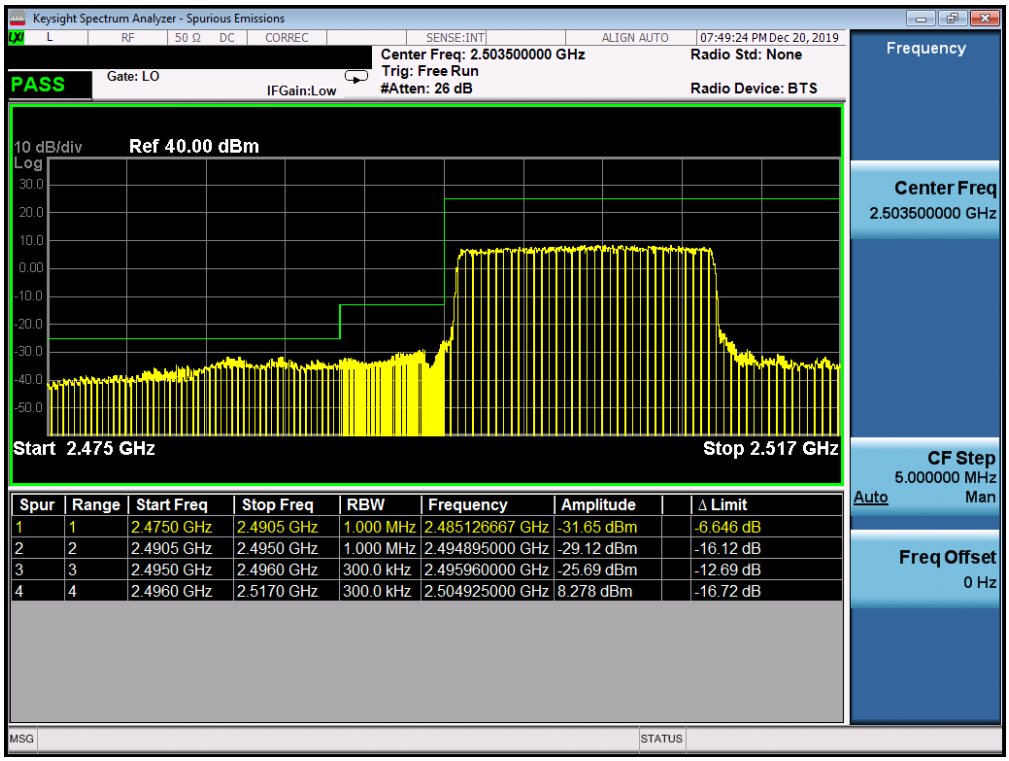
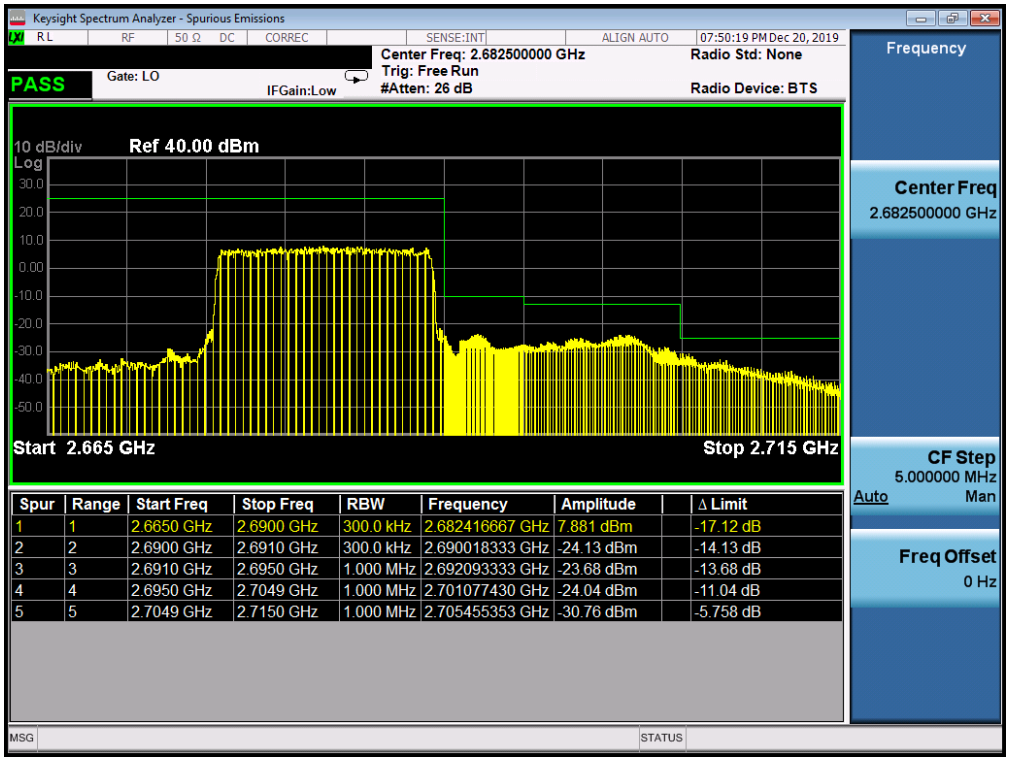


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.485126667 GHz	-31.65 dBm	-6.646 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494895000 GHz	-29.12 dBm	-16.12 dB
3	3	2.4950 GHz	2.4960 GHz	300.0 kHz	2.495960000 GHz	-25.69 dBm	-12.69 dB
4	4	2.4960 GHz	2.5170 GHz	300.0 kHz	2.504925000 GHz	8.278 dBm	-16.72 dB

Plot 7-213. Lower ACP Plot at 2496 MHz (Band 41 PC2 - 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	2.682416667 GHz	7.881 dBm	-17.12 dB
2	2	2.6900 GHz	2.6910 GHz	300.0 kHz	2.690018333 GHz	-24.13 dBm	-14.13 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.692093333 GHz	-23.68 dBm	-13.68 dB
4	4	2.6950 GHz	2.7049 GHz	1.000 MHz	2.701077430 GHz	-24.04 dBm	-11.04 dB
5	5	2.7049 GHz	2.7150 GHz	1.000 MHz	2.705455353 GHz	-30.76 dBm	-5.758 dB

Plot 7-214. Upper ACP Plot (Band 41 PC2 - 15.0MHz QPSK - Full RB Configuration)

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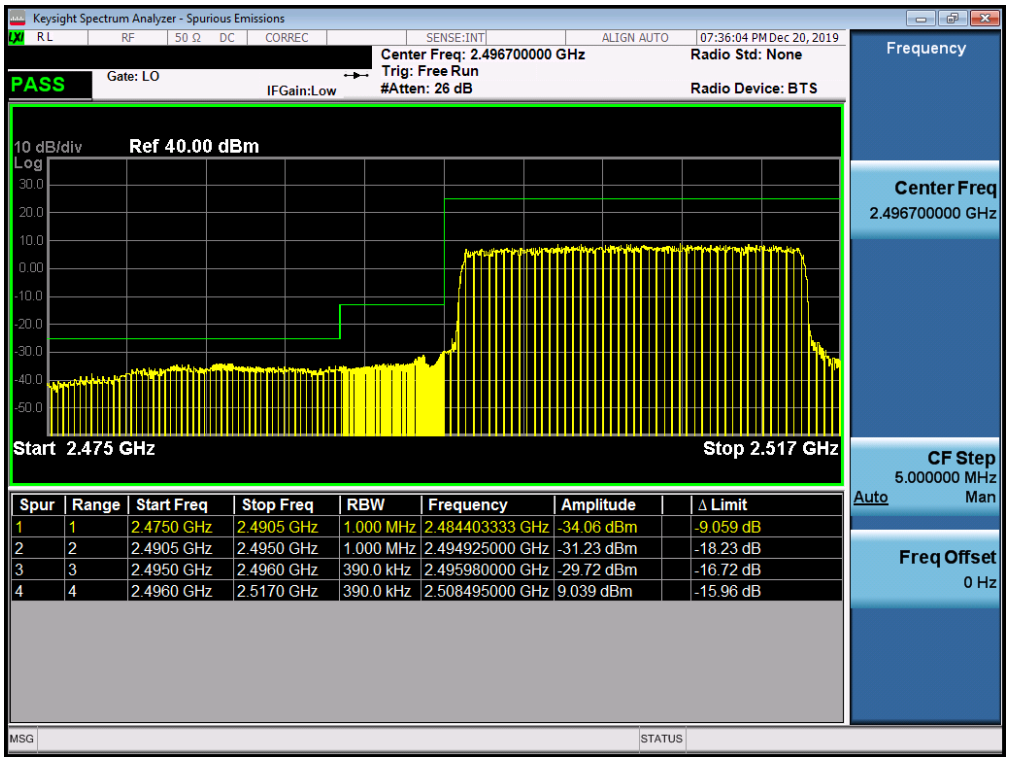
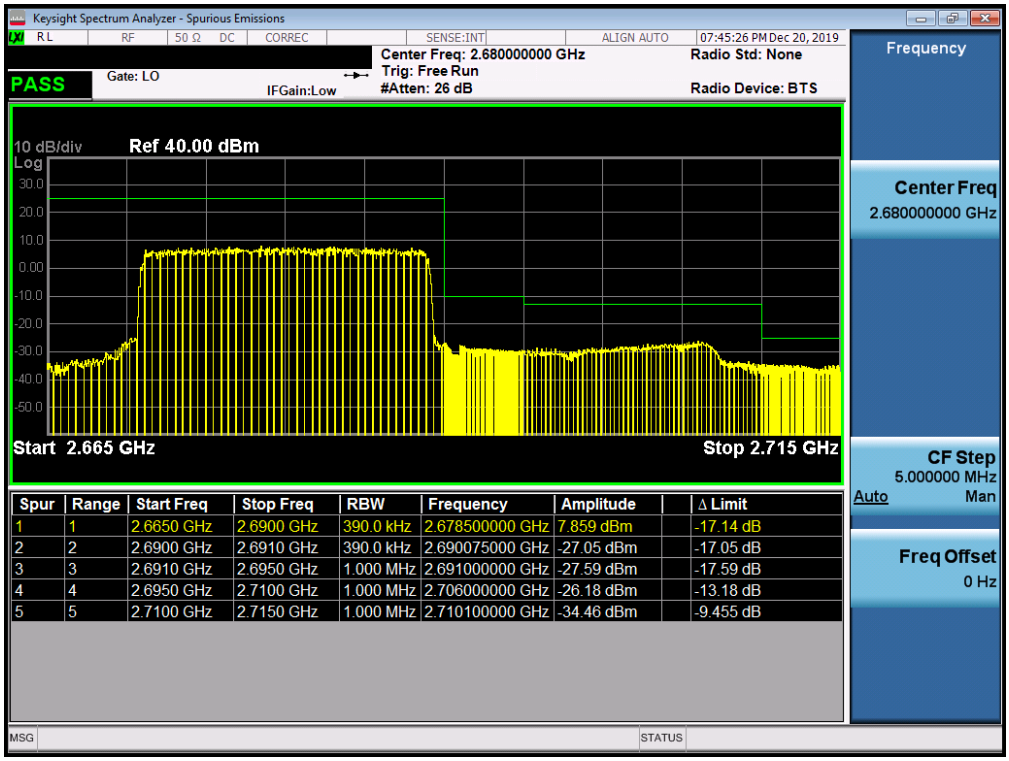


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.484403333 GHz	-34.06 dBm	-9.059 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494925000 GHz	-31.23 dBm	-18.23 dB
3	3	2.4950 GHz	2.4960 GHz	390.0 kHz	2.495980000 GHz	-29.72 dBm	-16.72 dB
4	4	2.4960 GHz	2.5170 GHz	390.0 kHz	2.508495000 GHz	9.039 dBm	-15.96 dB

Plot 7-215. Lower ACP Plot at 2496 MHz (Band 41 PC2 - 20.0MHz QPSK - Full RB Configuration)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	390.0 kHz	2.678500000 GHz	7.859 dBm	-17.14 dB
2	2	2.6900 GHz	2.6910 GHz	390.0 kHz	2.690075000 GHz	-27.05 dBm	-17.05 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691000000 GHz	-27.59 dBm	-17.59 dB
4	4	2.6950 GHz	2.7100 GHz	1.000 MHz	2.706000000 GHz	-26.18 dBm	-13.18 dB
5	5	2.7100 GHz	2.7150 GHz	1.000 MHz	2.710100000 GHz	-34.46 dBm	-9.455 dB

Plot 7-216. Upper ACP Plot (Band 41 PC2 - 20.0MHz QPSK - Full RB Configuration)

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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.

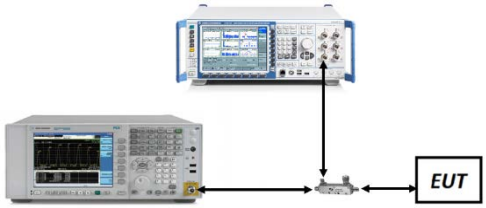

Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None.

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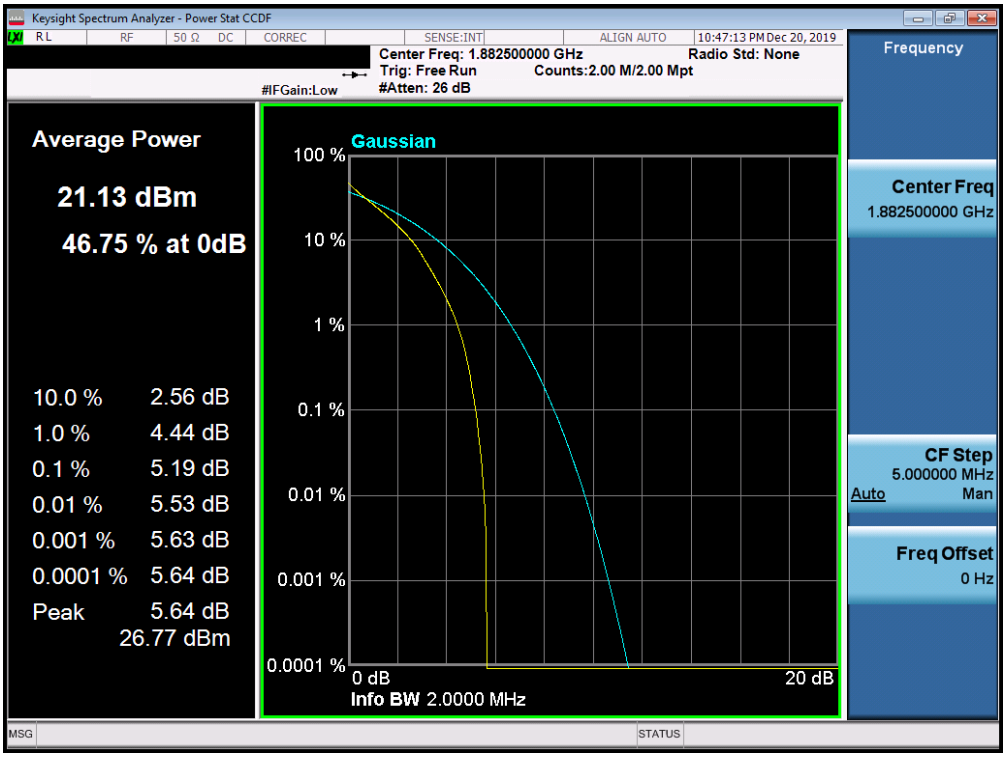
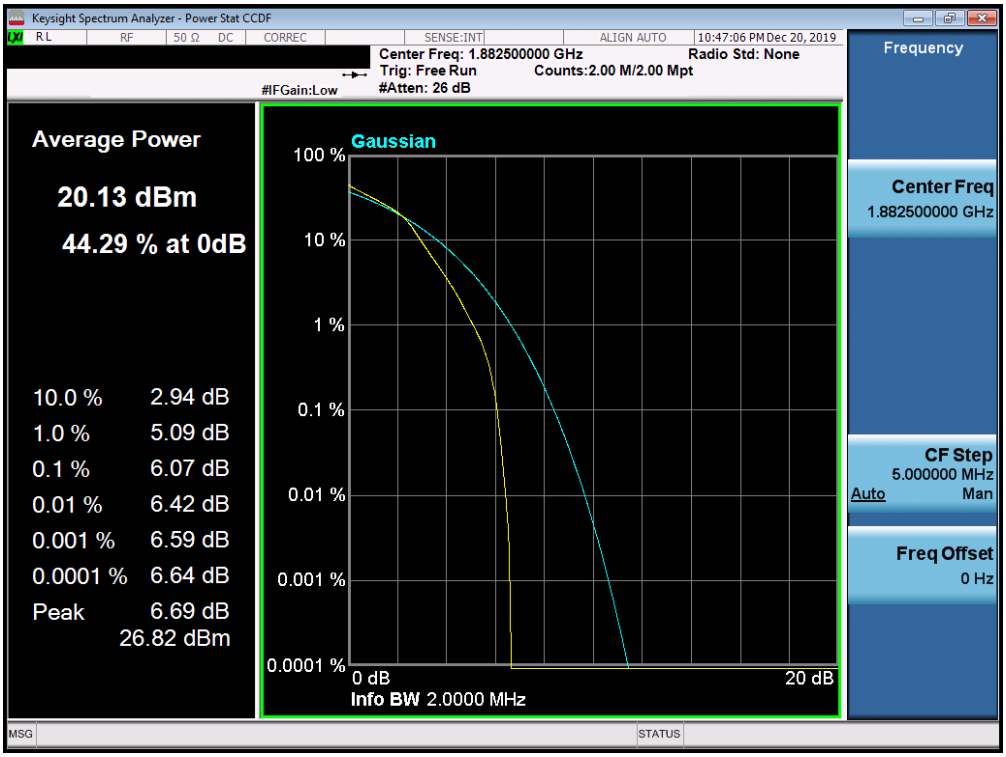
Band 25/2



Plot 7-217. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-218. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

