
	18 Mbs	0.704	0.820	0.85865969	0.662
	24 Mbs	0.532	0.643	0.82726559	0.824
	36 Mbs	0.364	0.475	0.76641104	1.155
	48 Mbs	0.275	0.388	0.70876289	1.495
	54 Mbs	0.248	0.360	0.68888889	1.619
n_HT20	MCS 0	1.925	2.040	0.94371997	0.252
	MCS 1	0.980	1.090	0.89875275	0.464
	MCS 2	0.668	0.779	0.85723615	0.669
	MCS 3	0.508	0.624	0.81477514	0.890
	MCS 4	0.352	0.471	0.74766333	1.263
	MCS 5	0.272	0.383	0.71061961	1.484
	MCS 6	0.248	0.359	0.69056790	1.608
	MCS 7	0.228	0.349	0.65349582	1.848

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

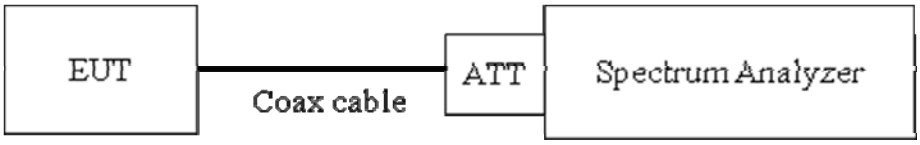
9.2 6dB BANDWIDTH

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 v03r05)

RBW = 100 kHz

VBW ≥ 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	8.080	0.500	Pass
2437	6	8.094	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	15.74	0.500	Pass
2437	6	16.14	0.500	Pass
2462	11	15.95	0.500	Pass

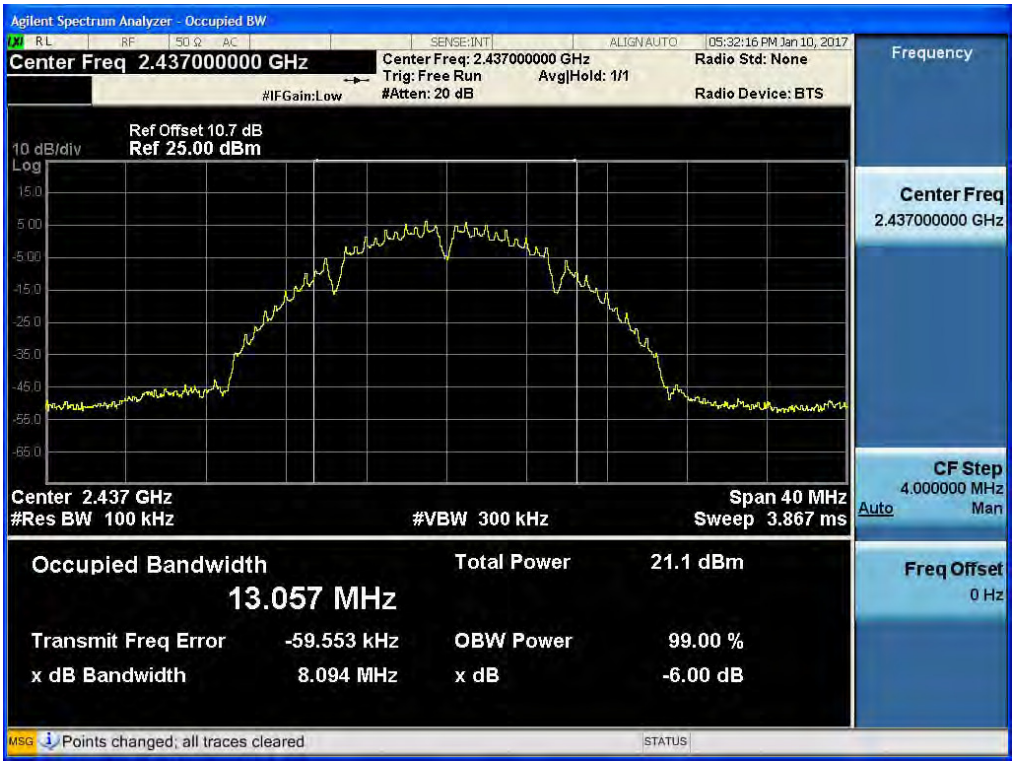
Conducted 6dB Bandwidth Measurements for 802.11n_HT20

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	16.32	0.500	Pass
2437	6	17.25	0.500	Pass
2462	11	15.98	0.500	Pass

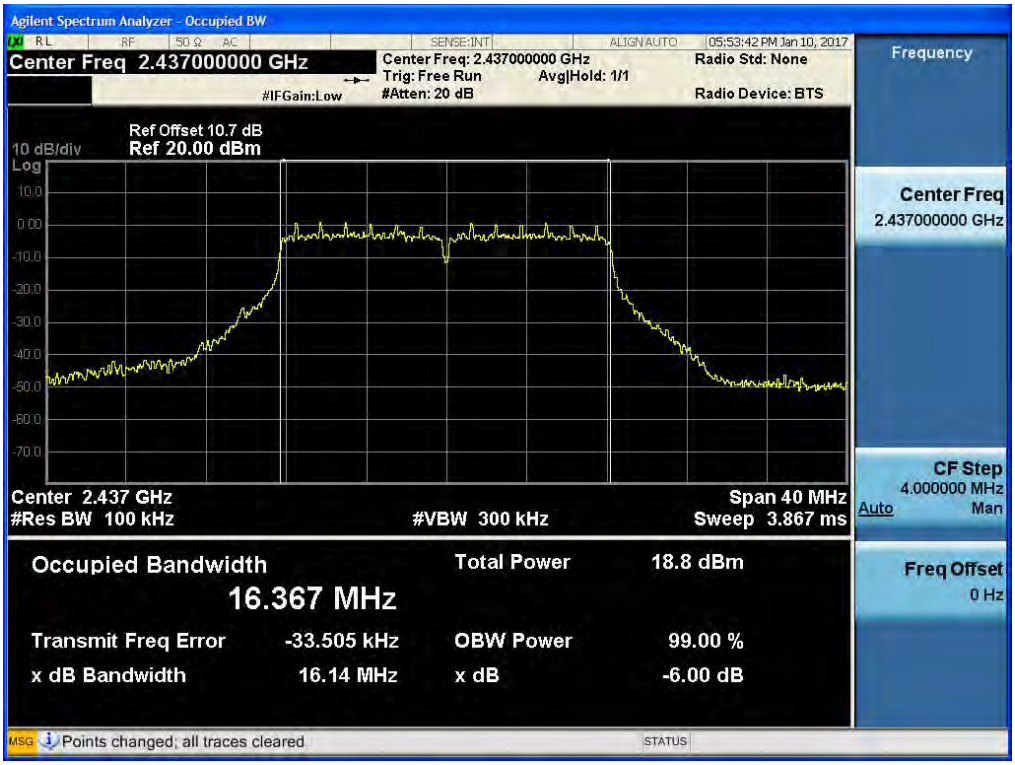
Note : In order to simplify the report, attached plots were only the most wide 6 dB BW channel.

▣ RESULT PLOTS

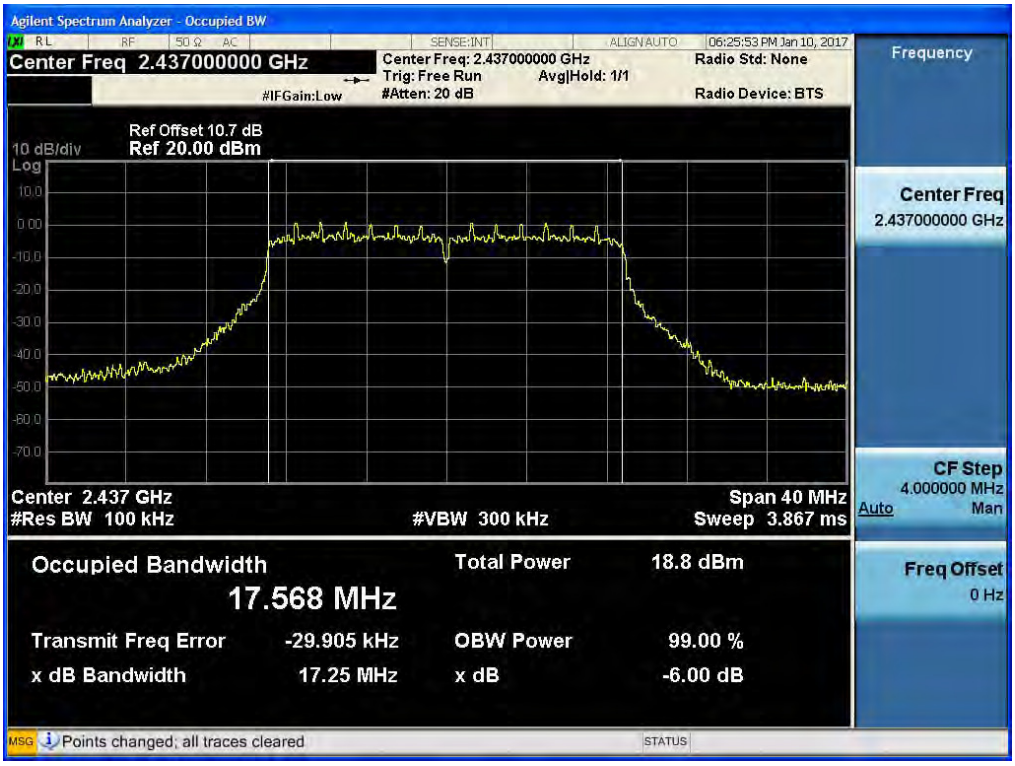
6dB Bandwidth plot (802.11b-CH 6)



6dB Bandwidth plot (802.11g-CH 6)



6dB Bandwidth plot (802.11n_HT20-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	8.084	0.500	Pass
2437	6	8.093	0.500	Pass
2462	11	8.083	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	15.95	0.500	Pass
2437	6	16.06	0.500	Pass
2462	11	15.97	0.500	Pass

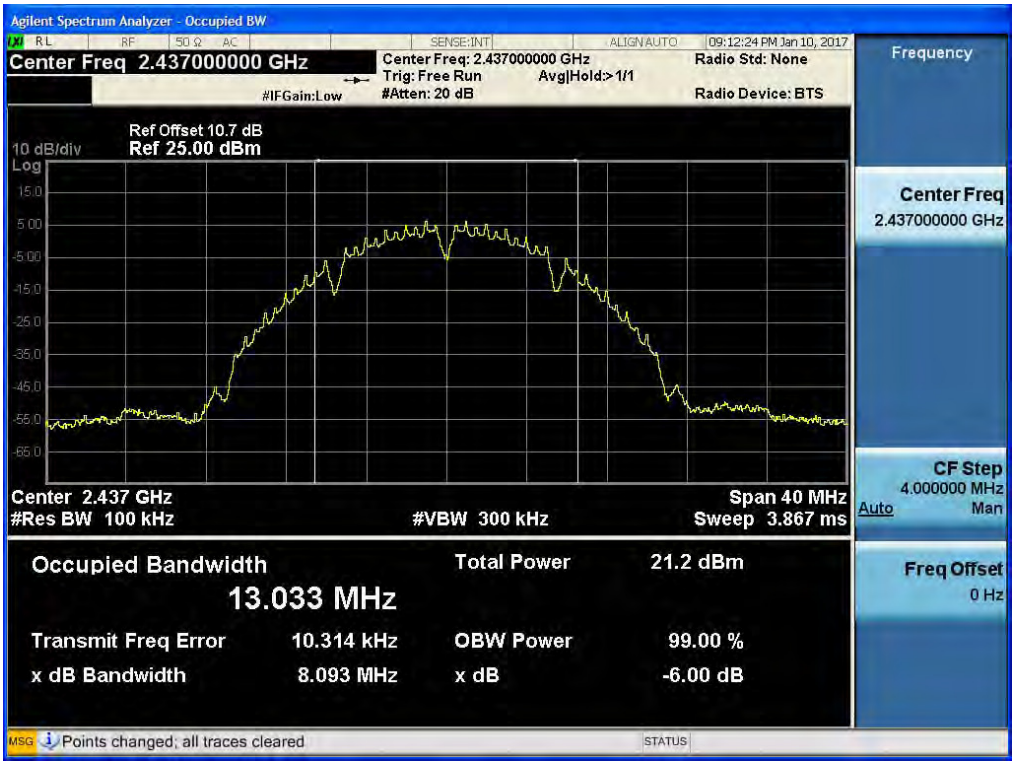
Conducted 6dB Bandwidth Measurements for 802.11n_HT20

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	16.50	0.500	Pass
2437	6	16.88	0.500	Pass
2462	11	16.03	0.500	Pass

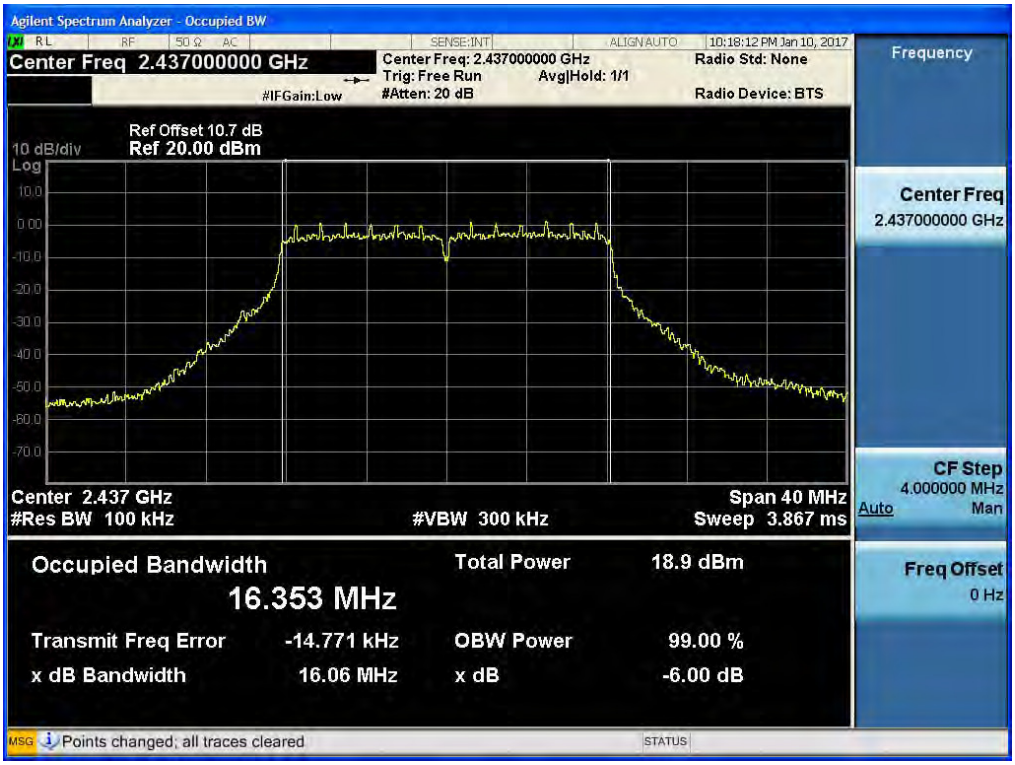
Note : In order to simplify the report, attached plots were only the most wide 6 dB BW channel.

▣ RESULT PLOTS

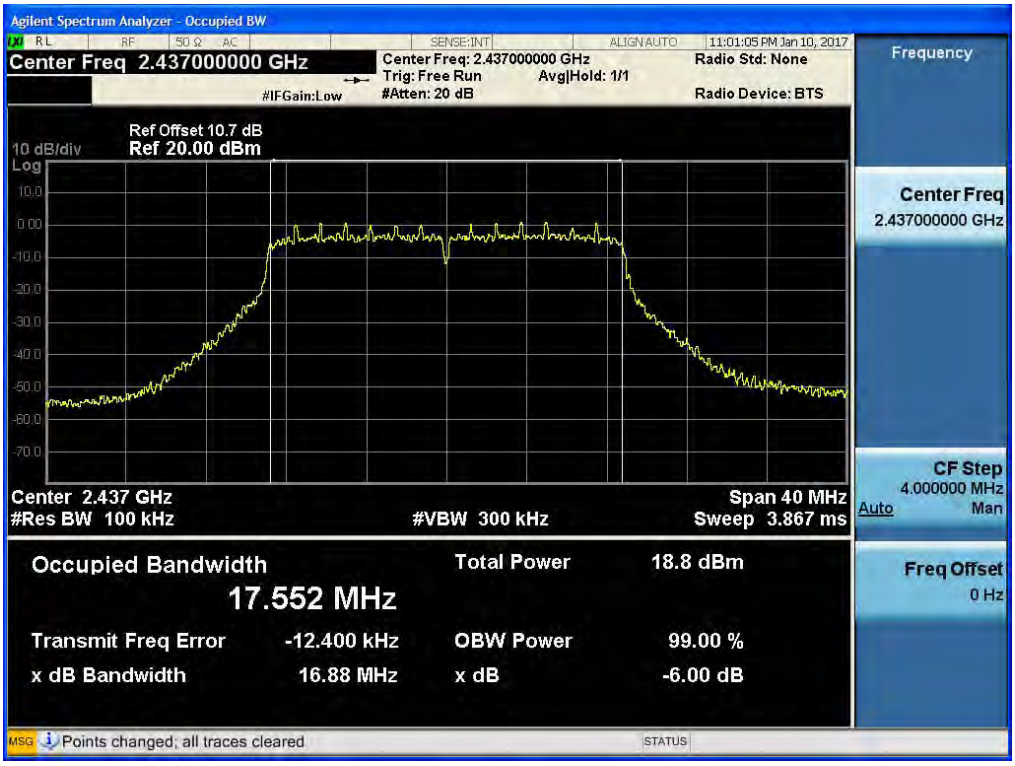
6dB Bandwidth plot (802.11b-CH 6)



6dB Bandwidth plot (802.11g-CH 6)



6dB Bandwidth plot (802.11n_HT20-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	-0.75	30.0
			1	-1.28	30.0
MIMO(2 TX)		802.11g/n_HT20	0 & 1	2.00	30.0

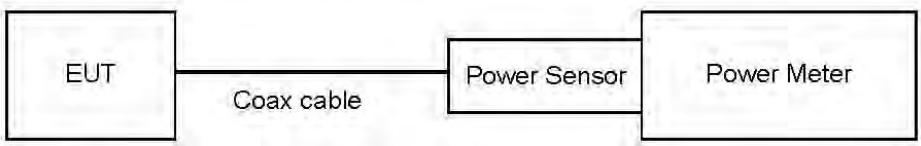
Note : 1. If all antenna gains are not equal,

Directional gain = $10*\log[(10^{G1/20} + 10^{G2/20}+\ldots+10^{GN/20})^2/N]$ dBi (802.11g/n_HT20)

(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 9.1.2 in KDB 558074 v03r05)

1. Measure the peak power of the transmitter.

▪ Average Power (Procedure 9.2.3.1 in KDB 558074 v03r05)

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 tenth dB. So, 10.7 dB is offset for 2.4 GHz Band.
   Actual value of loss for the attenuator and cable combination is below table.

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	10.65
	2437	10.65
	2462	10.66

(Actual value of loss for the attenuator and cable combination)

▣ Sample Calculation

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

Ex) Output Power = 10 dBm + 20 dB + 0.8 dB + 0.2 dB = 31.0 dBm

Note :

1. Spectrum reading values are not plot data. The power results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB. So, 10.7 dB is offset for 2.4 GHz Band and
   Actual value of loss for the attenuator and cable combination is below table.

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	10.65
	2437	10.65
	2462	10.66

(Actual value of loss for the attenuator and cable combination)

▣ **TEST RESULTS-Peak**

▣ **TEST RESULTS-Ant.0**

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	16.55	30
		2 Mbps	16.78	30
		5.5 Mbps	18.16	30
		11 Mbps	19.68	30
2437	6	1 Mbps	16.52	30
		2 Mbps	16.74	30
		5.5 Mbps	18.08	30
		11 Mbps	19.59	30
2462	11	1 Mbps	16.73	30
		2 Mbps	16.89	30
		5.5 Mbps	18.30	30
		11 Mbps	19.83	30

▣ **TEST RESULTS-Ant.1**

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	16.73	30
		2 Mbps	16.90	30
		5.5 Mbps	18.30	30
		11 Mbps	19.83	30
2437	6	1 Mbps	16.51	30
		2 Mbps	16.91	30
		5.5 Mbps	18.25	30
		11 Mbps	19.75	30
2462	11	1 Mbps	16.79	30
		2 Mbps	17.06	30
		5.5 Mbps	18.42	30
		11 Mbps	19.94	30

▣ TEST RESULTS-Ant.0

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate	Measured	Limit
Frequency[MHz]	Channel No.	(Mbps)	Power(dBm)	(dBm)
2412	1	6 Mbps	19.34	30
		9 Mbps	19.47	30
		12 Mbps	19.46	30
		18 Mbps	19.22	30
		24 Mbps	20.54	30
		36 Mbps	20.06	30
		48 Mbps	20.17	30
		54 Mbps	20.28	30
2437	6	6 Mbps	19.35	30
		9 Mbps	19.48	30
		12 Mbps	19.48	30
		18 Mbps	19.22	30
		24 Mbps	20.58	30
		36 Mbps	20.10	30
		48 Mbps	20.18	30
		54 Mbps	20.34	30
2462	11	6 Mbps	19.56	30
		9 Mbps	19.65	30
		12 Mbps	19.67	30
		18 Mbps	19.45	30
		24 Mbps	20.74	30
		36 Mbps	20.35	30
		48 Mbps	20.45	30
		54 Mbps	20.55	30

▣ TEST RESULTS-Ant.1

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate	Measured	Limit
Frequency[MHz]	Channel No.	(Mbps)	Power(dBm)	(dBm)
2412	1	6 Mbps	19.54	30
		9 Mbps	19.65	30
		12 Mbps	19.60	30
		18 Mbps	19.40	30
		24 Mbps	20.63	30
		36 Mbps	20.23	30
		48 Mbps	20.36	30
		54 Mbps	20.46	30
2437	6	6 Mbps	19.48	30
		9 Mbps	19.57	30
		12 Mbps	19.52	30
		18 Mbps	19.36	30
		24 Mbps	20.60	30
		36 Mbps	20.15	30
		48 Mbps	20.30	30
		54 Mbps	20.42	30
2462	11	6 Mbps	19.66	30
		9 Mbps	19.76	30
		12 Mbps	19.74	30
		18 Mbps	19.53	30
		24 Mbps	20.73	30
		36 Mbps	20.34	30
		48 Mbps	20.50	30
		54 Mbps	20.55	30

▣ **TEST RESULTS-_Sum Data of Ant.0 and Ant.1**

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate	Measured	Limit
Frequency[MHz]	Channel No.	(Mbps)	Power(dBm)	(dBm)
2412	1	6 Mbps	22.45	30
		9 Mbps	22.57	30
		12 Mbps	22.54	30
		18 Mbps	22.32	30
		24 Mbps	23.60	30
		36 Mbps	23.15	30
		48 Mbps	23.27	30
		54 Mbps	23.38	30
2437	6	6 Mbps	22.43	30
		9 Mbps	22.54	30
		12 Mbps	22.51	30
		18 Mbps	22.30	30
		24 Mbps	23.60	30
		36 Mbps	23.13	30
		48 Mbps	23.25	30
		54 Mbps	23.39	30
2462	11	6 Mbps	22.62	30
		9 Mbps	22.72	30
		12 Mbps	22.71	30
		18 Mbps	22.50	30
		24 Mbps	23.74	30
		36 Mbps	23.35	30
		48 Mbps	23.48	30
		54 Mbps	23.56	30

▣ **TEST RESULTS-Ant.0**

Conducted Output Power Measurements (802.11n_HT20 Mode)

802.11n Mode		MCS	Measured	Limit
Frequency[MHz]	Channel No.	Index	Power(dBm)	(dBm)
2412	1	0	19.27	30
		1	18.94	30
		2	19.14	30
		3	19.79	30
		4	19.77	30
		5	19.85	30
		6	19.94	30
		7	19.77	30
2437	6	0	19.42	30
		1	19.10	30
		2	19.26	30
		3	20.03	30
		4	20.00	30
		5	20.02	30
		6	20.12	30
		7	19.97	30
2462	11	0	19.42	30
		1	19.16	30
		2	19.33	30
		3	19.91	30
		4	19.91	30
		5	19.99	30
		6	20.06	30
		7	19.89	30

▣ **TEST RESULTS-Ant.1**

Conducted Output Power Measurements (802.11n_HT20 Mode)

802.11n Mode		MCS	Measured	Limit
Frequency[MHz]	Channel No.	Index	Power(dBm)	(dBm)
2412	1	0	20.69	30
		1	19.13	30
		2	19.32	30
		3	19.93	30
		4	19.92	30
		5	20.05	30
		6	20.09	30
		7	19.93	30
2437	6	0	19.43	30
		1	19.08	30
		2	19.32	30
		3	19.98	30
		4	19.92	30
		5	20.01	30
		6	20.08	30
		7	19.94	30
2462	11	0	19.49	30
		1	19.15	30
		2	19.38	30
		3	19.95	30
		4	19.92	30
		5	20.02	30
		6	20.06	30
		7	19.90	30

▣ **TEST RESULTS-_Sum Data of Ant.0 and Ant.1**

Conducted Output Power Measurements (802.11n_HT20 Mode)

