FCC Part 15C
Measurement and Test Report

For

Shenzhen Sang Fei Consumer Communications Co., Ltd.

11 Science and Technology Road, Shenzhen Hi-tech Industrial Park, Nanshan District, Shenzhen City, GuangDong province,518057, China

FCC ID: VQRCTS359

FCC Rule(s):	FCC Part 15C
Product Description:	Smart Phone
Tested Model:	Philips S359
Report No.:	STR17098061I-3
Tested Date:	2017-09-05 to 2017-10-30
Issued Date:	2017-10-30
Tested By:	Jason Su / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager

Prepared By:

Shenzhen SEM.Test Technology Co., Ltd.
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C.（518101）
Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Shenzhen Sang Fei Consumer Communications Co., Ltd.
Address of applicant:	11 Science and Technology Road, Shenzhen Hi-tech Industrial Park, Nanshan District, Shenzhen City, GuangDong province,518057, China
Manufacturer:	Shenzhen Sang Fei Consumer Communications Co., Ltd.
Address of manufacturer:	11 Science and Technology Road, Shenzhen Hi-tech Industrial Park, Nanshan District, Shenzhen City, GuangDong province,518057, China

General Description of EUT	
Product Name:	Smart Phone
Brand Name:	PHILIPS
Model No.:	Philips S359
Adding Model(s):	/
Rated Voltage:	DC 3.8V by Battery
Battery Capacity:	3000mAh
Power Adapter:	Model: A31-501000 Input:100V-240V, 50/60Hz, Output:5V,1A
Hardware version:	A889--MB-V1.0
Software version:	Philips_S359_1733_V01_AR
The EUT Main board support GSM850/ PCS1900, WCDMA Band 2/5, LTE Band 2/4/5/7 function. It is intended for speech, Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850/900/DCS1800/PCS1900, GPS, FM, Bluetooth and Wi-Fi functions. For more information see the following datasheet	
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz
RF Output Power:	14.64dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11
Channel Separation:	5MHz
Type of Antenna:	Integral
Antenna Gain:	-0.5dBi

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen Sang Fei Consumer Communications Co., Ltd. in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

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

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices, and ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. The measurement guide KDB 558074 D01 v04 for digital transmission systems shall be performed also.

1.4 Test Facility

FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

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

1.5 EUT Setup and Test Mode

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

Test Mode List		
Test Mode	Description	Remark
TM1	802.11b	2412MHz, 2437MHz, 2462MHz
TM2	802.11g	2412MHz, 2437MHz, 2462MHz
TM3	802.11n-HT20	2412MHz, 2437MHz, 2462MHz
TM4	802.11n-HT40	2422MHz, 2437MHz, 2452MHz
Note: All test modes (different data rate and different modulation) are performed, but only the worst case is recorded in this report.		

Accessories Equipment List and Details			
Description	**Manufacturer**	**Model No.**	**Serial Number**
Notebook	Lenovo	E445	
Accessories Cable List and Details			
Cable Description	**Length (m)**	**Shielded/Unshielded**	**With Core/Without Core**
Earphone	1.2	Unshielded	Without Ferrite
EUT Cable List and Details			
Cable Description	**Length (m)**	**Shielded/Unshielded**	**With Core/Without Core**
USB Cable	0.7	Shielded	Without Core

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	±0.42dB
Occupied Bandwidth	Conducted	±1.5%
Power Spectral Density	Conducted	±1.8dB
Conducted Spurious Emission	Conducted	±2.17dB
Conducted Emissions	Conducted	±2.88dB
Transmitter Spurious Emissions	Radiated	±5.1dB

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2017-06-12	2018-06-11
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2017-06-12	2018-06-11
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2017-06-12	2018-06-11
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2017-06-12	2018-06-11
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2017-06-12	2018-06-11
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-08	2018-06-07
SEMT-1042	Horn Antenna	ETS	3117	00086197	2017-06-08	2018-06-07
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2017-06-08	2018-06-07
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2018-06-07
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2017-06-12	2018-06-11
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2017-06-12	2018-06-11
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2017-06-12	2018-06-11
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2017-08-15	2018-08-14
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2017-08-15	2018-08-14
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2017-06-12	2018-06-11
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2017-03-09	2018-03-08

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 2.1093	RF Exposure	Compliant
§ 15.203; § 15.247(b)(4)(i)	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§ 15.207(a)	Conducted Emission	Compliant
§ 15.247(e)	Power Spectral Density	Compliant
§ 15.247(a)(2)	6 dB Bandwidth	Compliant
§ 15.247(b)(3)	RF Output Power	Compliant
§ 15.209(a)	Radiated Emission	Compliant
§ 15.247(d)	Band Edge (Out of Band Emissions)	Compliant

N/A: not applicable

3. RF Exposure

3.1 Standard Applicable

According to § 1.1307 and § 2.1093, the portable transmitter must comply the RF exposure requirements.

3.2 Test Result

This product complied with the requirement of the RF exposure, please see the RF Exposure Report.

4. Antenna Requirement

4.1 Standard Applicable

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

4.2 Evaluation Information

This product has an integral antenna, fulfill the requirement of this section.

5. Power Spectral Density

5.1 Standard Applicable

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

5.2 Test Procedure

According to the KDB 558074 D01 v04, such specifications require that the same method as used to determine the conducted output power shall also be used to determine the power spectral density. The test method of power spectral density as below:

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

5.3 Environmental Conditions

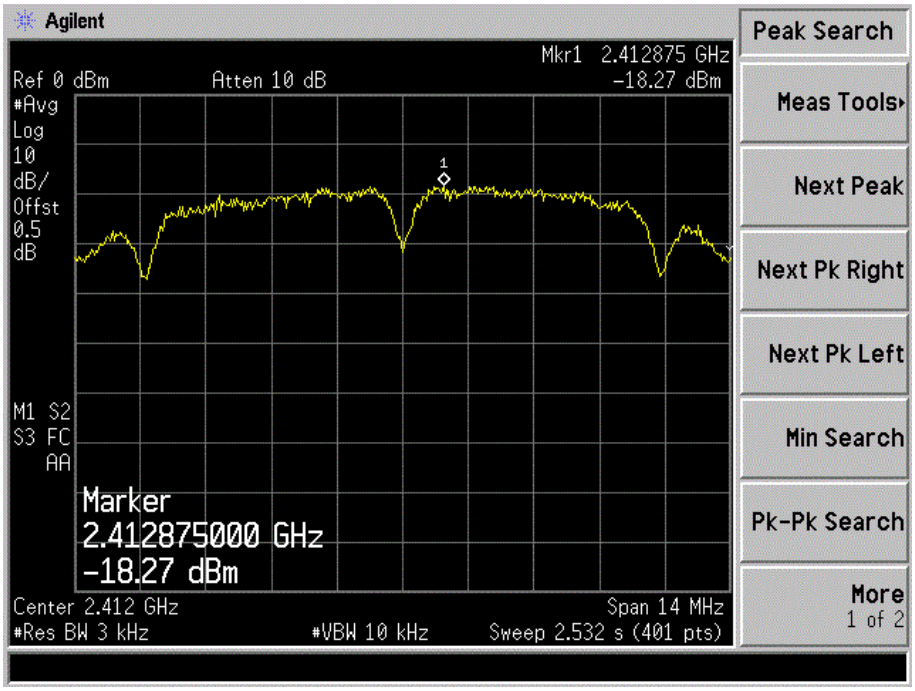
Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

5.4 Summary of Test Results/Plots

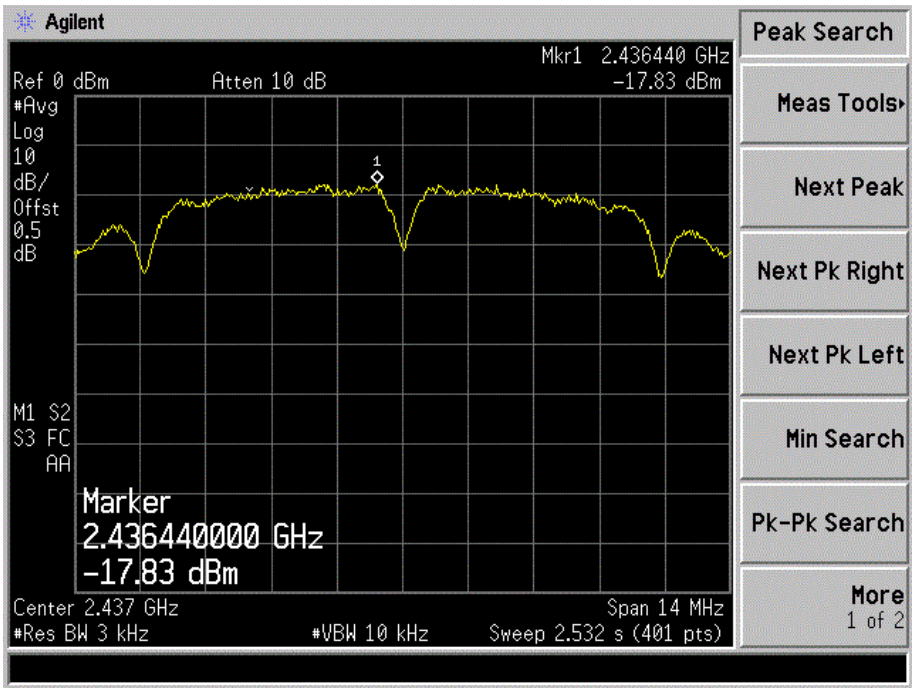
Test Mode	Test Channel MHz	Power Spectral Density dBm/3kHz	Limit dBm/3kHz
802.11b	2412	-18.27	8
	2437	-17.83	8
	2462	-18.67	8
802.11g	2412	-21.73	8
	2437	-20.63	8
	2462	-22.40	8
802.11n HT20	2412	-21.55	8
	2437	-21.06	8
	2462	-22.37	8
802.11n HT40	2422	-24.57	8
	2437	-24.15	8
	2452	-25.58	8

Please refer to the following test plots:

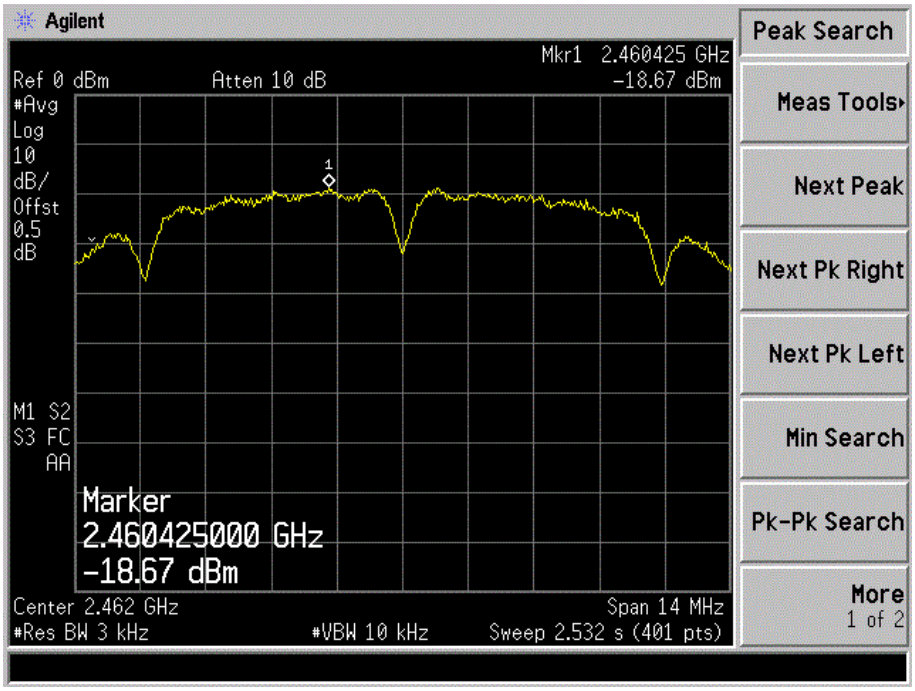
802.11b-Low Channel



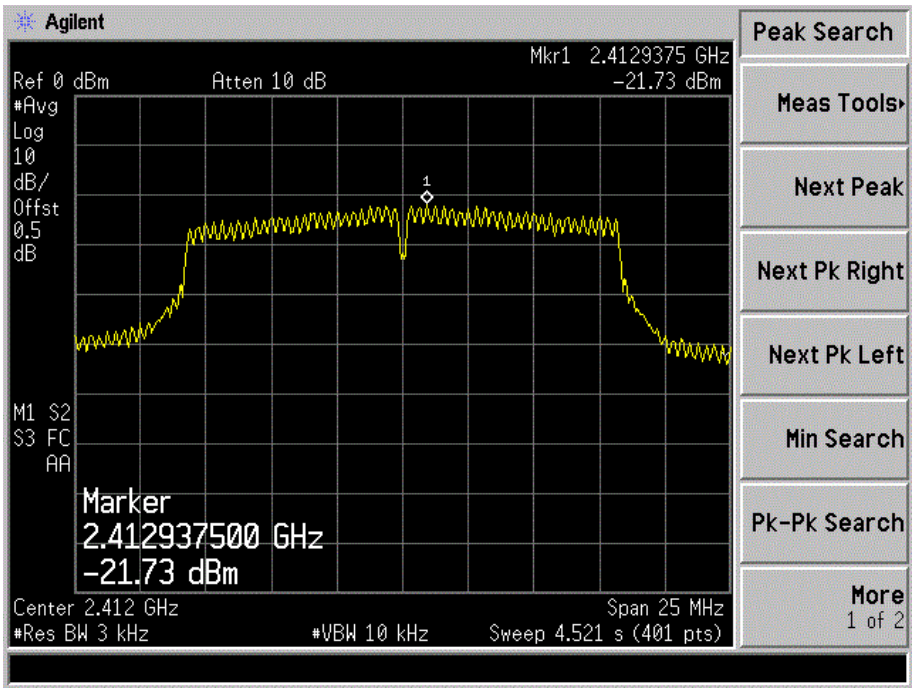
802.11b-Middle Channel



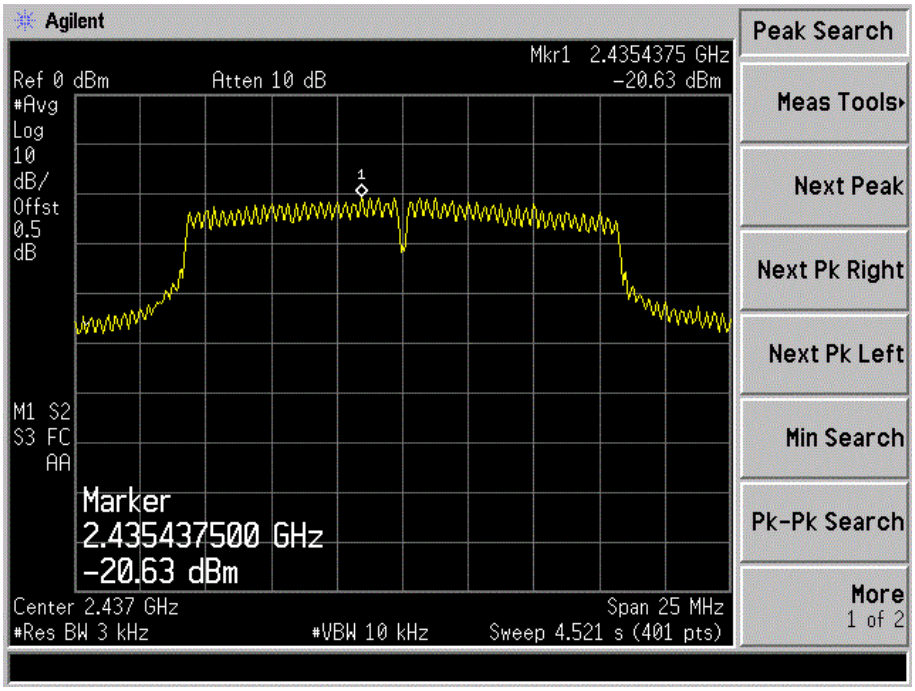
802.11b-High Channel



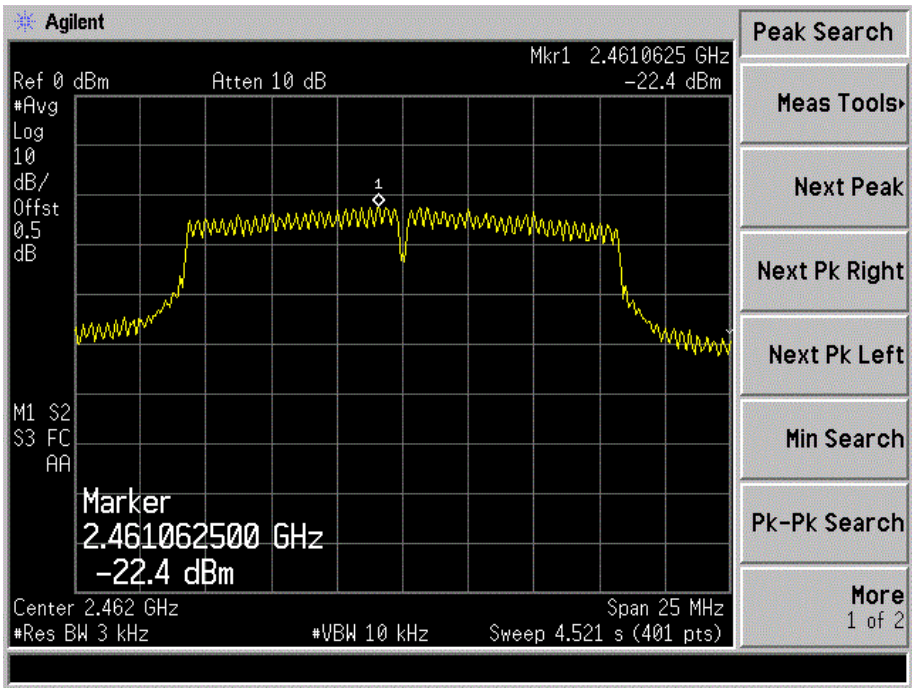
802.11g-Low Channel



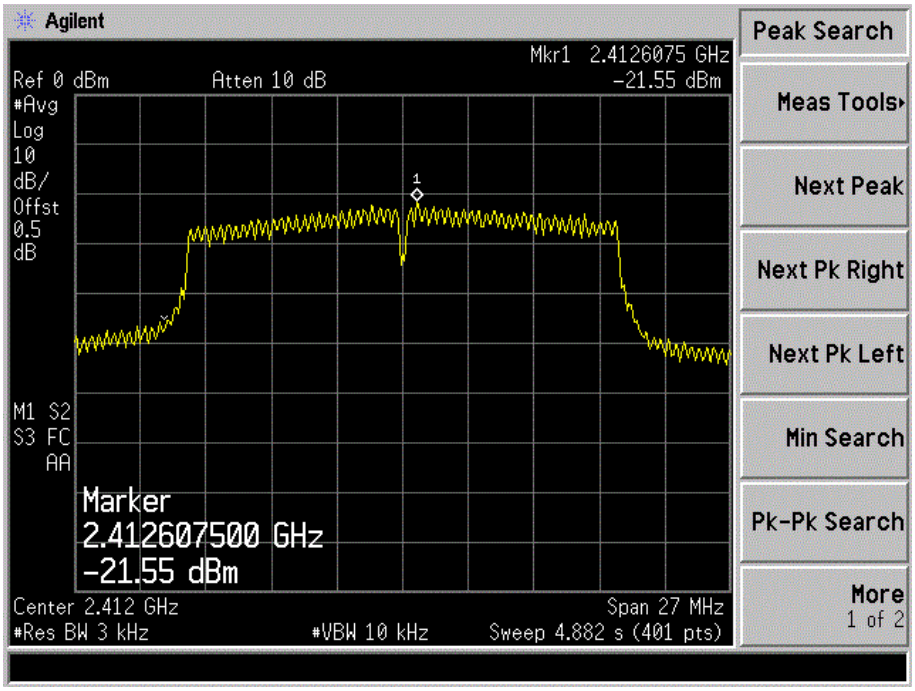
802.11g-Middle Channel



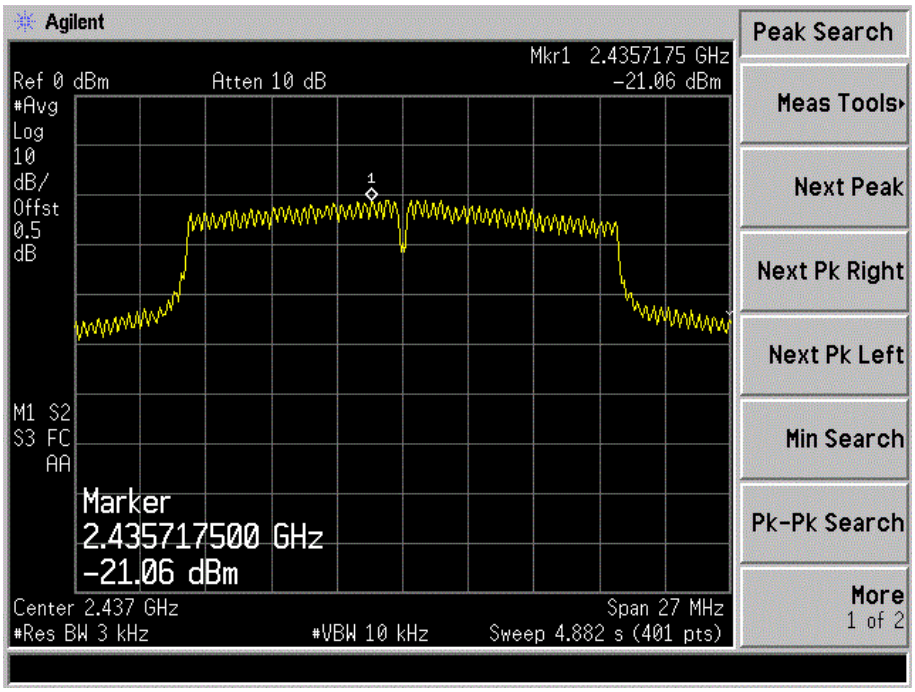
802.11g-High Channel



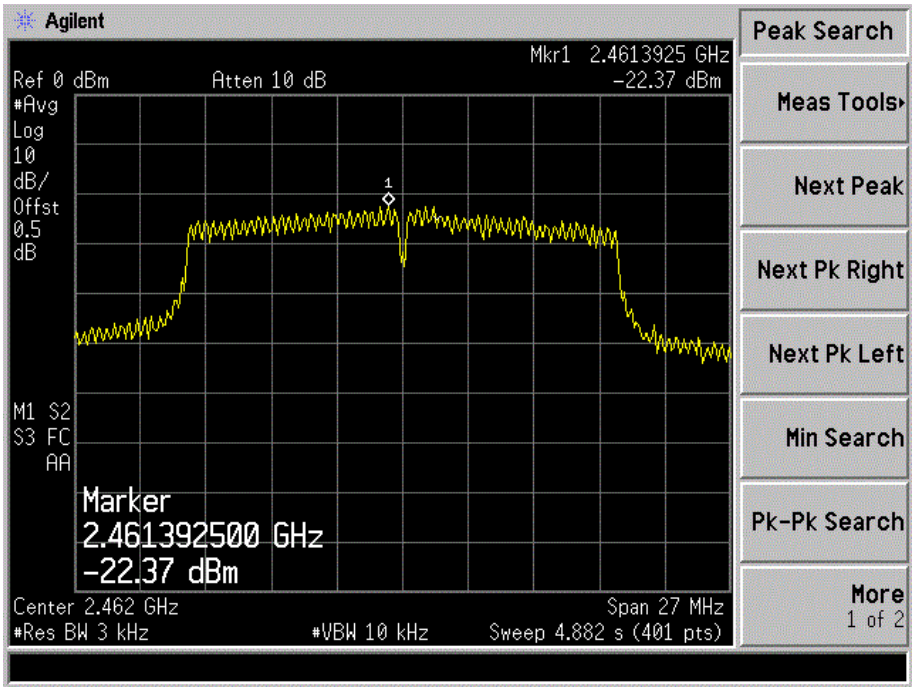
802.11n-HT20-Low Channel



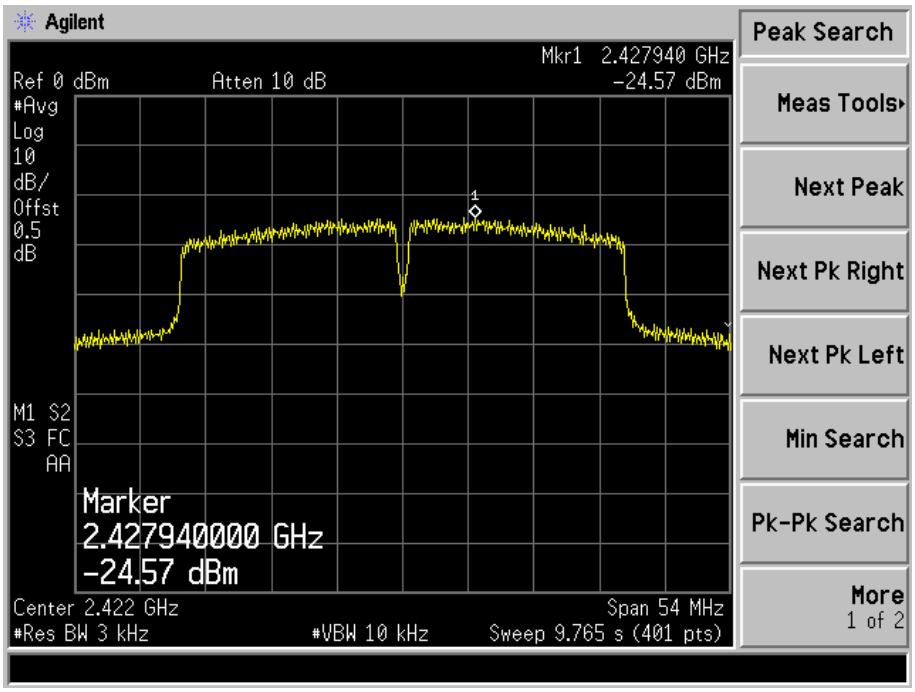
802.11n-HT20-Middle Channel



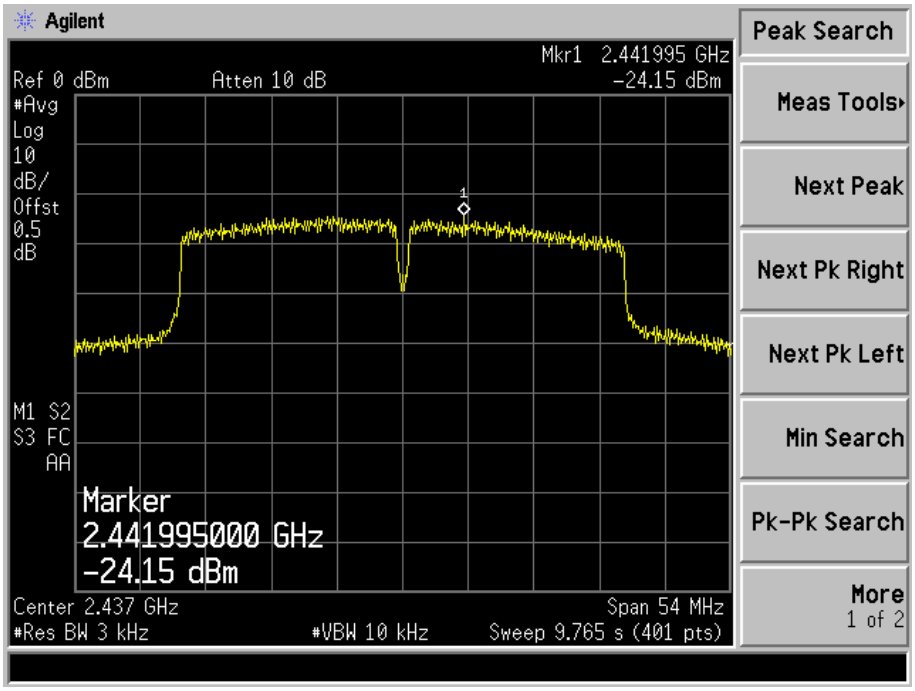
802.11n-HT20-High Channel



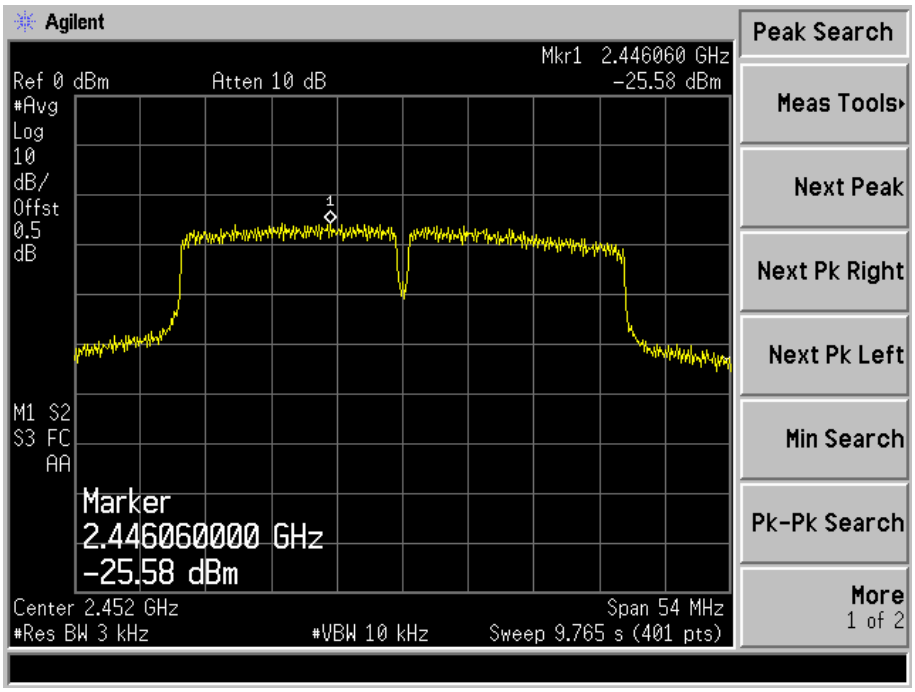
802.11n-HT40-Low Channel



802.11n-HT40-Middle Channel



802.11n-HT40-High Channel



6. 6dB Bandwidth

6.1 Standard Applicable

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

6.2 Test Procedure

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

6.3 Environmental Conditions

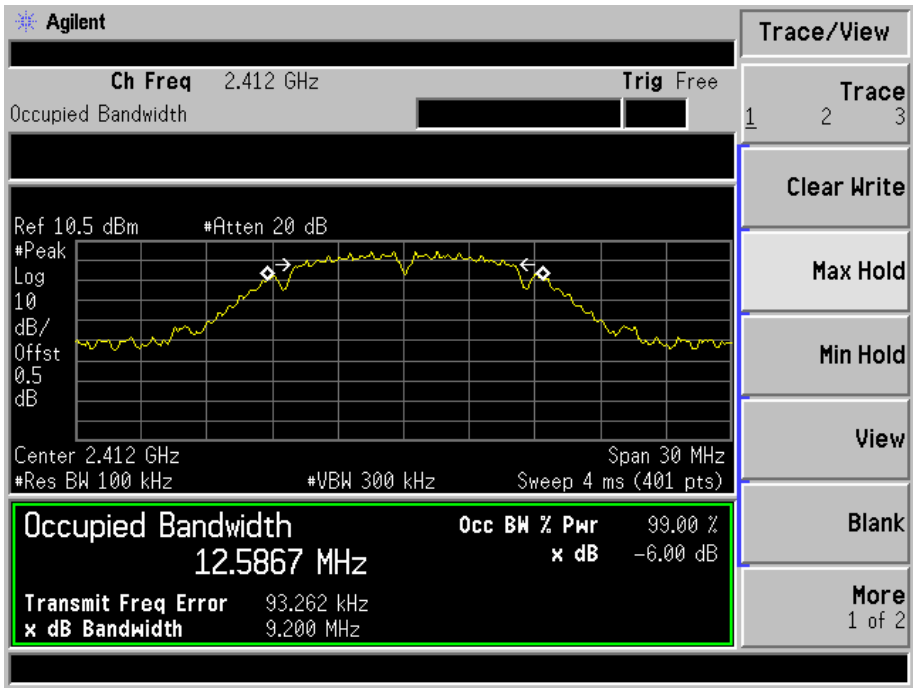
Temperature:	25° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

6.4 Summary of Test Results/Plots

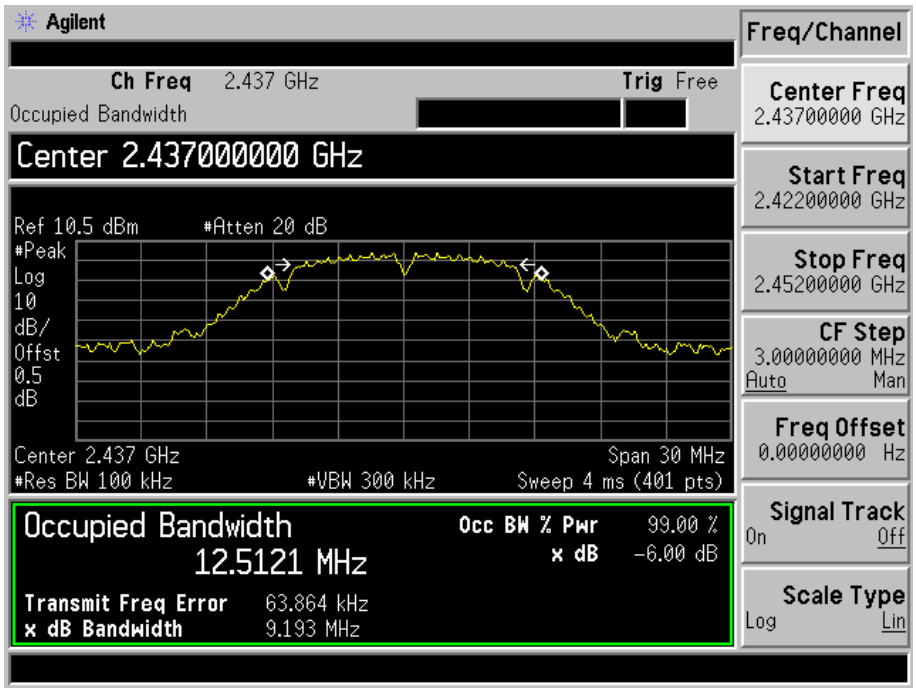
Test Mode	Test Channel MHz	6 dB Bandwidth MHz	99% Bandwidth MHz	Limit kHz
802.11b	2412	9.200	12.5867	≥500
	2437	9.193	12.5121	≥500
	2462	9.196	12.4913	≥500
802.11g	2412	16.384	16.3474	≥500
	2437	16.401	16.3485	≥500
	2462	16.386	16.3938	≥500
802.11n-HT20	2412	17.647	17.5541	≥500
	2437	17.638	17.5428	≥500
	2462	17.640	17.5384	≥500
802.11n-HT40	2422	36.175	35.7737	≥500
	2437	36.185	35.8521	≥500
	2452	36.334	35.8510	≥500

Please refer to the following test plots:

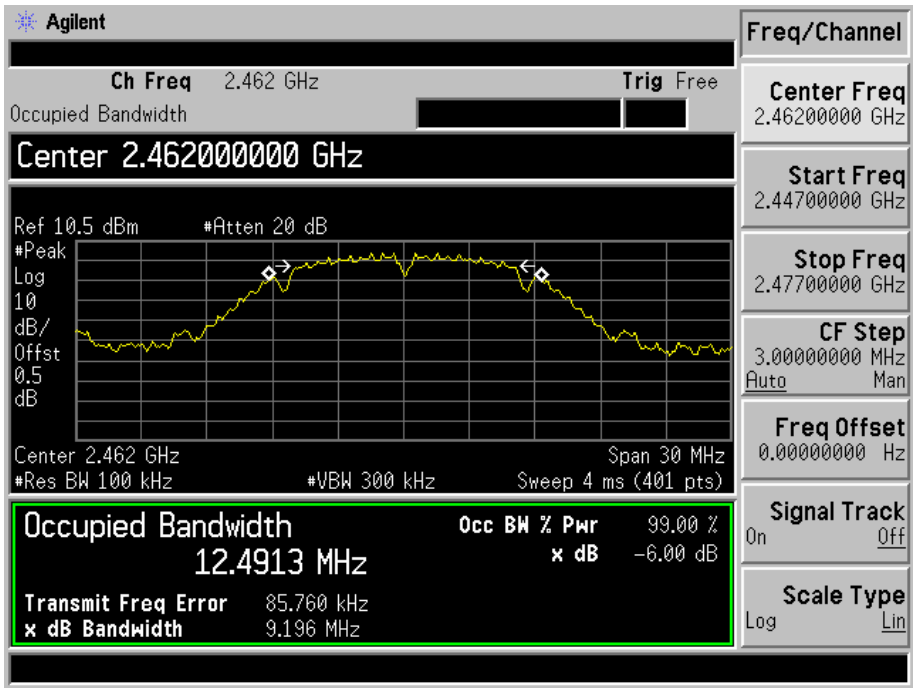
802.11b-Low Channel



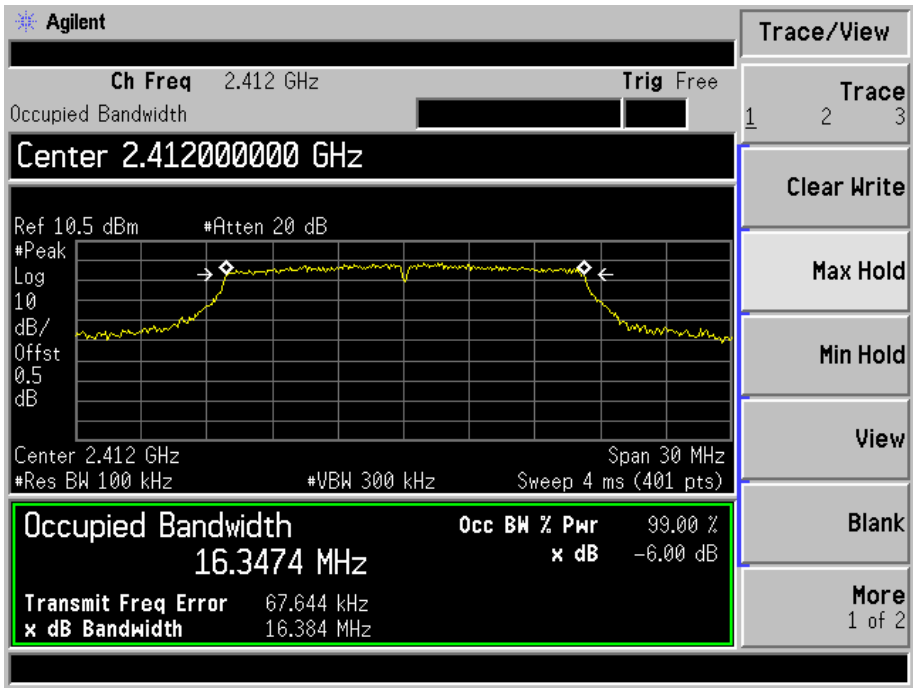
802.11b-Middle Channel



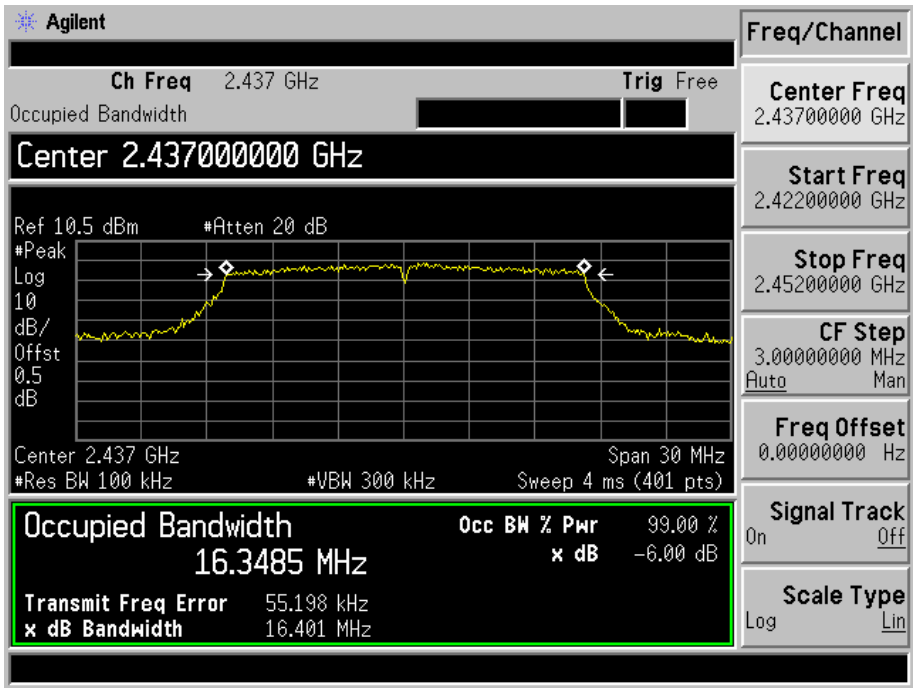
802.11b-High Channel



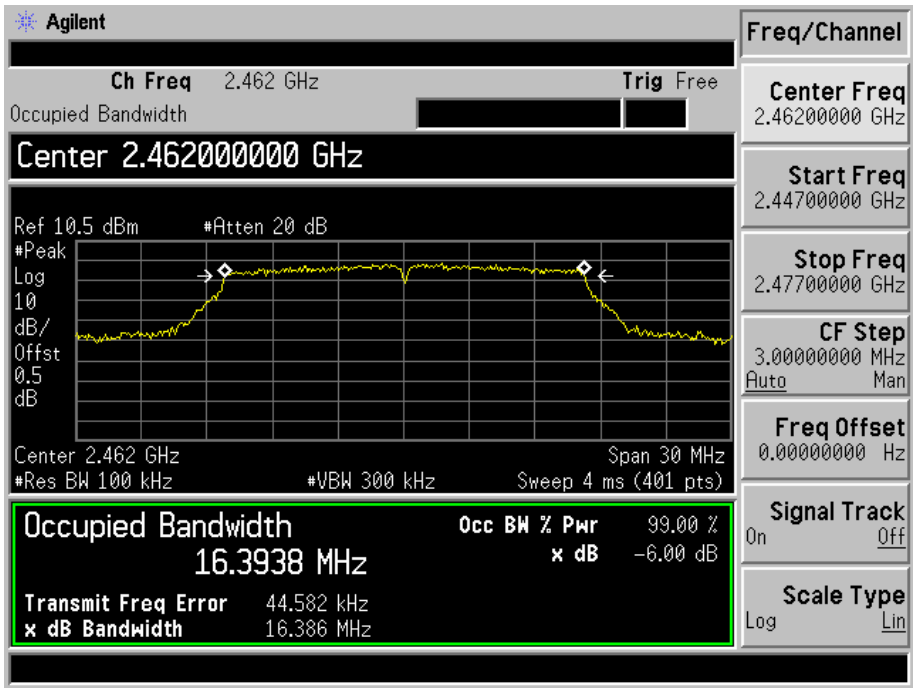
802.11g-Low Channel



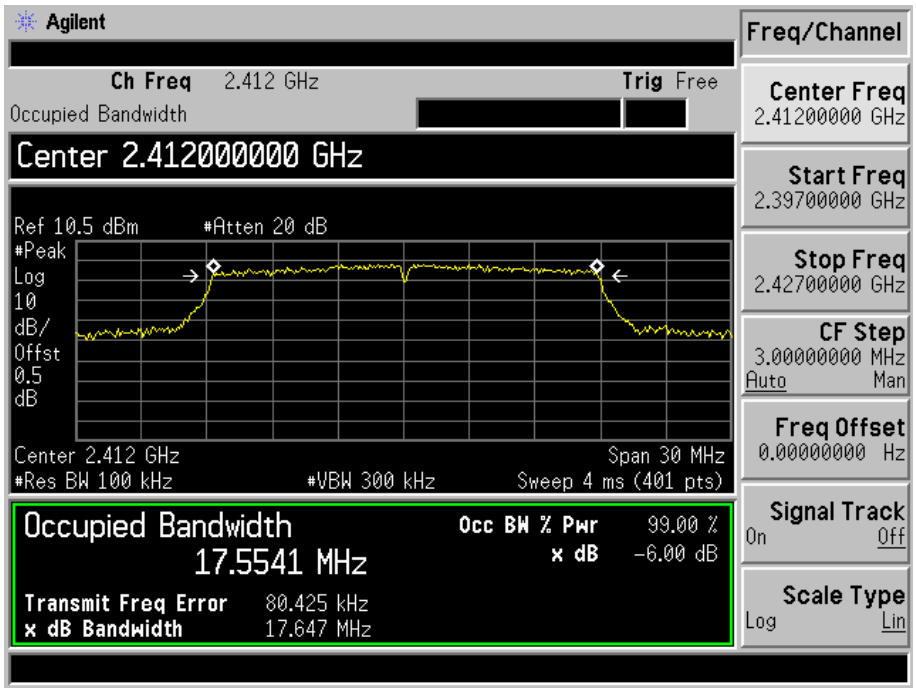
802.11g-Middle Channel



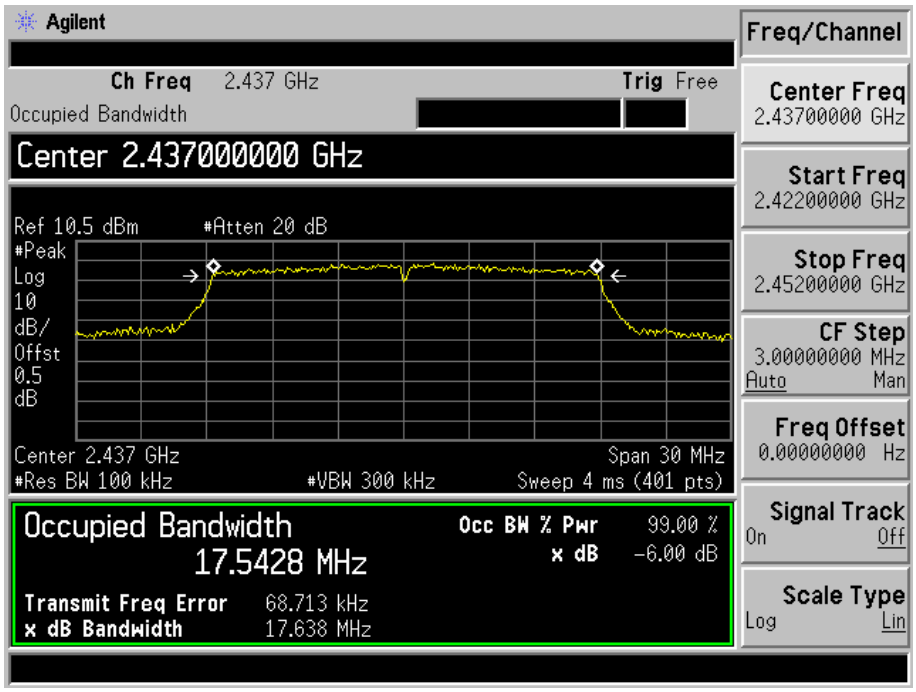
802.11g-High Channel



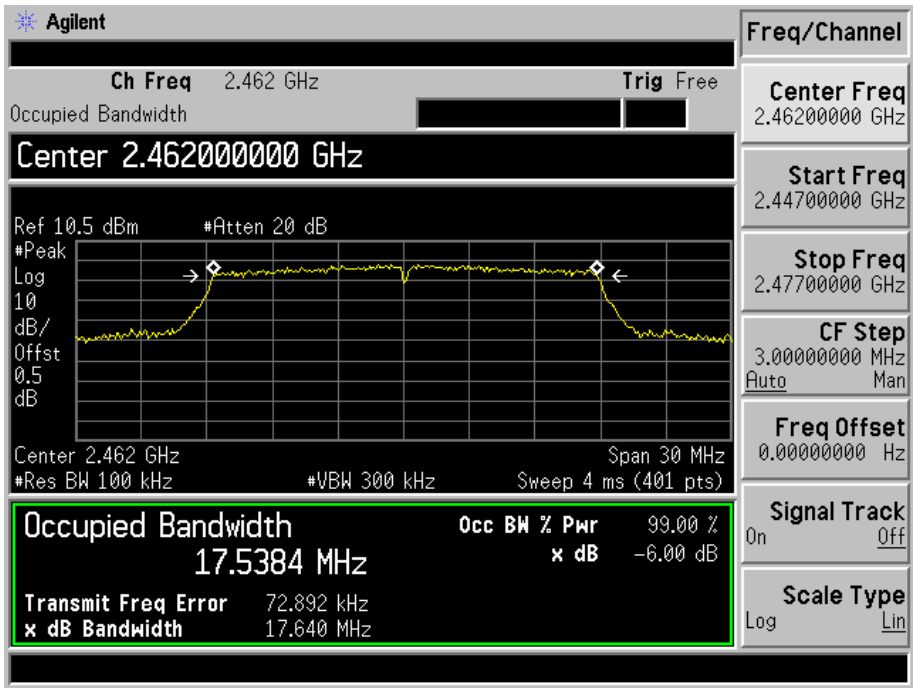
802.11n-HT20-Low Channel



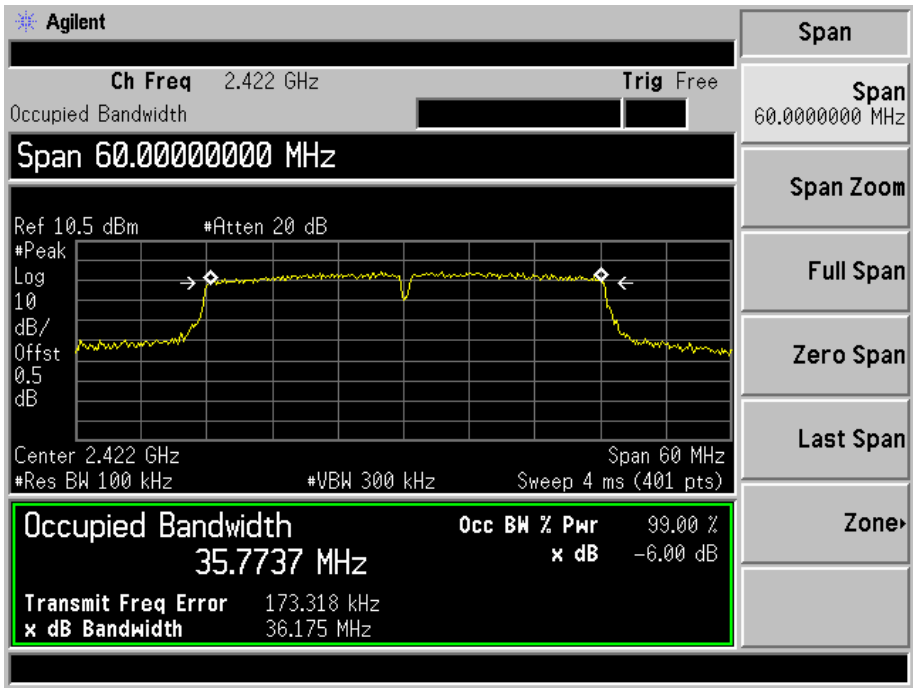
802.11n-HT20-Middle Channel



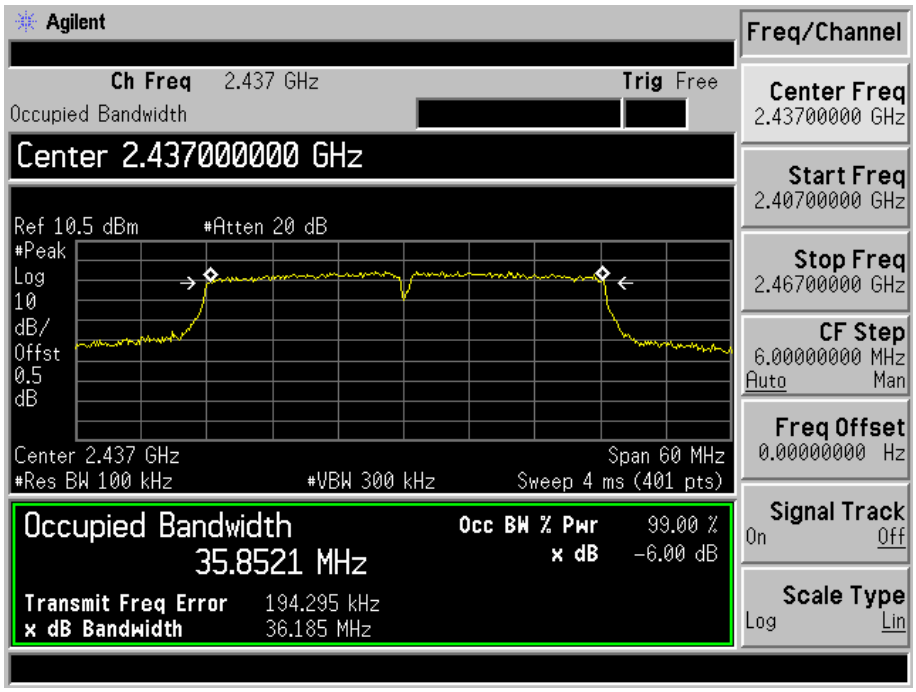
802.11n-HT20-High Channel



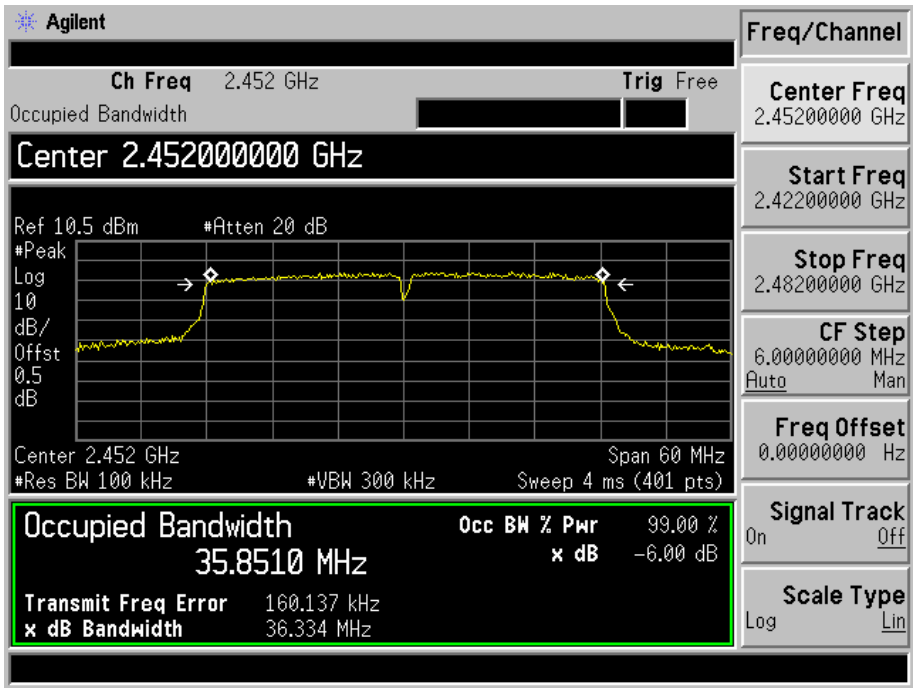
802.11n-HT40-Low Channel



802.11n-HT40-Middle Channel



802.11n-HT40-High Channel



7. RF Output Power

7.1 Standard Applicable

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

7.2 Test Procedure

According to the KDB-558074 D01 v04, 9.2.2.2, when this option is exercised, the measured power is to be referenced to the OBW rather than the DTS bandwidth

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

7.3 Environmental Conditions

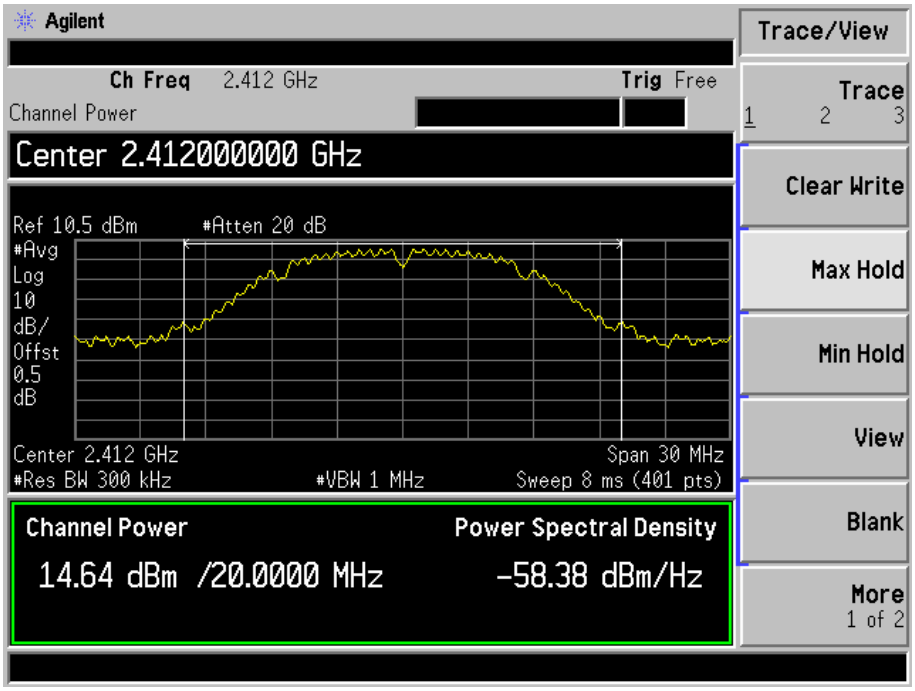
Temperature:	26° C
Relative Humidity:	57%
ATM Pressure:	1011 mbar

7.4 Summary of Test Results/Plots

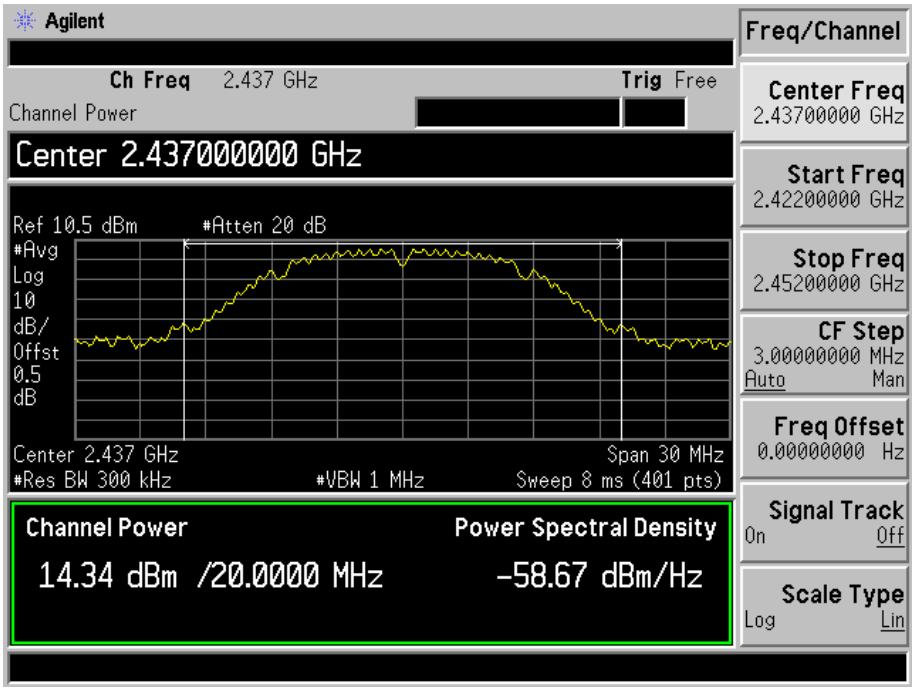
Test Mode	Frequency MHz	Reading dBm	Output Power mW	Limit mW
802.11b _ 11Mbps	2412	14.64	29.107	1000
	2437	14.34	27.164	1000
	2462	13.73	23.605	1000
802.11g_54Mbps	2412	11.84	15.276	1000
	2437	11.68	14.723	1000
	2462	11.33	13.583	1000
802.11n HT20_MCS7	2412	11.44	13.932	1000
	2437	11.96	15.704	1000
	2462	11.14	13.002	1000
802.11n HT40_MCS7	2422	10.79	11.995	1000
	2437	10.44	11.066	1000
	2452	10.84	12.134	1000

Please refer to the following test plots:

