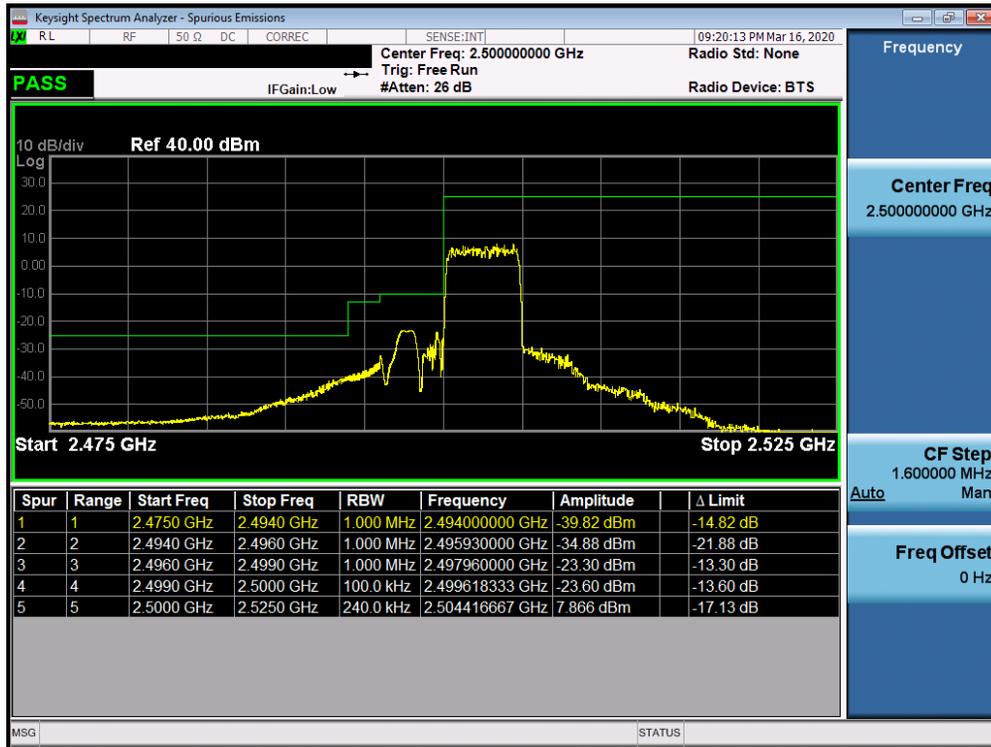
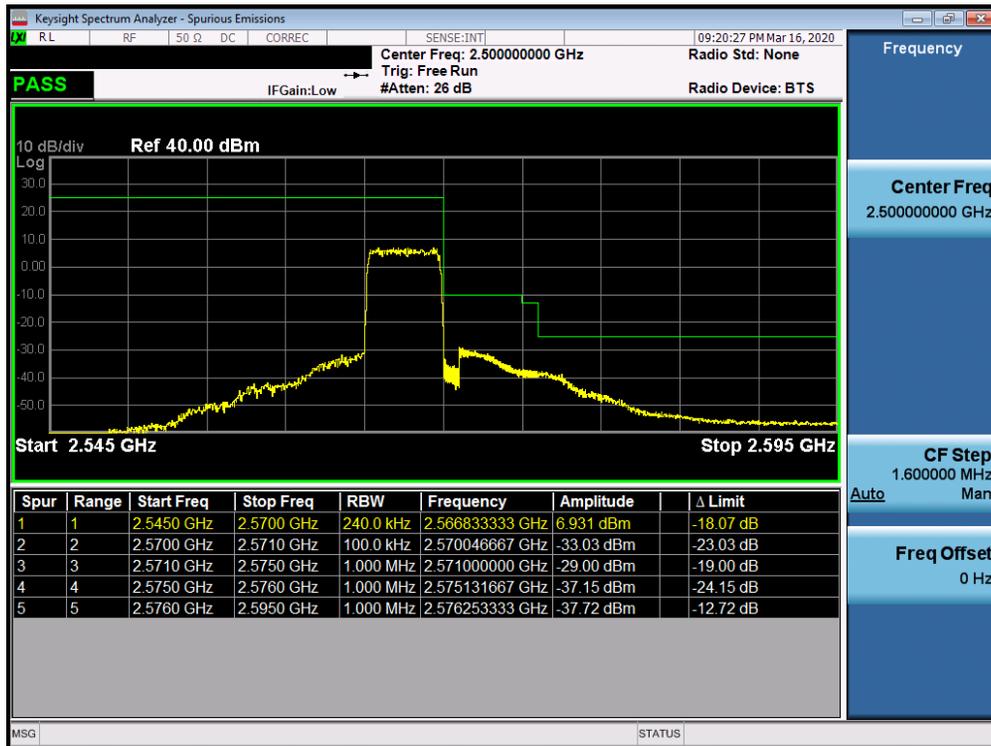


## Band 7

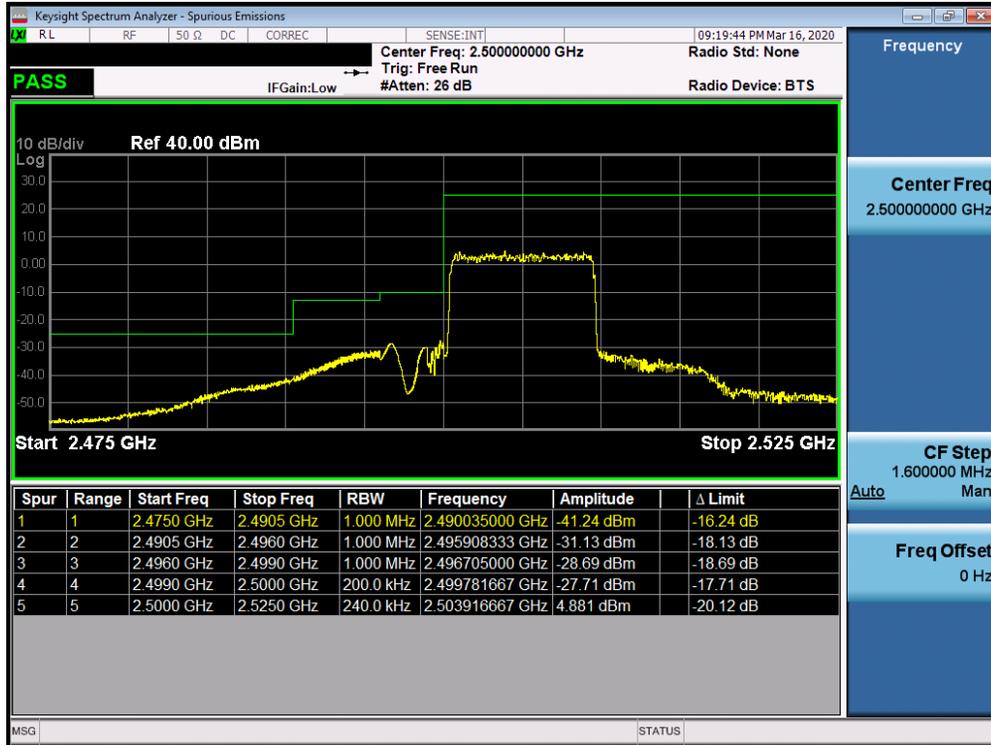


Plot 7-225. Lower ACP Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)

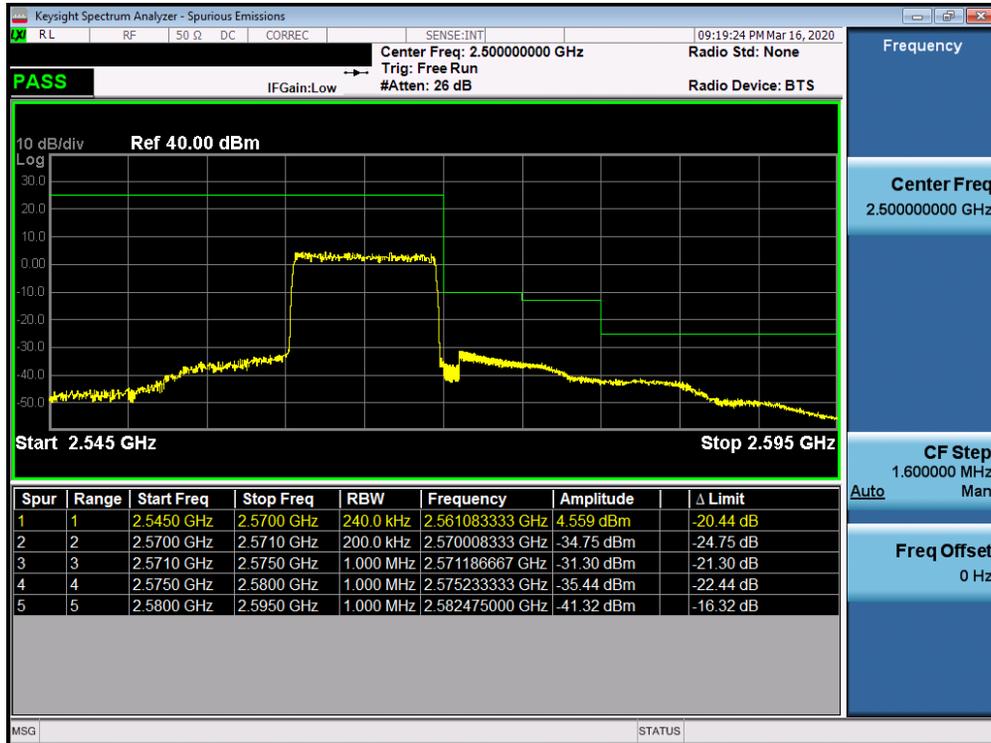


Plot 7-226. Upper ACP Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 133 of 211

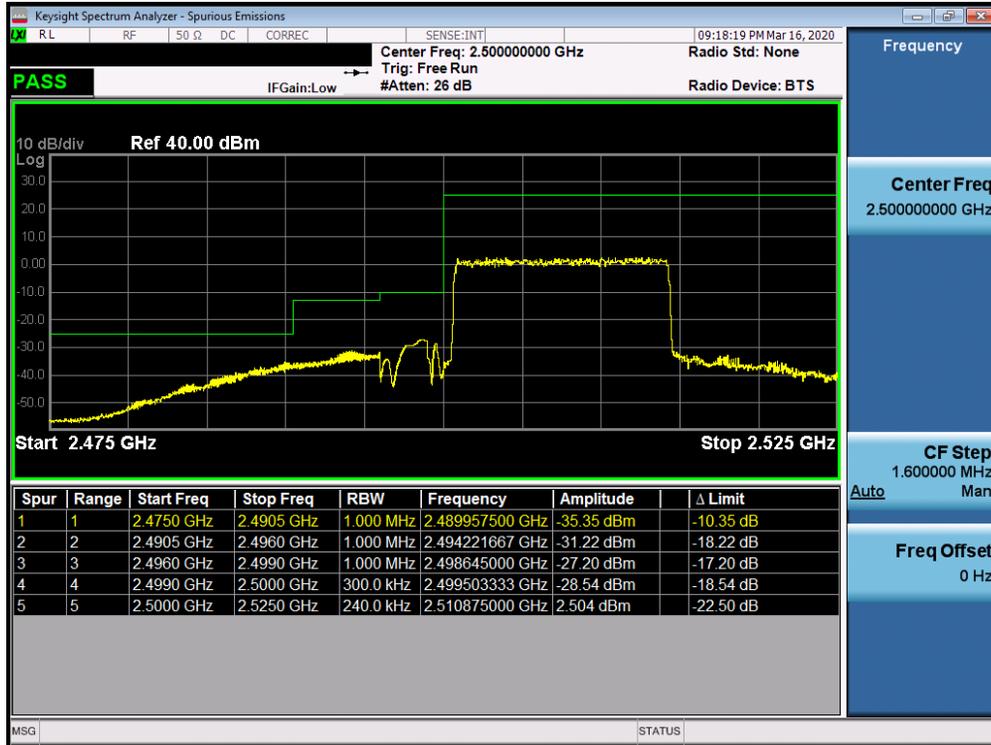


Plot 7-227. Lower ACP Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)

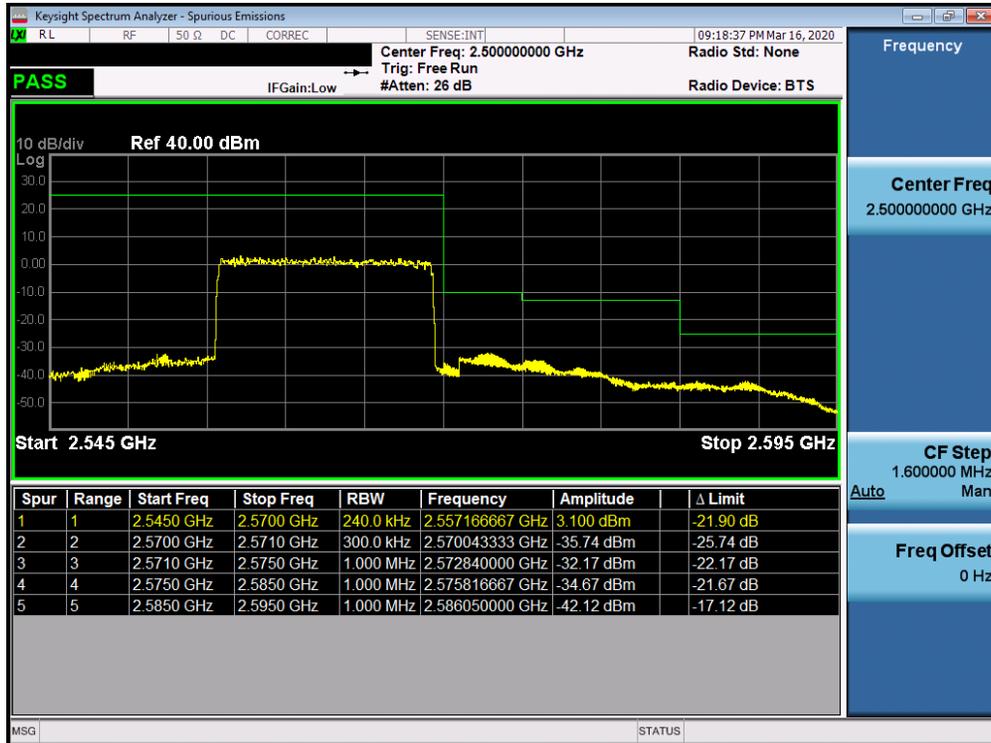


Plot 7-228. Upper ACP Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 134 of 211



Plot 7-229. Lower ACP Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)

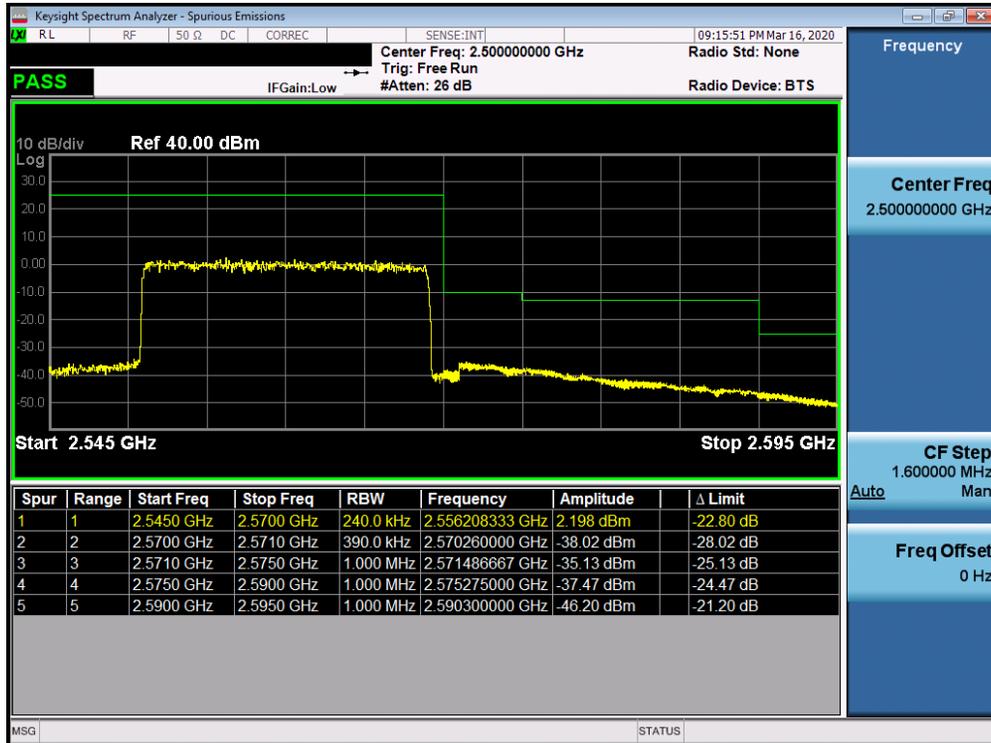


Plot 7-230. Upper ACP Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 135 of 211



Plot 7-231. Lower ACP Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-232. Upper ACP Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 136 of 211

## 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.

### Test Setup

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

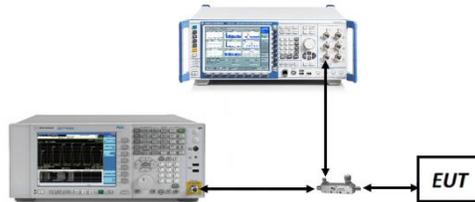


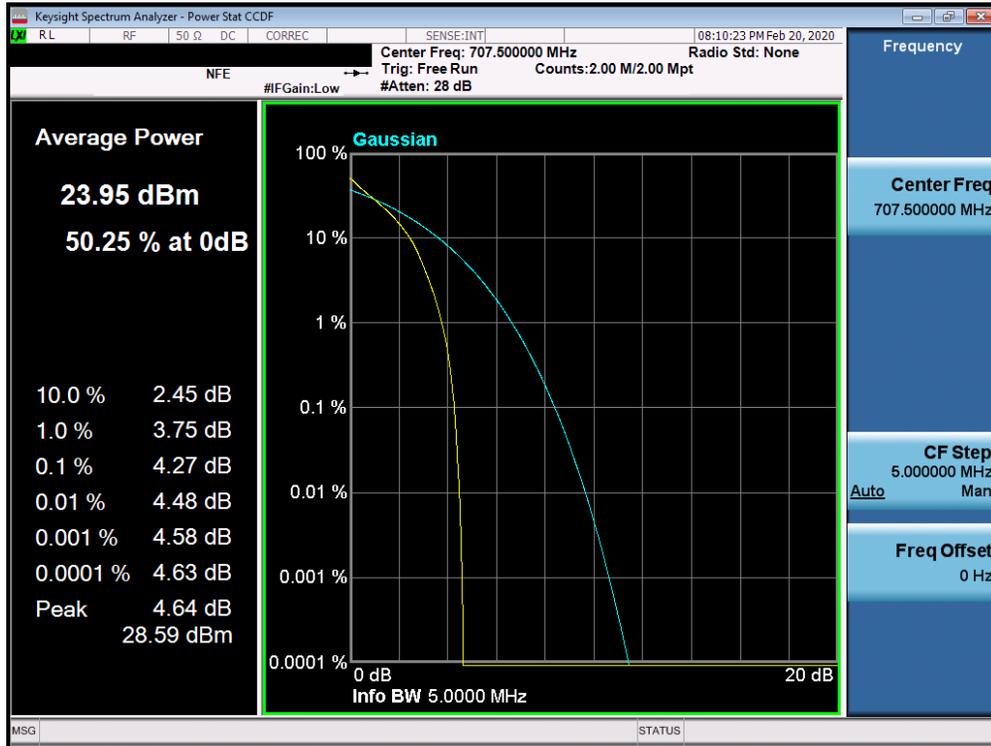
Figure 7-4. Test Instrument & Measurement Setup

### Test Notes

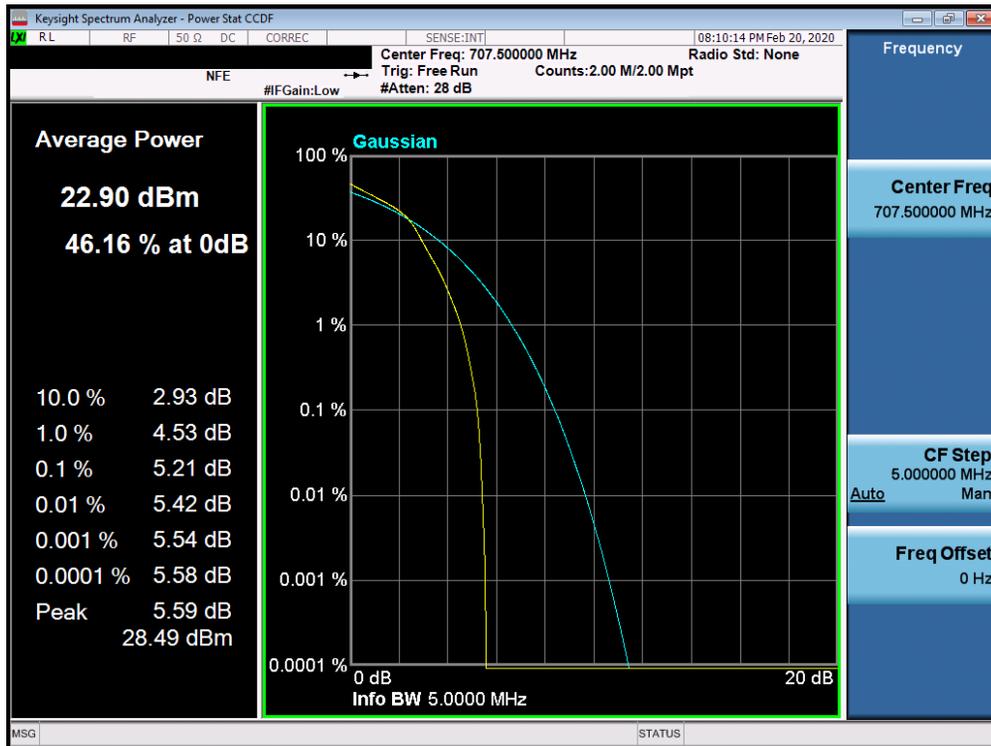
None.

FCC ID: ZNFK300UM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 137 of 211

**Band 12/17**

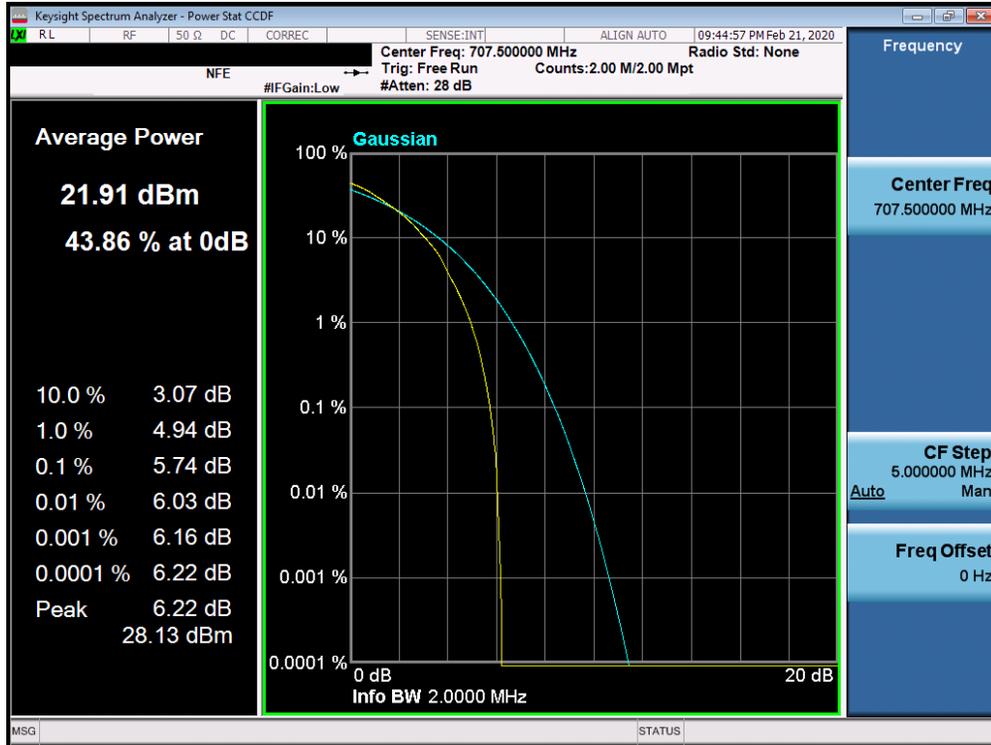


**Plot 7-233. PAR Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)**

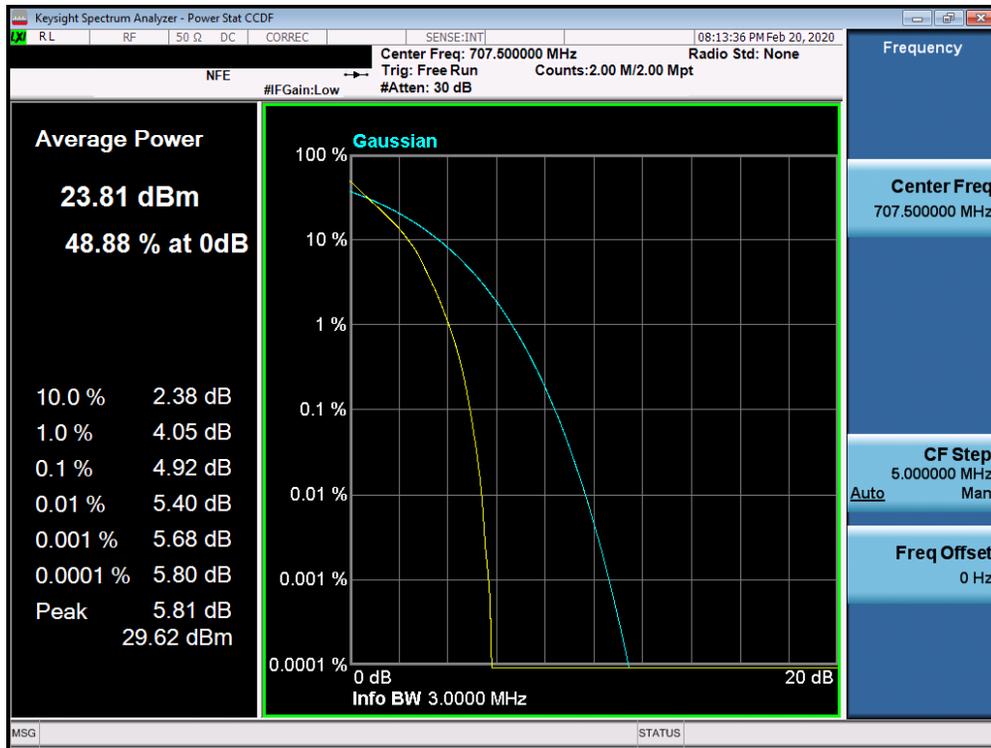


**Plot 7-234. PAR Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 138 of 211

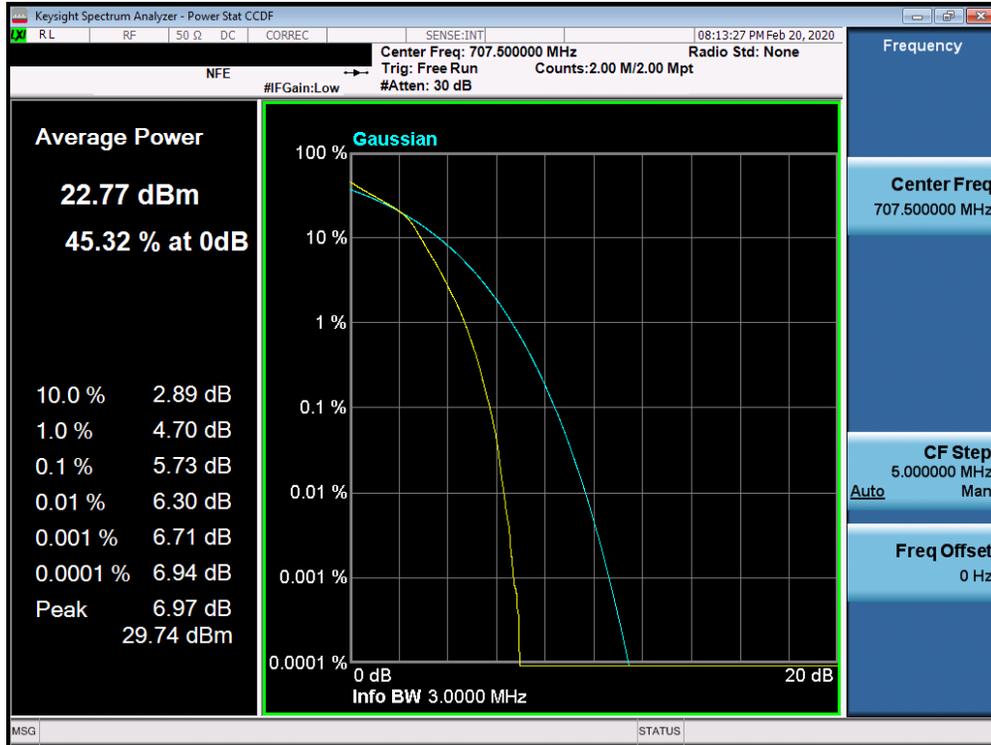


Plot 7-235. PAR Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)

