RF TEST REPORT

Applicant	Honor Device Co., Ltd.
FCC ID	2AYGCNZA-LX9N
Product	Smart Phone
Model	NZA-LX9N
Report No.	R2101A0067-R4
Issue Date	February 5, 2021

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2019)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Peng Tao

Approved by: Kai Xu

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Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Maximum output power	15.247(b)(3)	PASS
2	99% Bandwidth and 6 dB bandwidth	15.247(a)(2)	PASS
3	Power spectral density	15.247(e)	PASS
4	Band Edge	15.247(d)	PASS
5	Spurious RF Conducted Emissions	15.247(d)	PASS
6	Unwanted Emissions	15.247(d),15.205,15.209	PASS
7	Conducted Emissions	15.207	PASS
Date of Testing: January 21, 2021 ~ January 24, 2021 Date of Sample Received: January 18, 2021			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1. Test Laboratory

1.1. Notes of the test report

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

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

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

A2LA (Certificate Number: 3857.01)

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

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201201
Country:	P. R. China
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Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	Honor Device Co., Ltd.
Applicant address	Suite 3401, Unit A, Building 6, Shum Yip Sky Park, No. 8089, Hongli West Road, Xiangmihu Street, Futian District, Shenzhen, Guangdong 518040, People's Republic of China
Manufacturer	Honor Device Co., Ltd.
Manufacturer address	Suite 3401, Unit A, Building 6, Shum Yip Sky Park, No. 8089, Hongli West Road, Xiangmihu Street, Futian District, Shenzhen, Guangdong 518040, People's Republic of China

2.2. General information

EUT Description	
Model	NZA-LX9N
SN	L4H0120C21000146
Hardware Version	HL1WKGM
Software Version	5.0.0.76
Power Supply	Battery/AC Adapter
Antenna Type	Internal Antenna
Antenna Connector	A permanently attached antenna (meet with the standard FCC Part 15.203 requirement)
Antenna Gain	-2dBi
Beamforming gain	NA
Test Mode	802.11b, 802.11g, 802.11n(HT20/HT40) Bluetooth V5.1LE
Modulation Type	802.11b: DSSS 802.11g/n(HT20/HT40): OFDM BLE: GFSK
Max. output Power	Wi-Fi 2.4G: 18.75dBm BLE: 7.57dBm
Operating Frequency Range(s)	802.11b/g/n(HT20): 2412 ~ 2462 MHz 802.11n(HT40):2422 ~ 2452 MHz BLE: 2402 ~2480 MHz

EUT Accessory			
Accessory	**Model**	**Manufacture**	**No.**
Adapter	HW-100225E00	Honor Device Co., Ltd. (Manufacturer: BYD)	1
		Honor Device Co., Ltd. (Manufacturer: Phitek)	2

		Honor Device Co., Ltd. (Manufacturer: HUNTKEY)	3
	HW-100225B00	Honor Device Co., Ltd. (Manufacturer: BYD)	4
		Honor Device Co., Ltd. (Manufacturer: HUNTKEY)	5
	HW-100225U00	Honor Device Co., Ltd. (Manufacturer: BYD)	6
		Honor Device Co., Ltd. (Manufacturer: HUNTKEY)	7
	HW-100225A00	Honor Device Co., Ltd. (Manufacturer: BYD)	8
		Honor Device Co., Ltd. (Manufacturer: HUNTKEY)	9
Battery	HB526488EEW	Honor Device Co., Ltd. (Manufacturer: Sunwoda)	1
		Honor Device Co., Ltd. (Manufacturer: Desay)	2
		Honor Device Co., Ltd. (Manufacturer: NVT)	3
	HB536488EEW	Honor Device Co., Ltd. (Manufacturer: Sunwoda)	4
		Honor Device Co., Ltd. (Manufacturer: Desay)	5
		Honor Device Co., Ltd. (Manufacturer: NVT)	6
Earphone	MEND1532B528A11	Jiangxi Lianchuang Hongsheng Electronic Co. ,LTD.	1
	1293-3283-3.5mm-339	Boluo County Quancheng Electronic Co.,ltd.	2
	EPAB542-2WH05-DH	FOXCONN INTERCONNECT TECHNOLOGY LIMITED	3
USB Cable	18-93C2CHO-001HF	Freeport resources Enterprises Corp.	1
	WA0020	NingBo Broad Telecommunication Co., Ltd.	2
	L99UC131-CS-H	Luxshare Precision industry Co., Ltd.	3
	203-1572-0	MING JI ELECTRONICS CO., LTD.	4
	CUDU01B-HC295-EH	FOXCONN INTERCONNECT TECHNOLOGY LIMITED	5
Note: 1.The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant. 2. There is more than one Adapter / USB cable/ Battery and Earphone, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 6/ USB cable 3/ Battery 2 and Earphone 3) will be recorded in this report.			

3. Applied Standards

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

Test standards:

FCC CFR47 Part 15C (2019) Radio Frequency Devices

ANSI C63.10 (2013)

Reference standard:

KDB 558074 D01 15.247 Meas Guidance v05r02

4. Test Configuration

Test Mode

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

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

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

Worst-case data rates are shown as following table.

Test Mode	Data Rate
Bluetooth(Low Energy)	1Mbps, 2Mbps
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

5. Test Case Results

5.1. Maximum output power

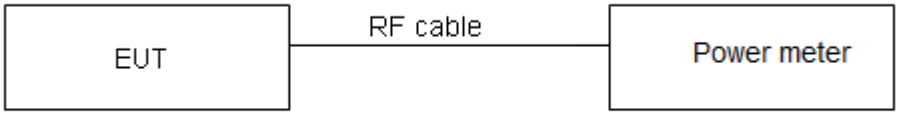
Ambient condition

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

Methods of Measurement

During the process of the testing, The EUT was connected to Power meter with a known loss. The EUT is max power transmission with proper modulation.

Test Setup



Limits

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

Average Output Power	≤ 1W (30dBm)

Measurement Uncertainty

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

Test Results

Power Index					
Channel	**802.11b**	**802.11g**	**802.11g**	**Channel**	**802.11n HT40**
CH1	17.5	8	8	**CH3**	6
CH2	/	13	13	**CH4**	8
CH3	/	15	15	**CH5**	11
CH4	/	17	17	**CH6**	11
CH6	17.5	17	17	**CH7**	11
CH8	/	17	17	**CH8**	8
CH9	/	15	15	**CH9**	6
CH10	/	13	13	**/**	/
CH11	17.5	8	8	**/**	/

Test Mode	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11b	1.00	1.00	1.00	NA
802.11g	1.39	1.43	0.97	0.13
802.11n HT20	1.30	1.34	0.96	0.16
802.11n HT40	0.65	0.69	0.94	0.27
BLE (1M)	2.12	2.50	0.85	0.72
BLE (2M)	1.07	1.87	0.57	2.44
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.				

Test Mode	Carrier frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11b	2412	18.50	18.50	30	PASS
	2437	18.52	18.52	30	PASS
	2462	18.75	18.75	30	PASS
802.11g	2412	8.56	8.69	30	PASS
	2417	13.70	13.83	30	PASS
	2422	15.64	15.77	30	PASS
	2427	17.43	17.56	30	PASS
	2437	17.56	17.69	30	PASS
	2447	17.52	17.65	30	PASS
	2452	15.42	15.55	30	PASS
	2457	13.82	13.95	30	PASS
	2462	8.78	8.91	30	PASS
802.11n HT20	2412	8.20	8.36	30	PASS
	2417	13.72	13.88	30	PASS
	2422	15.53	15.69	30	PASS
	2427	17.31	17.47	30	PASS
	2437	17.32	17.48	30	PASS
	2447	17.16	17.32	30	PASS
	2452	15.23	15.39	30	PASS
	2457	13.66	13.82	30	PASS
	2462	8.67	8.83	30	PASS
802.11n HT40	2422	6.56	6.83	30	PASS
	2427	8.57	8.84	30	PASS
	2432	11.62	11.89	30	PASS
	2437	11.59	11.86	30	PASS
	2442	11.32	11.59	30	PASS
	2447	8.45	8.72	30	PASS
	2452	6.42	6.69	30	PASS
Bluetooth (Low Energy) (1M)	2402	6.58	7.30	30	PASS
	2440	6.85	7.57	30	PASS
	2480	6.63	7.35	30	PASS

Bluetooth (Low Energy) (2M)	2402	4.63	7.07	30	PASS
	2440	4.65	7.09	30	PASS
	2480	4.67	7.11	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

5.2. 99% Bandwidth and 6dB Bandwidth

Ambient condition

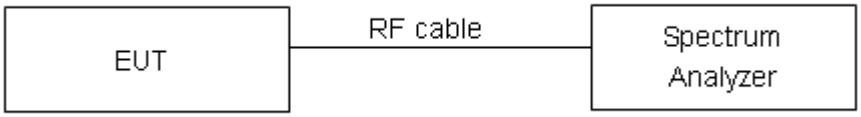
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100 kHz; VBW is set to 300 kHz on spectrum analyzer.
Dector=Peak, Trace mode=max hold.

The EUT was connected to the spectrum analyzer through a known loss cable. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value.

Test Setup



Limits

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

minimum 6 dB bandwidth	≥ 500 kHz

Measurement Uncertainty

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

Test Results:

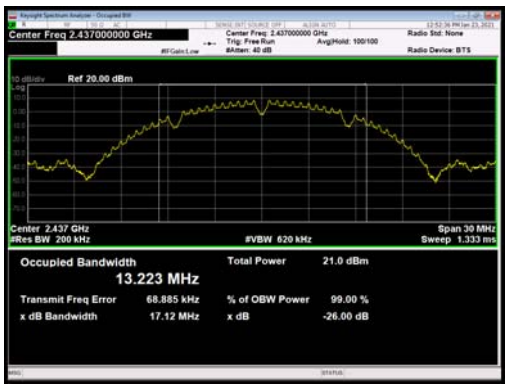
Test Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11b	2412	13.108	8.546	500	PASS
	2437	13.223	9.027	500	PASS
	2462	13.334	8.540	500	PASS
802.11g	2412	16.493	15.40	500	PASS
	2417	16.342	12.52	500	PASS
	2422	16.425	14.77	500	PASS
	2427	16.557	15.73	500	PASS
	2437	16.634	16.30	500	PASS
	2447	16.560	16.28	500	PASS
	2452	16.523	15.64	500	PASS
	2457	16.599	16.32	500	PASS
	2462	16.589	16.32	500	PASS
802.11n HT20	2412	17.655	16.15	500	PASS
	2417	17.448	14.99	500	PASS
	2422	17.597	15.58	500	PASS
	2427	17.669	16.34	500	PASS
	2437	17.760	17.56	500	PASS
	2447	17.680	16.89	500	PASS
	2452	17.619	16.80	500	PASS
	2457	17.727	17.54	500	PASS
	2462	17.724	17.54	500	PASS
802.11n HT40	2422	36.125	35.03	500	PASS
	2427	36.088	35.04	500	PASS
	2432	36.154	35.47	500	PASS
	2437	36.243	36.30	500	PASS
	2442	36.237	35.05	500	PASS
	2447	36.167	35.06	500	PASS

	2452	36.101	35.07	500	PASS
Bluetooth (Low Energy) (1M)	2402	1.0276	0.7124	500	PASS
	2440	1.0266	0.6602	500	PASS
	2480	1.0265	0.6650	500	PASS
Bluetooth (Low Energy) (2M)	2402	2.0459	1.3590	500	PASS
	2440	2.0594	1.2300	500	PASS
	2480	2.0539	1.2360	500	PASS