802.11g Mode		Rate	Measured	Limit
Frequency[MHz]	Channel No.	(Mbps)	Power(dBm)	(dBm)
2412	1	6 Mbps	23.02	30
		9 Mbps	22.05	30
		12 Mbps	22.24	30
		18 Mbps	22.87	30
		24 Mbps	22.86	30
		36 Mbps	22.96	30
		48 Mbps	23.03	30
		54 Mbps	22.86	30
2437	6	6 Mbps	22.44	30
		9 Mbps	22.10	30
		12 Mbps	22.30	30
		18 Mbps	23.02	30
		24 Mbps	22.97	30
		36 Mbps	23.03	30
		48 Mbps	23.11	30
		54 Mbps	22.97	30
2462	11	6 Mbps	22.47	30
		9 Mbps	22.17	30
		12 Mbps	22.37	30
		18 Mbps	22.94	30
		24 Mbps	22.93	30
		36 Mbps	23.02	30
		48 Mbps	23.07	30
		54 Mbps	22.91	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	13.94	0.040	13.98	30
		2 Mbps	13.90	0.073	13.98	30
		5.5 Mbps	13.82	0.193	14.02	30
		11 Mbps	13.69	0.339	14.03	30
2437	6	1 Mbps	13.85	0.040	13.89	30
		2 Mbps	13.86	0.073	13.93	30
		5.5 Mbps	13.74	0.193	13.94	30
		11 Mbps	13.45	0.339	13.79	30
2462	11	1 Mbps	14.13	0.040	14.17	30
		2 Mbps	14.11	0.073	14.18	30
		5.5 Mbps	13.95	0.193	14.14	30
		11 Mbps	13.86	0.339	14.20	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	14.17	0.040	14.21	30
		2 Mbps	14.08	0.073	14.16	30
		5.5 Mbps	13.94	0.193	14.13	30
		11 Mbps	13.83	0.339	14.17	30
2437	6	1 Mbps	14.05	0.040	14.09	30
		2 Mbps	14.07	0.073	14.14	30
		5.5 Mbps	13.89	0.193	14.09	30
		11 Mbps	13.79	0.339	14.12	30
2462	11	1 Mbps	14.27	0.040	14.31	30
		2 Mbps	14.21	0.073	14.29	30
		5.5 Mbps	14.11	0.193	14.30	30
		11 Mbps	13.95	0.339	14.29	30

▣ **TEST RESULTS_Ant.0**

Conducted Output Power Measurements (802.11g 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	11.35	0.240	11.59	30
		9 Mbps	11.16	0.337	11.49	30
		12 Mbps	11.05	0.458	11.51	30
		18 Mbps	10.98	0.662	11.64	30
		24 Mbps	11.00	0.824	11.82	30
		36 Mbps	10.62	1.155	11.78	30
		48 Mbps	10.35	1.495	11.84	30
		54 Mbps	10.21	1.619	11.83	30
2437	6	6 Mbps	11.32	0.240	11.56	30
		9 Mbps	11.20	0.337	11.54	30
		12 Mbps	11.03	0.458	11.49	30
		18 Mbps	10.95	0.662	11.61	30
		24 Mbps	10.99	0.824	11.82	30
		36 Mbps	10.58	1.155	11.73	30
		48 Mbps	10.27	1.495	11.77	30
		54 Mbps	10.14	1.619	11.76	30
2462	11	6 Mbps	11.51	0.240	11.75	30
		9 Mbps	11.33	0.337	11.66	30
		12 Mbps	11.24	0.458	11.70	30
		18 Mbps	11.14	0.662	11.80	30
		24 Mbps	11.21	0.824	12.03	30
		36 Mbps	10.85	1.155	12.01	30
		48 Mbps	10.59	1.495	12.09	30
		54 Mbps	10.40	1.619	12.02	30

▣ **TEST RESULTS_Ant.1**

Conducted Output Power Measurements (802.11g 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	11.47	0.240	11.71	30
		9 Mbps	11.33	0.337	11.67	30
		12 Mbps	11.19	0.458	11.65	30
		18 Mbps	11.11	0.662	11.77	30
		24 Mbps	11.15	0.824	11.98	30
		36 Mbps	10.78	1.155	11.94	30
		48 Mbps	10.53	1.495	12.03	30
		54 Mbps	10.37	1.619	11.99	30
2437	6	6 Mbps	11.35	0.240	11.59	30
		9 Mbps	11.26	0.337	11.60	30
		12 Mbps	11.14	0.458	11.60	30
		18 Mbps	11.10	0.662	11.76	30
		24 Mbps	11.09	0.824	11.92	30
		36 Mbps	10.69	1.155	11.85	30
		48 Mbps	10.48	1.495	11.98	30
		54 Mbps	10.29	1.619	11.91	30
2462	11	6 Mbps	11.61	0.240	11.85	30
		9 Mbps	11.45	0.337	11.79	30
		12 Mbps	11.33	0.458	11.79	30
		18 Mbps	11.28	0.662	11.94	30
		24 Mbps	11.26	0.824	12.08	30
		36 Mbps	10.89	1.155	12.04	30
		48 Mbps	10.63	1.495	12.13	30
		54 Mbps	10.45	1.619	12.07	30

▣ **TEST RESULTS_Sum Data of Ant.0 and Ant.1**

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate	Sum Power of Ant.0 & 1	Limit
Frequency[MHz]	Channel No.	(Mbps)	(dBm)	(dBm)
2412	1	6 Mbps	14.66	30
		9 Mbps	14.59	30
		12 Mbps	14.59	30
		18 Mbps	14.72	30
		24 Mbps	14.91	30
		36 Mbps	14.87	30
		48 Mbps	14.95	30
		54 Mbps	14.92	30
2437	6	6 Mbps	14.59	30
		9 Mbps	14.58	30
		12 Mbps	14.56	30
		18 Mbps	14.70	30
		24 Mbps	14.88	30
		36 Mbps	14.80	30
		48 Mbps	14.89	30
		54 Mbps	14.85	30
2462	11	6 Mbps	14.81	30
		9 Mbps	14.74	30
		12 Mbps	14.76	30
		18 Mbps	14.88	30
		24 Mbps	15.07	30
		36 Mbps	15.04	30
		48 Mbps	15.12	30
		54 Mbps	15.06	30

▣ **TEST RESULTS_Ant.0**

Conducted Output Power Measurements (802.11n_HT20 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	11.16	0.252	11.42	30
		1	10.77	0.464	11.23	30
		2	10.75	0.669	11.42	30
		3	11.01	0.890	11.90	30
		4	10.66	1.263	11.92	30
		5	10.39	1.484	11.87	30
		6	10.28	1.608	11.89	30
		7	10.06	1.848	11.91	30
2437	6	0	11.14	0.252	11.40	30
		1	10.76	0.464	11.22	30
		2	10.76	0.669	11.43	30
		3	11.01	0.890	11.90	30
		4	10.66	1.263	11.92	30
		5	10.38	1.484	11.86	30
		6	10.32	1.608	11.93	30
		7	10.10	1.848	11.95	30
2462	11	0	11.27	0.252	11.52	30
		1	11.01	0.464	11.47	30
		2	10.94	0.669	11.61	30
		3	11.18	0.890	12.07	30
		4	10.84	1.263	12.10	30
		5	10.52	1.484	12.01	30
		6	10.45	1.608	12.06	30
		7	10.27	1.848	12.12	30

▣ **TEST RESULTS_Ant.1**

Conducted Output Power Measurements (802.11n_HT20 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	11.15	0.252	11.41	30
		1	10.77	0.464	11.24	30
		2	10.72	0.669	11.39	30
		3	10.90	0.890	11.79	30
		4	10.58	1.263	11.84	30
		5	10.34	1.484	11.82	30
		6	10.25	1.608	11.86	30
		7	10.02	1.848	11.87	30
2437	6	0	11.19	0.252	11.44	30
		1	10.83	0.464	11.30	30
		2	10.83	0.669	11.50	30
		3	11.11	0.890	12.00	30
		4	10.71	1.263	11.98	30
		5	10.38	1.484	11.86	30
		6	10.35	1.608	11.96	30
		7	10.14	1.848	11.99	30
2462	11	0	11.43	0.252	11.68	30
		1	11.06	0.464	11.53	30
		2	11.02	0.669	11.68	30
		3	11.23	0.890	12.12	30
		4	10.88	1.263	12.15	30
		5	10.61	1.484	12.09	30
		6	10.49	1.608	12.10	30
		7	10.34	1.848	12.19	30

▣ TEST RESULTS_Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n_HT20 Mode)

802.11n Mode		MCS	Sum Power of Ant.0 & 1 (dBm)	Limit (dBm)
Frequency[MHz]	Channel No.	Index		
2412	1	0	14.43	30
		1	14.25	30
		2	14.42	30
		3	14.86	30
		4	14.89	30
		5	14.86	30
		6	14.89	30
		7	14.90	30
2437	6	0	14.43	30
		1	14.27	30
		2	14.48	30
		3	14.96	30
		4	14.96	30
		5	14.87	30
		6	14.96	30
		7	14.98	30
2462	11	0	14.61	30
		1	14.51	30
		2	14.66	30
		3	15.11	30
		4	15.14	30
		5	15.06	30
		6	15.09	30
		7	15.17	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	-0.75	8.0
			1	-1.28	8.0
MIMO(2 TX)		802.11g/n_HT20	0 & 1	2.00	8.0

Note : 1. If all antenna gains are not equal,

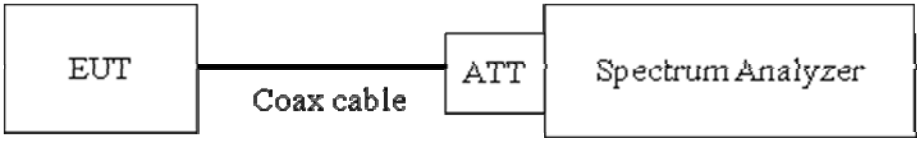
Directional gain = $10*\log[(10^{G1/20} + 10^{G2/20}+\ldots+10^{GN/20})^2/N]$ dBi

Directional gain = $10*\log[(10^{G1/10} + 10^{G2/10}+\ldots+10^{GN/10})/N]$ dBi

(according to KDB662911 D01 v02r01)

2. Limit is calculated by antenna gain.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

We tested according to Procedure 10.2 in KDB 558074 v03r05

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 x RBW.

Sweep = auto couple

Detector = peak

Trace Mode = max hold

Allow trace to fully stabilize.

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

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. Spectrum offset = Attenuator loss + Cable loss
3. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB. So, 10.7 dB is offset for 2.4 GHz Band.
   Actual value of loss for the attenuator and cable combination is below table.

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	10.65
	2437	10.65
	2462	10.66

(Actual value of loss for the attenuator and cable combination)

▣ **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	0.547	8	Pass
2437	6		-1.827	8	Pass
2462	11		6.536	8	Pass
2412	1	802.11g	-13.410	8	Pass
2437	6		-13.255	8	Pass
2462	11		-13.198	8	Pass
2412	1	802.11n HT20	-13.151	8	Pass
2437	6		-13.758	8	Pass
2462	11		-13.166	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	1.621	8	Pass
2437	6		0.551	8	Pass
2462	11		6.440	8	Pass
2412	1	802.11g	-13.845	8	Pass
2437	6		-13.169	8	Pass
2462	11		-12.398	8	Pass
2412	1	802.11n HT20	-16.079	8	Pass
2437	6		-12.522	8	Pass
2462	11		-12.513	8	Pass

▣ TEST RESULTS_Sum Data of Ant.0 and Ant.1

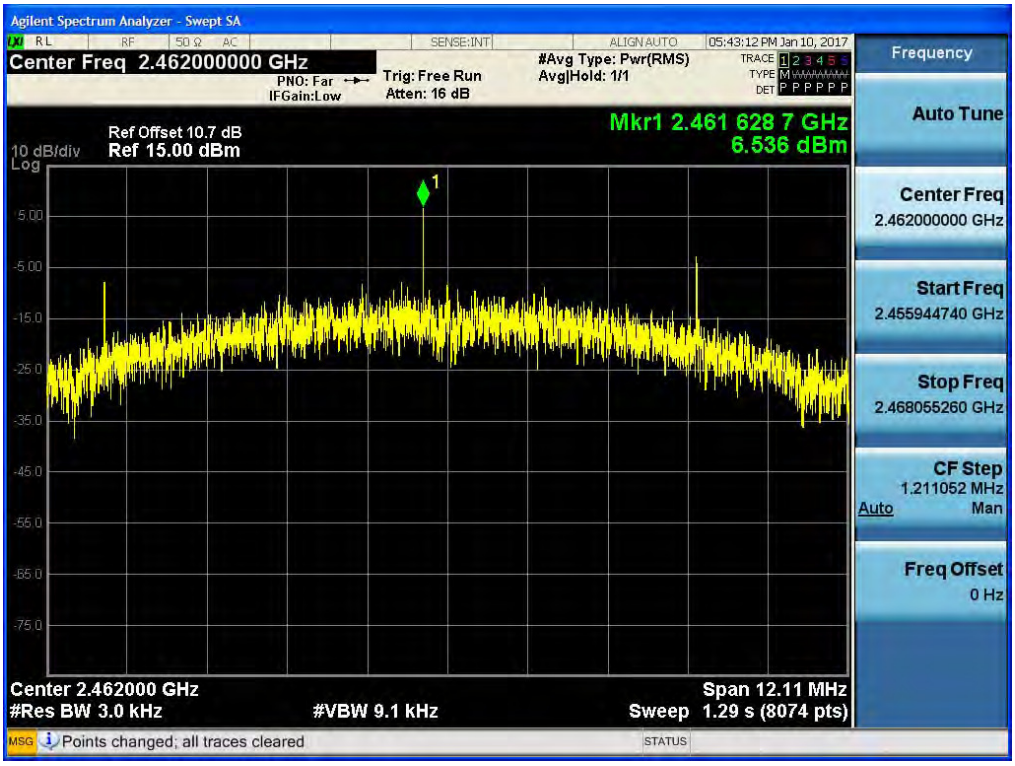
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1	802.11g	-10.61	8	Pass
2437	6		-10.20		Pass
2462	11		-9.77		Pass
2412	1	802.11n HT20	-11.36	8	Pass
2437	6		-10.09		Pass
2462	11		-9.82		Pass

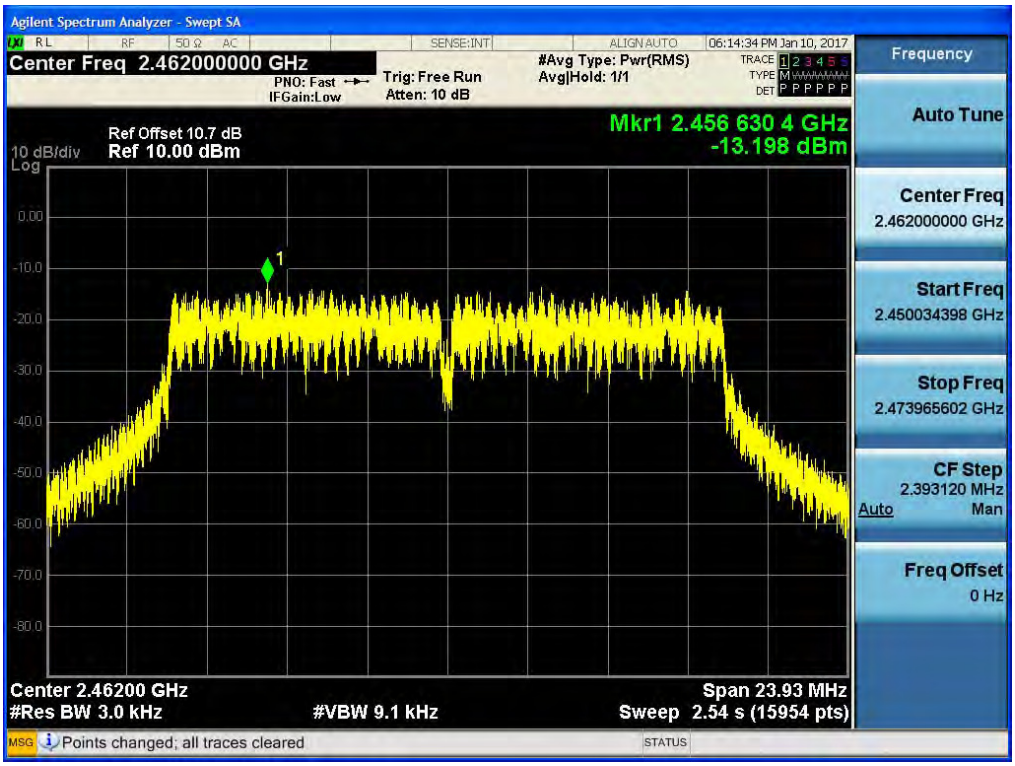
Note : In order to simplify the report, attached plots were only the highest PSD channel.

▣ RESULT PLOTS_Ant.0

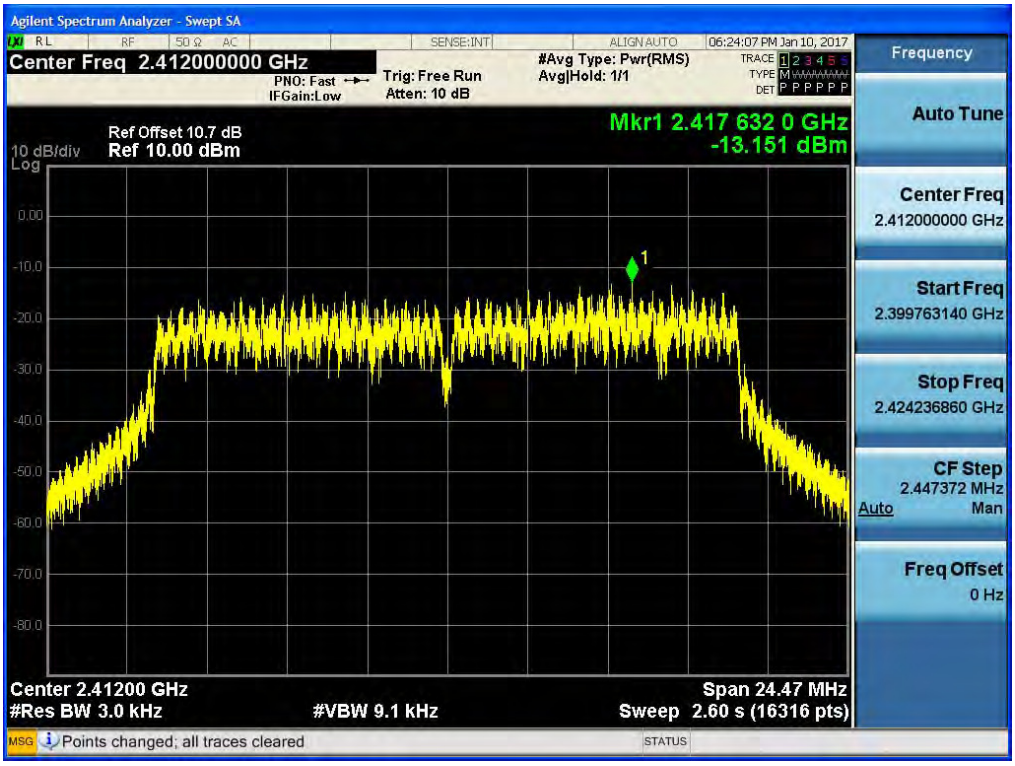
Power Spectral Density (802.11b-CH 11)



Power Spectral Density (802.11g-CH 11)

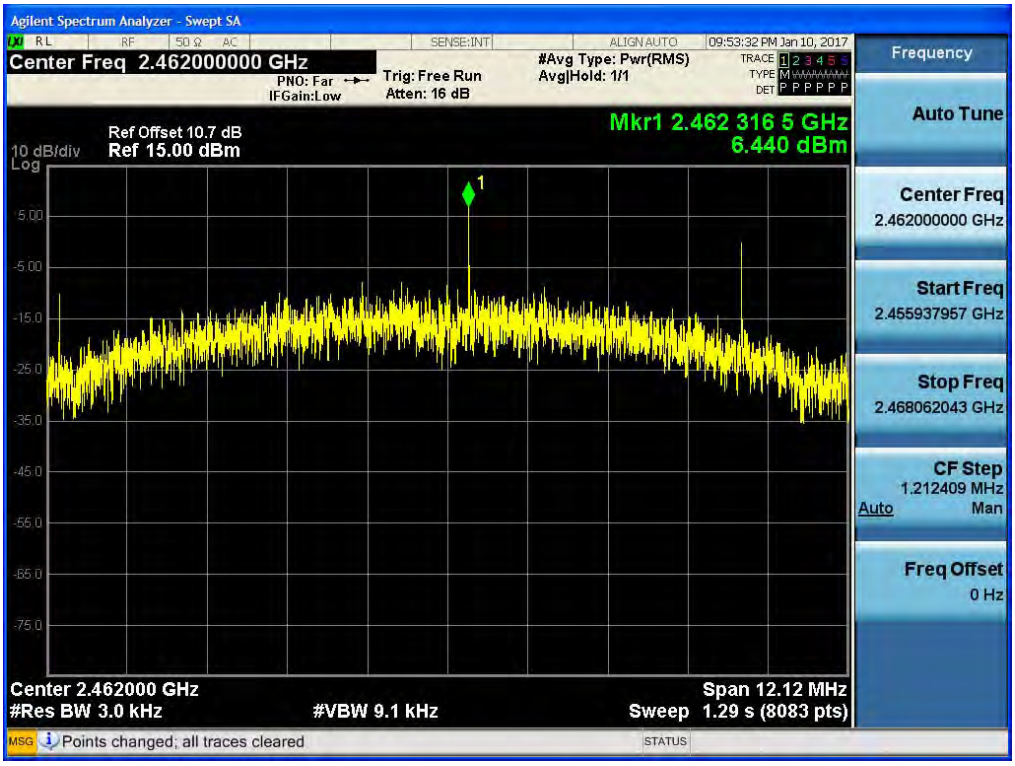


Power Spectral Density (802.11n_HT20 -CH 1)

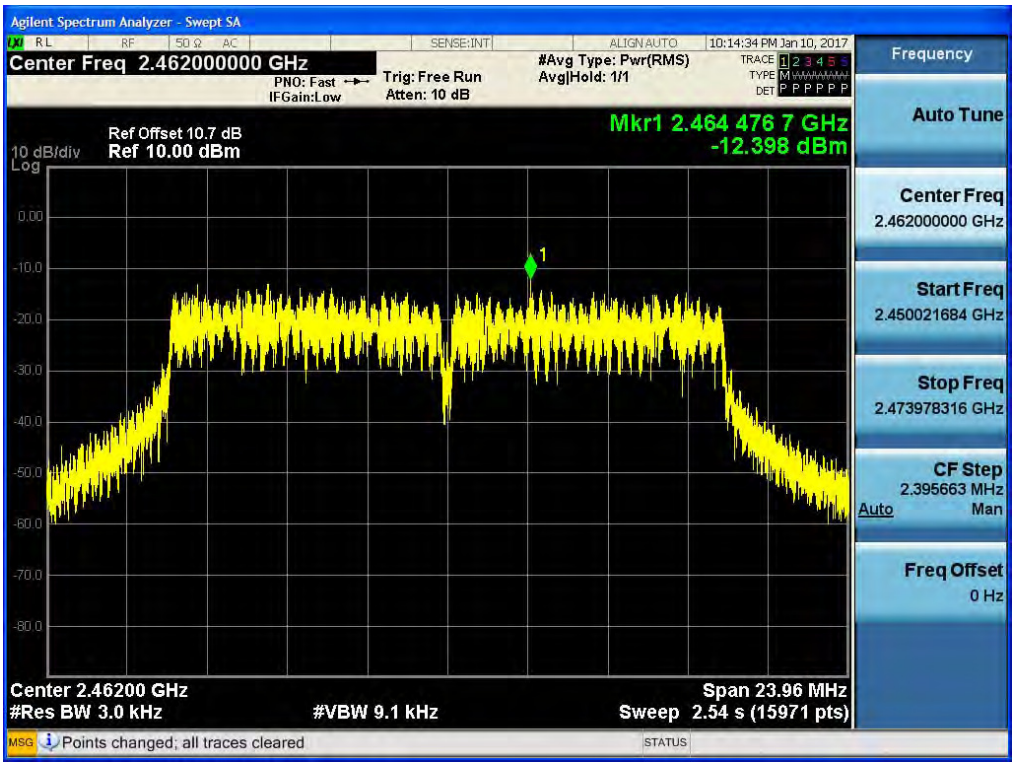


▣ RESULT PLOTS_Ant.1

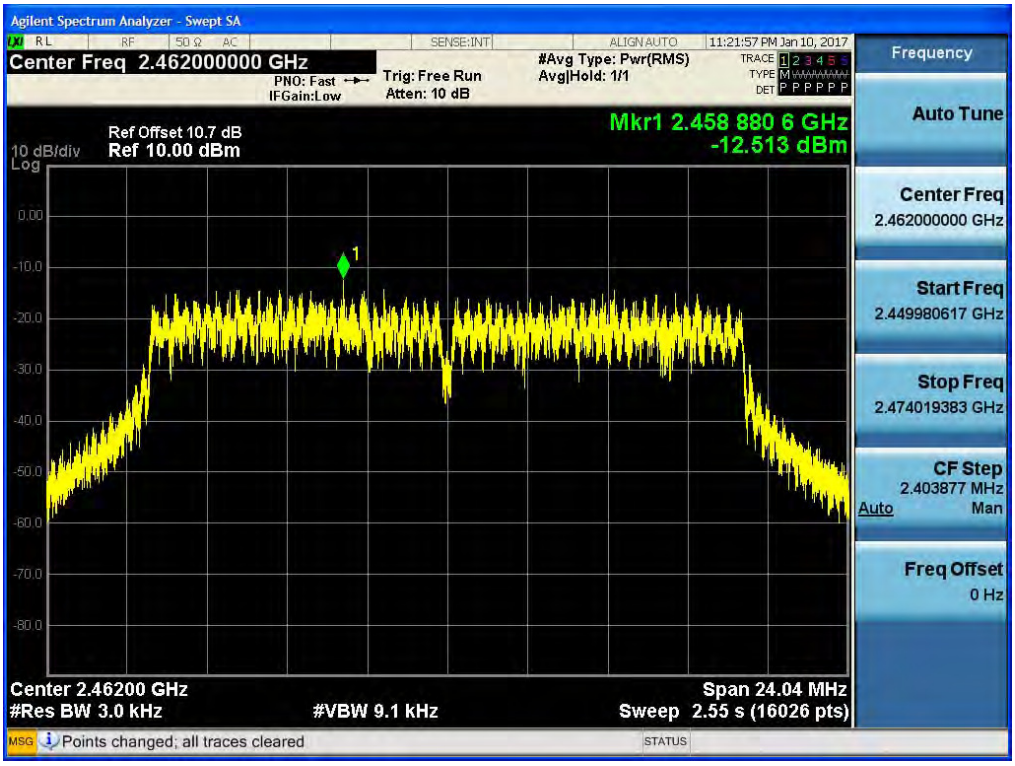
Power Spectral Density (802.11b-CH 11)



Power Spectral Density (802.11g-CH 11)



Power Spectral Density (802.11n_HT20 -CH 11)



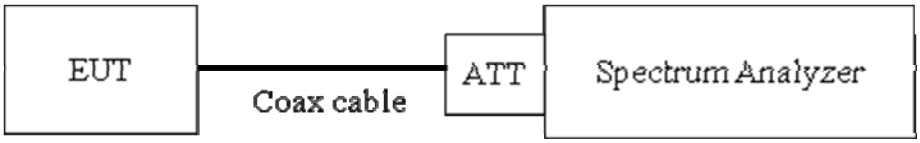
9.5 OUT OF BAND EMISSIONS AT THE BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

Test Requirements and limit, §15.247(d)

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

Limit : 30 dBc

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. (Procedure 11.0 in KDB 558074 v03r05)

RBW = 100 kHz

VBW ≥ 3 x RBW

Set span to encompass the spectrum to be examined

Detector = Peak

Trace Mode = max hold

Sweep time = auto couple

Ensure that the number of measurement points ≥ Span/RBW

Allow trace to fully stabilize.

