中国认可
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检测
TESTING
CNAS L8469

APPLICATION FOR CERTIFICATION
On Behalf of
Hewlett Packard Enterprise
Server

Model No.	:	HSTNS-5231
Brand	:	HEWLETT PACKARD ENTERPRISE
FCC ID	:	2ARBSEL8000530S

Prepared for

Hewlett Packard Enterprise
11445 Compaq Center Dr W Houston TX 77070 United States

Prepared by

Audix Technology (Wujiang) Co., Ltd. EMC Dept.
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Report No.	:	ACWE-F1906004
Date of Test	:	May 18~27, 2019
Date of Report	:	Jun.13, 2019

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Description Page

TEST REPORT CERTIFICATION

Applicant	:	Hewlett Packard Enterprise
Manufacturer	:	Hewlett Packard Enterprise
Factory	:	Refer to section 3.1
EUT Description	:	Server
FCC ID	:	2ARBSEL8000530S
(A) Model No.	:	HSTNS-5231
(B) Brand	:	HEWLETT PACKARD ENTERPRISE
(C) Power Supply	:	AC 120V/60Hz
(D) Test Voltage	:	AC 120V/60Hz

Applicable Standards:

47 CFR FCC Part 15 Subpart C
ANSI C63.10:2013
KDB 558074 D01 DTS Meas Guidance v05r02

The device described above was tested by Audix Technology (Wujiang) Co., Ltd. EMC Dept.to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C section 15.247 limits.

The measurement results are contained in this test report and Audix Technology (Wujiang) Co., Ltd. EMC Dept. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Wujiang) Co., Ltd. EMC Dept.

Date of Test: May 18~27, 2019 Date of Report: Jun.13, 2019

Prepared by : Emma Hu
(Emma Hu/Assistant Administrator)

Approved & Authorized Signer : Ken Lu
(Ken Lu/Assistant General Manager)

TESTING
NVLAP LAB CODE 200786-0

1. DESCRIPTION OF VERSION

Edition No.	Date of Rev.	Summary	Report No.
0	Jun.13, 2019	Original Report.	ACWE-F1906004

2. SUMMARY OF MEASUREMENTS AND RESULTS

The EUT have been tested according to the applicable standards as referenced below.

Rule	Description	Results
15.207	Conducted Emission	**PASS**
15.247(d)/ 15.205	Radiated Band Edge and Radiated Spurious Emission	**PASS**
15.247(a)(2)	6dB Bandwidth	**PASS**
15.247(b)(3)	Maximum Output Power	**PASS**
15.247(d)	Conducted Band Edges and Conducted Spurious Emission	**PASS**
15.247 (e)	Peak Power Spectral Density	**PASS**
15.203	Antenna Requirement	**Compliance**

3. GENERAL INFORMATION

3.1. Description of Device (EUT)

Description	:	Server
Model No.	:	HSTNS-5231
FCC ID	:	2ARBSEL8000530S
Brand	:	HEWLETT PACKARD ENTERPRISE
Applicant	:	Hewlett Packard Enterprise 11445 Compaq Center Dr W Houston TX 77070 United States
Manufacturer	:	Hewlett Packard Enterprise 11445 Compaq Center Dr W Houston TX 77070 United States
Factory#1	:	INVENTEC (PUDONG) TECHNOLOGY CORPORATION NO.789, PUXING ROAD, CAOHEJING EXPORT PROCESSING ZONE, MINHANG DISTRICT, SHANGHAI, CHINA
Factory#2	:	IEC TECHNOLOGIES, S. DE R.L. DE C.V. DEL NORTE INDUSTRIAL CENTER #1,BOULEVARD INDEPENDENCIA #10150,COL. MUNICIPLO LIBRE, C.P. 32450 GIUDAD JUAREZ, CHIHUAHUA, MEXICO
Factory#3	:	FOXCONN CZ S R O KARLOV 245 284 01 KUTNA HORA CZECH REPUBLIC
Factory#4	:	HEWLETT PACKARD ENTERPRISE SINGAPORE PTE LTD 452 ALEXANDRA RD SINGAPORE 119961 SINGAPORE
Factory#5	:	ECMMS S A DE C V BLVD OSCAR FLORES SANCHEZ 8951 COL PUENTE ALTO 32690 JUAREZ CHIH MEXICO
Factory#6	:	HEWLETT PACKARD ENTERPRISE COMPANY 100 NORTH CASHMAN DRIVE,CHIPPEWA FALLS, WI 54729, USA
Factory#7	:	FLEXTRONICS AMERICA, LLC 12455 RESEARCH BOULEVARD AUSTIN TX 78759 UNITED STATES OF AMERICA
Factory#8	:	FLEXTRONICS INTERNATIONAL TECNOLOGIA LTDA. AV LIBERDADE N6315.BAIRRO IPORANGA SP SOROCABA.18087-170 BRAZIL
Factory#9	:	NEC PLATFORMS LTD 1088-3 OTSU-MACHI, KOFU-SHI YAMANASHI, 400-0055 JAPAN

3.2. Antenna Information

Frequency (MHz)	Gain(dBi)
2400-2500	2.38
5150-5250	3.25
5250-5350	3.25
5470-5725	3.78
5725-5850	3.94

3.3. EUT Specification Assessed in Current Report

Mode	Fundamental Range (MHz)	Channel Number	Modulation	Data Rate (Mbps)
802.11b	2412-2462	11	DSSS (DBPSK/DQPSK/CCK)	Up to 11
802.11g		11	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 54
802.11n-HT20				Up to 144.4

Channel List	
802.11 b/g/n-HT20	
Channel Number	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

3.4. Test Power Setting&Software

Mode	Channel	Power Setting
802.11b	1	15
	6	15
	11	15
802.11g	1	15
	6	15
	11	15
802.11n-HT20	1	13
	6	13
	11	13
Test Software	Putty	

3.5. EUT's Configuration

	Item	Brand	Model	Spec
2U node(Top)	Memory*12	Micron	MTA144ASQ16G72LSZ-2S9E1TG , 2933	128G*12
	M.2*6	HP	MS000400KWDUR	400G
			VS000480KWDUP	480G
			VS000960KWDVQ	960G
			MS000400KWDVR	400G
		ADATA	IM2S33D4-120GP	120G
		Toshiba	KXG50ZNV512G	512G
	Optical fiber Card*1	Foxconn	P09500-001	
	CPU*1	Intel	Cascade Lake 3.7 GHz 8c, 6244,QPKX	3.7GHz
2U node(Bottom)	Memory*1	Micron	MTA9ASF1G72PZ-2G9E1VG, 2933	8G
	M.2*1	ADATA	IM2S33D4-120GP	120G
	Optical fiber Card*1	Foxconn	P09500-001	
	CPU*1	Intel	Cascade Lake 3.7 GHz 8c, 6244, QPKX	3.7GHz
Management module*1		Foxconn	P09478-001	
Power Supply*2		Murata	D1U54P-W-1500-12-HC4TC-HP *2	

3.6. Data Rate Relative to Output Power

802.11b		
Channel	Data Rate	Power(dBm)
1	1	14.85
1	2	14.83
1	5.5	14.72
1	11	14.76

802.11g		
Channel	Data Rate	Power(dBm)
1	6	14.60
1	9	14.57
1	12	14.48
1	18	14.40
1	24	14.32
1	36	14.06
1	48	13.96
1	54	13.94

802.11n-HT20		
Channel	Data Rate	Power(dBm)
1	MCS0	12.79
1	MCS1	12.74
1	MCS2	12.73
1	MCS3	12.69
1	MCS4	12.55
1	MCS5	12.38
1	MCS6	12.30
1	MCS7	12.27

3.7. Duty Cycle

Mode	Duty Cycle	Duty Cycle Factor
802.11b	100%	0
802.11g	97%	0.13
802.11n-HT20	97%	0.13

3.8. Description of Test Facility

Name of Firm	:	**Audix Technology (Wujiang) Co., Ltd. EMC Dept.**
Site Location	:	No. 1289 Jiangxing East Road, the Eastern Part of Wujiang Economic Development Zone Jiangsu China 215200
Test Facilities	:	**No.1 Conducted Shielding Enclosure** **No.2 3m Semi-anechoic Chamber** **RF Fully Chamber**
NVLAP Lab Code	:	200786-0 Valid until on Sep.30, 2019 (NVLAP is a signatory member of ILAC MRA) Remark: This report shall not be imply endorsement, certification or approval by NVLAP, NIST, or any agency of the U.S. Federal Government.

3.9. Measurement Uncertainty

Test Item	Range Frequency	Uncertainty
No.1 Conducted Disturbance Measurement	0.15MHz ~ 30MHz	± 2.65dB
Radiated Disturbance Measurement (At 3m Chamber)	30MHz ~ 300MHz	± 3.18dB
	300MHz ~ 1GHz	± 3.12dB
Radiated Disturbance Measurement (At 3m Chamber)	1GHz ~ 6GHz	± 4.56dB
	6GHz ~ 18GHz	± 5.03dB

Remark: Uncertainty = $ku_c(y)$

Test Item	Uncertainty
6 dB Bandwidth	± 0.16 MHz
Output Power	± 0.12dB
Band Edges	± 0.38dB
Power Spectral Density	± 0.38dB
Emission Limitations	± 0.38dB

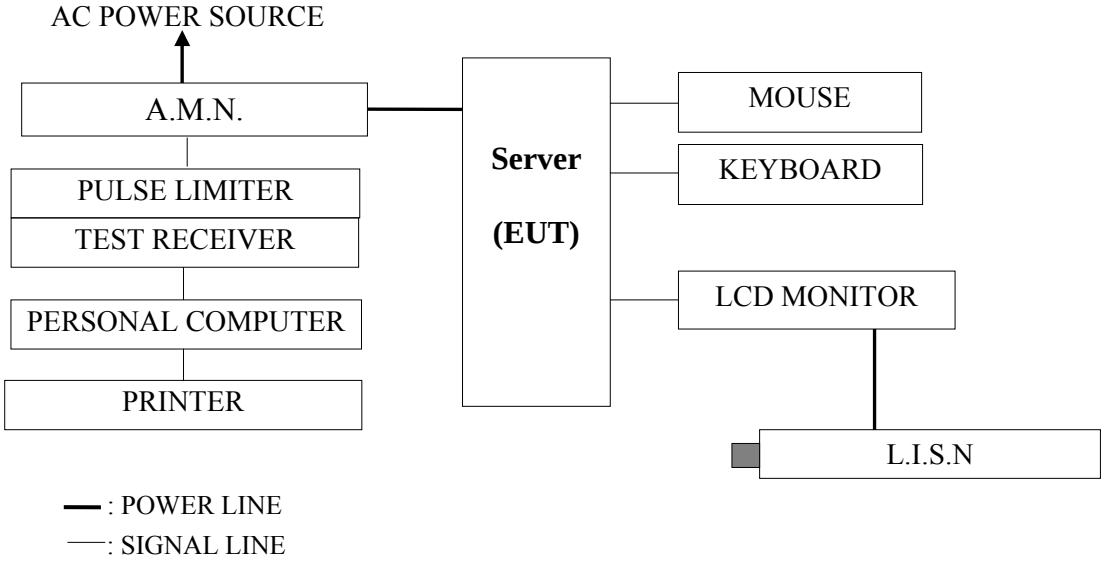
Remark: Uncertainty = $ku_c(y)$

4. CONDUCTED EMISSION MEASUREMET

4.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
1.	Test Receiver	R & S	ESCI	100351	2018-09-05	1 Year
2.	A.M.N.	R & S	ESH2-Z5	100153	2018-12-25	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-1793-3	2019-04-04	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	100605	2018-12-25	1 Year
5.	RF Cable	Shengxuan	SX-ROS400	Cable 59/2+Switch	2018-12-25	1 Year
6.	Software	Audix /e3 (9.160323)				

4.2. Block Diagram of Test Setup



4.3. Power line Conducted Emission Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dBμV	56 ~ 46 dBμV
500kHz ~ 5MHz	56 dBμV	46 dBμV
5MHz ~ 30MHz	60 dBμV	50 dBμV

Remark1: If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.

2: The lower limit applies at the band edges.

4.4. Test Procedure

The measuring process is according to ANSI C63.10-2013 and laboratory internal procedure TKC-301-004. (For FCC Part15 Subpart C)

In the conducted emission measurement, the EUT and all peripheral devices were set up on a non-metallic table which was 0.8 meter height above the ground plane, and 0.4 meter far away from the vertical plane. The mains cable of the EUT connected to one Artificial Main Network(AMN). All other unit of the EUT and AE connected to a second Line Impedance Stabilization Network(L.I.S.N.). The telecommunication cable connected to the AE through a Impedance Stabilization Network(ISN) which terminated a 50Ω resistor. For the measurement, the A.M.N measuring port was terminated by a 50Ω measuring equipment and the second L.I.S.N measuring port was terminated by a 50Ω terminator. All measurements were done between the phase lead and the reference ground, and between the neutral lead and the reference ground. All cables or wires placement were verified to find out the maximum emission.

The bandwidth of measuring receiver was set at 9 kHz.

The required frequency band (0.15 MHz ~ 30 MHz) was pre-scanned with peak detector; the final measurement was measured with quasi-peak detector and average detector. (If the average limit is met when using a quasi-peak detector, the average detector is unnecessary).

The emission level is calculated automatically by the test system which uses the following equation:

Emission level (dBμV) = Reading (dBμV) + A.M.N factor (dB) + Cable loss (dB).
(Cable loss includes Pulse Att+Cable+Switch)

4.5. Conducted Emission Measurement Results

For FCC Part15 Subpart C

PASSED.

EUT was performed during this section testing and all the test results are attached in next pages.

Test Date: May 18, 2019 Temperature: 20.4℃ Humidity: 47%

Mode	Test Condition	Reference Test Data No.	
		Neutral	Line
1	TX	# 1	# 2

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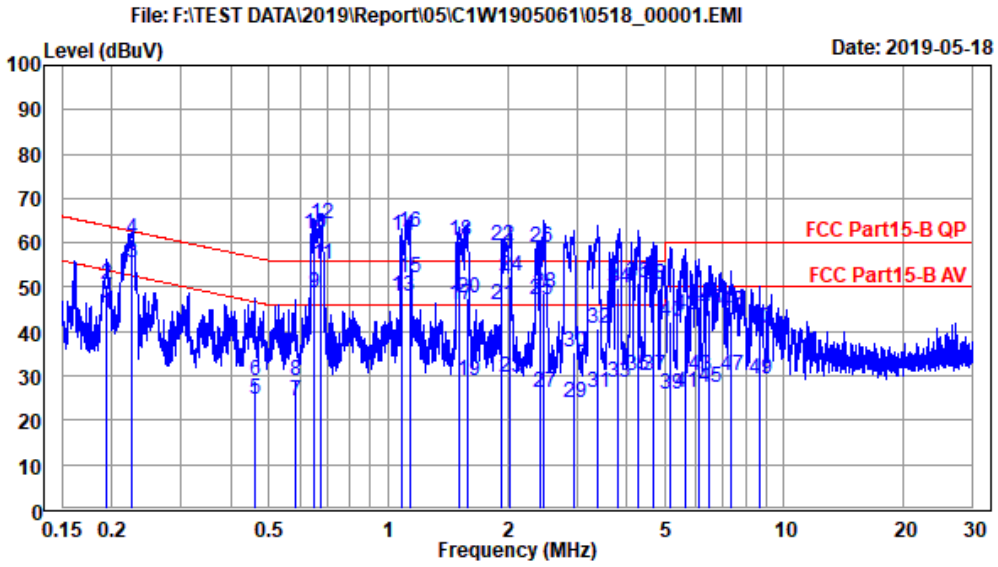

Site NO. : NO.1 Shielded Room
AMN/LISN . : ESH2-Z5 -ADP-1812
Limit : FCC Part15-B QP
Env. / Ins. : 20.4°C47%/ESCI
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX
Memo :

phase.: Neutral Data NO.:1
Engineer : HANYU

Freq. MHz	AMN. Factor dB	Cable Loss dB	Reading dBuV	Emission Level dBuV	Limits dBuV	Margin dB	Remark	
0.1943	0.18	9.90	33.89	43.97	53.85	9.88	Average	
0.1943	0.18	9.90	40.65	50.73	63.85	13.12	QP	
0.2247	0.18	9.90	45.57	55.65	52.64	-3.01	Average	*
0.2247	0.18	9.90	50.78	60.86	62.64	1.78	QP	
0.4600	0.20	9.91	14.42	24.53	46.69	22.16	Average	
0.4600	0.20	9.91	18.86	28.97	56.69	27.72	QP	
0.5819	0.20	9.91	14.30	24.41	46.00	21.59	Average	
0.5819	0.20	9.91	18.87	28.98	56.00	27.02	QP	
0.6506	0.21	9.92	38.55	48.68	46.00	-2.68	Average	*
0.6506	0.21	9.92	51.75	61.88	56.00	-5.88	QP	*
0.6772	0.21	9.92	45.11	55.24	46.00	-9.24	Average	*
0.6772	0.21	9.92	54.28	64.41	56.00	-8.41	QP	*
1.0788	0.22	9.92	37.61	47.75	46.00	-1.75	Average	*
1.0788	0.22	9.92	51.54	61.68	56.00	-5.68	QP	*
1.1315	0.23	9.92	41.81	51.96	46.00	-5.96	Average	*
1.1315	0.23	9.92	52.14	62.29	56.00	-6.29	QP	*
1.5096	0.24	9.93	35.71	45.88	46.00	0.12	Average	

marks:Emission Level =AMN factor+Cable loss(Pulse Att+Cable+Switch)+Reading

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Freq.	AMN. Factor	Cable Loss	Reading	Emission Level	Limits	Margin	Remark	
MHz	dB	dB	dBuV	dBuV	dBuV	dB		
1.5096	0.24	9.93	50.16	60.33	56.00	-4.33	QP	*
1.5846	0.24	9.93	18.55	28.72	46.00	17.28	Average	
1.5846	0.24	9.93	37.50	47.67	56.00	8.33	QP	
1.9372	0.25	9.94	35.71	45.90	46.00	0.10	Average	
1.9372	0.25	9.94	49.15	59.34	56.00	-3.34	QP	*
2.0249	0.25	9.94	19.33	29.52	46.00	16.48	Average	
2.0249	0.25	9.94	42.38	52.57	56.00	3.43	QP	
2.4220	0.27	9.95	36.79	47.01	46.00	-1.01	Average	*
2.4220	0.27	9.95	48.57	58.79	56.00	-2.79	QP	*
2.4759	0.27	9.95	16.05	26.27	46.00	19.73	Average	
2.4759	0.27	9.95	38.27	48.49	56.00	7.51	QP	
2.9463	0.29	9.96	13.69	23.94	46.00	22.06	Average	
2.9463	0.29	9.96	24.93	35.18	56.00	20.82	QP	
3.3926	0.31	9.96	15.88	26.15	46.00	19.85	Average	
3.3926	0.31	9.96	30.41	40.68	56.00	15.32	QP	
3.8237	0.32	9.97	18.05	28.34	46.00	17.66	Average	
3.8237	0.32	9.97	39.53	49.82	56.00	6.18	QP	
4.2642	0.33	9.97	19.69	29.99	46.00	16.01	Average	
4.2642	0.33	9.97	40.83	51.13	56.00	4.87	QP	
4.6975	0.34	9.98	19.81	30.13	46.00	15.87	Average	
4.6975	0.34	9.98	40.24	50.56	56.00	5.44	QP	
5.1825	0.36	9.98	15.66	26.00	50.00	24.00	Average	
5.1825	0.36	9.98	31.97	42.31	60.00	17.69	QP	
5.6228	0.38	9.99	15.85	26.22	50.00	23.78	Average	
5.6228	0.38	9.99	33.45	43.82	60.00	16.18	QP	
6.1035	0.40	10.00	19.47	29.87	50.00	20.13	Average	
6.1035	0.40	10.00	35.31	45.71	60.00	14.29	QP	
6.4997	0.41	10.00	16.96	27.37	50.00	22.63	Average	
6.4997	0.41	10.00	34.40	44.81	60.00	15.19	QP	
7.3757	0.44	10.01	19.47	29.92	50.00	20.08	Average	
7.3757	0.44	10.01	33.90	44.35	60.00	15.65	QP	
8.7053	0.49	10.03	18.75	29.27	50.00	20.73	Average	
8.7053	0.49	10.03	30.28	40.80	60.00	19.20	QP	

marks:Emission Level =AMN factor+Cable loss(Pulse Att+Cable+Switch)+Reading

"*" means the emission higher than limit were confirmed not emitted from RF transmitter are subject to FCC 15.107.

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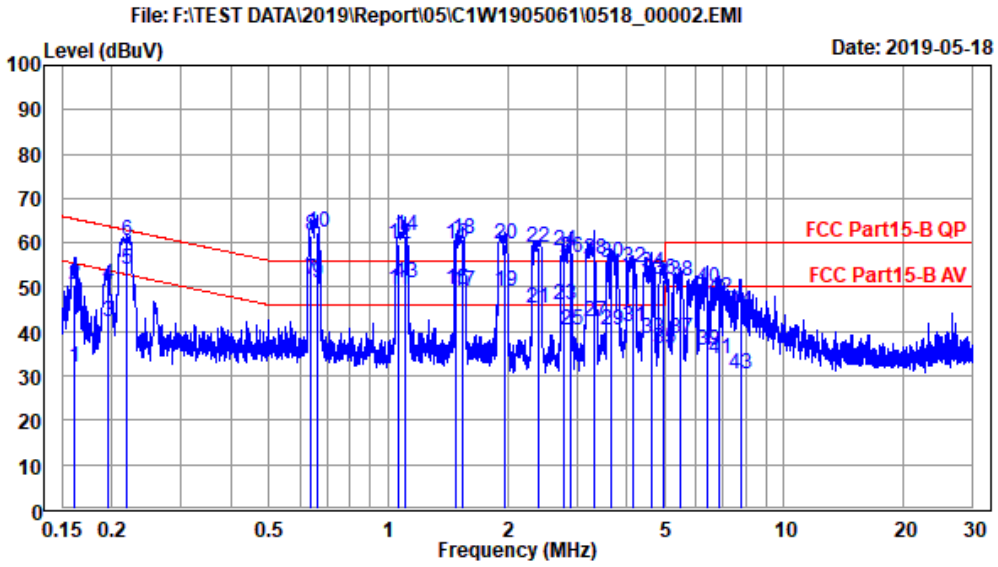

Site NO. : NO.1 Shielded Room
AMN/LISN . : ESH2-Z5 -ADP-1812
Limit : FCC Part15-B QP
Env. / Ins. : 20.4°C47%/ESCI
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX
Memo :

phase.: Line Data NO.:2
Engineer : HANYU

Freq. MHz	AMN. Factor dB	Cable Loss dB	Reading dBuV	Emission Level dBuV	Limits dBuV	Margin dB	Remark	
0.1618	0.30	9.90	21.81	32.01	55.37	23.36	Average	
0.1618	0.30	9.90	40.22	50.42	65.37	14.95	QP	
0.1952	0.30	9.90	32.02	42.22	53.81	11.59	Average	
0.1952	0.30	9.90	40.29	50.49	63.81	13.32	QP	
0.2189	0.30	9.90	43.92	54.12	52.86	-1.26	Average	*
0.2189	0.30	9.90	50.08	60.28	62.86	2.58	QP	
0.6368	0.33	9.92	41.49	51.74	46.00	-5.74	Average	*
0.6368	0.33	9.92	51.27	61.52	56.00	-5.52	QP	*
0.6639	0.33	9.92	40.61	50.86	46.00	-4.86	Average	*
0.6639	0.33	9.92	52.16	62.41	56.00	-6.41	QP	*
1.0604	0.34	9.92	39.33	49.59	46.00	-3.59	Average	*
1.0604	0.34	9.92	49.55	59.81	56.00	-3.81	QP	*
1.1019	0.34	9.92	40.75	51.01	46.00	-5.01	Average	*
1.1019	0.34	9.92	51.19	61.45	56.00	-5.45	QP	*
1.4877	0.36	9.93	39.01	49.30	46.00	-3.30	Average	*
1.4877	0.36	9.93	49.58	59.87	56.00	-3.87	QP	*
1.5435	0.36	9.93	38.92	49.21	46.00	-3.21	Average	*

marks:Emission Level =AMN factor+Cable loss(Pulse Att+Cable+Switch)+Reading

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Freq. MHz	AMN. Factor dB	Cable Loss dB	Reading dBuV	Emission Level dBuV	Limits dBuV	Margin dB	Remark	
1.5435	0.36	9.93	50.38	60.67	56.00	-4.67	QP	*
1.9736	0.37	9.94	38.64	48.95	46.00	-2.95	Average	*
1.9736	0.37	9.94	49.50	59.81	56.00	-3.81	QP	*
2.3883	0.39	9.95	35.09	45.43	46.00	0.57	Average	
2.3883	0.39	9.95	48.47	58.81	56.00	-2.81	QP	*
2.7721	0.40	9.95	35.76	46.11	46.00	-0.11	Average	*
2.7721	0.40	9.95	47.99	58.34	56.00	-2.34	QP	*
2.8807	0.40	9.96	29.80	40.16	46.00	5.84	Average	
2.8807	0.40	9.96	46.38	56.74	56.00	-0.74	QP	*
3.3105	0.41	9.96	31.73	42.10	46.00	3.90	Average	
3.3105	0.41	9.96	46.02	56.39	56.00	-0.39	QP	*
3.6611	0.42	9.97	29.94	40.33	46.00	5.67	Average	
3.6611	0.42	9.97	45.17	55.56	56.00	0.44	QP	
4.1713	0.43	9.97	30.54	40.94	46.00	5.06	Average	
4.1713	0.43	9.97	43.91	54.31	56.00	1.69	QP	
4.6376	0.44	9.98	28.16	38.58	46.00	7.42	Average	
4.6376	0.44	9.98	42.90	53.32	56.00	2.68	QP	
4.9617	0.45	9.98	25.80	36.23	46.00	9.77	Average	
4.9617	0.45	9.98	41.14	51.57	56.00	4.43	QP	
5.4800	0.47	9.99	27.94	38.40	50.00	11.60	Average	
5.4800	0.47	9.99	40.96	51.42	60.00	8.58	QP	
6.3986	0.50	10.00	25.40	35.90	50.00	14.10	Average	
6.3986	0.50	10.00	39.19	49.69	60.00	10.31	QP	
6.8548	0.52	10.01	23.15	33.68	50.00	16.32	Average	
6.8548	0.52	10.01	37.11	47.64	60.00	12.36	QP	
7.7586	0.55	10.02	19.74	30.31	50.00	19.69	Average	
7.7586	0.55	10.02	34.08	44.65	60.00	15.35	QP	

marks:Emission Level =AMN factor+Cable loss(Pulse Att+Cable+Switch)+Reading

"*" means the emission higher than limit were confirmed not emitted from RF transmitter are subject to FCC 15.107.

5. RADIATED EMISSION MEASUREMENT

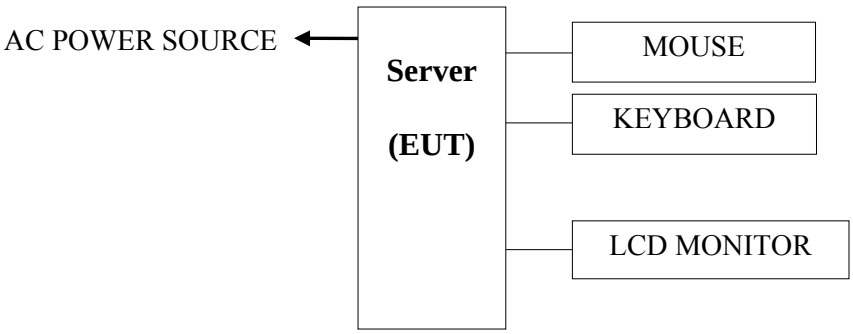
5.1. Test Equipment

The following test equipment was used during the radiated emission measurement:
At 3m Semi-Anechoic Chamber

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
1.	Preamplifier	Agilent	8447D	2944A10922	2019-04-04	1 Year
2.	Bi-log Antenna	SCHWARZBECK	VULB 9168	706	2019-02-21	1 Year
3.	Horn Antenna	ETS	3117	00218586	2019-02-21	1 Year
4.	Microwave Preamplifier	Agilent	8449B	3008A02233	2019-04-12	1 Year
5.	EMI Test Receiver	R&S	ESR7	101956	2019-04-10	1 Year
6.	RF Cable	Shengxuan	SX-ROS400	3m(50/2+59/5)	2018-12-25	1 Year
7.	RF Cable	Huber+Shuner	SUCOFLEX 104	MY2865/2+MY 2863/2	2018-12-25	1 Year
8.	Software	Audix /e3 (9.160323)				

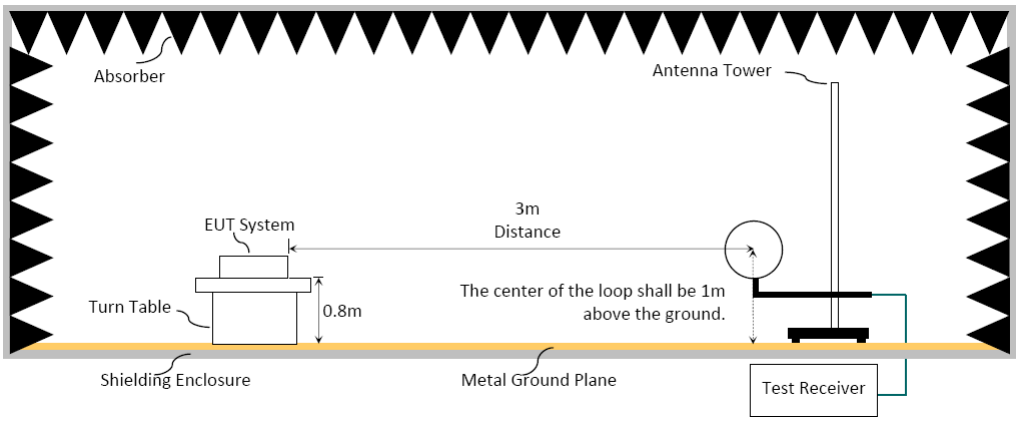
5.2. Block Diagram of Test Setup

5.2.1. Block Diagram of Test Setup between EUT and simulators

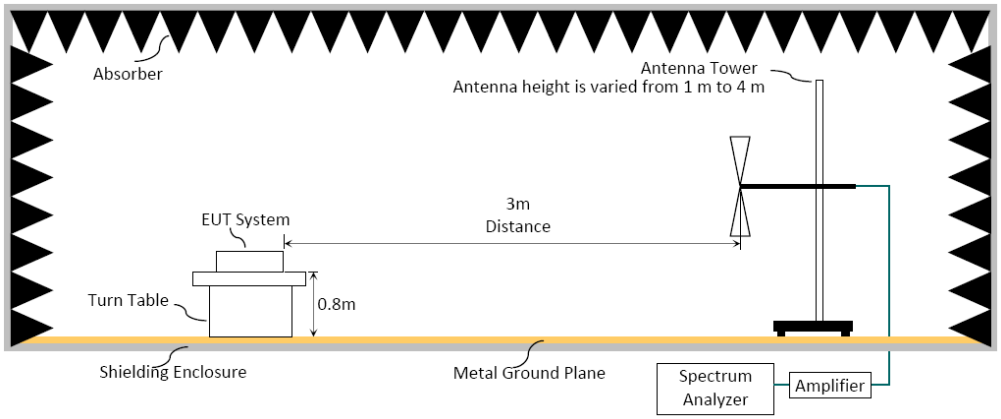


—— : POWER LINE
—— : SIGNAL LINE

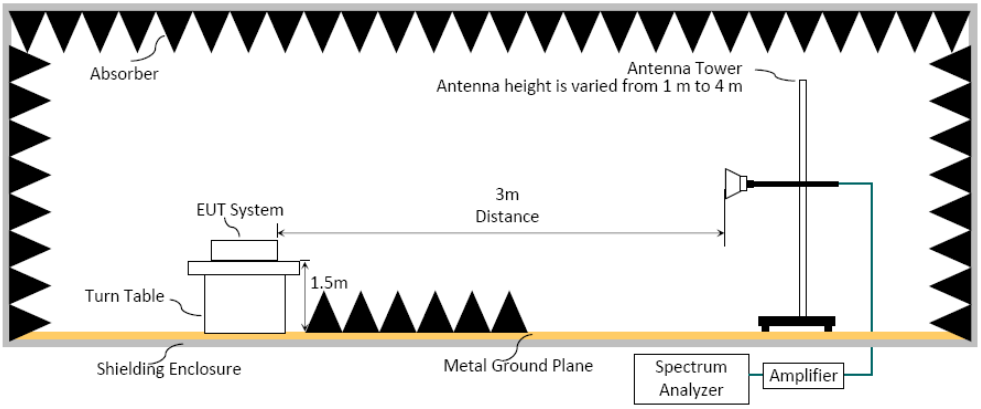
5.2.2. No. 1 3m Semi-Anechoic Chamber Setup Diagram (Test distance: 3m) for 9kHz-30MHz



5.2.3. No. 1 3m Semi-Anechoic Chamber Setup Diagram (Test distance: 3m) for 30MHz-1GHz



5.2.4. No. 1 3m Semi-Anechoic Chamber Setup Diagram (Test distance: 3m) for Above 1GHz



5.3. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance (m)	Limits	
		dBμV/m	μV/m
0.009 - 0.490	300	67.6-20 log f(kHz)	2400/f kHz
0.490 - 1.705	30	87.6-20 log f(kHz)	24000/f kHz
1.705 - 30	30	29.5	30
30 - 88	3	40.0	100
88- 216	3	43.5	150
216- 960	3	46.0	200
Above 960	3	54.0	500
Above 1000	3	74.0 dBμV/m (Peak) 54.0 dBμV/m (Average)	

Remark: (1) dBμV/m = 20 log (μV/m)

(2)The tighter limit applies to the edge between two frequency bands.

(3)Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

(4)Fundamental and emission fall within operation band are exempted from this section.

(5)Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

5.4. Test Procedure

Frequency Range 9kHz~30MHz:
The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level.
In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

(1) RBW = 9kHz with peak and average detector.
(2) Detector: average and peak (9kHz-490kHz)
Q.P. (490kHz-30MHz)

Frequency Range 30MHz ~ 25GHz:
The EUT setup on the turn table which has 80 cm (for 30-1000 MHz) and 1.5m (for above 1GHz) height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

Frequency below 1 GHz:
Spectrum Analyzer is used for pre-testing with following setting:

(1)RBW = 120KHz
(2)VBW ≥ 3 x RBW.
(3)Detector = Peak.
(4)Sweep time = auto.
(5)Trace mode = max hold.
(6)Allow sweeps to continue until the trace stabilizes.
(7)When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required, otherwise using Q.P. for final measurement.

Frequency above 1GHz to 10th harmonic (up to 25GHz):
Peak Dector:

(1)RBW = 1MHz
(2)VBW ≥ 3 x RBW.
(3)Detector = Peak.
(4)Sweep time = auto.
(5)Trace mode = max hold.
(6)Allow sweeps to continue until the trace stabilizes.
(7)When peak-detected value is lower than limit that the measurement using the average detector is not required, otherwise using average detector for final measurement.

5.5. Measurement Results

PASSED

The EUT was tested in restricted bands and all the test results are listed in next page.
The frequency range from 9kHz to 10th harmonic(25GHz) are checked, and the emission (9kHz~30MHz,18GHz~25GHz)not reported for there is no emission be found.

