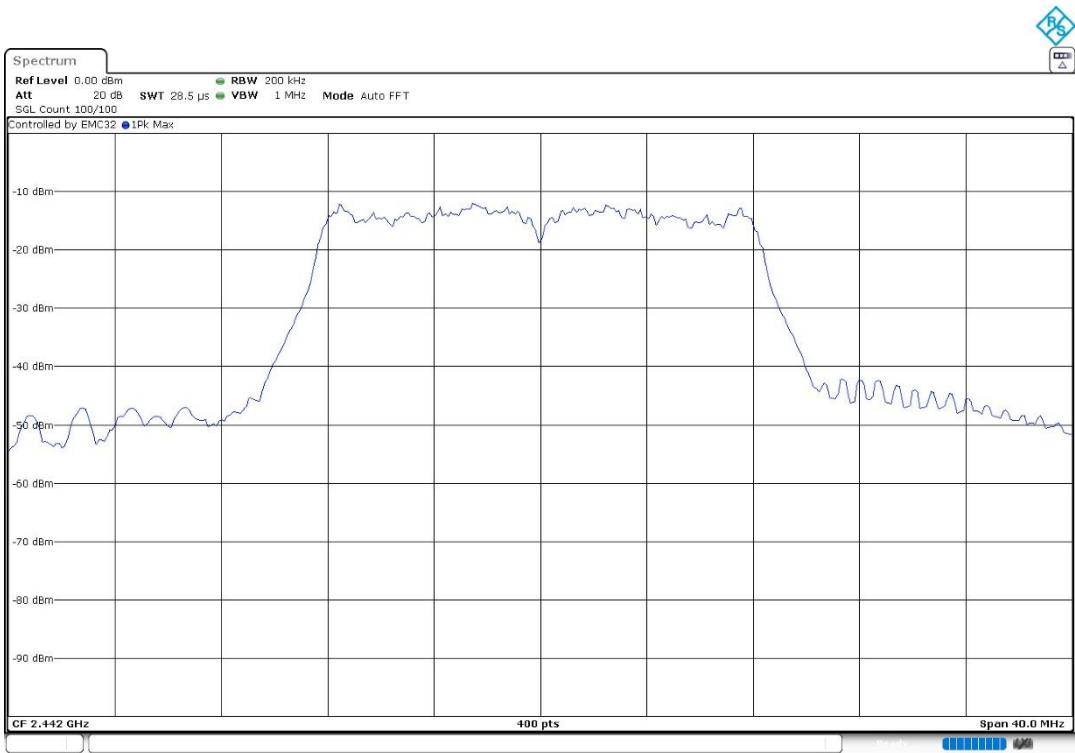
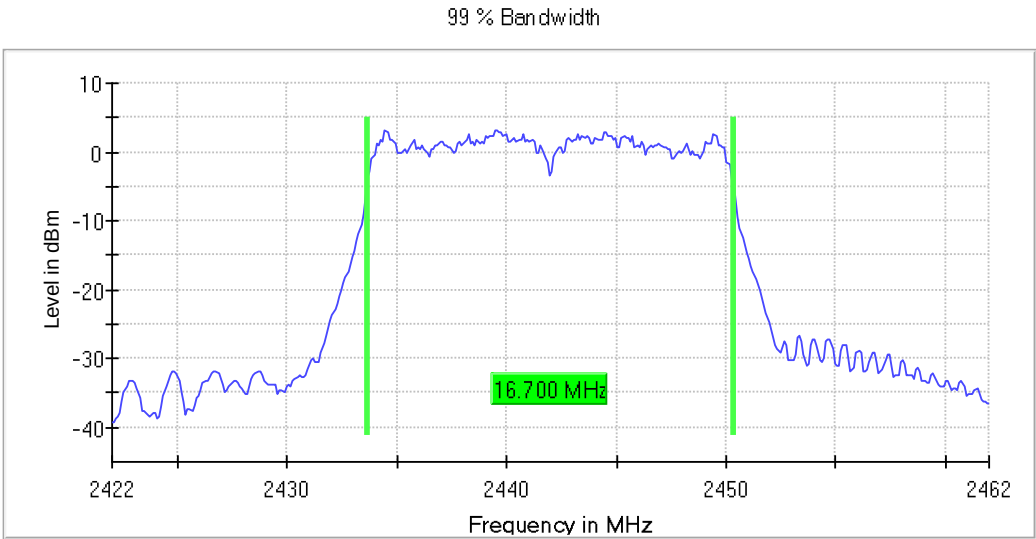


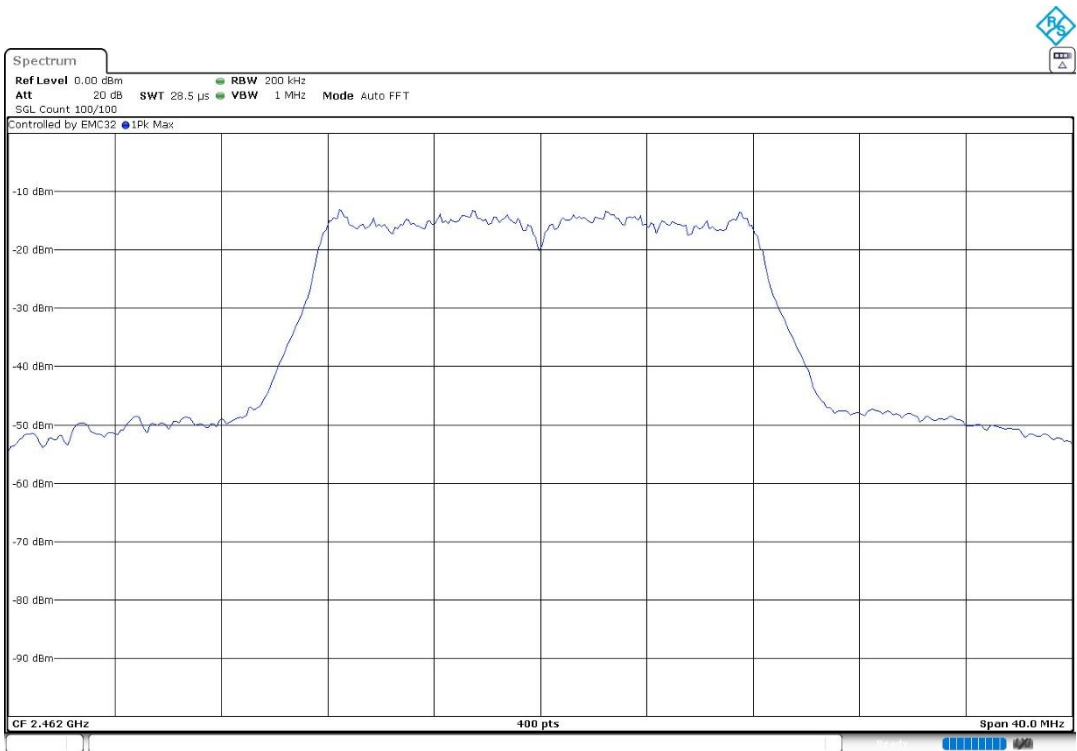
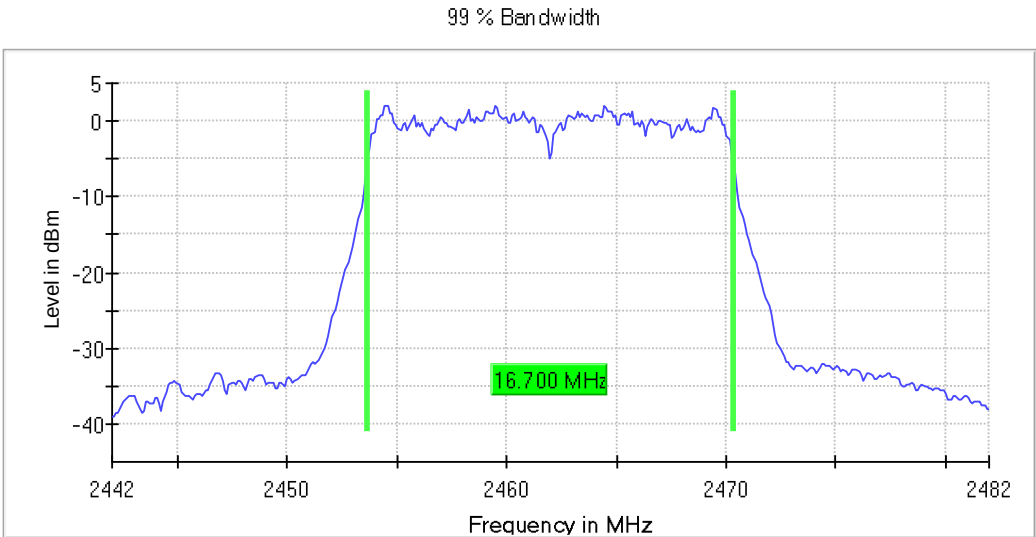
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2442.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11g (OFDM 6 Mbit/s)

Figures:



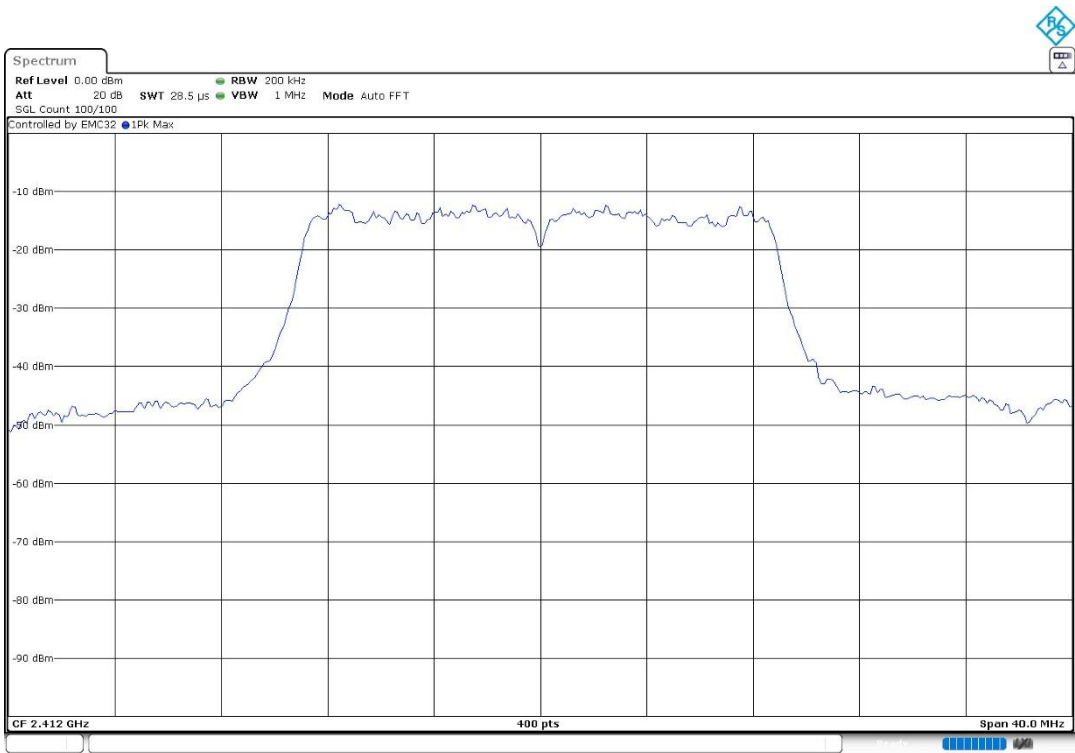
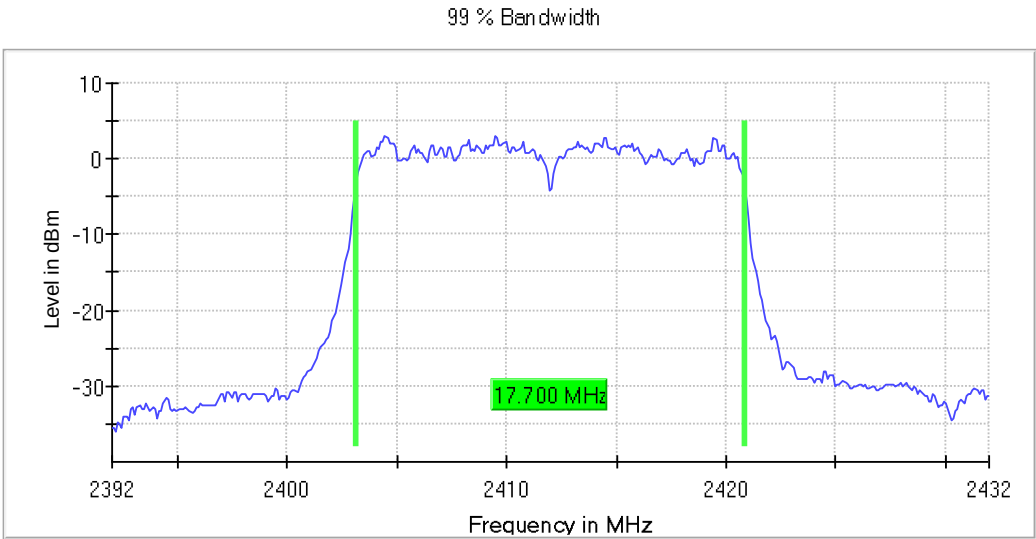
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2462.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11g (OFDM 6 Mbit/s)

Figures:



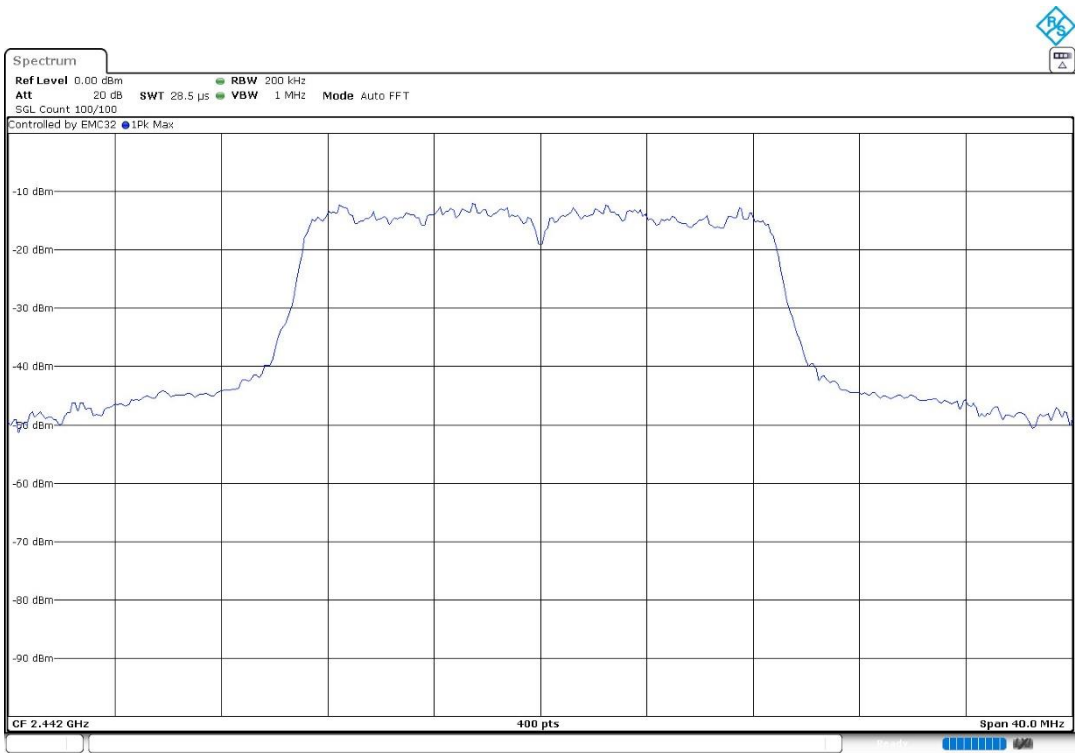
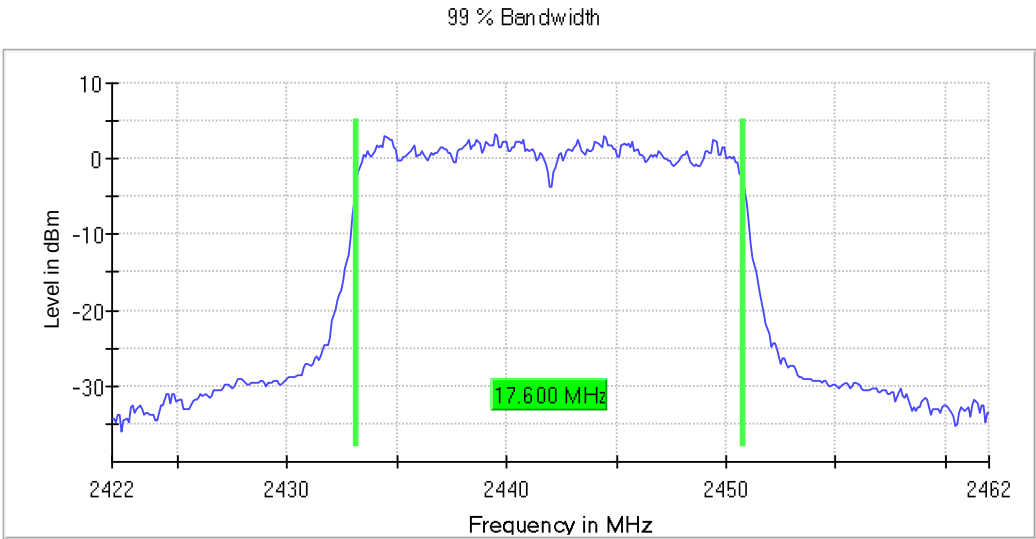
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2412.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