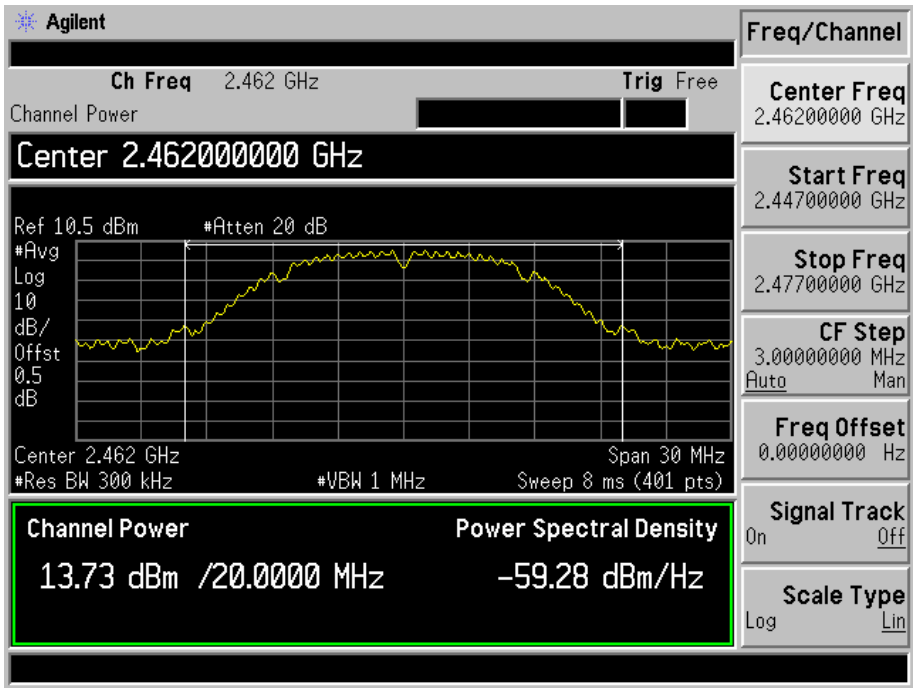
802.11b-11Mbps-Low Channel



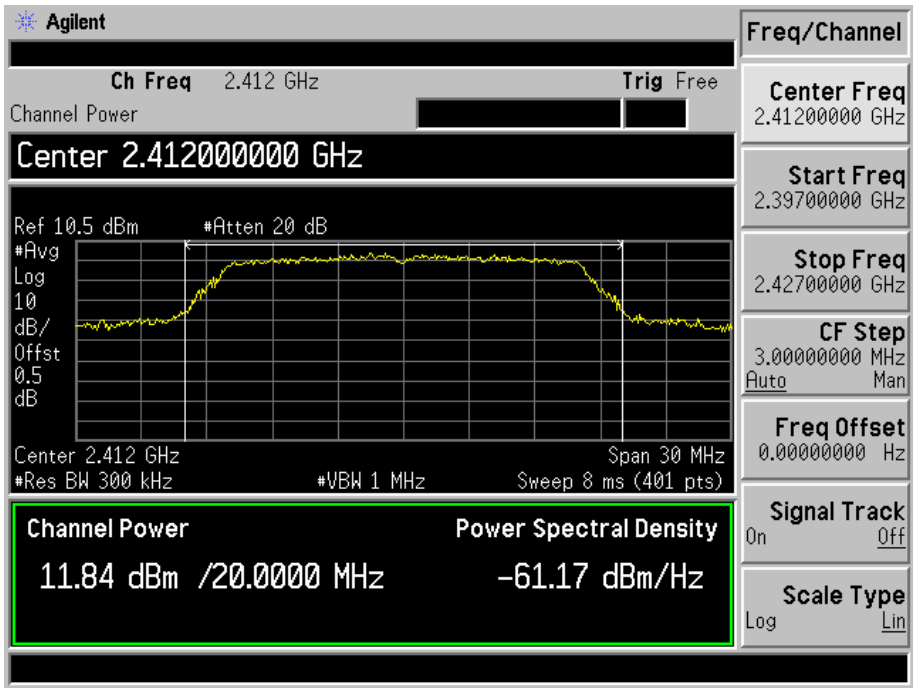
802.11b -11Mbps-Middle Channel



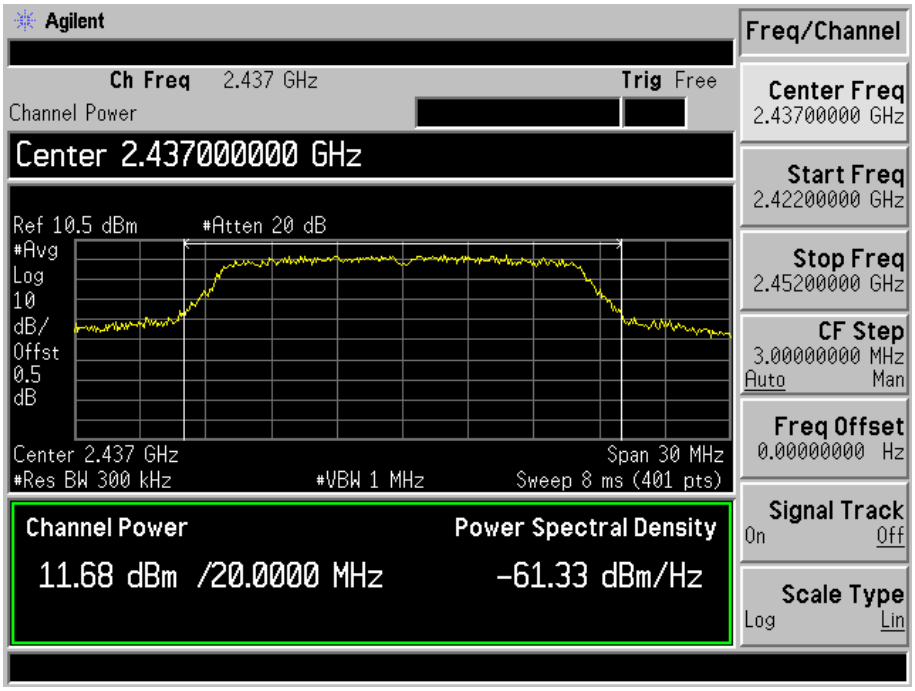
802.11b -11Mpbs-High Channel



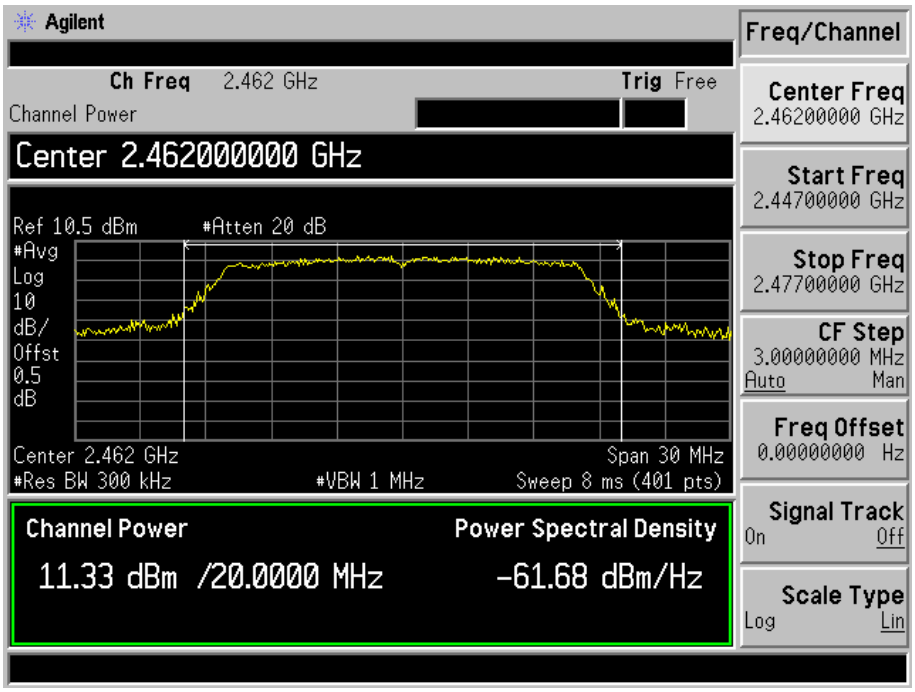
802.11g-54Mbps-Low Channel



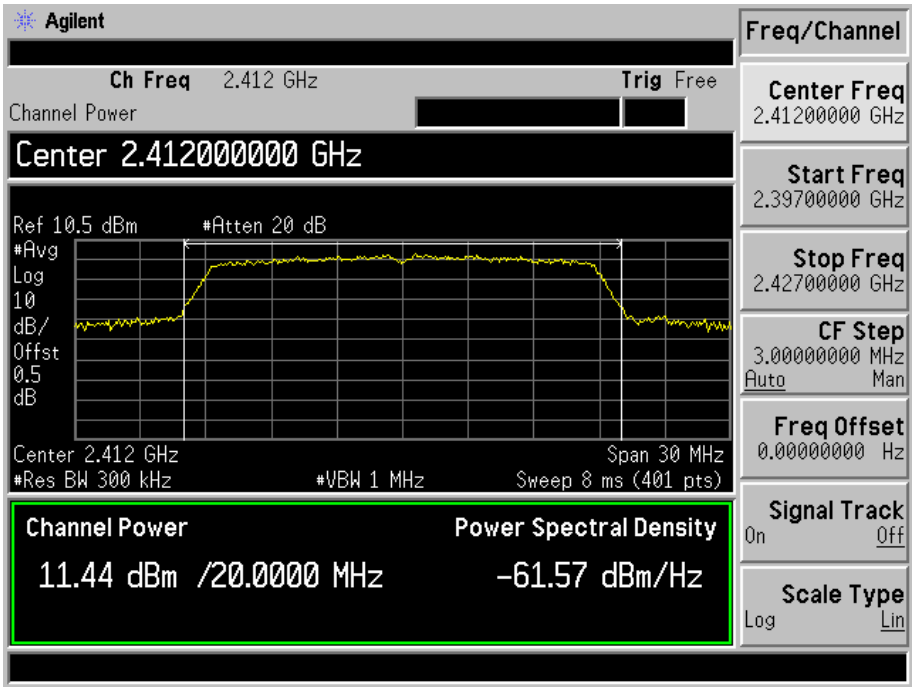
802.11g-54Mbps-Middle Channel



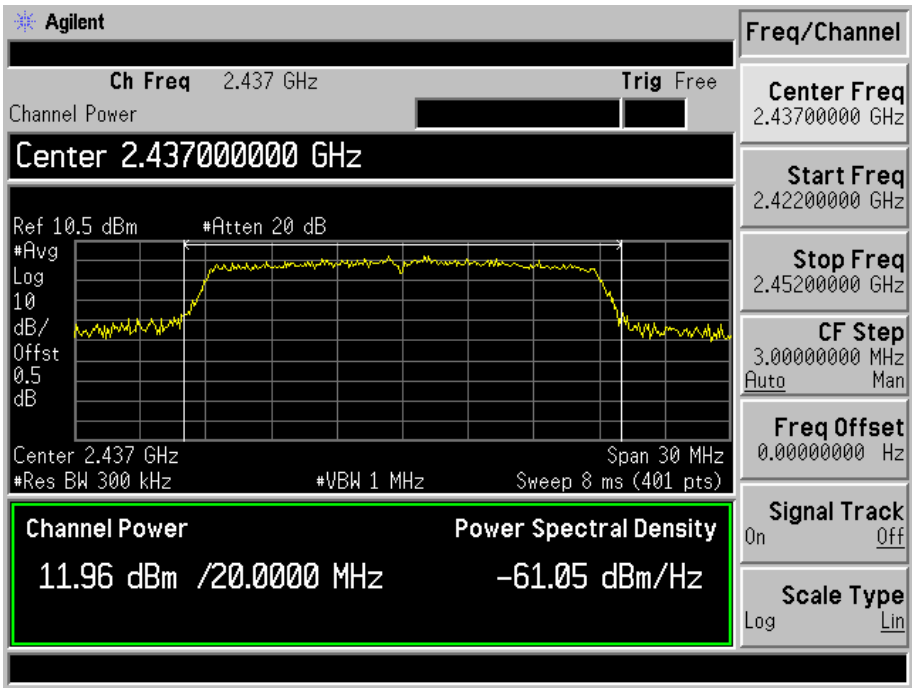
802.11g-54Mpbs-High Channel



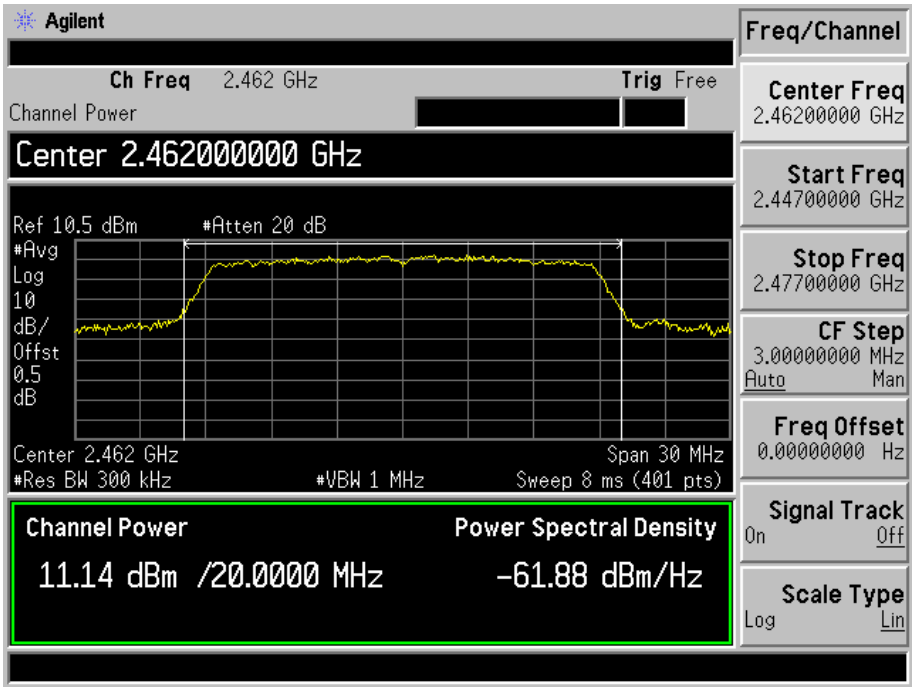
802.11n-HT20-MCS7-Low Channel



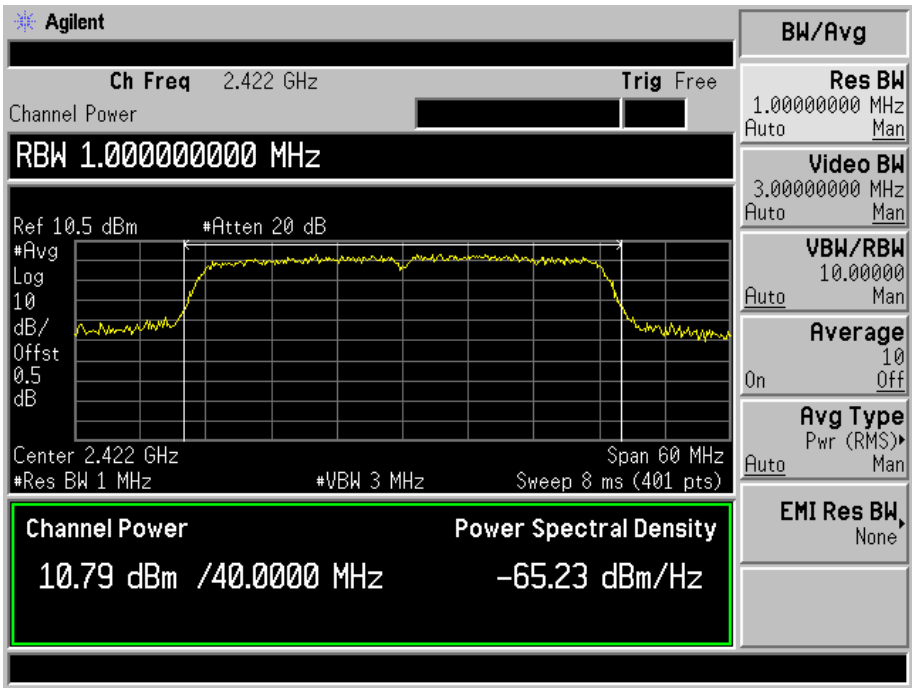
802.11n-HT20-MCS7-Middle Channel



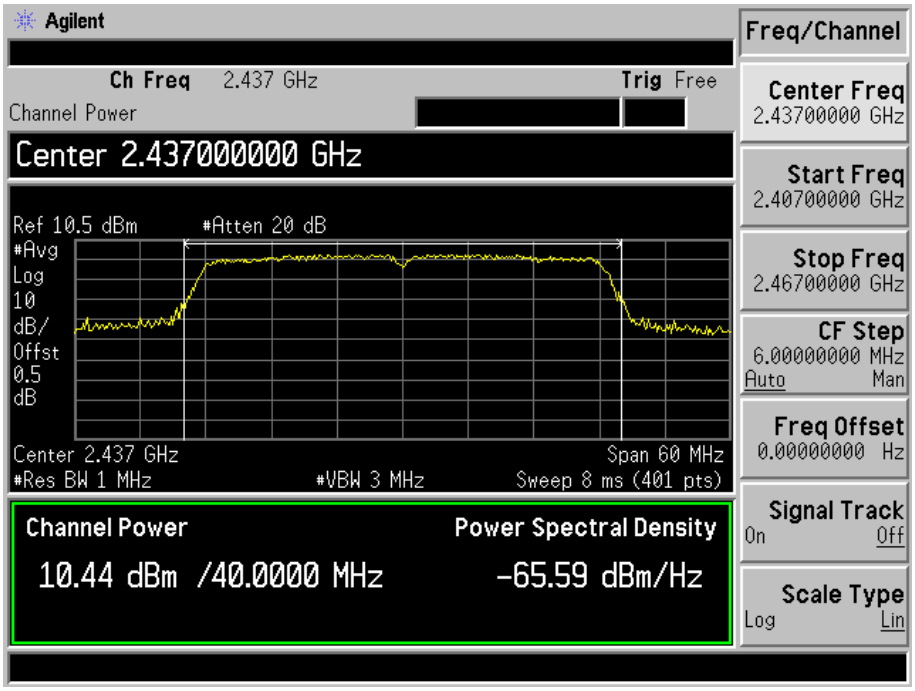
802.11n-HT20-MCS7-High Channel



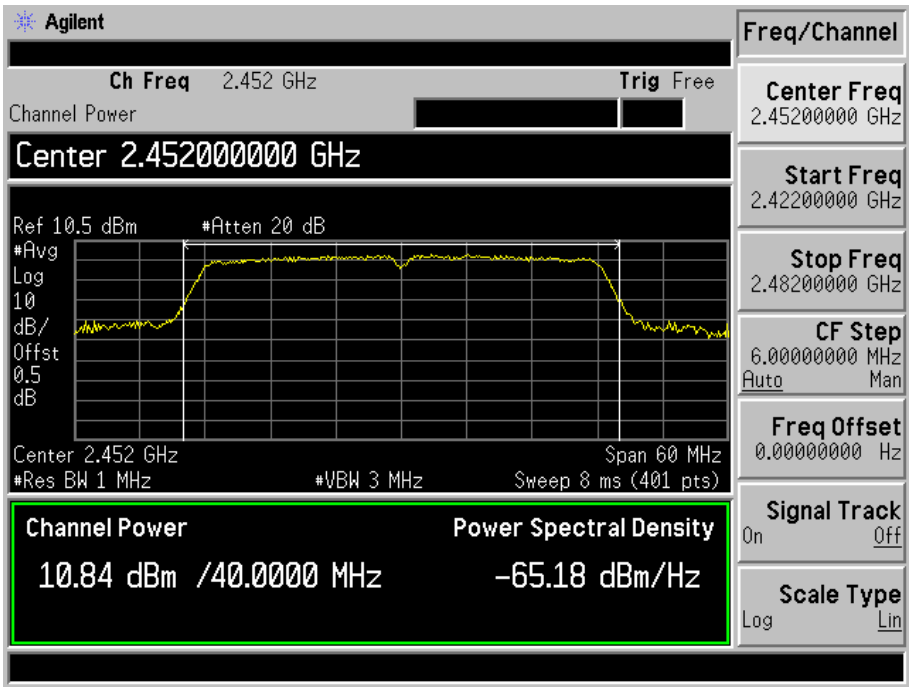
802.11n-HT40-MCS7-Low Channel



802.11n-HT40-MCS7-Middle Channel



802.11n-HT40-MCS7-High Channel



8. Field Strength of Spurious Emissions

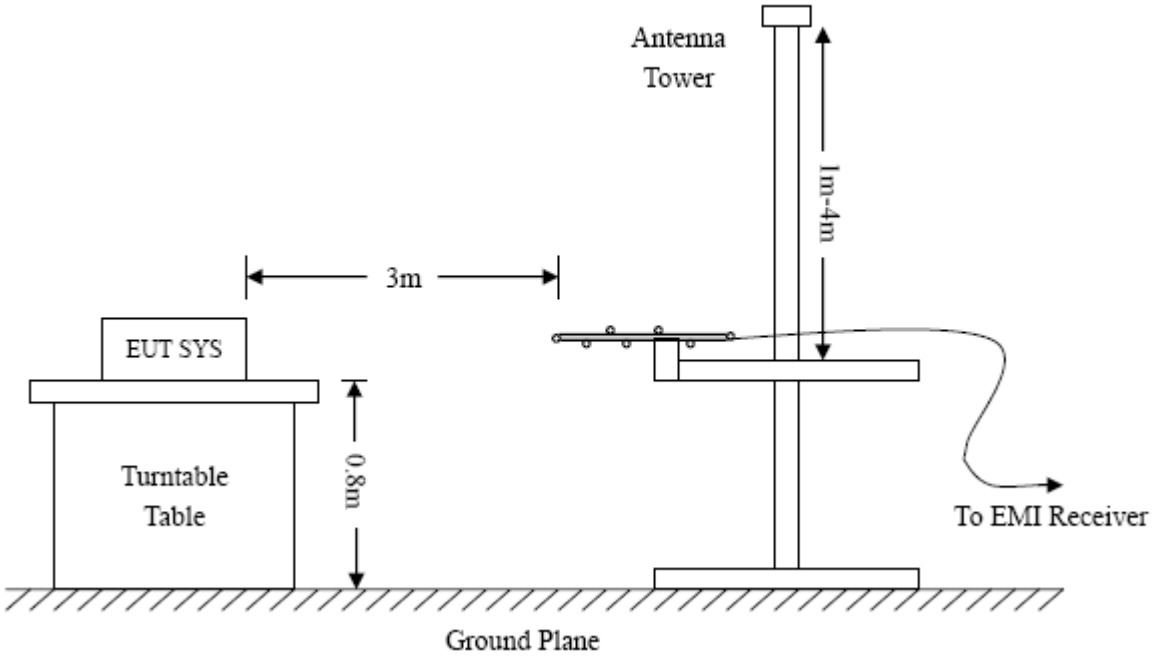
8.1 Standard Applicable

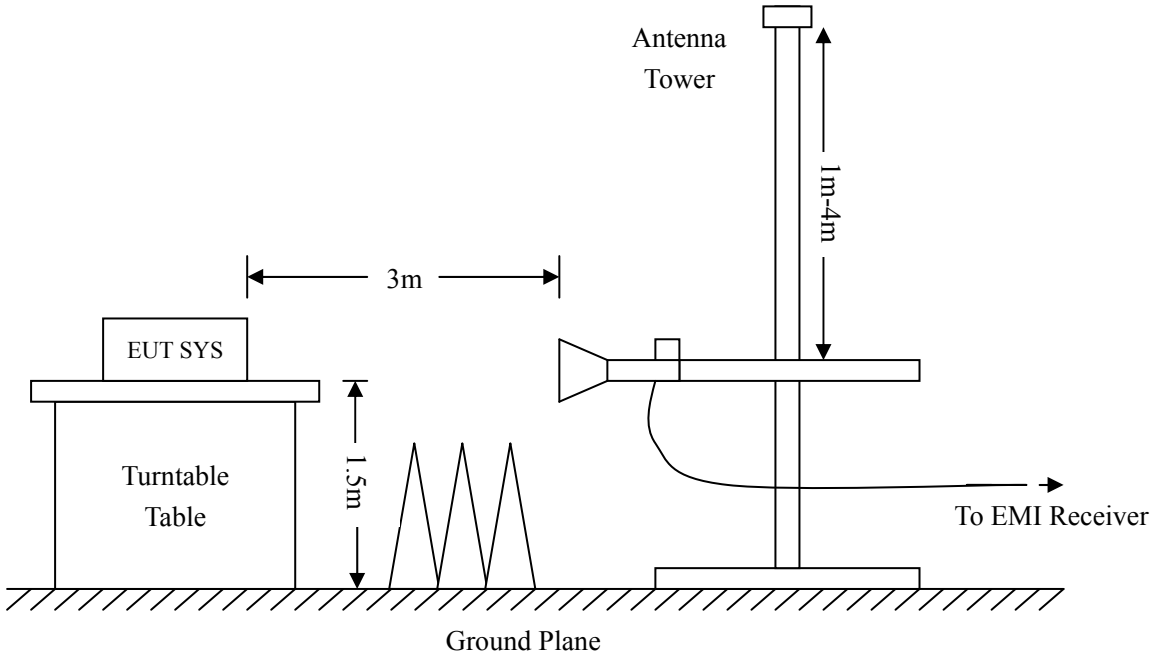
According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within 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).

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

8.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.





Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=360KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

8.3 Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Indicated Reading + Ant. Factor + Cable Loss – Ampl. Gain

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

Margin = Corr. Ampl. – FCC Part 15 Limit

8.4 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

8.5 Summary of Test Results/Plots

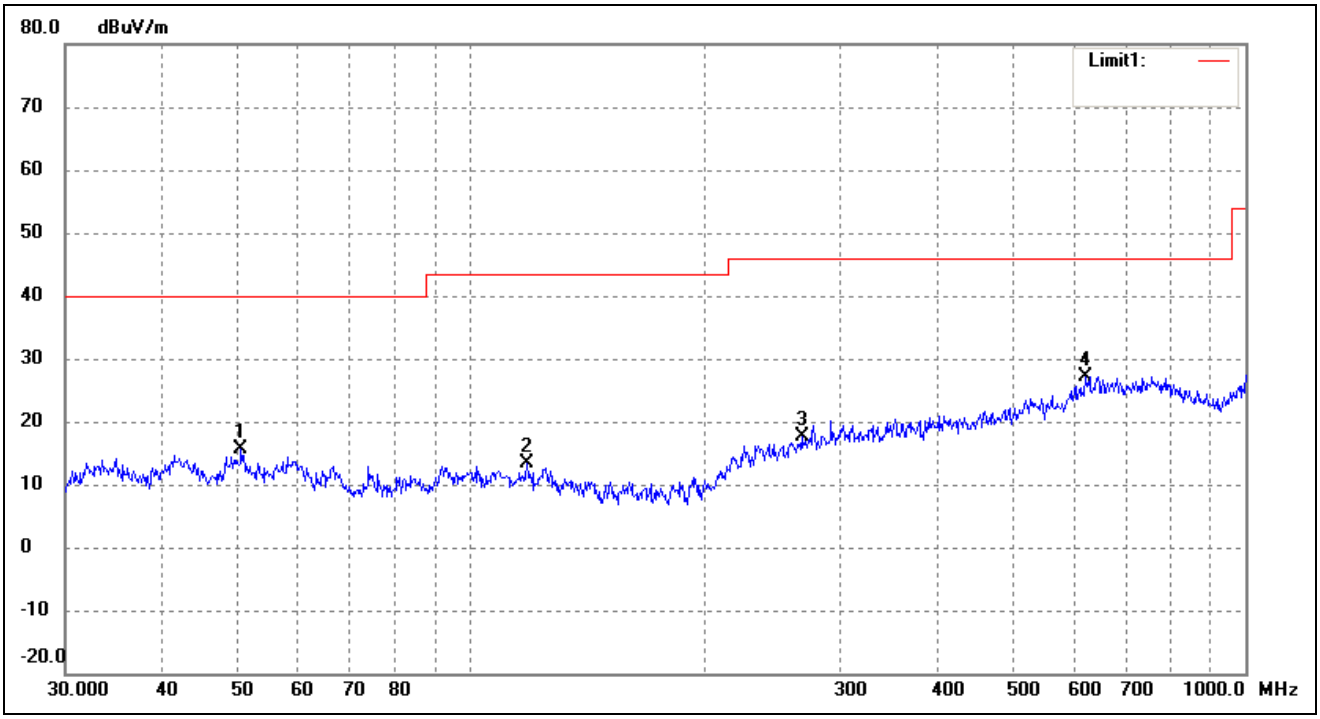
According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst cases:

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

Plot of Radiated Emissions Test Data (30MHz to 1GHz)

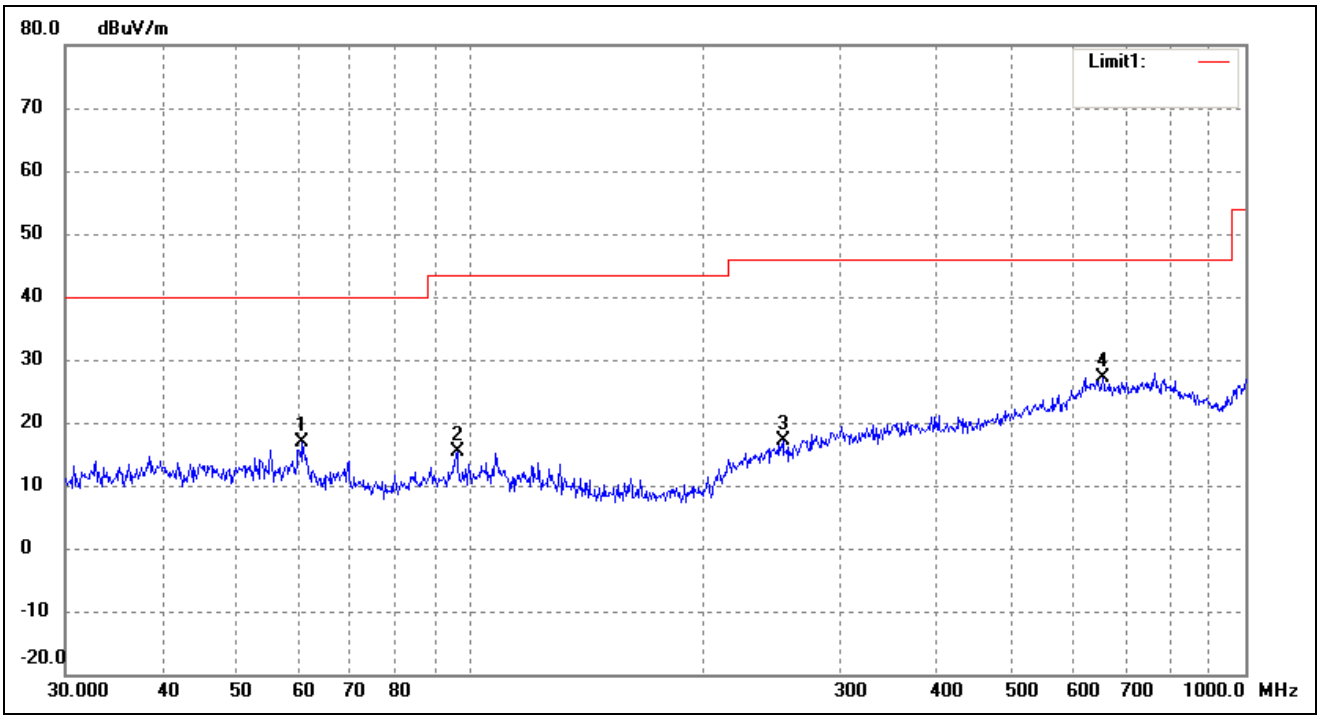
EUT: *Smart Phone*
Tested Model: *Philips S359*
Operating Condition: *802.11b Transmitting*
Comment: *DC 5V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	50.5860	32.09	-16.53	15.56	40.00	-24.44	243	100	peak
2	118.1862	29.99	-16.66	13.33	43.50	-30.17	96	100	peak
3	267.5455	28.96	-11.25	17.71	46.00	-28.29	119	100	peak
4	620.7096	28.85	-1.67	27.18	46.00	-18.82	106	100	peak

Test Specification: *Vertical*

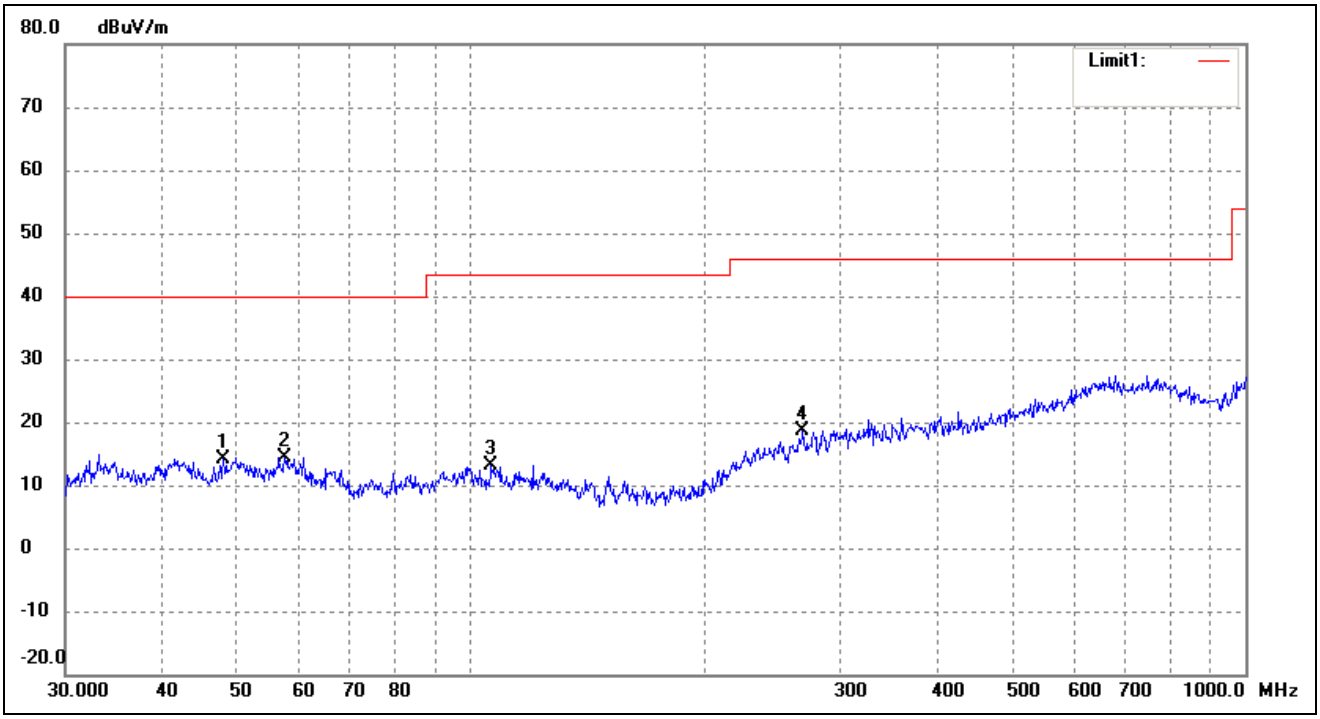


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	60.7044	33.54	-16.64	16.90	40.00	-23.10	313	100	peak
2	96.0986	32.56	-17.14	15.42	43.50	-28.08	189	100	peak
3	252.9482	29.17	-12.03	17.14	46.00	-28.86	51	100	peak
4	654.2318	28.47	-1.38	27.09	46.00	-18.91	215	100	peak

Plot of Radiated Emissions Test Data (30MHz to 1GHz)

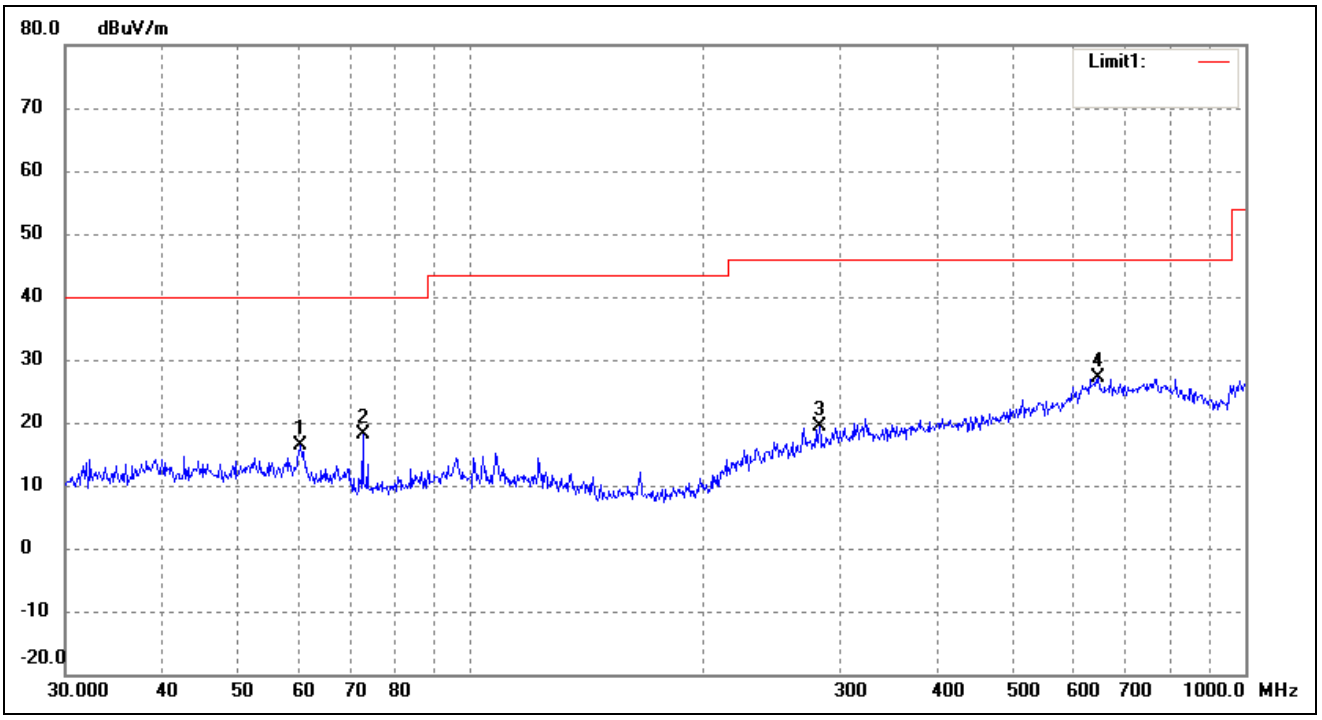
EUT: *Smart Phone*
Tested Model: *Philips S359*
Operating Condition: *802.11g Transmitting*
Comment: *DC 5V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	47.9940	30.76	-16.53	14.23	40.00	-25.77	96	100	peak
2	57.5939	30.96	-16.54	14.42	40.00	-25.58	108	100	peak
3	106.3850	29.84	-16.60	13.24	43.50	-30.26	85	100	peak
4	268.4853	29.73	-11.18	18.55	46.00	-27.45	98	100	peak

Test Specification: *Vertical*

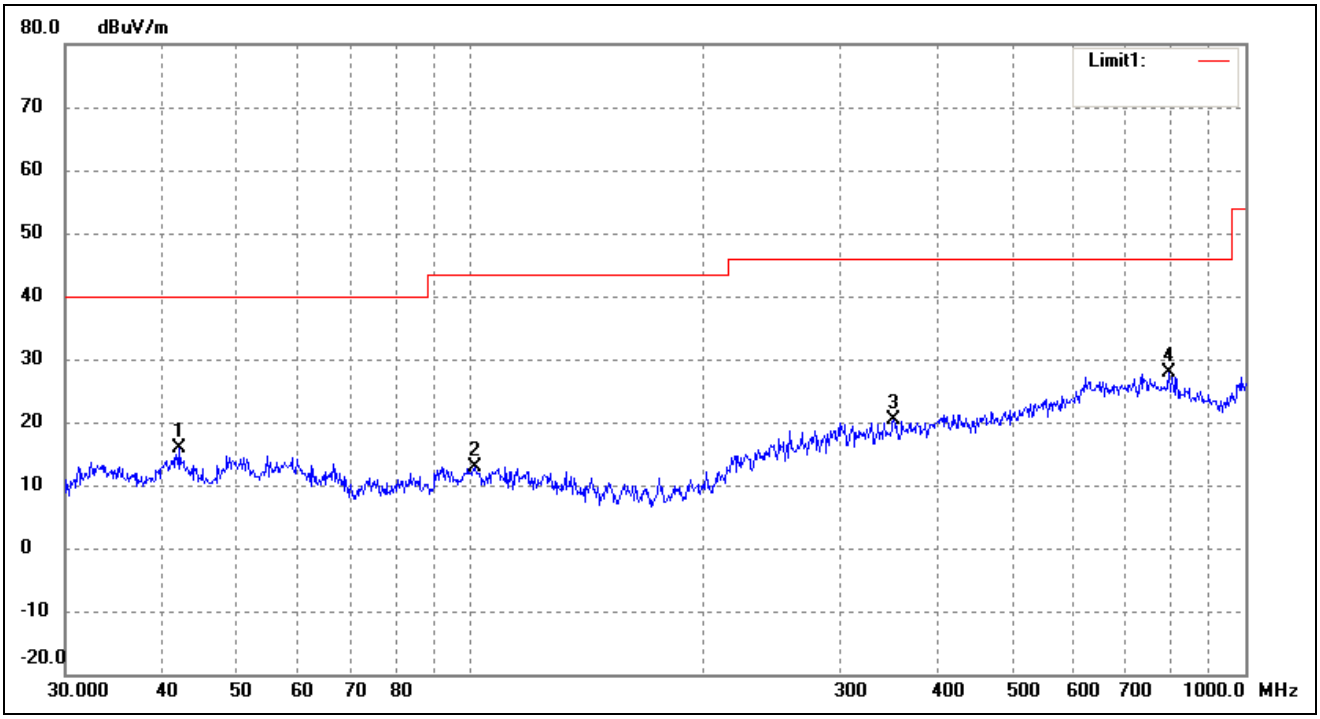


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	60.2801	32.85	-16.56	16.29	40.00	-23.71	50	100	peak
2	72.5917	37.15	-19.02	18.13	40.00	-21.87	163	100	peak
3	281.9946	29.71	-10.29	19.42	46.00	-26.58	67	100	peak
4	645.1195	28.20	-1.15	27.05	46.00	-18.95	171	100	peak

Plot of Radiated Emissions Test Data (30MHz to 1GHz)

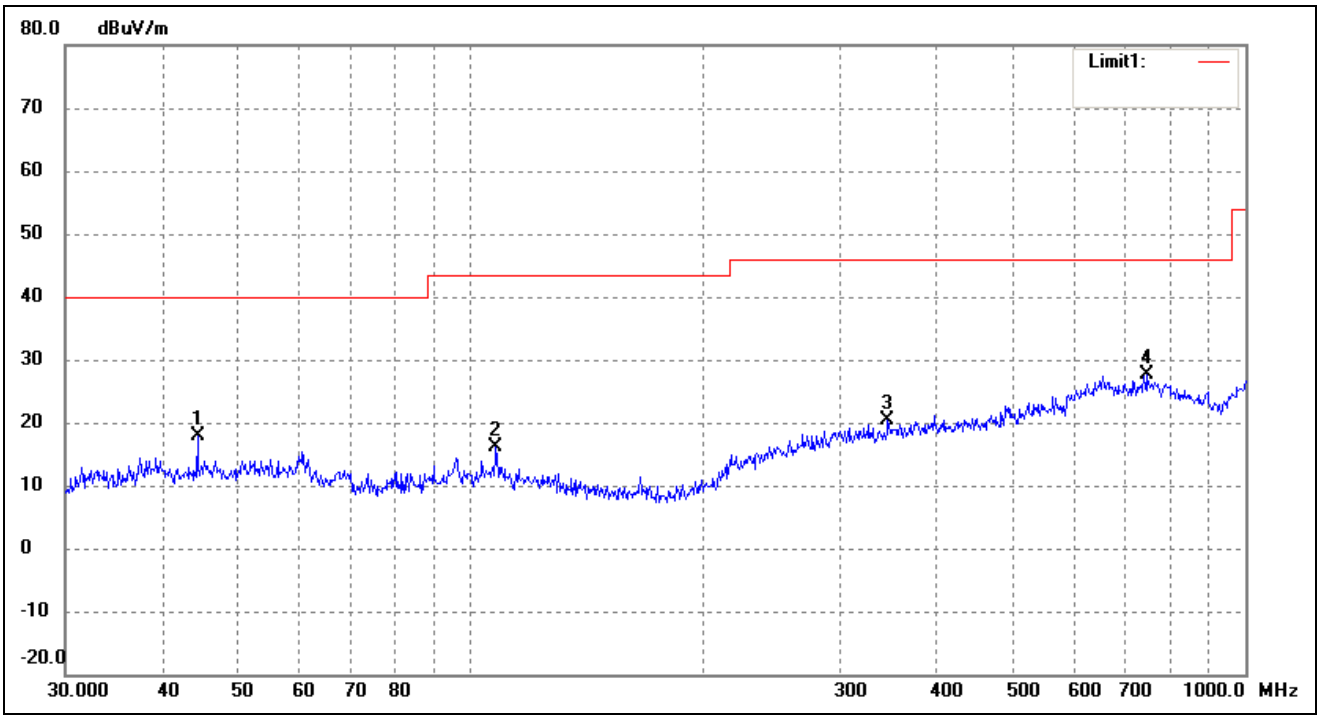
EUT: *Smart Phone*
Tested Model: *Philips S359*
Operating Condition: *802.11n-HT20 Transmitting*
Comment: *DC 5V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	42.1542	32.41	-16.50	15.91	40.00	-24.09	304	100	peak
2	101.2885	29.48	-16.57	12.91	43.50	-30.59	339	100	peak
3	351.7079	29.61	-9.21	20.40	46.00	-25.60	53	100	peak
4	796.1830	30.00	-2.13	27.87	46.00	-18.13	182	100	peak

Test Specification: *Vertical*

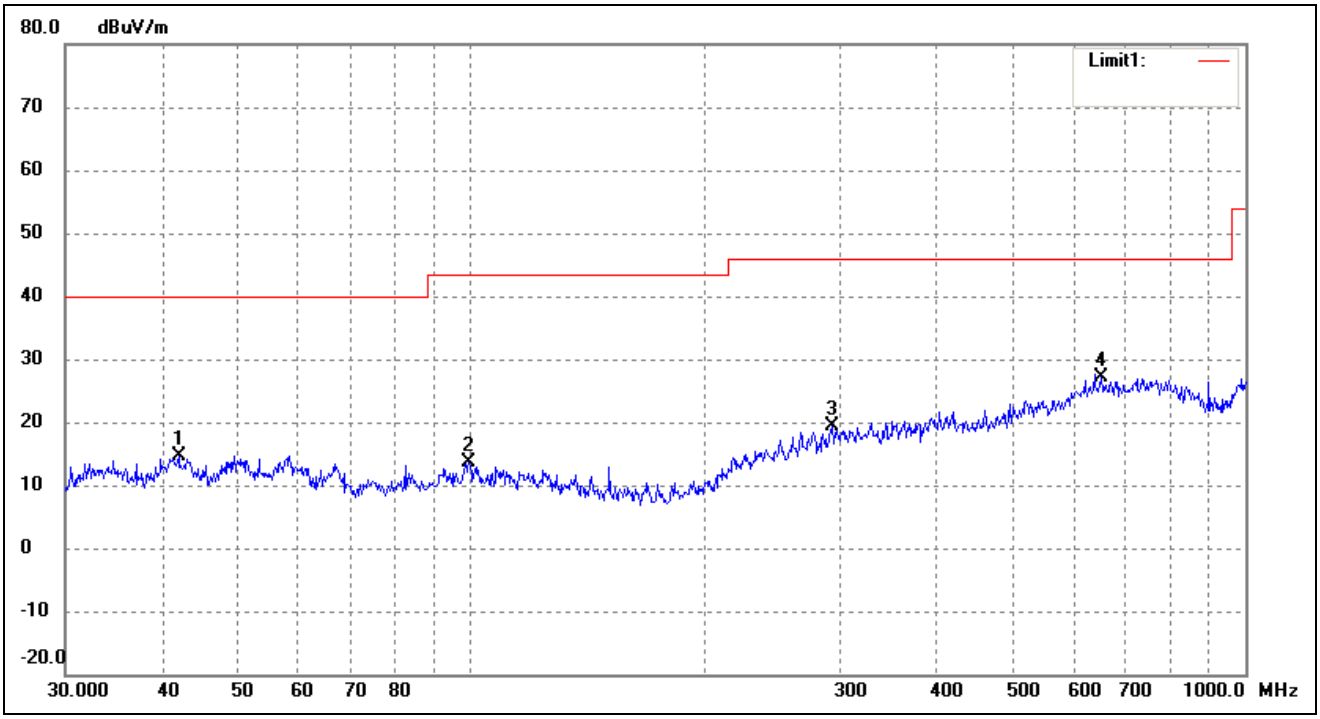


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	44.4308	34.27	-16.48	17.79	40.00	-22.21	182	100	peak
2	107.8877	32.82	-16.61	16.21	43.50	-27.29	199	100	peak
3	345.5952	29.72	-9.45	20.27	46.00	-25.73	81	100	peak
4	744.8661	27.65	-0.03	27.62	46.00	-18.38	128	100	peak

Plot of Radiated Emissions Test Data (30MHz to 1GHz)