5.5.1. Emission Measurement Results (For Below 1GHz)

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 9168-706-1902-3M
Limit : FCC PART 15B QP
Env. / Ins. : 20.9*C & 48% /ESR
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 2.4GHz
Memo :

Ant. pol.: Vertical Data NO.:148
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
81.09	14.5	1.0	47.0	27.6	34.9	40.0	5.1	QP
98.87	15.5	1.0	46.7	27.4	35.8	43.5	7.7	Peak
261.77	17.6	1.7	52.9	26.6	45.6	46.0	0.4	QP
464.56	22.9	2.2	41.3	27.8	38.6	46.0	7.4	Peak
500.45	23.5	2.3	43.3	28.0	41.1	46.0	4.9	Peak
625.58	25.7	2.6	38.2	28.1	38.4	46.0	7.6	Peak
687.66	26.5	2.7	38.7	28.1	39.8	46.0	6.2	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 9168-706-1902-3M
Limit : FCC PART 15B QP
Env. / Ins. : 20.9*C & 48% /ESR
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 2.4GHz
Memo :

Ant. pol.: Horizontal Data NO.:149
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
80.44	14.5	1.0	46.2	27.6	34.1	40.0	5.9	Peak
161.92	18.4	1.3	41.7	27.0	34.4	43.5	9.1	Peak
231.76	16.9	1.6	47.2	26.7	39.0	46.0	7.0	Peak
258.92	17.5	1.7	49.6	26.6	42.2	46.0	3.8	Peak
312.27	18.9	1.8	44.6	26.7	38.6	46.0	7.4	Peak
459.71	22.8	2.2	45.7	27.8	42.9	46.0	3.1	Peak
500.45	23.5	2.3	43.0	28.0	40.8	46.0	5.2	Peak
892.33	29.6	3.3	37.6	27.5	43.0	46.0	3.0	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

5.5.2. Emission Measurement Results (For Above 1GHz)

Mode	802.11b	Frequency	TX 2412MHz

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2412MHz
Memo :

Ant. pol.: Horizontal Data NO.:136
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1884.00	31.7	6.9	44.7	33.8	49.5	74.0	24.5	Peak
5352.00	35.6	7.6	40.8	33.3	50.7	74.0	23.3	Peak
7953.00	37.2	8.9	38.3	33.6	50.8	74.0	23.2	Peak
9908.00	38.5	8.6	35.7	33.8	49.0	74.0	25.0	Peak
11047.00	39.5	13.6	33.7	33.3	53.5	74.0	20.5	Peak
11047.17	39.5	13.6	27.5	33.3	47.3	54.0	6.7	Average
13359.00	40.6	11.1	34.0	31.6	54.1	74.0	19.9	Peak
13359.87	40.6	11.1	27.5	31.6	47.6	54.0	6.4	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:137
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1884.00	31.7	6.9	47.4	33.8	52.2	74.0	21.8	Peak
5828.00	36.1	7.8	42.2	33.4	52.7	74.0	21.3	Peak
8072.00	37.4	9.0	38.3	33.6	51.1	74.0	22.9	Peak
9908.00	38.5	8.6	38.0	33.8	51.3	74.0	22.7	Peak
11030.00	39.5	13.6	34.1	33.3	53.9	74.0	20.1	Peak
11030.61	39.5	13.6	27.6	33.3	47.4	54.0	6.6	Average
14141.00	40.4	11.4	33.6	31.5	53.9	74.0	20.1	Peak
14141.54	40.4	11.4	27.4	31.5	47.7	54.0	6.3	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11b	Frequency	TX 2462MHz

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:138
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1901.00	31.8	6.9	45.9	33.8	50.8	74.0	23.2	Peak
6712.00	36.6	8.0	36.3	33.4	47.5	74.0	26.5	Peak
8803.00	38.0	9.3	37.4	33.8	50.9	74.0	23.1	Peak
10231.00	39.1	9.8	38.8	33.7	54.0	74.0	20.0	Peak
10231.52	39.1	9.8	31.5	33.7	46.7	54.0	7.3	Average
11030.00	39.5	13.6	34.7	33.3	54.5	74.0	19.5	Peak
11030.55	39.5	13.6	27.5	33.3	47.3	54.0	6.7	Average
13427.00	40.5	11.1	30.5	31.6	50.5	74.0	23.5	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2462MHz
Memo :

Ant. pol.: Horizontal Data NO.:139
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1884.00	31.7	6.9	45.0	33.8	49.8	74.0	24.2	Peak
5794.00	36.0	7.8	41.9	33.4	52.3	74.0	21.7	Peak
8191.00	37.4	9.0	38.0	33.6	50.8	74.0	23.2	Peak
9177.00	38.4	9.2	36.7	33.8	50.5	74.0	23.5	Peak
10996.00	39.5	13.7	33.6	33.3	53.5	74.0	20.5	Peak
10996.56	39.5	13.7	27.6	33.3	47.5	54.0	6.5	Average
12322.00	40.1	10.1	32.3	32.7	49.8	74.0	24.2	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11g	Frequency	TX 2412MHz

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2412MHz
Memo :

Ant. pol.: Horizontal Data NO.:140
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1697.00	30.4	6.2	39.0	33.9	41.7	74.0	32.3	Peak
1867.00	31.6	6.8	44.2	33.8	48.8	74.0	25.2	Peak
5811.00	36.1	7.8	40.7	33.4	51.2	74.0	22.8	Peak
7868.00	37.0	8.9	37.2	33.6	49.5	74.0	24.5	Peak
8718.00	37.8	9.3	36.7	33.7	50.1	74.0	23.9	Peak
11081.00	39.5	13.4	33.7	33.3	53.3	74.0	20.7	Peak
11081.54	39.5	13.4	27.7	33.3	47.3	54.0	6.7	Average
13733.00	40.5	11.2	31.1	31.5	51.3	74.0	22.7	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
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Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:141
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1867.00	31.6	6.8	44.2	33.8	48.8	74.0	25.2	Peak
5794.00	36.0	7.8	41.2	33.4	51.6	74.0	22.4	Peak
8395.00	37.4	9.1	37.0	33.7	49.8	74.0	24.2	Peak
9075.00	38.4	9.3	37.0	33.8	50.9	74.0	23.1	Peak
9840.00	38.5	8.7	36.9	33.8	50.3	74.0	23.7	Peak
11030.00	39.5	13.6	35.3	33.3	55.1	74.0	18.9	Peak
11030.14	39.5	13.6	27.7	33.3	47.5	54.0	6.5	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11g	Frequency	TX 2462MHz

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:142
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1901.00	31.8	6.9	46.7	33.8	51.6	74.0	22.4	Peak
5318.00	35.6	7.6	38.4	33.3	48.3	74.0	25.7	Peak
7936.00	37.2	8.9	38.0	33.6	50.5	74.0	23.5	Peak
9075.00	38.4	9.3	37.7	33.8	51.6	74.0	22.4	Peak
10945.00	39.5	13.5	33.7	33.3	53.4	74.0	20.6	Peak
10945.85	39.5	13.5	27.6	33.3	47.3	54.0	6.7	Average
12730.00	40.6	10.7	30.8	32.1	50.0	74.0	24.0	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2462MHz
Memo :

Ant. pol.: Horizontal Data NO.:143
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1884.00	31.7	6.9	45.6	33.8	50.4	74.0	23.6	Peak
5811.00	36.1	7.8	41.8	33.4	52.3	74.0	21.7	Peak
8361.00	37.4	9.1	37.8	33.7	50.6	74.0	23.4	Peak
9109.00	38.4	9.3	36.8	33.8	50.7	74.0	23.3	Peak
11047.00	39.5	13.6	33.6	33.3	53.4	74.0	20.6	Peak
11047.32	39.5	13.6	27.6	33.3	47.4	54.0	6.6	Average
12679.00	40.6	10.6	32.9	32.2	51.9	74.0	22.1	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11nHT20	Frequency	TX 2412MHz

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2412MHz
Memo :

Ant. pol.: Horizontal Data NO.:144
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1867.00	31.6	6.8	45.8	33.8	50.4	74.0	23.6	Peak
1952.00	32.2	7.1	45.8	33.7	51.4	74.0	22.6	Peak
5811.00	36.1	7.8	40.2	33.4	50.7	74.0	23.3	Peak
8378.00	37.4	9.1	37.1	33.7	49.9	74.0	24.1	Peak
9041.00	38.4	9.4	37.6	33.8	51.6	74.0	22.4	Peak
10826.00	39.6	12.9	34.5	33.4	53.6	74.0	20.4	Peak
10826.14	39.6	12.9	27.8	33.4	46.9	54.0	7.1	Average
11710.00	39.5	10.8	34.1	33.2	51.2	74.0	22.8	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Audix Technology (Wu Jiang) Co.,Ltd
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:145
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1765.00	30.9	6.5	47.4	33.8	51.0	74.0	23.0	Peak
5811.00	36.1	7.8	41.3	33.4	51.8	74.0	22.2	Peak
8174.00	37.4	9.0	35.8	33.6	48.6	74.0	25.4	Peak
9092.00	38.4	9.3	36.0	33.8	49.9	74.0	24.1	Peak
10520.00	39.7	11.3	33.2	33.5	50.7	74.0	23.3	Peak
11081.00	39.5	13.4	33.5	33.3	53.1	74.0	20.9	Peak
11081.41	39.5	13.4	27.4	33.3	47.0	54.0	7.0	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11nHT20	Frequency	TX 2462MHz

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Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:146
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1901.00	31.8	6.9	45.9	33.8	50.8	74.0	23.2	Peak
5794.00	36.0	7.8	41.6	33.4	52.0	74.0	22.0	Peak
8021.00	37.4	9.0	37.2	33.6	50.0	74.0	24.0	Peak
9109.00	38.4	9.3	36.7	33.8	50.6	74.0	23.4	Peak
11013.00	39.5	13.7	33.7	33.3	53.6	74.0	20.4	Peak
11013.17	39.5	13.7	27.2	33.3	47.1	54.0	6.9	Average
11710.00	39.5	10.8	34.1	33.2	51.2	74.0	22.8	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2462MHz
Memo :

Ant. pol.: Horizontal Data NO.:147
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
1952.00	32.2	7.1	43.4	33.7	49.0	74.0	25.0	Peak
4740.00	35.6	7.2	37.5	33.3	47.0	74.0	27.0	Peak
5811.00	36.1	7.8	41.8	33.4	52.3	74.0	21.7	Peak
7086.00	36.4	8.2	37.3	33.4	48.5	74.0	25.5	Peak
8089.00	37.4	9.0	38.9	33.6	51.7	74.0	22.3	Peak
9772.00	38.5	8.7	37.2	33.8	50.6	74.0	23.4	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

5.5.3. Spurious Emission Measurement Results in Band Edge Emission

Mode	802.11b	Frequency	TX 2412MHz

Audix Technology (Wu Jiang) Co.,Ltd
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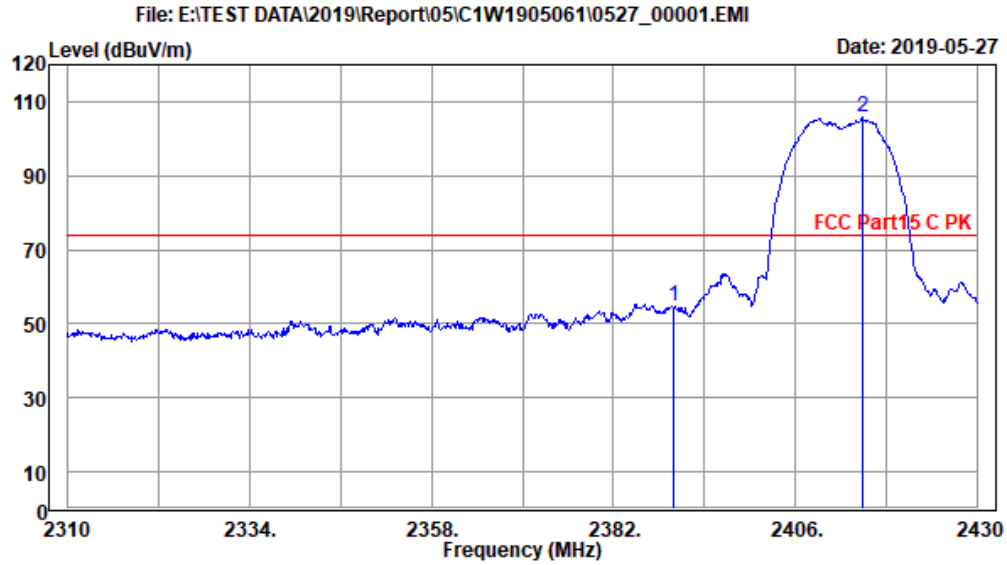
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339



Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2412MHz
Memo :

Ant. pol.: Horizontal Data NO.:1
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.00	33.3	6.3	49.0	33.7	54.9	74.0	19.1	Peak
2414.76	33.3	6.3	99.9	33.7	105.8	74.0	-31.8	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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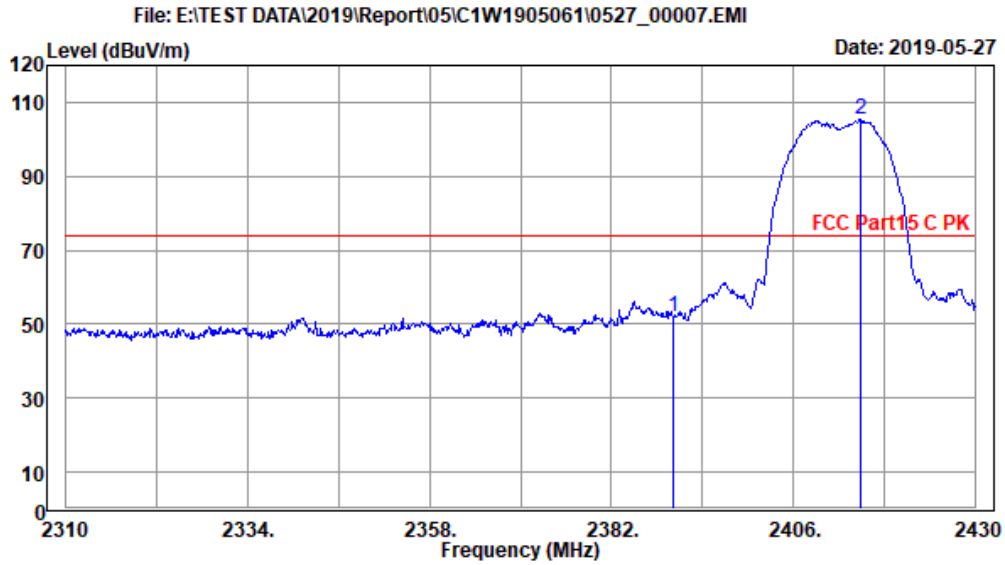
No.1289,Jiang Xing East Road,The Eastern Part of WuJiang
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339



Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:7
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	46.0	33.7	51.9	74.0	22.1	Peak
2414.76	33.3	6.3	99.7	33.7	105.6	74.0	-31.6	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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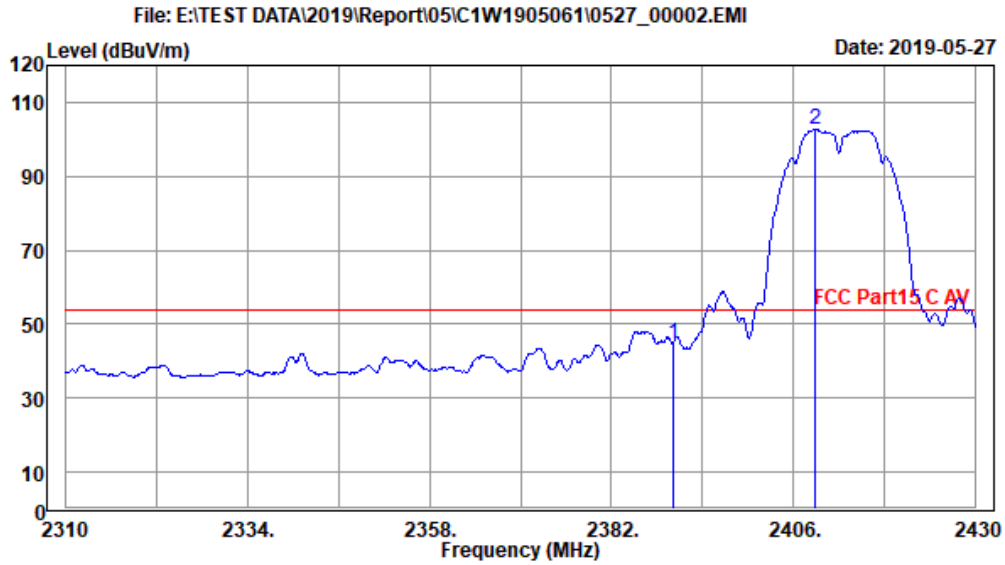
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339



Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2412MHz
Memo :

Ant. pol.: Horizontal Data NO.:2
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	38.9	33.7	44.8	54.0	9.2	Average
2408.76	33.3	6.3	96.8	33.7	102.7	54.0	-48.7	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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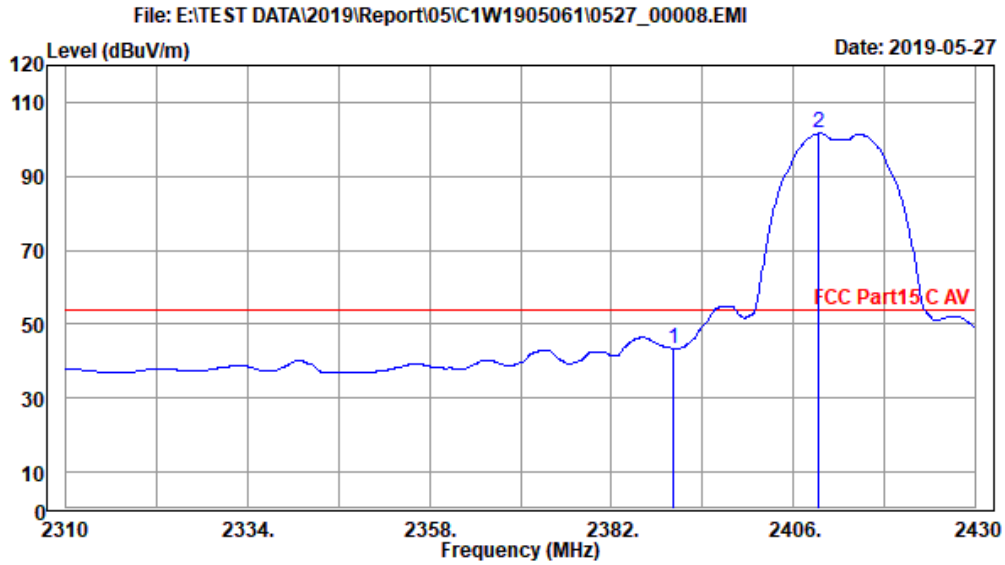

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:8
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	37.5	33.7	43.4	54.0	10.6	Average
2409.36	33.3	6.3	95.7	33.7	101.6	54.0	-47.6	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11b	Frequency	TX 2462MHz

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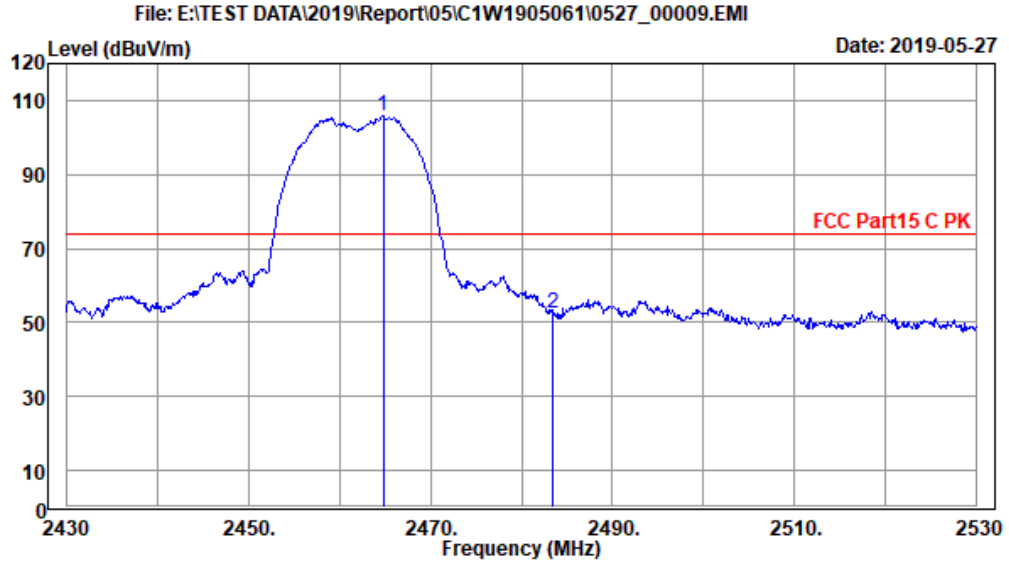

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2462MHz
Memo :

Ant. pol.: Horizontal Data NO.:9
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2464.80	33.4	6.2	99.9	33.6	105.9	74.0	-31.9	Peak
2483.50	33.5	6.1	46.4	33.6	52.4	74.0	21.6	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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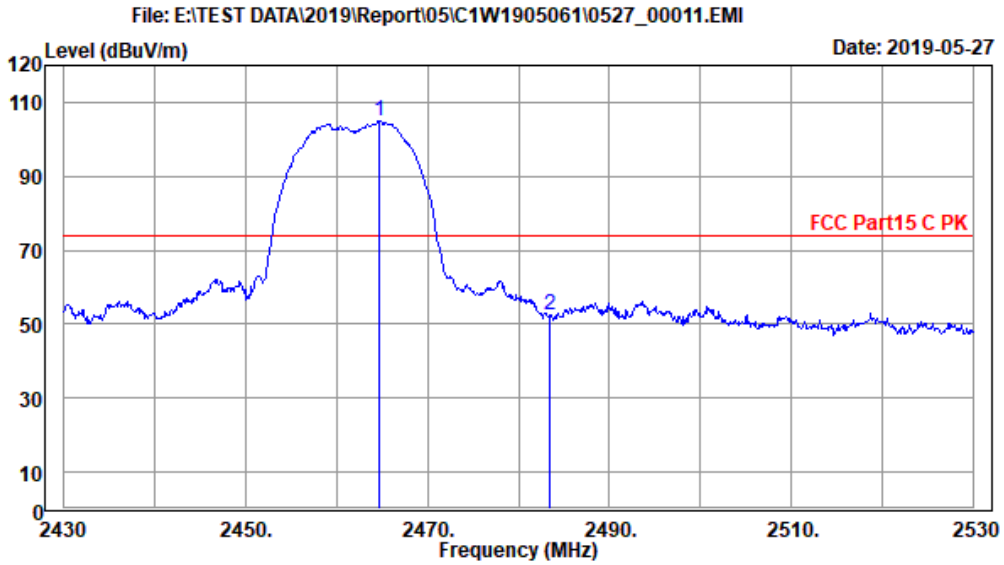

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:11
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2464.70	33.4	6.2	99.1	33.6	105.1	74.0	-31.1	Peak
2483.50	33.5	6.1	46.3	33.6	52.3	74.0	21.7	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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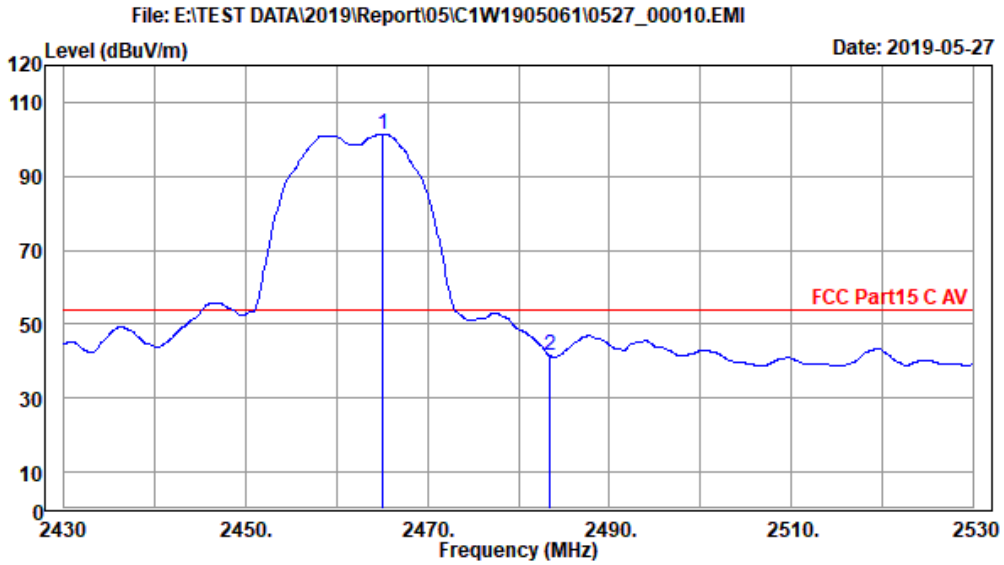

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2462MHz
Memo :

Ant. pol.: Horizontal Data NO.:10
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2465.00	33.4	6.2	95.3	33.6	101.3	54.0	-47.3	Average
2483.50	33.5	6.1	35.4	33.6	41.4	54.0	12.6	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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Economic Development Zone,JiangSu,China
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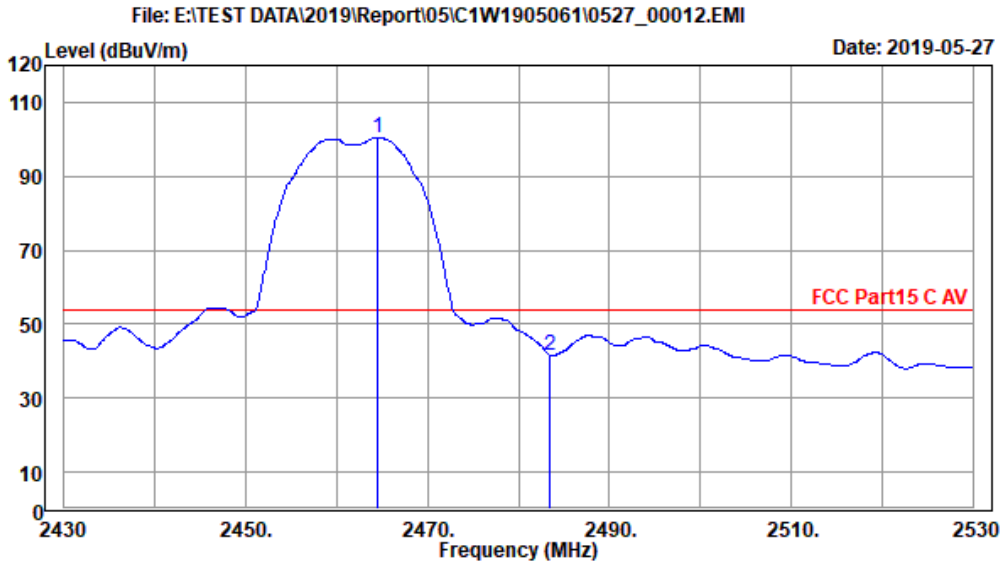

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11b 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:12
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2464.60	33.4	6.2	94.4	33.6	100.4	54.0	-46.4	Average
2483.50	33.5	6.1	35.6	33.6	41.6	54.0	12.4	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11g	Frequency	TX 2412MHz

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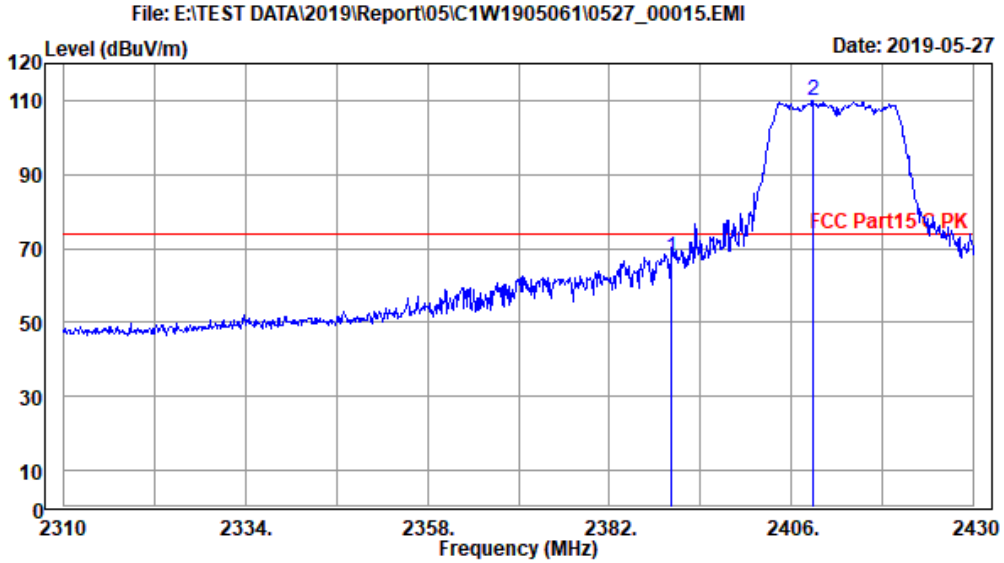
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339



Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2412MHz
Memo :

Ant. pol.: Horizontal Data NO.:15
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	61.8	33.7	67.7	74.0	6.3	Peak
2408.76	33.3	6.3	104.0	33.7	109.9	74.0	-35.9	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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Economic Development Zone,JiangSu,China
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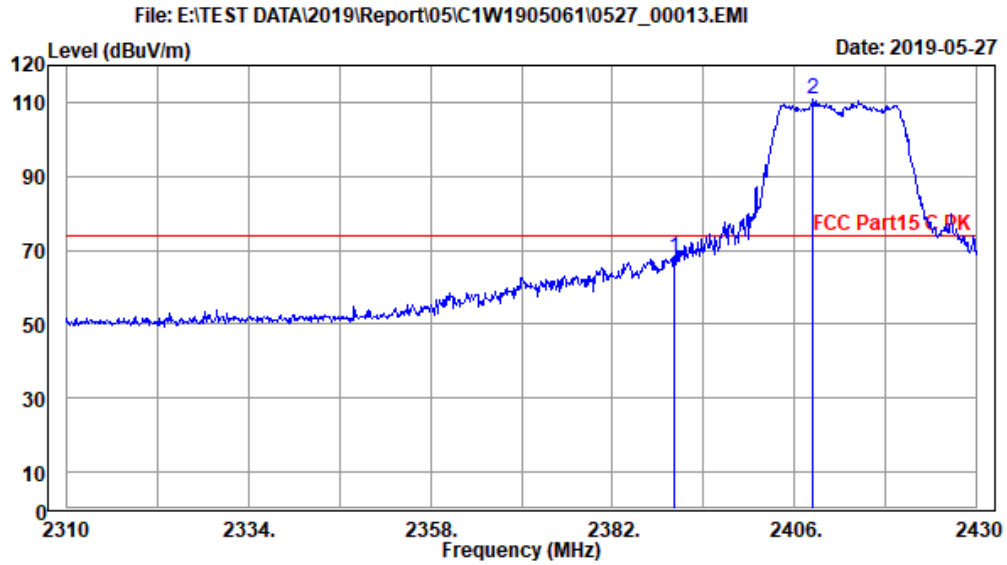

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:13
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	62.0	33.7	67.9	74.0	6.1	Peak
2408.40	33.3	6.3	104.9	33.7	110.8	74.0	-36.8	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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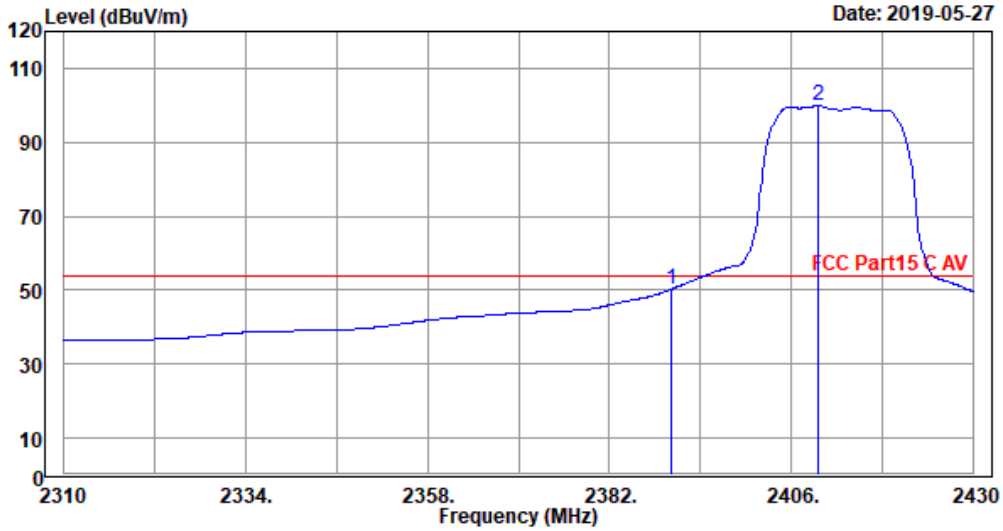

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2412MHz
Memo :

Ant. pol.: Horizontal Data NO.:16
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	44.3	33.7	50.2	54.0	3.8	Average
2409.48	33.3	6.3	93.9	33.7	99.8	54.0	-45.8	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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Economic Development Zone,JiangSu,China
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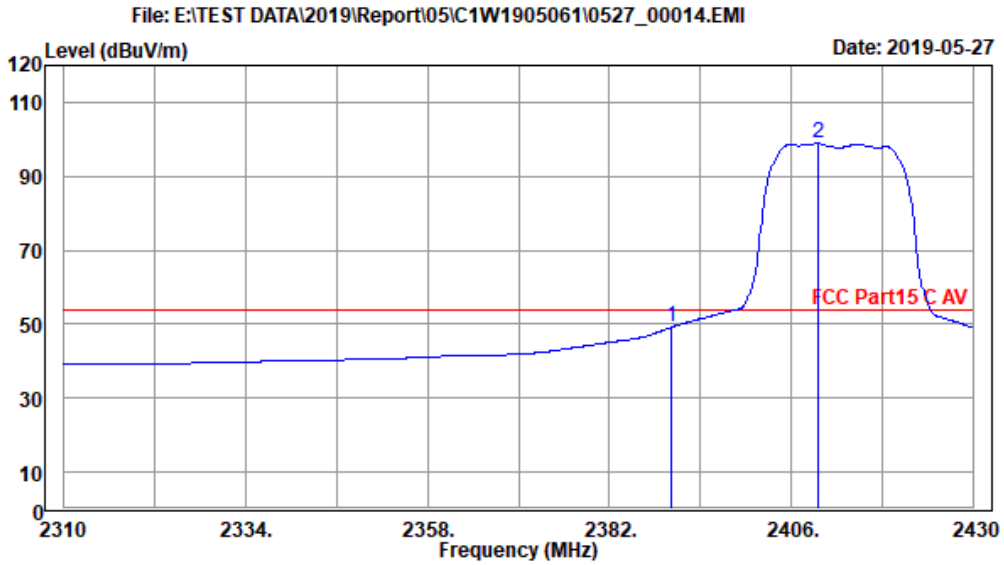

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:14
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	43.2	33.7	49.1	54.0	4.9	Average
2409.48	33.3	6.3	92.9	33.7	98.8	54.0	-44.8	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11g	Frequency	TX 2462MHz

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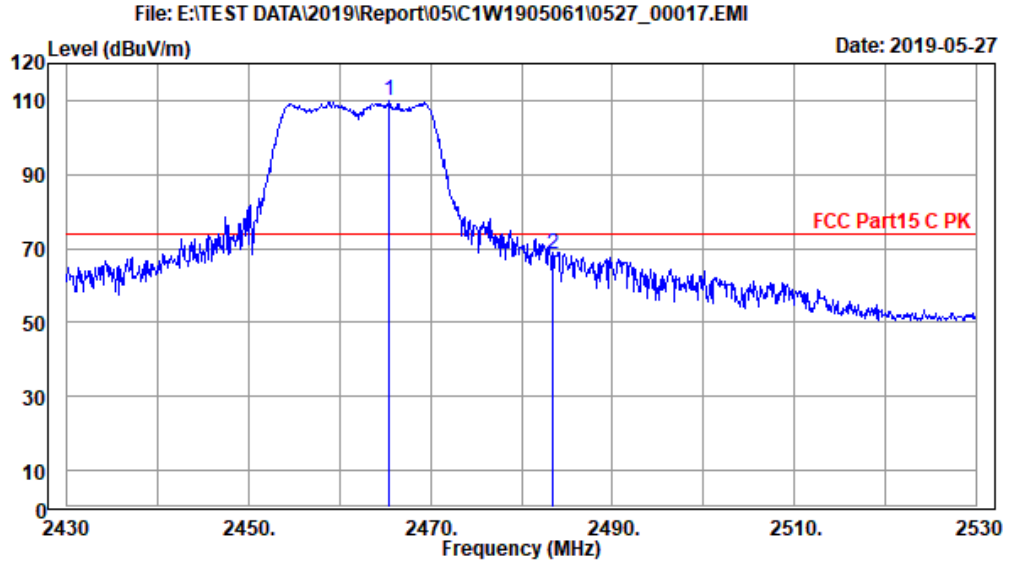
Economic Development Zone,JiangSu,China
Tel : (0512)63403993 Fax:(0512)63403339



Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2462MHz
Memo :

Ant. pol.: Horizontal Data NO.:17
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2465.40	33.4	6.2	103.8	33.6	109.8	74.0	-35.8	Peak
2483.50	33.5	6.1	62.6	33.6	68.6	74.0	5.4	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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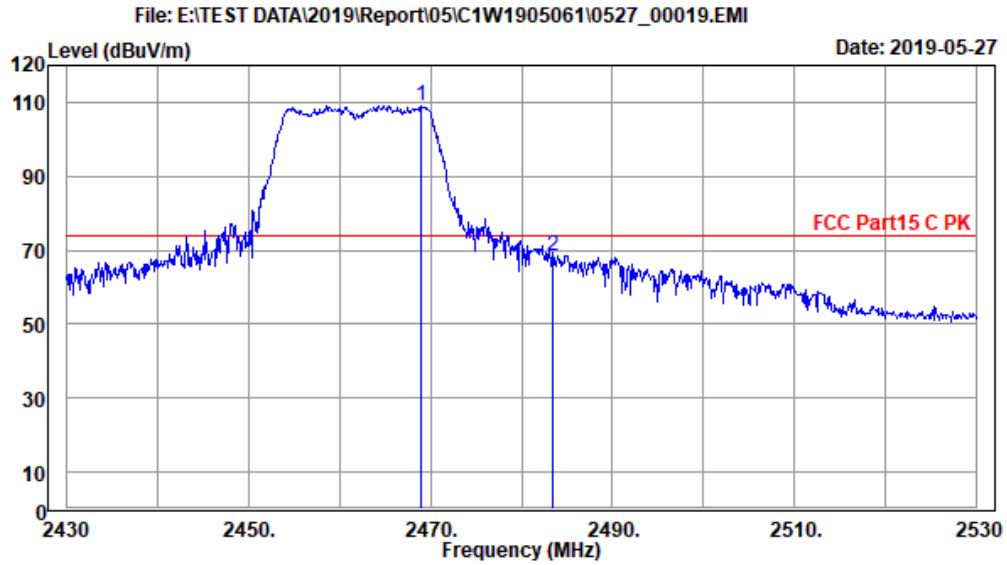

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:19
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2469.00	33.4	6.2	103.1	33.6	109.1	74.0	-35.1	Peak
2483.50	33.5	6.1	62.3	33.6	68.3	74.0	5.7	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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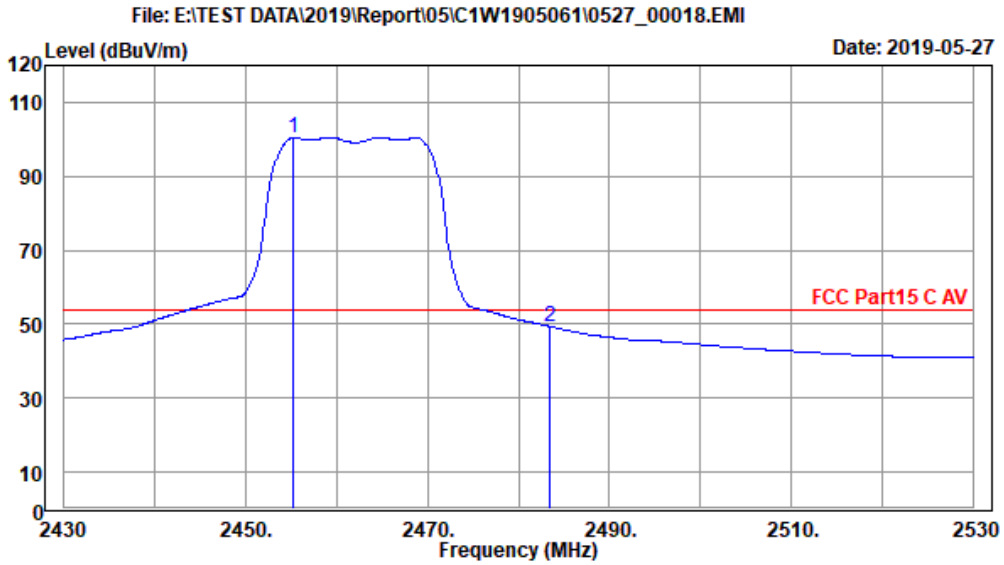

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2462MHz
Memo :

Ant. pol.: Horizontal Data NO.:18
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2455.30	33.4	6.2	94.5	33.6	100.5	54.0	-46.5	Average
2483.50	33.5	6.1	43.4	33.6	49.4	54.0	4.6	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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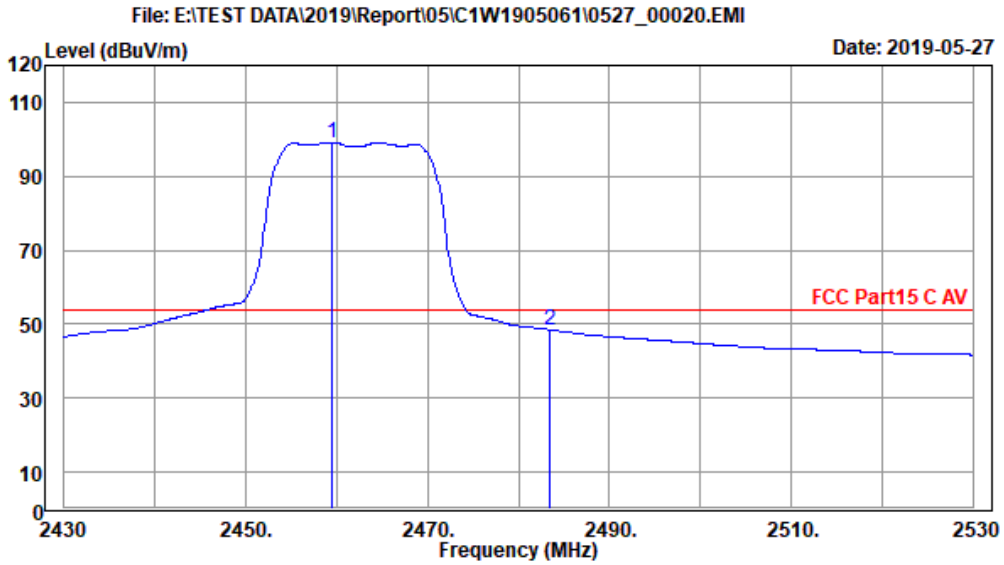

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11g 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:20
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2459.50	33.4	6.2	93.1	33.6	99.1	54.0	-45.1	Average
2483.50	33.5	6.1	42.5	33.6	48.5	54.0	5.5	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11nHT20	Frequency	TX 2412MHz

