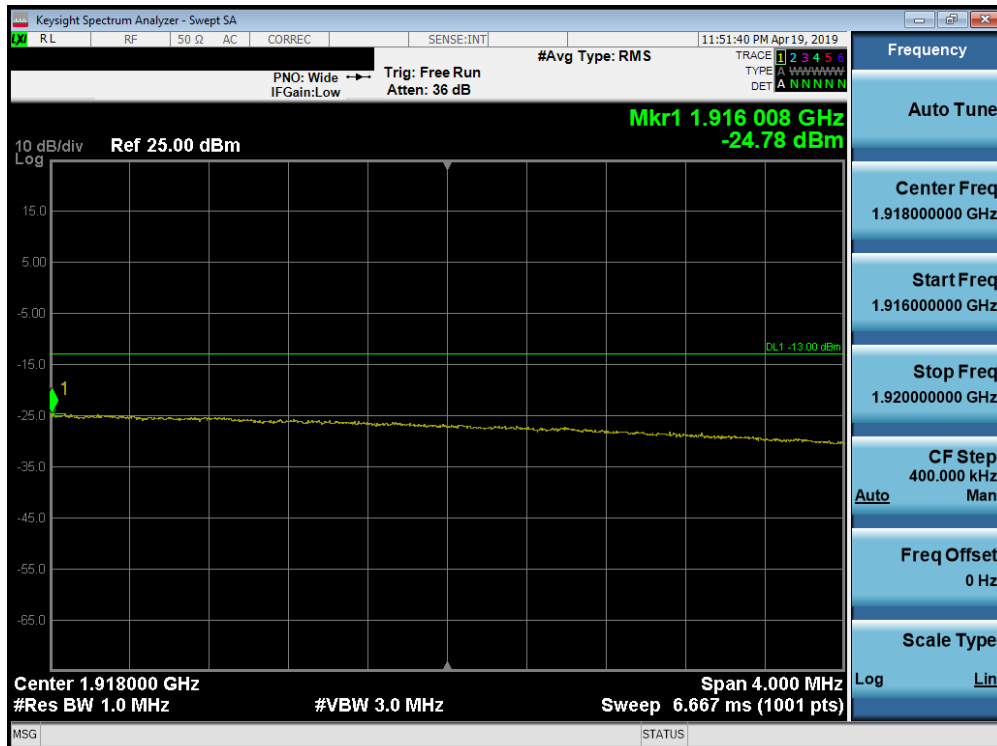


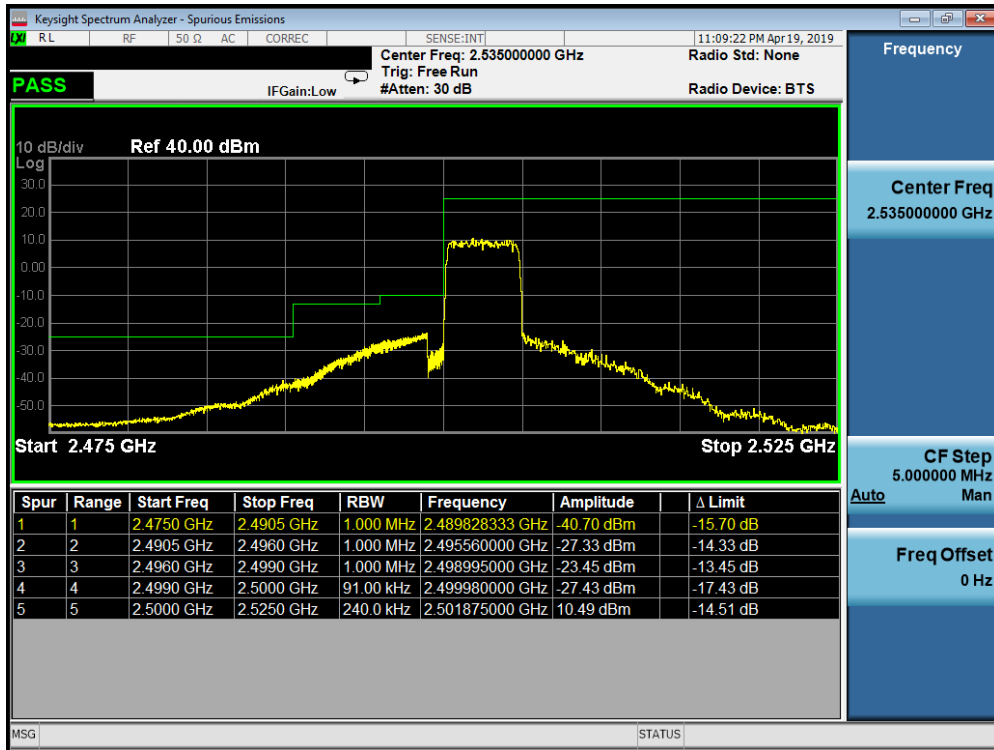
Plot 7-260. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



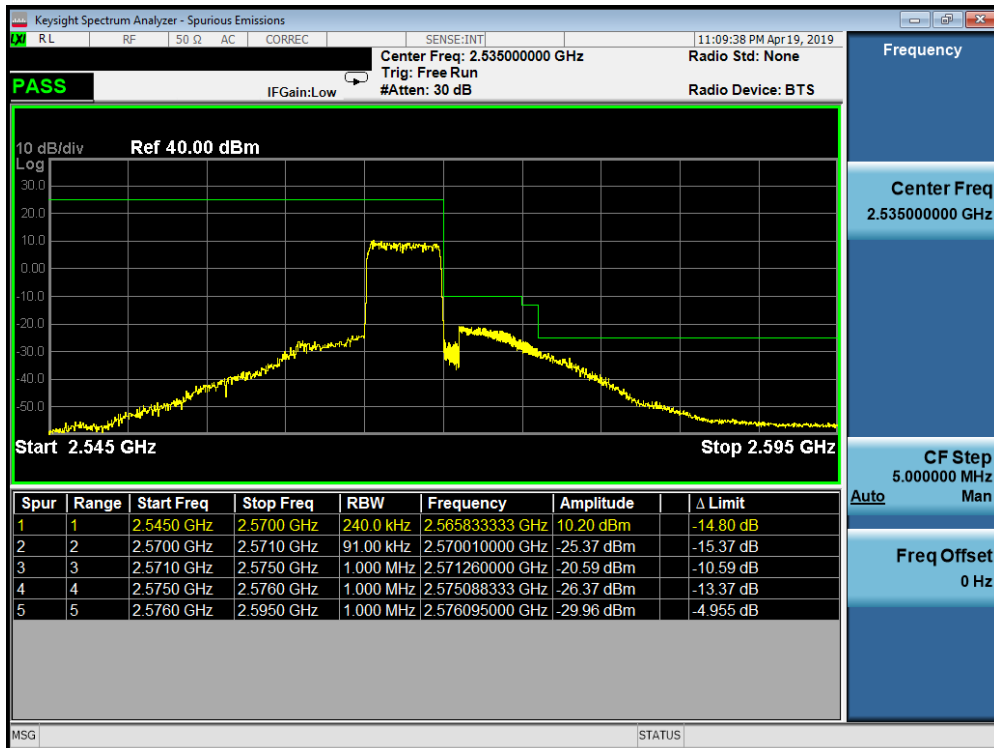
Plot 7-261. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 155 of 232

Band 7

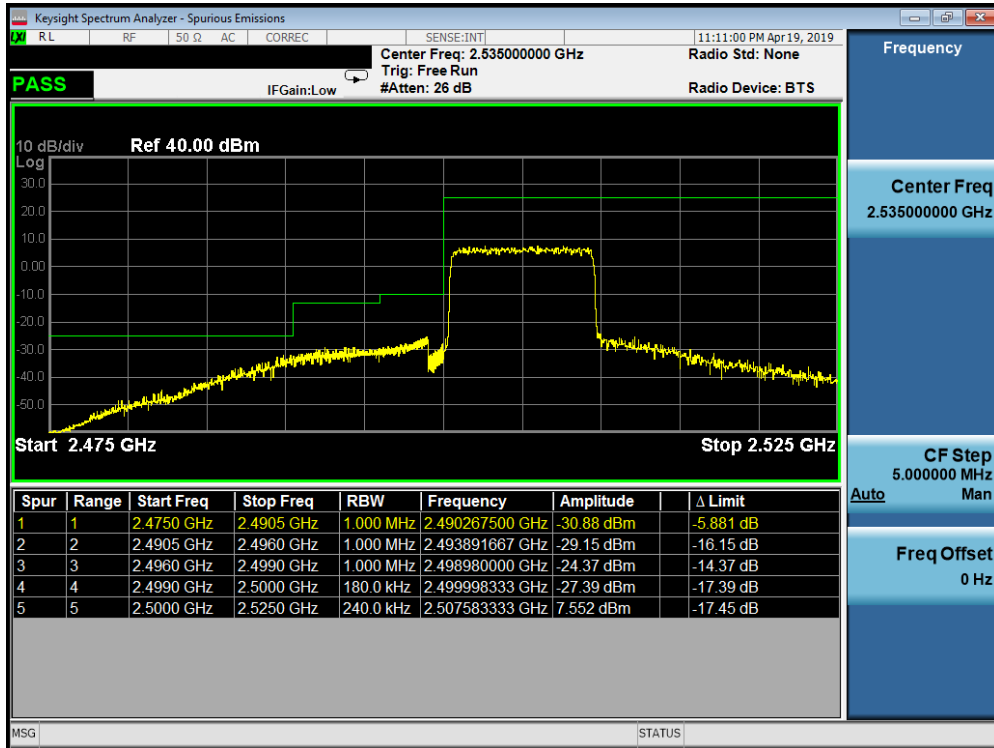


Plot 7-262. Lower ACP Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)

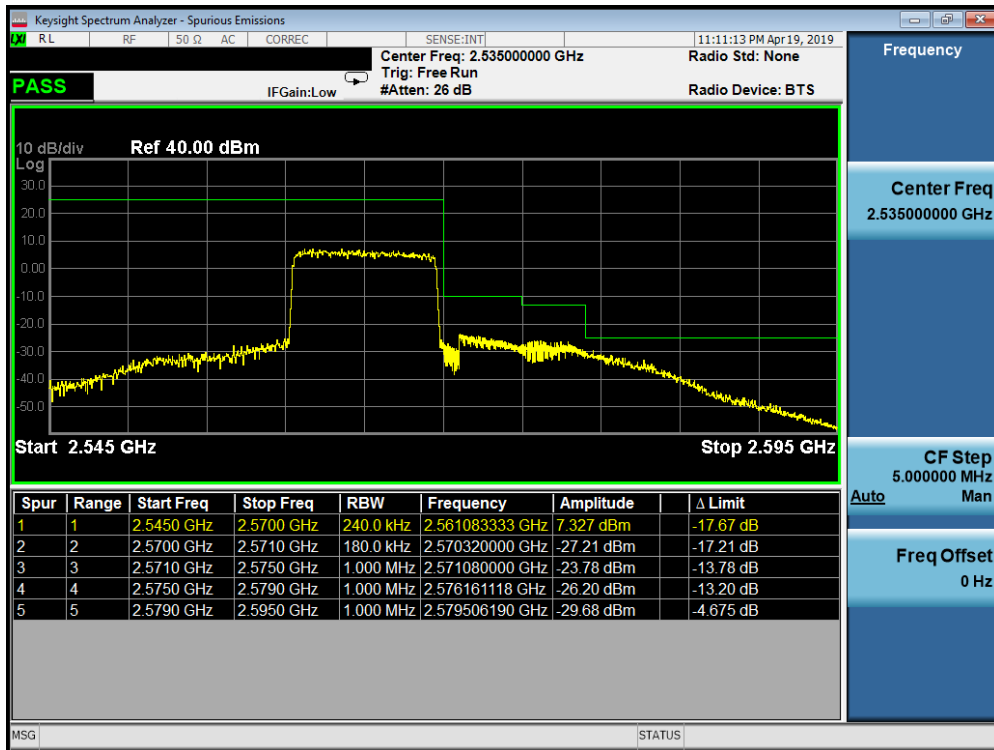


Plot 7-263. Upper ACP Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 156 of 232

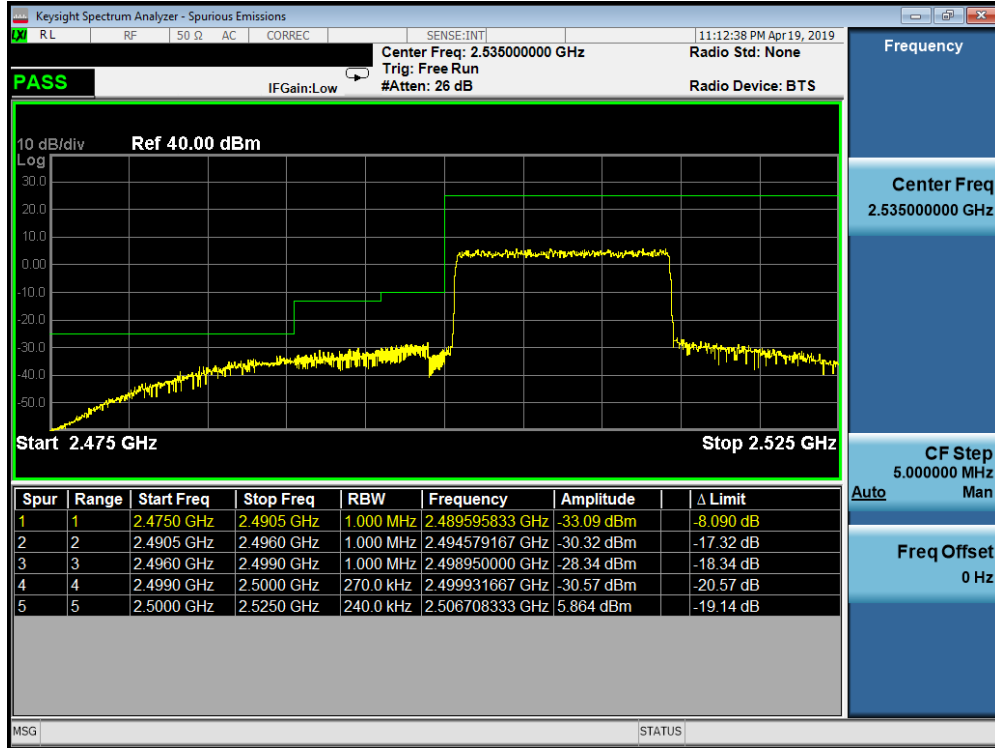


Plot 7-264. Lower ACP Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)

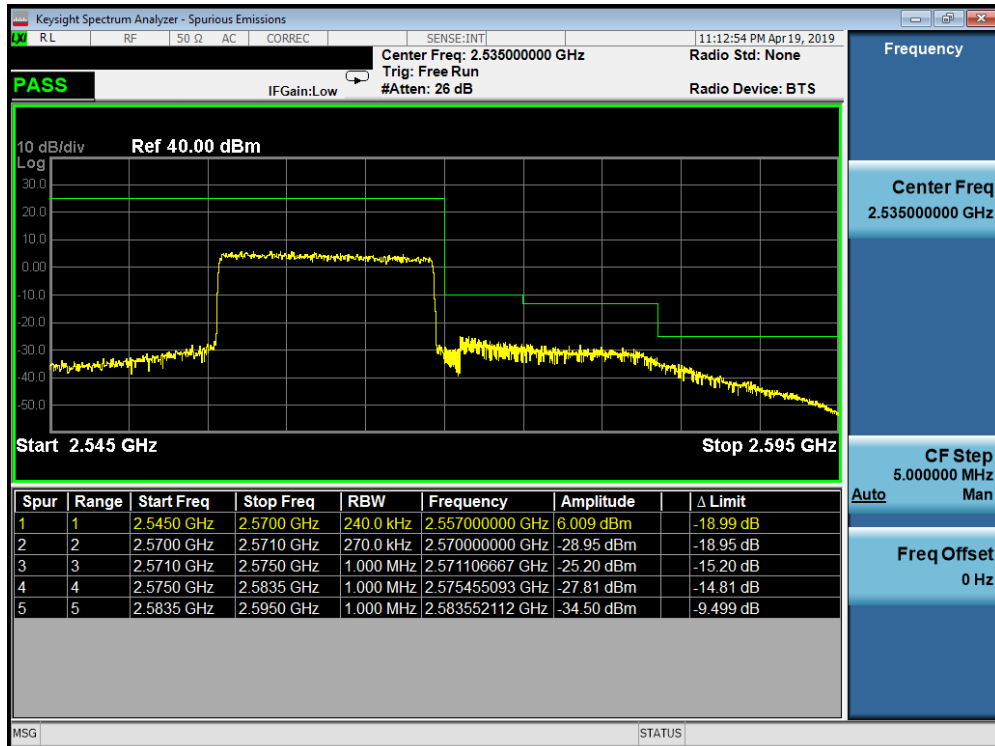


Plot 7-265. Upper ACP Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 157 of 232

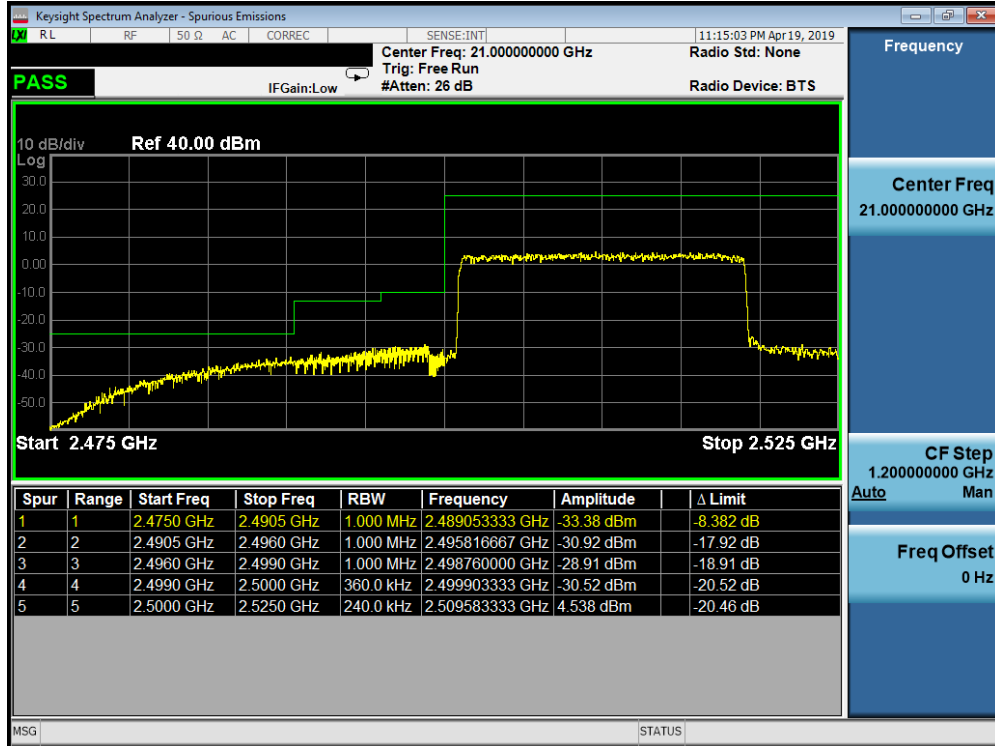


Plot 7-266. Lower ACP Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)

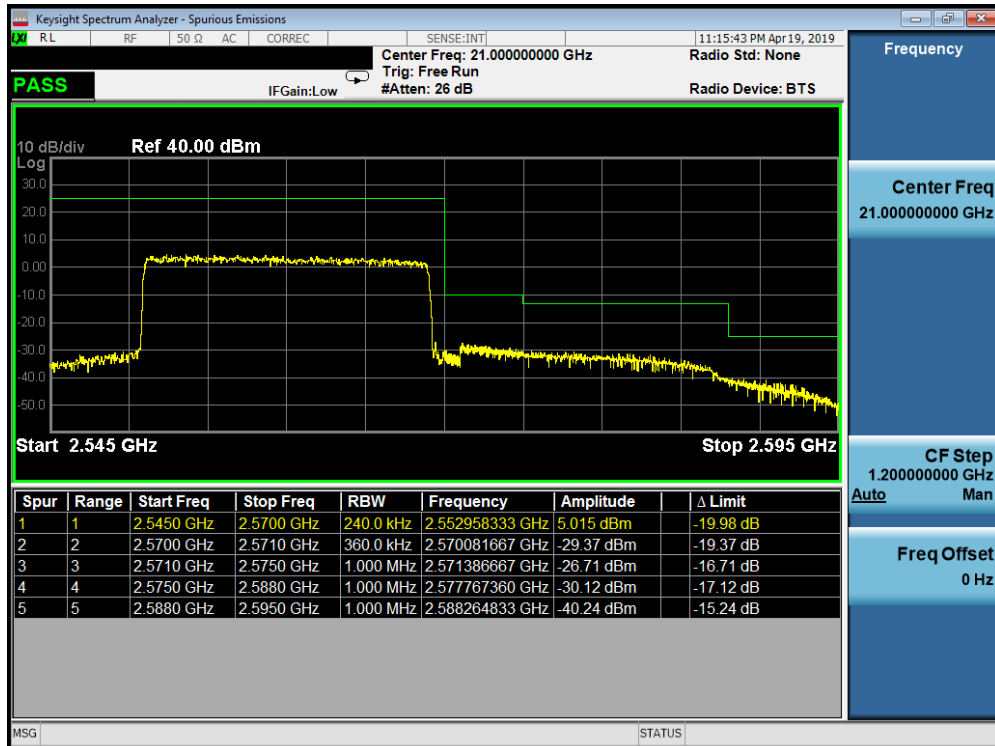


Plot 7-267. Upper ACP Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 158 of 232



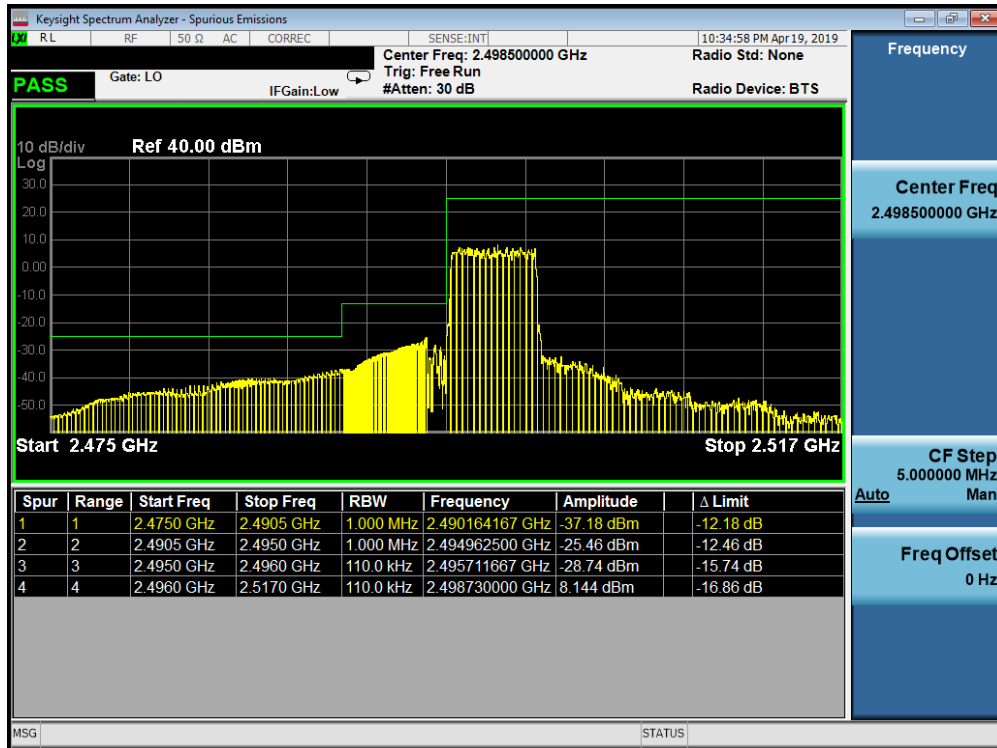
Plot 7-268. Lower ACP Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)



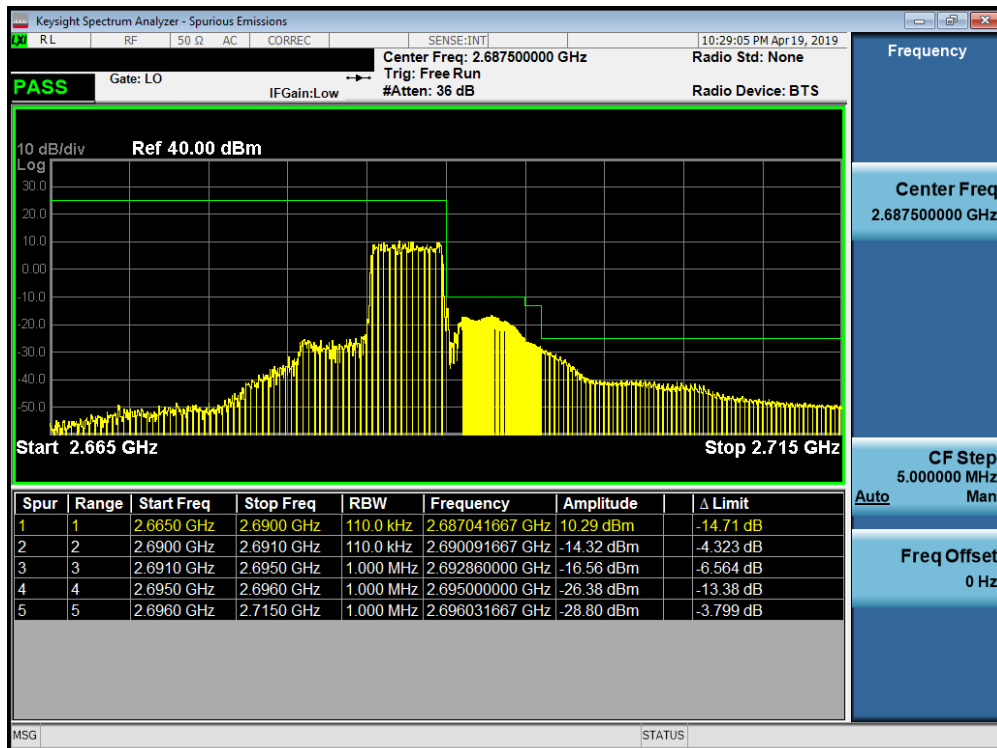
Plot 7-269. Upper ACP Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 159 of 232

Band 41 (PC2)

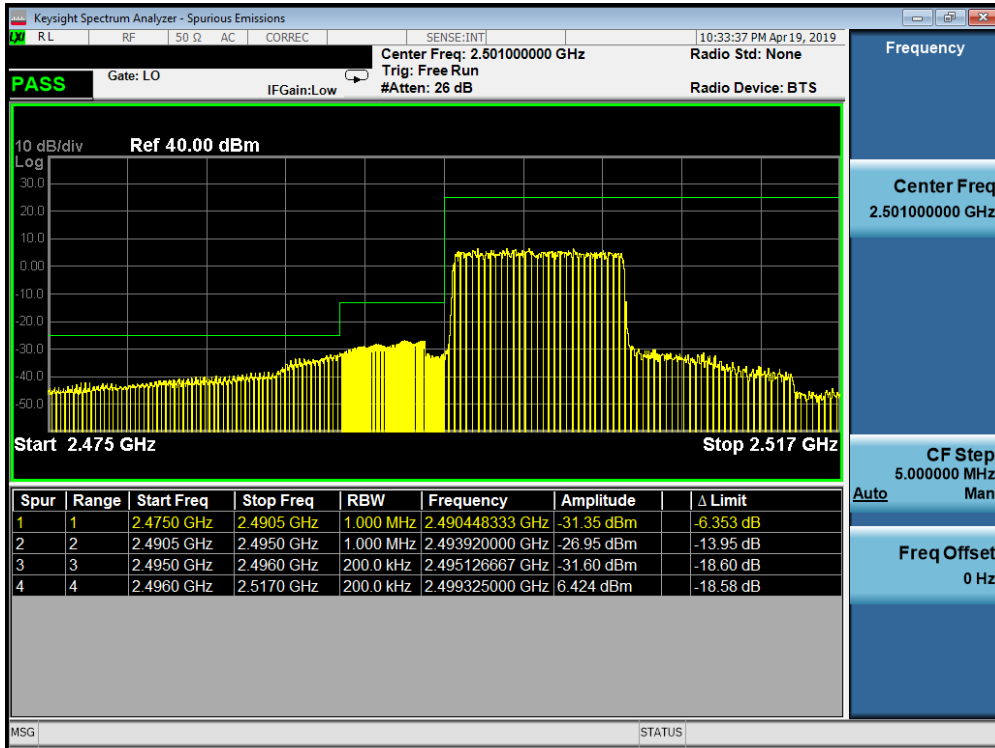


Plot 7-270. Lower ACP Plot (Band 41 PC2 - 5.0MHz QPSK - Full RB Configuration)