Use peak marker function to determine the maximum amplitude level.

Measurements are made over the 30 MHz to 10th harmonic range with the transmitter set to the lowest, middle, and highest channels.

Note :

1. The band edge results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB. So, 10.7 dB is offset for 2.4 GHz Band. Actual value of loss for the attenuator and cable combination is below table.

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	10.65
	2437	10.65
	2462	10.66

(Actual value of loss for the attenuator and cable combination)

4. In case of conducted spurious emissions test, please check factors blow table.

5. In order to simplify the report, attached plots were only the worst case channel.

▣ FACTORS FOR FREQUENCY

Freq(MHz)	Factor(dB)
30	11.30
100	9.83
200	10.19
300	10.13
400	10.23
500	10.25
600	10.32
700	10.35
800	10.35
900	10.34
1000	10.39
2000	10.64
2400*	10.65
2500*	10.67
3000	10.68
4000	10.89
5000	11.07
6000	11.06
7000	11.35
8000	11.32
9000	11.48
10000	11.56
11000	11.56
12000	11.68
13000	11.83
14000	11.90
15000	11.98

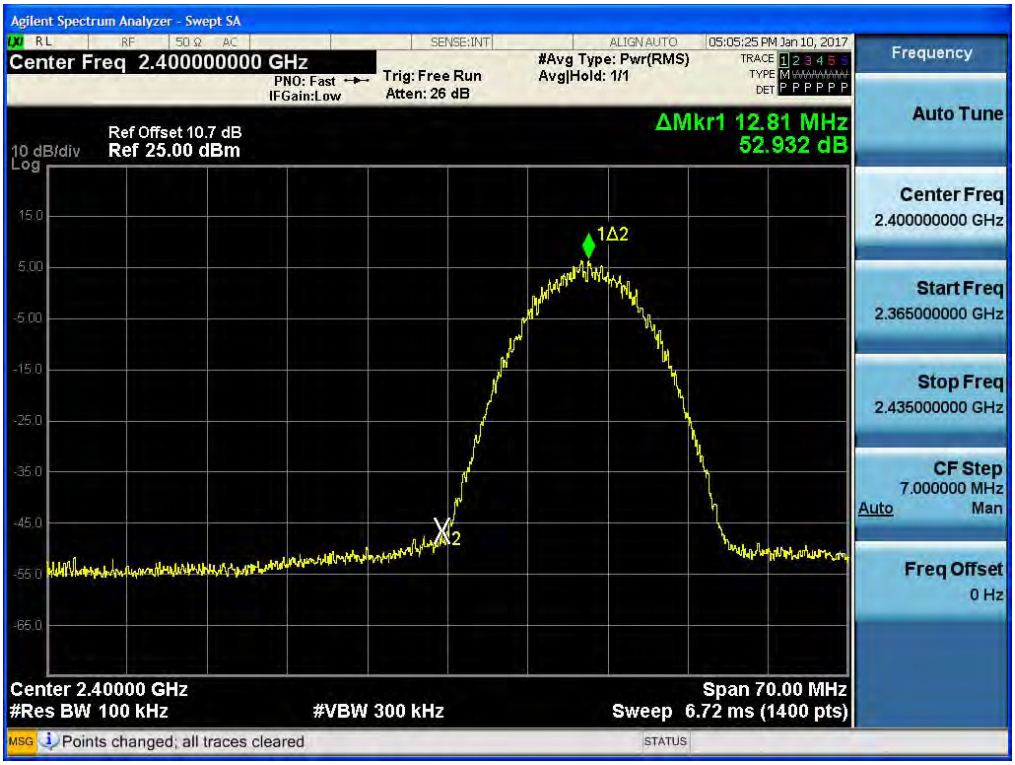
16000	12.04
17000	12.02
18000	12.08
19000	12.07
20000	12.14
21000	12.17
22000	12.31
23000	12.60
24000	12.34
25000	12.53

Note : 1. '*' is fundamental frequency range.

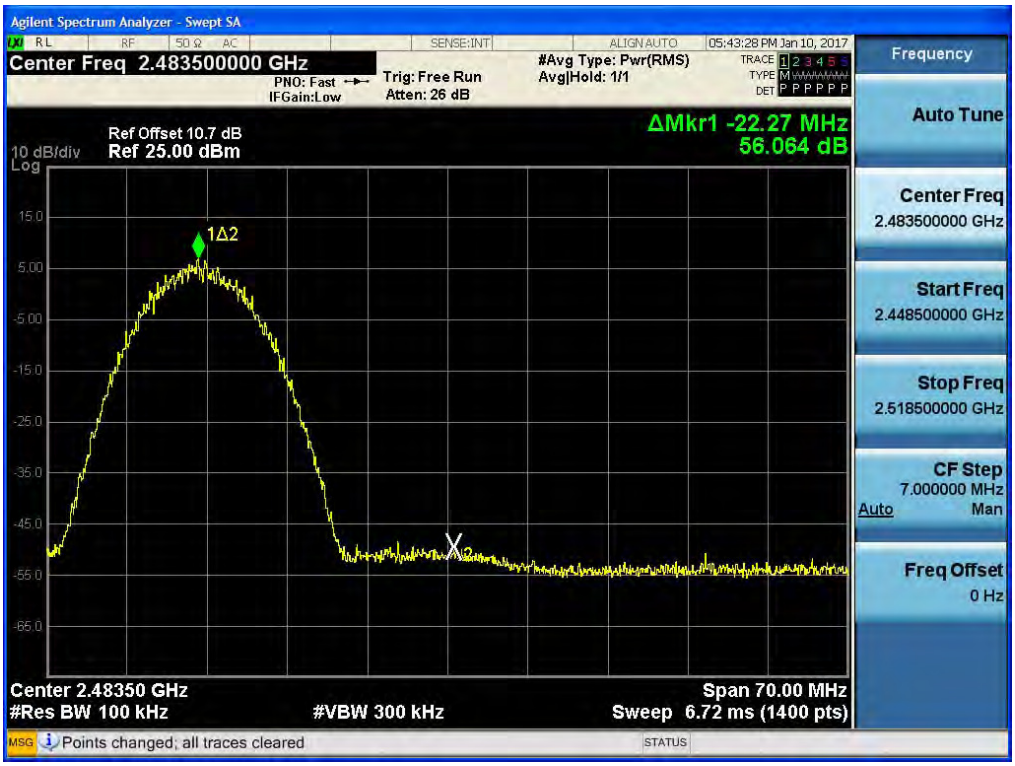
2. Factor = Cable loss + Attenuator loss

▣ RESULT PLOTS_Ant.0

BandEdge (802.11b-CH1)

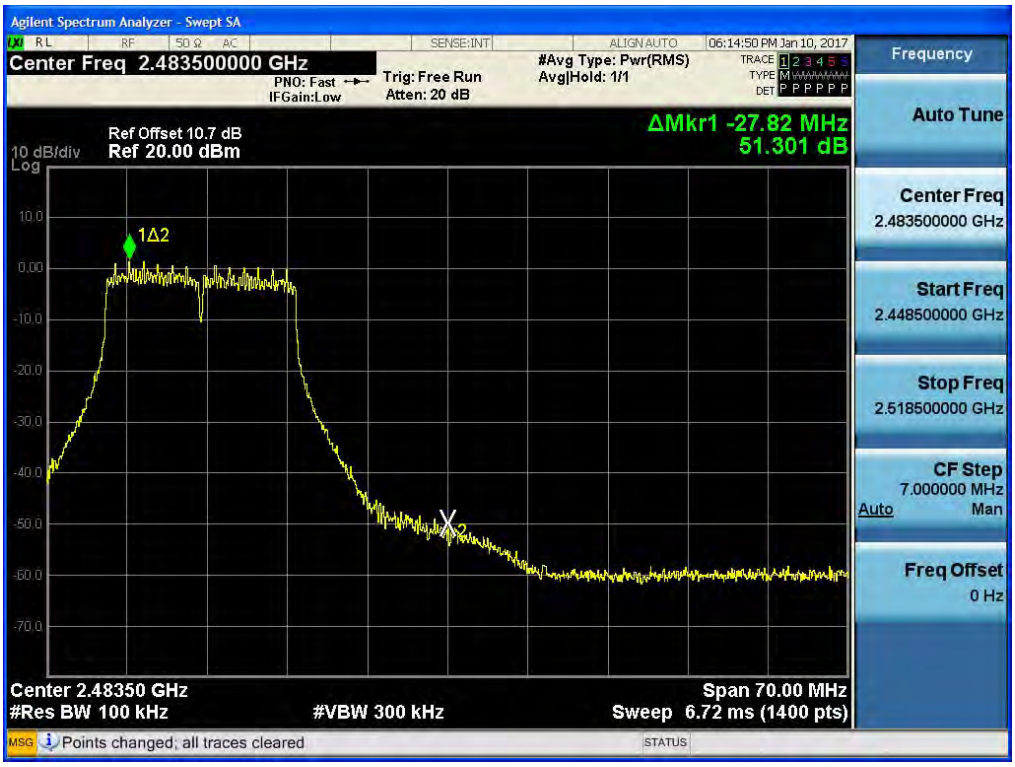


BandEdge (802.11b-CH11)

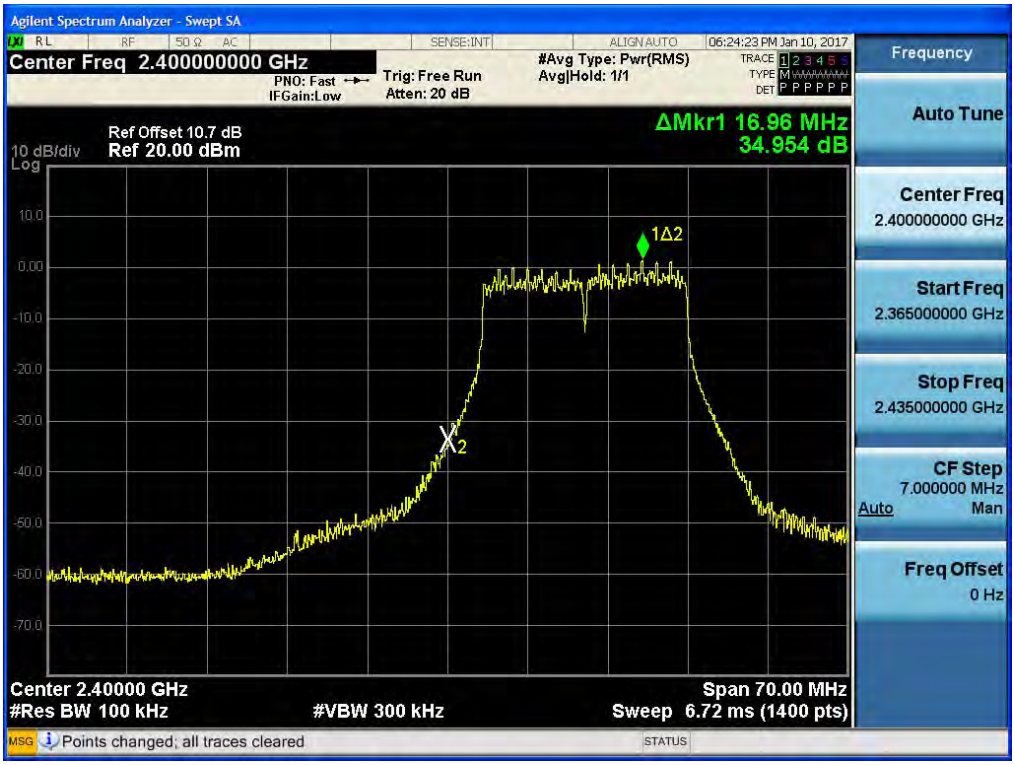


BandEdge (802.11g-CH1)

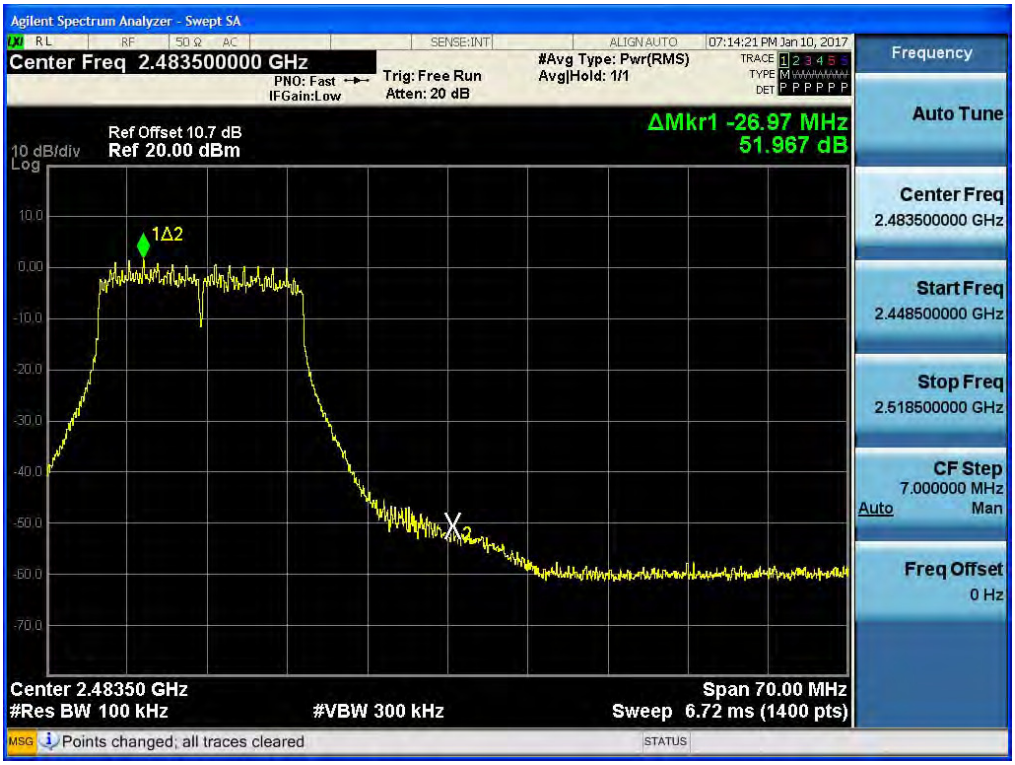
BandEdge (802.11g-CH11)



Band Edge (802.11n_HT20-CH1)

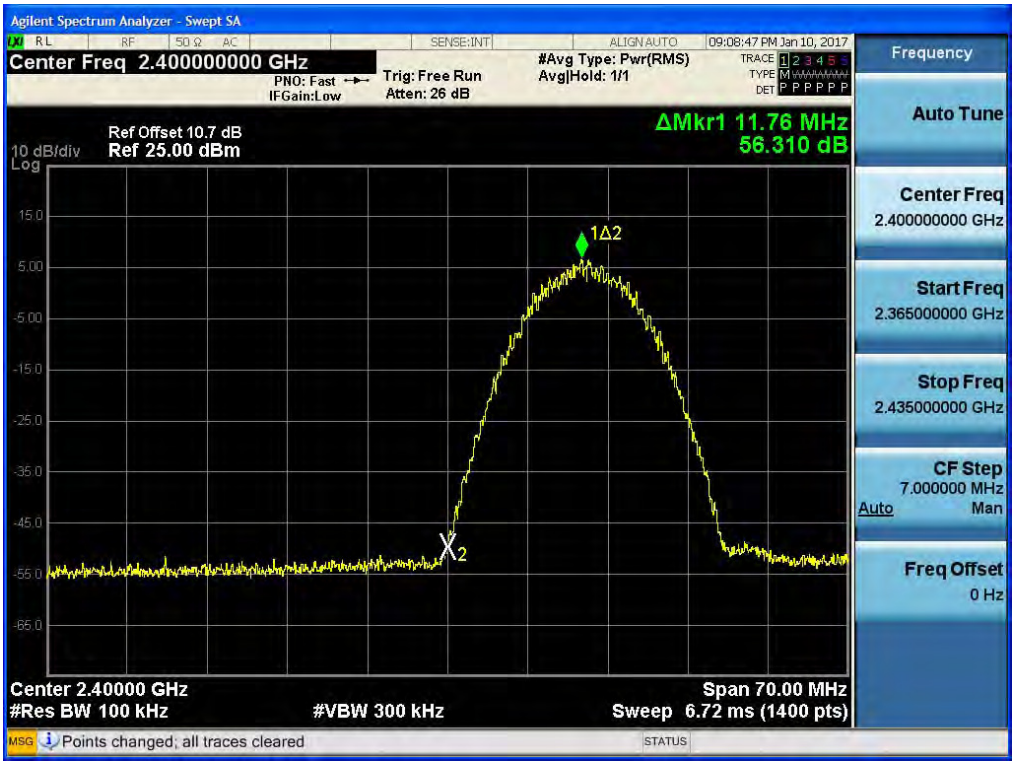


Band Edge (802.11n_HT20-CH11)

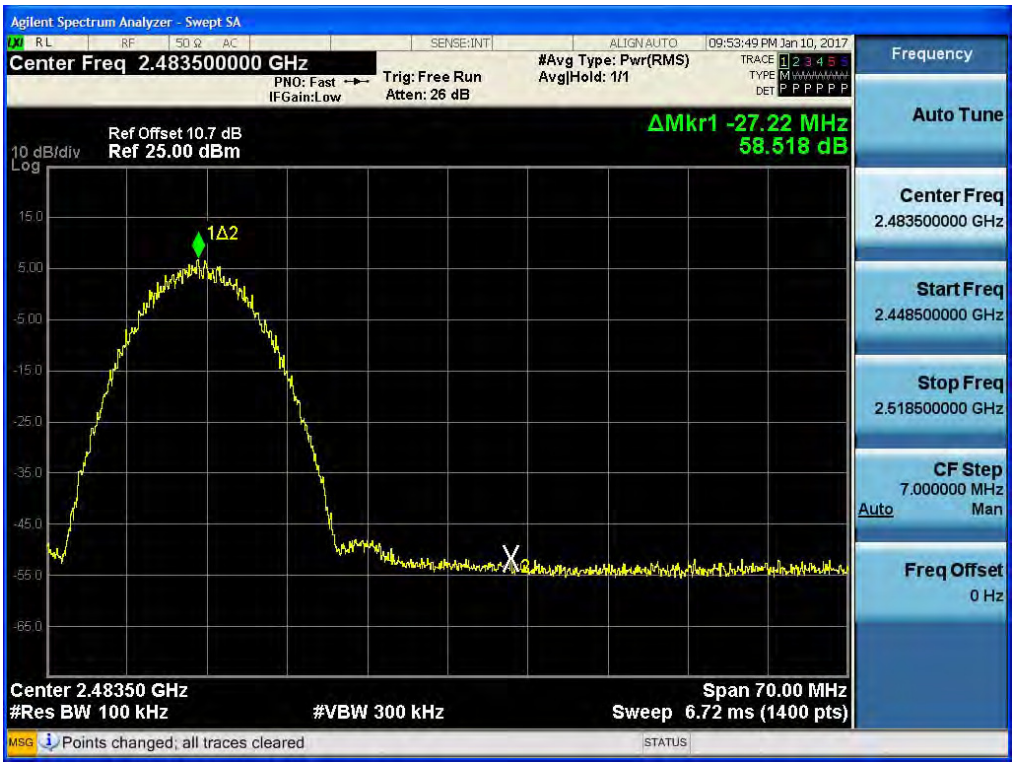


▣ RESULT PLOTS_Ant.1

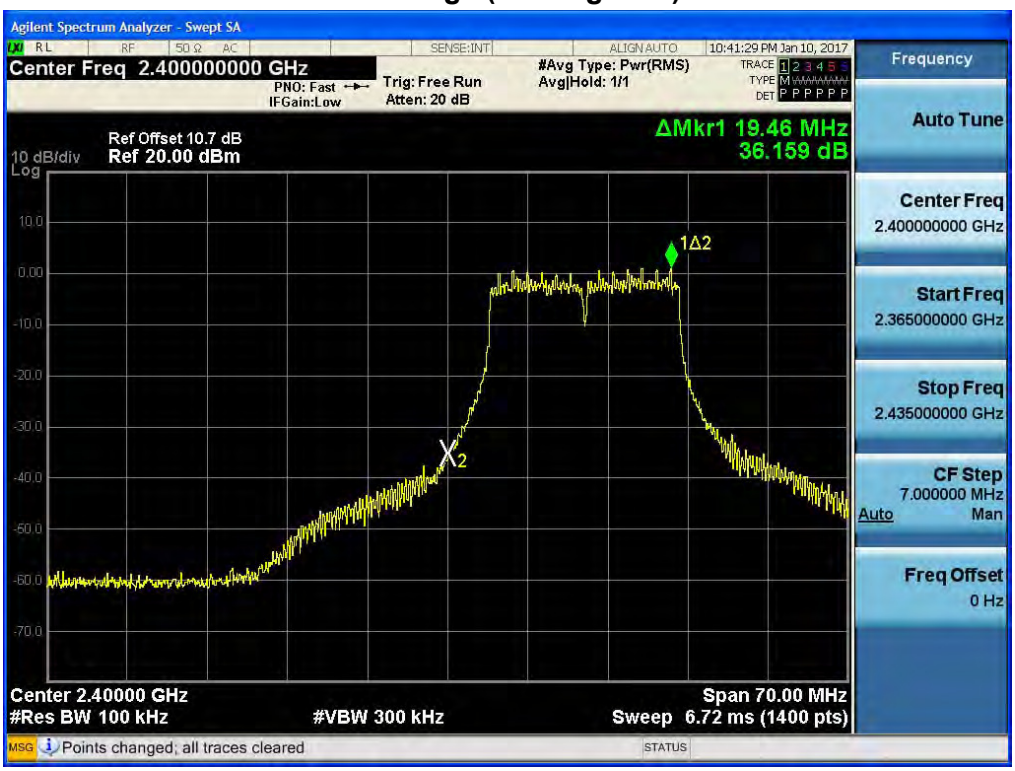
BandEdge (802.11b-CH1)



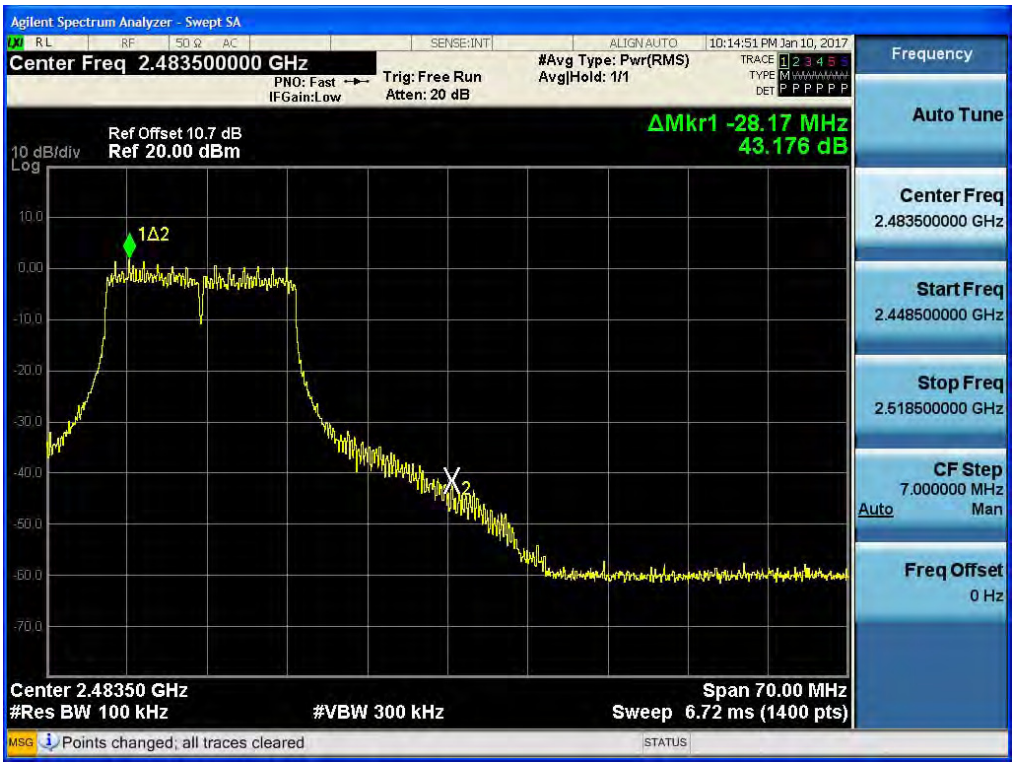
BandEdge (802.11b-CH11)



BandEdge (802.11g-CH1)

