



RF TEST REPORT

Applicant ZTE Corporation

FCC ID SRQ-ZTEA2022PG

Product 5G NR/LTE/WCDMA/GSM(GPRS)
Multi-Mode Digital Mobile Phone

Marketing ZTE Axon 30 Ultra 5G

Model ZTE A2022PG

Report No. R2103A0263-R6V2

Issue Date May 11, 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.

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Version	Revision description	Issue Date
Rev.0	Initial issue of report.	April 29, 2021
Rev.1	Add 802.11ax HE20/ HE40 data on RU. Update information in Page 8	May 10, 2021
Rev.2	Update description in Page 45/47/48.	May 11, 2021
Note: This revised report (Report No. R2103A0263-R6V2) supersedes and replaces the previously issued report (Report No. R2103A0263-R6V1). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Maximum output power	15.247(b)(3)	PASS
2	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: April 4,2021~ May 7, 2021			
Date of Sample Received: March 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
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2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

2.2. General information

EUT Description	
Model	ZTE A2022PG
IMEI	IMEI 1:861959050001059 IMEI 2:861959050002059
Hardware Version	ZTE A2022PGHW1.0
Software Version 1	MyOS11.0.0_A2022PG_GLB
Software Version 2	MyOS11.0.0_A2022PG_TEL
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	Antenna 1: 0.15 dBi Antenna 2: -2.40 dBi
Directional Gain	Power Directional Gain: 0.15 dBi PSD Directional Gain: 3.16 dBi
Test Mode	802.11b, 802.11g, 802.11n(HT20/HT40), 802.11ax(HE20/HE40) Bluetooth LE V5.0
Modulation Type	802.11b: DSSS 802.11g/n(HT20/HT40): OFDM 802.11ax(HE20/HE40): OFDMA Bluetooth LE: GFSK
Max. Conducted Power	Wi-Fi 2.4G: 19.85 dBm Bluetooth LE: 8.64 dBm
Operating Frequency Range(s)	802.11b/g/n(HT20)/ax(HE20): 2412 ~ 2462 MHz 802.11n(HT40)/ax(HE40): 2422 ~ 2452 MHz Bluetooth LE: 2402 ~2480 MHz
FLASH	8+128G,12+256G



EUT Accessory	
Adapter 1	Manufacturer: ShenZhen KunXing Technology Co., Ltd. Model: STC-A59152050AC-Z
Adapter 2	Manufacturer: ShenZhen KunXing Technology Co., Ltd. Model: STC-A59152050AC-A
Earphone	Manufacturer: Shen zhen FDC Electronic Co.,Ltd. Model: DEM-9A
Battery	Manufacturer: Zhuhai CosMX Battery Co., Ltd. Model: Li3941T44P8h826453
USB Cable	Manufacturer: Shenzhen Luxshare Precision Industry Co.,Ltd. Model: TC20-TC20-W-100-M-6A-HSF
Type-C to 3.5 mm Headphone Jack Adapter	Manufacture: HUIZHOU JUWEI ELECTRONICS CO. ,LTD Model: JWUB1389-Z01
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 FLASH/Adapter, each one should be applied throughout the compliance test respectively, and however, only the worst case (12+256G/Adapter 1) will be recorded in this report. 3.The two different software versions are for different market requirement.	



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

KDB 662911 D01 Multiple Transmitter Output v02r01

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		
	Antenna 1	Antenna 2	MIMO
802.11b	1 Mbps	1 Mbps	/
802.11g	6 Mbps	6 Mbps	/
802.11n HT20	MCS0	MCS0	MCS8
802.11n HT40	MCS0	MCS0	MCS8
802.11ax HE20	MCS0	MCS0	MCS0
802.11ax HE40	MCS0	MCS0	MCS0

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

Test Cases	Antenna 1	Antenna 2	MIMO
Maximum conducted output power	O	O	O
6dB Bandwidth	802.11b/g	-	802.11n HT20 802.11n HT40 802.11ax HE20 802.11ax HE20
Band Edge	802.11b/g	-	802.11n HT20 802.11n HT40 802.11ax HE20 802.11ax HE20
Power Spectral Density	O	O	O
Spurious RF Conducted Emissions	802.11b/g	-	802.11n HT20 802.11n HT40 802.11ax HE20 802.11ax HE20
Unwanted Emissions	802.11b/g	-	802.11n HT20 802.11n HT40 802.11ax HE20 802.11ax HE20
Conducted Emission	802.11b/g	-	802.11n HT20 802.11n HT40 802.11ax HE20 802.11ax HE20
Note: "O": test all bands			

According to RF Output power results in chapter 5.1, MIMO was selected as the worst antenna for 802.11n HT20/ HT40, 802.11ax HE20/ HE40. SISO Antenna 1 was selected as the worst SISO antenna for 802.11b/g.

5. Test Case Results

5.1. Maximum output power

Ambient condition

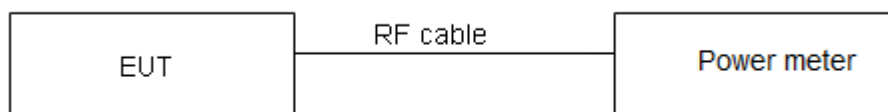
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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.

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

Test Setup



Limits

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

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

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



Test Results

SISO Antenna Power Index								
Antenna	Channel	802.11b	802.11g	802.11n HT20	802.11ax HE20	Channel	802.11n HT40	802.11ax HE40
Antenna 1	CH1	18	17	16	15	CH3	15	15
	CH6	18	17	16	15	CH6	15	15
	CH11	18	17	16	15	CH9	15	15
Antenna 2	CH1	18	17	16	15	CH3	15	15
	CH6	18	17	16	15	CH6	15	15
	CH11	18	17	16	15	CH9	15	15
MIMO Antenna Power Index								
Antenna	Channel	802.11b	802.11g	802.11n HT20	802.11ax HE20	Channel	802.11n HT40	802.11ax HE40
Antenna 1	CH1	--	--	16	15	CH3	15	15
	CH6	--	--	16	15	CH6	15	15
	CH11	--	--	16	15	CH9	15	15
Antenna 2	CH1	--	--	16	15	CH3	15	15
	CH6	--	--	16	15	CH6	15	15
	CH11	--	--	16	15	CH9	15	15

Test Mode	T _{on} (ms)	T _(on+off) (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11b	0.67	0.77	0.87	0.62
802.11g	2.10	2.39	0.88	0.56
802.11n HT20	5.43	5.77	0.94	0.26
802.11n HT40	5.40	5.82	0.93	0.33
802.11ax HE20	1.00	1.00	1.00	NA
802.11ax HE40	1.00	1.00	1.00	NA
Bluetooth LE (1M)	0.39	0.62	0.619	2.086
Bluetooth LE (2M)	0.20	0.62	0.327	4.856
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
Bluetooth (Low Energy) (1M)	2402	5.55	7.64	30	PASS
	2440	6.55	8.64	30	PASS
	2480	4.96	7.05	30	PASS
Bluetooth (Low Energy) (2M)	2402	2.79	7.65	30	PASS
	2440	3.55	8.41	30	PASS
	2480	2.31	7.17	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna1

Test Mode	Carrier frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11b	2412	18.03	18.65	30	PASS
	2437	18.07	18.69	30	PASS
	2462	18.14	18.76	30	PASS
802.11g	2412	17.63	18.19	30	PASS
	2437	17.71	18.27	30	PASS
	2462	17.65	18.21	30	PASS
802.11n HT20	2412	16.23	16.49	30	PASS
	2437	16.42	16.68	30	PASS
	2462	16.40	16.66	30	PASS
802.11n HT40	2422	14.98	15.31	30	PASS
	2437	15.69	16.02	30	PASS
	2452	14.83	15.16	30	PASS
802.11ax HE20	2412	14.78	14.78	30	PASS
	2437	15.06	15.06	30	PASS
	2462	15.19	15.19	30	PASS
802.11ax HE40	2422	14.48	14.48	30	PASS
	2437	15.26	15.26	30	PASS
	2452	14.47	14.47	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

**SISO Antenna2**

Test Mode	Carrier frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11b	2412	17.73	18.35	30	PASS
	2437	17.55	18.17	30	PASS
	2462	17.47	18.09	30	PASS
802.11g	2412	17.67	18.23	30	PASS
	2437	17.77	18.33	30	PASS
	2462	17.13	17.69	30	PASS
802.11n HT20	2412	16.73	16.99	30	PASS
	2437	16.79	17.05	30	PASS
	2462	16.45	16.71	30	PASS
802.11n HT40	2422	15.71	16.04	30	PASS
	2437	16.58	16.91	30	PASS
	2452	15.81	16.14	30	PASS
802.11ax HE20	2412	16.25	16.25	30	PASS
	2437	16.42	16.42	30	PASS
	2462	16.23	16.23	30	PASS
802.11ax HE40	2422	15.69	15.69	30	PASS
	2437	16.38	16.38	30	PASS
	2452	15.47	15.47	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

MIMO

Test Mode	Carrier frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	2412	16.14	16.40	16.37	16.63	19.53	30	PASS
	2437	16.33	16.59	16.82	17.08	19.85	30	PASS
	2462	16.31	16.57	16.08	16.34	19.47	30	PASS
802.11n HT40	2422	14.89	15.22	15.94	16.27	18.78	30	PASS
	2437	15.60	15.93	16.49	16.82	19.40	30	PASS
	2452	14.74	15.07	15.67	16.00	18.57	30	PASS
802.11ax HE20	2412	15.14	15.14	16.32	16.32	18.78	30	PASS
	2437	15.47	15.47	16.49	16.49	19.02	30	PASS
	2462	15.25	15.25	15.98	15.98	18.64	30	PASS
802.11ax HE40	2422	14.85	14.85	15.72	15.72	18.32	30	PASS
	2437	15.38	15.38	16.12	16.12	18.78	30	PASS
	2452	14.47	14.47	15.40	15.40	17.97	30	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor
2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),
The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.
3. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 f) (ii),If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.
So directional gain = $G_{\text{ANT}}=0.15\text{ dBi}<6\text{dBi}$. So the power limit is 30dBm

**MU mode****SISO Antenna 1**

Test Mode	Carrier frequency (MHz)	RU size	Power Index	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11ax HE20	2412	26-Tones	0	14.62	14.62	30	PASS
	2437		4	14.58	14.58	30	PASS
	2462		8	15.06	15.06	30	PASS
802.11ax HE20	2412	52-Tones	37	14.72	14.72	30	PASS
	2437		38	14.86	14.86	30	PASS
	2462		40	15.03	15.03	30	PASS
802.11ax HE20	2412	106-Tones	53	14.65	14.65	30	PASS
	2437		53	14.77	14.77	30	PASS
	2462		54	14.96	14.96	30	PASS

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

SISO Antenna 2

Test Mode	Carrier frequency (MHz)	RU size	Power Index	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11ax HE20	2412	26-Tones	0	15.78	15.78	30	PASS
	2437		4	15.63	15.63	30	PASS
	2462		8	15.36	15.36	30	PASS
802.11ax HE20	2412	52-Tones	37	15.92	15.92	30	PASS
	2437		38	15.66	15.66	30	PASS
	2462		40	14.97	14.97	30	PASS
802.11ax HE20	2412	106-Tones	53	15.75	15.75	30	PASS
	2437		53	15.74	15.74	30	PASS
	2462		54	15.08	15.08	30	PASS

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

MIMO

Test Mode	Carrier frequency (MHz)	RU size	Power Index	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
				Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11ax HE20	2412	26-Tones	0	14.86	14.86	15.83	15.83	18.38	30	PASS
	2437		4	15.13	15.13	15.61	15.61	18.39	30	PASS
	2462		8	14.95	14.95	15.36	15.36	18.17	30	PASS
802.11ax HE20	2412	52-Tones	37	14.83	14.83	15.89	15.89	18.40	30	PASS
	2437		38	15.09	15.09	15.44	15.44	18.28	30	PASS
	2462		40	14.88	14.88	14.85	14.85	17.88	30	PASS
802.11ax HE20	2412	106-Tones	53	14.87	14.87	15.68	15.68	18.30	30	PASS
	2437		53	15.09	15.09	15.73	15.73	18.43	30	PASS
	2462		54	14.85	14.85	14.97	14.97	17.92	30	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 f) (ii),If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain. So directional gain = $G_{\text{ANT}}=0.15\text{ dBi}<6\text{dBi}$. So the power limit is 30dBm

SU mode

SISO Antenna 1

Test Mode	Carrier frequency (MHz)	RU size	Power Index	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11ax HE20	2412	242-Tones	61	14.72	14.72	30	PASS
	2437		61	15.03	15.03	30	PASS
	2462		61	14.89	14.89	30	PASS
802.11ax HE40	2422	484-Tones	65	14.42	14.42	30	PASS
	2437		65	15.04	15.04	30	PASS
	2452		65	14.21	14.21	30	PASS

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

**SISO Antenna 2**

Test Mode	Carrier frequency (MHz)	RU size	Power Index	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11ax HE20	2412	242-Tones	61	15.11	15.11	30	PASS
	2437		61	15.13	15.13	30	PASS
	2462		61	15.14	15.14	30	PASS
802.11ax HE40	2422	484-Tones	65	14.84	14.84	30	PASS
	2437		65	15.21	15.21	30	PASS
	2452		65	14.26	14.26	30	PASS

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

MIMO

Test Mode	Carrier frequency (MHz)	RU size	Power Index	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
				Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11ax HE20	2412	242-Tones	61	15.08	15.08	15.26	15.26	18.18	30	PASS
	2437		61	15.14	15.14	15.31	15.31	18.24	30	PASS
	2462		61	15.07	15.07	15.36	15.36	18.23	30	PASS
802.11ax HE40	2422	484-Tones	65	14.63	14.63	14.93	14.93	17.79	30	PASS
	2437		65	15.26	15.26	15.34	15.34	18.31	30	PASS
	2452		65	14.32	14.32	14.48	14.48	17.41	30	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)} + 10^{(\text{Power antenna2 in dBm}/10)})$.

3. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 f) (ii), If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain. So directional gain = $G_{\text{ANT}} = 0.15 \text{ dBi} < 6 \text{ dBi}$. So the power limit is 30dBm

5.2. 99% Bandwidth and 6dB Bandwidth

Ambient condition

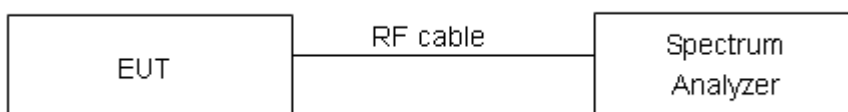
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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.
Detector=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
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Measurement Uncertainty

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

**Test Results:**

Test Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11b	2412	13.1720	8.0920	500	PASS
	2437	13.1120	7.6230	500	PASS
	2462	12.9590	7.5880	500	PASS
802.11g	2412	16.2570	15.1400	500	PASS
	2437	16.2280	15.1500	500	PASS
	2462	16.3700	15.6700	500	PASS
802.11n HT20	2412	17.4470	15.1800	500	PASS
	2437	17.4610	15.1600	500	PASS
	2462	17.5420	15.6200	500	PASS
802.11n HT40	2422	35.8700	35.1100	500	PASS
	2437	35.7040	33.8700	500	PASS
	2452	35.9100	35.4700	500	PASS
802.11ax HE20	2412	18.7890	17.6100	500	PASS
	2437	18.8470	16.7000	500	PASS
	2462	18.8740	17.8300	500	PASS
802.11ax HE40	2422	37.6110	37.2000	500	PASS
	2437	37.5010	36.0800	500	PASS
	2452	37.4450	35.4500	500	PASS
Bluetooth (Low Energy) (1M)	2402	1.0286	0.6696	500	PASS
	2440	1.0278	0.6172	500	PASS
	2480	1.0289	0.6714	500	PASS
Bluetooth (Low Energy) (2M)	2402	2.0145	0.1153	500	PASS
	2440	2.0126	0.1154	500	PASS
	2480	2.0133	0.1162	500	PASS

**MU mode**

Test Mode	Carrier frequency (MHz)	RU size	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11ax HE20	2412	26-Tones	16.6797	2.0021	500	PASS
	2437		16.7132	2.6630	500	PASS
	2462		17.5911	1.9874	500	PASS
802.11ax HE20	2412	52-Tones	17.4154	13.2055	500	PASS
	2437		16.2538	12.5013	500	PASS
	2462		16.1838	16.9880	500	PASS
802.11ax HE20	2412	106-Tones	16.3629	17.1222	500	PASS
	2437		17.9138	14.5785	500	PASS
	2462		17.1264	17.1689	500	PASS

SU mode

Test Mode	Carrier frequency (MHz)	RU size	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11ax HE20	2412	242-Tones	19.0095	19.0430	500	PASS
	2437		18.9725	19.0219	500	PASS
	2462		19.0532	19.0705	500	PASS
802.11ax HE40	2422	484-Tones	37.9386	38.1131	500	PASS
	2437		37.9140	37.9253	500	PASS
	2452		38.0324	37.9073	500	PASS

99%bandwidth

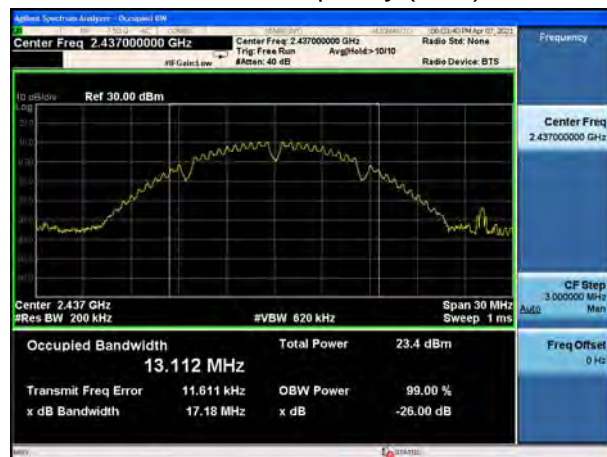
802.11b, Carrier frequency (MHz): 2412



802.11g, Carrier frequency (MHz): 2412



802.11b, Carrier frequency (MHz): 2437



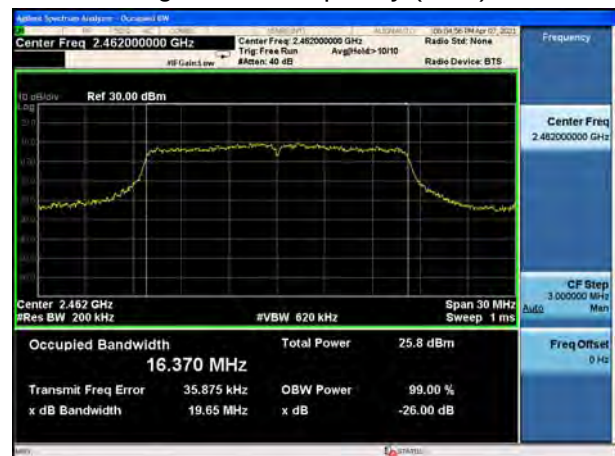
802.11g, Carrier frequency (MHz): 2437



802.11b, Carrier frequency (MHz):2462



802.11g, Carrier frequency (MHz):2462



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



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



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



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



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



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



802.11ax(HE20), Carrier frequency (MHz): 2412



802.11ax(HE40), Carrier frequency (MHz): 2422



802.11ax(HE20), Carrier frequency (MHz): 2437



802.11ax(HE40), Carrier frequency (MHz): 2437



802.11ax(HE20), Carrier frequency (MHz): 2462



802.11ax(HE40), Carrier frequency (MHz): 2452



Bluetooth LE (1M) Carrier frequency (MHz):
2402



Bluetooth LE (2M) Carrier frequency (MHz):
2402



Bluetooth LE (1M) Carrier frequency (MHz):
2440



Bluetooth LE (2M) Carrier frequency (MHz):
2440



Bluetooth LE (1M) Carrier frequency (MHz):
2480



Bluetooth LE (2M) Carrier frequency (MHz):
2480



MU mode

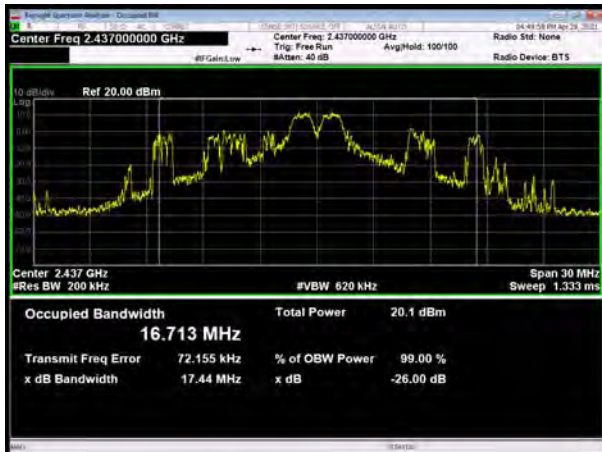
802.11ax(HE20), Carrier frequency (MHz): 2412
26-Tones



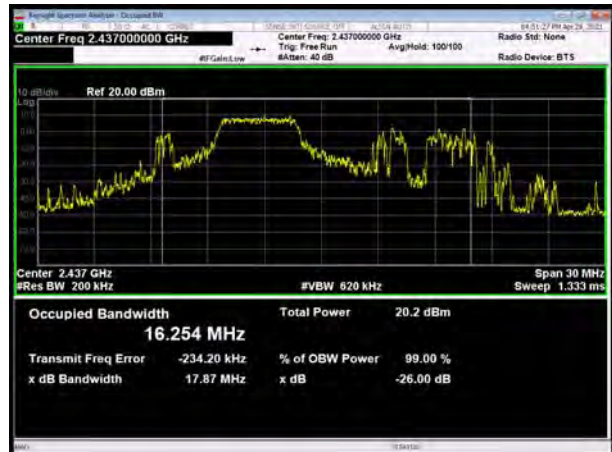
802.11ax(HE20), Carrier frequency (MHz): 2412
52-Tones



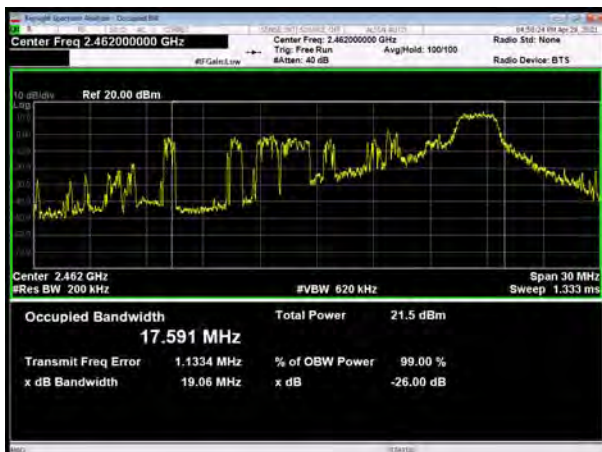
802.11ax(HE20), Carrier frequency (MHz): 2437
26-Tones



802.11ax(HE20), Carrier frequency (MHz): 2437
52-Tones

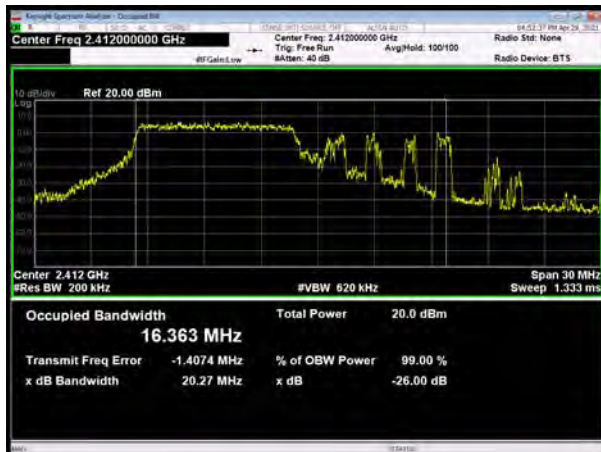
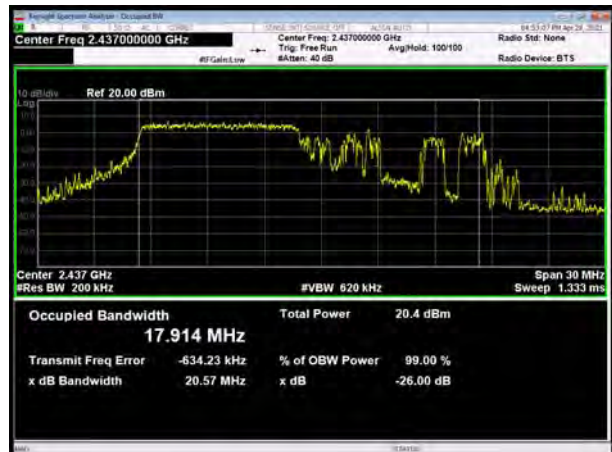


802.11ax(HE20), Carrier frequency (MHz): 2462
26-Tones



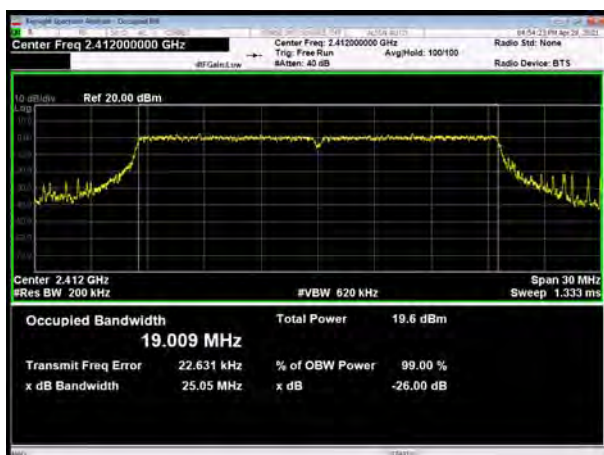
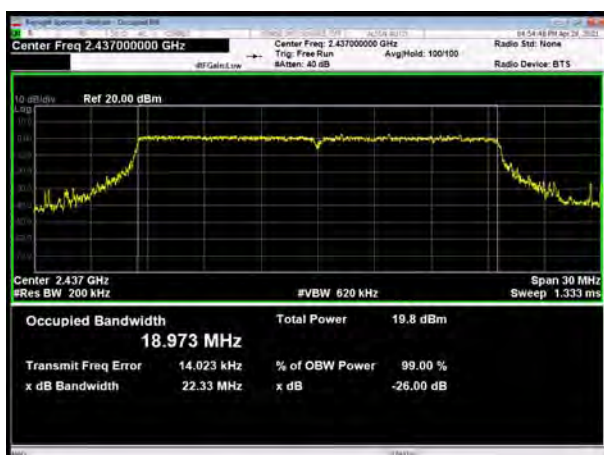
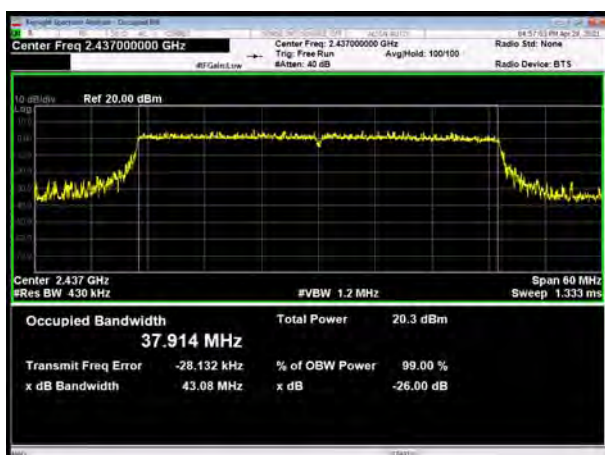
802.11ax(HE20), Carrier frequency (MHz): 2462
52-Tones



802.11ax(HE20), Carrier frequency (MHz): 2412
106-Tones802.11ax(HE20), Carrier frequency (MHz): 2437
106-Tones802.11ax(HE20), Carrier frequency (MHz): 2462
106-Tones



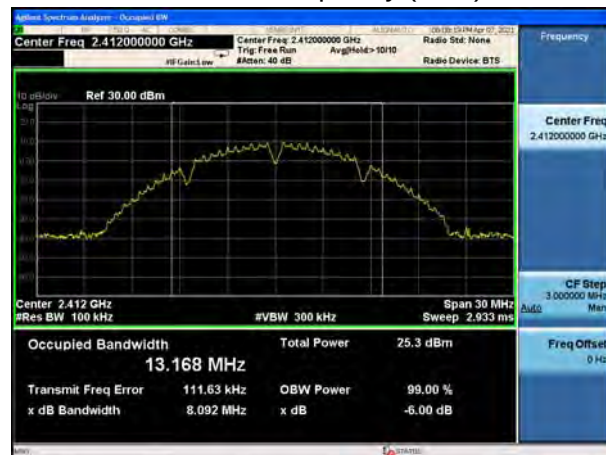
SU mode

802.11ax(HE20), Carrier frequency (MHz): 2412
242-Tones802.11ax(HE40), Carrier frequency (MHz): 2422
484-Tones802.11ax(HE20), Carrier frequency (MHz): 2437
242-Tones802.11ax(HE40), Carrier frequency (MHz): 2437
484-Tones802.11ax(HE20), Carrier frequency (MHz): 2462
242-Tones802.11ax(HE40), Carrier frequency (MHz): 2452
484-Tones

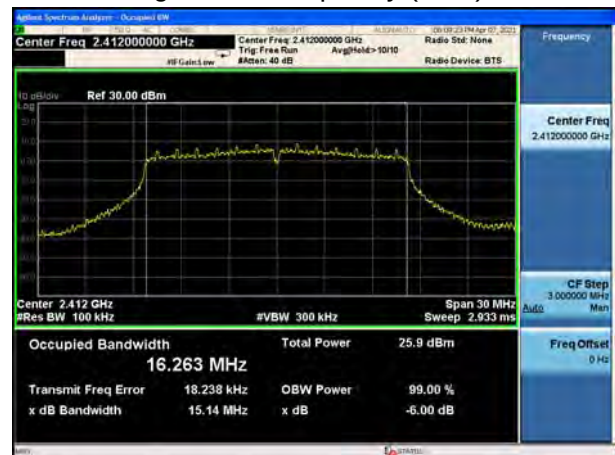


6 dB bandwidth

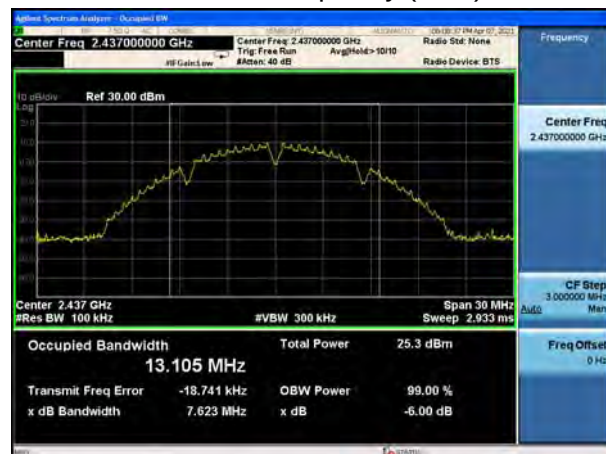
802.11b, Carrier frequency (MHz): 2412



802.11g, Carrier frequency (MHz): 2412



802.11b, Carrier frequency (MHz): 2437



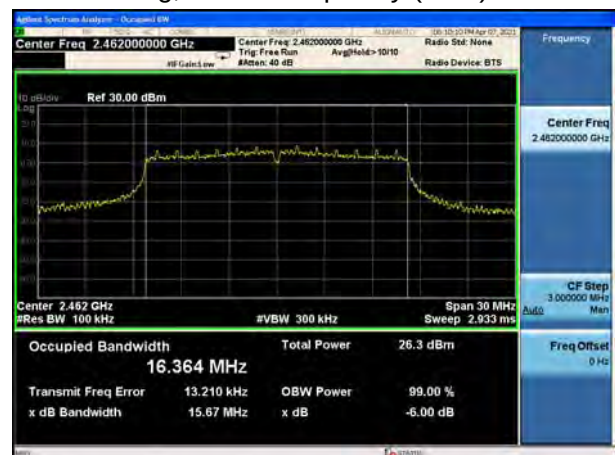
802.11g, Carrier frequency (MHz): 2437



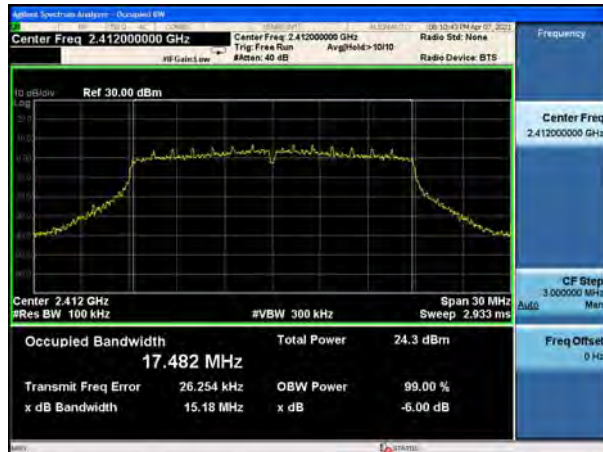
802.11b, Carrier frequency (MHz): 2462



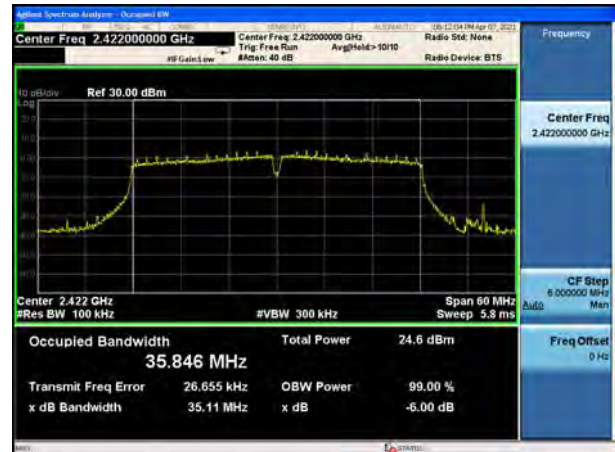
802.11g, Carrier frequency (MHz): 2462



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



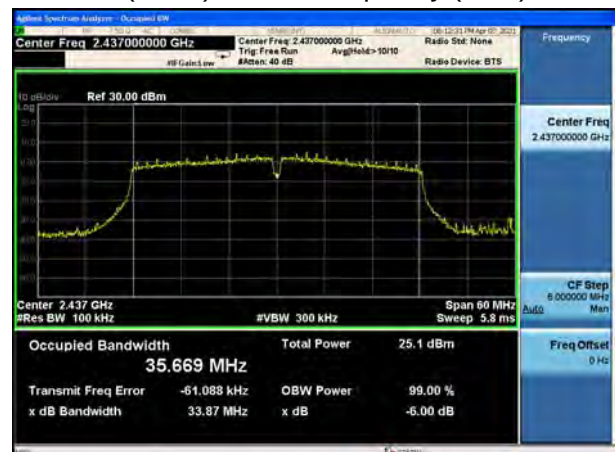
802.11n(HT40), Carrier frequency (MHz): 2422



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



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



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



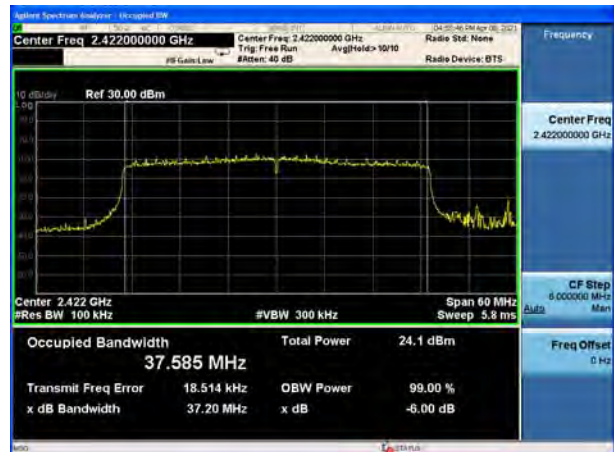
802.11n(HT40), Carrier frequency (MHz): 2452



802.11ax(HE20), Carrier frequency (MHz): 2412



802.11ax(HE40), Carrier frequency (MHz): 2422



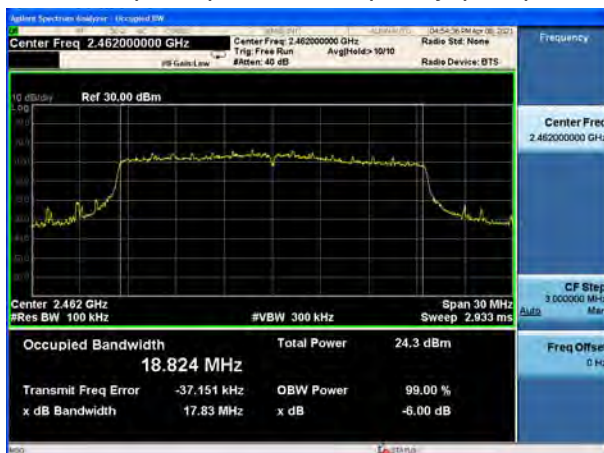
802.11ax(HE20), Carrier frequency (MHz): 2437



802.11ax(HE40), Carrier frequency (MHz): 2437



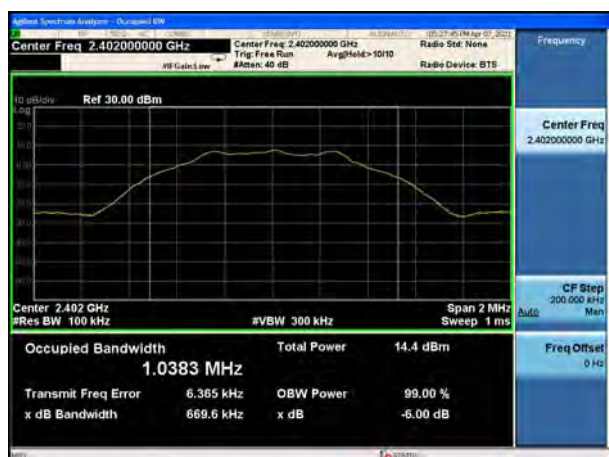
802.11ax(HE20), Carrier frequency (MHz): 2462



802.11ax(HE40), Carrier frequency (MHz): 2452



Bluetooth LE (1M) Carrier frequency (MHz):
2402



Bluetooth LE (2M) Carrier frequency (MHz):
2402



Bluetooth LE (1M) Carrier frequency (MHz):
2440



Bluetooth LE (2M) Carrier frequency (MHz):
2440



Bluetooth LE (1M) Carrier frequency (MHz):
2480



Bluetooth LE (2M) Carrier frequency (MHz):
2480



MU mode

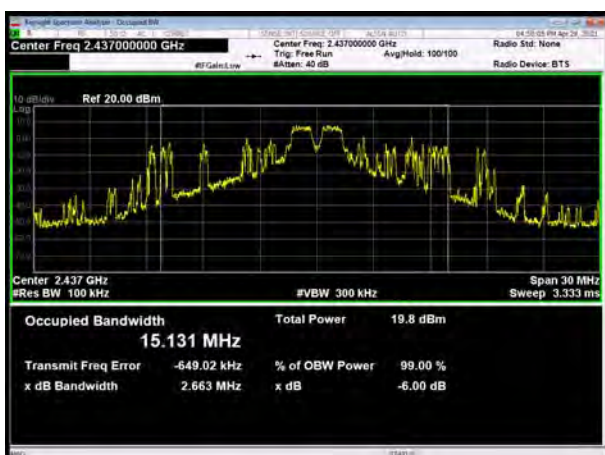
802.11ax(HE20), Carrier frequency (MHz): 2412
26-Tones



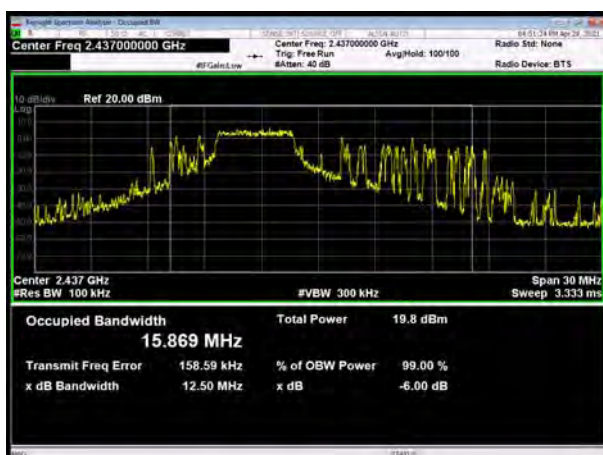
802.11ax(HE20), Carrier frequency (MHz): 2412
52-Tones



802.11ax(HE20), Carrier frequency (MHz): 2437
26-Tones



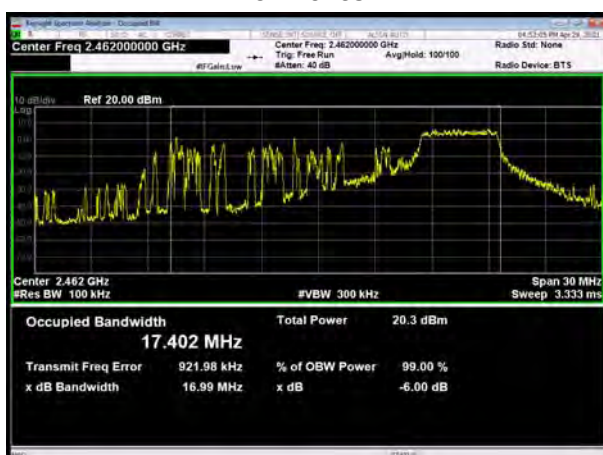
802.11ax(HE20), Carrier frequency (MHz): 2437
52-Tones