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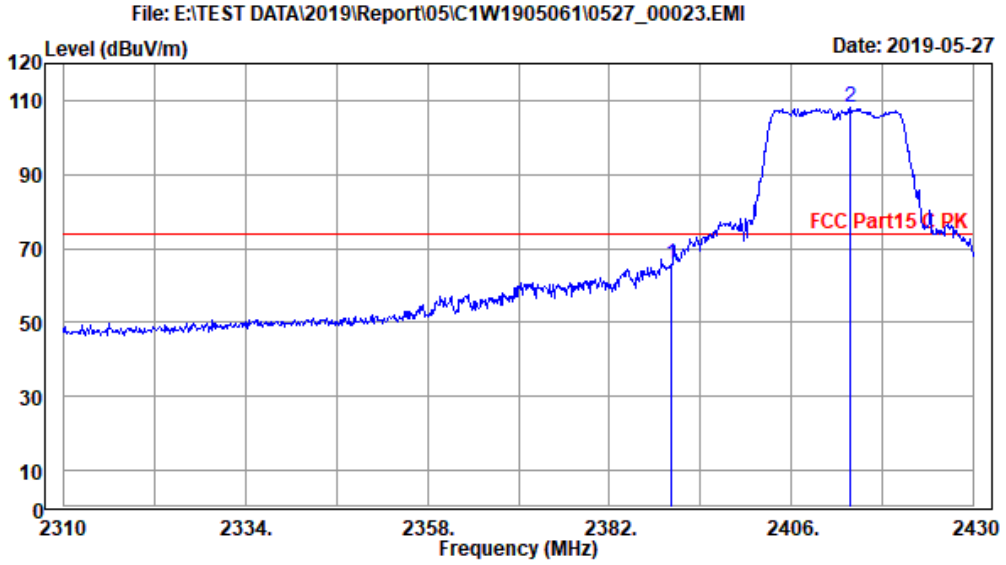


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Site NO.      : NO.2 3M chamber                 Ant. pol.: Horizontal   Data NO.:23
Dis. / Ant.   : 3117-586-1902                   Engineer : Zhangjiahui
Limit         : FCC Part15 C PK
Env. / Ins.   : 20.9*C & 48% /N9030A
EUT           : Server
M/N           : HSTNS-5231
Power Rating  : 120Vac/60Hz
Test Mode     : TX 802.11n-HT20  2412MHz
Memo          :
```

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	59.9	33.7	65.8	74.0	8.2	Peak
2413.68	33.3	6.3	102.1	33.7	108.0	74.0	-34.0	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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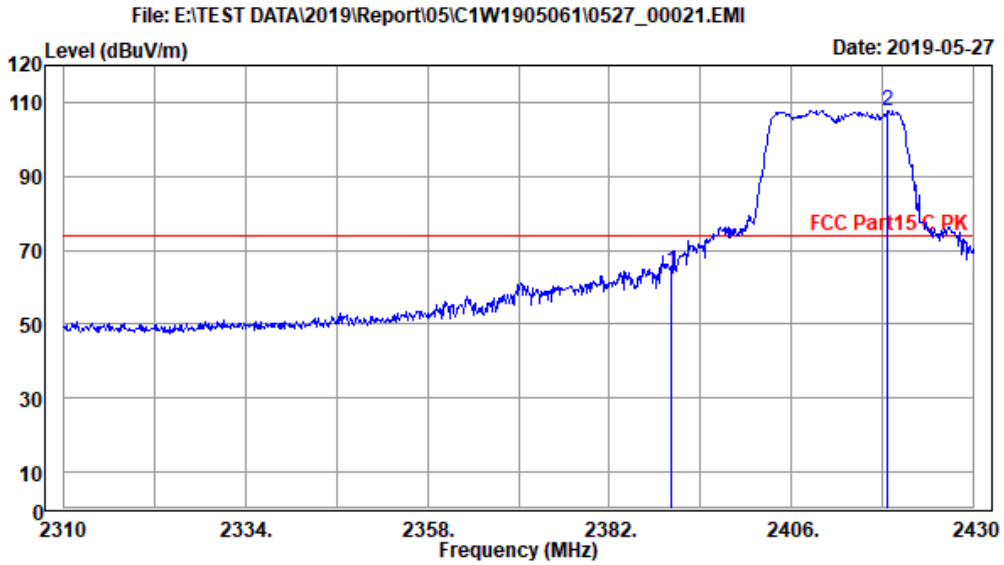

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:21
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	58.5	33.7	64.4	74.0	9.6	Peak
2418.60	33.4	6.3	101.7	33.7	107.7	74.0	-33.7	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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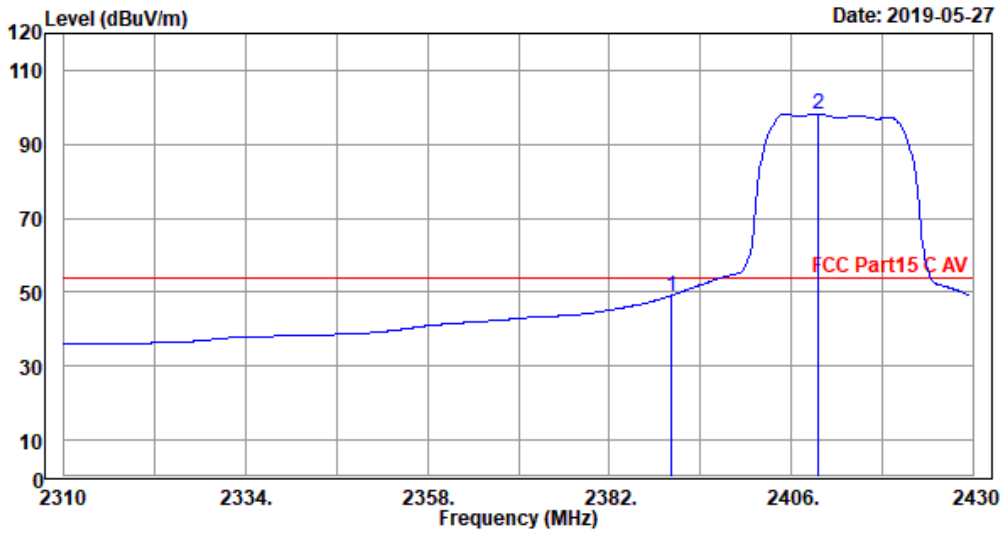

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2412MHz
Memo :

Ant. pol.: Horizontal Data NO.:24
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	43.1	33.7	49.0	54.0	5.0	Average
2409.48	33.3	6.3	92.4	33.7	98.3	54.0	-44.3	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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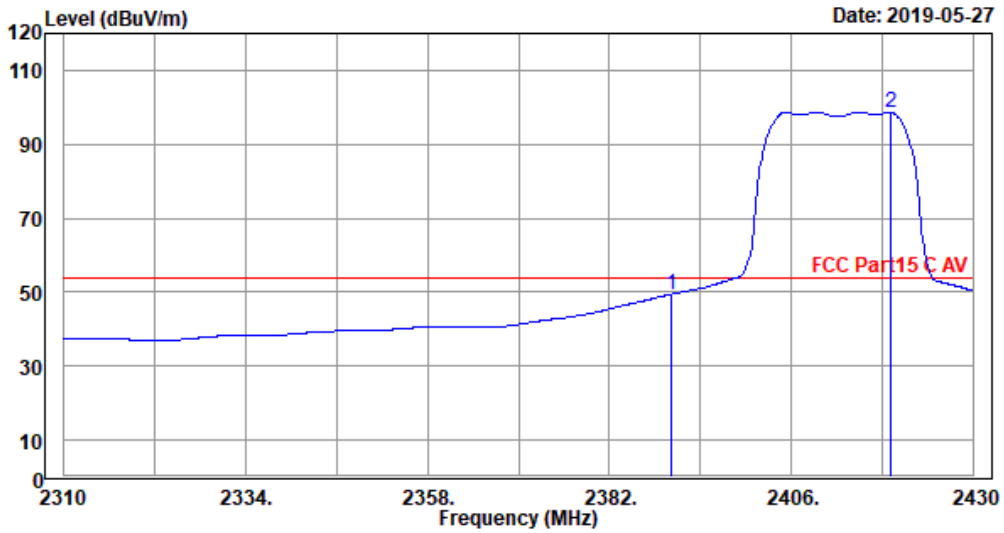

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2412MHz
Memo :

Ant. pol.: Vertical Data NO.:22
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2390.04	33.3	6.3	43.5	33.7	49.4	54.0	4.6	Average
2418.96	33.4	6.3	92.6	33.7	98.6	54.0	-44.6	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

Mode	802.11nHT20	Frequency	TX 2462MHz

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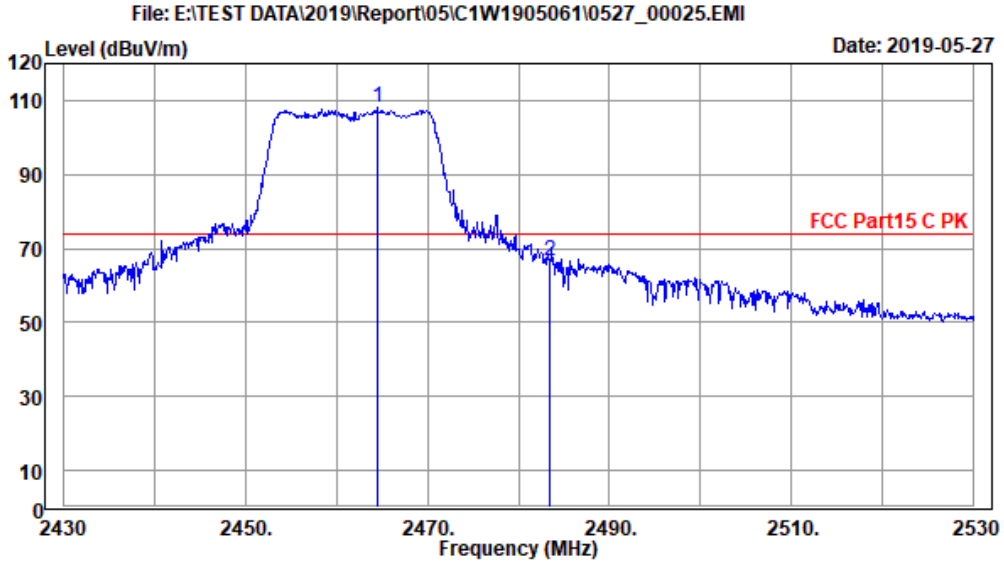


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Site NO.      : NO.2 3M chamber                 Ant. pol.: Horizontal   Data NO.:25
Dis. / Ant.   : 3117-586-1902                   Engineer : Zhangjiahui
Limit         : FCC Part15 C PK
Env. / Ins.   : 20.9*C & 48% /N9030A
EUT           : Server
M/N           : HSTNS-5231
Power Rating  : 120Vac/60Hz
Test Mode     : TX 802.11n-HT20  2462MHz
Memo          :
```

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2464.50	33.4	6.2	102.0	33.6	108.0	74.0	-34.0	Peak
2483.50	33.5	6.1	60.6	33.6	66.6	74.0	7.4	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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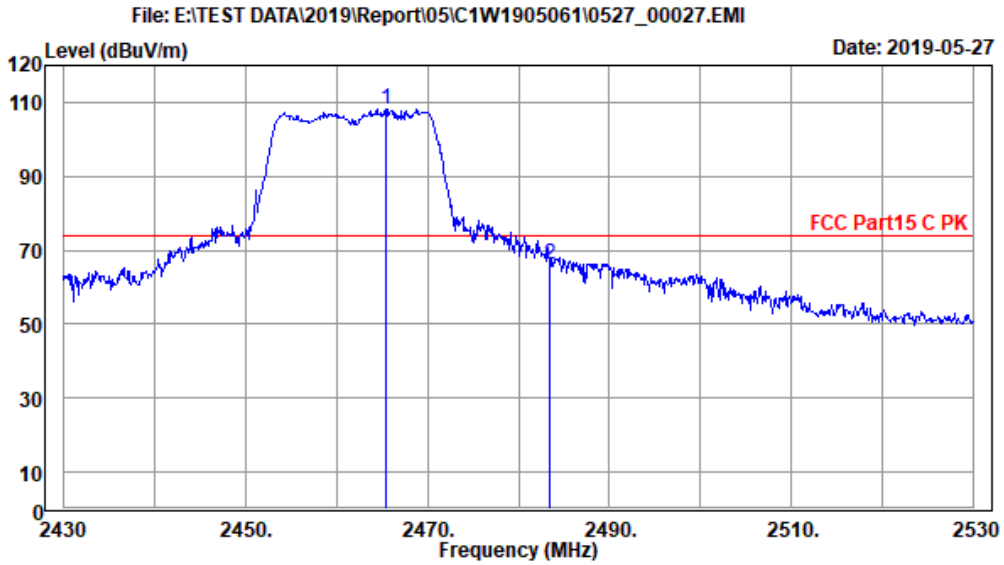

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C PK
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:27
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2465.50	33.4	6.2	102.3	33.6	108.3	74.0	-34.3	Peak
2483.50	33.5	6.1	60.3	33.6	66.3	74.0	7.7	Peak

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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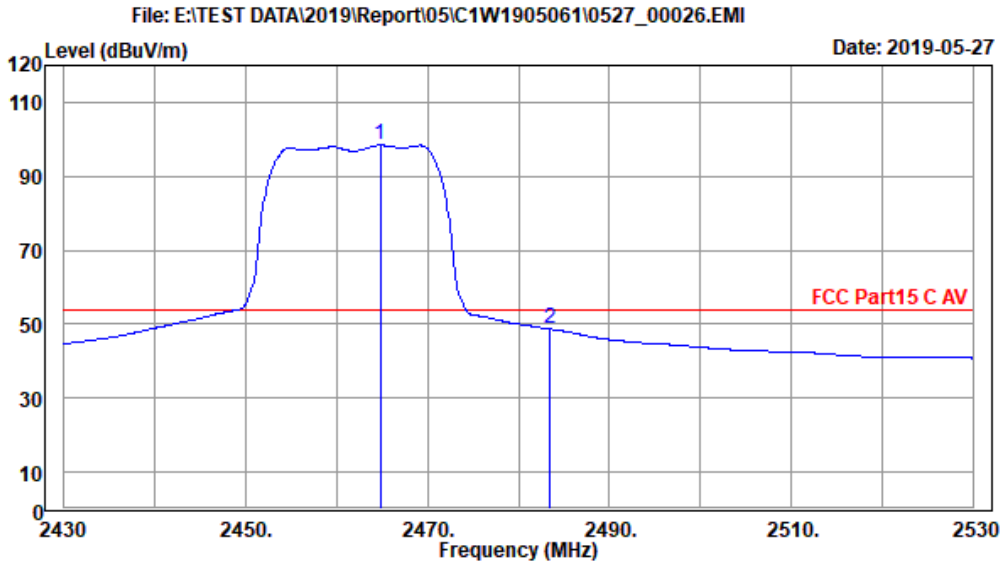

Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2462MHz
Memo :

Ant. pol.: Horizontal Data NO.:26
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2464.80	33.4	6.2	92.4	33.6	98.4	54.0	-44.4	Average
2483.50	33.5	6.1	42.7	33.6	48.7	54.0	5.3	Average

marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

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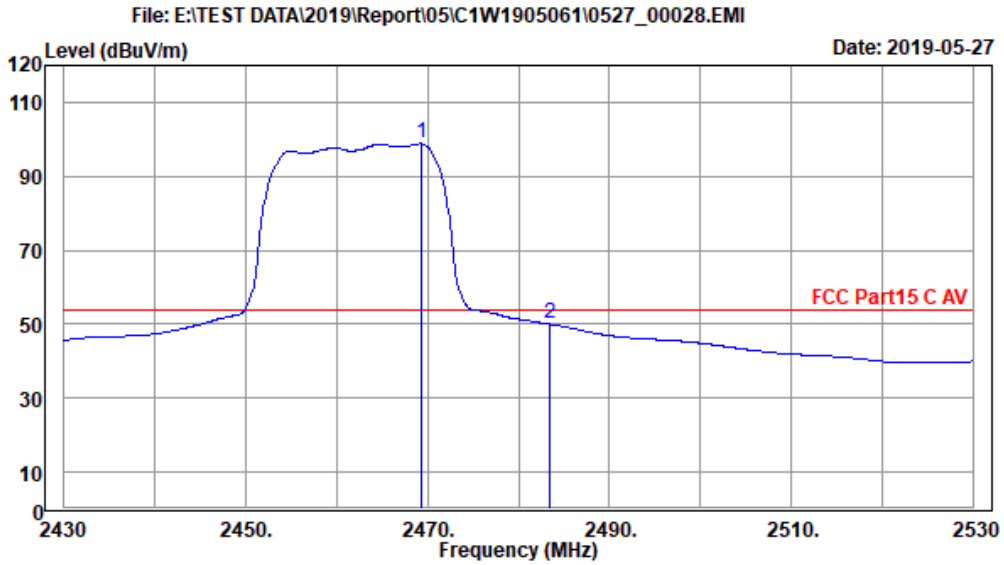


Site NO. : NO.2 3M chamber
Dis. / Ant. : 3117-586-1902
Limit : FCC Part15 C AV
Env. / Ins. : 20.9*C & 48% /N9030A
EUT : Server
M/N : HSTNS-5231
Power Rating : 120Vac/60Hz
Test Mode : TX 802.11n-HT20 2462MHz
Memo :

Ant. pol.: Vertical Data NO.:28
Engineer : Zhangjiahui

Freq. MHz	Ant. Factor dB/m	Cable Loss dB	Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limits dBuV/m	Margin dB	Remark
2469.30	33.4	6.2	92.8	33.6	98.8	54.0	-44.8	Average
2483.50	33.5	6.1	44.0	33.6	50.0	54.0	4.0	Average

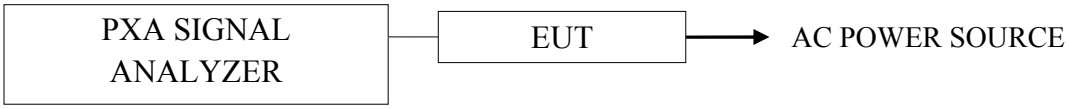
marks:Emission Level = Antenna factor+Cable loss+Reading-Preamp Factor

6. 6dB BANDWIDTH MEASUREMENT

6.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
1.	PXA signal analyzer	Agilent	N9030A	MY53120217	2019-04-12	1 Year

6.2. Block Diagram of Test Setup



—— : SIGNAL LINE

6.3. Specification Limits

The minimum 6dB bandwidth shall be at least 500kHz.

6.4. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v05:

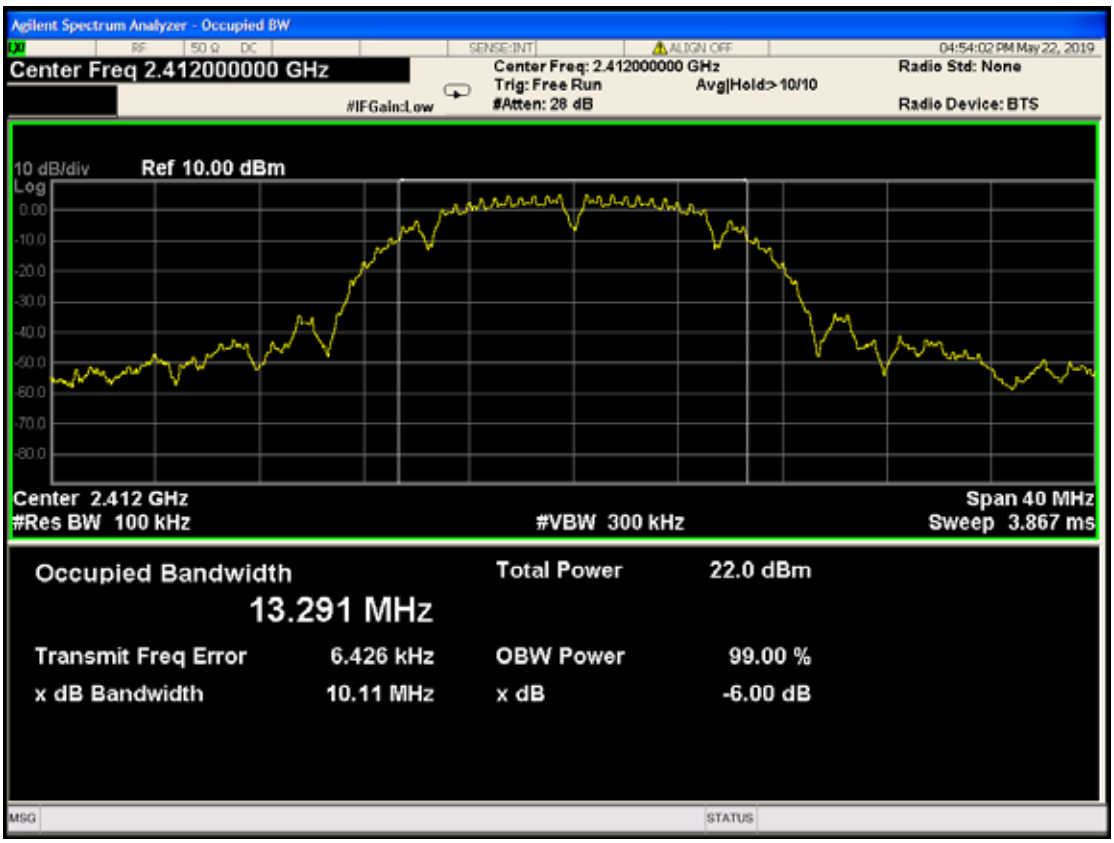
(1) Set RBW = 100 kHz.
(2) Set the video bandwidth (VBW) ≥ 3 × RBW.
(3) Detector = Peak.
(4) Trace mode = max hold.
(5) Sweep = auto couple.
(6) Allow the trace to stabilize.
(7) Setting channel bandwidth function x dB to -6 dB to record the final bandwidth.

6.5. Test Results

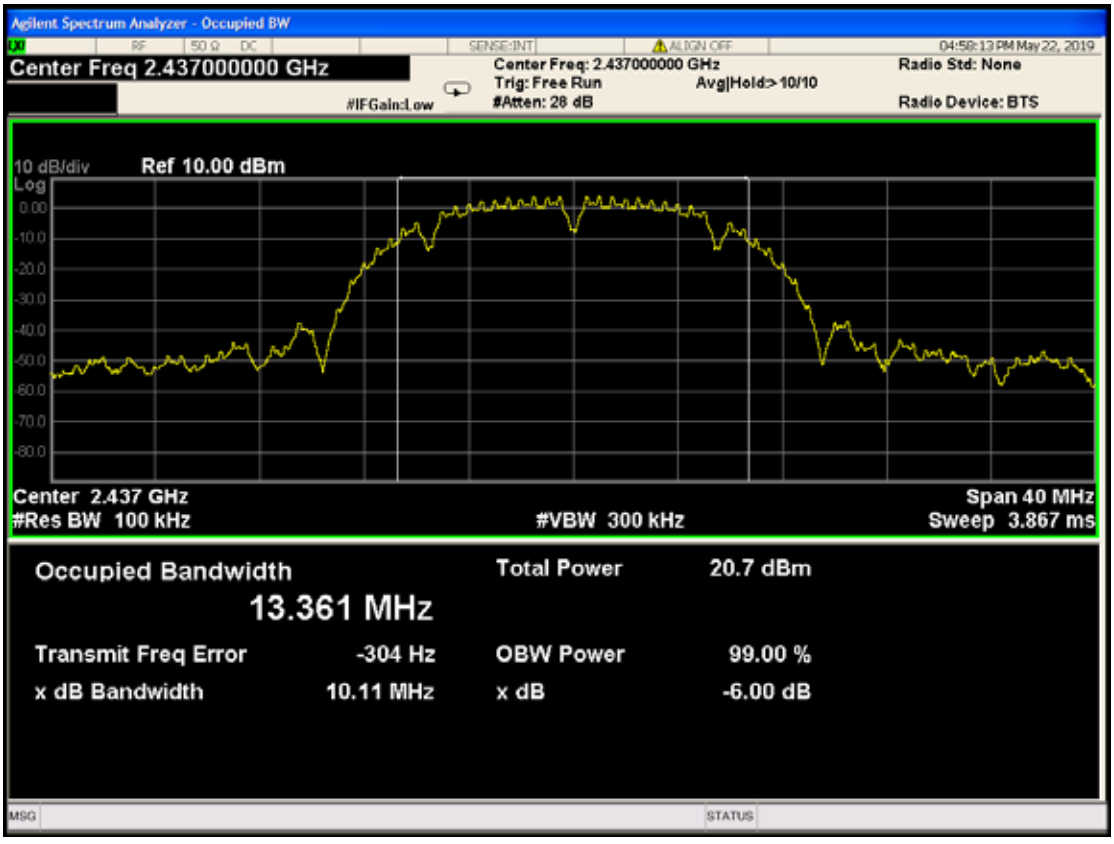
PASSED. All the test results are attached in next pages.

Item	Channel	Test Frequency (MHz)	6dB Bandwidth (MHz)
802.11b	1	2412	10.11
	6	2437	10.11
	11	2462	10.13
802.11g	1	2412	16.40
	6	2437	16.41
	11	2462	16.62
802.11 nHT20	1	2412	17.61
	6	2437	17.59
	11	2462	17.60

