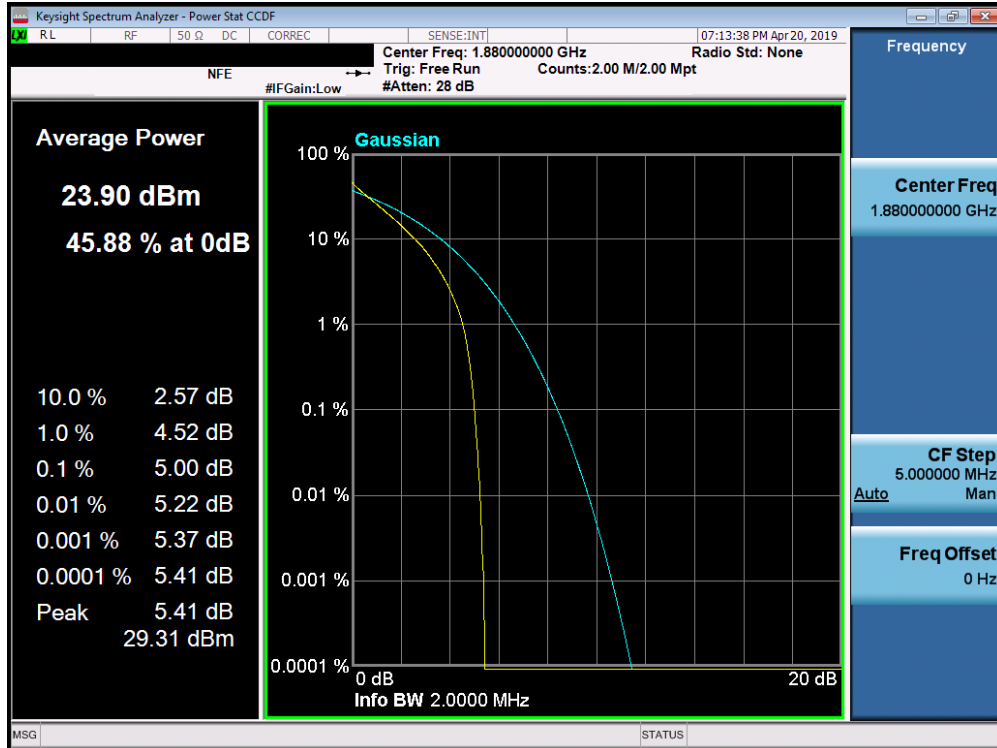
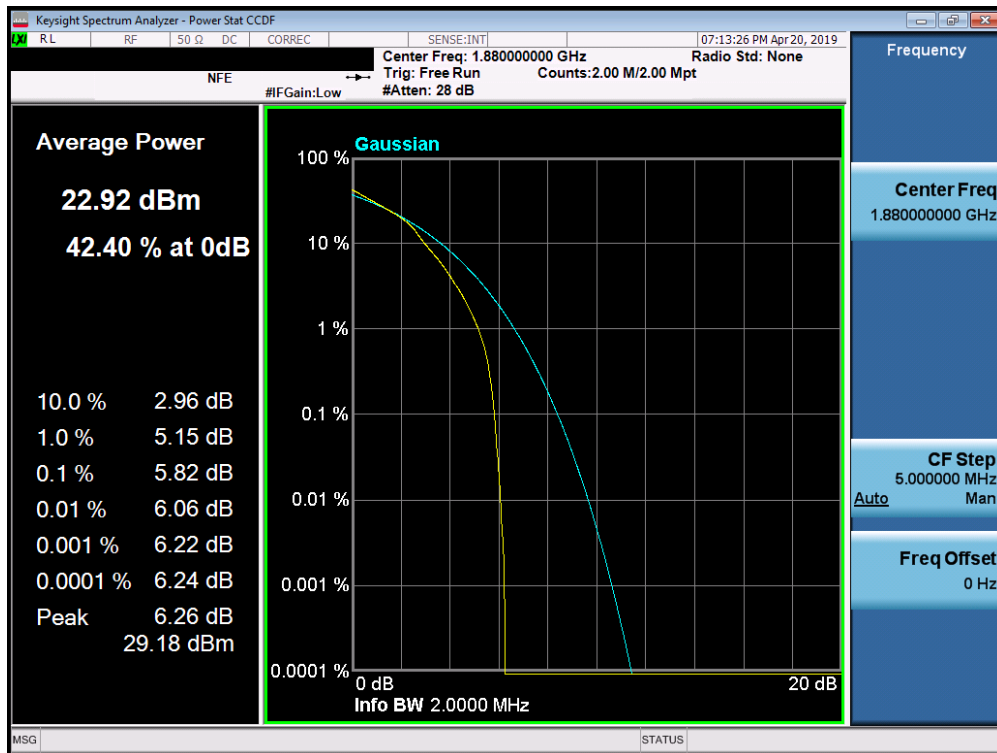


Band 25/2

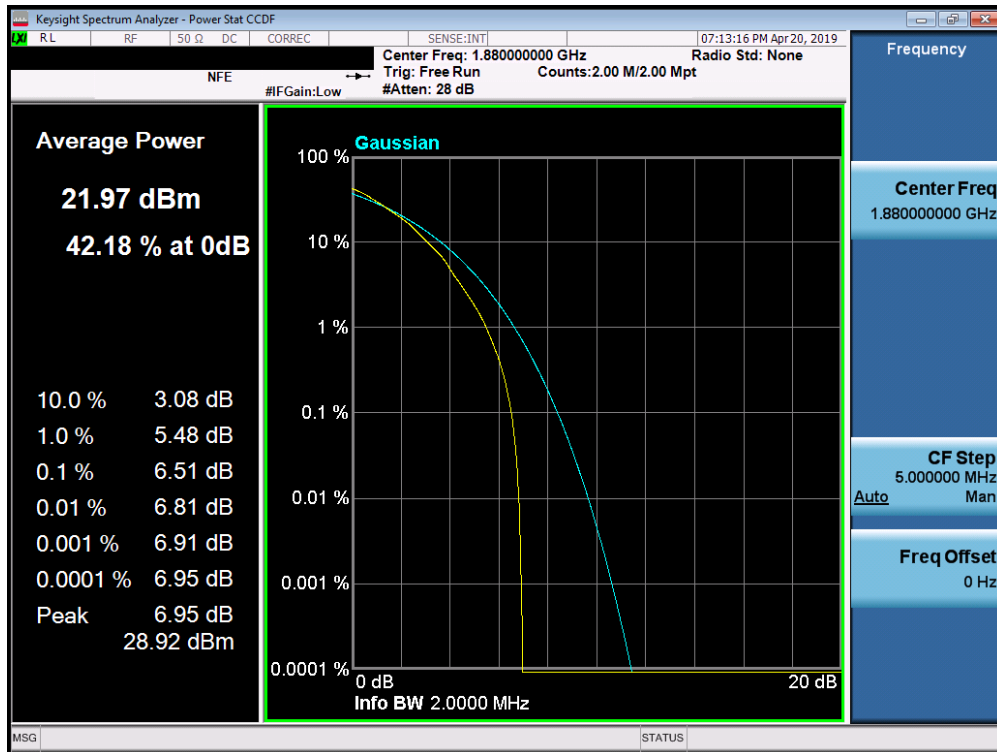


Plot 7-297. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

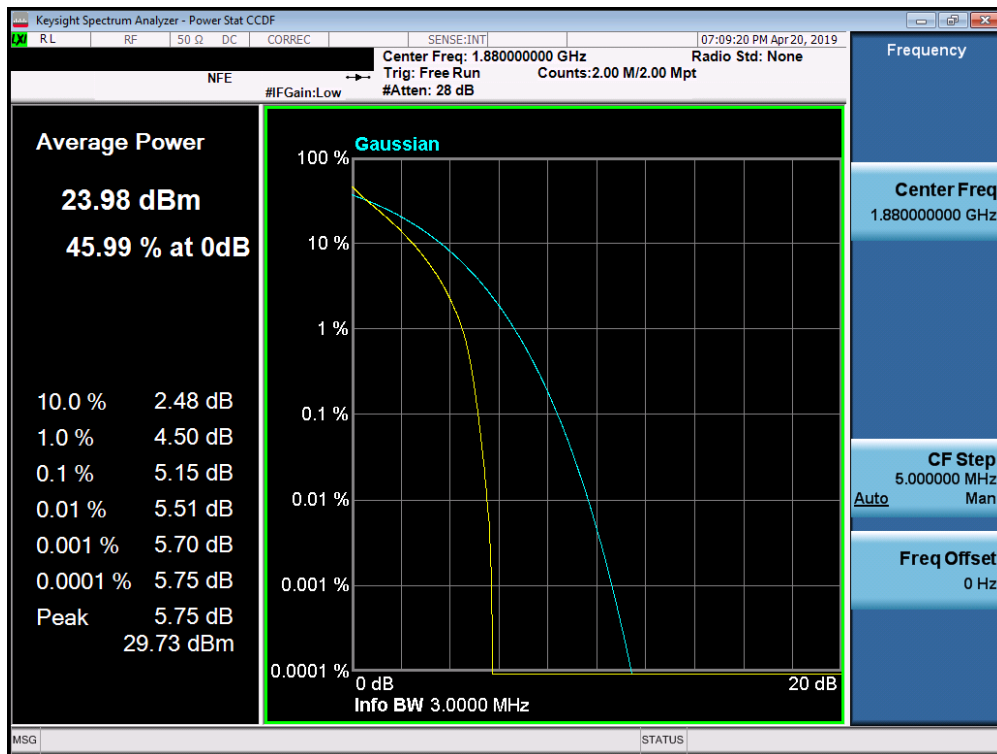


Plot 7-298. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 174 of 225

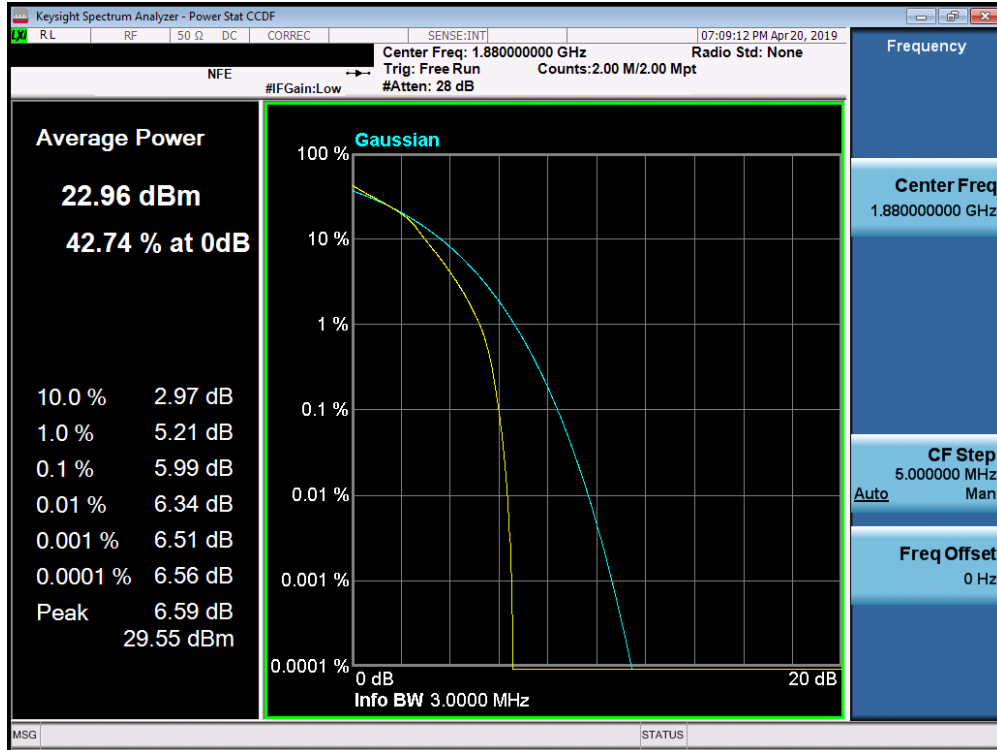


Plot 7-299. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

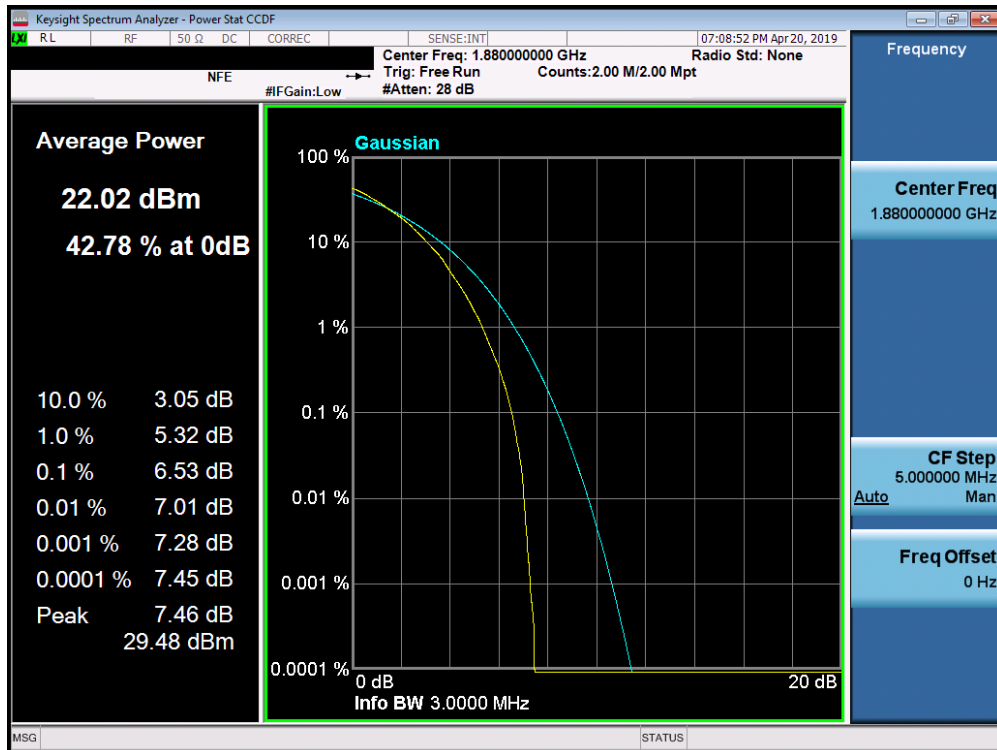


Plot 7-300. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1-ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 175 of 225