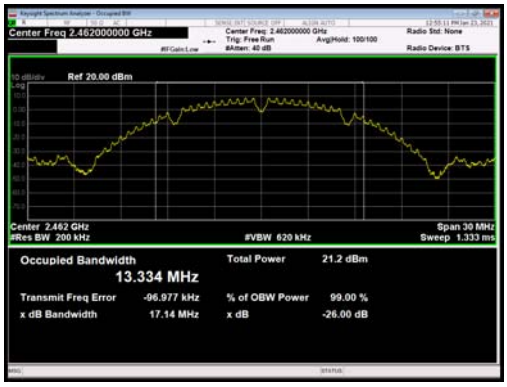
99%bandwidth

802.11b, Carrier frequency (MHz): 2412

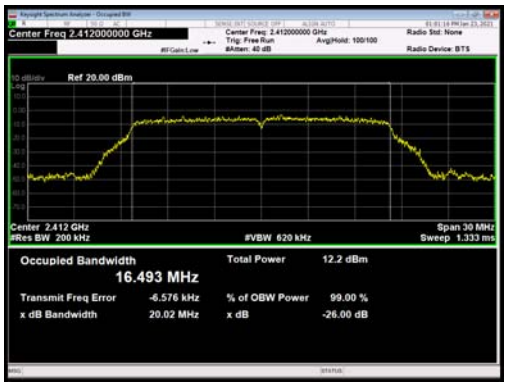
802.11b, Carrier frequency (MHz): 2437



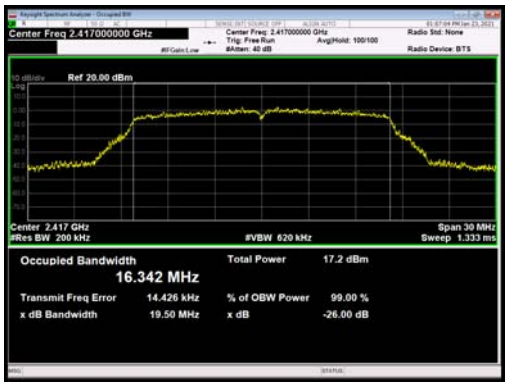
802.11b, Carrier frequency (MHz):2462



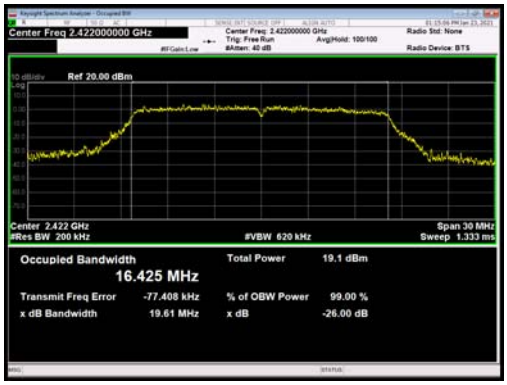
802.11g, Carrier frequency (MHz):2412



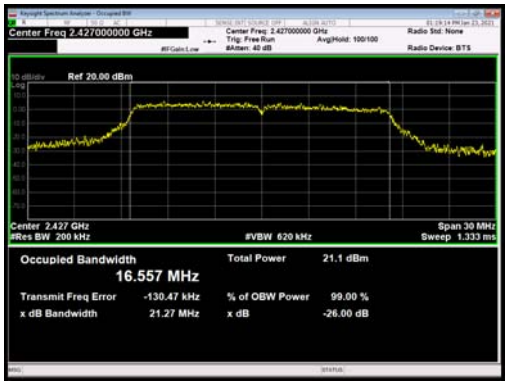
802.11g, Carrier frequency (MHz):2417



802.11g, Carrier frequency (MHz):2422

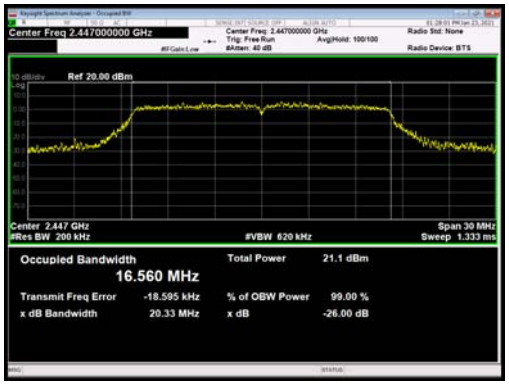


802.11g, Carrier frequency (MHz):2427

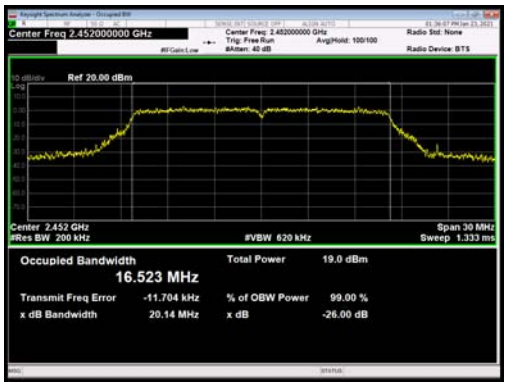


802.11g, Carrier frequency (MHz):2437

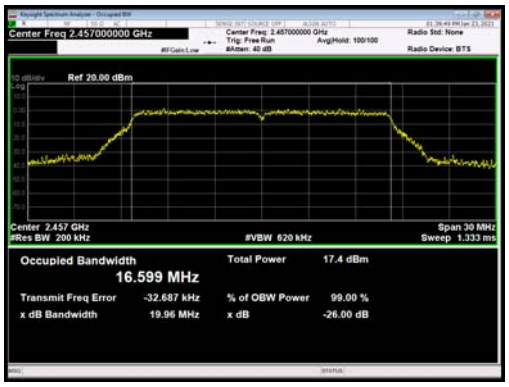
802.11g, Carrier frequency (MHz):2447



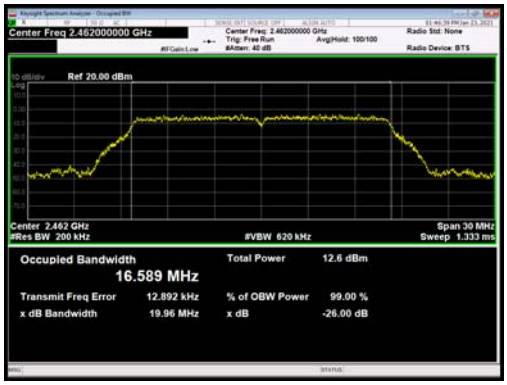
802.11g, Carrier frequency (MHz):2452



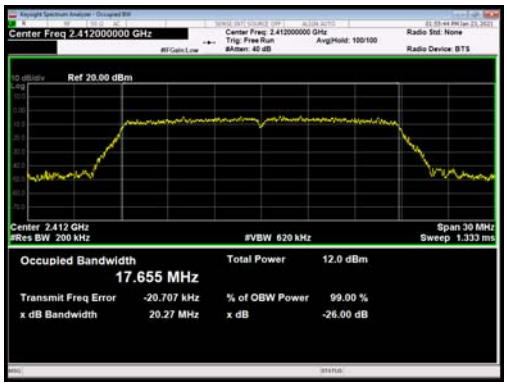
802.11g, Carrier frequency (MHz):2457



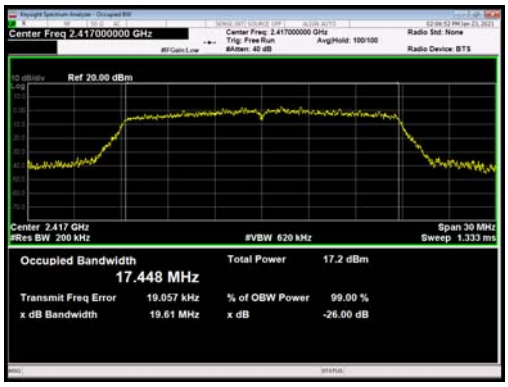
802.11g, Carrier frequency (MHz):2462



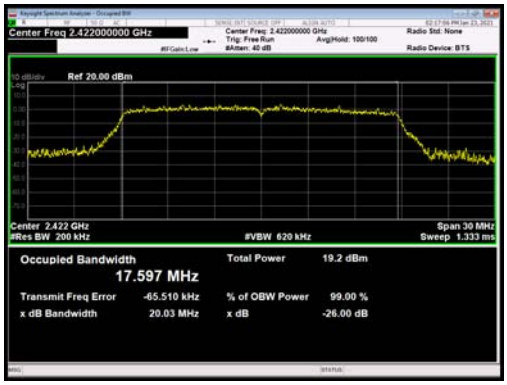
802.11 n(HT20), Carrier frequency (MHz):2412



802.11 n(HT20), Carrier frequency (MHz):2417

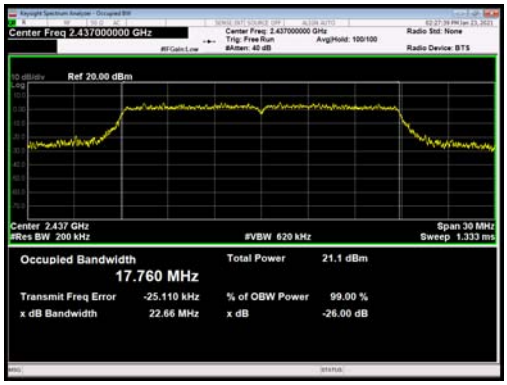


802.11 n(HT20), Carrier frequency (MHz):2422



802.11 n(HT20), Carrier frequency (MHz):2427

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



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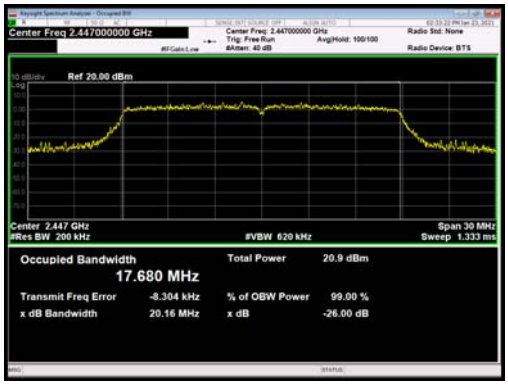
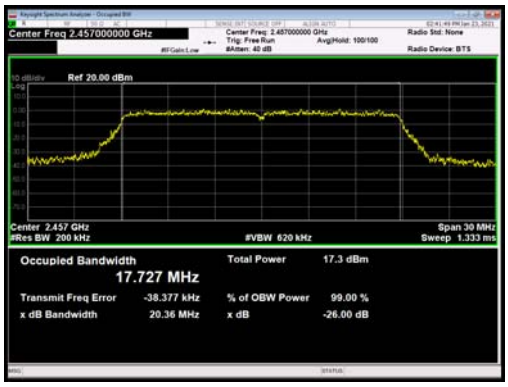
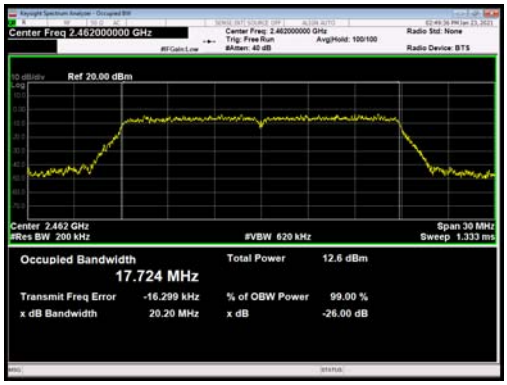


802.11 n(HT20), Carrier frequency (MHz):2452

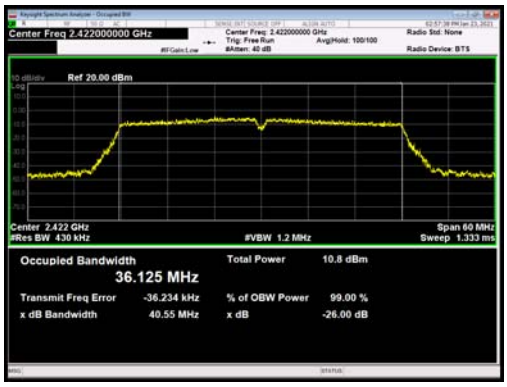
802.11 n(HT20), Carrier frequency (MHz):2457



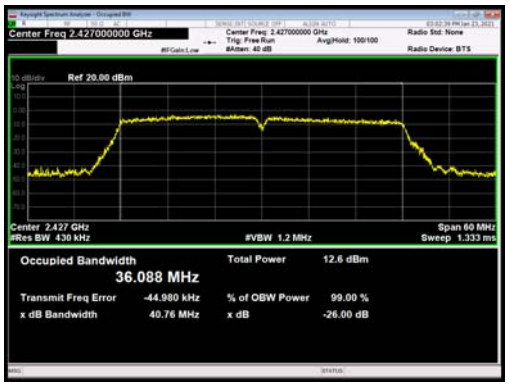
802.11 n(HT20), Carrier frequency (MHz):2462



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



802.11 n(HT40), Carrier frequency (MHz):2427



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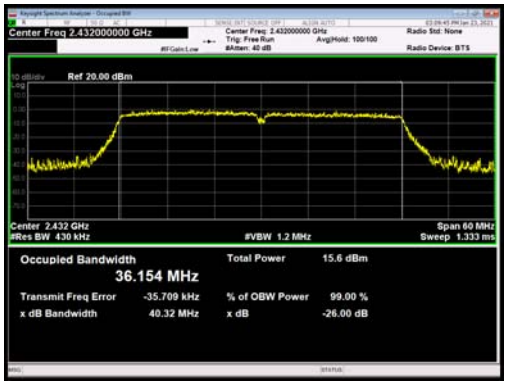

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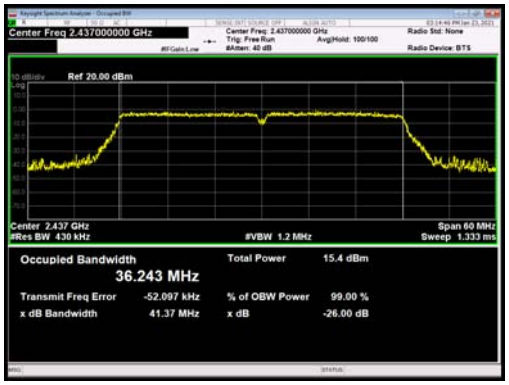

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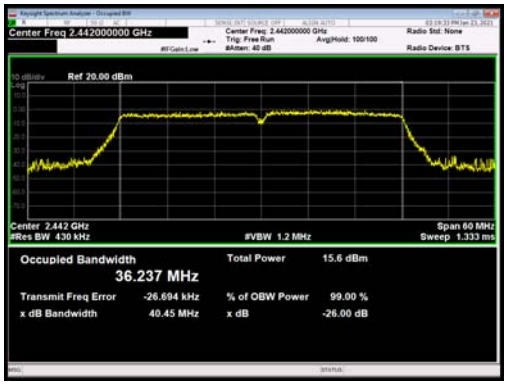

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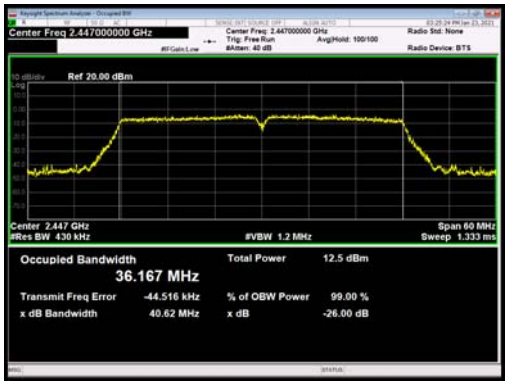
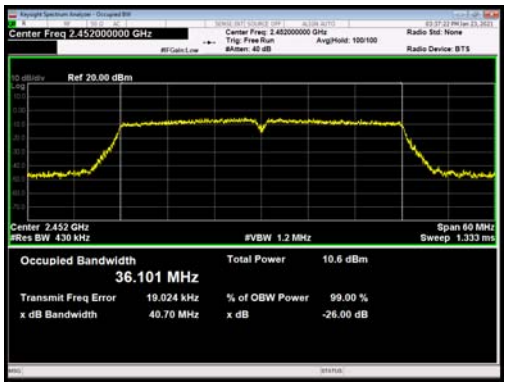
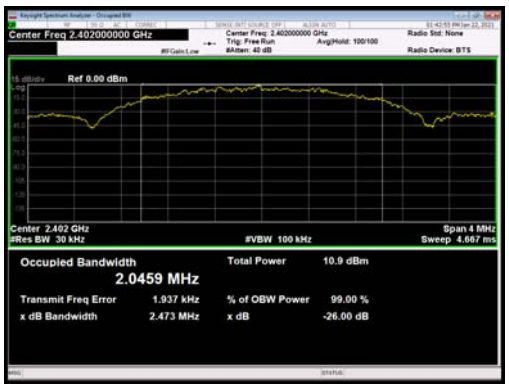
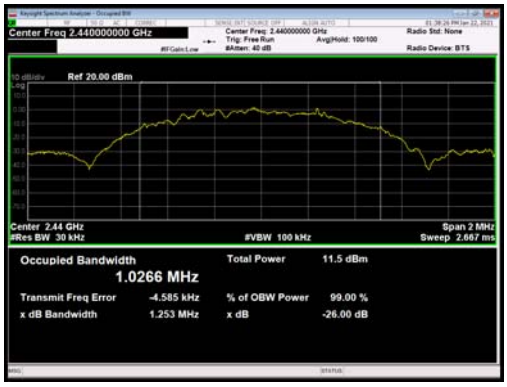
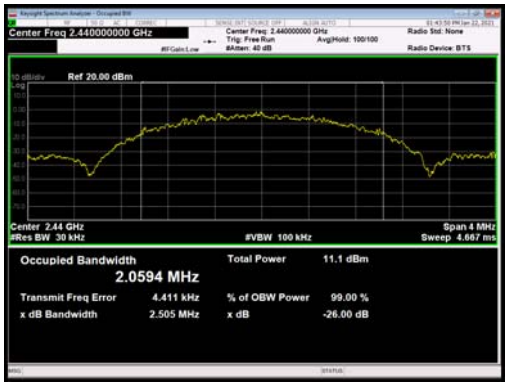


802.11 n(HT40), Carrier frequency (MHz):2452



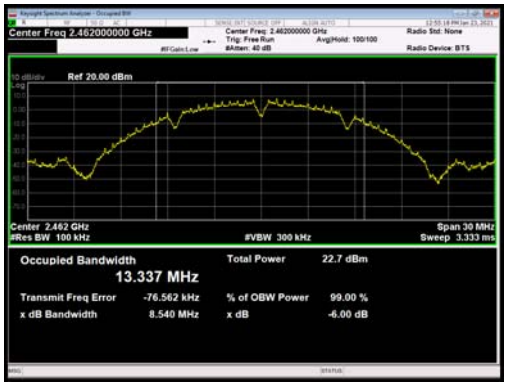
BLE (1M) Carrier frequency (MHz): 2402	BLE (2M) Carrier frequency (MHz): 2402
	