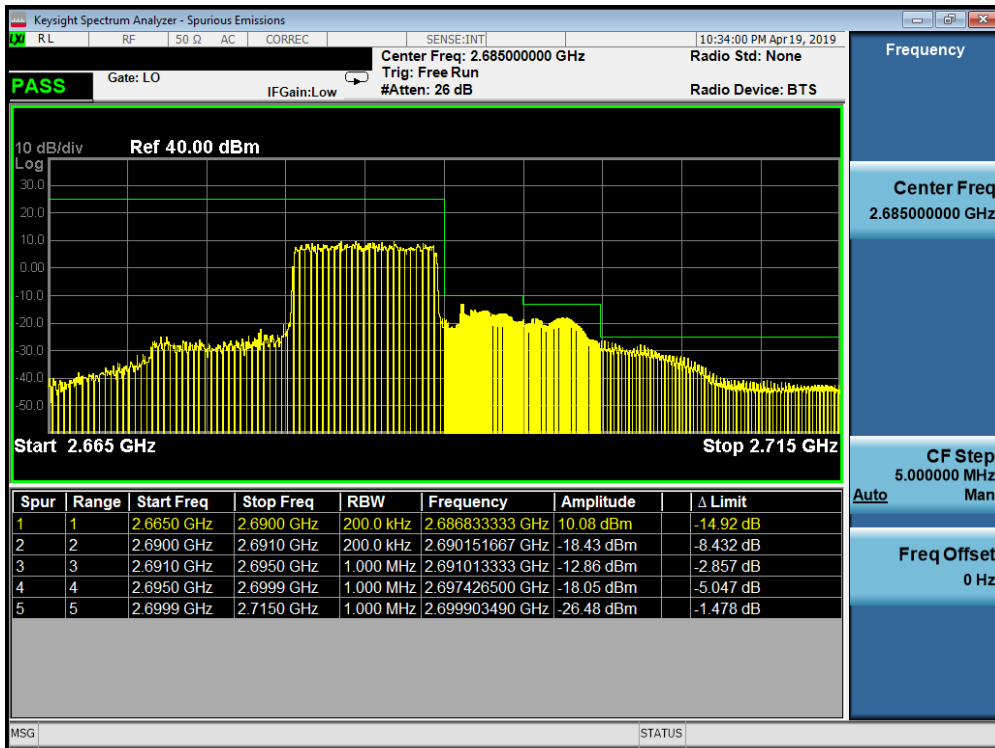


Plot 7-271. Upper ACP Plot (Band 41 PC2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 160 of 232

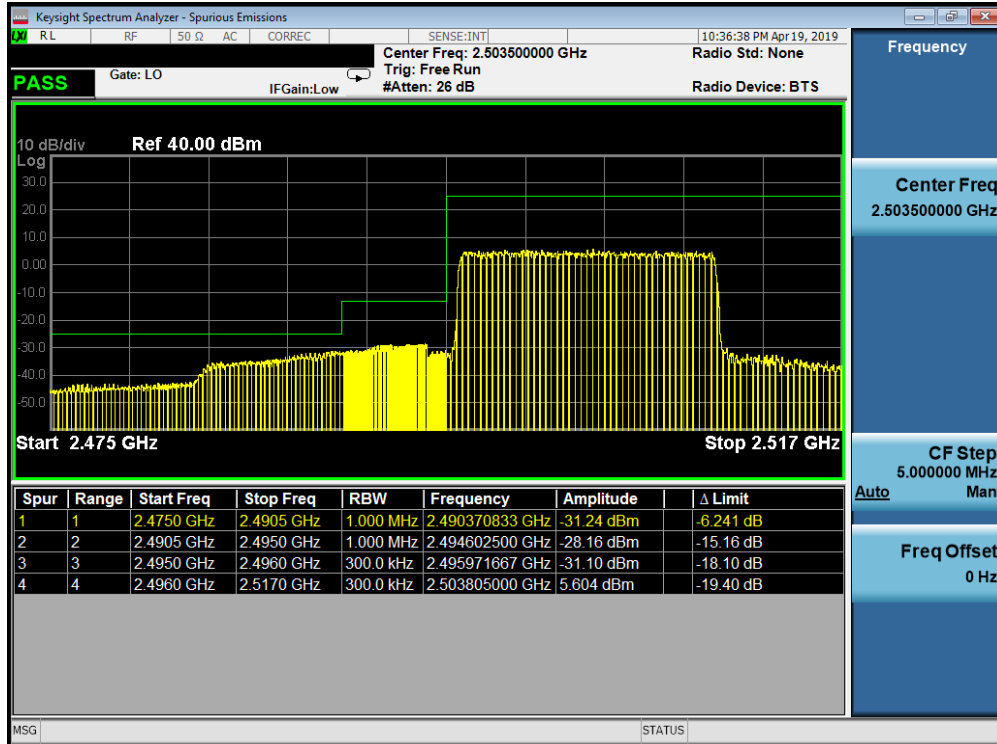


Plot 7-272. Lower ACP Plot (Band 41 PC2 - 10.0MHz QPSK - Full RB Configuration)

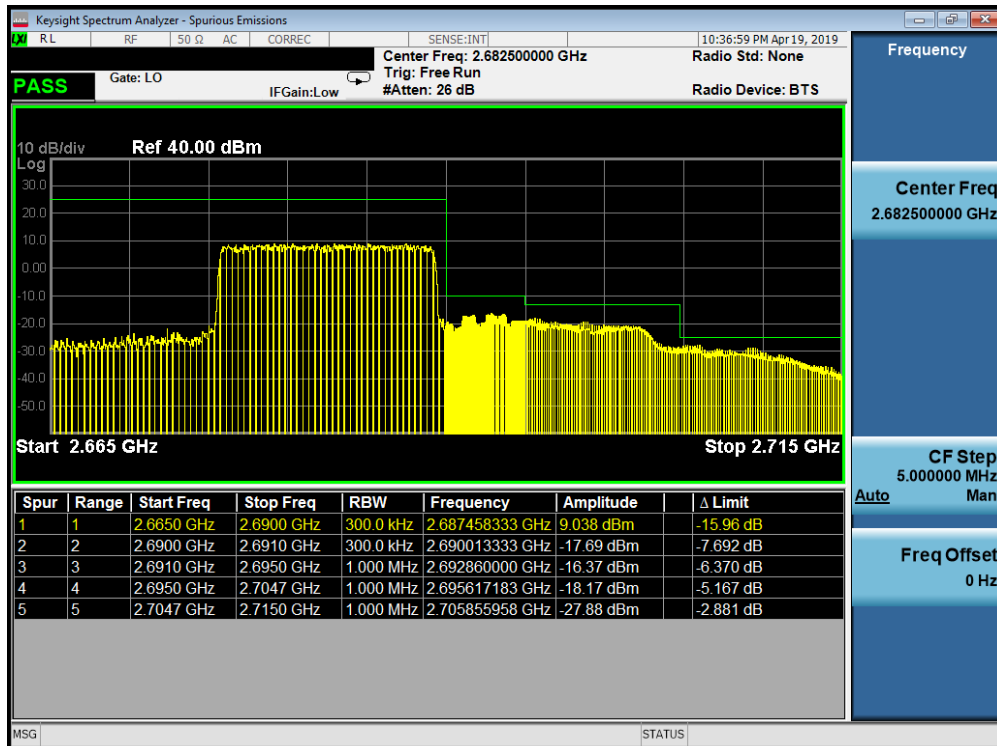


Plot 7-273. Upper ACP Plot (Band 41 PC2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 161 of 232

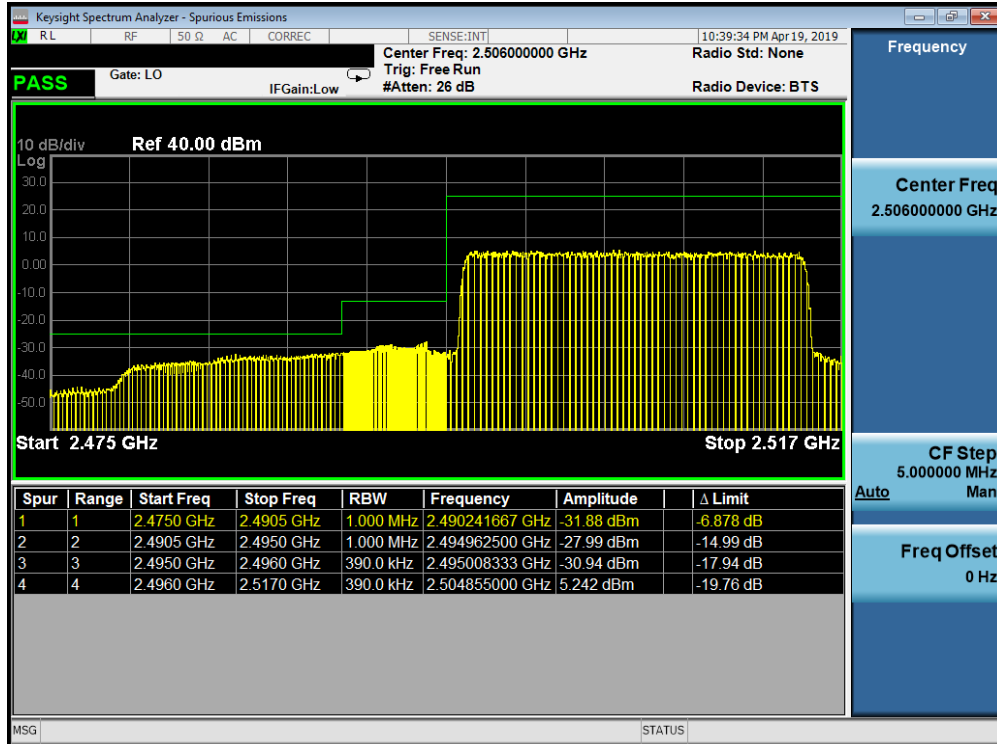


Plot 7-274. Lower ACP Plot (Band 41 PC2 - 15.0MHz QPSK - Full RB Configuration)

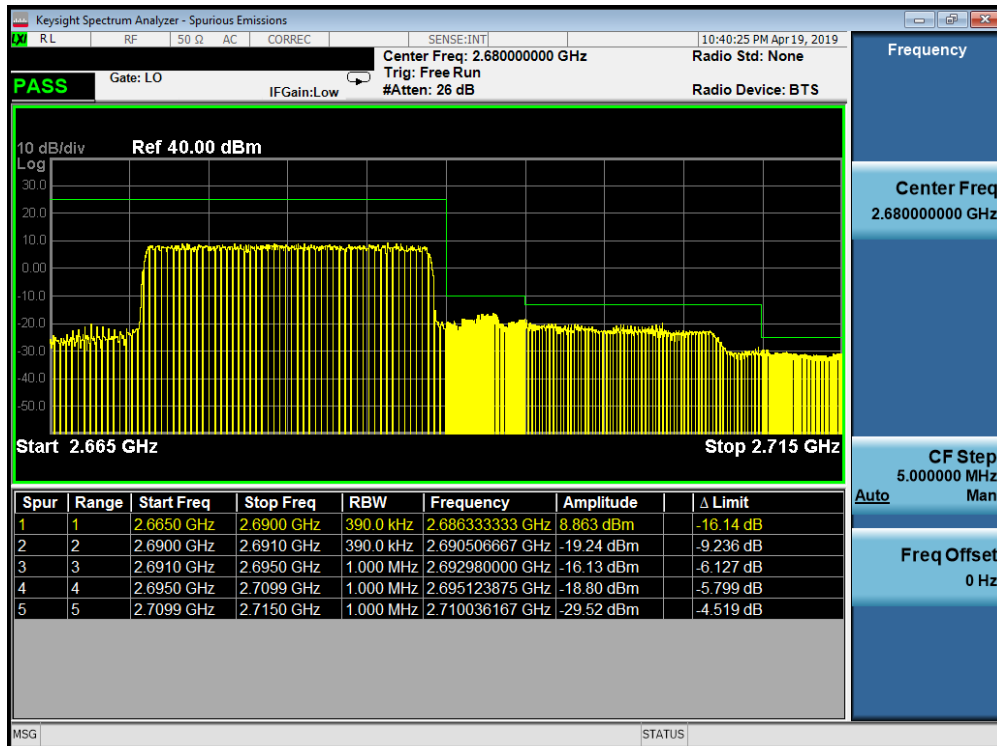


Plot 7-275. Upper ACP Plot (Band 41 PC2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 162 of 232



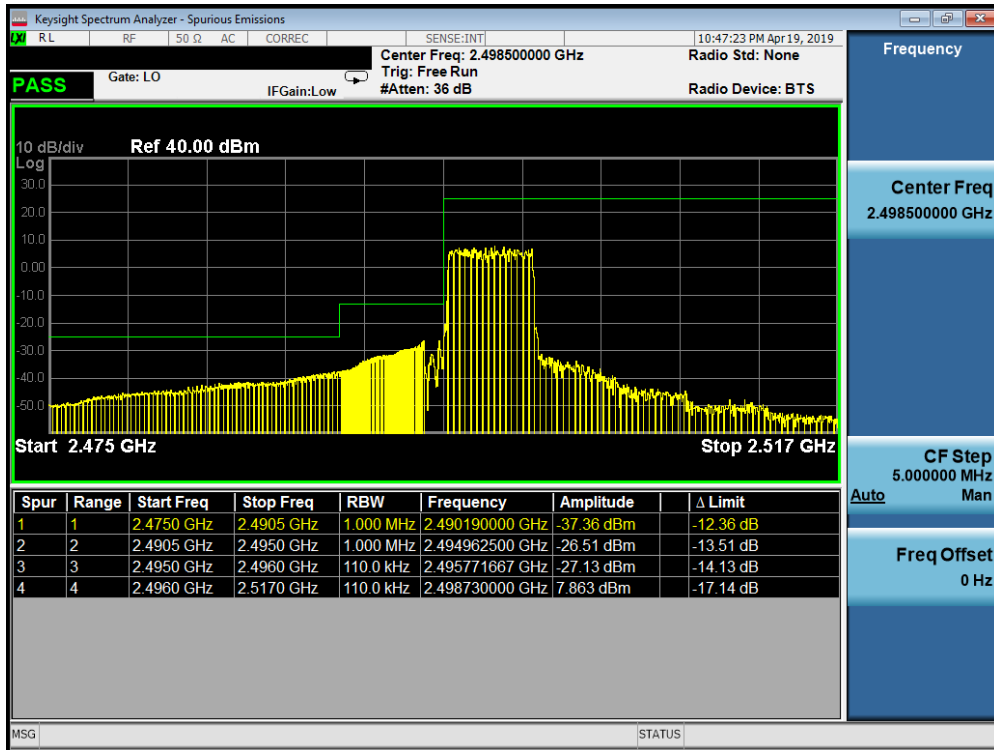
Plot 7-276. Lower ACP Plot (Band 41 PC2 - 20.0MHz QPSK - Full RB Configuration)



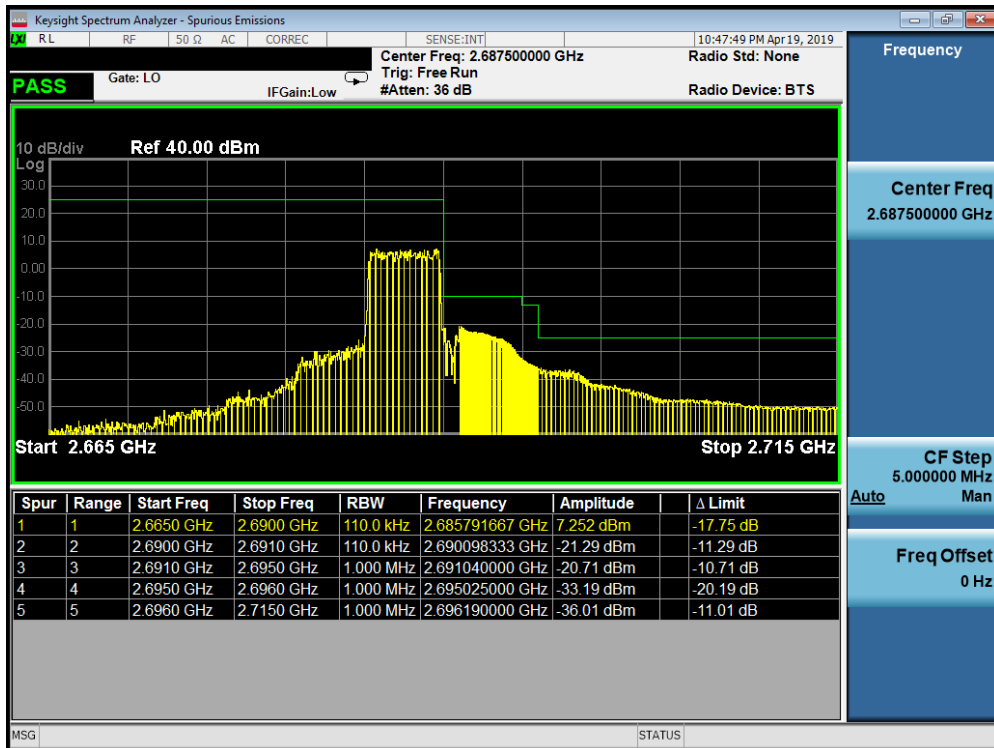
Plot 7-277. Upper ACP Plot (Band 41 PC2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 163 of 232

Band 41 (PC3)

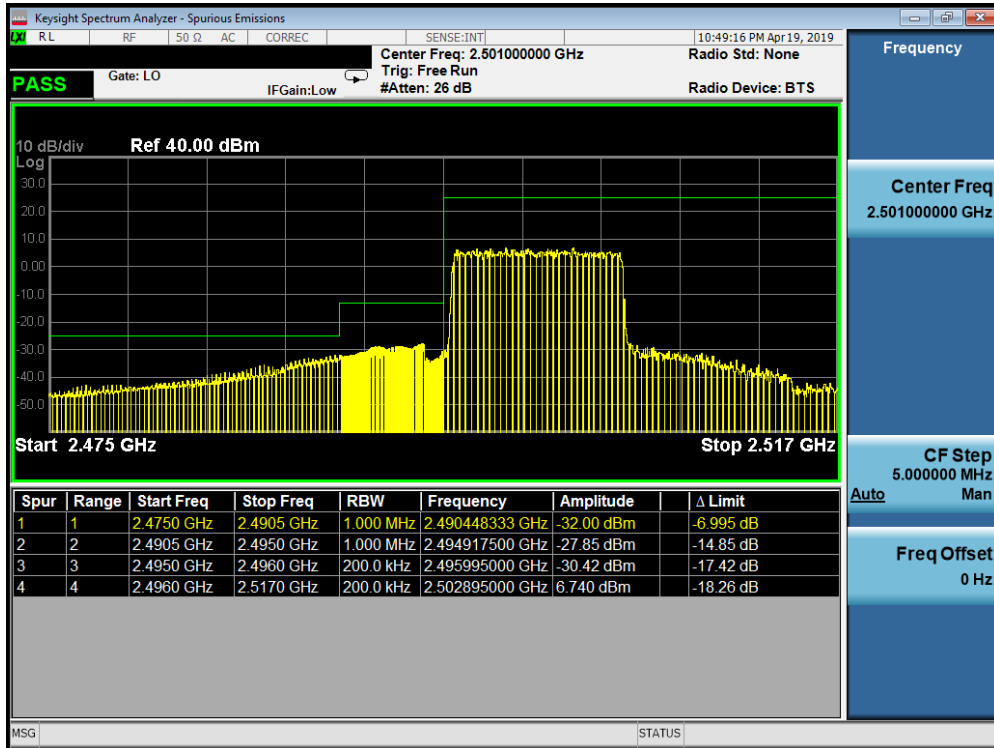


Plot 7-278. Lower ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)

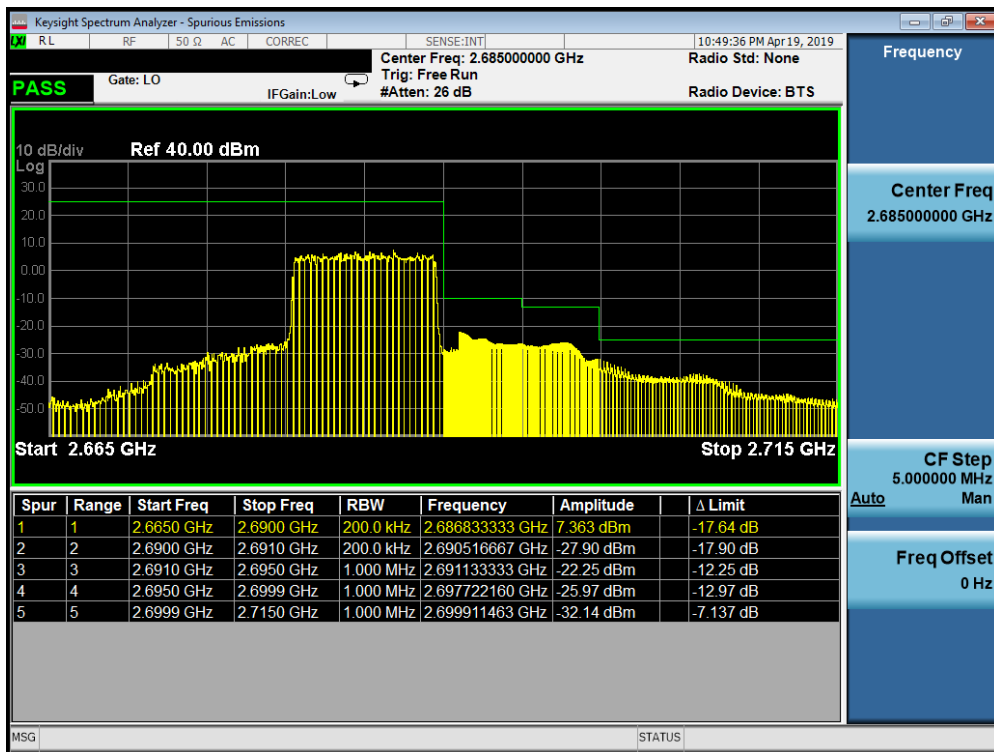


Plot 7-279. Upper ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 164 of 232

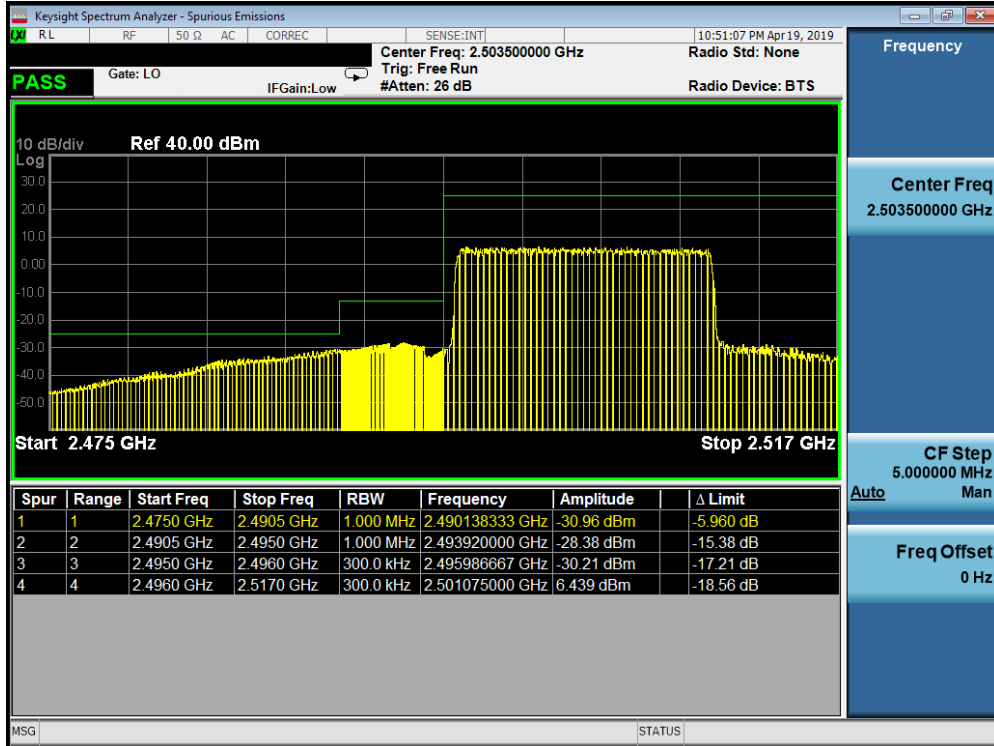


Plot 7-280. Lower ACP Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)

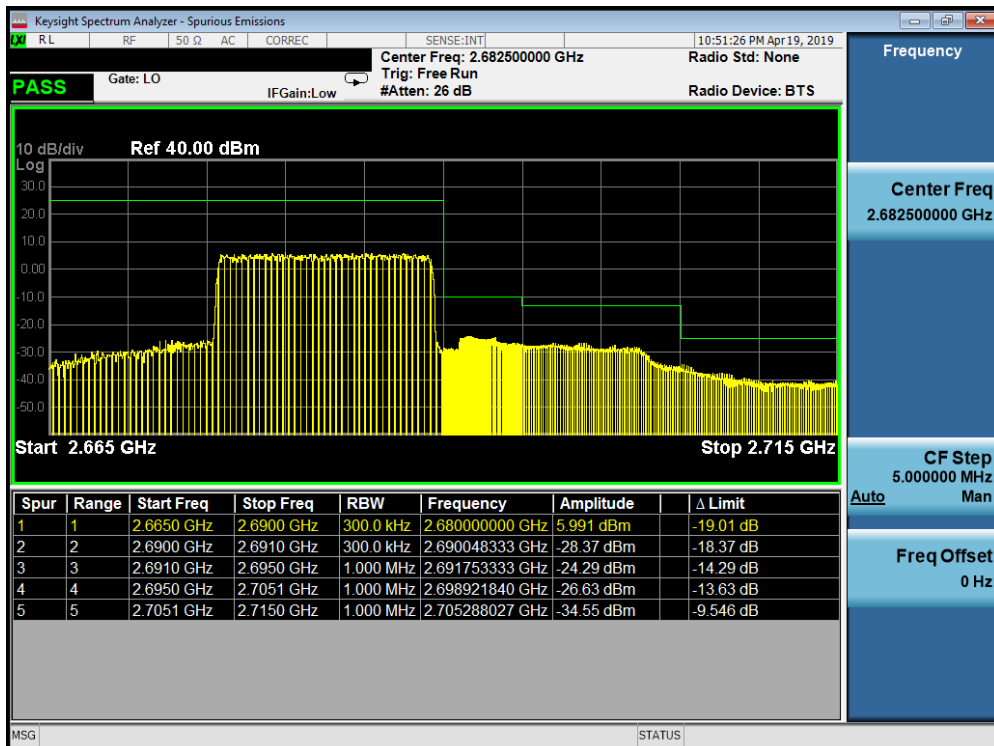


Plot 7-281. Upper ACP Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 165 of 232

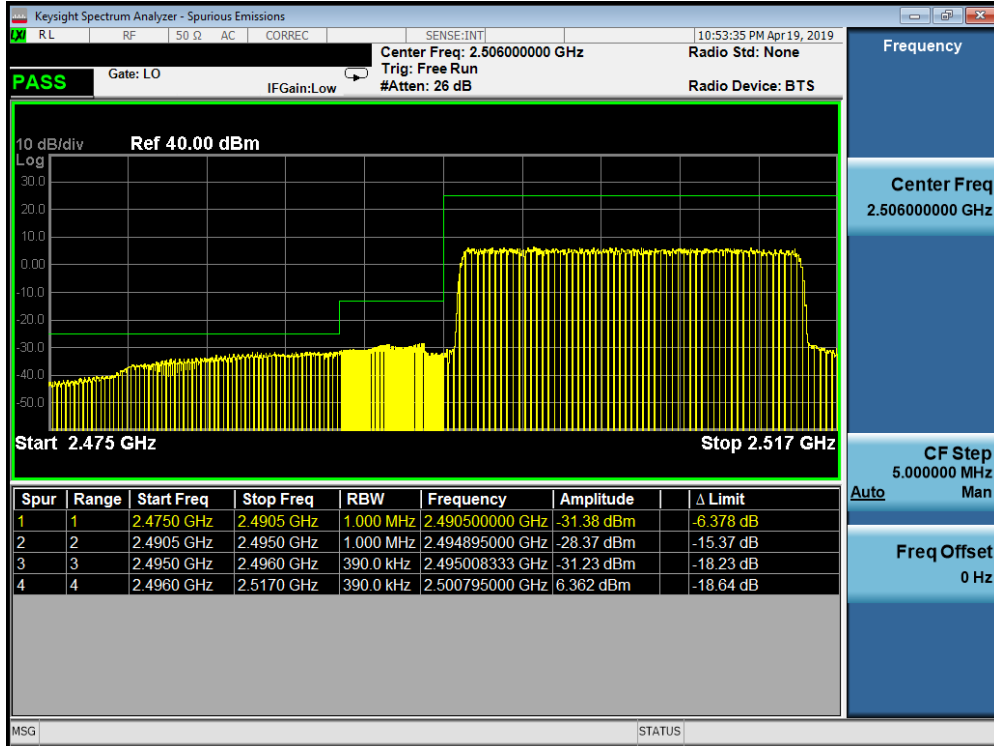


Plot 7-282. Lower ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)

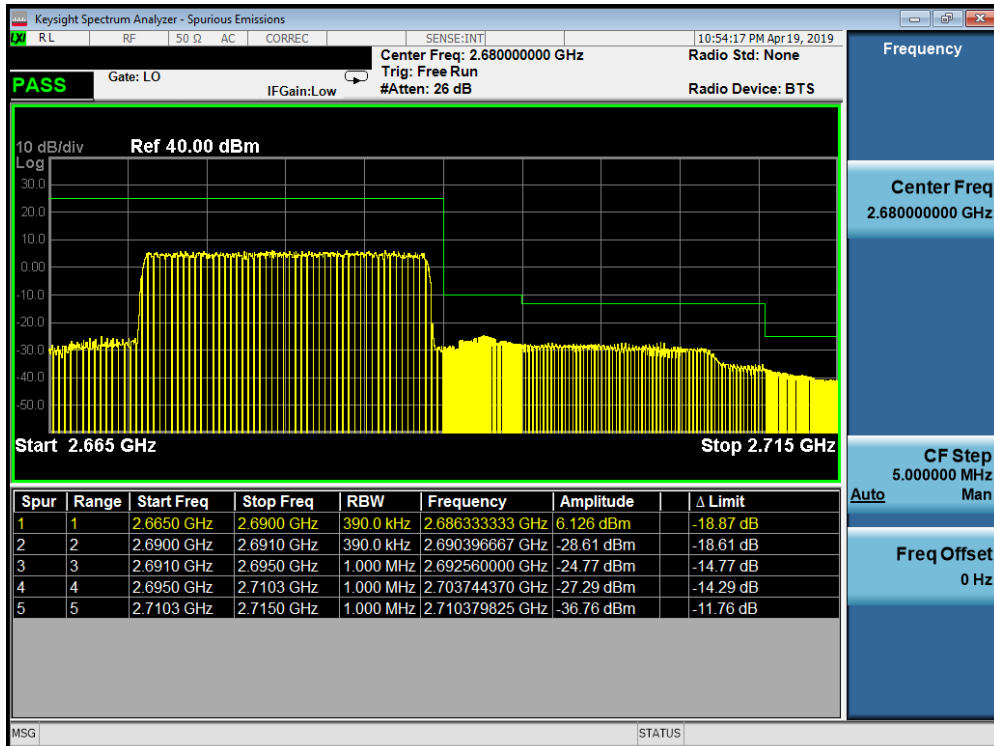


Plot 7-283. Upper ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 166 of 232



Plot 7-284. Lower ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-285. Upper ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 167 of 232

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 \geq 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.

