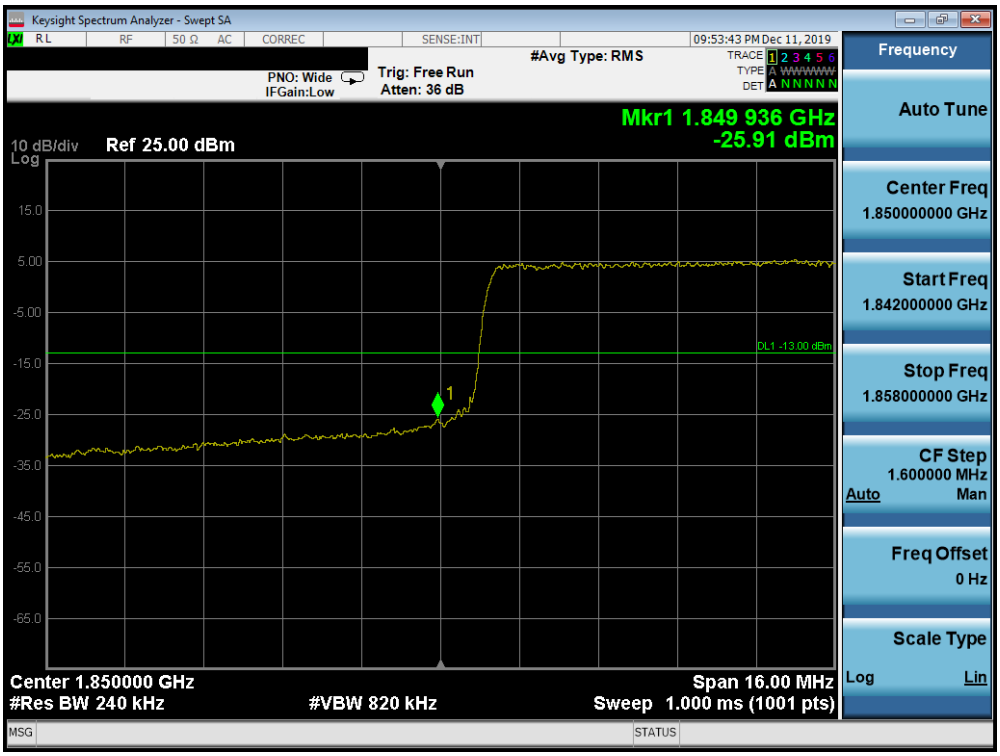
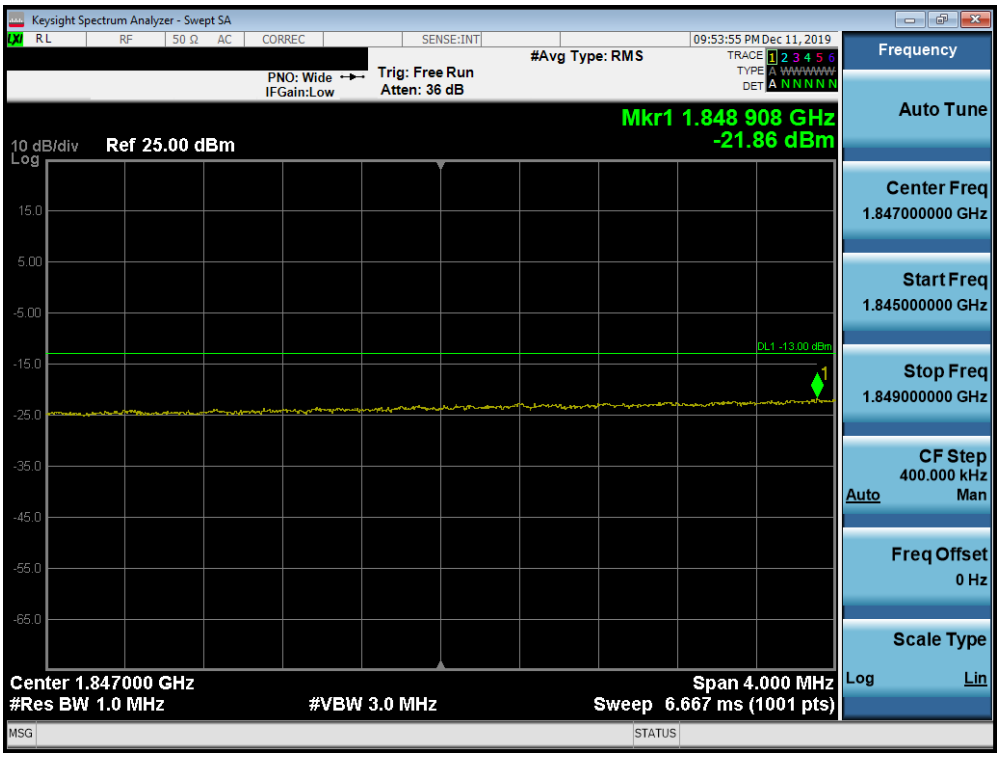
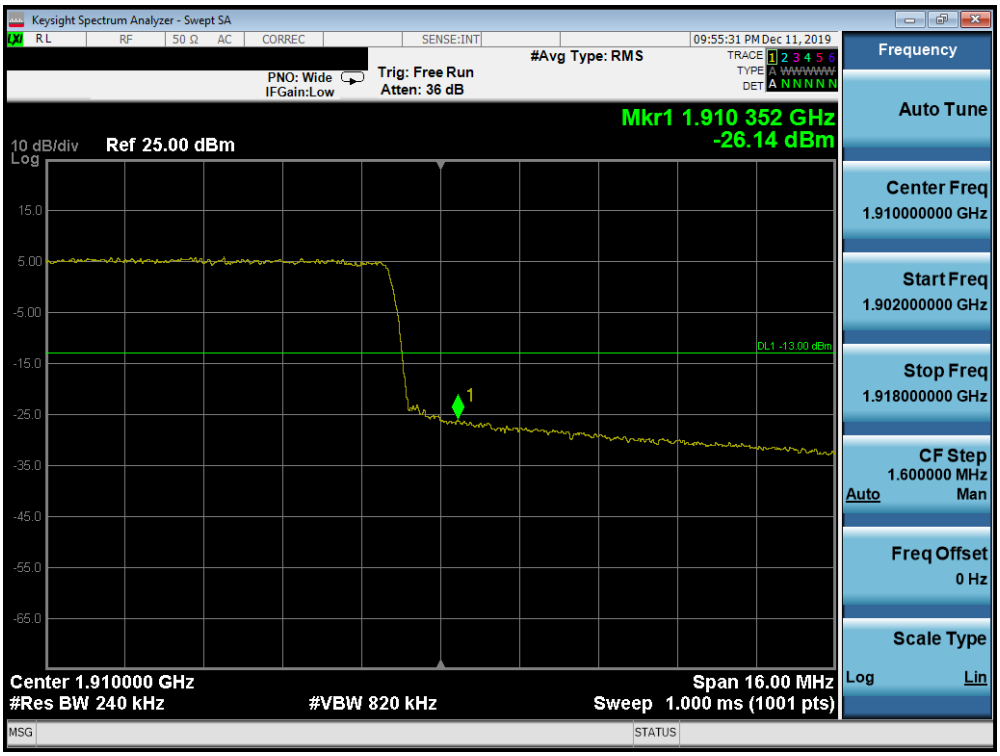


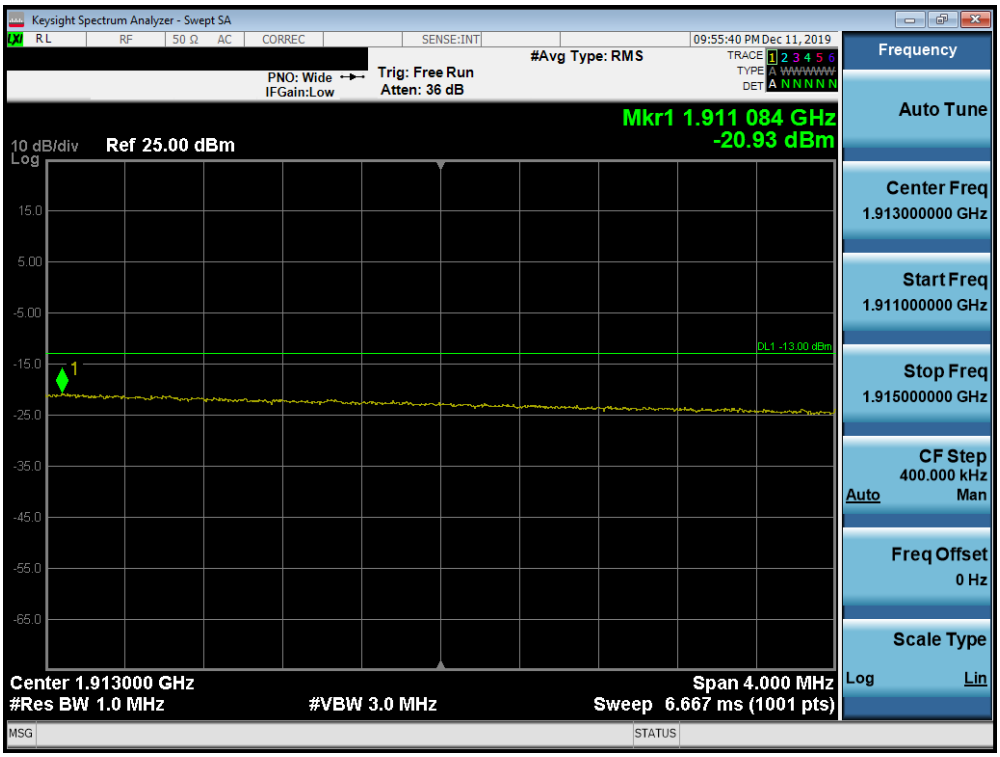
Plot 7-233. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



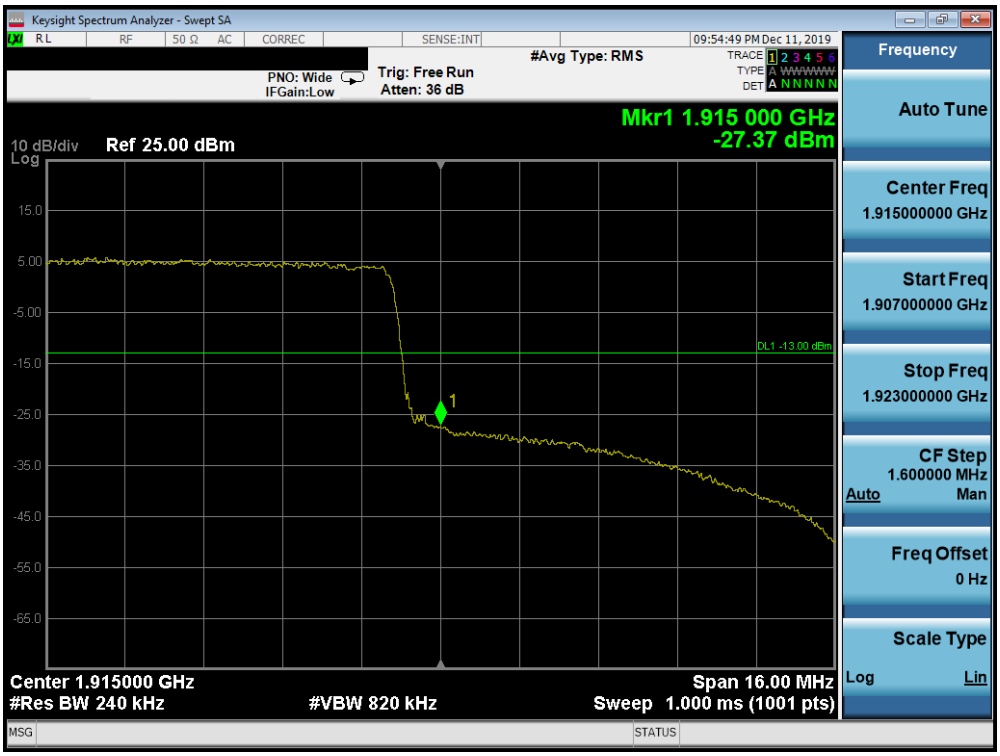
Plot 7-234. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



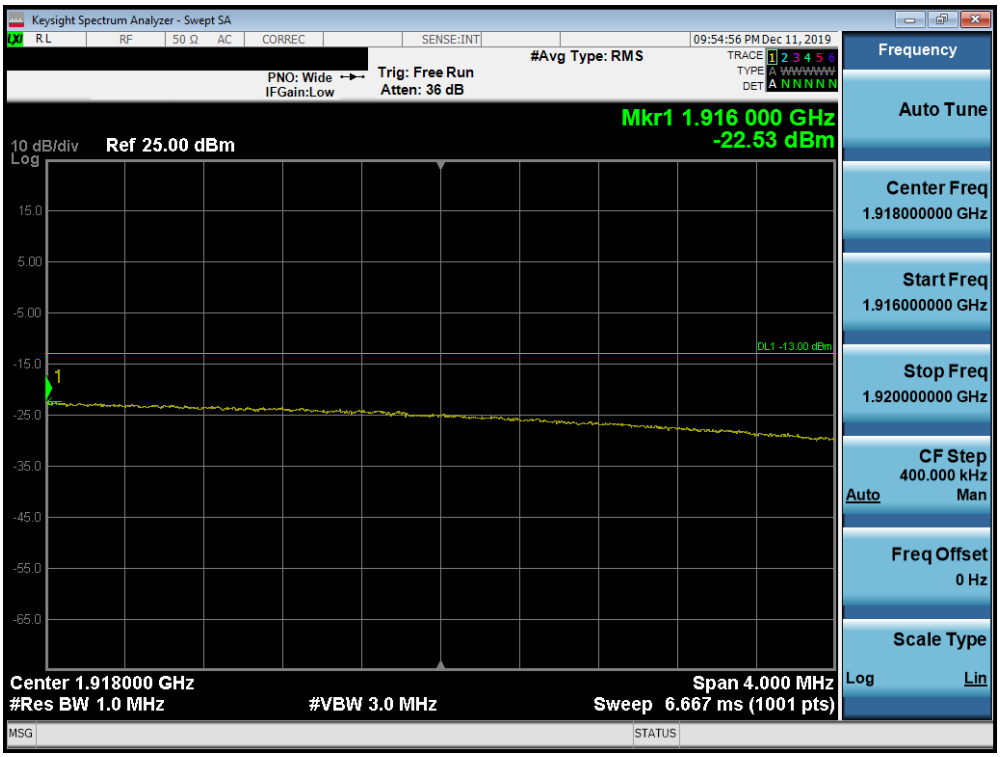
Plot 7-235. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK - Full RB Configuration)



Plot 7-236. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK - Full RB Configuration)

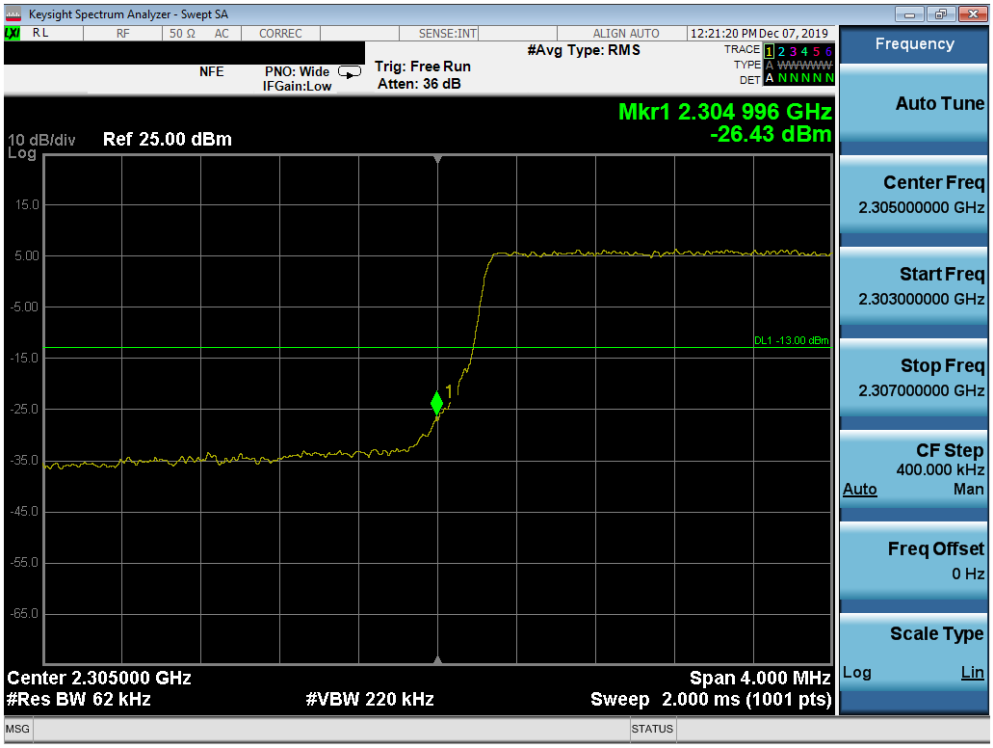


Plot 7-237. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

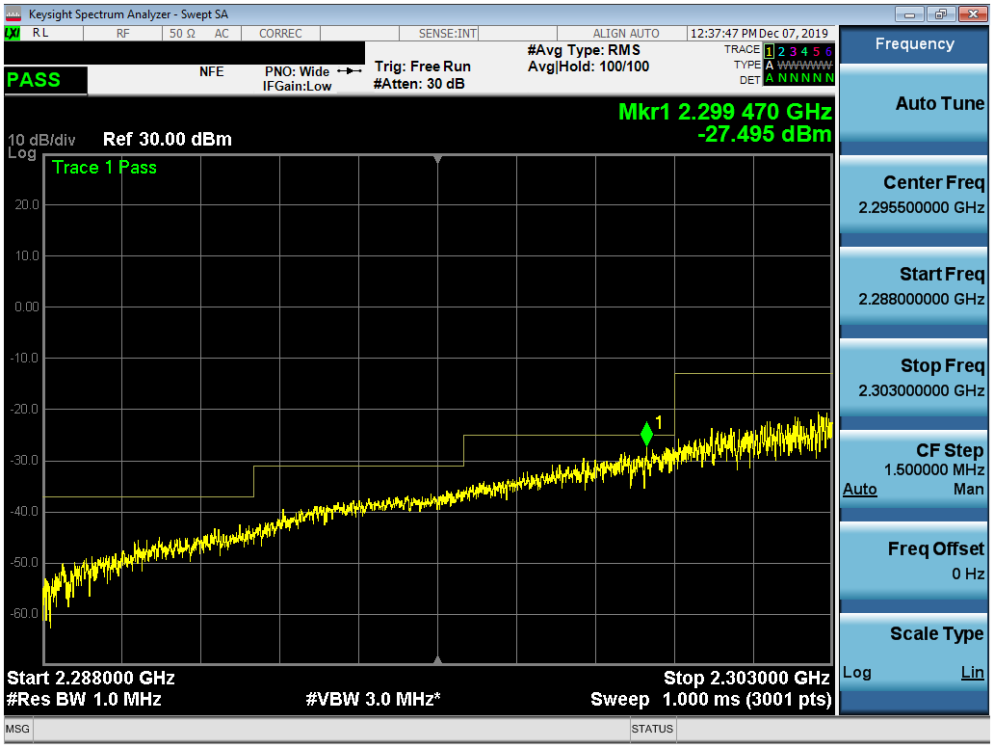


Plot 7-238. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

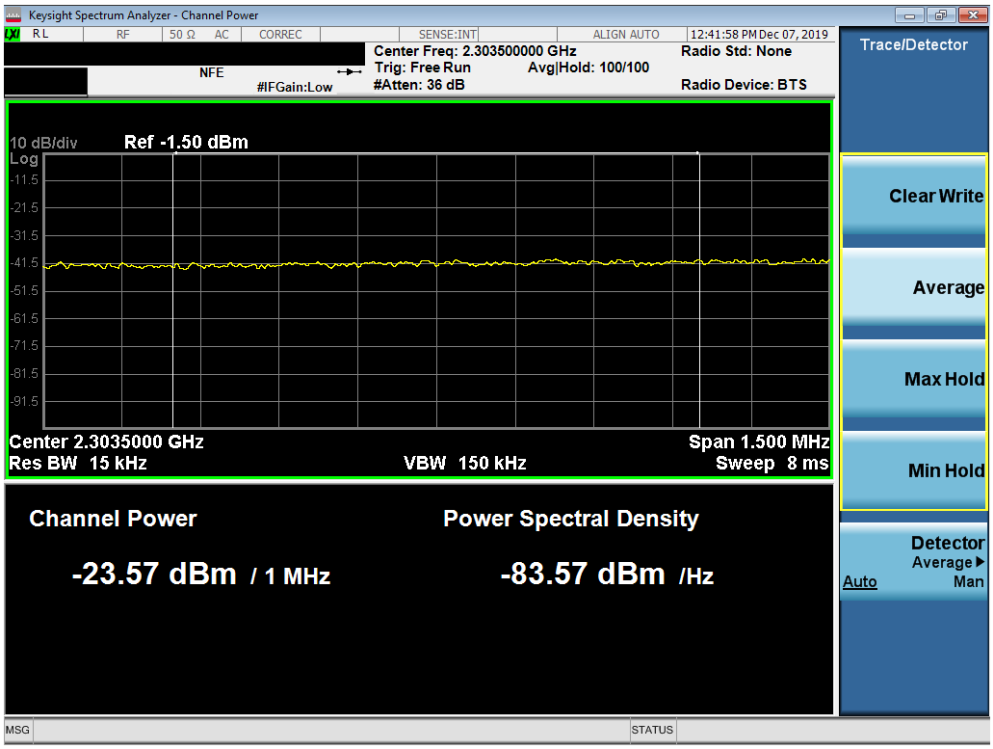
Band 30



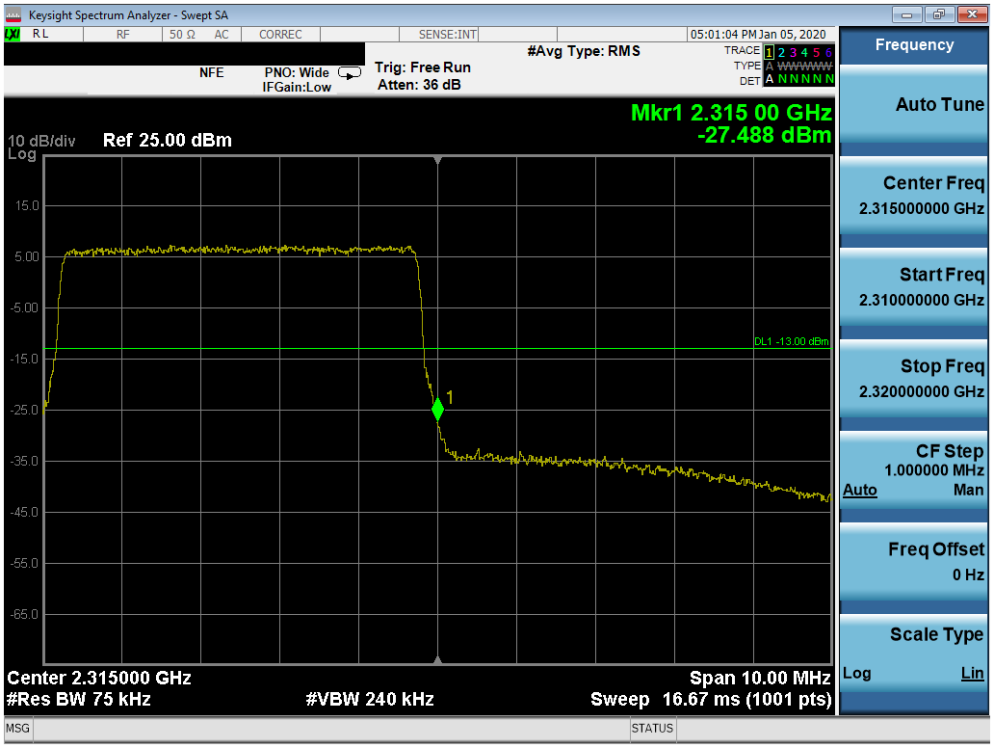
Plot 7-239. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



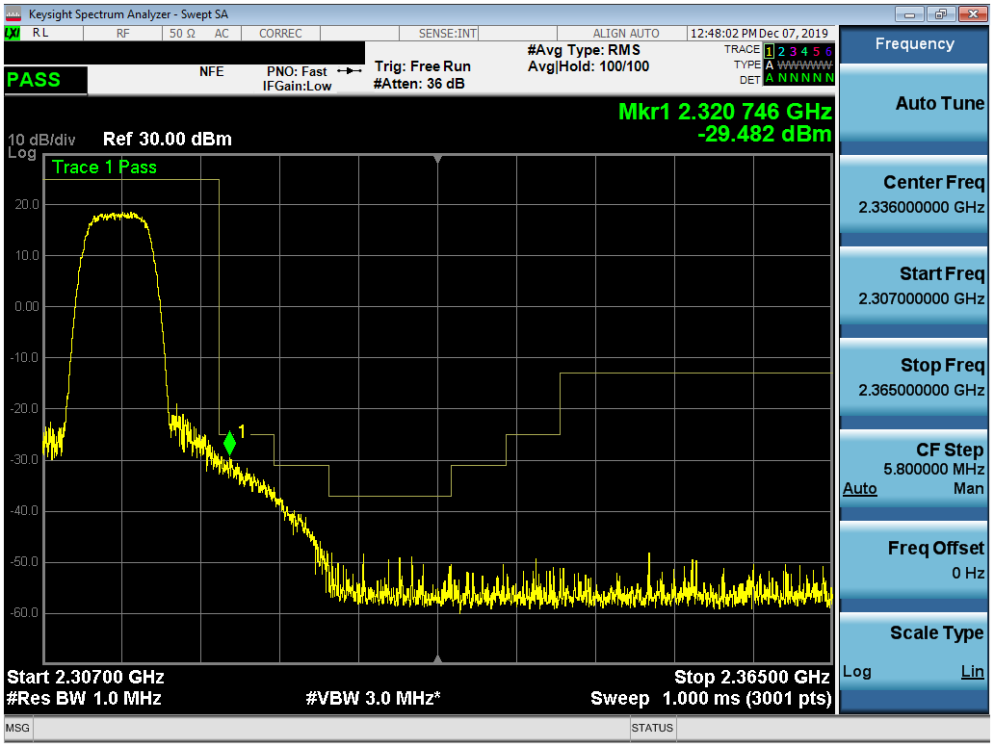
Plot 7-240. Lower Extended Band Edge Plot 2288-2303MHz (Band 30 - 5.0MHz QPSK - Full RB Configuration)



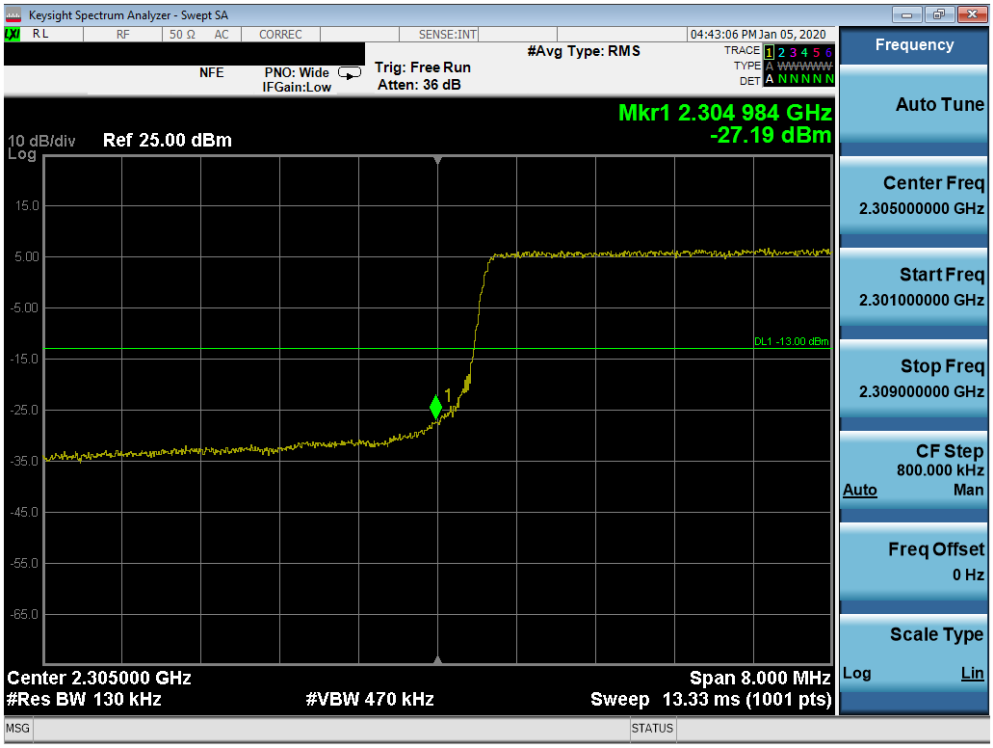
Plot 7-241. Lower Extended Band Edge Plot 2303-2304MHz (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-242. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

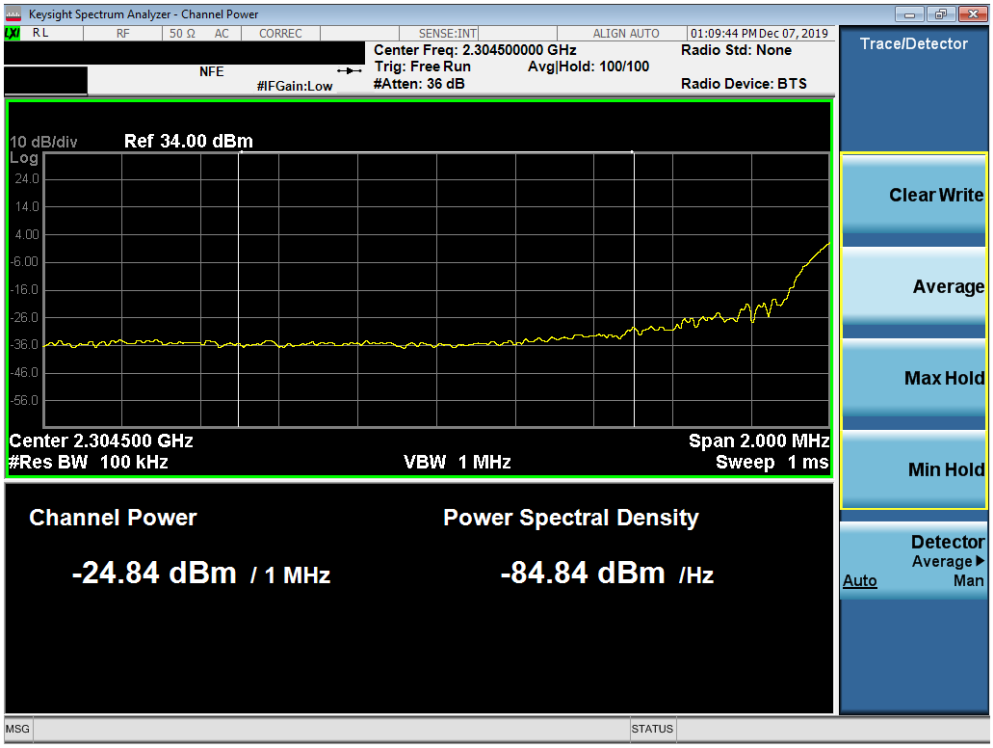


Plot 7-243. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

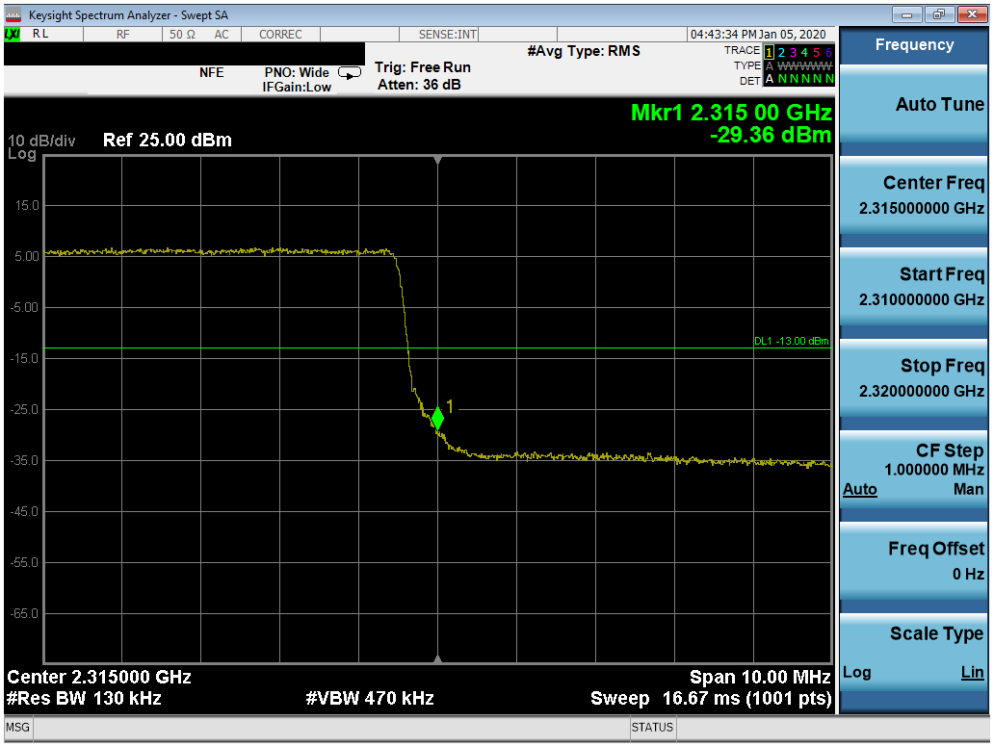


Plot 7-244. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

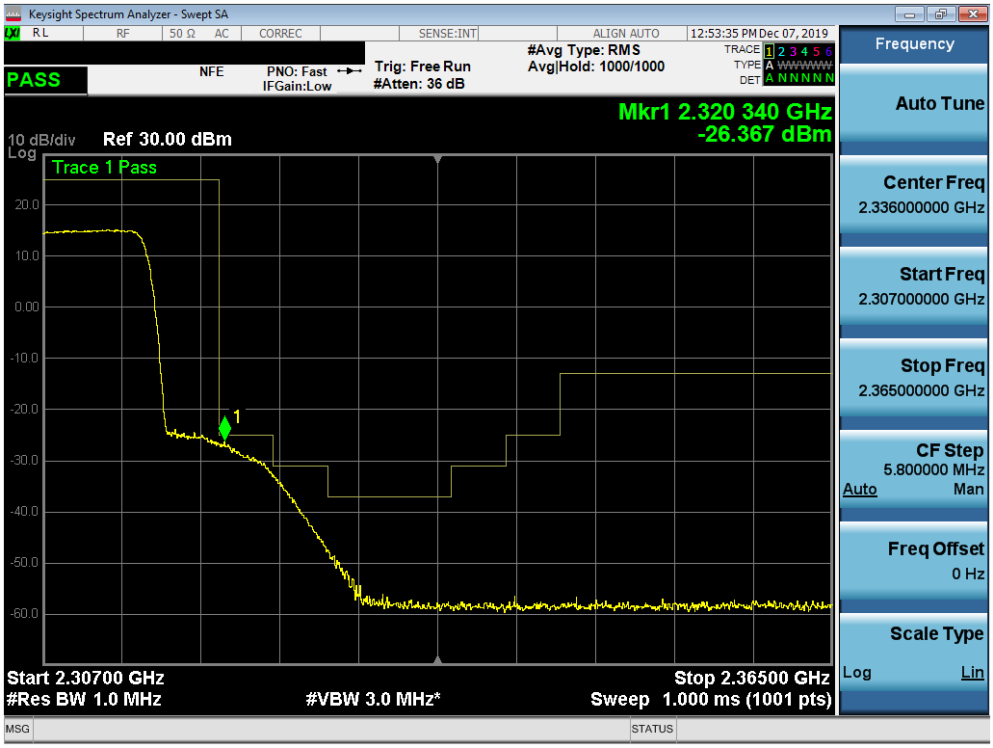
Plot 7-245. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-246. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

