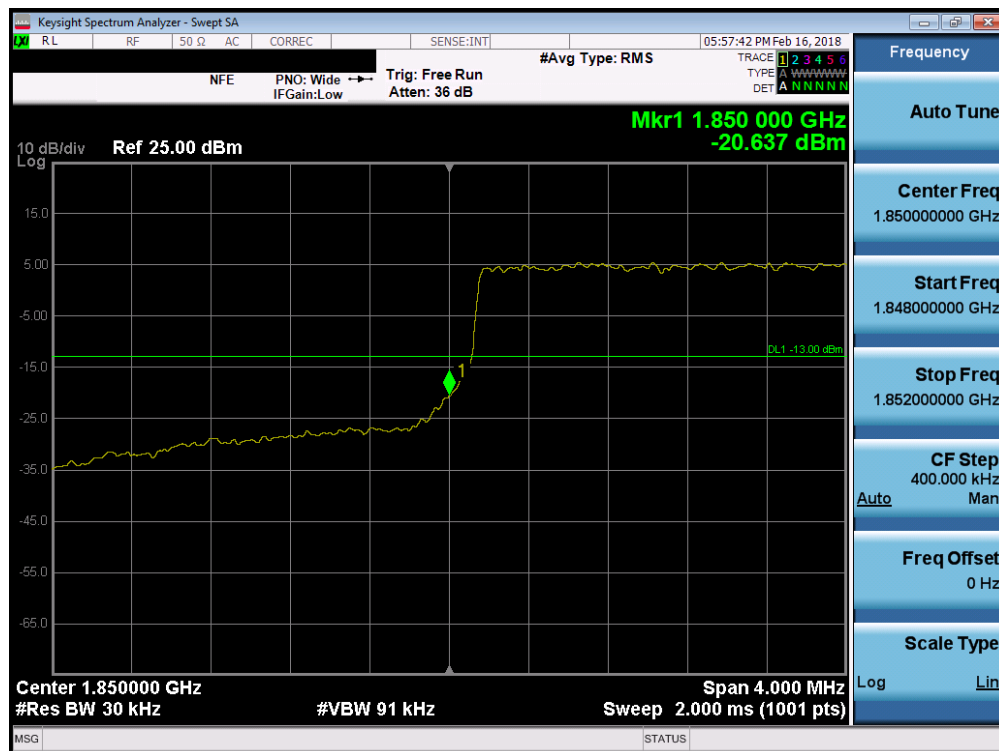
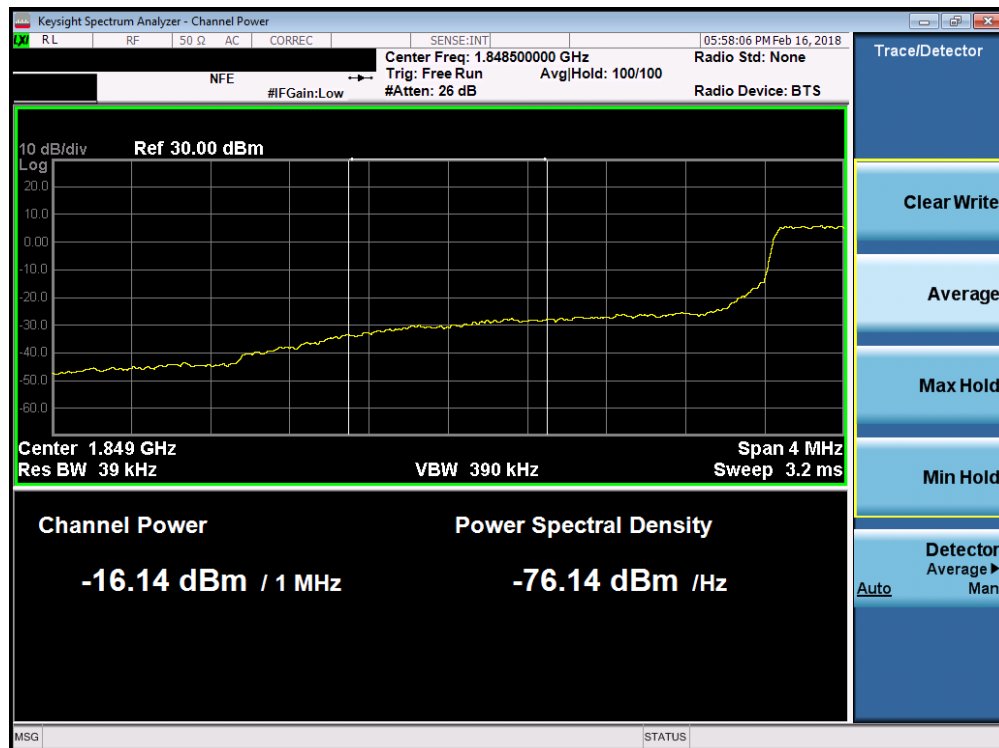


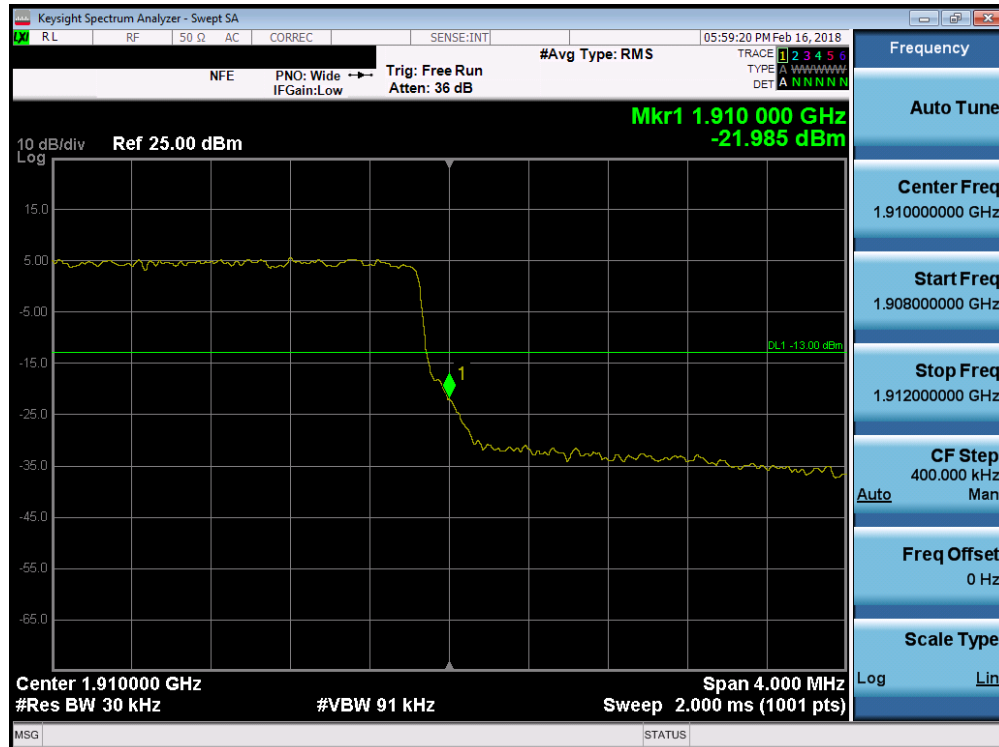


Plot 7-220. Lower Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-221. Lower Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 133 of 225