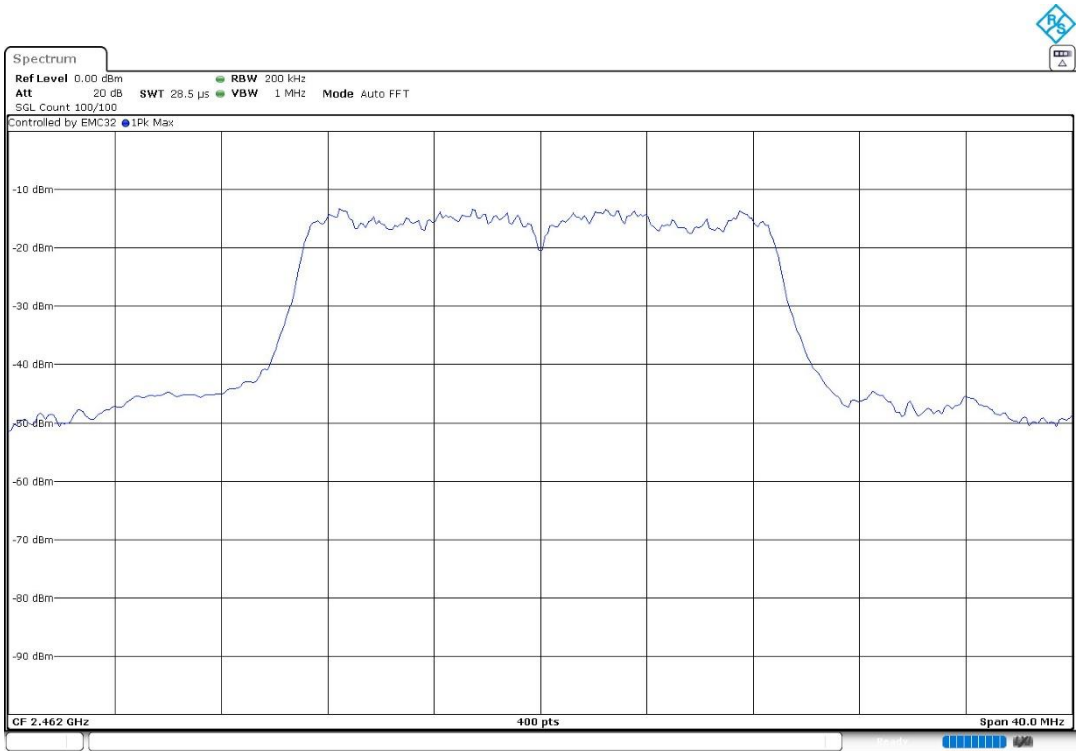
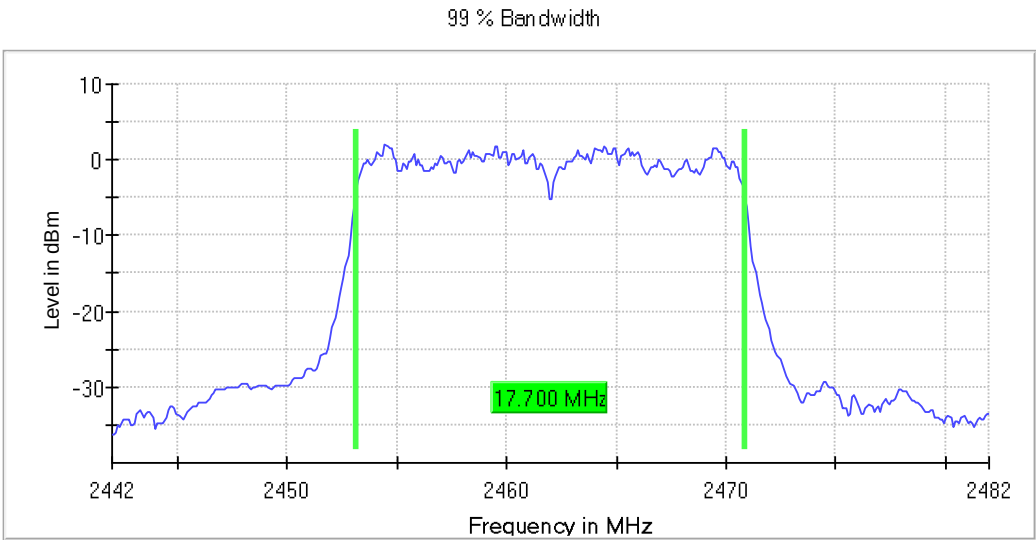
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2442.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2462.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



FCC 15.247 (a)(2) / RSS-247 5.2 (a) 6 dB Bandwidth

Limits

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

Results

- Mode 802.11 b:

Frequency (MHz)	6 dB Bandwidth (MHz)
2412.00	10.150
2442.00	10.100
2462.00	10.150

- Mode 802.11 g:

Frequency (MHz)	6 dB Bandwidth (MHz)
2412.00	16.450
2442.00	16.450
2462.00	16.450

- Mode 802.11 n20:

Frequency (MHz)	6 dB Bandwidth (MHz)
2412.00	17.650
2442.00	17.400
2462.00	17.650

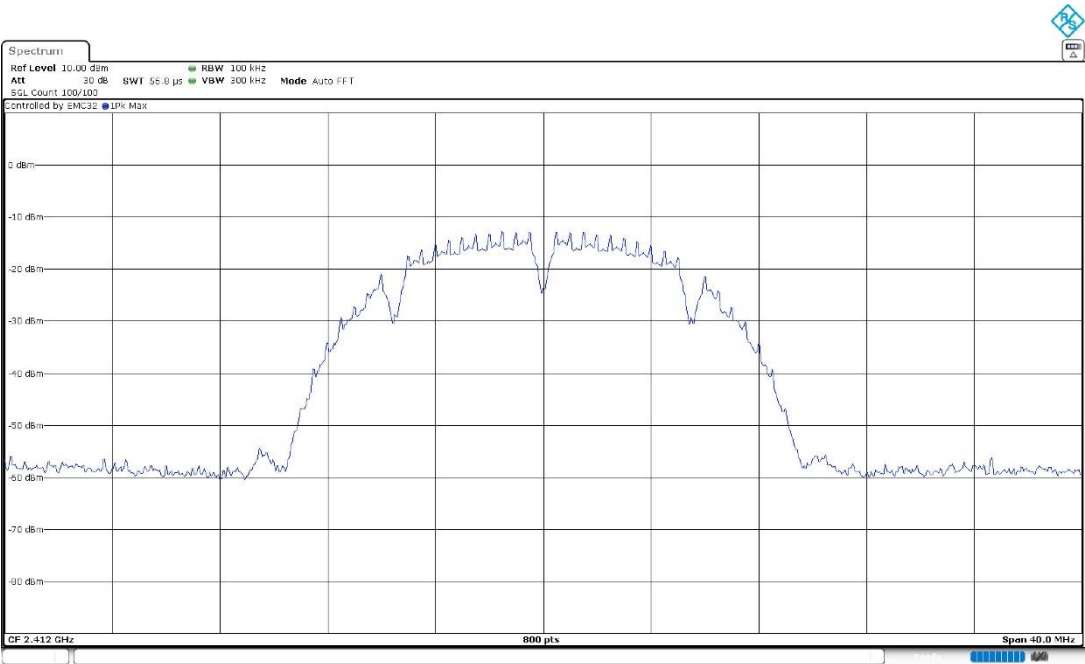
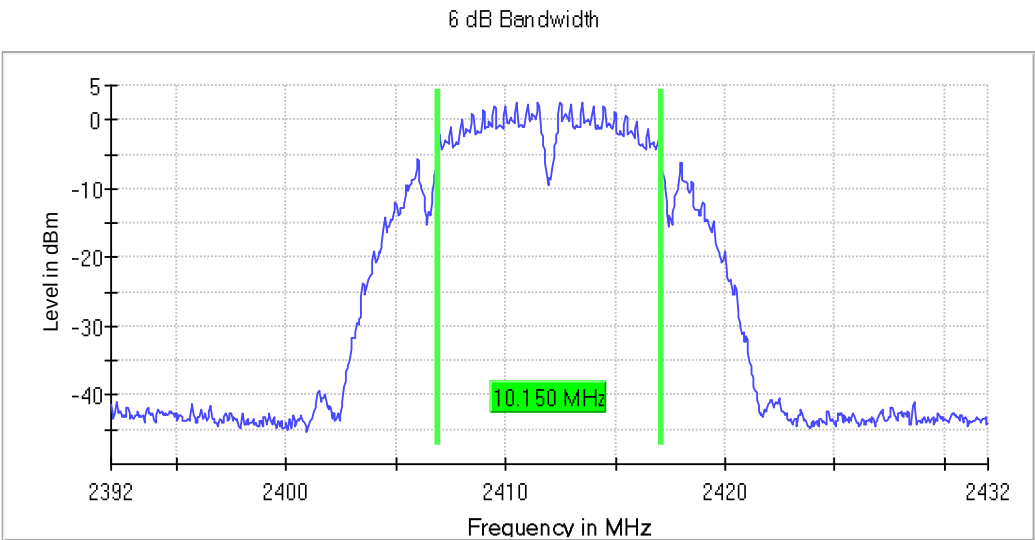
Verdict

Pass

Attachments

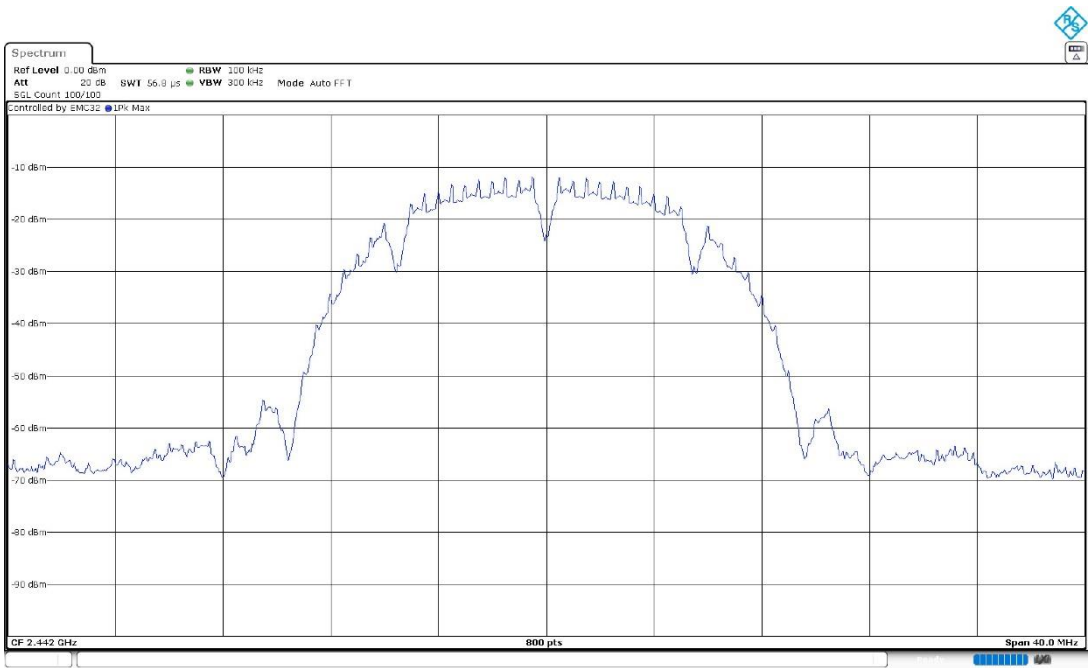
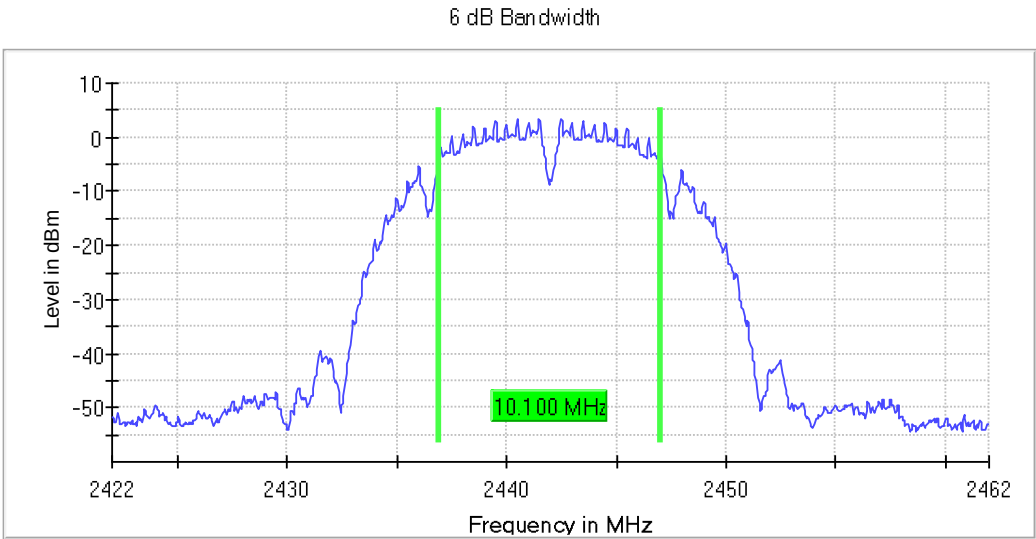
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2412.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11b (DSSS 1 Mbit/s)

Figures:



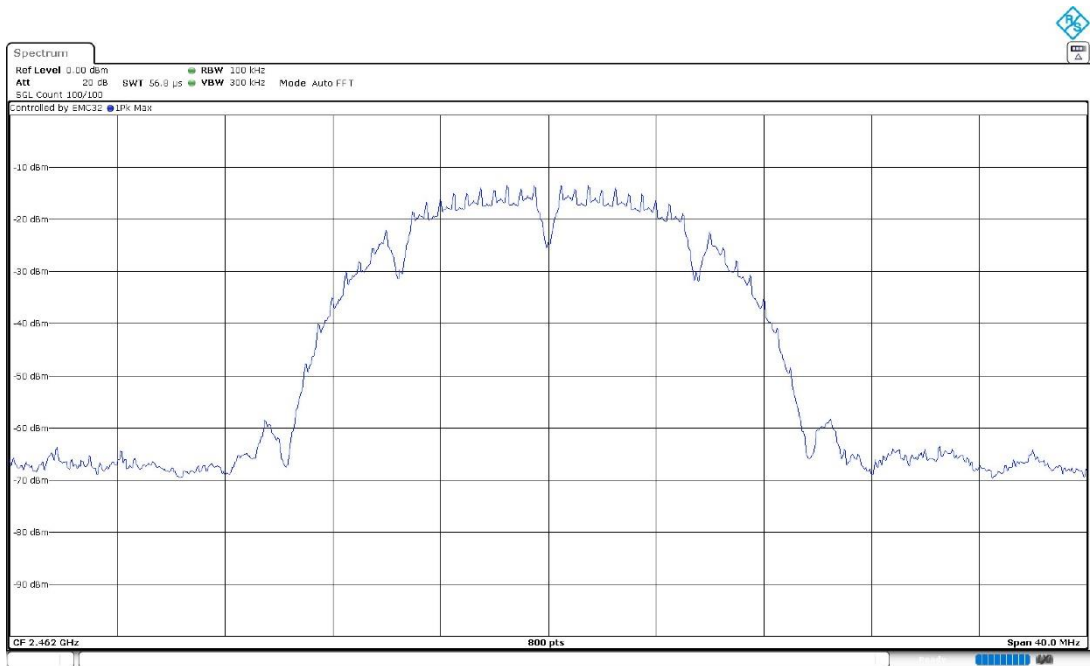
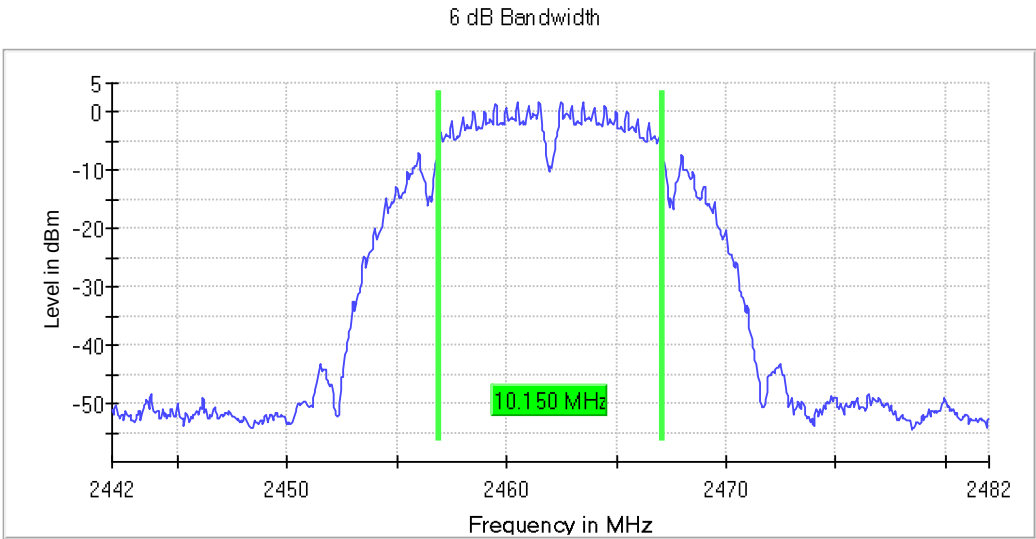
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2442.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11b (DSSS 1 Mbit/s)

Figures:



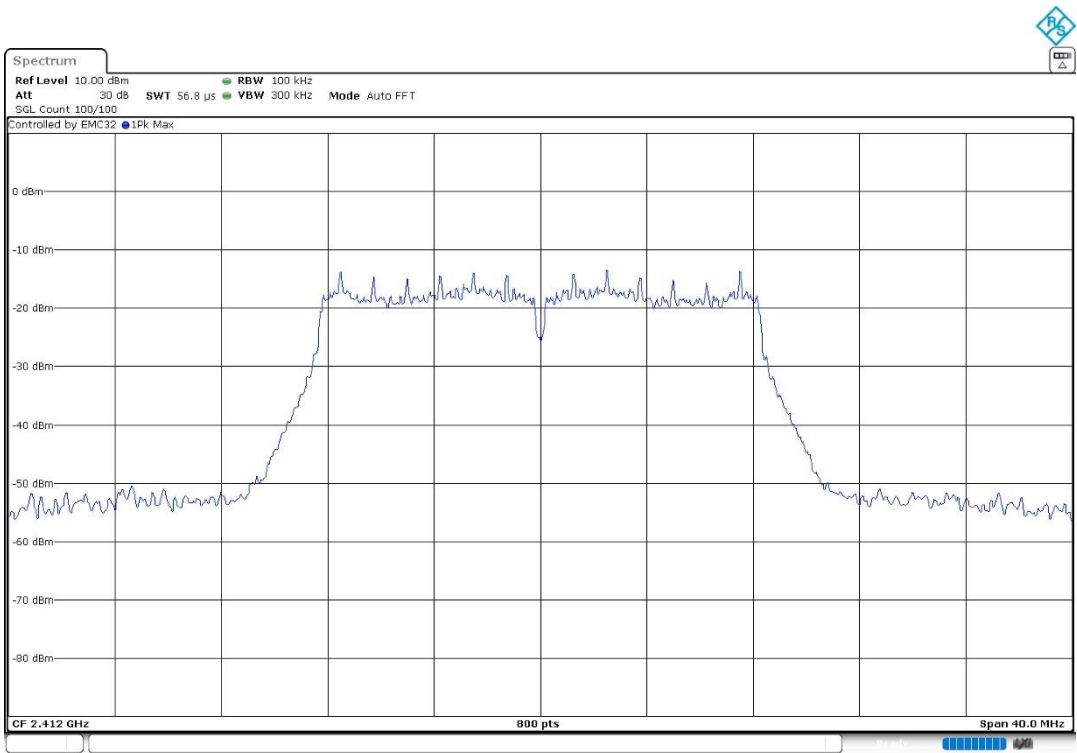
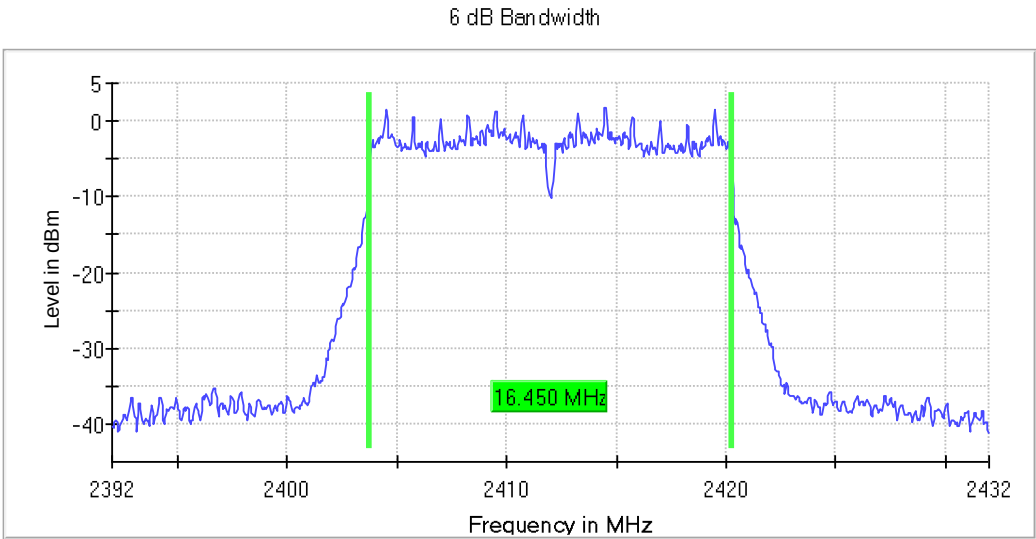
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2462.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11b (DSSS 1 Mbit/s)

