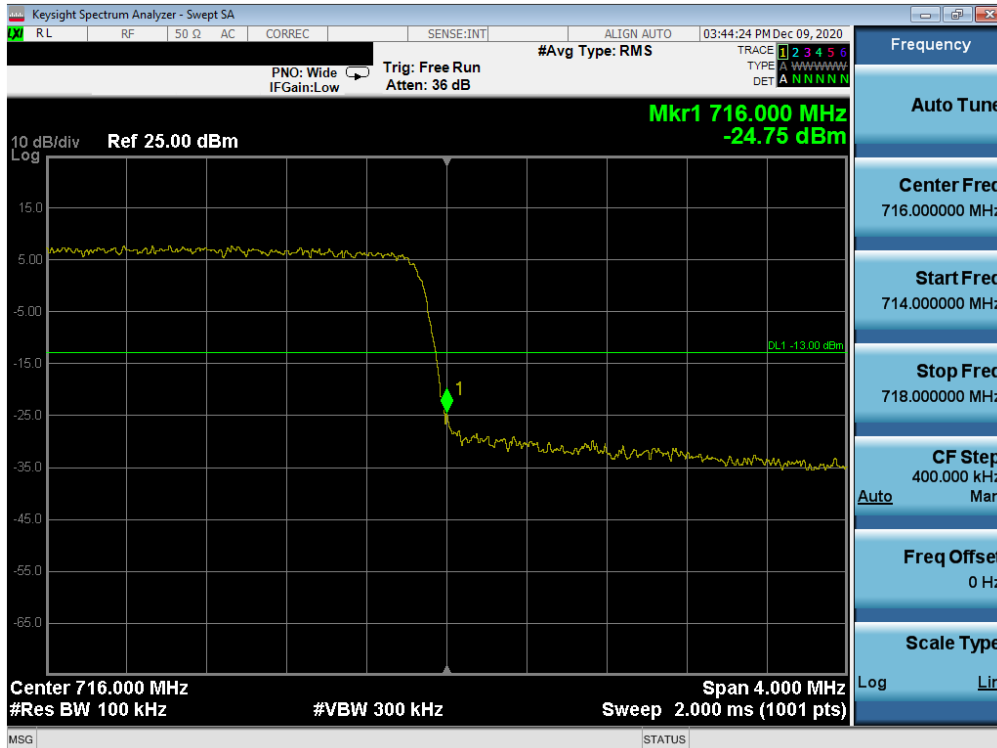
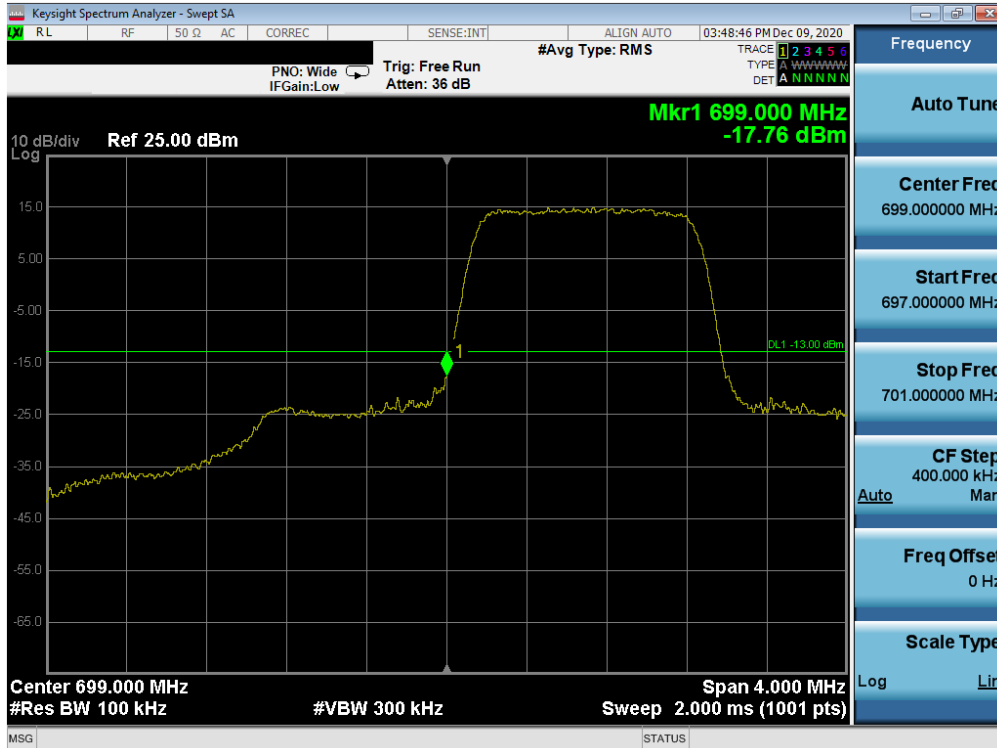


Plot 7-129. Lower Band Edge Plot (LTE Band 12 - 3MHz QPSK – Full RB Configuration)



Plot 7-130. Upper Band Edge Plot (LTE Band 12 - 3MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 83 of 129



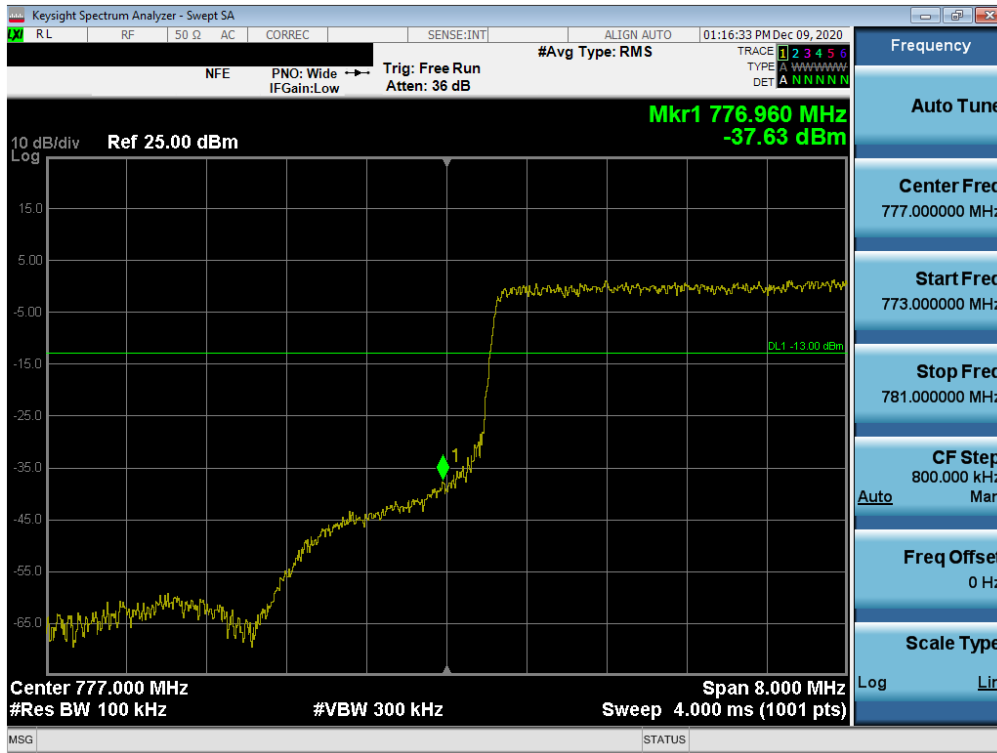
Plot 7-131. Lower Band Edge Plot (LTE Band 12 – 1.4MHz QPSK – Full RB Configuration)



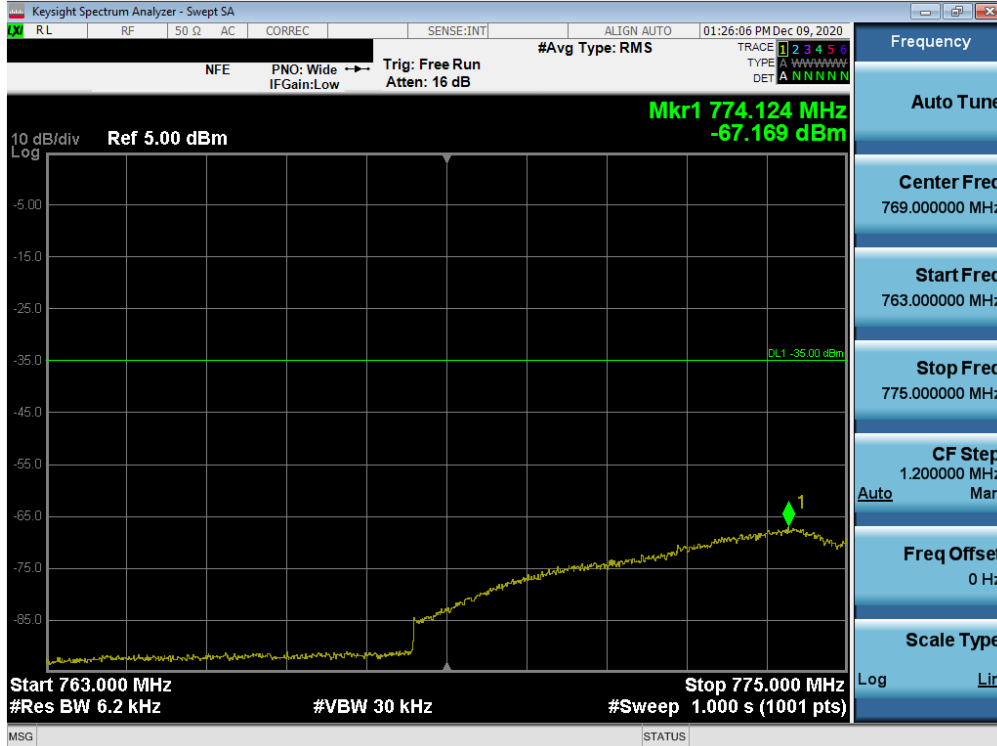
Plot 7-132. Upper Band Edge Plot (LTE Band 12 – 1.4MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 84 of 129

LTE Band 13

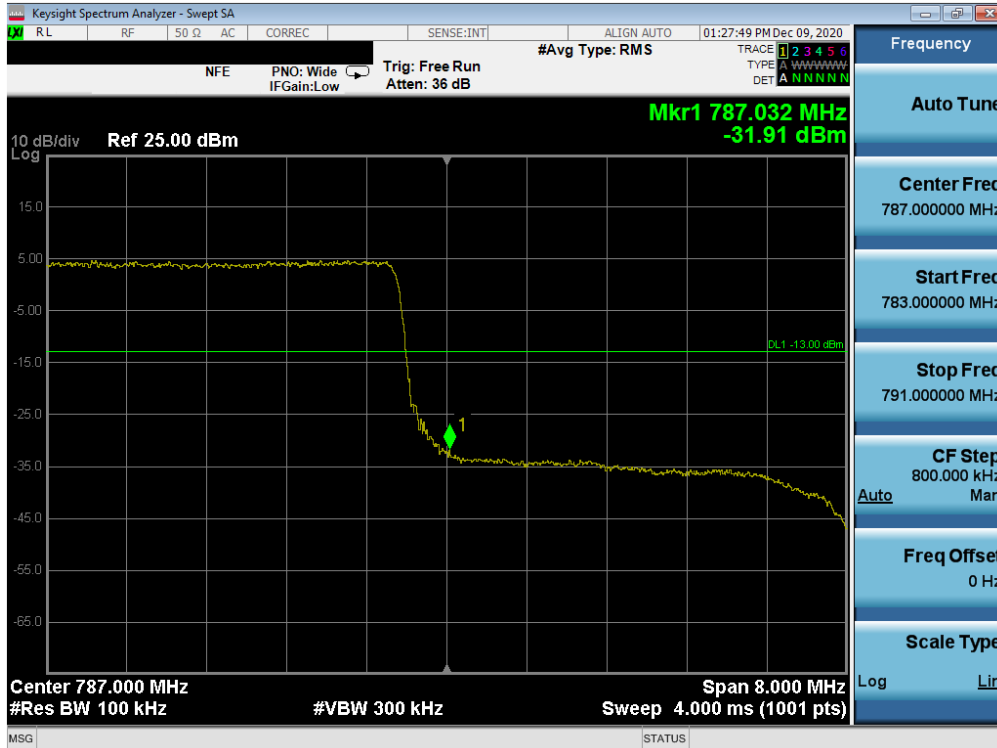


Plot 7-133. Lower Band Edge Plot (LTE Band 13 - 10MHz QPSK – Full RB Configuration)

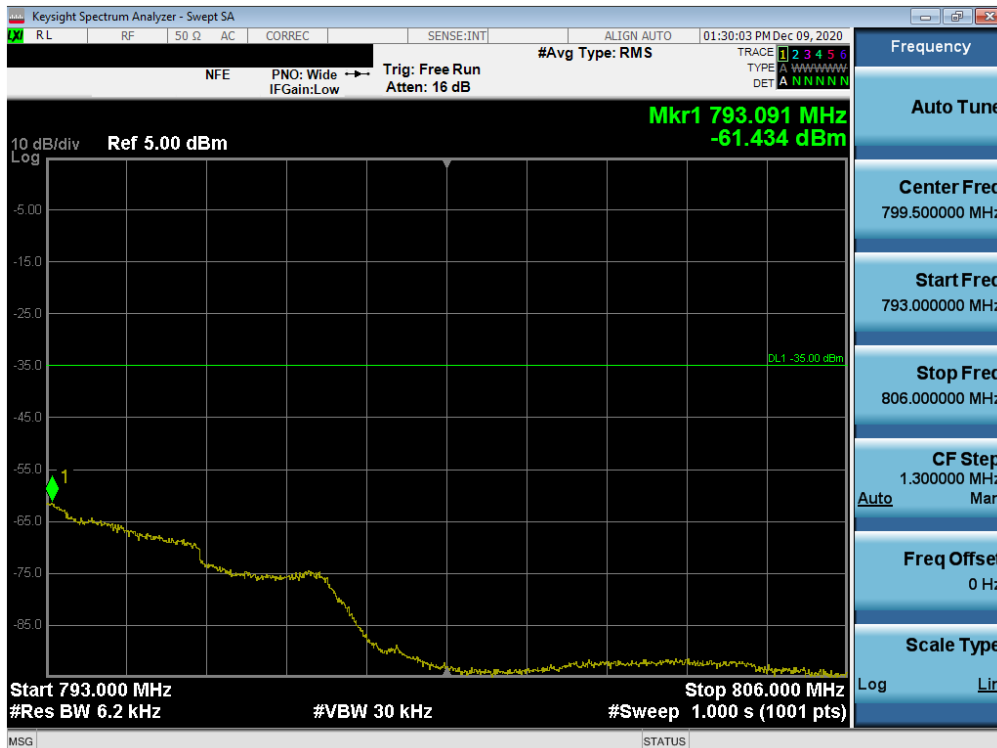


Plot 7-134. Lower Emission Mask Plot (LTE Band 13 - 10MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 85 of 129

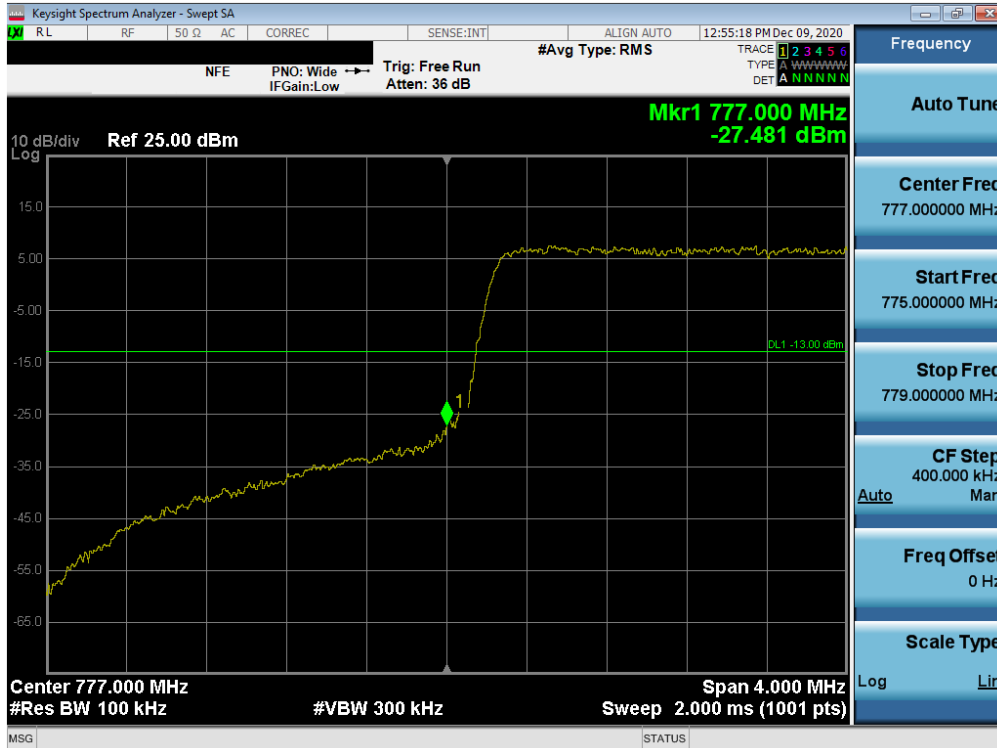


Plot 7-135. Upper Band Edge Plot (LTE Band 13 - 10MHz QPSK – Full RB Configuration)

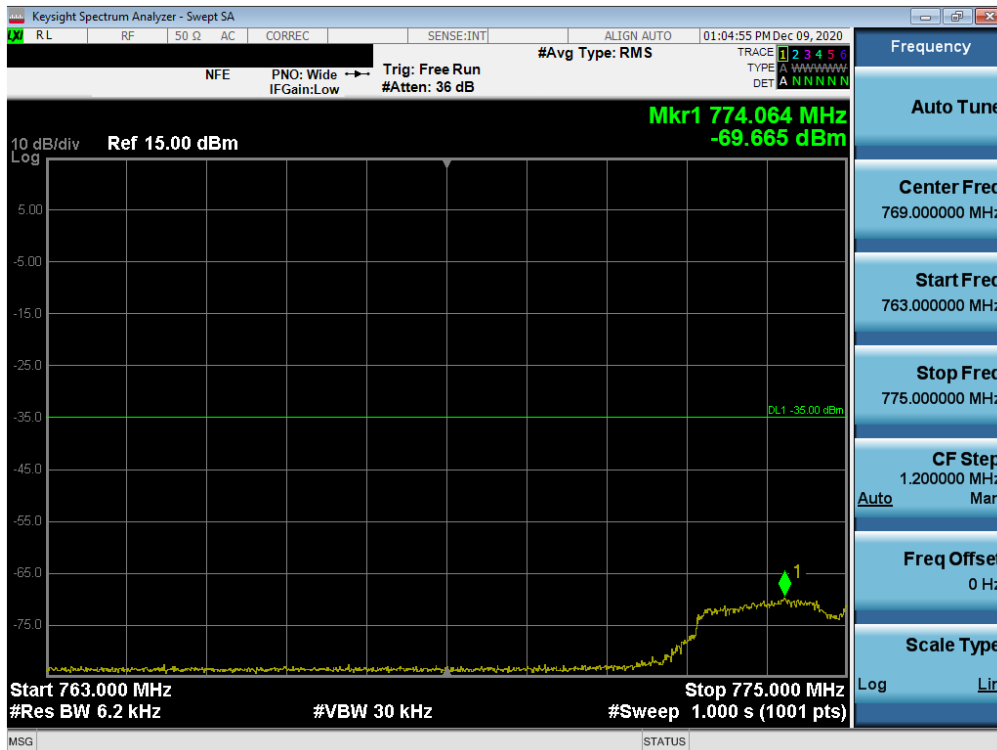


Plot 7-136. Upper Emission Mask Plot (LTE Band 13 - 10MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 86 of 129

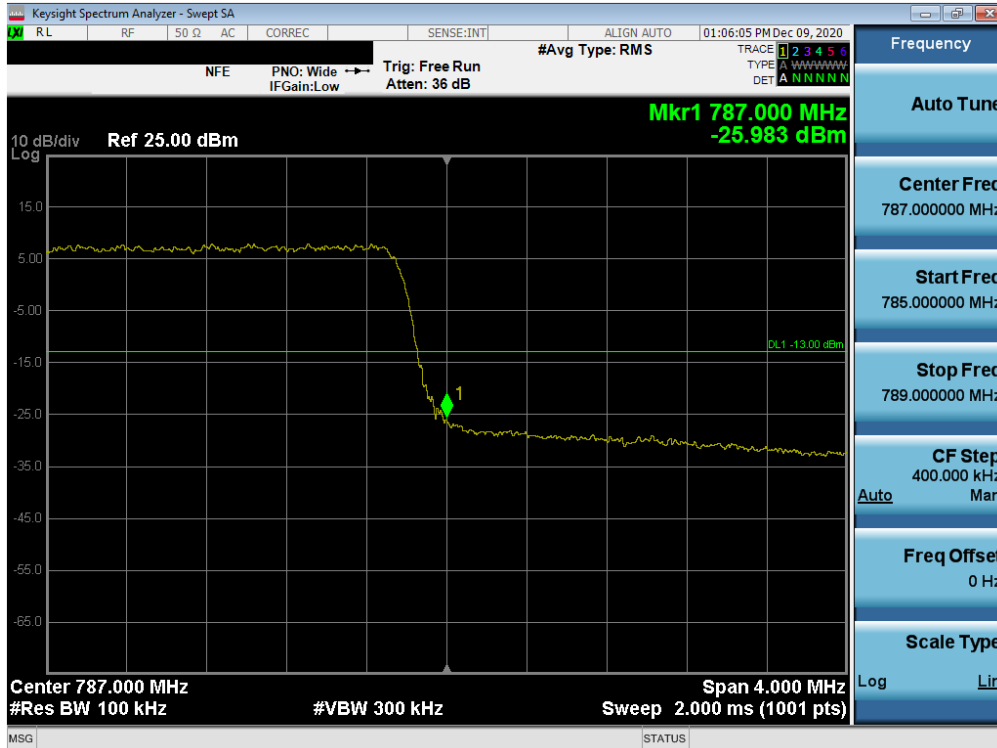


Plot 7-137. Lower Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB Configuration)

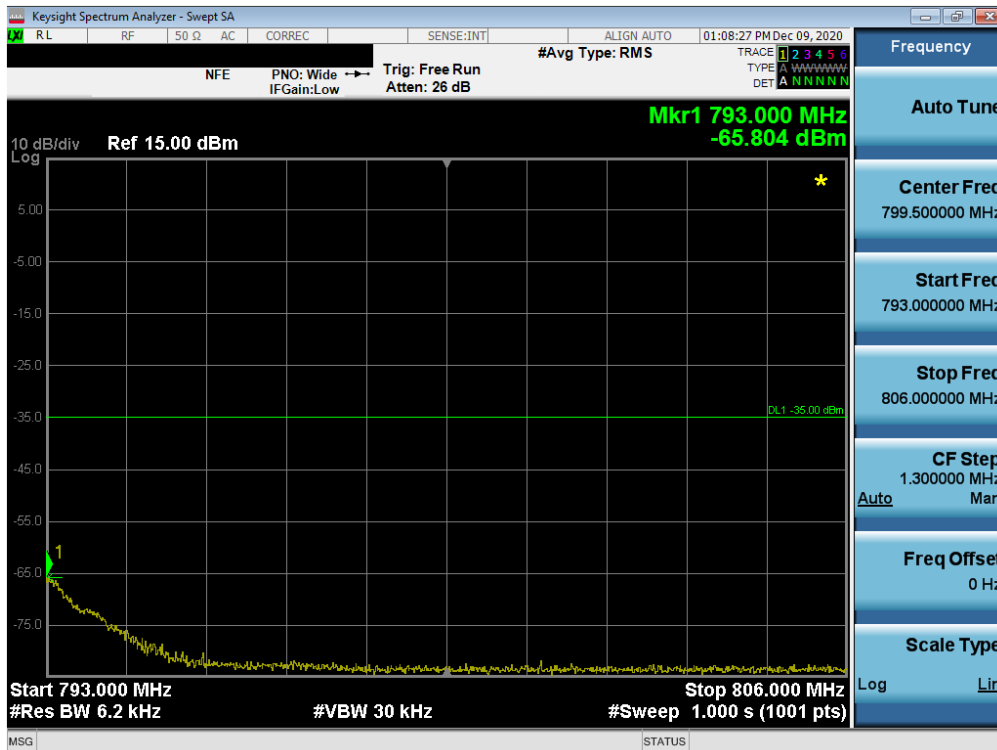


Plot 7-138. Lower Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 87 of 129



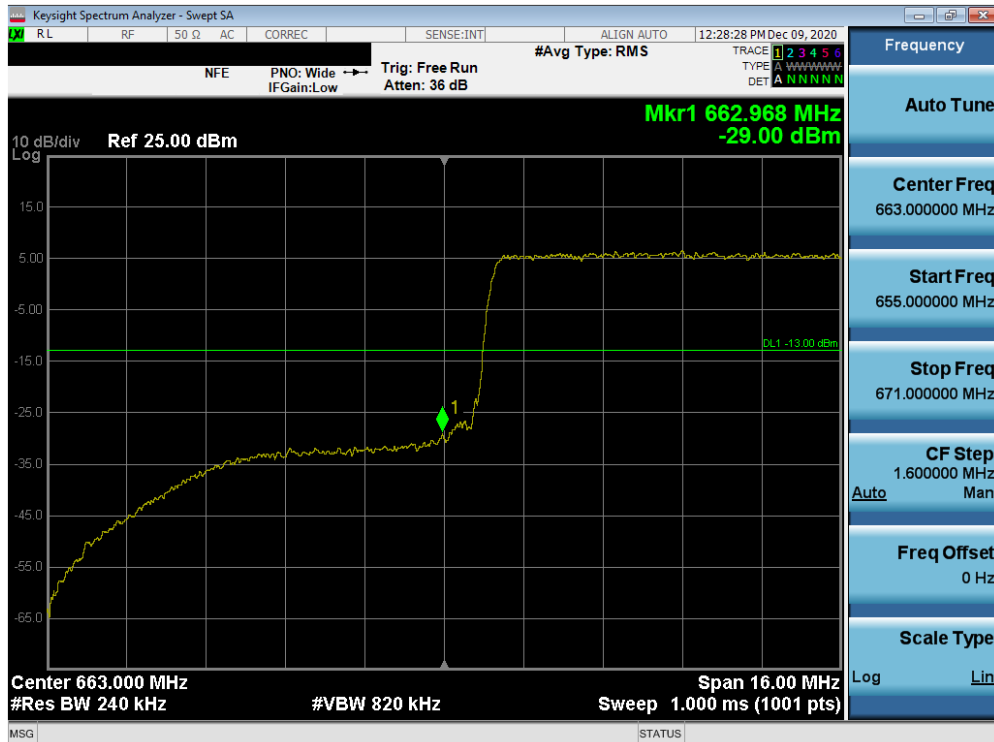
Plot 7-139. Upper Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB Configuration)



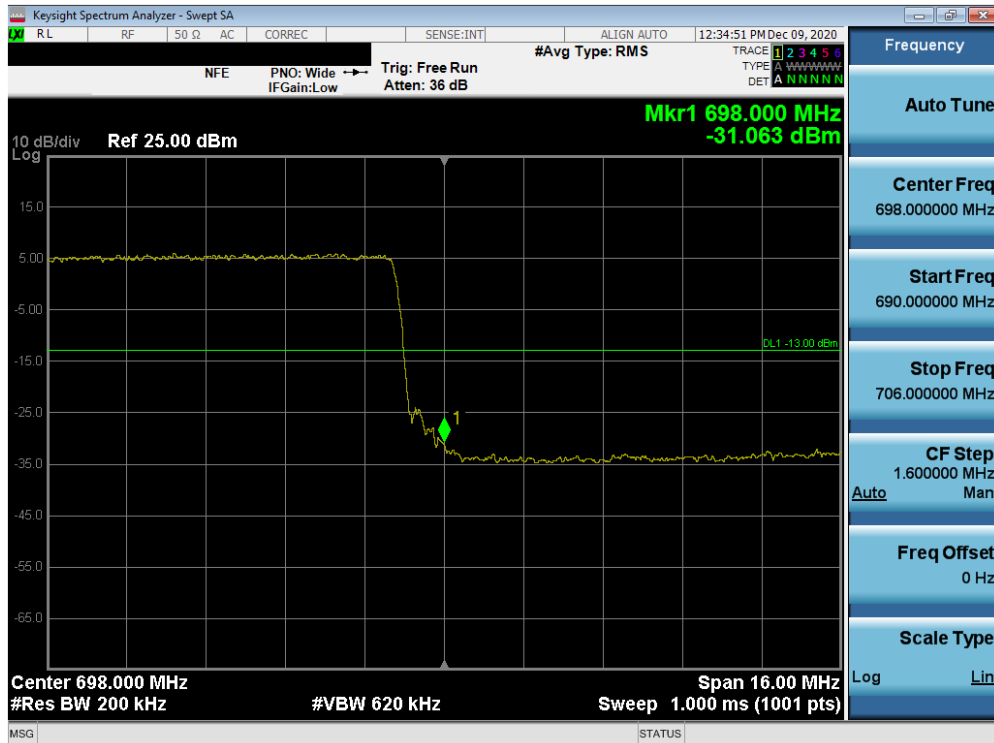
Plot 7-140. Upper Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 88 of 129

LTE Band 71

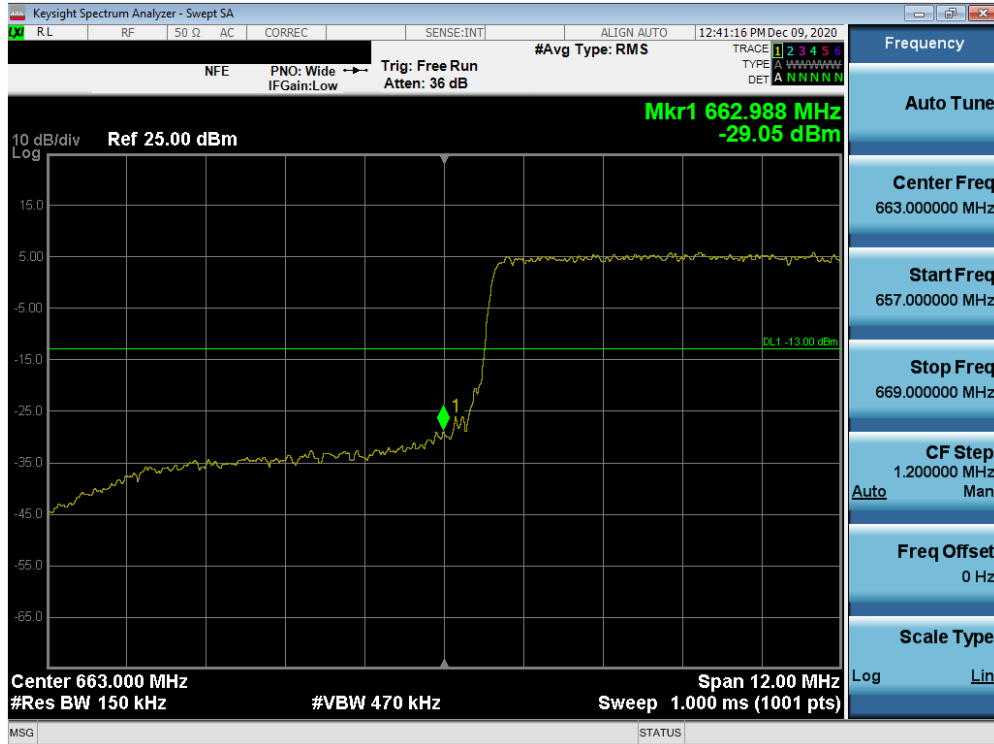


Plot 7-141. Lower Band Edge Plot (LTE Band 71 - 20MHz QPSK – Full RB Configuration)

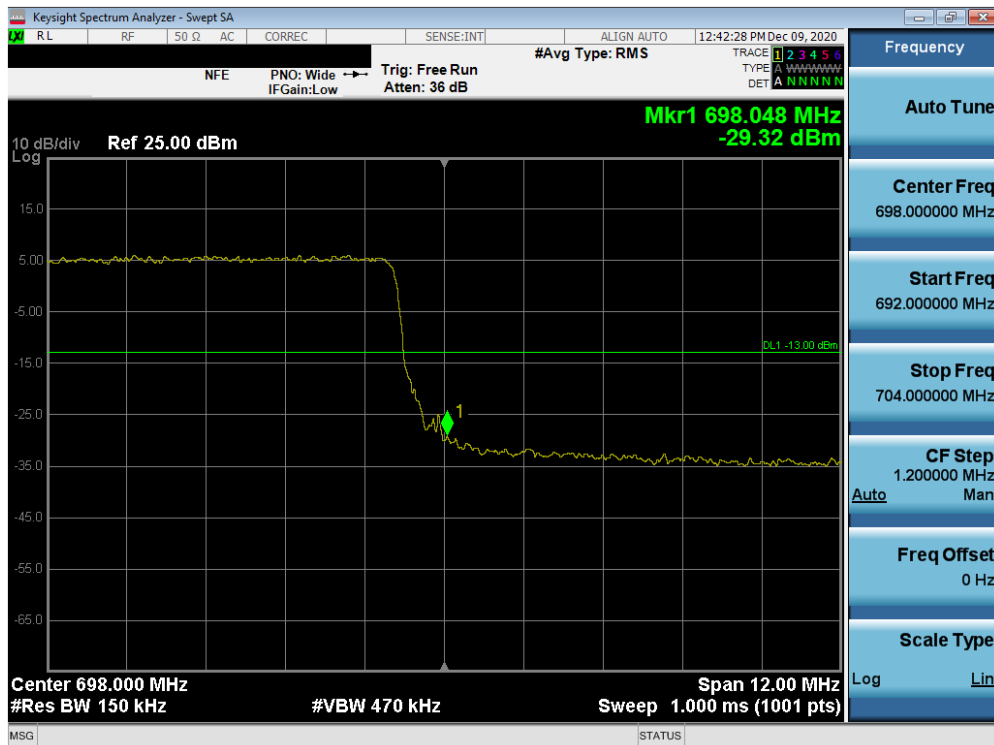


Plot 7-142. Upper Band Edge Plot (LTE Band 71 - 20MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 89 of 129

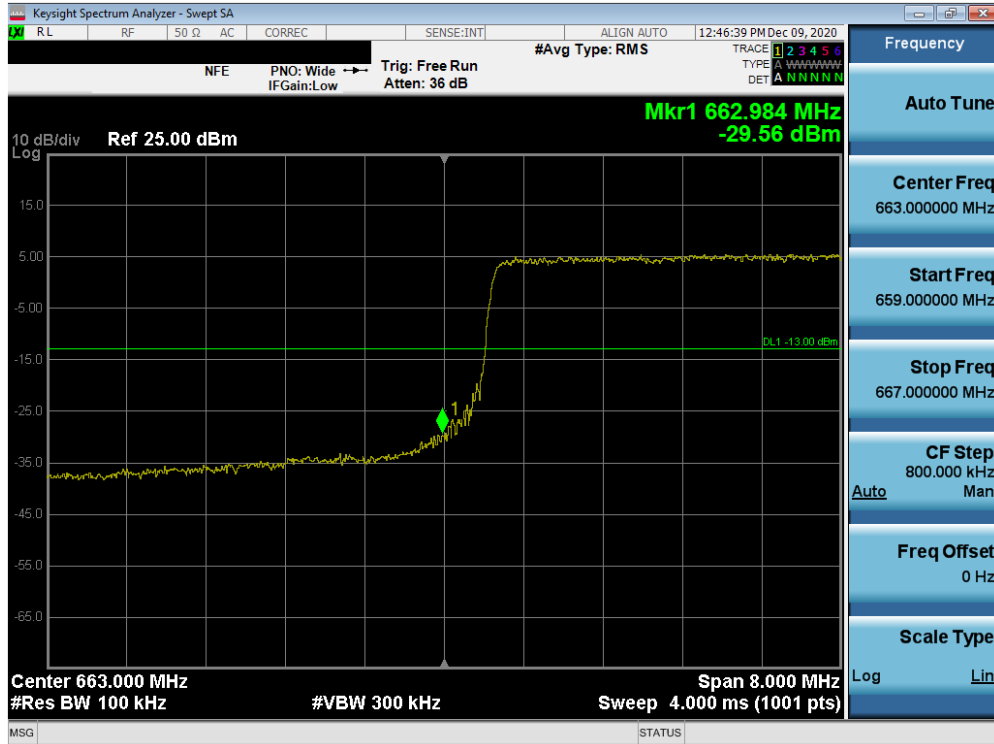


Plot 7-143. Lower Band Edge Plot (LTE Band 71 - 15MHz QPSK – Full RB Configuration)

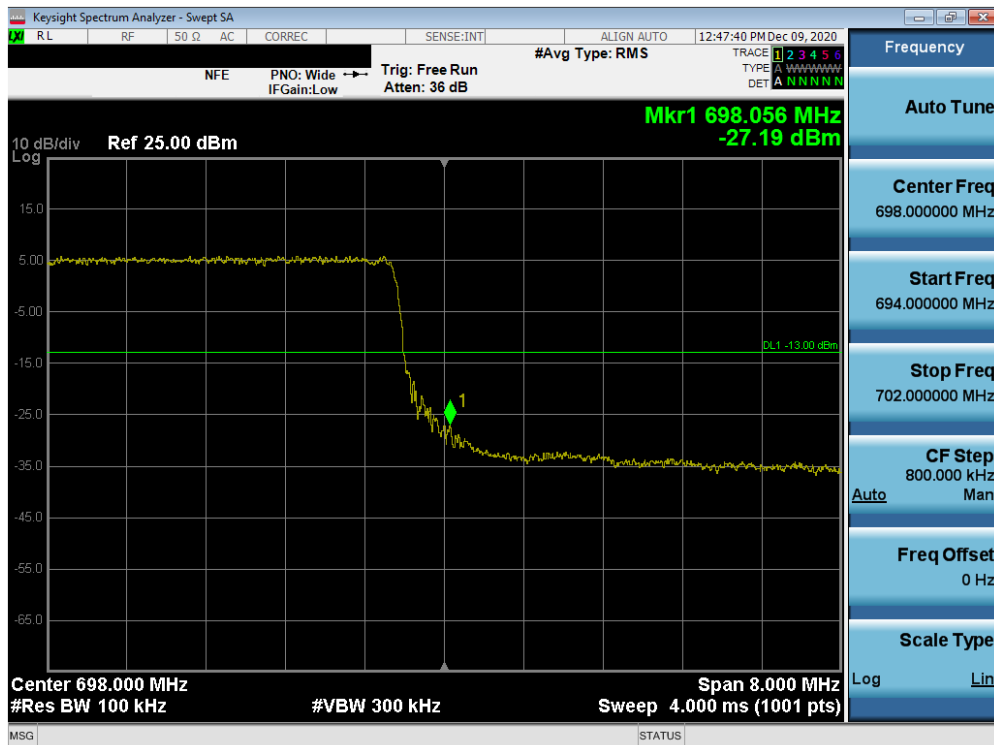


Plot 7-144. Upper Band Edge Plot (LTE Band 71 - 15MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 90 of 129