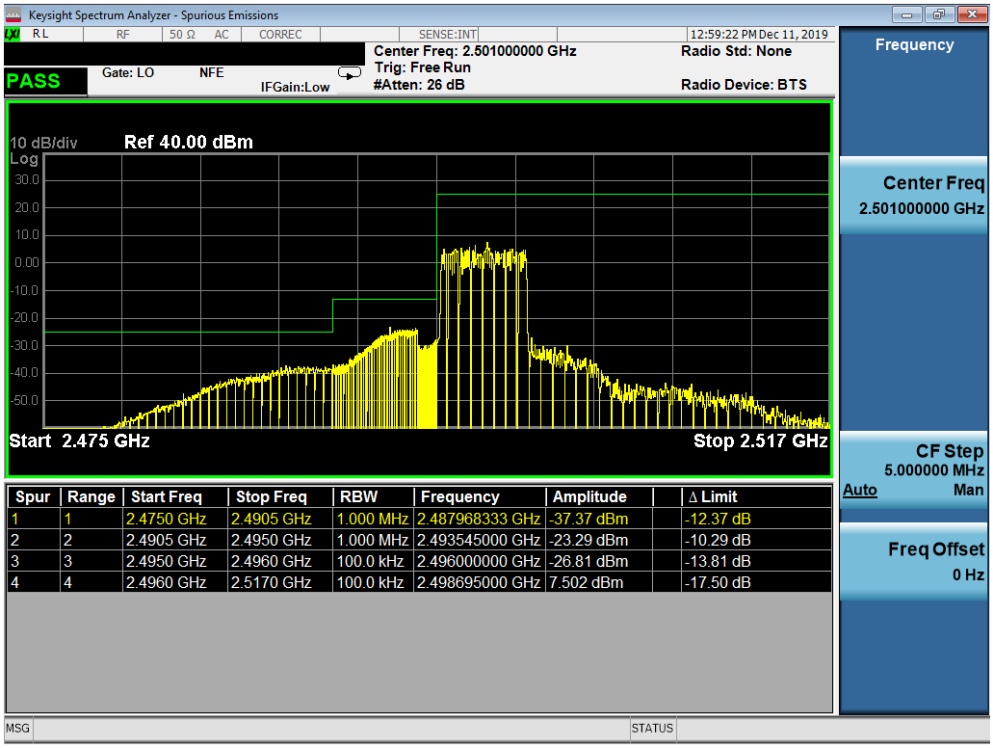


Plot 7-247. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



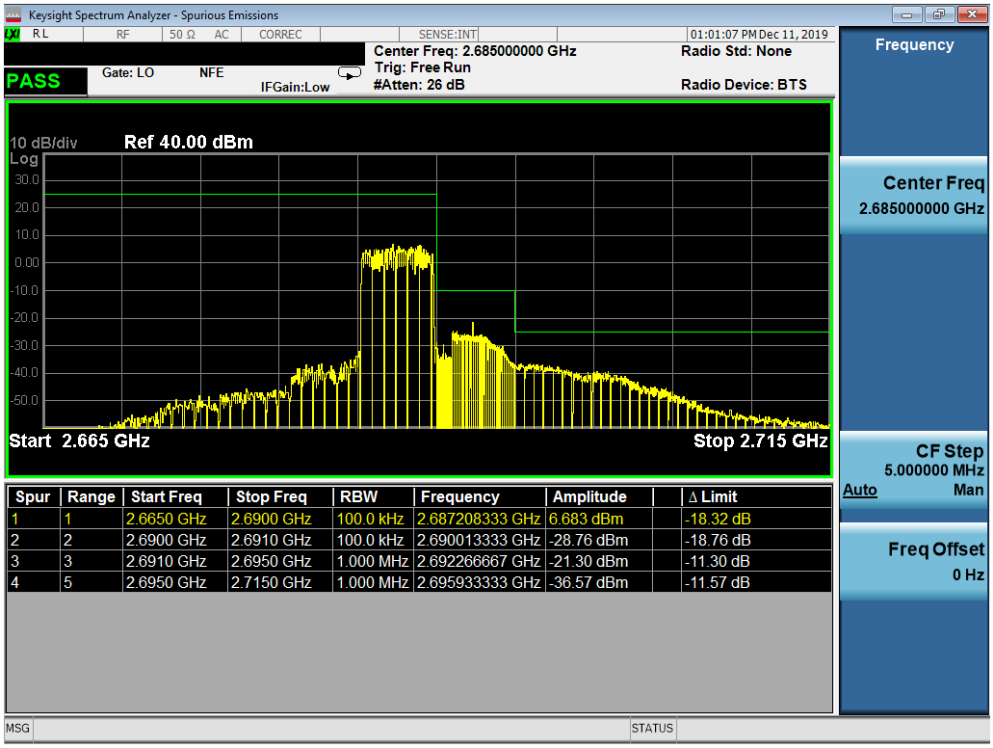
Plot 7-248. Upper Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

Band 41 PC3



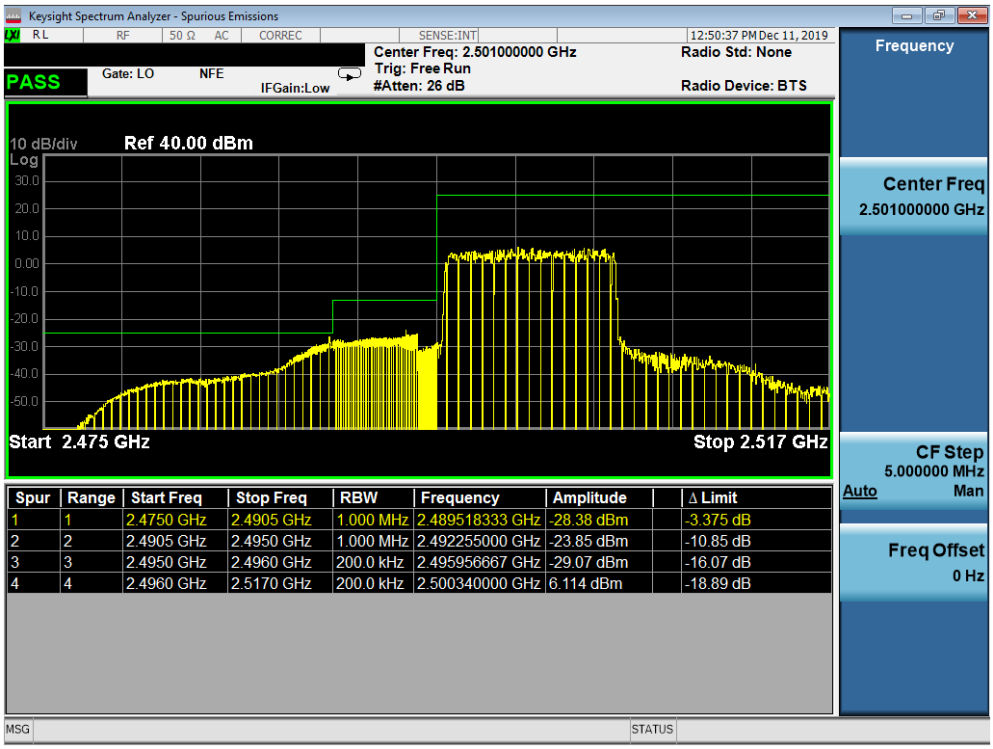
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.487968333 GHz	-37.37 dBm	-12.37 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.493545000 GHz	-23.29 dBm	-10.29 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.496000000 GHz	-26.81 dBm	-13.81 dB
4	4	2.4960 GHz	2.5170 GHz	100.0 kHz	2.498695000 GHz	7.502 dBm	-17.50 dB

Plot 7-249. Lower ACP Plot at 2496 MHz (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)



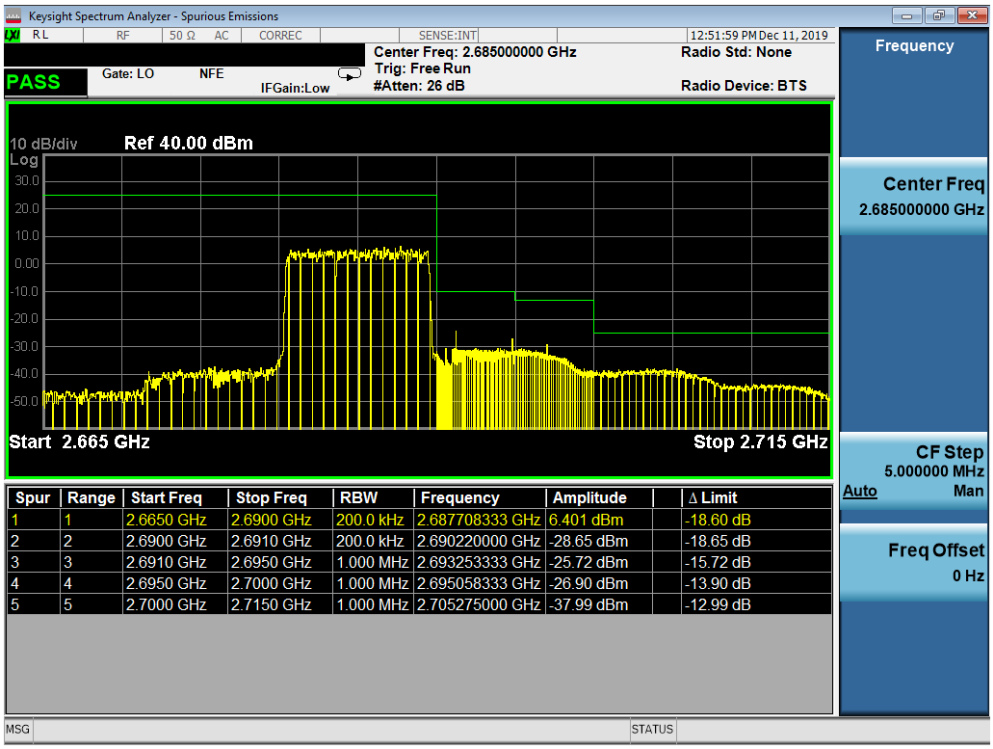
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	100.0 kHz	2.687208333 GHz	6.683 dBm	-18.32 dB
2	2	2.6900 GHz	2.6910 GHz	100.0 kHz	2.690013333 GHz	-28.76 dBm	-18.76 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.692266667 GHz	-21.30 dBm	-11.30 dB
4	5	2.6950 GHz	2.7150 GHz	1.000 MHz	2.695933333 GHz	-36.57 dBm	-11.57 dB

Plot 7-250. Upper ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)



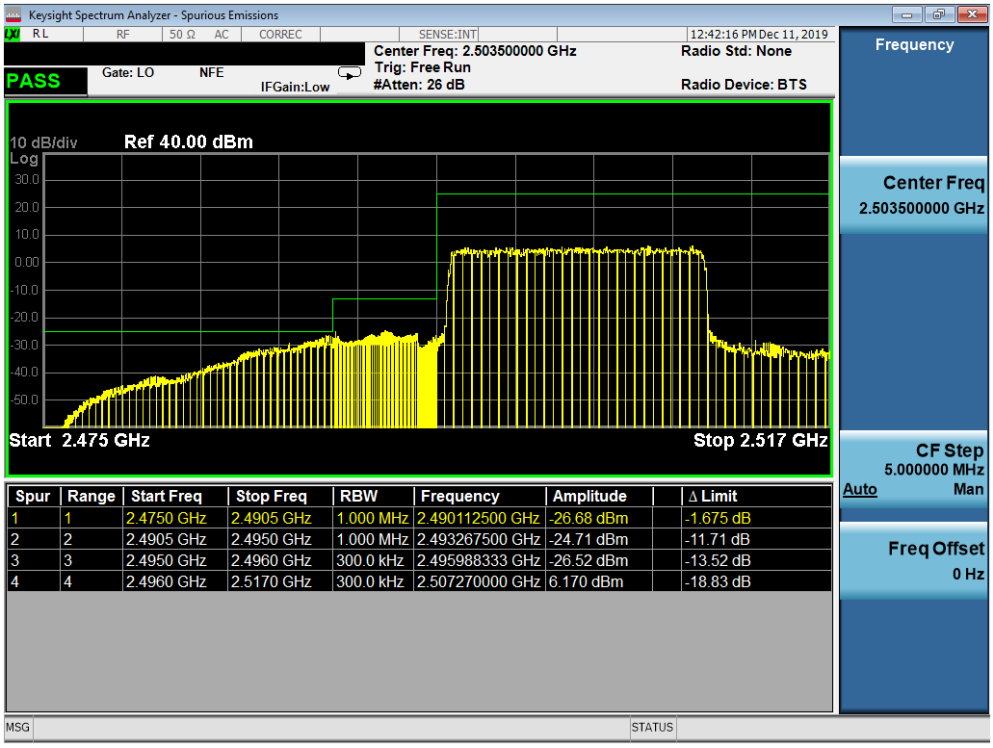
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489518333 GHz	-28.38 dBm	-3.375 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.492255000 GHz	-23.85 dBm	-10.85 dB
3	3	2.4950 GHz	2.4960 GHz	200.0 kHz	2.495956667 GHz	-29.07 dBm	-16.07 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.500340000 GHz	6.114 dBm	-18.89 dB

Plot 7-251. Lower ACP Plot at 2496 MHz (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)



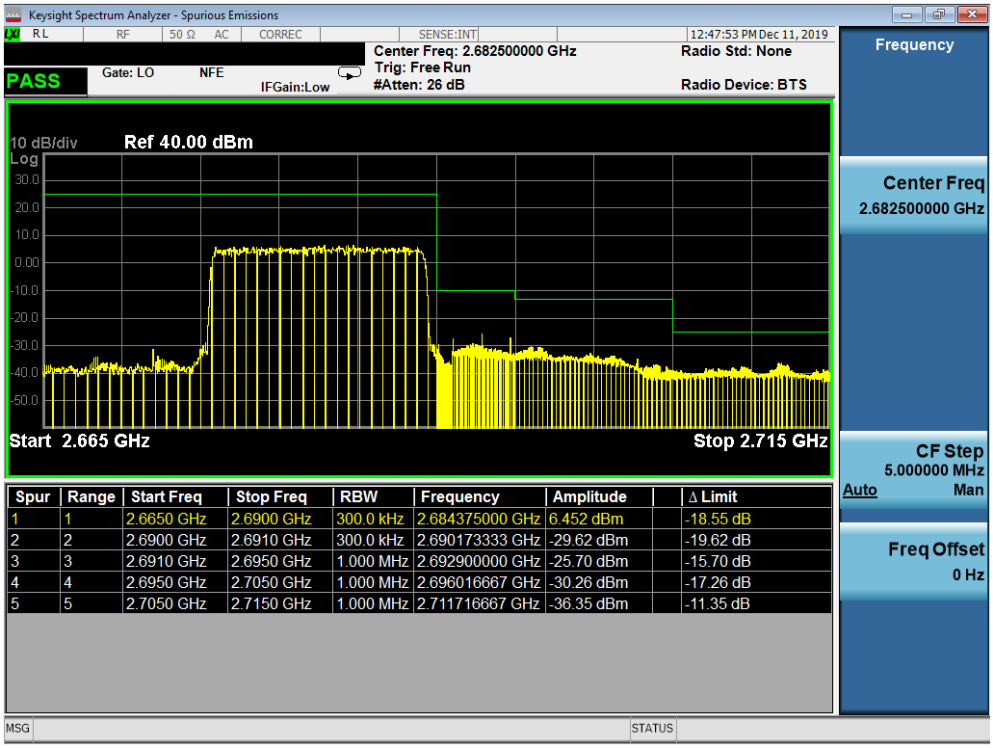
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	200.0 kHz	2.687708333 GHz	6.401 dBm	-18.60 dB
2	2	2.6900 GHz	2.6910 GHz	200.0 kHz	2.690220000 GHz	-28.65 dBm	-18.65 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.693253333 GHz	-25.72 dBm	-15.72 dB
4	4	2.6950 GHz	2.7000 GHz	1.000 MHz	2.695058333 GHz	-26.90 dBm	-13.90 dB
5	5	2.7000 GHz	2.7150 GHz	1.000 MHz	2.705275000 GHz	-37.99 dBm	-12.99 dB

Plot 7-252. Upper ACP Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)



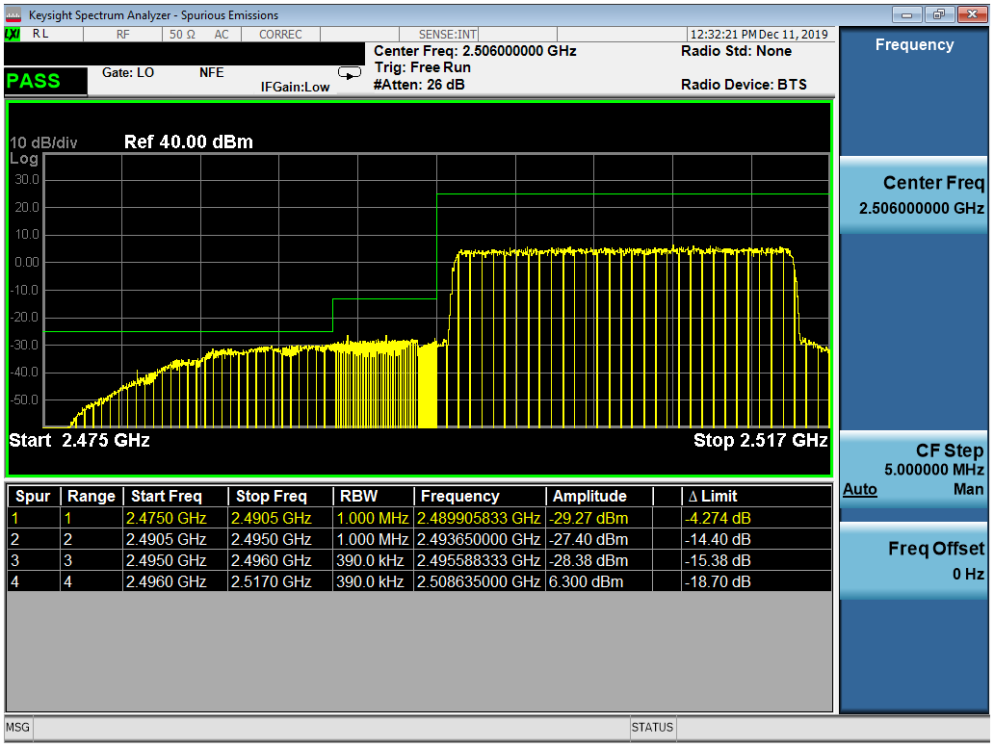
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490112500 GHz	-26.68 dBm	-1.675 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.493267500 GHz	-24.71 dBm	-11.71 dB
3	3	2.4950 GHz	2.4960 GHz	300.0 kHz	2.495988333 GHz	-26.52 dBm	-13.52 dB
4	4	2.4960 GHz	2.5170 GHz	300.0 kHz	2.507270000 GHz	6.170 dBm	-18.83 dB

Plot 7-253. Lower ACP Plot at 2496 MHz (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)

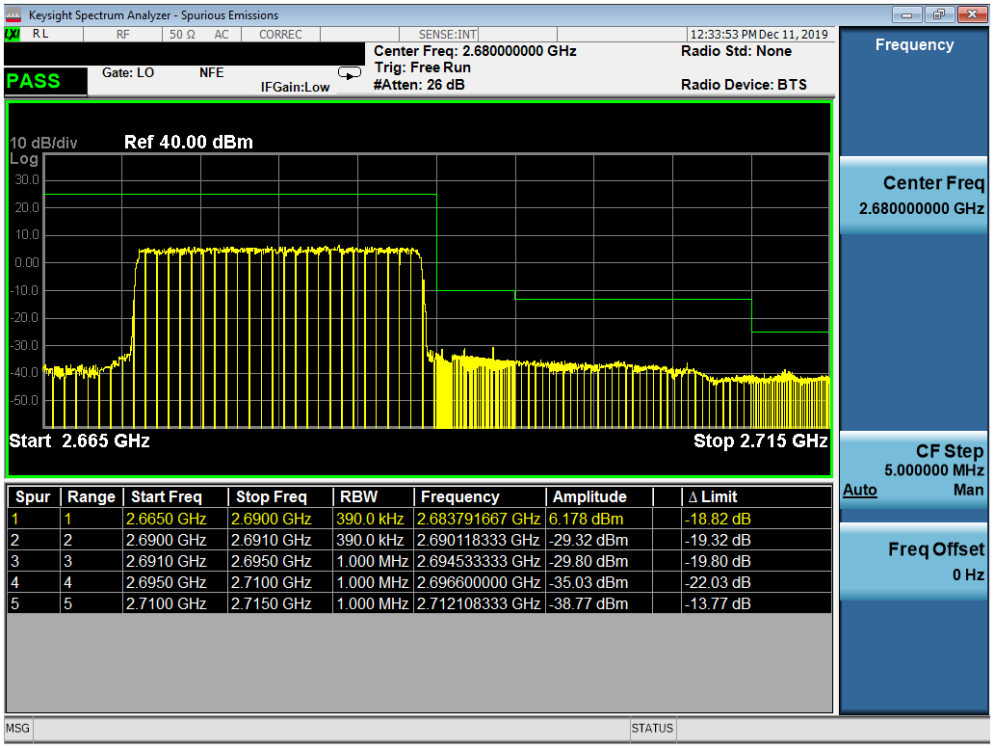


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	300.0 kHz	2.684375000 GHz	6.452 dBm	-18.55 dB
2	2	2.6900 GHz	2.6910 GHz	300.0 kHz	2.690173333 GHz	-29.62 dBm	-19.62 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.692900000 GHz	-25.70 dBm	-15.70 dB
4	4	2.6950 GHz	2.7050 GHz	1.000 MHz	2.696016667 GHz	-30.26 dBm	-17.26 dB
5	5	2.7050 GHz	2.7150 GHz	1.000 MHz	2.711716667 GHz	-36.35 dBm	-11.35 dB

Plot 7-254. Upper ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-255. Lower ACP Plot at 2496 MHz (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-256. Upper ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)

7.5 Peak-Average Ratio

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW ≥ OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

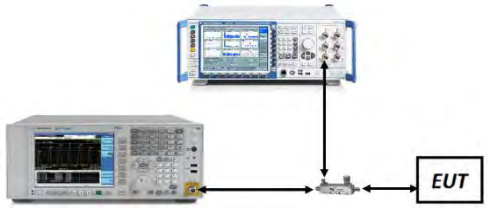
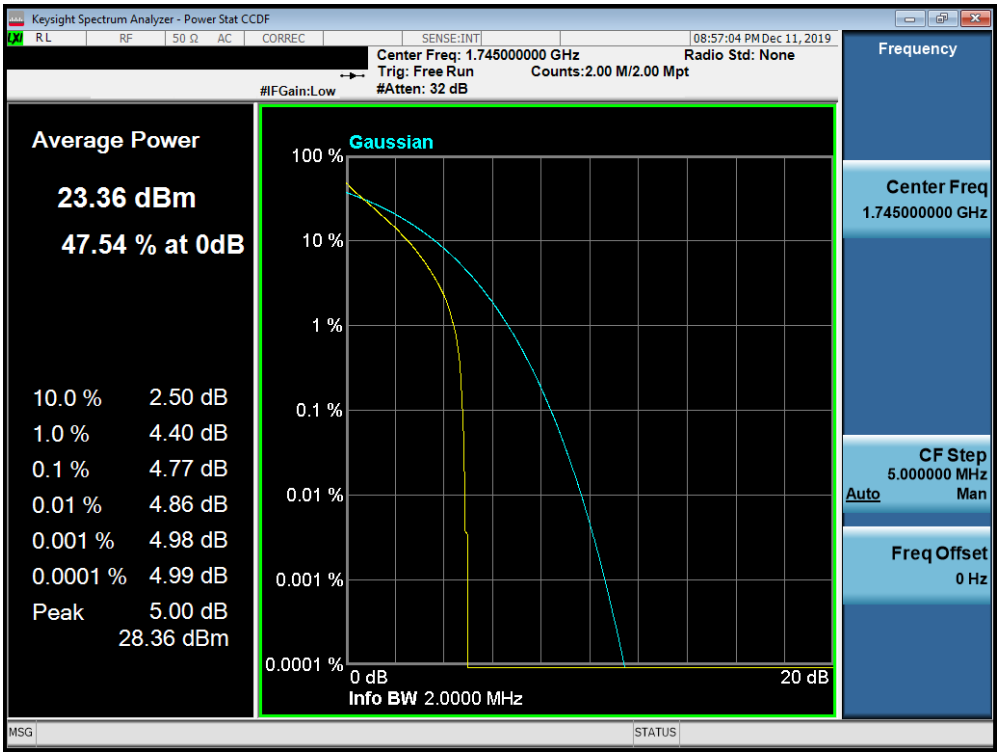


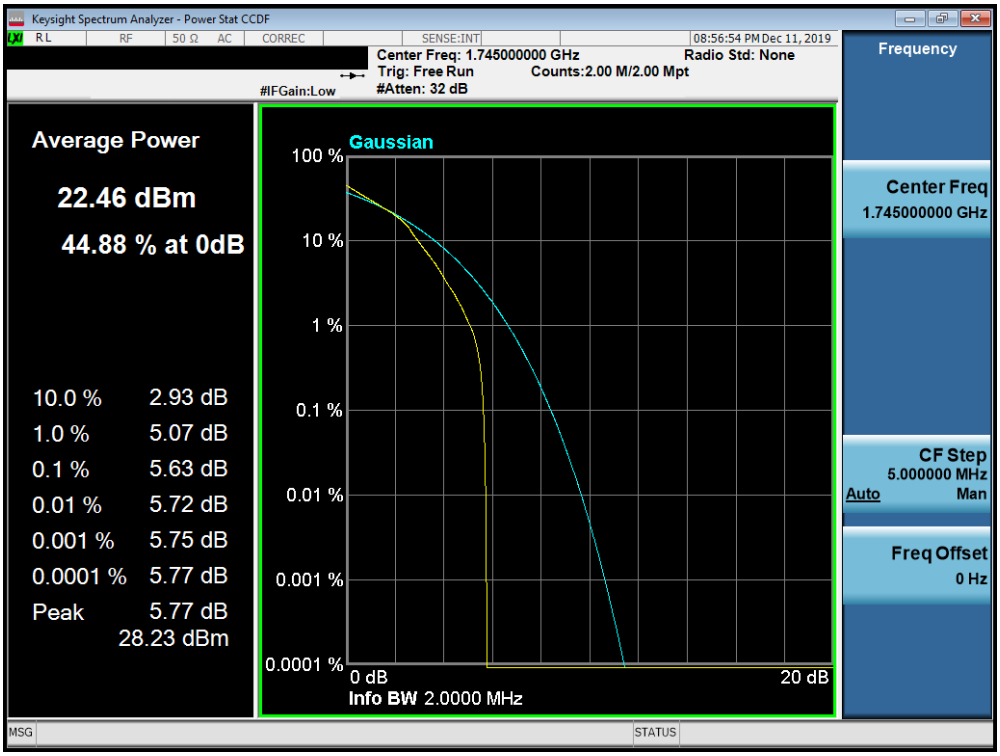
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

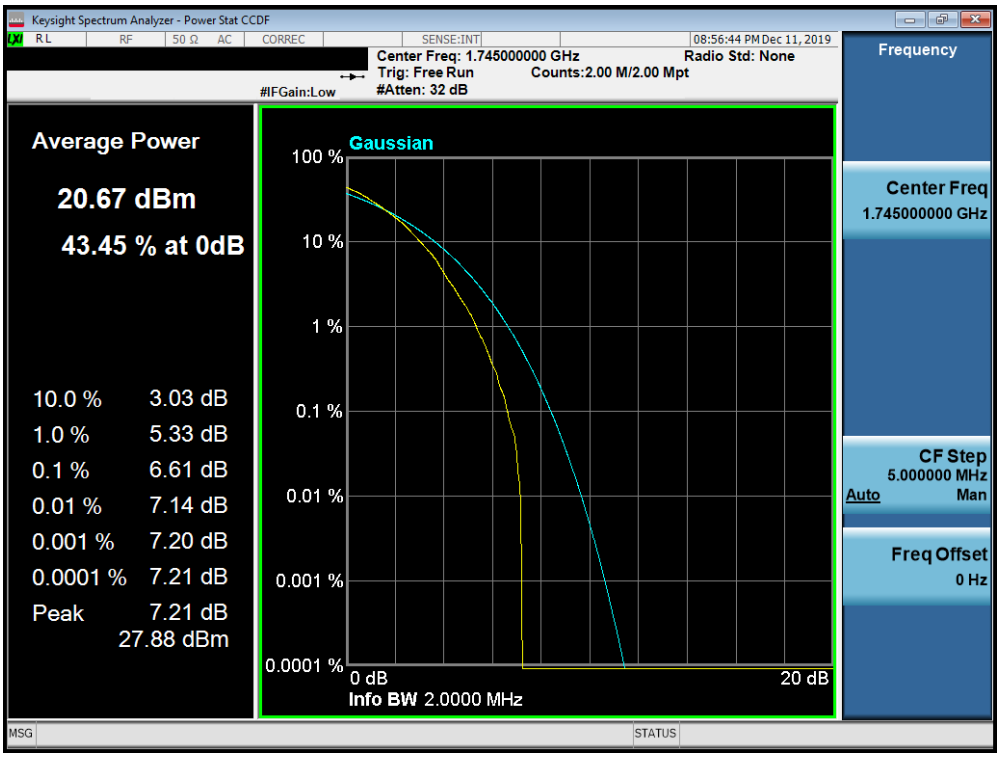
None.



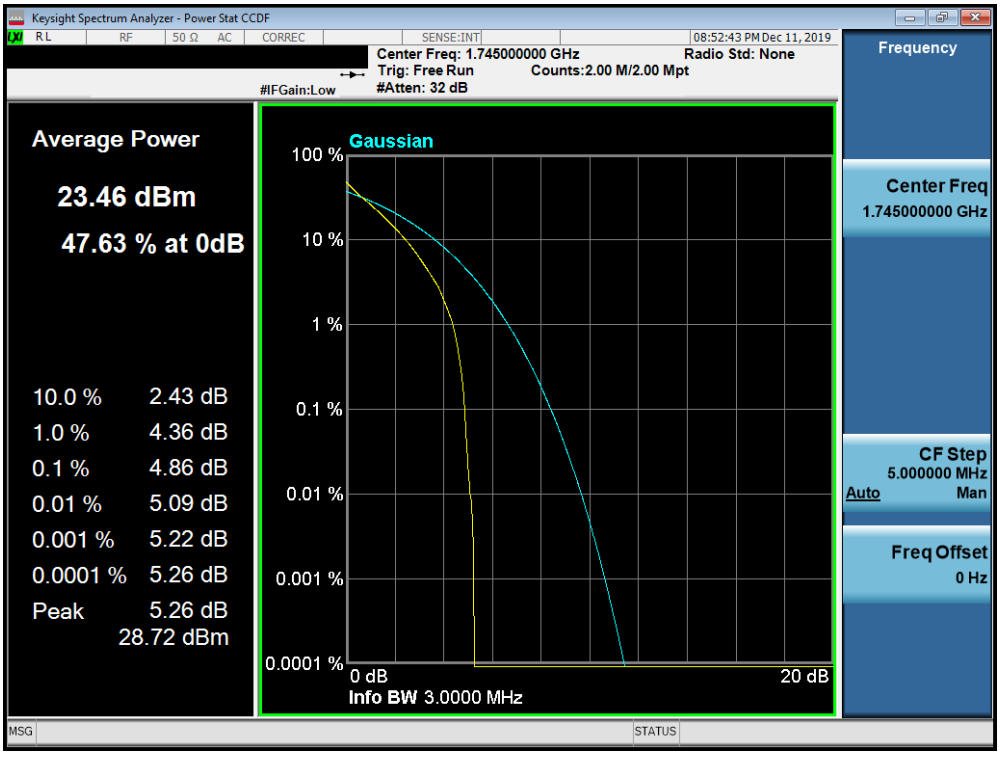
Plot 7-257. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



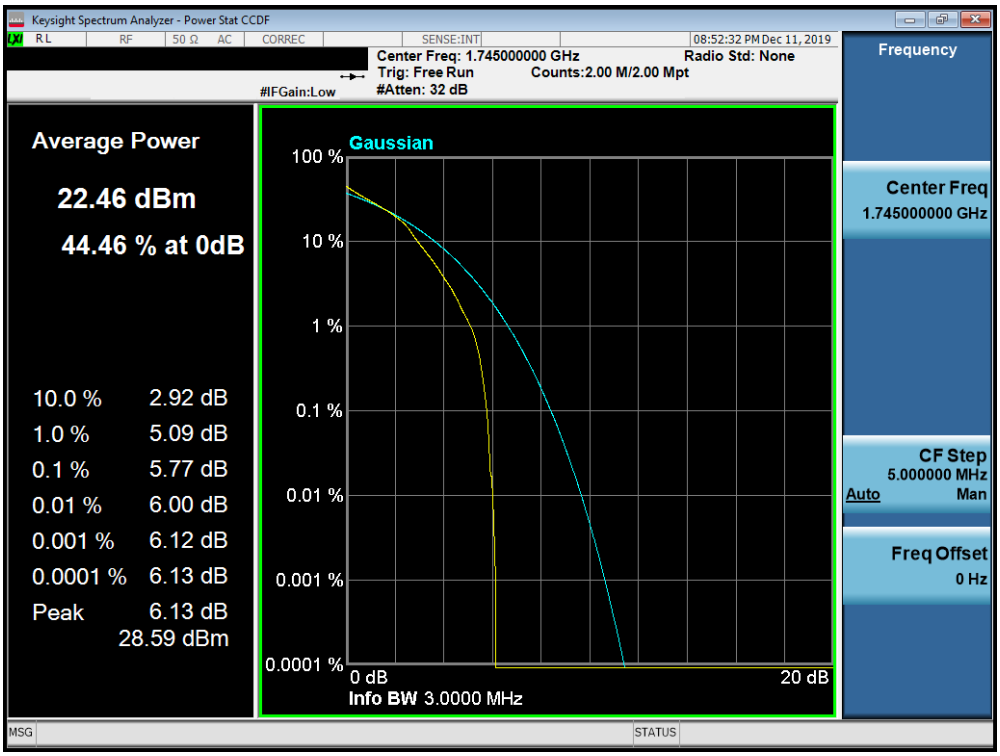
Plot 7-258. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)



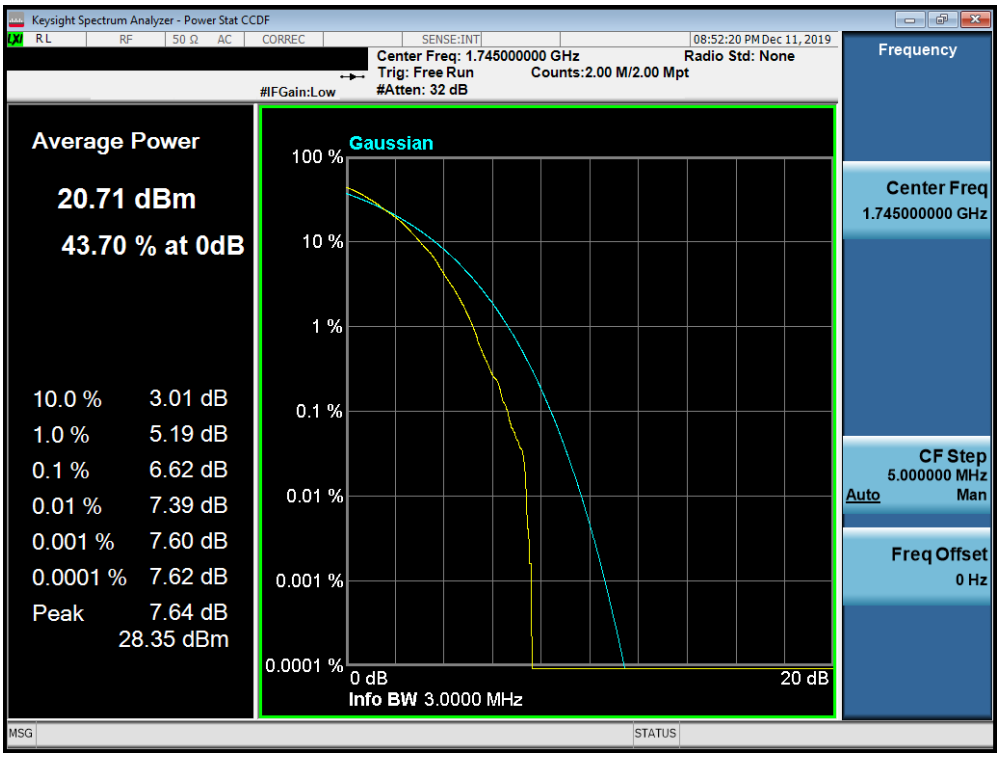
Plot 7-259. PAR Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



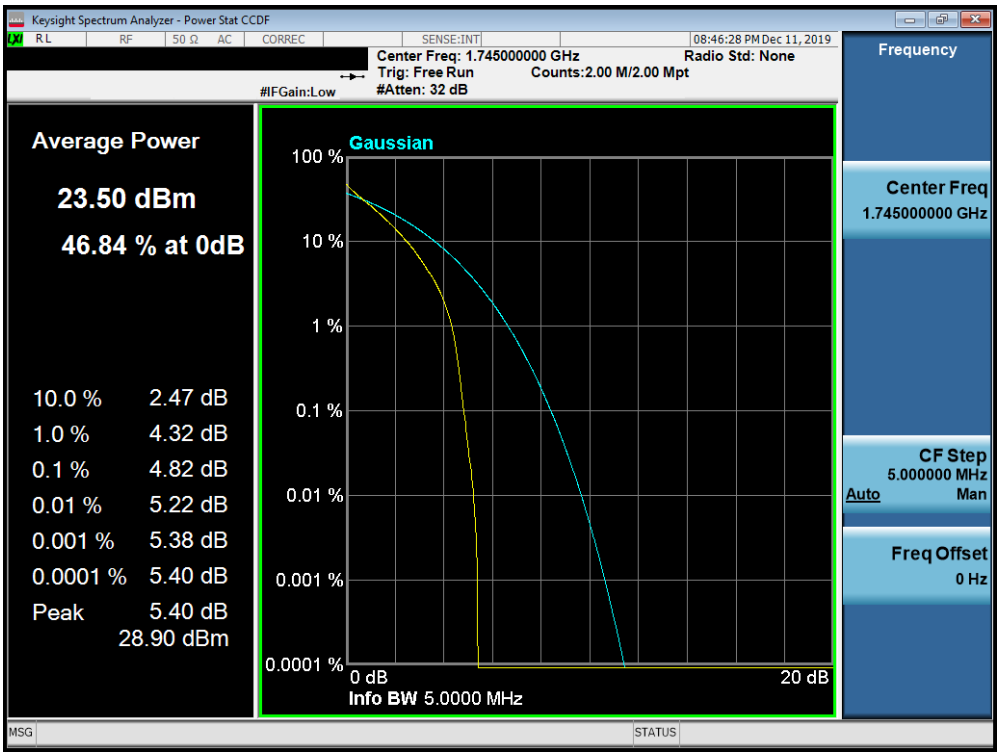
Plot 7-260. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



