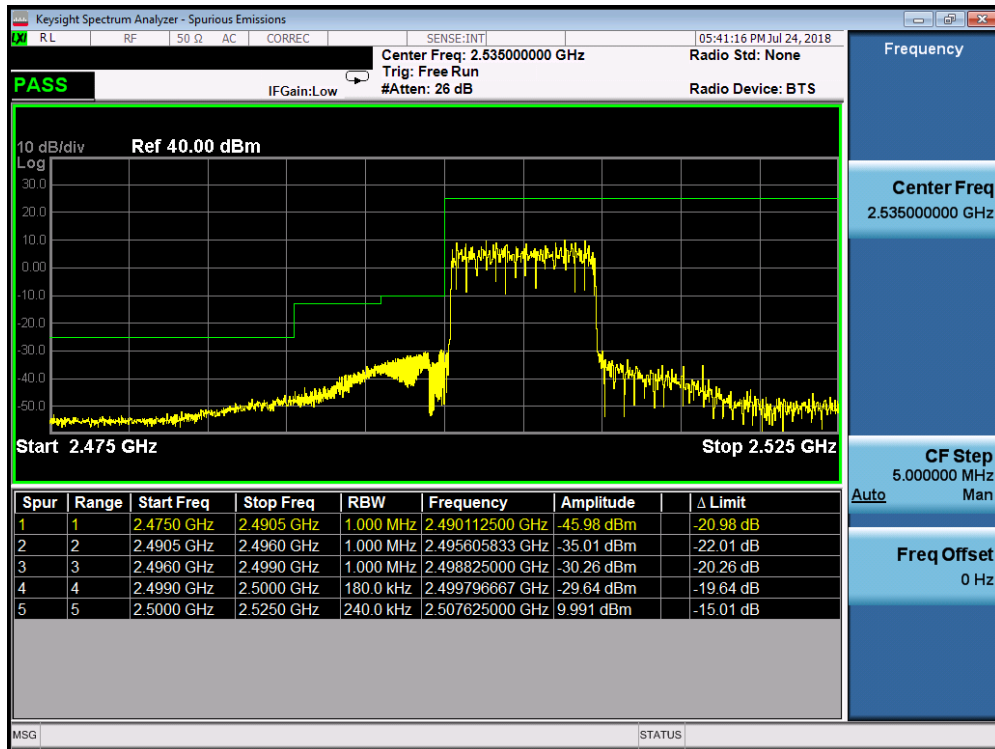


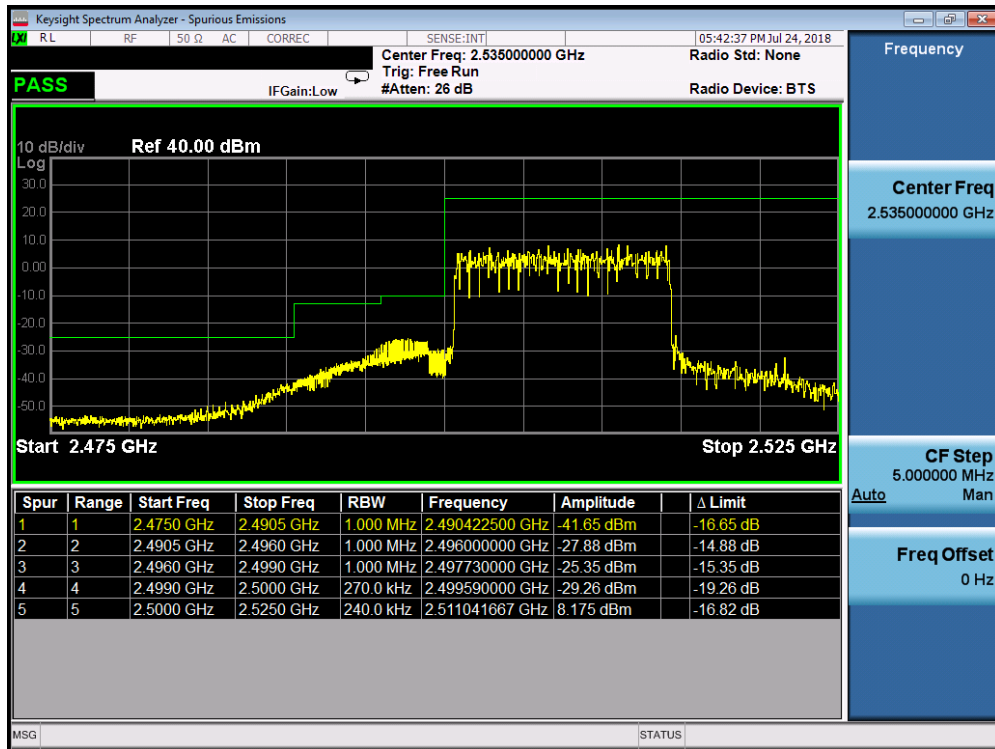


Plot 7-271. Lower ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 50)

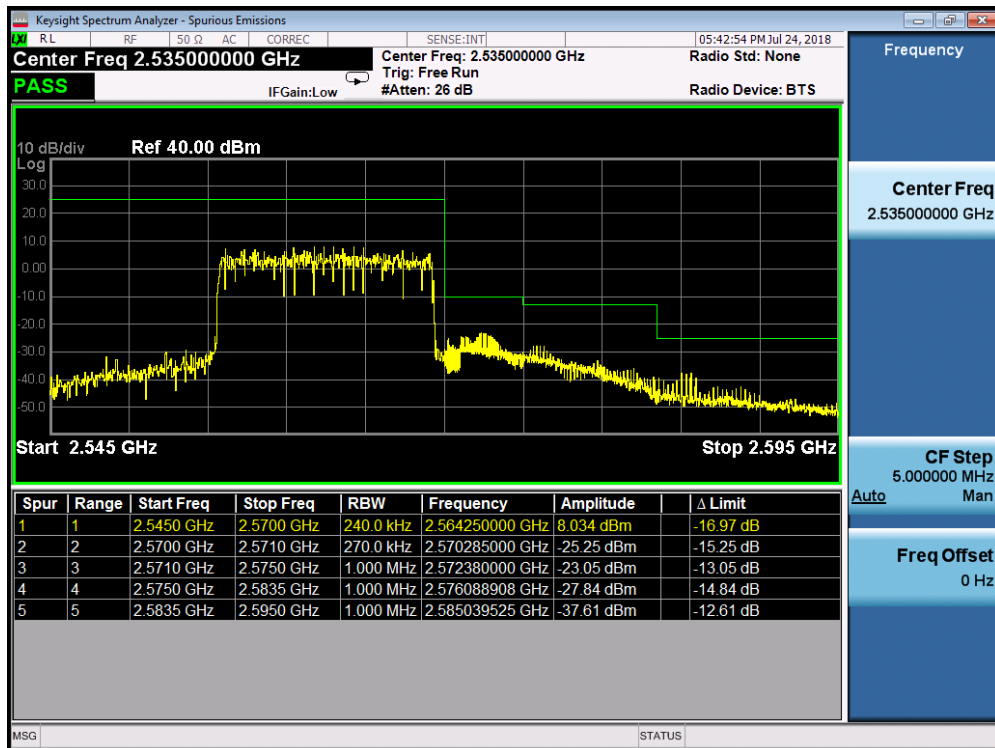


Plot 7-272. Upper ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 50)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 160 of 226

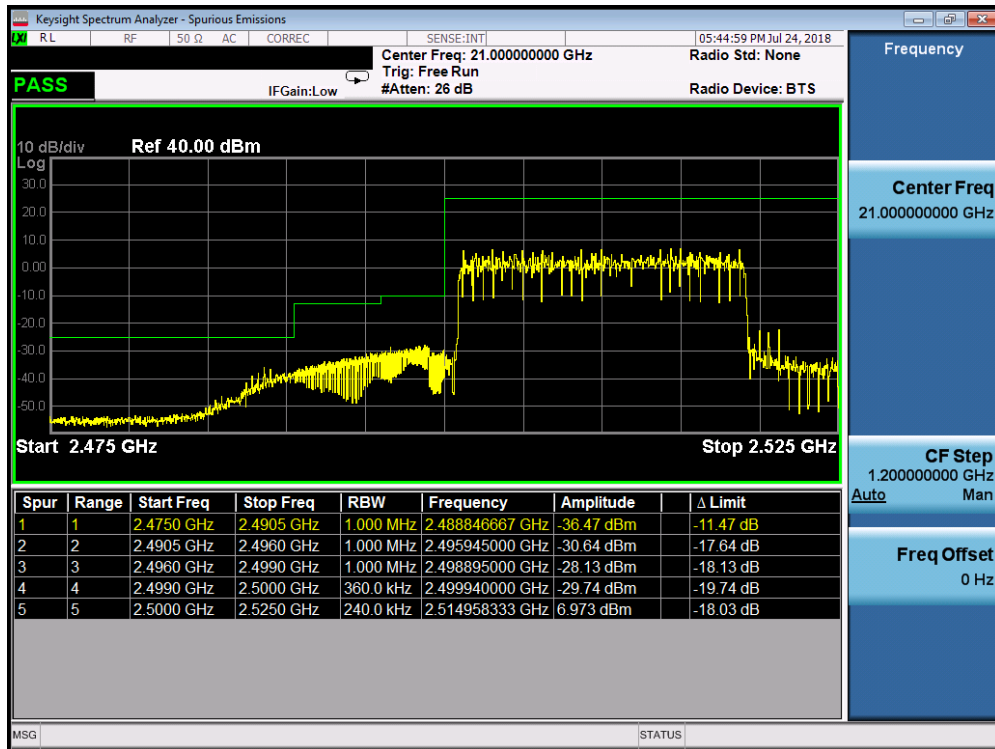


Plot 7-273. Lower ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)

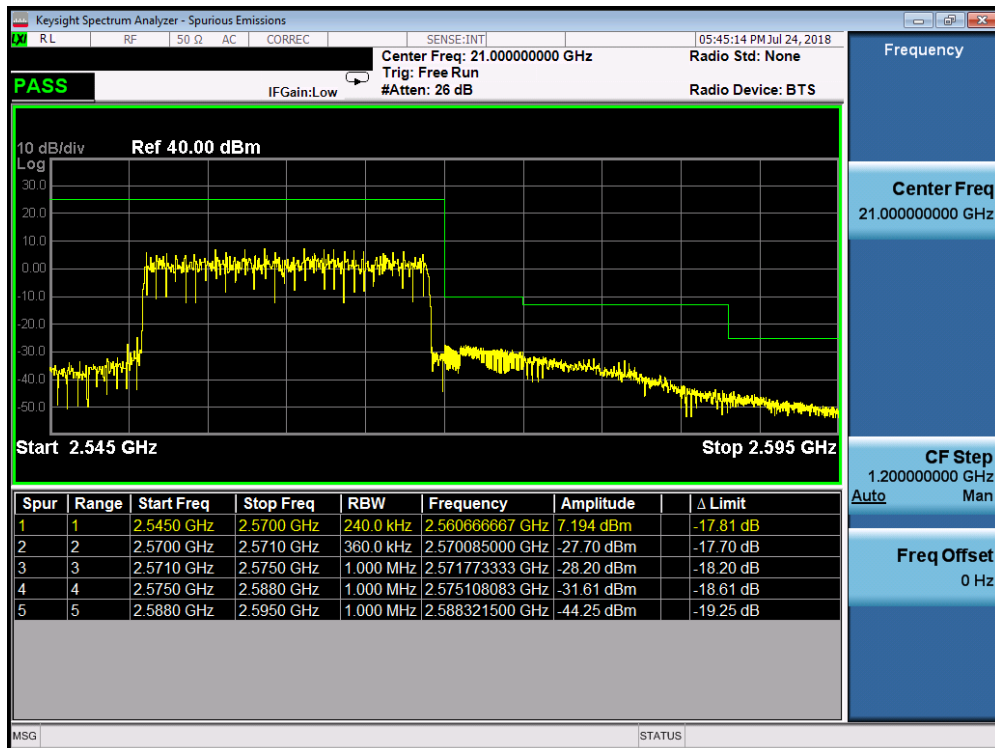


Plot 7-274. Upper ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 161 of 226



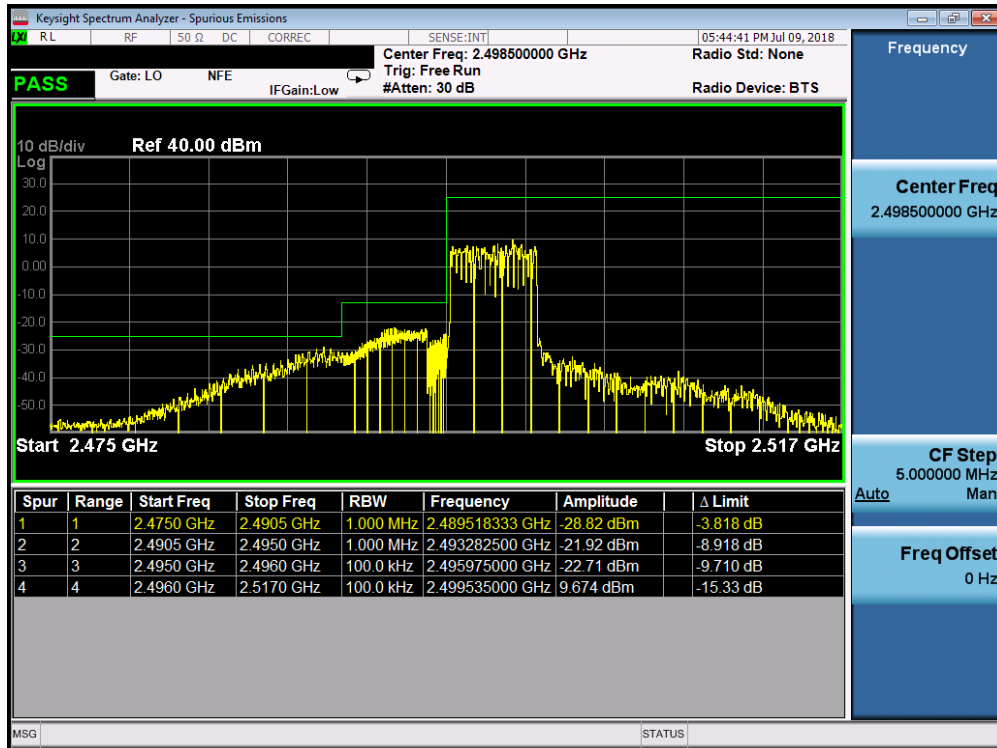
Plot 7-275. Lower ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)



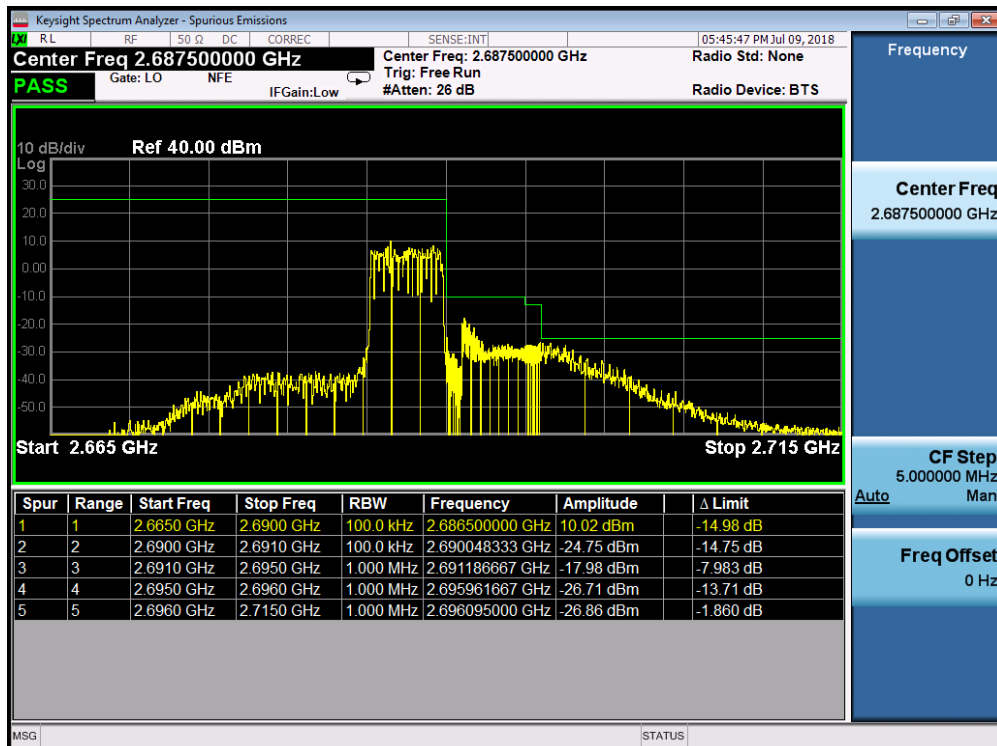
Plot 7-276. Upper ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 162 of 226

Band 41

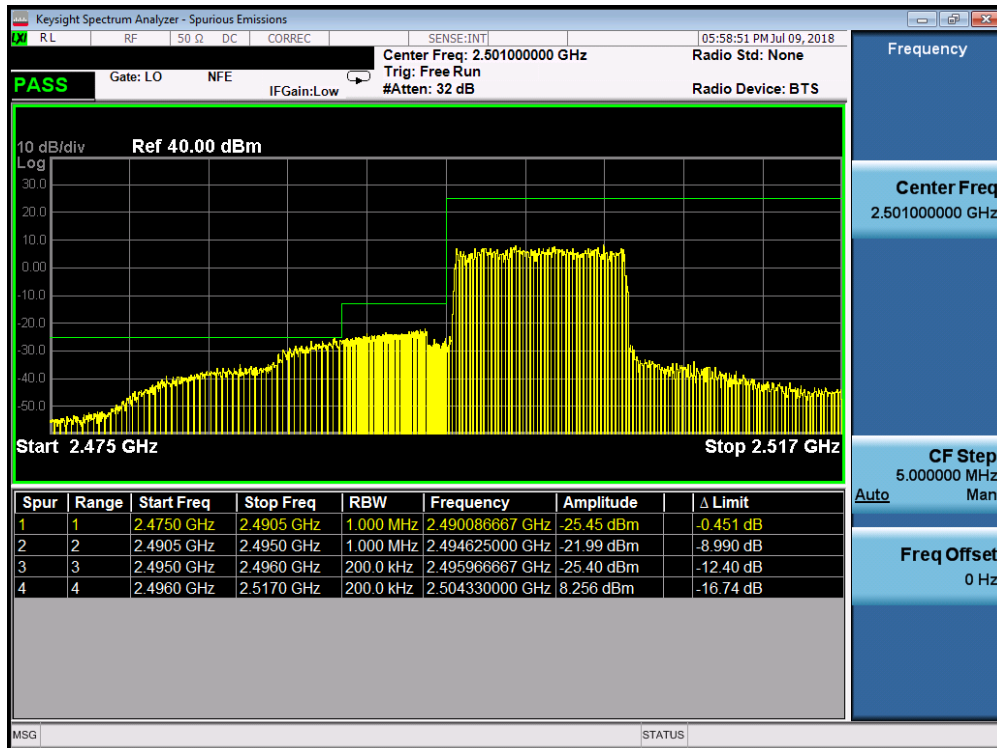


Plot 7-277. Lower ACP Plot at 2496 MHz (Band 41 - 5.0MHz QPSK - RB Size 25)

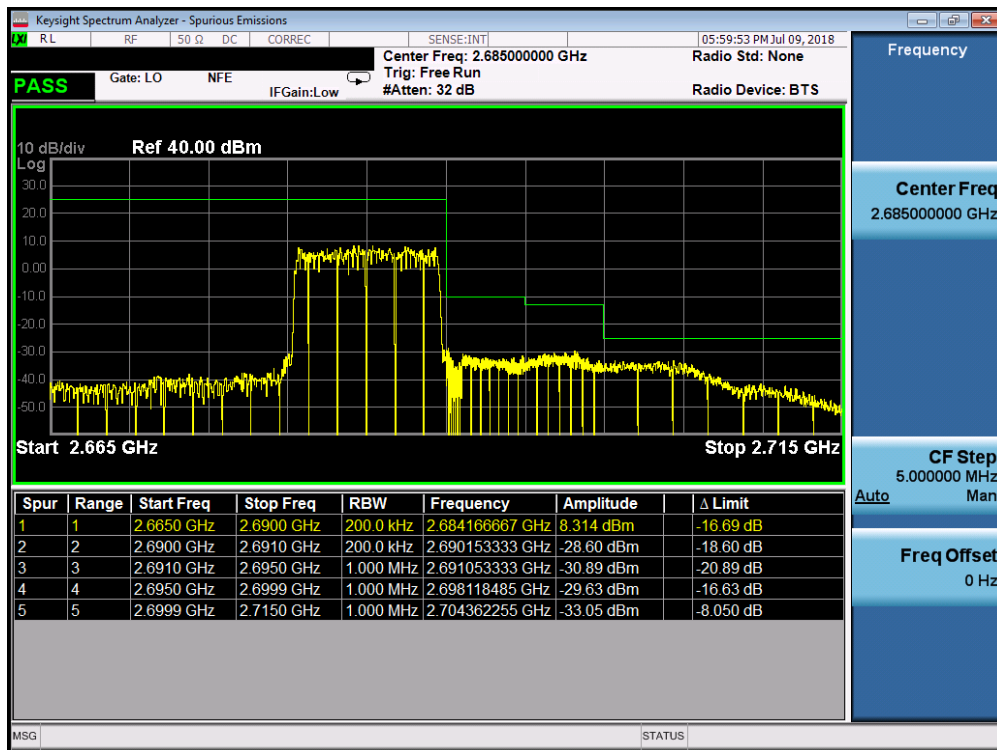


Plot 7-278. Upper ACP Plot (Band 41 - 5.0MHz QPSK - RB Size 25)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 163 of 226

