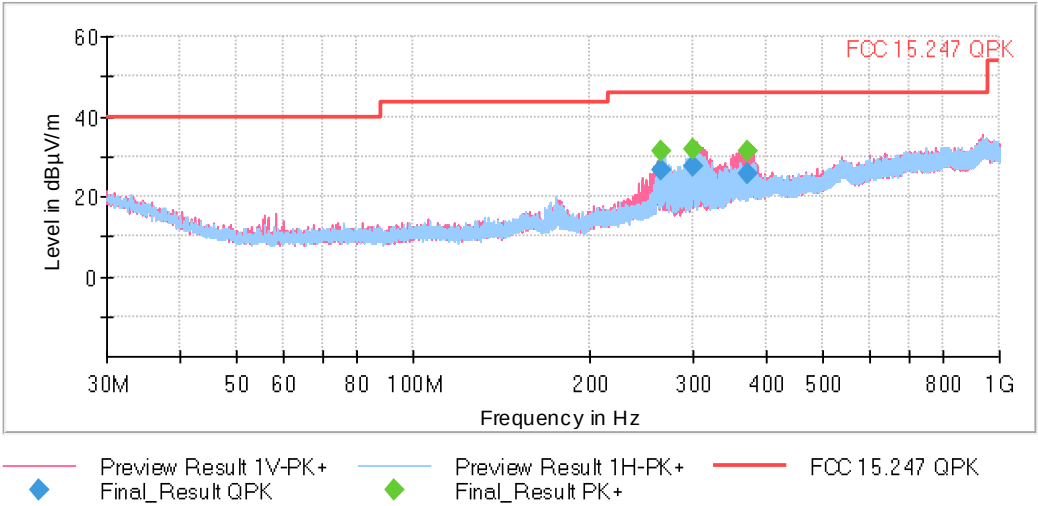


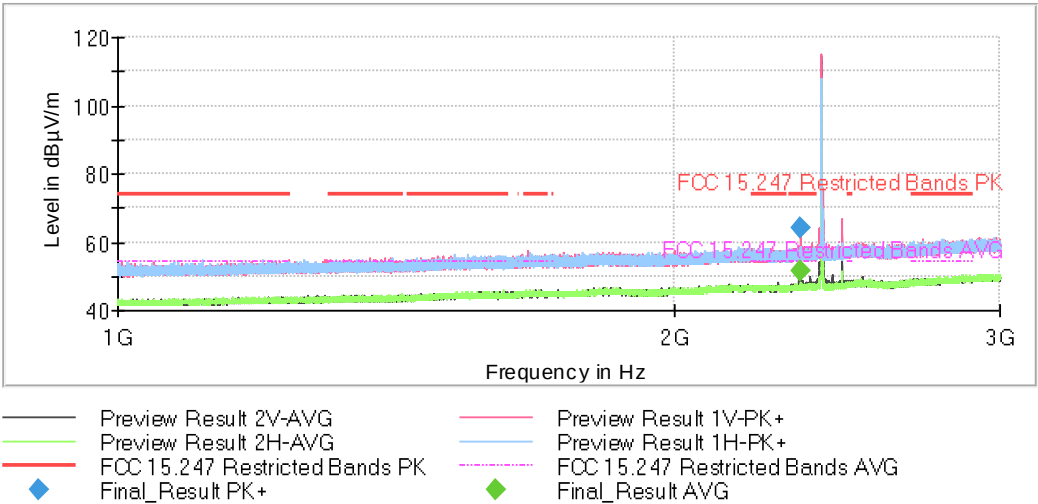
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [0.03, 1],
Measurement Point = 1

Images:

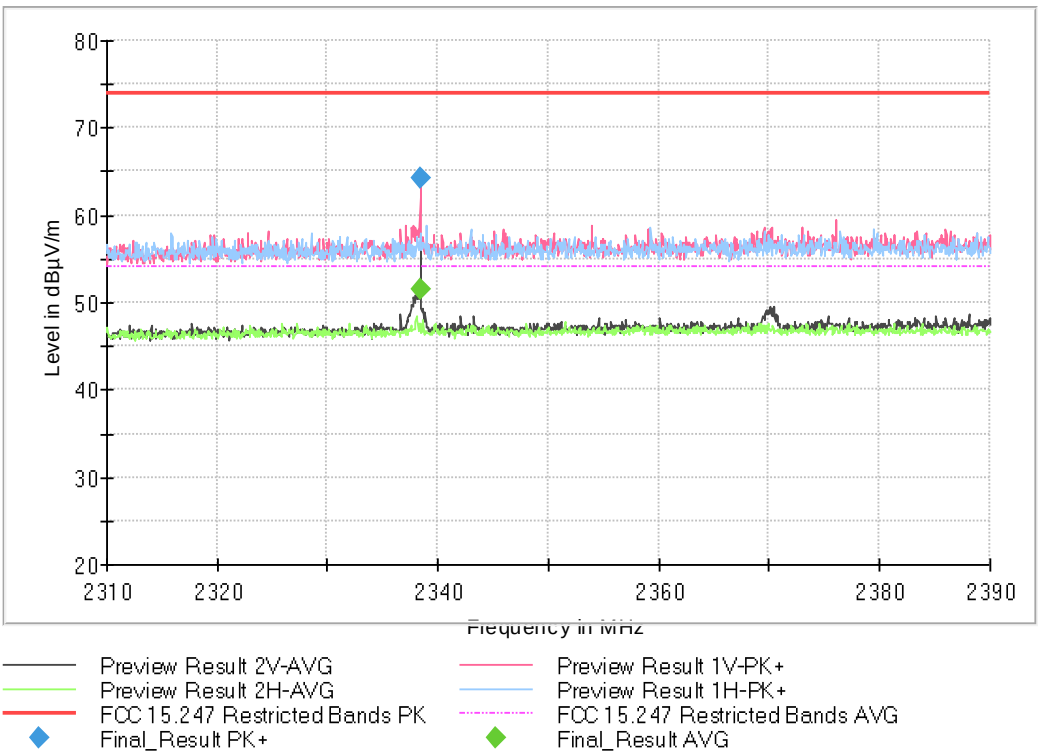


Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [1, 3],
Measurement Point = 1

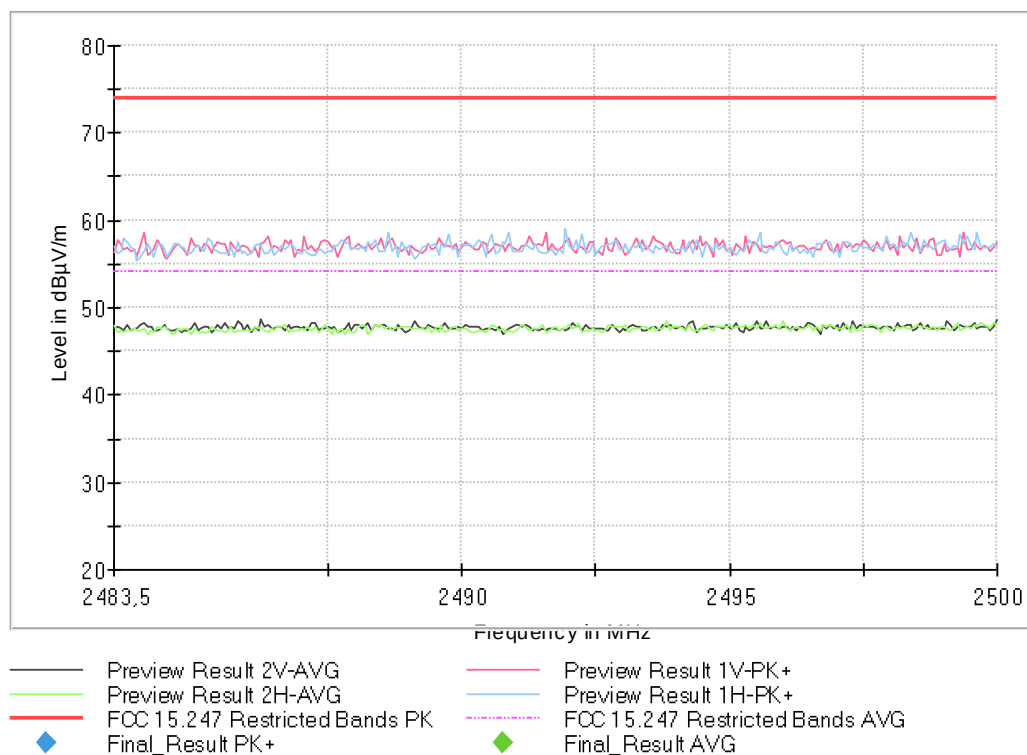
Images:



Full Spectrum

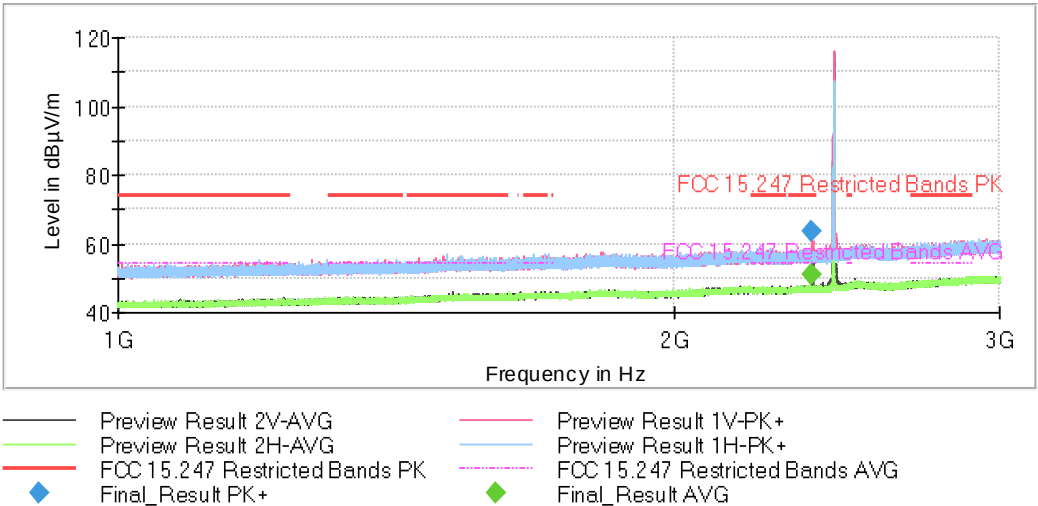


Full Spectrum

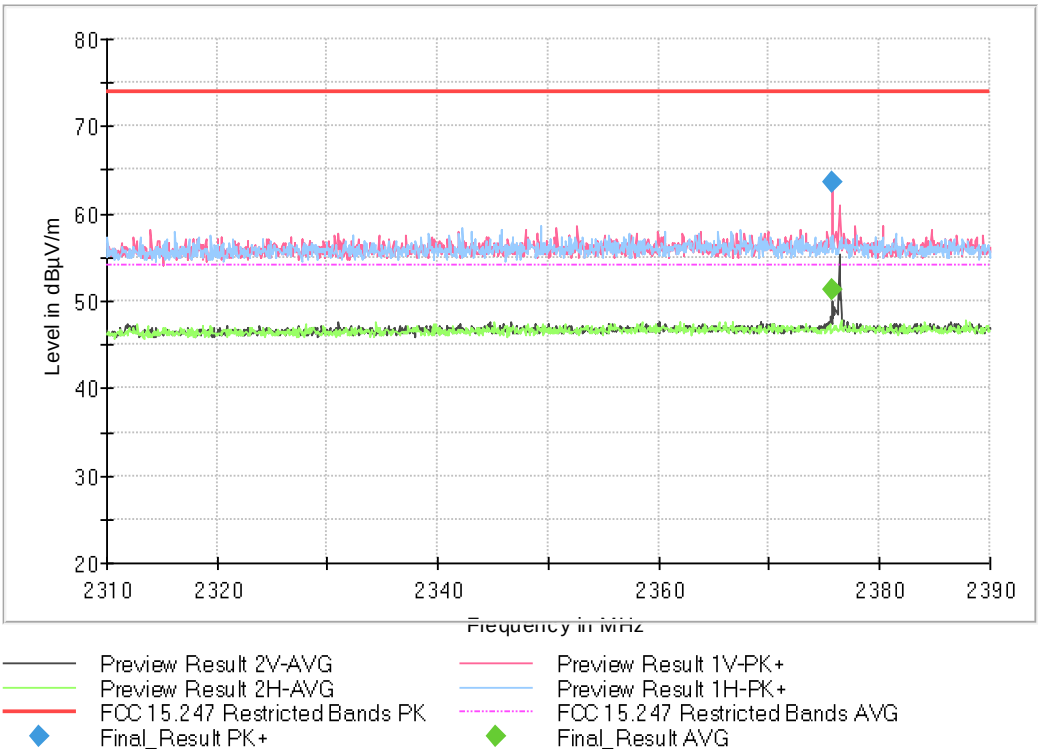


Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [1, 3],
Measurement Point = 1

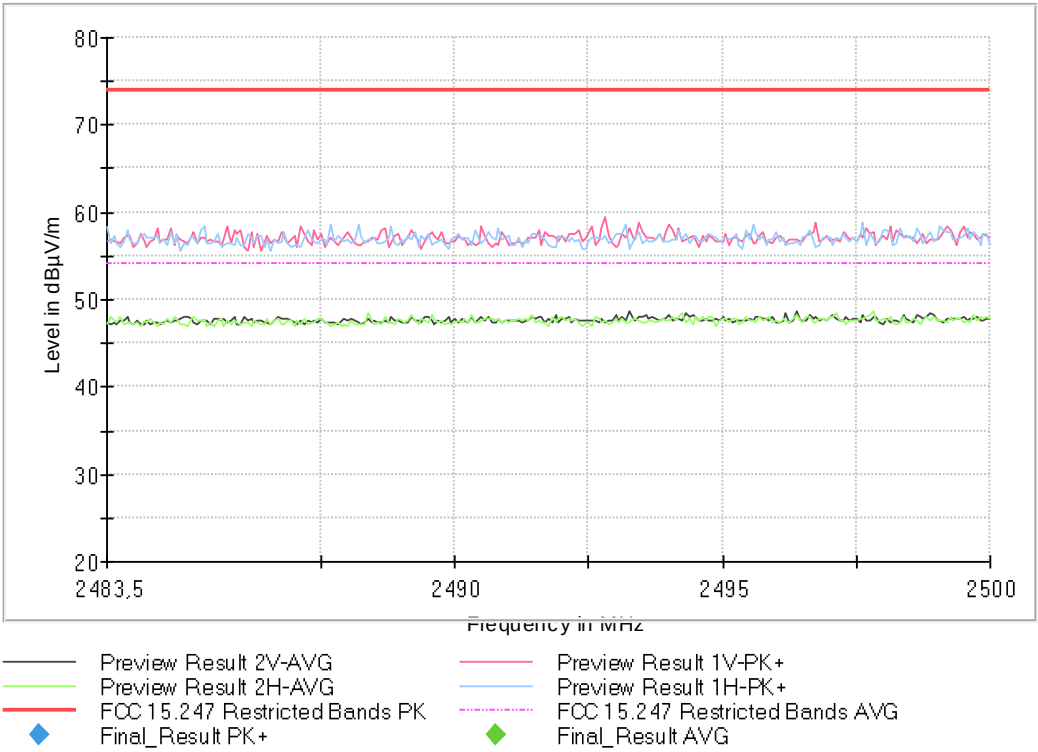
Images:



Full Spectrum

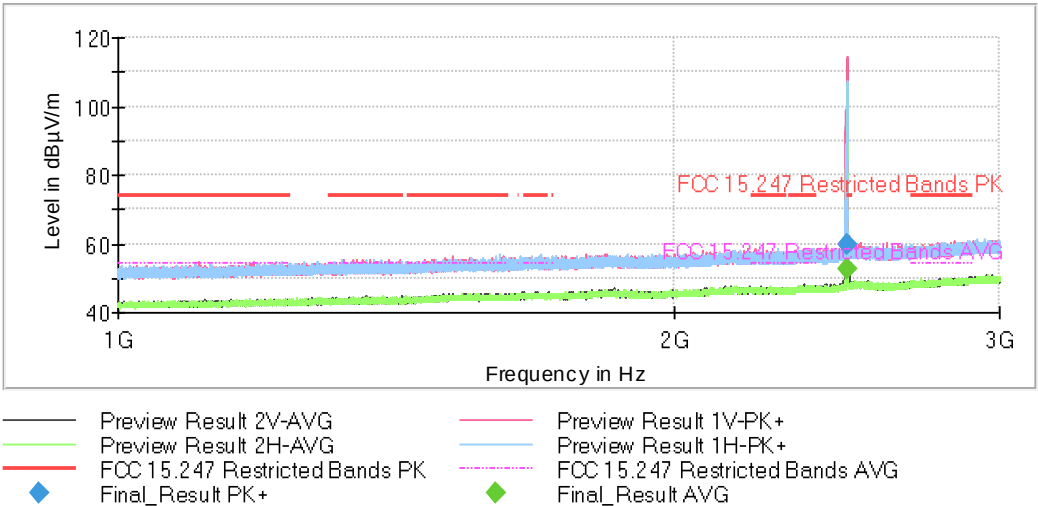


Full Spectrum

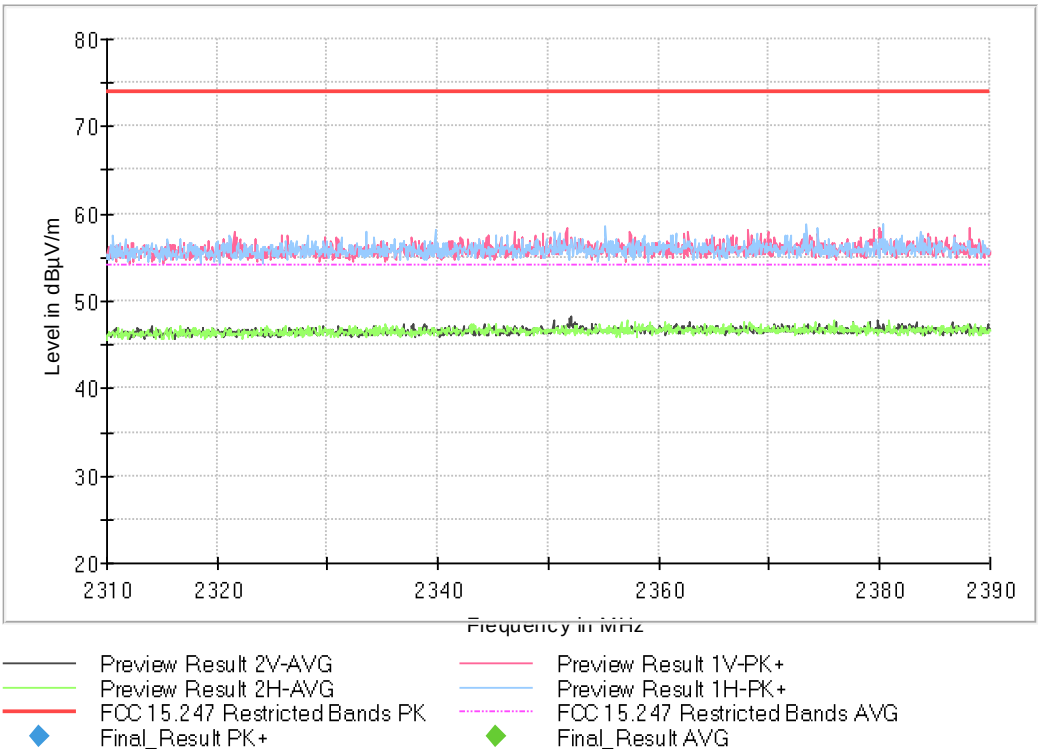


Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [1, 3],
Measurement Point = 1

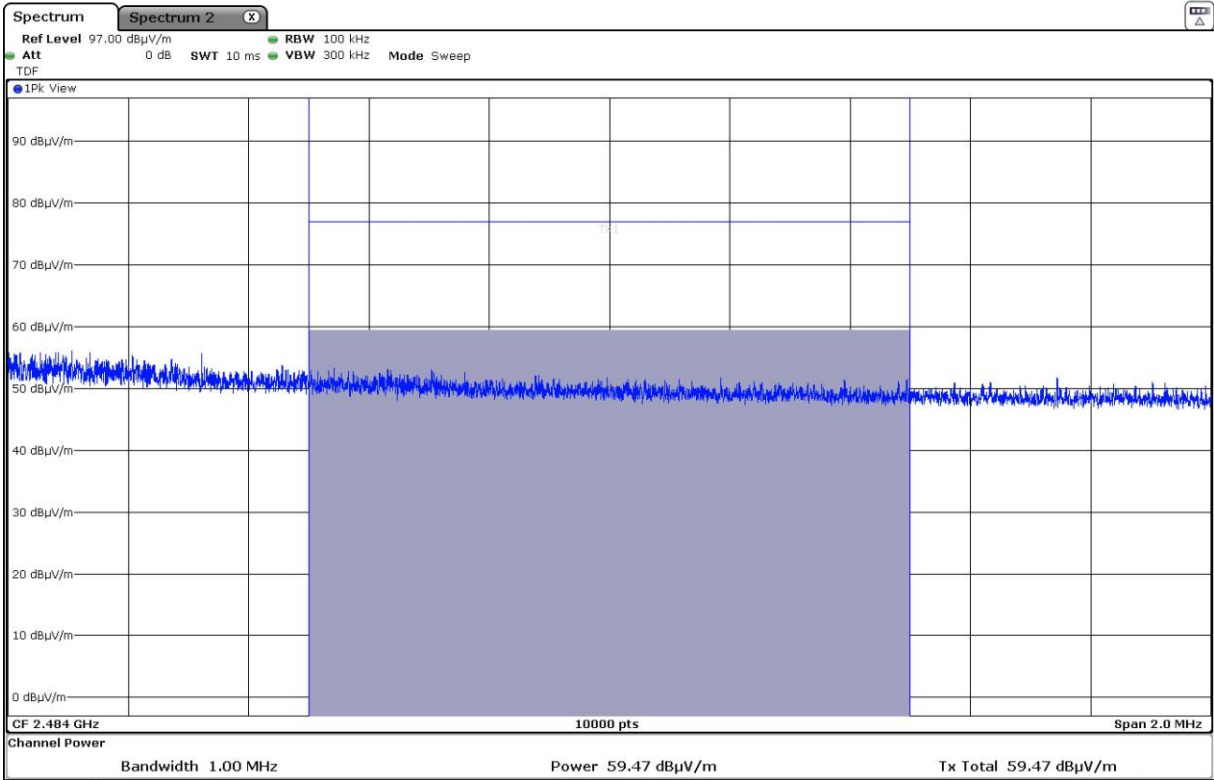
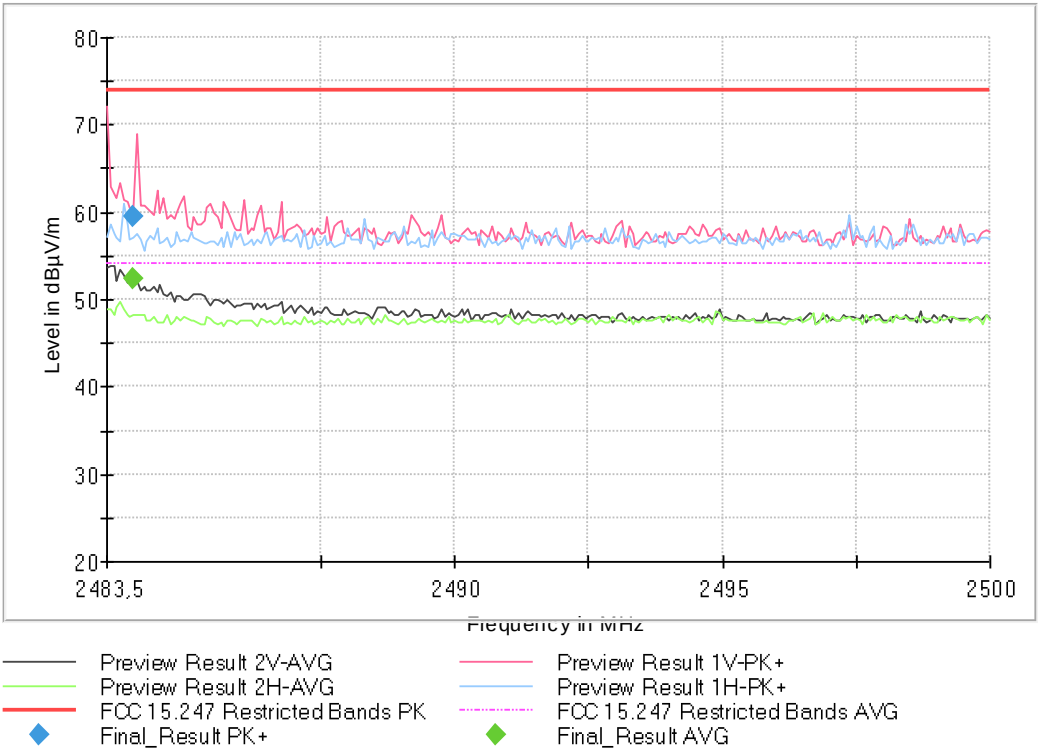
Images:

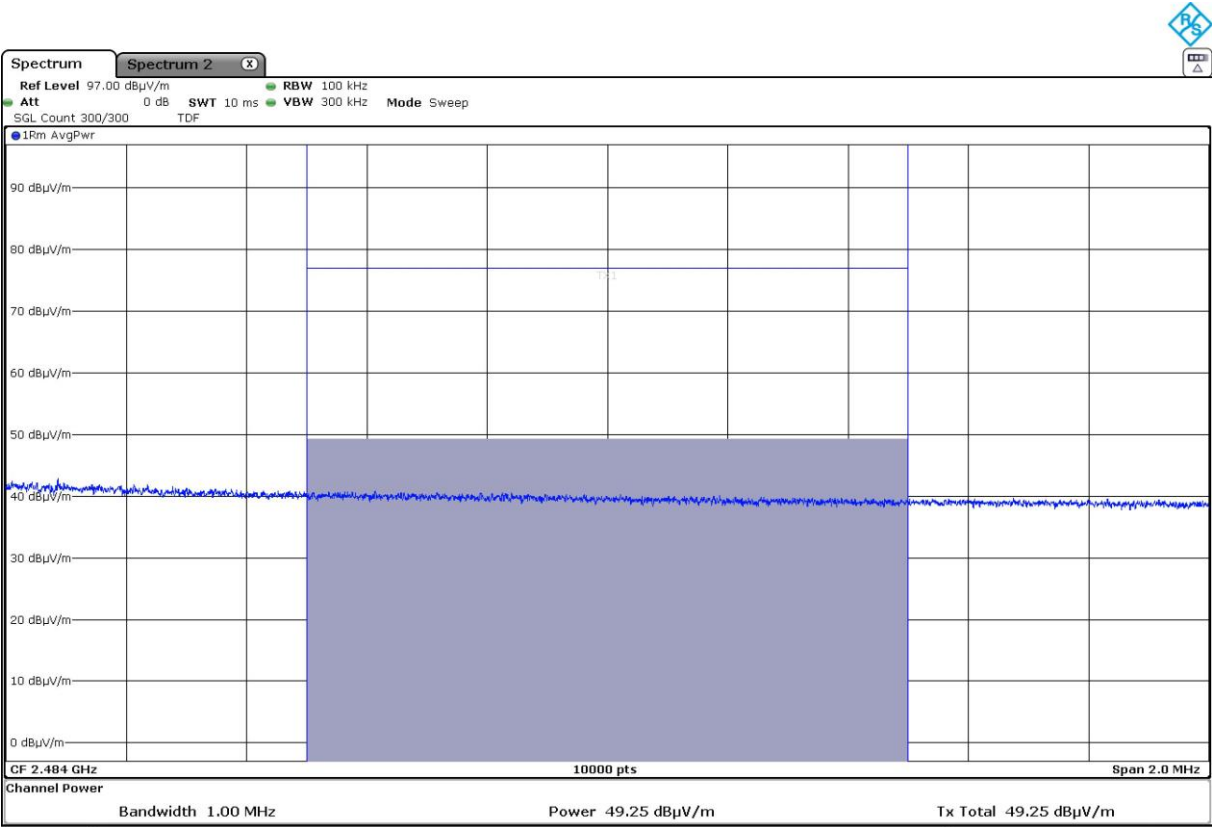


Full Spectrum



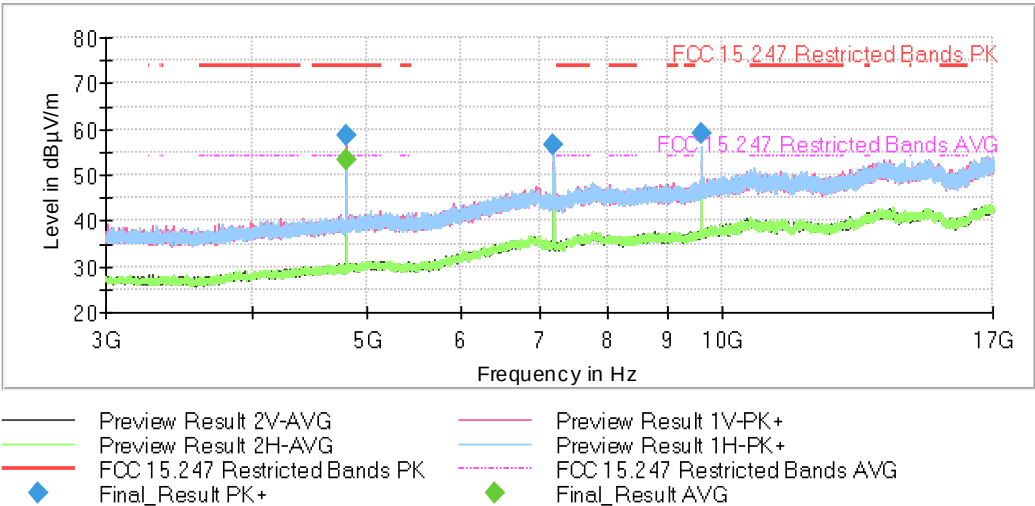
Full Spectrum





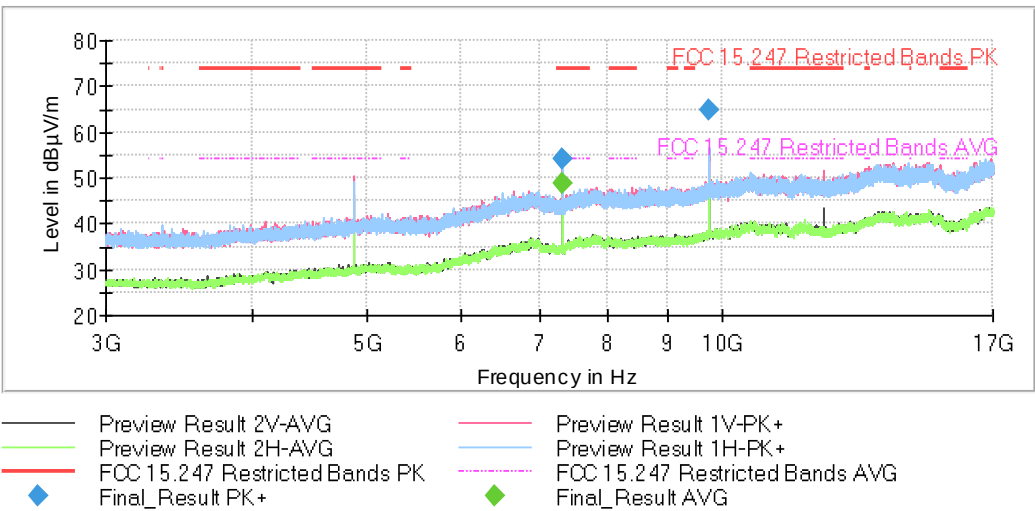
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [3, 17],
Measurement Point = 1

Images:



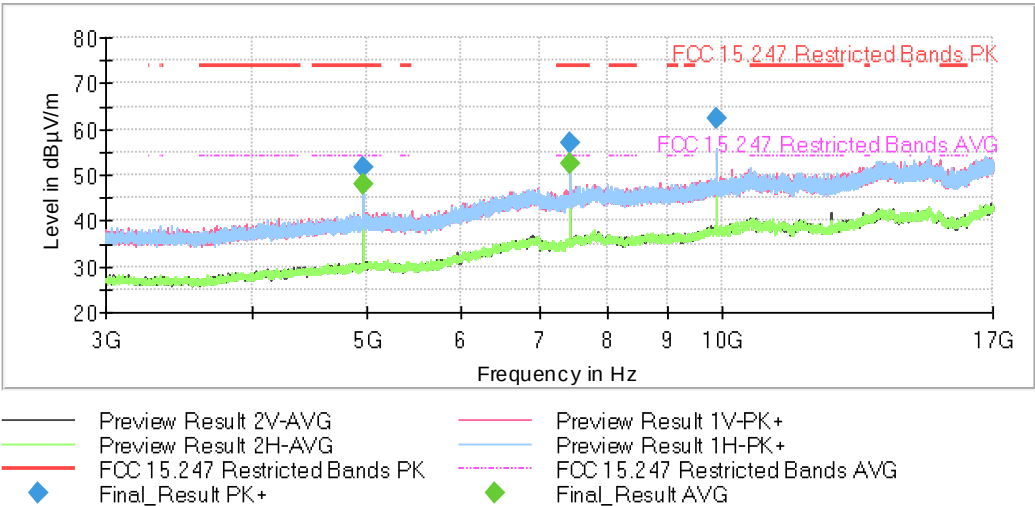
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [3, 17],
Measurement Point = 1

Images:



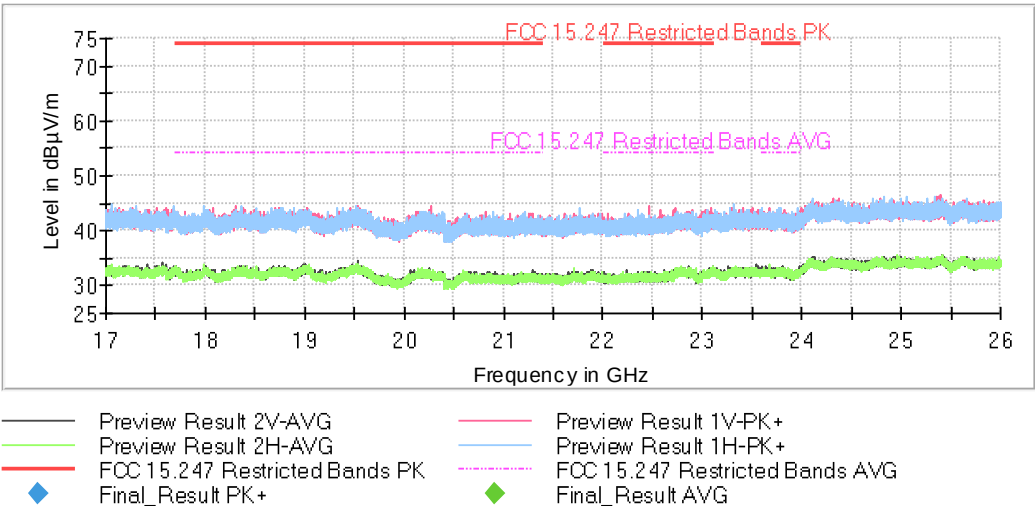
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [3, 17], Measurement Point = 1

Images:



Operation Band MHz = [2400, 2483.5], Frequency MHz = This plot is valid for the Low, Middle and High Channels, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [17, 26], Measurement Point = 1

Images:



Appendix B: Test results. Bluetooth Low Energy 5.0 (2M, 1M). A2 antenna

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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 3.7Vdc
Type of Power Supply: Battery

ANTENNA GAIN (*):

Type of Antenna: Integral
Maximum Declared Antenna Gain: -0,17 dBi (Ch 2402MHz); -0,11 dBi (Ch 2440MHz);
-0,20 dBi (Ch 2480MHz)

TEST FREQUENCIES (*):

			OUTPUT POWER
Bluetooth Low Energy 5.0 (1M, 2M):	Low Channel:	2402 MHz	3dBm
	Middle Channel:	2440 MHz	
	High Channel:	2480 MHz	

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

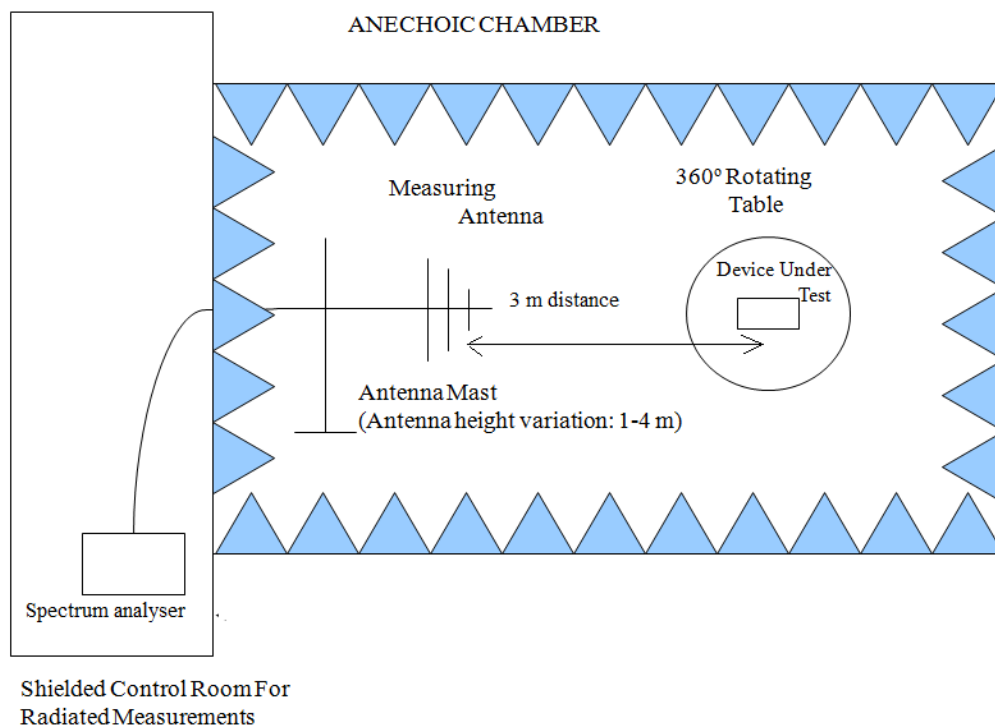
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

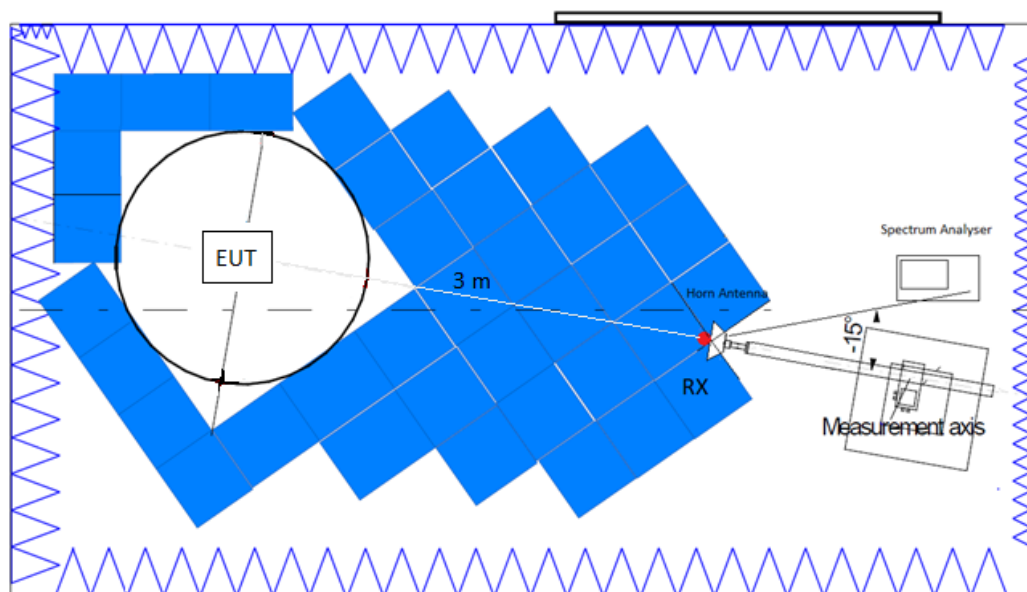
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth/video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

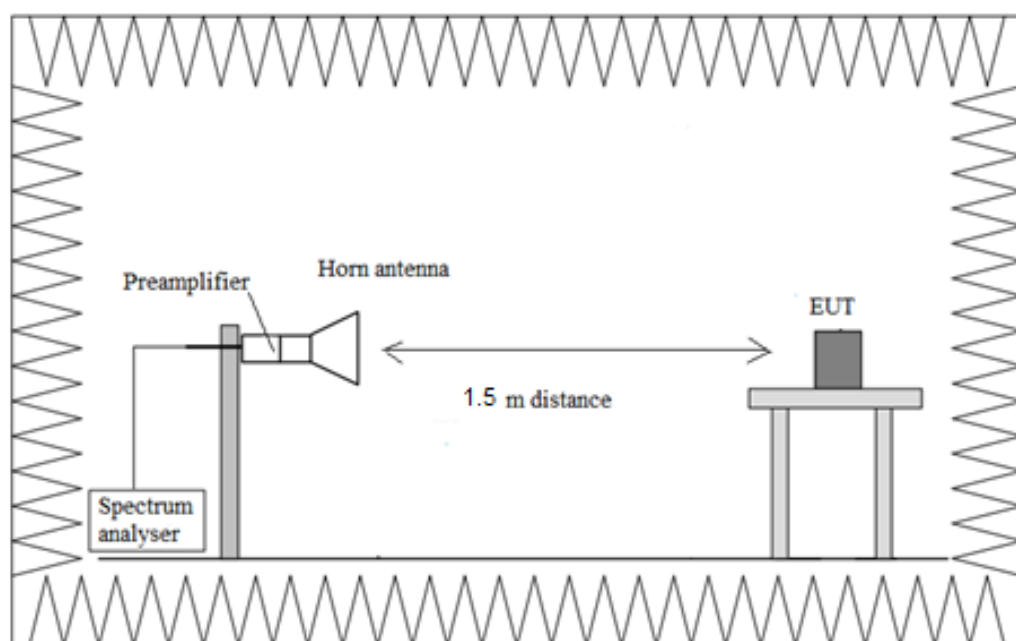
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



TEST CASES DETAILS

FCC 47 CFR Part 15.247 / RSS-247 RSS-247 5.2 (a) / FCC 15.247 (a) (2) [6dBw] 6 dB Bandwidth

Limits

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

Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Results

Freq (MHz)	Emission Bandwidth (MHz)
2402.00000	1.17557
2440.00000	1.27612
2480.00000	1.36926

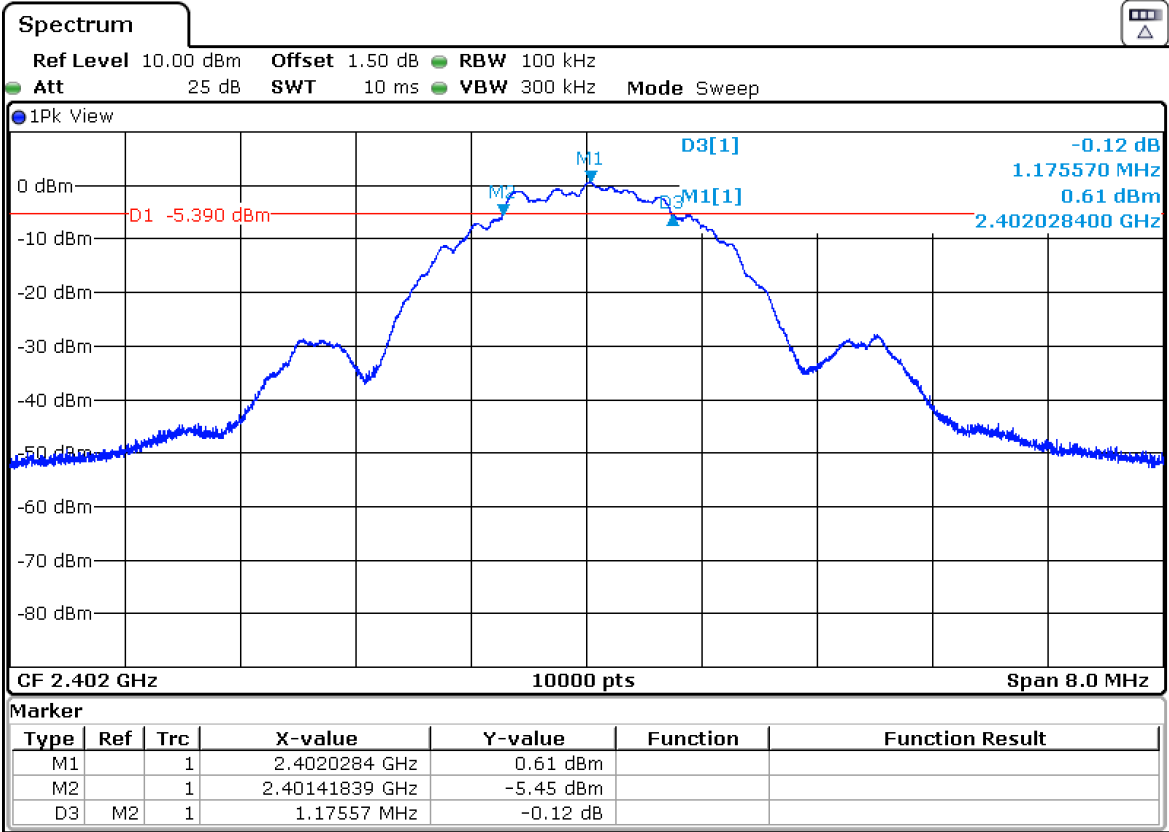
Verdict

Pass

Attachments

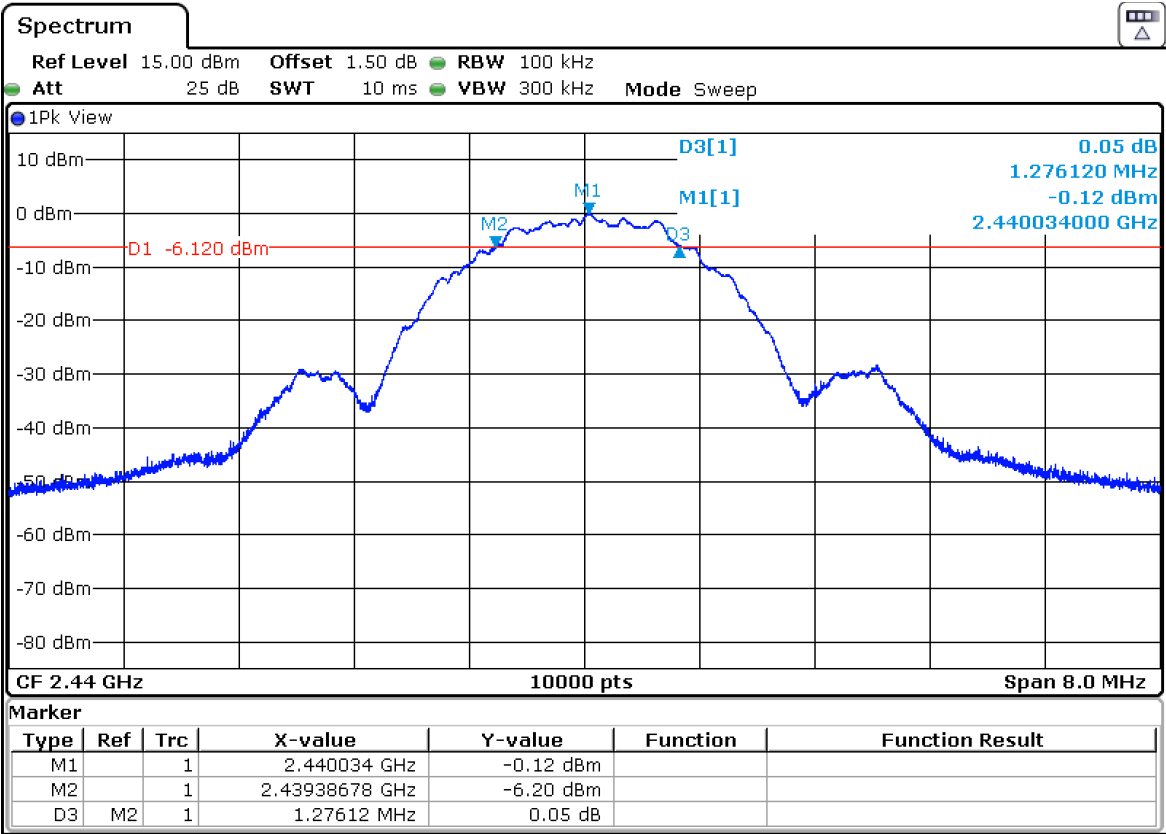
Frequency MHz = 2402.00000, Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