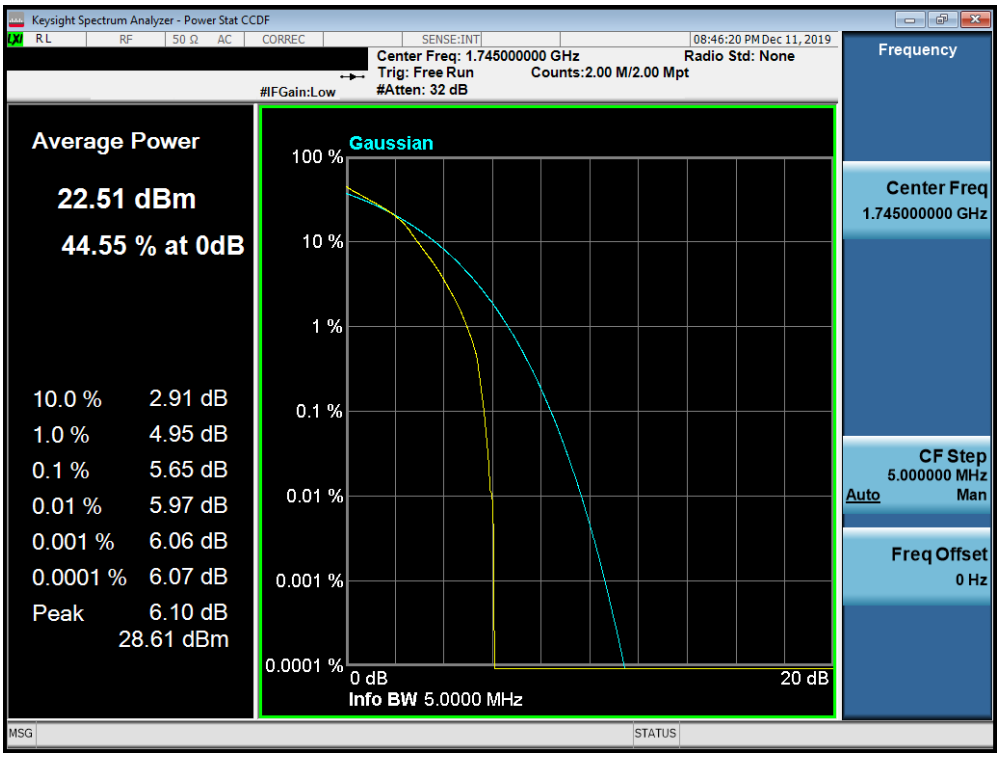
Plot 7-261. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)



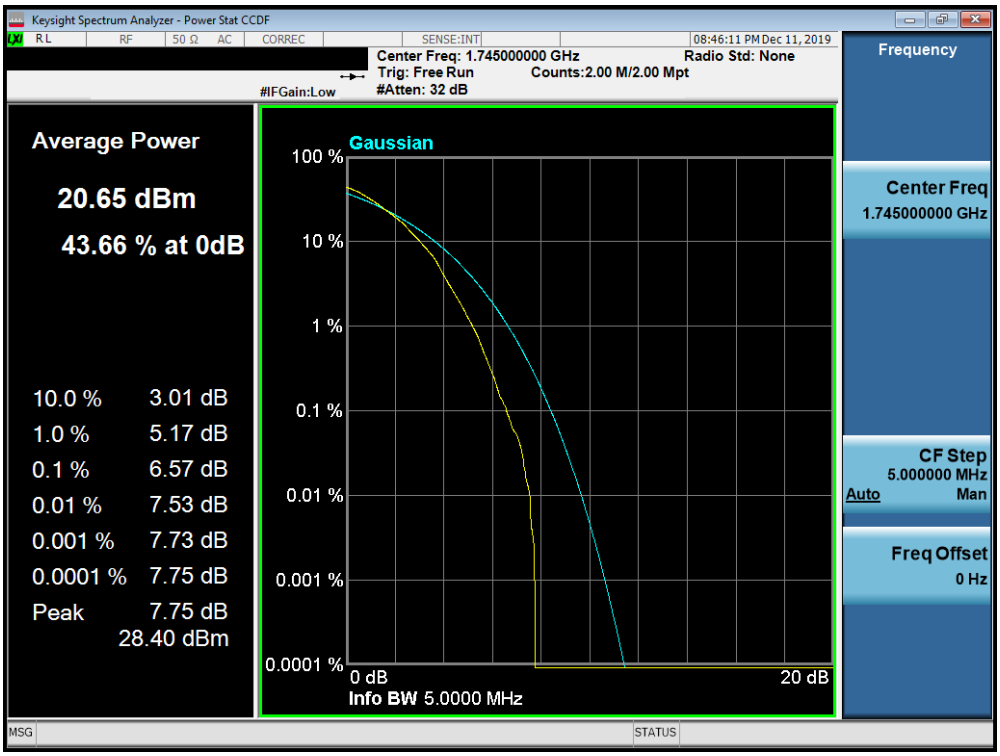
Plot 7-262. PAR Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)



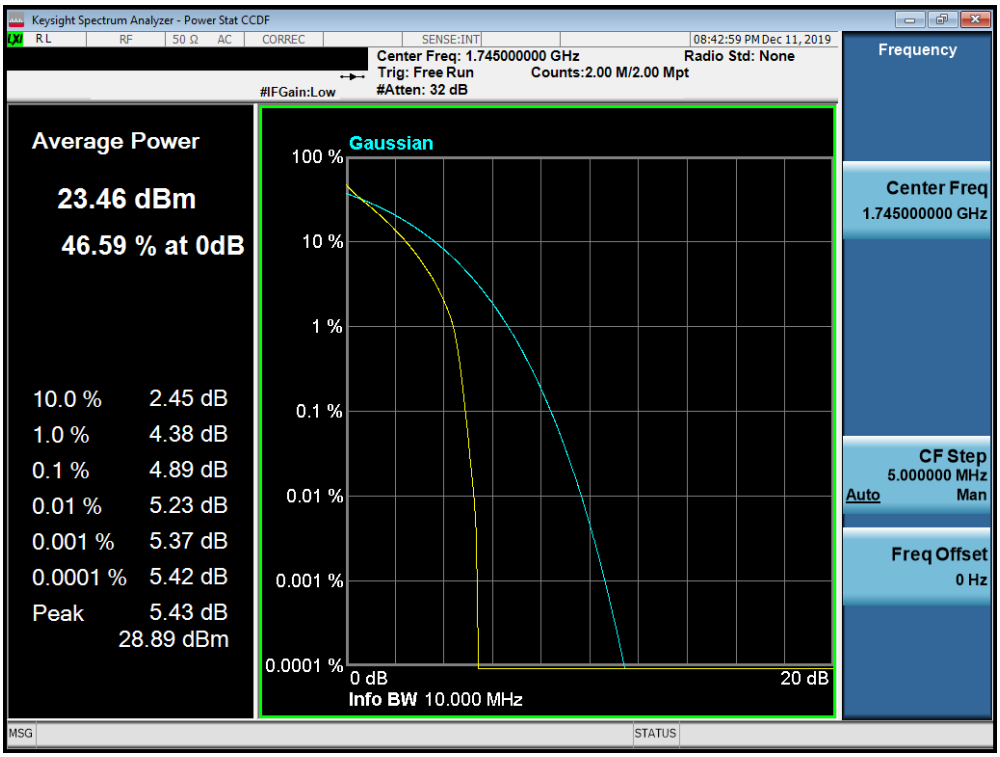
Plot 7-263. PAR Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



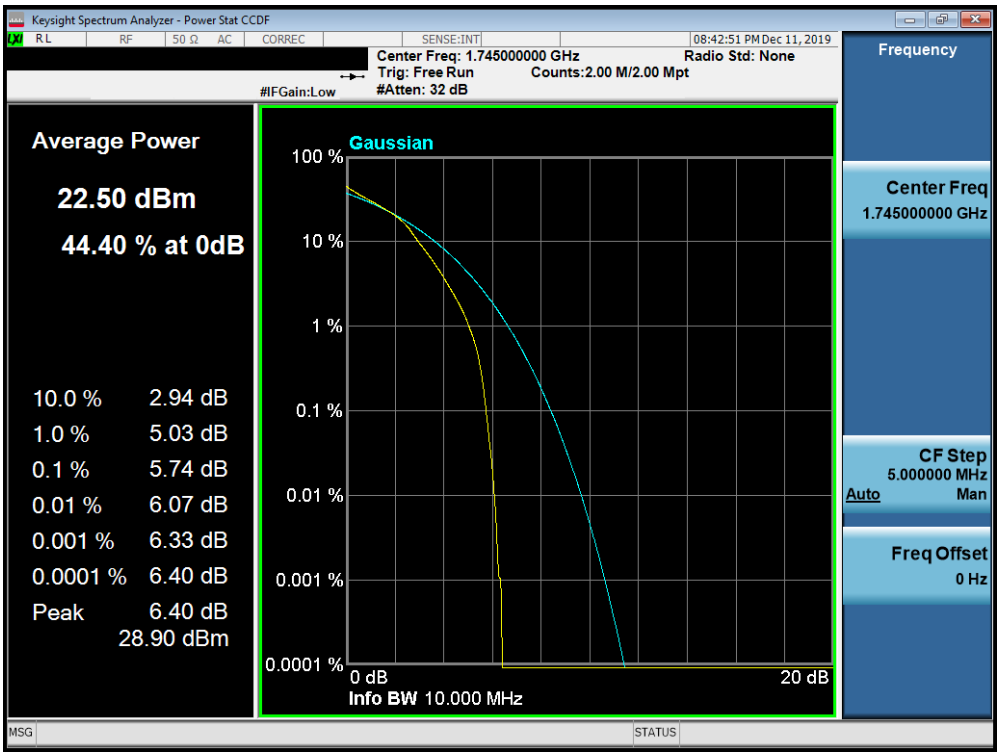
Plot 7-264. PAR Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)



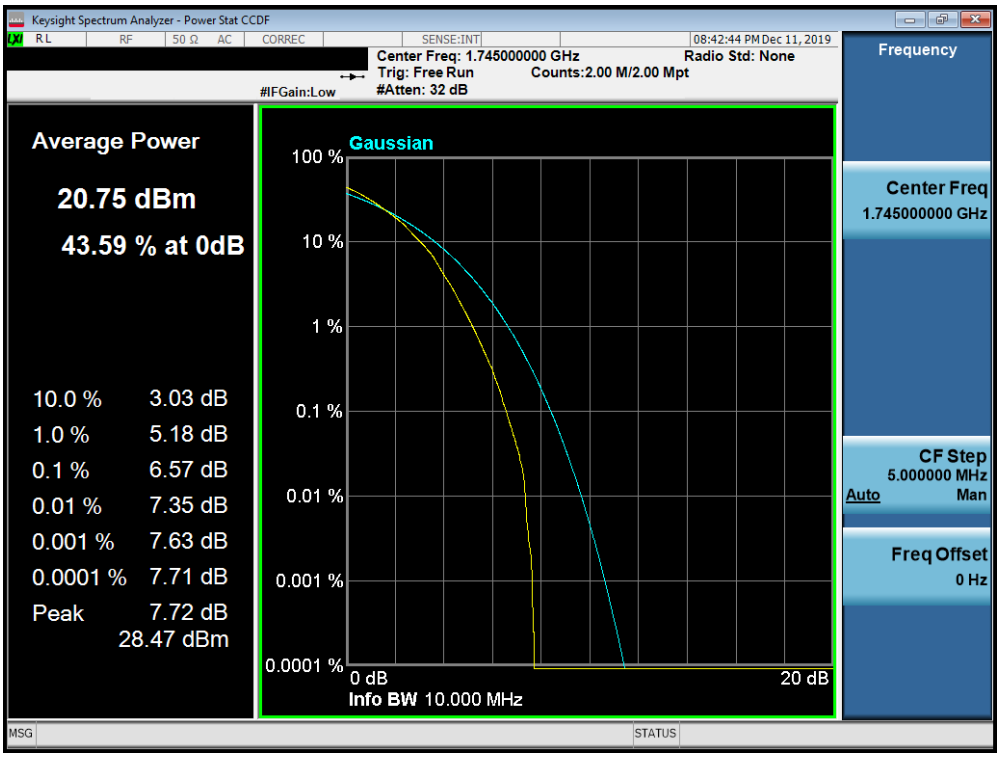
Plot 7-265. PAR Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)



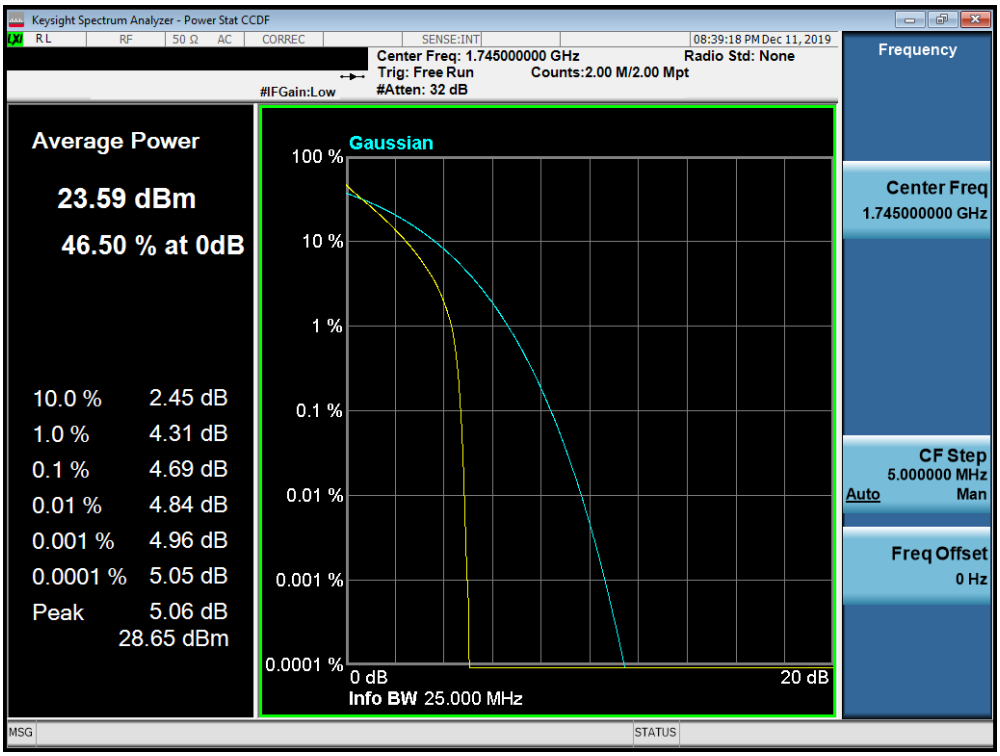
Plot 7-266. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



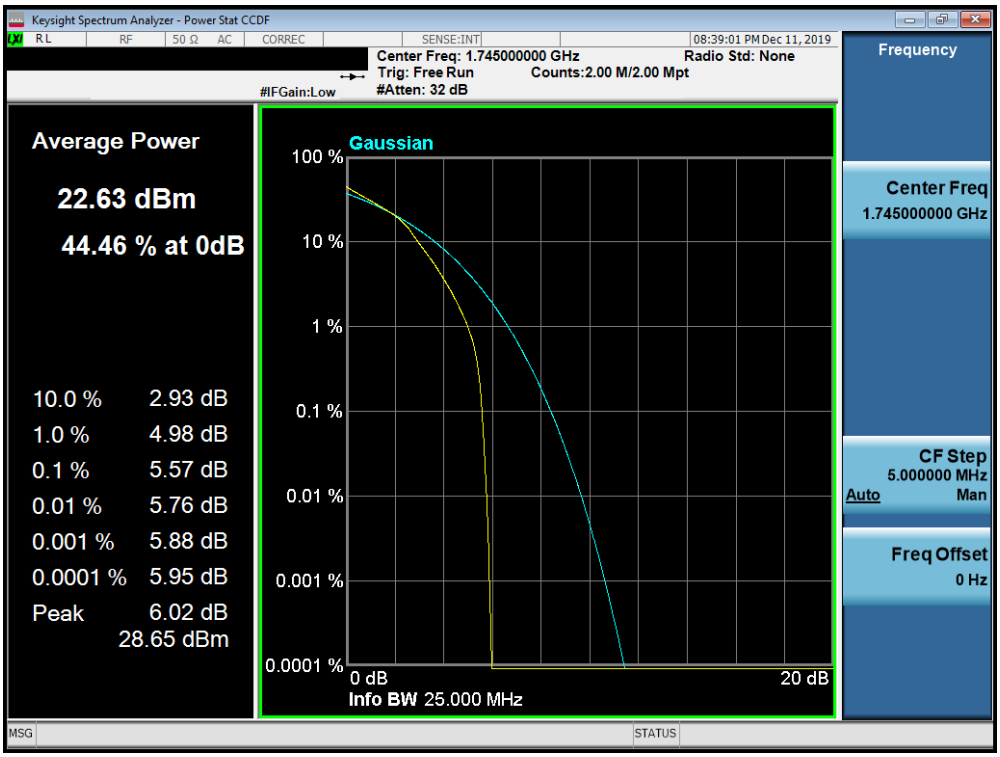
Plot 7-267. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)



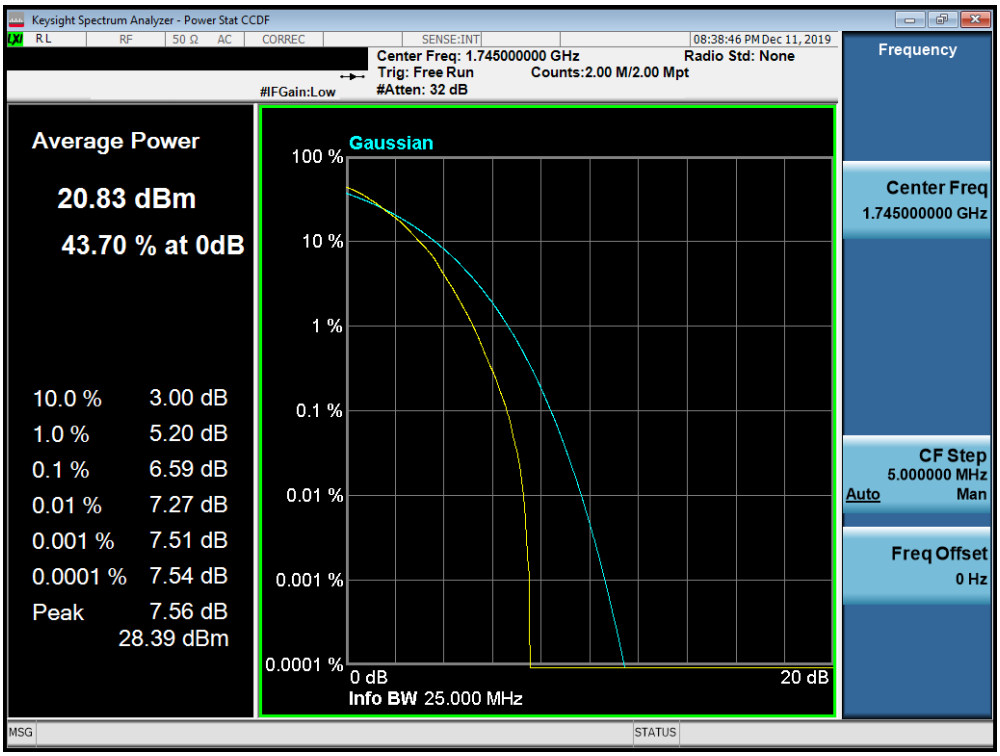
Plot 7-268. PAR Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)



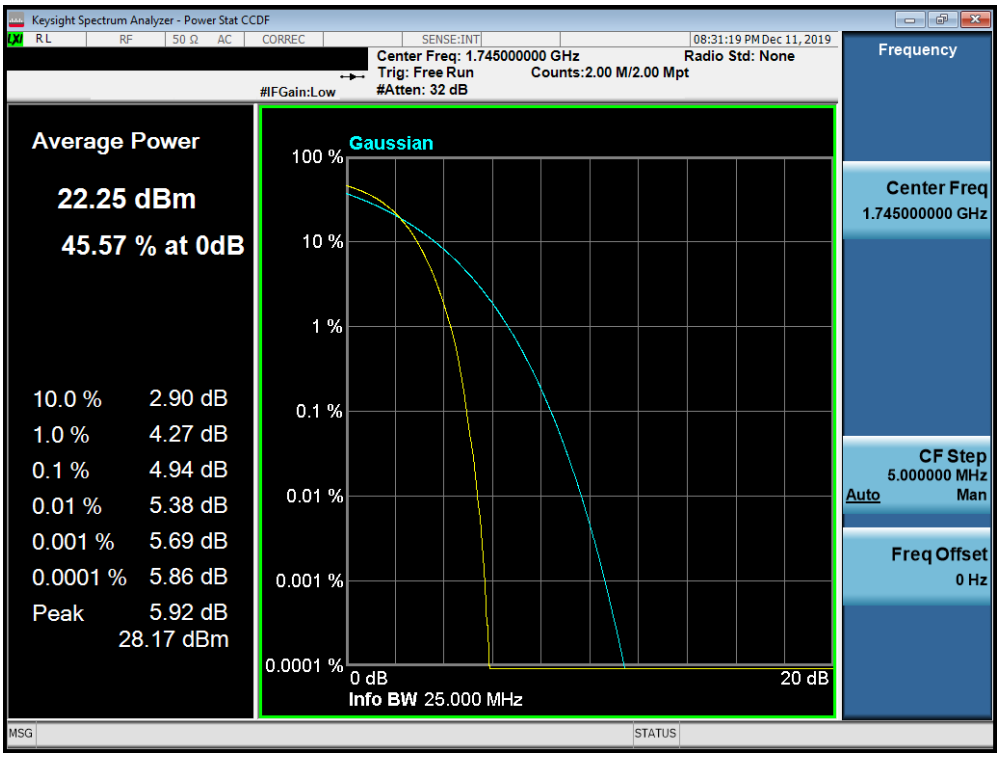
Plot 7-269. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



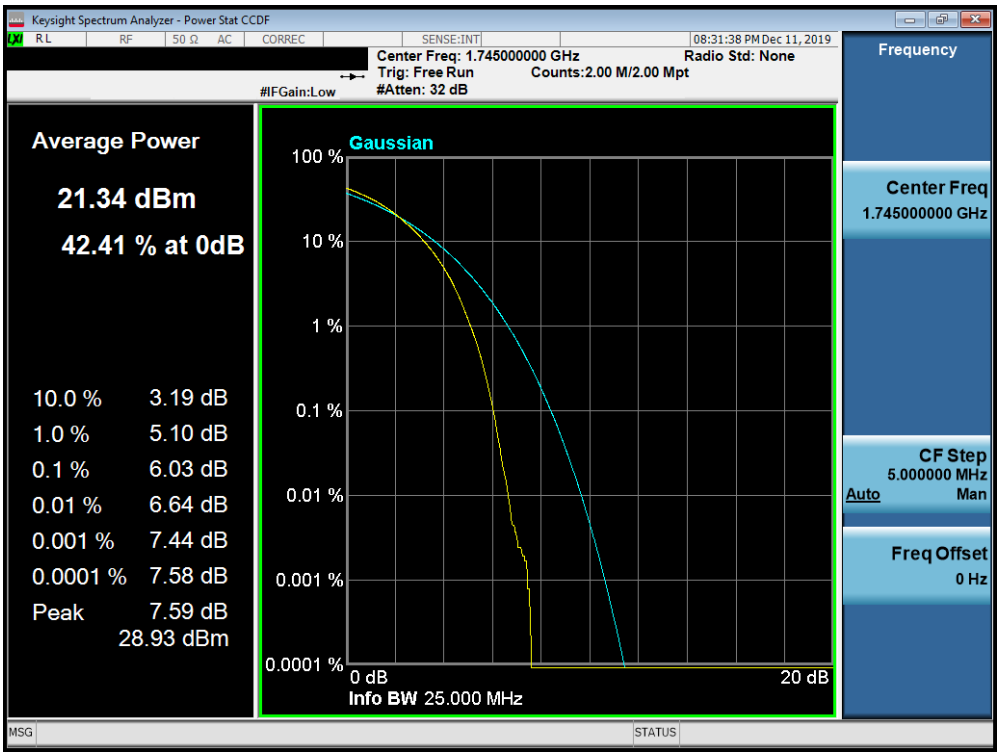
Plot 7-270. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)



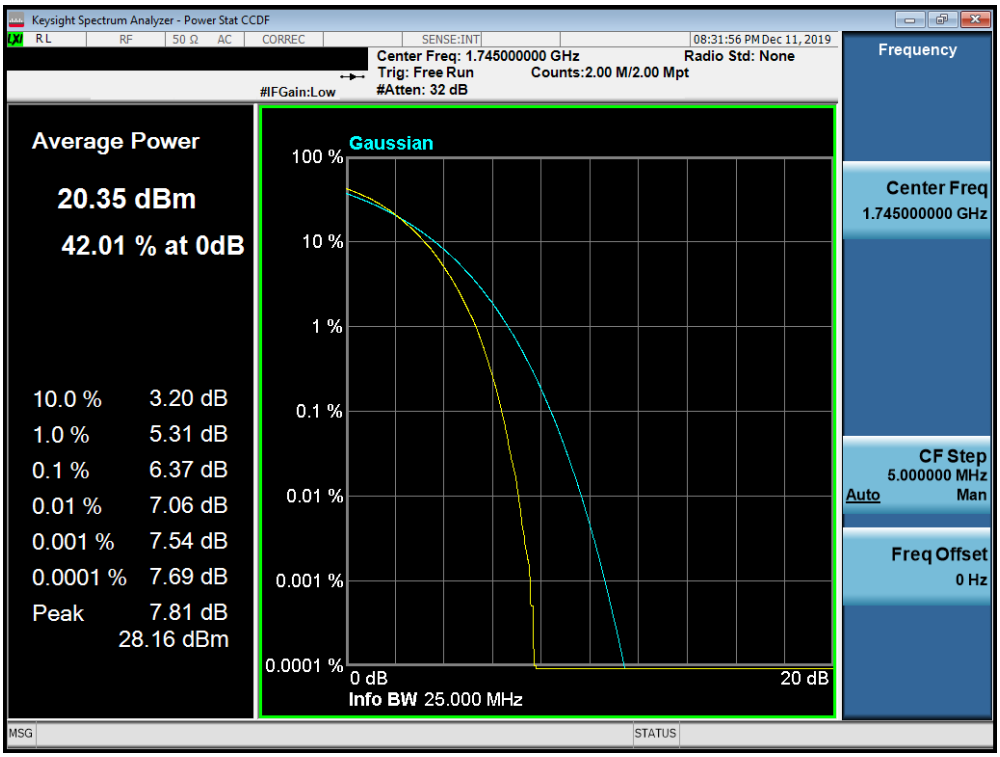
Plot 7-271. PAR Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)



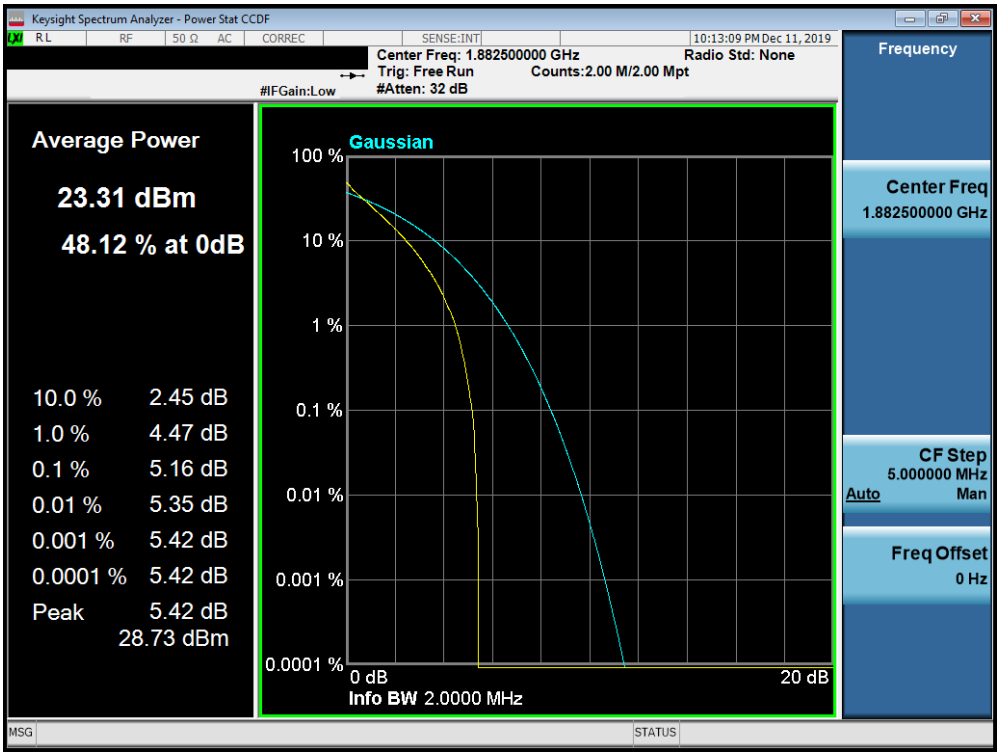
Plot 7-272. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



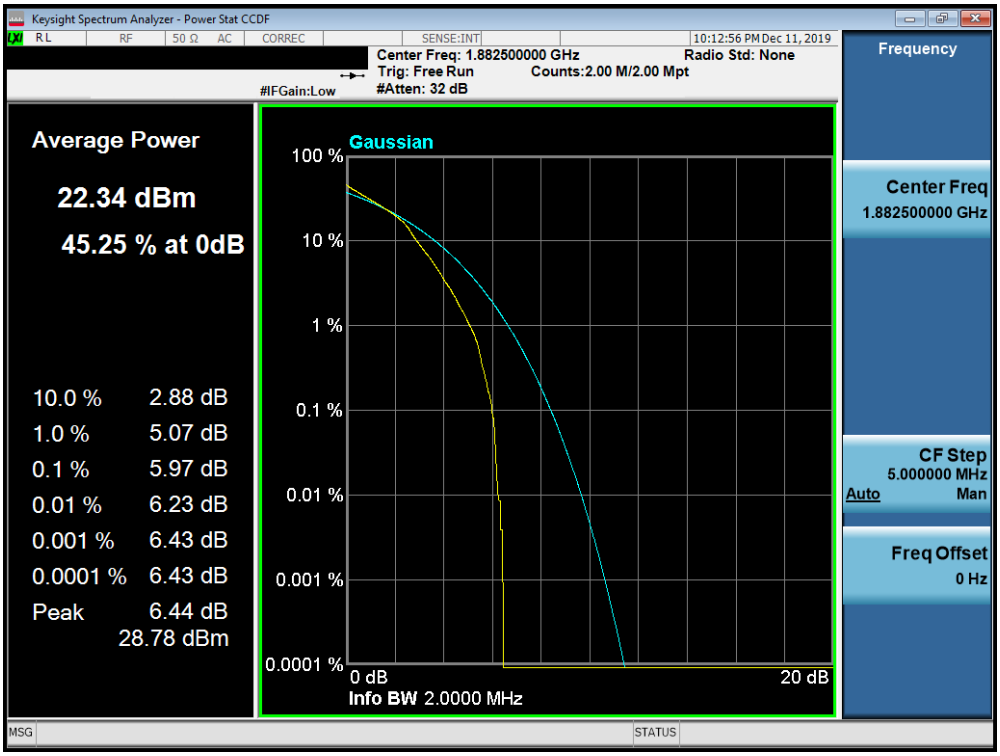
Plot 7-273. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



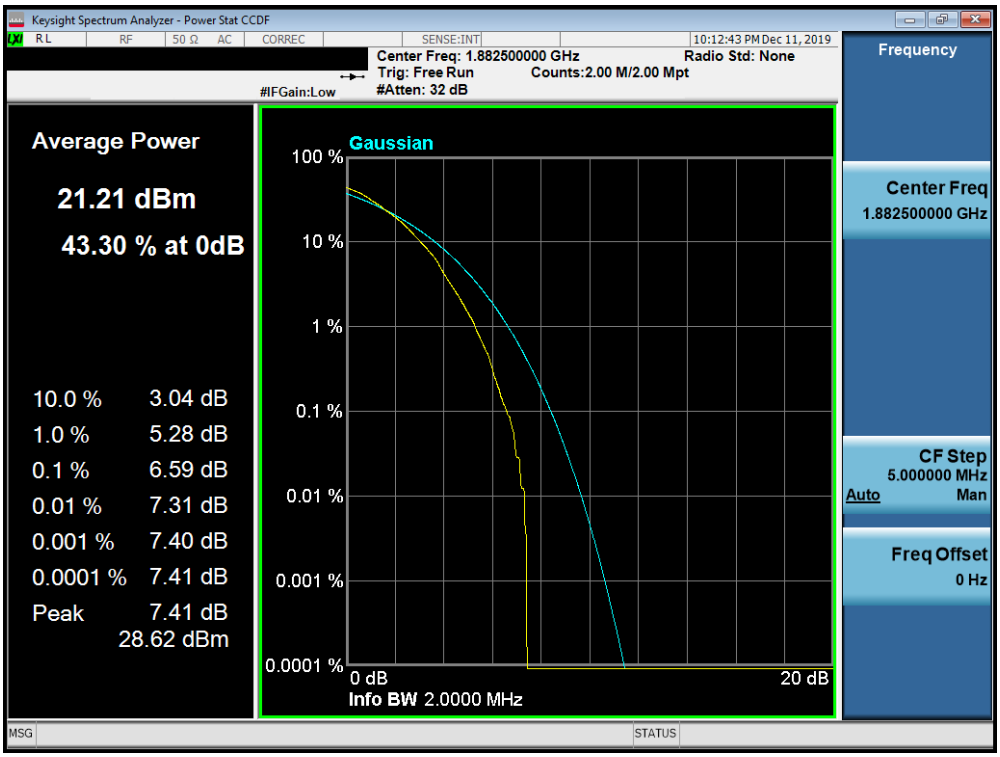
Plot 7-274. PAR Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)



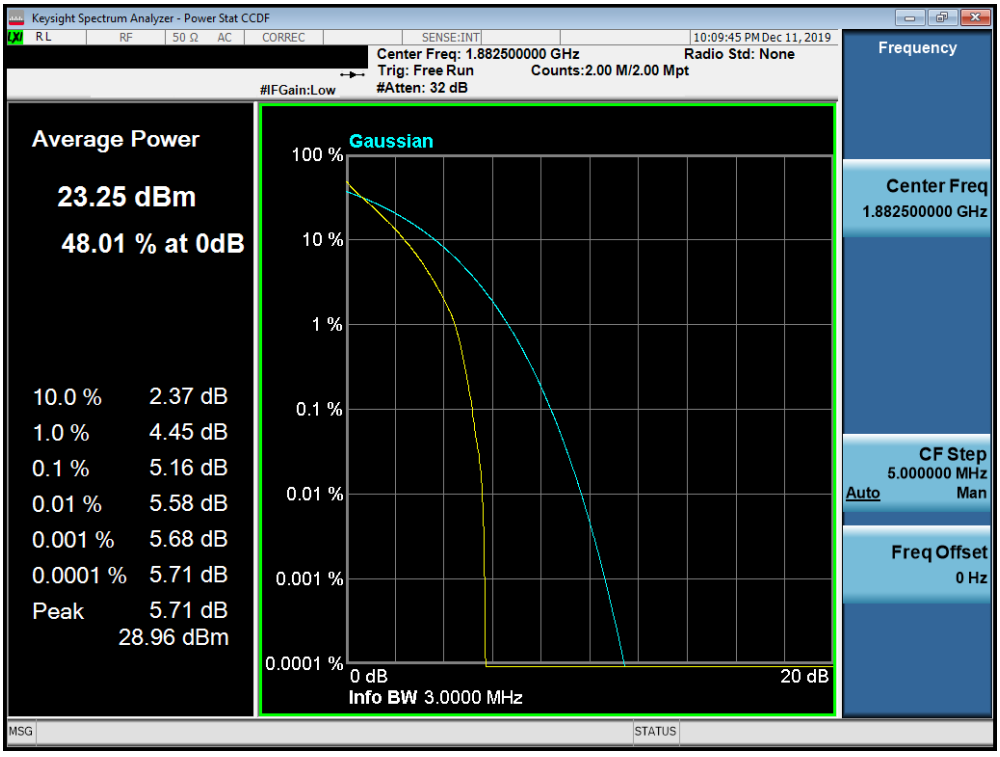
Plot 7-275. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



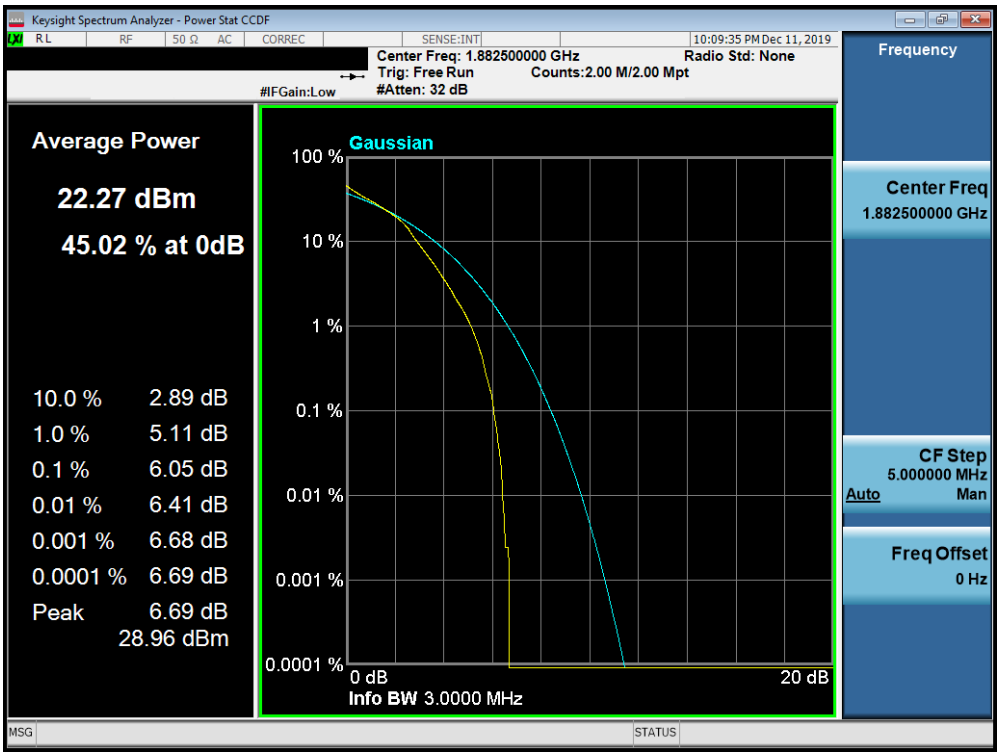
Plot 7-276. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)