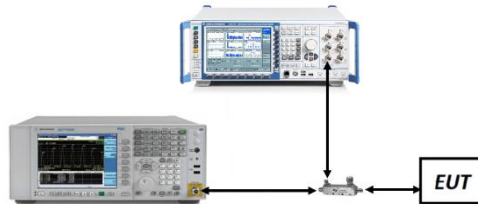


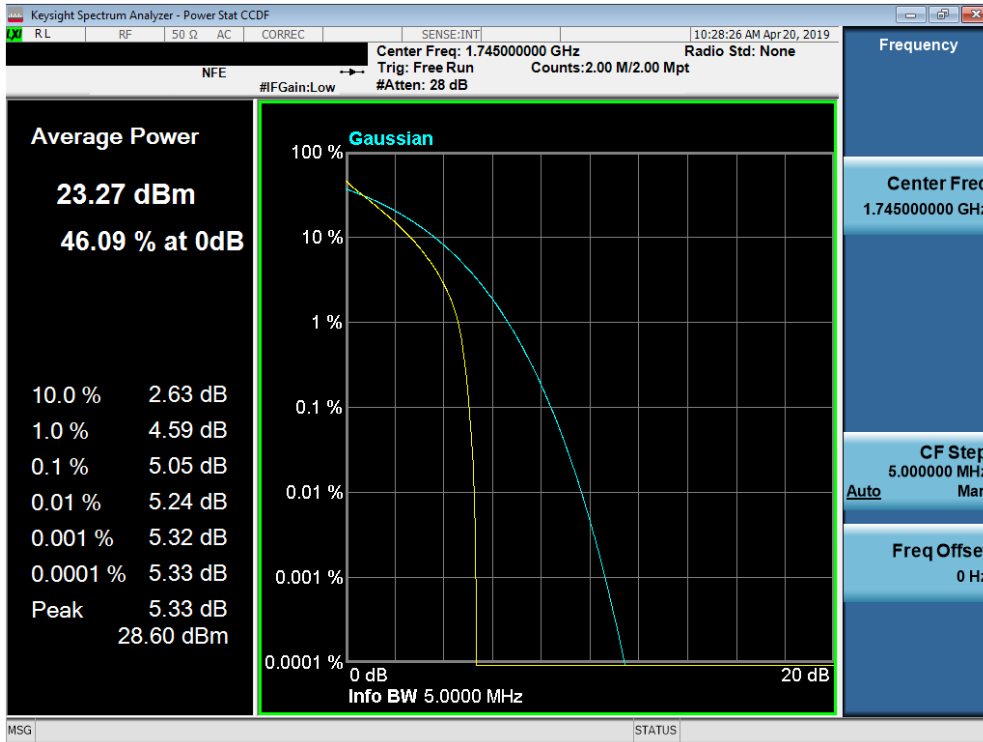
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

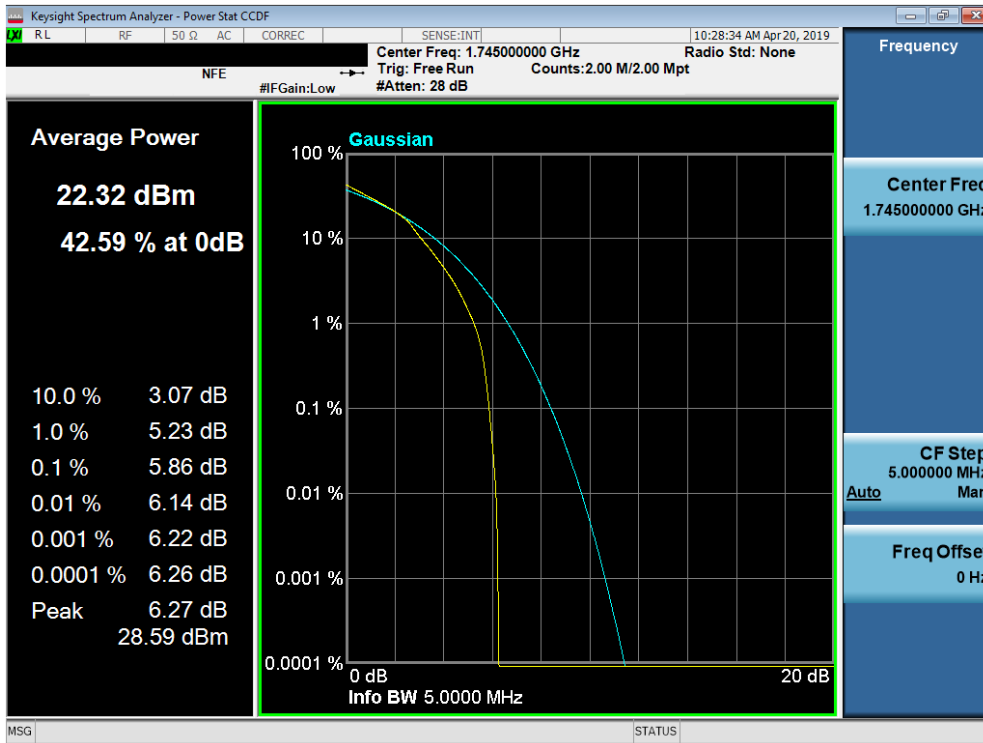
None.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 168 of 232

Band 66/4

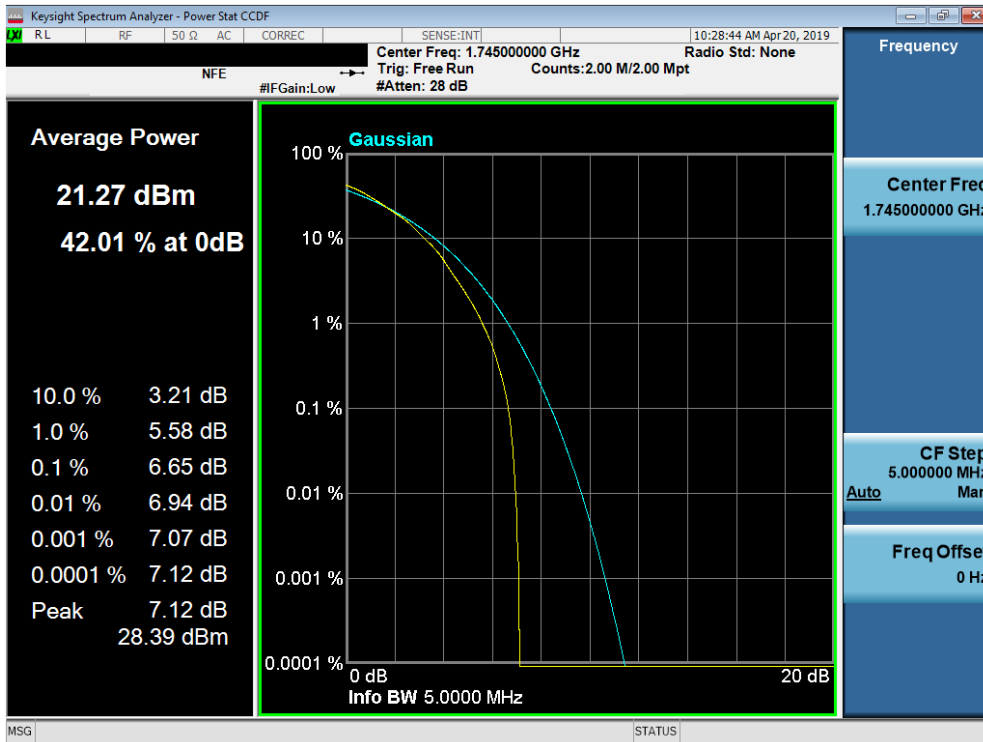


Plot 7-286. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

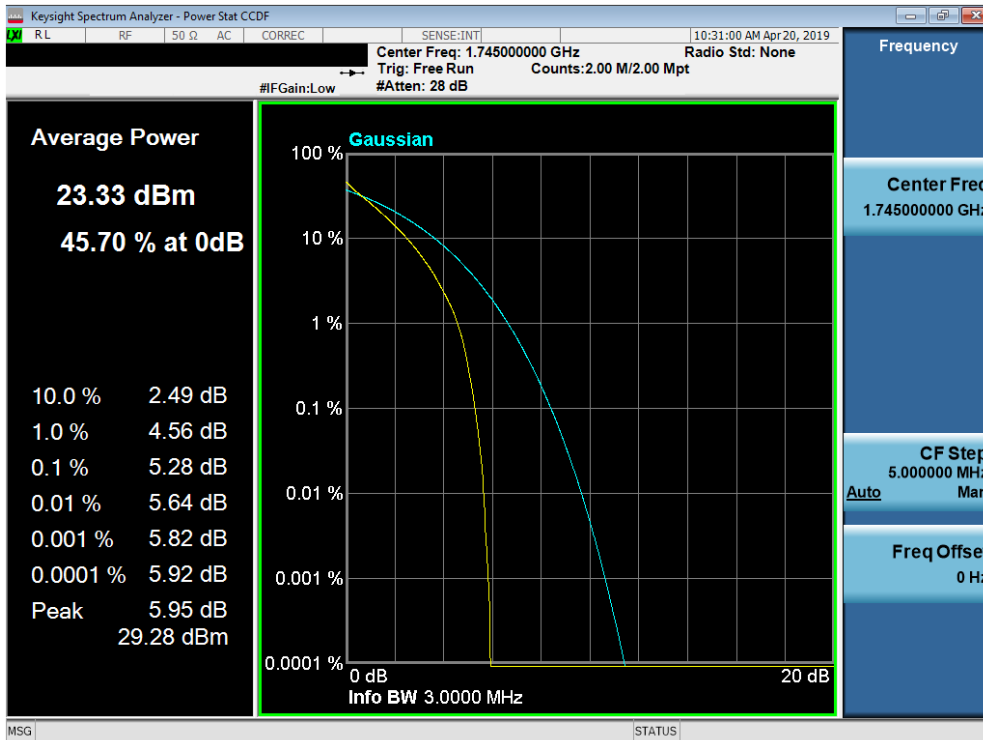


Plot 7-287. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX420MM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 169 of 232

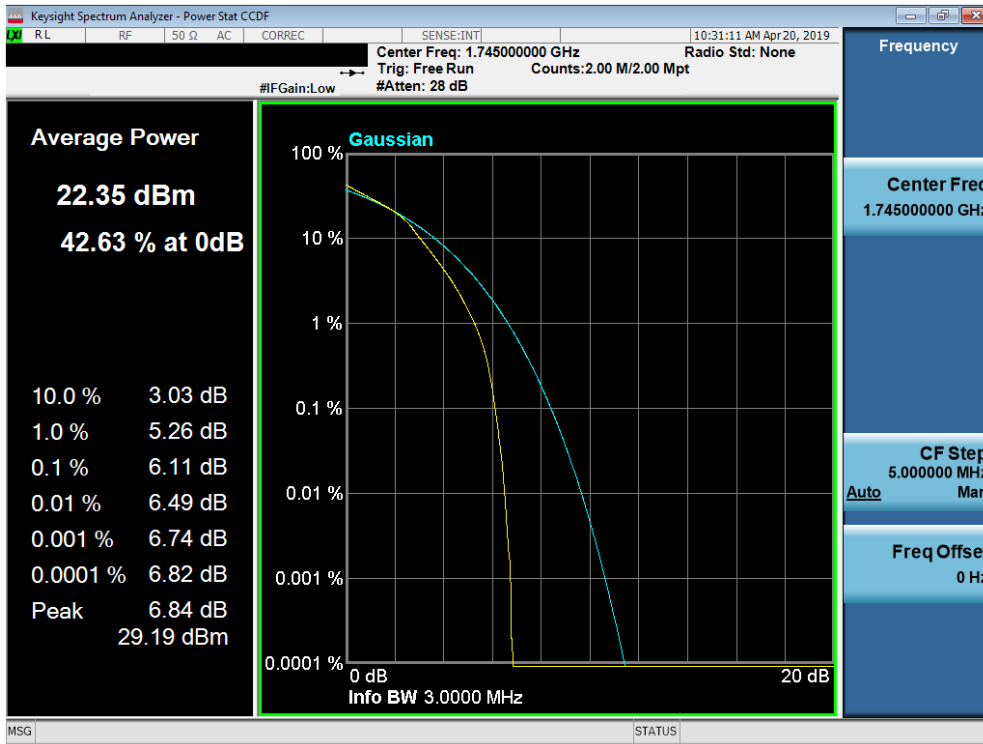


Plot 7-288. PAR Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)

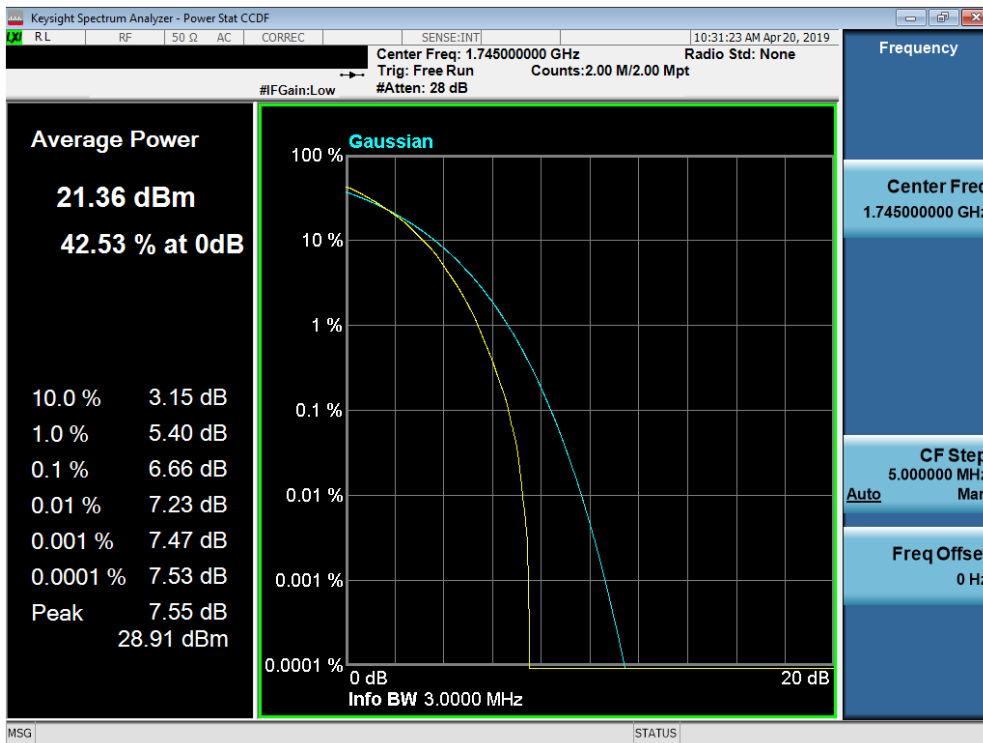


Plot 7-289. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 170 of 232

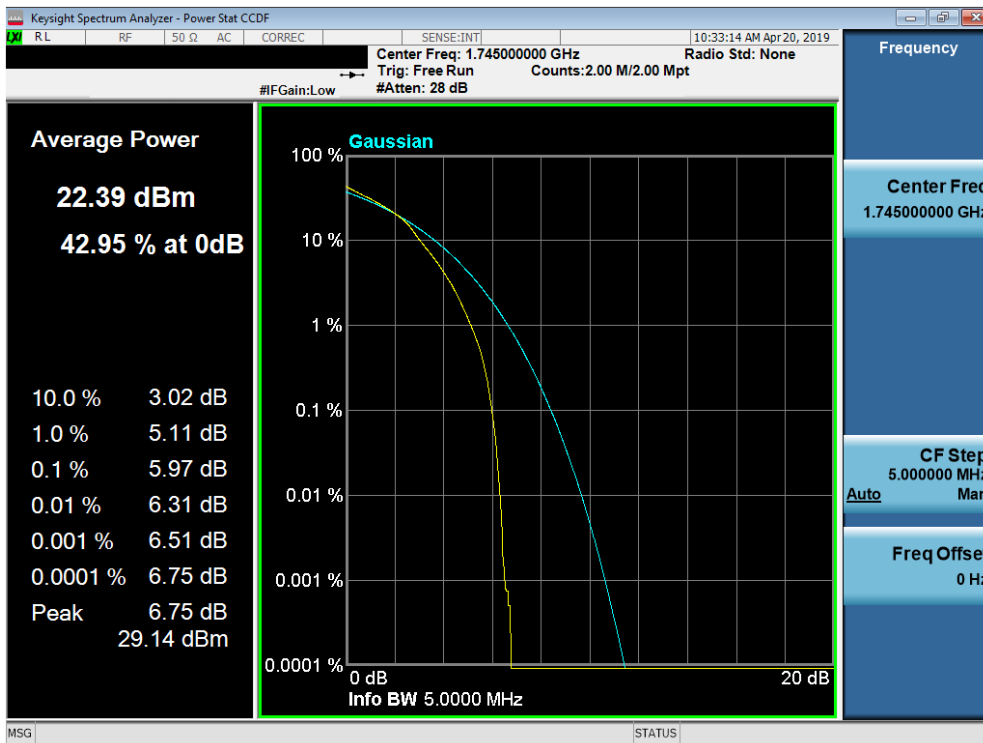
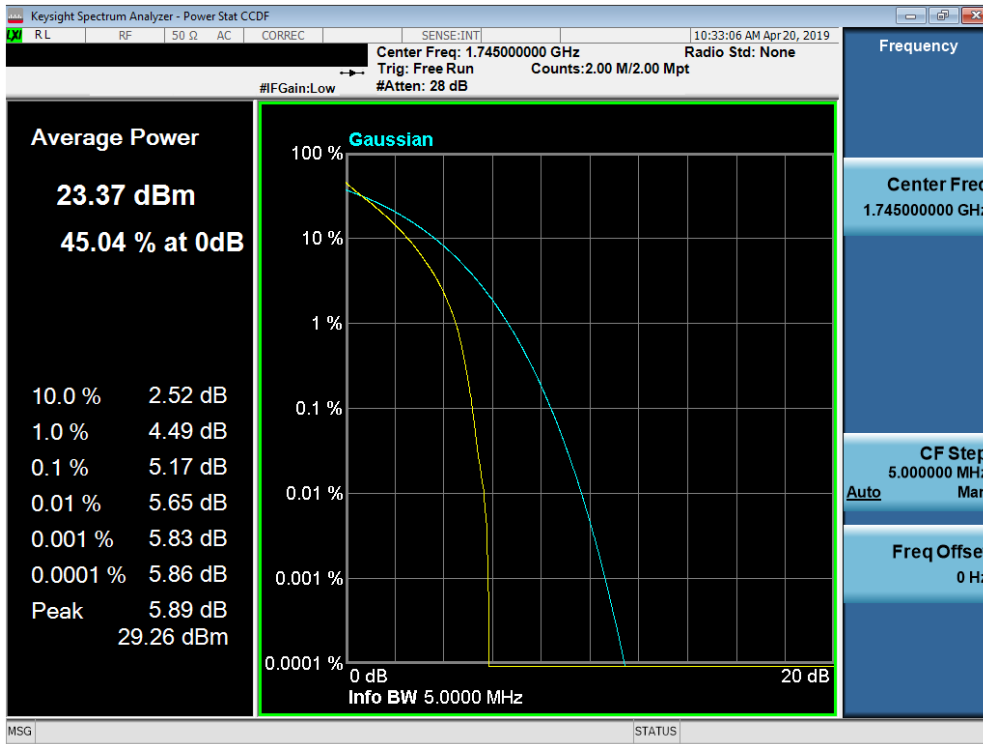


Plot 7-290. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

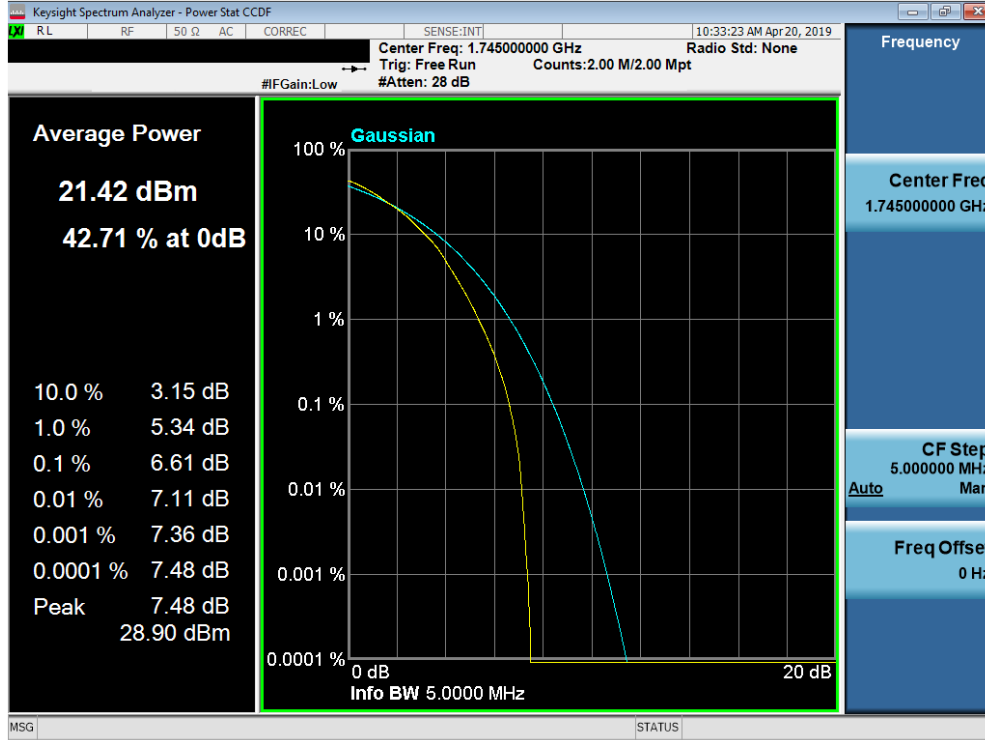


Plot 7-291. PAR Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

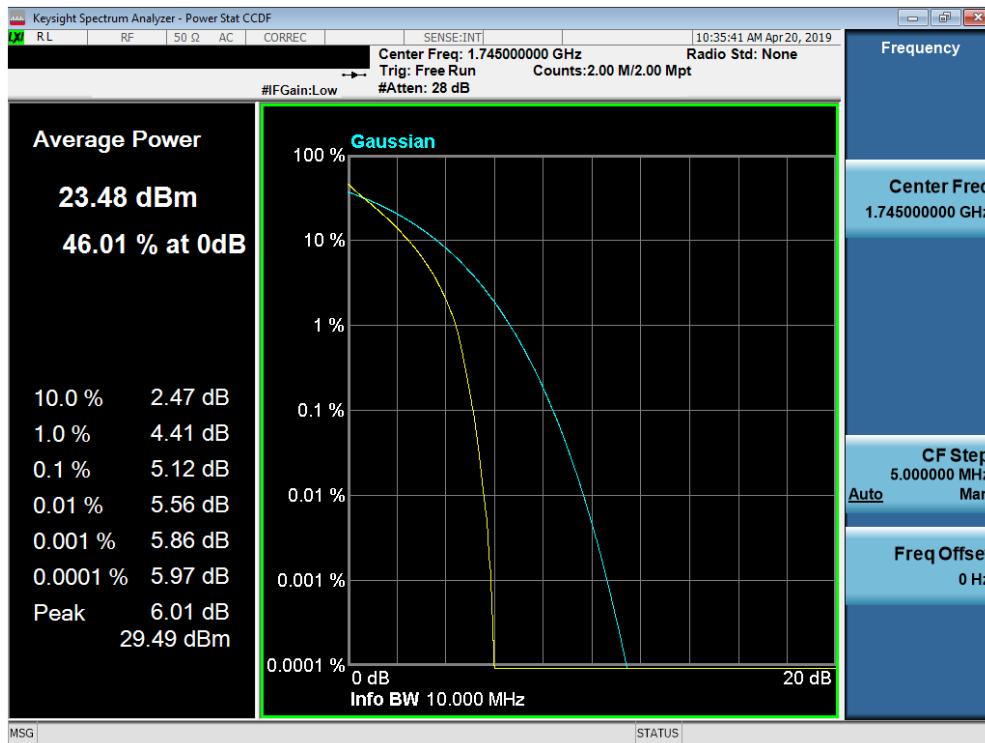
FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 171 of 232



FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 172 of 232

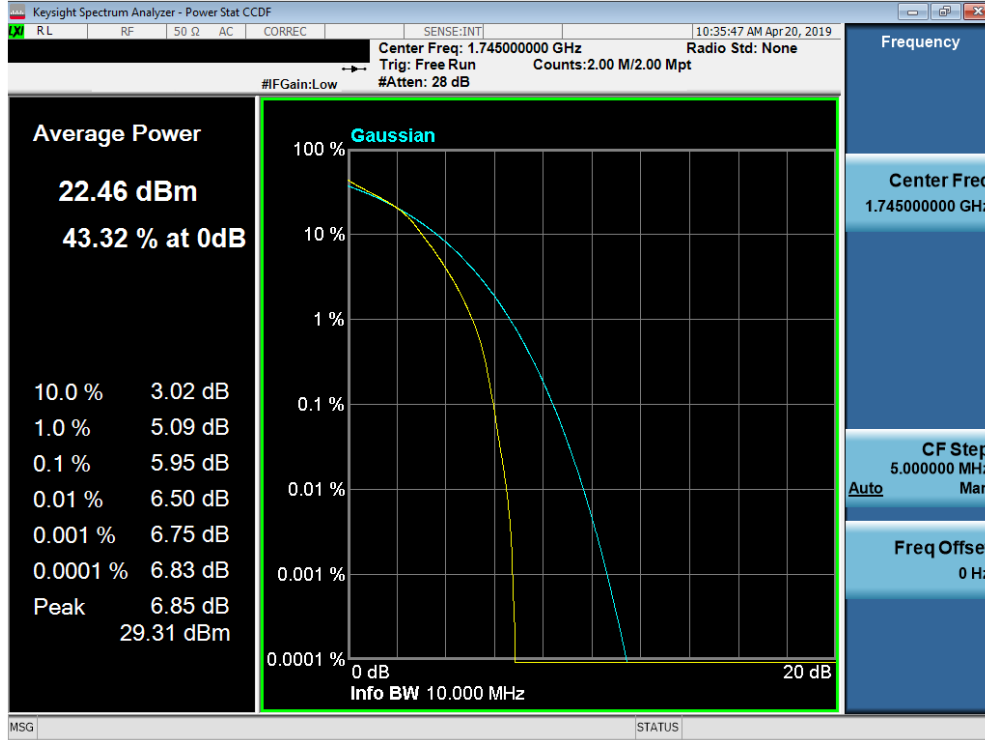


Plot 7-294. PAR Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)