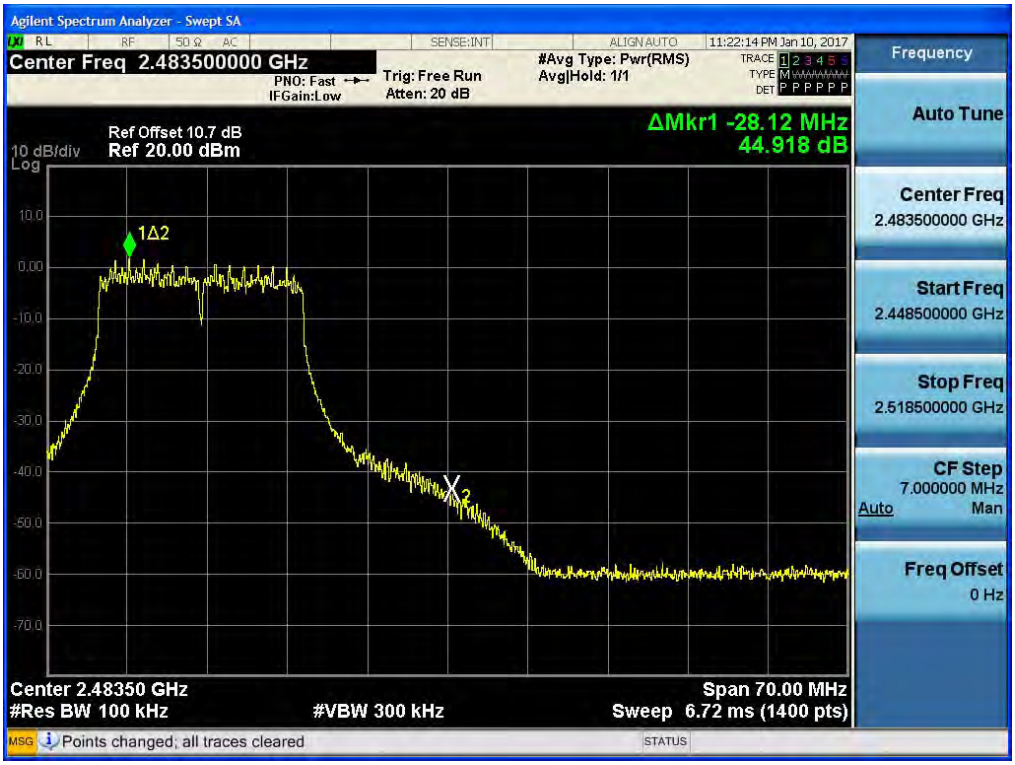


BandEdge (802.11g-CH11)



Band Edge (802.11n_HT20-CH1)

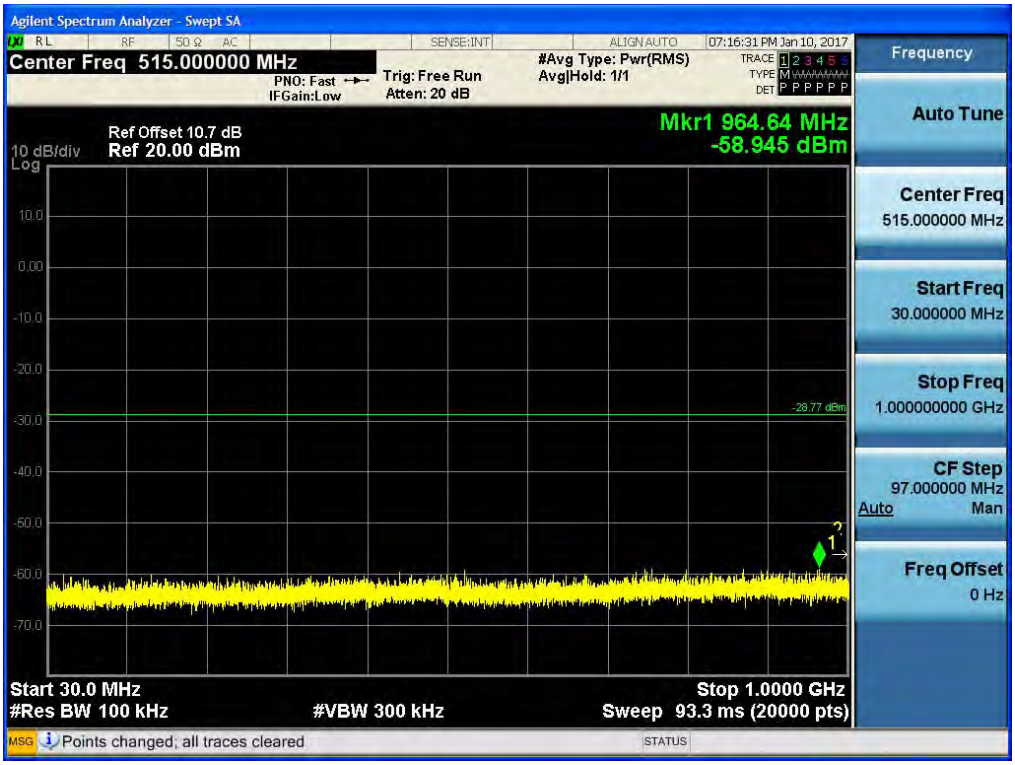
Band Edge (802.11n_HT20-CH11)



Ant.0

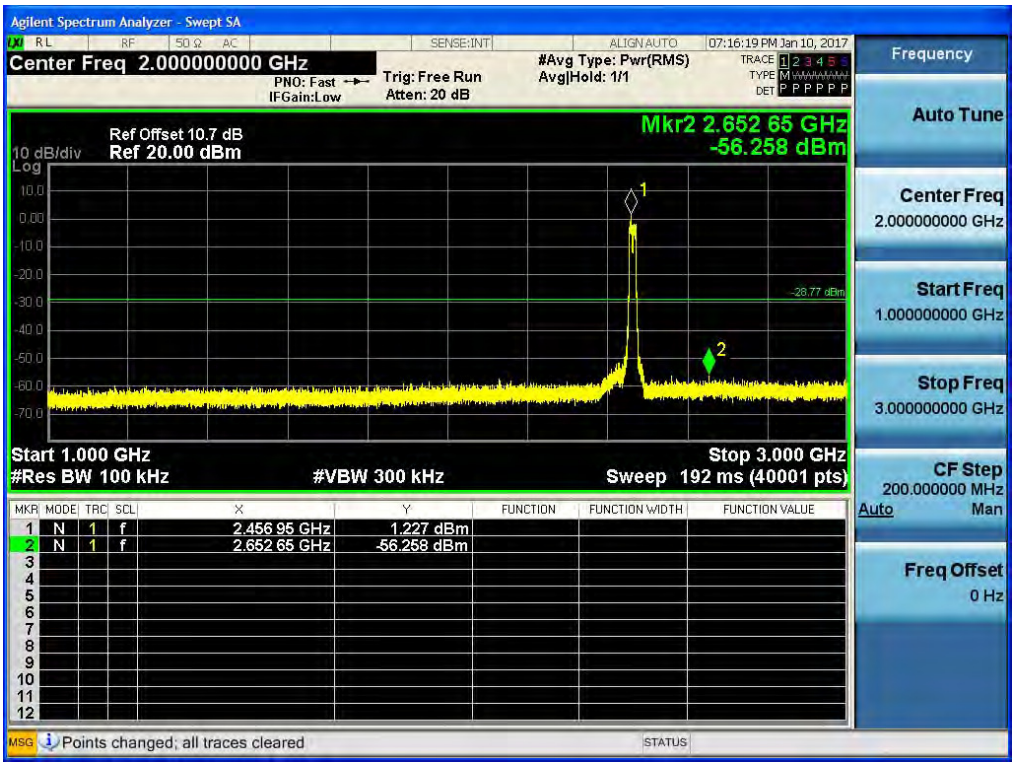
30 MHz ~ 1 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



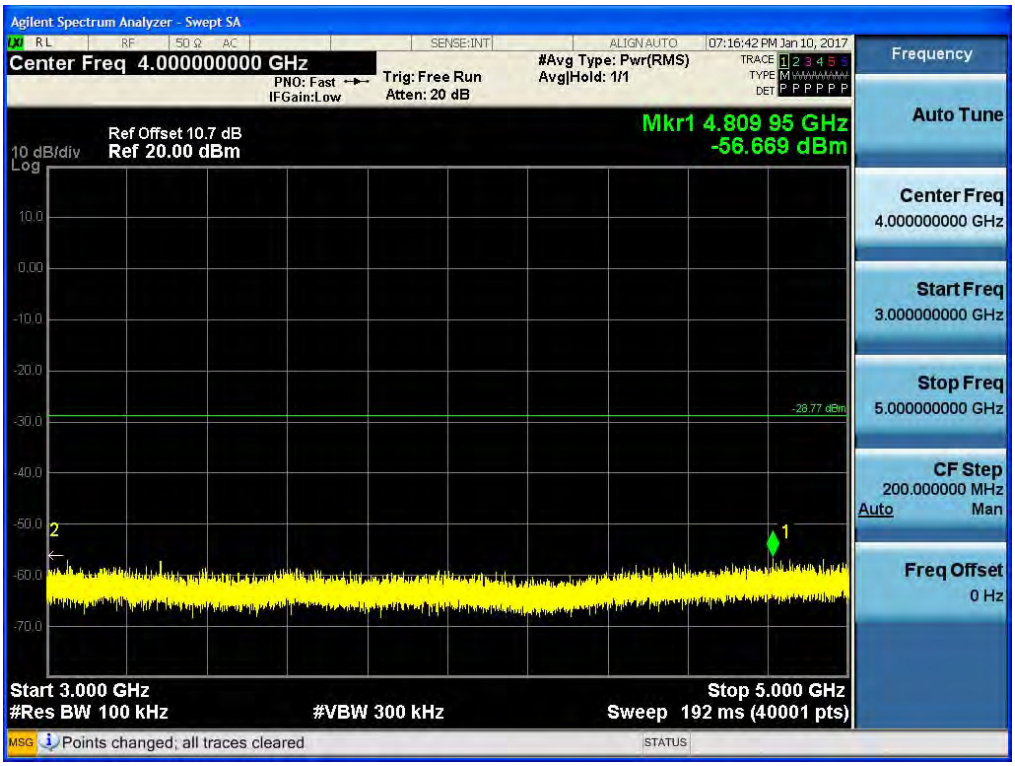
1 GHz ~ 3 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



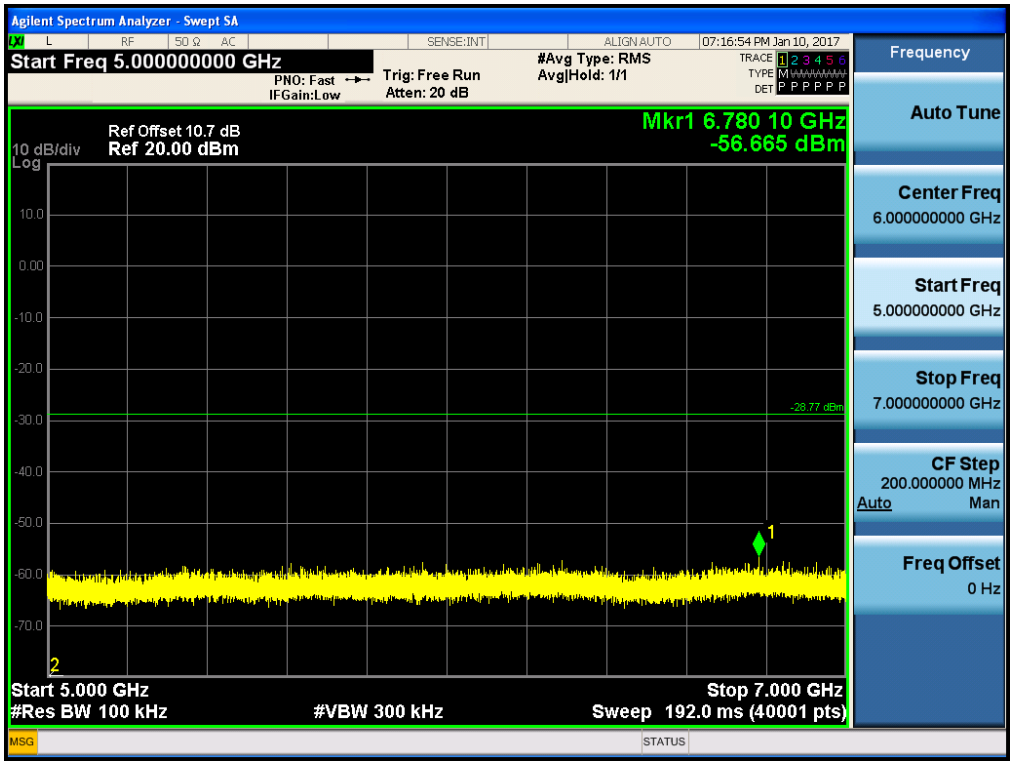
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



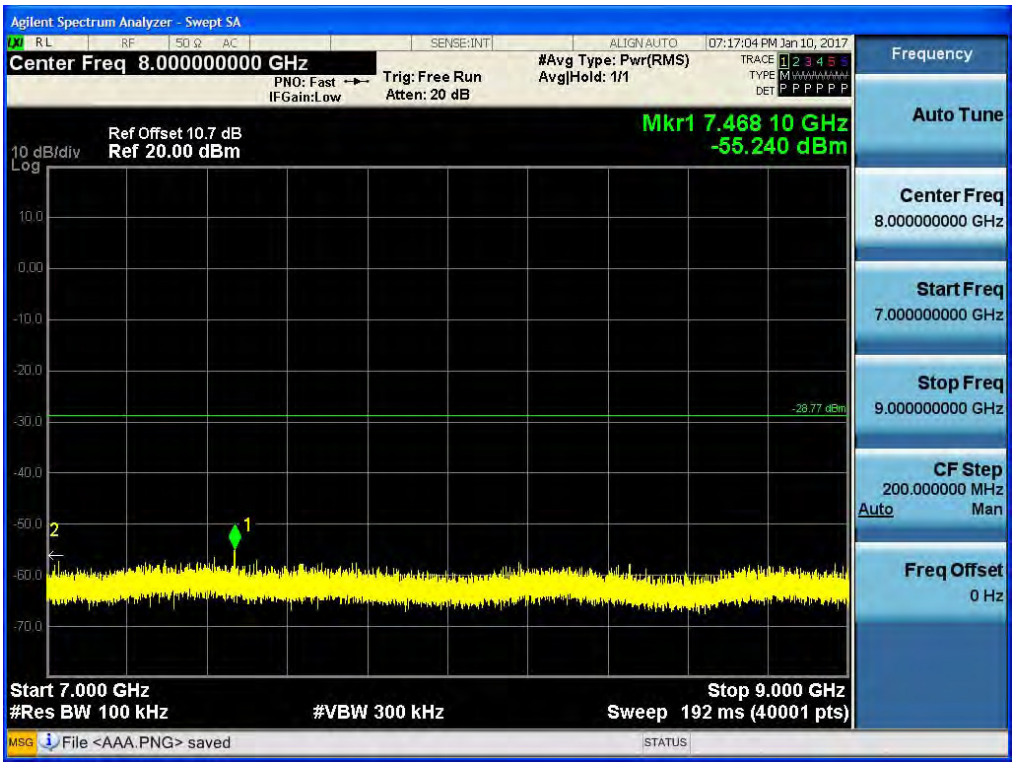
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



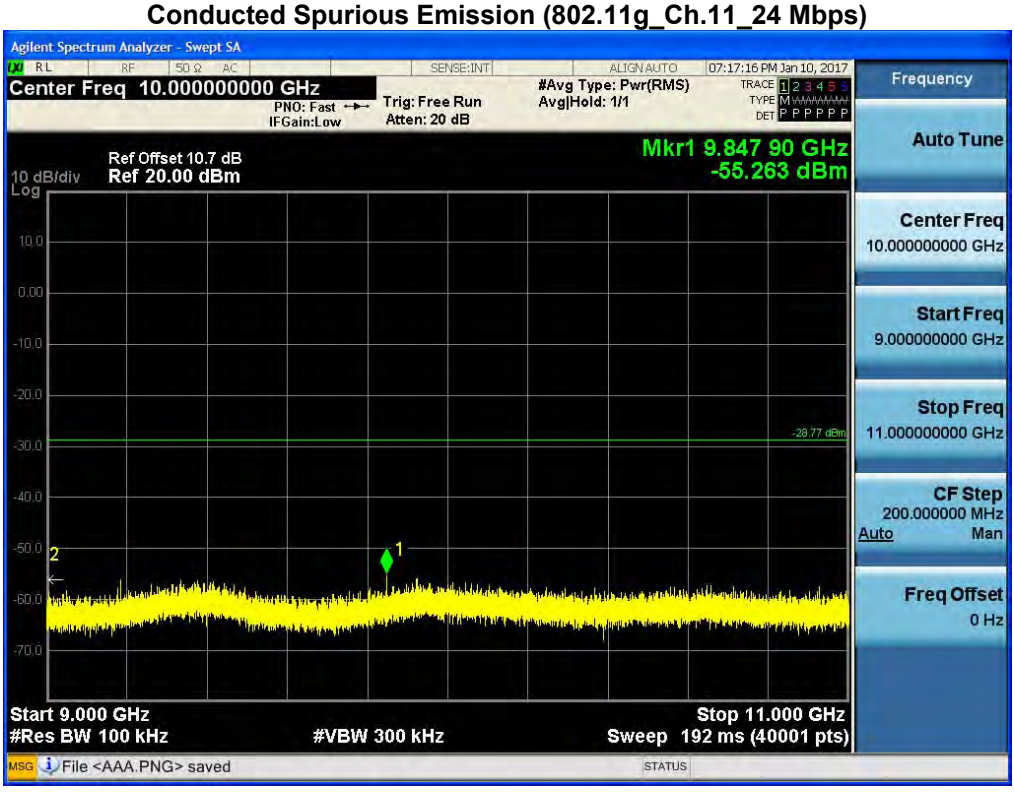
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



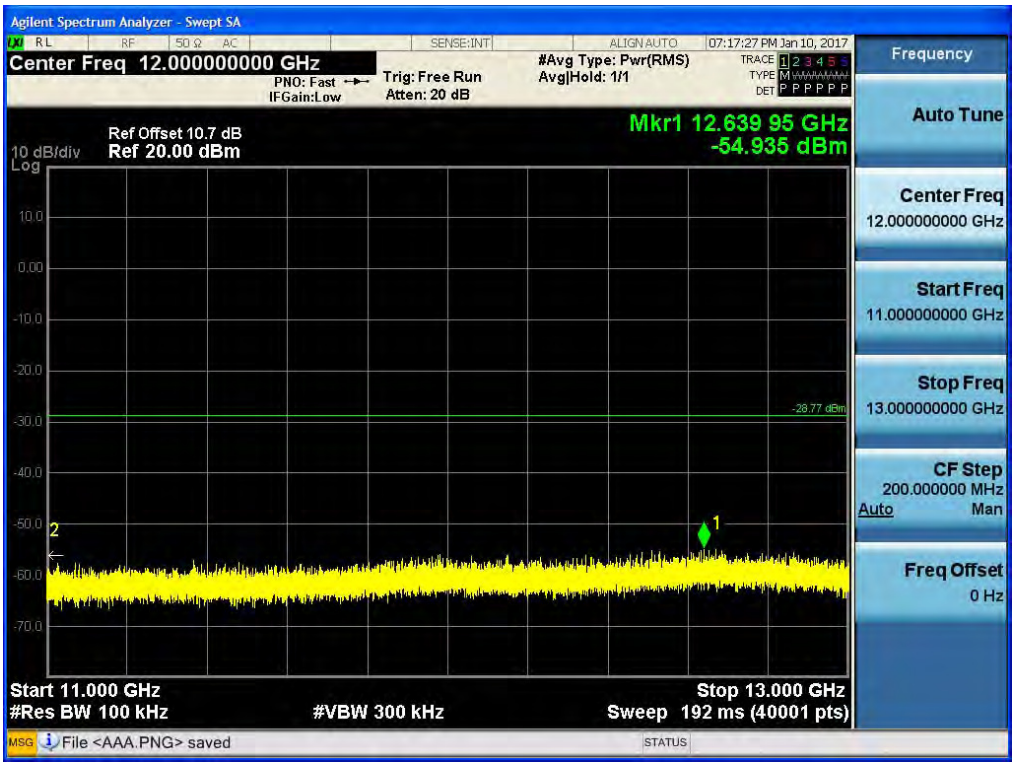
9 GHz ~ 11 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



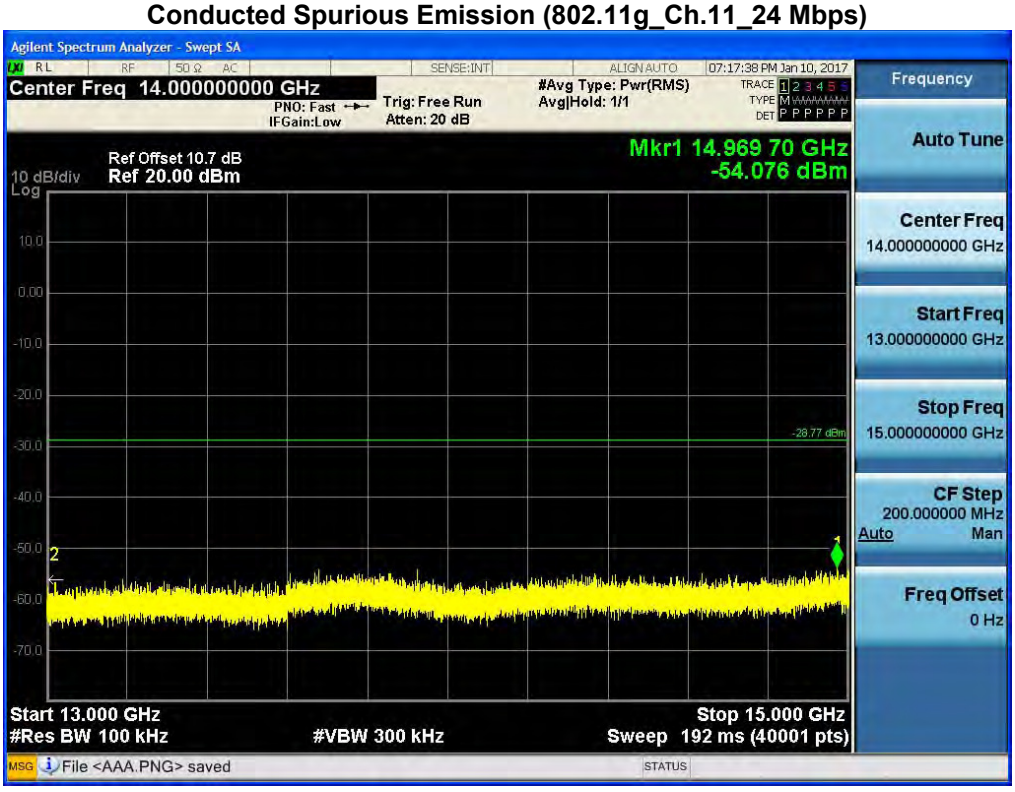
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



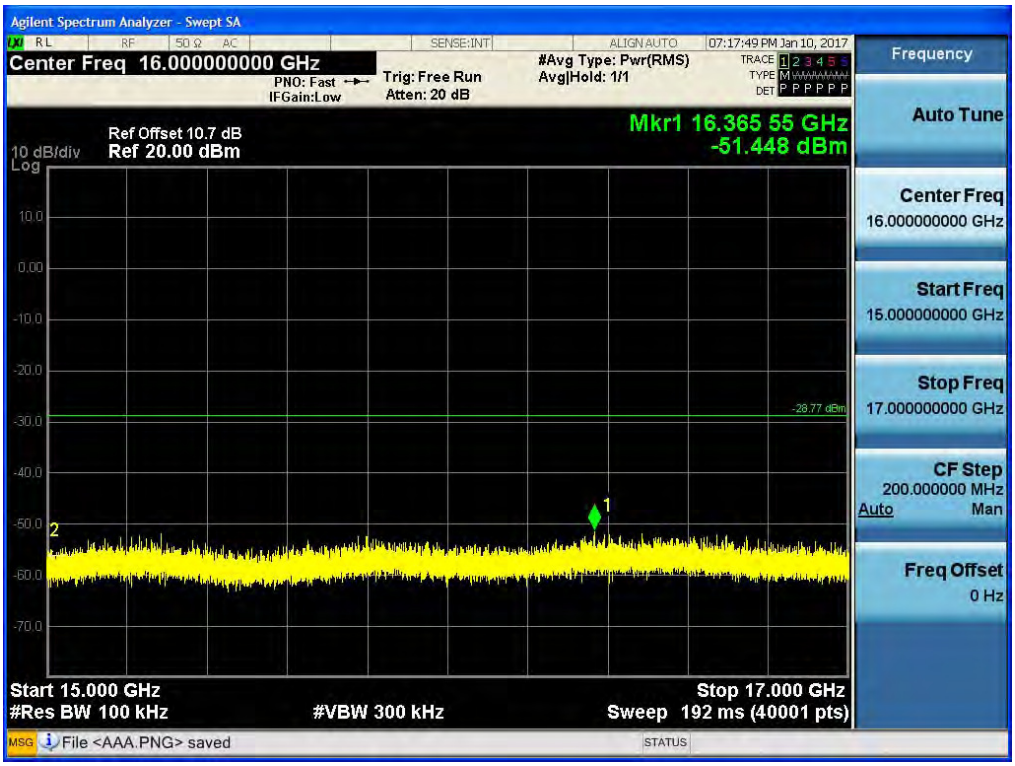
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



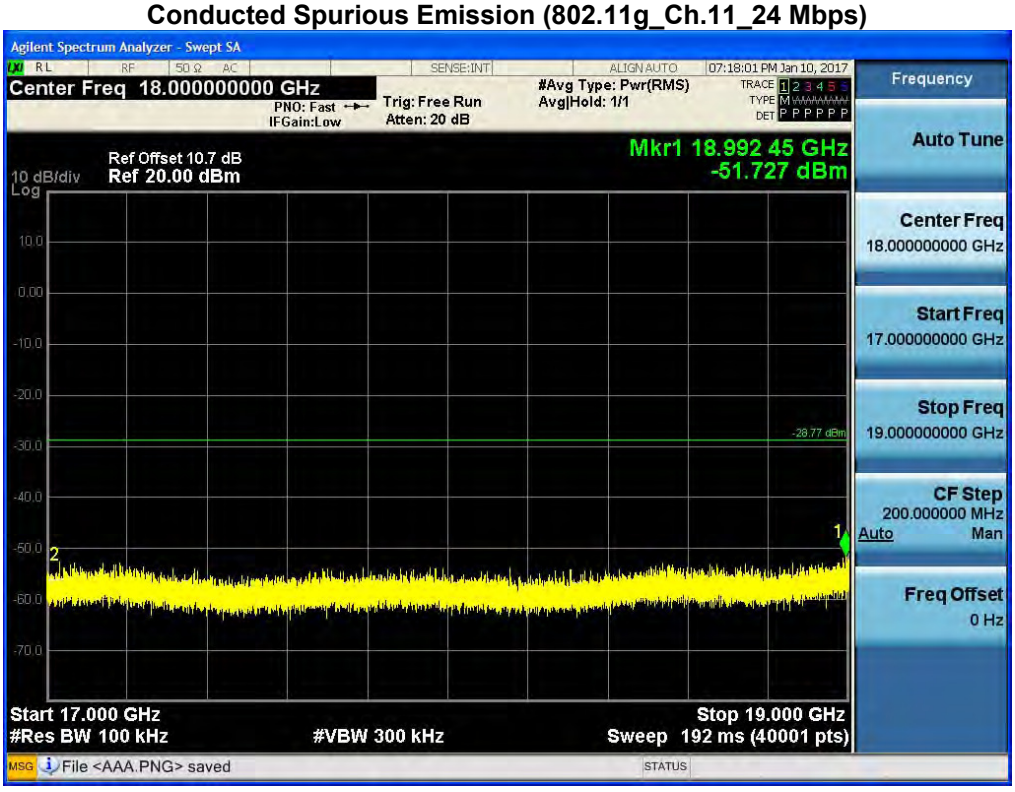
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