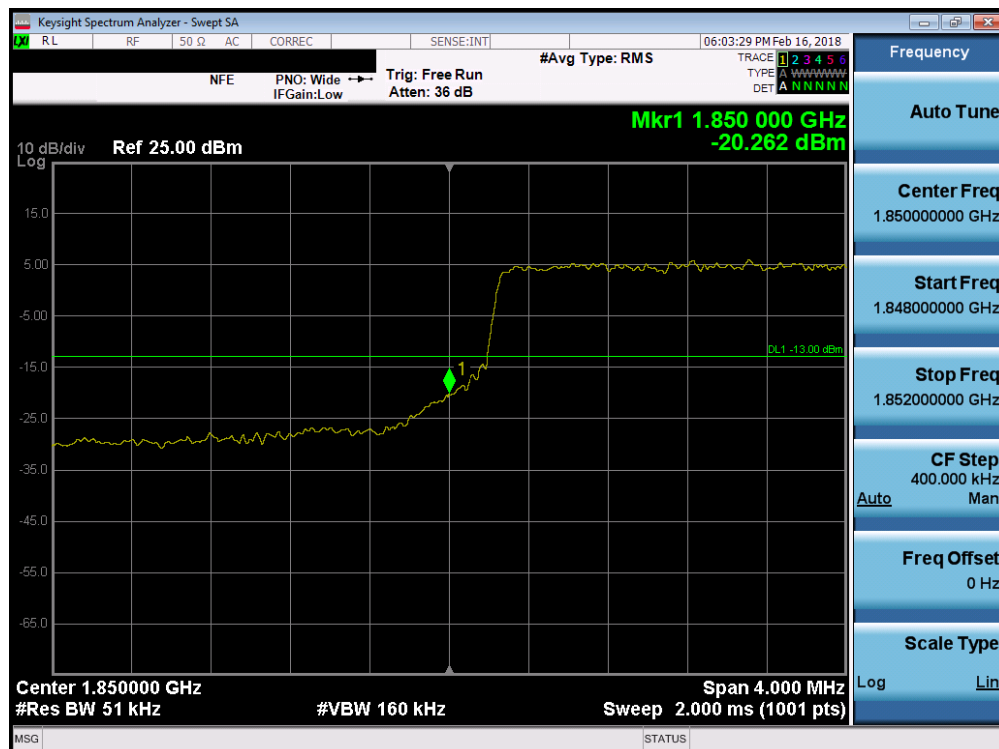


Plot 7-222. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

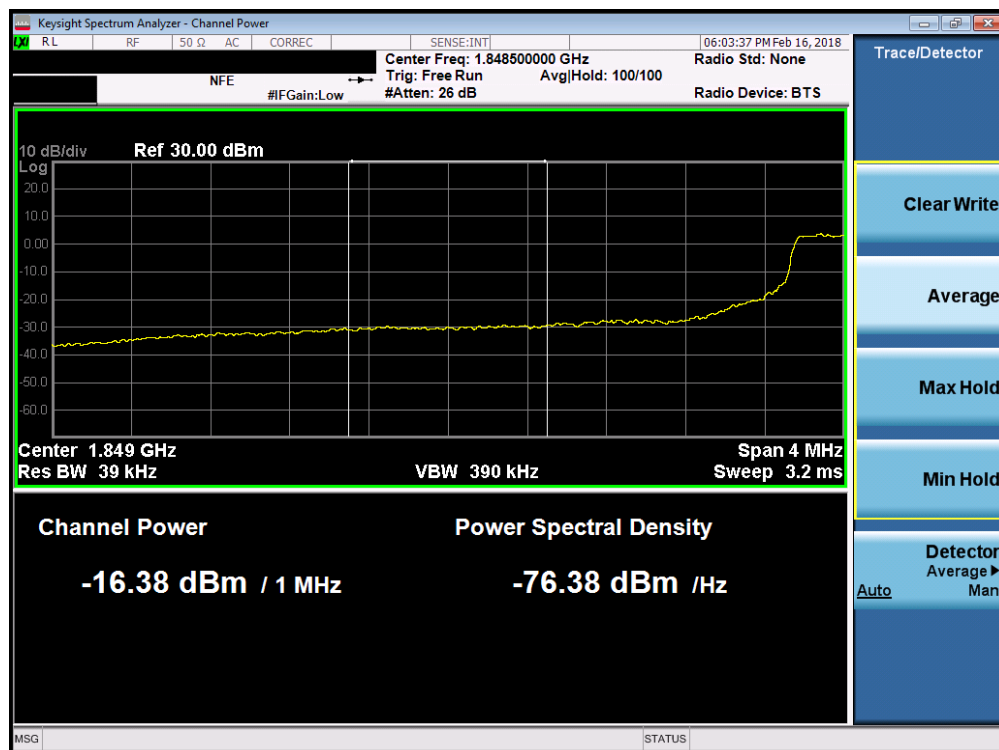


Plot 7-223. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 134 of 225

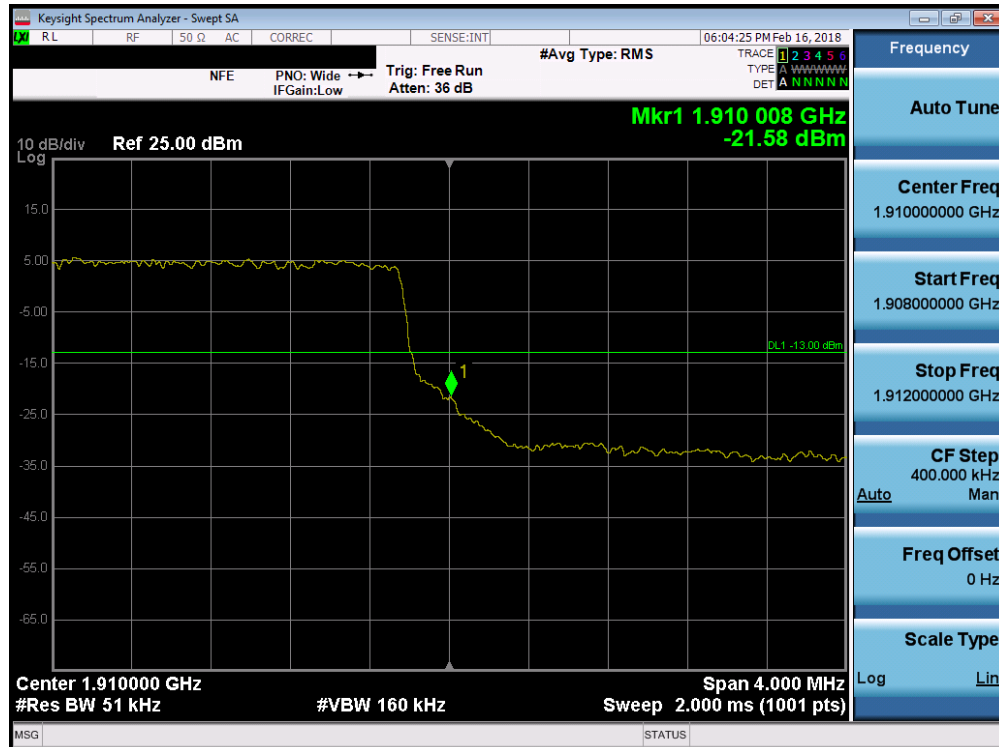


Plot 7-224. Lower Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

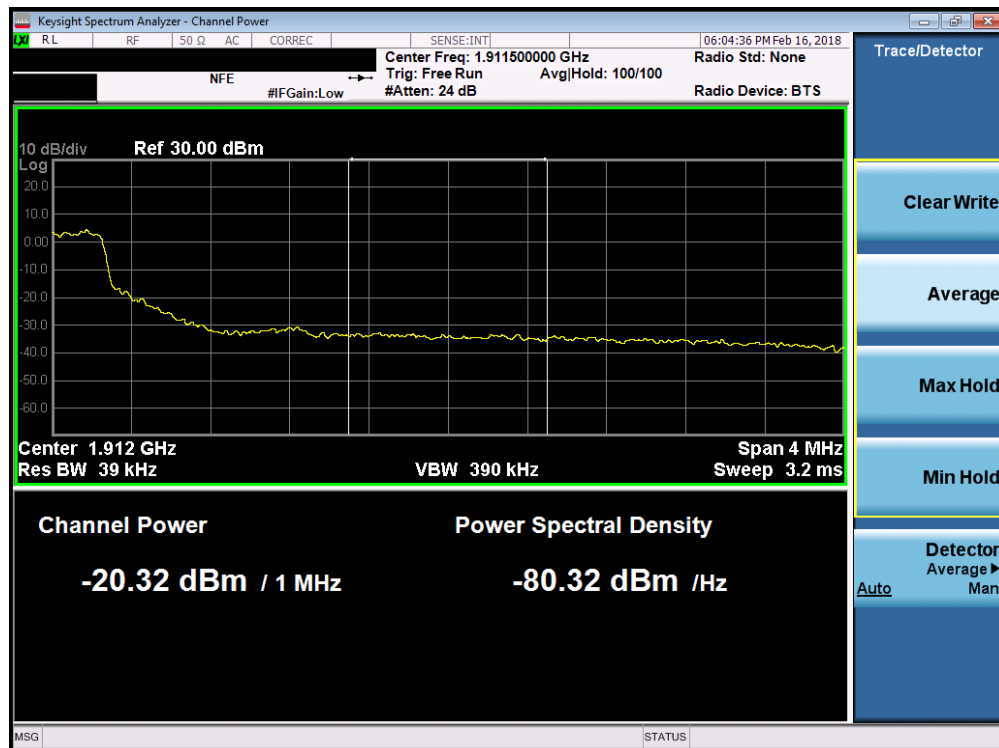


Plot 7-225. Lower Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 135 of 225

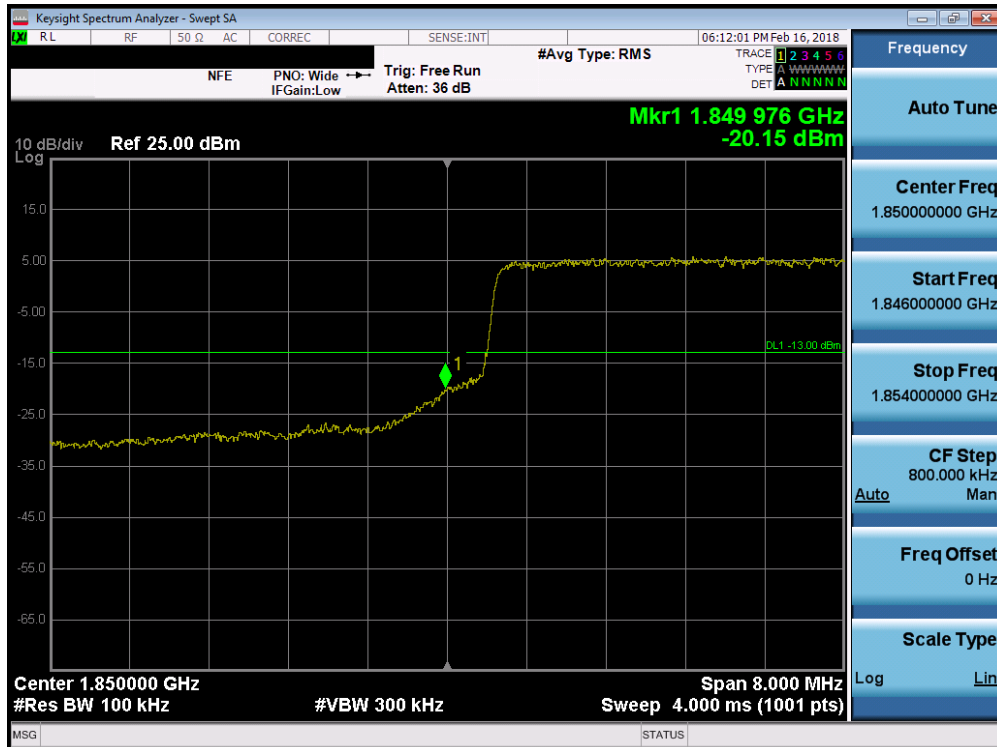


Plot 7-226. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

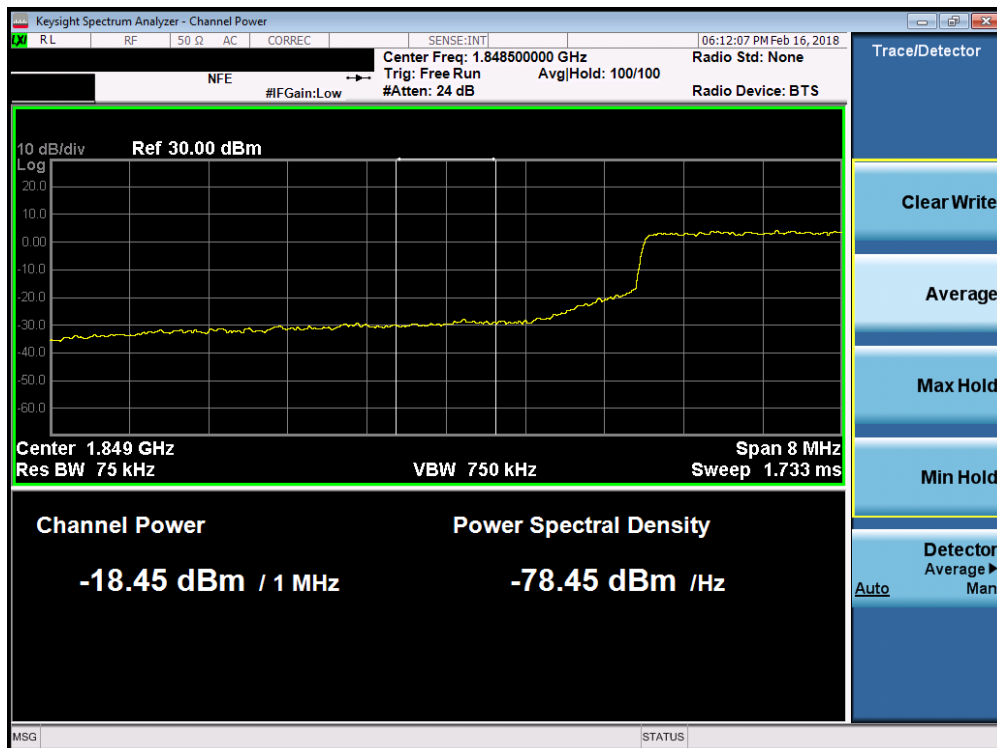


Plot 7-227. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 136 of 225



Plot 7-228. Lower Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

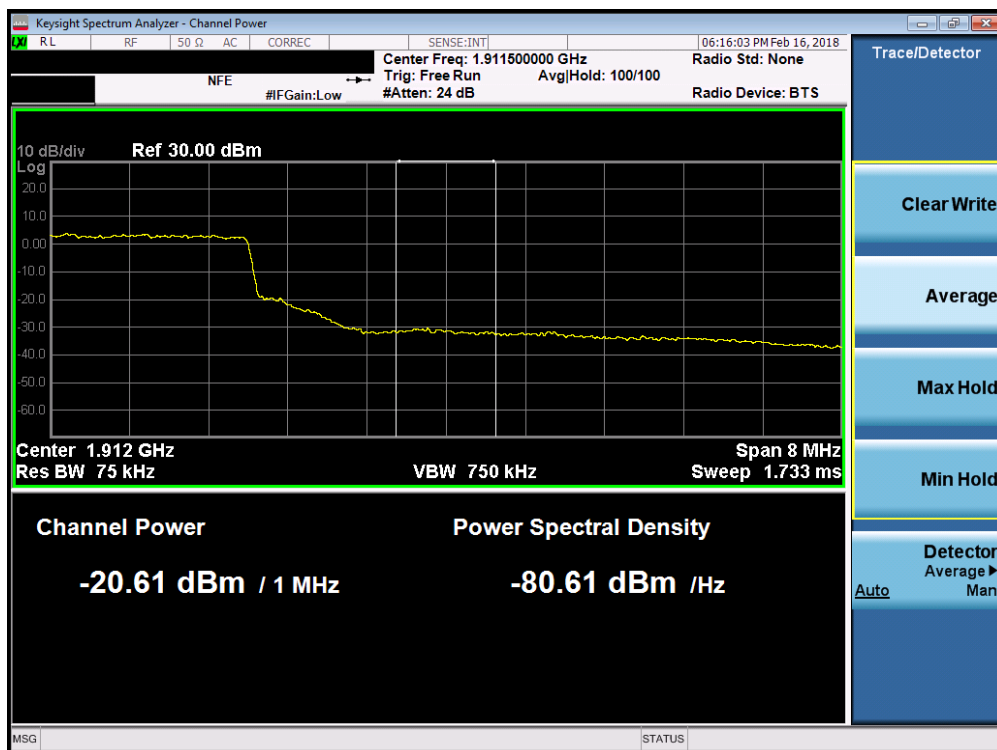


Plot 7-229. Lower Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 137 of 225