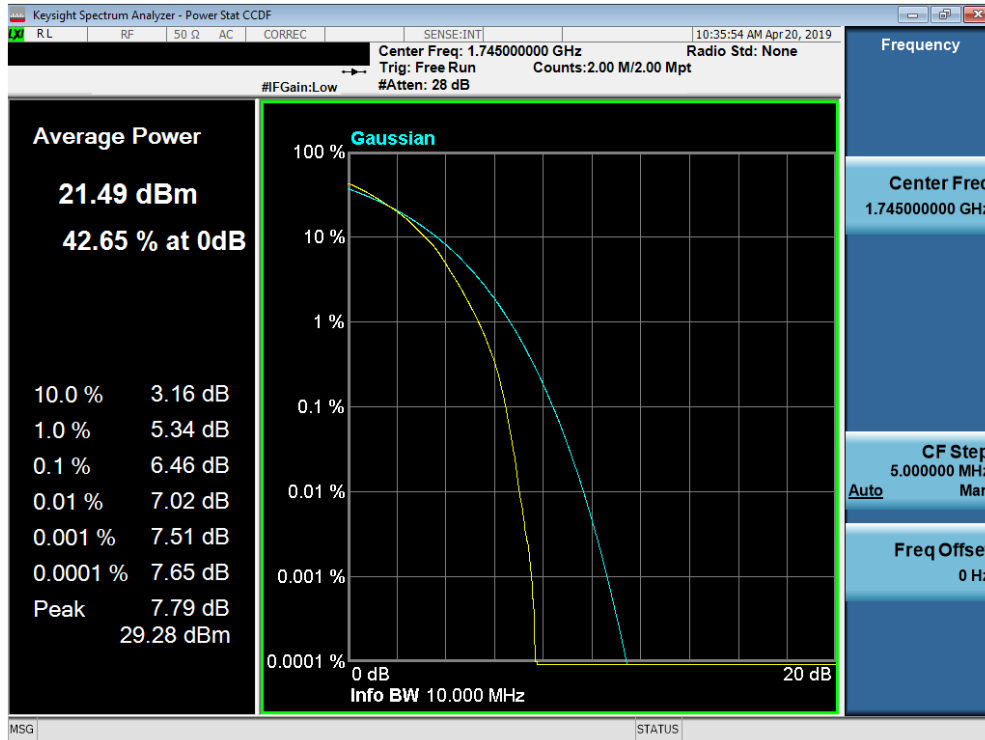


Plot 7-295. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 173 of 232

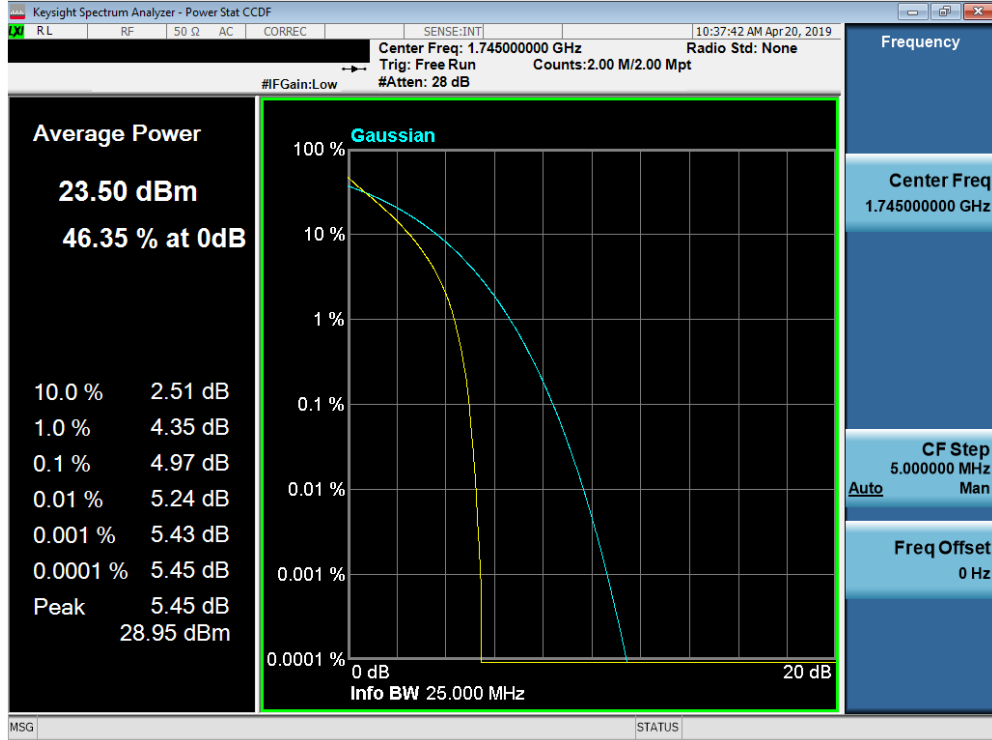


Plot 7-296. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

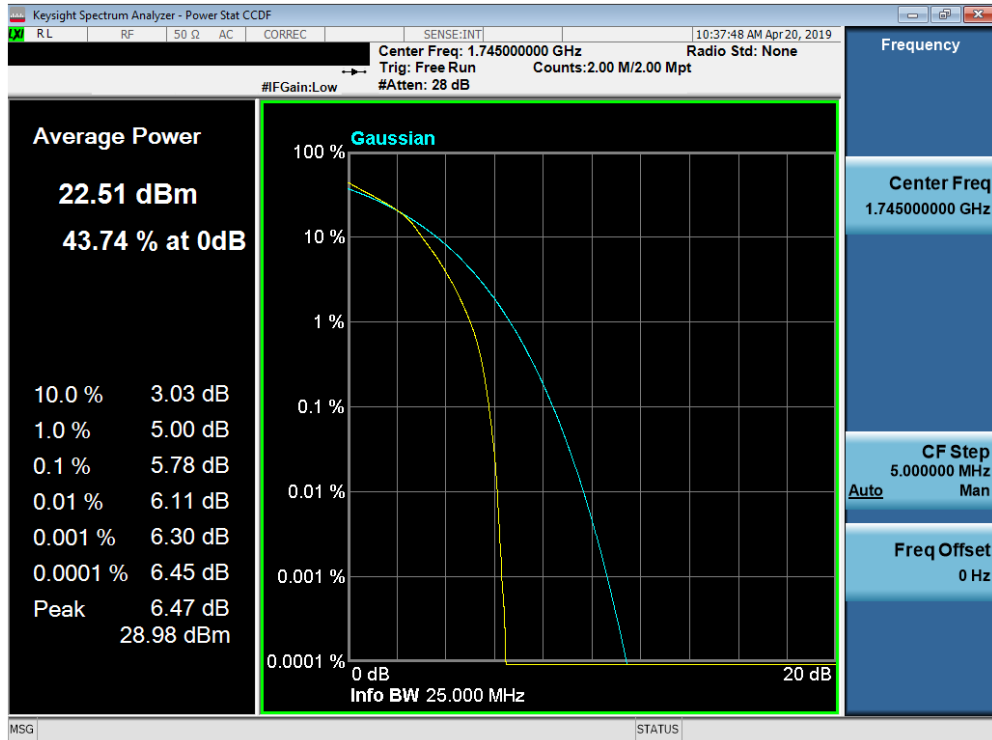


Plot 7-297. PAR Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 174 of 232

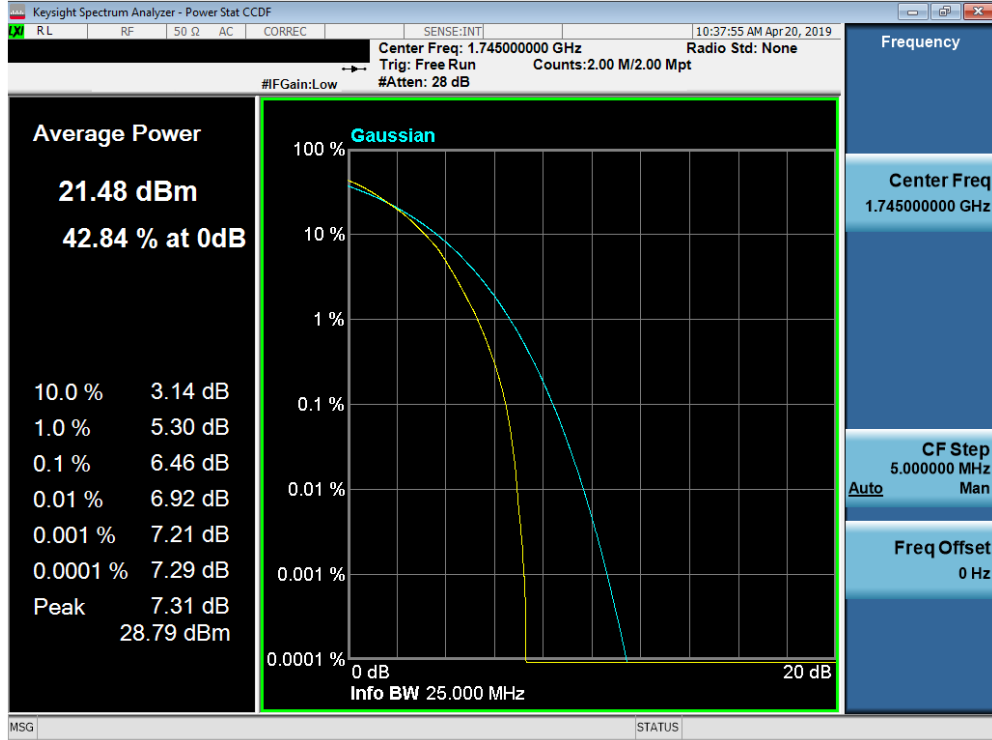


Plot 7-298. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

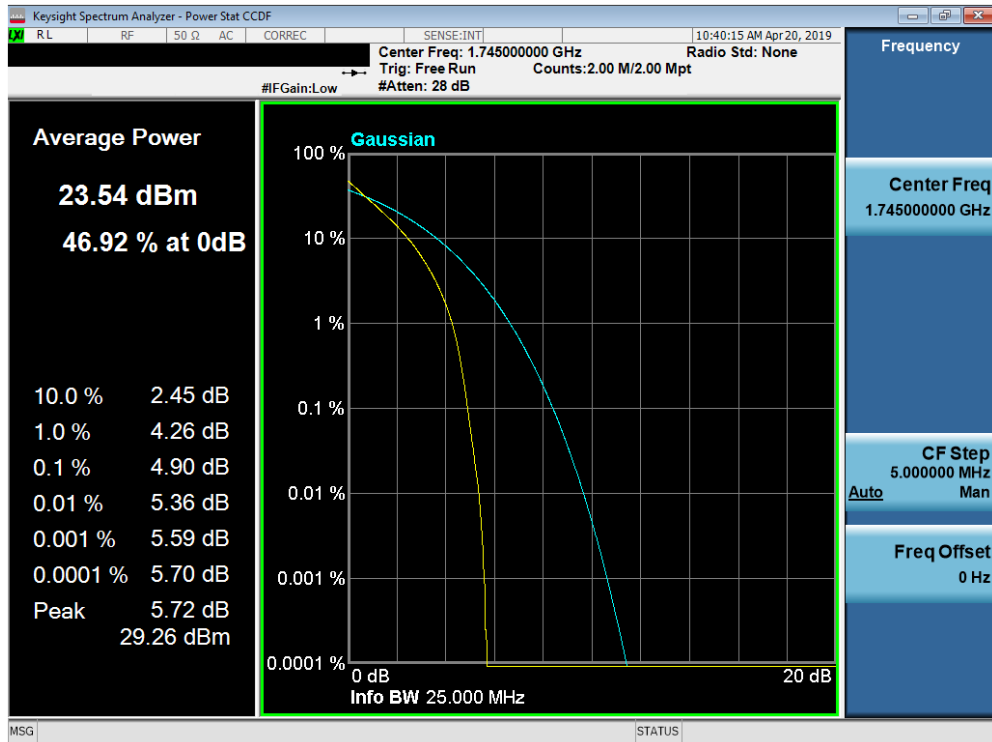


Plot 7-299. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 175 of 232

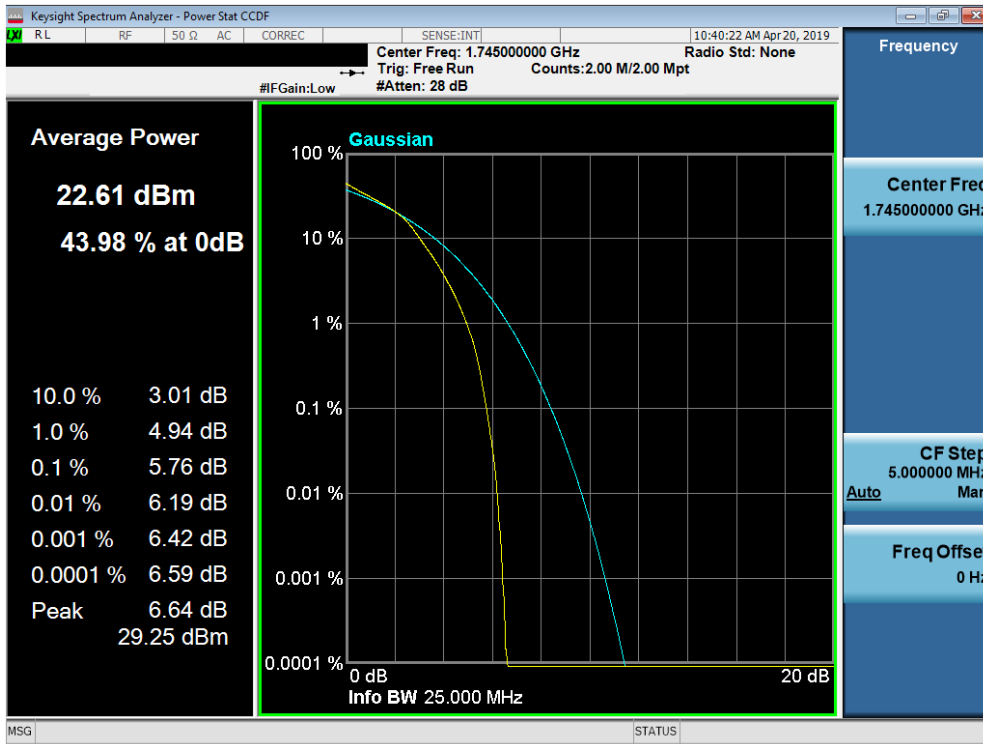


Plot 7-300. PAR Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)

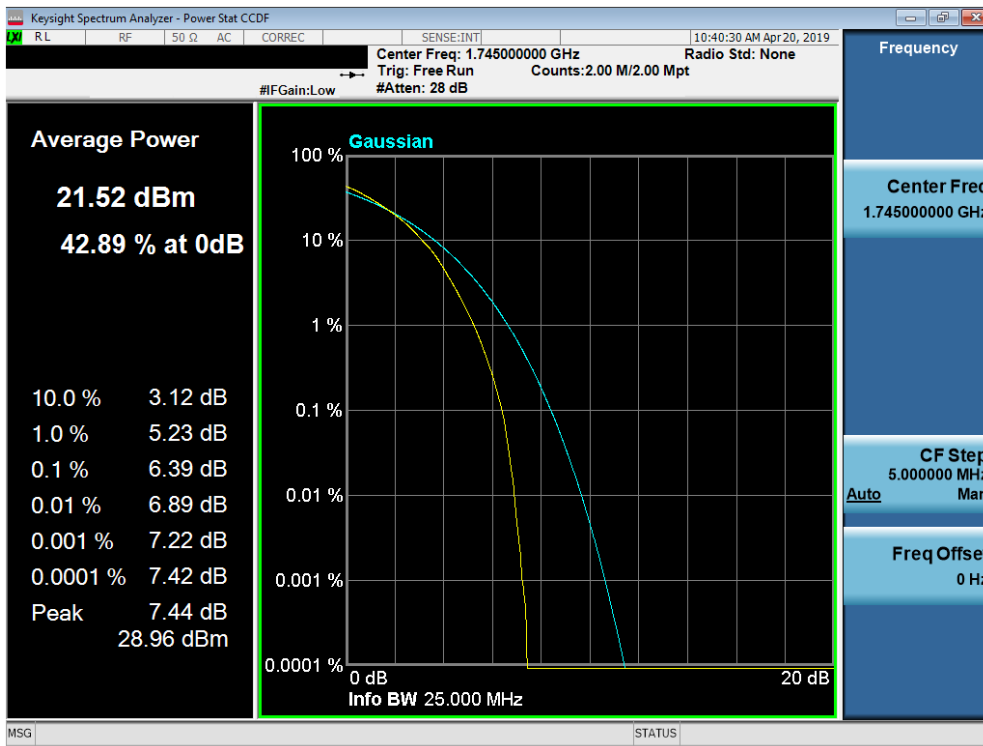


Plot 7-301. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 176 of 232



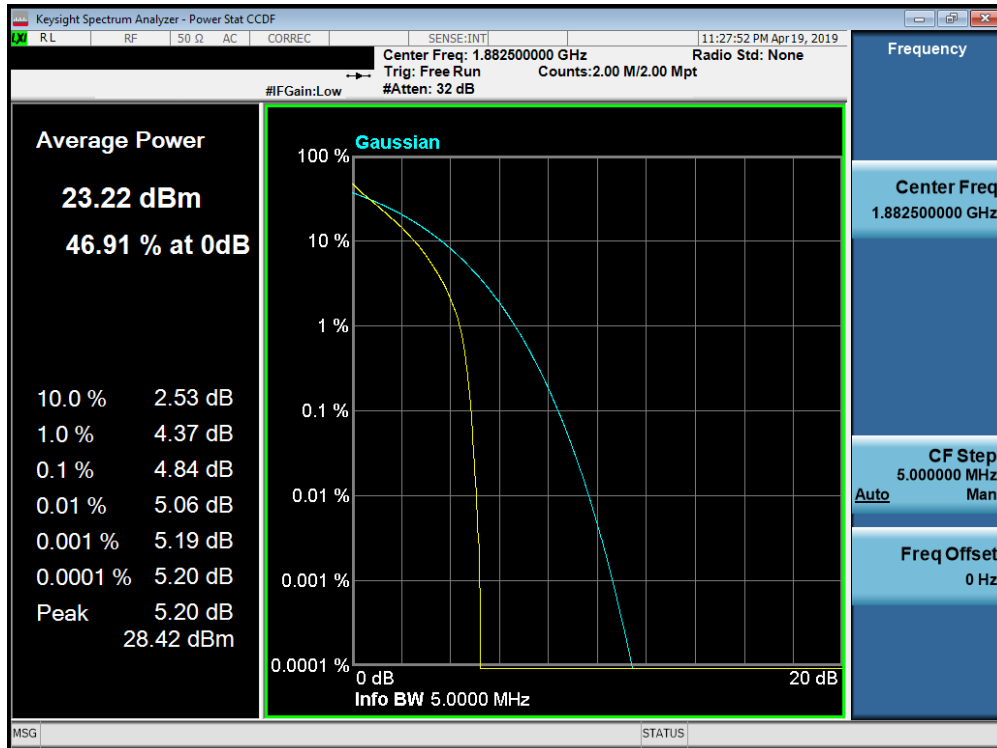
Plot 7-302. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



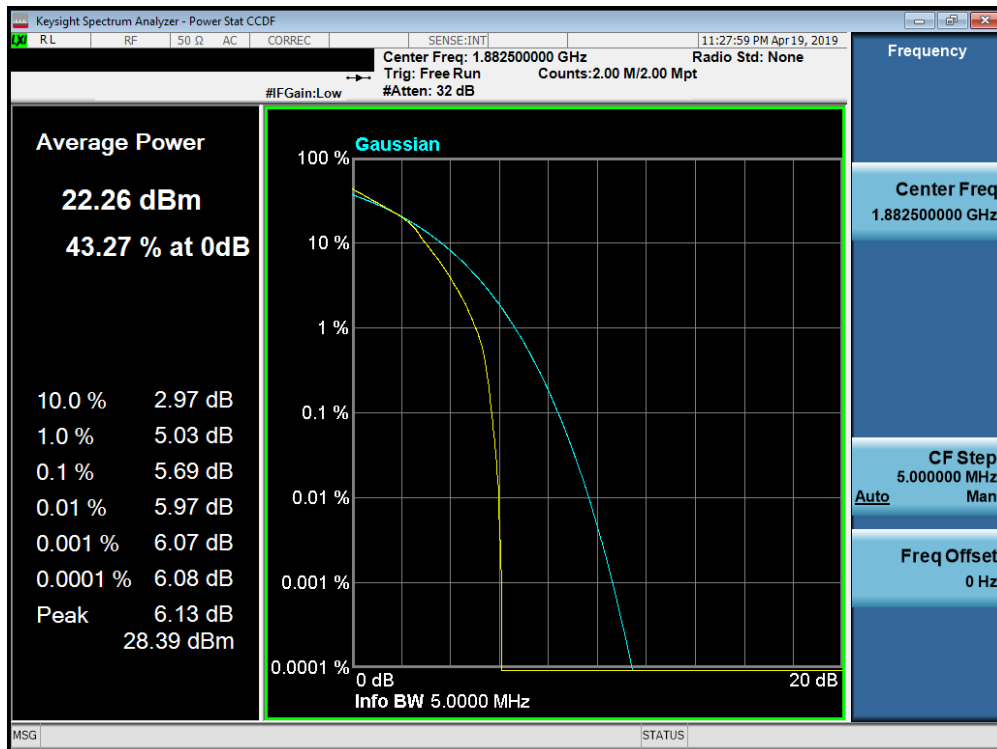
Plot 7-303. PAR Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 177 of 232

Band 25/2

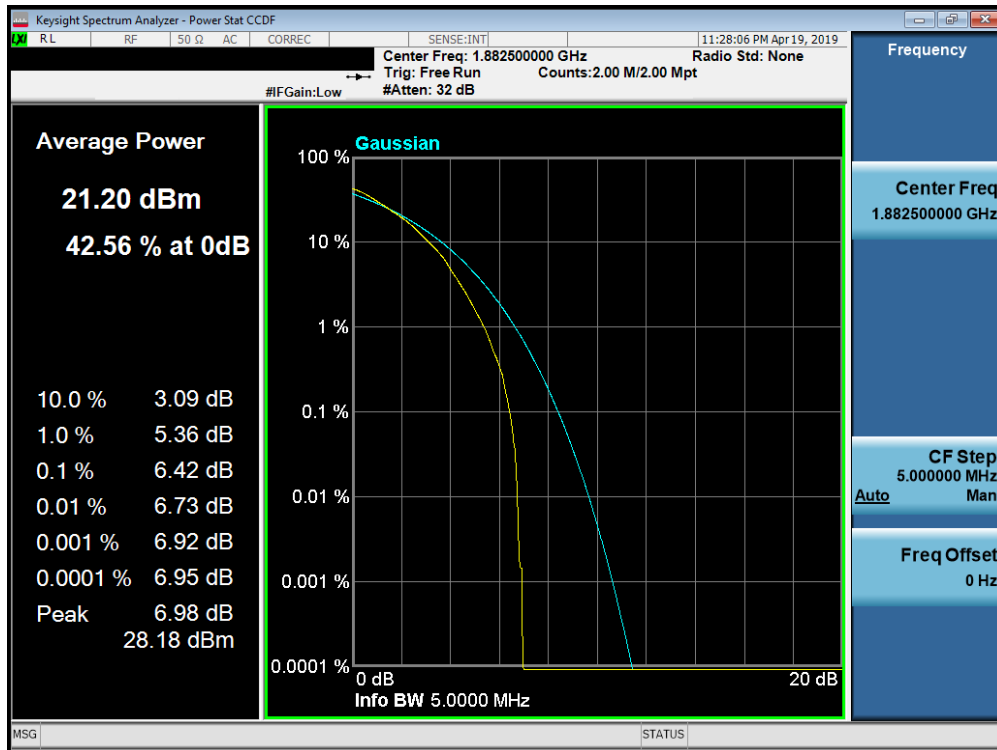


Plot 7-304. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

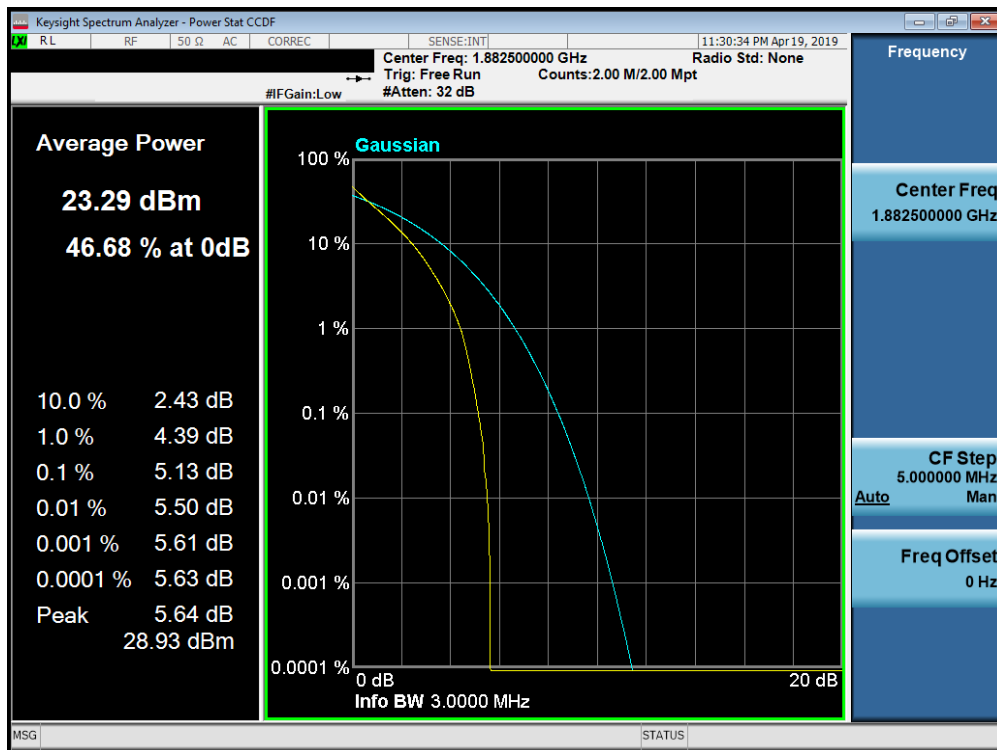


Plot 7-305. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX420MM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 178 of 232