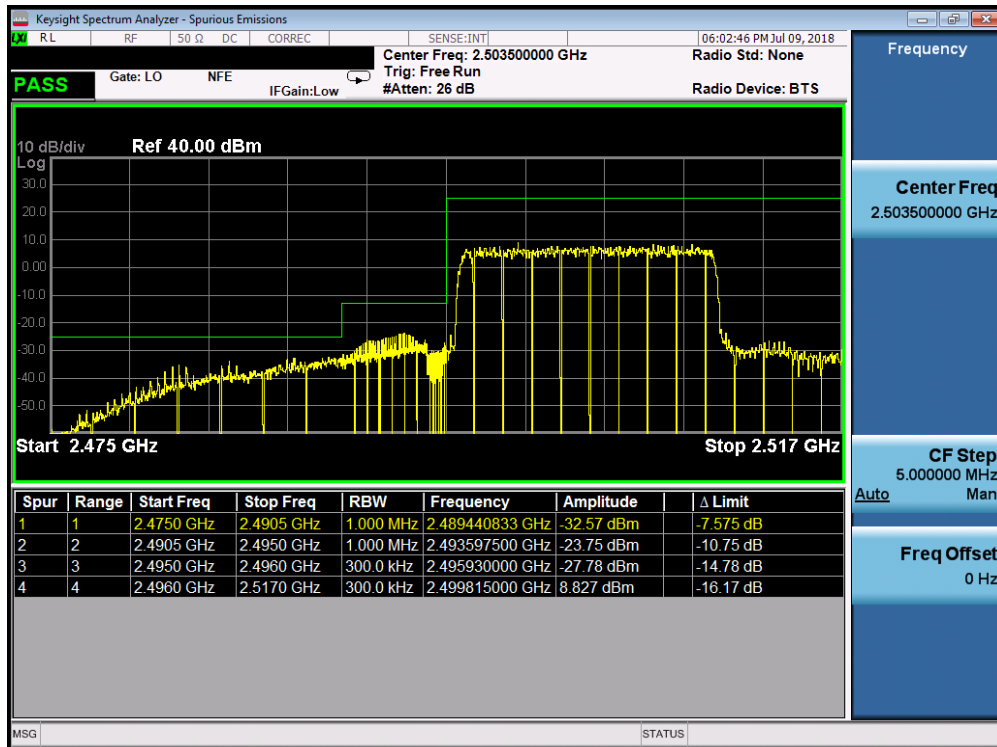


Plot 7-279. Lower ACP Plot at 2496 MHz (Band 41 - 10.0MHz QPSK - RB Size 50)

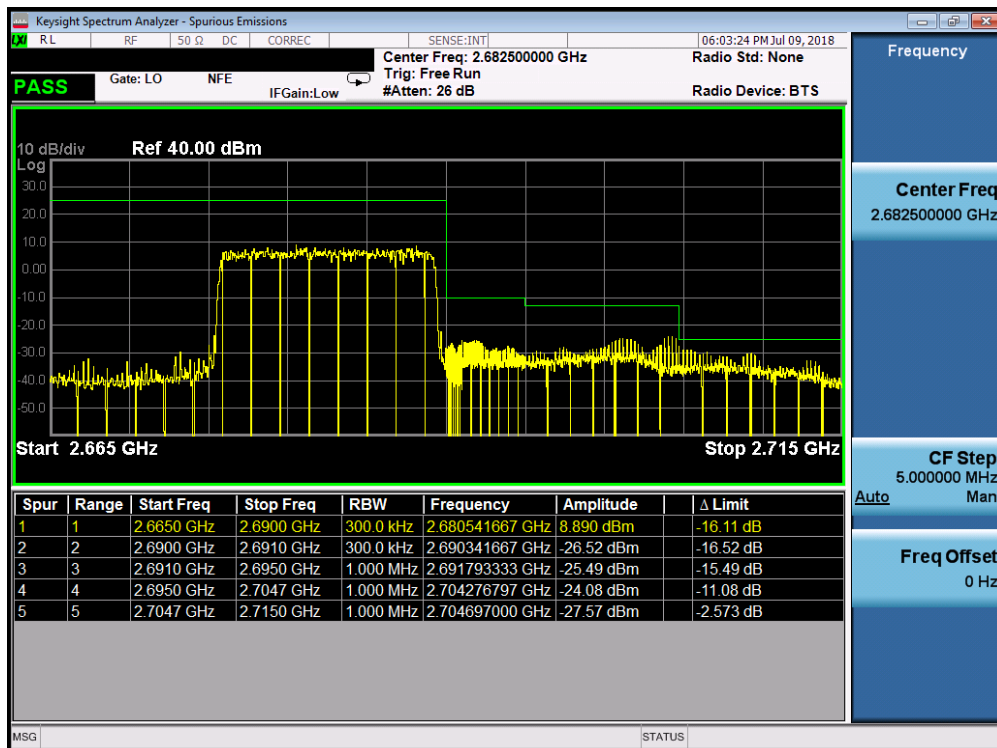


Plot 7-280. Upper ACP Plot (Band 41 - 10.0MHz QPSK - RB Size 50)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 164 of 226

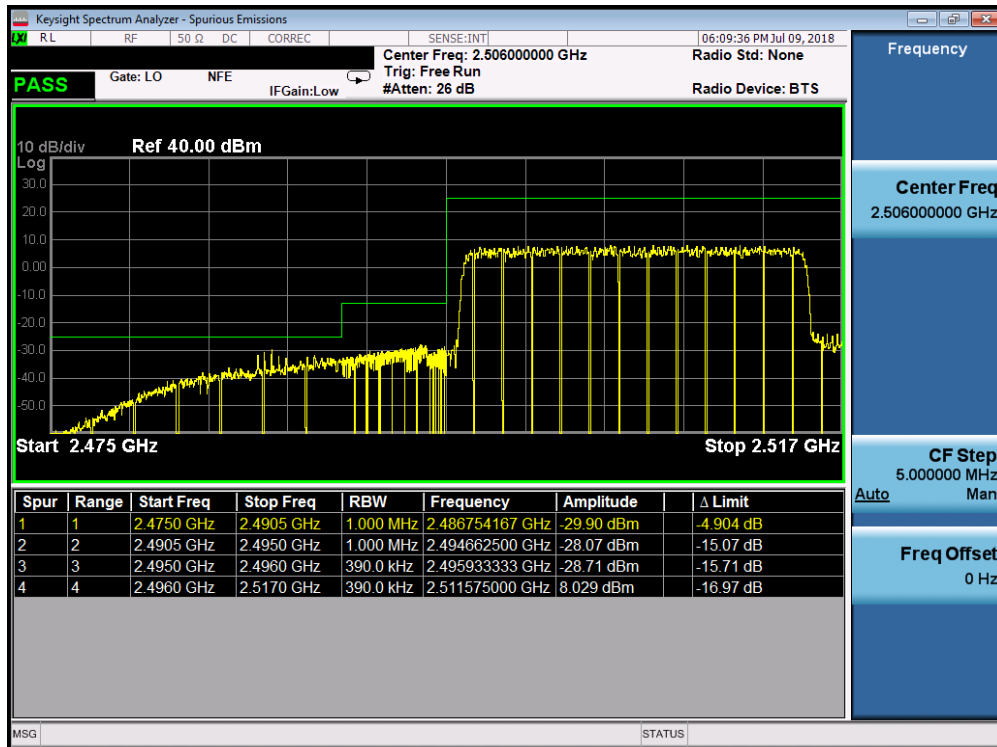


Plot 7-281. Lower ACP Plot at 2496 MHz (Band 41 - 15.0MHz QPSK - RB Size 75)

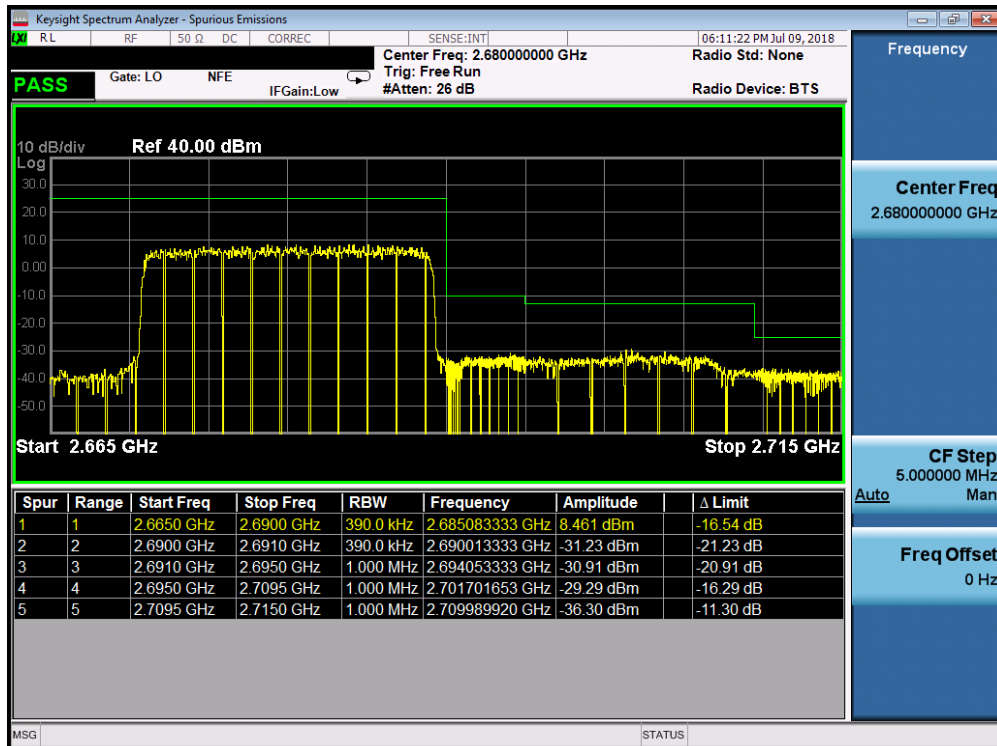


Plot 7-282. Upper ACP Plot (Band 41 - 15.0MHz QPSK - RB Size 75)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 165 of 226



Plot 7-283. Lower ACP Plot at 2496 MHz (Band 41 - 20.0MHz QPSK - RB Size 100)



Plot 7-284. Upper ACP Plot (Band 41 - 20.0MHz QPSK - RB Size 100)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 166 of 226

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 > Emission bandwidth of signal
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.

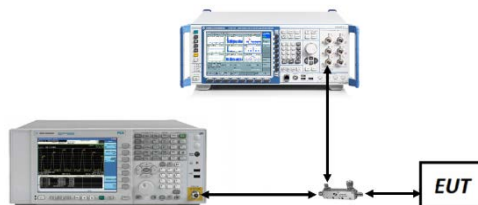


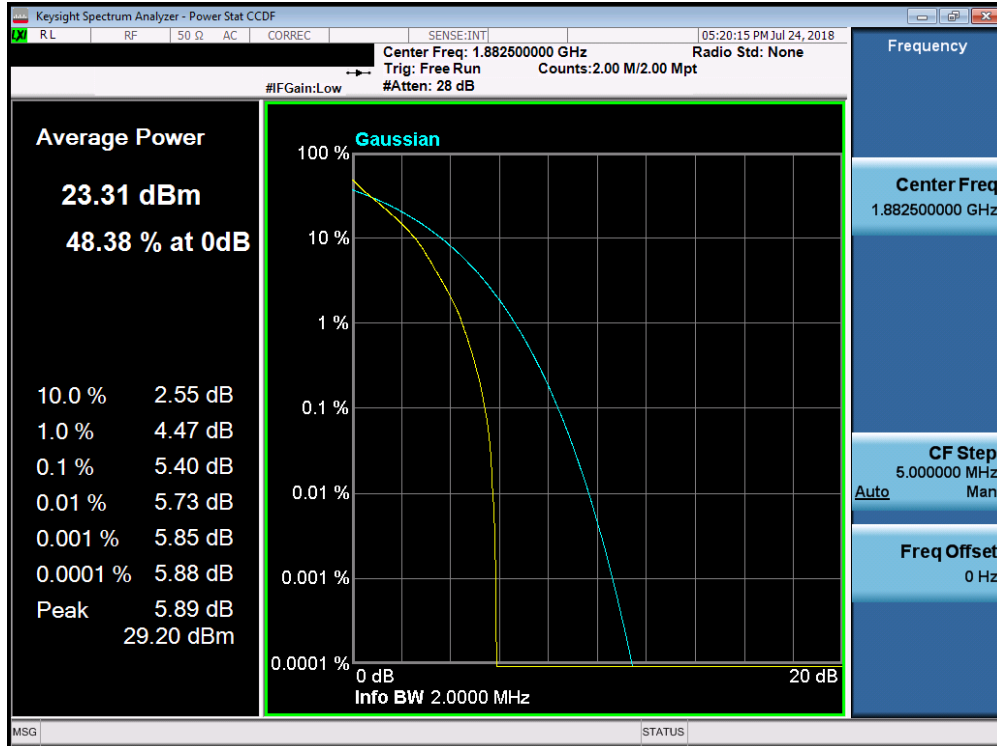
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

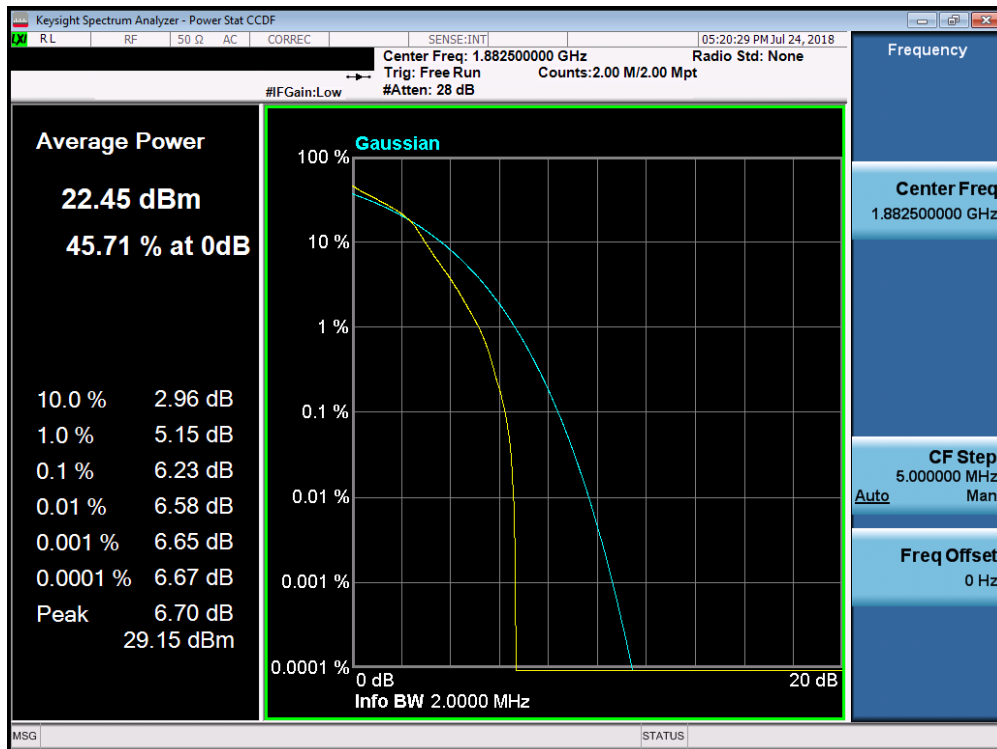
None.