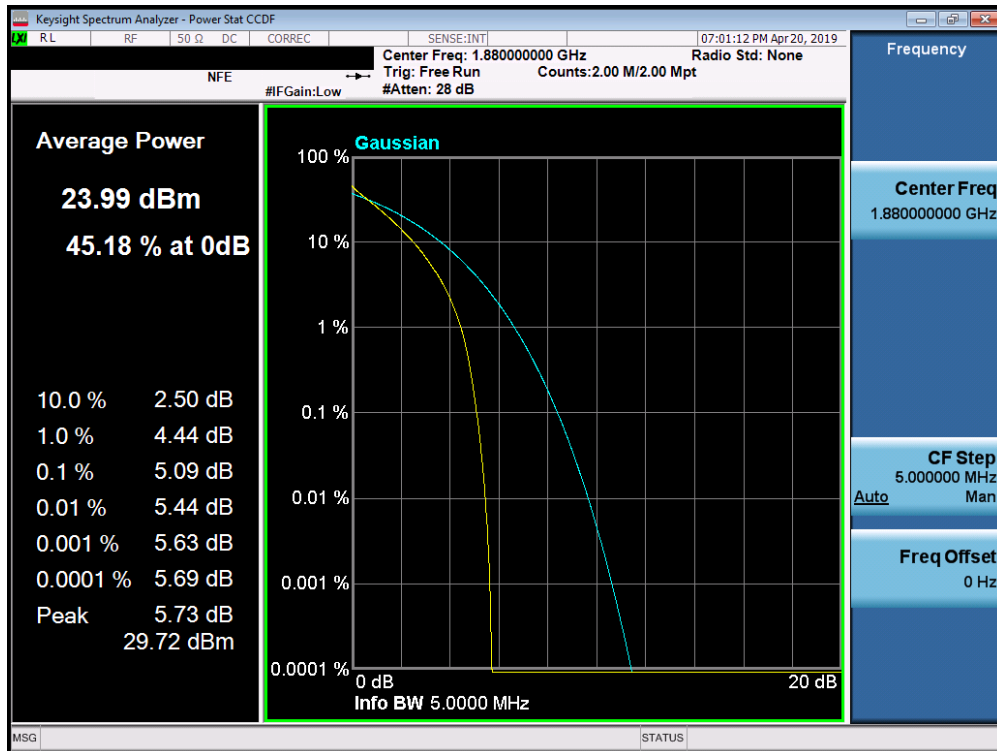


Plot 7-301. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

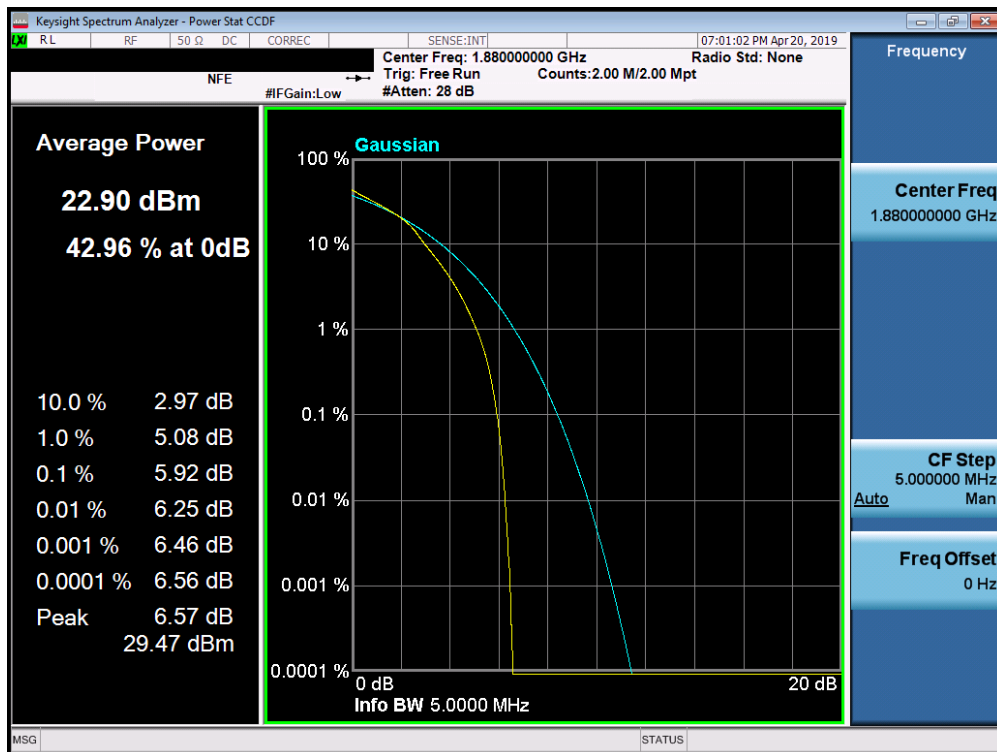


Plot 7-302. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset	Page 176 of 225

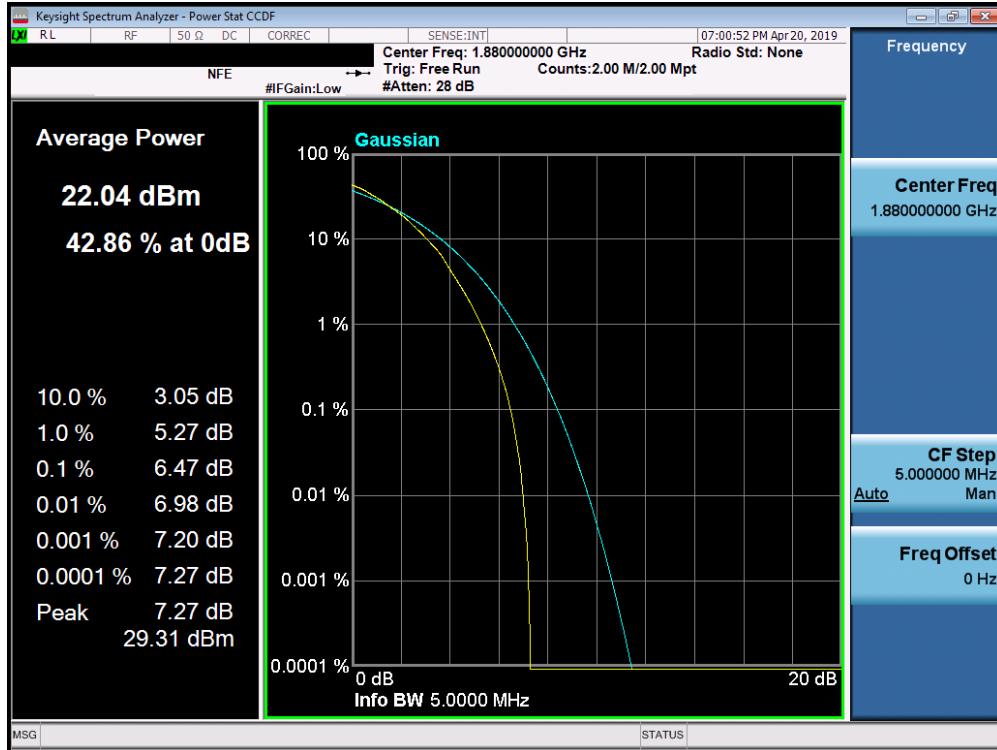


Plot 7-303. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

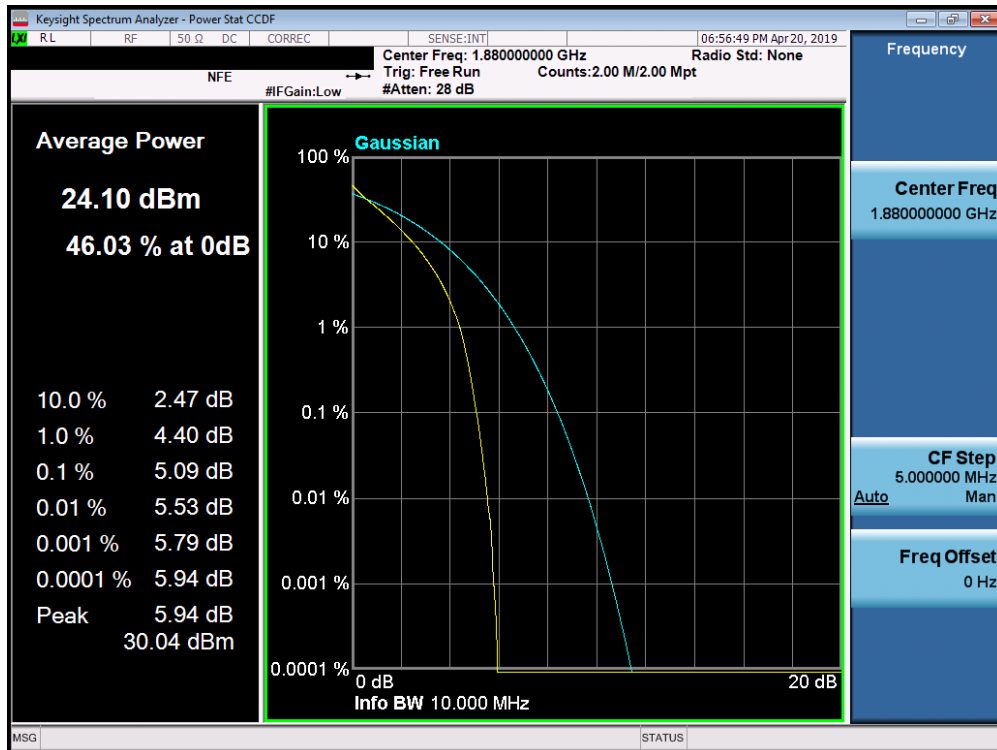


Plot 7-304. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1-ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset	Page 177 of 225

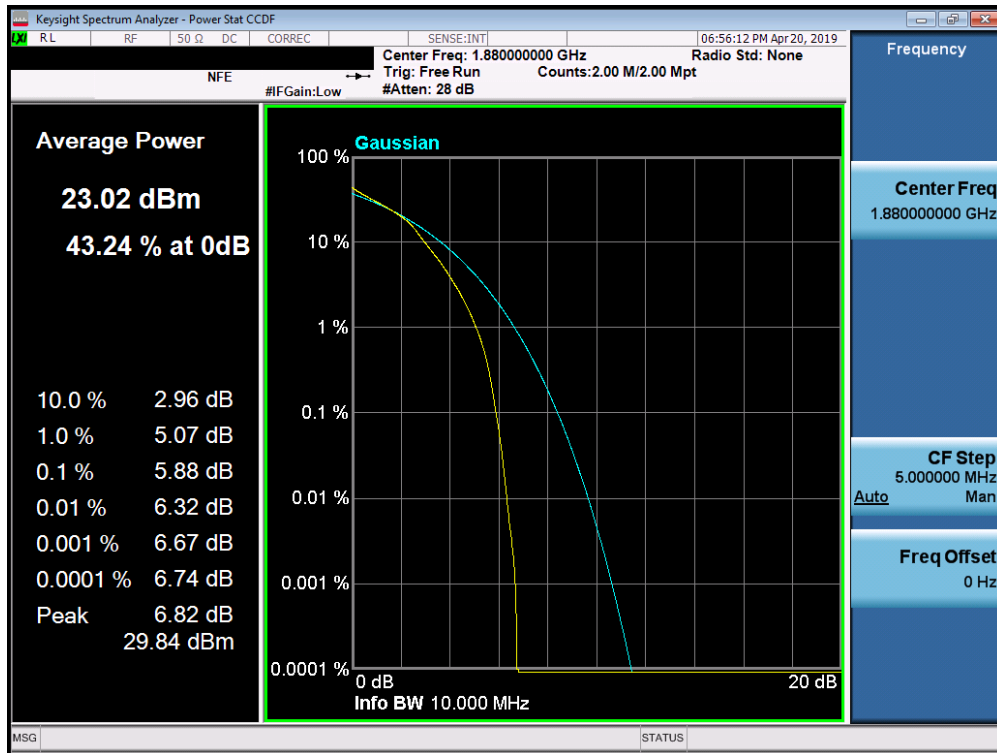


Plot 7-305. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

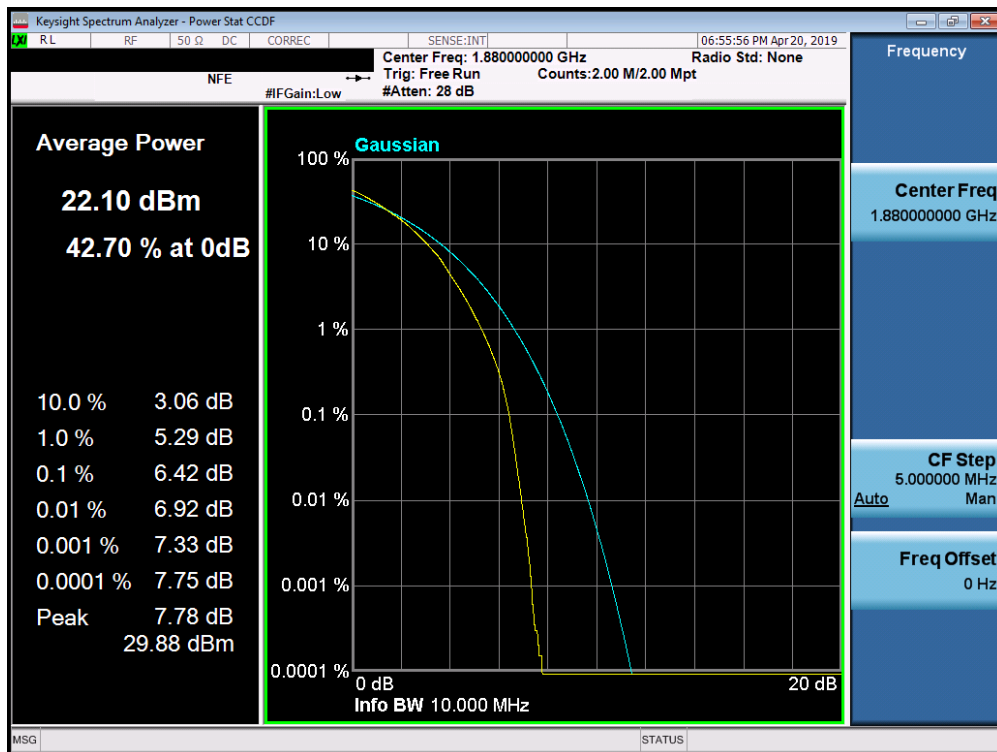


Plot 7-306. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 178 of 225

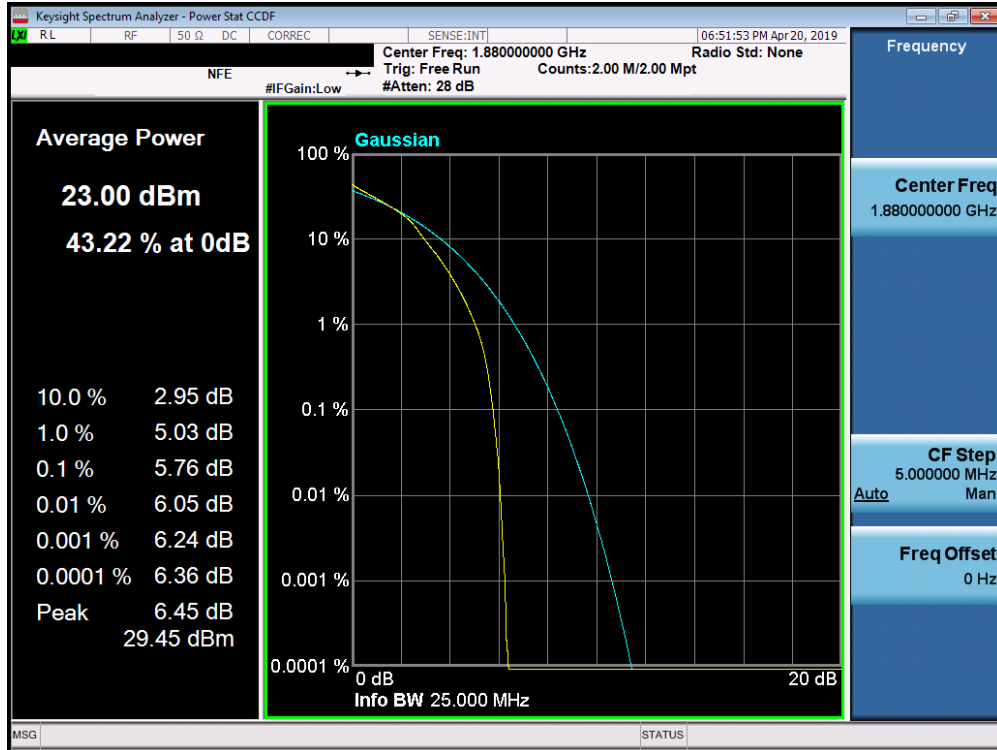


Plot 7-307. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

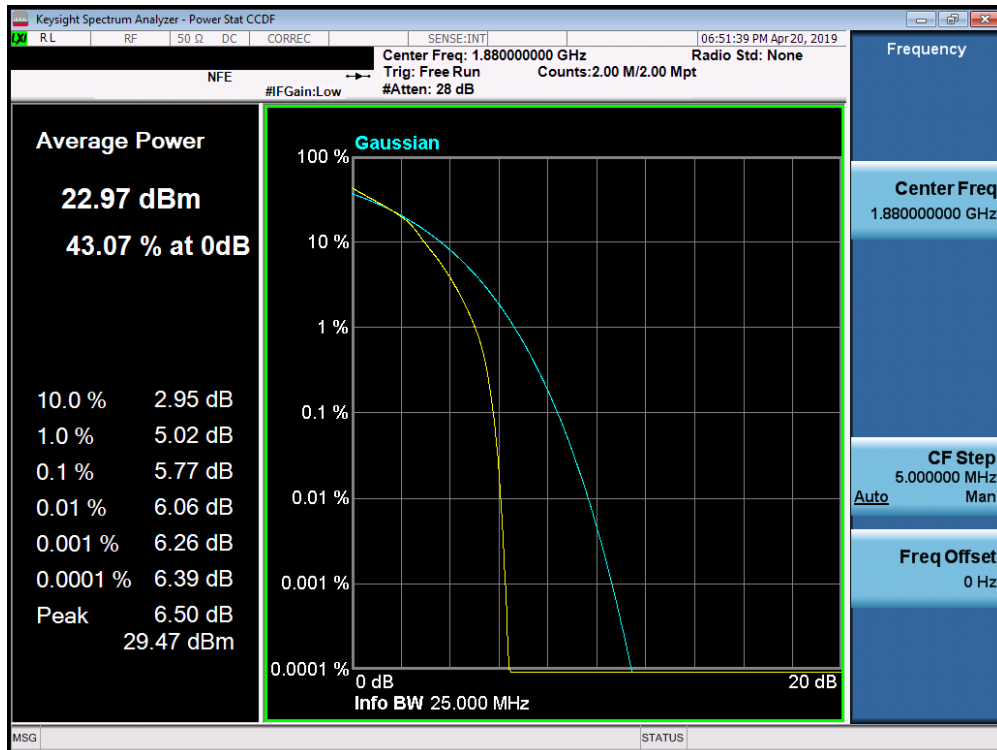


Plot 7-308. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1-ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset	Page 179 of 225