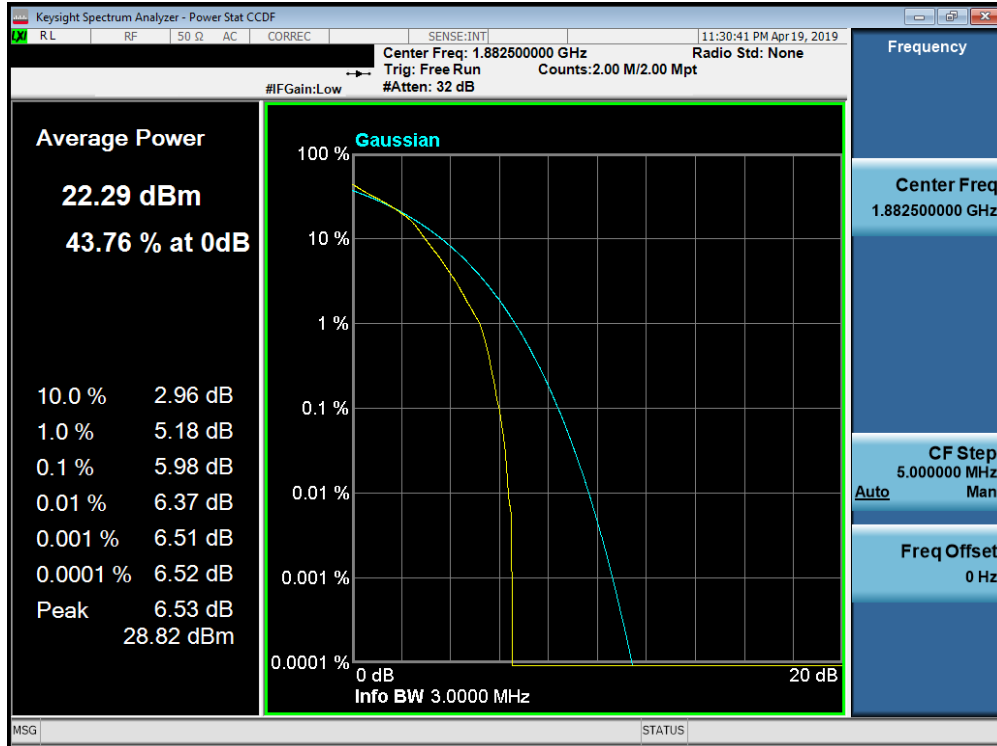


Plot 7-306. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

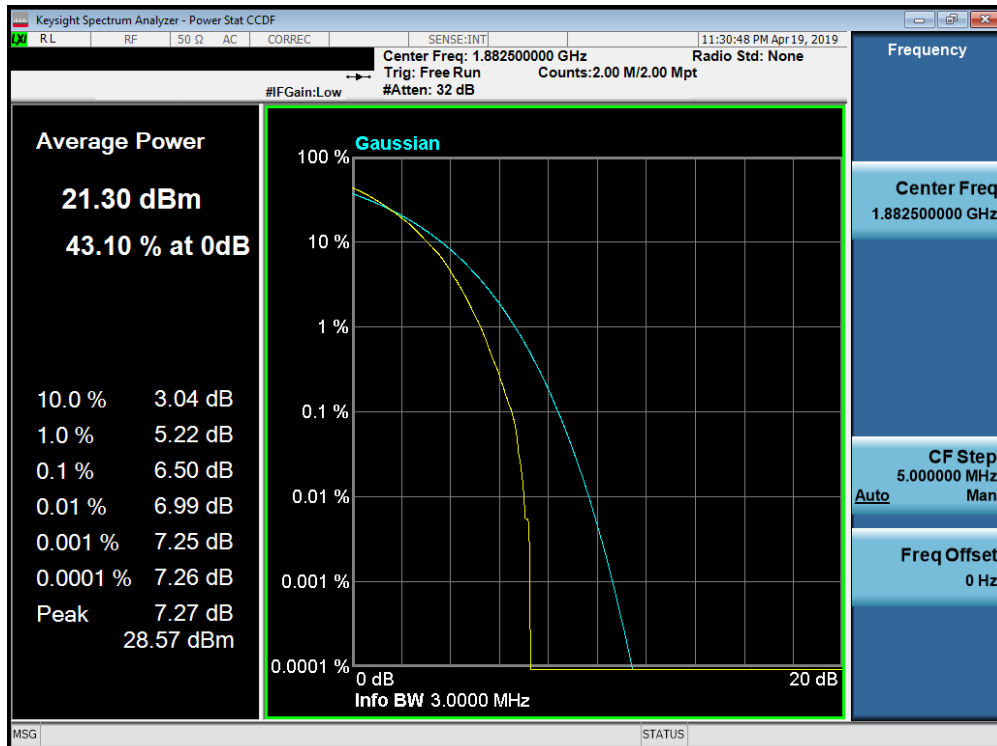


Plot 7-307. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 179 of 232

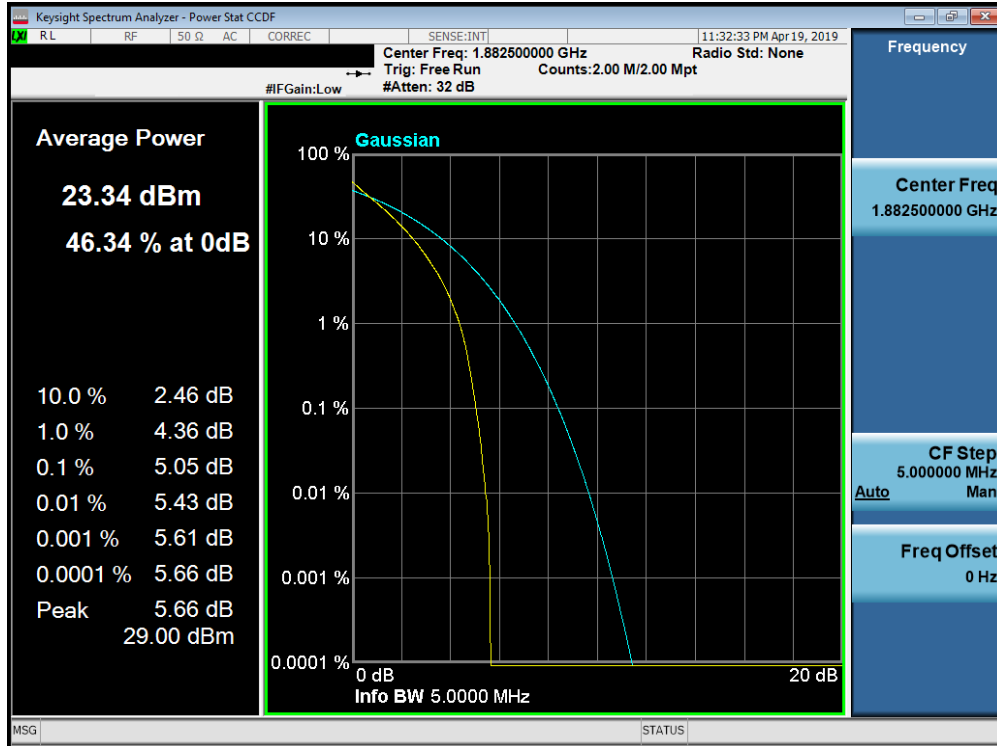


Plot 7-308. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

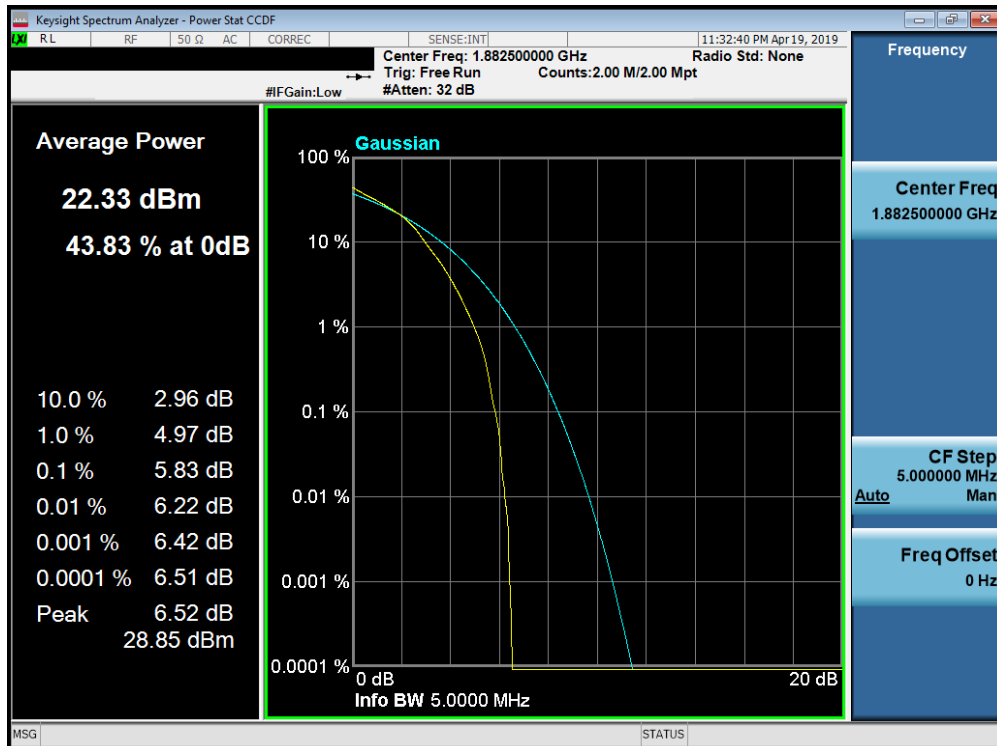


Plot 7-309. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 180 of 232

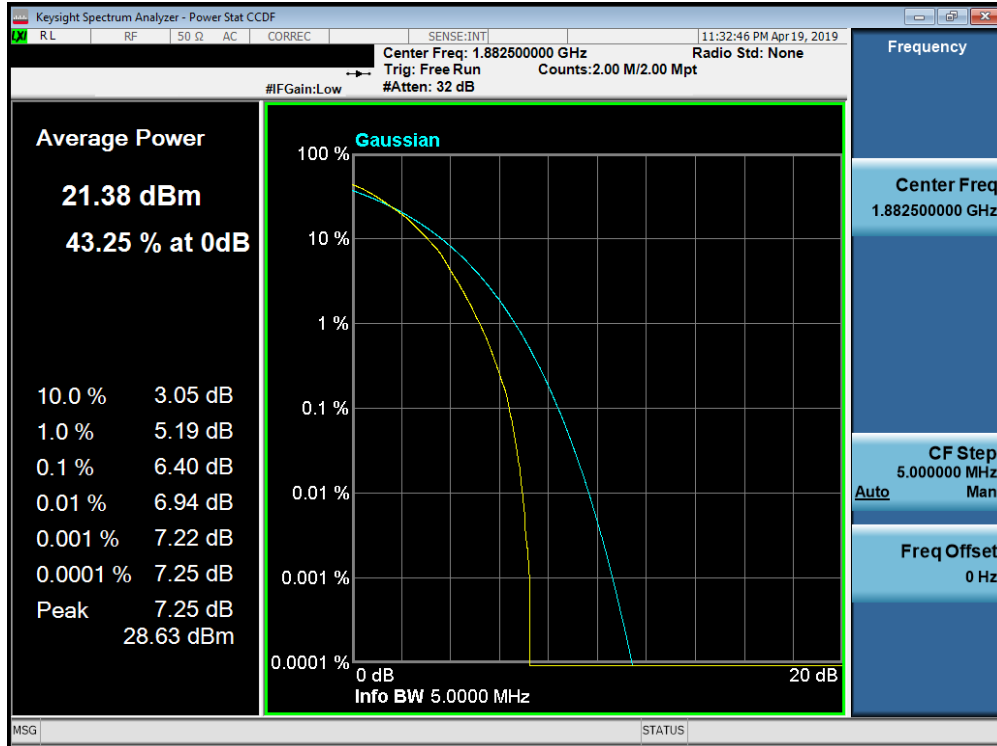


Plot 7-310. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

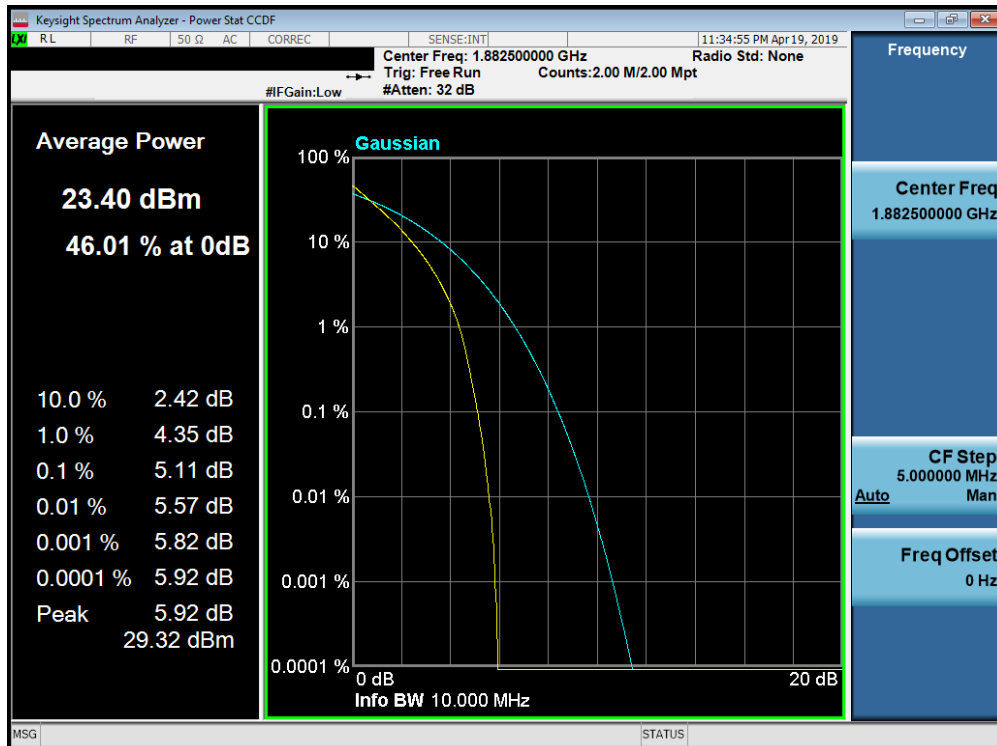


Plot 7-311. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 181 of 232

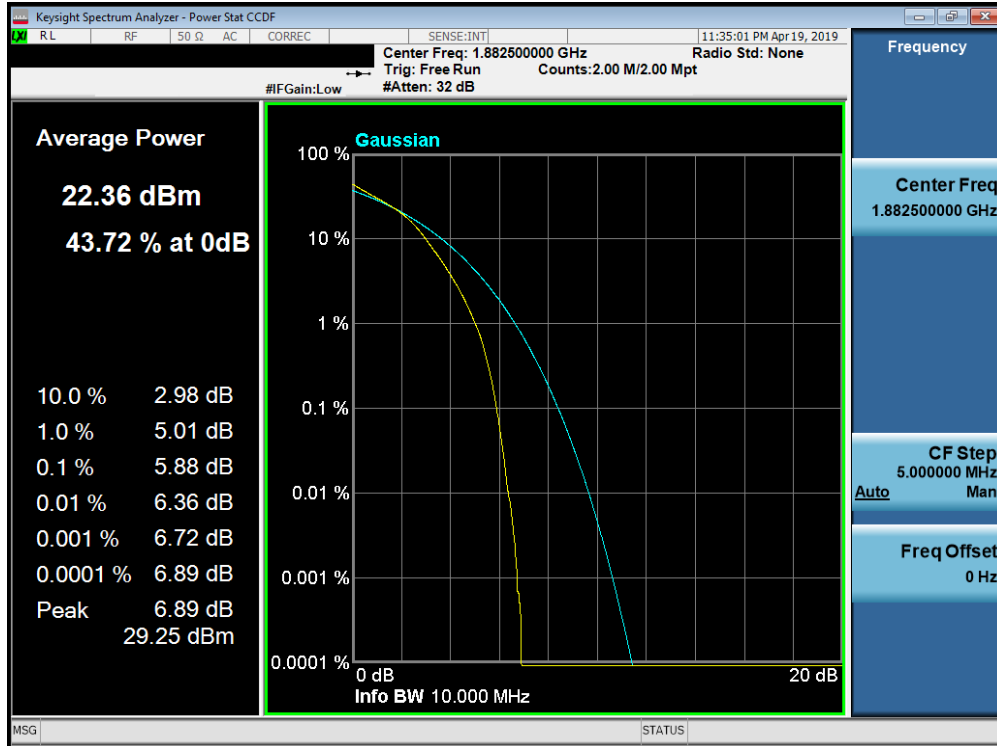


Plot 7-312. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

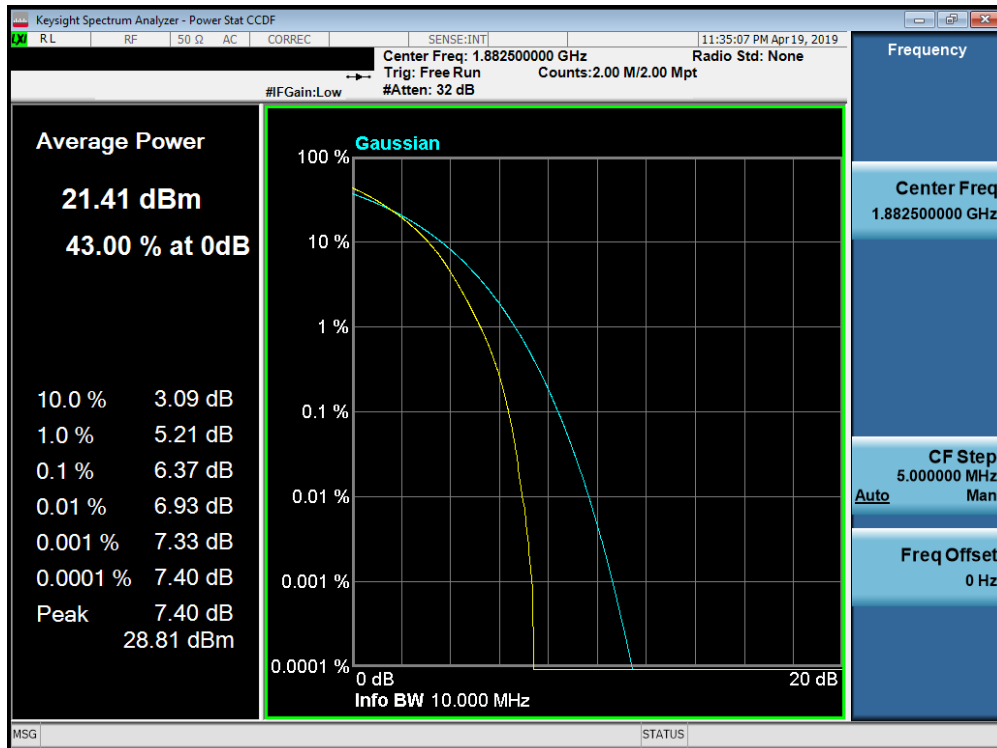


Plot 7-313. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 182 of 232

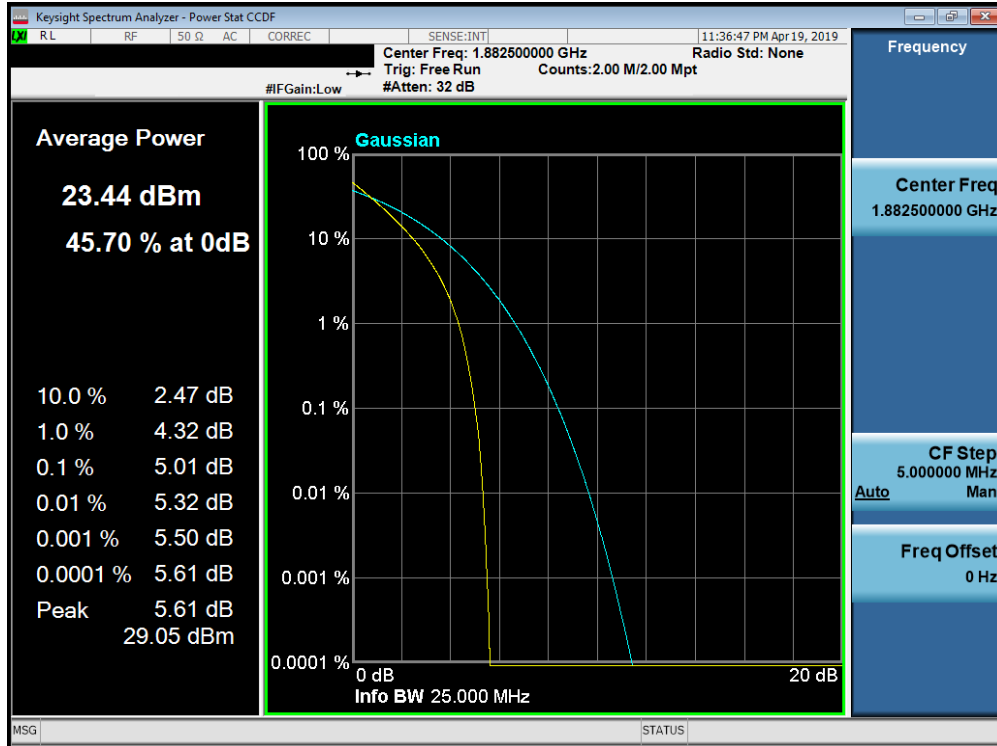


Plot 7-314. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

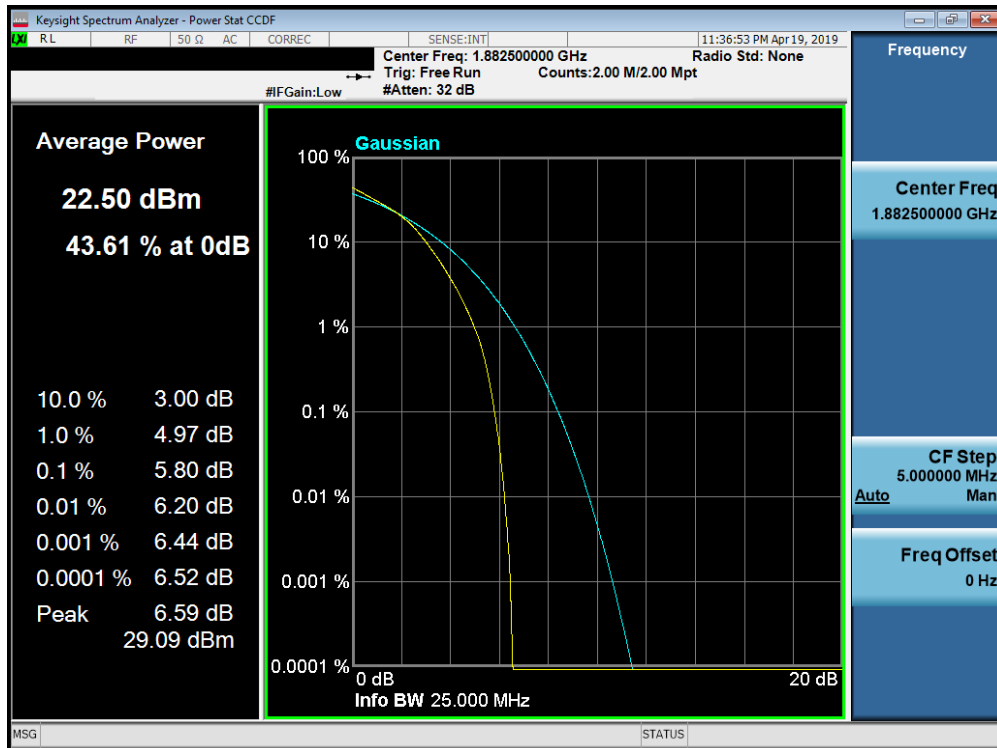


Plot 7-315. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFX420MM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 183 of 232

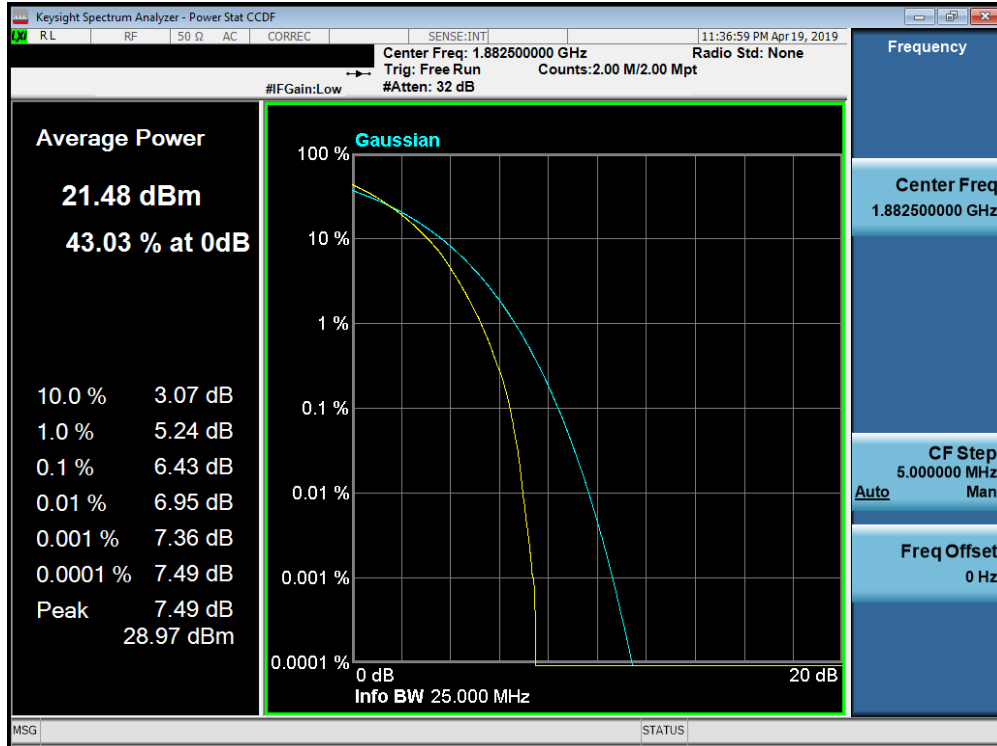


Plot 7-316. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

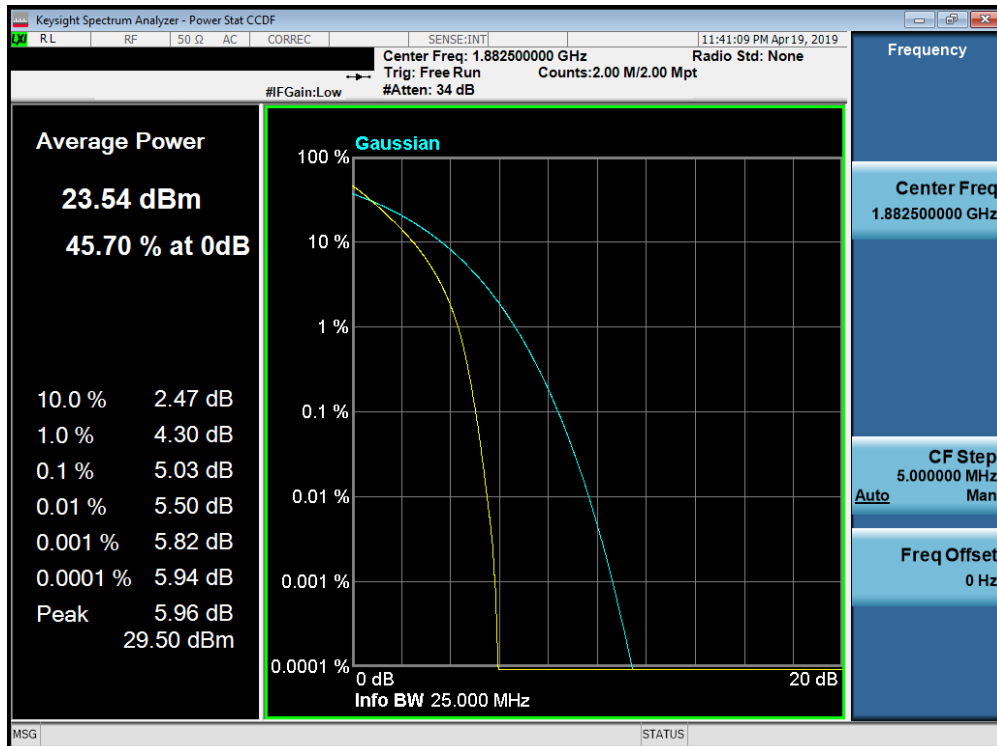


Plot 7-317. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 184 of 232

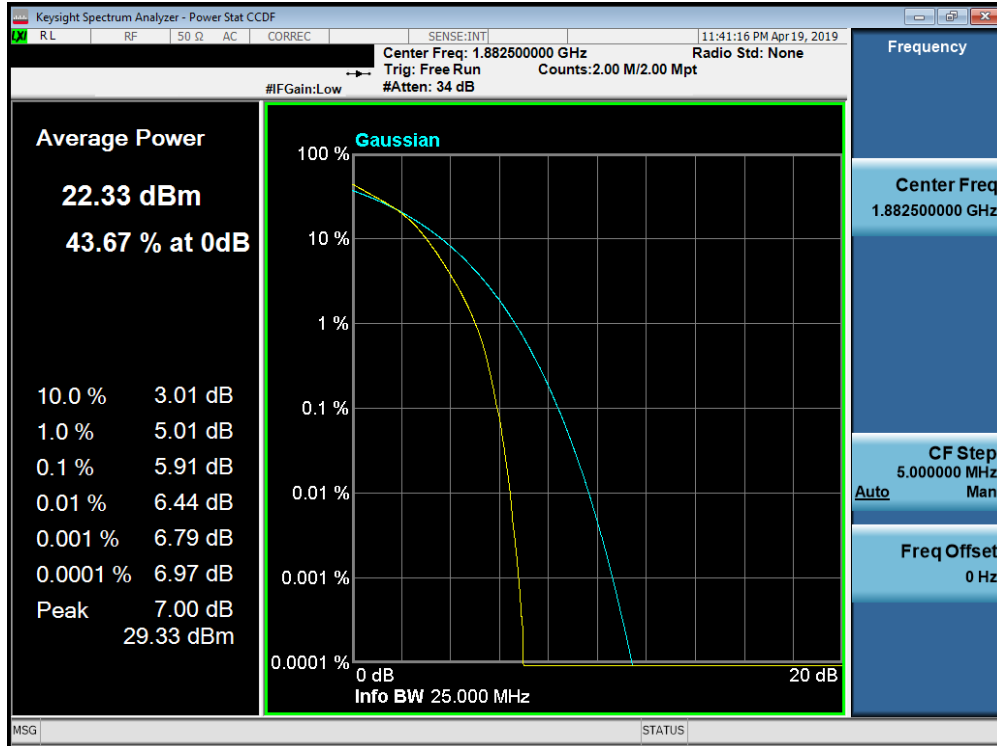


Plot 7-318. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

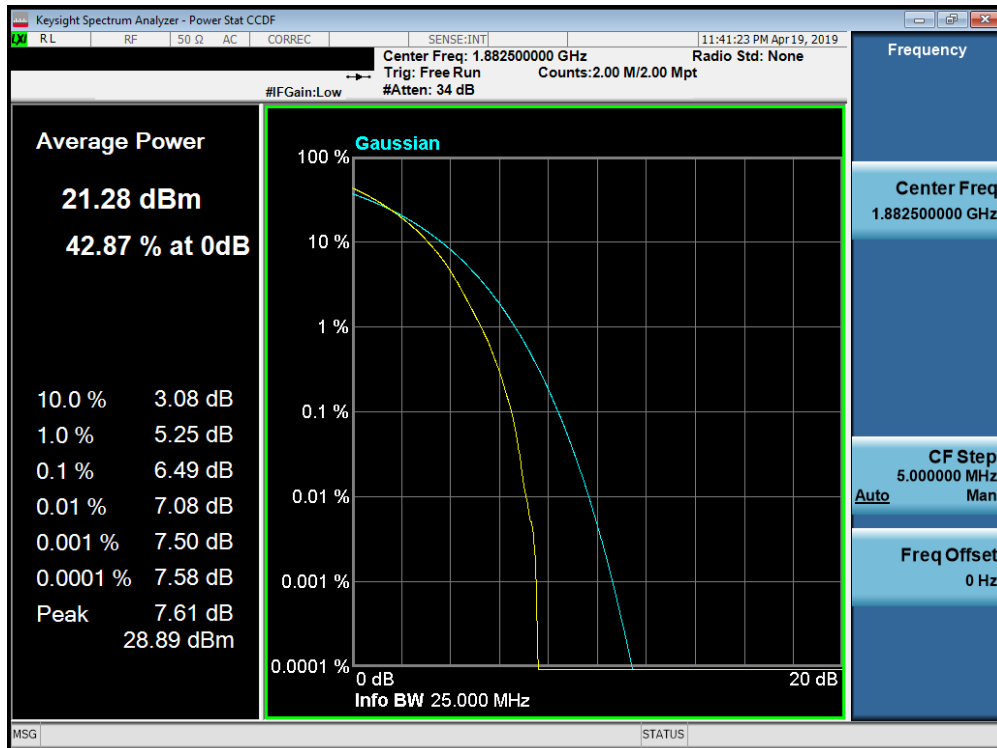


Plot 7-319. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 185 of 232



Plot 7-320. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-321. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 186 of 232

7.6 Additional Maximum Power Reduction (A-MPR) §2.1046

Test Overview

A-MPR is implemented in this device when operating at Power Class 2 in LTE Band 41 per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.2.2

Test Settings

1. Span = 2 x OBW to 3 x OBW
2. RBW = 1% to 5% of the OBW
3. Number of measurement points in sweep $\geq 2 \times \text{span} / \text{RBW}$
4. Sweep = auto-couple (less than transmission burst duration)
5. Detector = RMS (power)
6. Trigger was set to enable power measurements only on full power bursts
7. Trace was allowed to stabilize
8. Spectrum analyzer's "Channel Power" function was used to compute the power by integrating the spectrum across the OBW of the signal