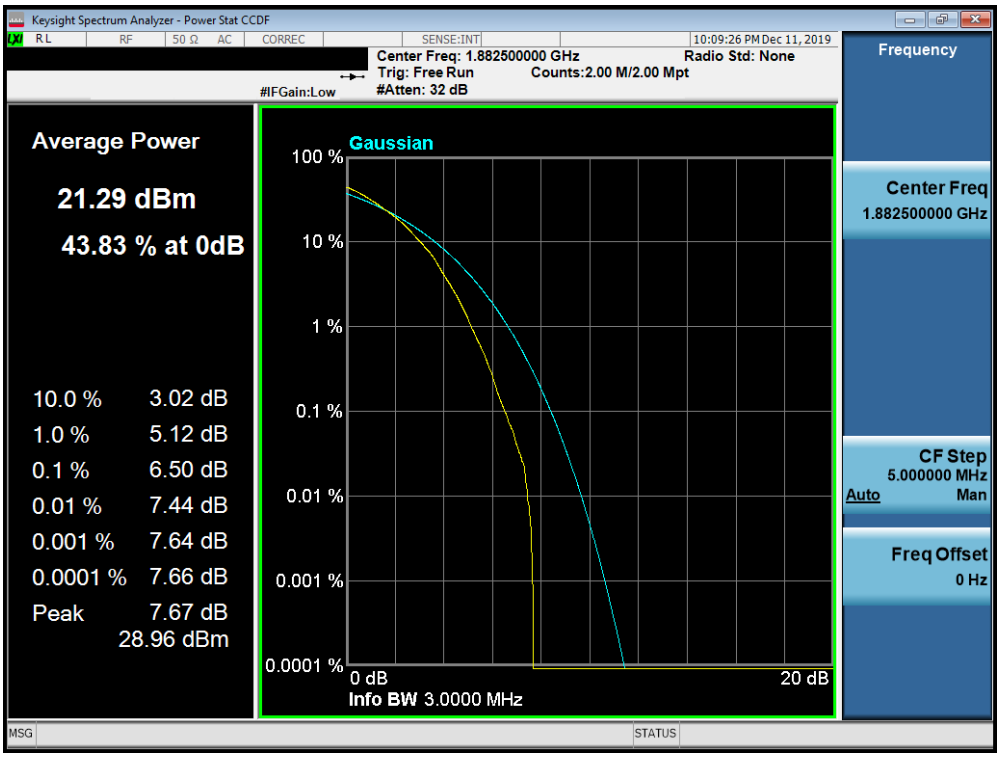
Plot 7-277. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



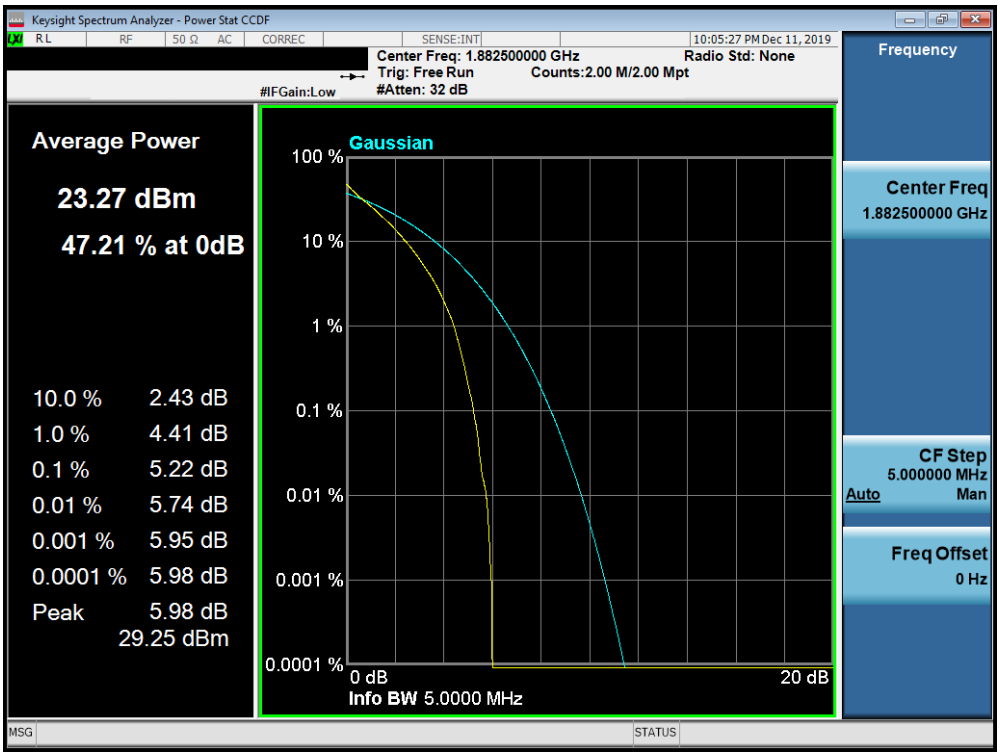
Plot 7-278. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



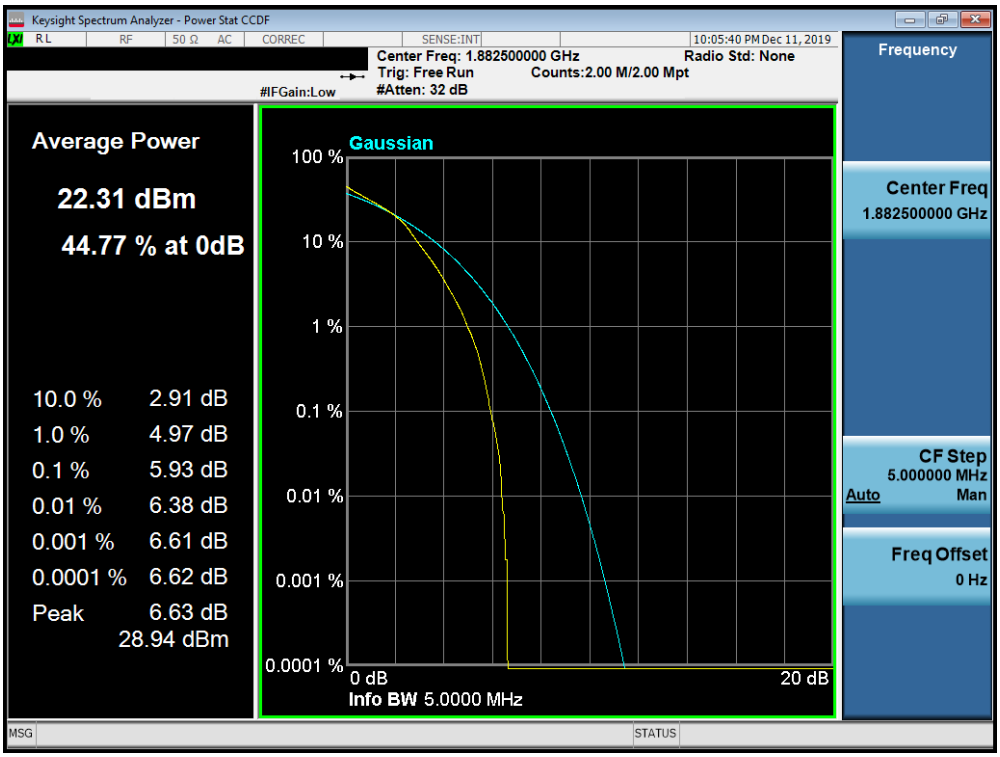
Plot 7-279. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



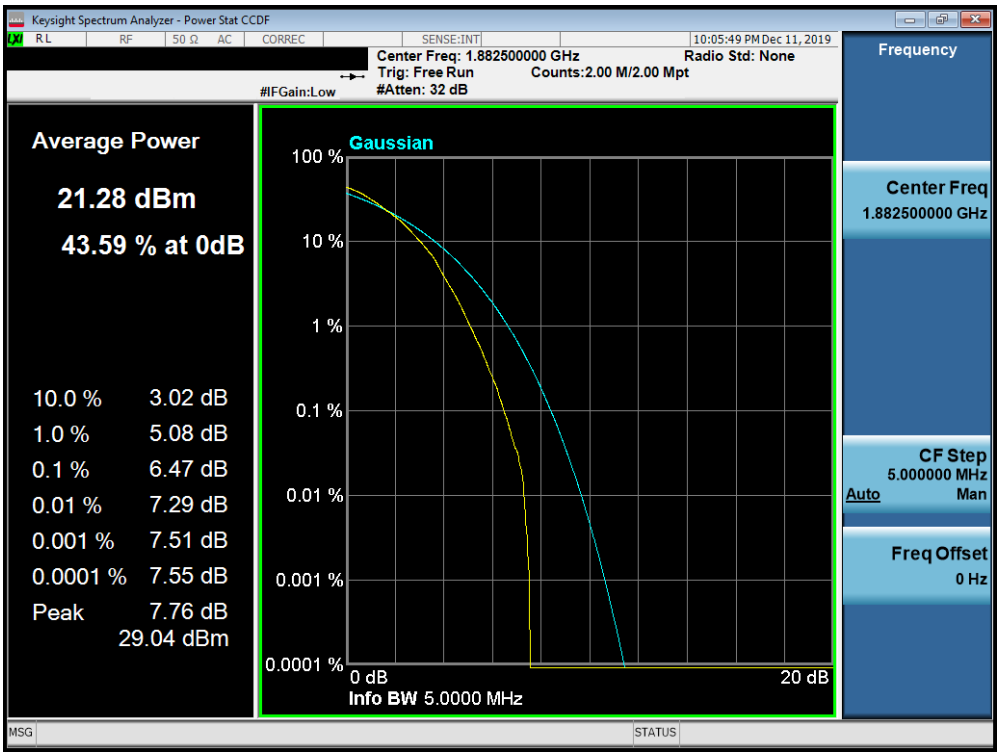
Plot 7-280. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)



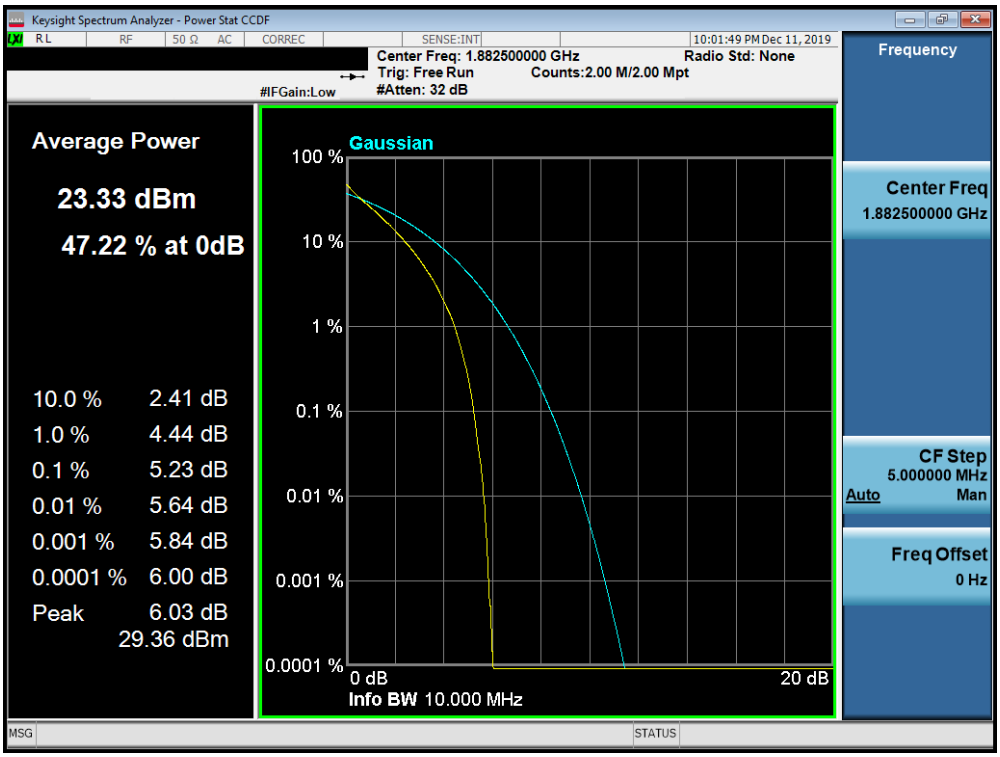
Plot 7-281. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



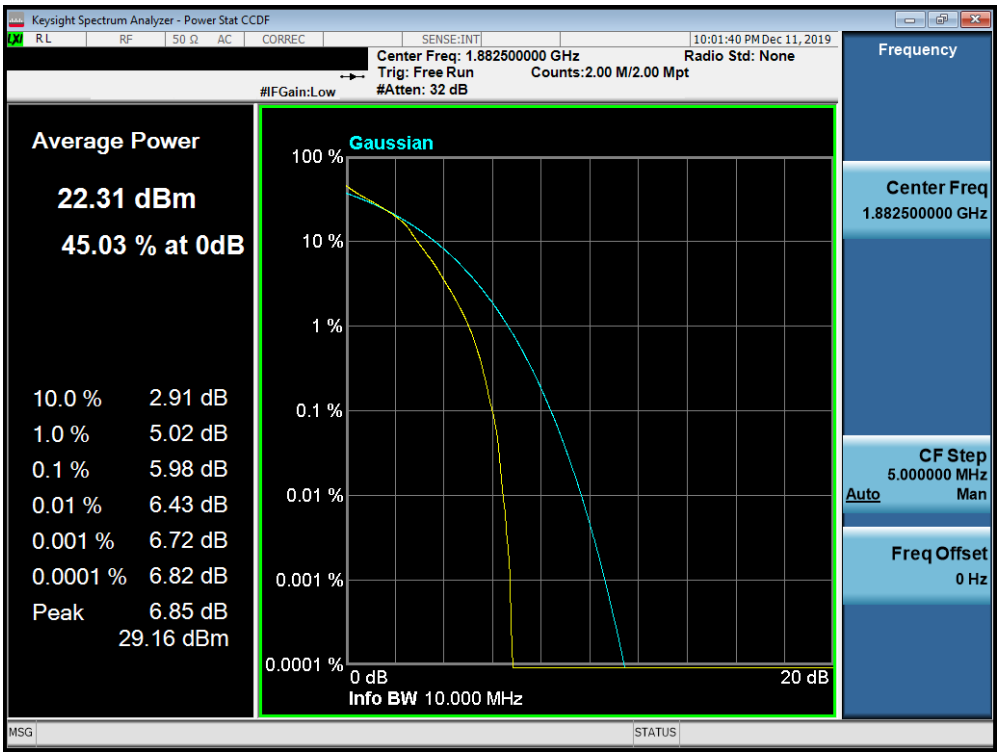
Plot 7-282. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)



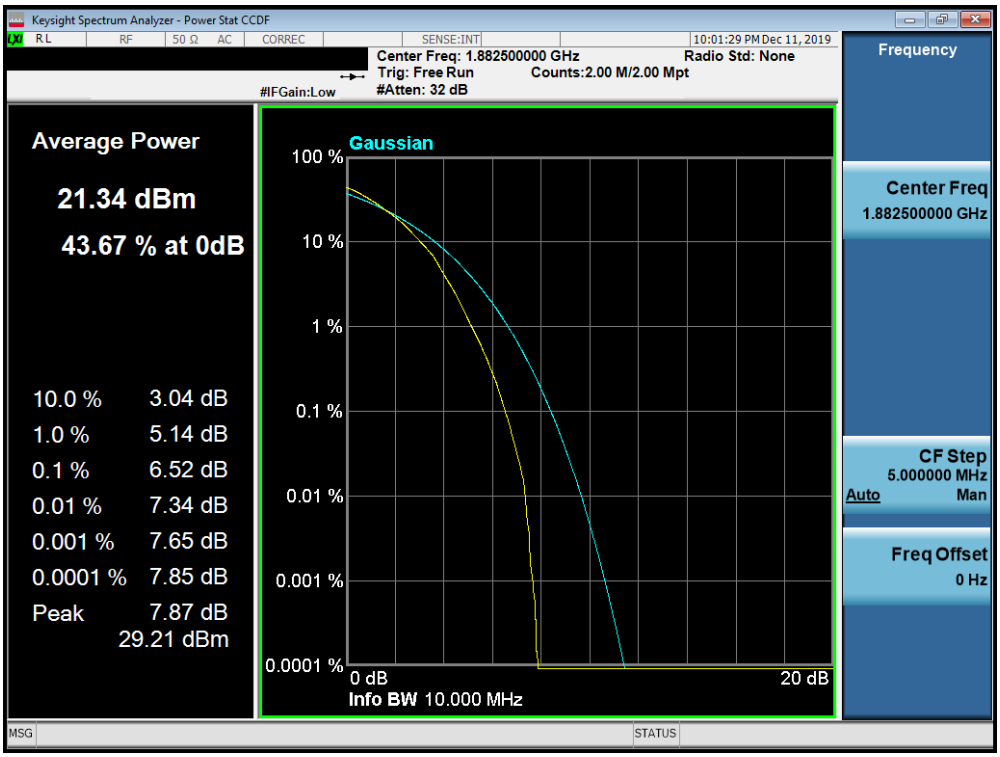
Plot 7-283. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)



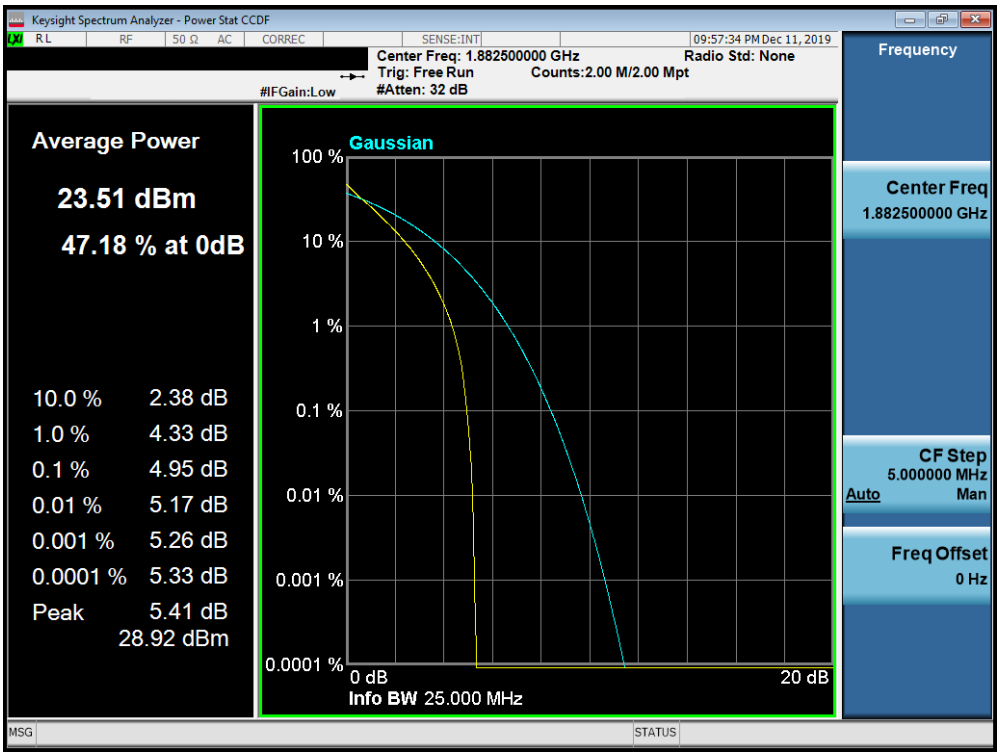
Plot 7-284. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



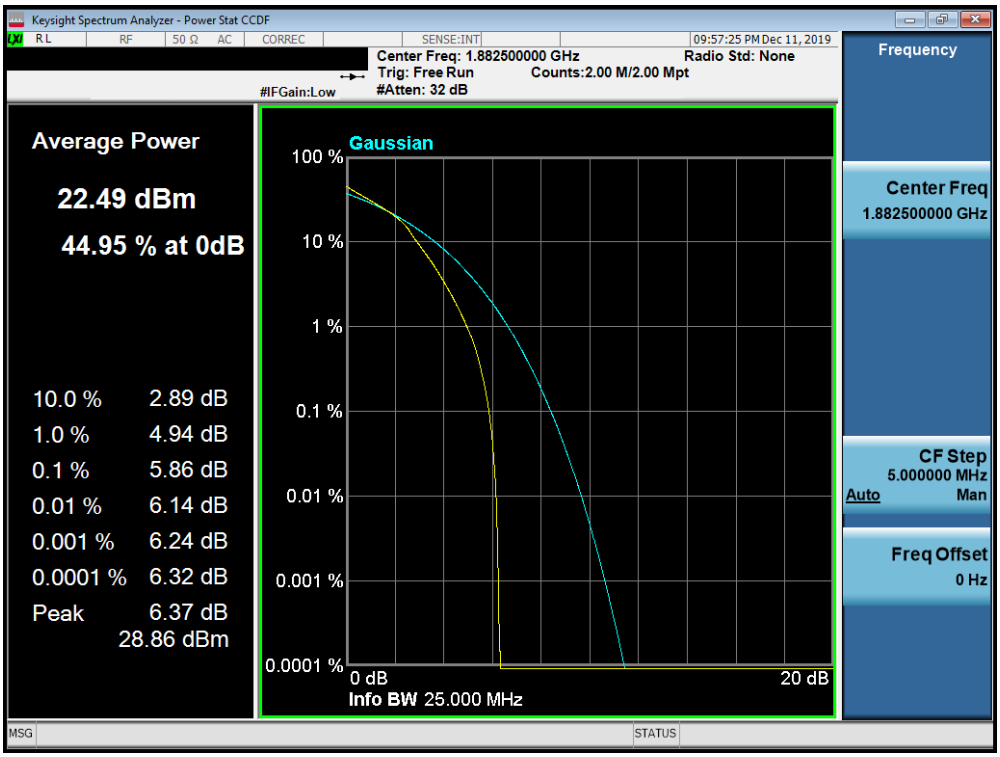
Plot 7-285. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)



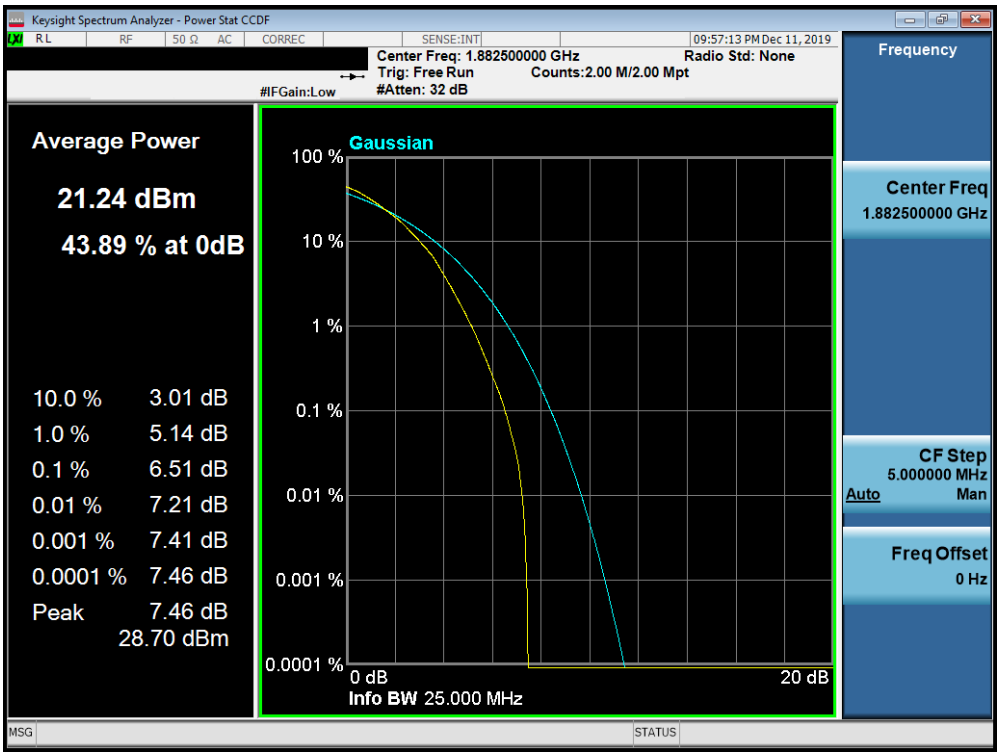
Plot 7-286. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)



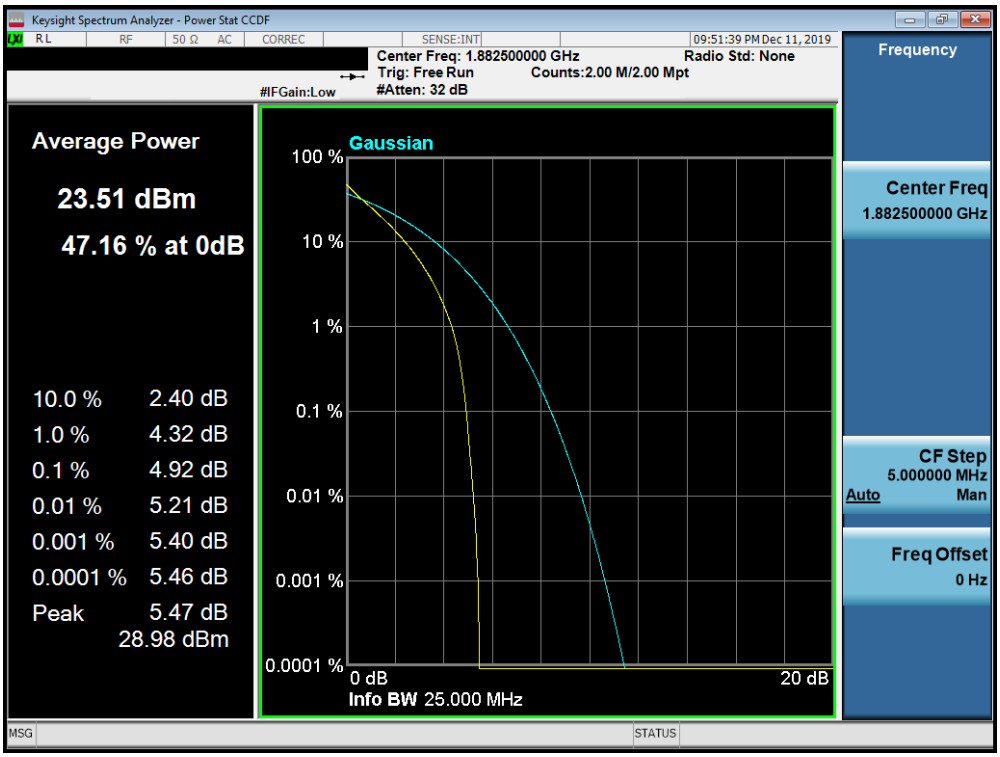
Plot 7-287. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



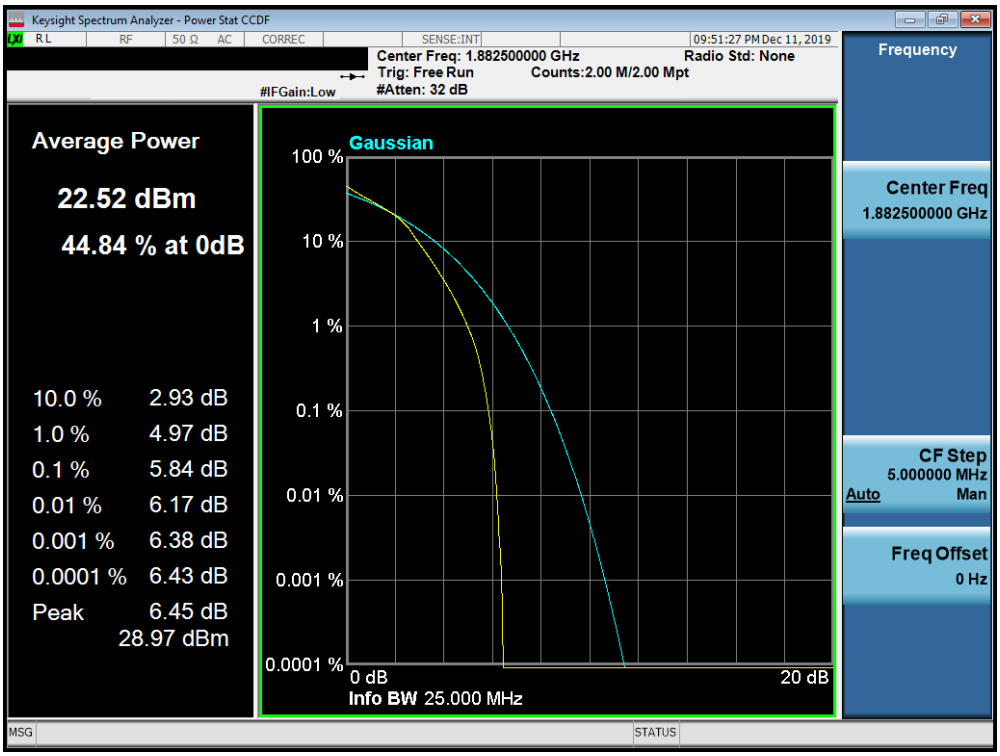
Plot 7-288. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)



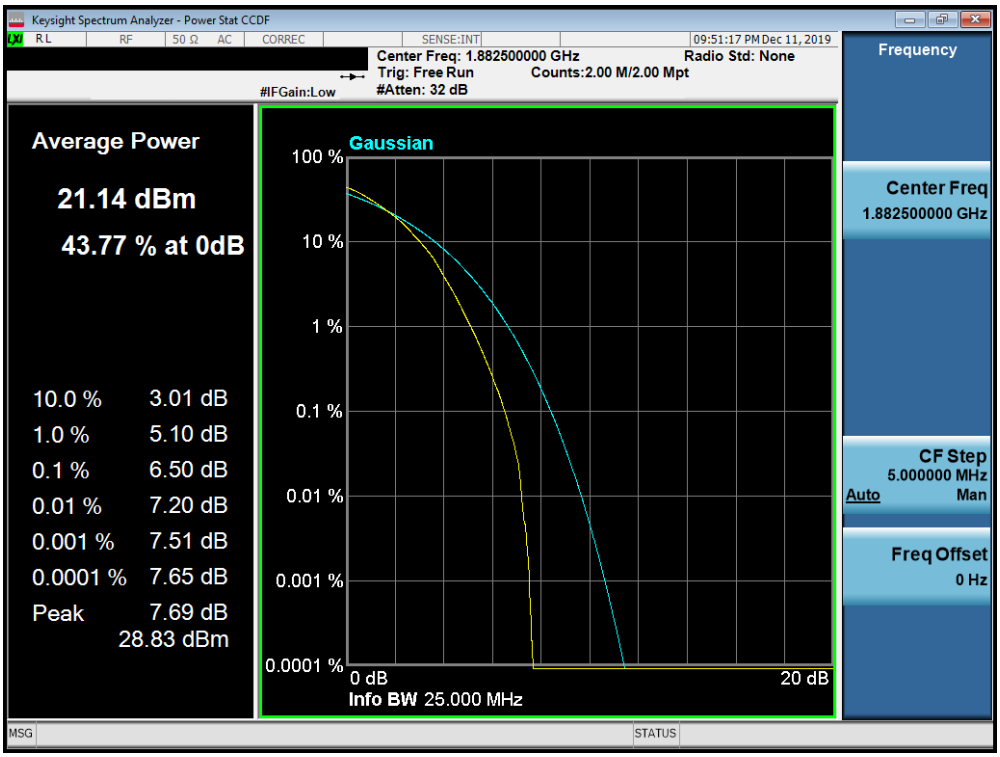
Plot 7-289. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-290. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-291. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-292. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

7.6 Uplink Carrier Aggregation

§27.53(m)

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

For Band 41, the minimum permissible attenuation level of any spurious emission is 55 + 10 $log_{10}(P_{[Watts]})$.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

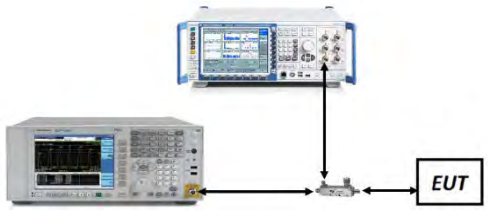


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.

2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-503 and 7-504 below, with both carriers set to transmit using 1RB.