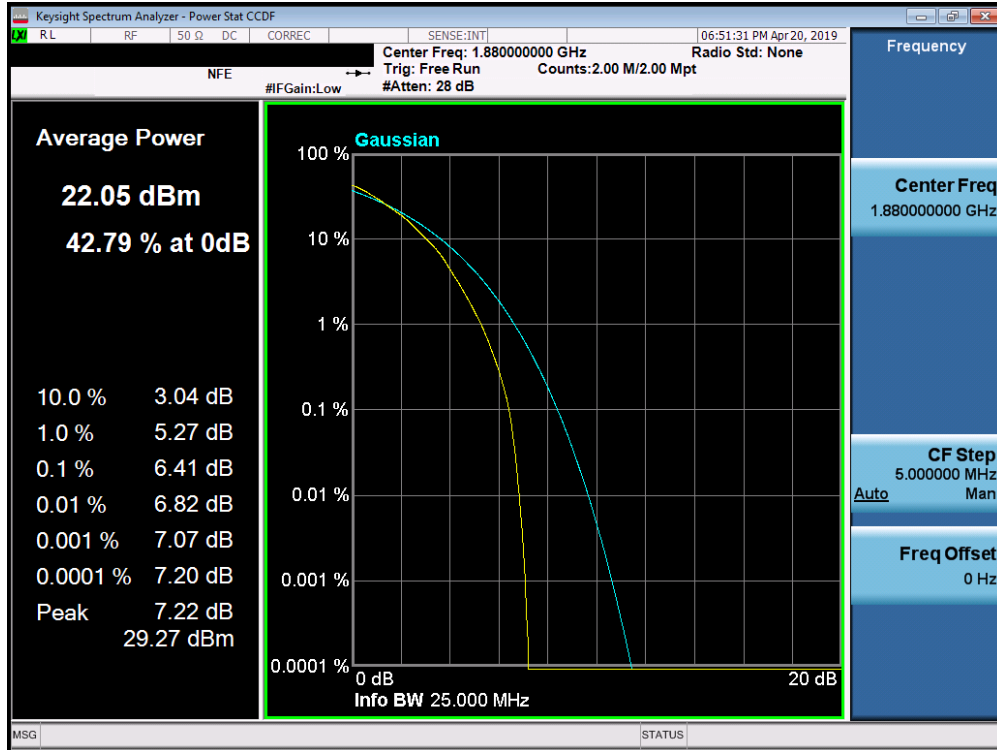


Plot 7-309. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

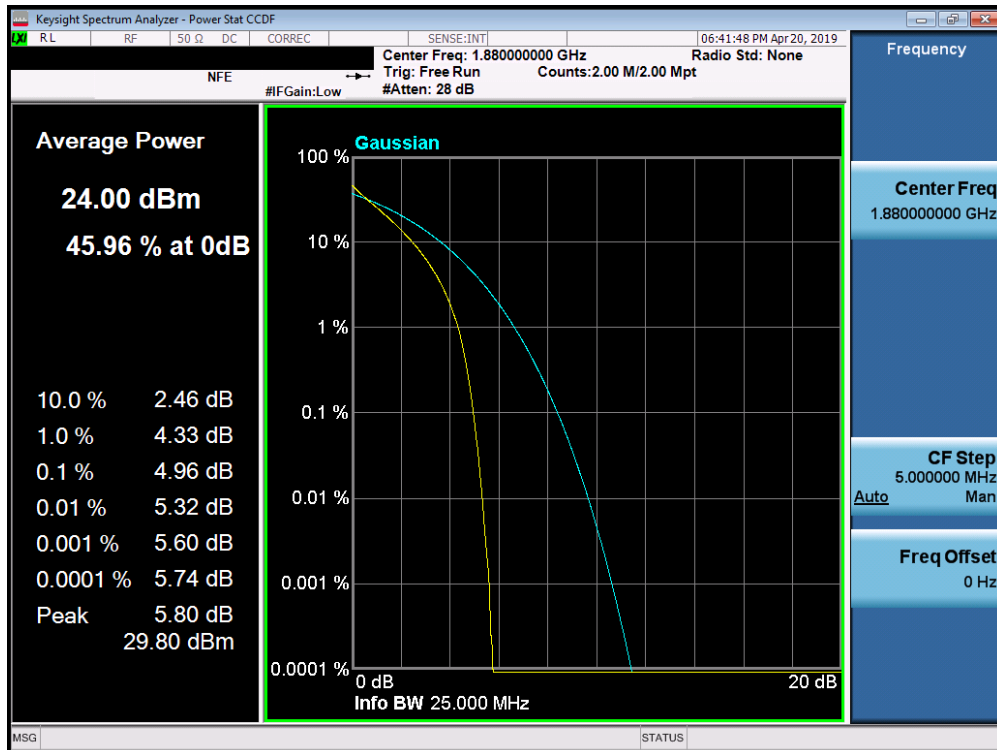


Plot 7-310. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset	Page 180 of 225

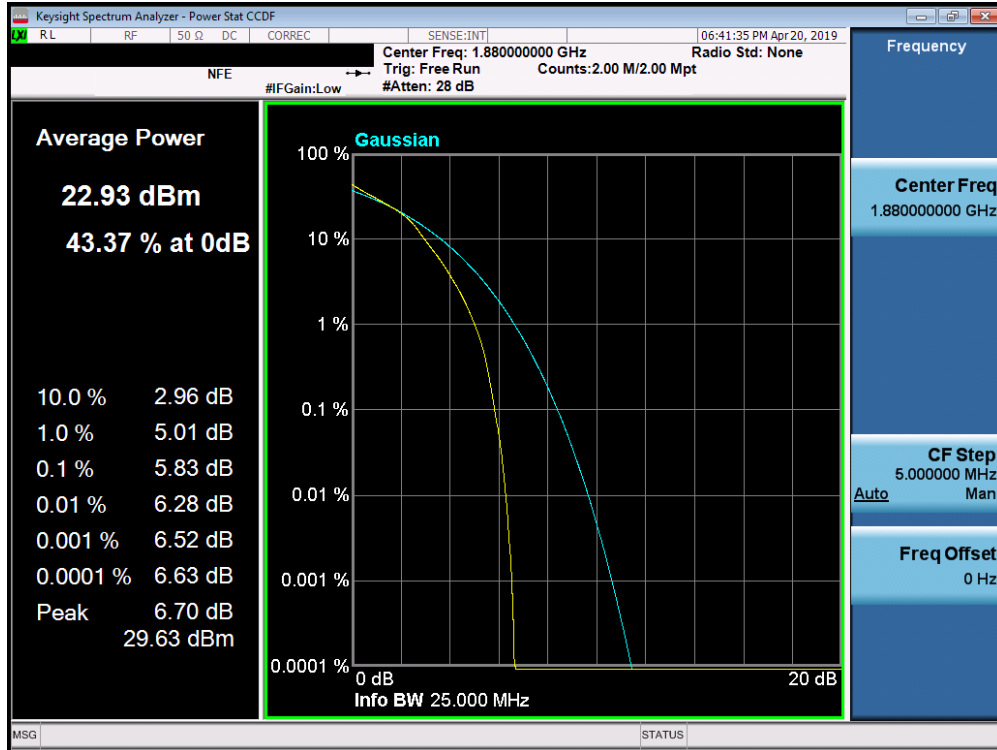


Plot 7-311. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

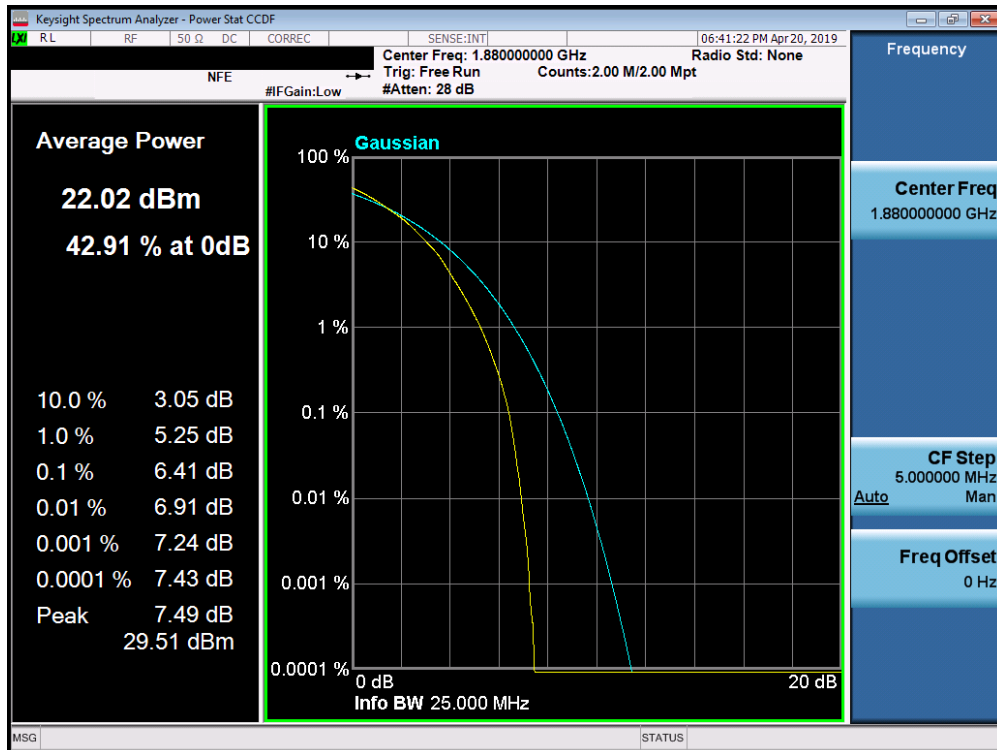


Plot 7-312. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 181 of 225



Plot 7-313. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-314. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1-ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset	Page 182 of 225

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.

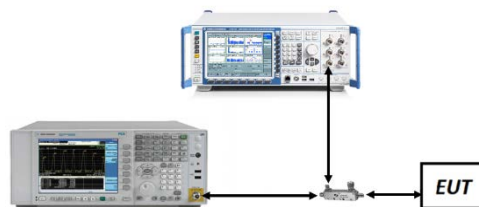


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 183 of 225

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]
1	01	312	530	5	39675	2498.5	QPSK	1	0	0	≤ 3	25.33
							16-QAM			≤ 1		24.32
							64-QAM			≤ 2		23.27
2				5	39675	2498.5	QPSK	1	9	0	0	27.23
							16-QAM			≤ 1		26.53
							64-QAM			≤ 2		25.33
3				10	39700	2501	QPSK	1	0	0	≤ 5	24.19
							16-QAM	1	0	≤ 1		23.35
							64-QAM	1	0	≤ 2		22.30
4				10	39700	2501	QPSK	20	0	0	≤ 2	25.45
							16-QAM	20	0	≤ 1		24.48
							64-QAM	20	0	≤ 2		23.48
5				10	39700	2501	QPSK	50	0	0	≤ 3	24.42
							16-QAM	50	0	≤ 1		23.46
							64-QAM	50	0	≤ 2		22.26
6				10	39700	2501	QPSK	25	20	0	≤ 1	25.45
							16-QAM	25	20	≤ 1		24.49
							64-QAM	25	20	≤ 2		23.58
7				10	39700	2501	QPSK	1	36	0	0	27.22
							16-QAM	1	36	≤ 1		26.23
							64-QAM	1	36	≤ 2		25.23
8				15	39725	2503.5	QPSK	1	0	0	≤ 5	22.21
							16-QAM	1	0	≤ 1		21.23
							64-QAM	1	0	≤ 2		20.25
9				15	39725	2503.5	QPSK	20	0	0	≤ 2	24.37
							16-QAM	20	0	≤ 1		23.28
							64-QAM	20	0	≤ 2		22.40
10				15	39725	2503.5	QPSK	75	0	0	≤ 4	22.37
							16-QAM	75	0	≤ 1		21.37
							64-QAM	75	0	≤ 2		20.32
11				15	39725	2503.5	QPSK	50	15	0	≤ 3	23.40
							16-QAM	50	15	≤ 1		22.42
							64-QAM	50	15	≤ 2		21.41
12				15	39725	2503.5	QPSK	1	60	0	0	27.21
							16-QAM	1	60	≤ 1		26.27
							64-QAM	1	60	≤ 2		25.26
13				20	39750	2506	QPSK	1	0	0	≤ 5	22.21
							16-QAM	1	0	≤ 1		21.30
							64-QAM	1	0	≤ 2		20.27
14				20	39750	2506	QPSK	20	0	0	≤ 2	24.38
							16-QAM	20	0	≤ 1		23.26
							64-QAM	20	0	≤ 2		22.36
15				20	39750	2506	QPSK	100	0	0	≤ 4	22.37
							16-QAM	100	0	≤ 1		21.36
							64-QAM	100	0	≤ 2		20.34
16				20	39750	2506	QPSK	75	24	0	≤ 3	23.40
							16-QAM	75	24	≤ 1		22.46
							64-QAM	75	24	≤ 2		21.37
17				20	39750	2506	QPSK	1	77	0	0	27.21
							16-QAM	1	77	≤ 1		26.65
							64-QAM	1	77	≤ 2		25.32
19	01	001	01	5	39675	2498.5	QPSK	1	0	0	0	27.21
							16-QAM			≤ 1		26.22
							64-QAM			≤ 2		25.21

Table 7-3. A-MPR Conducted Power Measurements

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset	Page 184 of 225	

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: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1-ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 185 of 225