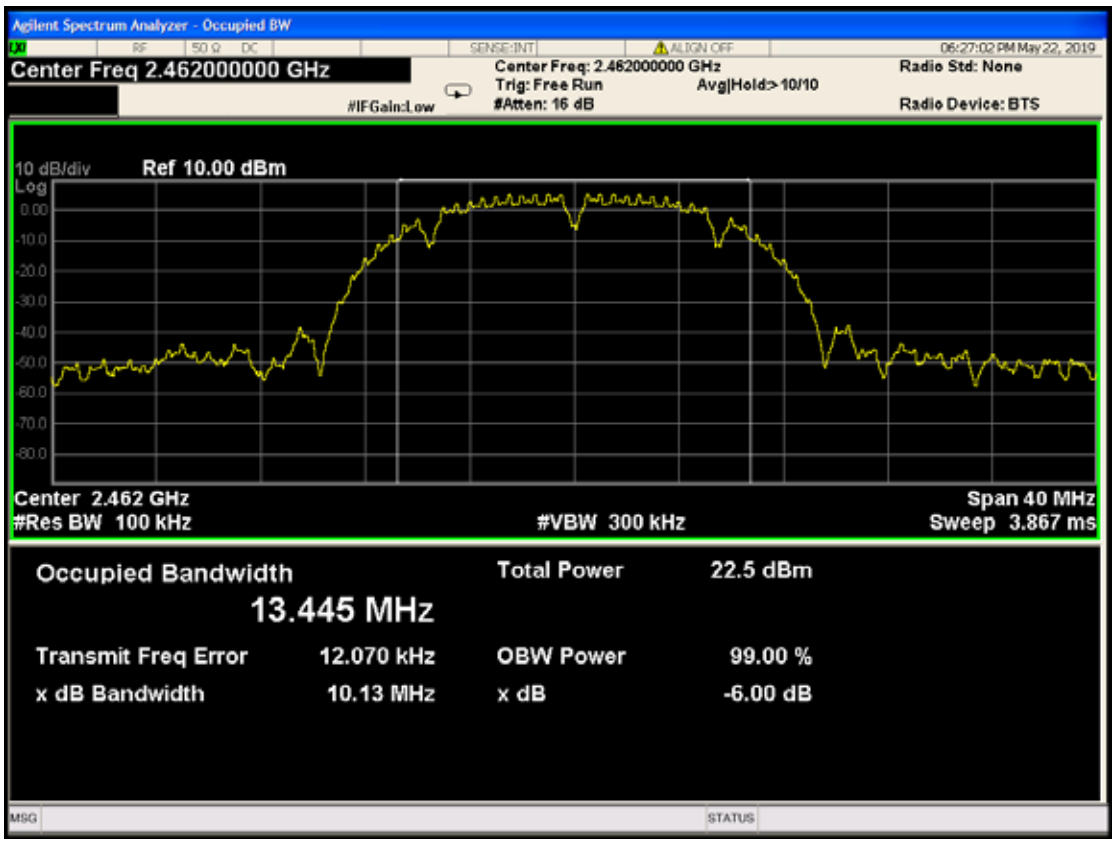
802.11b CH1



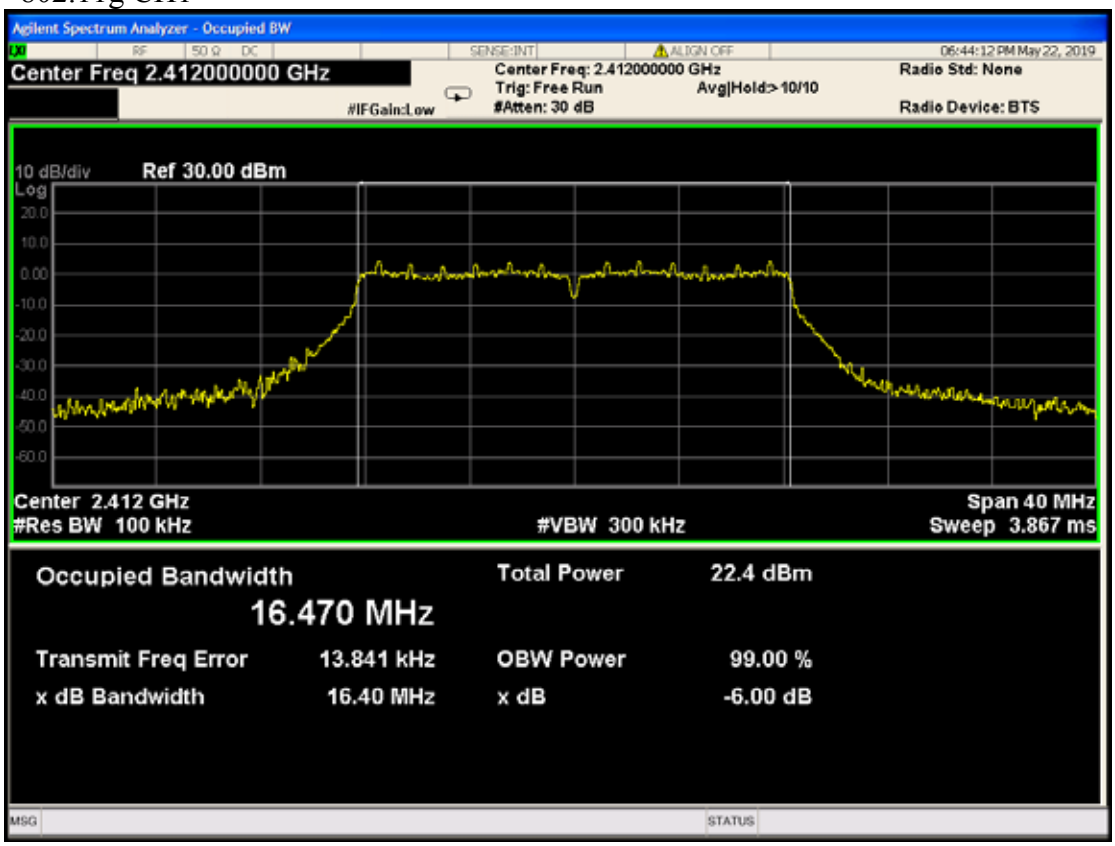
802.11b CH6



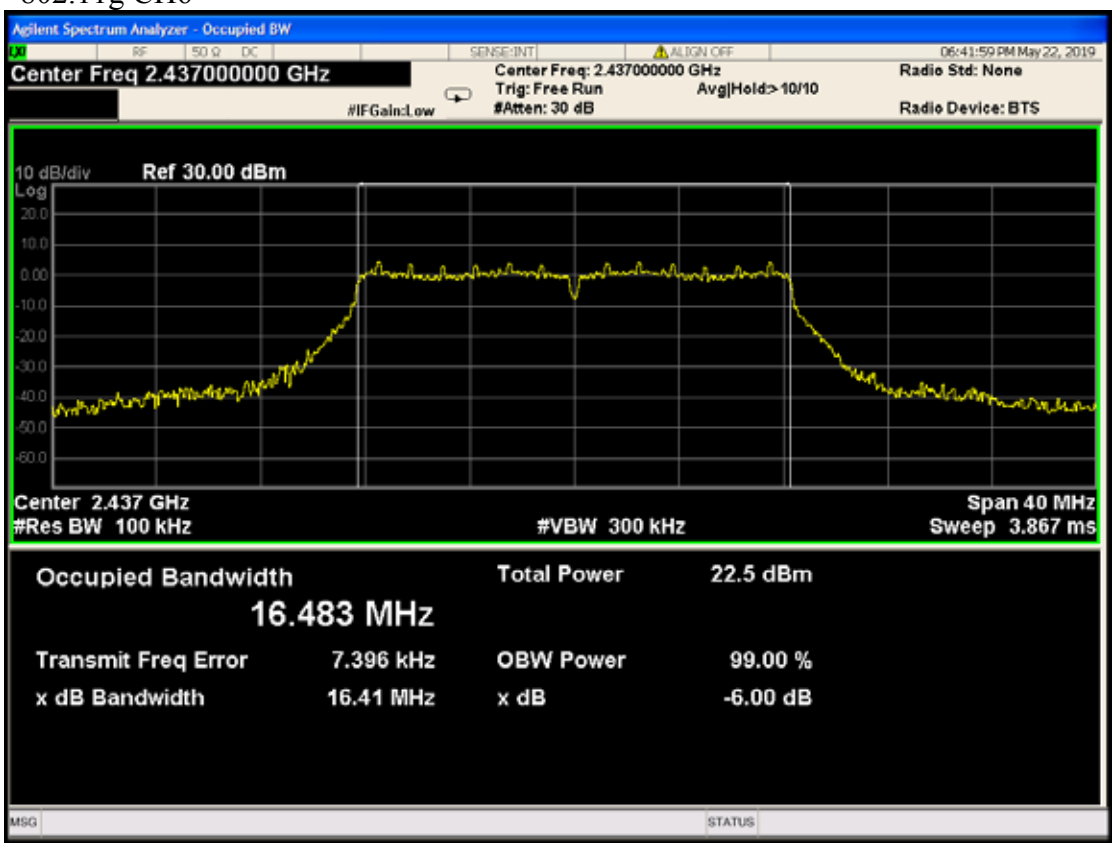
802.11b CH11



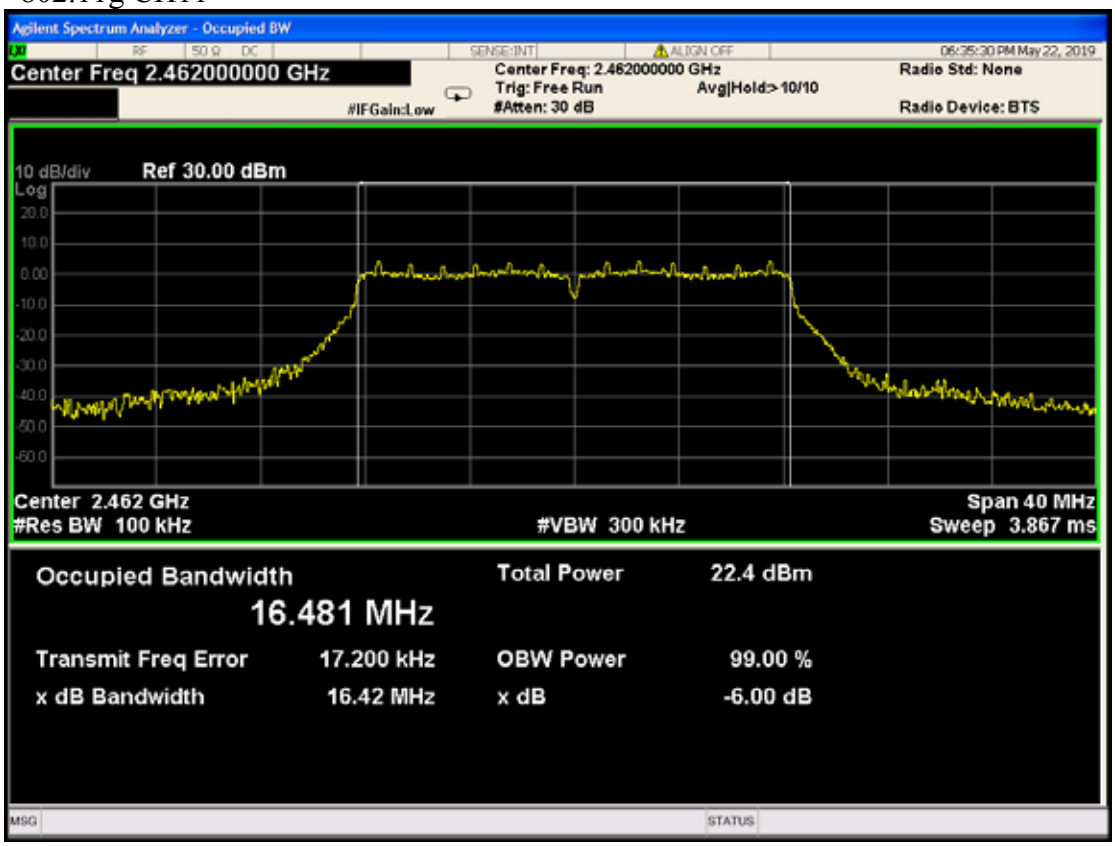
802.11g CH1



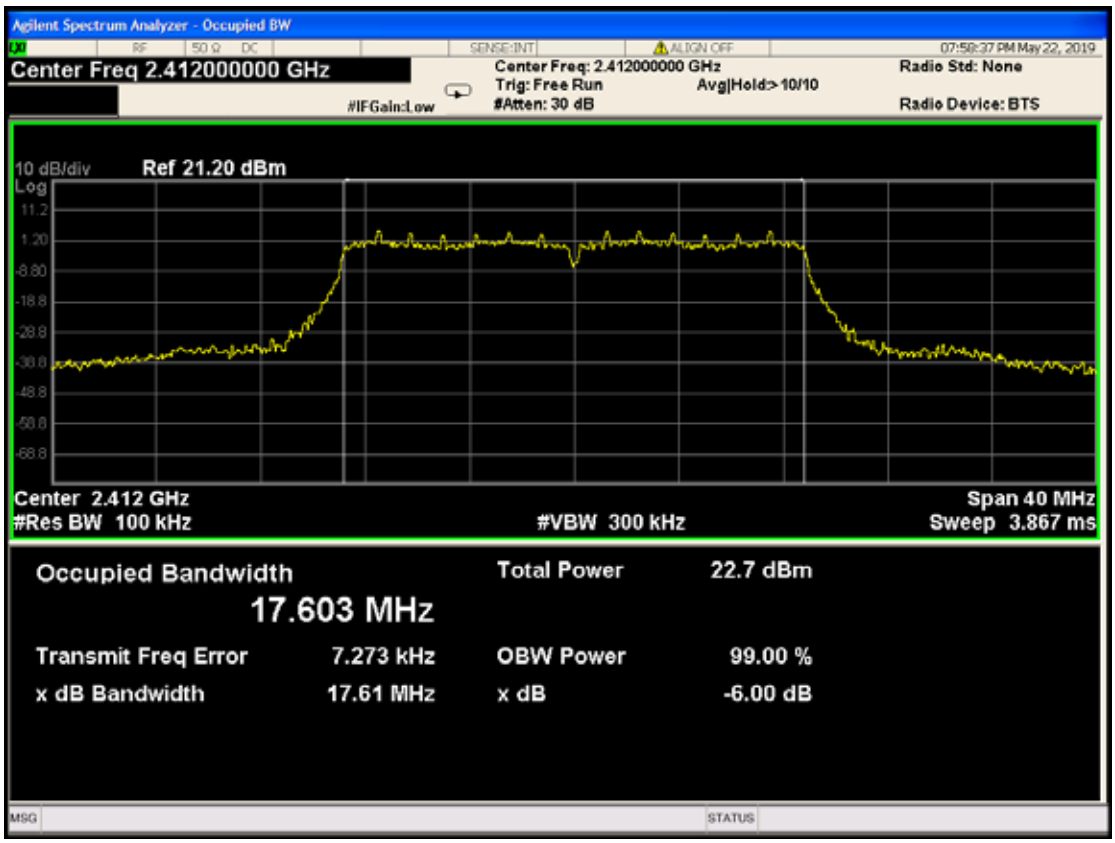
802.11g CH6



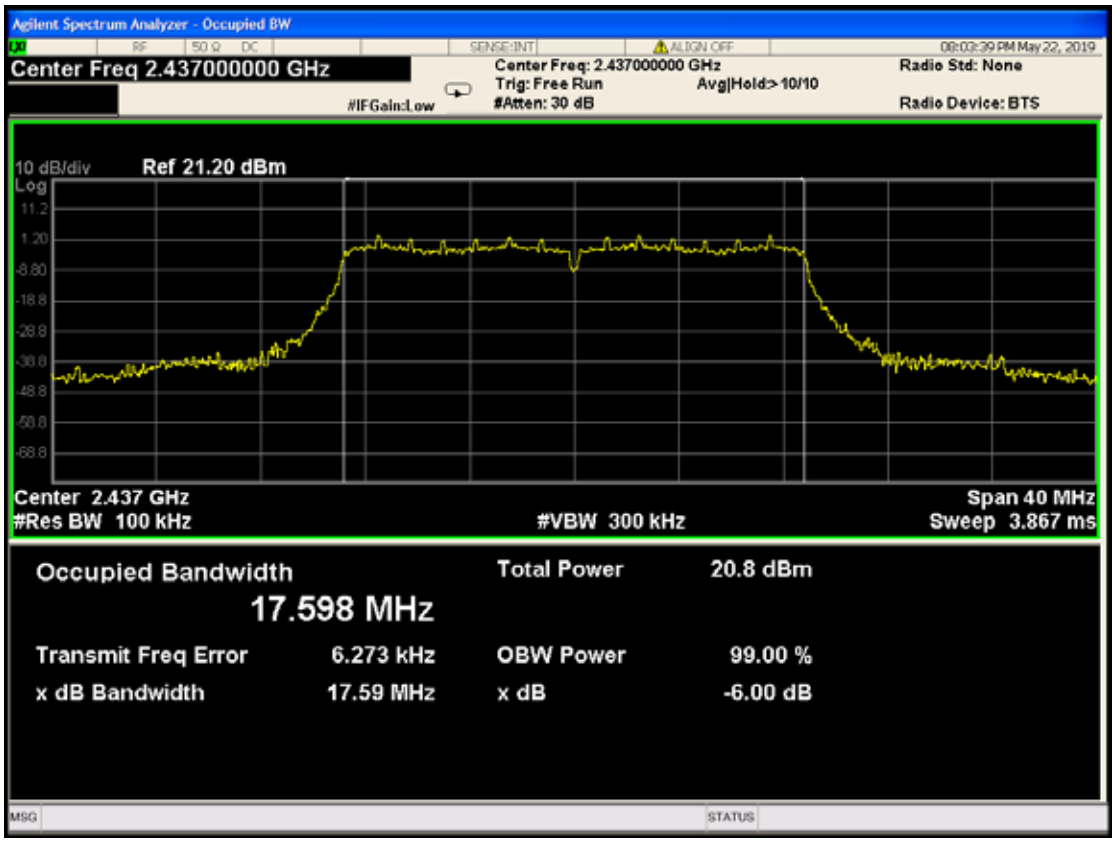
802.11g CH11



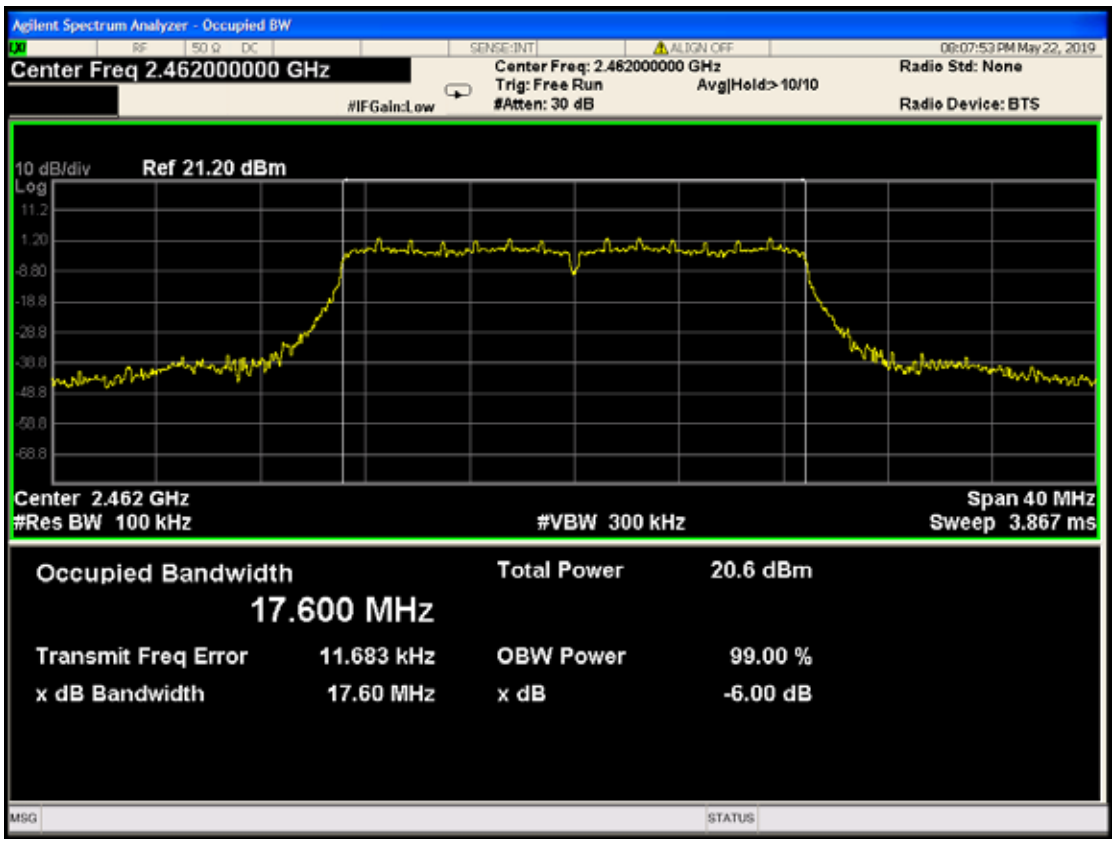
802.11nHT20 CH1



802.11nHT20 CH6



802.11nHT20 CH11

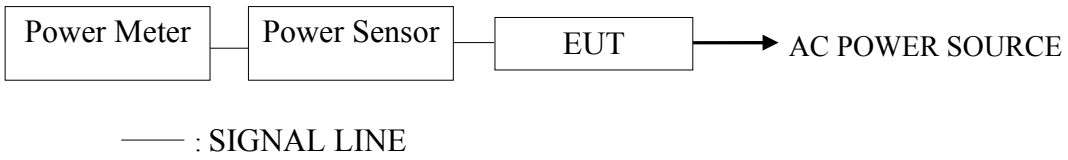


7. OUTPUT POWER MEASUREMENT

7.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
1.	PXA signal analyzer	Agilent	N9030A	MY53120217	2019-04-12	1 Year

7.2. Block Diagram of Test Setup



7.3. Specification Limits (§15.247(b)(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is : 1Watt. (30dBm), and E.I.R.P.: 4Watt (36dBm)

7.4. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v05:

☐**Method AVGSA-2 (Spectrum channel power)**

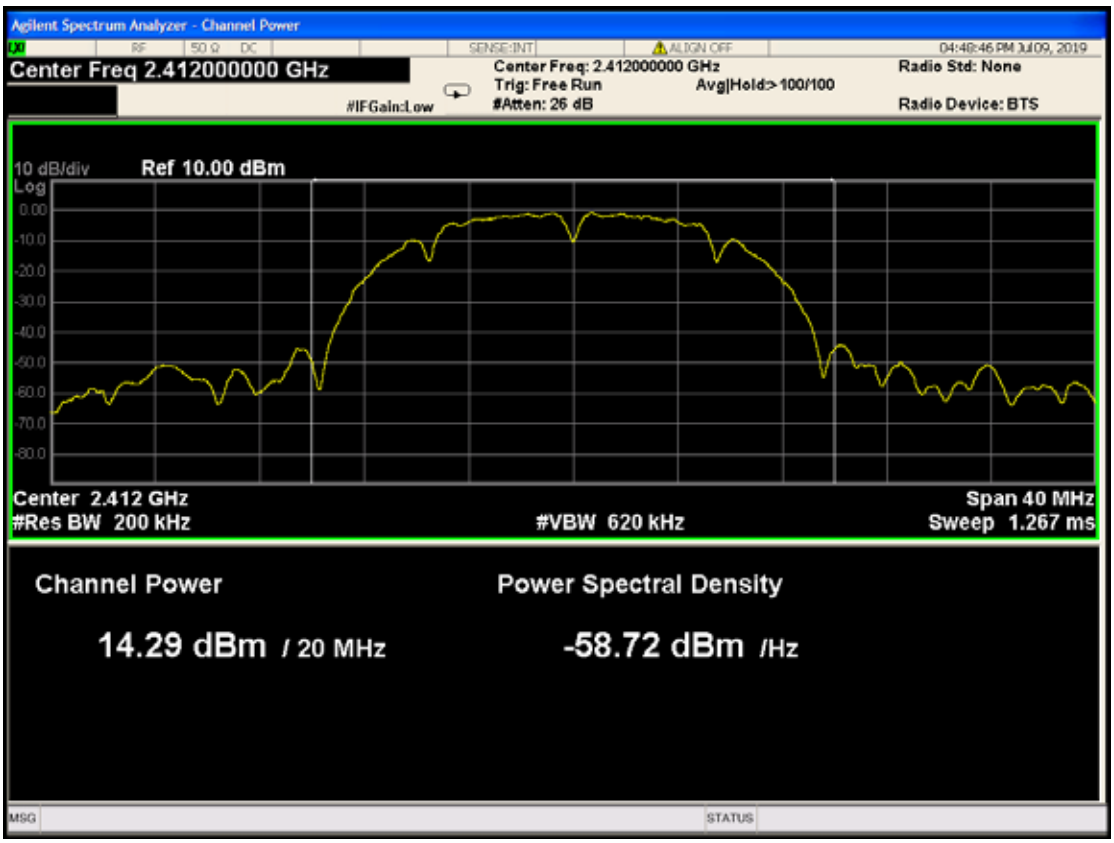
(1) Set span to at least 1.5 times the OBW
(2) Set RBW = 1 -5% of OBW
(3) Set the video bandwidth (VBW) ≥ 3 × RBW.
(4) Detector = RMS.
(5) Trace mode = trace average at least 100 traces
(6) Sweep = auto couple.
(7) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.
(8) Duty cycle factor is added when duty cycle presented in chapter3.5 is < 98%.

7.5. Test Results

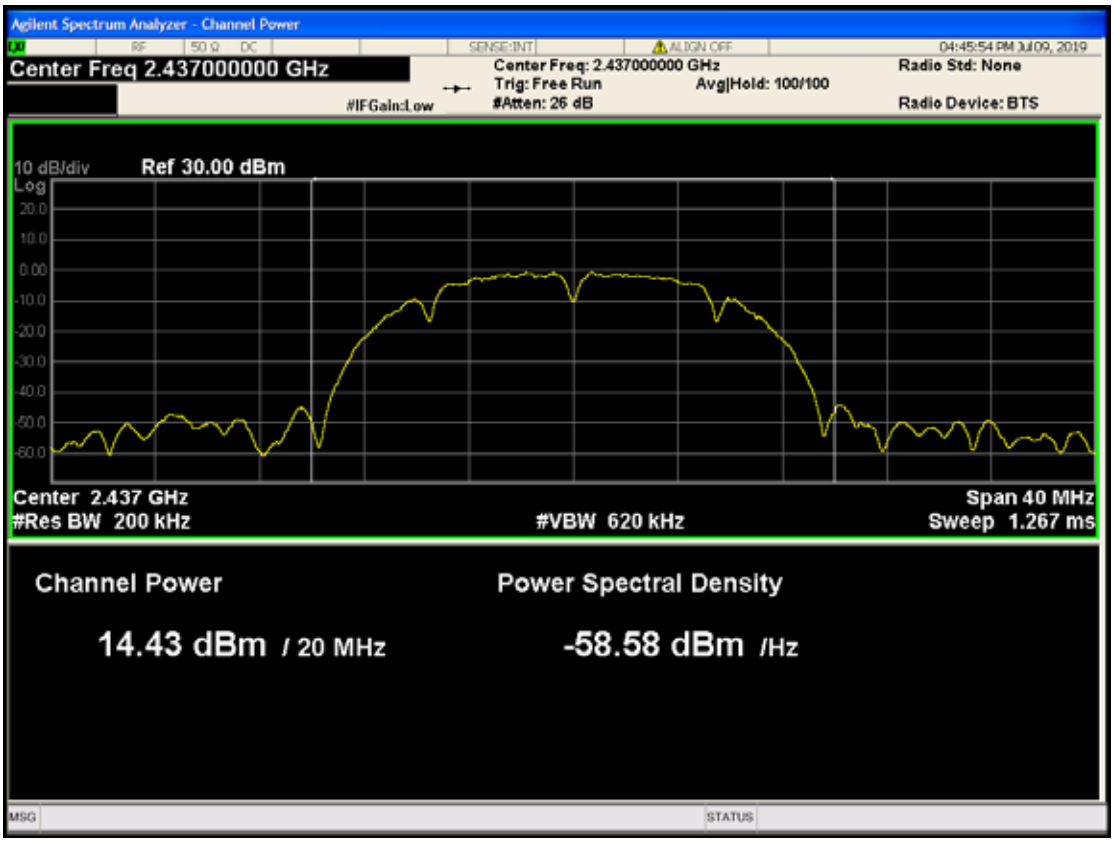
PASSED.

Mode	Frequency	Duty Crycle Factor	Reading (dBm)	Average Output Power (dBm)	Limit (dBm)
11b	2412	0	14.29	14.29	30
	2437		14.43	14.43	
	2462		14.22	14.22	
11g	2412	0.13	14.12	14.25	
	2437		14.25	14.38	
	2462		14.10	14.23	
11n-HT20	2412	0.13	12.39	12.52	
	2437		12.47	12.6	
	2462		12.34	12.47	

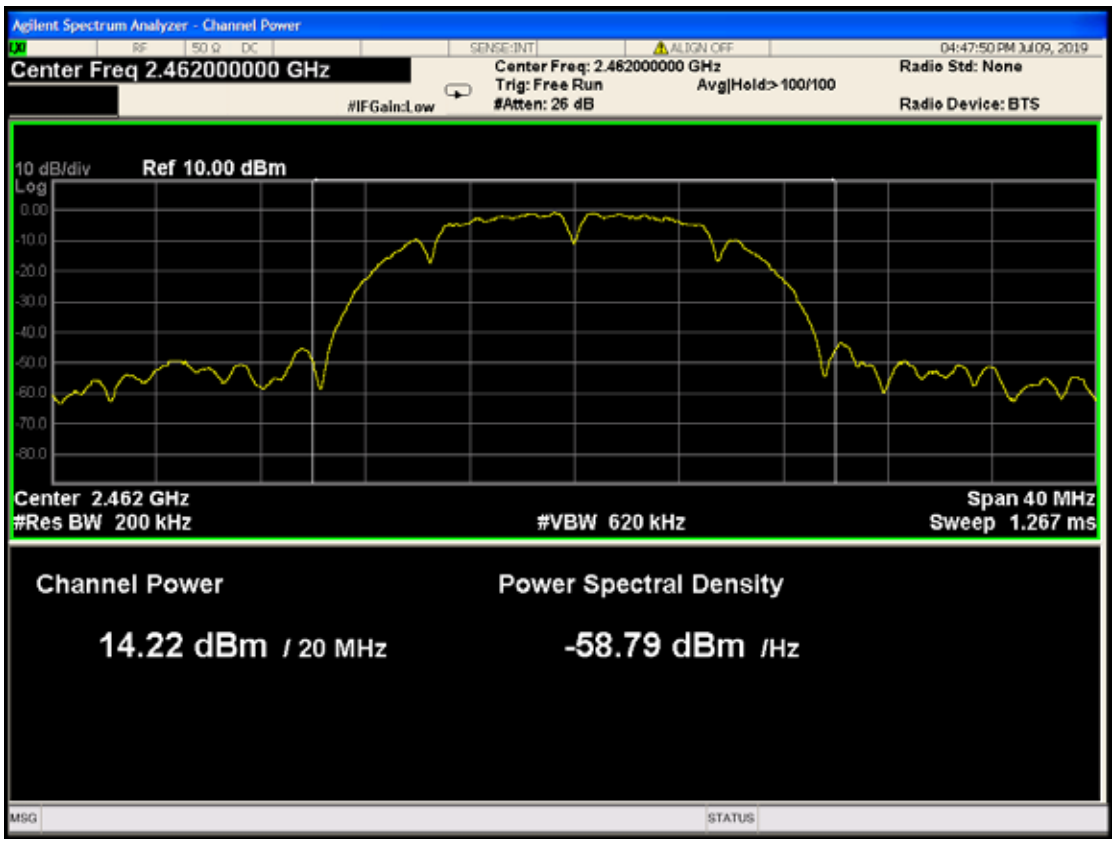
802.11b CH1



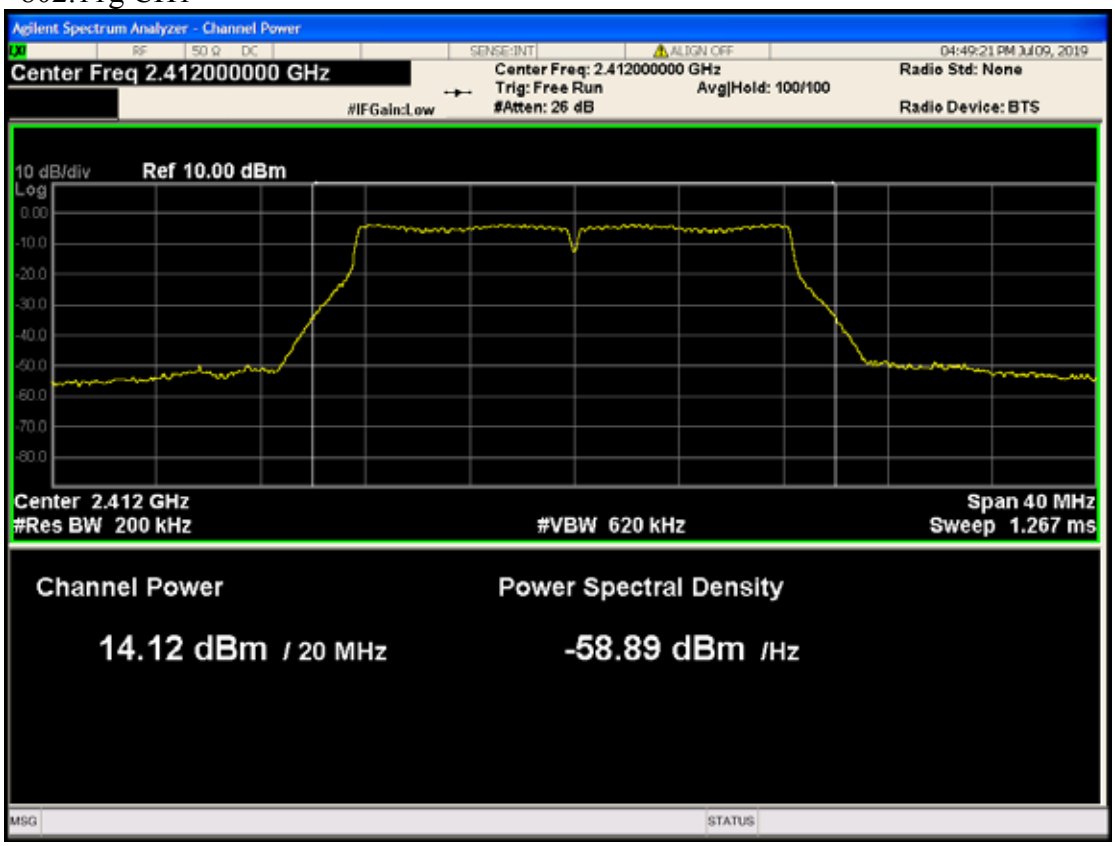
802.11b CH6



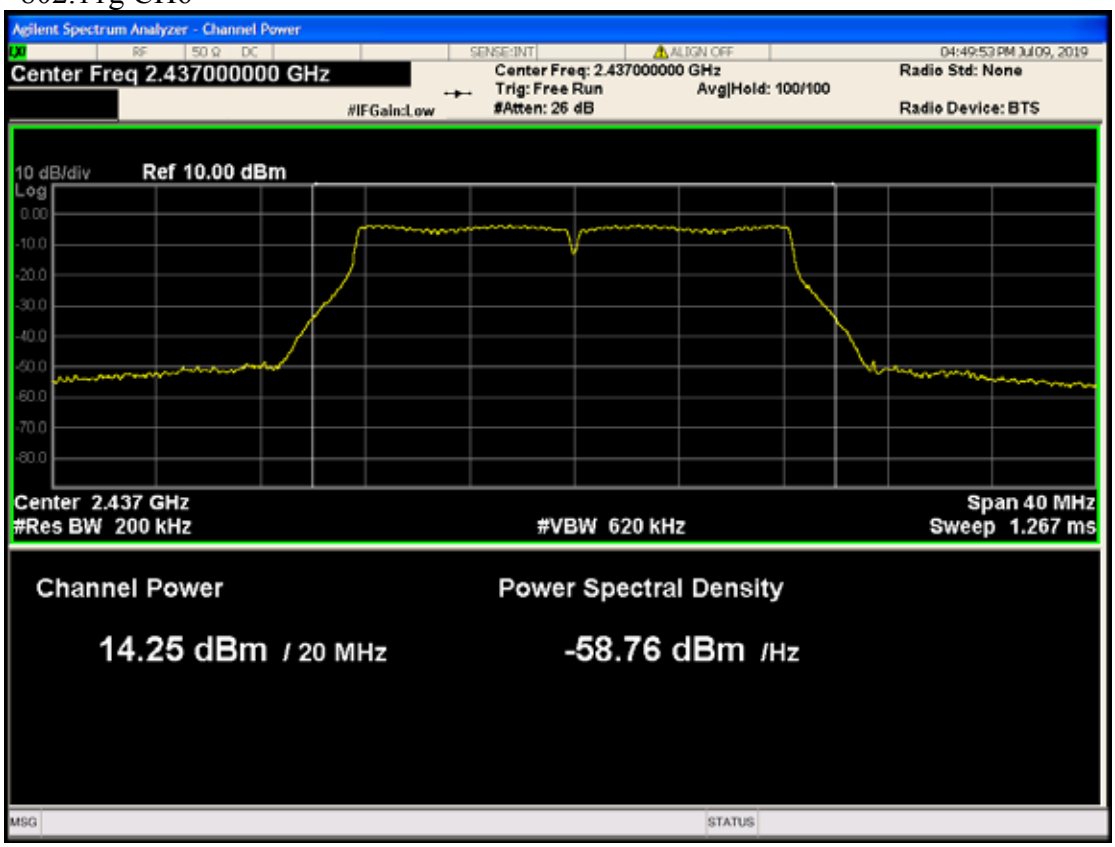
802.11b CH11



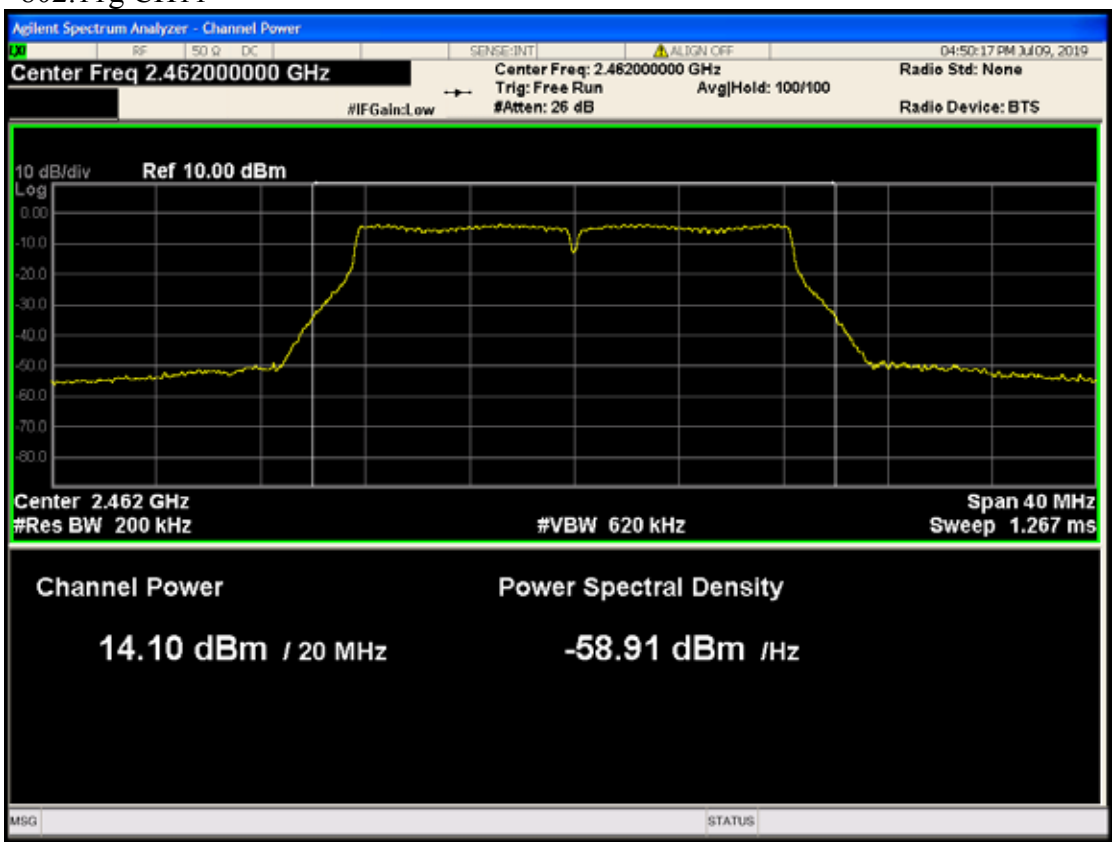
802.11g CH1



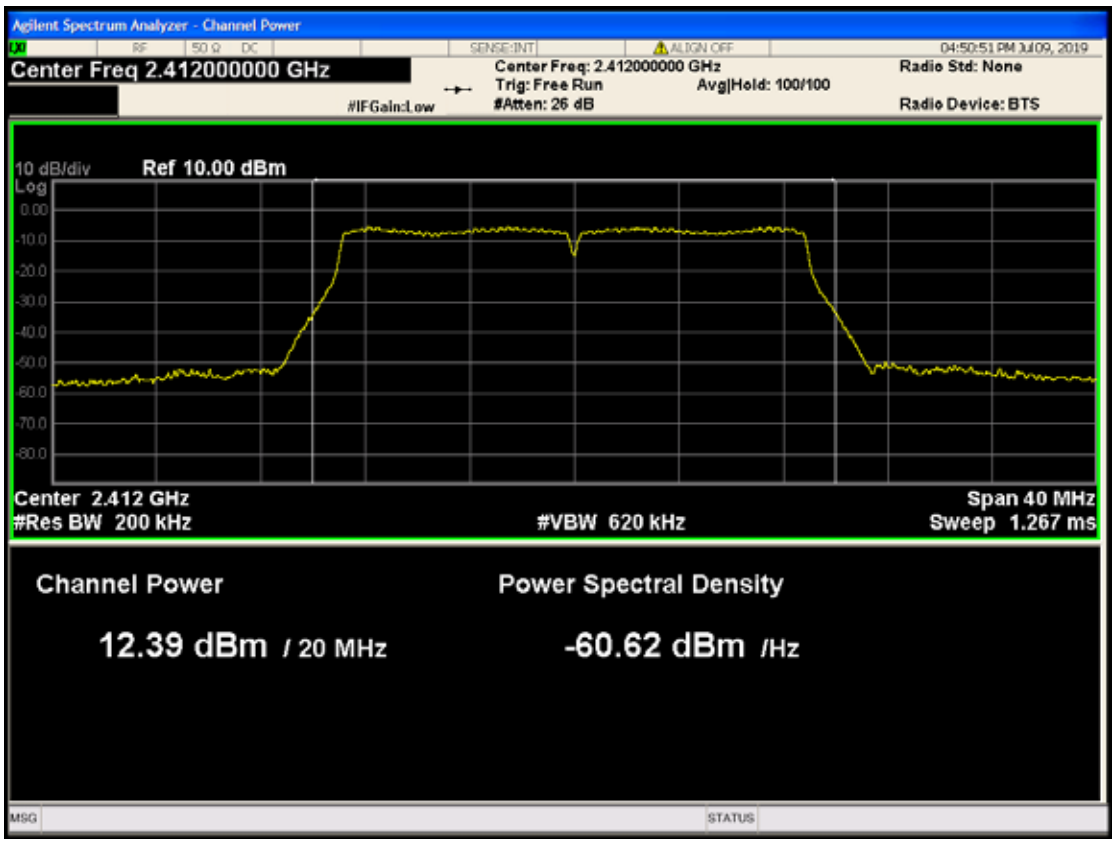
802.11g CH6



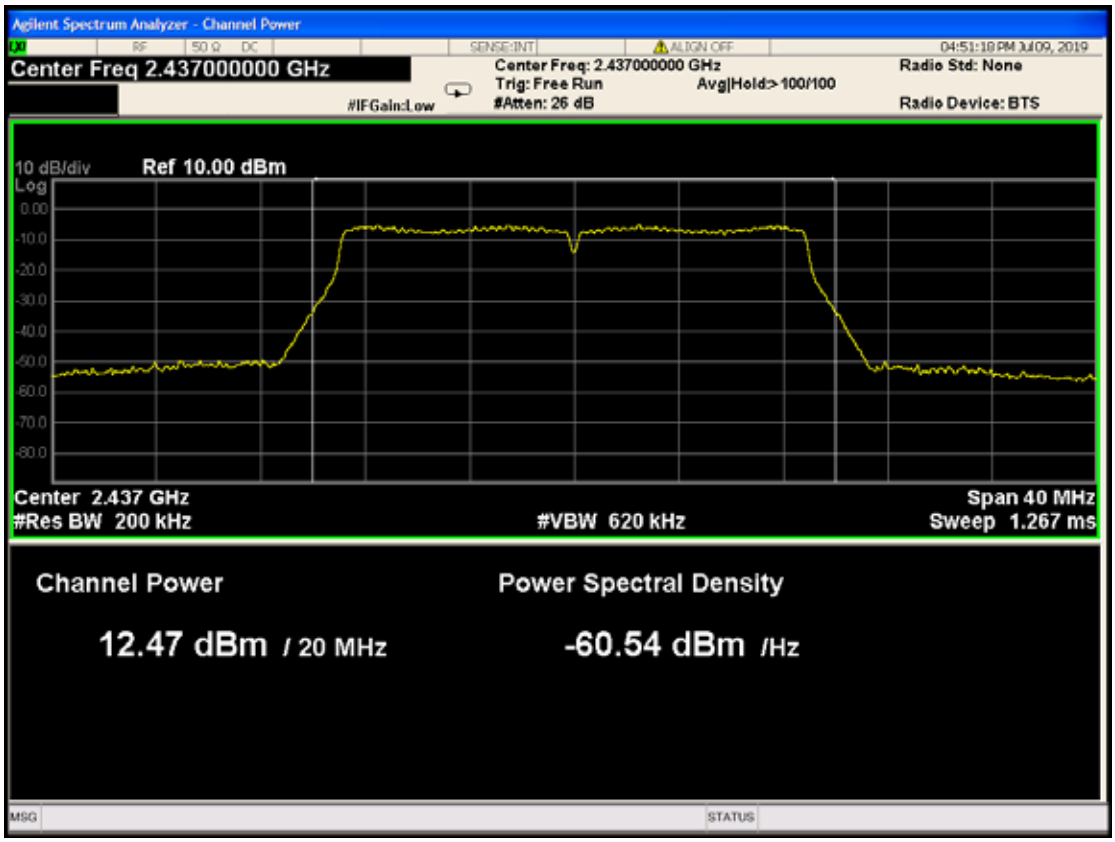
802.11g CH11



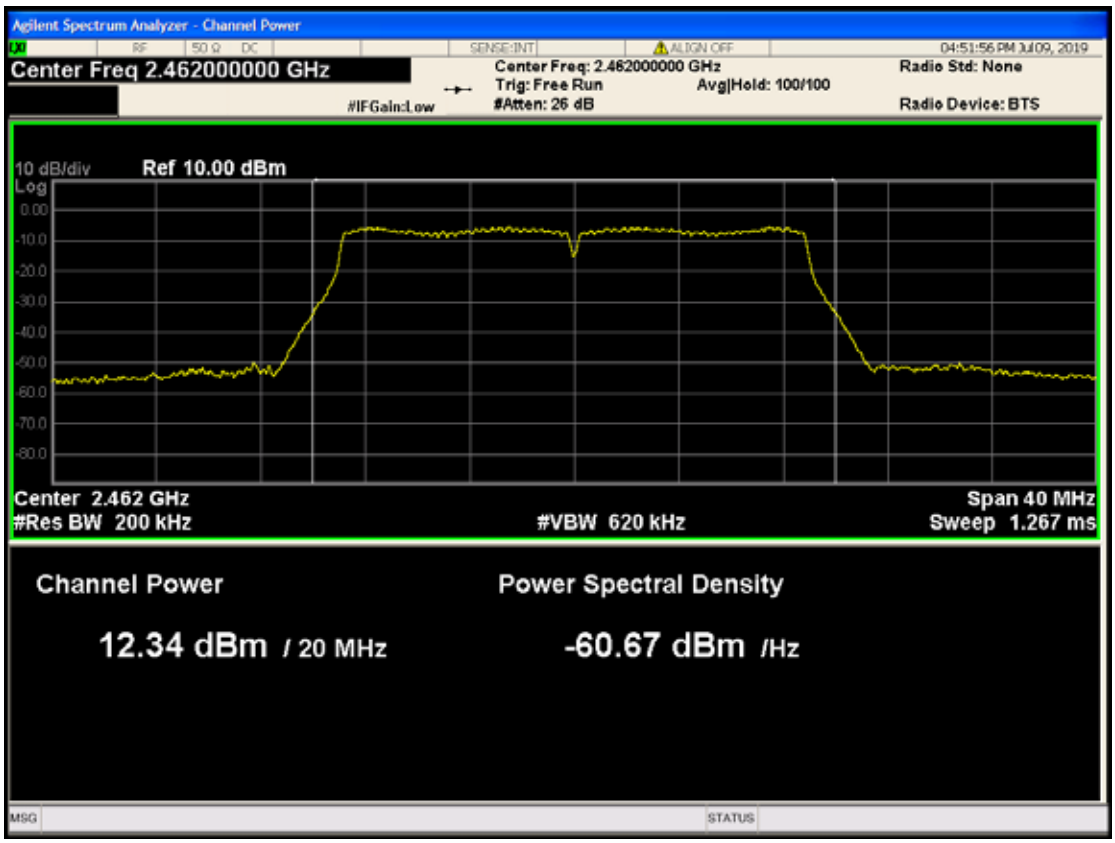
802.11nHT20 CH1



802.11nHT20 CH6



802.11nHT20 CH11



8. POWER SPECTRAL DENSITY MEASUREMENT

8.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
1.	PXA signal analyzer	Agilent	N9030A	MY53120217	2019-04-12	1 Year

8.2. Block Diagram of Test Setup

The same as section 6.2.

8.3. Specification Limits

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

8.4. Test Procedure

(1) Set analyzer center frequency to DTS channel center frequency.
(2) Set the span to 1.5 times the DTS bandwidth.
(3) Set the RBW to: 3 kHz $\leq$ RBW $\leq$ 100 kHz.
(4) Set the VBW $\geq$ 3 × RBW.
(5) Detector = peak.
(6) Sweep time = auto couple.
(7) Trace mode = max hold.
(8) Allow trace to fully stabilize.
(9) Use the peak marker function to determine the maximum amplitude level.

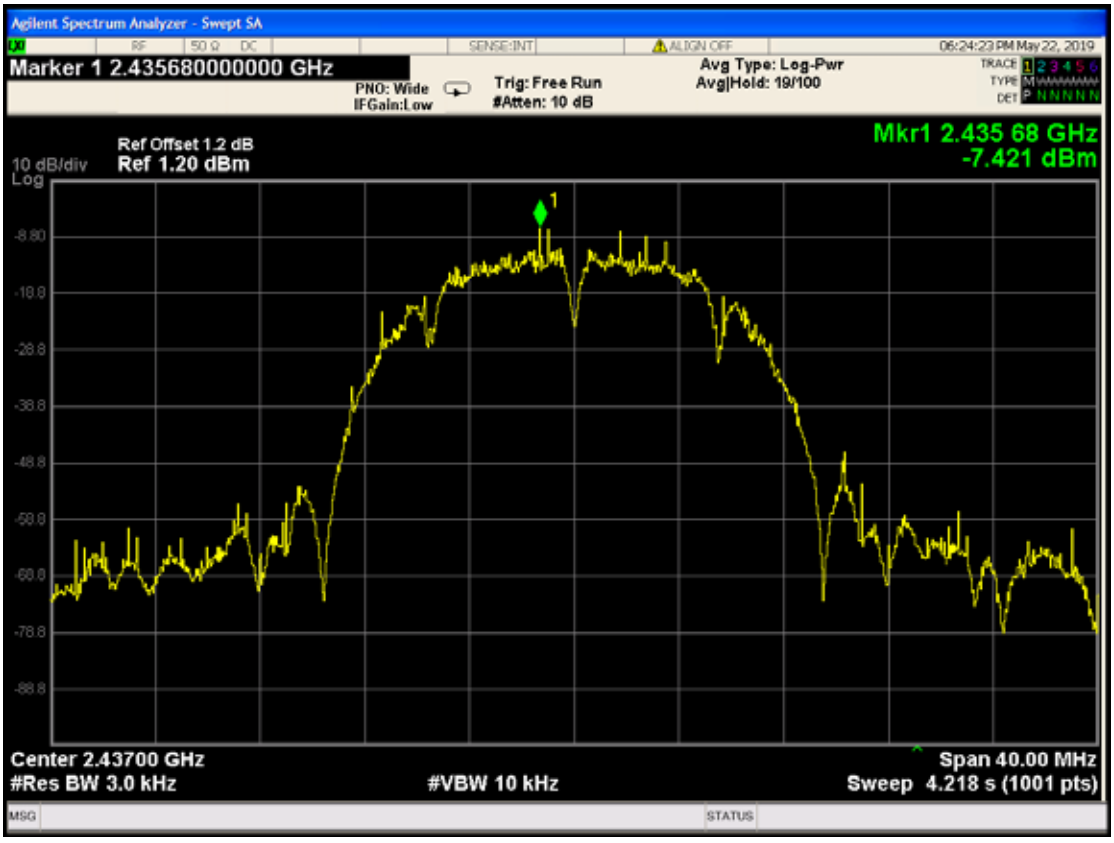
8.5. Test Results

PASSED. All the test results are attached in next page.

