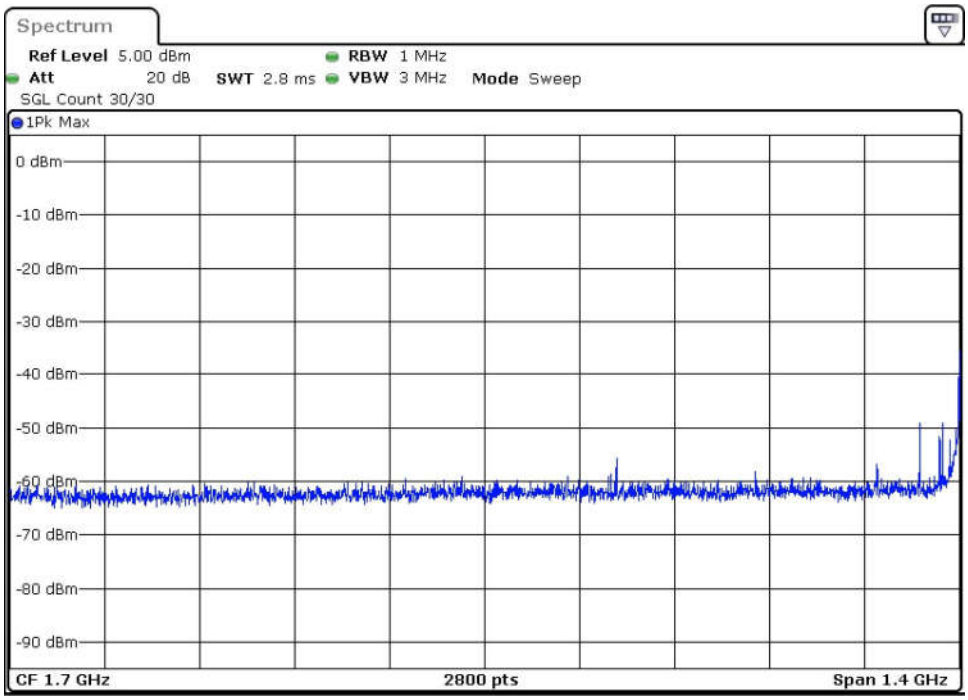
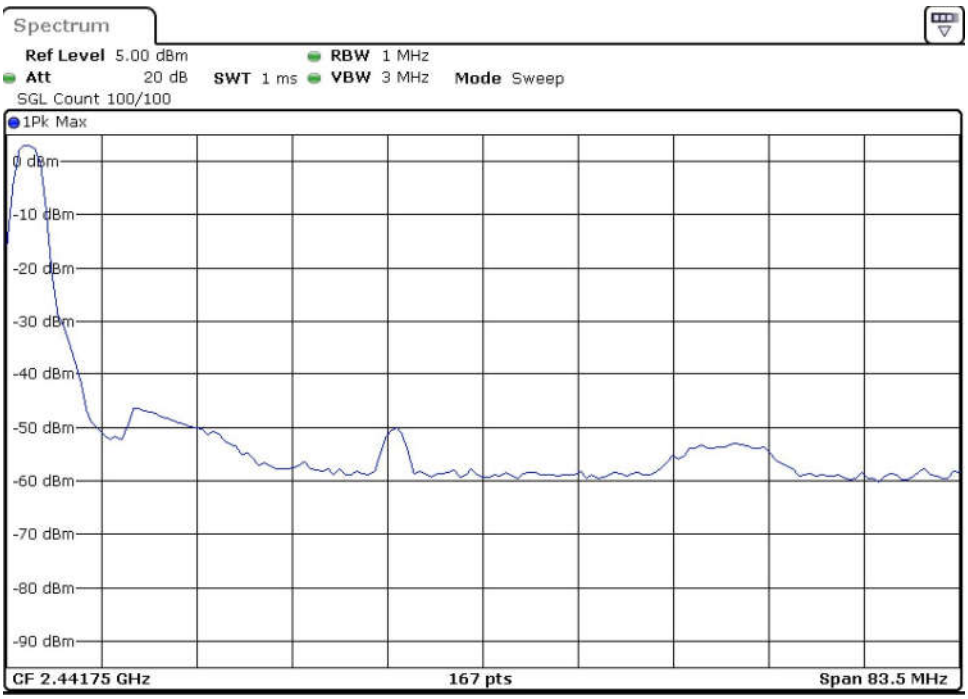
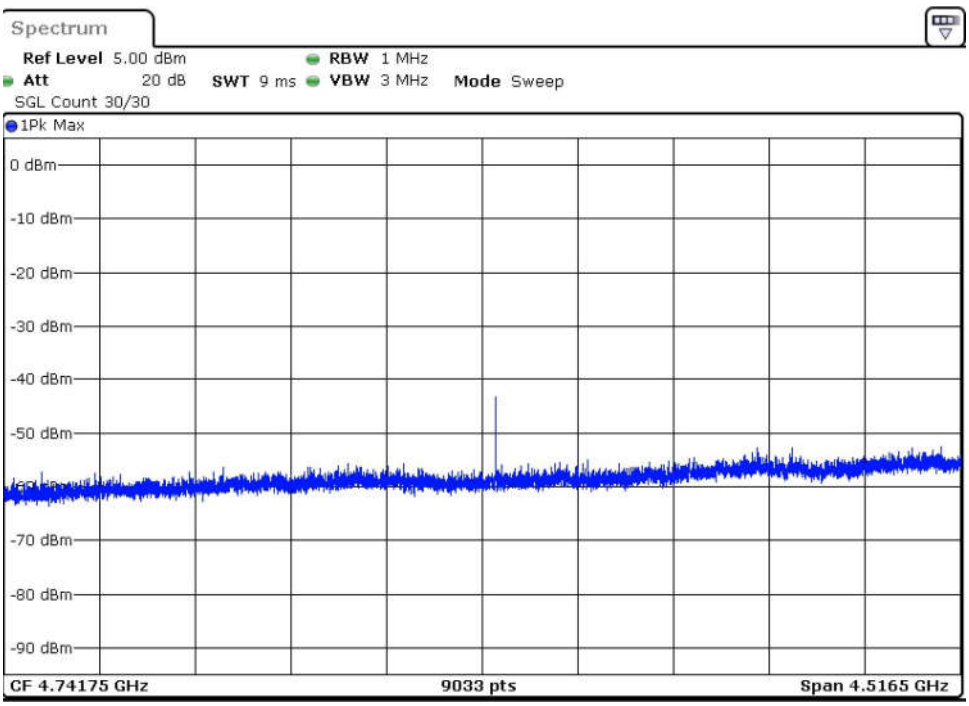
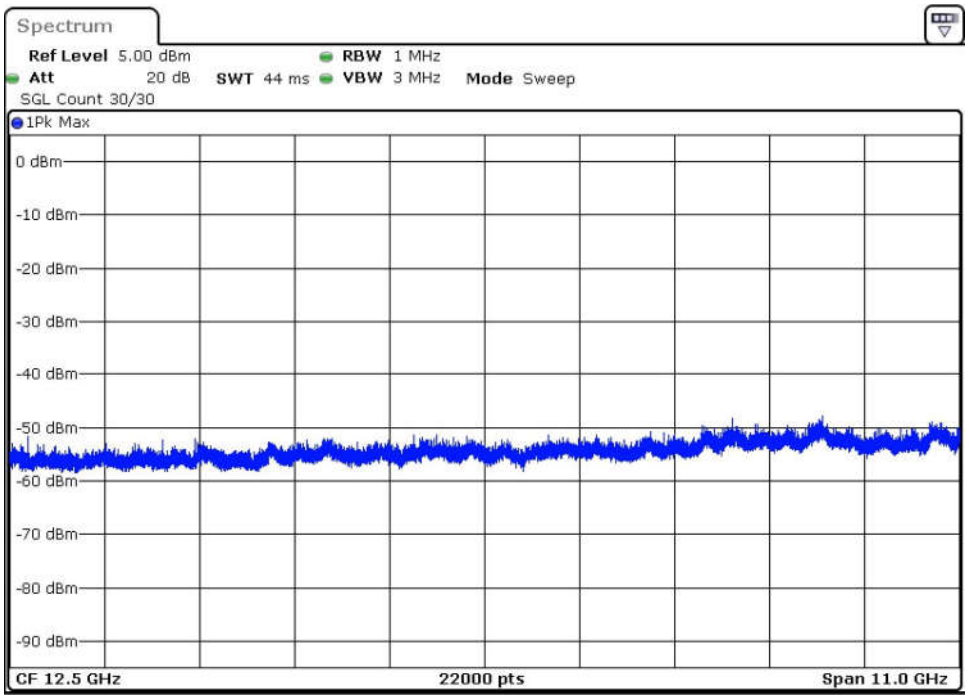
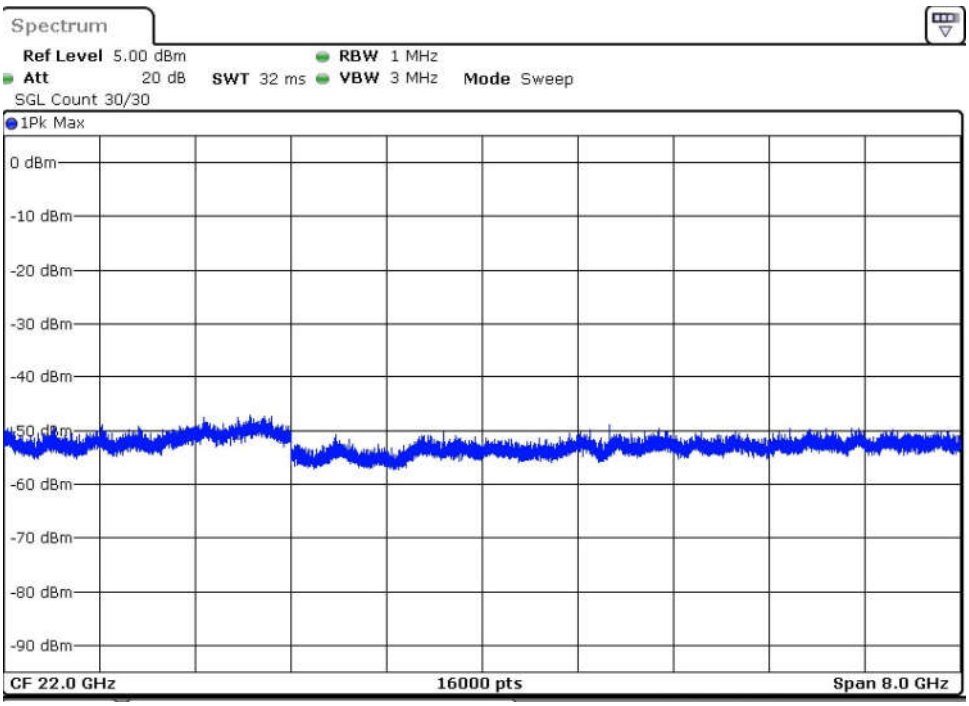

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 2.8 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 1.7 GHz
2800 pts
Span 1.4 GHz

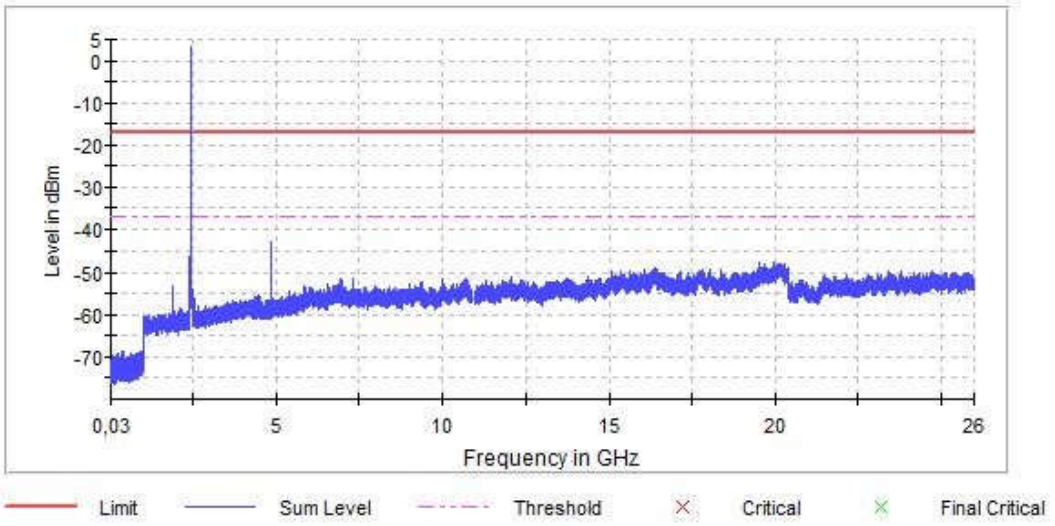

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 1 ms
VBW 3 MHz
Mode Sweep
SGL Count 100/100
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 2.44175 GHz
167 pts
Span 83.5 MHz