Test Setup

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

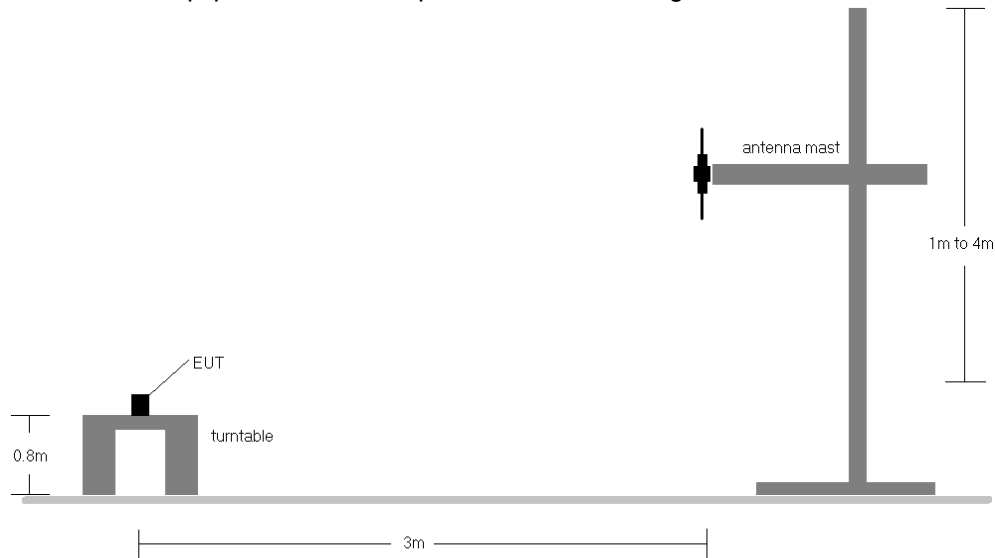


Figure 7-6. Radiated Test Setup <1GHz

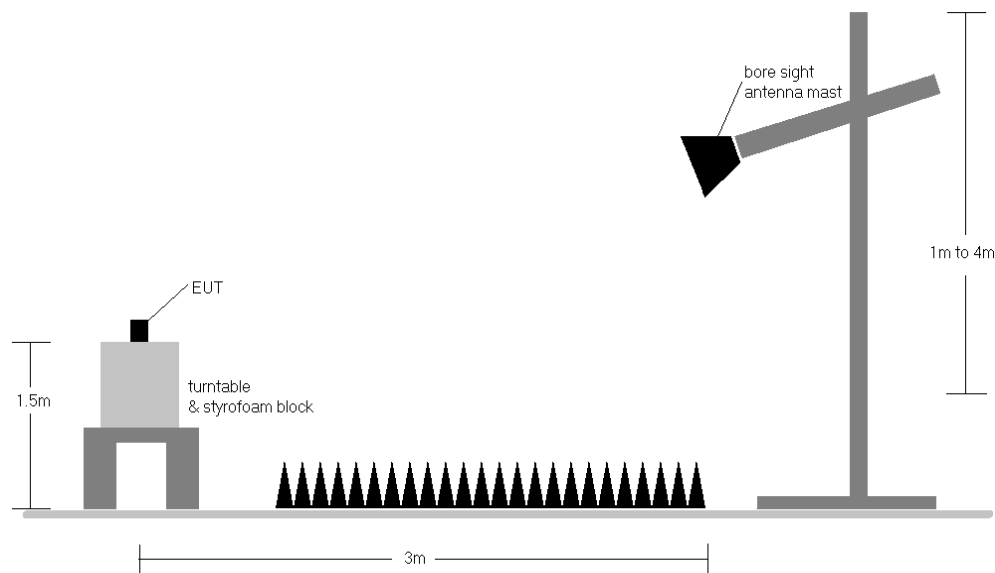


Figure 7-7. Radiated Test Setup >1GHz

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: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 186 of 225

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	V	262	249	1 / 24	15.36	3.75	16.96	0.050	34.77	-17.81
680.50	5	QPSK	V	266	226	1 / 0	15.62	4.20	17.67	0.058	34.77	-17.10
695.50	5	QPSK	V	262	235	1 / 0	14.90	4.50	17.25	0.053	34.77	-17.52
680.50	5	16-QAM	V	266	226	1 / 0	14.28	4.20	16.33	0.043	34.77	-18.44
680.50	5	64-QAM	V	266	226	1 / 0	14.07	4.20	16.12	0.041	34.77	-18.65
668.00	10	QPSK	V	101	258	1 / 49	16.33	3.80	17.98	0.063	34.77	-16.79
680.50	10	QPSK	V	100	256	1 / 0	15.96	4.20	18.01	0.063	34.77	-16.76
693.00	10	QPSK	V	104	256	1 / 49	16.17	4.40	18.42	0.070	34.77	-16.35
693.00	10	16-QAM	V	104	256	1 / 0	14.50	4.40	16.75	0.047	34.77	-18.02
693.00	10	64-QAM	V	104	256	1 / 0	14.69	4.40	16.94	0.049	34.77	-17.83
670.50	15	QPSK	V	104	261	1 / 74	16.57	3.90	18.32	0.068	34.77	-16.45
680.50	15	QPSK	V	110	256	1 / 74	16.62	4.20	18.67	0.074	34.77	-16.10
690.50	15	QPSK	V	106	263	1 / 74	16.69	4.40	18.94	0.078	34.77	-15.83
690.50	15	16-QAM	V	106	263	1 / 0	15.15	4.40	17.40	0.055	34.77	-17.37
690.50	15	64-QAM	V	106	263	1 / 74	15.02	4.40	17.27	0.053	34.77	-17.50
673.00	20	QPSK	V	111	245	1 / 0	16.79	4.00	18.64	0.073	34.77	-16.13
680.50	20	QPSK	V	102	256	1 / 99	17.48	4.20	19.53	0.090	34.77	-15.24
688.00	20	QPSK	V	108	246	1 / 99	17.38	4.40	19.63	0.092	34.77	-15.14
688.00	20	16-QAM	V	108	246	1 / 99	16.28	4.40	18.53	0.071	34.77	-16.24
688.00	20	64-QAM	V	108	246	1 / 99	16.23	4.40	18.48	0.070	34.77	-16.29
688.00	20	QPSK	H	176	177	1 / 99	16.58	3.20	17.63	0.058	34.77	-17.14

Table 7-4. ERP Data (Band 71)

FCC ID: ZNFQ720PS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset	Page 187 of 225

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	281	268	1 / 0	14.58	3.40	15.83	0.038	34.77	-18.94	17.98	0.063	36.99	-19.01
707.50	1.4	QPSK	H	283	270	3 / 2	14.75	3.65	16.25	0.042	34.77	-18.52	18.40	0.069	36.99	-18.59
715.30	1.4	QPSK	H	285	281	1 / 5	14.40	3.70	15.95	0.039	34.77	-18.82	18.10	0.065	36.99	-18.89
707.50	1.4	16-QAM	H	283	270	1 / 0	13.24	3.65	14.74	0.030	34.77	-20.03	16.89	0.049	36.99	-20.10
707.50	1.4	64-QAM	H	283	270	1 / 0	13.10	3.65	14.60	0.029	34.77	-20.17	16.75	0.047	36.99	-20.24
700.50	3	QPSK	H	279	262	1 / 0	14.79	3.40	16.04	0.040	34.77	-18.73	18.19	0.066	36.99	-18.80
707.50	3	QPSK	H	277	271	1 / 0	14.51	3.65	16.01	0.040	34.77	-18.76	18.16	0.065	36.99	-18.83
714.50	3	QPSK	H	281	261	1 / 0	14.58	3.70	16.13	0.041	34.77	-18.64	18.28	0.067	36.99	-18.71
714.50	3	16-QAM	H	281	261	1 / 0	13.17	3.70	14.72	0.030	34.77	-20.05	16.87	0.049	36.99	-20.12
707.50	3	64-QAM	H	277	271	1 / 14	13.13	3.65	14.63	0.029	34.77	-20.14	16.78	0.048	36.99	-20.21

Table 7-5. 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]
701.50	5	QPSK	H	125	261	1 / 0	14.68	3.40	15.93	0.039	34.77	-18.84	18.08	0.064	36.99	-18.91
707.50	5	QPSK	H	129	263	1 / 0	14.78	3.65	16.28	0.042	34.77	-18.49	18.43	0.070	36.99	-18.56
713.50	5	QPSK	H	129	276	1 / 24	14.69	3.70	16.24	0.042	34.77	-18.53	18.39	0.069	36.99	-18.60
707.50	5	16-QAM	H	129	263	1 / 24	13.82	3.65	15.32	0.034	34.77	-19.45	17.47	0.056	36.99	-19.52
713.50	5	64-QAM	H	129	276	1 / 24	13.66	3.70	15.21	0.033	34.77	-19.56	17.36	0.054	36.99	-19.63
704.00	10	QPSK	H	123	266	1 / 49	16.61	3.50	17.96	0.063	34.77	-16.81	20.11	0.103	36.99	-16.88
707.50	10	QPSK	H	128	267	1 / 49	17.34	3.65	18.84	0.077	34.77	-15.93	20.99	0.126	36.99	-16.00
711.00	10	QPSK	H	129	262	1 / 49	17.37	3.70	18.92	0.078	34.77	-15.85	21.07	0.128	36.99	-15.92
711.00	10	16-QAM	H	129	262	1 / 49	16.10	3.70	17.65	0.058	34.77	-17.12	19.80	0.095	36.99	-17.19
711.00	10	64-QAM	H	129	262	1 / 49	15.99	3.70	17.54	0.057	34.77	-17.23	19.69	0.093	36.99	-17.30
711.00	10	QPSK	V	129	156	1 / 49	13.88	4.60	16.33	0.043	34.77	-18.44	18.48	0.070	36.99	-18.51

Table 7-6. ERP Data (Band 12/17)

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	102	282	1 / 0	12.46	5.80	16.11	0.041	34.77	-18.66	18.26	0.067	36.99	-18.73
782.00	5	QPSK	H	100	273	1 / 24	12.04	5.80	15.69	0.037	34.77	-19.08	17.84	0.061	36.99	-19.15
784.50	5	QPSK	H	102	283	1 / 24	12.32	5.90	16.07	0.040	34.77	-18.70	18.22	0.066	36.99	-18.77
779.50	5	16-QAM	H	102	282	1 / 24	10.95	5.80	14.60	0.029	34.77	-20.17	16.75	0.047	36.99	-20.24
779.50	5	64-QAM	H	102	282	1 / 24	10.92	5.80	14.57	0.029	34.77	-20.20	16.72	0.047	36.99	-20.27
782.00	10	QPSK	H	237	273	1 / 0	12.55	5.80	16.20	0.042	34.77	-18.57	18.35	0.068	36.99	-18.64
782.00	10	16-QAM	H	237	273	1 / 0	11.64	5.80	15.29	0.034	34.77	-19.48	17.44	0.055	36.99	-19.55
782.00	10	64-QAM	H	237	273	1 / 0	11.22	5.80	14.87	0.031	34.77	-19.90	17.02	0.050	36.99	-19.97
782.00	10	QPSK	V	154	260	1 / 0	11.98	5.80	15.63	0.037	34.77	-19.14	17.78	0.060	36.99	-19.21

Table 7-7. ERP Data (Band 13)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 188 of 225

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	145	255	1 / 5	14.94	7.12	19.91	0.098	38.45	-18.54	22.06	0.161	40.61	-18.55
836.50	1.4	QPSK	V	133	259	1 / 0	14.39	7.34	19.58	0.091	38.45	-18.87	21.73	0.149	40.61	-18.88
848.30	1.4	QPSK	V	143	254	1 / 0	13.74	7.55	19.14	0.082	38.45	-19.31	21.29	0.135	40.61	-19.31
824.70	1.4	16-QAM	V	145	255	1 / 5	14.38	7.12	19.35	0.086	38.45	-19.10	21.50	0.141	40.61	-19.11
824.70	1.4	64-QAM	V	145	255	1 / 0	14.14	7.12	19.11	0.081	38.45	-19.34	21.26	0.134	40.61	-19.35
825.50	3	QPSK	V	144	268	1 / 0	14.49	7.13	19.47	0.089	38.45	-18.98	21.62	0.145	40.61	-18.98
836.50	3	QPSK	V	146	256	1 / 14	14.56	7.34	19.75	0.094	38.45	-18.70	21.90	0.155	40.61	-18.71
847.50	3	QPSK	V	154	273	1 / 0	13.32	7.54	18.71	0.074	38.45	-19.74	20.86	0.122	40.61	-19.75
825.50	3	16-QAM	V	144	268	1 / 0	13.90	7.13	18.88	0.077	38.45	-19.57	21.03	0.127	40.61	-19.57
836.50	3	64-QAM	V	146	256	1 / 0	13.86	7.34	19.05	0.080	38.45	-19.40	21.20	0.132	40.61	-19.41
826.50	5	QPSK	V	148	243	1 / 0	14.59	7.15	19.59	0.091	38.45	-18.86	21.74	0.149	40.61	-18.86
836.50	5	QPSK	V	148	255	1 / 0	14.83	7.34	20.02	0.100	38.45	-18.43	22.17	0.165	40.61	-18.44
846.50	5	QPSK	V	144	248	1 / 0	14.08	7.52	19.45	0.088	38.45	-19.00	21.60	0.145	40.61	-19.01
836.50	5	16-QAM	V	148	255	1 / 0	14.17	7.34	19.36	0.086	38.45	-19.09	21.51	0.141	40.61	-19.10
836.50	5	64-QAM	V	148	255	1 / 0	13.84	7.34	19.03	0.080	38.45	-19.42	21.18	0.131	40.61	-19.43
829.00	10	QPSK	V	157	253	1 / 0	15.18	7.20	20.23	0.105	38.45	-18.22	22.38	0.173	40.61	-18.23
836.50	10	QPSK	V	142	257	1 / 0	14.96	7.34	20.15	0.103	38.45	-18.30	22.30	0.170	40.61	-18.31
844.00	10	QPSK	V	146	251	1 / 0	14.52	7.47	19.84	0.096	38.45	-18.61	21.99	0.158	40.61	-18.61
836.50	10	16-QAM	V	142	257	1 / 0	14.73	7.34	19.92	0.098	38.45	-18.53	22.07	0.161	40.61	-18.54
829.00	10	64-QAM	V	157	253	1 / 0	14.59	7.20	19.64	0.092	38.45	-18.81	21.79	0.151	40.61	-18.82
836.50	10	QPSK	H	144	267	1 / 0	13.42	7.08	18.35	0.068	38.45	-20.10	20.50	0.112	40.61	-20.10

Table 7-8. ERP Data (Band 26/5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
831.50	15	QPSK	V	146	246	1 / 0	15.12	7.24	20.21	0.105	38.45	-18.24	22.36	0.172	40.61	-18.24
836.50	15	QPSK	V	146	256	1 / 0	15.26	7.34	20.45	0.111	38.45	-18.00	22.60	0.182	40.61	-18.01
841.50	15	QPSK	V	150	245	1 / 0	14.88	7.43	20.16	0.104	38.45	-18.29	22.31	0.170	40.61	-18.30
836.50	15	16-QAM	V	146	256	1 / 74	14.52	7.34	19.71	0.093	38.45	-18.74	21.86	0.153	40.61	-18.75
836.50	15	64-QAM	V	146	256	1 / 0	14.67	7.34	19.86	0.097	38.45	-18.59	22.01	0.159	40.61	-18.60

Table 7-9. ERP Data (Band 26)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 189 of 225