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 167 of 226

Band 25/2

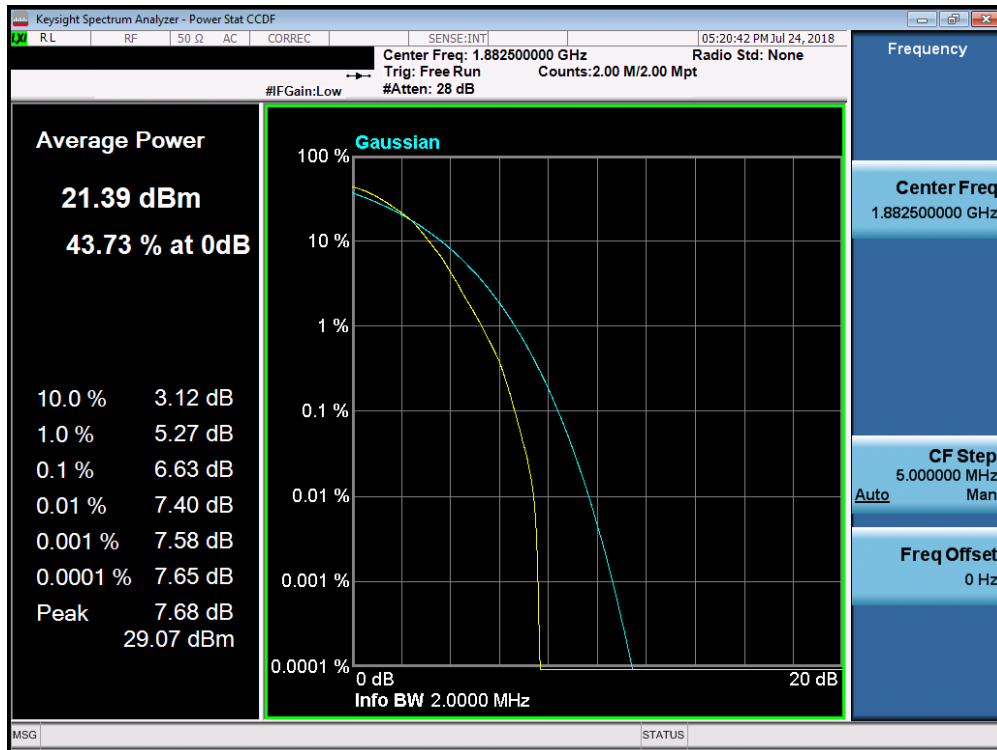


Plot 7-285. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

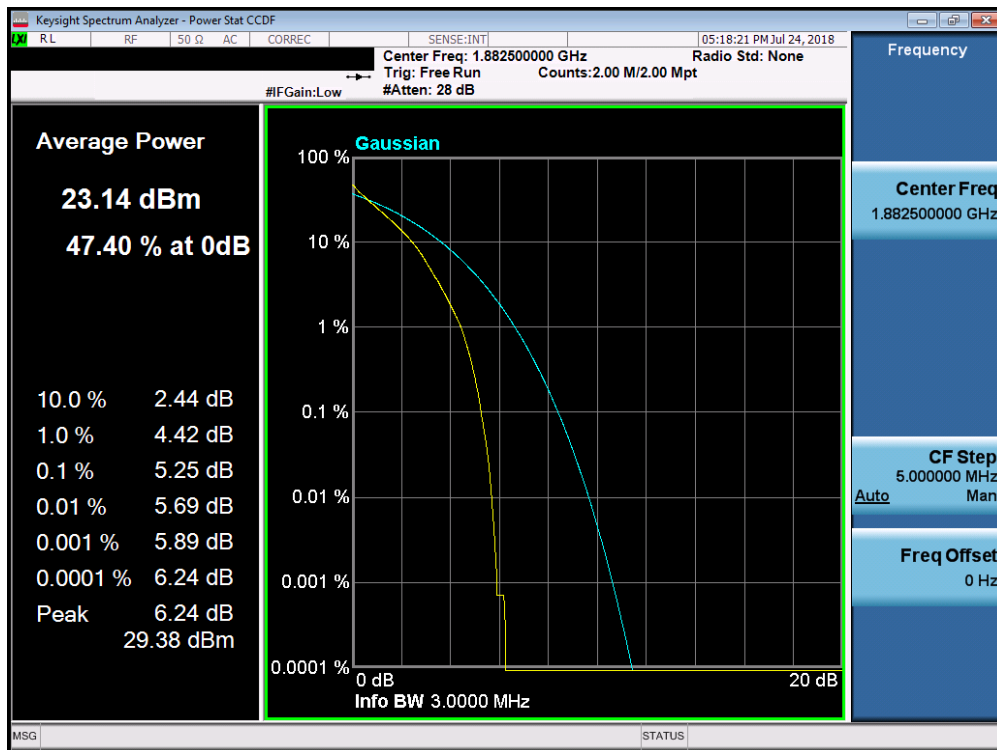


Plot 7-286. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 168 of 226

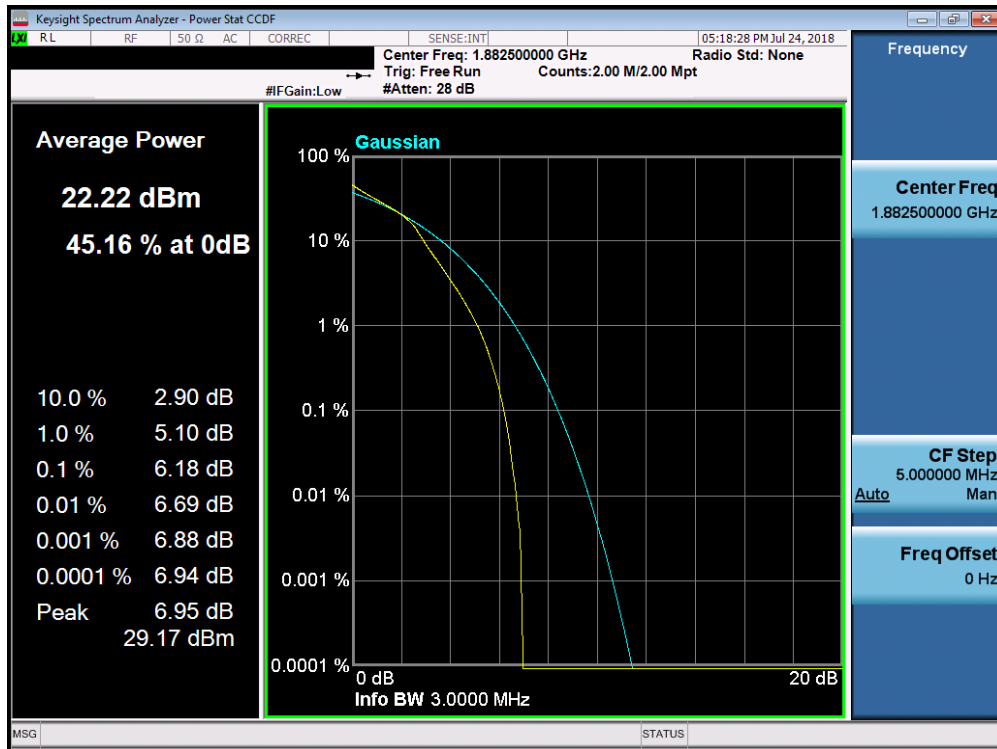


Plot 7-287. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

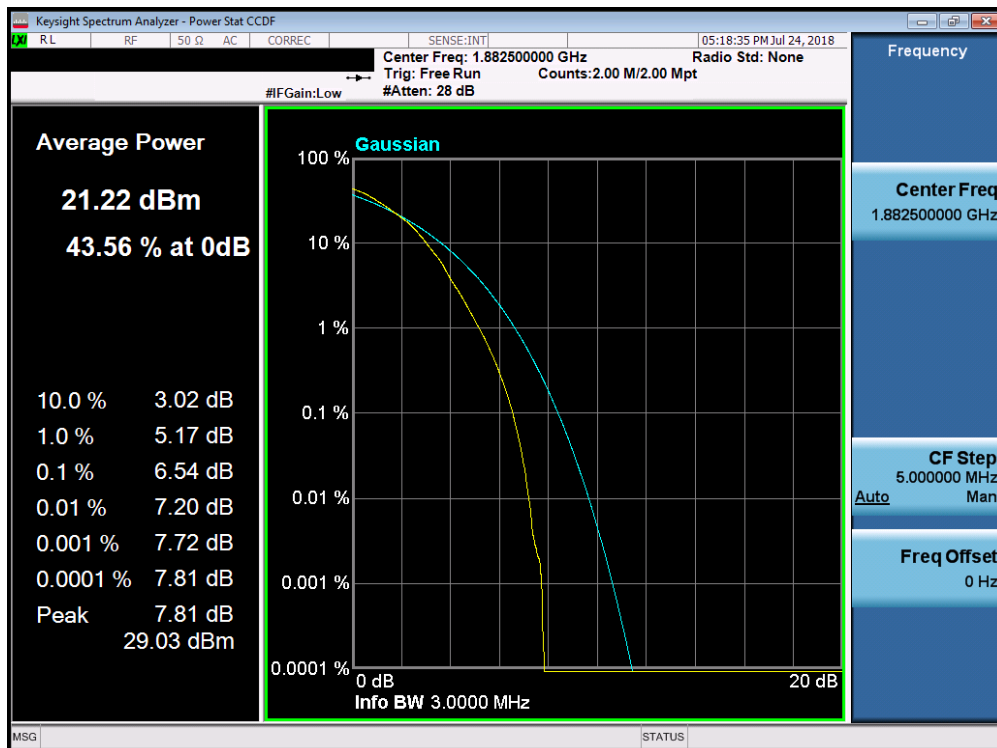


Plot 7-288. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 169 of 226

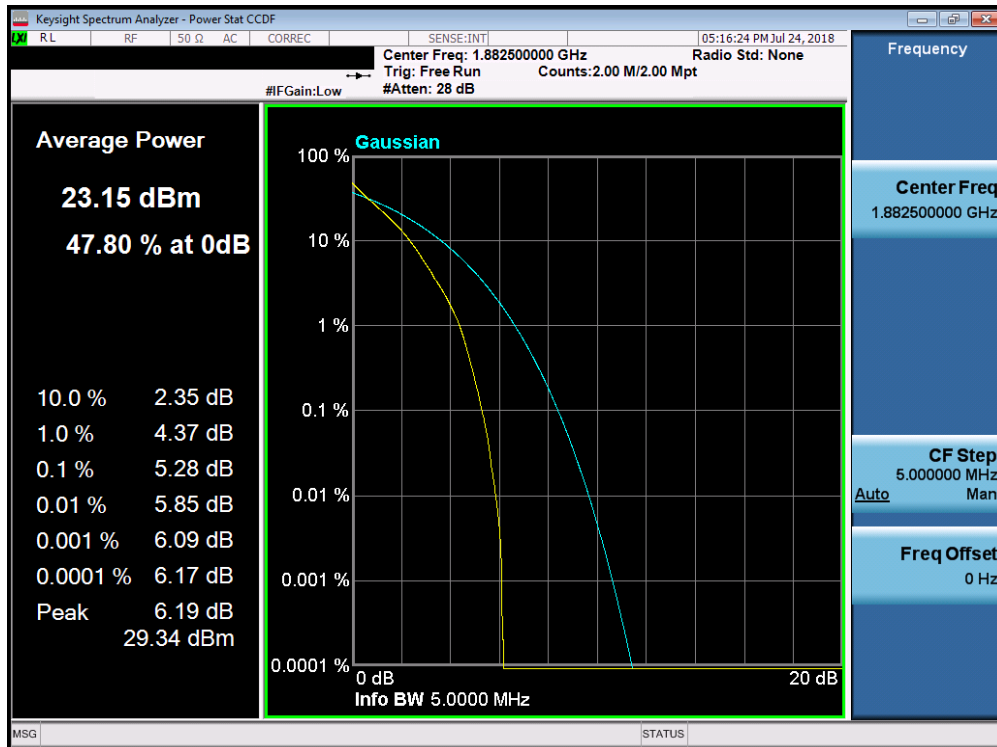


Plot 7-289. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

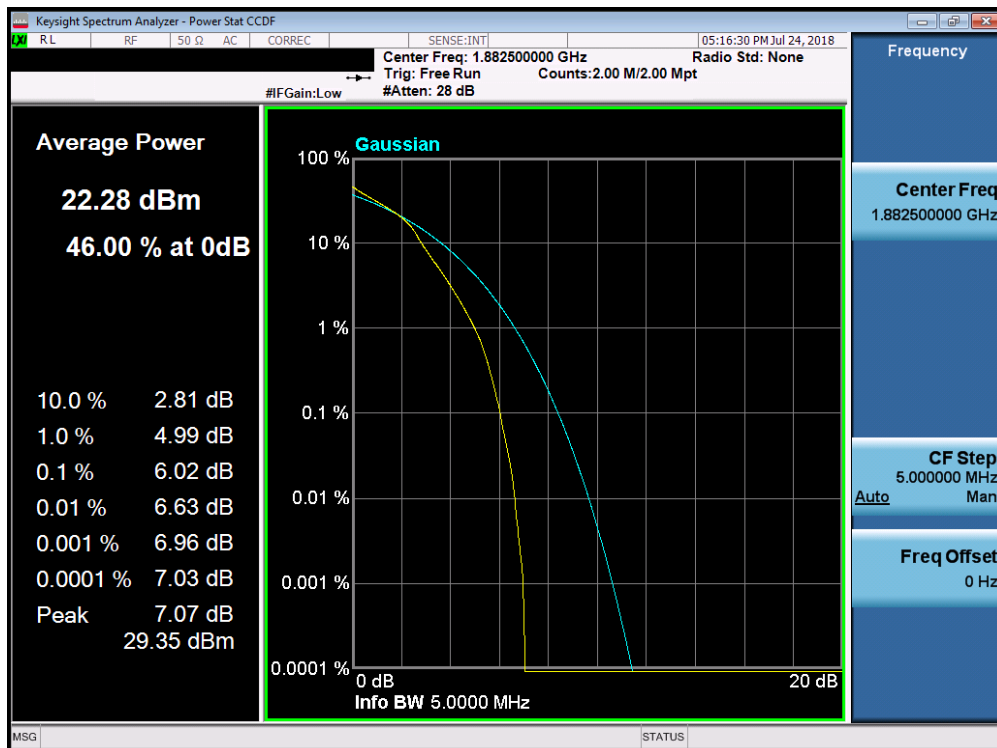


Plot 7-290. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 170 of 226

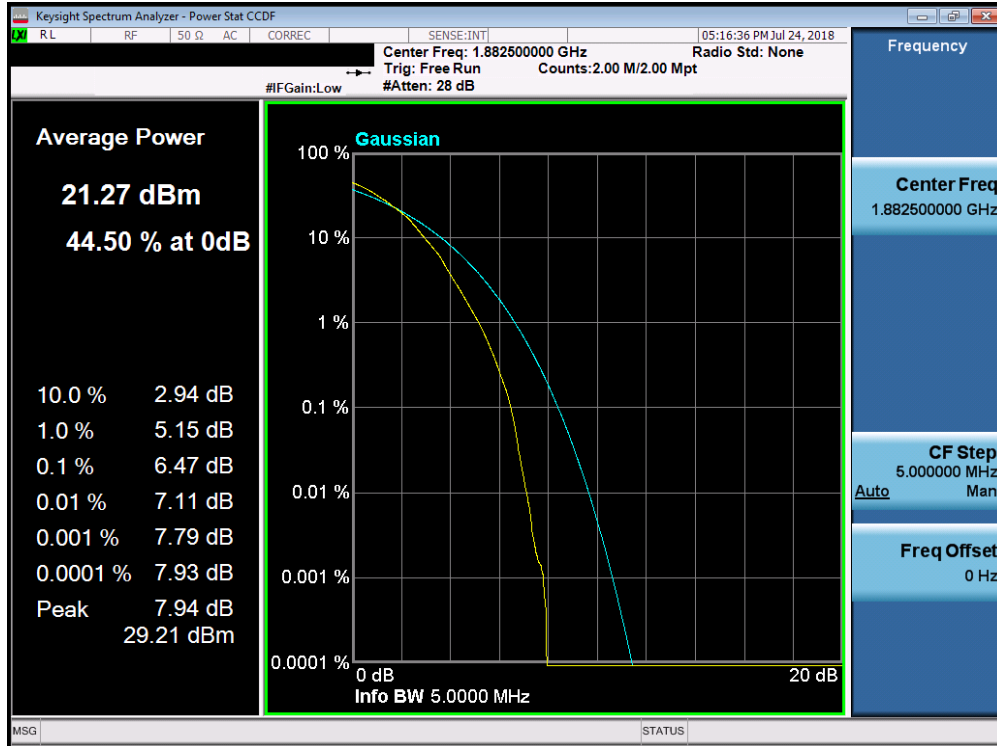


Plot 7-291. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

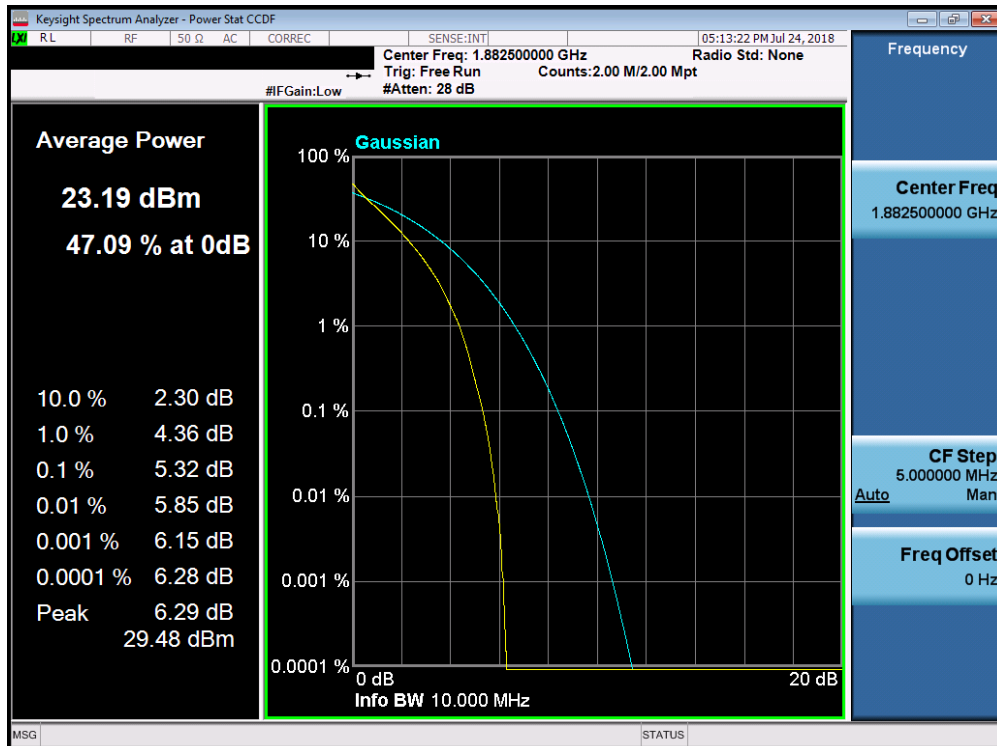


Plot 7-292. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 171 of 226

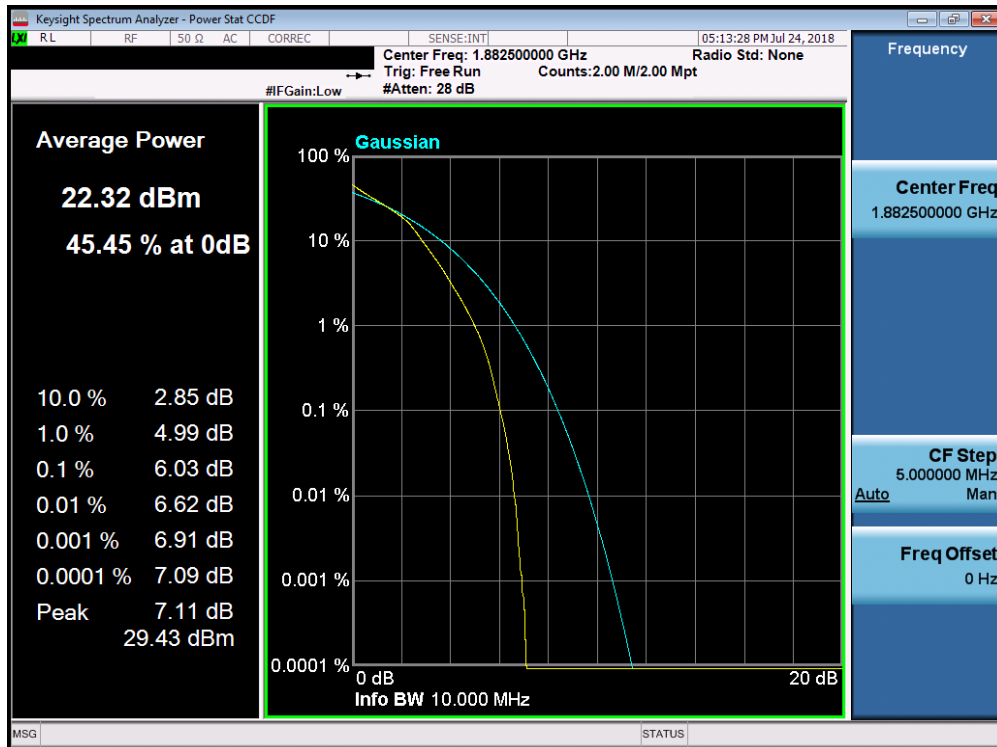


Plot 7-293. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

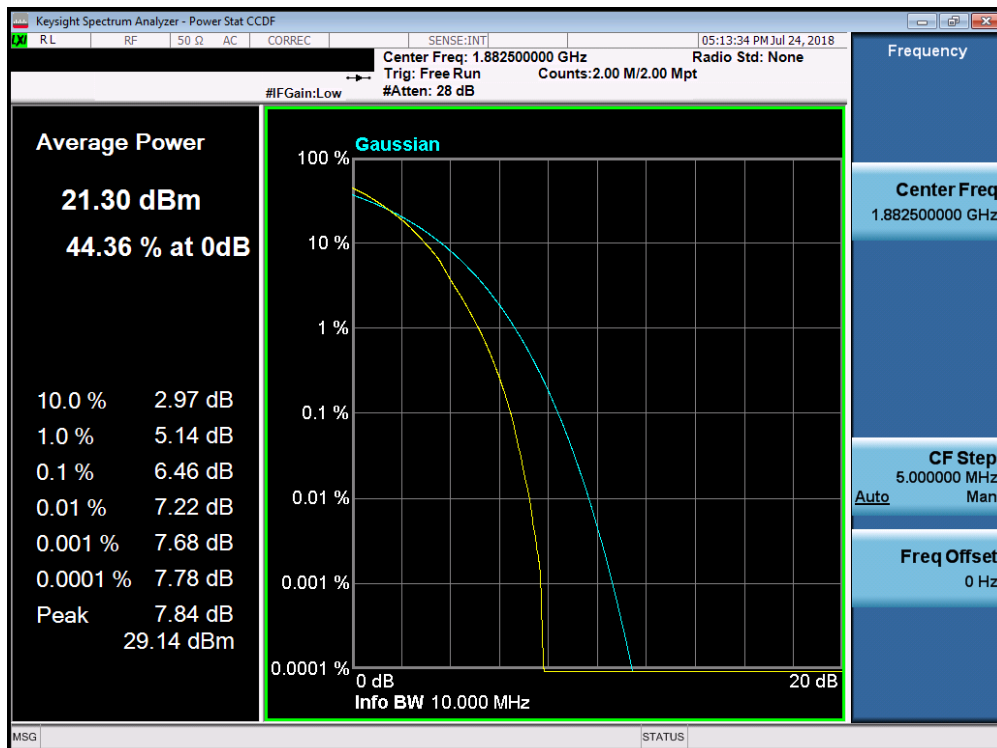


Plot 7-294. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 172 of 226

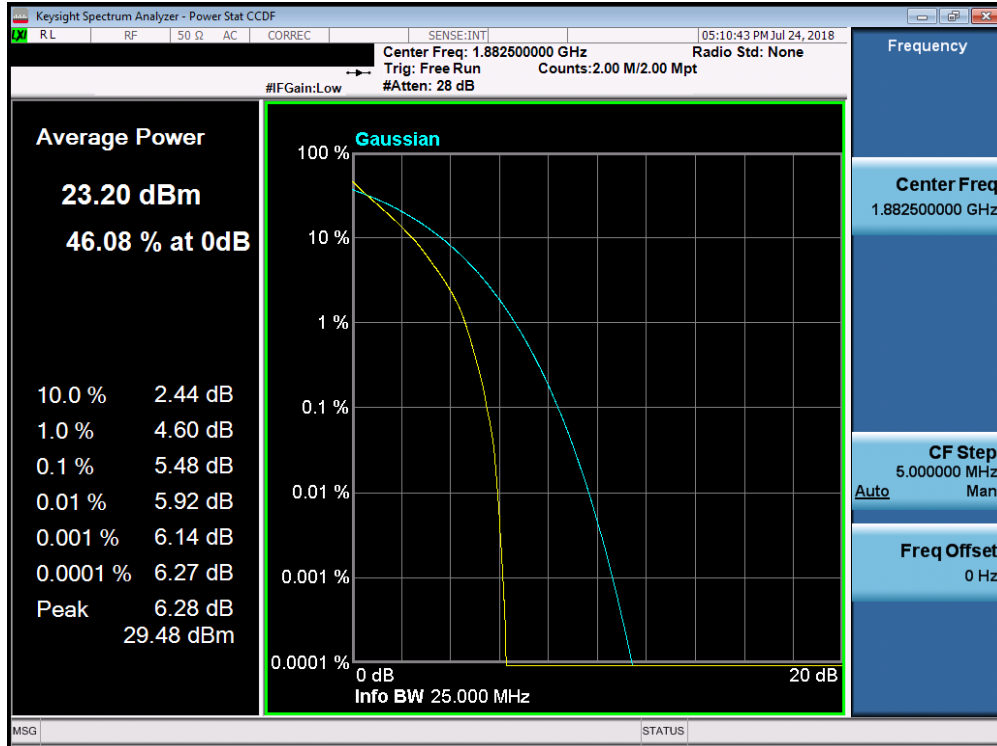


Plot 7-295. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

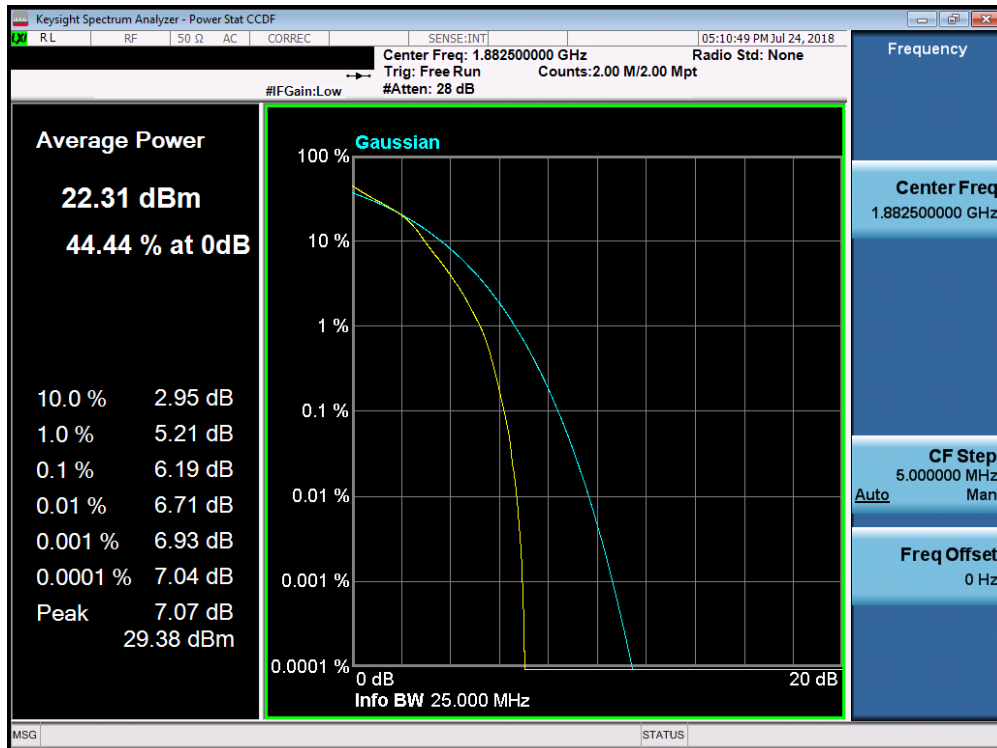


Plot 7-296. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 173 of 226

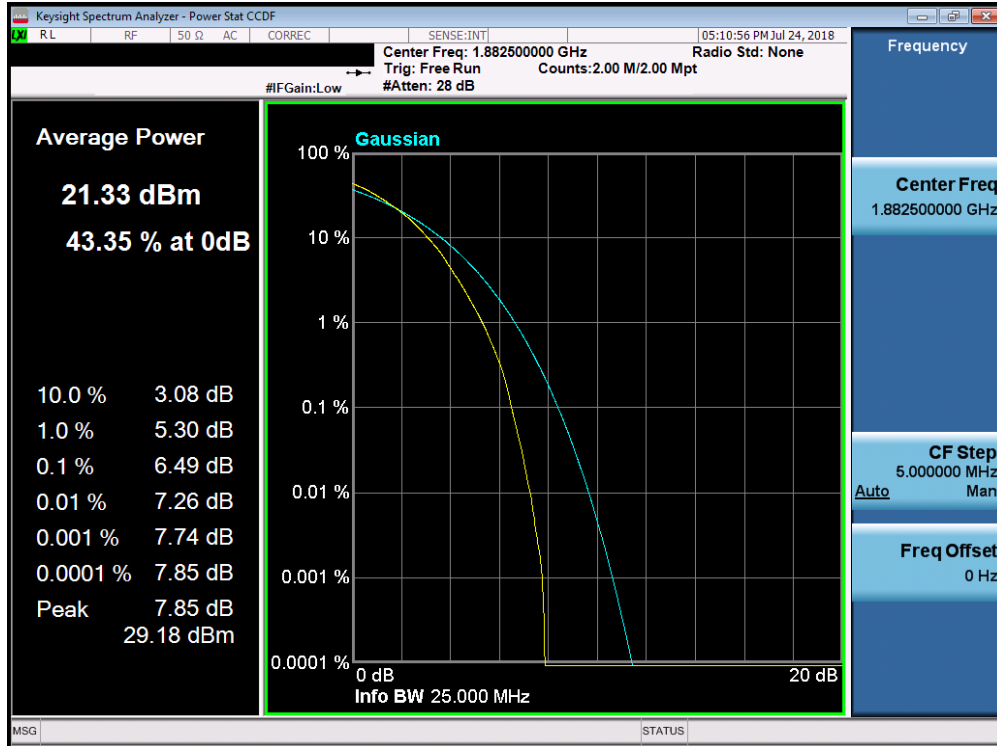


Plot 7-297. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

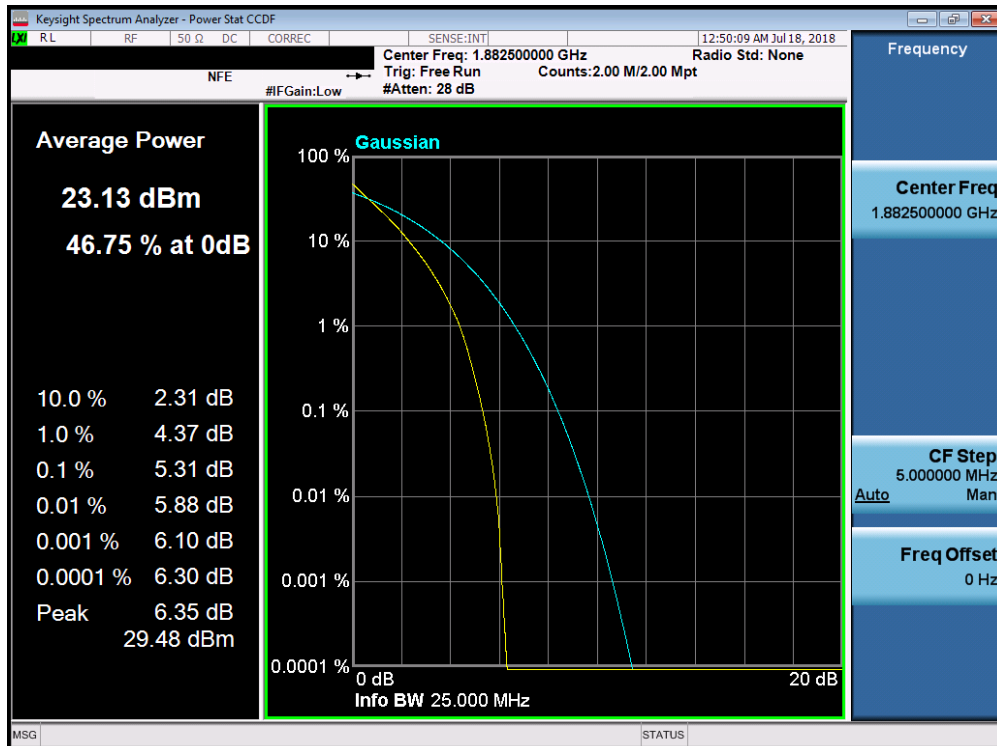


Plot 7-298. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 174 of 226

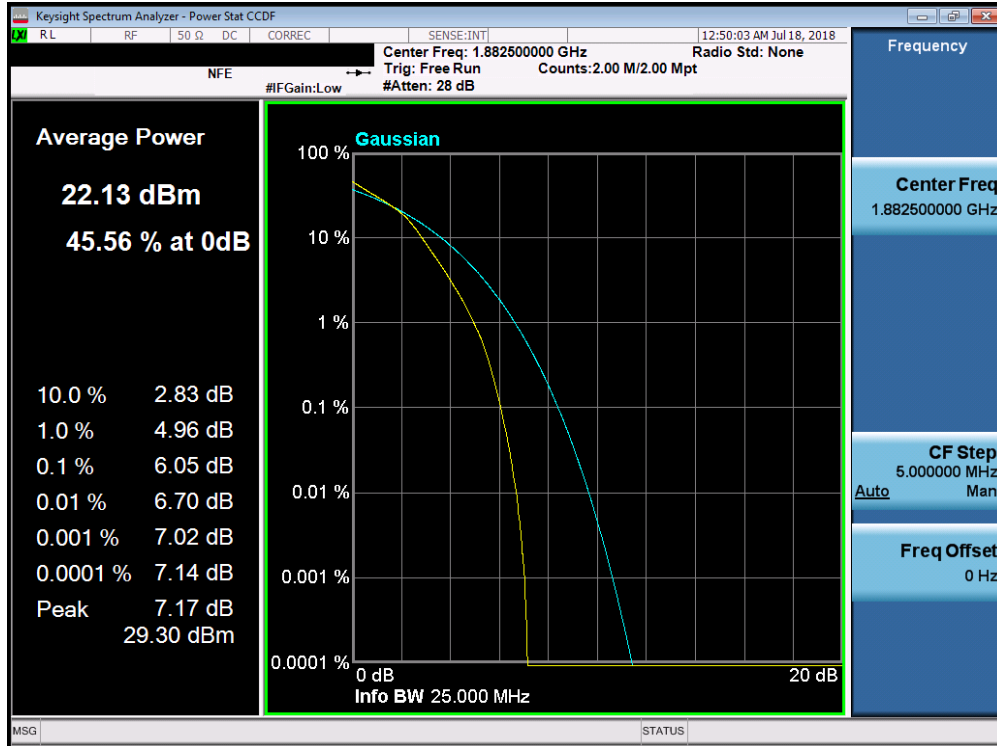


Plot 7-299. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

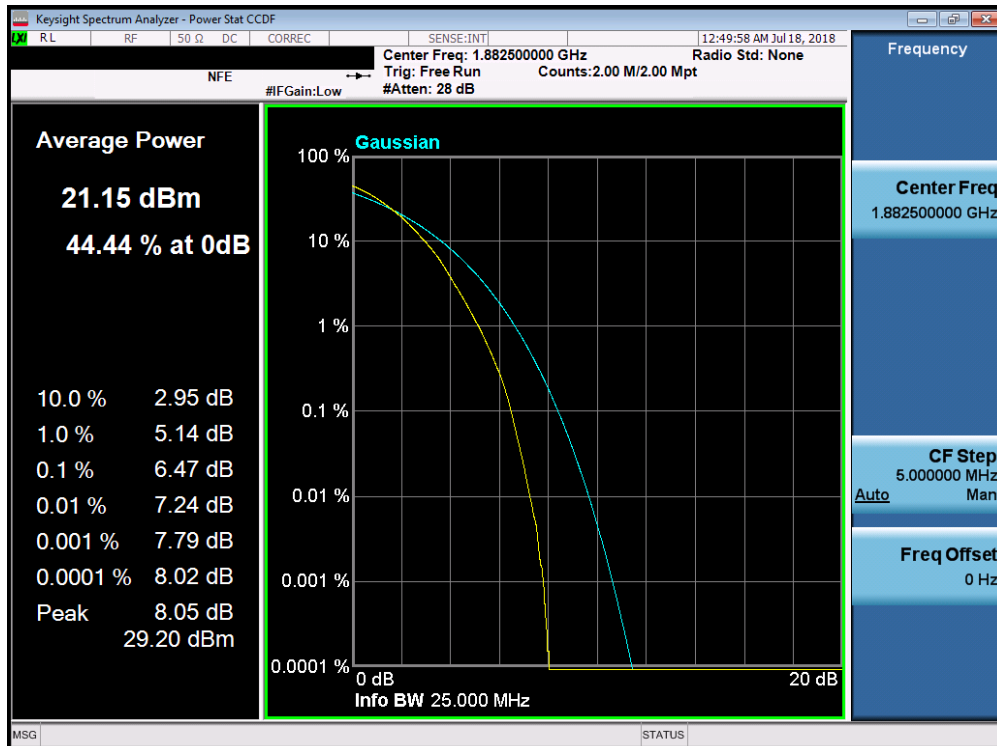


Plot 7-300. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 175 of 226



Plot 7-301. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-302. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 176 of 226

7.6 Radiated Power (ERP/EIRP)

Test Overview

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

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW $\geq 3 \times$ 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: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 177 of 226

Test Setup

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

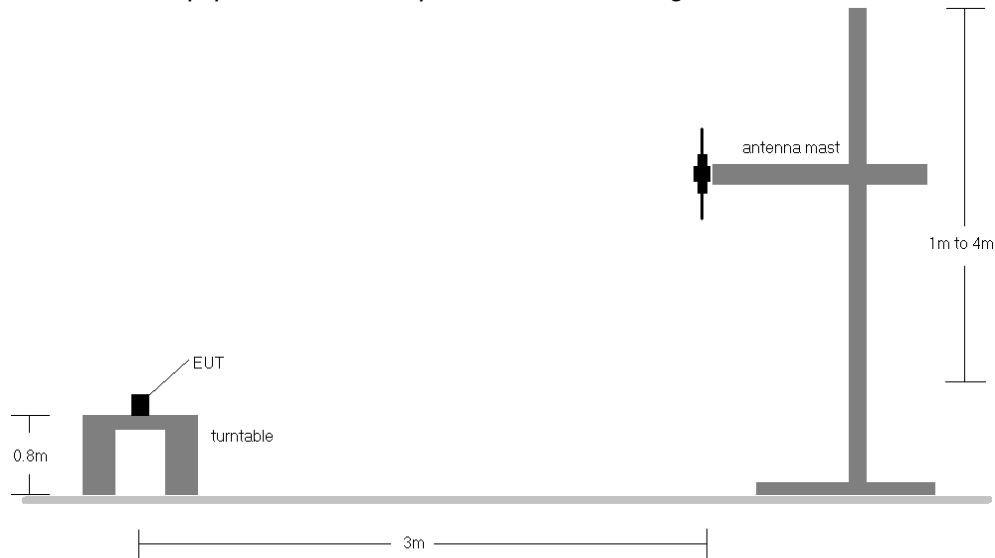


Figure 7-5. Radiated Test Setup <1GHz

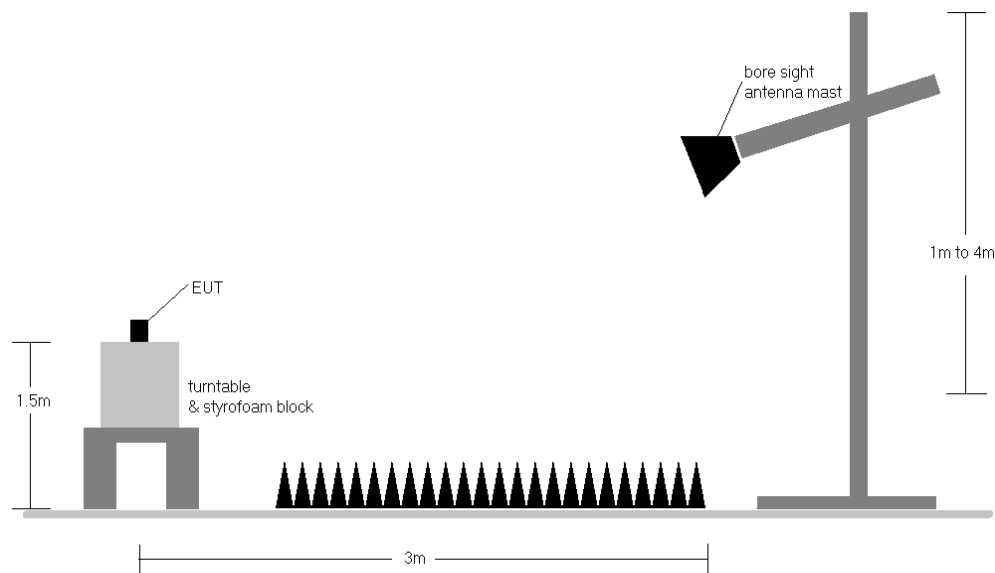


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

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

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 178 of 226

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	150	352	1 / 0	20.26	1.10	19.21	0.083	34.77	-15.56
707.50	1.4	QPSK	H	150	356	1 / 0	19.97	1.13	18.95	0.079	34.77	-15.82
715.30	1.4	QPSK	H	150	355	1 / 0	18.82	1.16	17.83	0.061	34.77	-16.94
699.70	1.4	16-QAM	H	150	352	1 / 0	19.36	1.10	18.31	0.068	34.77	-16.46
699.70	1.4	64-QAM	H	150	352	1 / 0	18.39	1.10	17.34	0.054	34.77	-17.43
700.50	3	QPSK	H	150	2	1 / 0	20.38	1.10	19.33	0.086	34.77	-15.44
707.50	3	QPSK	H	150	355	1 / 0	20.25	1.13	19.23	0.084	34.77	-15.54
714.50	3	QPSK	H	150	352	1 / 0	19.78	1.16	18.79	0.076	34.77	-15.98
700.50	3	16-QAM	H	150	2	1 / 0	19.54	1.10	18.49	0.071	34.77	-16.28
700.50	3	64-QAM	H	150	2	1 / 0	18.47	1.10	17.42	0.055	34.77	-17.35

Table 7-3. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
701.50	5	QPSK	H	150	358	1 / 0	20.42	1.11	19.38	0.087	34.77	-15.40