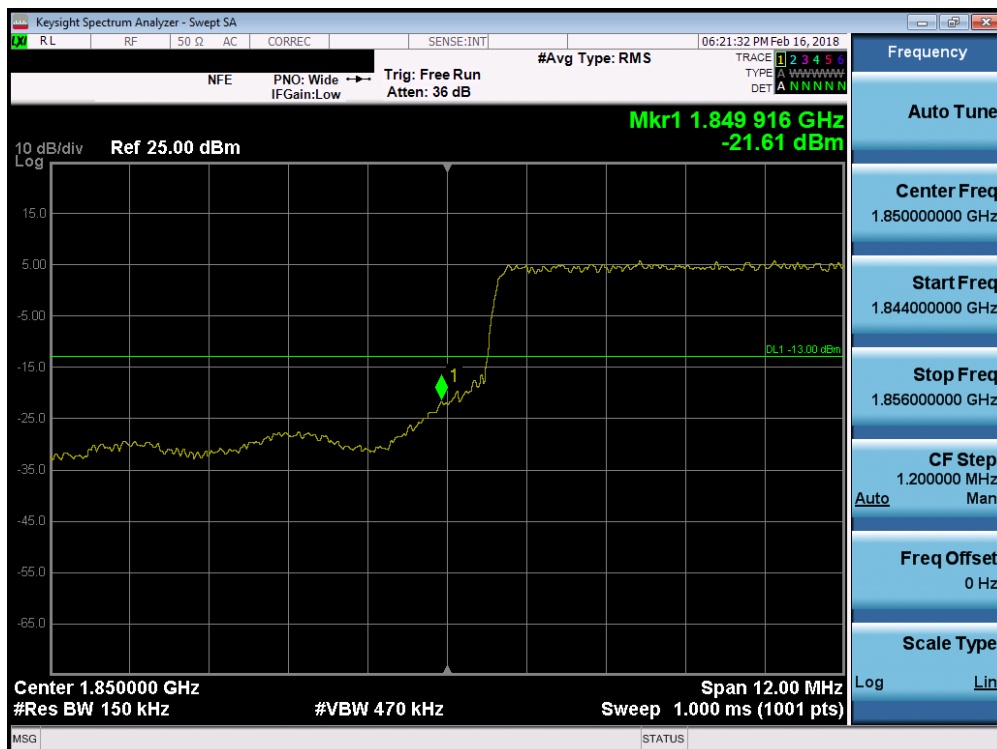


Plot 7-230. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

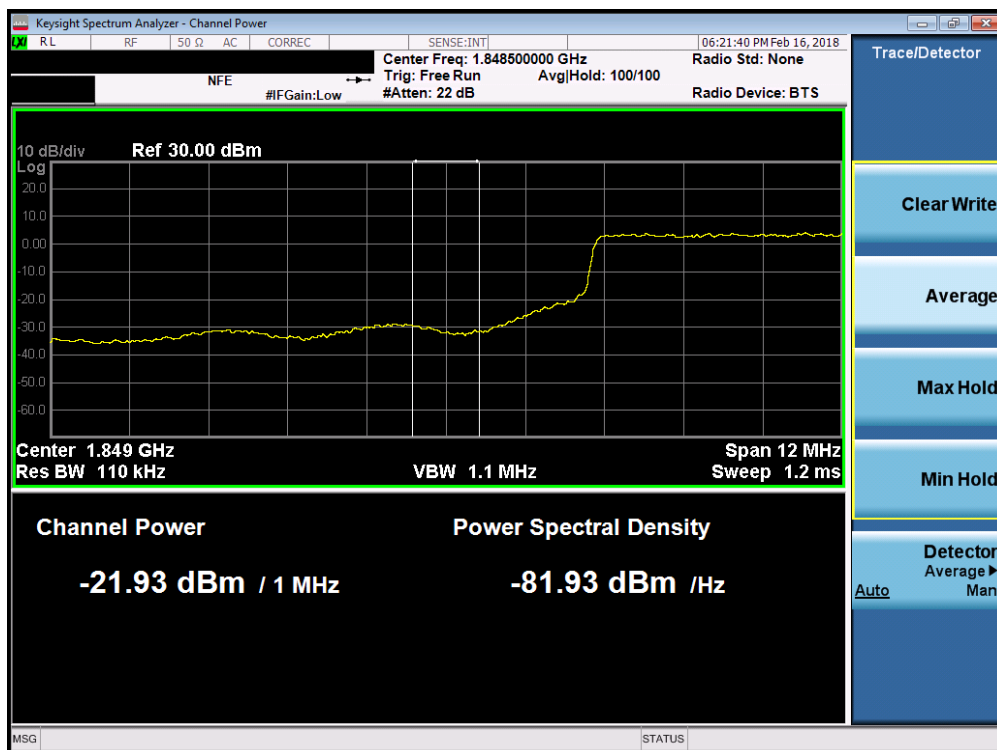


Plot 7-231. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 138 of 225

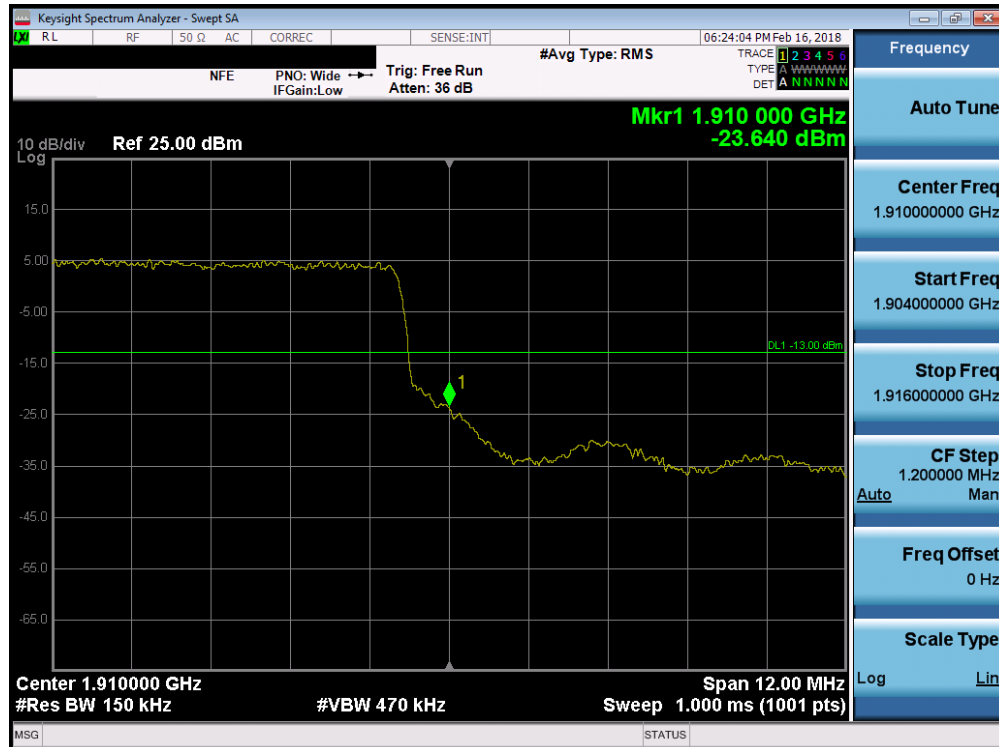


Plot 7-232. Lower Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

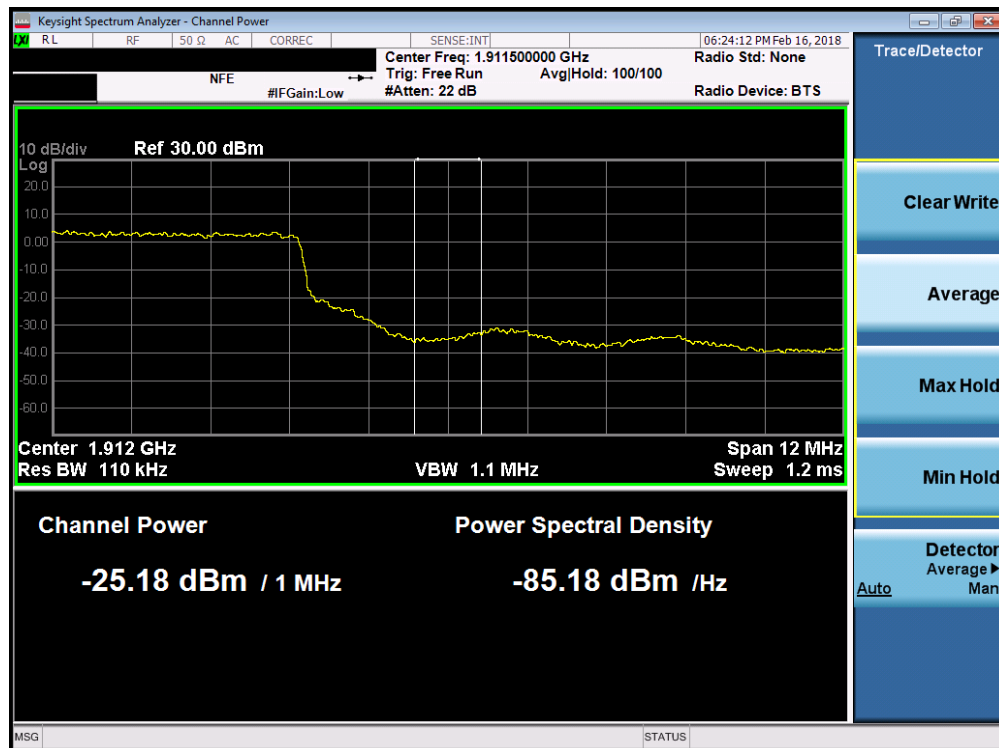


Plot 7-233. Lower Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 139 of 225