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	166	13	1 / 0	10.72	9.60	20.32	0.108	30.00	-9.68
1745.00	1.4	QPSK	H	168	10	1 / 0	12.87	9.48	22.35	0.172	30.00	-7.65
1779.30	1.4	QPSK	H	183	8	1 / 5	9.06	9.34	18.40	0.069	30.00	-11.60
1745.00	1.4	16-QAM	H	168	10	1 / 5	11.86	9.48	21.34	0.136	30.00	-8.66
1745.00	1.4	64-QAM	H	168	10	1 / 0	10.82	9.48	20.30	0.107	30.00	-9.70
1711.50	3	QPSK	H	173	15	1 / 0	10.72	9.60	20.32	0.108	30.00	-9.68
1745.00	3	QPSK	H	176	13	1 / 14	12.81	9.48	22.29	0.170	30.00	-7.71
1778.50	3	QPSK	H	169	8	1 / 0	9.12	9.34	18.46	0.070	30.00	-11.54
1745.00	3	16-QAM	H	176	13	1 / 14	11.72	9.48	21.20	0.132	30.00	-8.80
1745.00	3	64-QAM	H	176	13	1 / 14	10.66	9.48	20.14	0.103	30.00	-9.86
1712.50	5	QPSK	H	180	9	1 / 24	10.97	9.59	20.56	0.114	30.00	-9.44
1745.00	5	QPSK	H	172	7	1 / 0	12.97	9.48	22.45	0.176	30.00	-7.55
1777.50	5	QPSK	H	173	5	1 / 0	9.63	9.35	18.98	0.079	30.00	-11.02
1745.00	5	16-QAM	H	172	7	1 / 0	12.05	9.48	21.53	0.142	30.00	-8.47
1745.00	5	64-QAM	H	172	7	1 / 0	11.91	9.48	21.39	0.138	30.00	-8.61
1715.00	10	QPSK	H	183	8	1 / 49	12.06	9.59	21.65	0.146	30.00	-8.35
1745.00	10	QPSK	H	175	9	1 / 49	12.86	9.48	22.34	0.172	30.00	-7.66
1775.00	10	QPSK	H	172	7	1 / 49	9.79	9.36	19.15	0.082	30.00	-10.85
1745.00	10	16-QAM	H	175	9	1 / 49	11.84	9.48	21.32	0.136	30.00	-8.68
1745.00	10	64-QAM	H	175	9	1 / 49	11.84	9.48	21.32	0.136	30.00	-8.68
1717.50	15	QPSK	H	101	9	1 / 0	12.57	9.58	22.15	0.164	30.00	-7.85
1745.00	15	QPSK	H	100	2	1 / 74	12.77	9.48	22.25	0.168	30.00	-7.75
1772.50	15	QPSK	H	100	3	1 / 0	11.93	9.37	21.30	0.135	30.00	-8.70
1745.00	15	16-QAM	H	100	2	1 / 0	11.51	9.48	20.99	0.126	30.00	-9.01
1745.00	15	64-QAM	H	100	2	1 / 74	11.54	9.48	21.02	0.127	30.00	-8.98
1720.00	20	QPSK	H	101	10	1 / 0	12.17	9.57	21.74	0.149	30.00	-8.26
1745.00	20	QPSK	H	125	4	1 / 99	12.68	9.48	22.16	0.165	30.00	-7.84
1770.00	20	QPSK	H	100	3	1 / 0	11.95	9.38	21.33	0.136	30.00	-8.67
1745.00	20	16-QAM	H	125	4	1 / 99	11.51	9.48	20.99	0.126	30.00	-9.01
1745.00	20	64-QAM	H	125	4	1 / 99	11.48	9.48	20.96	0.125	30.00	-9.04
1745.00	5	QPSK	V	243	314	1 / 0	11.82	9.48	21.30	0.135	30.00	-8.70

Table 7-10. EIRP Data (Band 66/4)

FCC ID: ZNFQ720PS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1-ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset	Page 190 of 225

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	157	5	1 / 5	10.20	9.07	19.27	0.084	33.01	-13.75
1882.50	1.4	QPSK	H	159	12	1 / 5	12.26	9.16	21.42	0.139	33.01	-11.60
1914.30	1.4	QPSK	H	150	10	1 / 5	9.65	9.31	18.96	0.079	33.01	-14.05
1882.50	1.4	16-QAM	H	159	12	1 / 0	11.84	9.16	21.00	0.126	33.01	-12.02
1882.50	1.4	64-QAM	H	159	12	1 / 5	11.68	9.16	20.84	0.121	33.01	-12.18
1851.50	3	QPSK	H	159	13	1 / 14	10.20	9.07	19.27	0.084	33.01	-13.74
1882.50	3	QPSK	H	155	15	1 / 0	12.63	9.16	21.79	0.151	33.01	-11.23
1913.50	3	QPSK	H	150	4	1 / 0	9.41	9.30	18.71	0.074	33.01	-14.30
1882.50	3	16-QAM	H	155	15	1 / 14	12.36	9.16	21.52	0.142	33.01	-11.50
1882.50	3	64-QAM	H	155	15	1 / 0	12.18	9.16	21.34	0.136	33.01	-11.68
1852.50	5	QPSK	H	155	2	1 / 24	10.70	9.07	19.77	0.095	33.01	-13.24
1882.50	5	QPSK	H	155	9	1 / 0	12.73	9.16	21.89	0.154	33.01	-11.13
1912.50	5	QPSK	H	151	12	1 / 0	10.14	9.29	19.43	0.088	33.01	-13.58
1882.50	5	16-QAM	H	155	9	1 / 0	12.30	9.16	21.46	0.140	33.01	-11.56
1882.50	5	64-QAM	H	155	9	1 / 0	12.12	9.16	21.28	0.134	33.01	-11.74
1855.00	10	QPSK	H	121	9	1 / 49	11.85	9.08	20.93	0.124	33.01	-12.08
1882.50	10	QPSK	H	157	15	1 / 49	12.53	9.16	21.69	0.147	33.01	-11.33
1910.00	10	QPSK	H	119	8	1 / 0	10.01	9.27	19.28	0.085	33.01	-13.73
1882.50	10	16-QAM	H	157	15	1 / 0	12.17	9.16	21.33	0.136	33.01	-11.69
1882.50	10	64-QAM	H	157	15	1 / 49	12.24	9.16	21.40	0.138	33.01	-11.62
1857.50	15	QPSK	H	159	7	1 / 74	11.31	9.08	20.39	0.110	33.01	-12.62
1882.50	15	QPSK	H	153	16	1 / 0	12.18	9.16	21.34	0.136	33.01	-11.68
1907.50	15	QPSK	H	146	18	1 / 0	11.36	9.26	20.62	0.115	33.01	-12.39
1882.50	15	16-QAM	H	153	16	1 / 0	11.54	9.16	20.70	0.117	33.01	-12.32
1882.50	15	64-QAM	H	153	16	1 / 0	11.72	9.16	20.88	0.122	33.01	-12.14
1860.00	20	QPSK	H	153	4	1 / 99	12.12	9.09	21.21	0.132	33.01	-11.80
1882.50	20	QPSK	H	157	15	1 / 0	12.25	9.16	21.41	0.138	33.01	-11.61
1905.00	20	QPSK	H	144	10	1 / 0	11.49	9.24	20.73	0.118	33.01	-12.28
1882.50	20	16-QAM	H	157	15	1 / 0	11.80	9.16	20.96	0.125	33.01	-12.06
1882.50	20	64-QAM	H	157	15	1 / 0	11.79	9.16	20.95	0.124	33.01	-12.07
1882.50	5	QPSK	V	115	49	1 / 0	11.84	9.09	20.93	0.124	33.01	-12.08

Table 7-11. EIRP Data (Band 25/2)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 191 of 225

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	V	161	13	1 / 0	17.17	8.37	25.54	0.358	33.01	-7.47
2593.00	5	QPSK	V	151	11	1 / 0	15.75	8.42	24.17	0.261	33.01	-8.84
2687.50	5	QPSK	V	163	4	1 / 24	14.31	8.67	22.98	0.199	33.01	-10.03
2498.50	5	16-QAM	V	161	13	1 / 0	17.14	8.37	25.51	0.356	33.01	-7.50
2498.50	5	64-QAM	V	161	13	1 / 0	16.82	8.37	25.19	0.330	33.01	-7.82
2501.00	10	QPSK	V	119	20	1 / 49	16.62	8.37	24.99	0.316	33.01	-8.02
2593.00	10	QPSK	V	104	27	1 / 0	16.01	8.42	24.43	0.277	33.01	-8.58
2685.00	10	QPSK	V	117	27	1 / 49	15.94	8.66	24.60	0.289	33.01	-8.41
2685.00	10	16-QAM	V	117	27	1 / 49	15.60	8.66	24.26	0.267	33.01	-8.75
2685.00	10	64-QAM	V	117	27	1 / 49	15.60	8.66	24.26	0.267	33.01	-8.75
2503.50	15	QPSK	V	113	21	1 / 74	16.23	8.37	24.60	0.289	33.01	-8.41
2593.00	15	QPSK	V	121	9	1 / 74	15.78	8.42	24.20	0.263	33.01	-8.81
2682.50	15	QPSK	V	108	31	1 / 74	15.55	8.66	24.21	0.263	33.01	-8.80
2682.50	15	16-QAM	V	108	31	1 / 74	15.52	8.66	24.18	0.262	33.01	-8.83
2682.50	15	64-QAM	V	108	31	1 / 74	15.52	8.66	24.18	0.262	33.01	-8.83
2506.00	20	QPSK	V	115	13	1 / 0	14.39	8.37	22.76	0.189	33.01	-10.25
2593.00	20	QPSK	V	119	8	1 / 0	15.68	8.42	24.10	0.257	33.01	-8.91
2680.00	20	QPSK	V	113	20	1 / 0	15.06	8.65	23.71	0.235	33.01	-9.30
2593.00	20	16-QAM	V	119	8	1 / 0	15.41	8.42	23.83	0.241	33.01	-9.18
2593.00	20	64-QAM	V	119	8	1 / 99	15.07	8.42	23.49	0.223	33.01	-9.52
2498.50	5	QPSK	H	161	6	1 / 0	15.31	8.37	23.68	0.233	33.01	-9.33

Table 7-12. EIRP Data (Band 41 PC2)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	V	155	18	1 / 0	14.27	8.37	22.64	0.184	33.01	-10.37

Table 7-13. EIRP Data (Band 41 PC3)

FCC ID: ZNFQ720PS			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset			Page 192 of 225

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

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Test Setup

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

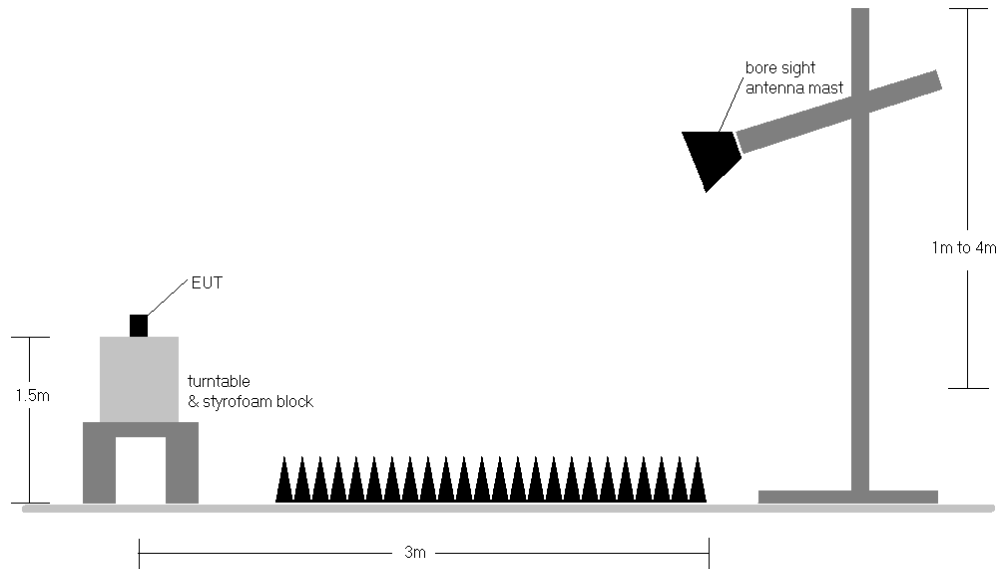


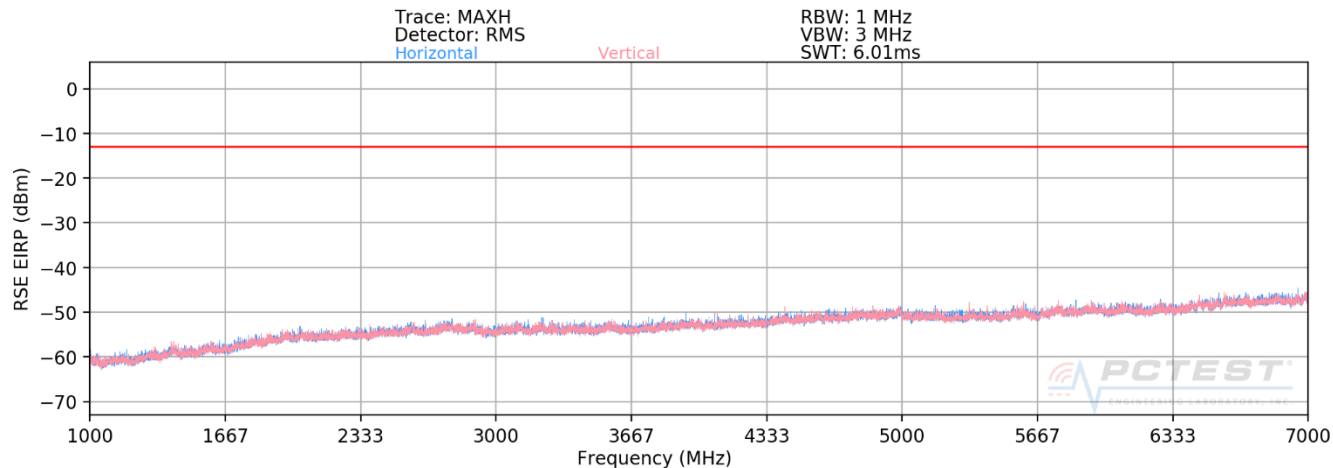
Figure 7-8. Test Instrument & Measurement Setup

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.