707.50	5	QPSK	H	150	355	1 / 0	20.18	1.13	19.16	0.082	34.77	-15.61
713.50	5	QPSK	H	150	351	1 / 0	19.74	1.15	18.74	0.075	34.77	-16.03
701.50	5	16-QAM	H	150	358	1 / 0	19.67	1.11	18.63	0.073	34.77	-16.15
701.50	5	64-QAM	H	150	358	1 / 0	18.49	1.11	17.45	0.056	34.77	-17.33
704.00	10	QPSK	H	150	354	1 / 0	20.47	1.12	19.44	0.088	34.77	-15.33
707.50	10	QPSK	H	150	354	1 / 0	20.26	1.13	19.24	0.084	34.77	-15.53
711.00	10	QPSK	H	150	351	1 / 0	20.25	1.14	19.24	0.084	34.77	-15.53
704.00	10	16-QAM	H	150	354	1 / 0	19.63	1.12	18.60	0.072	34.77	-16.17
704.00	10	64-QAM	H	150	354	1 / 0	18.43	1.12	17.40	0.055	34.77	-17.37
704.00	10	QPSK	V	150	73	1 / 0	17.37	1.12	16.34	0.043	34.77	-18.43

Table 7-4. ERP Data (Band 12/17)

FCC ID: ZNFQ910QM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset	Page 179 of 226

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]
779.50	5	QPSK	V	150	72	1 / 24	20.65	1.32	19.82	0.096	34.77	-14.95
782.00	5	QPSK	V	150	79	1 / 0	20.39	1.33	19.57	0.091	34.77	-15.20
784.50	5	QPSK	V	150	75	1 / 0	20.42	1.34	19.61	0.091	34.77	-15.16
779.50	5	16-QAM	V	150	72	1 / 24	19.64	1.32	18.81	0.076	34.77	-15.96
779.50	5	64-QAM	V	150	72	1 / 24	18.61	1.32	17.78	0.060	34.77	-16.99
782.00	10	QPSK	V	150	72	1 / 0	20.51	1.33	19.69	0.093	34.77	-15.08
782.00	10	16-QAM	V	150	72	1 / 0	19.59	1.33	18.77	0.075	34.77	-16.00
782.00	10	64-QAM	V	150	72	1 / 0	18.48	1.33	17.66	0.058	34.77	-17.11
779.50	5	QPSK	H	150	12	1 / 24	19.35	1.32	18.52	0.071	34.77	-16.25

Table 7-5. ERP Data (Band 13)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 180 of 226

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	H	150	5	1 / 0	20.93	1.50	20.28	0.107	38.45	-18.17
836.50	1.4	QPSK	H	150	2	3 / 2	20.39	1.50	19.74	0.094	38.45	-18.71
848.30	1.4	QPSK	H	150	3	1 / 3	19.35	1.50	18.70	0.074	38.45	-19.75
824.70	1.4	16-QAM	H	150	5	1 / 0	20.11	1.50	19.46	0.088	38.45	-18.99
824.70	1.4	64-QAM	H	150	5	1 / 0	18.86	1.50	18.21	0.066	38.45	-20.24
825.50	3	QPSK	H	150	355	1 / 14	20.75	1.50	20.10	0.102	38.45	-18.35
836.50	3	QPSK	H	150	358	1 / 0	20.12	1.50	19.47	0.089	38.45	-18.98
847.50	3	QPSK	H	150	1	1 / 7	18.92	1.50	18.27	0.067	38.45	-20.18
825.50	3	16-QAM	H	150	355	1 / 14	19.84	1.50	19.19	0.083	38.45	-19.26
825.50	3	64-QAM	H	150	355	1 / 14	18.87	1.50	18.22	0.066	38.45	-20.23
826.50	5	QPSK	H	150	355	1 / 24	20.86	1.50	20.21	0.105	38.45	-18.24
836.50	5	QPSK	H	150	5	1 / 0	20.00	1.50	19.35	0.086	38.45	-19.10
846.50	5	QPSK	H	150	8	1 / 0	18.91	1.50	18.26	0.067	38.45	-20.19
826.50	5	16-QAM	H	150	355	1 / 24	19.75	1.50	19.10	0.081	38.45	-19.35
826.50	5	64-QAM	H	150	355	1 / 24	18.81	1.50	18.16	0.065	38.45	-20.29
829.00	10	QPSK	H	150	356	1 / 0	21.12	1.50	20.47	0.111	38.45	-17.98
836.50	10	QPSK	H	150	358	1 / 0	20.18	1.50	19.53	0.090	38.45	-18.92
844.00	10	QPSK	H	150	1	1 / 0	19.64	1.50	18.99	0.079	38.45	-19.46
829.00	10	16-QAM	H	150	356	1 / 0	20.27	1.50	19.62	0.092	38.45	-18.83
829.00	10	64-QAM	H	150	356	1 / 0	19.12	1.50	18.47	0.070	38.45	-19.98
829.00	10	QPSK	V	150	70	1 / 0	18.57	1.50	17.92	0.062	38.45	-20.53

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	H	150	356	1 / 0	20.99	1.50	20.34	0.108	38.45	-18.11
836.50	15	QPSK	H	150	356	1 / 0	20.67	1.50	20.02	0.100	38.45	-18.43
841.50	15	QPSK	H	150	1	1 / 0	20.13	1.50	19.48	0.089	38.45	-18.97
831.50	15	16-QAM	H	150	356	1 / 0	20.26	1.50	19.61	0.091	38.45	-18.84
831.50	15	64-QAM	H	150	356	1 / 0	19.42	1.50	18.77	0.075	38.45	-19.68

Table 7-7. ERP Data (Band 26)

FCC ID: ZNFQ910QM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 181 of 226