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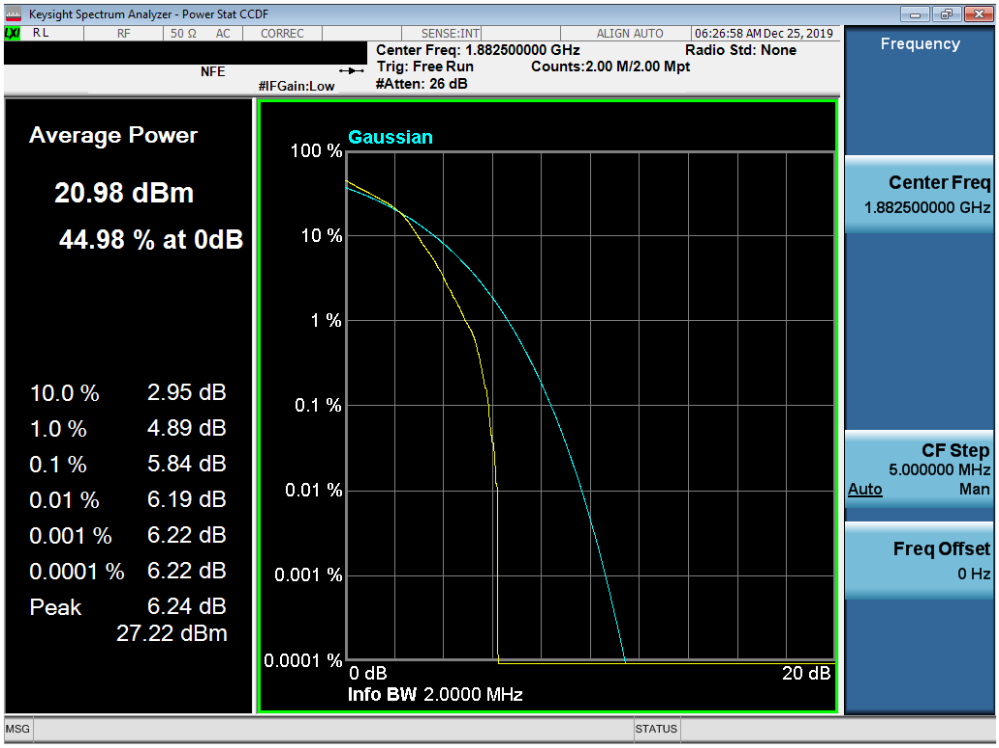
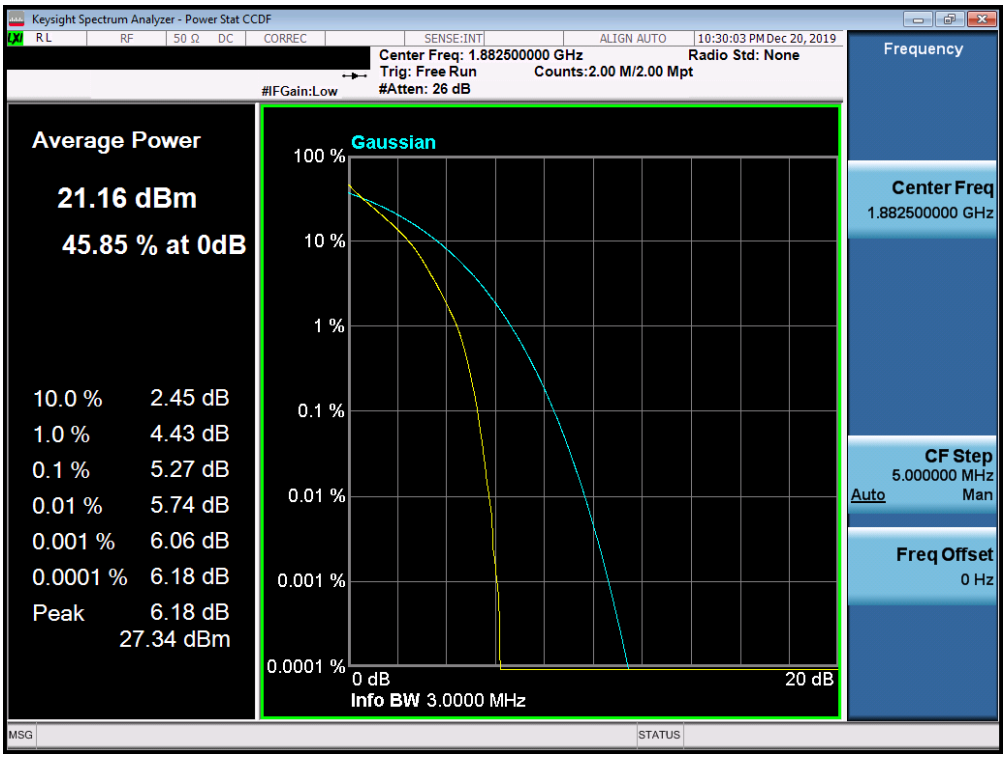


Plot 7-219. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



Plot 7-220. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

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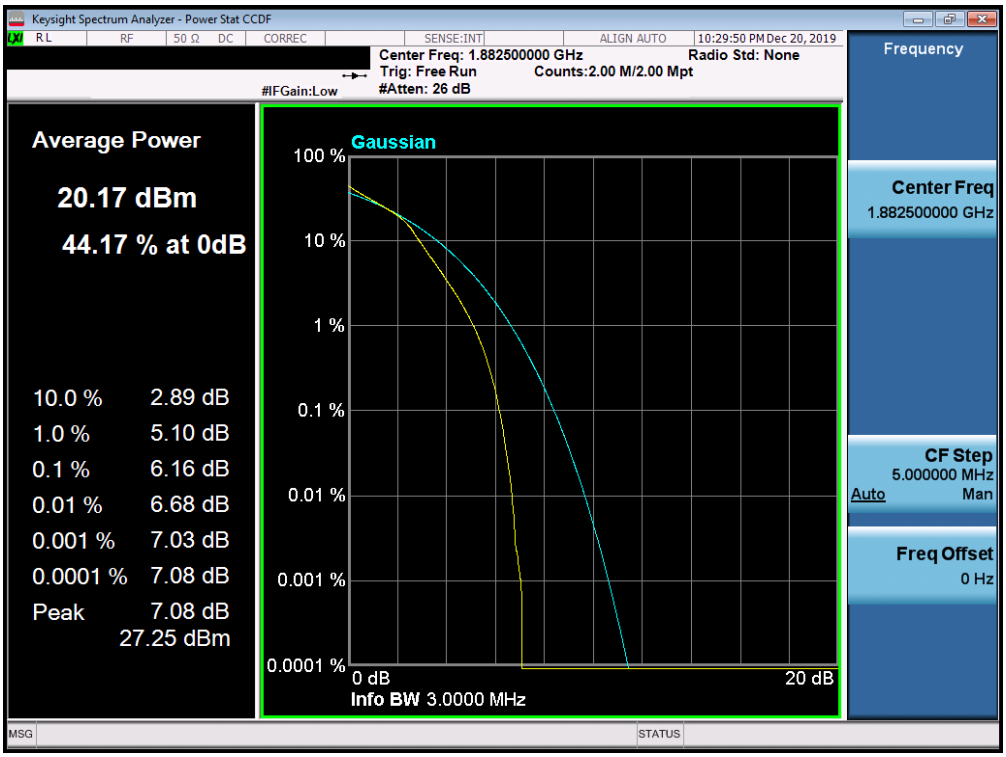
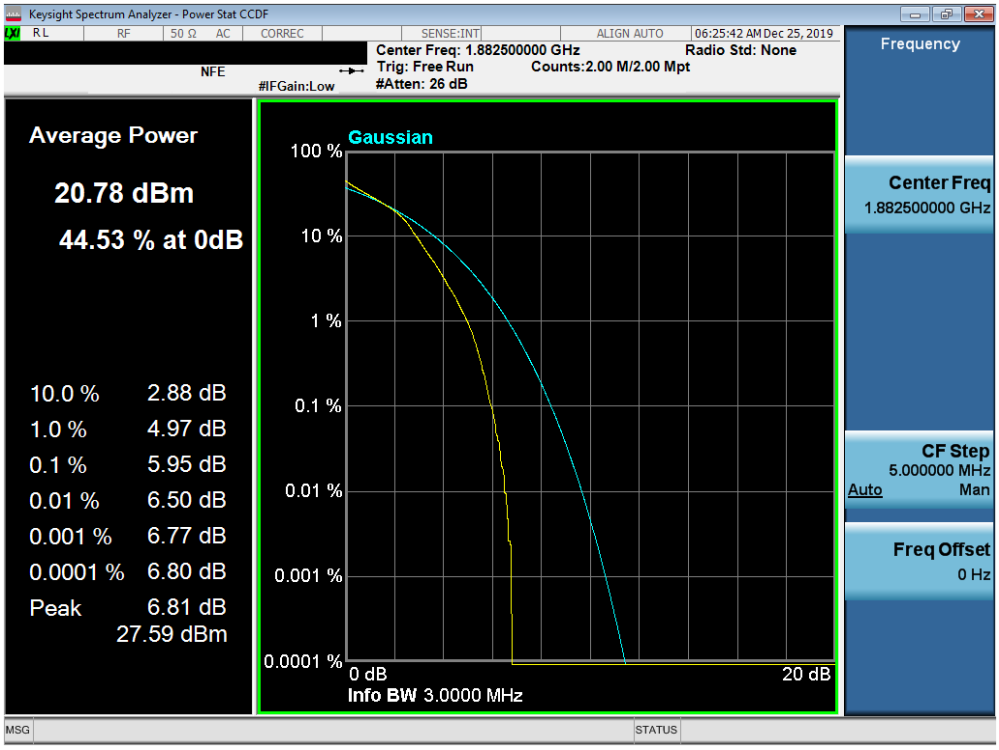


Plot 7-221. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



Plot 7-222. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

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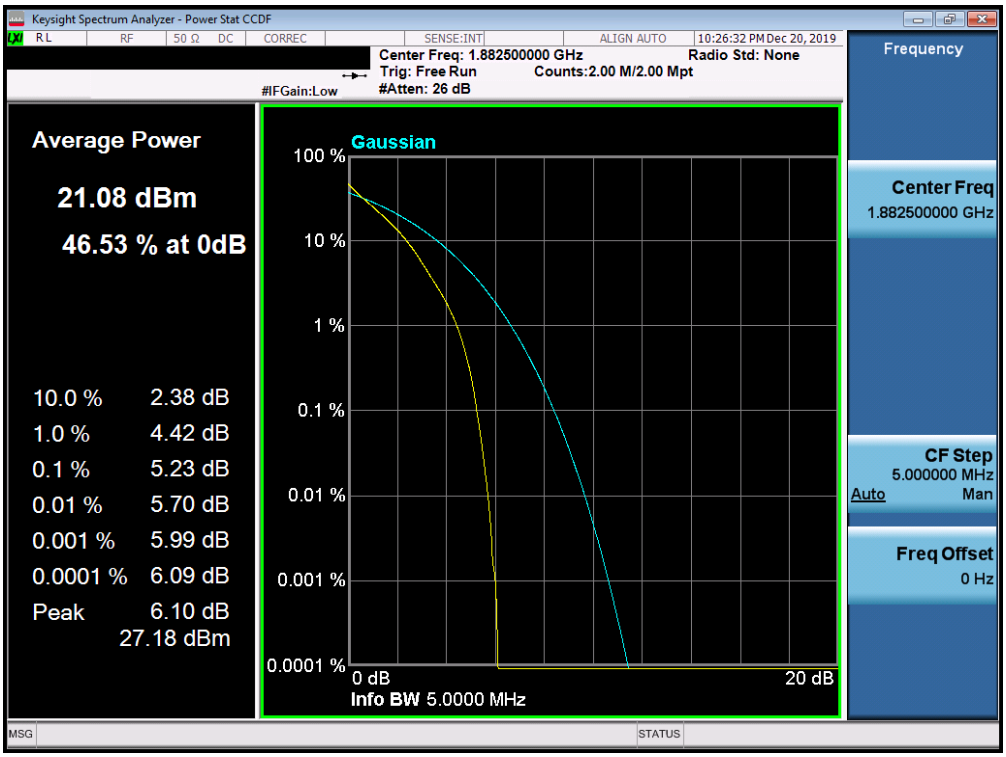
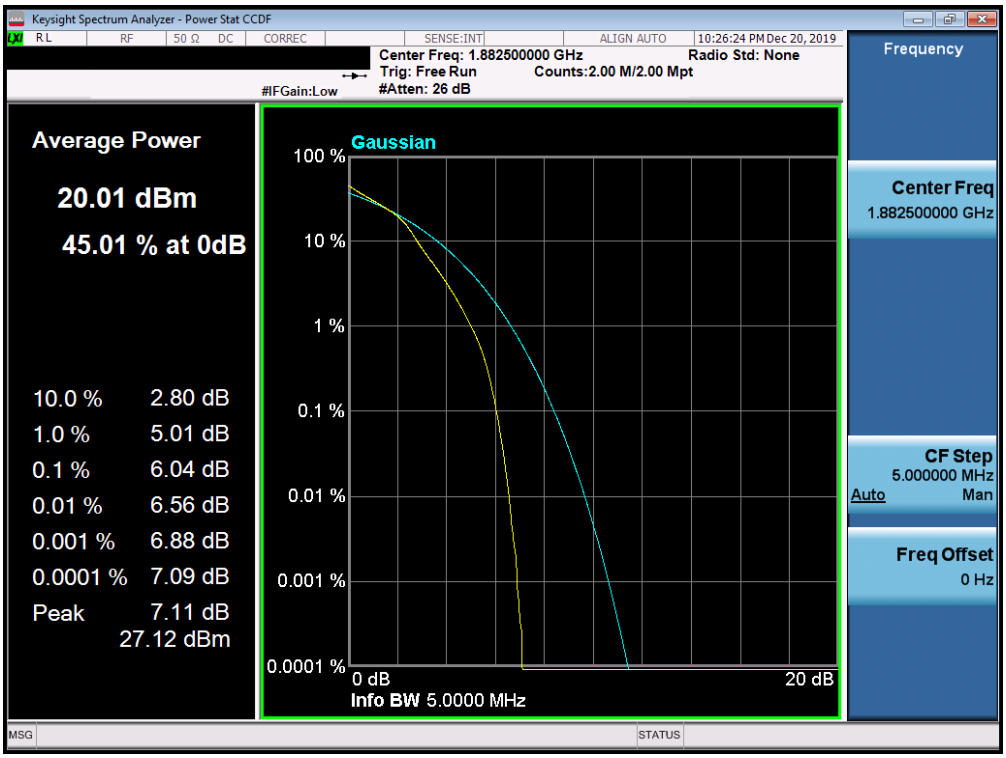


Plot 7-223. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-224. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

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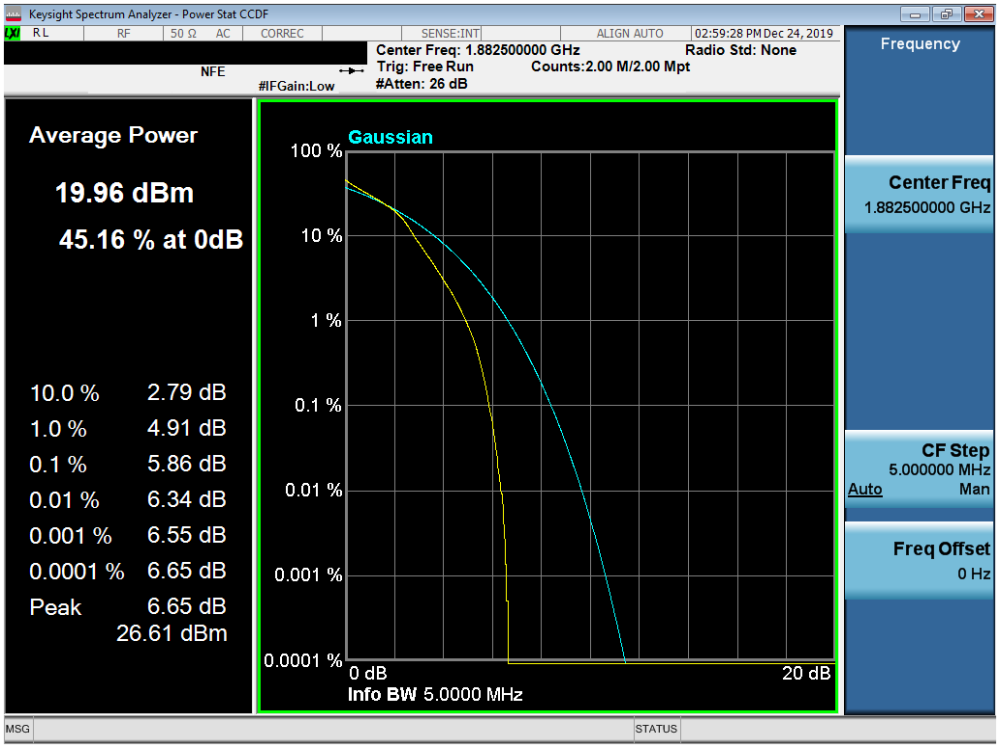
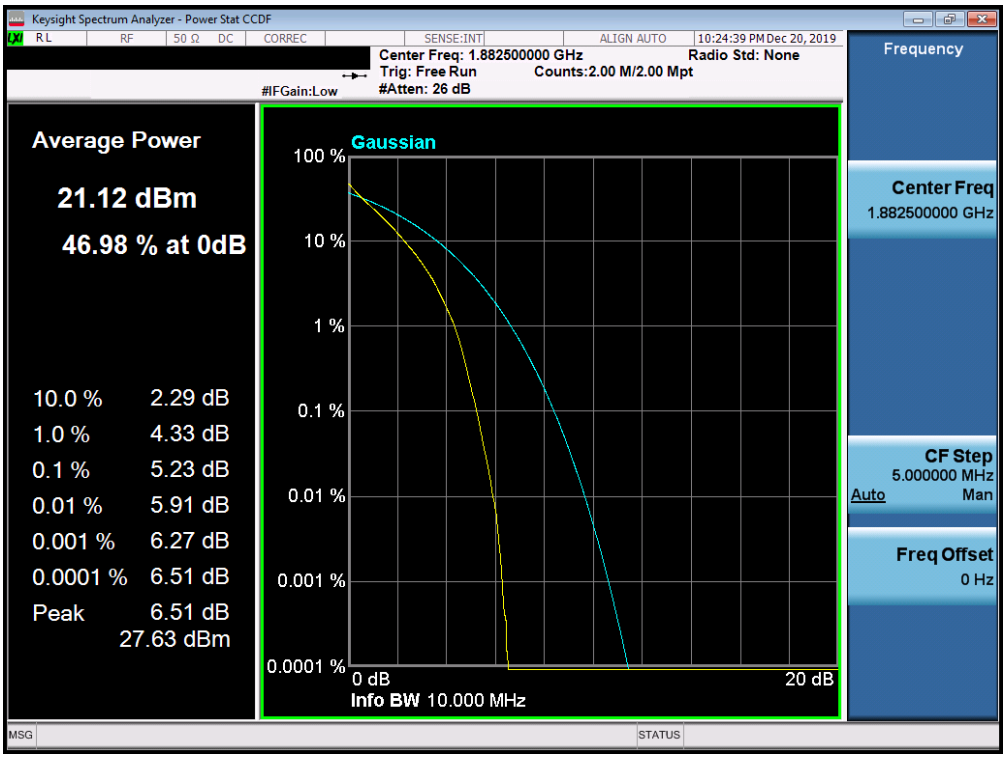


Plot 7-225. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)