BLE (1M) Carrier frequency (MHz): 2440	BLE (2M) Carrier frequency (MHz): 2440
	
BLE (1M) Carrier frequency (MHz): 2480	BLE (2M) Carrier frequency (MHz): 2480
	

6 dB bandwidth

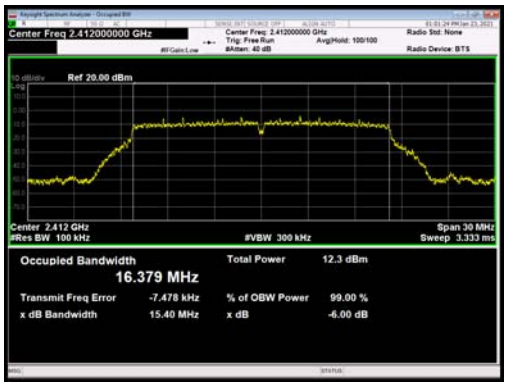
802.11b, Carrier frequency (MHz): 2412

802.11b, Carrier frequency (MHz): 2437

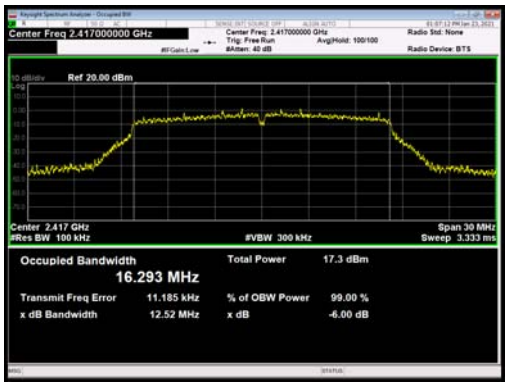
802.11b, Carrier frequency (MHz):2462



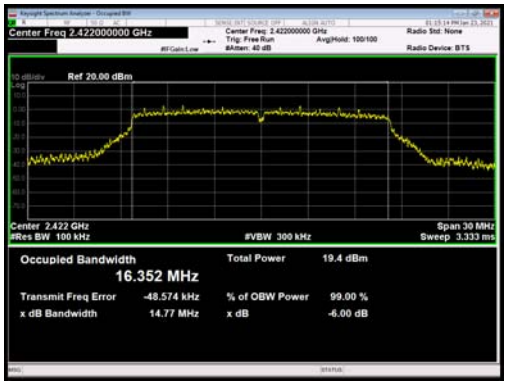
802.11g, Carrier frequency (MHz):2412



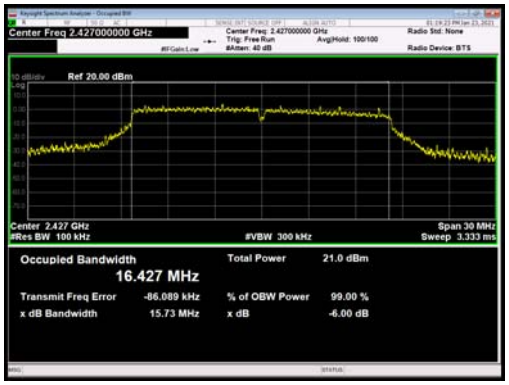
802.11g, Carrier frequency (MHz):2417



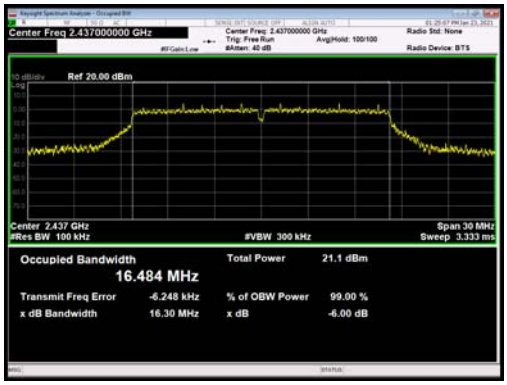
802.11g, Carrier frequency (MHz):2422



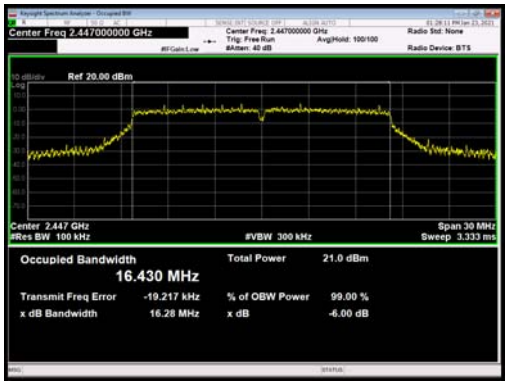
802.11g, Carrier frequency (MHz):2427



802.11g, Carrier frequency (MHz):2437

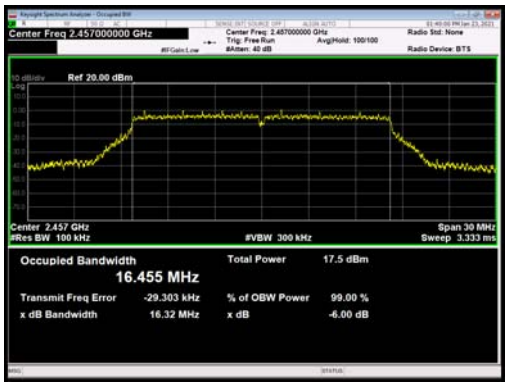


802.11g, Carrier frequency (MHz):2447

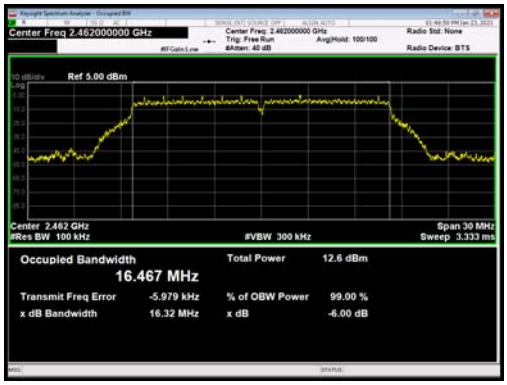


802.11g, Carrier frequency (MHz):2452

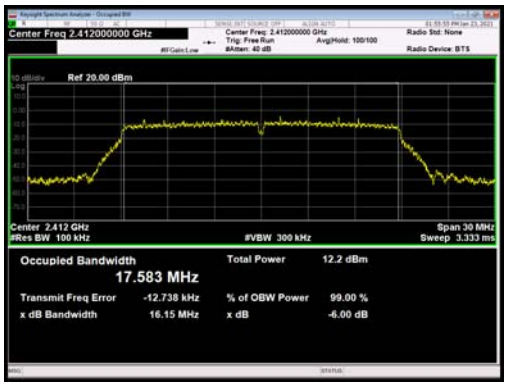
802.11g, Carrier frequency (MHz):2457



802.11g, Carrier frequency (MHz):2462

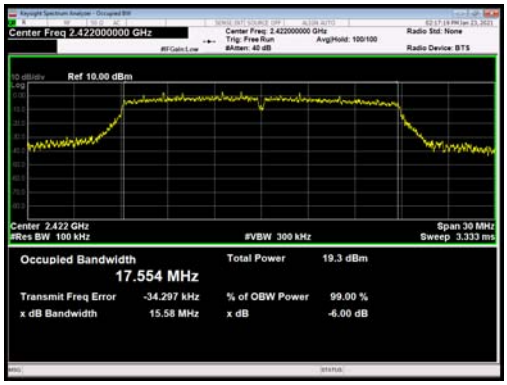


802.11 n(HT20), Carrier frequency (MHz):2412

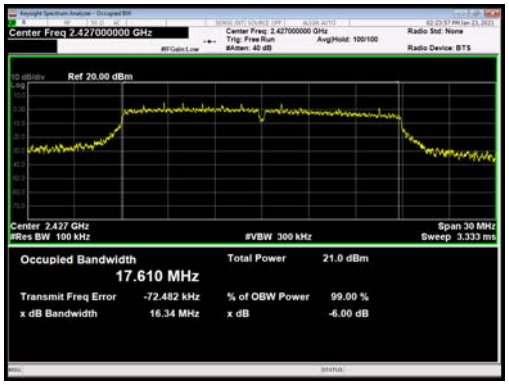


802.11 n(HT20), Carrier frequency (MHz):2417

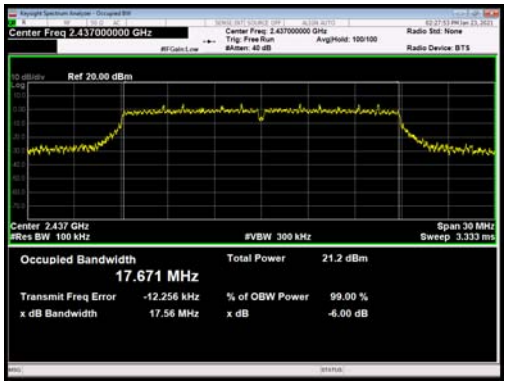
802.11 n(HT20), Carrier frequency (MHz):2422



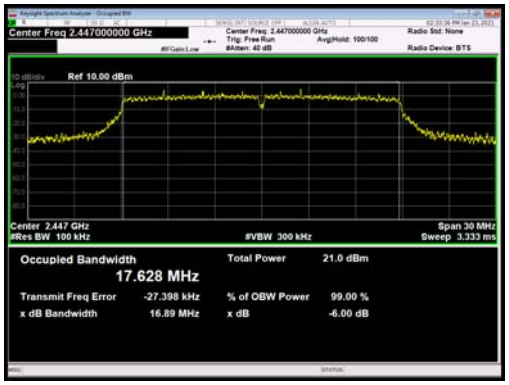
802.11 n(HT20), Carrier frequency (MHz):2427



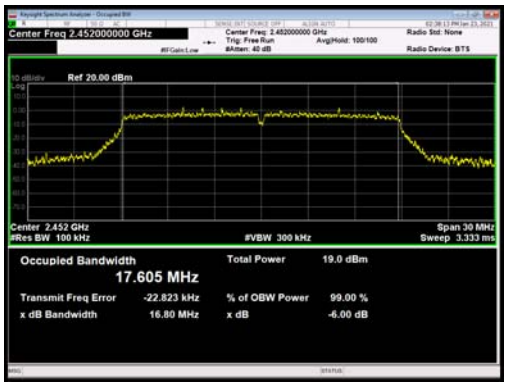
802.11 n(HT20), Carrier frequency (MHz):2437



802.11 n(HT20), Carrier frequency (MHz):2447



802.11 n(HT20), Carrier frequency (MHz):2452



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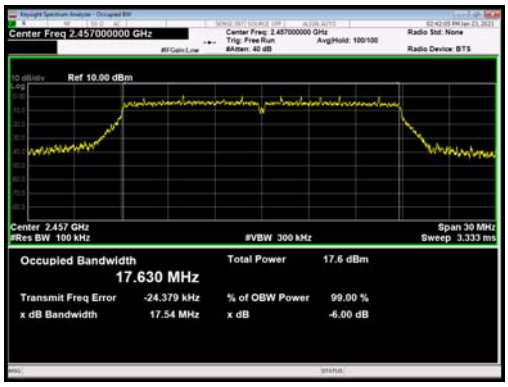
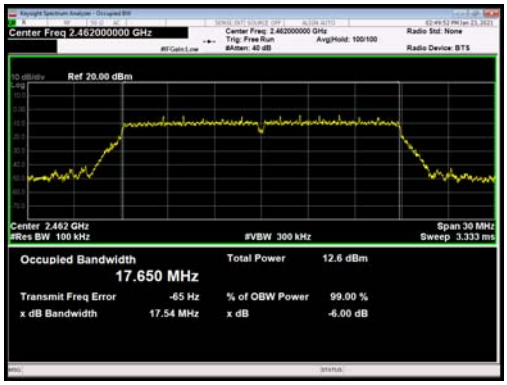
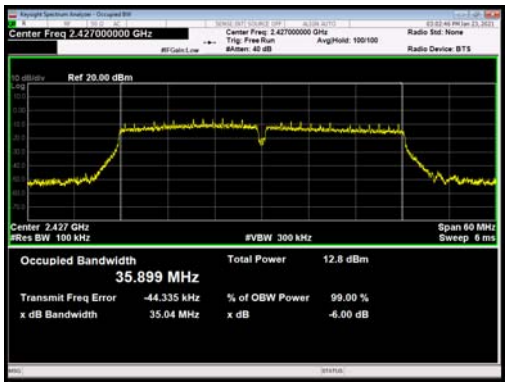


802.11 n(HT20), Carrier frequency (MHz):2462



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

802.11 n(HT40), Carrier frequency (MHz):2427



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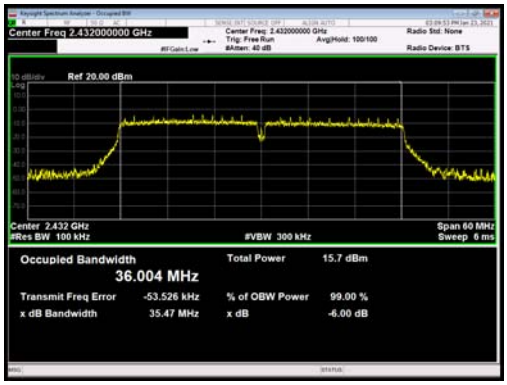
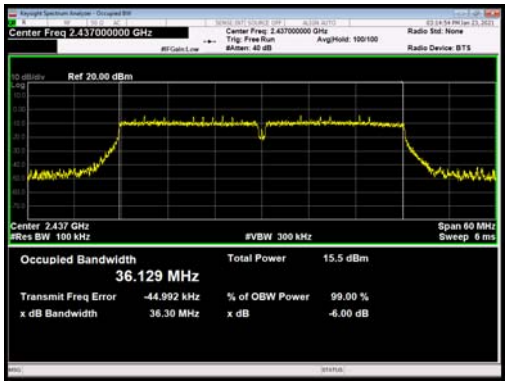


802.11 n(HT40), Carrier frequency (MHz):2437



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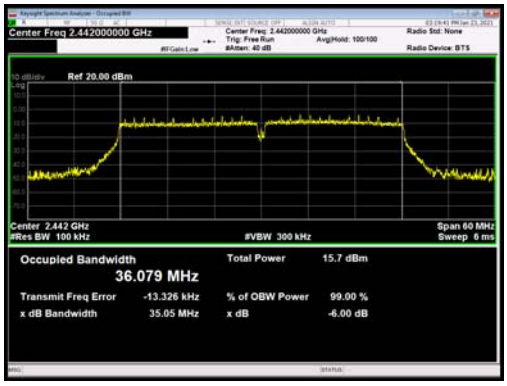
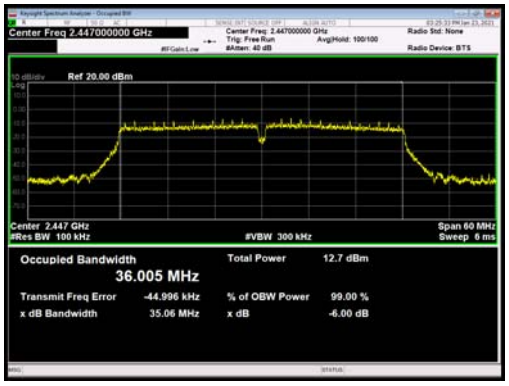
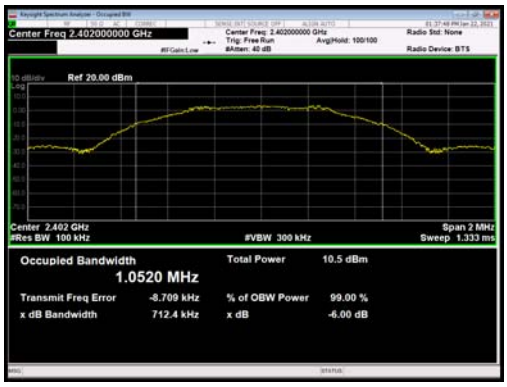


802.11 n(HT40), Carrier frequency (MHz):2447

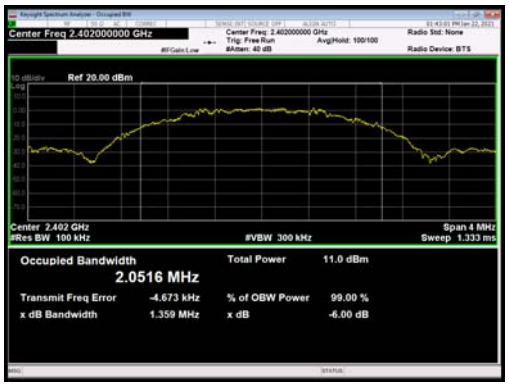


802.11 n(HT40), Carrier frequency (MHz):2452

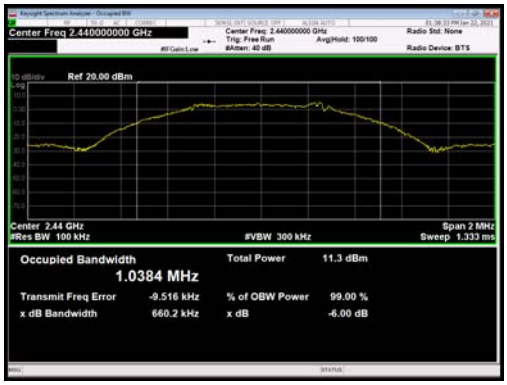
BLE (1M) Carrier frequency (MHz): 2402



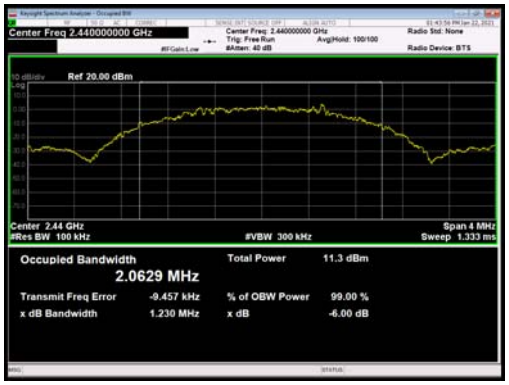
BLE (2M) Carrier frequency (MHz): 2402



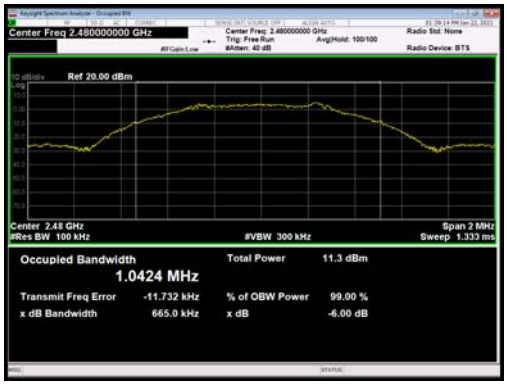
BLE (1M) Carrier frequency (MHz): 2440



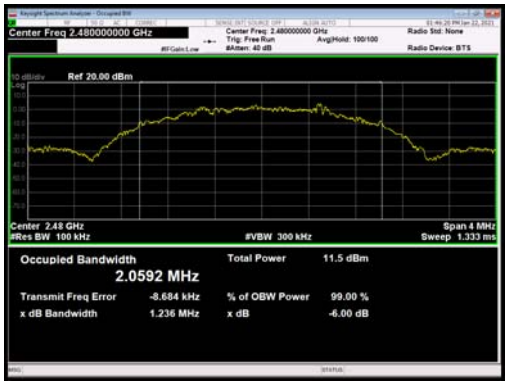
BLE (2M) Carrier frequency (MHz): 2440



BLE (1M) Carrier frequency (MHz): 2480



BLE (2M) Carrier frequency (MHz): 2480



5.3. Band Edge

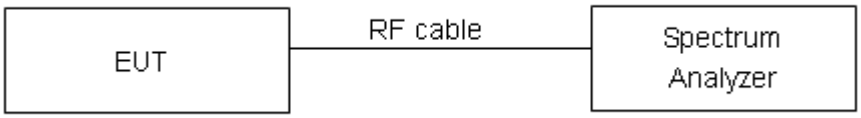
Ambient condition

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

Method of Measurement

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

Test Setup



Limits

Rule Part 15.247(d) specifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak power limits.” If the transmitter complies with the power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.”