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	150	355	3 / 2	16.80	5.56	22.36	0.172	30.00	-7.64
1745.00	1.4	QPSK	V	150	353	1 / 0	15.26	5.32	20.58	0.114	30.00	-9.42
1779.30	1.4	QPSK	V	150	152	1 / 3	15.05	5.09	20.14	0.103	30.00	-9.86
1710.70	1.4	16-QAM	V	150	355	3 / 2	16.27	5.56	21.83	0.152	30.00	-8.17
1710.70	1.4	64-QAM	V	150	355	3 / 2	15.85	5.56	21.41	0.138	30.00	-8.59
1711.50	3	QPSK	V	150	355	1 / 14	17.05	5.55	22.60	0.182	30.00	-7.40
1745.00	3	QPSK	V	150	351	1 / 7	15.48	5.32	20.80	0.120	30.00	-9.20
1778.50	3	QPSK	V	150	155	1 / 14	15.05	5.10	20.15	0.103	30.00	-9.85
1711.50	3	16-QAM	V	150	355	1 / 14	16.34	5.55	21.89	0.155	30.00	-8.11
1711.50	3	64-QAM	V	150	355	1 / 14	15.21	5.55	20.76	0.119	30.00	-9.24
1712.50	5	QPSK	V	150	352	1 / 0	16.83	5.55	22.38	0.173	30.00	-7.62
1745.00	5	QPSK	V	150	2	1 / 24	14.74	5.32	20.06	0.101	30.00	-9.94
1777.50	5	QPSK	V	150	144	1 / 0	14.76	5.10	19.86	0.097	30.00	-10.14
1712.50	5	16-QAM	V	150	352	1 / 0	16.47	5.55	22.02	0.159	30.00	-7.98
1712.50	5	64-QAM	V	150	352	1 / 0	15.55	5.55	21.10	0.129	30.00	-8.90
1715.00	10	QPSK	V	150	352	1 / 49	16.72	5.53	22.25	0.168	30.00	-7.75
1745.00	10	QPSK	V	150	352	1 / 0	15.51	5.32	20.83	0.121	30.00	-9.17
1775.00	10	QPSK	V	150	129	1 / 25	15.27	5.12	20.39	0.109	30.00	-9.61
1715.00	10	16-QAM	V	150	352	1 / 49	15.92	5.53	21.45	0.140	30.00	-8.55
1715.00	10	64-QAM	V	150	352	1 / 49	14.89	5.53	20.42	0.110	30.00	-9.58
1717.50	15	QPSK	V	150	350	1 / 0	16.63	5.51	22.14	0.164	30.00	-7.86
1745.00	15	QPSK	V	150	350	1 / 0	15.85	5.32	21.17	0.131	30.00	-8.83
1772.50	15	QPSK	V	150	125	1 / 74	16.03	5.14	21.17	0.131	30.00	-8.83
1717.50	15	16-QAM	V	150	350	1 / 0	16.35	5.51	21.86	0.153	30.00	-8.14
1717.50	15	64-QAM	V	150	350	1 / 0	15.43	5.51	20.94	0.124	30.00	-9.06
1720.00	20	QPSK	V	150	350	1 / 0	16.78	5.49	22.27	0.169	30.00	-7.73
1745.00	20	QPSK	V	150	353	1 / 0	16.12	5.32	21.44	0.139	30.00	-8.56
1770.00	20	QPSK	V	150	129	1 / 0	15.72	5.15	20.87	0.122	30.00	-9.13
1720.00	20	16-QAM	V	150	350	1 / 0	16.51	5.49	22.00	0.159	30.00	-8.00
1720.00	20	64-QAM	V	150	350	1 / 0	15.51	5.49	21.00	0.126	30.00	-9.00
1711.50	3	QPSK	H	150	352	1 / 14	16.68	5.55	22.23	0.167	30.00	-7.77

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

FCC ID: ZNFQ910QM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset	Page 182 of 226

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	V	150	325	3 / 2	15.83	4.82	20.65	0.116	33.01	-12.36
1882.50	1.4	QPSK	V	150	296	3 / 2	15.93	4.73	20.66	0.117	33.01	-12.35
1914.30	1.4	QPSK	V	150	332	1 / 3	17.12	4.68	21.80	0.151	33.01	-11.21
1914.30	1.4	16-QAM	V	150	332	1 / 3	16.49	4.68	21.17	0.131	33.01	-11.84
1914.30	1.4	64-QAM	V	150	332	1 / 3	15.58	4.68	20.26	0.106	33.01	-12.75
1851.50	3	QPSK	V	150	299	1 / 7	16.40	4.82	21.22	0.132	33.01	-11.79
1882.50	3	QPSK	V	150	305	1 / 0	15.93	4.73	20.66	0.117	33.01	-12.35
1913.50	3	QPSK	V	150	332	1 / 7	16.65	4.68	21.33	0.136	33.01	-11.68
1913.50	3	16-QAM	V	150	332	1 / 7	16.33	4.68	21.01	0.126	33.01	-12.00
1913.50	3	64-QAM	V	150	332	1 / 7	15.63	4.68	20.31	0.107	33.01	-12.70
1852.50	5	QPSK	V	150	309	1 / 0	16.07	4.81	20.88	0.123	33.01	-12.13
1882.50	5	QPSK	V	150	305	1 / 0	15.92	4.73	20.65	0.116	33.01	-12.36
1912.50	5	QPSK	V	150	333	1 / 0	16.95	4.68	21.63	0.146	33.01	-11.38
1912.50	5	16-QAM	V	150	333	1 / 0	16.49	4.68	21.17	0.131	33.01	-11.84
1912.50	5	64-QAM	V	150	333	1 / 0	15.25	4.68	19.93	0.098	33.01	-13.08
1855.00	10	QPSK	V	150	306	1 / 0	16.60	4.81	21.41	0.138	33.01	-11.60
1882.50	10	QPSK	V	150	308	1 / 0	16.41	4.73	21.14	0.130	33.01	-11.87
1910.00	10	QPSK	V	150	333	1 / 49	17.01	4.68	21.69	0.148	33.01	-11.32
1910.00	10	16-QAM	V	150	333	1 / 49	16.32	4.68	21.00	0.126	33.01	-12.01
1910.00	10	64-QAM	V	150	333	1 / 49	15.60	4.68	20.28	0.107	33.01	-12.73
1857.50	15	QPSK	V	319	302	1 / 0	16.49	4.80	21.29	0.135	33.01	-11.72
1882.50	15	QPSK	V	150	308	1 / 0	16.08	4.73	20.81	0.121	33.01	-12.20
1907.50	15	QPSK	V	150	333	1 / 74	17.02	4.68	21.70	0.148	33.01	-11.31
1907.50	15	16-QAM	V	150	333	1 / 74	16.13	4.68	20.81	0.121	33.01	-12.20
1907.50	15	64-QAM	V	150	333	1 / 74	15.19	4.68	19.87	0.097	33.01	-13.14
1860.00	20	QPSK	V	150	302	1 / 0	16.66	4.79	21.45	0.140	33.01	-11.56
1882.50	20	QPSK	V	150	311	1 / 0	15.85	4.73	20.58	0.114	33.01	-12.43
1905.00	20	QPSK	V	150	333	1 / 99	16.51	4.68	21.19	0.132	33.01	-11.82
1905.00	20	16-QAM	V	150	333	1 / 99	16.13	4.68	20.81	0.121	33.01	-12.20
1905.00	20	64-QAM	V	150	333	1 / 99	14.98	4.68	19.66	0.093	33.01	-13.35
1914.30	1.4	QPSK	H	150	236	1 / 3	15.78	4.68	20.46	0.111	33.01	-12.55

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

FCC ID: ZNFQ910QM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 183 of 226

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	V	150	134	1 / 0	12.37	5.74	18.11	0.065	23.98	-5.87
2312.50	5	QPSK	V	150	124	1 / 24	13.07	5.74	18.81	0.076	23.98	-5.17
2312.50	5	16-QAM	V	150	124	1 / 24	12.47	5.74	18.21	0.066	23.98	-5.77
2312.50	5	64-QAM	V	150	124	1 / 24	11.78	5.74	17.52	0.056	23.98	-6.46
2310.00	10	QPSK	V	150	82	1 / 49	11.79	5.74	17.53	0.057	23.98	-6.45
2310.00	10	16-QAM	V	150	82	1 / 49	10.99	5.74	16.73	0.047	23.98	-7.25
2310.00	10	64-QAM	V	150	82	1 / 49	10.37	5.74	16.11	0.041	23.98	-7.87
2312.50	5	QPSK	H	150	186	1 / 24	10.54	5.74	16.28	0.042	23.98	-7.70

Table 7-10. EIRP Data (Band 30)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 184 of 226

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	150	190	1 / 24	14.87	5.74	20.61	0.115	33.01	-12.40
2535.00	5	QPSK	H	150	190	1 / 24	15.69	5.86	21.55	0.143	33.01	-11.46
2567.50	5	QPSK	H	150	198	1 / 0	15.67	5.98	21.65	0.146	33.01	-11.36
2567.50	5	16-QAM	H	150	198	1 / 0	15.26	5.98	21.24	0.133	33.01	-11.77
2567.50	5	64-QAM	H	150	198	1 / 0	14.33	5.98	20.31	0.107	33.01	-12.70
2505.00	10	QPSK	H	150	187	1 / 49	15.08	5.75	20.83	0.121	33.01	-12.18
2535.00	10	QPSK	H	150	191	1 / 49	15.71	5.86	21.57	0.144	33.01	-11.44
2565.00	10	QPSK	H	150	198	1 / 0	15.91	5.97	21.88	0.154	33.01	-11.13
2565.00	10	16-QAM	H	150	198	1 / 0	15.66	5.97	21.63	0.146	33.01	-11.38
2565.00	10	64-QAM	H	150	198	1 / 0	14.21	5.97	20.18	0.104	33.01	-12.83
2507.50	15	QPSK	H	150	194	1 / 74	15.28	5.76	21.04	0.127	33.01	-11.97
2535.00	15	QPSK	H	150	194	1 / 36	15.68	5.86	21.54	0.143	33.01	-11.47
2562.50	15	QPSK	H	150	197	1 / 0	15.97	5.96	21.93	0.156	33.01	-11.08
2562.50	15	16-QAM	H	150	197	1 / 0	15.66	5.96	21.62	0.145	33.01	-11.39
2562.50	15	64-QAM	H	150	197	1 / 0	14.65	5.96	20.61	0.115	33.01	-12.40
2510.00	20	QPSK	H	150	190	1 / 99	15.48	5.77	21.25	0.133	33.01	-11.76
2535.00	20	QPSK	H	150	194	1 / 0	15.73	5.86	21.59	0.144	33.01	-11.42
2560.00	20	QPSK	H	150	197	1 / 0	16.41	5.95	22.36	0.172	33.01	-10.65
2560.00	20	16-QAM	H	150	197	1 / 0	16.08	5.95	22.03	0.160	33.01	-10.98
2560.00	20	64-QAM	H	150	197	1 / 0	14.77	5.95	20.72	0.118	33.01	-12.29
2560.00	20	QPSK	V	150	309	1 / 0	13.57	5.95	19.52	0.090	33.01	-13.49

Table 7-11. EIRP Data (Band 7)

FCC ID: ZNFQ910QM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset	Page 185 of 226

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	150	124	1 / 0	17.69	5.73	23.42	0.220	33.01	-9.59
2593.00	5	QPSK	V	150	110	1 / 0	15.36	6.07	21.43	0.139	33.01	-11.58
2687.50	5	QPSK	V	150	124	1 / 0	17.06	6.48	23.54	0.226	33.01	-9.47
2498.50	5	16-QAM	V	150	124	1 / 0	16.78	5.73	22.51	0.178	33.01	-10.50
2498.50	5	64-QAM	V	150	124	1 / 0	15.84	5.73	21.57	0.144	33.01	-11.44
2501.00	10	QPSK	V	150	131	1 / 0	18.10	5.73	23.83	0.242	33.01	-9.18
2593.00	10	QPSK	V	150	124	1 / 0	15.68	6.07	21.75	0.150	33.01	-11.26
2685.00	10	QPSK	V	150	117	1 / 0	9.90	6.47	16.38	0.043	33.01	-16.63
2501.00	10	16-QAM	V	150	131	1 / 0	17.20	5.73	22.93	0.196	33.01	-10.08
2501.00	10	64-QAM	V	150	131	1 / 0	15.98	5.73	21.71	0.148	33.01	-11.30
2503.50	15	QPSK	V	150	131	1 / 0	18.03	5.74	23.77	0.238	33.01	-9.24
2593.00	15	QPSK	V	150	131	1 / 0	15.71	6.07	21.78	0.151	33.01	-11.23
2682.50	15	QPSK	V	150	127	1 / 0	11.68	6.46	18.14	0.065	33.01	-14.87
2503.50	15	16-QAM	V	150	131	1 / 0	17.12	5.74	22.86	0.193	33.01	-10.15
2503.50	15	64-QAM	V	150	131	1 / 0	15.90	5.74	21.64	0.146	33.01	-11.37
2506.00	20	QPSK	V	150	131	1 / 0	18.13	5.75	23.89	0.245	33.01	-9.12
2593.00	20	QPSK	V	150	117	1 / 0	15.92	6.07	22.00	0.158	33.01	-11.01
2680.00	20	QPSK	V	150	44	1 / 0	11.73	6.45	18.18	0.066	33.01	-14.83
2506.00	20	16-QAM	V	150	131	1 / 0	17.23	5.75	22.98	0.199	33.01	-10.03
2506.00	20	64-QAM	V	150	131	1 / 0	16.00	5.75	21.75	0.150	33.01	-11.26
2506.00	20	QPSK	H	150	189	1 / 0	17.13	5.75	22.88	0.194	33.01	-10.13

Table 7-12. EIRP Data (Band 41)

FCC ID: ZNFQ910QM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset	Page 186 of 226

7.7 Radiated Spurious Emissions Measurements

Test Overview

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

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ 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: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 187 of 226

Test Setup

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

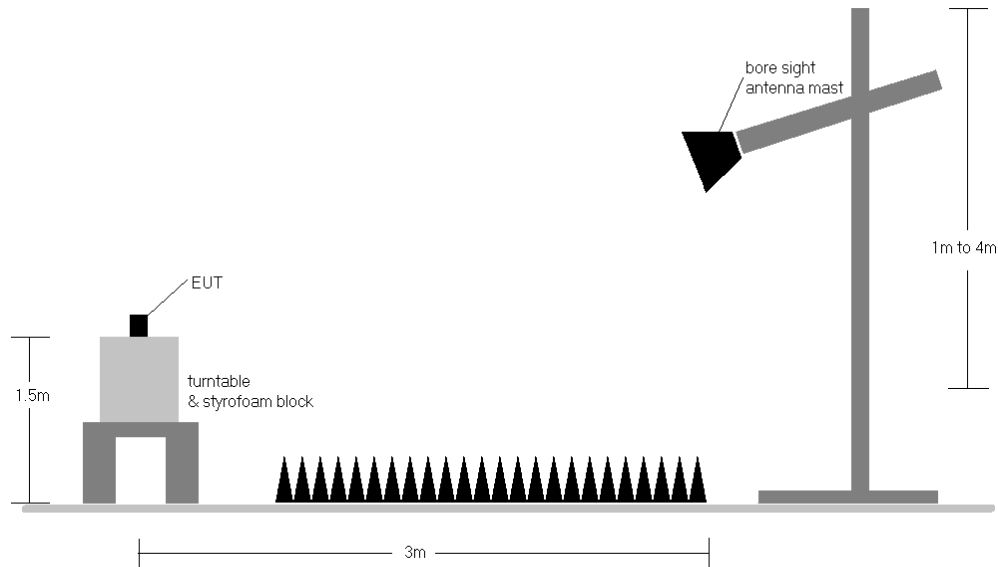


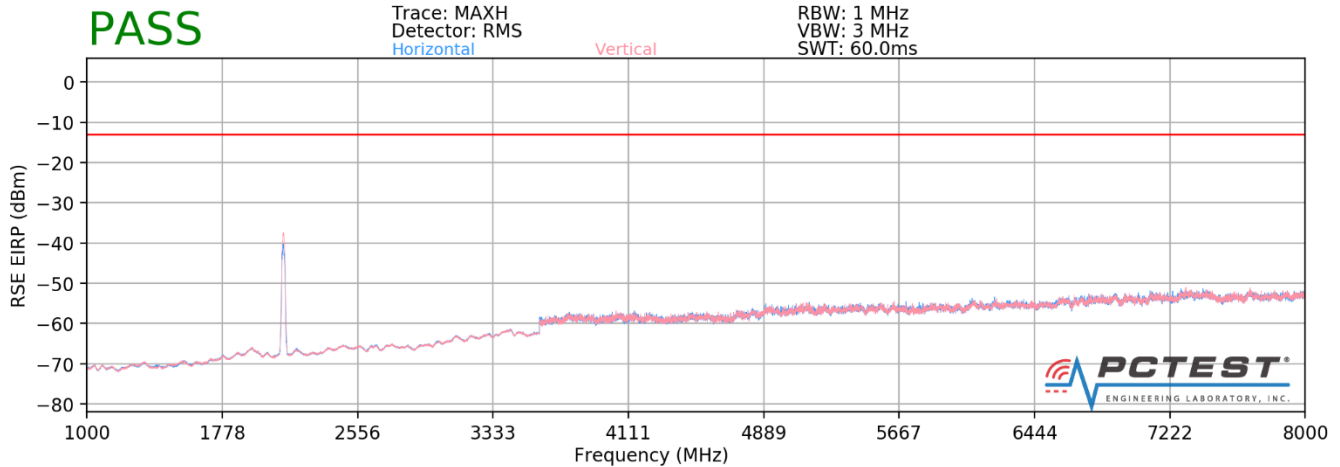
Figure 7-7. Test Instrument & Measurement Setup

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 188 of 226

Band 12/17



Plot 7-303. Radiated Spurious Plot above 1GHz (Band 12/17)

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	219	252	-69.74	8.00	-61.73	-48.7
2112.00	H	149	190	-35.93	8.89	-27.04	-14.0
2816.00	H	-	-	-78.27	10.10	-68.17	-55.2
3520.00	H	-	-	-73.96	9.68	-64.27	-51.3

Table 7-13. Radiated Spurious Data (Band 12/17 – Low Channel)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 189 of 226

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	140	208	-71.30	8.09	-63.21	-50.2
2122.50	H	154	186	-33.47	8.88	-24.59	-11.6
2830.00	H	-	-	-78.17	10.13	-68.04	-55.0
3537.50	H	-	-	-74.50	9.69	-64.80	-51.8

Table 7-14. Radiated Spurious Data (Band 12/17 – Mid Channel)

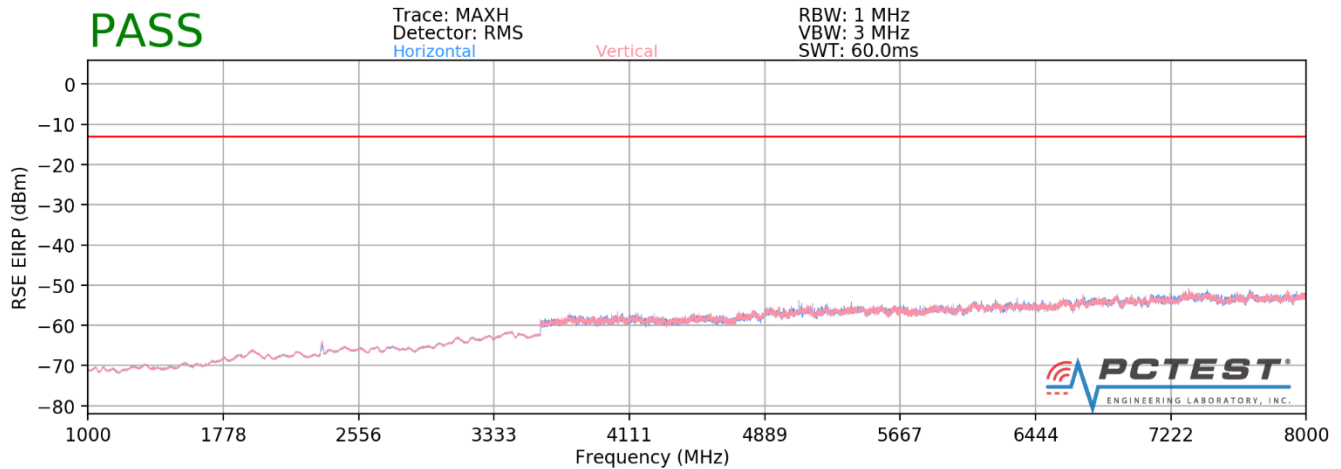
OPERATING FREQUENCY: 711.00 MHz
 CHANNEL: 23130
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	206	197	-67.94	8.17	-59.77	-46.8
2133.00	H	102	234	-34.95	8.87	-26.09	-13.1
2844.00	H	-	-	-77.32	10.16	-67.15	-54.2
3555.00	H	-	-	-74.30	9.71	-64.58	-51.6

Table 7-15. Radiated Spurious Data (Band 12/17 – High Channel)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 190 of 226

Band 13



Plot 7-304. Radiated Spurious Plot above 1GHz (Band 13)

OPERATING FREQUENCY: 779.50 MHz
CHANNEL: 23205
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]
2338.50	H	155	247	-63.63	9.52	-54.11	-41.1
3118.00	H	-	-	-74.59	9.56	-65.03	-52.0
3897.50	H	-	-	-72.40	9.08	-63.32	-50.3

Table 7-16. Radiated Spurious Data (Band 13 – Low Channel)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 191 of 226

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 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]
2346.00	H	125	242	-60.47	9.49	-50.98	-38.0
3128.00	H	-	-	-74.65	9.53	-65.12	-52.1
3910.00	H	-	-	-72.44	9.09	-63.35	-50.3

Table 7-17. Radiated Spurious Data (Band 13 – Mid Channel)

OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 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]
2353.50	H	102	222	-64.28	9.45	-54.83	-41.8
3138.00	H	-	-	-74.67	9.50	-65.17	-52.2
3922.50	H	-	-	-73.34	9.10	-64.24	-51.2

Table 7-18. Radiated Spurious Data (Band 13 – High Channel)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 192 of 226