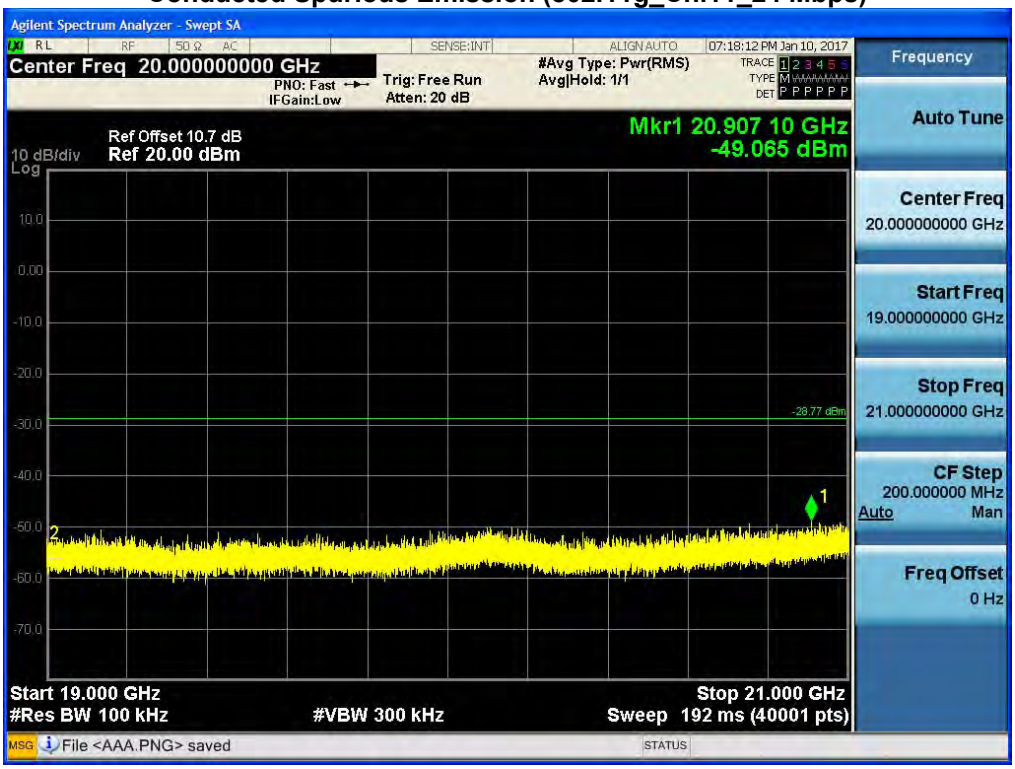
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



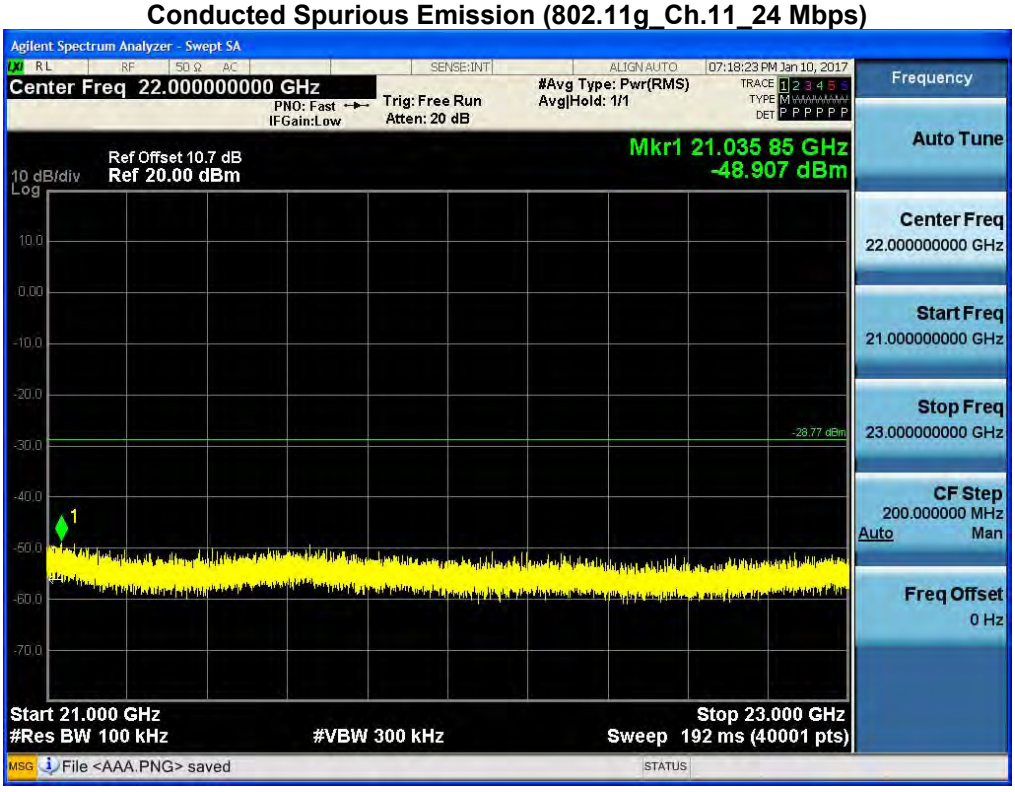
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



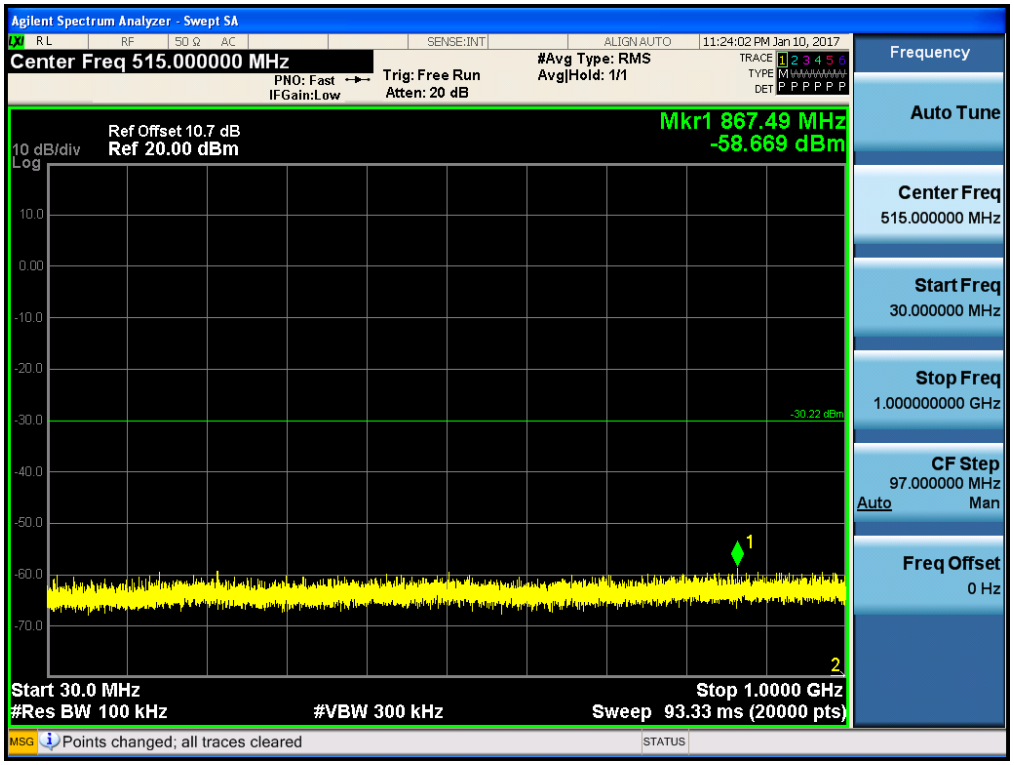
23 GHz ~ 25 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)

Ant.1

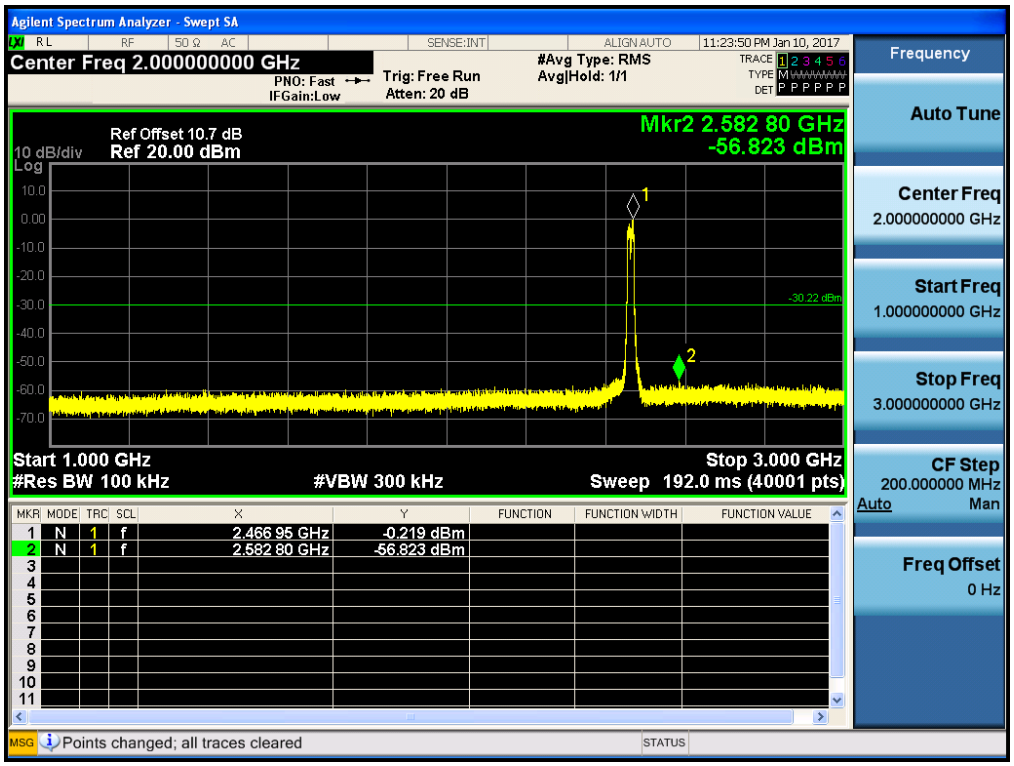
30 MHz ~ 1 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



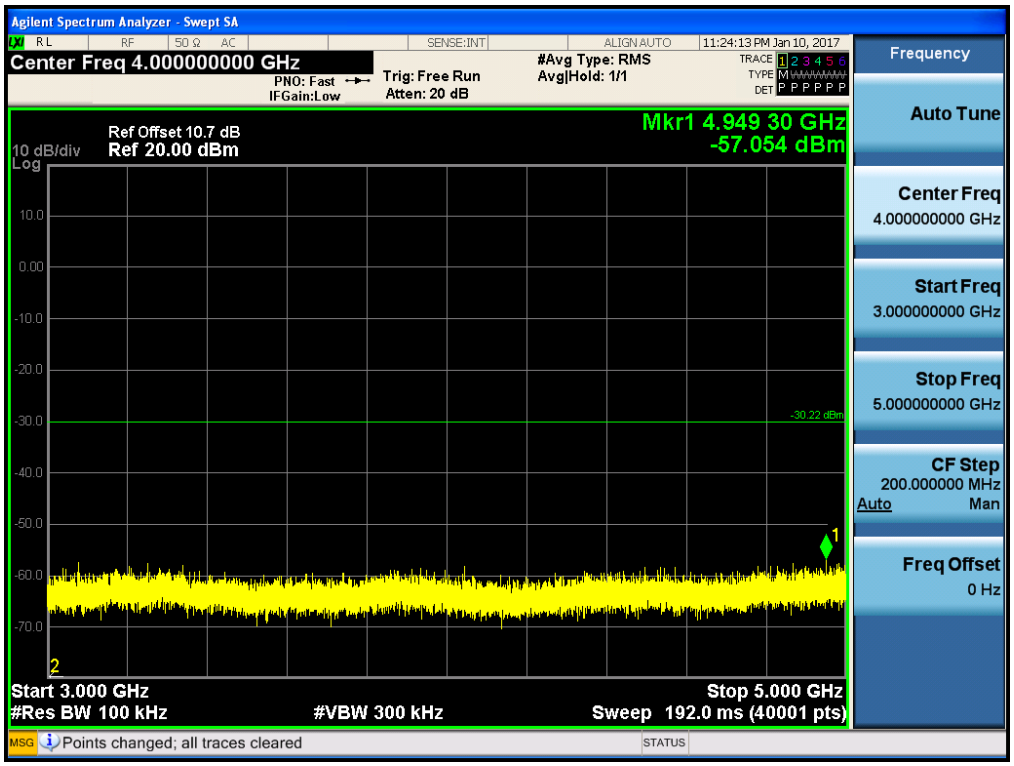
1 GHz ~ 3 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



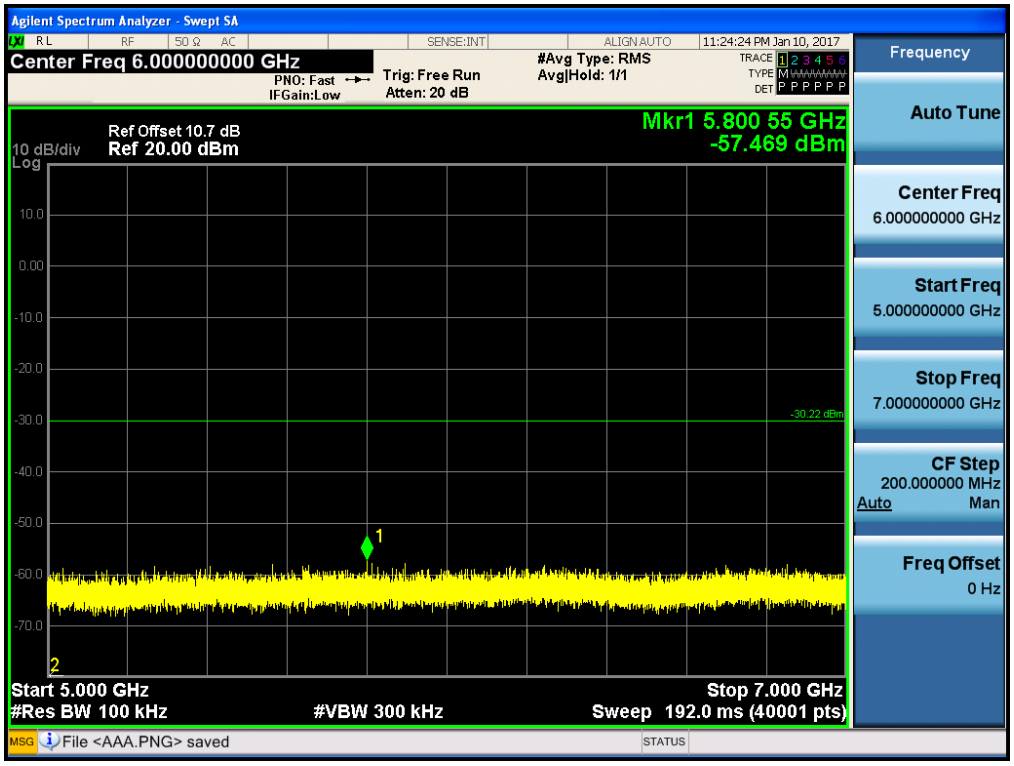
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



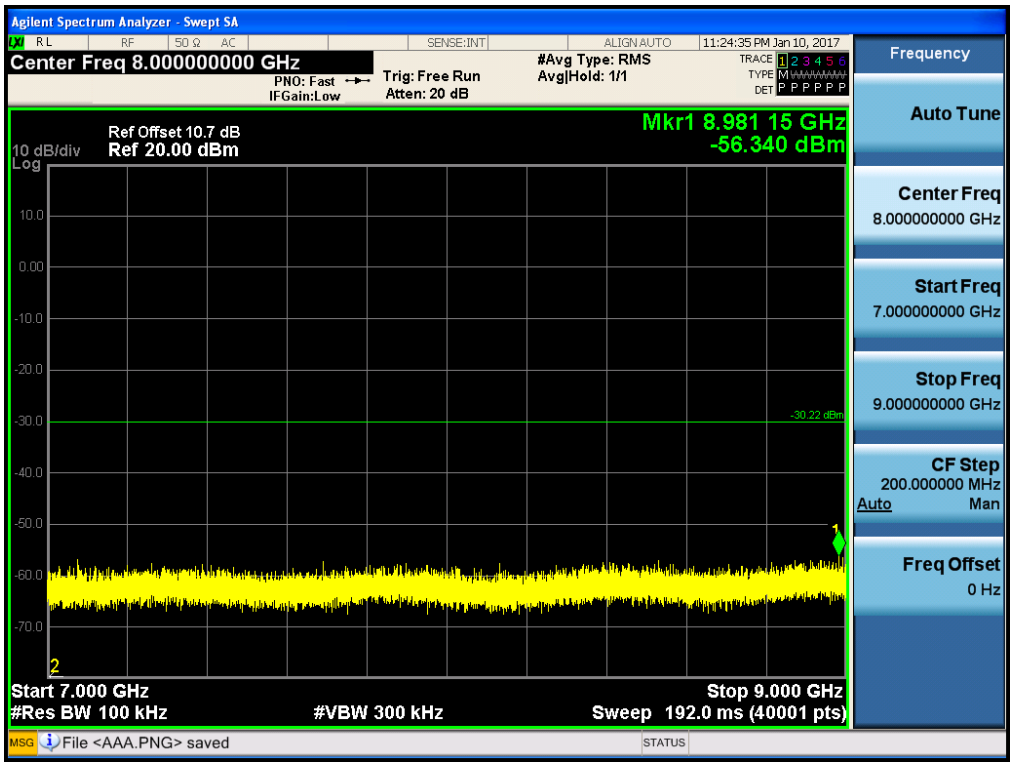
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



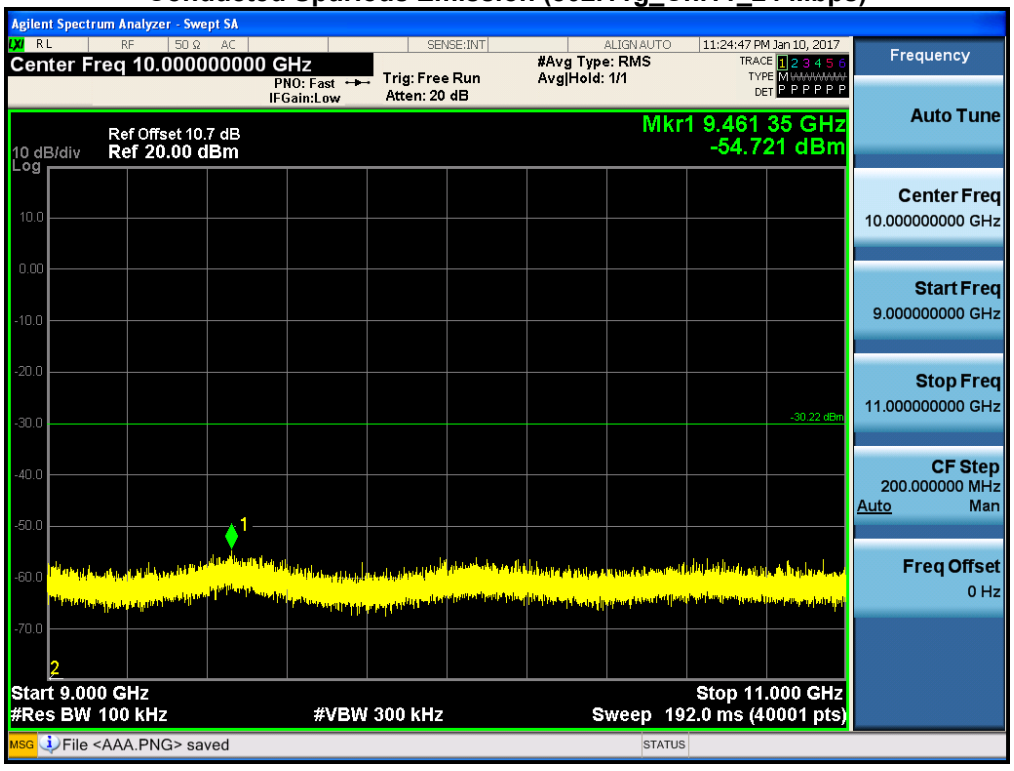
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



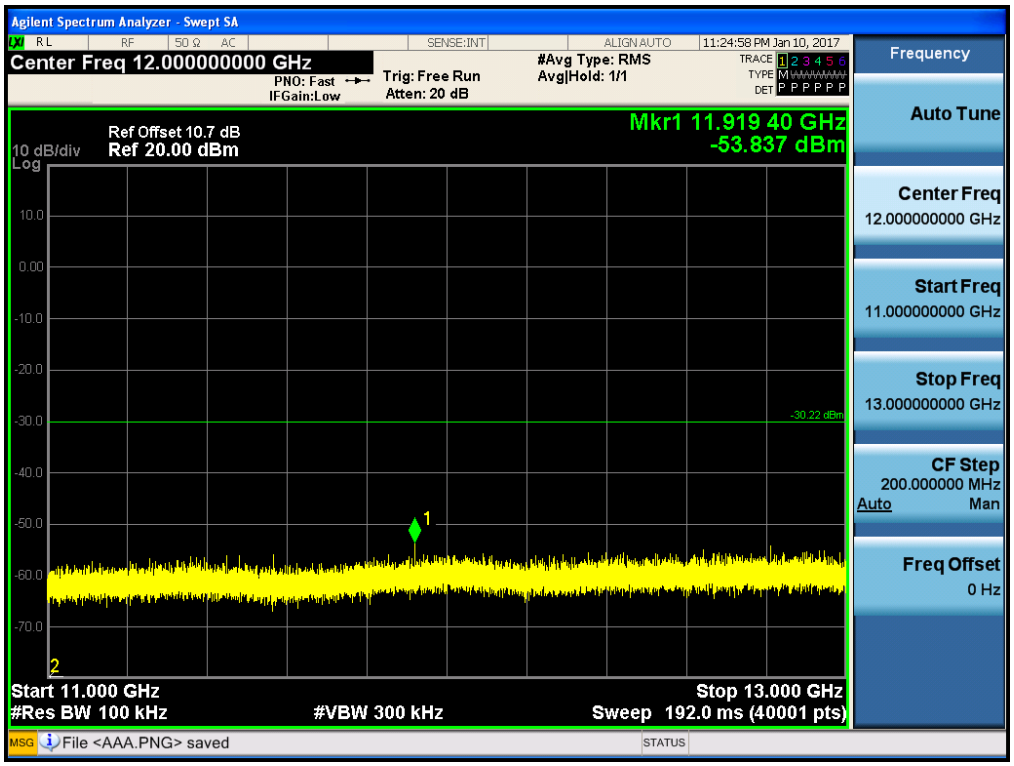
9 GHz ~ 11 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



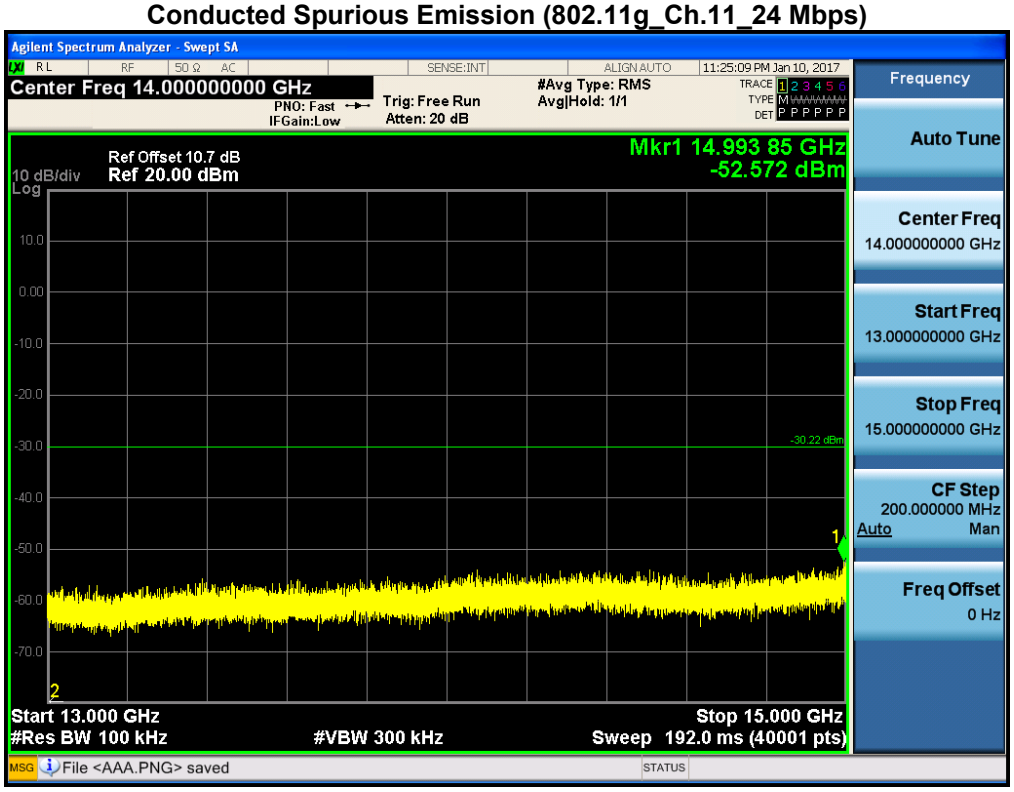
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