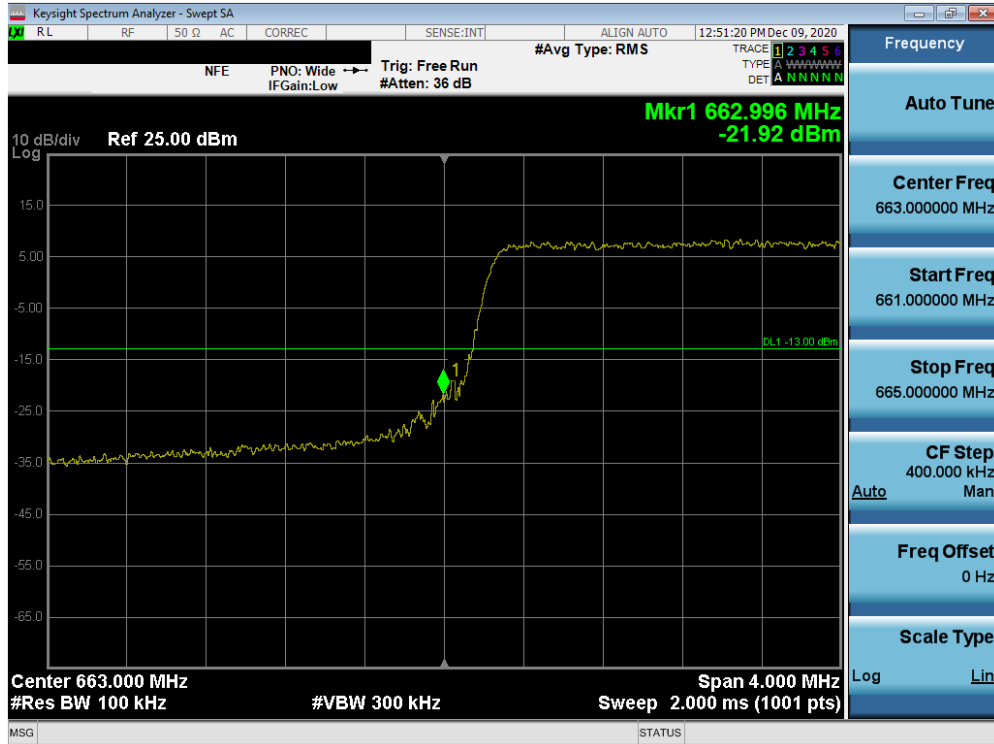


Plot 7-145. Lower Band Edge Plot (LTE Band 71 - 10MHz QPSK – Full RB Configuration)



Plot 7-146. Upper Band Edge Plot (LTE Band 71 - 10MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 91 of 129



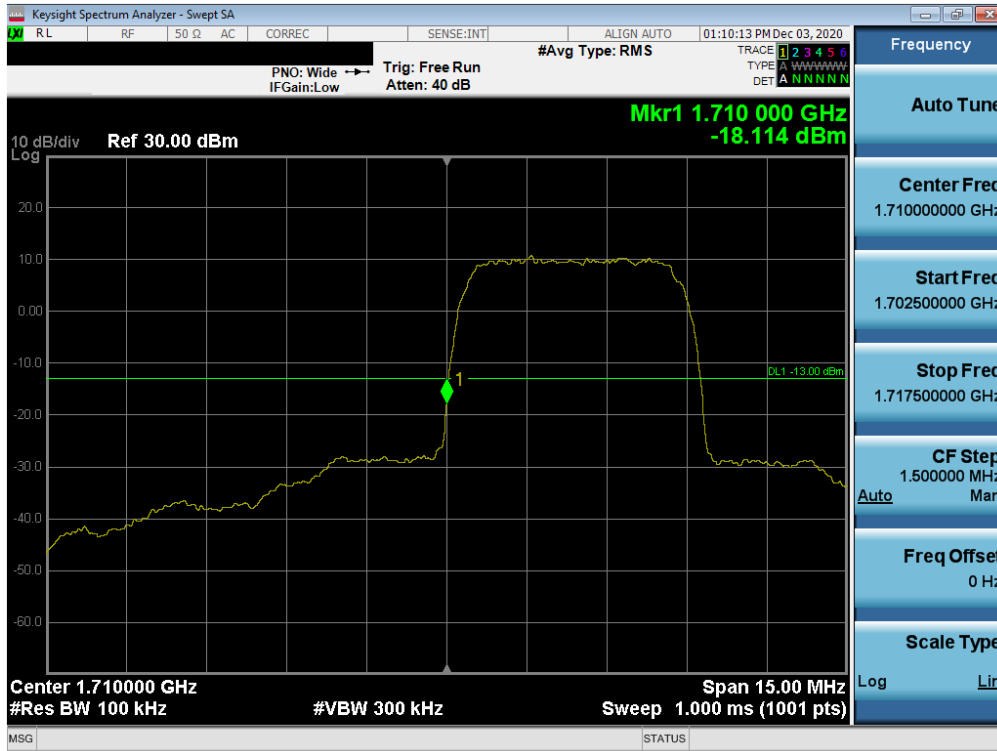
Plot 7-147. Lower Band Edge Plot (LTE Band 71 - 5MHz QPSK – Full RB Configuration)



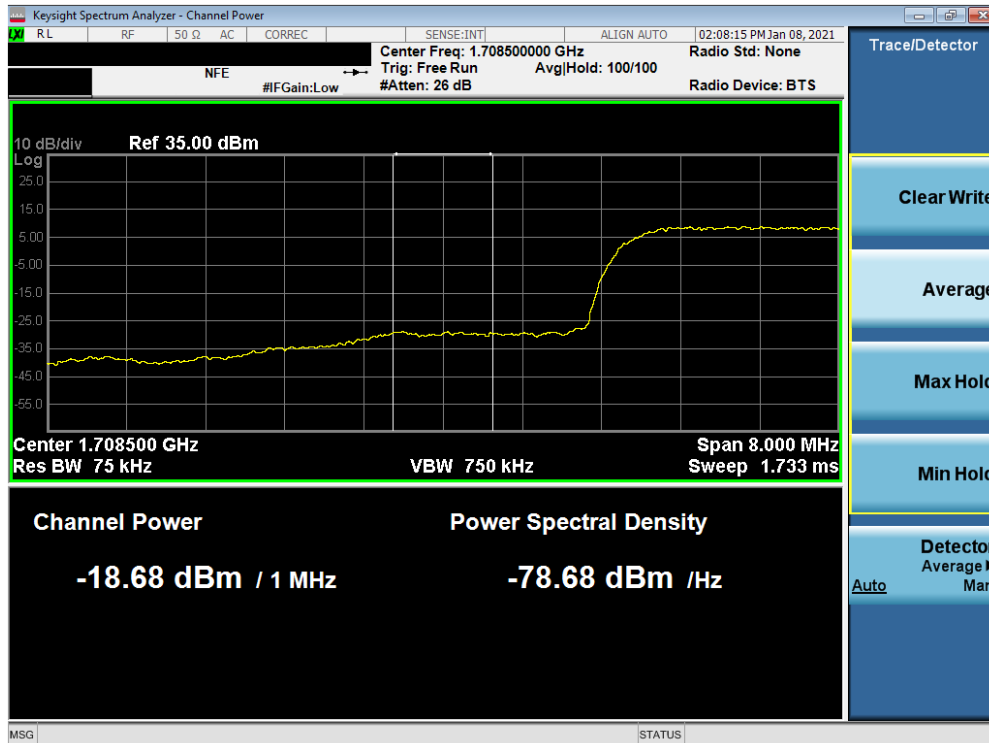
Plot 7-148. Upper Band Edge Plot (LTE Band 71 - 5MHz QPSK – Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 92 of 129

WCDMA AWS



Plot 7-149. Lower Band Edge Plot (WCDMA AWS – Ch. 1312)

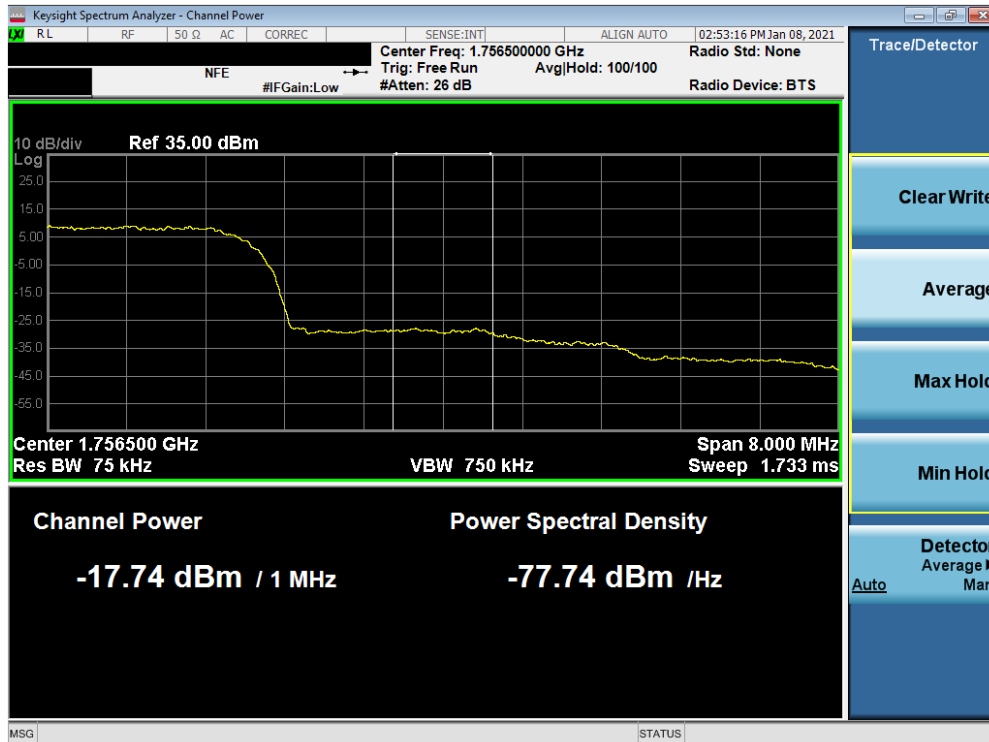


Plot 7-150. Lower Extended Band Edge Plot (WCDMA AWS – Ch. 1312)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 93 of 129



Plot 7-151. Upper Band Edge Plot (WCDMA AWS – Ch. 1513)



Plot 7-152. Upper Extended Band Edge Plot (WCDMA AWS – Ch. 1513)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 94 of 129

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.

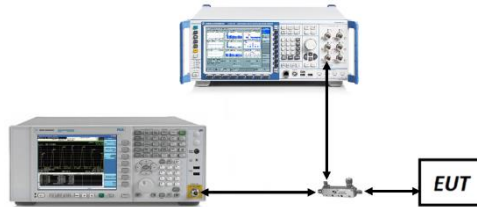


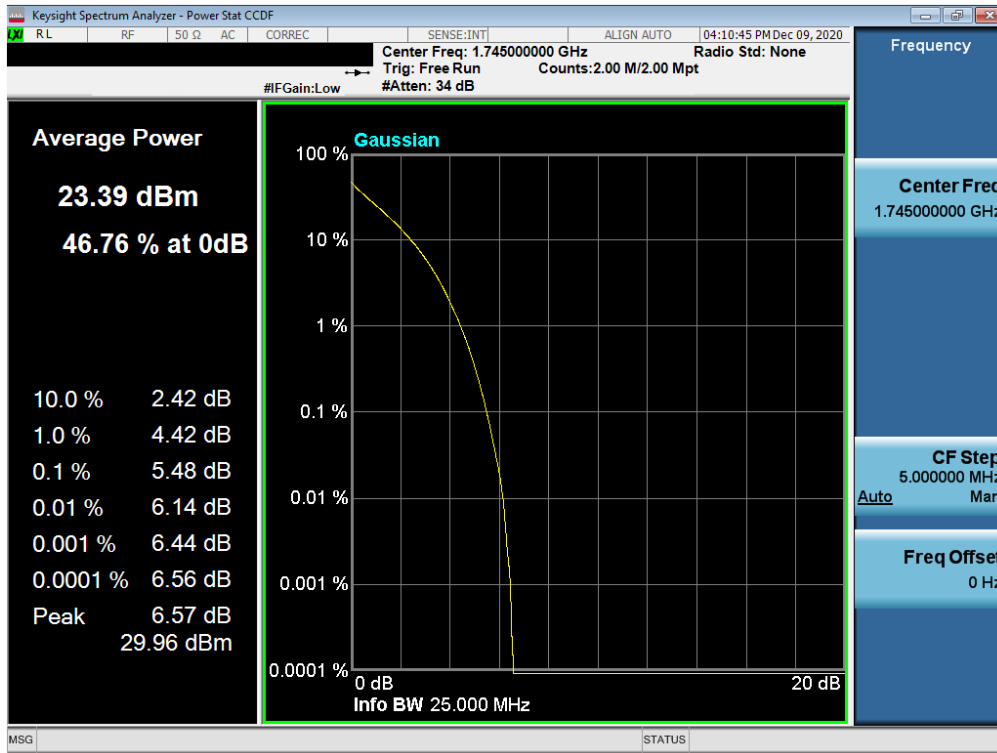
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

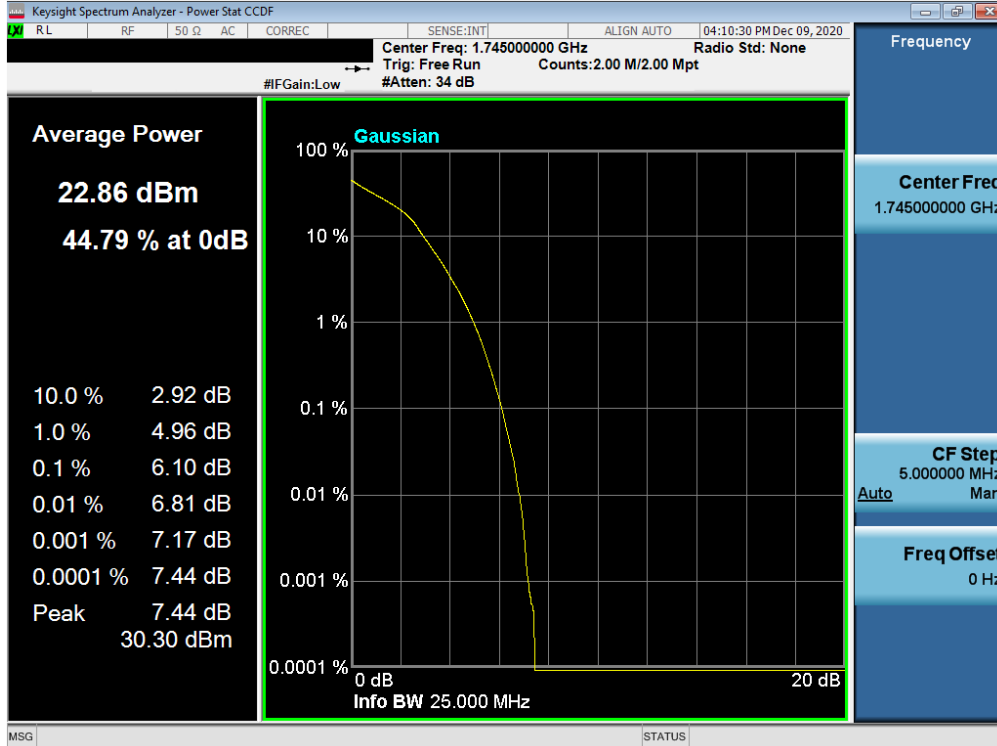
None.

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 95 of 129	

LTE Band 66/4

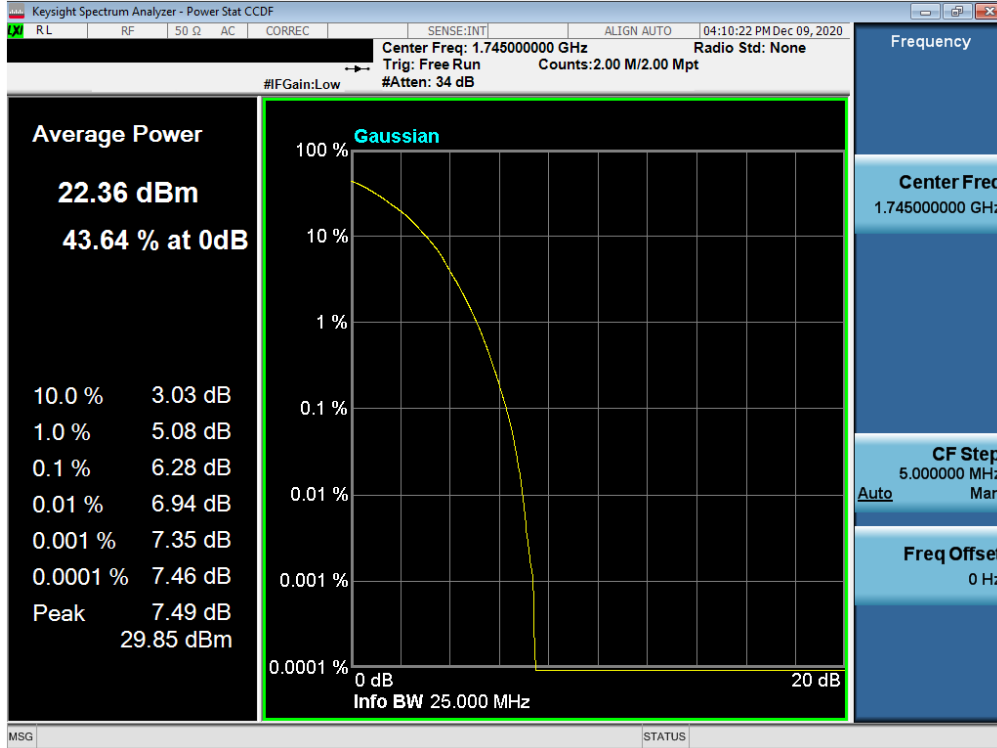


Plot 7-153. PAR Plot (LTE Band 66/4 - 20MHz QPSK - Full RB Configuration)

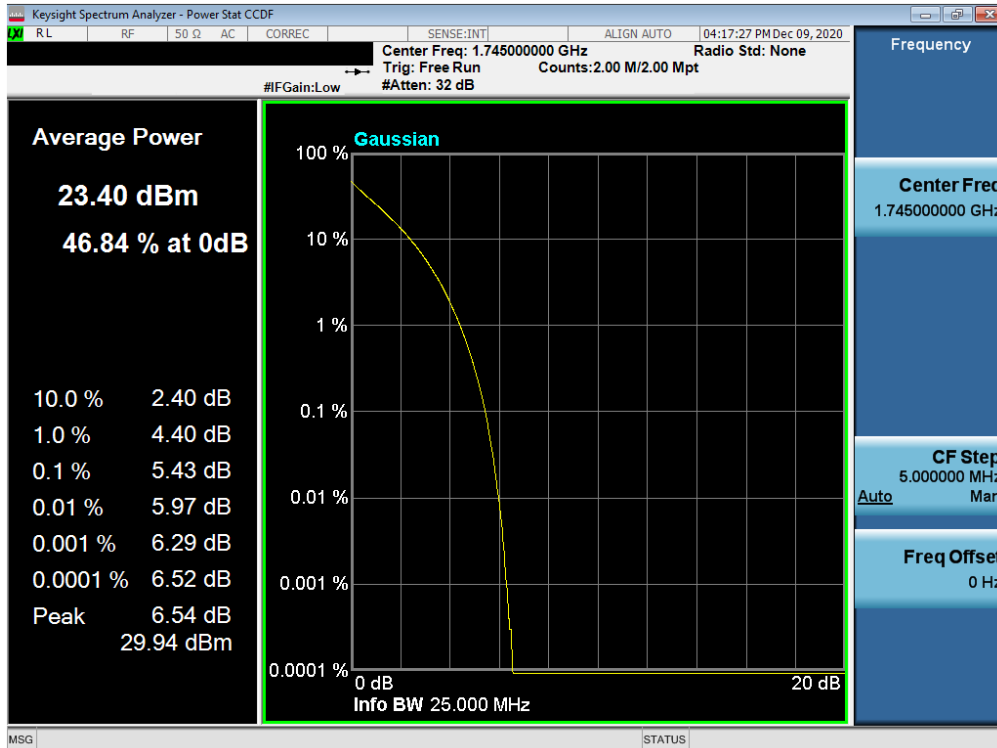


Plot 7-154. PAR Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 96 of 129

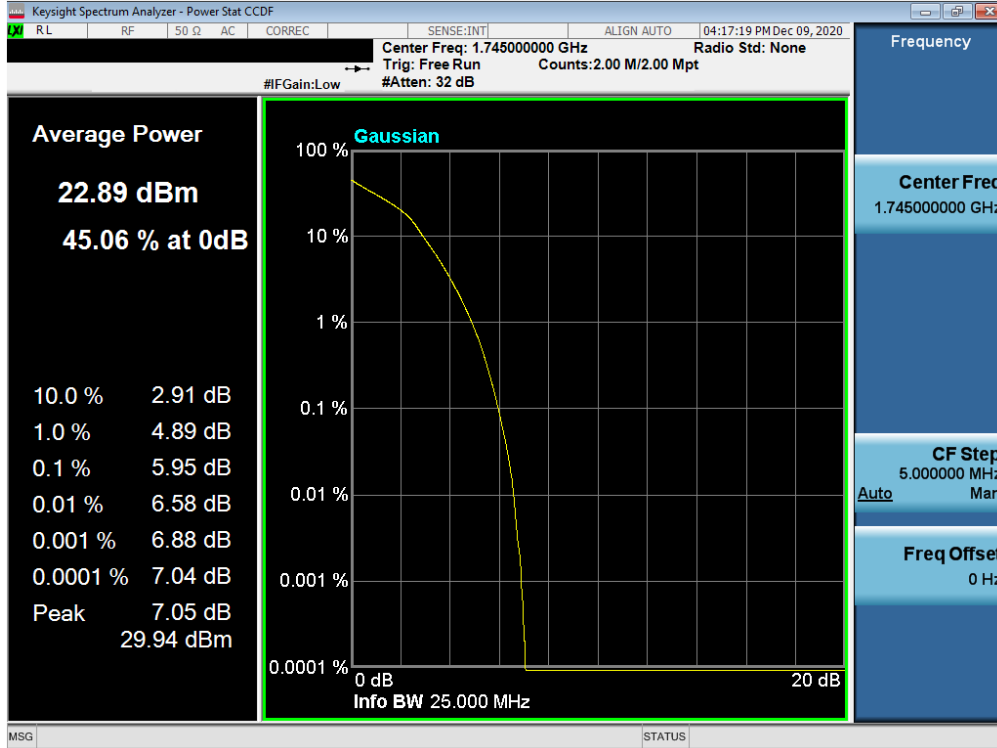


Plot 7-155. PAR Plot (LTE Band 66/4 - 20MHz 64-QAM - Full RB Configuration)

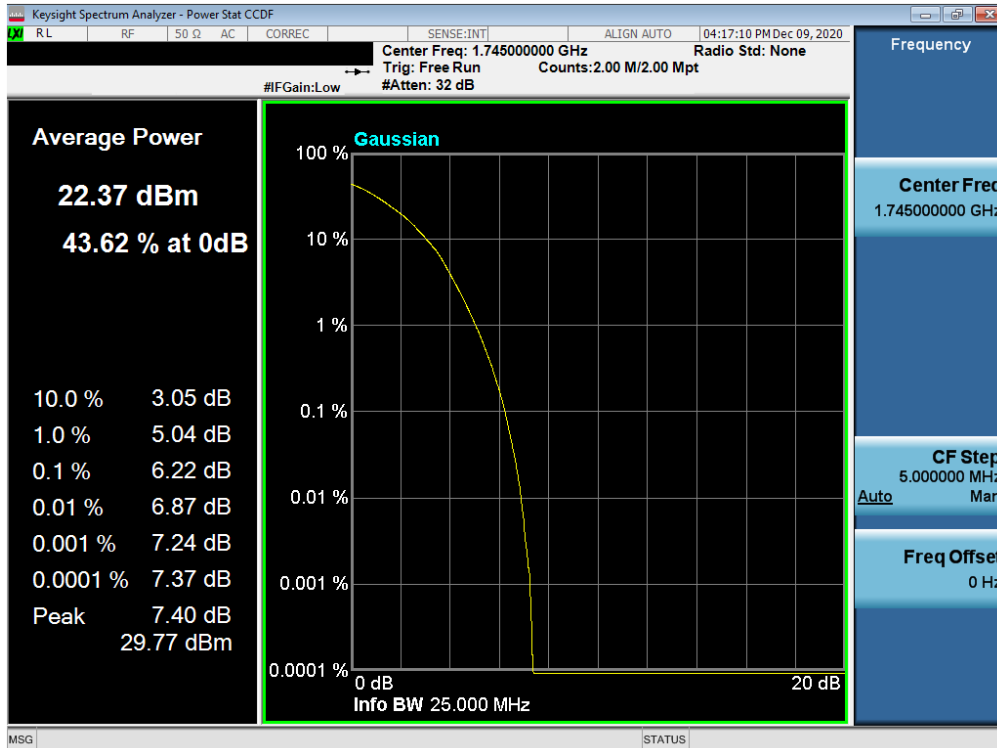


Plot 7-156. PAR Plot (LTE Band 66/4 - 15MHz QPSK - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 97 of 129

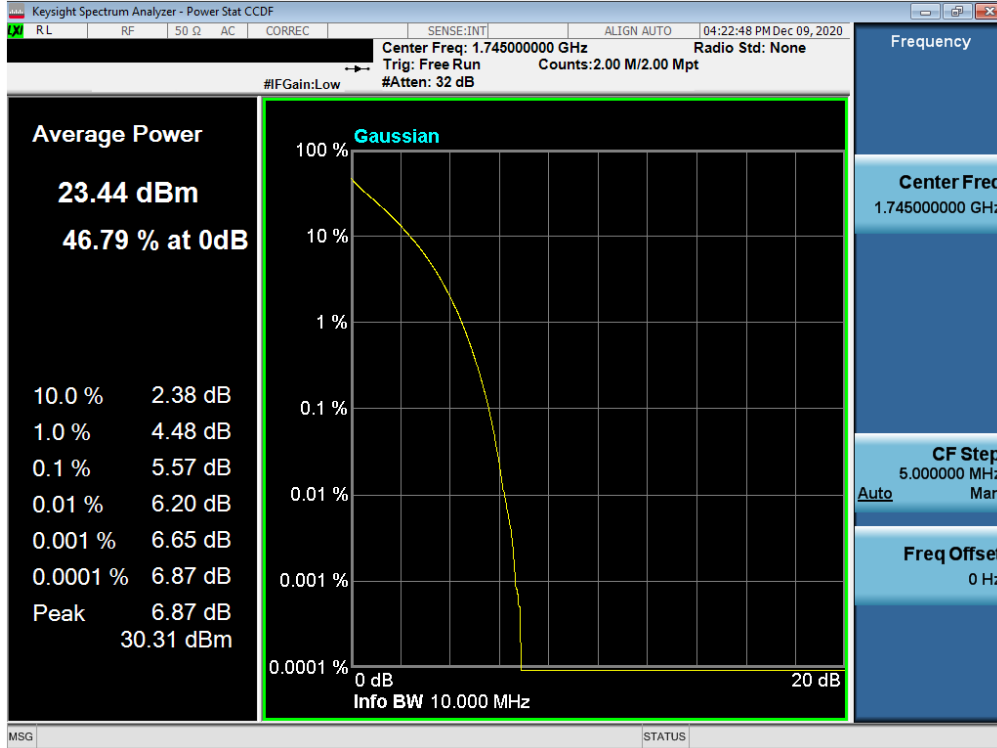


Plot 7-157. PAR Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB Configuration)

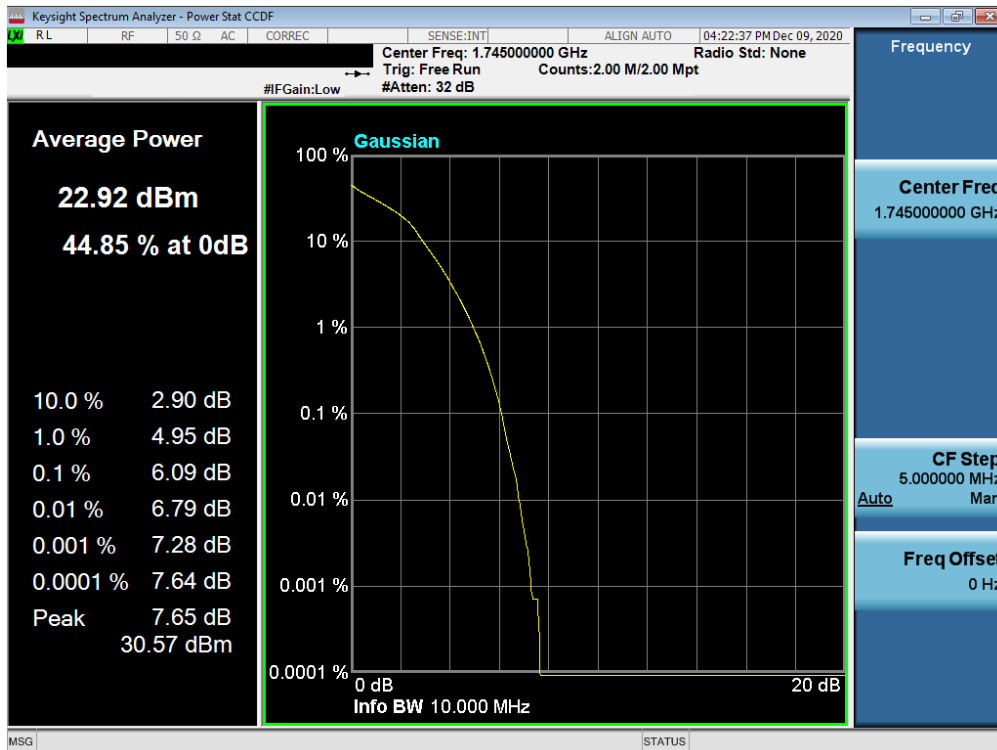


Plot 7-158. PAR Plot (LTE Band 66/4 - 15MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 98 of 129

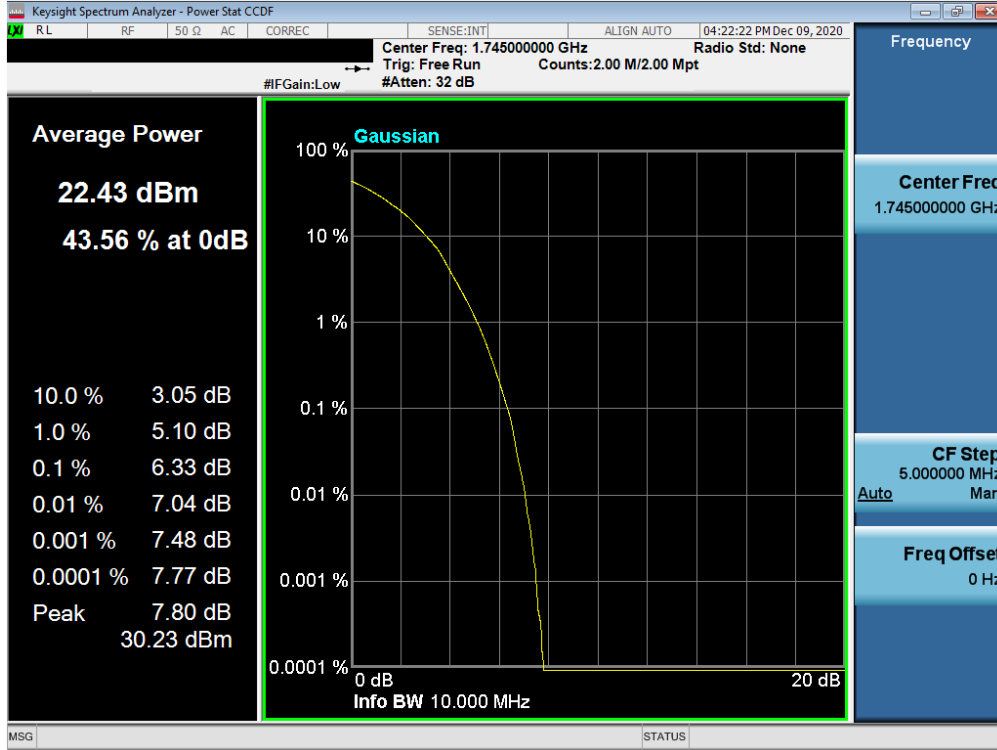


Plot 7-159. PAR Plot (LTE Band 66/4 - 10MHz QPSK - Full RB Configuration)

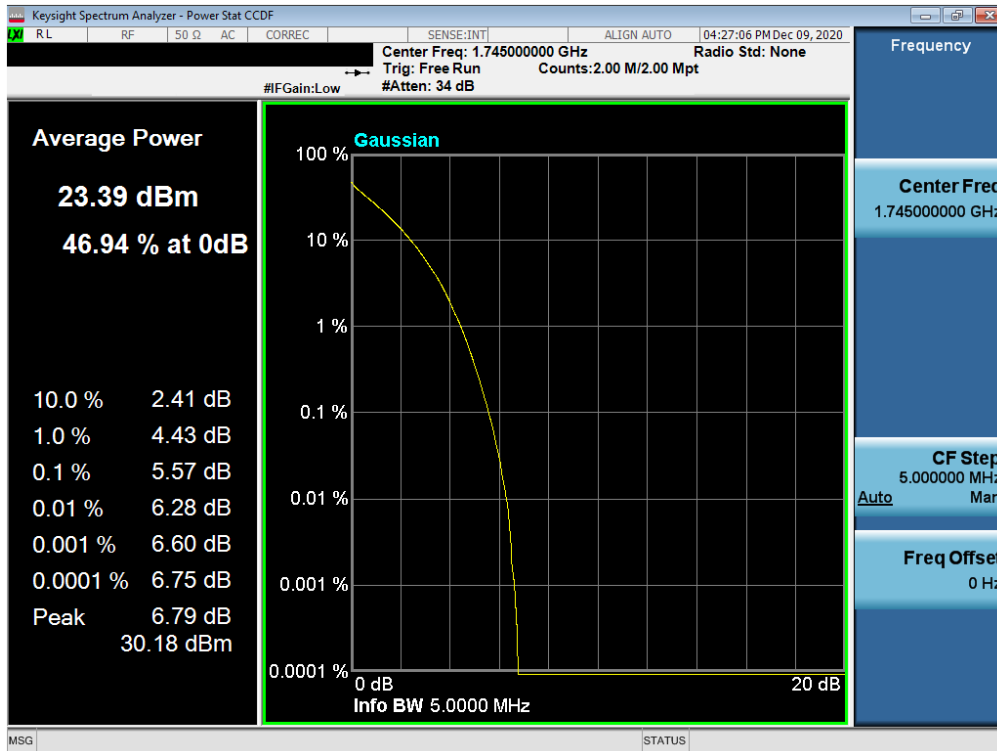


Plot 7-160. PAR Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 99 of 129

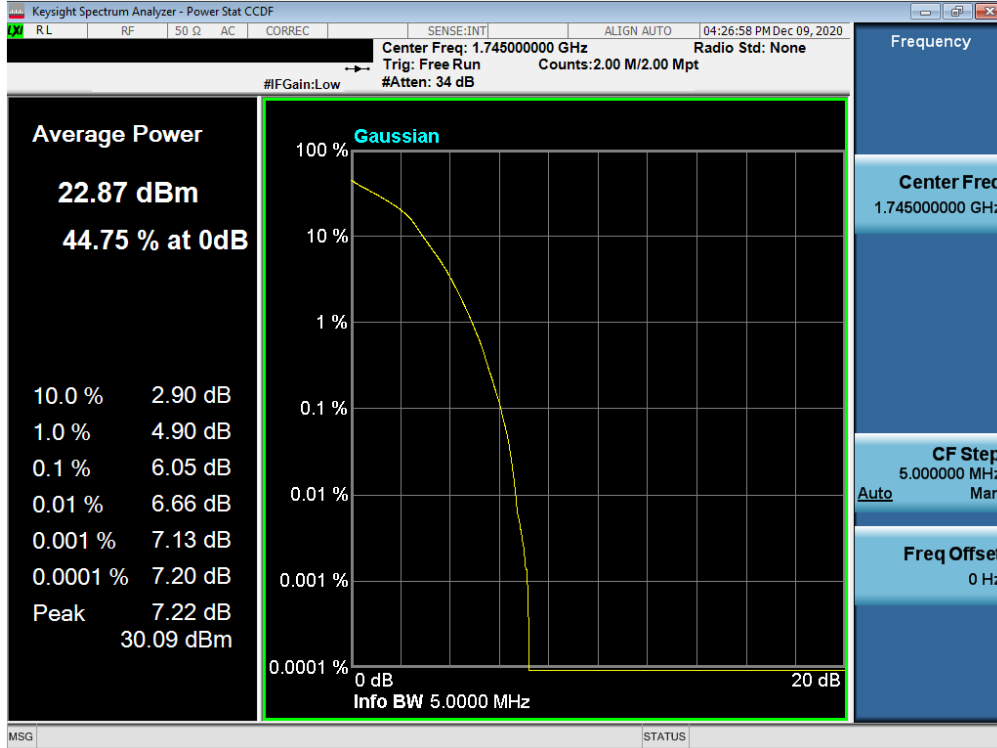


Plot 7-161. PAR Plot (LTE Band 66/4 - 10MHz 64-QAM - Full RB Configuration)

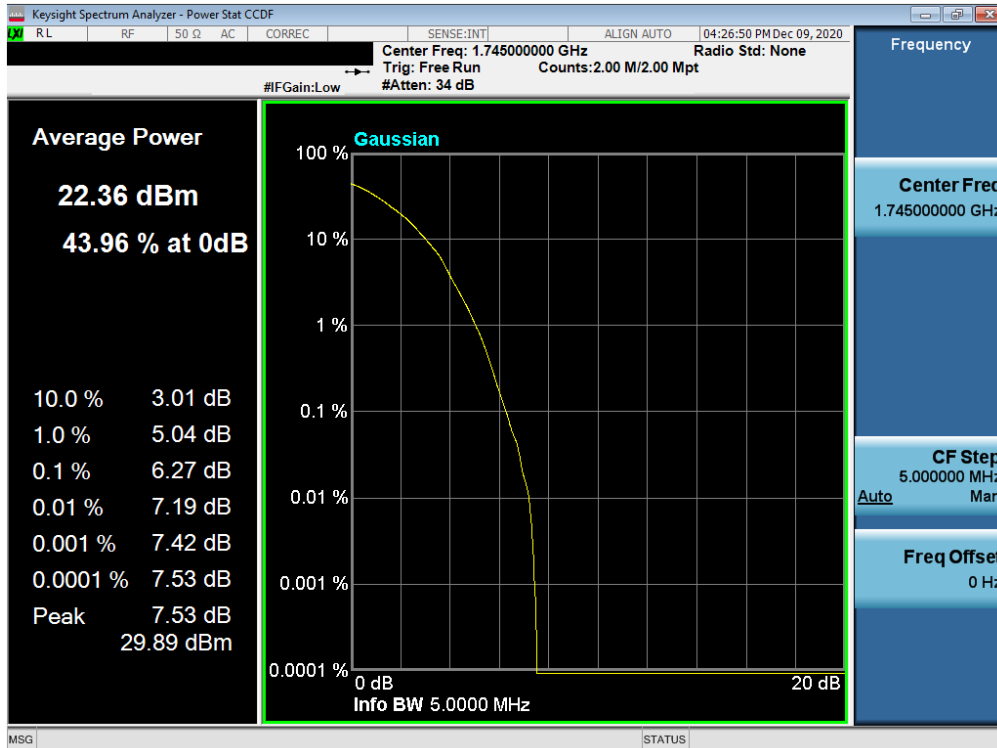


Plot 7-162. PAR Plot (LTE Band 66/4 - 5MHz QPSK - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 100 of 129

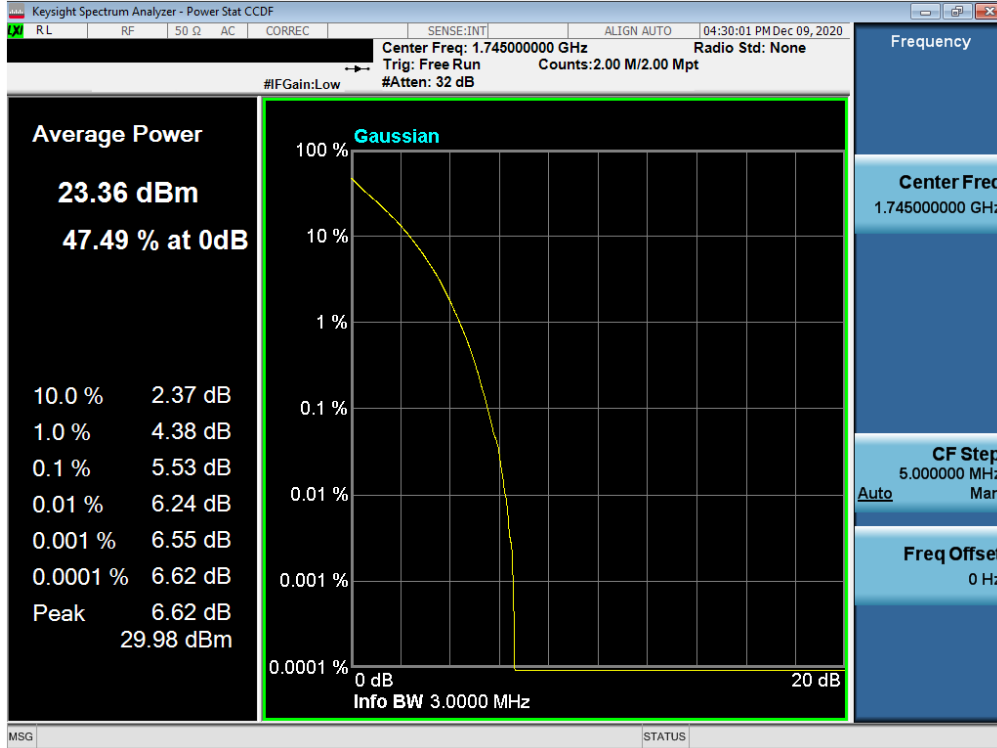


Plot 7-163. PAR Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB Configuration)

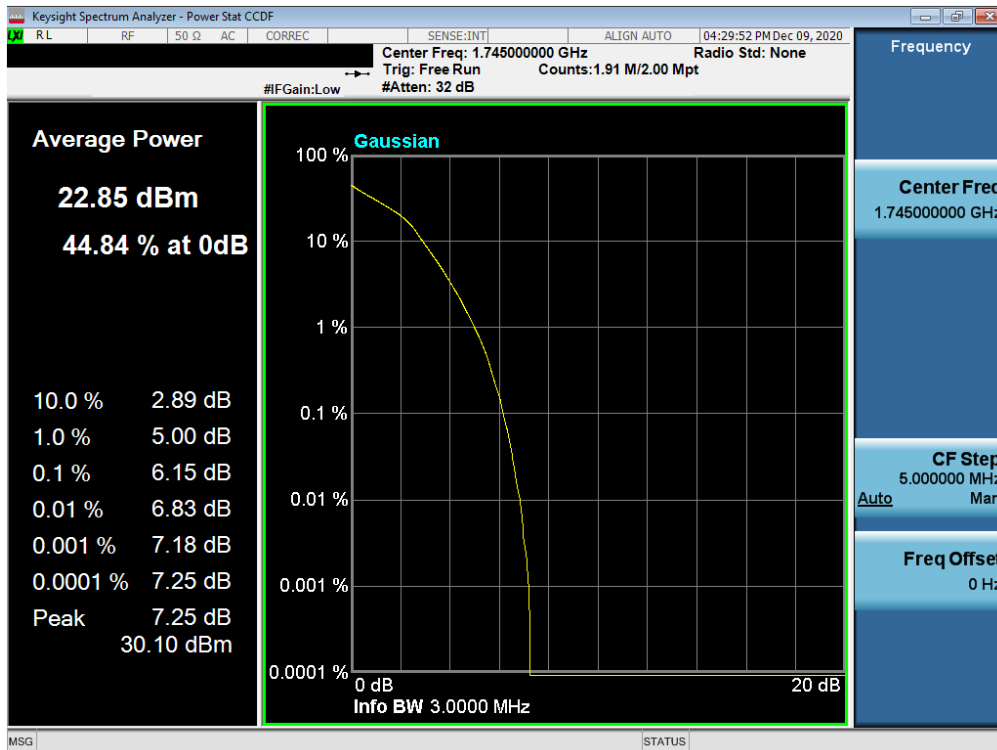


Plot 7-164. PAR Plot (LTE Band 66/4 - 5MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 101 of 129

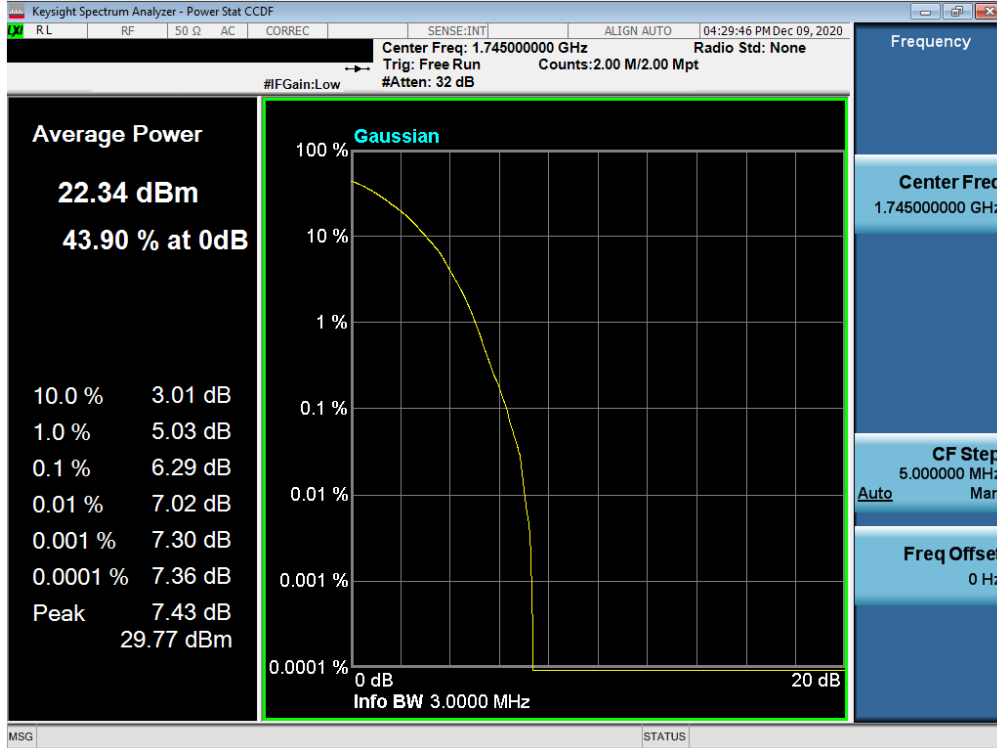


Plot 7-165. PAR Plot (LTE Band 66/4 - 3MHz QPSK - Full RB Configuration)

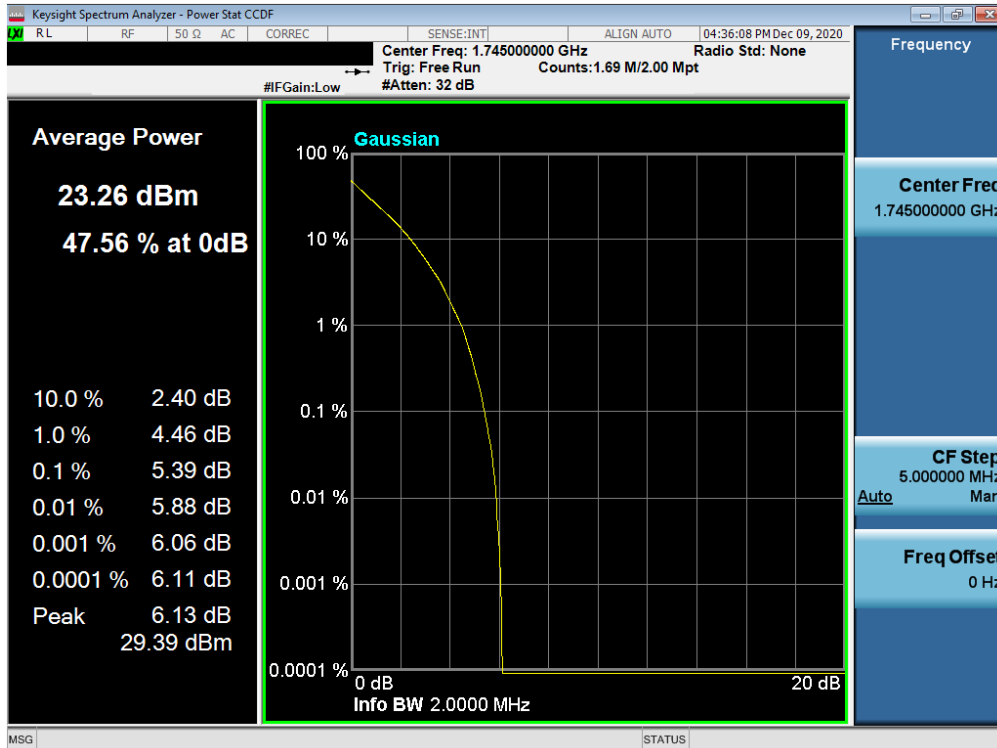


Plot 7-166. PAR Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 102 of 129

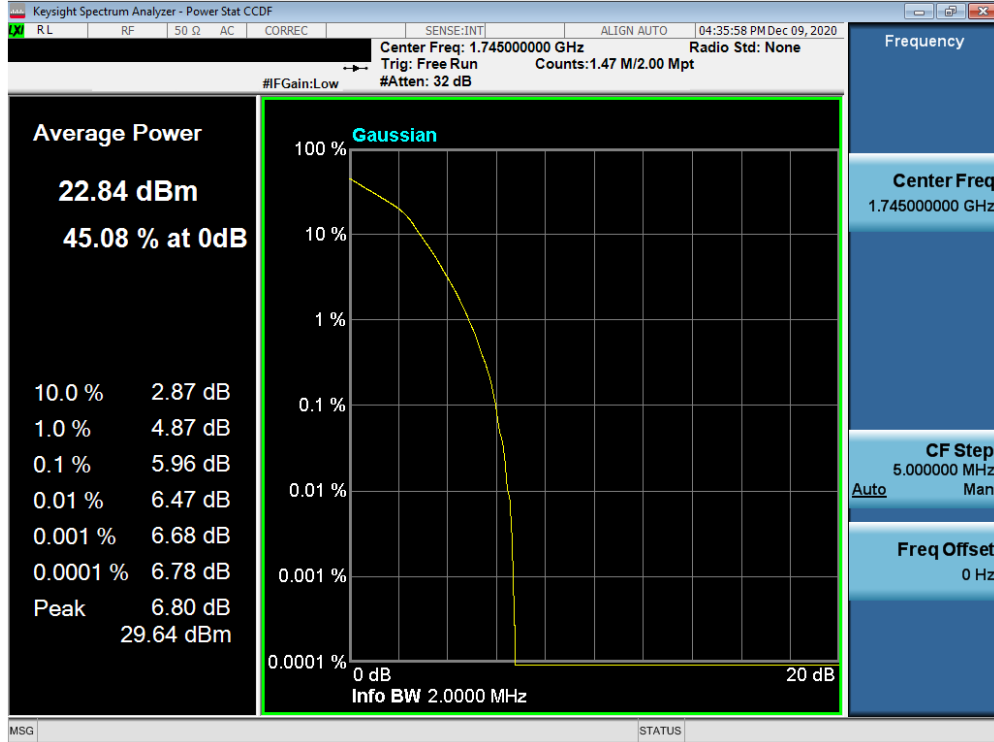


Plot 7-167. PAR Plot (LTE Band 66/4 - 3MHz 64-QAM - Full RB Configuration)

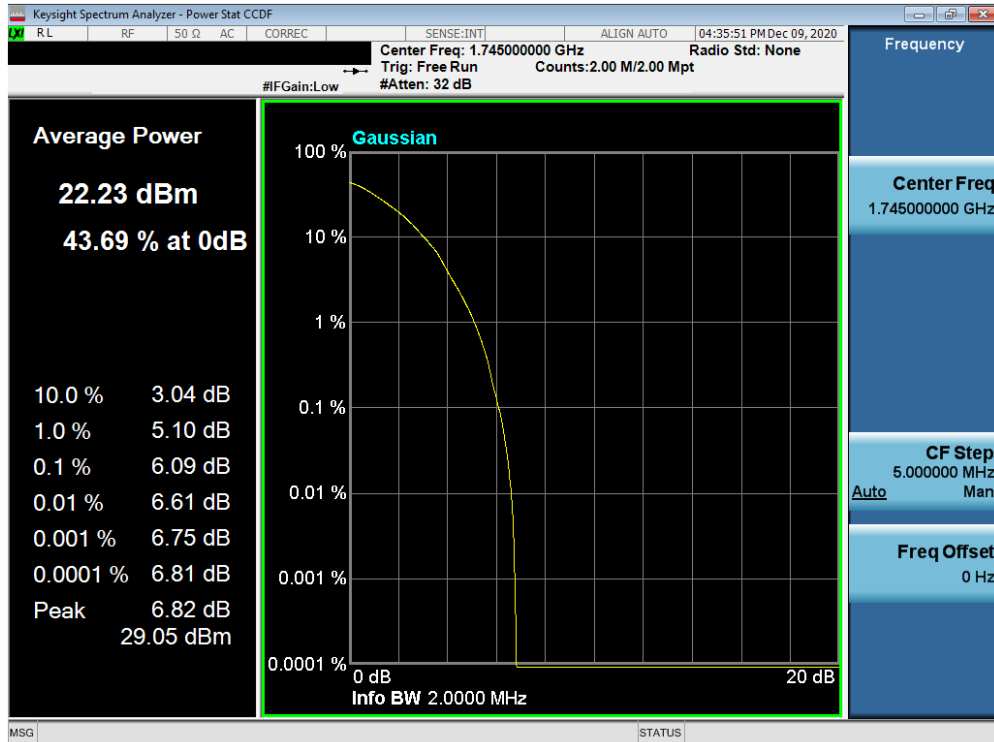


Plot 7-168. PAR Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 103 of 129



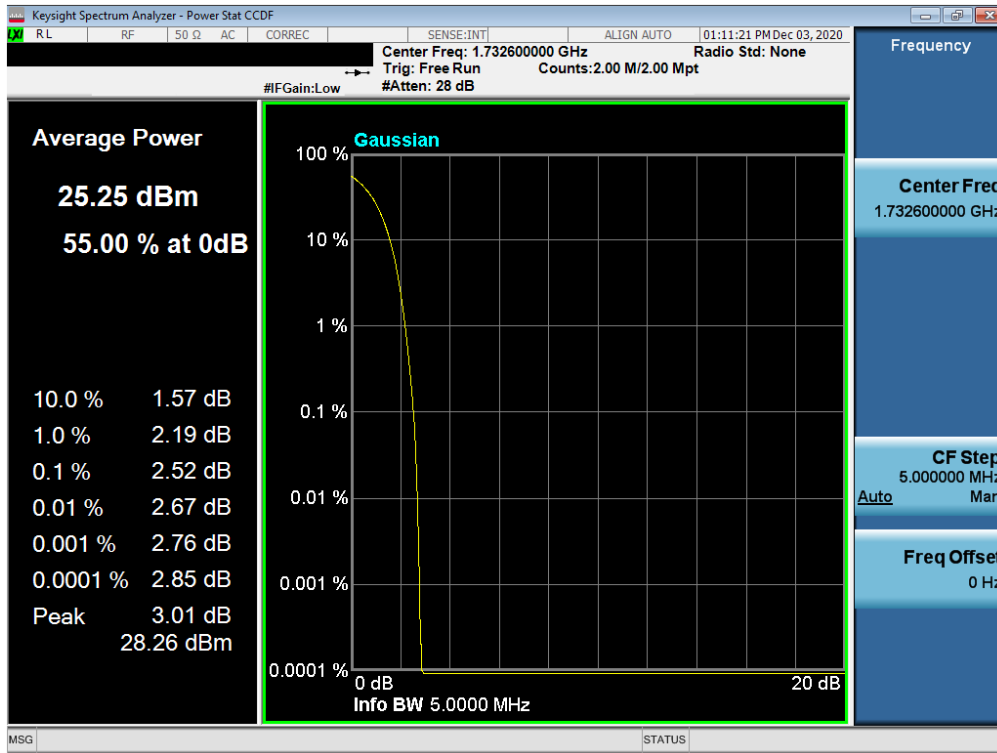
Plot 7-169. PAR Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)



Plot 7-170. PAR Plot (LTE Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 104 of 129

WCDMA AWS



Plot 7-171. PAR Plot (WCDMA, Ch. 1413)

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 105 of 129

7.6 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. 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.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW \geq 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points \geq 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	 LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 106 of 129	

Test Setup

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

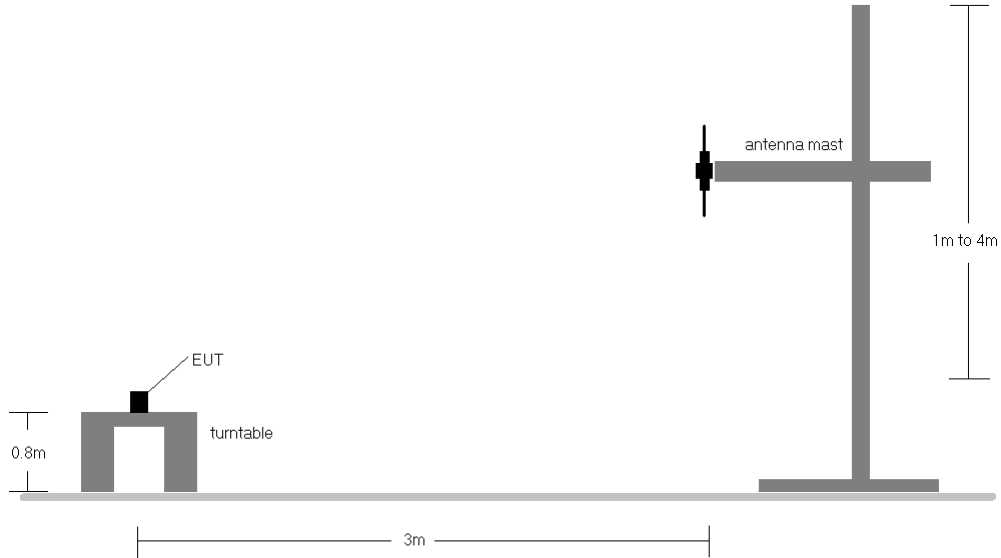


Figure 7-5. Radiated Test Setup <1GHz

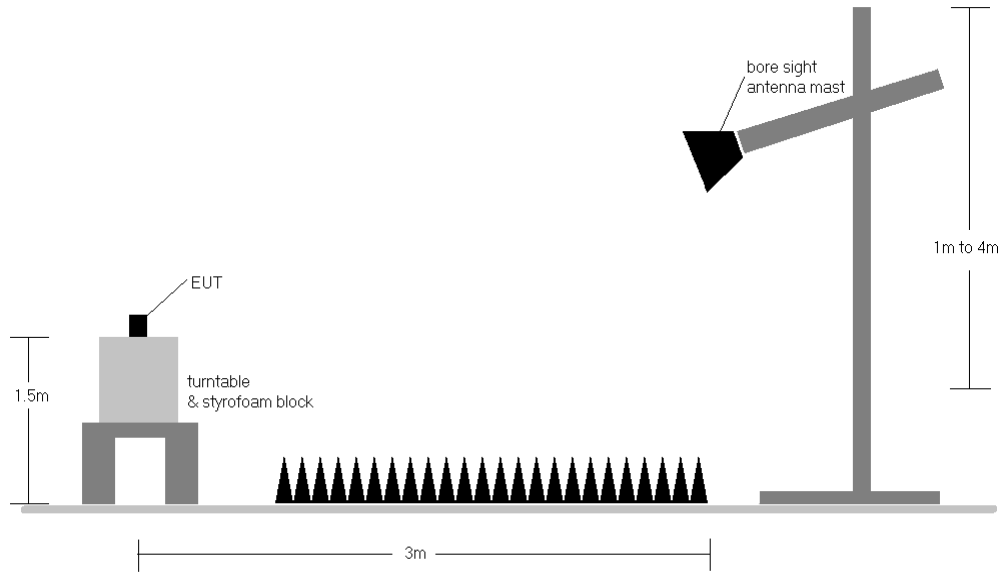




Figure 7-6. Radiated Test Setup >1GHz

<p>FCC ID: ZNFK420TM</p>	<p>PCTEST Proud to be part of element</p>	<p>PART 27 MEASUREMENT REPORT</p>		<p>Approved by: Technical Manager</p>
<p>Test Report S/N: 1M2011180184-14.ZNF</p>	<p>Test Dates: 12/1 – 1/8/2021</p>	<p>EUT Type: Portable Handset</p>	<p>Page 107 of 129</p>	

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 device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 3) This unit was tested with its standard battery.
- 4) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

FCC ID: ZNFK420TM	 PART 27 MEASUREMENT REPORT 		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 108 of 129

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1720.0	H	173	19	8.61	1 / 0	15.74	24.35	0.272	30.00	-5.65
		1745.0	H	171	22	8.61	1 / 50	15.25	23.86	0.243	30.00	-6.14
		1770.0	H	200	22	8.62	1 / 50	15.84	24.46	0.279	30.00	-5.54
	16-QAM	1720.0	H	173	19	8.61	1 / 0	15.06	23.67	0.233	30.00	-6.33
64-QAM	1720.0	H	173	19	8.61	1 / 0	13.95	22.56	0.180	30.00	-7.44	
15 MHz	QPSK	1717.5	H	173	19	8.61	1 / 0	19.26	24.32	0.270	30.00	-5.68
		1745.0	H	171	22	8.61	1 / 37	19.03	24.09	0.257	30.00	-5.91
		1772.5	H	200	22	8.62	1 / 37	19.12	24.19	0.263	30.00	-5.81
	16-QAM	1772.5	H	200	22	8.62	1 / 37	18.50	23.57	0.228	30.00	-6.43
64-QAM	1717.5	H	173	19	8.61	1 / 0	17.52	22.58	0.181	30.00	-7.42	
10 MHz	QPSK	1715.0	H	173	19	8.61	1 / 25	19.33	24.39	0.275	30.00	-5.61
		1745.0	H	171	22	8.61	1 / 25	19.02	24.08	0.256	30.00	-5.92
		1775.0	H	200	22	8.62	1 / 0	19.21	24.28	0.268	30.00	-5.72
	16-QAM	1715.0	H	173	19	8.61	1 / 25	18.41	23.47	0.222	30.00	-6.53
64-QAM	1715.0	H	173	19	8.61	1 / 25	17.59	22.65	0.184	30.00	-7.35	
5 MHz	QPSK	1712.5	H	173	19	8.61	1 / 12	19.50	24.56	0.285	30.00	-5.44
		1745.0	H	171	22	8.61	1 / 24	18.76	23.82	0.241	30.00	-6.18
		1777.5	H	200	22	8.62	1 / 12	18.82	23.89	0.245	30.00	-6.11
	16-QAM	1712.5	H	173	19	8.61	1 / 12	18.86	23.92	0.246	30.00	-6.08
64-QAM	1712.5	H	173	19	8.61	1 / 12	17.63	22.69	0.186	30.00	-7.31	
3 MHz	QPSK	1711.5	H	173	19	8.60	1 / 7	19.58	24.63	0.291	30.00	-5.37
		1745.0	H	171	22	8.61	1 / 7	18.59	23.65	0.232	30.00	-6.35
		1778.5	H	200	22	8.62	1 / 7	19.07	24.14	0.260	30.00	-5.86
	16-QAM	1711.5	H	173	19	8.60	1 / 7	18.63	23.68	0.234	30.00	-6.32
64-QAM	1711.5	H	173	19	8.60	1 / 7	17.83	22.88	0.194	30.00	-7.12	
1.4 MHz	QPSK	1710.7	H	173	19	8.60	1 / 3	19.37	24.42	0.277	30.00	-5.58
		1745.0	H	171	22	8.61	1 / 3	18.95	24.01	0.252	30.00	-5.99
		1779.3	H	200	22	8.62	1 / 3	19.13	24.20	0.263	30.00	-5.80
	16-QAM	1710.7	H	173	19	8.60	1 / 3	18.63	23.68	0.234	30.00	-6.32
64-QAM	1710.7	H	173	19	8.60	1 / 3	17.54	22.59	0.182	30.00	-7.41	
20 MHz	Opposite Pol.	1779.3	V	111	59	8.61	1 / 3	13.20	21.81	0.152	30.00	-8.19



Table 7-2. EIRP Data (LTE Band 66/4)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	
10 MHz	QPSK	704.0	H	142	293	1.34	1 / 0	19.79	21.13	0.130	36.99	-15.86	18.98	0.079	34.77	-15.79	
		707.5	H	141	298	1.33	1 / 0	19.33	20.66	0.117	36.99	-16.33	18.51	0.071	34.77	-16.26	
		711.0	H	142	297	1.33	1 / 0	18.65	19.98	0.099	36.99	-17.01	17.83	0.061	34.77	-16.95	
		16-QAM	704.0	H	142	293	1.34	1 / 0	18.87	20.21	0.105	36.99	-16.78	18.06	0.064	34.77	-16.71
		64-QAM	704.0	H	142	293	1.34	1 / 0	17.84	19.18	0.083	36.99	-17.81	17.03	0.050	34.77	-17.74
5 MHz	QPSK	701.5	H	142	293	1.35	1 / 12	19.70	21.05	0.127	36.99	-15.94	18.90	0.078	34.77	-15.87	
		707.5	H	141	298	1.33	1 / 12	18.60	19.93	0.098	36.99	-17.06	17.78	0.060	34.77	-16.99	
		713.5	H	142	297	1.32	1 / 12	18.09	19.41	0.087	36.99	-17.58	17.26	0.053	34.77	-17.51	
		16-QAM	701.5	H	142	293	1.35	1 / 12	18.95	20.30	0.107	36.99	-16.69	18.15	0.065	34.77	-16.62
		64-QAM	701.5	H	142	293	1.35	1 / 12	17.86	19.21	0.083	36.99	-17.78	17.06	0.051	34.77	-17.71
3 MHz	QPSK	700.5	H	142	293	1.35	1 / 7	19.63	20.98	0.125	36.99	-16.01	18.83	0.076	34.77	-15.94	
		707.5	H	141	298	1.33	1 / 7	19.73	21.06	0.128	36.99	-15.93	18.91	0.078	34.77	-15.86	
		714.5	H	142	297	1.32	1 / 7	19.88	21.20	0.132	36.99	-15.79	19.05	0.080	34.77	-15.72	
		16-QAM	714.5	H	142	297	1.32	1 / 7	19.12	20.44	0.111	36.99	-16.55	18.29	0.067	34.77	-16.48
		64-QAM	714.5	H	142	297	1.32	1 / 7	18.03	19.35	0.086	36.99	-17.64	17.20	0.052	34.77	-17.57
1.4 MHz	QPSK	699.7	H	142	293	1.35	1 / 3	18.20	19.55	0.090	36.99	-17.44	17.40	0.055	34.77	-17.37	
		707.5	H	141	298	1.33	1 / 3	18.79	20.12	0.103	36.99	-16.87	17.97	0.063	34.77	-16.80	
		715.3	H	142	297	1.32	1 / 3	19.04	20.36	0.109	36.99	-16.63	18.21	0.066	34.77	-16.57	
		16-QAM	715.3	H	142	297	1.32	1 / 3	18.22	19.54	0.090	36.99	-17.45	17.39	0.055	34.77	-17.39
		64-QAM	715.3	H	142	297	1.32	1 / 3	17.17	18.49	0.071	36.99	-18.50	16.34	0.043	34.77	-18.44
10 MHz	Opposite Pol.	714.5	V	142	322	1.32	1 / 7	18.79	20.11	0.103	36.99	-16.88	17.96	0.045	34.77	-16.81	

Table 7-3. ERP Data (LTE Band 12)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	782.0	V	146	319	1.17	1 / 25	19.73	20.90	0.123	36.99	-16.09	18.75	0.075	34.77	-16.02
	16-QAM	782.0	V	146	319	1.17	1 / 25	19.01	20.18	0.104	36.99	-16.81	18.03	0.064	34.77	-16.74
	64-QAM	782.0	V	146	319	1.17	1 / 25	17.89	19.06	0.081	36.99	-17.93	16.91	0.049	34.77	-17.86
5 MHz	QPSK	779.5	V	146	319	1.17	1 / 12	19.42	20.59	0.115	36.99	-16.40	18.44	0.070	34.77	-16.33
		782.0	V	146	319	1.17	1 / 12	19.61	20.78	0.120	36.99	-16.21	18.63	0.073	34.77	-16.14
		784.5	V	146	319	1.16	1 / 12	19.88	21.04	0.127	36.99	-15.95	18.89	0.078	34.77	-15.88
	16-QAM	784.5	V	146	319	1.16	1 / 12	19.26	20.42	0.110	36.99	-16.57	18.27	0.067	34.77	-16.50
	64-QAM	784.5	V	146	319	1.16	1 / 12	18.08	19.24	0.084	36.99	-17.75	17.09	0.051	34.77	-17.68
10 MHz	Opposite Pol.	784.5	H	245	298	1.16	1 / 12	17.49	18.65	0.073	36.99	-18.34	16.50	0.045	34.77	-18.27

Table 7-4. ERP Data (LTE Band 13)



FCC ID: ZNFK420TM		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 - 1/8/2021	EUT Type: Portable Handset		Page 109 of 129

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
20 MHz	QPSK	673.0	V	181	333	1.33	1 / 50	20.81	22.14	0.164	36.99	-14.85	19.99	0.100	34.77	-14.78
		680.5	V	179	322	1.33	1 / 0	20.58	21.91	0.155	36.99	-15.07	19.76	0.095	34.77	-15.01
		688.0	V	173	331	1.34	1 / 0	20.17	21.51	0.142	36.99	-15.48	19.36	0.086	34.77	-15.41
	16-QAM	673.0	V	181	333	1.33	1 / 50	19.96	21.29	0.135	36.99	-15.70	19.14	0.082	34.77	-15.63
64-QAM	673.0	V	181	333	1.33	1 / 50	18.98	20.31	0.107	36.99	-16.68	18.16	0.065	34.77	-16.61	
15 MHz	QPSK	670.5	V	181	333	1.33	1 / 37	20.89	22.22	0.167	36.99	-14.77	20.07	0.102	34.77	-14.70
		680.5	V	179	322	1.33	1 / 0	20.51	21.84	0.153	36.99	-15.14	19.69	0.093	34.77	-15.08
		690.5	V	173	331	1.34	1 / 0	20.04	21.38	0.138	36.99	-15.61	19.23	0.084	34.77	-15.54
	16-QAM	670.5	V	181	333	1.33	1 / 37	20.13	21.46	0.140	36.99	-15.53	19.31	0.085	34.77	-15.46
64-QAM	670.5	V	181	333	1.33	1 / 37	19.01	20.34	0.108	36.99	-16.65	18.19	0.066	34.77	-16.58	
10 MHz	QPSK	668.0	V	181	333	1.32	1 / 25	20.64	21.96	0.157	36.99	-15.03	19.81	0.096	34.77	-14.96
		680.5	V	179	322	1.33	1 / 25	20.27	21.60	0.145	36.99	-15.38	19.45	0.088	34.77	-15.32
		693.0	V	173	331	1.35	1 / 25	19.84	21.19	0.131	36.99	-15.80	19.04	0.080	34.77	-15.74
	16-QAM	668.0	V	181	333	1.32	1 / 25	19.96	21.28	0.134	36.99	-15.71	19.13	0.082	34.77	-15.64
64-QAM	668.0	V	181	333	1.32	1 / 25	18.91	20.23	0.106	36.99	-16.76	18.08	0.064	34.77	-16.69	
5 MHz	QPSK	665.5	V	181	333	1.32	1 / 12	20.40	21.72	0.149	36.99	-15.27	19.57	0.091	34.77	-15.20
		680.5	V	179	322	1.33	1 / 12	20.46	21.79	0.151	36.99	-15.19	19.64	0.092	34.77	-15.13
		695.5	V	173	331	1.35	1 / 12	19.62	20.97	0.125	36.99	-16.02	18.82	0.076	34.77	-15.95
	16-QAM	665.5	V	181	333	1.32	1 / 12	19.68	21.00	0.126	36.99	-15.99	18.85	0.077	34.77	-15.92
64-QAM	680.5	V	179	322	1.33	1 / 12	18.62	19.95	0.099	36.99	-17.03	17.80	0.060	34.77	-16.97	
20 MHz	Opposite Pol.	670.5	H	262	3	1.33	1 / 37	19.71	21.04	0.127	36.99	-15.95	18.89	0.077	34.77	-15.88

Table 7-5. ERP Data (LTE Band 71)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	H	182	10	15.27	9.46	24.73	0.297	30.00	-5.27
1732.60	WCDMA1700	H	142	22	15.37	9.34	24.71	0.296	30.00	-5.29
1752.60	WCDMA1700	H	128	23	15.39	9.24	24.63	0.290	30.00	-5.37
1712.40	WCDMA1700	V	137	51	13.06	9.46	22.52	0.179	30.00	-7.48

Table 7-6. EIRP Data (WCDMA AWS)

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 110 of 129

7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically 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 average RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.



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

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 111 of 129

Test Setup

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

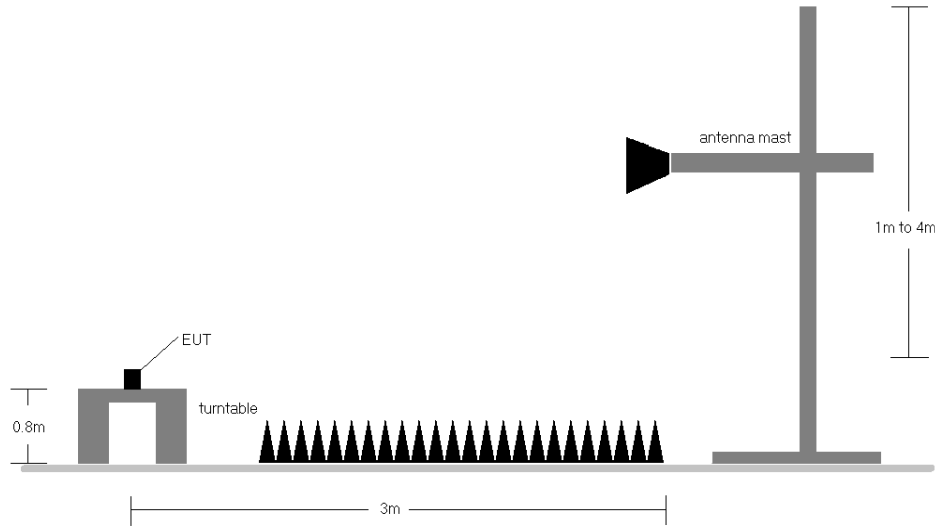


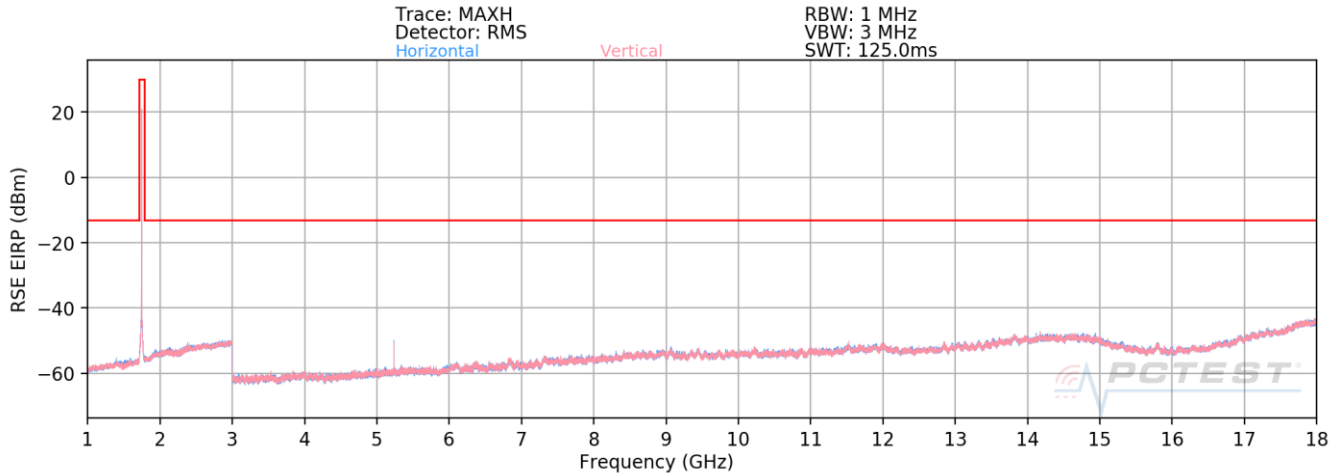
Figure 7-7. Test Instrument & Measurement Setup

Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
 - a) $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - b) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$; where D is the measurement distance in meters.
- 2) 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.
- 3) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 6) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 7) 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.
- 8) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

LTE Band 66/4

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 112 of 129	



Plot 7-172. Radiated Spurious Plot (LTE Band 66/4)

Bandwidth (MHz):	20
Frequency (MHz):	1720.0
RB / Offset:	1 / 0



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3440.0	H	101	44	-70.91	-1.03	35.06	-60.20	-13.00	-47.20
5160.0	H	109	29	-69.07	2.28	40.21	-55.05	-13.00	-42.05
6880.0	H	-	-	-79.31	7.00	34.69	-60.57	-13.00	-47.57
8600.0	H	-	-	-80.61	9.70	36.09	-59.17	-13.00	-46.17
10320.0	H	-	-	-82.07	13.17	38.10	-57.16	-13.00	-44.16

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

Bandwidth (MHz):	20
Frequency (MHz):	1745.0
RB / Offset:	1 / 0

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3490.0	H	100	16	-71.04	-1.11	34.85	-60.41	-13.00	-47.41
5235.0	H	110	26	-66.02	2.60	43.58	-51.68	-13.00	-38.68
6980.0	H	-	-	-79.64	7.29	34.65	-60.61	-13.00	-47.61
8725.0	H	-	-	-80.54	10.20	36.66	-58.59	-13.00	-45.59
10470.0	H	-	-	-81.77	12.73	37.96	-57.30	-13.00	-44.30



Table 7-8. Radiated Spurious Data (LTE Band 66/4 – Mid Channel)

FCC ID: ZNFK420TM	 PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 113 of 129

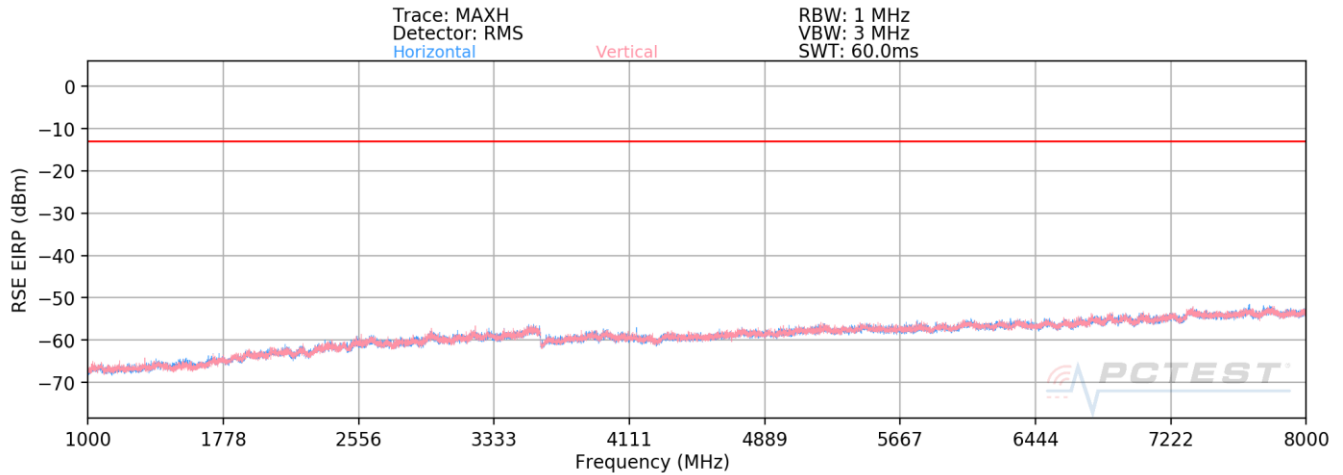
Bandwidth (MHz):	20
Frequency (MHz):	1770.0
RB / Offset:	1 / 0

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3540.00	H	103	18	-67.05	-0.54	39.41	-55.85	-13.00	-42.85
5310.00	H	101	25	-67.29	3.54	43.25	-52.01	-13.00	-39.01
7080.00	H	-	-	-79.61	7.49	34.88	-60.38	-13.00	-47.38
8850.00	H	-	-	-81.00	10.33	36.33	-58.93	-13.00	-45.93
10620.00	H	-	-	-81.57	13.62	39.05	-56.21	-13.00	-43.21

Table 7-9. Radiated Spurious Data (LTE Band 66/4 – High Channel)

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 114 of 129

LTE Band 12



Plot 7-173. Radiated Spurious Plot (LTE Band 12)

Bandwidth (MHz):	3
Frequency (MHz):	700.5
RB / Offset:	1 / 14



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1401.0	H	359	155	-72.76	-8.14	26.10	-69.16	-13.00	-56.16
2101.5	H	345	165	-58.56	-4.93	43.51	-51.75	-13.00	-38.75
2802.0	H	-	-	-76.78	-2.51	27.71	-67.55	-13.00	-54.55
3502.5	H	-	-	-76.26	-1.06	29.68	-65.58	-13.00	-52.58
4203.0	H	-	-	-76.82	0.77	30.95	-64.31	-13.00	-51.31

Table 7-10. Radiated Spurious Data (LTE Band 12 – Low Channel)

Bandwidth (MHz):	3
Frequency (MHz):	707.5
RB / Offset:	1 / 14

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1415.0	H	339	154	-72.28	-8.10	26.62	-68.64	-13.00	-55.64
2122.5	H	332	158	-55.44	-5.00	46.56	-48.70	-13.00	-35.70
2830.0	H	-	-	-76.07	-2.59	28.34	-66.92	-13.00	-53.92
3537.5	H	-	-	-76.57	-0.99	29.44	-65.81	-13.00	-52.81
4245.0	H	-	-	-76.91	0.55	30.64	-64.62	-13.00	-51.62



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

FCC ID: ZNFK420TM	 PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 115 of 129

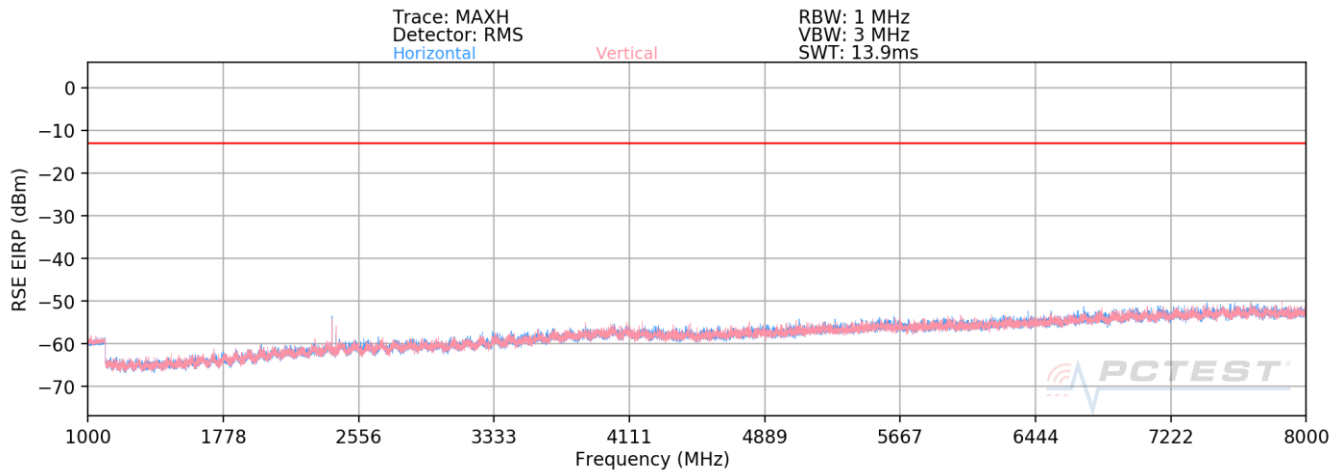
Bandwidth (MHz):	3
Frequency (MHz):	714.5
RB / Offset:	1 / 14

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1429.0	H	360	182	-73.38	-8.11	25.51	-69.75	-13.00	-56.75
2143.5	H	374	167	-57.94	-5.17	43.89	-51.37	-13.00	-38.37
2858.0	H	-	-	-75.74	-2.68	28.58	-66.68	-13.00	-53.68
3572.5	H	-	-	-76.32	-0.43	30.25	-65.01	-13.00	-52.01
4287.0	H	-	-	-76.50	0.67	31.17	-64.09	-13.00	-51.09

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

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 116 of 129

LTE Band 13



Plot 7-174. Radiated Spurious Plot (LTE Band 13)

Bandwidth (MHz):	5
Frequency (MHz):	779.5
RB / Offset:	1 / 12



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1559.0	H	364	195	-73.51	-7.51	25.98	-69.28	-40.00	-29.28
2338.5	H	101	0	-53.01	-3.99	50.00	-45.26	-13.00	-32.26
3118.0	H	-	-	-76.81	-2.17	28.02	-67.24	-13.00	-54.24
3897.5	H	309	9	-74.73	0.52	32.79	-62.47	-13.00	-49.47
4677.0	H	-	-	-77.33	1.20	30.87	-64.39	-13.00	-51.39
5456.5	H	-	-	-77.80	3.46	32.66	-62.59	-13.00	-49.59
6236.0	H	-	-	-79.38	5.79	33.41	-61.85	-13.00	-48.85

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

Bandwidth (MHz):	5
Frequency (MHz):	782.0
RB / Offset:	1 / 12

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1564.0	H	354	187	-72.34	-7.48	27.18	-68.08	-40.00	-28.08
2346.0	H	101	1	-54.36	-3.93	48.71	-46.55	-13.00	-33.55
3128.0	H	-	-	-77.01	-2.13	27.86	-67.40	-13.00	-54.40
3910.0	H	312	8	-73.25	0.72	34.47	-60.78	-13.00	-47.78
4692.0	H	-	-	-77.25	1.13	30.88	-64.38	-13.00	-51.38
5474.0	H	-	-	-78.19	3.54	32.35	-62.91	-13.00	-49.91
6256.0	H	-	-	-79.16	5.70	33.54	-61.72	-13.00	-48.72



Table 7-14. Radiated Spurious Data (LTE Band 13 – Mid Channel)

FCC ID: ZNFK420TM	 PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 117 of 129

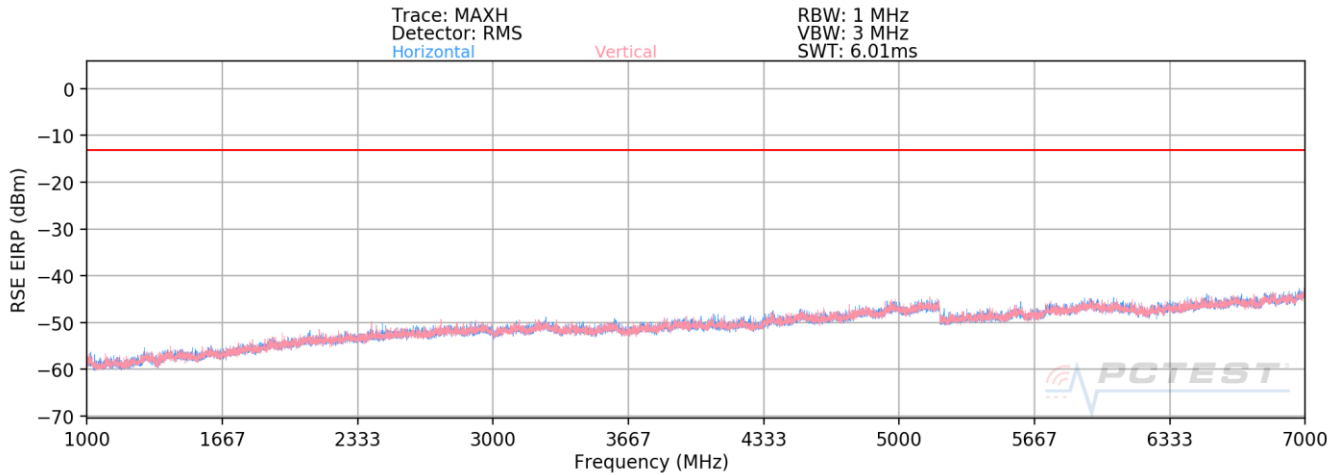
Bandwidth (MHz):	5
Frequency (MHz):	784.5
RB / Offset:	1 / 12

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1569.0	H	368	198	-72.40	-7.47	27.13	-68.12	-40.00	-28.12
2353.5	H	100	355	-52.03	-3.86	51.11	-44.14	-13.00	-31.14
3138.0	H	-	-	-76.87	-2.04	28.09	-67.17	-13.00	-54.17
3922.5	H	311	5	-72.51	0.90	35.39	-59.87	-13.00	-46.87
4707.0	H	-	-	-77.16	1.10	30.94	-64.32	-13.00	-51.32
5491.5	H	-	-	-78.32	3.92	32.60	-62.65	-13.00	-49.65
6276.0	H	-	-	-79.16	5.36	33.20	-62.06	-13.00	-49.06

Table 7-15. Radiated Spurious Data (LTE Band 13 – High Channel)

FCC ID: ZNFK420TM	 PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 118 of 129

LTE Band 71



Plot 7-175. Radiated Spurious Plot (LTE Band 71)

Bandwidth (MHz):	15
Frequency (MHz):	670.5
RB / Offset:	1 / 74



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1341.0	V	119	164	-71.58	-8.70	26.72	-68.53	-13.00	-55.53
2011.5	V	103	154	-62.60	-5.49	38.91	-56.35	-13.00	-43.35
2682.0	V	-	-	-76.28	-3.00	27.72	-67.54	-13.00	-54.54
3352.5	V	-	-	-76.65	-1.26	29.09	-66.17	-13.00	-53.17
4023.0	V	-	-	-76.81	1.69	31.88	-63.38	-13.00	-50.38

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

Bandwidth (MHz):	15
Frequency (MHz):	680.5
RB / Offset:	1 / 74

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1361.0	V	101	164	-72.64	-8.57	25.79	-69.47	-13.00	-56.47
2041.5	V	108	160	-58.30	-5.24	43.46	-51.80	-13.00	-38.80
2722.0	V	-	-	-76.38	-2.81	27.81	-67.45	-13.00	-54.45
3402.5	V	-	-	-76.65	-1.10	29.25	-66.01	-13.00	-53.01
4083.0	V	-	-	-77.00	1.49	31.49	-63.77	-13.00	-50.77



Table 7-17. Radiated Spurious Data (LTE Band 71 – Mid Channel)

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	 LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 119 of 129	

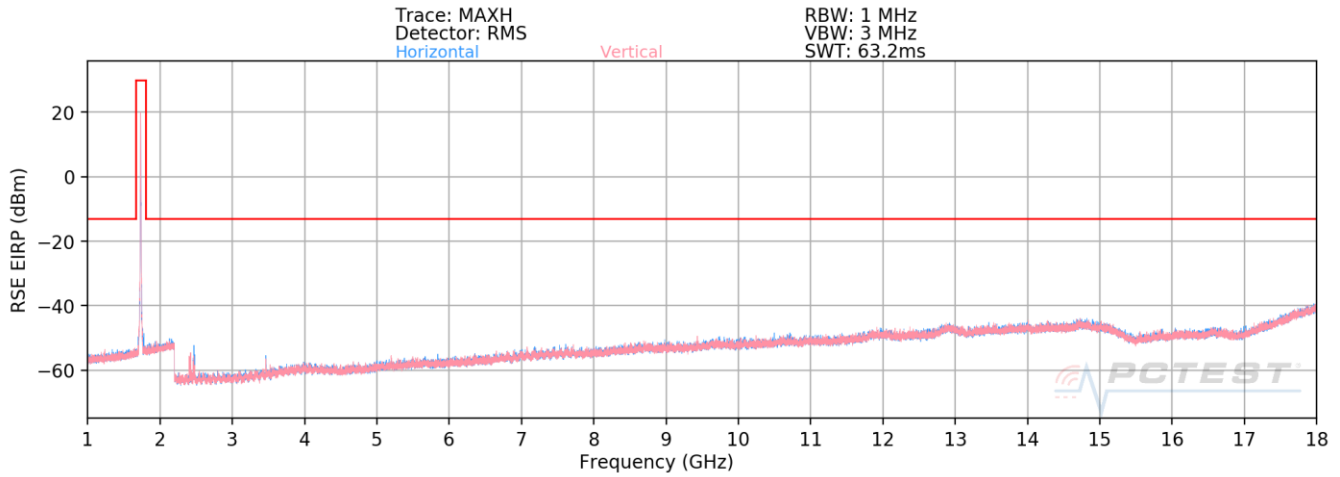
Bandwidth (MHz):	15
Frequency (MHz):	690.5
RB / Offset:	1 / 74

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1381.0	V	144	174	-71.05	-8.35	27.60	-67.66	-13.00	-54.66
2071.5	V	133	159	-59.86	-4.99	42.15	-53.11	-13.00	-40.11
2762.0	V	-	-	-76.30	-2.62	28.08	-67.17	-13.00	-54.17
3452.5	V	-	-	-77.12	-1.03	28.85	-66.40	-13.00	-53.40
4143.0	V	-	-	-77.14	1.07	30.93	-64.32	-13.00	-51.32

Table 7-18. Radiated Spurious Data (LTE Band 71 – High Channel)

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 120 of 129

WCDMA AWS



Plot 7-176. Radiated Spurious Plot (WCDMA AWS)