802.11ax(HE20), Carrier frequency (MHz): 2462
26-Tones



802.11ax(HE20), Carrier frequency (MHz): 2462
52-Tones



802.11ax(HE20), Carrier frequency (MHz): 2412 106-Tones



802.11ax(HE20), Carrier frequency (MHz): 2437 106-Tones

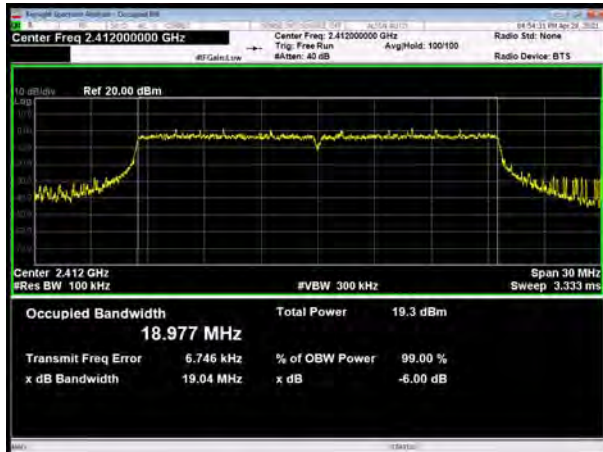
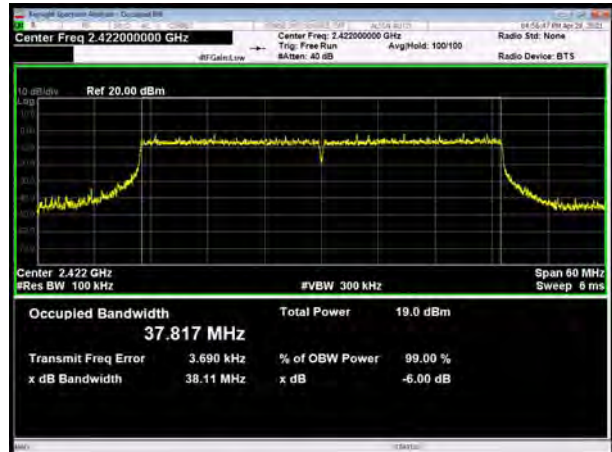
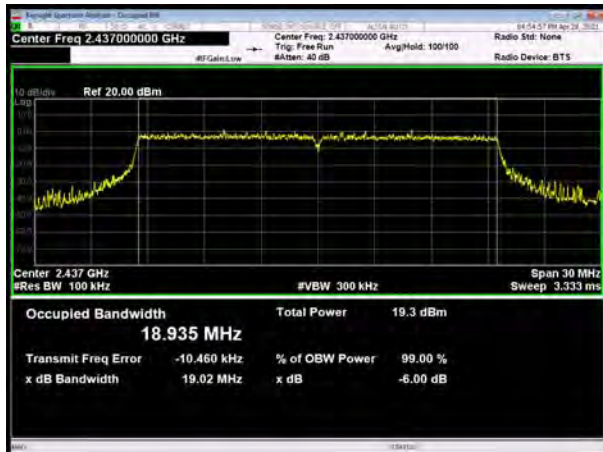


802.11ax(HE20), Carrier frequency (MHz): 2462 106-Tones





SU mode

802.11ax(HE20), Carrier frequency (MHz): 2412
242-Tones802.11ax(HE40), Carrier frequency (MHz): 2422
484-Tones802.11ax(HE20), Carrier frequency (MHz): 2437
242-Tones802.11ax(HE40), Carrier frequency (MHz): 2437
484-Tones802.11ax(HE20), Carrier frequency (MHz): 2462
242-Tones802.11ax(HE40), Carrier frequency (MHz): 2452
484-Tones

5.3. Band Edge

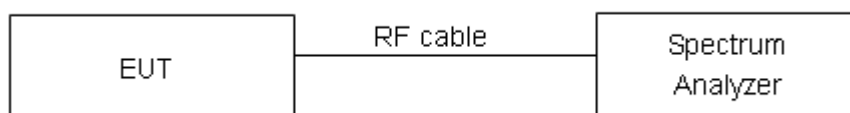
Ambient condition

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

Method of Measurement

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

Test Setup



Limits

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

Measurement Uncertainty

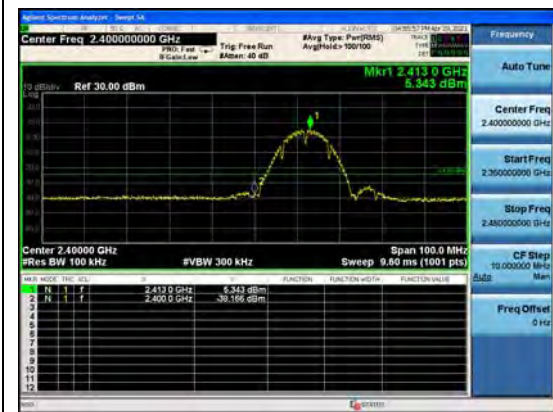
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
2GHz-3GHz	1.407 dB

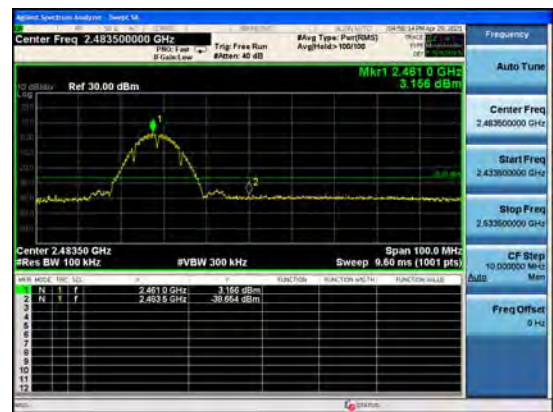


Test Results: PASS

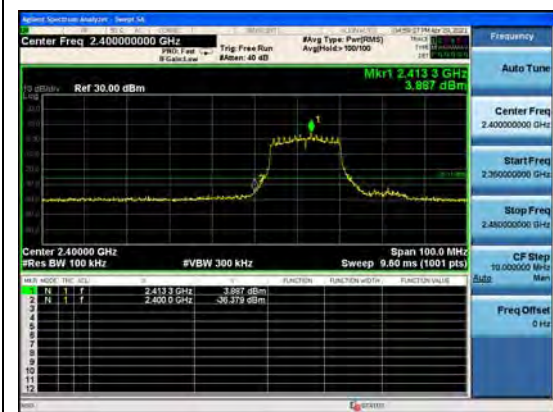
802.11b, Channel No.: 1



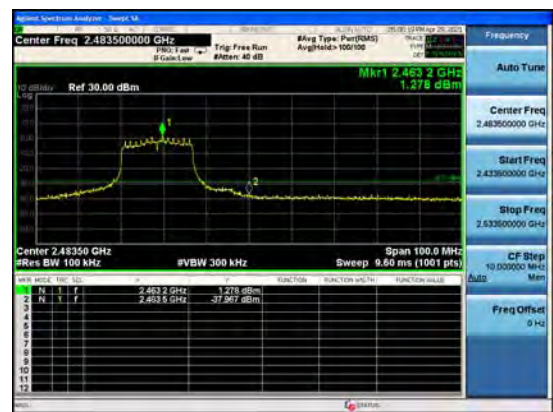
802.11b, Channel No.: 11



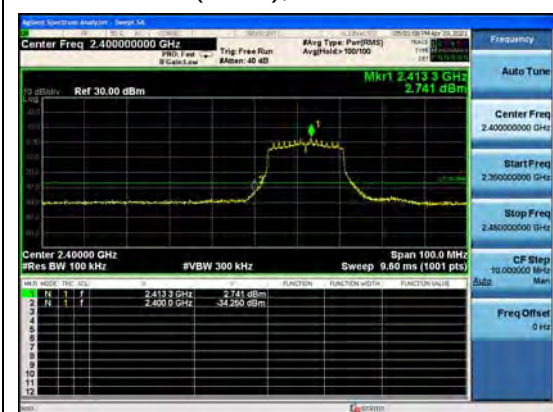
802.11g, Channel No.: 1



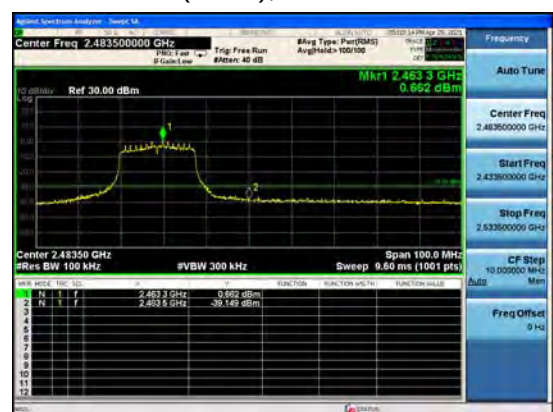
802.11g, Channel No.: 11



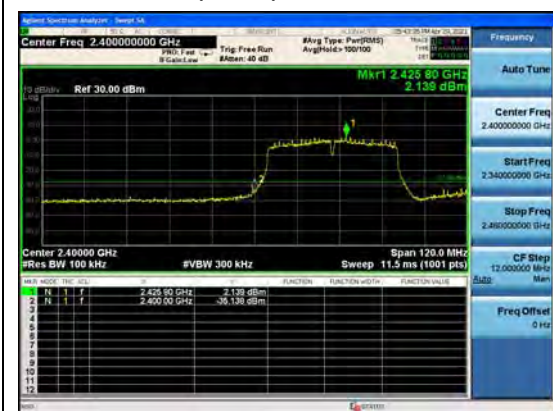
802.11n(HT20), Channel No.: 1



802.11n(HT20), Channel No.: 11



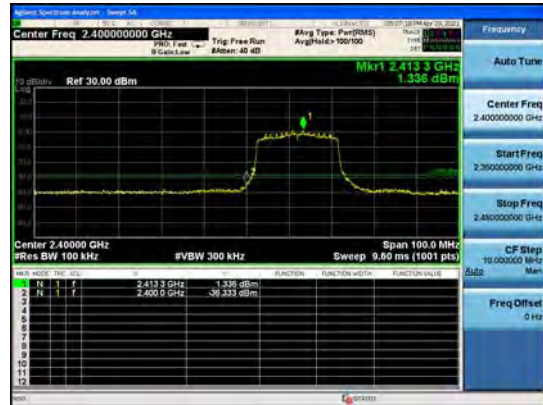
802.11n(HT40), Channel No.: 3



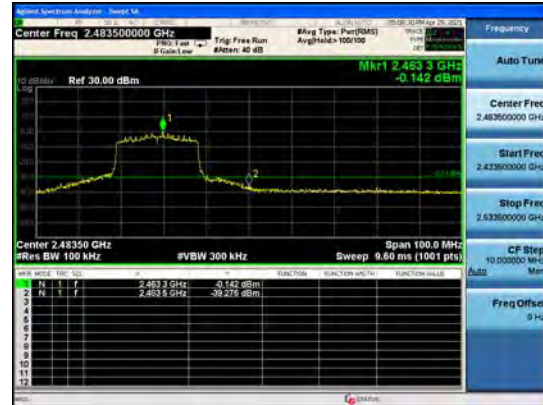
802.11n(HT40), Channel No.: 9



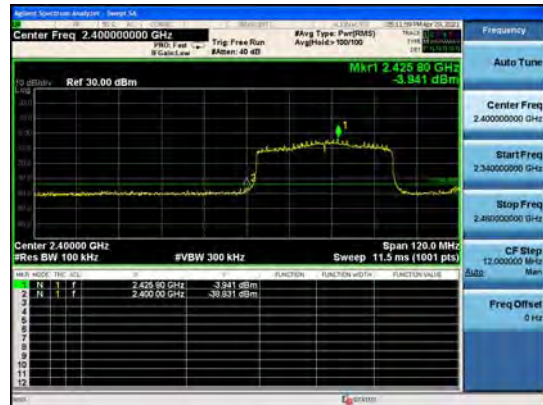
802.11ax(HE20), Channel No.: 1



802.11ax(HE20), Channel No.: 11



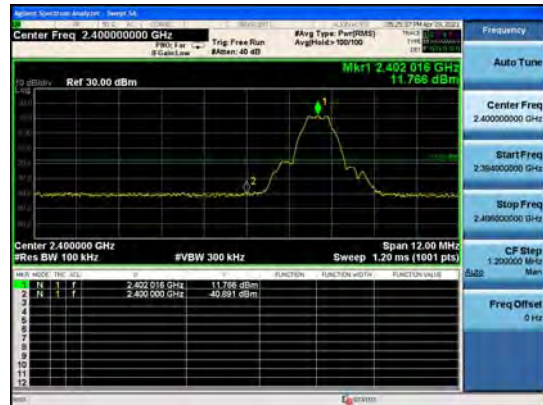
802.11ax(HE40), Channel No.: 3



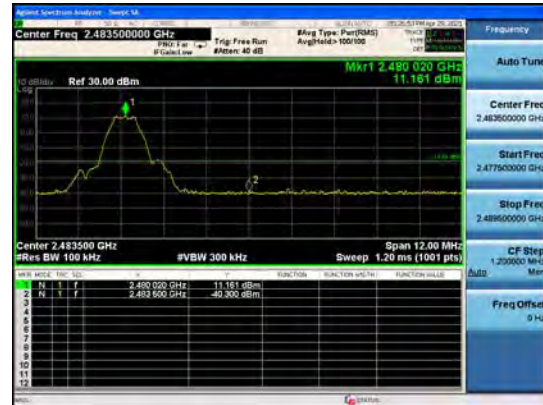
802.11ax(HE40), Channel No.: 9



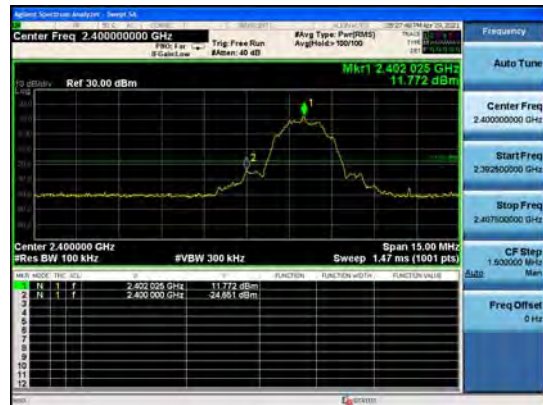
Bluetooth LE (1M), Channel No.: 0



Bluetooth LE (1M), Channel No.: 39



Bluetooth LE (2M), Channel No.: 0

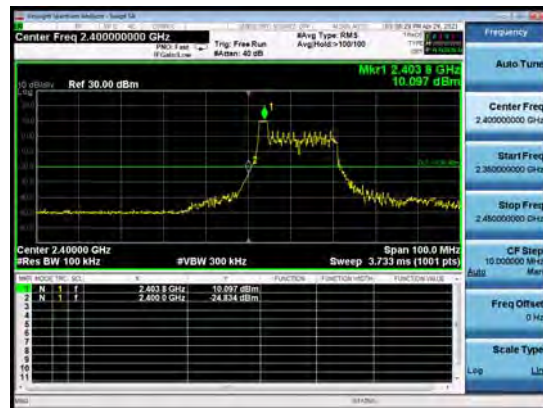


Bluetooth LE (2M), Channel No.: 39



MU mode

802.11ax(HE20), Channel No.: 1
26-Tones



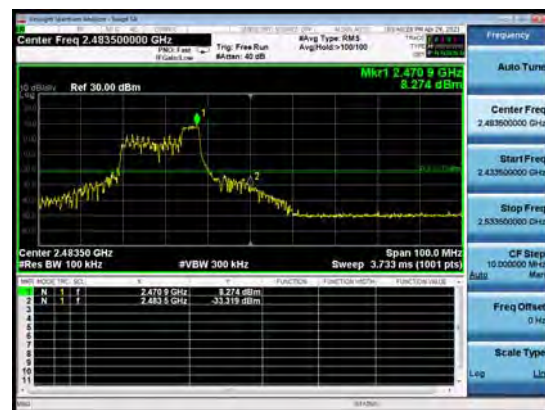
802.11ax(HE20), Channel No.: 11
26-Tones



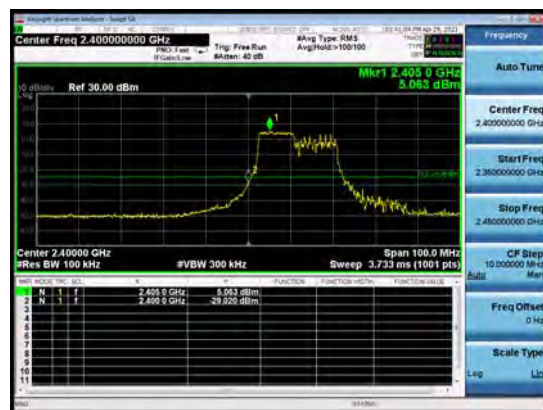
802.11ax(HE20), Channel No.: 1
52-Tones



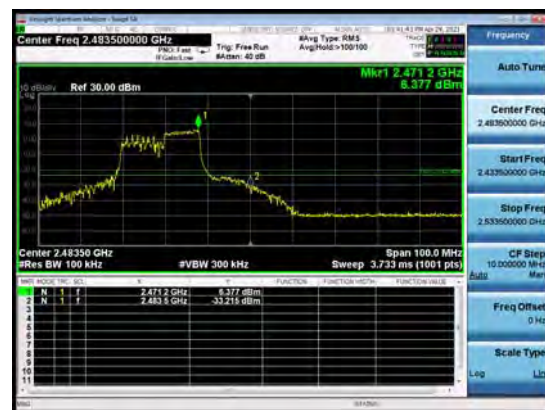
802.11ax(HE20), Channel No.: 11
52-Tones



802.11ax(HE20), Channel No.: 1
106-Tones

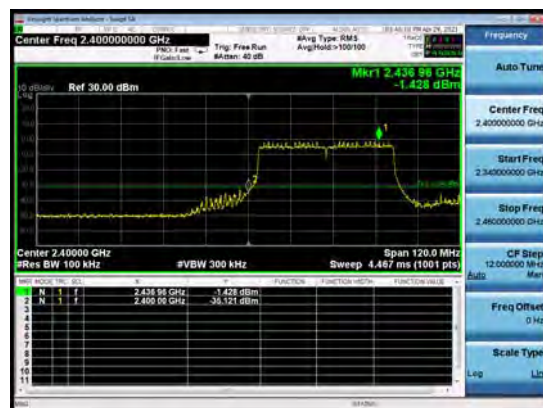


802.11ax(HE20), Channel No.: 11
106-Tones





SU mode

802.11ax(HE20), Channel No.: 1
242-Tones802.11ax(HE20), Channel No.: 11
242-Tones802.11ax(HE40), Channel No.: 3
484-Tones802.11ax(HE40), Channel No.: 9
484-Tones

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.

- Set instrument center frequency to DTS channel center frequency
- Set span to at least 1.5 times the OBW
- Set RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$
- Set VBW $\geq [3 \times \text{RBW}]$
- Detector=power averaging(rms) or sample detector(when rms not available)
- Ensure that the number of measurement points in the sweep $2[2 \times \text{span}/\text{RBW}]$
- Sweep time auto couple
- Employ trace averaging(rms) mode over a minimum of 100 traces
- Use the peak marker function to determine the maximum amplitude level.
- 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.

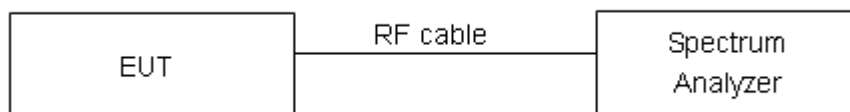
- Measure the duty cycle(D)of the transmitter output signal as described in 11.6
- Set instrument center frequency to DTS channel center frequency
- Set span to at least 1.5 times the OBW
- Set RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{Kh}$
- Set VBW $\geq [3 \times \text{RBW}]$
- Detector= power averaging(rms) or sample detector (when rms not available)
- Ensure that the number of measurement points in the sweep $2[2 \times \text{span}/\text{RBW}]$
- Sweep time =auto couple
- Do not use sweep triggering; allow sweep to "free run"
- Employ trace averaging(rms) mode over a minimum of 100 traces
- Use the peak marker function to determine the maximum amplitude level
- 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 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)

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

Test setup



Limits

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

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

Measurement Uncertainty

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

**Test Results:**

Test Mode	Channel Number	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
Bluetooth (Low Energy) (1M)	0	-10.83	-8.74	8	PASS
	19	-10.12	-8.04	8	PASS
	39	-10.99	-8.91	8	PASS
Bluetooth (Low Energy) (2M)	0	-14.06	-9.21	8	PASS
	19	-12.95	-8.10	8	PASS
	39	-14.38	-9.53	8	PASS

Note: Power Spectral Density =Read Value+Duty cycle correction factor

SISO Antenna 1

Test Mode	Channel Number	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11b	1	-12.84	-12.22	8	PASS
	6	-12.92	-12.30	8	PASS
	11	-12.72	-12.10	8	PASS
802.11g	1	-16.25	-15.69	8	PASS
	6	-15.97	-15.41	8	PASS
	11	-16.28	-15.72	8	PASS
802.11n HT20	1	-18.09	-17.83	8	PASS
	6	-17.40	-17.14	8	PASS
	11	-17.55	-17.29	8	PASS
802.11n HT40	3	-21.91	-21.58	8	PASS
	6	-20.91	-20.59	8	PASS
	9	-22.44	-22.12	8	PASS
802.11ax HE20	1	-20.03	-20.03	8	PASS
	6	-19.63	-19.63	8	PASS
	11	-19.92	-19.92	8	PASS
802.11ax HE40	3	-23.31	-23.31	8	PASS
	6	-22.27	-22.27	8	PASS



	9	-23.55	-23.55	8	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor					

SISO Antenna 2

Test Mode	Channel Number	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11b	1	-11.66	-11.04	8	PASS
	6	-11.38	-10.77	8	PASS
	11	-12.25	-11.63	8	PASS
802.11g	1	-14.60	-14.04	8	PASS
	6	-14.59	-14.03	8	PASS
	11	-15.25	-14.69	8	PASS
802.11n HT20	1	-16.08	-15.82	8	PASS
	6	-16.30	-16.04	8	PASS
	11	-16.92	-16.66	8	PASS
802.11n HT40	3	-21.03	-20.71	8	PASS
	6	-20.59	-20.27	8	PASS
	9	-20.48	-20.16	8	PASS
802.11ax HE20	1	-18.58	-18.58	8	PASS
	6	-18.65	-18.65	8	PASS
	11	-18.94	-18.94	8	PASS
802.11ax HE40	3	-22.78	-22.78	8	PASS
	6	-21.50	-21.50	8	PASS
	9	-22.68	-22.68	8	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor					



MIMO

Test Mode	Channel Number	Power Spectral Density				Total PSD	Limit (dBm / 3kHz)	Conclusion
		Antenna 1		Antenna 2				
		Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	(dBm / 3kHz)		
802.11n HT20	1	-17.91	-17.65	-16.15	-15.89	-13.67	8.00	PASS
	6	-17.65	-17.39	-16.60	-16.34	-13.82	8.00	PASS
	11	-17.85	-17.59	-16.81	-16.55	-14.03	8.00	PASS
802.11n HT40	3	-21.89	-21.57	-20.84	-20.84	-18.18	8.00	PASS
	6	-20.77	-20.45	-20.36	-20.36	-17.39	8.00	PASS
	9	-22.05	-21.72	-20.47	-20.47	-18.04	8.00	PASS
802.11ax HE20	1	-19.41	-19.41	-18.61	-18.61	-15.98	8.00	PASS
	6	-18.82	-18.82	-18.63	-18.63	-15.71	8.00	PASS
	11	-19.82	-19.82	-19.24	-19.24	-16.51	8.00	PASS
802.11ax HE40	3	-23.58	-23.58	-22.93	-22.93	-20.23	8.00	PASS
	6	-22.40	-22.40	-21.92	-21.92	-19.15	8.00	PASS
	9	-23.73	-23.73	-22.52	-22.52	-20.07	8.00	PASS

Note: 1. Power Spectral Density = Read Value + Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a), the power spectral density = $10\log(10^{(\text{PSD antenna1 in dBm}/10)} + 10^{(\text{PSD antenna2 in dBm}/10)})$

3. The manufacturer declared the transmitter output signals is CDD mode. According to Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) f) (ii), And $N_{ss}=1$, Array Gain = $10\log(N_{ant}/N_{ss})\text{dB}$, so Directional gain = GANT + Array Gain = $0.15\text{dBi} + 10\log(2/1) = 3.16\text{dBi}$
So the power limit is $8+6-\text{MAX}(6, \text{direction gain})\text{dBm} = 8\text{dBm}$

**MU mode****SISO Antenna 1**

Test Mode	Channel Number	RU size	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11ax HE20	1	26-Tones	-9.17	-9.17	8	PASS
	6		-10.02	-10.02	8	PASS
	11		-8.96	-8.96	8	PASS
802.11ax HE20	1	52-Tones	-12.26	-12.26	8	PASS
	6		-12.16	-12.16	8	PASS
	11		-12.00	-12.00	8	PASS
802.11ax HE20	1	106-Tones	-15.53	-15.53	8	PASS
	6		-15.05	-15.05	8	PASS
	11		-14.54	-14.54	8	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor						

SISO Antenna 2

Test Mode	Channel Number	RU size	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11ax HE20	1	26-Tones	-8.69	-8.69	8	PASS
	6		-9.84	-9.84	8	PASS
	11		-8.88	-8.88	8	PASS
802.11ax HE20	1	52-Tones	-12.20	-12.20	8	PASS
	6		-10.86	-10.86	8	PASS
	11		-10.47	-10.47	8	PASS
802.11ax HE20	1	106-Tones	-15.33	-15.33	8	PASS
	6		-15.23	-15.23	8	PASS
	11		-14.63	-14.63	8	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor						

MIMO

Test Mode	Channel Number	RU size	Power Spectral Density				Total PSD	Limit (dBm / 3kHz)	Conclusion
			Antenna 1		Antenna 2				
			Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	(dBm / 3kHz)		
802.11ax HE20	1	26-Tones	-9.25	-9.25	-9.52	-9.52	-6.37	8.00	PASS
	6		-8.94	-8.94	-9.55	-9.55	-6.23	8.00	PASS
	11		-8.98	-8.98	-7.72	-7.72	-5.29	8.00	PASS
802.11ax HE20	1	52-Tones	-12.58	-12.58	-12.04	-12.04	-9.29	8.00	PASS
	6		-12.81	-12.81	-11.67	-11.67	-9.19	8.00	PASS
	11		-12.03	-12.03	-11.25	-11.25	-8.61	8.00	PASS
802.11ax HE20	1	106-Tones	-14.33	-14.33	-15.33	-15.33	-11.79	8.00	PASS
	6		-15.41	-15.41	-14.98	-14.98	-12.18	8.00	PASS
	11		-14.40	-14.40	-14.25	-14.25	-11.31	8.00	PASS

Note: 1.Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10\log(10^{(PSD_{antenna1} \text{ in dBm}/10)} + 10^{(PSD_{antenna2} \text{ in dBm}/10)})$

3. The manufacturer declared the transmitter output signals is CDD mode. According to Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) f) (ii), And $N_{ss}=1$, Array Gain= $10\log(N_{ant}/N_{ss})$ dB,so Directional gain = GANT + Array Gain= $0.15\text{dBi}+10\log(2/1)=3.16\text{dBi}$
So the power limit is $8+6-\text{MAX}(6, \text{direction gain})\text{dBm}=8\text{dBm}$

SU mode

SISO Antenna 1

Test Mode	Channel Number	RU size	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11ax HE20	1	242-Tones	-17.93	-17.93	8	PASS
	6		-16.75	-16.75	8	PASS
	11		-16.93	-16.93	8	PASS
802.11ax HE40	3	484-Tones	-20.17	-20.17	8	PASS
	6		-19.35	-19.35	8	PASS
	9		-20.52	-20.52	8	PASS

Note: Power Spectral Density =Read Value+Duty cycle correction factor

**SISO Antenna 2**

Test Mode	Channel Number	RU size	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Limit (dBm / 3kHz)	Conclusion
802.11ax HE20	1	242-Tones	-17.77	-17.77	8	PASS
	6		-17.45	-17.45	8	PASS
	11		-17.30	-17.30	8	PASS
802.11ax HE40	3	484-Tones	-20.45	-20.45	8	PASS
	6		-19.37	-19.37	8	PASS
	9		-19.21	-19.21	8	PASS

Note: Power Spectral Density =Read Value+Duty cycle correction factor

MIMO

Test Mode	Channel Number	RU size	Power Spectral Density				Total PSD	Limit (dBm / 3kHz)	Conclusion
			Antenna 1		Antenna 2				
			Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	Read Value (dBm / 3kHz)	Power Spectral Density (dBm / 3kHz)	(dBm / 3kHz)		
802.11ax HE20	1	242-Tones	-18.05	-18.05	-17.29	-17.29	-14.64	8.00	PASS
	6		-18.36	-18.36	-17.42	-17.42	-14.86	8.00	PASS
	11		-17.73	-17.73	-16.05	-16.05	-13.80	8.00	PASS
802.11ax HE40	3	484-Tones	-20.23	-20.23	-19.73	-19.73	-16.96	8.00	PASS
	6		-19.87	-19.87	-18.01	-18.01	-15.83	8.00	PASS
	9		-19.47	-19.47	-19.01	-19.01	-16.22	8.00	PASS

Note: 1.Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10\log(10^{(\text{PSD antenna1 in dBm}/10)}+10^{(\text{PSD antenna2 in dBm}/10)})$

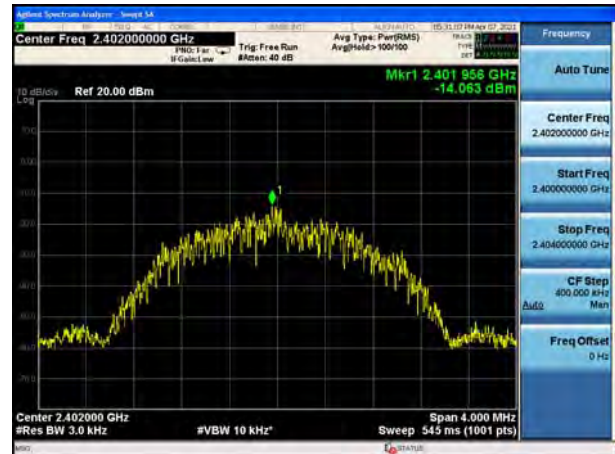
3. The manufacturer declared the transmitter output signals is CDD mode. According to Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) f) (ii), And $N_{ss}=1$, Array Gain= $10\log(\text{Nant}/N_{ss})\text{dB}$,so Directional gain = GANT + Array Gain= $0.15\text{dBi}+10\log(2/1)=3.16\text{dBi}$

So the power limit is $8+6-\text{MAX}(6, \text{direction gain})\text{dBm}=8\text{dBm}$