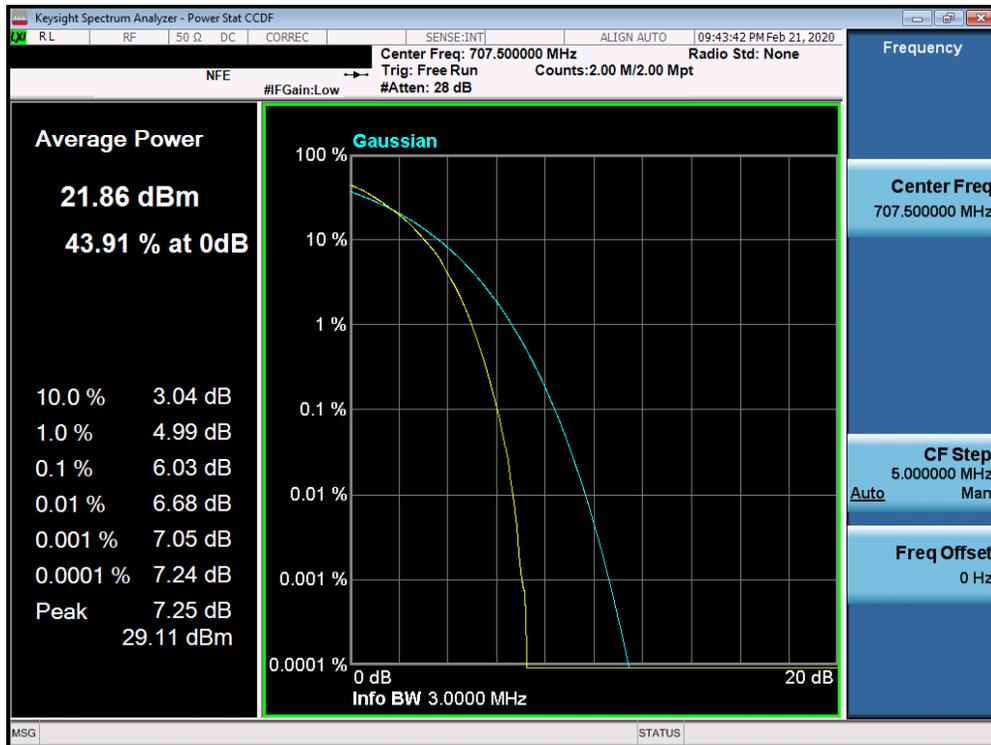


Plot 7-236. PAR Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 139 of 211

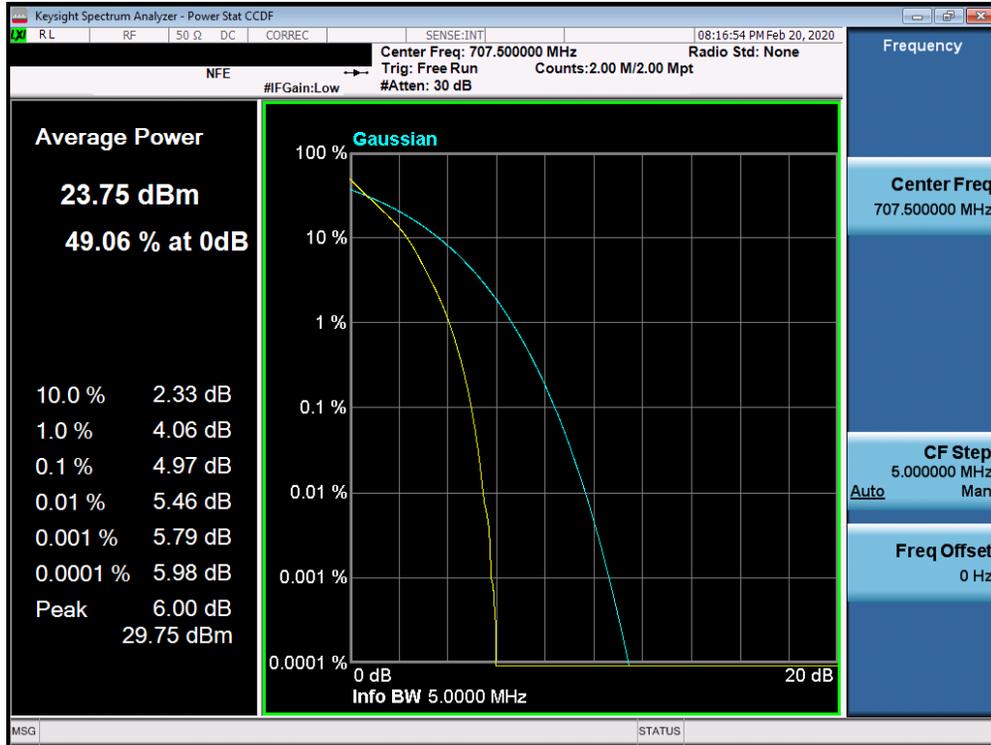


Plot 7-237. PAR Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

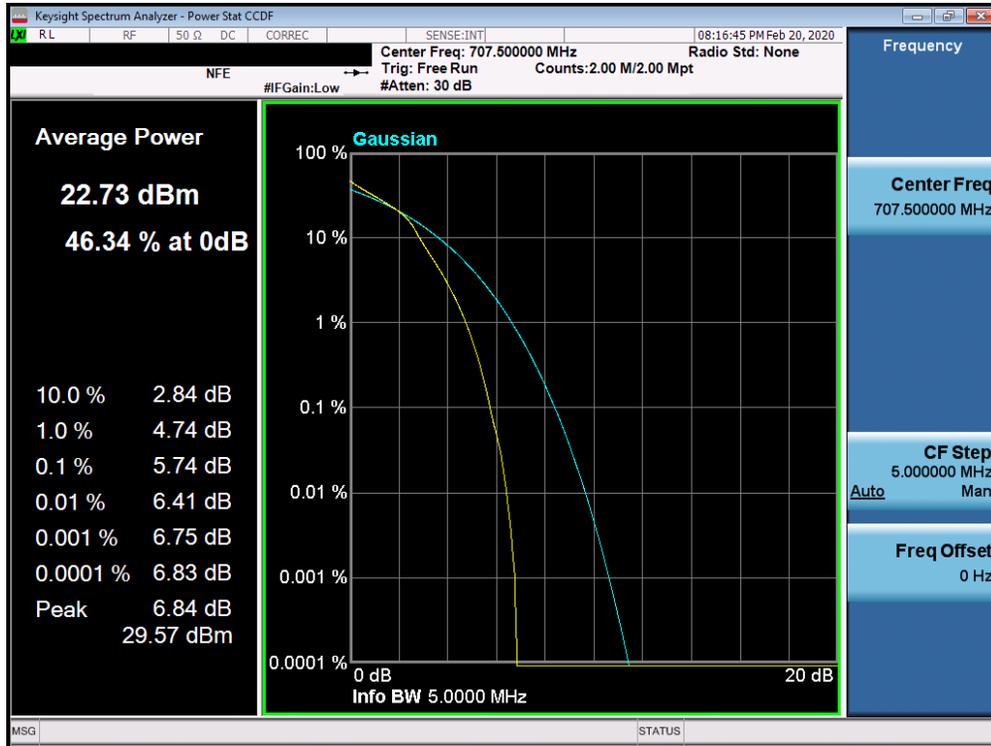


Plot 7-238. PAR Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 140 of 211

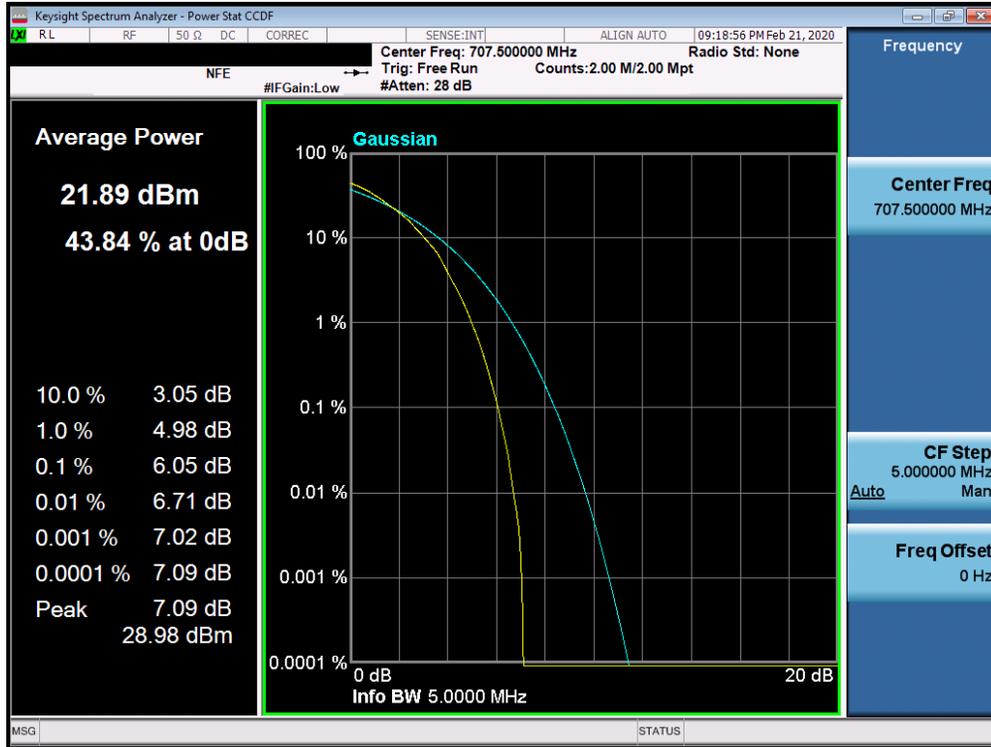


**Plot 7-239. PAR Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)**

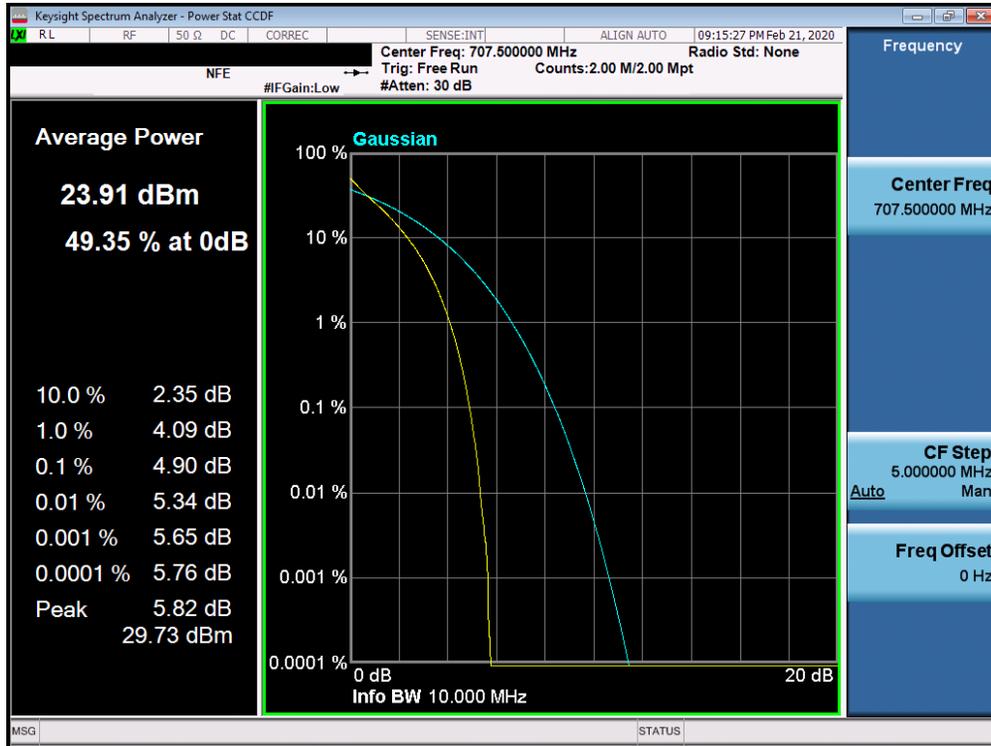


**Plot 7-240. PAR Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 141 of 211

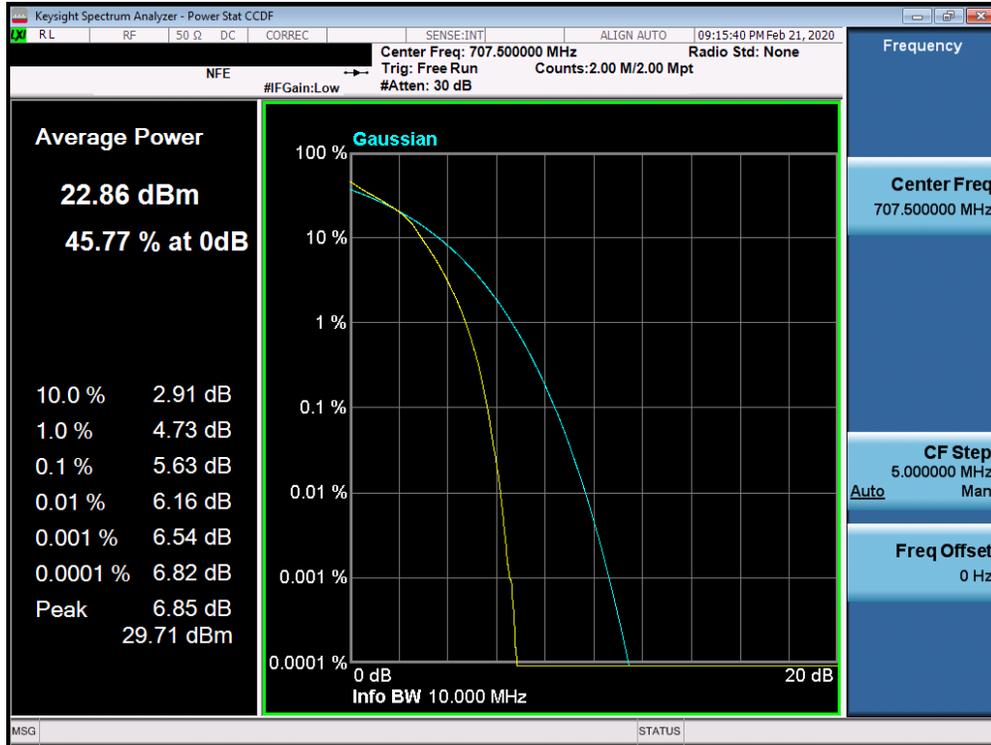


Plot 7-241. PAR Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)

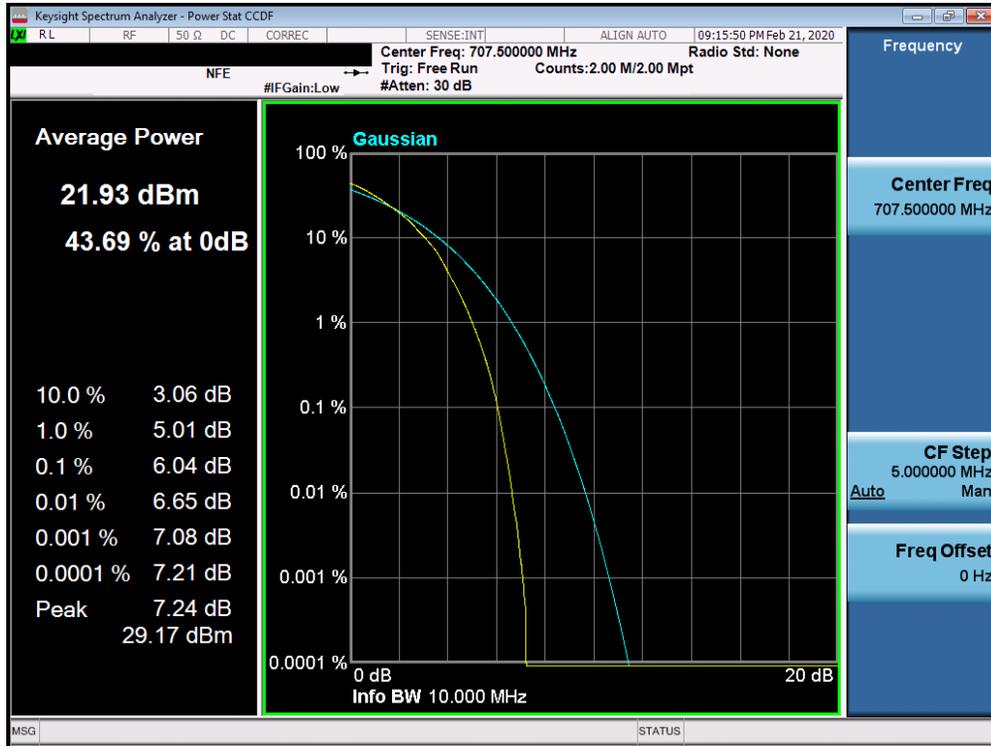


Plot 7-242. PAR Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 142 of 211



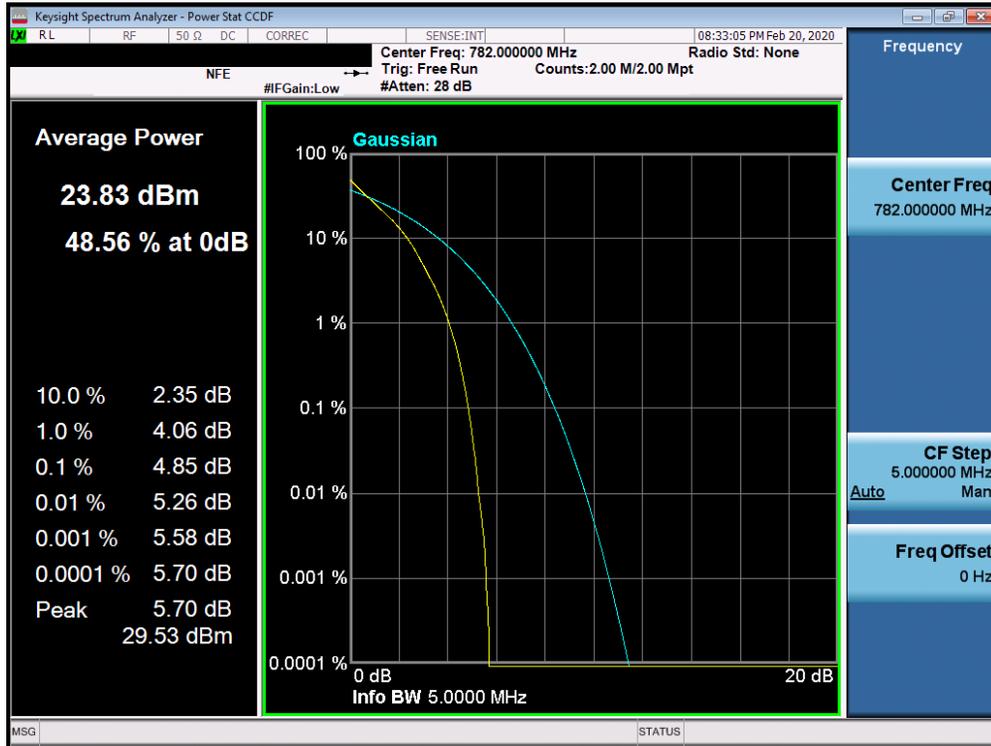
Plot 7-243. PAR Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)



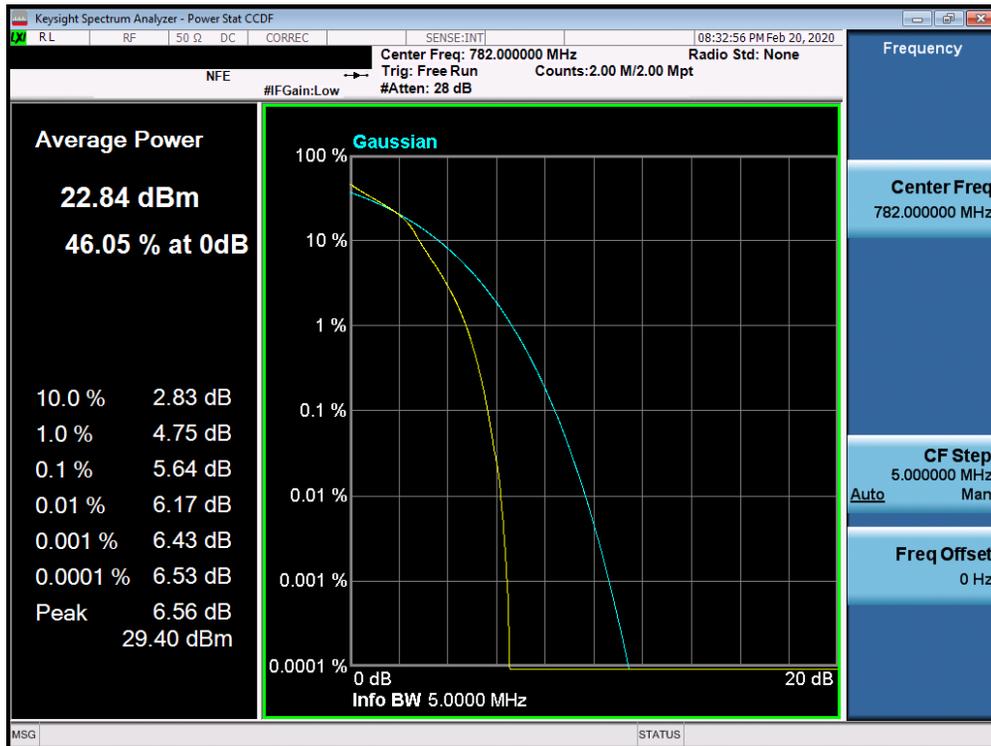
Plot 7-244. PAR Plot (Band 12/17 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 143 of 211

### Band 13

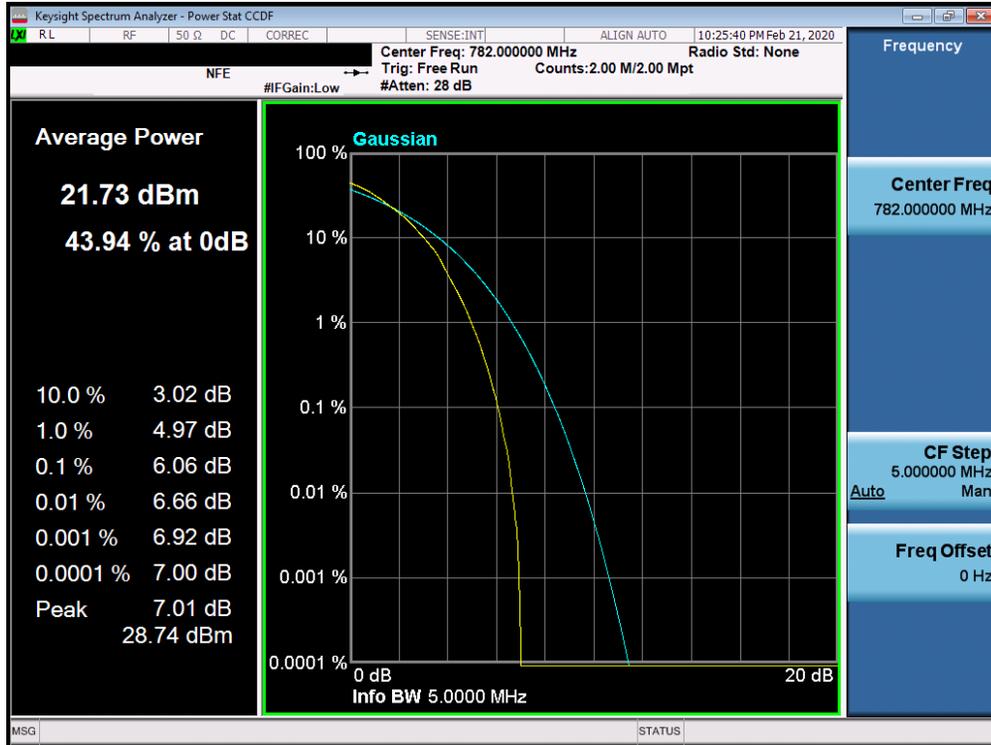


**Plot 7-245. PAR Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)**

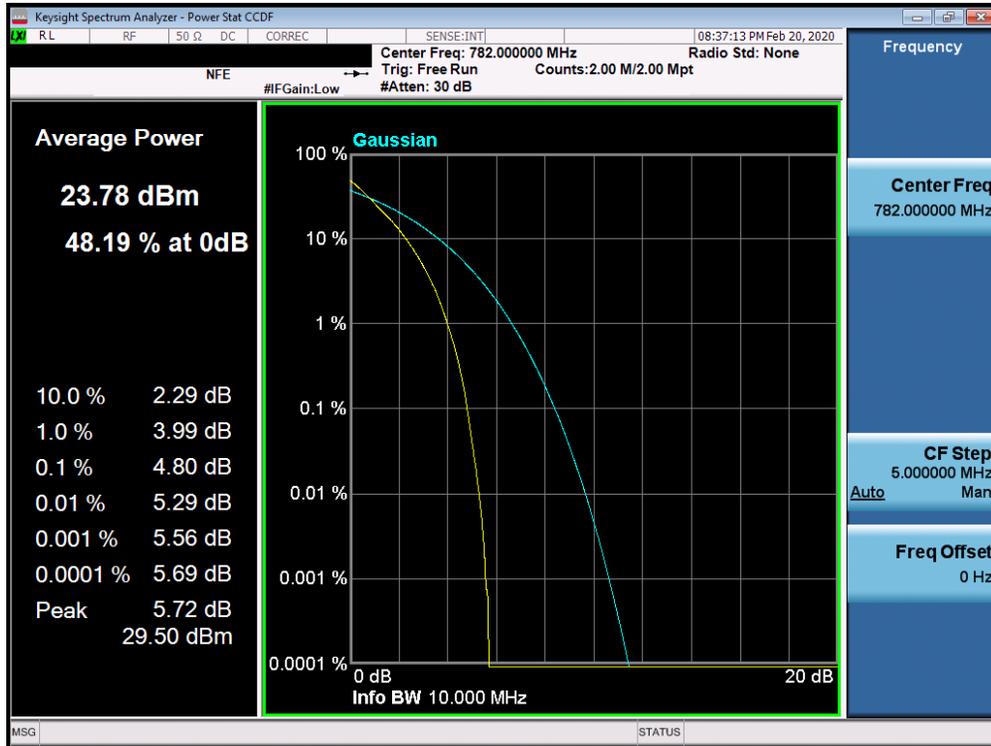


**Plot 7-246. PAR Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 144 of 211

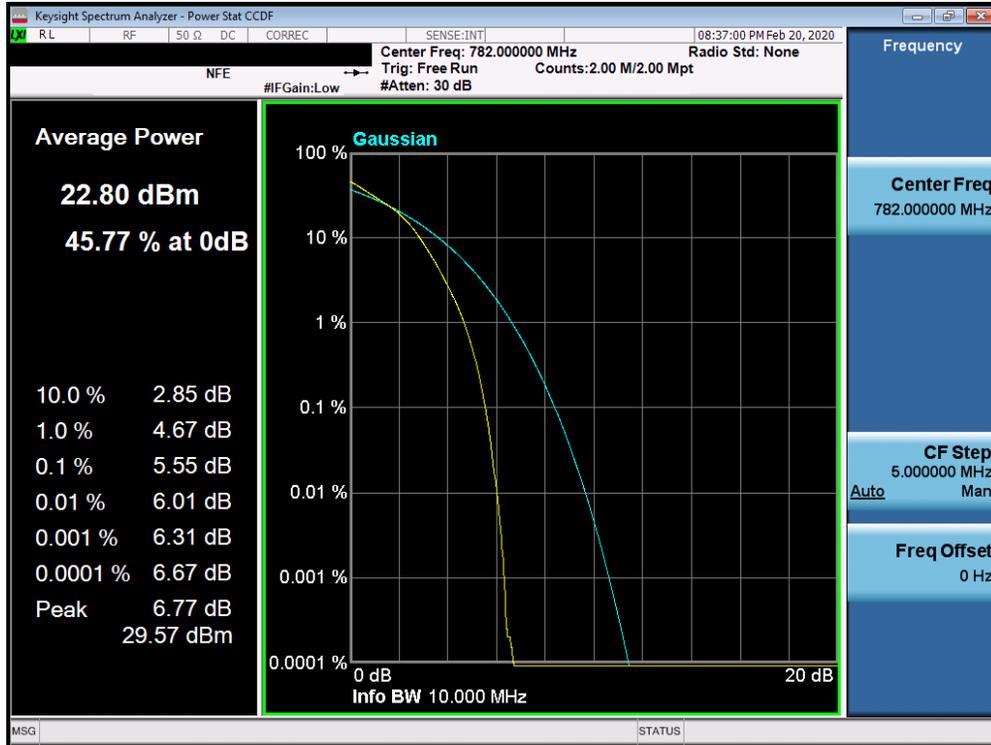


Plot 7-247. PAR Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

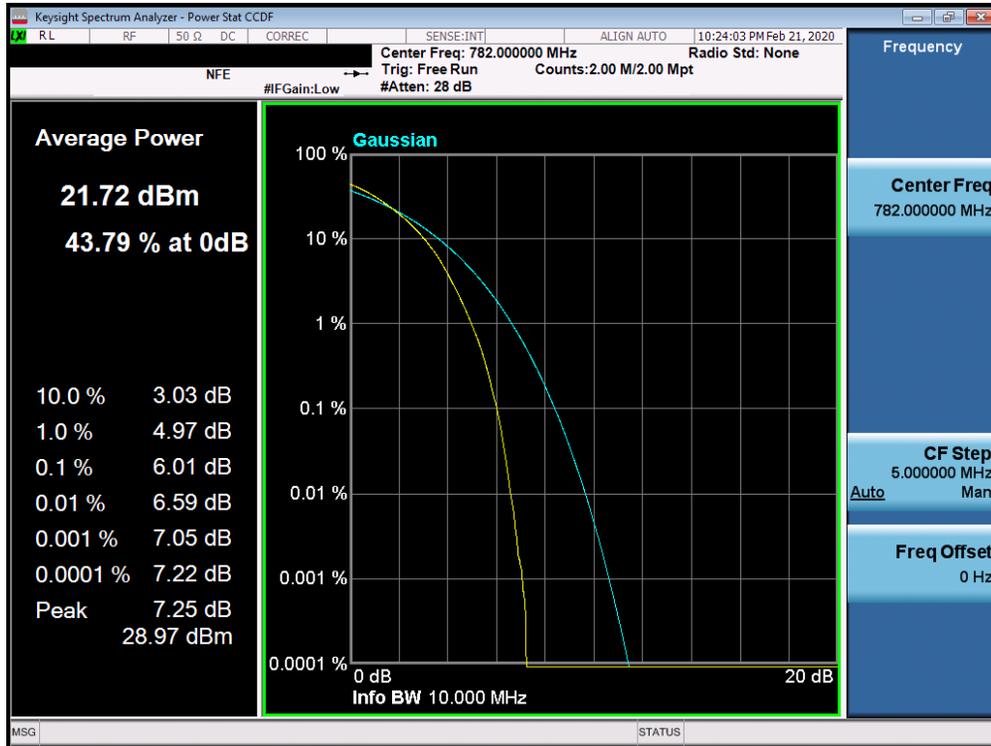


Plot 7-248. PAR Plot (Band 13- 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 145 of 211



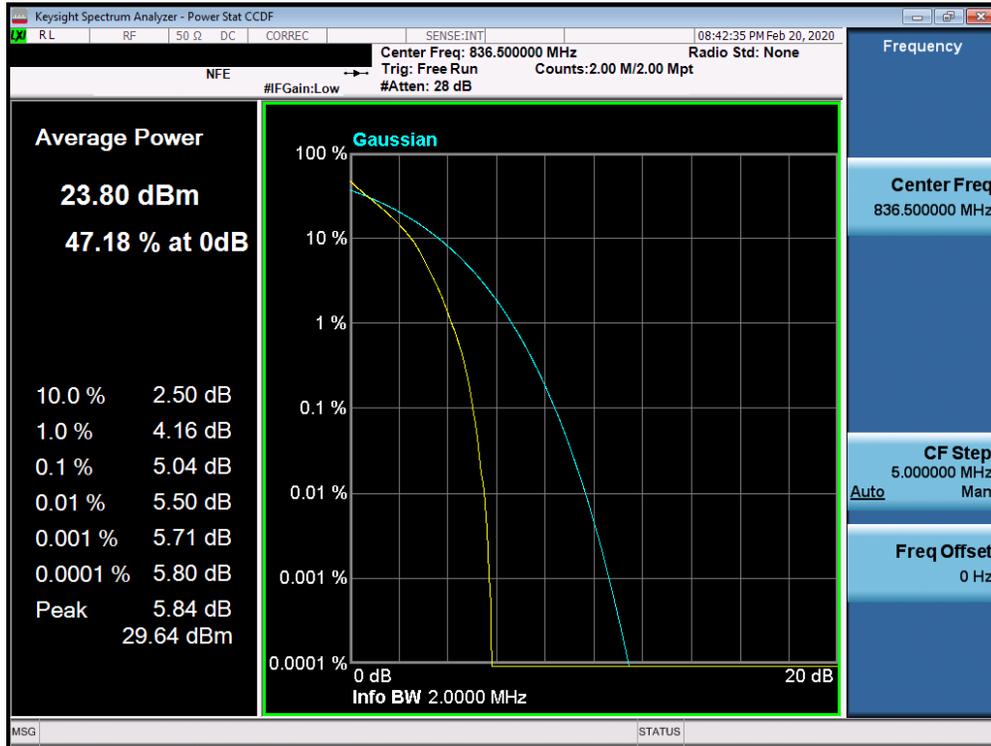
Plot 7-249. PAR Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)



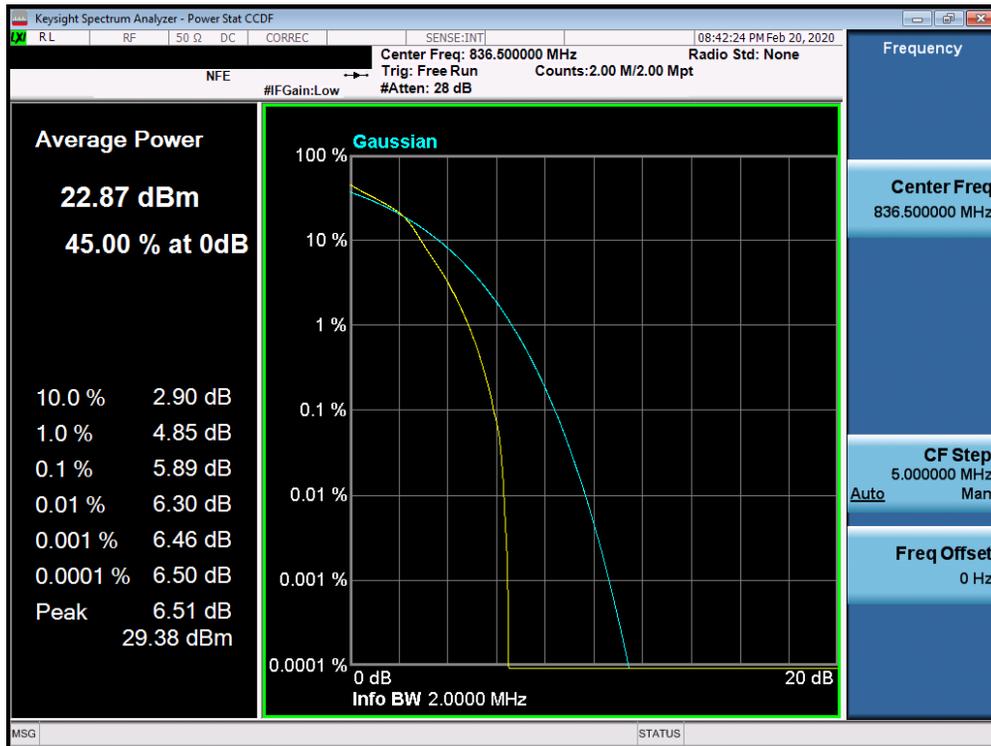
Plot 7-250. PAR Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 146 of 211

**Band 5**

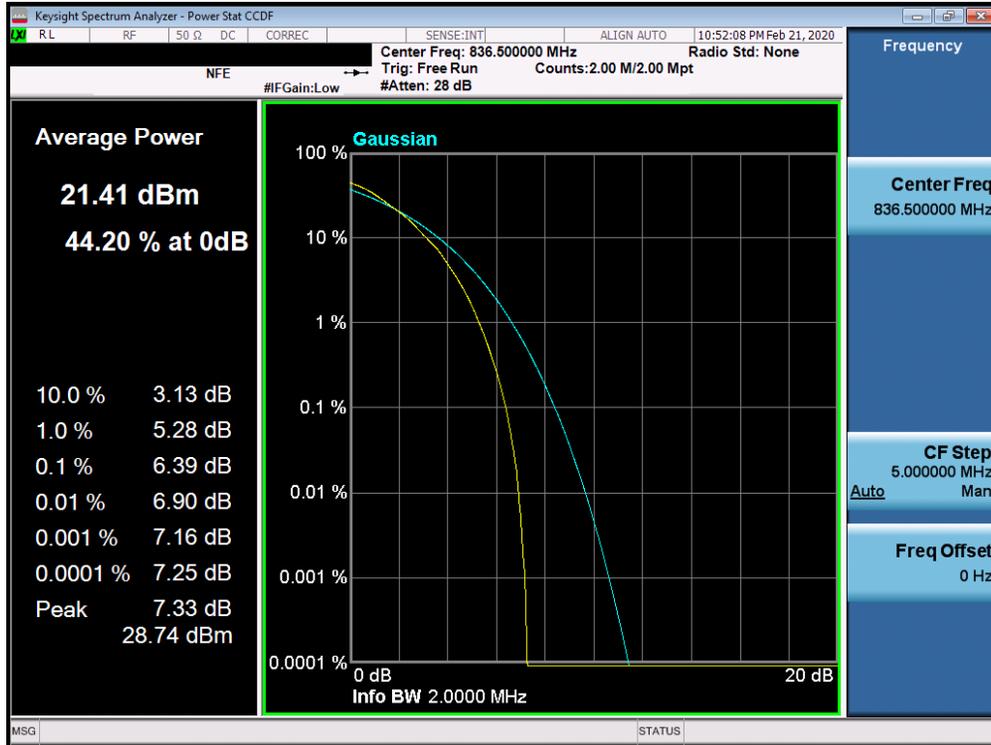


**Plot 7-251. PAR Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)**

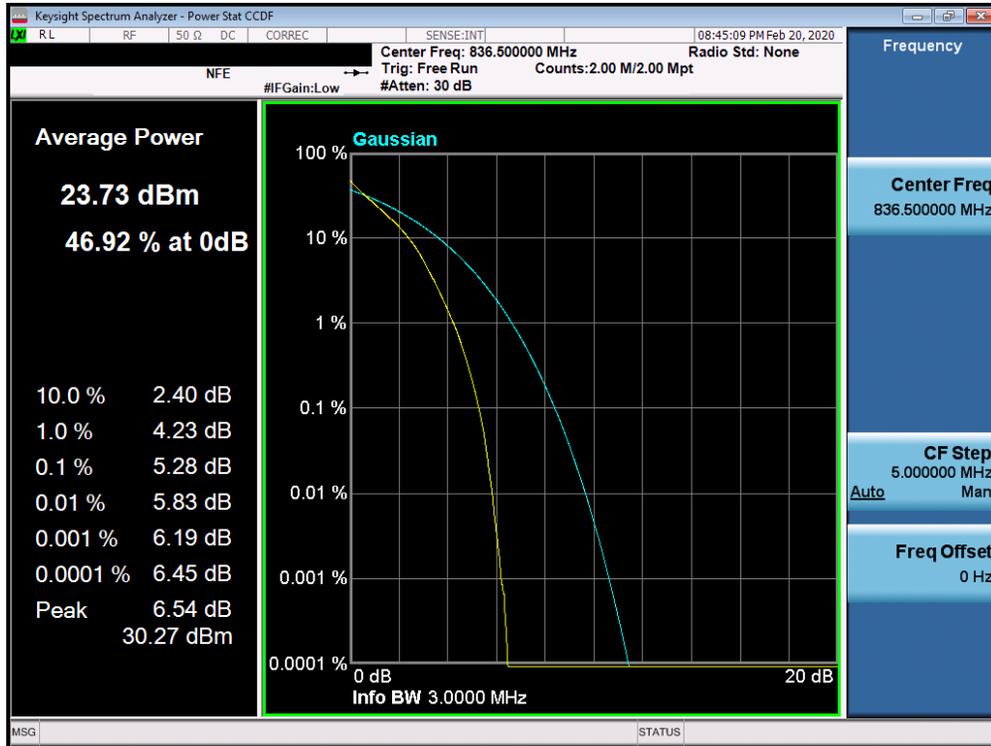


**Plot 7-252. PAR Plot (Band 5 - 1.4MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 147 of 211

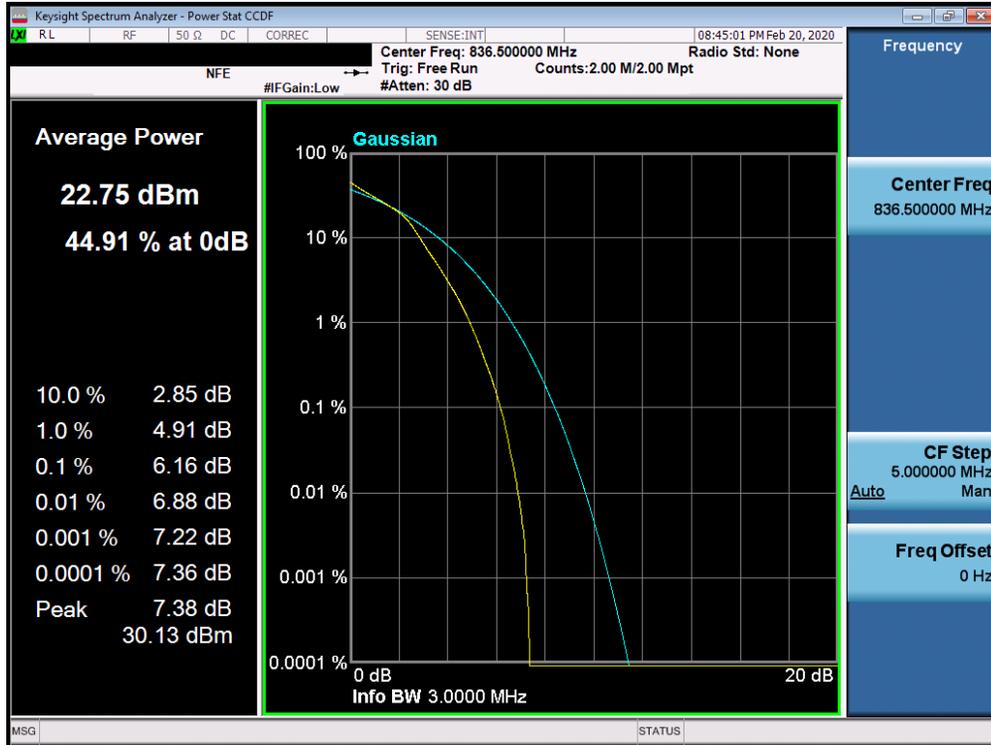


Plot 7-253. PAR Plot (Band 5 - 1.4MHz 64-QAM - Full RB Configuration)