Plot 7-226. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

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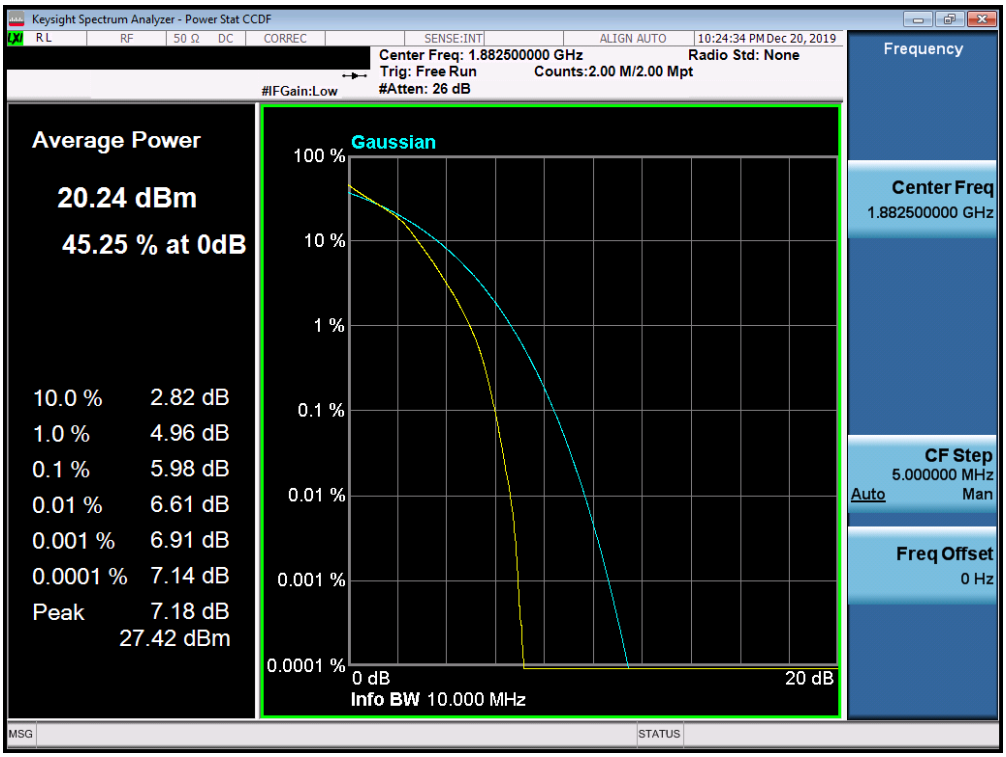
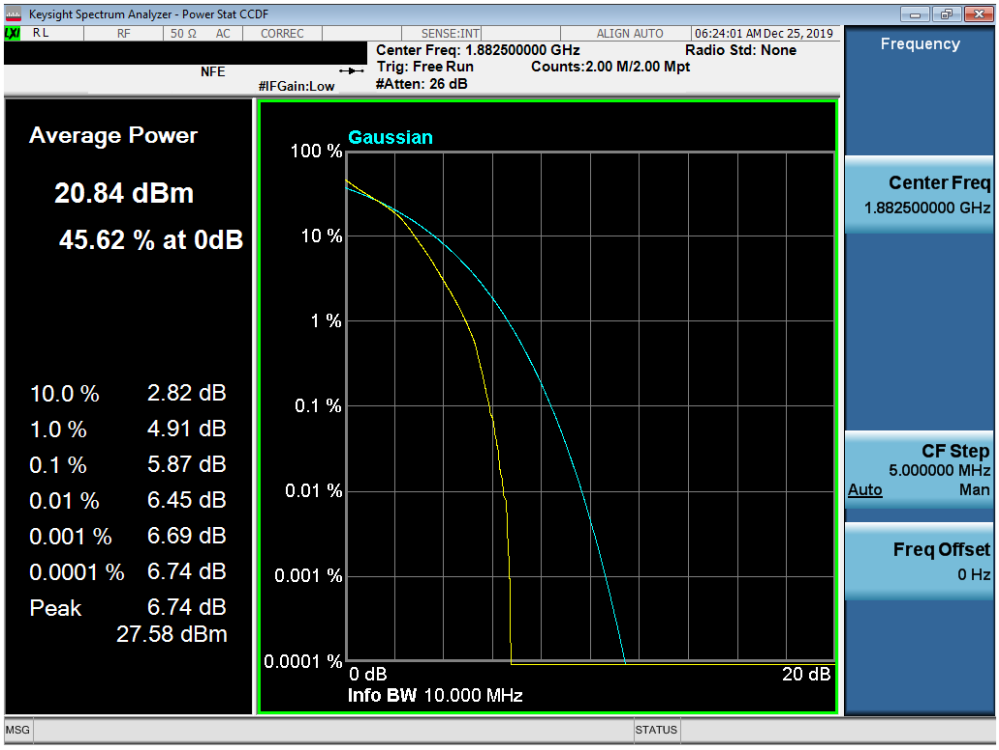


Plot 7-227. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)



Plot 7-228. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

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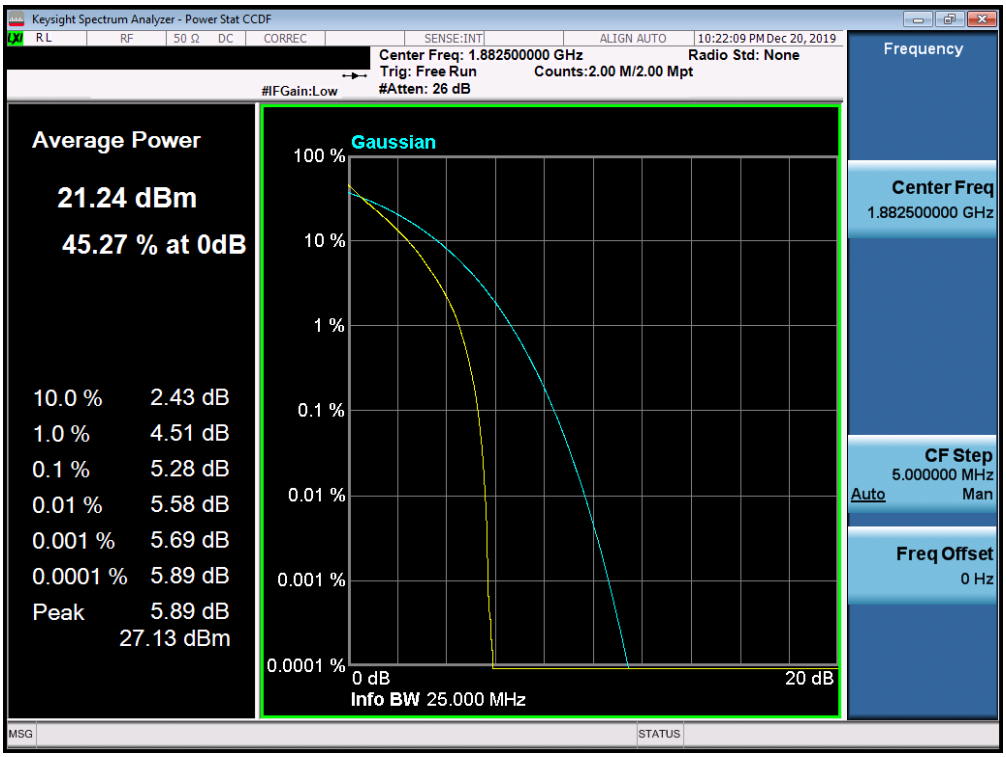
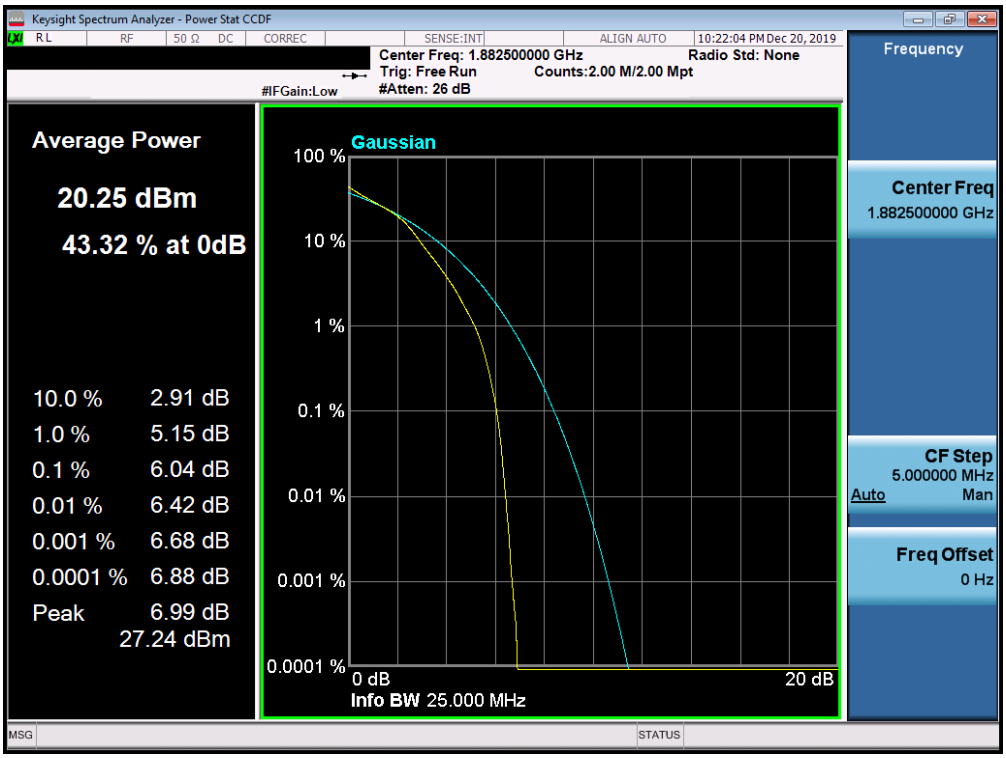


Plot 7-229. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-230. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

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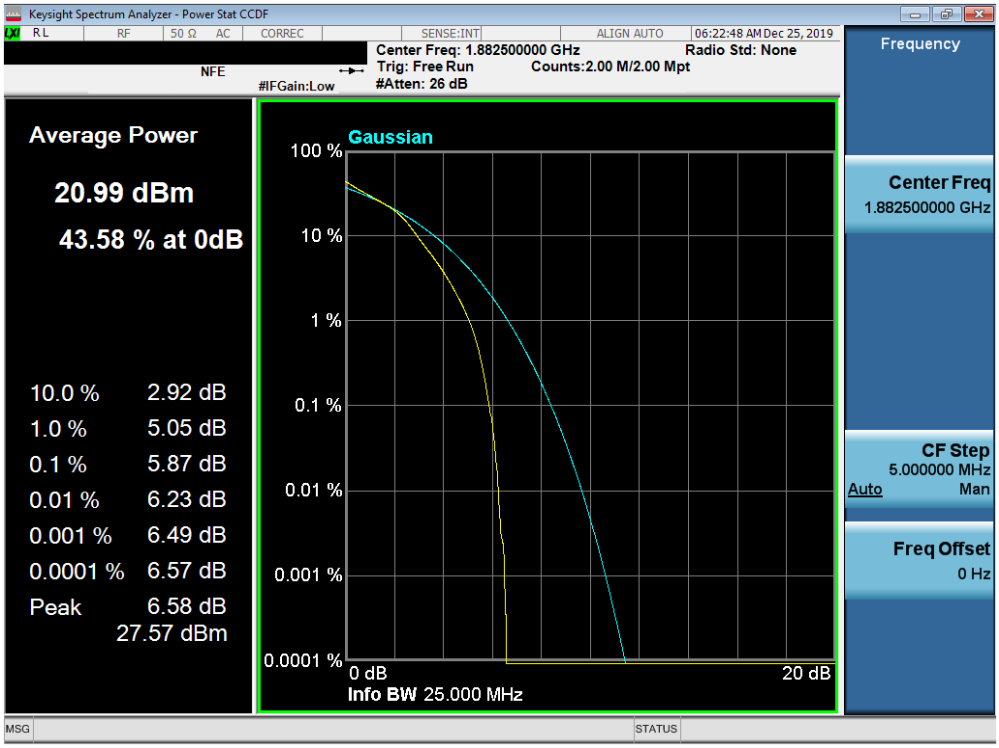
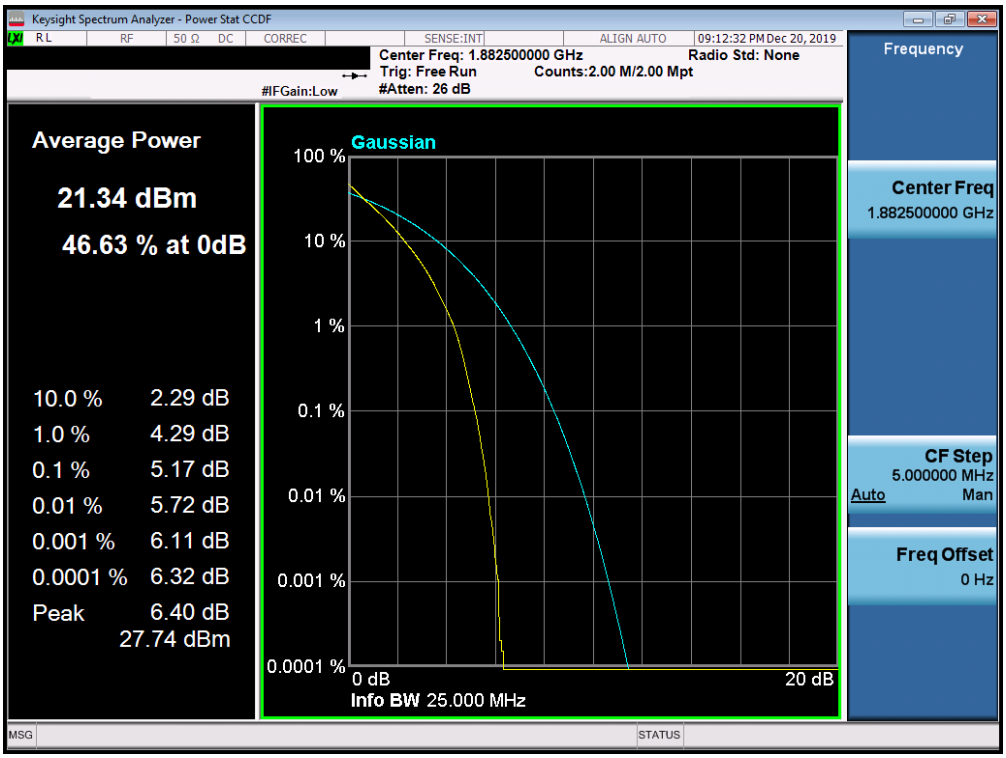


Plot 7-231. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-232. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

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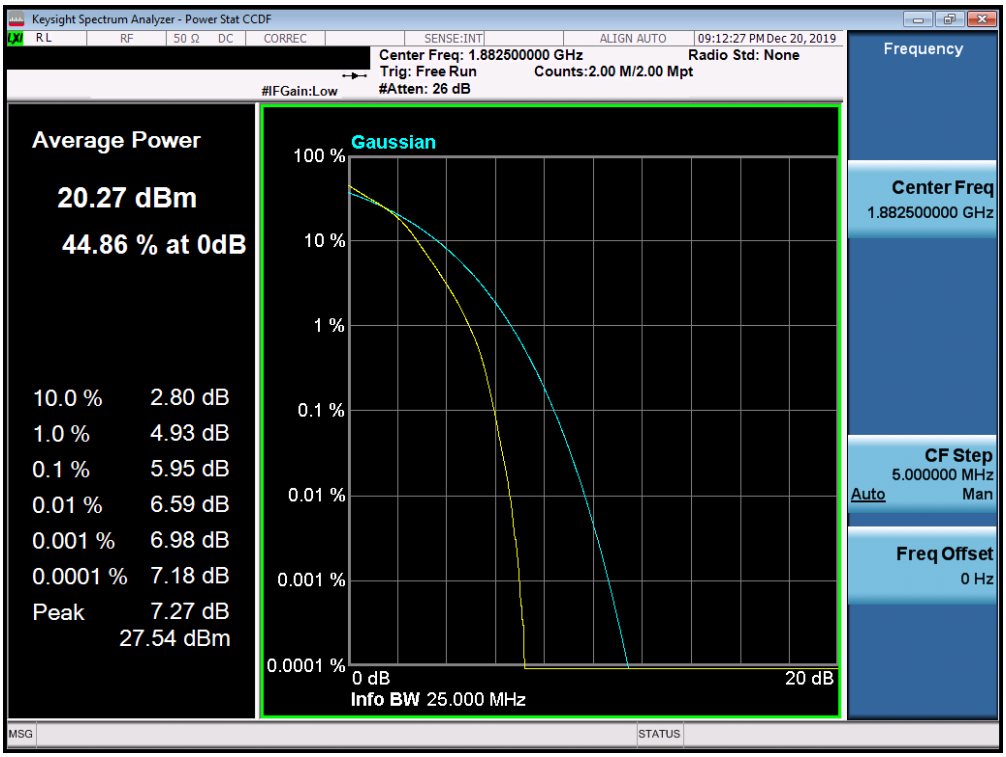
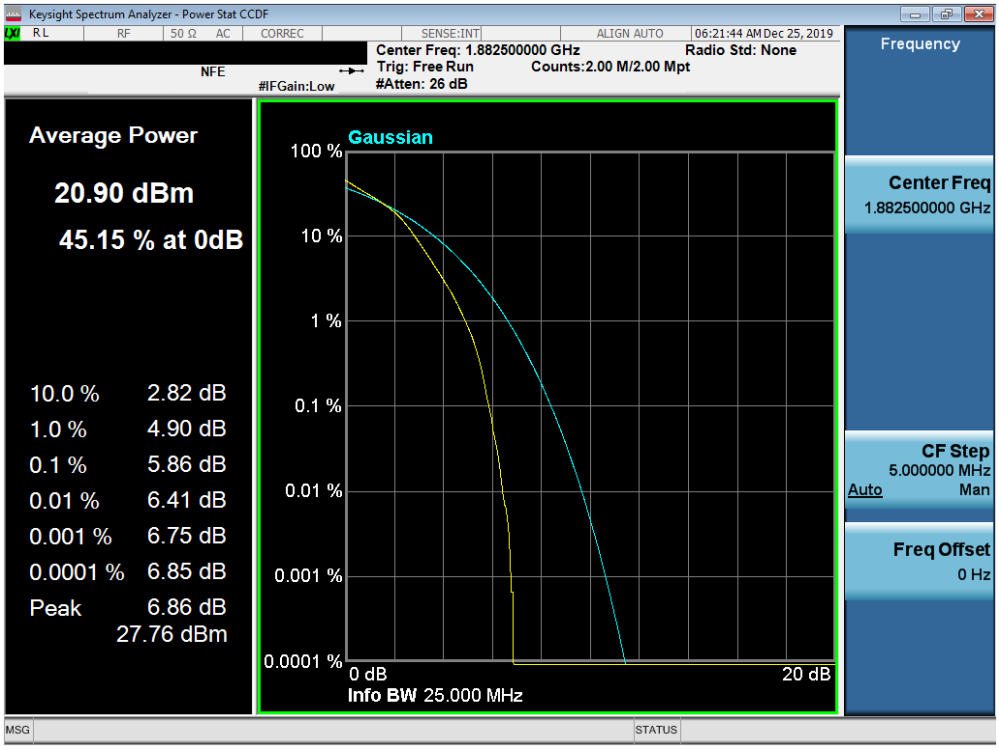