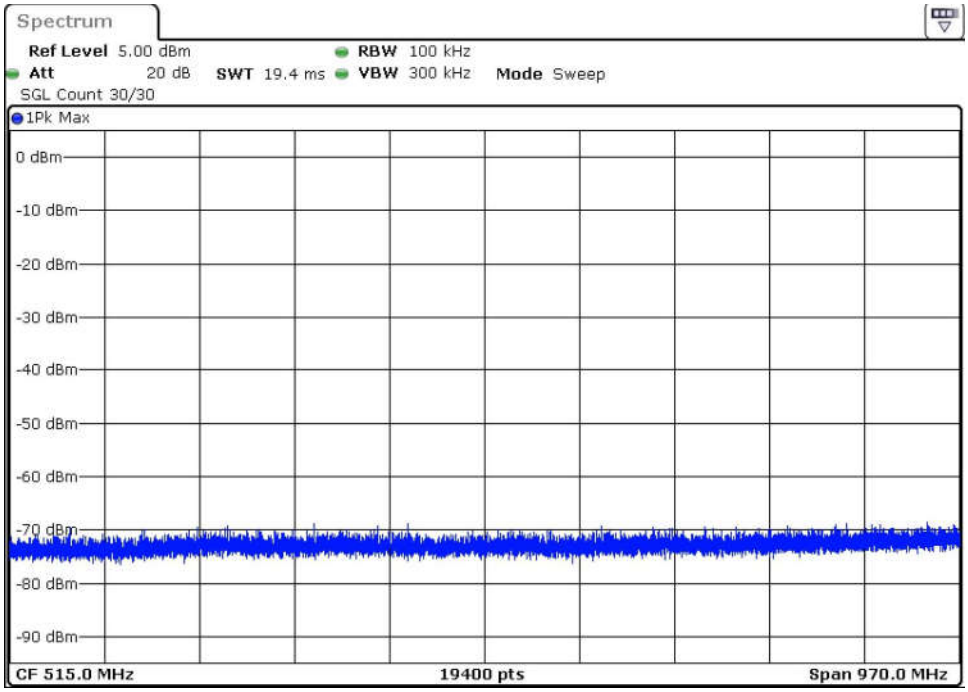

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 9 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
-80 dBm
-90 dBm
CF 4.74175 GHz
9033 pts
Span 4.5165 GHz

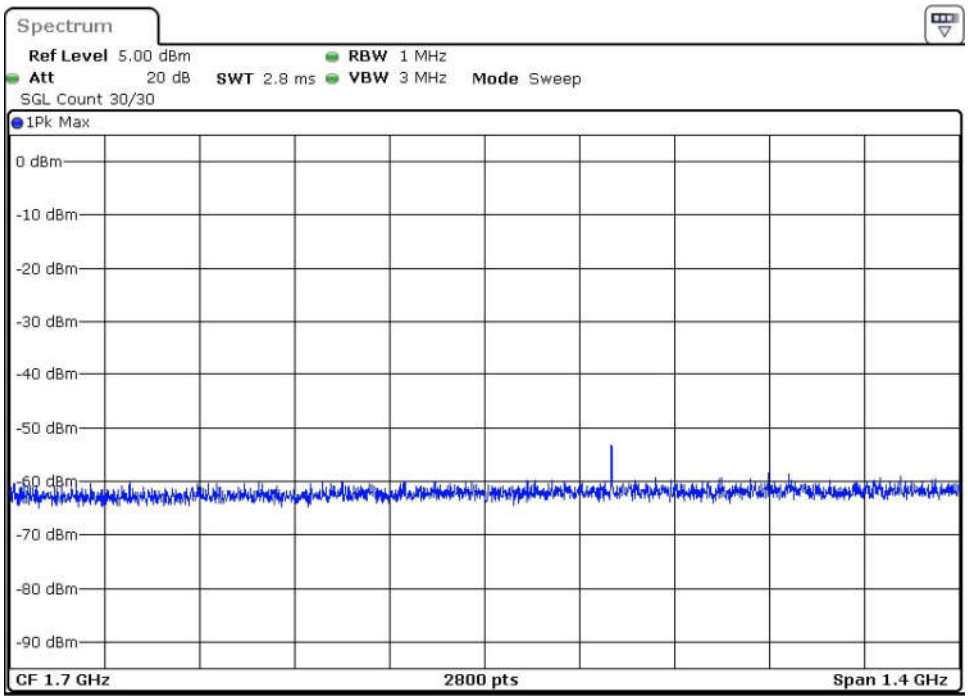

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 44 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 12.5 GHz
22000 pts
Span 11.0 GHz

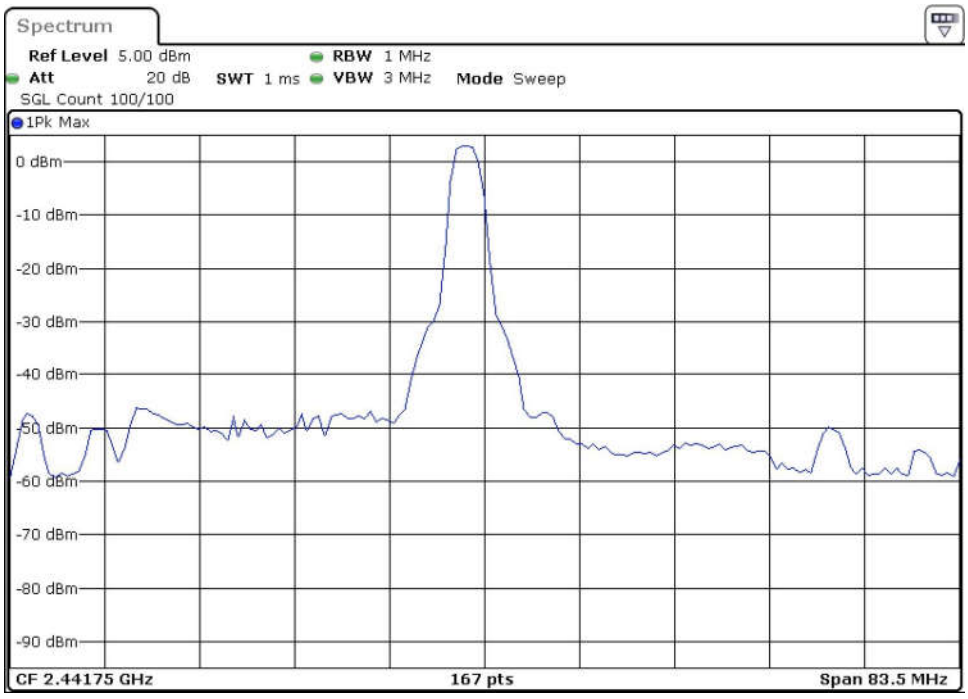

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 32 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 22.0 GHz
16000 pts
Span 8.0 GHz

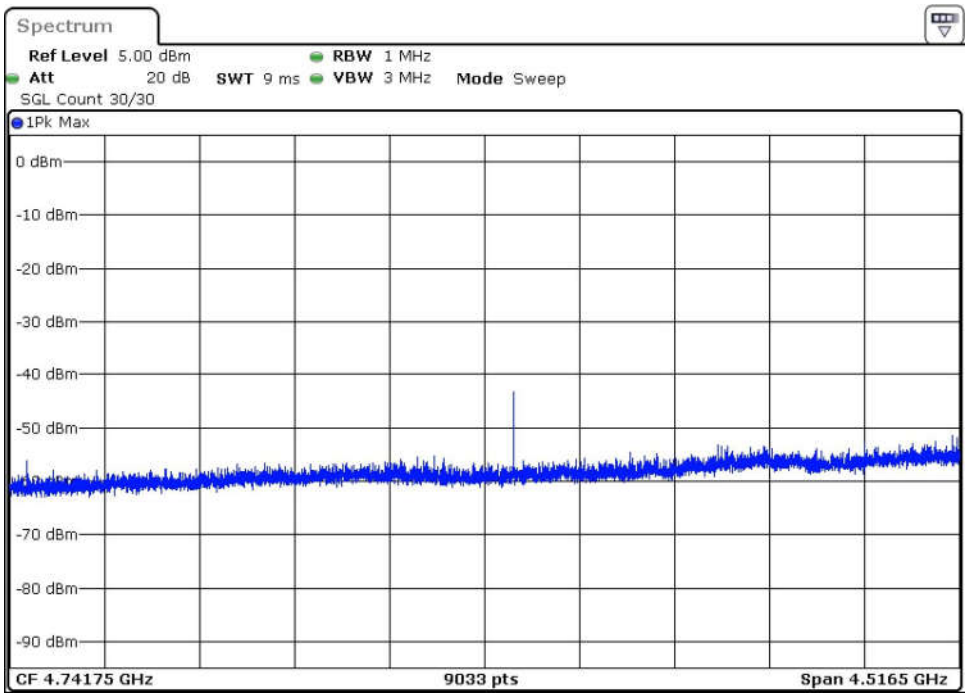
Middle frequency 2440 MHz:

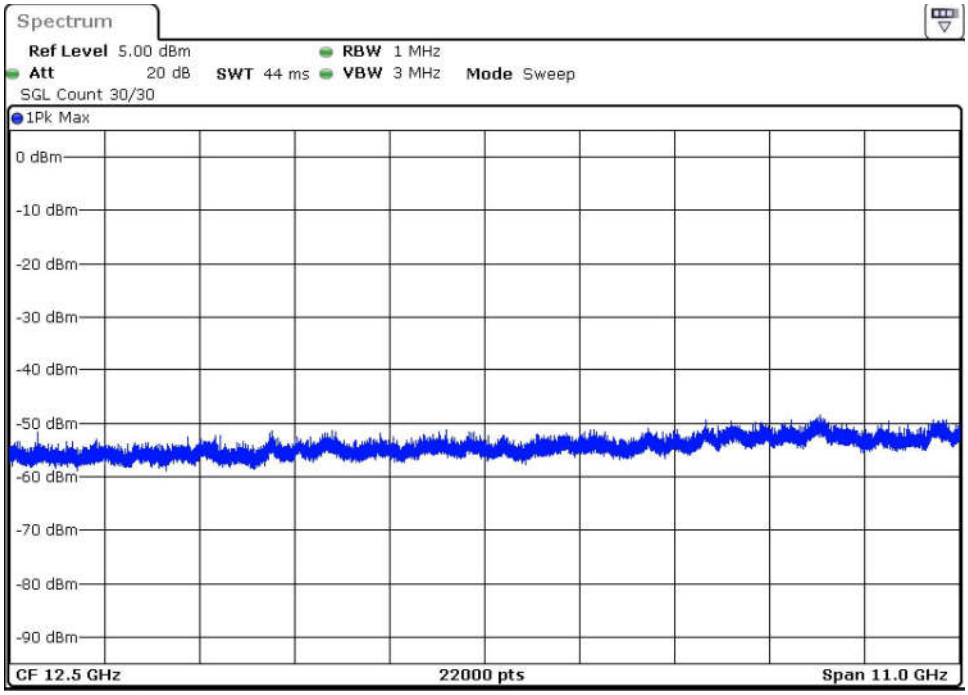


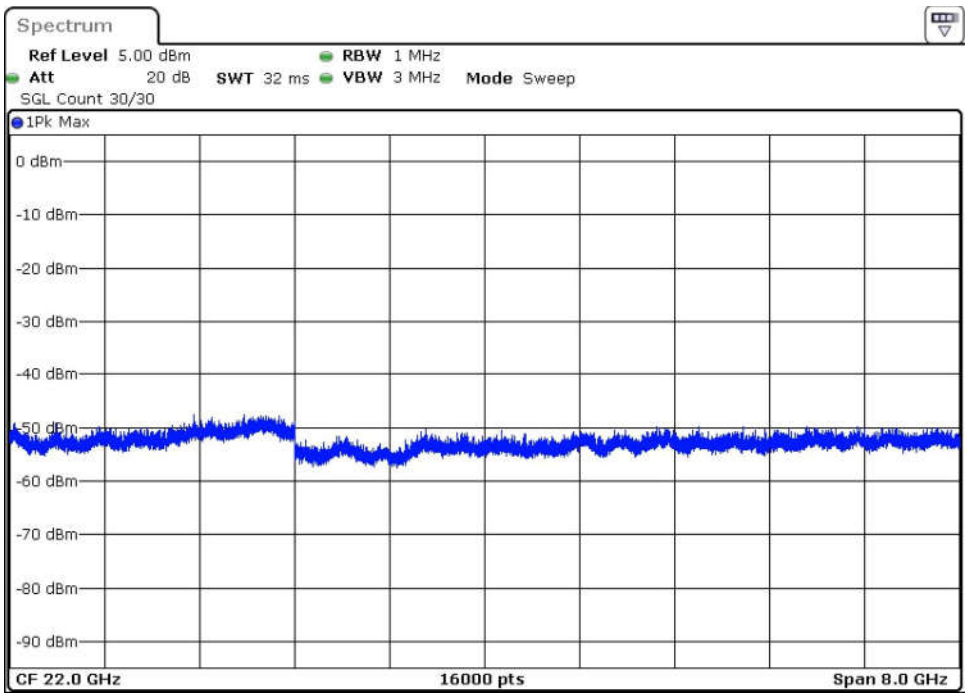



Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 2.8 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 1.7 GHz
2800 pts
Span 1.4 GHz