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Band 71



Plot 7-315. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY: 673.00 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 20.0 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	H	182	213	-65.87	2.91	-62.96	-50.0
2019.00	H	166	185	-61.43	2.82	-58.60	-45.6
2692.00	H	-	-	-67.58	4.53	-63.05	-50.0
3365.00	H	-	-	-68.63	6.10	-62.53	-49.5

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

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 195 of 225

OPERATING FREQUENCY: 680.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	H	274	200	-63.87	2.88	-60.99	-48.0
2041.50	H	144	202	-60.82	2.73	-58.09	-45.1
2722.00	H	-	-	-67.28	4.63	-62.65	-49.7
3402.50	H	-	-	-68.15	6.26	-61.89	-48.9

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

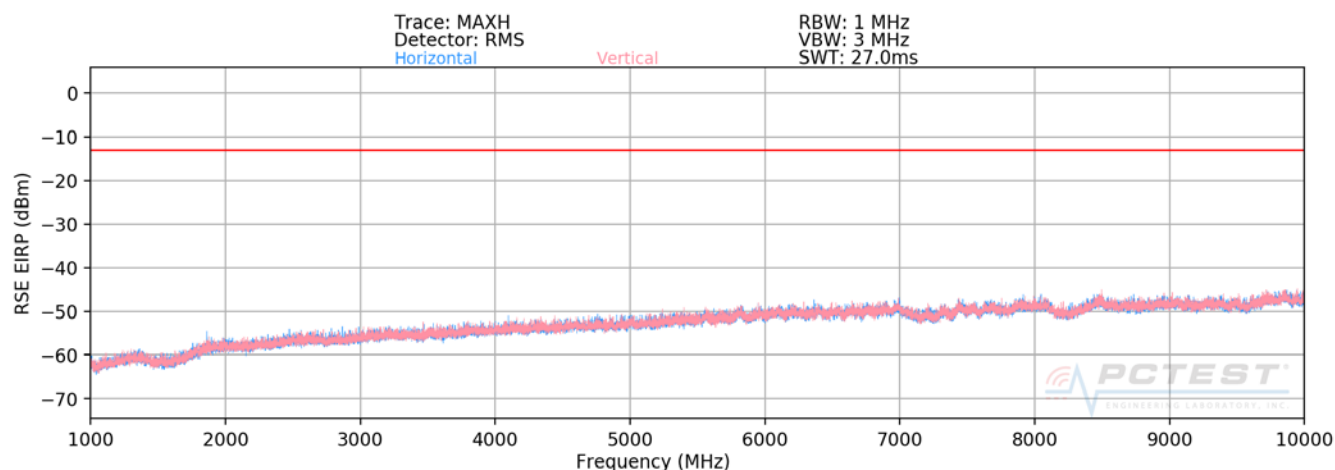
OPERATING FREQUENCY: 688.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	H	196	209	-58.81	2.64	-56.17	-43.2
2064.00	H	144	166	-57.74	2.82	-54.92	-41.9
2752.00	H	-	-	-66.70	4.60	-62.09	-49.1
3440.00	H	-	-	-67.86	6.28	-61.58	-48.6

Table 7-16. Radiated Spurious Data (Band 71 – High Channel)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12/17



Plot 7-316. Radiated Spurious Plot above 1GHz (Band 12/17)

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	V	117	70	-64.49	2.30	-62.19	-49.2
2112.00	V	129	61	-45.42	3.12	-42.30	-29.3
2816.00	V	-	-	-66.28	4.82	-61.46	-48.5
3520.00	V	-	-	-67.63	6.48	-61.15	-48.1

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

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 197 of 225

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	V	310	323	-66.10	2.39	-63.71	-50.7
2122.50	V	123	52	-45.42	3.14	-42.27	-29.3
2830.00	V	-	-	-66.60	4.87	-61.73	-48.7
3537.50	V	-	-	-66.30	6.45	-59.84	-46.8

Table 7-18. Radiated Spurious Data (Band 12/17 – Mid Channel)

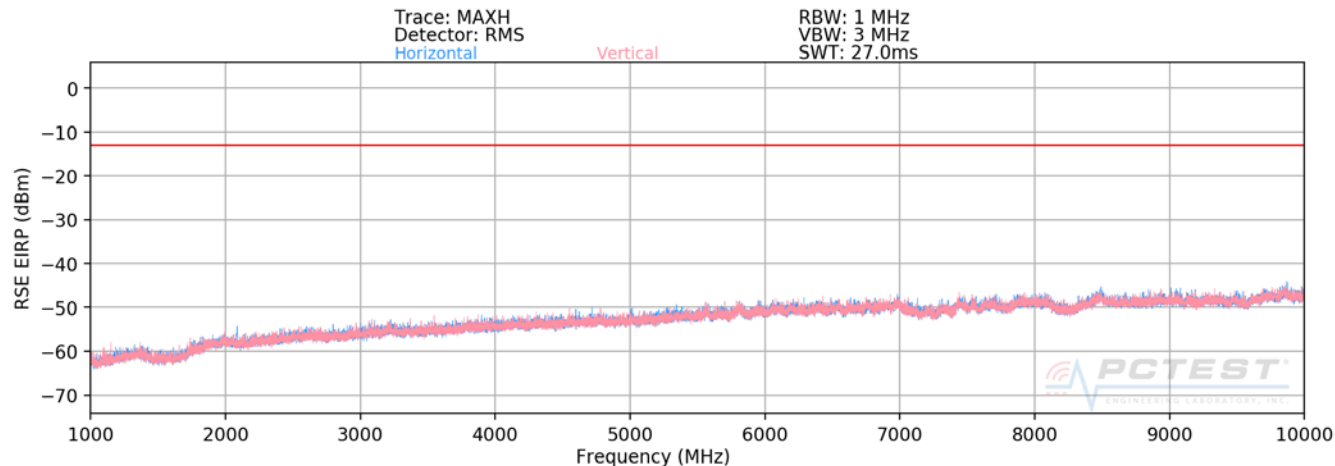
OPERATING FREQUENCY: 711.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	V	-	-	-68.43	2.53	-65.90	-52.9
2133.00	V	121	59	-49.36	3.11	-46.25	-33.3
2844.00	V	-	-	-66.78	4.91	-61.88	-48.9
3555.00	V	-	-	-65.73	6.46	-59.28	-46.3

Table 7-19. Radiated Spurious Data (Band 12/17 – High Channel)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13



Plot 7-317. 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	121	219	-62.71	3.64	-59.08	-46.1
3128.00	H	-	-	-67.17	5.73	-61.43	-48.4
3910.00	H	-	-	-67.78	7.25	-60.53	-47.5

Table 7-20. Radiated Spurious Data (Band 13 – Mid Channel)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 199 of 225

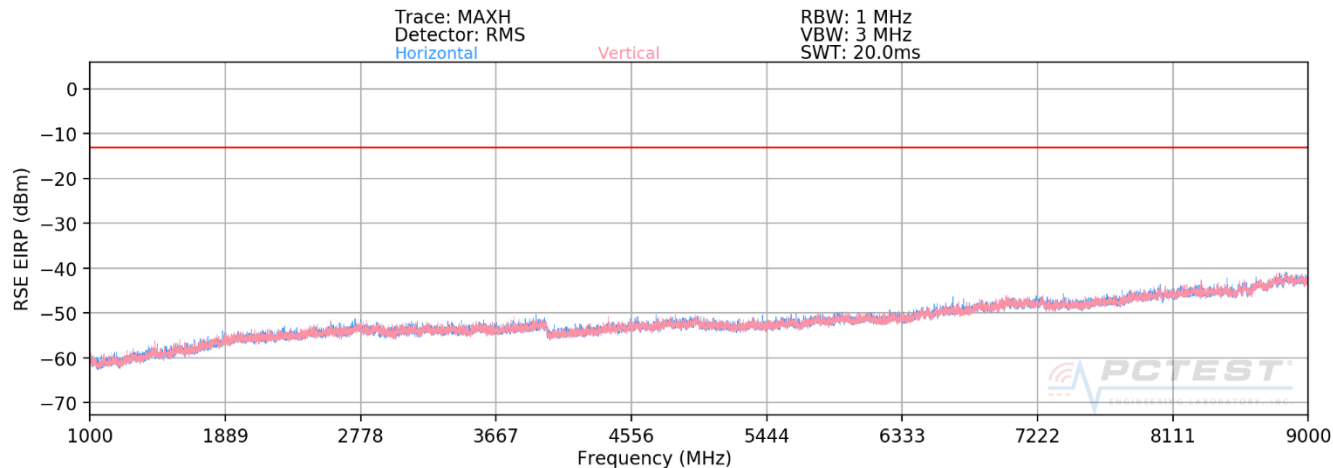
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

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	-	-	-68.78	2.93	-65.85	-25.8

Table 7-21. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 200 of 225

Band 26/5



Plot 7-318. 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	-	-	-69.13	3.12	-66.01	-53.0
2487.00	H	-	-	-66.85	3.87	-62.98	-50.0
3316.00	H	-	-	-68.54	6.01	-62.53	-49.5

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

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 201 of 225

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	-	-	-69.13	3.10	-66.03	-53.0
2509.50	H	173	7	-65.04	4.02	-61.03	-48.0
3346.00	H	-	-	-67.85	6.03	-61.82	-48.8
4182.50	H	-	-	-69.39	7.79	-61.59	-48.6

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

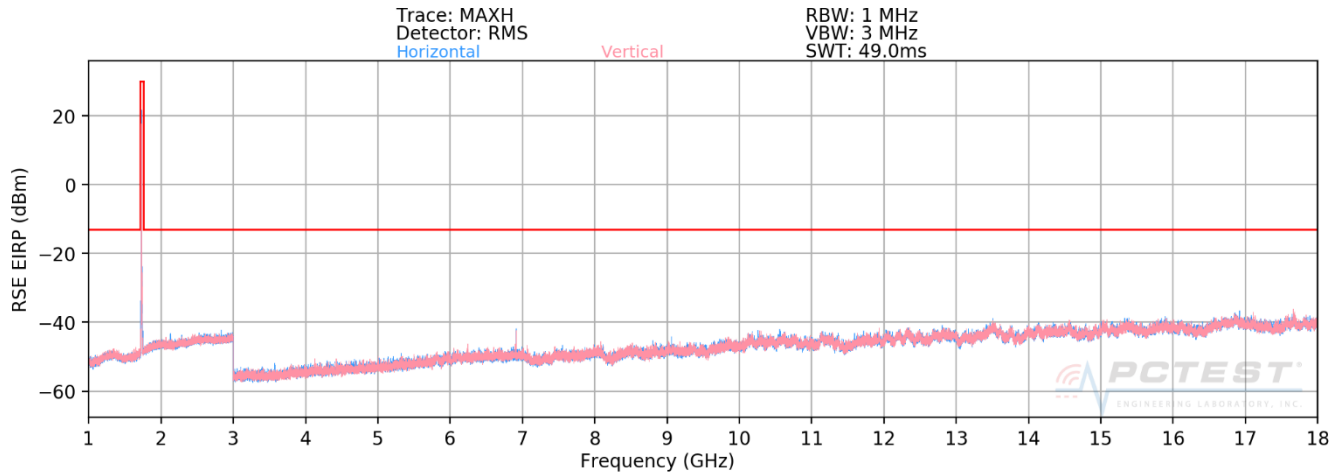
OPERATING FREQUENCY: 844.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	H	-	-	-69.08	3.18	-65.90	-52.9
2532.00	H	-	-	-66.93	4.10	-62.83	-49.8
3376.00	H	-	-	-67.83	6.15	-61.69	-48.7

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

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 202 of 225

Band 66/4



Plot 7-319. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY: 1712.50 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 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]
3425.00	V	137	352	-56.66	6.27	-50.39	-37.4
5137.50	V	114	119	-51.21	8.94	-42.27	-29.3
6850.00	V	146	29	-56.16	9.44	-46.72	-33.7
8562.50	V	117	17	-58.61	9.58	-49.03	-36.0
10275.00	V	121	3	-59.13	9.61	-49.51	-36.5
11987.50	V	-	-	-59.27	9.20	-50.06	-37.1
13700.00	V	-	-	-56.40	8.76	-47.64	-34.6

Table 7-25. Radiated Spurious Data (Band 66/4 – Low Channel)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset			Page 203 of 225

OPERATING FREQUENCY: 1745.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 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	V	125	350	-65.34	6.47	-58.87	-45.9
5235.00	V	161	43	-68.64	8.97	-59.67	-46.7
6980.00	V	129	31	-59.52	9.23	-50.29	-37.3
8725.00	V	-	-	-65.10	9.59	-55.51	-42.5
10470.00	V	-	-	-61.21	9.43	-51.78	-38.8

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

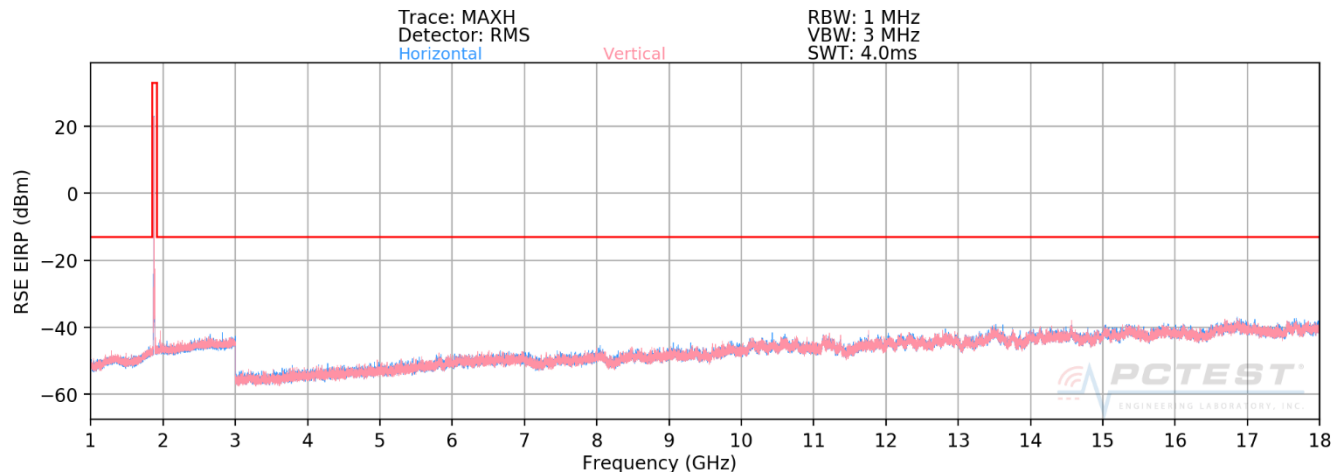
OPERATING FREQUENCY: 1777.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
3555.00	V	157	228	-66.40	6.46	-59.95	-46.9
5332.50	V	211	16	-67.09	9.04	-58.05	-45.1
7110.00	V	121	201	-61.30	9.17	-52.13	-39.1
8887.50	V	-	-	-64.00	9.53	-54.47	-41.5
10665.00	V	333	348	-60.22	9.53	-50.69	-37.7
12442.50	V	-	-	-59.14	9.04	-50.10	-37.1
14220.00	V	-	-	-55.73	8.53	-47.20	-34.2

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

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2



Plot 7-320. Radiated Spurious Plot above 1GHz (Band 25/2)

OPERATING FREQUENCY: 1852.50 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 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]
3705.00	H	331	314	-66.95	6.89	-60.06	-47.1
5557.50	H	110	298	-68.17	9.03	-59.15	-46.1
7410.00	H	209	328	-60.77	9.23	-51.54	-38.5
9262.50	H	-	-	-63.26	9.44	-53.82	-40.8
11115.00	H	215	358	-60.13	9.45	-50.69	-37.7
12967.50	H	-	-	-57.58	8.75	-48.83	-35.8
14820.00	H	-	-	-55.42	8.65	-46.77	-33.8

Table 7-28. Radiated Spurious Data (Band 25/2 – Low Channel)

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset			Page 205 of 225

OPERATING FREQUENCY: 1882.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 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	197	310	-68.26	6.94	-61.32	-48.3
5647.50	H	-	-	-69.00	9.17	-59.84	-46.8
7530.00	H	195	321	-61.64	9.31	-52.33	-39.3
9412.50	H	-	-	-63.35	9.50	-53.85	-40.9
11295.00	H	174	10	-61.17	9.49	-51.68	-38.7
13177.50	H	-	-	-57.47	8.73	-48.74	-35.7
15060.00	H	-	-	-55.79	8.89	-46.90	-33.9

Table 7-29. Radiated Spurious Data (Band 25/2 – Mid Channel)

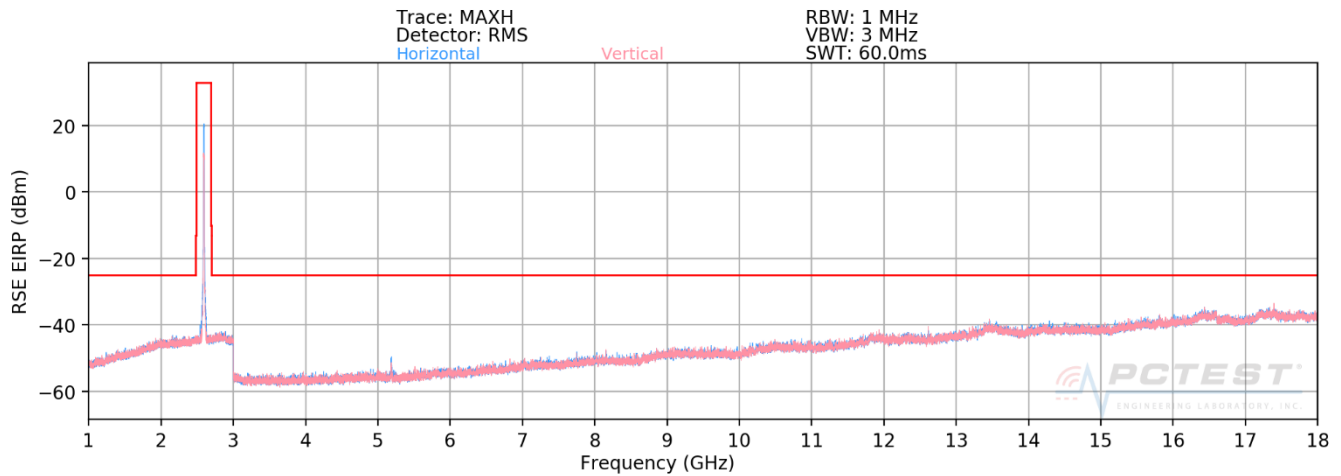
OPERATING FREQUENCY: 1912.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
3825.00	H	337	330	-68.11	7.13	-60.98	-48.0
5737.50	H	-	-	-69.17	9.03	-60.14	-47.1
7650.00	H	172	315	-61.28	9.30	-51.97	-39.0
9562.50	H	-	-	-63.40	9.44	-53.96	-41.0
11475.00	H	174	0	-58.98	9.47	-49.50	-36.5
13387.50	H	-	-	-57.05	8.69	-48.36	-35.4
15300.00	H	-	-	-54.34	8.52	-45.81	-32.8