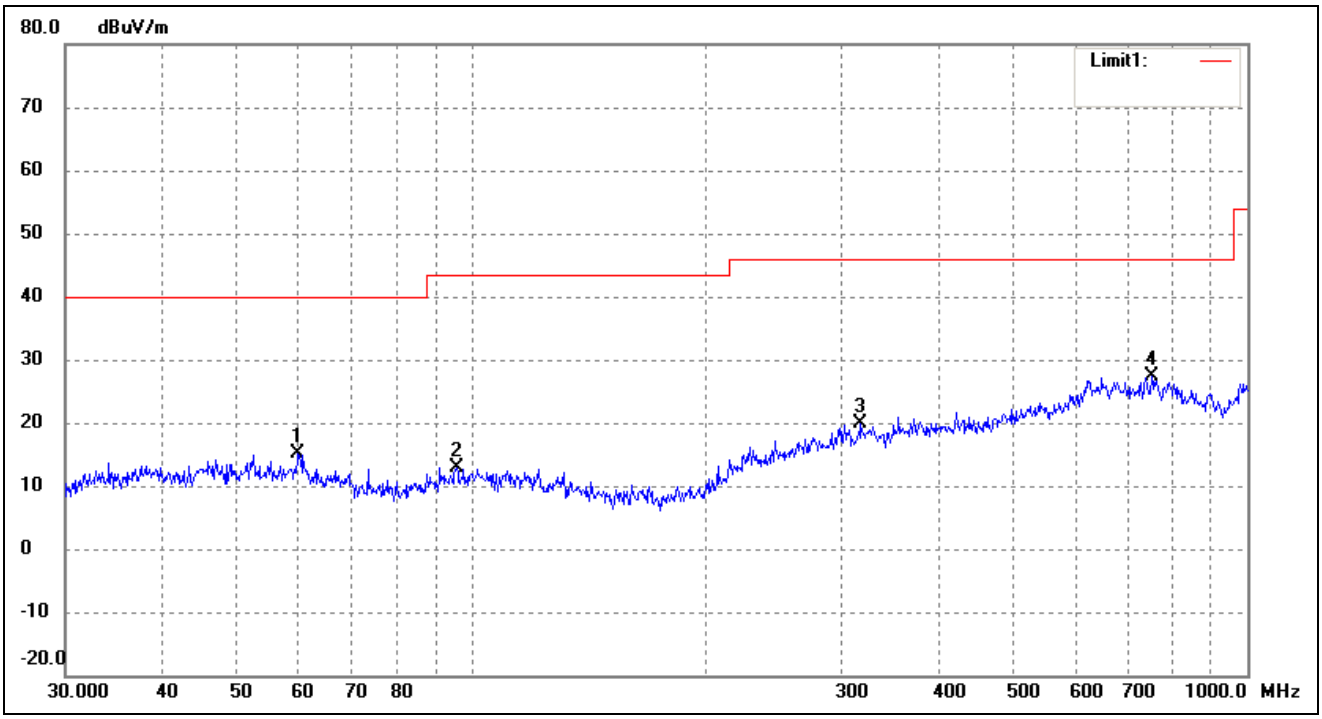
EUT: *Smart Phone*
Tested Model: *Philips S359*
Operating Condition: *802.11n-HT40 Transmitting*
Comment: *DC 5V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	42.0066	31.03	-16.50	14.53	40.00	-25.47	201	100	peak
2	99.5281	30.16	-16.63	13.53	43.50	-29.97	312	100	peak
3	293.0842	29.27	-9.83	19.44	46.00	-26.56	76	100	peak
4	651.9417	28.50	-1.32	27.18	46.00	-18.82	183	100	peak

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	59.8588	31.67	-16.51	15.16	40.00	-24.84	295	100	peak
2	95.7622	30.04	-17.19	12.85	43.50	-30.65	97	100	peak
3	317.7011	29.25	-9.36	19.89	46.00	-26.11	356	100	peak
4	752.7432	27.65	-0.33	27.32	46.00	-18.68	101	100	peak

Spurious Emissions Above 1GHz

Test Mode: 802.11b

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	60.00	-3.86	56.14	74	-17.86	H	PK
4824.000	47.27	-3.86	43.41	54	-10.59	H	AV
7236.000	58.18	1.1	59.28	74	-14.72	H	PK
7236.000	49.09	1.1	50.19	54	-3.81	H	AV
4824.000	57.27	-3.86	53.41	74	-20.59	V	PK
4824.000	47.27	-3.86	43.41	54	-10.59	V	AV
7236.000	53.64	1.1	54.74	74	-19.26	V	PK
7236.000	50.00	1.1	51.10	54	-2.90	V	AV
Middle Channel-2437MHz							
4874.000	60.00	-3.74	56.26	74	-17.74	H	PK
4874.000	46.36	-3.74	42.62	54	-11.38	H	AV
7311.000	58.18	1.47	59.65	74	-14.35	H	PK
7311.000	46.36	1.47	47.83	54	-6.17	H	AV
4874.000	52.73	-3.74	48.99	74	-25.01	V	PK
4874.000	50.00	-3.74	46.26	54	-7.74	V	AV
7311.000	55.45	1.47	56.92	74	-17.08	V	PK
7311.000	49.09	1.47	50.56	54	-3.44	V	AV
High Channel-2462MHz							
4924.000	58.18	-3.63	54.55	74	-19.45	H	PK
4924.000	46.36	-3.63	42.73	54	-11.27	H	AV
7386.000	57.27	1.62	58.89	74	-15.11	H	PK
7386.000	43.64	1.62	45.26	54	-8.74	H	AV
4924.000	58.18	-3.63	54.55	74	-19.45	V	PK
4924.000	47.27	-3.63	43.64	54	-10.36	V	AV
7386.000	60.00	1.62	61.62	74	-12.38	V	PK
7386.000	47.27	1.62	48.89	54	-5.11	V	AV

Test Mode: 802.11g

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	63.44	-3.87	59.57	74	-14.43	H	PK
4824.000	55.41	-3.87	51.54	54	-2.46	H	AV
7236.000	60.64	1.14	61.78	74	-12.22	H	PK
7236.000	46.62	1.19	47.81	54	-6.19	H	AV
4824.000	64.66	-3.86	60.8	74	-13.2	V	PK
4824.000	55.89	-3.86	52.03	54	-1.97	V	AV
7236.000	58.44	1.1	59.54	74	-14.46	V	PK
7236.000	45.48	1.1	46.58	54	-7.42	V	AV
Middle Channel-2437MHz							
4874.000	64.28	-3.74	60.54	74	-13.46	H	PK
4874.000	55.12	-3.74	51.38	54	-2.62	H	AV
7311.000	57.06	1.47	58.53	74	-15.47	H	PK
7311.000	47.37	1.47	48.84	54	-5.16	H	AV
4874.000	63.81	-3.74	60.07	74	-13.93	V	PK
4874.000	55.67	-3.74	51.93	54	-2.07	V	AV
7311.000	58.07	1.47	59.54	74	-14.46	V	PK
7311.000	47.21	1.47	48.68	54	-5.32	V	AV
High Channel-2462MHz							
4924.000	66.98	-3.59	63.39	74	-10.61	H	PK
4924.000	53.15	-3.59	49.56	54	-4.44	H	AV
7386.000	59.79	1.79	61.58	74	-12.42	H	PK
7386.000	46.98	1.79	48.77	54	-5.23	H	AV
4924.000	63.63	-3.59	60.04	74	-13.96	V	PK
4924.000	55.69	-3.59	52.1	54	-1.90	V	AV
7386.000	57.7	1.79	59.49	74	-14.51	V	PK
7386.000	46.08	1.79	47.87	54	-6.13	V	AV

Test Mode: 802.11n-HT20

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	67.9	-3.87	64.03	74	-9.97	H	PK
4824.000	50.43	-3.87	46.56	54	-7.44	H	AV
7236.000	58.25	1.14	59.39	74	-14.61	H	PK
7236.000	46.05	1.19	47.24	54	-6.76	H	AV
4824.000	64.62	-3.86	60.76	74	-13.24	V	PK
4824.000	50.72	-3.86	46.86	54	-7.14	V	AV
7236.000	59.03	1.1	60.13	74	-13.87	V	PK
7236.000	47.55	1.1	48.65	54	-5.35	V	AV
Middle Channel-2437MHz							
4874.000	67.61	-3.74	63.87	74	-10.13	H	PK
4874.000	48.1	-3.74	44.36	54	-9.64	H	AV
7311.000	59.29	1.47	60.76	74	-13.24	H	PK
7311.000	47.65	1.47	49.12	54	-4.88	H	AV
4874.000	66.79	-3.74	63.05	74	-10.95	V	PK
4874.000	49.64	-3.74	45.9	54	-8.1	V	AV
7311.000	59.9	1.47	61.37	74	-12.63	V	PK
7311.000	47.72	1.47	49.19	54	-4.81	V	AV
High Channel-2462MHz							
4924.000	67.09	-3.59	63.5	74	-10.5	H	PK
4924.000	50.28	-3.59	46.69	54	-7.31	H	AV
7386.000	58.97	1.79	60.76	74	-13.24	H	PK
7386.000	45.65	1.79	47.44	54	-6.56	H	AV
4924.000	64.5	-3.59	60.91	74	-13.09	V	PK
4924.000	48.91	-3.59	45.32	54	-8.68	V	AV
7386.000	60.66	1.79	62.45	74	-11.55	V	PK
7386.000	46.73	1.79	48.52	54	-5.48	V	AV

Test Mode: 802.11n-HT40

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2422MHz							
4844.000	65.37	-3.87	61.5	74	-12.5	H	PK
4824.000	52.94	-3.87	49.07	54	-4.93	H	AV
7266.000	61.15	1.14	62.29	74	-11.71	H	PK
7266.000	46.4	1.19	47.59	54	-6.41	H	AV
4844.000	65.92	-3.86	62.06	74	-11.94	V	PK
4824.000	51.38	-3.86	47.52	54	-6.48	V	AV
7266.000	58.17	1.1	59.27	74	-14.73	V	PK
7266.000	45.26	1.1	46.36	54	-7.64	V	AV
Middle Channel-2437MHz							
4874.000	65.7	-3.74	61.96	74	-12.04	H	PK
4874.000	50.74	-3.74	47	54	-7.00	H	AV
7311.000	60.71	1.47	62.18	74	-11.82	H	PK
7311.000	45.33	1.47	46.8	54	-7.2	H	AV
4874.000	65.72	-3.74	61.98	74	-12.02	V	PK
4874.000	52.68	-3.74	48.94	54	-5.06	V	AV
7311.000	61.48	1.47	62.95	74	-11.05	V	PK
7311.000	46.97	1.47	48.44	54	-5.56	V	AV
High Channel-2452MHz							
4904.000	68.97	-3.59	65.38	74	-8.62	H	PK
4904.000	50.56	-3.59	46.97	54	-7.03	H	AV
7356.000	60.4	1.79	62.19	74	-11.81	H	PK
7356.000	47.59	1.79	49.38	54	-4.62	H	AV
4904.000	67.01	-3.59	63.42	74	-10.58	V	PK
4904.000	50.98	-3.59	47.39	54	-6.61	V	AV
7356.000	58.95	1.79	60.74	74	-13.26	V	PK
7356.000	45.86	1.79	47.65	54	-6.35	V	AV

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

9. Out of Band Emissions

9.1 Standard Applicable

According to §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).

9.2 Test Procedure

According to the KDB 558074D01 v04, the band-edge radiated test method as follows:

Set span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation (2310MHz to 2420MHz for low bandedge, 2460MHz to 2500MHz for the high bandedge)
RBW = 1MHz, VBW = 1MHz for peak value measured
RBW = 1MHz, VBW = 10Hz for average value measured
Sweep = auto; Detector function = peak/average; Trace = max hold
All the trace to stabilize, set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. Those emission must comply with the 15.209 limit for fall in the restricted bands listed in section 15.205. Note that the method of measurement KDB publication number: 913591 may be used for the radiated bandedge measurements.

According to the KDB 558074 D01 v04, the conducted spurious emissions test method as follows:
1. Set start frequency to DTS channel edge frequency.
2. Set stop frequency so as to encompass the spectrum to be examined.
3. Set RBW = 100 kHz.
4. Set VBW ≥ 300 kHz.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize (this may take some time, depending on the extent of the span).
9. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

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

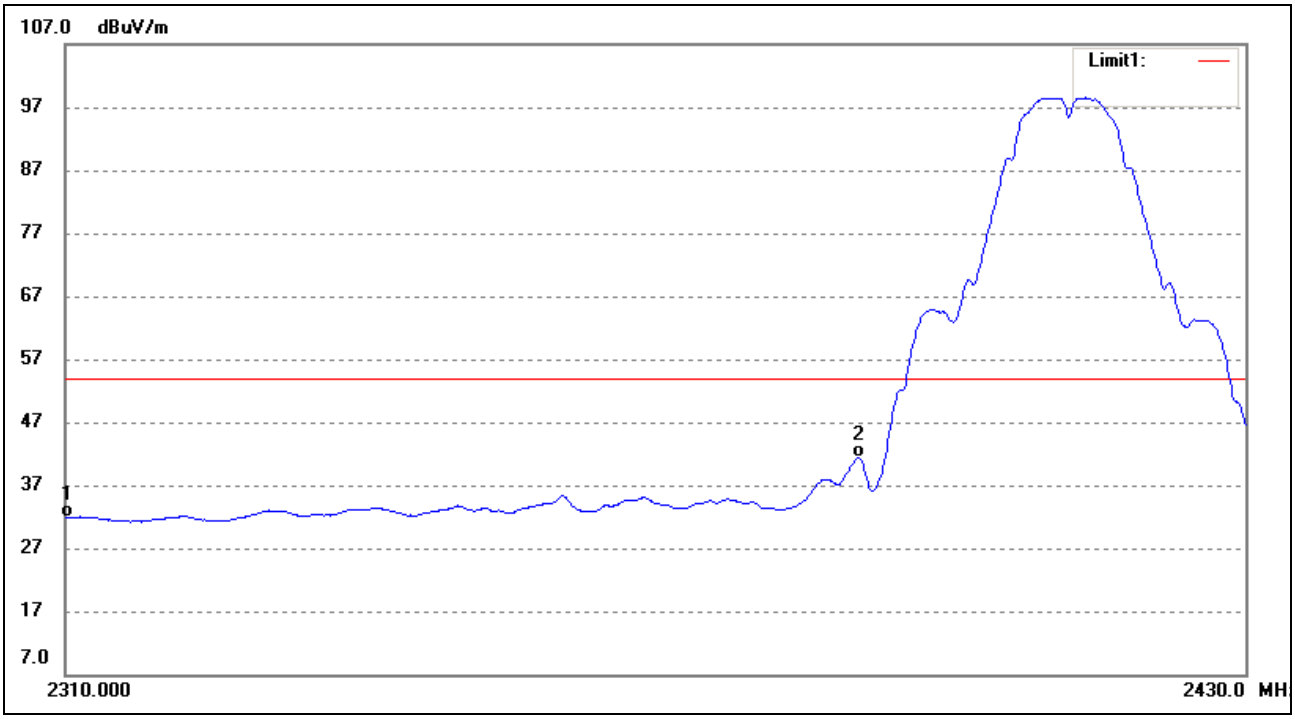
9.3 Environmental Conditions

Temperature:	23°C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

9.4 Summary of Test Results/Plots

802.11b-Lowest Bandedge

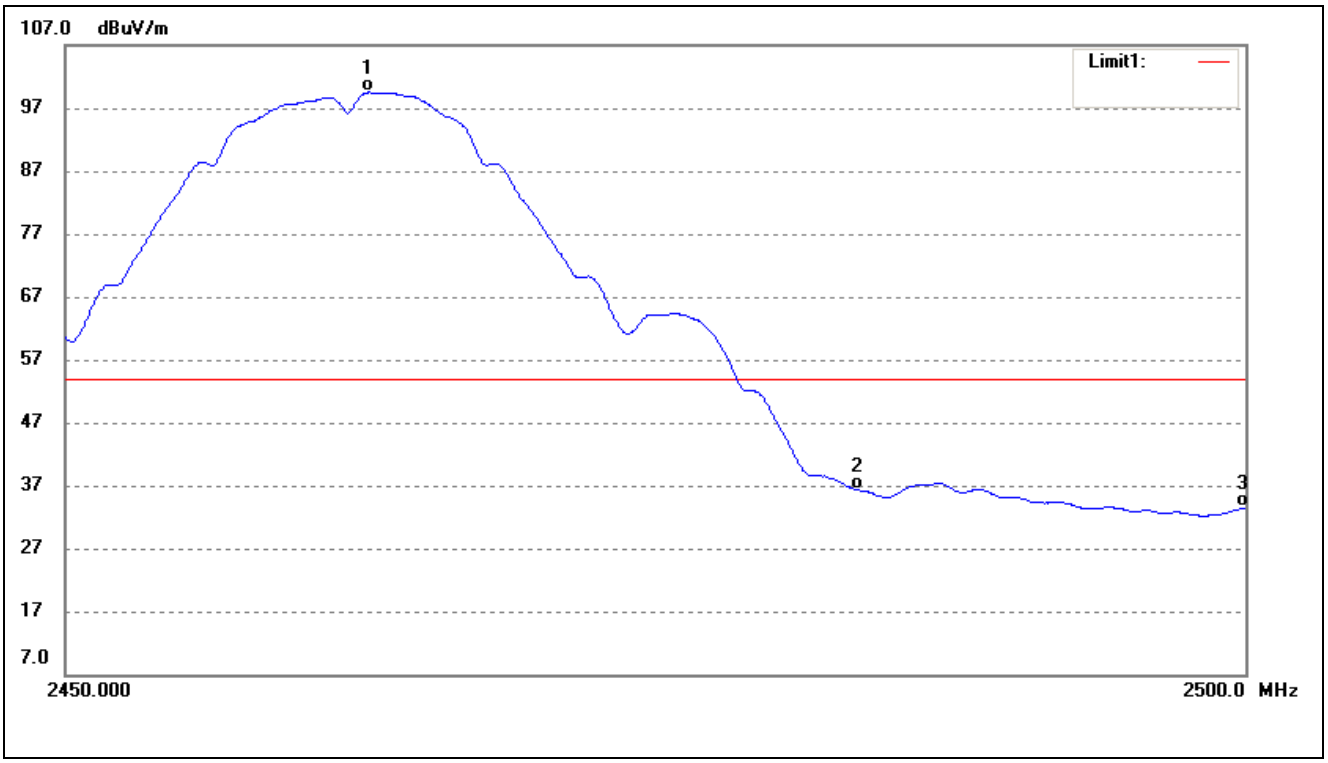
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	38.17	-6.38	31.79	54.00	-22.21	Average Detector
	2310.000	51.06	-6.38	44.68	74.00	-29.32	Peak Detector
2	2390.000	48.69	-7.26	41.43	54.00	-12.57	Average Detector
	2390.000	58.41	-7.26	51.15	74.00	-22.85	Peak Detector
3	2413.443	105.91	-7.40	98.51	/	/	Average Detector
	2414.421	110.96	-7.40	103.56	/	/	Peak Detector

802.11b-Highest Bandedge

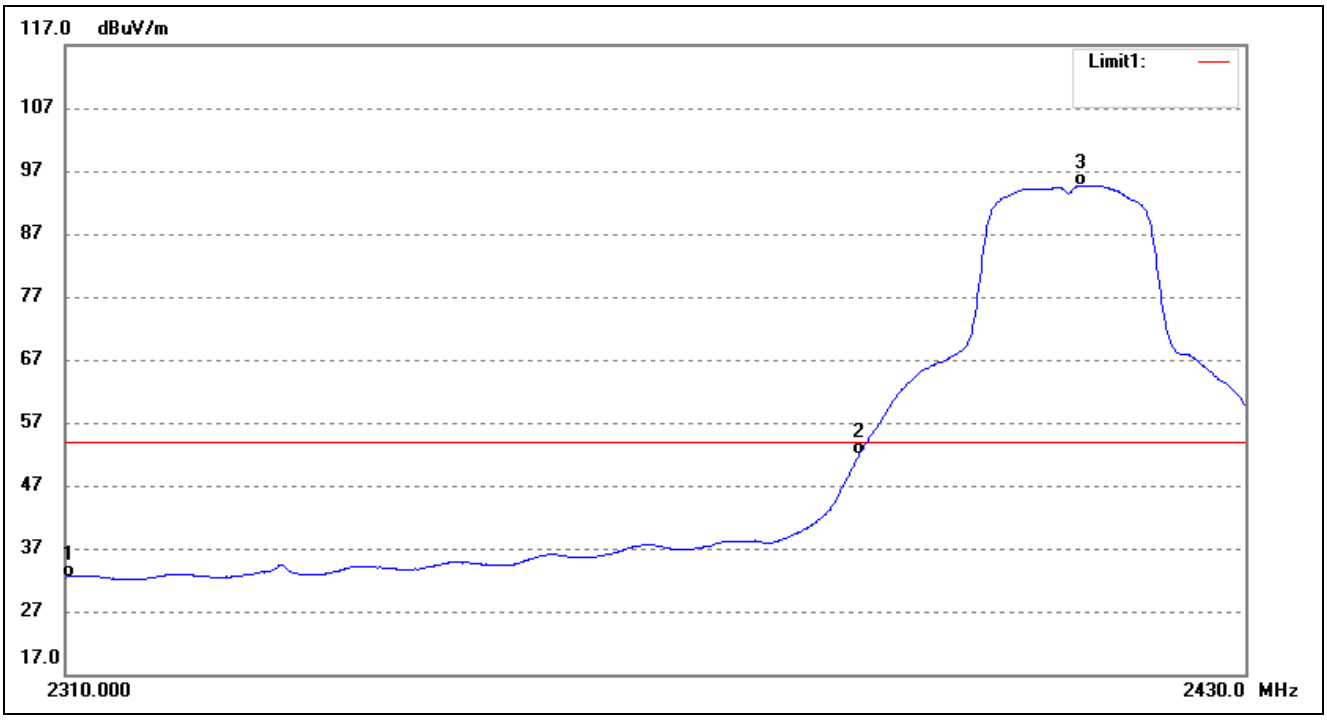
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2462.754	106.82	-7.31	99.51	/	/	Average Detector
	2463.948	110.92	-7.31	103.61	/	/	Peak Detector
2	2483.500	43.55	-7.28	36.27	54.00	-17.73	Average Detector
	2483.500	55.84	-7.28	48.56	74.00	-25.44	Peak Detector
3	2500.000	40.80	-7.25	33.55	54.00	-20.45	Average Detector
	2500.000	54.80	-7.25	47.55	74.00	-26.45	Peak Detector