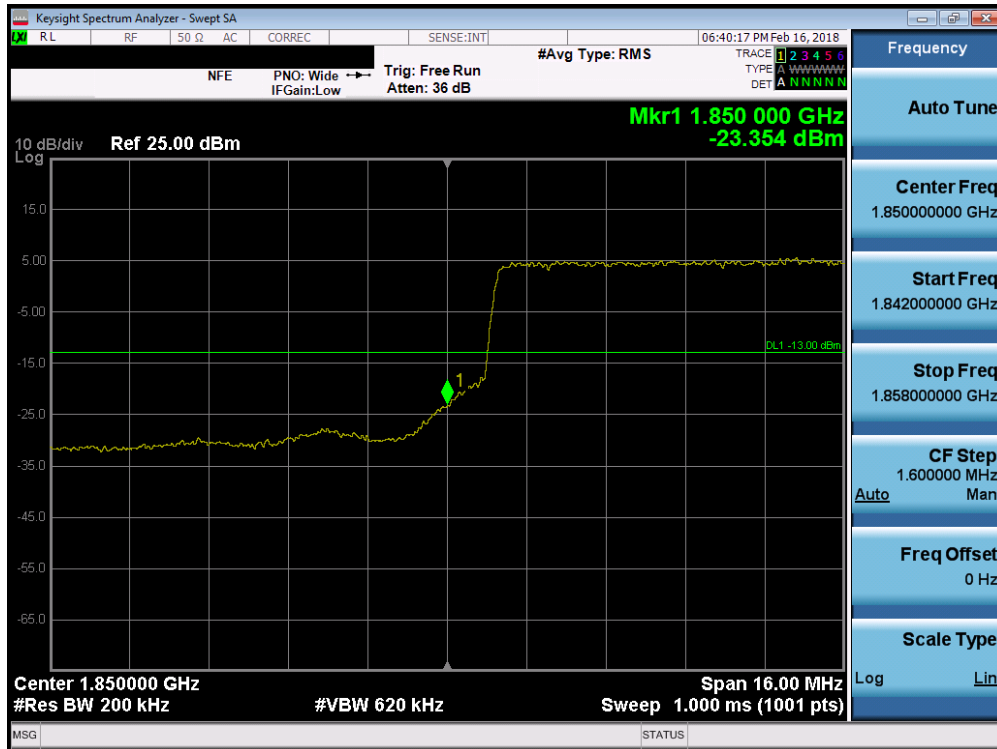


Plot 7-234. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

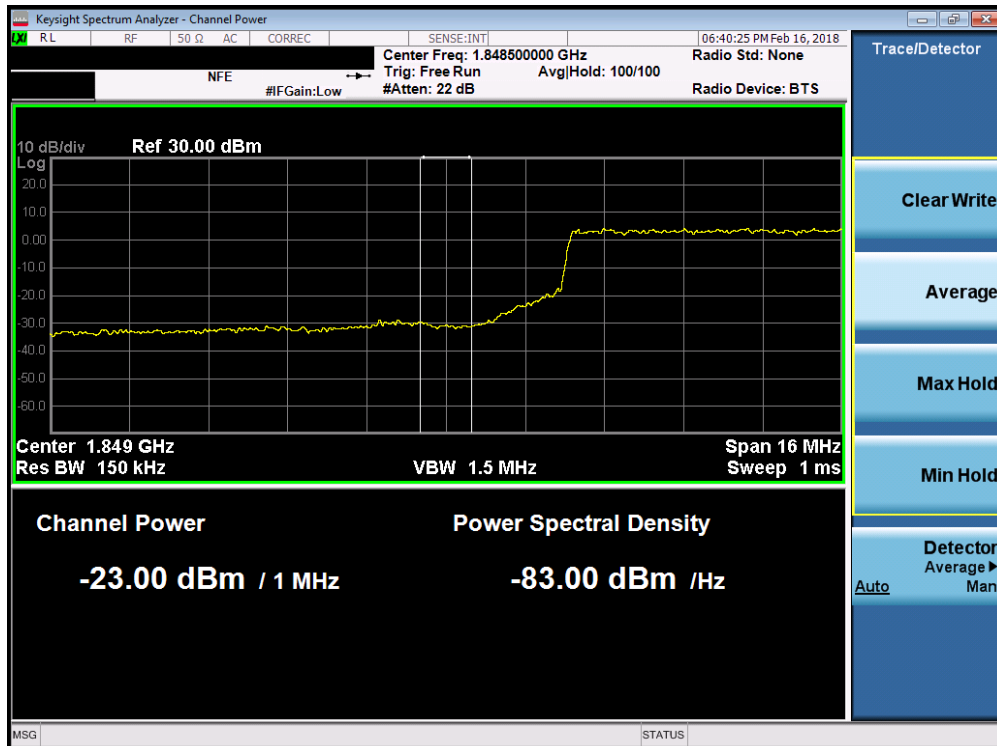


Plot 7-235. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 140 of 225

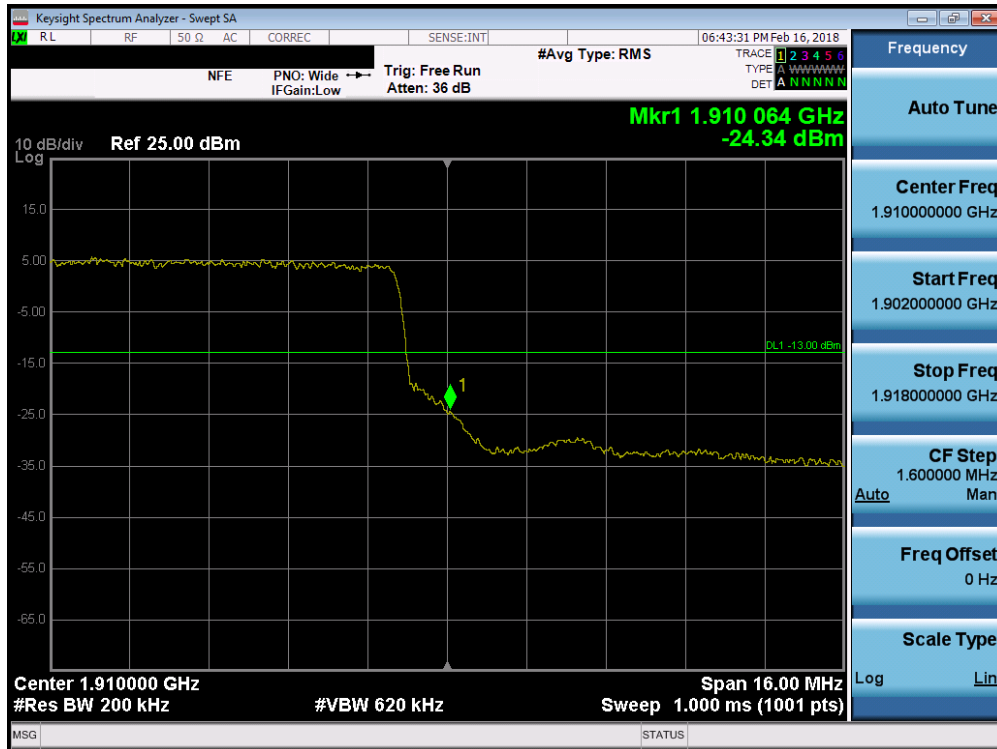


Plot 7-236. Lower Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

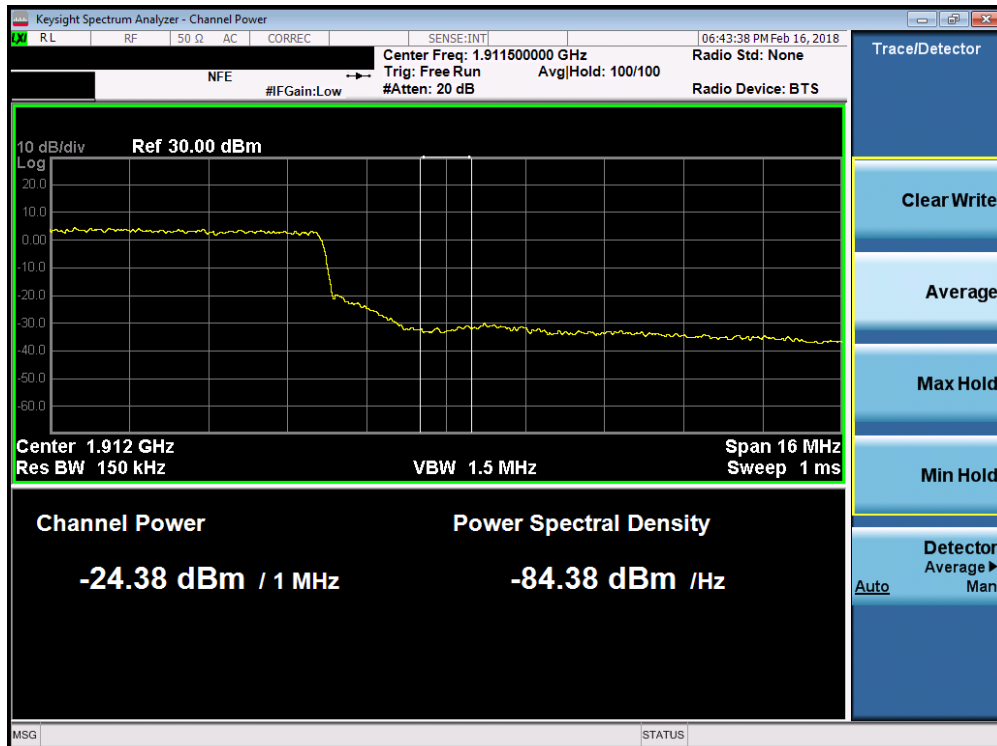


Plot 7-237. Lower Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 141 of 225



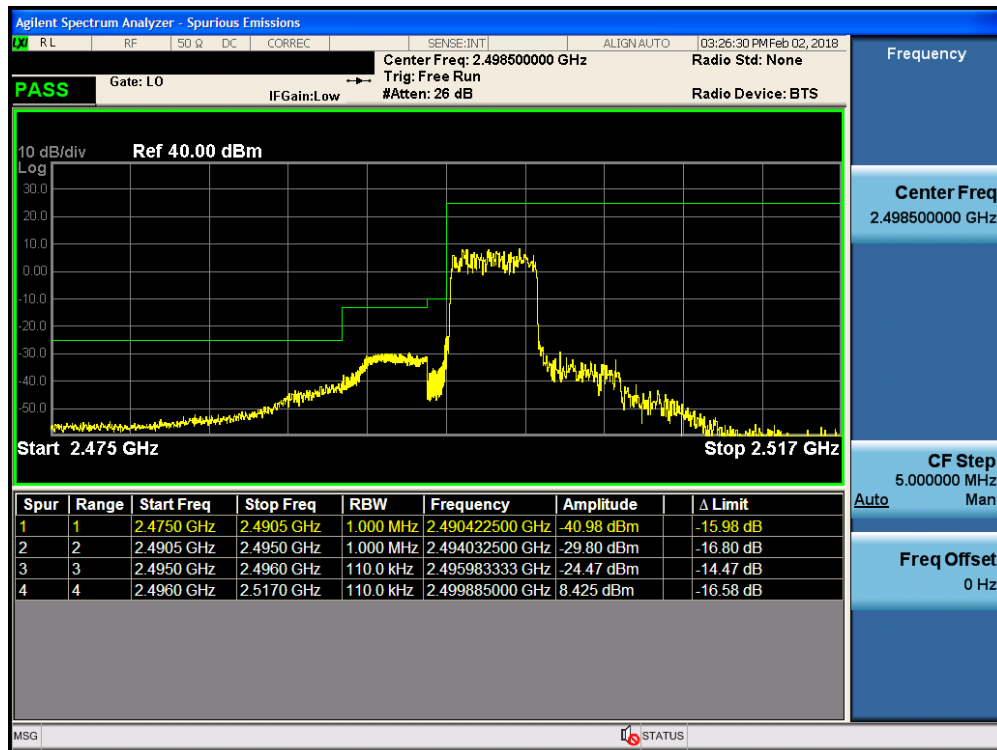
Plot 7-238. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-239. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 142 of 225

Band 41

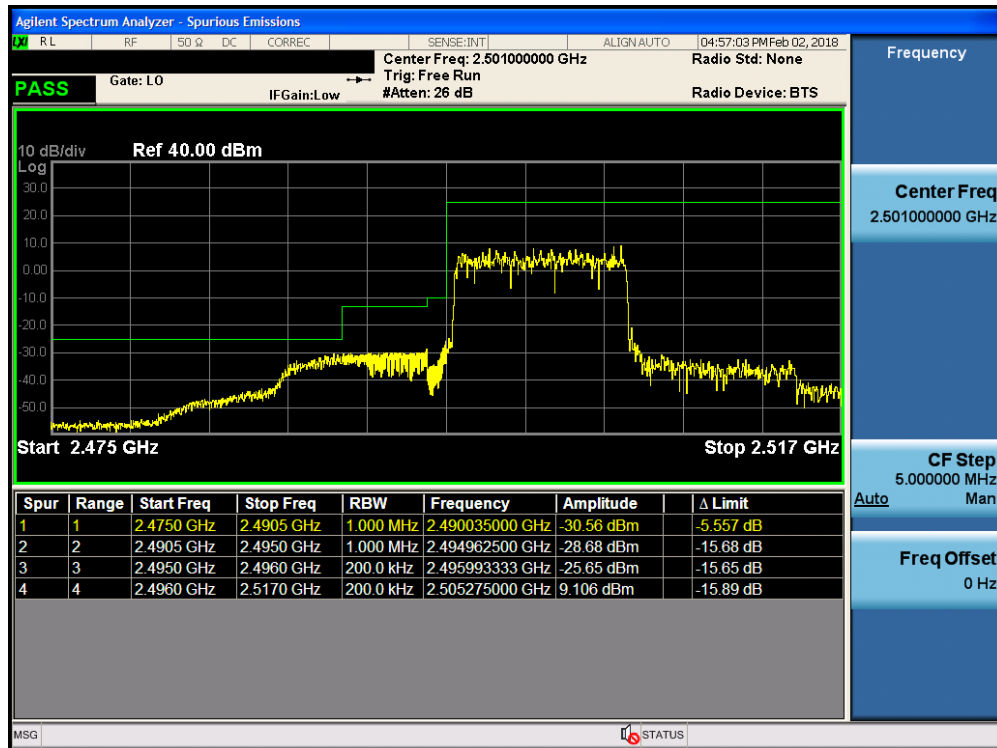


Plot 7-240. Lower ACP Plot at 2496 MHz (Band 41 - 5.0MHz QPSK - RB Size 25)



Plot 7-241. Upper ACP Plot (Band 41 - 5.0MHz QPSK - RB Size 25)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 143 of 225