Test Setup

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

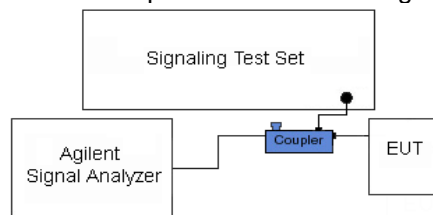


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 187 of 232

Test Case	NS	MCC	MNC	Channel BW [MHz]	Channel Number	Channel Frequency [MHz]	Modulation	RB Size	RB Offset	MPR [dB]	A-MPR [dB]	Measured Power [dBm]	Lowest Typical Power [dBm]	Delta [dB]		
1	01	312	530	5	39675	2498.5	QPSK	1	0	0	≤ 3	25.33	23.2	2.13		
							16-QAM			≤ 1		24.49	22.2	2.29		
							64-QAM			≤ 2		23.36	21.2	2.16		
2				5	39675	2498.5	1	9	QPSK	1	9	0	0	26.67	26.2	0.47
									16-QAM			≤ 1		26.24	25.2	1.04
									64-QAM			≤ 2		25.09	24.2	0.89
3				10	39700	2501	1	0	QPSK	1	0	0	≤ 5	24.44	21.2	3.24
									16-QAM			≤ 1		23.69	20.2	3.49
									64-QAM			≤ 2		22.53	19.2	3.33
4				10	39700	2501	20	0	QPSK	20	0	0	≤ 2	25.56	23.2	2.36
									16-QAM			≤ 1		24.57	22.2	2.37
									64-QAM			≤ 2		23.59	21.2	2.39
5				10	39700	2501	50	0	QPSK	50	0	0	≤ 3	24.47	22.2	2.27
									16-QAM			≤ 1		23.47	21.2	2.27
									64-QAM			≤ 2		22.44	20.2	2.24
6	10	39700	2501	25	20	QPSK	25	20	0	≤ 1	25.52	24.2	1.32			
						16-QAM			≤ 1		24.59	23.2	1.39			
						64-QAM			≤ 2		23.75	22.2	1.55			
8	15	39725	2503.5	1	0	QPSK	1	0	0	≤ 5	22.18	21.2	0.98			
						16-QAM			≤ 1		21.52	20.2	1.32			
						64-QAM			≤ 2		20.39	19.2	1.19			
9	15	39725	2503.5	20	0	QPSK	20	0	0	≤ 2	24.18	23.2	0.98			
						16-QAM			≤ 1		23.19	22.2	0.99			
						64-QAM			≤ 2		22.31	21.2	1.11			
10	15	39725	2503.5	75	0	QPSK	75	0	0	≤ 4	22.11	21.2	0.91			
						16-QAM			≤ 1		21.21	20.2	1.01			
						64-QAM			≤ 2		20.11	19.2	0.91			
11	15	39725	2503.5	50	15	QPSK	50	15	0	≤ 3	23.05	22.2	0.85			
						16-QAM			≤ 1		22.14	21.2	0.94			
						64-QAM			≤ 2		21.13	20.2	0.93			
12	20	39750	2506	1	0	QPSK	1	0	0	≤ 5	22.31	21.2	1.11			
						16-QAM			≤ 1		21.48	20.2	1.28			
						64-QAM			≤ 2		20.36	19.2	1.16			
13	20	39750	2506	20	0	QPSK	20	0	0	≤ 2	24.19	23.2	0.99			
						16-QAM			≤ 1		23.25	22.2	1.05			
						64-QAM			≤ 2		22.28	21.2	1.08			
14	20	39750	2506	100	0	QPSK	100	0	0	≤ 4	22.08	21.2	0.88			
						16-QAM			≤ 1		21.05	20.2	0.85			
						64-QAM			≤ 2		20.03	19.2	0.83			
15	20	39750	2506	75	24	QPSK	75	24	0	≤ 3	23.01	22.2	0.81			
						16-QAM			≤ 1		22.18	21.2	0.98			
						64-QAM			≤ 2		21.12	20.2	0.92			
16	01	311	490	5	39675	2498.5	QPSK	1	0	0	≤ 3	25.36	23.2	2.16		
							16-QAM			≤ 1		24.54	22.2	2.34		
							64-QAM			≤ 2		23.38	21.2	2.18		
17	01	001	01	5	39675	2498.5	QPSK	1	0	0	0	26.62	26.2	0.42		
							16-QAM			≤ 1		25.94	25.2	0.74		
							64-QAM			≤ 2		26.12	24.2	1.92		

Table 7-3. A-MPR Conducted Power Measurements

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset	Page 188 of 232	

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 $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ 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

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1-ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 189 of 232

Test Setup

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

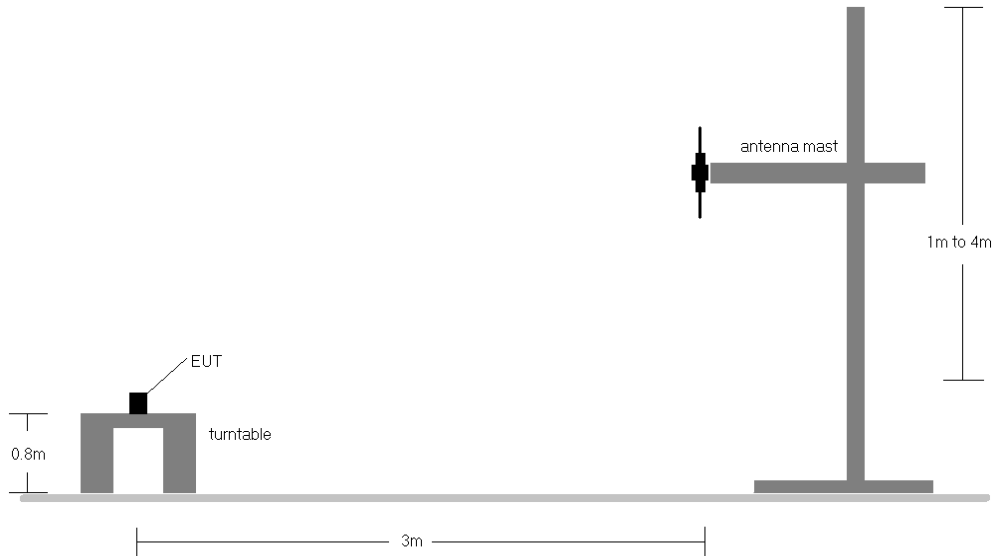


Figure 7-6. Radiated Test Setup <1GHz

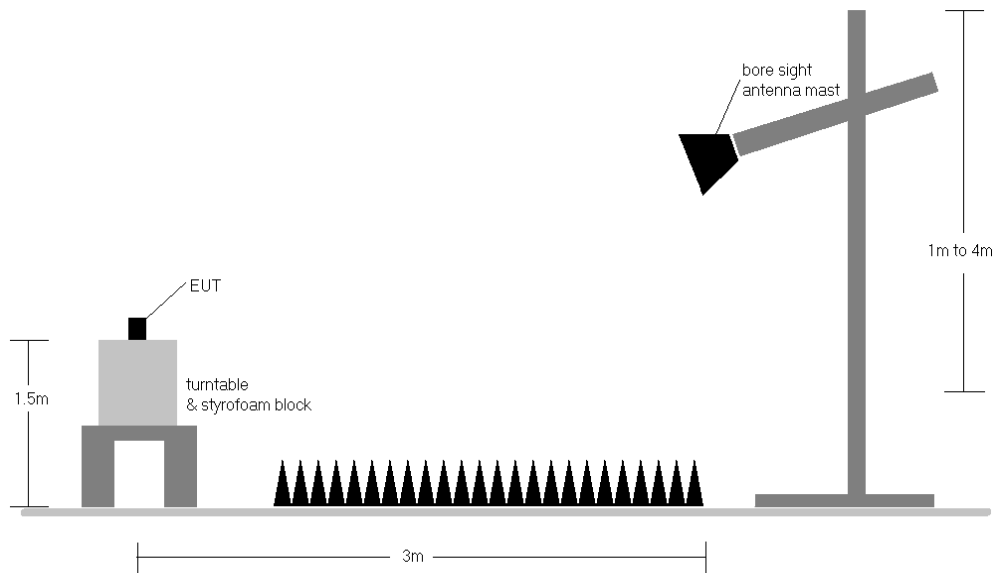


Figure 7-7. Radiated Test Setup >1GHz

Test 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.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 190 of 232

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]
665.50	5	QPSK	H	178	280	1 / 24	16.50	5.14	19.49	0.089	34.77	-15.28
680.50	5	QPSK	H	173	276	1 / 0	17.01	5.14	20.00	0.100	34.77	-14.77
695.50	5	QPSK	H	188	271	1 / 0	17.04	5.14	20.03	0.101	34.77	-14.74
680.50	5	16-QAM	H	173	276	1 / 24	16.00	5.14	18.99	0.079	34.77	-15.78
695.50	5	64-QAM	H	188	271	1 / 24	15.16	5.14	18.15	0.065	34.77	-16.62
668.00	10	QPSK	H	181	288	1 / 49	16.40	5.14	19.39	0.087	34.77	-15.38
680.50	10	QPSK	H	173	281	1 / 0	17.01	5.14	20.00	0.100	34.77	-14.77
693.00	10	QPSK	H	181	275	1 / 25	17.04	5.14	20.03	0.101	34.77	-14.74
680.50	10	16-QAM	H	173	281	1 / 25	16.17	5.14	19.16	0.082	34.77	-15.61
680.50	10	64-QAM	H	173	281	1 / 25	15.27	5.14	18.26	0.067	34.77	-16.51
670.50	15	QPSK	H	180	281	1 / 0	16.25	5.14	19.24	0.084	34.77	-15.53
680.50	15	QPSK	H	172	275	1 / 74	17.01	5.14	20.00	0.100	34.77	-14.77
690.50	15	QPSK	H	184	272	1 / 0	16.99	5.14	19.98	0.100	34.77	-14.79
680.50	15	16-QAM	H	172	275	1 / 0	15.99	5.14	18.98	0.079	34.77	-15.79
680.50	15	64-QAM	H	172	275	1 / 74	15.05	5.14	18.04	0.064	34.77	-16.73
673.00	20	QPSK	H	183	284	1 / 99	16.24	5.14	19.23	0.084	34.77	-15.54
680.50	20	QPSK	H	174	279	1 / 99	17.01	5.14	20.00	0.100	34.77	-14.77
688.00	20	QPSK	H	181	273	1 / 99	17.07	5.14	20.06	0.101	34.77	-14.71
688.00	20	16-QAM	H	181	273	1 / 99	16.25	5.14	19.24	0.084	34.77	-15.53
688.00	20	64-QAM	H	181	273	1 / 99	15.17	5.14	18.16	0.065	34.77	-16.61
688.00	20	QPSK	V	160	245	1 / 99	16.07	5.14	19.06	0.081	34.77	-15.71

Table 7-4. ERP Data (Band 71)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 191 of 232	

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]
699.70	1.4	QPSK	H	301	272	1 / 5	17.66	5.12	20.63	0.116	34.77	-14.14
707.50	1.4	QPSK	H	292	262	1 / 5	17.42	5.19	20.46	0.111	34.77	-14.31
715.30	1.4	QPSK	H	312	282	1 / 0	17.55	5.26	20.66	0.116	34.77	-14.12
715.30	1.4	16-QAM	H	312	282	1 / 0	16.86	5.26	19.97	0.099	34.77	-14.81
699.70	1.4	64-QAM	H	301	272	1 / 5	16.01	5.12	18.98	0.079	34.77	-15.79
700.50	3	QPSK	H	301	275	1 / 0	17.68	5.14	20.67	0.117	34.77	-14.10
707.50	3	QPSK	H	297	263	1 / 14	17.42	5.19	20.46	0.111	34.77	-14.31
714.50	3	QPSK	H	311	282	1 / 0	17.58	5.25	20.68	0.117	34.77	-14.09
714.50	3	16-QAM	H	311	282	1 / 14	16.84	5.25	19.94	0.099	34.77	-14.83
714.50	3	64-QAM	H	311	282	1 / 0	15.72	5.25	18.82	0.076	34.77	-15.95
701.50	5	QPSK	H	299	276	1 / 0	17.67	5.15	20.67	0.117	34.77	-14.10
707.50	5	QPSK	H	295	266	1 / 24	17.21	5.19	20.25	0.106	34.77	-14.52
713.50	5	QPSK	H	311	279	1 / 24	17.59	5.24	20.68	0.117	34.77	-14.09
701.50	5	16-QAM	H	299	276	1 / 24	17.09	5.15	20.09	0.102	34.77	-14.68
713.50	5	64-QAM	H	311	279	1 / 0	15.86	5.24	18.95	0.079	34.77	-15.82
704.00	10	QPSK	H	300	275	1 / 49	17.66	5.17	20.68	0.117	34.77	-14.09
707.50	10	QPSK	H	294	265	1 / 49	17.09	5.19	20.13	0.103	34.77	-14.64
711.00	10	QPSK	H	312	277	1 / 49	17.63	5.22	20.70	0.118	34.77	-14.07
704.00	10	16-QAM	H	300	275	1 / 49	16.94	5.17	19.96	0.099	34.77	-14.81
704.00	10	64-QAM	H	300	275	1 / 49	16.06	5.17	19.08	0.081	34.77	-15.69
711.00	10	QPSK	V	100	213	1 / 49	16.43	5.22	19.50	0.089	34.77	-15.27

Table 7-5. ERP Data (Band 12)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 192 of 232	

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]
824.70	1.4	QPSK	V	131	274	1 / 5	15.85	6.89	20.59	0.114	38.45	-17.86
836.50	1.4	QPSK	V	135	261	1 / 5	15.65	7.08	20.58	0.114	38.45	-17.87
848.30	1.4	QPSK	V	122	278	1 / 0	15.96	7.28	21.09	0.128	38.45	-17.36
848.30	1.4	16-QAM	V	122	278	1 / 0	15.04	7.28	20.17	0.104	38.45	-18.28
848.30	1.4	64-QAM	V	122	278	1 / 0	13.69	7.28	18.82	0.076	38.45	-19.63
825.50	3	QPSK	V	133	275	1 / 0	15.77	6.90	20.52	0.113	38.45	-17.93
836.50	3	QPSK	V	132	265	1 / 14	15.71	7.08	20.64	0.116	38.45	-17.81
847.50	3	QPSK	V	127	278	1 / 0	15.93	7.26	21.04	0.127	38.45	-17.41
847.50	3	16-QAM	V	127	278	1 / 0	15.04	7.26	20.15	0.104	38.45	-18.30
847.50	3	64-QAM	V	127	278	1 / 0	13.70	7.26	18.81	0.076	38.45	-19.64
826.50	5	QPSK	V	132	276	1 / 0	15.85	6.92	20.62	0.115	38.45	-17.83
836.50	5	QPSK	V	132	261	1 / 24	15.65	7.08	20.58	0.114	38.45	-17.87
846.50	5	QPSK	V	125	277	1 / 0	16.00	7.25	21.10	0.129	38.45	-17.35
846.50	5	16-QAM	V	125	277	1 / 24	15.24	7.25	20.34	0.108	38.45	-18.11
846.50	5	64-QAM	V	125	277	1 / 24	14.05	7.25	19.15	0.082	38.45	-19.30
829.00	10	QPSK	V	135	271	1 / 0	16.15	6.96	20.96	0.125	38.45	-17.49
836.50	10	QPSK	V	133	262	1 / 0	15.85	7.08	20.78	0.120	38.45	-17.67
844.00	10	QPSK	V	125	278	1 / 0	16.03	7.21	21.09	0.128	38.45	-17.36
844.00	10	16-QAM	V	125	278	1 / 0	15.22	7.21	20.28	0.107	38.45	-18.17
844.00	10	64-QAM	V	125	278	1 / 0	14.35	7.21	19.41	0.087	38.45	-19.04

Table 7-6. 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]
831.50	15	QPSK	V	134	270	1 / 74	15.84	7.00	20.69	0.117	38.45	-17.76
836.50	15	QPSK	V	133	266	1 / 74	16.05	7.08	20.98	0.125	38.45	-17.47
841.50	15	QPSK	V	127	271	1 / 0	16.10	7.17	21.12	0.129	38.45	-17.34
836.50	15	16-QAM	V	133	266	1 / 74	15.35	7.08	20.28	0.107	38.45	-18.17
836.50	15	64-QAM	V	133	266	1 / 74	14.37	7.08	19.30	0.085	38.45	-19.15
841.50	15	QPSK	H	209	282	1 / 0	16.00	7.17	21.02	0.126	38.45	-17.44

Table 7-7. ERP Data (Band 26)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 193 of 232	

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	102	55	1 / 0	14.79	9.63	24.42	0.277	30.00	-5.58
1745.00	1.4	QPSK	V	102	41	1 / 0	14.90	9.49	24.39	0.275	30.00	-5.61
1779.30	1.4	QPSK	V	103	52	1 / 0	14.96	9.35	24.31	0.270	30.00	-5.69
1779.30	1.4	16-QAM	V	103	52	1 / 0	14.19	9.35	23.54	0.226	30.00	-6.46
1779.30	1.4	64-QAM	V	103	52	1 / 0	13.16	9.35	22.51	0.178	30.00	-7.49
1711.50	3	QPSK	V	100	54	1 / 0	14.72	9.62	24.34	0.272	30.00	-5.66
1745.00	3	QPSK	V	102	43	1 / 0	15.00	9.49	24.49	0.281	30.00	-5.51
1778.50	3	QPSK	V	101	51	1 / 0	15.13	9.35	24.48	0.281	30.00	-5.52
1778.50	3	16-QAM	V	101	51	1 / 0	14.27	9.35	23.62	0.230	30.00	-6.38
1745.00	3	64-QAM	V	102	43	1 / 0	13.03	9.49	22.52	0.178	30.00	-7.48
1712.50	5	QPSK	V	104	49	1 / 0	14.70	9.62	24.32	0.270	30.00	-5.68
1745.00	5	QPSK	V	101	47	1 / 0	14.96	9.49	24.45	0.278	30.00	-5.55
1777.50	5	QPSK	V	100	50	1 / 0	15.09	9.36	24.45	0.278	30.00	-5.55
1777.50	5	16-QAM	V	100	50	1 / 0	14.16	9.36	23.52	0.225	30.00	-6.48
1777.50	5	64-QAM	V	100	50	1 / 24	13.08	9.36	22.44	0.175	30.00	-7.56
1715.00	10	QPSK	V	102	52	1 / 0	14.62	9.61	24.23	0.265	30.00	-5.77
1745.00	10	QPSK	V	100	46	1 / 49	14.96	9.49	24.45	0.278	30.00	-5.55
1775.00	10	QPSK	V	104	51	1 / 0	15.09	9.37	24.46	0.279	30.00	-5.54
1775.00	10	16-QAM	V	104	51	1 / 49	14.19	9.37	23.56	0.227	30.00	-6.44
1775.00	10	64-QAM	V	104	51	1 / 49	13.09	9.37	22.46	0.176	30.00	-7.54
1717.50	15	QPSK	V	101	55	1 / 0	14.73	9.60	24.33	0.271	30.00	-5.67
1745.00	15	QPSK	V	103	47	1 / 0	14.91	9.49	24.40	0.275	30.00	-5.60
1772.50	15	QPSK	V	100	55	1 / 0	15.19	9.38	24.57	0.286	30.00	-5.43
1772.50	15	16-QAM	V	100	55	1 / 0	14.19	9.38	23.57	0.227	30.00	-6.43
1772.50	15	64-QAM	V	100	55	1 / 74	12.92	9.38	22.30	0.170	30.00	-7.70
1720.00	20	QPSK	V	102	56	1 / 0	14.93	9.59	24.52	0.283	30.00	-5.48
1745.00	20	QPSK	V	102	44	1 / 99	15.08	9.49	24.57	0.286	30.00	-5.43
1770.00	20	QPSK	V	100	53	1 / 99	15.28	9.39	24.67	0.293	30.00	-5.33
1745.00	20	16-QAM	V	102	44	1 / 99	14.39	9.49	23.88	0.244	30.00	-6.12
1745.00	20	64-QAM	V	102	44	1 / 99	13.43	9.49	22.92	0.196	30.00	-7.08
1770.00	20	QPSK	H	288	35	1 / 99	13.61	9.39	23.00	0.199	30.00	-7.00

Table 7-8. EIRP Data (Band 66/4)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset	Page 194 of 232	

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	107	14	1 / 0	14.80	9.07	23.87	0.244	33.01	-9.15
1882.50	1.4	QPSK	H	116	15	1 / 0	14.30	9.16	23.46	0.222	33.01	-9.56
1914.30	1.4	QPSK	H	112	7	1 / 0	13.89	9.31	23.20	0.209	33.01	-9.81
1850.70	1.4	16-QAM	H	107	14	1 / 0	13.57	9.07	22.64	0.183	33.01	-10.38
1850.70	1.4	64-QAM	H	107	14	1 / 0	12.75	9.07	21.82	0.152	33.01	-11.20
1851.50	3	QPSK	H	102	12	1 / 0	14.75	9.07	23.82	0.241	33.01	-9.19
1882.50	3	QPSK	H	114	23	1 / 0	14.16	9.16	23.32	0.215	33.01	-9.70
1913.50	3	QPSK	H	110	5	1 / 0	13.97	9.30	23.27	0.212	33.01	-9.74
1851.50	3	16-QAM	H	102	12	1 / 0	13.92	9.07	22.99	0.199	33.01	-10.02
1851.50	3	64-QAM	H	102	12	1 / 0	12.90	9.07	21.97	0.157	33.01	-11.04
1852.50	5	QPSK	H	112	12	1 / 0	14.72	9.07	23.79	0.239	33.01	-9.22
1882.50	5	QPSK	H	116	12	1 / 0	14.05	9.16	23.21	0.209	33.01	-9.81
1912.50	5	QPSK	H	116	4	1 / 0	13.80	9.29	23.09	0.204	33.01	-9.92
1852.50	5	16-QAM	H	112	12	1 / 0	13.64	9.07	22.71	0.187	33.01	-10.30
1852.50	5	64-QAM	H	112	12	1 / 0	12.68	9.07	21.75	0.150	33.01	-11.26
1855.00	10	QPSK	H	112	4	1 / 0	14.83	9.08	23.91	0.246	33.01	-9.10
1882.50	10	QPSK	H	121	14	1 / 0	14.25	9.16	23.41	0.219	33.01	-9.61
1910.00	10	QPSK	H	116	3	1 / 0	14.06	9.27	23.33	0.216	33.01	-9.68
1855.00	10	16-QAM	H	112	4	1 / 0	13.86	9.08	22.94	0.197	33.01	-10.07
1882.50	10	64-QAM	H	121	14	1 / 49	12.48	9.16	21.64	0.146	33.01	-11.38
1857.50	15	QPSK	H	114	15	1 / 74	14.59	9.08	23.67	0.233	33.01	-9.34
1882.50	15	QPSK	H	115	17	1 / 74	14.25	9.16	23.41	0.219	33.01	-9.61
1907.50	15	QPSK	H	122	3	1 / 0	14.03	9.26	23.29	0.213	33.01	-9.72
1857.50	15	16-QAM	H	114	15	1 / 0	13.77	9.08	22.85	0.193	33.01	-10.16
1882.50	15	64-QAM	H	115	17	1 / 74	12.47	9.16	21.63	0.145	33.01	-11.39
1860.00	20	QPSK	H	113	15	1 / 0	14.84	9.09	23.93	0.247	33.01	-9.08
1882.50	20	QPSK	H	114	18	1 / 0	14.19	9.16	23.35	0.216	33.01	-9.67
1905.00	20	QPSK	H	116	1	1 / 0	14.06	9.24	23.30	0.214	33.01	-9.71
1860.00	20	16-QAM	H	113	15	1 / 0	13.96	9.09	23.05	0.202	33.01	-9.96
1860.00	20	64-QAM	H	113	15	1 / 0	13.49	9.09	22.58	0.181	33.01	-10.43
1860.00	20	QPSK	V	102	61	14.84	14.56	9.09	23.65	0.232	33.01	-9.36

Table 7-9. EIRP Data (Band 25/2)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset	Page 195 of 232	

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]
2502.50	5	QPSK	H	100	39	1 / 0	14.69	8.34	23.03	0.201	33.01	-9.98
2535.00	5	QPSK	H	102	40	1 / 0	14.52	8.28	22.80	0.191	33.01	-10.21
2567.50	5	QPSK	H	100	37	1 / 0	14.39	8.17	22.56	0.180	33.01	-10.45
2502.50	5	16-QAM	H	100	39	1 / 0	13.81	8.34	22.15	0.164	33.01	-10.86
2567.50	5	64-QAM	H	100	37	1 / 0	12.60	8.17	20.77	0.119	33.01	-12.24
2505.00	10	QPSK	H	101	41	1 / 0	14.71	8.33	23.04	0.202	33.01	-9.97
2535.00	10	QPSK	H	100	43	1 / 0	14.64	8.28	22.92	0.196	33.01	-10.09
2565.00	10	QPSK	H	100	30	1 / 0	14.60	8.18	22.78	0.190	33.01	-10.23
2505.00	10	16-QAM	H	101	41	1 / 0	13.81	8.33	22.14	0.164	33.01	-10.87
2505.00	10	64-QAM	H	101	41	1 / 49	12.52	8.33	20.85	0.122	33.01	-12.16
2507.50	15	QPSK	H	102	43	1 / 74	14.78	8.33	23.11	0.205	33.01	-9.90
2535.00	15	QPSK	H	100	40	1 / 0	14.57	8.28	22.85	0.193	33.01	-10.16
2562.50	15	QPSK	H	105	35	1 / 0	14.64	8.19	22.83	0.192	33.01	-10.18
2507.50	15	16-QAM	H	102	43	1 / 74	13.87	8.33	22.20	0.166	33.01	-10.81
2535.00	15	64-QAM	H	100	40	1 / 74	12.75	8.28	21.03	0.127	33.01	-11.98
2510.00	20	QPSK	H	100	42	1 / 99	14.81	8.33	23.14	0.206	33.01	-9.87
2535.00	20	QPSK	H	100	41	1 / 0	14.47	8.28	22.75	0.189	33.01	-10.26
2560.00	20	QPSK	H	100	34	1 / 0	14.65	8.21	22.86	0.193	33.01	-10.15
2510.00	20	16-QAM	H	100	42	1 / 99	13.75	8.33	22.08	0.161	33.01	-10.93
2510.00	20	64-QAM	H	100	42	1 / 99	13.11	8.33	21.44	0.139	33.01	-11.57
2510.00	20	QPSK	V	395	9	1 / 99	14.77	8.33	23.10	0.204	33.01	-9.91

Table 7-10. EIRP Data (Band 7)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 196 of 232	

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	101	42	1 / 24	18.44	8.35	26.79	0.477	33.01	-6.22
2593.00	5	QPSK	H	105	33	1 / 0	18.65	8.04	26.69	0.466	33.01	-6.32
2687.50	5	QPSK	H	100	42	1 / 0	17.44	7.94	25.38	0.345	33.01	-7.63
2498.50	5	16-QAM	H	101	42	1 / 0	17.96	8.35	26.31	0.428	33.01	-6.70
2498.50	5	64-QAM	H	101	42	1 / 0	16.86	8.35	25.21	0.332	33.01	-7.80
2501.00	10	QPSK	H	100	38	1 / 0	18.43	8.34	26.77	0.475	33.01	-6.24
2593.00	10	QPSK	H	104	33	1 / 0	18.65	8.04	26.69	0.466	33.01	-6.32
2685.00	10	QPSK	H	101	40	1 / 0	17.41	7.93	25.34	0.342	33.01	-7.67
2501.00	10	16-QAM	H	100	38	1 / 0	18.09	8.34	26.43	0.440	33.01	-6.58
2501.00	10	64-QAM	H	100	38	1 / 0	17.02	8.34	25.36	0.344	33.01	-7.65
2503.50	15	QPSK	H	101	39	1 / 0	18.20	8.34	26.54	0.451	33.01	-6.47
2593.00	15	QPSK	H	102	32	1 / 74	18.53	8.04	26.57	0.454	33.01	-6.44
2682.50	15	QPSK	H	100	40	1 / 0	17.34	7.92	25.26	0.336	33.01	-7.75
2503.50	15	16-QAM	H	101	39	1 / 0	18.01	8.34	26.35	0.431	33.01	-6.66
2503.50	15	64-QAM	H	101	39	1 / 74	16.98	8.34	25.32	0.340	33.01	-7.69
2506.00	20	QPSK	H	100	40	1 / 99	18.48	8.33	26.81	0.480	33.01	-6.20
2593.00	20	QPSK	H	102	35	1 / 50	18.41	8.04	26.45	0.441	33.01	-6.56
2680.00	20	QPSK	H	100	39	1 / 0	17.28	7.91	25.19	0.330	33.01	-7.82
2506.00	20	16-QAM	H	100	40	1 / 50	17.97	8.33	26.30	0.427	33.01	-6.71
2593.00	20	64-QAM	H	102	35	1 / 50	16.95	8.04	24.99	0.315	33.01	-8.02
2506.00	20	QPSK	H	147	62	1 / 0	14.46	8.33	22.79	0.190	33.01	-10.22

Table 7-11. EIRP Data (Band 41 PC2)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 197 of 232	