3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.23
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	24.96
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	24.91

Table 7-4. Conducted Powers (B41 – Left Carrier: RB Size 1 Offset Max Right Carrier: RB Size 1 Offset 0)

Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	20	40620	2593	QPSK	1	0	LTE B41	20	40818	2612.8	QPSK	1	0	18.71
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	99	18.91
Max	LTE B41	20	40620	2593	QPSK	1	0	LTE B41	20	40818	2612.8	QPSK	1	99	16.41
Max	LTE B41	20	40620	2593	QPSK	1	50	LTE B41	20	40818	2612.8	QPSK	1	50	20.34
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	24.98
Max	LTE B41	20	40620	2593	QPSK	100	0	LTE B41	20	40818	2612.8	QPSK	100	0	23.11
Max	LTE B41	20	40620	2593	16-QAM	100	0	LTE B41	20	40818	2612.8	16-QAM	100	0	22.01
Max	LTE B41	20	40620	2593	64-QAM	100	0	LTE B41	20	40818	2612.8	64-QAM	100	0	20.56

Table 7-5. Conducted Powers (B41 with Various Combinations for 20MHz Channel Bandwidth)

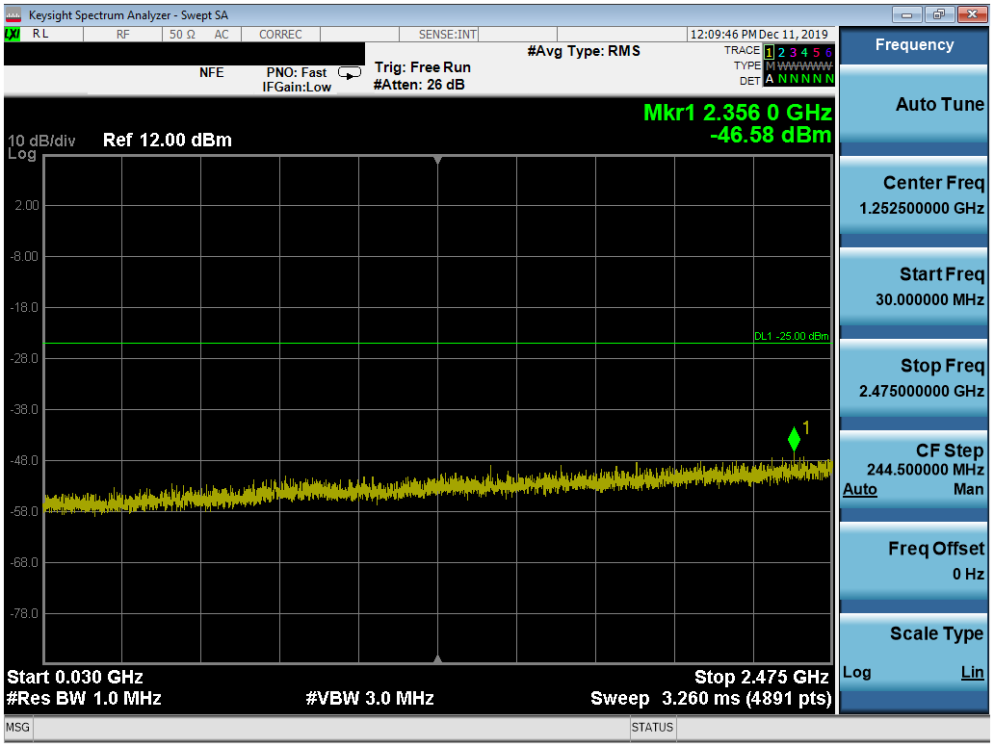


Table 7-293. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

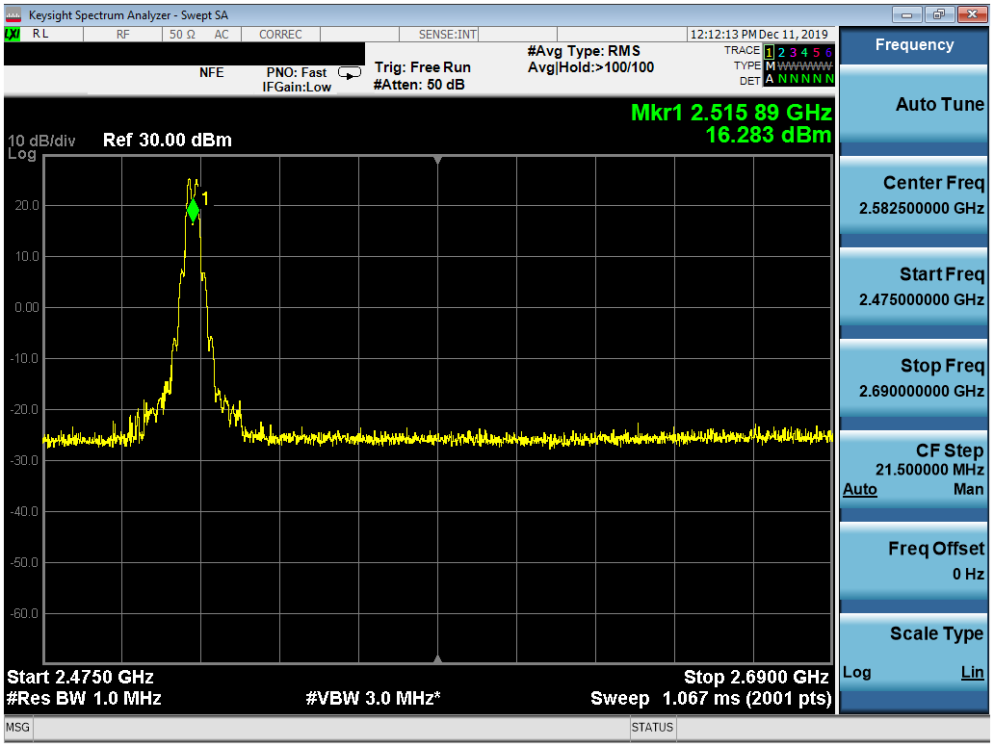


Table 7-294. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

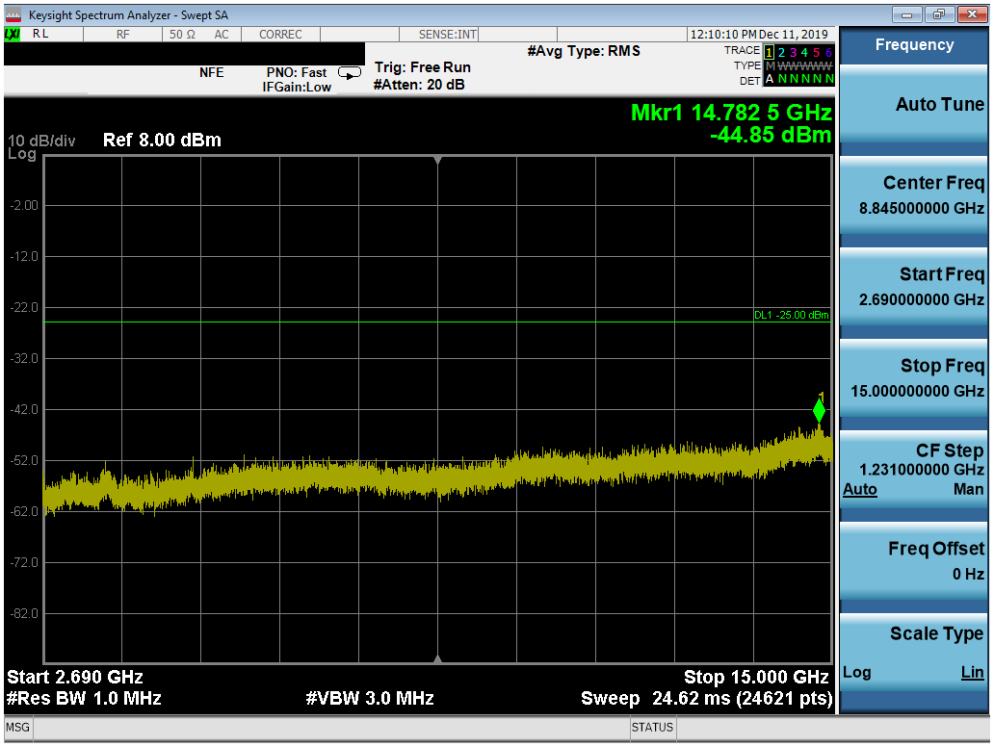


Table 7-295. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

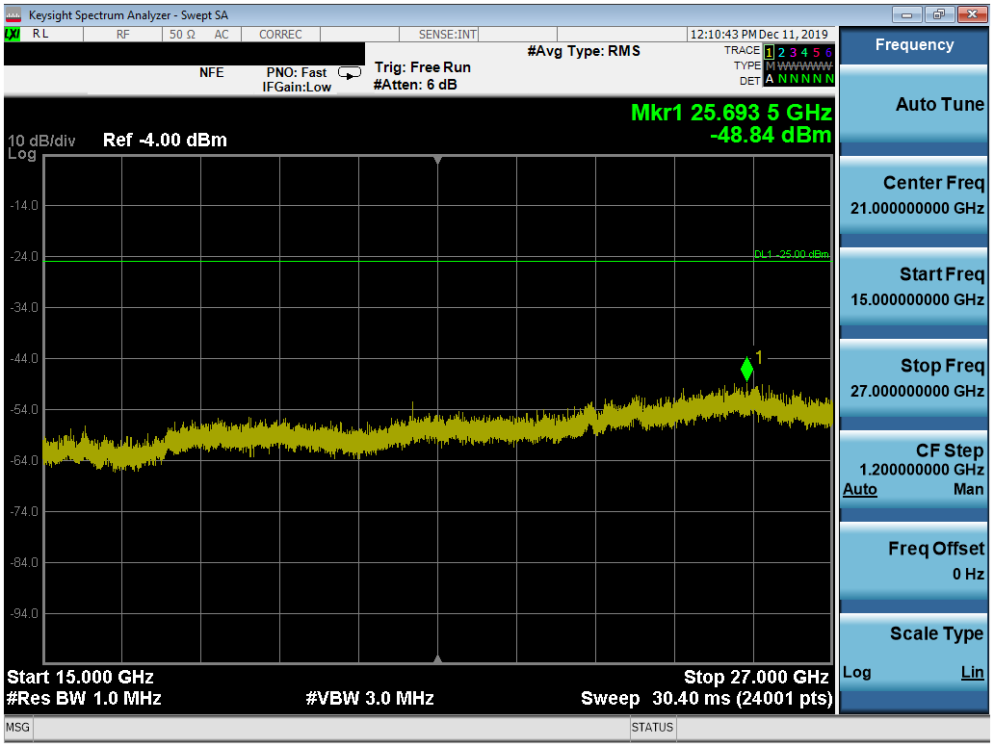


Table 7-296. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

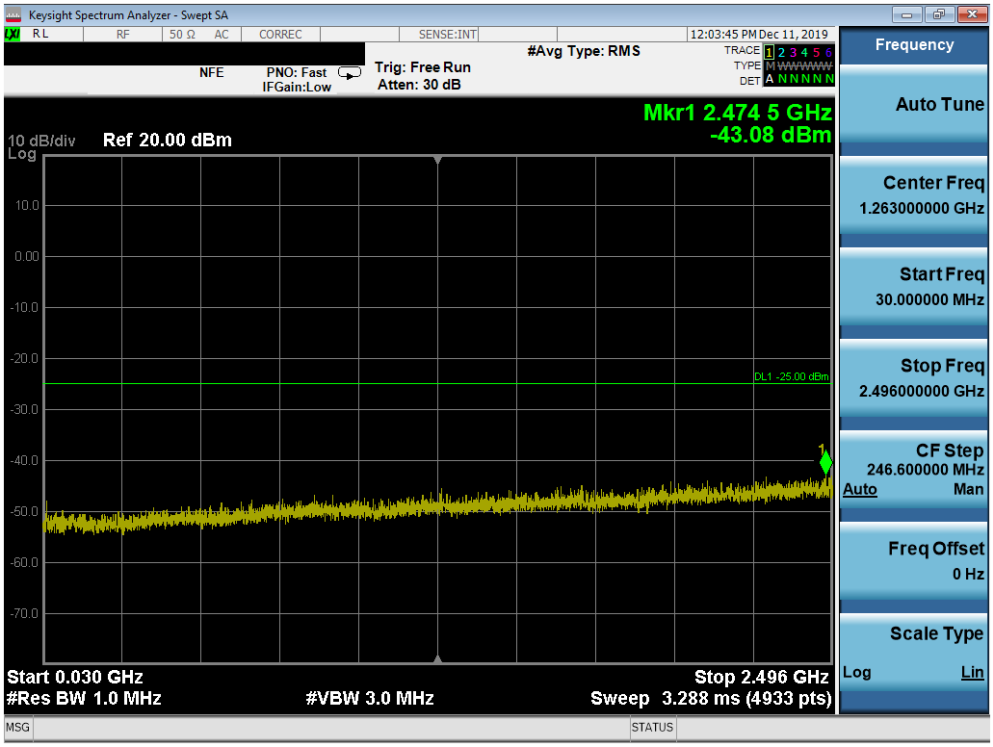


Table 7-297. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Mid Channel)

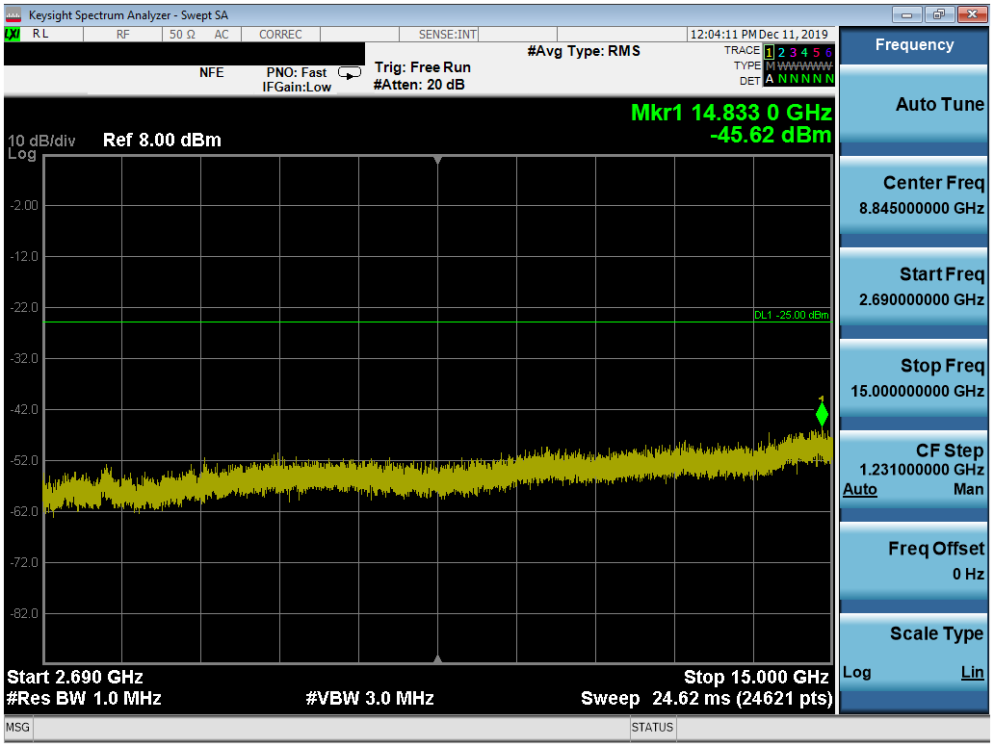


Table 7-298. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Mid Channel)

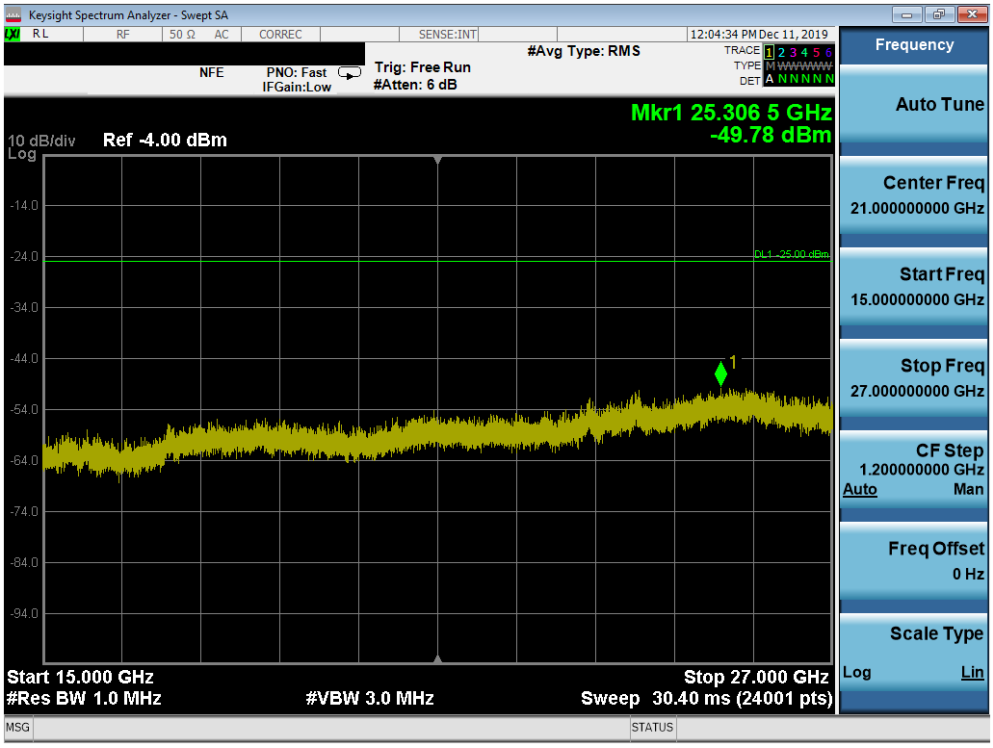


Table 7-299. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Mid Channel)

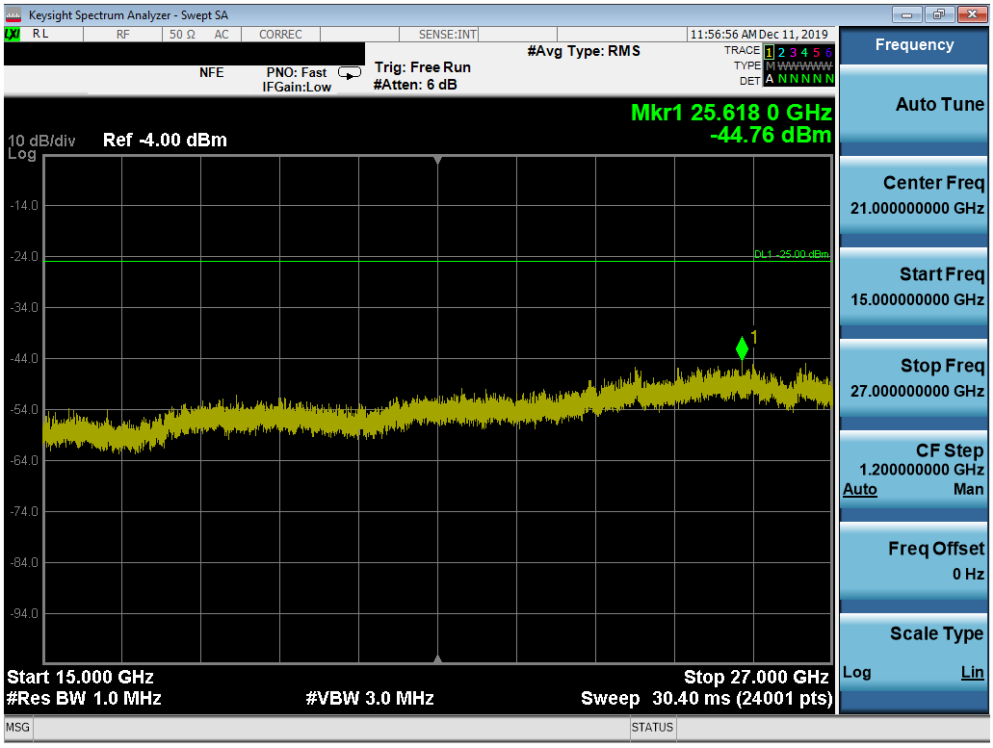


Table 7-300. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Mid Channel)

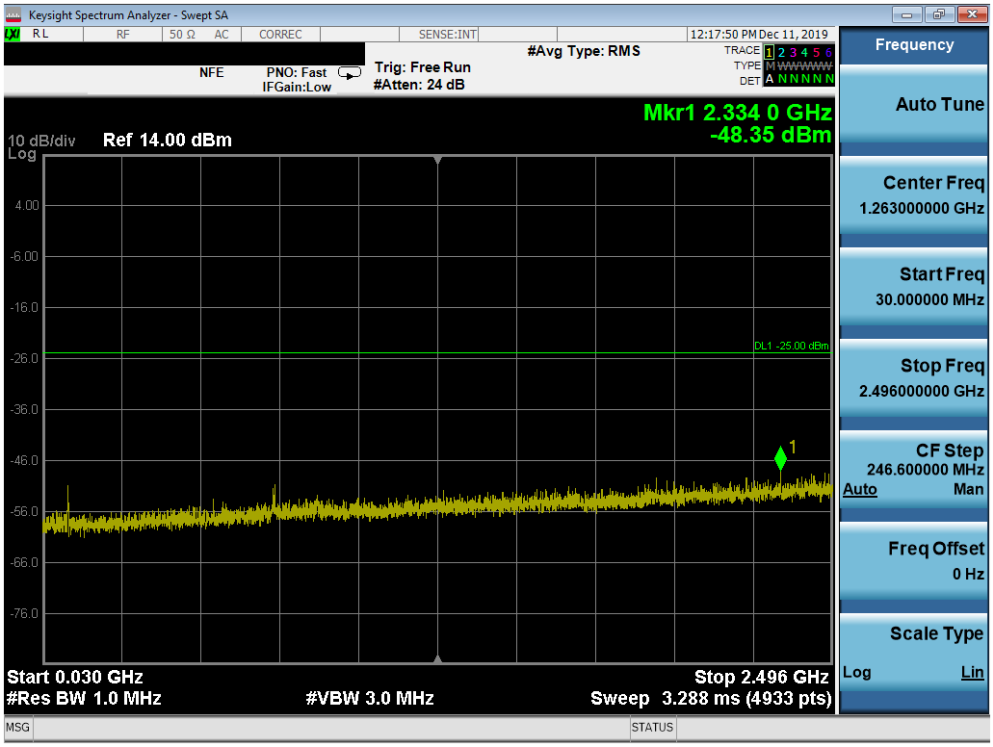


Table 7-301. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – High Channel)

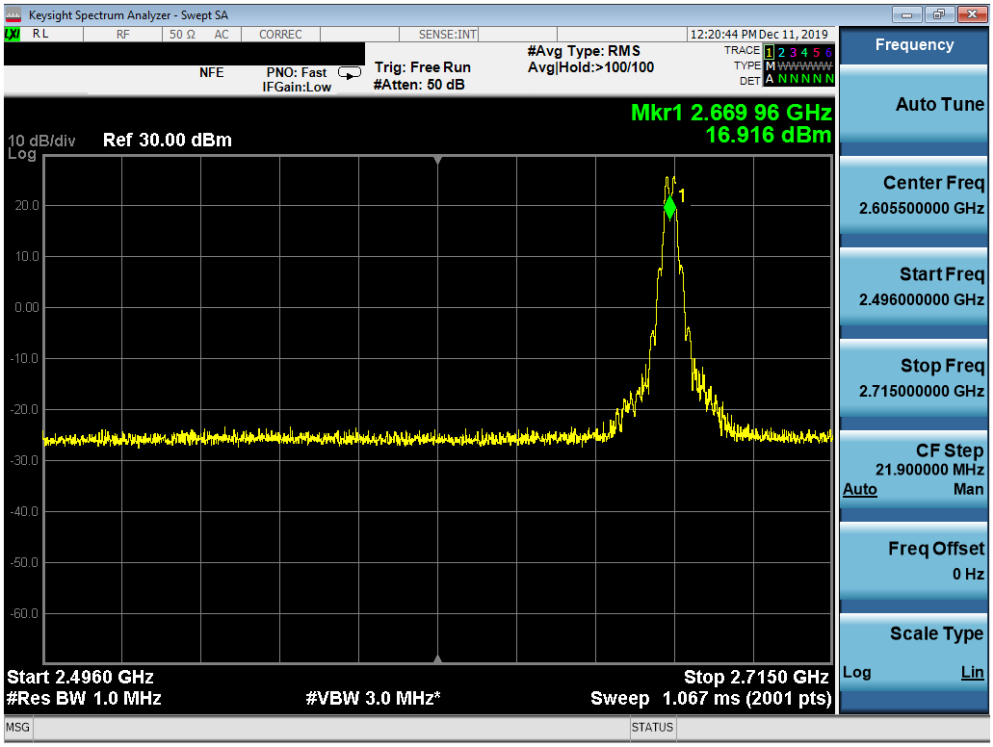


Table 7-302. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – High Channel)

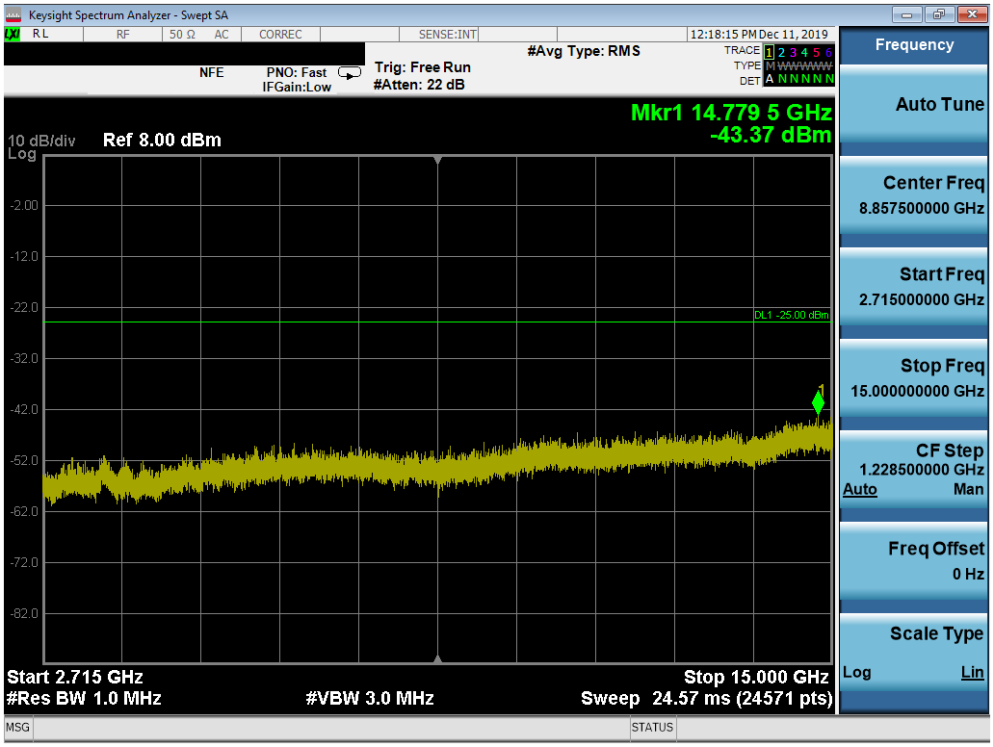


Table 7-303. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – High Channel)

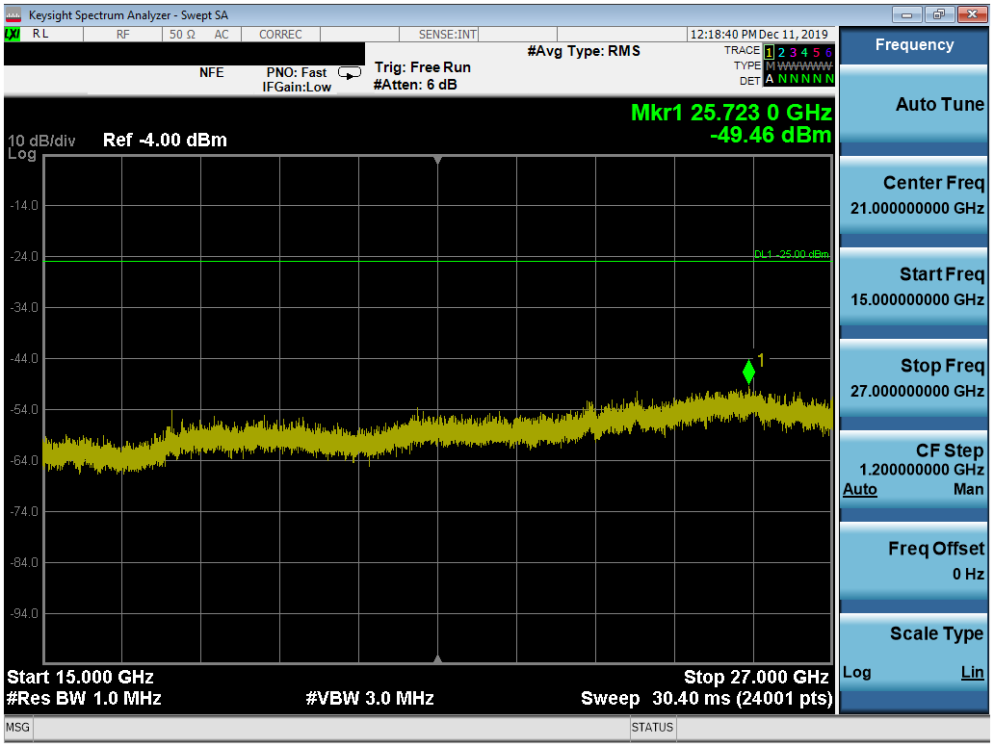
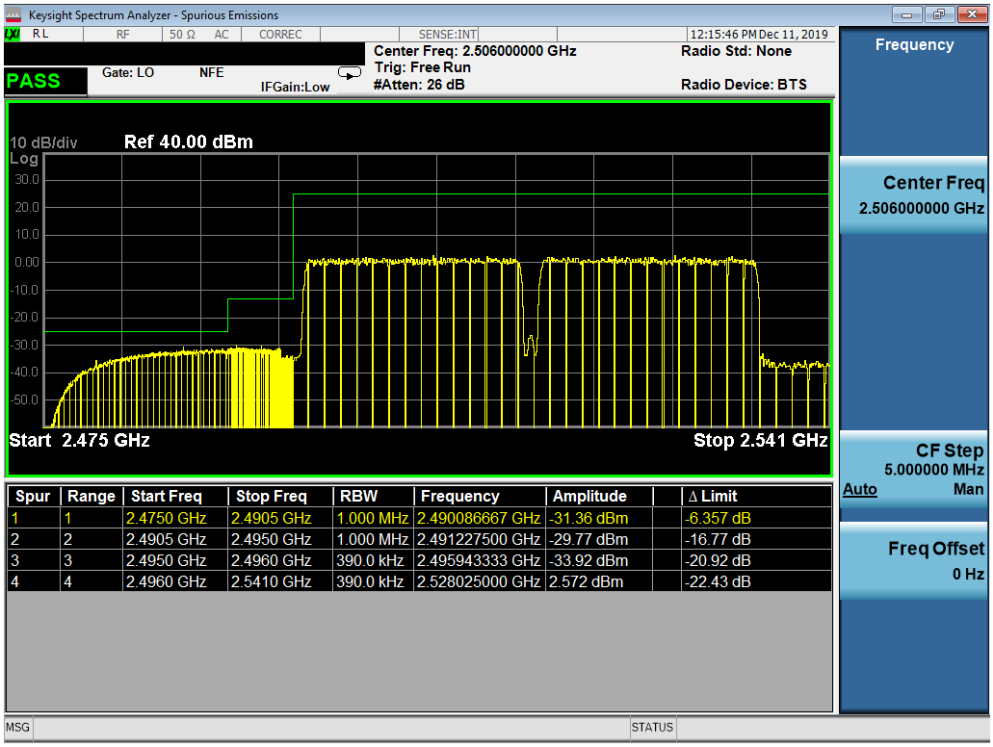
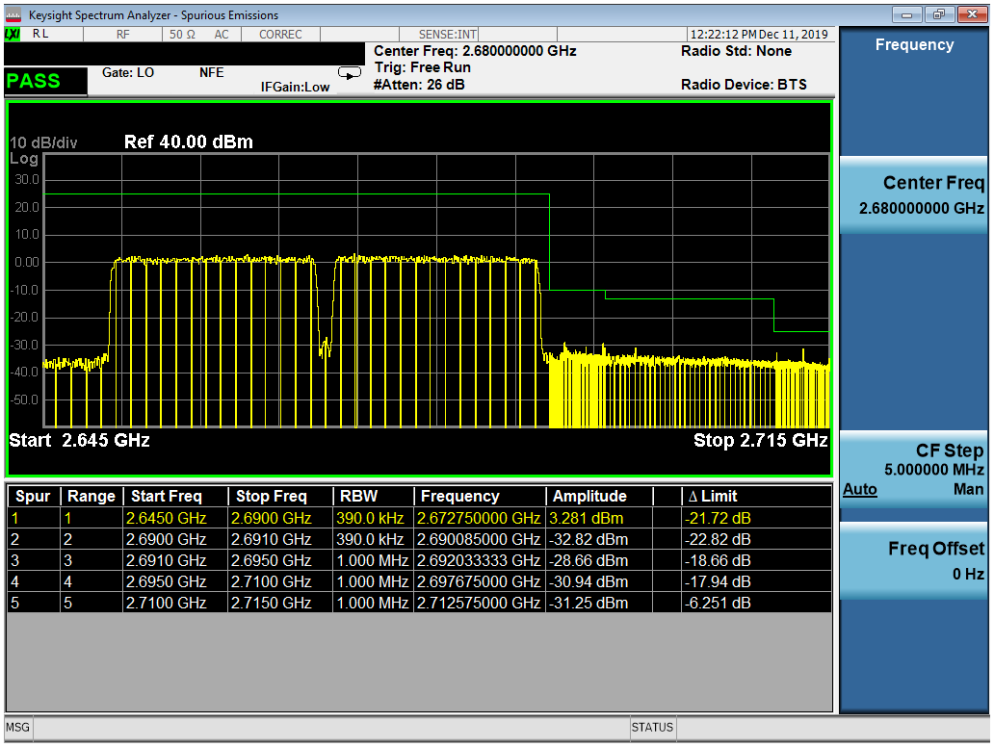


Table 7-304. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – High Channel)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490086667 GHz	-31.36 dBm	-6.357 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.491227500 GHz	-29.77 dBm	-16.77 dB
3	3	2.4950 GHz	2.4960 GHz	390.0 kHz	2.495943333 GHz	-33.92 dBm	-20.92 dB
4	4	2.4960 GHz	2.5410 GHz	390.0 kHz	2.528025000 GHz	2.572 dBm	-22.43 dB

Table 7-305. Lower ACP Plot (Band 41 QPSK – Left Carrier:20 MHz Right Carrier:20 MHz – Full RB)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6450 GHz	2.6900 GHz	390.0 kHz	2.672750000 GHz	3.281 dBm	-21.72 dB
2	2	2.6900 GHz	2.6910 GHz	390.0 kHz	2.690085000 GHz	-32.82 dBm	-22.82 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.692033333 GHz	-28.66 dBm	-18.66 dB
4	4	2.6950 GHz	2.7100 GHz	1.000 MHz	2.697675000 GHz	-30.94 dBm	-17.94 dB
5	5	2.7100 GHz	2.7150 GHz	1.000 MHz	2.712575000 GHz	-31.25 dBm	-6.251 dB

Table 7-306. Upper ACP Plot (Band 41 QPSK – Left Carrier:20 MHz Right Carrier:20 MHz – Full RB)

7.7 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

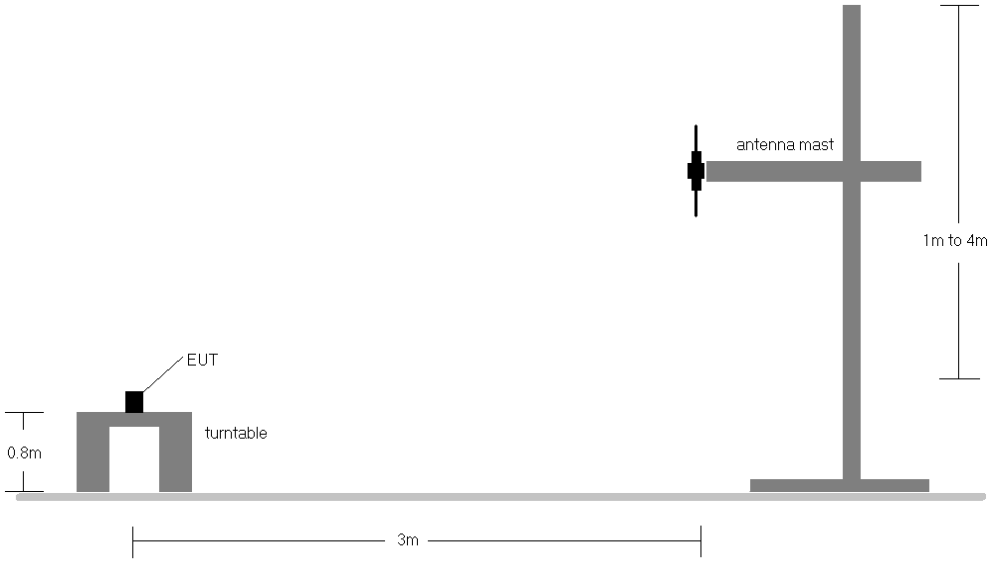


Figure 7-6. Radiated Test Setup <1GHz

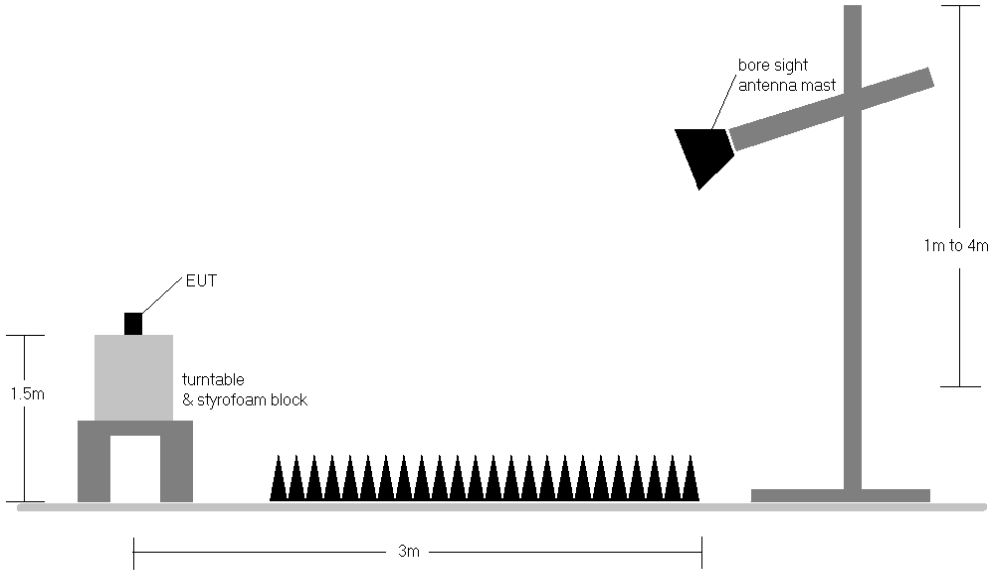


Figure 7-7. Radiated Test Setup >1GHz

Test Settings

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured is:

ERP/EIRP = PMeas – LC + GT

Where:

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm)

PMeas = measured transmitter output power or PSD, in dBW or dBm

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

Figure 7-8. ERP/EIRP Measurement Setup

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) The configuration with the the strongest ERP & EIRP was found to be the “Open” configuration. “Closed” configurations were measured and included in the tables and denoted with the word “(Closed)” in the Channel Bandwidth column.

3) This unit was tested with its standard battery.

4) The Level (dBm) readings in the table were taken with a correction table loaded into the base station simulator. The correction table was used to account for the signal attenuation in the connecting cable between the transmitter and antenna.

5) The Ant. Gains (GT) are listed in dBi.