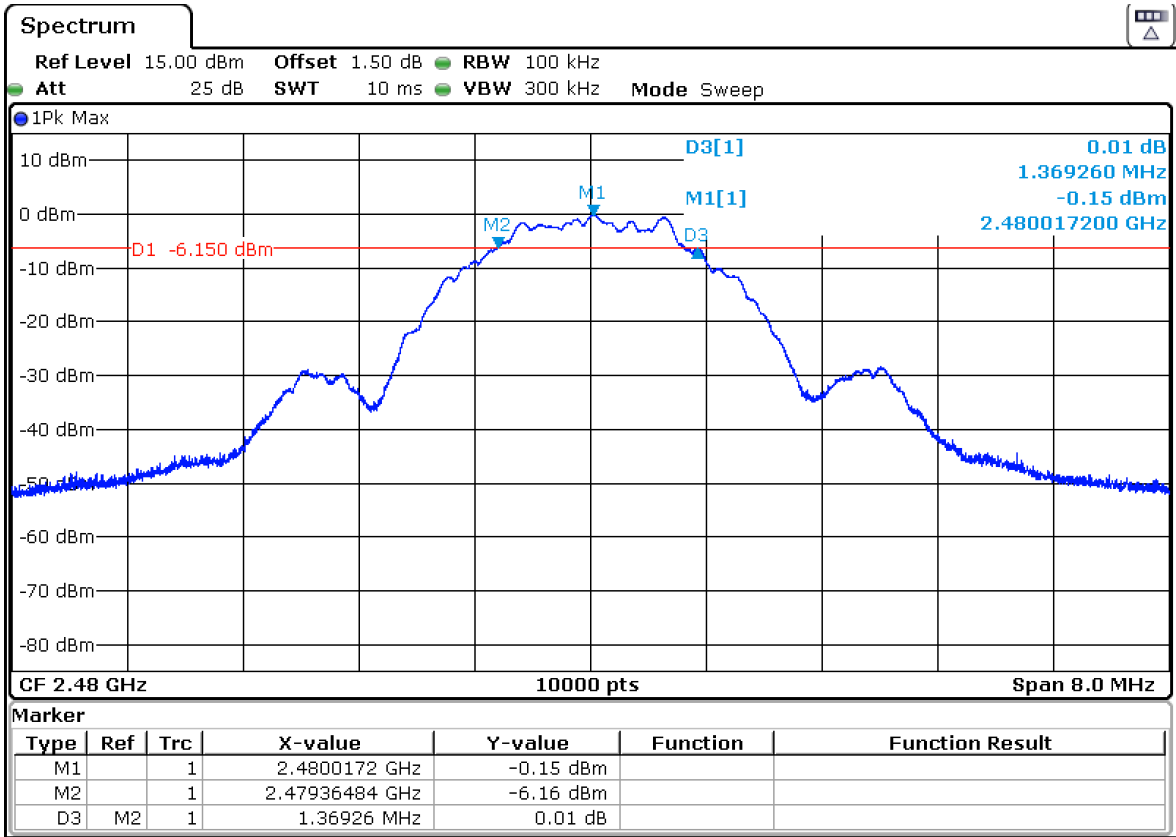
Frequency MHz = 2440.00000, Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



Frequency MHz = 2480.00000, Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Results

Freq (MHz)	Emission Bandwidth (MHz)
2402.00000	0.71451
2440.00000	0.74100
2480.00000	0.70421

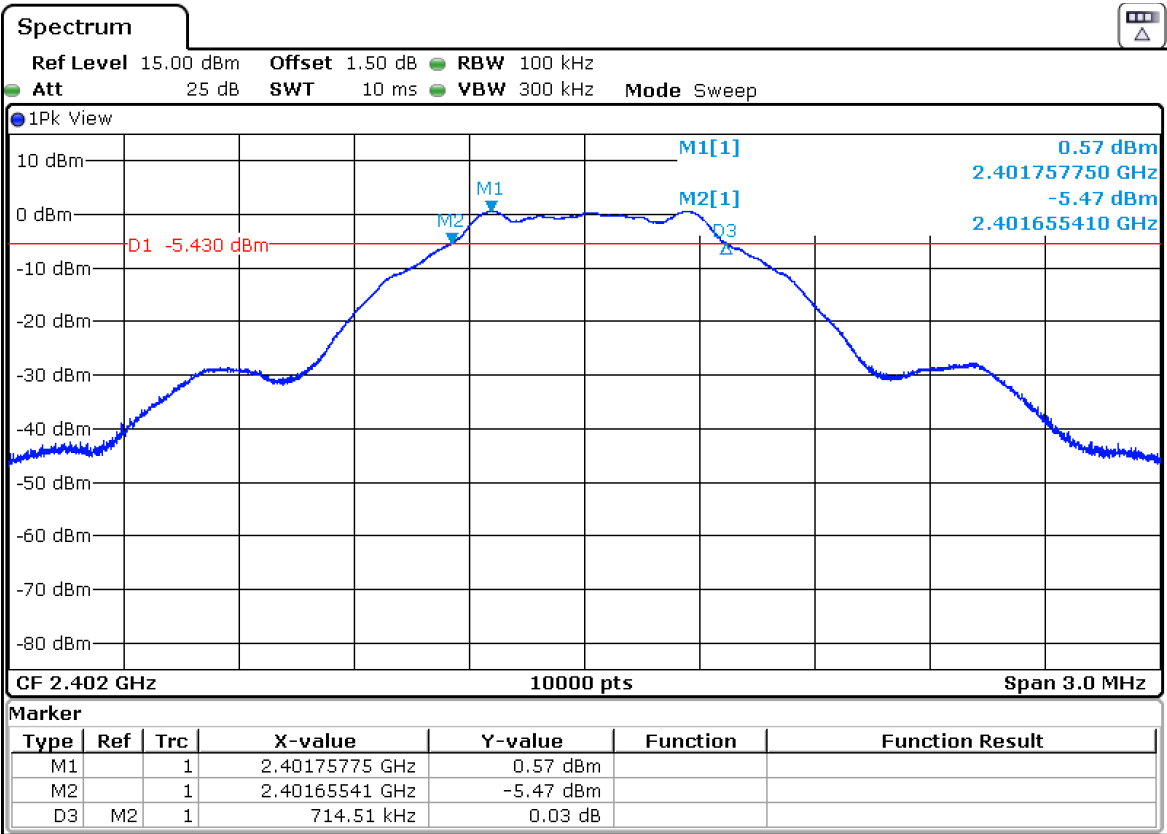
Verdict

Pass

Attachments

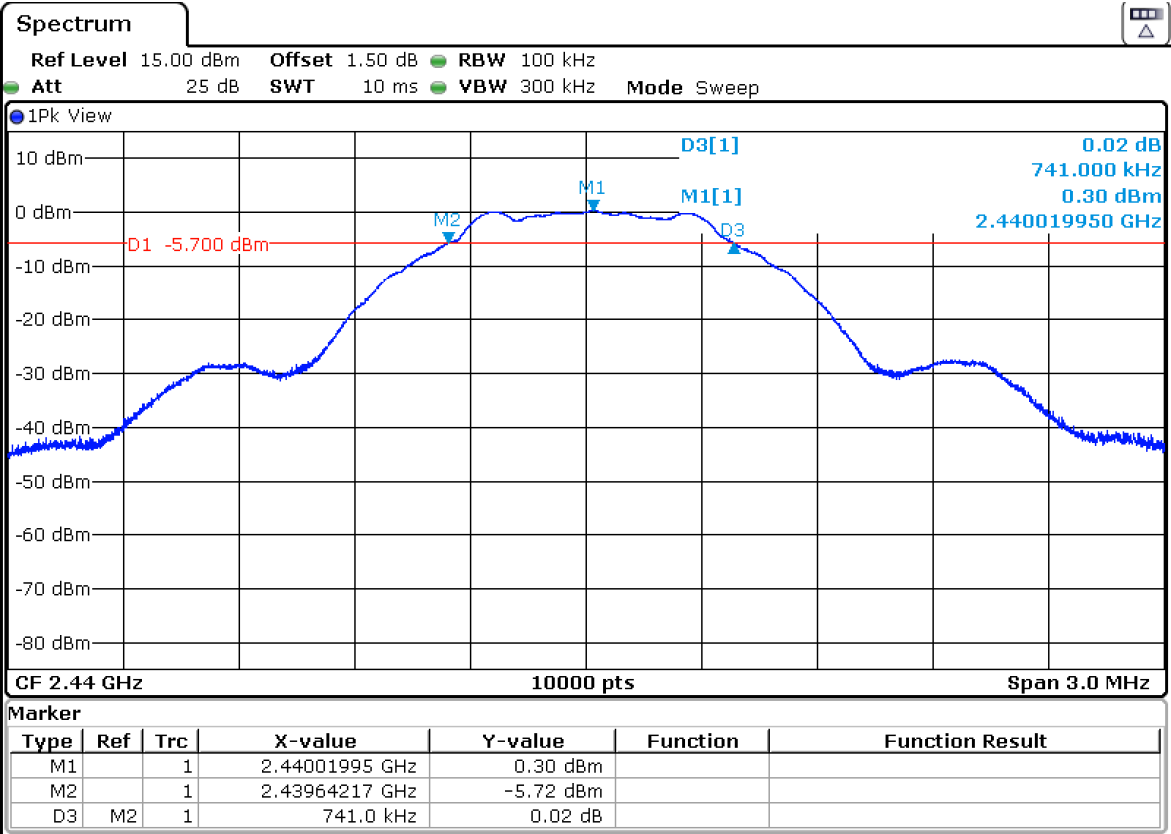
Frequency MHz = 2402.00000, Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Images:



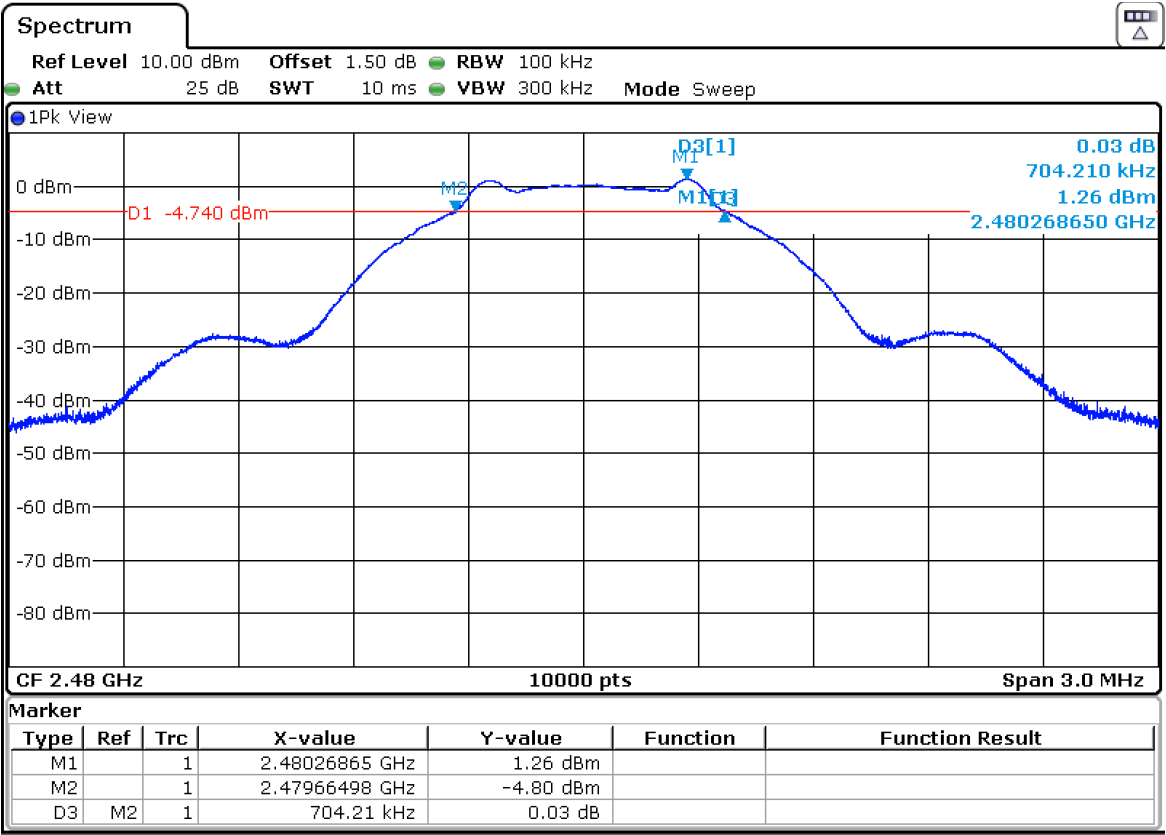
Frequency MHz = 2440.00000, Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Images:



Frequency MHz = 2480.00000, Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Images:



99dBw Occupied Channel Bandwidth 99%

Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Results

Freq (MHz)	Occ Ch BW (MHz)
2402.00000	2.1296
2440.00000	2.1272
2480.00000	2.1216

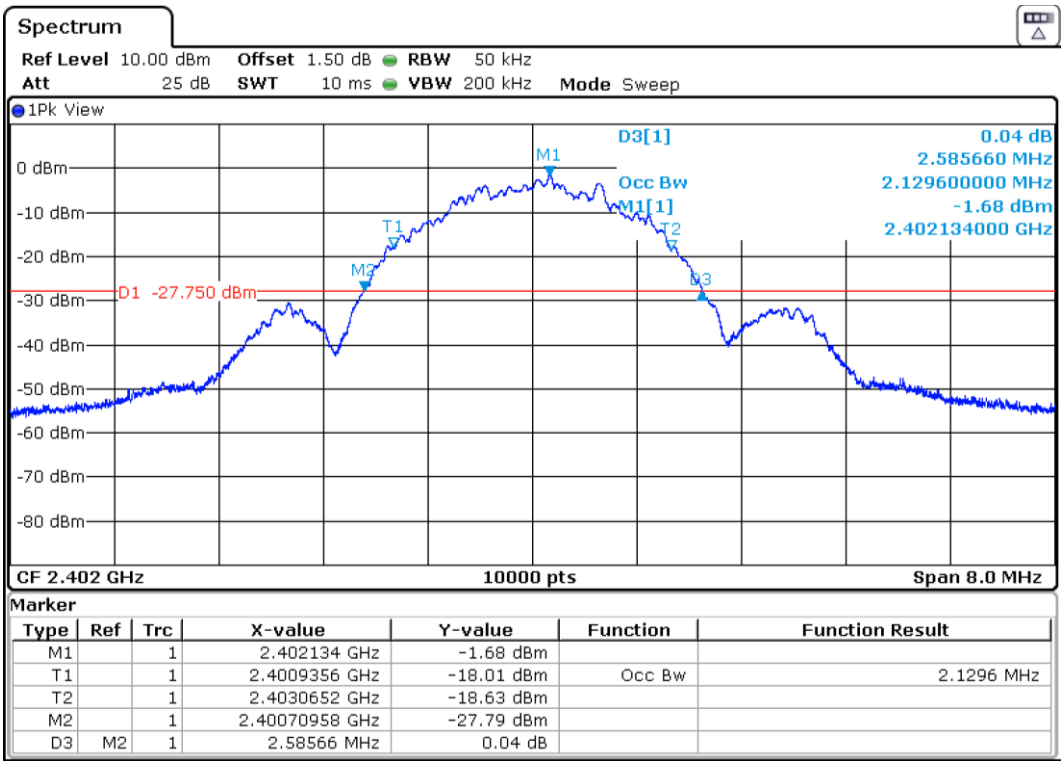
Verdict

Pass

Attachments

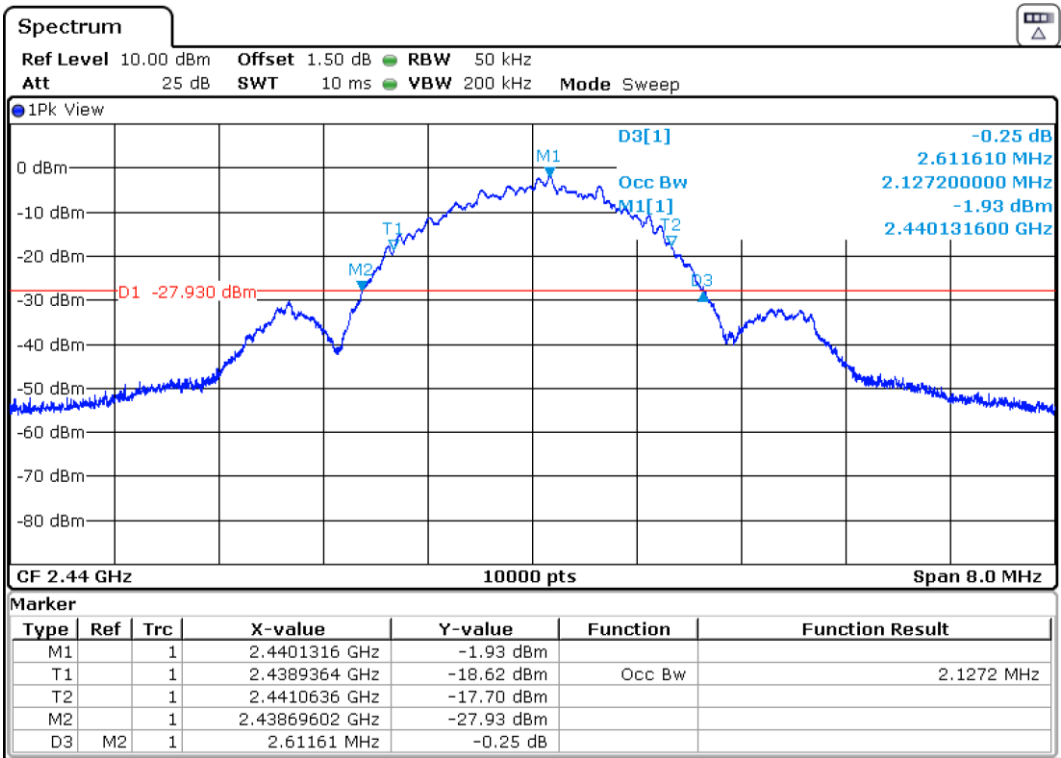
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



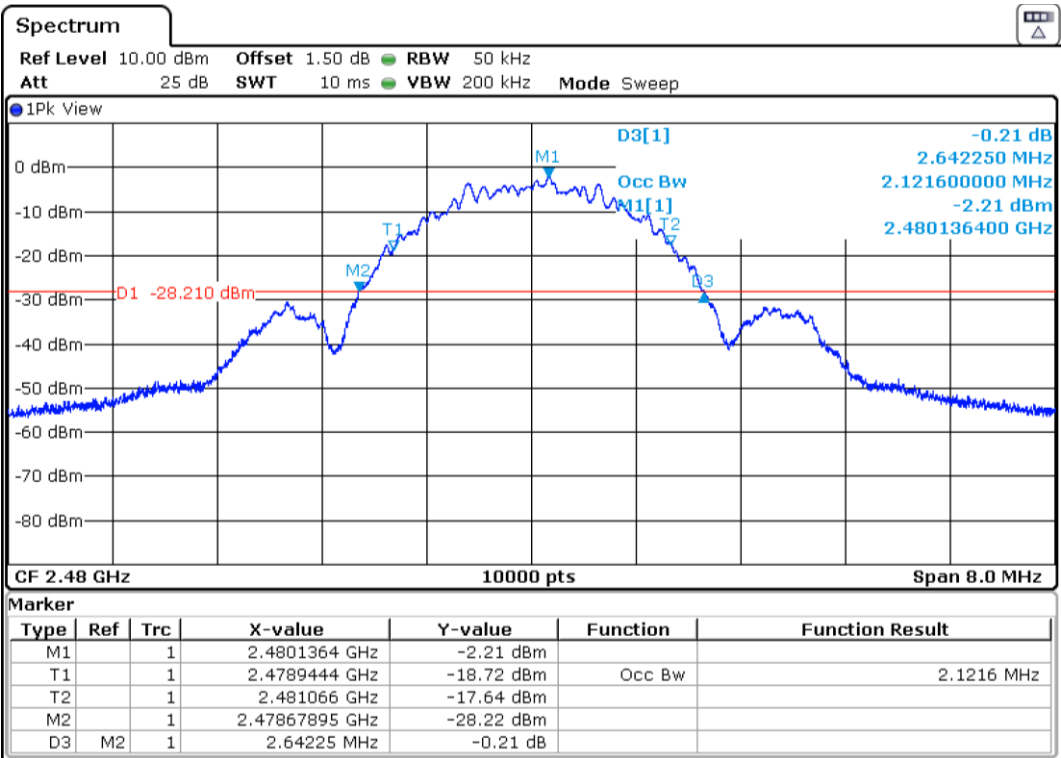
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Results