Measurement Uncertainty

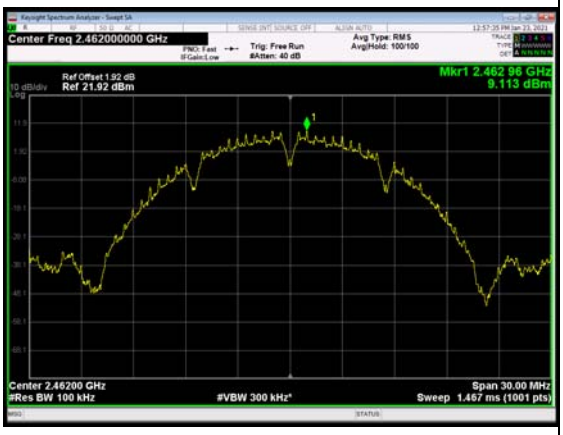
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

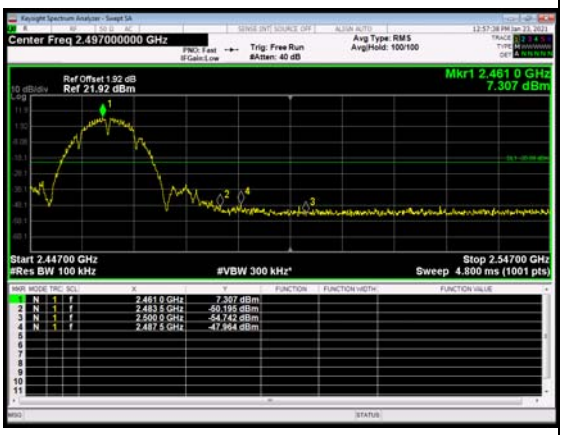
Frequency	Uncertainty
2GHz-3GHz	1.407 dB

Test Results: PASS

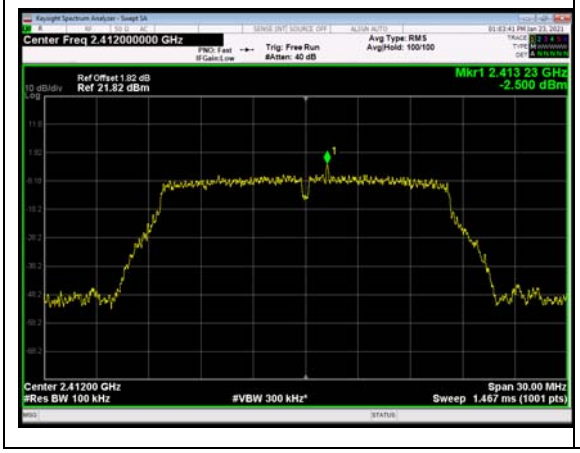
802.11b, Channel No.: 1

802.11b, Channel No.: 11

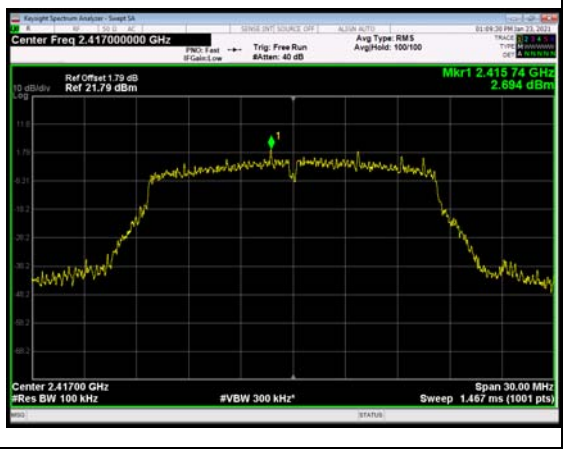


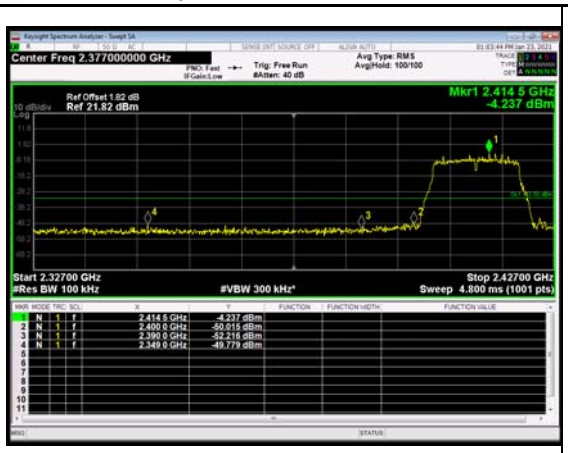


802.11g, Channel No.: 1



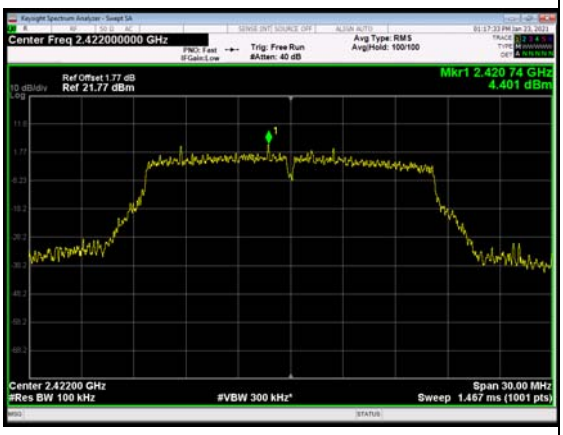
802.11g, Channel No.: 2

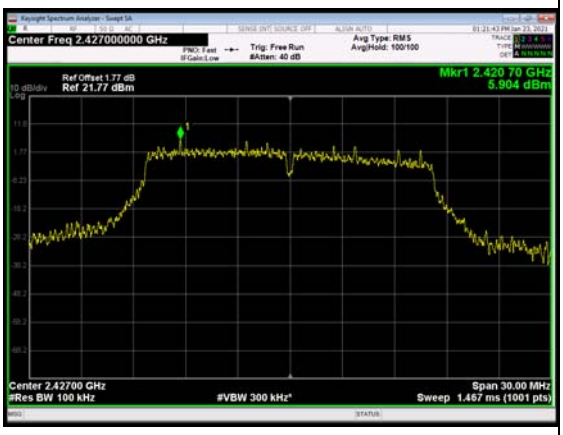




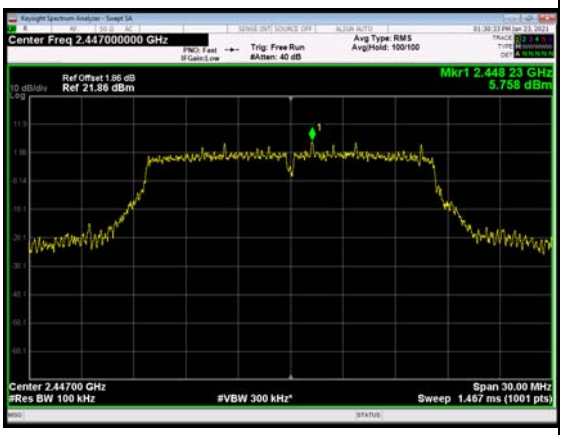
802.11g, Channel No.:3

802.11g, Channel No.:4

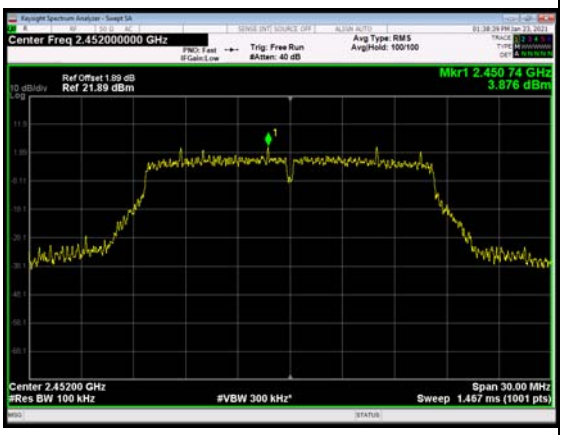




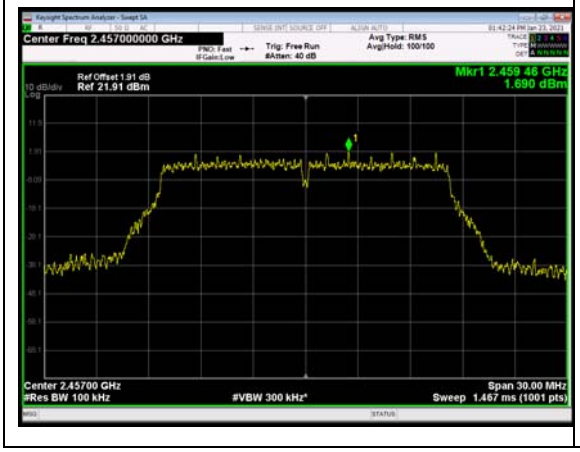
802.11g, Channel No.:8



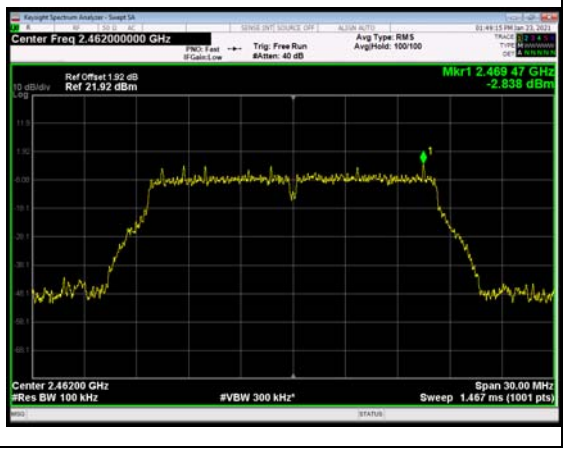
802.11g, Channel No.:9

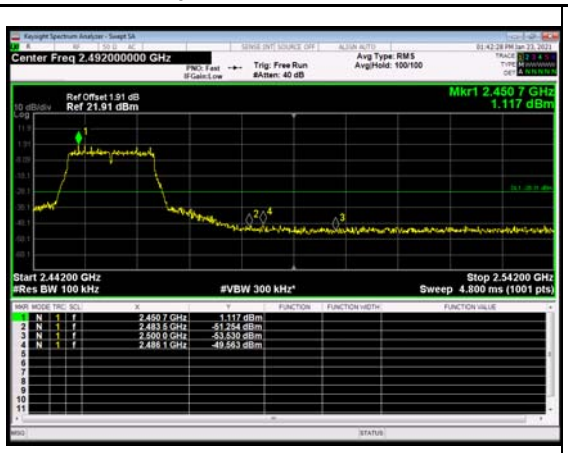


802.11g, Channel No.:10

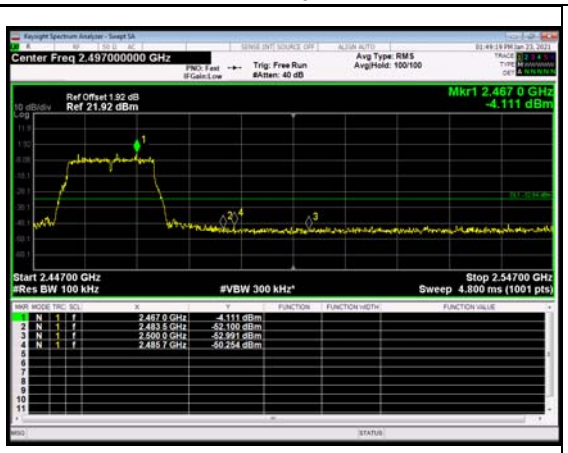


802.11g, Channel No.:11

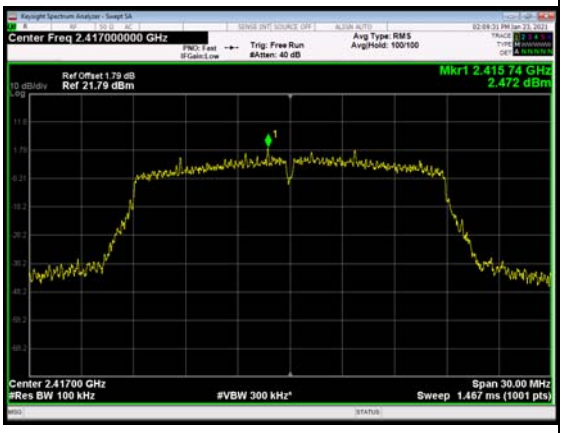


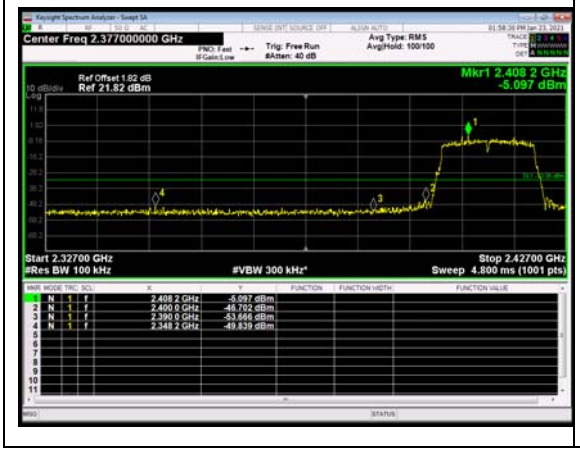


802.11n(HT20), Channel No.: 1

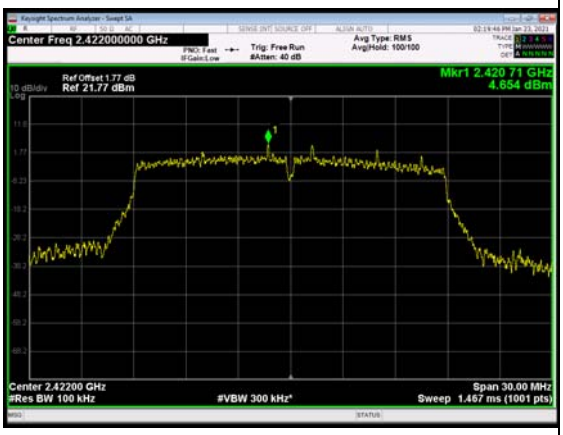


802.11n(HT20), Channel No.: 2



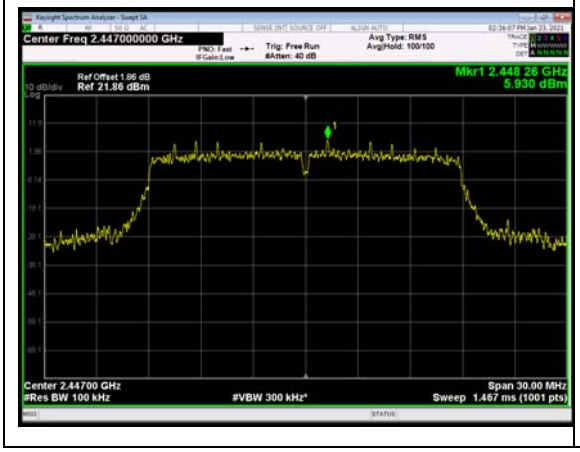


802.11n(HT20), Channel No.:3



802.11n(HT20), Channel No.:4

802.11n(HT20), Channel No.:8



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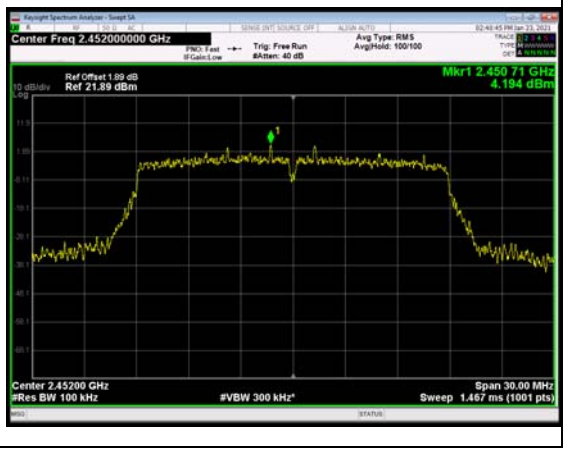
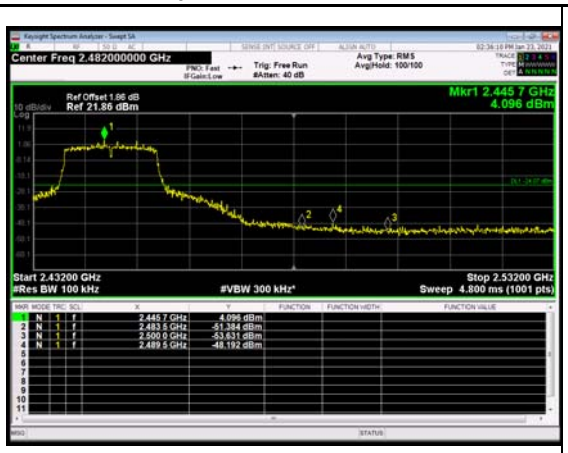
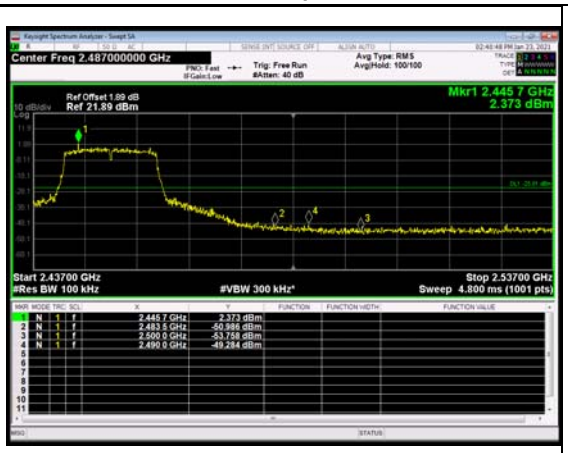
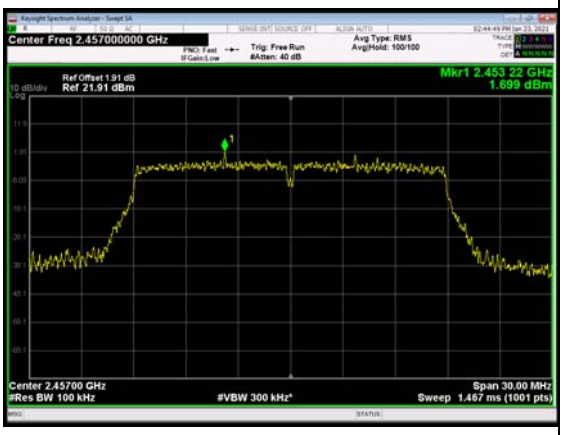