7.7.1 Radiated Power (ERP/EIRP)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	115	291	1 / 5	14.02	3.40	15.27	0.034	34.77	-19.50	17.42	0.055	36.99	-19.57
707.50	1.4	QPSK	H	125	292	1 / 5	14.43	3.65	15.93	0.039	34.77	-18.84	18.08	0.064	36.99	-18.91
715.30	1.4	QPSK	H	121	295	1 / 5	14.66	3.70	**16.21**	0.042	34.77	-18.56	**18.36**	0.069	36.99	-18.63
715.30	1.4	16-QAM	H	121	295	1 / 5	13.61	3.70	**15.16**	0.033	34.77	-19.61	**17.31**	0.054	36.99	-19.68
715.30	1.4	64-QAM	H	121	295	1 / 5	12.50	3.70	**14.05**	0.025	34.77	-20.72	**16.20**	0.042	36.99	-20.79
700.50	3	QPSK	H	110	288	1 / 14	14.01	3.40	15.26	0.034	34.77	-19.51	17.41	0.055	36.99	-19.58
707.50	3	QPSK	H	133	295	1 / 14	14.88	3.65	16.38	0.043	34.77	-18.39	18.53	0.071	36.99	-18.46
714.50	3	QPSK	H	116	292	1 / 14	14.89	3.70	**16.44**	0.044	34.77	-18.33	**18.59**	0.072	36.99	-18.40
714.50	3	16-QAM	H	116	292	1 / 14	13.80	3.70	**15.35**	0.034	34.77	-19.42	**17.50**	0.056	36.99	-19.49
714.50	3	64-QAM	H	116	292	1 / 14	12.83	3.70	**14.38**	0.027	34.77	-20.39	**16.53**	0.045	36.99	-20.46

Table 7-6. ERP Data (Band 12 - OPEN)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
701.50	5	QPSK	H	111	289	1 / 24	14.07	3.40	15.32	0.034	34.77	-19.45	17.47	0.056	36.99	-19.52
707.50	5	QPSK	H	121	290	1 / 24	14.75	3.65	16.25	0.042	34.77	-18.52	18.40	0.069	36.99	-18.59
713.50	5	QPSK	H	124	293	1 / 24	14.86	3.70	**16.41**	0.044	34.77	-18.36	**18.56**	0.072	36.99	-18.43
713.50	5	16-QAM	H	124	293	1 / 24	14.04	3.70	**15.59**	0.036	34.77	-19.18	**17.74**	0.059	36.99	-19.25
713.50	5	64-QAM	H	124	293	1 / 24	12.97	3.70	**14.52**	0.028	34.77	-20.25	**16.67**	0.046	36.99	-20.32
704.00	10	QPSK	H	111	289	1 / 0	14.82	3.50	16.17	0.041	34.77	-18.60	18.32	0.068	36.99	-18.67
707.50	10	QPSK	H	121	290	1 / 49	14.88	3.65	16.38	0.043	34.77	-18.39	18.53	0.071	36.99	-18.46
711.00	10	QPSK	H	124	293	1 / 49	15.04	3.70	**16.59**	**0.046**	34.77	-18.18	**18.74**	**0.075**	36.99	-18.25
711.00	10	16-QAM	H	124	293	1 / 49	14.34	3.70	**15.89**	0.039	34.77	-18.88	**18.04**	0.064	36.99	-18.95
711.00	10	64-QAM	H	124	293	1 / 0	13.10	3.70	**14.65**	0.029	34.77	-20.12	**16.80**	0.048	36.99	-20.19
711.00	10	QPSK	V	168	315	1 / 49	13.81	3.50	15.16	0.033	34.77	-19.61	17.31	0.054	36.99	-19.68
711.00	10 (WCP)	QPSK	H	135	290	1 / 49	9.62	3.70	11.17	0.013	34.77	-23.60	13.32	0.021	36.99	-23.67
711.00	10 (Closed)	QPSK	V	183	189	1 / 49	9.20	3.50	10.55	**0.011**	34.77	-24.22	12.70	**0.019**	36.99	-24.29

Table 7-7. ERP Data (Band 12/17 - OPEN)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	109	303	1 / 0	11.47	5.80	15.12	0.033	34.77	-19.65	17.27	0.053	36.99	-19.72
782.00	5	QPSK	H	111	301	1 / 0	11.80	5.80	**15.45**	0.035	34.77	-19.32	**17.60**	0.058	36.99	-19.39
784.50	5	QPSK	H	108	300	1 / 0	11.46	5.90	15.21	0.033	34.77	-19.56	17.36	0.054	36.99	-19.63
782.00	5	16-QAM	H	111	301	1 / 0	10.86	5.80	**14.51**	0.028	34.77	-20.26	**16.66**	0.046	36.99	-20.33
782.00	5	64-QAM	H	111	301	1 / 0	9.64	5.80	**13.29**	0.021	34.77	-21.48	**15.44**	0.035	36.99	-21.55
782.00	10	QPSK	H	100	306	1 / 0	11.96	5.80	**15.61**	**0.036**	34.77	-19.16	**17.76**	**0.060**	36.99	-19.23
782.00	10	16-QAM	H	100	306	1 / 0	10.76	5.80	**14.41**	0.028	34.77	-20.36	**16.56**	0.045	36.99	-20.43
782.00	10	64-QAM	H	100	306	1 / 0	9.48	5.80	**13.13**	0.021	34.77	-21.64	**15.28**	0.034	36.99	-21.71
782.00	10	QPSK	V	147	246	1 / 0	11.31	5.80	14.96	0.031	34.77	-19.81	17.11	0.051	36.99	-19.88
782.00	10 (WCP)	QPSK	H	138	301	1 / 0	5.33	5.80	8.98	0.008	34.77	-25.79	11.13	0.013	36.99	-25.86
782.00	10 (Closed)	QPSK	V	101	169	1 / 0	5.95	5.80	9.60	**0.009**	34.77	-25.17	11.75	**0.015**	36.99	-25.24

Table 7-8. ERP Data (Band 13)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	142	251	1 / 0	11.84	6.30	15.99	0.040	38.45	-22.46	18.14	0.065	40.61	-22.47
836.50	1.4	QPSK	V	173	258	1 / 0	12.27	6.40	**16.52**	0.045	38.45	-21.93	**18.67**	0.074	40.61	-21.94
848.30	1.4	QPSK	V	161	254	1 / 0	11.54	6.50	15.89	0.039	38.45	-22.56	18.04	0.064	40.61	-22.57
836.50	1.4	16-QAM	V	173	258	1 / 0	11.07	6.40	**15.32**	0.034	38.45	-23.13	**17.47**	0.056	40.61	-23.14
836.50	1.4	64-QAM	V	173	258	1 / 0	10.31	6.40	**14.56**	0.029	38.45	-23.89	**16.71**	0.047	40.61	-23.90
825.50	3	QPSK	V	151	249	1 / 0	12.30	6.30	16.45	0.044	38.45	-22.00	18.60	0.072	40.61	-22.01
836.50	3	QPSK	V	155	253	1 / 0	12.38	6.40	**16.63**	0.046	38.45	-21.82	**18.78**	0.076	40.61	-21.83
847.50	3	QPSK	V	168	257	1 / 0	11.88	6.50	16.23	0.042	38.45	-22.22	18.38	0.069	40.61	-22.23
836.50	3	16-QAM	V	155	253	1 / 0	11.46	6.40	**15.71**	0.037	38.45	-22.74	**17.86**	0.061	40.61	-22.75
836.50	3	64-QAM	V	155	253	1 / 0	10.67	6.40	**14.92**	0.031	38.45	-23.53	**17.07**	0.051	40.61	-23.54
826.50	5	QPSK	V	130	250	1 / 0	12.36	6.30	16.51	0.045	38.45	-21.94	18.66	0.073	40.61	-21.95
836.50	5	QPSK	V	150	252	1 / 0	12.43	6.40	**16.68**	0.047	38.45	-21.77	**18.83**	0.076	40.61	-21.78
846.50	5	QPSK	V	161	258	1 / 0	11.95	6.50	16.30	0.043	38.45	-22.15	18.45	0.070	40.61	-22.16
836.50	5	16-QAM	V	150	252	1 / 0	11.64	6.40	**15.89**	0.039	38.45	-22.56	**18.04**	0.064	40.61	-22.57
836.50	5	64-QAM	V	150	252	1 / 0	10.77	6.40	**15.02**	0.032	38.45	-23.43	**17.17**	0.052	40.61	-23.44
829.00	10	QPSK	V	137	251	1 / 49	12.43	6.30	16.58	0.045	38.45	-21.87	18.73	0.075	40.61	-21.88
836.50	10	QPSK	V	147	250	1 / 0	12.55	6.40	**16.80**	0.048	38.45	-21.65	**18.95**	**0.079**	40.61	-21.66
844.00	10	QPSK	V	152	256	1 / 0	11.97	6.40	16.22	0.042	38.45	-22.23	18.37	0.069	40.61	-22.24
836.50	10	16-QAM	V	147	250	1 / 0	11.88	6.40	**16.13**	0.041	38.45	-22.32	**18.28**	0.067	40.61	-22.33
836.50	10	64-QAM	V	147	250	1 / 0	10.97	6.40	**15.22**	0.033	38.45	-23.23	**17.37**	0.055	40.61	-23.24
831.50	15	QPSK	V	141	250	1 / 74	12.37	6.35	16.57	0.045	38.45	-21.88	18.72	0.074	40.61	-21.89
836.50	15	QPSK	V	141	251	1 / 0	12.50	6.40	**16.75**	0.047	38.45	-21.70	**18.90**	0.078	40.61	-21.71
841.50	15	QPSK	V	155	257	1 / 0	12.04	6.40	16.29	0.043	38.45	-22.16	18.44	0.070	40.61	-22.17
836.50	15	16-QAM	V	141	251	1 / 0	11.80	6.40	**16.05**	0.040	38.45	-22.40	**18.20**	0.066	40.61	-22.41
836.50	15	64-QAM	V	141	251	1 / 0	10.94	6.40	**15.19**	0.033	38.45	-23.26	**17.34**	0.054	40.61	-23.27
836.50	10	QPSK	H	100	303	1 / 0	11.66	6.40	15.91	0.039	38.45	-22.54	18.06	0.064	40.61	-22.55
836.50	10 (WCP)	QPSK	V	140	304	1 / 0	9.90	6.40	14.15	0.026	38.45	-24.30	16.30	0.043	40.61	-24.31
836.50	10 (Closed)	QPSK	H	205	353	1 / 0	7.32	6.40	11.57	0.014	38.45	-26.88	13.72	0.024	40.61	-26.89

Table 7-9. ERP Data (Band 26/5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
831.50	15	QPSK	V	141	250	1 / 74	12.37	6.35	16.57	0.045	38.45	-21.88	18.72	0.074	40.61	-21.89
836.50	15	QPSK	V	141	251	1 / 0	12.50	6.40	**16.75**	0.047	38.45	-21.70	**18.90**	0.078	40.61	-21.71
841.50	15	QPSK	V	155	257	1 / 0	12.04	6.40	16.29	0.043	38.45	-22.16	18.44	0.070	40.61	-22.17
836.50	15	16-QAM	V	141	251	1 / 0	11.80	6.40	**16.05**	0.040	38.45	-22.40	**18.20**	0.066	40.61	-22.41
836.50	15	64-QAM	V	141	251	1 / 0	10.94	6.40	**15.19**	0.033	38.45	-23.26	**17.34**	0.054	40.61	-23.27

Table 7-10. ERP Data (Band 26)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	138	306	1 / 0	12.91	9.35	22.26	0.168	30.00	-7.74
1745.00	1.4	QPSK	V	129	316	1 / 0	14.10	9.11	**23.21**	0.209	30.00	-6.79
1779.30	1.4	QPSK	V	128	307	1 / 0	13.75	9.17	22.92	0.196	30.00	-7.08
1745.00	1.4	16-QAM	V	129	316	1 / 0	13.33	9.11	**22.44**	0.175	30.00	-7.56
1745.00	1.4	64-QAM	V	129	316	1 / 0	12.00	9.11	**21.11**	0.129	30.00	-8.89
1711.50	3	QPSK	V	141	302	1 / 0	13.07	9.34	22.41	0.174	30.00	-7.59
1745.00	3	QPSK	V	149	314	1 / 0	14.03	9.11	**23.14**	0.206	30.00	-6.86
1778.50	3	QPSK	V	131	303	1 / 0	13.82	9.17	22.99	0.199	30.00	-7.01
1745.00	3	16-QAM	V	149	314	1 / 0	13.20	9.11	**22.31**	0.170	30.00	-7.69
1745.00	3	64-QAM	V	149	314	1 / 0	12.09	9.11	**21.20**	0.132	30.00	-8.80
1712.50	5	QPSK	V	141	300	1 / 0	13.17	9.34	22.51	0.178	30.00	-7.49
1745.00	5	QPSK	V	142	310	1 / 0	14.09	9.11	**23.20**	0.209	30.00	-6.80
1777.50	5	QPSK	V	139	308	1 / 0	13.77	9.16	22.93	0.197	30.00	-7.07
1745.00	5	16-QAM	V	142	310	1 / 0	12.86	9.11	**21.97**	0.157	30.00	-8.03
1745.00	5	64-QAM	V	142	310	1 / 0	11.87	9.11	**20.98**	0.125	30.00	-9.02
1715.00	10	QPSK	V	148	302	1 / 0	13.26	9.32	22.58	0.181	30.00	-7.42
1745.00	10	QPSK	V	129	317	1 / 0	14.10	9.11	**23.21**	0.209	30.00	-6.79
1775.00	10	QPSK	V	141	307	1 / 0	13.90	9.16	23.06	0.202	30.00	-6.94
1745.00	10	16-QAM	V	129	317	1 / 0	13.09	9.11	**22.20**	0.166	30.00	-7.80
1745.00	10	64-QAM	V	129	317	1 / 0	12.13	9.11	**21.24**	0.133	30.00	-8.76
1717.50	15	QPSK	V	148	303	1 / 0	12.95	9.30	22.25	0.168	30.00	-7.75
1745.00	15	QPSK	V	139	312	1 / 0	14.13	9.11	**23.24**	0.211	30.00	-6.76
1772.50	15	QPSK	V	131	307	1 / 0	13.86	9.15	23.01	0.200	30.00	-6.99
1745.00	15	16-QAM	V	139	312	1 / 0	13.13	9.11	**22.24**	0.167	30.00	-7.76
1745.00	15	64-QAM	V	139	312	1 / 0	12.27	9.11	**21.38**	0.137	30.00	-8.62
1720.00	20	QPSK	V	143	304	1 / 99	14.02	9.28	23.30	0.214	30.00	-6.70
1745.00	20	QPSK	V	136	315	1 / 0	14.21	9.11	**23.32**	**0.215**	30.00	-6.68
1770.00	20	QPSK	V	129	305	1 / 0	13.89	9.14	23.03	0.201	30.00	-6.97
1745.00	20	16-QAM	V	136	315	1 / 0	13.22	9.11	**22.33**	0.171	30.00	-7.67
1745.00	20	64-QAM	V	136	315	1 / 0	12.00	9.11	**21.11**	0.129	30.00	-8.89
1745.00	20	QPSK	H	130	249	1 / 99	12.01	9.23	21.24	0.133	30.00	-8.76
1745.00	20 (WCP)	QPSK	V	180	293	1 / 0	9.48	9.11	18.59	0.072	30.00	-11.41
1745.00	20 (Closed)	QPSK	H	115	119	1 / 0	9.41	9.11	18.52	**0.071**	30.00	-11.48

Table 7-11. EIRP Data (Band 66/4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	142	53	1 / 0	12.38	9.48	21.86	0.154	33.01	-11.15
1882.50	1.4	QPSK	H	139	50	1 / 0	12.81	9.94	**22.75**	0.188	33.01	-10.27
1914.30	1.4	QPSK	H	131	51	1 / 0	11.71	10.29	22.00	0.159	33.01	-11.01
1882.50	1.4	16-QAM	H	139	50	1 / 0	11.58	9.94	**21.52**	0.142	33.01	-11.50
1882.50	1.4	64-QAM	H	139	50	1 / 0	10.38	9.94	**20.32**	0.108	33.01	-12.70
1851.50	3	QPSK	H	142	51	1 / 0	11.85	9.50	21.35	0.136	33.01	-11.66
1882.50	3	QPSK	H	145	48	1 / 0	12.79	9.94	**22.73**	0.187	33.01	-10.29
1913.50	3	QPSK	H	136	53	1 / 0	11.43	10.29	21.72	0.148	33.01	-11.30
1882.50	3	16-QAM	H	145	48	1 / 0	11.52	9.94	**21.46**	0.140	33.01	-11.56
1882.50	3	64-QAM	H	145	48	1 / 0	10.29	9.94	**20.23**	0.105	33.01	-12.79
1852.50	5	QPSK	H	145	54	1 / 0	11.88	9.51	21.39	0.138	33.01	-11.62
1882.50	5	QPSK	H	138	45	1 / 0	12.62	9.94	**22.56**	0.180	33.01	-10.46
1912.50	5	QPSK	H	135	51	1 / 0	11.64	10.28	21.92	0.156	33.01	-11.09
1882.50	5	16-QAM	H	138	45	1 / 0	11.46	9.94	**21.40**	0.138	33.01	-11.62
1882.50	5	64-QAM	H	138	45	1 / 0	10.12	9.94	**20.06**	0.101	33.01	-12.96
1855.00	10	QPSK	H	142	53	1 / 0	11.91	9.55	21.46	0.140	33.01	-11.55
1882.50	10	QPSK	H	139	50	1 / 0	12.81	9.94	**22.75**	0.188	33.01	-10.27
1910.00	10	QPSK	H	131	51	1 / 0	11.55	10.26	21.81	0.152	33.01	-11.20
1882.50	10	16-QAM	H	139	50	1 / 0	11.56	9.94	**21.50**	0.141	33.01	-11.52
1882.50	10	64-QAM	H	139	50	1 / 0	10.25	9.94	**20.19**	0.104	33.01	-12.83
1857.50	15	QPSK	H	149	58	1 / 0	11.76	9.58	21.34	0.136	33.01	-11.67
1882.50	15	QPSK	H	147	63	1 / 74	13.12	9.94	**23.06**	0.202	33.01	-9.96
1907.50	15	QPSK	H	152	59	1 / 0	11.46	10.24	21.70	0.148	33.01	-11.31
1882.50	15	16-QAM	H	147	63	1 / 0	11.70	9.94	**21.64**	0.146	33.01	-11.38
1882.50	15	64-QAM	H	147	63	1 / 0	10.92	9.94	**20.86**	0.122	33.01	-12.16
1860.00	20	QPSK	H	153	56	1 / 0	12.47	9.62	22.09	0.162	33.01	-10.92
1882.50	20	QPSK	H	151	43	1 / 0	13.45	9.94	**23.39**	**0.218**	33.01	-9.63
1905.00	20	QPSK	H	138	54	1 / 0	12.05	10.22	22.27	0.169	33.01	-10.74
1882.50	20	16-QAM	H	151	43	1 / 0	12.46	9.94	**22.40**	0.174	33.01	-10.62
1882.50	20	64-QAM	H	151	43	1 / 0	11.44	9.94	**21.38**	0.137	33.01	-11.64
1882.50	20	QPSK	V	116	183	1 / 0	10.70	9.94	20.64	0.116	33.01	-12.38
1882.50	20 (WCP)	QPSK	H	138	21	1 / 0	7.30	9.94	17.24	0.053	33.01	-15.78
1882.50	20 (Closed)	QPSK	H	107	182	1 / 0	9.38	9.94	19.32	**0.085**	33.01	-13.70

Table 7-12. EIRP Data (Band 25/2)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	162	195	1 / 0	11.88	10.31	**22.19**	0.166	23.98	-1.79
2312.50	5	QPSK	H	161	194	1 / 0	11.62	10.31	21.93	0.156	23.98	-2.05
2307.50	5	16-QAM	H	162	195	1 / 0	10.92	10.31	21.23	0.133	23.98	-2.75
2307.50	5	64-QAM	H	162	195	1 / 0	9.47	10.31	**19.78**	0.095	23.98	-4.20
2310.00	10	QPSK	H	159	197	1 / 0	11.93	10.31	**22.24**	**0.167**	23.98	-1.74
2310.00	10	16-QAM	H	159	197	1 / 0	11.10	10.31	21.41	0.138	23.98	-2.57
2310.00	10	64-QAM	H	159	197	1 / 0	9.61	10.31	19.92	0.098	23.98	-4.06
2310.00	10	QPSK	V	119	256	1 / 0	11.53	10.31	21.84	0.153	23.98	-2.14
2310.00	10 (WCP)	QPSK	H	117	220	1 / 0	10.85	10.31	21.16	0.131	23.98	-2.82
2310.00	10 (Closed)	QPSK	H	125	343	1 / 0	10.07	10.31	**20.38**	**0.109**	23.98	-3.60

Table 7-13. EIRP Data (Band 30)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	V	111	271	1 / 0	12.47	9.40	21.87	0.154	33.01	-11.14
2593.00	5	QPSK	V	110	295	1 / 0	12.99	9.56	**22.55**	0.180	33.01	-10.46
2687.50	5	QPSK	V	117	283	1 / 0	12.33	9.69	22.02	0.159	33.01	-10.99
2593.00	5	16-QAM	V	110	295	1 / 0	12.07	9.56	**21.63**	0.146	33.01	-11.38
2593.00	5	64-QAM	V	110	295	1 / 0	11.12	9.56	**20.68**	0.117	33.01	-12.33
2501.00	10	QPSK	V	113	275	1 / 0	12.28	9.40	21.68	0.147	33.01	-11.33
2593.00	10	QPSK	V	107	297	1 / 0	13.07	9.56	**22.63**	0.183	33.01	-10.38
2685.00	10	QPSK	V	114	295	1 / 0	12.35	9.68	22.03	0.160	33.01	-10.98
2593.00	10	16-QAM	V	107	297	1 / 0	12.13	9.56	**21.69**	0.148	33.01	-11.32
2593.00	10	64-QAM	V	107	297	1 / 0	11.25	9.56	**20.81**	0.120	33.01	-12.20
2503.50	15	QPSK	V	115	279	1 / 0	12.42	9.39	21.81	0.152	33.01	-11.20
2593.00	15	QPSK	V	110	287	1 / 0	13.35	9.56	**22.91**	0.195	33.01	-10.10
2682.50	15	QPSK	V	117	291	1 / 0	12.45	9.68	22.13	0.163	33.01	-10.88
2593.00	15	16-QAM	V	110	287	1 / 0	12.41	9.56	**21.97**	0.157	33.01	-11.04
2593.00	15	64-QAM	V	110	287	1 / 0	11.29	9.56	**20.85**	0.122	33.01	-12.16
2506.00	20	QPSK	V	104	269	1 / 0	12.42	9.39	21.81	0.152	33.01	-11.20
2593.00	20	QPSK	V	107	271	1 / 0	13.65	9.56	**23.21**	**0.209**	33.01	-9.80
2680.00	20	QPSK	V	105	270	1 / 0	12.48	9.68	22.16	0.164	33.01	-10.85
2593.00	20	16-QAM	V	107	271	1 / 0	12.57	9.56	**22.13**	0.163	33.01	-10.88
2593.00	20	64-QAM	V	107	271	1 / 0	11.74	9.56	**21.30**	0.135	33.01	-11.71
2593.00	20	QPSK	H	167	56	1 / 0	10.80	9.56	20.36	0.109	33.01	-12.65
2593.00	20 (WCP)	QPSK	V	107	273	1 / 0	12.07	9.56	21.63	0.146	33.01	-11.38
2593.00	20 (Closed)	QPSK	V	275	284	1 / 0	8.39	9.56	**17.95**	**0.062**	33.01	-15.06

Table 7-14. EIRP Data (Band 41 – PC3)

7.8 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points ≥ 2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

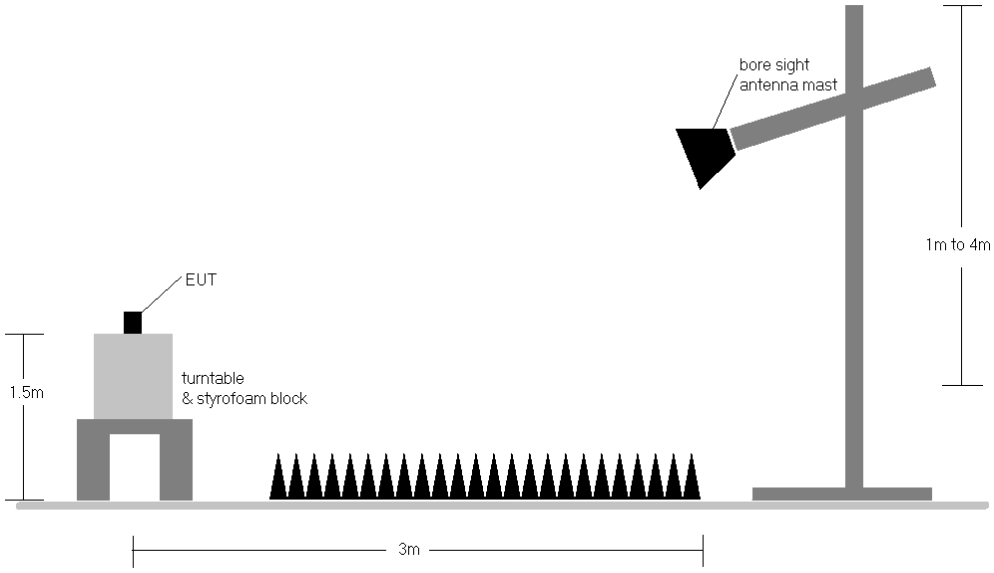


Figure 7-9. Test Instrument & Measurement Setup

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

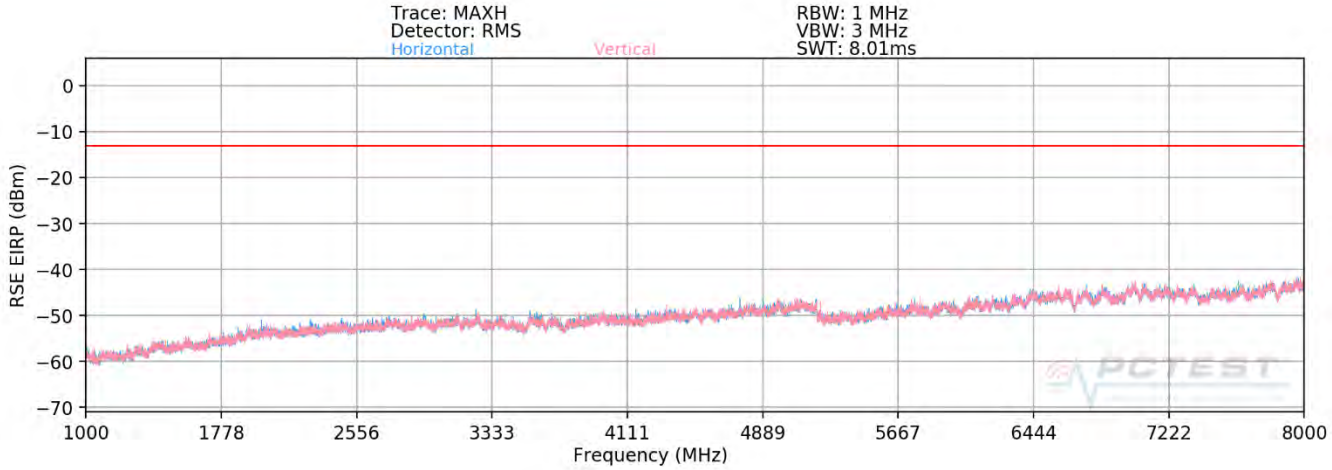
2) This unit was tested with its standard battery.

3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

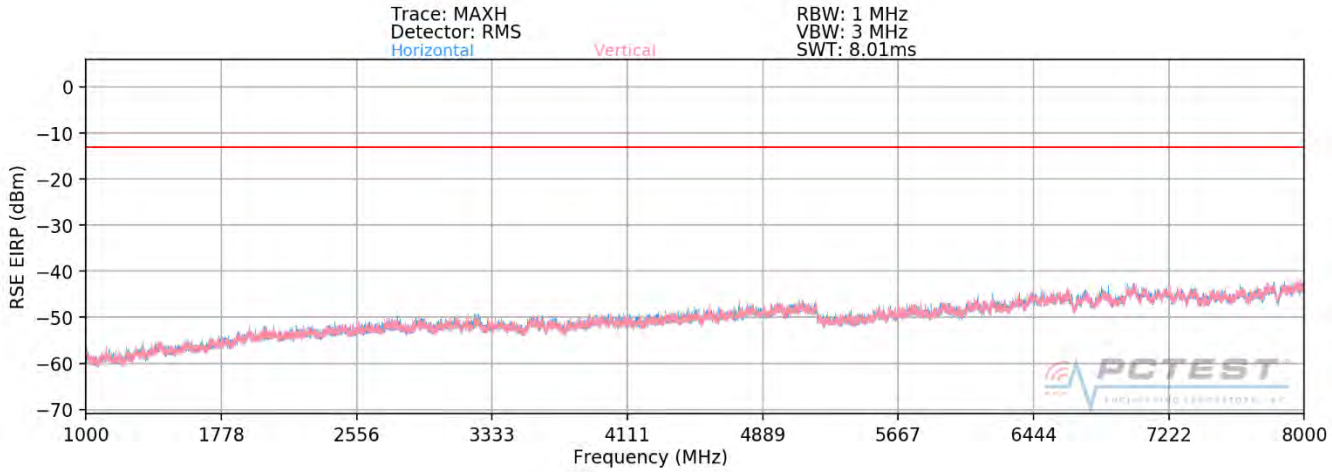
4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

7.8.1 Radiated Spurious Emissions Measurements
Band 12/17



Plot 7-307. Radiated Spurious Plot above 1GHz (Band 12) – OPEN



Plot 7-308. Radiated Spurious Plot above 1GHz (Band 12) - CLOSED

OPERATING FREQUENCY:	704.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	H	100	202	-57.62	2.30	-55.31	-42.3
1408.00	V (Closed)	123	281	-65.59	2.30	-63.28	-50.3
2112.00	H	145	341	-65.55	3.12	-62.42	-49.4
2816.00	H	110	152	-65.73	4.82	-60.91	-47.9
3520.00	H	101	156	-68.99	6.48	-62.51	-49.5
4224.00	H	-	-	-69.44	7.89	-61.55	-48.5
4928.00	H	-	-	-69.76	8.73	-61.04	-48.0

Table 7-15. Radiated Spurious Data (Band 12 – Low Channel)

OPERATING FREQUENCY:	707.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	100	210	-58.88	2.39	-56.49	-43.5
2122.50	H	123	331	-65.18	3.14	-62.04	-49.0
2830.00	H	120	145	-66.50	4.87	-61.63	-48.6
3537.50	H	-	-	-68.88	6.45	-62.43	-49.4
4245.00	H	-	-	-69.51	7.98	-61.54	-48.5

Table 7-16. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY:	711.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	H	101	221	-66.38	2.53	-63.86	-50.9
2133.00	H	176	293	-65.64	3.11	-62.53	-49.5
2844.00	H	-	-	-67.41	4.91	-62.50	-49.5
3555.00	H	-	-	-67.64	6.46	-61.19	-48.2

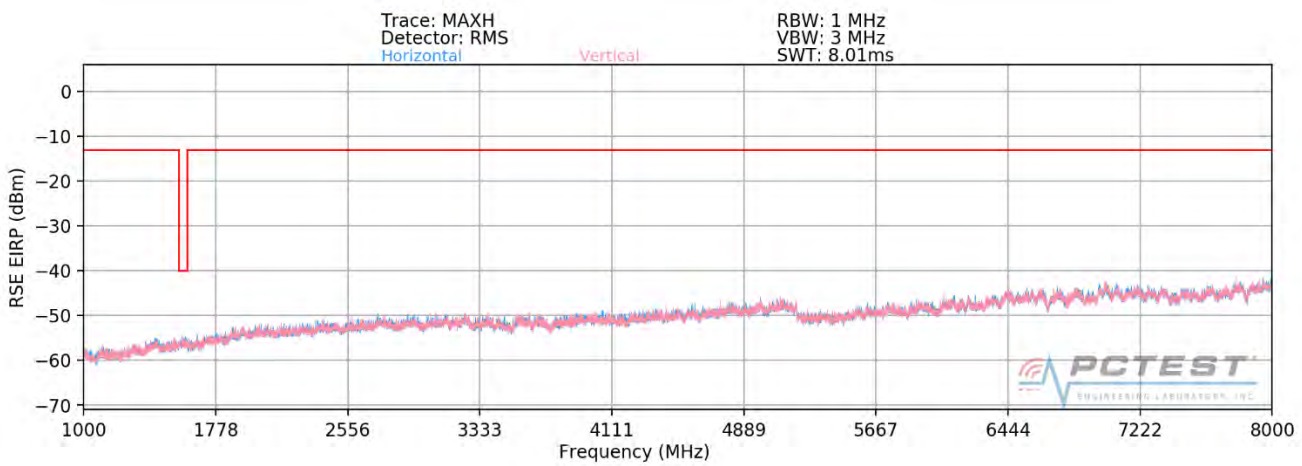
Table 7-17. Radiated Spurious Data (Band 12 – High Channel)

OPERATING FREQUENCY:	704.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

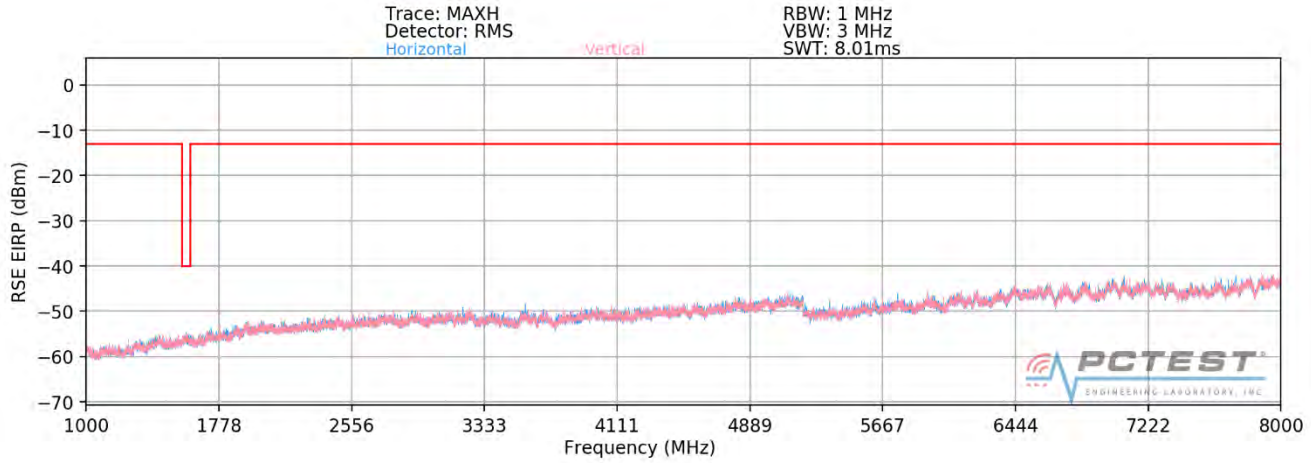
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	H	114	67	-60.70	2.30	-58.39	-45.4
2112.00	H	-	-	-68.03	3.12	-64.90	-51.9
2816.00	H	-	-	-68.31	4.82	-63.49	-50.5

Table 7-18. Radiated Spurious Data with WCP (Band 12 – Low Channel)

Band 13



Plot 7-309. Radiated Spurious Plot above 1GHz (Band 13) – OPEN



Plot 7-310. Radiated Spurious Plot above 1GHz (Band 13) – CLOSED

OPERATING FREQUENCY:	782.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	135	152	-61.73	3.64	-58.10	-45.1
3128.00	H	-	-	-67.13	5.73	-61.39	-48.4
3910.00	H	-	-	-68.97	7.25	-61.72	-48.7

Table 7-19. Radiated Spurious Data (Band 13 – Mid Channel)

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	102	167	-68.38	2.93	-65.45	-25.4
1564.00	V (Closed)	190	10	-68.69	2.93	-65.76	-25.8

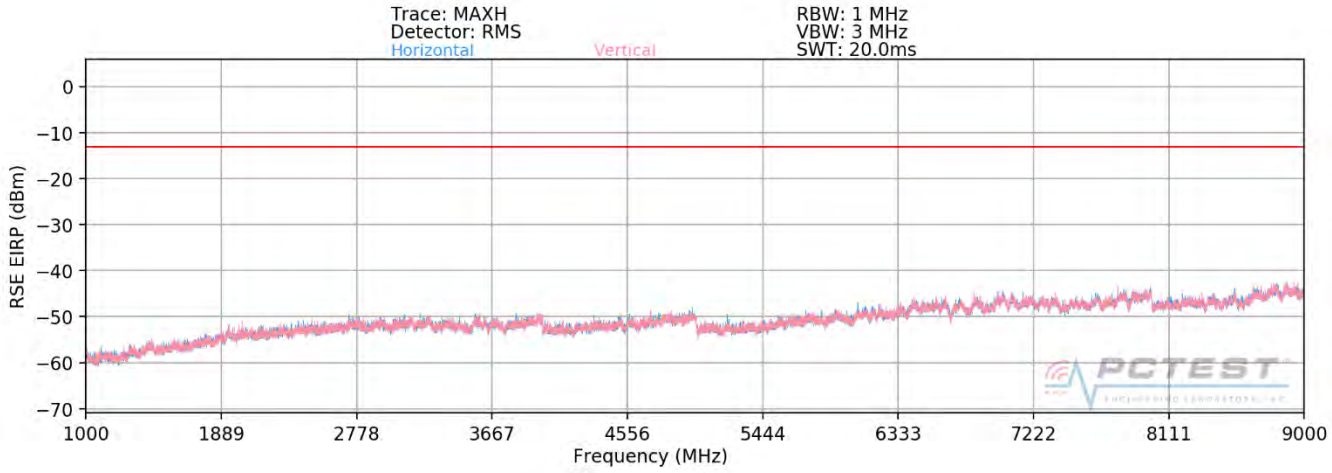
Table 7-20. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY:	782.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

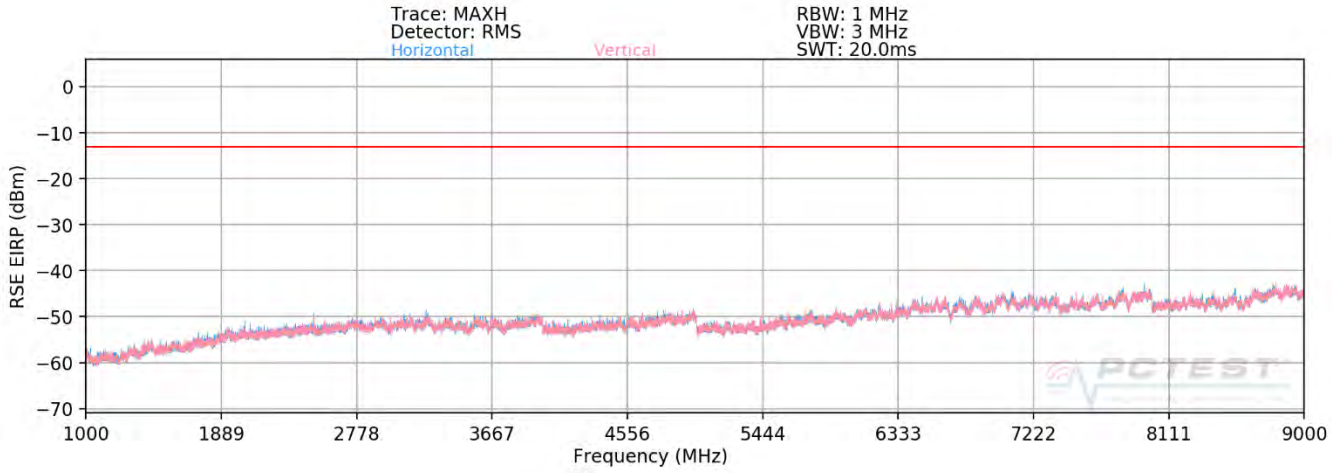
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	135	152	-64.02	3.64	-60.39	-47.4
3128.00	H	-	-	-67.67	5.73	-61.93	-48.9
3910.00	H	-	-	-68.80	7.25	-61.55	-48.5

Table 7-21. Radiated Spurious Data with WCP (Band 13)

Band 26/5



Plot 7-311. Radiated Spurious Plot above 1GHz (Band 26/5) - OPEN



Plot 7-312. Radiated Spurious Plot above 1GHz (Band 26/5) - CLOSED

OPERATING FREQUENCY:	829.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	H	141	122	-67.71	3.12	-64.59	-51.6
2487.00	H	109	154	-60.75	3.87	-56.88	-43.9
3316.00	H	-	-	-67.94	6.01	-61.93	-48.9
4145.00	H	-	-	-69.93	7.77	-62.16	-49.2