Freq (MHz)	Occ Ch BW (MHz)
2402.00000	1.0614
2440.00000	1.0659
2480.00000	1.0716

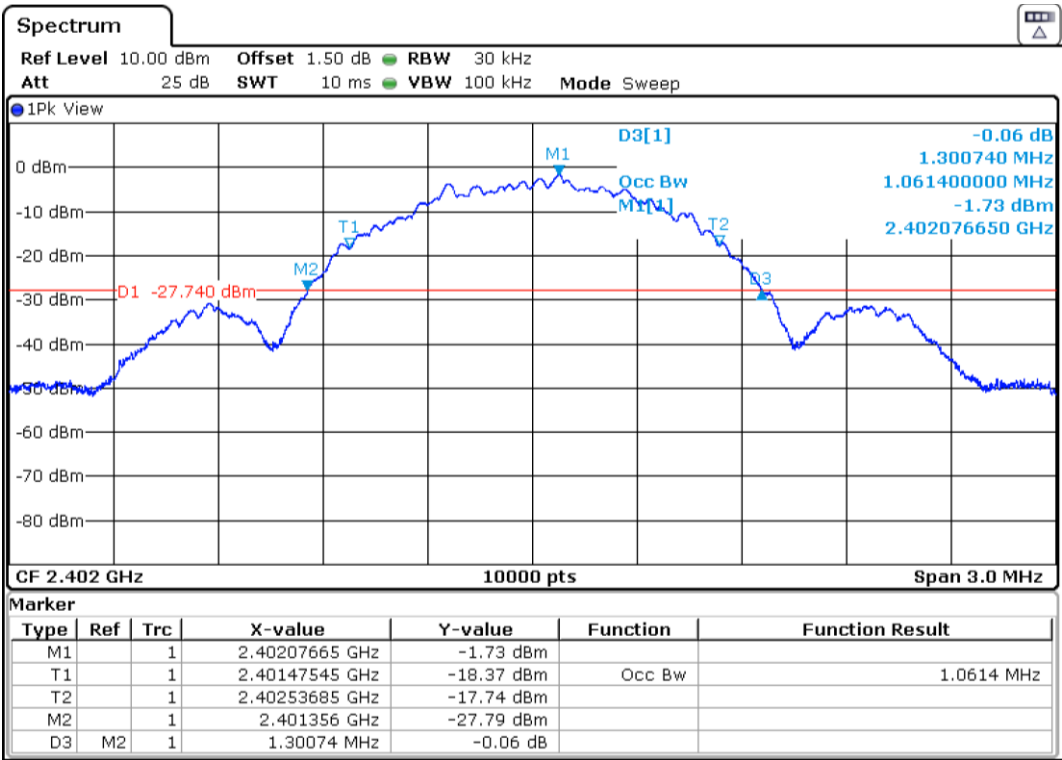
Verdict

Pass

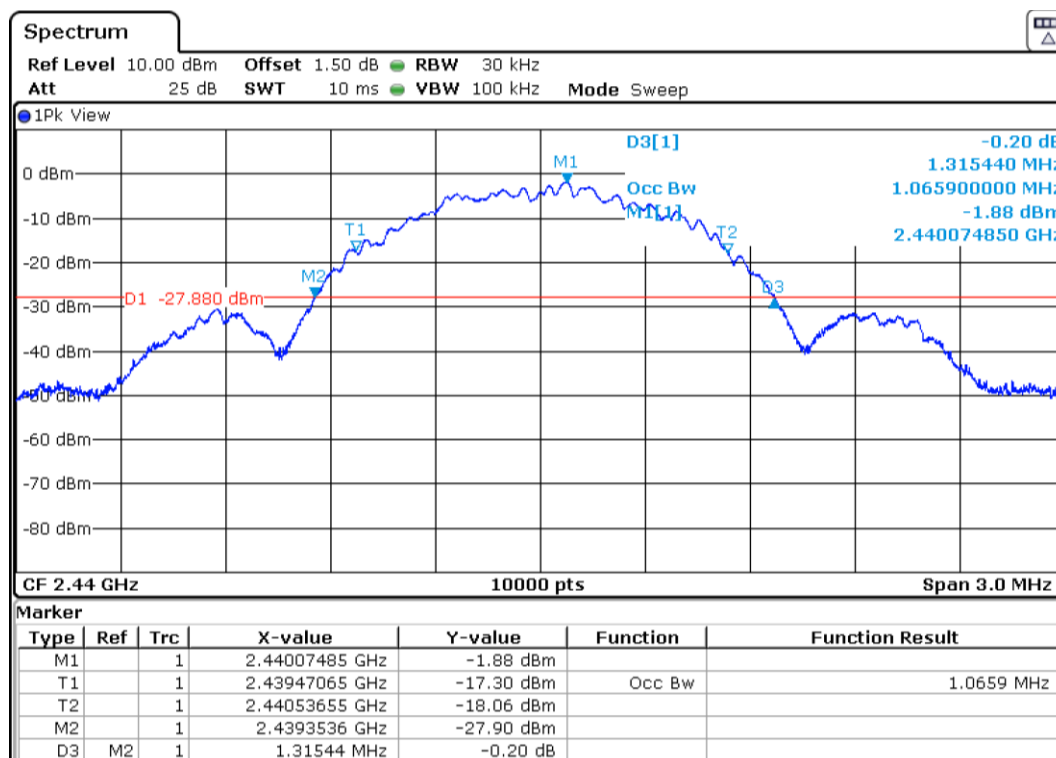
Attachments

Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

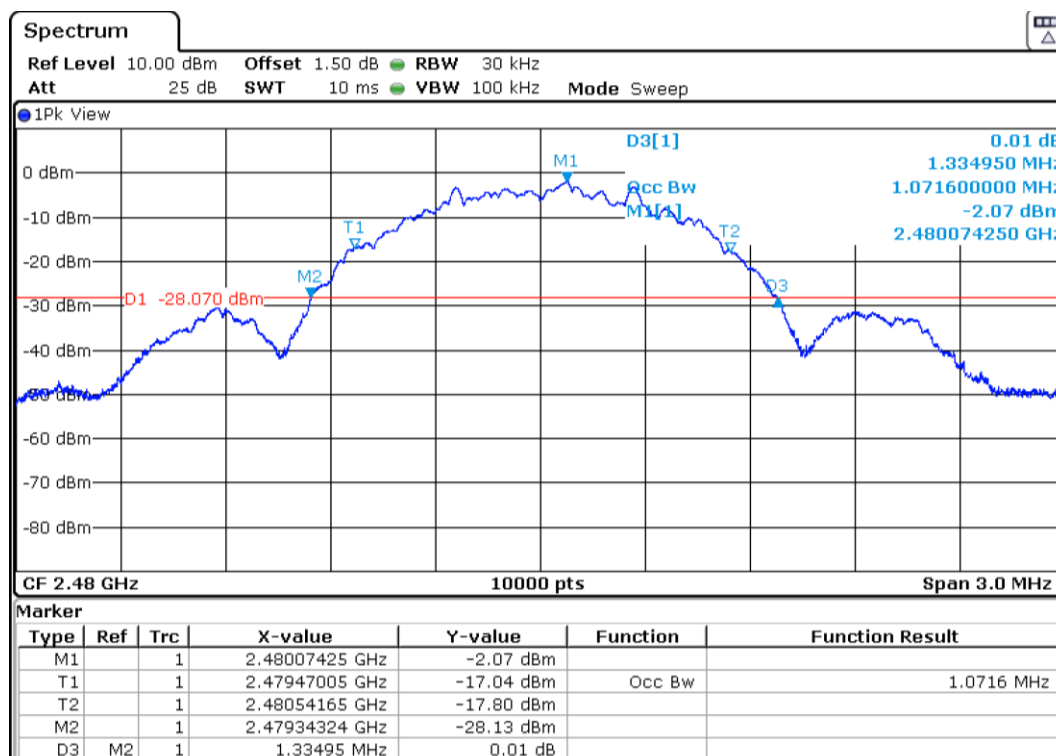
Images:



Images:



Images:



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).
The e.i.r.p. shall not exceed 4 W (36 dBm) (Canada).

Result

The maximum peak conducted output power level in the fundamental emission was measured using the method according to point 11.9.1.1 "RBW $\geq$ DTS bandwidth" of ANSI C.63.10-2013.

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

Maximum Declared Antenna Gain: -0,17 dBi (Ch 2402MHz); -0,11 dBi (Ch 2440MHz);
-0,20 dBi (Ch 2480MHz)

Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

	Low Channel 2402 MHz	Middle Channel 2440 MHz	High Channel 2480 MHz
Maximum Conducted Power (dBm)	1.29	1.18	1.00
Maximum EIRP Power (dBm)	1.12	1.07	0.80

Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

	Low Channel 2402 MHz	Middle Channel 2440 MHz	High Channel 2480 MHz
Maximum Conducted Power (dBm)	1.63	1.55	1.37
Maximum EIRP Power (dBm)	1.46	1.44	1.17

Verdict

Pass

RSS-247 5.2 (b) / FCC 15.247 (e) [Psd] 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.

Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Results

Freq (MHz)	PSD (dBm)
2402.00000	-0.18
2440.00000	-0.20
2480.00000	-0.26

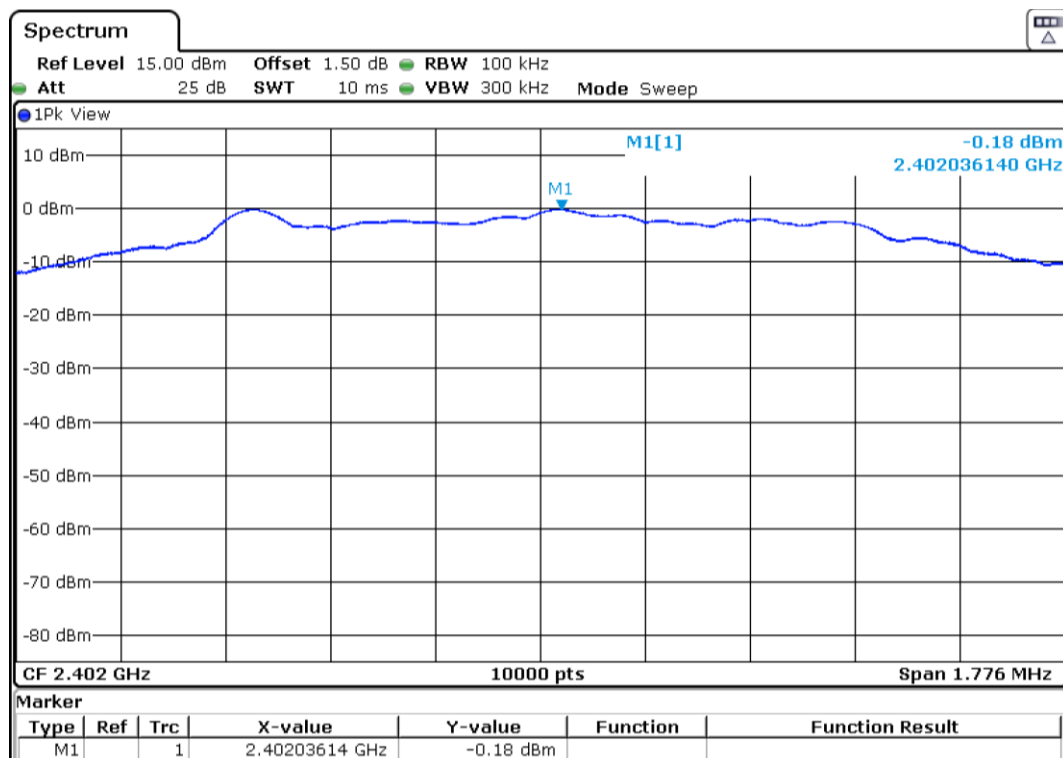
Verdict

Pass

Attachments

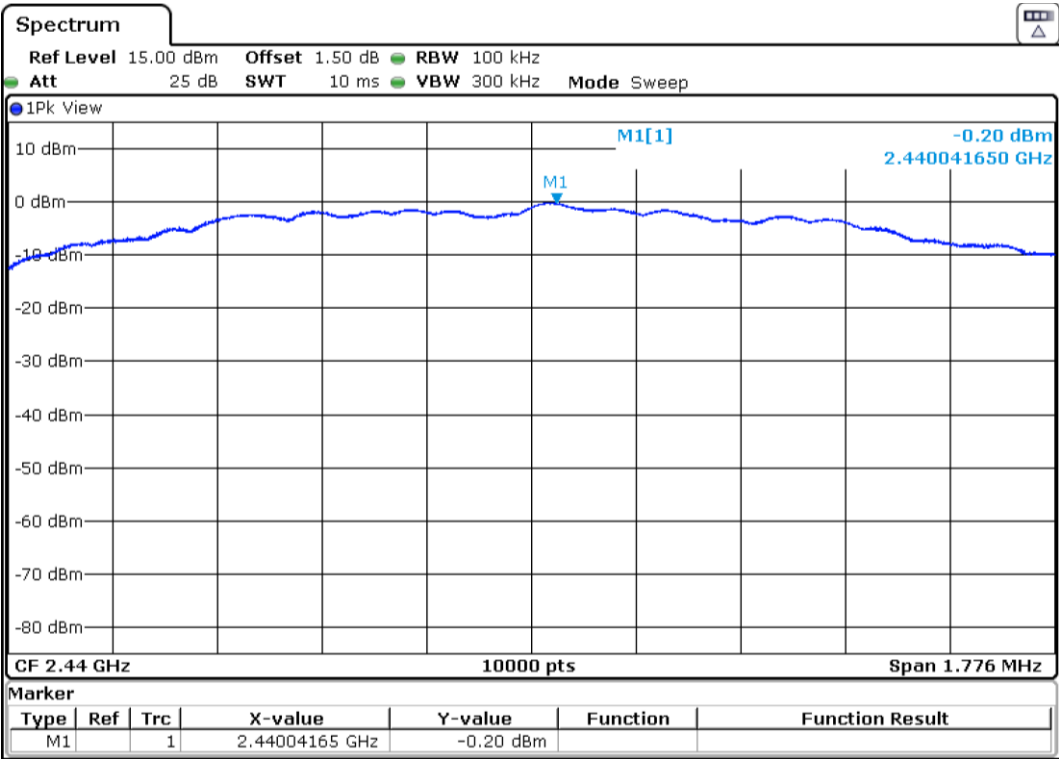
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



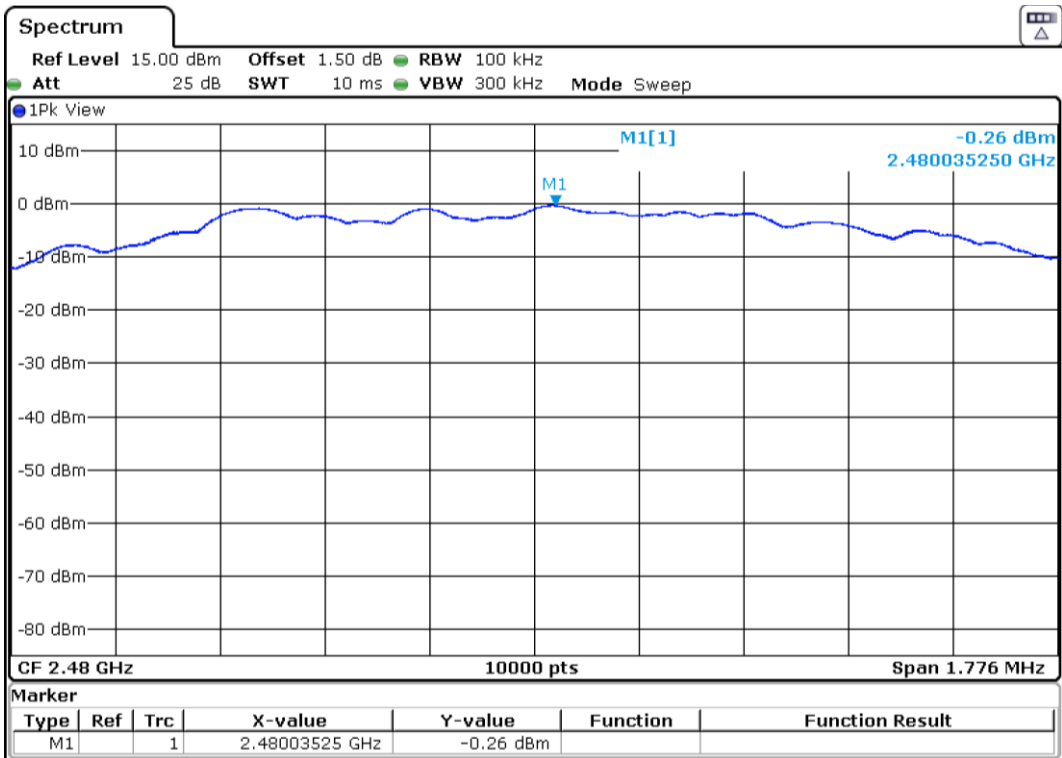
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:



Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Results

Freq (MHz)	PSD (dBm)
2402.00000	1.22
2440.00000	1.12
2480.00000	1.03

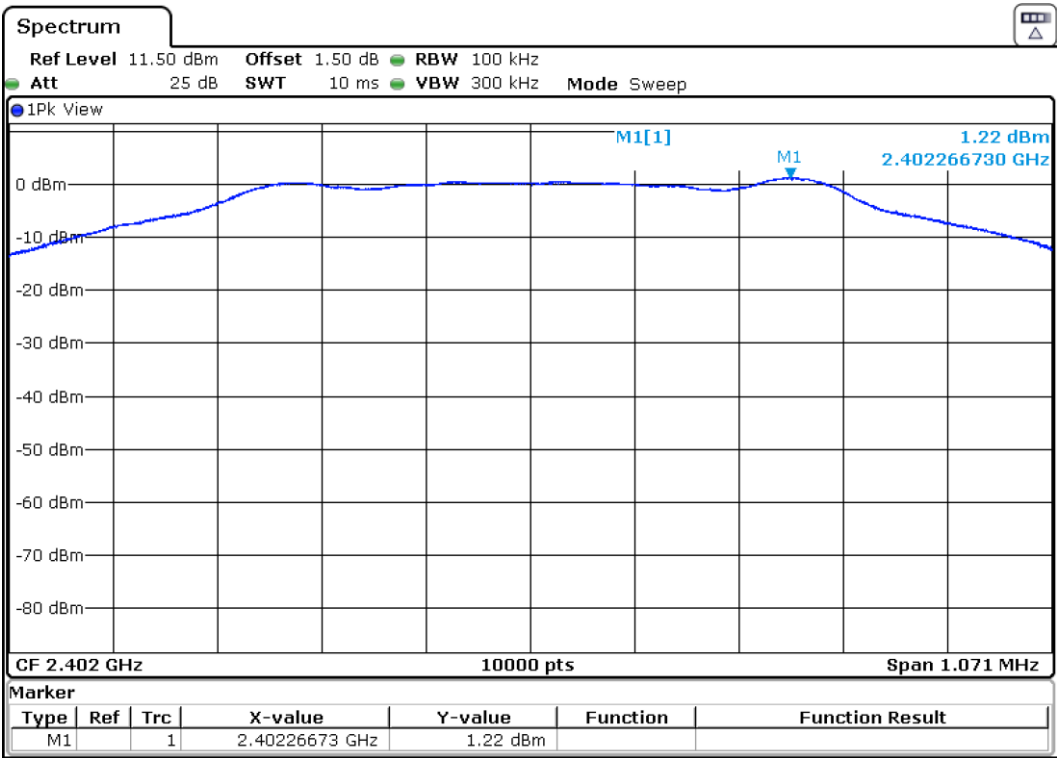
Verdict

Pass

Attachments

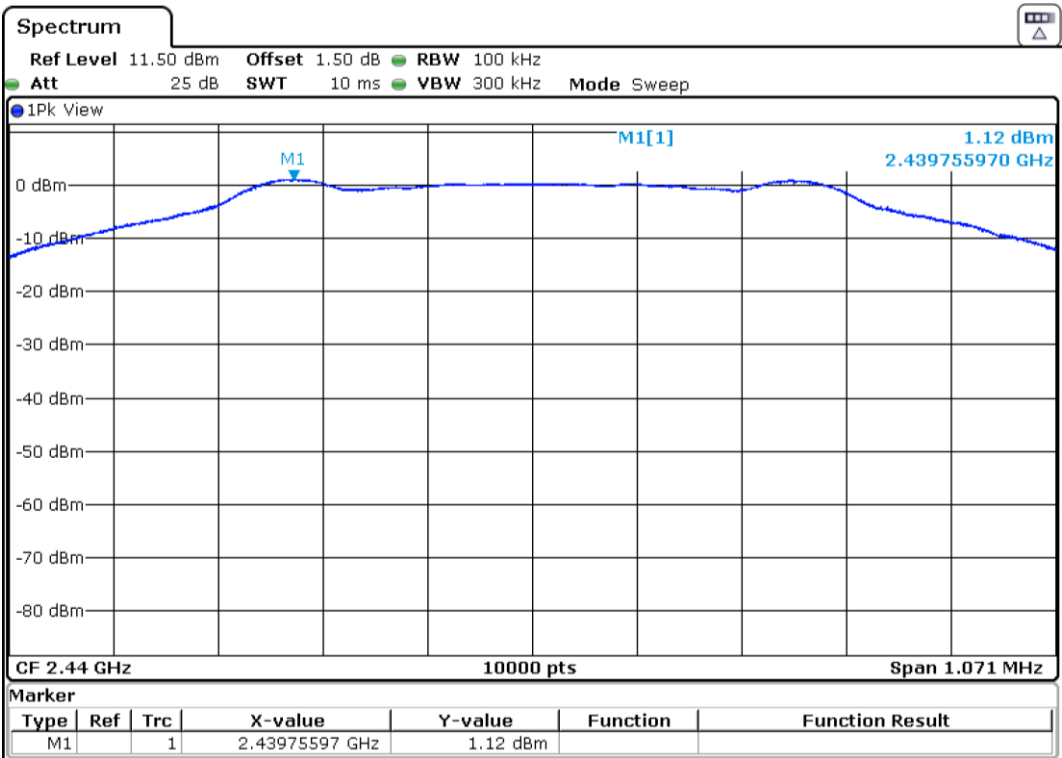
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Images:



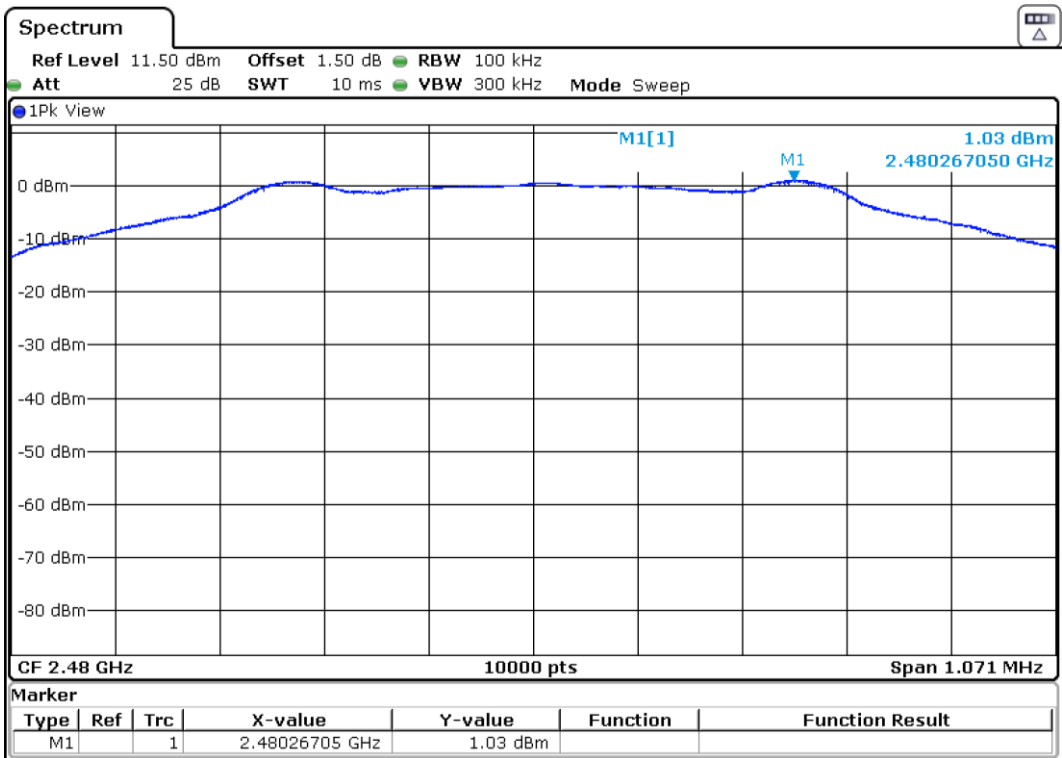
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Images:



Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Images:



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

Limits

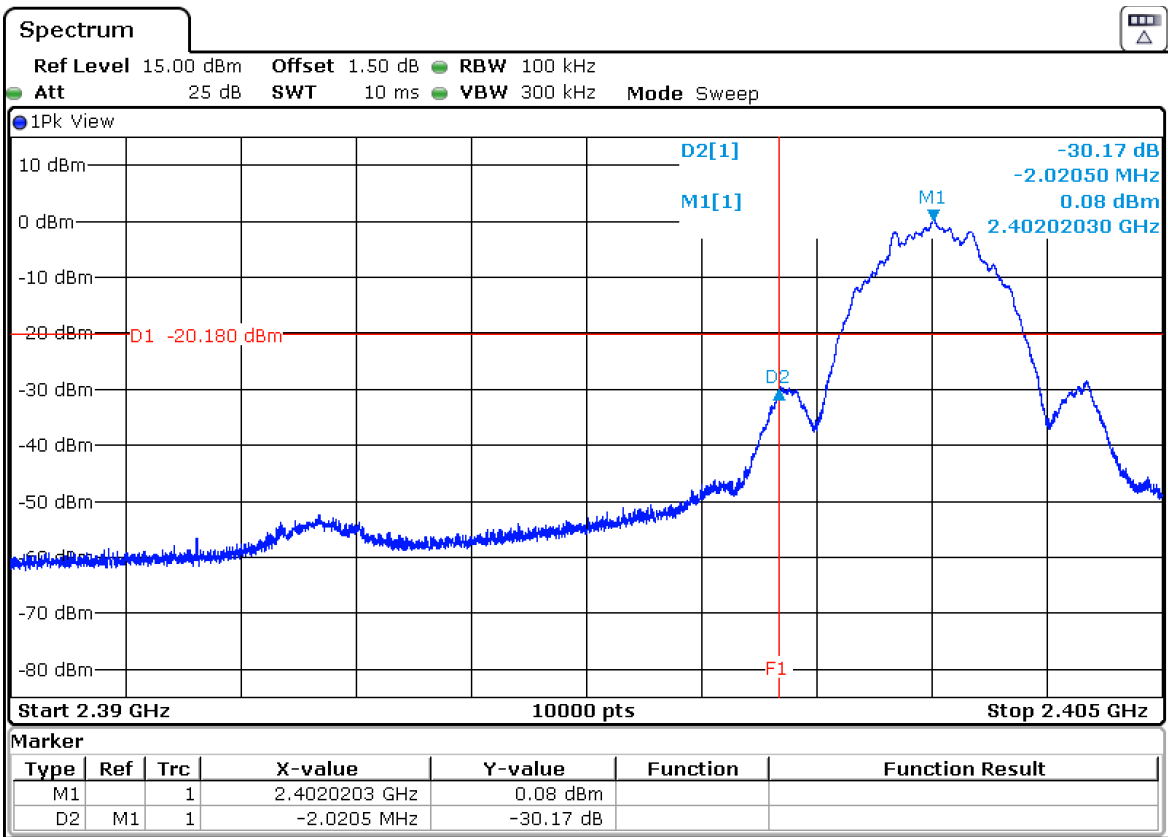
In any 100 kHz bandwidths outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, 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.

Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Attachments

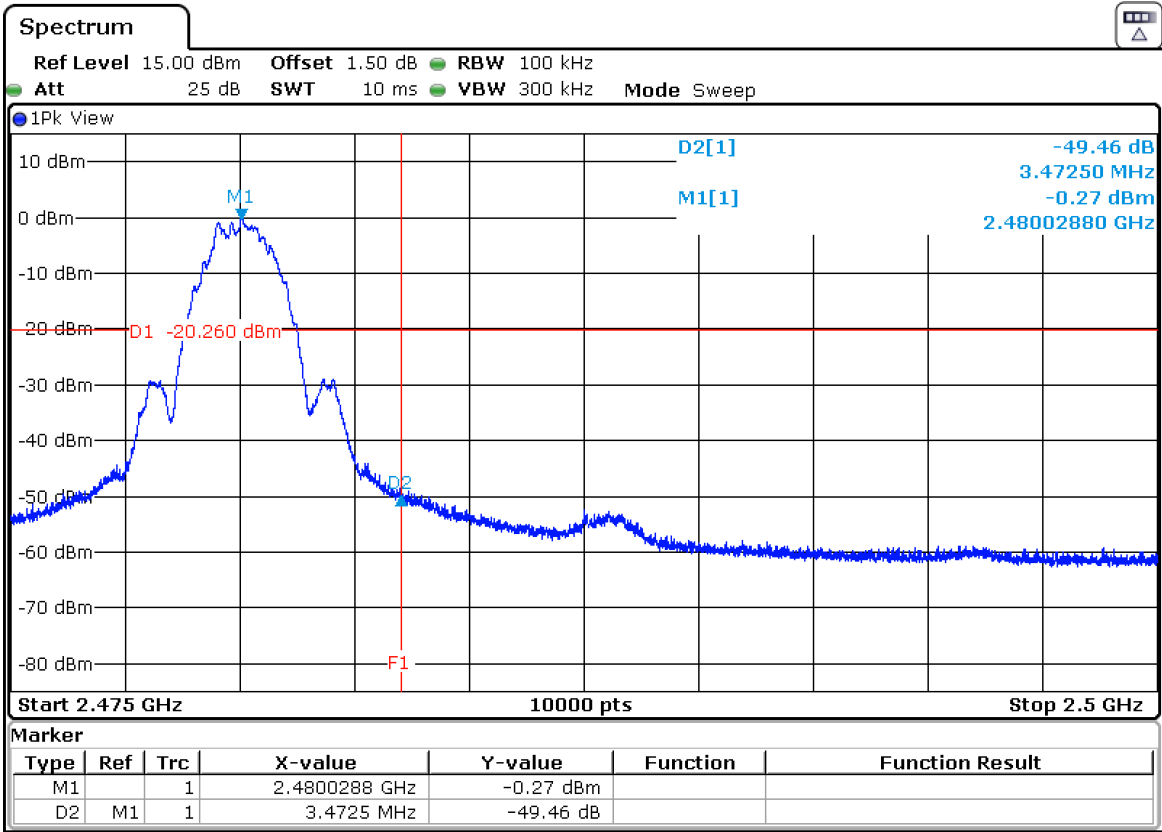
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Measurement Point = 1

Images:



Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Measurement Point = 1

Images:



Verdict

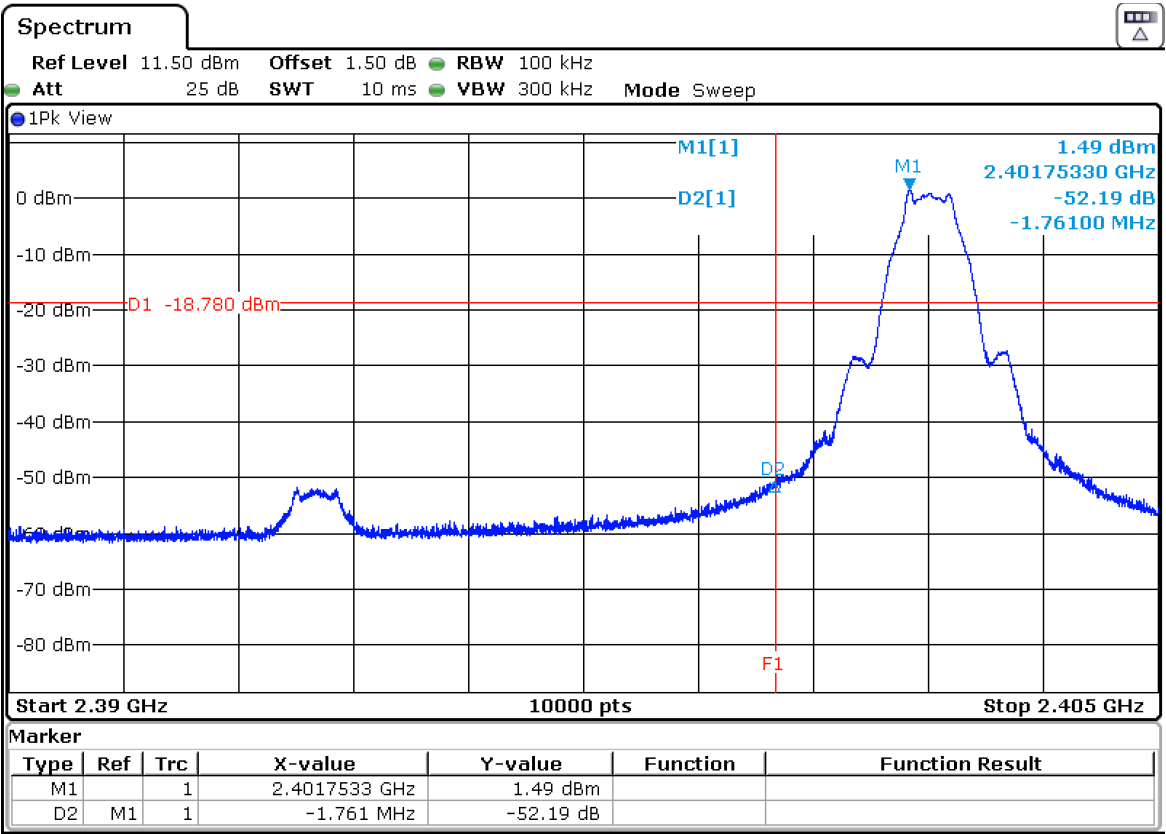
Pass

Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Attachments

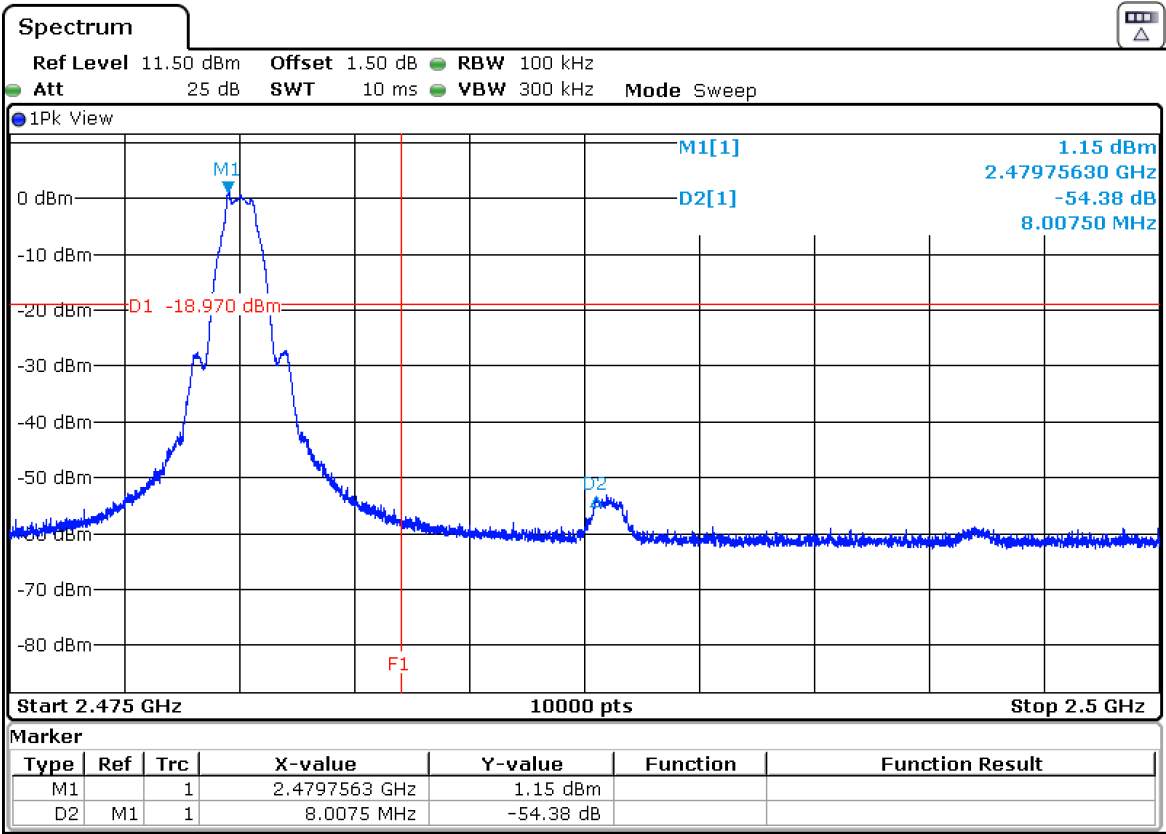
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Measurement Point = 1

Images:



Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Measurement Point = 1

Images:



Verdict

Pass

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

Limits

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)/RSS-Gen):

Frequency Range (MHz)	Field strength ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	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 is specified when measuring with peak detector function.

RSS-247: Attenuation below the general field strength limits specified in RSS-Gen is not required.

Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Result

Operation Band (MHz)	Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[2400, 2483.5]	2402.00000	[1, 3]	2361.9333	57.12	V	PK
				44.25	V	AVG
	2402.00000	[1, 3]	2486.8000	58.41	V	PK
				44.97	V	AVG
	2440.00000	[1, 3]	2326.4000	56.92	H	PK
				44.25	H	AVG
	2440.00000	[1, 3]	2496.0667	57.84	V	PK
				44.99	V	AVG
	2480.00000	[1, 3]	2385.5333	56.88	V	PK
				44.15	V	AVG
	2480.00000	[1, 3]	2488.8667	58.18	H	PK
				45.04	H	AVG
	2402.00000	[3, 17]	4804.5000	47.37	H	PK
	2402.00000	[3, 17]	15688.0000	51.07	V	PK
	2440.00000	[3, 17]	4879.0000	49.65	H	PK
	2440.00000	[3, 17]	15789.0000	50.97	V	PK
	2480.00000	[3, 17]	4960.5000	51.25	H	PK
	2480.00000	[3, 17]	12338.0000	50.40	V	PK

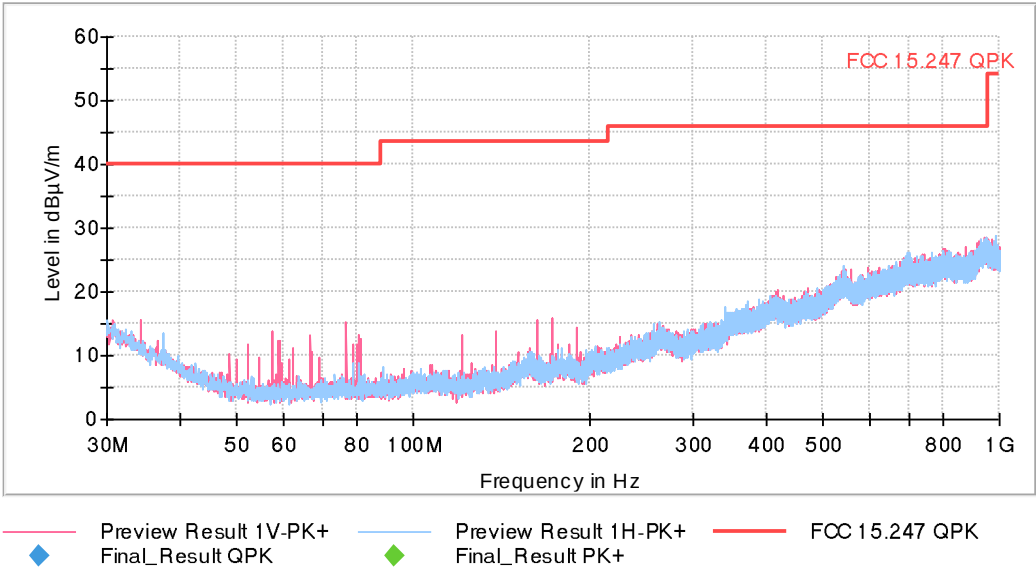
Verdict

Pass

Attachments

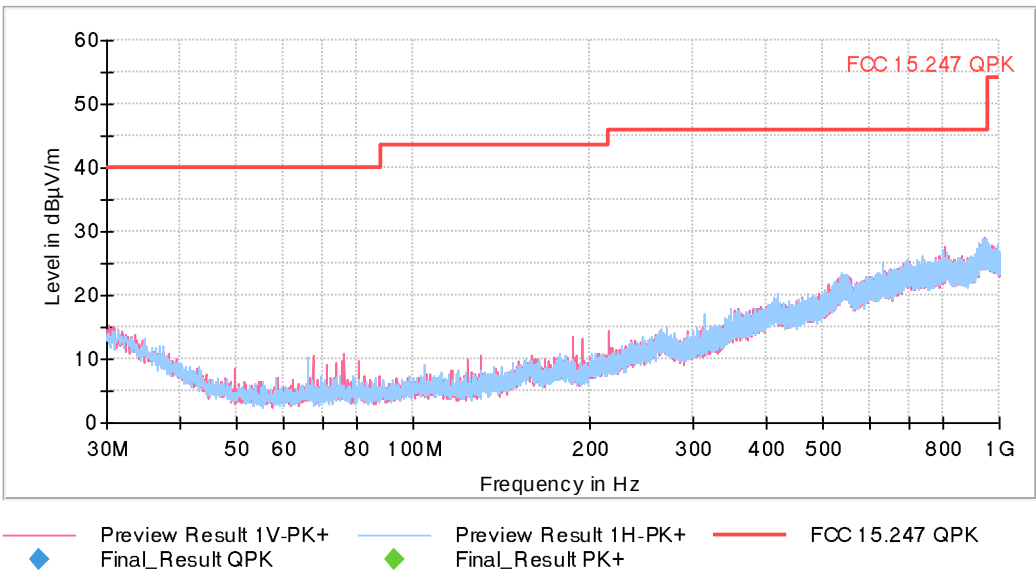
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [0.03, 1], Measurement Point = 1

Images:



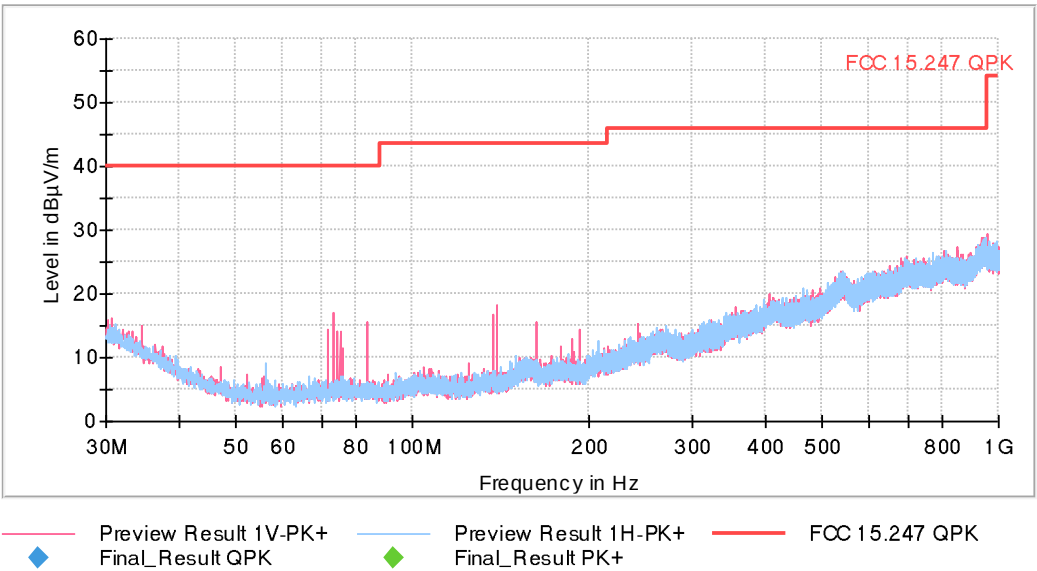
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [0.03, 1], Measurement Point = 1

Images:



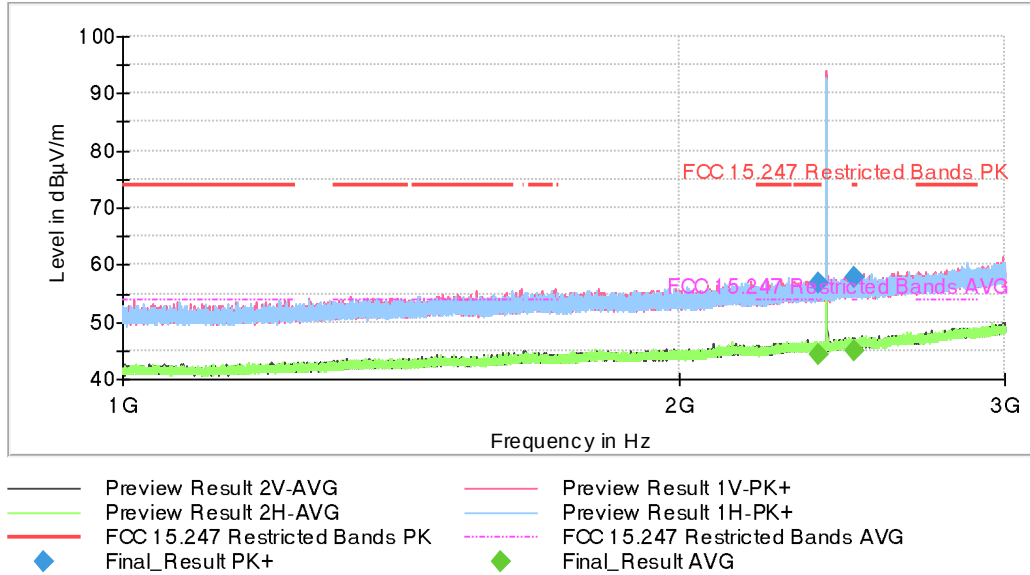
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [0.03, 1],
Measurement Point = 1

Images:

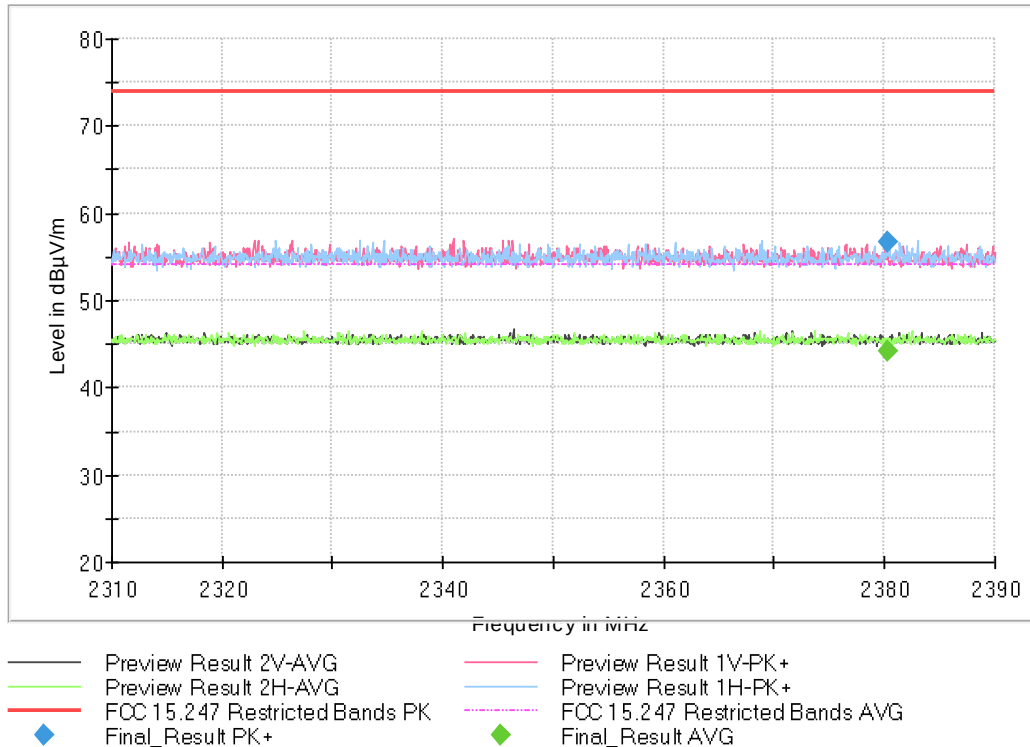


Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [1, 3],
Measurement Point = 1