802.11g-Lowest Bandedge

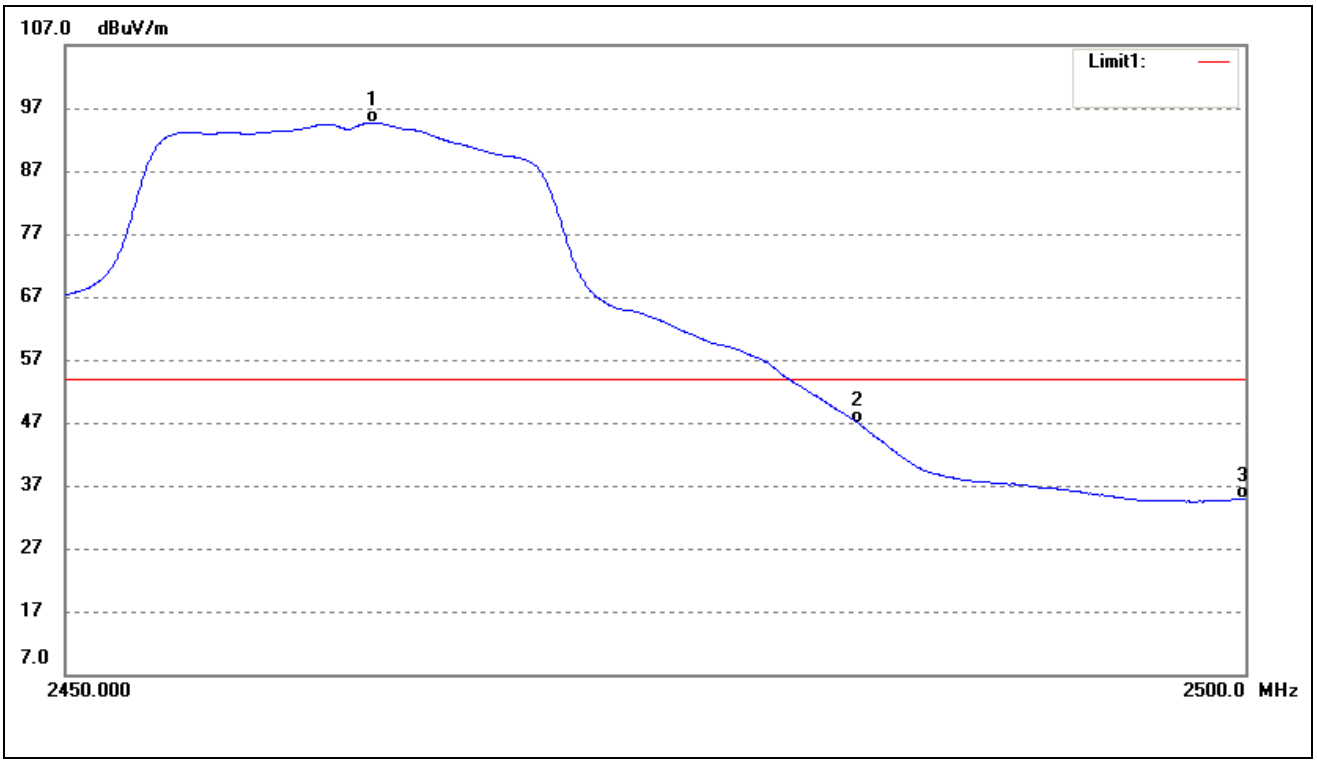
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	38.83	-6.38	32.45	54.00	-21.55	Average Detector
	2310.000	51.97	-6.38	45.59	74.00	-28.41	Peak Detector
2	2390.000	59.20	-7.26	51.94	54.00	-2.06	Average Detector
	2390.000	79.69	-7.26	72.43	74.00	-1.57	Peak Detector
3	2412.954	102.13	-7.40	94.73	/	/	Average Detector
	2414.054	110.96	-7.40	103.56	/	/	Peak Detector

802.11g-Highest Bandedge

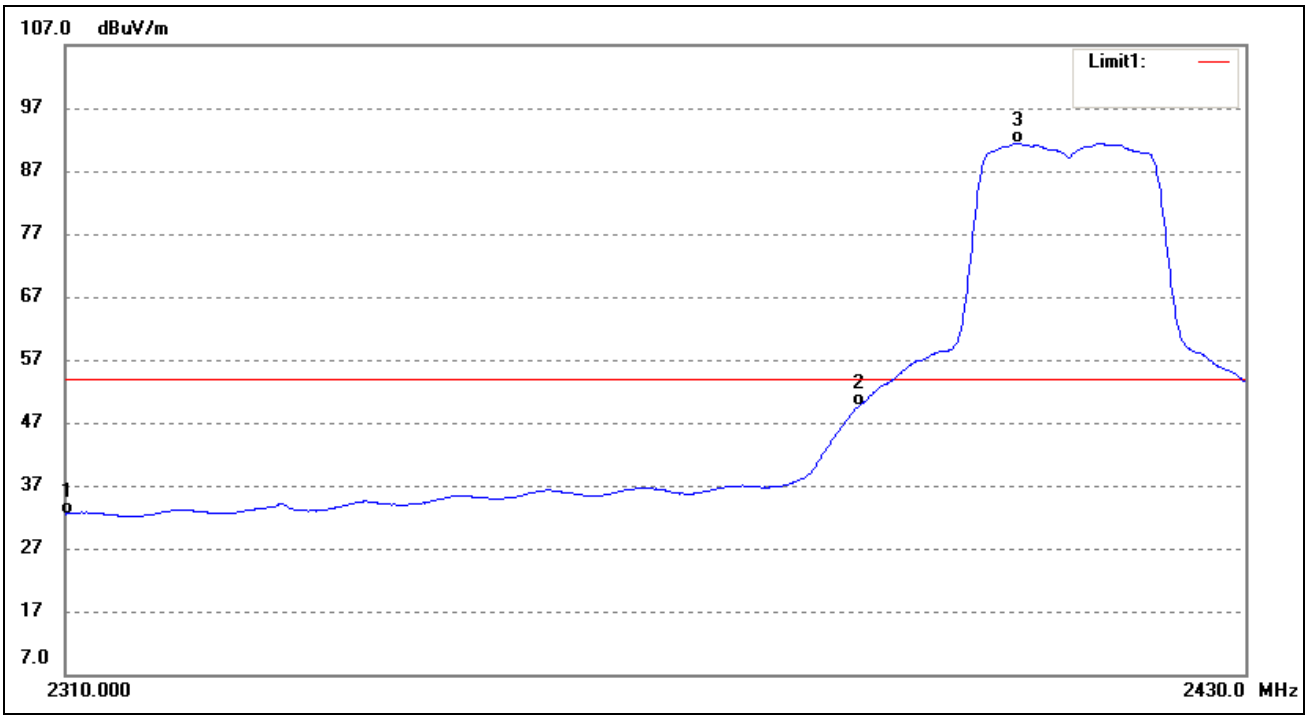
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2462.903	102.03	-7.31	94.72	/	/	Average Detector
	2462.704	110.94	-7.31	103.63	/	/	Peak Detector
2	2483.500	54.06	-7.28	46.78	54.00	-7.22	Average Detector
	2483.500	79.28	-7.28	72.00	74.00	-2.00	Peak Detector
3	2500.000	42.21	-7.25	34.96	54.00	-19.04	Average Detector
	2500.000	62.29	-7.25	55.04	74.00	-18.96	Peak Detector

802.11n-HT20-Lowest Bandedge

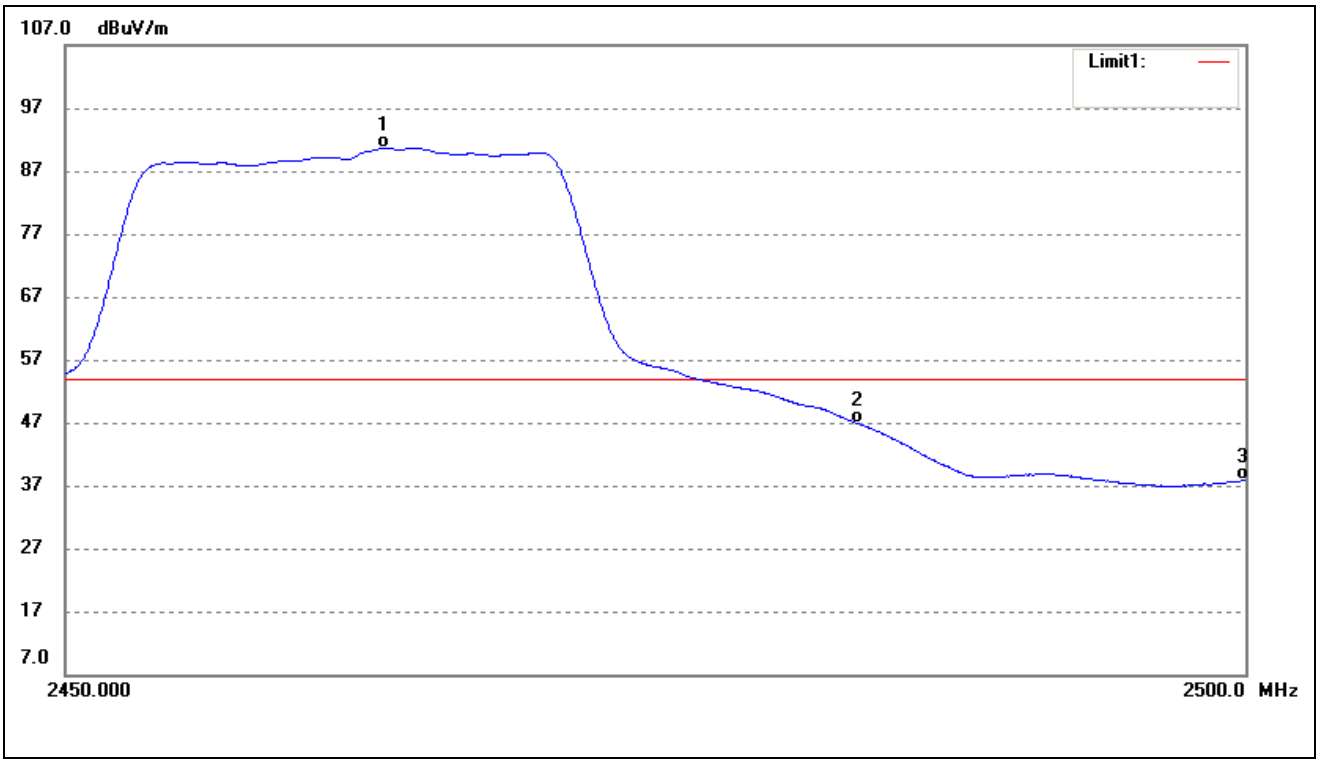
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	38.86	-6.38	32.48	54.00	-21.52	Average Detector
	2310.000	51.63	-6.38	45.25	74.00	-28.75	Peak Detector
2	2390.000	56.99	-7.26	49.73	54.00	-4.27	Average Detector
	2390.000	79.22	-7.26	71.96	74.00	-2.04	Peak Detector
3	2406.364	98.87	-7.42	91.45	/	/	Average Detector
	2414.788	109.62	-7.40	102.22	/	/	Peak Detector

802.11n-HT20-Highest Bandedge

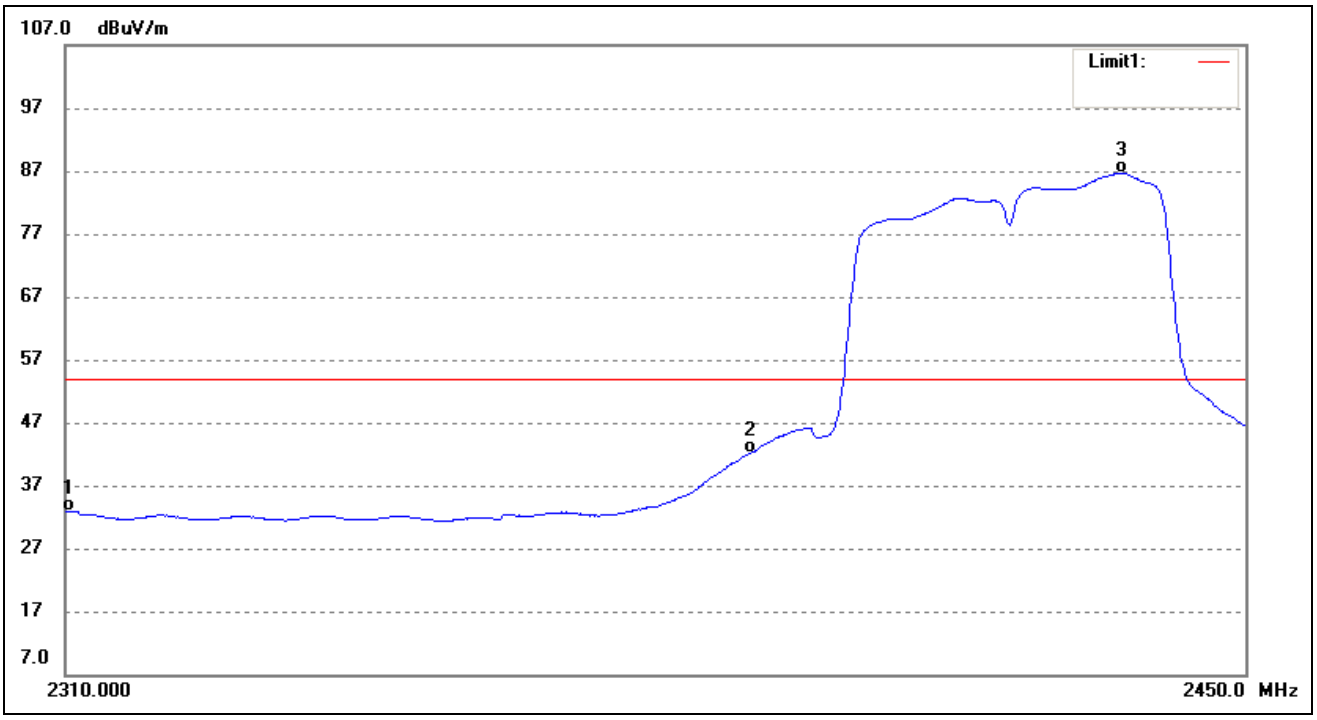
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2463.401	97.89	-7.31	90.58	/	/	Average Detector
	2464.944	109.18	-7.31	101.87	/	/	Peak Detector
2	2483.500	54.08	-7.28	46.80	54.00	-7.20	Average Detector
	2483.500	76.04	-7.28	68.76	74.00	-5.24	Peak Detector
3	2500.000	45.05	-7.25	37.80	54.00	-16.20	Average Detector
	2500.000	56.96	-7.25	49.71	74.00	-24.29	Peak Detector

802.11n-HT40-Lowest Bandedge

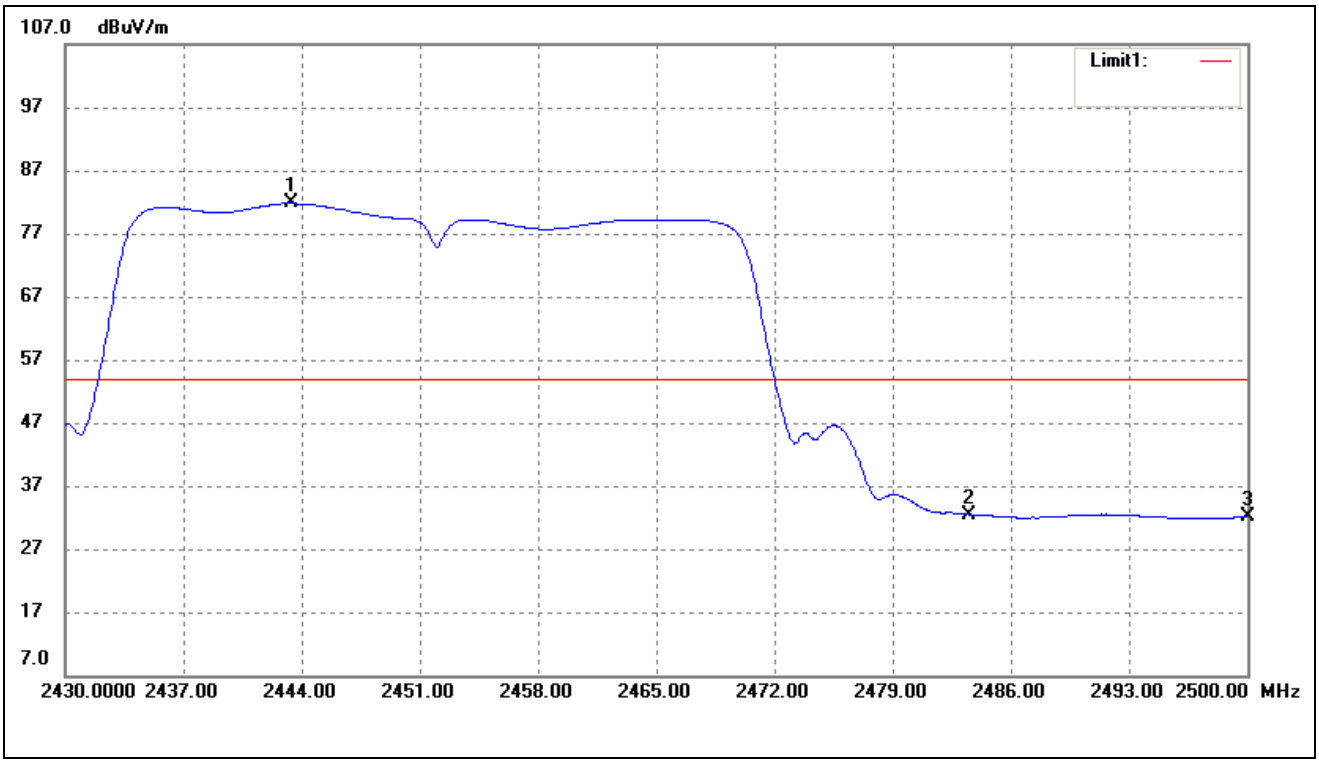
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	39.15	-6.38	32.77	54.00	-21.23	Average Detector
	2310.000	51.19	-6.38	44.81	74.00	-29.19	Peak Detector
2	2390.000	49.29	-7.26	42.03	54.00	-11.97	Average Detector
	2390.000	60.98	-7.26	53.72	74.00	-20.28	Peak Detector
3	2434.910	94.00	-7.37	86.63	/	/	Average Detector
	2434.767	101.12	-7.37	93.75	/	/	Peak Detector

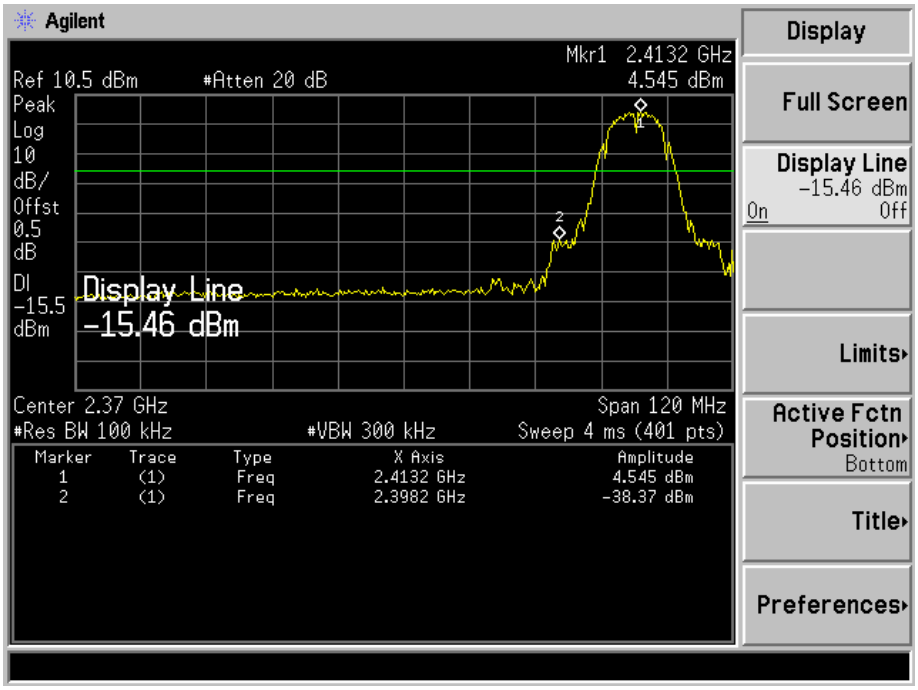
802.11n-HT40-Highest Bandedge

Vertical (Worst case)

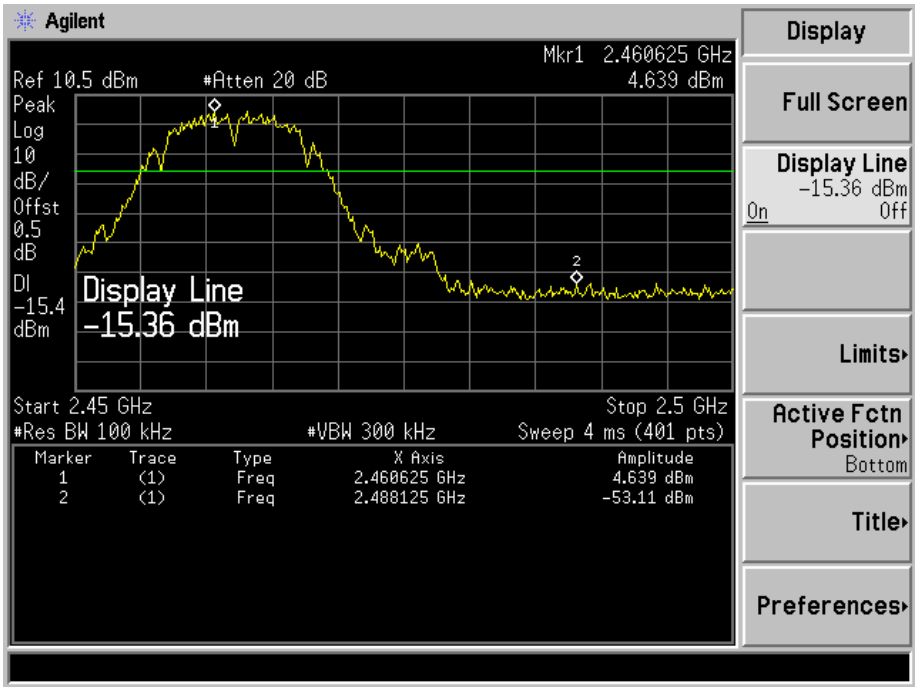


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2443.370	83.23	-1.41	81.82	/	/	Average Detector
	2454.990	94.76	-1.39	93.37	/	/	Peak Detector
2	2483.500	33.85	-1.36	32.49	54.00	-21.51	Average Detector
	2483.500	47.87	-1.36	46.51	74.00	-27.49	Peak Detector
3	2500.000	33.49	-1.34	32.15	54.00	-21.85	Average Detector
	2500.000	47.34	-1.34	46.00	74.00	-28.00	Peak Detector