Bluetooth LE (1M), Channel No.: 0



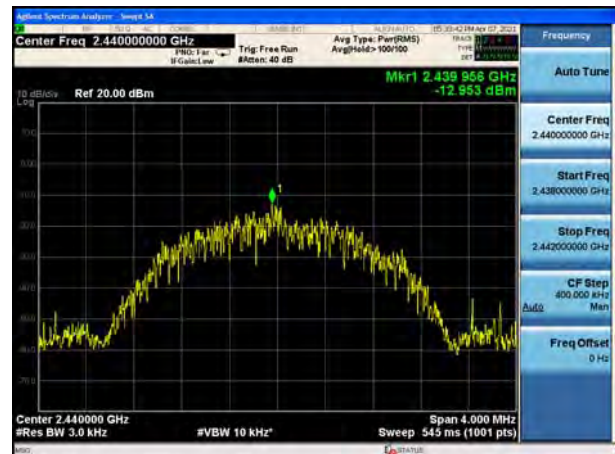
Bluetooth LE (2M), Channel No.: 0



Bluetooth LE (1M), Channel No.: 19



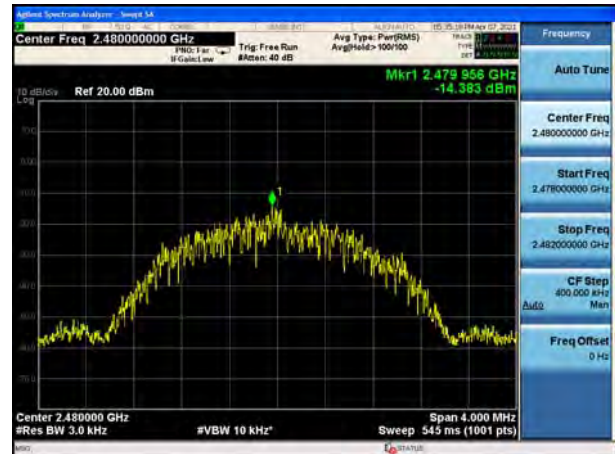
Bluetooth LE (2M), Channel No.: 19



Bluetooth LE (1M), Channel No.: 39



Bluetooth LE (2M), Channel No.: 39



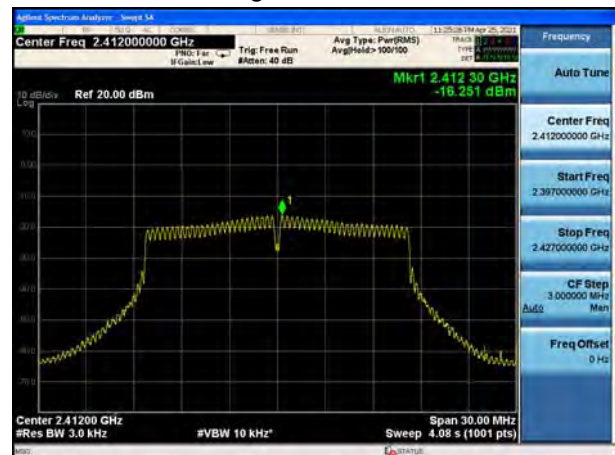


SISO Antenna 1

802.11b, Channel No.: 1



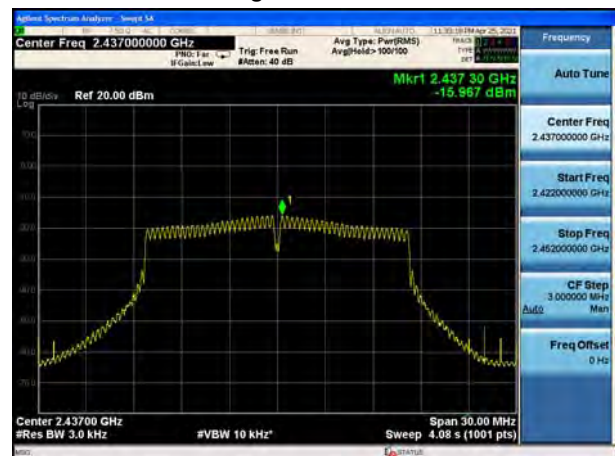
802.11g, Channel No.: 1



802.11b, Channel No.: 6



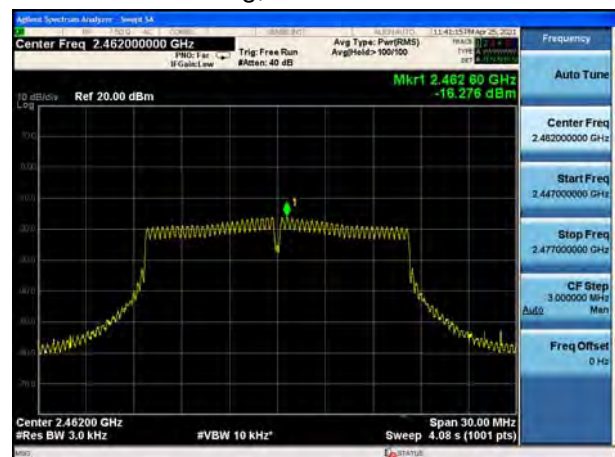
802.11g, Channel No.: 6



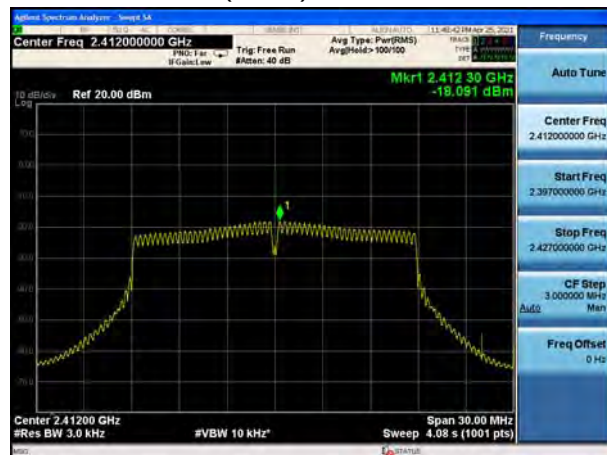
802.11b, Channel No.: 11



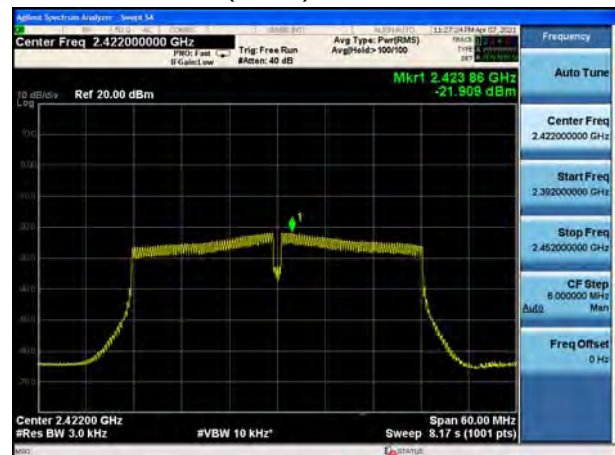
802.11g, Channel No.: 11



802.11n(HT20), Channel No. 1



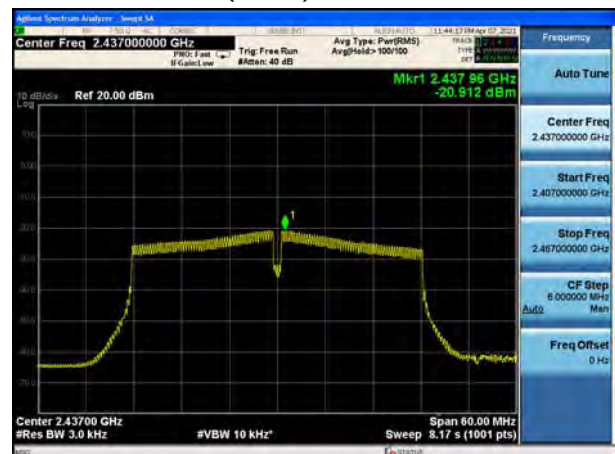
802.11n(HT40), Channel No. 3



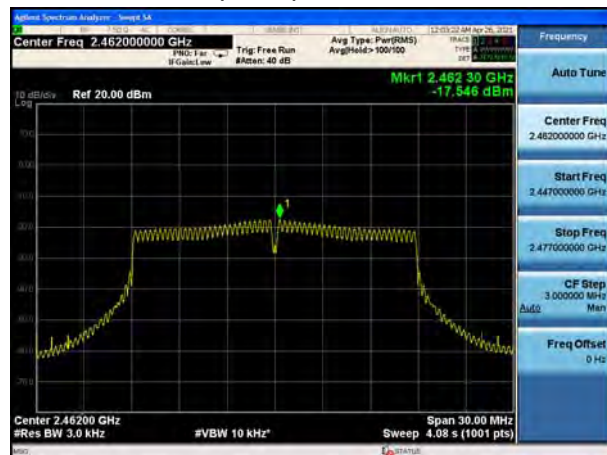
802.11n(HT20), Channel No. 6



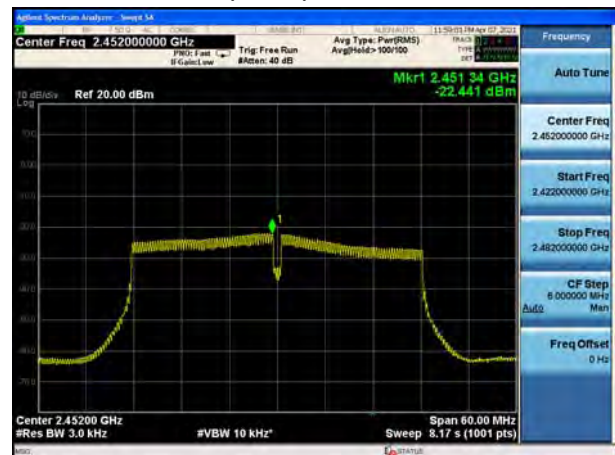
802.11n(HT40), Channel No. 6



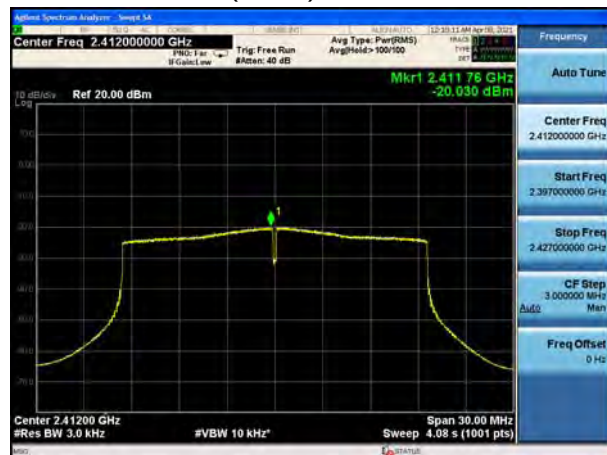
802.11n(HT20), Channel No. 11



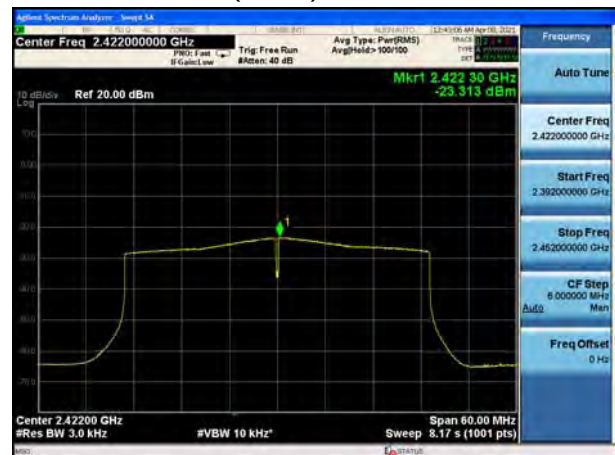
802.11n(HT40), Channel No. 9



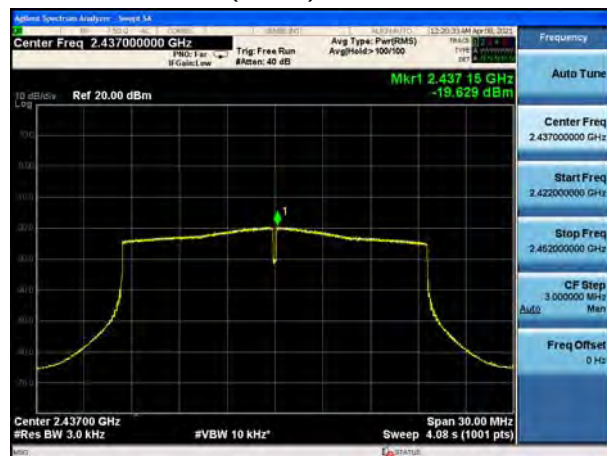
802.11ax(HE20), Channel No. 1



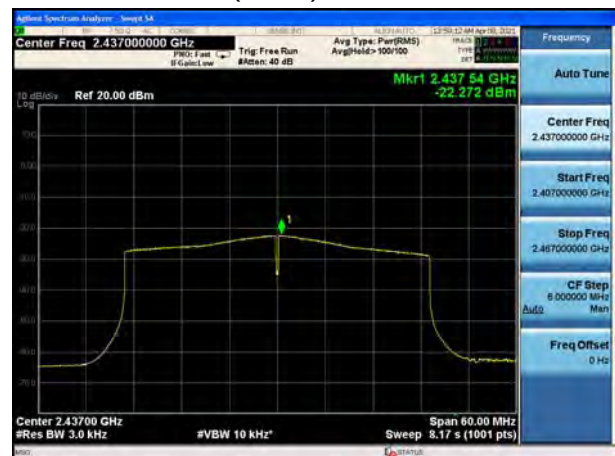
802.11ax(HE40), Channel No. 3



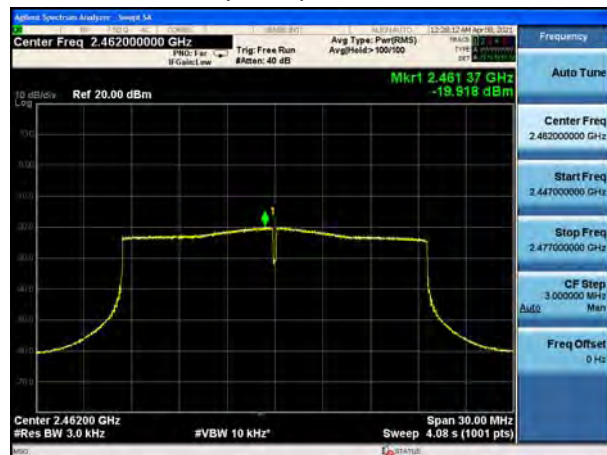
802.11ax(HE20), Channel No. 6



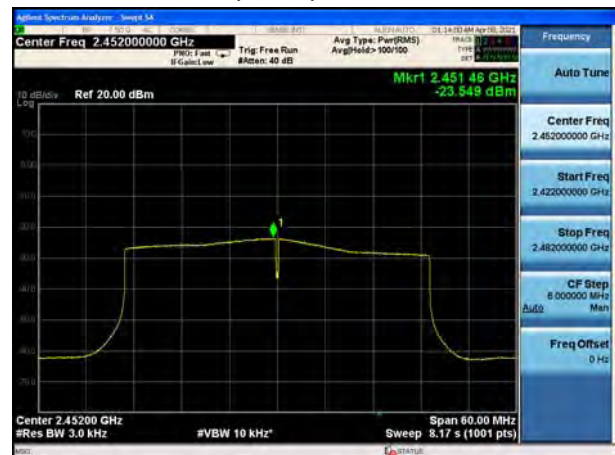
802.11ax(HE40), Channel No. 6



802.11ax(HE20), Channel No. 11



802.11ax(HE40), Channel No. 9



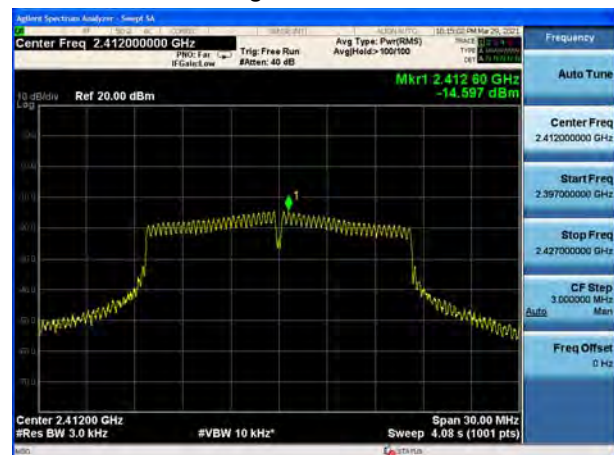


SISO Antenna 2

802.11b, Channel No.: 1



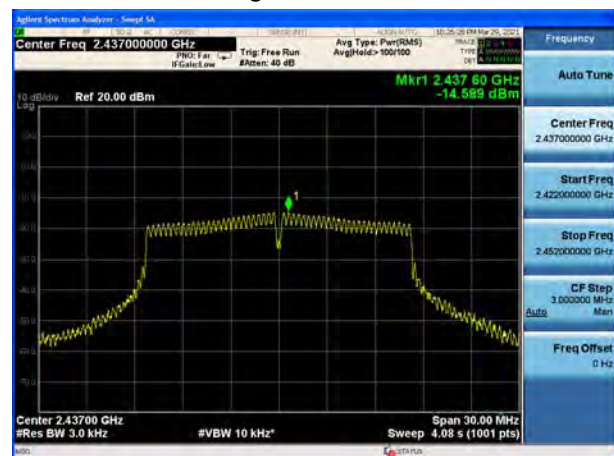
802.11g, Channel No.: 1



802.11b, Channel No.: 6



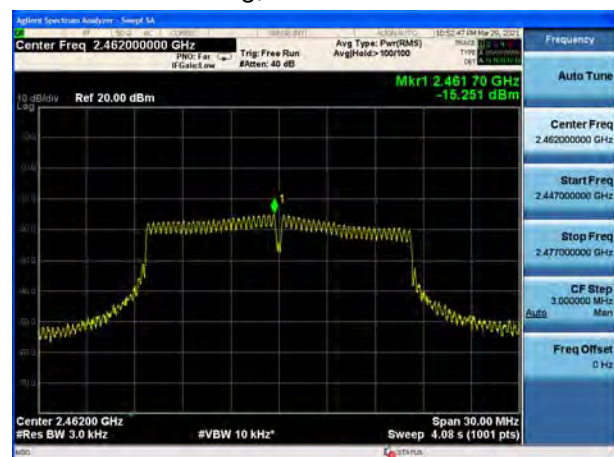
802.11g, Channel No.: 6



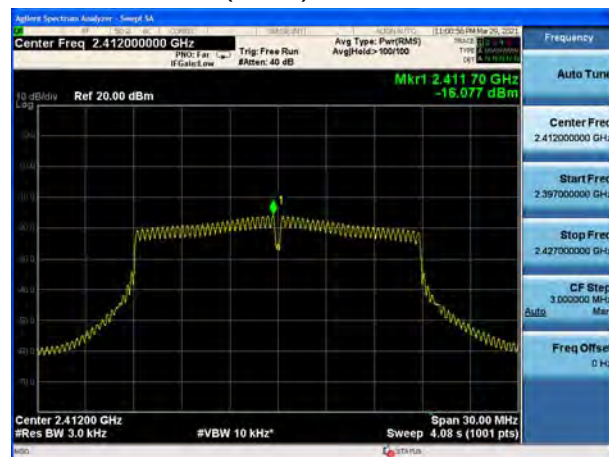
802.11b, Channel No.: 11



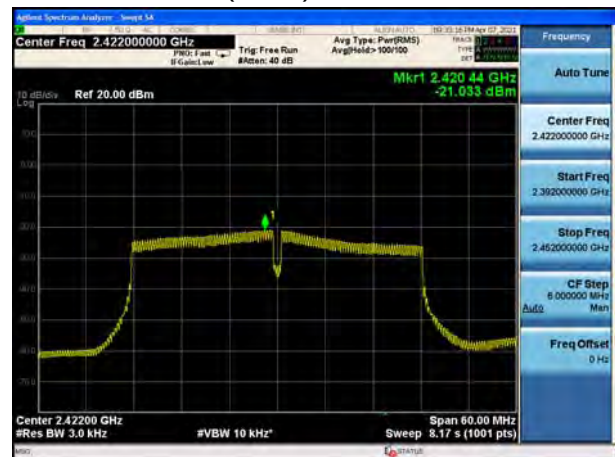
802.11g, Channel No.: 11



802.11n(HT20), Channel No. 1



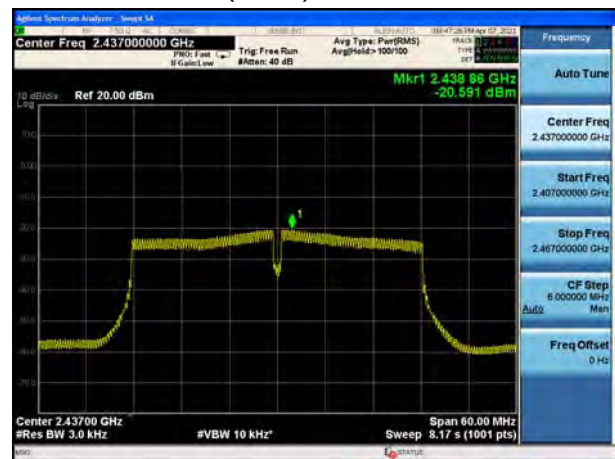
802.11n(HT40), Channel No. 3



802.11n(HT20), Channel No. 6



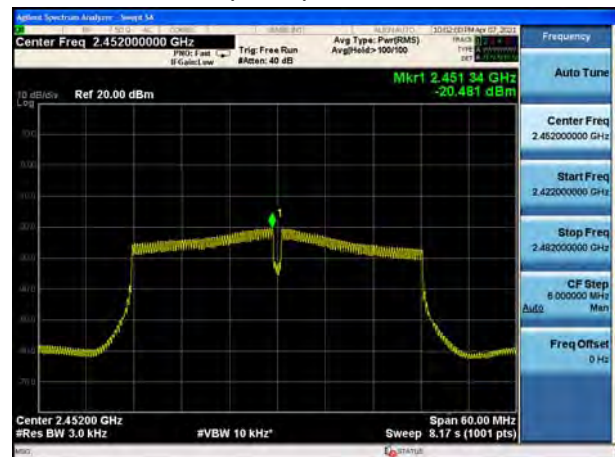
802.11n(HT40), Channel No. 6



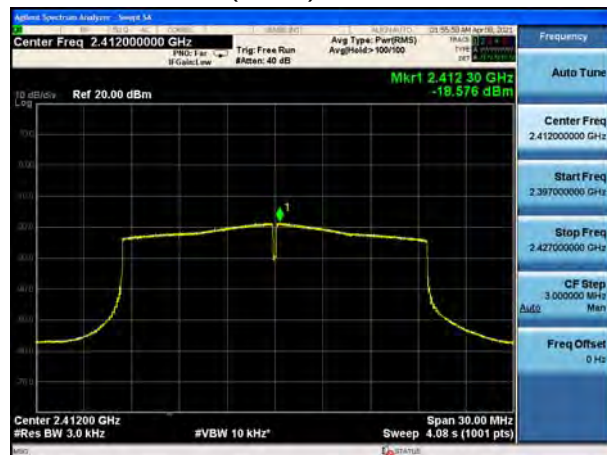
802.11n(HT20), Channel No. 11



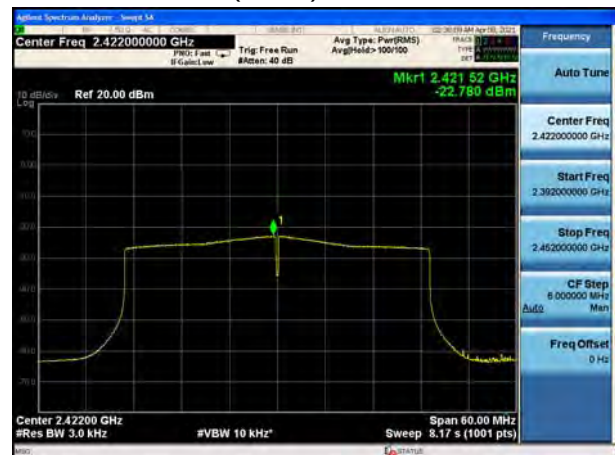
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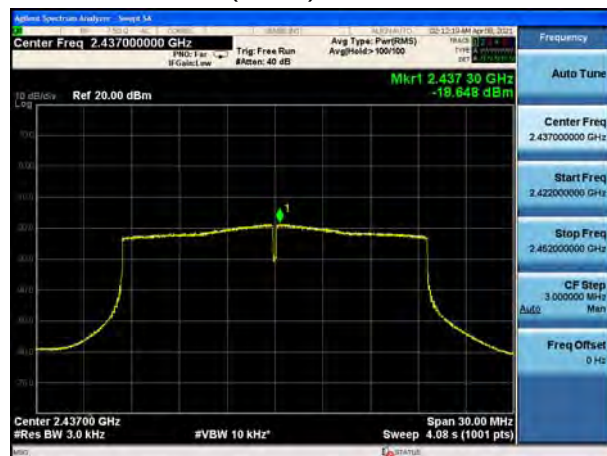
802.11ax(HE20), Channel No. 1



802.11ax(HE40), Channel No. 3



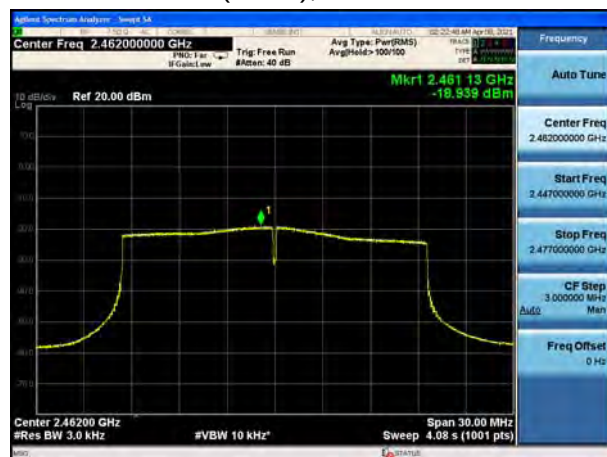
802.11ax(HE20), Channel No. 6



802.11ax(HE40), Channel No. 6



802.11ax(HE20), Channel No. 11



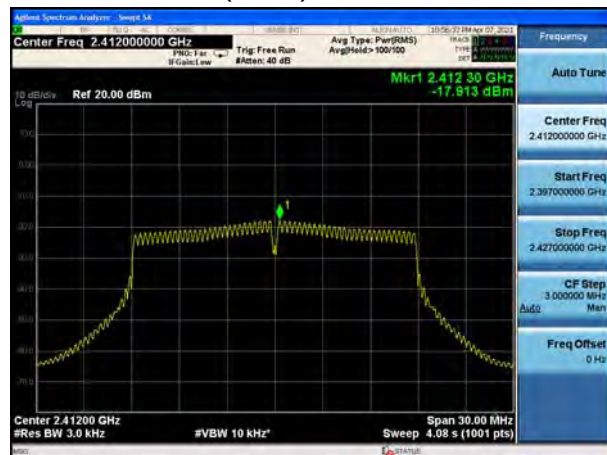
802.11ax(HE40), Channel No. 9



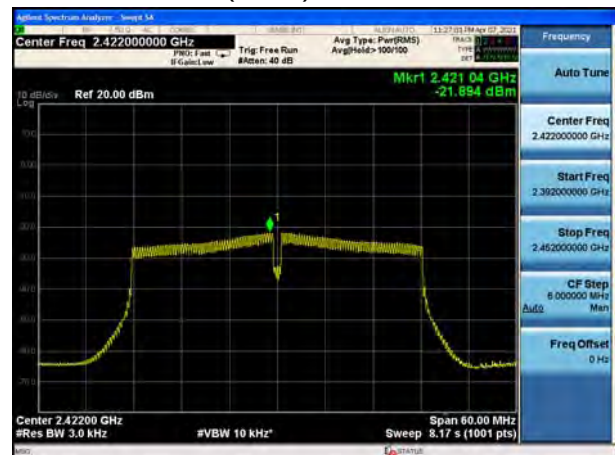


MIMO Antenna 1

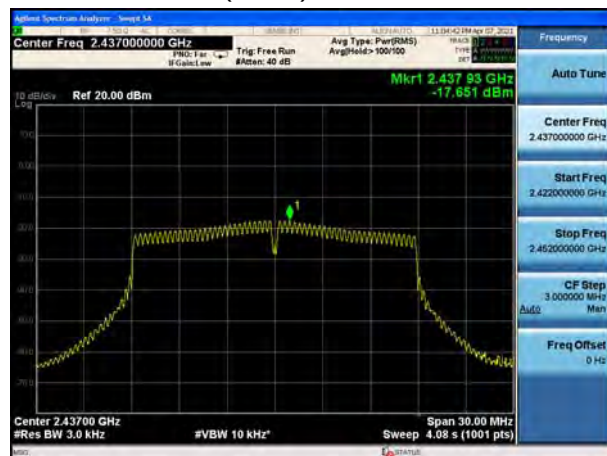
802.11n(HT20), Channel No. 1



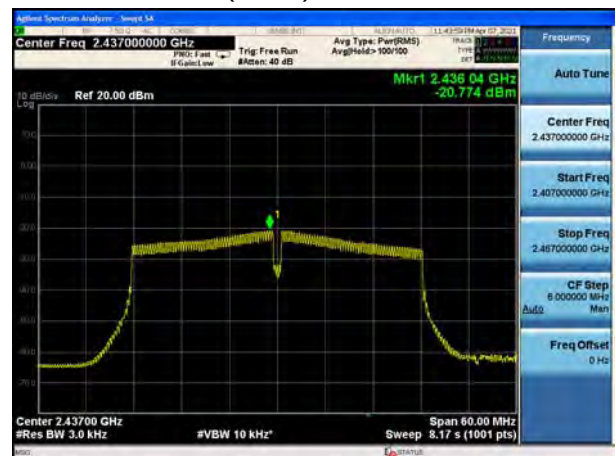
802.11n(HT40), Channel No. 3



802.11n(HT20), Channel No. 6



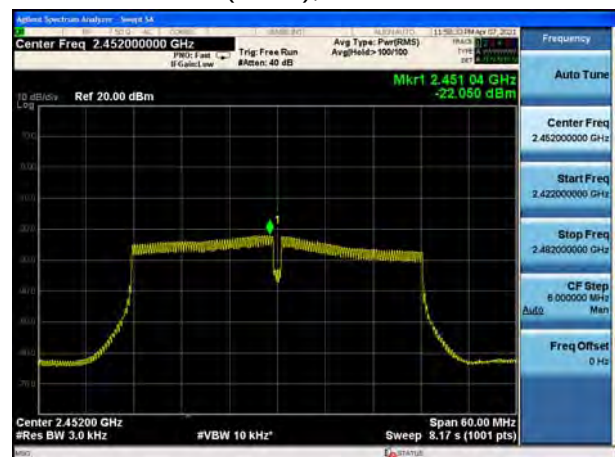
802.11n(HT40), Channel No. 6



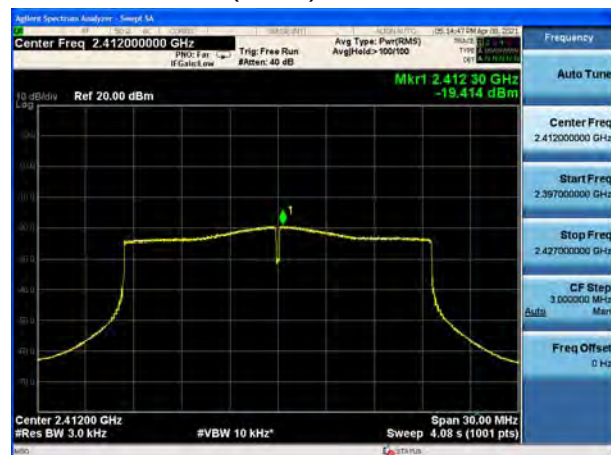
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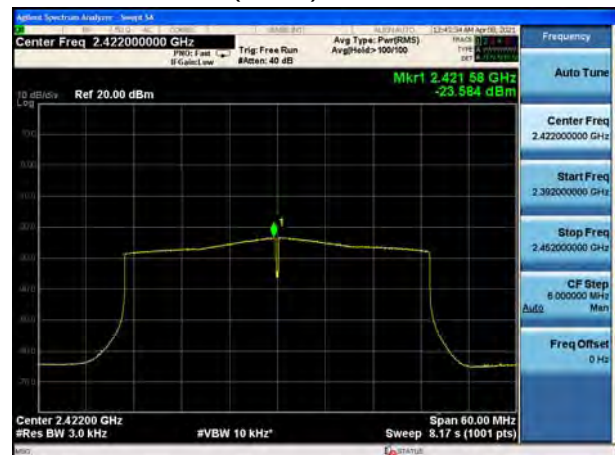
802.11n(HT40), Channel No. 9



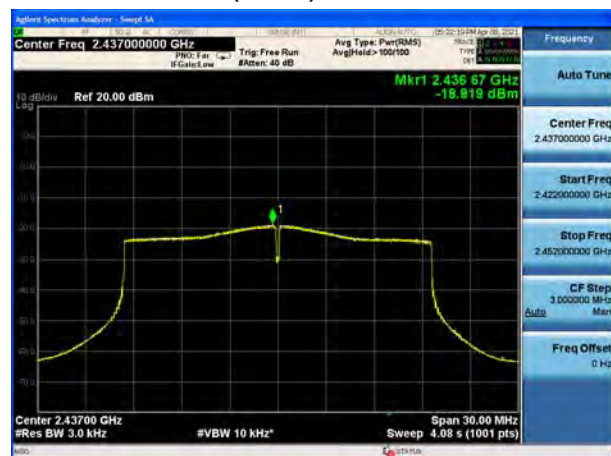
802.11ax(HE20), Channel No. 1



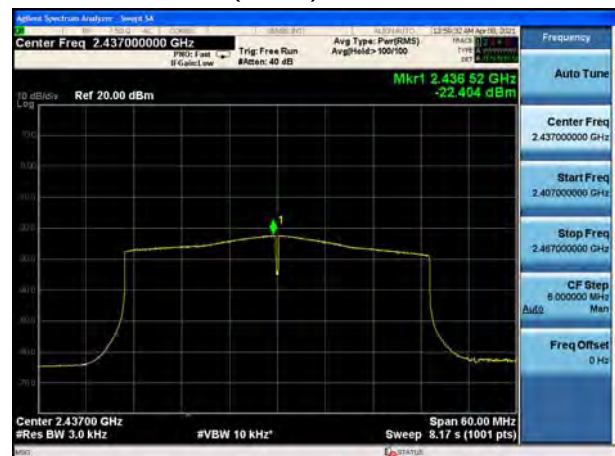
802.11ax(HE40), Channel No. 3



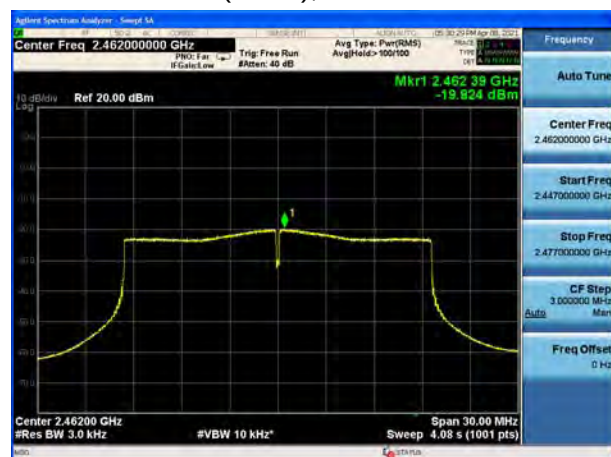
802.11ax(HE20), Channel No. 6



802.11ax(HE40), Channel No. 6



802.11ax(HE20), Channel No. 11



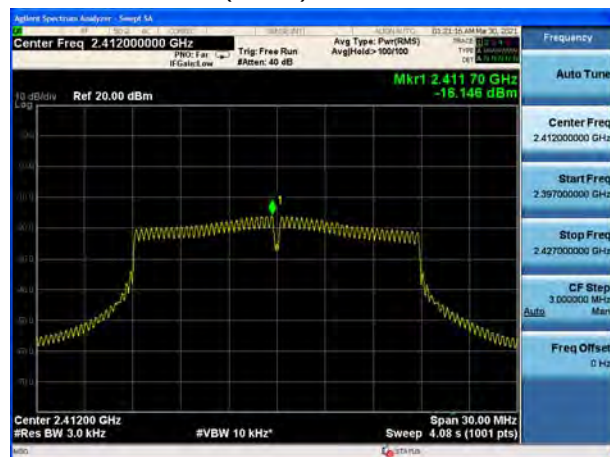
802.11ax(HE40), Channel No. 9



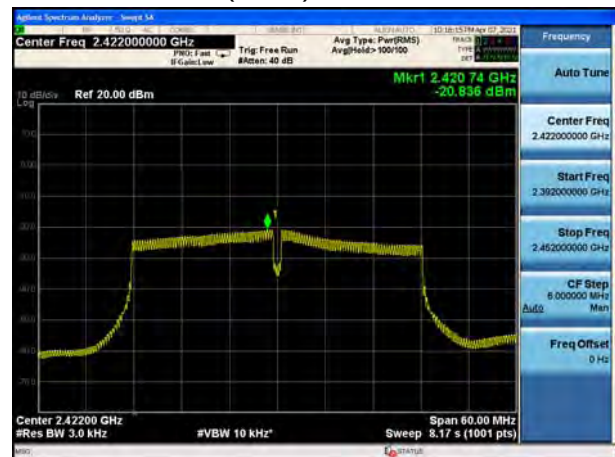


MIMO Antenna 2

802.11n(HT20), Channel No. 1



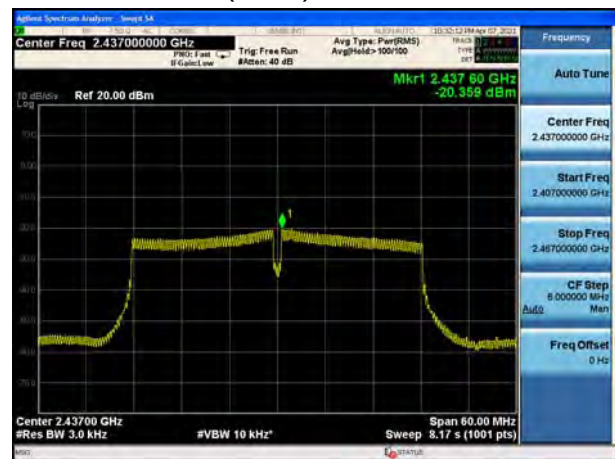
802.11n(HT40), Channel No. 3



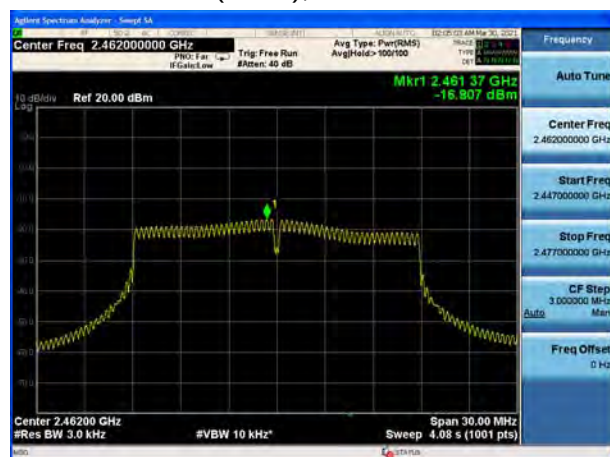
802.11n(HT20), Channel No. 6



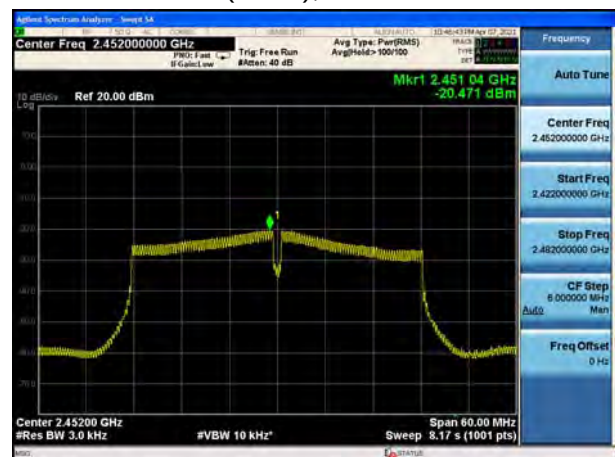
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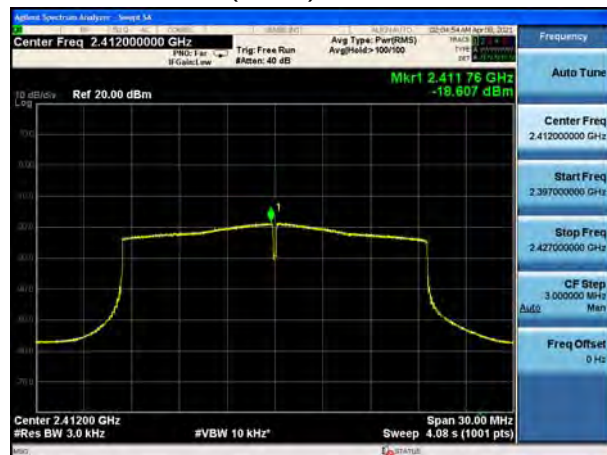
802.11n(HT20), Channel No. 11



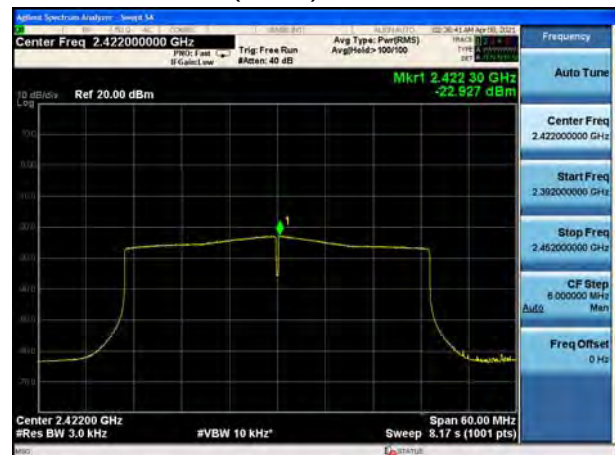
802.11n(HT40), Channel No. 9



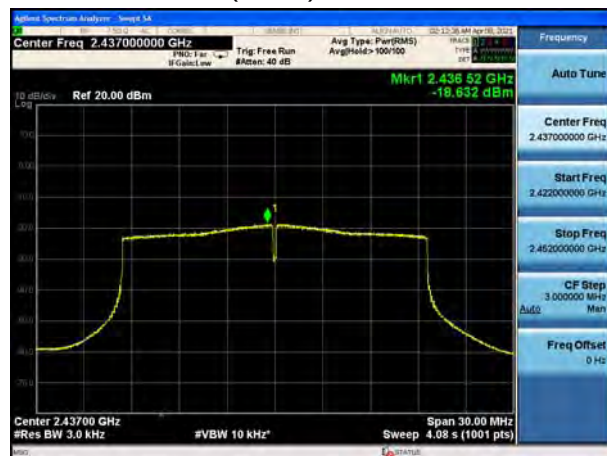
802.11ax(HE20), Channel No. 1



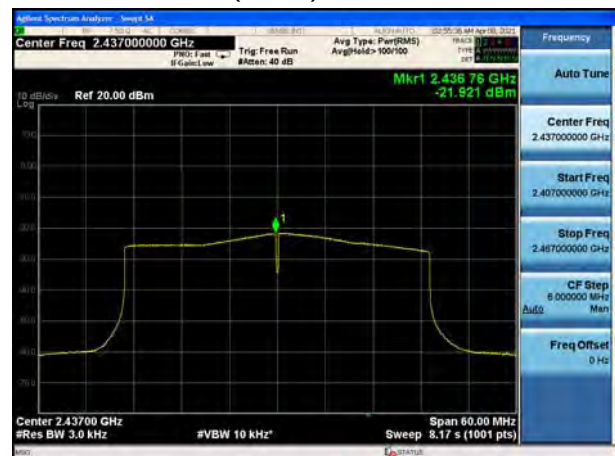
802.11ax(HE40), Channel No. 3



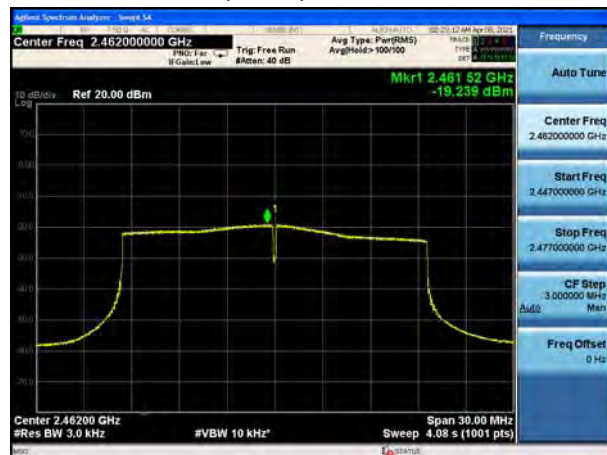
802.11ax(HE20), Channel No. 6



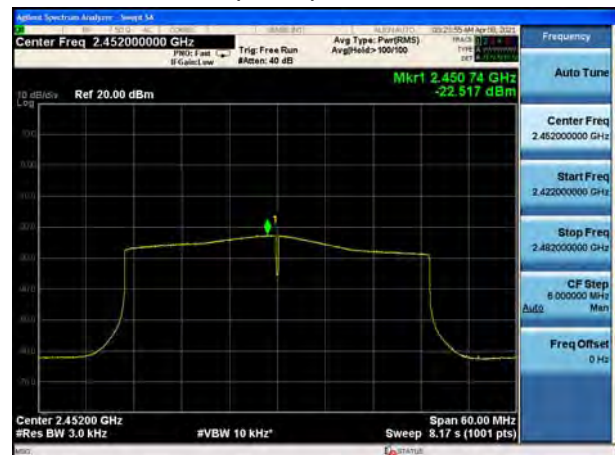
802.11ax(HE40), Channel No. 6



802.11ax(HE20), Channel No. 11



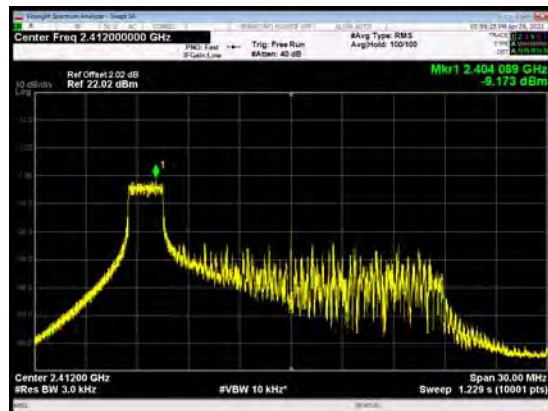
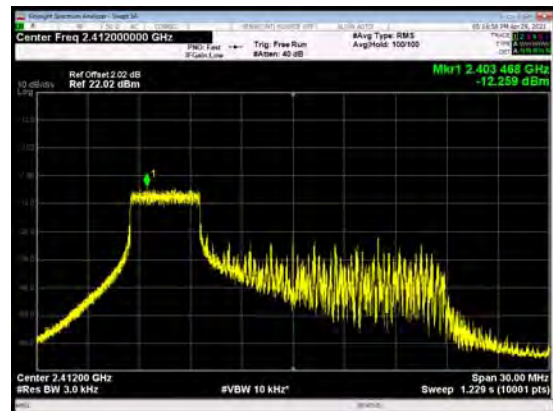
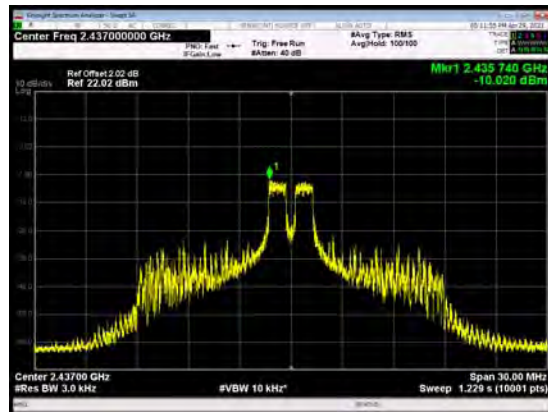
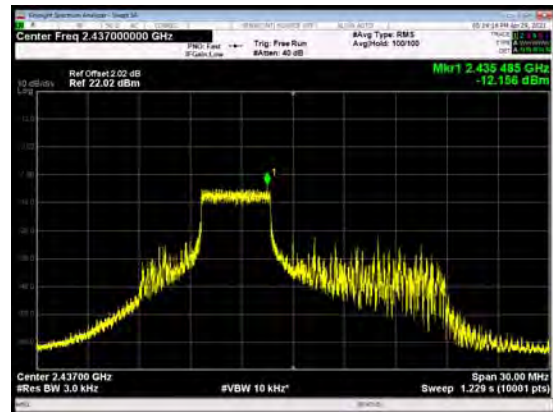
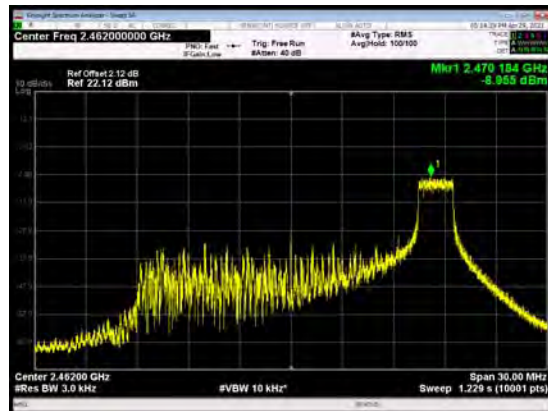
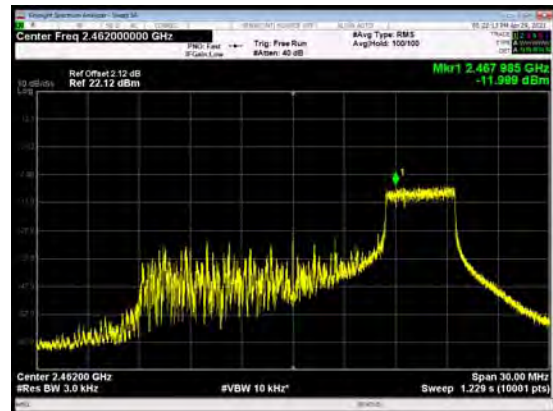
802.11ax(HE40), Channel No. 9

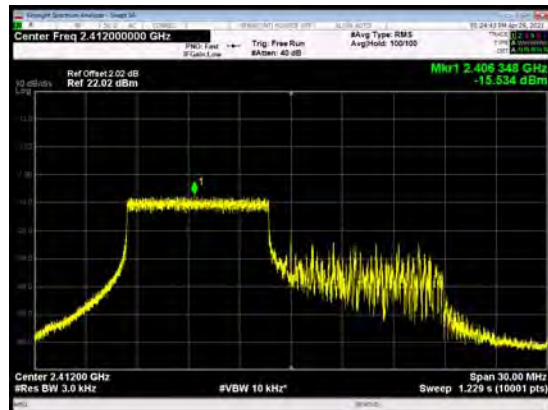
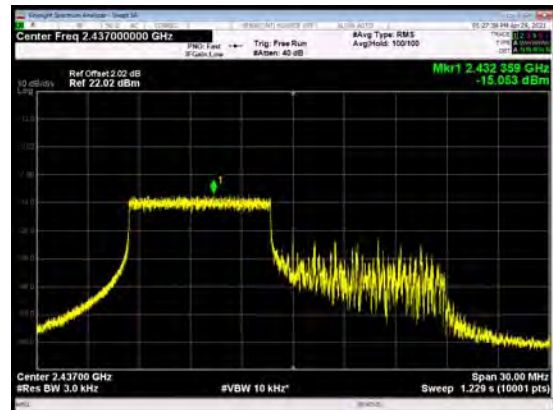
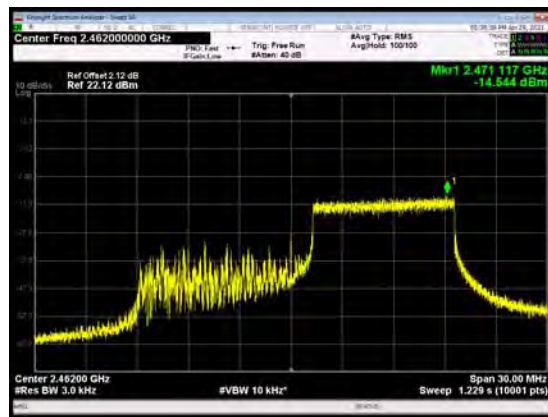




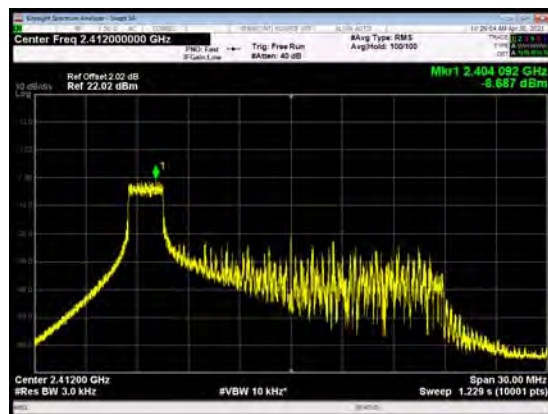
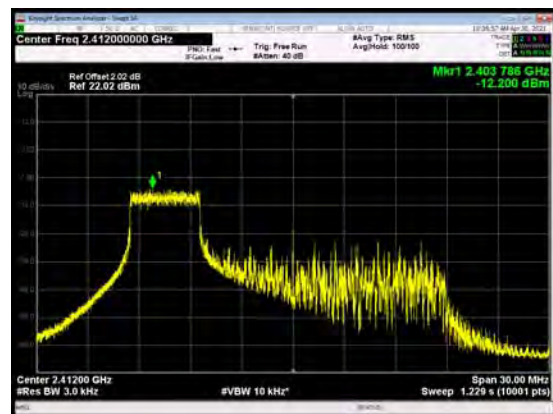
MU mode