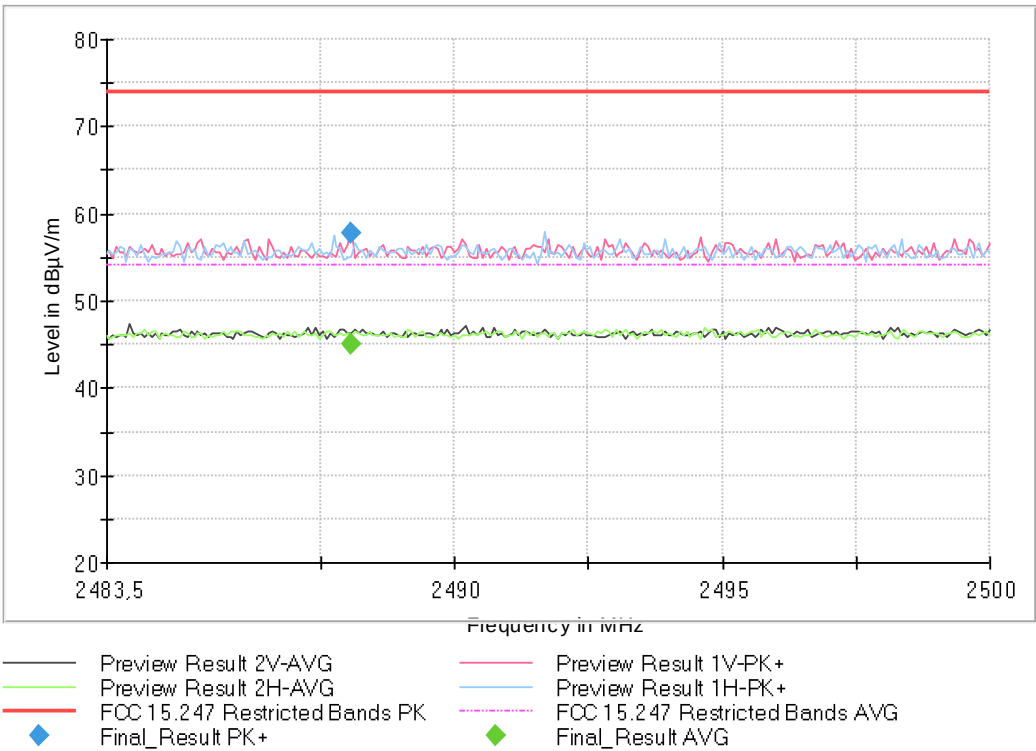
Images:



Full Spectrum

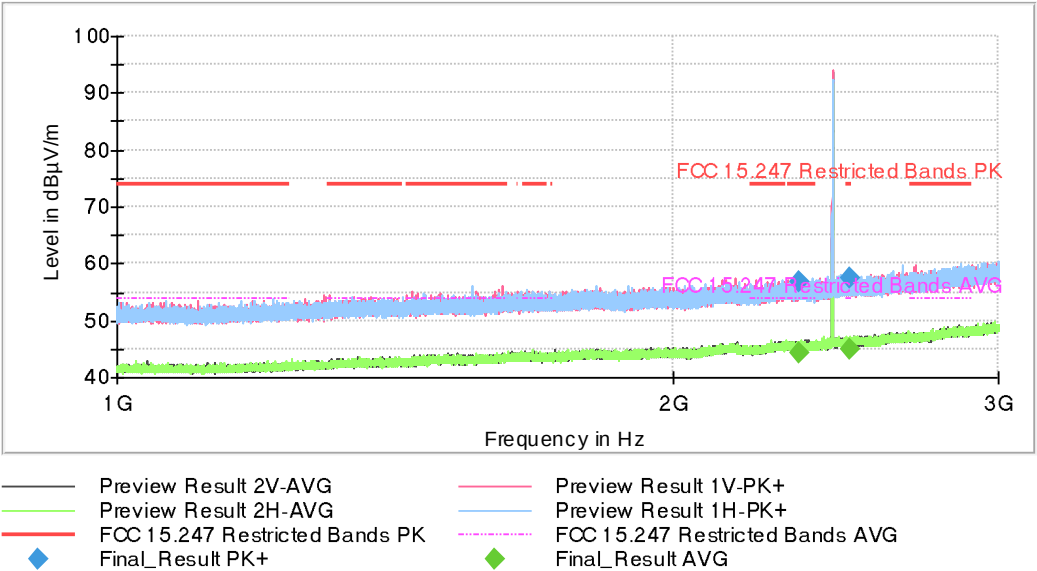


Full Spectrum

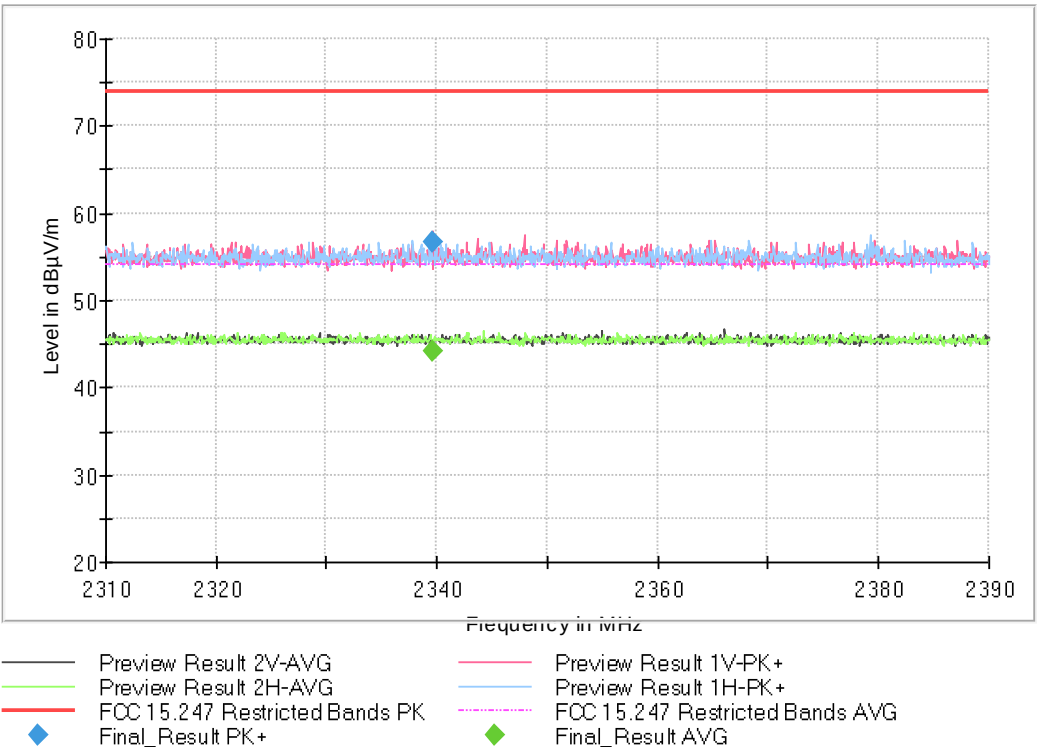


Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [1, 3],
Measurement Point = 1

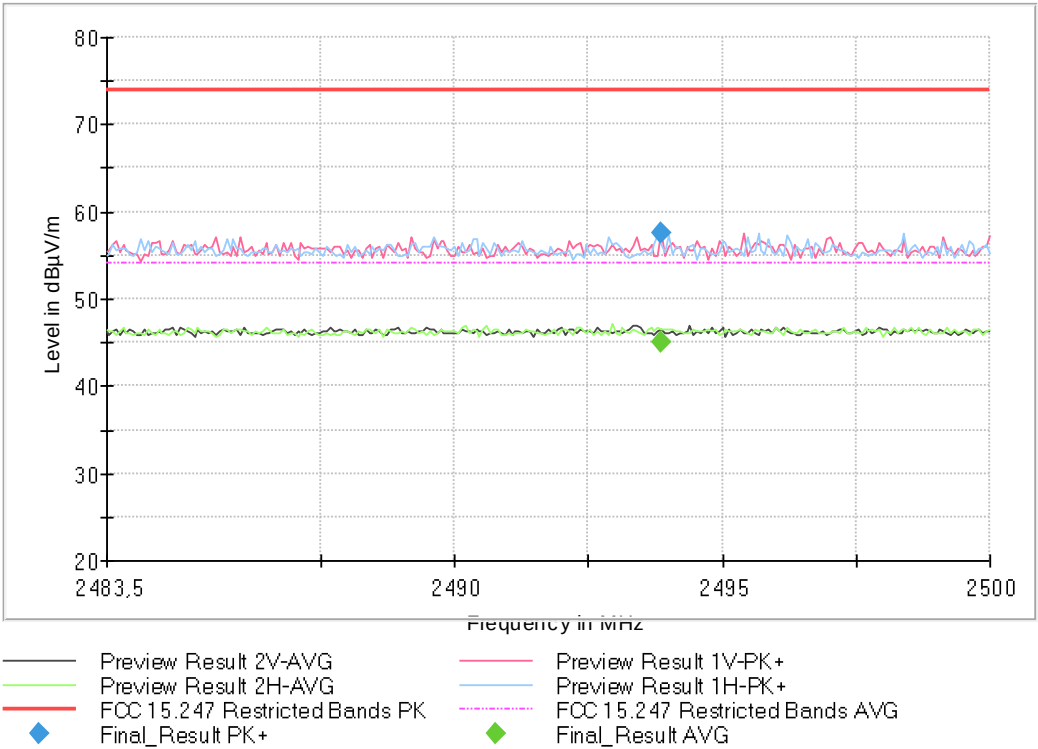
Images:



Full Spectrum

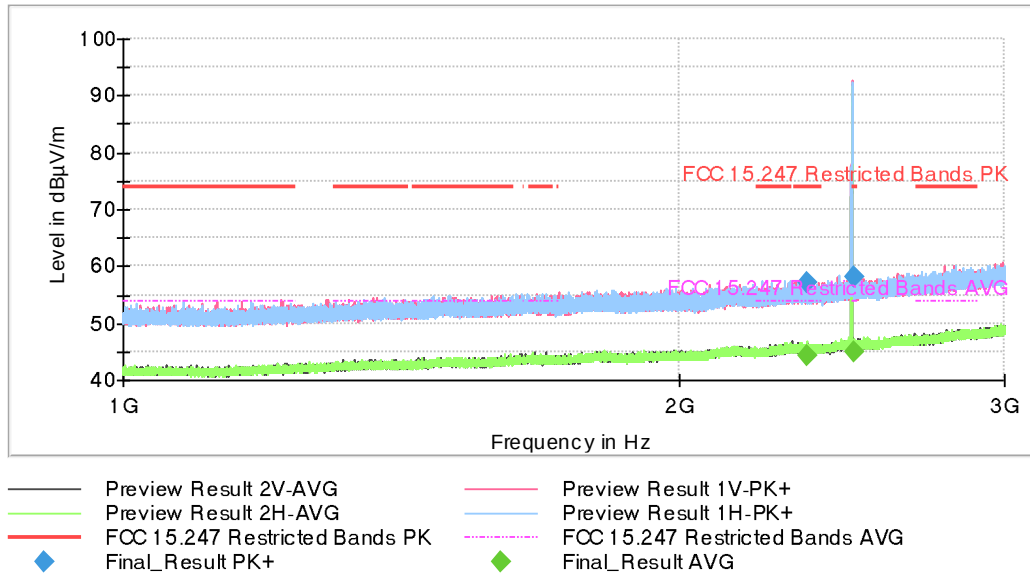


Full Spectrum

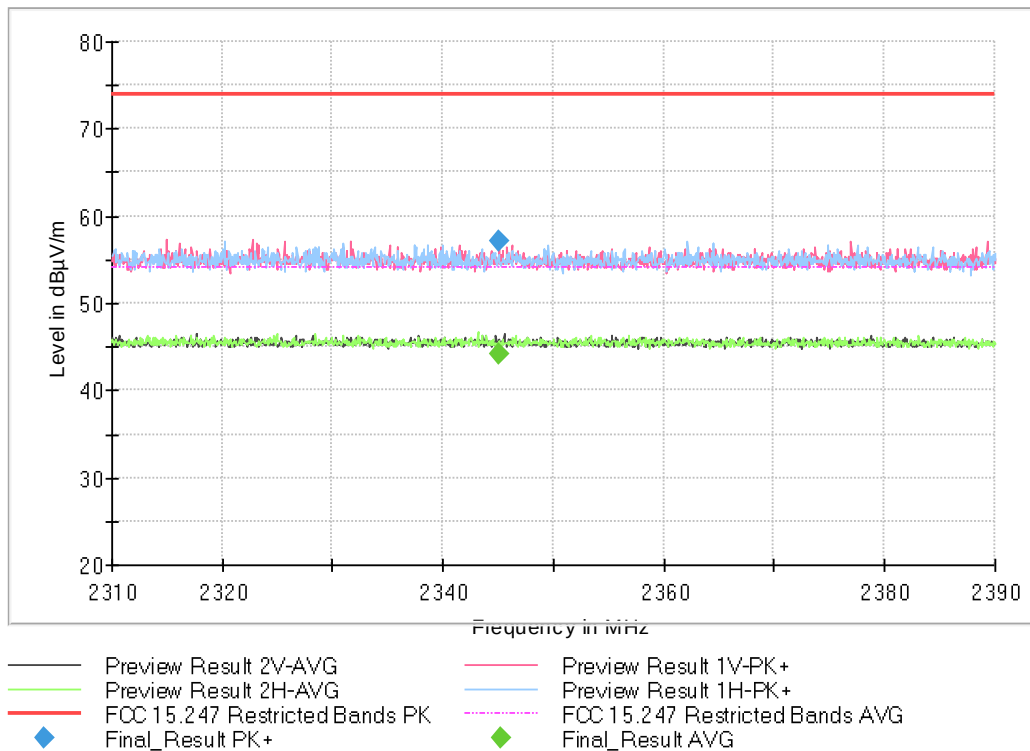


Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [1, 3], Measurement Point = 1

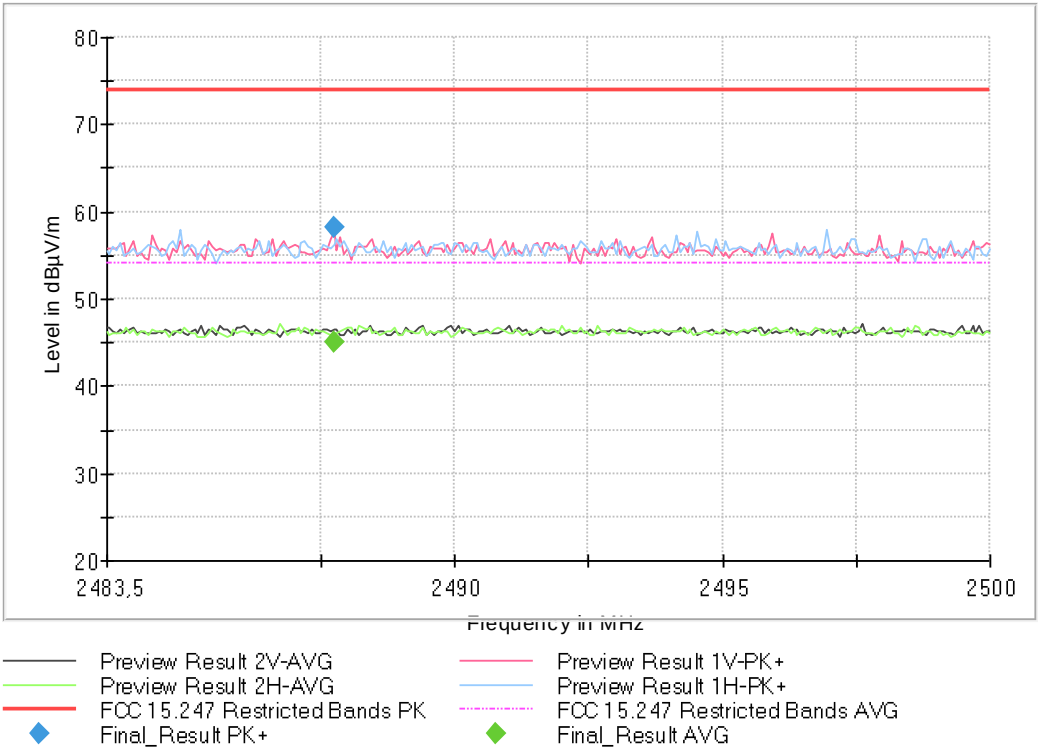
Images:



Full Spectrum

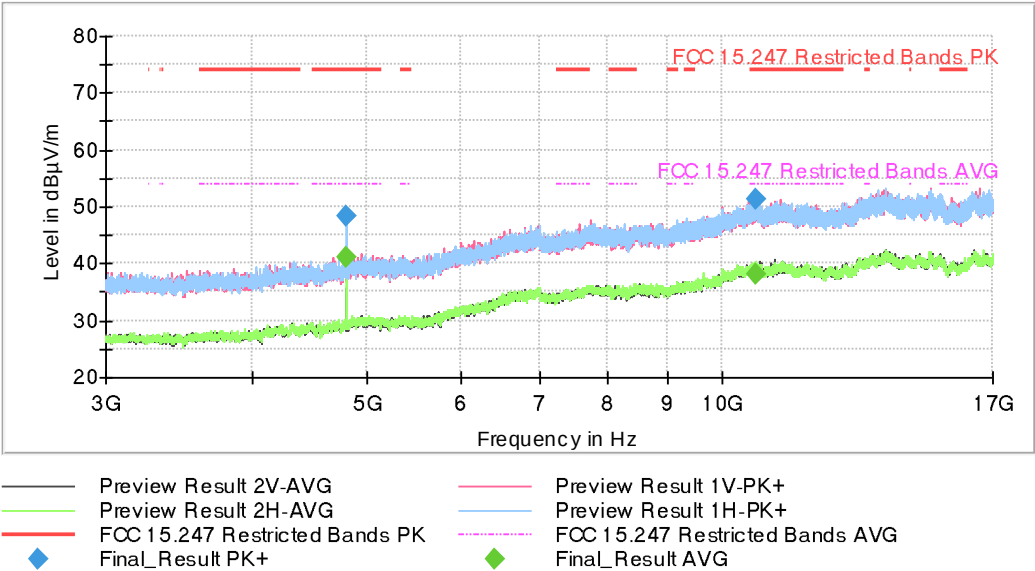


Full Spectrum



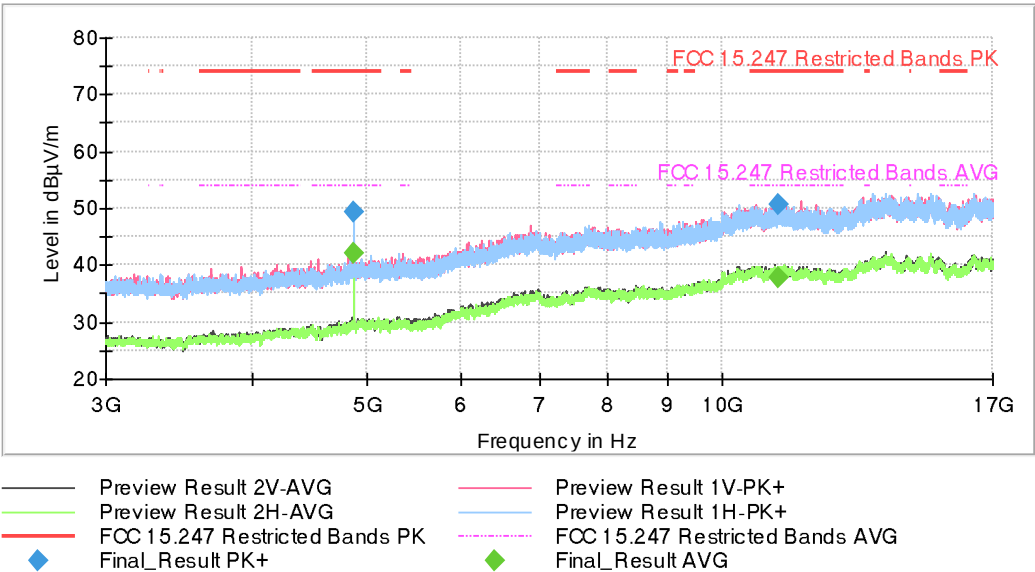
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [3, 17],
Measurement Point = 1

Images:



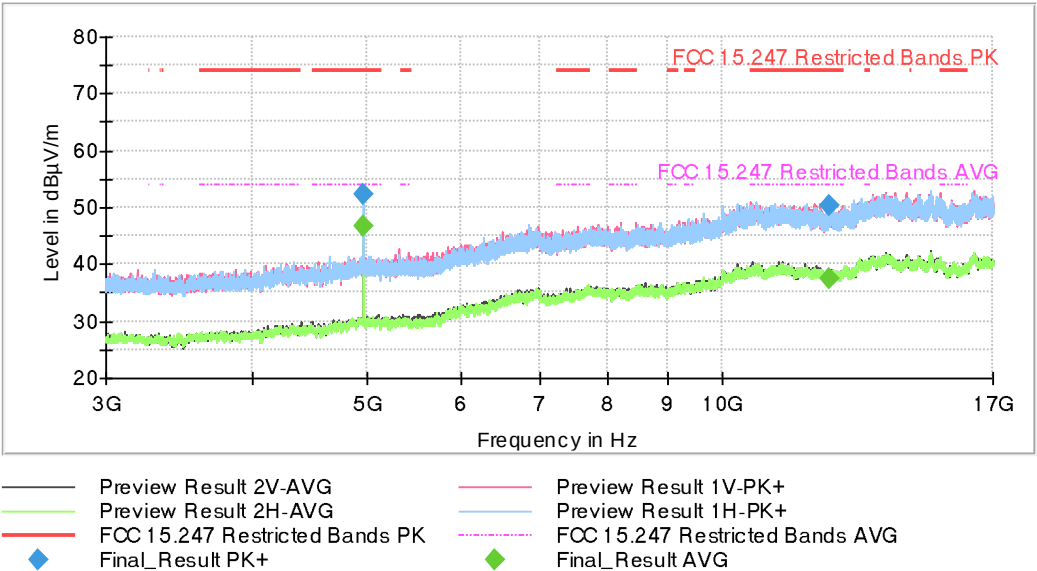
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [3, 17],
Measurement Point = 1

Images:



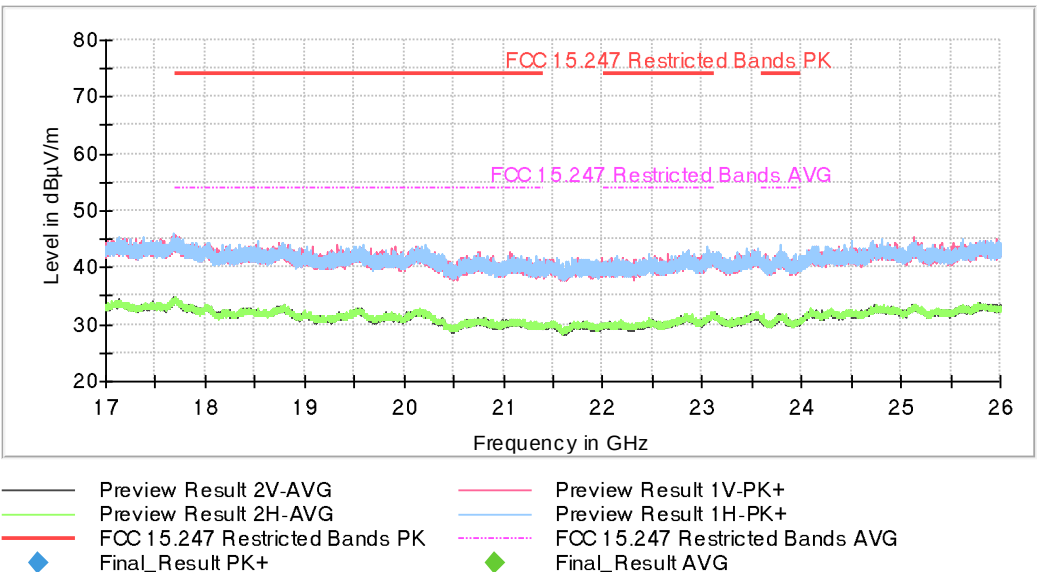
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [3, 17],
Measurement Point = 1

Images:



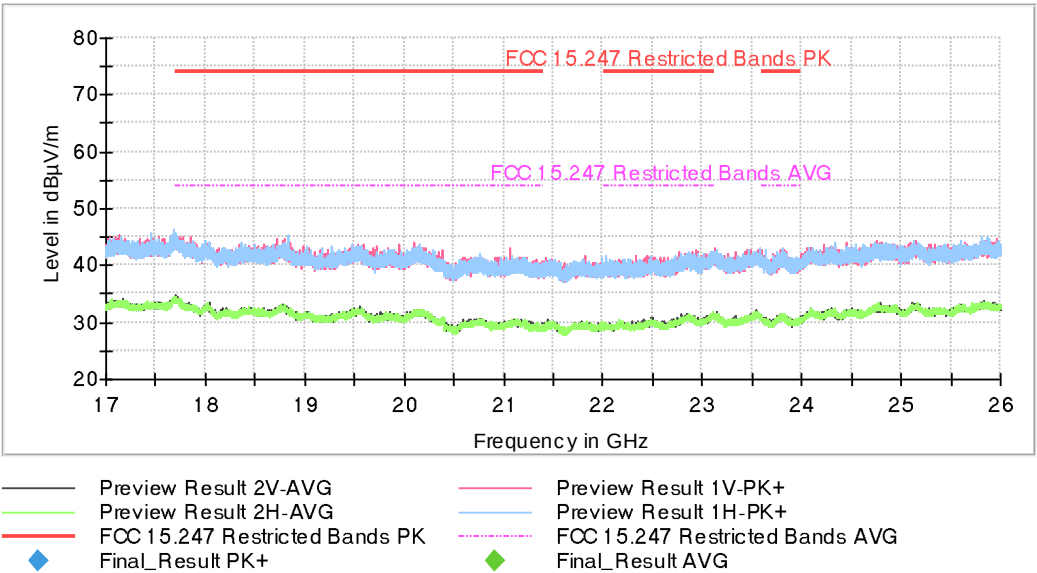
Operation Band MHz = [2400, 2483.5], Frequency MHz =2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [17, 26],
Measurement Point = 1

Images:



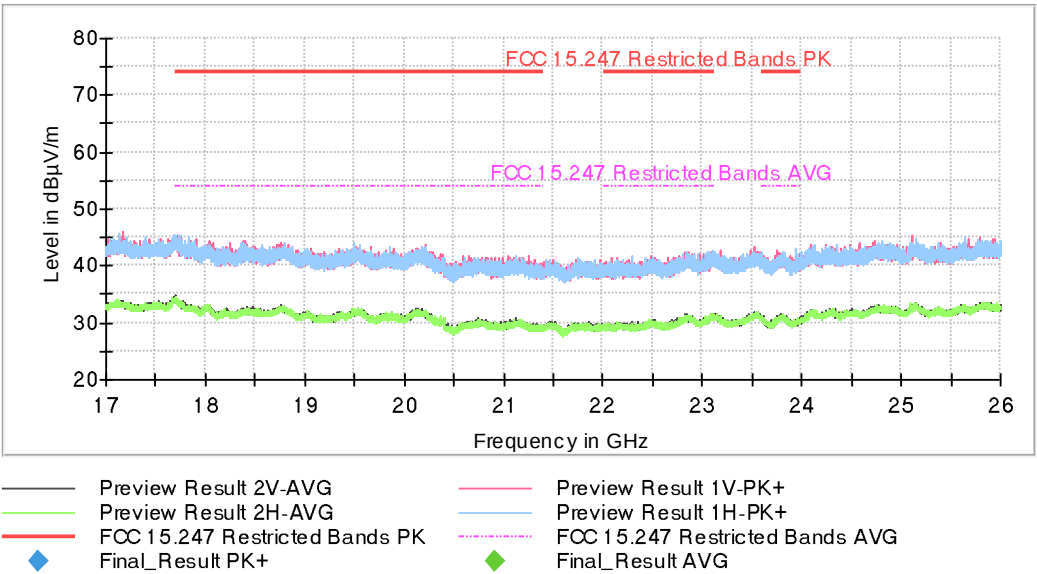
Operation Band MHz = [2400, 2483.5], Frequency MHz =2440.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [17, 26],
Measurement Point = 1

Images:



Operation Band MHz = [2400, 2483.5], Frequency MHz =2480.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 2 Mbit/s), Frequency Range GHz = [17, 26],
Measurement Point = 1

Images:



Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Results

Operation Band (MHz)	Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[2400, 2483.5]	2402.00000	[1, 3]	2380.2667	56.72	H	PK
				44.19	H	AVG
	2402.00000	[1, 3]	2488.0667	57.81	V	PK
				44.97	V	AVG
	2440.00000	[1, 3]	2339.5333	56.71	V	PK
				44.26	V	AVG
	2440.00000	[1, 3]	2493.8667	57.57	V	PK
				45.01	V	AVG
	2480.00000	[1, 3]	2345.0667	57.06	V	PK
				44.25	V	AVG
	2480.00000	[1, 3]	2487.7333	58.19	V	PK
				45.00	V	AVG
	2402.00000	[3, 17]	4803.5000	48.49	H	PK
	2402.00000	[3, 17]	10703.0000	51.20	H	PK
	2440.00000	[3, 17]	4879.5000	49.29	H	PK
	2440.00000	[3, 17]	11195.0000	50.79	V	PK
	2480.00000	[3, 17]	4950.5000	52.45	H	PK
	2480.00000	[3, 17]	12359.5000	50.43	V	PK

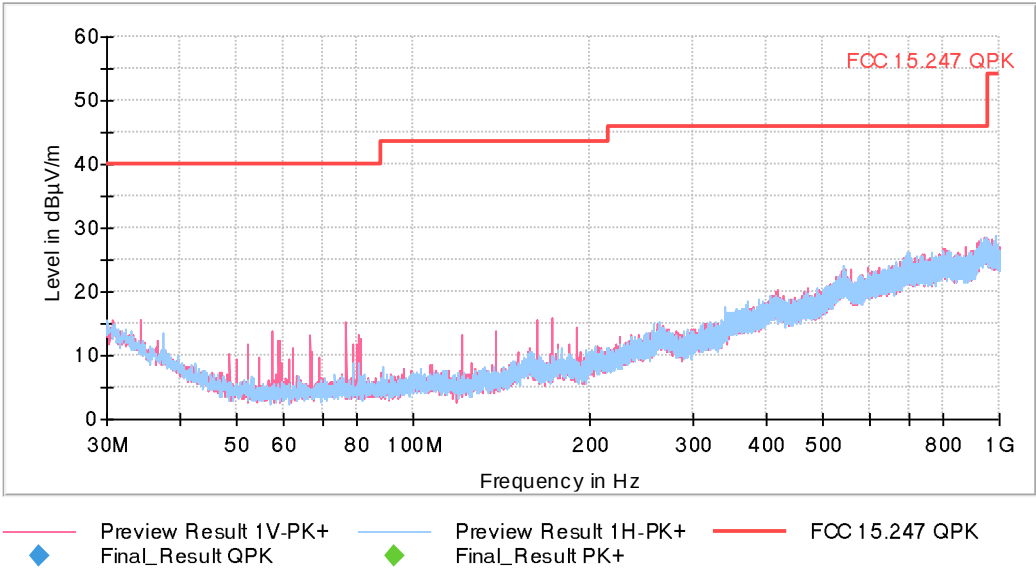
Verdict

Pass

Attachments

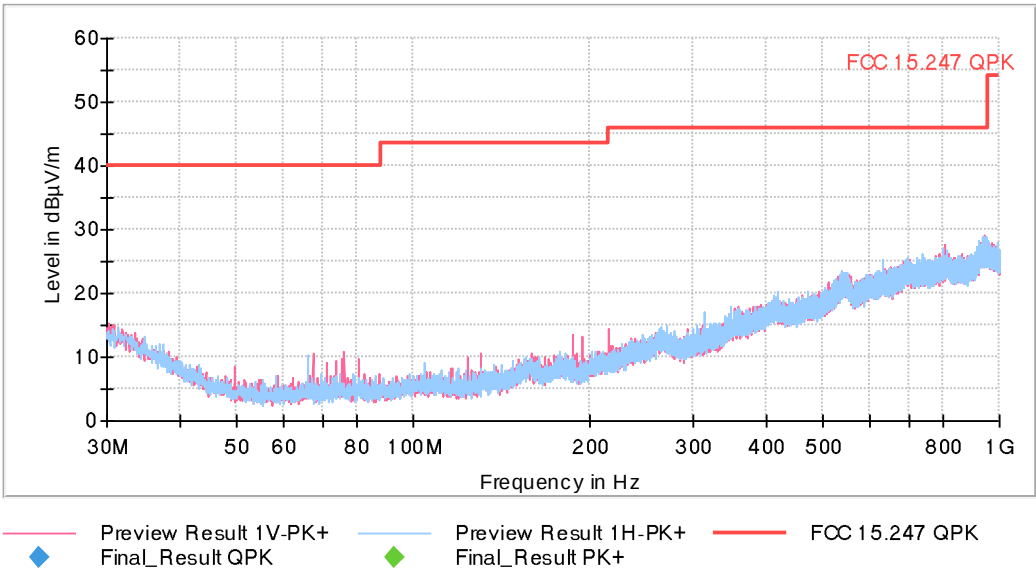
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [0.03, 1],
Measurement Point = 1

Images:



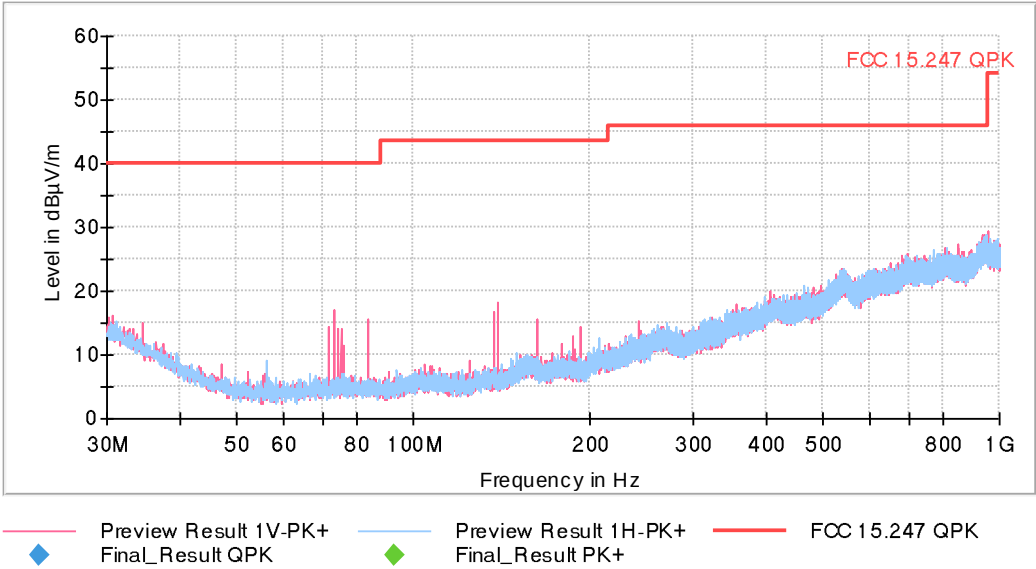
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [0.03, 1],
Measurement Point = 1

Images:



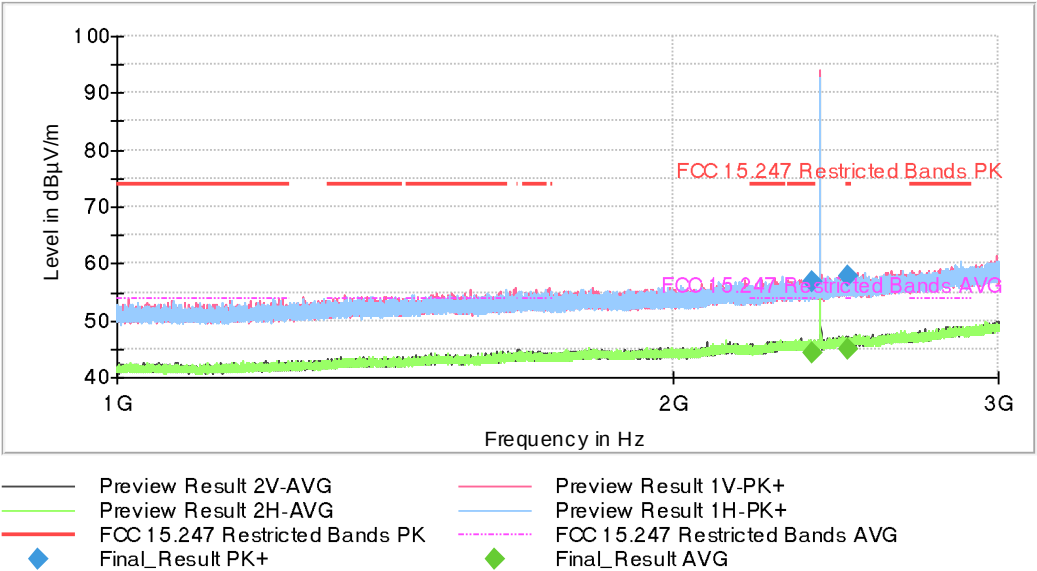
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [0.03, 1],
Measurement Point = 1

Images:

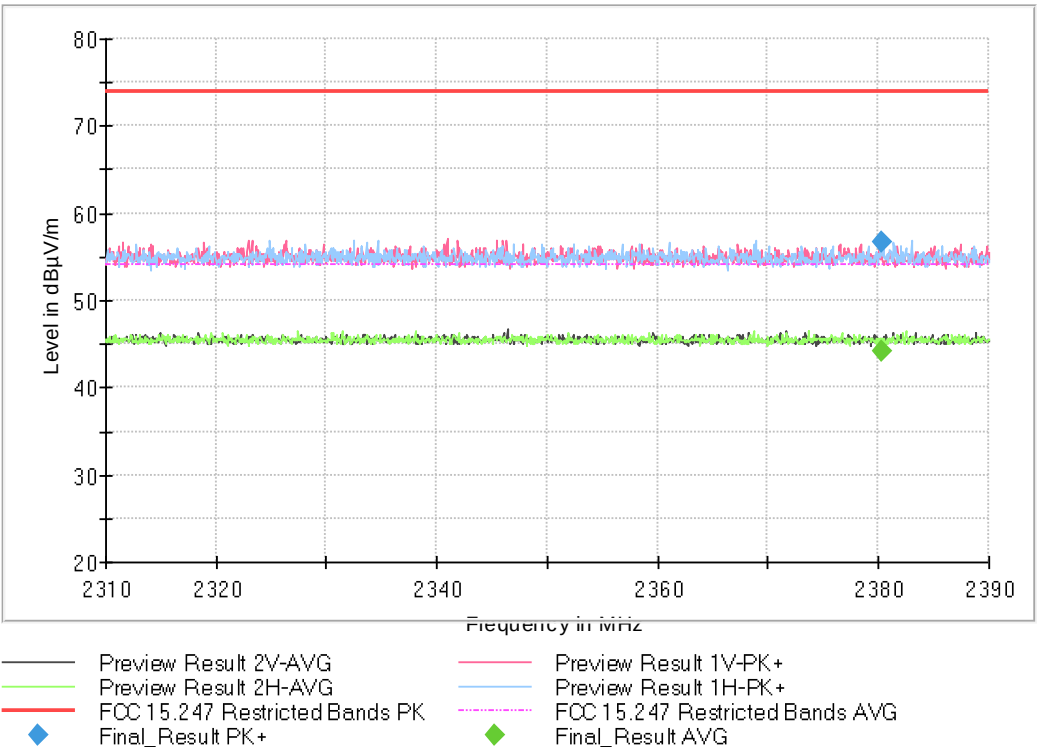


Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [1, 3],
Measurement Point = 1

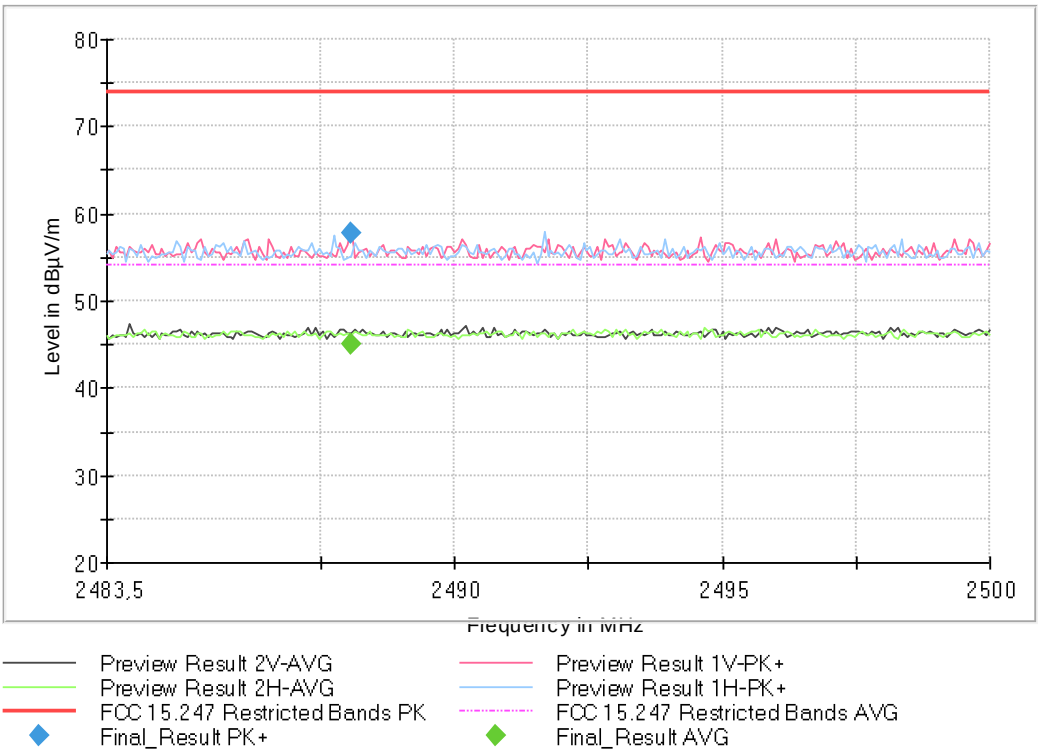
Images:



Full Spectrum

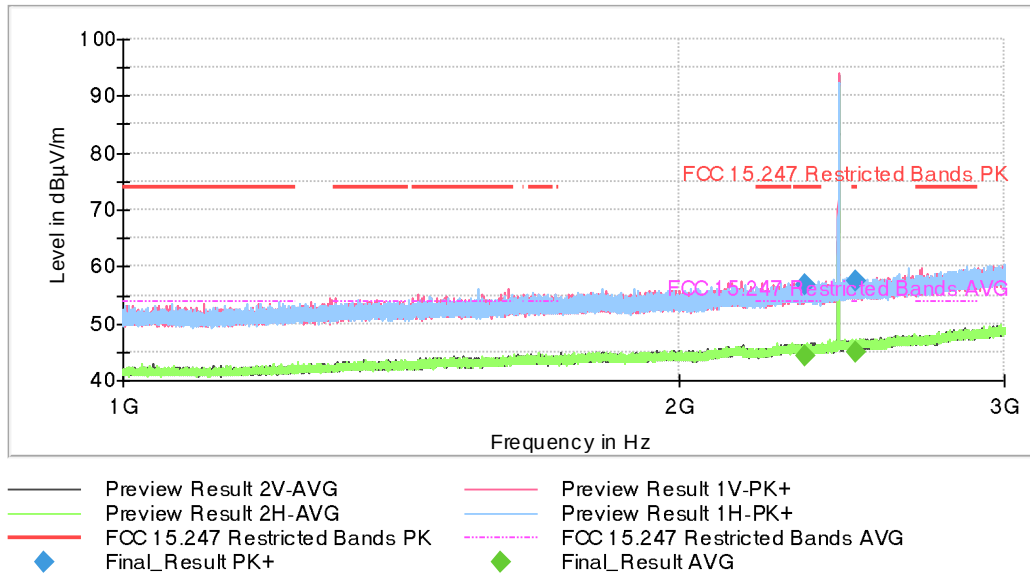


Full Spectrum

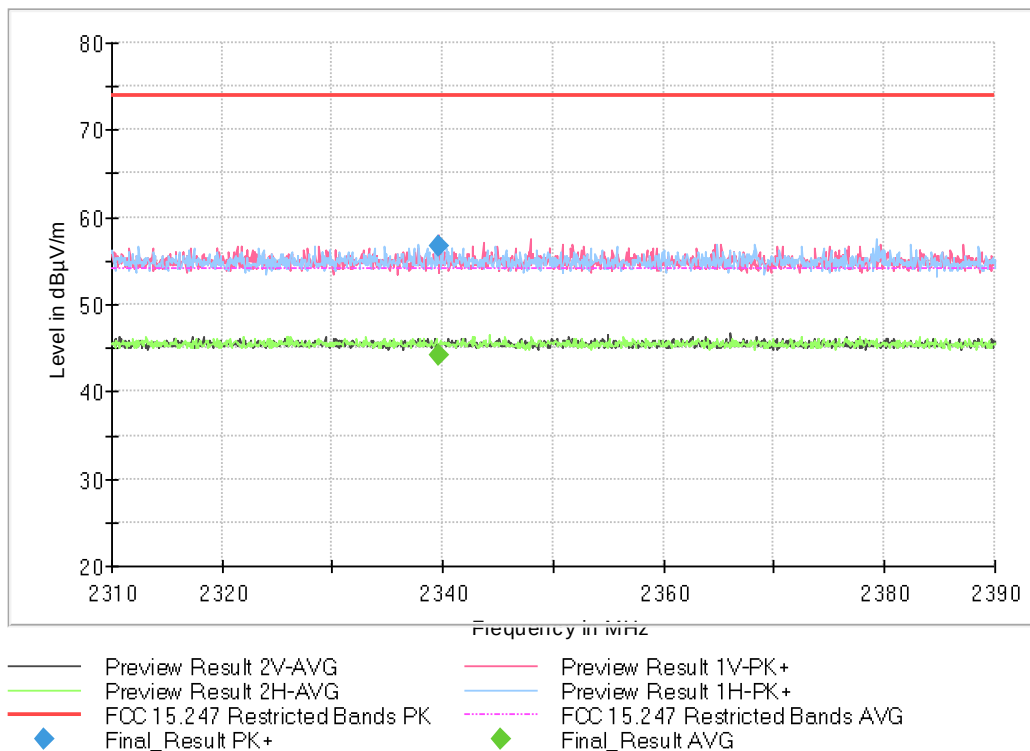


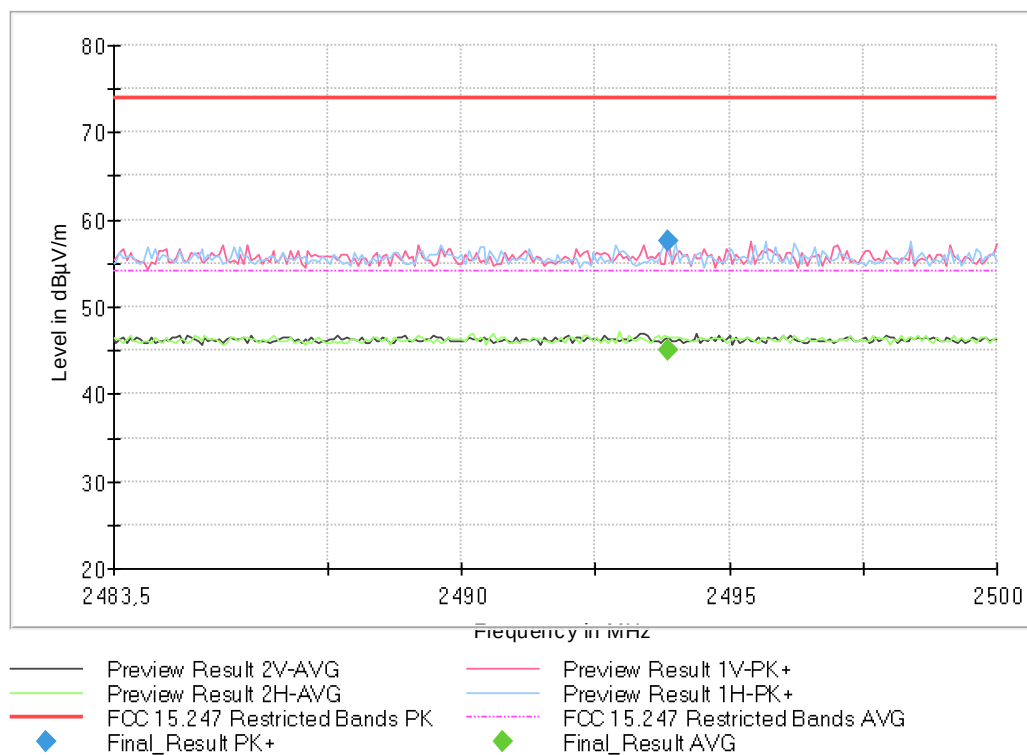
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [1, 3], Measurement Point = 1