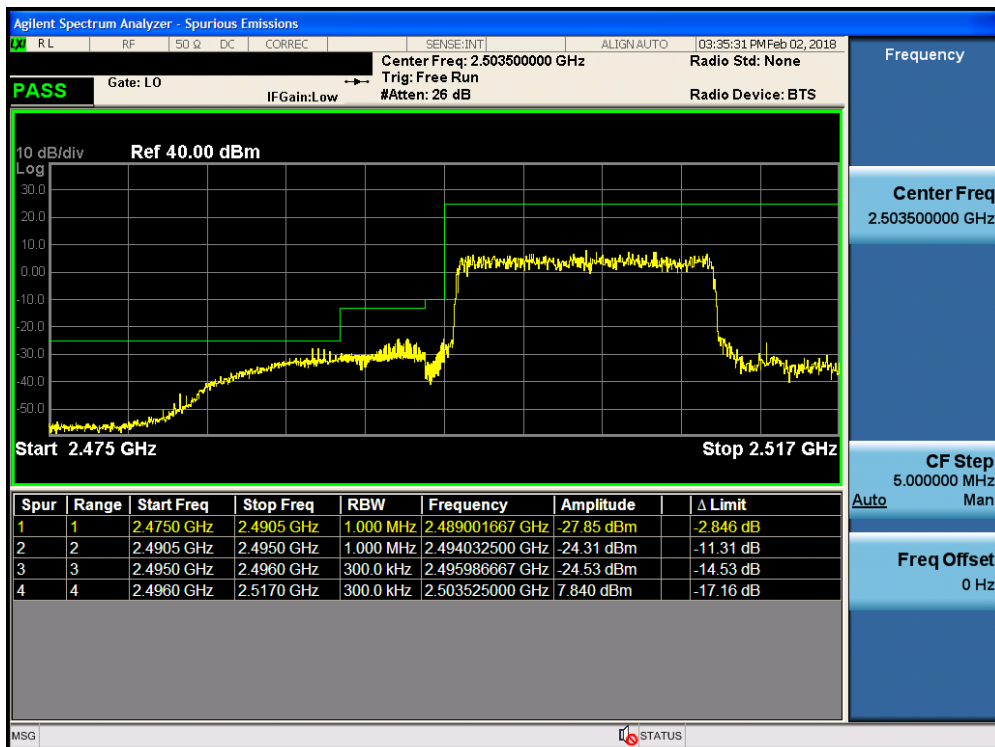


Plot 7-242. Lower ACP Plot at 2496 MHz (Band 41 - 10.0MHz QPSK - RB Size 25)

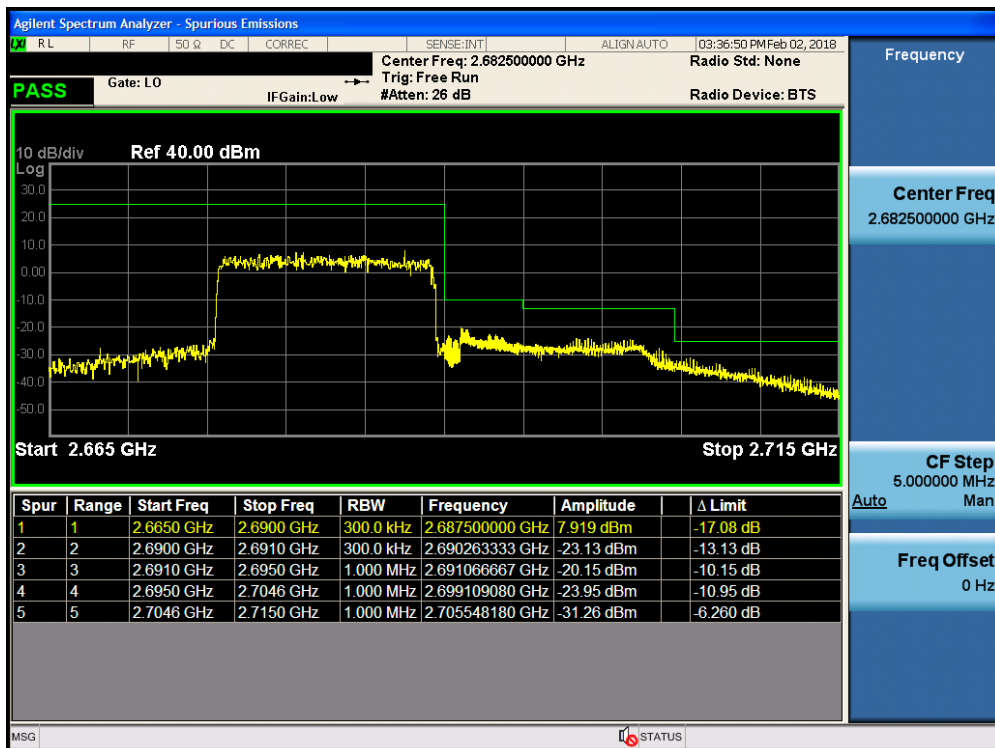


Plot 7-243. Upper ACP Plot (Band 41 - 10.0MHz QPSK - RB Size 25)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 144 of 225

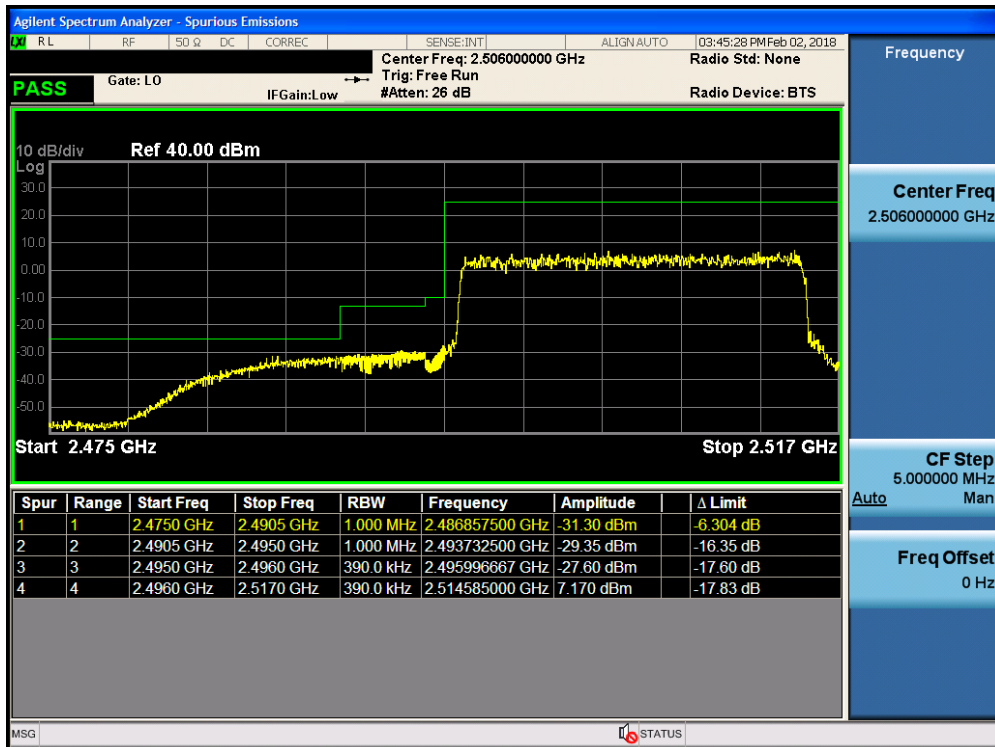


Plot 7-244. Lower ACP Plot at 2496 MHz (Band 41 - 15.0MHz QPSK - RB Size 25)

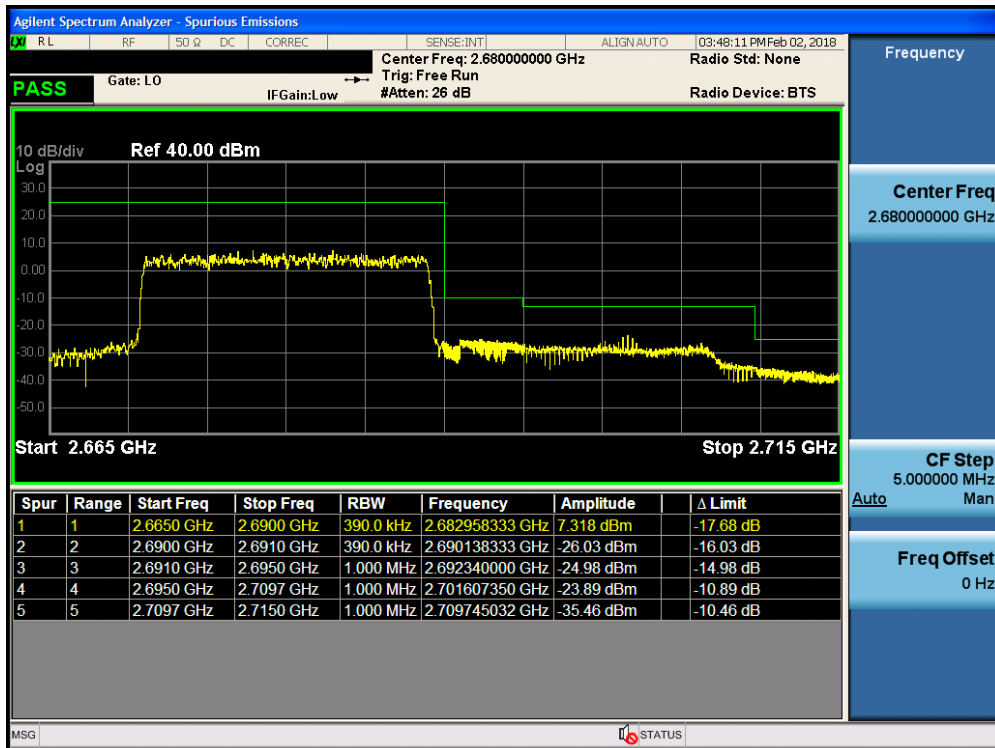


Plot 7-245. Upper ACP Plot (Band 41 - 15.0MHz QPSK - RB Size 25)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 145 of 225



Plot 7-246. Lower ACP Plot at 2496 MHz (Band 41 - 20.0MHz QPSK - RB Size 25)



Plot 7-247. Upper ACP Plot (Band 41 - 20.0MHz QPSK - RB Size 25)

FCC ID: ZNFQ710TS	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 146 of 225	

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 v03 – Section 5.7.1

Test Settings

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

Test Setup

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

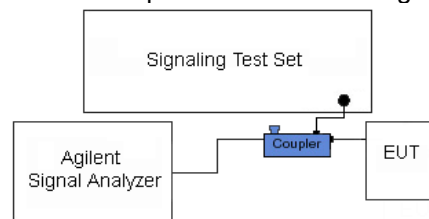


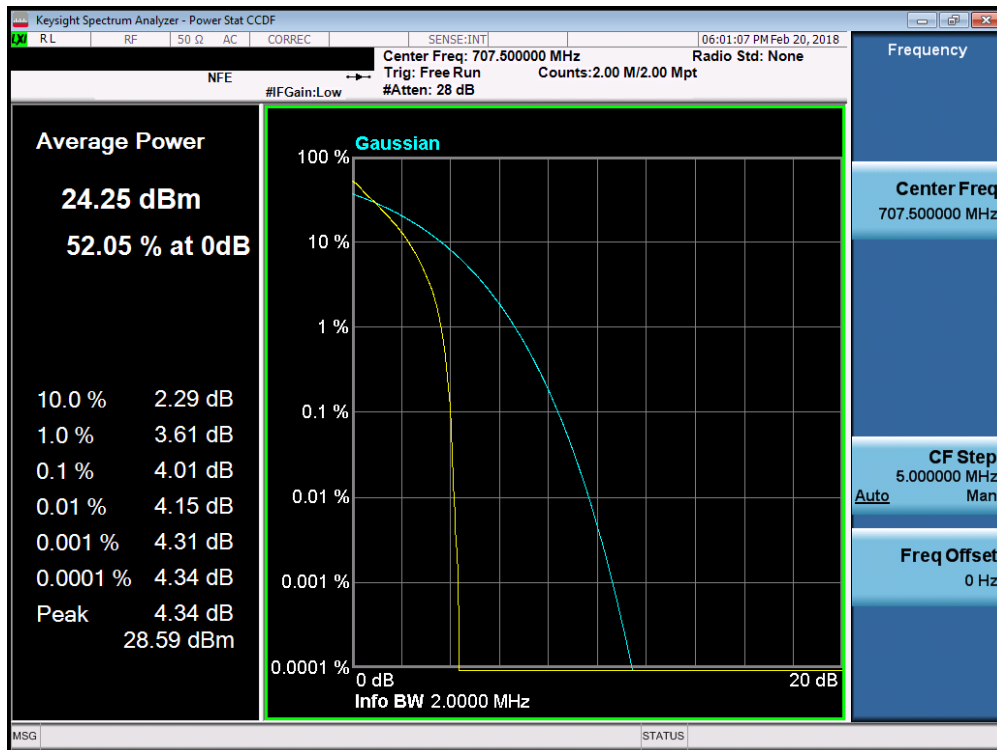
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