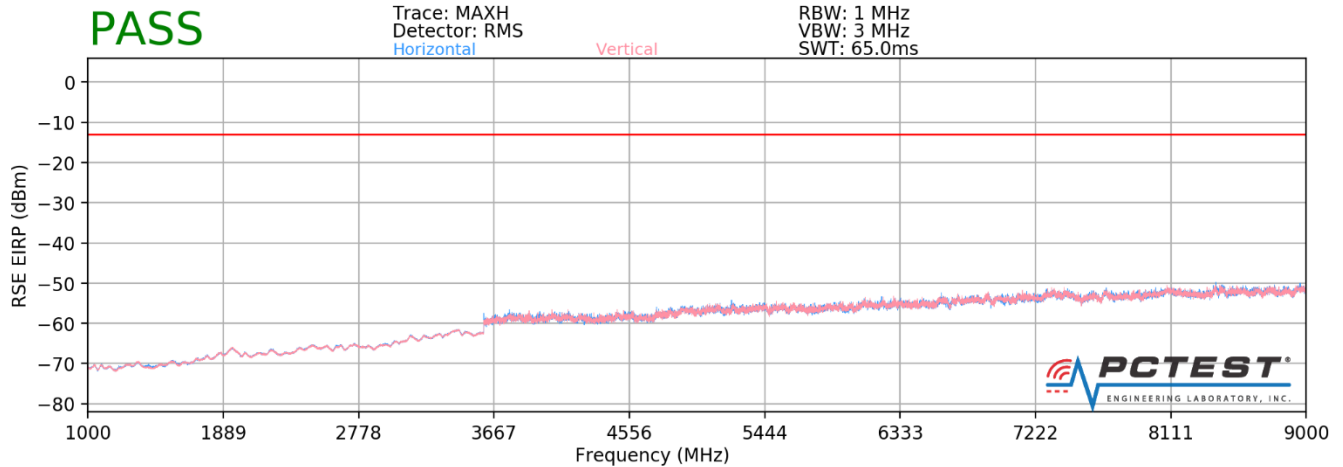
MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

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]
1559.00	H	169	197	-73.19	8.72	-64.46	-24.5
1564.00	H	173	166	-71.20	8.73	-62.47	-22.5
1569.00	H	174	166	-65.98	8.74	-57.24	-17.2

Table 7-19. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 193 of 226

Band 26/5



Plot 7-305. Radiated Spurious Plot above 1GHz (Band 26/5)

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	H	-	-	-81.09	8.96	-72.13	-59.1
2487.00	H	171	136	-77.68	9.13	-68.55	-55.6
3316.00	H	-	-	-76.42	9.36	-67.06	-54.1

Table 7-20. Radiated Spurious Data (Band 26/5 – Low Channel)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 194 of 226

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	H	-	-	-80.53	8.85	-71.68	-58.7
2509.50	H	-	-	-78.21	9.17	-69.04	-56.0

Table 7-21. Radiated Spurious Data (Band 26/5 – Mid Channel)

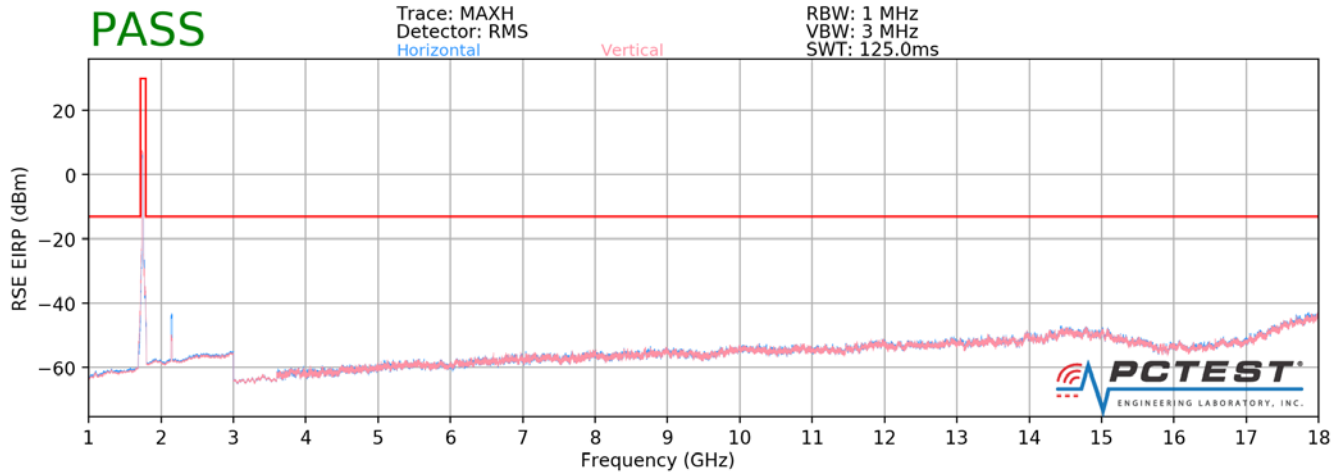
OPERATING FREQUENCY: 844.00 MHz
 CHANNEL: 26990
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	H	-	-	-80.40	8.74	-71.66	-58.7
2532.00	H	-	-	-77.53	9.24	-68.29	-55.3

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

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 195 of 226

Band 66/4



Plot 7-306. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY: 1711.50 MHz
CHANNEL: 131987
MODULATION SIGNAL: QPSK
BANDWIDTH: 3.0 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]
3423.00	V	150	79	-68.41	9.51	-58.90	-45.9
5134.50	V	-	-	-70.91	10.81	-60.10	-47.1

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

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 196 of 226

OPERATING FREQUENCY: 1745.00 MHz
 CHANNEL: 132322
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 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	-	-	-71.99	9.65	-62.35	-49.3
5235.00	V	150	93	-69.92	10.93	-58.99	-46.0
6980.00	V	-	-	-67.50	10.96	-56.54	-43.5

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

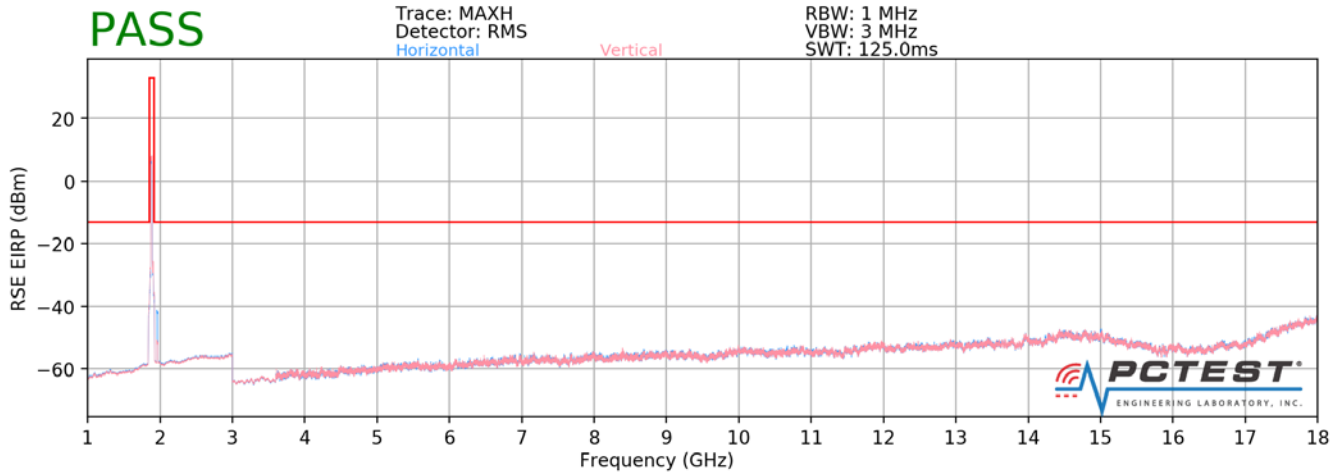
OPERATING FREQUENCY: 1778.50 MHz
 CHANNEL: 132657
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
3557.00	V	-	-	-70.85	9.72	-61.13	-48.1
5335.50	V	150	76	-69.96	10.99	-58.96	-46.0
7114.00	V	-	-	-68.22	10.99	-57.24	-44.2

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

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 197 of 226

Band 25/2



Plot 7-307. Radiated Spurious Plot above 1GHz (Band 25/2)

OPERATING FREQUENCY: 1850.70 MHz
CHANNEL: 26047
MODULATION SIGNAL: QPSK
BANDWIDTH: 1.4 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]
3701.40	V	-	-	-71.92	9.74	-62.18	-49.2
5552.10	V	-	-	-70.38	10.98	-59.41	-46.4

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

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 198 of 226

OPERATING FREQUENCY: 1882.50 MHz
CHANNEL: 26365
MODULATION SIGNAL: QPSK
BANDWIDTH: 1.4 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	V	-	-	-71.66	9.48	-62.18	-49.2
5647.50	V	-	-	-69.88	11.18	-58.70	-45.7

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

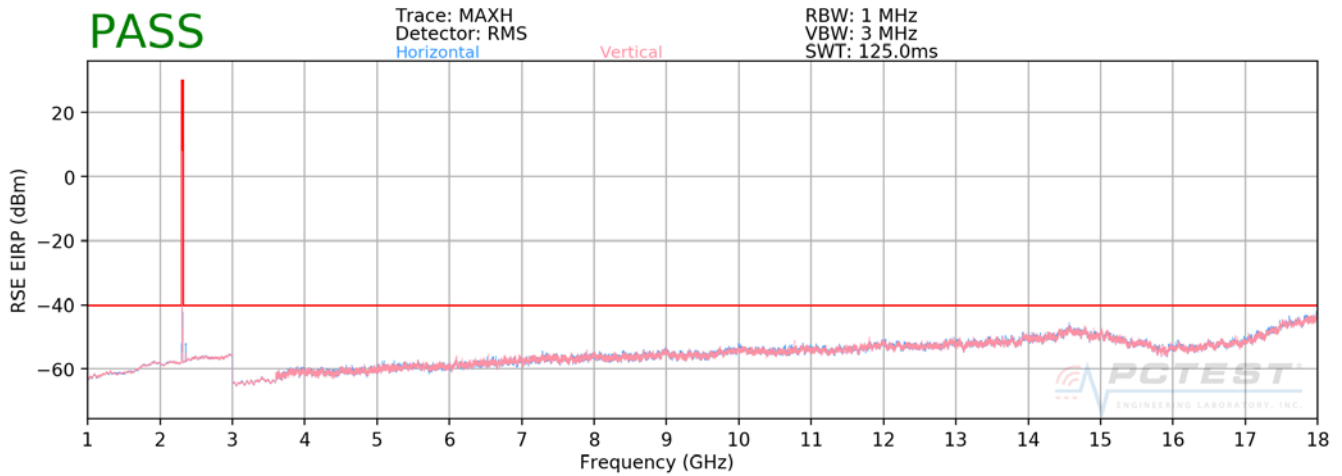
OPERATING FREQUENCY: 1914.30 MHz
CHANNEL: 26683
MODULATION SIGNAL: QPSK
BANDWIDTH: 1.4 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

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]
3828.60	V	-	-	-70.75	9.27	-61.48	-48.5
5742.90	V	-	-	-70.33	11.36	-58.97	-46.0

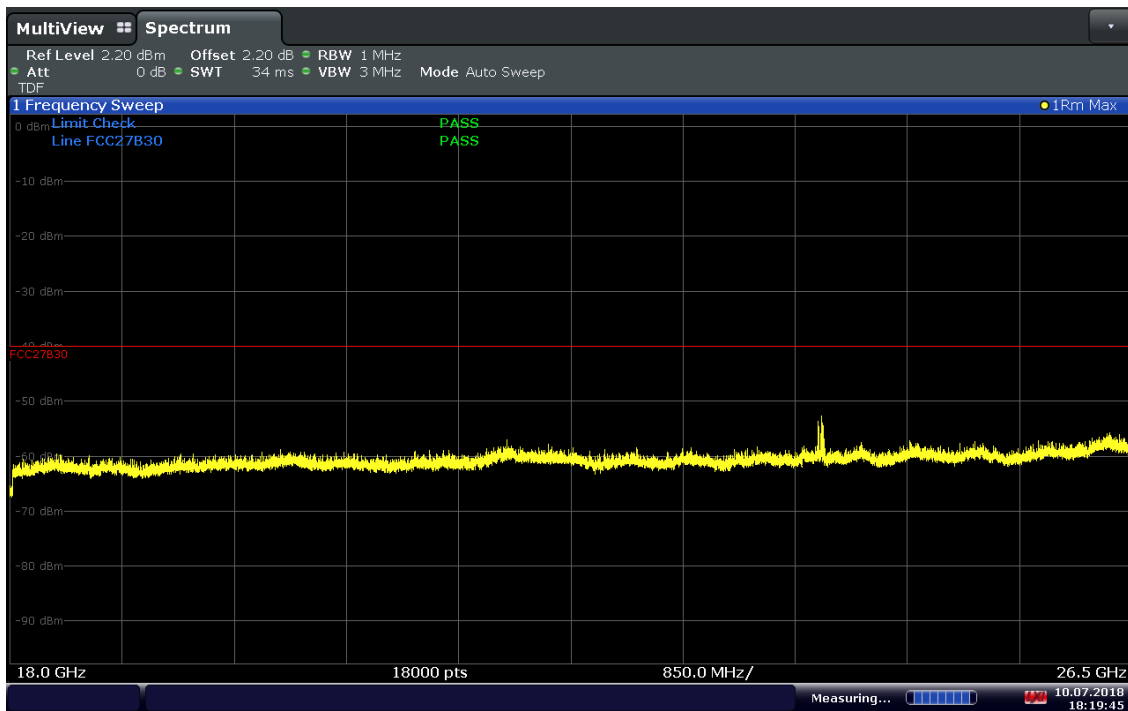
Table 7-28. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 199 of 226

Band 30



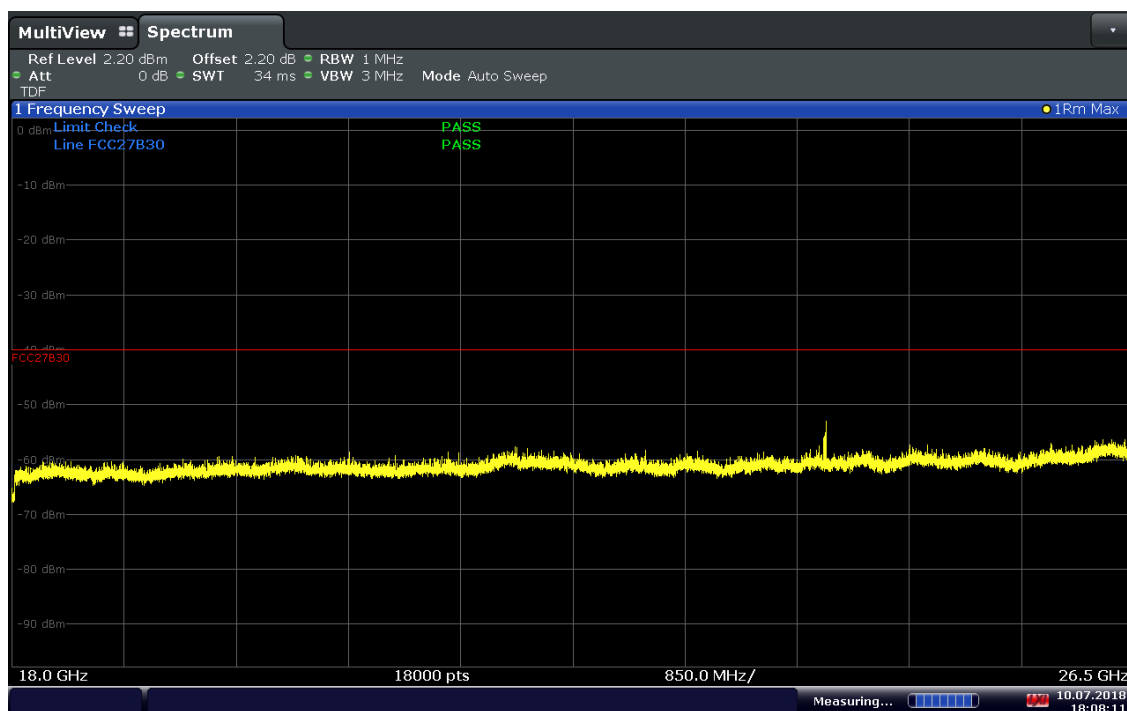
Plot 7-308. Radiated Spurious Plot 1GHz - 18GHz (Band 30)



18:19:46 10.07.2018

Plot 7-309. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30 Ant Pol.H)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 200 of 226



18:08:12 10.07.2018

Plot 7-310. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30 Ant Pol.V)

OPERATING FREQUENCY: 2307.50 MHz
 CHANNEL: 27685
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	H	271	10	-73.14	11.22	-61.92	-21.9
6922.50	H	-	-	-71.17	10.89	-60.27	-20.3
9230.00	H	127	289	-70.24	12.29	-57.95	-18.0
11537.50	H	-	-	-69.34	13.21	-56.12	-16.1
13845.00	H	-	-	-65.80	12.34	-53.46	-13.5

Table 7-29. Radiated Spurious Data (Band 30 – Low Channel)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3-ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 201 of 226

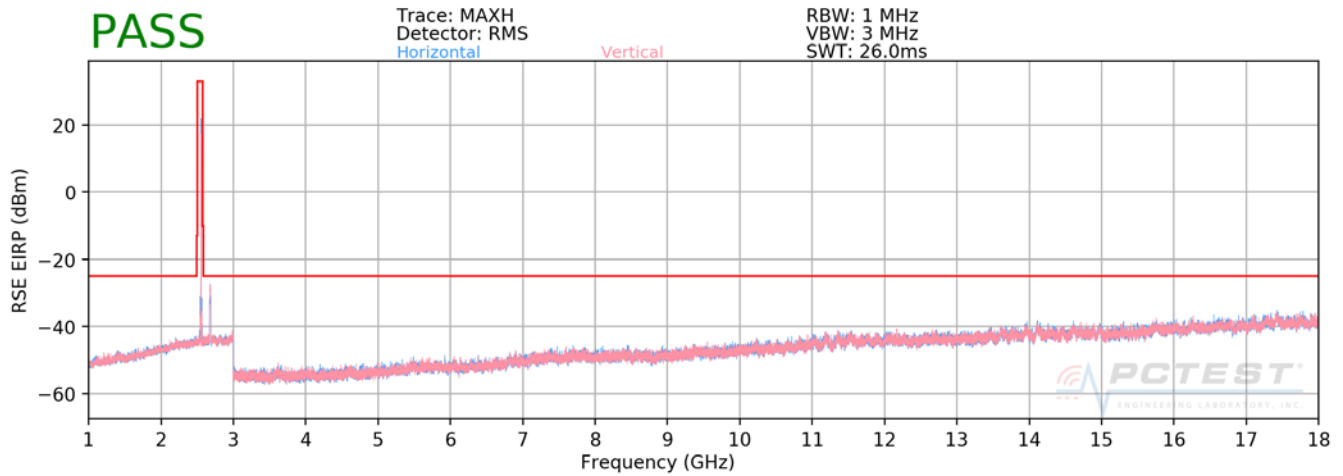
OPERATING FREQUENCY: 2312.50 MHz
 CHANNEL: 27735
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4625.00	H	283	358	-71.69	11.23	-60.46	-20.5
6937.50	H	-	-	-71.16	10.91	-60.25	-20.2
9250.00	H	155	354	-69.80	12.28	-57.52	-17.5
11562.50	H	-	-	-69.51	13.18	-56.33	-16.3
13875.00	H	-	-	-65.38	12.29	-53.09	-13.1

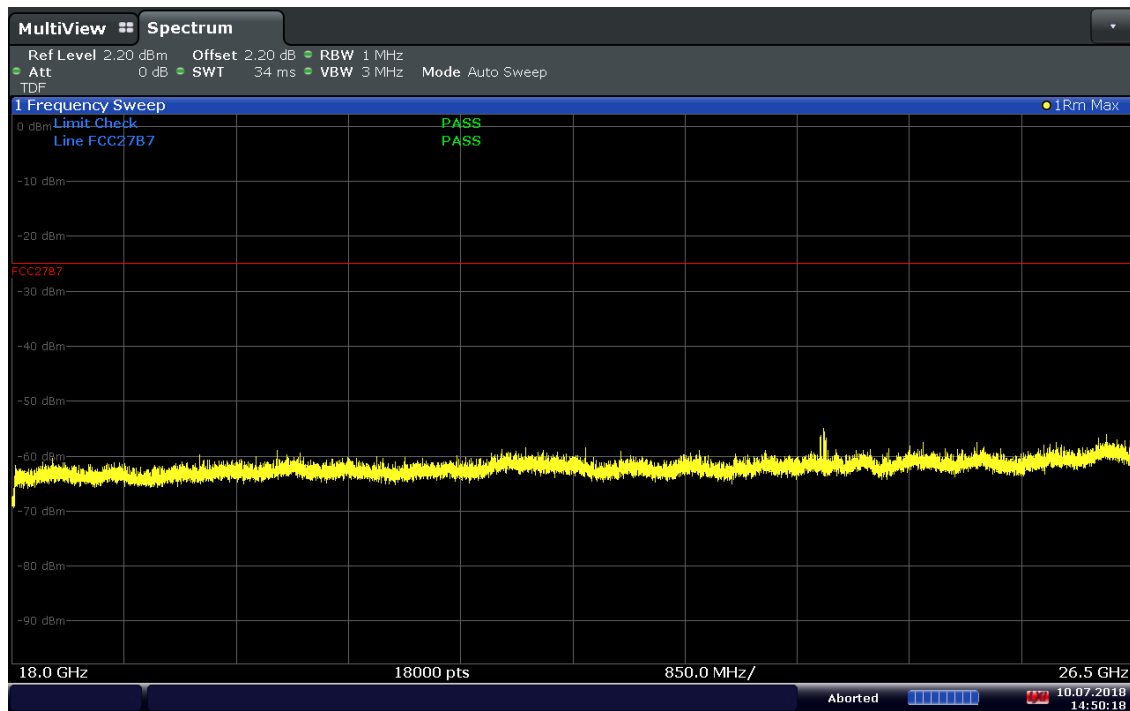
Table 7-30. Radiated Spurious Data (Band 30 – High Channel)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 202 of 226