Figures:



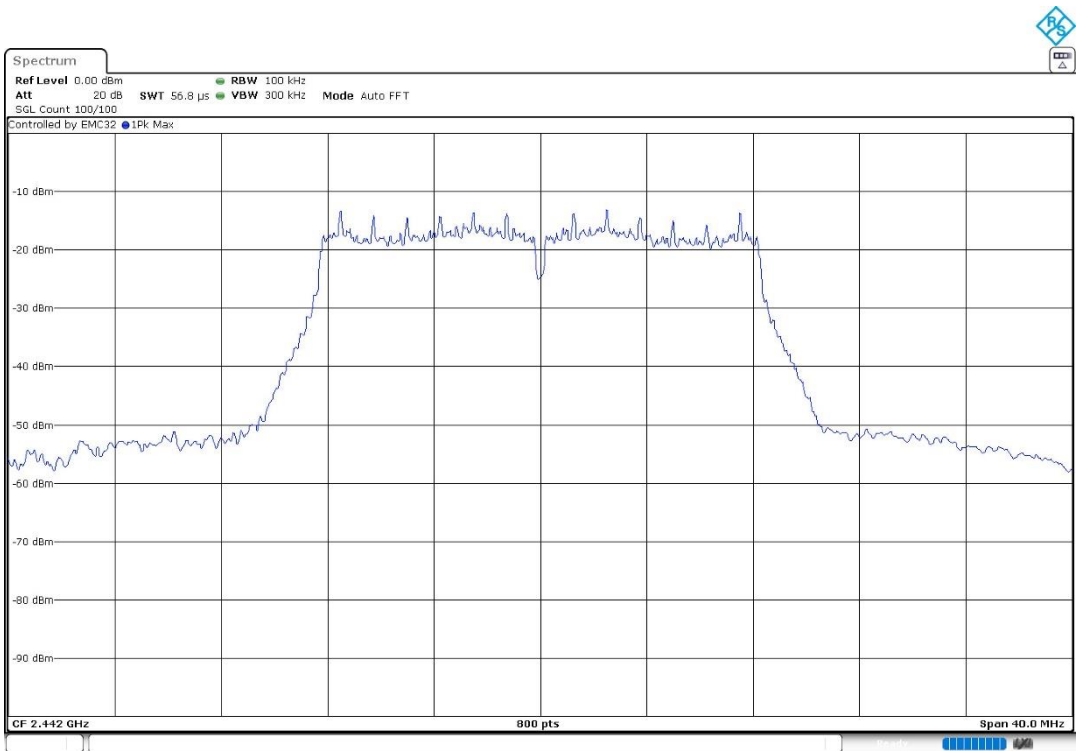
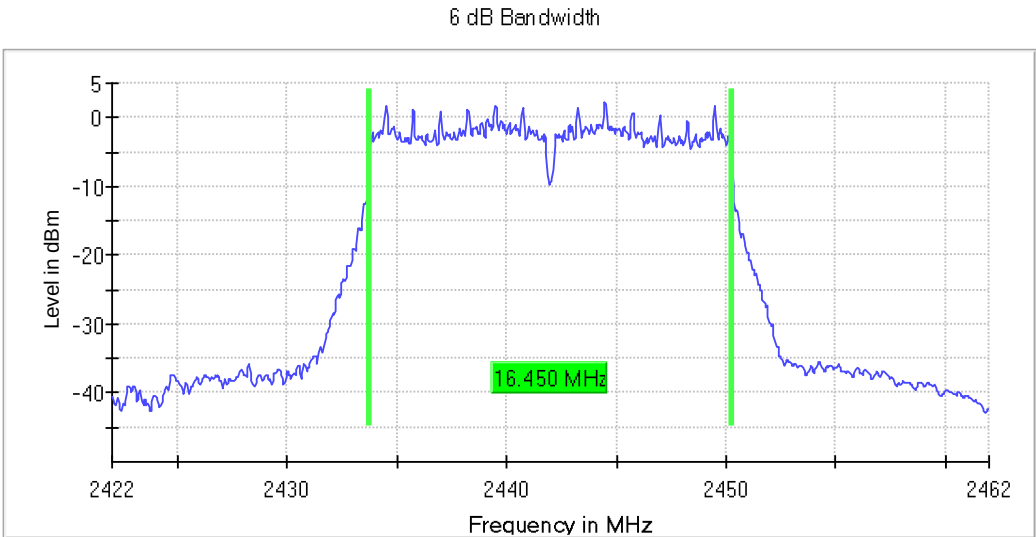
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2412.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11g (OFDM 6 Mbit/s)

Figures:



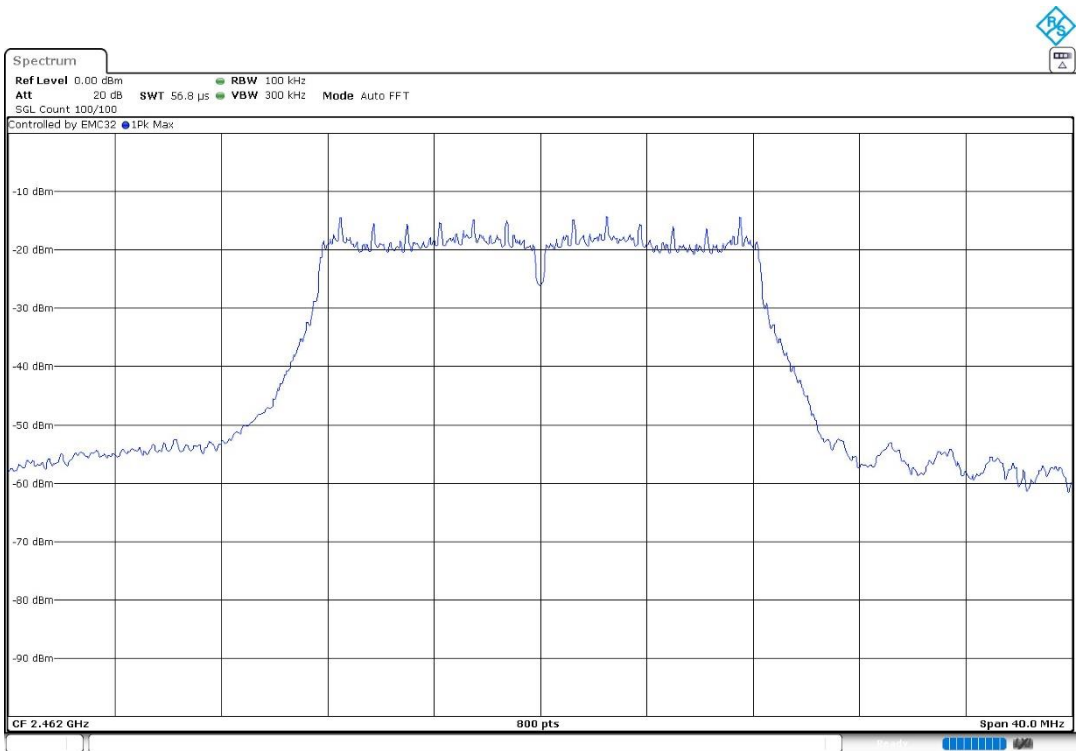
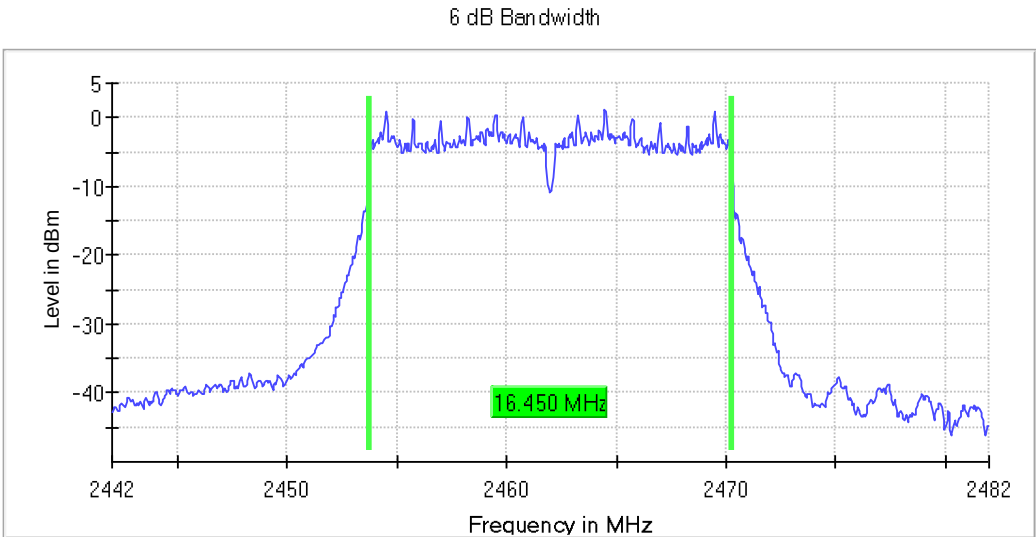
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2442.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11g (OFDM 6 Mbit/s)

Figures:



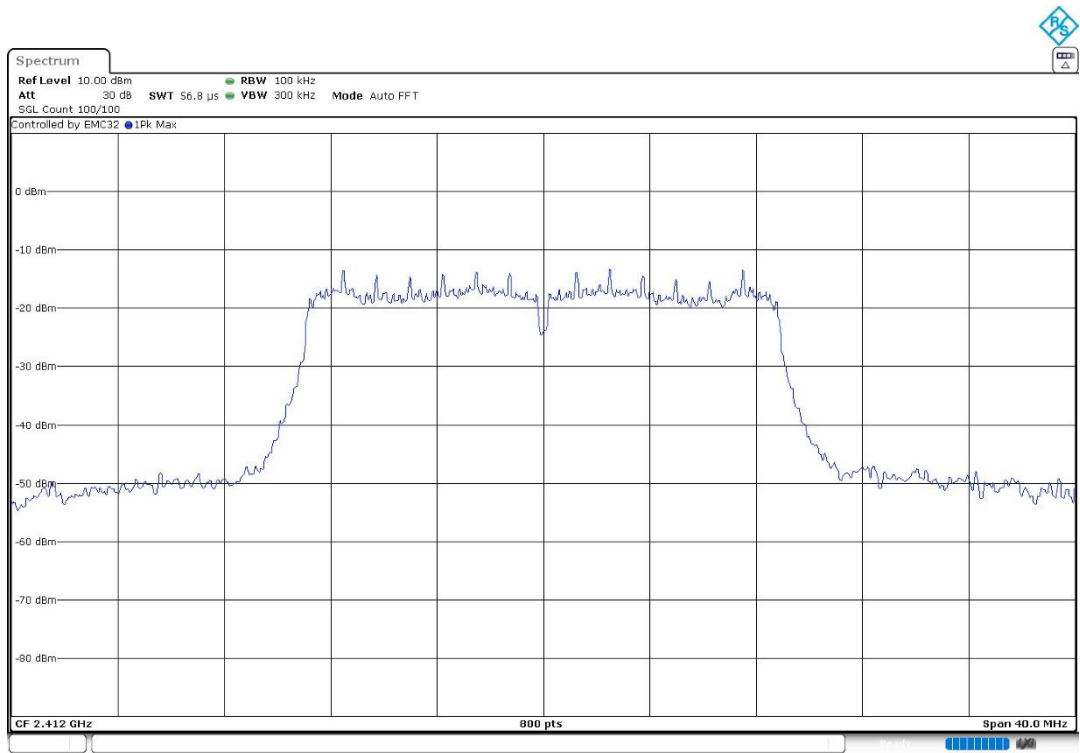
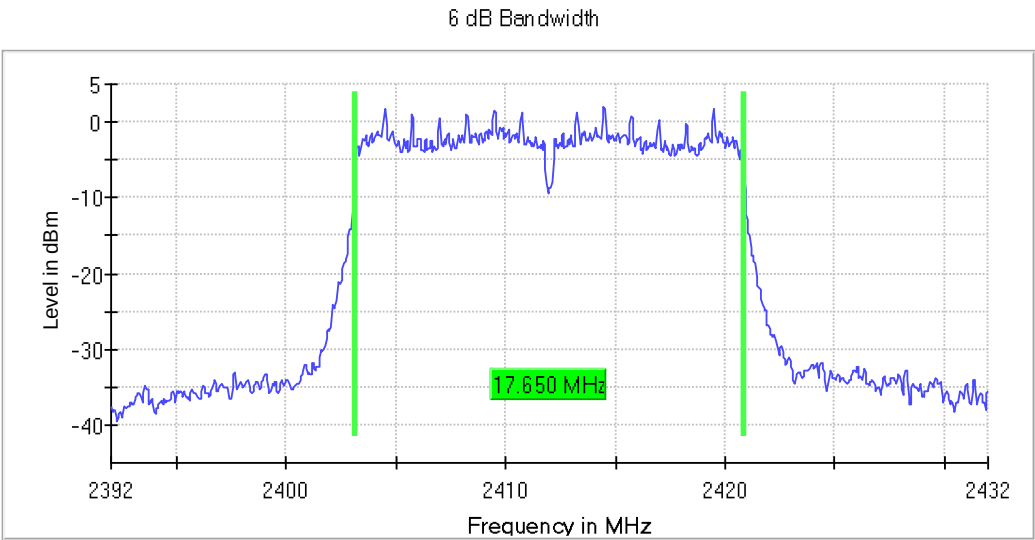
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2462.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11g (OFDM 6 Mbit/s)

Figures:



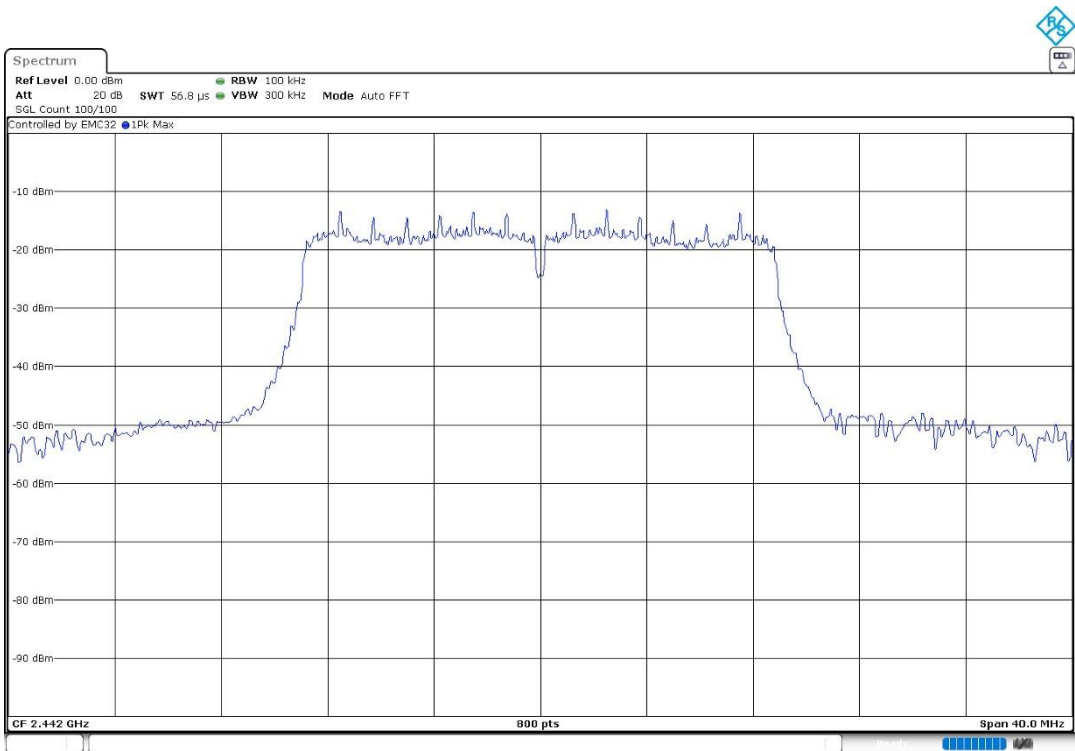
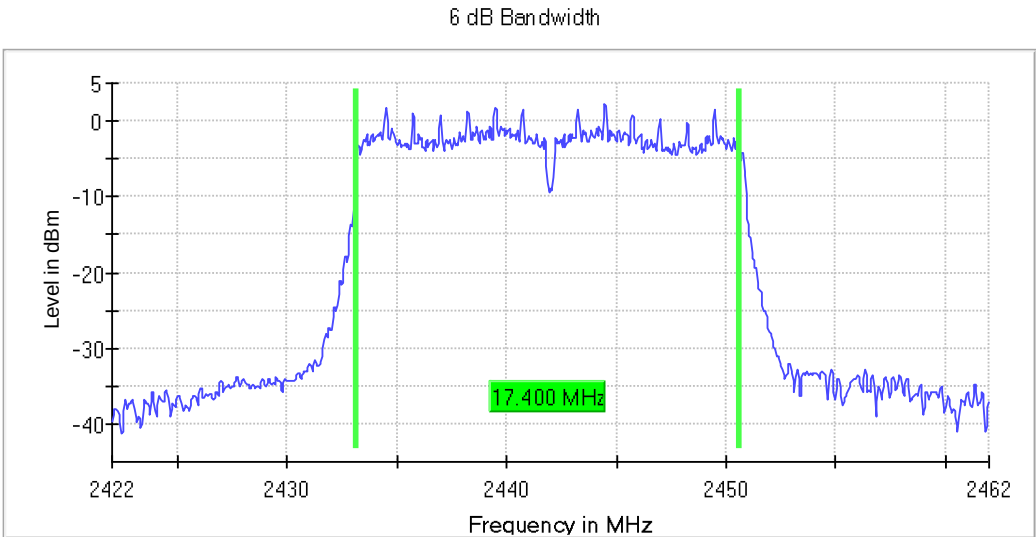
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2412.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