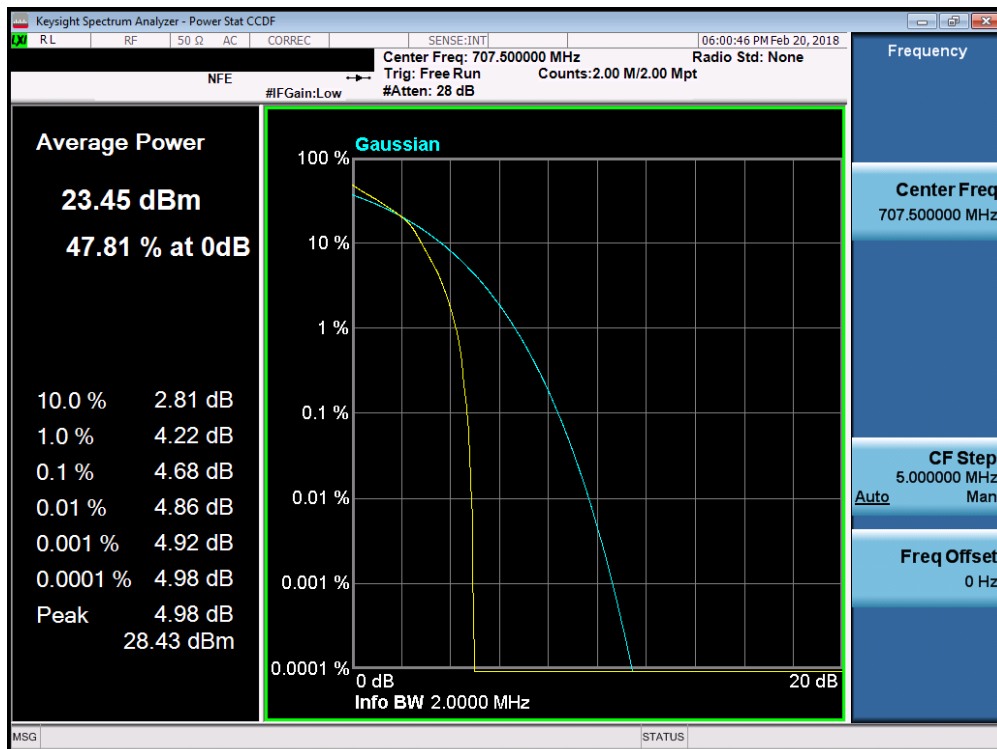
None.

FCC ID: ZNFQ710TS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 147 of 225

Band 12

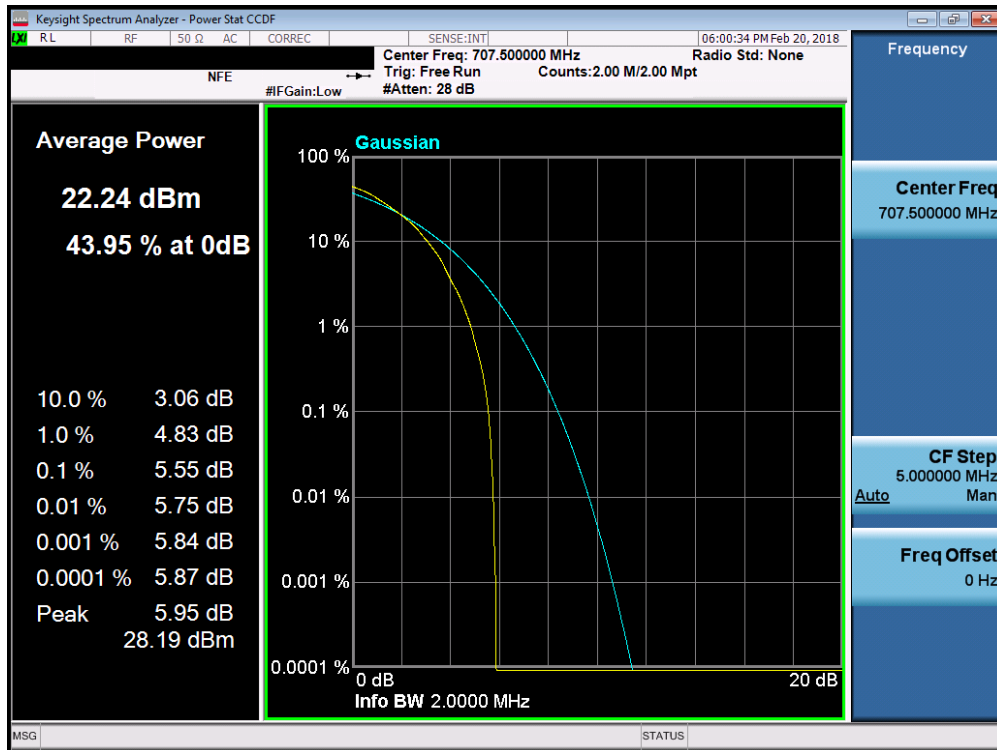


Plot 7-248. PAR Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

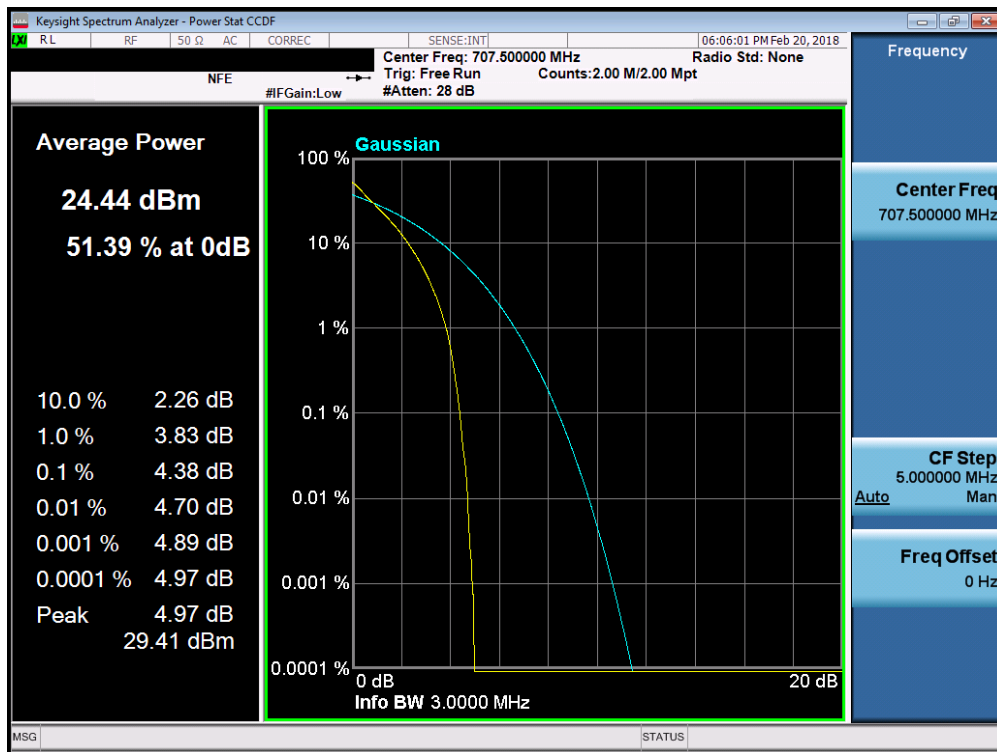


Plot 7-249. PAR Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 148 of 225

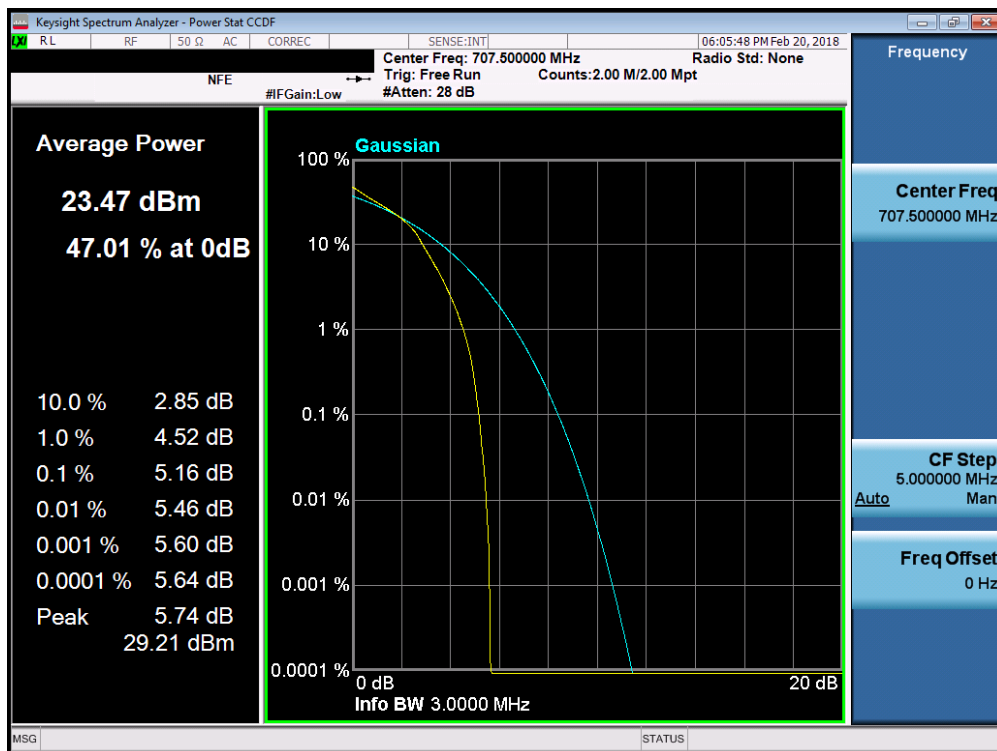


Plot 7-250. PAR Plot (Band 12 - 1.4MHz 64-QAM - Full RB Configuration)