Plot 7-233. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-234. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

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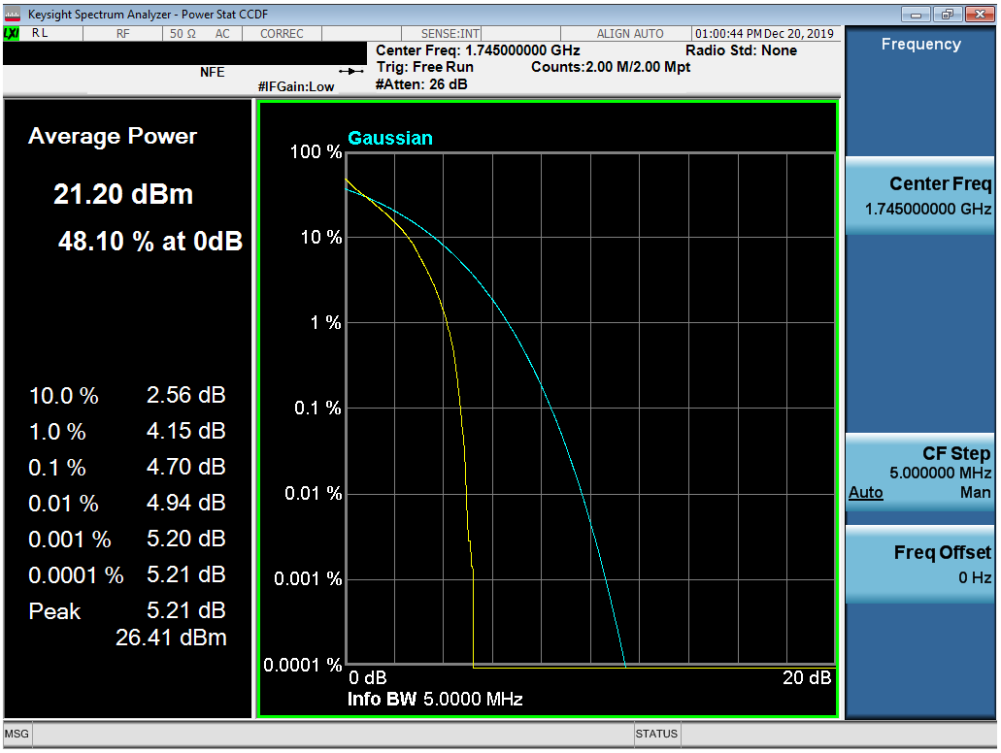
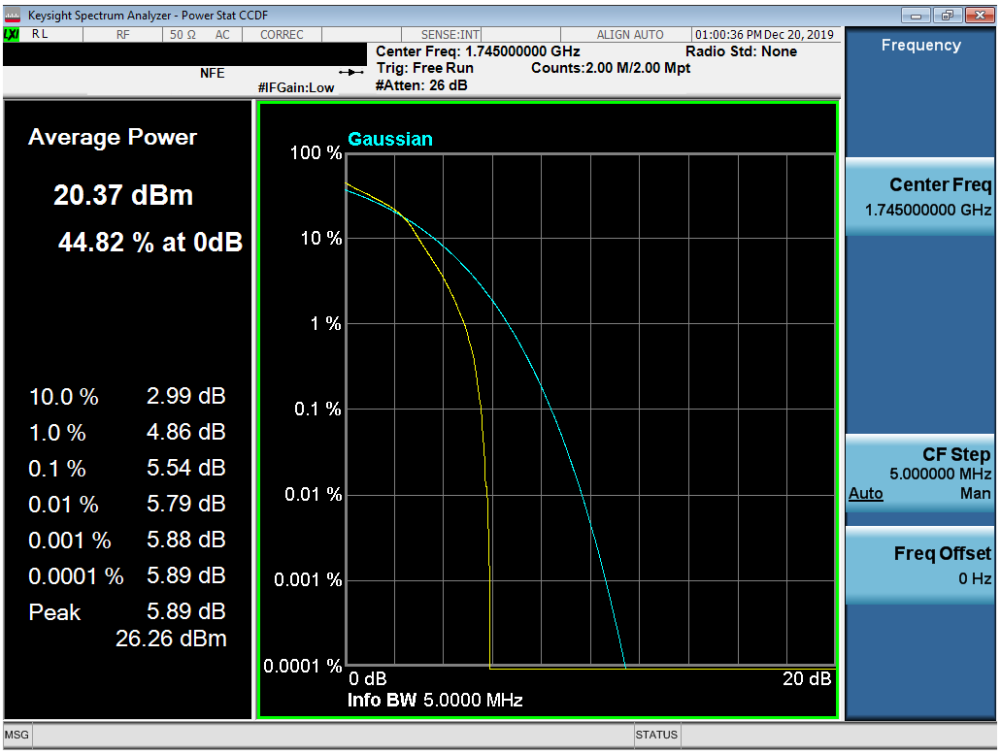
‘Band 66/4



Plot 7-235. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-236. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

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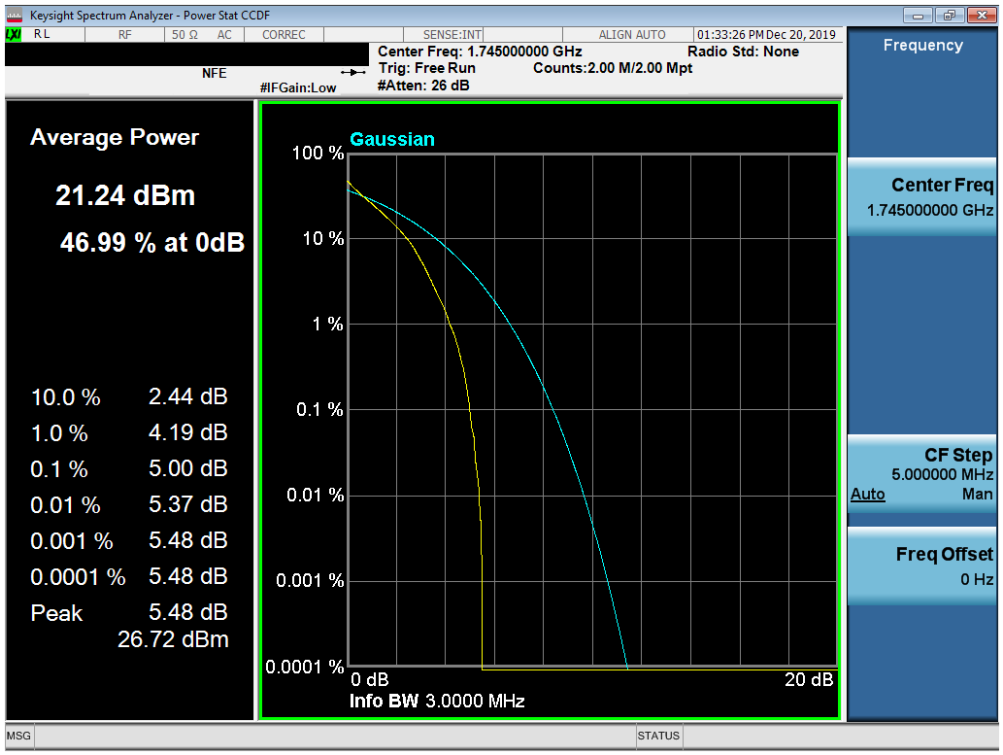
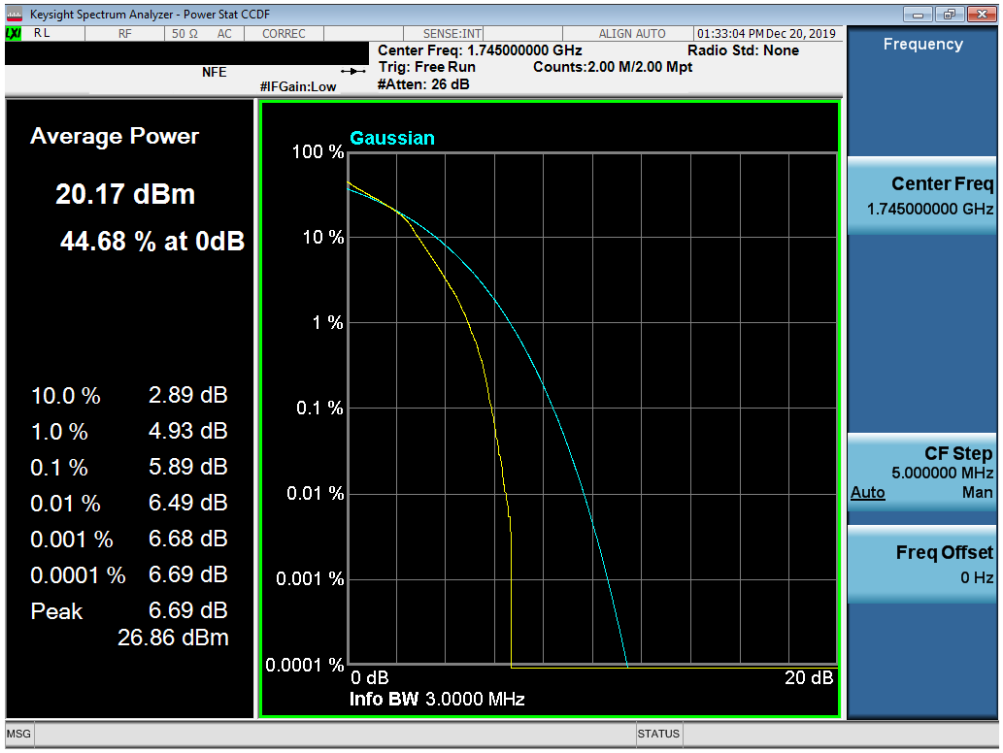


Plot 7-237. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-238. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

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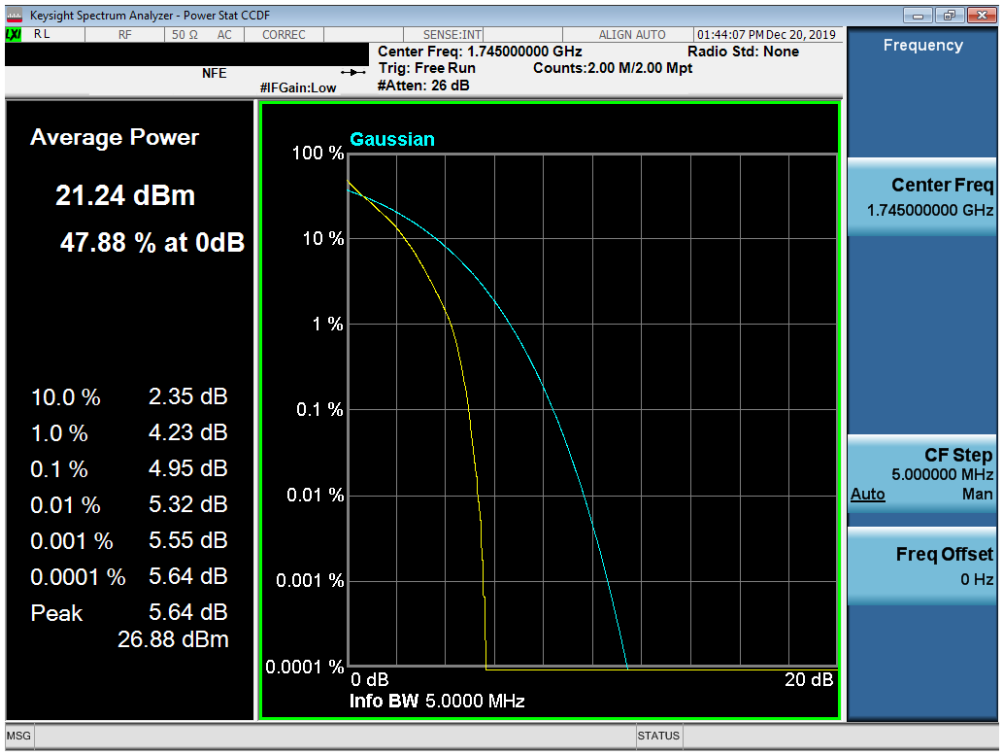
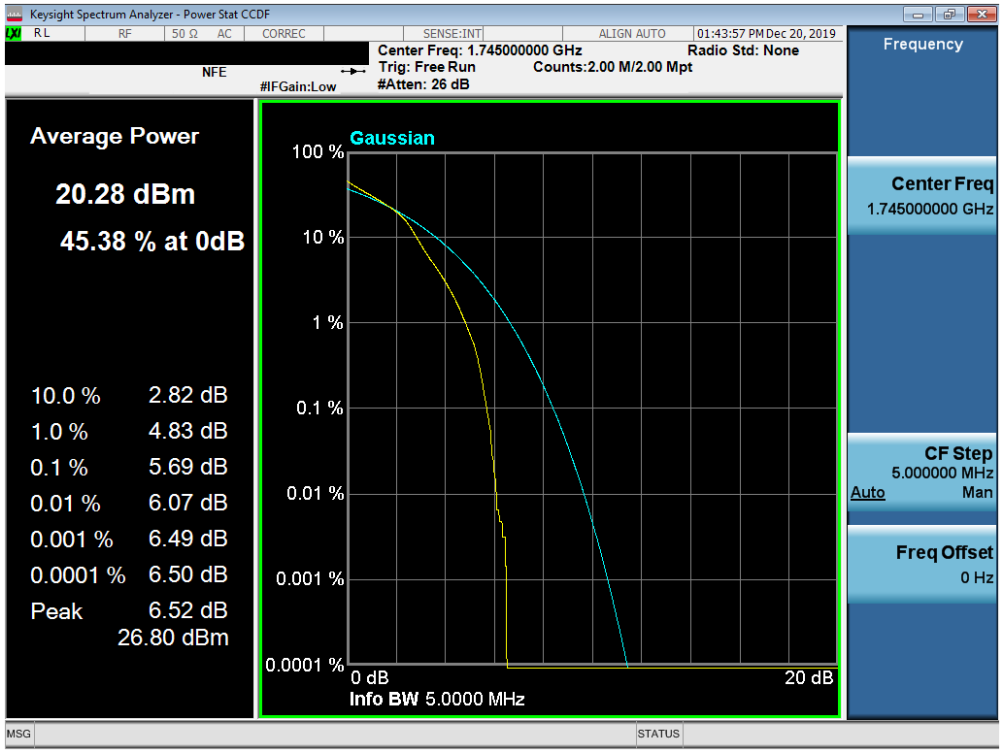


Plot 7-239. PAR Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-240. PAR Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

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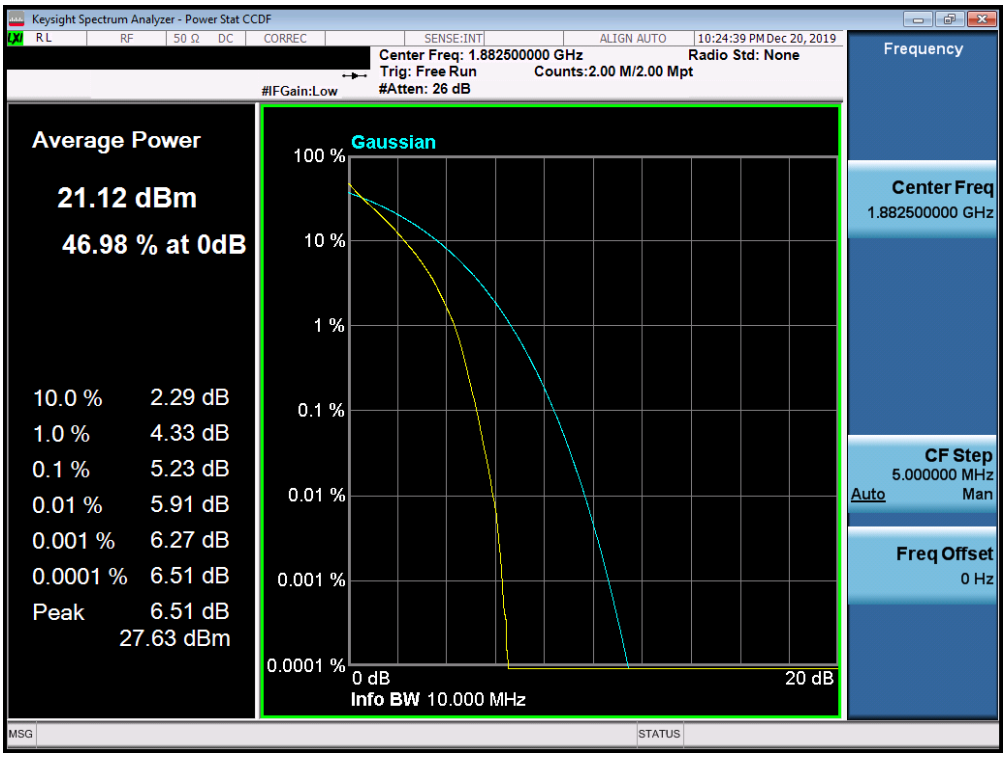
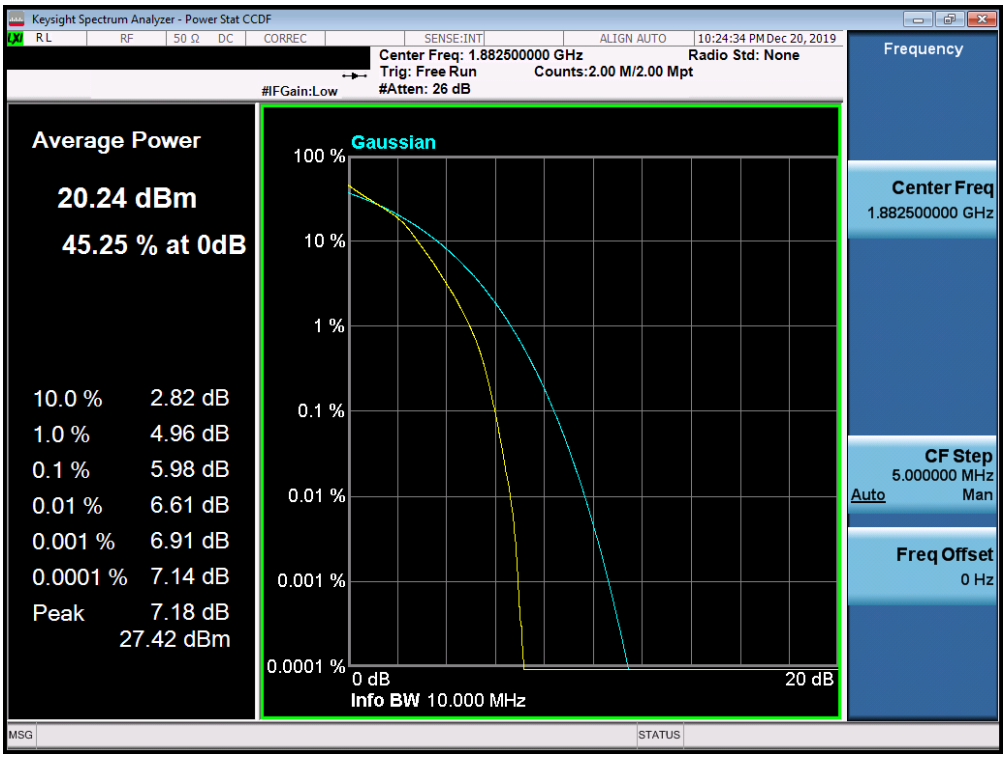