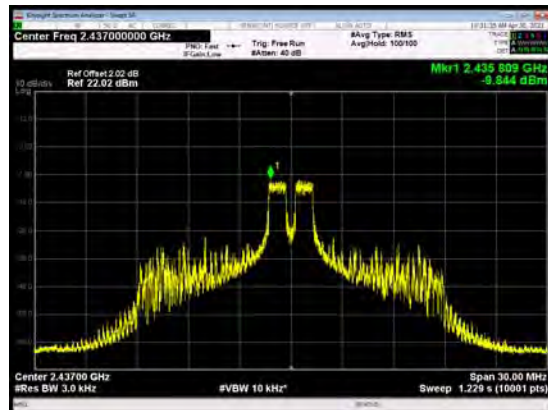
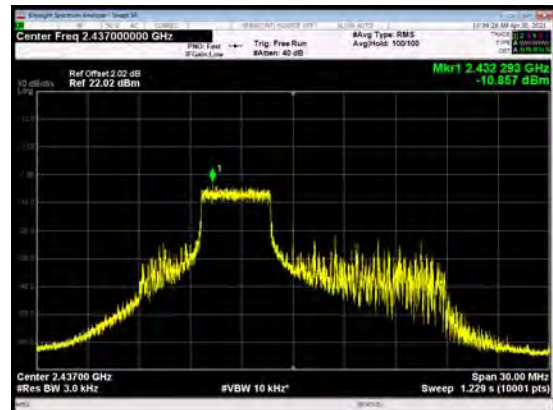
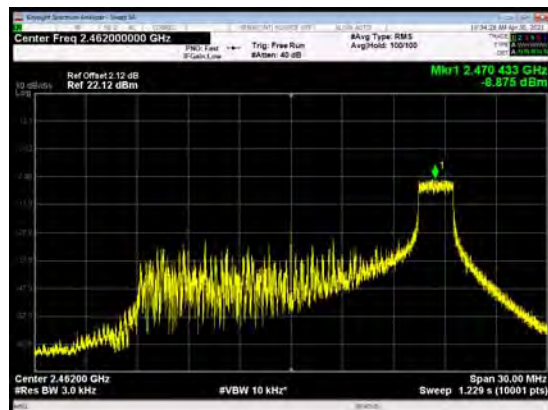
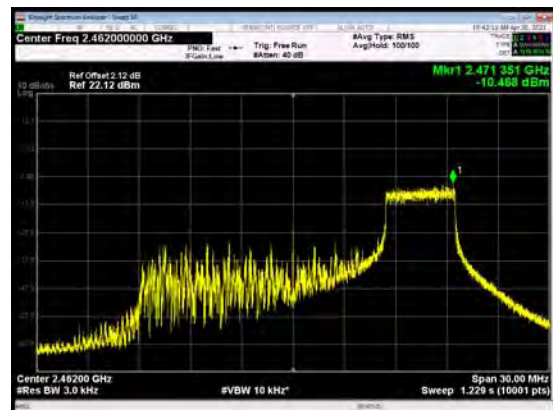
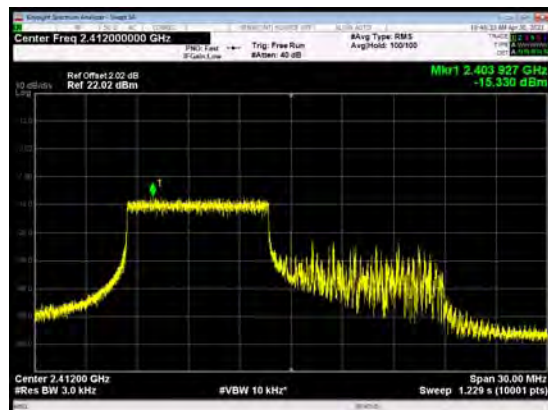
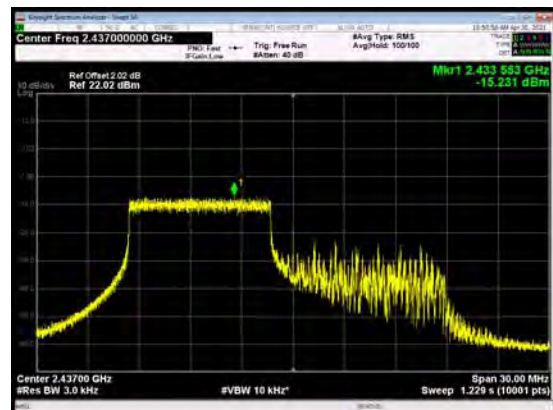
SISO Antenna 1

802.11ax(HE20), Channel No.: 1
26-Tones802.11ax(HE20), Channel No.: 1
52-Tones802.11ax(HE20), Channel No.: 6
26-Tones802.11ax(HE20), Channel No.: 6
52-Tones802.11ax(HE20), Channel No.: 11
26-Tones802.11ax(HE20), Channel No.: 11
52-Tones

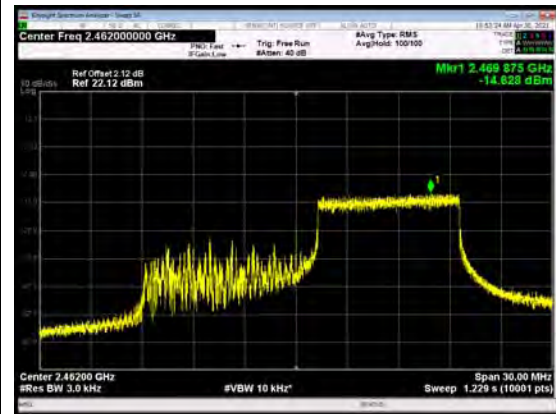
802.11ax(HE20), Channel No.: 1
106-Tones

802.11ax(HE20), Channel No.: 6
106-Tones

802.11ax(HE20), Channel No.: 11
106-Tones


SISO Antenna 2

802.11ax(HE20), Channel No.: 1
26-Tones

802.11ax(HE20), Channel No.: 1
52-Tones


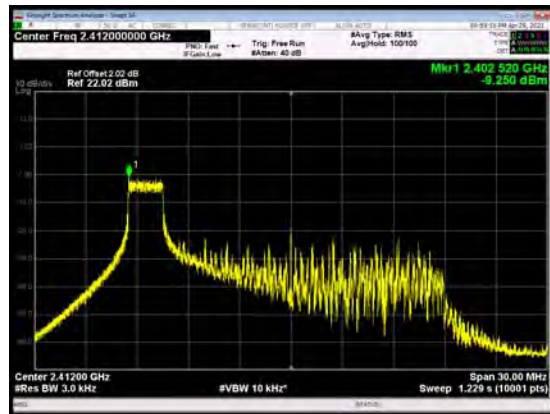
802.11ax(HE20), Channel No.: 6
26-Tones

802.11ax(HE20), Channel No.: 6
52-Tones

802.11ax(HE20), Channel No.: 11
26-Tones

802.11ax(HE20), Channel No.: 11
52-Tones

802.11ax(HE20), Channel No.: 1
106-Tones

802.11ax(HE20), Channel No.: 6
106-Tones


802.11ax(HE20), Channel No.: 11 106-Tones

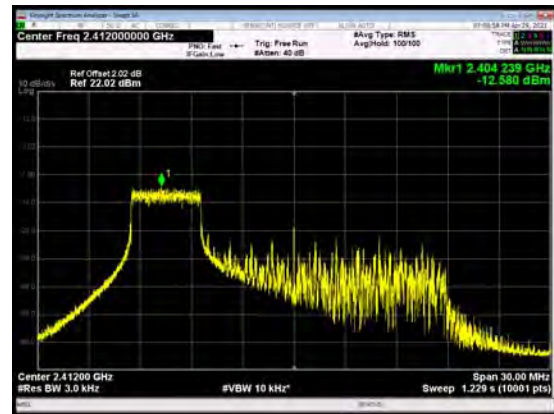


MIMO Antenna 1

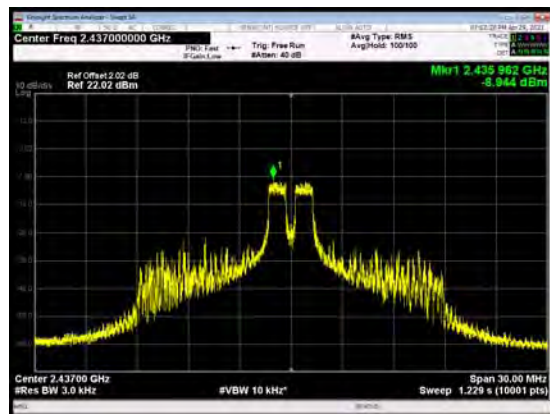
802.11ax(HE20), Channel No.: 1 26-Tones



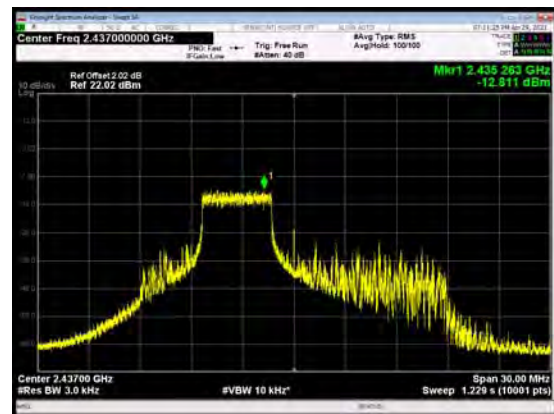
802.11ax(HE20), Channel No.: 1 52-Tones

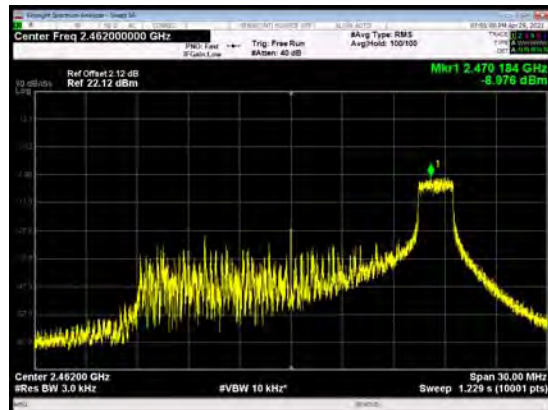


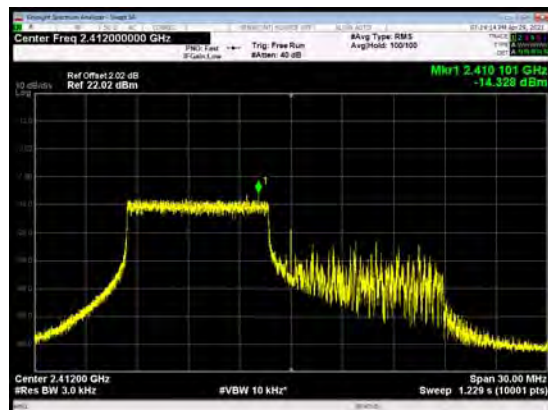
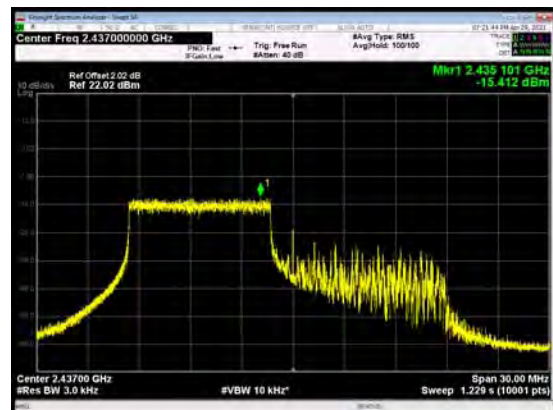
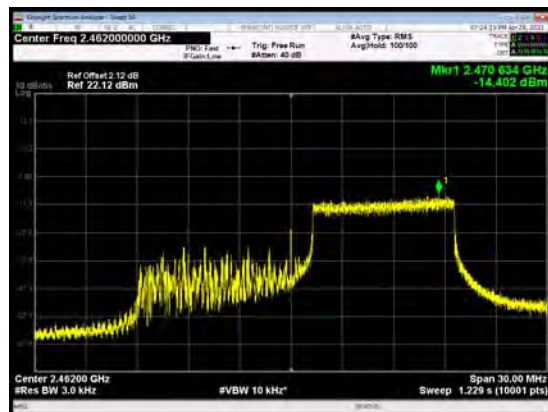
802.11ax(HE20), Channel No.: 6 26-Tones



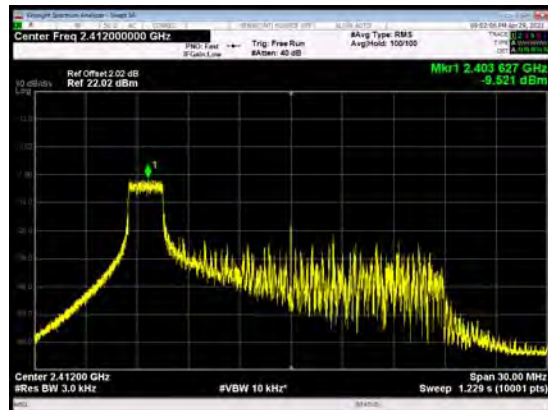
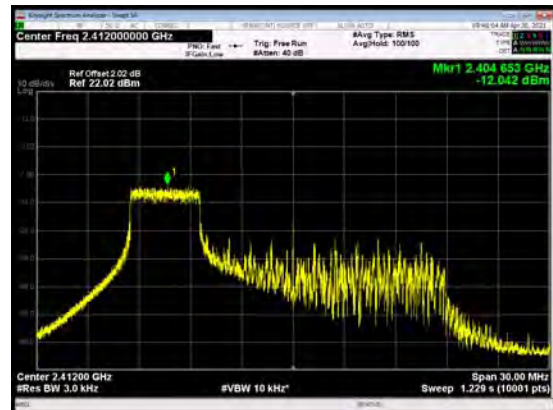
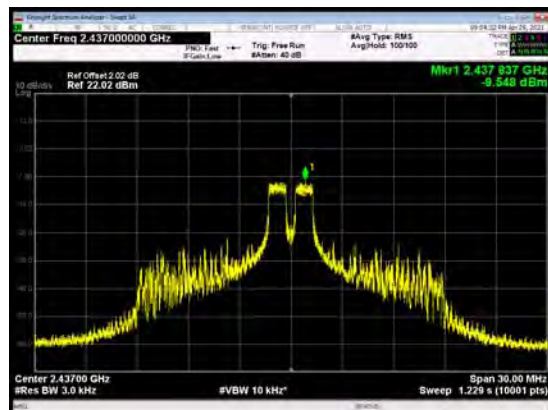
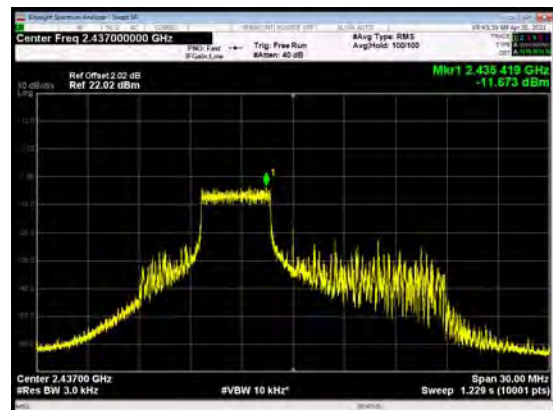
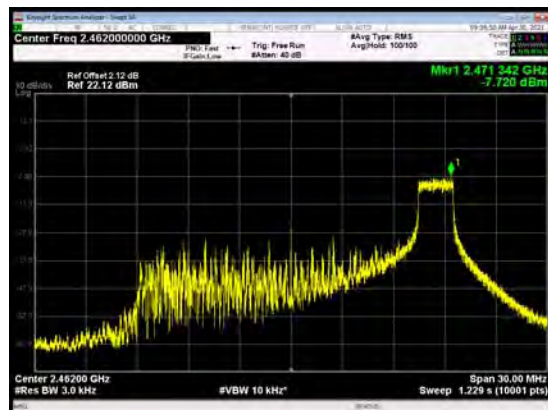
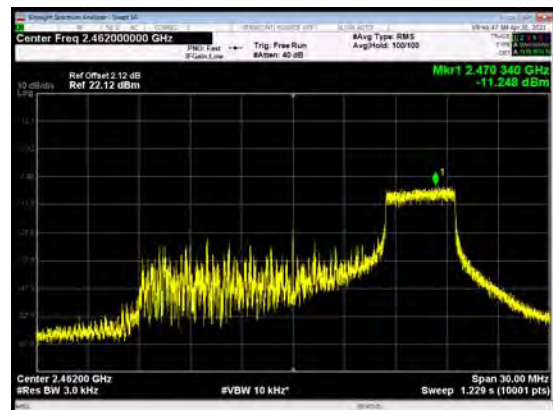
802.11ax(HE20), Channel No.: 6 52-Tones



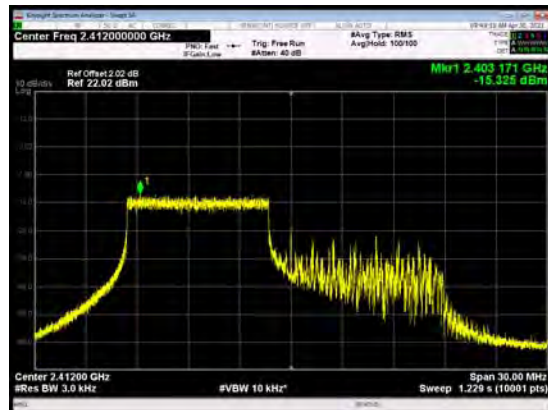
802.11ax(HE20), Channel No.: 11
26-Tones

802.11ax(HE20), Channel No.: 11
52-Tones

802.11ax(HE20), Channel No.: 1
106-Tones

802.11ax(HE20), Channel No.: 6
106-Tones

802.11ax(HE20), Channel No.: 11
106-Tones


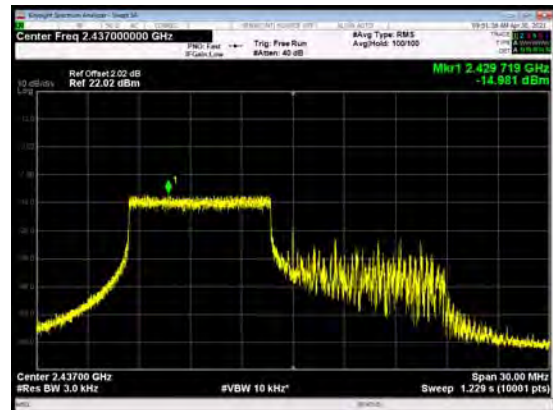
MIMO Antenna 2

802.11ax(HE20), Channel No.: 1
26-Tones

802.11ax(HE20), Channel No.: 1
52-Tones

802.11ax(HE20), Channel No.: 6
26-Tones

802.11ax(HE20), Channel No.: 6
52-Tones

802.11ax(HE20), Channel No.: 11
26-Tones

802.11ax(HE20), Channel No.: 11
52-Tones


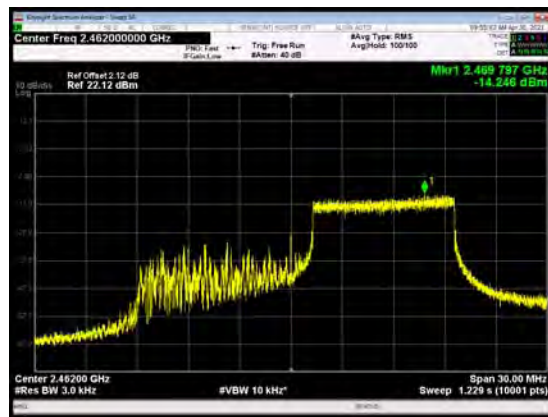
802.11ax(HE20), Channel No.: 1
106-Tones



802.11ax(HE20), Channel No.: 6
106-Tones



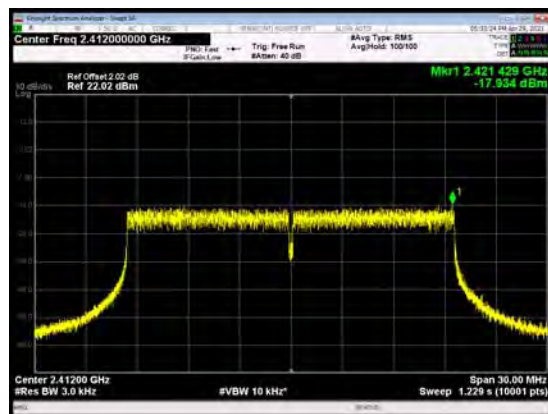
802.11ax(HE20), Channel No.: 11
106-Tones



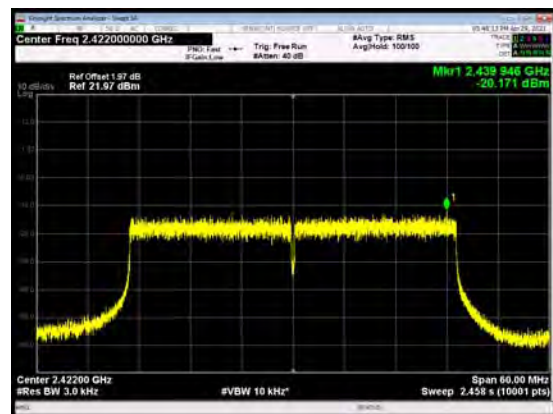
SU mode

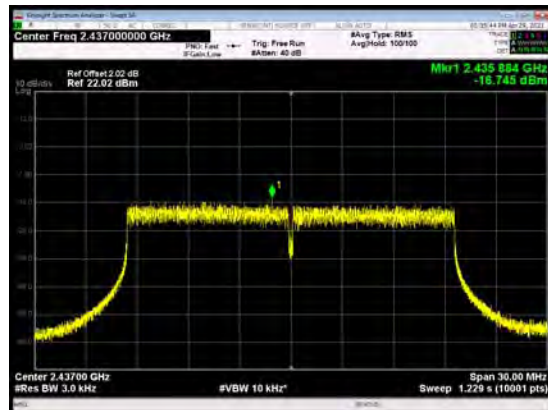
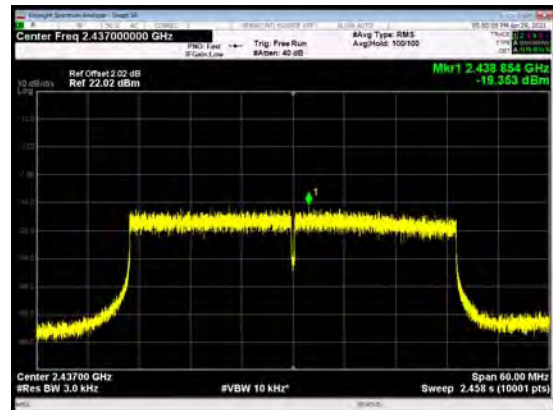
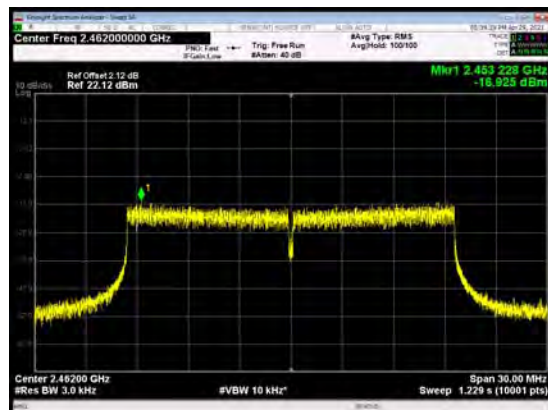
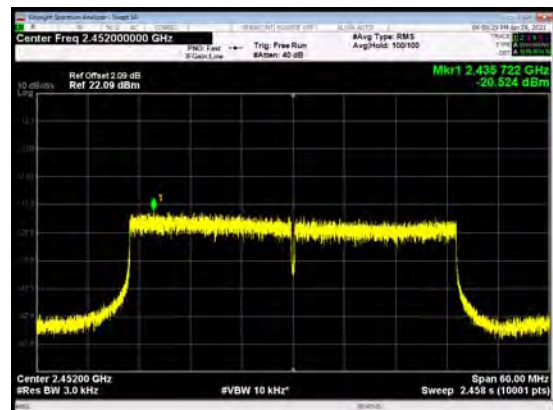
SISO Antenna 1

802.11ax(HE20), Channel No.: 1
242-Tones

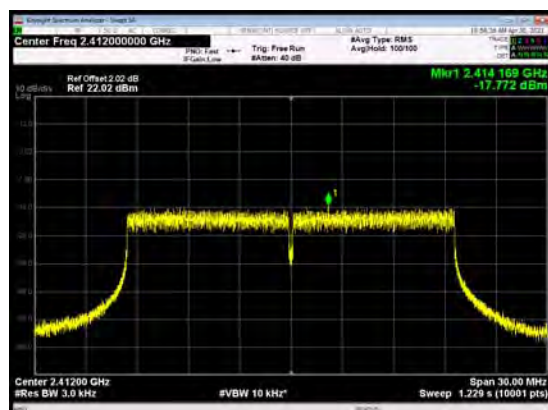
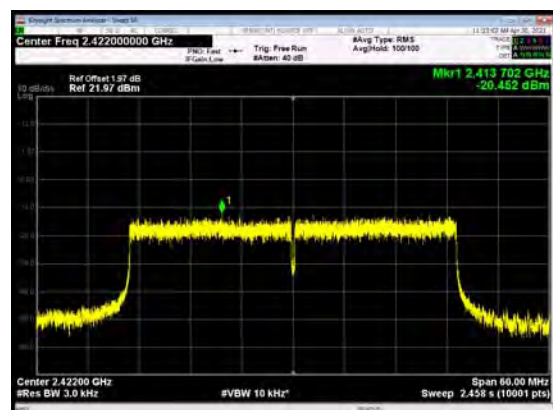


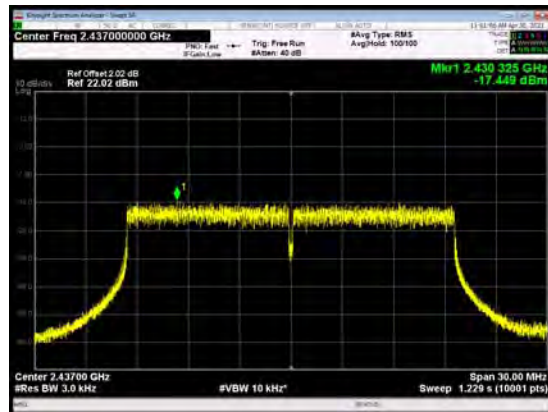
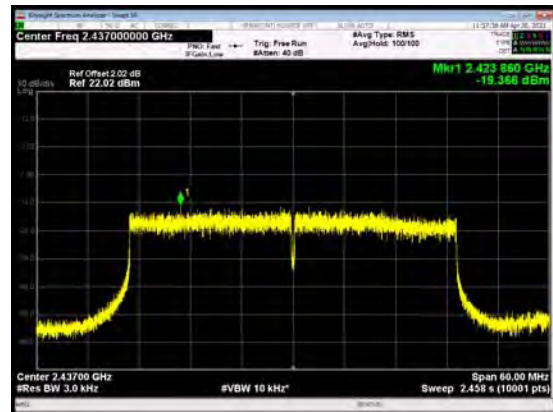
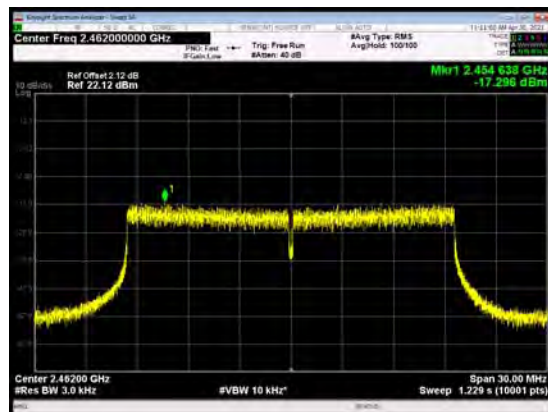
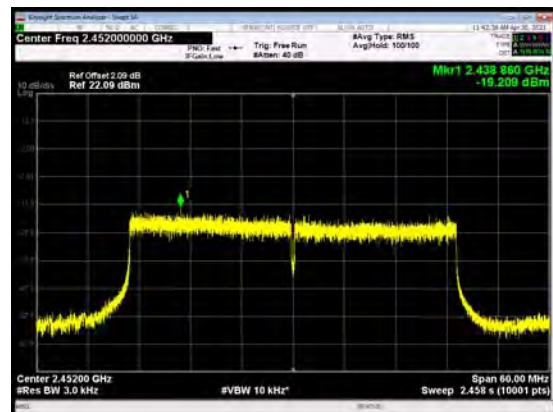
802.11ax(HE40), Channel No.: 3
484-Tones



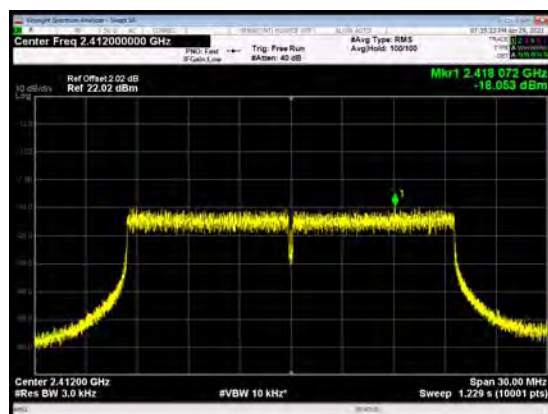
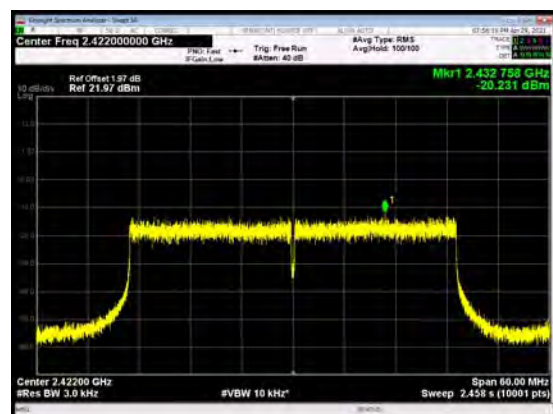
802.11ax(HE20), Channel No.: 6
242-Tones

802.11ax(HE40), Channel No.: 6
484-Tones

802.11ax(HE20), Channel No.: 11
242-Tones

802.11ax(HE40), Channel No.: 9
484-Tones


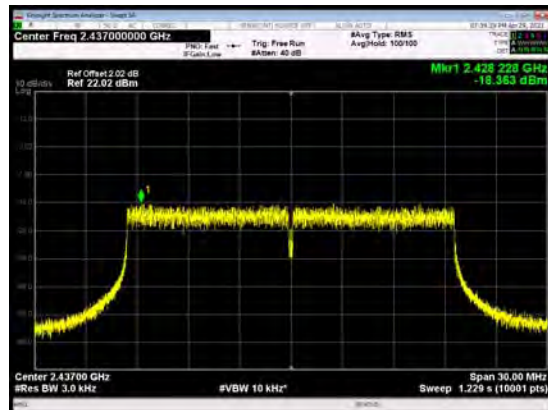
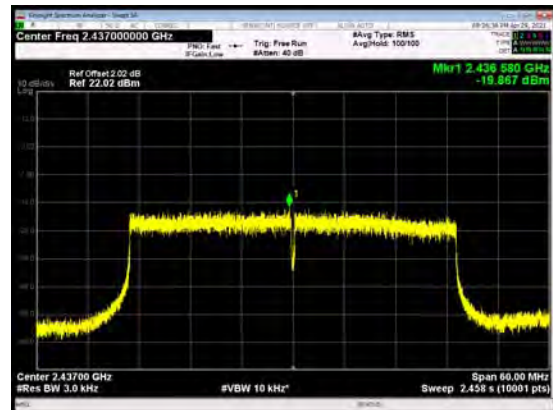
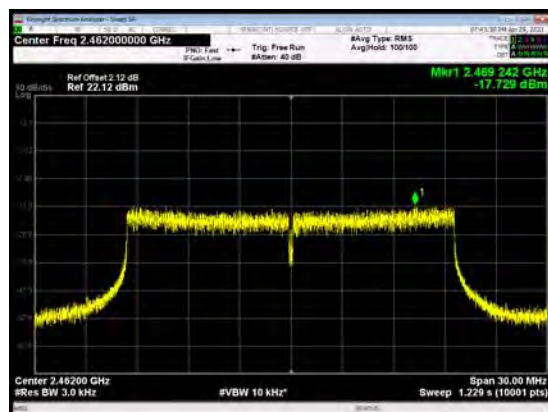
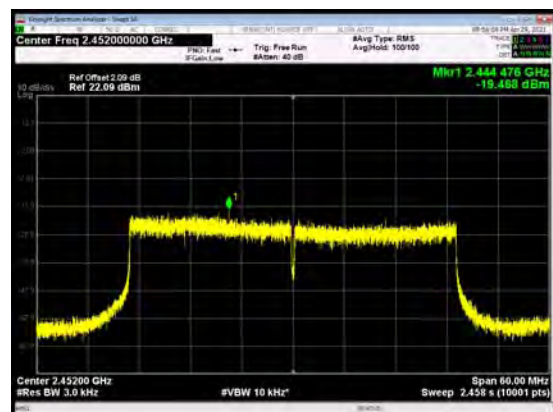
SISO Antenna 2

802.11ax(HE20), Channel No.: 1
242-Tones

802.11ax(HE40), Channel No.: 3
484-Tones


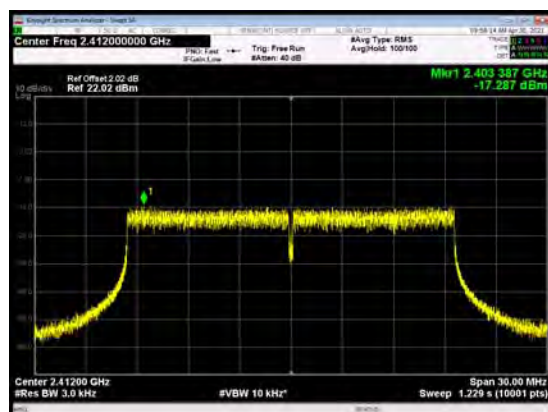
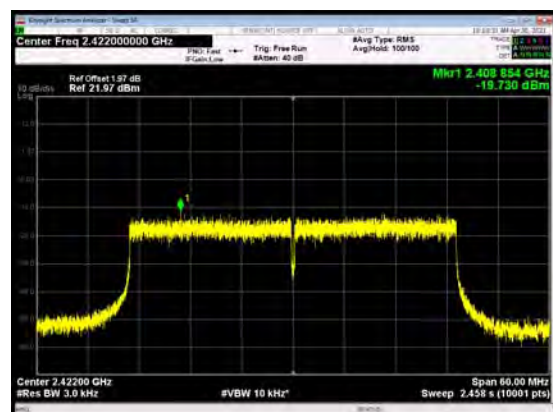
802.11ax(HE20), Channel No.: 6
242-Tones

802.11ax(HE40), Channel No.: 6
484-Tones

802.11ax(HE20), Channel No.: 11
242-Tones

802.11ax(HE40), Channel No.: 9
484-Tones


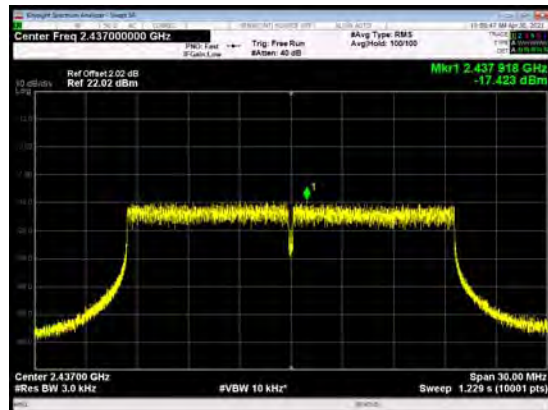
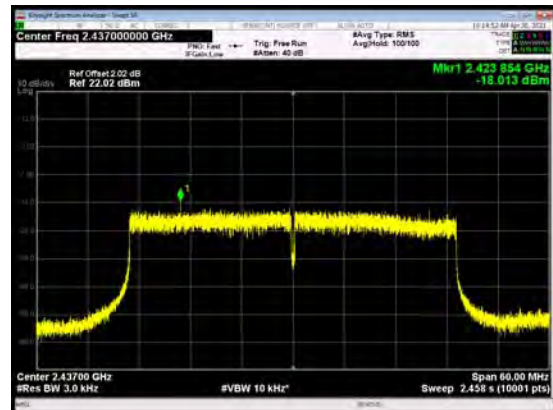
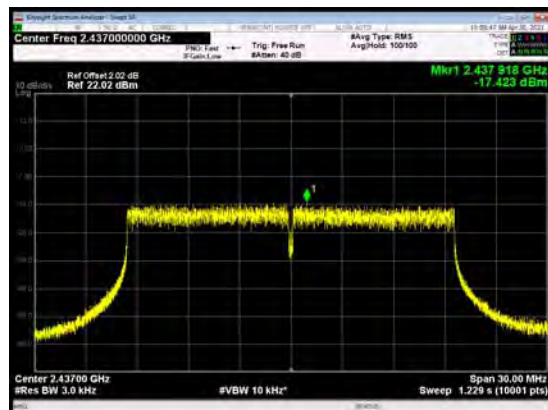
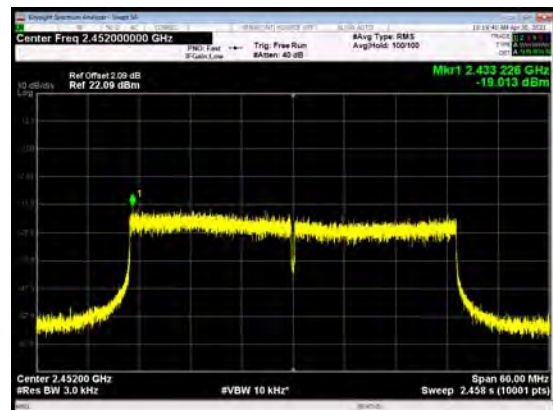
MIMO Antenna 1

802.11ax(HE20), Channel No.: 1
242-Tones

802.11ax(HE40), Channel No.: 3
484-Tones


802.11ax(HE20), Channel No.: 6
242-Tones

802.11ax(HE40), Channel No.: 6
484-Tones

802.11ax(HE20), Channel No.: 11
242-Tones

802.11ax(HE40), Channel No.: 9
484-Tones


MIMO Antenna 2

802.11ax(HE20), Channel No.: 1
242-Tones

802.11ax(HE40), Channel No.: 3
484-Tones


802.11ax(HE20), Channel No.: 6
242-Tones

802.11ax(HE40), Channel No.: 6
484-Tones

802.11ax(HE20), Channel No.: 11
242-Tones

802.11ax(HE40), Channel No.: 9
484-Tones


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 conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. "

Test Mode	Carrier frequency (MHz)	Reference value (dBm)	Limit
802.11b	2412	8.80	-21.20
	2437	9.34	-20.66
	2462	8.50	-21.50
802.11g	2412	6.85	-23.15
	2437	5.06	-24.94
	2462	6.80	-23.20
802.11n HT20	2412	4.32	-25.68
	2437	4.10	-25.91
	2462	5.59	-24.41
802.11n HT40	2422	1.36	-28.64
	2437	1.78	-28.22



	2452	0.32	-29.68
802.11ax HE20	2412	2.31	-27.69
	2437	3.24	-26.76
	2462	2.43	-27.57
802.11ax HE40	2422	-1.49	-31.49
	2437	0.12	-29.88
	2452	1.36	-28.64
Bluetooth (Low Energy) (1M)	2402	7.24	-22.76
	2440	7.89	-22.11
	2480	6.31	-23.69
Bluetooth (Low Energy) (2M)	2402	7.26	-22.74
	2440	7.96	-22.04
	2480	7.06	-22.94

MU mode

Test Mode	Carrier frequency (MHz)	RU size	Reference value (dBm)	Limit
802.11ax HE20	2412	26-Tones	9.68	-20.32
	2437		9.56	-20.44
	2462		10.50	-19.50
802.11ax HE20	2412	52-Tones	7.43	-22.57
	2437		7.47	-22.53
	2462		7.93	-22.07
802.11ax HE20	2412	106-Tones	3.72	-26.28
	2437		5.16	-24.84
	2462		5.38	-24.62

SU mode

Test Mode	Carrier frequency (MHz)	RU size	Reference value (dBm)	Limit
802.11ax HE20	2412	242-Tones	2.65	-27.35
	2437		2.73	-27.27
	2462		0.75	-29.25
802.11ax HE40	2422	484-Tones	-0.28	-30.28
	2437		0.85	-29.15
	2452		-2.60	-32.60

**Measurement Uncertainty**

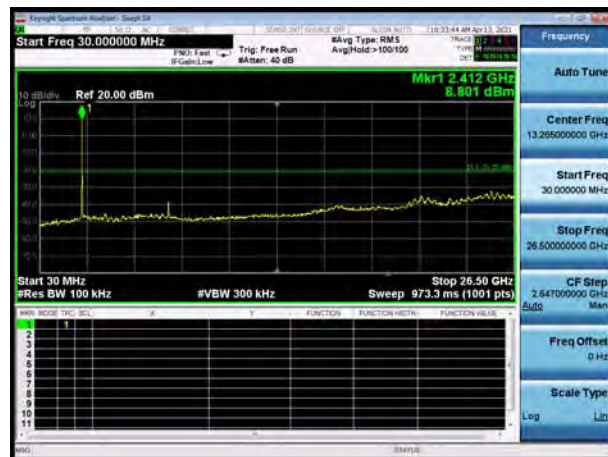
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