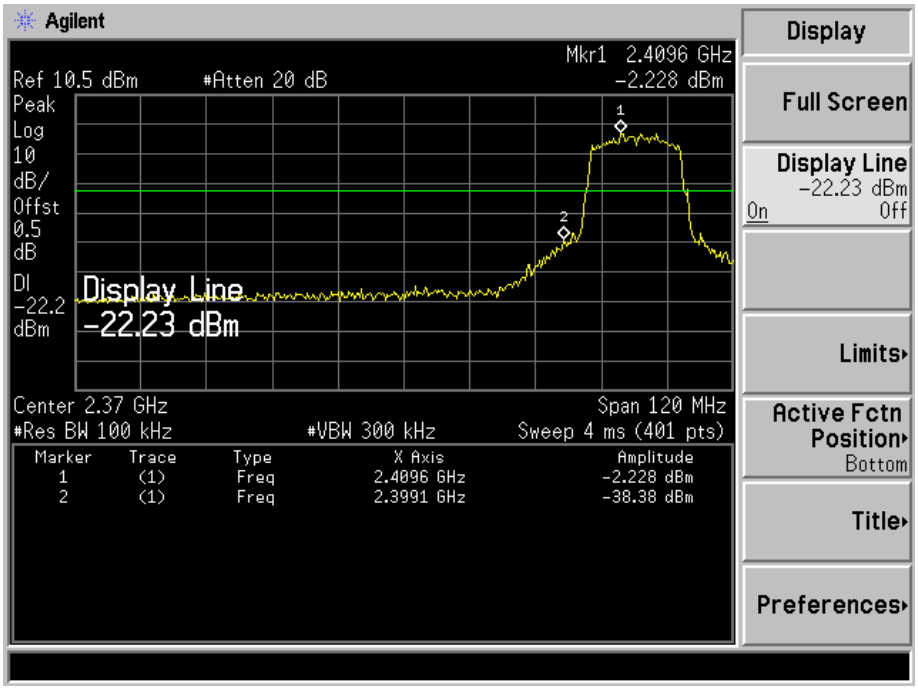
Spurious (Conducted)
802.11b-Lowest
Lowest



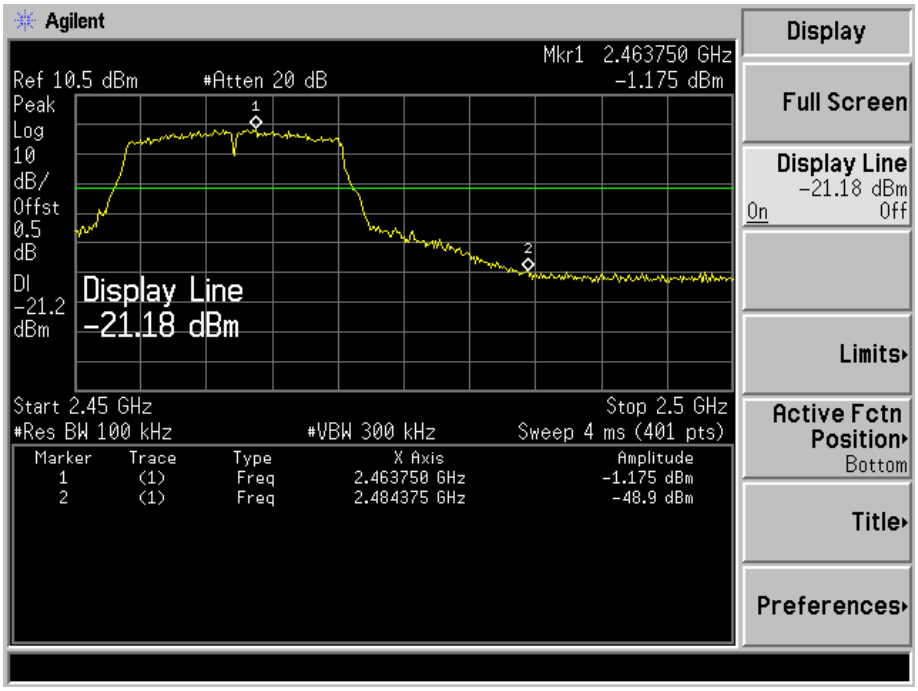
Highest



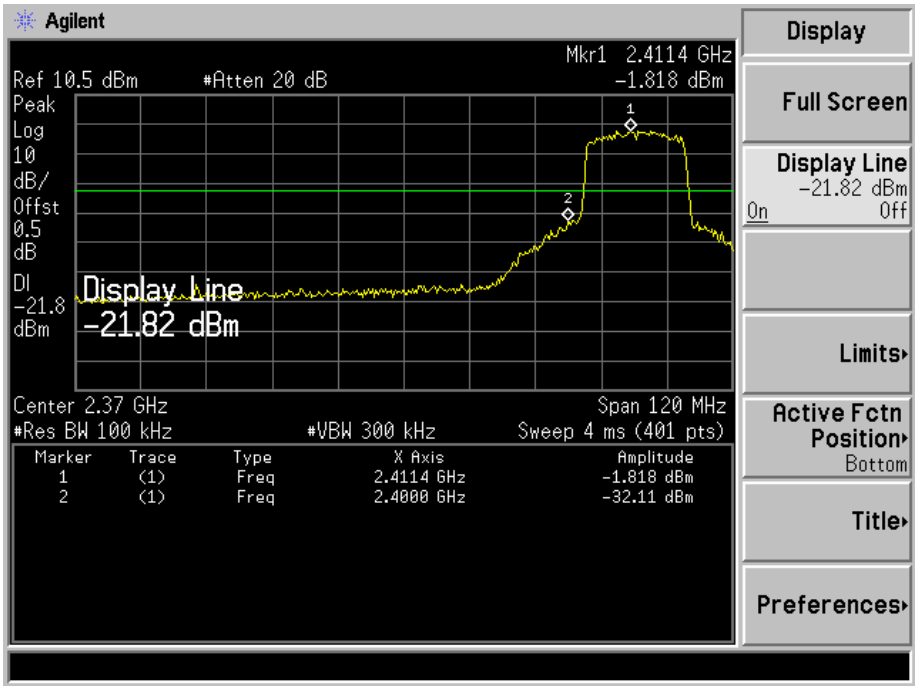
Spurious (Conducted)
802.11g-Lowest
Lowest



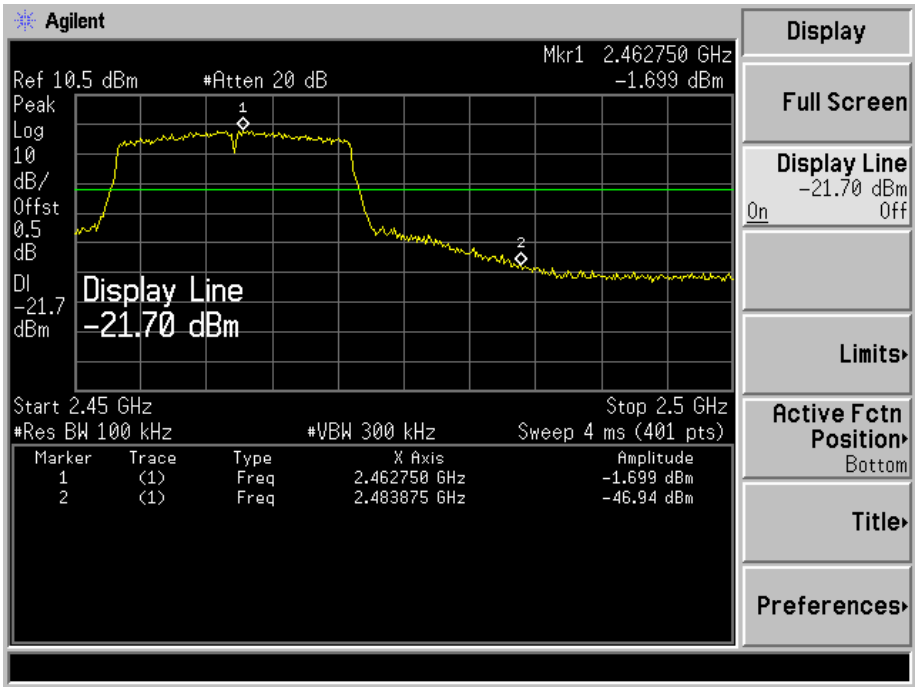
Highest



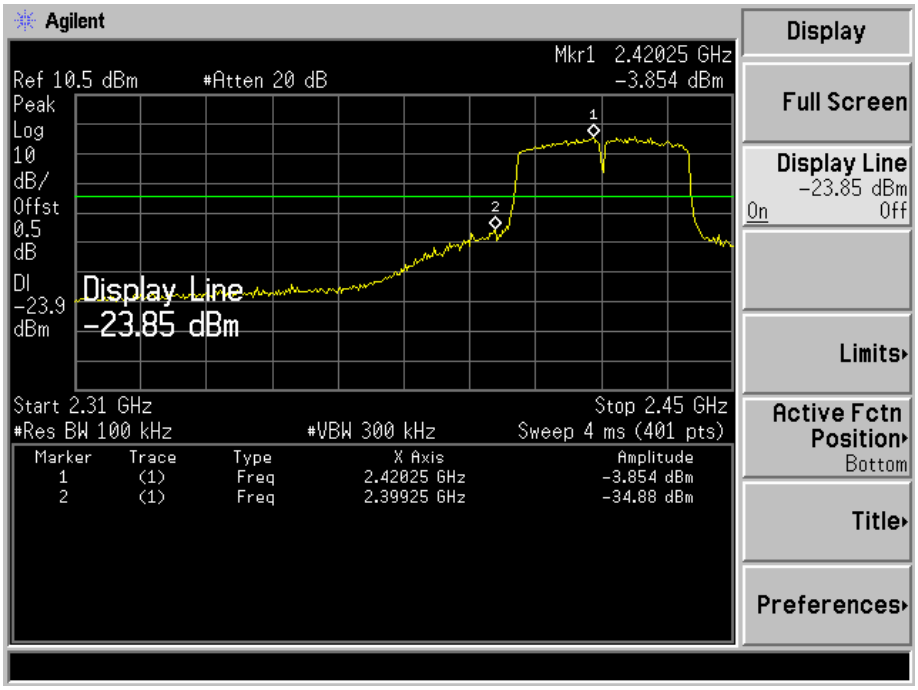
Spurious (Conducted)
802.11n-HT20-Lowest
Lowest



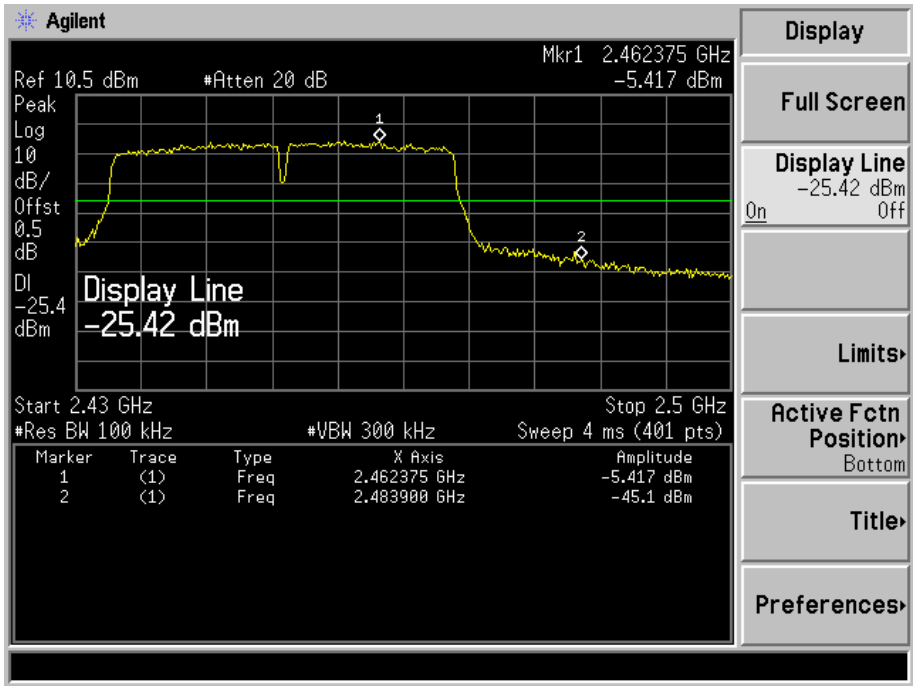
Highest



Spurious (Conducted)
802.11n-HT40-Lowest
Lowest



Highest

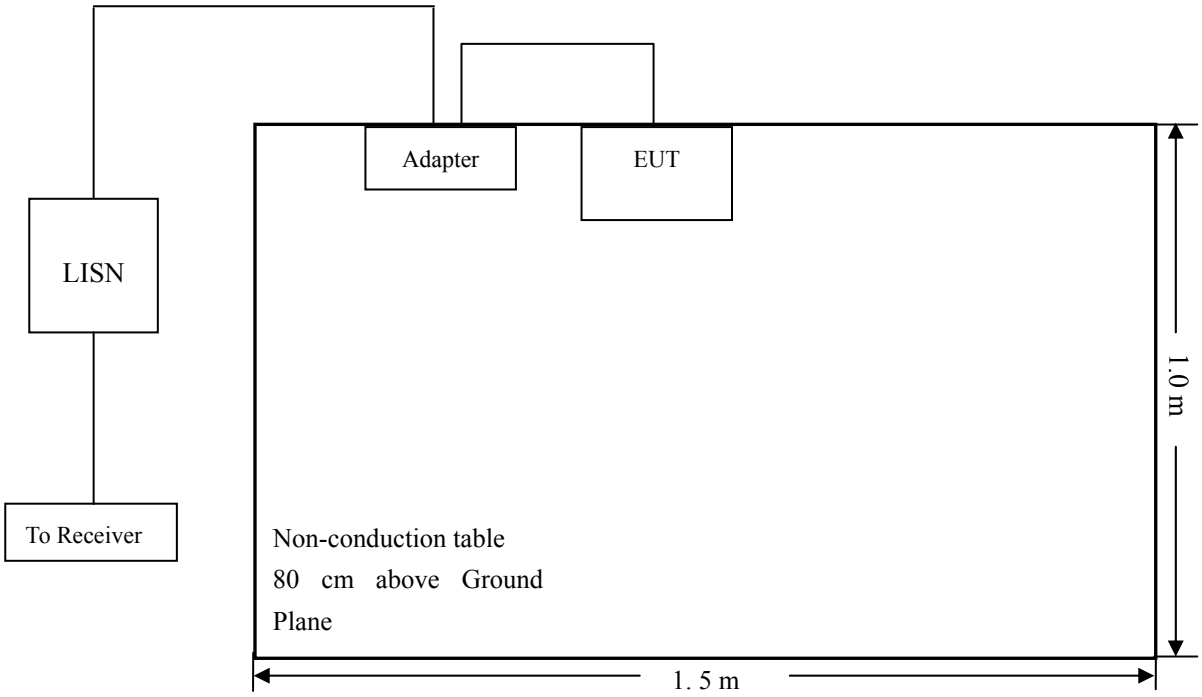


10. Conducted Emissions

10.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.

10.2 Basic Test Setup Block Diagram



10.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

10.4 Test Receiver Setup

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

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

10.5 Summary of Test Results/Plots

According to the data in section 10.6, the EUT complied with the FCC Part 15.207 Conducted margin for this device, with the *worst* margin reading of:

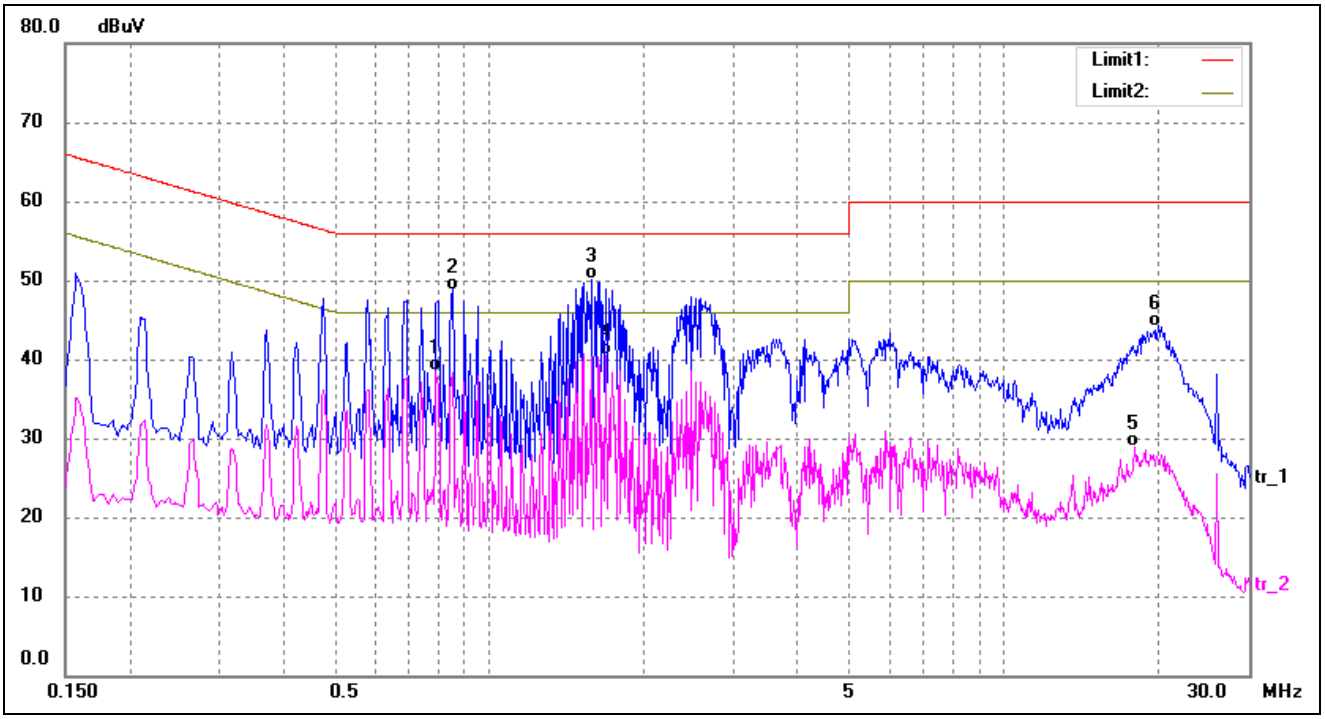
-1.40 dB at 0.5860 MHz in the **Line** mode**, Average** detector, **0.15-30MHz**

10.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

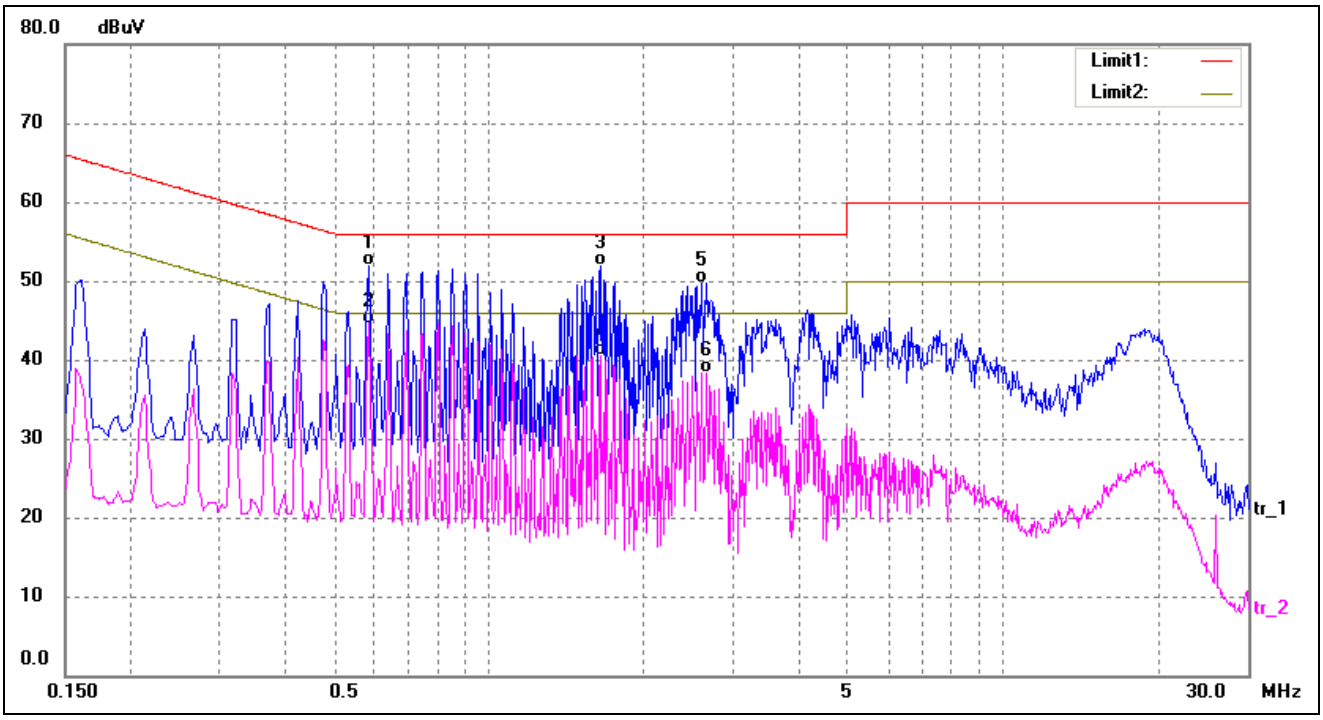
EUT: *Smart Phone*
Tested Model: *Philips S359*
Operating Condition: *Transmitting(Wi-Fi)*
Comment: *DC 5V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.7900	28.63	9.78	38.41	46.00	-7.59	AVG
2	0.8500	39.03	9.77	48.80	56.00	-7.20	QP
3	1.5820	40.37	9.75	50.12	56.00	-5.88	QP
4*	1.6860	30.84	9.74	40.58	46.00	-5.42	AVG
5	17.9660	19.19	9.65	28.84	50.00	-21.16	AVG
6	19.9940	34.52	9.68	44.20	60.00	-15.80	QP

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.5860	42.07	9.79	51.86	56.00	-4.14	QP
2*	0.5860	34.81	9.79	44.60	46.00	-1.40	AVG
3	1.6460	42.13	9.74	51.87	56.00	-4.13	QP
4	1.6460	30.77	9.74	40.51	46.00	-5.49	AVG
5	2.6020	39.93	9.72	49.65	56.00	-6.35	QP
6	2.6540	28.61	9.72	38.33	46.00	-7.67	AVG

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