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	101	38	1 / 0	15.67	8.35	24.02	0.252	33.01	-8.99
2593.00	5	QPSK	H	102	42	1 / 0	15.48	8.04	23.52	0.225	33.01	-9.49
2687.50	5	QPSK	H	101	39	1 / 0	14.22	7.94	22.16	0.164	33.01	-10.85
2498.50	5	16-QAM	H	101	38	1 / 0	15.10	8.35	23.45	0.221	33.01	-9.56
2498.50	5	64-QAM	H	101	38	1 / 0	13.83	8.35	22.18	0.165	33.01	-10.83
2501.00	10	QPSK	H	101	41	1 / 0	15.71	8.34	24.05	0.254	33.01	-8.96
2593.00	10	QPSK	H	105	41	1 / 49	15.50	8.04	23.54	0.226	33.01	-9.47
2685.00	10	QPSK	H	101	38	1 / 49	14.38	7.93	22.31	0.170	33.01	-10.70
2501.00	10	16-QAM	H	101	41	1 / 0	15.20	8.34	23.54	0.226	33.01	-9.47
2501.00	10	64-QAM	H	101	41	1 / 0	13.96	8.34	22.30	0.170	33.01	-10.71
2503.50	15	QPSK	H	105	38	1 / 0	15.73	8.34	24.07	0.255	33.01	-8.94
2593.00	15	QPSK	H	105	39	1 / 74	15.73	8.04	23.77	0.238	33.01	-9.24
2682.50	15	QPSK	H	100	41	1 / 0	14.61	7.92	22.53	0.179	33.01	-10.48
2503.50	15	16-QAM	H	105	38	1 / 0	14.95	8.34	23.29	0.213	33.01	-9.72
2503.50	15	64-QAM	H	105	38	1 / 74	13.46	8.34	21.80	0.151	33.01	-11.21
2506.00	20	QPSK	H	102	39	1 / 0	15.75	8.33	24.08	0.256	33.01	-8.93
2593.00	20	QPSK	H	105	41	1 / 99	15.57	8.04	23.61	0.229	33.01	-9.40
2680.00	20	QPSK	H	100	39	1 / 50	14.55	7.91	22.46	0.176	33.01	-10.55
2506.00	20	16-QAM	H	102	39	1 / 0	15.20	8.33	23.53	0.226	33.01	-9.48
2506.00	20	64-QAM	H	102	39	1 / 0	14.34	8.33	22.67	0.185	33.01	-10.34
2506.00	20	QPSK	H	142	66	1 / 0	12.56	8.33	20.89	0.123	33.01	-12.12

Table 7-12. EIRP Data (Band 41 PC3)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 198 of 232	

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 $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Test Setup

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

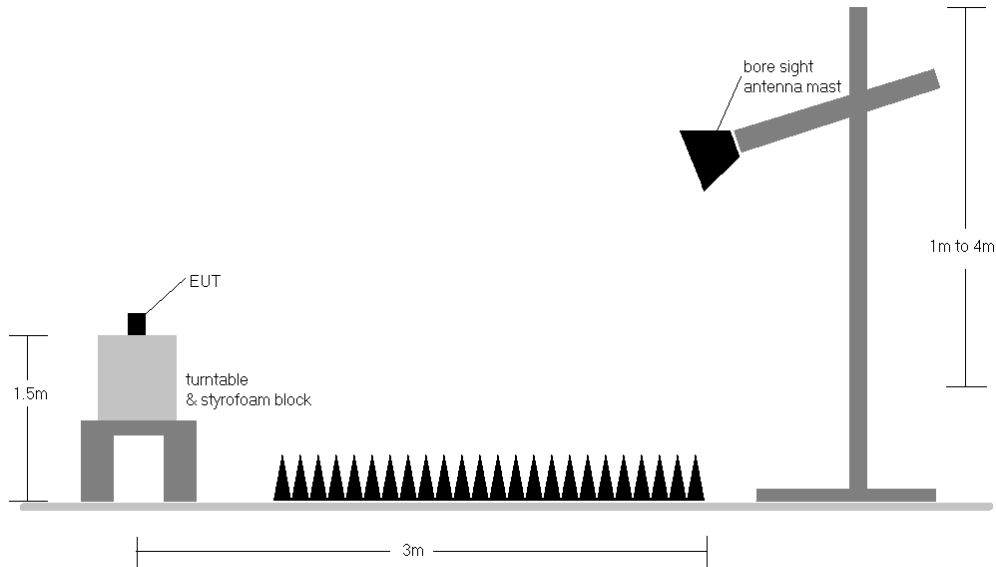


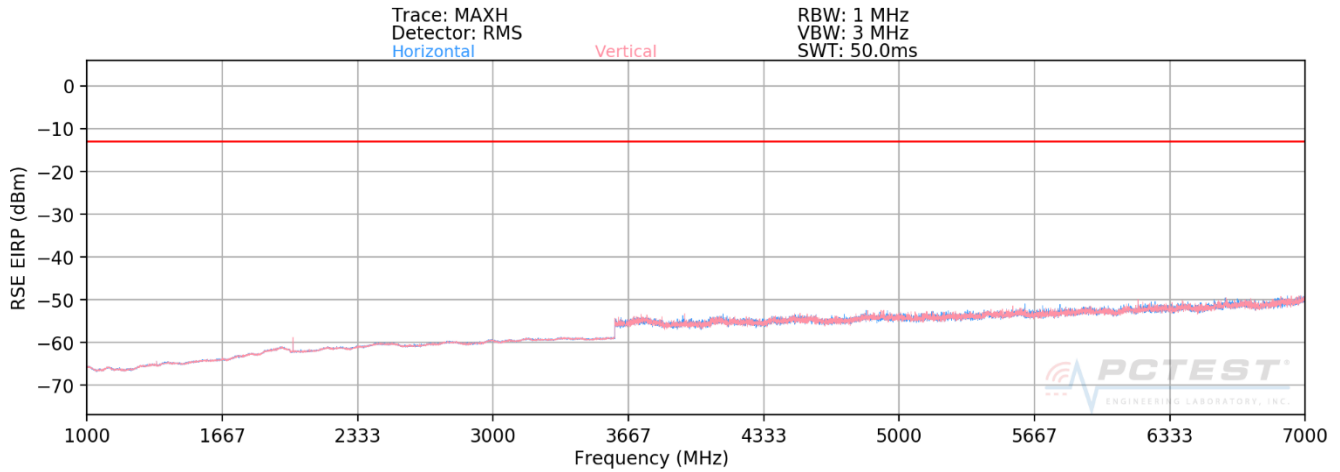
Figure 7-8. Test Instrument & Measurement Setup

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.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 71



Plot 7-322. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY: 673.00 MHz
 CHANNEL: 133222
 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]
1346.00	H	155	58	-76.52	7.47	-69.04	-56.0
2019.00	H	156	320	-59.30	8.68	-50.61	-37.6
2692.00	H	-	-	-76.58	9.99	-66.59	-53.6
3365.00	H	-	-	-74.26	9.66	-64.59	-51.6

Table 7-13. Radiated Spurious Data (Band 71 – Low Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 201 of 232	

OPERATING FREQUENCY: 680.50 MHz
 CHANNEL: 133297
 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]
1361.00	H	187	283	-74.47	7.48	-66.98	-54.0
2041.50	H	142	324	-60.62	8.76	-51.86	-38.9
2722.00	H	-	-	-76.87	10.08	-66.79	-53.8
3402.50	H	-	-	-74.18	9.80	-64.38	-51.4

Table 7-14. Radiated Spurious Data (Band 71 – Mid Channel)

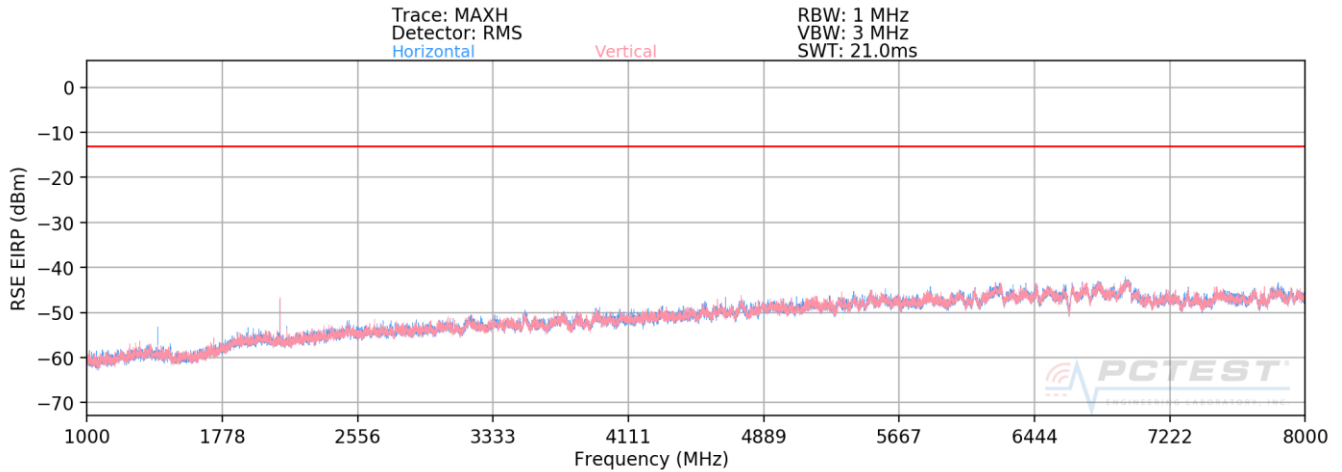
OPERATING FREQUENCY: 688.00 MHz
 CHANNEL: 133372
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
1376.00	H	135	312	-73.06	7.46	-65.60	-52.6
2064.00	H	183	322	-60.39	8.80	-51.58	-38.6
2752.00	H	-	-	-77.30	10.17	-67.14	-54.1
3440.00	H	-	-	-74.14	9.84	-64.30	-51.3

Table 7-15. Radiated Spurious Data (Band 71 – High Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 202 of 232	

Band 12



Plot 7-323. Radiated Spurious Plot above 1GHz (Band 12)

OPERATING FREQUENCY: 704.00 MHz
 CHANNEL: 23060
 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	113	299	-69.18	7.54	-61.64	-48.6
2112.00	H	132	318	-61.29	8.85	-52.44	-39.4
2816.00	H	-	-	-76.68	10.12	-66.56	-53.6
3520.00	H	-	-	-73.69	9.91	-63.78	-50.8

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

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset			Page 203 of 232

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 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	198	308	-68.63	7.63	-60.99	-48.0
2122.50	H	129	326	-60.78	8.86	-51.92	-38.9
2830.00	H	-	-	-76.61	10.10	-66.52	-53.5
3537.50	H	400	210	-72.53	9.90	-62.64	-49.6
4245.00	H	-	-	-74.45	10.58	-63.87	-50.9
4952.50	H	-	-	-73.40	10.92	-62.48	-49.5

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

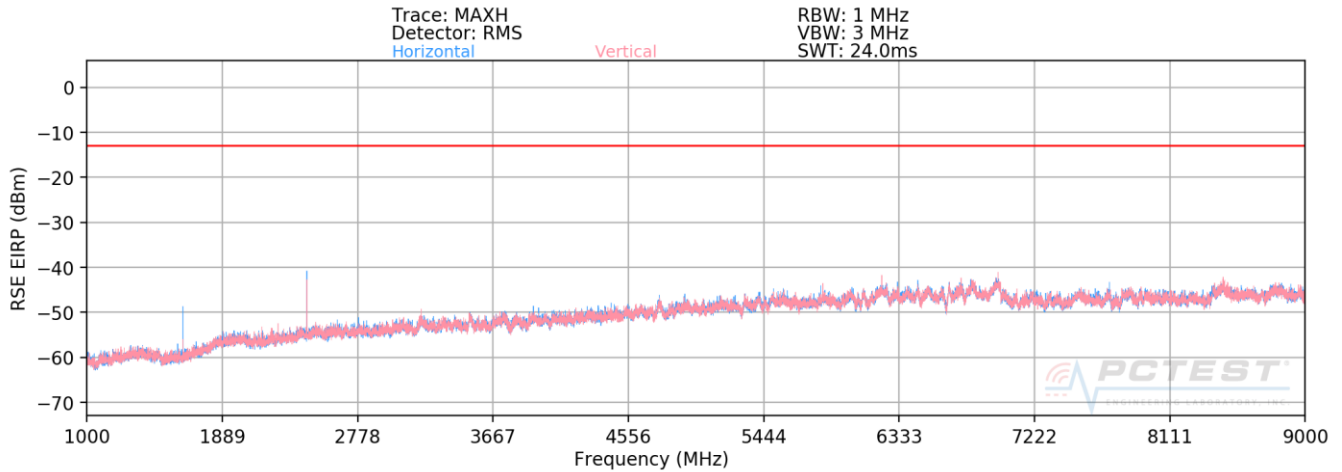
OPERATING FREQUENCY: 711.00 MHz
 CHANNEL: 23130
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	115	315	-68.59	7.72	-60.87	-47.9
2133.00	H	118	318	-59.74	8.87	-50.87	-37.9
2844.00	H	-	-	-76.63	10.07	-66.56	-53.6
3555.00	H	-	-	-73.40	9.89	-63.51	-50.5

Table 7-18. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset	Page 204 of 232	

Band 26



Plot 7-324. Radiated Spurious Plot above 1GHz (Band 26)

OPERATING FREQUENCY: 829.00 MHz
 CHANNEL: 26840
 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	V	355	41	-75.27	8.95	-66.32	-53.3
2487.00	V	130	101	-72.83	9.70	-63.13	-50.1
3316.00	V	-	-	-73.84	9.59	-64.25	-51.2
4145.00	V	-	-	-73.44	10.22	-63.22	-50.2

Table 7-19. Radiated Spurious Data (Band 26 – Low Channel)

FCC ID: ZNFX420MM			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 205 of 232	

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 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	V	340	145	-78.66	8.95	-69.71	-56.7
2509.50	V	125	94	-72.06	9.75	-62.31	-49.3
3346.00	V	-	-	-73.87	9.60	-64.26	-51.3
4182.50	V	-	-	-74.40	10.34	-64.06	-51.1

Table 7-20. Radiated Spurious Data (Band 26 – Mid Channel)

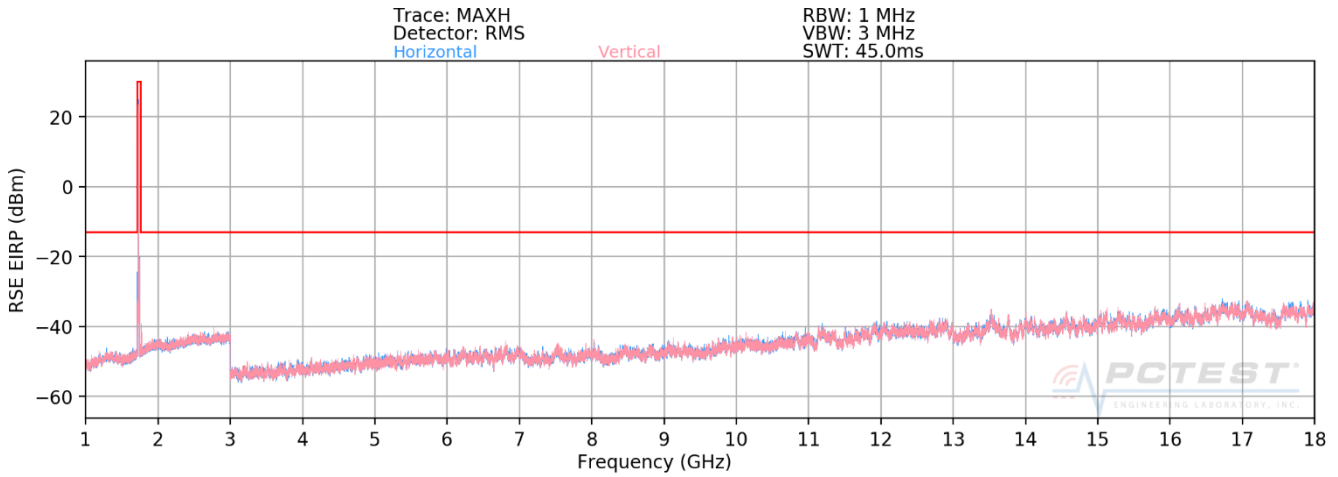
OPERATING FREQUENCY: 844.00 MHz
 CHANNEL: 26990
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	V	375	89	-77.85	8.95	-68.89	-55.9
2532.00	V	124	97	-68.91	9.75	-59.16	-46.2
3376.00	V	-	-	-74.62	9.71	-64.92	-51.9
4220.00	V	-	-	-74.21	10.48	-63.73	-50.7

Table 7-21. Radiated Spurious Data (Band 26 – High Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 206 of 232	

Band 66/4



Plot 7-325. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY: 1720.00 MHz
 CHANNEL: 132072
 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	332	46	-73.29	9.84	-63.44	-50.4
5160.00	H	-	-	-72.42	10.71	-61.71	-48.7
6880.00	H	-	-	-70.71	11.68	-59.03	-46.0

Table 7-22. Radiated Spurious Data (Band 66/4 – Low Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 207 of 232	

OPERATING FREQUENCY: 1745.00 MHz
 CHANNEL: 132322
 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	112	17	-71.49	9.91	-61.58	-48.6
5235.00	H	-	-	-72.09	10.73	-61.35	-48.4
6980.00	H	-	-	-71.64	11.82	-59.81	-46.8

Table 7-23. Radiated Spurious Data (Band 66/4 – Mid Channel)

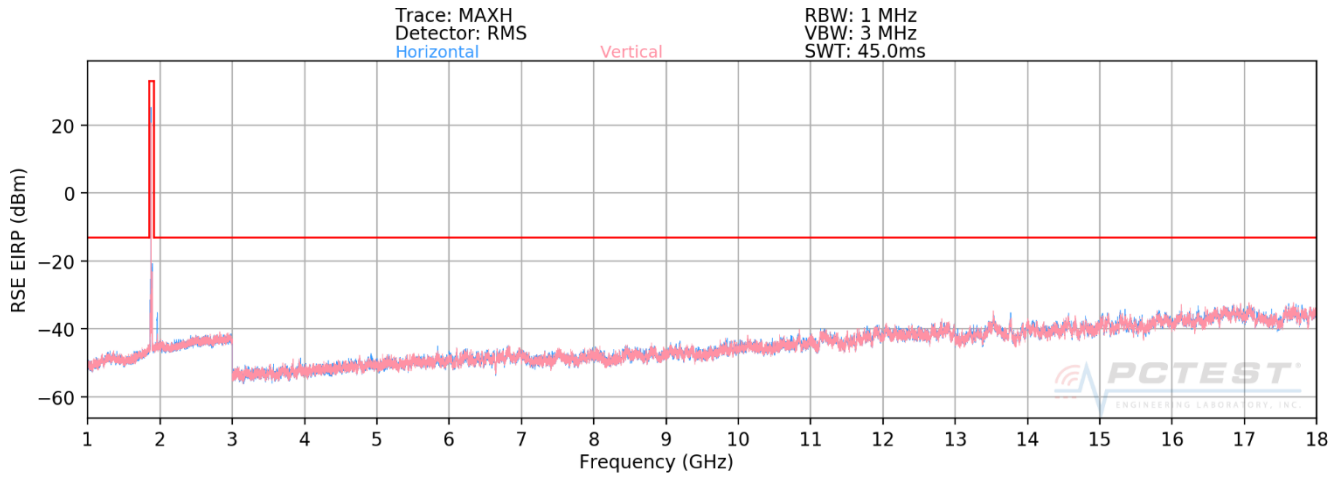
OPERATING FREQUENCY: 1770.00 MHz
 CHANNEL: 132572
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	111	12	-60.08	9.89	-50.18	-37.2
5310.00	H	-	-	-72.14	10.69	-61.45	-48.5
7080.00	H	-	-	-71.35	11.79	-59.56	-46.6

Table 7-24. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 208 of 232

Band 25/2



Plot 7-326. Radiated Spurious Plot above 1GHz (Band 25/2)

OPERATING FREQUENCY: 1860.00 MHz
 CHANNEL: 26140
 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	398	320	-71.27	9.51	-61.76	-48.8
5580.00	H	-	-	-72.16	10.99	-61.18	-48.2
7440.00	H	-	-	-68.93	10.99	-57.95	-44.9

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

FCC ID: ZNFX420MM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 209 of 232

OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 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	361	337	-71.08	9.36	-61.72	-48.7
5647.50	H	-	-	-72.38	11.19	-61.18	-48.2
7530.00	H	-	-	-69.25	11.13	-58.12	-45.1

Table 7-26. Radiated Spurious Data (Band 25/2 – Mid Channel)

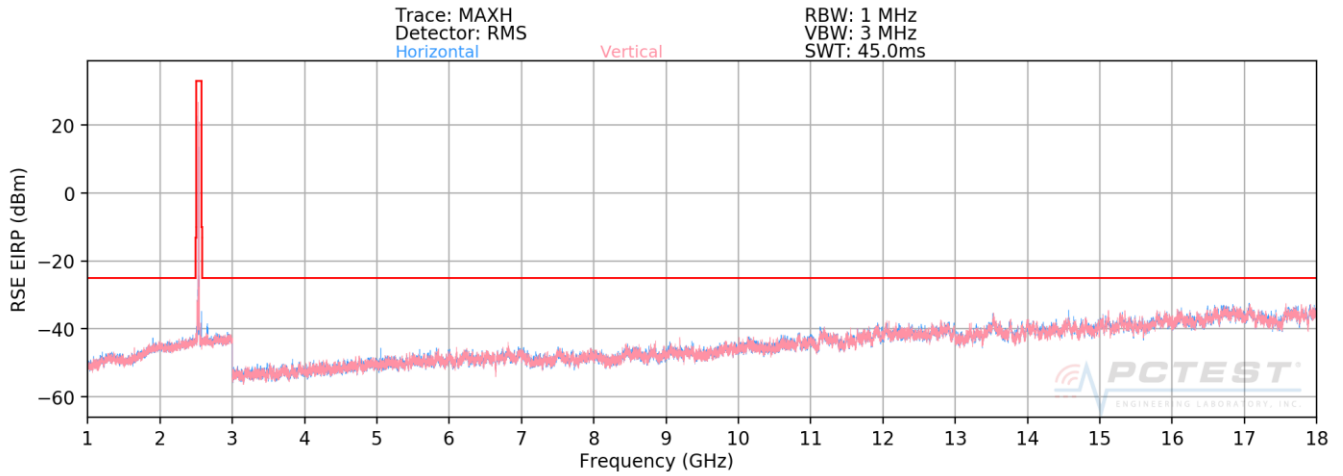
OPERATING FREQUENCY: 1905.00 MHz
 CHANNEL: 26590
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	364	336	-71.24	9.29	-61.95	-48.9
5715.00	H	-	-	-72.31	11.35	-60.96	-48.0
7620.00	H	-	-	-69.38	11.29	-58.10	-45.1

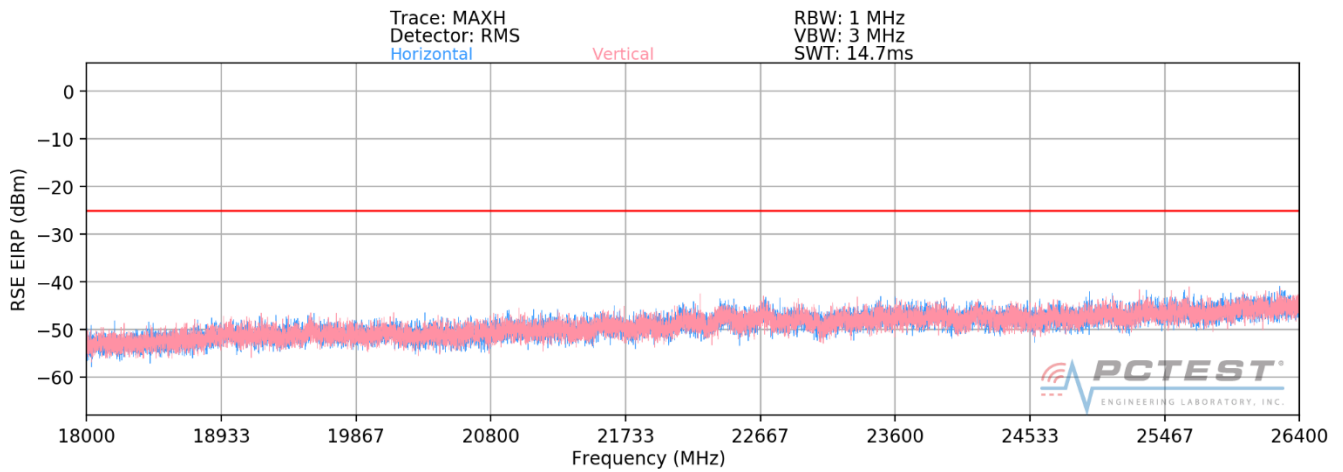
Table 7-27. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 210 of 232

Band 7



Plot 7-327. Radiated Spurious Plot 1GHz - 18GHz (Band 7)



Plot 7-328. Radiated Spurious Plot 18GHz - 26.5GHz (Band 7)

FCC ID: ZNFX420MM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset	Page 211 of 232	

OPERATING FREQUENCY: 2510.00 MHz
 CHANNEL: 20850
 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	H	111	25	-63.63	10.88	-52.75	-27.8
7530.00	H	117	352	-67.83	11.13	-56.70	-31.7
10040.00	H	-	-	-67.08	11.99	-55.09	-30.1
12550.00	H	-	-	-66.19	13.56	-52.63	-27.6

Table 7-28. Radiated Spurious Data (Band 7 – Low Channel)

OPERATING FREQUENCY: 2535.00 MHz
 CHANNEL: 21100
 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]
5070.00	H	111	1	-64.10	10.75	-53.35	-28.4
7605.00	H	112	352	-69.28	11.25	-58.03	-33.0
10140.00	H	-	-	-67.13	12.07	-55.06	-30.1
12675.00	H	-	-	-66.53	13.66	-52.86	-27.9

Table 7-29. Radiated Spurious Data (Band 7 – Mid Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 212 of 232	

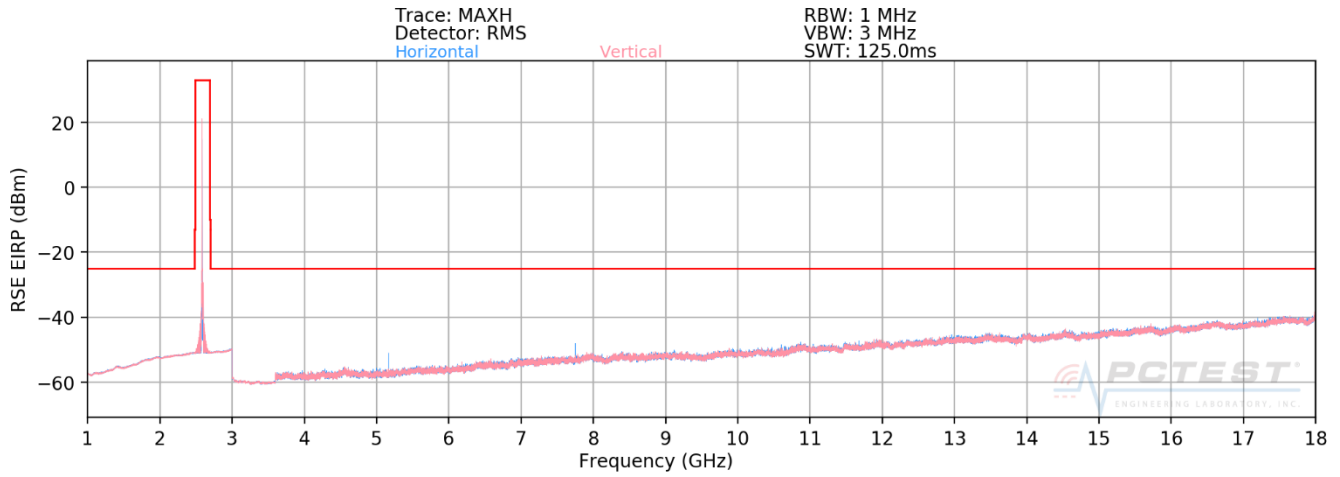
OPERATING FREQUENCY: 2560.00 MHz
 CHANNEL: 21350
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

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]
5120.00	H	112	0	-63.02	10.68	-52.34	-27.3
7680.00	H	394	328	-69.32	11.39	-57.93	-32.9
10240.00	H	-	-	-67.32	12.18	-55.13	-30.1
12800.00	H	-	-	-65.87	13.50	-52.37	-27.4

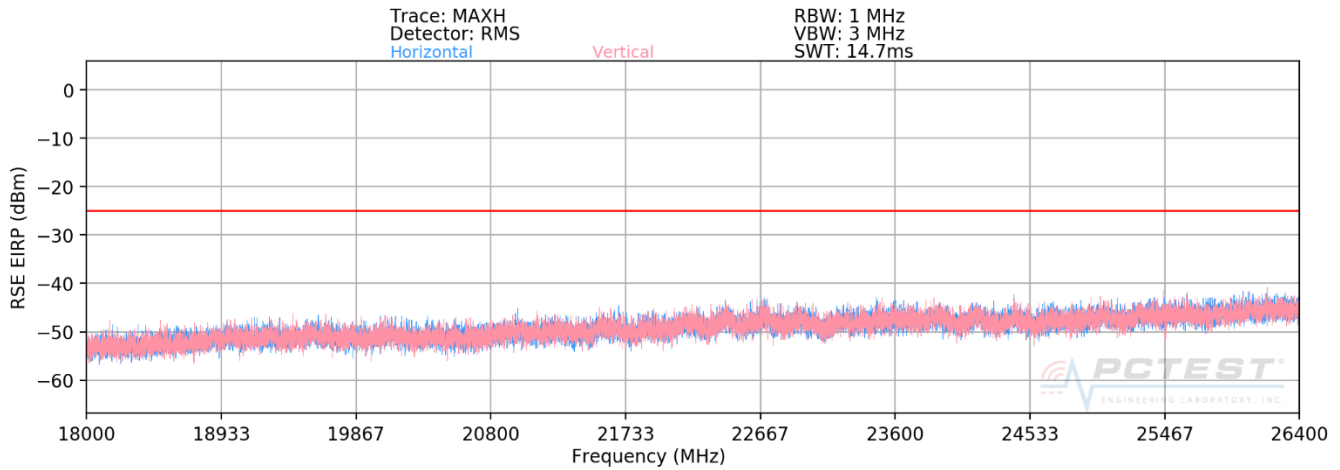
Table 7-30. Radiated Spurious Data (Band 7 – High Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 213 of 232