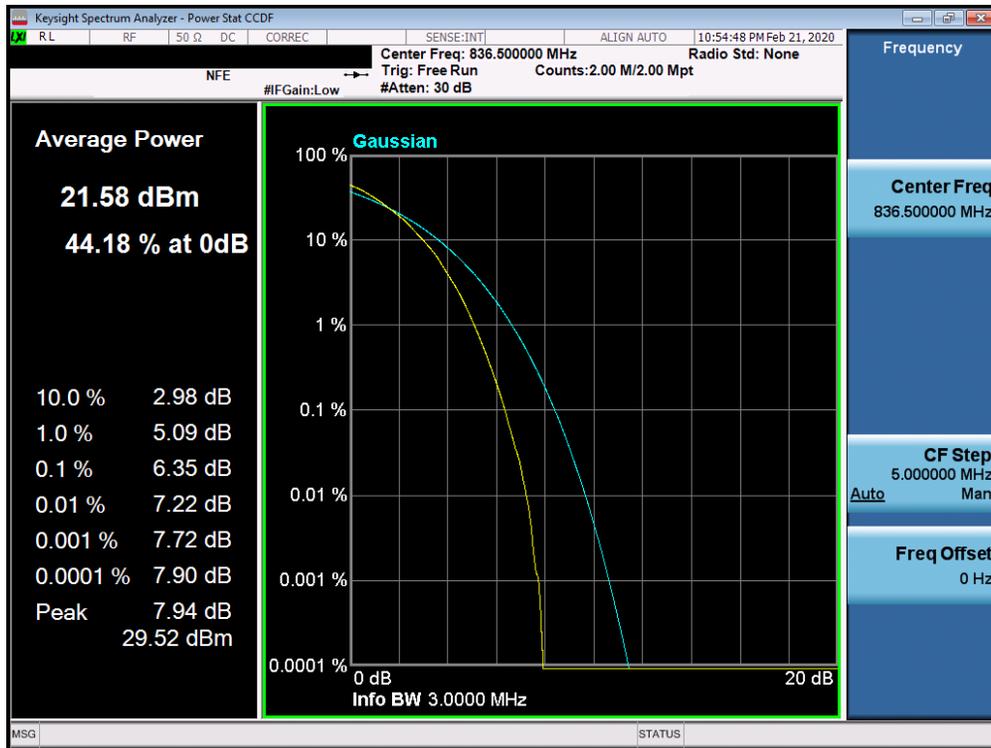


Plot 7-254. PAR Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 148 of 211

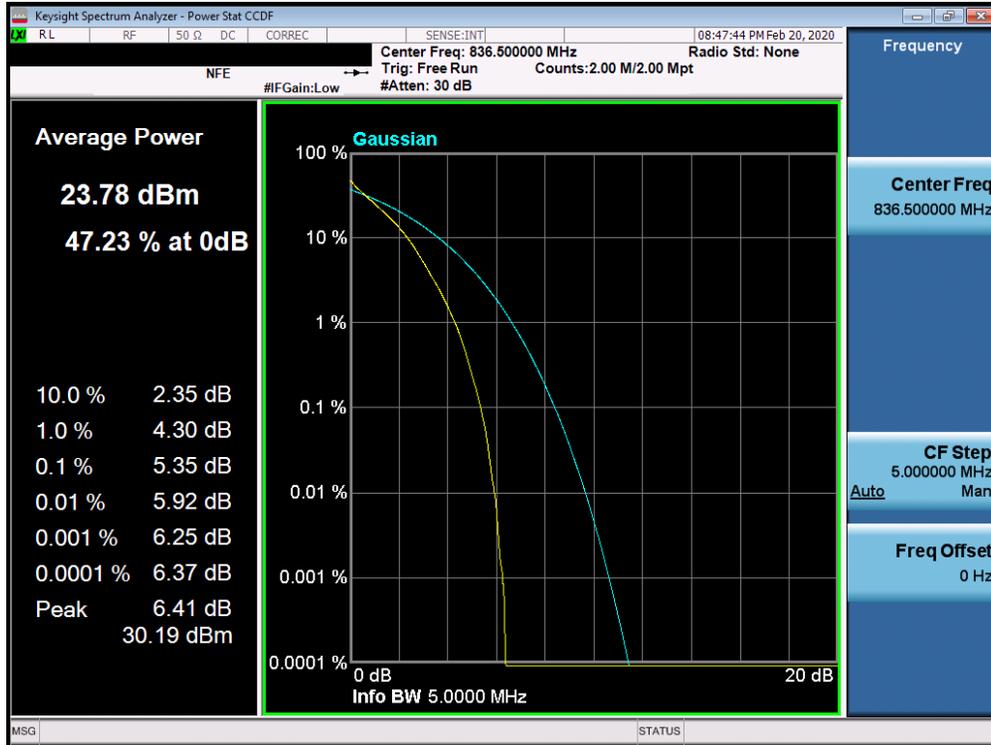


Plot 7-255. PAR Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)

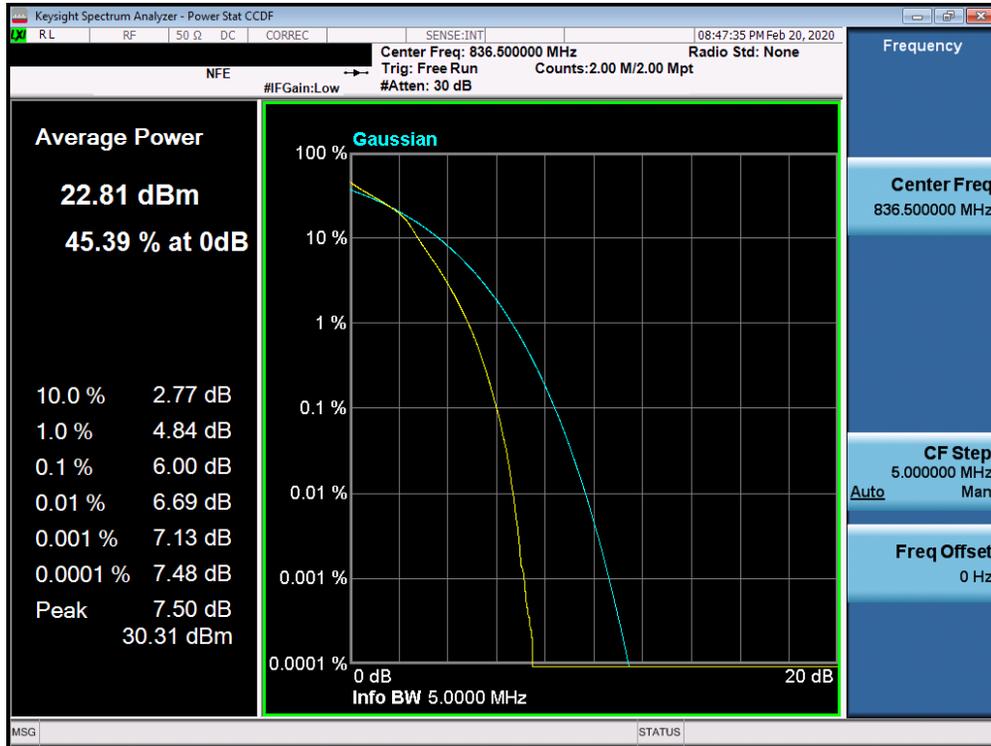


Plot 7-256. PAR Plot (Band 5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 149 of 211

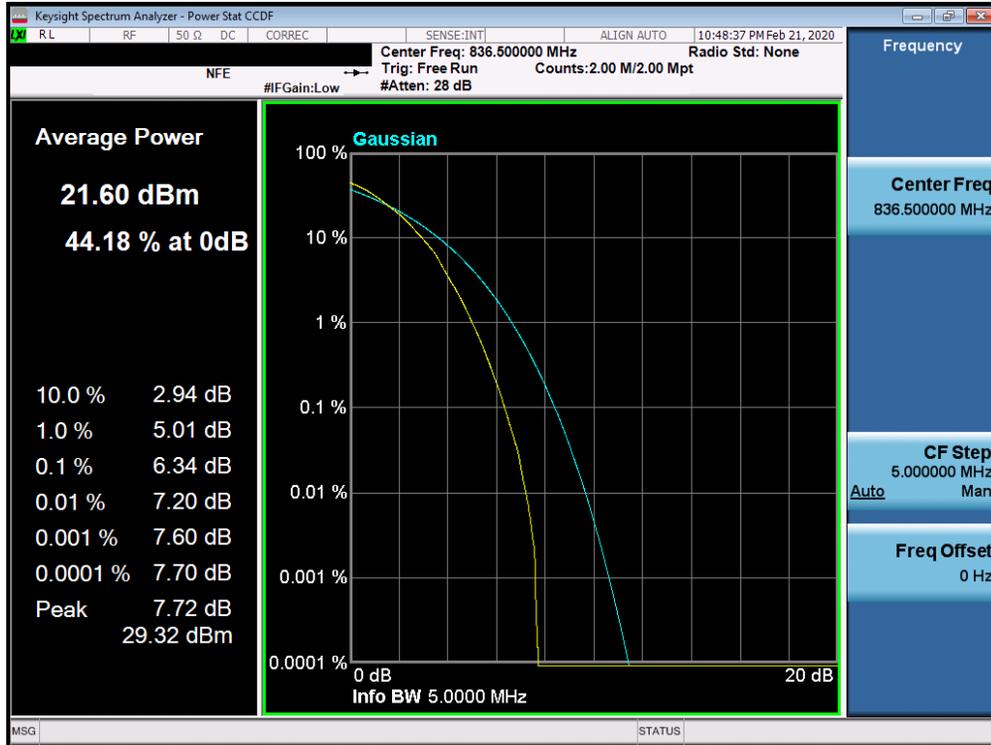


Plot 7-257. PAR Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)

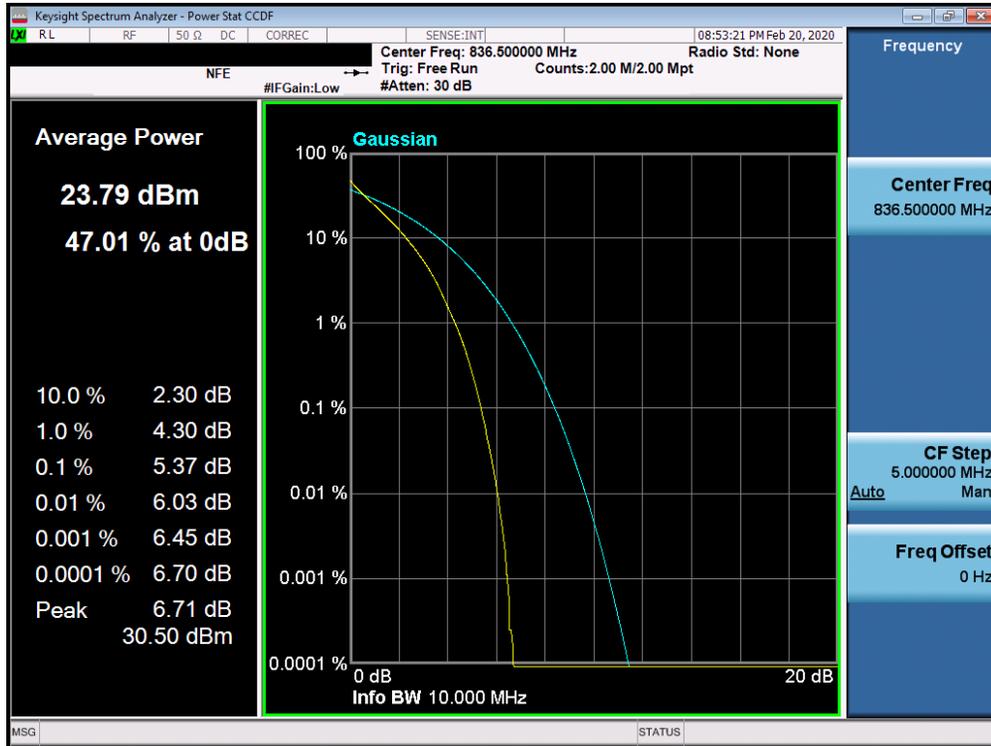


Plot 7-258. PAR Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 150 of 211

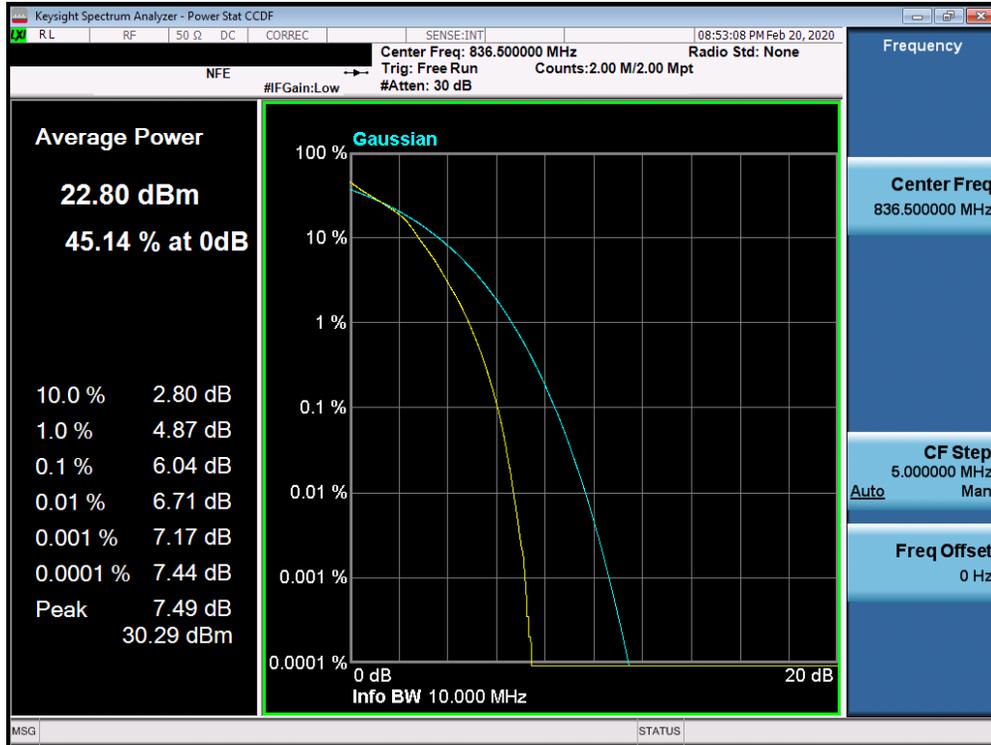


**Plot 7-259. PAR Plot (Band 5 - 5.0MHz 64-QAM - Full RB Configuration)**

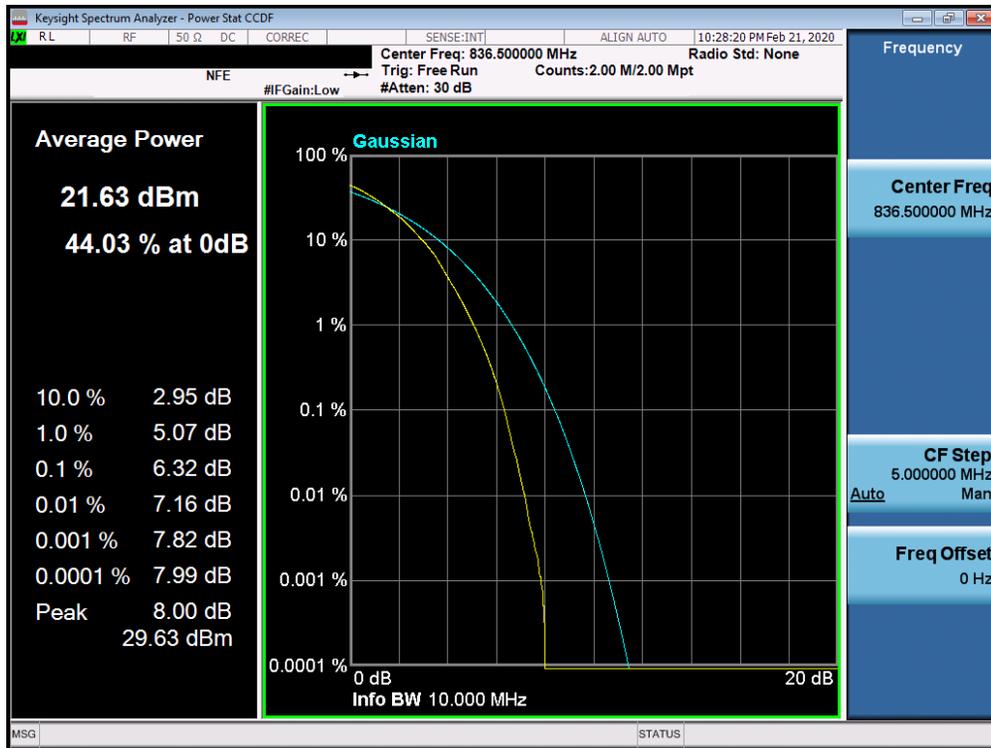


**Plot 7-260. PAR Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 151 of 211



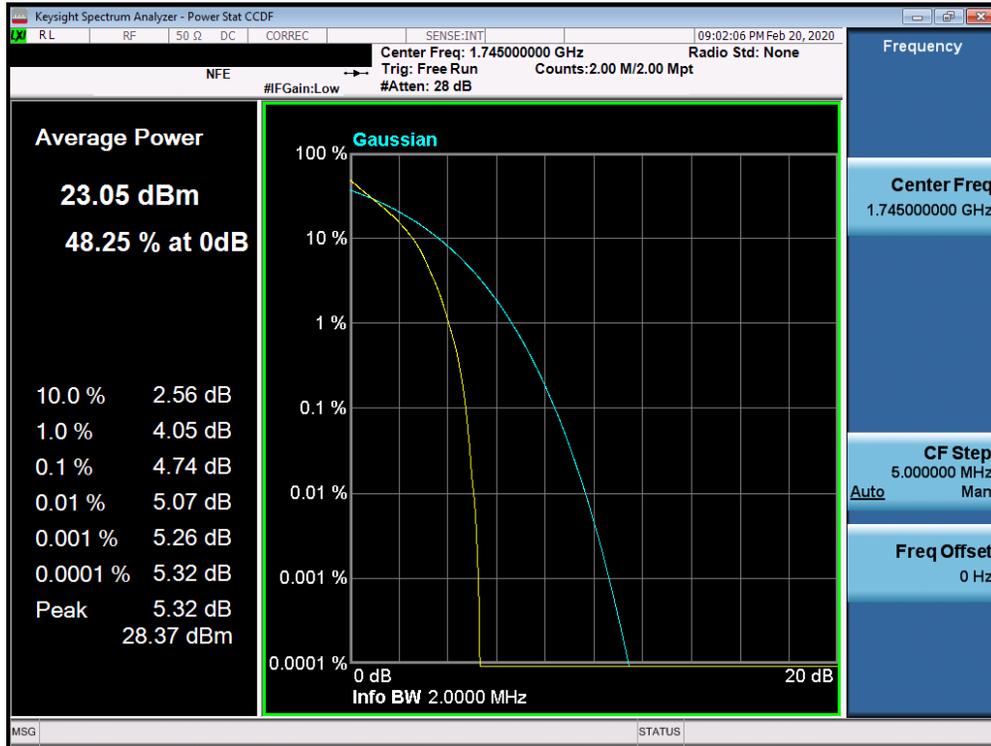
Plot 7-261. PAR Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)



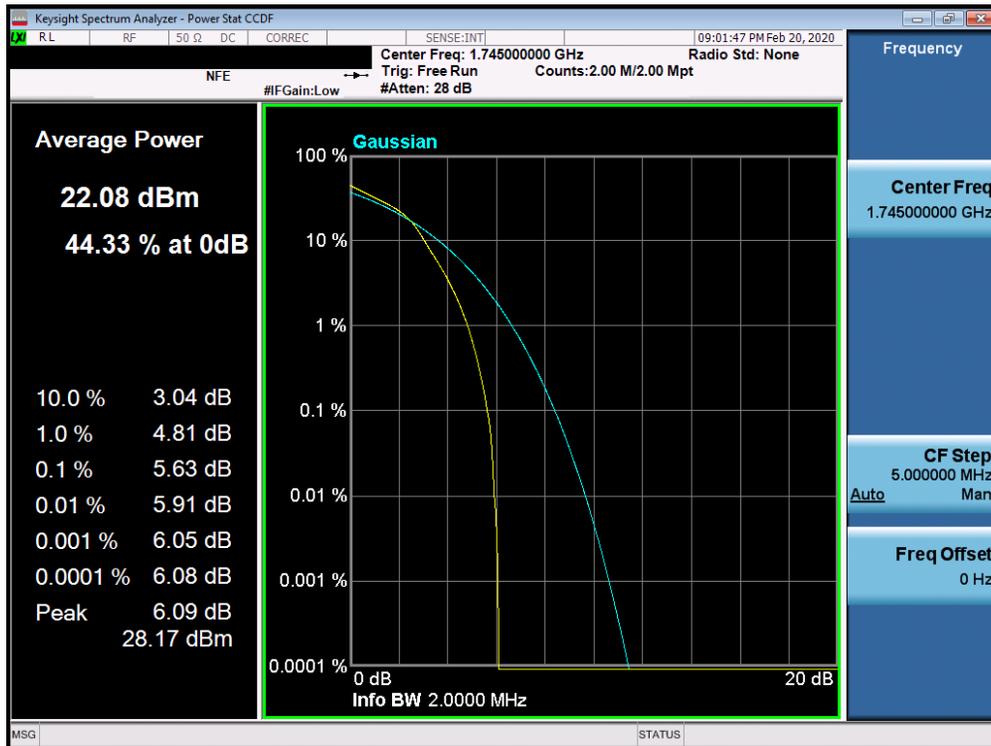
Plot 7-262. PAR Plot (Band 5 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 152 of 211

**Band 66/4**

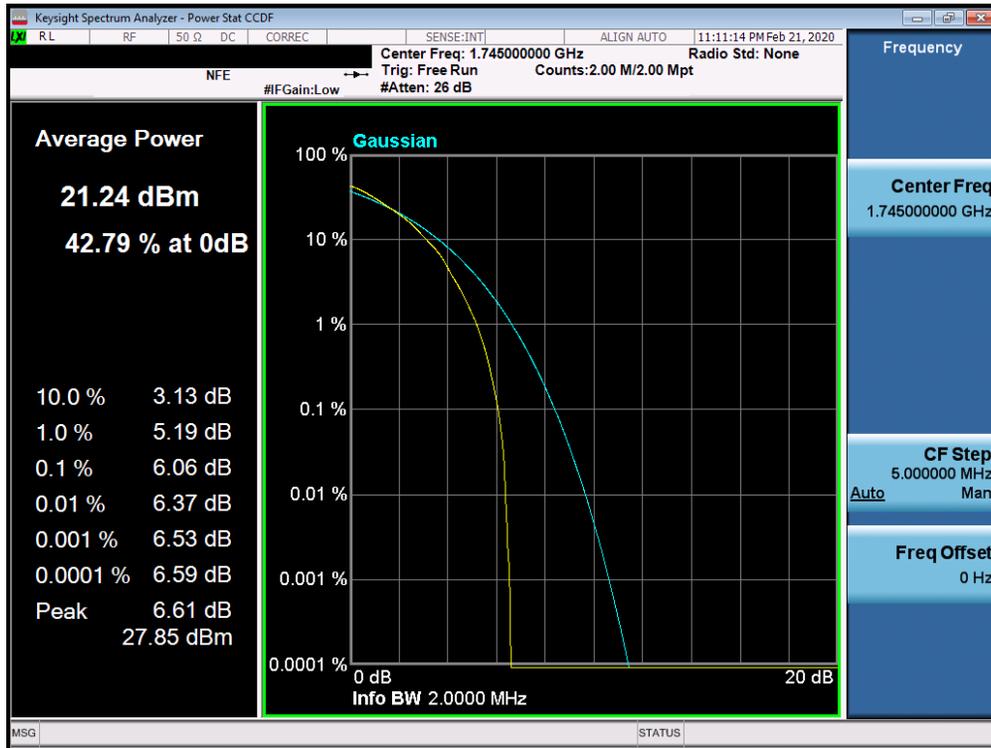


**Plot 7-263. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)**

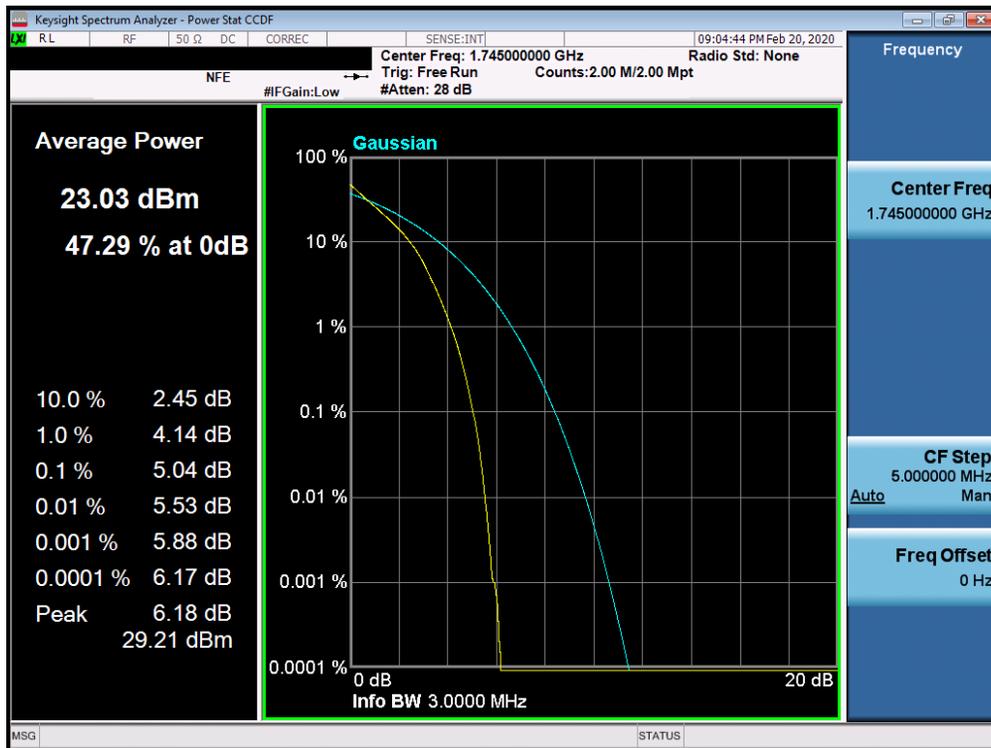


**Plot 7-264. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 153 of 211

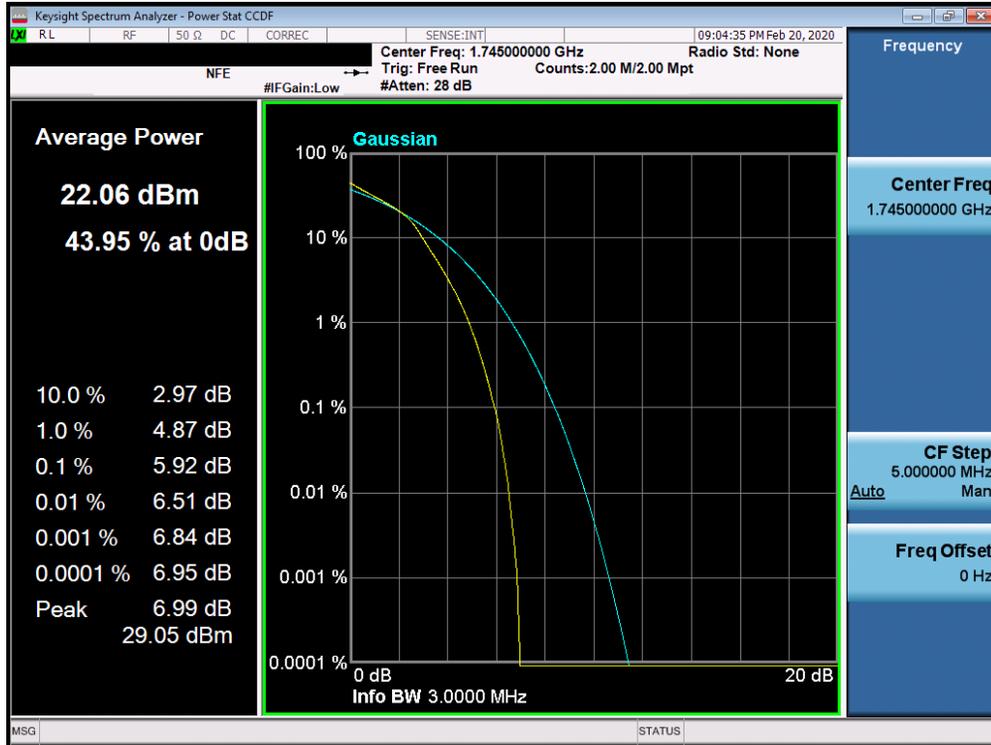


Plot 7-265. PAR Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)

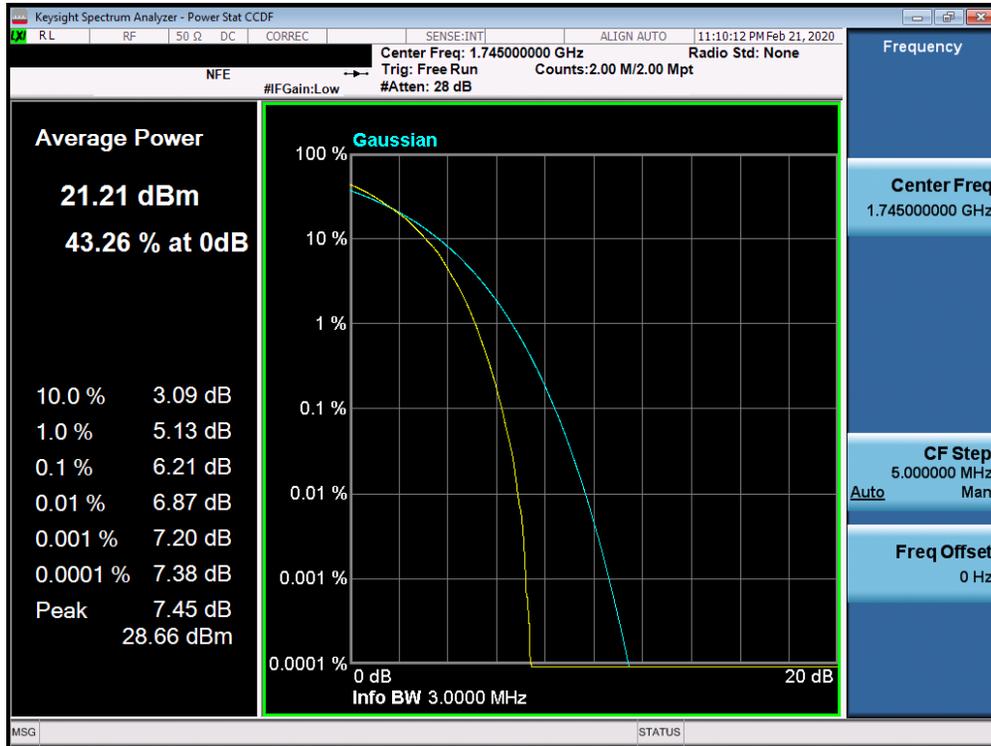


Plot 7-266. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 154 of 211

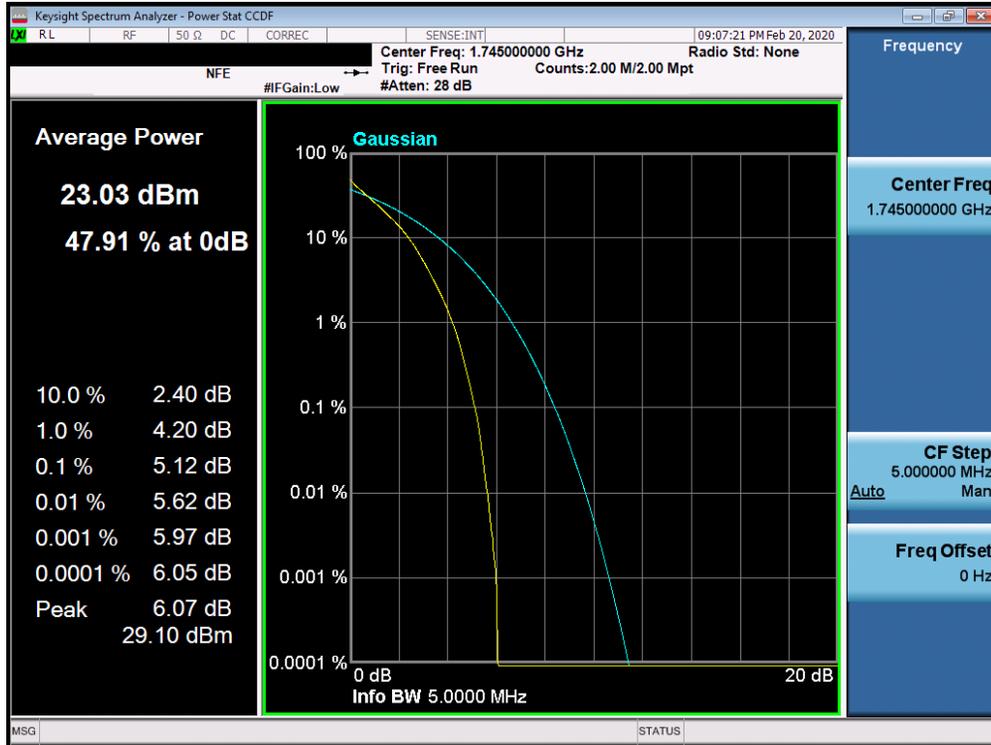


Plot 7-267. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

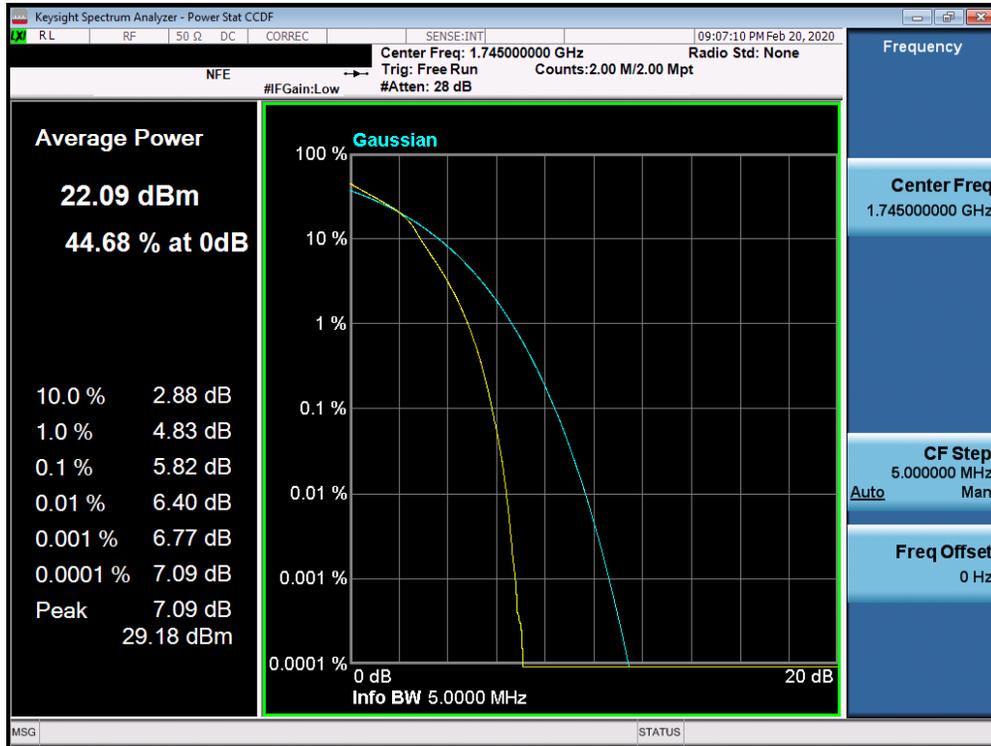


Plot 7-268. PAR Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 155 of 211

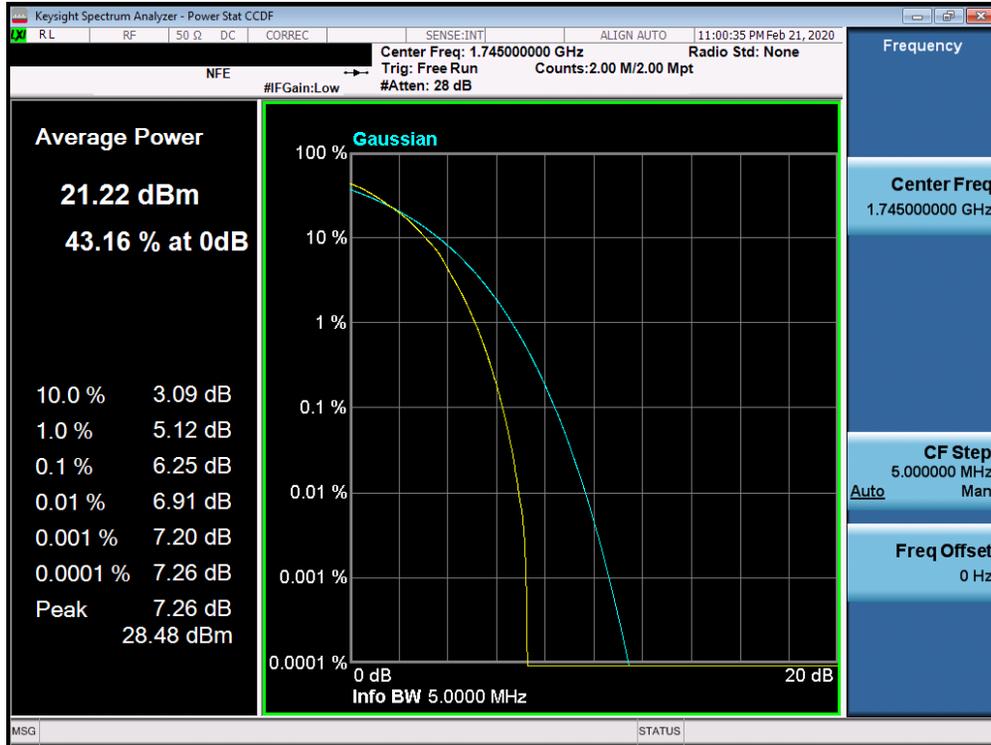


**Plot 7-269. PAR Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)**

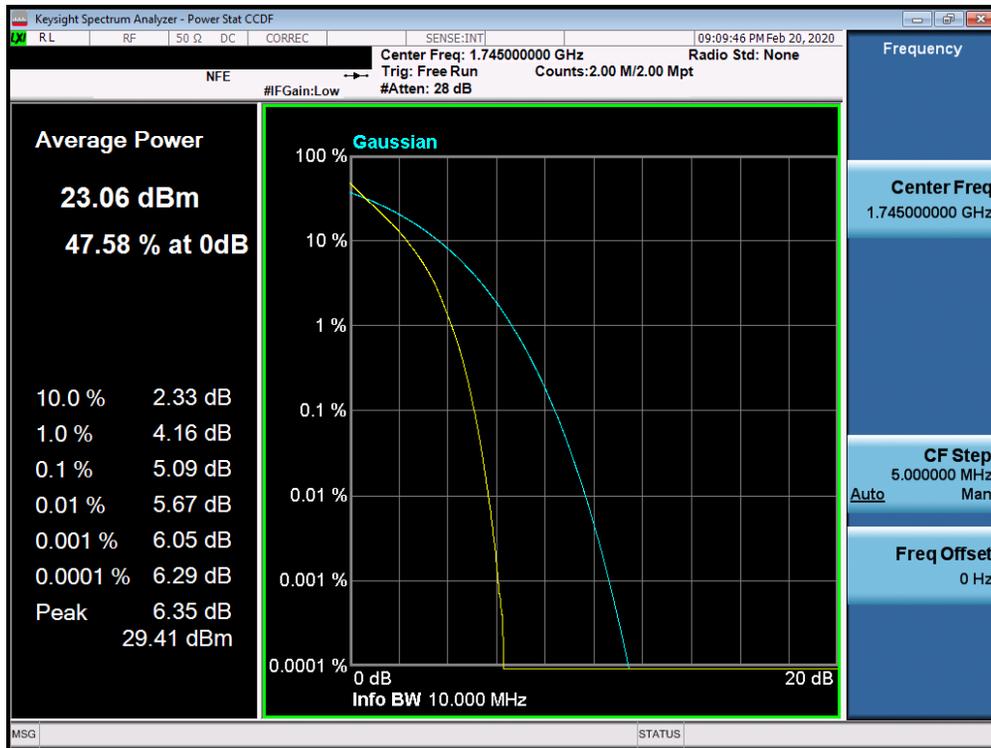


**Plot 7-270. PAR Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 156 of 211

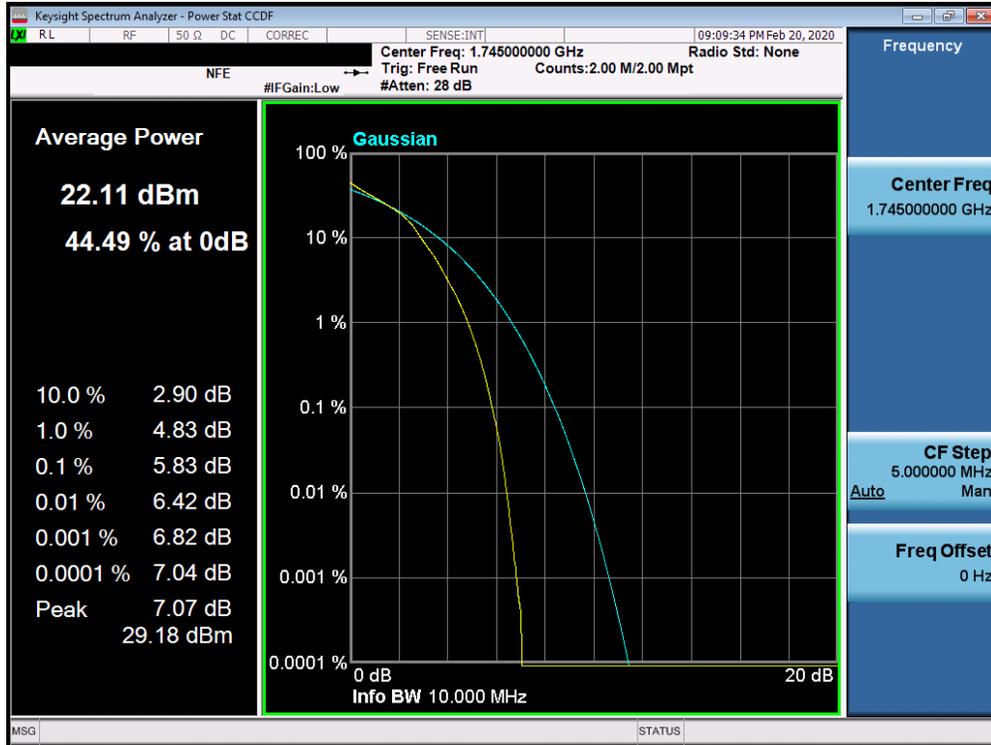


Plot 7-271. PAR Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)

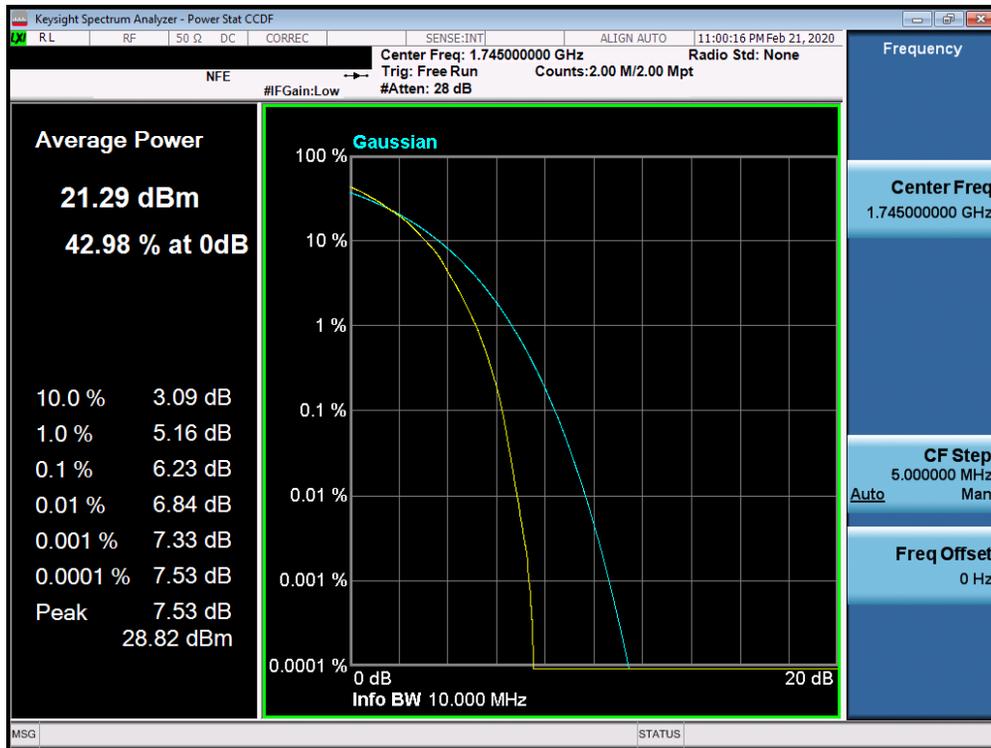


Plot 7-272. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 157 of 211

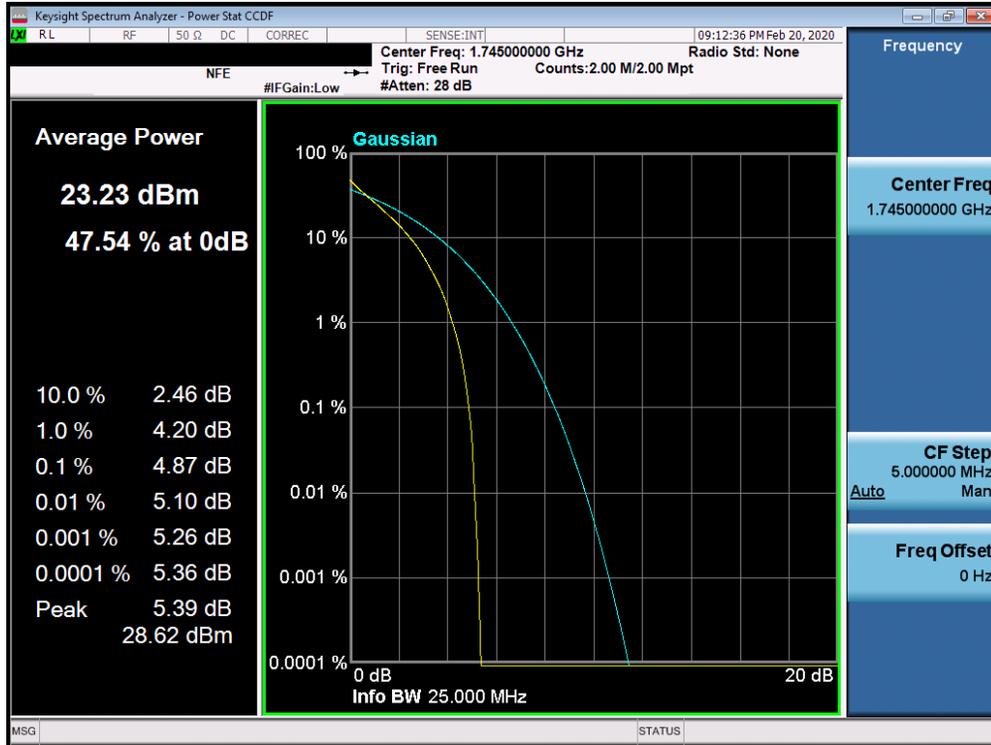


**Plot 7-273. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)**

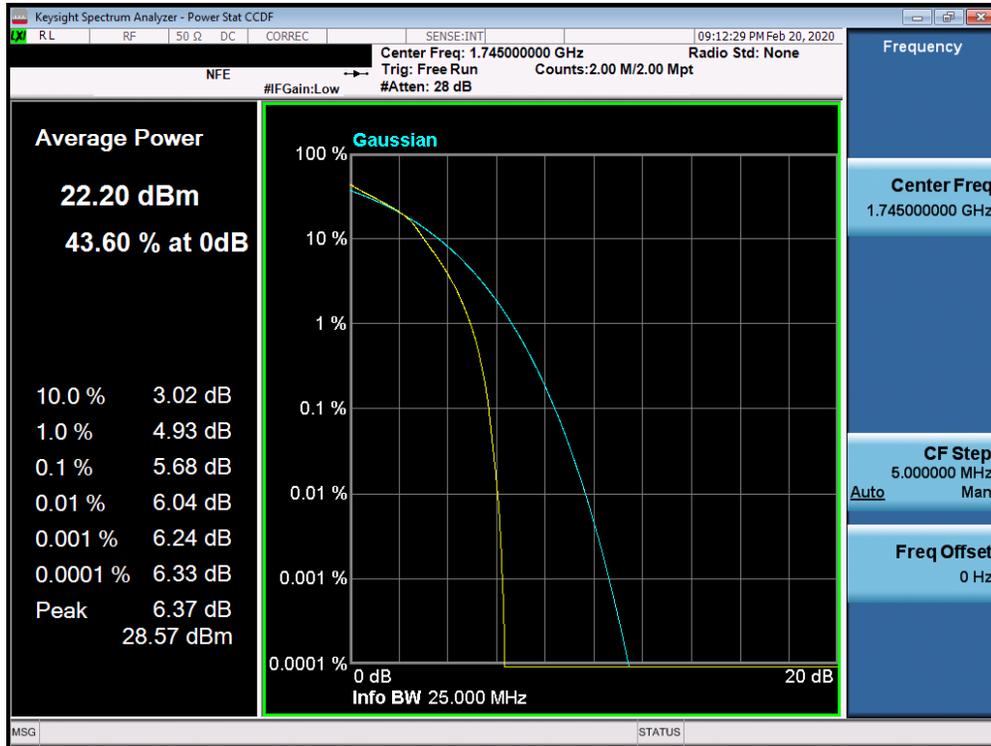


**Plot 7-274. PAR Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 158 of 211

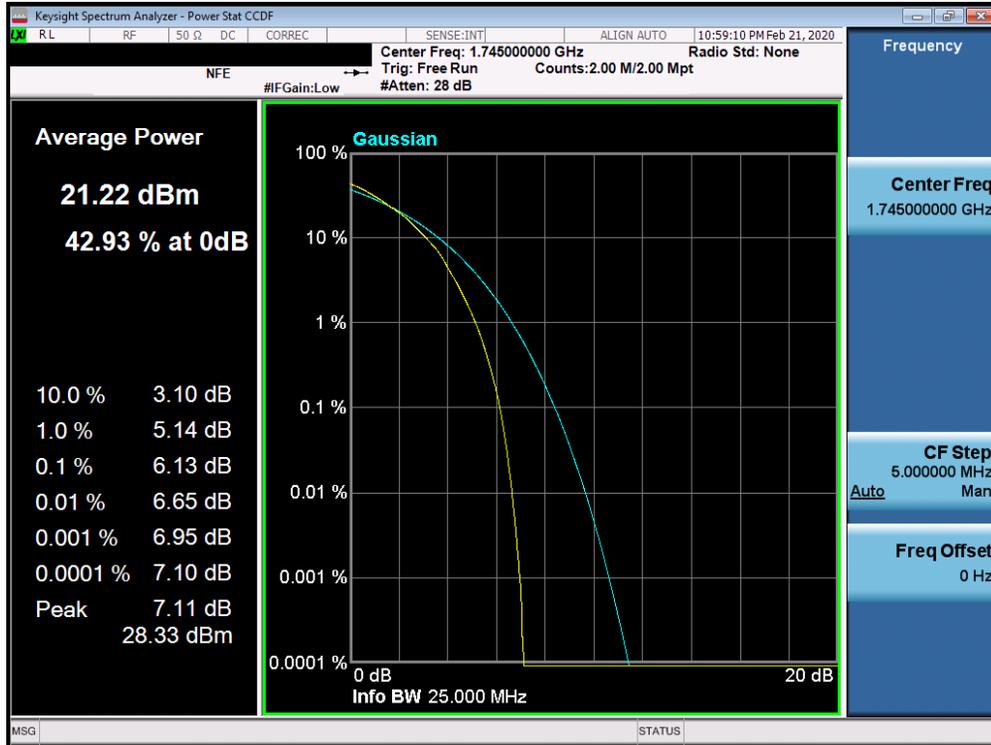


Plot 7-275. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

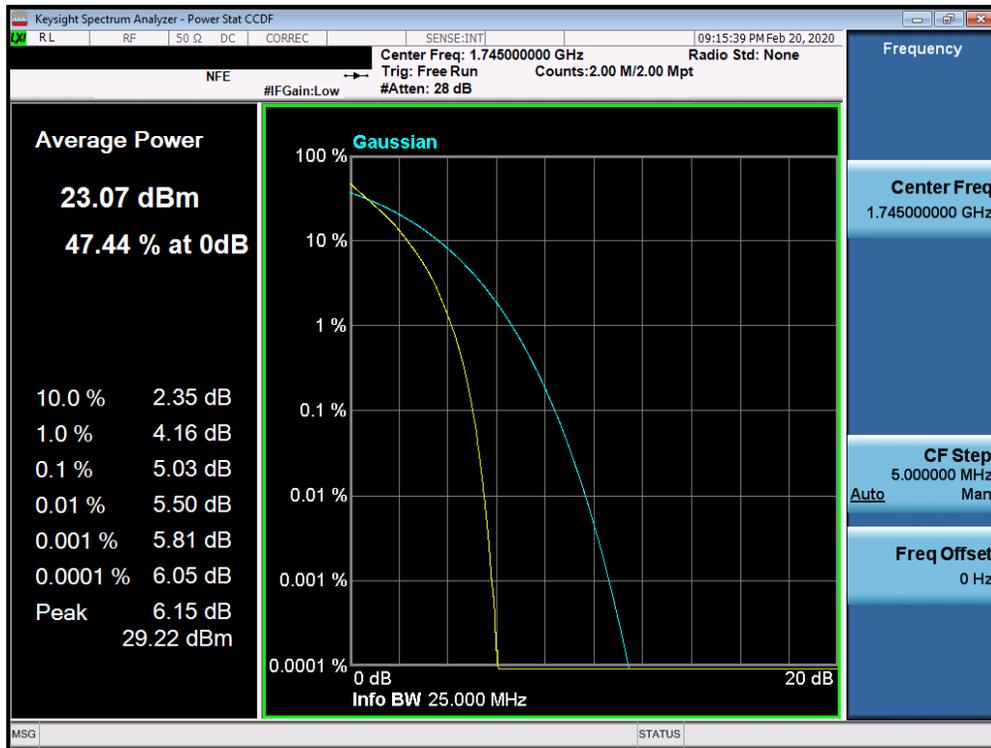


Plot 7-276. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 159 of 211

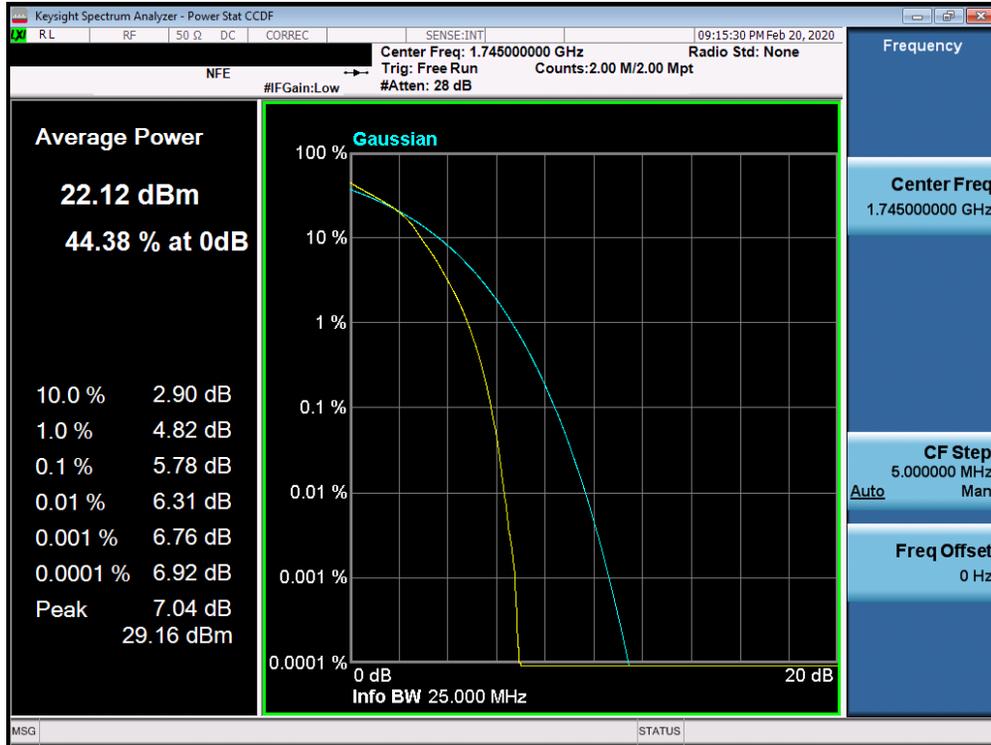


Plot 7-277. PAR Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)

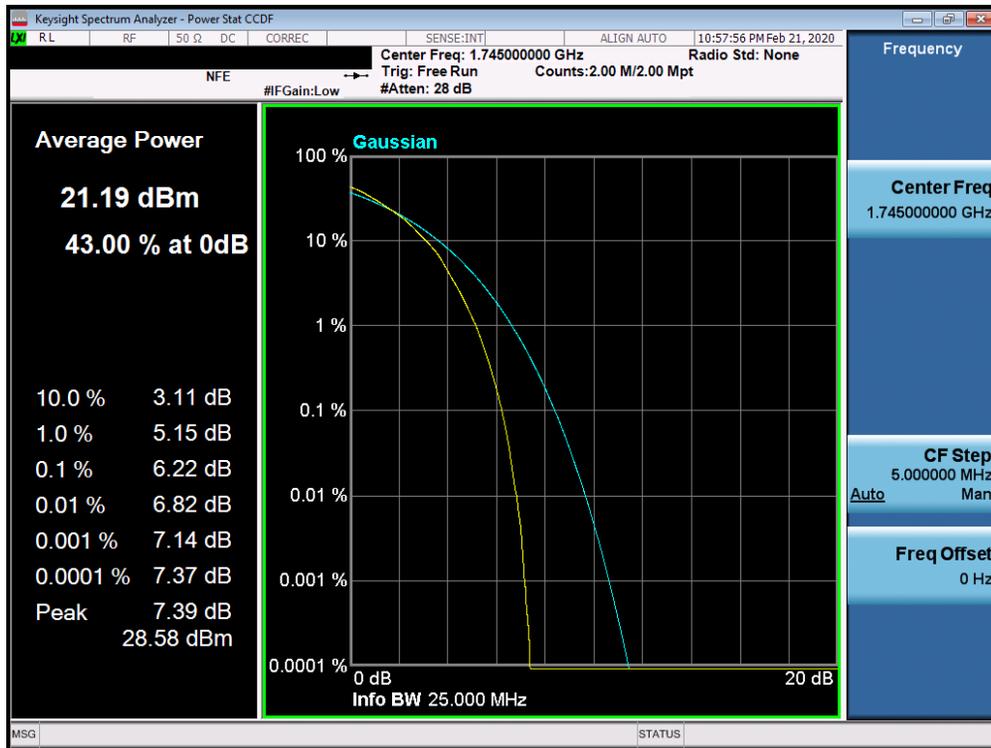


Plot 7-278. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 160 of 211



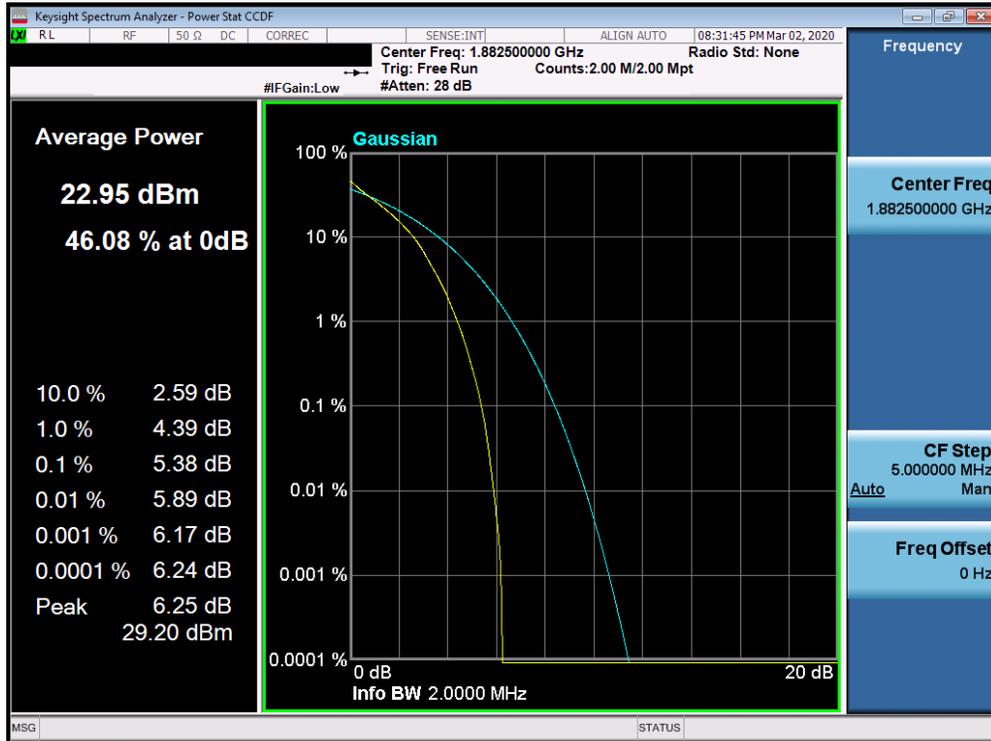
**Plot 7-279. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)**



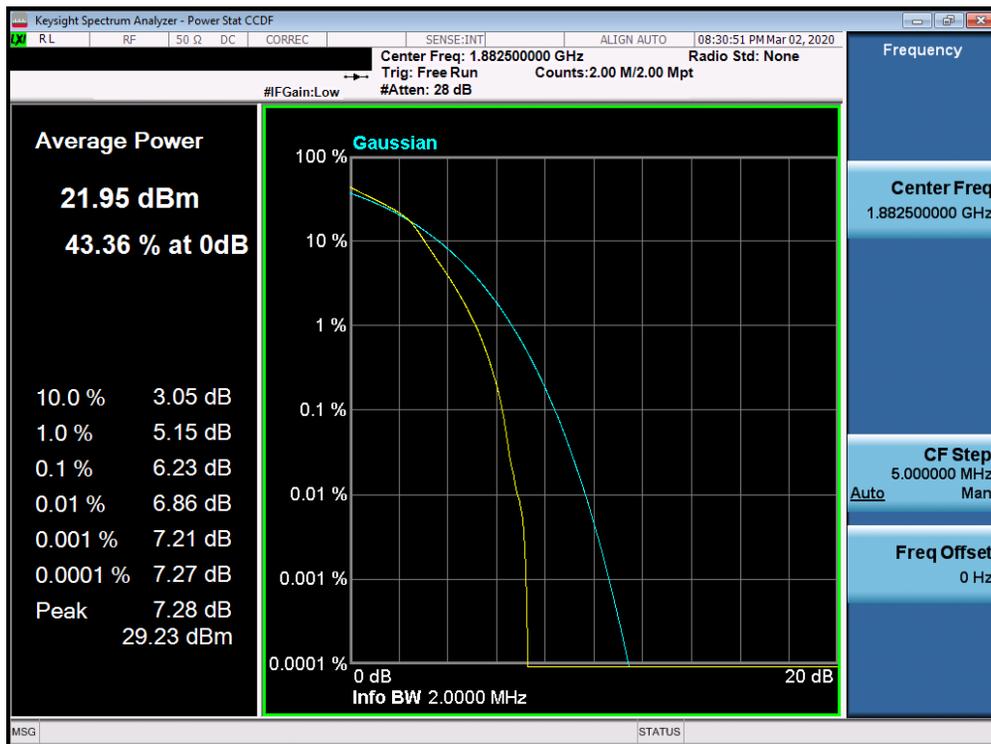
**Plot 7-280. PAR Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 161 of 211

## Band 25/2

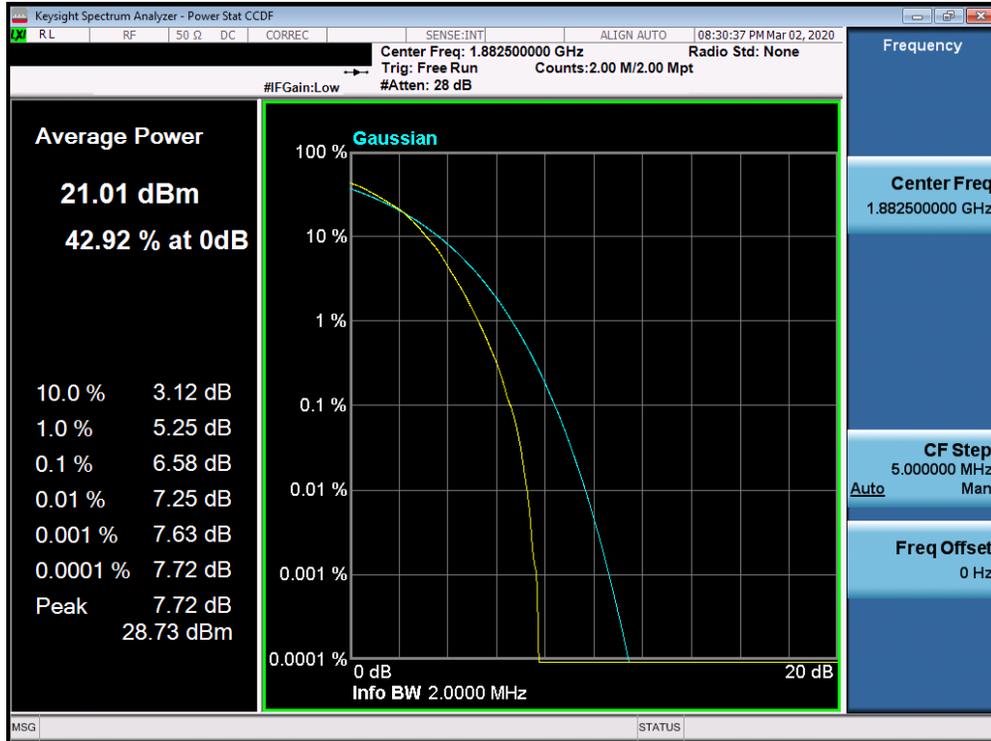


Plot 7-281. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

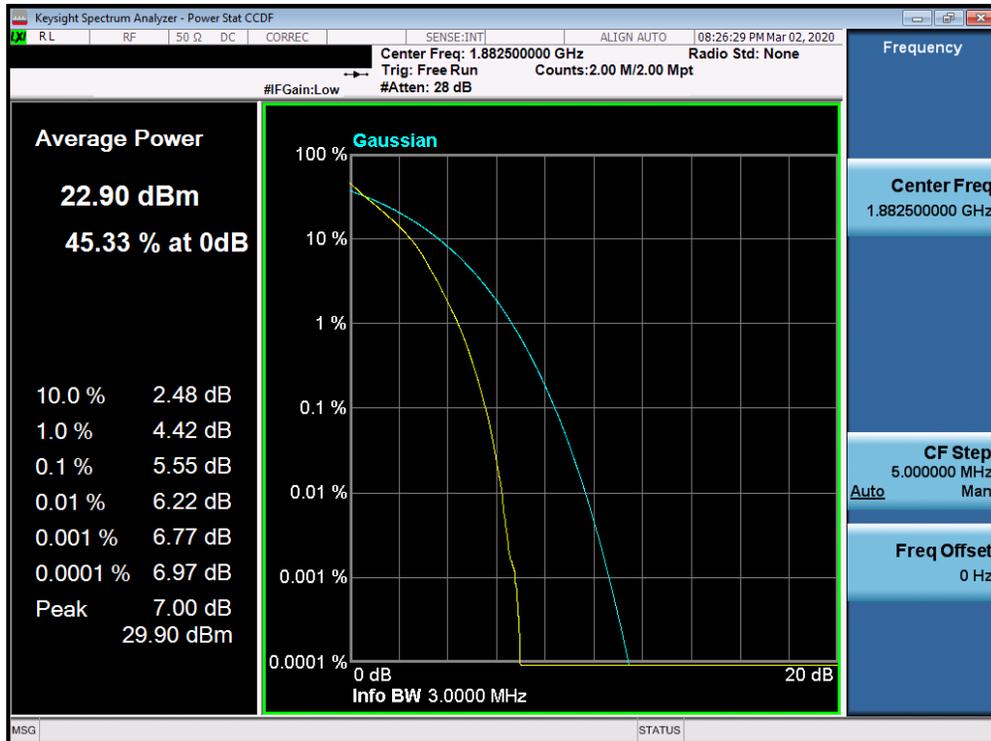


Plot 7-282. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 162 of 211

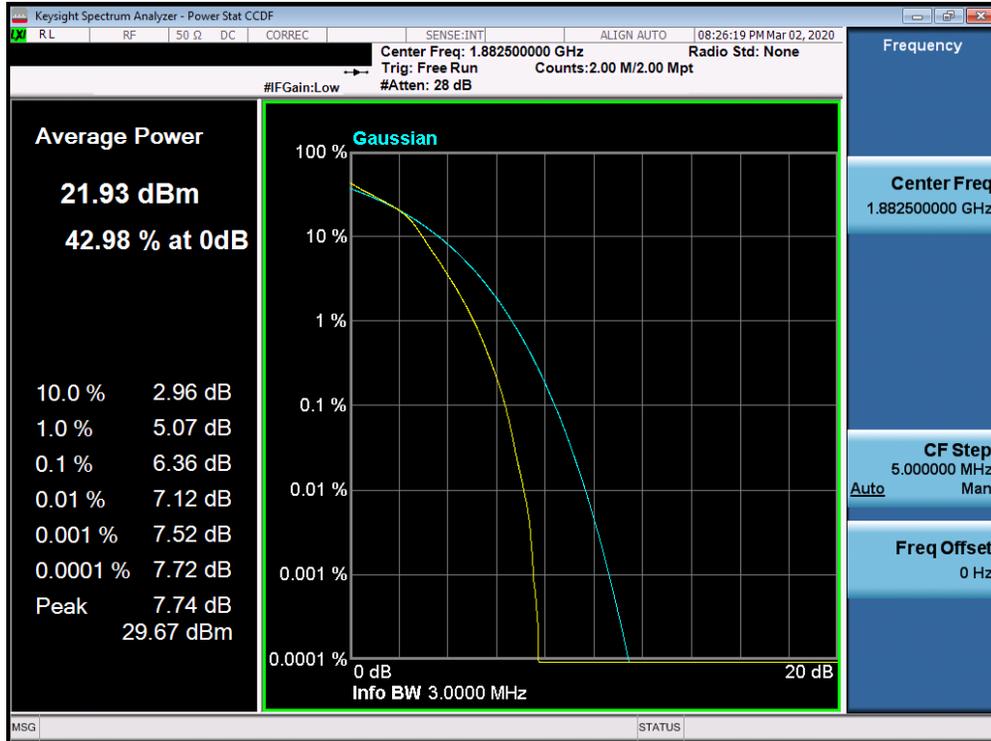


Plot 7-283. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

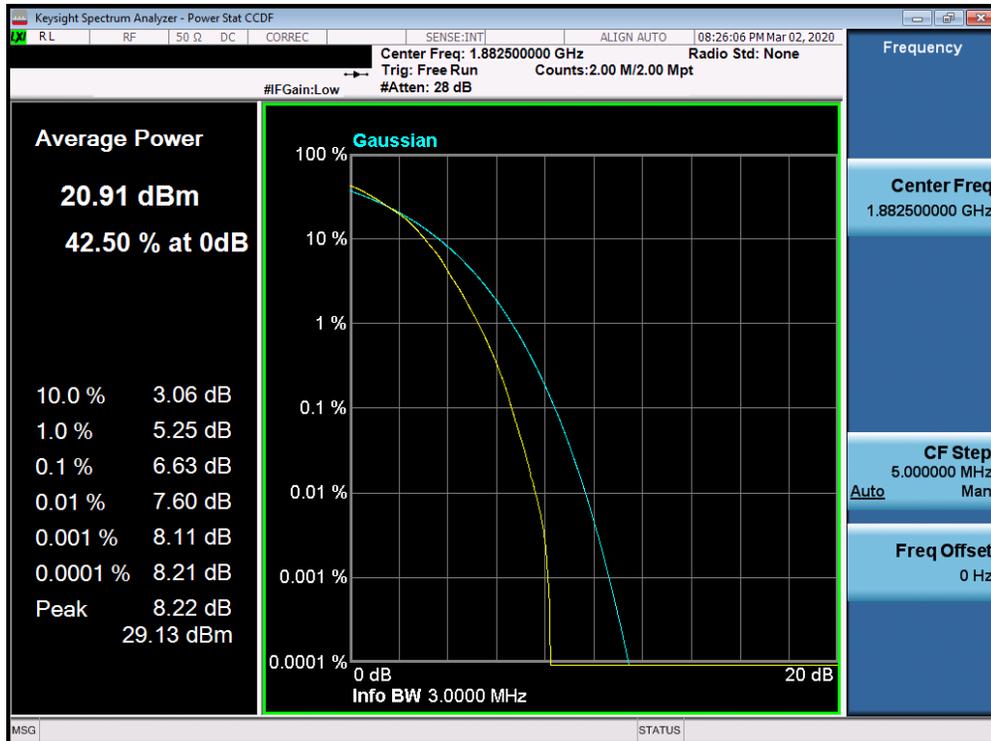


Plot 7-284. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 163 of 211

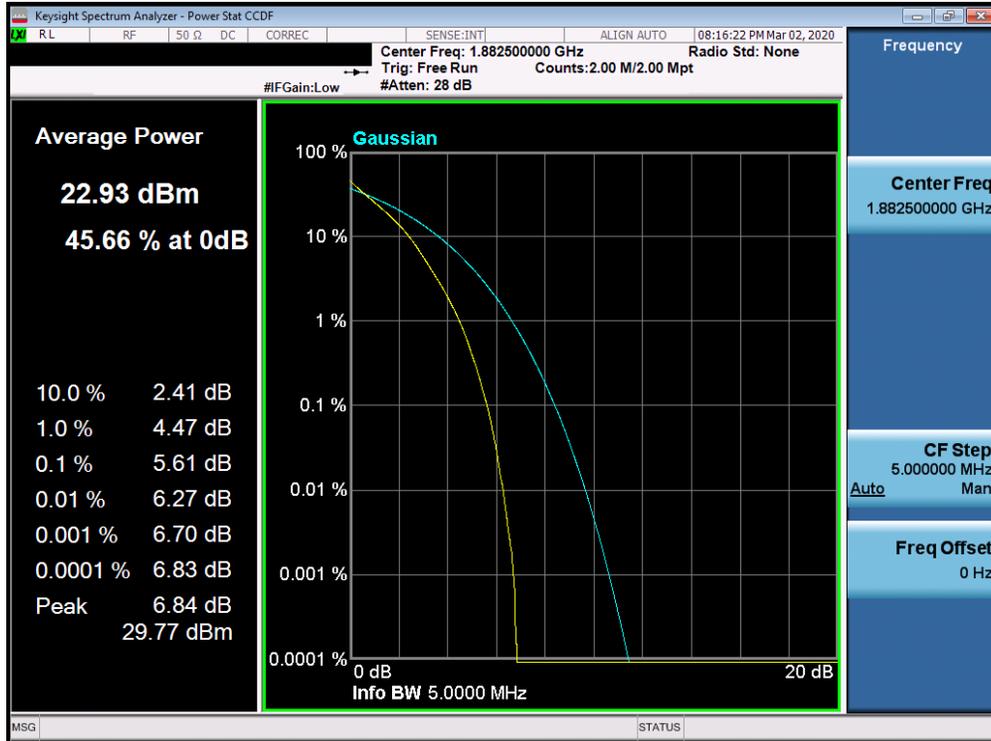


Plot 7-285. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

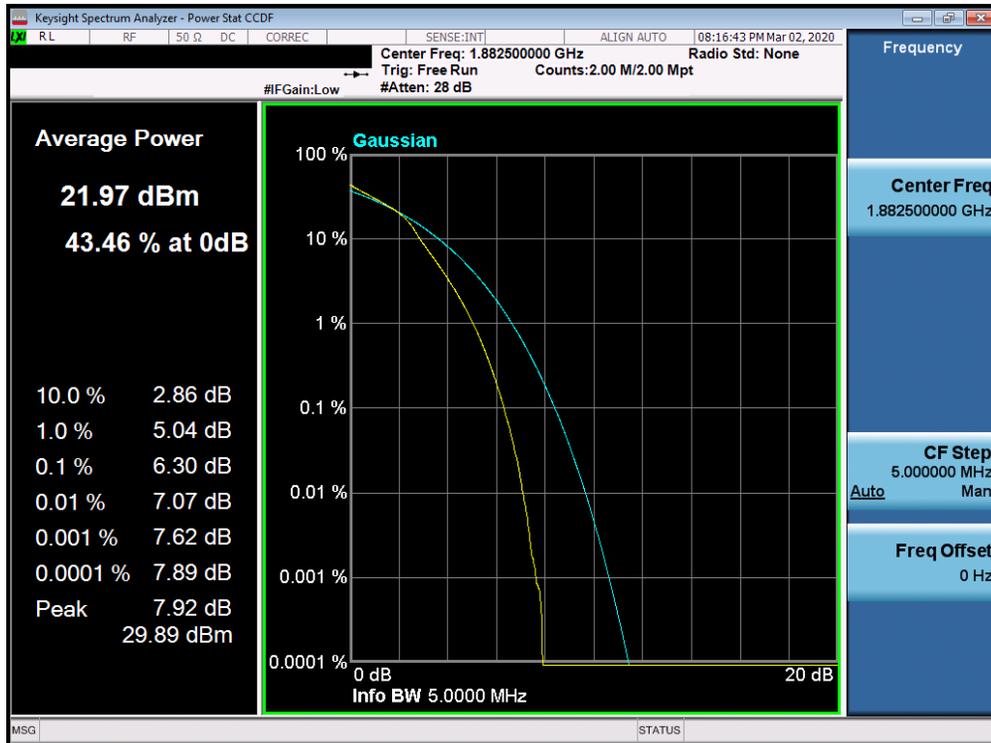


Plot 7-286. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 164 of 211

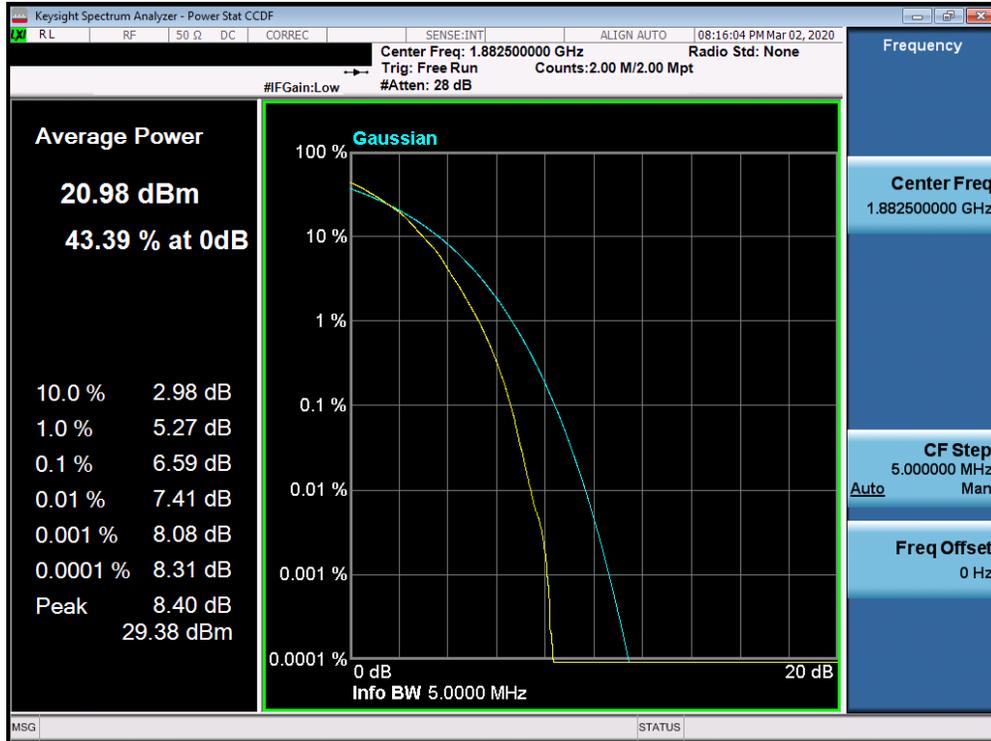


Plot 7-287. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

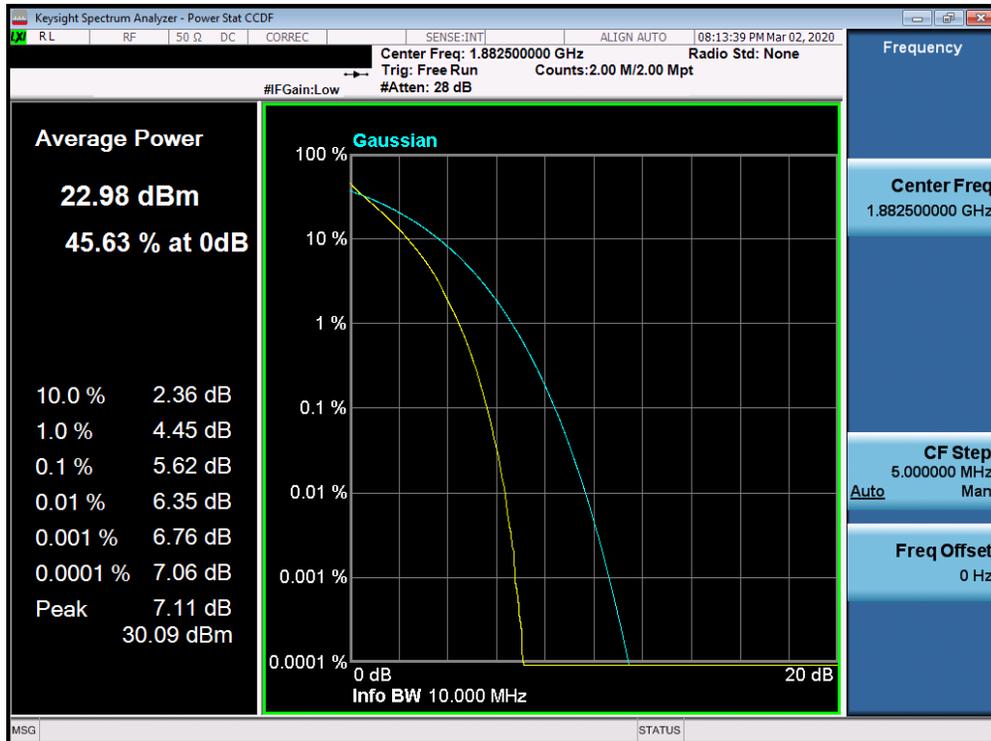


Plot 7-288. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 165 of 211

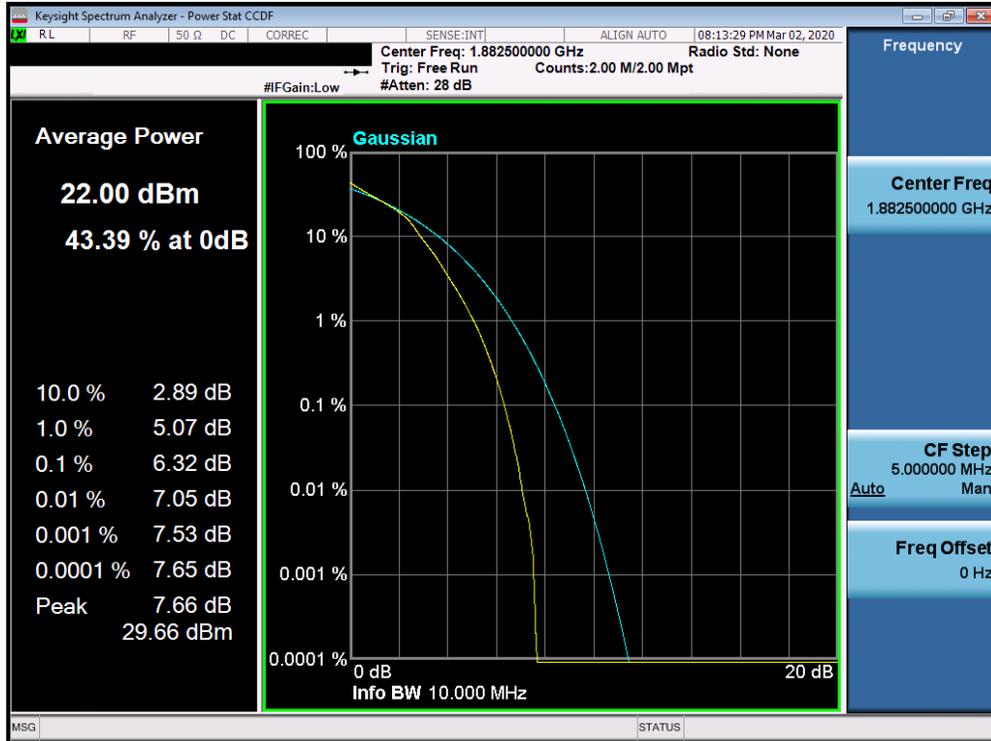


Plot 7-289. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

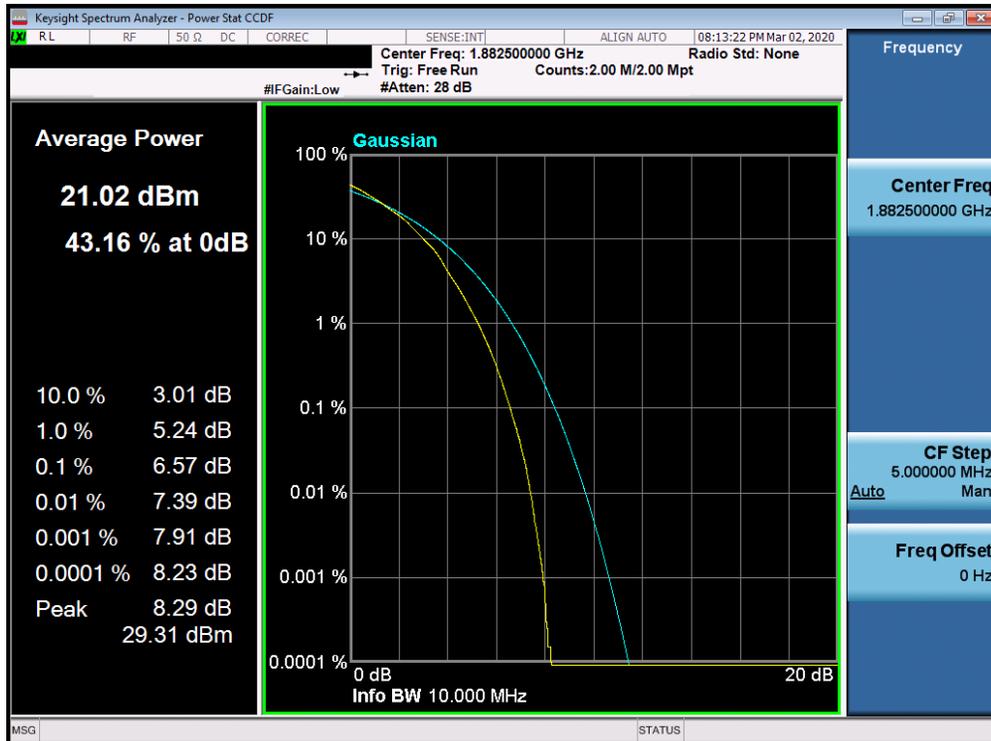


Plot 7-290. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 166 of 211

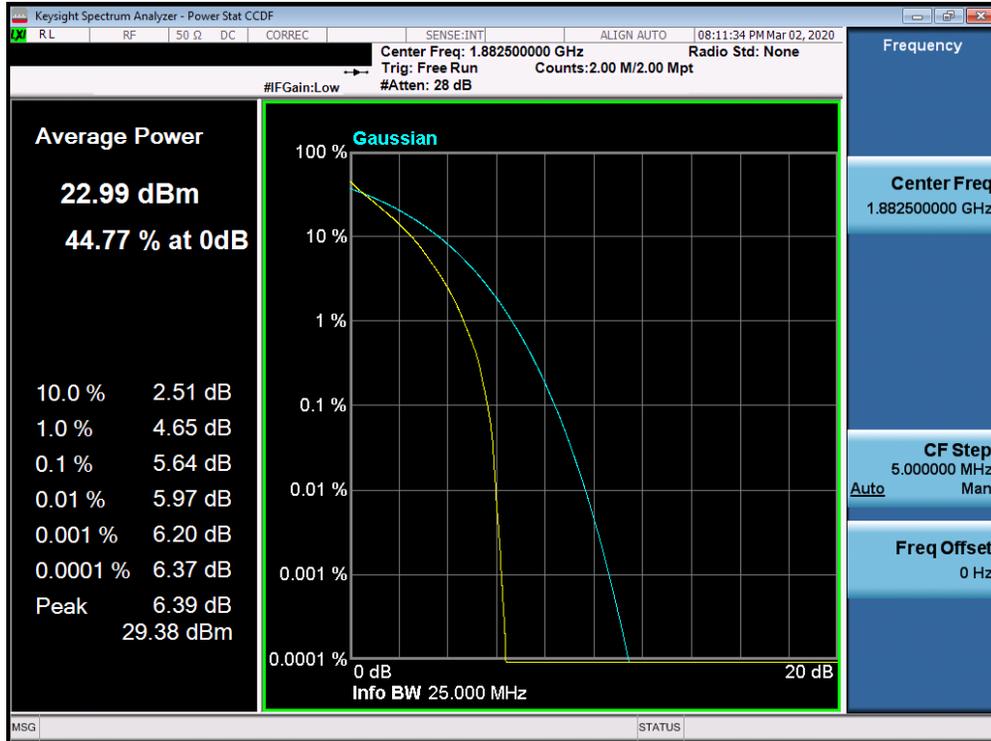


Plot 7-291. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

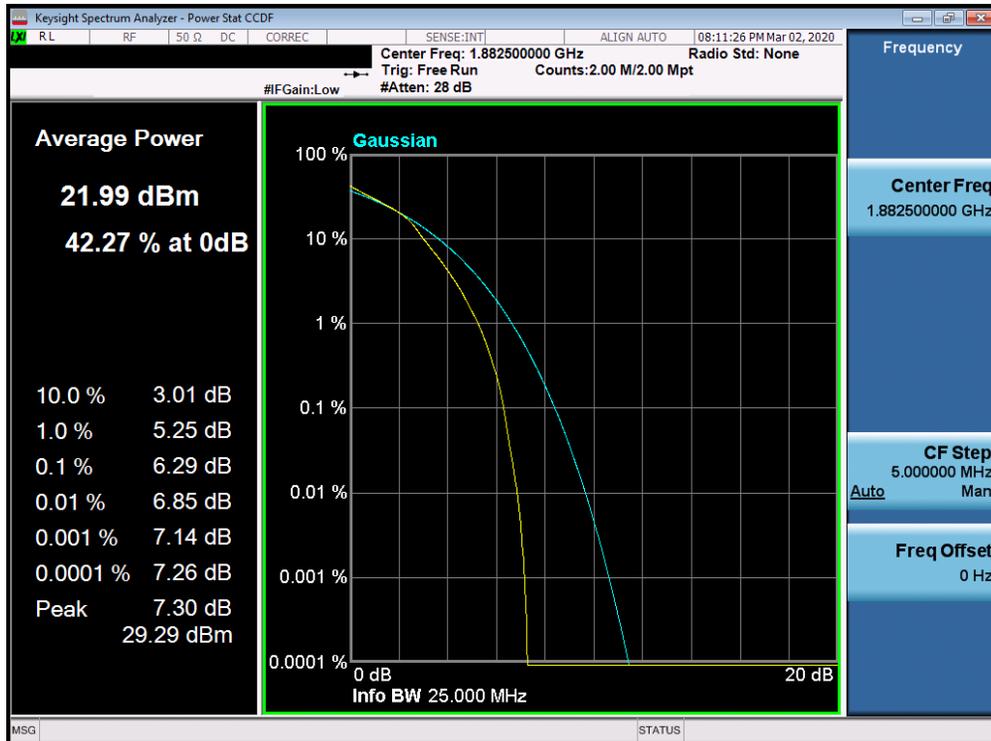


Plot 7-292. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 167 of 211

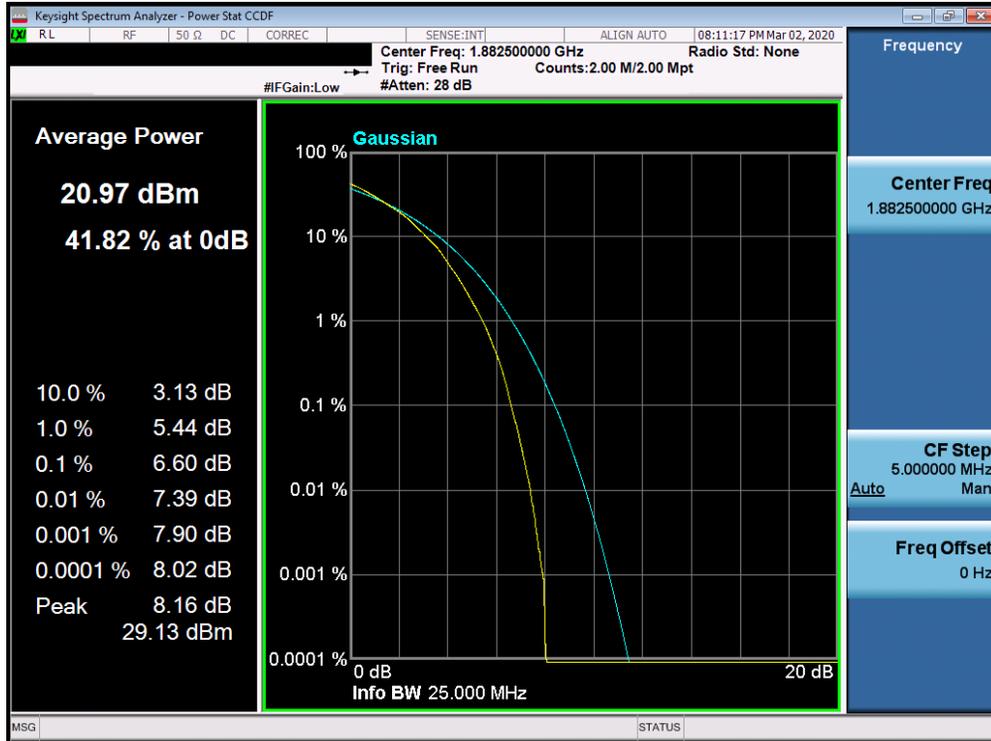


Plot 7-293. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

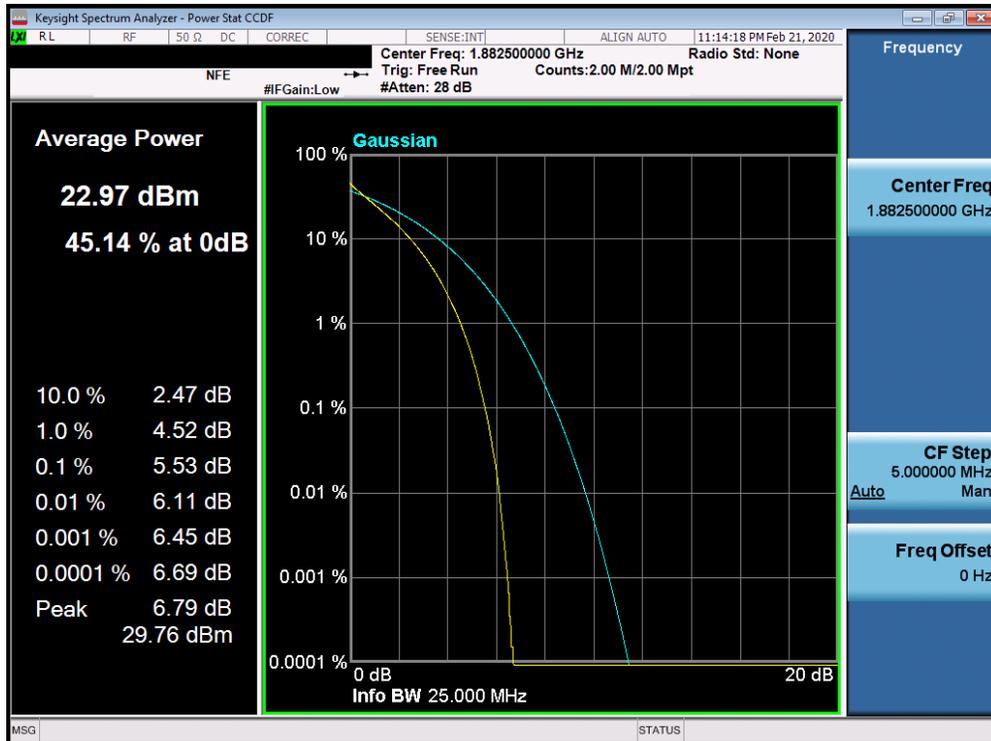


Plot 7-294. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 168 of 211

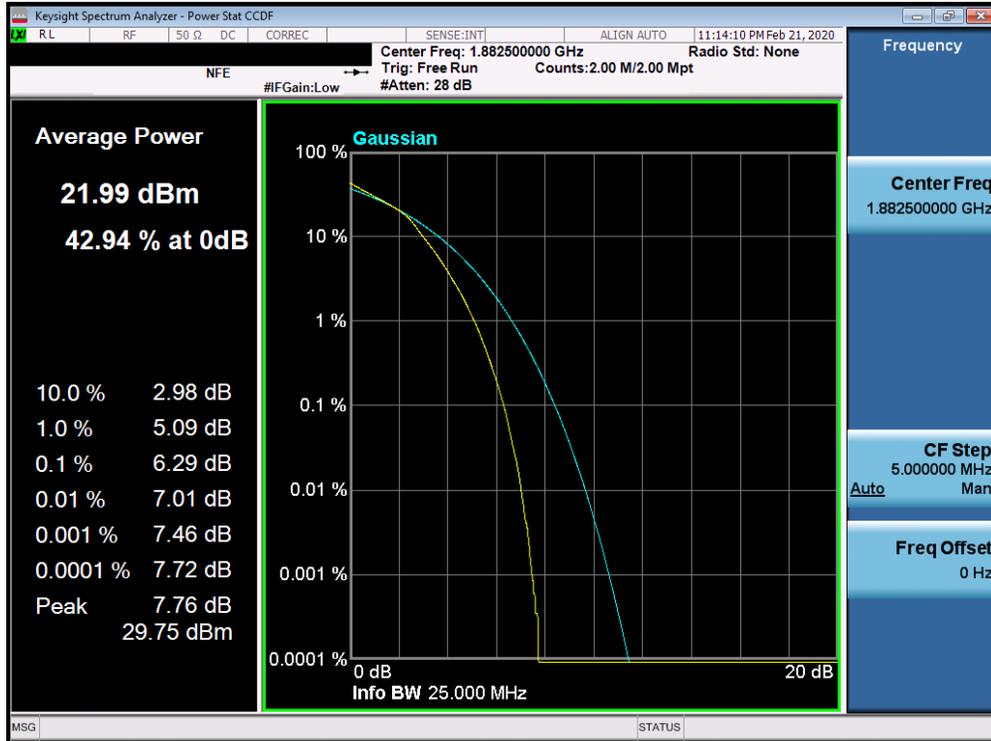


Plot 7-295. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

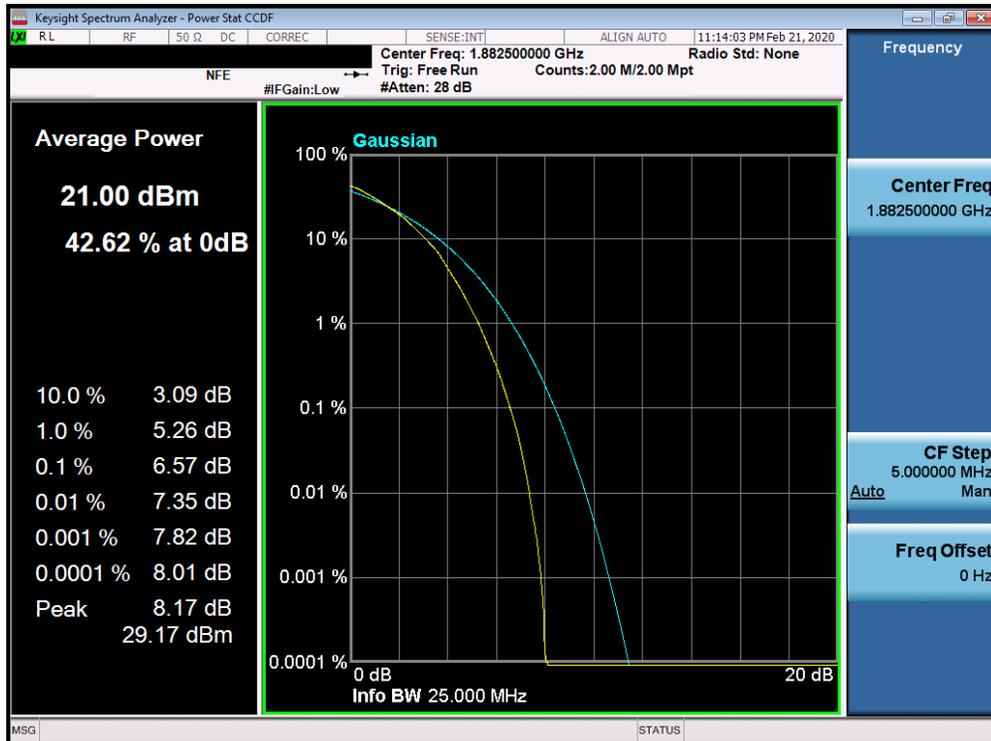


Plot 7-296. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 169 of 211



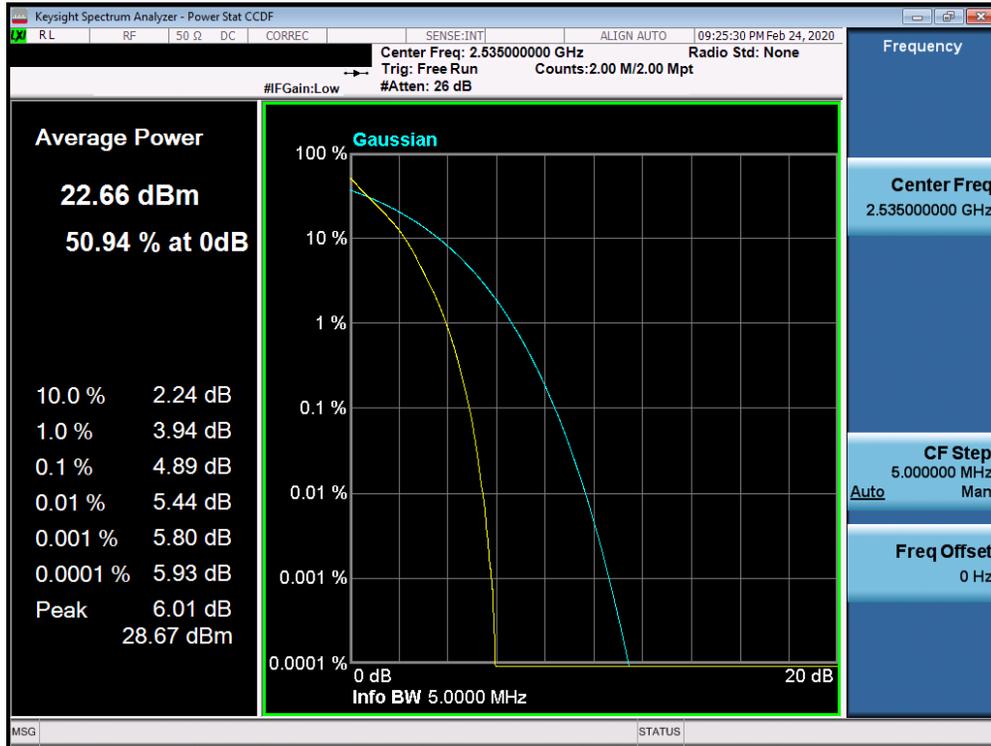
Plot 7-297. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