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

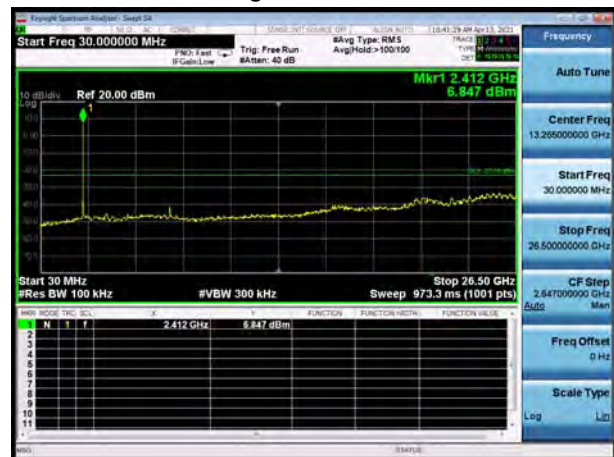


Test Results:

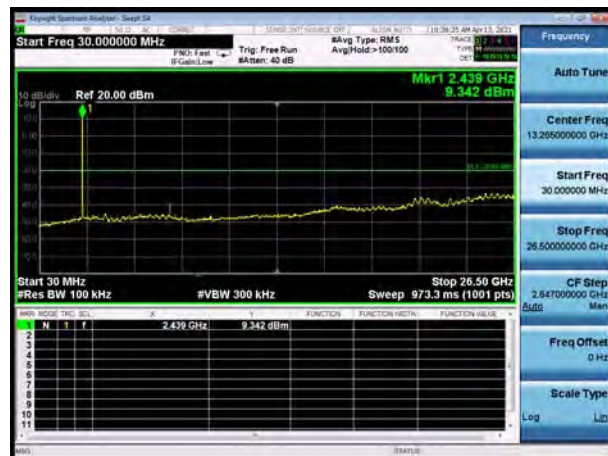
802.11b, Channel No.: 1



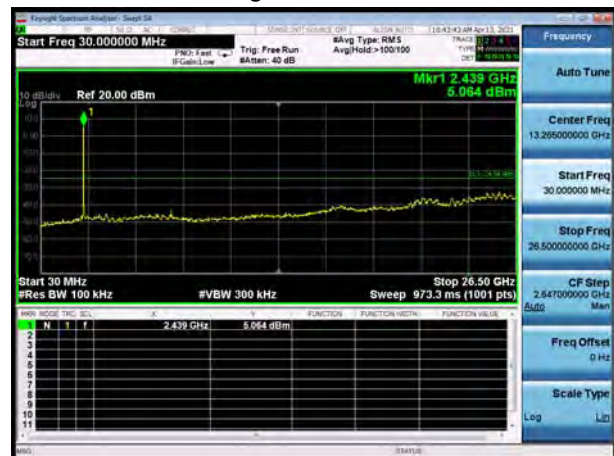
802.11g, Channel No.: 1



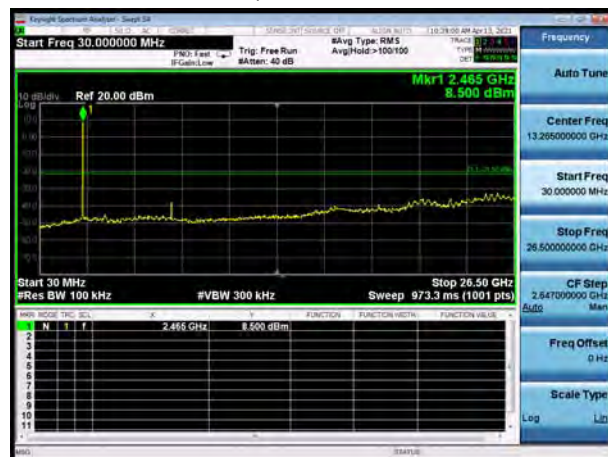
802.11b, Channel No.: 6



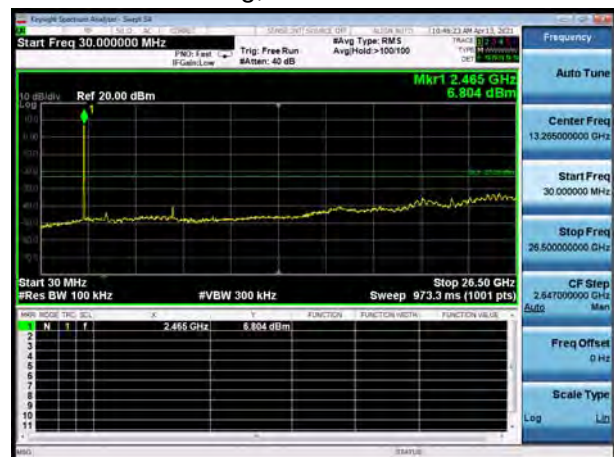
802.11g, Channel No.: 6



802.11b, Channel No.: 11

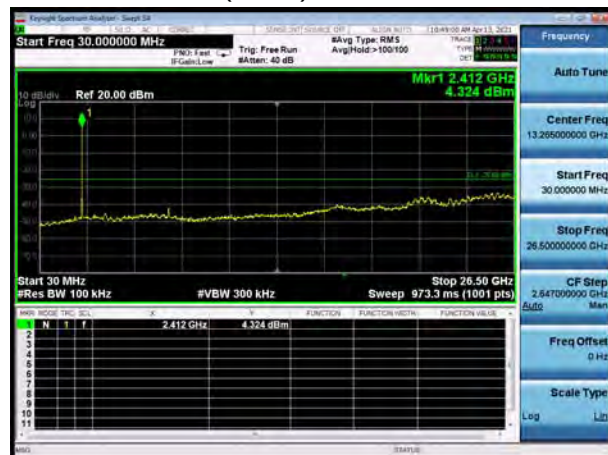


802.11g, Channel No.: 11

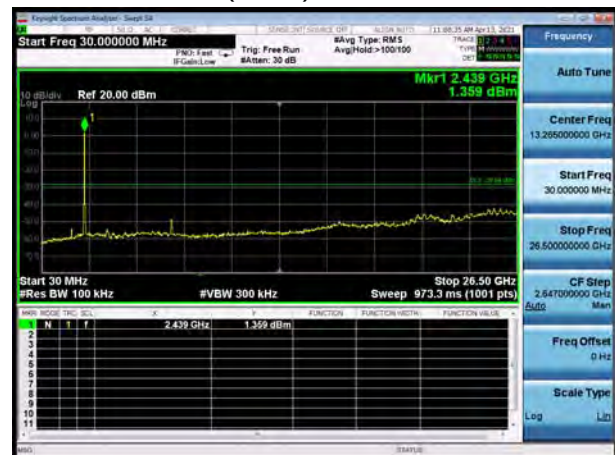




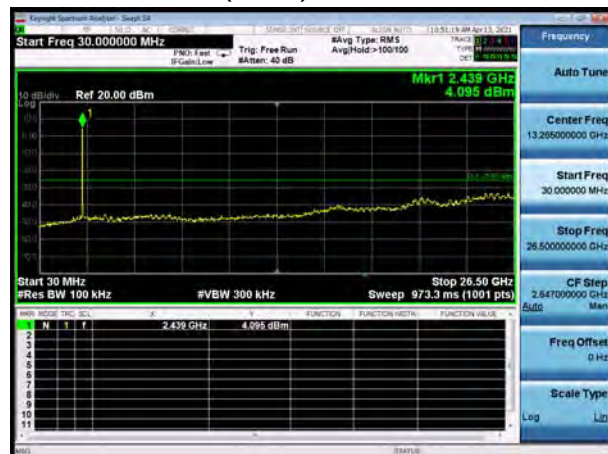
802.11n(HT20), Channel No. 1



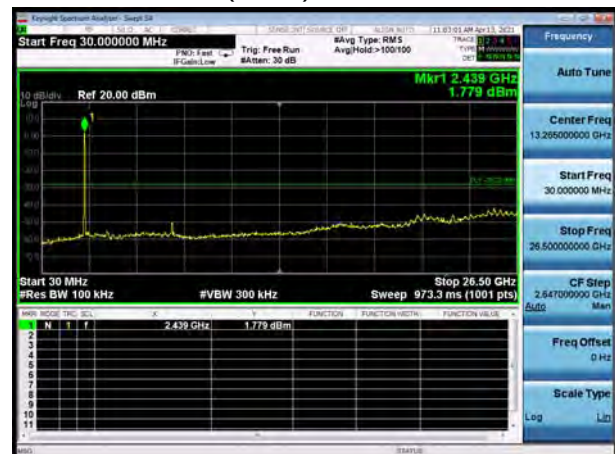
802.11n(HT40), Channel No. 3



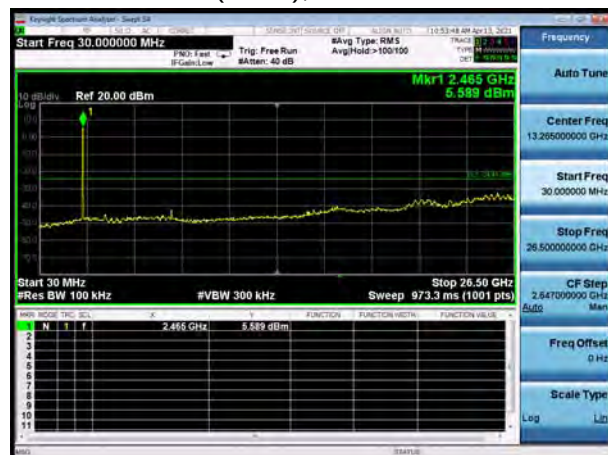
802.11n(HT20), Channel No. 6



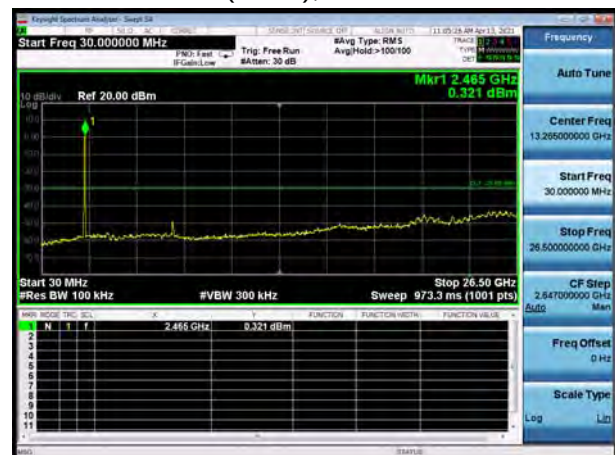
802.11n(HT40), Channel No. 6



802.11n(HT20), Channel No. 11

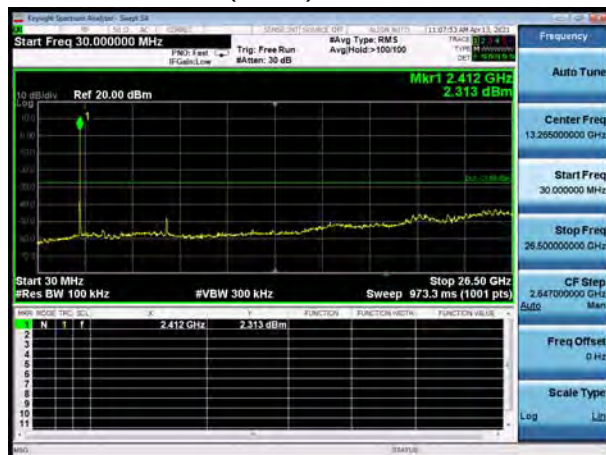


802.11n(HT40), Channel No. 9

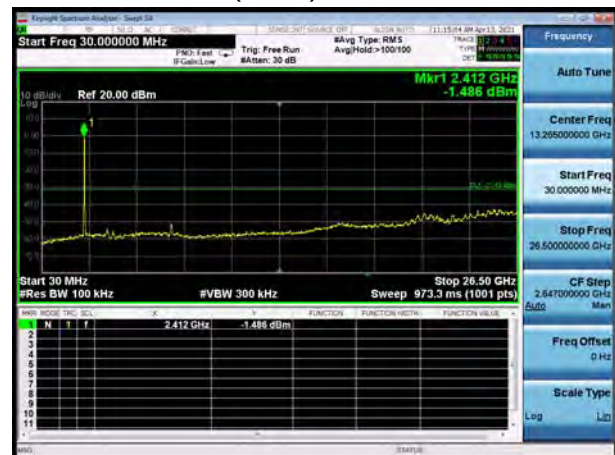




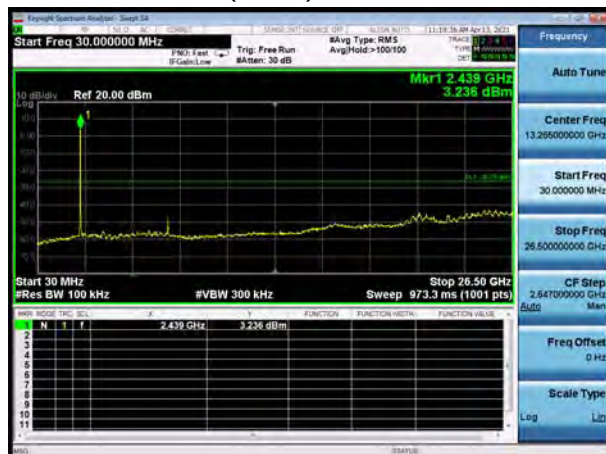
802.11ax(HE20), Channel No. 1



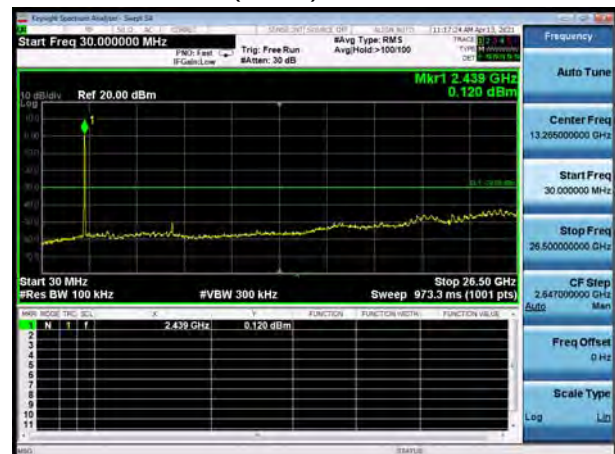
802.11ax(HT40), Channel No. 3



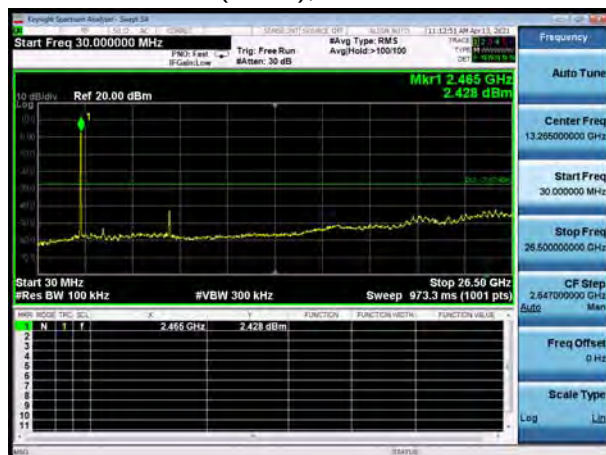
802.11ax(HE20), Channel No. 6



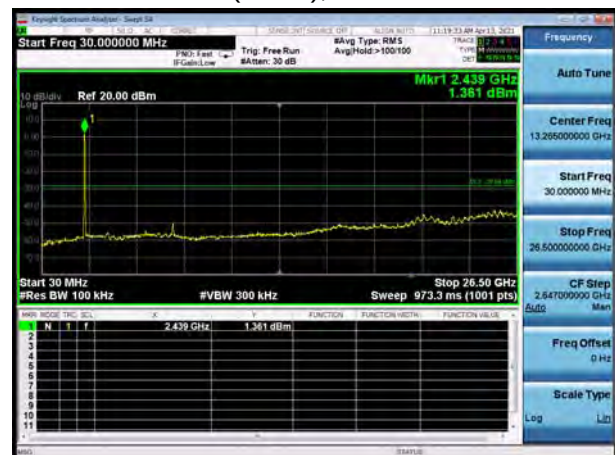
802.11ax(HE40), Channel No. 6



802.11ax(HE20), Channel No. 11

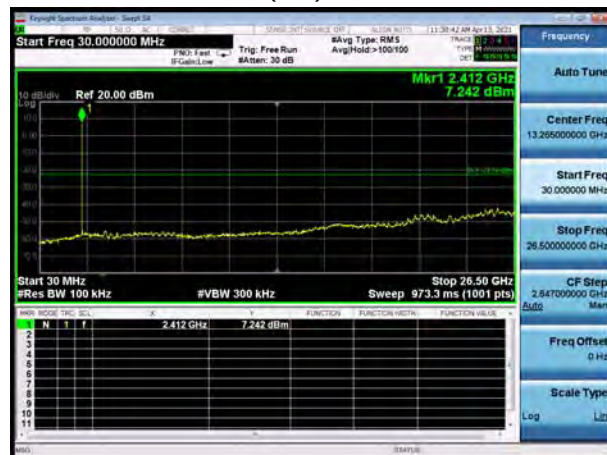


802.11ax(HE40), Channel No. 9

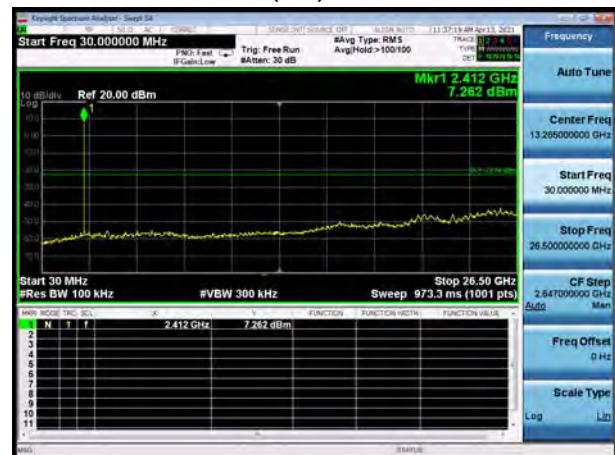




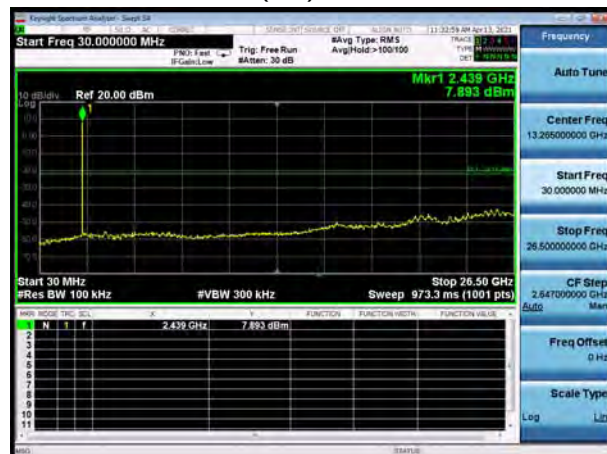
Bluetooth LE (1M), Channel No.: 0



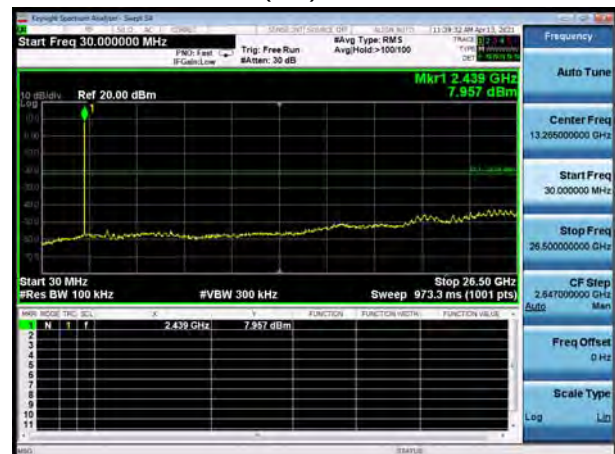
Bluetooth LE (2M), Channel No.: 0



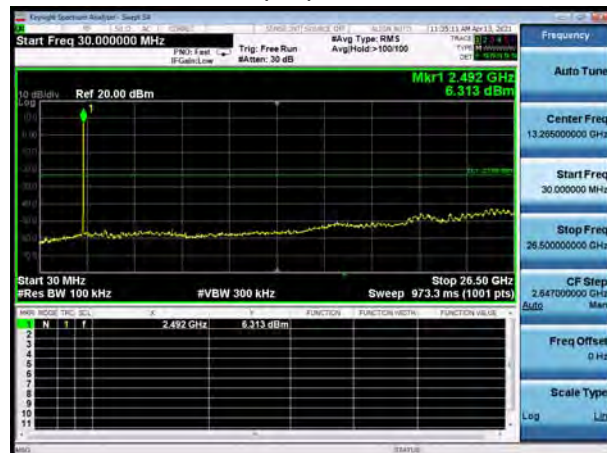
Bluetooth LE (1M), Channel No.: 19



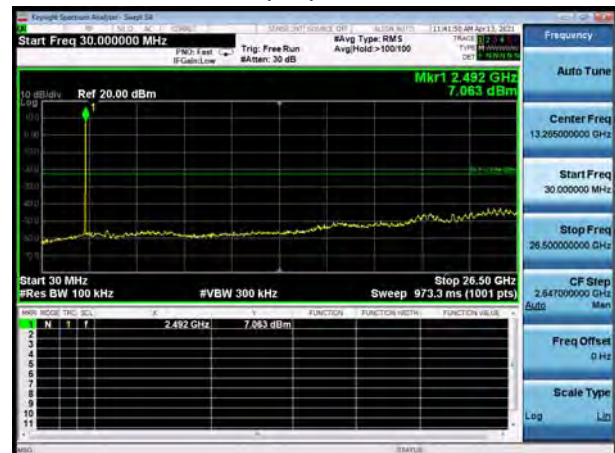
Bluetooth LE (2M), Channel No.: 19



Bluetooth LE (1M), Channel No.: 39

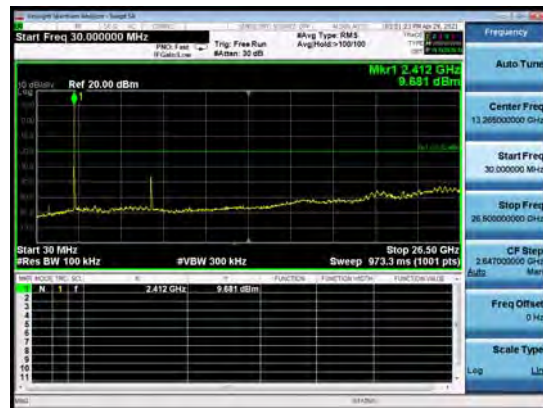


Bluetooth LE (2M), Channel No.: 39

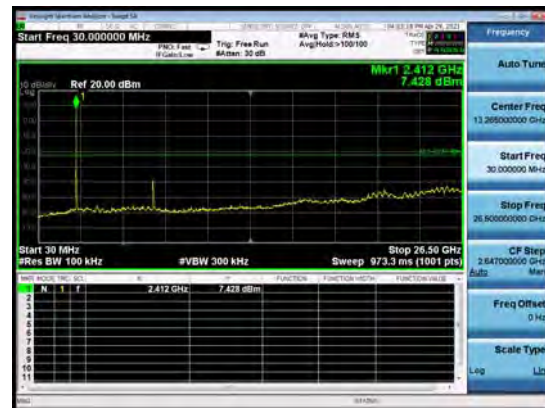


MU mode

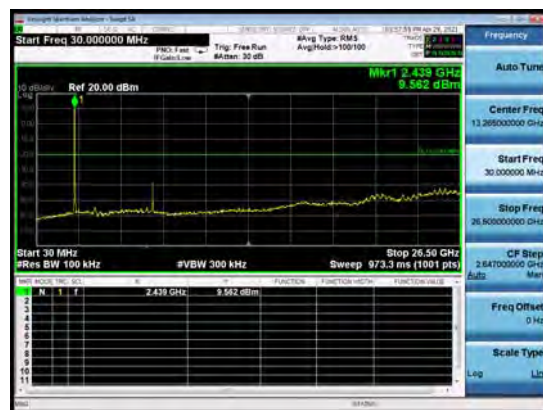
802.11ax(HE20), Channel No.: 1
26-Tones



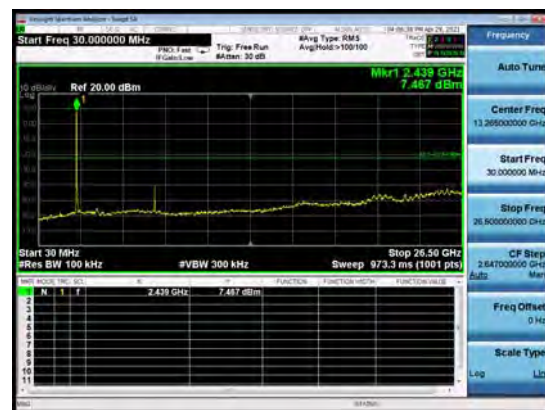
802.11ax(HE20), Channel No.: 1
52-Tones



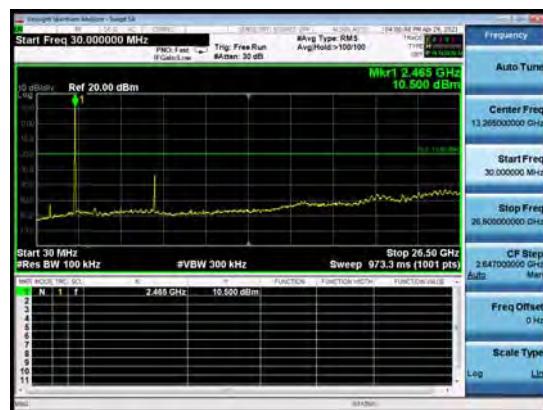
802.11ax(HE20), Channel No.: 6
26-Tones



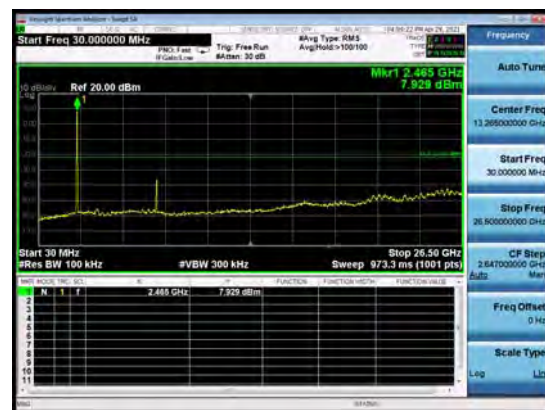
802.11ax(HE20), Channel No.: 6
52-Tones



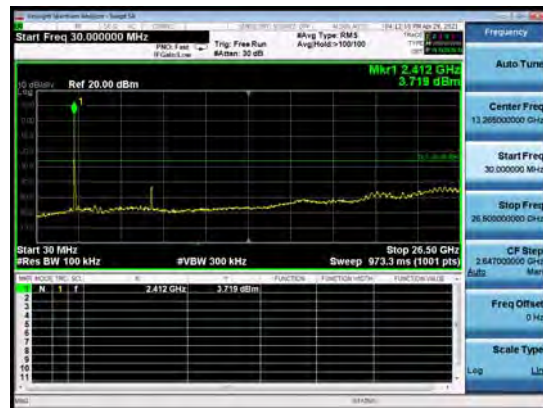
802.11ax(HE20), Channel No.: 11
26-Tones



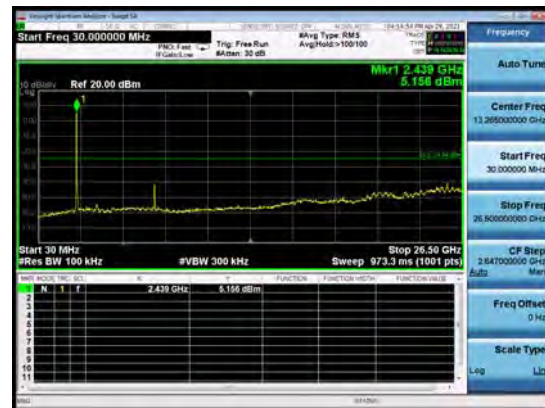
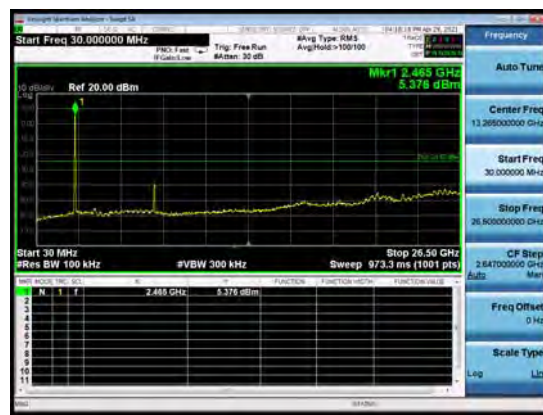
802.11ax(HE20), Channel No.: 11
52-Tones



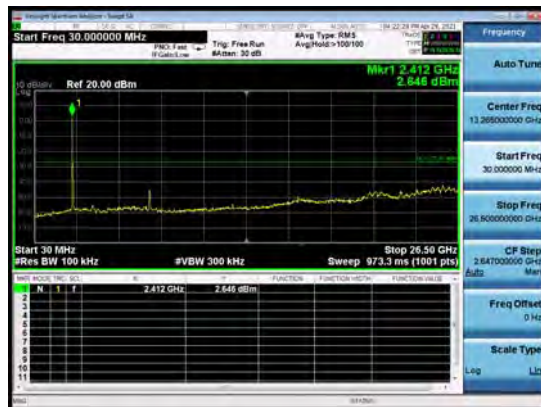
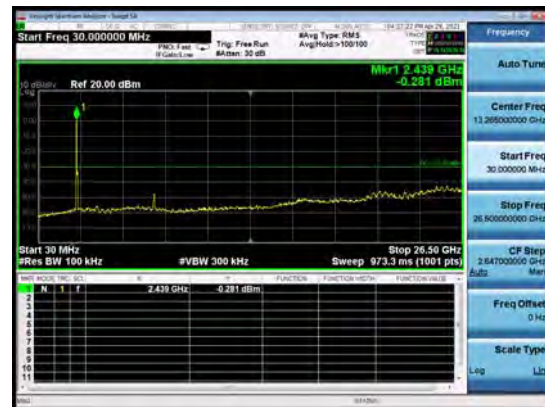
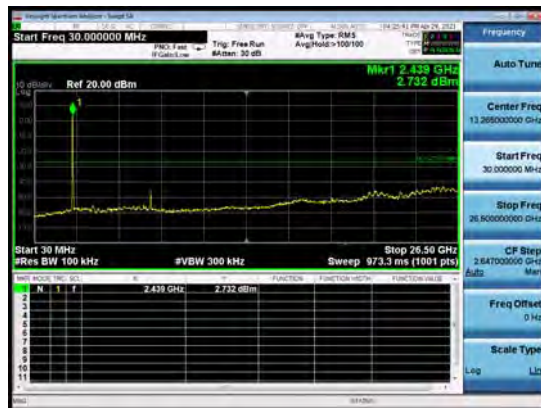
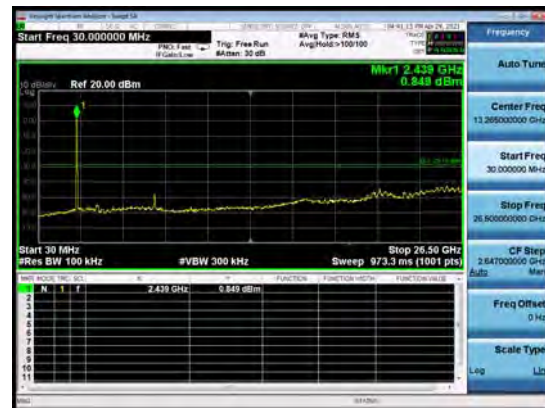
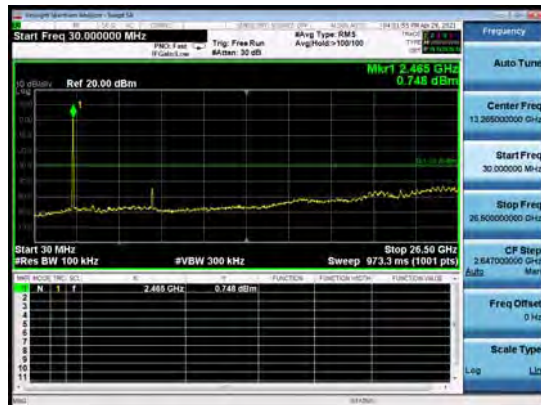
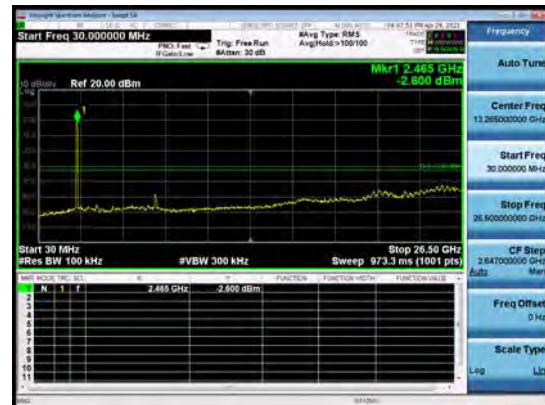
802.11ax(HE20), Channel No.: 1
106-Tones



802.11ax(HE20), Channel No.: 6
106-Tones

802.11ax(HE20), Channel No.: 11
106-Tones

SU mode

802.11ax(HE20), Channel No.: 1
242-Tones

802.11ax(HE40), Channel No.: 3
484-Tones

802.11ax(HE20), Channel No.: 6
242-Tones

802.11ax(HE40), Channel No.: 6
484-Tones

802.11ax(HE20), Channel No.: 11
242-Tones

802.11ax(HE40), Channel No.: 9
484-Tones


5.6. Unwanted Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	102.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10.

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna.

The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. Sweep the Restricted Band and the emissions less than 20 dB below the permissible value are reported.

The radiated emissions measurements were made in a typical installation configuration.

Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

This method refer to ANSI C63.10.

The procedure for peak unwanted emissions measurements above 1000 MHz is as follows:

Set the spectrum analyzer in the following:

9kHz~150 kHz

RBW=200Hz, VBW=1kHz/ Sweep=AUTO

150 kHz~30MHz

RBW=9KHz, VBW=30KHz,/ Sweep=AUTO

Below 1GHz

RBW=100kHz / VBW=300kHz / Sweep=AUTO

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

Above 1GHz

PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

b) Average emission levels are measured by setting the instrument as follows:

Above 1GHz

AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

c) Detector: The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage



averaging. Log or dB averaging shall not be used.)

e) Sweep time = auto.

f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of $1 / D$, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is $[10 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

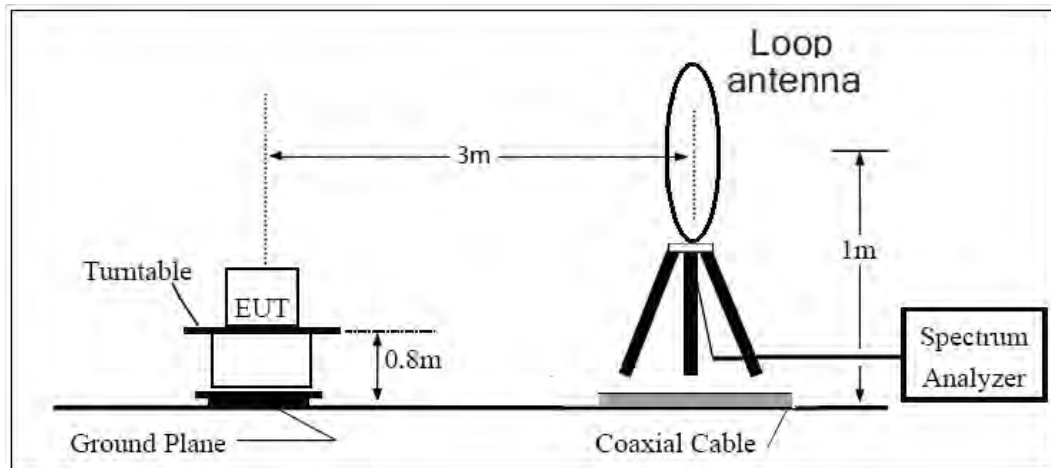
2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is $[20 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

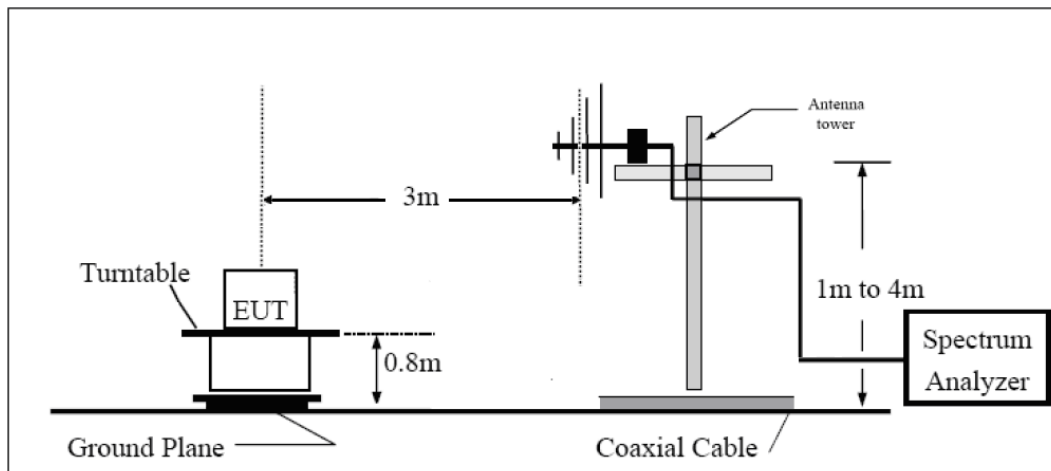
The test is in transmitting mode.

Test setup

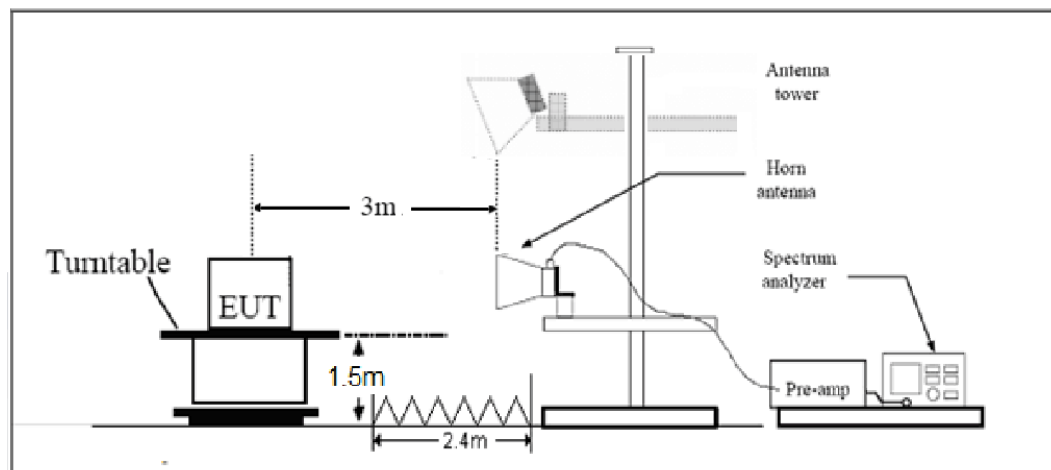
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Rule Part 15.247(d) specifies that “In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).”