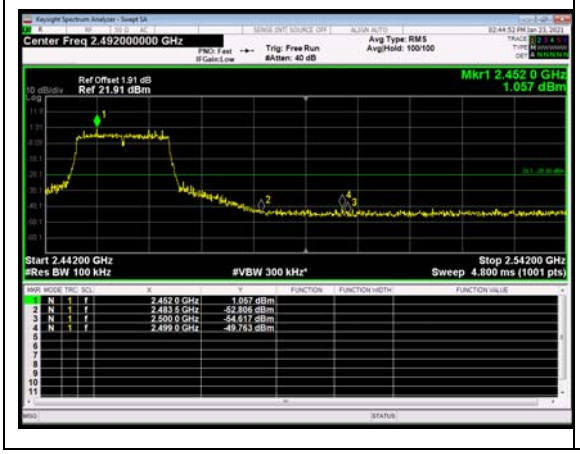


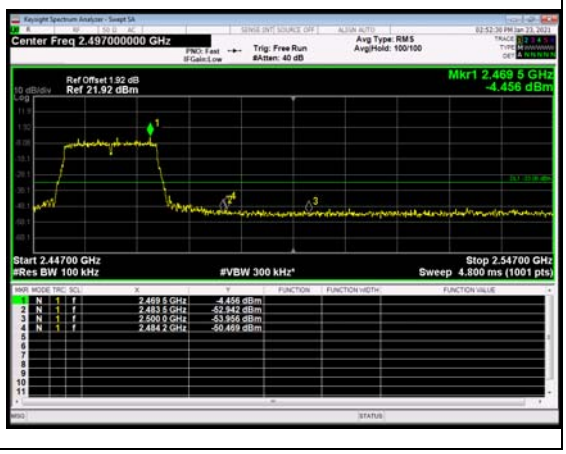
802.11n(HT20), Channel No.:10



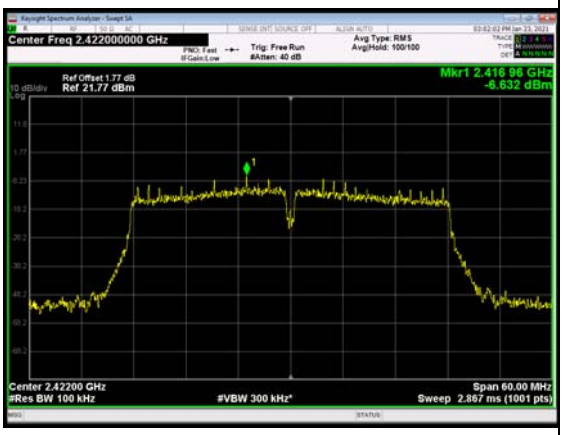
802.11n(HT20), Channel No.:11



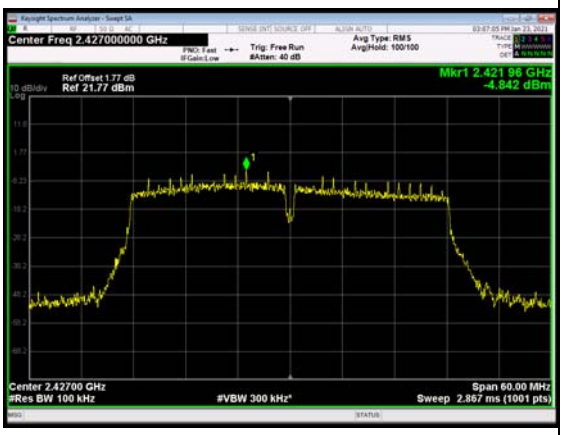


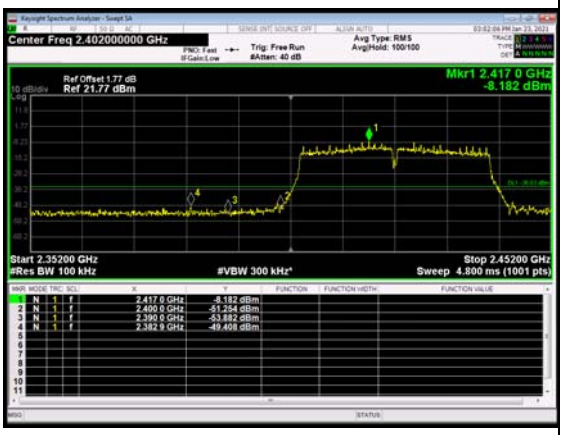


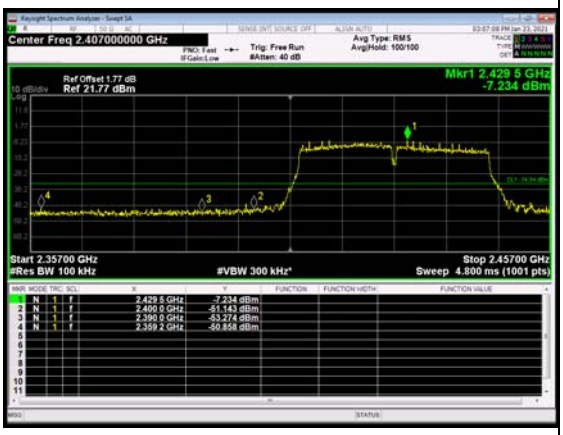
802.11n(HT40), Channel No.: 3



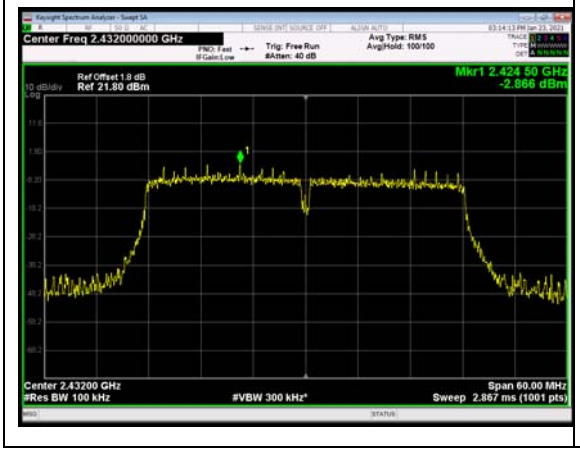
802.11n(HT40), Channel No.:4



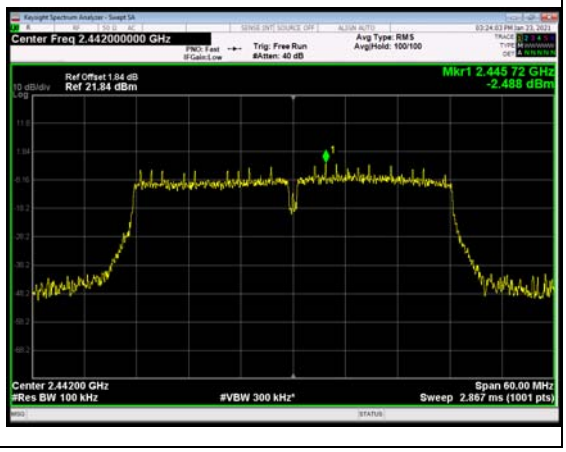


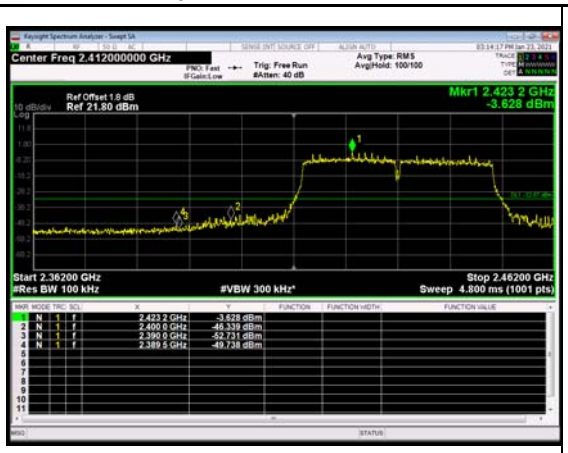


802.11n(HT40), Channel No.:5

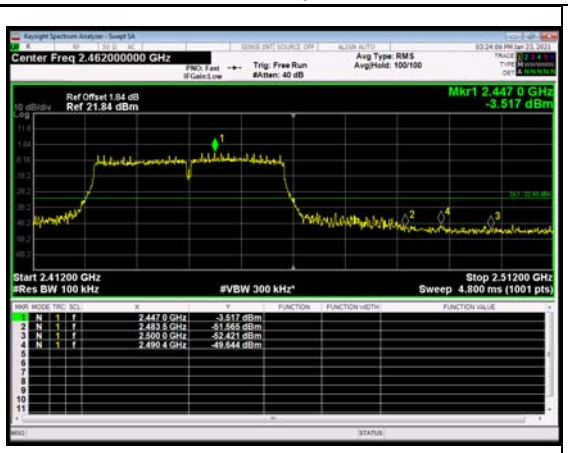


802.11n(HT40), Channel No.:7





802.11n(HT40), Channel No.:8



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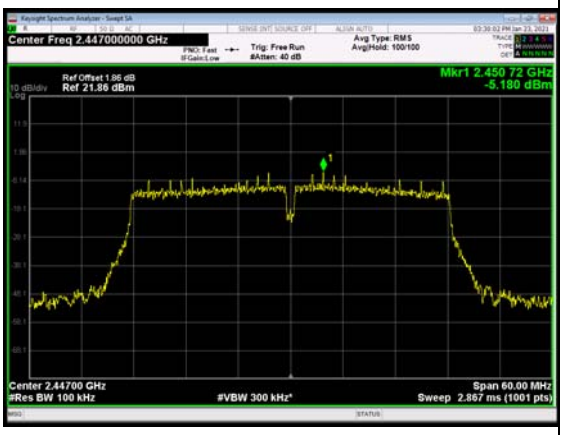
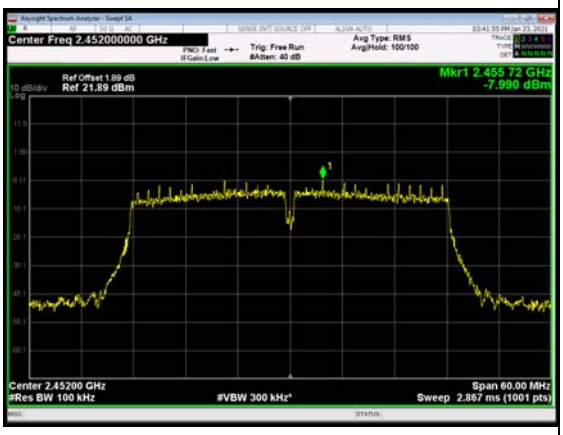
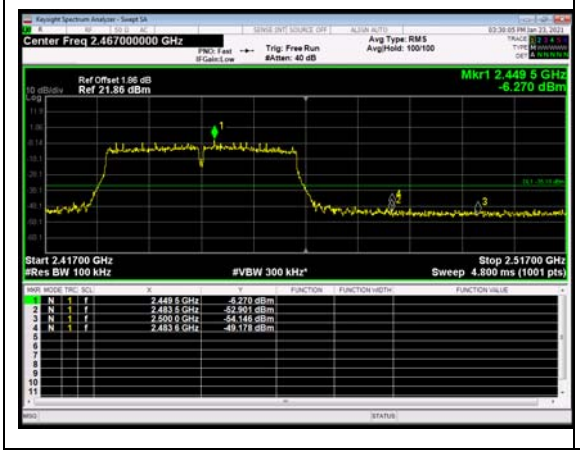
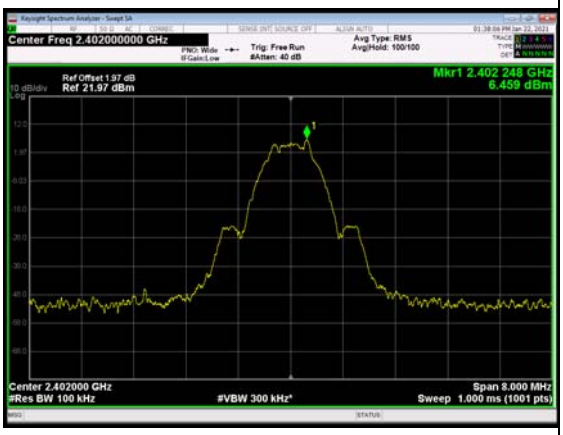