Images:



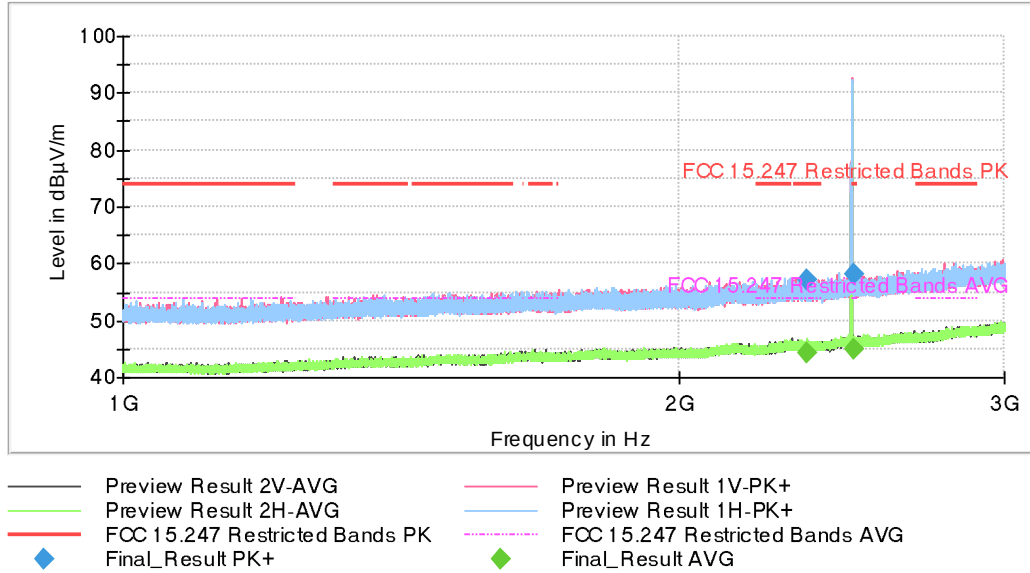
Full Spectrum



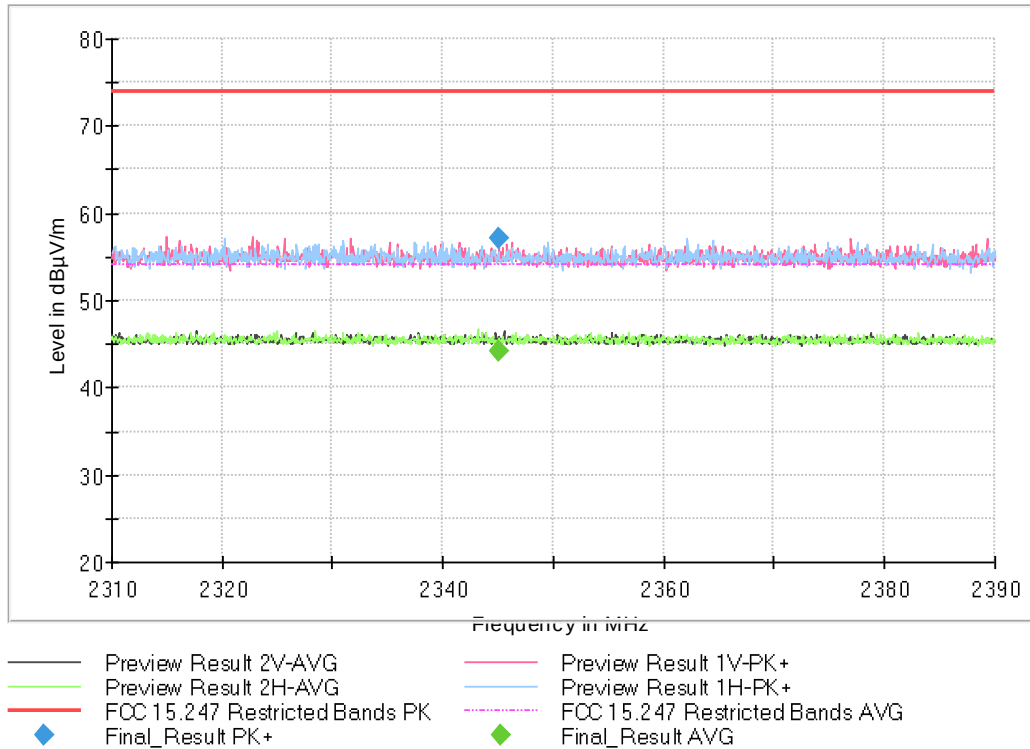


Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [1, 3], Measurement Point = 1

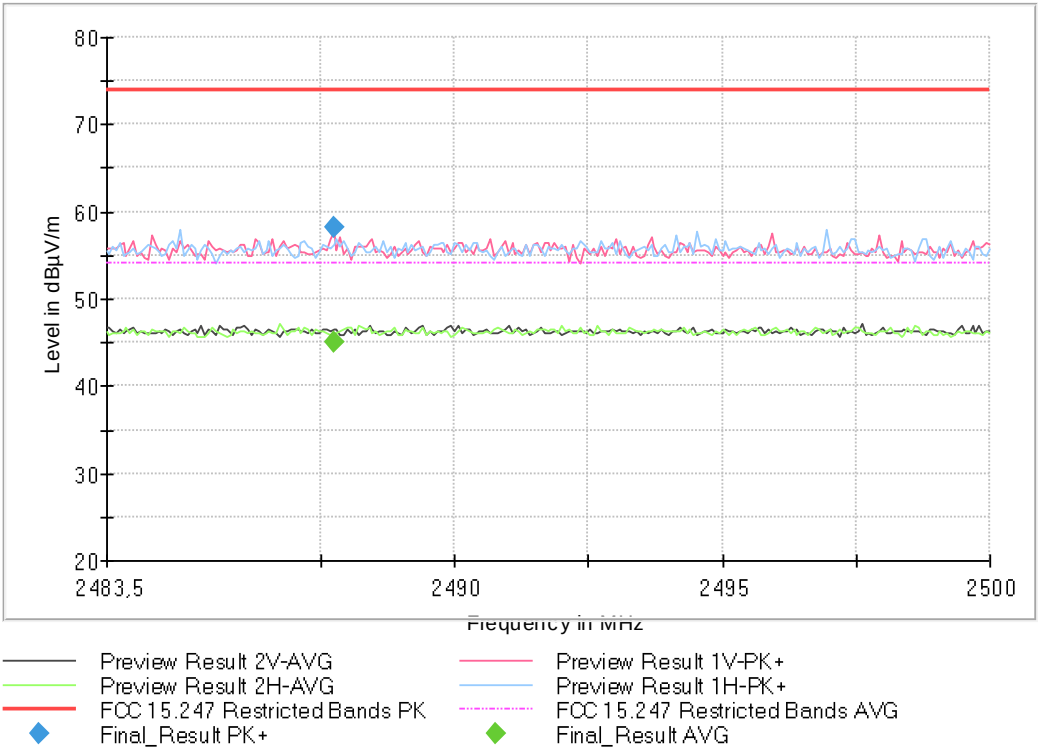
Images:



Full Spectrum

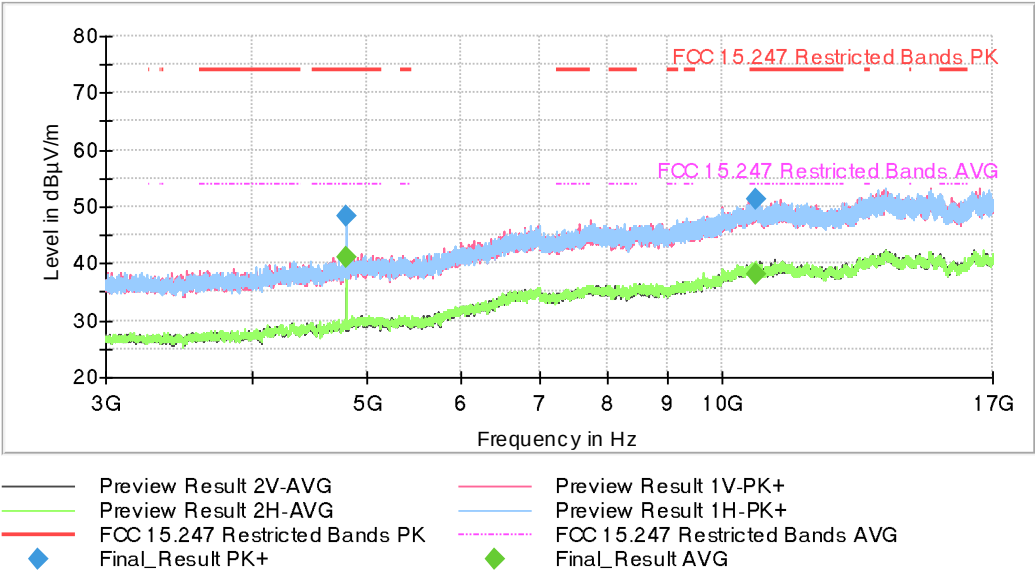


Full Spectrum



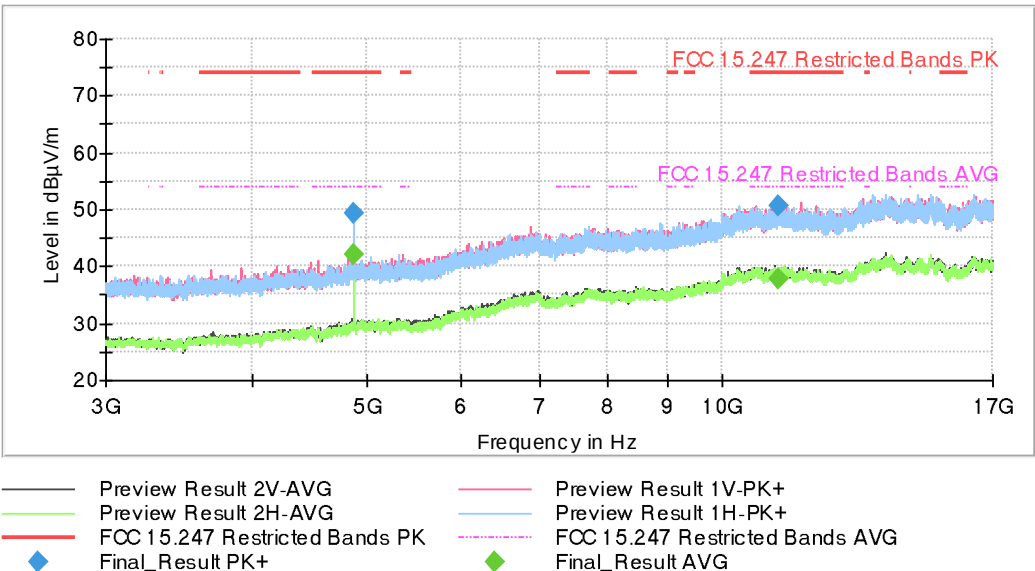
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2402.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [3, 17],
Measurement Point = 1

Images:



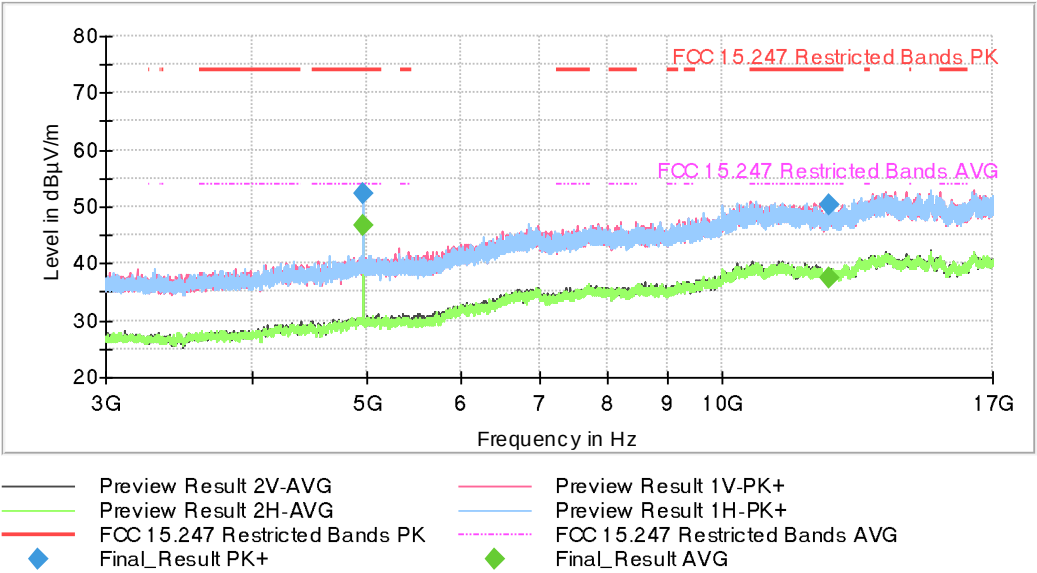
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2440.00000, Equipment Type = Digital
Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [3, 17],
Measurement Point = 1

Images:



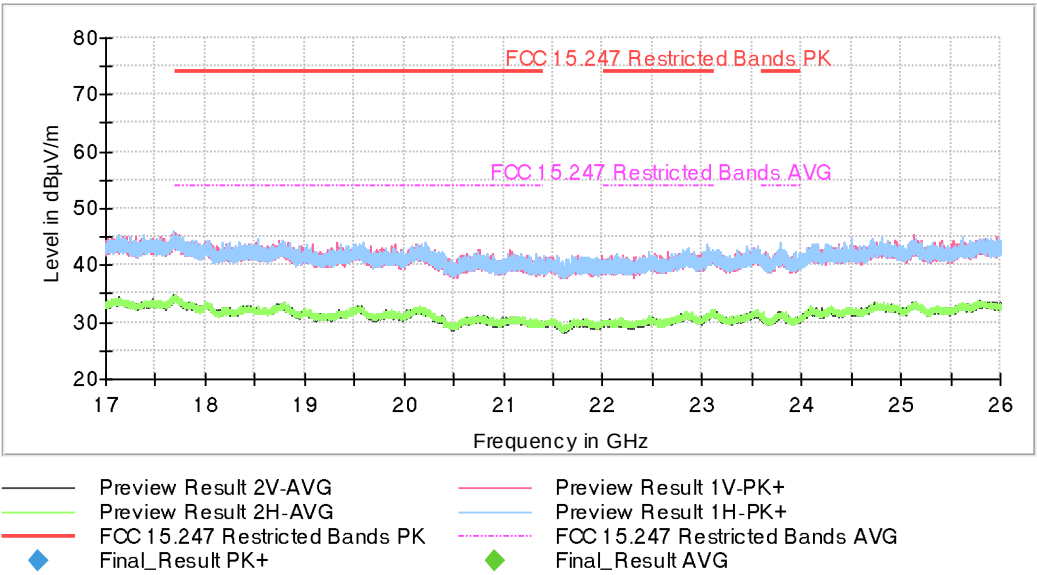
Operation Band MHz = [2400, 2483.5], Frequency MHz = 2480.00000, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [3, 17], Measurement Point = 1

Images:



Operation Band MHz = [2400, 2483.5], Frequency MHz = This plot is valid for the Low, Middle and High Channels, Equipment Type = Digital Transmission System (DTS), Modulation = BTLE 5.0 (GFSK 1 Mbit/s), Frequency Range GHz = [17, 26], Measurement Point = 1

Images:



Appendix C: Test results. IEEE 802.15.4 ZigBee. A1 antenna

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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 3.7Vdc

Type of Power Supply: Battery

ANTENNA GAIN (*):

Type of Antenna: Integral

Maximum Declared Antenna Gain: 1.10 dBi (Ch 2405MHz); 1.10 dBi (Ch 2445MHz);
0.65 dBi (Ch 2475MHz)

TEST FREQUENCIES (*):

			OUTPUT POWER
IEEE 802.15.4 ZigBee:	Low Channel:	2405 MHz	0dBm_20dBm
	Middle Channel:	2445 MHz	
	High Channel:	2475 MHz	

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

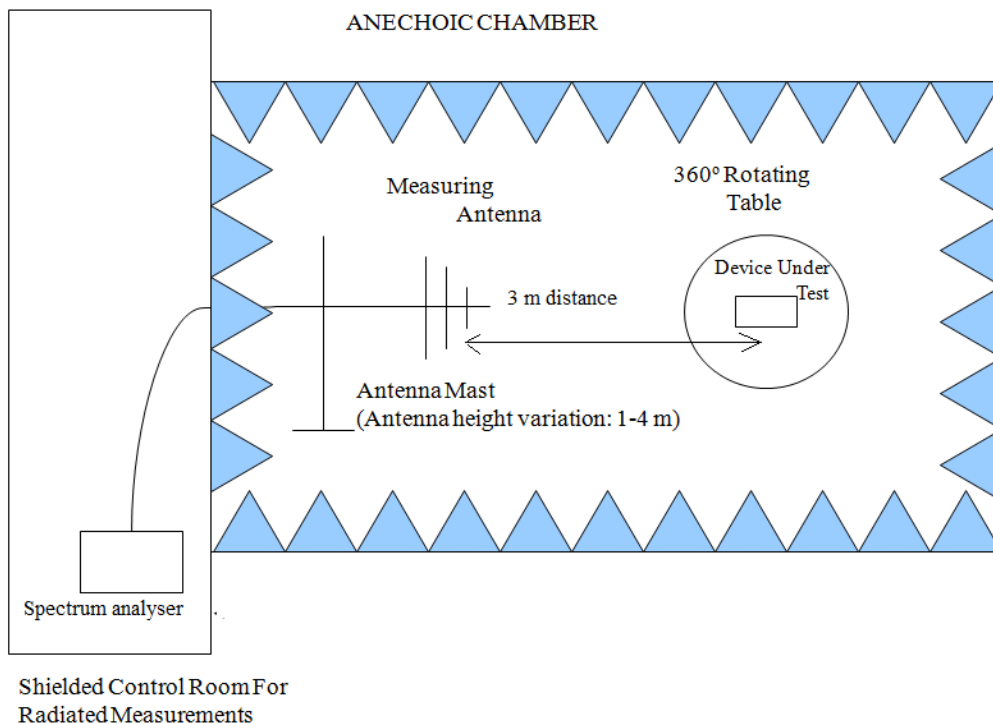
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

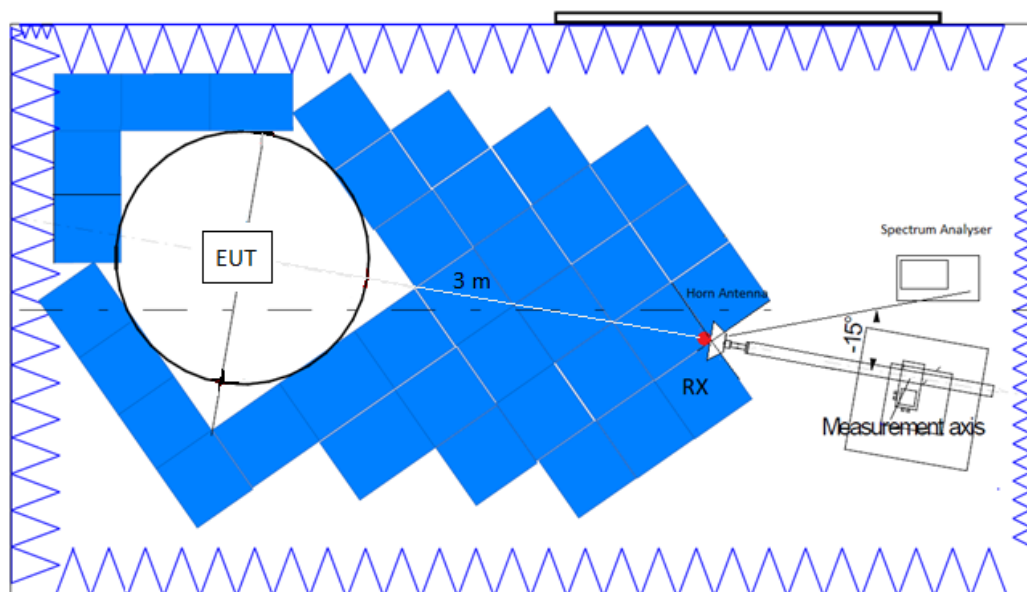
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth/video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:

