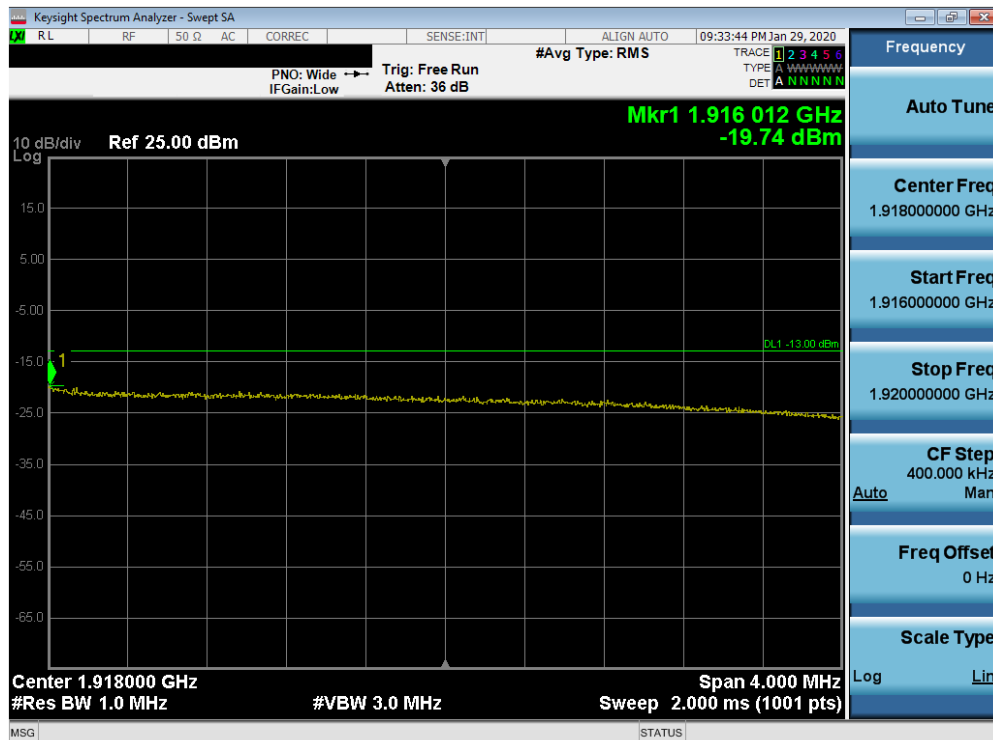


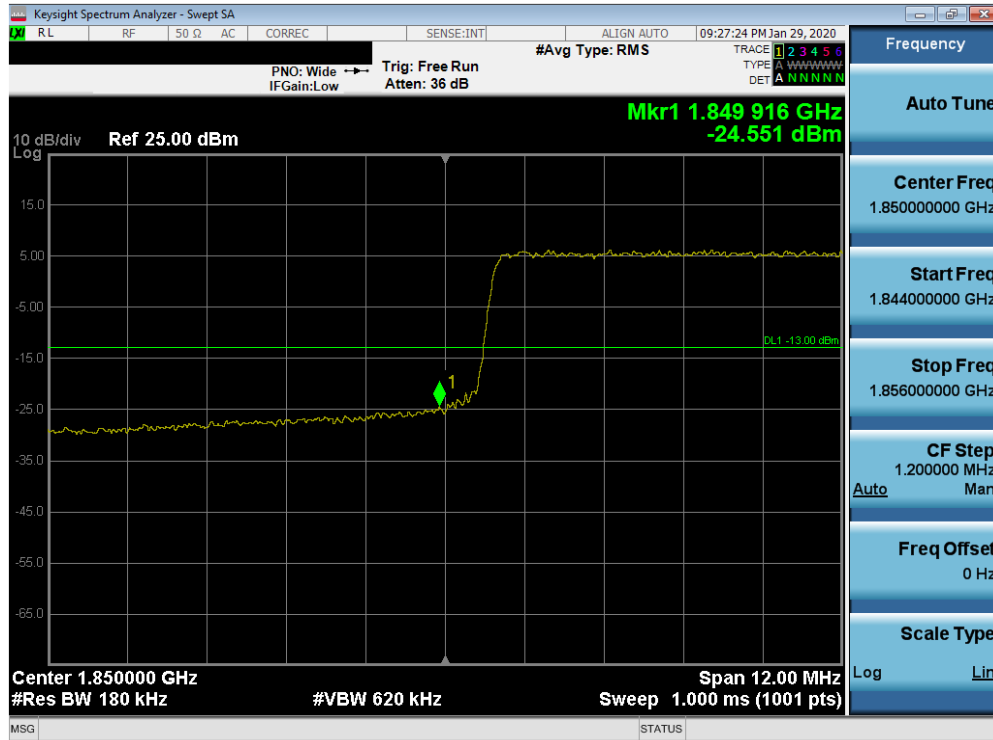


Plot 7-243. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

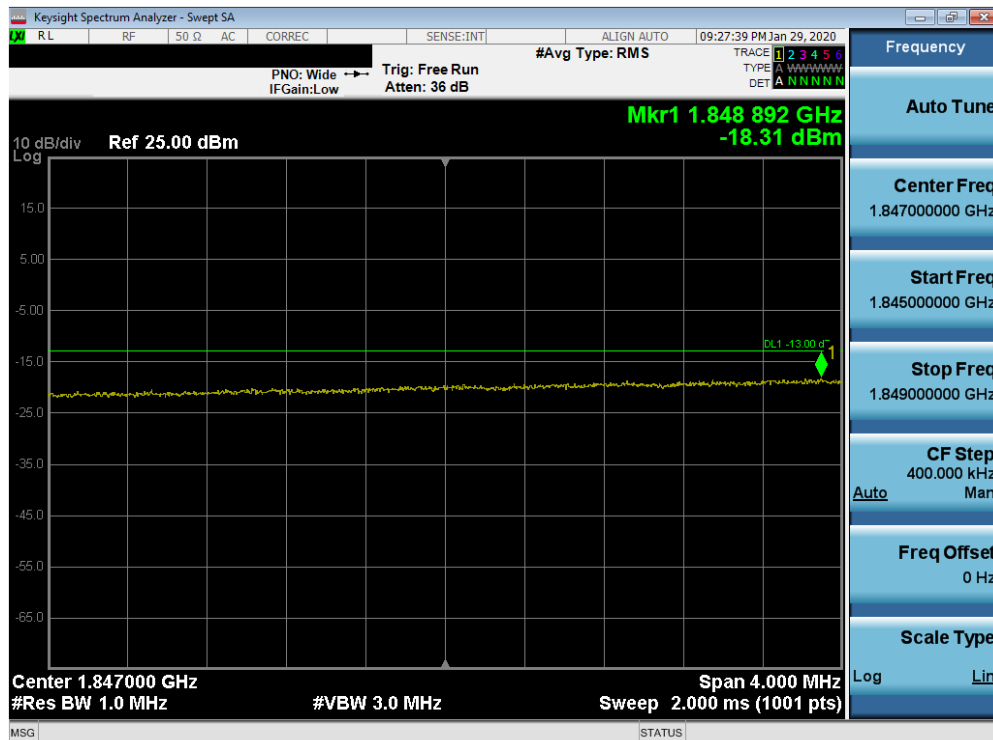


Plot 7-244. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 146 of 237



Plot 7-245. Lower Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

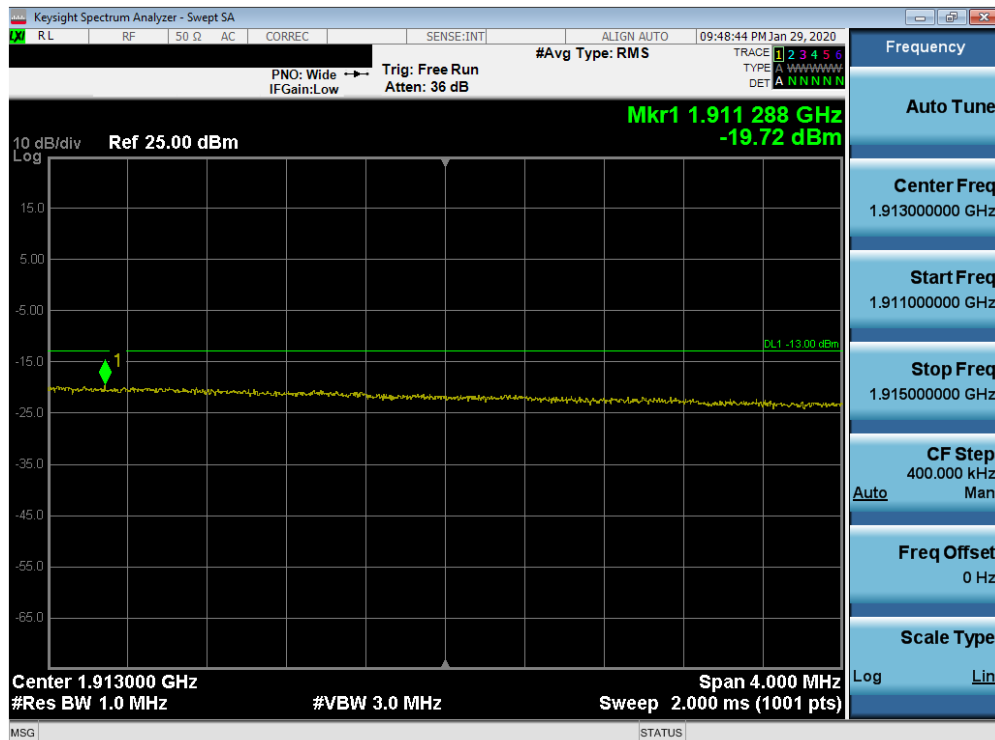


Plot 7-246. Lower Extended Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 147 of 237

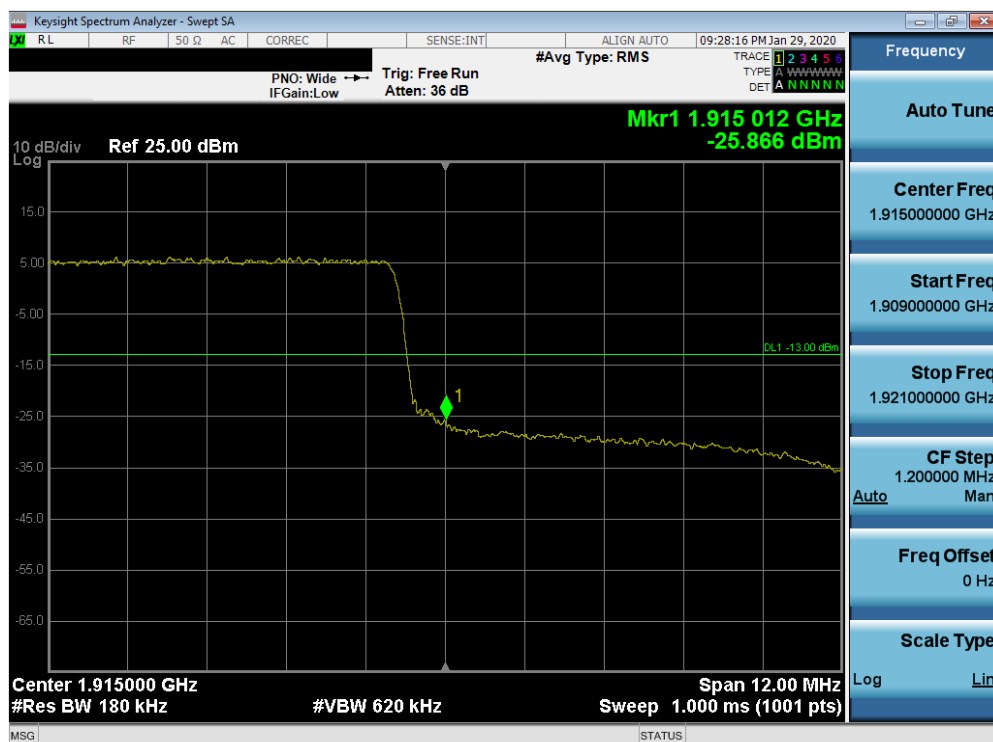


Plot 7-247. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

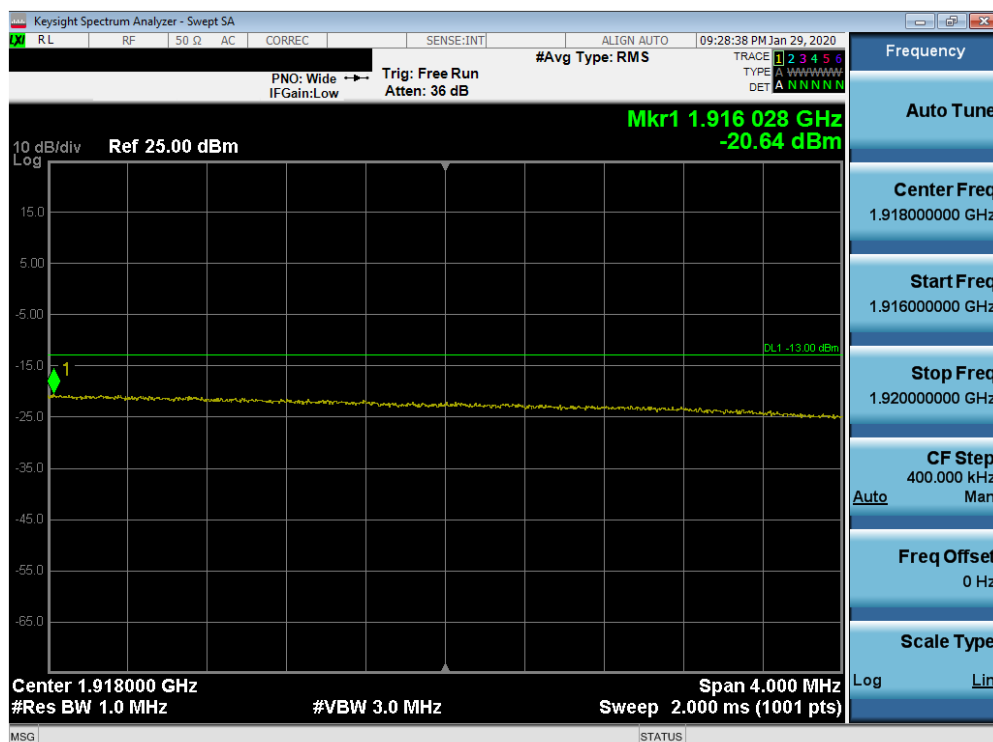


Plot 7-248. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 148 of 237

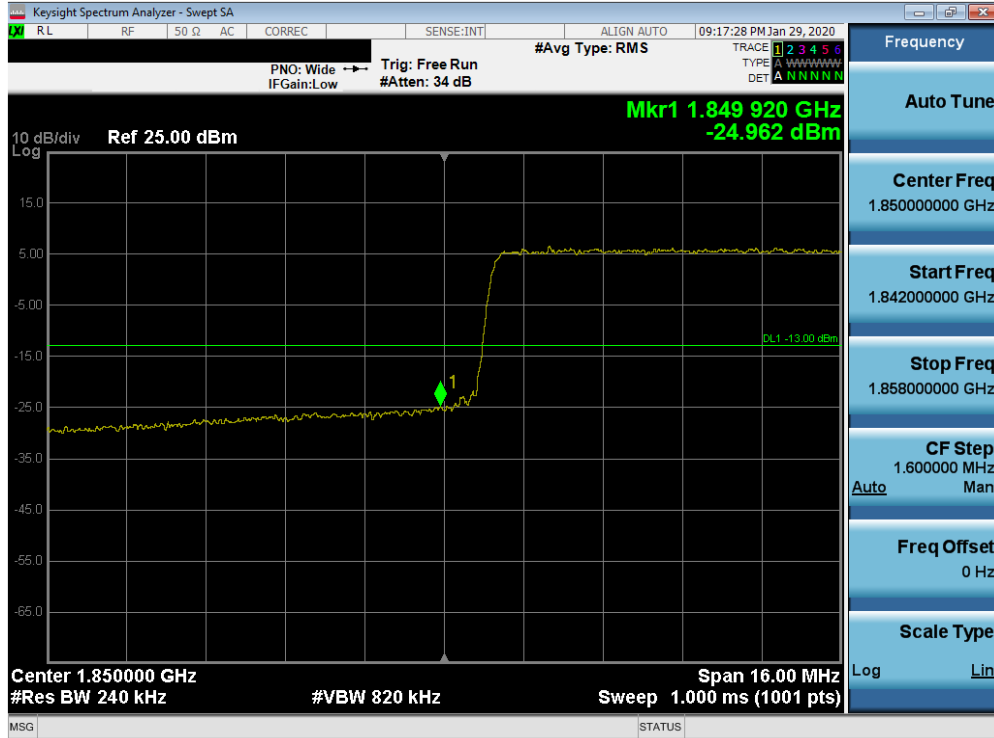


Plot 7-249. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

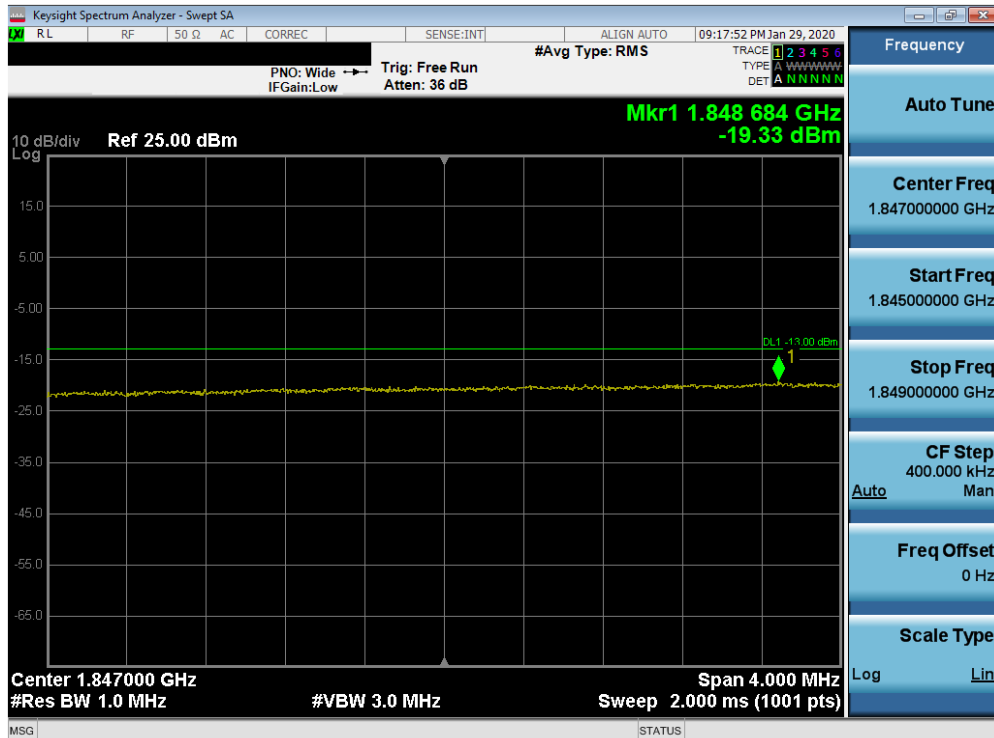


Plot 7-250. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 149 of 237



Plot 7-251. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

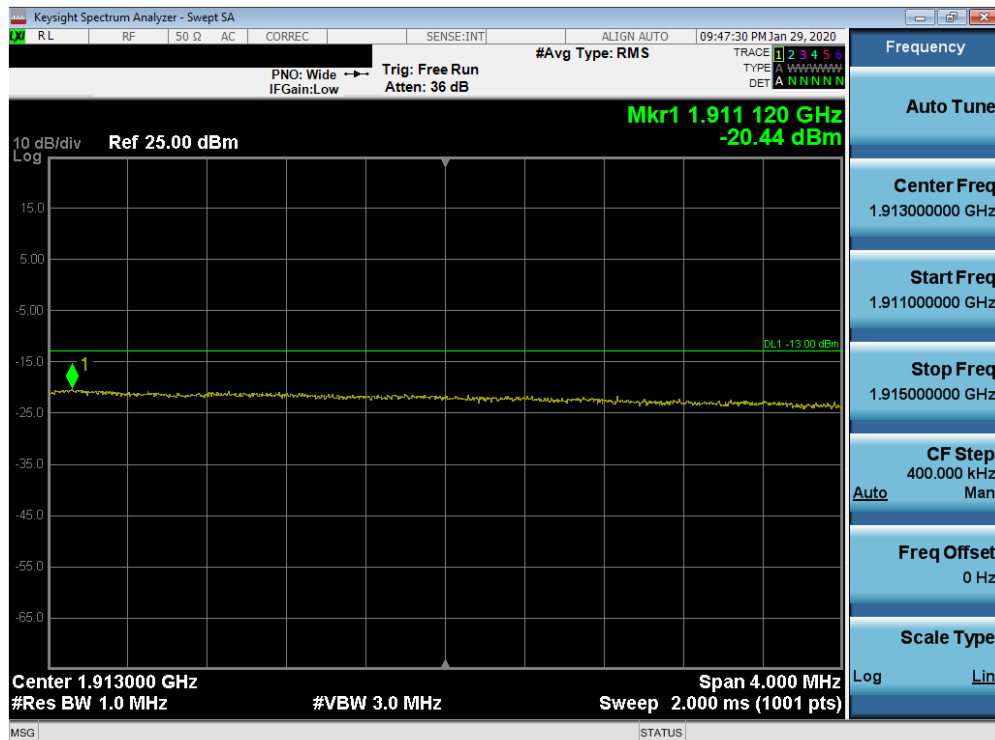


Plot 7-252. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 150 of 237



Plot 7-253. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

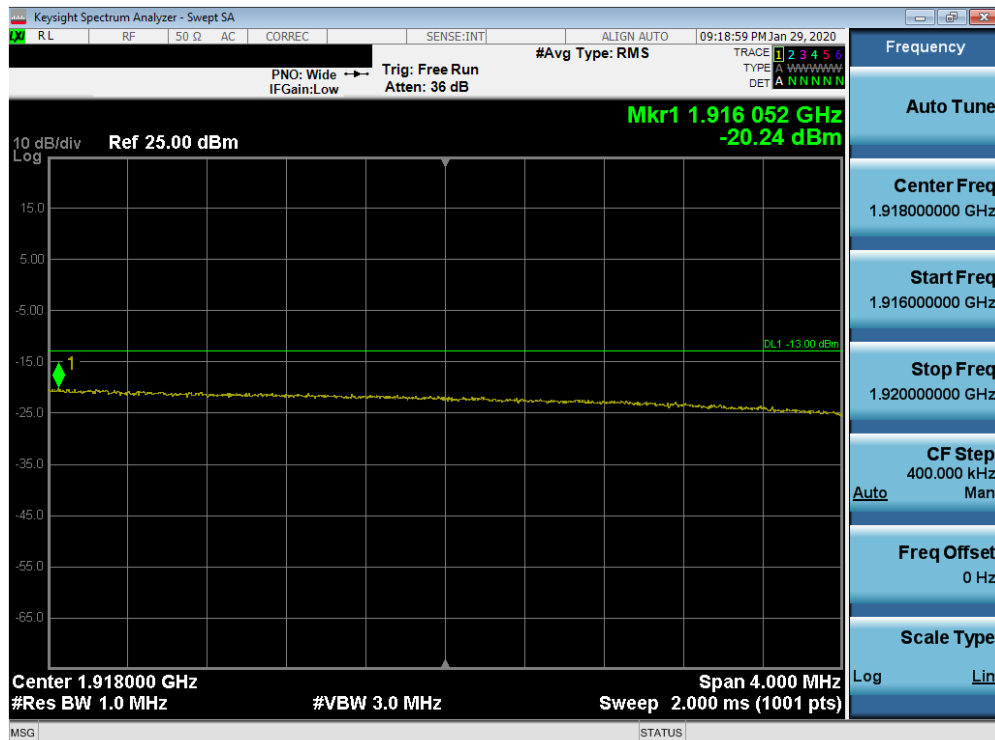


Plot 7-254. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 151 of 237



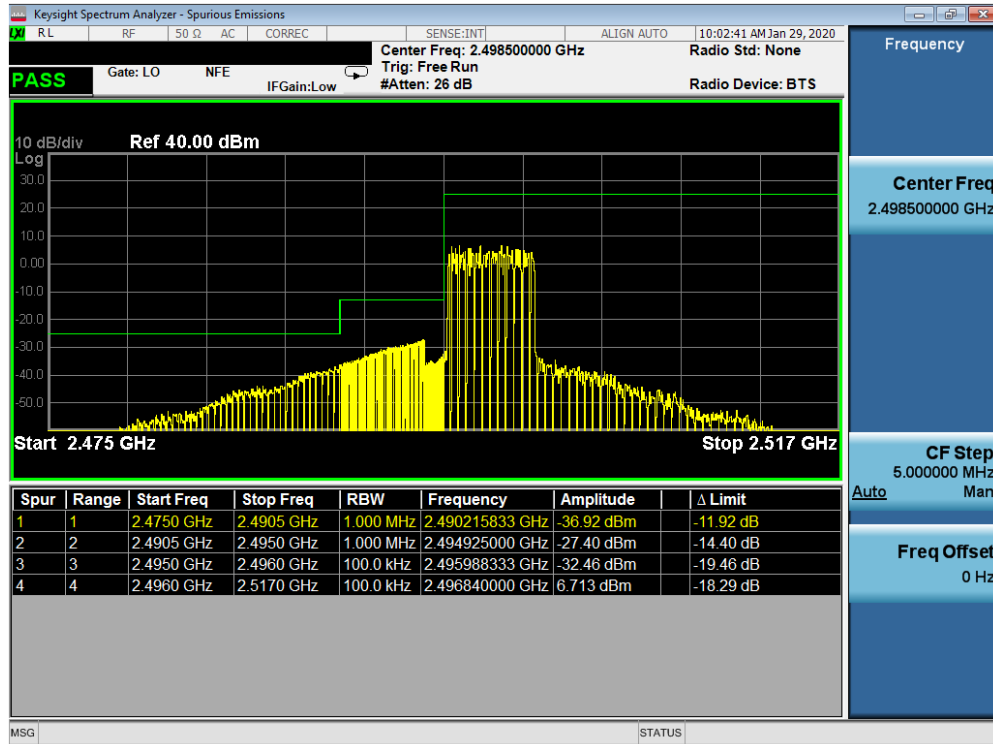
Plot 7-255. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



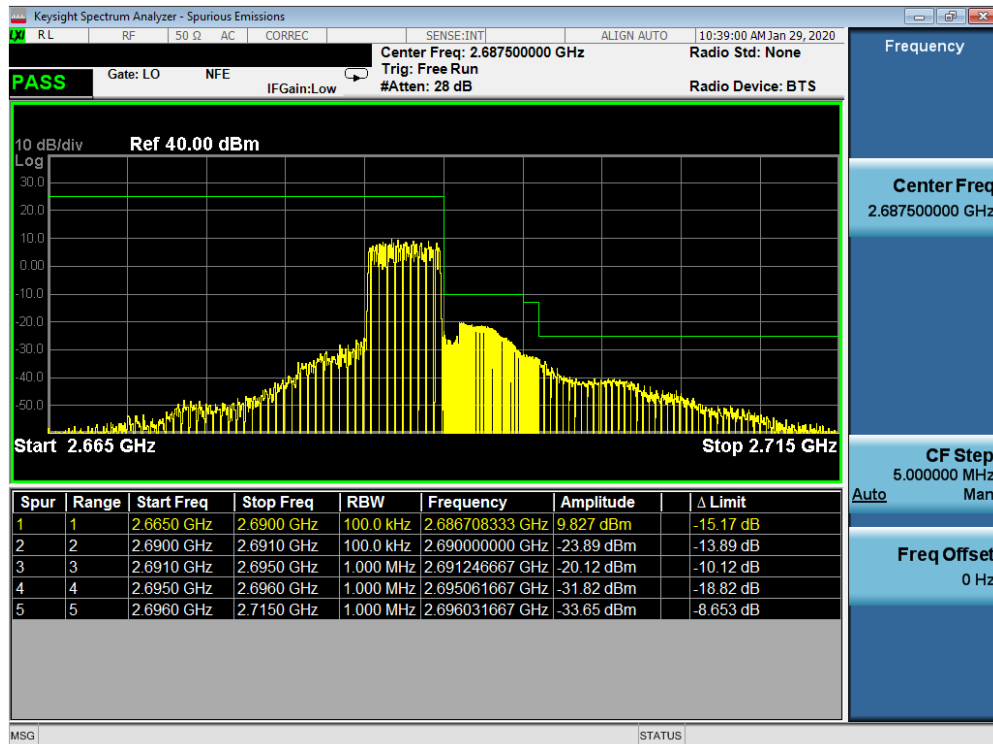
Plot 7-256. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 152 of 237

Band 41 PC2

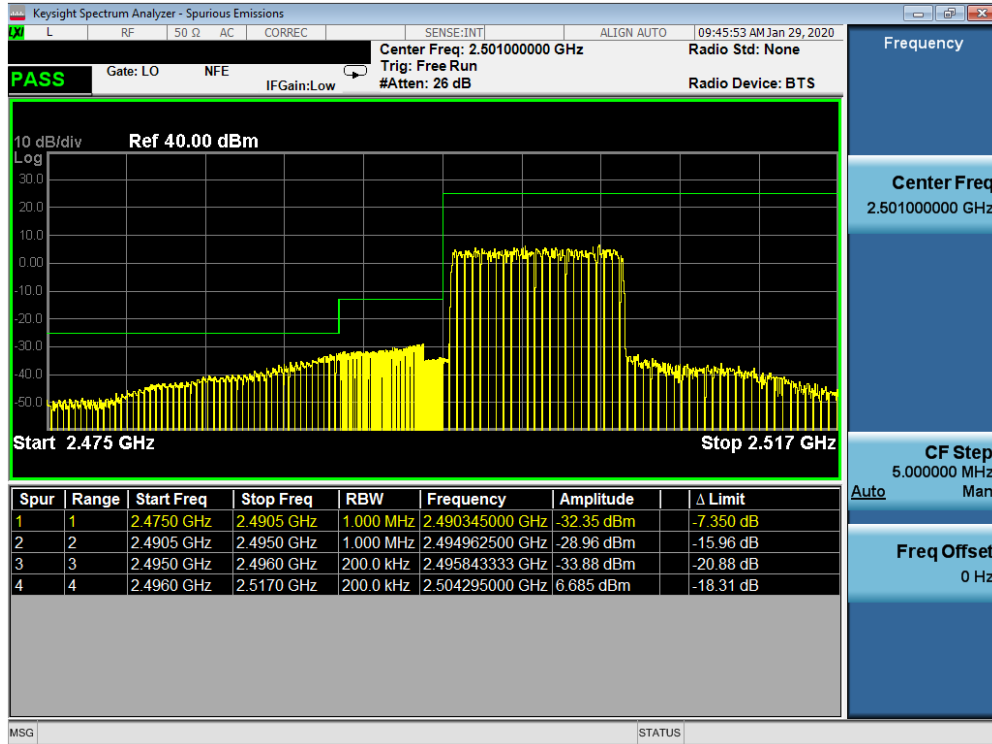


Plot 7-257. Lower Band Edge Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

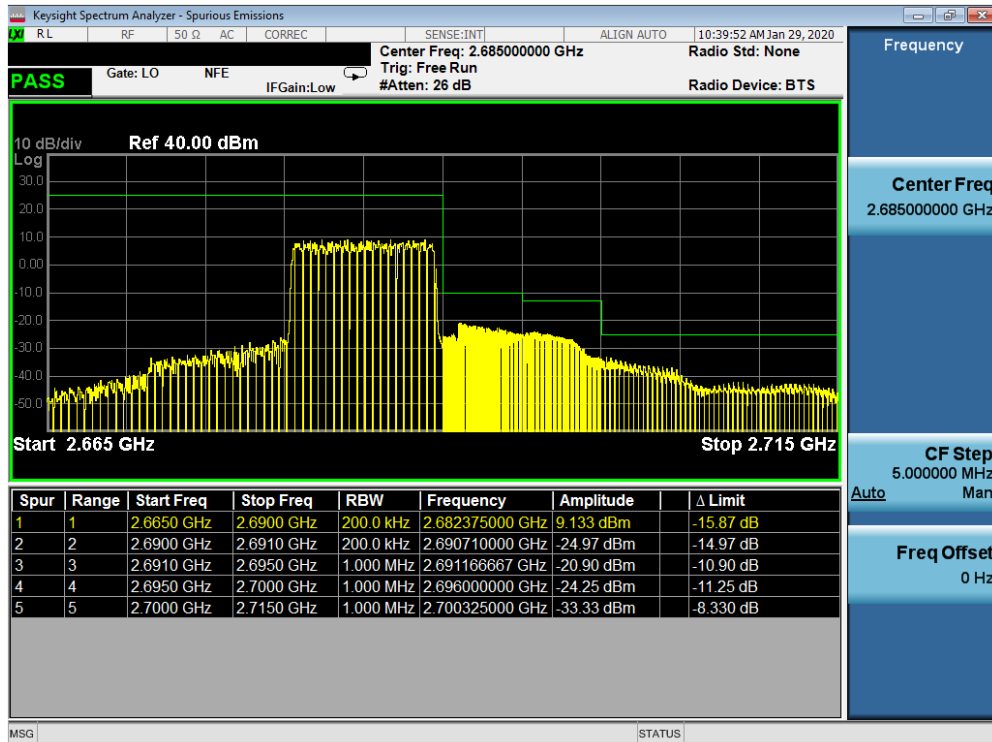


Plot 7-258. Upper Band Edge Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 153 of 237

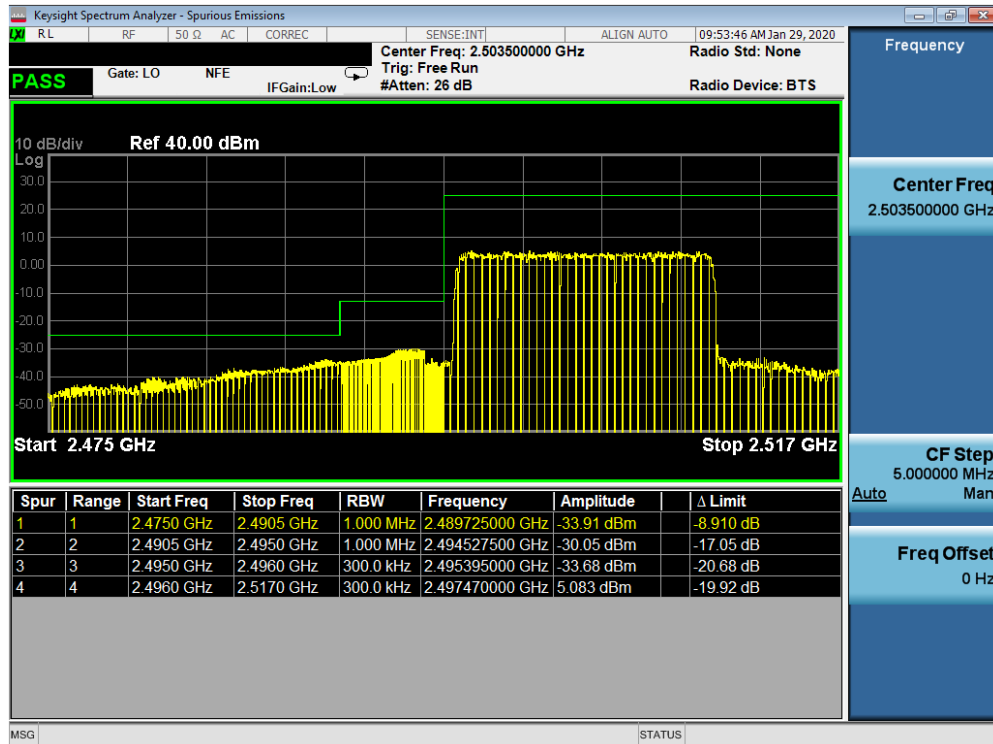


Plot 7-259. Lower Band Edge Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

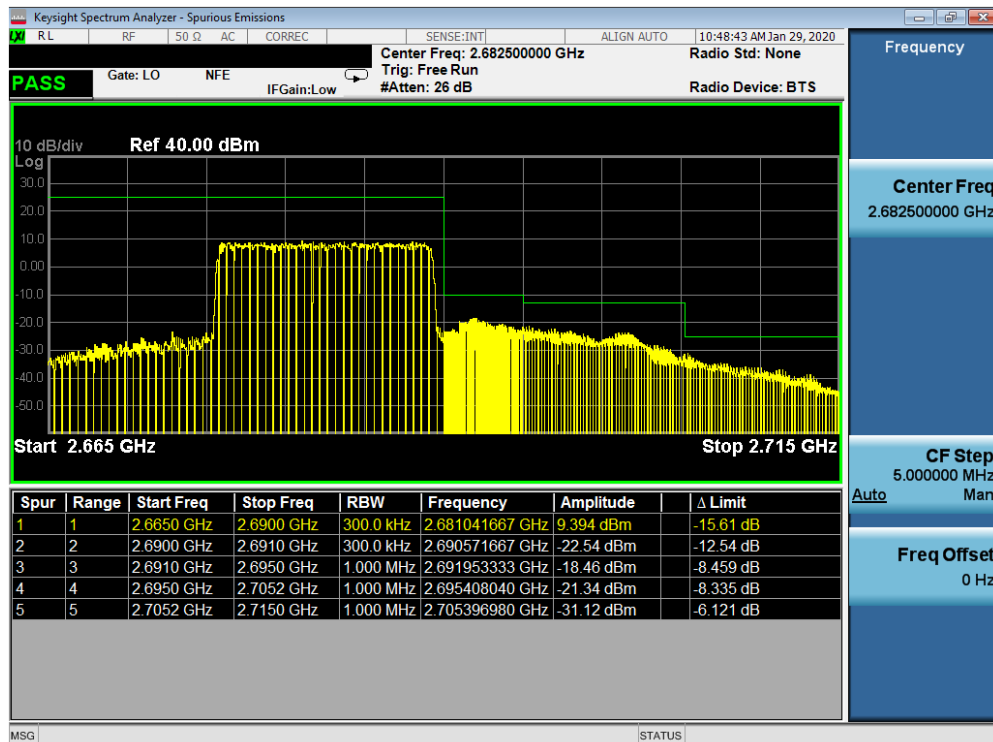


Plot 7-260. Upper Band Edge Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 154 of 237	

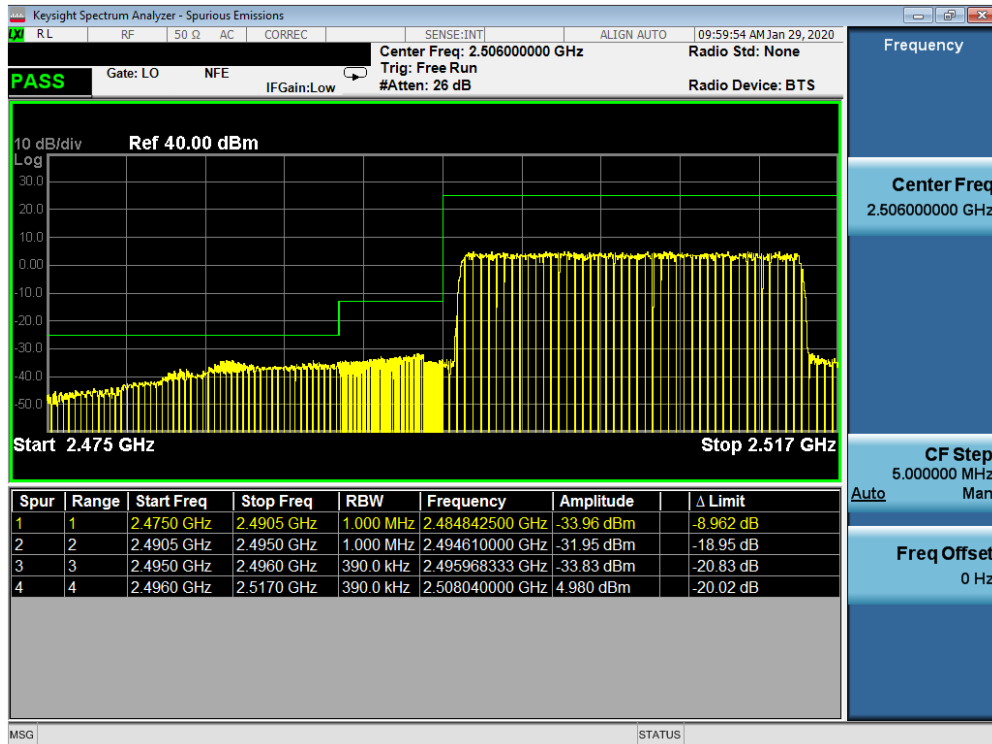


Plot 7-261. Lower Band Edge Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)

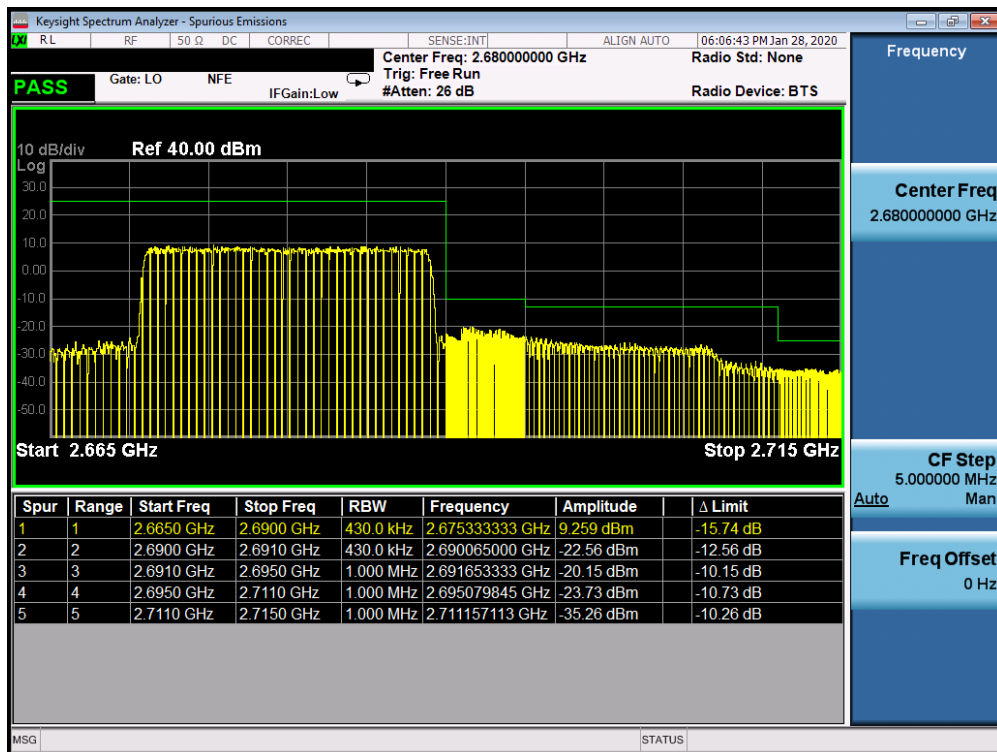


Plot 7-262. Upper Band Edge Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 155 of 237



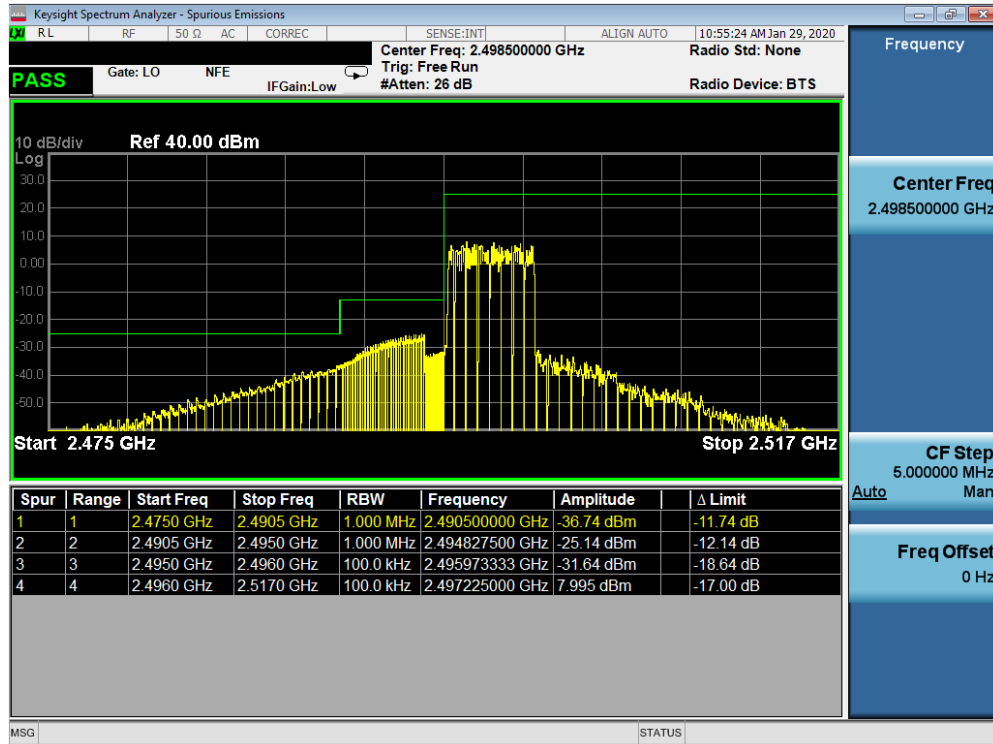
Plot 7-263. Lower Band Edge Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)



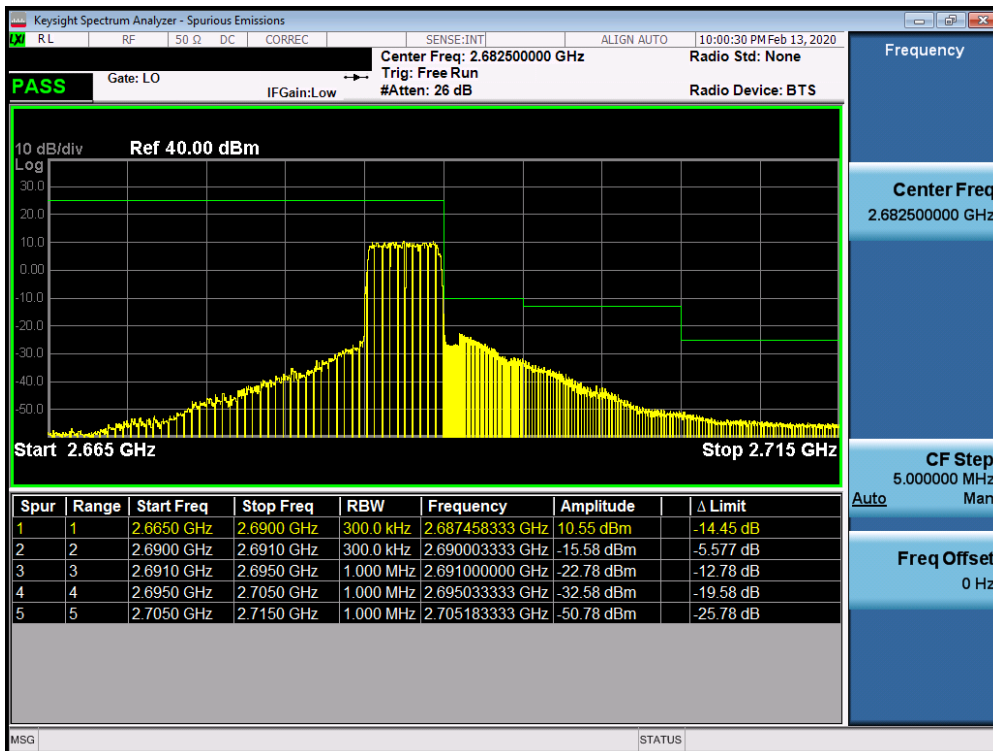
Plot 7-264. Upper Band Edge Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 156 of 237

Band 41 PC3

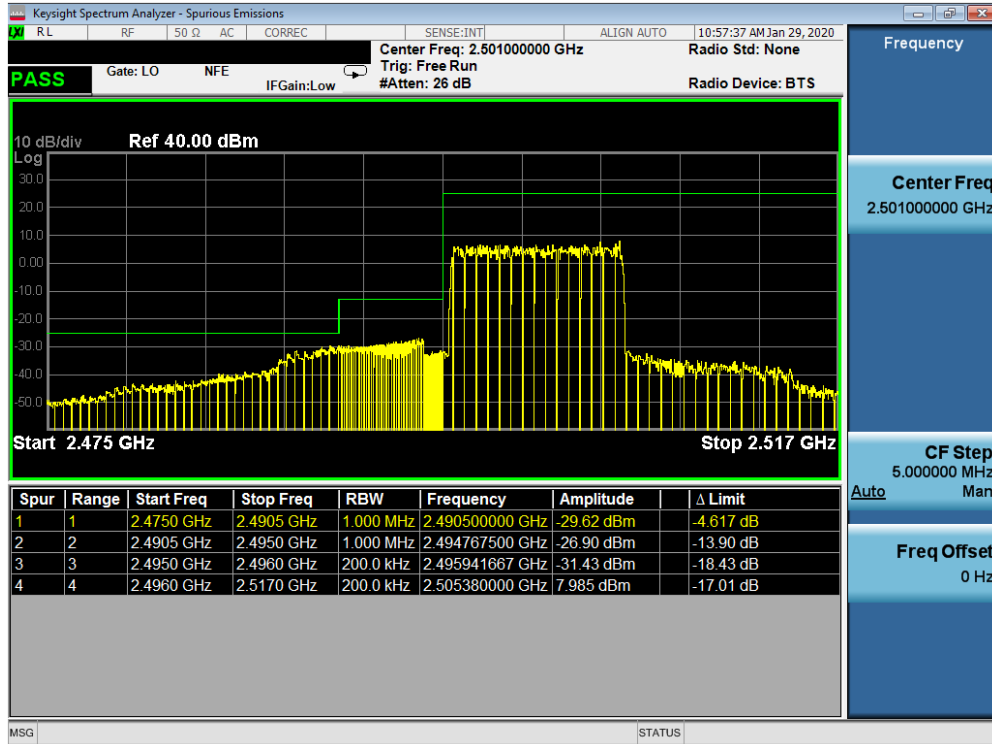


Plot 7-265. Lower Band Edge Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

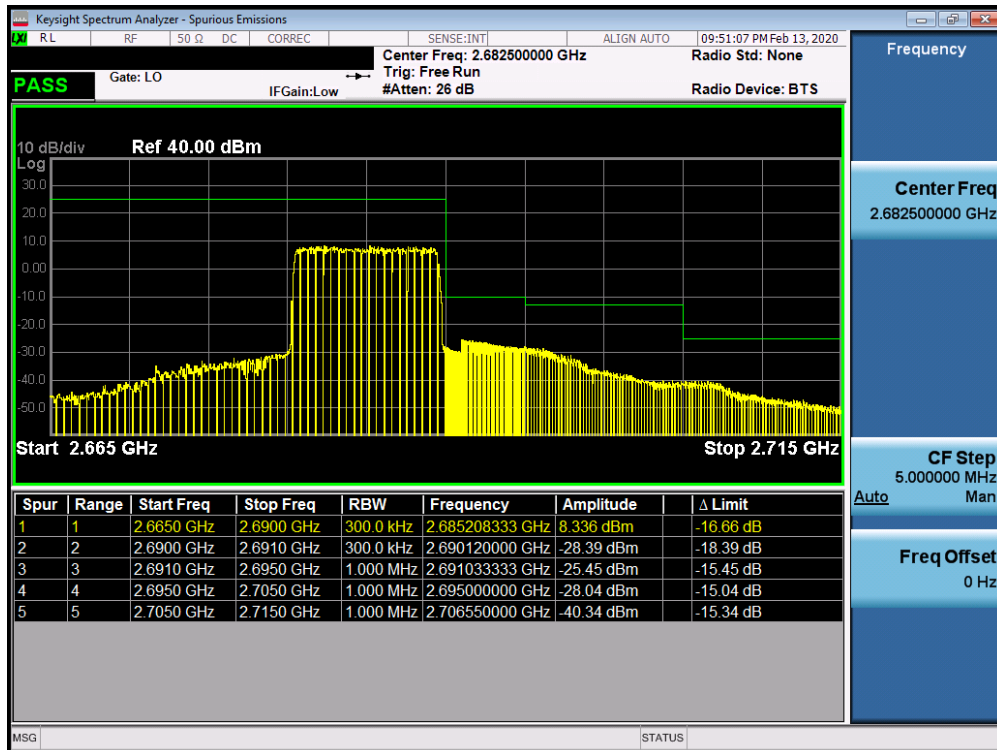


Plot 7-266. Upper Band Edge Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 157 of 237

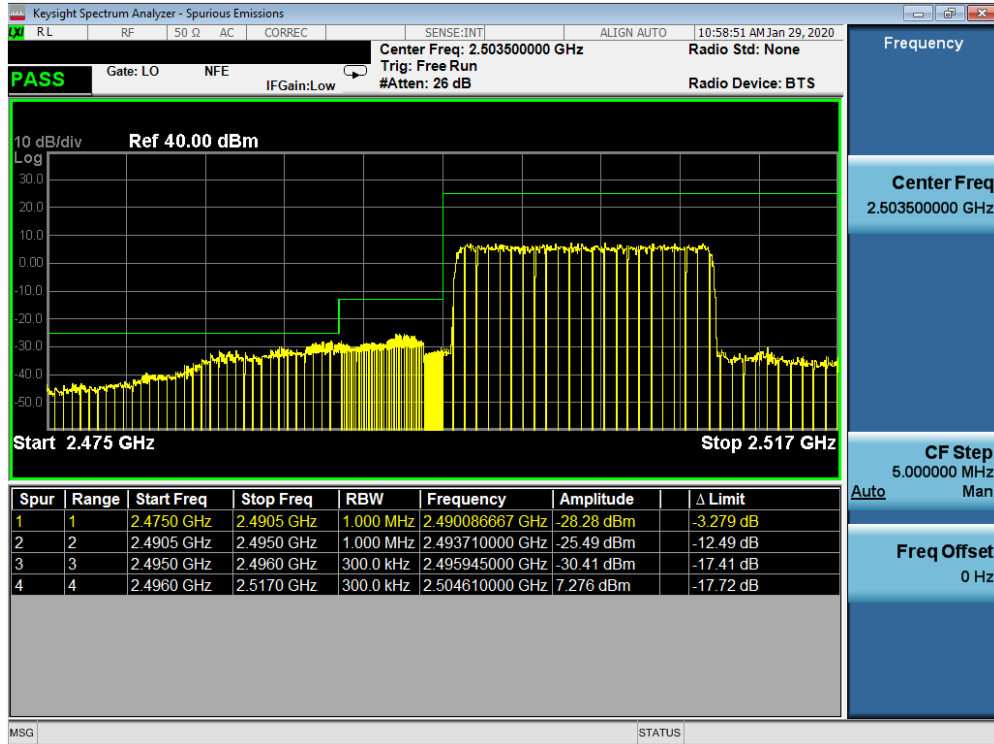


Plot 7-267. Lower Band Edge Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

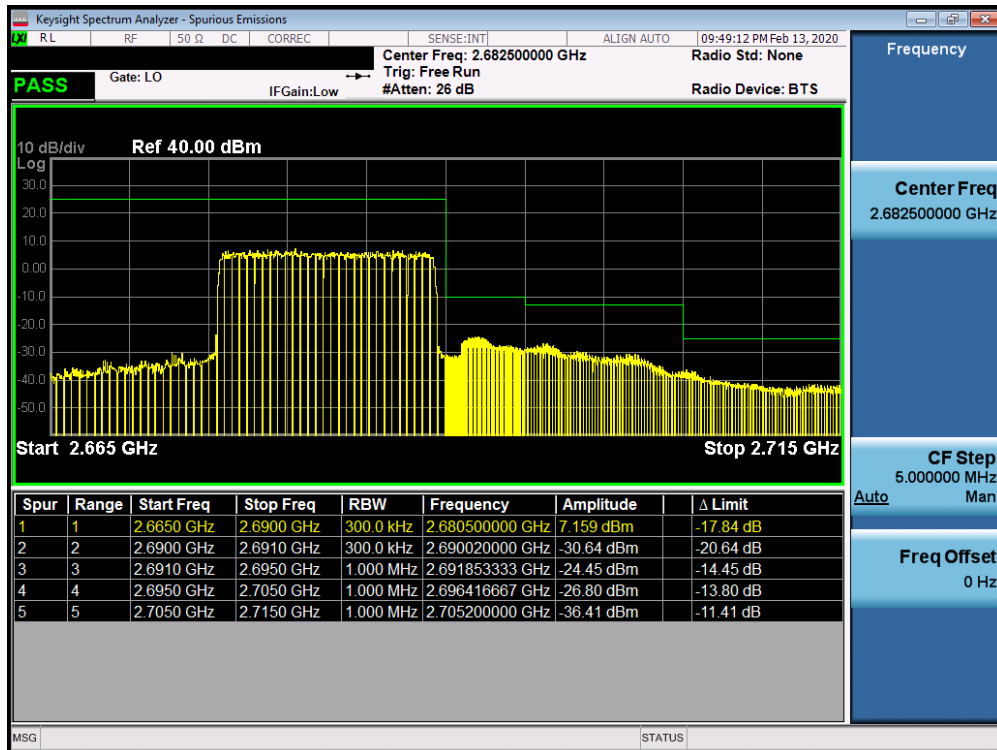


Plot 7-268. Upper Band Edge Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 158 of 237

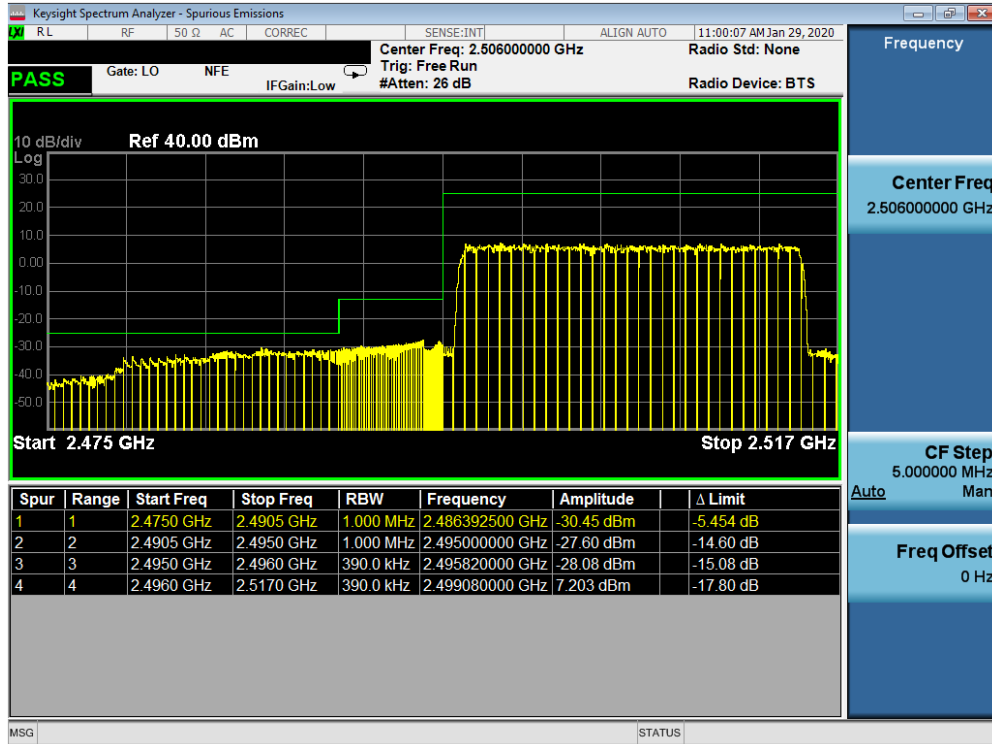


Plot 7-269. Lower Band Edge Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)

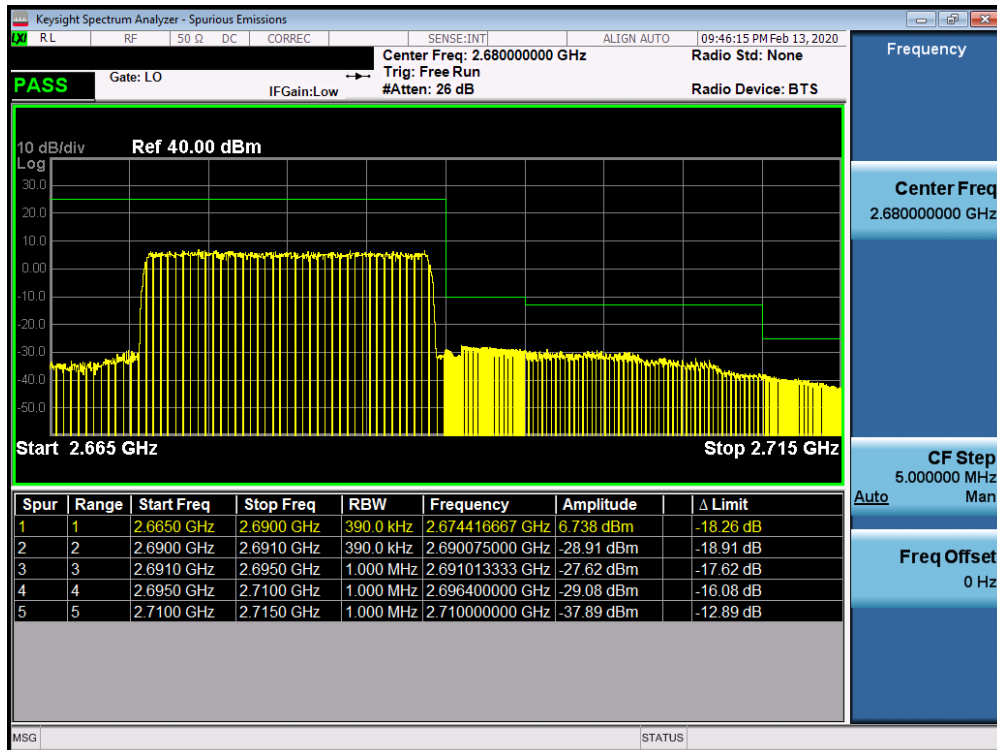


Plot 7-270. Upper Band Edge Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 159 of 237



Plot 7-271. Lower Band Edge Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-272. Upper Band Edge Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 160 of 237

7.5 Peak-Average Ratio

Test Overview

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

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

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

Test Setup

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

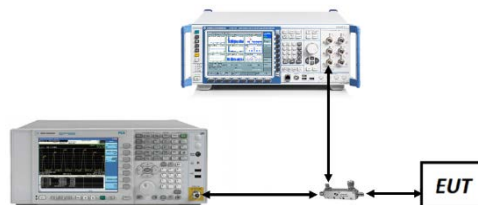


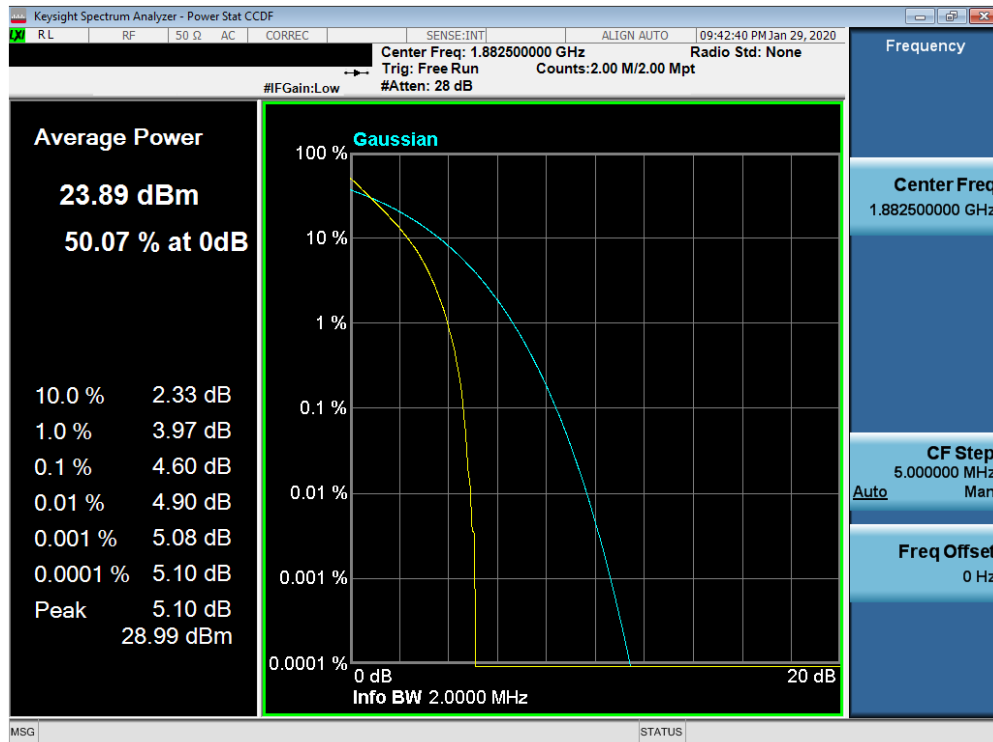
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

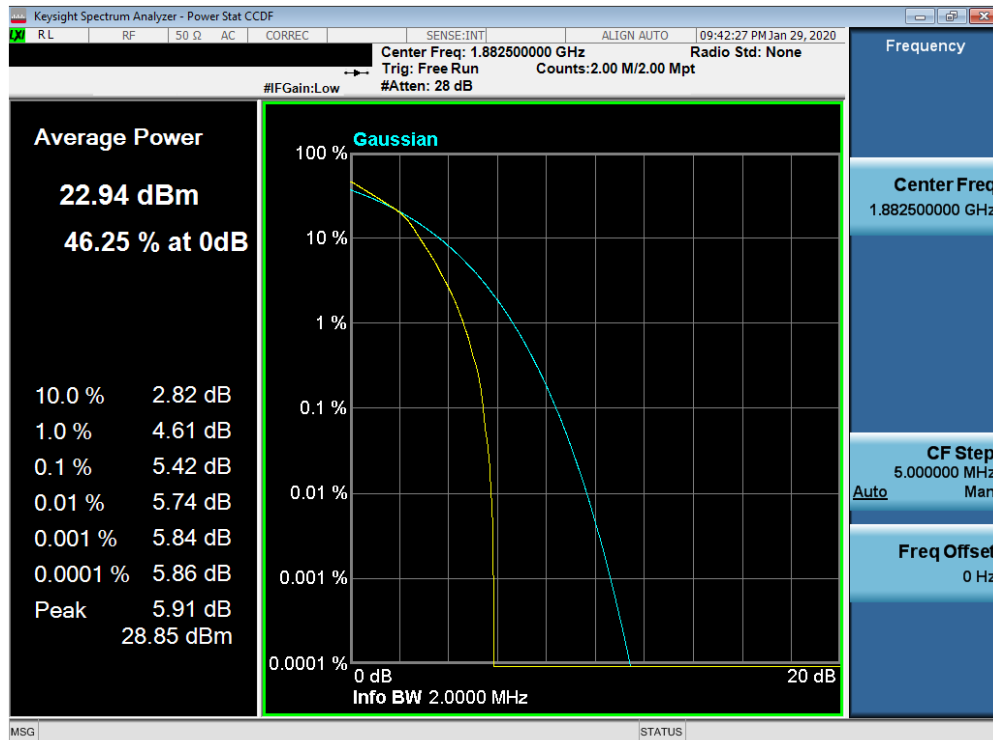
None.

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 161 of 237

Band 25/2

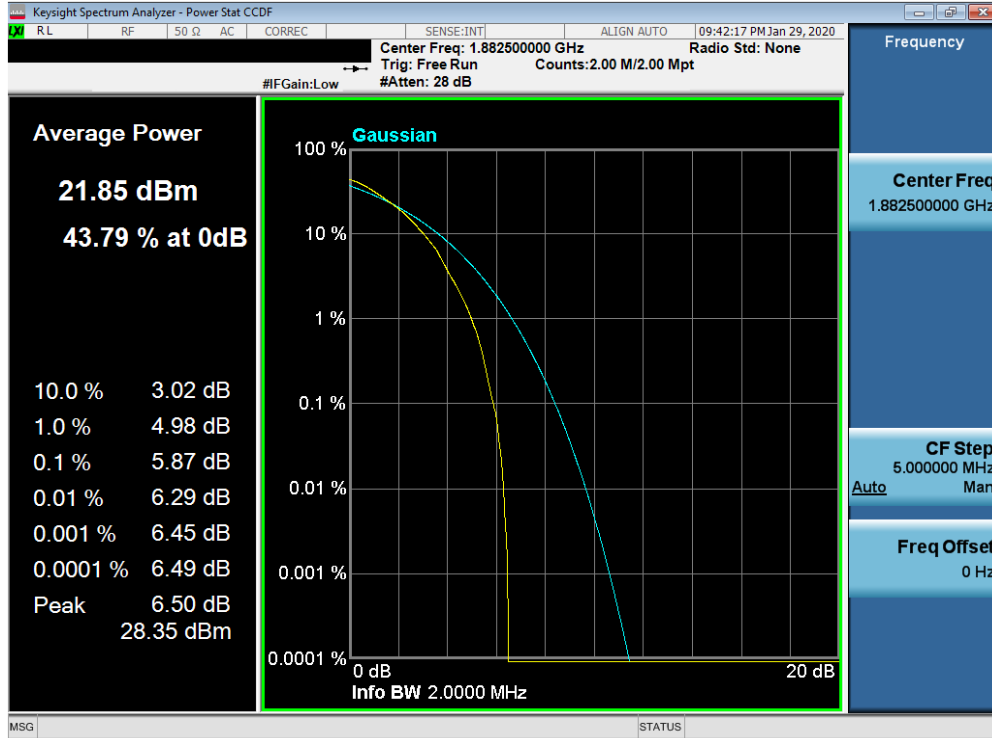


Plot 7-273. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

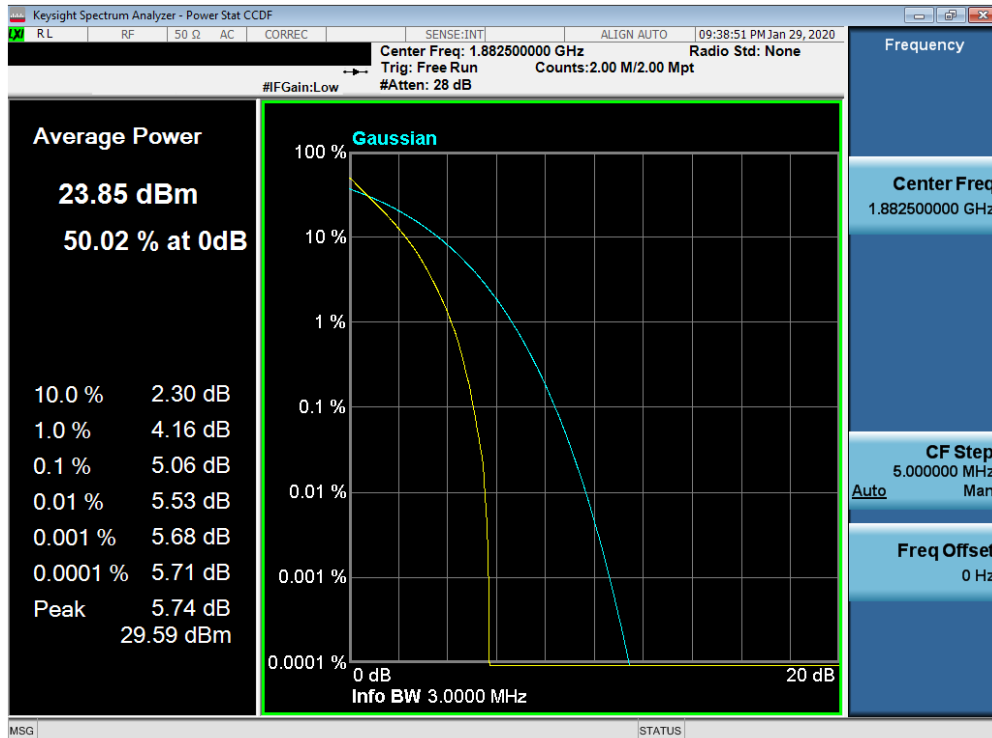


Plot 7-274. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 162 of 237

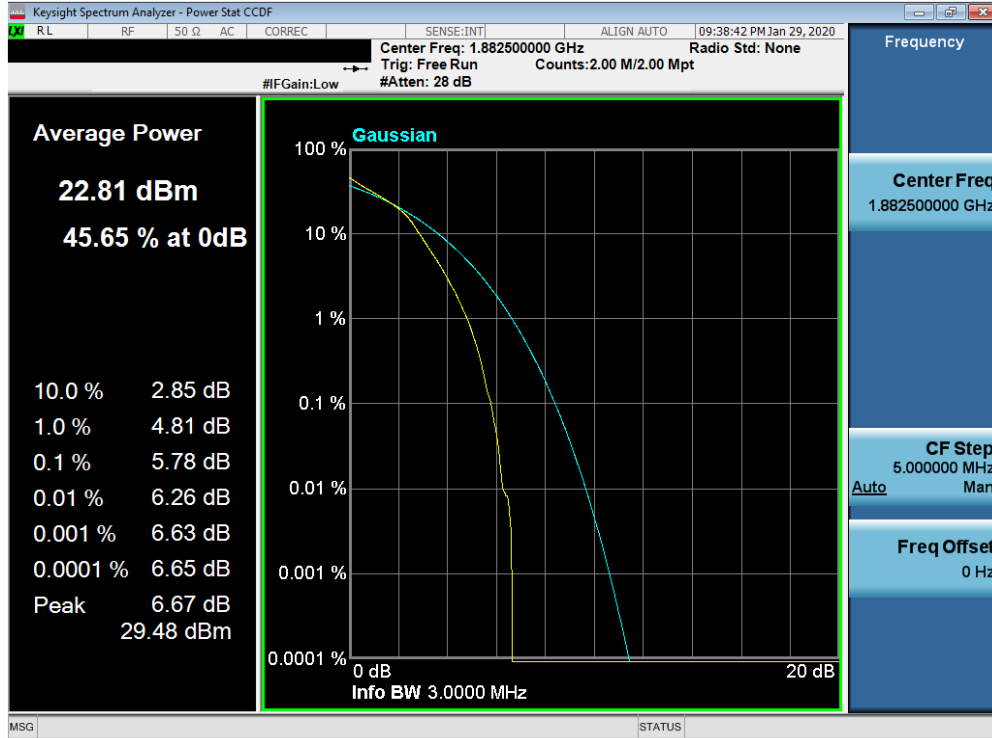


Plot 7-275. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

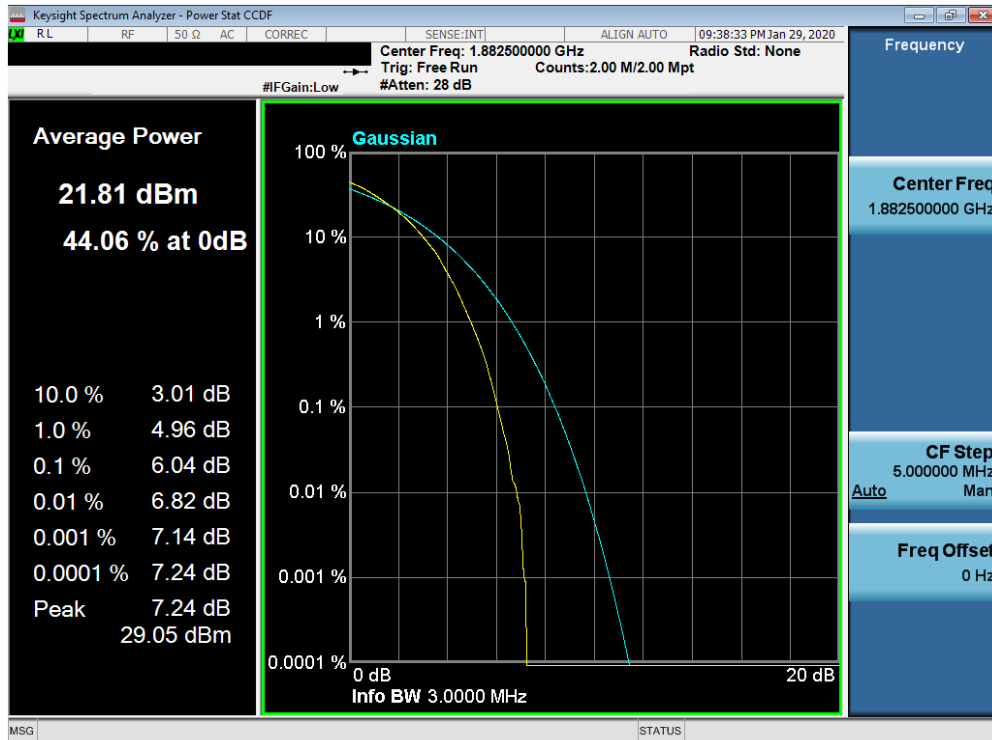


Plot 7-276. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 163 of 237

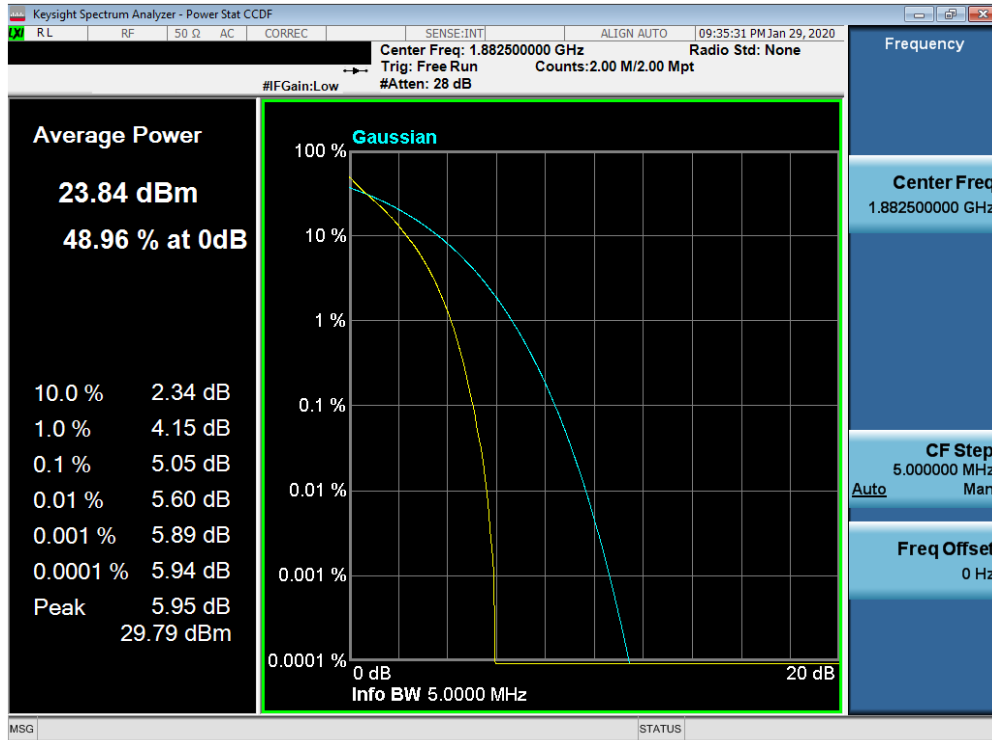


Plot 7-277. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

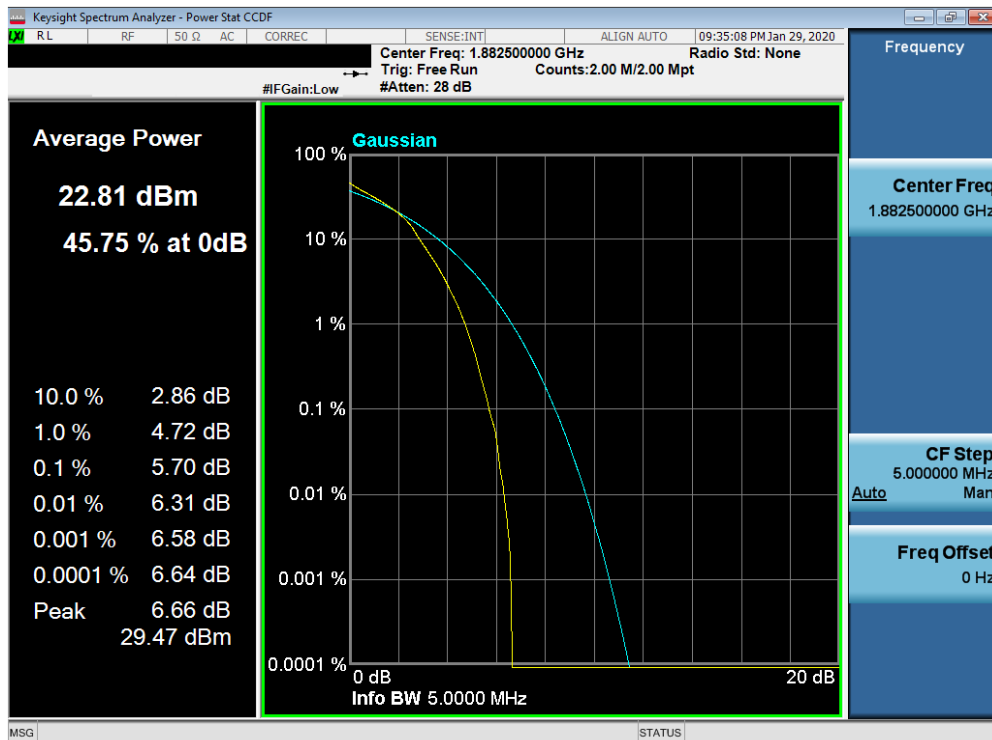


Plot 7-278. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 164 of 237

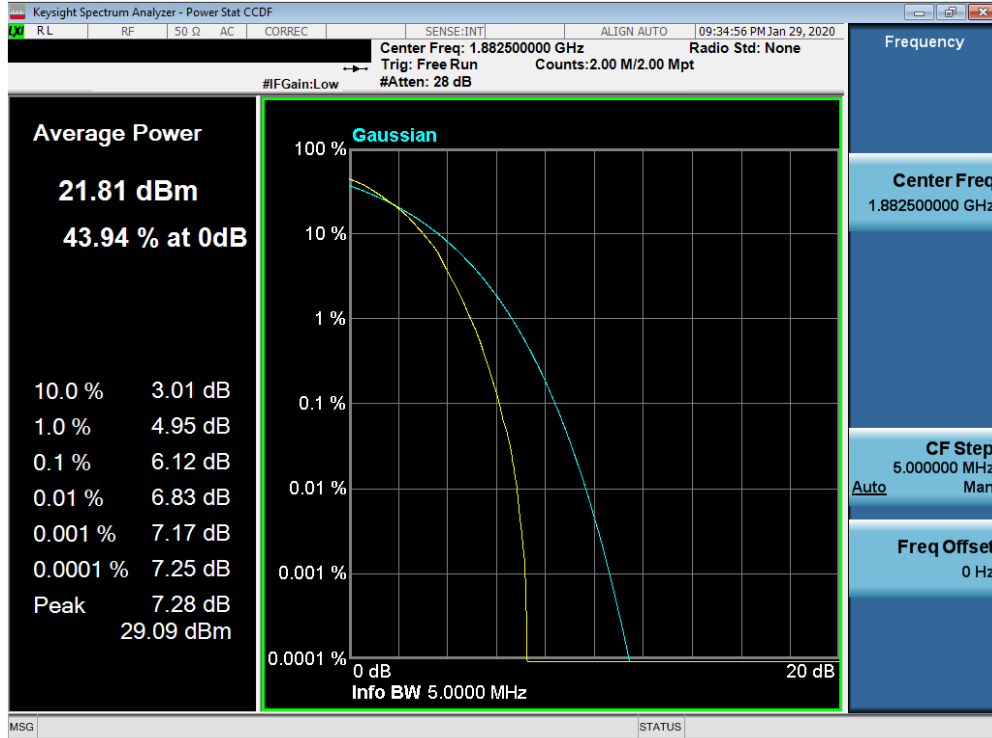


Plot 7-279. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

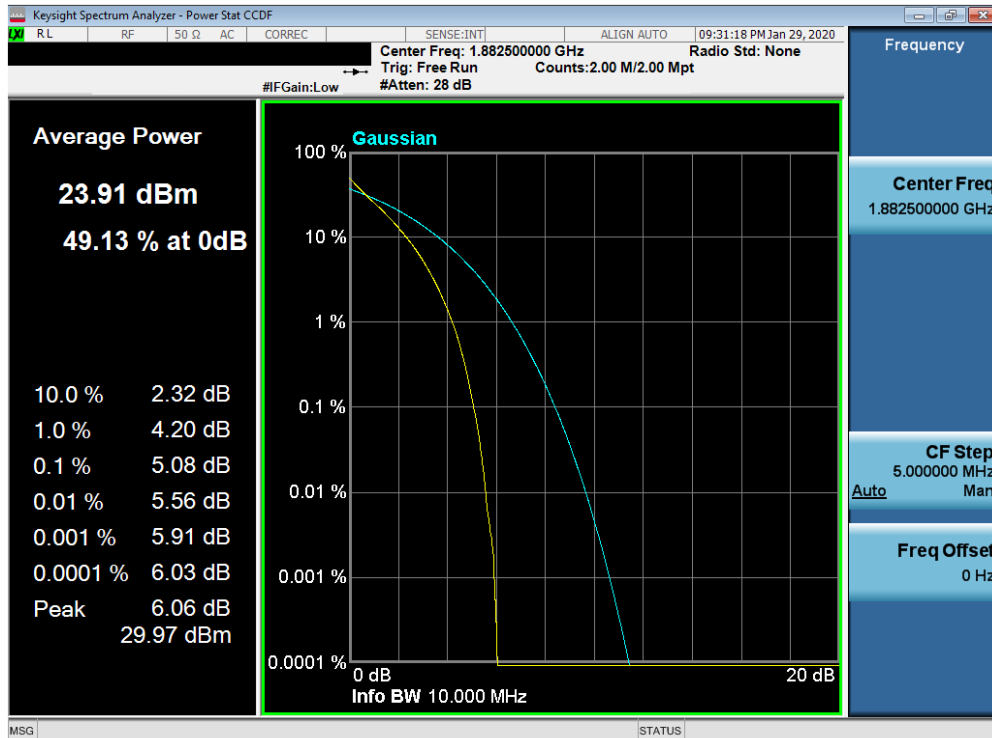


Plot 7-280. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 165 of 237

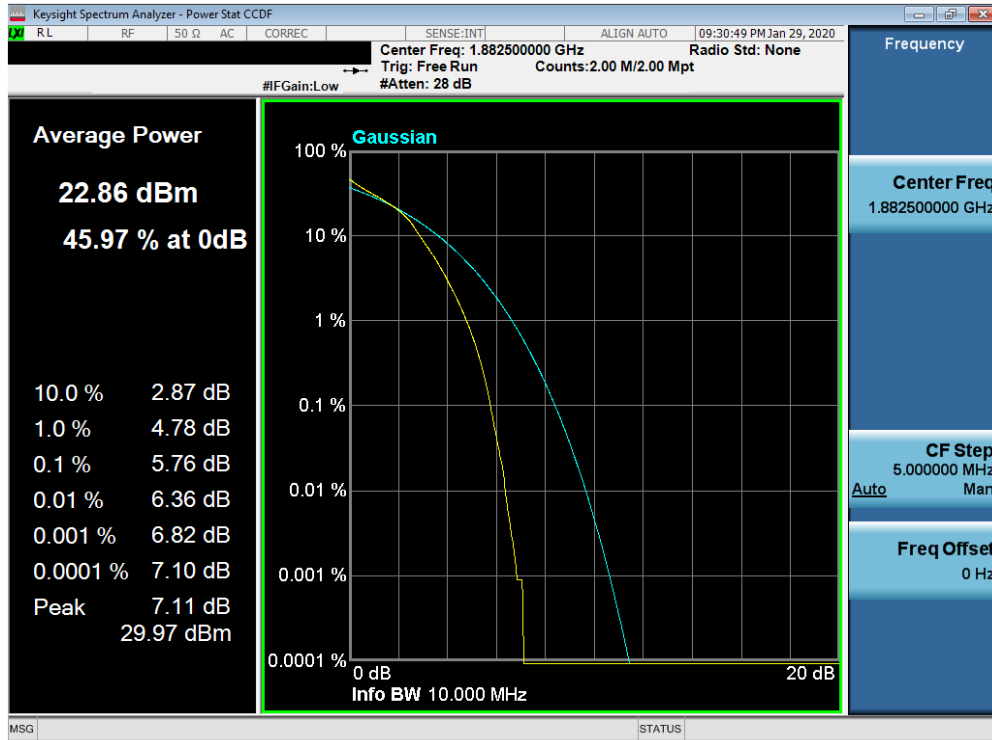


Plot 7-281. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

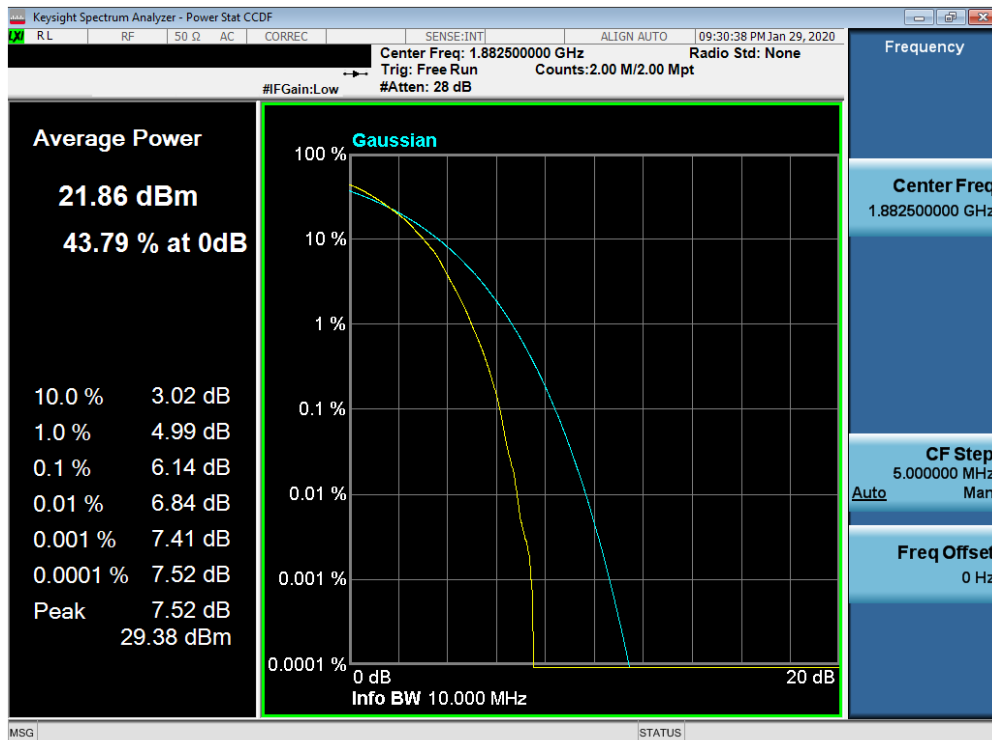


Plot 7-282. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 166 of 237

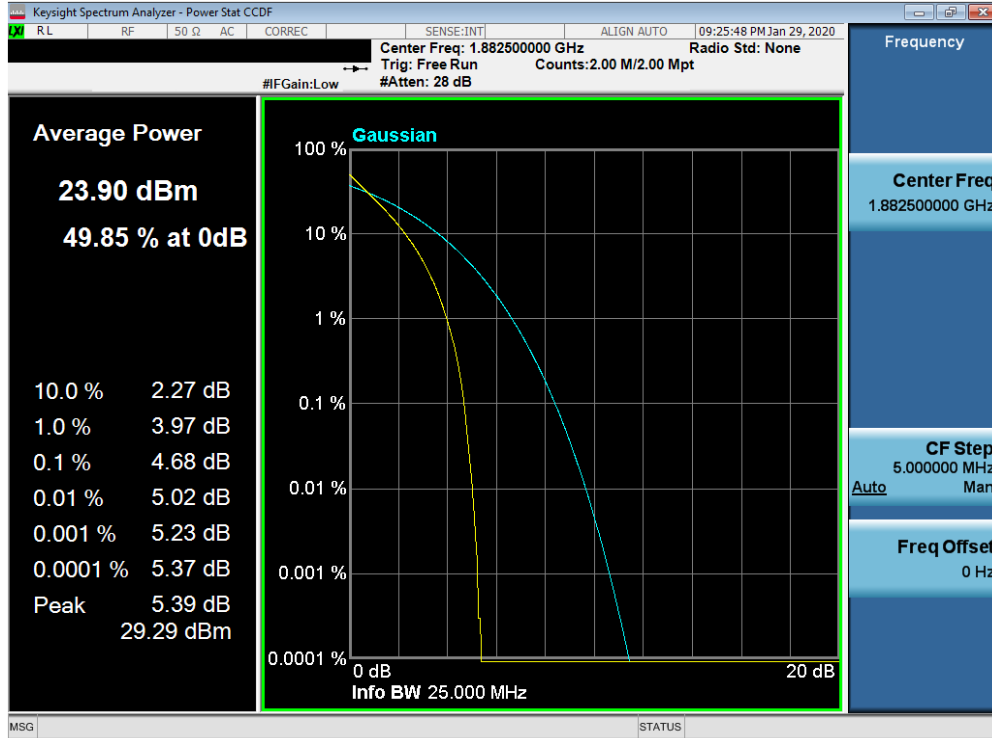


Plot 7-283. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

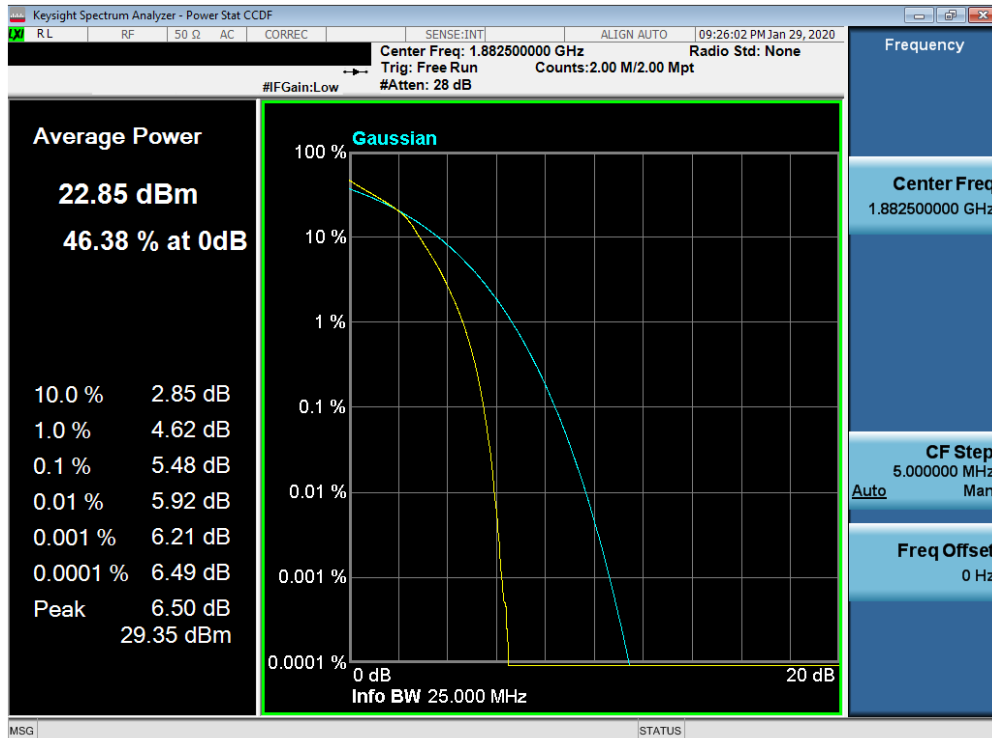


Plot 7-284. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 167 of 237

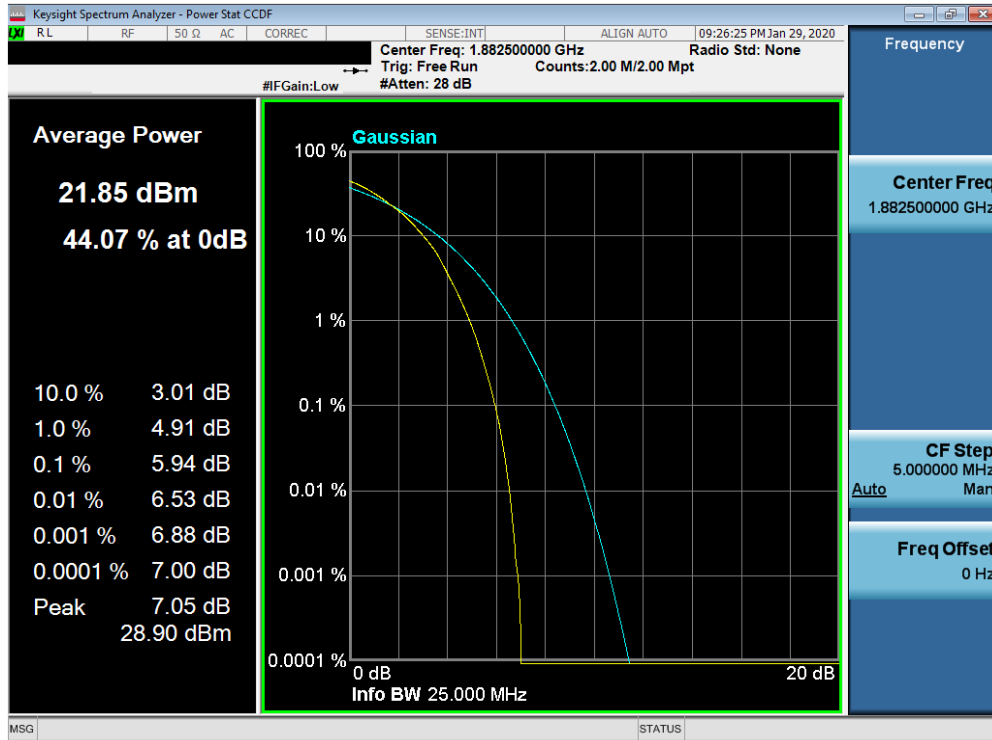


Plot 7-285. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

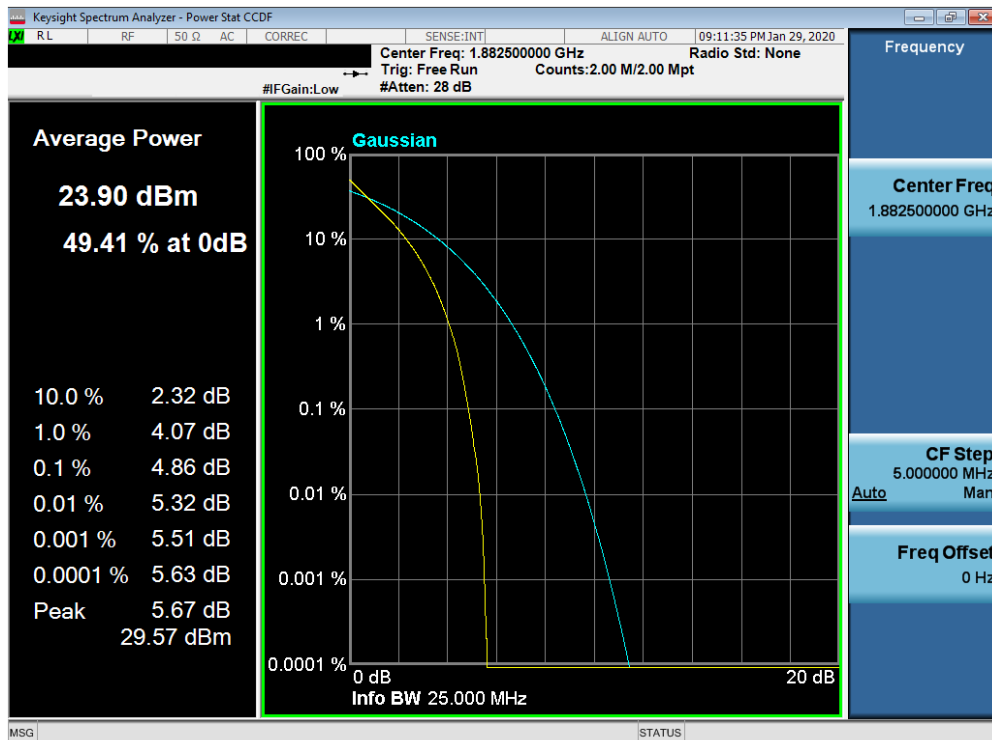


Plot 7-286. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 168 of 237

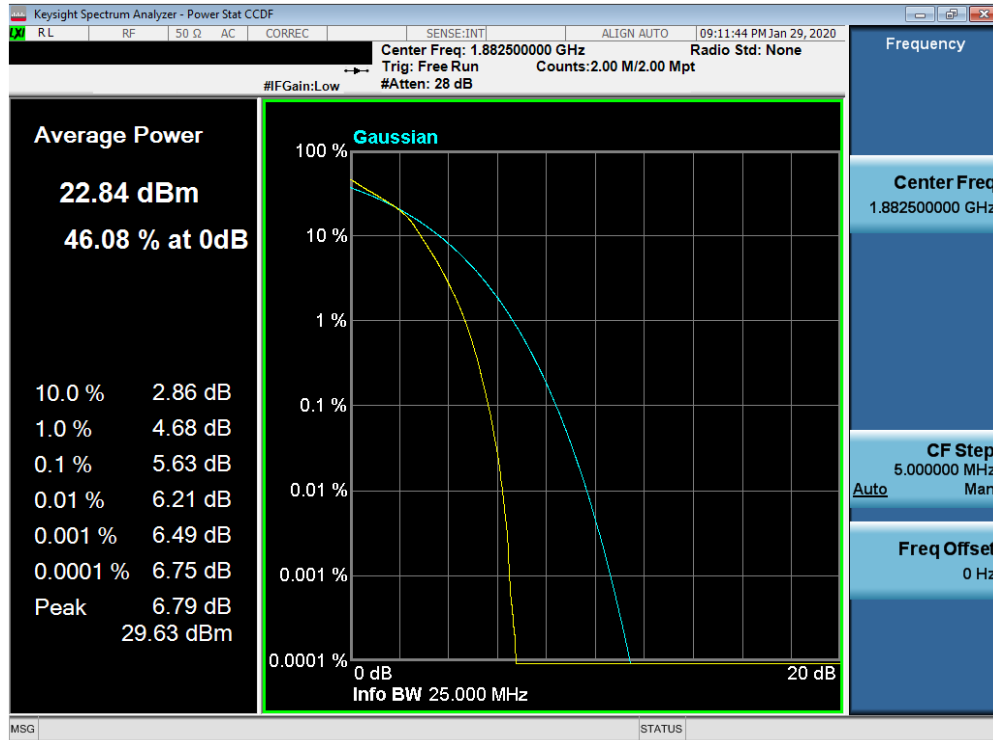


Plot 7-287. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

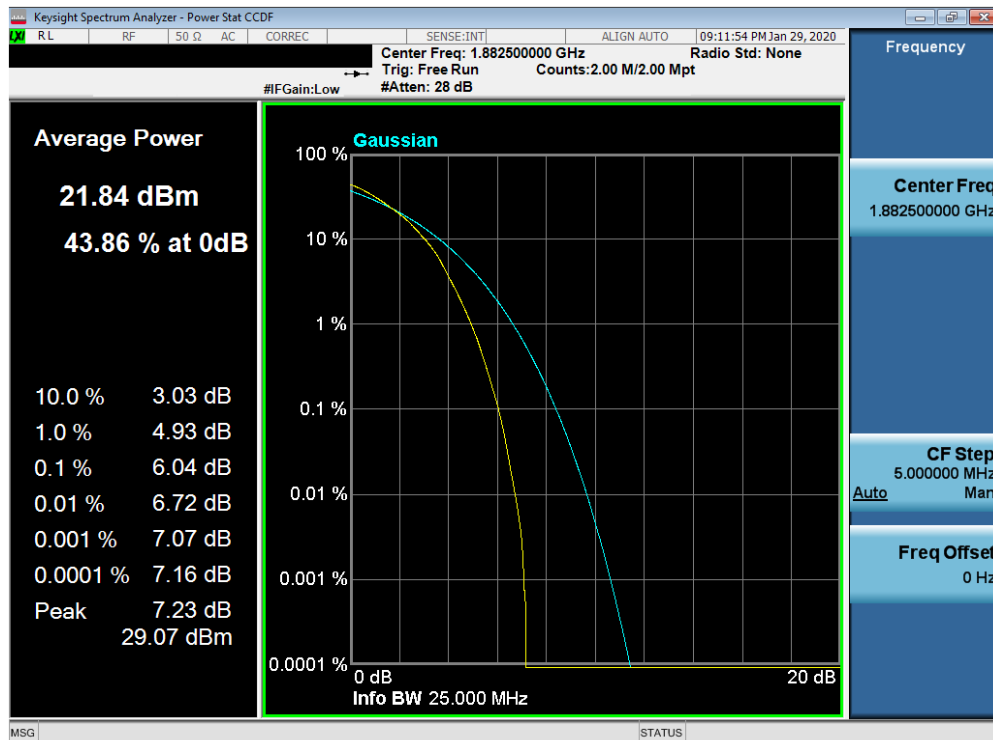


Plot 7-288. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 169 of 237



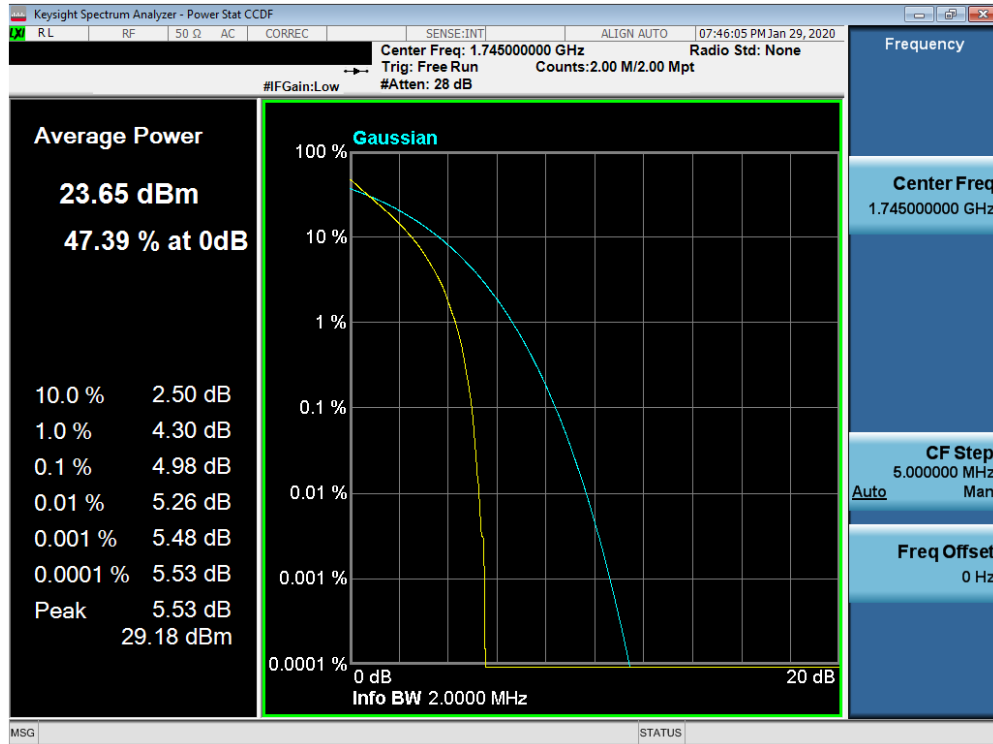
Plot 7-289. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



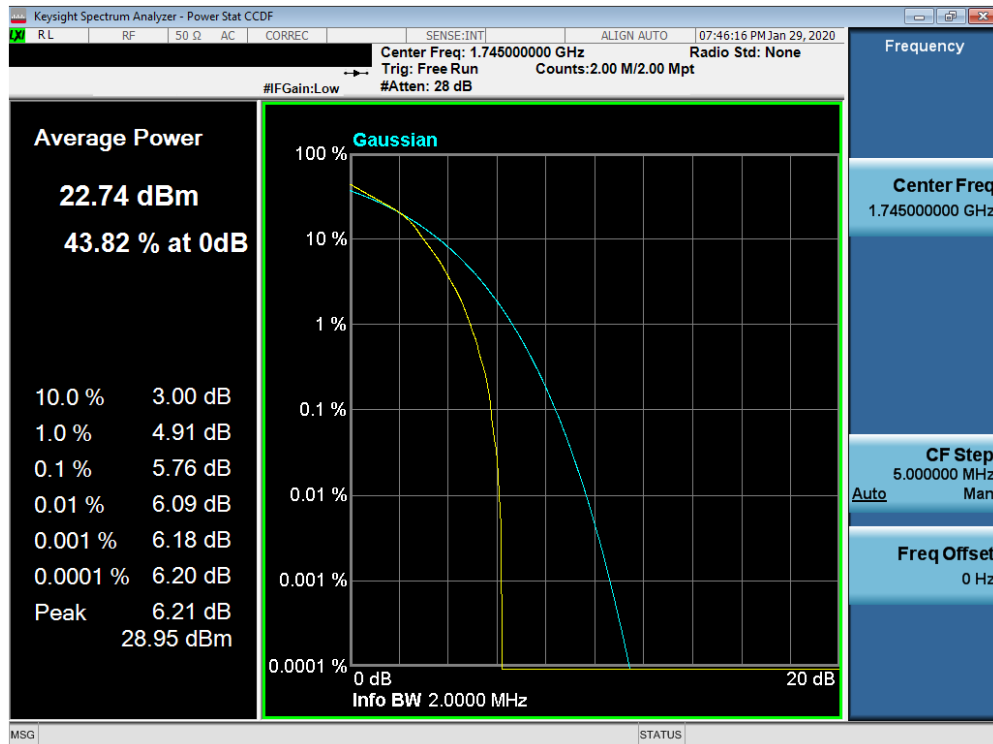
Plot 7-290. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 170 of 237

Band 66/4

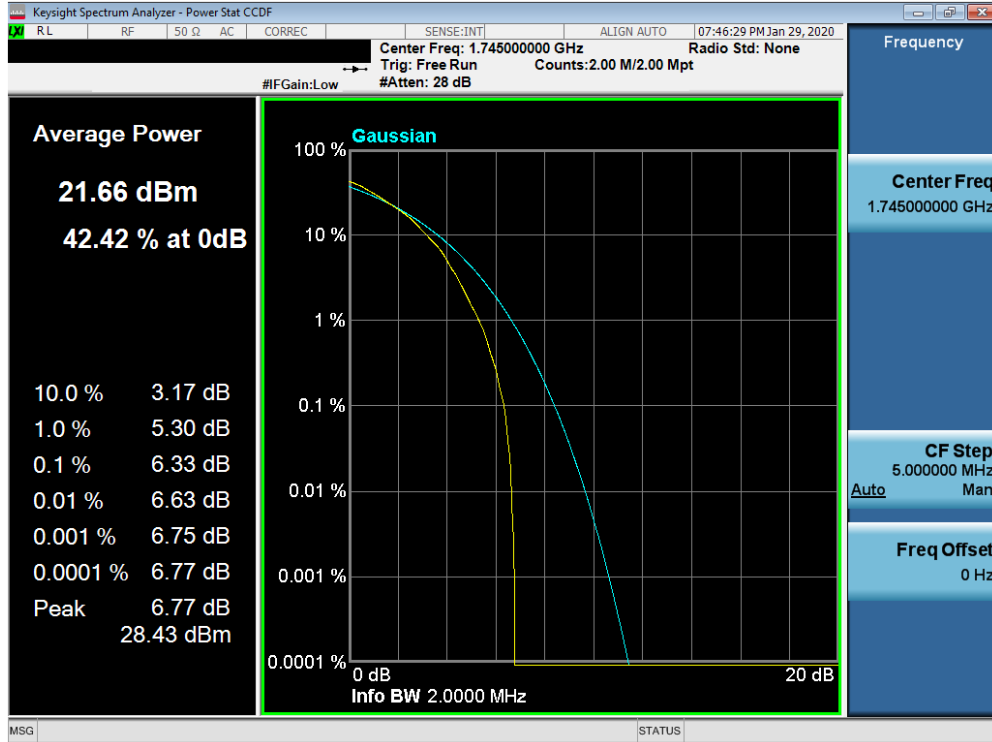


Plot 7-291. PAR Plot (Band 66/4 – 1.4MHz QPSK - Full RB Configuration)

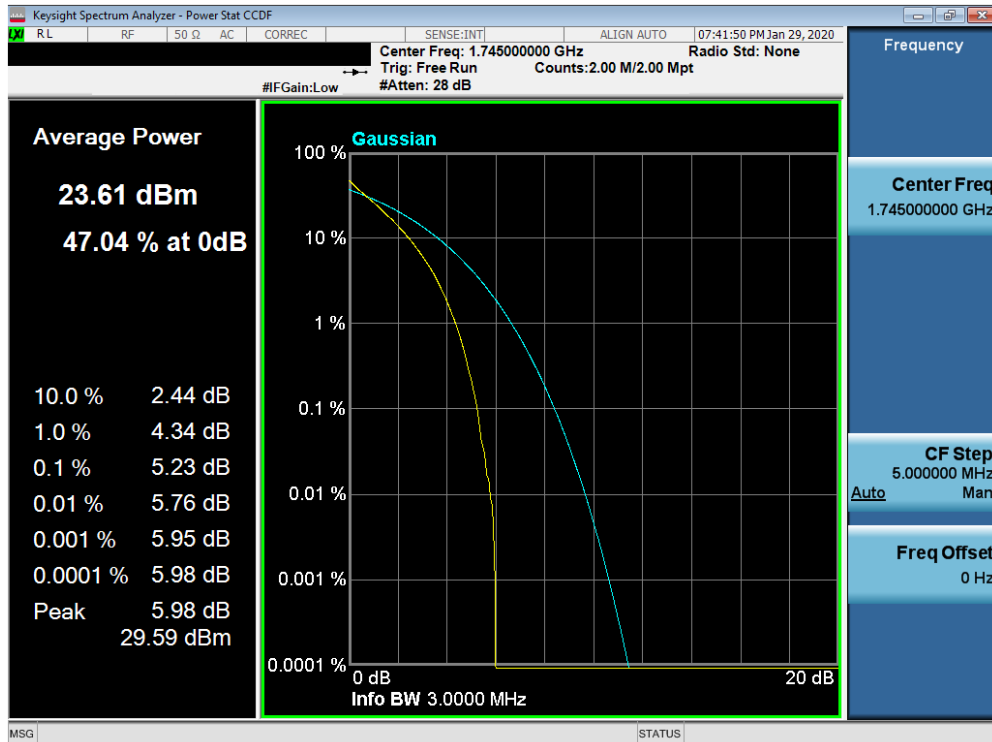


Plot 7-292. PAR Plot (Band 66/4 – 1.4MHz 16QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 171 of 237

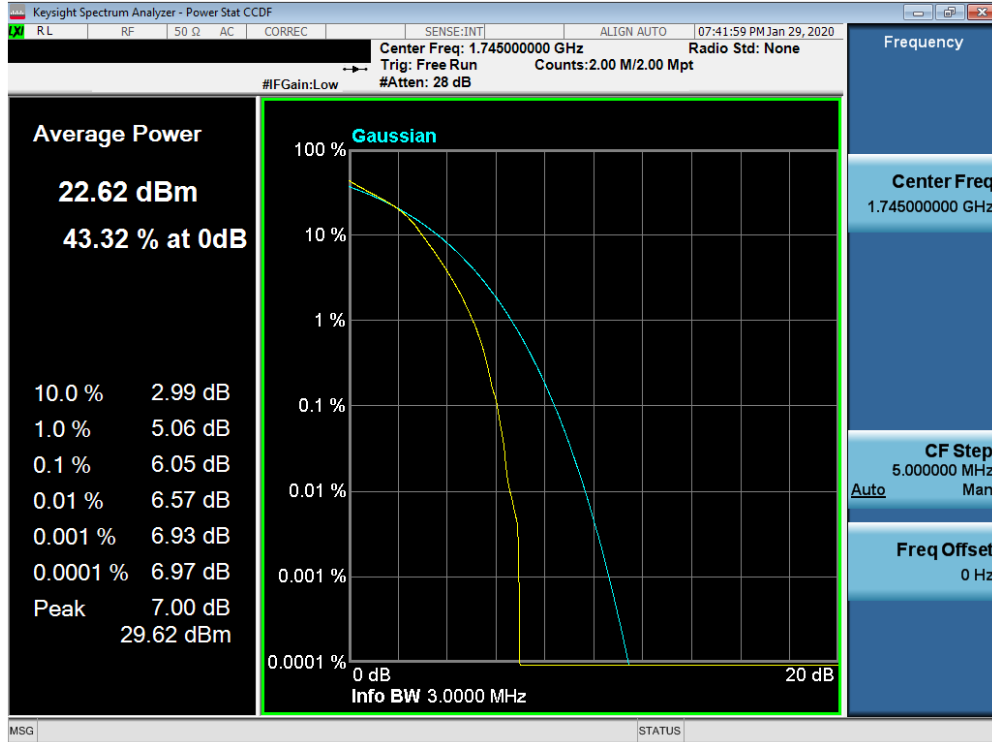


Plot 7-293. PAR Plot (Band 66/4 - 1.4MHz 64QAM - Full RB Configuration)

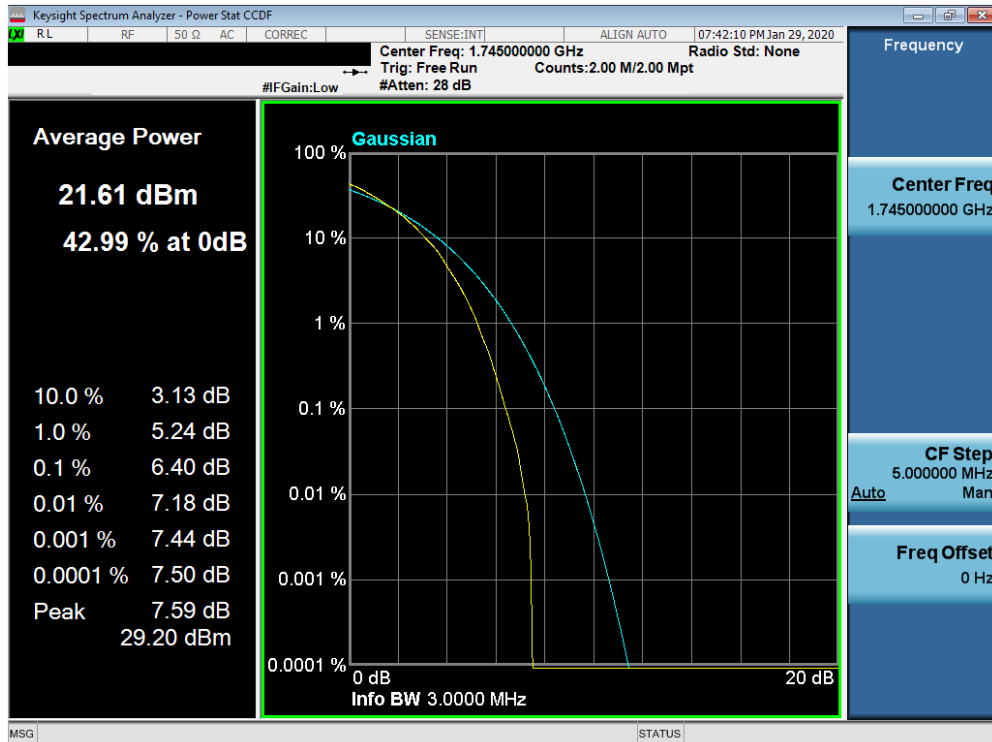


Plot 7-294. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 172 of 237

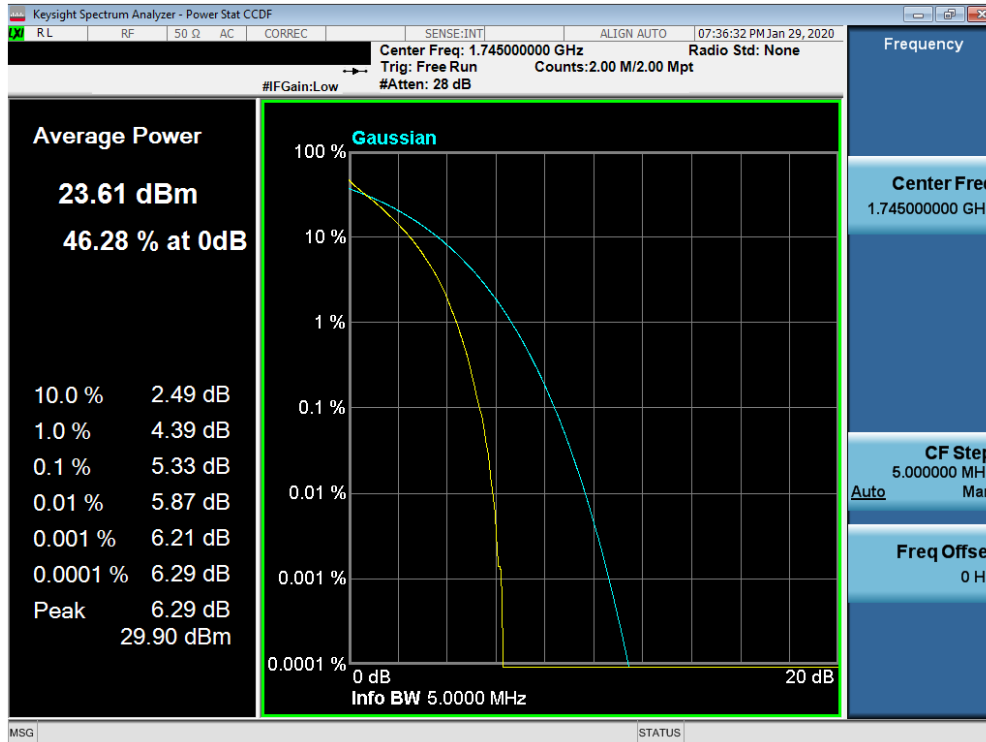


Plot 7-295. PAR Plot (Band 66/4 –3.0MHz 16QAM - Full RB Configuration)

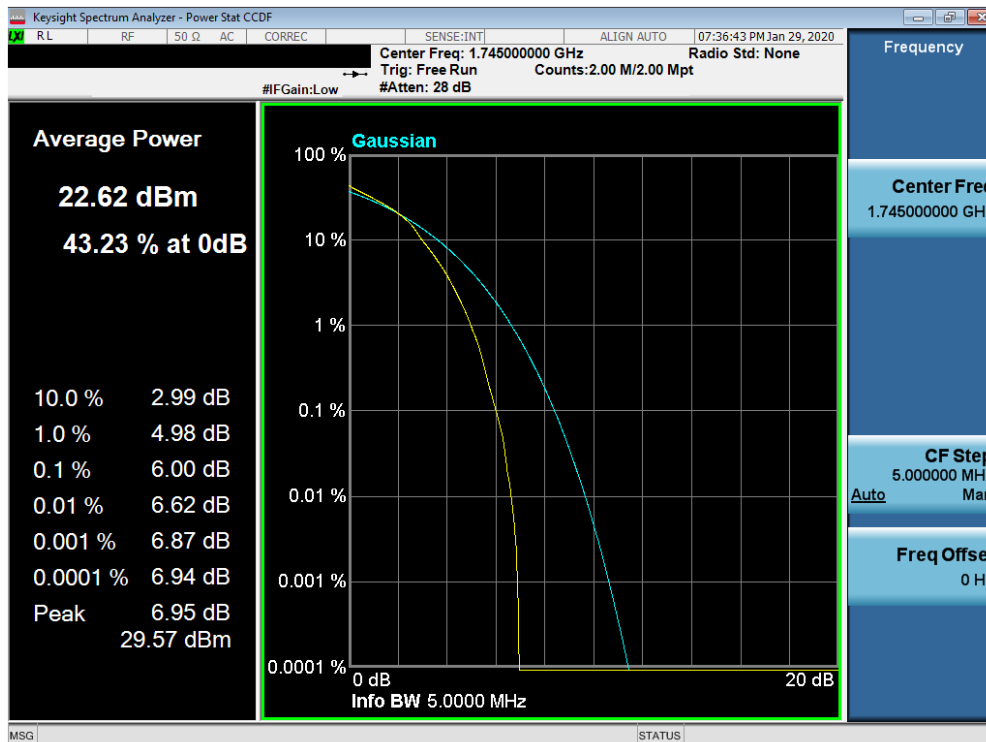


Plot 7-296. PAR Plot (Band 66/4 – 3.0MHz 64QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 173 of 237

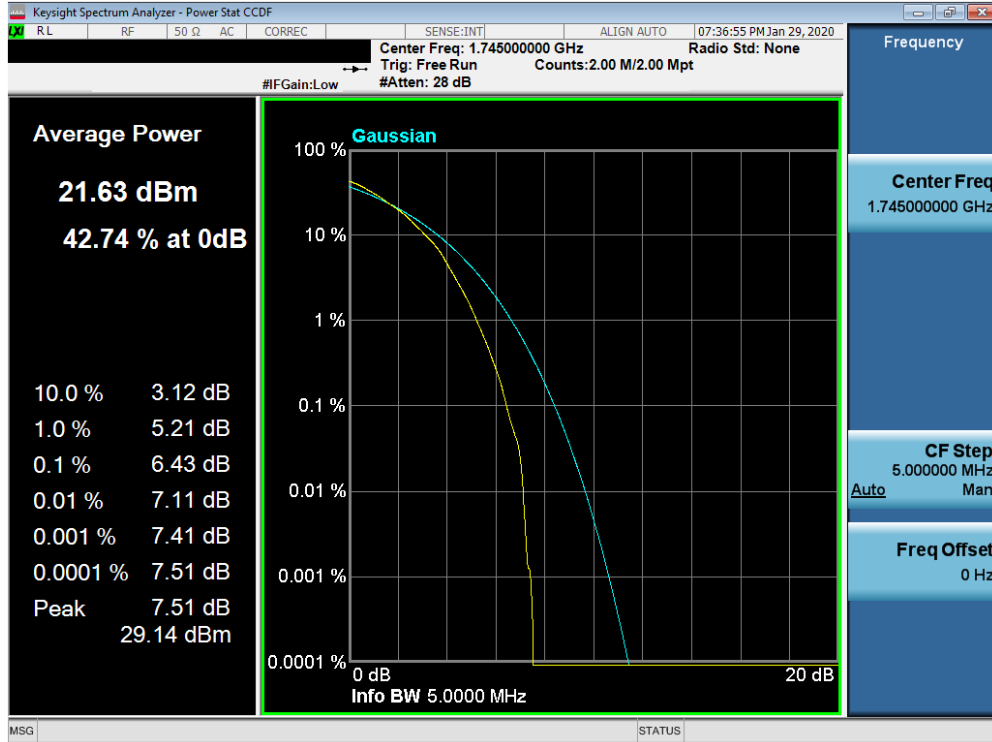


Plot 7-297. PAR Plot (Band 66/4 – 5.0MHz QPSK - Full RB Configuration)

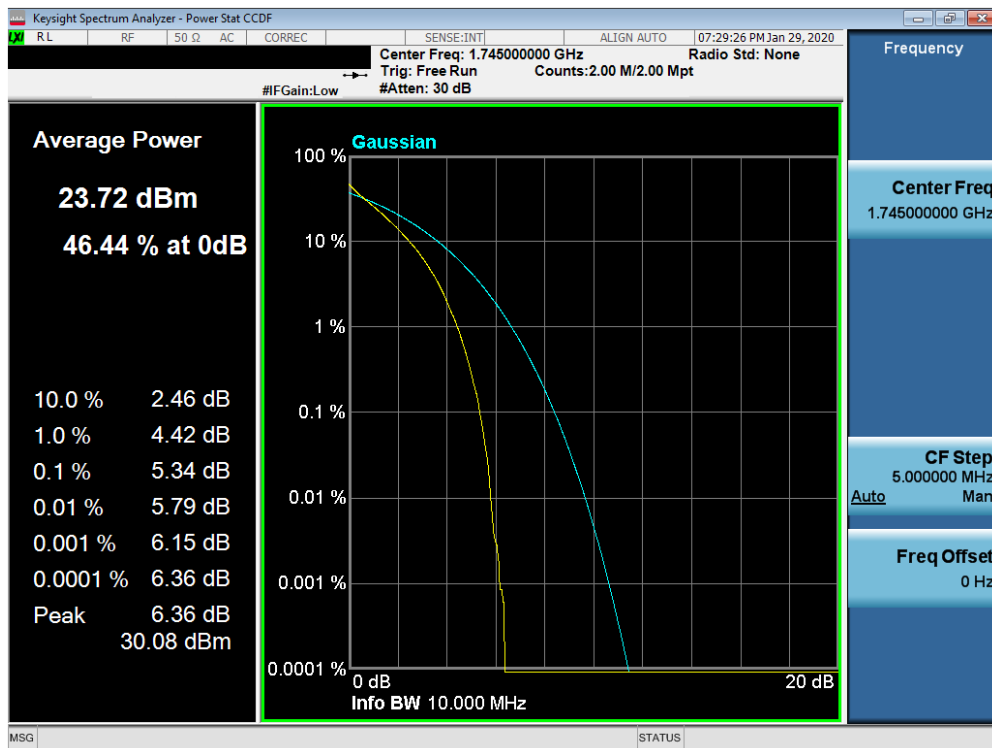


Plot 7-298. PAR Plot (Band 66/4 – 5.0MHz 16QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 174 of 237

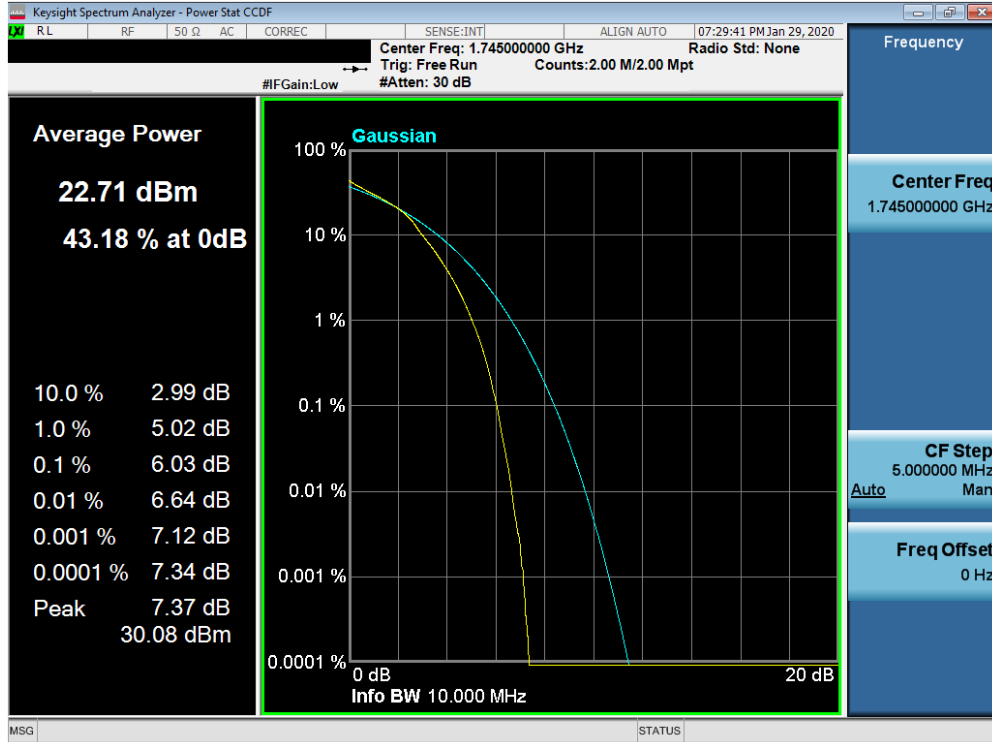


Plot 7-299. PAR Plot (Band 66/4 – 5.0MHz 64QAM - Full RB Configuration)

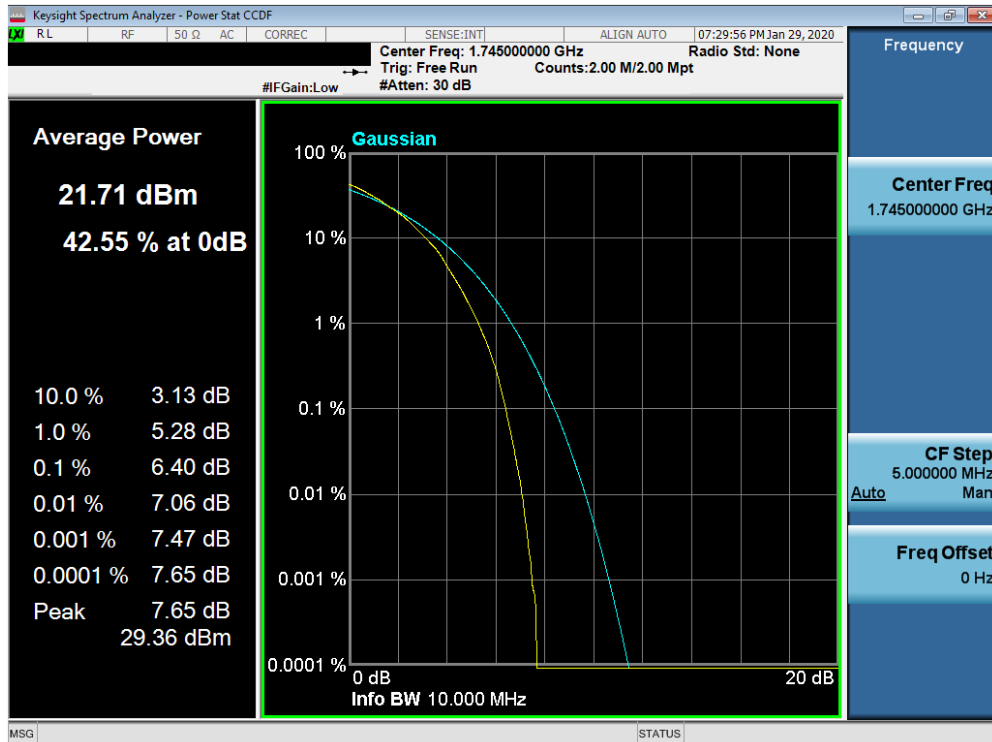


Plot 7-300. PAR Plot (Band 66/4 – 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 175 of 237

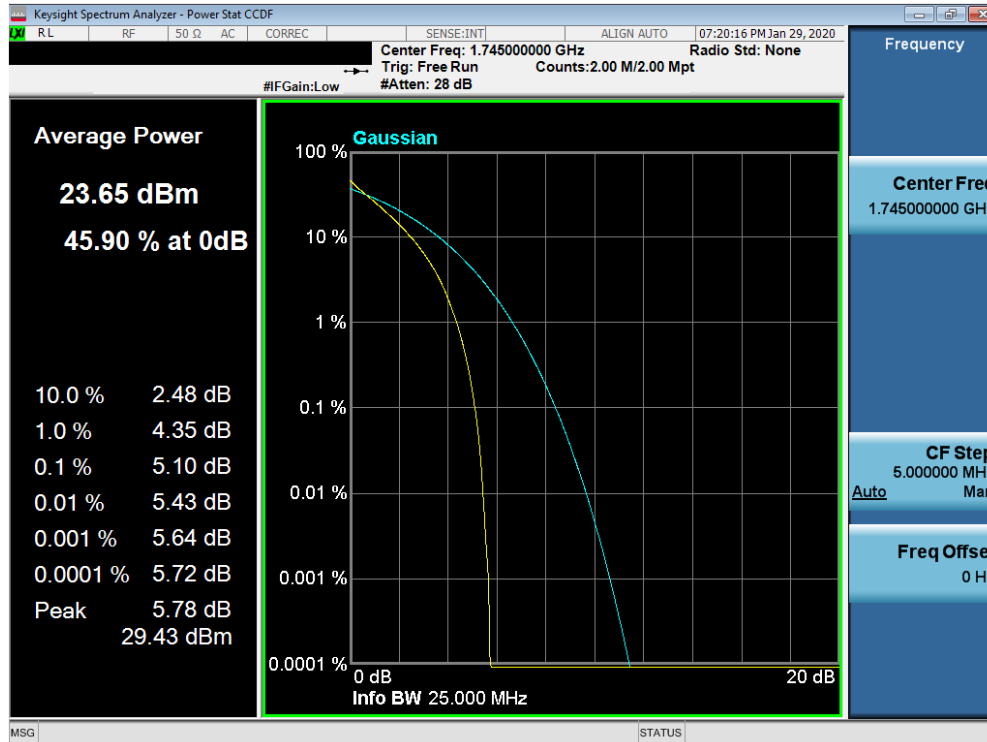


Plot 7-301. PAR Plot (Band 66/4 – 10.0MHz 16QAM - Full RB Configuration)

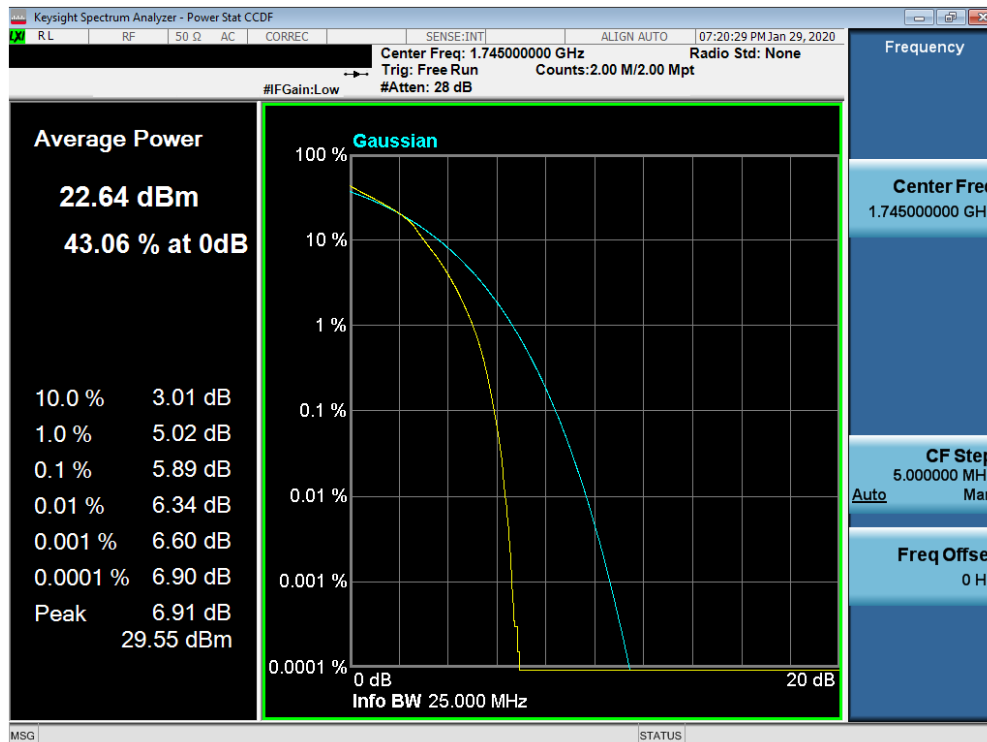


Plot 7-302. PAR Plot (Band 66/4 – 10.0MHz 64QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 176 of 237

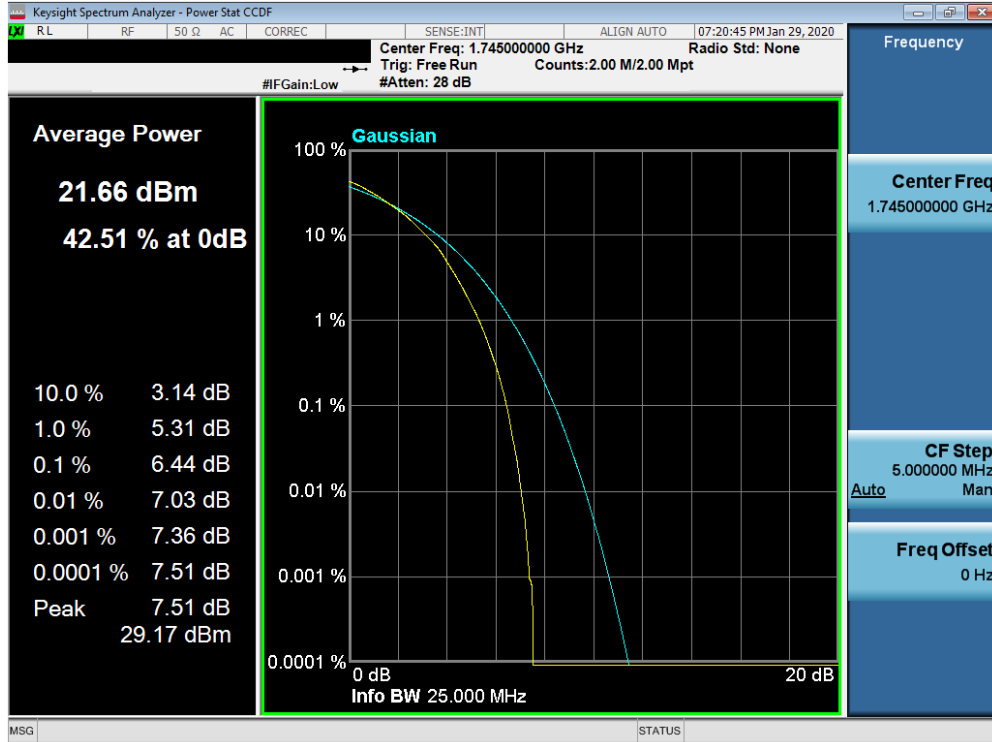


Plot 7-303. PAR Plot (Band 66/4 – 15.0MHz QPSK - Full RB Configuration)

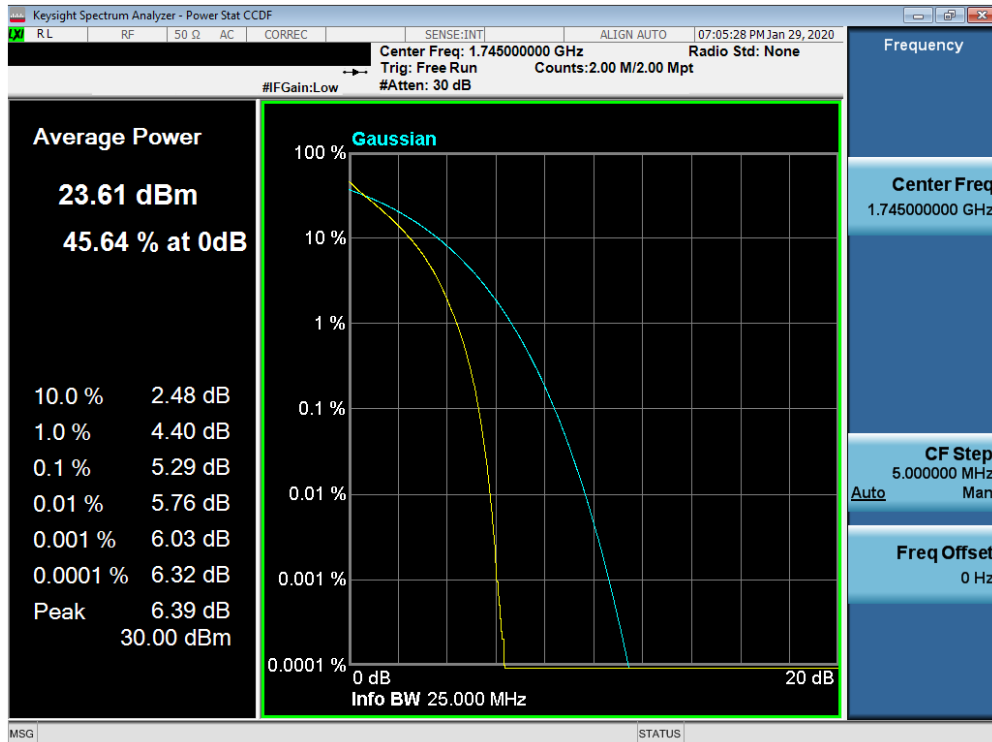


Plot 7-304. PAR Plot (Band 66/4 – 15.0MHz 16QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 177 of 237

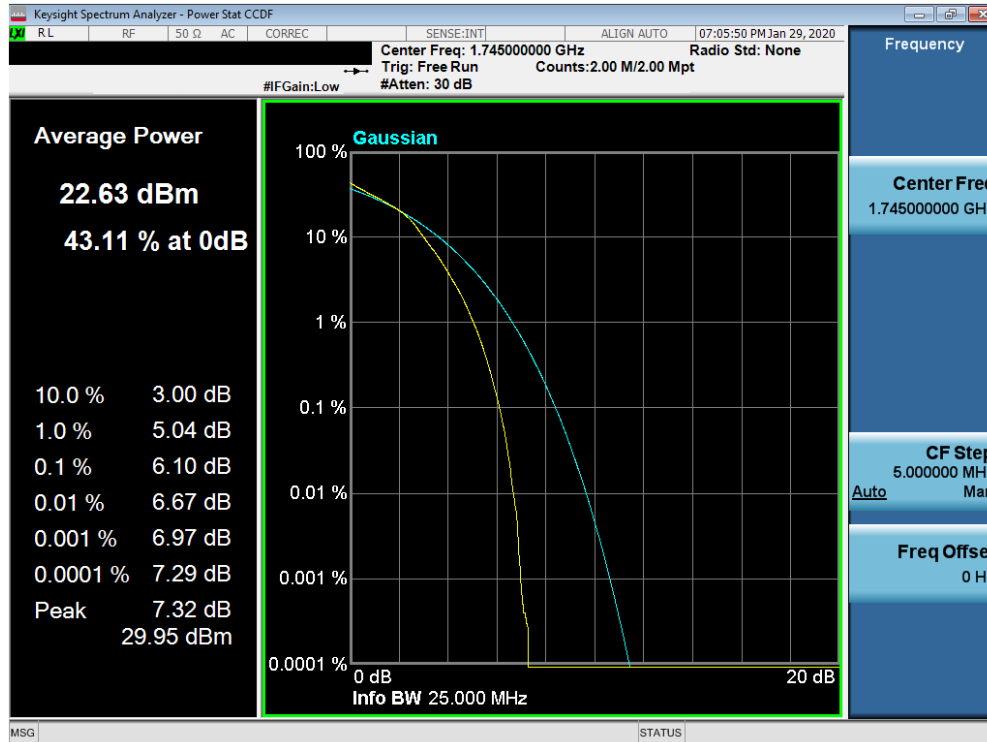


Plot 7-305. PAR Plot (Band 66/4 – 15.0MHz 64QAM - Full RB Configuration)

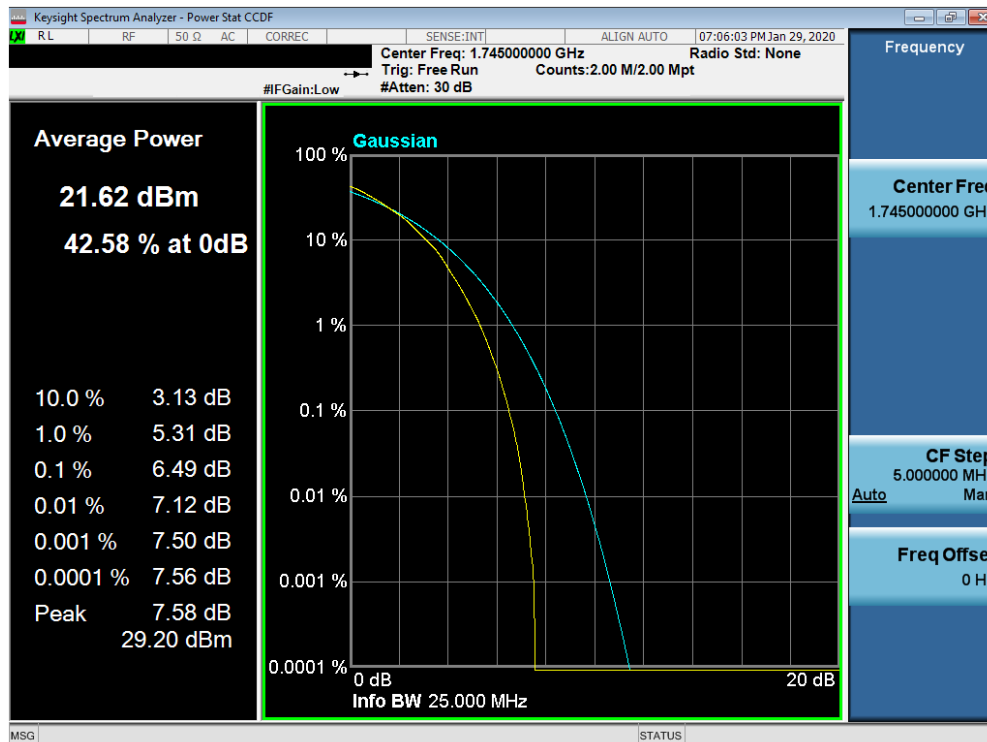


Plot 7-306. PAR Plot (Band 66/4 – 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 178 of 237



Plot 7-307. PAR Plot (Band 66/4 – 20.0MHz 16QAM - Full RB Configuration)



Plot 7-308. PAR Plot (Band 66/4 – 20.0MHz 64QAM - Full RB Configuration)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 179 of 237

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.

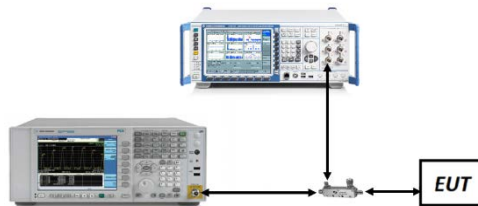


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 180 of 237

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	190	5	39675	2498.5	QPSK	1	0	0	≤ 3	23.40
							16-QAM			≤ 1		22.78
							64-QAM			≤ 2		21.60
2				5	39675	2498.5	QPSK	1	9	0	0	26.53
							16-QAM			≤ 1		25.60
							64-QAM			≤ 2		24.74
3				10	39700	2501	QPSK	1	0	0	≤ 5	21.50
							16-QAM	1	0	≤ 1		20.65
							64-QAM	1	0	≤ 2		19.74
4				10	39700	2501	QPSK	20	0	0	≤ 2	23.51
							16-QAM	20	0	≤ 1		22.52
							64-QAM	20	0	≤ 2		21.52
5				10	39700	2501	QPSK	50	0	0	≤ 3	22.53
							16-QAM	50	0	≤ 1		21.59
							64-QAM	50	0	≤ 2		20.52
6				10	39700	2501	QPSK	25	20	0	≤ 1	24.56
							16-QAM	25	20	≤ 1		23.55
							64-QAM	25	20	≤ 2		22.61
7				10	39700	2501	QPSK	1	36	0	0	26.56
							16-QAM	1	36	≤ 1		26.01
							64-QAM	1	36	≤ 2		24.85
8				15	39725	2503.5	QPSK	1	0	0	≤ 5	21.42
							16-QAM	1	0	≤ 1		20.45
							64-QAM	1	0	≤ 2		19.93
9				15	39725	2503.5	QPSK	20	0	0	≤ 2	23.42
							16-QAM	20	0	≤ 1		22.42
							64-QAM	20	0	≤ 2		21.45
10				15	39725	2503.5	QPSK	75	0	0	≤ 4	21.52
							16-QAM	75	0	≤ 1		20.49
							64-QAM	75	0	≤ 2		19.47
11				15	39725	2503.5	QPSK	50	15	0	≤ 3	22.55
							16-QAM	50	15	≤ 1		21.59
							64-QAM	50	15	≤ 2		20.55
12				15	39725	2503.5	QPSK	1	60	0	0	26.50
							16-QAM	1	60	≤ 1		25.81
							64-QAM	1	60	≤ 2		25.07
13				20	39750	2506	QPSK	1	0	0	≤ 5	21.24
							16-QAM	1	0	≤ 1		20.47
							64-QAM	1	0	≤ 2		19.92
14				20	39750	2506	QPSK	20	0	0	≤ 2	23.33
							16-QAM	20	0	≤ 1		22.36
							64-QAM	20	0	≤ 2		21.42
15				20	39750	2506	QPSK	100	0	0	≤ 4	21.47
							16-QAM	100	0	≤ 1		20.48
							64-QAM	100	0	≤ 2		19.40
16				20	39750	2506	QPSK	75	24	0	≤ 3	22.47
							16-QAM	75	24	≤ 1		21.54
							64-QAM	75	24	≤ 2		20.49
17				20	39750	2506	QPSK	1	77	0	0	26.39
							16-QAM	1	77	≤ 1		25.57
							64-QAM	1	77	≤ 2		25.07
18	01	311	870	5	39675	2498.5	QPSK	1	0	0	≤ 3	23.39
							16-QAM			≤ 1		22.79
							64-QAM			≤ 2		21.79
19	01	001	01	5	39675	2498.5	QPSK	1	0	0	0	26.81
							16-QAM			≤ 1		25.92
							64-QAM			≤ 2		24.83

Table 7-3. A-MPR Conducted Power Measurements

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 181 of 237

7.7 Uplink Carrier Aggregation

§27.53(m)

Test Overview

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

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

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

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

Test Setup

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

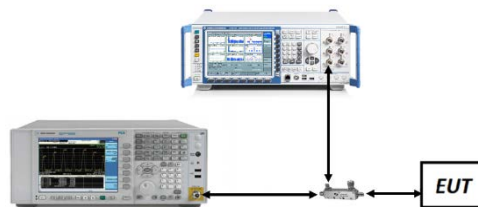


Figure 7-6. Test Instrument & Measurement Setup

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 182 of 237

Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 2 and 3.
2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-503 and 7-504 below, with both carriers set to transmit using 1RB.
3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 183 of 237

Uplink CA Configuration Band 41 (PC2)

Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	25.74
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	25.85
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	26.02

Table 7-4. Conducted Powers (B41 (PC2) – 20MHz + 20MHz Channel Bandwidth – PCC/SCC: 1RB)

Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	
Max	LTE B41	20	41490	2680	QPSK	100	0	LTE B41	20	41292	2660.2	QPSK	100	0	24.05
Max	LTE B41	20	41490	2680	16-QAM	100	0	LTE B41	20	41292	2660.2	16-QAM	100	0	22.96
Max	LTE B41	20	41490	2680	64-QAM	100	0	LTE B41	20	41292	2660.2	64-QAM	100	0	22.92

Table 7-5. Conducted Powers (B41 (PC2) – with Various Combinations for 20MHz + 20MHz Channel Bandwidth)

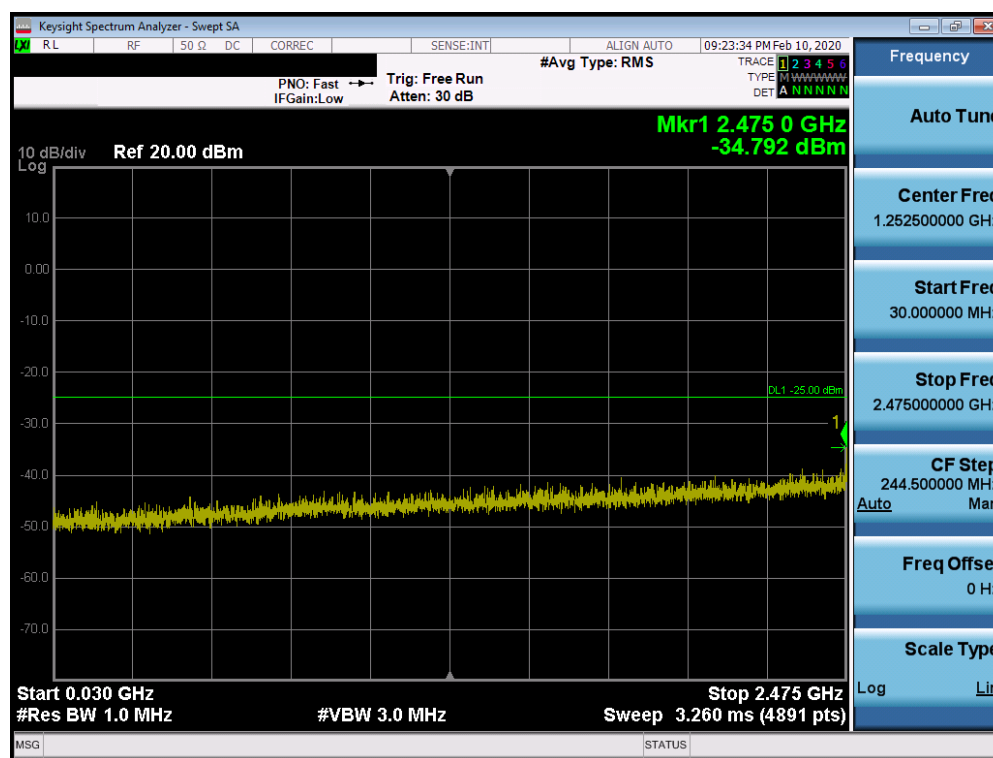


Table 7-309. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 184 of 237

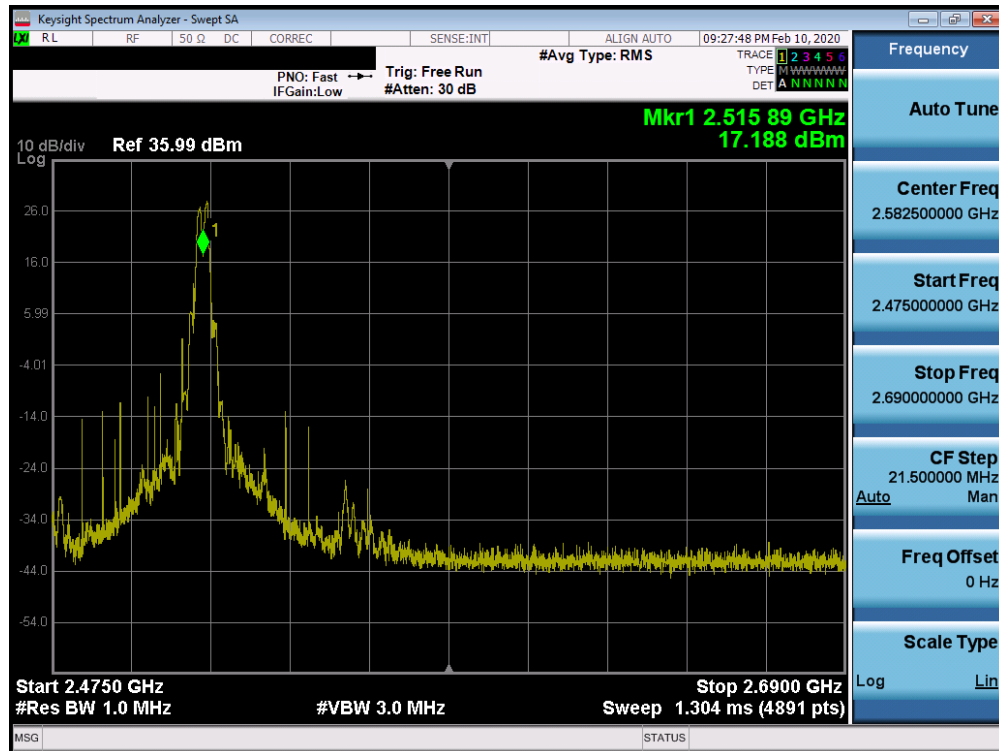


Table 7-310. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

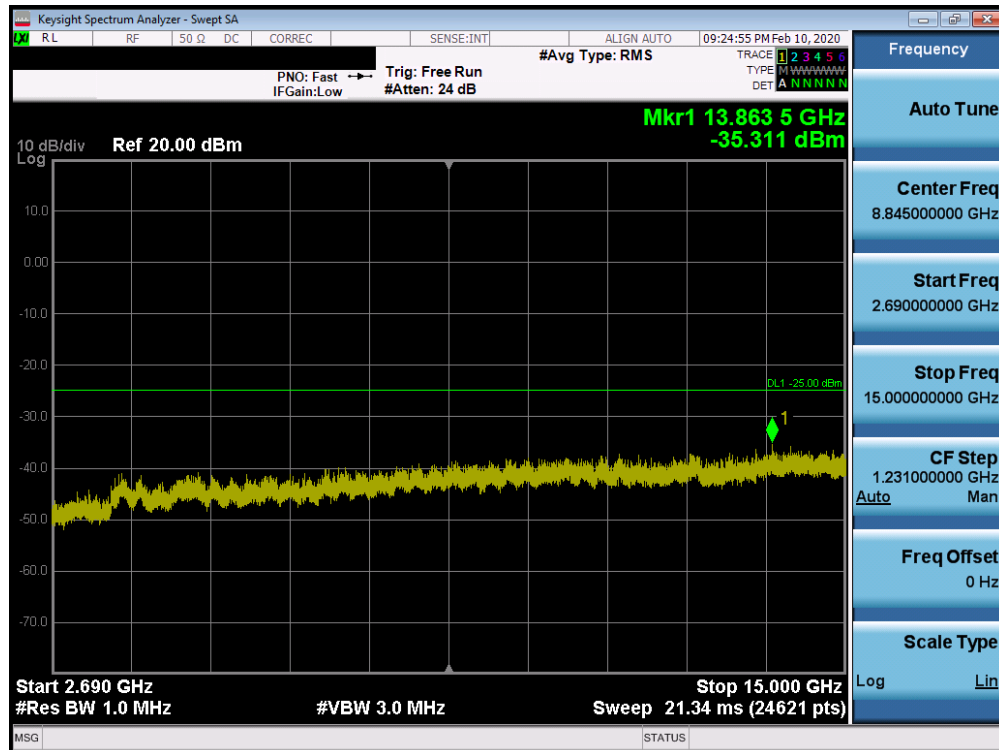


Table 7-311. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 185 of 237

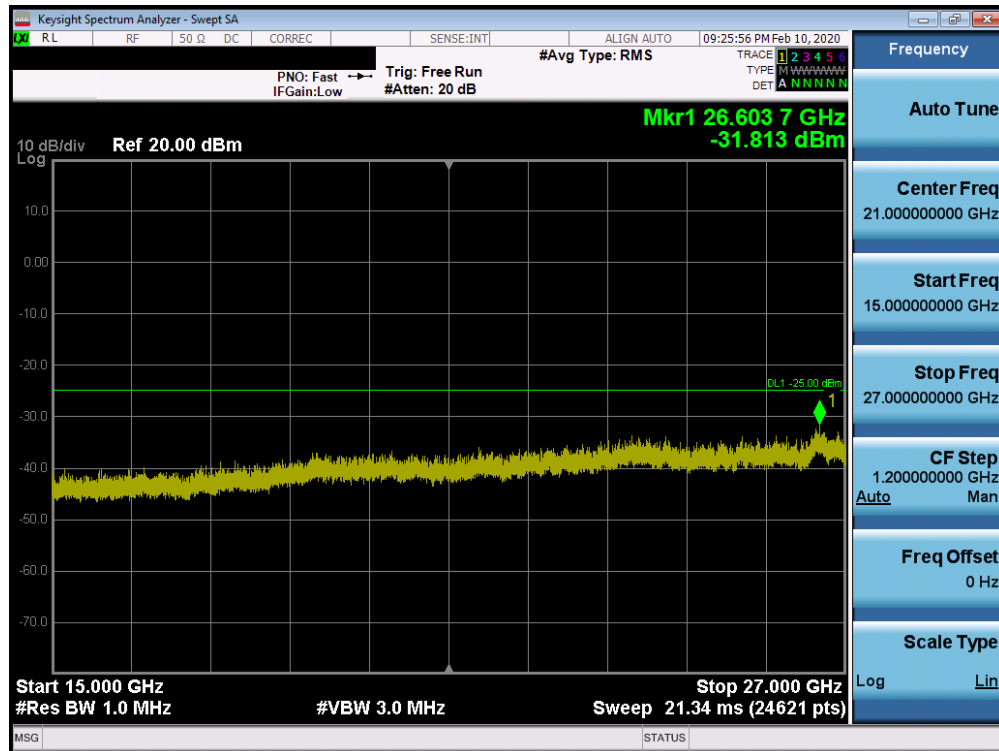


Table 7-312. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

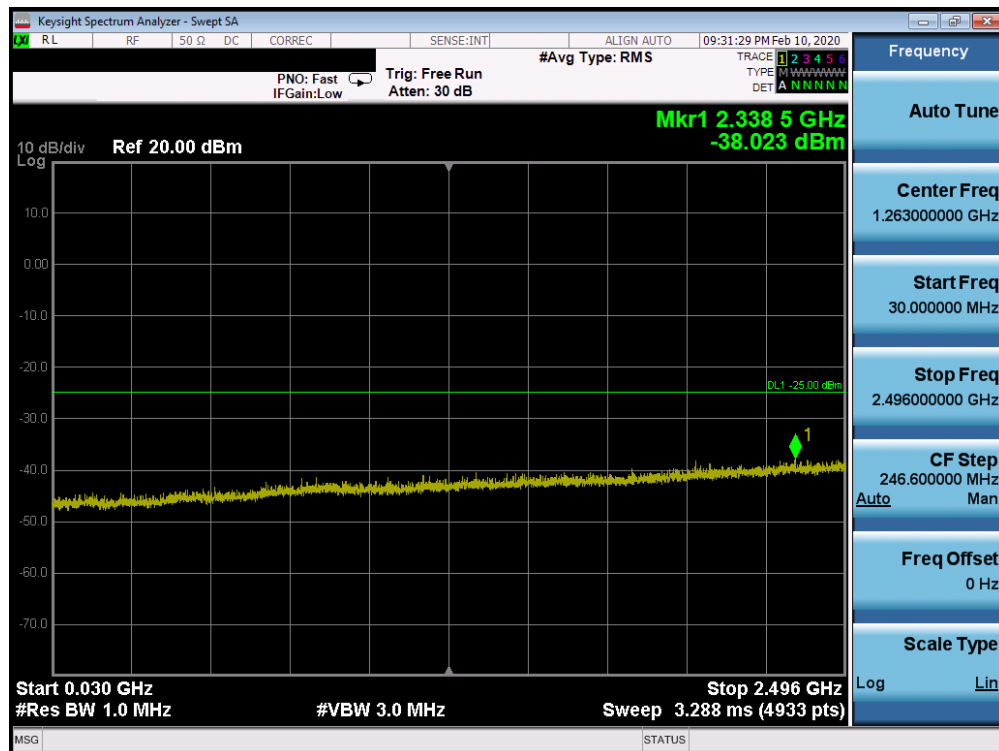


Table 7-313. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 186 of 237

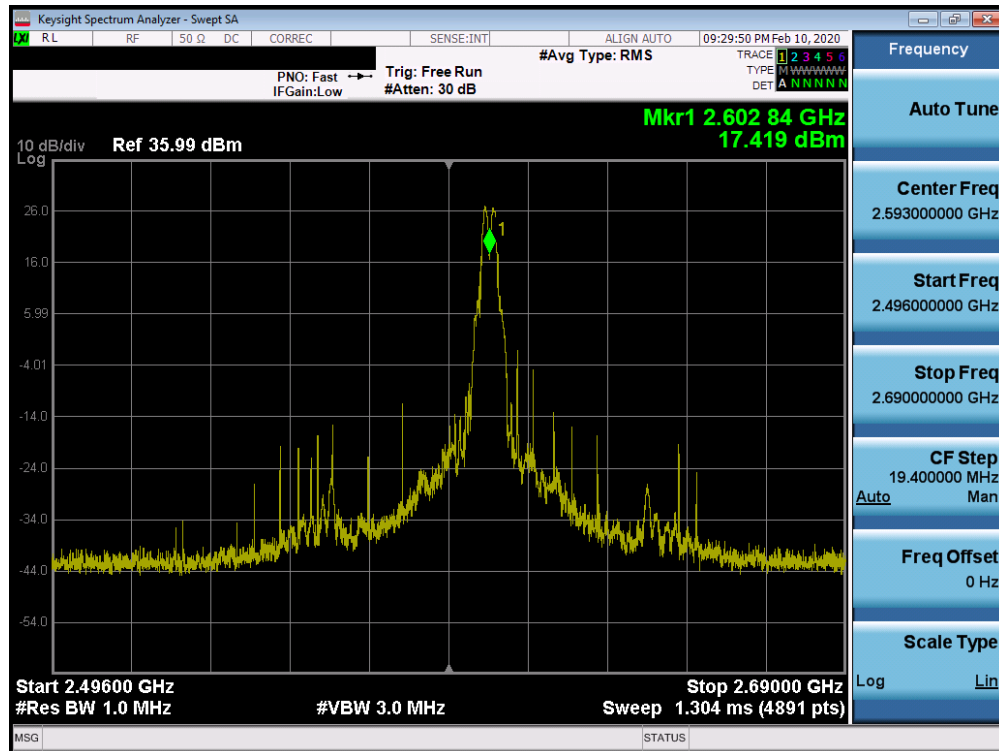


Table 7-314. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

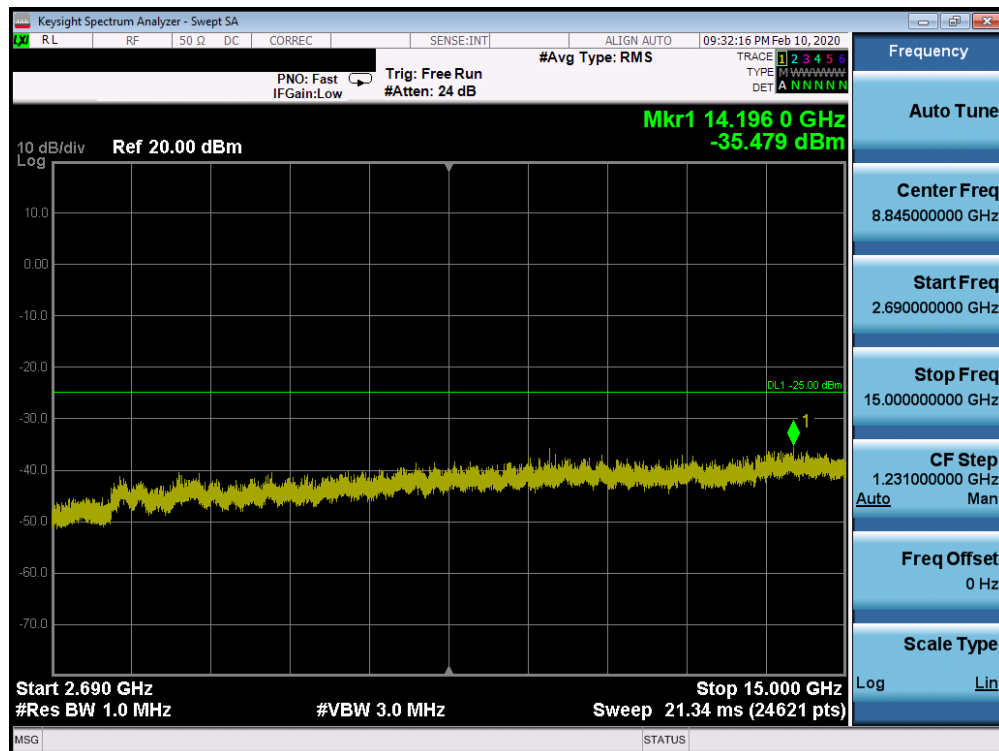


Table 7-315. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 187 of 237

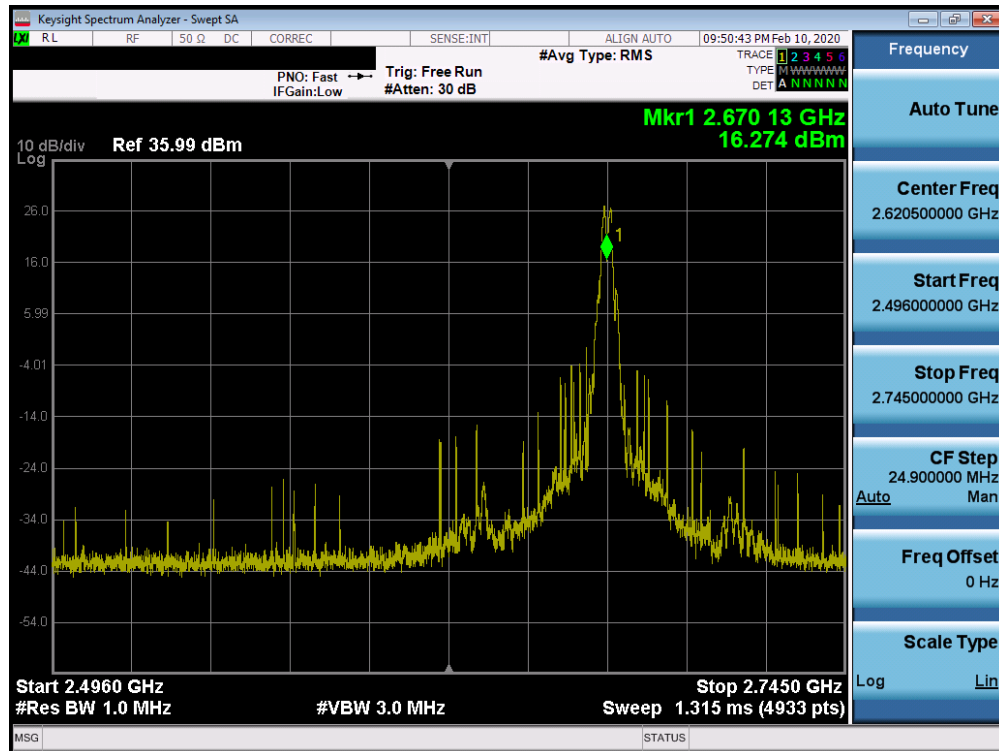


Table 7-318. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – High Channel)

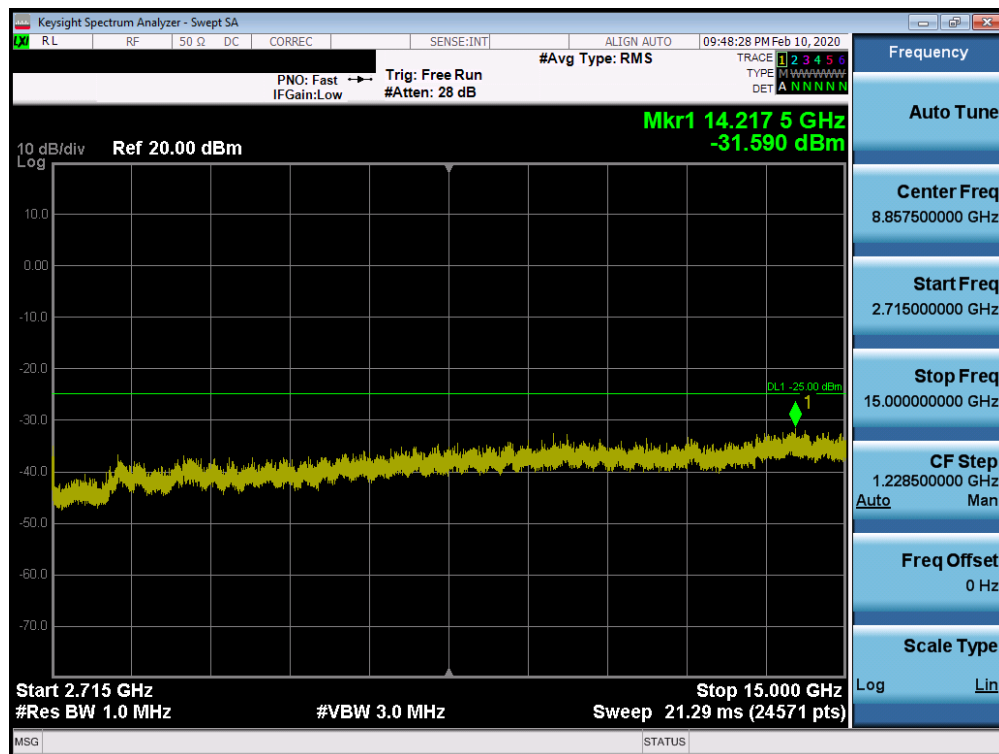


Table 7-319. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – High Channel)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 189 of 237

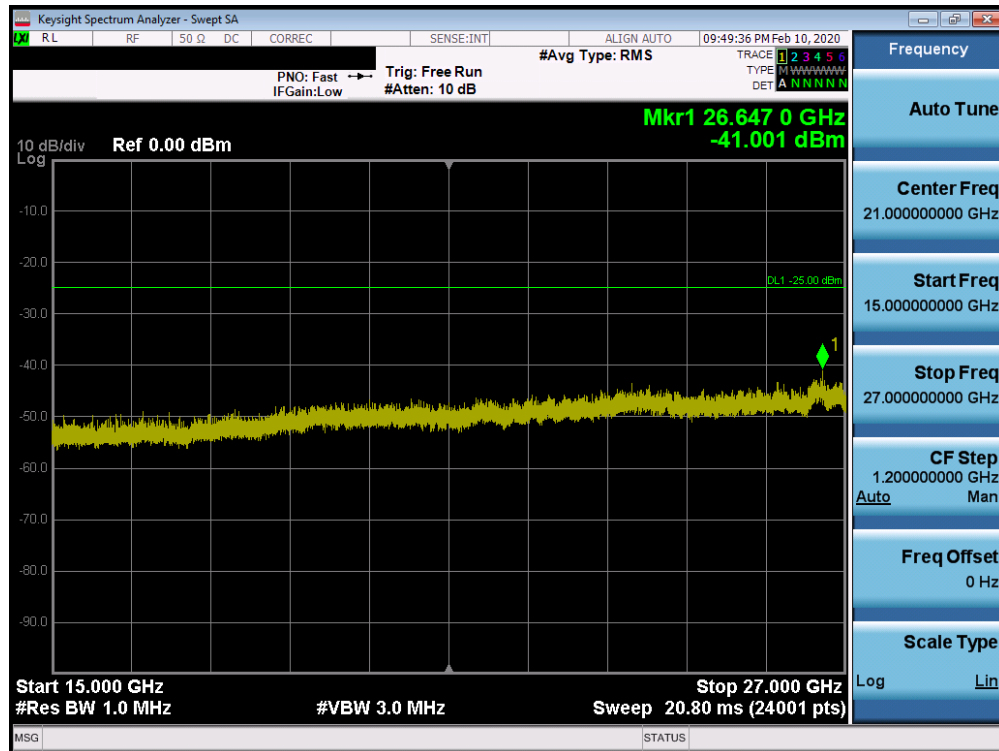


Table 7-320. Conducted Spurious Plot (Band 41(PC2)– 20.0MHz QPSK – PCC 1/99 SCC 1/0 – High Channel)

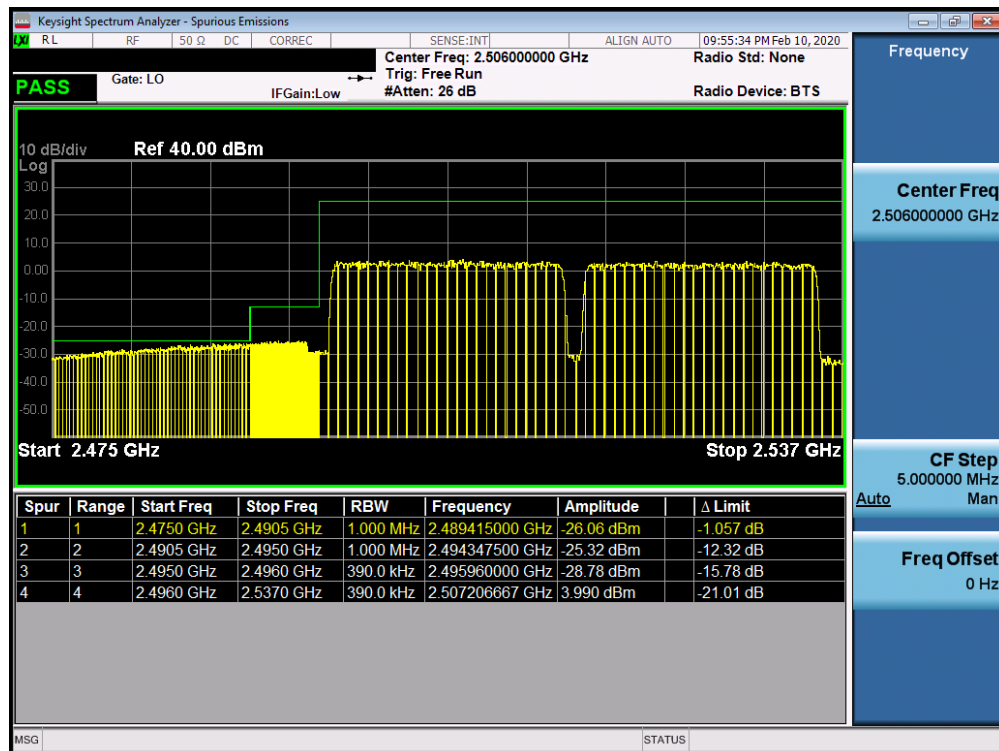


Table 7-321. Lower ACP Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: ZNFQ730TM	PCTEST		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset			Page 190 of 237

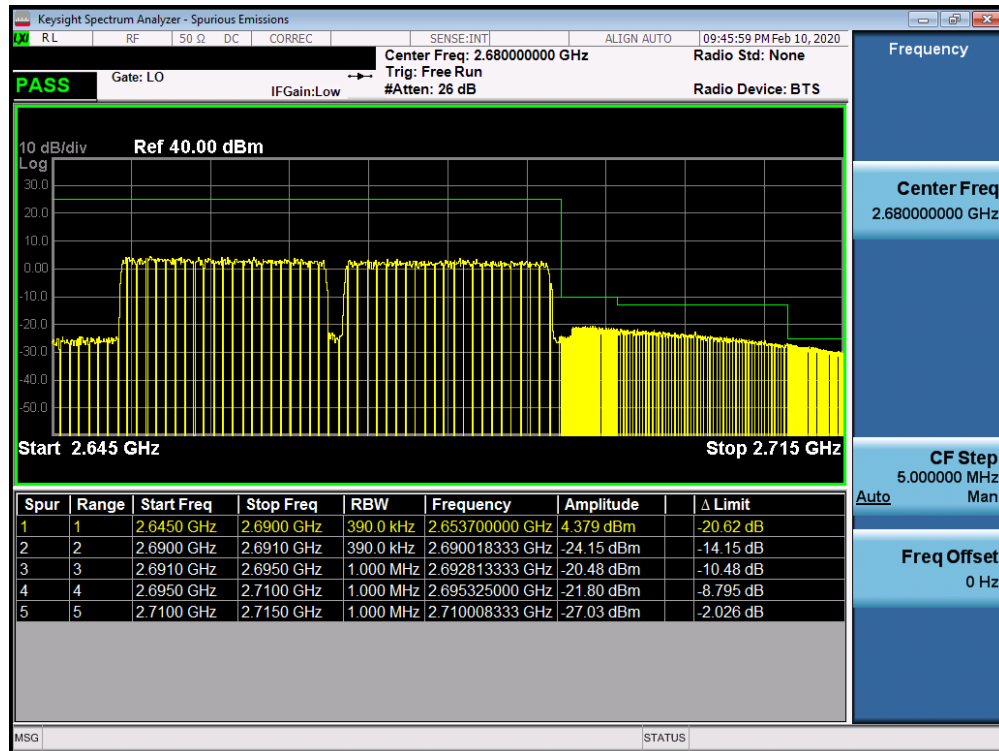


Table 7-322. Upper ACP Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 191 of 237	

7.8 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

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Test Setup

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

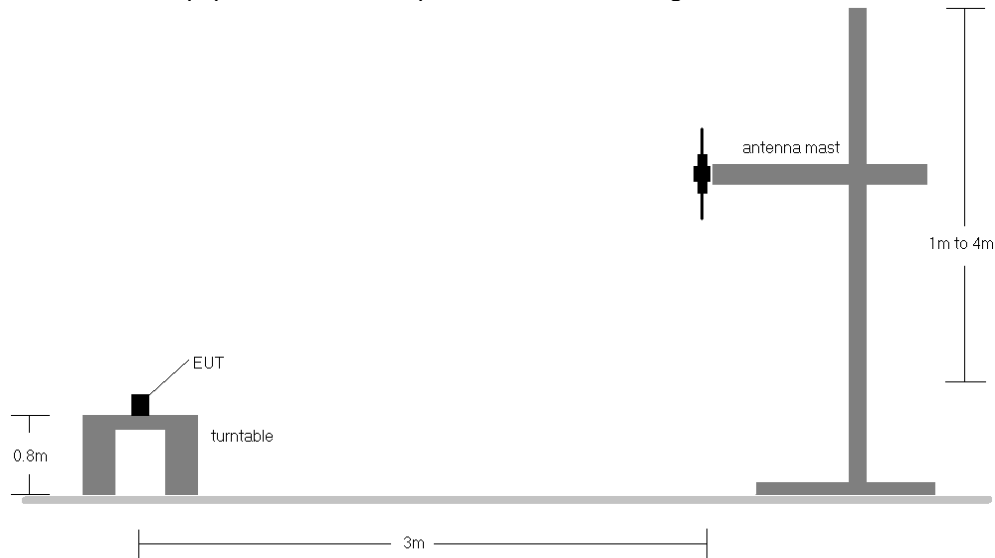


Figure 7-7. Radiated Test Setup <1GHz

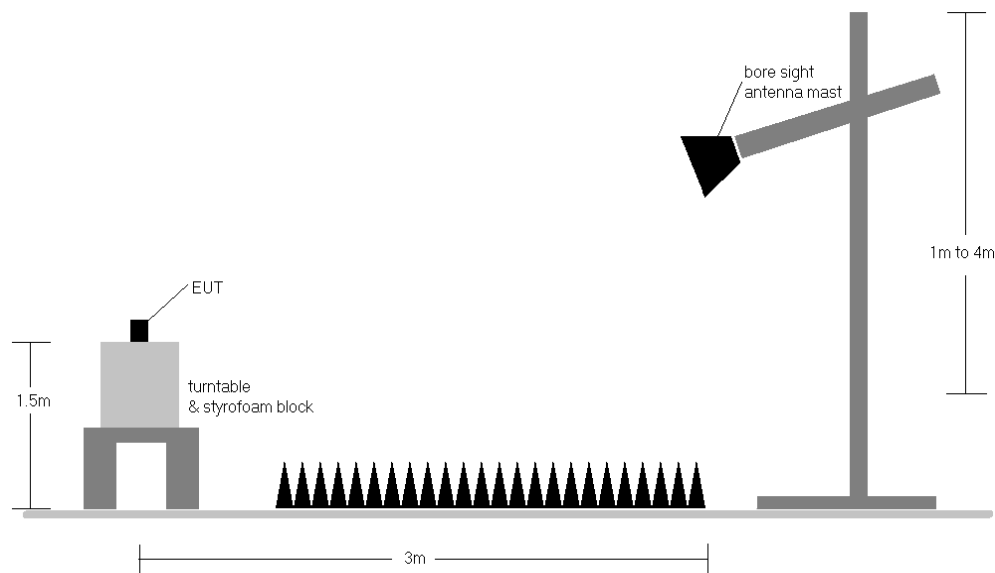


Figure 7-8. Radiated Test Setup >1GHz

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: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
665.50	5	QPSK	V	175	123	1 / 0	15.48	2.90	16.23	0.042	34.77	-18.54
680.50	5	QPSK	V	175	123	1 / 24	14.98	3.20	16.03	0.040	34.77	-18.74
695.50	5	QPSK	V	180	122	1 / 0	15.41	3.30	16.56	0.045	34.77	-18.21
695.50	5	16-QAM	V	180	122	1 / 0	14.76	3.30	15.91	0.039	34.77	-18.86
665.50	5	64-QAM	V	175	123	1 / 0	14.27	2.90	15.02	0.032	34.77	-19.75
668.00	10	QPSK	V	176	121	1 / 0	15.53	2.90	16.28	0.042	34.77	-18.49
680.50	10	QPSK	V	174	120	1 / 49	15.03	3.20	16.08	0.041	34.77	-18.69
693.00	10	QPSK	V	181	121	1 / 0	15.46	3.30	16.61	0.046	34.77	-18.16
693.00	10	16-QAM	V	181	121	1 / 0	14.81	3.30	15.96	0.039	34.77	-18.81
668.00	10	64-QAM	V	176	121	1 / 0	14.32	2.90	15.07	0.032	34.77	-19.70
670.50	15	QPSK	V	173	114	1 / 0	15.58	3.00	16.43	0.044	34.77	-18.34
680.50	15	QPSK	V	173	125	1 / 74	15.08	3.20	16.13	0.041	34.77	-18.64
690.50	15	QPSK	V	180	123	1 / 0	15.51	3.30	16.66	0.046	34.77	-18.11
690.50	15	16-QAM	V	180	123	1 / 0	14.86	3.30	16.01	0.040	34.77	-18.76
670.50	15	64-QAM	V	173	114	1 / 0	14.37	3.00	15.22	0.033	34.77	-19.55
673.00	20	QPSK	V	174	117	1 / 0	16.50	3.10	17.45	0.056	34.77	-17.32
680.50	20	QPSK	V	174	120	1 / 99	16.00	3.20	17.05	0.051	34.77	-17.72
688.00	20	QPSK	V	180	122	1 / 0	16.43	3.30	17.58	0.057	34.77	-17.19
688.00	20	16-QAM	V	180	122	1 / 0	15.78	3.30	16.93	0.049	34.77	-17.84
673.00	20	64-QAM	V	174	117	1 / 0	15.29	3.10	16.24	0.042	34.77	-18.53
688.00	20	QPSK	H	146	157	1 / 0	15.91	3.30	17.06	0.051	34.77	-17.71

Table 7-6. ERP Data (Band 71)

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	V	161	119	1 / 0	12.44	3.40	13.69	0.023	34.77	-21.08	15.84	0.038	36.99	-21.15
707.50	1.4	QPSK	V	165	121	1 / 5	14.77	3.65	16.27	0.042	34.77	-18.50	18.42	0.070	36.99	-18.57
715.30	1.4	QPSK	V	165	126	1 / 0	12.63	3.70	14.18	0.026	34.77	-20.59	16.33	0.043	36.99	-20.66
707.50	1.4	16-QAM	V	165	121	1 / 5	13.11	3.65	14.61	0.029	34.77	-20.16	16.76	0.047	36.99	-20.23
707.50	1.4	64-QAM	V	165	121	1 / 0	11.52	3.65	13.02	0.020	34.77	-21.75	15.17	0.033	36.99	-21.82
700.50	3	QPSK	V	164	123	1 / 0	14.38	3.40	15.63	0.037	34.77	-19.14	17.78	0.060	36.99	-19.21
707.50	3	QPSK	V	162	121	1 / 14	15.44	3.65	16.94	0.049	34.77	-17.83	19.09	0.081	36.99	-17.90
714.50	3	QPSK	V	166	123	1 / 0	14.45	3.70	16.00	0.040	34.77	-18.77	18.15	0.065	36.99	-18.84
707.50	3	16-QAM	V	162	121	1 / 14	14.19	3.65	15.69	0.037	34.77	-19.08	17.84	0.061	36.99	-19.15
707.50	3	64-QAM	V	162	121	1 / 0	12.98	3.65	14.48	0.028	34.77	-20.29	16.63	0.046	36.99	-20.36
701.50	5	QPSK	V	161	125	1 / 0	15.31	3.40	16.56	0.045	34.77	-18.21	18.71	0.074	36.99	-18.28
707.50	5	QPSK	V	162	121	1 / 24	15.68	3.65	17.18	0.052	34.77	-17.59	19.33	0.086	36.99	-17.66
713.50	5	QPSK	V	165	123	1 / 0	15.35	3.70	16.90	0.049	34.77	-17.87	19.05	0.080	36.99	-17.94
707.50	5	16-QAM	V	162	121	1 / 24	14.69	3.65	16.19	0.042	34.77	-18.58	18.34	0.068	36.99	-18.65
707.50	5	64-QAM	V	162	121	1 / 0	13.64	3.65	15.14	0.033	34.77	-19.63	17.29	0.054	36.99	-19.70
704.00	10	QPSK	V	158	130	1 / 0	15.78	3.50	17.13	0.052	34.77	-17.64	19.28	0.085	36.99	-17.71
707.50	10	QPSK	V	162	121	1 / 49	15.80	3.65	17.30	0.054	34.77	-17.47	19.45	0.088	36.99	-17.54
711.00	10	QPSK	V	172	123	1 / 0	15.78	3.70	17.33	0.054	34.77	-17.44	19.48	0.089	36.99	-17.51
707.50	10	16-QAM	V	162	121	1 / 49	14.99	3.65	16.49	0.045	34.77	-18.28	18.64	0.073	36.99	-18.35
707.50	10	64-QAM	V	162	121	1 / 0	14.02	3.65	15.52	0.036	34.77	-19.25	17.67	0.058	36.99	-19.32
711.00	10	QPSK	H	279	8	1 / 0	14.69	3.70	16.24	0.042	34.77	-18.53	18.39	0.069	36.99	-18.60

Table 7-7. ERP/EIRP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
779.50	5	QPSK	V	148	38	1 / 0	11.95	5.80	15.60	0.036	34.77	-19.17	17.75	0.060	36.99	-19.24
782.00	5	QPSK	V	149	36	1 / 0	11.96	5.80	15.61	0.036	34.77	-19.16	17.76	0.060	36.99	-19.23
784.50	5	QPSK	V	151	37	1 / 0	11.91	5.90	15.66	0.037	34.77	-19.11	17.81	0.060	36.99	-19.18
784.50	5	16-QAM	V	151	37	1 / 0	11.25	5.90	15.00	0.032	34.77	-19.77	17.15	0.052	36.99	-19.84
784.50	5	64-QAM	V	151	37	1 / 0	10.34	5.90	14.09	0.026	34.77	-20.69	16.24	0.042	36.99	-20.75
782.00	10	QPSK	V	148	36	1 / 0	12.02	5.80	15.67	0.037	34.77	-19.10	17.82	0.061	36.99	-19.17
782.00	10	16-QAM	V	148	36	1 / 0	11.26	5.80	14.91	0.031	34.77	-19.86	17.06	0.051	36.99	-19.93
782.00	10	64-QAM	V	148	36	1 / 0	10.43	5.80	14.08	0.026	34.77	-20.69	16.23	0.042	36.99	-20.76
782.00	10	QPSK	H	102	63	1 / 0	11.09	5.80	14.74	0.030	34.77	-20.03	16.89	0.049	36.99	-20.10

Table 7-8. ERP/EIRP Data (Band 13)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	241	286	1 / 5	9.48	6.70	14.03	0.025	38.45	-24.42	16.18	0.041	40.61	-24.43
836.50	1.4	QPSK	H	374	285	1 / 5	10.04	6.70	14.59	0.029	38.45	-23.86	16.74	0.047	40.61	-23.87
848.30	1.4	QPSK	H	232	57	1 / 5	11.68	6.70	16.23	0.042	38.45	-22.22	18.38	0.069	40.61	-22.23
848.30	1.4	16-QAM	H	232	57	1 / 5	10.56	6.70	15.11	0.032	38.45	-23.34	17.26	0.053	40.61	-23.35
848.30	1.4	64-QAM	H	232	57	1 / 5	8.58	6.70	13.13	0.021	38.45	-25.32	15.28	0.034	40.61	-25.33
825.50	3	QPSK	H	242	286	1 / 14	9.46	6.70	14.01	0.025	38.45	-24.44	16.16	0.041	40.61	-24.45
836.50	3	QPSK	H	374	286	1 / 14	10.03	6.70	14.58	0.029	38.45	-23.87	16.73	0.047	40.61	-23.88
847.50	3	QPSK	H	235	51	1 / 14	11.64	6.65	16.14	0.041	38.45	-22.31	18.29	0.067	40.61	-22.32
847.50	3	16-QAM	H	235	51	1 / 14	10.91	6.65	15.41	0.035	38.45	-23.04	17.56	0.057	40.61	-23.05
847.50	3	64-QAM	H	235	51	1 / 14	8.73	6.65	13.23	0.021	38.45	-25.22	15.38	0.035	40.61	-25.23
826.50	5	QPSK	H	232	284	1 / 24	9.33	6.70	13.88	0.024	38.45	-24.57	16.03	0.040	40.61	-24.58
836.50	5	QPSK	H	374	287	1 / 24	10.06	6.70	14.61	0.029	38.45	-23.84	16.76	0.047	40.61	-23.85
846.50	5	QPSK	H	236	56	1 / 24	11.75	6.60	16.20	0.042	38.45	-22.25	18.35	0.068	40.61	-22.26
846.50	5	16-QAM	H	236	56	1 / 24	10.57	6.60	15.02	0.032	38.45	-23.43	17.17	0.052	40.61	-23.44
846.50	5	64-QAM	H	236	56	1 / 24	8.52	6.60	12.97	0.020	38.45	-25.48	15.12	0.033	40.61	-25.49
829.00	10	QPSK	H	235	301	1 / 49	9.41	6.70	13.96	0.025	38.45	-24.49	16.11	0.041	40.61	-24.50
836.50	10	QPSK	H	374	289	1 / 49	9.30	6.70	13.85	0.024	38.45	-24.60	16.00	0.040	40.61	-24.61
844.00	10	QPSK	H	232	51	1 / 49	10.86	6.60	15.31	0.034	38.45	-23.14	17.46	0.056	40.61	-23.15
844.00	10	16-QAM	H	232	51	1 / 49	10.55	6.60	15.00	0.032	38.45	-23.45	17.15	0.052	40.61	-23.46
844.00	10	64-QAM	H	232	51	1 / 49	8.58	6.60	13.03	0.020	38.45	-25.42	15.18	0.033	40.61	-25.43

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

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
831.50	15	QPSK	H	224	292	1 / 74	9.49	6.70	14.04	0.025	38.45	-24.41	16.19	0.042	40.61	-24.42
836.50	15	QPSK	H	374	282	1 / 0	10.23	6.70	14.78	0.030	38.45	-23.67	16.93	0.049	40.61	-23.68
841.50	15	QPSK	H	223	50	1 / 74	11.81	6.60	16.26	0.042	38.45	-22.19	18.41	0.069	40.61	-22.20
841.50	15	16-QAM	H	223	50	1 / 74	10.83	6.60	15.28	0.034	38.45	-23.17	17.43	0.055	40.61	-23.18
841.50	15	64-QAM	H	223	50	1 / 74	8.81	6.60	13.26	0.021	38.45	-25.19	15.41	0.035	40.61	-25.20
841.50	15	QPSK	V	145	240	1 / 74	11.26	6.60	15.71	0.037	38.45	-22.74	17.86	0.061	40.61	-22.75

Table 7-10. ERP Data (Band 26)

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	151	42	1 / 5	12.07	9.44	21.51	0.142	30.00	-8.49
1745.00	1.4	QPSK	V	151	353	1 / 5	12.60	9.23	21.83	0.152	30.00	-8.17
1779.30	1.4	QPSK	V	160	47	1 / 5	11.35	9.26	20.61	0.115	30.00	-9.39
1745.00	1.4	16-QAM	V	151	353	1 / 5	12.10	9.23	21.33	0.136	30.00	-8.67
1745.00	1.4	64-QAM	V	151	353	1 / 5	10.78	9.23	20.01	0.100	30.00	-9.99
1711.50	3	QPSK	V	151	42	1 / 14	11.98	9.44	21.42	0.139	30.00	-8.58
1745.00	3	QPSK	V	151	353	1 / 14	12.63	9.23	21.86	0.153	30.00	-8.14
1778.50	3	QPSK	V	160	47	1 / 14	11.46	9.26	20.72	0.118	30.00	-9.28
1745.00	3	16-QAM	V	151	353	1 / 14	12.12	9.23	21.35	0.136	30.00	-8.65
1745.00	3	64-QAM	V	151	353	1 / 14	10.75	9.23	19.98	0.100	30.00	-10.02
1712.50	5	QPSK	V	151	42	1 / 24	12.04	9.43	21.47	0.140	30.00	-8.53
1745.00	5	QPSK	V	151	353	1 / 24	12.67	9.23	21.90	0.155	30.00	-8.10
1777.50	5	QPSK	V	160	47	1 / 24	11.27	9.26	20.53	0.113	30.00	-9.47
1745.00	5	16-QAM	V	151	353	1 / 24	12.07	9.23	21.30	0.135	30.00	-8.70
1745.00	5	64-QAM	V	151	353	1 / 24	10.90	9.23	20.13	0.103	30.00	-9.87
1715.00	10	QPSK	V	152	45	1 / 49	12.10	9.42	21.52	0.142	30.00	-8.48
1745.00	10	QPSK	V	152	355	1 / 49	12.65	9.23	21.88	0.154	30.00	-8.12
1775.00	10	QPSK	V	160	47	1 / 49	11.41	9.25	20.67	0.117	30.00	-9.33
1745.00	10	16-QAM	V	152	355	1 / 49	12.05	9.23	21.28	0.134	30.00	-8.72
1745.00	10	64-QAM	V	152	355	1 / 49	10.80	9.23	20.03	0.101	30.00	-9.97
1717.50	15	QPSK	V	153	45	1 / 74	12.16	9.40	21.56	0.143	30.00	-8.44
1745.00	15	QPSK	V	151	353	1 / 74	12.64	9.23	21.87	0.154	30.00	-8.13
1772.50	15	QPSK	V	159	49	1 / 74	11.34	9.25	20.59	0.114	30.00	-9.41
1745.00	15	16-QAM	V	151	353	1 / 74	12.05	9.23	21.28	0.134	30.00	-8.72
1745.00	15	64-QAM	V	151	353	1 / 74	10.98	9.23	20.21	0.105	30.00	-9.79
1720.00	20	QPSK	V	151	42	1 / 99	12.14	9.38	21.52	0.142	30.00	-8.48
1745.00	20	QPSK	V	151	353	1 / 99	12.70	9.23	21.93	0.156	30.00	-8.07
1770.00	20	QPSK	V	160	47	1 / 99	11.59	9.24	20.83	0.121	30.00	-9.17
1745.00	20	16-QAM	V	151	353	1 / 99	12.09	9.23	21.32	0.136	30.00	-8.68
1745.00	20	64-QAM	V	151	353	1 / 99	11.07	9.23	20.30	0.107	30.00	-9.70
1745.00	20	QPSK	H	146	4	1 / 99	11.32	9.23	20.55	0.114	30.00	-9.45

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

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	147	179	1 / 5	11.79	9.48	21.28	0.134	33.01	-11.74
1882.50	1.4	QPSK	H	155	120	1 / 5	11.30	9.94	21.24	0.133	33.01	-11.78
1914.30	1.4	QPSK	H	104	191	1 / 5	12.64	10.29	22.94	0.197	33.01	-10.08
1914.30	1.4	16-QAM	H	104	191	1 / 5	11.41	10.29	21.71	0.148	33.01	-11.31
1914.30	1.4	64-QAM	H	104	191	1 / 5	10.80	10.29	21.10	0.129	33.01	-11.92
1851.50	3	QPSK	H	147	179	1 / 14	11.75	9.50	21.24	0.133	33.01	-11.77
1882.50	3	QPSK	H	155	120	1 / 14	11.27	9.94	21.21	0.132	33.01	-11.81
1913.50	3	QPSK	H	104	191	1 / 14	12.66	10.29	22.95	0.197	33.01	-10.06
1913.50	3	16-QAM	H	104	191	1 / 14	11.53	10.29	21.82	0.152	33.01	-11.19
1913.50	3	64-QAM	H	104	191	1 / 14	10.82	10.29	21.11	0.129	33.01	-11.90
1852.50	5	QPSK	H	147	179	1 / 24	11.71	9.51	21.22	0.132	33.01	-11.79
1882.50	5	QPSK	H	155	120	1 / 24	11.31	9.94	21.25	0.133	33.01	-11.77
1912.50	5	QPSK	H	104	191	1 / 24	12.58	10.28	22.86	0.193	33.01	-10.15
1912.50	5	16-QAM	H	104	191	1 / 24	11.54	10.28	21.82	0.152	33.01	-11.19
1912.50	5	64-QAM	H	104	191	1 / 24	10.96	10.28	21.24	0.133	33.01	-11.77
1855.00	10	QPSK	H	147	179	1 / 49	11.62	9.55	21.16	0.131	33.01	-11.85
1882.50	10	QPSK	H	155	120	1 / 49	11.29	9.94	21.23	0.133	33.01	-11.79
1910.00	10	QPSK	H	104	191	1 / 49	12.71	10.26	22.97	0.198	33.01	-10.04
1910.00	10	16-QAM	H	104	191	1 / 49	11.60	10.26	21.86	0.153	33.01	-11.15
1910.00	10	64-QAM	H	104	191	1 / 49	10.86	10.26	21.12	0.129	33.01	-11.89
1857.50	15	QPSK	H	147	179	1 / 74	11.70	9.58	21.28	0.134	33.01	-11.73
1882.50	15	QPSK	H	155	120	1 / 74	11.28	9.94	21.22	0.132	33.01	-11.80
1907.50	15	QPSK	H	104	191	1 / 74	12.54	10.24	22.78	0.190	33.01	-10.23
1907.50	15	16-QAM	H	104	191	1 / 74	11.49	10.24	21.73	0.149	33.01	-11.28
1907.50	15	64-QAM	H	104	191	1 / 74	10.79	10.24	21.03	0.127	33.01	-11.98
1860.00	20	QPSK	H	147	179	1 / 99	11.73	9.62	21.35	0.136	33.01	-11.66
1882.50	20	QPSK	H	155	120	1 / 99	11.56	9.94	21.50	0.141	33.01	-11.52
1905.00	20	QPSK	H	104	191	1 / 99	12.78	10.22	23.00	0.199	33.01	-10.01
1905.00	20	16-QAM	H	104	191	1 / 99	12.03	10.22	22.25	0.168	33.01	-10.76
1905.00	20	64-QAM	H	104	191	1 / 99	10.93	10.22	21.15	0.130	33.01	-11.86
1905.00	20	QPSK	V	150	302	1 / 99	10.41	10.22	20.63	0.116	33.01	-12.38

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

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 198 of 237

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	H	104	34	1 / 0	16.43	9.43	25.87	0.386	33.01	-7.14
2593.00	5	QPSK	H	120	32	1 / 24	16.43	9.55	25.98	0.397	33.01	-7.03
2687.50	5	QPSK	H	145	35	1 / 0	16.00	9.82	25.82	0.382	33.01	-7.19
2687.50	5	16-QAM	H	145	35	1 / 24	15.72	9.82	25.54	0.358	33.01	-7.47
2687.50	5	64-QAM	H	145	35	1 / 24	15.14	9.82	24.96	0.313	33.01	-8.05
2501.00	10	QPSK	H	102	35	1 / 0	16.74	9.43	26.17	0.414	33.01	-6.84
2593.00	10	QPSK	H	118	30	1 / 49	16.68	9.55	26.23	0.420	33.01	-6.78
2685.00	10	QPSK	H	143	33	1 / 0	16.30	9.82	26.12	0.409	33.01	-6.89
2685.00	10	16-QAM	H	143	33	1 / 49	15.36	9.82	25.18	0.330	33.01	-7.83
2685.00	10	64-QAM	H	143	33	1 / 49	15.12	9.82	24.94	0.312	33.01	-8.07
2503.50	15	QPSK	H	105	40	1 / 0	16.65	9.43	26.08	0.405	33.01	-6.93
2593.00	15	QPSK	H	124	29	1 / 74	16.60	9.55	26.15	0.412	33.01	-6.86
2682.50	15	QPSK	H	146	33	1 / 0	16.25	9.83	26.08	0.405	33.01	-6.93
2682.50	15	16-QAM	H	146	33	1 / 74	15.55	9.83	25.38	0.345	33.01	-7.63
2682.50	15	64-QAM	H	146	33	1 / 74	15.12	9.83	24.95	0.313	33.01	-8.06
2506.00	20	QPSK	H	100	39	1 / 0	16.76	9.42	26.18	0.415	33.01	-6.83
2593.00	20	QPSK	H	121	28	1 / 99	16.85	9.55	26.40	0.437	33.01	-6.61
2680.00	20	QPSK	H	141	31	1 / 0	16.51	9.83	26.34	0.431	33.01	-6.67
2680.00	20	16-QAM	H	141	31	1 / 99	15.62	9.83	25.45	0.351	33.01	-7.56
2680.00	20	64-QAM	H	141	31	1 / 99	15.01	9.83	24.84	0.305	33.01	-8.17
2593.00	20	QPSK	V	169	124	36161.00	13.19	9.42	22.61	0.182	33.01	-10.40
2593.00	20 (PC3)	QPSK	H	103	44	1 / 0	15.00	9.55	24.55	0.285	33.01	-8.46

Table 7-13. EIRP Data (Band 41)

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 199 of 237

7.9 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: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION)		 Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 200 of 237

Test Setup

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

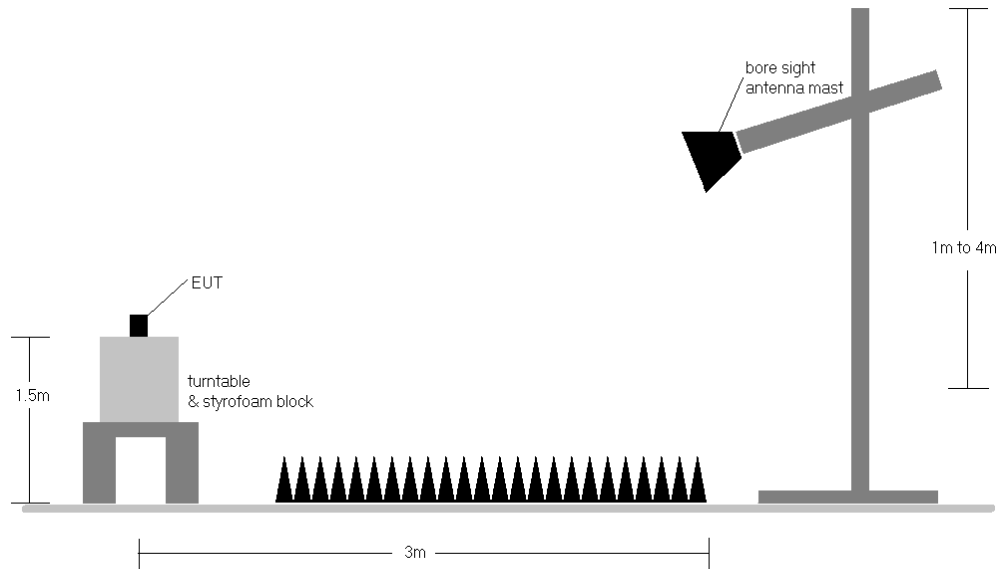


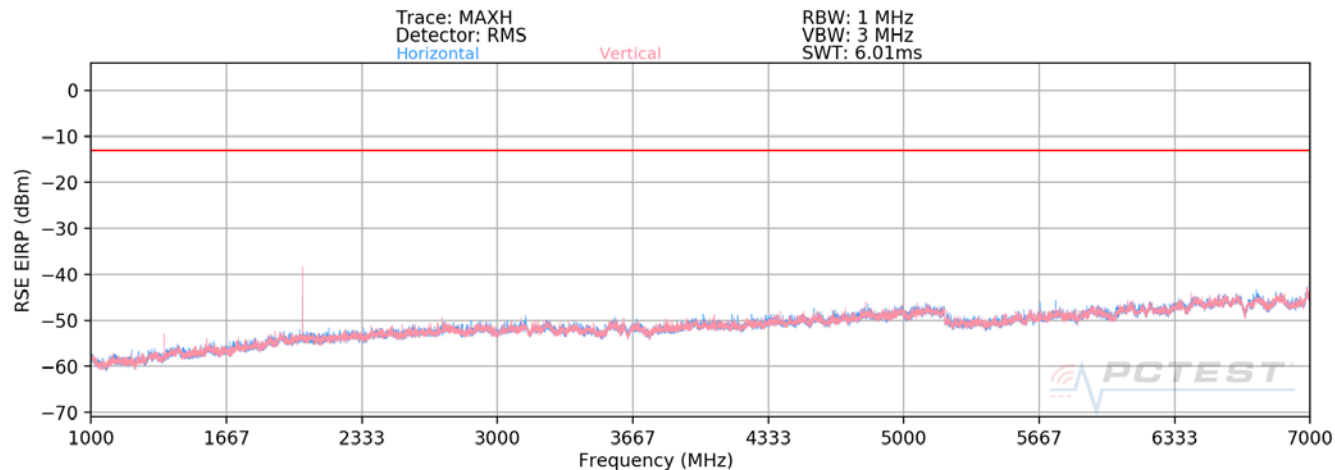
Figure 7-9. Test Instrument & Measurement Setup

Test Notes

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

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 201 of 237

Band 71



Plot 7-323. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY: 673.00 MHz

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	V	345	174	-72.18	8.76	-63.43	-50.4
2019.00	V	311	164	-67.51	10.22	-57.29	-44.3
2692.00	V	-	-	-72.36	9.81	-62.55	-49.6
3365.00	V	-	-	-68.55	7.30	-61.24	-48.2

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 202 of 237

OPERATING FREQUENCY: 680.50 MHz
 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	V	371	202	-75.62	8.61	-67.01	-54.0
2041.50	V	218	12	-57.46	10.04	-47.43	-34.4
2722.00	V	-	-	-71.69	9.58	-62.12	-49.1
3402.50	V	-	-	-69.28	7.33	-61.95	-48.9

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

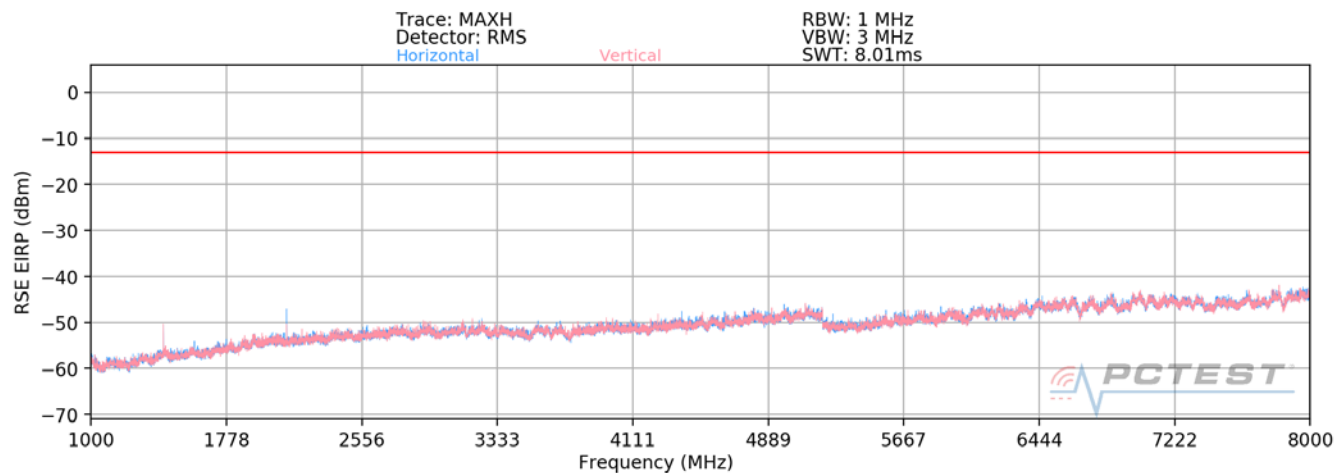
OPERATING FREQUENCY: 688.00 MHz
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	V	366	89	-75.57	8.41	-67.16	-54.2
2064.00	V	398	155	-67.99	9.87	-58.12	-45.1
2752.00	V	-	-	-71.59	9.30	-62.29	-49.3
3440.00	V	-	-	-69.46	7.51	-61.96	-49.0

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 203 of 237

Band 12



Plot 7-324. Radiated Spurious Plot above 1GHz (Band 12)

OPERATING FREQUENCY: 704.00 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 10.0 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	H	107	52	-64.29	8.16	-56.12	-43.1
2112.00	H	147	260	-62.50	9.61	-52.89	-39.9
2816.00	H	-	-	-71.53	9.09	-62.44	-49.4
3520.00	H	-	-	-69.85	7.37	-62.49	-49.5

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 204 of 237

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	155	198	-58.67	8.22	-50.45	-37.5
2122.50	H	102	28	-64.21	9.59	-54.62	-41.6
2830.00	H	-	-	-71.69	9.10	-62.59	-49.6
3537.50	H	-	-	-68.71	7.26	-61.45	-48.5

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

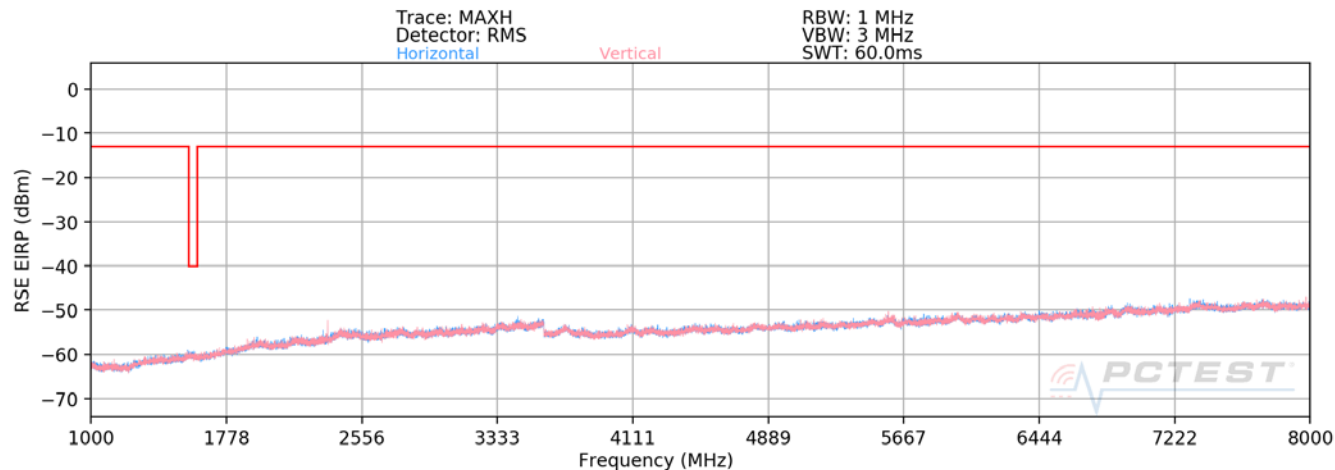
OPERATING FREQUENCY: 711.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	H	100	157	-60.18	8.27	-51.92	-38.9
2133.00	H	135	316	-65.32	9.57	-55.75	-42.8
2844.00	H	-	-	-71.72	9.11	-62.61	-49.6
3555.00	H	-	-	-67.61	7.16	-60.46	-47.5

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 205 of 237

Band 13



Plot 7-325. 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	V	141	106	-67.62	10.31	-57.31	-44.3
3128.00	V	-	-	-75.89	8.60	-67.30	-54.3
3910.00	V	398	234	-71.24	5.98	-65.26	-52.3
4692.00	V	-	-	-74.37	9.67	-64.70	-51.7
5474.00	V	-	-	-74.29	11.64	-62.65	-49.7

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 206 of 237

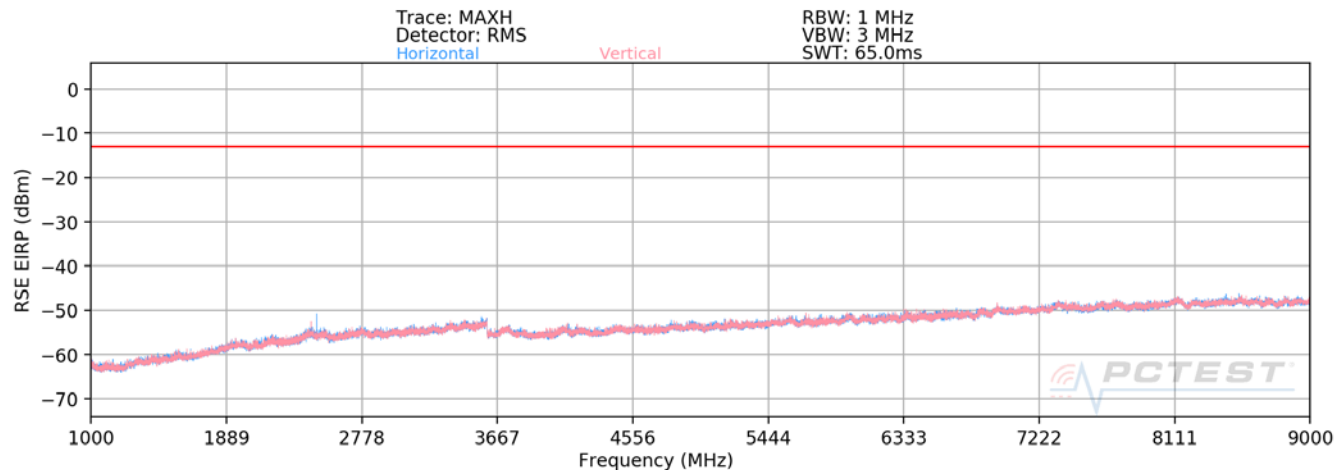
MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

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	V	223	50	-69.13	9.44	-59.70	-19.7

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

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 207 of 237

Band 26



Plot 7-326. Radiated Spurious Plot above 1GHz (Band 26)

OPERATING FREQUENCY: 831.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 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]
1663.00	H	117	10	-73.82	9.55	-64.27	-51.3
2494.50	H	190	3	-66.64	9.44	-57.20	-44.2
3326.00	H	-	-	-72.77	7.40	-65.37	-52.4
4157.50	H	-	-	-72.36	8.09	-64.28	-51.3

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 208 of 237

OPERATING FREQUENCY: 836.50 MHz
 BANDWIDTH: 15.0 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	159	13	-68.22	9.54	-58.68	-45.7
2509.50	H	173	35	-60.73	9.42	-51.31	-38.3
3346.00	H	-	-	-71.73	7.32	-64.42	-51.4
4182.50	H	147	25	-71.63	8.16	-63.47	-50.5
5019.00	H	-	-	-73.58	10.79	-62.78	-49.8
5855.50	H	-	-	-74.54	12.39	-62.15	-49.2

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

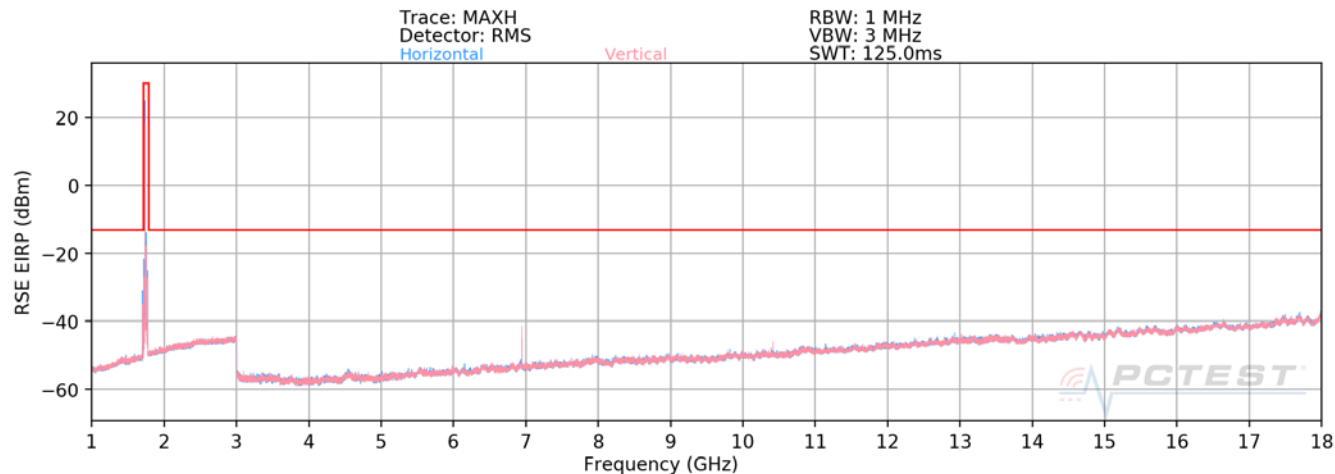
OPERATING FREQUENCY: 841.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
1683.00	H	155	356	-69.60	9.53	-60.07	-47.1
2524.50	H	203	17	-63.45	9.41	-54.04	-41.0
3366.00	H	-	-	-73.13	7.31	-65.83	-52.8
4207.50	H	-	-	-72.59	8.26	-64.34	-51.3

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 209 of 237

Band 66/4



Plot 7-327. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY: 1720.00 MHz

BANDWIDTH: 20.0 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	H	138	19	-62.39	6.22	-56.17	-43.2
5160.00	H	388	43	-64.15	8.68	-55.48	-42.5
6880.00	H	117	344	-51.01	8.76	-42.25	-29.3
8600.00	H	-	-	-66.18	9.17	-57.01	-44.0
10320.00	V	115	58	-62.60	9.64	-52.96	-40.0
12040.00	V	-	-	-60.40	9.23	-51.17	-38.2

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 210 of 237

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	V	109	58	-63.38	6.32	-57.06	-44.1
5235.00	V	113	344	-59.94	8.71	-51.23	-38.2
6980.00	V	126	344	-49.98	8.74	-41.25	-28.2
8725.00	V	-	-	-65.98	9.42	-56.57	-43.6
10470.00	V	128	73	-64.00	9.62	-54.38	-41.4
12215.00	V	-	-	-60.44	9.09	-51.35	-38.4

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

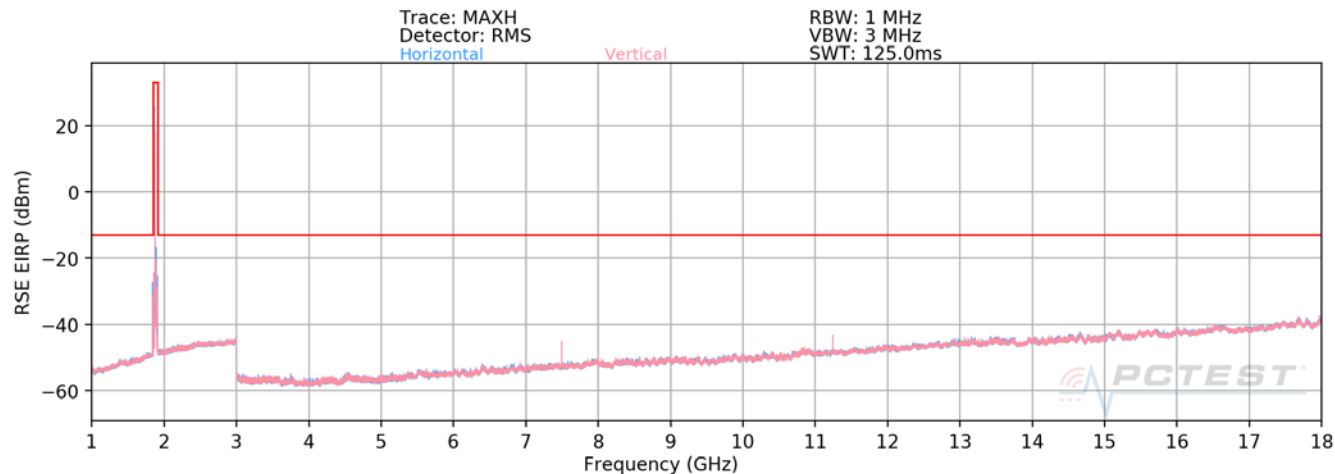
OPERATING FREQUENCY: 1770.00 MHz
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	V	101	58	-61.98	6.31	-55.67	-42.7
5310.00	V	104	17	-60.49	8.74	-51.75	-38.8
7080.00	V	100	333	-47.55	8.66	-38.89	-25.9
8850.00	V	-	-	-65.31	9.53	-55.78	-42.8
10620.00	V	101	47	-60.98	9.50	-51.48	-38.5
12390.00	V	-	-	-59.45	9.12	-50.33	-37.3

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

FCC ID: ZNFQ730TM			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset			Page 211 of 237

Band 25/2



Plot 7-328. Radiated Spurious Plot above 1GHz (Band 25/2)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3720.00	H	136	59	-62.81	6.58	-56.23	-43.2
5580.00	H	-	-	-65.25	8.74	-56.52	-43.5
7440.00	H	107	316	-55.69	8.41	-47.27	-34.3
9300.00	H	-	-	-65.15	9.33	-55.82	-42.8
11160.00	H	258	10	-58.09	9.32	-48.77	-35.8
13020.00	H	-	-	-59.31	8.96	-50.36	-37.4

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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 212 of 237

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	389	57	-62.93	6.70	-56.24	-43.2
5647.50	H	112	30	-64.24	8.83	-55.41	-42.4
7530.00	H	101	297	-55.01	8.46	-46.56	-33.6
9412.50	H	-	-	-64.99	9.32	-55.67	-42.7
11295.00	H	261	7	-55.76	9.23	-46.53	-33.5
13177.50	H	-	-	-59.31	9.08	-50.23	-37.2

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

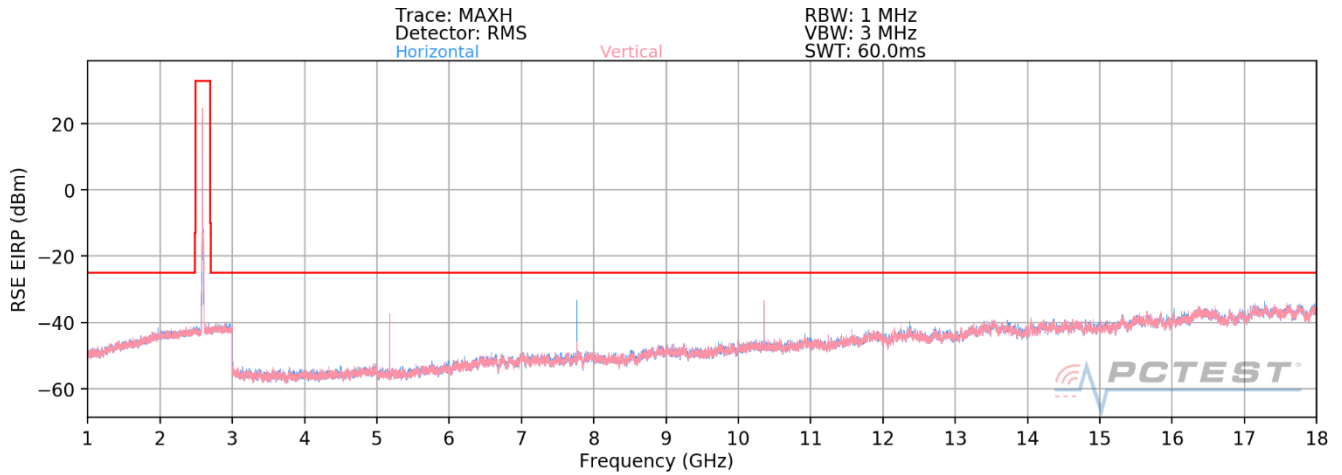
OPERATING FREQUENCY: 1905.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3810.00	H	107	68	-65.74	6.94	-58.80	-45.8
5715.00	H	-	-	-64.55	8.77	-55.79	-42.8
7620.00	H	122	318	-57.26	8.51	-48.75	-35.8
9525.00	H	-	-	-65.28	9.40	-55.88	-42.9
11430.00	H	258	4	-56.44	9.19	-47.24	-34.2
13335.00	H	-	-	-60.01	8.91	-51.10	-38.1

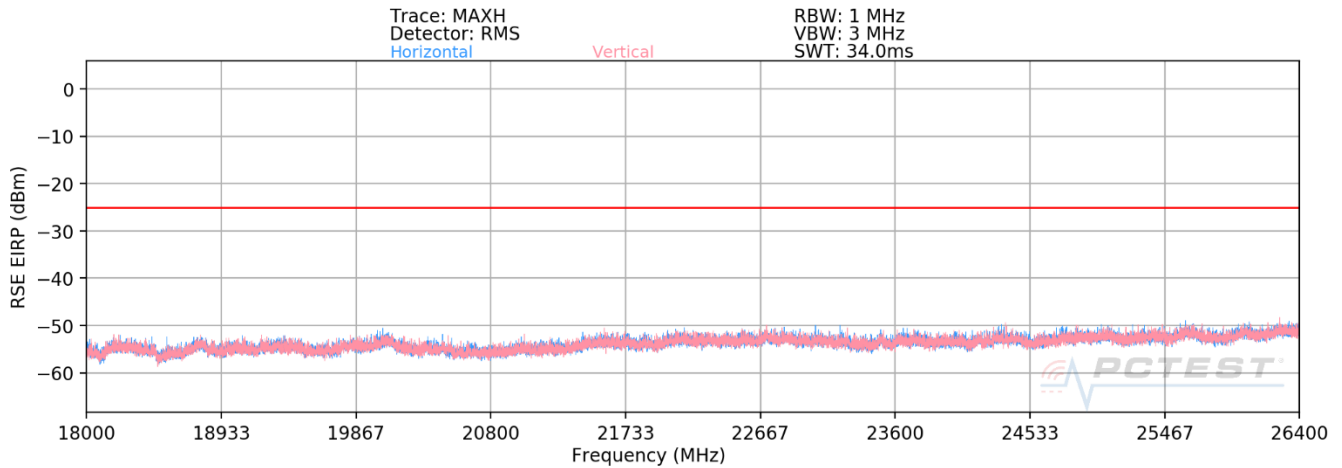
Table 7-30. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 213 of 237

Band 41 PC2



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



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

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 214 of 237

OPERATING FREQUENCY: 2501.00 MHz
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5002.00	V	107	336	-56.79	10.73	-46.06	-21.1
7503.00	V	149	23	-53.36	12.55	-40.81	-15.8
10004.00	V	203	341	-55.61	12.03	-43.58	-18.6
12505.00	V	-	-	-64.28	13.59	-50.69	-25.7

Table 7-31. Radiated Spurious Data (Band 41 PC2– Low Channel)

OPERATING FREQUENCY: 2593.00 MHz
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	V	101	354	-47.75	11.14	-36.62	-11.6
7779.00	V	131	12	-45.63	12.33	-33.30	-8.3
10372.00	V	290	25	-50.76	12.48	-38.28	-13.3
12965.00	V	-	-	-63.05	13.34	-49.71	-24.7

Table 7-32. Radiated Spurious Data (Band 41 PC2 – Mid Channel)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 215 of 237

OPERATING FREQUENCY: 2685.00 MHz
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5370.00	V	396	1	-50.06	11.47	-38.59	-13.6
8055.00	V	259	28	-50.50	11.97	-38.53	-13.5
10740.00	V	100	19	-50.27	12.65	-37.62	-12.6
13425.00	V	100	12	-57.58	12.61	-44.97	-20.0
16110.00	V	-	-	-66.40	16.62	-49.78	-24.8

Table 7-33. Radiated Spurious Data (Band 41 PC2– High Channel)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 216 of 237

7.10 Uplink Carrier Aggregation Radiated Measurements

§2.1053, §27.53(m)

Test Overview

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

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

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

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 217 of 237

Test Setup

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

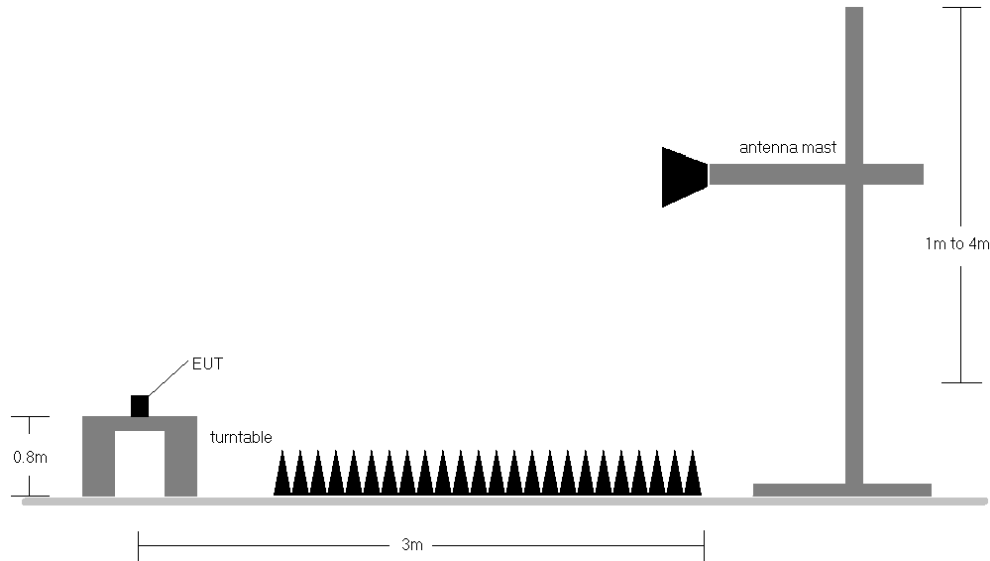


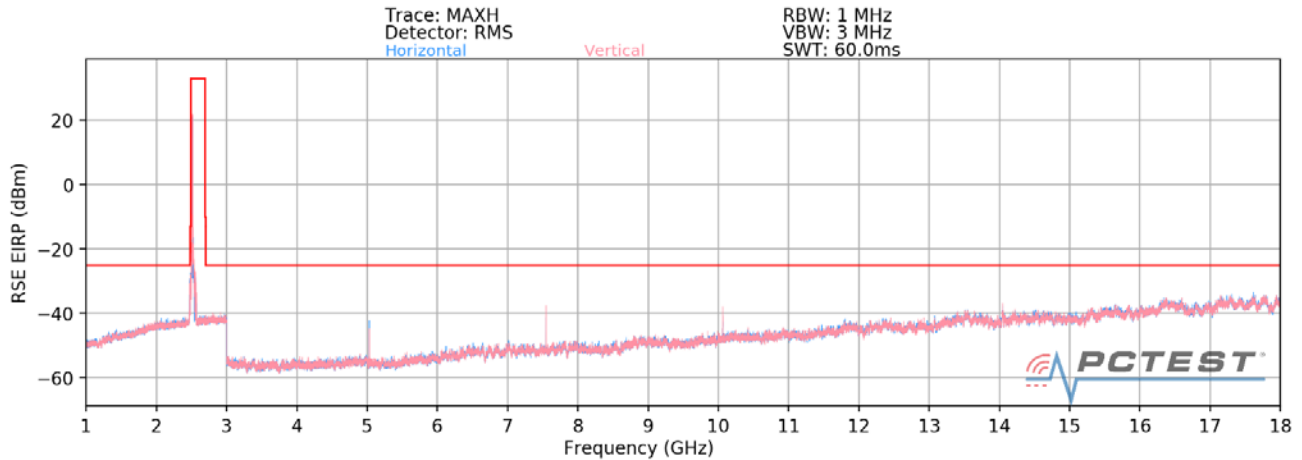
Figure 7-10. Test Instrument & Measurement Setup

Test Notes

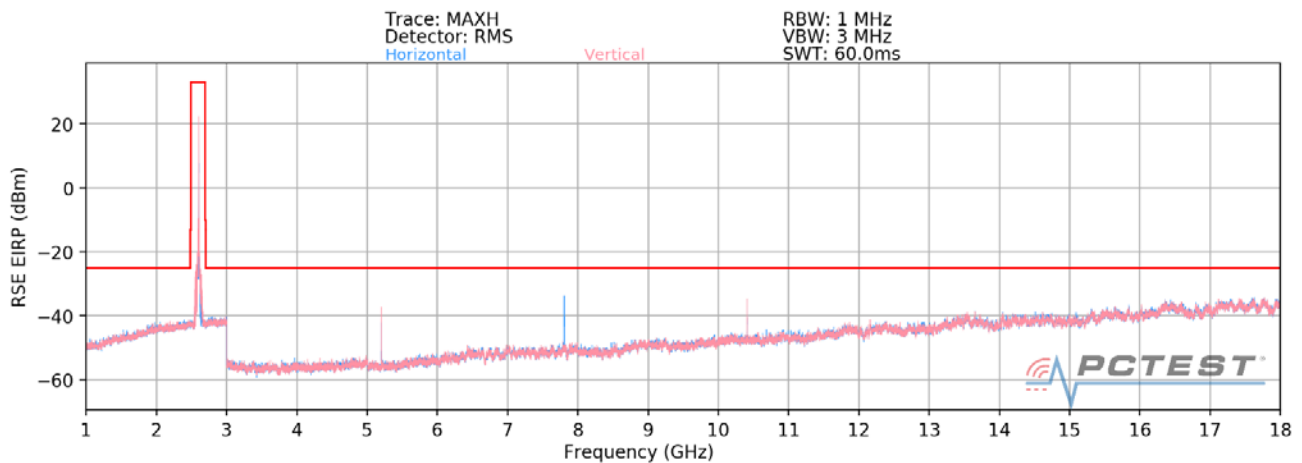
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 6) No significant emissions were found as a result of two uplink carriers operating contiguously.

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 218 of 237

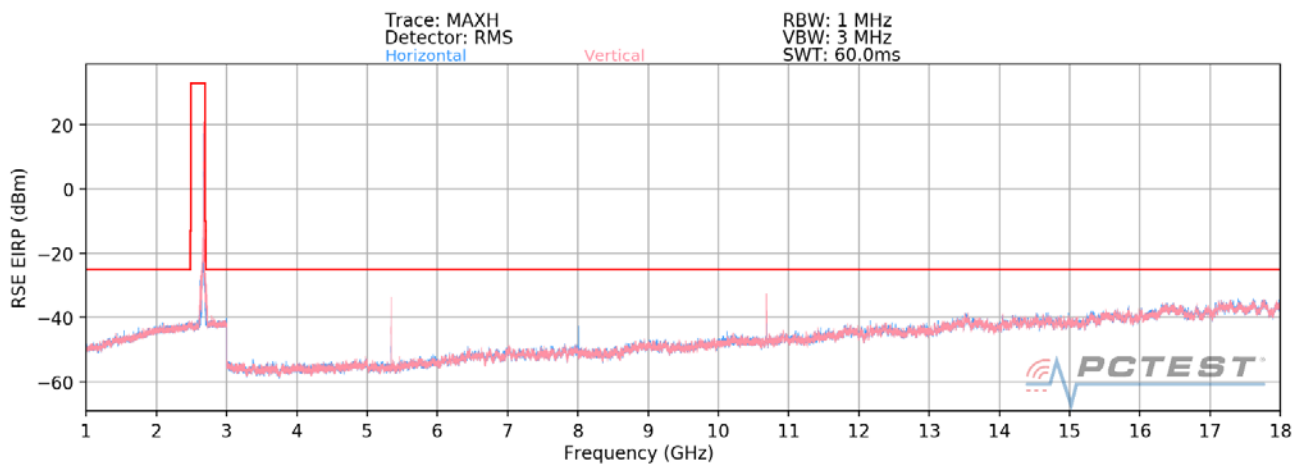
Band 41 PC2 ULCA



Plot 7-331. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC2 ULCA PCC/SCC: 1RB - Low Channel)

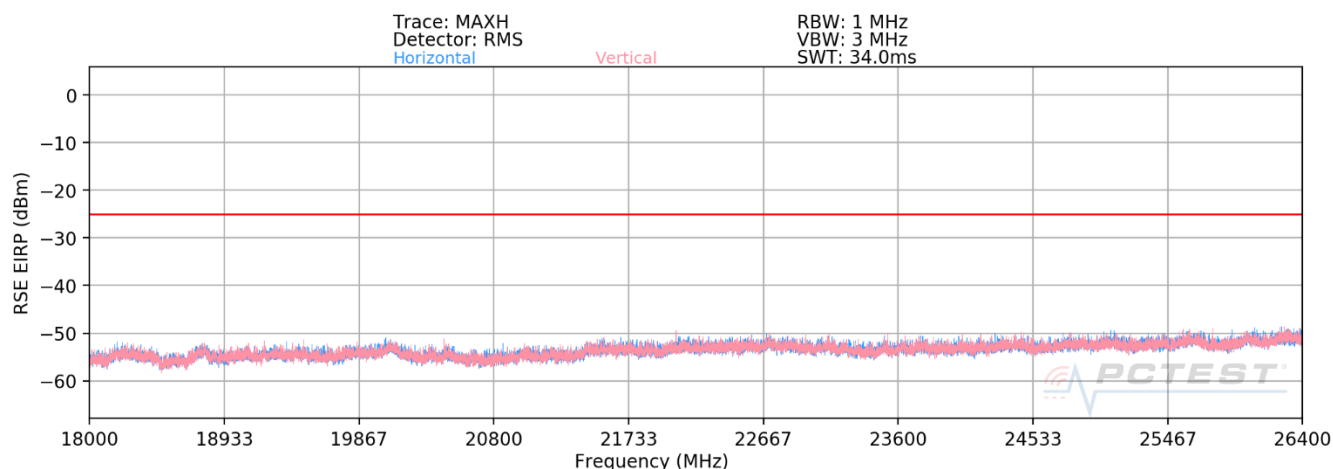


Plot 7-332. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC2 ULCA PCC/SCC: 1RB - Mid Channel)



Plot 7-333. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC2 ULCA PCC/SCC: 1RB - High Channel)

FCC ID: ZNFQ730TM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 219 of 237



Plot 7-334. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 PC2 ULCA)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	V	101	156	-50.32	8.75	-41.57	-16.6
7518.00	V	101	238	-49.51	9.32	-40.19	-15.2
10024.00	V	101	255	-41.68	9.80	-31.88	-6.9
12530.00	V	-	-	-45.52	8.87	-36.65	-11.6
15036.00	V	-	-	-42.40	8.84	-33.56	-8.6
17542.00	V	-	-	-41.60	7.81	-33.78	-8.8

Table 7-34. Radiated Spurious Data (ULCA 41C- PC2 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 220 of 237

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	V	113	257	-43.37	9.03	-34.34	-9.3
7779.00	H	291	295	-43.82	9.29	-34.53	-9.5
10372.00	V	110	258	-41.03	9.50	-31.53	-6.5
12965.00	V	-	-	-45.34	8.75	-36.58	-11.6
15558.00	V	-	-	-39.79	8.47	-31.33	-6.3

Table 7-35. Radiated Spurious Data (ULCA 41C- PC2 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	107	270	-37.55	8.99	-28.56	-3.6
8040.00	H	260	332	-55.40	9.35	-46.04	-21.0
10720.00	V	101	333	-39.99	9.39	-30.60	-5.6
13400.00	V	-	-	-42.28	8.67	-33.61	-8.6
16080.00	V	-	-	-38.99	8.46	-30.54	-5.5

Table 7-36. Radiated Spurious Data (ULCA 41C- PC2 - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 221 of 237

7.11 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: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 222 of 237

Band 71 Frequency Stability Measurements

OPERATING FREQUENCY: 680,500,000 Hz
REFERENCE VOLTAGE: 4.00 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.00	- 30	680,500,055	55	0.0000081
100 %		- 20	680,500,181	181	0.0000266
100 %		- 10	680,499,825	-175	-0.0000257
100 %		0	680,499,574	-426	-0.0000626
100 %		+ 10	680,499,776	-224	-0.0000329
100 %		+ 20	680,499,824	-176	-0.0000259
100 %		+ 30	680,499,982	-18	-0.0000026
100 %		+ 40	680,500,017	17	0.0000025
100 %		+ 50	680,500,039	39	0.0000057
BATT. ENDPOINT	2.90	+ 20	680,500,045	45	0.0000066

Table 7-37. 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: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 223 of 237

Band 71 Frequency Stability Measurements

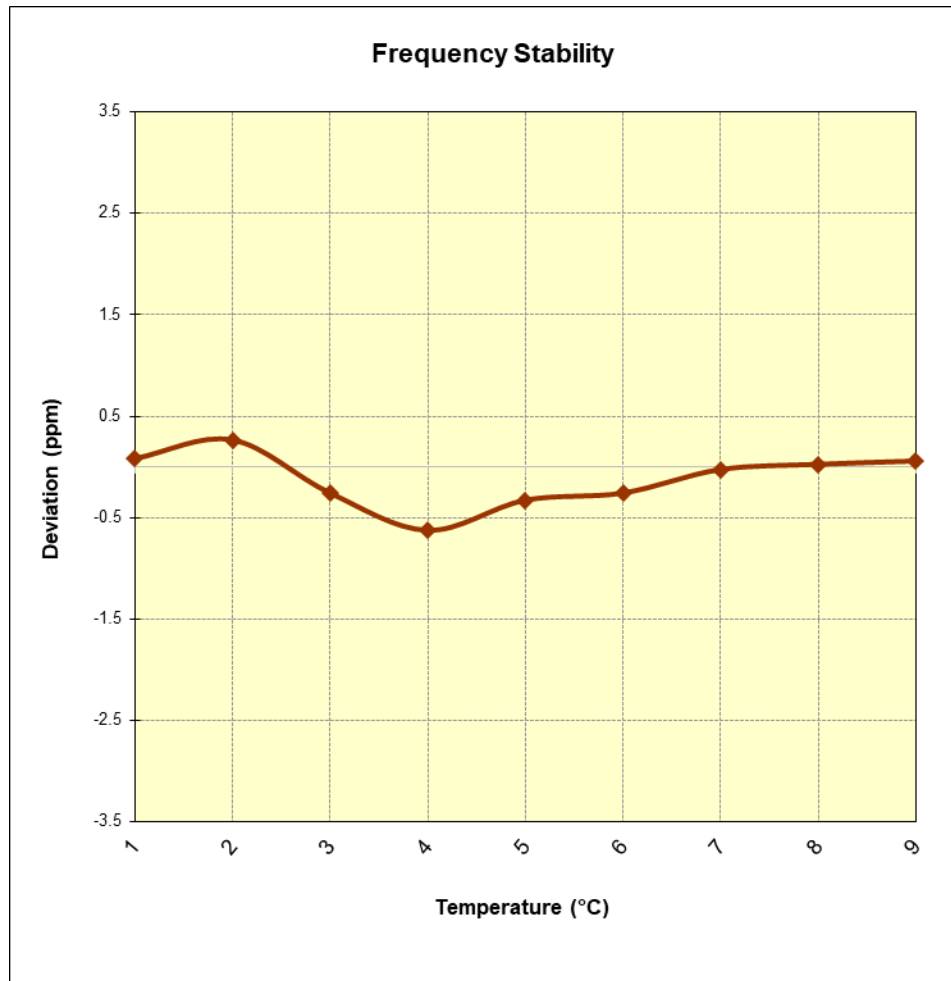


Figure 7-11. Frequency Stability Graph (Band 71)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 224 of 237

Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 4.00 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.00	- 30	707,499,910	-90	-0.0000127
100 %		- 20	707,500,411	411	0.0000581
100 %		- 10	707,500,168	168	0.0000237
100 %		0	707,500,163	163	0.0000230
100 %		+ 10	707,500,075	75	0.0000106
100 %		+ 20	707,499,662	-338	-0.0000478
100 %		+ 30	707,500,152	152	0.0000215
100 %		+ 40	707,500,058	58	0.0000082
100 %		+ 50	707,500,026	26	0.0000037
BATT. ENDPOINT	2.90	+ 20	707,500,351	351	0.0000496

Table 7-38. Frequency Stability Data (Band 12)

Note:

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

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 225 of 237

Band 12 Frequency Stability Measurements

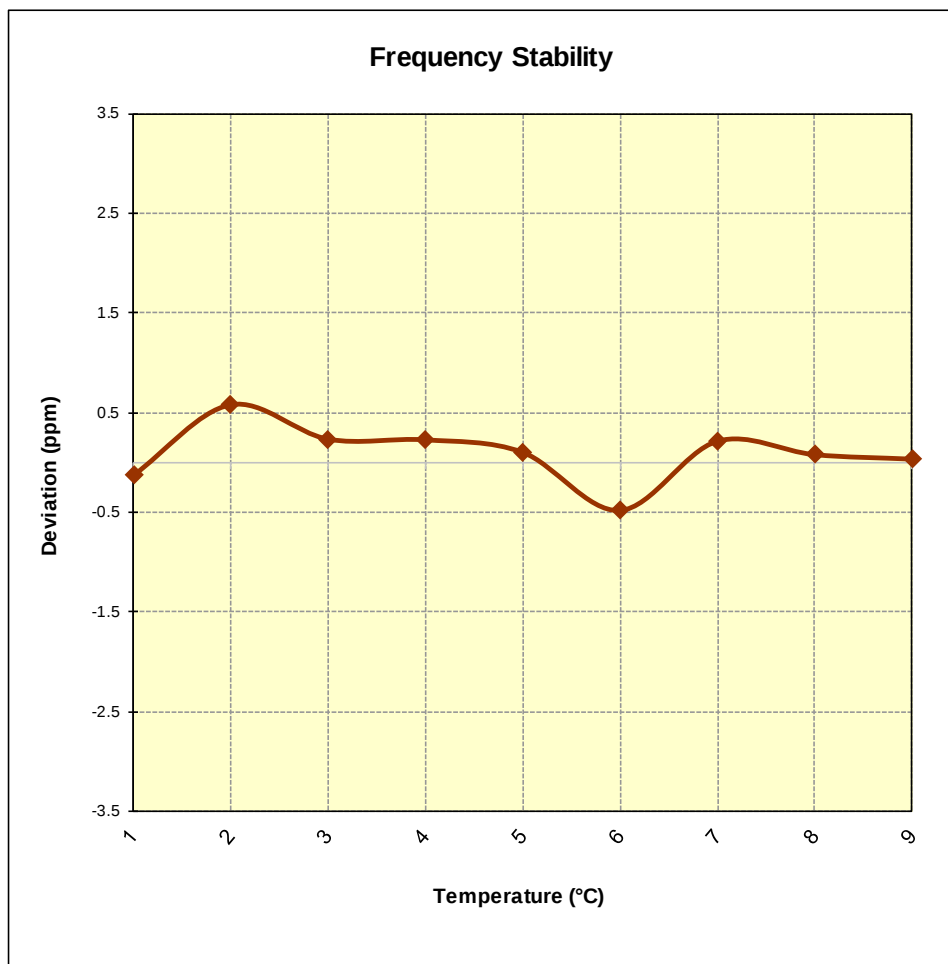


Figure 7-12. Frequency Stability Graph (Band 12)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 226 of 237

Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz
 CHANNEL: 23230
 REFERENCE VOLTAGE: 4.00 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.00	- 30	782,000,010	10	0.0000013
100 %		- 20	782,000,284	284	0.0000363
100 %		- 10	782,000,235	235	0.0000301
100 %		0	781,999,906	-94	-0.0000120
100 %		+ 10	782,000,087	87	0.0000111
100 %		+ 20	781,999,999	-1	-0.0000001
100 %		+ 30	782,000,046	46	0.0000059
100 %		+ 40	782,000,347	347	0.0000444
100 %		+ 50	781,999,881	-119	-0.0000152
BATT. ENDPOINT	2.90	+ 20	781,999,989	-11	-0.0000014

Table 7-39. 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: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset	Page 227 of 237

Band 13 Frequency Stability Measurements

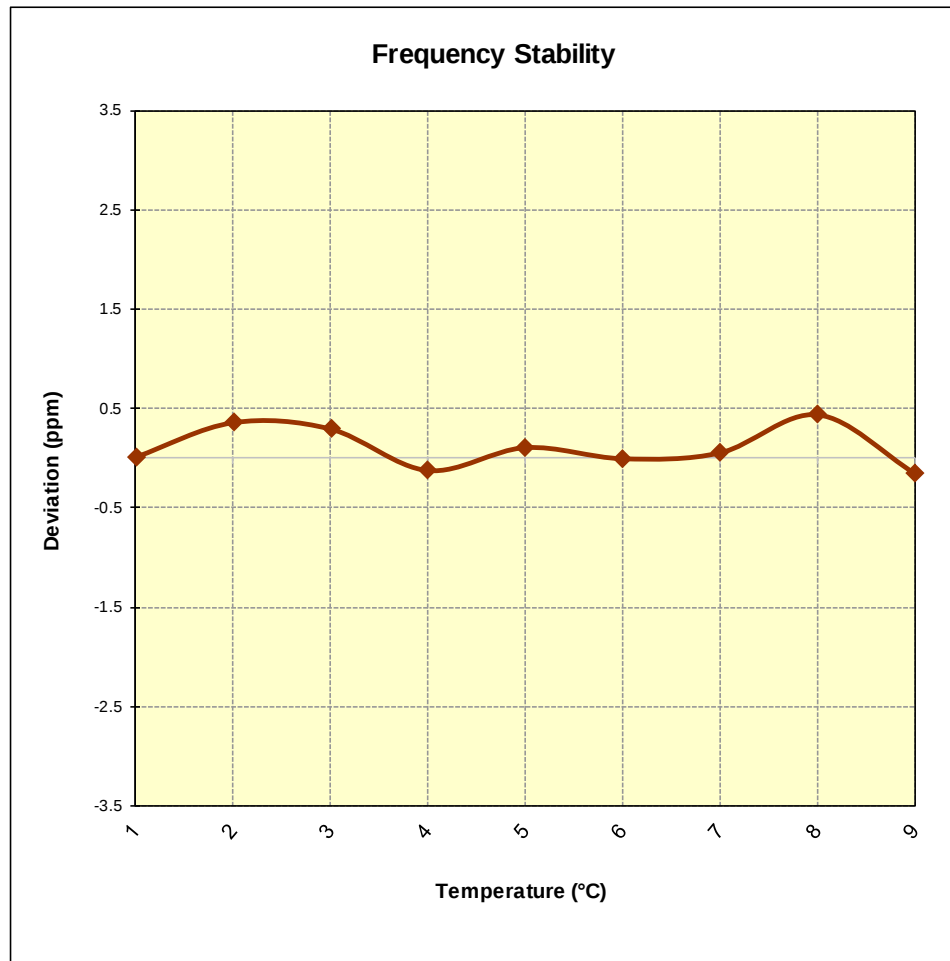


Figure 7-13. Frequency Stability Graph (Band 13)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 228 of 237

Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 831,500,000 Hz
 CHANNEL: 26865
 REFERENCE VOLTAGE: 4.00 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.00	- 30	831,499,652	-348	-0.0000419
100 %		- 20	831,500,092	92	0.0000111
100 %		- 10	831,499,965	-35	-0.0000042
100 %		0	831,500,231	231	0.0000278
100 %		+ 10	831,500,030	30	0.0000036
100 %		+ 20	831,500,008	8	0.0000010
100 %		+ 30	831,500,329	329	0.0000396
100 %		+ 40	831,500,008	8	0.0000010
100 %		+ 50	831,499,922	-78	-0.0000094
BATT. ENDPOINT	2.90	+ 20	831,500,273	273	0.0000328

Table 7-40. Frequency Stability Data (Band 26/5)

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements

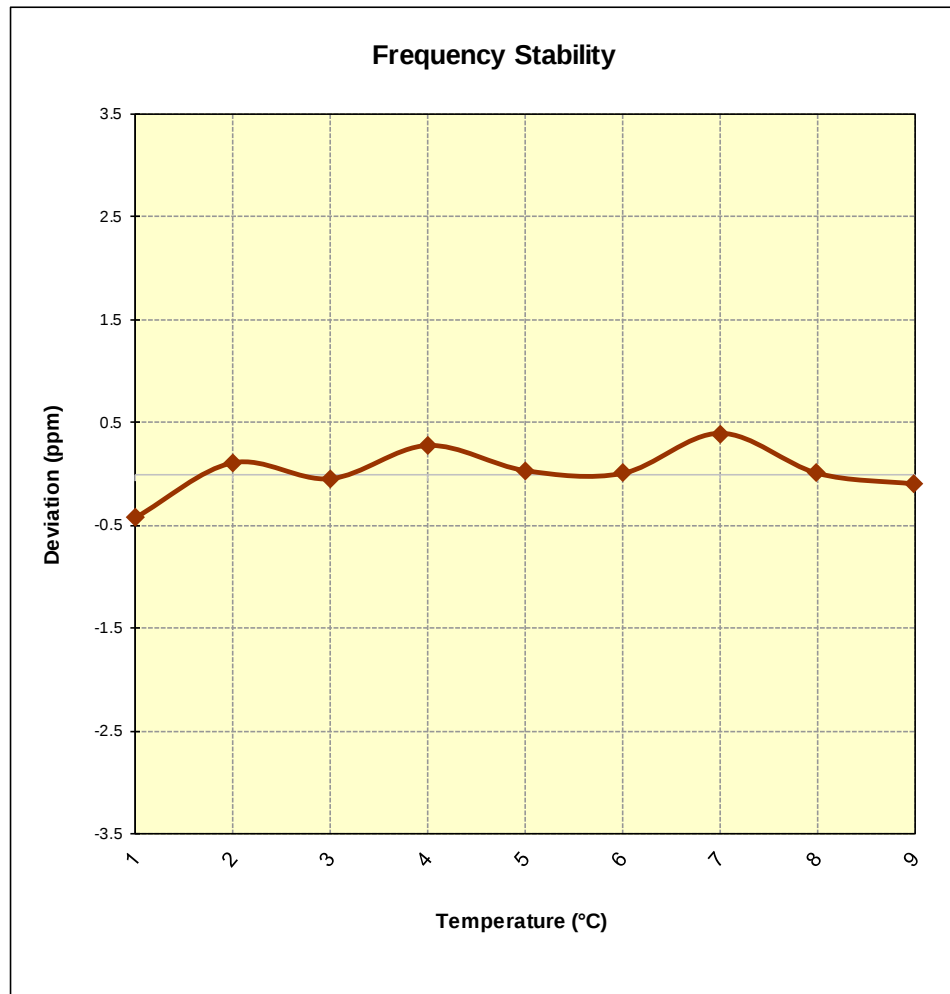


Figure 7-14. Frequency Stability Graph (Band 26/5)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 230 of 237

Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz
 CHANNEL: 132322
 REFERENCE VOLTAGE: 4.00 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.00	- 30	1,744,999,731	-269	-0.0000154
100 %		- 20	1,744,999,938	-62	-0.0000036
100 %		- 10	1,744,999,908	-92	-0.0000053
100 %		0	1,744,999,931	-69	-0.0000040
100 %		+ 10	1,745,000,128	128	0.0000073
100 %		+ 20	1,745,000,017	17	0.0000010
100 %		+ 30	1,745,000,029	29	0.0000017
100 %		+ 40	1,744,999,984	-16	-0.0000009
100 %		+ 50	1,745,000,166	166	0.0000095
BATT. ENDPOINT	2.90	+ 20	1,745,000,036	36	0.0000021

Table 7-41. 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: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

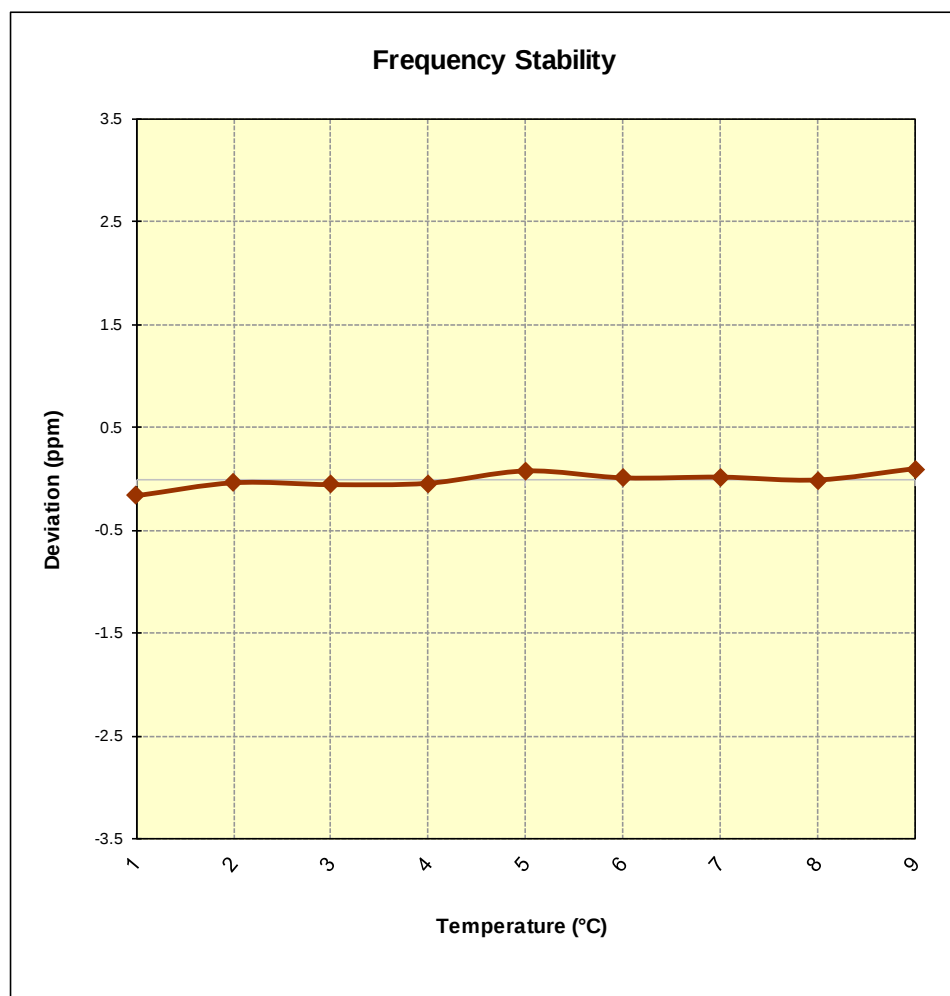


Figure 7-15. Frequency Stability Graph (Band 66/4)

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,880,000,000 Hz
 CHANNEL: 18900
 REFERENCE VOLTAGE: 4.00 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.00	- 30	1,879,999,624	-376	-0.0000200
100 %		- 20	1,880,000,063	63	0.0000034
100 %		- 10	1,880,000,397	397	0.0000211
100 %		0	1,879,999,977	-23	-0.0000012
100 %		+ 10	1,879,999,845	-155	-0.0000082
100 %		+ 20	1,879,999,737	-263	-0.0000140
100 %		+ 30	1,879,999,836	-164	-0.0000087
100 %		+ 40	1,880,000,031	31	0.0000016
100 %		+ 50	1,879,999,988	-12	-0.0000006
BATT. ENDPOINT	2.90	+ 20	1,880,000,154	154	0.0000082

Table 7-42. Frequency Stability Data (Band 25/2)

FCC ID: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

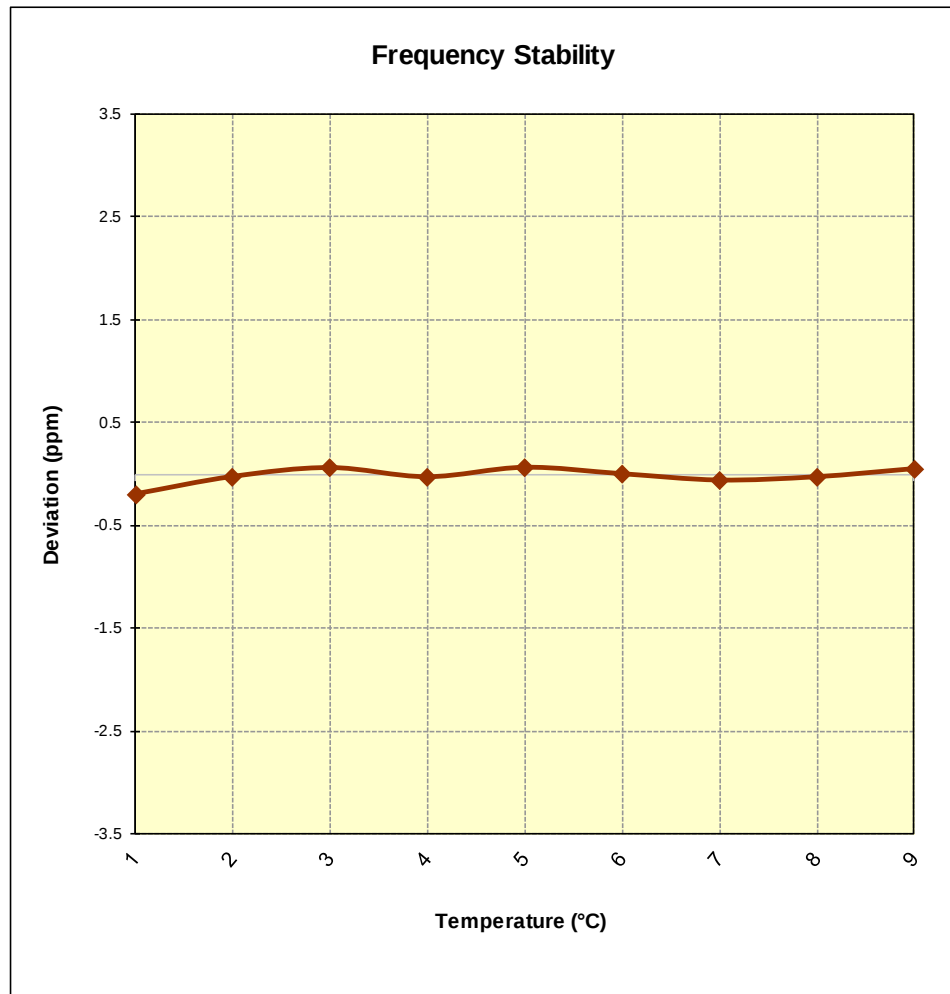


Figure 7-16. Frequency Stability Graph (Band 25/2)

FCC ID: ZNFQ730TM		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: 4.00 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.00	- 30	2,593,000,076	76	0.0000029
100 %		- 20	2,593,000,343	343	0.0000132
100 %		- 10	2,592,999,826	-174	-0.0000067
100 %		0	2,593,000,004	4	0.0000002
100 %		+ 10	2,592,999,846	-154	-0.0000059
100 %		+ 20	2,593,000,123	123	0.0000047
100 %		+ 30	2,592,999,914	-86	-0.0000033
100 %		+ 40	2,592,999,729	-271	-0.0000105
100 %		+ 50	2,592,999,991	-9	-0.0000003
BATT. ENDPOINT	2.90	+ 20	2,592,999,850	-150	-0.0000058

Table 7-43. 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: ZNFQ730TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

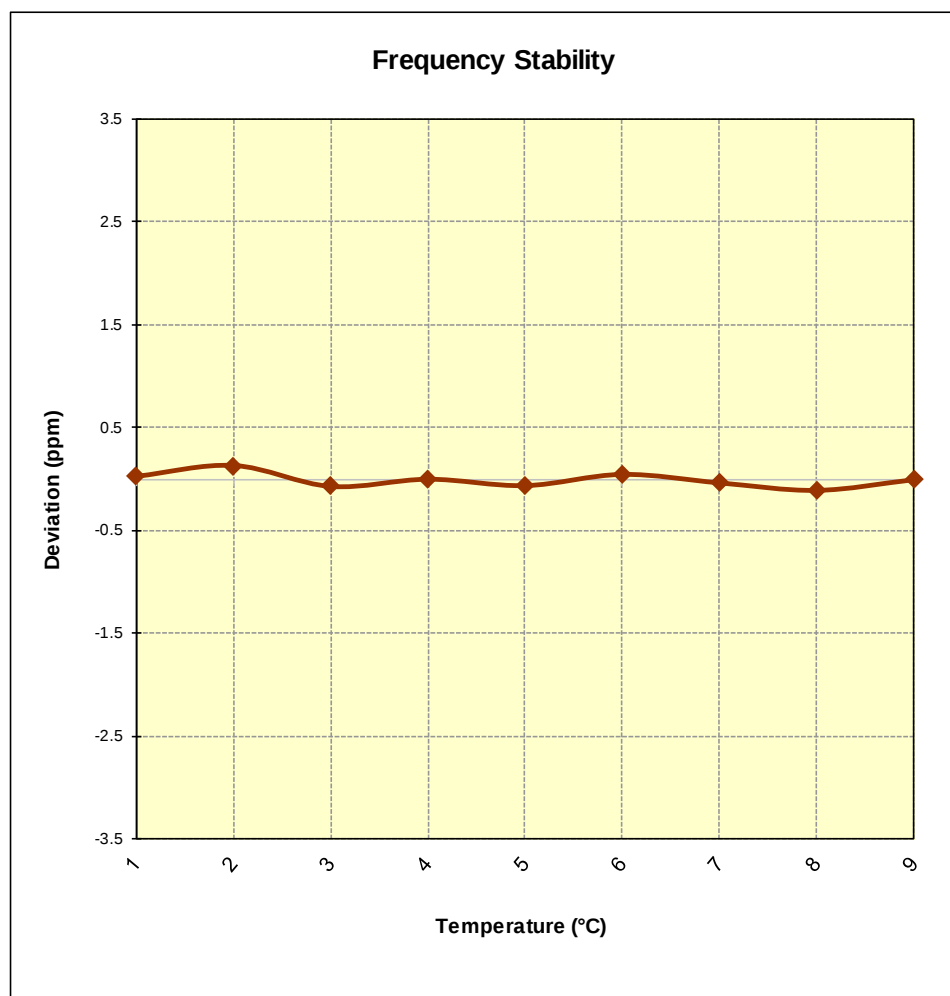


Figure 7-17. Frequency Stability Graph (Band 41)

FCC ID: ZNFQ730TM		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: ZNFQ730TM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: ZNFQ730TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2001130006 - 03.ZNF	Test Dates: 01/14/20 - 02/13/20	EUT Type: Portable Handset		Page 237 of 237