Plot 7-241. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-242. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

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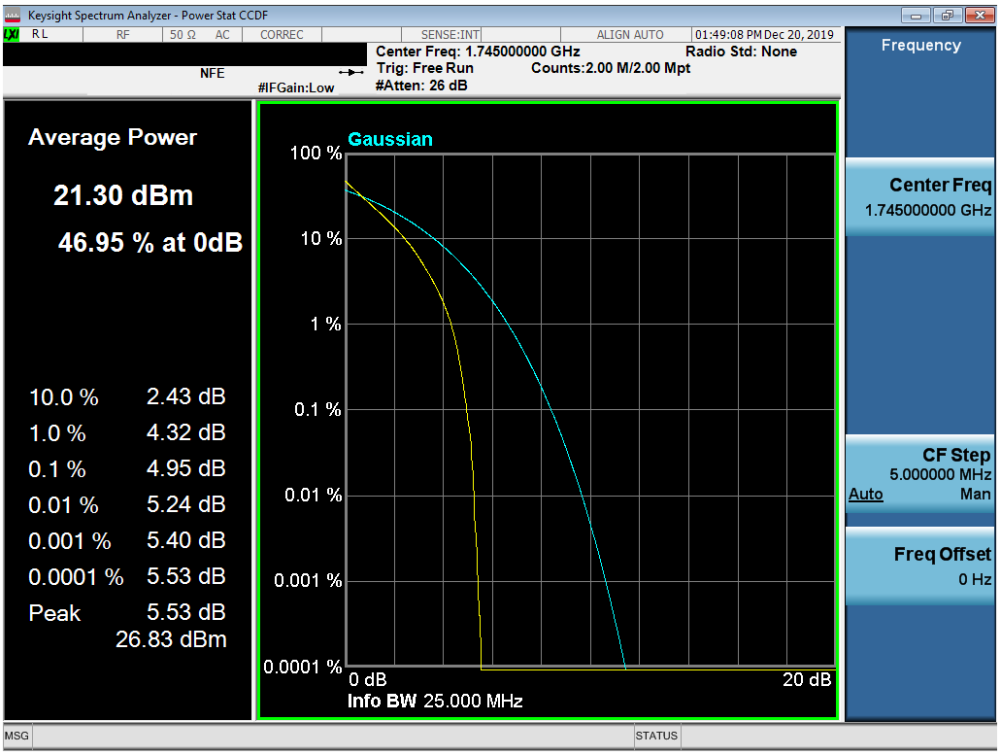
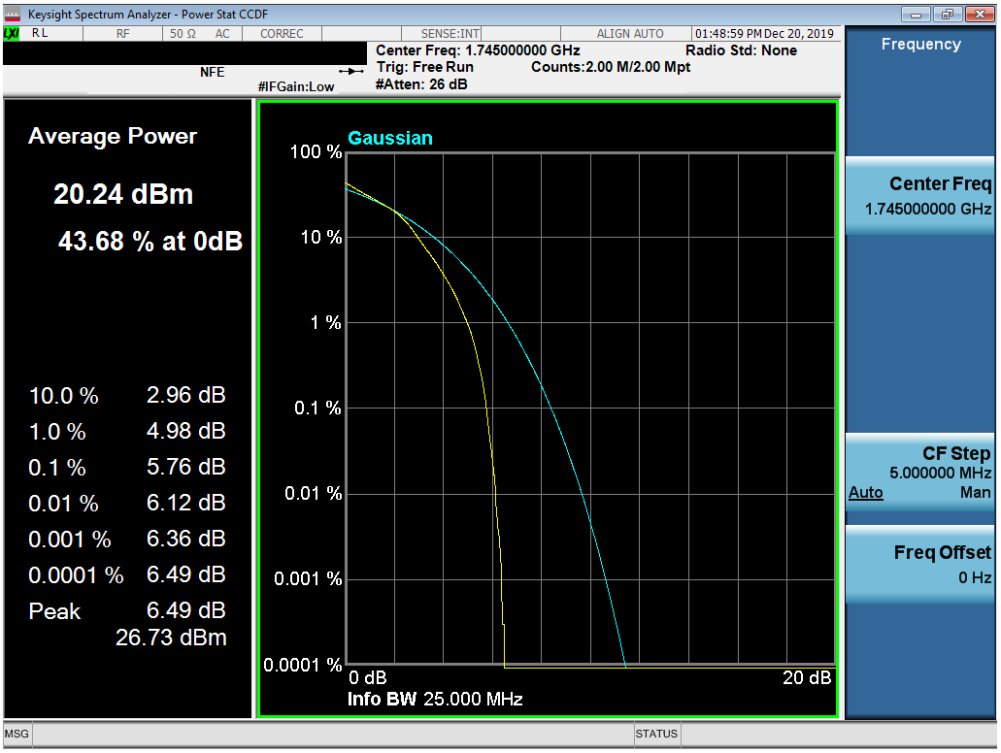


Plot 7-243. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-244. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

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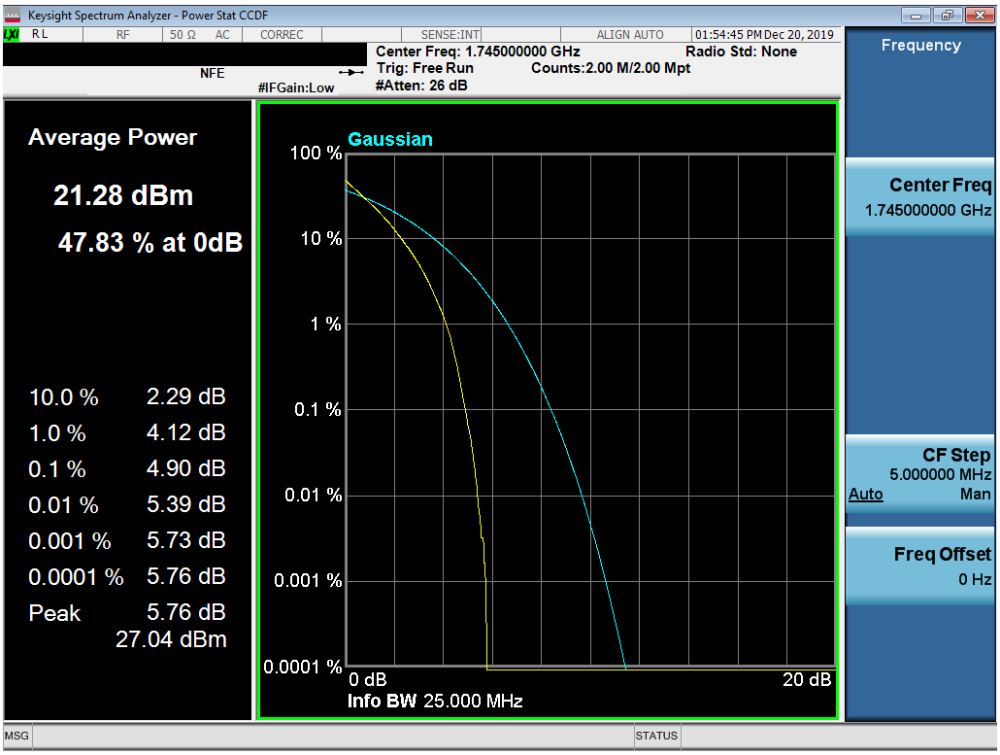
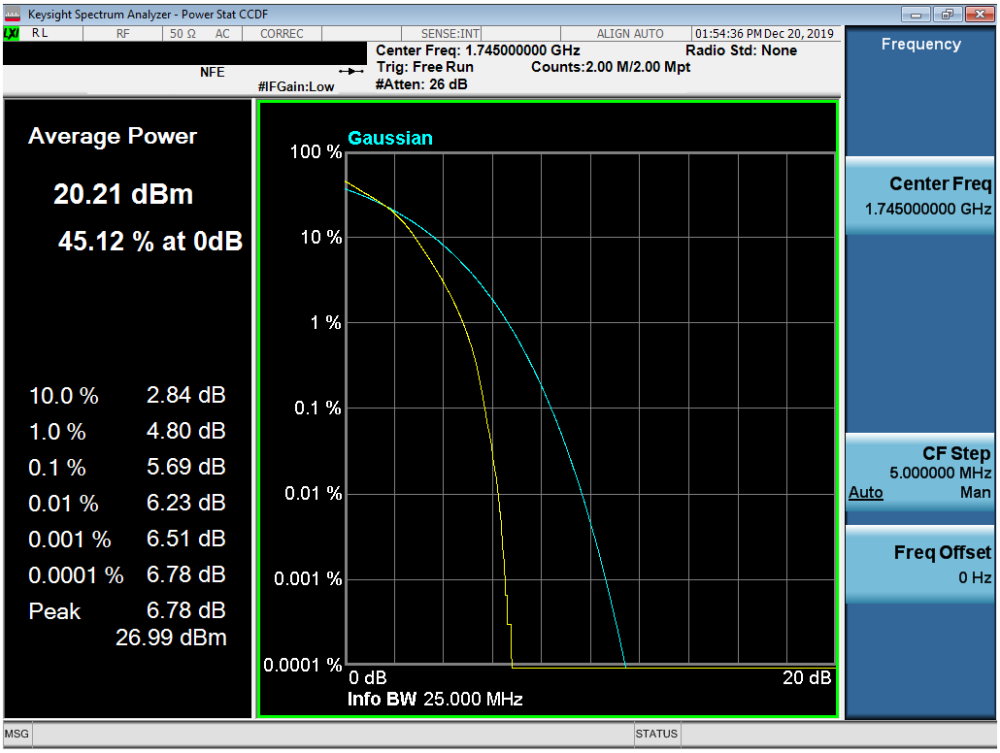


Plot 7-245. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-246. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

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7.6 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

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Test Setup

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

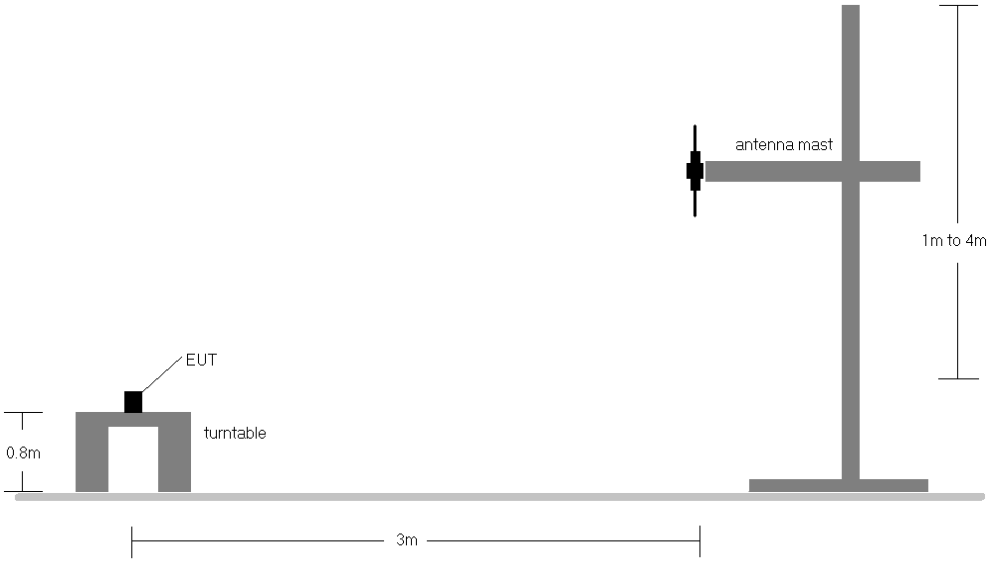

Figure 7-5. Radiated Test Setup <1GHz

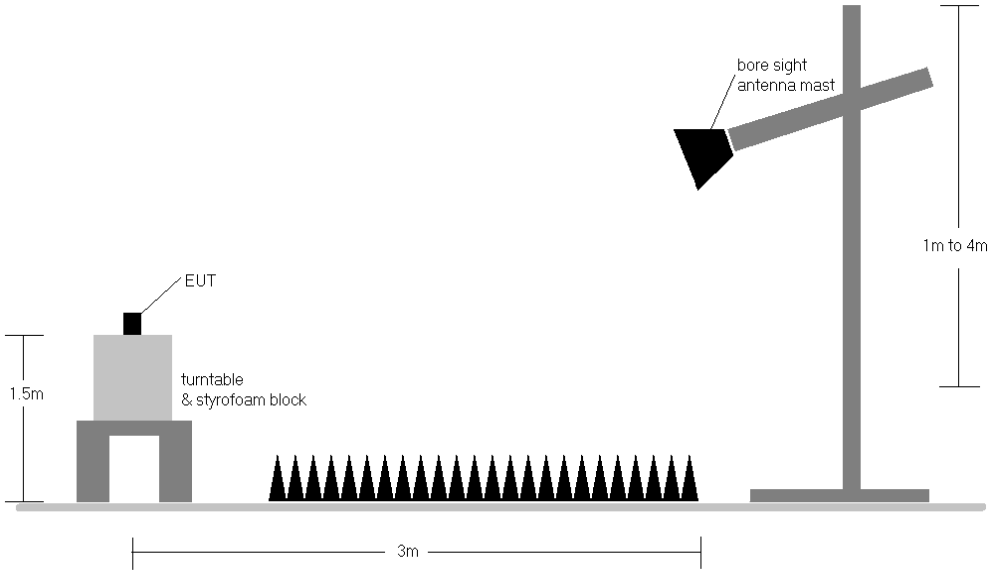

Figure 7-6. Radiated Test Setup >1GHz

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.

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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	182	12	1 / 5	16.05	3.40	17.30	0.054	34.77	-17.47	19.45	0.088	36.99	-17.54
707.50	1.4	QPSK	H	183	18	1 / 0	16.08	3.65	17.58	0.057	34.77	-17.19	19.73	0.094	36.99	-17.26
715.30	1.4	QPSK	H	308	3	1 / 5	16.69	3.70	**18.24**	0.067	34.77	-16.53	**20.39**	0.109	36.99	-16.60
715.30	1.4	16-QAM	H	308	3	1 / 5	15.98	3.70	**17.53**	0.057	34.77	-17.24	**19.68**	0.093	36.99	-17.31
700.50	3	QPSK	H	182	12	1 / 14	15.97	3.40	17.22	0.053	34.77	-17.55	19.37	0.086	36.99	-17.62
707.50	3	QPSK	H	183	18	1 / 0	15.95	3.65	17.45	0.056	34.77	-17.32	19.60	0.091	36.99	-17.39
714.50	3	QPSK	H	308	3	1 / 14	16.94	3.70	**18.49**	**0.071**	34.77	-16.28	**20.64**	**0.116**	36.99	-16.35
714.50	3	16-QAM	H	308	3	1 / 14	16.23	3.70	**17.78**	0.060	34.77	-16.99	**19.93**	0.098	36.99	-17.06
701.50	5	QPSK	H	182	12	1 / 24	15.79	3.40	17.04	0.051	34.77	-17.73	19.19	0.083	36.99	-17.80
707.50	5	QPSK	H	183	18	1 / 0	15.90	3.65	17.40	0.055	34.77	-17.37	19.55	0.090	36.99	-17.44
713.50	5	QPSK	H	308	3	1 / 24	15.96	3.70	**17.51**	0.056	34.77	-17.26	**19.66**	0.092	36.99	-17.33
713.50	5	16-QAM	H	308	3	1 / 24	15.25	3.70	**16.80**	0.048	34.77	-17.97	**18.95**	0.079	36.99	-18.04
704.00	10	QPSK	H	182	12	1 / 49	16.15	3.50	17.50	0.056	34.77	-17.27	19.65	0.092	36.99	-17.34
707.50	10	QPSK	H	183	18	1 / 0	16.07	3.65	17.57	0.057	34.77	-17.20	19.72	0.094	36.99	-17.27
711.00	10	QPSK	H	308	3	1 / 49	16.84	3.70	**18.39**	0.069	34.77	-16.38	**20.54**	0.113	36.99	-16.45
711.00	10	16-QAM	H	308	3	1 / 49	16.13	3.70	**17.68**	0.059	34.77	-17.09	**19.83**	0.096	36.99	-17.16
714.50	3	QPSK	V	202	227	1 / 14	15.77	3.70	17.32	0.054	34.77	-17.45	19.47	0.089	36.99	-17.52

Table 7-3. ERP Data (Band 12)

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	158	361	1 / 24	14.87	5.80	18.52	0.071	34.77	-16.25	20.67	0.117	36.99	-16.32
782.00	5	QPSK	H	158	361	1 / 24	14.98	5.80	18.63	0.073	34.77	-16.14	20.78	0.120	36.99	-16.21
784.50	5	QPSK	H	158	361	1 / 24	15.04	5.90	**18.79**	**0.076**	34.77	-15.98	**20.94**	**0.124**	36.99	-16.05
784.50	5	16-QAM	H	158	361	1 / 24	13.38	5.90	**17.13**	0.052	34.77	-17.64	**19.28**	0.085	36.99	-17.71
782.00	10	QPSK	H	158	361	1 / 49	15.08	5.80	**18.73**	0.075	34.77	-16.04	**20.88**	0.122	36.99	-16.11
782.00	10	16-QAM	H	158	361	1 / 49	14.34	5.80	**17.99**	0.063	34.77	-16.78	**20.14**	0.103	36.99	-16.85
784.50	5	QPSK	V	155	348	1 / 24	12.62	5.80	16.27	0.042	34.77	-18.50	18.42	0.070	36.99	-18.57

Table 7-4. ERP Data (Band 13)

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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	H	139	4	1 / 0	13.92	6.70	18.47	0.070	38.45	-19.98	20.62	0.115	40.61	-19.99
836.50	1.4	QPSK	H	139	4	1 / 0	14.31	6.70	**18.86**	0.077	38.45	-19.59	**21.01**	0.126	40.61	-19.60
848.30	1.4	QPSK	H	139	4	1 / 0	14.05	6.70	18.60	0.072	38.45	-19.85	20.75	0.119	40.61	-19.86
836.50	1.4	16-QAM	H	139	4	1 / 0	13.74	6.70	**18.29**	0.067	38.45	-20.16	**20.44**	0.111	40.61	-20.17
825.50	3	QPSK	H	139	4	1 / 0	14.27	6.70	18.82	0.076	38.45	-19.63	20.97	0.125	40.61	-19.64
836.50	3	QPSK	H	139	4	1 / 0	14.40	6.70	**18.95**	0.079	38.45	-19.50	**21.10**	0.129	40.61	-19.51
847.50	3	QPSK	H	139	4	1 / 0	14.36	6.65	18.86	0.077	38.45	-19.59	21.01	0.126	40.61	-19.60
836.50	3	16-QAM	H	139	4	1 / 0	13.83	6.70	**18.38**	0.069	38.45	-20.07	**20.53**	0.113	40.61	-20.08
826.50	5	QPSK	H	139	4	1 / 0	14.08	6.70	18.63	0.073	38.45	-19.82	20.78	0.120	40.61	-19.83
836.50	5	QPSK	H	139	4	1 / 0	14.42	6.70	**18.97**	0.079	38.45	-19.48	**21.12**	0.129	40.61	-19.49
846.50	5	QPSK	H	139	4	1 / 0	14.30	6.60	18.75	0.075	38.45	-19.70	20.90	0.123	40.61	-19.71
836.50	5	16-QAM	H	139	4	1 / 0	13.85	6.70	**18.40**	0.069	38.45	-20.05	**20.55**	0.114	40.61	-20.06
829.00	10	QPSK	H	139	4	1 / 0	13.87	6.70	18.42	0.070	38.45	-20.03	20.57	0.114	40.61	-20.04
836.50	10	QPSK	H	139	4	1 / 0	14.33	6.70	**18.88**	0.077	38.45	-19.57	**21.03**	0.127	40.61	-19.58
844.00	10	QPSK	H	139	4	1 / 0	13.86	6.60	18.31	0.068	38.45	-20.14	20.46	0.111	40.61	-20.15
836.50	10	16-QAM	H	139	4	1 / 0	13.76	6.70	**18.31**	0.068	38.45	-20.14	**20.46**	0.111	40.61	-20.15

Table 7-5. 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	H	139	4	1 / 0	13.94	6.70	18.49	0.071	38.45	-19.96	20.64	0.116	40.61	-19.97
836.50	15	QPSK	H	139	4	1 / 0	14.61	6.70	**19.16**	0.082	38.45	-19.29	**21.31**	**0.135**	40.61	-19.30
841.50	15	QPSK	H	139	4	1 / 0	14.03	6.60	18.48	0.070	38.45	-19.97	20.63	0.116	40.61	-19.98
836.50	15	16-QAM	H	139	4	1 / 0	14.04	6.70	**18.59**	0.072	38.45	-19.86	**20.74**	0.119	40.61	-19.87
836.50	15	QPSK	V	151	12	1 / 0	14.19	6.70	18.74	0.075	38.45	-19.71	20.89	0.123	40.61	-19.72

Table 7-6. ERP Data (Band 26)

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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	H	114	133	1 / 0	14.13	9.44	23.57	0.228	30.00	-6.43
1745.00	1.4	QPSK	H	124	162	1 / 5	14.61	9.23	**23.84**	0.242	30.00	-6.16
1779.30	1.4	QPSK	H	104	136	1 / 0	14.52	9.26	23.78	0.239	30.00	-6.22
1710.70	1.4	16-QAM	H	114	133	1 / 5	12.46	9.44	**21.90**	0.155	30.00	-8.10
1711.50	3	QPSK	H	114	133	1 / 0	13.86	9.44	23.30	0.214	30.00	-6.70
1745.00	3	QPSK	H	124	162	1 / 14	14.68	9.23	23.91	0.246	30.00	-6.09
1778.50	3	QPSK	H	104	136	1 / 0	14.95	9.26	**24.21**	**0.264**	30.00	-5.79
1711.50	3	16-QAM	H	114	133	1 / 14	12.45	9.44	**21.89**	0.154	30.00	-8.11
1712.50	5	QPSK	H	114	133	1 / 0	13.96	9.43	23.39	0.218	30.00	-6.61
1745.00	5	QPSK	H	124	162	1 / 24	14.68	9.23	**23.91**	0.246	30.00	-6.09
1777.50	5	QPSK	H	104	136	1 / 0	14.24	9.26	23.50	0.224	30.00	-6.50
1745.00	5	16-QAM	H	124	162	1 / 24	13.60	9.23	**22.83**	0.192	30.00	-7.17
1715.00	10	QPSK	H	114	133	1 / 0	13.95	9.42	23.37	0.217	30.00	-6.63
1745.00	10	QPSK	H	124	162	1 / 49	14.61	9.23	**23.84**	0.242	30.00	-6.16
1775.00	10	QPSK	H	104	136	1 / 0	14.36	9.25	23.61	0.230	30.00	-6.39
1745.00	10	16-QAM	H	124	162	1 / 49	13.65	9.23	**22.88**	0.194	30.00	-7.12
1717.50	15	QPSK	H	114	133	1 / 0	13.86	9.40	23.26	0.212	30.00	-6.74
1745.00	15	QPSK	H	124	162	1 / 74	14.77	9.23	**24.00**	0.251	30.00	-6.00
1772.50	15	QPSK	H	104	136	1 / 0	14.42	9.25	23.67	0.233	30.00	-6.33
1745.00	15	16-QAM	H	124	162	1 / 74	13.58	9.23	**22.81**	0.191	30.00	-7.19
1720.00	20	QPSK	H	114	133	1 / 0	13.89	9.38	23.27	0.213	30.00	-6.73
1745.00	20	QPSK	H	124	162	1 / 99	14.56	9.23	**23.79**	0.239	30.00	-6.21
1770.00	20	QPSK	H	104	136	1 / 0	14.27	9.24	23.51	0.224	30.00	-6.49
1745.00	20	16-QAM	H	124	162	1 / 99	13.63	9.23	**22.86**	0.193	30.00	-7.14
1778.50	3	QPSK	V	266	79	1 / 0	13.13	9.23	22.36	0.172	30.00	-7.64

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

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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	128	92	1 / 5	13.44	9.48	22.92	0.196	33.01	-10.09
1882.50	1.4	QPSK	H	149	82	1 / 0	13.42	9.94	**23.36**	**0.217**	33.01	-9.66
1914.30	1.4	QPSK	H	102	88	1 / 0	12.72	10.29	23.01	0.200	33.01	-10.00
1882.50	1.4	16-QAM	H	149	82	1 / 0	12.08	9.94	**22.02**	0.159	33.01	-11.00
1851.50	3	QPSK	H	128	92	1 / 14	13.30	9.50	22.80	0.190	33.01	-10.21
1882.50	3	QPSK	H	149	82	1 / 0	13.39	9.94	**23.33**	0.215	33.01	-9.69
1913.50	3	QPSK	H	102	88	1 / 0	12.83	10.29	23.12	0.205	33.01	-9.90
1882.50	3	16-QAM	H	149	82	1 / 0	11.97	9.94	**21.91**	0.155	33.01	-11.11
1852.50	5	QPSK	H	128	92	1 / 24	13.33	9.51	22.84	0.192	33.01	-10.17
1882.50	5	QPSK	H	149	82	1 / 0	12.42	9.94	22.36	0.172	33.01	-10.66
1912.50	5	QPSK	H	102	88	1 / 0	12.82	10.28	**23.10**	0.204	33.01	-9.91
1882.50	5	16-QAM	H	149	82	1 / 0	11.43	9.94	**21.37**	0.137	33.01	-11.65
1855.00	10	QPSK	H	128	92	1 / 49	13.44	9.55	22.99	0.199	33.01	-10.02
1882.50	10	QPSK	H	149	82	1 / 0	13.41	9.94	**23.35**	0.216	33.01	-9.67
1910.00	10	QPSK	H	102	88	1 / 0	12.93	10.26	23.19	0.208	33.01	-9.82
1882.50	10	16-QAM	H	149	82	1 / 0	12.15	9.94	**22.09**	0.162	33.01	-10.93
1857.50	15	QPSK	H	128	92	1 / 74	13.23	9.58	22.81	0.191	33.01	-10.20
1882.50	15	QPSK	H	149	82	1 / 0	13.42	9.94	**23.36**	**0.217**	33.01	-9.66
1907.50	15	QPSK	H	102	88	1 / 0	13.11	10.24	23.35	0.216	33.01	-9.66
1882.50	15	16-QAM	H	149	82	1 / 0	11.93	9.94	**21.87**	0.154	33.01	-11.15
1860.00	20	QPSK	H	128	92	1 / 99	13.43	9.62	23.05	0.202	33.01	-9.96
1882.50	20	QPSK	H	149	82	1 / 0	13.42	9.94	**23.36**	**0.217**	33.01	-9.66
1905.00	20	QPSK	H	102	88	1 / 0	13.03	10.22	23.25	0.211	33.01	-9.76
1882.50	20	16-QAM	H	149	82	1 / 0	12.33	9.94	**22.27**	0.168	33.01	-10.75
1882.50	1.4	QPSK	V	191	95	1 / 0	12.87	9.94	22.81	0.191	33.01	-10.21

Table 7-8. EIRP Data (Band 25/2)

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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	H	104	89	1 / 24	17.84	9.43	27.27	0.534	33.01	-5.74
2593.00	5	QPSK	H	129	86	1 / 0	17.85	9.55	**27.40**	0.550	33.01	-5.61
2687.50	5	QPSK	H	147	88	1 / 24	17.41	9.82	27.23	0.528	33.01	-5.78
2593.00	5	16-QAM	H	129	86	1 / 0	17.19	9.55	**26.74**	0.472	33.01	-6.27
2501.00	10	QPSK	H	104	89	1 / 49	17.91	9.43	27.34	0.542	33.01	-5.67
2593.00	10	QPSK	H	129	86	1 / 0	17.91	9.55	**27.46**	0.558	33.01	-5.55
2685.00	10	QPSK	H	147	88	1 / 49	17.49	9.82	27.31	0.539	33.01	-5.70
2593.00	10	16-QAM	H	129	86	1 / 0	17.22	9.55	**26.77**	0.476	33.01	-6.24
2503.50	15	QPSK	H	104	89	1 / 74	17.85	9.43	27.28	0.534	33.01	-5.73
2593.00	15	QPSK	H	129	86	1 / 0	17.92	9.55	**27.47**	**0.559**	33.01	-5.54
2682.50	15	QPSK	H	147	88	1 / 74	17.44	9.83	27.27	0.533	33.01	-5.74
2593.00	15	16-QAM	H	129	86	1 / 0	16.75	9.55	**26.30**	0.427	33.01	-6.71
2506.00	20	QPSK	H	104	89	1 / 99	17.92	9.42	27.34	0.543	33.01	-5.67
2593.00	20	QPSK	H	129	86	1 / 0	17.80	9.55	**27.35**	0.544	33.01	-5.66
2680.00	20	QPSK	H	147	88	1 / 99	17.49	9.83	27.32	0.540	33.01	-5.69
2593.00	20	16-QAM	H	129	86	1 / 0	17.12	9.55	**26.67**	0.465	33.01	-6.34
2593.00	15	QPSK	V	115	92	1 / 0	17.41	9.55	26.96	0.497	33.01	-6.05

Table 7-9. EIRP Data (Band 41 – PC2)

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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	H	170	82	1 / 0	11.90	9.43	21.33	0.136	33.01	-11.68
2593.00	5	QPSK	H	100	66	25 / 0	14.87	9.55	**24.42**	0.277	33.01	-8.59
2687.50	5	QPSK	H	134	37	1 / 24	14.50	9.82	24.32	0.270	33.01	-8.69
2593.00	5	16-QAM	H	100	66	25 / 0	13.97	9.55	**23.52**	0.225	33.01	-9.49
2501.00	10	QPSK	H	170	82	1 / 0	13.98	9.43	23.41	0.219	33.01	-9.60
2593.00	10	QPSK	H	100	66	50 / 0	14.90	9.55	**24.45**	0.279	33.01	-8.56
2685.00	10	QPSK	H	134	37	1 / 49	14.52	9.82	24.34	0.272	33.01	-8.67
2593.00	10	16-QAM	H	100	66	50 / 0	13.99	9.55	**23.54**	0.226	33.01	-9.47
2503.50	15	QPSK	H	170	82	1 / 0	13.90	9.43	23.33	0.215	33.01	-9.68
2593.00	15	QPSK	H	100	66	75 / 0	14.94	9.55	**24.49**	**0.281**	33.01	-8.52
2682.50	15	QPSK	H	134	37	1 / 74	14.55	9.83	24.38	0.274	33.01	-8.63
2593.00	15	16-QAM	H	100	66	75 / 0	13.89	9.55	**23.44**	0.221	33.01	-9.57
2506.00	20	QPSK	H	170	82	1 / 0	13.98	9.42	23.40	0.219	33.01	-9.61
2593.00	20	QPSK	H	100	66	100 / 0	14.94	9.55	**24.49**	**0.281**	33.01	-8.52
2680.00	20	QPSK	H	134	37	1 / 99	14.52	9.83	24.35	0.273	33.01	-8.66
2593.00	20	16-QAM	H	100	66	100 / 0	13.79	9.55	**23.34**	0.216	33.01	-9.67
2593.00	QPSK	H	V	107	142	75 / 0	10.61	9.55	20.16	0.104	33.01	-12.85

Table 7-10. EIRP Data (Band 41 – PC3)

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7.7 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

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Test Setup

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

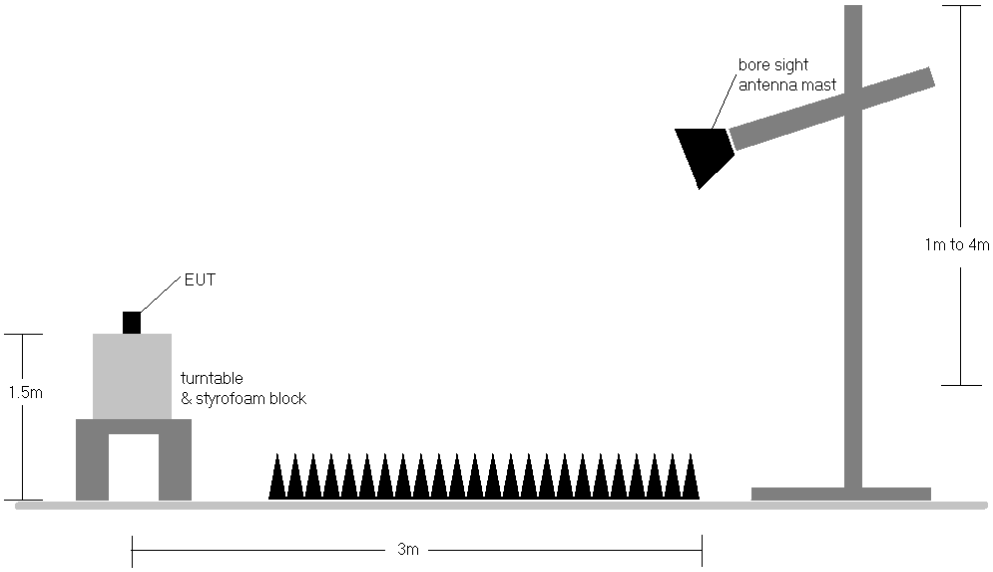

Figure 7-7. Test Instrument & Measurement Setup

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.

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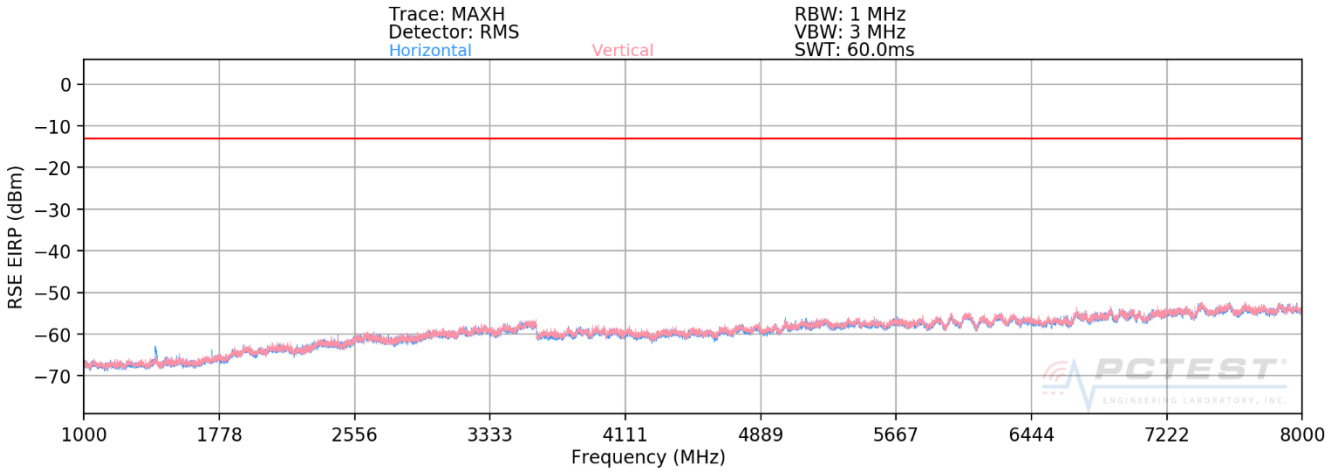
Band 12



Plot 7-247. Radiated Spurious Plot above 1GHz (Band 12)

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	175	353	-70.03	4.58	-65.45	-52.5
2112.00	H	121	24	-64.77	5.42	-59.35	-46.3
2816.00	H	-	-	-74.05	6.97	-67.07	-54.1

Table 7-11. Radiated Spurious Data (Band 12 – Low Channel)

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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	177	7	-63.22	4.71	-58.51	-45.5
2122.50	H	119	13	-66.27	5.53	-60.74	-47.7
2830.00	H	-	-	-74.13	7.04	-67.09	-54.1

Table 7-12. 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	148	169	-65.39	4.84	-60.55	-47.6
2133.00	H	162	8	-67.19	5.63	-61.57	-48.6
2844.00	H	-	-	-74.20	7.10	-67.09	-54.1

Table 7-13. Radiated Spurious Data (Band 12 – High Channel)

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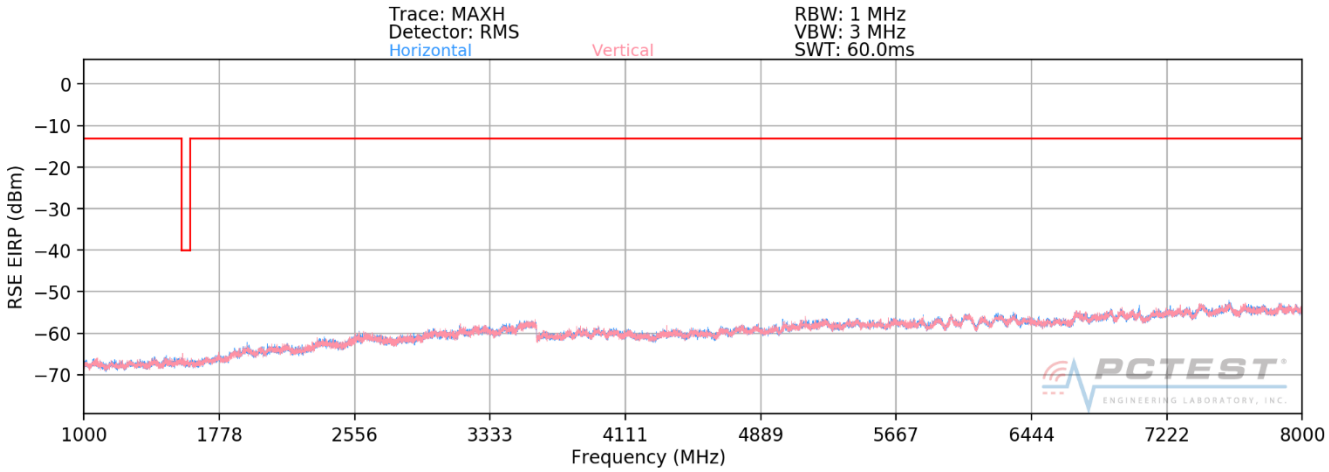
Band 13