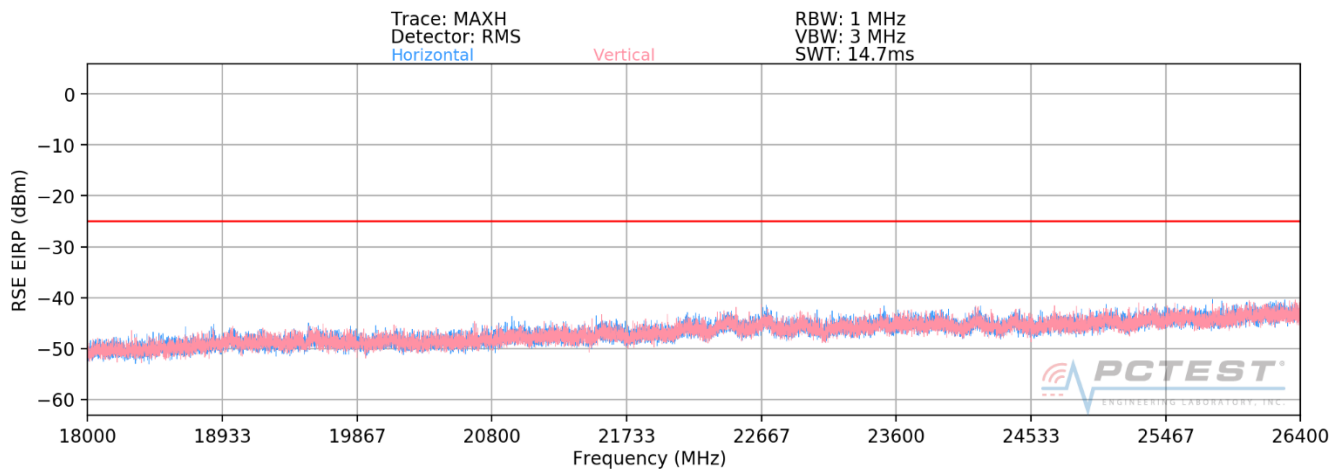
Table 7-30. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41 PC2



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



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

FCC ID: ZNFQ720PS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 207 of 225

OPERATING FREQUENCY: 2502.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 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]
5005.00	H	174	323	-50.84	8.73	-42.11	-17.1
7507.50	H	119	30	-57.06	9.32	-47.74	-22.7
10010.00	H	362	20	-46.65	9.82	-36.83	-11.8
12512.50	H	-	-	-50.93	8.93	-42.00	-17.0
15015.00	H	-	-	-46.59	8.79	-37.80	-12.8

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

OPERATING FREQUENCY: 2593.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 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	236	315	-49.95	9.03	-40.92	-15.9
7779.00	H	224	34	-56.66	9.29	-47.37	-22.4
10372.00	H	244	23	-49.36	9.50	-39.86	-14.9
12965.00	H	-	-	-50.12	8.75	-41.36	-16.4
15558.00	H	-	-	-46.28	8.47	-37.81	-12.8

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

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 208 of 225

OPERATING FREQUENCY: 2687.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 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]
5375.00	H	218	10	-42.85	8.99	-33.86	-8.9
8062.50	H	154	69	-56.15	9.38	-46.77	-21.8
10750.00	H	-	-	-53.49	9.36	-44.13	-19.1
13437.50	H	-	-	-49.00	8.62	-40.38	-15.4
16125.00	H	-	-	-44.79	8.43	-36.36	-11.4

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

Band 41 PC3

OPERATING FREQUENCY: 2687.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 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]
5375.00	H	190	17	-59.40	8.99	-50.41	-25.4

Table 7-34. Radiated Spurious Data (Band 41 – High Channel)

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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 $\pm 0.00025\%$ (± 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: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	- 30	680,500,236	236	0.0000347
100 %		- 20	680,500,109	109	0.0000160
100 %		- 10	680,499,921	-79	-0.0000116
100 %		0	680,499,882	-118	-0.0000173
100 %		+ 10	680,500,064	64	0.0000094
100 %		+ 20	680,500,058	58	0.0000085
100 %		+ 30	680,499,989	-11	-0.0000016
100 %		+ 40	680,500,068	68	0.0000100
100 %		+ 50	680,499,982	-18	-0.0000026
85 %		+ 20	680,500,049	49	0.0000072
BATT. ENDPOINT	3.50	+ 20	680,499,842	-158	-0.0000232

Table 7-35. 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.

FCC ID: ZNFQ720PS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 71 Frequency Stability Measurements

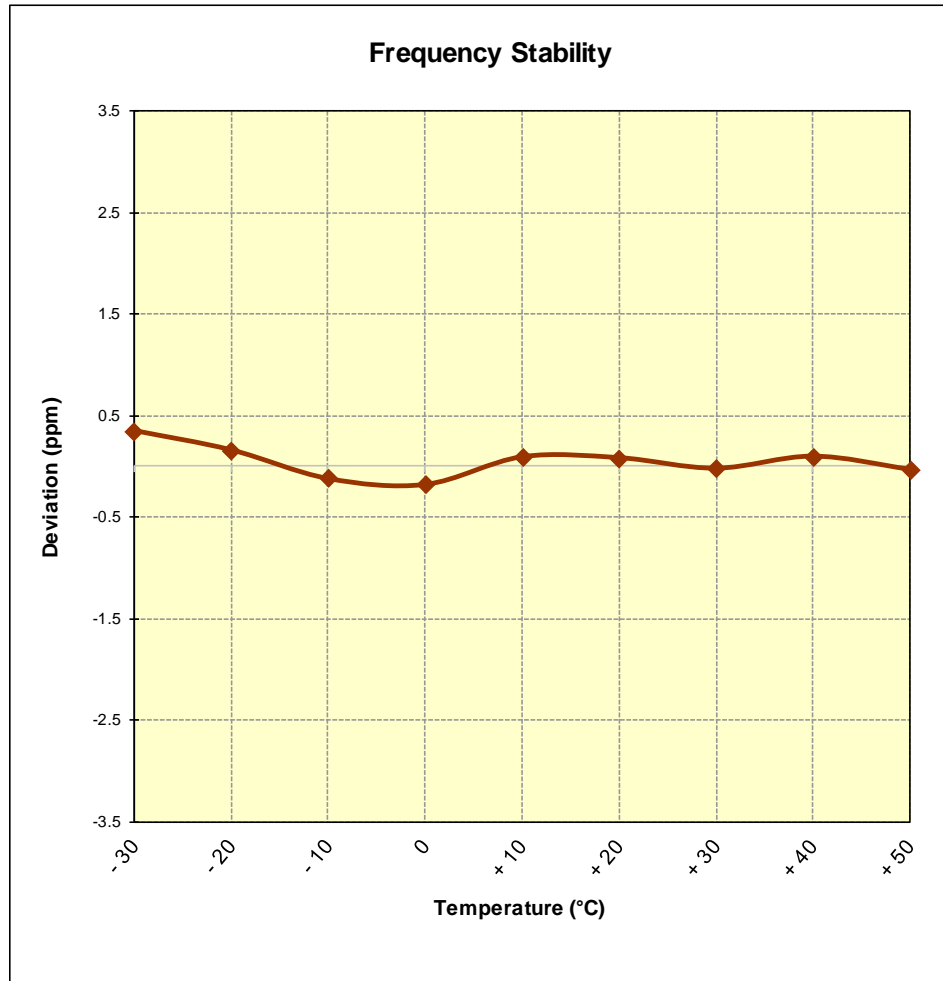


Figure 7-9. Frequency Stability Graph (Band 71)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12/17 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	- 30	707,500,151	151	0.0000213
100 %		- 20	707,500,024	24	0.0000034
100 %		- 10	707,500,142	142	0.0000201
100 %		0	707,499,926	-74	-0.0000105
100 %		+ 10	707,500,013	13	0.0000018
100 %		+ 20	707,500,136	136	0.0000192
100 %		+ 30	707,500,034	34	0.0000048
100 %		+ 40	707,499,777	-223	-0.0000315
100 %		+ 50	707,499,961	-39	-0.0000055
BATT. ENDPOINT	3.50	+ 20	707,499,778	-222	-0.0000314

Table 7-36. Frequency Stability Data (Band 12/17)

Note:

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

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12/17 Frequency Stability Measurements

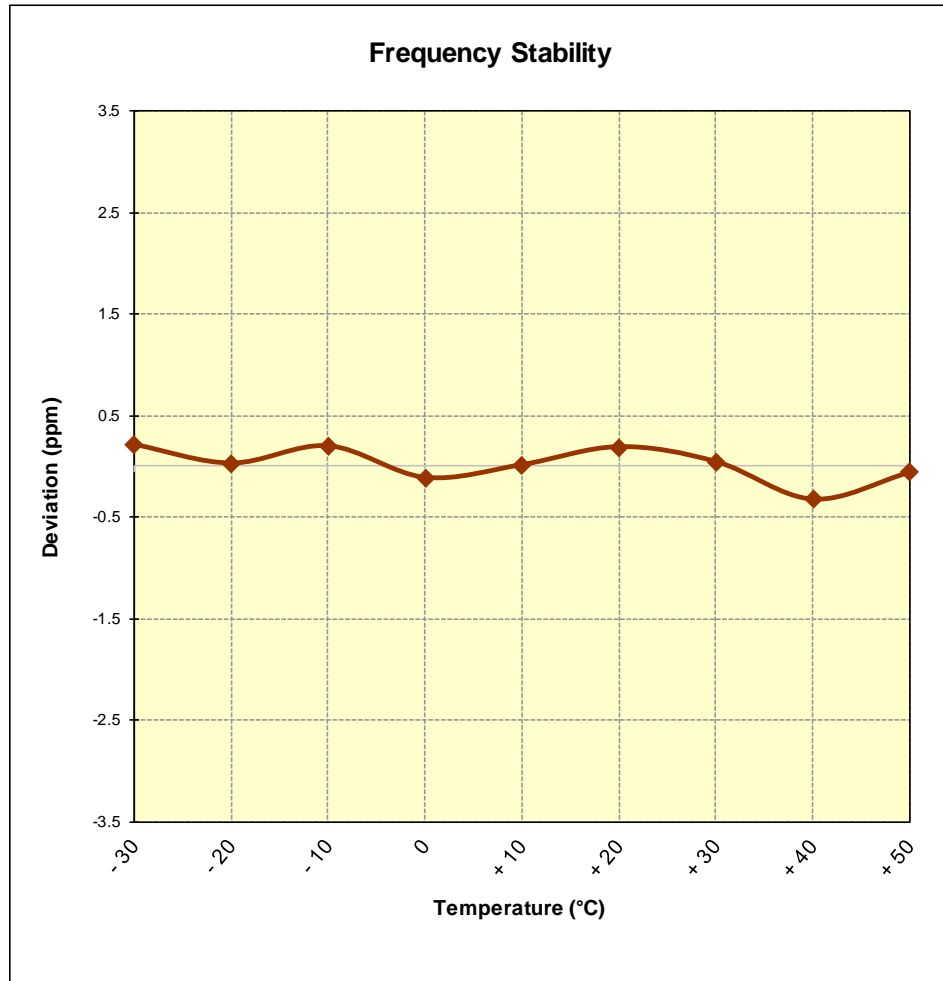


Figure 7-10. Frequency Stability Graph (Band 12/17)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz
 CHANNEL: 23230
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	- 30	782,000,003	3	0.0000004
100 %		- 20	782,000,334	334	0.0000427
100 %		- 10	782,000,035	35	0.0000045
100 %		0	781,999,981	-19	-0.0000024
100 %		+ 10	782,000,021	21	0.0000027
100 %		+ 20	782,000,284	284	0.0000363
100 %		+ 30	781,999,962	-38	-0.0000049
100 %		+ 40	781,999,909	-91	-0.0000116
100 %		+ 50	782,000,159	159	0.0000203
BATT. ENDPOINT	3.50	+ 20	781,999,793	-207	-0.0000265

Table 7-37. 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.

FCC ID: ZNFQ720PS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

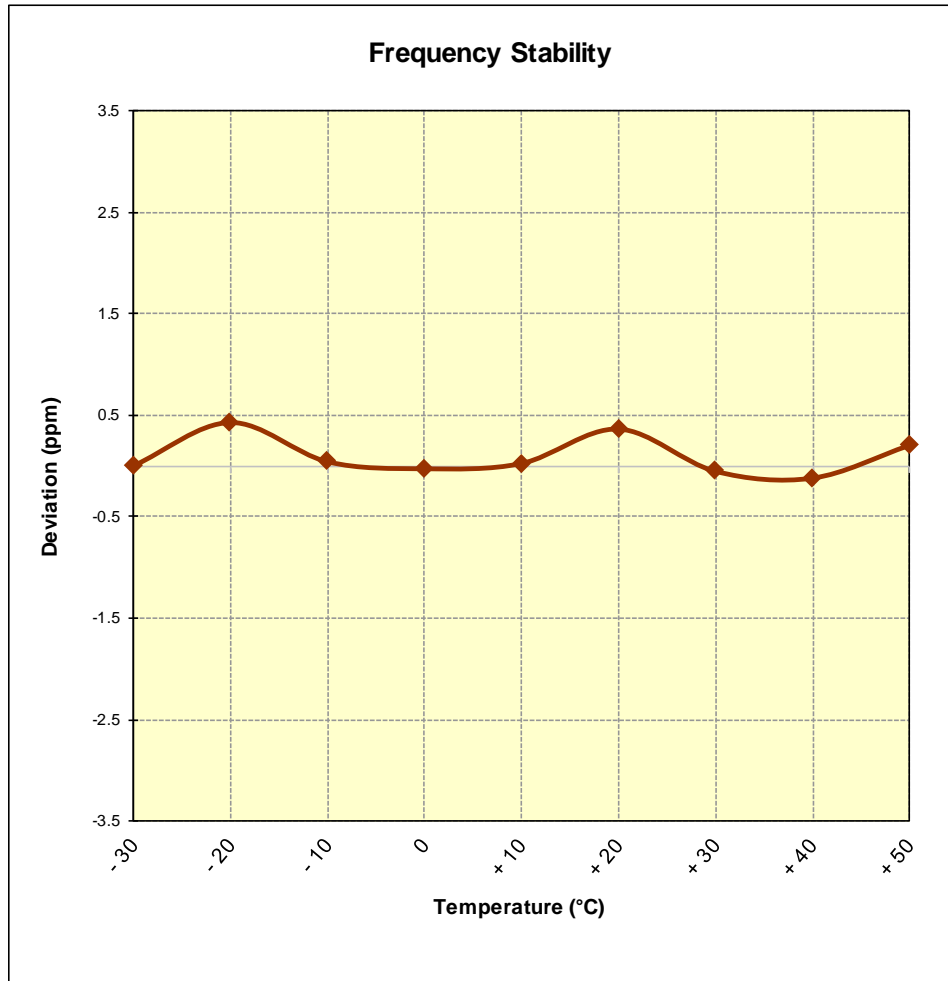


Figure 7-11. Frequency Stability Graph (Band 13)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz
 CHANNEL: 20525
 REFERENCE VOLTAGE: 4.34 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	- 30	836,499,830	-170	-0.0000203
100 %		- 20	836,499,975	-25	-0.0000030
100 %		- 10	836,499,999	-1	-0.0000001
100 %		0	836,499,976	-24	-0.0000029
100 %		+ 10	836,500,116	116	0.0000139
100 %		+ 20	836,500,106	106	0.0000127
100 %		+ 30	836,499,909	-91	-0.0000109
100 %		+ 40	836,499,847	-153	-0.0000183
100 %		+ 50	836,500,252	252	0.0000301
85 %		+ 20	836,500,022	22	0.0000026
BATT. ENDPOINT	3.50	+ 20	836,500,238	238	0.0000285