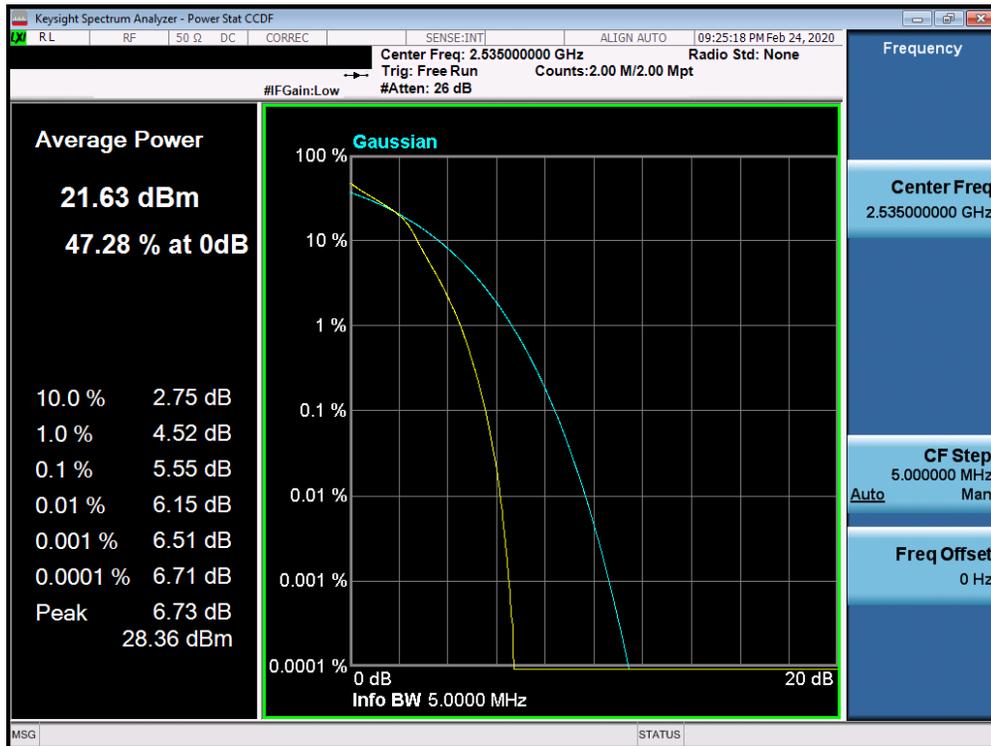
Plot 7-298. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 170 of 211

**Band 7**

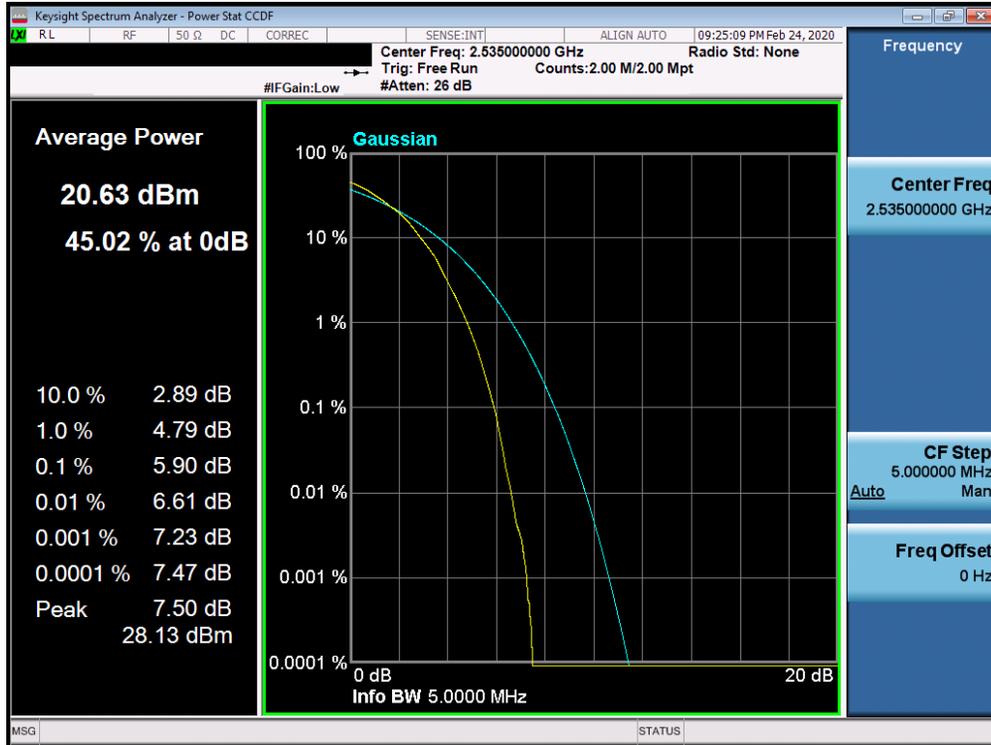


**Plot 7-299. PAR Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)**

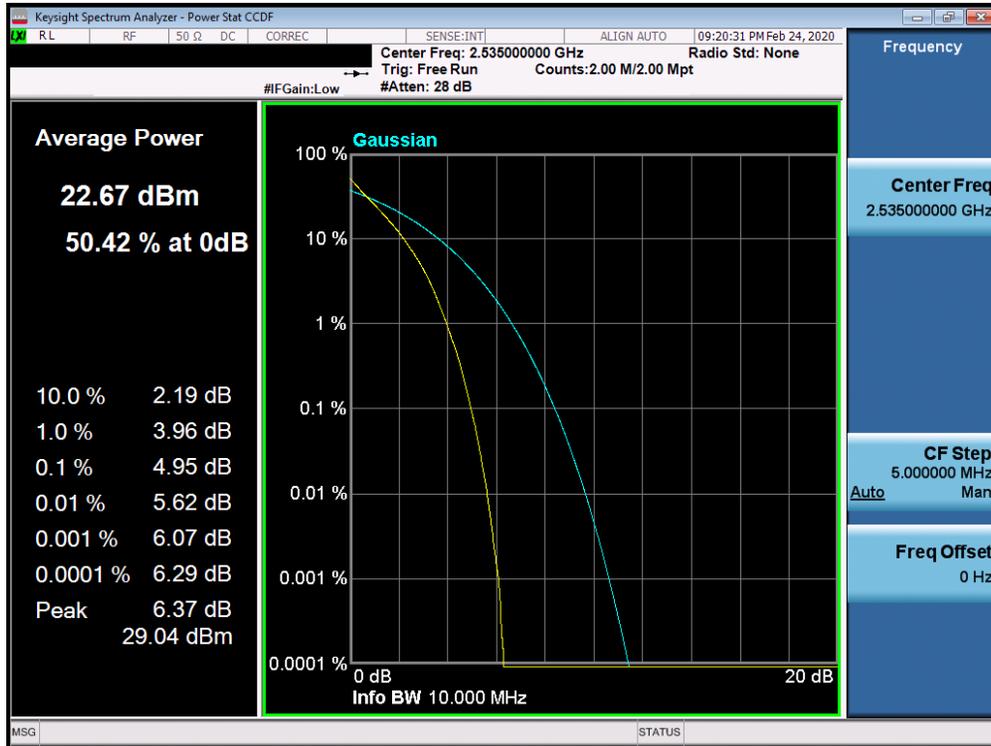


**Plot 7-300. PAR Plot (Band 7 - 5.0MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 171 of 211

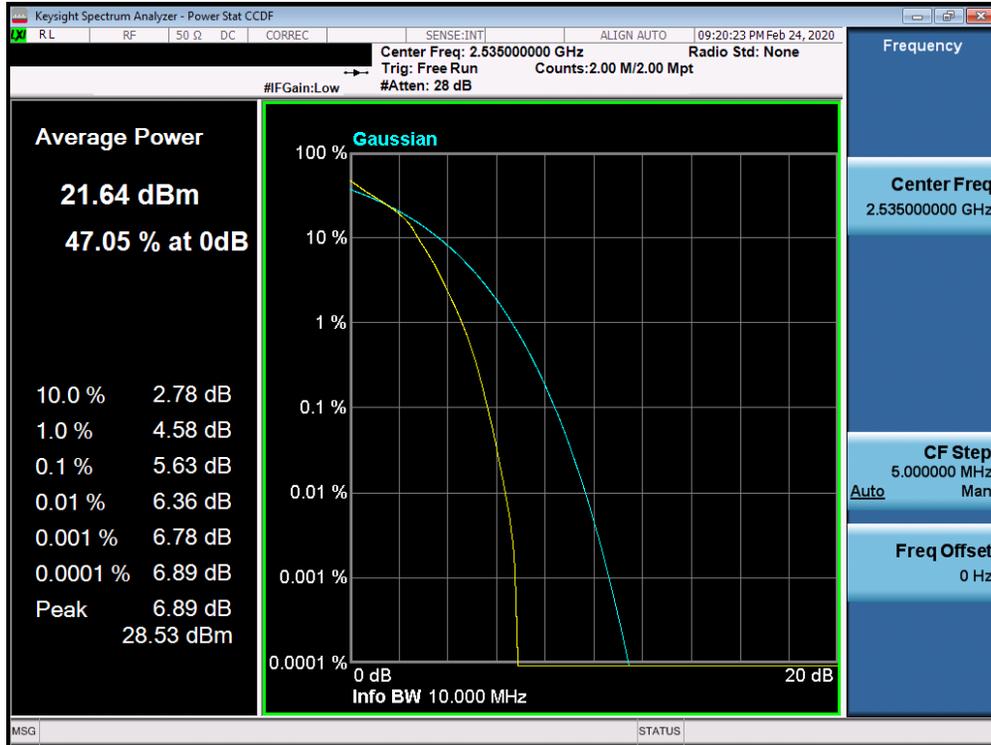


Plot 7-301. PAR Plot (Band 7 - 5.0MHz 64-QAM - Full RB Configuration)

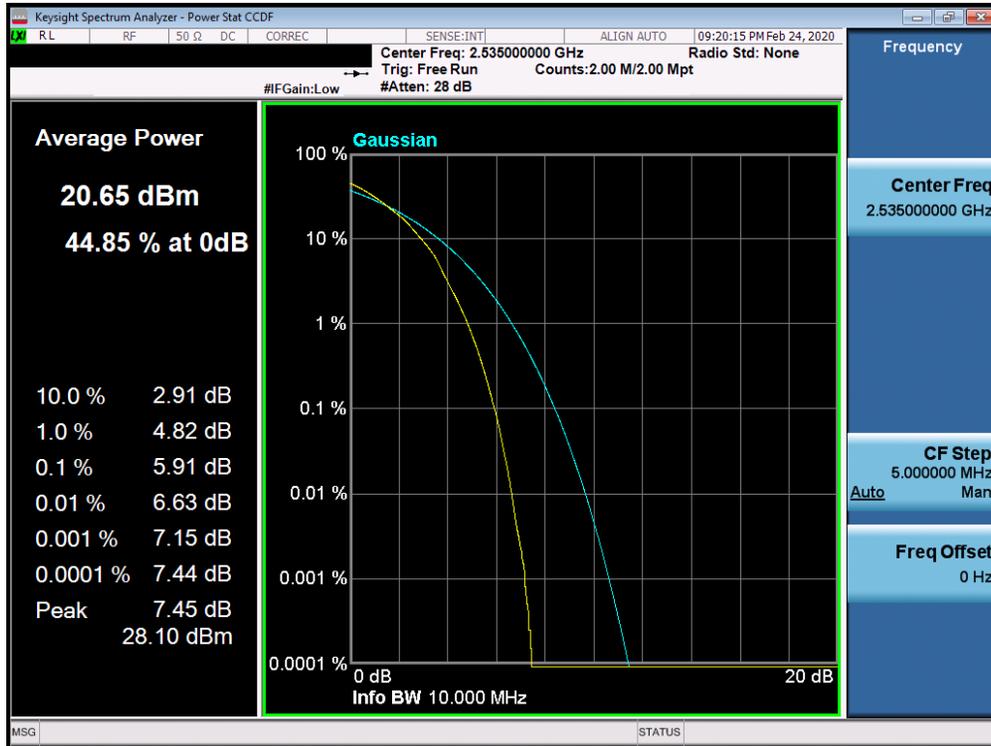


Plot 7-302. PAR Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 172 of 211

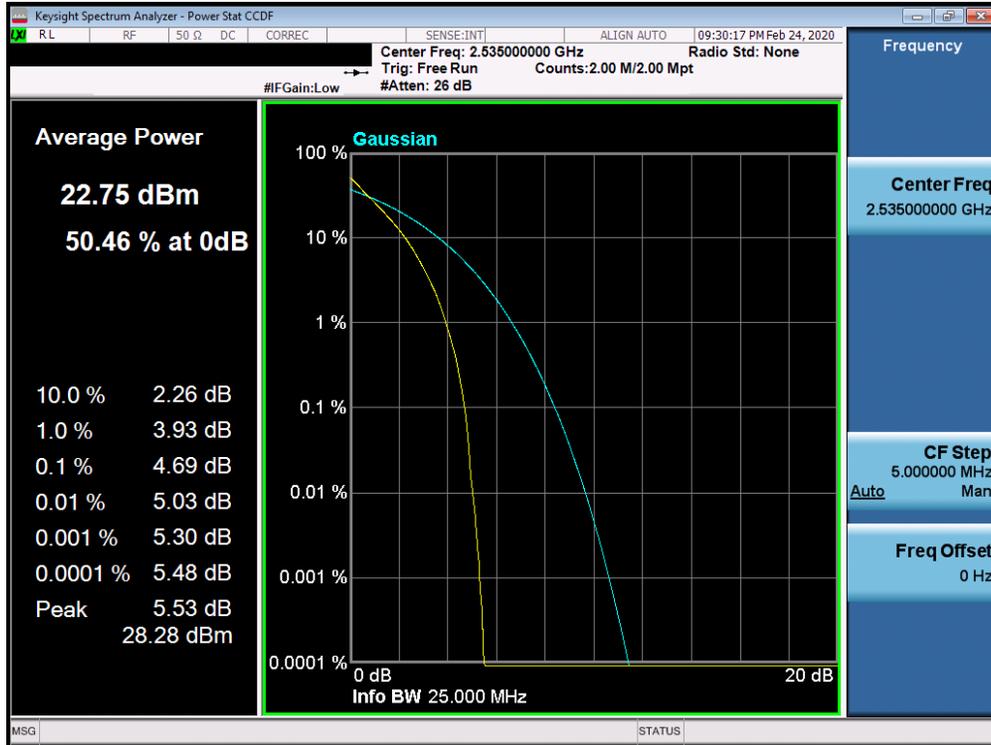


Plot 7-303. PAR Plot (Band 7 - 10.0MHz 16-QAM - Full RB Configuration)

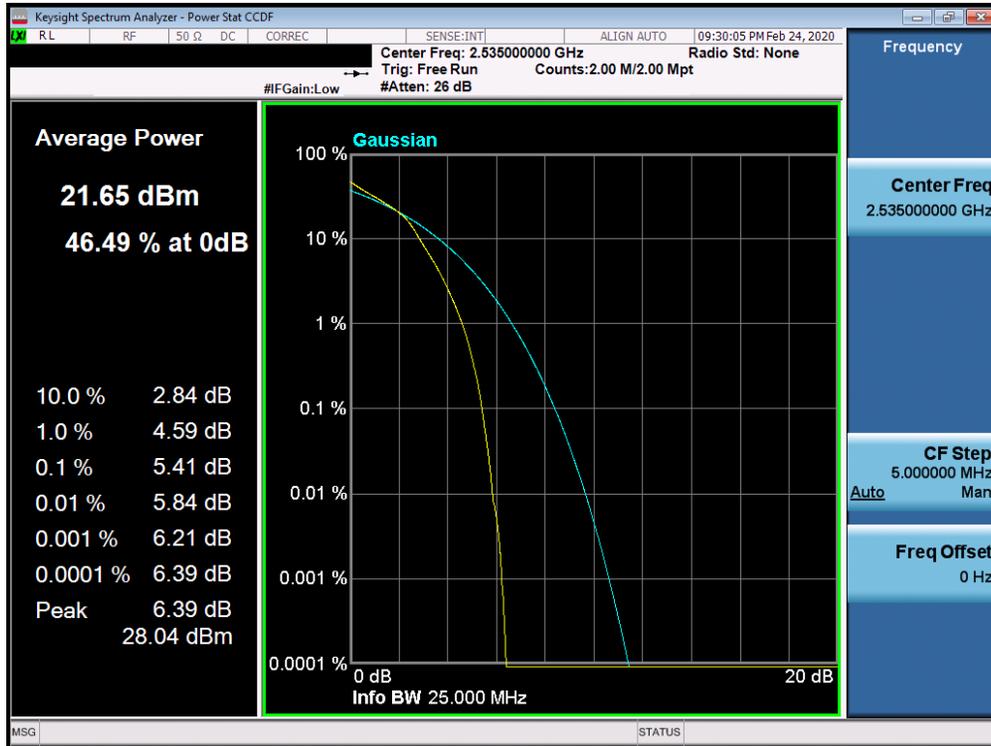


Plot 7-304. PAR Plot (Band 7 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 173 of 211

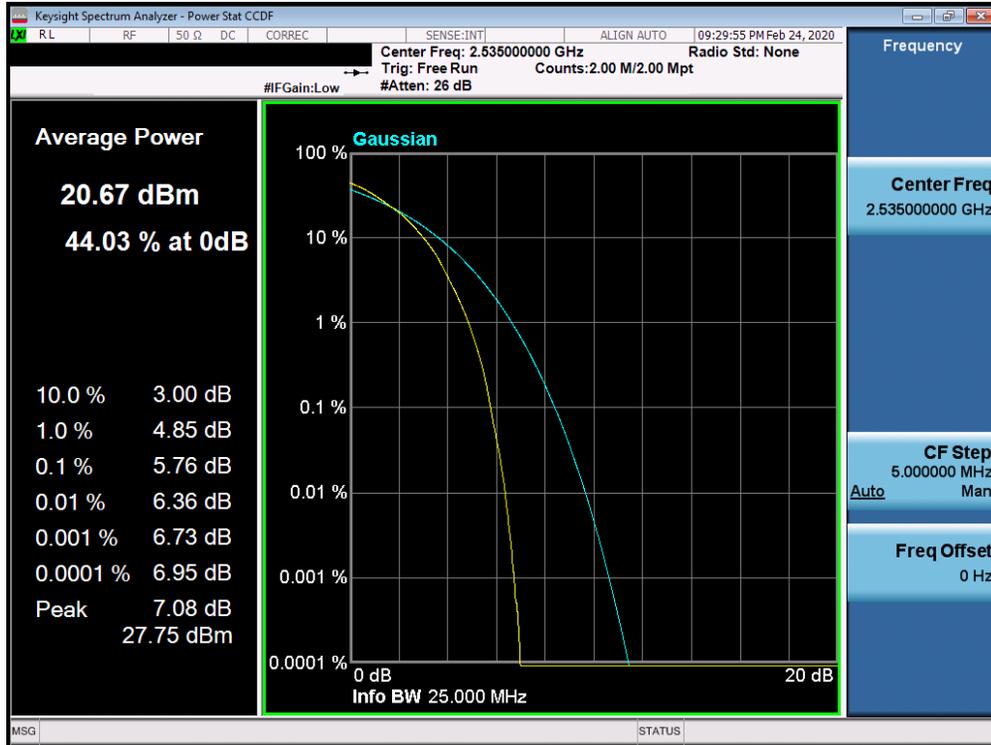


Plot 7-305. PAR Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)

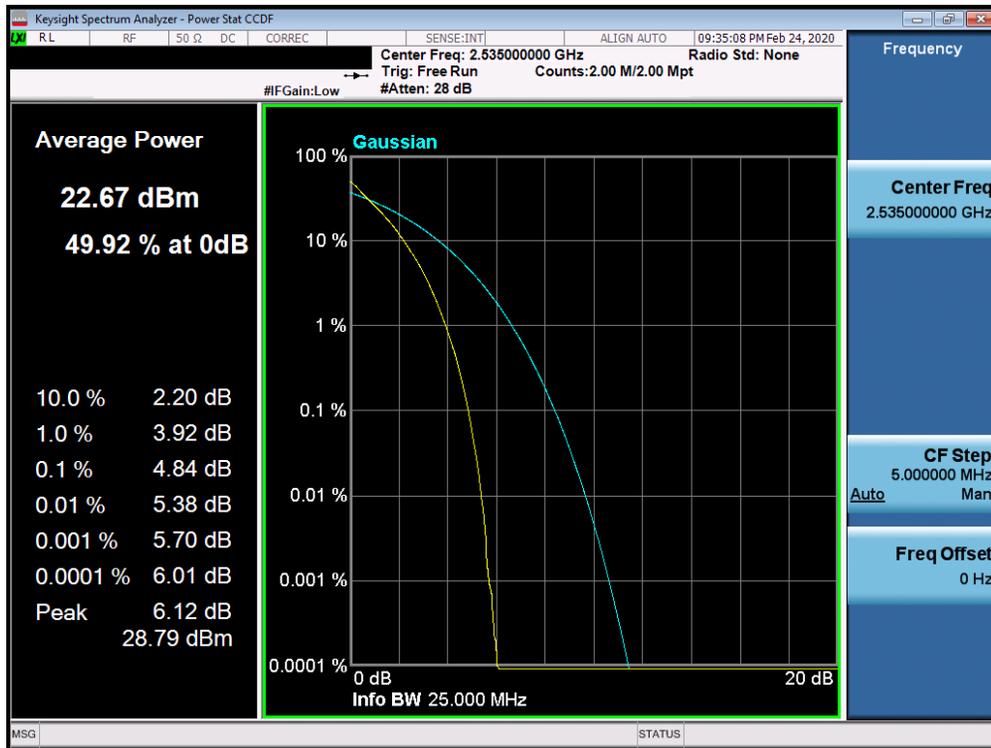


Plot 7-306. PAR Plot (Band 7 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 174 of 211

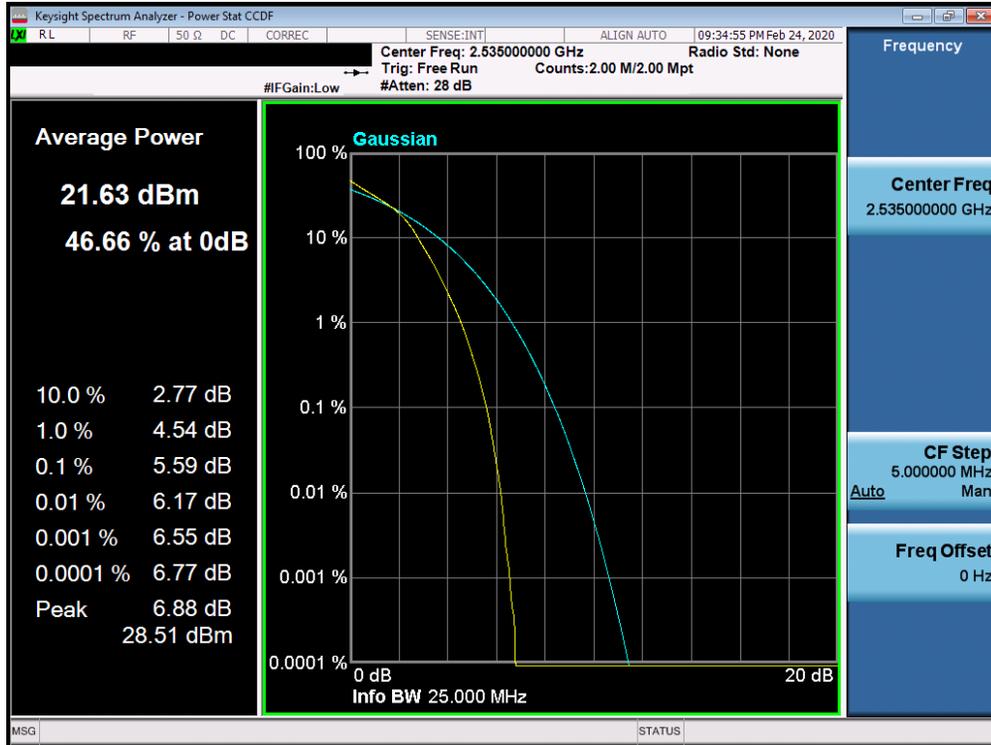


Plot 7-307. PAR Plot (Band 7 - 15.0MHz 64-QAM - Full RB Configuration)

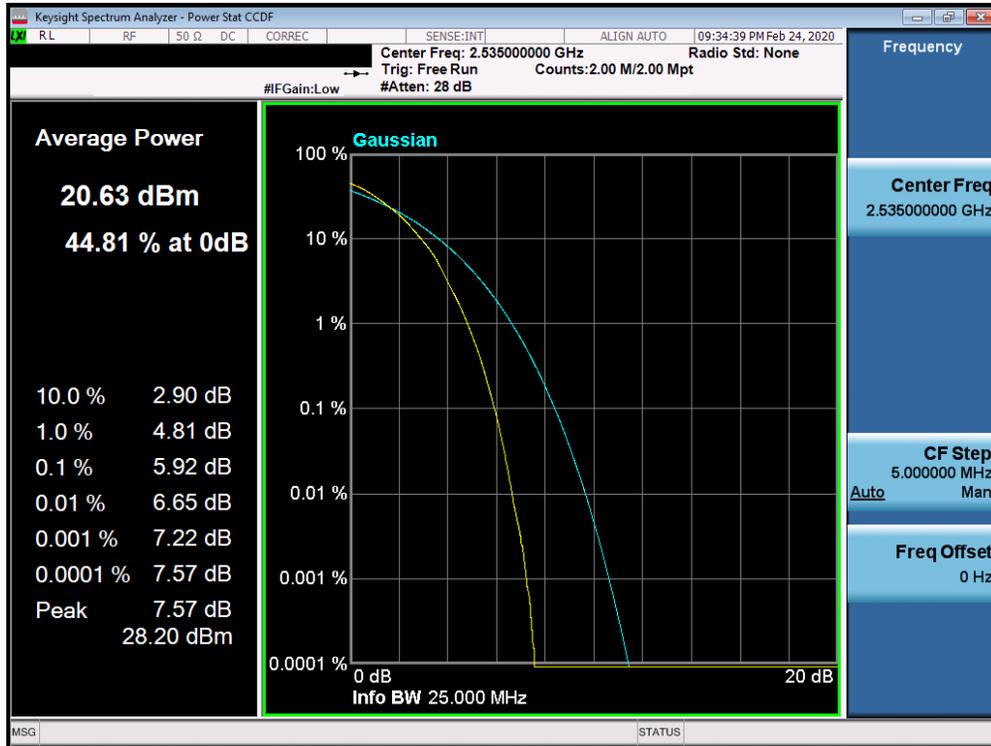


Plot 7-308. PAR Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 175 of 211



Plot 7-309. PAR Plot (Band 7 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-310. PAR Plot (Band 7 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 176 of 211

## 7.6 Radiated Power (ERP/EIRP)

### Test Overview

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

### Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

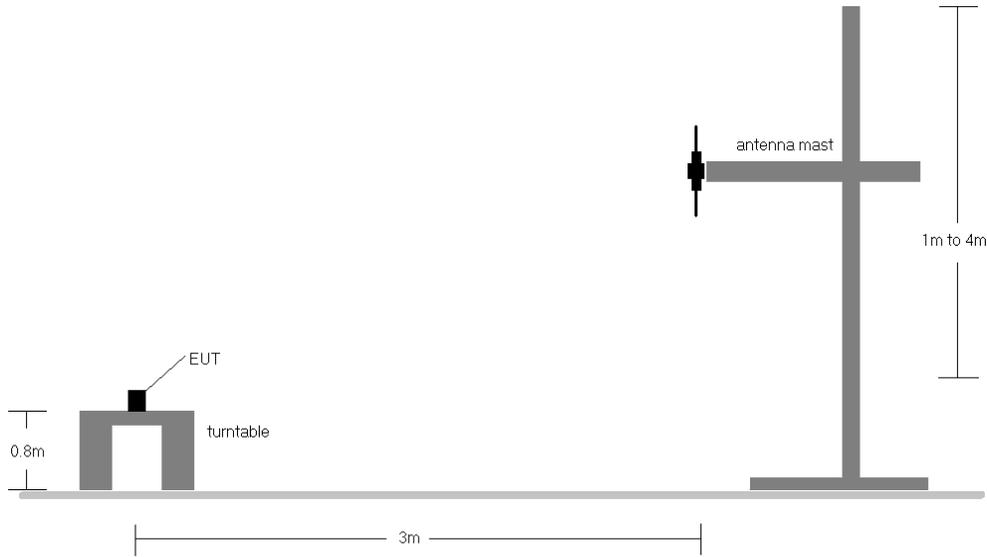
### Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
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

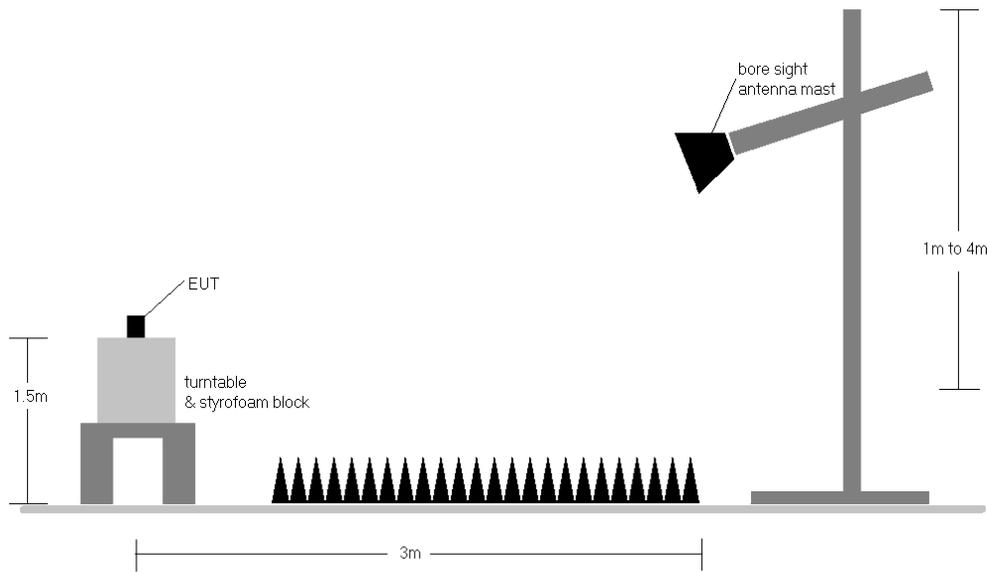
FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 177 of 211	