Limit in restricted band

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74 dBuV/m

Average Limit=54 dBuV/m

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

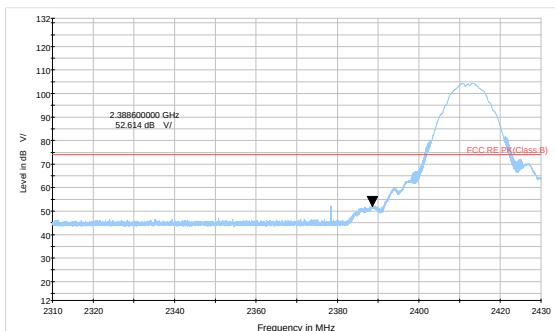
**Measurement Uncertainty**

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

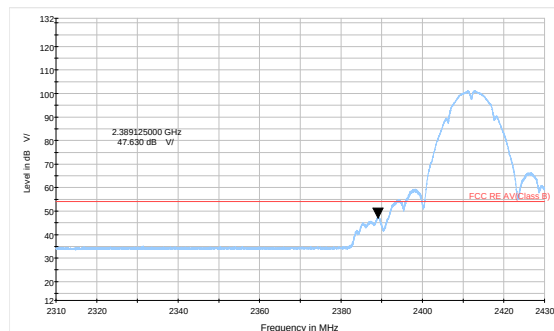
Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.17 dB
200MHz-1GHz	4.84 dB
1-18GHz	4.35 dB
18-26.5GHz	5.90 dB
26.5GHz~40GHz	5.92 dB

Test Results:

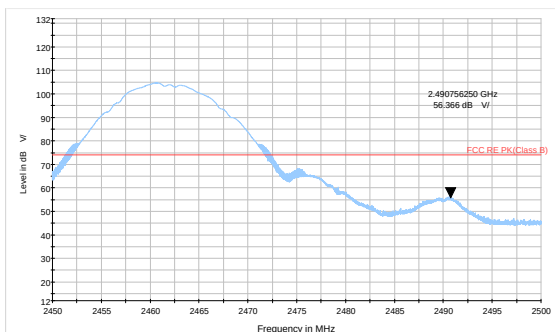
A font (Level in dBμV/) in the test plot =(level in dBμV/m)



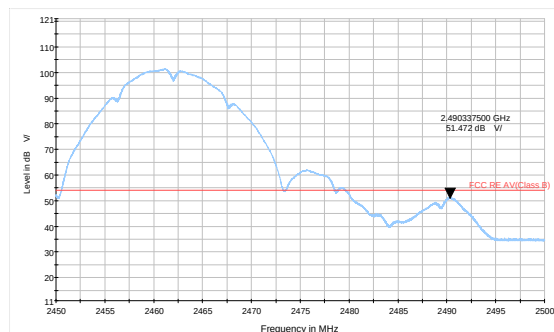
802.11b-Channel 1 Peak



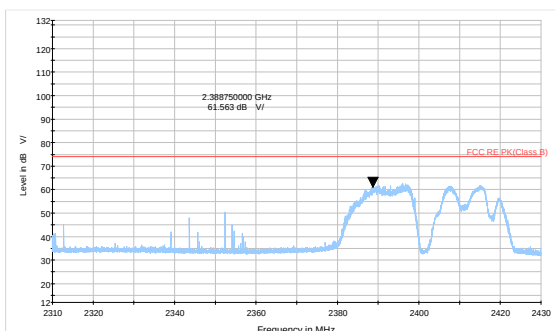
802.11b-Channel 1 Average



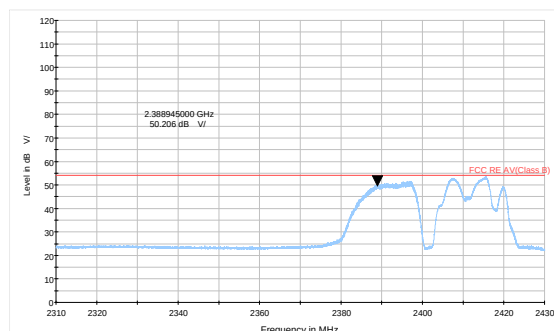
802.11b-Channel 11 Peak



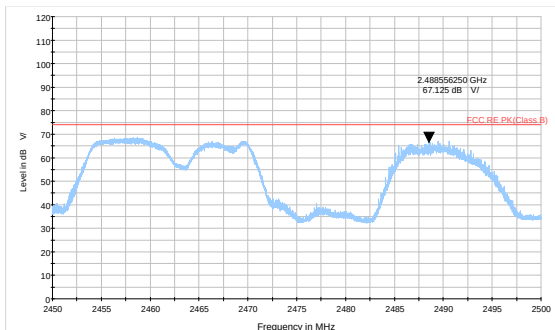
802.11b-Channel 11 Average



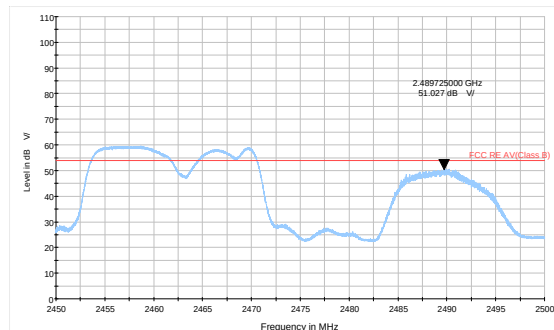
802.11g-Channel 1 Peak



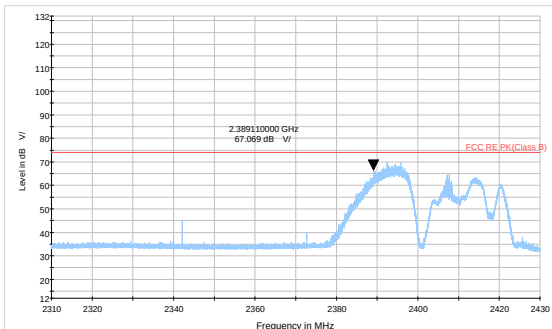
802.11g-Channel 1 Average



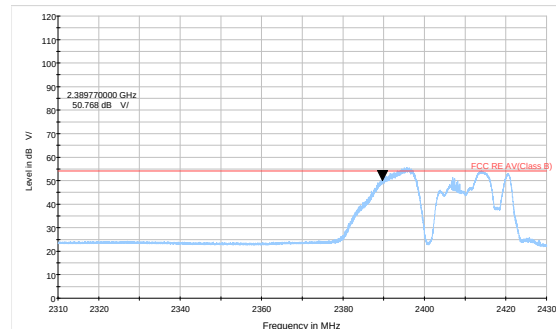
802.11g-Channel 11 Peak



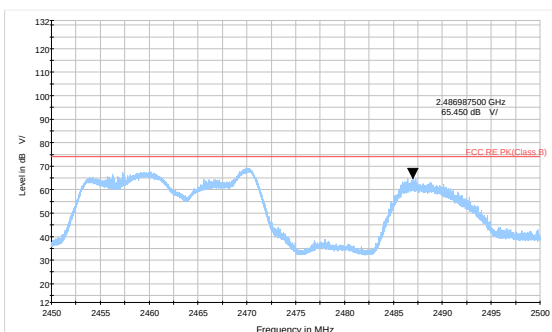
802.11g-Channel 11 Average



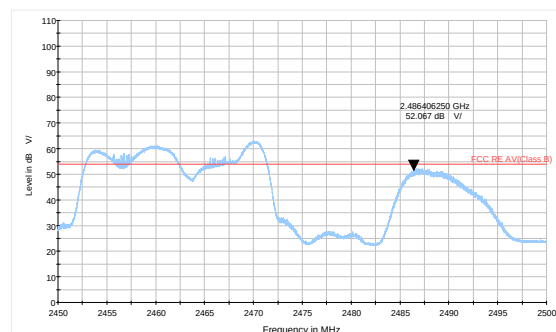
802.11n HT20 -Channel 1 Peak



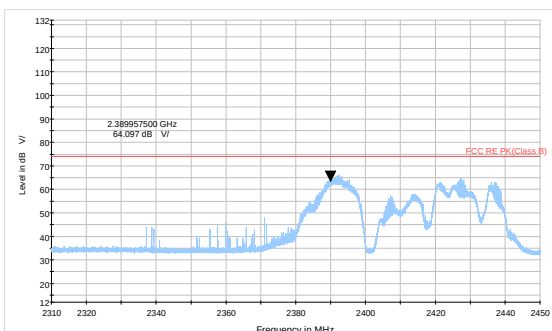
802.11n HT20 -Channel 1 Average



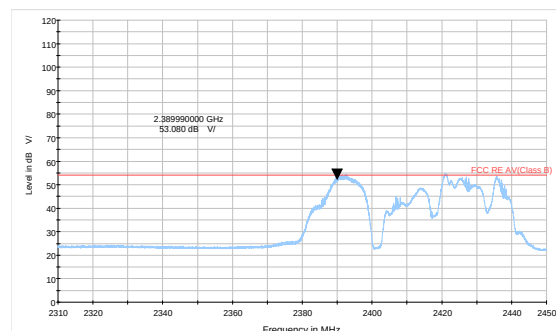
802.11n HT20 -Channel 11 Peak



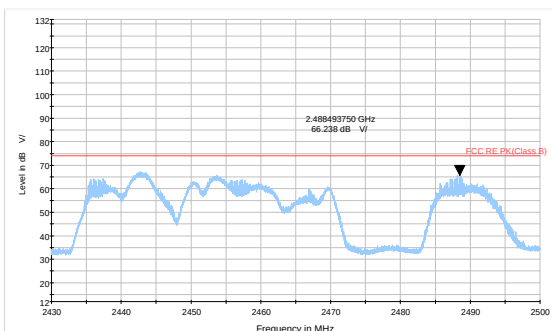
802.11n HT20 -Channel 11 Average



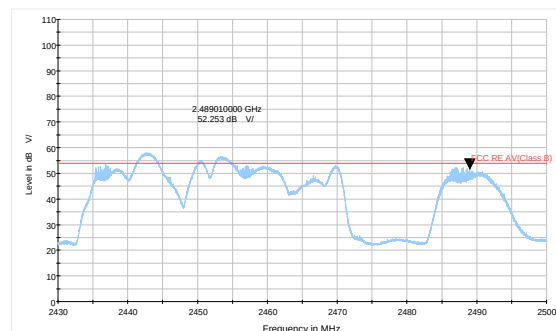
802.11n HT40 -Channel 3 Peak



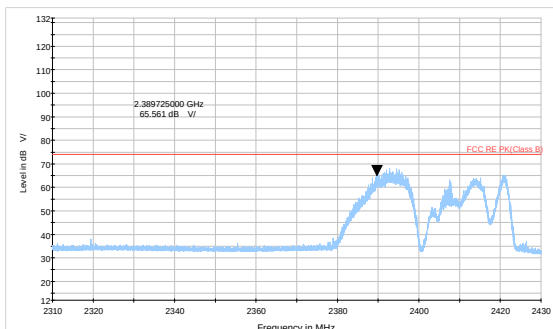
802.11n HT40 -Channel 3 Average



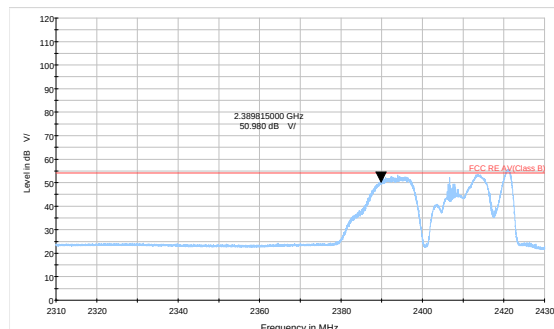
802.11n HT40 -Channel 9 Peak



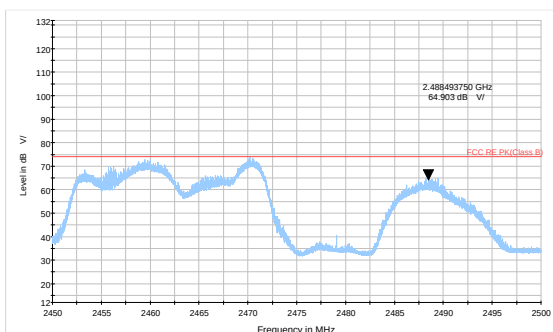
802.11n HT40 -Channel 9 Average



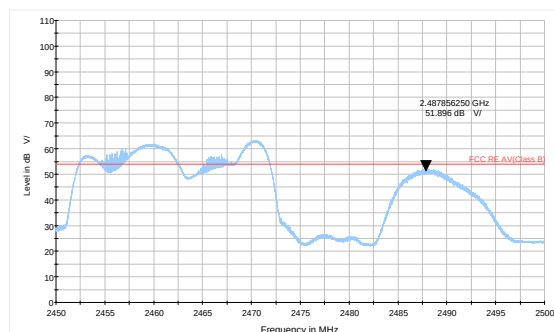
802.11ax HE20 -Channel 1 Peak



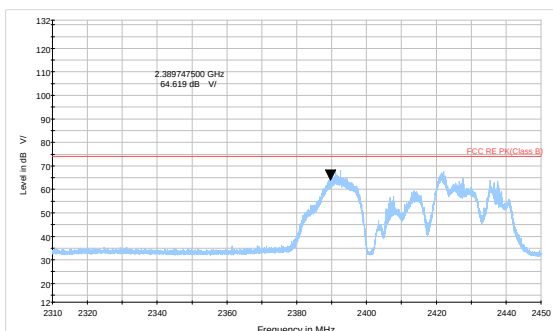
802.11ax HE20 -Channel 1 Average



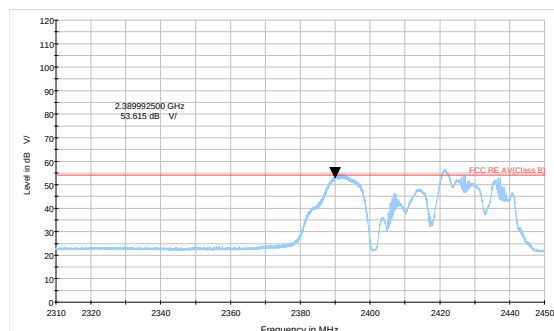
802.11ax HE20 -Channel 11 Peak



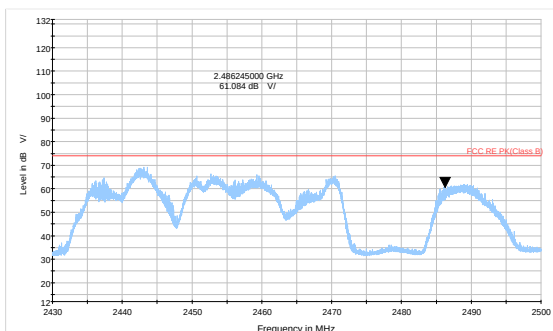
802.11ax HE20 -Channel 11 Average



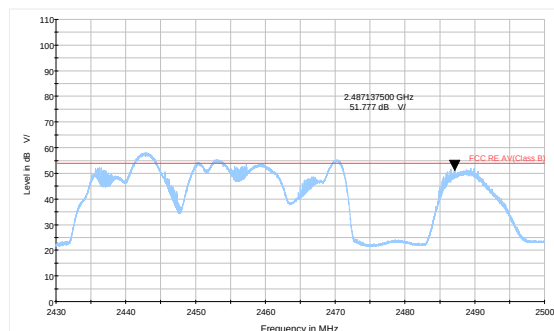
802.11ax HE40 -Channel 3 Peak



802.11ax HE40 -Channel 3 Average



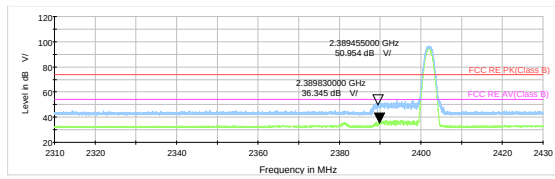
802.11ax HE40 -Channel 9 Peak



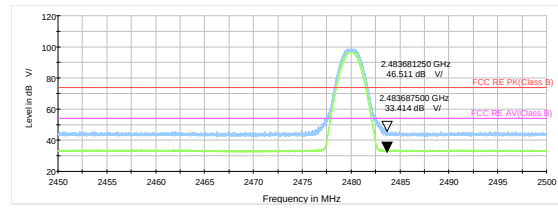
802.11ax HE40 -Channel 9 Average



During the test, the preliminary test was performed in both data rate for BLE, 1Mbps was selected as the worst case. The test data of the worst-case condition was recorded in this report



Bluetooth LE (1M) Channel 0 Peak& Average



Bluetooth LE (1M) Channel 39 Peak& Average

Result of RE

Test result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the Emissions in the frequency band 9kHz-30MHz and 18GHz-26.5GHz are more than 20dB below the limit are not reported.

The following graphs display the maximum values of horizontal and vertical by software.

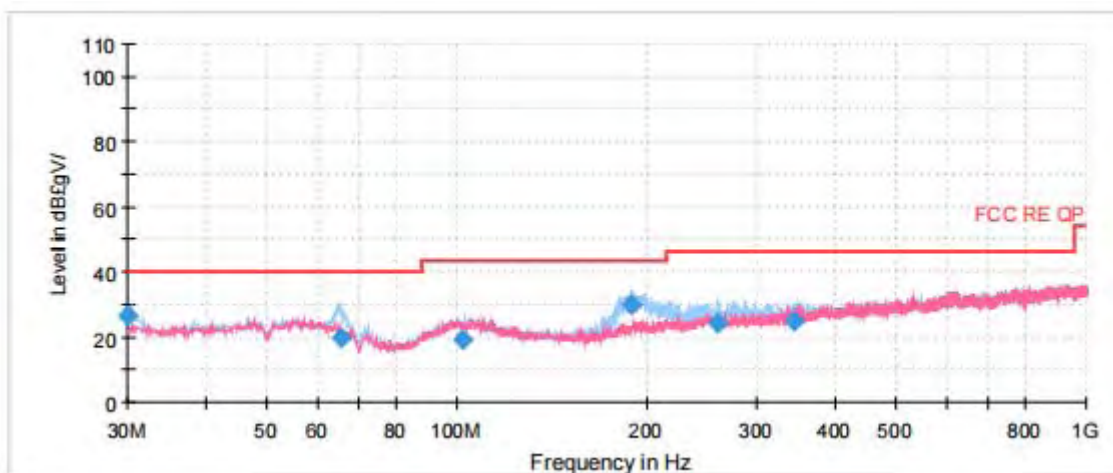
For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

After the pretest, MIMO was selected as the worst antenna for 802.11n HT20/ HT40, 802.11ax HE20/ HE40. SISO Antenna 1 was selected as the worst SISO antenna for 802.11b/g.

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 802.11n (HT40) CH6 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

A font (Level in dB μ V/m) in the test plot =(level in dB μ V/m)

Continuous TX mode:



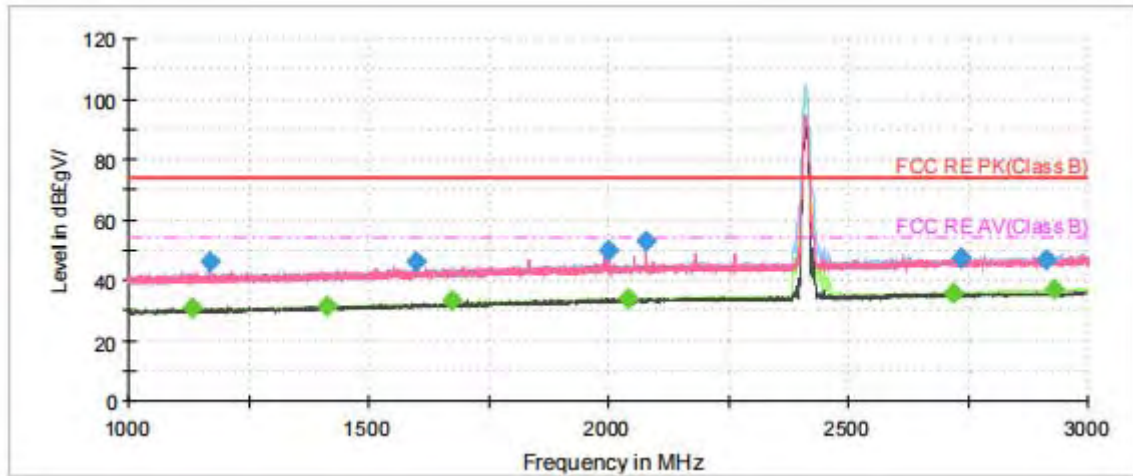
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dB μ V/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dB μ V/m)
30.080000	26.24	220.0	H	37.0	-5.1	13.76	40.00
65.442500	19.85	197.0	H	257.0	-7.2	20.15	40.00
102.311250	19.35	220.0	H	111.0	-5.7	24.15	43.50
190.006250	29.87	184.0	H	281.0	-6.3	13.63	43.50
258.798750	24.29	109.0	H	62.0	-4.3	21.71	46.00
343.838750	24.86	100.0	H	294.0	-1.9	21.14	46.00

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

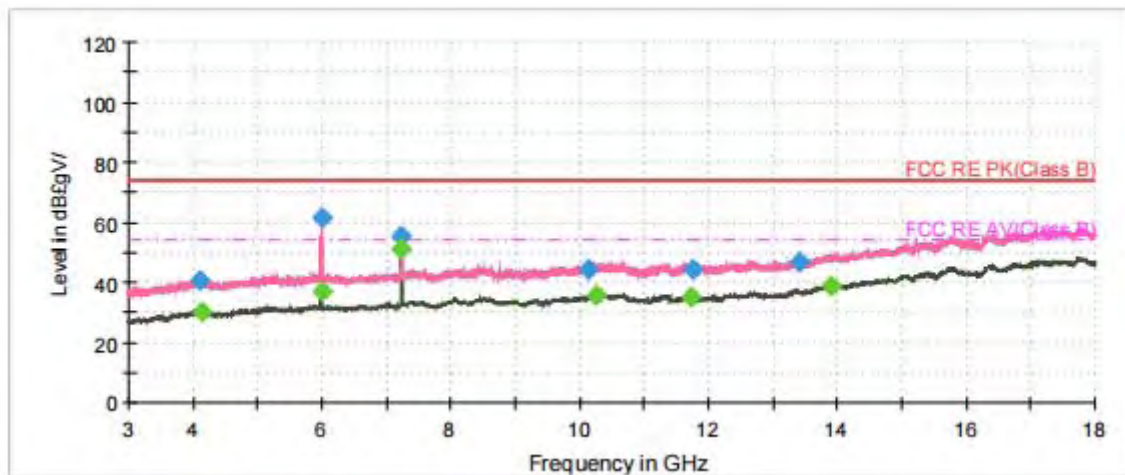
2. Margin = Limit – Quasi-Peak

802.11b CH1



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

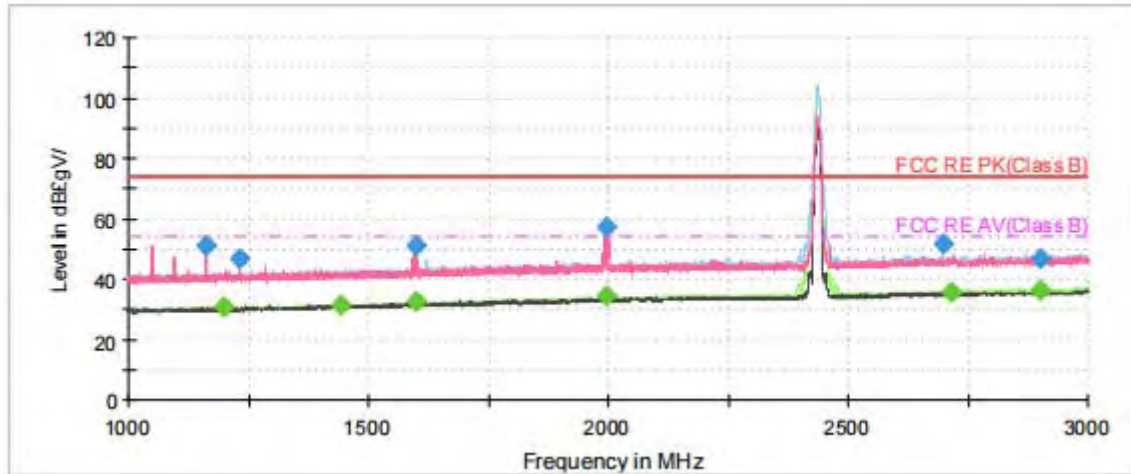


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1134.000000	---	30.72	54.00	23.28	200.0	H	29.0	-7.6
1167.500000	46.31	---	74.00	27.69	200.0	V	158.0	-7.5
1411.750000	---	31.63	54.00	22.37	100.0	H	148.0	-6.1
1598.750000	45.99	---	74.00	28.01	100.0	V	23.0	-5.0
1672.250000	---	33.07	54.00	20.93	200.0	H	1.0	-4.6
1998.750000	49.72	---	74.00	24.28	100.0	H	213.0	-2.7
2042.750000	---	34.01	54.00	19.99	200.0	H	40.0	-2.5
2078.250000	52.88	---	74.00	21.12	200.0	V	4.0	-2.3
2718.000000	---	35.62	54.00	18.38	100.0	H	213.0	0.6
2735.000000	47.25	---	74.00	26.75	200.0	H	179.0	0.7
2914.000000	46.72	---	74.00	27.28	100.0	H	329.0	1.3
2930.000000	---	37.12	54.00	16.88	200.0	H	51.0	1.4

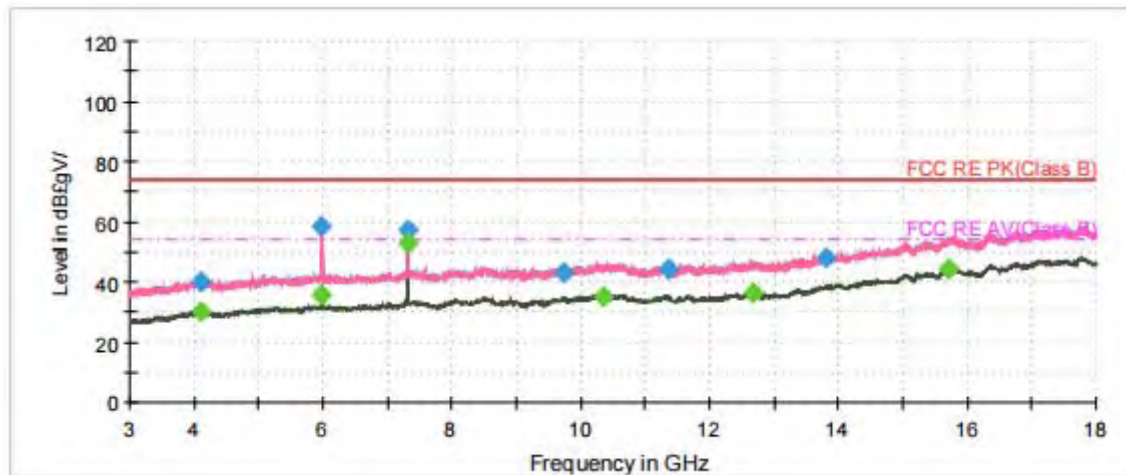
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11b CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



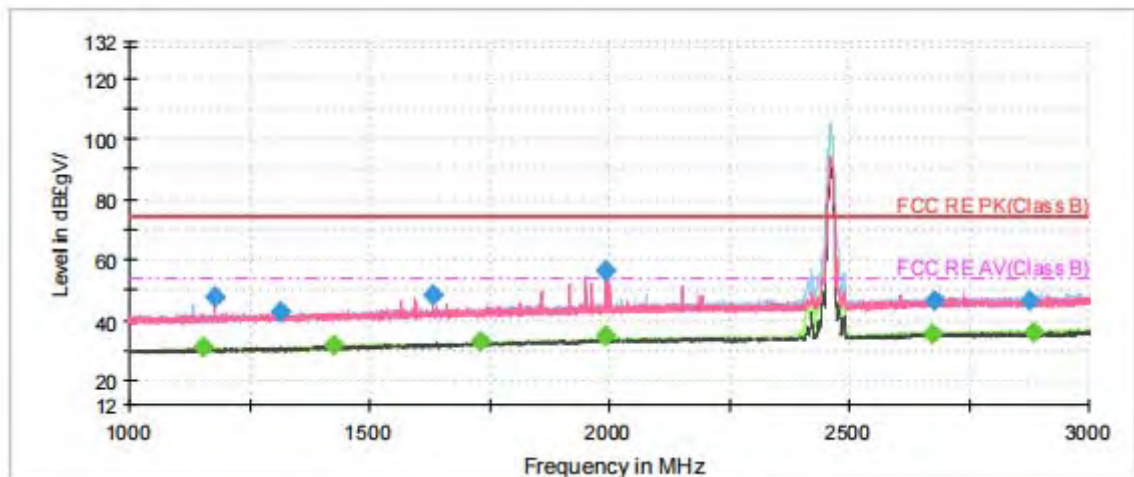
Radiates Emission from 3GHz to 18GHz



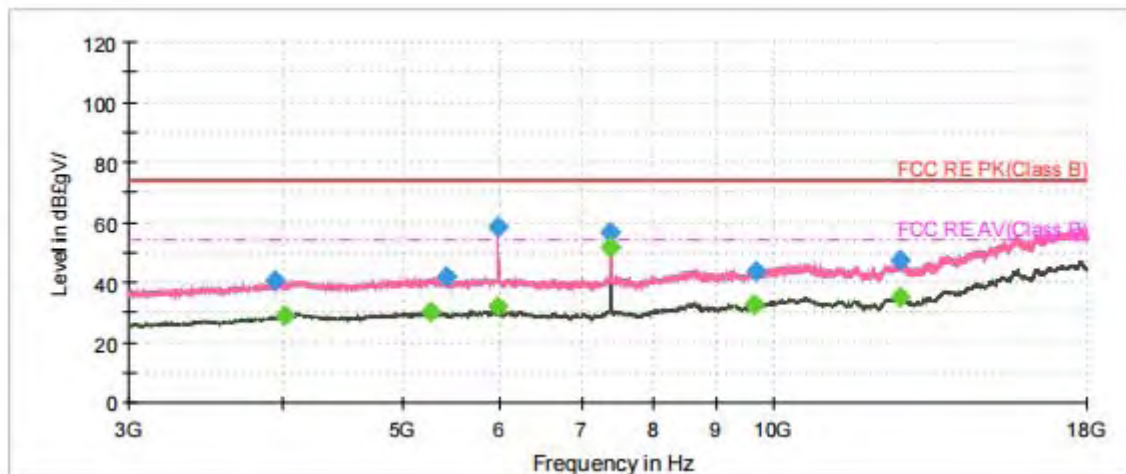
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4093.125000	40.11	---	74.00	33.89	200.0	H	0.0	-3.3
4095.000000	---	30.37	54.00	23.63	100.0	H	35.0	-3.2
5983.125000	58.26	---	74.00	15.74	100.0	V	251.0	-0.3
5983.125000	---	35.63	54.00	18.37	100.0	V	251.0	-0.3
7308.750000	57.31	---	74.00	16.69	100.0	V	123.0	1.4
7310.625000	---	52.96	54.00	1.04	100.0	V	123.0	1.4
9720.000000	43.22	---	74.00	30.78	100.0	H	167.0	4.1
10355.625000	---	34.89	54.00	19.11	100.0	H	81.0	5.8
11345.625000	44.53	---	74.00	29.47	200.0	H	73.0	5.7
12682.500000	---	36.61	54.00	17.39	100.0	H	14.0	7.5
13803.750000	47.99	---	74.00	26.01	200.0	H	273.0	10.4
15703.125000	---	44.21	54.00	9.79	100.0	H	0.0	13.9

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11b CH11



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

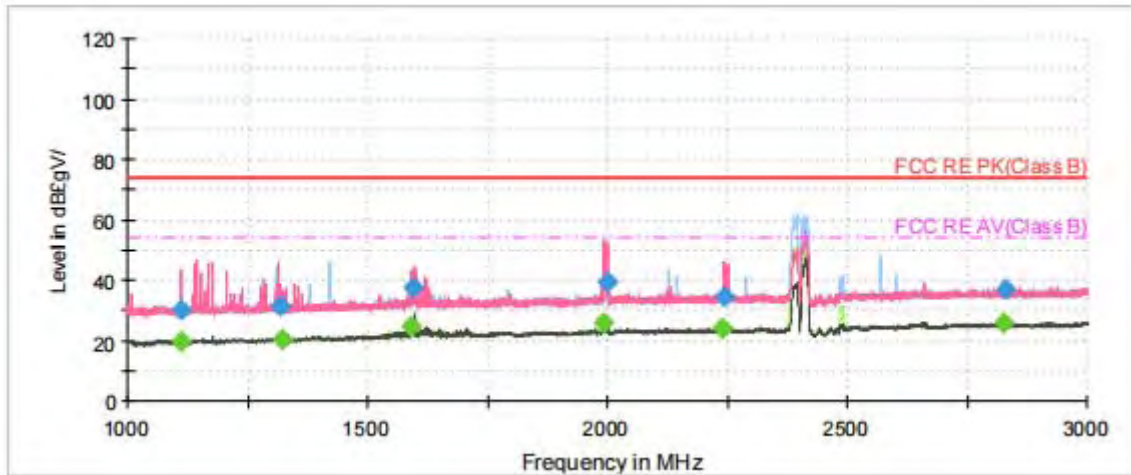


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3941.250000	40.37	---	74.00	33.63	100.0	H	351.0	-4.3
4010.625000	---	29.02	54.00	24.98	100.0	H	100.0	-3.8
5276.250000	---	30.28	54.00	23.72	200.0	V	243.0	-1.2
5439.375000	41.66	---	74.00	32.34	100.0	H	125.0	-1.3
5985.000000	---	31.81	54.00	22.19	100.0	V	10.0	-0.3
5985.000000	58.27	---	74.00	15.73	100.0	V	10.0	-0.3
7383.750000	---	51.79	54.00	2.21	100.0	V	226.0	1.5
7383.750000	56.61	---	74.00	17.39	100.0	V	226.0	1.5
9641.250000	---	32.32	54.00	21.68	100.0	H	326.0	4.0
9691.875000	43.59	---	74.00	30.41	200.0	V	349.0	4.1
12658.125000	47.33	---	74.00	26.67	200.0	V	7.0	7.4
12669.375000	---	35.17	54.00	18.83	100.0	H	100.0	7.4

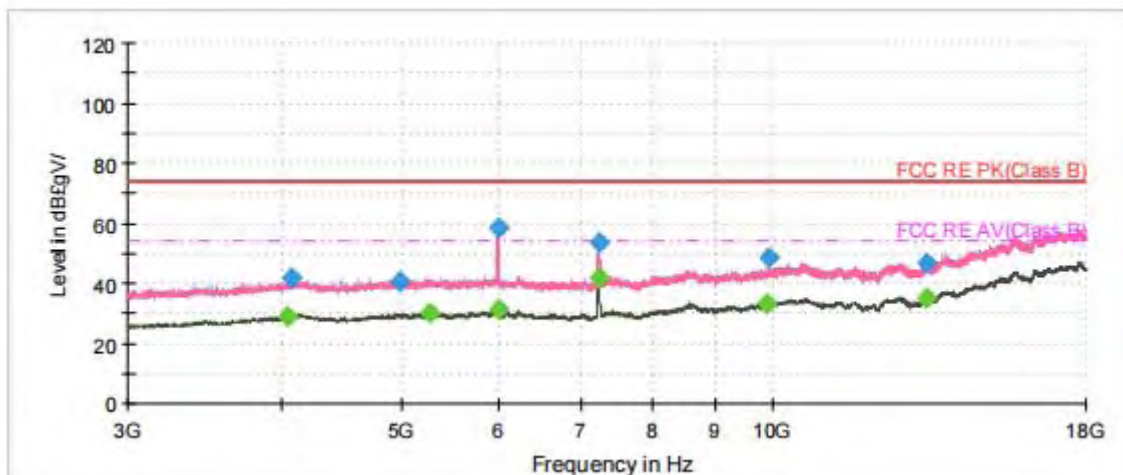
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11g CH1



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

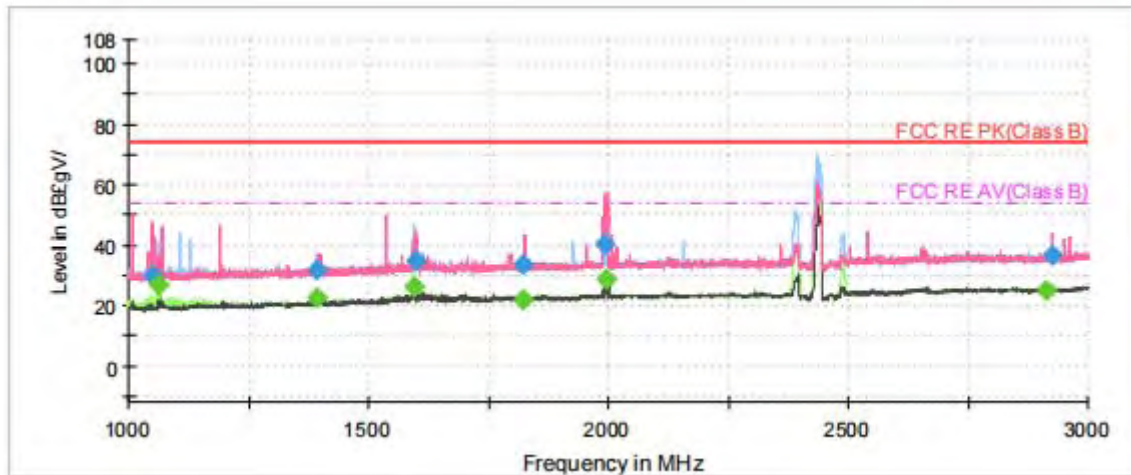


Radiates Emission from 3GHz to 18GHz

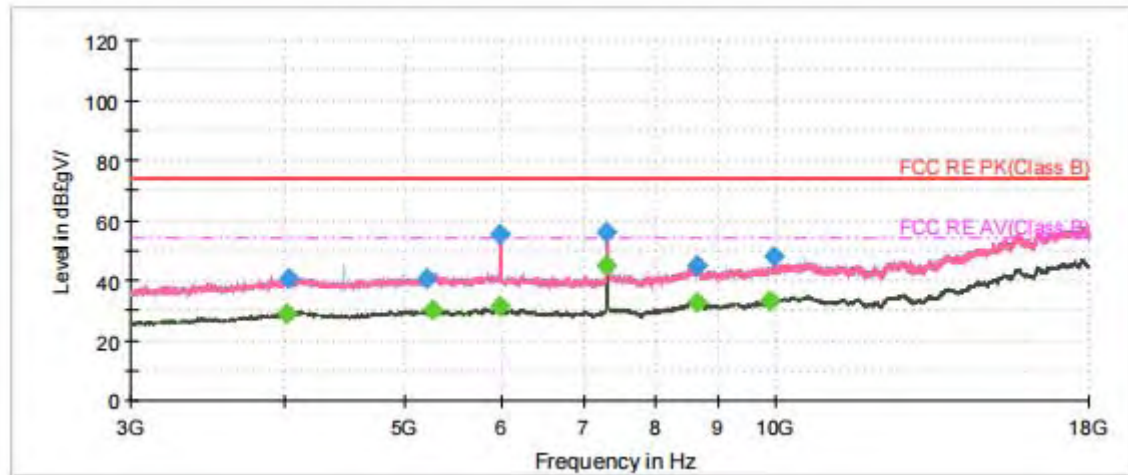
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1111.500000	30.18	---	74.00	43.82	100.0	V	0.0	-17.7
1112.500000	---	19.40	54.00	34.60	200.0	V	318.0	-17.7
1318.250000	31.25	---	74.00	42.75	200.0	H	94.0	-16.7
1321.750000	---	20.46	54.00	33.54	200.0	H	0.0	-16.7
1592.500000	---	24.36	54.00	29.64	100.0	V	218.0	-15.1
1596.000000	37.25	---	74.00	36.76	200.0	V	272.0	-15.1
1991.750000	---	26.01	54.00	27.99	200.0	V	255.0	-12.7
1998.250000	39.67	---	74.00	34.33	200.0	H	181.0	-12.7
2241.250000	---	23.72	54.00	30.28	200.0	H	21.0	-11.7
2244.500000	34.56	---	74.00	39.44	100.0	V	0.0	-11.7
2828.250000	---	25.67	54.00	28.33	100.0	V	88.0	-9.0
2829.750000	37.10	---	74.00	36.90	100.0	H	272.0	-9.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11g CH6



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

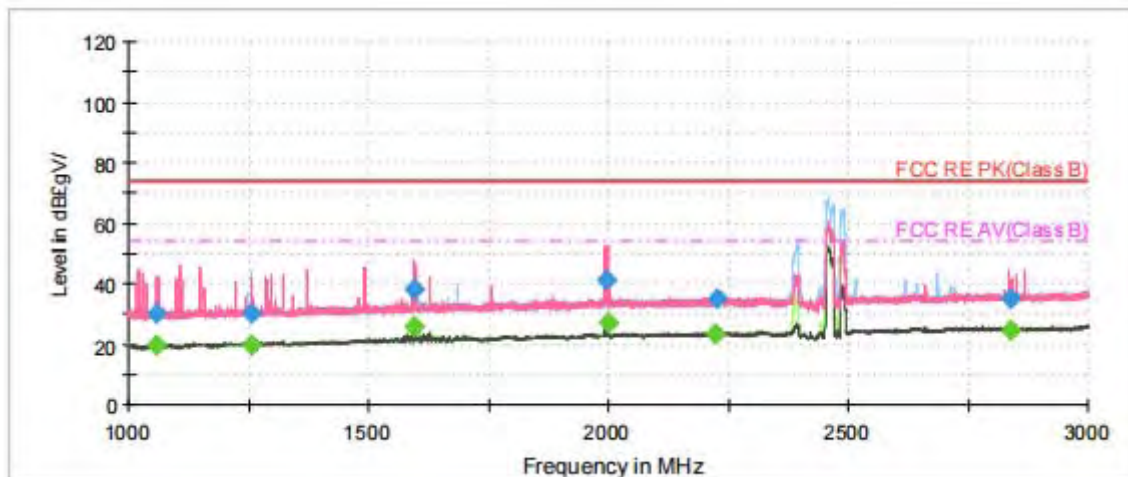


Radiates Emission from 3GHz to 18GHz

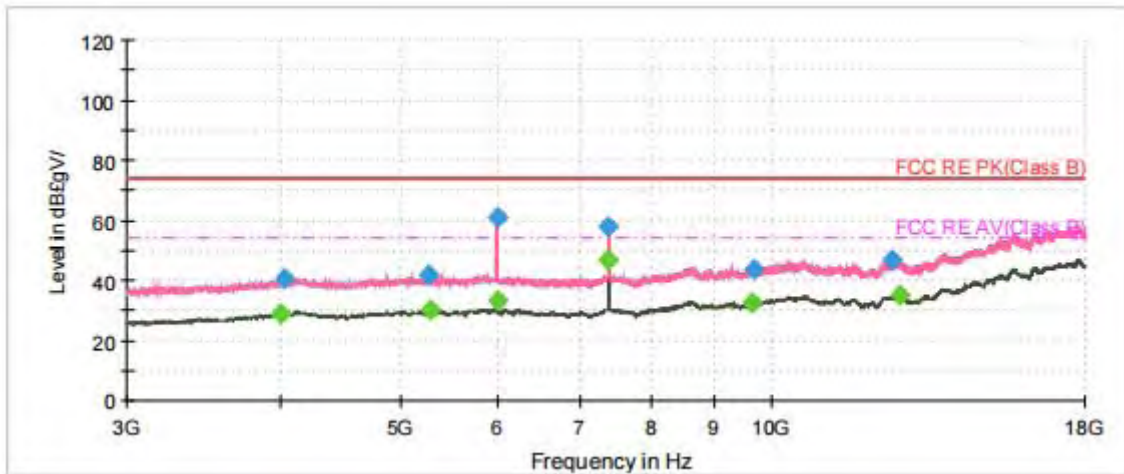
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1048.500000	29.78	---	74.00	44.22	100.0	H	335.0	-18.1
1063.750000	---	26.84	54.00	27.16	100.0	H	284.0	-18.0
1393.000000	---	22.16	54.00	31.84	100.0	H	318.0	-16.2
1393.500000	31.70	---	74.00	42.30	200.0	V	283.0	-16.2
1595.750000	---	26.08	54.00	27.92	200.0	V	289.0	-15.1
1601.000000	34.89	---	74.00	39.11	100.0	V	291.0	-15.0
1821.000000	33.81	---	74.00	40.19	100.0	H	340.0	-13.7
1821.750000	---	22.07	54.00	31.93	100.0	H	227.0	-13.7
1991.750000	40.07	---	74.00	33.93	100.0	H	170.0	-12.7
1997.250000	---	28.66	54.00	25.34	200.0	V	249.0	-12.7
2915.000000	---	24.96	54.00	29.04	100.0	H	290.0	-8.7
2923.750000	36.85	---	74.00	37.15	100.0	H	296.0	-8.7