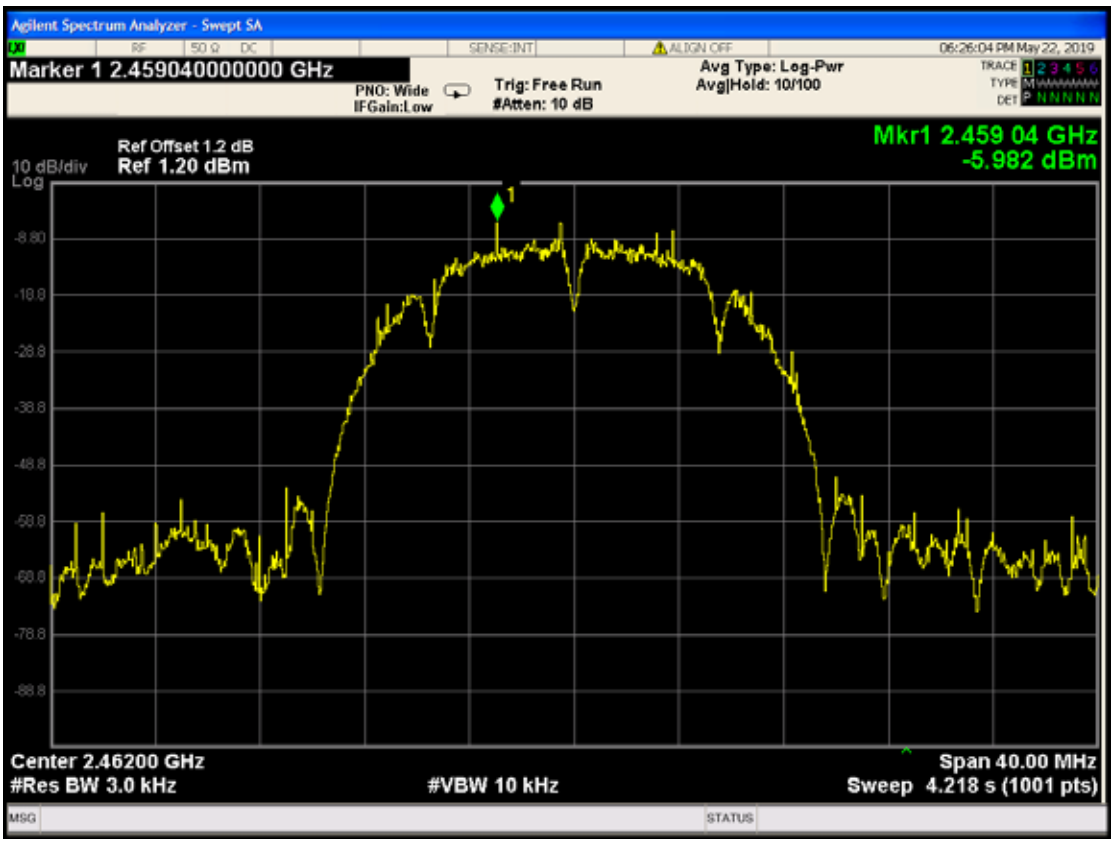
Item	Channel	Frequency (MHz)	Duty Cycle Factor	Reading (dBm)	Result (dBm)
802.11b	1	2412	0	-5.332	-5.332
	6	2437		-7.421	-7.421
	11	2462		-5.982	-5.982
802.11g	1	2412	0.13	-9.830	-9.7
	6	2437		-11.242	-11.112
	11	2462		-10.986	-10.856
802.11 nHT20	1	2412	0.13	-11.269	-11.139
	6	2437		-11.832	-11.702
	11	2462		-11.945	-11.815

802.11b CH1

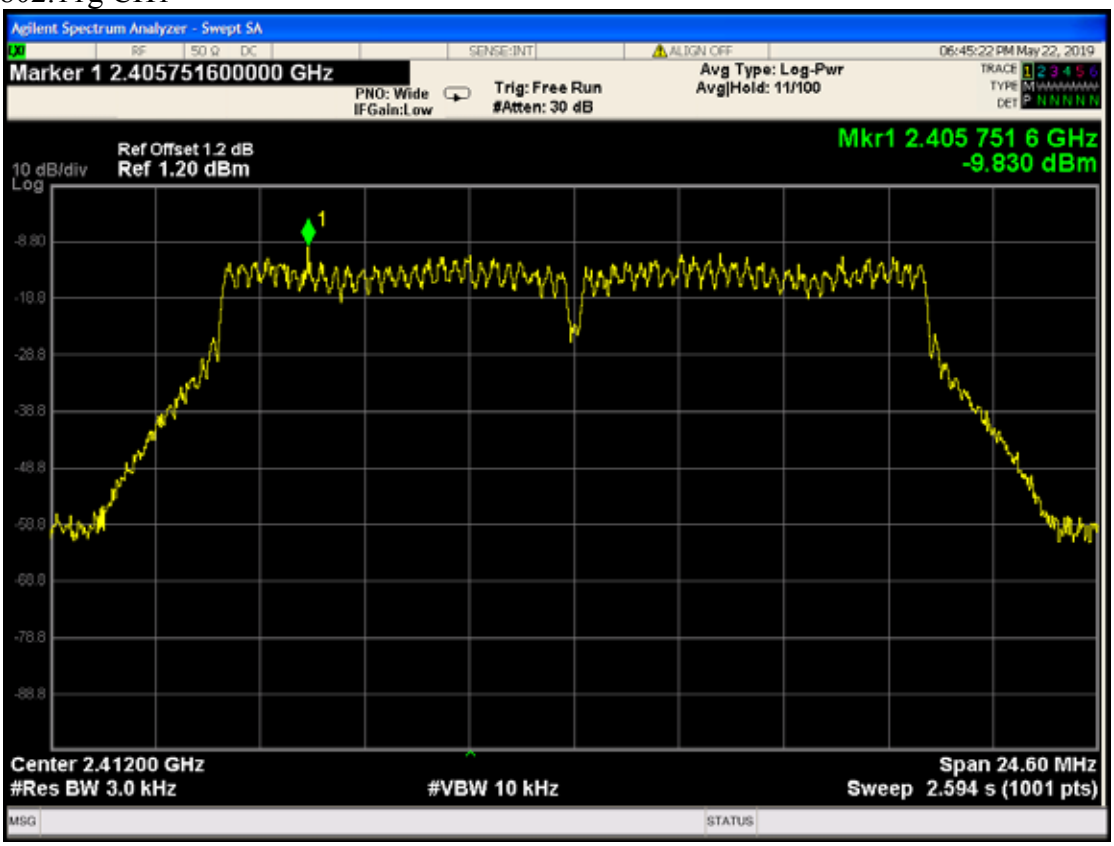
802.11b CH6



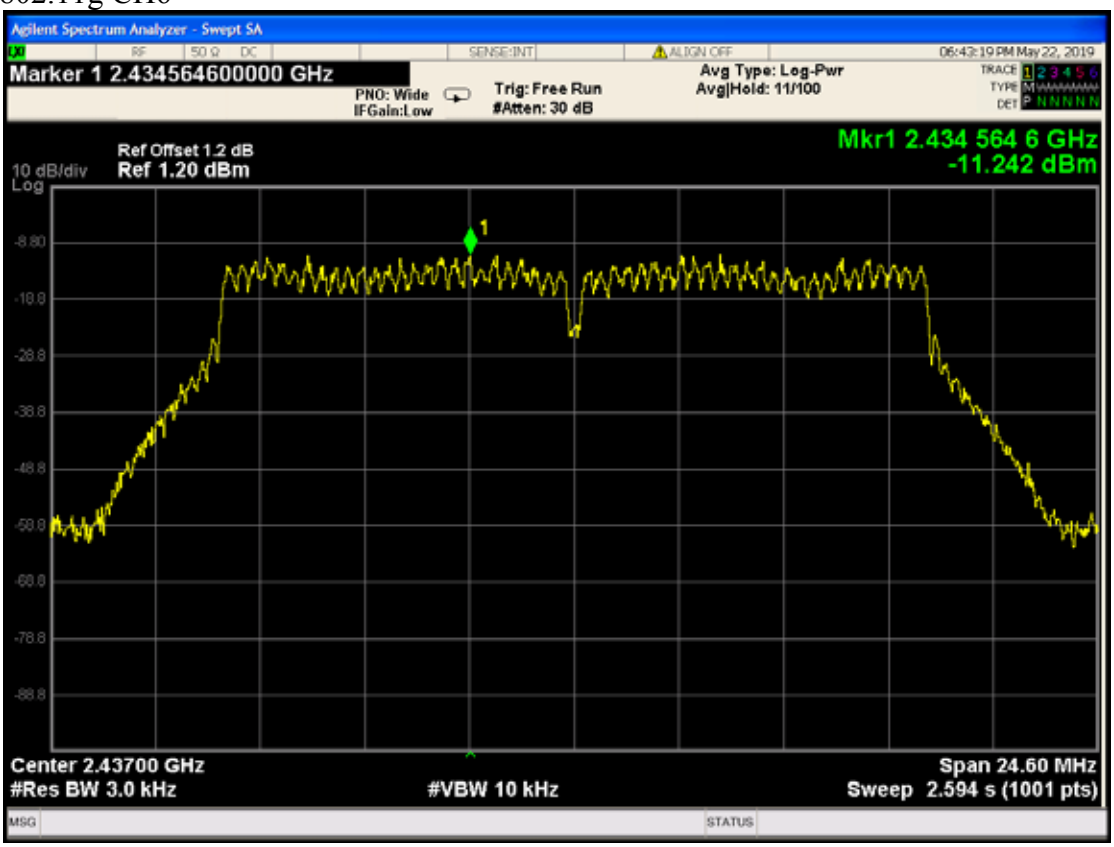
802.11b CH11



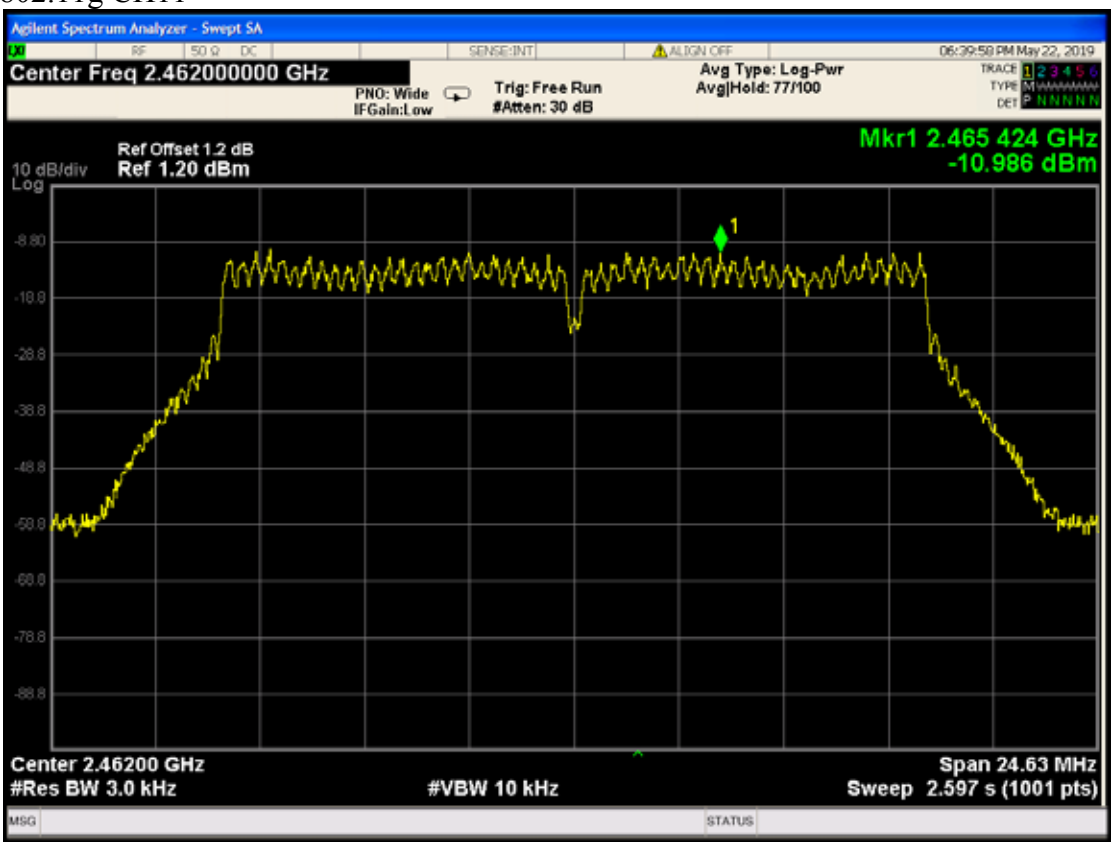
802.11g CH1



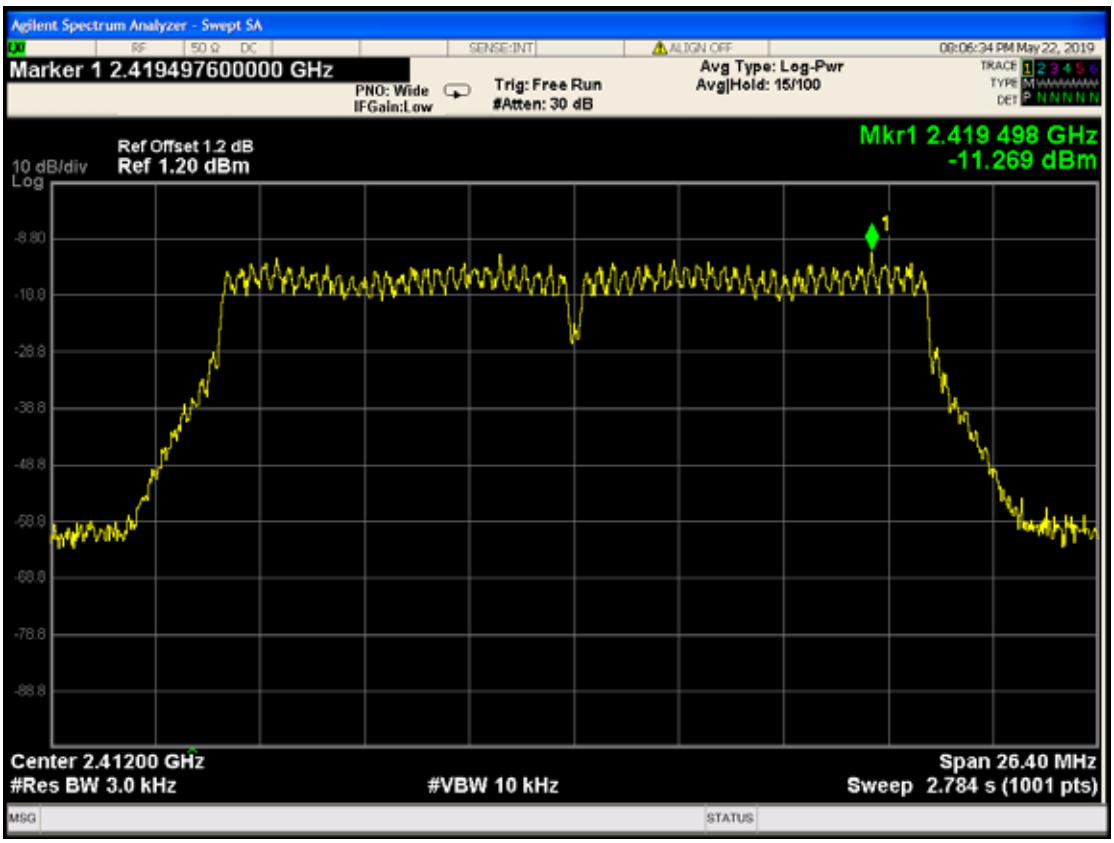
802.11g CH6



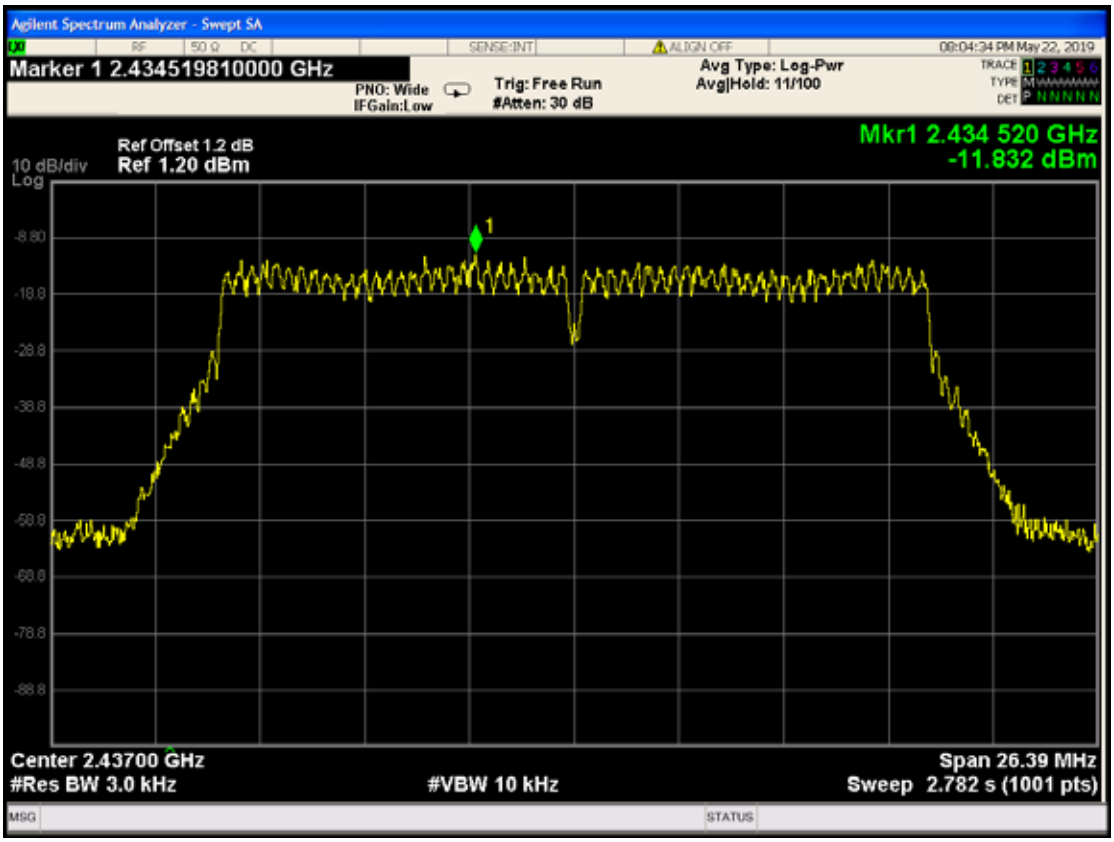
802.11g CH11



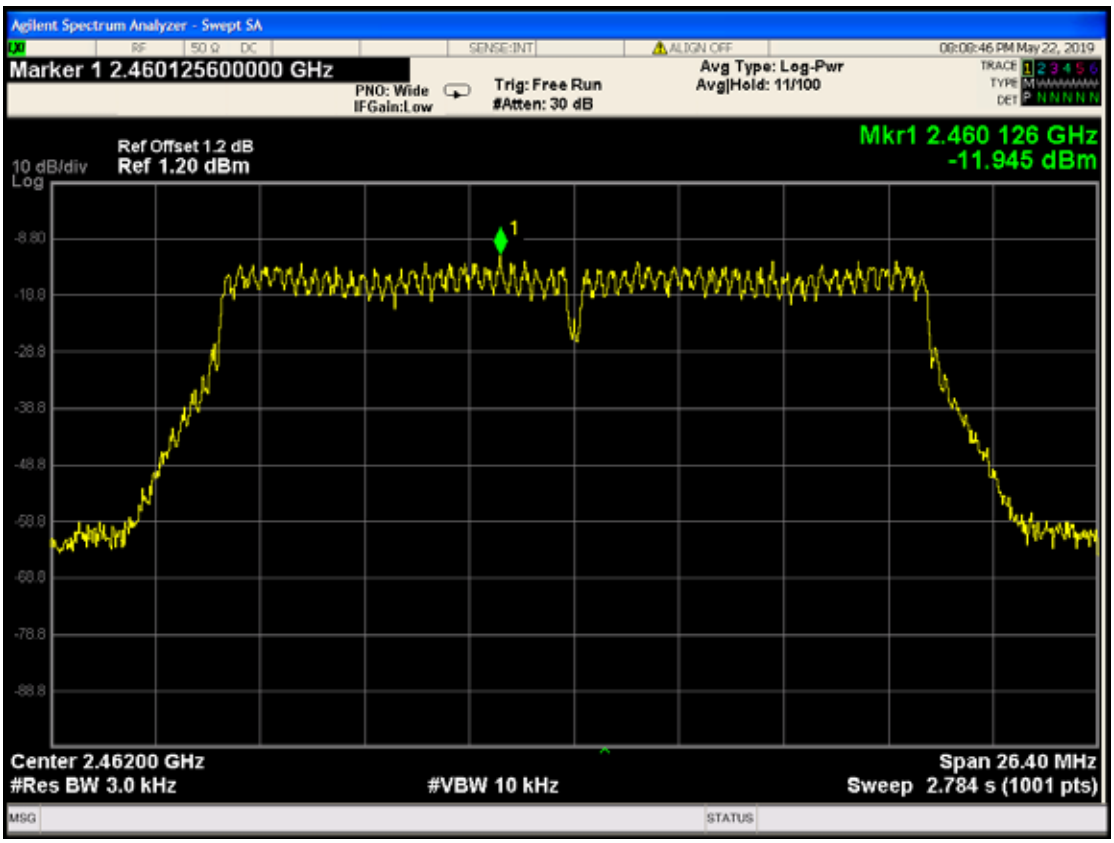
802.11nHT20 CH1



802.11nHT20 CH6



802.11nHT20 CH11



9. EMISSION LIMITATIONS MEASUREMENT

9.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Period
1.	PXA signal analyzer	Agilent	N9030A	MY53120217	2019-04-12	1 Year

9.2. Block Diagram of Test Setup

The same as section 6.2.

9.3. Specification Limits

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, that the required attenuation shall be 30 dB instead of 20 dB.

9.4. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v05r02:

(1) Set analyzer center frequency to DTS channel center frequency.

(2) Set the span to 1.5 times the DTS bandwidth.

(3) Set the RBW to: 100 kHz.

(4) Set the VBW $\geq$ 3 × RBW.

(5) Detector = peak.

(6) Sweep time = auto couple.

(7) Trace mode = max hold.

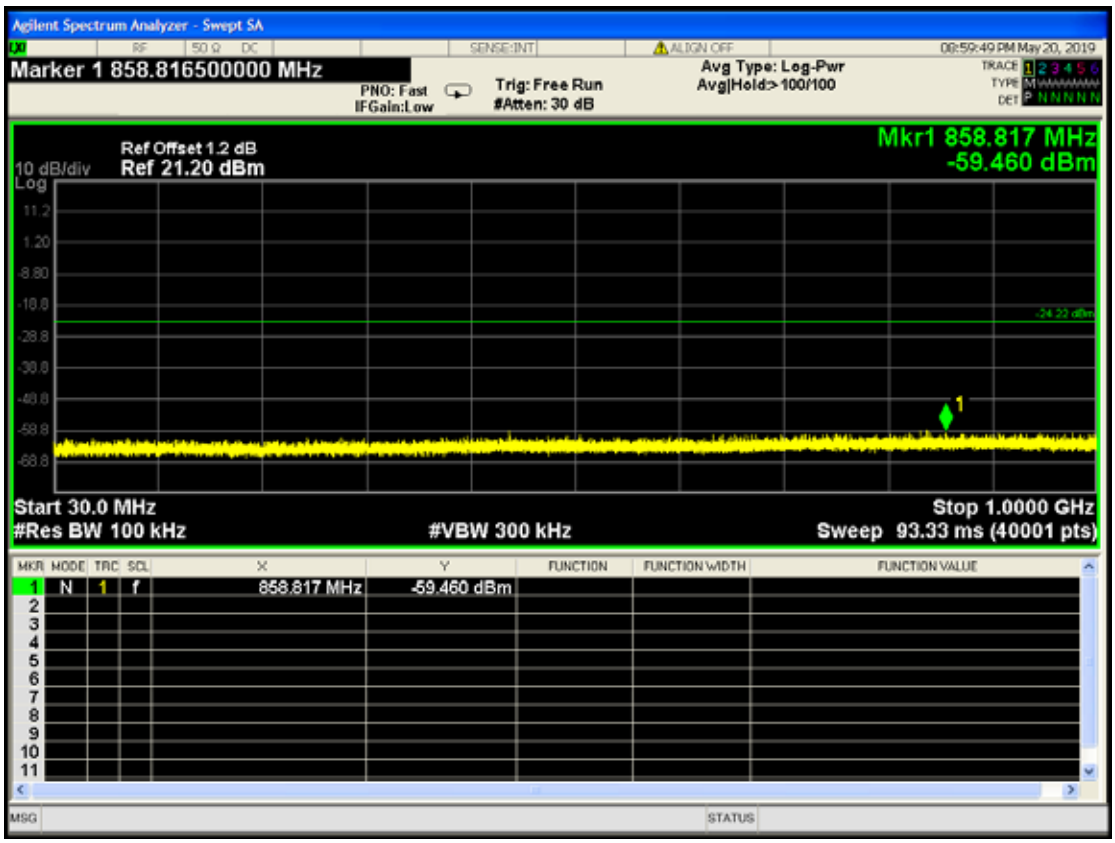
(8) Allow trace to fully stabilize to find the max level.

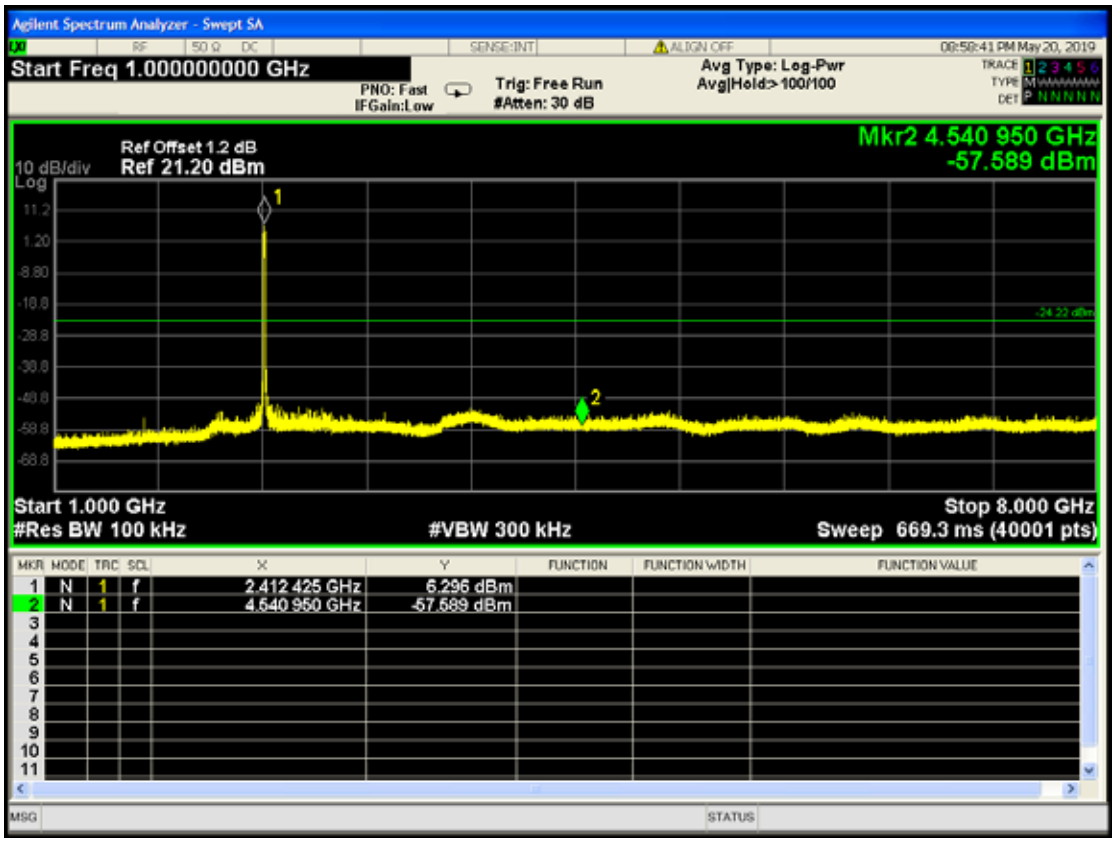
9.5. Test Results

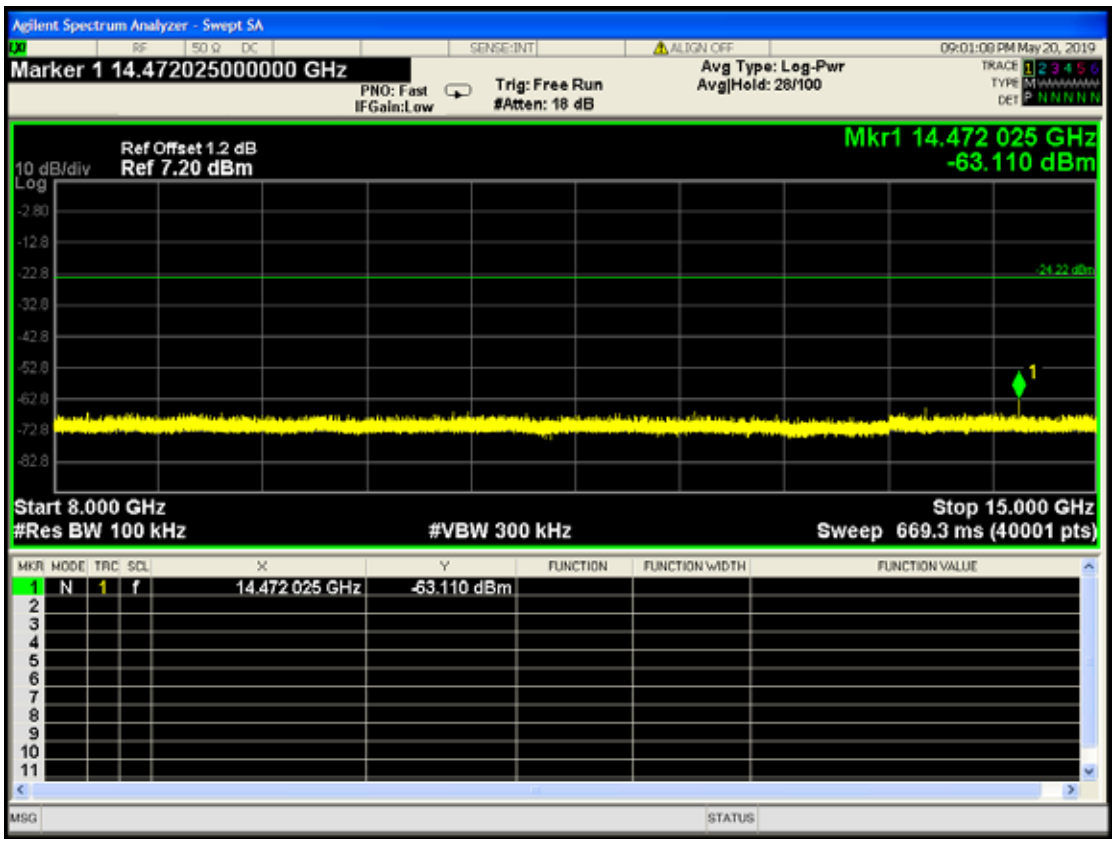
PASSED. All the test results are attached in next pages.

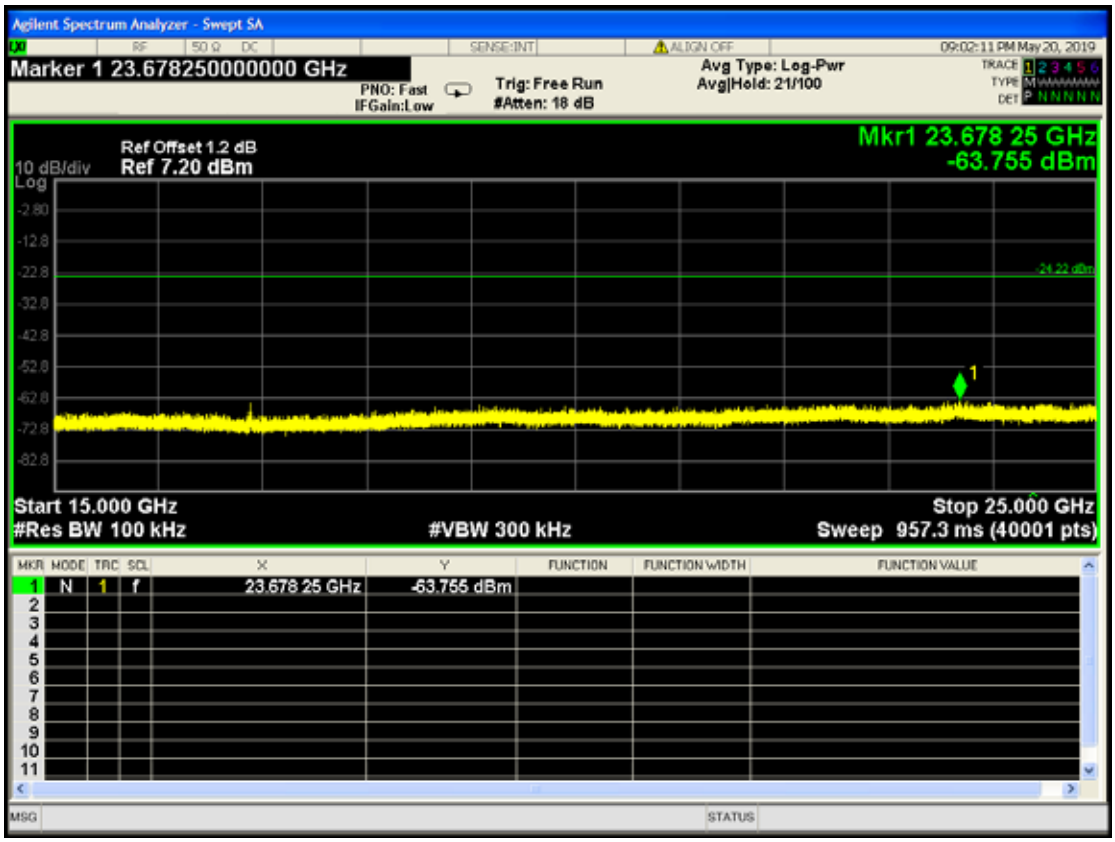
Item	Channel	Frequency (MHz)	Amplitude (dBm)
802.11b	1	858.17	-59.460
		4540.950	-57.589
		14472.025	-63.110
		23678.25	-63.755
		2390	-51.228
		2400	-53.487
	6	809.298	-68.665
		4873.975	-57.730
		14622	-63.591
		23693.50	-61.438
	11	820.138	-69.120
		4924.025	-56.517
		8627.375	-64.672
		24618.50	-61.760
		2483.50	-55.354
802.11g	1	905.037	-69.426
		4500	-68.160
		8958.65	-64.865
		23689.50	-62.158
		2390	-47.477
		2400.219	-34.259
	6	850.911	-69.470
		4500	-66.466
		8494.025	-64.641
		24037	-61.947
	11	825.788	-69.700
		4499.65	-66.629
		11070.025	-63.489
		24484.25	-61.339
		2483.50	-48.498
		2474.303	-36.626
802.11n HT20	1	874.749	-69.162
		4500	-69.147
		13819.45	-64.714
		22447.50	-62.302
		2390	-50.175
		2400	-42.908
	6	949.124	-69.226
		4500	-69.642
		9754.90	-64.672
		24867	-61.941
	11	990.397	-69.823
		4500	-67.843
		8519.575	-64.444
		24017.50	-61.356
		2483.50	-51.372
		2476.417	-38.510

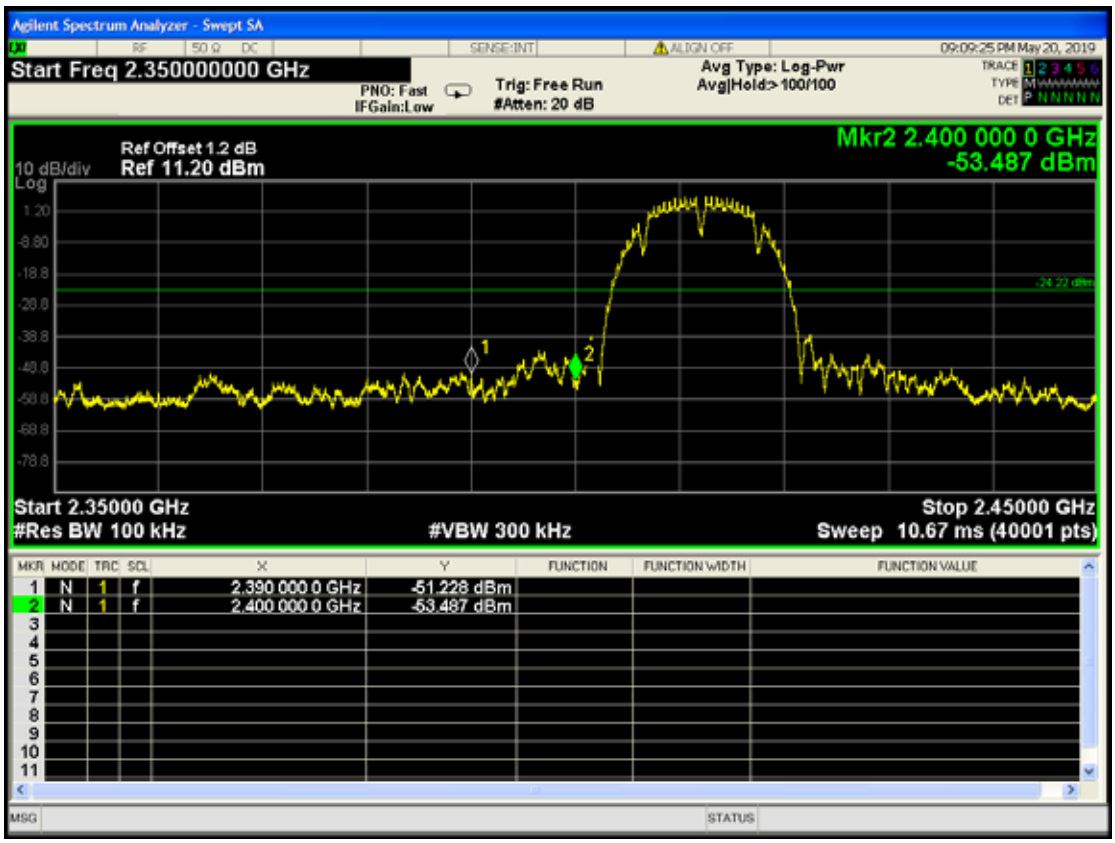
802.11b CH1


Agilent Spectrum Analyzer - Swept SA
Marker 1 858.816500000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:59:49 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Log
Ref 21.20 dBm
Mkr1 858.817 MHz
-59.460 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.33 ms (40001 pts)
1 N 1 f 858.817 MHz -59.460 dBm
MSG
STATUS