Plot 7-248. Radiated Spurious Plot above 1GHz (Band 13)

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	-	-	-73.83	6.00	-67.83	-54.8
3128.00	H	-	-	-72.73	7.20	-65.53	-52.5

Table 7-14. 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	126	322	-76.52	6.03	-70.50	-30.5

Table 7-15. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

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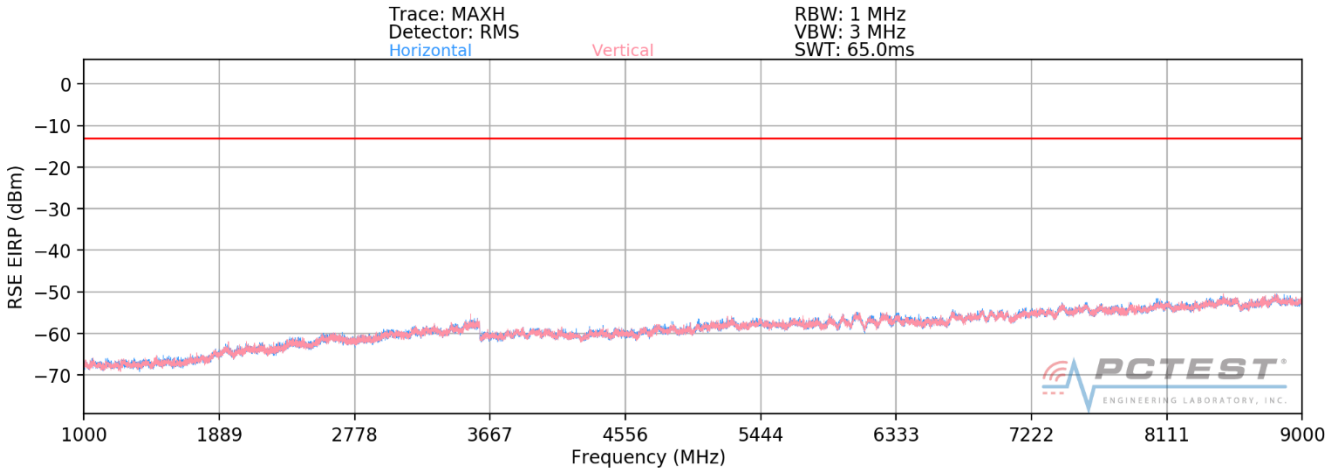
Band 26/5



Plot 7-249. Radiated Spurious Plot above 1GHz (Band 26/5)

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	265	287	-63.16	6.01	-57.15	-44.2
2487.00	H	-	-	-66.15	5.77	-60.37	-47.4
3316.00	H	-	-	-66.64	7.73	-58.91	-45.9

Table 7-16. Radiated Spurious Data (Band 26/5 – Low Channel)

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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	149	287	-61.75	5.97	-55.78	-42.8
2509.50	H	123	304	-61.78	5.80	-55.99	-43.0
3346.00	H	-	-	-66.24	7.87	-58.37	-45.4

Table 7-17. 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	207	295	-62.50	5.93	-56.57	-43.6
2532.00	H	120	34	-59.89	5.87	-54.02	-41.0
3376.00	H	-	-	-66.53	8.00	-58.53	-45.5

Table 7-18. Radiated Spurious Data (Band 26/5 – High Channel)

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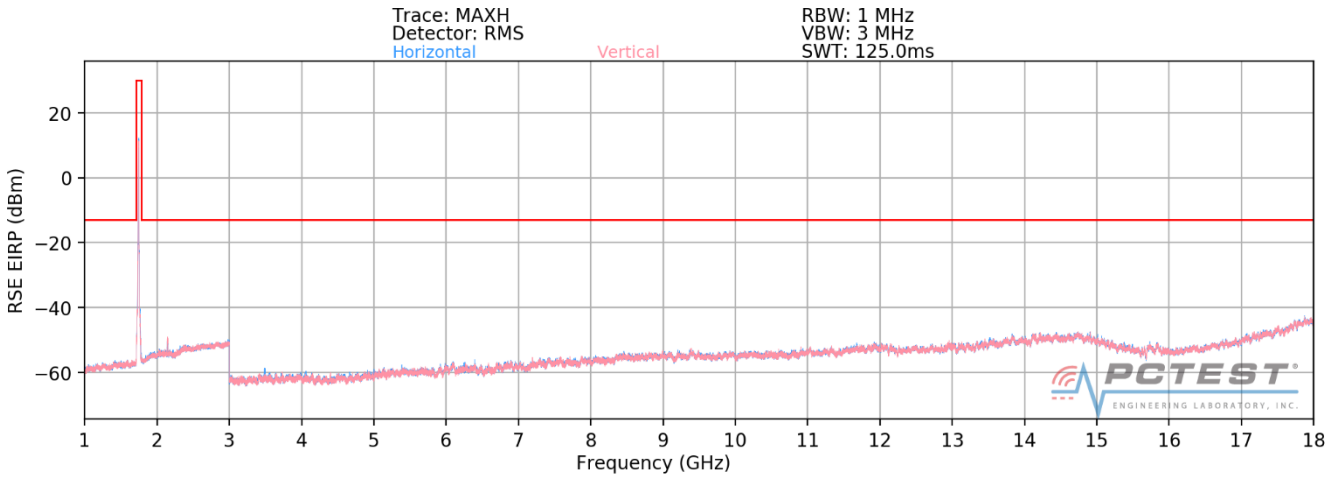
Band 66/4



Plot 7-250. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY:	1715.00	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]
3430.00	H	126	334	-61.44	8.18	-53.26	-40.3
5145.00	H	-	-	-72.30	10.24	-62.06	-49.1

Table 7-19. Radiated Spurious Data (Band 66/4 – Low Channel)

OPERATING FREQUENCY:	1745.00	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]
3490.00	H	127	22	-60.59	8.32	-52.27	-39.3
5235.00	H	-	-	-72.27	10.39	-61.88	-48.9

Table 7-20. Radiated Spurious Data (Band 66/4 – Mid Channel)

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OPERATING FREQUENCY:	1775.00	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]
3550.00	H	122	19	-60.20	8.38	-51.82	-38.8
5325.00	H	-	-	-72.49	10.34	-62.15	-49.2

Table 7-21. Radiated Spurious Data (Band 66/4 – High Channel)

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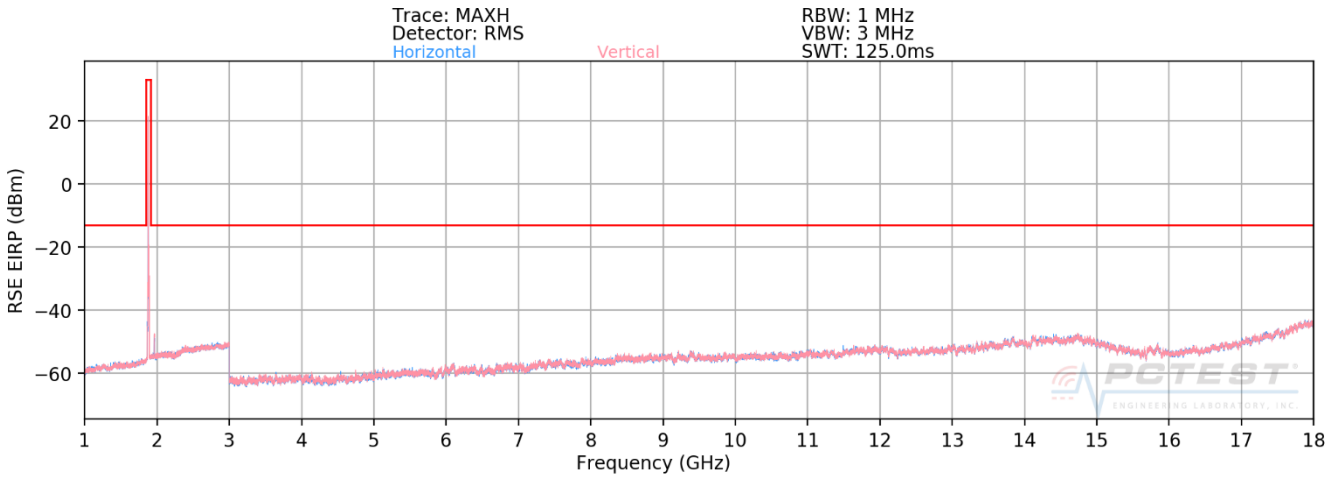
Band 25/2



Plot 7-251. Radiated Spurious Plot above 1GHz (Band 25/2)

OPERATING FREQUENCY:	1855.00	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]
3710.00	H	-	-	-72.59	8.57	-64.02	-51.0
5565.00	H	-	-	-71.90	10.56	-61.34	-48.3

Table 7-22. Radiated Spurious Data (Band 25/2 – Low Channel)

OPERATING FREQUENCY:	1882.50	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]
3765.00	H	-	-	-72.79	8.43	-64.36	-51.4
5647.50	H	-	-	-71.52	10.65	-60.87	-47.9

Table 7-23. Radiated Spurious Data (Band 25/2 – Mid Channel)

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OPERATING FREQUENCY:	1910.00	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]
3820.00	H	-	-	-72.12	8.42	-63.70	-50.7
5730.00	H	-	-	-72.61	10.72	-61.89	-48.9

Table 7-24. Radiated Spurious Data (Band 25/2 – High Channel)

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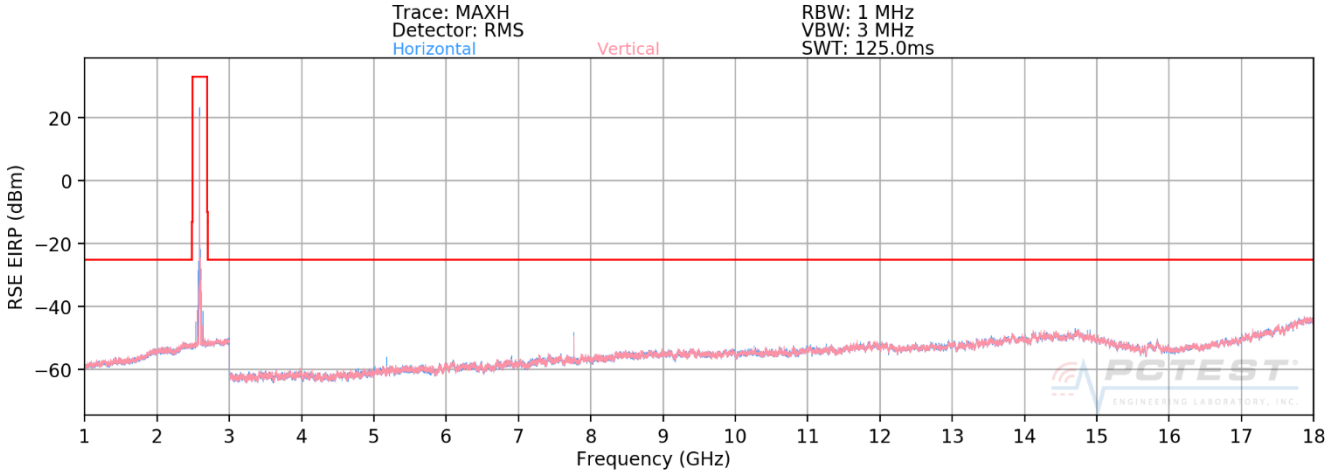
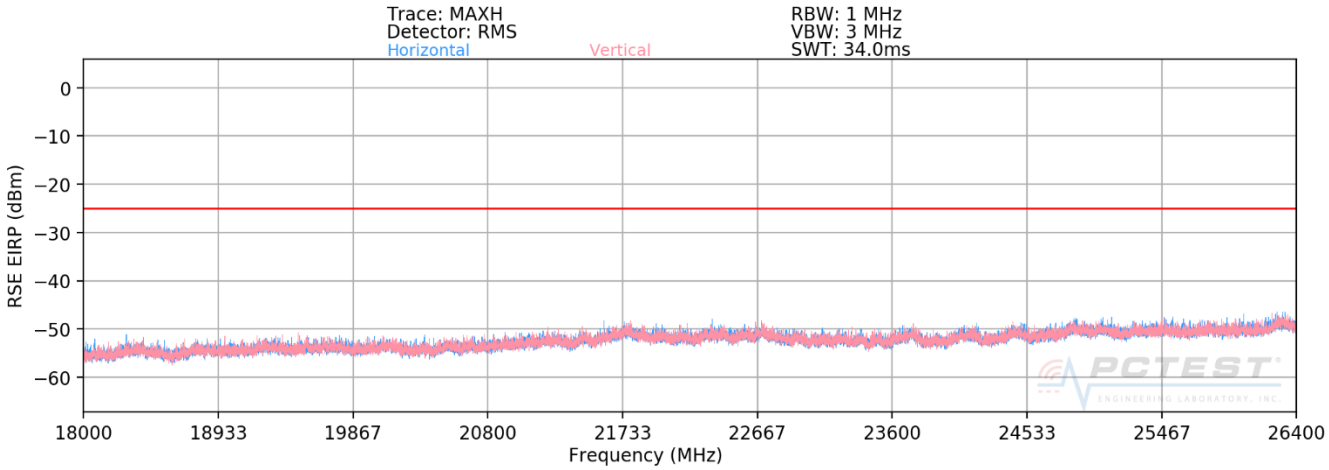
Band 41 PC2



Plot 7-252. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC2)



Plot 7-253. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 PC2)

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OPERATING FREQUENCY: 2501.00 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 10.0 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]
5002.00	H	112	12	-70.15	10.14	-60.00	-35.0
7503.00	H	200	330	-65.15	12.09	-53.06	-28.1
10004.00	H	-	-	-67.94	12.87	-55.07	-30.1

Table 7-25. Radiated Spurious Data (Band 41 PC2 – Low Channel)

OPERATING FREQUENCY: 2593.00 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 10.0 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	H	130	24	-63.69	10.32	-53.37	-28.4
7779.00	H	225	320	-57.42	12.28	-45.15	-20.1
10372.00	H	380	321	-65.28	12.87	-52.41	-27.4
12965.00	H	-	-	-64.33	13.27	-51.06	-26.1

Table 7-26. Radiated Spurious Data (Band 41 PC2 – Mid Channel)

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OPERATING FREQUENCY:	2685.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	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]
5370.00	H	166	325	-66.22	10.39	-55.83	-30.8
8055.00	H	114	131	-62.60	12.55	-50.05	-25.0
10740.00	H	-	-	-67.90	12.89	-55.01	-30.0
13425.00	H	-	-	-65.62	13.84	-51.78	-26.8

Table 7-27. Radiated Spurious Data (Band 41 PC2 – High Channel)

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7.8 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

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Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz

CHANNEL: 23790

REFERENCE VOLTAGE: 4.10 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (^{o}C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.10	- 30	707,499,851	-149	-0.0000211
100 %		- 20	707,500,308	308	0.0000435
100 %		- 10	707,500,293	293	0.0000414
100 %		0	707,499,926	-74	-0.0000105
100 %		+ 10	707,499,545	-455	-0.0000643
100 %		+ 20	707,499,803	-197	-0.0000278
100 %		+ 30	707,500,294	294	0.0000416
100 %		+ 40	707,500,001	1	0.0000001
100 %		+ 50	707,499,965	-35	-0.0000049
BATT. ENDPOINT	3.60	+ 20	707,499,793	-207	-0.0000293

Table 7-28. Frequency Stability Data (Band 12)

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.

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Band 12 Frequency Stability Measurements

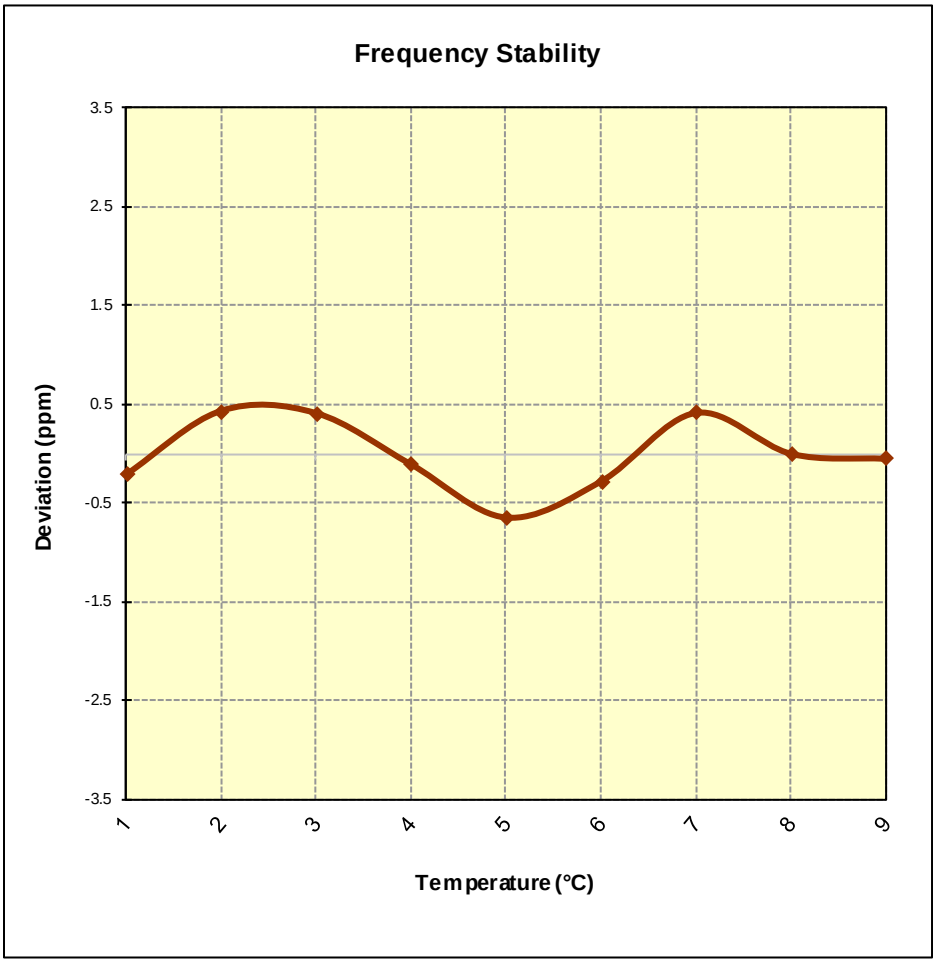

Figure 7-8. Frequency Stability Graph (Band 12)

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Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz

CHANNEL: 23230

REFERENCE VOLTAGE: 4.10 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (^{0}C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.10	- 30	782,000,013	13	0.0000017
100 %		- 20	781,999,881	-119	-0.0000152
100 %		- 10	781,999,989	-11	-0.0000014
100 %		0	781,999,912	-88	-0.0000113
100 %		+ 10	781,999,830	-170	-0.0000217
100 %		+ 20	782,000,307	307	0.0000393
100 %		+ 30	782,000,193	193	0.0000247
100 %		+ 40	782,000,097	97	0.0000124
100 %		+ 50	781,999,932	-68	-0.0000087
BATT. ENDPOINT	3.60	+ 20	782,000,087	87	0.0000111

Table 7-29. 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.