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11g CH11



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

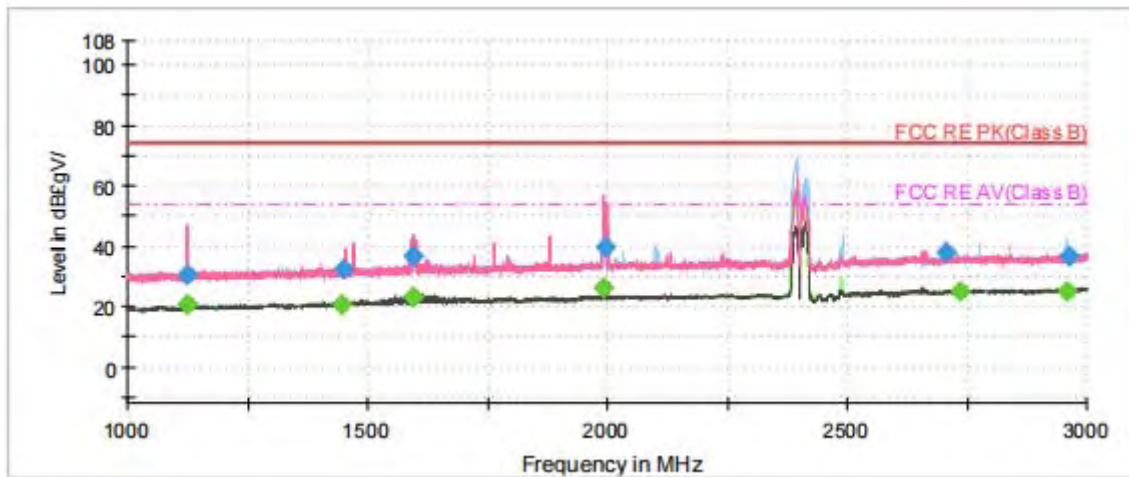


Radiates Emission from 3GHz to 18GHz

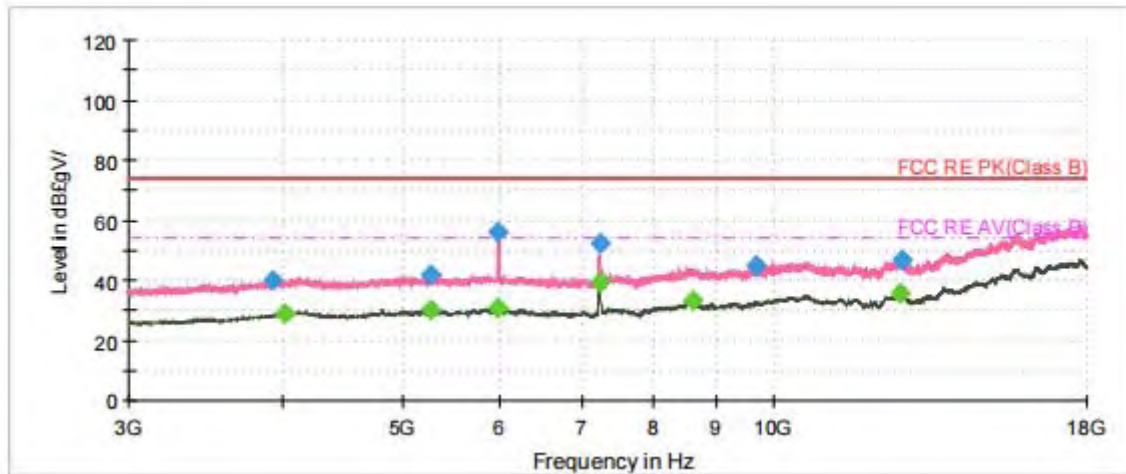
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4003.125000	---	29.11	54.00	24.89	100.0	V	91.0	-3.8
4033.125000	40.36	---	74.00	33.64	200.0	H	115.0	-3.6
5268.750000	41.89	---	74.00	32.11	100.0	H	307.0	-1.2
5283.750000	---	30.03	54.00	23.97	200.0	H	102.0	-1.2
5992.500000	---	33.34	54.00	20.66	100.0	V	336.0	-0.3
5992.500000	60.62	---	74.00	13.38	100.0	V	336.0	-0.3
7385.625000	---	46.61	54.00	7.39	100.0	V	225.0	1.5
7385.625000	57.55	---	74.00	16.45	100.0	V	225.0	1.5
9639.375000	---	32.69	54.00	21.31	200.0	V	56.0	4.0
9703.125000	43.68	---	74.00	30.32	200.0	H	289.0	4.1
12536.250000	46.97	---	74.00	27.03	200.0	H	185.0	7.1
12716.250000	---	35.11	54.00	18.89	100.0	V	5.0	7.5

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH1



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

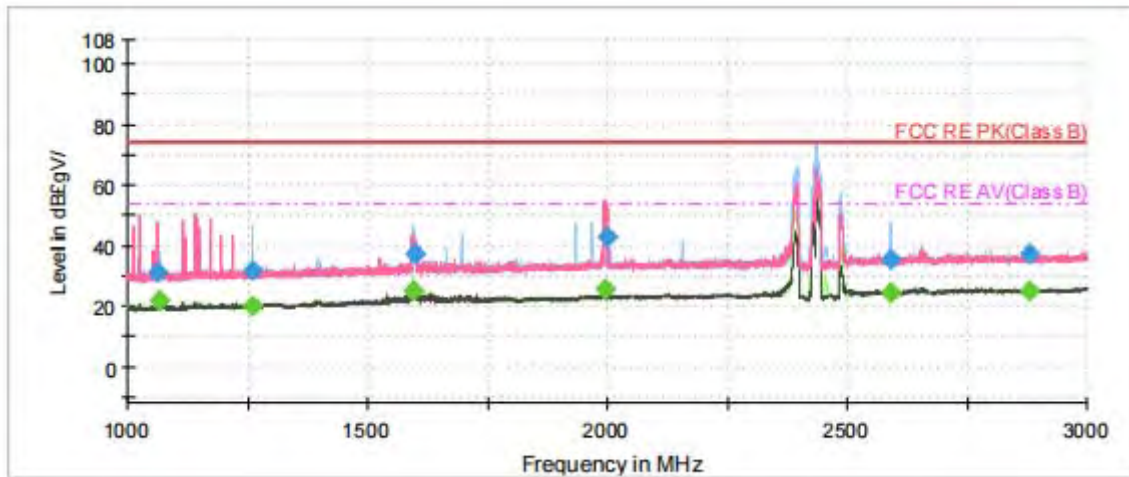


Radiates Emission from 3GHz to 18GHz

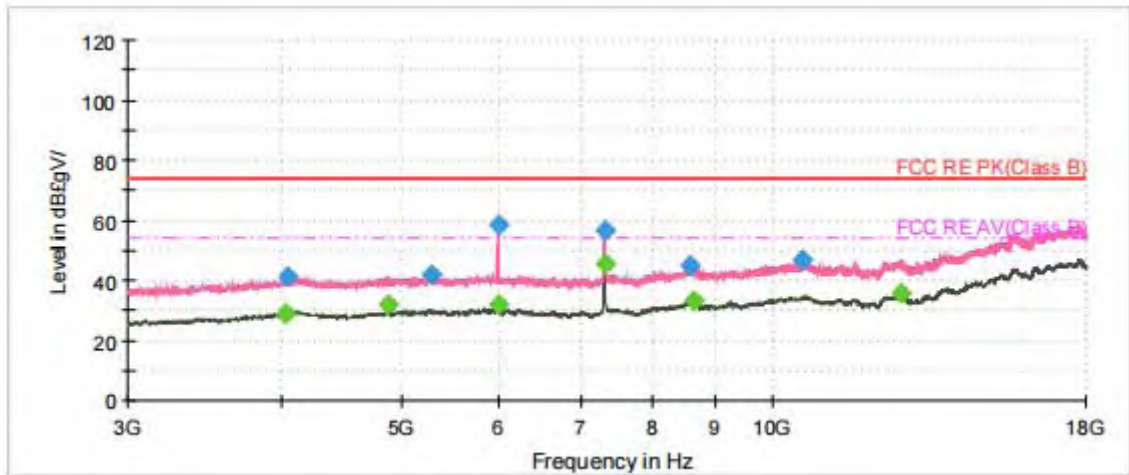
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1125.250000	30.28	---	74.00	43.72	200.0	V	304.0	-17.7
1125.500000	---	20.35	54.00	33.65	200.0	V	5.0	-17.7
1444.750000	---	20.52	54.00	33.48	100.0	H	0.0	-15.9
1451.000000	32.29	---	74.00	41.71	100.0	H	147.0	-15.8
1593.250000	---	23.04	54.00	30.96	200.0	H	161.0	-15.1
1594.500000	36.65	---	74.00	37.35	100.0	H	323.0	-15.1
1993.750000	---	26.01	54.00	27.99	200.0	V	177.0	-12.7
1995.500000	39.82	---	74.00	34.18	200.0	H	138.0	-12.7
2707.500000	38.08	---	74.00	35.92	100.0	V	229.0	-9.4
2735.000000	---	24.95	54.00	29.05	200.0	H	250.0	-9.3
2958.750000	---	24.73	54.00	29.27	100.0	H	253.0	-8.4
2961.250000	36.49	---	74.00	37.51	200.0	H	0.0	-8.4

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH6



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

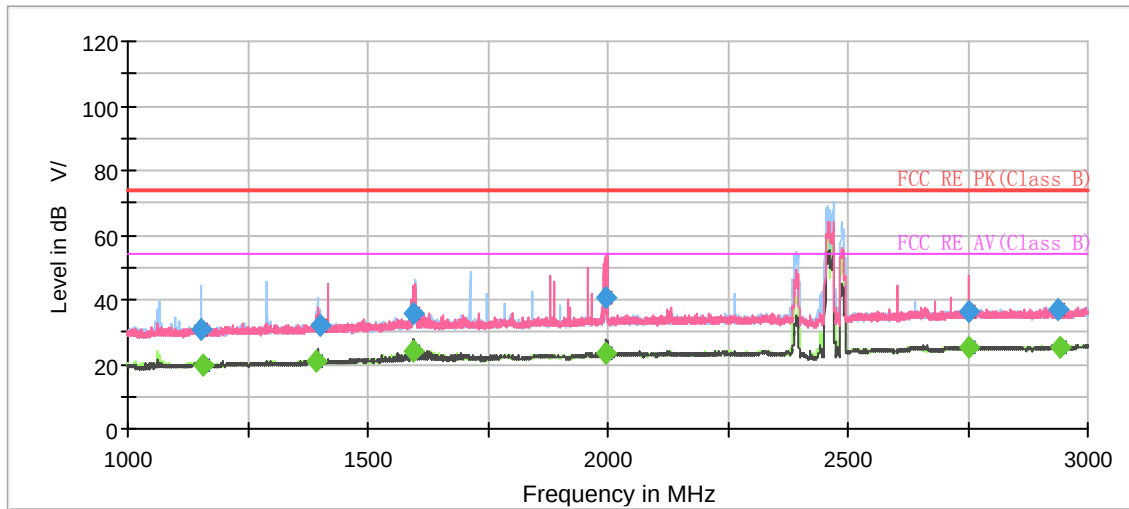


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1061.500000	31.20	---	74.00	42.80	100.0	H	331.0	-18.0
1065.500000	---	22.06	54.00	31.94	100.0	H	331.0	-18.0
1258.750000	31.73	---	74.00	42.27	200.0	H	5.0	-17.0
1259.500000	---	20.13	54.00	33.87	200.0	H	278.0	-17.0
1593.000000	---	24.79	54.00	29.21	100.0	H	314.0	-15.1
1600.000000	37.23	---	74.00	36.77	200.0	V	287.0	-15.0
1997.750000	---	25.40	54.00	28.60	100.0	V	269.0	-12.7
1998.250000	42.55	---	74.00	31.45	200.0	H	148.0	-12.7
2589.250000	35.33	---	74.00	38.67	100.0	H	353.0	-10.0
2591.750000	---	24.36	54.00	29.64	200.0	H	313.0	-10.0
2879.000000	---	24.85	54.00	29.15	200.0	H	86.0	-8.8
2881.500000	37.20	---	74.00	36.80	100.0	H	326.0	-8.8

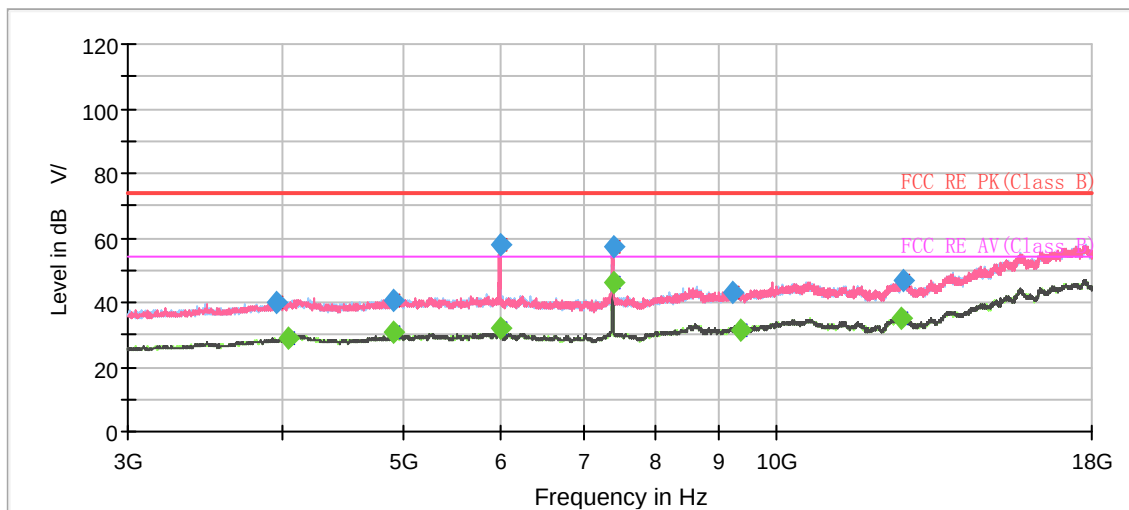
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT20) CH11



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



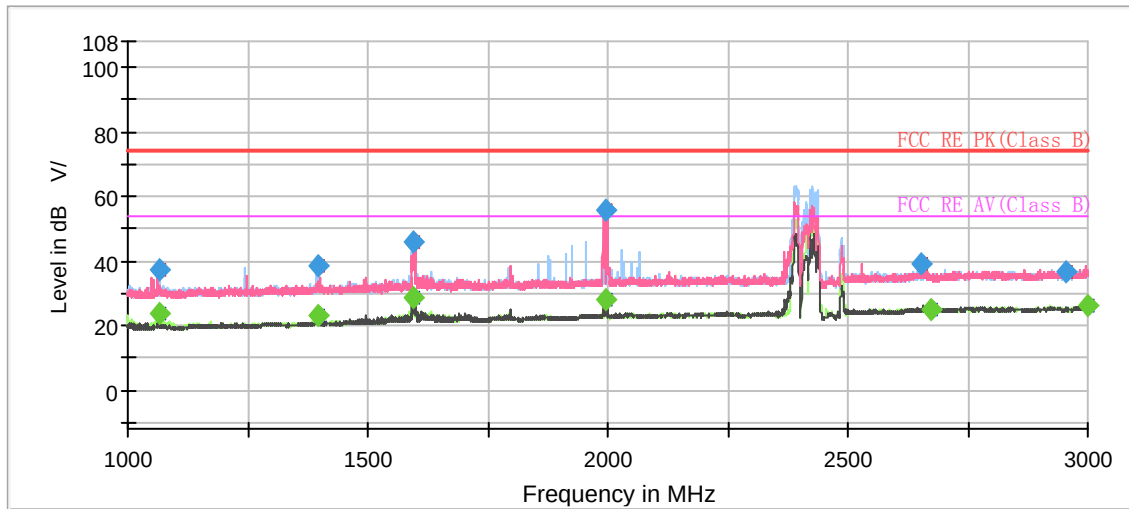
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1153.750000	31.07	---	74.00	42.93	200.0	H	171.0	-17.5
1155.000000	---	19.96	54.00	34.04	200.0	H	105.0	-17.5
1391.250000	---	21.04	54.00	32.96	100.0	H	310.0	-16.2
1400.250000	31.94	---	74.00	42.06	200.0	H	10.0	-16.2
1596.000000	35.91	---	74.00	38.09	100.0	V	68.0	-15.1
1596.750000	---	23.96	54.00	30.04	100.0	H	321.0	-15.1
1994.750000	---	23.49	54.00	30.51	200.0	H	206.0	-12.7
1996.750000	40.38	---	74.00	33.62	200.0	H	28.0	-12.7
2753.250000	---	25.39	54.00	28.61	200.0	V	209.0	-9.2
2754.000000	36.58	---	74.00	37.42	200.0	H	297.0	-9.2
2939.750000	36.73	---	74.00	37.27	200.0	H	48.0	-8.6
2940.250000	---	25.30	54.00	28.70	100.0	H	338.0	-8.6

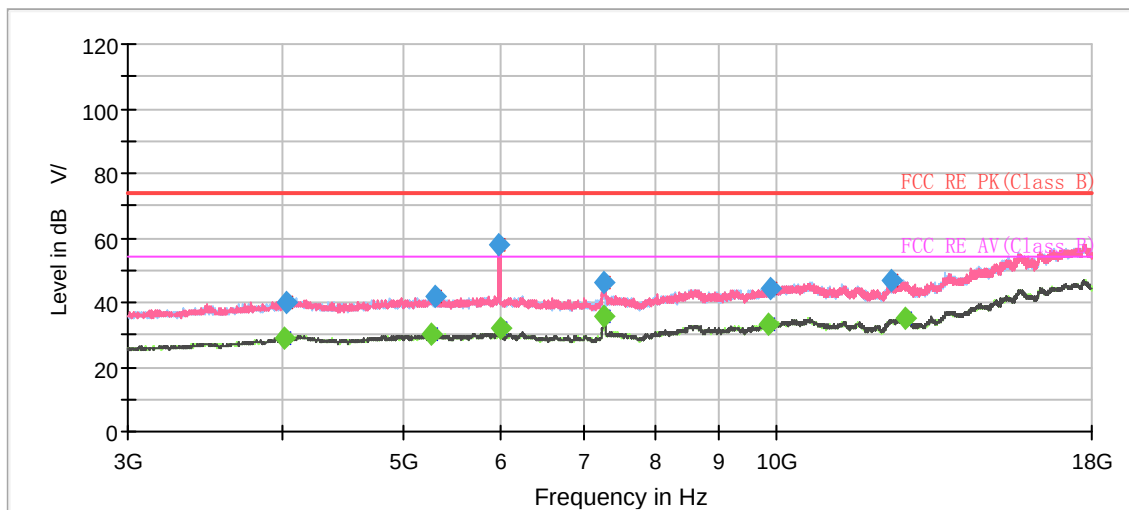
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH3



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

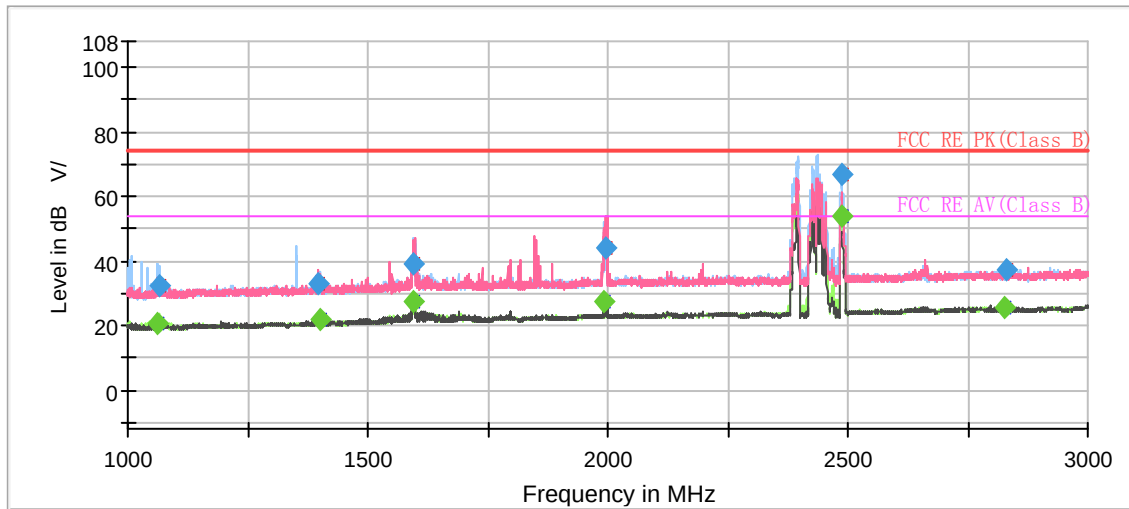


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1064.250000	36.93	---	74.00	37.07	100.0	H	311.0	-18.0
1065.500000	---	23.93	54.00	30.07	200.0	H	297.0	-18.0
1396.000000	38.34	---	74.00	35.66	100.0	H	294.0	-16.2
1396.000000	---	23.07	54.00	30.93	100.0	H	294.0	-16.2
1596.250000	46.10	---	74.00	27.90	100.0	H	329.0	-15.1
1596.250000	---	28.89	54.00	25.11	100.0	H	329.0	-15.1
1996.000000	55.87	---	74.00	18.13	200.0	V	261.0	-12.7
1997.750000	---	28.11	54.00	25.89	200.0	V	61.0	-12.7
2654.250000	39.21	---	74.00	34.79	200.0	V	313.0	-9.6
2673.000000	---	24.71	54.00	29.29	100.0	H	346.0	-9.6
2953.750000	36.53	---	74.00	37.47	200.0	H	94.0	-8.4
2998.250000	---	26.19	54.00	27.81	100.0	H	202.0	-8.1

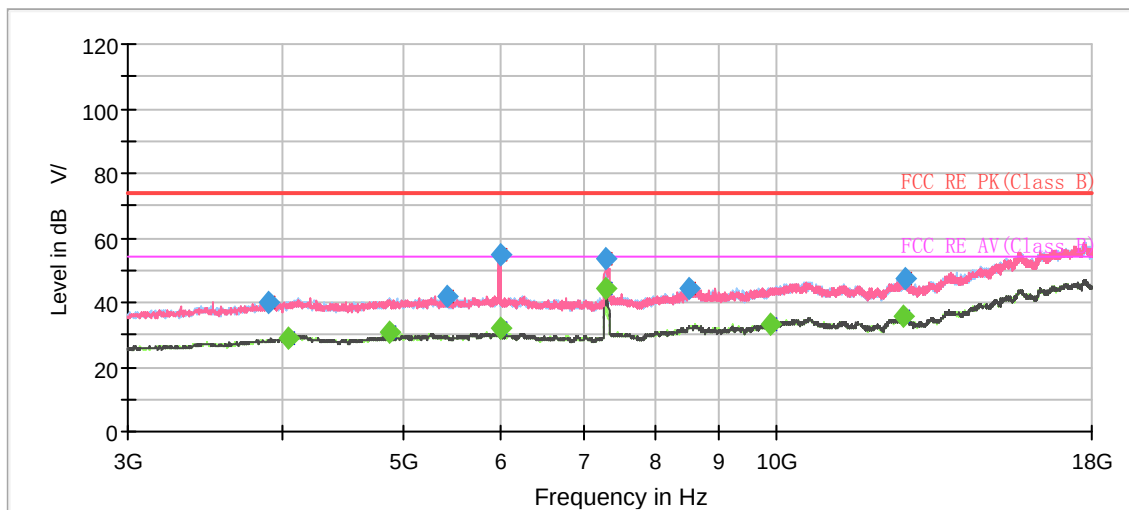
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

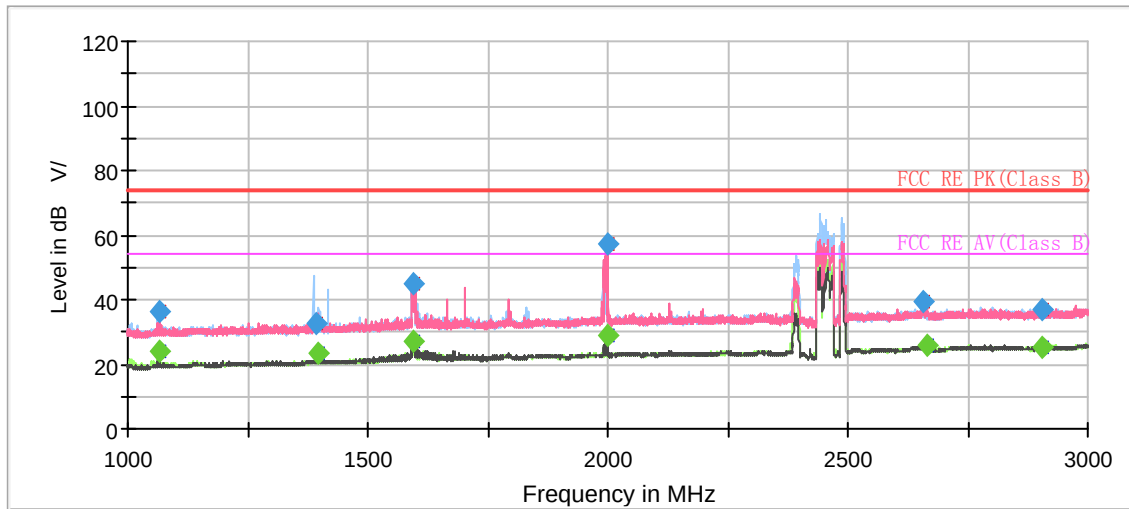


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1060.250000	---	20.61	54.00	33.39	100.0	H	324.0	-18.1
1064.250000	32.30	---	74.00	41.70	200.0	H	309.0	-18.0
1395.000000	32.82	---	74.00	41.18	200.0	H	148.0	-16.2
1399.500000	---	22.06	54.00	31.94	200.0	V	145.0	-16.2
1595.750000	---	27.29	54.00	26.71	200.0	V	279.0	-15.1
1596.000000	38.88	---	74.00	35.12	100.0	H	330.0	-15.1
1993.000000	---	27.16	54.00	26.84	200.0	V	279.0	-12.7
1997.750000	44.19	---	74.00	29.81	100.0	V	359.0	-12.7
2825.000000	---	25.24	54.00	28.76	200.0	H	240.0	-9.0
2830.000000	37.18	---	74.00	36.82	100.0	V	16.0	-9.0
3903.750000	40.26	---	74.00	33.74	200.0	H	118.0	-4.5
4040.625000	---	29.10	54.00	24.90	100.0	H	215.0	-3.6

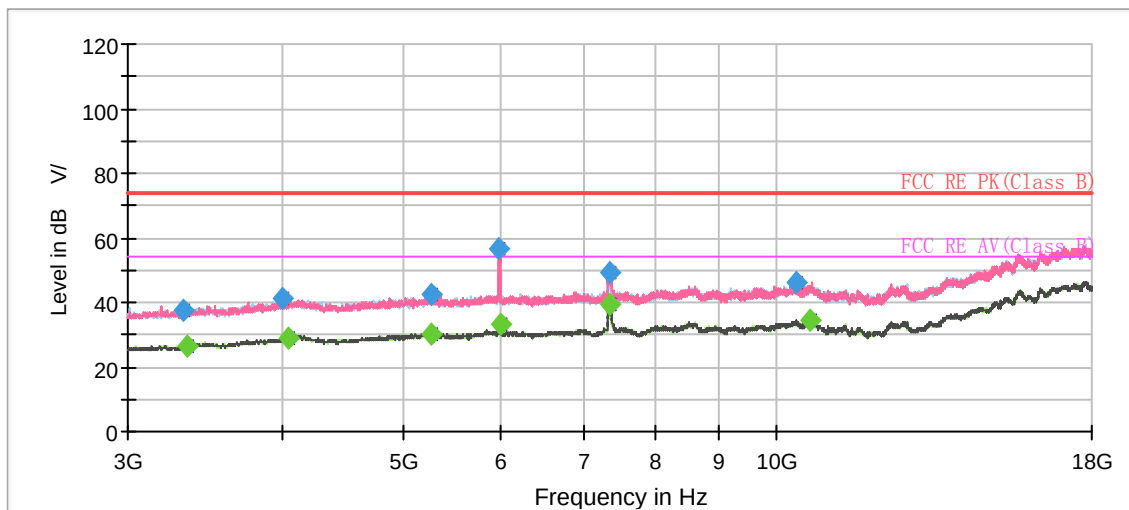
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11n (HT40) CH9



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

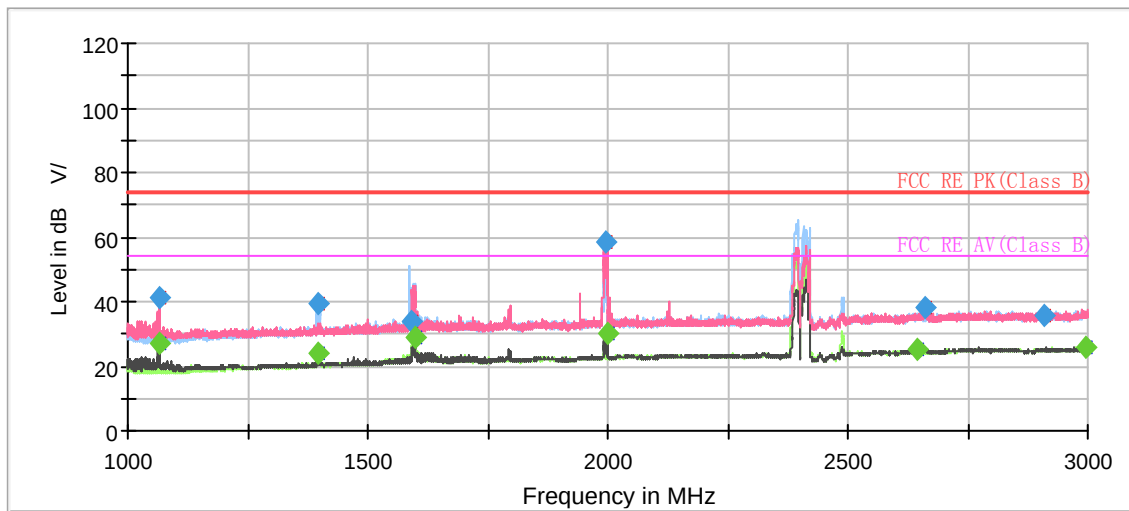


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1064.250000	---	24.15	54.00	29.85	200.0	H	12.0	-18.0
1065.000000	36.26	---	74.00	37.74	200.0	H	12.0	-18.0
1393.000000	32.82	---	74.00	41.18	200.0	H	336.0	-16.2
1397.250000	---	23.42	54.00	30.58	100.0	H	297.0	-16.2
1594.000000	---	27.28	54.00	26.72	100.0	V	234.0	-15.1
1595.750000	45.13	---	74.00	28.87	200.0	V	276.0	-15.1
2000.500000	---	28.95	54.00	25.05	200.0	V	294.0	-12.6
2000.500000	57.30	---	74.00	16.70	200.0	V	294.0	-12.6
2657.750000	39.19	---	74.00	34.81	200.0	H	353.0	-9.6
2665.500000	---	25.85	54.00	28.15	200.0	V	316.0	-9.6
2905.500000	37.01	---	74.00	36.99	200.0	V	15.0	-8.7
2906.500000	---	25.24	54.00	28.76	200.0	V	183.0	-8.7

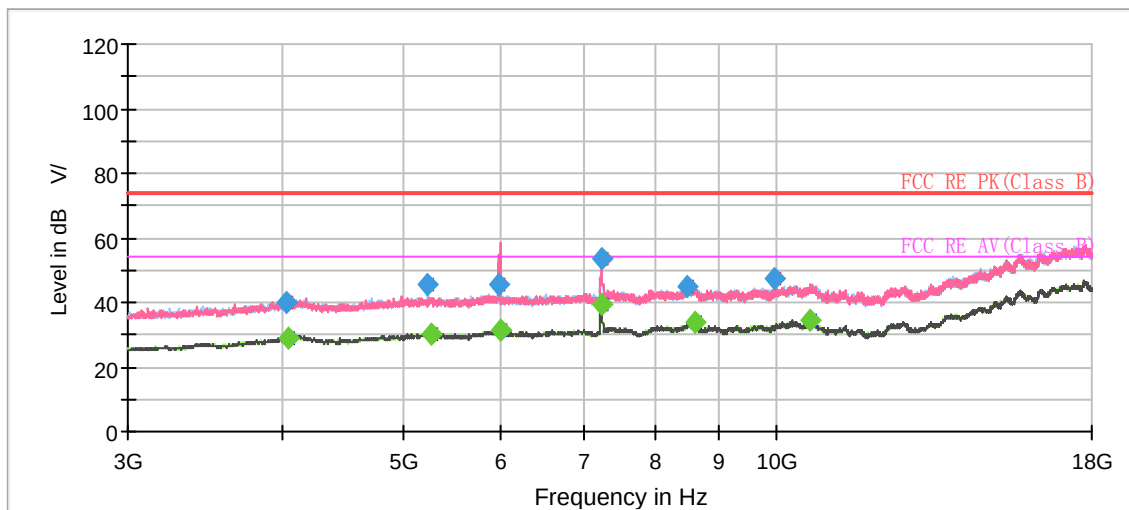
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE20) CH1



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

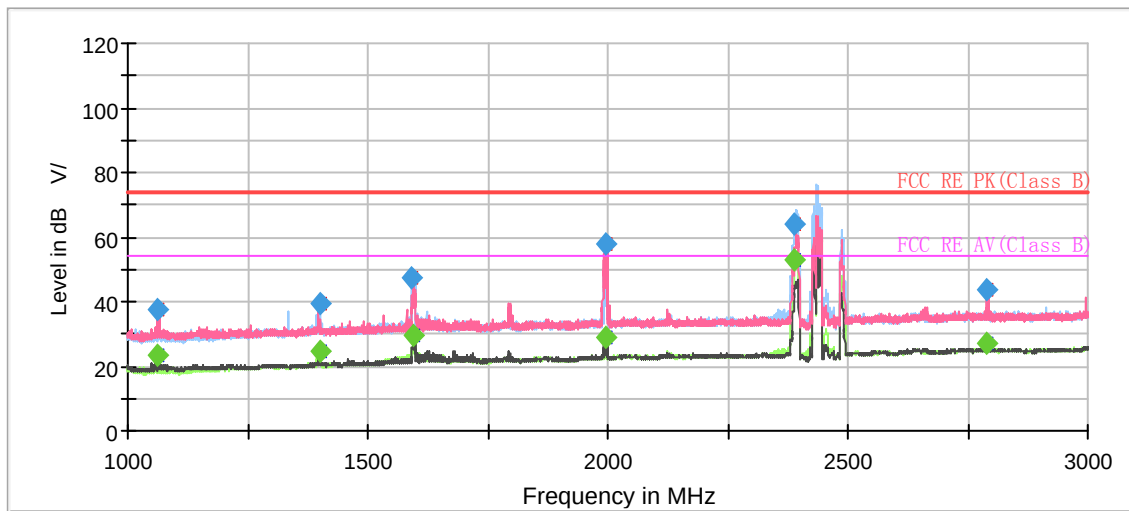


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1064.500000	41.30	---	74.00	32.70	200.0	V	292.0	-18.0
1064.750000	---	27.15	54.00	26.85	200.0	V	292.0	-18.0
1395.000000	---	23.81	54.00	30.19	100.0	H	285.0	-16.2
1397.000000	39.49	---	74.00	34.51	100.0	H	315.0	-16.2
1591.500000	34.06	---	74.00	39.94	100.0	H	290.0	-15.1
1598.000000	---	28.82	54.00	25.18	200.0	H	0.0	-15.1
1997.750000	58.48	---	74.00	15.52	200.0	V	296.0	-12.7
2000.000000	---	30.37	54.00	23.63	100.0	V	295.0	-12.7
2645.250000	---	24.93	54.00	29.07	100.0	H	337.0	-9.7
2661.750000	38.13	---	74.00	35.87	200.0	V	73.0	-9.6
2908.500000	35.73	---	74.00	38.27	200.0	H	220.0	-8.7
2997.000000	---	26.11	54.00	27.89	100.0	H	58.0	-8.1

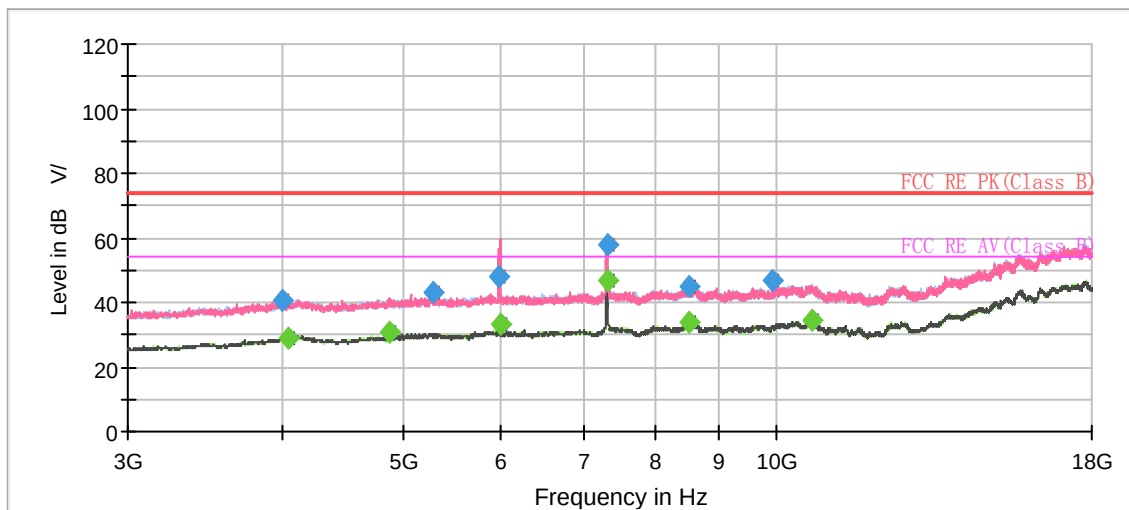
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE20) CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

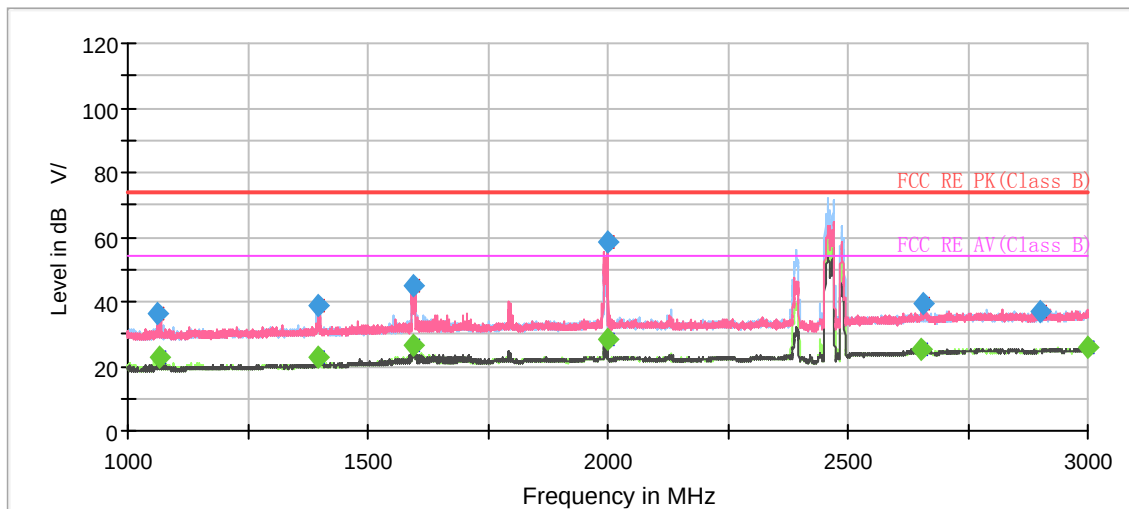


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1062.750000	37.37	---	74.00	36.63	100.0	V	297.0	-18.0
1062.750000	---	23.64	54.00	30.36	200.0	V	296.0	-18.0
1399.500000	39.44	---	74.00	34.56	100.0	H	325.0	-16.2
1399.500000	---	24.35	54.00	29.65	100.0	H	325.0	-16.2
1592.500000	47.39	---	74.00	26.61	100.0	H	320.0	-15.1
1595.750000	---	29.31	54.00	24.69	200.0	V	267.0	-15.1
1996.000000	---	29.11	54.00	24.89	200.0	V	301.0	-12.7
1996.000000	57.83	---	74.00	16.17	200.0	V	301.0	-12.7
2388.000000	64.18	---	74.00	9.82	100.0	H	276.0	-11.2
2389.750000	---	53.09	54.00	0.91	100.0	H	281.0	-11.2
2789.250000	43.63	---	74.00	30.37	100.0	V	297.0	-9.1
2789.250000	---	26.94	54.00	27.06	100.0	V	297.0	-9.1