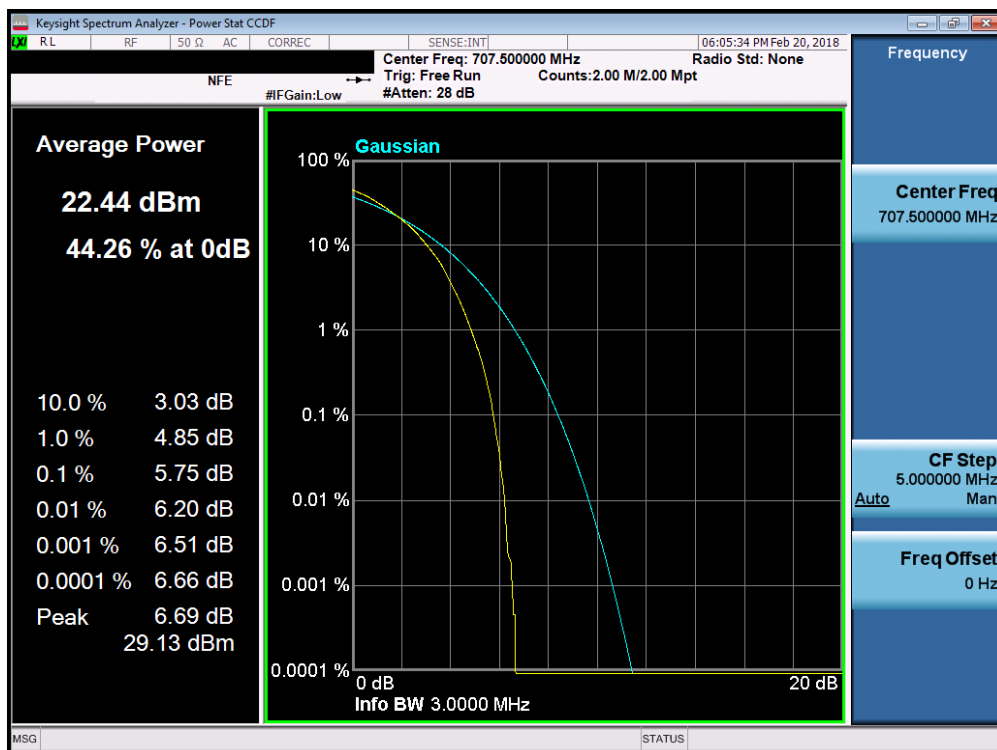


Plot 7-251. PAR Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 149 of 225

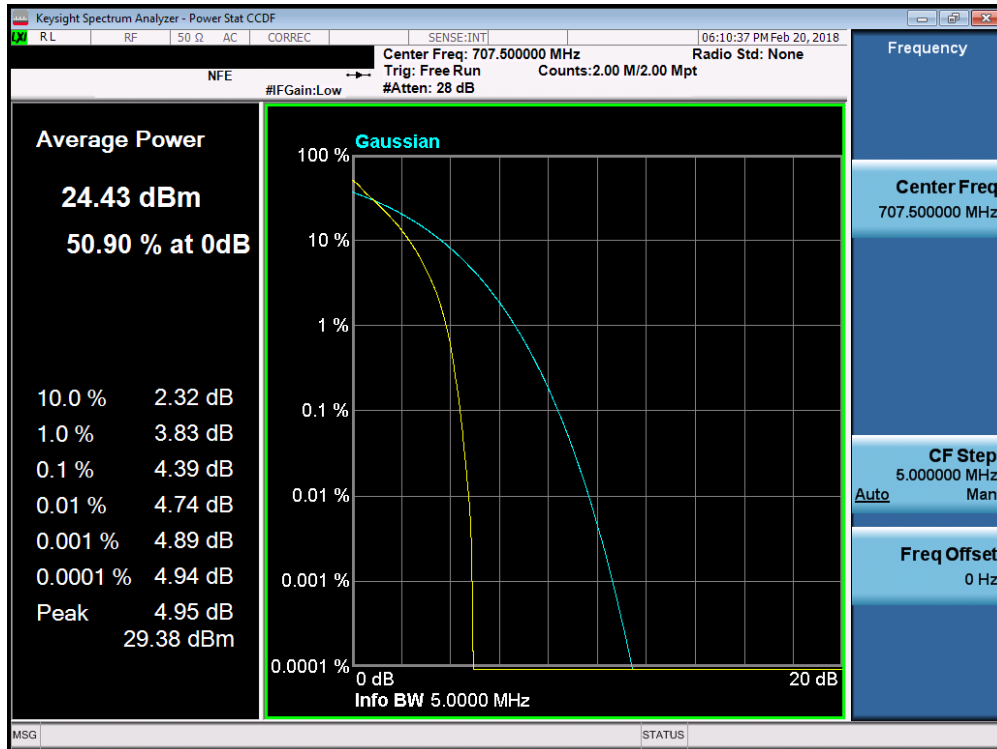


Plot 7-252. PAR Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)

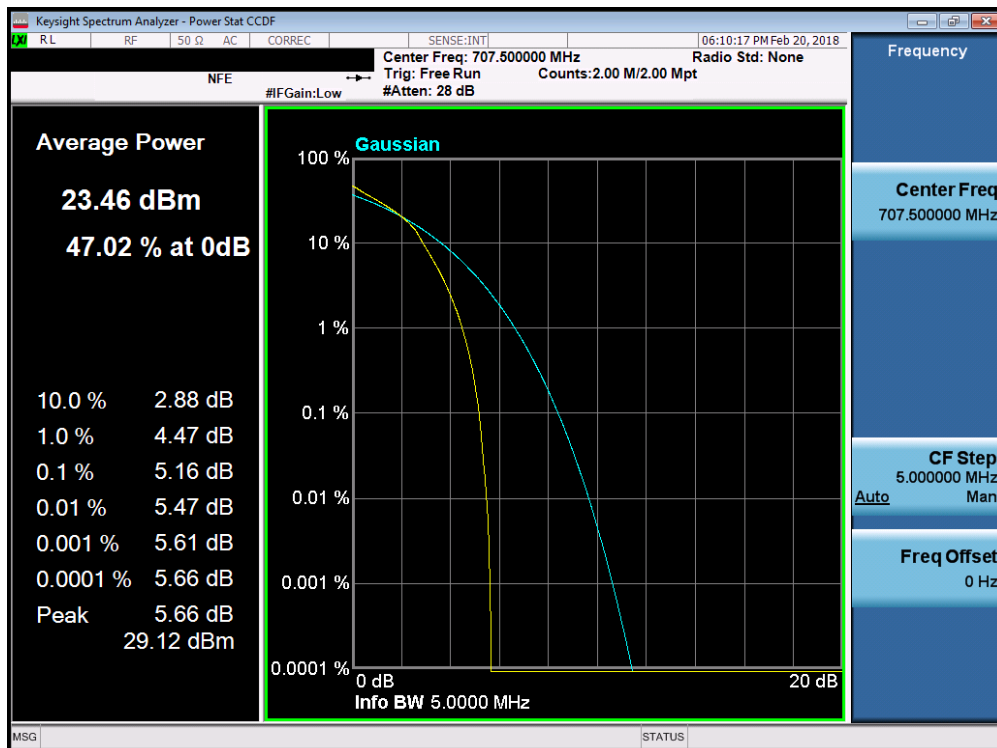


Plot 7-253. PAR Plot (Band 12 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 150 of 225

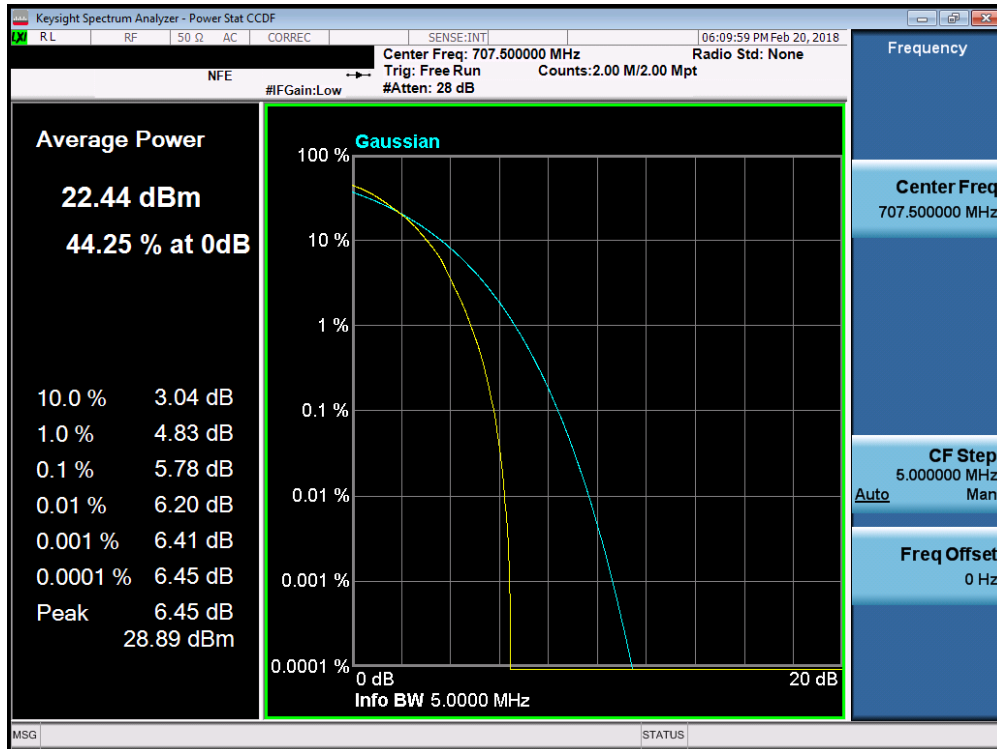


Plot 7-254. PAR Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

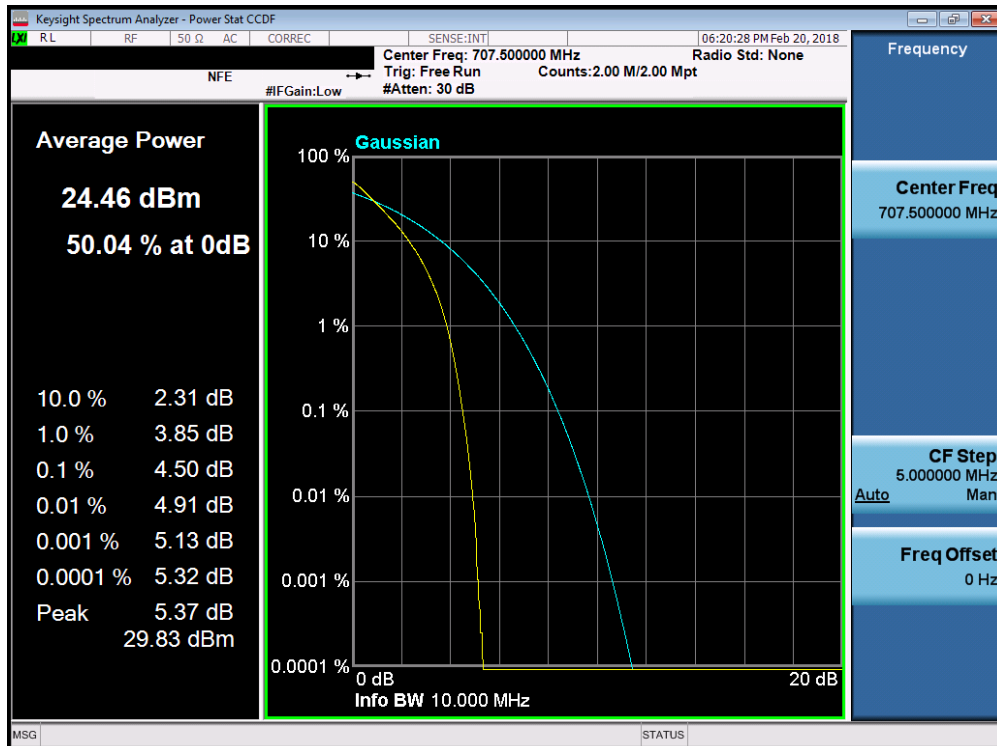


Plot 7-255. PAR Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 151 of 225

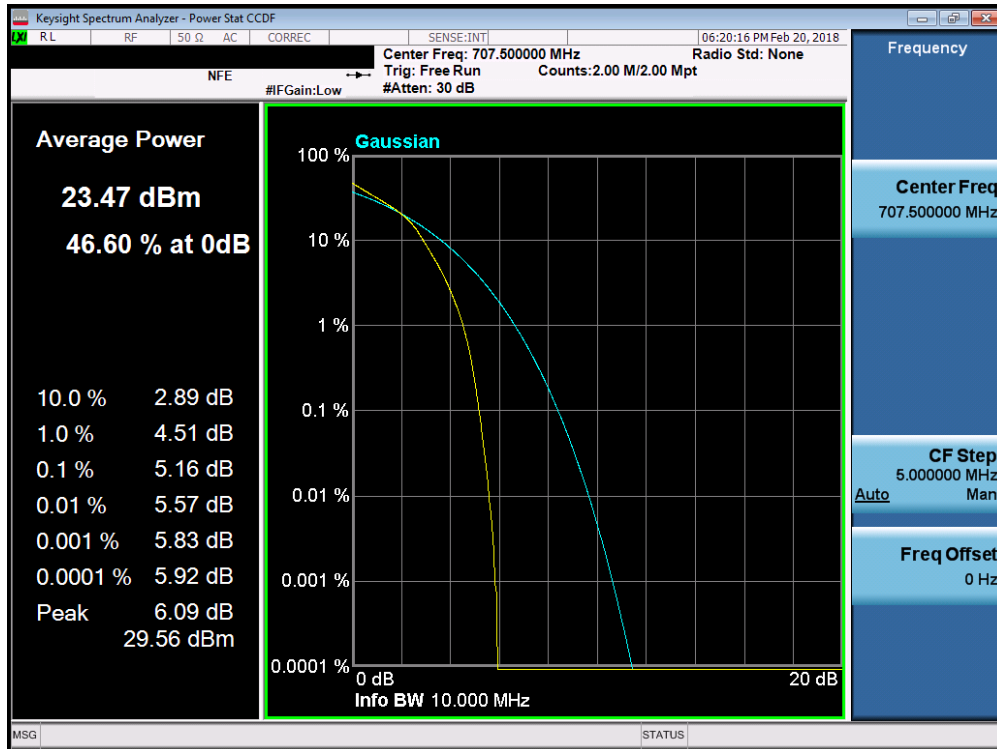


Plot 7-256. PAR Plot (Band 12 - 5.0MHz 64-QAM - Full RB Configuration)