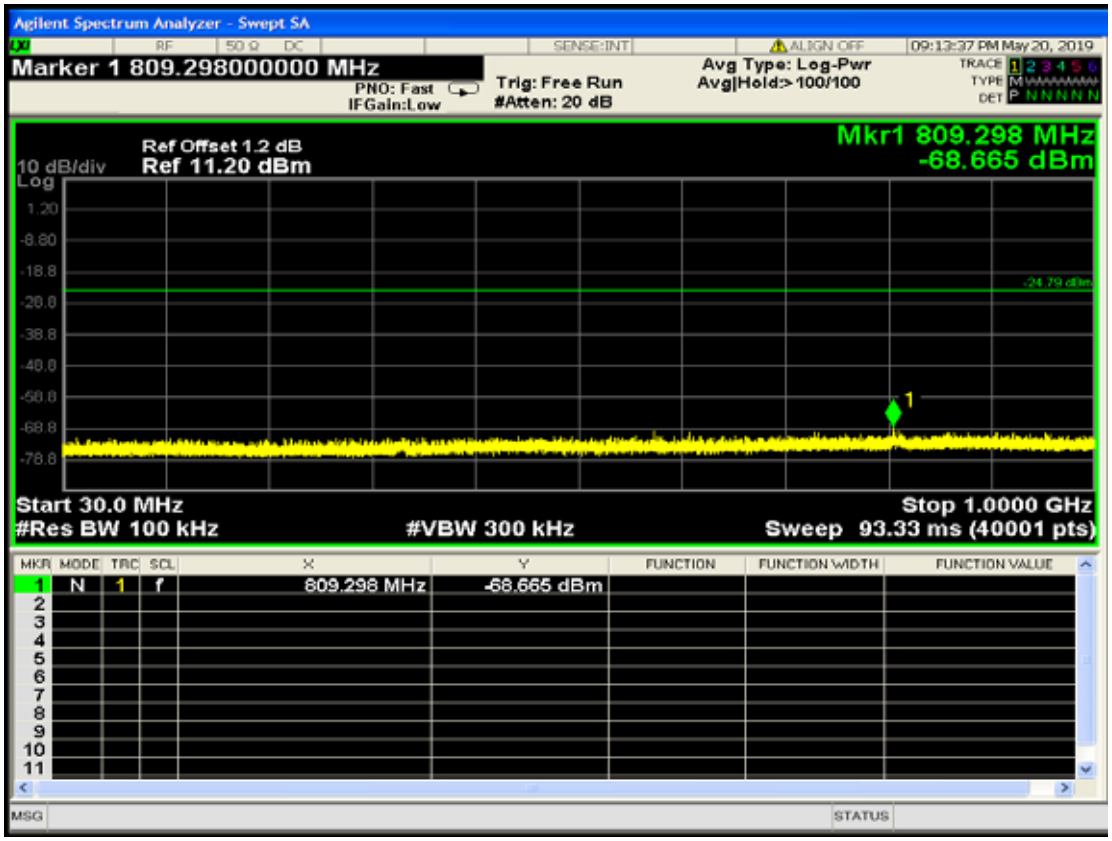

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:58:41 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Log
Ref 21.20 dBm
Mkr2 4.540 950 GHz
-57.589 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 8.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 2.412 425 GHz 6.296 dBm
2 N 1 f 4.540 950 GHz -57.589 dBm
MSG
STATUS

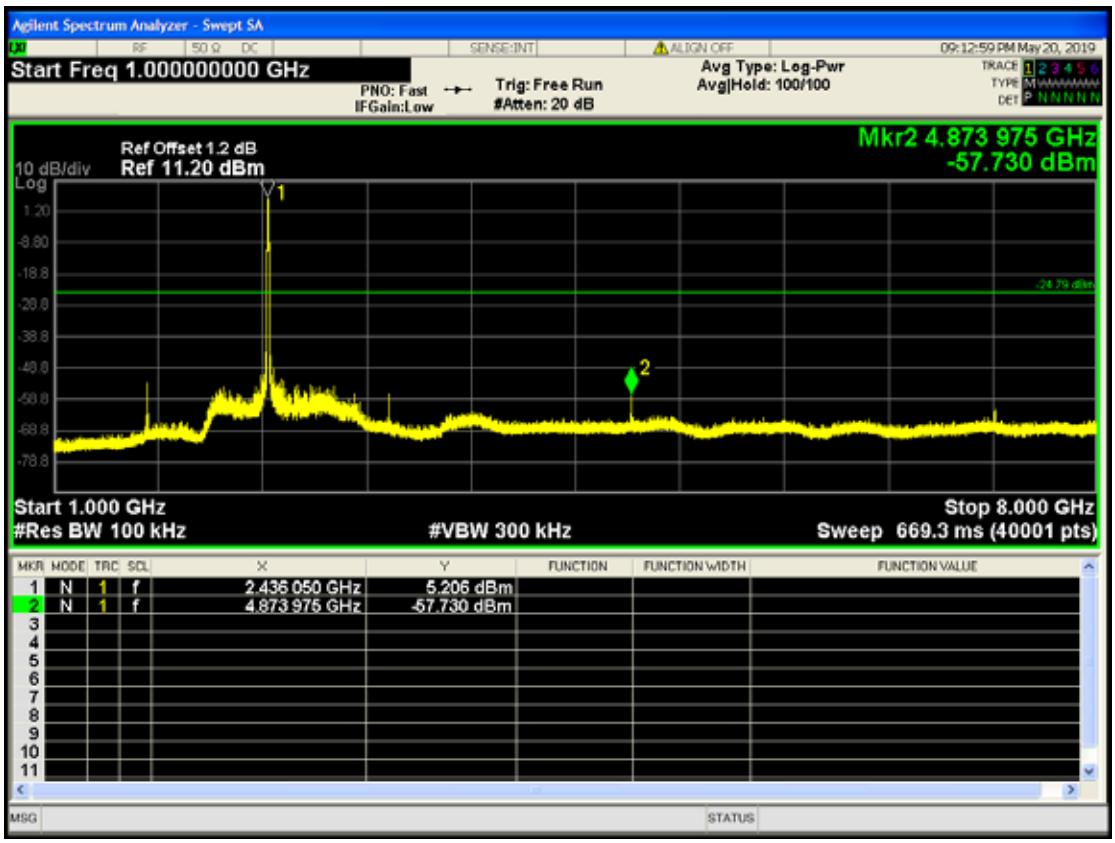

Agilent Spectrum Analyzer - Swept SA
Marker 1 14.472025000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 18 dB
Avg Type: Log-Pwr
Avg|Hold: 28/100
09:01:09 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 7.20 dBm
Log
Mkr1 14.472 025 GHz
-63.110 dBm
-24.22 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 14.472 025 GHz -63.110 dBm

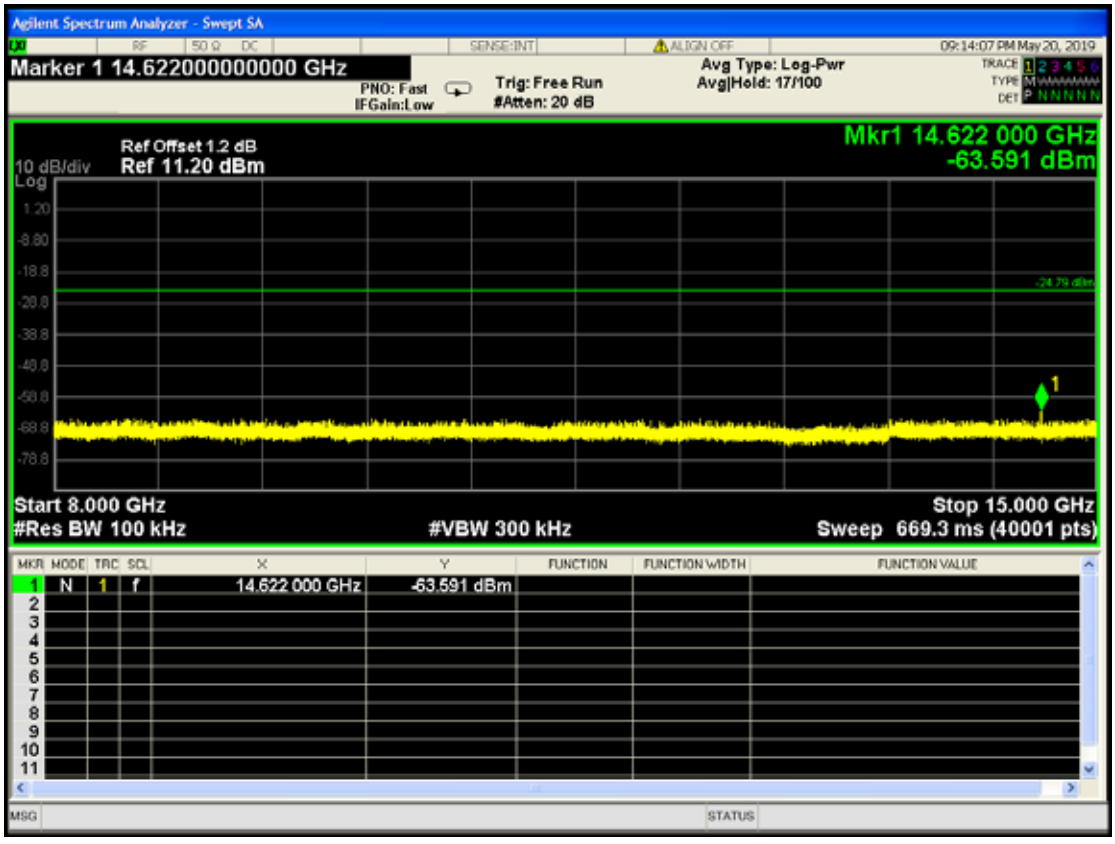

Agilent Spectrum Analyzer - Swept SA
Marker 1 23.678250000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 18 dB
Avg Type: Log-Pwr
Avg|Hold: 21/100
09:02:11 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 7.20 dBm
Log
Mkr1 23.678 25 GHz
-63.755 dBm
-24.22 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 957.3 ms (40001 pts)
1 N 1 f 23.678 25 GHz -63.755 dBm

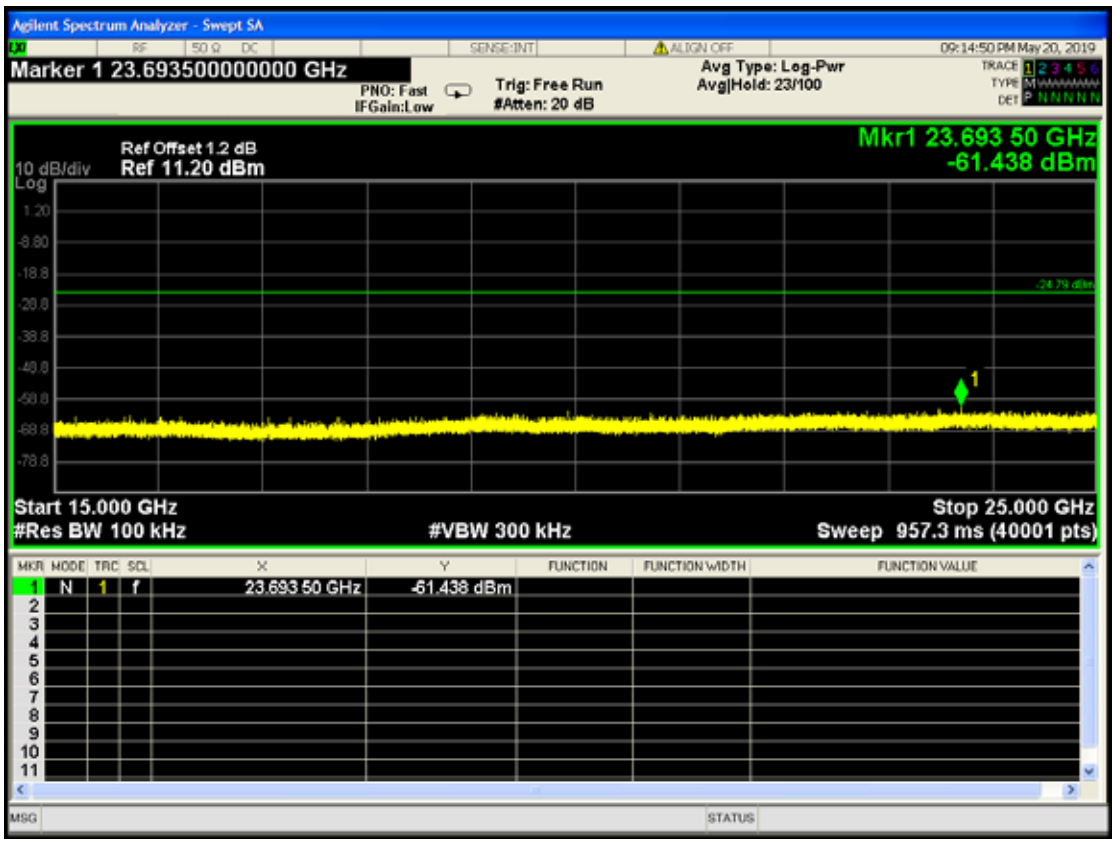

Agilent Spectrum Analyzer - Swept SA
Start Freq 2.350000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:09:25 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 2.400 000 0 GHz
-53.487 dBm
Start 2.35000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.45000 GHz
Sweep 10.67 ms (40001 pts)
1 N 1 f 2.390 000 0 GHz -51.228 dBm
2 N 1 f 2.400 000 0 GHz -53.487 dBm

802.11b CH6

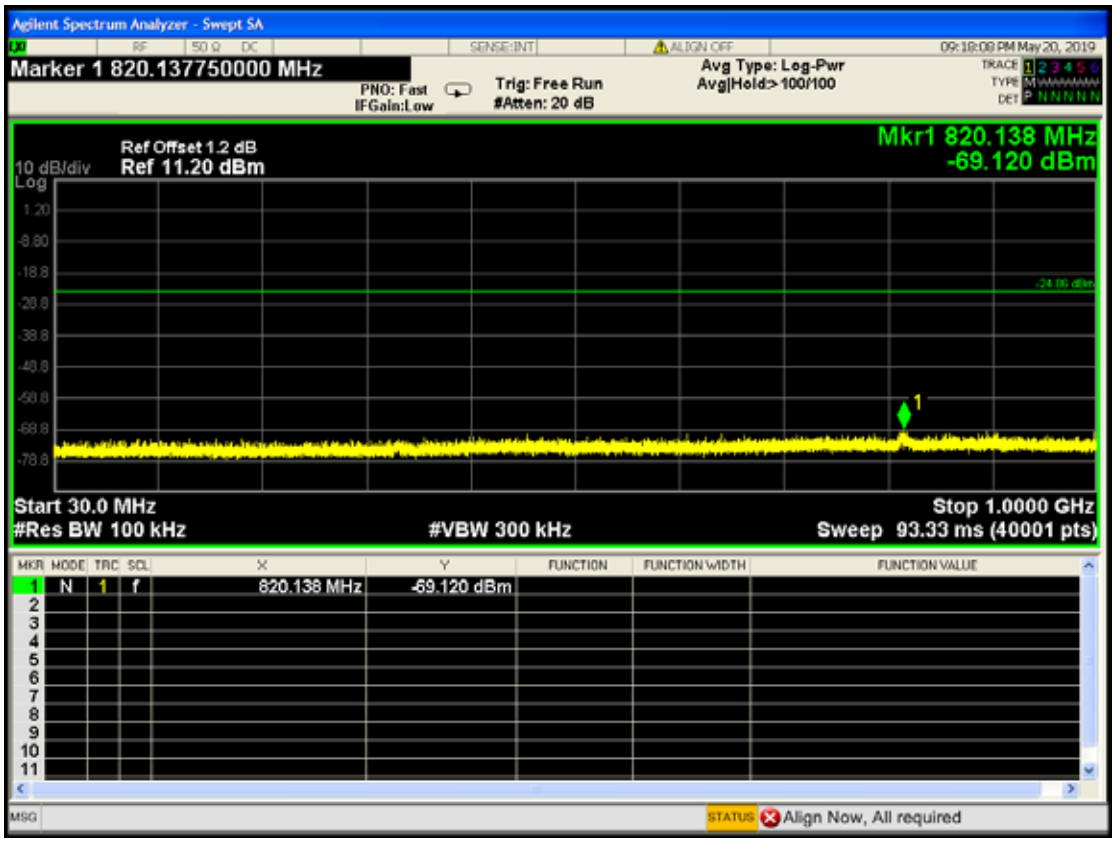

Agilent Spectrum Analyzer - Swept SA
Marker 1 809.298000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:13:37 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 809.298 MHz
-68.665 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.33 ms (40001 pts)
1 N 1 f 809.298 MHz -68.665 dBm

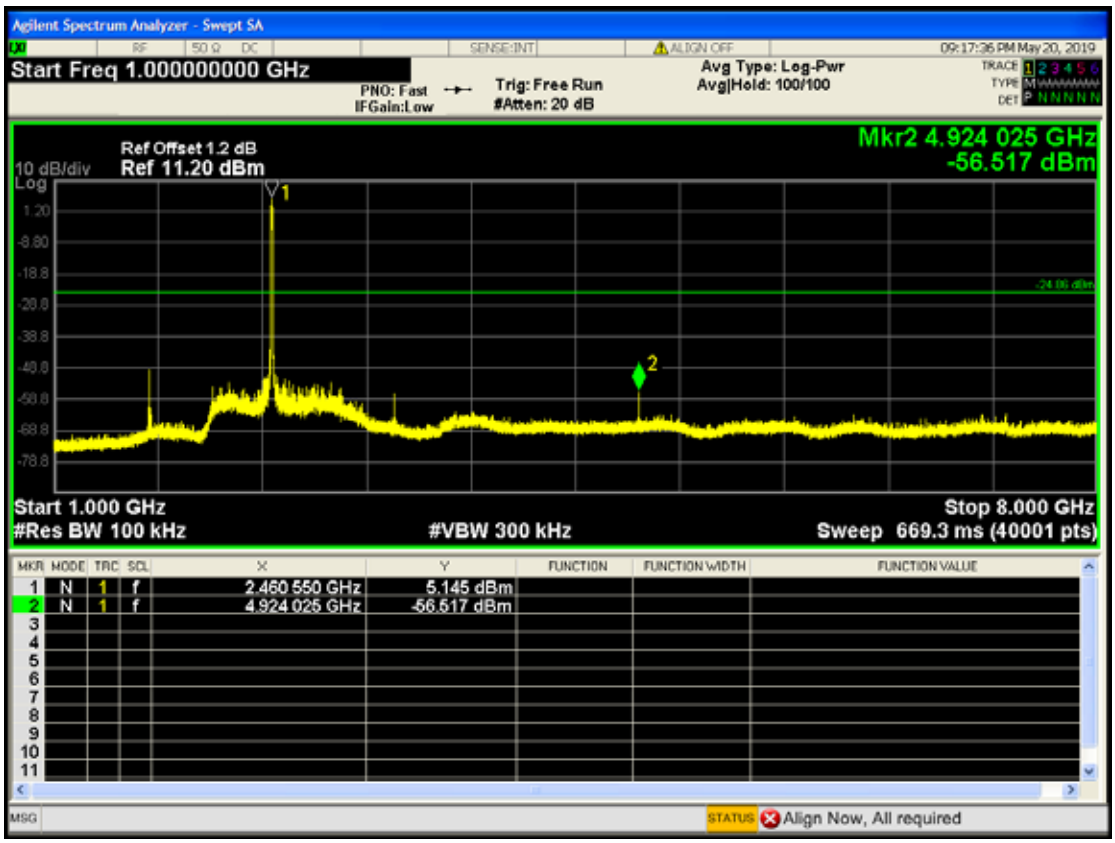

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
09:12:59 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 4.873 975 GHz
-57.730 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 8.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 2.436 050 GHz 5.206 dBm
2 N 1 f 4.873 975 GHz -57.730 dBm

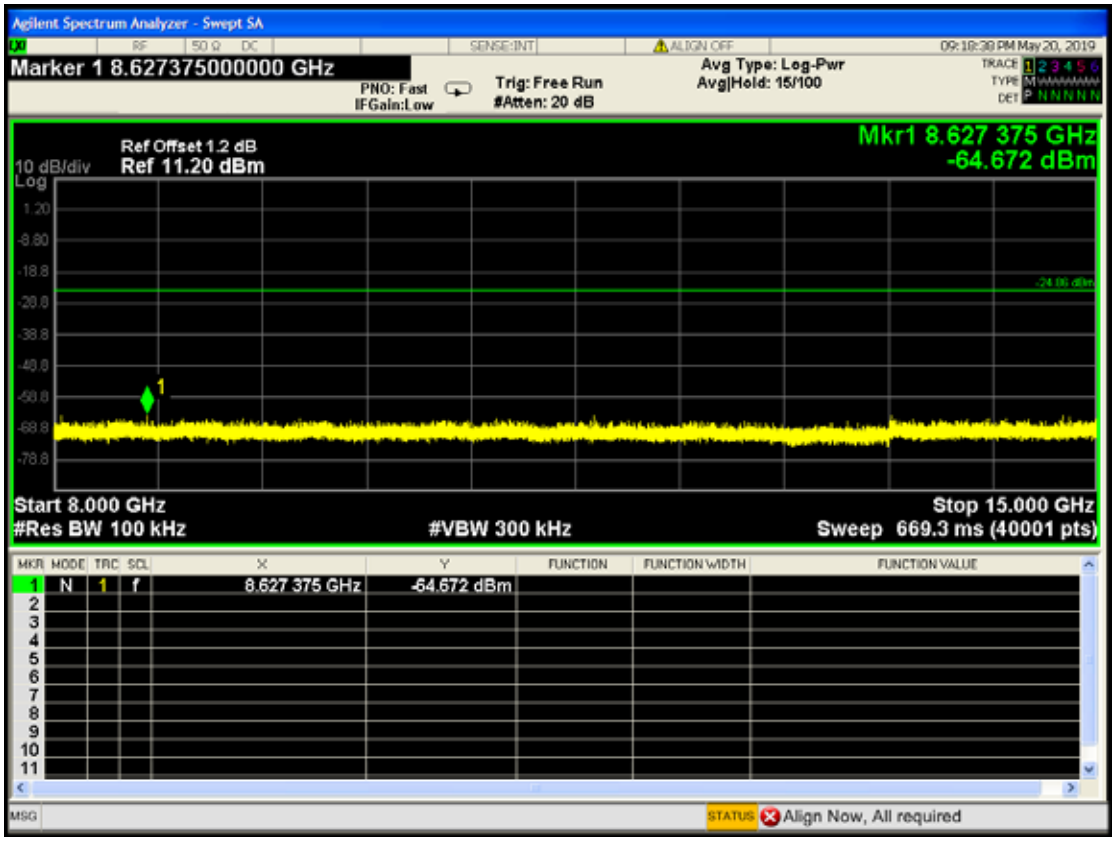

Agilent Spectrum Analyzer - Swept SA
Marker 1 14.622000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 17/100
09:14:07 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 14.622 000 GHz
-63.591 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 14.622 000 GHz -63.591 dBm

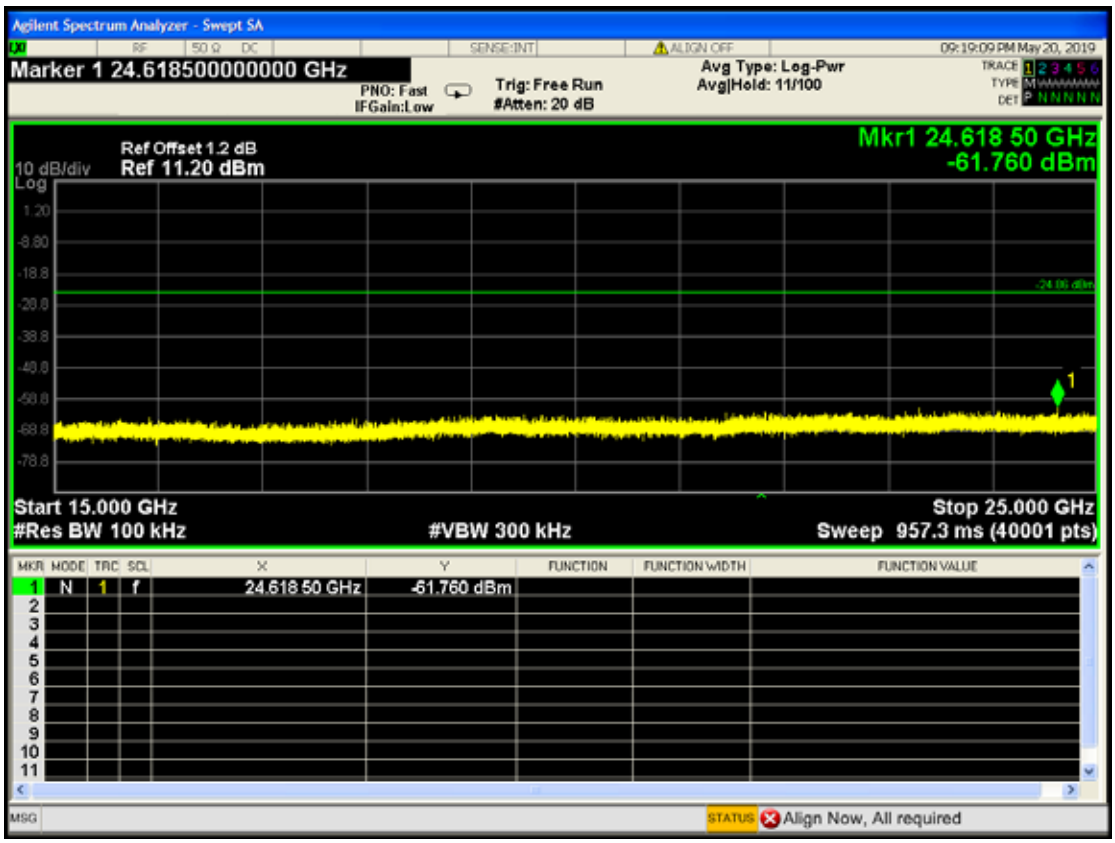

Agilent Spectrum Analyzer - Swept SA
Marker 1 23.693500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 23/100
09:14:50 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 23.693 50 GHz
-61.438 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 957.3 ms (40001 pts)
1 N 1 f 23.693 50 GHz -61.438 dBm

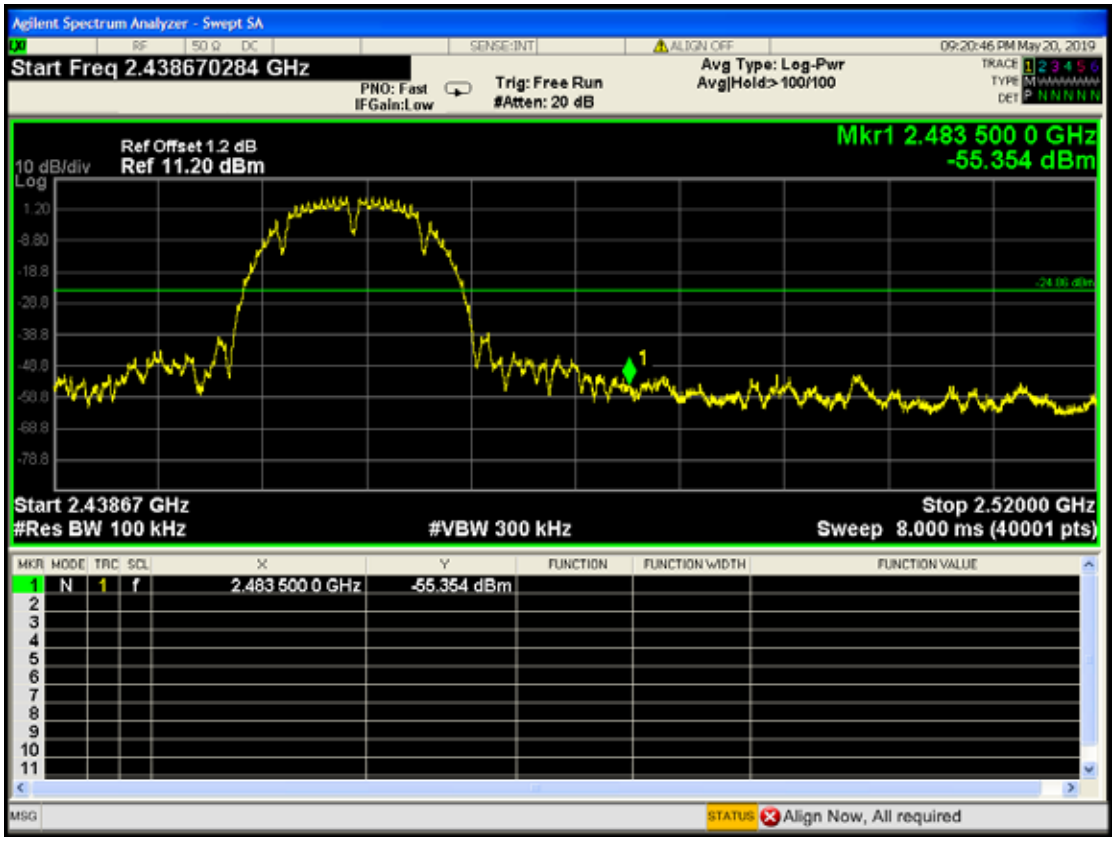
802.11b CH11


Agilent Spectrum Analyzer - Swept SA
Marker 1 820.137750000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
09:18:08 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 820.138 MHz
-69.120 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.33 ms (40001 pts)
1 N 1 f 820.138 MHz -69.120 dBm
STATUS Align Now, All required

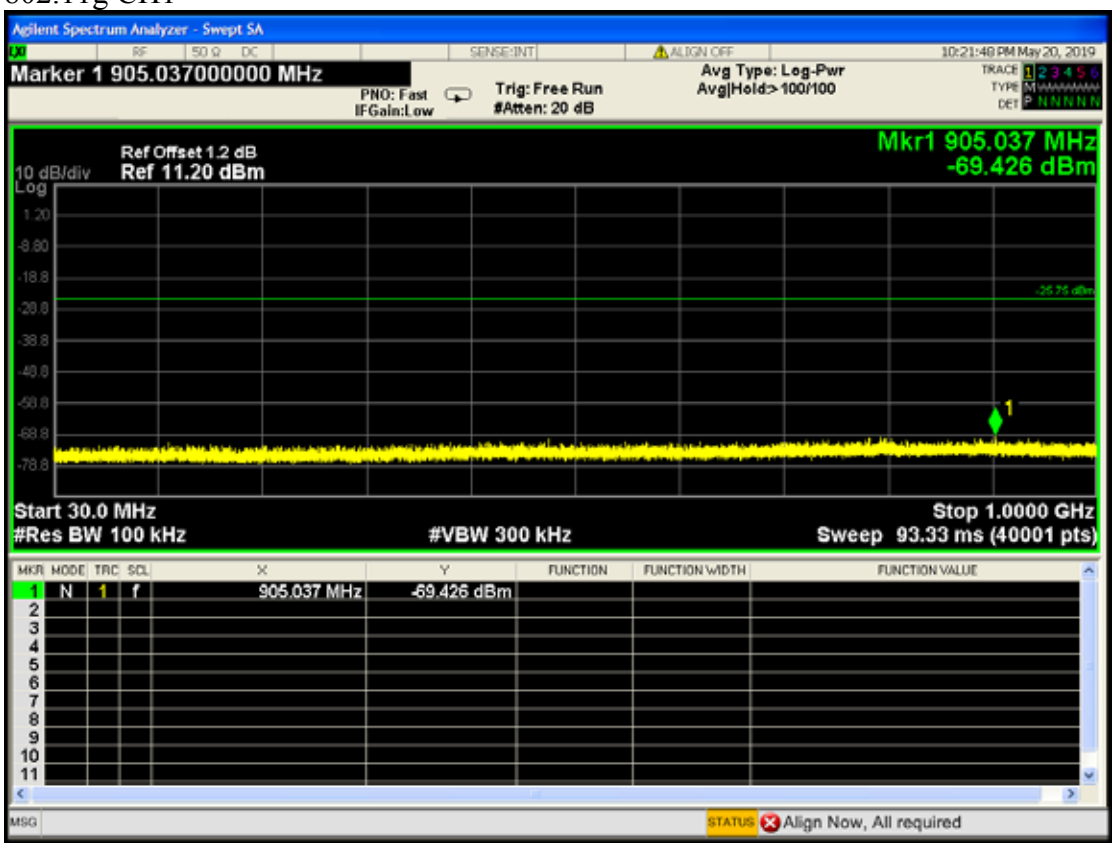

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
09:17:36 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 4.924 025 GHz
-56.517 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 8.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 2.460 550 GHz 5.145 dBm
2 N 1 f 4.924 025 GHz -56.517 dBm
Align Now, All required

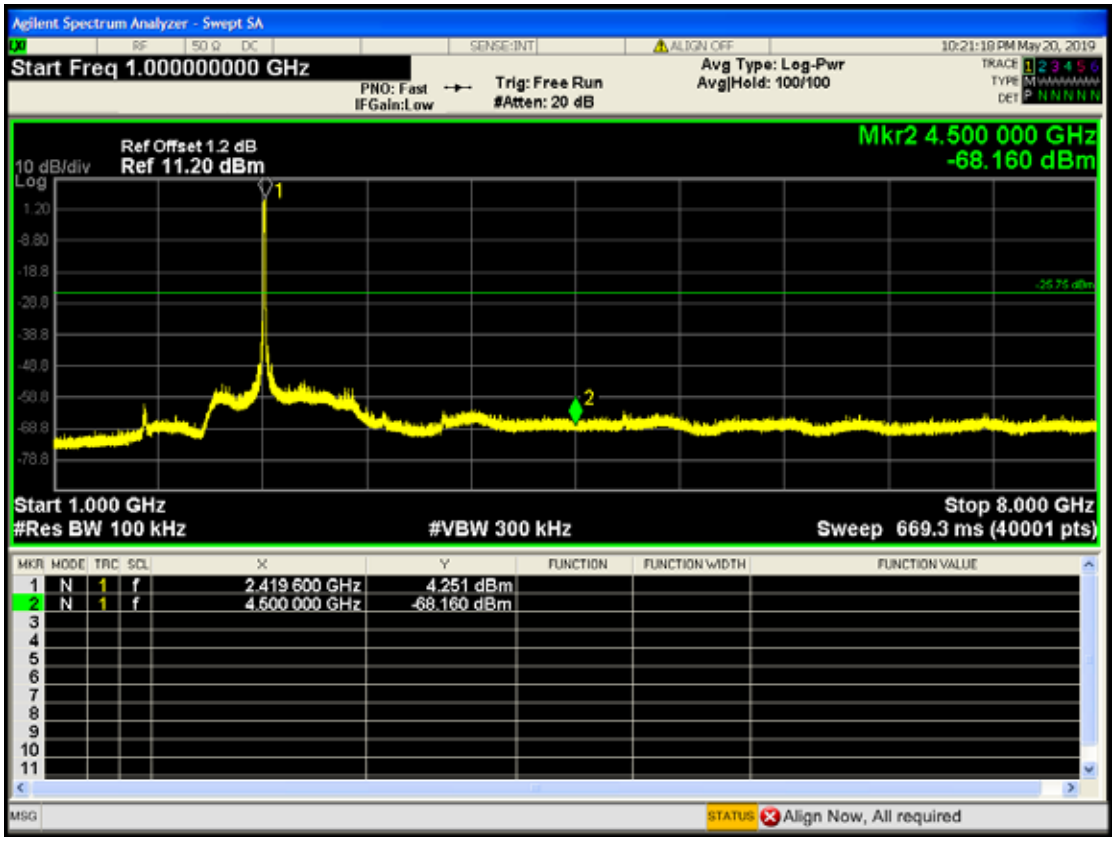

Agilent Spectrum Analyzer - Swept SA
Marker 1 8.627375000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 15/100
09:18:38 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 8.627 375 GHz
-64.672 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 8.627 375 GHz -64.672 dBm
Align Now, All required

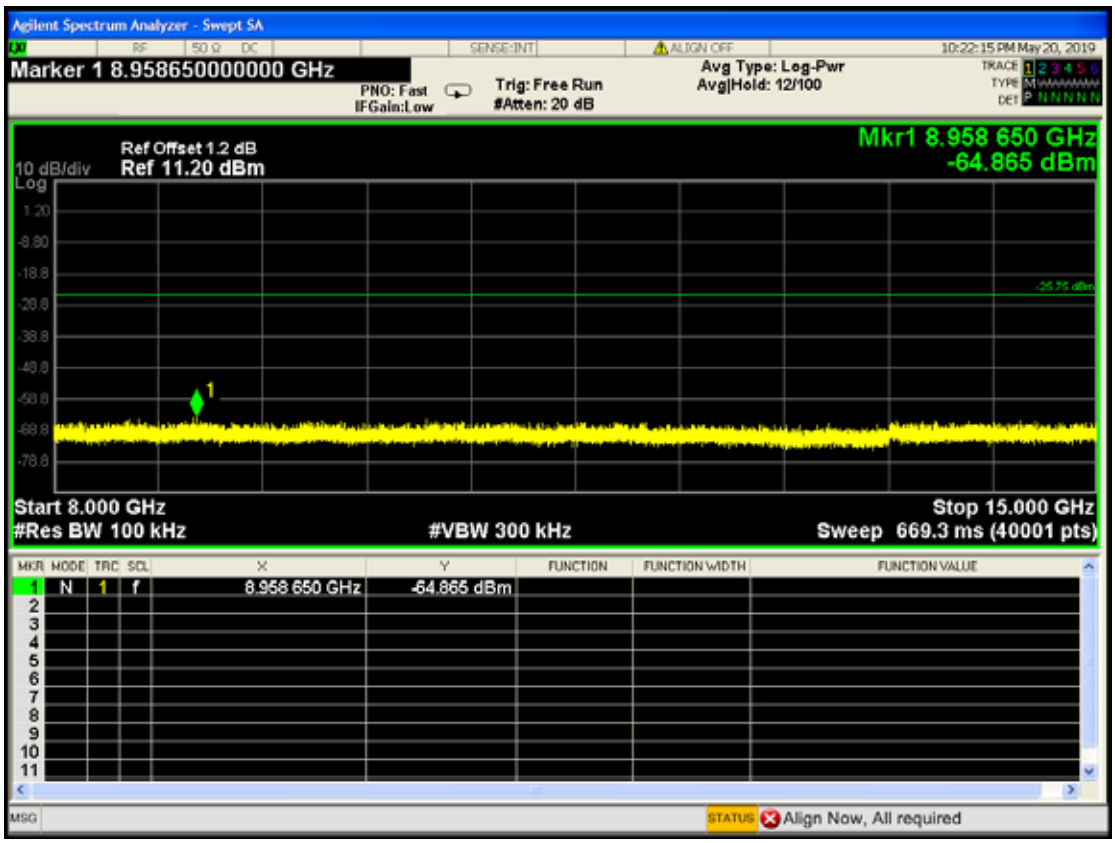

Agilent Spectrum Analyzer - Swept SA
09:19:09 PM May 20, 2019
Marker 1 24.618500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 11/100
Ref Offset 1.2 dB
10 dB/div
Log
Ref 11.20 dBm
Mkr1 24.618 50 GHz
-61.760 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 957.3 ms (40001 pts)
1 N 1 f 24.618 50 GHz -61.760 dBm
Align Now, All required

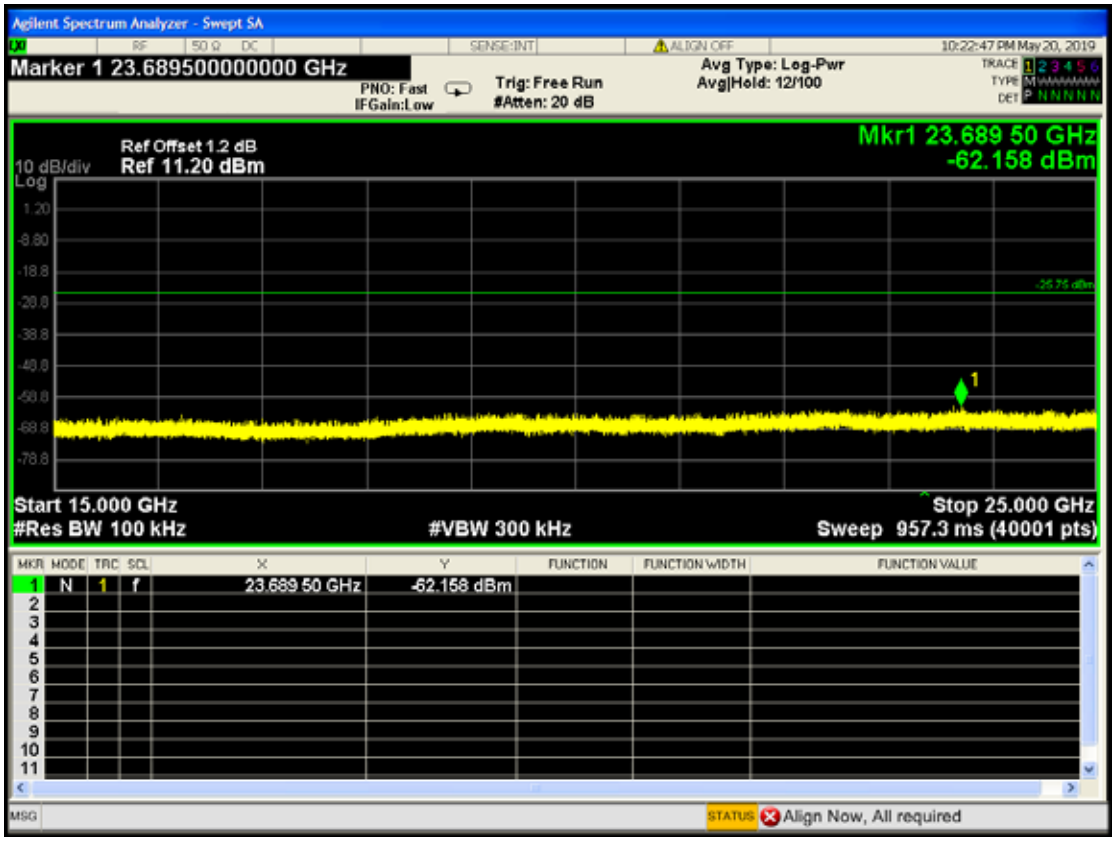

Agilent Spectrum Analyzer - Swept SA
09:20:46 PM May 20, 2019
Start Freq 2.438670284 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 1.2 dB
10 dB/div
Log
Ref 11.20 dBm
Mkr1 2.483 500 0 GHz
-55.354 dBm
Start 2.43867 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.52000 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.483 500 0 GHz -55.354 dBm
Align Now, All required