Band 7

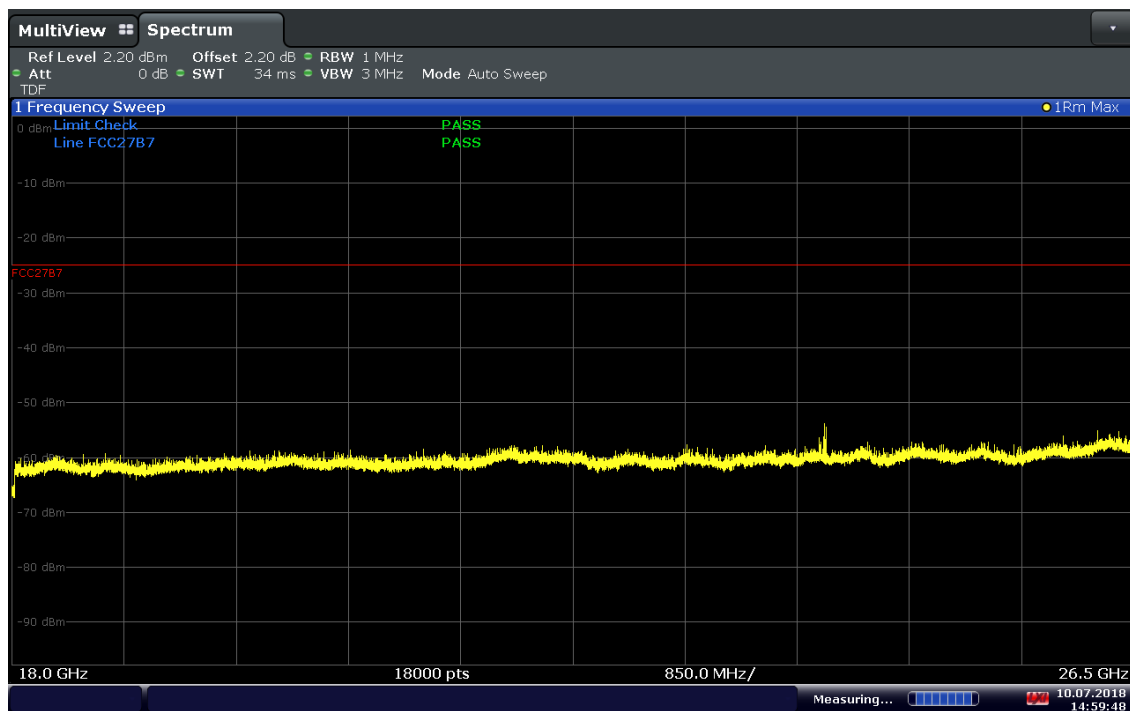


Plot 7-311. Radiated Spurious Plot 1GHz - 18GHz (Band 7)



Plot 7-312. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7 Ant Pol.H)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 203 of 226



14:59:49 10.07.2018

Plot 7-313. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7 Ant Pol.V)

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	-	-	-70.68	11.09	-59.59	-34.6
7530.00	H	-	-	-66.68	11.05	-55.62	-30.6

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

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 204 of 226

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	-	-	-70.72	10.91	-59.81	-34.8
7605.00	H	-	-	-66.92	11.22	-55.70	-30.7

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

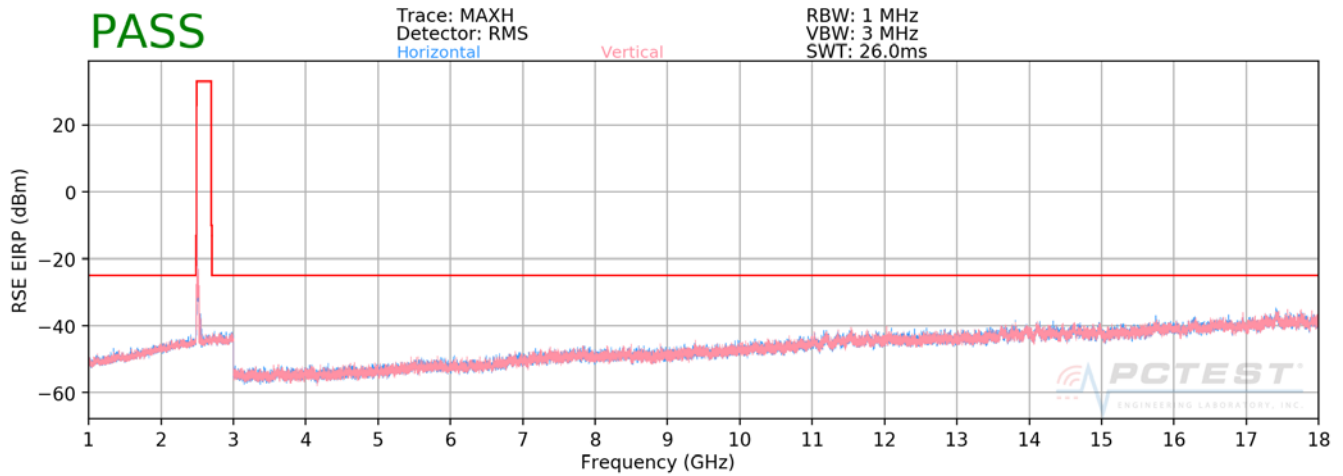
OPERATING FREQUENCY: 2560.00 MHz
 CHANNEL: 21350
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

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	-	-	-70.29	10.84	-59.46	-34.5
7680.00	H	-	-	-66.51	11.34	-55.17	-30.2

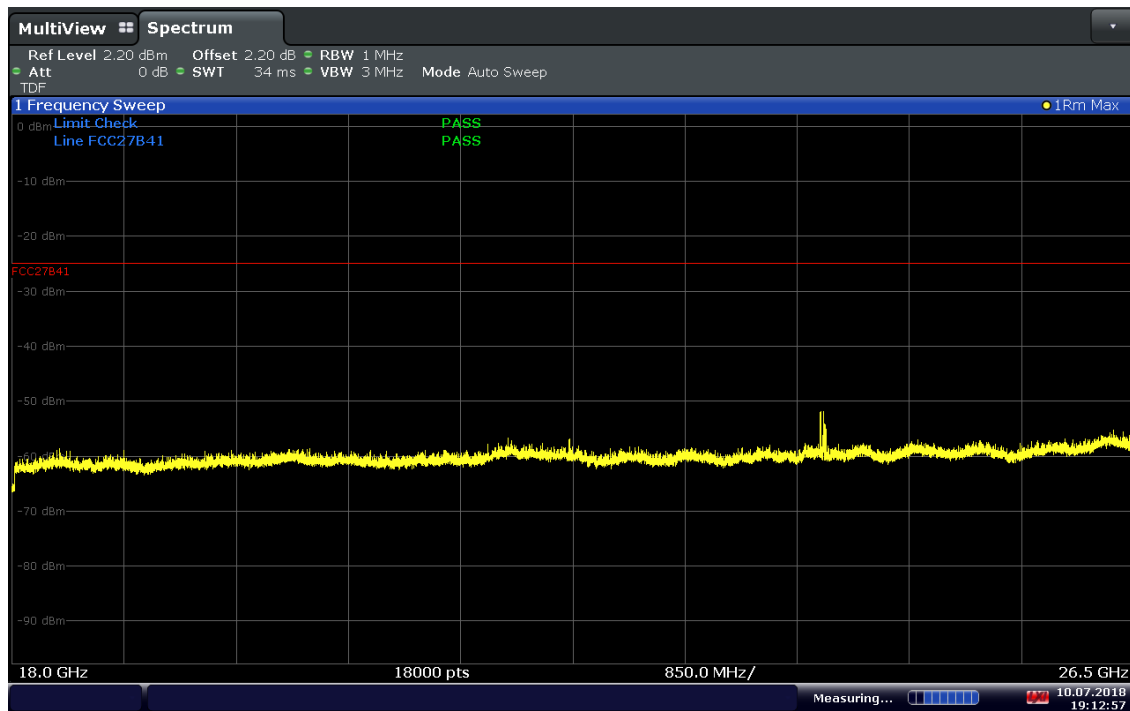
Table 7-33. Radiated Spurious Data (Band 7 – High Channel)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 205 of 226

Band 41



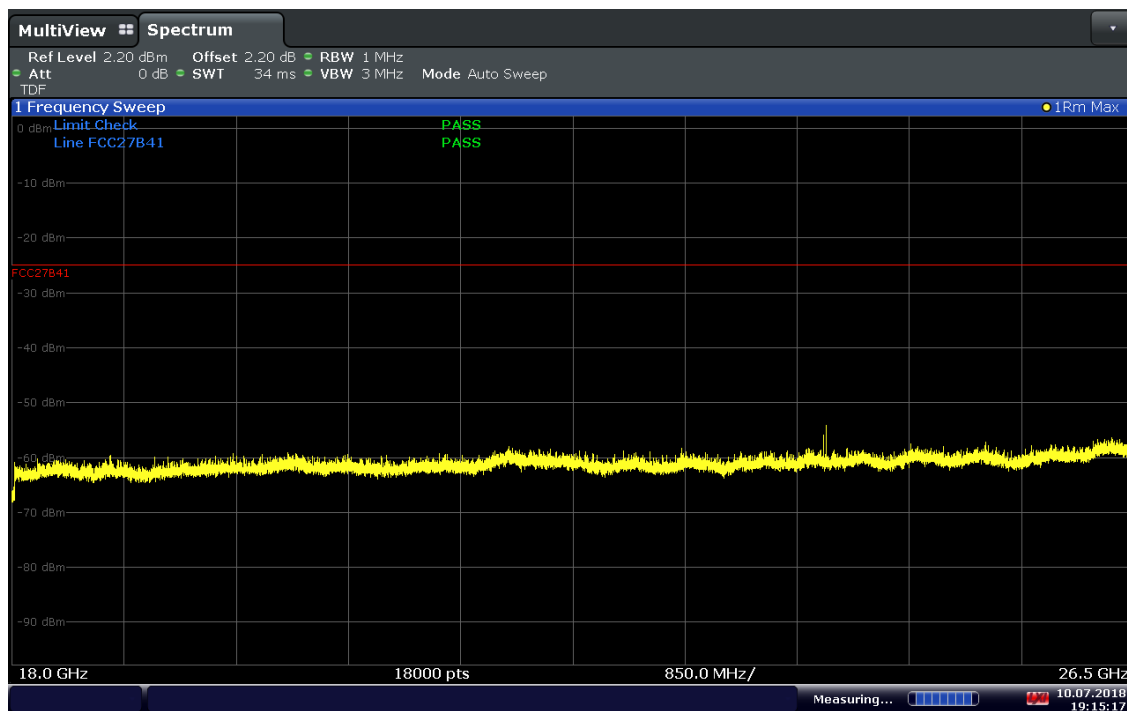
Plot 7-314. Radiated Spurious Plot 1GHz - 18GHz (Band 41)



19:12:58 10.07.2018

Plot 7-315. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 Ant Pol.H)

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 206 of 226



19:15:18 10.07.2018

Plot 7-316. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 Ant Pol.V)

OPERATING FREQUENCY: 2510.00 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]
5020.00	H	-	-	-60.40	8.35	-52.05	-27.0
7530.00	H	150	204	-55.42	8.45	-46.97	-22.0
10040.00	H	-	-	-54.80	9.84	-44.96	-20.0
12550.00	H	-	-	-51.07	9.29	-41.78	-16.8

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

FCC ID: ZNFQ910QM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 207 of 226

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	-	-	-59.17	8.45	-50.72	-25.7
7779.00	H	150	287	-55.83	8.75	-47.09	-22.1
10372.00	H	-	-	-53.90	9.73	-44.17	-19.2
12965.00	H	-	-	-51.18	9.19	-41.99	-17.0

Table 7-35. Radiated Spurious Data (Band 41 – Mid Channel)

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	-	-	-60.15	8.40	-51.75	-26.8
8040.00	H	150	201	-55.45	9.19	-46.27	-21.3
10720.00	H	-	-	-54.26	9.52	-44.74	-19.7
13400.00	H	-	-	-51.83	9.07	-42.77	-17.8

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

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 208 of 226

7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

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

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 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

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 209 of 226

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	+ 20 (Ref)	707,499,938	-62	-0.0000088
100 %		- 30	707,499,609	-391	-0.0000553
100 %		- 20	707,500,063	63	0.0000089
100 %		- 10	707,500,018	18	0.0000025
100 %		0	707,500,177	177	0.0000250
100 %		+ 10	707,499,973	-27	-0.0000038
100 %		+ 20	707,499,711	-289	-0.0000408
100 %		+ 30	707,500,303	303	0.0000428
100 %		+ 40	707,500,019	19	0.0000027
100 %		+ 50	707,499,854	-146	-0.0000206
BATT. ENDPOINT	3.43	+ 20	707,499,679	-321	-0.0000454

Table 7-37. 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: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 210 of 226

Band 12/17 Frequency Stability Measurements

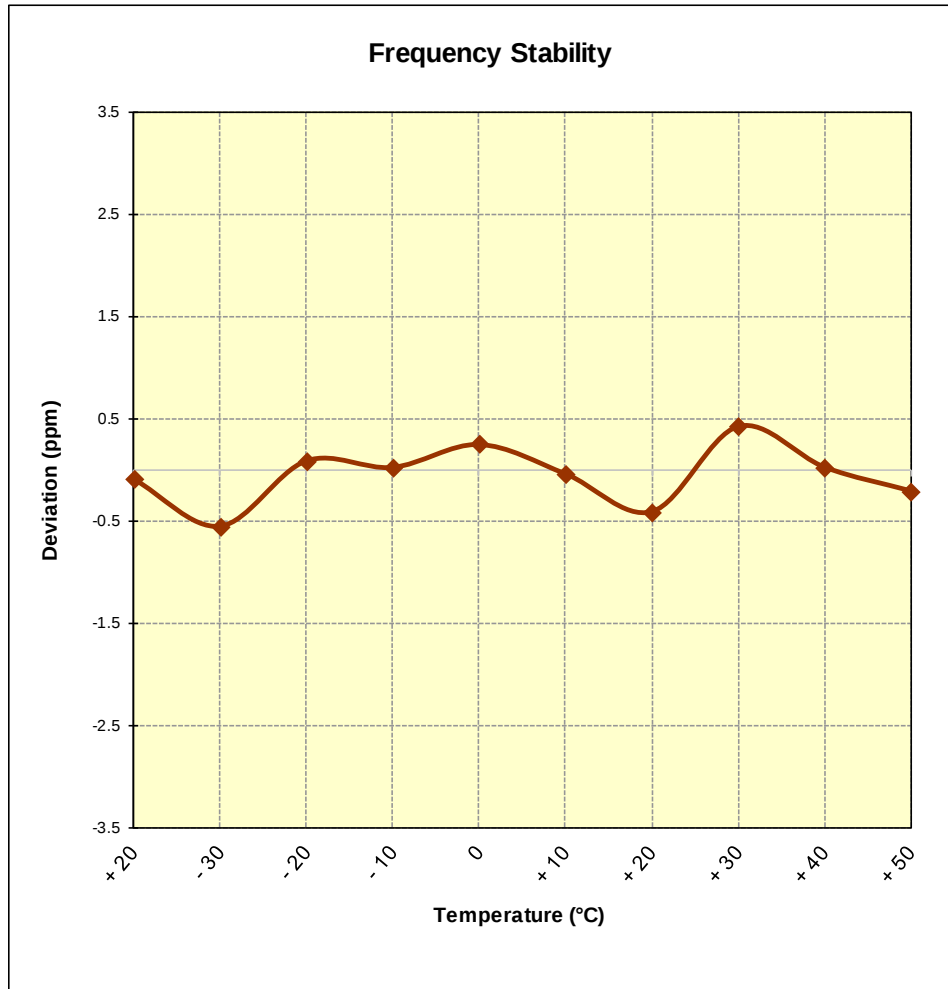


Figure 7-8. Frequency Stability Graph (Band 12/17)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 211 of 226

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	+ 20 (Ref)	782,000,239	239	0.0000306
100 %		- 30	781,999,748	-252	-0.0000322
100 %		- 20	781,999,908	-92	-0.0000118
100 %		- 10	781,999,701	-299	-0.0000382
100 %		0	782,000,120	120	0.0000153
100 %		+ 10	781,999,820	-180	-0.0000230
100 %		+ 20	781,999,961	-39	-0.0000050
100 %		+ 30	782,000,068	68	0.0000087
100 %		+ 40	782,000,026	26	0.0000033
100 %		+ 50	781,999,815	-185	-0.0000237
BATT. ENDPOINT	3.43	+ 20	782,000,073	73	0.0000093

Table 7-38. 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: ZNFQ910QM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset	Page 212 of 226

Band 13 Frequency Stability Measurements

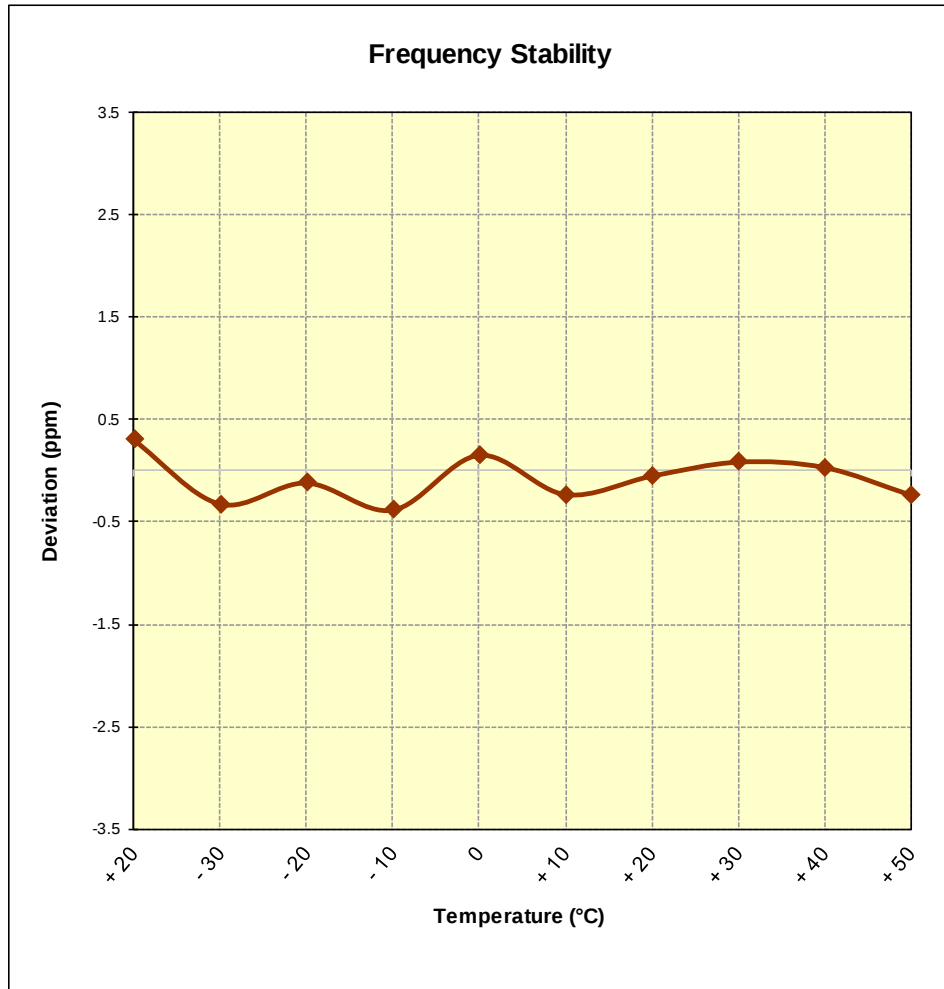


Figure 7-9. Frequency Stability Graph (Band 13)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 213 of 226

Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 831,500,000 Hz
 CHANNEL: 26865
 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	+ 20 (Ref)	831,500,024	24	0.0000029
100 %		- 30	831,499,907	-93	-0.0000112
100 %		- 20	831,500,035	35	0.0000042
100 %		- 10	831,499,599	-401	-0.0000482
100 %		0	831,500,095	95	0.0000114
100 %		+ 10	831,499,934	-66	-0.0000079
100 %		+ 20	831,499,884	-116	-0.0000140
100 %		+ 30	831,499,937	-63	-0.0000076
100 %		+ 40	831,499,975	-25	-0.0000030
100 %		+ 50	831,499,906	-94	-0.0000113
BATT. ENDPOINT	3.43	+ 20	831,499,692	-308	-0.0000370

Table 7-39. Frequency Stability Data (Band 26/5)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 214 of 226