Table 7-22. Radiated Spurious Data (Band 26/5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	101	163	-66.15	3.10	-63.05	-50.1
2509.50	H	106	353	-62.29	4.02	-58.27	-45.3
3346.00	H	121	143	-66.99	6.03	-60.97	-48.0
4182.50	H	133	147	-67.27	7.79	-59.48	-46.5
5019.00	H	-	-	-69.57	8.78	-60.79	-47.8
5855.50	H	-	-	-69.49	9.18	-60.31	-47.3

Table 7-23. Radiated Spurious Data (Band 26/5 – Mid Channel)

OPERATING FREQUENCY:	844.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	H	149	130	-68.36	3.18	-65.18	-52.2
2532.00	H	104	309	-60.70	4.10	-56.60	-43.6
2532.00	H (Closed)	109	131	-65.47	4.10	-61.37	-48.4
3376.00	H	-	-	-68.02	6.15	-61.87	-48.9
4220.00	H	-	-	-69.64	7.88	-61.76	-48.8

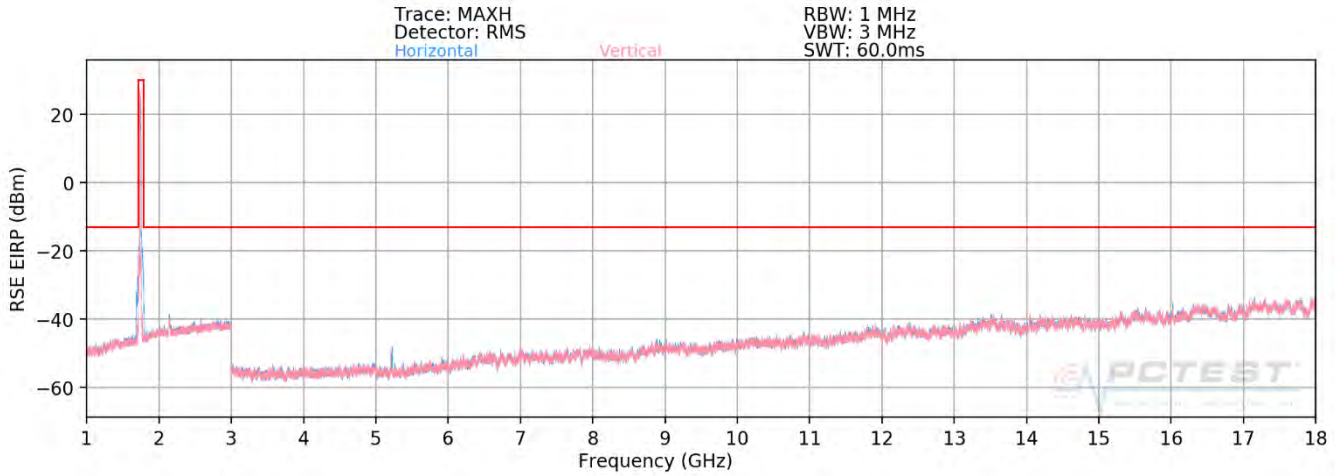
Table 7-24. Radiated Spurious Data (Band 26/5 – High Channel)

OPERATING FREQUENCY:	844.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

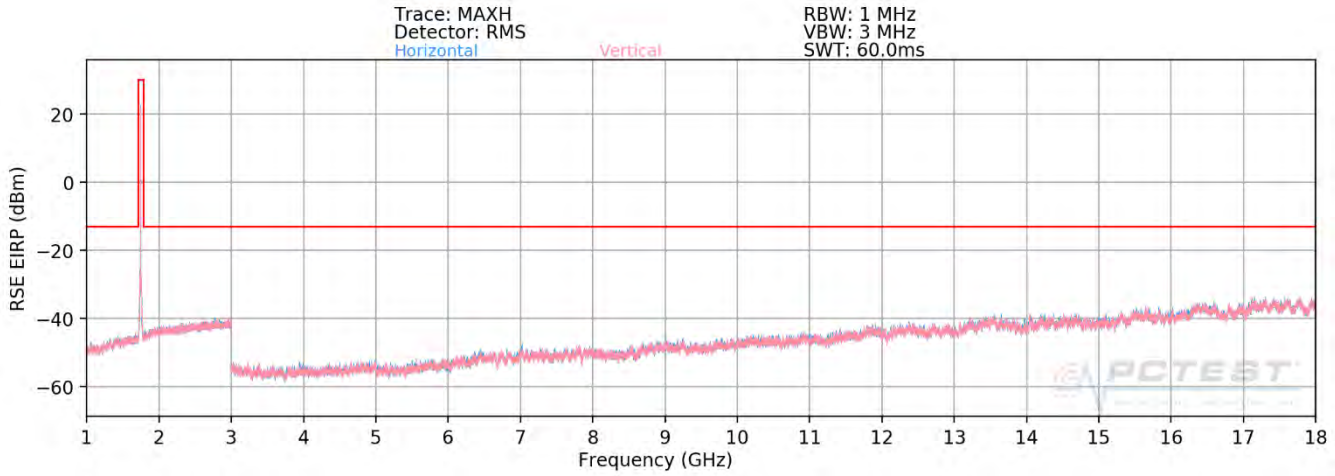
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	H	140	156	-69.36	3.18	-66.18	-53.2
2532.00	H	156	211	-63.14	4.10	-59.04	-46.0
3376.00	H	-	-	-67.64	6.15	-61.49	-48.5
4220.00	H	-	-	-69.57	7.88	-61.69	-48.7

Table 7-25. Radiated Spurious Data with WCP (Band 26/5 – High Channel)

Band 66/4



Plot 7-313. Radiated Spurious Plot above 1GHz (Band 66/4) - OPEN



Plot 7-314. Radiated Spurious Plot above 1GHz (Band 66/4) - CLOSED

OPERATING FREQUENCY:	1720.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	H	220	175	-67.71	6.28	-61.43	-48.4
5160.00	H	213	6	-68.65	8.98	-59.67	-46.7
6880.00	H	224	1	-65.01	9.42	-55.59	-42.6
8600.00	H	213	359	-63.80	9.62	-54.18	-41.2
10320.00	H	217	20	-56.62	9.56	-47.05	-34.1
10320.00	H (Closed)	127	31	-58.44	9.56	-48.87	-35.9
12040.00	H	-	-	-57.61	8.72	-48.88	-35.9
13760.00	H	-	-	-61.02	9.24	-51.77	-38.8

Table 7-26. Radiated Spurious Data (Band 66/4 – Low Channel)

OPERATING FREQUENCY:	1745.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	168	326	-66.83	6.47	-60.36	-47.4
5235.00	H	266	7	-65.41	8.97	-56.44	-43.4
6980.00	H	260	22	-64.59	9.23	-55.37	-42.4
8725.00	H	191	18	-60.54	9.59	-50.95	-37.9
10470.00	H	200	22	-59.58	9.43	-50.16	-37.2
12215.00	H	-	-	-59.21	9.17	-50.05	-37.0
13960.00	H	-	-	-57.85	8.59	-49.27	-36.3

Table 7-27. Radiated Spurious Data (Band 66/4 – Mid Channel)

OPERATING FREQUENCY:	1770.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	H	126	340	-67.01	6.45	-60.56	-47.6
5310.00	H	115	236	-64.29	9.09	-55.20	-42.2
7080.00	H	296	288	-65.62	9.17	-56.45	-43.5
8850.00	H	189	321	-58.09	9.57	-48.53	-35.5

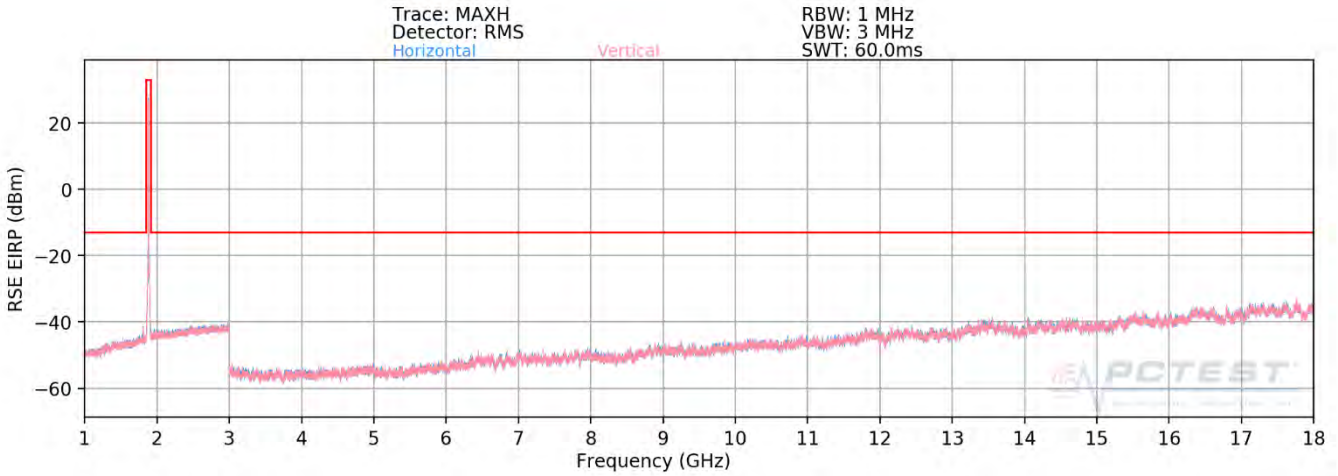
Table 7-28. Radiated Spurious Data (Band 66/4 – High Channel)

OPERATING FREQUENCY:	1720.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

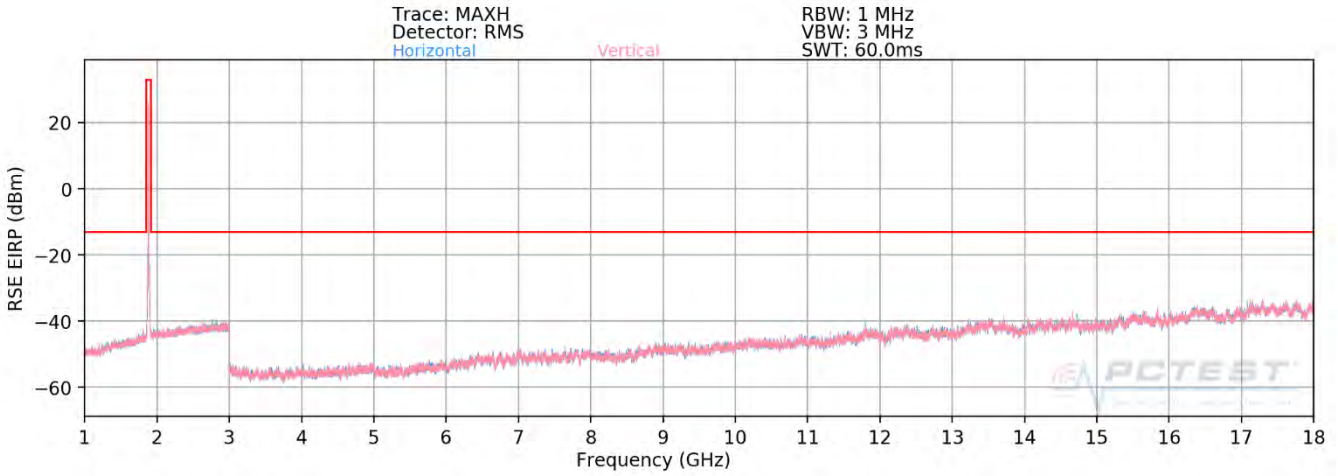
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	H	365	207	-67.29	6.47	-60.82	-47.8
5160.00	H	230	227	-68.53	8.97	-59.56	-46.6
6880.00	H	-	-	-65.98	9.23	-56.76	-43.8
8600.00	H	-	-	-66.12	9.59	-56.53	-43.5

Table 7-29. Radiated Spurious Data with WCP (Band 66/4 – Low Channel)

Band 25/2



Plot 7-315. Radiated Spurious Plot above 1GHz (Band 25/2) – OPEN



Plot 7-316. Radiated Spurious Plot above 1GHz (Band 25/2) - CLOSED

OPERATING FREQUENCY:	1860.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3720.00	H	150	206	-72.00	9.51	-62.50	-49.5
5580.00	H	-	-	-74.38	10.99	-63.40	-50.4
7440.00	H	-	-	-71.24	10.99	-60.25	-47.2

Table 7-30. Radiated Spurious Data (Band 25/2 – Low Channel)

OPERATING FREQUENCY:	1882.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	150	148	-70.01	9.36	-60.65	-47.6
3765.00	H (Closed)	132	139	-72.21	9.36	-62.85	-49.8
5647.50	H	-	-	-72.85	11.19	-61.65	-48.7
7530.00	H	-	-	-70.42	11.13	-59.29	-46.3

Table 7-31. Radiated Spurious Data (Band 25/2 – Mid Channel)

OPERATING FREQUENCY:	1905.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3810.00	H	153	199	-72.42	9.29	-63.12	-50.1
5715.00	H	-	-	-74.33	11.35	-62.98	-50.0
7620.00	H	-	-	-71.38	11.29	-60.09	-47.1

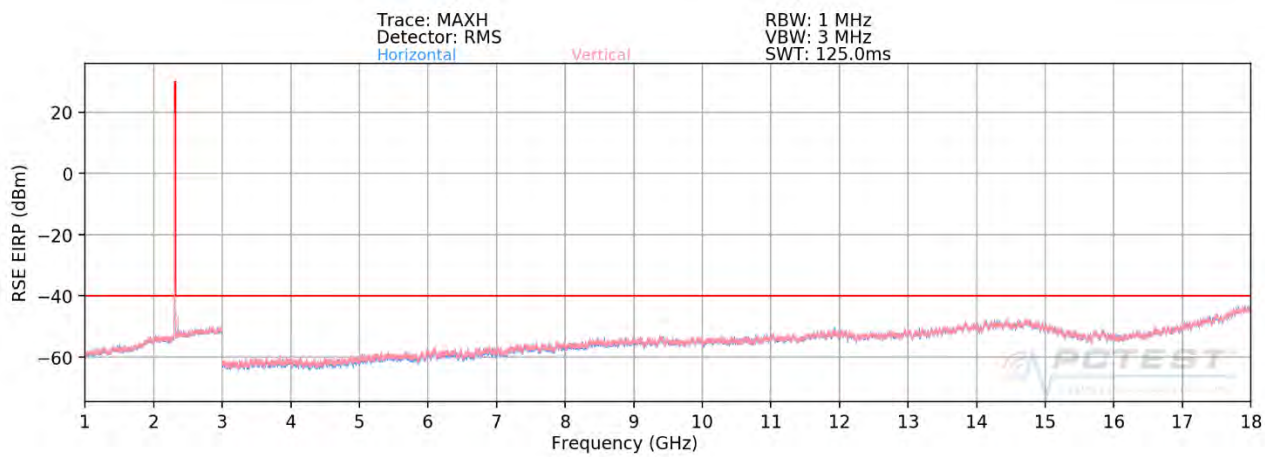
Table 7-32. Radiated Spurious Data (Band 25/2 – High Channel)

OPERATING FREQUENCY:	1882.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

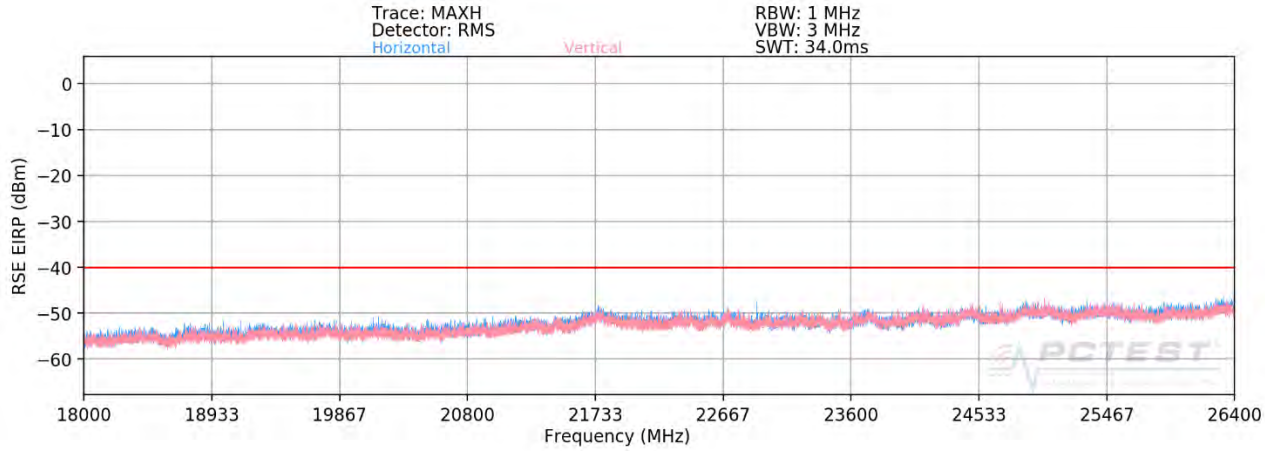
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	150	148	-70.01	9.36	-60.65	-47.6
5647.50	H	-	-	-72.85	11.19	-61.65	-48.7
7530.00	H	-	-	-70.42	11.13	-59.29	-46.3

Table 7-33. Radiated Spurious Data with WCP (Band 25/2 – Mid Channel)

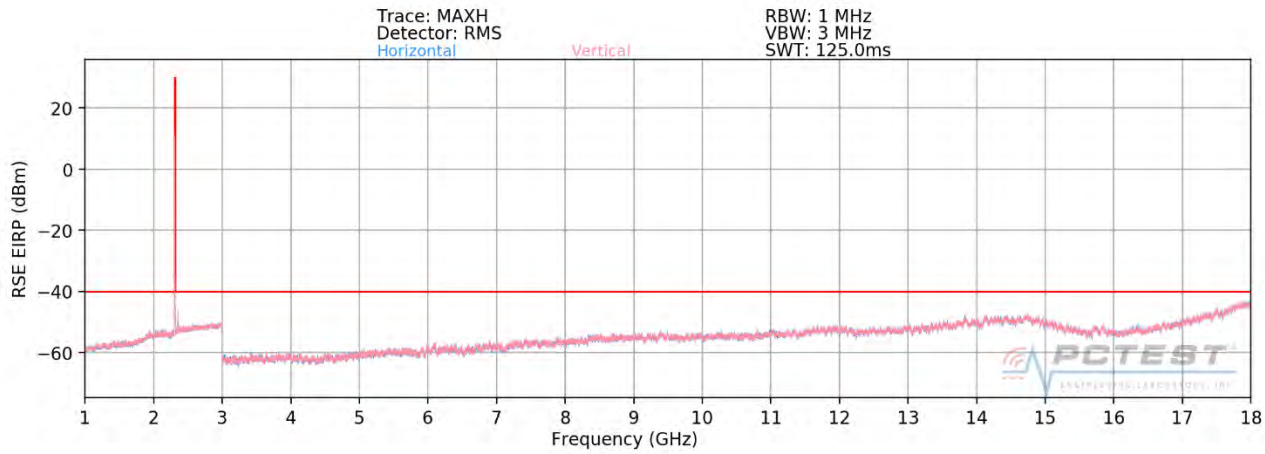
Band 30



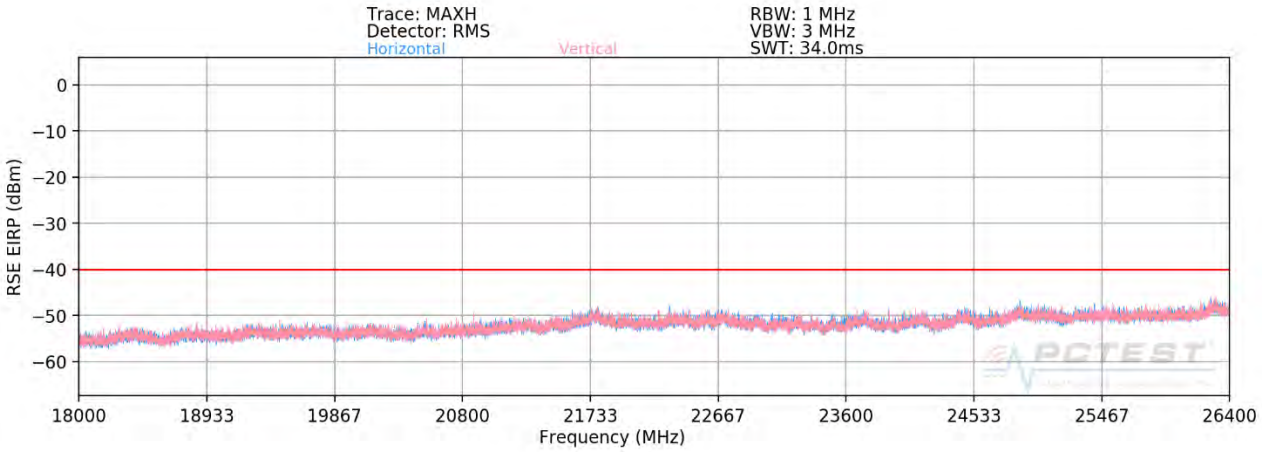
Plot 7-317. Radiated Spurious Plot 1GHz - 18GHz (Band 30) - OPEN



Plot 7-318. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30) – OPEN



Plot 7-319. Radiated Spurious Plot 1GHz - 18GHz (Band 30) - CLOSED



Plot 7-320. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30) - CLOSED

OPERATING FREQUENCY:	2310.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	272	328	-60.88	8.26	-52.62	-12.6
6930.00	H	102	20	-59.40	8.72	-50.68	-10.7
9240.00	H	363	298	-55.72	9.49	-46.23	-6.2
9240.00	H (Closed)	351	115	-57.36	9.49	-47.87	-7.9

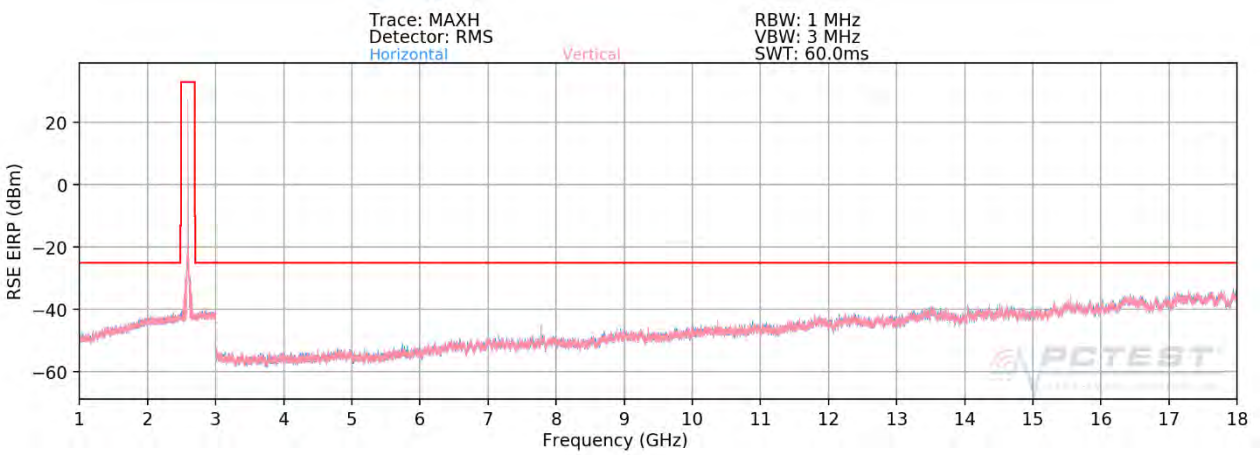
Table 7-34. Radiated Spurious Data (Band 30 – Channel)

OPERATING FREQUENCY:	2310.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

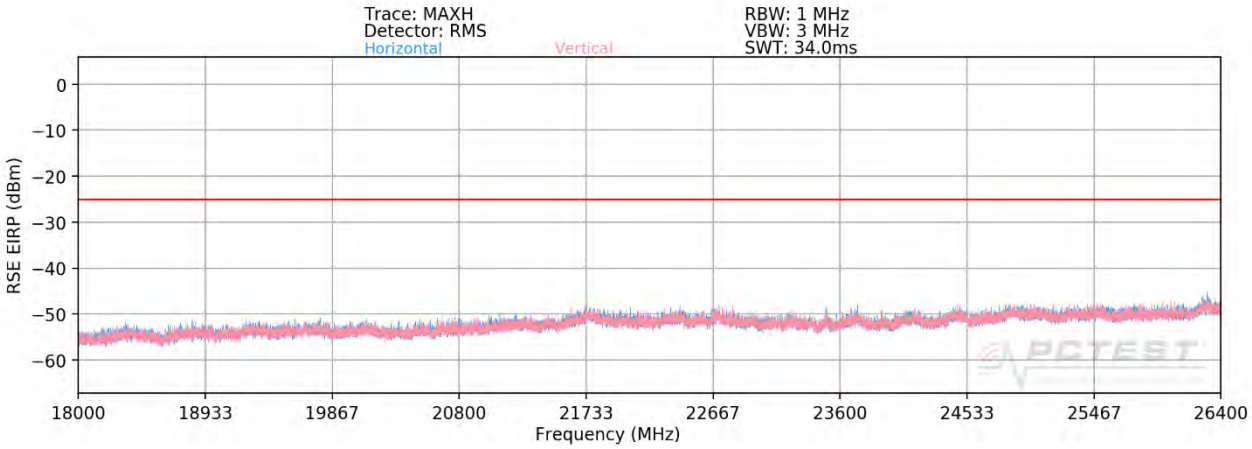
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	313	311	-61.78	8.26	-53.52	-13.5
6930.00	H	151	39	-60.94	8.72	-52.22	-12.2
9240.00	H	333	276	-56.42	9.49	-46.93	-6.9
11550.00	H	-	-	-57.69	9.19	-48.50	-8.5
13860.00	H	-	-	-55.70	9.00	-46.71	-6.7

Table 7-35. Radiated Spurious Data with WCP (Band 30 – Channel)

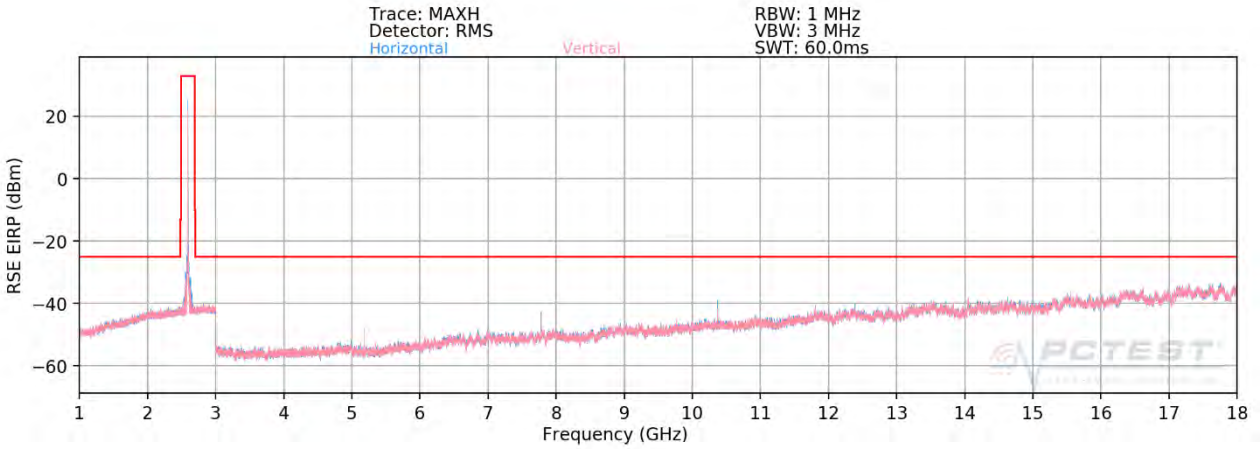
Band 41



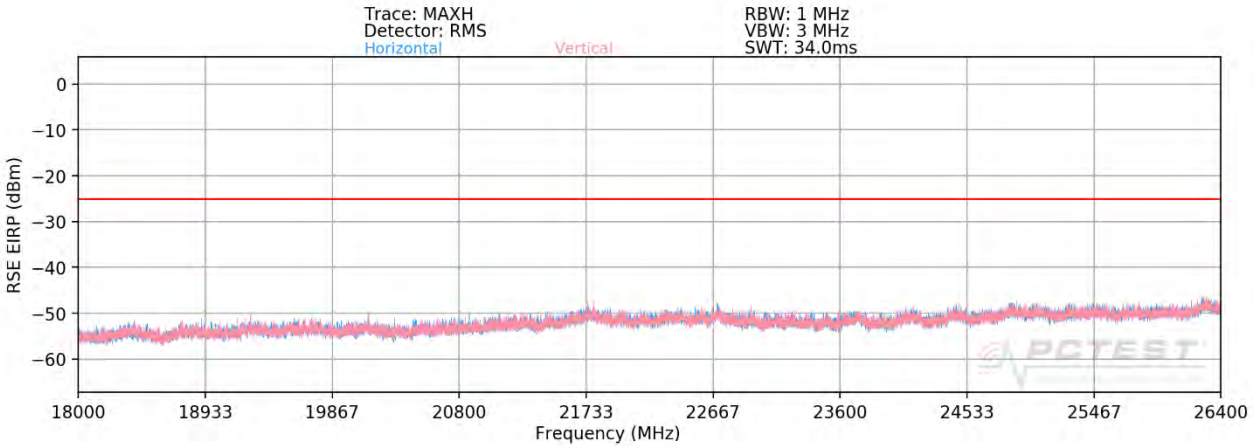
Plot 7-321. Radiated Spurious Plot 1GHz - 18GHz (Band 41) - OPEN



Plot 7-322. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41) - OPEN



Plot 7-323. Radiated Spurious Plot 1GHz - 18GHz (Band 41) – CLOSED



Plot 7-324. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41) - CLOSED

OPERATING FREQUENCY:	2510.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	V	105	301	-60.47	8.56	-51.90	-26.9
7526.00	V	115	538	-53.84	8.47	-45.37	-20.4
10032.00	V	121	109	-54.50	9.85	-44.65	-19.6
12538.00	V	-	-	-57.87	9.06	-48.81	-23.8
15044.00	V	-	-	-55.06	8.76	-46.30	-21.3

Table 7-36. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	V	101	276	-62.99	8.70	-54.29	-29.3
7779.00	V	117	242	-53.03	8.69	-44.34	-19.3
10372.00	V	119	102	-56.42	9.62	-46.79	-21.8
12965.00	V	-	-	-56.99	8.99	-48.00	-23.0
15558.00	V	-	-	-54.47	8.32	-46.15	-21.1

Table 7-37. Radiated Spurious Data (Band 41 – Mid Channel)

OPERATING FREQUENCY:	2680.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	109	299	-59.91	8.70	-51.21	-26.2
8040.00	V	128	271	-51.91	8.95	-42.95	-18.0
8040.00	H (Closed)	141	95	-55.00	9.32	-45.68	-20.7
10720.00	V	122	136	-49.02	8.77	-40.24	-15.2
13400.00	V	-	-	-52.33	8.01	-44.32	-19.3
16080.00	V	-	-	-53.23	8.35	-44.88	-19.9

Table 7-38. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY:	2680.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	198	287	-61.91	8.70	-53.21	-28.2
7953.00	V	232	275	-53.81	8.95	-44.85	-19.9
10546.00	V	211	251	-55.00	9.32	-45.68	-20.7
13139.00	V	-	-	-55.11	8.77	-46.33	-21.3
15732.00	V	-	-	-50.46	8.01	-42.45	-17.5

Table 7-39. Radiated Spurious Data with WCP (Band 41 – High Channel)

7.9 Uplink Carrier Aggregation Radiated Measurements

§2.1053, §27.53(m)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. No. of sweep points ≥ 2 x span / RBW
4. Detector = RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

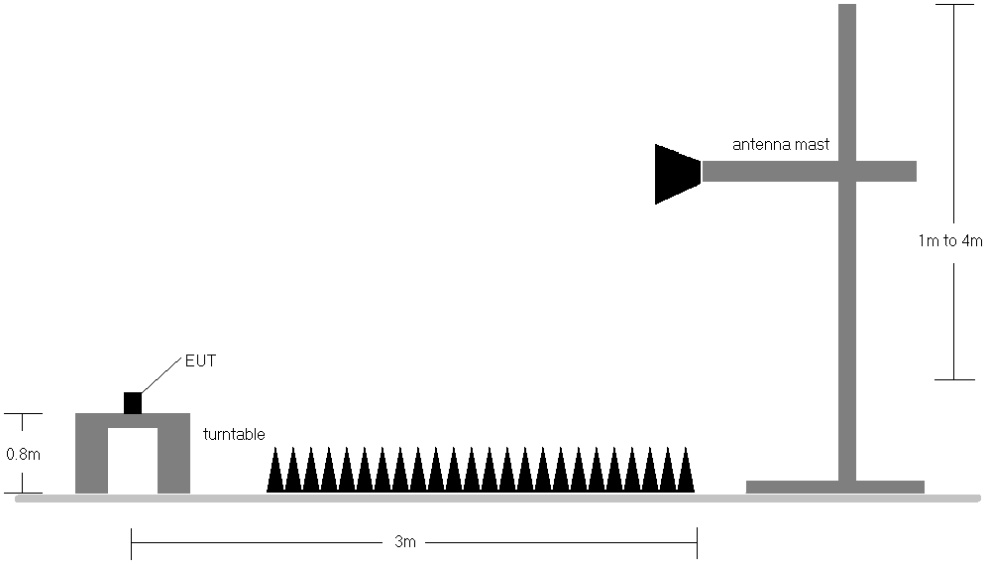


Figure 7-10. Test Instrument & Measurement Setup

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

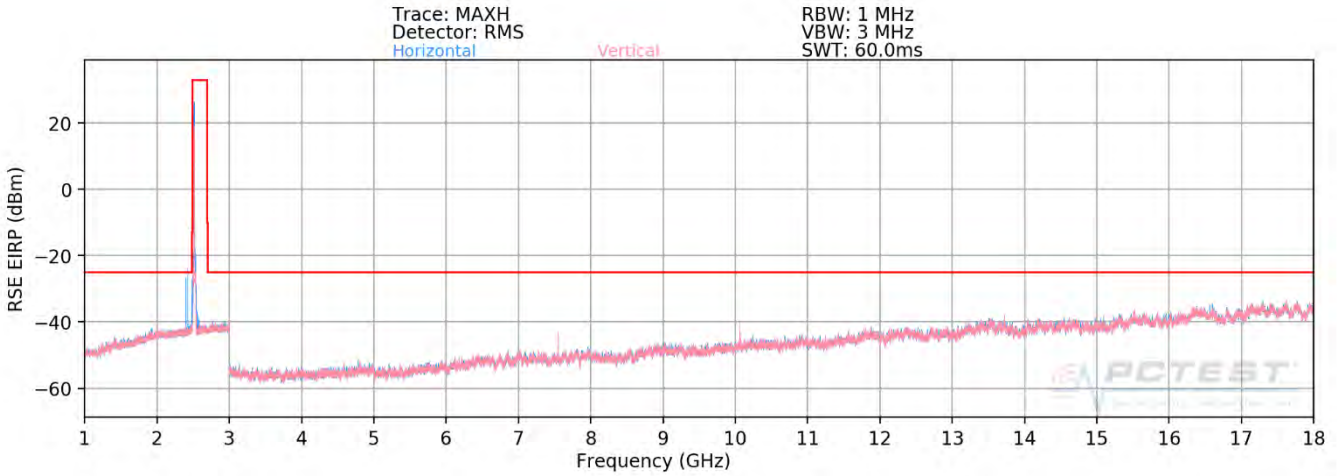
3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.

4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

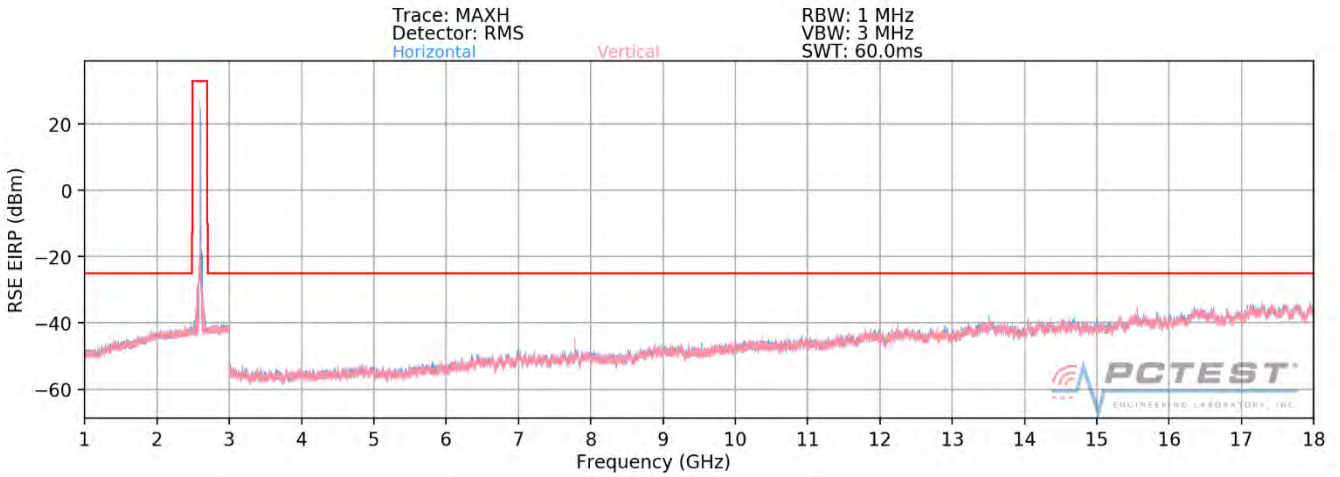
5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

6) No significant emissions were found as a result of two uplink carriers operating contiguously.