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Band 13 Frequency Stability Measurements

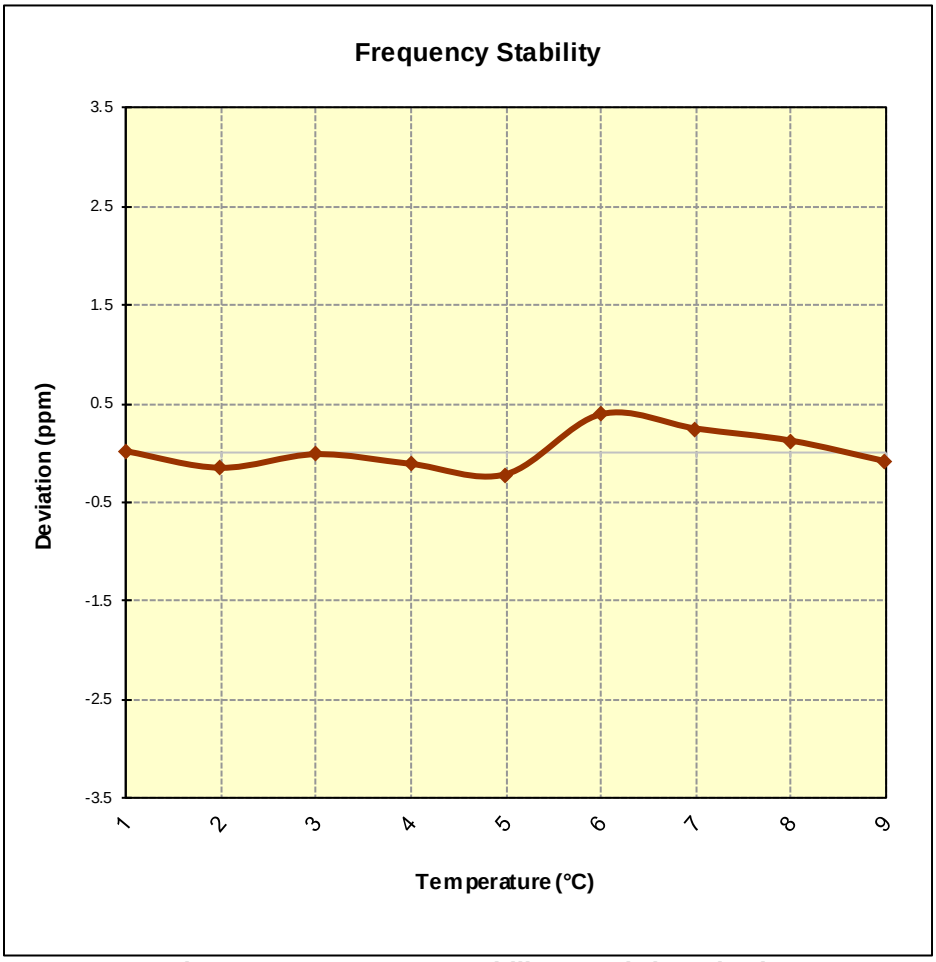

Figure 7-9. Frequency Stability Graph (Band 13)

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Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz

CHANNEL: 20525

REFERENCE VOLTAGE: 4.10 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (^{0}C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.10	- 30	836,499,979	-21	-0.0000025
100 %		- 20	836,500,031	31	0.0000037
100 %		- 10	836,500,054	54	0.0000065
100 %		0	836,500,008	8	0.0000010
100 %		+ 10	836,500,092	92	0.0000110
100 %		+ 20	836,500,108	108	0.0000129
100 %		+ 30	836,500,026	26	0.0000031
100 %		+ 40	836,500,182	182	0.0000218
100 %		+ 50	836,499,748	-252	-0.0000301
BATT. ENDPOINT	3.60	+ 20	836,500,176	176	0.0000210

Table 7-30. Frequency Stability Data (Band 26/5)

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Band 26/5 Frequency Stability Measurements

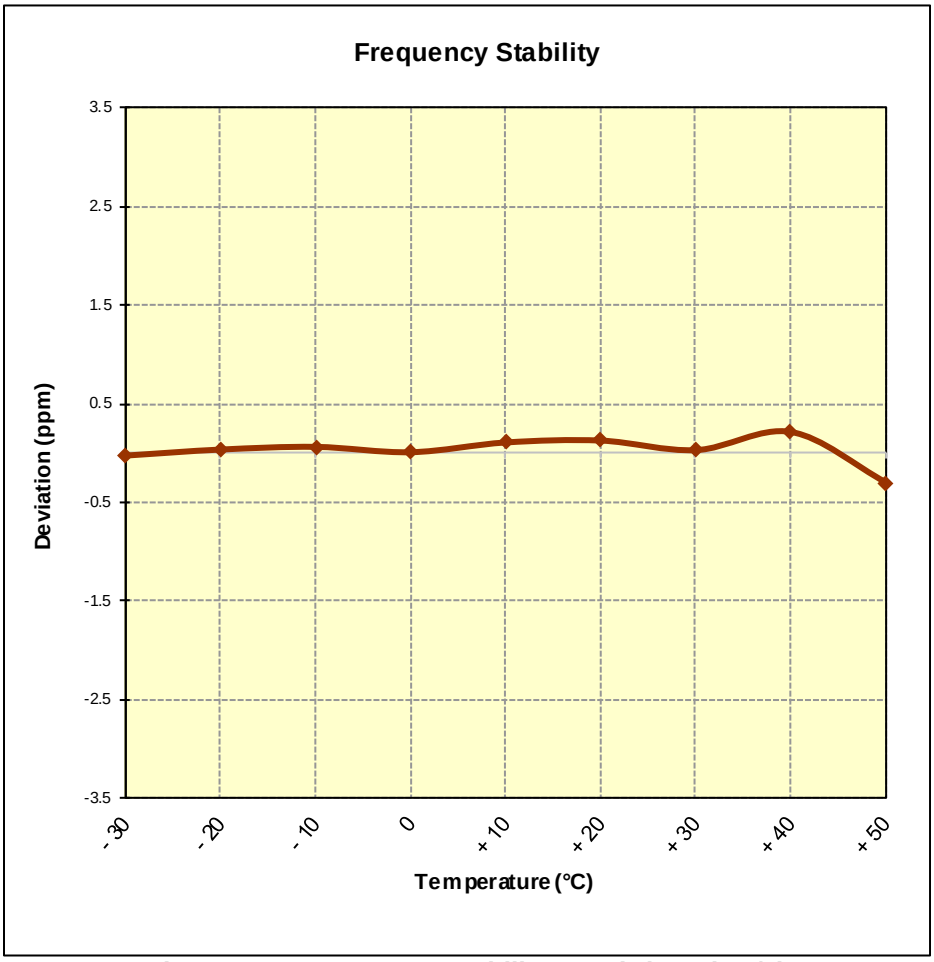

Figure 7-10. Frequency Stability Graph (Band 26/5)

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Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz

CHANNEL: 132322

REFERENCE VOLTAGE: 4.10 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (^{o}C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.10	- 30	1,744,999,880	-120	-0.0000069
100 %		- 20	1,745,000,043	43	0.0000025
100 %		- 10	1,745,000,185	185	0.0000106
100 %		0	1,745,000,015	15	0.0000009
100 %		+ 10	1,744,999,953	-47	-0.0000027
100 %		+ 20	1,744,999,791	-209	-0.0000120
100 %		+ 30	1,744,999,985	-15	-0.0000009
100 %		+ 40	1,745,000,021	21	0.0000012
100 %		+ 50	1,745,000,043	43	0.0000025
BATT. ENDPOINT	3.60	+ 20	1,745,000,115	115	0.0000066

Table 7-31. 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.

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Band 66/4 Frequency Stability Measurements

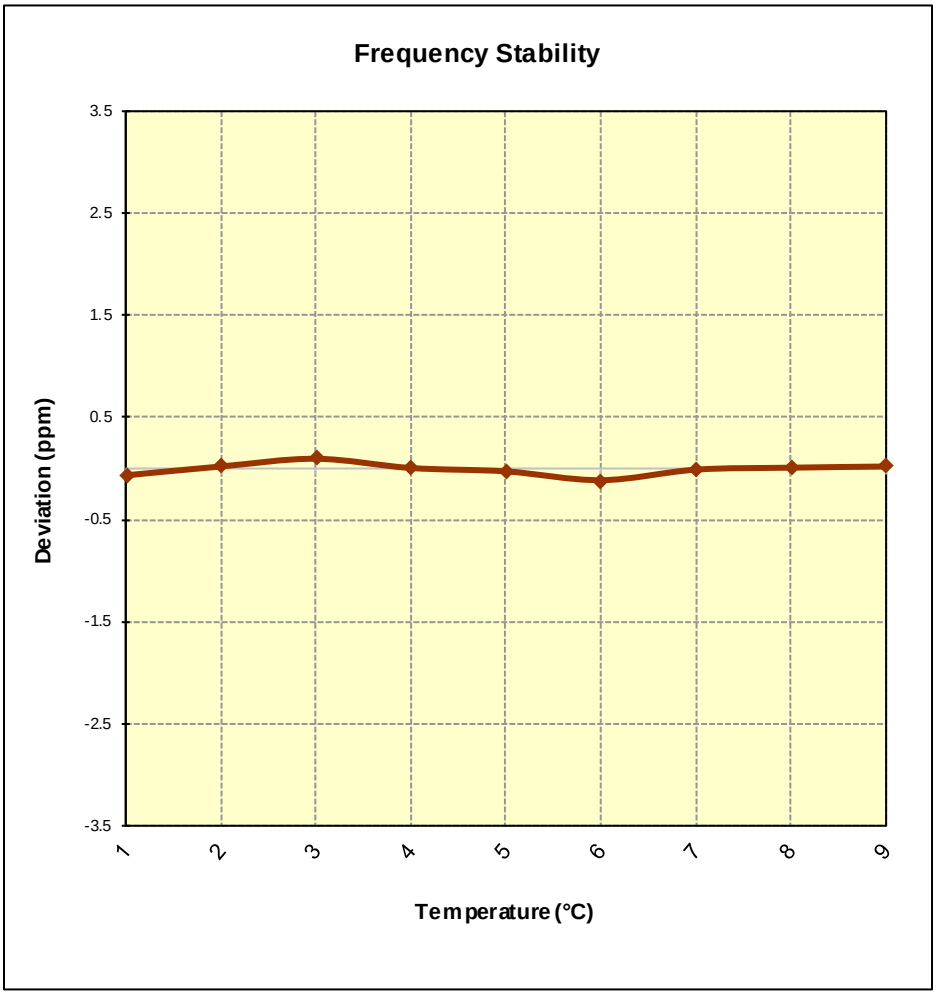

Figure 7-11. Frequency Stability Graph (Band 66/4)

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Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz

CHANNEL: 26365

REFERENCE VOLTAGE: 4.10 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (^{0}C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.10	- 30	1,882,499,884	-116	-0.0000062
100 %		- 20	1,882,499,834	-166	-0.0000088
100 %		- 10	1,882,500,124	124	0.0000066
100 %		0	1,882,500,116	116	0.0000062
100 %		+ 10	1,882,500,268	268	0.0000142
100 %		+ 20	1,882,499,831	-169	-0.0000090
100 %		+ 30	1,882,500,124	124	0.0000066
100 %		+ 40	1,882,500,190	190	0.0000101
100 %		+ 50	1,882,499,722	-278	-0.0000148
BATT. ENDPOINT	3.60	+ 20	1,882,499,892	-108	-0.0000057

Table 7-32. Frequency Stability Data (Band 25/2)

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Band 25/2 Frequency Stability Measurements

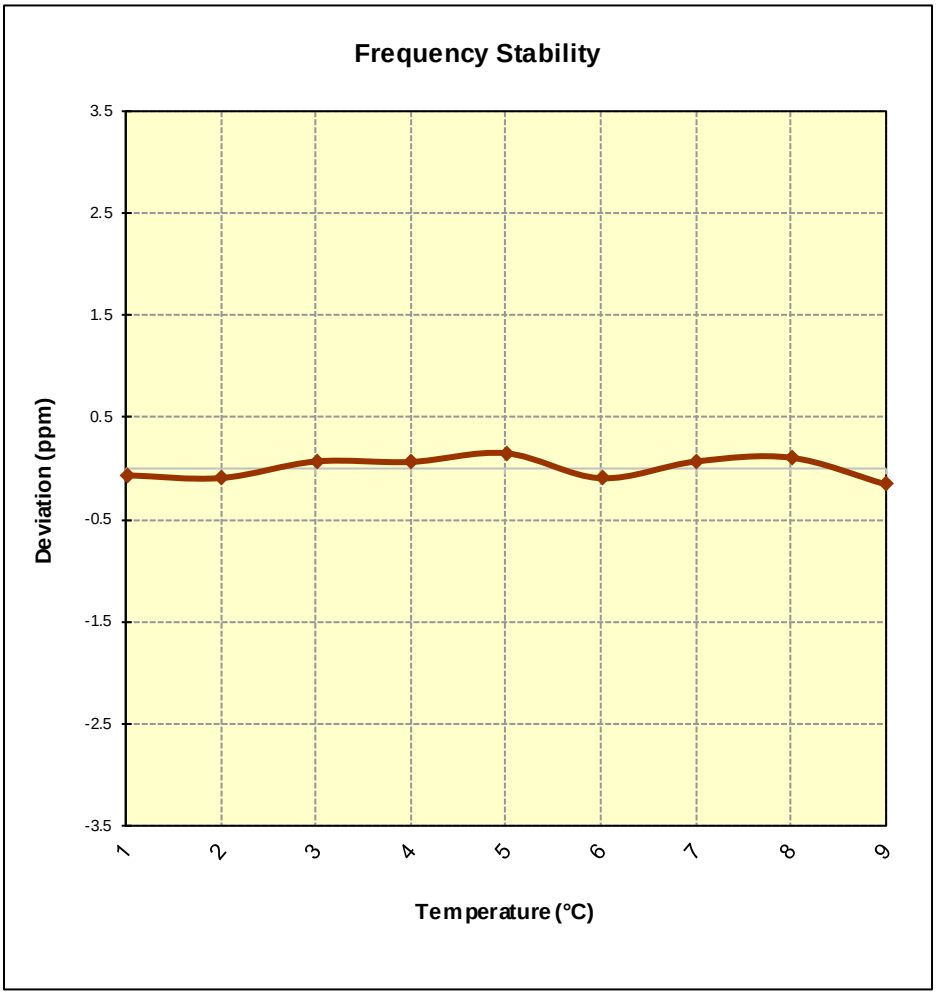

Figure 7-12. Frequency Stability Graph (Band 25/2)

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Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz

CHANNEL: 40620

REFERENCE VOLTAGE: 4.10 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (^{0}C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.10	- 30	2,593,000,306	306	0.0000118
100 %		- 20	2,593,000,319	319	0.0000123
100 %		- 10	2,593,000,122	122	0.0000047
100 %		0	2,592,999,900	-100	-0.0000039
100 %		+ 10	2,593,000,413	413	0.0000159
100 %		+ 20	2,592,999,895	-105	-0.0000040
100 %		+ 30	2,593,000,227	227	0.0000088
100 %		+ 40	2,593,000,055	55	0.0000021
100 %		+ 50	2,592,999,984	-16	-0.0000006
BATT. ENDPOINT	3.60	+ 20	2,593,000,041	41	0.0000016

Table 7-33. 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.

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Band 41 Frequency Stability Measurements

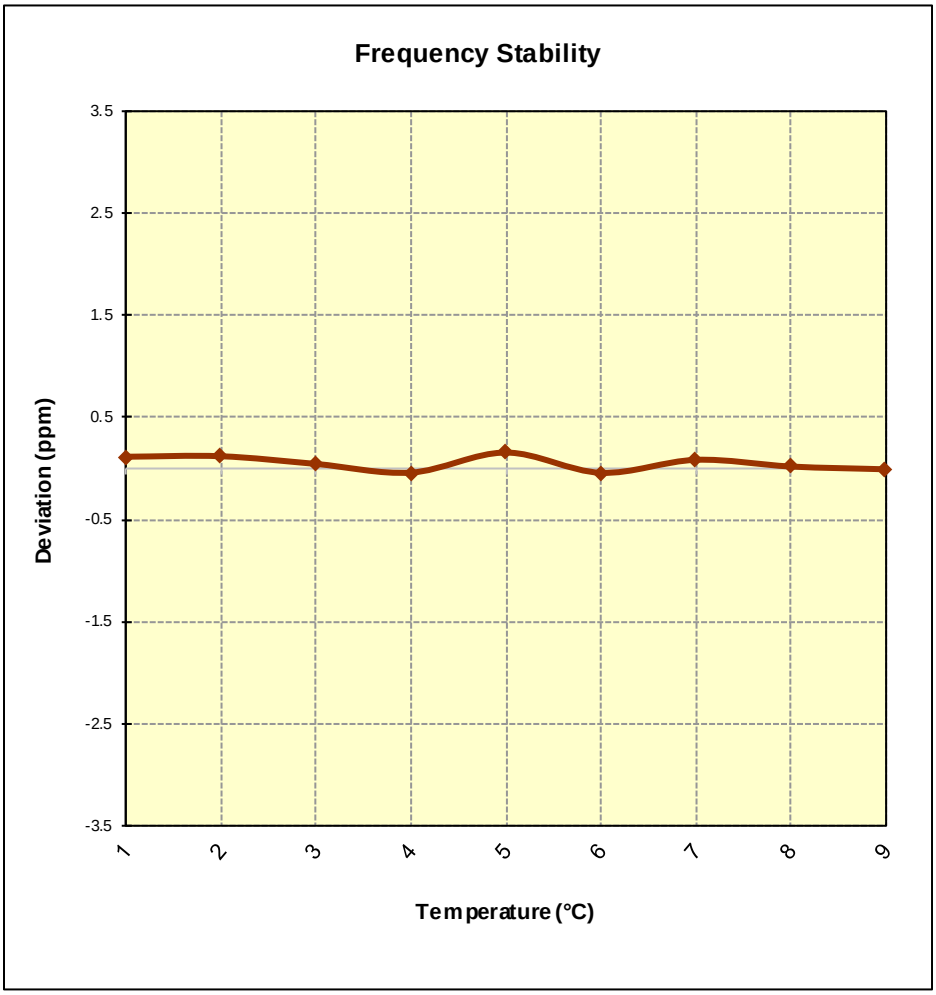

Figure 7-13. Frequency Stability Graph (Band 41)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFL125DL** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

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