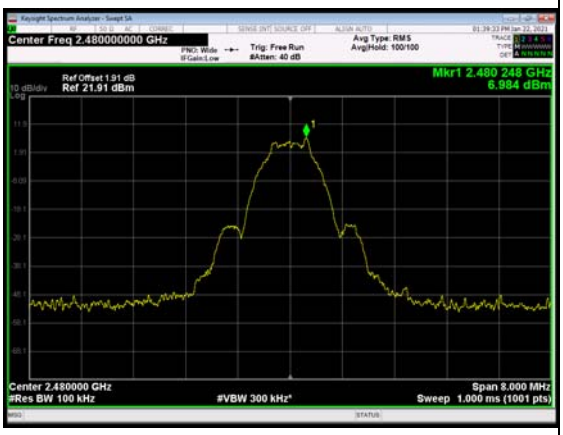


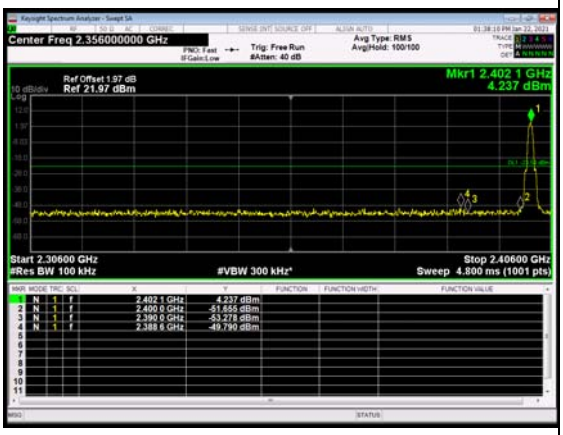


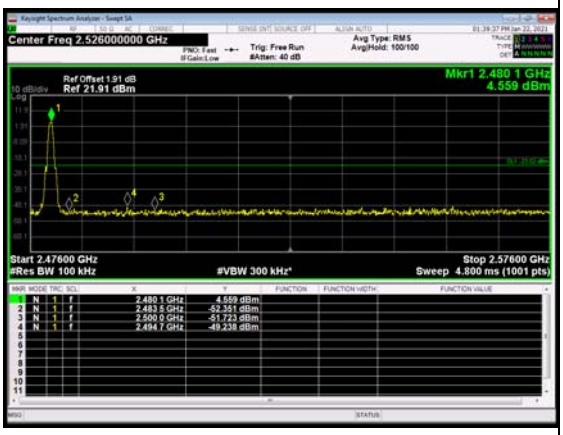
BLE (1M), Channel No.: 0



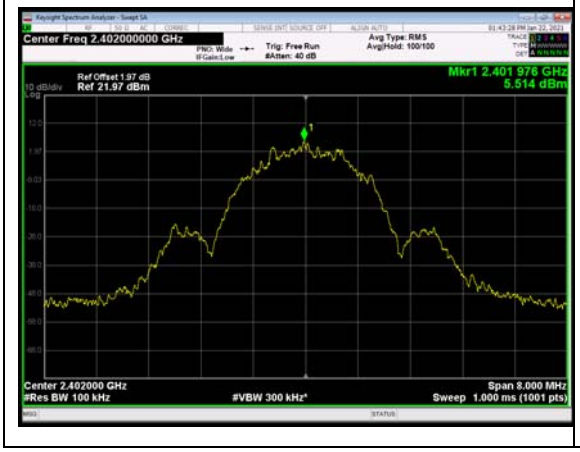
BLE (1M), Channel No.: 39



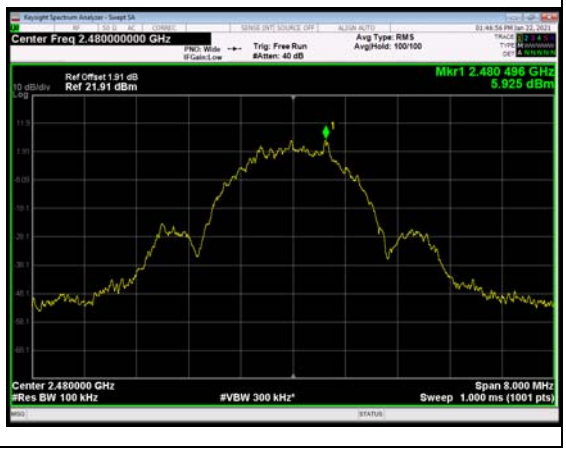


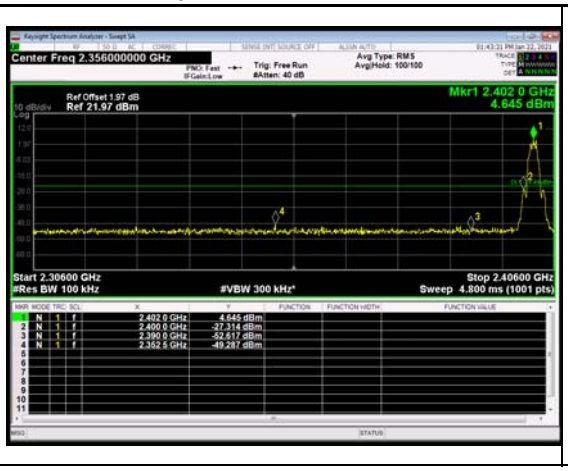


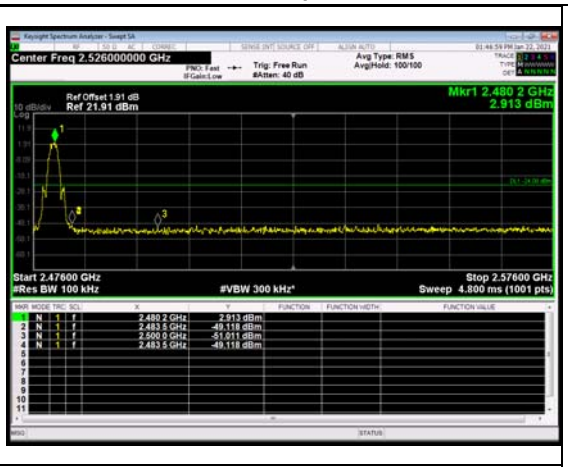
BLE (2M), Channel No.: 0



BLE (2M), Channel No.: 39







5.4. Power Spectral Density

Ambient condition

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

Method of Measurement

During the process of the testing, The EUT was connected to Spectrum Analyzer with a known loss. The EUT is max power transmission with proper modulation.

Method AVGPSD-1 was used for this test.

a) Set instrument center frequency to DTS channel center frequency

b) Set span to at least 1.5 times the OBW

c) Set RBW to:3kHz≤RBW≤100kHz

d) Set VBW≥[3x RBW]

e) Detector=power averaging(rms) or sample detector(when rms not available)

f) Ensure that the number of measurement points in the sweep 2[2 X span/RBWT]

g)Sweep time auto couple

h) Employ trace averaging(rms) mode over a minimum of 100 traces

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

j) If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat(note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced)

Method AVGPSD-2 was used for this test.

a) Measure the duty cycle(D)of the transmitter output signal as described in 11.6

b) Set instrument center frequency to DTS channel center frequency

c)Set span to at least 1.5 times the OBW

d) Set RBW to:3kHz≤RBW≤100Kh

e) Set VBW≥[3x RBW]

f)Detector= power averaging(rms) or sample detector (when rms not available)

g) Ensure that the number of measurement points in the sweep 2[2 X span/RBW]

h) Sweep time =auto couple

i) Do not use sweep triggering; allow sweep to "free run”

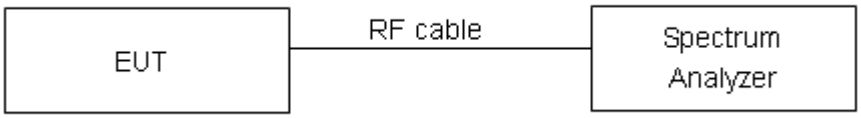
j) Employ trace averaging(rms) mode over a minimum of 100 traces

k) Use the peak marker function to determine the maximum amplitude level

l) Add [10 log(1/ D)], where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time

m) If measured value exceeds requirement specified by regulatory agency then reduce RBW(but o less than 3 kHz) and repeat(note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced)

Test setup



Limits

Rule Part 15.247(e) specifies that" For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. ''

Limits	≤ 8 dBm / 3kHz

Measurement Uncertainty

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

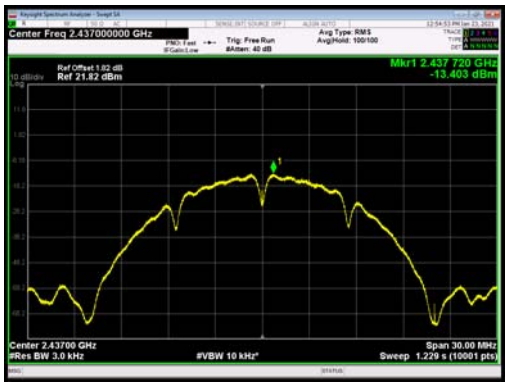
Test Results:

Test Mode	Channel Number	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11b	1	-13.12	-13.12	8	PASS
	6	-13.40	-13.40	8	PASS
	11	-12.67	-12.67	8	PASS
802.11g	1	-25.22	-25.09	8	PASS
	2	-17.92	-17.79	8	PASS
	3	-17.47	-17.34	8	PASS
	4	-16.17	-16.04	8	PASS
	6	-16.91	-16.78	8	PASS
	8	-16.72	-16.59	8	PASS
	9	-17.48	-17.35	8	PASS
	10	-17.14	-17.01	8	PASS
	11	-25.24	-25.11	8	PASS
802.11n HT20	1	-25.51	-25.35	8	PASS
	2	-18.36	-18.21	8	PASS
	3	-17.80	-17.64	8	PASS
	4	-15.48	-15.32	8	PASS
	6	-16.44	-16.28	8	PASS
	8	-16.74	-16.58	8	PASS
	9	-17.35	-17.20	8	PASS
	10	-17.02	-16.86	8	PASS
	11	-25.57	-25.41	8	PASS
802.11n HT40	3	-27.86	-27.59	8	PASS
	4	-26.37	-26.10	8	PASS
	5	-23.73	-23.46	8	PASS
	6	-23.43	-23.16	8	PASS
	7	-22.70	-22.43	8	PASS
	8	-26.98	-26.71	8	PASS
	9	-28.34	-28.06	8	PASS

Bluetooth (Low Energy) (1M)	0	-15.03	-14.31	8	PASS
	19	-14.66	-13.94	8	PASS
	39	-14.47	-13.75	8	PASS
Bluetooth (Low Energy) (2M)	0	-18.79	-16.35	8	PASS
	19	-18.58	-16.14	8	PASS
	39	-18.37	-15.93	8	PASS
Note: Power Spectral Density =Read Value+ Duty cycle correction factor					

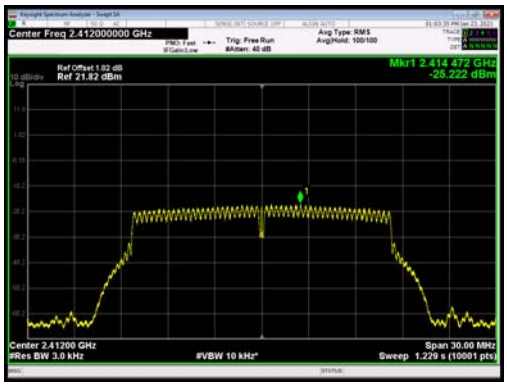
802.11b, Channel No.: 1

802.11b, Channel No.: 6

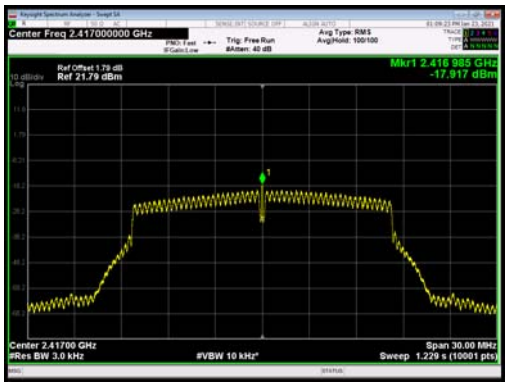


802.11b, Channel No.: 11

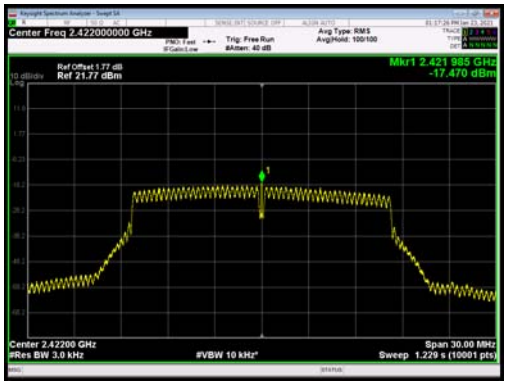
802.11g, Channel No.:1



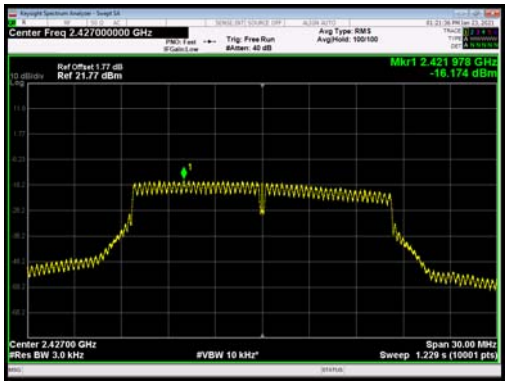
802.11g, Channel No.: 2



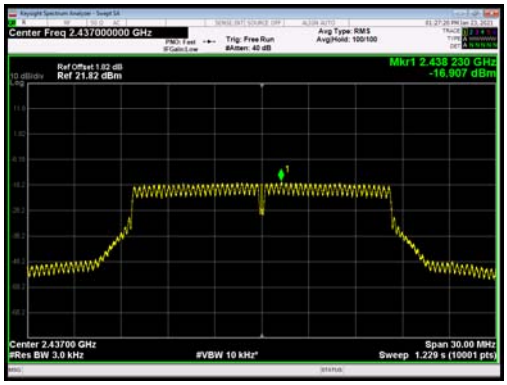
802.11g, Channel No.:3



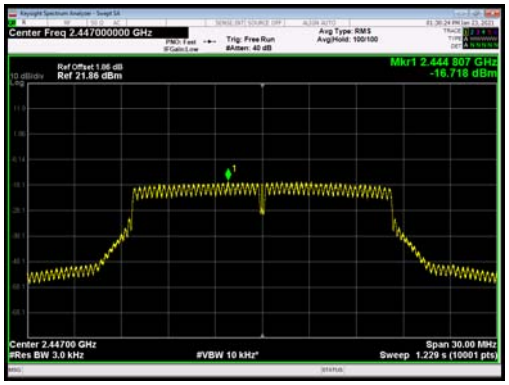
802.11g, Channel No.4



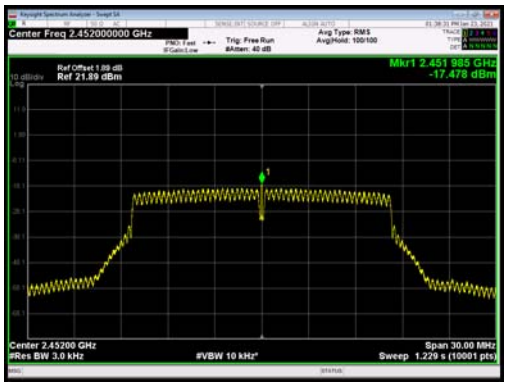
802.11g, Channel No.:6



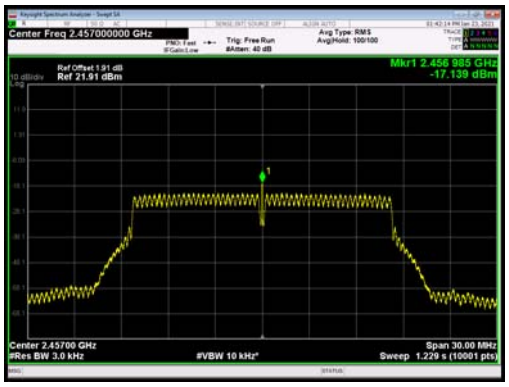
802.11g, Channel No.:8



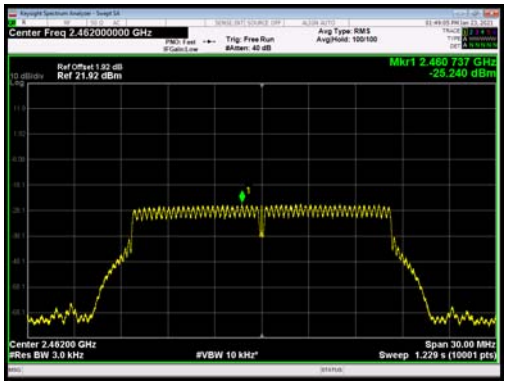
802.11g, Channel No.:9

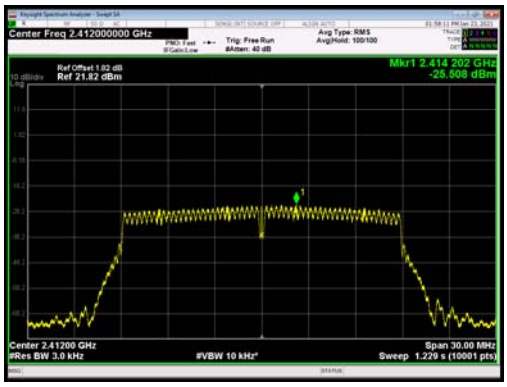
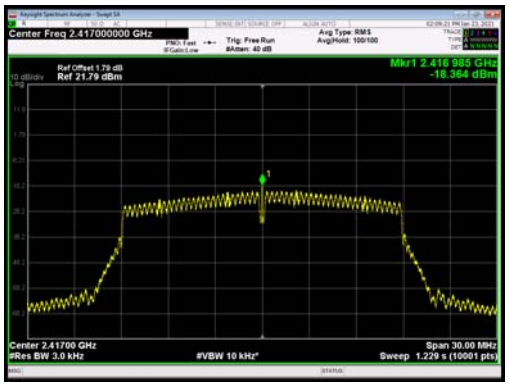
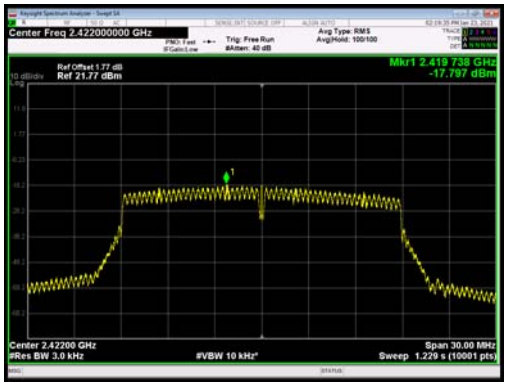
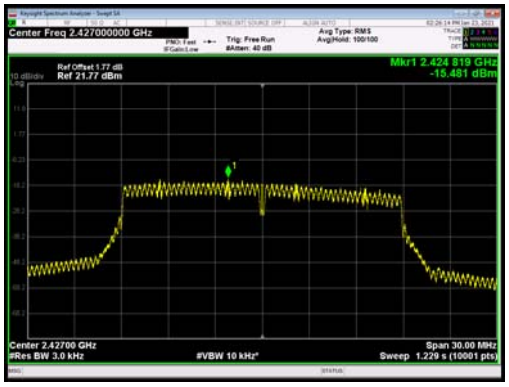
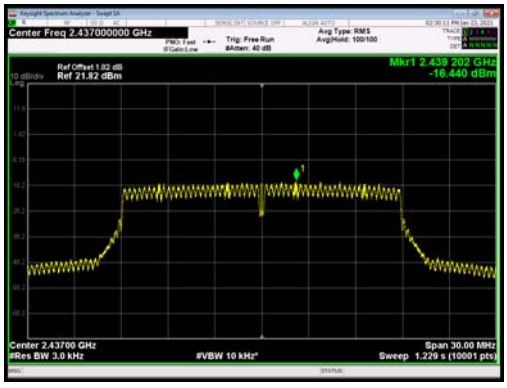
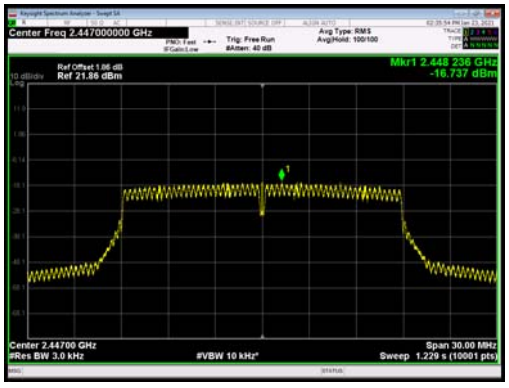