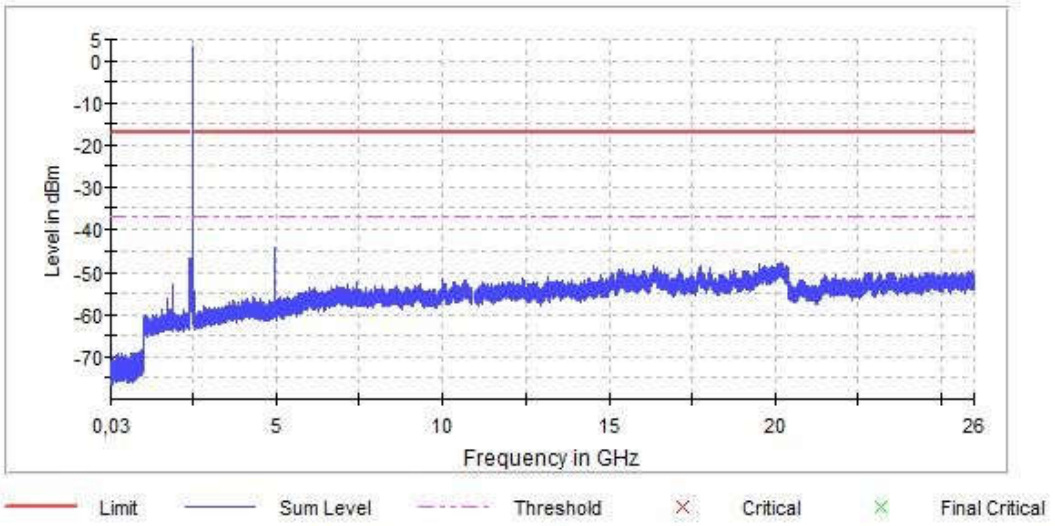

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 1 ms
VBW 3 MHz
Mode Sweep
SGL Count 100/100
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 2.44175 GHz
167 pts
Span 83.5 MHz

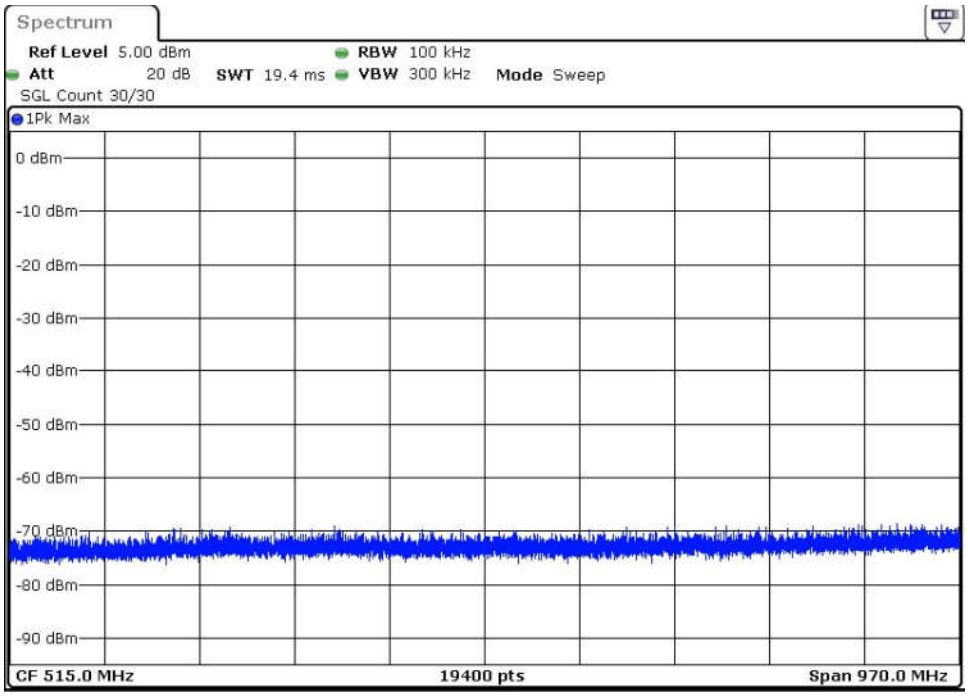

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 9 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
-80 dBm
-90 dBm
CF 4.74175 GHz
9033 pts
Span 4.5165 GHz

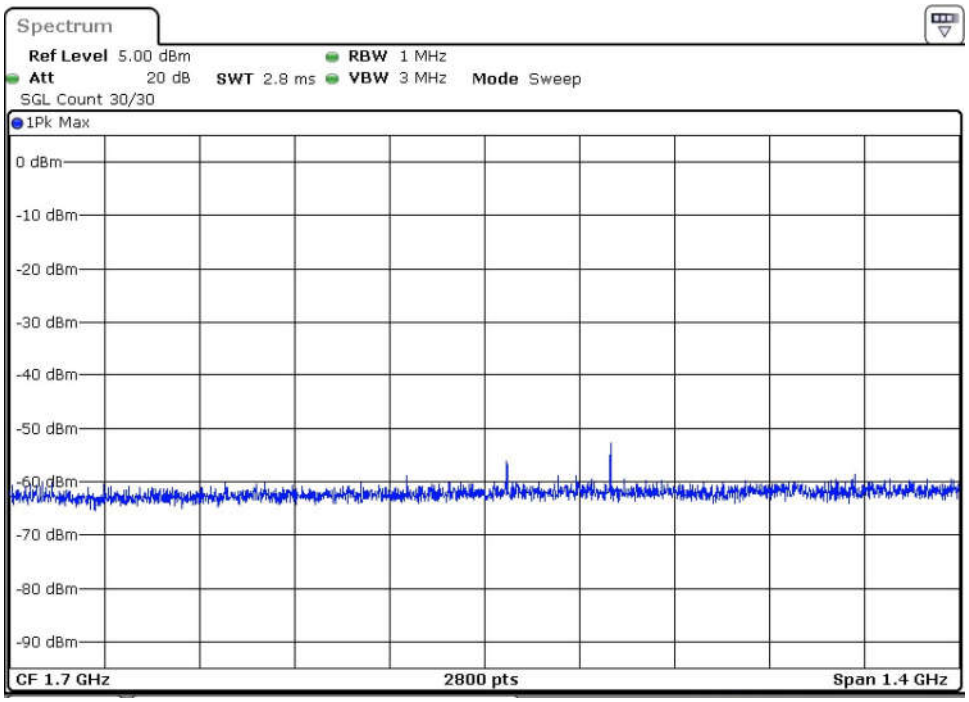

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 44 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 12.5 GHz
22000 pts
Span 11.0 GHz

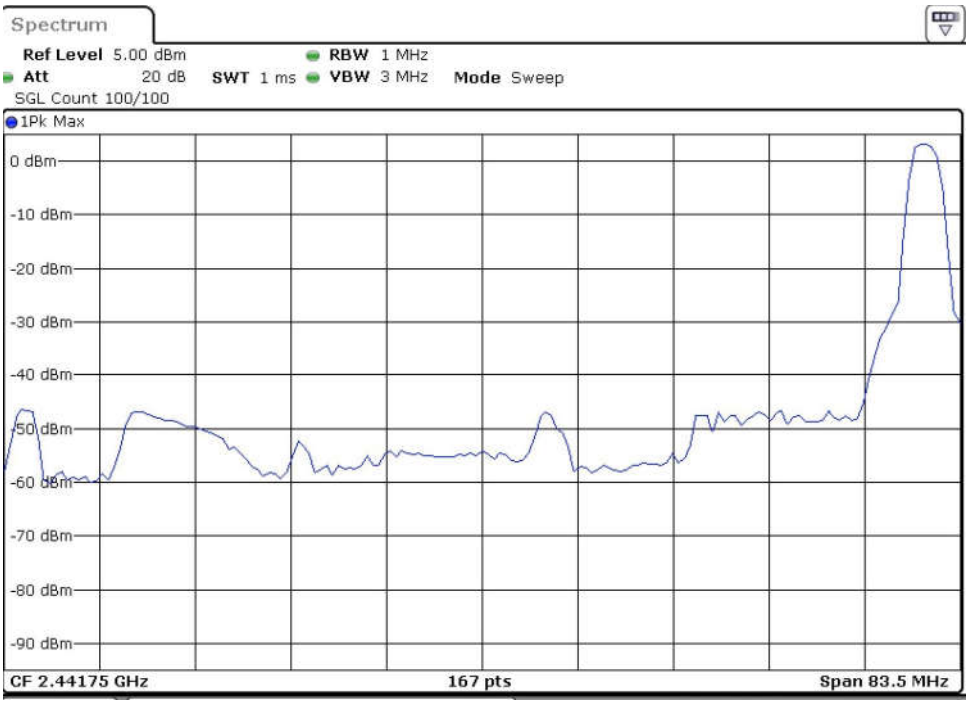

Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 32 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 22.0 GHz
16000 pts
Span 8.0 GHz

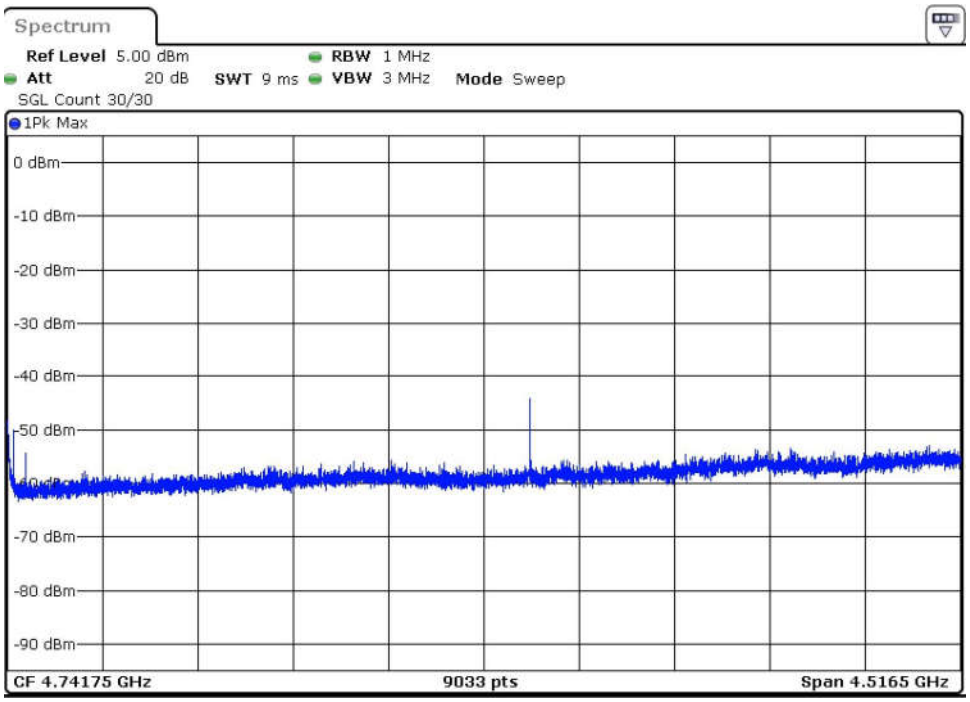
Highest frequency 2480 MHz:

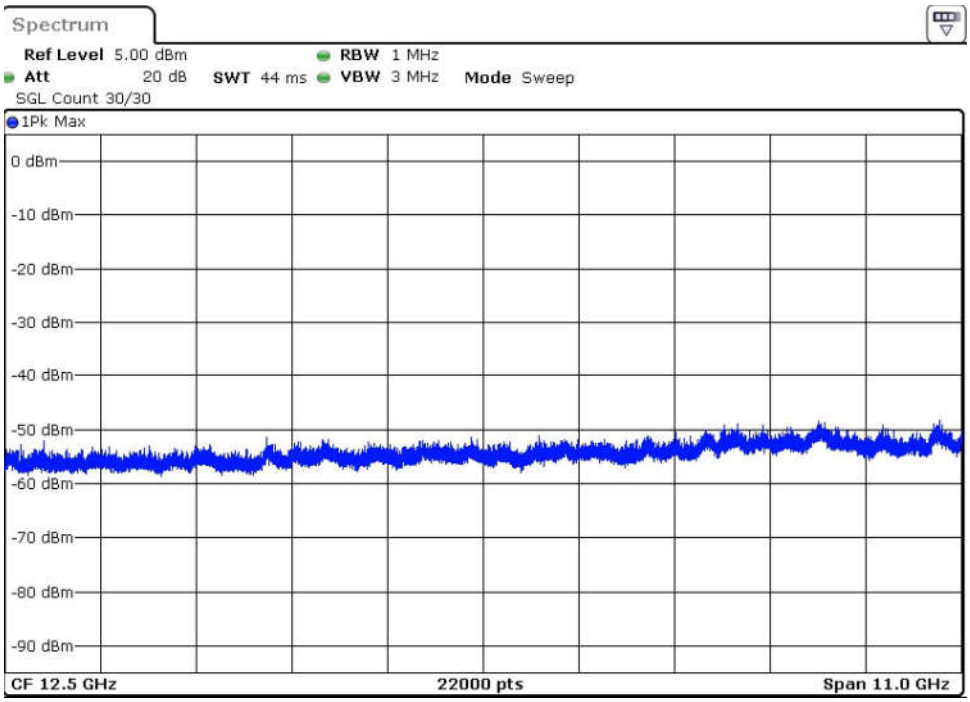


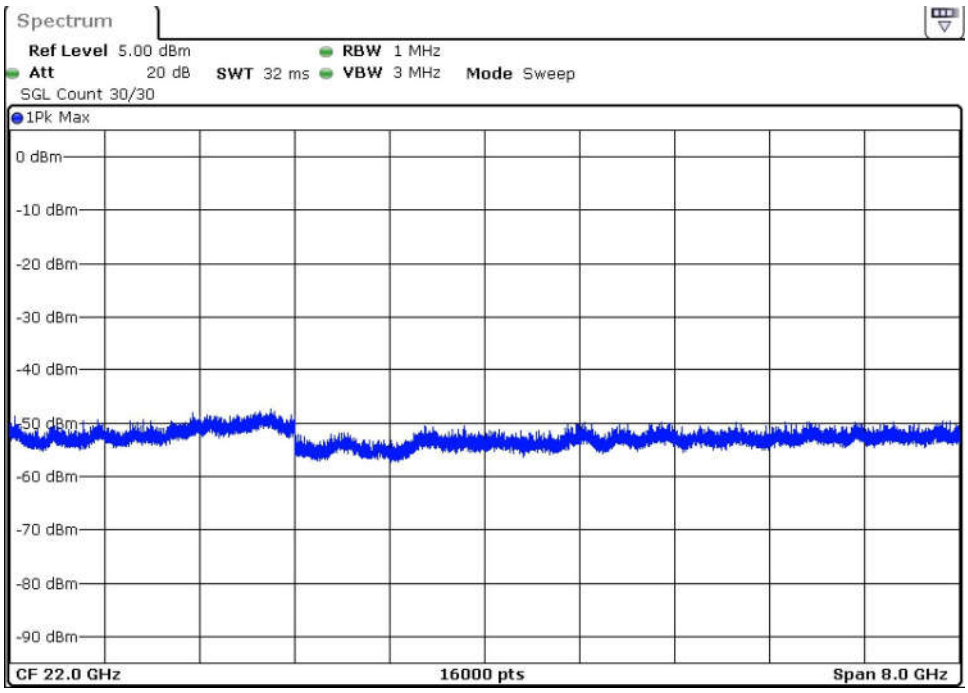



Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 2.8 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 1.7 GHz
2800 pts
Span 1.4 GHz


Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 1 ms
VBW 3 MHz
Mode Sweep
SGL Count 100/100
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 2.44175 GHz
167 pts
Span 83.5 MHz


Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 9 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-70 dBm
-80 dBm
-90 dBm
CF 4.74175 GHz
9033 pts
Span 4.5165 GHz


Spectrum
Ref Level 5.00 dBm
RBW 1 MHz
Att 20 dB
SWT 44 ms
VBW 3 MHz
Mode Sweep
SGL Count 30/30
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
CF 12.5 GHz
22000 pts
Span 11.0 GHz



Measurement 1

Setting	Instrument Value
Start Frequency	30.000 MHz
Stop Frequency	1.000 GHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	19400
Sweeptime	19.400 ms
Reference Level	5.000 dBm
Attenuation	20.000 dB
Detector	MaxPeak
SweepCount	30
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.50 dB
Run	4 / max. 150
Stable	3 / 3
Max Stable Difference	0.00 dB

Measurement 2

Setting	Instrument Value	Instrument Value	Instrument Value	Instrument Value	Instrument Value
Start Frequency	1.000 GHz	2.4000 GHz	2.4835 GHz	7.000 GHz	18.000 GHz
Stop Frequency	2.400 GHz	2.4835 GHz	7.000 GHz	18.000 GHz	26.000 GHz
RBW	1.000 MHz	1.000 MHz	1.000 MHz	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz	3.000 MHz	3.000 MHz	3.000 MHz
SweepPoints	2800	167	9033	22000	16000
Sweeptime	2.800 ms	1.000 ms	9.000 ms	44.000 ms	32.000 ms
Reference Level	5.000 dBm	5.000 dBm	5.000 dBm	5.000 dBm	5.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak	MaxPeak	MaxPeak
SweepCount	30	30	30	30	30
Filter	3 dB	3 dB	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep	Sweep	Sweep
Preamp	off	off	off	off	off
Stablemode	Trace	Trace	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB	0.50 dB	0.50 dB
Run	4 / max. 150	4 / max. 150	4 / max. 150	4 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.00 dB	0.00 dB	0.00 dB	0.00 dB	0.00 dB

Section 15.247 Subclause (d) / RSS-247 5.5. Band-edge emissions compliance (Transmitter)

SPECIFICATION

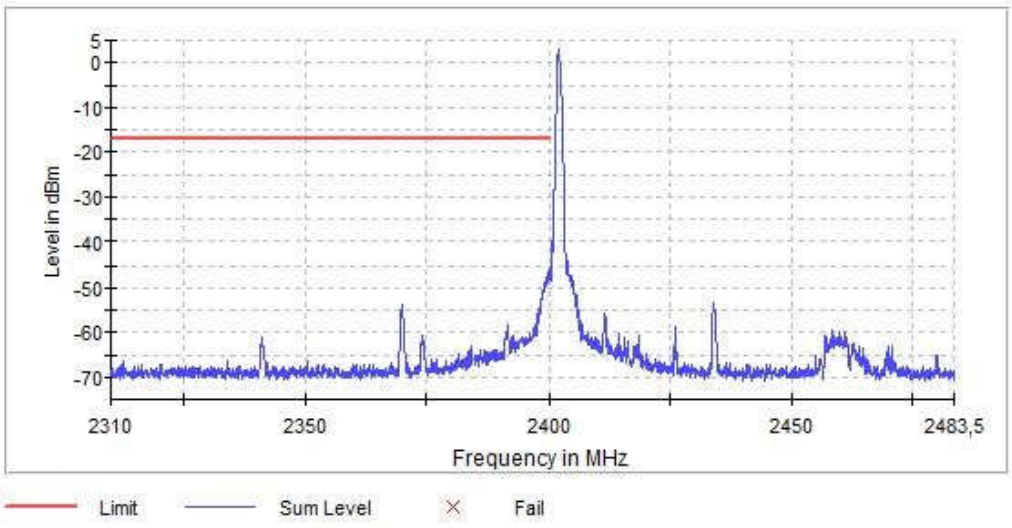
In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of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

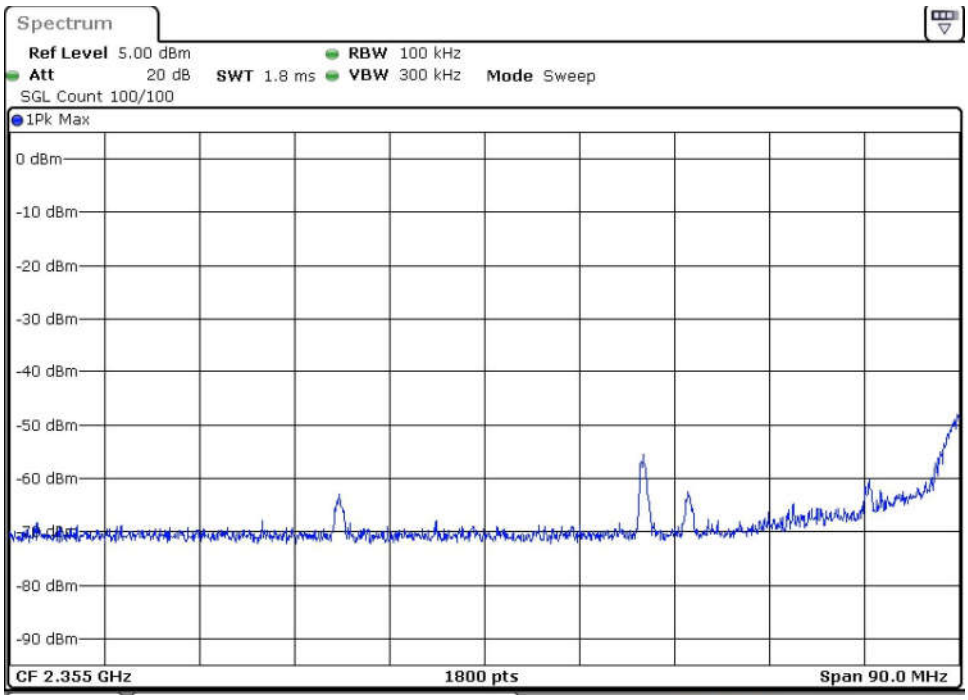
RESULTS:

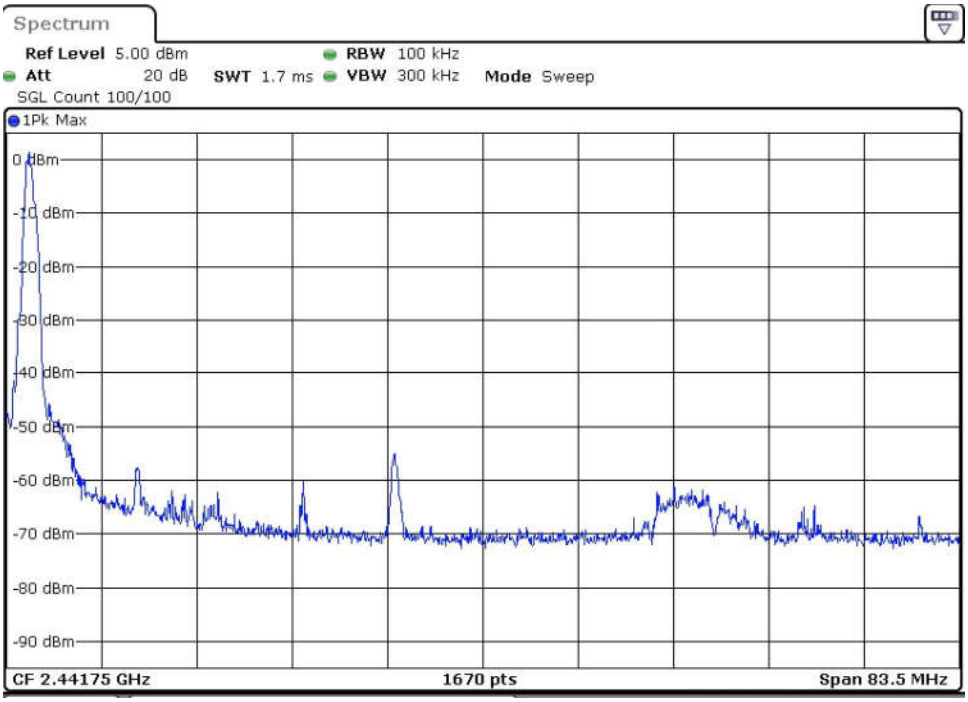
Note: Radiated measurements were used to show compliance with the limits in the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

1. LOW FREQUENCY SECTION. CONDUCTED.

See next plot.