**Test Setup**

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



**Figure 7-5. Radiated Test Setup <1GHz**



**Figure 7-6. Radiated Test Setup >1GHz**

**Test Notes**

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

FCC ID: ZNFK300UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 178 of 211

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	162	179	1 / 0	17.37	4.50	<b>19.72</b>	0.094	34.77	-15.05	<b>21.87</b>	0.154	36.99	-15.12
707.50	1.4	QPSK	V	177	180	1 / 0	17.12	4.60	19.57	0.091	34.77	-15.20	21.72	0.149	36.99	-15.27
715.30	1.4	QPSK	V	168	181	1 / 0	16.57	4.63	19.05	0.080	34.77	-15.72	21.20	0.132	36.99	-15.79
699.70	1.4	16-QAM	V	162	179	1 / 0	16.43	4.50	<b>18.78</b>	0.076	34.77	-15.99	<b>20.93</b>	0.124	36.99	-16.06
699.70	1.4	64-QAM	V	162	179	1 / 0	15.97	4.50	<b>18.32</b>	0.068	34.77	-16.45	<b>20.47</b>	0.111	36.99	-16.52
700.50	3	QPSK	V	164	176	1 / 0	17.44	4.55	<b>19.84</b>	0.096	34.77	-14.93	<b>21.99</b>	0.158	36.99	-15.00
707.50	3	QPSK	V	180	175	1 / 0	17.17	4.60	19.62	0.092	34.77	-15.15	21.77	0.150	36.99	-15.22
714.50	3	QPSK	V	163	186	1 / 0	16.47	4.60	18.92	0.078	34.77	-15.85	21.07	0.128	36.99	-15.92
700.50	3	16-QAM	V	164	176	1 / 0	16.56	4.55	<b>18.96</b>	0.079	34.77	-15.81	<b>21.11</b>	0.129	36.99	-15.88
700.50	3	64-QAM	V	164	176	1 / 0	16.00	4.55	<b>18.40</b>	0.069	34.77	-16.37	<b>20.55</b>	0.114	36.99	-16.44
715.30	1.4	QPSK	H	109	57	1 / 0	15.05	3.70	16.60	0.046	34.77	-18.17	18.75	0.075	36.99	-18.24

Table 7-3. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
701.50	5	QPSK	V	162	174	1 / 0	17.54	4.60	<b>19.99</b>	<b>0.100</b>	34.77	-14.78	<b>22.14</b>	<b>0.164</b>	36.99	-14.85
707.50	5	QPSK	V	177	180	1 / 0	17.27	4.60	19.72	0.094	34.77	-15.05	21.87	0.154	36.99	-15.12
713.50	5	QPSK	V	159	182	1 / 0	16.47	4.60	18.92	0.078	34.77	-15.85	21.07	0.128	36.99	-15.92
701.50	5	16-QAM	V	162	174	1 / 0	16.60	4.60	<b>19.05</b>	0.080	34.77	-15.72	<b>21.20</b>	0.132	36.99	-15.79
701.50	5	64-QAM	V	162	174	1 / 0	15.84	4.60	<b>18.29</b>	0.067	34.77	-16.48	<b>20.44</b>	0.111	36.99	-16.55
704.00	10	QPSK	V	166	173	1 / 0	17.40	4.50	<b>19.75</b>	0.094	34.77	-15.02	<b>21.90</b>	0.155	36.99	-15.09
707.50	10	QPSK	V	181	183	1 / 0	17.13	4.60	19.58	0.091	34.77	-15.19	21.73	0.149	36.99	-15.26
711.00	10	QPSK	V	154	188	1 / 0	16.33	4.60	18.78	0.076	34.77	-15.99	20.93	0.124	36.99	-16.06
704.00	10	16-QAM	V	166	173	1 / 0	16.58	4.50	<b>18.93</b>	0.078	34.77	-15.84	<b>21.08</b>	0.128	36.99	-15.91
704.00	10	64-QAM	V	166	173	1 / 0	15.91	4.50	<b>18.26</b>	0.067	34.77	-16.51	<b>20.41</b>	0.110	36.99	-16.58
701.50	5	QPSK	H	114	62	1 / 0	16.73	3.40	<b>17.98</b>	<b>0.063</b>	34.77	-16.79	<b>20.13</b>	<b>0.103</b>	36.99	-16.86

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

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	230	189	1 / 0	15.29	5.80	<b>18.94</b>	0.078	34.77	-15.83	<b>21.09</b>	0.129	36.99	-15.90
782.00	5	QPSK	H	233	176	1 / 0	14.89	5.80	18.54	0.071	34.77	-16.23	20.69	0.117	36.99	-16.30
784.50	5	QPSK	H	234	182	1 / 0	14.64	5.90	18.39	0.069	34.77	-16.38	20.54	0.113	36.99	-16.45
779.50	5	16-QAM	H	230	189	1 / 0	14.18	5.80	<b>17.83</b>	0.061	34.77	-16.94	<b>19.98</b>	0.100	36.99	-17.01
779.50	5	64-QAM	H	230	189	1 / 0	13.12	5.80	16.77	0.048	34.77	-18.00	18.92	0.078	36.99	-18.07
782.00	10	QPSK	H	237	175	1 / 0	15.81	5.80	<b>19.46</b>	<b>0.088</b>	34.77	-15.31	<b>21.61</b>	<b>0.145</b>	36.99	-15.38
782.00	10	16-QAM	H	237	175	1 / 0	14.71	5.80	<b>18.36</b>	0.069	34.77	-16.41	<b>20.51</b>	0.112	36.99	-16.48
782.00	10	64-QAM	H	237	175	1 / 0	13.66	5.80	<b>17.31</b>	0.054	34.77	-17.46	<b>19.46</b>	0.088	36.99	-17.53
782.00	10	QPSK	V	150	200	1 / 0	15.50	5.80	19.15	0.082	34.77	-15.62	21.30	0.135	36.99	-15.69

Table 7-5. ERP Data (Band 13)

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 179 of 211	

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	218	54	1 / 5	12.42	6.70	16.97	0.050	38.45	-21.48	19.12	0.082	40.61	-21.49
836.50	1.4	QPSK	H	224	42	1 / 0	13.09	6.70	<b>17.64</b>	<b>0.058</b>	38.45	-20.81	<b>19.79</b>	<b>0.095</b>	40.61	-20.82
848.30	1.4	QPSK	H	223	59	1 / 0	12.10	6.70	16.65	0.046	38.45	-21.80	18.80	0.076	40.61	-21.81
836.50	1.4	16-QAM	H	224	42	1 / 0	11.84	6.70	<b>16.39</b>	0.044	38.45	-22.06	<b>18.54</b>	0.071	40.61	-22.07
836.50	1.4	64-QAM	H	224	42	1 / 0	11.19	6.70	<b>15.74</b>	0.037	38.45	-22.71	<b>17.89</b>	0.062	40.61	-22.72
825.50	3	QPSK	H	223	51	1 / 14	12.53	6.70	17.08	0.051	38.45	-21.37	19.23	0.084	40.61	-21.38
836.50	3	QPSK	H	219	48	1 / 0	13.03	6.70	<b>17.58</b>	0.057	38.45	-20.87	<b>19.73</b>	0.094	40.61	-20.88
847.50	3	QPSK	H	227	50	1 / 0	12.24	6.65	16.74	0.047	38.45	-21.71	18.89	0.077	40.61	-21.72
836.50	3	16-QAM	H	219	48	1 / 0	12.18	6.70	<b>16.73</b>	0.047	38.45	-21.72	<b>18.88</b>	0.077	40.61	-21.73
836.50	3	64-QAM	H	219	48	1 / 0	11.17	6.70	<b>15.72</b>	0.037	38.45	-22.73	<b>17.87</b>	0.061	40.61	-22.74
826.50	5	QPSK	H	219	52	1 / 24	12.47	6.70	17.02	0.050	38.45	-21.43	19.17	0.083	40.61	-21.44
836.50	5	QPSK	H	217	51	1 / 0	12.99	6.70	<b>17.54</b>	0.057	38.45	-20.91	<b>19.69</b>	0.093	40.61	-20.92
846.50	5	QPSK	H	220	46	1 / 0	12.02	6.60	16.47	0.044	38.45	-21.98	18.62	0.073	40.61	-21.99
836.50	5	16-QAM	H	217	51	1 / 0	12.44	6.70	<b>16.99</b>	0.050	38.45	-21.46	<b>19.14</b>	0.082	40.61	-21.47
836.50	5	64-QAM	H	217	51	1 / 0	11.07	6.70	<b>15.62</b>	0.036	38.45	-22.83	<b>17.77</b>	0.060	40.61	-22.84
829.00	10	QPSK	H	209	48	1 / 49	12.52	6.70	17.07	0.051	38.45	-21.38	19.22	0.084	40.61	-21.39
836.50	10	QPSK	H	221	54	1 / 0	13.04	6.70	<b>17.59</b>	0.057	38.45	-20.86	<b>19.74</b>	0.094	40.61	-20.87
844.00	10	QPSK	H	224	42	1 / 0	12.07	6.60	16.52	0.045	38.45	-21.93	18.67	0.074	40.61	-21.94
836.50	10	16-QAM	H	221	54	1 / 0	12.24	6.70	<b>16.79</b>	0.048	38.45	-21.66	<b>18.94</b>	0.078	40.61	-21.67
836.50	10	64-QAM	H	221	54	1 / 0	11.13	6.70	<b>15.68</b>	0.037	38.45	-22.77	<b>17.83</b>	0.061	40.61	-22.78
824.70	1.4	QPSK	V	100	265	6 / 0	12.38	6.70	16.93	0.049	38.45	-21.52	19.08	0.081	40.61	-21.53

Table 7-6. EIRP Data (Band 5)

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 180 of 211	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	108	344	1 / 5	12.96	9.44	22.40	0.174	30.00	-7.60
1745.00	1.4	QPSK	H	106	332	1 / 5	13.16	9.23	22.39	0.173	30.00	-7.61
1779.30	1.4	QPSK	H	110	344	1 / 0	13.50	9.26	<b>22.76</b>	0.189	30.00	-7.24
1779.30	1.4	16-QAM	H	110	344	1 / 0	11.98	9.26	<b>21.24</b>	0.133	30.00	-8.76
1779.30	1.4	64-QAM	H	110	344	1 / 0	11.24	9.26	<b>20.50</b>	0.112	30.00	-9.50
1711.50	3	QPSK	H	112	341	1 / 14	12.91	9.44	22.35	0.172	30.00	-7.65
1745.00	3	QPSK	H	102	328	1 / 14	13.10	9.23	22.33	0.171	30.00	-7.67
1778.50	3	QPSK	H	116	346	1 / 0	13.55	9.26	<b>22.81</b>	0.191	30.00	-7.19
1778.50	3	16-QAM	H	116	346	1 / 0	12.12	9.26	<b>21.38</b>	0.137	30.00	-8.62
1778.50	3	64-QAM	H	116	346	1 / 0	11.25	9.26	<b>20.51</b>	0.112	30.00	-9.49
1712.50	5	QPSK	H	110	342	1 / 24	12.91	9.43	22.34	0.171	30.00	-7.66
1745.00	5	QPSK	H	104	332	1 / 24	13.11	9.23	22.34	0.171	30.00	-7.66
1777.50	5	QPSK	H	114	342	1 / 0	13.40	9.26	<b>22.66</b>	0.184	30.00	-7.34
1777.50	5	16-QAM	H	114	342	1 / 0	12.14	9.26	<b>21.40</b>	0.138	30.00	-8.60
1777.50	5	64-QAM	H	114	342	1 / 0	11.21	9.26	<b>20.47</b>	0.111	30.00	-9.53
1715.00	10	QPSK	H	107	340	1 / 49	12.91	9.42	22.33	0.171	30.00	-7.67
1745.00	10	QPSK	H	101	337	1 / 49	13.11	9.23	22.34	0.171	30.00	-7.66
1775.00	10	QPSK	H	117	340	1 / 0	13.59	9.25	<b>22.84</b>	<b>0.192</b>	30.00	-7.16
1775.00	10	16-QAM	H	117	340	1 / 0	12.18	9.25	<b>21.43</b>	0.139	30.00	-8.57
1775.00	10	64-QAM	H	117	340	1 / 0	11.24	9.25	<b>20.49</b>	0.112	30.00	-9.51
1717.50	15	QPSK	H	105	344	1 / 74	12.77	9.40	22.17	0.165	30.00	-7.83
1745.00	15	QPSK	H	102	332	1 / 74	12.99	9.23	22.22	0.167	30.00	-7.78
1772.50	15	QPSK	H	120	342	1 / 0	13.47	9.25	<b>22.72</b>	0.187	30.00	-7.28
1772.50	15	16-QAM	H	120	342	1 / 0	12.07	9.25	<b>21.32</b>	0.135	30.00	-8.68
1772.50	15	64-QAM	H	120	342	1 / 0	11.46	9.25	<b>20.71</b>	0.118	30.00	-9.29
1720.00	20	QPSK	H	106	341	1 / 99	12.60	9.38	21.98	0.158	30.00	-8.02
1745.00	20	QPSK	H	100	337	1 / 99	13.19	9.23	22.42	0.175	30.00	-7.58
1770.00	20	QPSK	H	118	345	1 / 0	13.48	9.24	<b>22.72</b>	0.187	30.00	-7.28
1770.00	20	16-QAM	H	118	345	1 / 0	12.69	9.24	<b>21.93</b>	0.156	30.00	-8.07
1770.00	20	64-QAM	H	118	345	1 / 0	11.57	9.24	<b>20.81</b>	0.121	30.00	-9.19
1710.70	1.4	QPSK	V	371	79	6 / 0	11.24	9.23	20.47	0.111	30.00	-9.53

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

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 181 of 211

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	119	61	1 / 5	13.39	9.48	22.87	0.194	33.01	-10.14
1882.50	1.4	QPSK	H	121	64	1 / 5	13.94	9.94	23.88	0.244	33.01	-9.14
1914.30	1.4	QPSK	H	120	59	1 / 0	14.07	10.29	<b>24.36</b>	<b>0.273</b>	33.01	-8.65
1914.30	1.4	16-QAM	H	120	59	1 / 0	12.36	10.29	22.65	0.184	33.01	-10.36
1914.30	1.4	64-QAM	H	120	59	1 / 0	11.90	10.29	22.19	0.166	33.01	-10.82
1851.50	3	QPSK	H	121	64	1 / 14	13.37	9.50	22.87	0.193	33.01	-10.14
1882.50	3	QPSK	H	118	62	1 / 14	13.93	9.94	23.87	0.244	33.01	-9.15
1913.50	3	QPSK	H	119	61	1 / 0	13.94	10.29	<b>24.23</b>	0.265	33.01	-8.79
1913.50	3	16-QAM	H	119	61	1 / 0	12.64	10.29	22.93	0.196	33.01	-10.09
1913.50	3	64-QAM	H	119	61	1 / 0	12.05	10.29	<b>22.34</b>	0.171	33.01	-10.68
1852.50	5	QPSK	H	125	60	1 / 24	13.38	9.51	22.89	0.195	33.01	-10.12
1882.50	5	QPSK	H	123	58	1 / 24	13.94	9.94	23.88	0.244	33.01	-9.14
1912.50	5	QPSK	H	115	64	1 / 0	13.80	10.28	<b>24.08</b>	0.256	33.01	-8.93
1912.50	5	16-QAM	H	115	64	1 / 0	12.50	10.28	<b>22.78</b>	0.190	33.01	-10.23
1912.50	5	64-QAM	H	115	64	1 / 0	11.94	10.28	<b>22.22</b>	0.167	33.01	-10.79
1855.00	10	QPSK	H	120	62	1 / 49	13.39	9.55	22.94	0.197	33.01	-10.07
1882.50	10	QPSK	H	119	61	1 / 49	13.95	9.94	23.89	0.245	33.01	-9.13
1910.00	10	QPSK	H	113	62	1 / 0	13.86	10.26	<b>24.12</b>	0.258	33.01	-8.89
1910.00	10	16-QAM	H	113	62	1 / 0	12.64	10.26	22.90	0.195	33.01	-10.11
1910.00	10	64-QAM	H	113	62	1 / 0	12.03	10.26	<b>22.29</b>	0.169	33.01	-10.72
1857.50	15	QPSK	H	122	67	1 / 74	13.44	9.58	23.02	0.200	33.01	-9.99
1882.50	15	QPSK	H	117	62	1 / 74	13.84	9.94	23.78	0.239	33.01	-9.24
1907.50	15	QPSK	H	110	60	1 / 0	13.82	10.24	<b>24.06</b>	0.255	33.01	-8.95
1907.50	15	16-QAM	H	110	60	1 / 0	12.63	10.24	22.87	0.194	33.01	-10.14
1907.50	15	64-QAM	H	110	60	1 / 0	11.95	10.24	22.19	0.166	33.01	-10.82
1860.00	20	QPSK	H	126	65	1 / 99	13.45	9.62	23.07	0.203	33.01	-9.94
1882.50	20	QPSK	H	113	60	1 / 99	13.99	9.94	23.93	0.247	33.01	-9.09
1905.00	20	QPSK	H	112	66	1 / 0	13.71	10.22	<b>23.93</b>	0.247	33.01	-9.08
1905.00	20	16-QAM	H	112	66	1 / 0	12.84	10.22	23.06	0.202	33.01	-9.95
1905.00	20	64-QAM	H	112	66	1 / 0	11.85	10.22	<b>22.07</b>	0.161	33.01	-10.94
1914.30	1.4	QPSK	V	317	58	6 / 0	12.51	10.12	22.63	0.183	33.01	-10.38

Table 7-8. EIRP Data (Band 25/2)

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 182 of 211	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	168	24	1 / 0	10.52	9.43	<b>19.95</b>	0.099	33.01	-13.06
2535.00	5	QPSK	H	163	18	1 / 0	10.53	9.39	19.92	0.098	33.01	-13.09
2567.50	5	QPSK	H	151	21	1 / 0	9.61	9.45	19.06	0.081	33.01	-13.95
2502.50	5	16-QAM	H	168	24	1 / 0	10.39	9.43	<b>19.82</b>	0.096	33.01	-13.19
2502.50	5	64-QAM	H	168	24	1 / 0	8.81	9.43	18.24	0.067	33.01	-14.77
2505.00	10	QPSK	H	165	22	1 / 0	10.65	9.43	20.08	0.102	33.01	-12.93
2535.00	10	QPSK	H	161	20	1 / 0	10.70	9.39	<b>20.09</b>	0.102	33.01	-12.92
2565.00	10	QPSK	H	153	18	1 / 0	9.67	9.44	19.11	0.081	33.01	-13.90
2535.00	10	16-QAM	H	161	20	1 / 0	10.47	9.39	<b>19.86</b>	0.097	33.01	-13.15
2535.00	10	64-QAM	H	161	20	1 / 0	9.16	9.39	<b>18.55</b>	0.072	33.01	-14.46
2507.50	15	QPSK	H	163	20	1 / 0	10.62	9.42	<b>20.04</b>	0.101	33.01	-12.97
2535.00	15	QPSK	H	158	19	1 / 0	10.62	9.39	20.01	0.100	33.01	-13.00
2562.50	15	QPSK	H	151	17	1 / 0	9.61	9.43	19.04	0.080	33.01	-13.97
2507.50	15	16-QAM	H	163	20	1 / 0	10.38	9.42	<b>19.80</b>	0.096	33.01	-13.21
2507.50	15	64-QAM	H	163	20	1 / 0	8.91	9.42	18.33	0.068	33.01	-14.68
2510.00	20	QPSK	H	161	22	1 / 0	10.74	9.42	20.16	0.104	33.01	-12.85
2535.00	20	QPSK	H	155	17	1 / 0	10.78	9.39	<b>20.17</b>	<b>0.104</b>	33.01	-12.84
2560.00	20	QPSK	H	147	12	1 / 0	9.91	9.42	19.33	0.086	33.01	-13.68
2535.00	20	16-QAM	H	155	17	1 / 0	10.11	9.39	<b>19.50</b>	0.089	33.01	-13.51
2535.00	20	64-QAM	H	155	17	1 / 0	9.03	9.39	<b>18.42</b>	0.070	33.01	-14.59
2567.50	5	QPSK	V	116	307	25 / 0	9.37	9.39	18.76	0.075	33.01	-14.25

Table 7-9. EIRP Data (Band 7)

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## 7.7 Radiated Spurious Emissions Measurements

### Test Overview

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

### Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

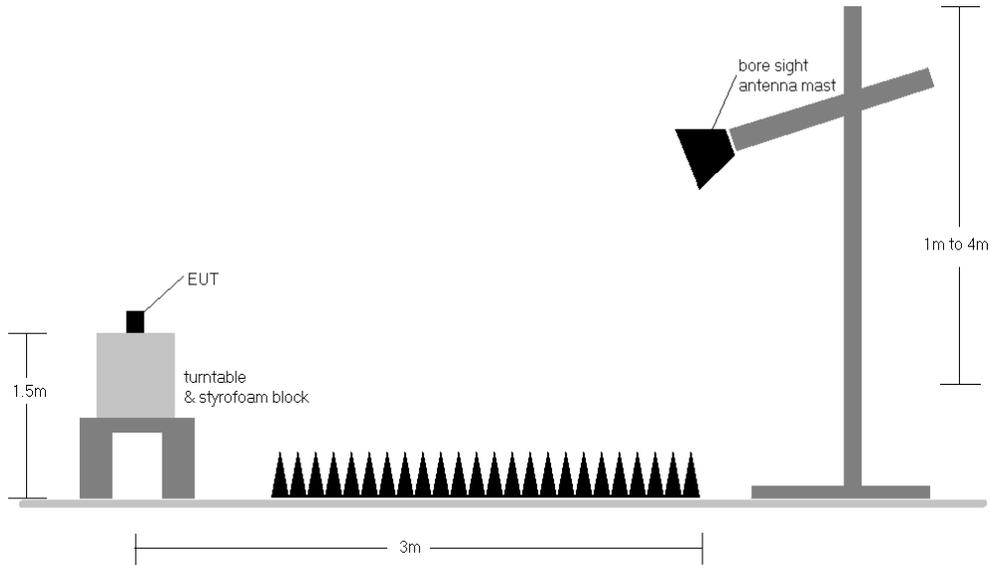
### Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW  $\geq$  3 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: ZNFK300UM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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**Test Setup**

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



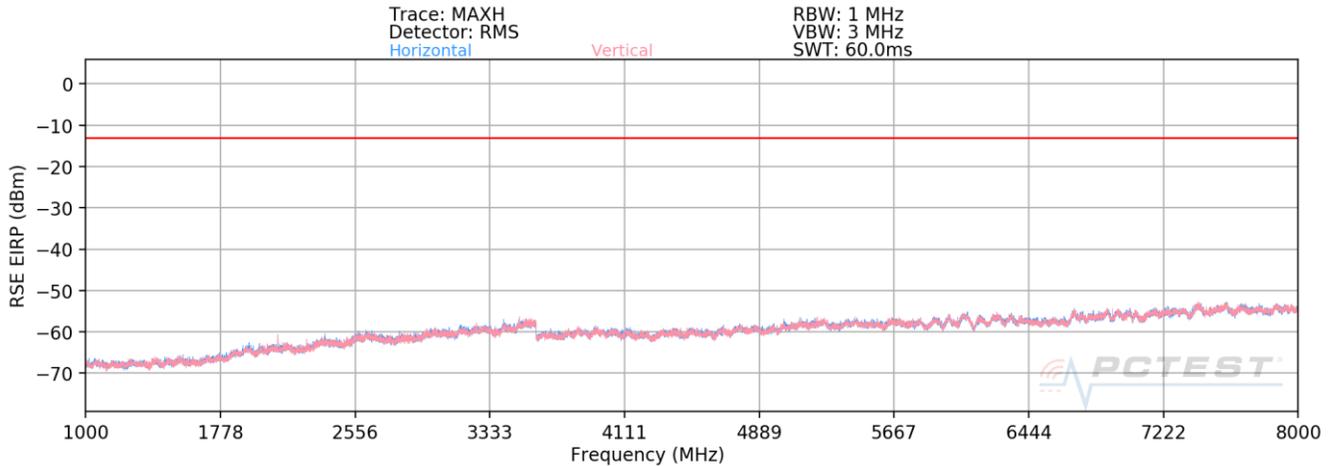
**Figure 7-7. Test Instrument & Measurement Setup**

**Test Notes**

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

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2002170021-03-R1.ZNF	<b>Test Dates:</b> 2/17 - 3/16/2020	<b>EUT Type:</b> Portable Handset		Page 185 of 211

## Band 12/17



**Plot 7-311. Radiated Spurious Plot above 1GHz (Band 12/17)**

OPERATING FREQUENCY: 701.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1403.00	H	152	184	-78.59	7.54	-71.05	-58.1
2104.50	H	113	2	-72.00	8.85	-63.15	-50.1
2806.00	H	-	-	-79.07	10.12	-68.95	-56.0
3507.50	H	-	-	-76.31	9.91	-66.40	-53.4

**Table 7-10. Radiated Spurious Data (Band 12/17 – Low Channel)**

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 186 of 211	

OPERATING FREQUENCY: 707.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	151	176	-78.61	7.63	-70.98	-58.0
2122.50	H	372	7	-74.55	8.86	-65.68	-52.7
2830.00	H	-	-	-78.72	10.10	-68.62	-55.6
3537.50	H	-	-	-75.29	9.90	-65.39	-52.4

Table 7-11. Radiated Spurious Data (Band 12/17 – Mid Channel)

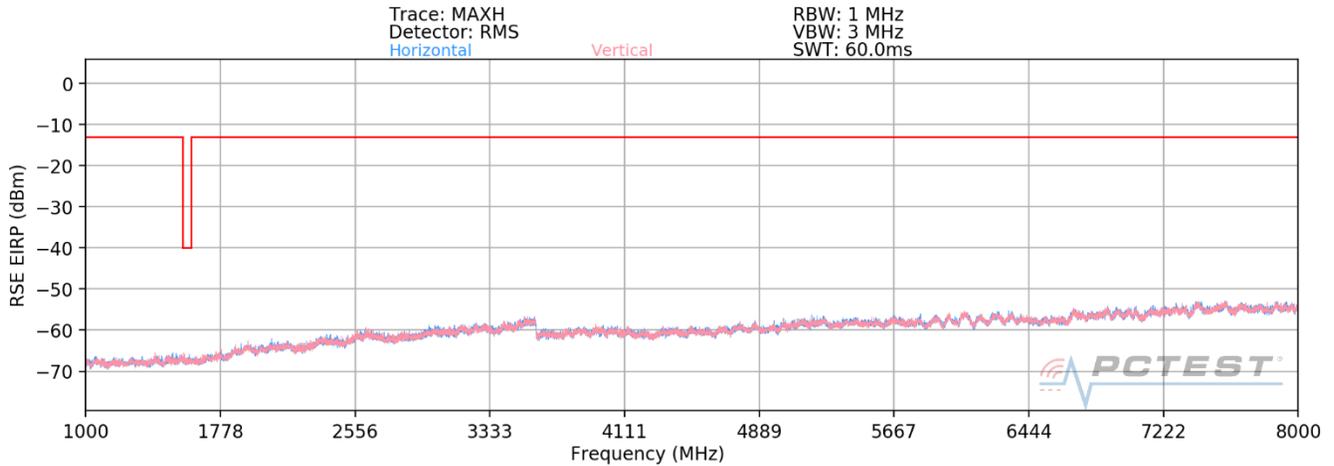
OPERATING FREQUENCY: 713.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1427.00	H	150	327	-80.25	7.72	-72.53	-59.5
2140.50	H	161	353	-72.12	8.87	-63.25	-50.2
2854.00	H	-	-	-79.69	10.07	-69.62	-56.6
3567.50	H	-	-	-77.09	9.89	-67.19	-54.2

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

FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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## Band 13



**Plot 7-312. 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	-	-	-78.95	9.43	-69.52	-56.5
3128.00	V	-	-	-76.42	9.34	-67.08	-54.1

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

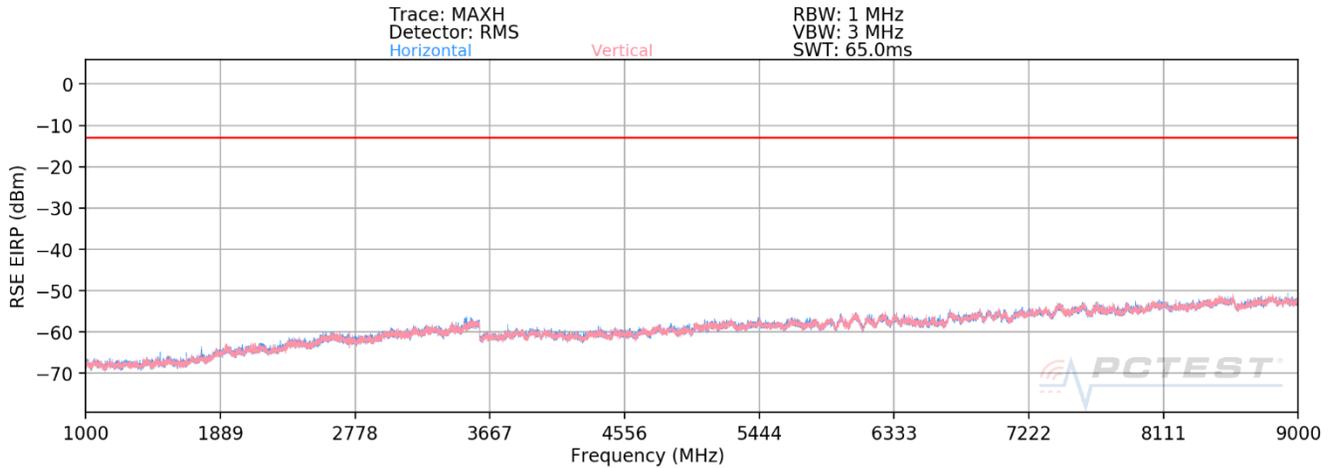
MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.00 MHz  
 DISTANCE: 3 meters  
 NARROWBAND EMISSION LIMIT: -50 dBm  
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

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	149	107	-80.44	8.53	-71.91	-31.9

**Table 7-14. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)**

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Band 5



**Plot 7-313. Radiated Spurious Plot above 1GHz (Band 5)**

OPERATING FREQUENCY: 824.70 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 1.4 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1649.40	H	295	142	-76.59	8.95	-67.64	-54.6
2474.10	H	151	178	-78.85	9.70	-69.14	-56.1
3298.80	H	-	-	-76.12	9.59	-66.53	-53.5
4123.50	H	-	-	-76.17	10.22	-65.96	-53.0

**Table 7-15. Radiated Spurious Data (Band 5 – Low Channel)**

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 189 of 211	

OPERATING FREQUENCY: 836.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 1.4 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	162	347	-76.19	8.95	-67.24	-54.2
2509.50	H	298	190	-77.68	9.75	-67.93	-54.9
3346.00	H	-	-	-76.93	9.60	-67.33	-54.3
4182.50	H	-	-	-77.29	10.34	-66.95	-54.0

Table 7-16. Radiated Spurious Data (Band 5 – Mid Channel)

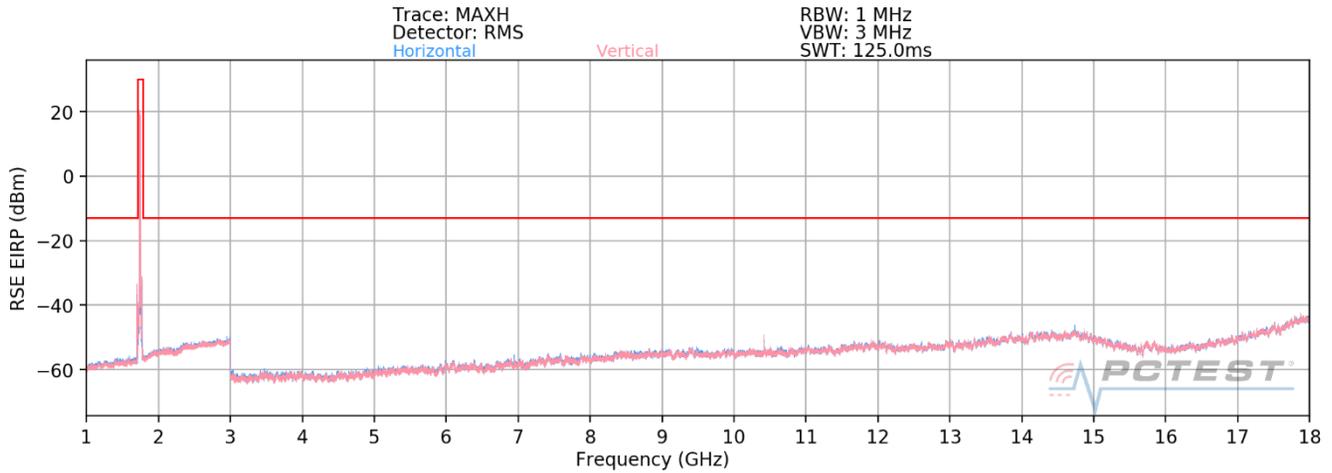
OPERATING FREQUENCY: 848.30 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 1.4 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1696.60	H	154	348	-77.19	8.95	-68.23	-55.2
2544.90	H	331	197	-77.22	9.75	-67.47	-54.5
3393.20	H	-	-	-77.25	9.71	-67.55	-54.5
4241.50	H	-	-	-77.51	10.48	-67.02	-54.0

Table 7-17. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 190 of 211	

## Band 66/4



**Plot 7-314. Radiated Spurious Plot above 1GHz (Band 66/4)**

OPERATING FREQUENCY: 1710.70 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 1.4 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3421.40	H	281	180	-67.15	9.84	-57.30	-44.3
5132.10	H	133	242	-75.79	10.71	-65.08	-52.1
6842.80	H	119	20	-70.12	11.68	-58.44	-45.4
8553.50	H	-	-	-71.57	11.08	-60.49	-47.5
10264.20	H	113	191	-69.46	12.38	-57.08	-44.1
11974.90	H	-	-	-70.05	12.71	-57.34	-44.3
13685.60	H	-	-	-67.05	11.99	-55.06	-42.1

**Table 7-18. Radiated Spurious Data (Band 66/4 – Low Channel)**

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 191 of 211

OPERATING FREQUENCY: 1745.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 1.4 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	151	159	-71.44	9.91	-61.52	-48.5
5235.00	H	112	339	-74.94	10.73	-64.21	-51.2
6980.00	H	118	20	-70.60	11.82	-58.78	-45.8
8725.00	H	-	-	-71.48	11.00	-60.48	-47.5
10470.00	H	121	198	-69.44	12.58	-56.86	-43.9
12215.00	H	-	-	-71.16	13.11	-58.04	-45.0
13960.00	H	-	-	-67.55	11.85	-55.70	-42.7