Table 7-38. Frequency Stability Data (Band 26/5)

FCC ID: ZNFQ720PS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements

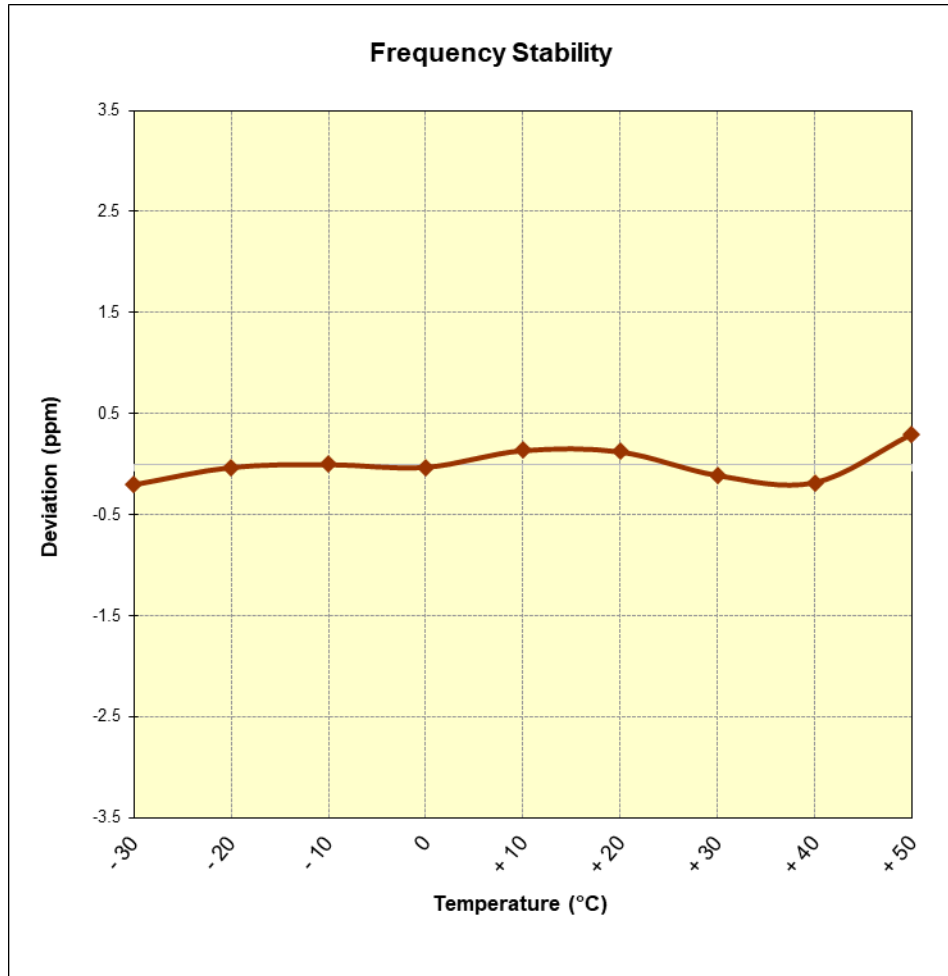


Figure 7-12. Frequency Stability Graph (Band 26/5)

FCC ID: ZNFQ720PS		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: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	- 30	1,744,999,841	-159	-0.0000091
100 %		- 20	1,744,999,927	-73	-0.0000042
100 %		- 10	1,744,999,846	-154	-0.0000088
100 %		0	1,745,000,126	126	0.0000072
100 %		+ 10	1,744,999,807	-193	-0.0000111
100 %		+ 20	1,744,999,962	-38	-0.0000022
100 %		+ 30	1,744,999,653	-347	-0.0000199
100 %		+ 40	1,744,999,770	-230	-0.0000132
100 %		+ 50	1,745,000,168	168	0.0000096
BATT. ENDPOINT	3.50	+ 20	1,745,000,004	4	0.0000002

Table 7-39. 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: ZNFQ720PS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

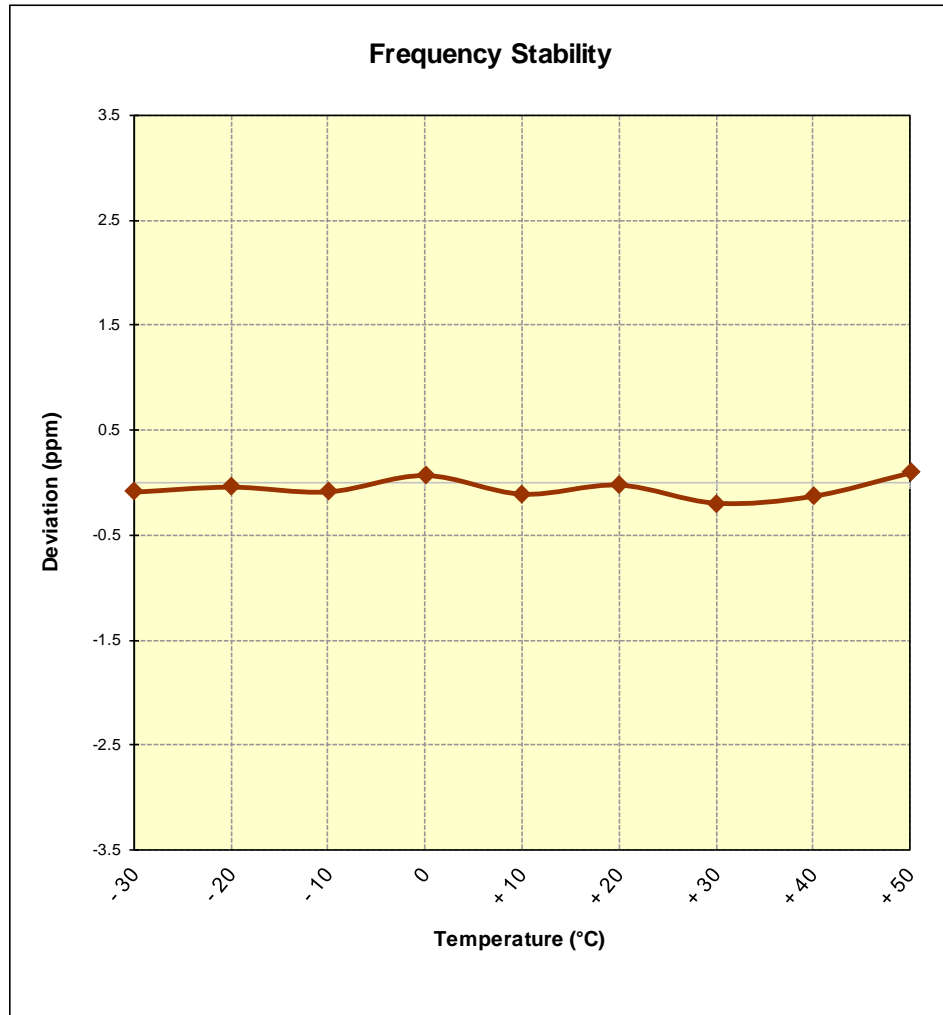


Figure 7-13. Frequency Stability Graph (Band 66/4)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		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: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	- 30	1,882,499,924	-76	-0.0000040
100 %		- 20	1,882,500,289	289	0.0000154
100 %		- 10	1,882,499,803	-197	-0.0000105
100 %		0	1,882,499,834	-166	-0.0000088
100 %		+ 10	1,882,499,971	-29	-0.0000015
100 %		+ 20	1,882,500,033	33	0.0000018
100 %		+ 30	1,882,499,959	-41	-0.0000022
100 %		+ 40	1,882,500,083	83	0.0000044
100 %		+ 50	1,882,500,049	49	0.0000026
BATT. ENDPOINT	3.50	+ 20	1,882,499,971	-29	-0.0000015

Table 7-40. Frequency Stability Data (Band 25/2)

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: ZNFQ720PS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

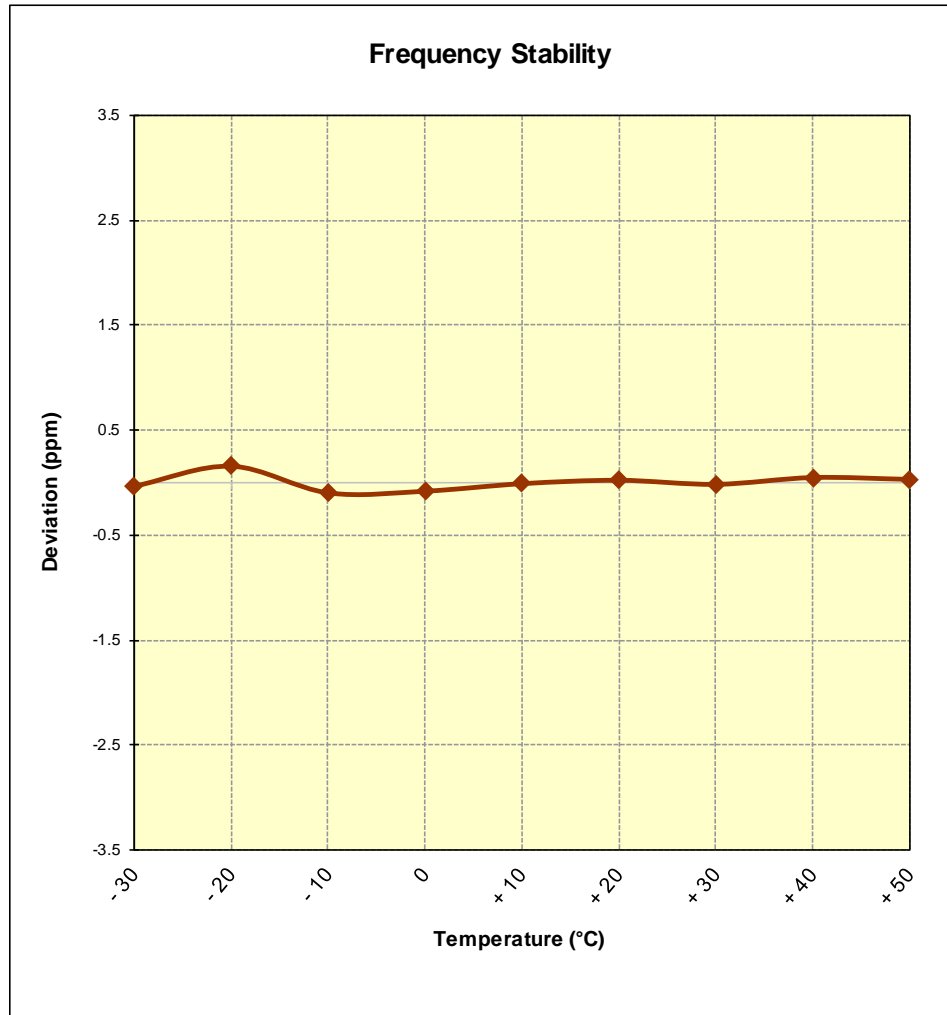


Figure 7-14. Frequency Stability Graph (Band 25/2)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz
 CHANNEL: 40620
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	- 30	2,592,999,981	-19	-0.0000007
100 %		- 20	2,593,000,174	174	0.0000067
100 %		- 10	2,593,000,002	2	0.0000001
100 %		0	2,592,999,793	-207	-0.0000080
100 %		+ 10	2,593,000,335	335	0.0000129
100 %		+ 20	2,592,999,973	-27	-0.0000010
100 %		+ 30	2,593,000,017	17	0.0000007
100 %		+ 40	2,593,000,001	1	0.0000000
100 %		+ 50	2,592,999,741	-259	-0.0000100
BATT. ENDPOINT	3.50	+ 20	2,592,999,555	-445	-0.0000172

Table 7-41. 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: ZNFQ720PS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

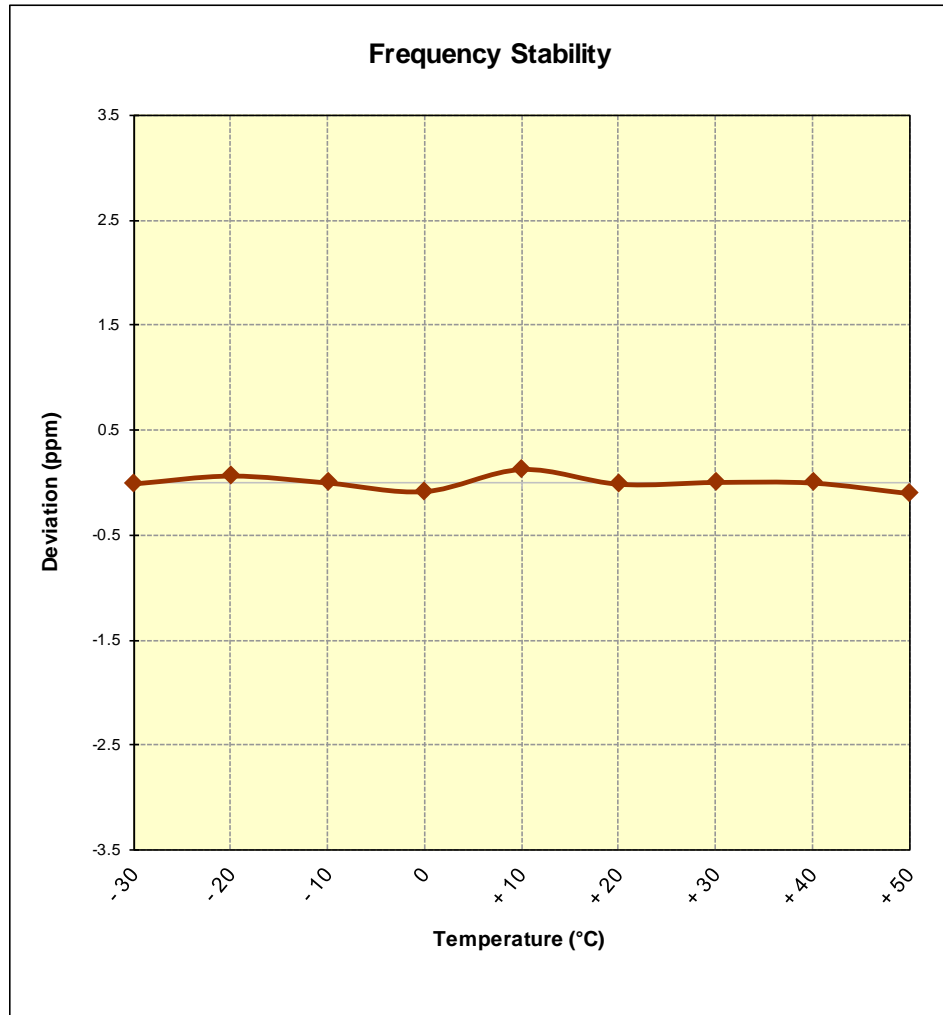


Figure 7-15. Frequency Stability Graph (Band 41)

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		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: ZNFQ720PS** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: ZNFQ720PS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903140039-03-R1.ZNF	Test Dates: 3/21 - 4/22/2019	EUT Type: Portable Handset		Page 225 of 225