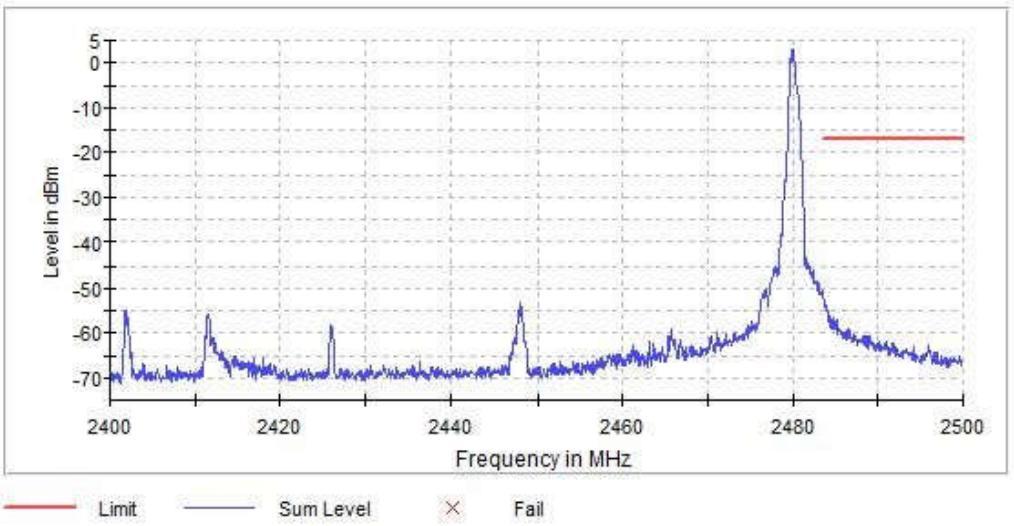
Measurement

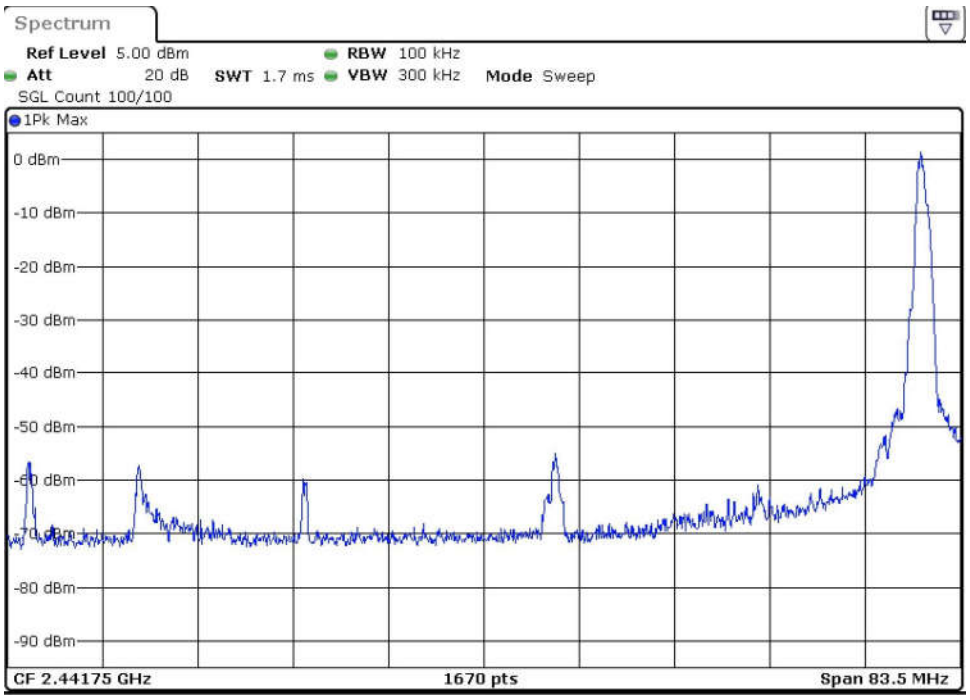
Setting	Instrument Value	Instrument Value
Start Frequency	**2.31000 GHz**	**2.40000 GHz**

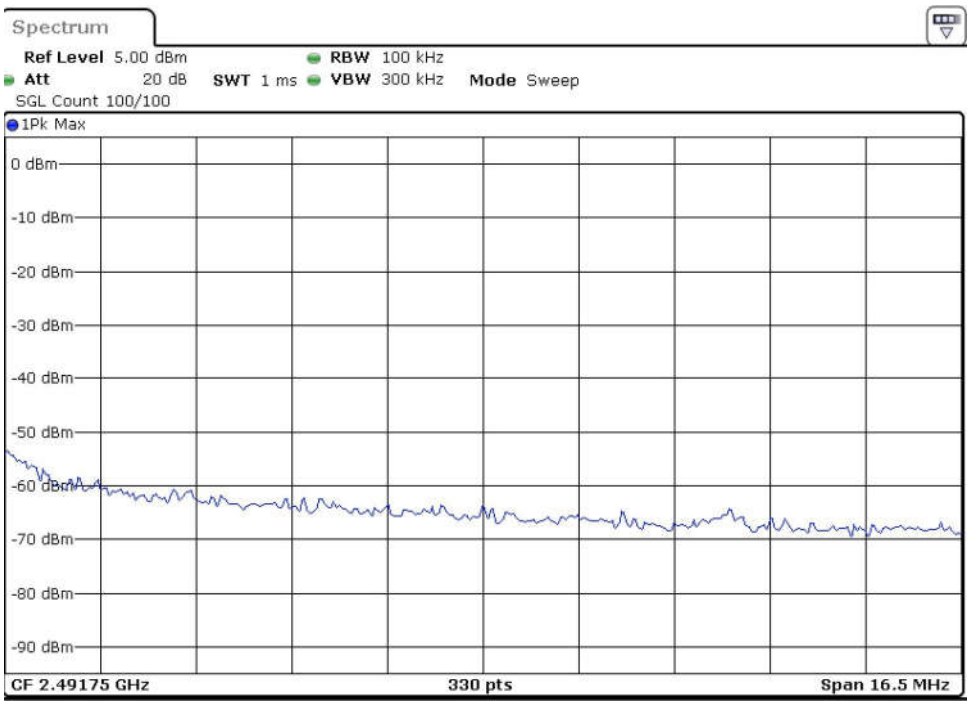
Stop Frequency	**2.40000 GHz**	**2.48350 GHz**
Span	**90.000 MHz**	**83.500 MHz**
RBW	**100.000 kHz**	**100.000 kHz**
VBW	**300.000 kHz**	**300.000 kHz**
SweepPoints	**1800**	**1670**
Sweeptime	**1.800 ms**	**1.670 ms**
Reference Level	**5.000 dBm**	**5.000 dBm**
Attenuation	**20.000 dB**	**20.000 dB**
Detector	**MaxPeak**	**MaxPeak**
SweepCount	**100**	**100**
Filter	**3 dB**	**3 dB**
Trace Mode	**Max Hold**	**Max Hold**
Sweeptype	**Sweep**	**Sweep**
Preamp	**off**	**off**
Stablemode	**Trace**	**Trace**
Stablevalue	**0.50 dB**	**0.50 dB**
Run	**14 / max. 150**	**8 / max. 150**
Stable	**3 / 3**	**3 / 3**
Max Stable Difference	**0.25 dB**	**0.14 dB**

2. HIGH FREQUENCY SECTION. CONDUCTED.

See next plot.







Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	**2.40000 GHz**	**2.48350 GHz**
Stop Frequency	**2.48350 GHz**	**2.50000 GHz**

Span	**83.500 MHz**	**16.500 MHz**
RBW	**100.000 kHz**	**100.000 kHz**
VBW	**300.000 kHz**	**300.000 kHz**
SweepPoints	**1670**	**330**
Sweeptime	**1.670 ms**	**1.010 ms**
Reference Level	**5.000 dBm**	**5.000 dBm**
Attenuation	**20.000 dB**	**20.000 dB**
Detector	**MaxPeak**	**MaxPeak**
SweepCount	**100**	**100**
Filter	**3 dB**	**3 dB**
Trace Mode	**Max Hold**	**Max Hold**
Sweeptype	**Sweep**	**Sweep**
Preamp	**off**	**off**
Stablemode	**Trace**	**Trace**
Stablevalue	**0.50 dB**	**0.50 dB**
Run	**8 / max. 150**	**13 / max. 150**
Stable	**3 / 3**	**3 / 3**
Max Stable Difference	**0.14 dB**	**0.00 dB**

Measurement uncertainty (dB)	< ±2.03

Verdict: PASS

Section 15.247 Subclause (e) / RSS-247 5.2. (b) Power spectral density

SPECIFICATION

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 maximum power spectral density level in the fundamental emission was measured using the method PKPSD (Peak PSD) according to point 10.2. of Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 558074 D01 DTS Meas Guidance v04 dated 05/04/2017.

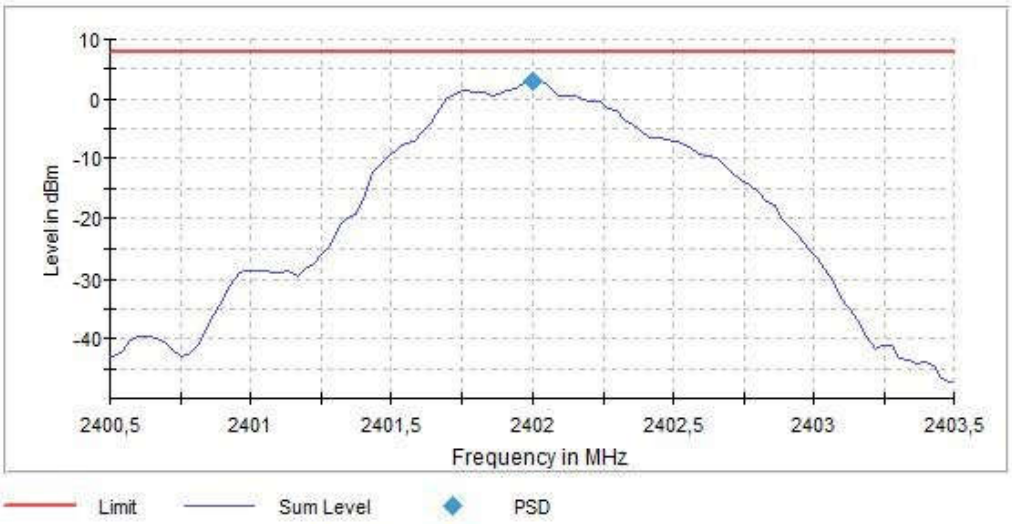
Power spectral density (see next plots).

	Lowest frequency 2402 MHz	Middle frequency 2440 MHz	Highest frequency 2480 MHz
Power spectral density (dBm)	2.874	2.862	2.960
Measurement uncertainty (dB)	<±0.78		

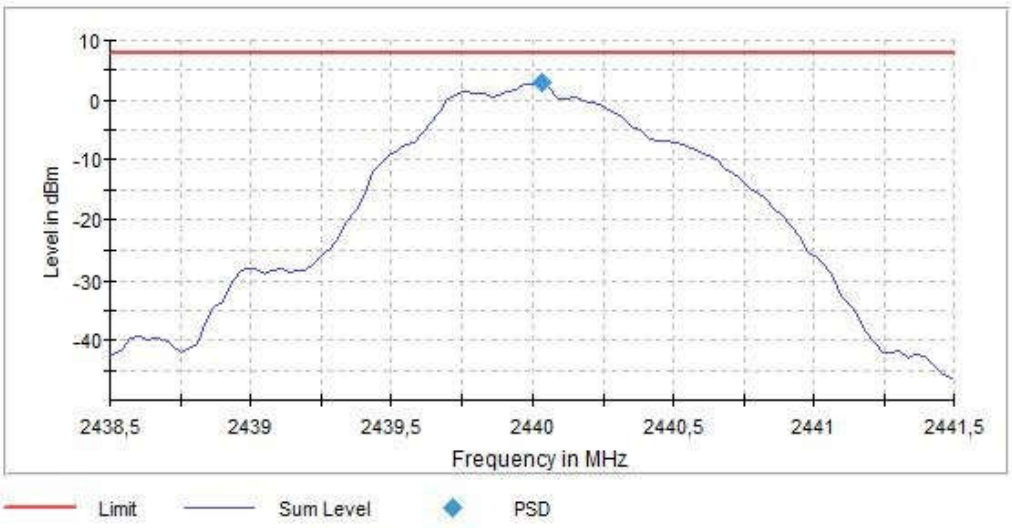
Verdict: PASS

POWER SPECTRAL DENSITY

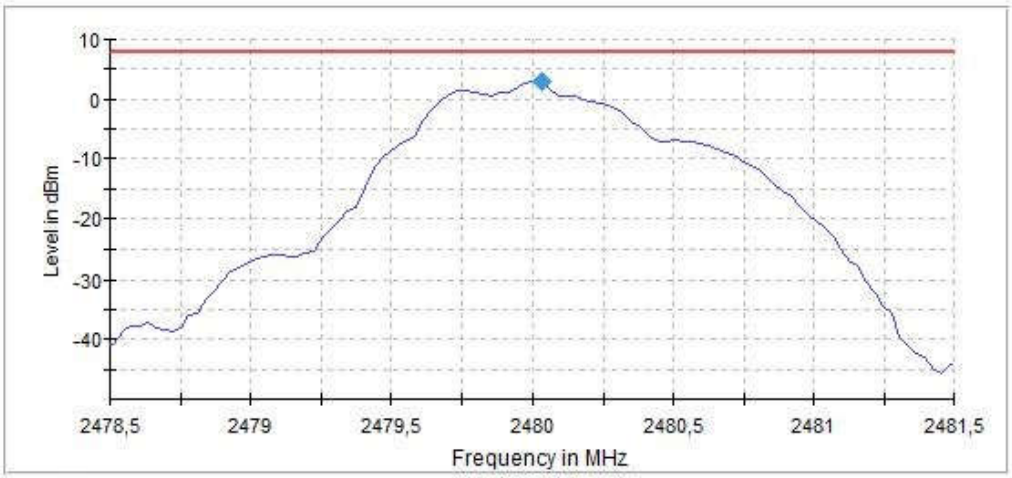
Lowest Channel



Middle Channel



Highest Channel



Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.40050 GHz	2.43850 GHz	2.47850 GHz
Stop Frequency	2.40350 GHz	2.44150 GHz	2.48150 GHz
Span	3.000 MHz	3.000 MHz	3.000 MHz
RBW	100.000 kHz	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz	300.000 kHz
SweepPoints	101	101	101
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	5.000 dBm	5.000 dBm	5.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	4 / max. 150	5 / max. 150	6 / max. 150
Stable	2 / 2	2 / 2	2 / 2
Max Stable Difference	0.29 dB	0.07 dB	0.10 dB

Section 15.247 Subclause (d) / RSS-247 5.5. Emission limitations radiated (Transmitter)

SPECIFICATION

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
960 - 25000	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.

RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-1000 MHz and at distance of 1m for the frequency range 1 GHz-25 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Preliminary scan of the four versions was performed to determine the worst case of Radiated emissions. Thus, the worst case has been the variant: GB 12.

Frequency range 30 MHz-1000 MHz.

The spurious signals detected do not depend on the operating channel.

No radiated spurious signals were detected at less than 20 dB respect to the limit for the lowest, middle and highest operating channels.

Frequency range 1 GHz-25 GHz

The results in the next tables show the maximum measured levels in the 1-25 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz (see next plots).

Spurious signals with peak levels above the average limit (54 dBµV/m at 3 m) are measured with average detector for checking compliance with the average limit.

1. CHANNEL: LOWEST (2402 MHz).

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dBµV/m)	Measurement Uncertainty (dB)
17530.25	V	Peak	49.74	± 4.87
		Average	36.15	± 4.87
17648.10	V	Peak	50.89	± 4.87
		Average	36.85	± 4.87

2. CHANNEL: MIDDLE (2440 MHz).

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dBµV/m)	Measurement Uncertainty (dB)
17772.77	V	Peak	50.63	± 4.87
		Average	36.82	± 4.87

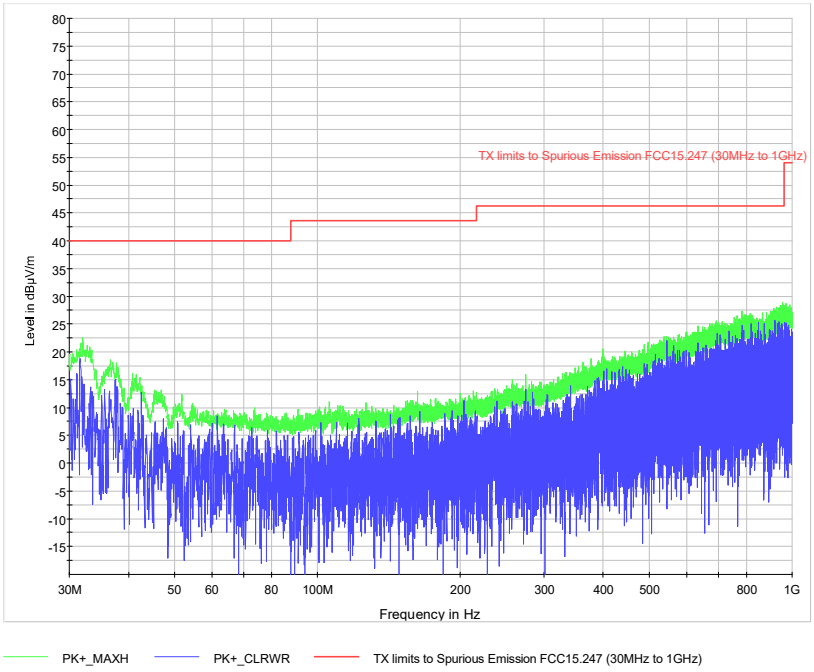
3. CHANNEL: HIGHEST (2480 MHz).

No radiated spurious signals were detected at less than 20 dB respect to the limit

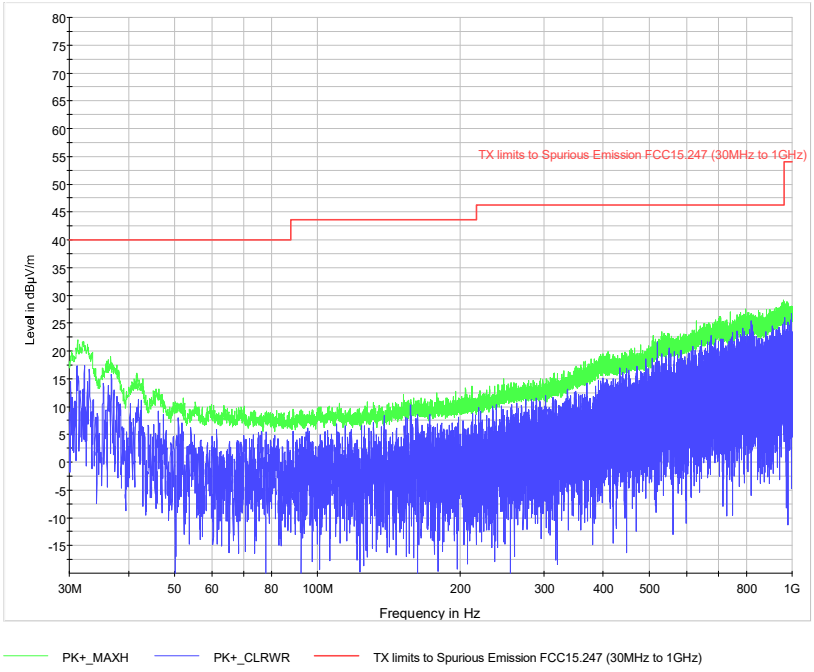
Verdict: PASS

FREQUENCY RANGE 30 MHz-1000 MHz.

CHANNEL: Lowest (2402 MHz):

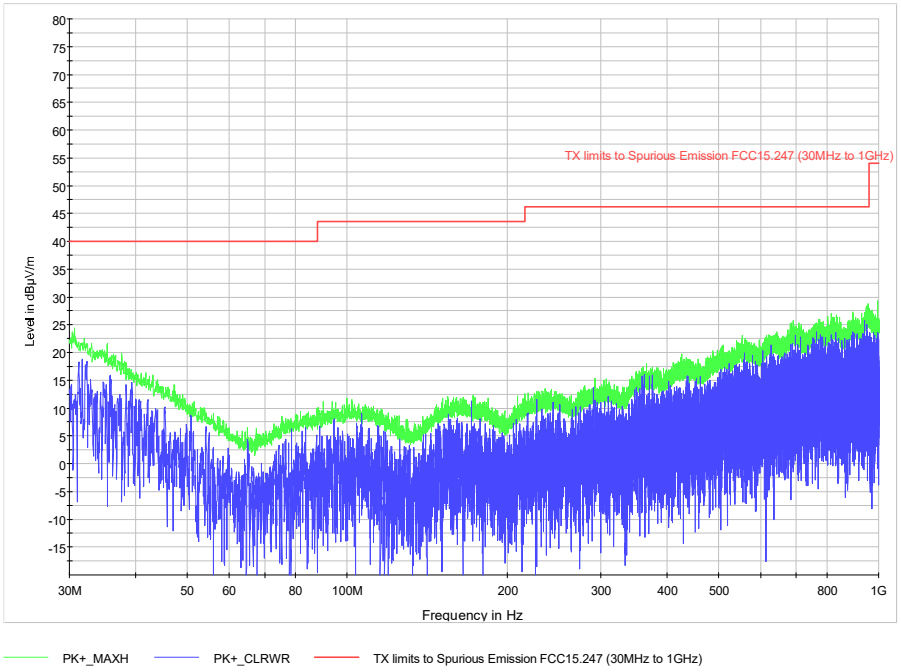


30MHz_1GHz_HP_CH Low

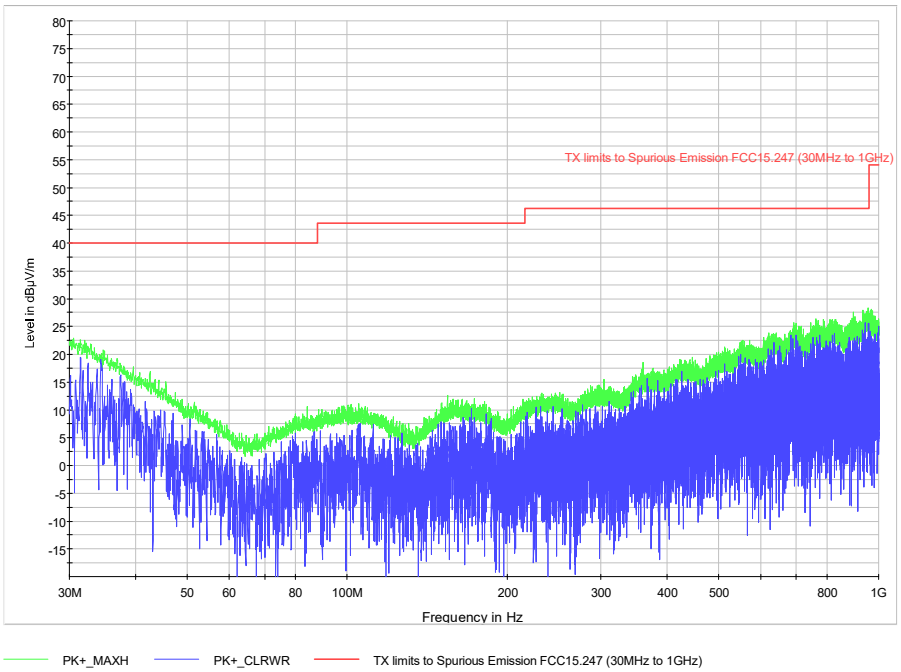


30MHz_1GHz_VP_CH Low

CHANNEL: Middle (2440 MHz):

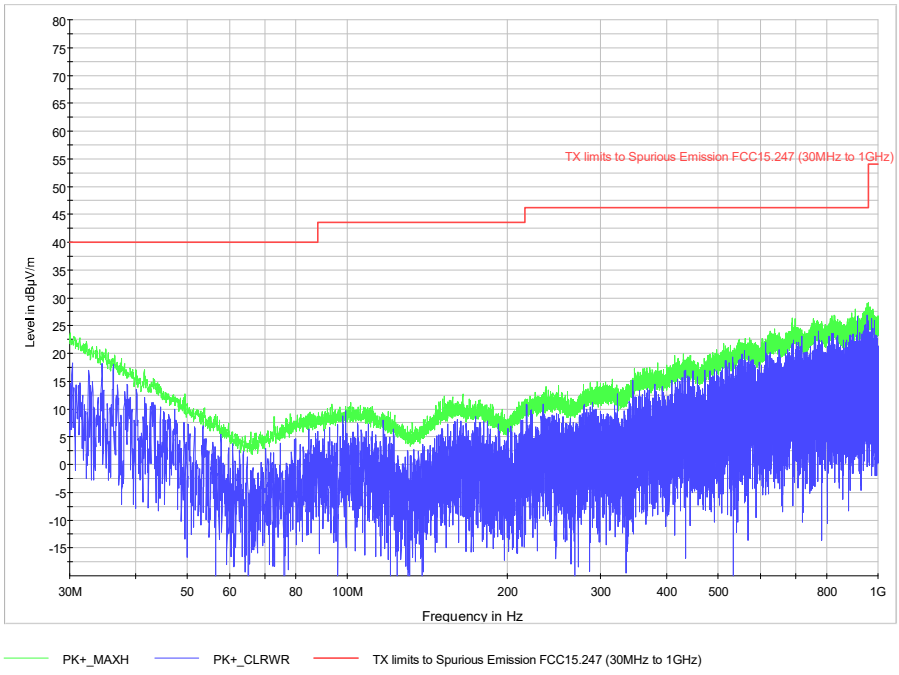


30MHz_1GHz_HP_CH Mid

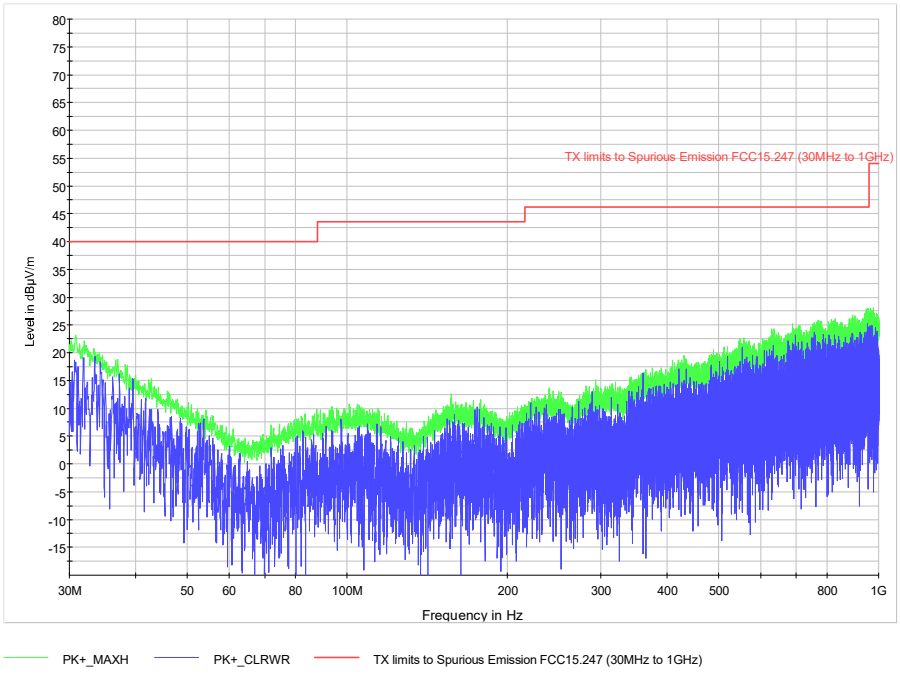


30MHz_1GHz_VP_CH Mid

CHANNEL: Highest (2480 MHz:



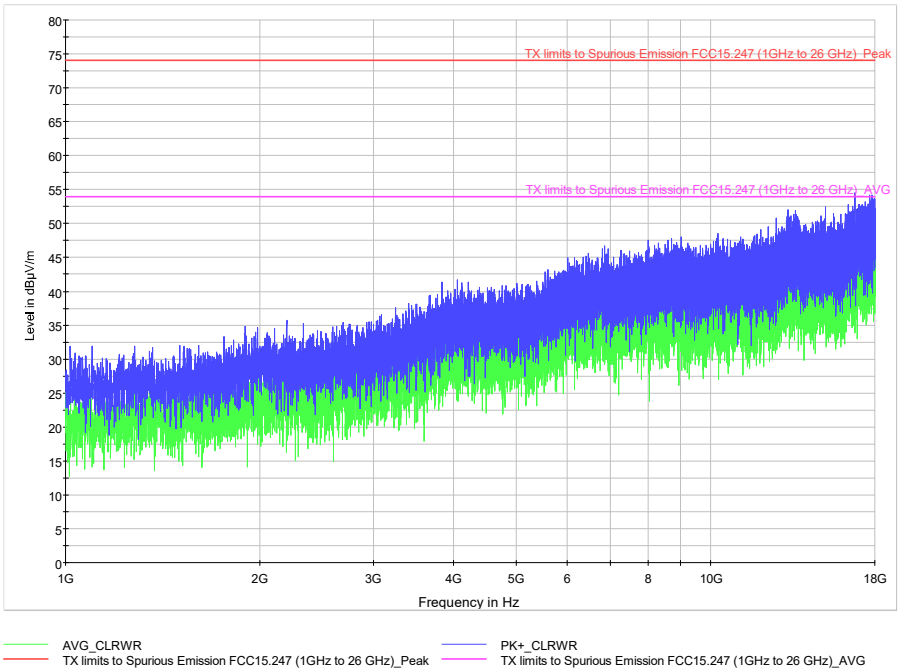
30MHz_1GHz_HP_CH High



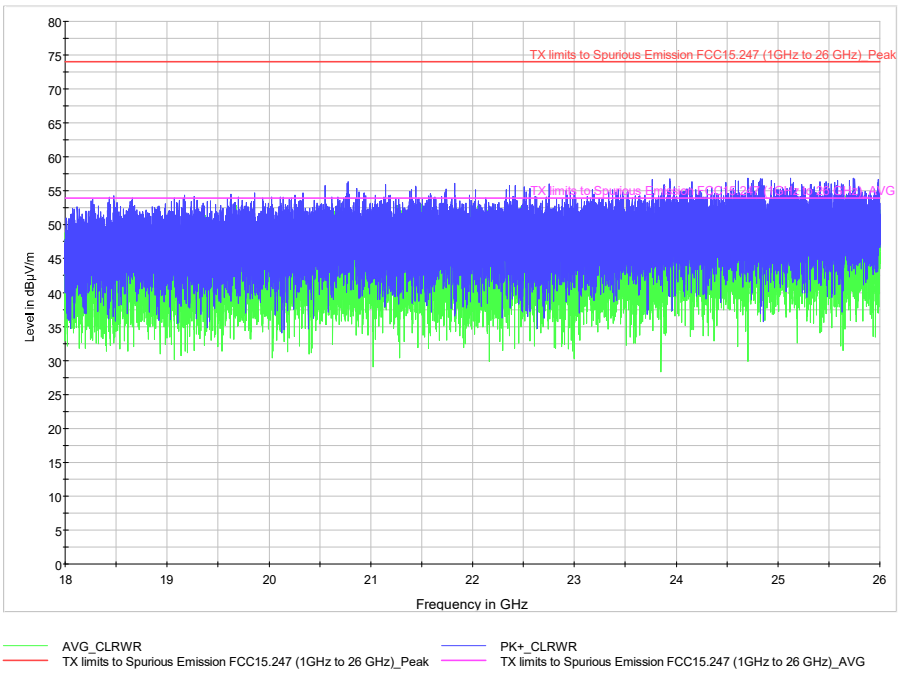
30MHz_1GHz_VP_CH High

FREQUENCY RANGE 1 GHz to 18 GHz.

CHANNEL: Lowest (2402 MHz).

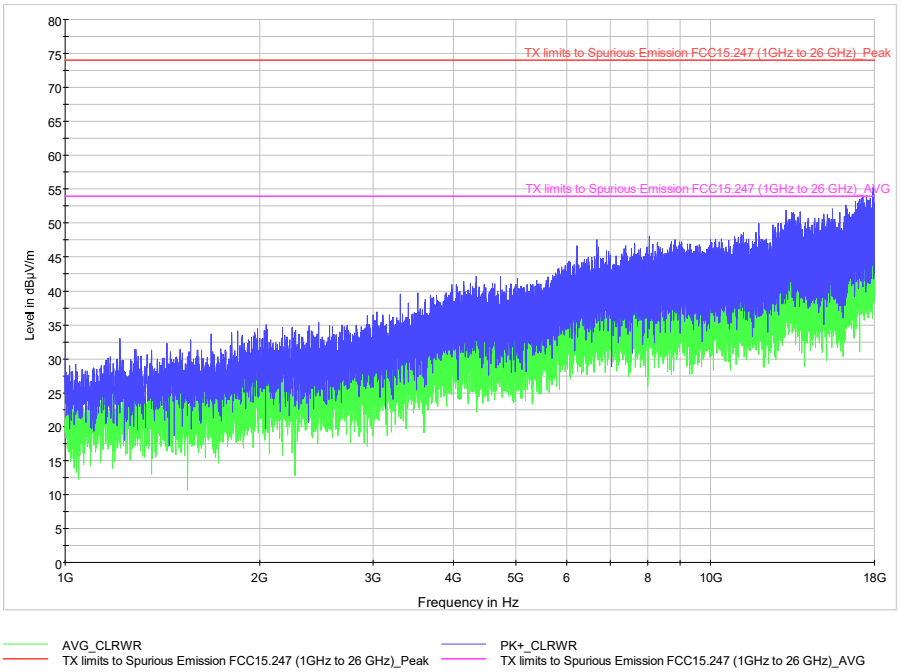


1GHz_18GHz_ HP_CH Low

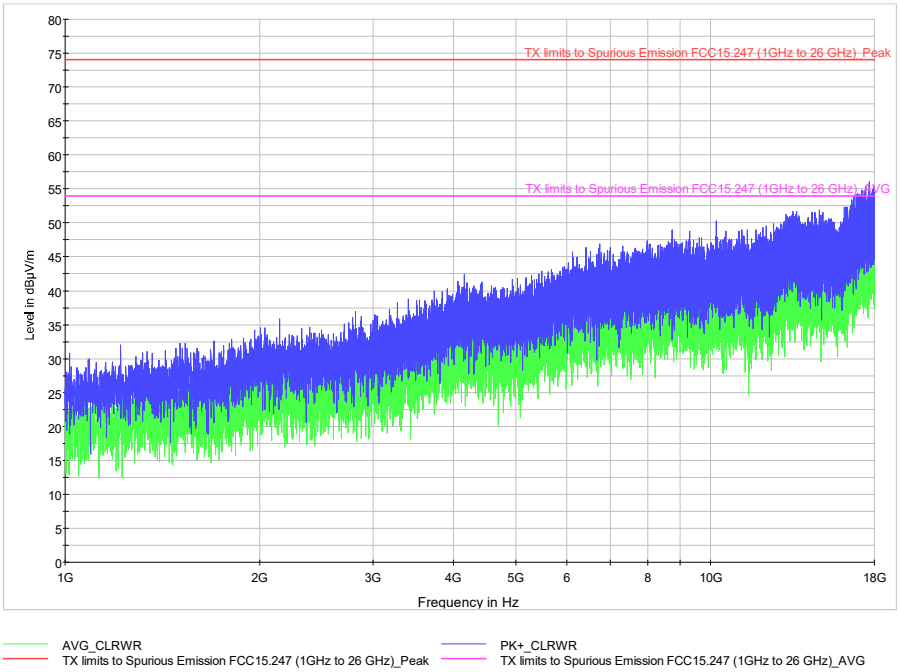


1GHz_18GHz_VP_CH Low

CHANNEL: Middle (2440 MHz).

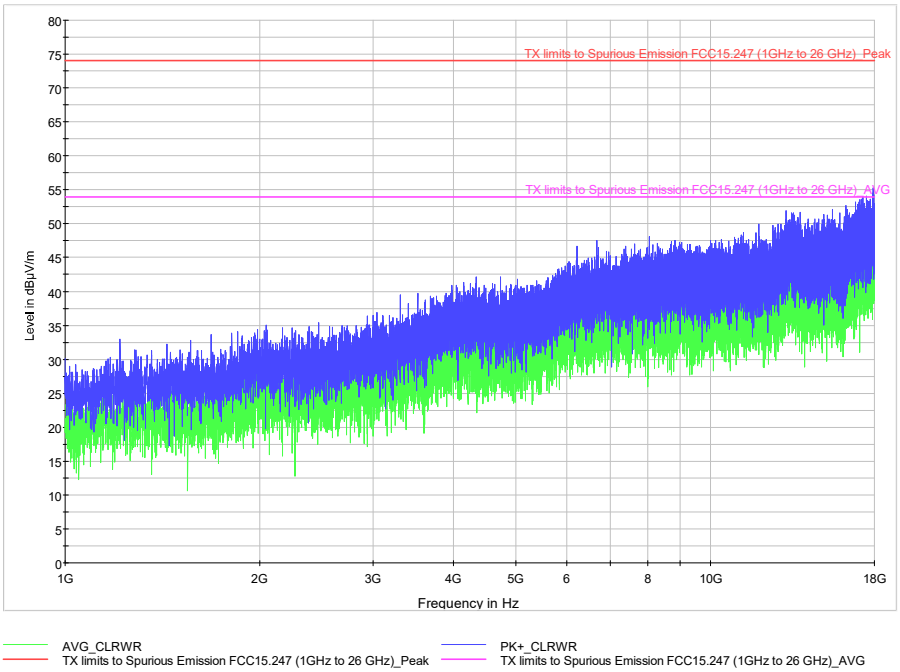


1GHz_18GHz_HP_CH Mid

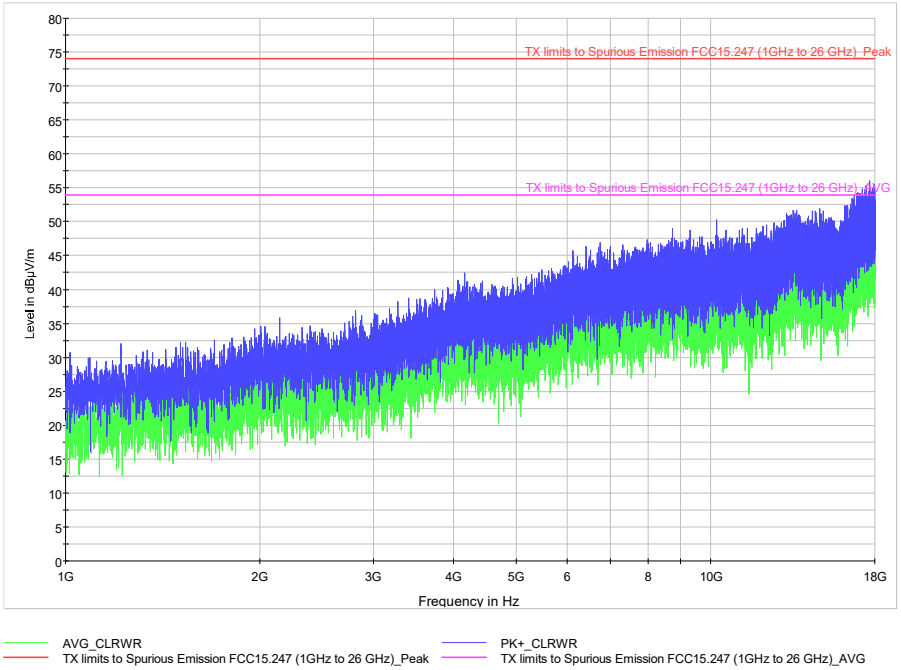


1GHz_18GHz_VP_CH Mid

CHANNEL: Highest (2480 MHz).