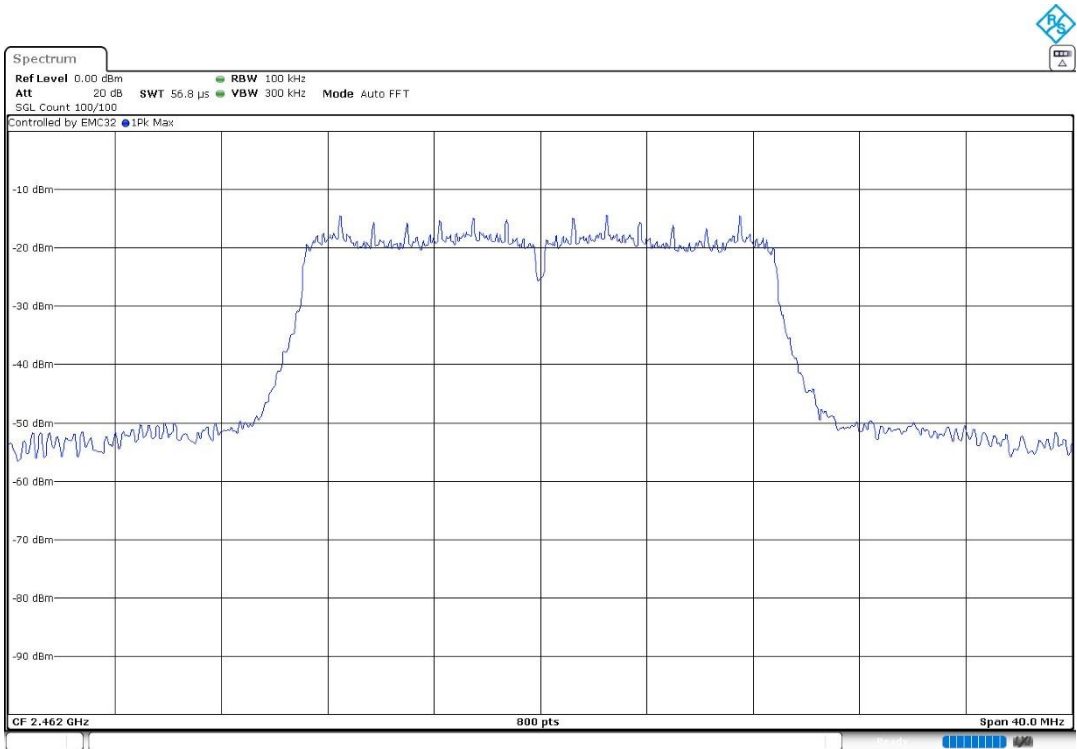
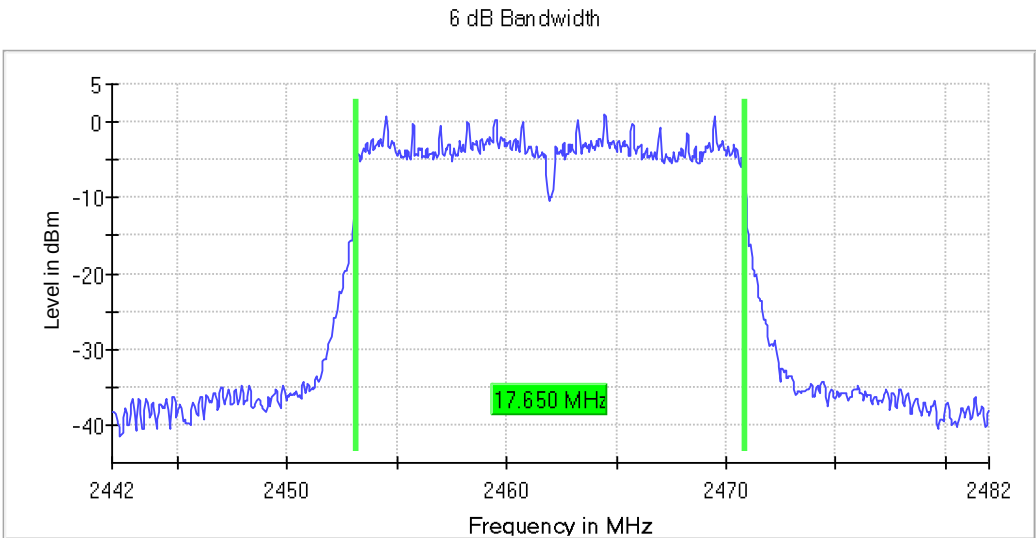
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2442.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2462.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



FCC 15.247 (b) / RSS-247 5.4 (d) Maximum output power and antenna gain

Limits

For systems using digital modulation in the 2400-2483.5 MHz band: 1 watt (30 dBm).

RSS-247:

The e.i.r.p. shall not exceed 4 W.

Results

The maximum conducted output power level of the fundamental emission was measured according to clause 11.9.2.3.2 "Method AVGPM-G" of ANSI C63.10-2013.

The EIRP power (dBm) is calculated by adding the maximum declared antenna gain to the measured conducted power.

Maximum Declared Antenna Gain: +0.11 dBi

The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

- **Mode 802.11 b:**

	Low Channel 2412 MHz	Middle Channel 2442 MHz	High Channel 2462 MHz
Maximum Average Conducted Power (dBm)	12.697	13.055	11.530
Maximum EIRP Power (dBm)	12.807	13.165	11.640

- **Mode 802.11 g:**

	Low Channel 2412 MHz	Middle Channel 2442 MHz	High Channel 2462 MHz
Maximum Average Conducted Power (dBm)	13.409	13.691	12.482
Maximum EIRP Power (dBm)	13.519	13.801	12.592

- **Mode 802.11 n20:**

	Low Channel 2412 MHz	Middle Channel 2442 MHz	High Channel 2462 MHz
Maximum Average Conducted Power (dBm)	13.758	13.764	12.519
Maximum EIRP Power (dBm)	13.868	13.874	12.629

Verdict

Pass

FCC 15.247 (e) / RSS-247 5.2 (b) Power spectral density

Limits

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.

Results

The power spectral density was measured according to clause 11.10.3 "Method AVGPS-1" of ANSI C63.10-2013.

- **Mode 802.11 b:**

	Low Channel 2412 MHz	Middle Channel 2442 MHz	High Channel 2462 MHz
Average Power Spectral Density (dBm)	-5.579	-5.039	-6.457

- **Mode 802.11 g:**

	Low Channel 2412 MHz	Middle Channel 2442 MHz	High Channel 2462 MHz
Average Power Spectral Density (dBm)	-7.053	-6.935	-7.981

- **Mode 802.11 n20:**

	Low Channel 2412 MHz	Middle Channel 2442 MHz	High Channel 2462 MHz
Average Power Spectral Density (dBm)	-7.195	-7.005	-8.327

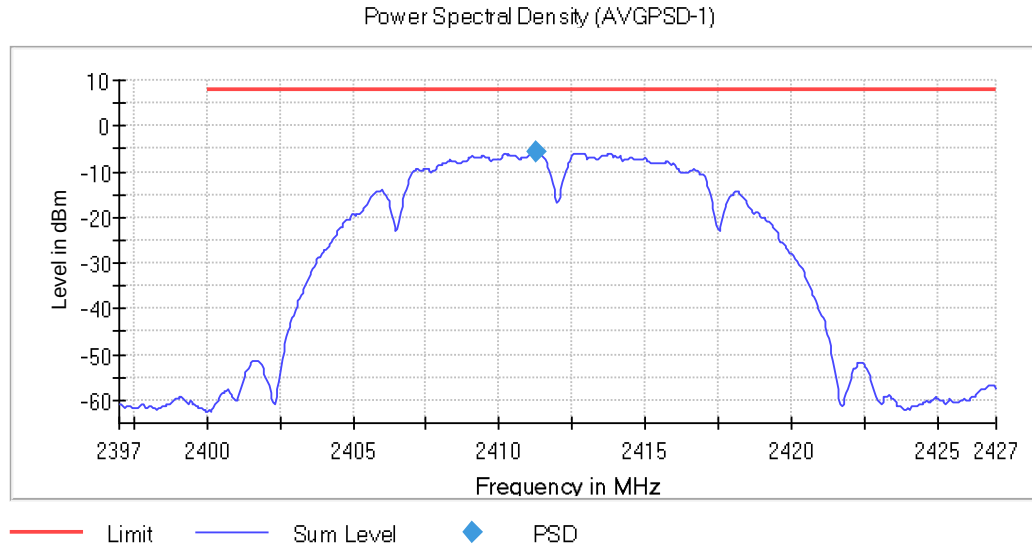
Verdict

Pass

Attachments

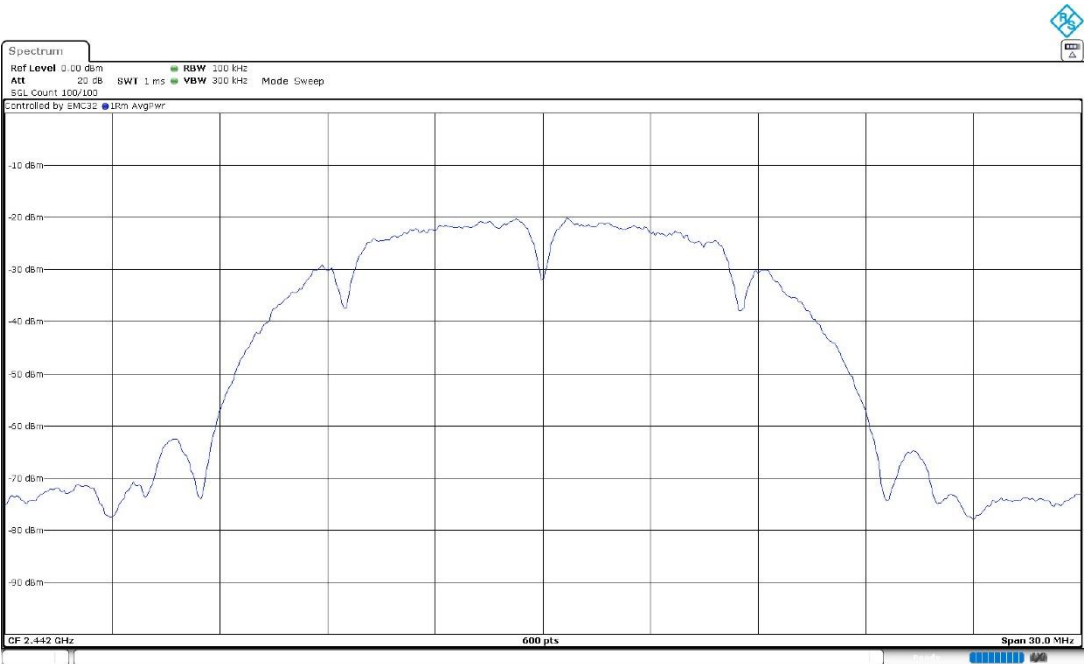
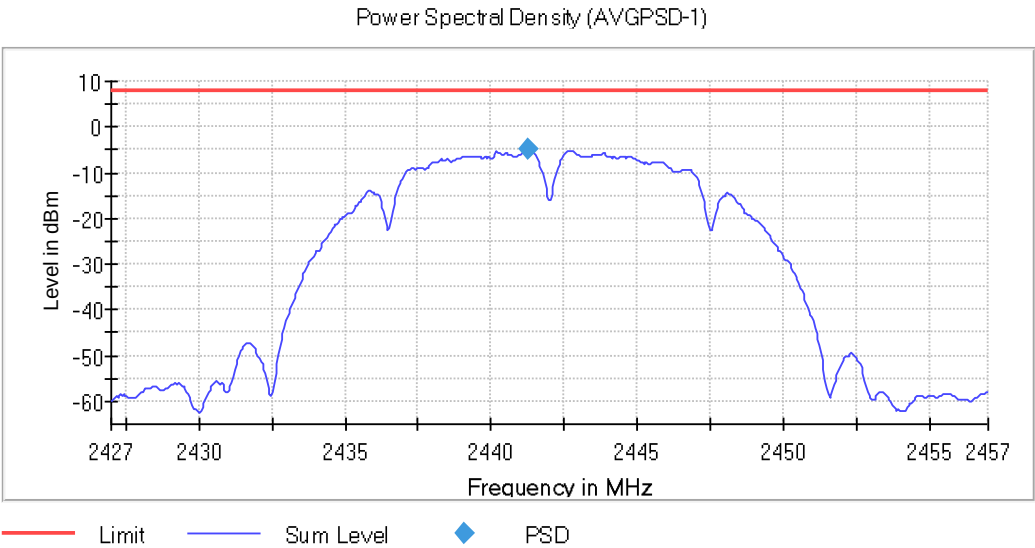
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2412.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11b (DSSS 1 Mbit/s)

Figures:



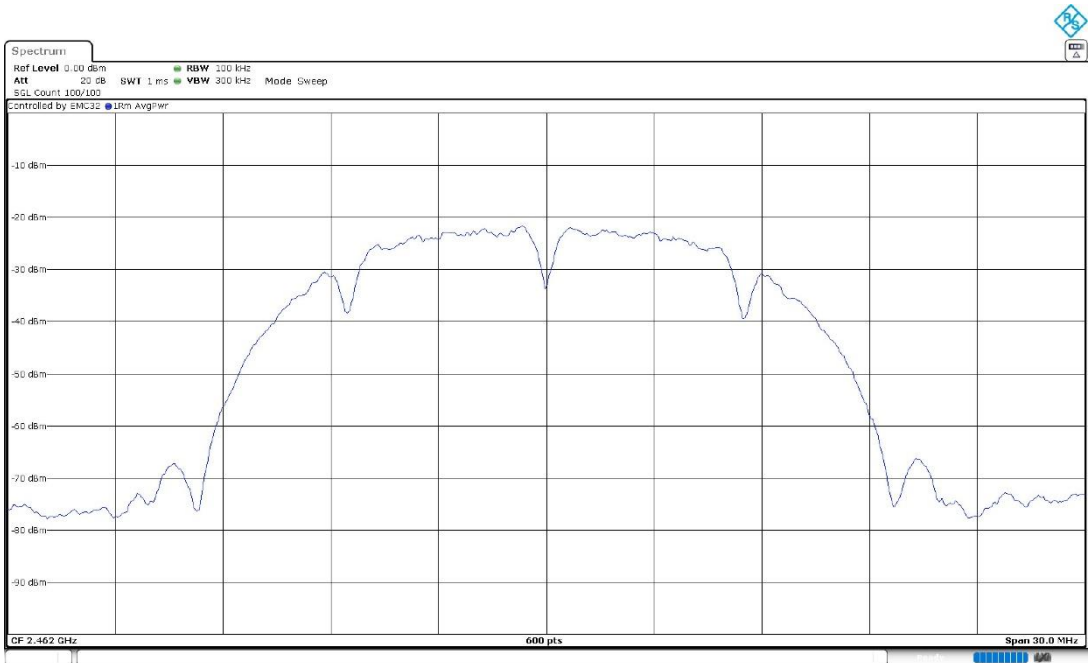
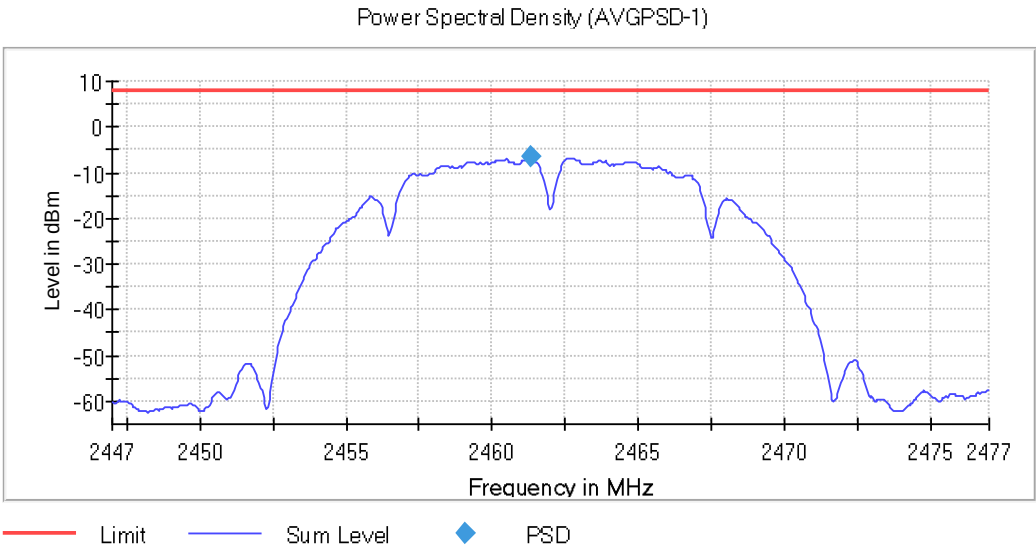
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2442.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11b (DSSS 1 Mbit/s)

Figures:



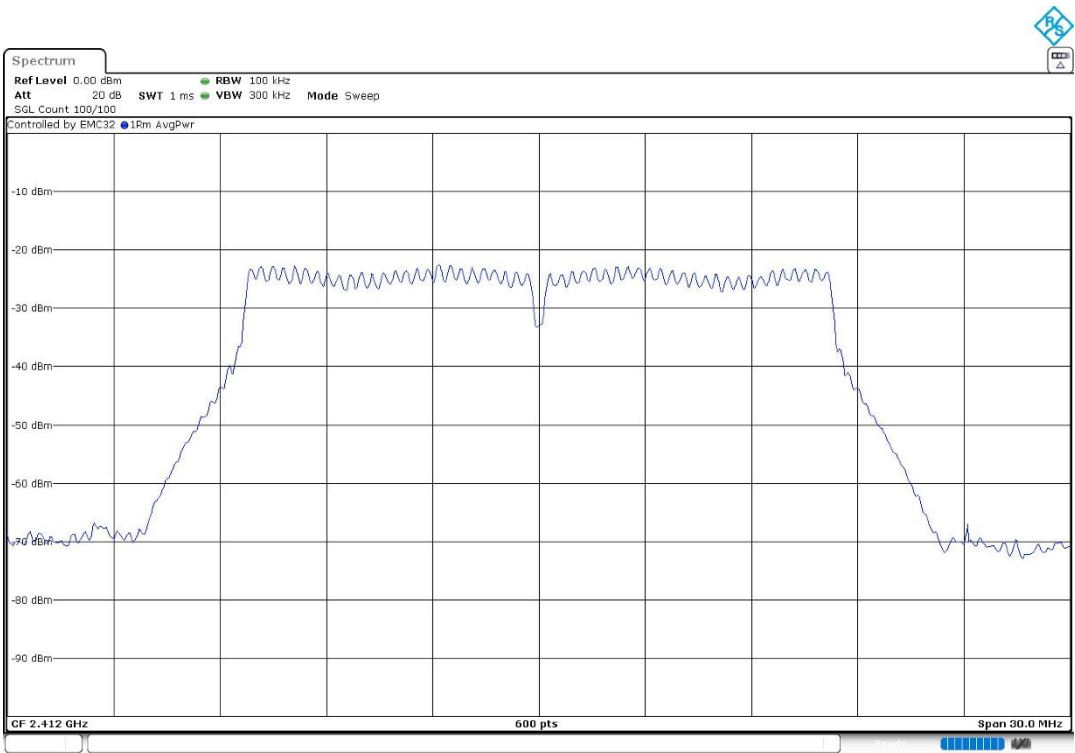
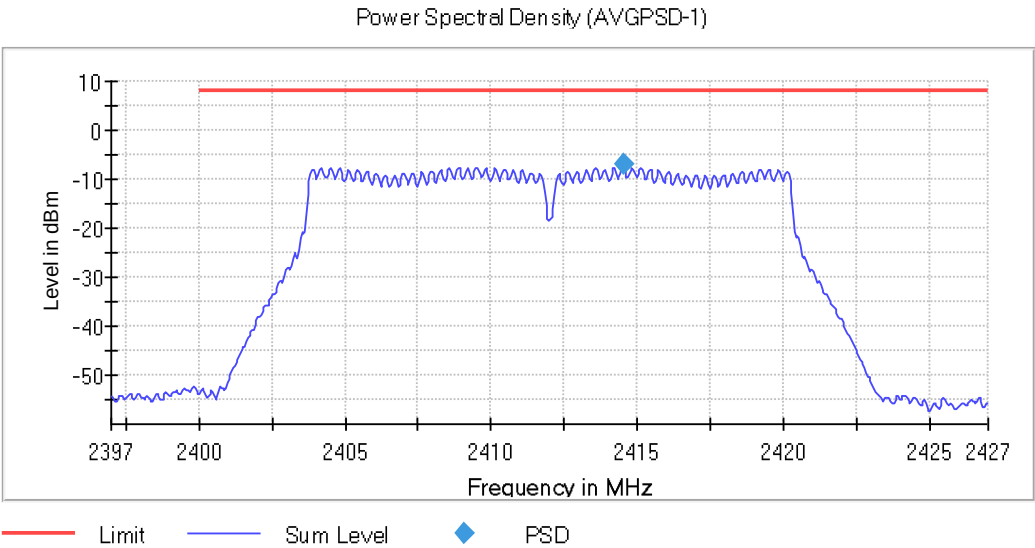
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2462.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11b (DSSS 1 Mbit/s)

Figures:



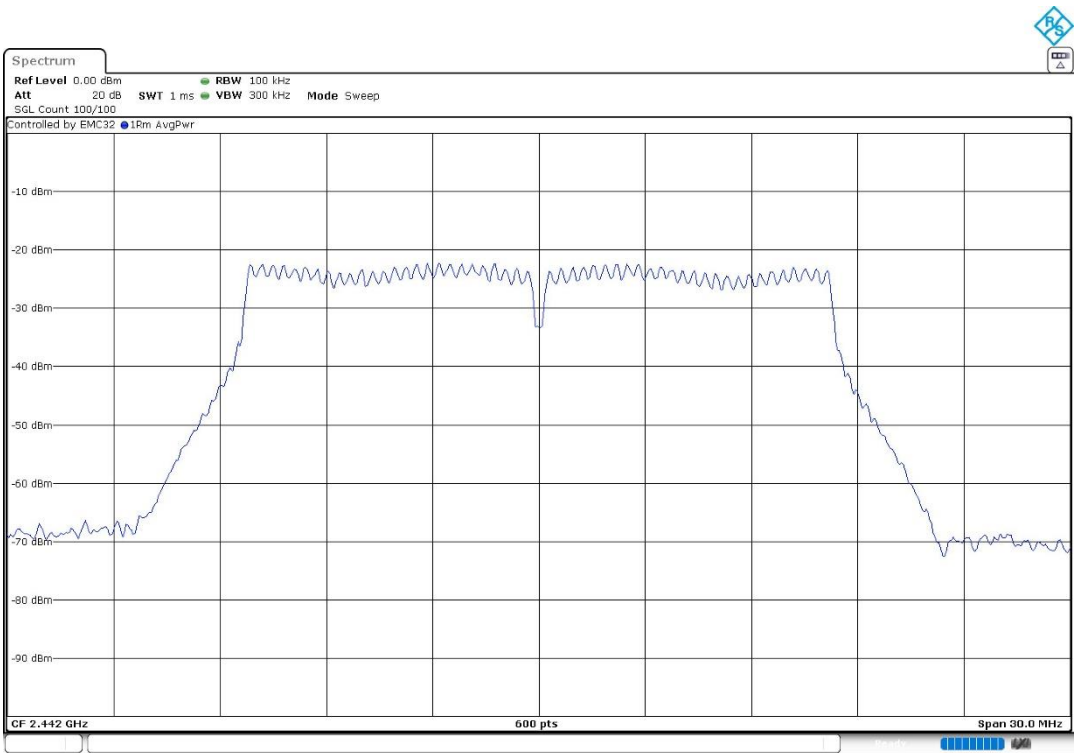
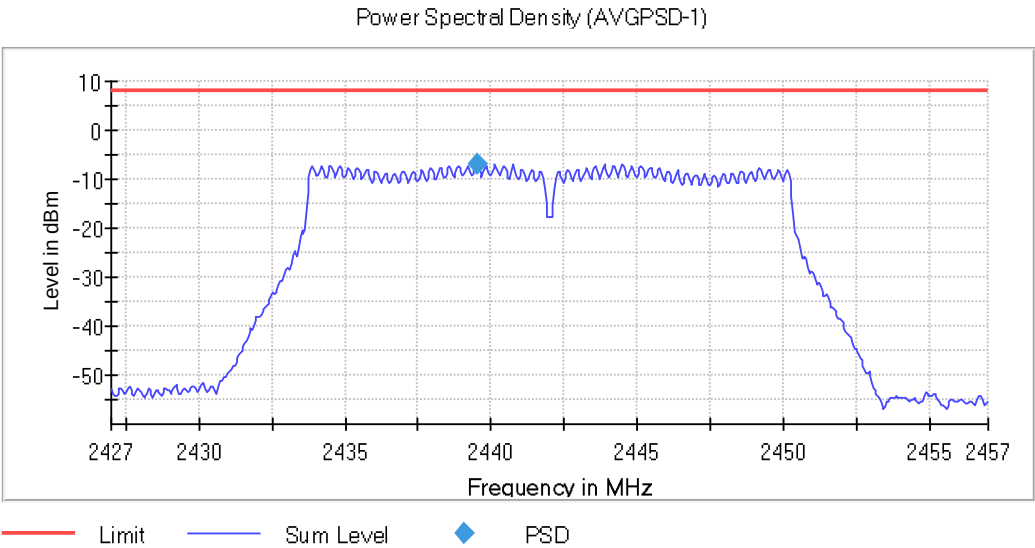
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2412.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11g (OFDM 6 Mbit/s)

Figures:



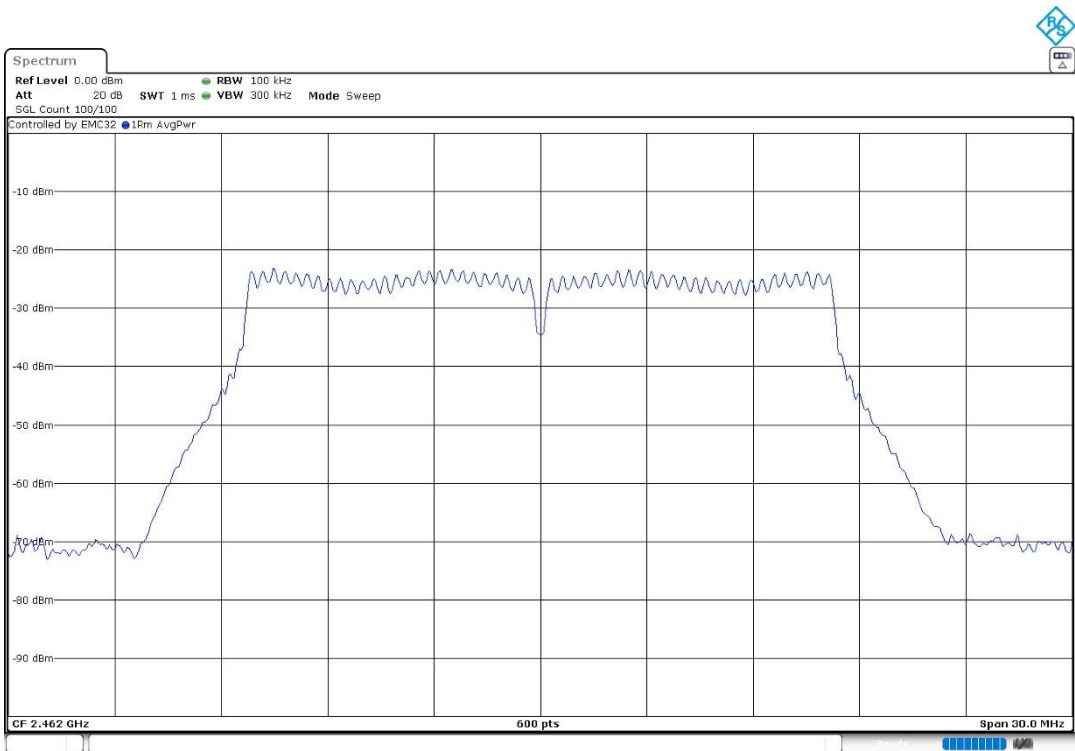
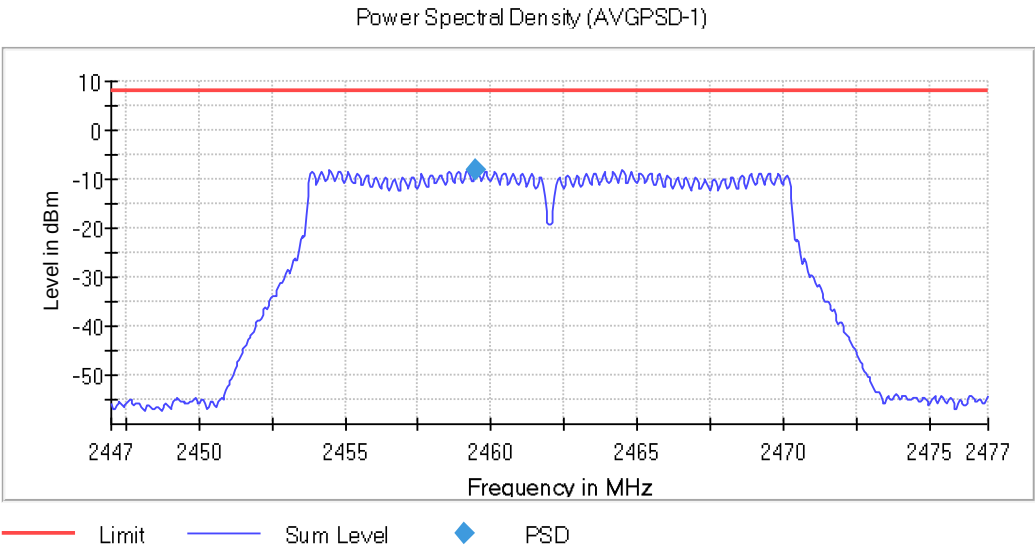
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2442.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11g (OFDM 6 Mbit/s)

Figures:



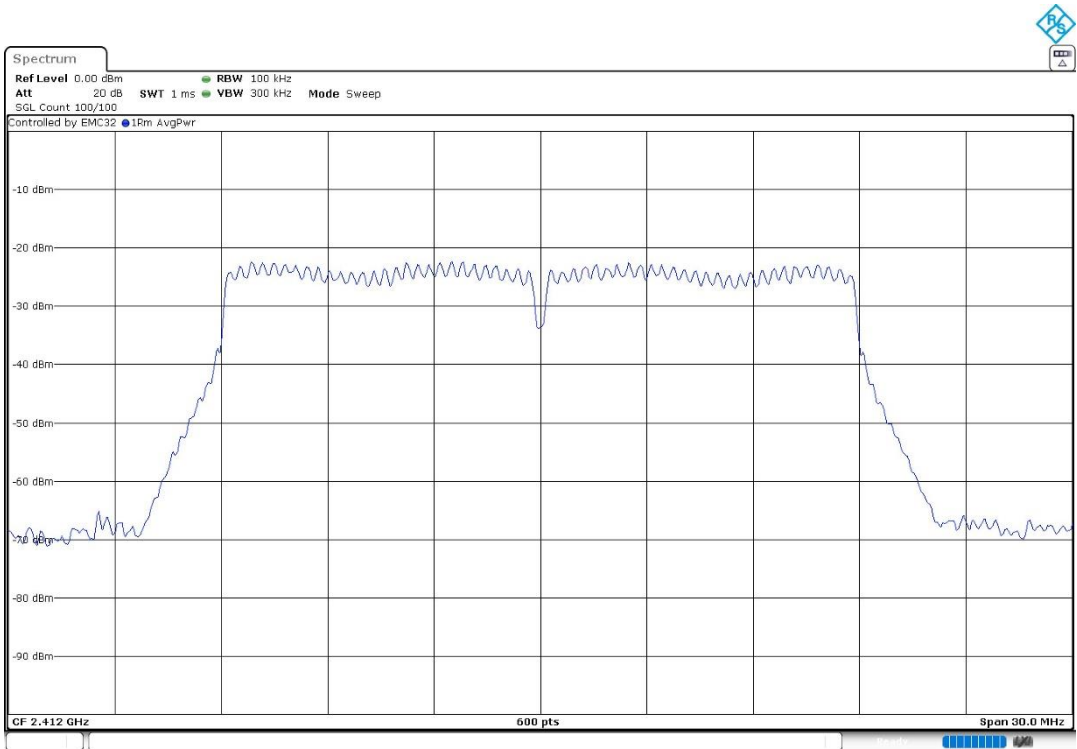
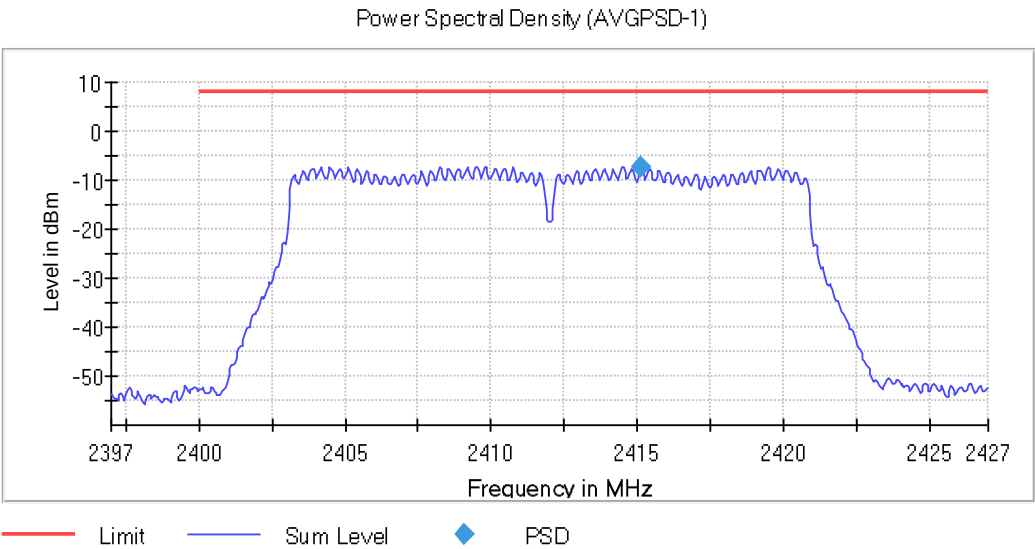
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2462.00, Equipment Type: Digital Transmission System (DTS), Modulation: 802.11g (OFDM 6 Mbit/s)

Figures:



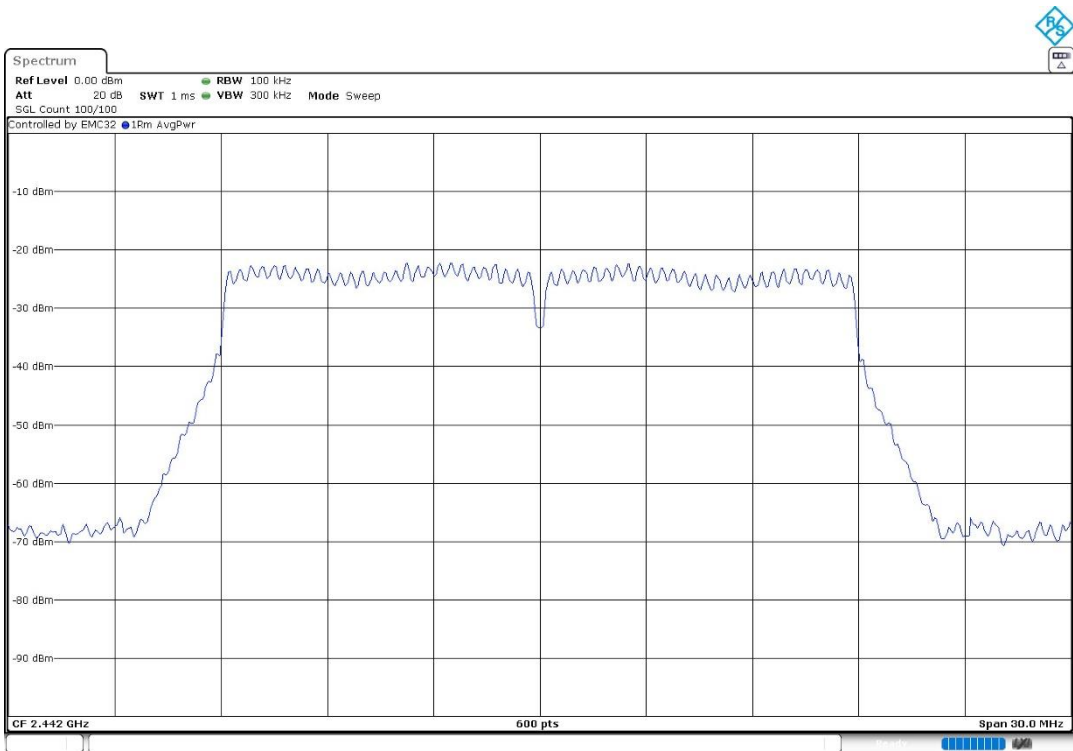
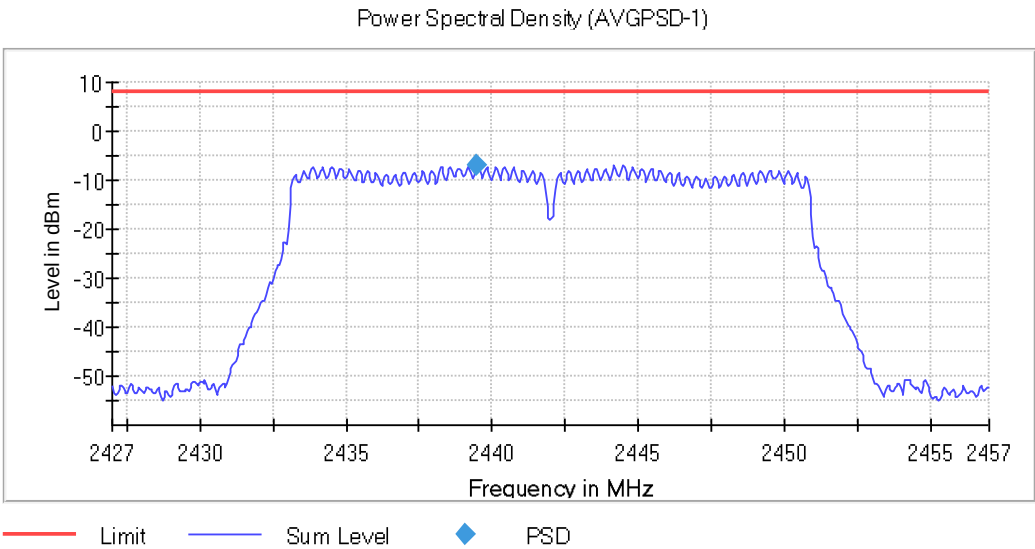
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2412.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