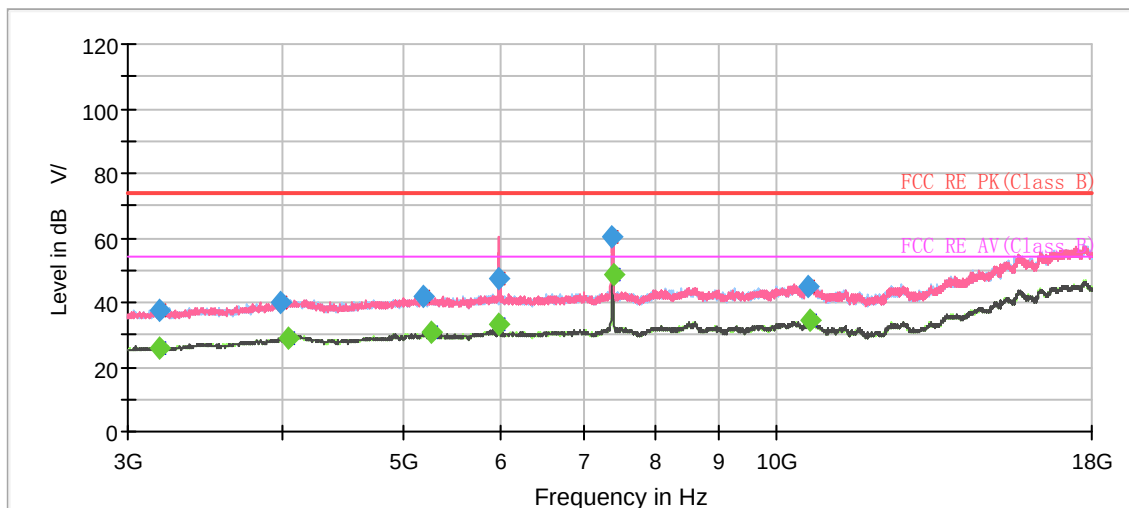
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE20) CH11



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

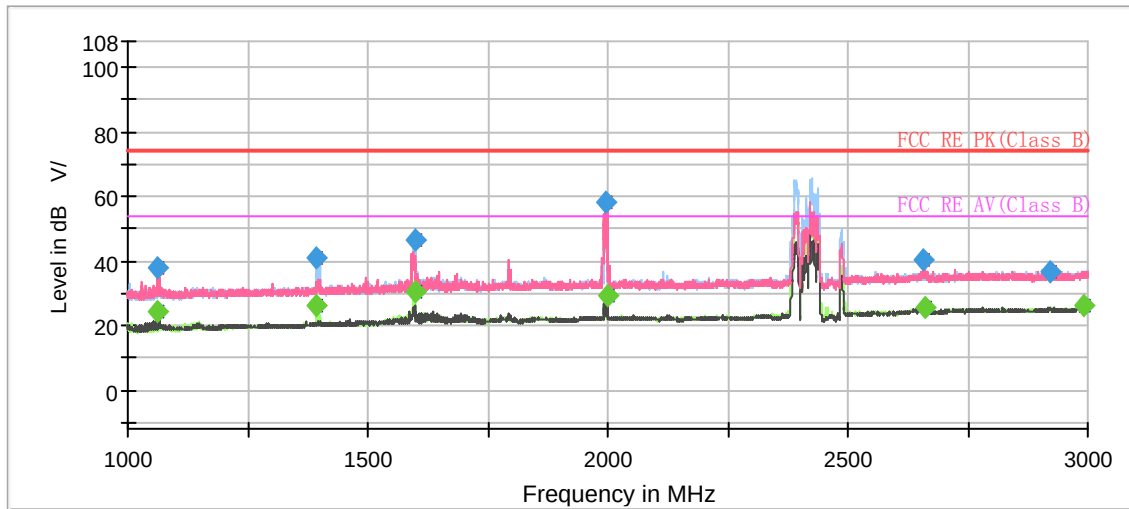


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1063.500000	36.17	---	74.00	37.83	100.0	H	1.0	-18.0
1066.500000	---	22.52	54.00	31.48	200.0	V	287.0	-18.0
1395.000000	---	22.99	54.00	31.01	100.0	V	19.0	-16.2
1397.500000	39.03	---	74.00	34.97	100.0	H	311.0	-16.2
1595.250000	44.84	---	74.00	29.16	200.0	H	0.0	-15.1
1595.500000	---	26.53	54.00	27.47	200.0	V	243.0	-15.1
1998.750000	---	28.36	54.00	25.64	200.0	V	302.0	-12.7
1998.750000	58.30	---	74.00	15.71	200.0	V	302.0	-12.7
2654.250000	---	25.27	54.00	28.73	200.0	V	312.0	-9.6
2657.750000	39.53	---	74.00	34.47	100.0	V	310.0	-9.6
2901.250000	36.95	---	74.00	37.05	200.0	H	145.0	-8.8
3000.000000	---	25.83	54.00	28.17	100.0	H	238.0	-8.1

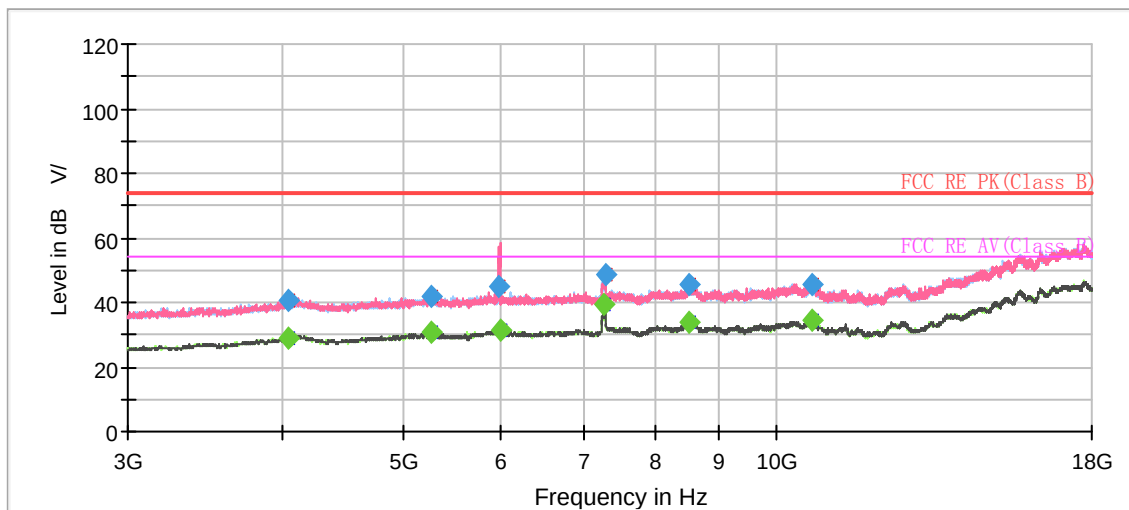
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE40) CH3



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

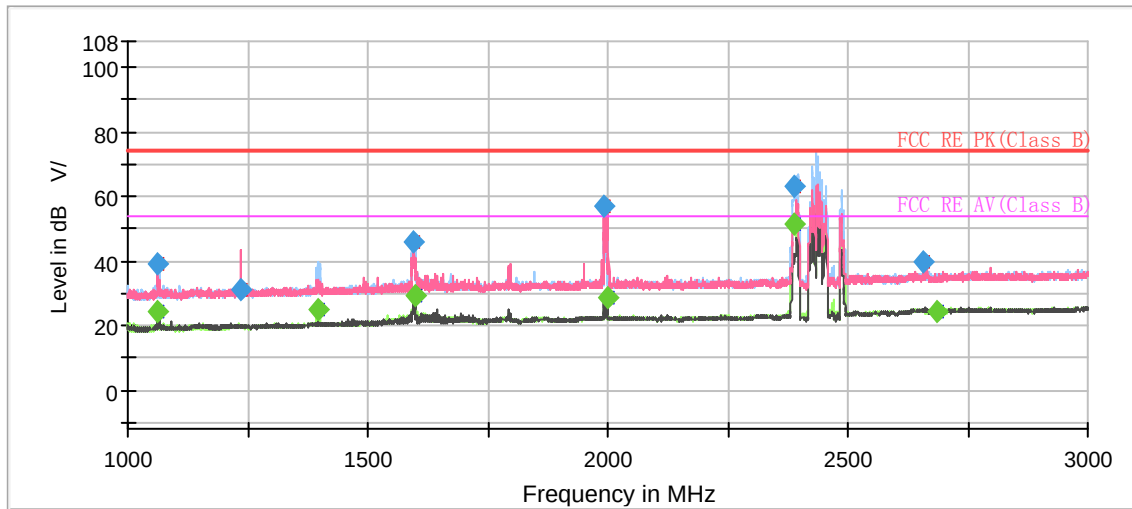


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1064.000000	37.77	---	74.00	36.23	100.0	H	321.0	-18.0
1064.000000	---	24.22	54.00	29.78	100.0	H	321.0	-18.0
1394.500000	40.65	---	74.00	33.35	100.0	H	317.0	-16.2
1394.500000	---	25.86	54.00	28.14	100.0	H	317.0	-16.2
1597.500000	46.56	---	74.00	27.45	200.0	H	3.0	-15.1
1597.500000	---	30.76	54.00	23.24	200.0	H	3.0	-15.1
1996.250000	58.25	---	74.00	15.75	200.0	V	298.0	-12.7
1999.250000	---	29.39	54.00	24.61	100.0	V	288.0	-12.7
2655.500000	40.33	---	74.00	33.67	200.0	V	314.0	-9.6
2659.250000	---	25.41	54.00	28.59	200.0	V	314.0	-9.6
2921.500000	36.58	---	74.00	37.42	100.0	H	252.0	-8.7
2993.500000	---	26.15	54.00	27.85	200.0	V	58.0	-8.1

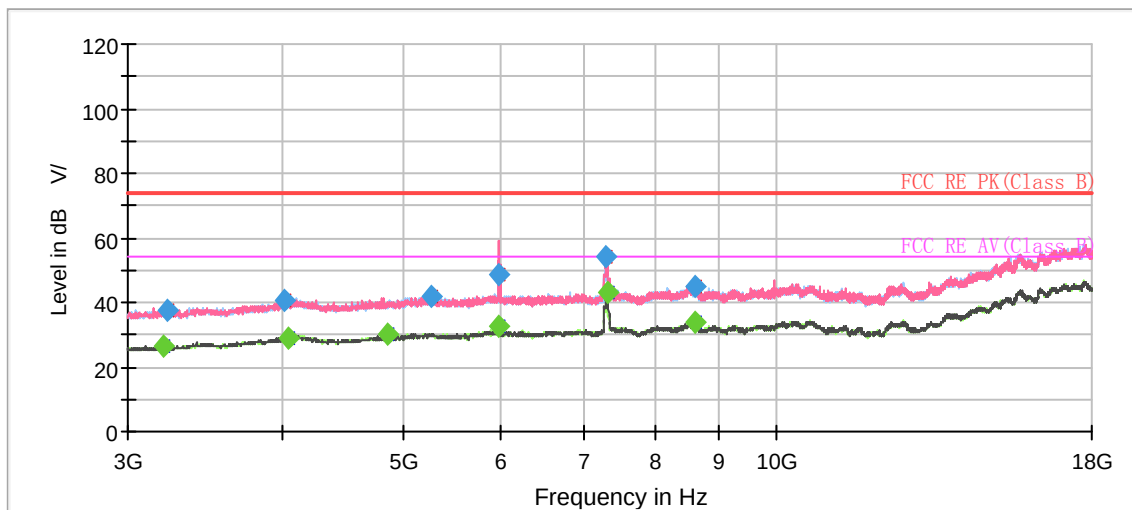
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE40) CH6



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



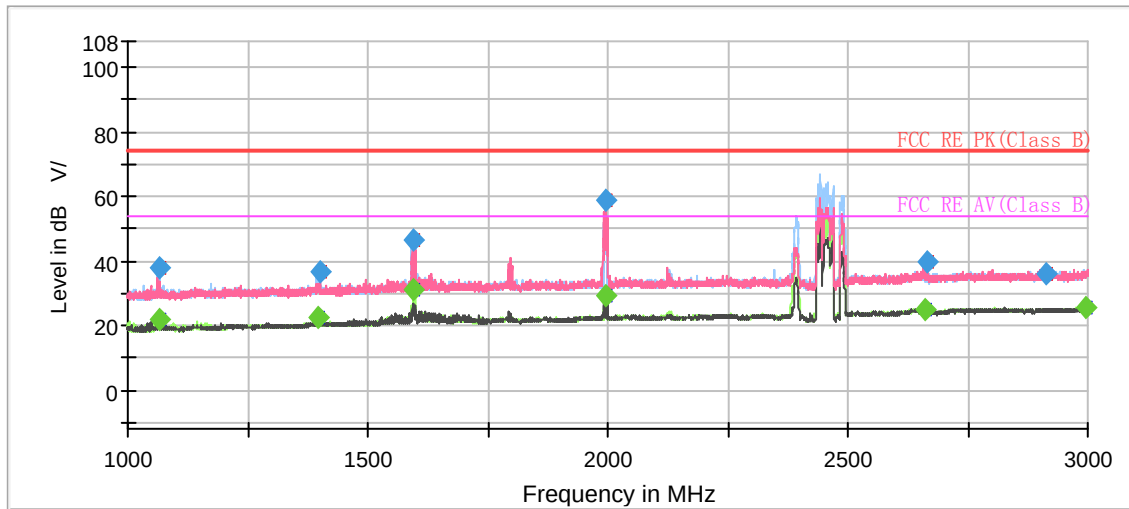
Radiates Emission from 3GHz to 18GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1062.000000	38.98	---	74.00	35.02	100.0	H	283.0	-18.0
1063.250000	---	24.46	54.00	29.54	100.0	H	345.0	-18.0
1234.500000	31.31	---	74.00	42.69	100.0	V	238.0	-17.1
1394.750000	---	24.81	54.00	29.19	100.0	H	318.0	-16.2
1596.500000	45.91	---	74.00	28.09	200.0	H	6.0	-15.1
1597.750000	---	29.08	54.00	24.92	100.0	H	322.0	-15.1
1990.750000	56.62	---	74.00	17.38	200.0	V	287.0	-12.7
2000.500000	---	28.70	54.00	25.30	200.0	V	282.0	-12.6
2386.750000	63.04	---	74.00	10.96	100.0	H	274.0	-11.2
2388.750000	---	51.17	54.00	2.83	100.0	H	274.0	-11.2
2657.750000	39.56	---	74.00	34.44	200.0	V	317.0	-9.6
2684.250000	---	24.09	54.00	29.91	100.0	H	205.0	-9.5

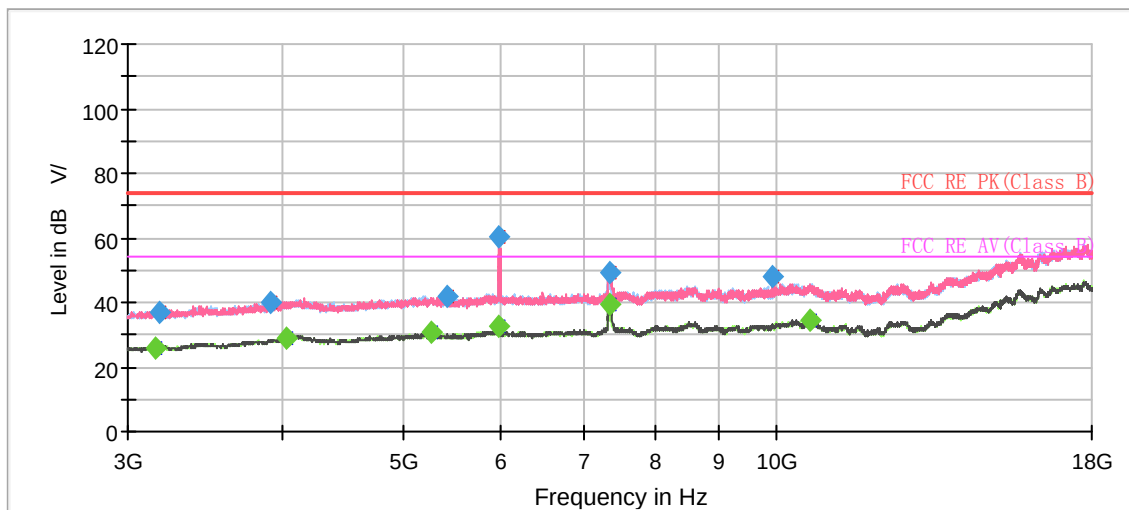
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

802.11ax (HE40) CH9



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

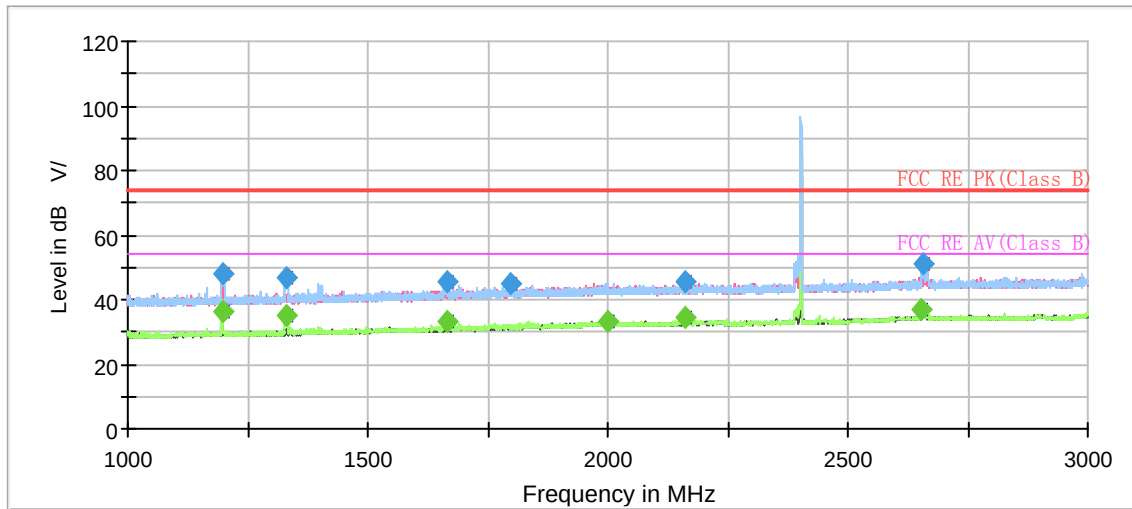


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1065.500000	37.77	---	74.00	36.23	200.0	H	347.0	-18.0
1065.500000	---	22.15	54.00	31.85	200.0	H	347.0	-18.0
1398.750000	---	22.65	54.00	31.35	100.0	H	338.0	-16.2
1399.750000	36.72	---	74.00	37.28	200.0	V	333.0	-16.2
1596.500000	---	30.99	54.00	23.01	100.0	H	317.0	-15.1
1596.500000	46.61	---	74.00	27.39	100.0	H	317.0	-15.1
1997.500000	---	28.93	54.00	25.07	200.0	V	301.0	-12.7
1997.500000	58.46	---	74.00	15.54	200.0	V	301.0	-12.7
2662.000000	---	24.74	54.00	29.26	200.0	H	342.0	-9.6
2665.500000	39.84	---	74.00	34.16	200.0	V	311.0	-9.6
2911.750000	36.20	---	74.00	37.80	100.0	H	67.0	-8.7
2995.750000	---	25.61	54.00	28.39	200.0	V	46.0	-8.1

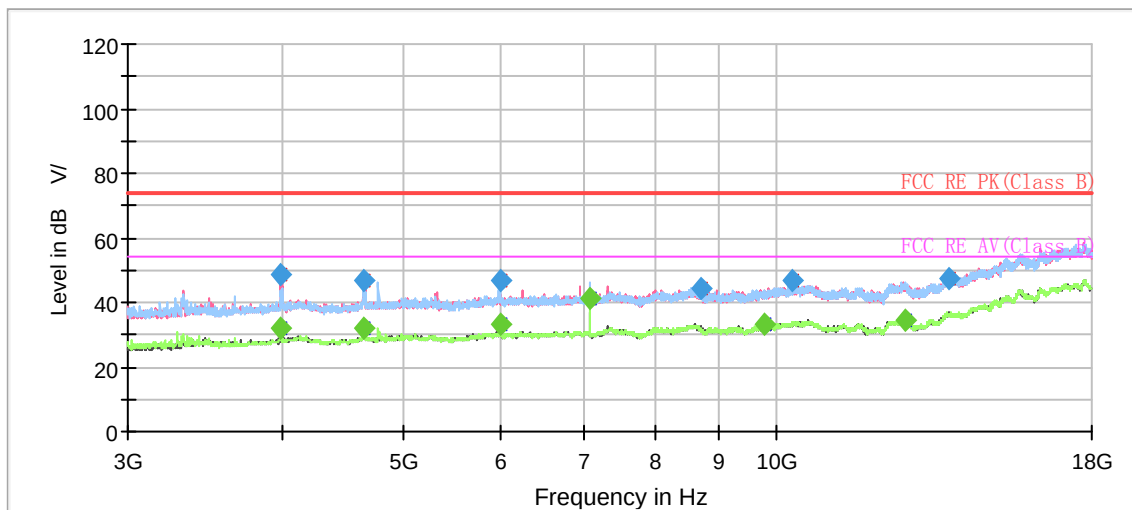
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Bluetooth LE-Channel 0



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

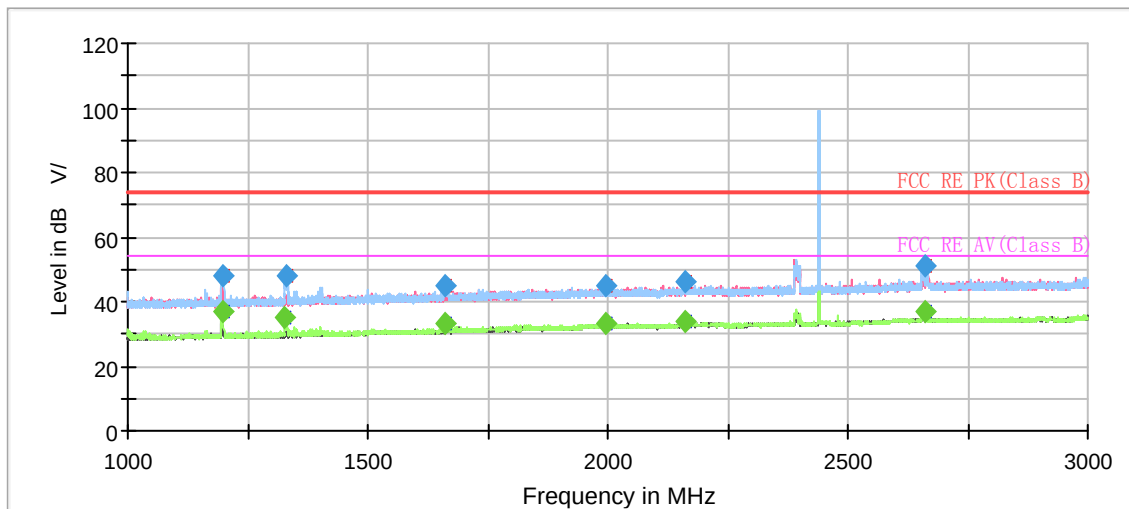


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1197.500000	48.30	---	74.00	25.70	100.0	H	8.0	-7.3
1197.750000	---	36.02	54.00	17.98	100.0	H	30.0	-7.3
1330.500000	46.92	---	74.00	27.08	100.0	H	155.0	-6.6
1331.500000	---	35.01	54.00	18.99	100.0	H	149.0	-6.6
1664.250000	---	33.18	54.00	20.82	200.0	H	140.0	-4.7
1666.000000	45.36	---	74.00	28.64	200.0	H	153.0	-4.7
1797.250000	44.98	---	74.00	29.02	100.0	H	266.0	-3.8
2000.250000	---	33.19	54.00	20.81	100.0	H	205.0	-2.7
2161.000000	---	34.74	54.00	19.26	100.0	H	260.0	-1.9
2161.000000	45.77	---	74.00	28.23	100.0	H	260.0	-1.9
2654.250000	---	37.08	54.00	16.92	200.0	H	345.0	0.4
2656.000000	51.25	---	74.00	22.75	200.0	H	351.0	0.4

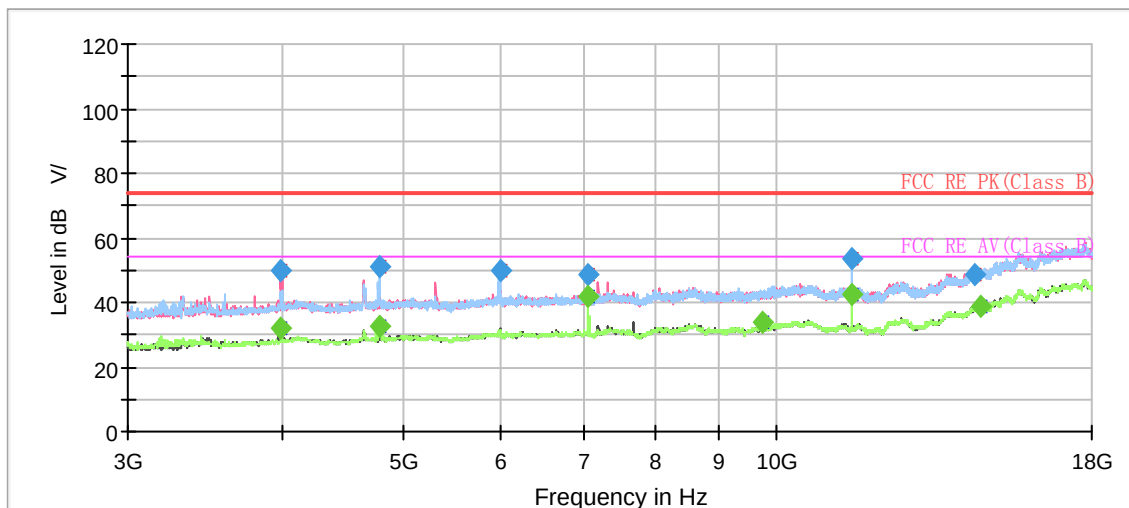
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Bluetooth LE-Channel 19



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

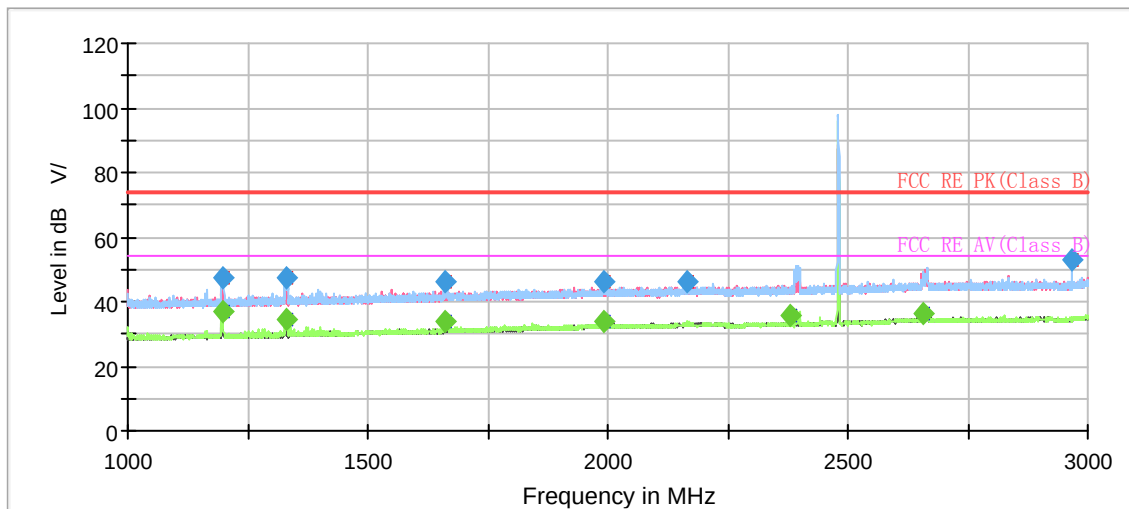


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.000000	47.85	---	74.00	26.15	200.0	H	221.0	-7.3
1199.000000	---	36.72	54.00	17.28	200.0	H	221.0	-7.3
1328.000000	---	35.21	54.00	18.79	100.0	H	141.0	-6.6
1331.250000	47.80	---	74.00	26.20	100.0	H	141.0	-6.6
1662.250000	45.13	---	74.00	28.87	200.0	H	152.0	-4.7
1662.250000	---	33.18	54.00	20.82	200.0	H	152.0	-4.7
1994.500000	45.08	---	74.00	28.92	200.0	H	215.0	-2.7
1997.500000	---	33.52	54.00	20.48	100.0	H	270.0	-2.7
2160.750000	---	33.54	54.00	20.46	100.0	H	270.0	-1.9
2162.250000	46.11	---	74.00	27.89	100.0	H	264.0	-1.9
2662.000000	---	36.74	54.00	17.26	200.0	V	162.0	0.4
2662.500000	50.91	---	74.00	23.09	200.0	V	205.0	0.4

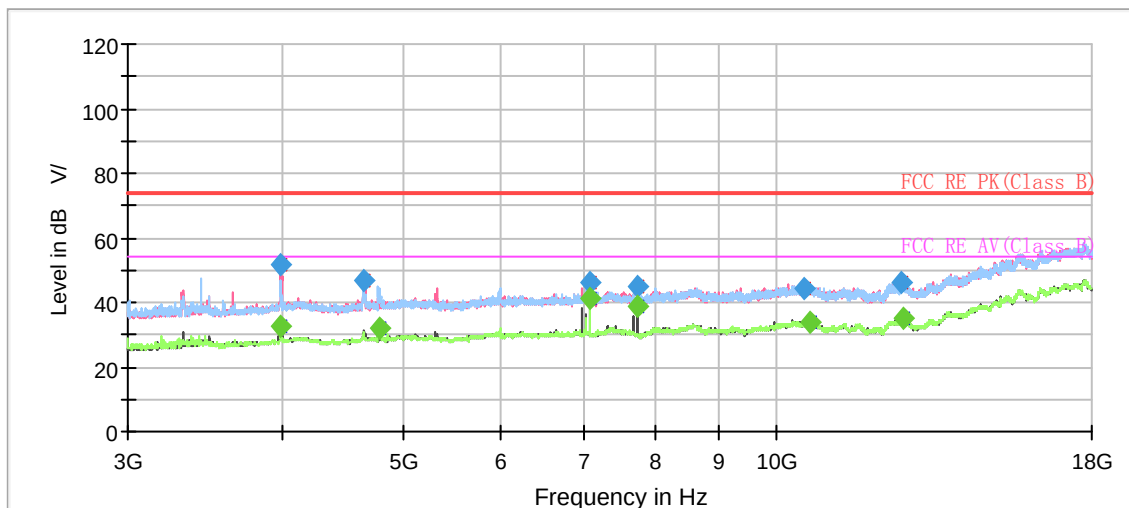
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Bluetooth LE-Channel 39



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



Radiates Emission from 3GHz to 18GHz

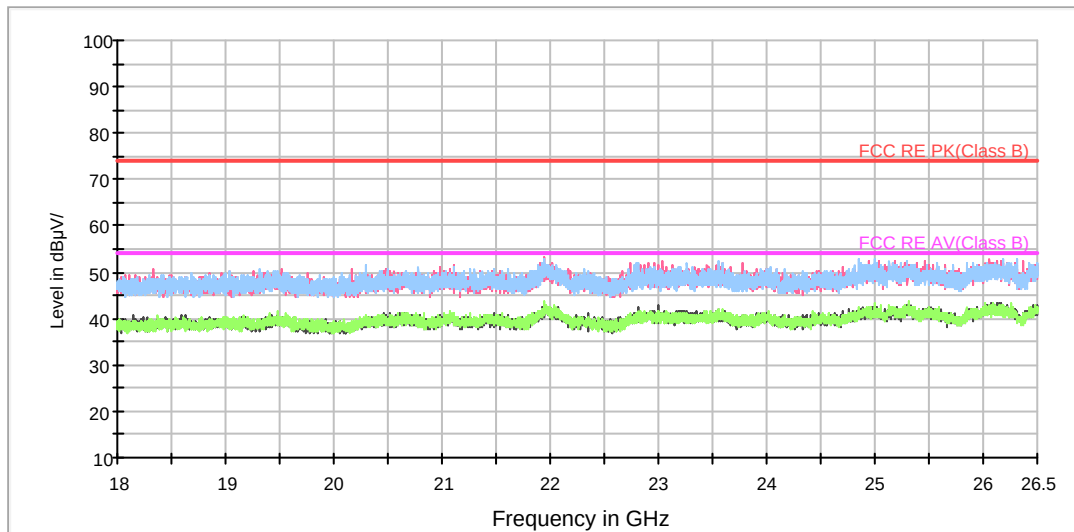
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.500000	---	36.94	54.00	17.06	200.0	H	235.0	-7.3
1198.250000	47.69	---	74.00	26.31	200.0	H	235.0	-7.3
1329.250000	47.49	---	74.00	26.51	100.0	H	149.0	-6.6
1329.250000	---	34.66	54.00	19.34	100.0	H	149.0	-6.6
1660.250000	---	33.72	54.00	20.28	200.0	H	257.0	-4.7
1662.500000	46.12	---	74.00	27.88	100.0	H	126.0	-4.7
1991.250000	---	33.57	54.00	20.43	100.0	H	263.0	-2.7
1991.750000	46.01	---	74.00	27.99	100.0	H	188.0	-2.7
2164.750000	46.39	---	74.00	27.61	100.0	H	270.0	-1.9
2380.750000	---	35.81	54.00	18.19	100.0	H	82.0	-1.2
2656.500000	---	36.51	54.00	17.49	200.0	V	181.0	0.4
2967.500000	52.68	---	74.00	21.32	100.0	H	149.0	1.7

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)



During the test, the Radiates Emission from 18GHz to 26.5GHz was performed in all modes with all channels, 802.11b CH6 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

RE 18-26.5GHz PK+AV



Radiates Emission from 18GHz to 26.5GHz

5.7. Conducted Emission

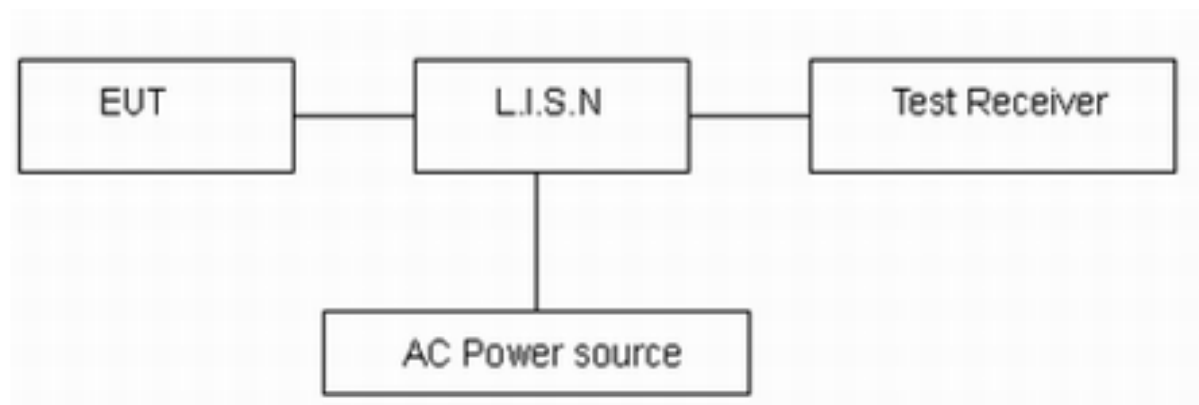
Ambient condition

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

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line. The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

Limits

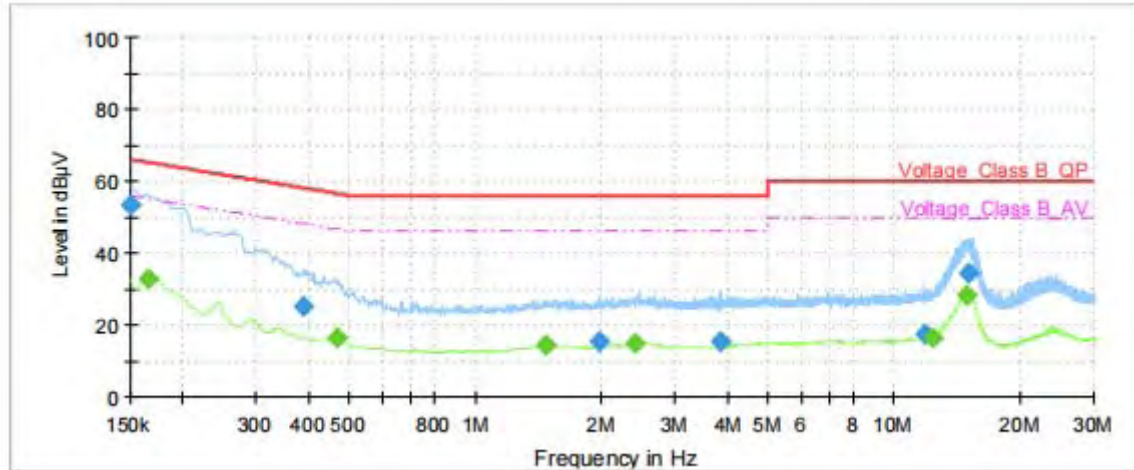
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 2.69$ dB.

Test Results:

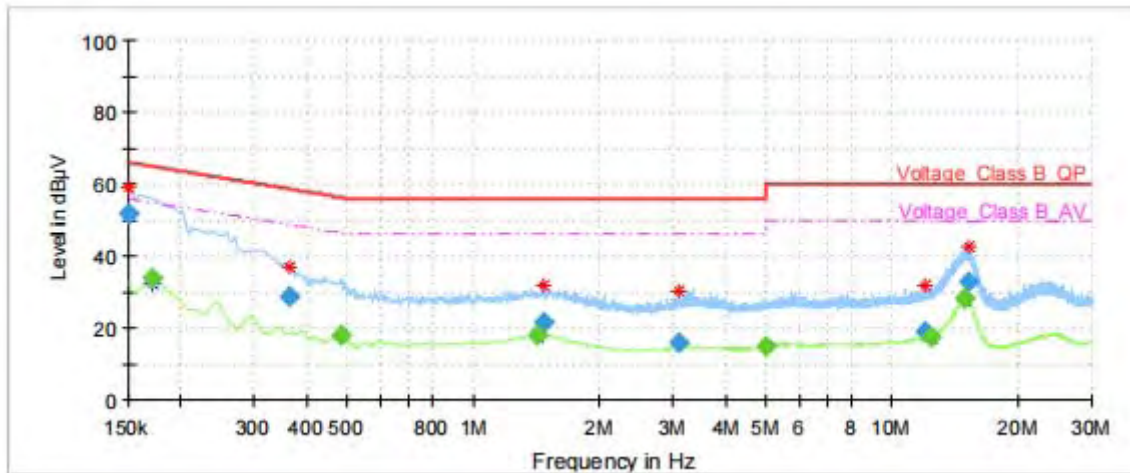
Following plots, Blue trace uses the peak detection and Green trace uses the average detection. During the test, the Conducted Emission was performed in all modes (WIFI 2.4G /Bluetooth LE) with all channels, 802.11b CH6 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	53.49	---	66.00	12.51	70.0	9.000	L1	ON	21
0.17	---	32.89	55.17	22.28	70.0	9.000	L1	ON	21
0.39	25.02	---	58.10	33.08	70.0	9.000	L1	ON	20
0.47	---	16.27	46.52	30.25	70.0	9.000	L1	ON	20
1.47	---	14.32	46.00	31.68	70.0	9.000	L1	ON	20
1.97	15.43	---	56.00	40.57	70.0	9.000	L1	ON	20
2.40	---	14.81	46.00	31.19	70.0	9.000	L1	ON	19
3.86	15.51	---	56.00	40.49	70.0	9.000	L1	ON	19
11.92	17.39	---	60.00	42.61	70.0	9.000	L1	ON	20
12.38	---	16.19	50.00	33.81	70.0	9.000	L1	ON	20
14.95	---	28.24	50.00	21.76	70.0	9.000	L1	ON	20
15.03	34.60	---	60.00	25.40	70.0	9.000	L1	ON	20

Remark: Correct factor=cable loss + LISN factor

L line Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	51.84	---	66.00	14.16	70.0	9.000	N	ON	21
0.17	---	33.99	54.95	20.96	70.0	9.000	N	ON	21
0.36	28.96	---	58.64	29.68	70.0	9.000	N	ON	21
0.48	---	18.15	46.33	28.18	70.0	9.000	N	ON	20
1.42	---	18.03	46.00	27.97	70.0	9.000	N	ON	20
1.48	21.46	---	56.00	34.54	70.0	9.000	N	ON	20
3.10	16.02	---	56.00	39.98	70.0	9.000	N	ON	19
5.00	---	14.79	46.00	31.21	70.0	9.000	N	ON	19
12.02	18.90	---	60.00	41.10	70.0	9.000	N	ON	20
12.38	---	17.25	50.00	32.75	70.0	9.000	N	ON	20
14.98	---	28.12	50.00	21.88	70.0	9.000	N	ON	20
15.23	32.75	---	60.00	27.25	70.0	9.000	N	ON	20

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 KHz to 30 MHz

6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Spectrum Analyzer	R&S	FSV30	100815	2020-12-13	2021-12-12
EMI Test Receiver	R&S	ESCI	100948	2020-05-18	2021-05-17
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2020-04-02	2023-04-01
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	391	2019-12-16	2021-12-15
Horn Antenna	R&S	HF907	102723	2018-08-11	2021-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2021-06-19
EMI Test Receiver	R&S	ESR	101667	2020-05-18	2021-05-17
LISN	R&S	ENV216	101171	2018-12-15	2021-12-14
Spectrum Analyzer	Agilent	N9010A	MY47191109	2020-05-18	2021-05-17
Power Meter	R&S	NRP2	104306	2020-05-18	2021-05-17
Power Sensor	R&S	NRP-Z21	104799	2020-05-18	2021-05-17
20dB Attenuator	Star River Highlight	UCL-TS2S-20	18013001	2020-12-13	2021-12-12
RF Cable	Agilent	SMA 15cm	0001	2020-12-10	2021-06-09
Software	R&S	EMC32	9.26.0	/	/

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



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.



ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.