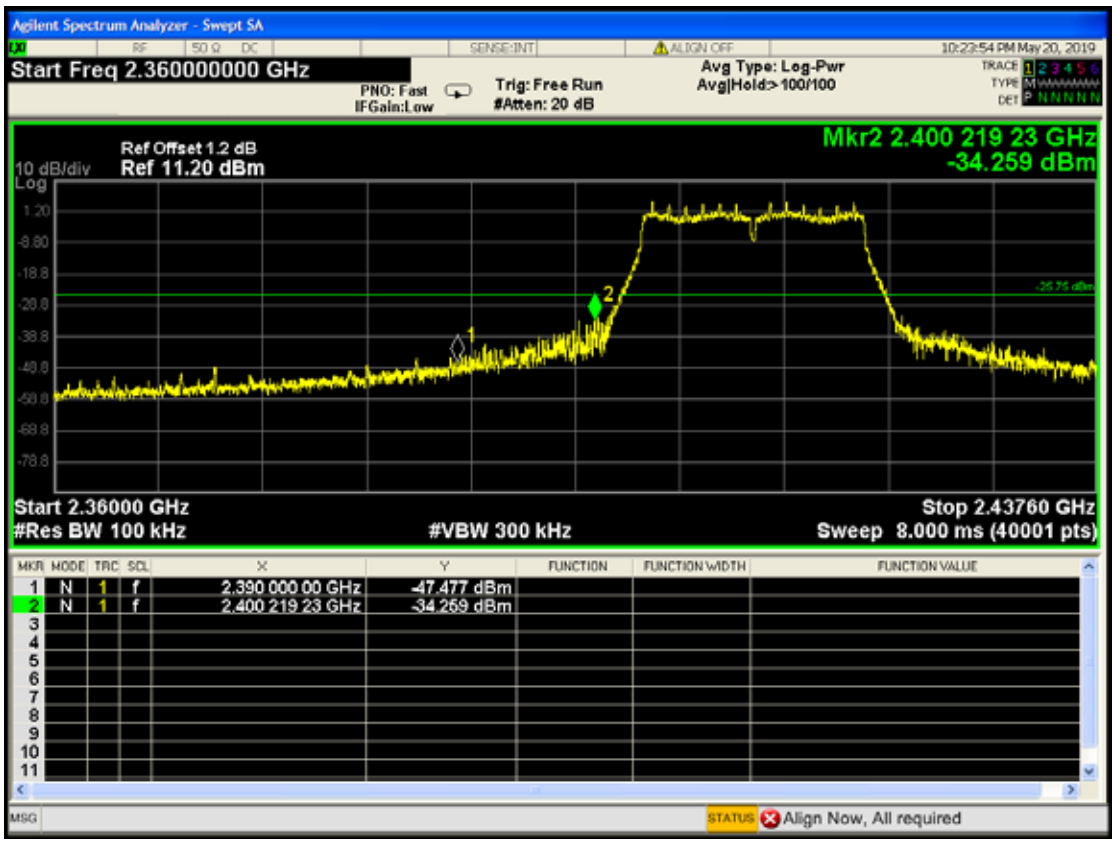
802.11g CH1


Agilent Spectrum Analyzer - Swept SA
Marker 1 905.037000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:21:48 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 905.037 MHz
-69.426 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.33 ms (40001 pts)
1 N 1 f 905.037 MHz -69.426 dBm
Align Now, All required

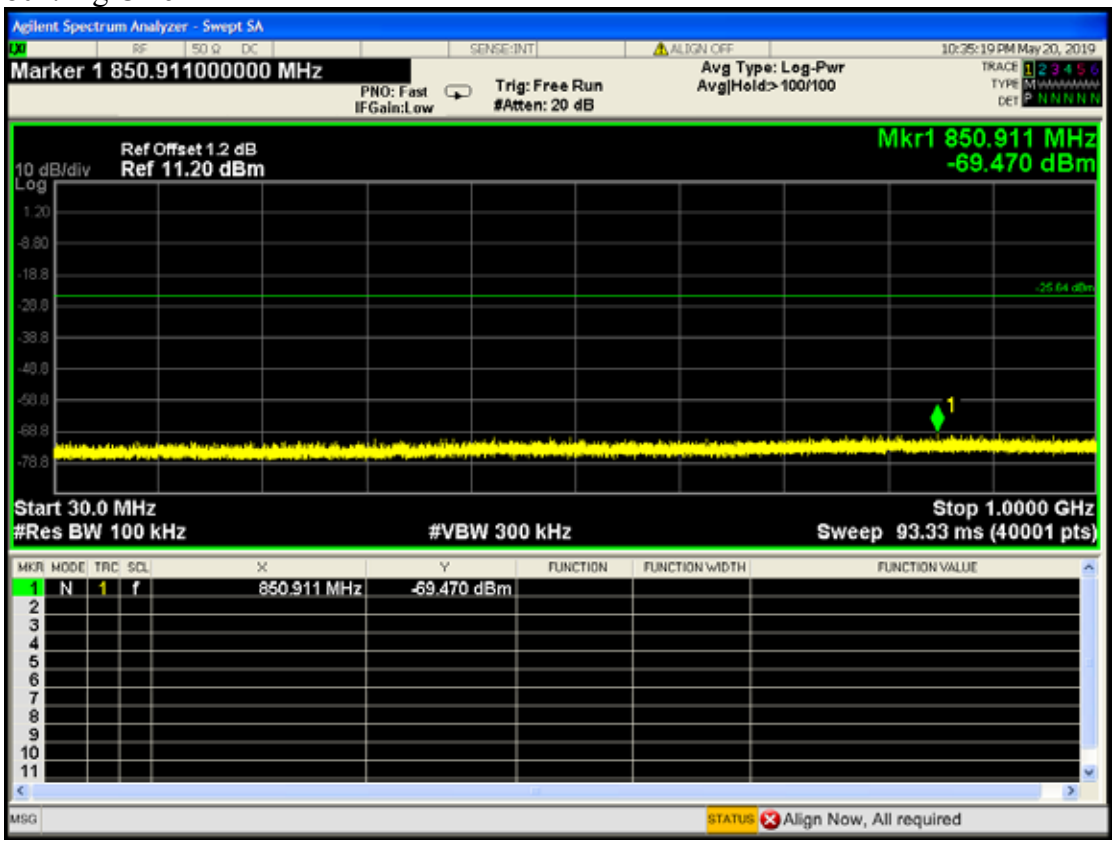

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
10:21:18 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 4.500 000 GHz
-68.160 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 8.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 2.419 600 GHz 4.251 dBm
2 N 1 f 4.500 000 GHz -68.160 dBm
Align Now, All required

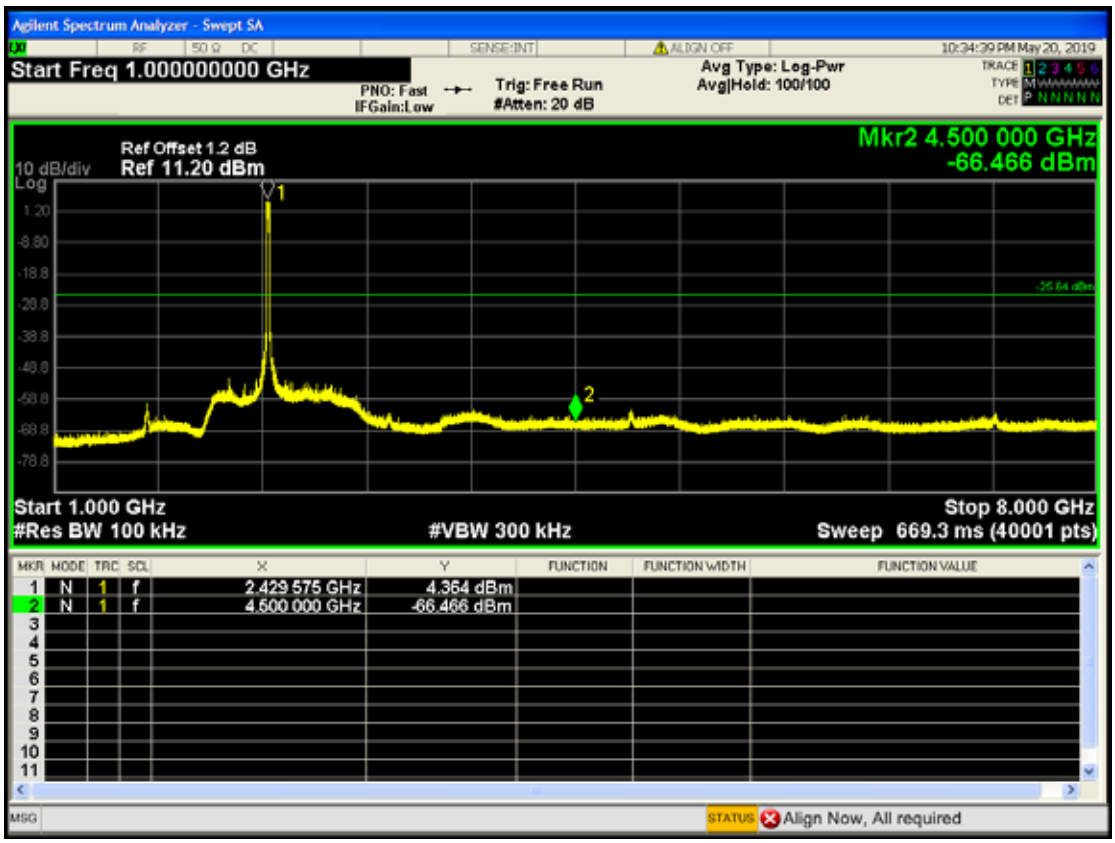

Agilent Spectrum Analyzer - Swept SA
Marker 1 8.958650000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
10:22:15 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 8.958 650 GHz
-64.865 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 8.958 650 GHz -64.865 dBm
Align Now, All required

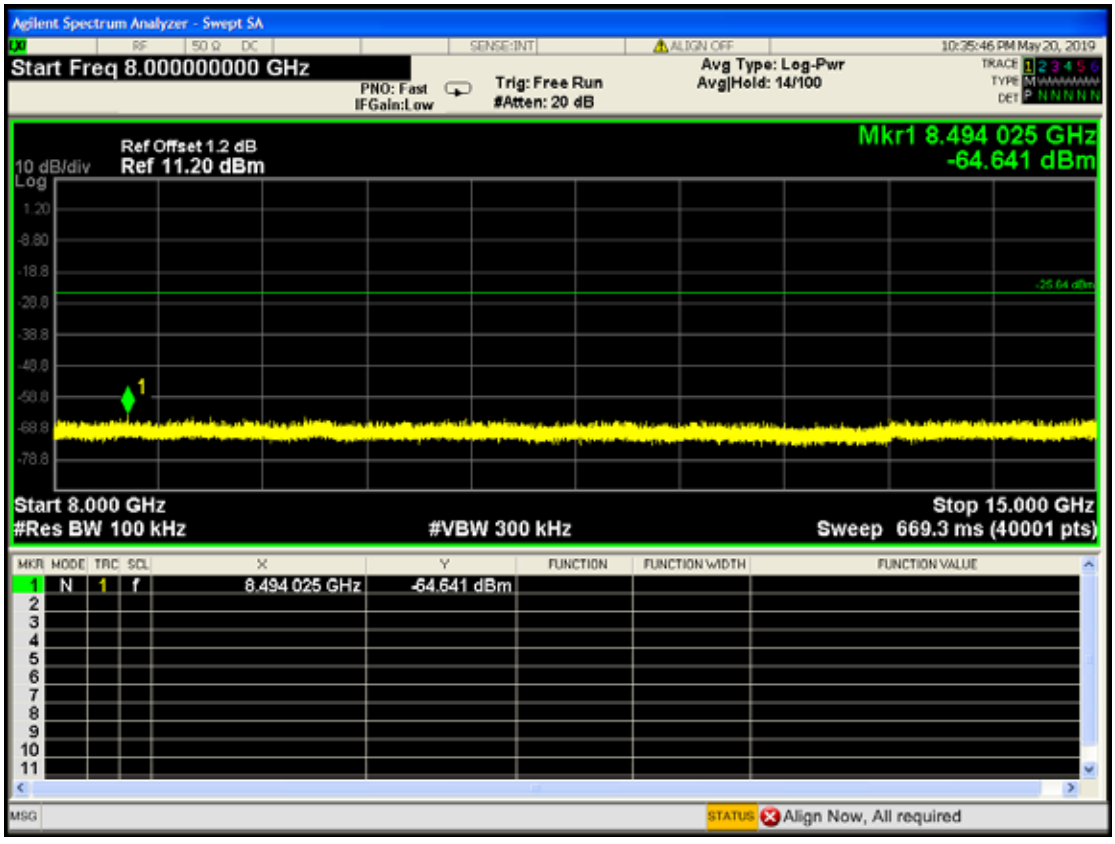

Agilent Spectrum Analyzer - Swept SA
Marker 1 23.689500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
10:22:47 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 23.689 50 GHz
-62.158 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 957.3 ms (40001 pts)
1 N 1 f 23.689 50 GHz -62.158 dBm
Align Now, All required

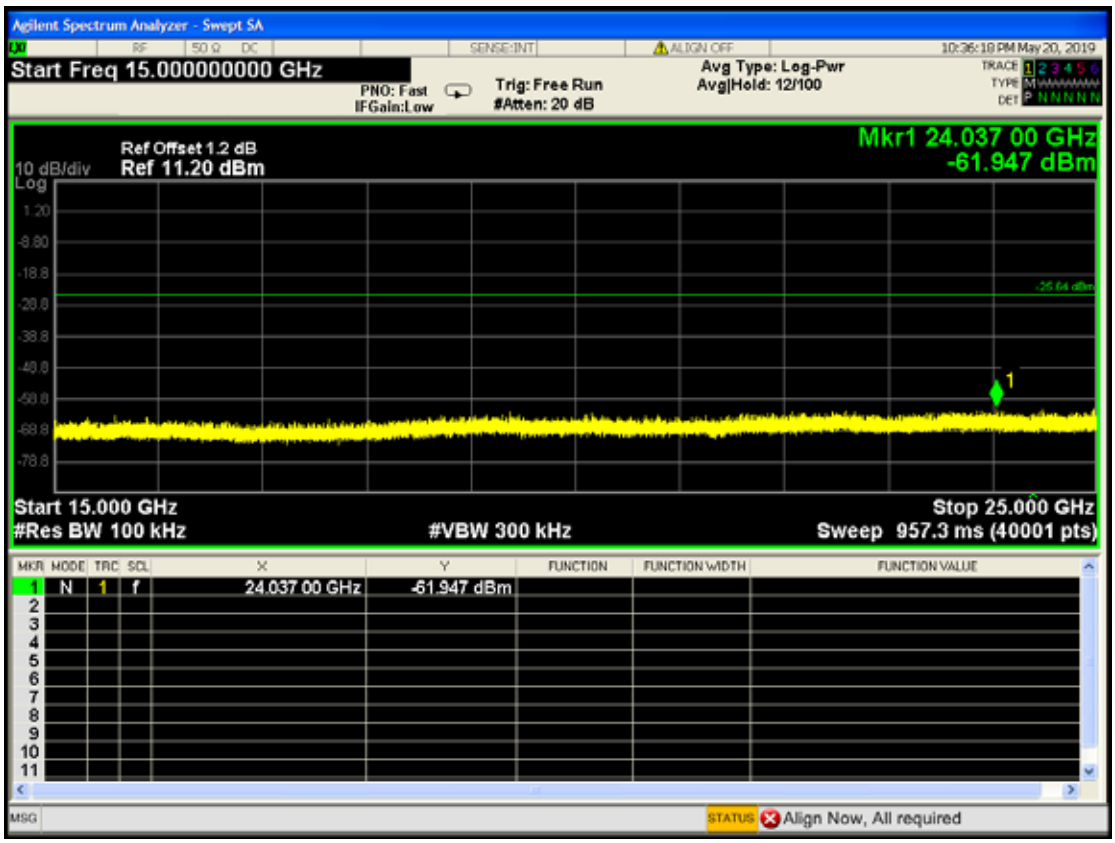

Agilent Spectrum Analyzer - Swept SA
Start Freq 2.360000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:22:54 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 2.400 219 23 GHz
-34.259 dBm
Start 2.36000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.43760 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.390 000 00 GHz -47.477 dBm
2 N 1 f 2.400 219 23 GHz -34.259 dBm
Align Now, All required

802.11g CH6

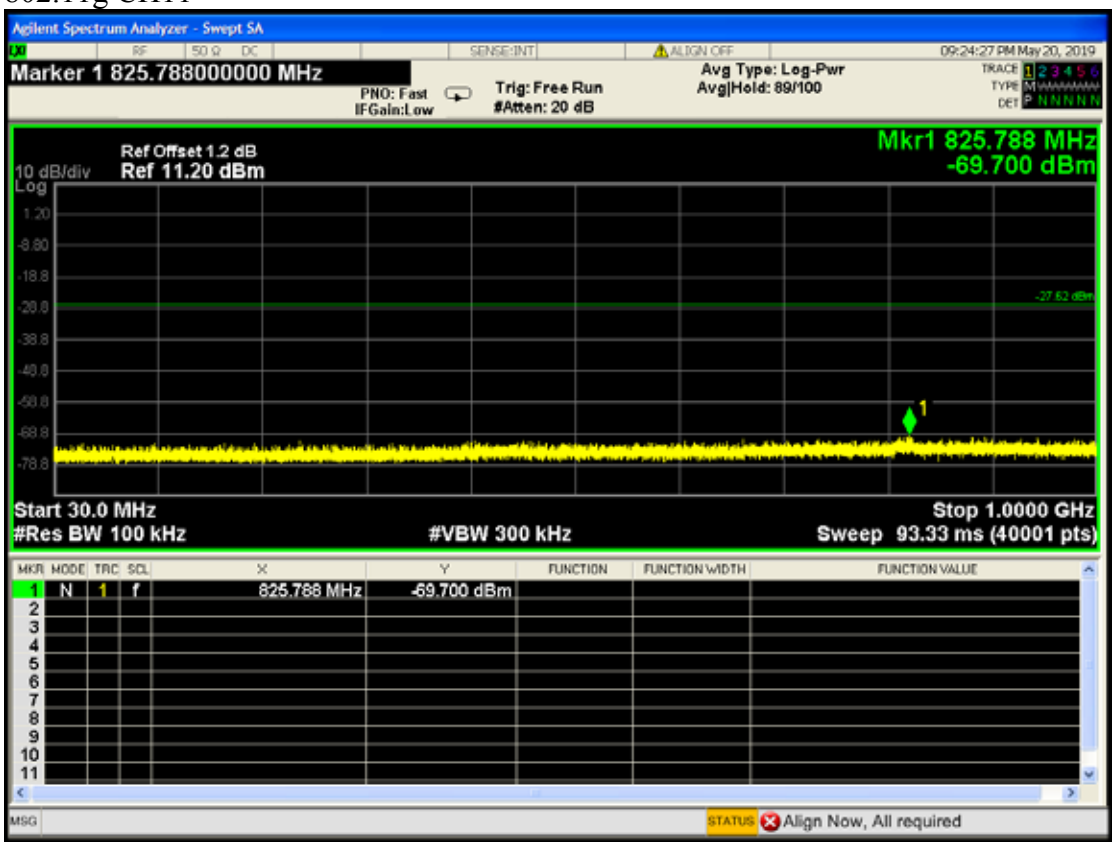

Agilent Spectrum Analyzer - Swept SA
Marker 1 850.911000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:35:19 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 850.911 MHz
-69.470 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.33 ms (40001 pts)
1 N 1 f 850.911 MHz -69.470 dBm
Align Now, All required

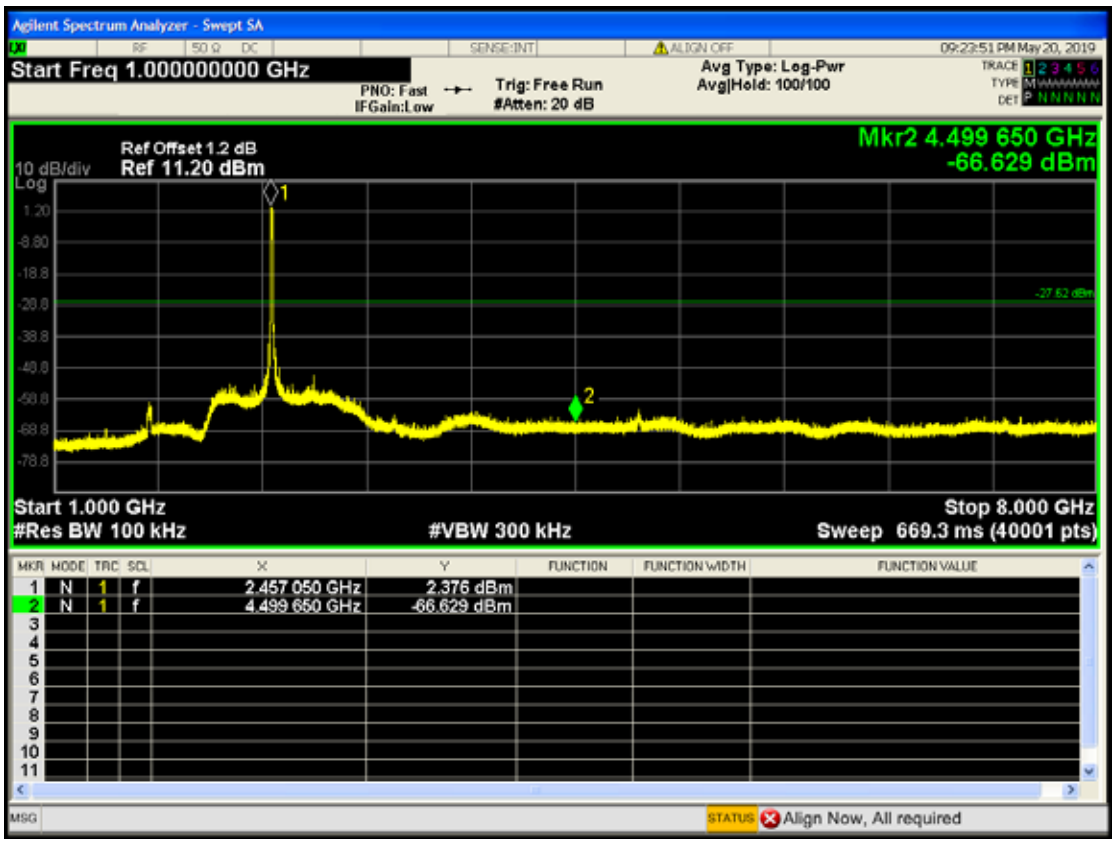

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
10:34:39 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 4.500 000 GHz
-66.466 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 8.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 2.429 575 GHz 4.364 dBm
2 N 1 f 4.500 000 GHz -66.466 dBm
Align Now, All required

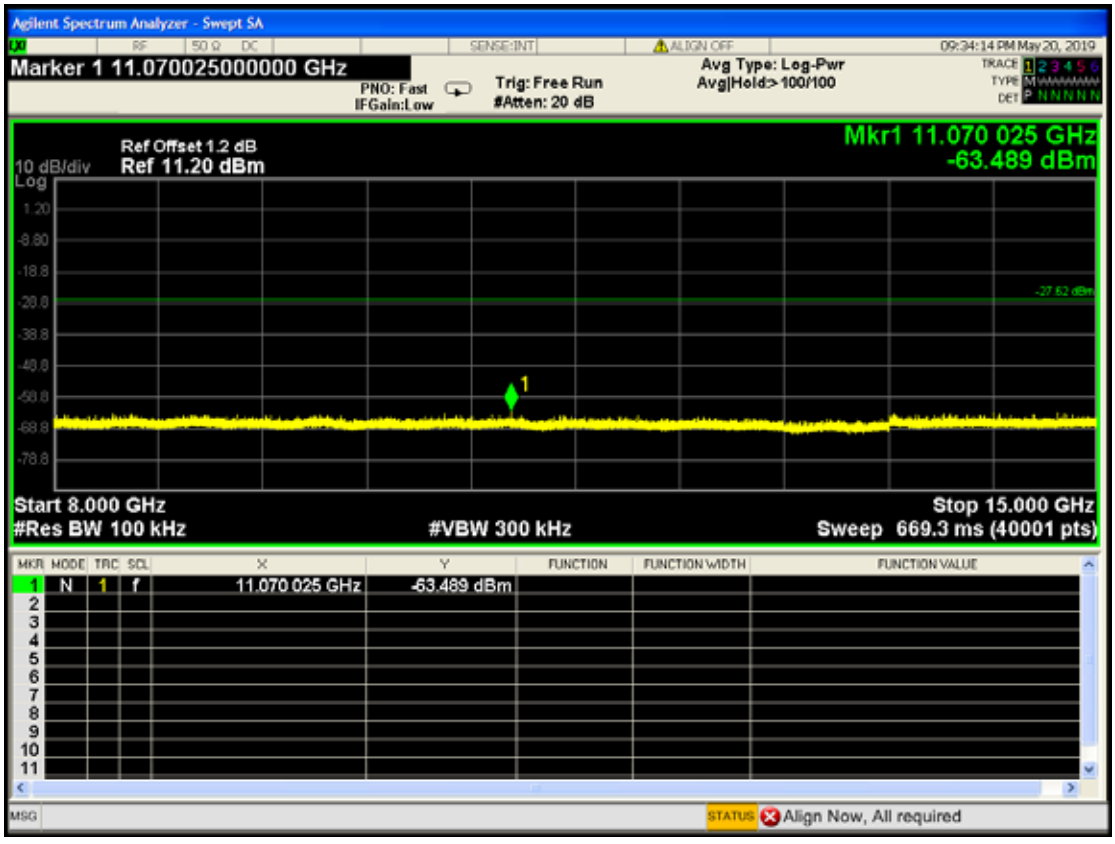

Agilent Spectrum Analyzer - Swept SA
Start Freq 8.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 14/100
10:35:46 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 8.494 025 GHz
-64.641 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 8.494 025 GHz -64.641 dBm
Align Now, All required

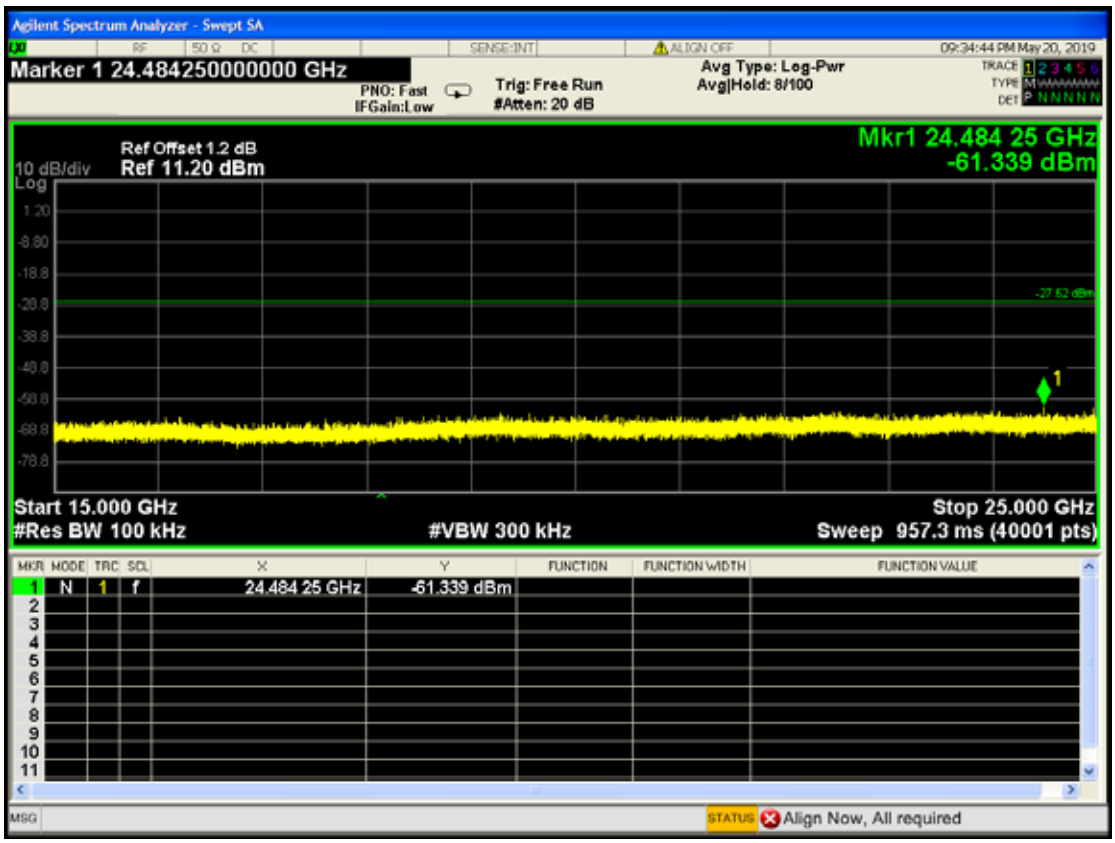

Agilent Spectrum Analyzer - Swept SA
Start Freq 15.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
10:36:18 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 24.037 00 GHz
-61.947 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 957.3 ms (40001 pts)
1 N 1 f 24.037 00 GHz -61.947 dBm
Align Now, All required

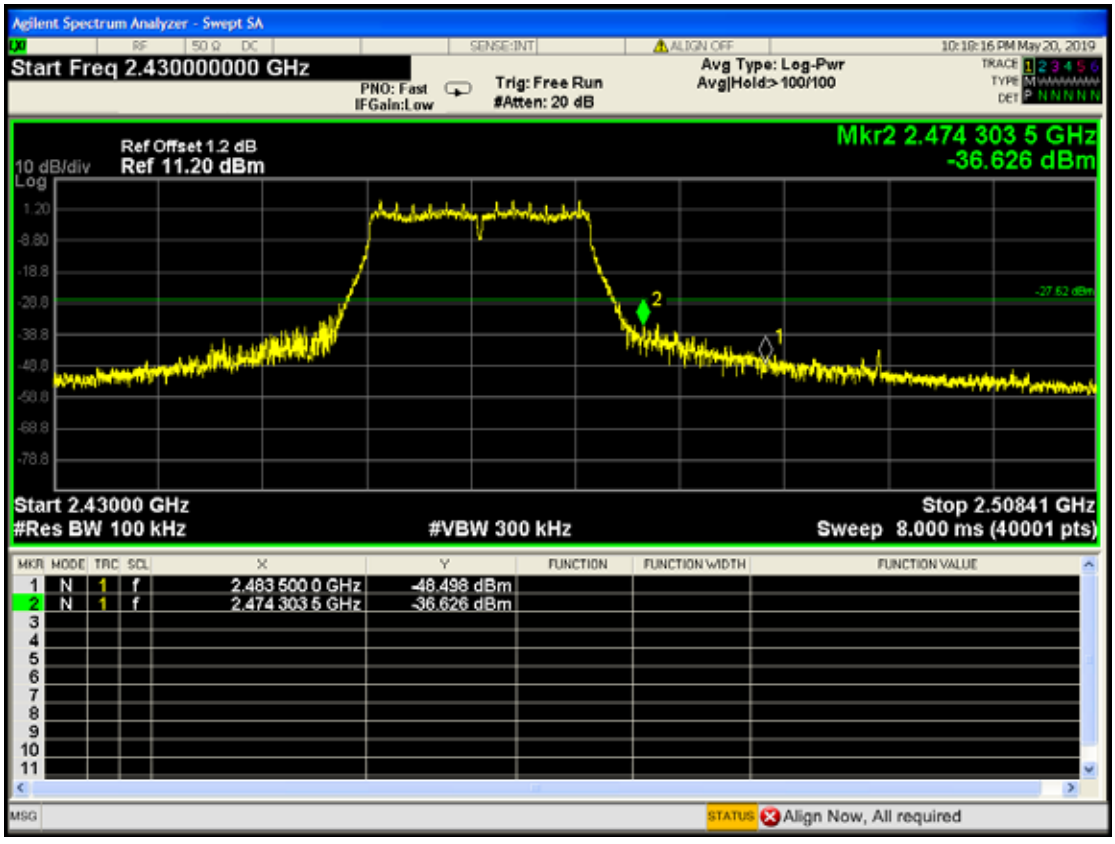
802.11g CH11


Agilent Spectrum Analyzer - Swept SA
Marker 1 825.788000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 89/100
09:24:27 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 825.788 MHz
-69.700 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.33 ms (40001 pts)
1 N 1 f 825.788 MHz -69.700 dBm
Align Now, All required

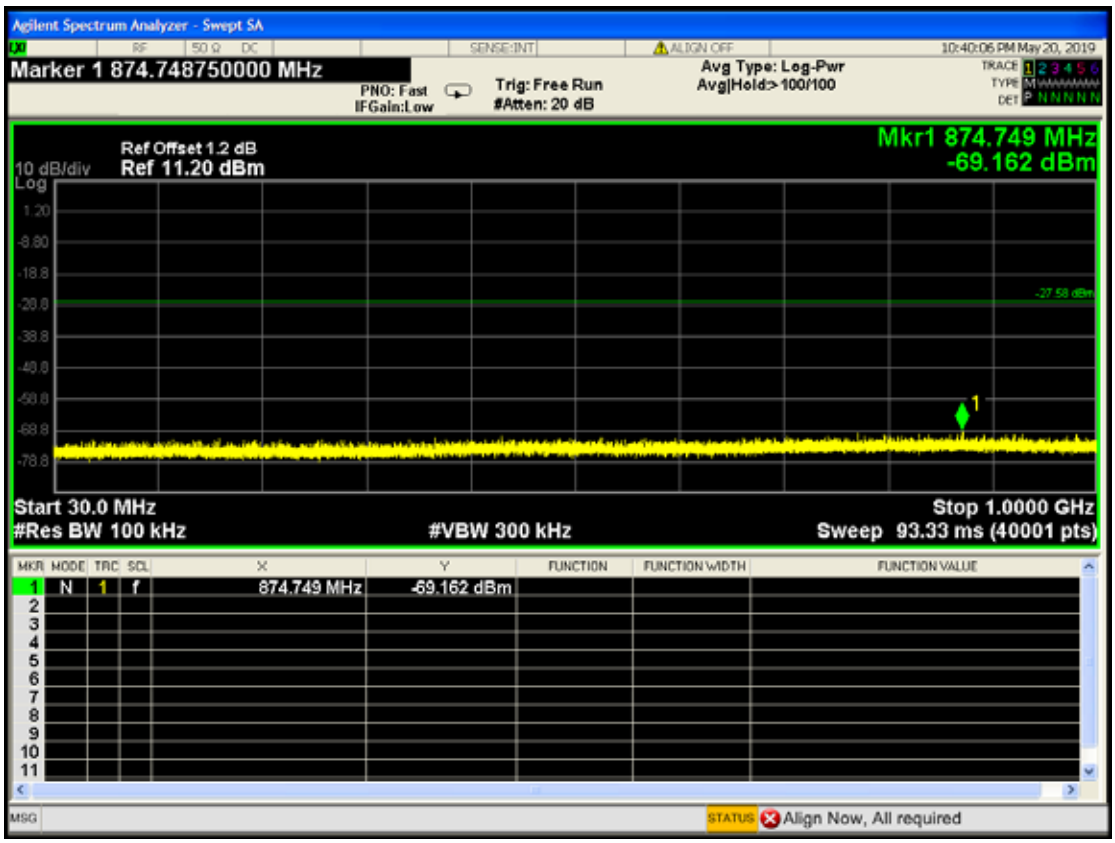

Agilent Spectrum Analyzer - Swept SA
09:23:51 PM May 20, 2019
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 4.499 650 GHz
-66.629 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 8.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 2.457 050 GHz 2.376 dBm
2 N 1 f 4.499 650 GHz -66.629 dBm
Align Now, All required

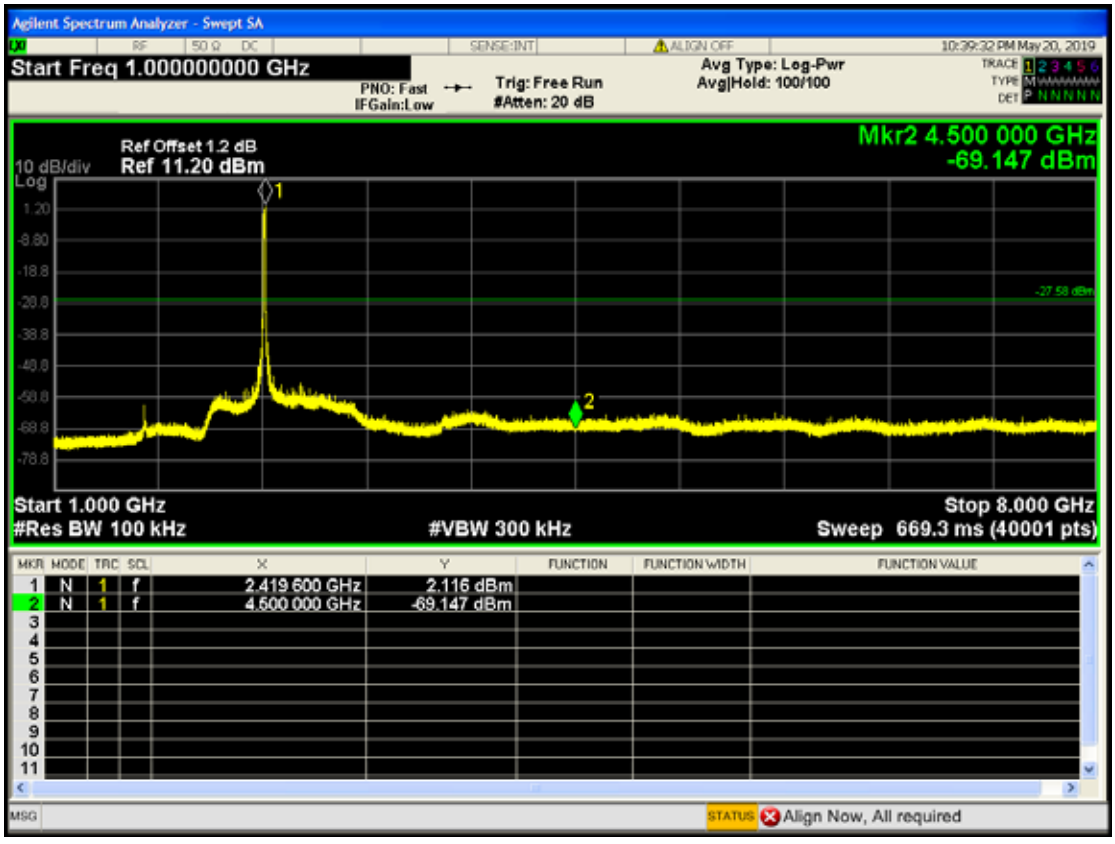

Agilent Spectrum Analyzer - Swept SA
09:34:14 PM May 20, 2019
Marker 1 11.070025000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 11.070 025 GHz
-63.489 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 11.070 025 GHz -63.489 dBm
Align Now, All required