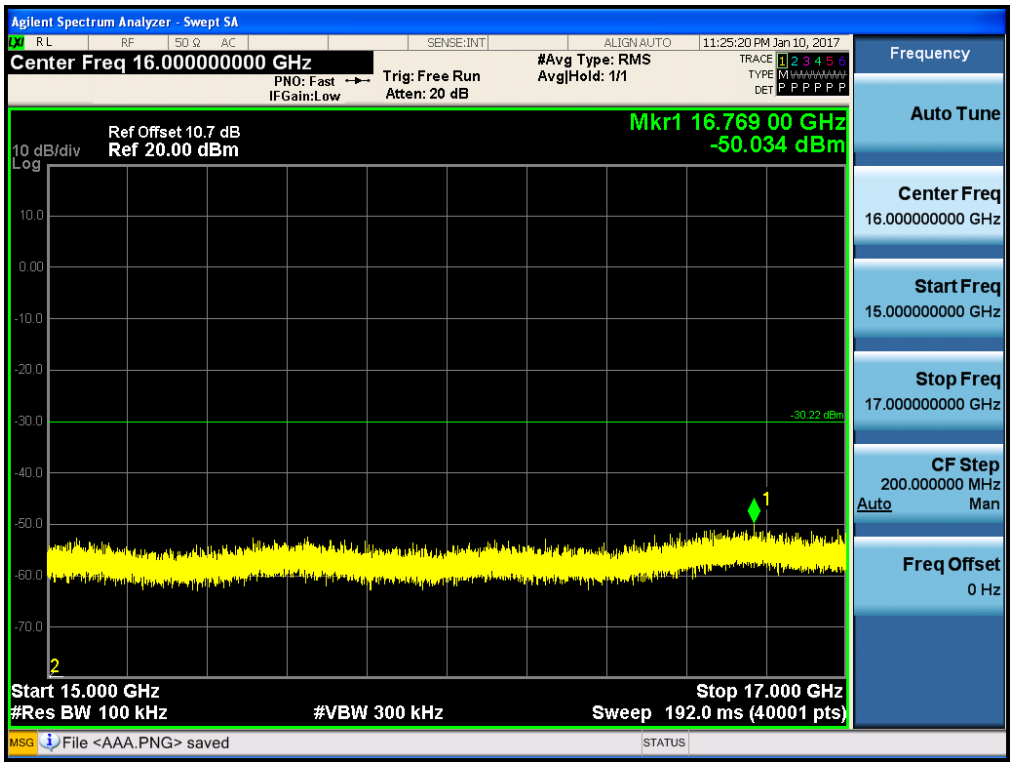
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



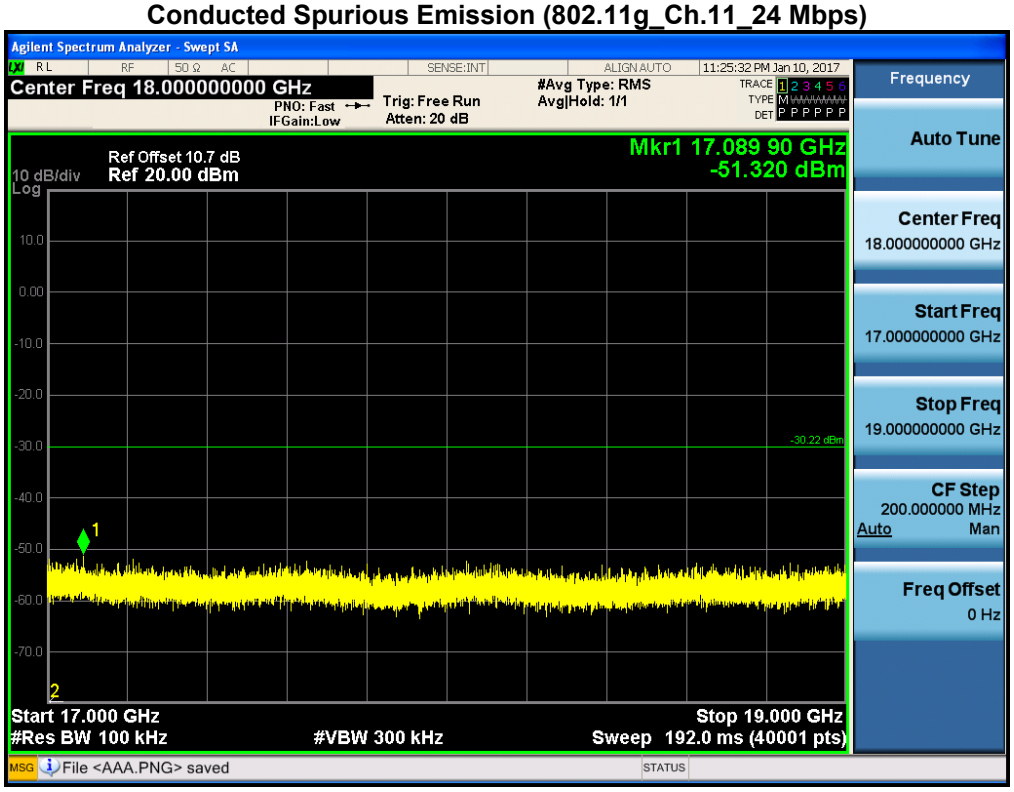
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



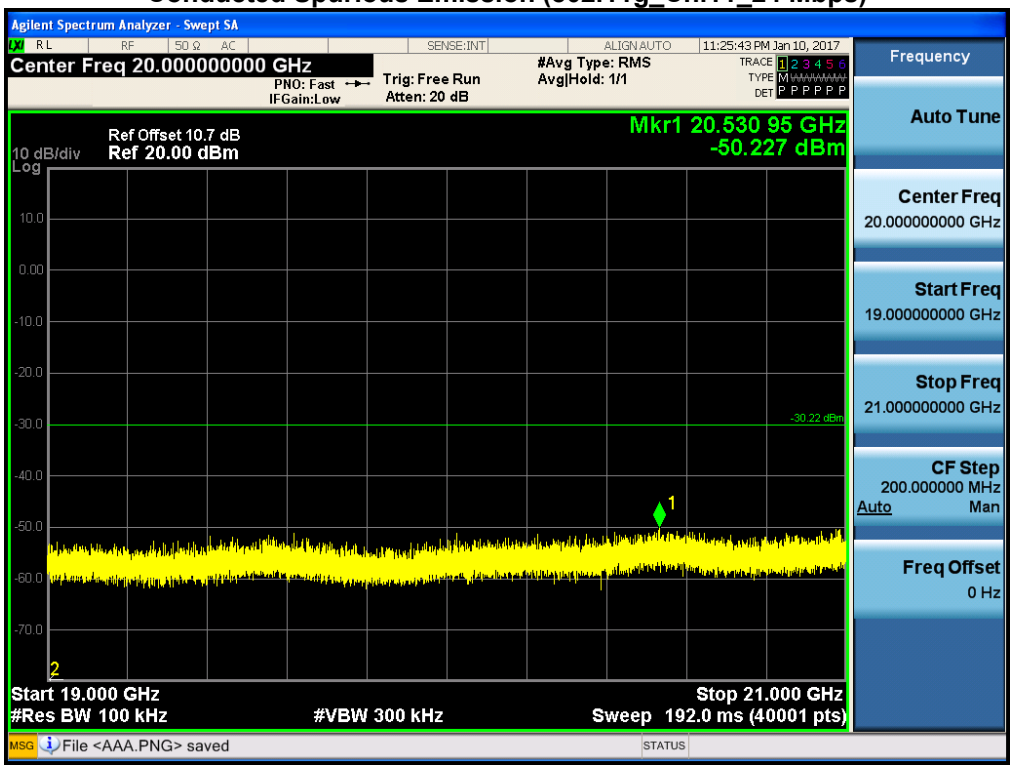
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



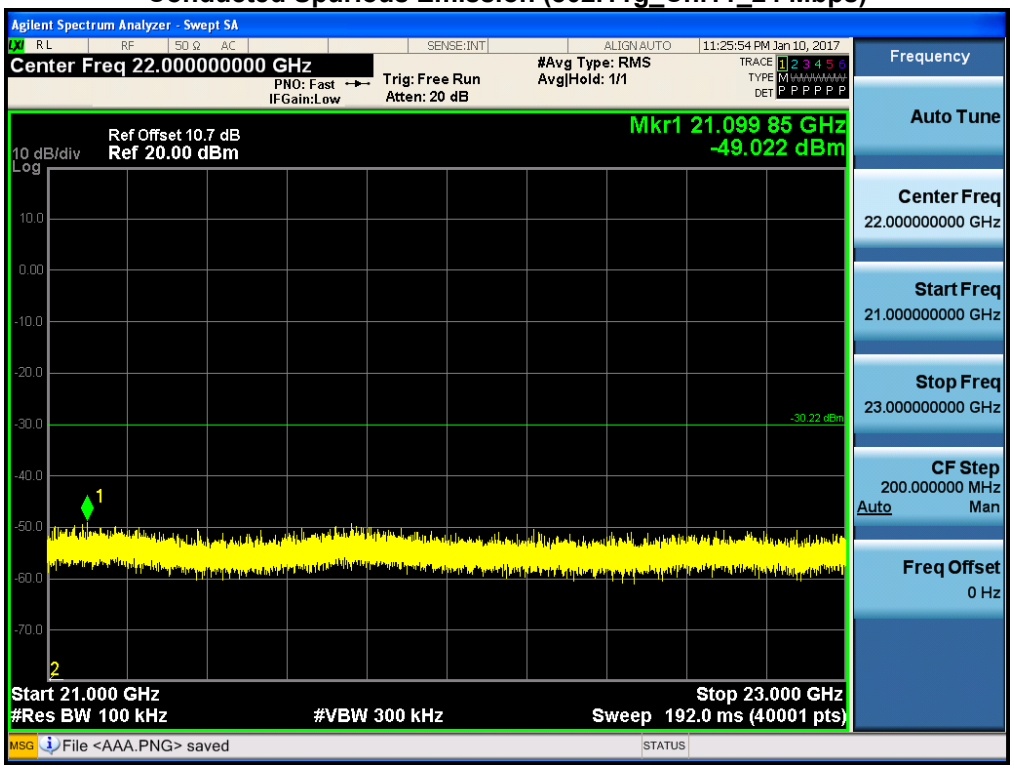
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



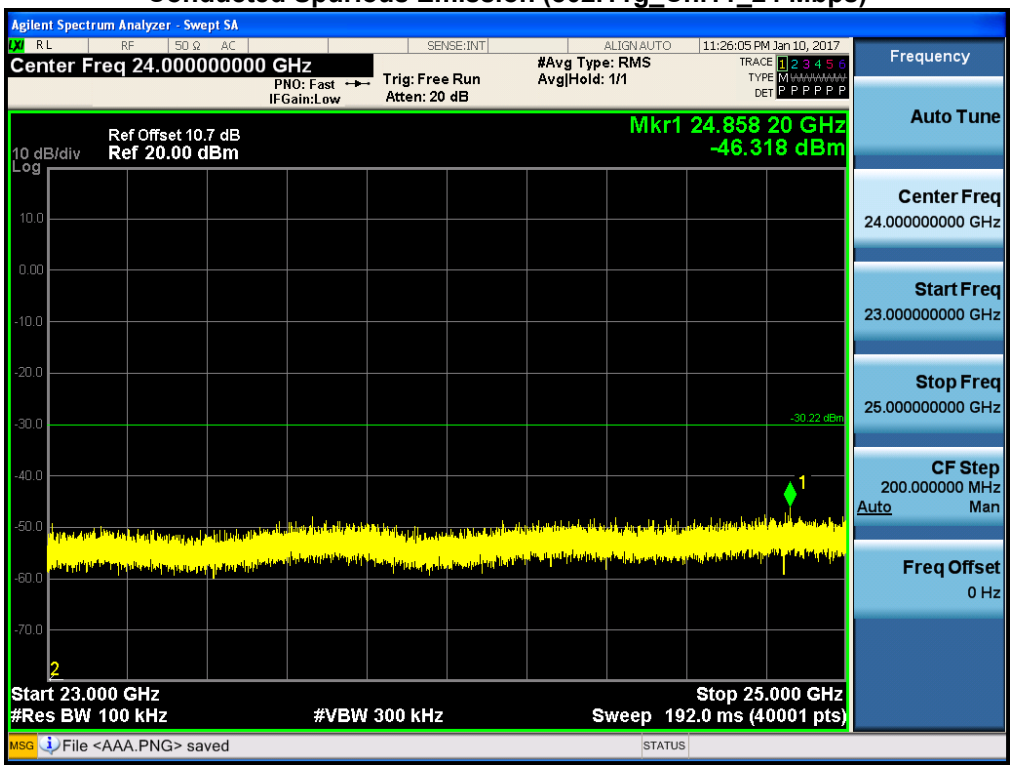
21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



23 GHz ~ 25 GHz

Conducted Spurious Emission (802.11g_Ch.11_24 Mbps)



9.6 RADIATED MEASUREMENT.

9.6.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

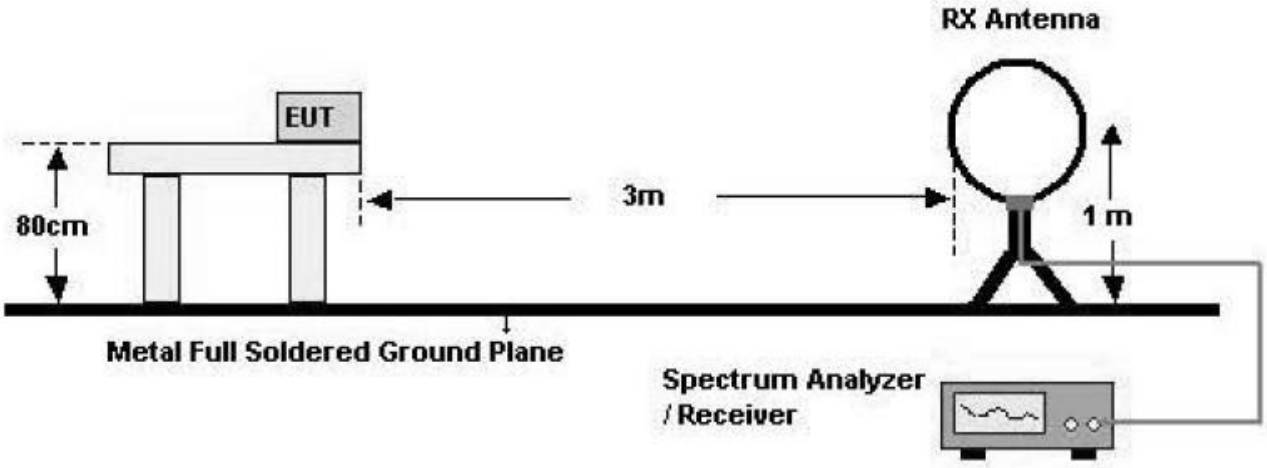
▣ Test case

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

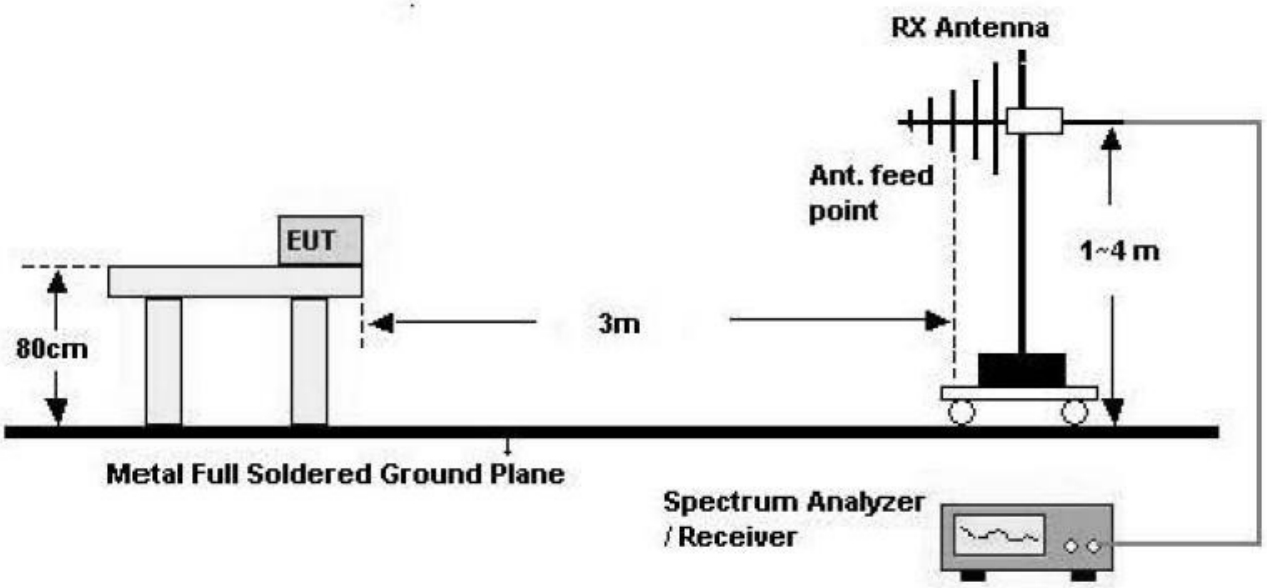
Note : In case of radiation test, we have done all test case. Worst case is MIMO(CDD) for 802.11g/n_HT20 mode and Ant.0(SISO) for 802.11b mode. So, we attached the result of MIMO for 802.11g/n mode and Ant.0(SISO) for 802.11b mode.

Test Configuration

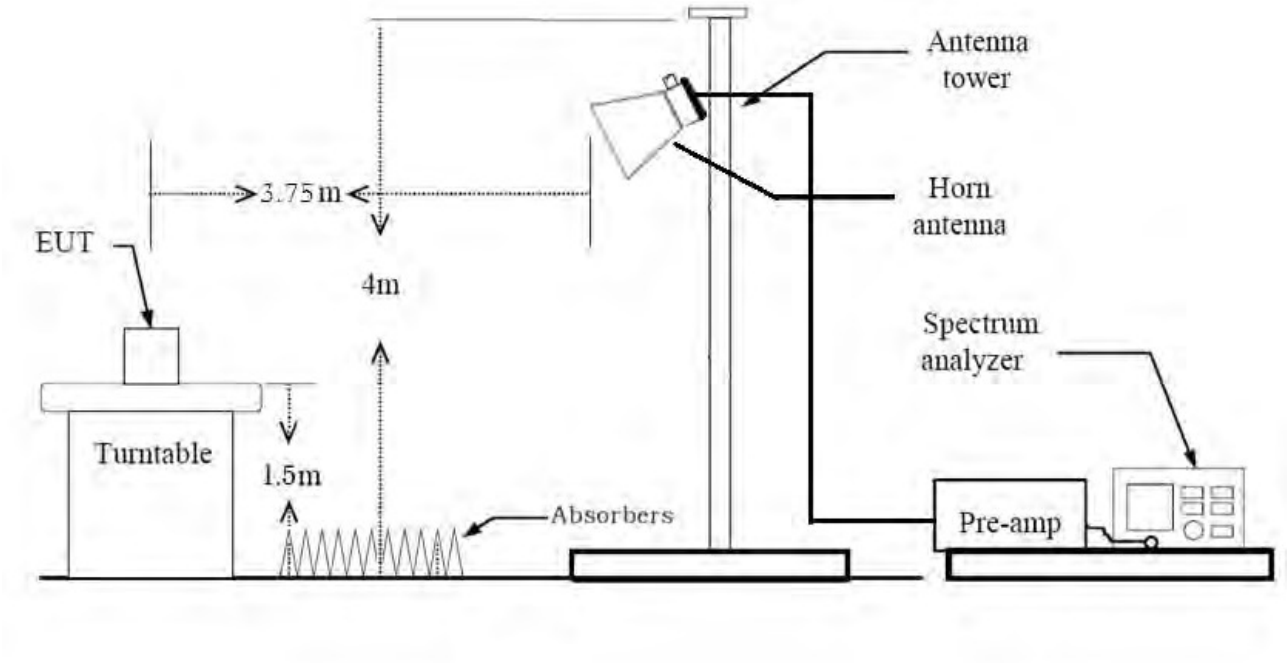
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE USED

Method 12.1 in KDB 558074 v03r05

Spectrum Setting

- Peak

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

RBW = cf. Table 1.

VBW ≥ 3 x RBW.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweeps to continue until the trace stabilizes.

(Note that the required measurement time may be longer for low duty cycle applications).

Table 1 —RBW as a function of frequency

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

- Average (duty cycle ≥ 98%)

Set RBW = 1 MHz

Set VBW ≥ 3 x RBW

Detector = RMS

Averaging type = power (*i.e.*, RMS).

Sweep time = auto.

Trace mode = average (at least 100 traces).

- Average (duty cycle < 98%, duty cycle variations are less than ±2%)

Set RBW = 1 MHz

Set VBW ≥ 3 x RBW

Detector = RMS.

Averaging type = power (*i.e.*, RMS).

Sweep time = auto.

Trace mode = average (at least 100 traces).

A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.

- Average (duty cycle < 98%, duty cycle variations exceed ±2%)

Set RBW = 1 MHz

Set VBW ≥ 1/T.(at least 100 times less than the resolution bandwidth, but no less than 10 Hz.)

Select spectrum analyzer linear display mode.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Note :

1. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor(reference distance : 3 m).

2. The duty cycle factor for 802.11 b/g/n_HT20

Mode	Worst Data rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)	VBW(1/T) (Hz)
b	1	12.430	12.544	99.09	0.040	80
g	6	2.064	2.181	94.62	0.240	485
n_HT20	MCS 0	1.925	2.040	94.37	0.252	519

TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
㎒	dB㎶	dB /m	dB	(H/V)	dB㎶/m	dB㎶/m	dB
No Critical peaks found							

Notes:

1. Measuring frequencies from 9 kHz to the 30MHz.
2. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
4. Limit line = specific Limits (dBuV) + Distance extrapolation factor
5. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

TEST RESULTS

Below 1 GHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
㎒	dB㎶	dB /m	dB	(H/V)	dB㎶/m	dB㎶/m	dB
No Critical peaks found							

Notes:

1. Measuring frequencies from 30 MHz to the 1 GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Above 1 GHz

[Only tablet]

Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.54	-0.64	V	47.90	73.98	26.08	PK
4824	36.34	-0.64	V	35.70	53.98	18.28	AV
7236	45.60	8.49	V	54.09	73.98	19.89	PK
7236	33.65	8.49	V	42.14	53.98	11.84	AV
4824	48.60	-0.64	H	47.96	73.98	26.02	PK
4824	36.47	-0.64	H	35.83	53.98	18.15	AV
7236	45.87	8.49	H	54.36	73.98	19.62	PK
7236	33.76	8.49	H	42.25	53.98	11.73	AV

Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.72	0.00	-0.64	V	48.08	73.98	25.90	PK
4824	36.11	0.24	-0.64	V	35.71	53.98	18.27	AV
7236	45.99	0.00	8.49	V	54.48	73.98	19.50	PK
7236	33.64	0.24	8.49	V	42.37	53.98	11.61	AV
4824	49.02	0.00	-0.64	H	48.38	73.98	25.60	PK
4824	36.15	0.24	-0.64	H	35.75	53.98	18.23	AV
7236	46.26	0.00	8.49	H	54.75	73.98	19.23	PK
7236	33.68	0.24	8.49	H	42.41	53.98	11.57	AV

Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.74	0.00	-0.64	V	48.10	73.98	25.88	PK
4824	36.08	0.25	-0.64	V	35.69	53.98	18.29	AV
7236	46.08	0.00	8.49	V	54.57	73.98	19.41	PK
7236	33.66	0.25	8.49	V	42.40	53.98	11.58	AV
4824	48.98	0.00	-0.64	H	48.34	73.98	25.64	PK
4824	36.12	0.25	-0.64	H	35.73	53.98	18.25	AV
7236	46.25	0.00	8.49	H	54.74	73.98	19.24	PK
7236	33.69	0.25	8.49	H	42.43	53.98	11.55	AV

* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F: Distance Factor

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor(802.11b)
5. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor + Duty Cycle Factor(802.11g/n)
6. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	49.21	0.01	V	49.22	73.98	24.76	PK
4874	37.10	0.01	V	37.11	53.98	16.87	AV
7311	45.74	8.94	V	54.68	73.98	19.30	PK
7311	33.88	8.94	V	42.82	53.98	11.16	AV
4874	49.31	0.01	H	49.32	73.98	24.66	PK
4874	37.12	0.01	H	37.13	53.98	16.85	AV
7311	46.52	8.94	H	55.46	73.98	18.52	PK
7311	33.90	8.94	H	42.84	53.98	11.14	AV

Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	49.18	0.00	0.01	V	49.19	73.98	24.79	PK
4874	37.26	0.24	0.01	V	37.51	53.98	16.47	AV
7311	45.37	0.00	8.94	V	54.31	73.98	19.67	PK
7311	33.79	0.24	8.94	V	42.97	53.98	11.01	AV
4874	49.30	0.00	0.01	H	49.31	73.98	24.67	PK
4874	37.38	0.24	0.01	H	37.63	53.98	16.35	AV
7311	45.76	0.00	8.94	H	54.70	73.98	19.28	PK
7311	33.87	0.24	8.94	H	43.05	53.98	10.93	AV

Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	49.15	0.00	0.01	V	49.16	73.98	24.82	PK
4874	37.18	0.25	0.01	V	37.44	53.98	16.54	AV
7311	45.41	0.00	8.94	V	54.35	73.98	19.63	PK
7311	33.76	0.25	8.94	V	42.95	53.98	11.03	AV
4874	49.28	0.00	0.01	H	49.29	73.98	24.69	PK
4874	37.34	0.25	0.01	H	37.60	53.98	16.38	AV
7311	45.87	0.00	8.94	H	54.81	73.98	19.17	PK
7311	33.83	0.25	8.94	H	43.02	53.98	10.96	AV

* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F: Distance Factor

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor(802.11b)
5. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor + Duty Cycle Factor(802.11g/n)
6. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	48.44	0.38	V	48.82	73.98	25.16	PK
4924	36.17	0.38	V	36.55	53.98	17.43	AV
7386	45.39	9.02	V	54.41	73.98	19.57	PK
7386	33.00	9.02	V	42.02	53.98	11.96	AV
4924	48.55	0.38	H	48.93	73.98	25.05	PK
4924	36.20	0.38	H	36.58	53.98	17.40	AV
7386	45.42	9.02	H	54.44	73.98	19.54	PK
7386	33.03	9.02	H	42.05	53.98	11.93	AV

Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	48.39	0.00	0.38	V	48.77	73.98	25.21	PK
4924	36.38	0.24	0.38	V	37.00	53.98	16.98	AV
7386	45.28	0.00	9.02	V	54.30	73.98	19.68	PK
7386	33.11	0.24	9.02	V	42.37	53.98	11.61	AV
4924	48.51	0.00	0.38	H	48.89	73.98	25.09	PK
4924	36.50	0.24	0.38	H	37.12	53.98	16.86	AV
7386	45.40	0.00	9.02	H	54.42	73.98	19.56	PK
7386	33.14	0.24	9.02	H	42.40	53.98	11.58	AV

Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	48.14	0.00	0.38	V	48.52	73.98	25.46	PK
4924	36.41	0.25	0.38	V	37.04	53.98	16.94	AV
7386	45.27	0.00	9.02	V	54.29	73.98	19.69	PK
7386	33.03	0.25	9.02	V	42.30	53.98	11.68	AV
4924	48.48	0.00	0.38	H	48.86	73.98	25.12	PK
4924	36.53	0.25	0.38	H	37.16	53.98	16.82	AV
7386	45.38	0.00	9.02	H	54.40	73.98	19.58	PK
7386	33.12	0.25	9.02	H	42.39	53.98	11.59	AV

* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F: Distance Factor

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor(802.11b)
5. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor + Duty Cycle Factor(802.11g/n)
6. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

[Tablet+keyboard cover(kickstand)]

Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.52	-0.64	V	47.88	73.98	26.10	PK
4824	36.23	-0.64	V	35.59	53.98	18.39	AV
7236	45.71	8.49	V	54.20	73.98	19.78	PK
7236	33.52	8.49	V	42.01	53.98	11.97	AV
4824	48.64	-0.64	H	48.00	73.98	25.98	PK
4824	36.38	-0.64	H	35.74	53.98	18.24	AV
7236	45.92	8.49	H	54.41	73.98	19.57	PK
7236	33.71	8.49	H	42.20	53.98	11.78	AV

Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.70	0.00	-0.64	V	48.06	73.98	25.92	PK
4824	36.00	0.24	-0.64	V	35.60	53.98	18.38	AV
7236	46.31	0.00	8.49	V	54.80	73.98	19.18	PK
7236	33.51	0.24	8.49	V	42.24	53.98	11.74	AV
4824	49.06	0.00	-0.64	H	48.42	73.98	25.56	PK
4824	36.06	0.24	-0.64	H	35.66	53.98	18.32	AV
7236	46.27	0.00	8.49	H	54.76	73.98	19.22	PK
7236	33.63	0.24	8.49	H	42.36	53.98	11.62	AV

Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	48.72	0.00	-0.64	V	48.08	73.98	25.90	PK
4824	35.97	0.25	-0.64	V	35.58	53.98	18.40	AV
7236	46.19	0.00	8.49	V	54.68	73.98	19.30	PK
7236	33.53	0.25	8.49	V	42.27	53.98	11.71	AV
4824	49.02	0.00	-0.64	H	48.38	73.98	25.60	PK
4824	36.03	0.25	-0.64	H	35.64	53.98	18.34	AV
7236	46.40	0.00	8.49	H	54.89	73.98	19.09	PK
7236	33.64	0.25	8.49	H	42.38	53.98	11.60	AV

* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F: Distance Factor

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor(802.11b)
5. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor + Duty Cycle Factor(802.11g/n)
6. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	49.19	0.01	V	49.20	73.98	24.78	PK
4874	36.99	0.01	V	37.00	53.98	16.98	AV
7311	46.21	8.94	V	55.15	73.98	18.83	PK
7311	33.75	8.94	V	42.69	53.98	11.29	AV
4874	49.37	0.01	H	49.38	73.98	24.60	PK
4874	37.03	0.01	H	37.04	53.98	16.94	AV
7311	45.90	8.94	H	54.84	73.98	19.14	PK
7311	33.85	8.94	H	42.79	53.98	11.19	AV

Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	49.16	0.00	0.01	V	49.17	73.98	24.81	PK
4874	37.15	0.24	0.01	V	37.40	53.98	16.58	AV
7311	46.28	0.00	8.94	V	55.22	73.98	18.76	PK
7311	33.74	0.24	8.94	V	42.92	53.98	11.06	AV
4874	49.34	0.00	0.01	H	49.35	73.98	24.63	PK
4874	37.29	0.24	0.01	H	37.54	53.98	16.44	AV
7311	46.13	0.00	8.94	H	55.07	73.98	18.91	PK
7311	33.85	0.24	8.94	H	43.03	53.98	10.95	AV

Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	49.13	0.00	0.01	V	49.14	73.98	24.84	PK
4874	37.07	0.25	0.01	V	37.33	53.98	16.65	AV
7311	45.52	0.00	8.94	V	54.46	73.98	19.52	PK
7311	33.76	0.25	8.94	V	42.95	53.98	11.03	AV
4874	49.32	0.00	0.01	H	49.33	73.98	24.65	PK
4874	37.25	0.25	0.01	H	37.51	53.98	16.47	AV
7311	45.86	0.00	8.94	H	54.80	73.98	19.18	PK
7311	33.81	0.25	8.94	H	43.00	53.98	10.98	AV

* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F: Distance Factor

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor(802.11b)
5. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor + Duty Cycle Factor(802.11g/n)
6. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	48.42	0.38	V	48.80	73.98	25.18	PK
4924	36.06	0.38	V	36.44	53.98	17.54	AV
7386	45.50	9.02	V	54.52	73.98	19.46	PK
7386	32.87	9.02	V	41.89	53.98	12.09	AV
4924	48.59	0.38	H	48.97	73.98	25.01	PK
4924	36.11	0.38	H	36.49	53.98	17.49	AV
7386	45.47	9.02	H	54.49	73.98	19.49	PK
7386	32.98	9.02	H	42.00	53.98	11.98	AV

Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	48.37	0.00	0.38	V	48.75	73.98	25.23	PK
4924	36.27	0.24	0.38	V	36.89	53.98	17.09	AV
7386	45.45	0.00	9.02	V	54.47	73.98	19.51	PK
7386	32.98	0.24	9.02	V	42.24	53.98	11.74	AV
4924	48.55	0.00	0.38	H	48.93	73.98	25.05	PK
4924	36.41	0.24	0.38	H	37.03	53.98	16.95	AV
7386	45.45	0.00	9.02	H	54.47	73.98	19.51	PK
7386	33.09	0.24	9.02	H	42.35	53.98	11.63	AV

Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV]	Ducy Cycle Factor [dB]	A.F.+C.L.-A.G.+D,F, [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	48.39	0.00	0.38	V	48.77	73.98	25.21	PK
4924	36.30	0.25	0.38	V	36.93	53.98	17.05	AV
7386	45.38	0.00	9.02	V	54.40	73.98	19.58	PK
7386	32.96	0.25	9.02	V	42.23	53.98	11.75	AV
4924	48.52	0.00	0.38	H	48.90	73.98	25.08	PK
4924	36.44	0.25	0.38	H	37.07	53.98	16.91	AV
7386	45.43	0.00	9.02	H	54.45	73.98	19.53	PK
7386	33.07	0.25	9.02	H	42.34	53.98	11.64	AV

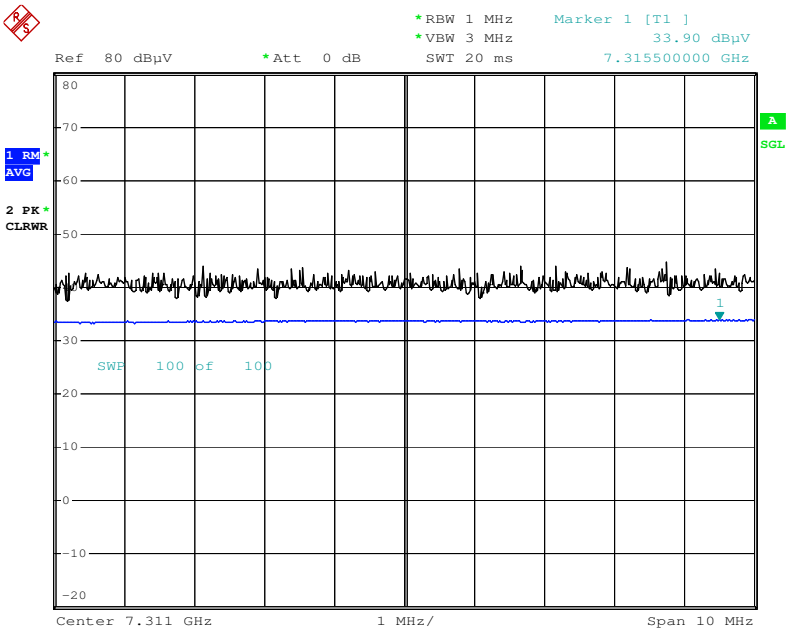
* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F: Distance Factor

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor(802.11b)
5. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor + Duty Cycle Factor(802.11g/n)
6. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
7. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

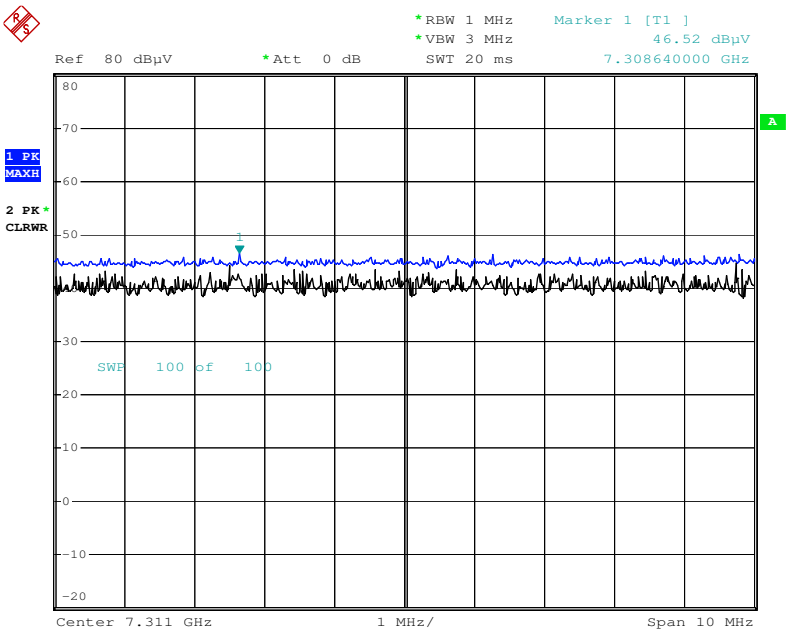
▣ RESULT PLOTS (Worst Case: X-H, Only tablet)

Radiated Spurious Emissions plot – Average Reading (802.11b, Ch.6 3rd Harmonic)



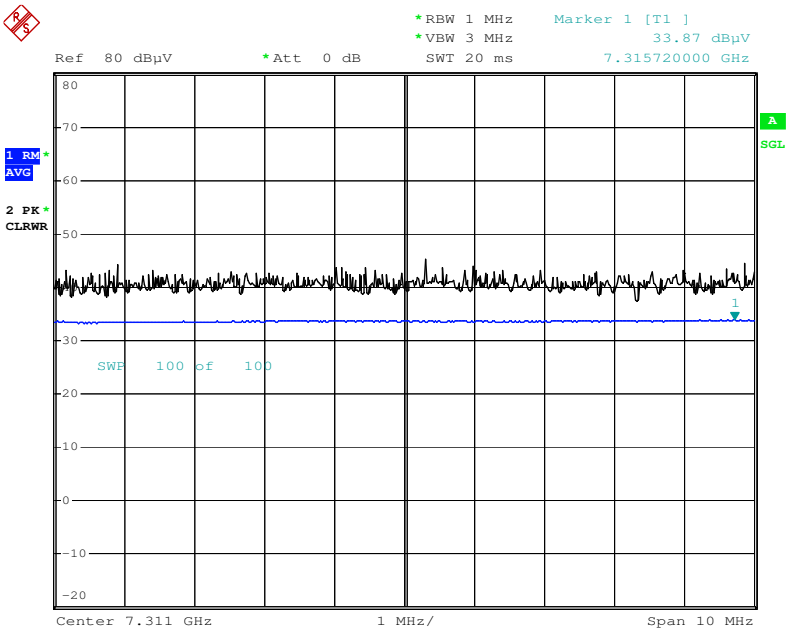
Date: 10.JAN.2017 13:25:24

Radiated Spurious Emissions plot – Peak Reading (802.11b, Ch.6 3rd Harmonic)



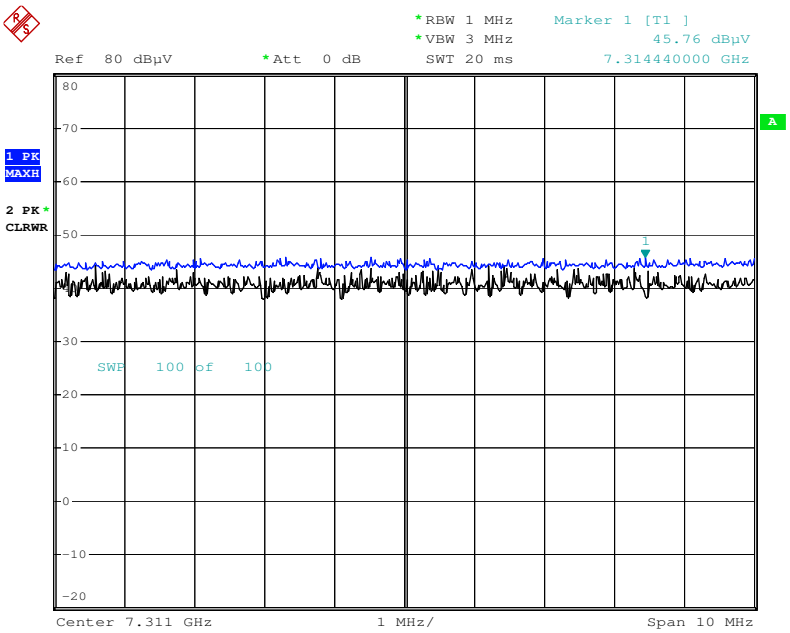
Date: 10.JAN.2017 13:28:44

Radiated Spurious Emissions plot – Average Reading (802.11g, Ch.6 3rd Harmonic)



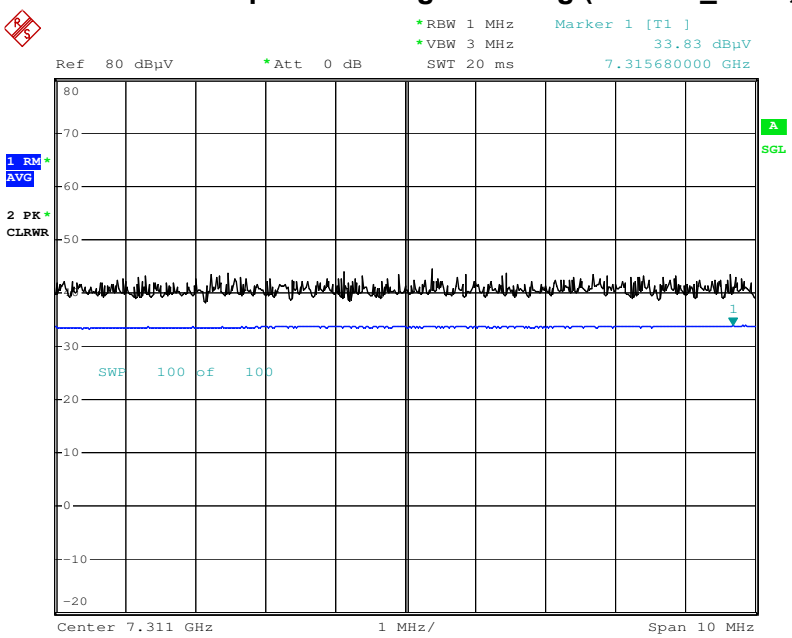
Date: 10.JAN.2017 13:26:07

Radiated Spurious Emissions plot – Peak Reading (802.11g, Ch.6 3rd Harmonic)



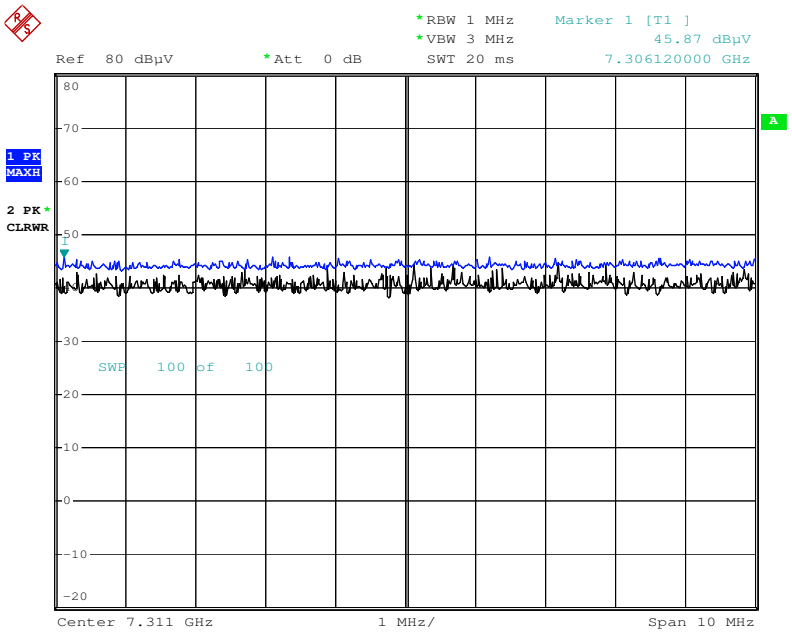
Date: 10.JAN.2017 13:27:47

Radiated Spurious Emissions plot – Average Reading (802.11n_HT20, Ch.6 3rd Harmonic)



Date: 10.JAN.2017 13:26:41

Radiated Spurious Emissions plot – Peak Reading (802.11n_HT20, Ch.6 3rd Harmonic)



Date: 10.JAN.2017 13:27:23

9.6.2 RADIATED RESTRICTED BAND EDGES

Test Requirements and limit, §15.247(d) §15.205, §15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 15.205(c)).

[Only tablet]

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.81	0.00	32.68	H	58.49	73.98	15.49	PK
2390.0	14.26	0.24	32.68	H	47.18	53.98	6.80	AV
2390.0	25.21	0.00	32.68	V	57.89	73.98	16.09	PK
2390.0	14.19	0.24	32.68	V	47.11	53.98	6.87	AV
2483.5	26.34	0.00	33.05	H	59.39	73.98	14.59	PK
2483.5	14.29	0.24	33.05	H	47.58	53.98	6.40	AV
2483.5	26.42	0.00	33.05	V	59.47	73.98	14.51	PK
2483.5	14.51	0.24	33.05	V	47.80	53.98	6.18	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.86	32.68	H	58.54	73.98	15.44	PK
2390.0	14.53	32.68	H	47.21	53.98	6.77	AV
2390.0	25.49	32.68	V	58.17	73.98	15.81	PK
2390.0	14.45	32.68	V	47.13	53.98	6.85	AV
2483.5	26.62	33.05	H	59.67	73.98	14.31	PK
2483.5	14.55	33.05	H	47.60	53.98	6.38	AV
2483.5	26.25	33.05	V	59.30	73.98	14.68	PK
2483.5	14.36	33.05	V	47.41	53.98	6.57	AV

Operation Mode:	802.11n_HT20
Transfer MCS Index:	0
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.55	0.00	32.68	H	58.23	73.98	15.75	PK
2390.0	14.40	0.25	32.68	H	47.33	53.98	6.65	AV
2390.0	26.10	0.00	32.68	V	58.78	73.98	15.20	PK
2390.0	14.26	0.25	32.68	V	47.19	53.98	6.79	AV
2483.5	26.12	0.00	33.05	H	59.17	73.98	14.81	PK
2483.5	14.12	0.25	33.05	H	47.42	53.98	6.56	AV
2483.5	26.61	0.00	33.05	V	59.66	73.98	14.32	PK
2483.5	14.32	0.25	33.05	V	47.62	53.98	6.36	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss +Distance Factor + Duty Cycle Factor(802.11g/n)
2. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

[Tablet+keyboard cover(kickstand)]

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.81	0.00	32.68	H	58.49	73.98	15.49	PK
2390.0	14.30	0.24	32.68	H	47.22	53.98	6.76	AV
2390.0	26.17	0.00	32.68	V	58.85	73.98	15.13	PK
2390.0	14.25	0.24	32.68	V	47.17	53.98	6.81	AV
2483.5	26.61	0.00	33.05	H	59.66	73.98	14.32	PK
2483.5	14.46	0.24	33.05	H	47.75	53.98	6.23	AV
2483.5	26.38	0.00	33.05	V	59.43	73.98	14.55	PK
2483.5	14.60	0.24	33.05	V	47.89	53.98	6.09	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.74	32.68	H	58.42	73.98	15.56	PK
2390.0	14.22	32.68	H	46.90	53.98	7.08	AV
2390.0	25.36	32.68	V	58.04	73.98	15.94	PK
2390.0	14.18	32.68	V	46.86	53.98	7.12	AV
2483.5	26.33	33.05	H	59.38	73.98	14.60	PK
2483.5	14.49	33.05	H	47.54	53.98	6.44	AV
2483.5	26.02	33.05	V	59.07	73.98	14.91	PK
2483.5	14.36	33.05	V	47.41	53.98	6.57	AV

Operation Mode:	802.11n_HT20
Transfer MCS Index:	0
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

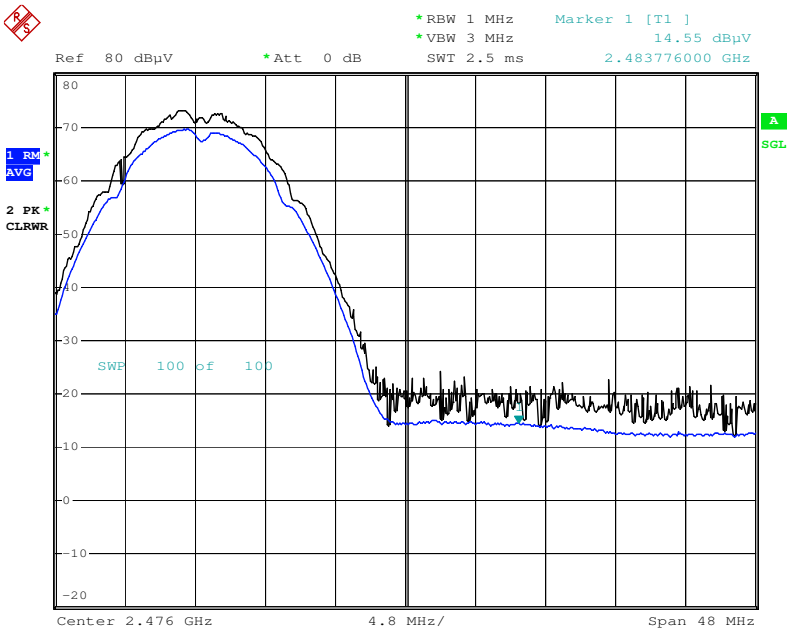
Frequency [MHz]	Reading [dBuV]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.60	0.00	32.68	H	58.28	73.98	15.70	PK
2390.0	14.44	0.25	32.68	H	47.37	53.98	6.61	AV
2390.0	25.69	0.00	32.68	V	58.37	73.98	15.61	PK
2390.0	14.24	0.25	32.68	V	47.17	53.98	6.81	AV
2483.5	25.87	0.00	33.05	H	58.92	73.98	15.06	PK
2483.5	14.43	0.25	33.05	H	47.73	53.98	6.25	AV
2483.5	26.62	0.00	33.05	V	59.67	73.98	14.31	PK
2483.5	14.89	0.25	33.05	V	48.19	53.98	5.79	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss +Distance Factor + Duty Cycle Factor(802.11g/n)
2. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

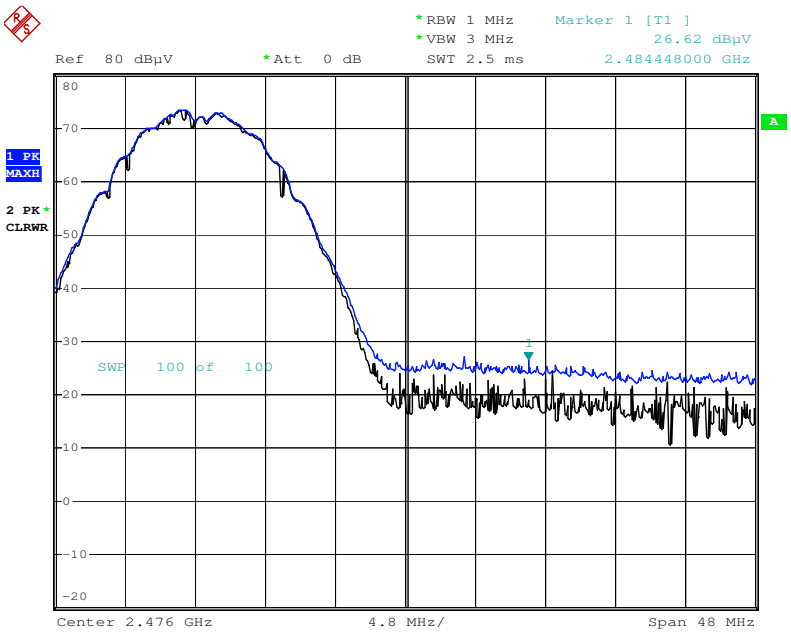
▣ RESULT PLOTS(Worst Case: X-H, Only tablet)

Radiated Restricted Band Edges plot – Average Reading (802.11b, Ch.11)