Band 41 (PC2)



Plot 7-329. Radiated Spurious Plot 1GHz - 18GHz (Band 41)



Plot 7-330. Radiated Spurious Plot 18GHz - 26.5GHz (Band 41)

FCC ID: ZNFX420MM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset	Page 214 of 232	

OPERATING FREQUENCY: 2506.00 MHz
 CHANNEL: 39790
 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	H	112	343	-60.82	10.90	-49.92	-24.9
7518.00	H	344	332	-60.70	11.11	-49.60	-24.6
10024.00	H	-	-	-65.57	11.99	-53.58	-28.6
12530.00	H	-	-	-64.85	13.56	-51.29	-26.3

Table 7-31. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 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	H	209	345	-61.26	10.74	-50.51	-25.5
7779.00	H	114	336	-62.27	11.44	-50.83	-25.8
10372.00	H	-	-	-66.38	12.42	-53.95	-29.0
12965.00	H	-	-	-64.32	13.29	-51.03	-26.0

Table 7-32. Radiated Spurious Data (Band 41 – Mid Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 215 of 232	

OPERATING FREQUENCY: 2680.00 MHz
 CHANNEL: 41490
 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	H	144	325	-62.39	10.70	-51.69	-26.7
8040.00	H	322	307	-60.30	11.16	-49.14	-24.1
10720.00	H	-	-	-66.41	12.59	-53.81	-28.8
13400.00	H	-	-	-63.27	12.59	-50.68	-25.7

Table 7-33. Radiated Spurious Data (Band 41 – High Channel)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1904050055-03-R1.ZNF	Test Dates: 04/11/2019 - 04/29/2019	EUT Type: Portable Handset		Page 216 of 232	

7.9 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 71 Frequency Stability Measurements

OPERATING FREQUENCY: 680,500,000 Hz
 CHANNEL: 133297
 REFERENCE VOLTAGE: 4.33 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	680,500,023	23	0.0000034
100 %		- 20	680,500,020	20	0.0000029
100 %		- 10	680,499,952	-48	-0.0000071
100 %		0	680,499,771	-229	-0.0000337
100 %		+ 10	680,500,128	128	0.0000188
100 %		+ 20	680,500,066	66	0.0000097
100 %		+ 30	680,500,083	83	0.0000122
100 %		+ 40	680,500,182	182	0.0000267
100 %		+ 50	680,499,826	-174	-0.0000256
BATT. ENDPOINT		3.51	+ 20	680,500,034	34

Table 7-34. Frequency Stability Data (Band 71)

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 71 Frequency Stability Measurements

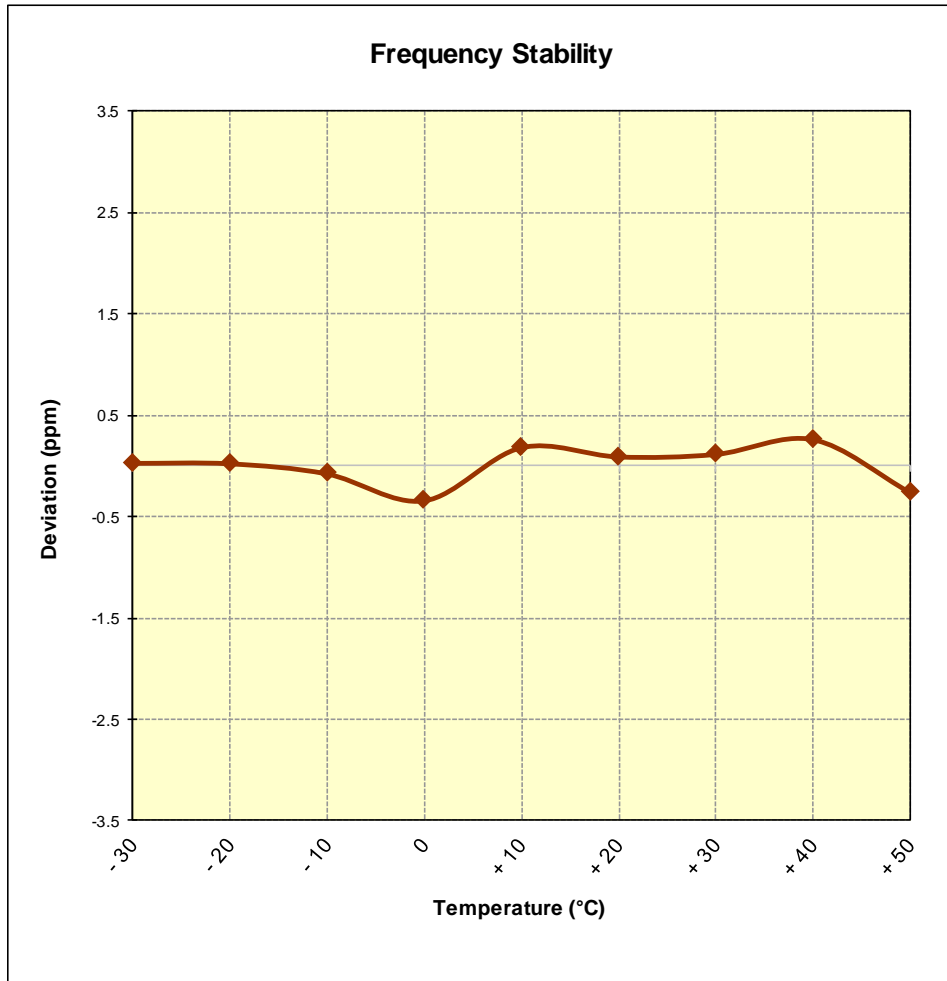


Figure 7-9. Frequency Stability Graph (Band 71)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 4.33 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	707,499,865	-135	-0.0000191
100 %		- 20	707,499,953	-47	-0.0000066
100 %		- 10	707,500,220	220	0.0000311
100 %		0	707,500,113	113	0.0000160
100 %		+ 10	707,499,803	-197	-0.0000278
100 %		+ 20	707,499,650	-350	-0.0000495
100 %		+ 30	707,500,046	46	0.0000065
100 %		+ 40	707,500,036	36	0.0000051
100 %		+ 50	707,499,877	-123	-0.0000174
BATT. ENDPOINT		3.51	+ 20	707,500,111	111

Table 7-35. 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.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12 Frequency Stability Measurements

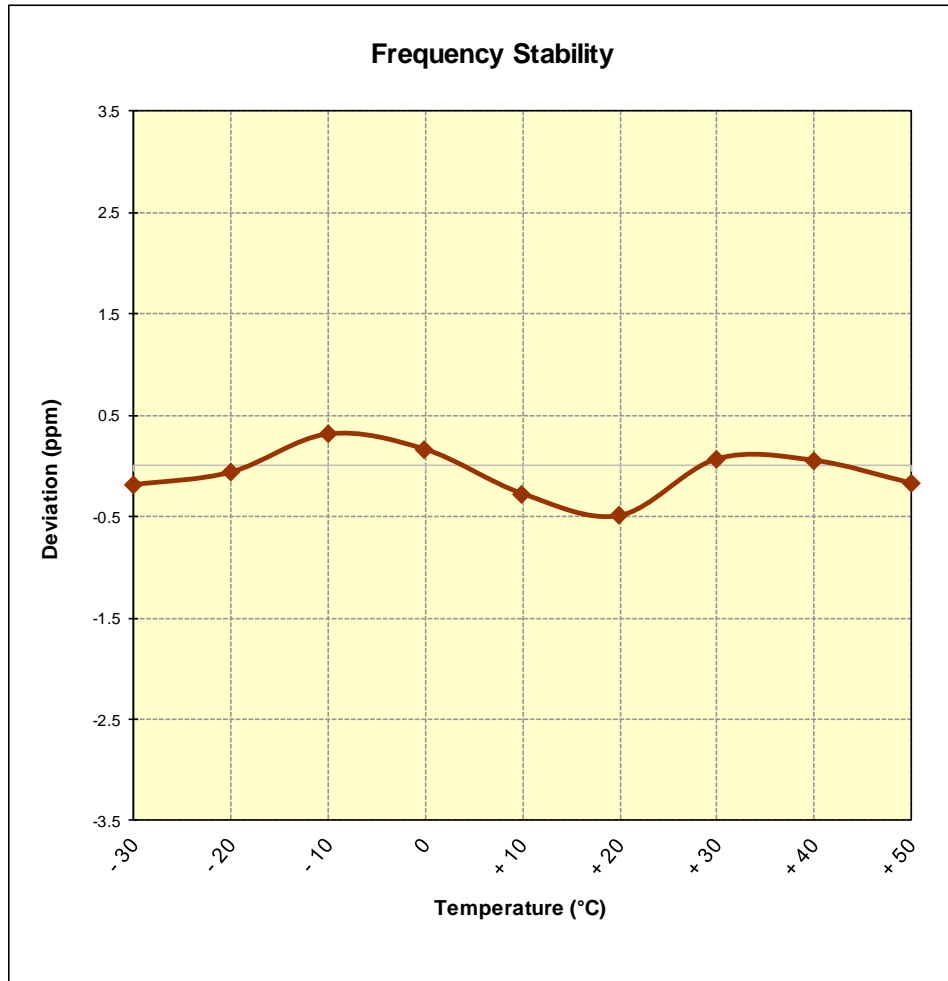


Figure 7-10. Frequency Stability Graph (Band 12)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 831,500,000 Hz
 CHANNEL: 26865
 REFERENCE VOLTAGE: 4.33 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	831,500,091	91	0.0000109
100 %		- 20	831,500,016	16	0.0000019
100 %		- 10	831,500,001	1	0.0000001
100 %		0	831,500,109	109	0.0000131
100 %		+ 10	831,500,338	338	0.0000406
100 %		+ 20	831,500,077	77	0.0000093
100 %		+ 30	831,499,917	-83	-0.0000100
100 %		+ 40	831,500,229	229	0.0000275
100 %		+ 50	831,499,918	-82	-0.0000099
BATT. ENDPOINT		3.51	+ 20	831,499,772	-228

Table 7-36. Frequency Stability Data (Band 26/5)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements

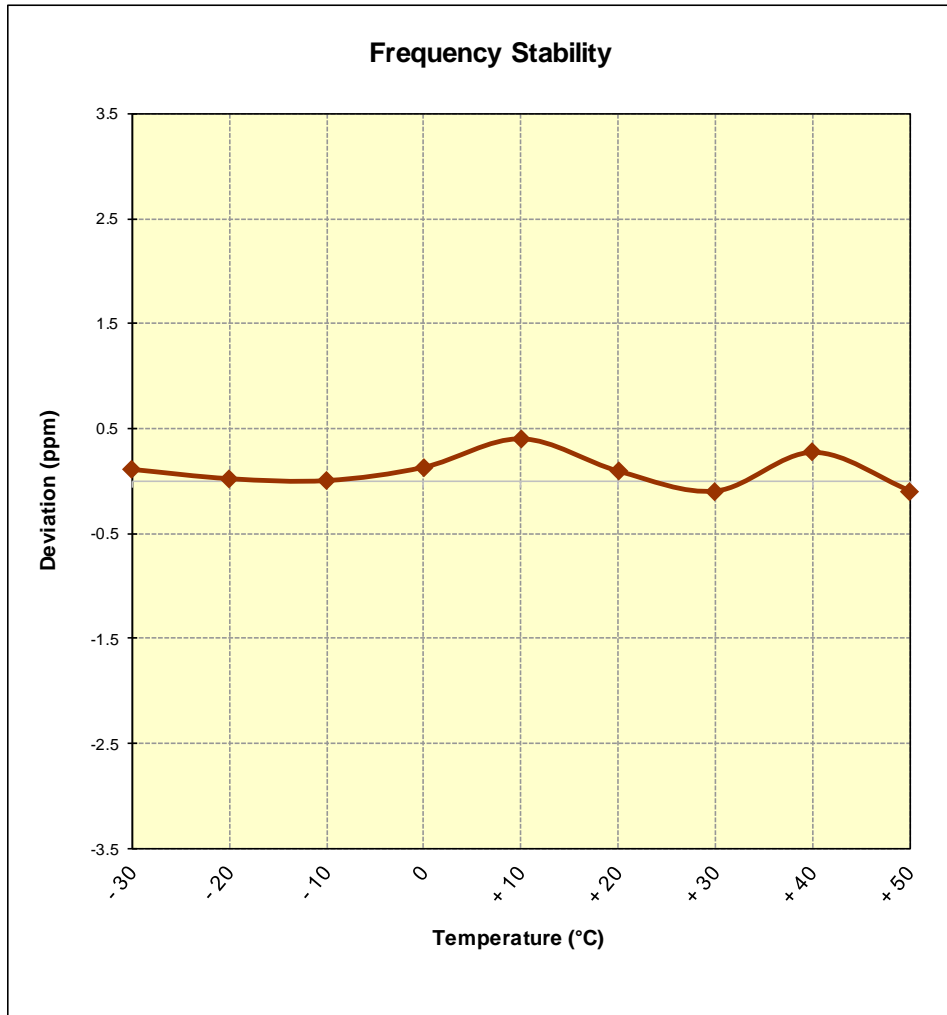


Figure 7-11. Frequency Stability Graph (Band 26/5)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz
 CHANNEL: 132322
 REFERENCE VOLTAGE: 4.33 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	1,745,000,024	24	0.0000014
100 %		- 20	1,745,000,056	56	0.0000032
100 %		- 10	1,745,000,028	28	0.0000016
100 %		0	1,744,999,984	-16	-0.0000009
100 %		+ 10	1,745,000,055	55	0.0000032
100 %		+ 20	1,745,000,058	58	0.0000033
100 %		+ 30	1,745,000,274	274	0.0000157
100 %		+ 40	1,744,999,807	-193	-0.0000111
100 %		+ 50	1,745,000,171	171	0.0000098
BATT. ENDPOINT		3.51	+ 20	1,745,000,336	336

Table 7-37. 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.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

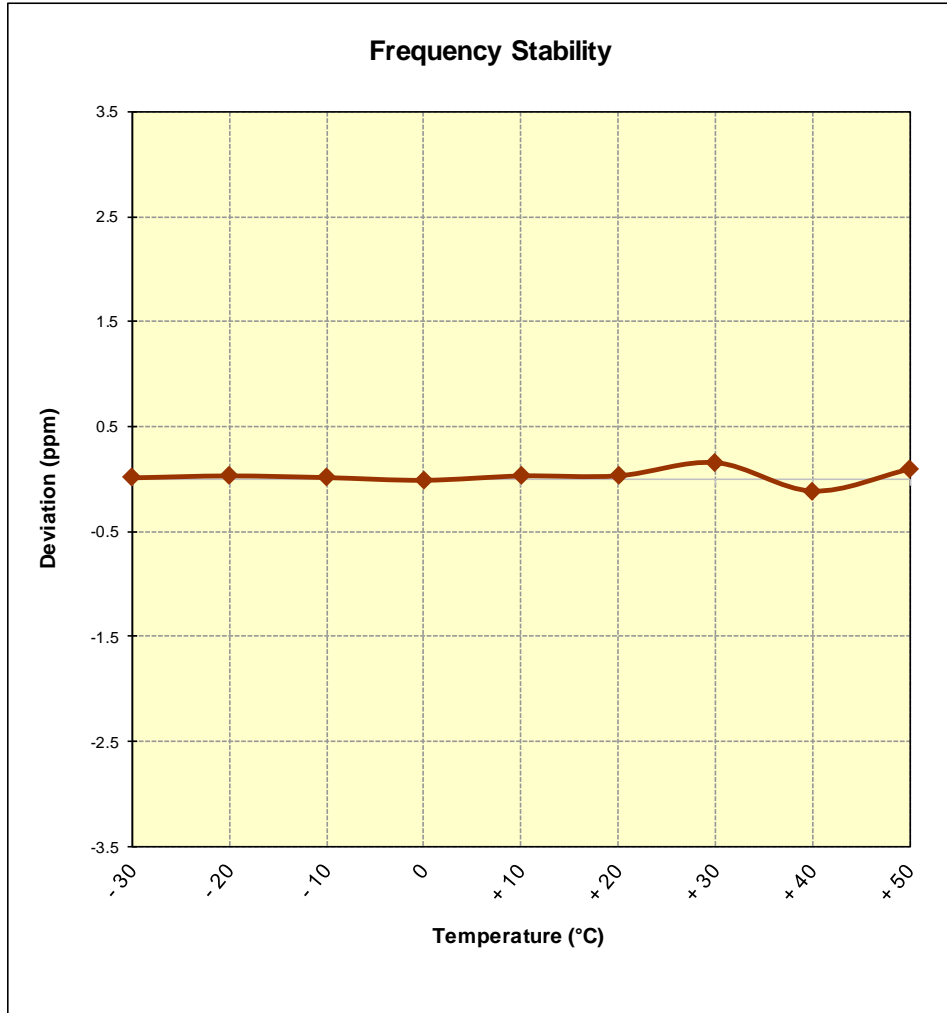


Figure 7-12. Frequency Stability Graph (Band 66/4)

FCC ID: ZNFX420MM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz
 CHANNEL: 26365
 REFERENCE VOLTAGE: 4.33 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	1,882,500,300	300	0.0000159
100 %		- 20	1,882,500,112	112	0.0000059
100 %		- 10	1,882,499,927	-73	-0.0000039
100 %		0	1,882,500,115	115	0.0000061
100 %		+ 10	1,882,499,596	-404	-0.0000215
100 %		+ 20	1,882,499,538	-462	-0.0000245
100 %		+ 30	1,882,499,901	-99	-0.0000053
100 %		+ 40	1,882,499,997	-3	-0.0000002
100 %		+ 50	1,882,500,409	409	0.0000217
BATT. ENDPOINT		3.51	+ 20	1,882,500,252	252

Table 7-38. Frequency Stability Data (Band 25/2)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

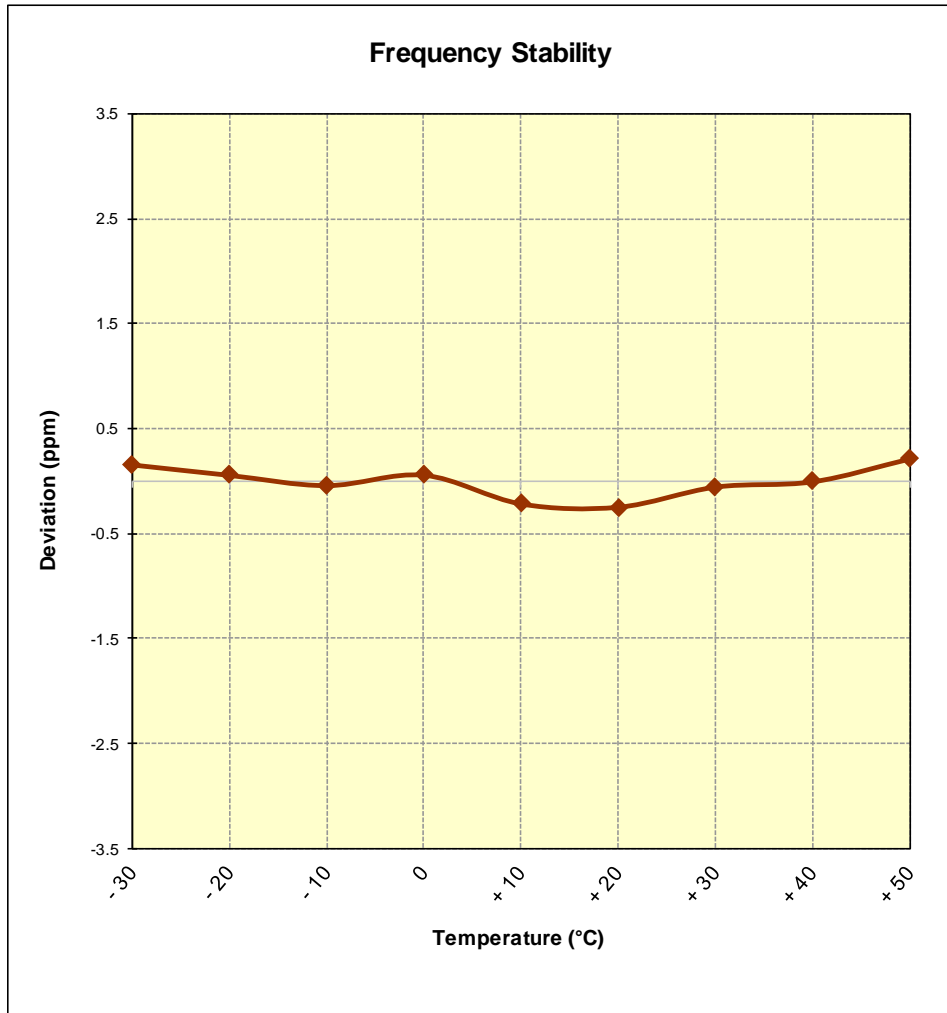


Figure 7-13. Frequency Stability Graph (Band 25/2)

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 7 Frequency Stability Measurements

OPERATING FREQUENCY: 2,535,000,000 Hz
 CHANNEL: 21100
 REFERENCE VOLTAGE: 4.33 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	2,535,000,002	2	0.0000001
100 %		- 20	2,534,999,871	-129	-0.0000051
100 %		- 10	2,535,000,009	9	0.0000004
100 %		0	2,534,999,930	-70	-0.0000028
100 %		+ 10	2,534,999,964	-36	-0.0000014
100 %		+ 20	2,535,000,213	213	0.0000084
100 %		+ 30	2,534,999,757	-243	-0.0000096
100 %		+ 40	2,535,000,016	16	0.0000006
100 %		+ 50	2,535,000,116	116	0.0000046
BATT. ENDPOINT		3.51	+ 20	2,534,999,964	-36

Table 7-39. Frequency Stability Data (Band 7)

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.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 7 Frequency Stability Measurements

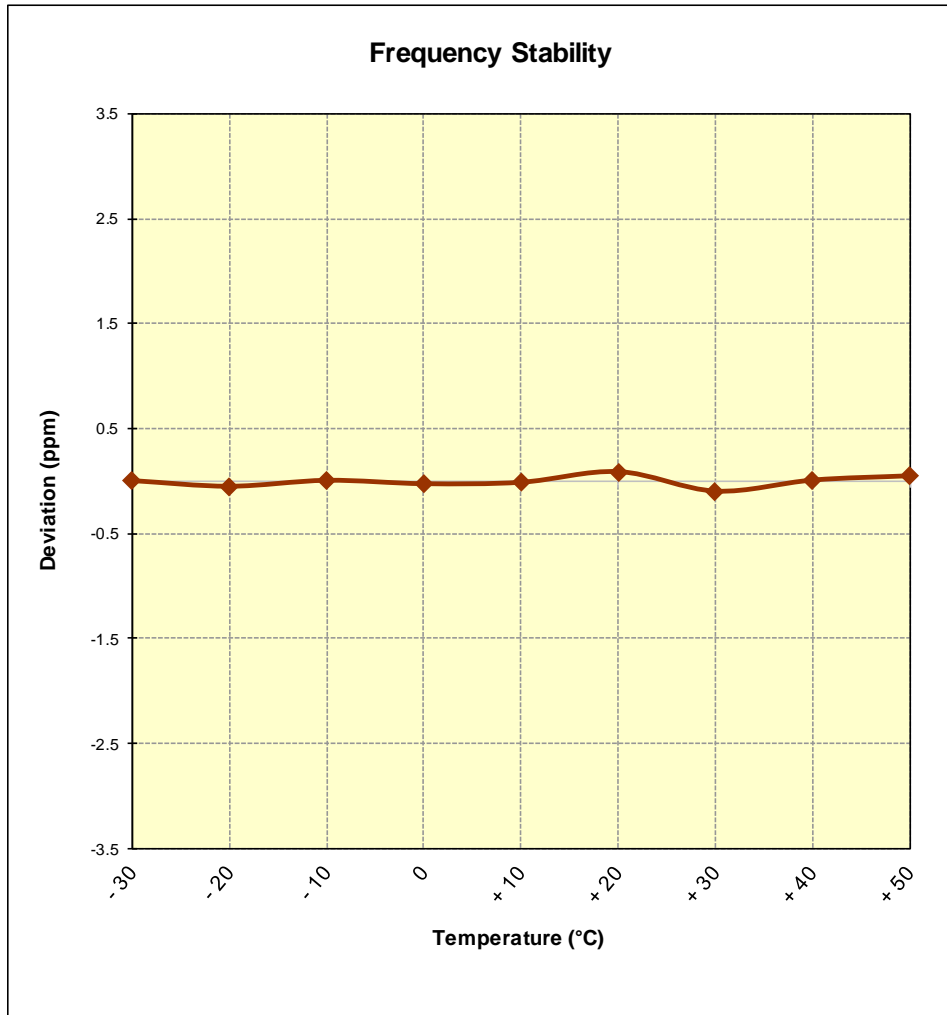


Figure 7-14. Frequency Stability Graph (Band 7)

FCC ID: ZNFX420MM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz
 CHANNEL: 40620
 REFERENCE VOLTAGE: 4.33 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.33	- 30	2,592,999,902	-98	-0.0000038
100 %		- 20	2,593,000,128	128	0.0000049
100 %		- 10	2,593,000,424	424	0.0000164
100 %		0	2,593,000,127	127	0.0000049
100 %		+ 10	2,593,000,009	9	0.0000003
100 %		+ 20	2,592,999,913	-87	-0.0000034
100 %		+ 30	2,592,999,765	-235	-0.0000091
100 %		+ 40	2,593,000,112	112	0.0000043
100 %		+ 50	2,593,000,235	235	0.0000091
BATT. ENDPOINT		3.51	+ 20	2,593,000,092	92

Table 7-40. 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.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

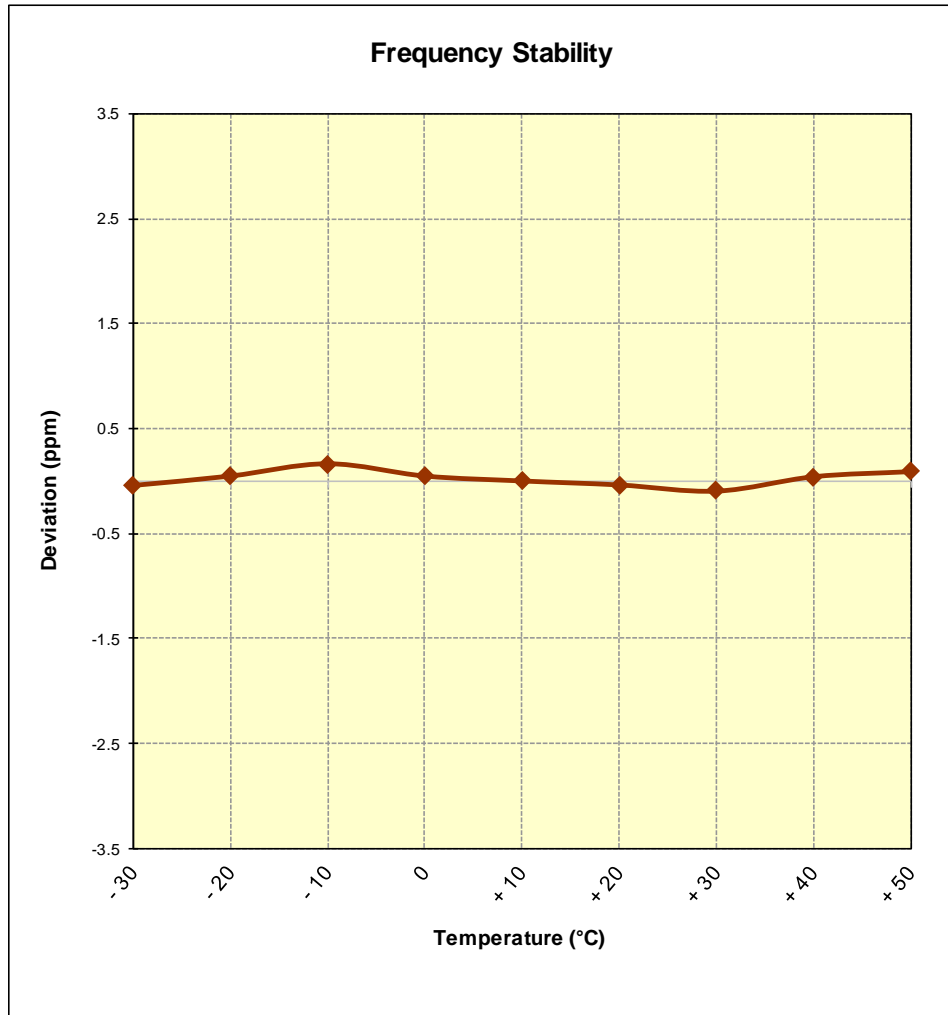


Figure 7-15. Frequency Stability Graph (Band 41)

FCC ID: ZNFX420MM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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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: ZNFX420MM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: ZNFX420MM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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