802.11g, Channel No.:10

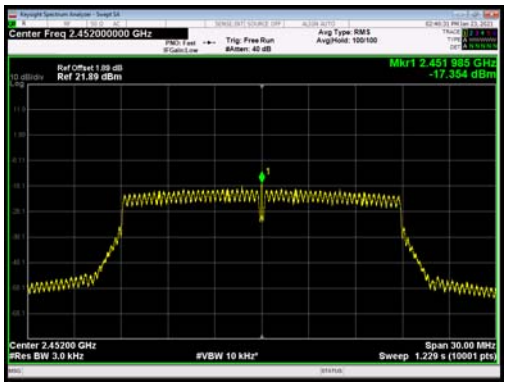


802.11g, Channel No.:11



802.11 n(HT20) Channel No.:1	802.11 n(HT20), Channel No.: 2
	
802.11 n(HT20), Channel No.:3	802.11 n(HT20), Channel No.4
	
802.11 n(HT20), Channel No.:6	802.11 n(HT20), Channel No.:8
	

802.11 n(HT20), Channel No.:9



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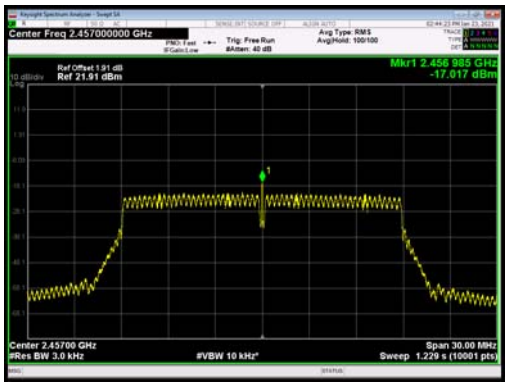
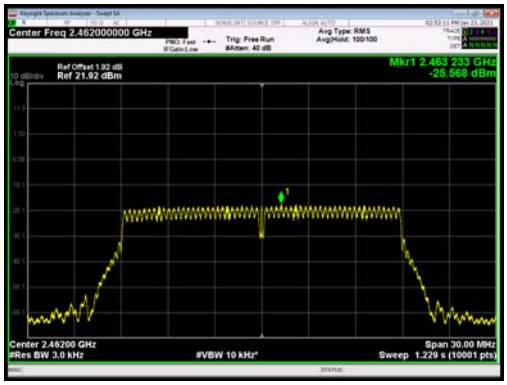
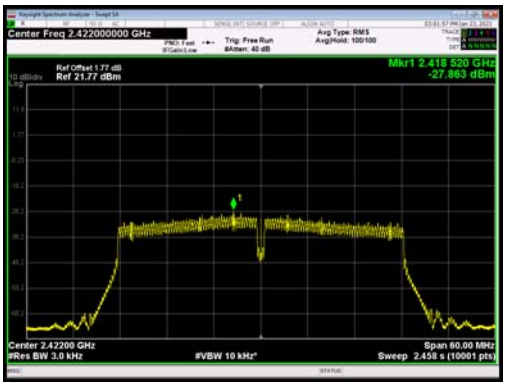


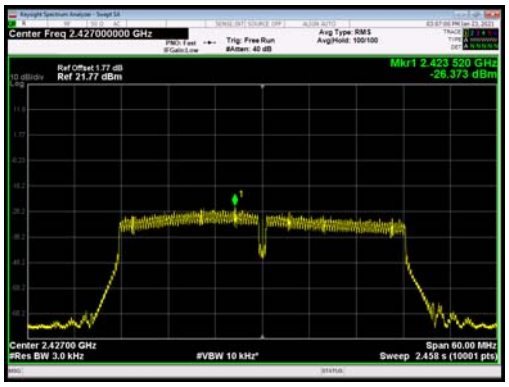
802.11 n(HT20), Channel No.:11



802.11n(HT40), Channel No:3



802.11n(HT40), Channel No:4



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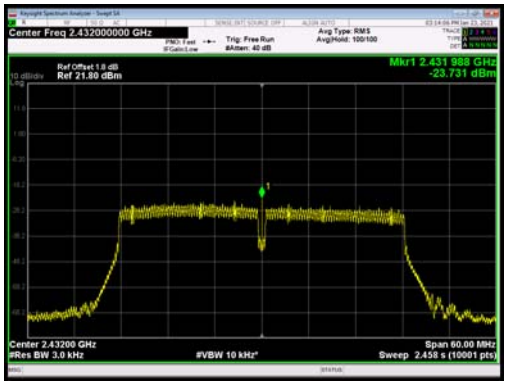
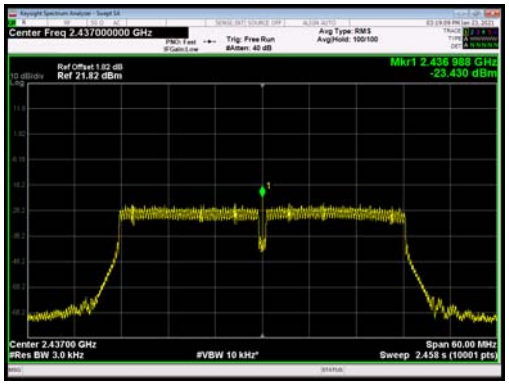
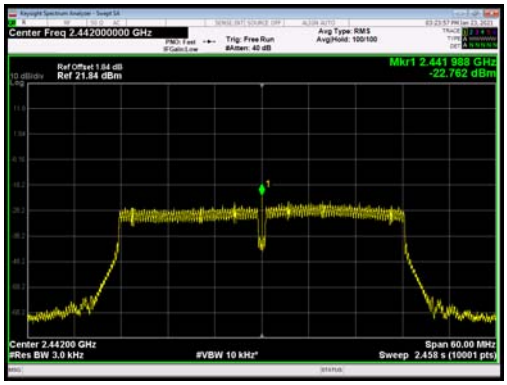


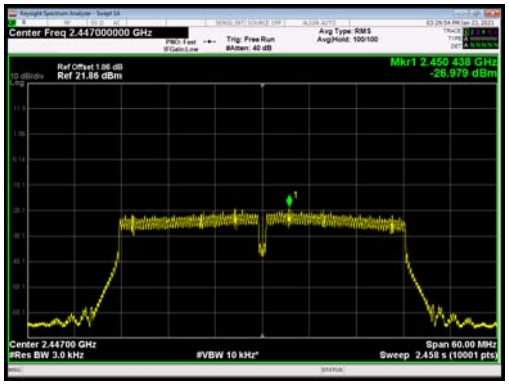
802.11n(HT40), Channel No:6



802.11n(HT40), Channel No:7



802.11n(HT40), Channel No:8



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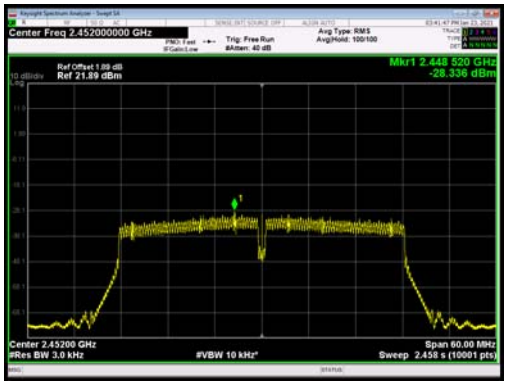
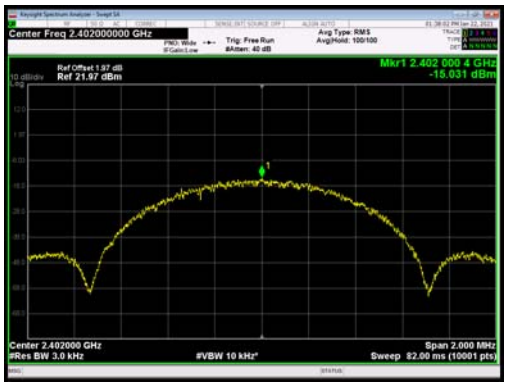
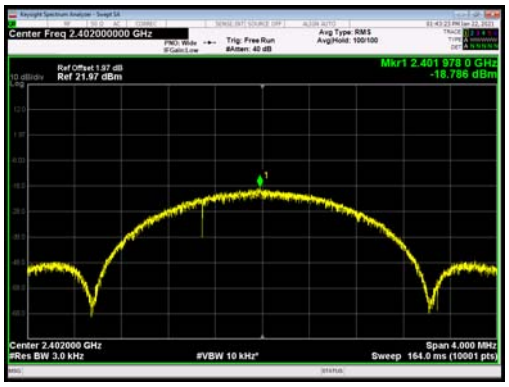
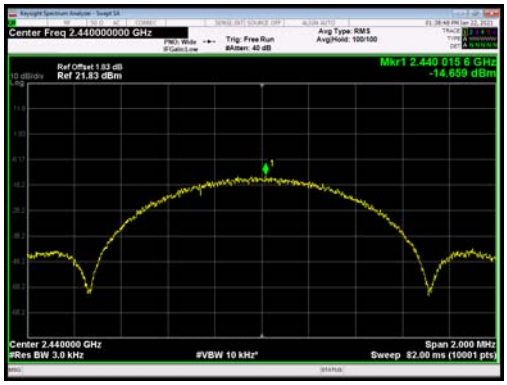
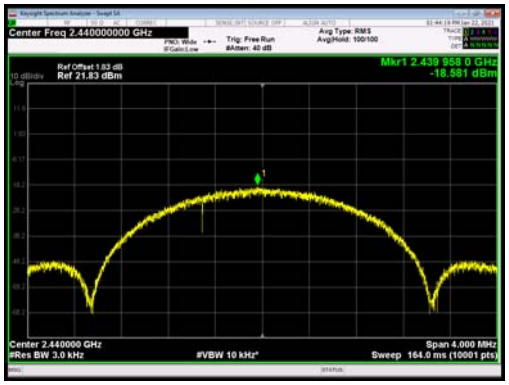
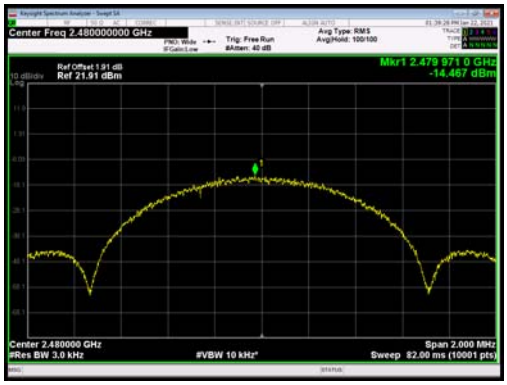
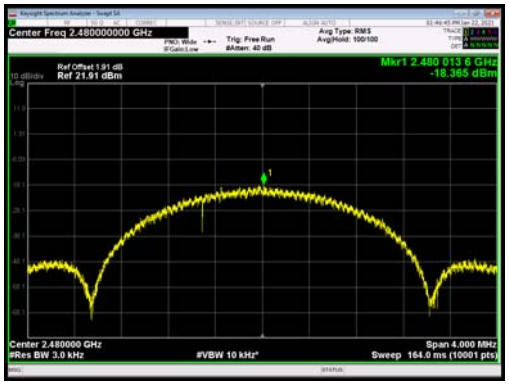


BLE (1M), Channel No.: 0	BLE (2M), Channel No.: 0
	
BLE (1M), Channel No.: 19	BLE (2M), Channel No.: 19
	
BLE (1M), Channel No.: 39	BLE (2M), Channel No.: 39
	

5.5. Spurious RF Conducted Emissions

Ambient condition

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

Method of Measurement

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW to 100 kHz and VBW to 300 kHz, Sweep is set to ATUO.
The test is in transmitting mode.

Test setup

Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak power limits. If the transmitter complies with the power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. ”

Test Mode	Carrier frequency (MHz)	Reference value (dBm)	Limit (dBm)
802.11b	2412	10.00	-20.00
	2437	9.62	-20.38
	2462	9.88	-20.12
802.11g	2412	-2.50	-32.50
	2417	2.04	-27.96
	2422	4.33	-25.67
	2427	6.84	-23.16
	2437	6.26	-23.74
	2447	6.47	-23.53
	2452	4.66	-25.34
	2457	2.58	-27.42
	2462	-2.44	-32.44
802.11n	2412	-2.23	-32.23

HT20	2417	3.17	-26.83
	2422	4.62	-25.38
	2427	7.01	-22.99
	2437	6.72	-23.28
	2447	6.29	-23.71
	2452	4.42	-25.58
	2457	3.14	-26.86
	2462	-2.39	-32.39
802.11n HT40	2422	-6.51	-36.51
	2427	-4.12	-34.12
	2432	-1.11	-31.11
	2437	-1.79	-31.79
	2442	-2.34	-32.34
	2447	-5.40	-35.40
	2452	-6.20	-36.20
Bluetooth (Low Energy) (1M)	2402	7.07	-22.93
	2440	6.73	-23.27
	2480	7.31	-22.69
Bluetooth (Low Energy) (2M)	2402	5.83	-24.17
	2440	6.76	-23.24
	2480	6.06	-23.94

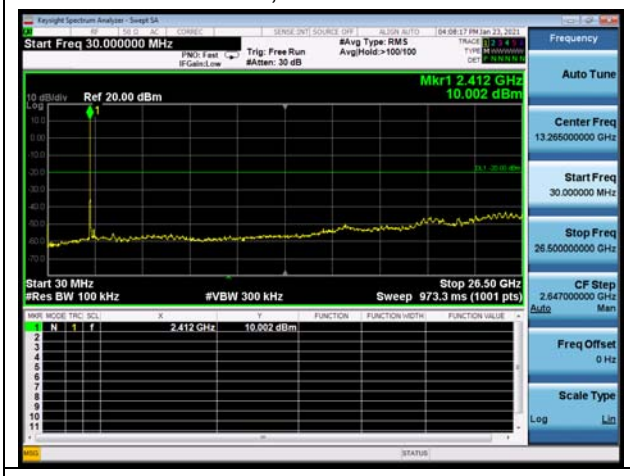
Measurement Uncertainty

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

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

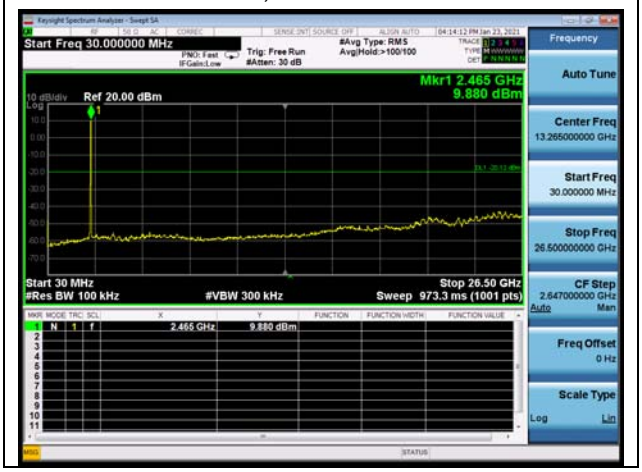
Test Results:

802.11b, Channel No.: 1

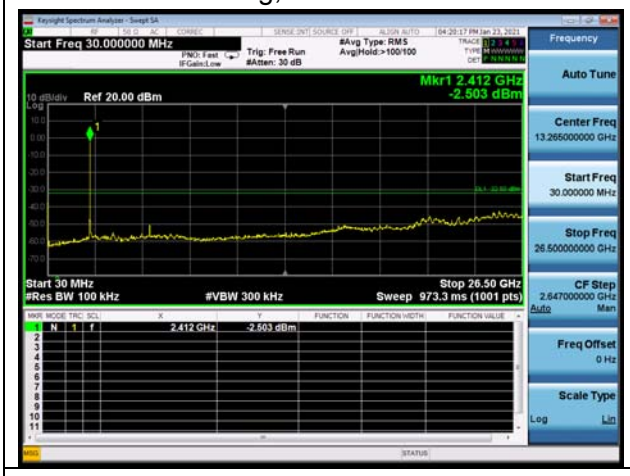


802.11b, Channel No.: 6

802.11b, Channel No.: 11

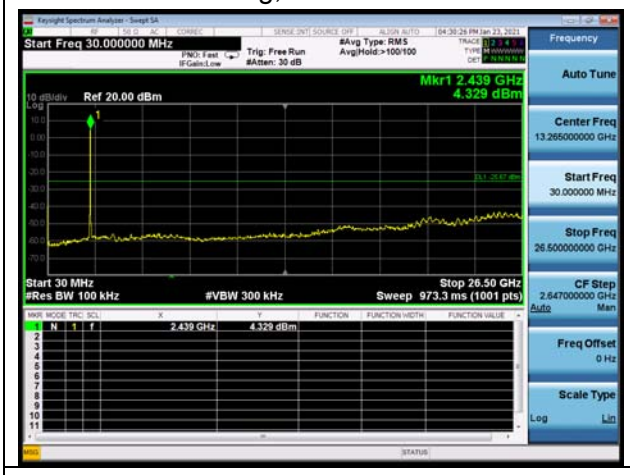


802.11g, Channel No.:1



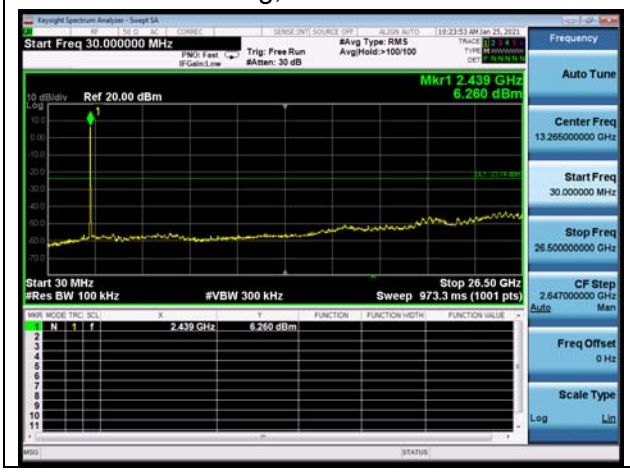
802.11g, Channel No.: 2

802.11g, Channel No.:3



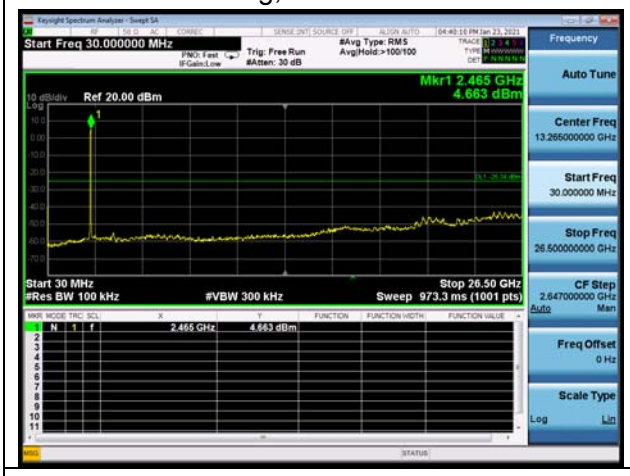
802.11g, Channel No.:4

802.11g, Channel No.:6



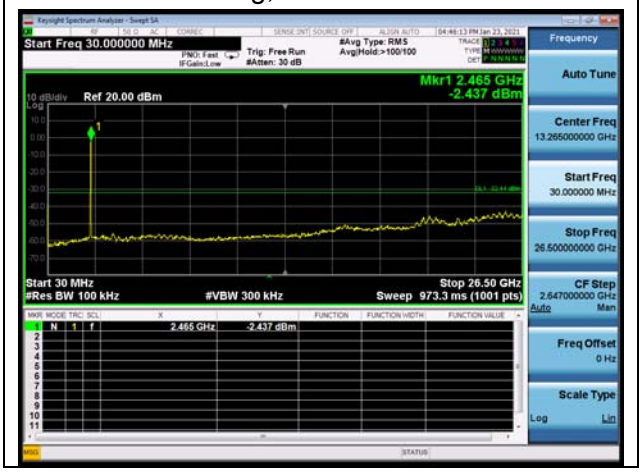
802.11g, Channel No.:8

802.11g, Channel No.:9

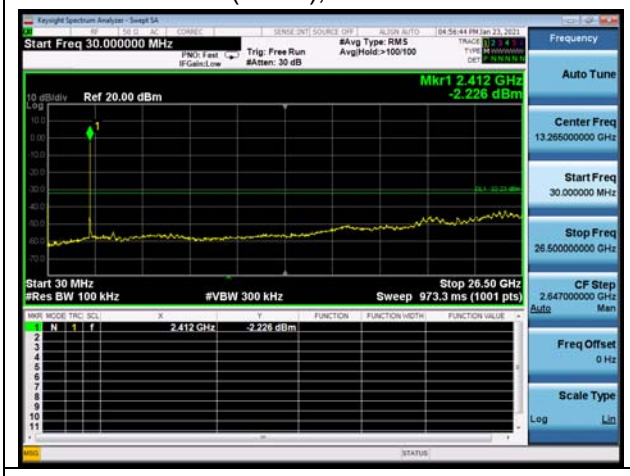


802.11g, Channel No.:10

802.11g, Channel No.:11

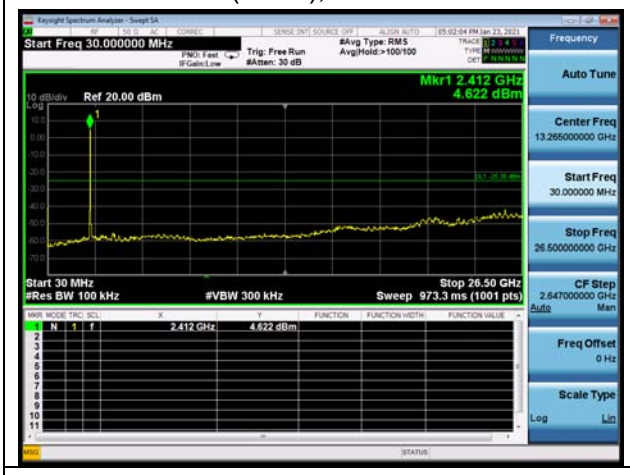


802.11n(HT20), Channel No. 1



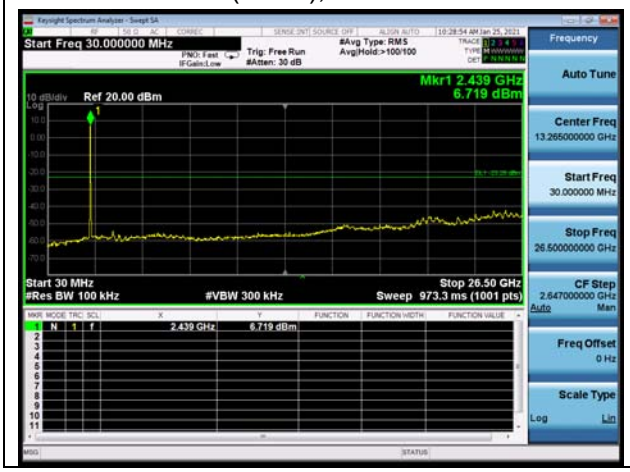
802.11n(HT20), Channel No. 2

802.11n(HT20), Channel No. 3



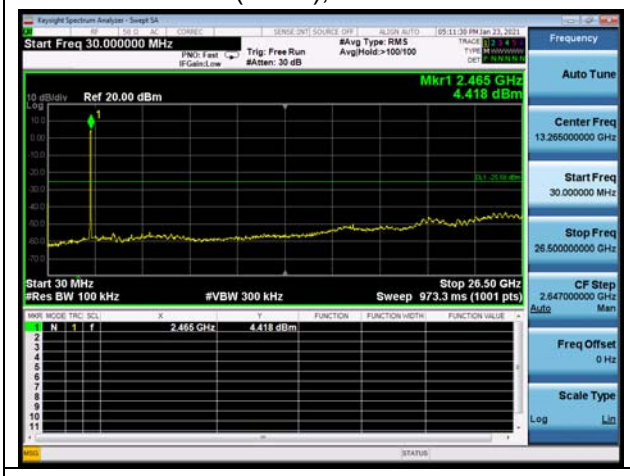
802.11n(HT20), Channel No. 4

802.11n(HT20), Channel No. 6



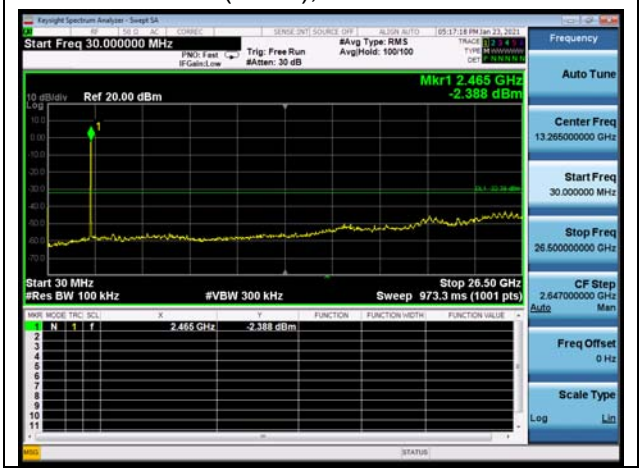
802.11n(HT20), Channel No. 8

802.11n(HT20), Channel No.9

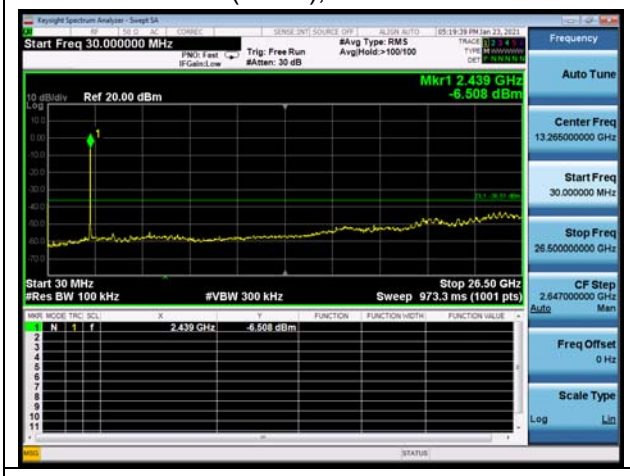


802.11n(HT20), Channel No. 10

802.11n(HT20), Channel No. 11



802.11n(HT40), Channel No. 3



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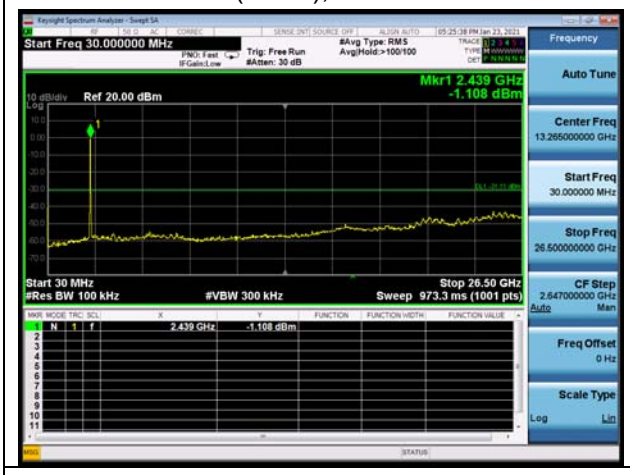
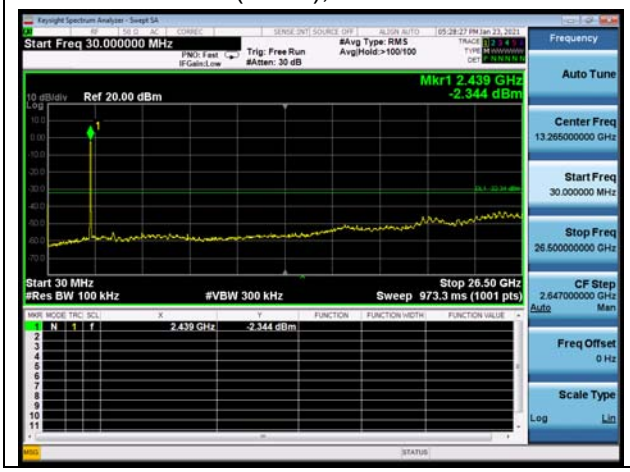
802.11n(HT40), Channel No.5

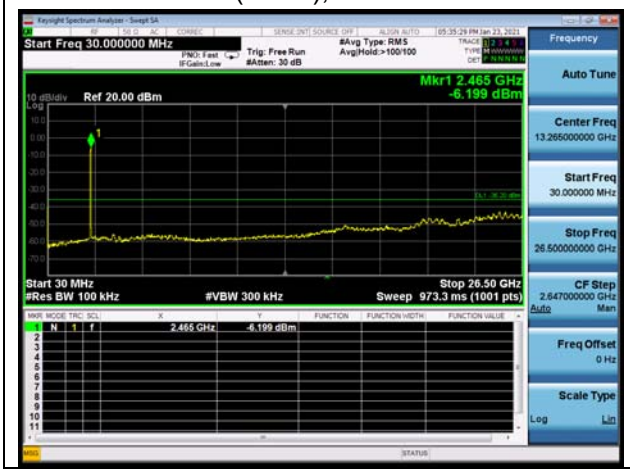


802.11n(HT40), Channel No.6

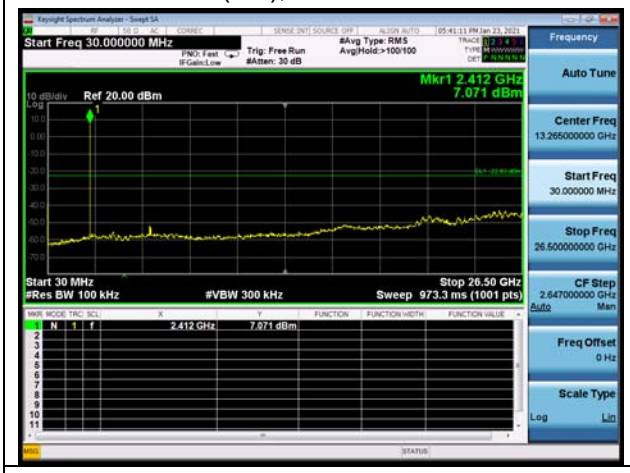
802.11n(HT40), Channel No.7



802.11n(HT40), Channel No.8

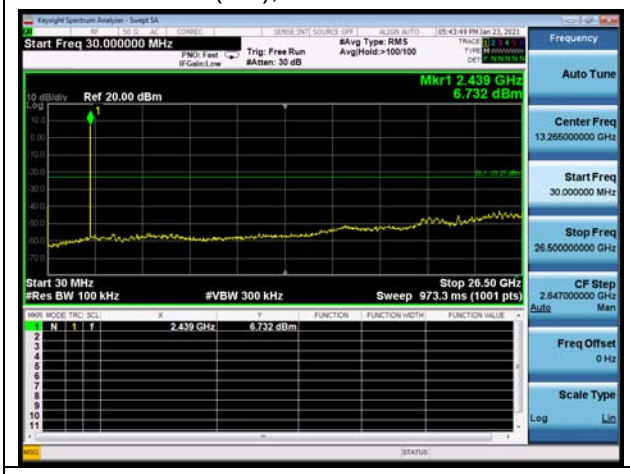
802.11n(HT40), Channel No.9 	/

BLE (1M), Channel No.: 0



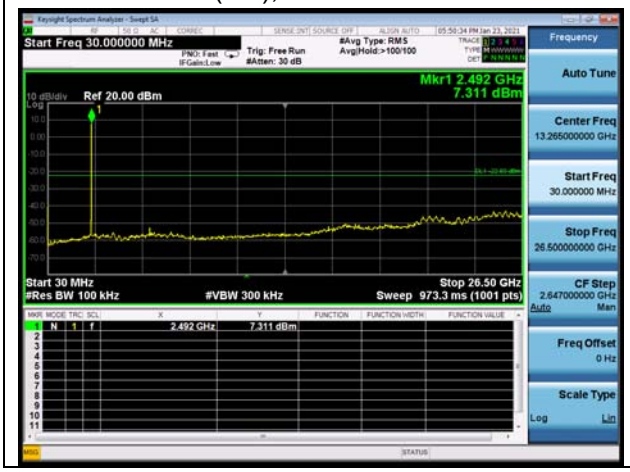
BLE (2M), Channel No.: 0

BLE (1M), Channel No.: 19



BLE (2M), Channel No.: 19

BLE (1M), Channel No.: 39



BLE (2M), Channel No.: 39

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