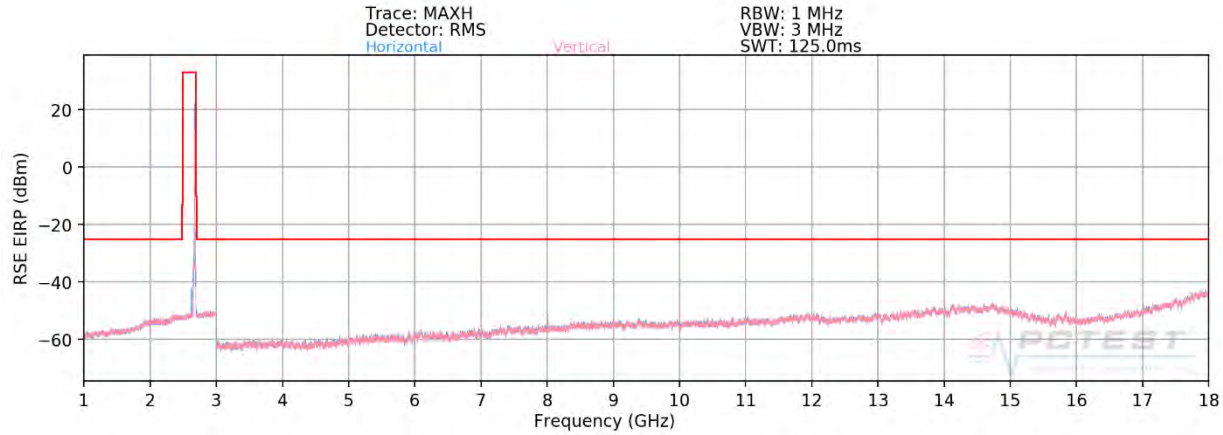
Uplink CA Configuration 41C (PC3)



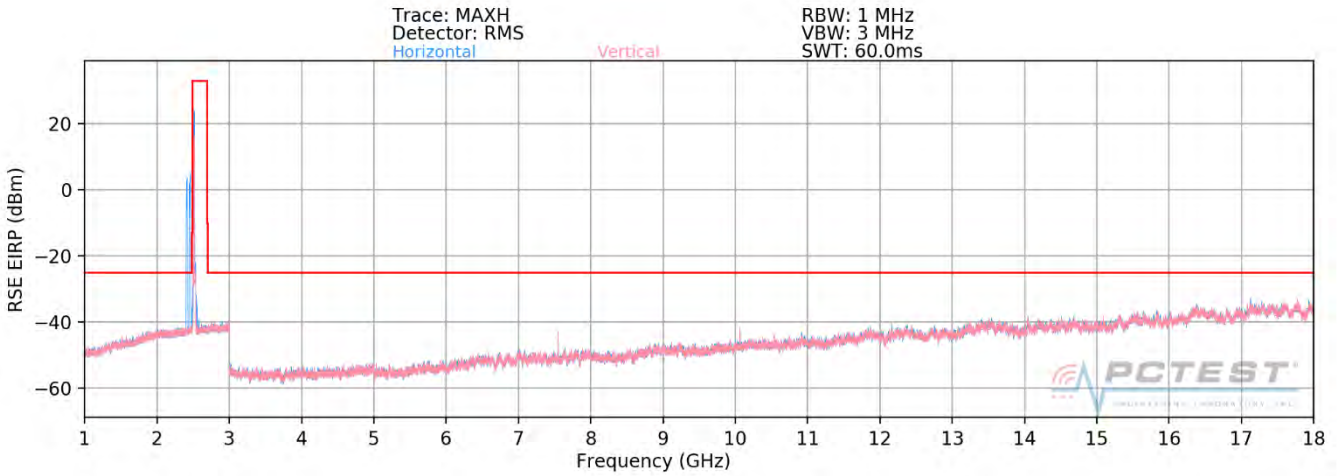
Plot 7-325. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel) - OPEN



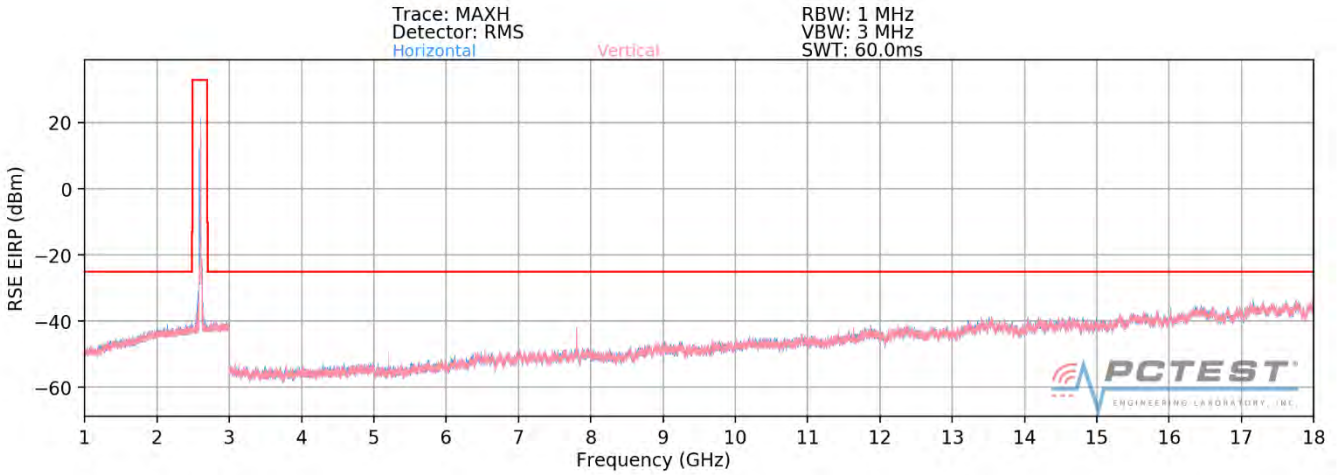
Plot 7-326. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel) - OPEN



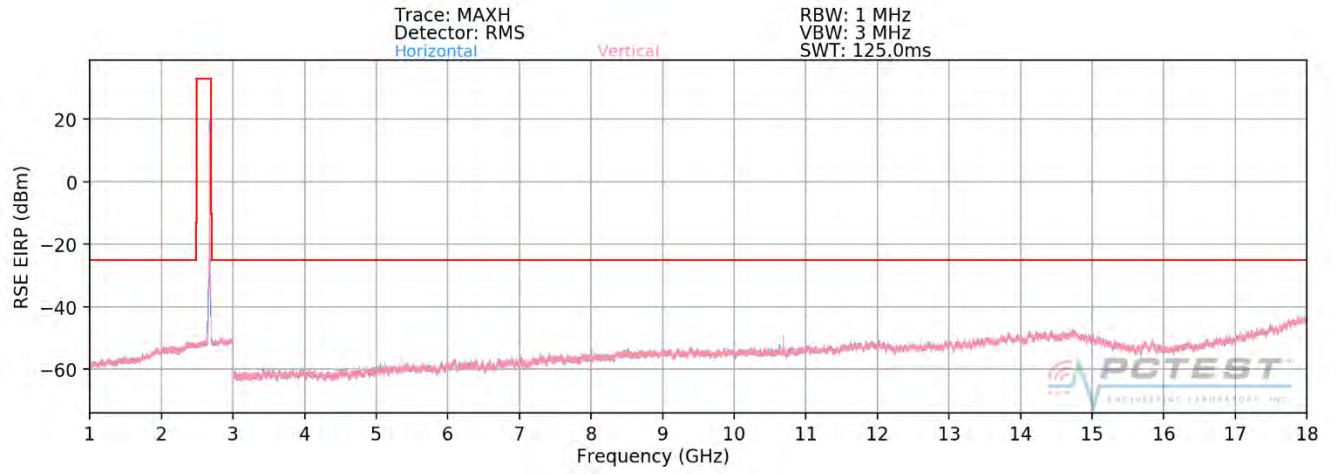
Plot 7-327. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel) - OPEN



Plot 7-328. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel) - CLOSED



Plot 7-329. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel) – CLOSED



Plot 7-330. Radiated Spurious Plot (ULCA 41C PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel) - CLOSED

OPERATING FREQUENCY (PCC):	2506.00	MHz
OPERATING FREQUENCY (SCC):	2525.80	MHz
CHANNEL (PCC):	39750	
CHANNEL (SCC):	39948	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	V	136	67	-57.22	8.75	-48.46	-23.5
7518.00	V	101	254	-44.97	9.32	-35.65	-10.7
10024.00	V	102	217	-48.03	9.80	-38.23	-13.2
12530.00	V	-	-	-50.05	8.87	-41.18	-16.2
15036.00	V	-	-	-45.76	8.84	-36.91	-11.9
7518 (Closed)	V	332	292	-46.67	9.32	-37.35	-12.4

Table 7-40. Radiated Spurious Data (ULCA 41C- PC3 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	2593.00	MHz
OPERATING FREQUENCY (SCC):	2612.80	MHz
CHANNEL (PCC):	40620	
CHANNEL (SCC):	40818	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	V	131	52	-56.70	9.03	-47.67	-22.7
7779.00	V	106	183	-50.76	9.29	-41.48	-16.5
10372.00	V	115	143	-51.53	9.50	-42.03	-17.0
12965.00	V	-	-	-49.06	8.75	-40.31	-15.3
15558.00	V	-	-	-44.45	8.47	-35.99	-11.0
7779 (Closed)	V	314	268	-52.69	9.29	-43.41	-18.4

Table 7-41. Radiated Spurious Data (ULCA 41C- PC3 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

OPERATING FREQUENCY (PCC):	2680.00	MHz
OPERATING FREQUENCY (SCC):	2660.20	MHz
CHANNEL (PCC):	41490	
CHANNEL (SCC):	41292	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	145	65	-54.88	8.99	-45.88	-20.9
8040.00	V	141	251	-51.51	9.35	-42.15	-17.2
10720.00	V	103	131	-49.55	9.39	-40.15	-15.2
13400.00	V	-	-	-47.09	8.67	-38.42	-13.4
16080.00	V	-	-	-43.68	8.46	-35.22	-10.2
10720 (Closed)	V	301	265	-50.92	9.39	-41.52	-16.5

Table 7-42. Radiated Spurious Data (ULCA 41C – PC3 - PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

OPERATING FREQUENCY (PCC):	2506.00	MHz
OPERATING FREQUENCY (SCC):	2525.80	MHz
CHANNEL (PCC):	39750	
CHANNEL (SCC):	39948	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	V	114	89	-59.12	8.75	-50.36	-25.4
7518.00	V	109	175	-48.41	9.32	-39.09	-14.1
10024.00	V	122	196	-50.75	9.80	-40.95	-16.0
12530.00	V	-	-	-50.12	8.87	-41.25	-16.2
15036.00	V	-	-	-45.47	8.84	-36.62	-11.6

Table 7-43. Radiated Spurious Data with WCP (ULCA 41C- PC3 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

7.10 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency. For Part 24, Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

Band 12/17 Frequency Stability Measurements

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	
REFERENCE VOLTAGE:	4.27	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	707,500,105	105	0.0000148
100 %		- 20	707,500,227	227	0.0000321
100 %		- 10	707,500,187	187	0.0000264
100 %		0	707,499,932	-68	-0.0000096
100 %		+ 10	707,500,078	78	0.0000110
100 %		+ 20	707,499,967	-33	-0.0000047
100 %		+ 30	707,499,927	-73	-0.0000103
100 %		+ 40	707,500,120	120	0.0000170
100 %		+ 50	707,500,007	7	0.0000010
BATT. ENDPOINT	3.41	+ 20	707,500,328	328	0.0000464

Table 7-44. Frequency Stability Data (Band 12/17)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Band 12/17 Frequency Stability Measurements

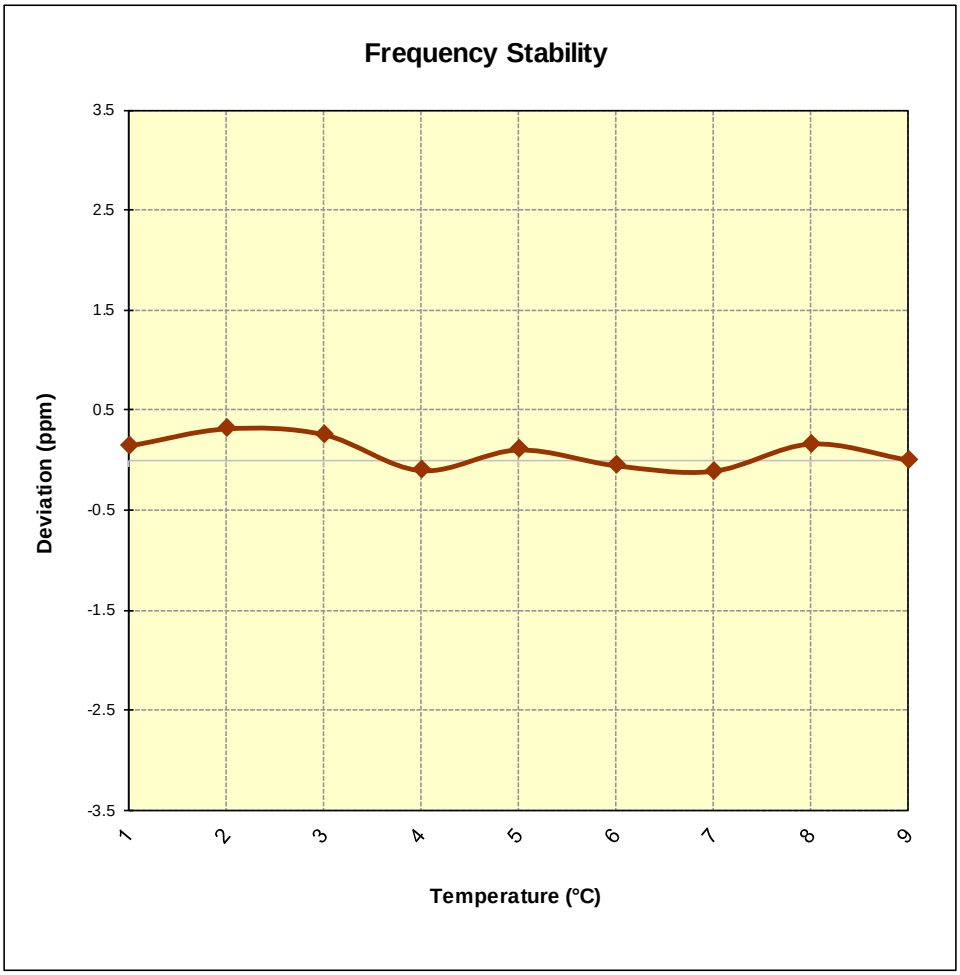


Figure 7-11. Frequency Stability Graph (Band 12/17)

Band 13 Frequency Stability Measurements

OPERATING FREQUENCY:	782,000,000	Hz
CHANNEL:	23230	
REFERENCE VOLTAGE:	4.27	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	781,999,975	-25	-0.0000032
100 %		- 20	781,999,931	-69	-0.0000088
100 %		- 10	782,000,393	393	0.0000503
100 %		0	781,999,721	-279	-0.0000357
100 %		+ 10	782,000,149	149	0.0000191
100 %		+ 20	781,999,998	-2	-0.0000003
100 %		+ 30	781,999,895	-105	-0.0000134
100 %		+ 40	782,000,094	94	0.0000120
100 %		+ 50	781,999,975	-25	-0.0000032
BATT. ENDPOINT	3.41	+ 20	782,000,179	179	0.0000229

Table 7-45. Frequency Stability Data (Band 13)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Band 13 Frequency Stability Measurements

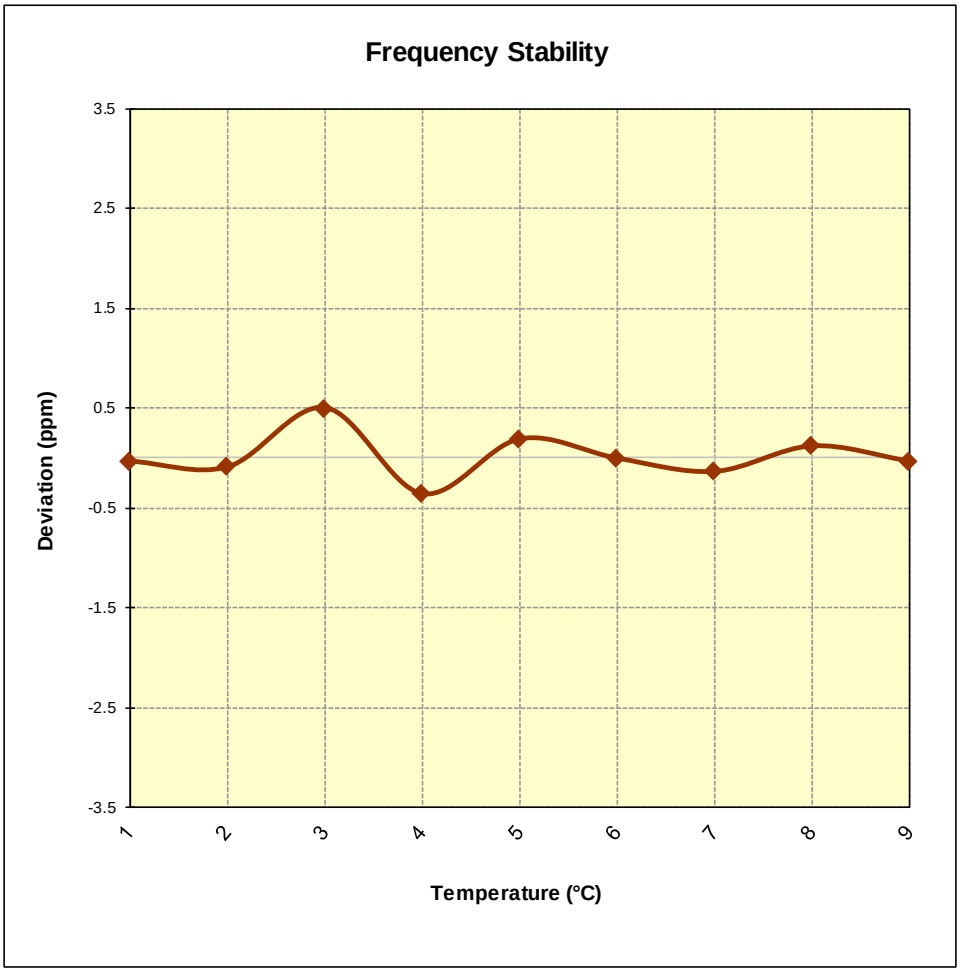


Figure 7-12. Frequency Stability Graph (Band 13)

Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY:	831,500,000	Hz
CHANNEL:	26865	
REFERENCE VOLTAGE:	4.27	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	831,500,000	0	0.0000000
100 %		- 20	831,499,847	-153	-0.0000184
100 %		- 10	831,499,953	-47	-0.0000057
100 %		0	831,499,748	-252	-0.0000303
100 %		+ 10	831,500,029	29	0.0000035
100 %		+ 20	831,500,272	272	0.0000327
100 %		+ 30	831,500,027	27	0.0000032
100 %		+ 40	831,500,389	389	0.0000468
100 %		+ 50	831,499,884	-116	-0.0000140
BATT. ENDPOINT	3.41	+ 20	831,500,037	37	0.0000044

Table 7-46. Frequency Stability Data (Band 26/5)

Band 26/5 Frequency Stability Measurements

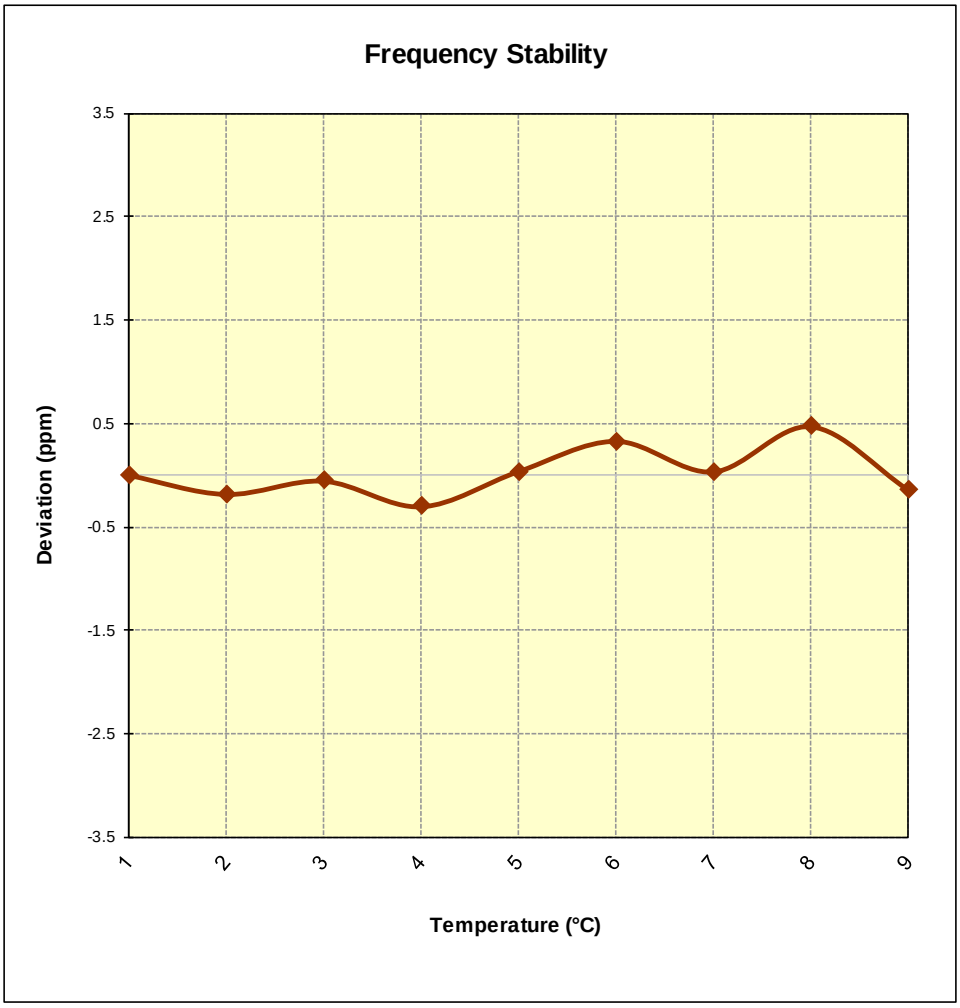


Figure 7-13. Frequency Stability Graph (Band 26/5)

Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY:	1,745,000,000	Hz
CHANNEL:	132322	
REFERENCE VOLTAGE:	4.27	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	1,745,000,346	346	0.0000198
100 %		- 20	1,744,999,890	-110	-0.0000063
100 %		- 10	1,744,999,994	-6	-0.0000003
100 %		0	1,745,000,004	4	0.0000002
100 %		+ 10	1,744,999,978	-22	-0.0000013
100 %		+ 20	1,744,999,908	-92	-0.0000053
100 %		+ 30	1,744,999,821	-179	-0.0000103
100 %		+ 40	1,744,999,951	-49	-0.0000028
100 %		+ 50	1,744,999,553	-447	-0.0000256
BATT. ENDPOINT	3.41	+ 20	1,745,000,147	147	0.0000084

Table 7-47. Frequency Stability Data (Band 66/4)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Band 66/4 Frequency Stability Measurements

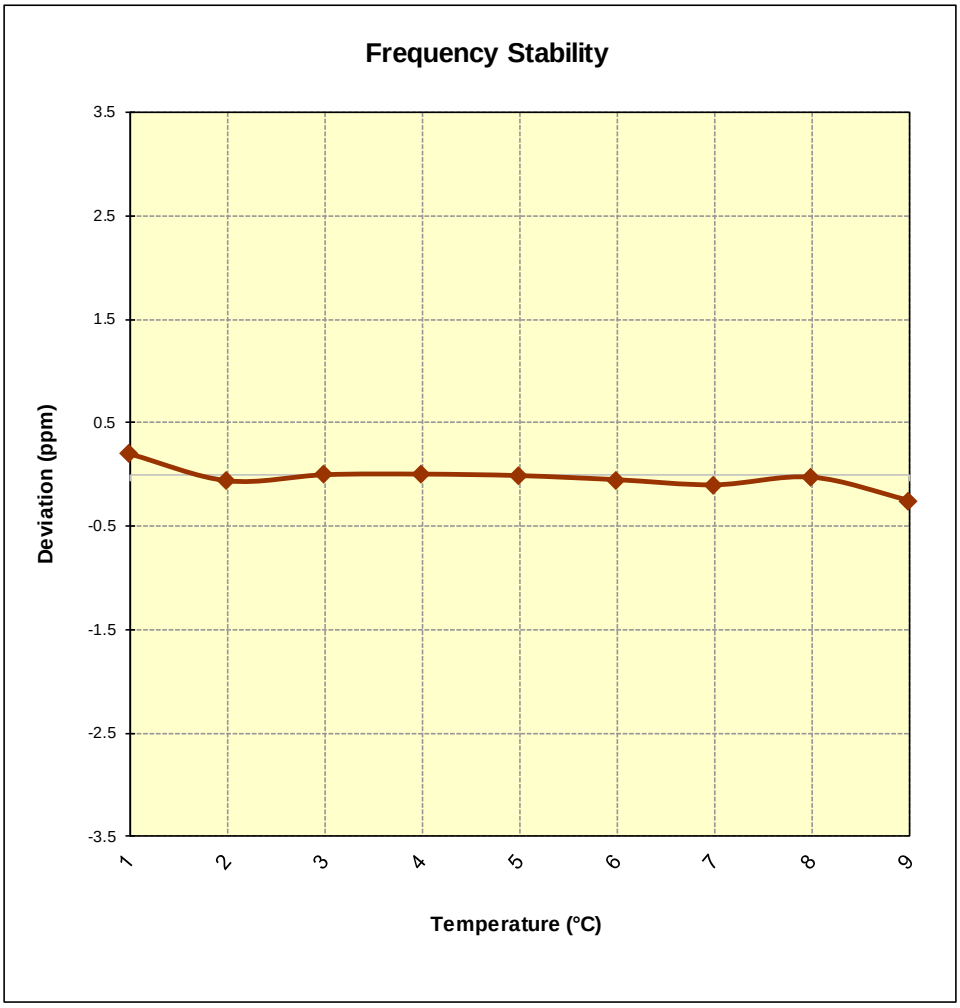


Figure 7-14. Frequency Stability Graph (Band 66/4)

Band 25 Frequency Stability Measurements

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	
REFERENCE VOLTAGE:	4.27	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	1,882,499,738	-262	-0.0000139
100 %		- 20	1,882,499,973	-27	-0.0000014
100 %		- 10	1,882,500,059	59	0.0000031
100 %		0	1,882,499,922	-78	-0.0000041
100 %		+ 10	1,882,499,834	-166	-0.0000088
100 %		+ 20	1,882,499,728	-272	-0.0000144
100 %		+ 30	1,882,500,154	154	0.0000082
100 %		+ 40	1,882,500,132	132	0.0000070
100 %		+ 50	1,882,499,743	-257	-0.0000137
BATT. ENDPOINT	3.41	+ 20	1,882,499,689	-311	-0.0000165

Table 7-48. Frequency Stability Data (Band 25)

Band 25 Frequency Stability Measurements

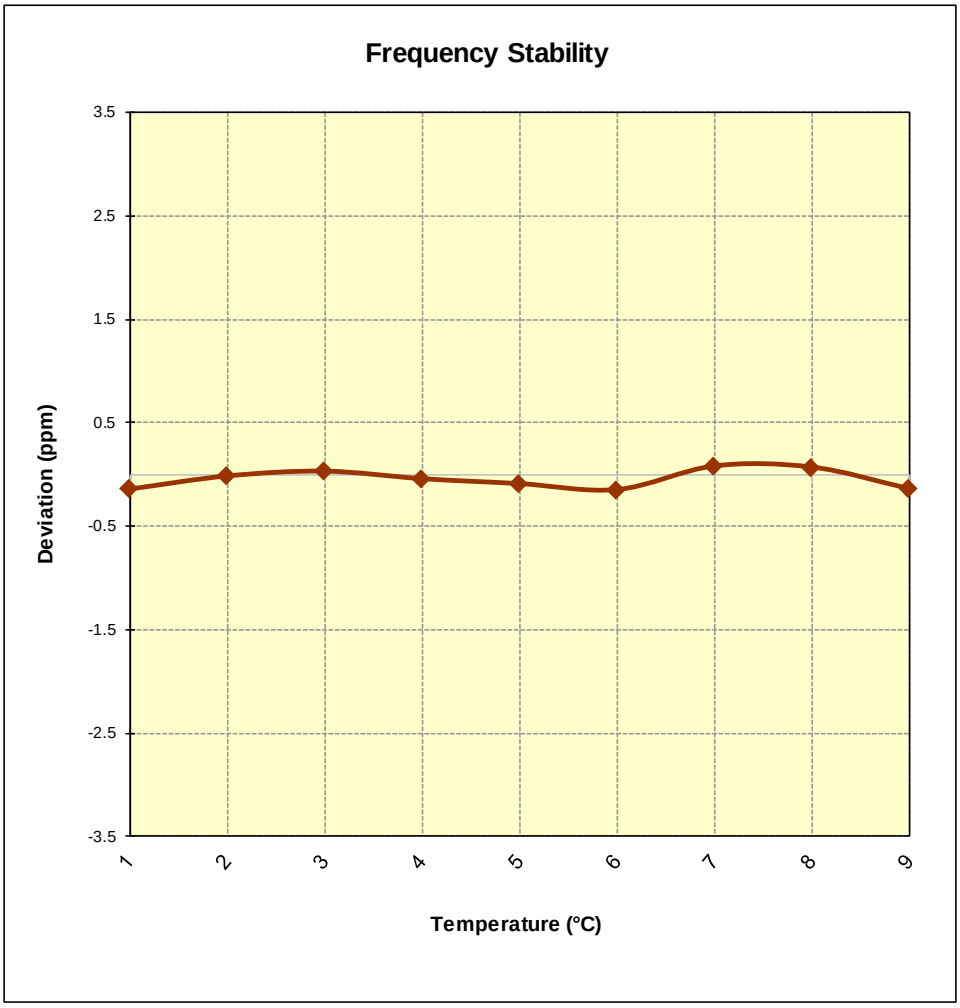


Figure 7-15. Frequency Stability Graph (Band 25)

Band 30 Frequency Stability Measurements

OPERATING FREQUENCY:	2,310,000,000	Hz
CHANNEL:	27710	
REFERENCE VOLTAGE:	4.27	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	2,309,999,859	-141	-0.0000061
100 %		- 20	2,310,000,124	124	0.0000054
100 %		- 10	2,309,999,911	-89	-0.0000039
100 %		0	2,309,999,927	-73	-0.0000032
100 %		+ 10	2,309,999,942	-58	-0.0000025
100 %		+ 20	2,310,000,141	141	0.0000061
100 %		+ 30	2,310,000,021	21	0.0000009
100 %		+ 40	2,310,000,151	151	0.0000065
100 %		+ 50	2,310,000,050	50	0.0000022
BATT. ENDPOINT	3.41	+ 20	2,309,999,967	-33	-0.0000014

Table 7-49. Frequency Stability Data (Band 30)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Band 30 Frequency Stability Measurements

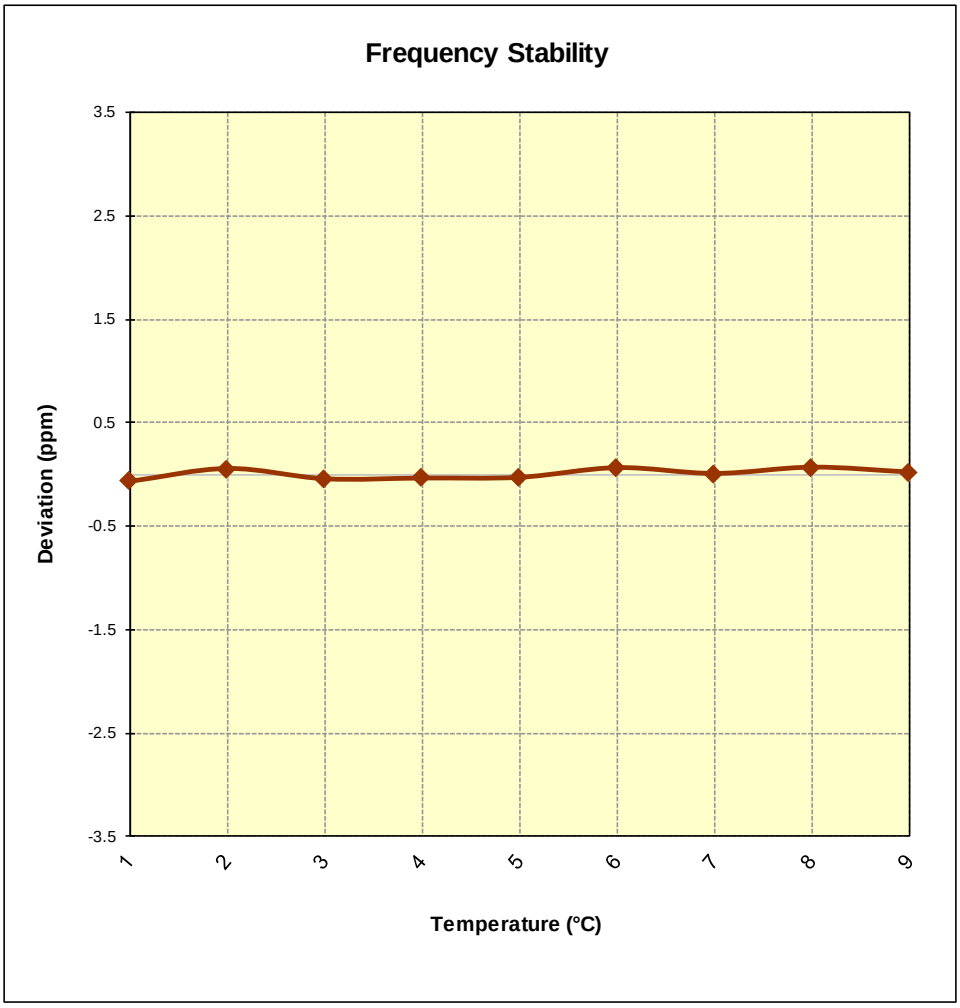


Figure 7-16. Frequency Stability Graph (Band 30)

Band 41 Frequency Stability Measurements

OPERATING FREQUENCY:	2,593,000,000	Hz
CHANNEL:	40620	
REFERENCE VOLTAGE:	4.27	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	2,593,000,166	166	0.0000064
100 %		- 20	2,592,999,728	-272	-0.0000105
100 %		- 10	2,593,000,003	3	0.0000001
100 %		0	2,592,999,948	-52	-0.0000020
100 %		+ 10	2,593,000,001	1	0.0000000
100 %		+ 20	2,593,000,065	65	0.0000025
100 %		+ 30	2,593,000,112	112	0.0000043
100 %		+ 40	2,593,000,032	32	0.0000012
100 %		+ 50	2,592,999,672	-328	-0.0000126
BATT. ENDPOINT	3.41	+ 20	2,592,999,958	-42	-0.0000016

Table 7-50. Frequency Stability Data (Band 41)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Band 41 Frequency Stability Measurements

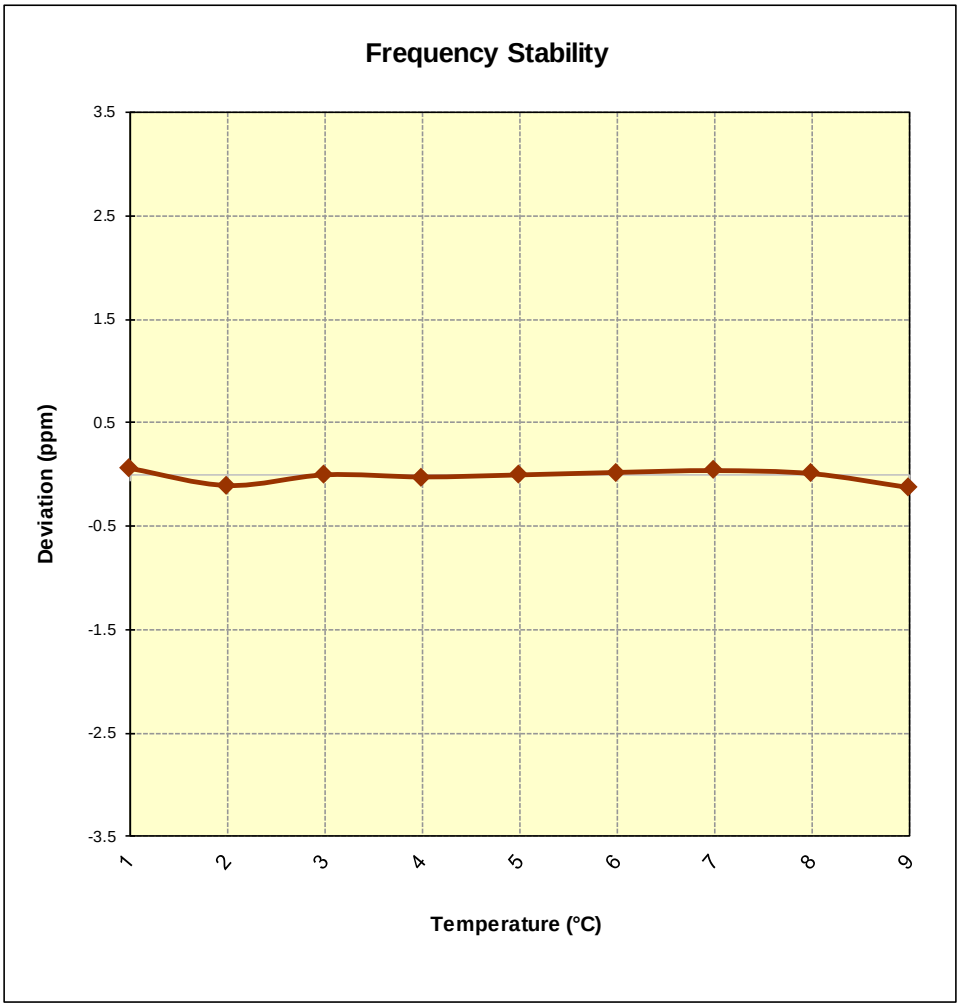


Figure 7-17. Frequency Stability Graph (Band 41)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMF700F** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.