Mode:	WCDMA RMC
Channel:	1312
Frequency (MHz):	1712.4



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3424.8	H	100	6	-73.34	-1.19	32.47	-62.79	-13.00	-49.79
5137.2	H	100	129	-69.59	2.45	39.86	-55.40	-13.00	-42.40
6849.6	H	-	-	-78.97	6.73	34.76	-60.50	-13.00	-47.50
8562.0	H	-	-	-79.85	9.55	36.70	-58.56	-13.00	-45.56

7-19. Radiated Spurious Data (WCDMA AWS – Low Channel)

Mode:	WCDMA RMC
Channel:	1413
Frequency (MHz):	1732.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3465.2	H	101	112	-73.80	-1.09	32.11	-63.15	-13.00	-50.15
5197.8	H	100	126	-70.03	2.34	39.31	-55.95	-13.00	-42.95
6930.4	H	-	-	-78.93	7.05	35.12	-60.14	-13.00	-47.14
8663.0	H	-	-	-80.17	10.04	36.87	-58.39	-13.00	-45.39
10395.6	H	-	-	-81.61	13.04	38.43	-56.83	-13.00	-43.83



Table 7-20. Radiated Spurious Data (WCDMA AWS – Mid Channel)

FCC ID: ZNFK420TM	 PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 121 of 129

Mode:	WCDMA RMC
Channel:	1513
Frequency (MHz):	1752.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB μ V/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3505.2	H	128	113	-75.04	-0.78	31.18	-64.08	-13.00	-51.08
5257.8	H	116	127	-70.40	2.74	39.34	-55.92	-13.00	-42.92
7010.4	H	-	-	-79.01	7.08	35.07	-60.18	-13.00	-47.18
8763.0	H	-	-	-80.48	10.50	37.02	-58.24	-13.00	-45.24
10515.6	H	-	-	-81.49	12.68	38.19	-57.07	-13.00	-44.07

Table 7-21. Radiated Spurious Data (WCDMA AWS – High Channel)

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 122 of 129

7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

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

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

For Part 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

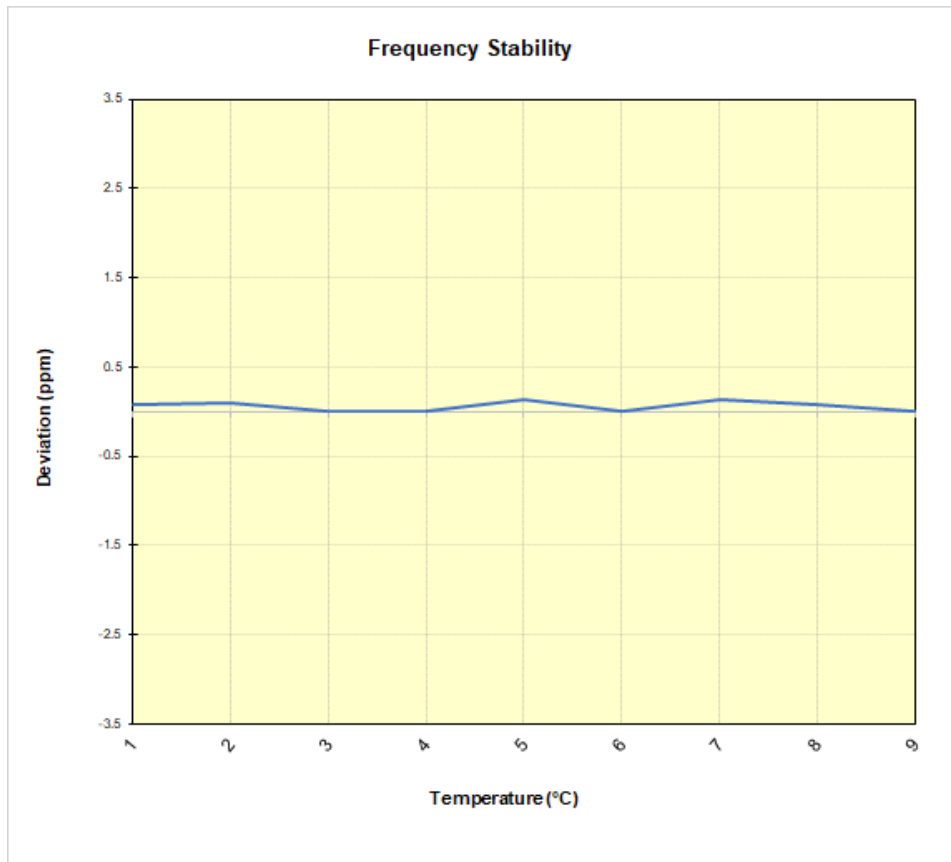
None

FCC ID: ZNFK420TM	 PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	 LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 123 of 129

Frequency Stability / Temperature Variation

LTE Band 66/4					
Operating Frequency (Hz):		1,745,000,000			
Ref. Voltage (VDC):		4.40			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.40	- 30	1,745,000,073	121	0.0000069
		- 20	1,745,000,110	158	0.0000091
		- 10	1,744,999,965	13	0.0000007
		0	1,744,999,943	-9	-0.0000005
		+ 10	1,745,000,196	244	0.0000140
		+ 20 (Ref)	1,744,999,952	0	0.0000000
		+ 30	1,745,000,192	240	0.0000138
		+ 40	1,745,000,086	134	0.0000077
Battery Endpoint	2.50	+ 20	1,745,000,002	50	0.0000029

Table 7-22. LTE Band 66/4 Frequency Stability Data



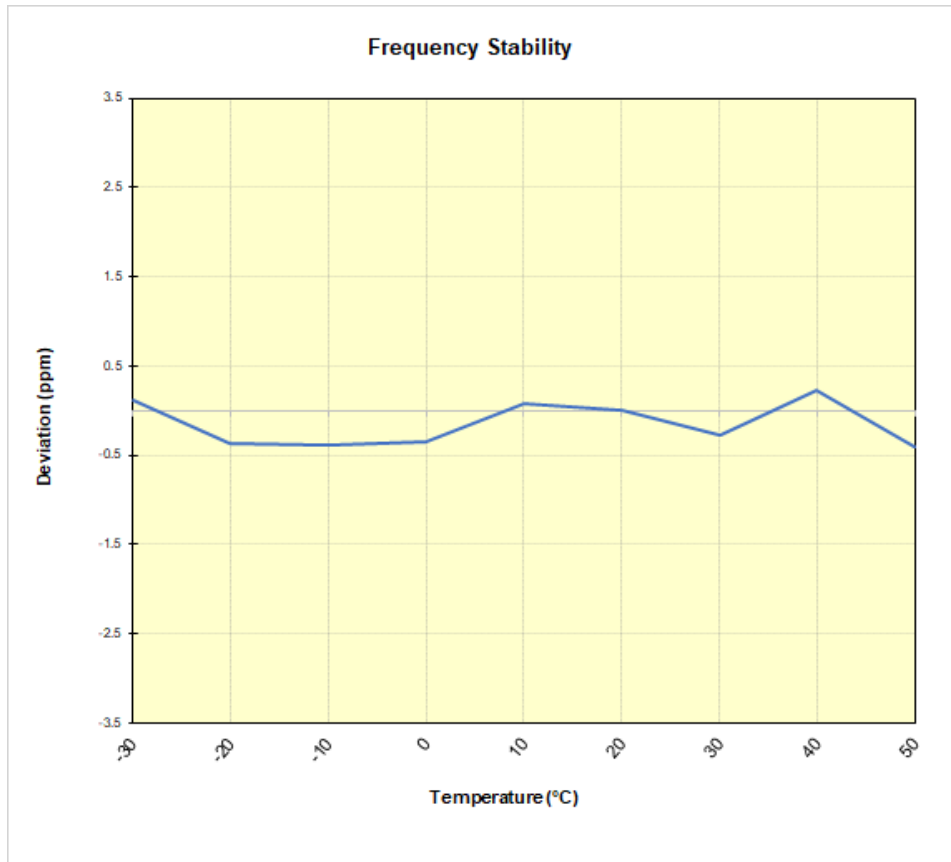
Plot 7-177. LTE Band 66/4 Frequency Stability Chart

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 124 of 129

Frequency Stability / Temperature Variation

LTE Band 12					
		Operating Frequency (Hz):		707,500,000	
		Ref. Voltage (VDC):		4.40	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.40	- 30	707,500,263	76	0.0000107
		- 20	707,499,925	-262	-0.0000370
		- 10	707,499,915	-272	-0.0000384
		0	707,499,942	-245	-0.0000346
		+ 10	707,500,236	49	0.0000069
		+ 20 (Ref)	707,500,187	0	0.0000000
		+ 30	707,499,997	-190	-0.0000269
		+ 40	707,500,352	165	0.0000233
Battery Endpoint	2.50	+ 20	707,499,756	-431	-0.0000609

Table 7-23. LTE Band 12 Frequency Stability Data



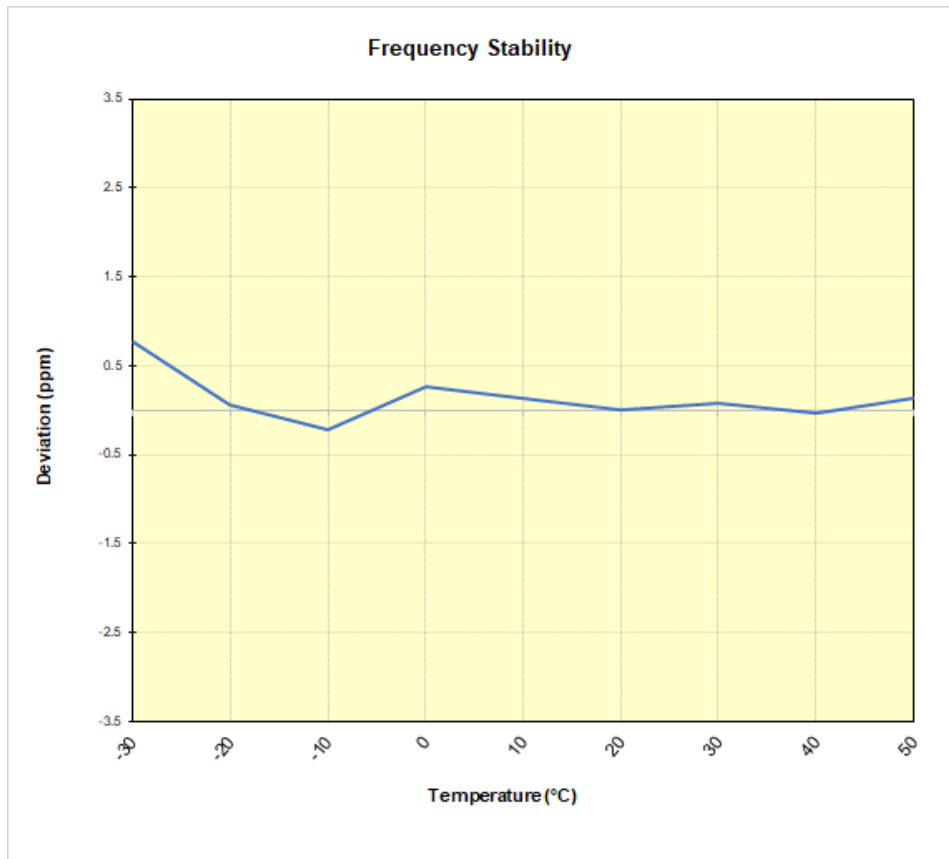
Plot 7-178. LTE Band 12 Frequency Stability Chart

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 125 of 129

Frequency Stability / Temperature Variation

LTE Band 13					
Operating Frequency (Hz):		782,000,000			
Ref. Voltage (VDC):		4.40			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.40	- 30	782,000,463	593	0.0000758
		- 20	781,999,915	45	0.0000058
		- 10	781,999,693	-177	-0.0000226
		0	782,000,072	202	0.0000258
		+ 10	781,999,971	101	0.0000129
		+ 20 (Ref)	781,999,870	0	0.0000000
		+ 30	781,999,930	60	0.0000077
		+ 40	781,999,839	-31	-0.0000040
Battery Endpoint	2.50	+ 20	782,000,055	185	0.0000237

Table 7-24. LTE Band 13 Frequency Stability Data



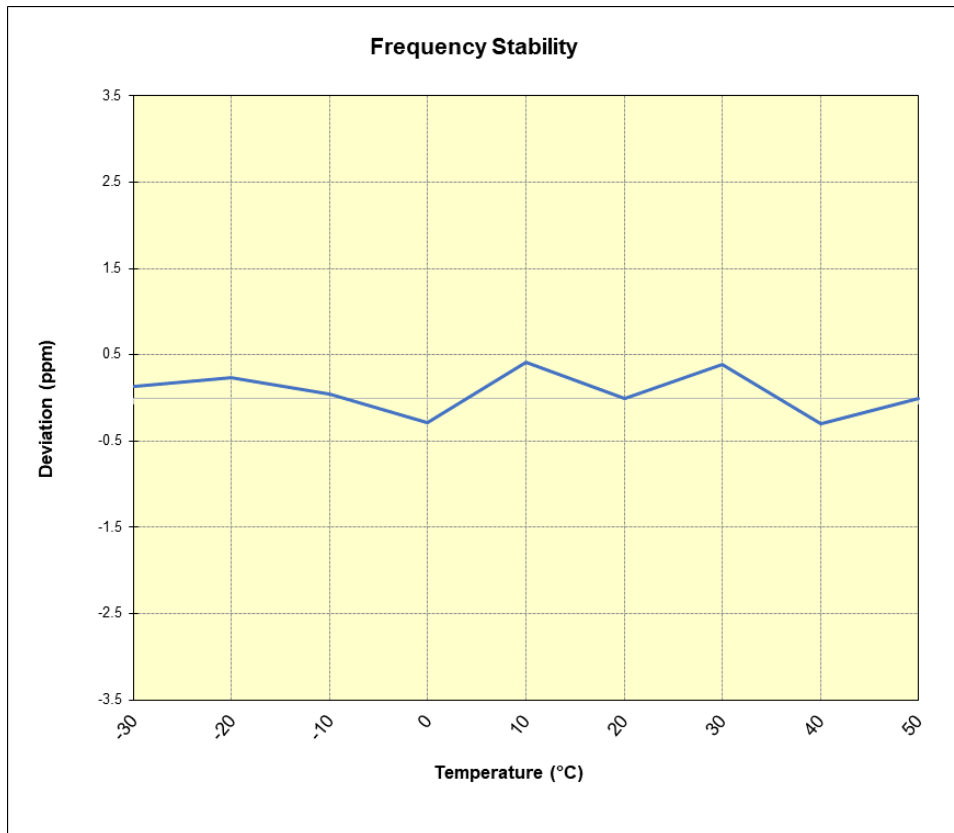
Plot 7-179. LTE Band 13 Frequency Stability Chart

Frequency Stability / Temperature Variation

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 126 of 129	

LTE Band 71					
		Operating Frequency (Hz):		680,500,000	
		Ref. Voltage (VDC):		4.40	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.40	- 30	680,500,006	92	0.0000135
		- 20	680,500,073	159	0.0000234
		- 10	680,499,941	27	0.0000040
		0	680,499,720	-194	-0.0000285
		+ 10	680,500,197	283	0.0000416
		+ 20 (Ref)	680,499,914	0	0.0000000
		+ 30	680,500,175	261	0.0000384
		+ 40	680,499,713	-201	-0.0000295
Battery Endpoint	2.50	+ 20	680,500,171	257	0.0000378

Table 7-25. LTE Band 71 Frequency Stability Data



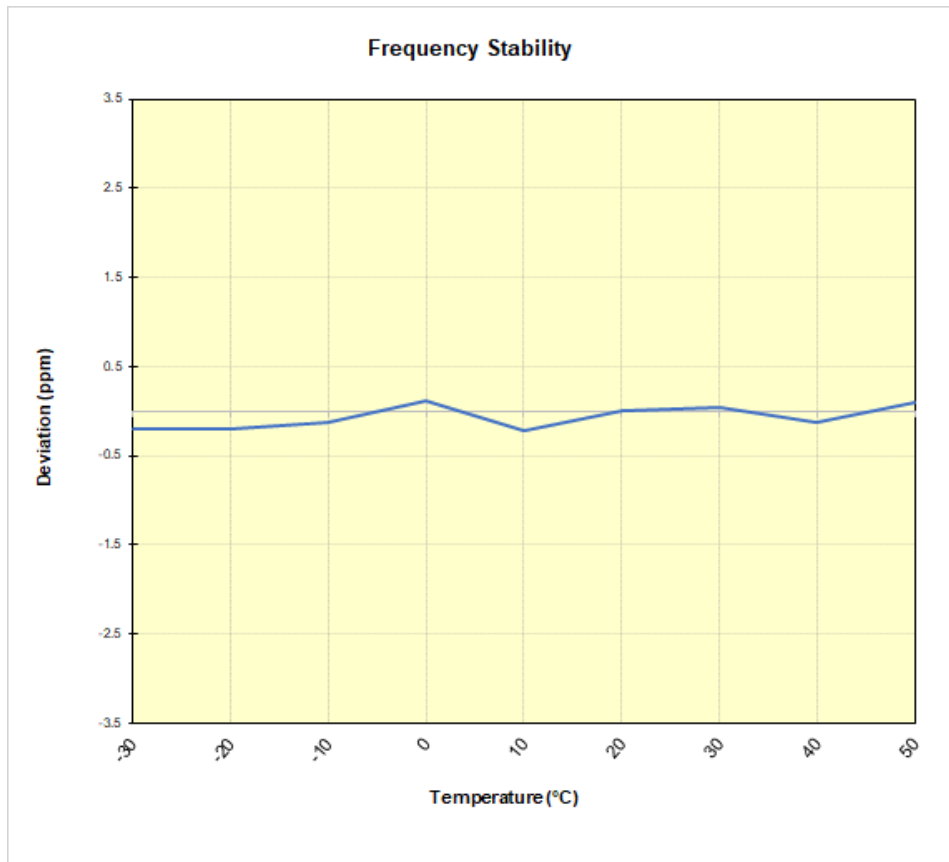
Plot 7-180. LTE Band 71 Frequency Stability Chart

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 127 of 129

Frequency Stability / Temperature Variation

WCDMA AWS					
Operating Frequency (Hz):		1,732,600,000			
Ref. Voltage (VDC):		4.40			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.40	- 30	1,732,599,865	-343	-0.0000198
		- 20	1,732,599,847	-361	-0.0000208
		- 10	1,732,599,998	-210	-0.0000121
		0	1,732,600,412	204	0.0000118
		+ 10	1,732,599,837	-371	-0.0000214
		+ 20 (Ref)	1,732,600,208	0	0.0000000
		+ 30	1,732,600,270	62	0.0000036
		+ 40	1,732,599,992	-216	-0.0000125
Battery Endpoint	2.50	+ 20	1,732,600,094	-114	-0.0000066

Table 7-26. WCDMA AWS Frequency Stability Data





Plot 7-181. WCDMA AWS Frequency Stability Chart

FCC ID: ZNFK420TM	PCTEST Proud to be part of element	PART 27 MEASUREMENT REPORT	LG	Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset		Page 128 of 129

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFK420TM** complies with all the requirements of Part 27 of the FCC rules.

FCC ID: ZNFK420TM	 PART 27 MEASUREMENT REPORT 		Approved by: Technical Manager
Test Report S/N: 1M2011180184-14.ZNF	Test Dates: 12/1 – 1/8/2021	EUT Type: Portable Handset	Page 129 of 129