Band 26/5 Frequency Stability Measurements

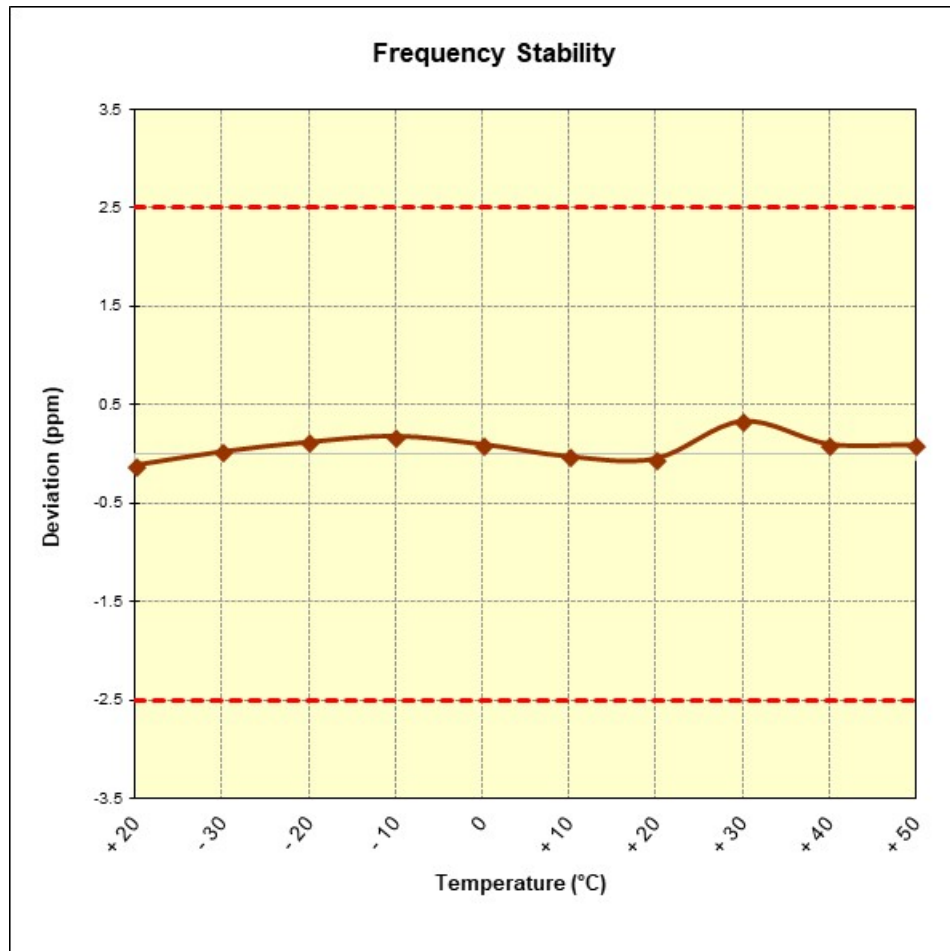


Figure 7-10. Frequency Stability Graph (Band 26/5)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 215 of 226

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	+ 20 (Ref)	1,744,999,681	-319	-0.0000183
100 %		- 30	1,744,999,902	-98	-0.0000056
100 %		- 20	1,744,999,701	-299	-0.0000171
100 %		- 10	1,744,999,969	-31	-0.0000018
100 %		0	1,745,000,086	86	0.0000049
100 %		+ 10	1,744,999,863	-137	-0.0000079
100 %		+ 20	1,745,000,317	317	0.0000182
100 %		+ 30	1,744,999,757	-243	-0.0000139
100 %		+ 40	1,745,000,381	381	0.0000218
100 %		+ 50	1,745,000,027	27	0.0000015
BATT. ENDPOINT	3.43	+ 20	1,744,999,914	-86	-0.0000049

Table 7-40. 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: ZNFQ910QM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset	Page 216 of 226

Band 66/4 Frequency Stability Measurements

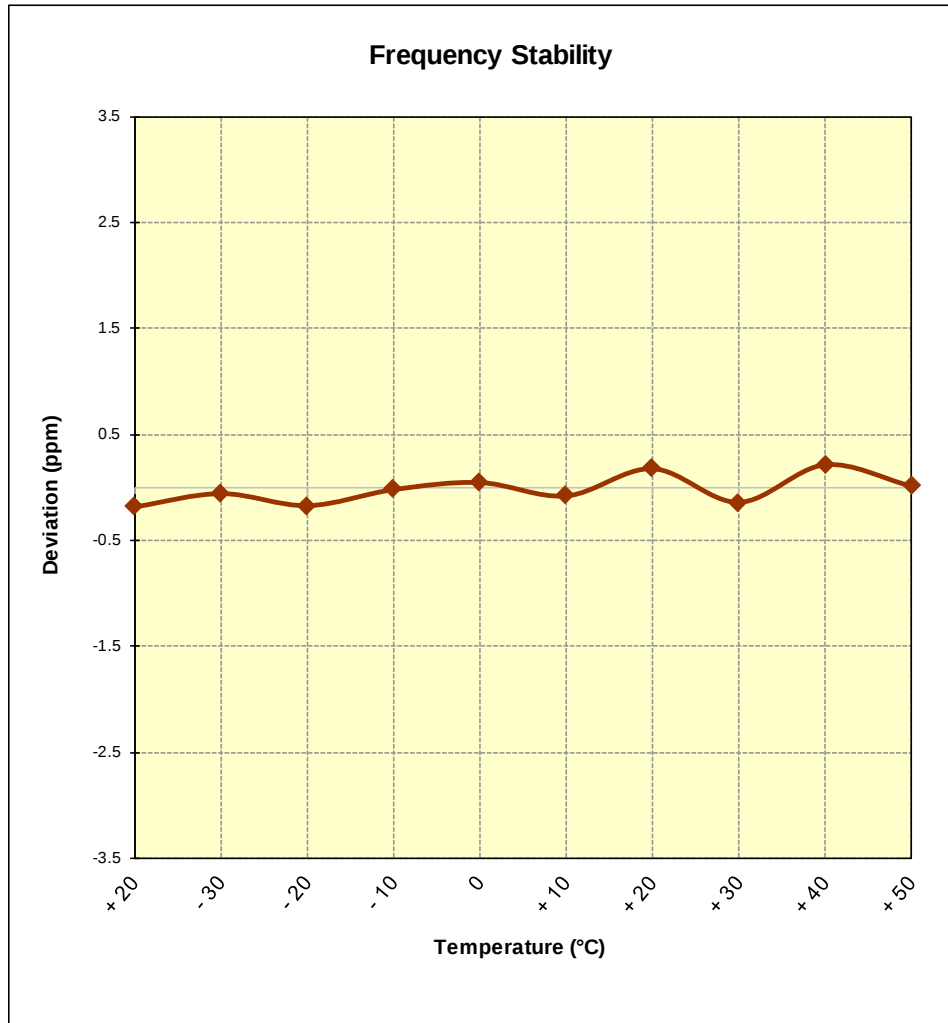


Figure 7-11. Frequency Stability Graph (Band 66/4)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 217 of 226

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	+ 20 (Ref)	1,882,499,995	-5	-0.0000003
100 %		- 30	1,882,500,100	100	0.0000053
100 %		- 20	1,882,500,077	77	0.0000041
100 %		- 10	1,882,499,896	-104	-0.0000055
100 %		0	1,882,500,273	273	0.0000145
100 %		+ 10	1,882,499,999	-1	-0.0000001
100 %		+ 20	1,882,499,957	-43	-0.0000023
100 %		+ 30	1,882,500,186	186	0.0000099
100 %		+ 40	1,882,499,996	-4	-0.0000002
100 %		+ 50	1,882,499,831	-169	-0.0000090
BATT. ENDPOINT	3.43	+ 20	1,882,500,222	222	0.0000118

Table 7-41. 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: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 218 of 226

Band 25/2 Frequency Stability Measurements

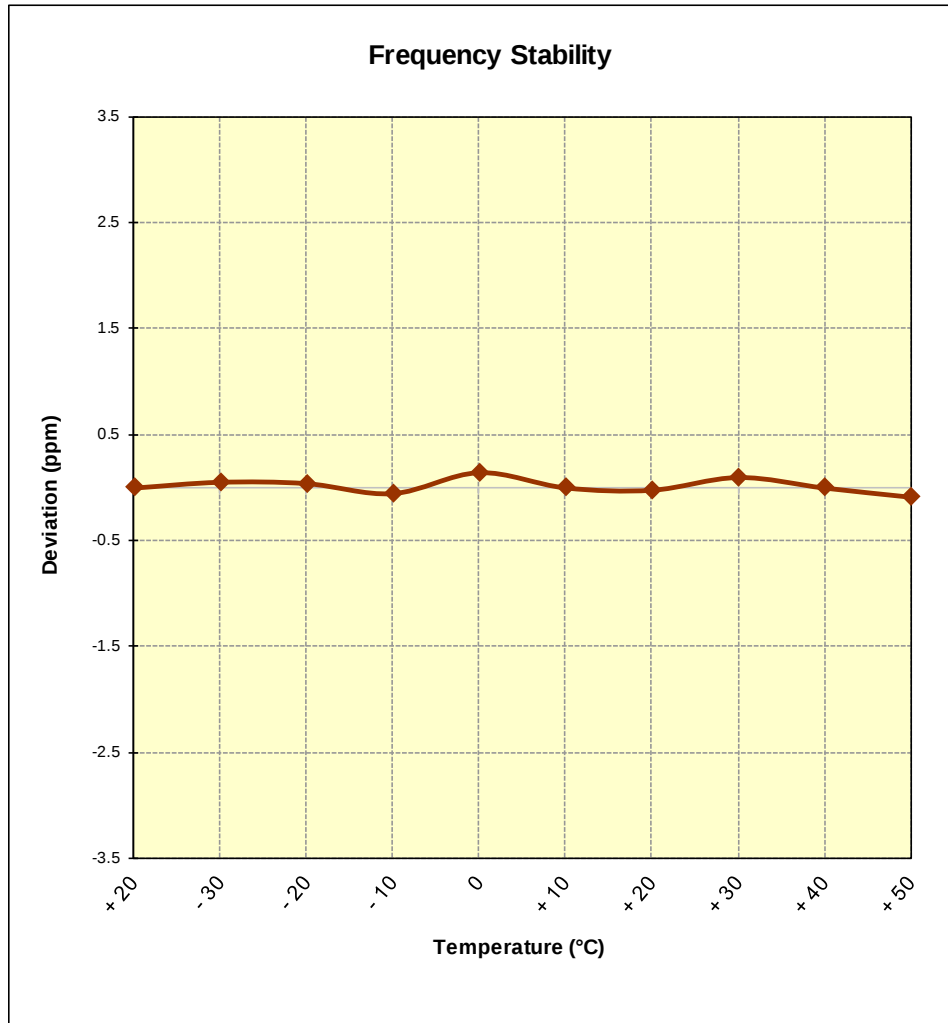


Figure 7-12. Frequency Stability Graph (Band 25/2)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 219 of 226

Band 30 Frequency Stability Measurements

OPERATING FREQUENCY: 2,310,000,000 Hz
 CHANNEL: 27710
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	2,310,000,236	236	0.0000102
100 %		- 30	2,309,999,977	-23	-0.0000010
100 %		- 20	2,309,999,557	-443	-0.0000192
100 %		- 10	2,310,000,259	259	0.0000112
100 %		0	2,309,999,764	-236	-0.0000102
100 %		+ 10	2,309,999,794	-206	-0.0000089
100 %		+ 20	2,310,000,299	299	0.0000129
100 %		+ 30	2,310,000,027	27	0.0000012
100 %		+ 40	2,310,000,192	192	0.0000083
100 %		+ 50	2,309,999,896	-104	-0.0000045
BATT. ENDPOINT	3.43	+ 20	2,310,000,033	33	0.0000014

Table 7-42. Frequency Stability Data (Band 30)

Note:

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

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 220 of 226

Band 30 Frequency Stability Measurements

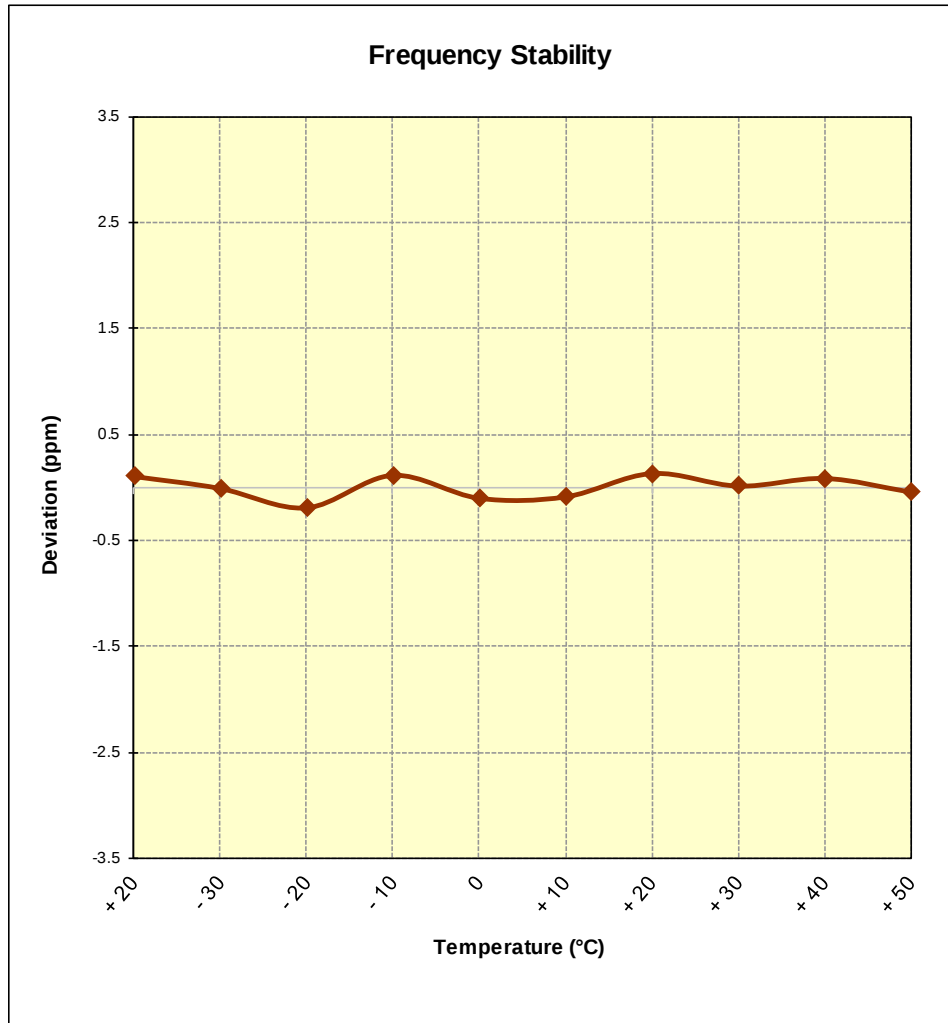


Figure 7-13. Frequency Stability Graph (Band 30)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 221 of 226

Band 7 Frequency Stability Measurements

OPERATING FREQUENCY: 2,535,000,000 Hz
 CHANNEL: 21100
 REFERENCE VOLTAGE: 4.34 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.34	+ 20 (Ref)	2,535,000,112	112	0.0000044
100 %		- 30	2,535,000,126	126	0.0000050
100 %		- 20	2,535,000,147	147	0.0000058
100 %		- 10	2,535,000,160	160	0.0000063
100 %		0	2,534,999,807	-193	-0.0000076
100 %		+ 10	2,535,000,184	184	0.0000073
100 %		+ 20	2,534,999,675	-325	-0.0000128
100 %		+ 30	2,534,999,967	-33	-0.0000013
100 %		+ 40	2,534,999,979	-21	-0.0000008
100 %		+ 50	2,535,000,167	167	0.0000066
BATT. ENDPOINT		+ 20	2,534,999,965	-35	-0.0000014

Table 7-43. 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: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 222 of 226

Band 7 Frequency Stability Measurements

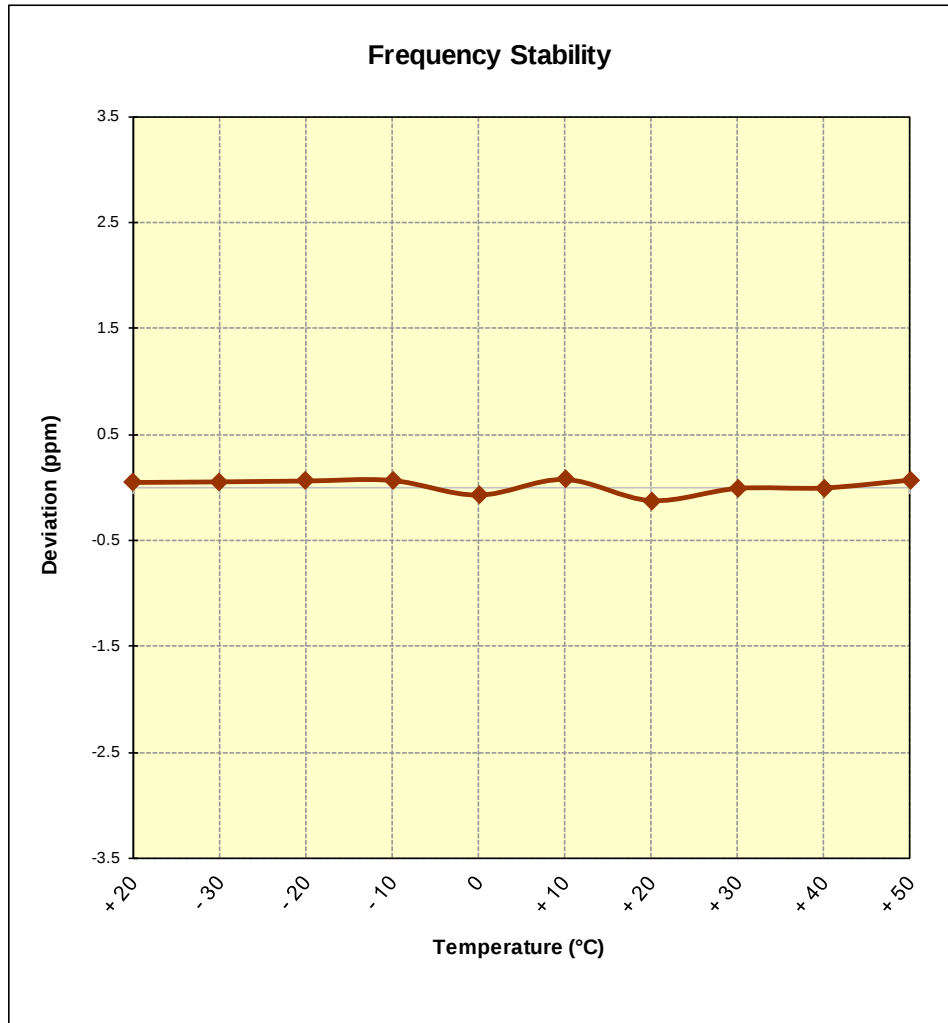


Figure 7-14. Frequency Stability Graph (Band 7)

FCC ID: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1806290137-03-R3.ZNF	Test Dates: 6/29 - 7/31/2018	EUT Type: Portable Handset		Page 223 of 226

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	+ 20 (Ref)	2,593,000,028	28	0.0000011
100 %		- 30	2,592,999,976	-24	-0.0000009
100 %		- 20	2,592,999,975	-25	-0.0000010
100 %		- 10	2,593,000,079	79	0.0000030
100 %		0	2,592,999,996	-4	-0.0000002
100 %		+ 10	2,592,999,944	-56	-0.0000022
100 %		+ 20	2,593,000,238	238	0.0000092
100 %		+ 30	2,593,000,364	364	0.0000140
100 %		+ 40	2,593,000,131	131	0.0000051
100 %		+ 50	2,593,000,184	184	0.0000071
BATT. ENDPOINT	3.43	+ 20	2,593,000,031	31	0.0000012

Table 7-44. 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: ZNFQ910QM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

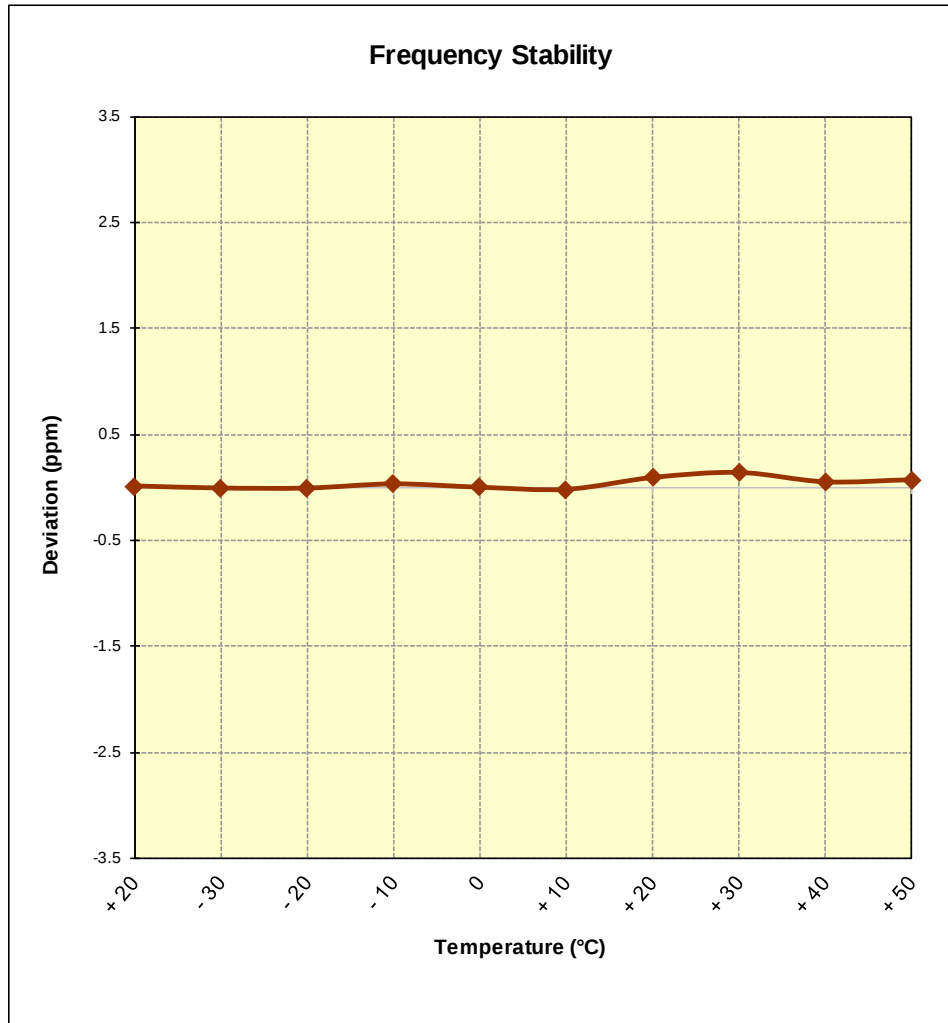


Figure 7-15. Frequency Stability Graph (Band 41)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFQ910QM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

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