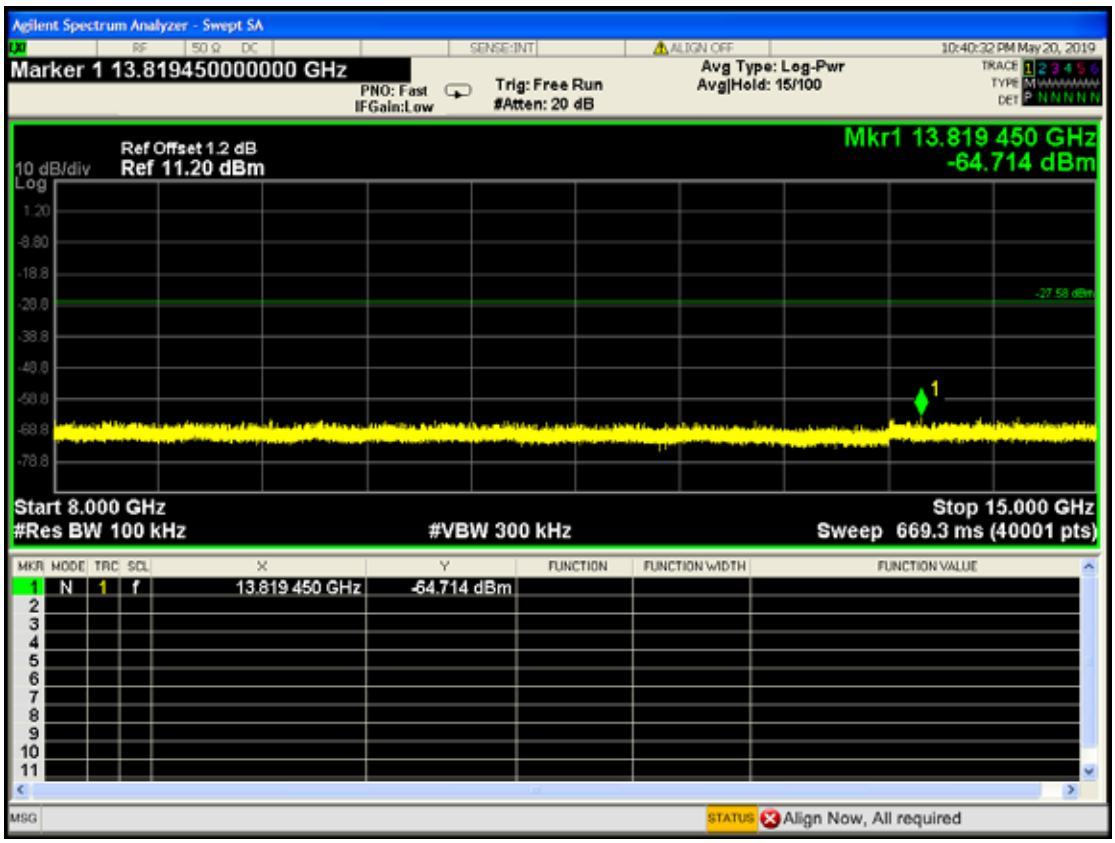

Agilent Spectrum Analyzer - Swept SA
09:34:44 PM May 20, 2019
Marker 1 24.484250000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 8/100
Ref Offset 1.2 dB
10 dB/div
Log
Ref 11.20 dBm
Mkr1 24.484 25 GHz
-61.339 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 957.3 ms (40001 pts)
1 N 1 f 24.484 25 GHz -61.339 dBm
Align Now, All required

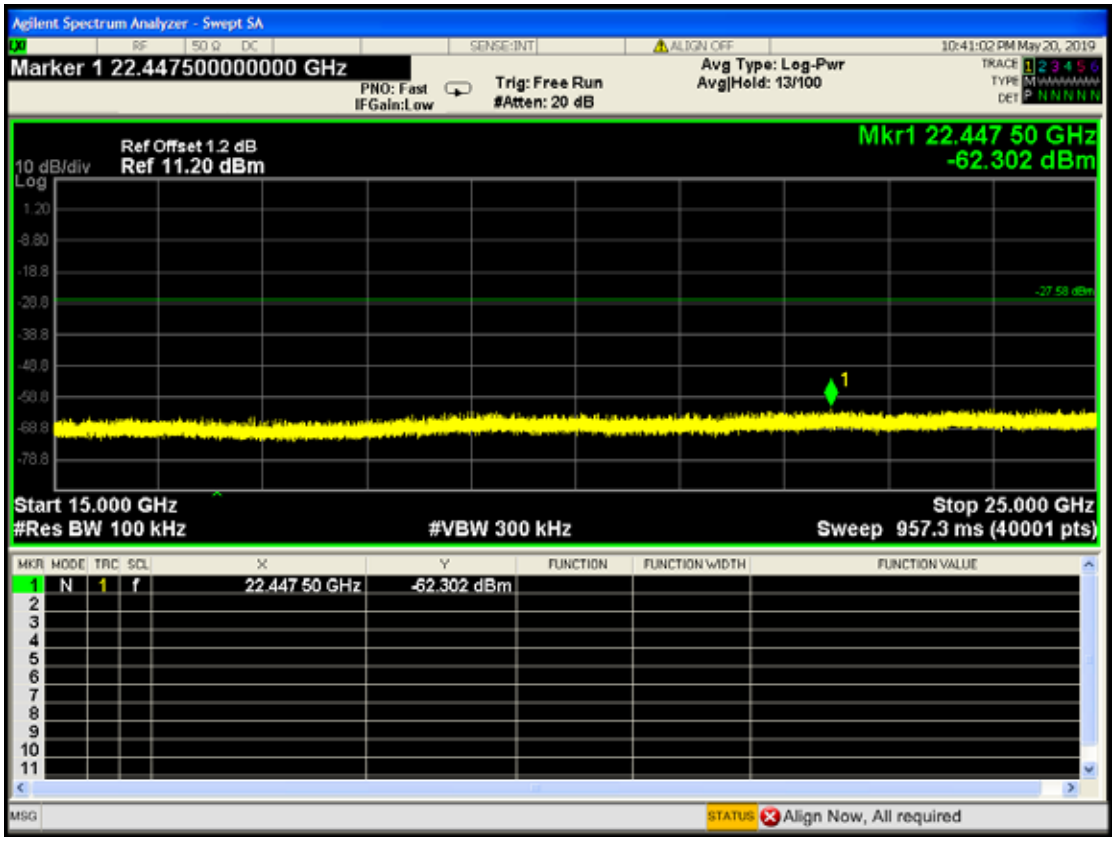

Agilent Spectrum Analyzer - Swept SA
10:18:16 PM May 20, 2019
Start Freq 2.430000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 1.2 dB
10 dB/div
Log
Ref 11.20 dBm
Mkr2 2.474 303 5 GHz
-36.626 dBm
Start 2.43000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.50841 GHz
Sweep 8.000 ms (40001 pts)
1 N 1 f 2.483 500 0 GHz -48.498 dBm
2 N 1 f 2.474 303 5 GHz -36.626 dBm
Align Now, All required

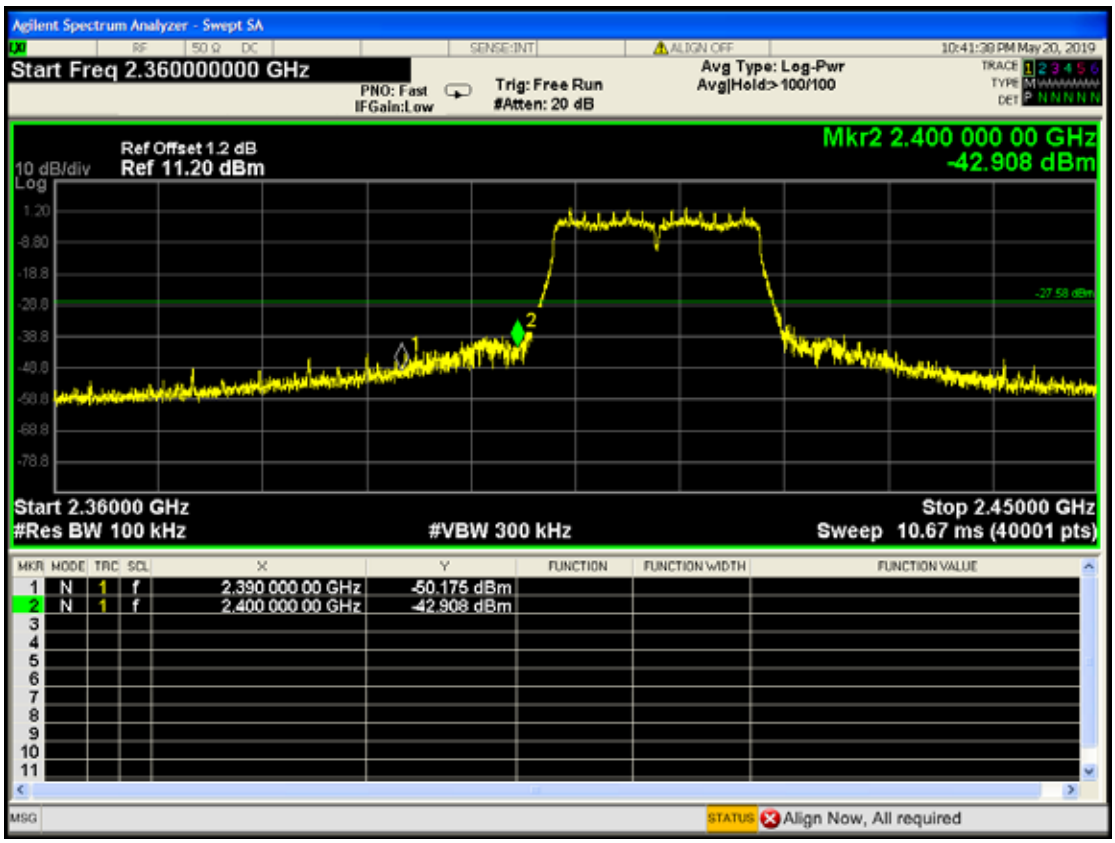
802.11nHT20 CH1



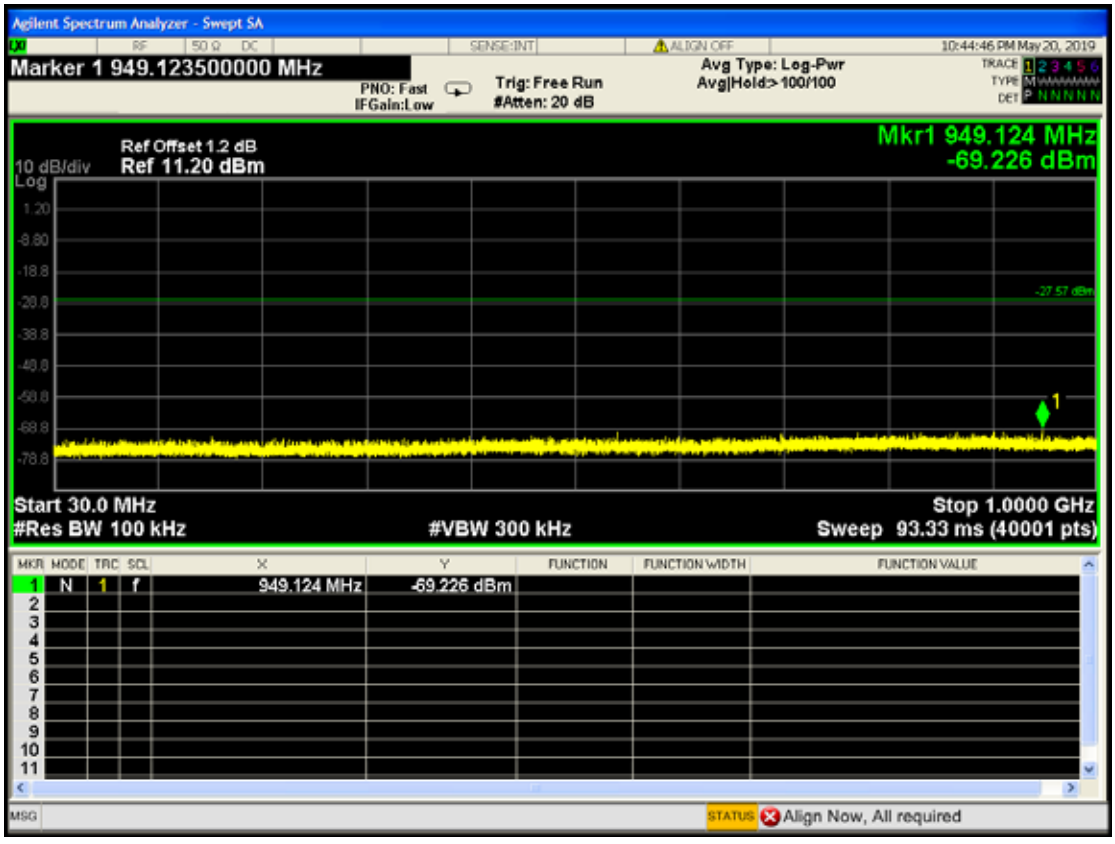


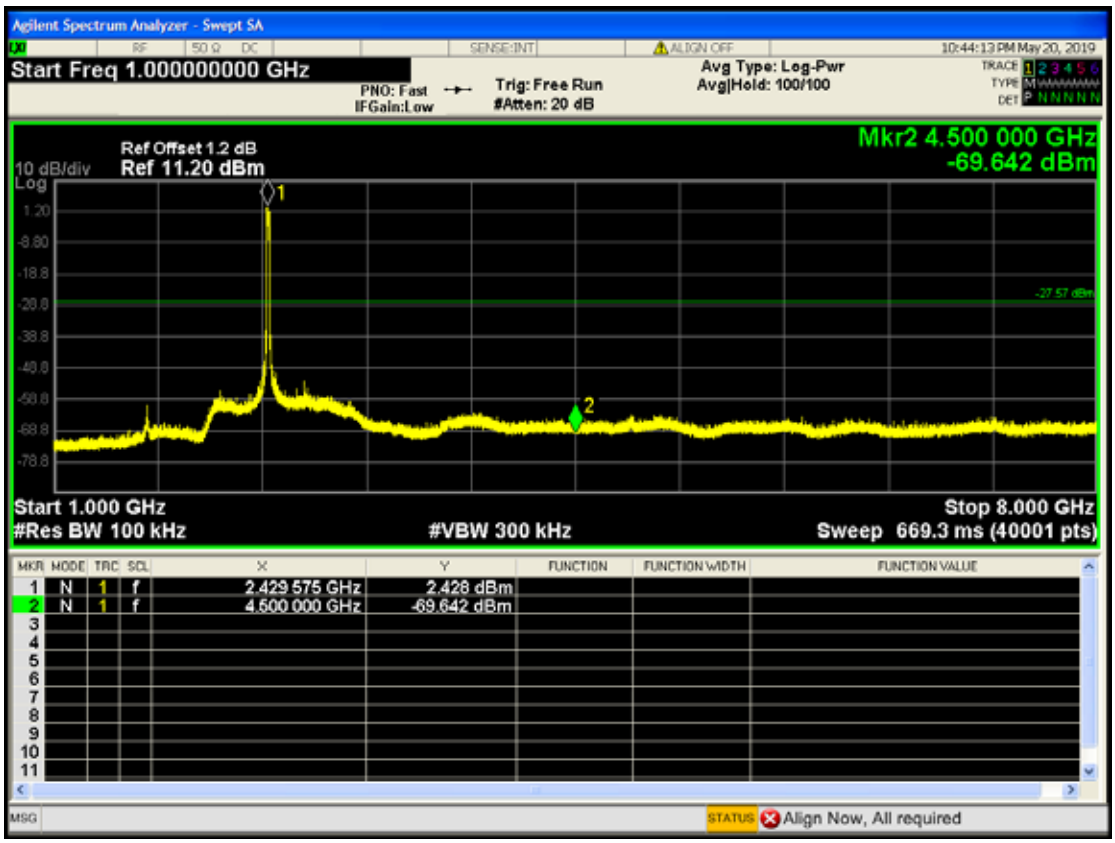

Agilent Spectrum Analyzer - Swept SA
Marker 1 13.819450000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 15/100
10:40:32 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 13.819 450 GHz
-64.714 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 13.819 450 GHz -64.714 dBm
Align Now, All required

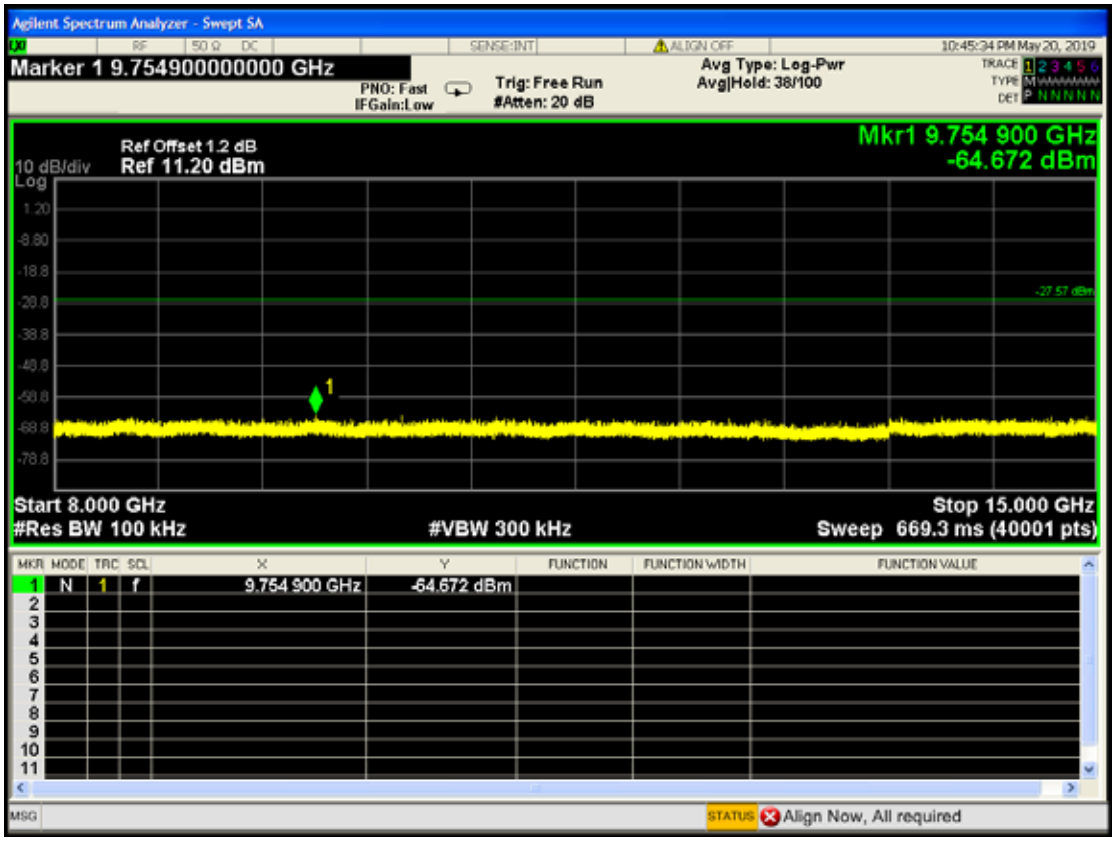

Agilent Spectrum Analyzer - Swept SA
Marker 1 22.447500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 13/100
10:41:02 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 22.447 50 GHz
-62.302 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 957.3 ms (40001 pts)
1 N 1 f 22.447 50 GHz -62.302 dBm
Align Now, All required

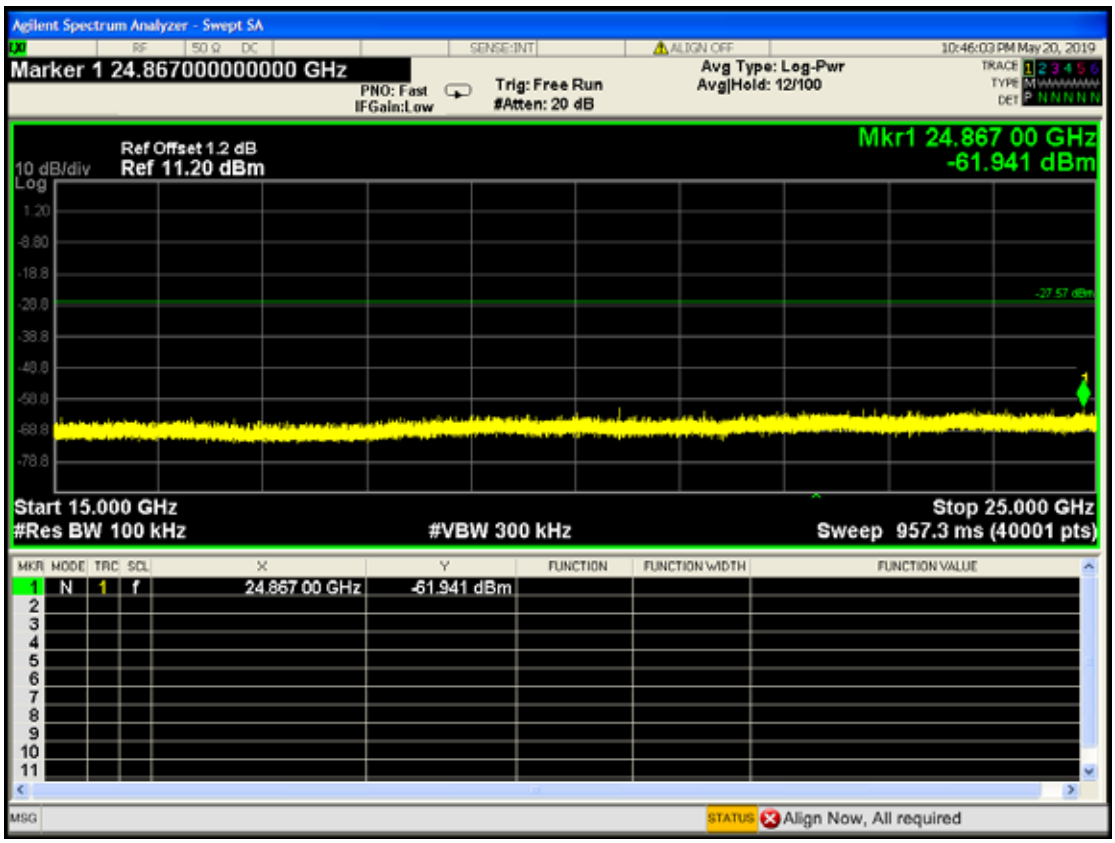


802.11nHT20 CH6

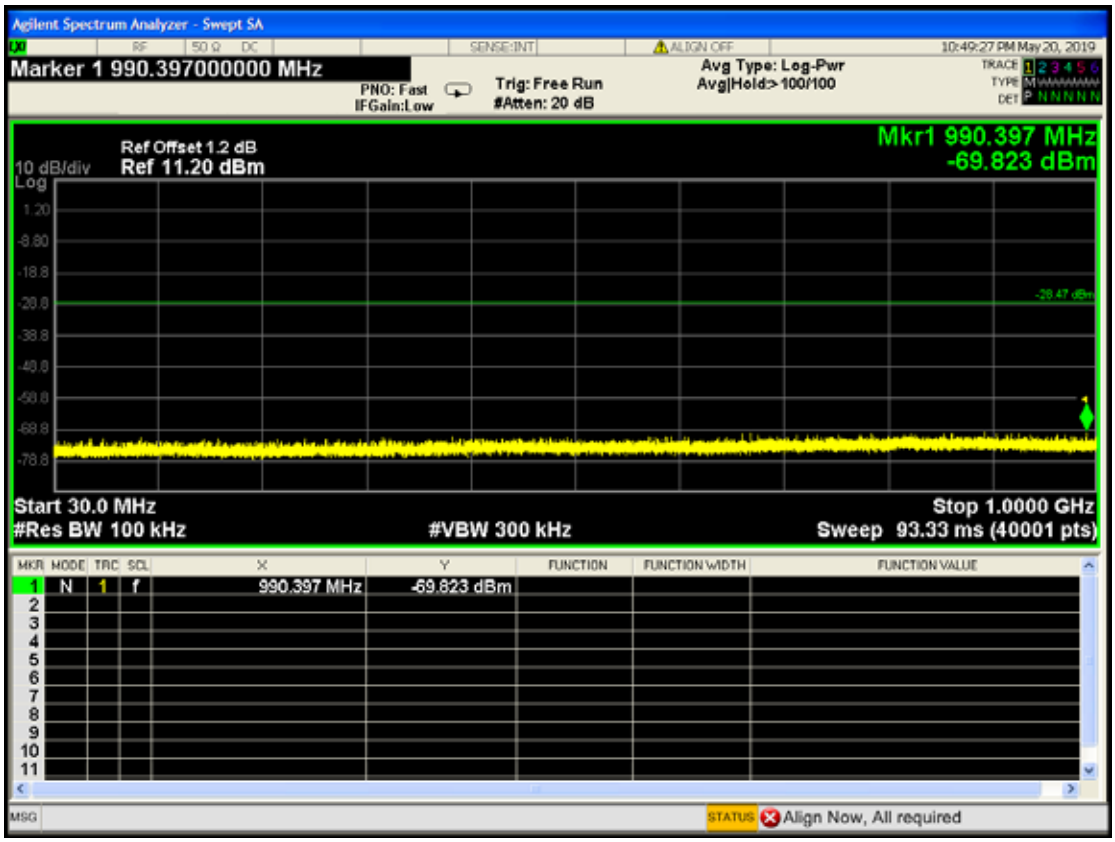


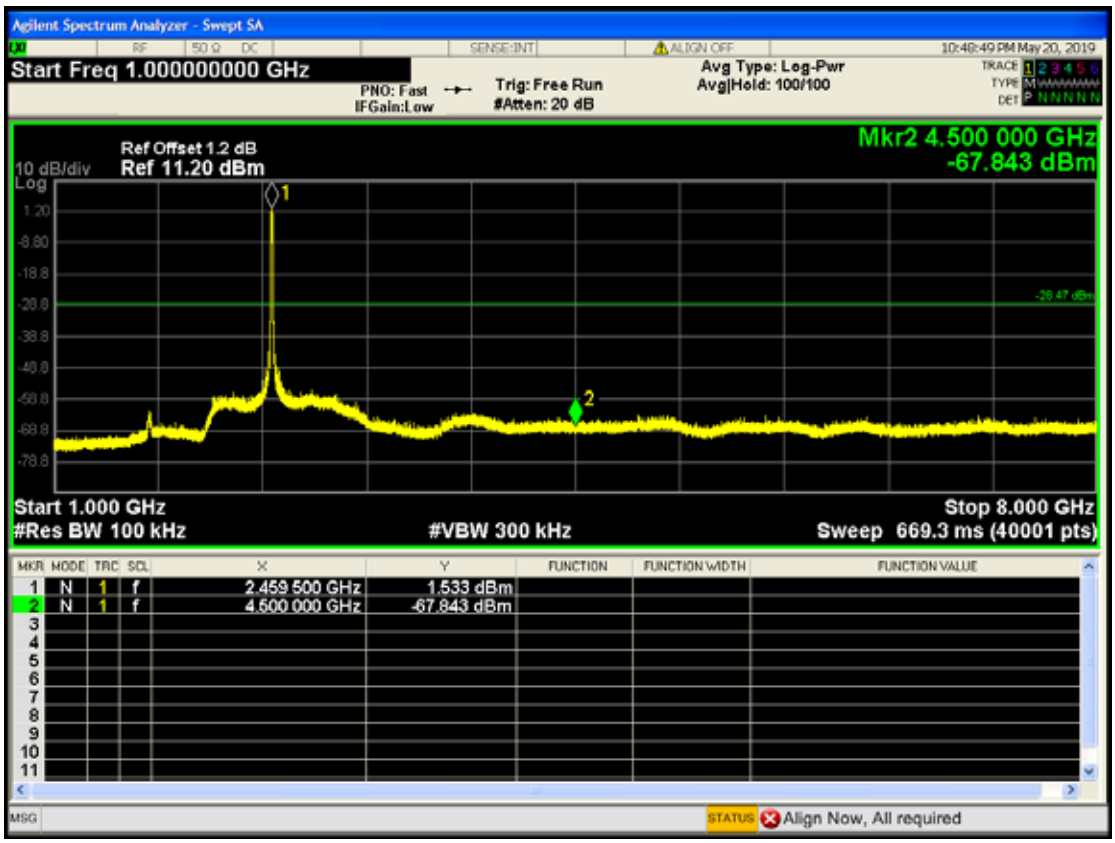

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
10:44:13 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 4.500 000 GHz
-69.642 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 8.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 2.429 575 GHz 2.428 dBm
2 N 1 f 4.500 000 GHz -69.642 dBm
Align Now, All required

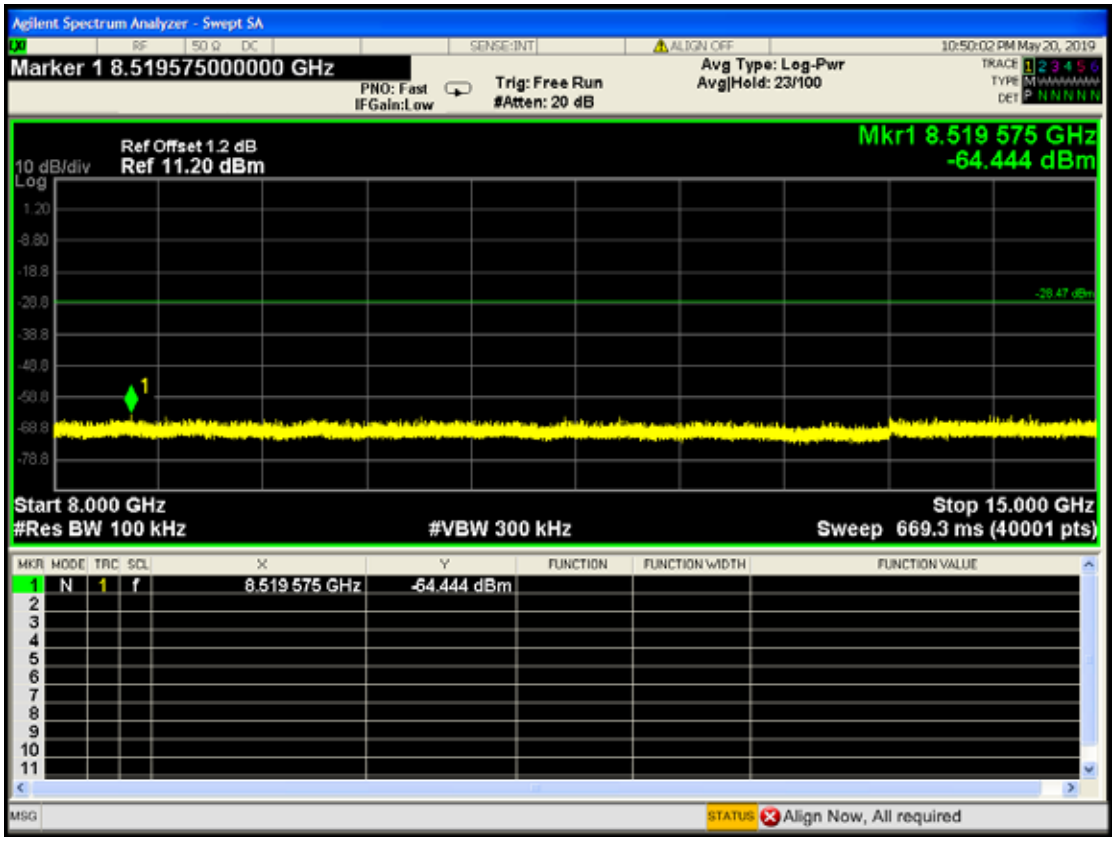

Agilent Spectrum Analyzer - Swept SA
Marker 1 9.754900000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 38/100
10:45:34 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 9.754 900 GHz
-64.672 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 9.754 900 GHz -64.672 dBm
Align Now, All required

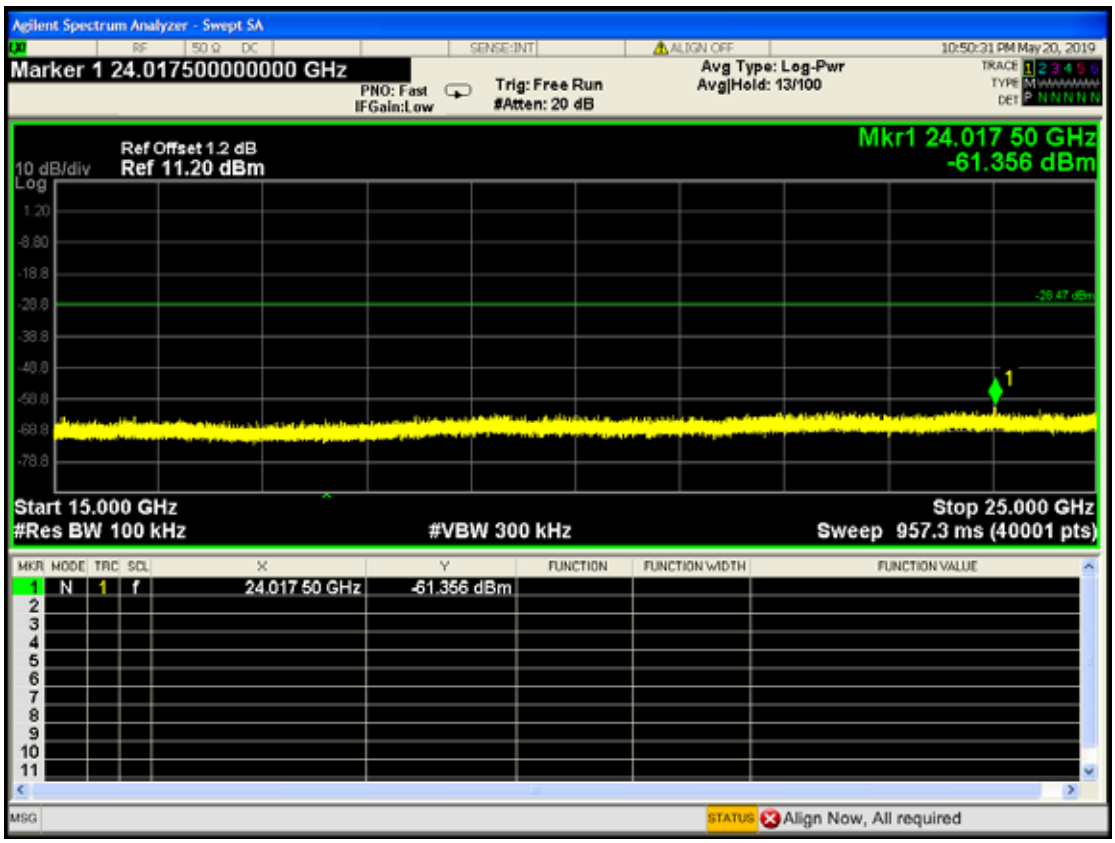


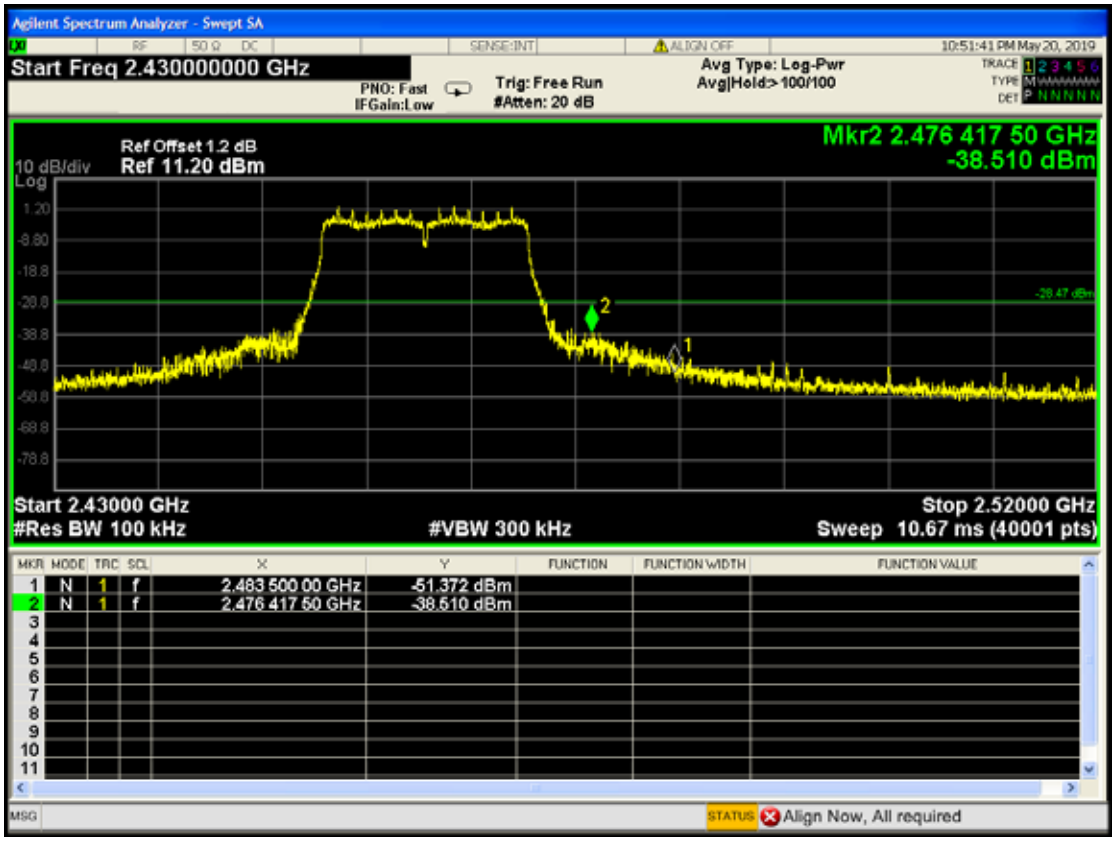
802.11nHT20 CH11




Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
10:40:49 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr2 4.500 000 GHz
-67.843 dBm
Start 1.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 8.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 2.459 500 GHz 1.533 dBm
2 N 1 f 4.500 000 GHz -67.843 dBm
Align Now, All required


Agilent Spectrum Analyzer - Swept SA
Marker 1 8.519575000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 23/100
10:50:02 PM May 20, 2019
Ref Offset 1.2 dB
10 dB/div
Ref 11.20 dBm
Log
Mkr1 8.519 575 GHz
-64.444 dBm
Start 8.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 15.000 GHz
Sweep 669.3 ms (40001 pts)
1 N 1 f 8.519 575 GHz -64.444 dBm
Align Now, All required


Agilent Spectrum Analyzer - Swept SA
10:50:31 PM May 20, 2019
Marker 1 24.017500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 13/100
Ref Offset 1.2 dB
10 dB/div
Log
Ref 11.20 dBm
Mkr1 24.017 50 GHz
-61.356 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.000 GHz
Sweep 957.3 ms (40001 pts)
1 N 1 f 24.017 50 GHz -61.356 dBm
Align Now, All required


Agilent Spectrum Analyzer - Swept SA
10:51:41 PM May 20, 2019
Start Freq 2.430000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 1.2 dB
10 dB/div
Log
Ref 11.20 dBm
Mkr2 2.476 417 50 GHz
-38.510 dBm
Start 2.43000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.52000 GHz
Sweep 10.67 ms (40001 pts)
1 N 1 f 2.483 500 00 GHz -51.372 dBm
2 N 1 f 2.476 417 50 GHz -38.510 dBm
Align Now, All required

10. DEVIATION TO TEST SPECIFICATIONS

【NONE】