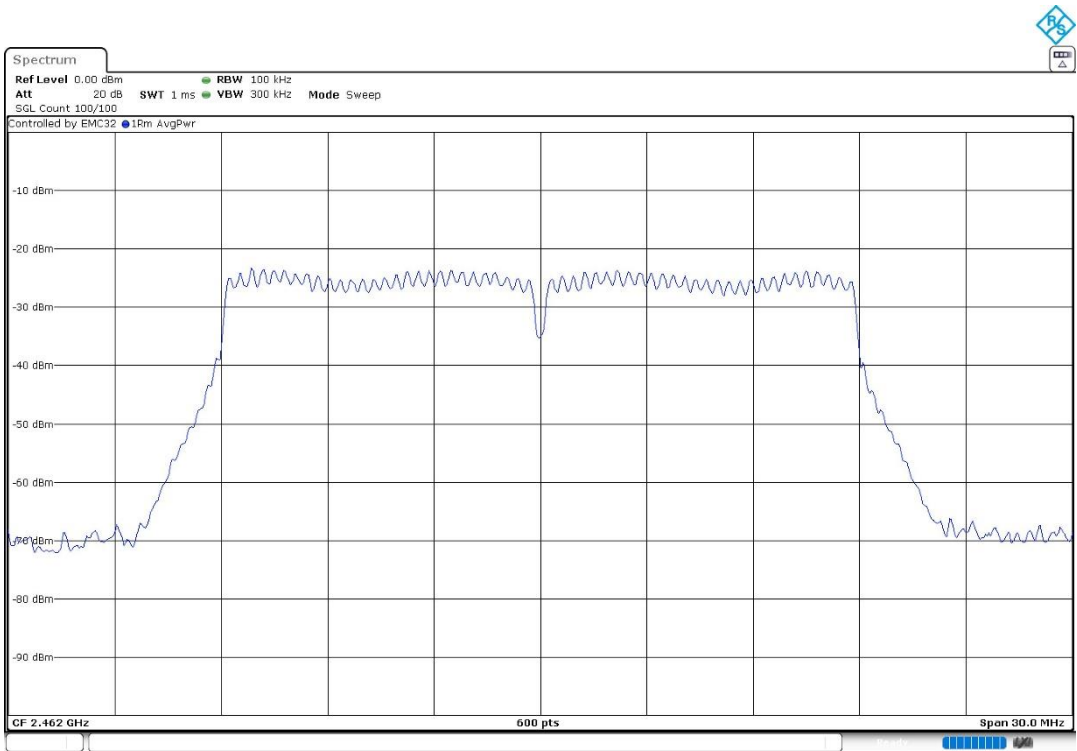
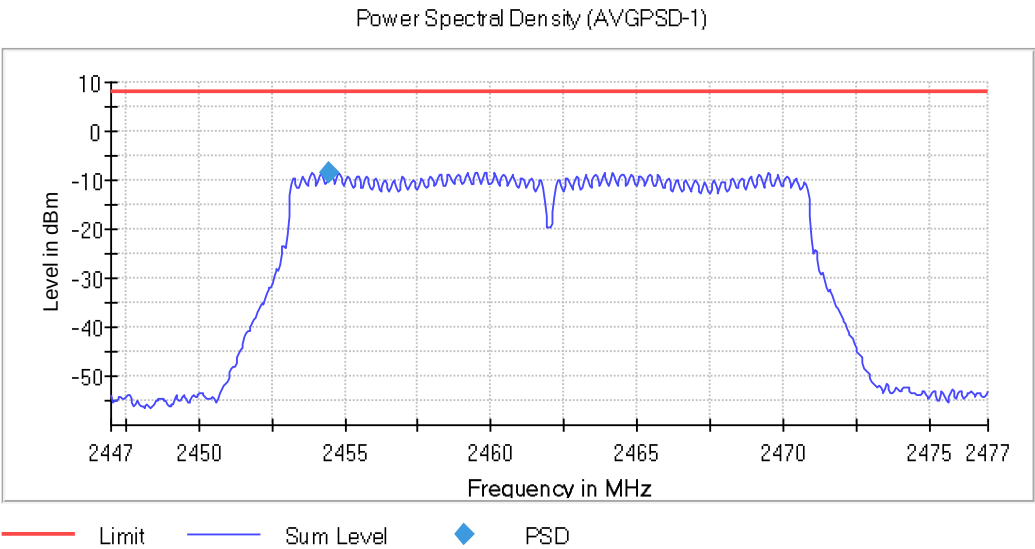
Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2442.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2462.00, Equipment Type: Digital Transmission System (DTS), 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Figures:



FCC 15.247 (d) / RSS-247 5.5 Band-edge emissions compliance (Transmitter)

Limits

In any 100 kHz bandwidths outside the frequency band in which the 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, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Results

Radiated measurements were used to show compliance with the limits in the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

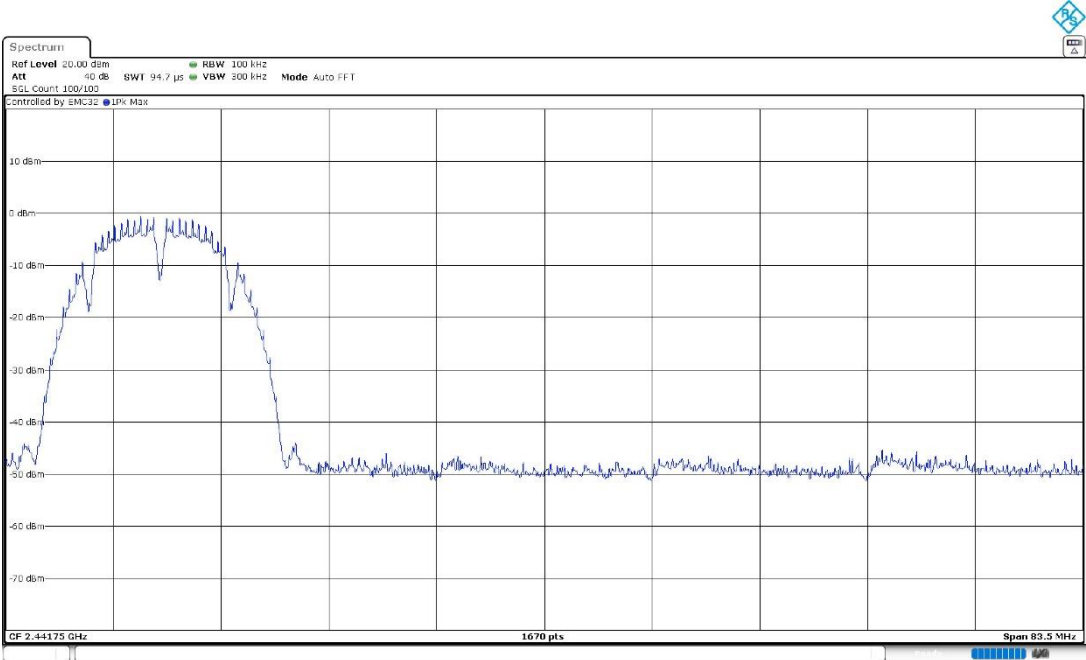
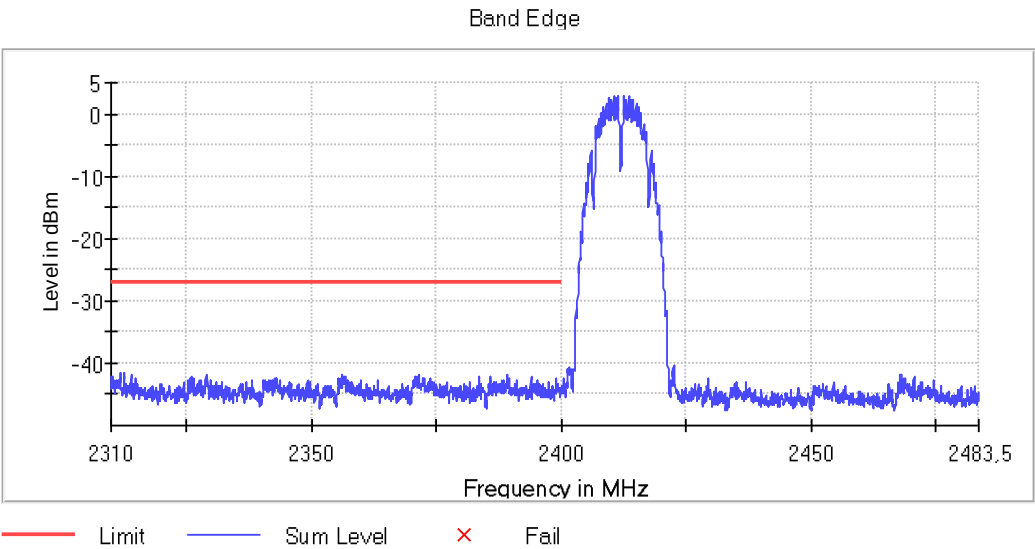
Verdict

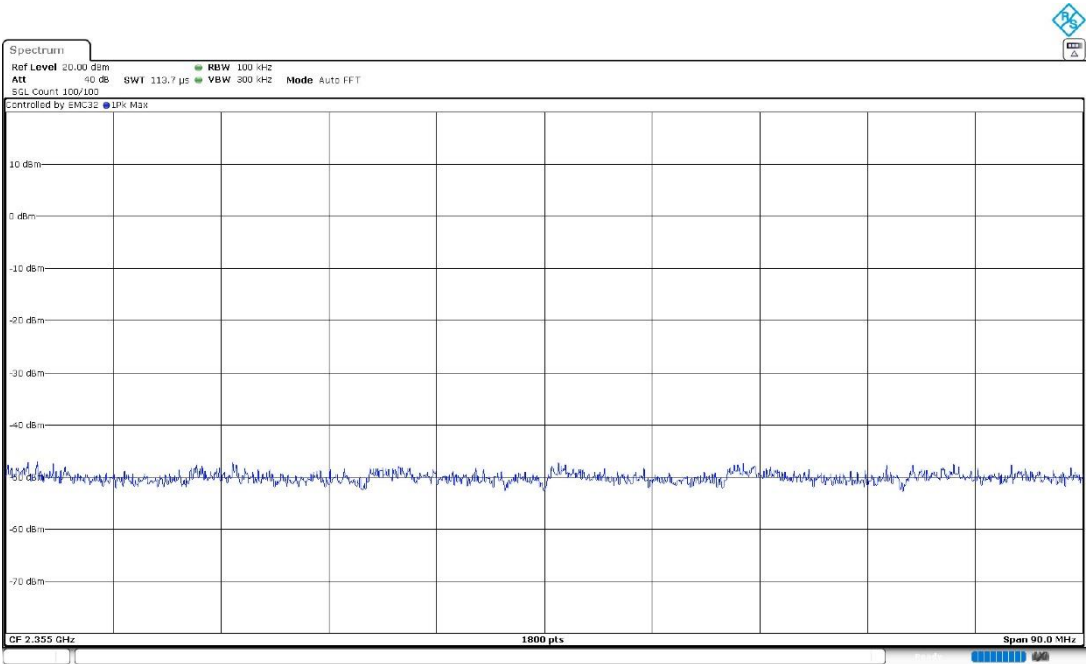
Pass

Attachments

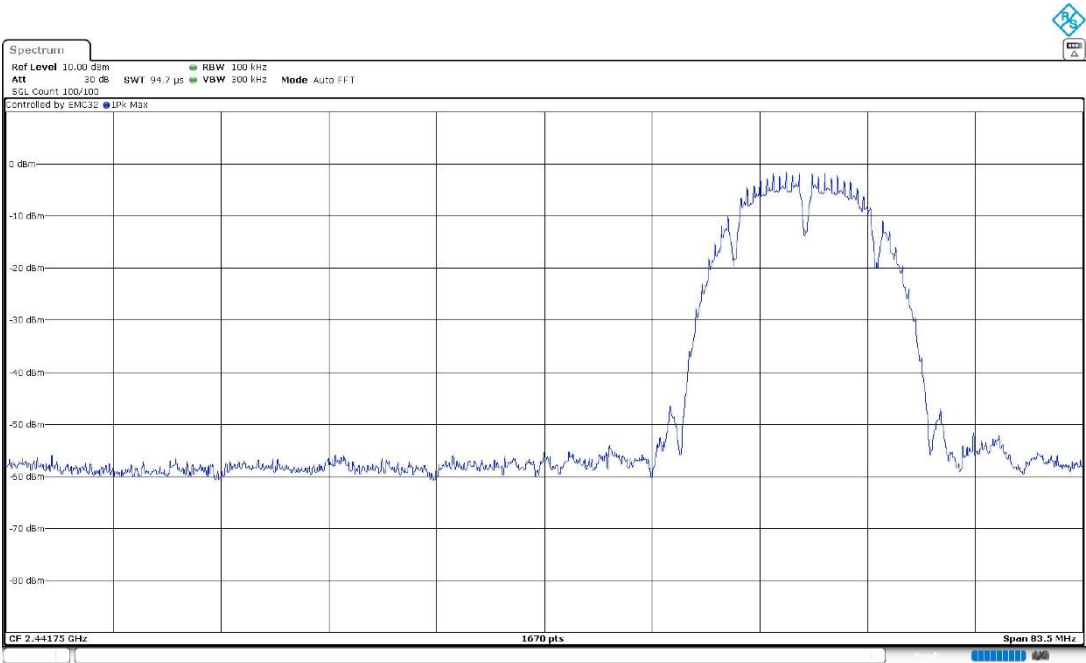
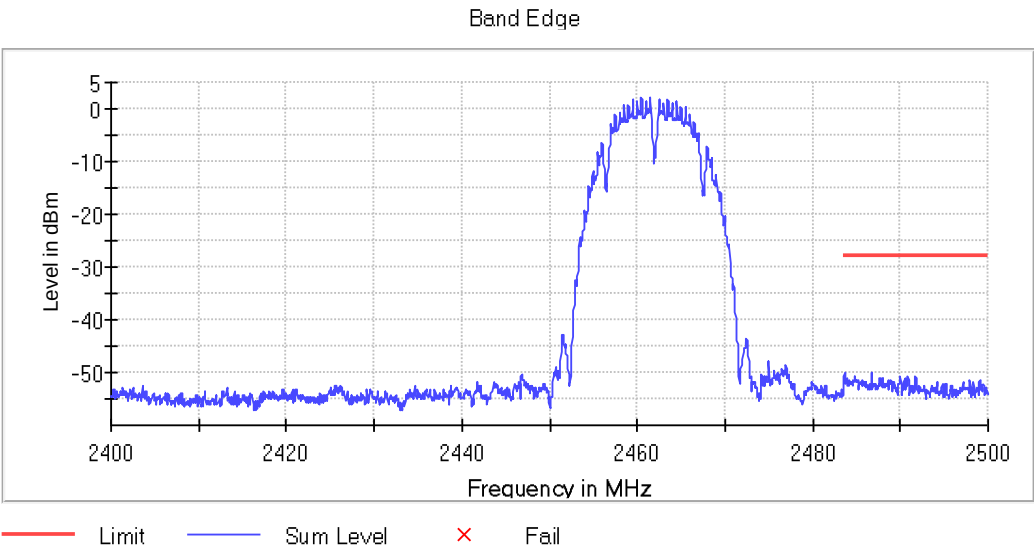
Mode 802.11 b – Band-edge emissions

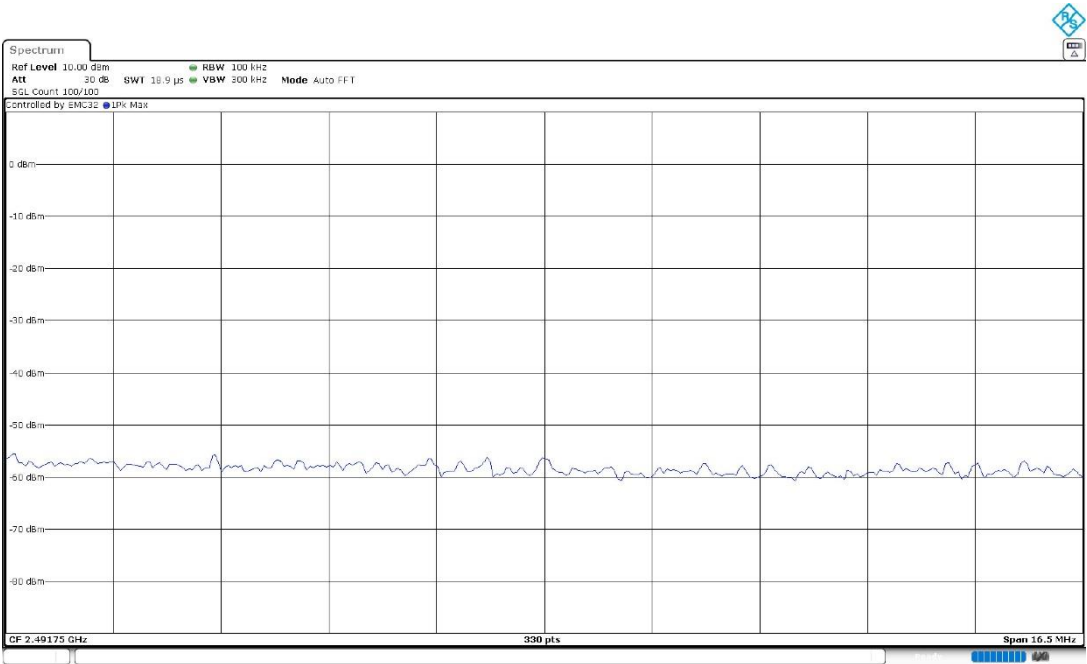
- Low Channel:





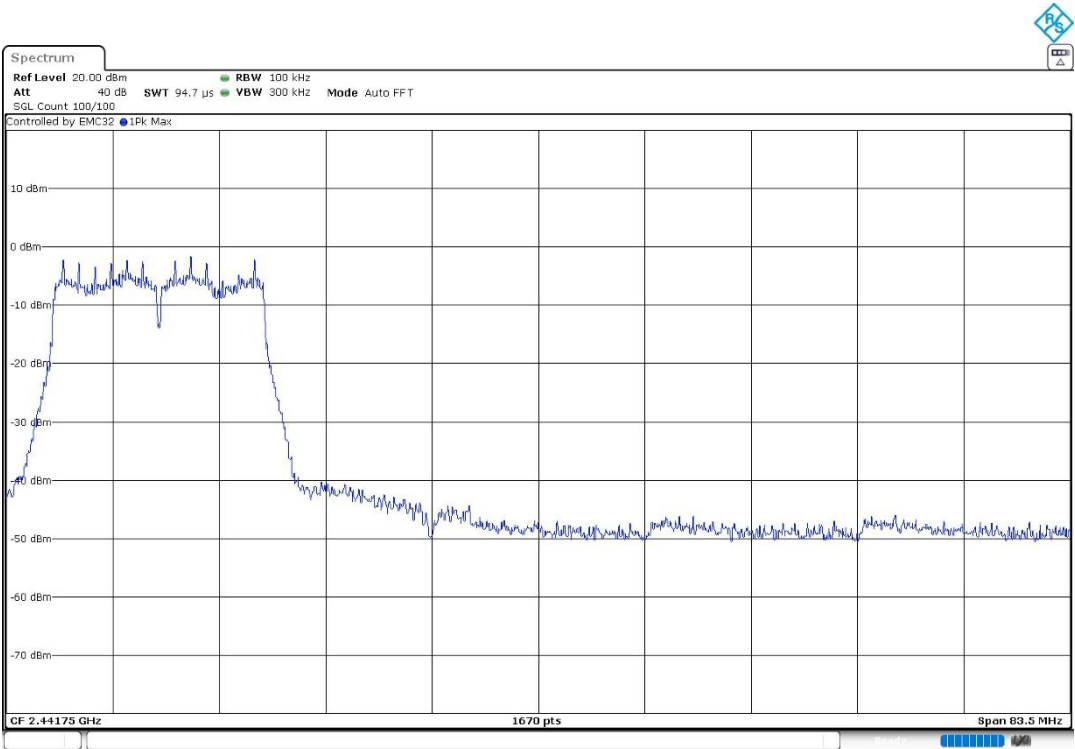
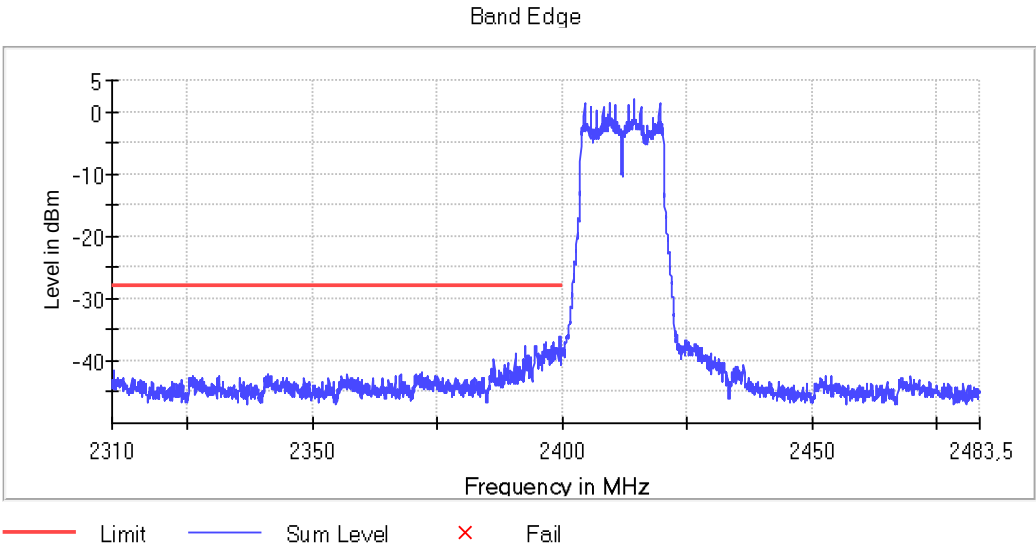
- High Channel:

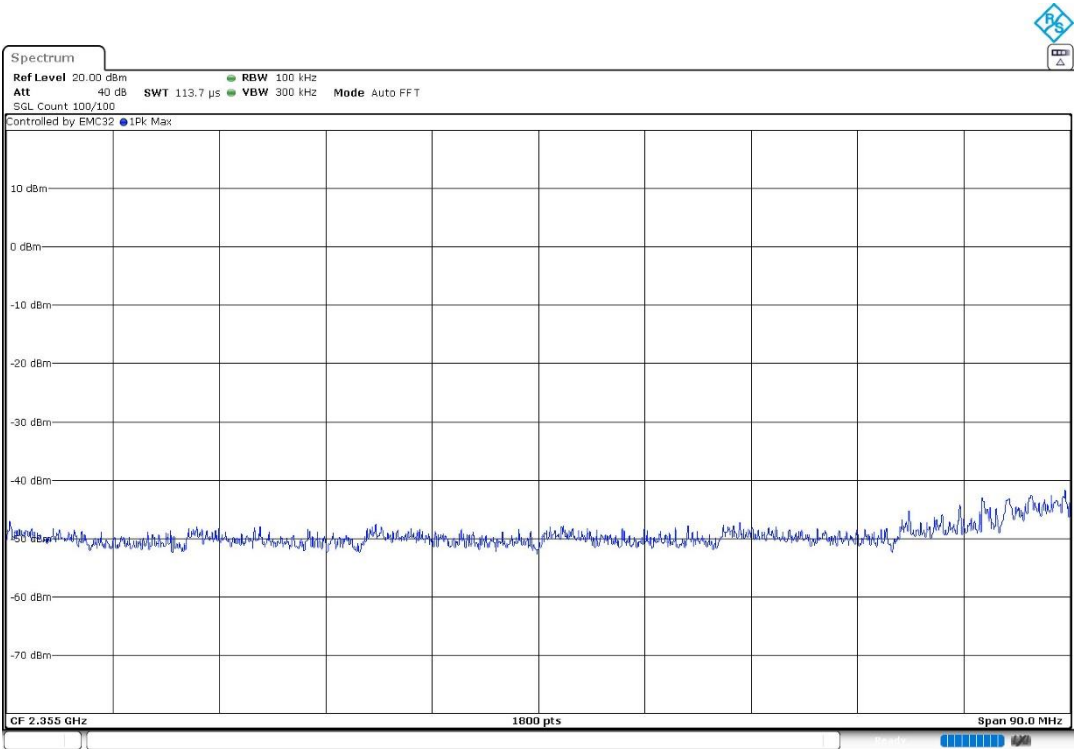




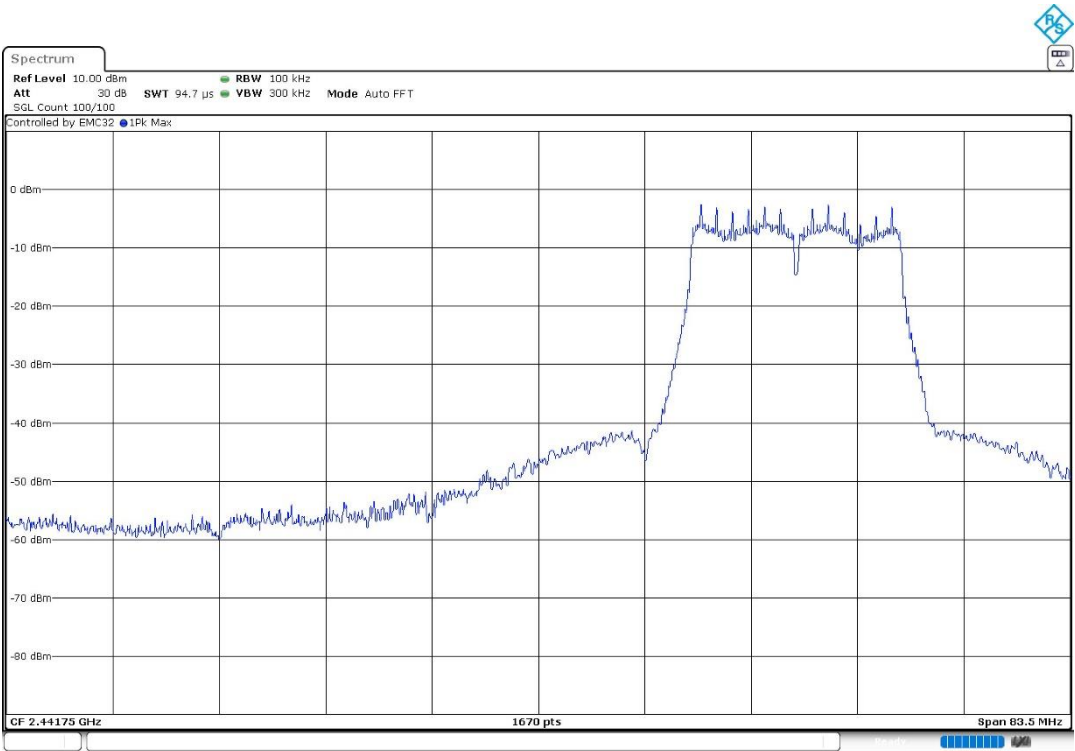
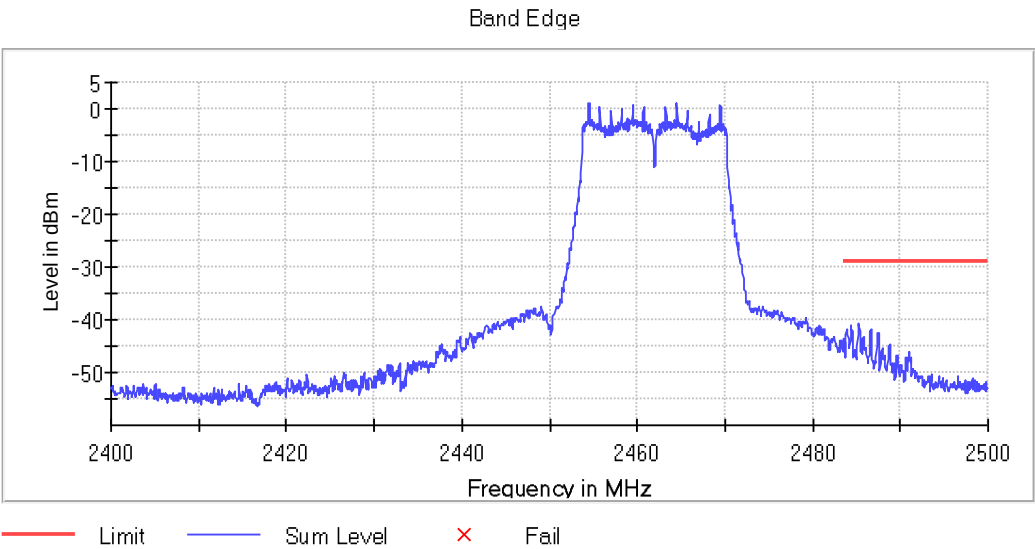
Mode 802.11 g – Band-edge emissions

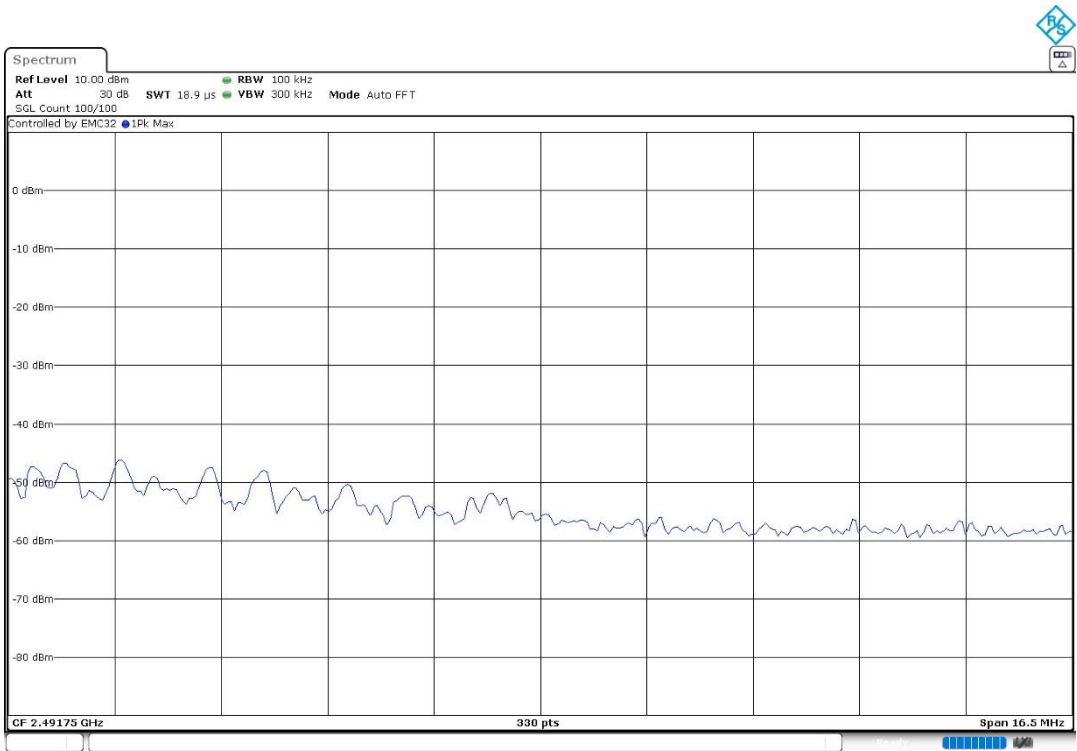
- Low Channel:





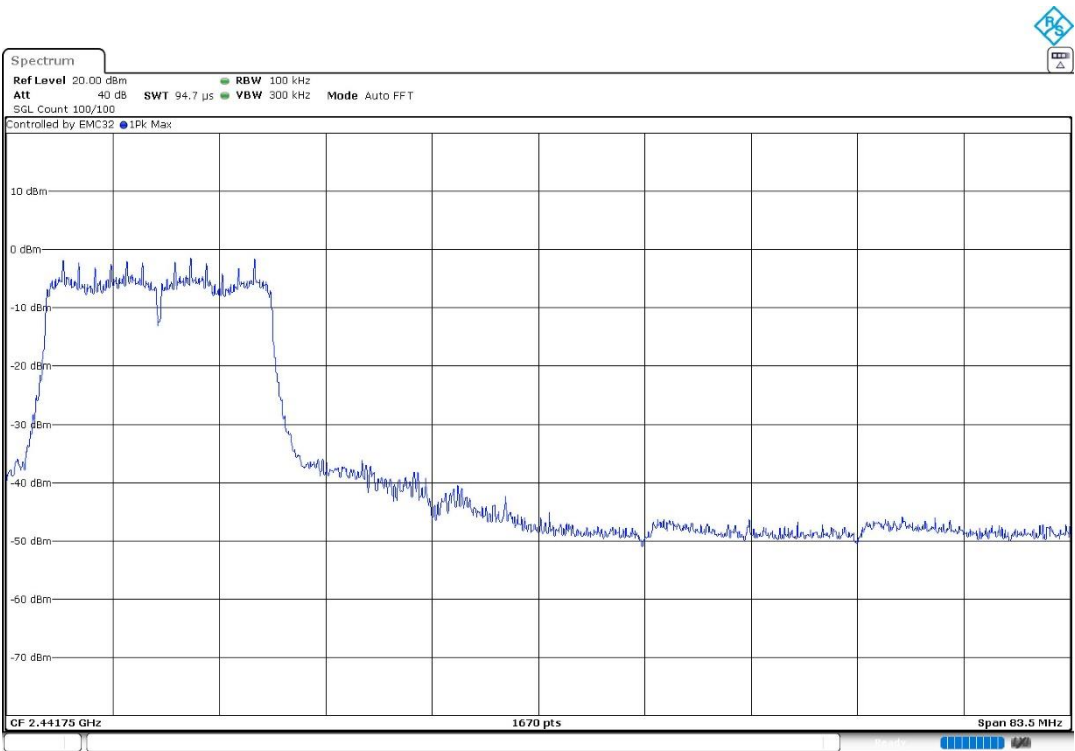
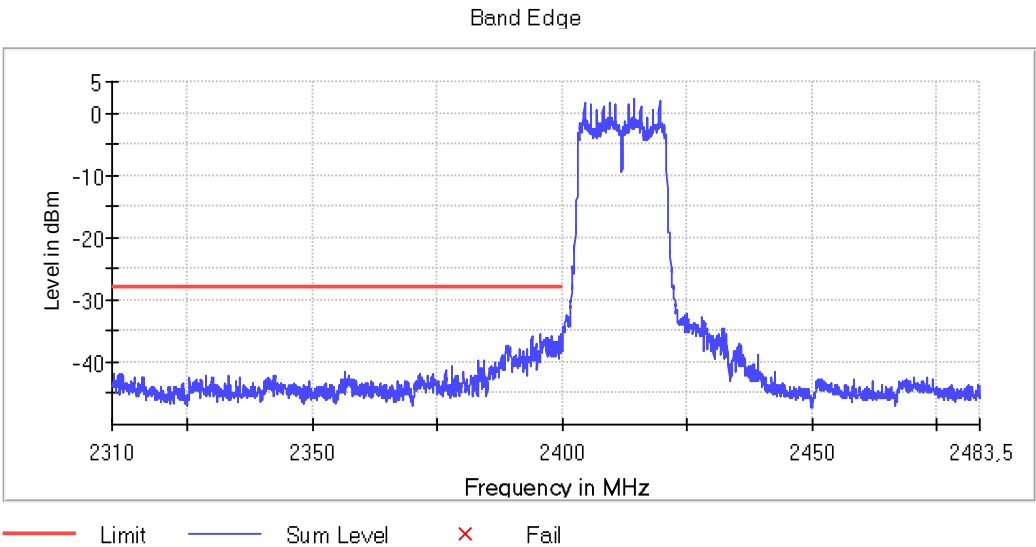
- High Channel:

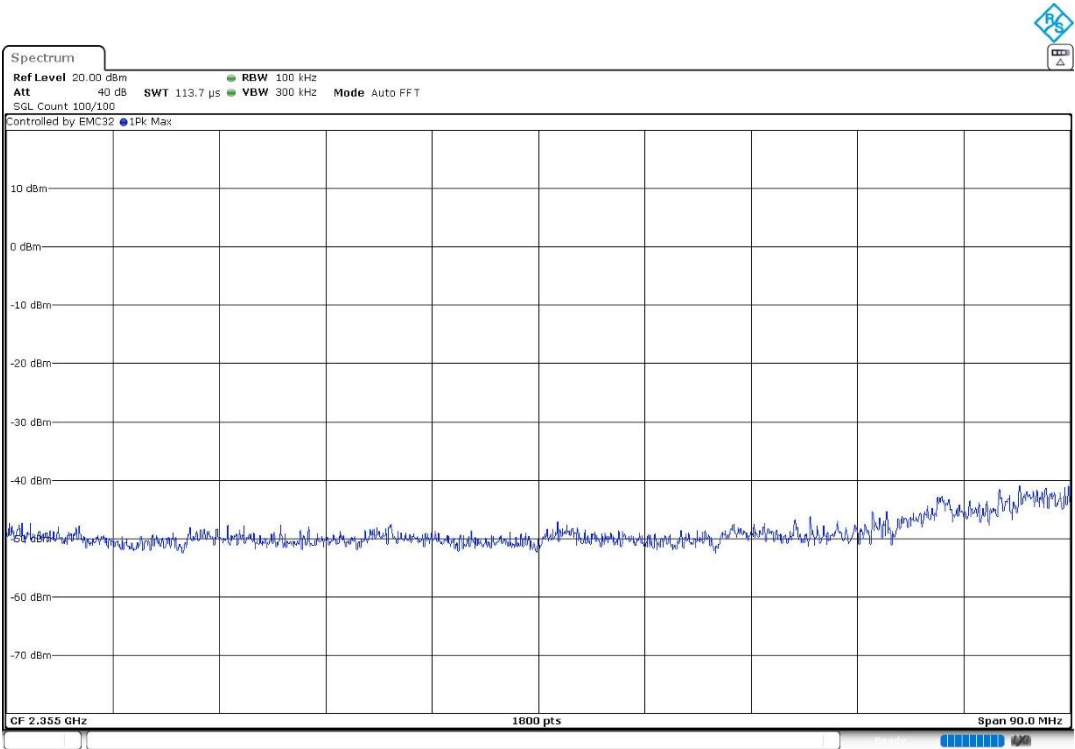




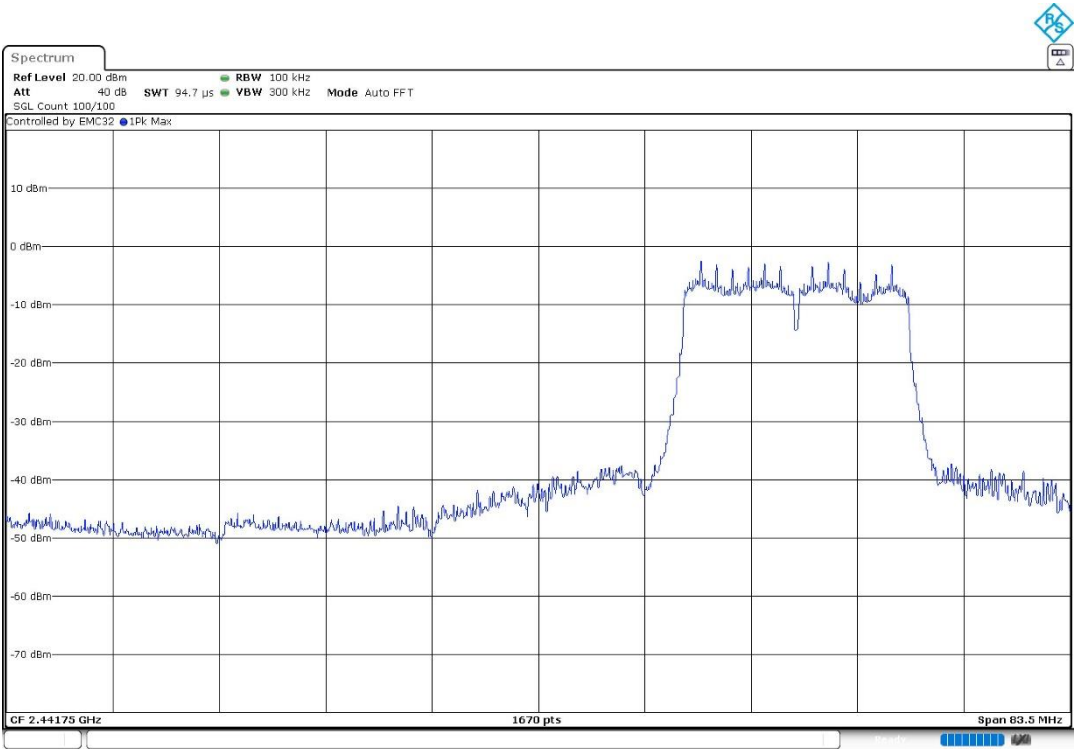
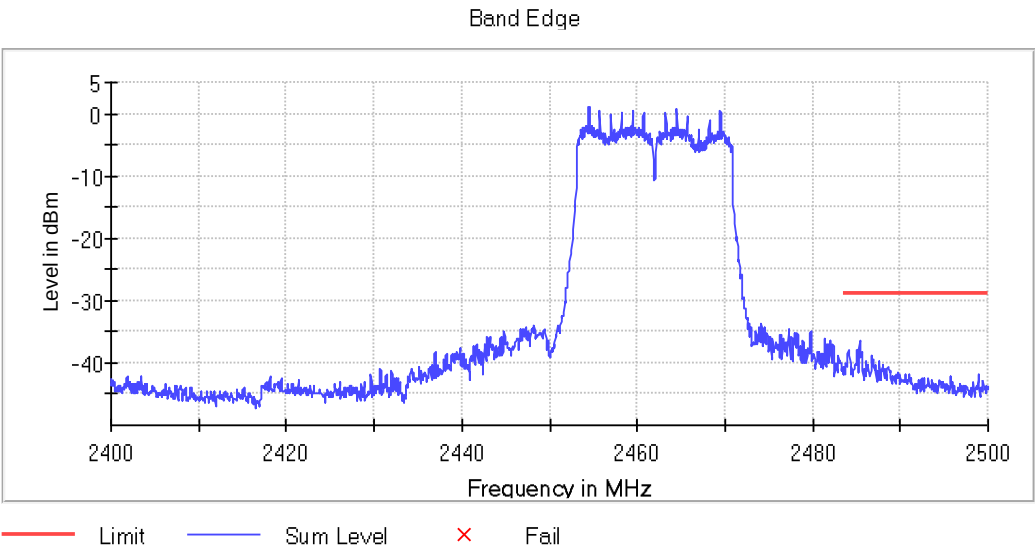
Mode 802.11 n20 – Band-edge emissions

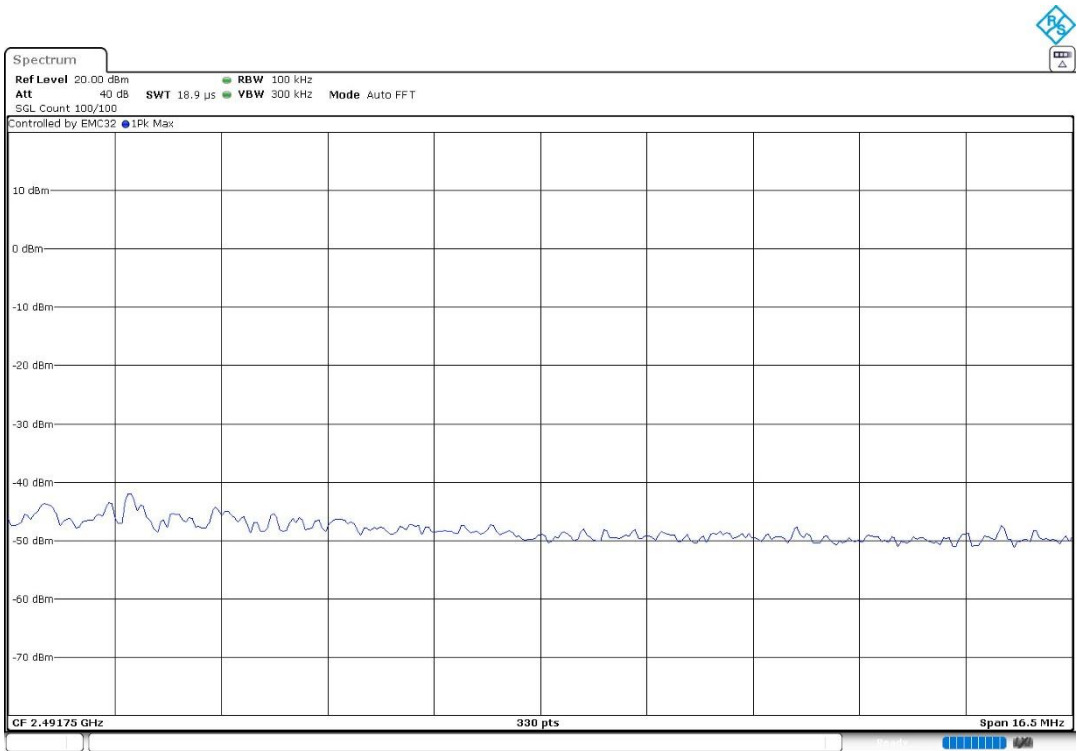
- Low Channel:





- High Channel:





FCC 15.247 (d) / RSS-247 5.5 Emission limitations radiated (Transmitter)

Limits

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) / RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	-	300
0.490 - 1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

The emission limits shown in the above table are based on measurements employing 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.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table, specified when measuring with peak detector function.

RSS-247:

Attenuation below the general field strength limits specified in RSS-Gen is not required.

Results

The field strength is calculated by adding a correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss, pre-amplifiers gain and the distance correction factor for measurements above 17 GHz performed at 1.5-meter distance.

Frequency range 30 MHz - 1 GHz:

The spurious frequencies detected below 1 GHz do not depend on either the operating channel or the modulation mode selected in the EUT.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBµV/m)	Polarization	Detector
32.788750	27.11	V	Quasi-peak
349.978750	27.63	H	Quasi-peak
374.986563	27.29	H	Quasi-peak

Frequency range 1 - 26 GHz:

The results below show the maximum measured levels in the 1-26 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

Spurious frequencies with peak levels above the average limit (54 dB μ V/m at 3 m) are measured with average detector for checking compliance with the average limit.

- **Mode 802.11 b:**

- Low Channel.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dB μ V/m)	Polarization	Detector
4986.880000	53.11	H	Peak
7481.540000	53.11	H	Peak

- Middle Channel.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dB μ V/m)	Polarization	Detector
12075.080000	51.60	H	Peak

- High Channel.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dB μ V/m)	Polarization	Detector
7304.440000	47.11	V	Peak

Verdict

Pass

OFDM modes:

For spurious emissions in the range 30 MHz - 26 GHz (except field strength at the band edges that was tested for all modes) a preliminary scan was performed to determine the OFDM worst-case mode in terms of spurious emissions.

Spurious emissions in the Restricted Bands 2.31-2.39 GHz and 2.4835-2.5 GHz are measured for all modes.

- **Worst case OFDM mode: 802.11 g**
 - **Mode 802.11 g (OFDM worst case):**
 - Low Channel.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBμV/m)	Polarization	Detector
2385.400000	62.67	H	Peak
	50.52		Average
2388.861539	65.76	H	Peak
	50.36		Average
2485.938462	60.97	V	Peak
	49.18		Average
2495.107692	60.12	H	Peak
	49.39		Average
4990.940000	45.56	H	Peak

- Middle Channel.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBμV/m)	Polarization	Detector
2484.369231	60.10	H	Peak
	50.18		Average
2494.615385	60.32	H	Peak
	49.75		Average

- High Channel.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBμV/m)	Polarization	Detector
2483.846154	62.99	H	Peak
	49.84		Average
4991.780000	52.21	V	Peak
7526.060000	50.01	H	Peak

Verdict

Pass

- **Mode 802.11 n20:**

- Low Channel. Restricted Bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBμV/m)	Polarization	Detector
2384.276923	61.77	H	Peak
	50.11		Average
2388.707692	61.02	H	Peak
	49.38		Average
2494.123077	60.79	H	Peak
	49.39		Average

- Middle Channel. Restricted Bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

No spurious frequencies found close to the limit.

- High Channel. Restricted Bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

Spurious frequencies at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBμV/m)	Polarization	Detector
2484.984615	64.93	H	Peak
	49.36		Average

Verdict

Pass

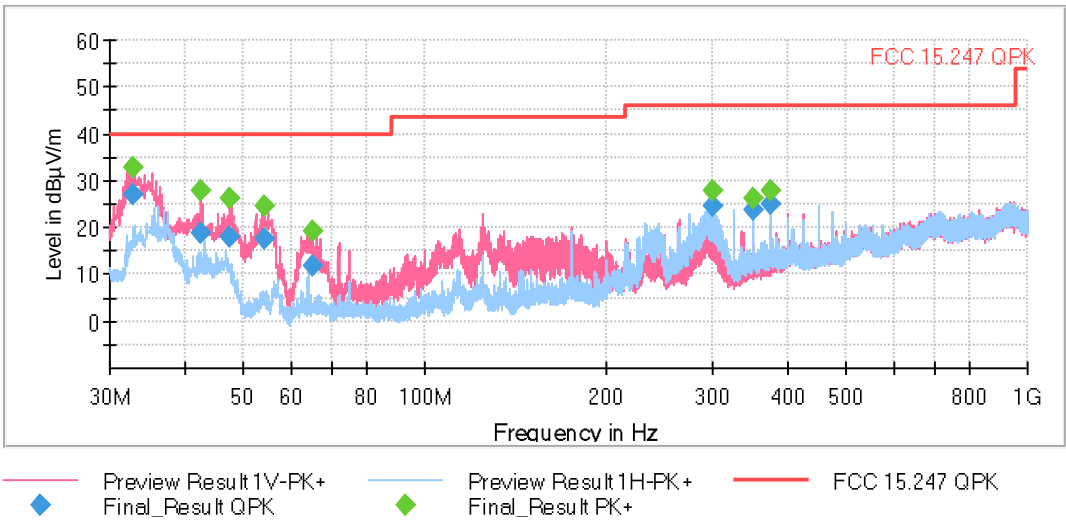
Attachments

Measurement settings:

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESR 7] 30 MHz - 1 GHz	30,312 kHz	PK+	100 kHz	1 s	0 dB
Receiver: [FSW 50] 1 GHz - 3 GHz	30,769 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
Receiver: [FSW 50] 3 GHz - 17 GHz	140 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
Receiver: [FSW 50] 17 GHz - 26 GHz	300 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

FREQUENCY RANGE 30 MHz - 1 GHz

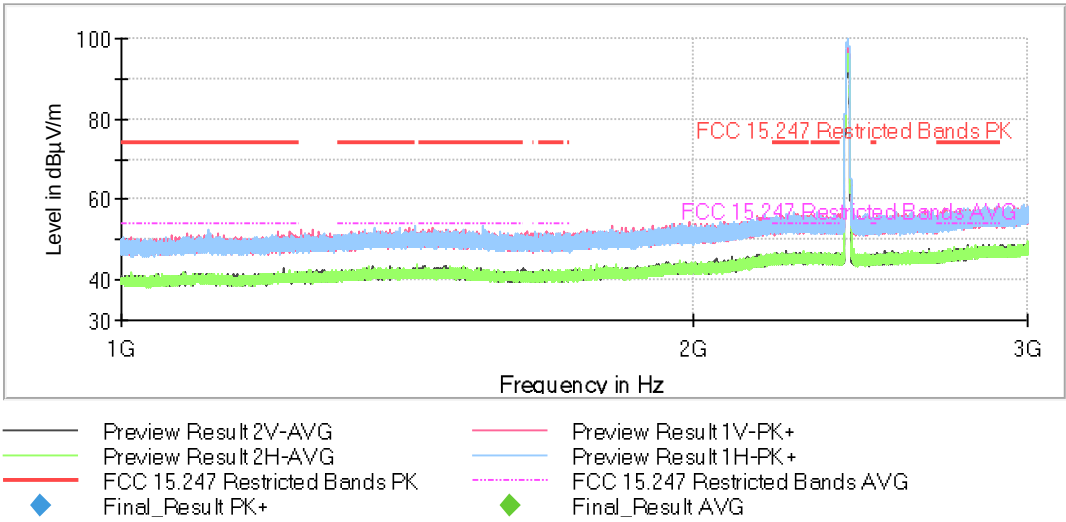
This plot is valid for Low, Middle and High Channels and all modulations.



FREQUENCY RANGE 1 - 3 GHz

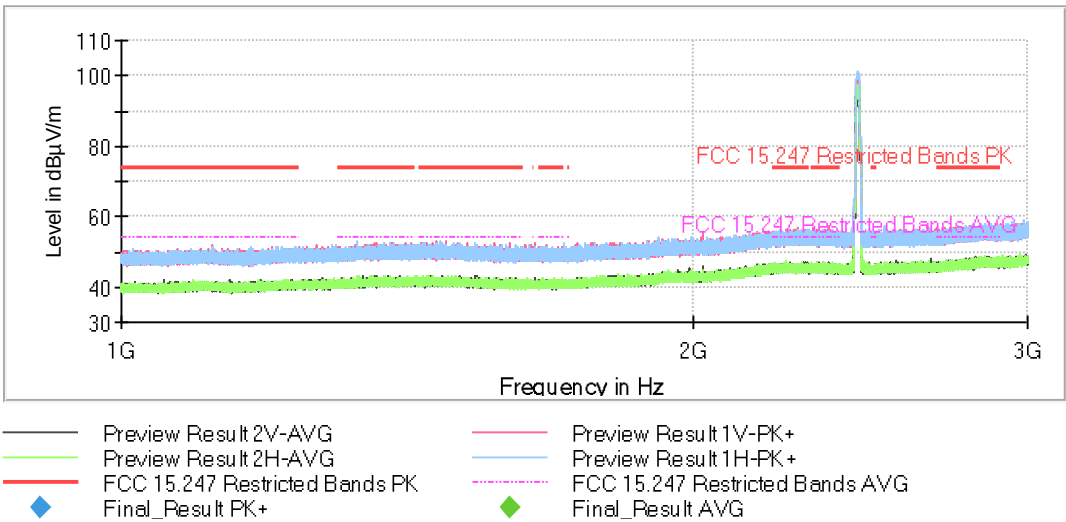
- Mode 802.11 b:

- Low Channel:



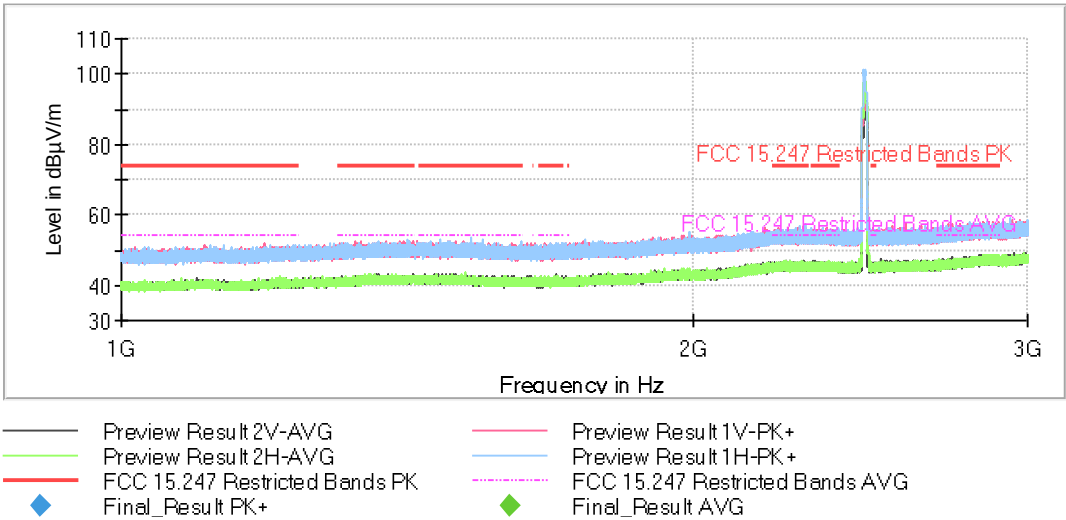
The peak above the limit is the carrier frequency.

- Middle Channel:



The peak above the limit is the carrier frequency.

- High Channel:



The peak above the limit is the carrier frequency.