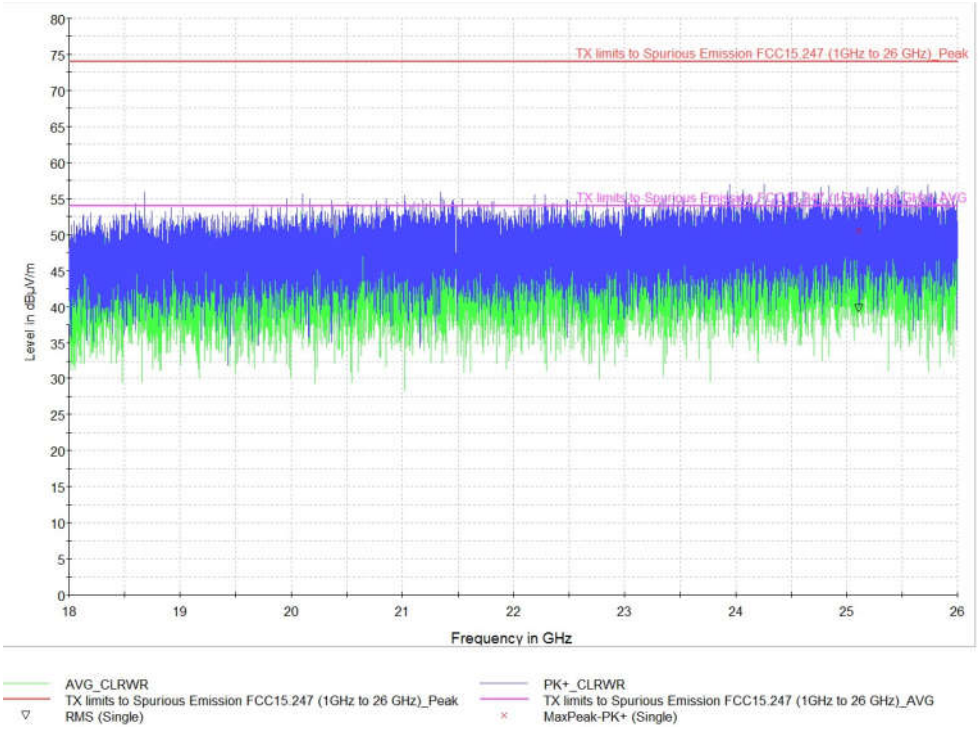
1GHz_18GHz_HP_CH High



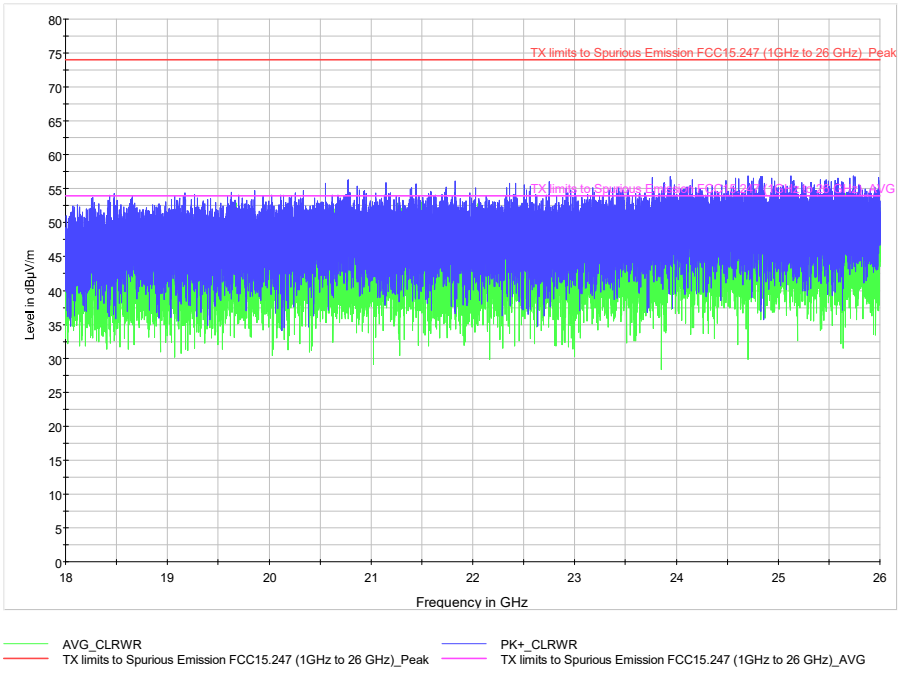
1GHz_18GHz_VP_CH High

FREQUENCY RANGE 18 GHz to 26 GHz.

CHANNEL: Lowest (2402 MHz).

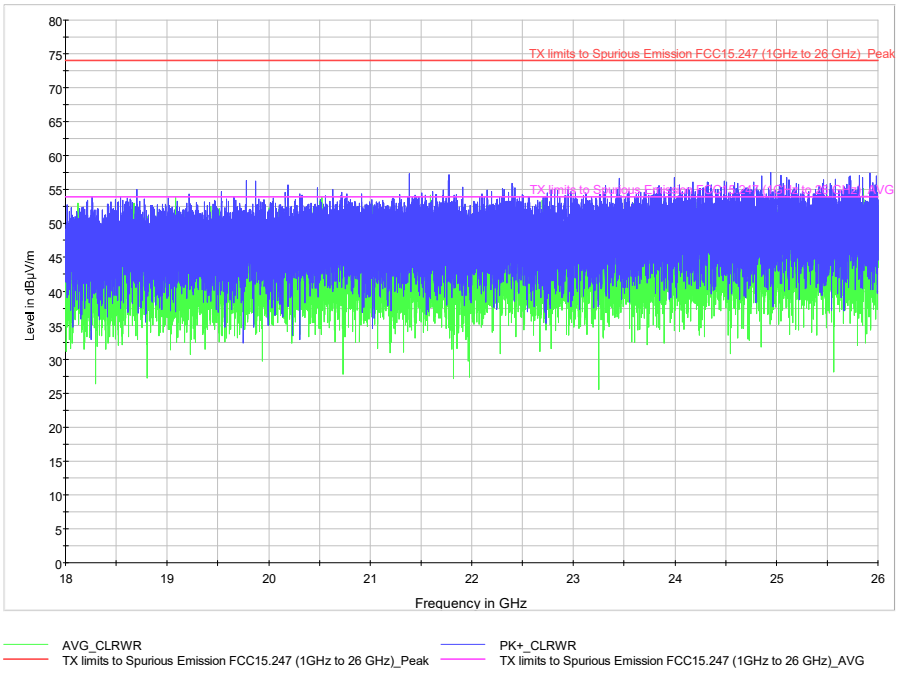


18GHz_26GHz_HP_CH Low

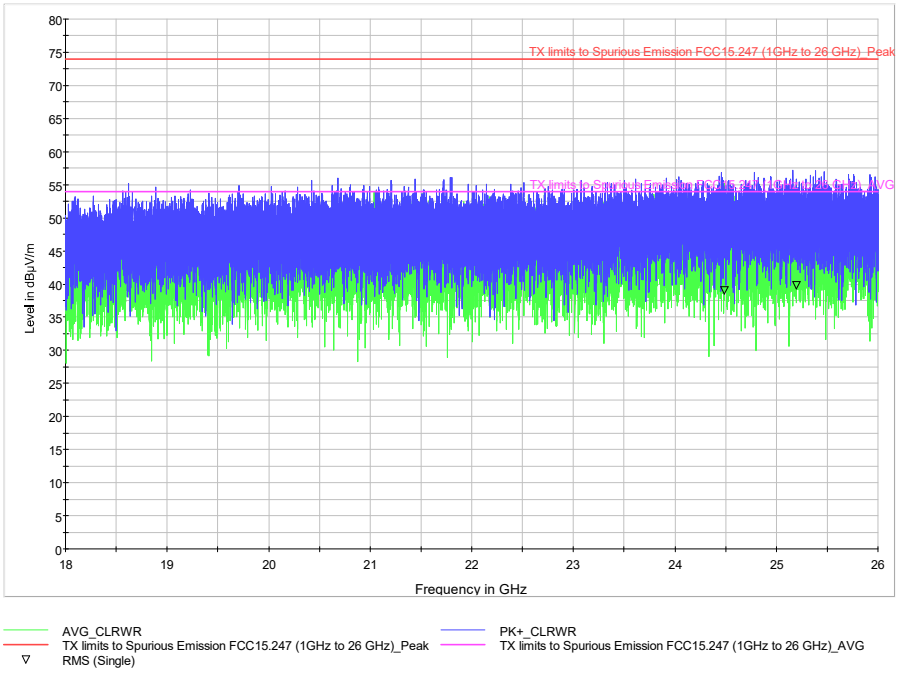


18GHz_26GHz_VP_CH Low

CHANNEL: Middle (2440 MHz).

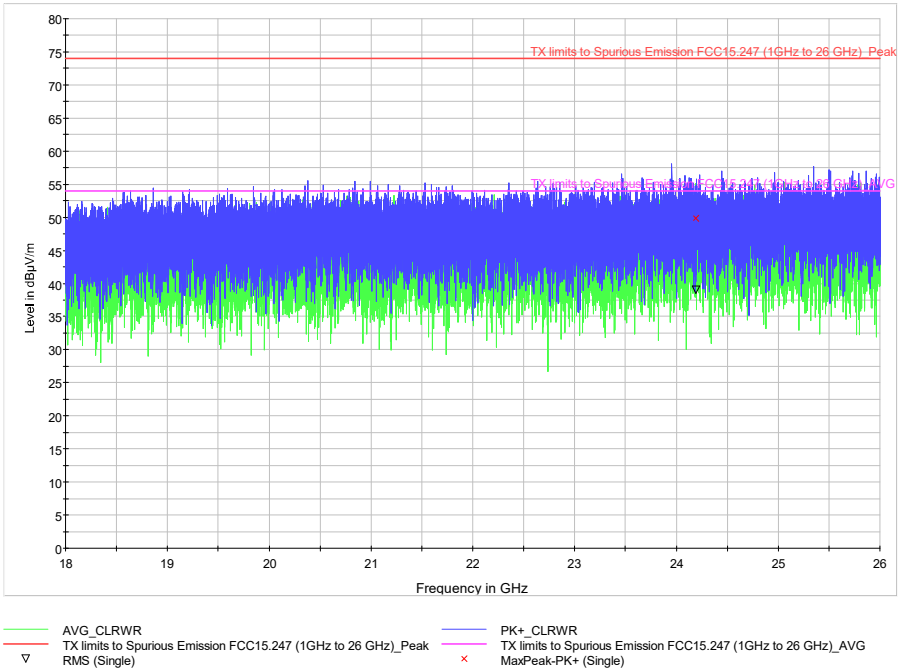


18GHz_26GHz_HP_CH Mid

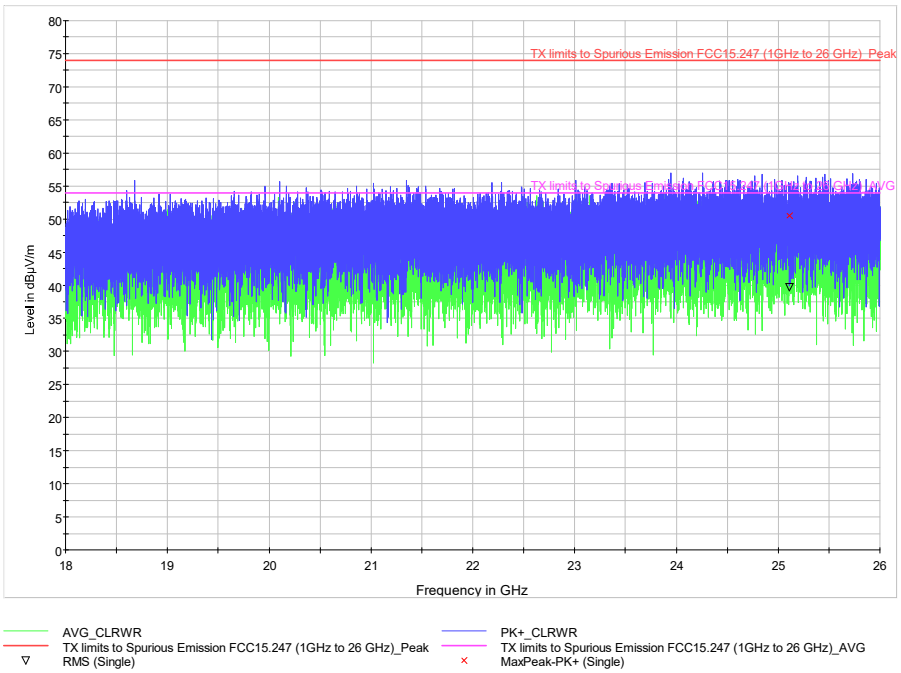


18GHz_26GHz_VP_CH Mid

CHANNEL: Highest (2480 MHz).



18GHz_26GHz_HP_CH High



18GHz_26GHz_HP_CH High