Table 7-19. Radiated Spurious Data (Band 66/4 – Mid Channel)

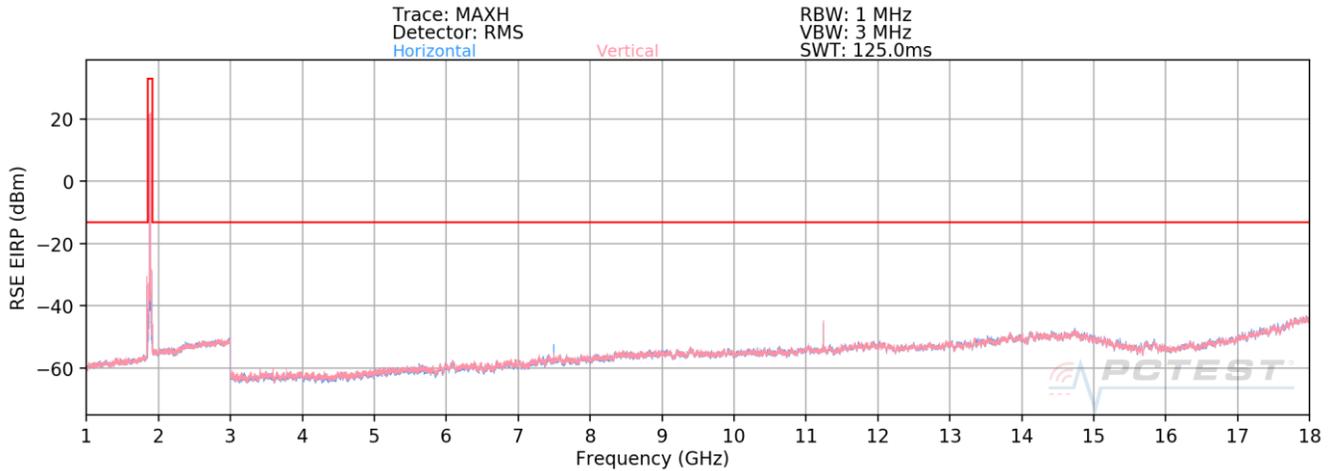
OPERATING FREQUENCY: 1779.30 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 1.4 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3558.60	H	297	165	-67.45	9.89	-57.56	-44.6
5337.90	H	195	321	-76.07	10.69	-65.39	-52.4
7117.20	H	123	135	-71.03	11.79	-59.25	-46.2
8896.50	H	-	-	-71.06	11.00	-60.06	-47.1
10675.80	H	115	205	-68.63	12.58	-56.06	-43.1
12455.10	H	-	-	-70.62	13.33	-57.29	-44.3
14234.40	H	-	-	-66.78	11.53	-55.24	-42.2

Table 7-20. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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## Band 25/2



**Plot 7-315. Radiated Spurious Plot above 1GHz (Band 25/2)**

OPERATING FREQUENCY: 1850.70 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 1.4 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3701.40	V	400	79	-69.94	9.51	-60.44	-47.4
5552.10	V	126	12	-73.23	10.99	-62.25	-49.2
7402.80	V	114	302	-65.05	10.99	-54.06	-41.1
9253.50	V	-	-	-70.79	11.61	-59.18	-46.2
11104.20	V	112	115	-61.26	12.73	-48.53	-35.5
12954.90	V	-	-	-70.04	13.23	-56.81	-43.8
14805.60	V	-	-	-66.33	12.62	-53.72	-40.7

**Table 7-21. Radiated Spurious Data (Band 25/2 – Low Channel)**

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 193 of 211	

OPERATING FREQUENCY: 1882.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 1.4 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	V	398	143	-73.19	9.36	-63.83	-50.8
5647.50	V	117	246	-72.76	11.19	-61.56	-48.6
7530.00	V	111	302	-63.54	11.13	-52.41	-39.4
9412.50	V	-	-	-70.22	11.57	-58.65	-45.6
11295.00	V	112	115	-59.57	12.71	-46.85	-33.9
13177.50	V	-	-	-70.38	13.13	-57.25	-44.2
15060.00	V	-	-	-69.43	13.58	-55.85	-42.9

Table 7-22. Radiated Spurious Data (Band 25/2 – Mid Channel)

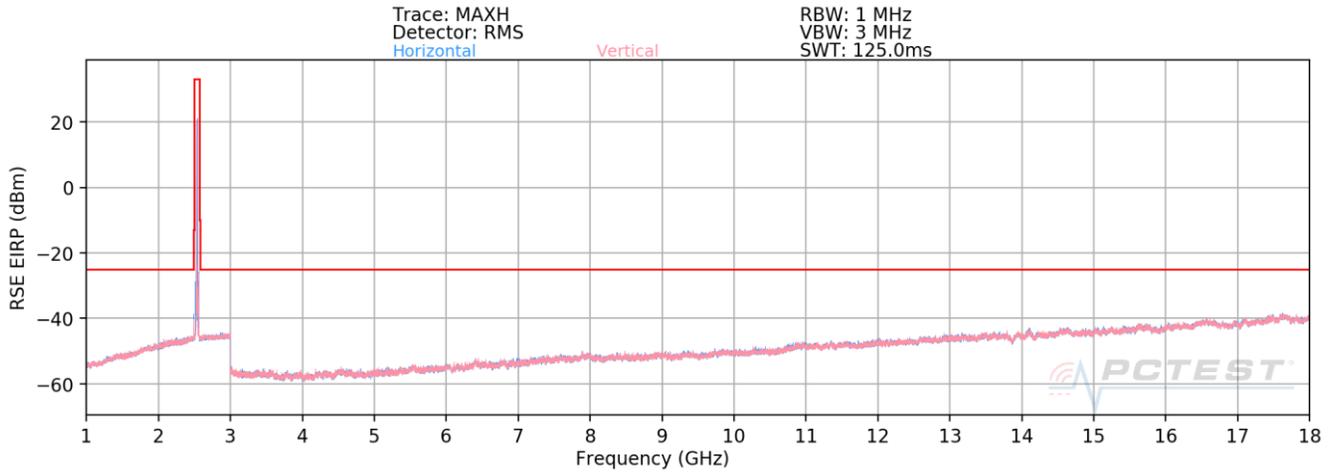
OPERATING FREQUENCY: 1914.30 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 1.4 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3828.60	V	170	138	-73.11	9.29	-63.81	-50.8
5742.90	V	-	-	-75.40	11.35	-64.05	-51.0
7657.20	V	111	300	-65.31	11.29	-54.02	-41.0
9571.50	V	-	-	-71.52	11.73	-59.79	-46.8
11485.80	V	113	113	-65.72	12.83	-52.89	-39.9
13400.10	V	-	-	-68.87	12.80	-56.08	-43.1
15314.40	V	-	-	-71.78	14.79	-56.99	-44.0

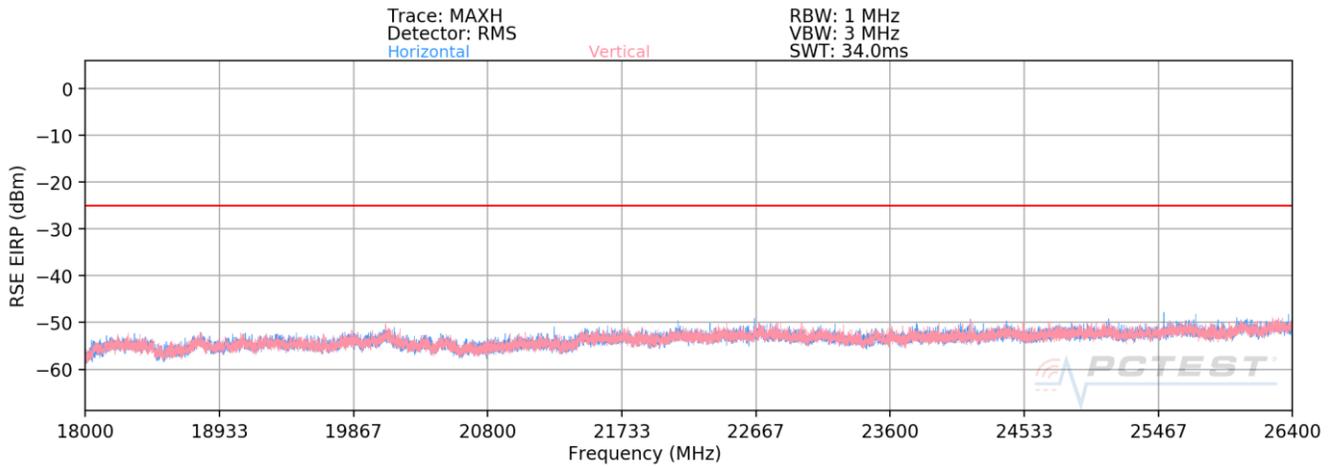
Table 7-23. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 194 of 211

## Band 7



**Plot 7-316. Radiated Spurious Plot 1GHz - 18GHz (Band 7)**



**Plot 7-317. Radiated Spurious Plot 18GHz - 26.5GHz (Band 7)**

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2002170021-03-R1.ZNF	<b>Test Dates:</b> 2/17 - 3/16/2020	<b>EUT Type:</b> Portable Handset	Page 195 of 211	

OPERATING FREQUENCY: 2502.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5005.00	V	116	69	-69.19	10.88	-58.31	-33.3
7507.50	V	-	-	-68.37	11.13	-57.24	-32.2
10010.00	V	290	337	-65.75	11.99	-53.77	-28.8
12512.50	V	-	-	-66.41	13.56	-52.85	-27.9
15015.00	V	-	-	-63.36	13.58	-49.79	-24.8

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

OPERATING FREQUENCY: 2535.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	V	141	79	-69.68	10.75	-58.93	-33.9
7605.00	V	-	-	-68.40	11.25	-57.15	-32.2
10140.00	V	270	337	-67.08	12.07	-55.01	-30.0
12675.00	V	-	-	-65.68	13.66	-52.02	-27.0
15210.00	V	-	-	-65.02	14.71	-50.31	-25.3

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

FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 196 of 211	

OPERATING FREQUENCY: 2567.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5135.00	V	100	313	-66.88	10.68	-56.20	-31.2
7702.50	V	-	-	-68.88	11.39	-57.49	-32.5
10270.00	V	112	244	-67.47	12.18	-55.29	-30.3
12837.50	V	-	-	-65.55	13.50	-52.05	-27.0
15405.00	V	-	-	-64.66	15.29	-49.37	-24.4

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

FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 197 of 211

## 7.8 Frequency Stability / Temperature Variation

### Test Overview and Limit

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

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

***For Part 22, the frequency stability of the transmitter shall be maintained within ±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: ZNFK300UM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 198 of 211	

## Band 12/17 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz  
 CHANNEL: 23790  
 REFERENCE VOLTAGE: 4.25 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	707,500,348	348	0.0000492
100 %		- 20	707,499,914	-86	-0.0000122
100 %		- 10	707,500,034	34	0.0000048
100 %		0	707,500,010	10	0.0000014
100 %		+ 10	707,499,604	-396	-0.0000560
100 %		+ 20	707,499,876	-124	-0.0000175
100 %		+ 30	707,499,899	-101	-0.0000143
100 %		+ 40	707,500,043	43	0.0000061
100 %		+ 50	707,499,578	-422	-0.0000596
BATT. ENDPOINT		3.29	+ 20	707,500,111	111

**Table 7-27. Frequency Stability Data (Band 12/17)**

**Note:**

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

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 199 of 211	

## Band 12/17 Frequency Stability Measurements

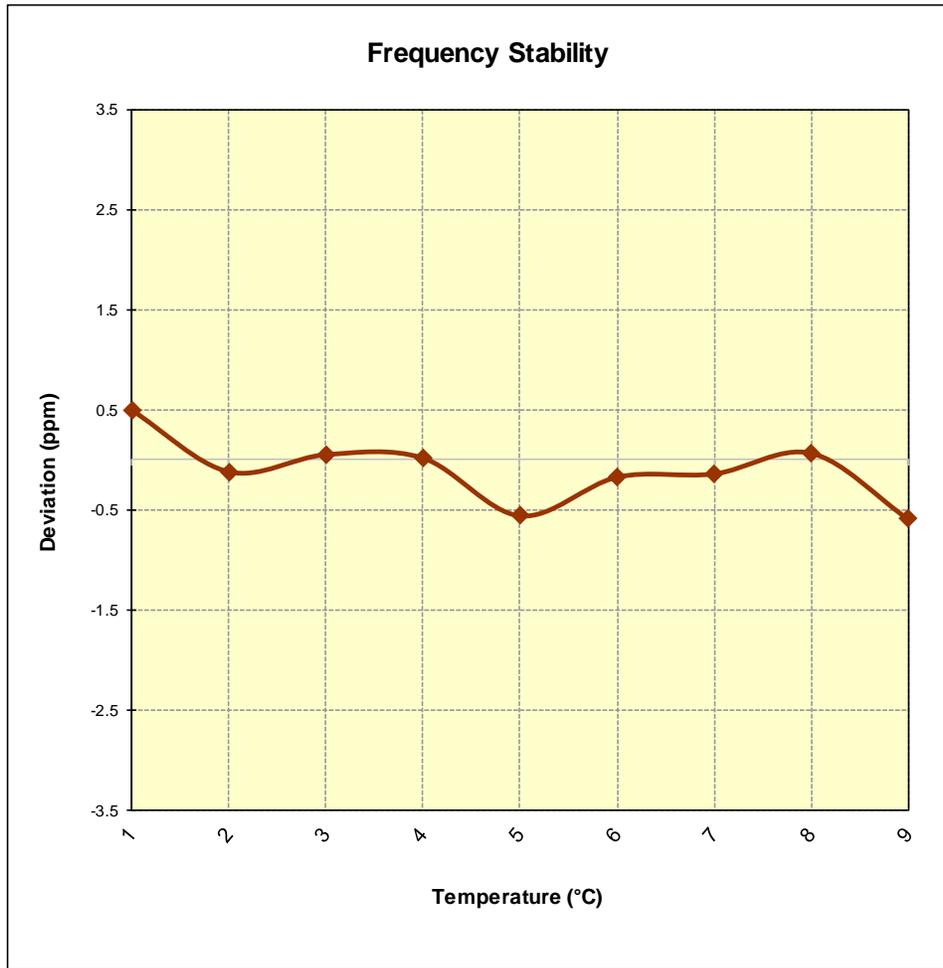


Figure 7-8. Frequency Stability Graph (Band 12/17)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2002170021-03-R1.ZNF	<b>Test Dates:</b> 2/17 - 3/16/2020	<b>EUT Type:</b> Portable Handset	Page 200 of 211	

## Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz  
 CHANNEL: 23230  
 REFERENCE VOLTAGE: 4.25 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	782,000,090	90	0.0000115
100 %		- 20	781,999,906	-94	-0.0000120
100 %		- 10	782,000,008	8	0.0000010
100 %		0	781,999,941	-59	-0.0000075
100 %		+ 10	781,999,993	-7	-0.0000009
100 %		+ 20	781,999,989	-11	-0.0000014
100 %		+ 30	782,000,063	63	0.0000081
100 %		+ 40	781,999,717	-283	-0.0000362
100 %		+ 50	782,000,050	50	0.0000064
BATT. ENDPOINT		3.29	+ 20	782,000,177	177

**Table 7-28. Frequency Stability Data (Band 13)**

FCC ID: ZNFK300UM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 201 of 211	

## Band 13 Frequency Stability Measurements

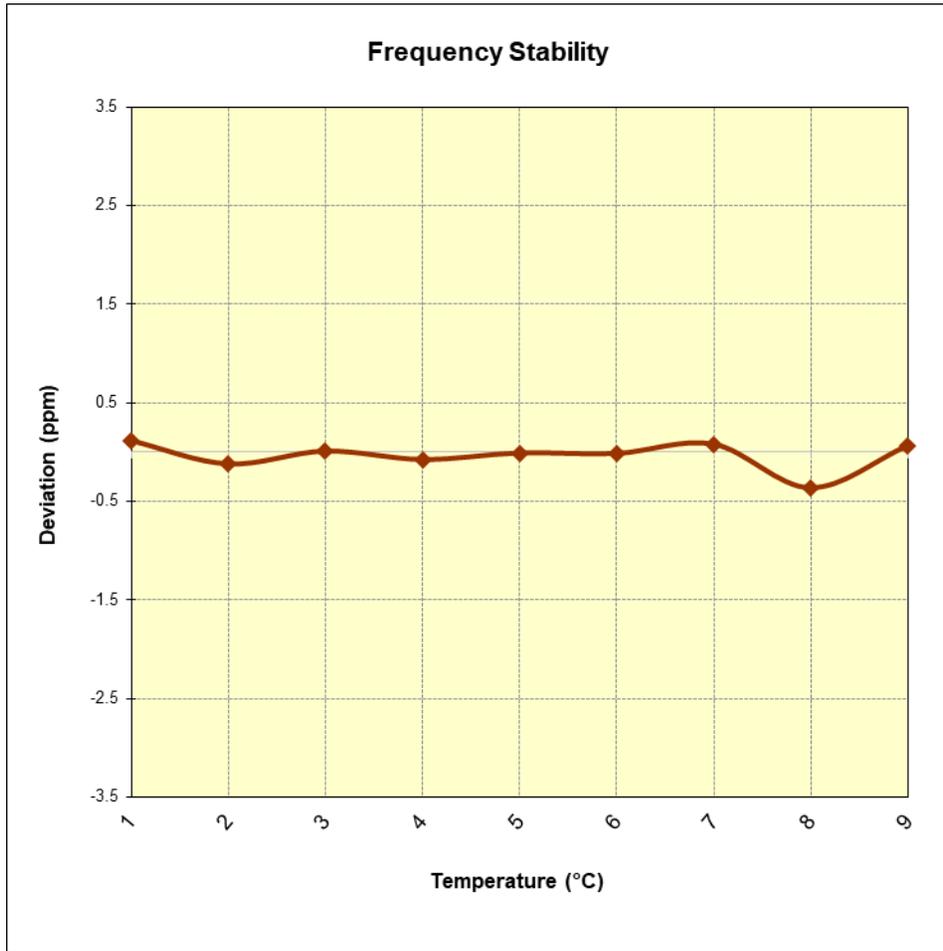


Figure 7-9. Frequency Stability Graph (Band 13)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2002170021-03-R1.ZNF	<b>Test Dates:</b> 2/17 - 3/16/2020	<b>EUT Type:</b> Portable Handset	Page 202 of 211	

## Band 5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz  
 CHANNEL: 20525  
 REFERENCE VOLTAGE: 4.25 VDC  
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	836,499,863	-137	-0.0000164
100 %		- 20	836,500,228	228	0.0000273
100 %		- 10	836,499,715	-285	-0.0000341
100 %		0	836,499,703	-297	-0.0000355
100 %		+ 10	836,499,838	-162	-0.0000194
100 %		+ 20	836,500,126	126	0.0000151
100 %		+ 30	836,500,178	178	0.0000213
100 %		+ 40	836,499,993	-7	-0.0000008
100 %		+ 50	836,499,610	-390	-0.0000466
BATT. ENDPOINT		3.29	+ 20	836,499,868	-132

Table 7-29. Frequency Stability Data (Band 5)

FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 203 of 211	

## Band 5 Frequency Stability Measurements

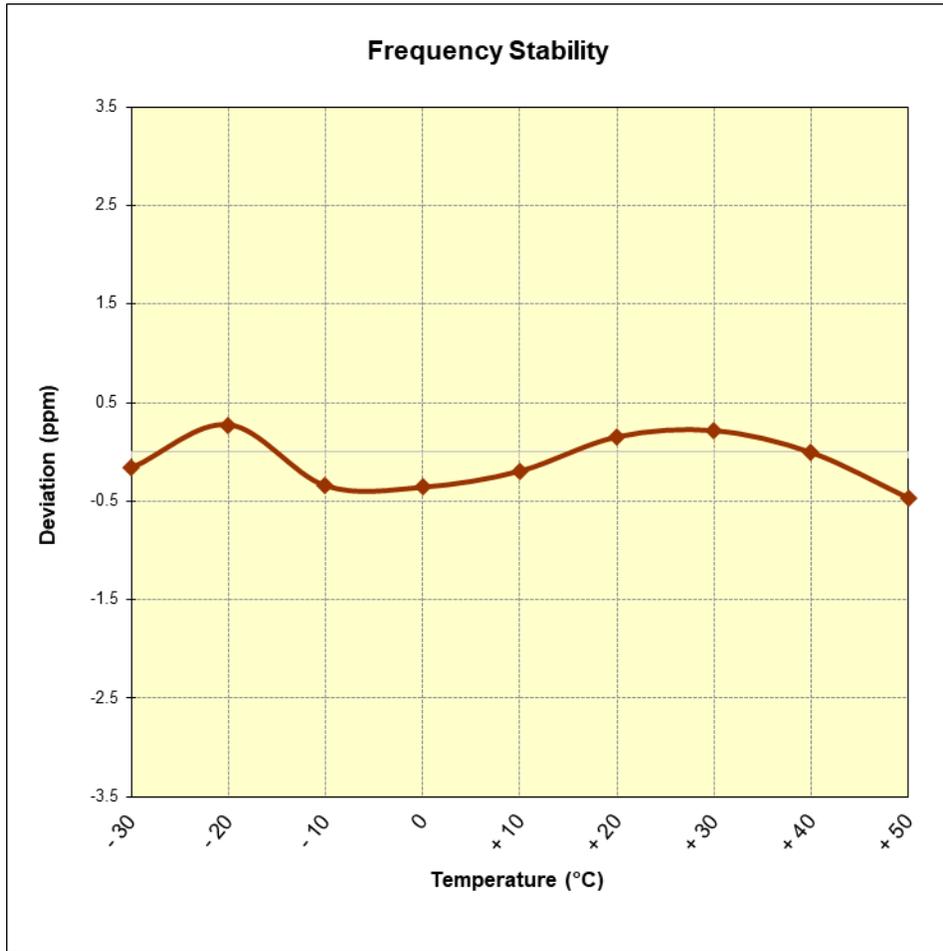


Figure 7-10. Frequency Stability Graph (Band 5)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset		Page 204 of 211

## Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz  
 CHANNEL: 132322  
 REFERENCE VOLTAGE: 4.25 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	1,745,000,015	15	0.0000009
100 %		- 20	1,744,999,890	-110	-0.0000063
100 %		- 10	1,744,999,889	-111	-0.0000064
100 %		0	1,744,999,951	-49	-0.0000028
100 %		+ 10	1,745,000,106	106	0.0000061
100 %		+ 20	1,745,000,181	181	0.0000104
100 %		+ 30	1,744,999,951	-49	-0.0000028
100 %		+ 40	1,744,999,891	-109	-0.0000062
100 %		+ 50	1,745,000,032	32	0.0000018
BATT. ENDPOINT		3.29	+ 20	1,744,999,976	-24

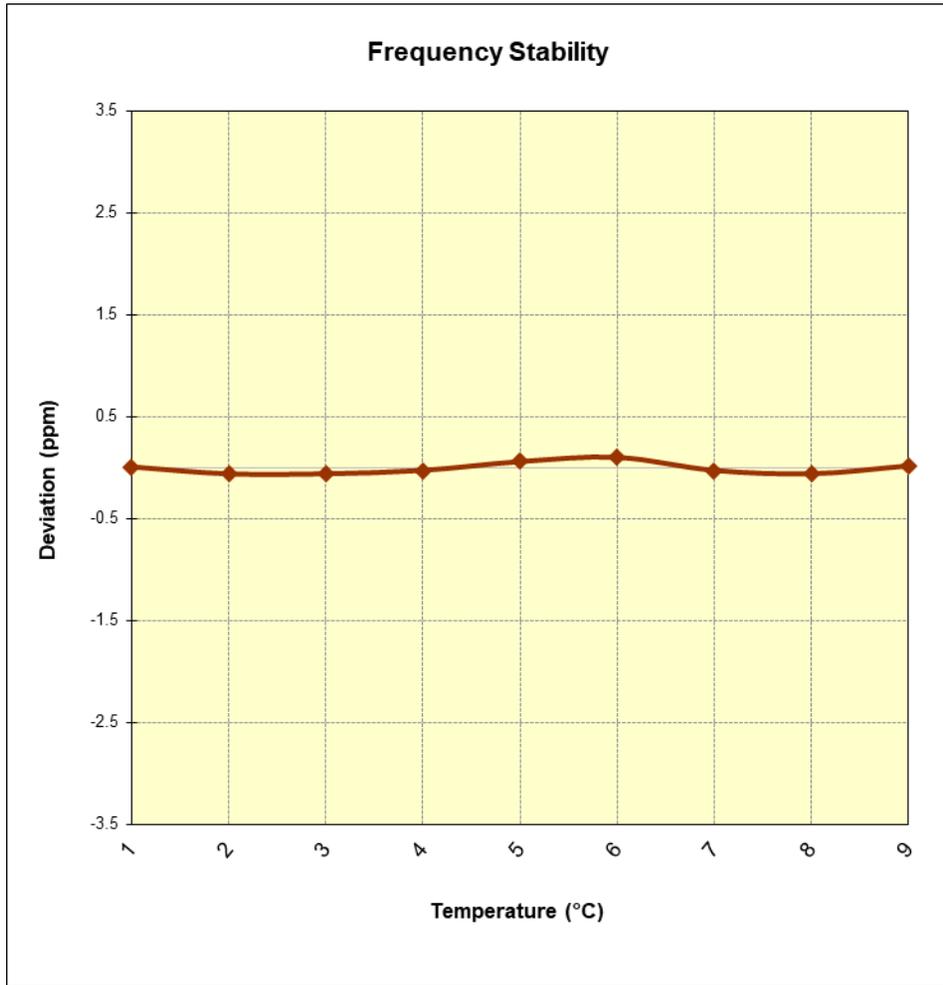
**Table 7-30. Frequency Stability Data (Band 66/4)**

**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: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 205 of 211	

## Band 66/4 Frequency Stability Measurements



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

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2002170021-03-R1.ZNF	<b>Test Dates:</b> 2/17 - 3/16/2020	<b>EUT Type:</b> Portable Handset	Page 206 of 211	

## Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz  
 CHANNEL: 26365  
 REFERENCE VOLTAGE: 4.25 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	1,882,499,581	-419	-0.0000223
100 %		- 20	1,882,499,723	-277	-0.0000147
100 %		- 10	1,882,499,807	-193	-0.0000103
100 %		0	1,882,499,991	-9	-0.0000005
100 %		+ 10	1,882,500,098	98	0.0000052
100 %		+ 20	1,882,499,755	-245	-0.0000130
100 %		+ 30	1,882,500,035	35	0.0000019
100 %		+ 40	1,882,499,989	-11	-0.0000006
100 %		+ 50	1,882,499,716	-284	-0.0000151
BATT. ENDPOINT		3.29	+ 20	1,882,499,959	-41

**Table 7-31. Frequency Stability Data (Band 25/2)**

**Note:**

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

FCC ID: ZNFK300UM	 PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 207 of 211	

## Band 25/2 Frequency Stability Measurements

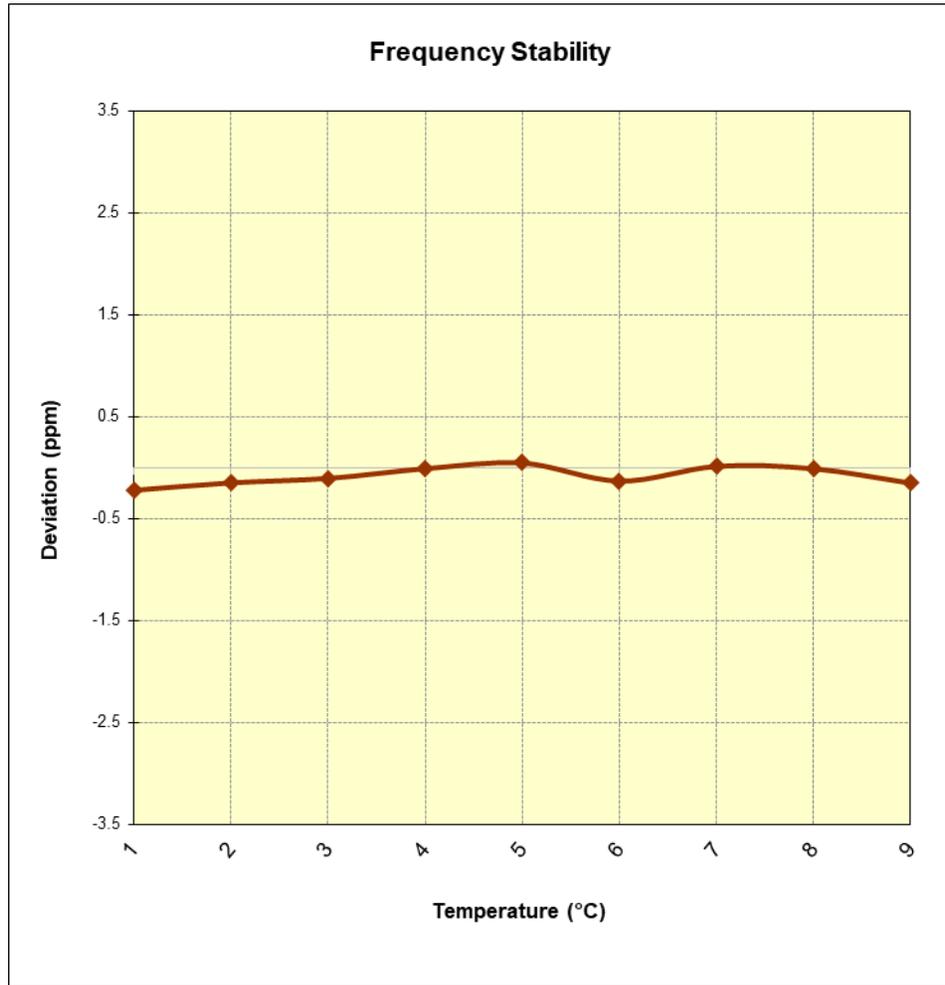


Figure 7-12. Frequency Stability Graph (Band 25/2)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2002170021-03-R1.ZNF	<b>Test Dates:</b> 2/17 - 3/16/2020	<b>EUT Type:</b> Portable Handset	Page 208 of 211	

## Band 7 Frequency Stability Measurements

OPERATING FREQUENCY: 2,535,000,000 Hz  
 CHANNEL: 21100  
 REFERENCE VOLTAGE: 4.25 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	2,534,999,971	-29	-0.0000011
100 %		- 20	2,534,999,962	-38	-0.0000015
100 %		- 10	2,535,000,327	327	0.0000129
100 %		0	2,535,000,102	102	0.0000040
100 %		+ 10	2,535,000,341	341	0.0000135
100 %		+ 20	2,535,000,026	26	0.0000010
100 %		+ 30	2,534,999,825	-175	-0.0000069
100 %		+ 40	2,534,999,993	-7	-0.0000003
100 %		+ 50	2,535,000,017	17	0.0000007
BATT. ENDPOINT		3.29	+ 20	2,534,999,937	-63

**Table 7-32. Frequency Stability Data (Band 7)**

**Note:**

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

FCC ID: ZNFK300UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2002170021-03-R1.ZNF	Test Dates: 2/17 - 3/16/2020	EUT Type: Portable Handset	Page 209 of 211	

## Band 7 Frequency Stability Measurements

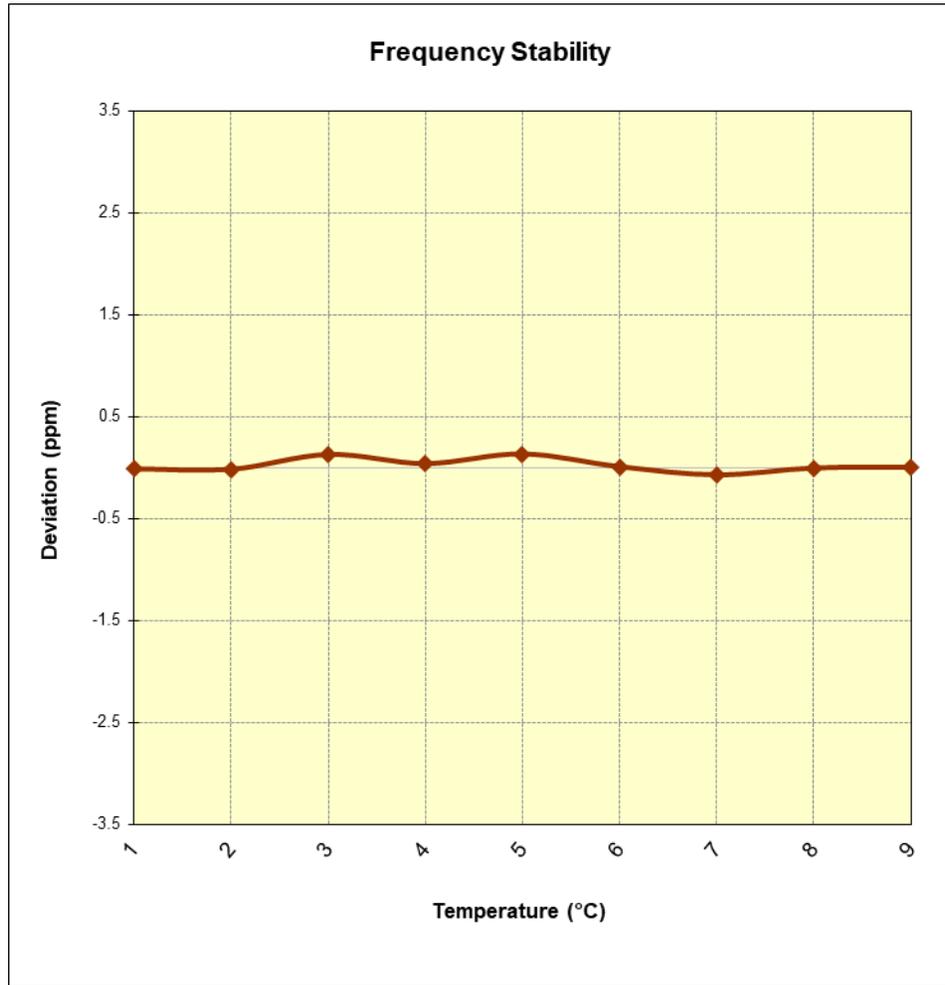


Figure 7-13. Frequency Stability Graph (Band 7)

FCC ID: ZNFK300UM	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2002170021-03-R1.ZNF	<b>Test Dates:</b> 2/17 - 3/16/2020	<b>EUT Type:</b> Portable Handset	Page 210 of 211	

## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFK300UM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

<b>FCC ID:</b> ZNFK300UM		<b>MEASUREMENT REPORT (CERTIFICATION)</b>	 <b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2002170021-03-R1.ZNF	<b>Test Dates:</b> 2/17 - 3/16/2020	<b>EUT Type:</b> Portable Handset	Page 211 of 211