Date: 6.JAN.2017 11:03:43

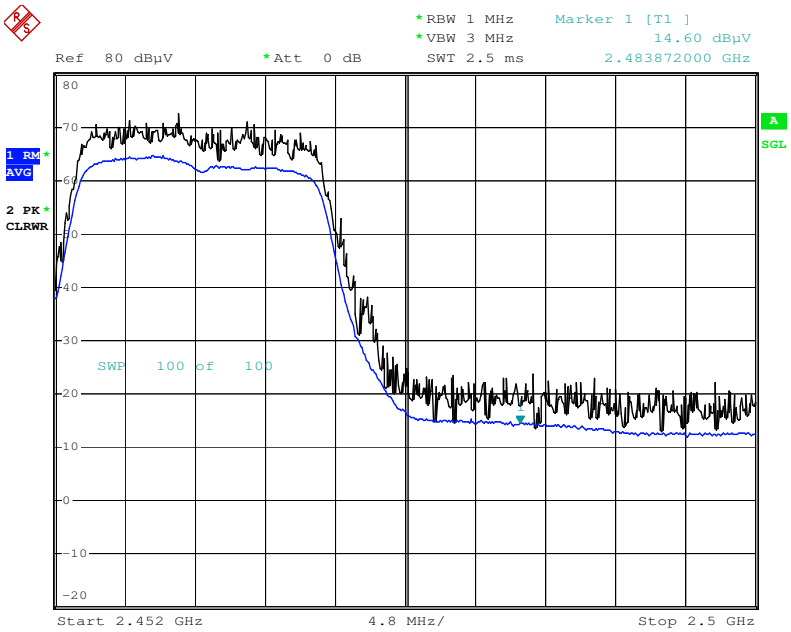
Radiated Restricted Band Edges plot – Peak Reading (802.11b, Ch.11)



Date: 6.JAN.2017 11:03:17

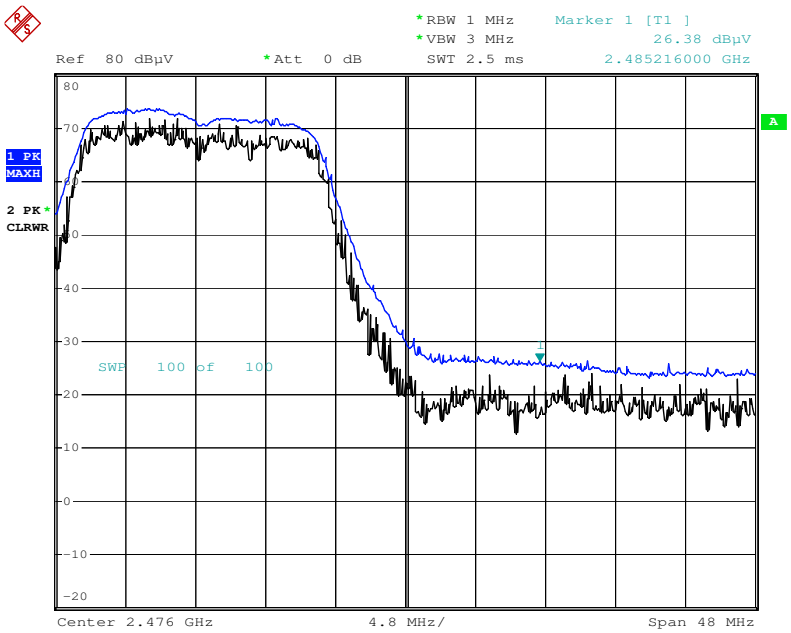
▣ RESULT PLOTS(Worst Case: X-V, Tablet+keyboard cover(kickstand))

Radiated Restricted Band Edges plot – Average Reading (802.11g, Ch.1)



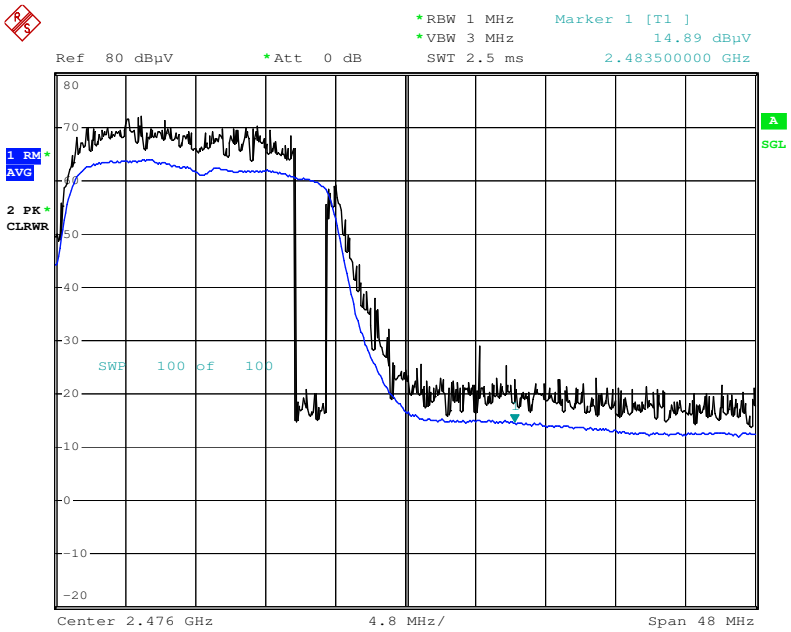
Date: 9.JAN.2017 11:19:38

Radiated Restricted Band Edges plot – Peak Reading (802.11g, Ch.1)



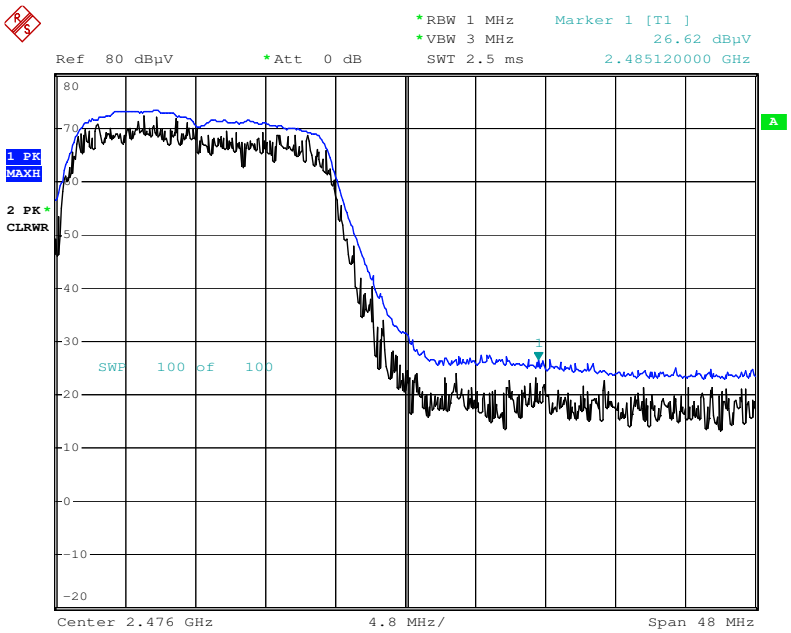
Date: 9.JAN.2017 11:28:09

Radiated Restricted Band Edges plot – Average Reading (802.11n_HT20, Ch.1)



Date: 9.JAN.2017 11:33:00

Radiated Restricted Band Edges plot – Peak Reading (802.11n_HT20, Ch.1)



Date: 9.JAN.2017 11:32:30

9.7 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.207

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.
5. We are performed the AC Power Line Conducted Emission test for worst data rate, channel, operation mode.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

▣ RESULT PLOTS (Only tablet)

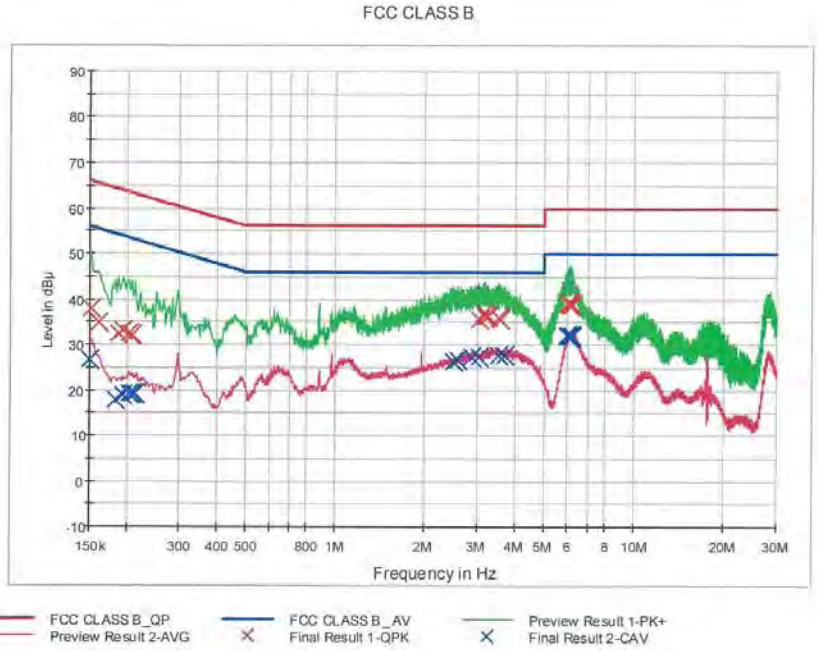
Conducted Emissions (Line 1)

EMI Auto Test(4) 1 / 2

HCT TEST Report

Common Information

EUT:	SM-W727V
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN_2.4G_L1



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	37.7	9.000	Off	L1	9.6	28.2	65.9
0.160000	34.7	9.000	Off	L1	9.6	30.7	65.5
0.188000	32.5	9.000	Off	L1	9.6	31.6	64.1
0.194000	33.0	9.000	Off	L1	9.6	30.9	63.9
0.204000	32.5	9.000	Off	L1	9.6	31.0	63.4
0.208000	32.1	9.000	Off	L1	9.6	31.2	63.3
3.044000	35.5	9.000	Off	L1	9.8	20.5	56.0
3.122000	36.7	9.000	Off	L1	9.8	19.3	56.0
3.192000	36.2	9.000	Off	L1	9.8	19.8	56.0
3.250000	36.3	9.000	Off	L1	9.8	19.7	56.0
3.540000	35.6	9.000	Off	L1	9.8	20.4	56.0
3.582000	35.4	9.000	Off	L1	9.8	20.6	56.0
6.024000	38.8	9.000	Off	L1	10.0	21.2	60.0
6.074000	39.2	9.000	Off	L1	10.0	20.8	60.0
6.088000	38.6	9.000	Off	L1	10.0	21.4	60.0
6.094000	39.2	9.000	Off	L1	10.0	20.8	60.0
6.142000	38.9	9.000	Off	L1	10.0	21.1	60.0
6.212000	38.4	9.000	Off	L1	10.0	21.6	60.0

Final Result 2

2017-01-19 오전 9:41:17

EMI Auto Test(4) 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	26.5	9.000	Off	L1	9.6	29.5	56.0
0.182000	18.0	9.000	Off	L1	9.6	36.4	54.4
0.194000	18.7	9.000	Off	L1	9.6	35.1	53.9
0.204000	19.3	9.000	Off	L1	9.6	34.2	53.4
0.208000	19.2	9.000	Off	L1	9.6	34.1	53.3
0.212000	19.2	9.000	Off	L1	9.6	33.9	53.1
2.490000	26.4	9.000	Off	L1	9.8	19.6	46.0
2.558000	26.6	9.000	Off	L1	9.8	19.4	46.0
2.870000	27.3	9.000	Off	L1	9.8	18.7	46.0
3.044000	27.3	9.000	Off	L1	9.8	18.7	46.0
3.540000	27.8	9.000	Off	L1	9.8	18.2	46.0
3.676000	27.5	9.000	Off	L1	9.8	18.5	46.0
6.002000	31.9	9.000	Off	L1	10.0	18.1	50.0
6.010000	31.7	9.000	Off	L1	10.0	18.3	50.0
6.046000	32.1	9.000	Off	L1	10.0	17.9	50.0
6.156000	32.1	9.000	Off	L1	10.0	17.9	50.0
6.170000	32.2	9.000	Off	L1	10.0	17.8	50.0
6.212000	31.7	9.000	Off	L1	10.0	18.3	50.0

2017-01-19 오전 9:41:17

Conducted Emissions (Line 2)

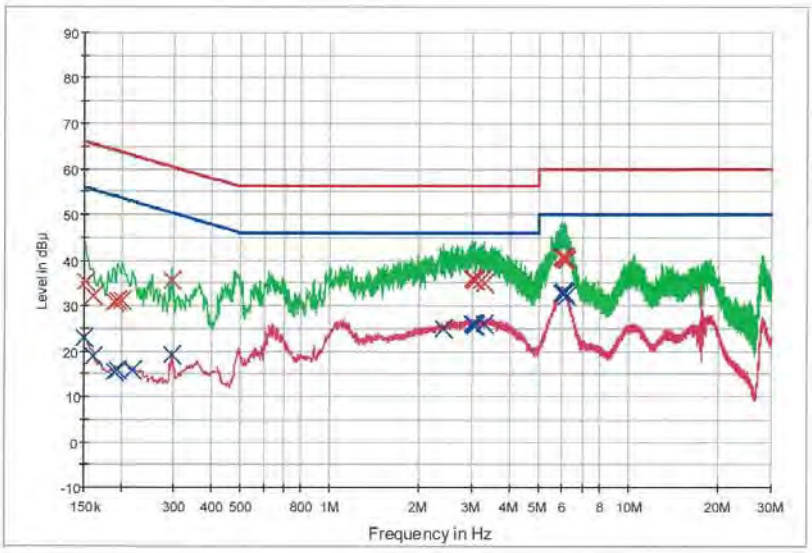
EMI Auto Test(4) 1 / 2

HCT TEST Report

Common Information

EUT:	SM-W727V
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN_2.4G_N

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	35.1	9.000	Off	N	9.6	30.8	65.9
0.160000	31.9	9.000	Off	N	9.6	33.5	65.5
0.190000	30.8	9.000	Off	N	9.6	33.3	64.0
0.194000	31.1	9.000	Off	N	9.6	32.8	63.9
0.202000	31.0	9.000	Off	N	9.6	32.5	63.5
0.294000	35.3	9.000	Off	N	9.6	25.1	60.4
3.008000	35.9	9.000	Off	N	9.8	20.1	56.0
3.026000	35.8	9.000	Off	N	9.8	20.2	56.0
3.044000	35.4	9.000	Off	N	9.8	20.6	56.0
3.056000	35.6	9.000	Off	N	9.8	20.4	56.0
3.216000	35.3	9.000	Off	N	9.8	20.7	56.0
3.300000	34.7	9.000	Off	N	9.8	21.3	56.0
5.982000	40.4	9.000	Off	N	9.9	19.6	60.0
6.032000	40.6	9.000	Off	N	9.9	19.4	60.0
6.074000	40.3	9.000	Off	N	9.9	19.7	60.0
6.096000	40.3	9.000	Off	N	9.9	19.7	60.0
6.100000	40.3	9.000	Off	N	9.9	19.7	60.0
6.158000	39.8	9.000	Off	N	9.9	20.2	60.0

Final Result 2

2017-01-19 오전 9:56:31

EMI Auto Test(4) 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	22.8	9.000	Off	N	9.6	33.2	56.0
0.160000	18.7	9.000	Off	N	9.6	36.8	55.5
0.190000	15.5	9.000	Off	N	9.6	38.5	54.0
0.194000	15.9	9.000	Off	N	9.6	38.0	53.9
0.218000	15.7	9.000	Off	N	9.6	37.2	52.9
0.294000	19.1	9.000	Off	N	9.6	31.3	50.4
2.402000	25.0	9.000	Off	N	9.8	21.0	46.0
3.004000	26.0	9.000	Off	N	9.8	20.0	46.0
3.026000	25.9	9.000	Off	N	9.8	20.1	46.0
3.044000	25.7	9.000	Off	N	9.8	20.3	46.0
3.056000	25.6	9.000	Off	N	9.8	20.4	46.0
3.300000	25.8	9.000	Off	N	9.8	20.2	46.0
6.002000	32.8	9.000	Off	N	9.9	17.2	50.0
6.020000	32.9	9.000	Off	N	9.9	17.1	50.0
6.032000	32.9	9.000	Off	N	9.9	17.1	50.0
6.096000	32.6	9.000	Off	N	9.9	17.4	50.0
6.100000	32.6	9.000	Off	N	9.9	17.4	50.0
6.158000	32.2	9.000	Off	N	9.9	17.8	50.0

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▣ RESULT PLOTS (Tablet+keyboard cover(kickstand))

Conducted Emissions (Line 1)

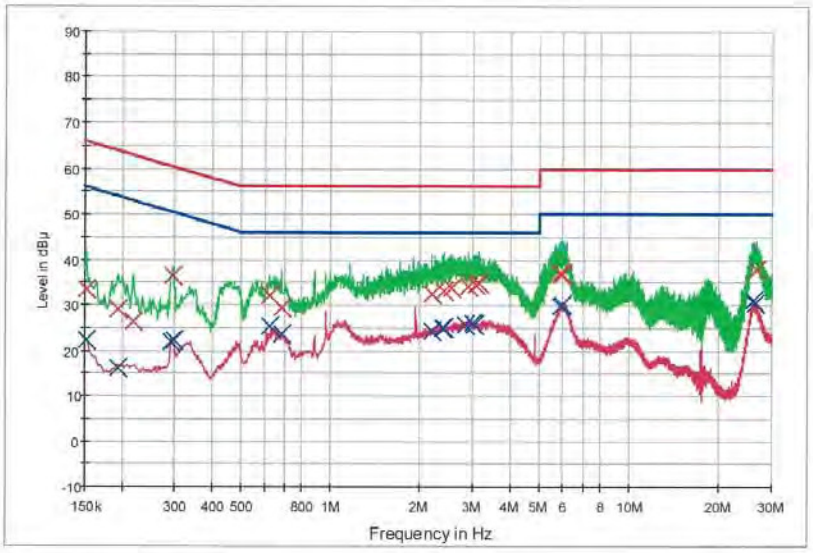
EMI Auto Test(4) 1 / 2

HCT TEST Report

Common Information

EUT:	SM-W727V
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN_2.4G_L1 (KEYBOARD)

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	33.3	9.000	Off	L1	9.6	32.6	65.9
0.194000	29.0	9.000	Off	L1	9.6	34.8	63.9
0.218000	26.2	9.000	Off	L1	9.6	36.7	62.9
0.296000	36.5	9.000	Off	L1	9.7	23.9	60.4
0.622000	32.1	9.000	Off	L1	9.7	23.9	56.0
0.688000	29.3	9.000	Off	L1	9.7	26.7	56.0
2.176000	32.5	9.000	Off	L1	9.8	23.5	56.0
2.388000	33.0	9.000	Off	L1	9.8	23.0	56.0
2.552000	33.6	9.000	Off	L1	9.8	22.4	56.0
2.892000	34.1	9.000	Off	L1	9.8	21.9	56.0
3.078000	34.4	9.000	Off	L1	9.8	21.6	56.0
3.138000	34.8	9.000	Off	L1	9.8	21.2	56.0
5.912000	36.8	9.000	Off	L1	9.9	23.2	60.0
5.916000	36.7	9.000	Off	L1	9.9	23.3	60.0
5.924000	37.1	9.000	Off	L1	9.9	23.0	60.0
5.954000	36.7	9.000	Off	L1	9.9	23.3	60.0
26.538000	37.8	9.000	Off	L1	10.4	22.2	60.0
26.542000	37.8	9.000	Off	L1	10.4	22.2	60.0

Final Result 2

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EMI Auto Test(4) 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.152000	22.2	9.000	Off	L1	9.6	33.7	55.9
0.194000	16.3	9.000	Off	L1	9.6	37.6	53.9
0.292000	22.0	9.000	Off	L1	9.7	28.5	50.5
0.298000	22.3	9.000	Off	L1	9.7	28.0	50.3
0.622000	25.1	9.000	Off	L1	9.7	20.9	46.0
0.688000	23.6	9.000	Off	L1	9.7	22.4	46.0
2.176000	24.3	9.000	Off	L1	9.8	21.7	46.0
2.366000	24.8	9.000	Off	L1	9.8	21.2	46.0
2.388000	24.8	9.000	Off	L1	9.8	21.2	46.0
2.816000	25.7	9.000	Off	L1	9.8	20.3	46.0
2.998000	25.8	9.000	Off	L1	9.8	20.2	46.0
3.020000	25.7	9.000	Off	L1	9.8	20.3	46.0
5.884000	29.7	9.000	Off	L1	9.9	20.3	50.0
5.912000	29.8	9.000	Off	L1	9.9	20.2	50.0
5.916000	29.6	9.000	Off	L1	9.9	20.4	50.0
5.954000	29.9	9.000	Off	L1	9.9	20.1	50.0
26.126000	30.9	9.000	Off	L1	10.4	19.1	50.0
26.238000	30.4	9.000	Off	L1	10.4	19.6	50.0

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Conducted Emissions (Line 2)

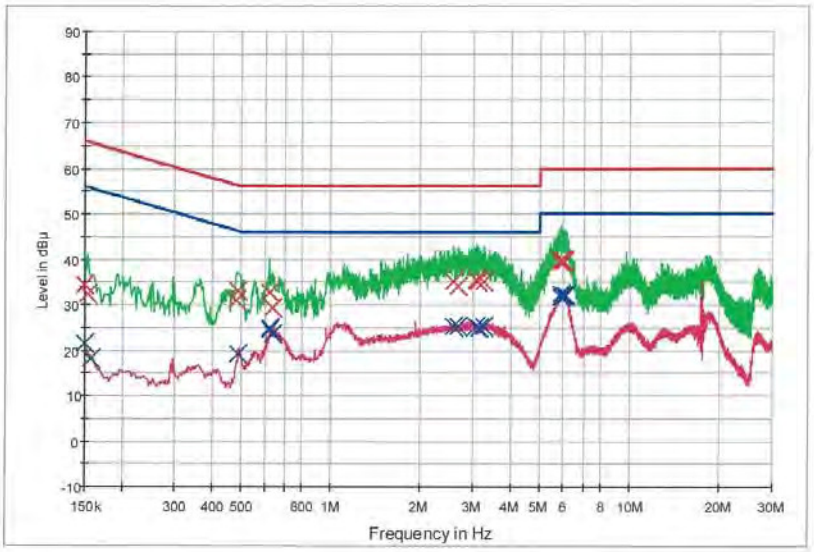
EMI Auto Test(4) 1 / 2

HCT TEST Report

Common Information

EUT:	SM-W727V
Manufacturer:	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN_2.4G_N (KEYBOARD)

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	34.5	9.000	Off	N	9.6	31.5	66.0
0.154000	32.5	9.000	Off	N	9.6	33.3	65.8
0.482000	31.0	9.000	Off	N	9.7	25.3	56.3
0.488000	33.1	9.000	Off	N	9.7	23.1	56.2
0.622000	32.7	9.000	Off	N	9.7	23.3	56.0
0.642000	29.3	9.000	Off	N	9.7	26.7	56.0
2.572000	35.1	9.000	Off	N	9.8	20.9	56.0
2.668000	34.2	9.000	Off	N	9.8	21.8	56.0
3.052000	35.3	9.000	Off	N	9.8	20.7	56.0
3.060000	35.5	9.000	Off	N	9.8	20.5	56.0
3.086000	34.9	9.000	Off	N	9.8	21.1	56.0
3.258000	35.0	9.000	Off	N	9.8	21.0	56.0
5.826000	39.3	9.000	Off	N	9.9	20.7	60.0
5.910000	39.8	9.000	Off	N	9.9	20.2	60.0
5.944000	39.6	9.000	Off	N	9.9	20.4	60.0
5.990000	39.7	9.000	Off	N	9.9	20.3	60.0
6.024000	39.5	9.000	Off	N	9.9	20.5	60.0
6.046000	39.4	9.000	Off	N	9.9	20.6	60.0

Final Result 2

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EMI Auto Test(4) 2 / 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	21.4	9.000	Off	N	9.6	34.6	56.0
0.158000	18.3	9.000	Off	N	9.6	37.3	55.6
0.490000	19.0	9.000	Off	N	9.7	27.2	46.2
0.622000	24.5	9.000	Off	N	9.7	21.5	46.0
0.626000	25.0	9.000	Off	N	9.7	21.0	46.0
0.642000	23.4	9.000	Off	N	9.7	22.6	46.0
2.572000	25.1	9.000	Off	N	9.8	20.9	46.0
2.668000	25.1	9.000	Off	N	9.8	20.9	46.0
3.052000	25.2	9.000	Off	N	9.8	20.8	46.0
3.060000	25.2	9.000	Off	N	9.8	20.8	46.0
3.130000	25.0	9.000	Off	N	9.8	21.0	46.0
3.270000	25.4	9.000	Off	N	9.8	20.6	46.0
5.896000	31.8	9.000	Off	N	9.9	18.2	50.0
5.910000	32.5	9.000	Off	N	9.9	17.5	50.0
5.920000	31.8	9.000	Off	N	9.9	18.2	50.0
5.944000	32.0	9.000	Off	N	9.9	18.0	50.0
6.024000	32.2	9.000	Off	N	9.9	17.8	50.0
6.080000	32.1	9.000	Off	N	9.9	17.9	50.0

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10. LIST OF TEST EQUIPMENT

10.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	12/23/2016	Annual	100073
Rohde & Schwarz	ESCI / Test Receiver	12/23/2016	Annual	100584
Agilent	N9020A / Signal Analyzer	06/24/2016	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	11/30/2016	Annual	MY49431210
Agilent	N1911A / Power Meter	03/11/2016	Annual	MY45100523
Agilent	N1921A / Power Sensor	03/11/2016	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/23/2016	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	06/14/2016	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	03/09/2016	Annual	KR75303962
Agilent	8493C / Attenuator(10 dB)	07/15/2016	Annual	07560

10.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Audix	AM4000 / Antenna Position Tower	N/A	N/A	N/A
Audix	Turn Table	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Rohde & Schwarz	Loop Antenna	02/23/2016	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	04/15/2015	Biennial	255
Schwarzbeck	BBHA 9120D / Horn Antenna	05/07/2015	Biennial	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	09/03/2015	Biennial	BBHA9170541
Rohde & Schwarz	FSP / Spectrum Analyzer	09/10/2016	Annual	100688
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/23/2016	Annual	101068-SZ
Wainwright Instruments	WHK3.0/18G-10EF / High Pass Filter	06/24/2016	Annual	8
Wainwright Instruments	WHFX7.0/18G-8SS / High Pass Filter	05/13/2016	Annual	29
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	07/06/2016	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/24/2017	Annual	2
Agilent	8493C-10 / Attenuator(10 dB)	08/11/2016	Annual	76649
CERNEX	CBLU1183540 / Power Amplifier	07/15/2016	Annual	22964
CERNEX	CBL06185030 / Power Amplifier	07/15/2016	Annual	22965
CERNEX	CBL18265035 / Power Amplifier	07/11/2016	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	07/11/2016	Annual	25956