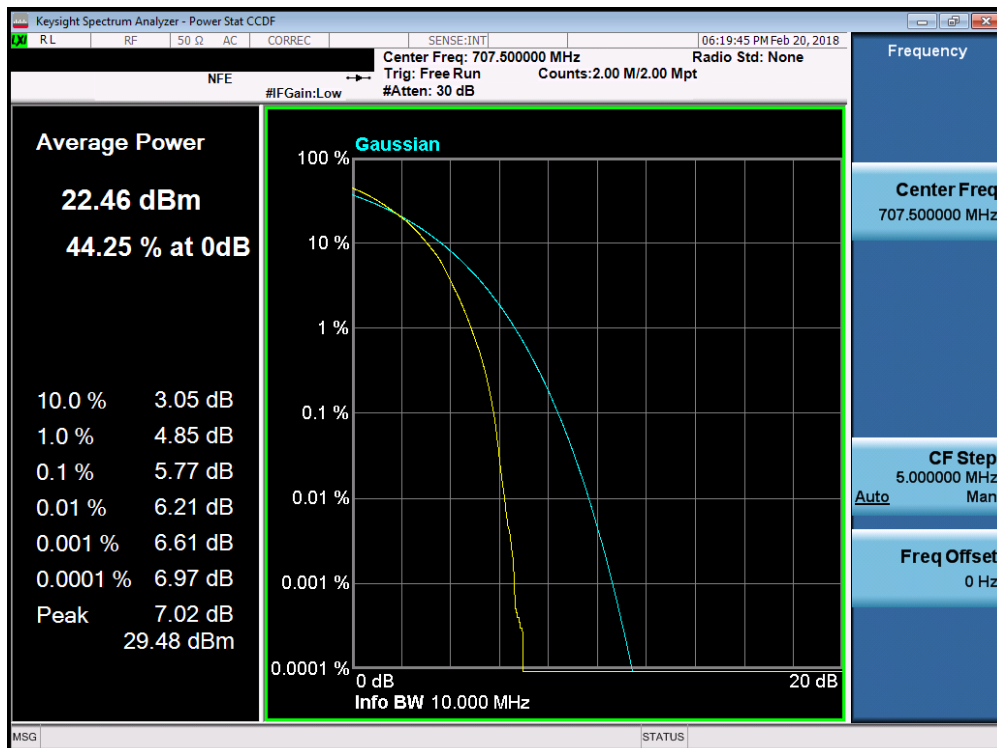


Plot 7-257. PAR Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 152 of 225



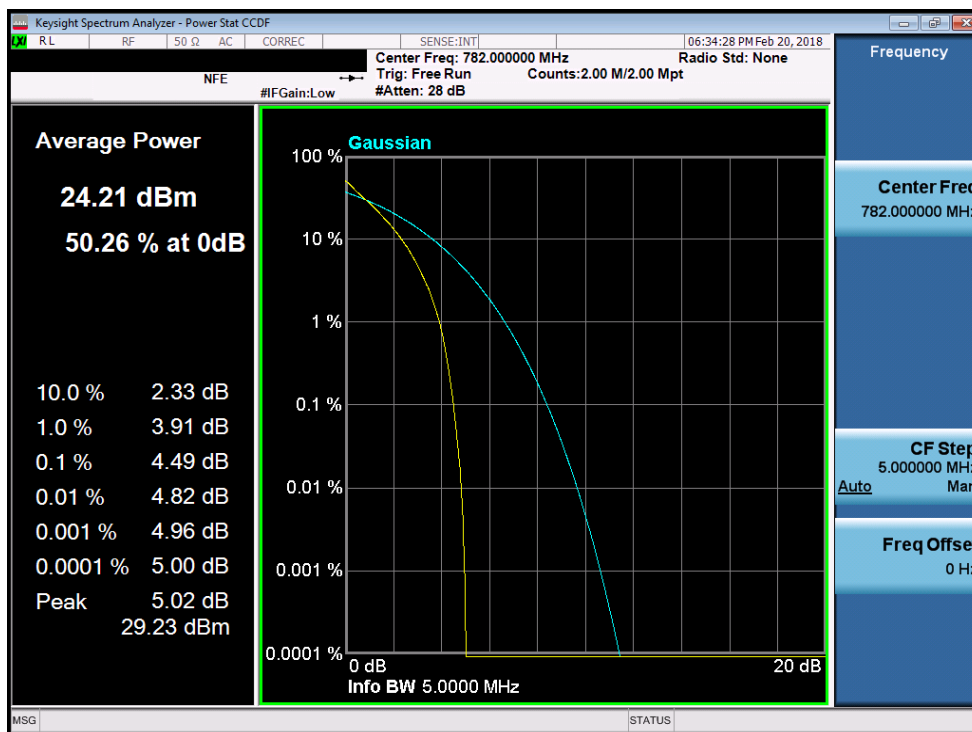
Plot 7-258. PAR Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)



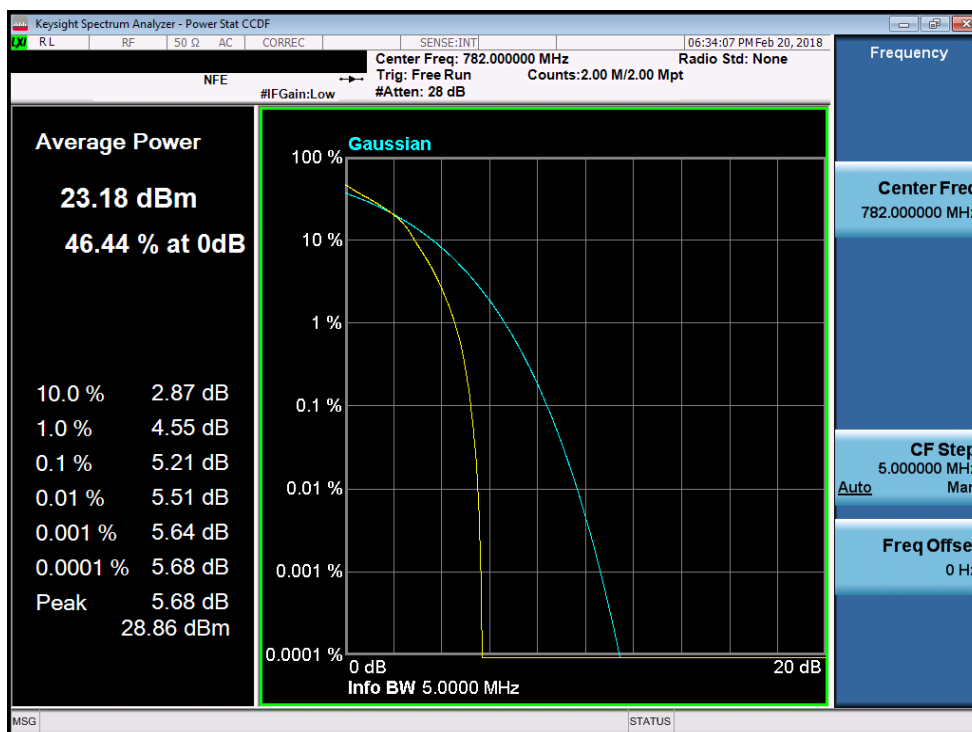
Plot 7-259. PAR Plot (Band 12 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 153 of 225

Band 13

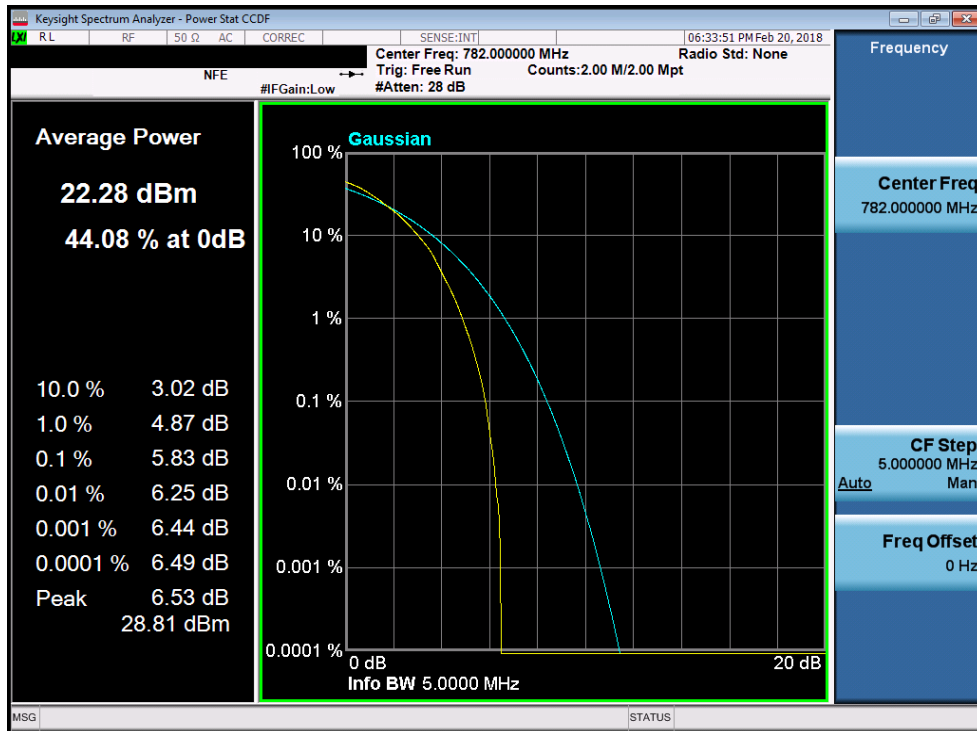


Plot 7-260. PAR Plot (Band 13 - 5.0MHz QPSK - Full RB Configuration)

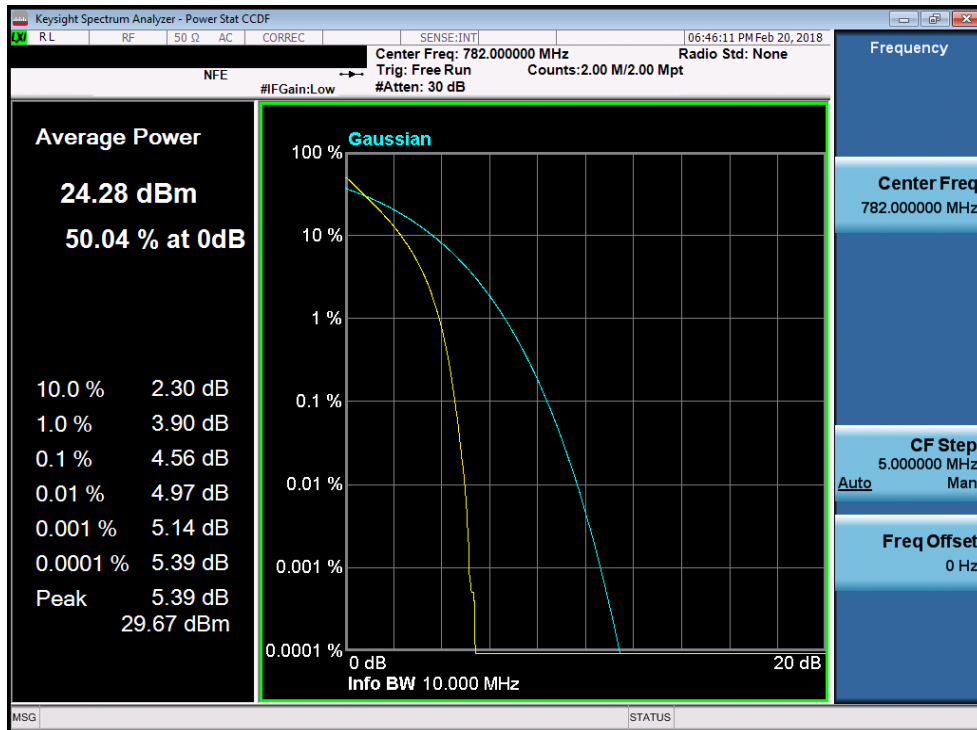


Plot 7-261. PAR Plot (Band 13 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 154 of 225

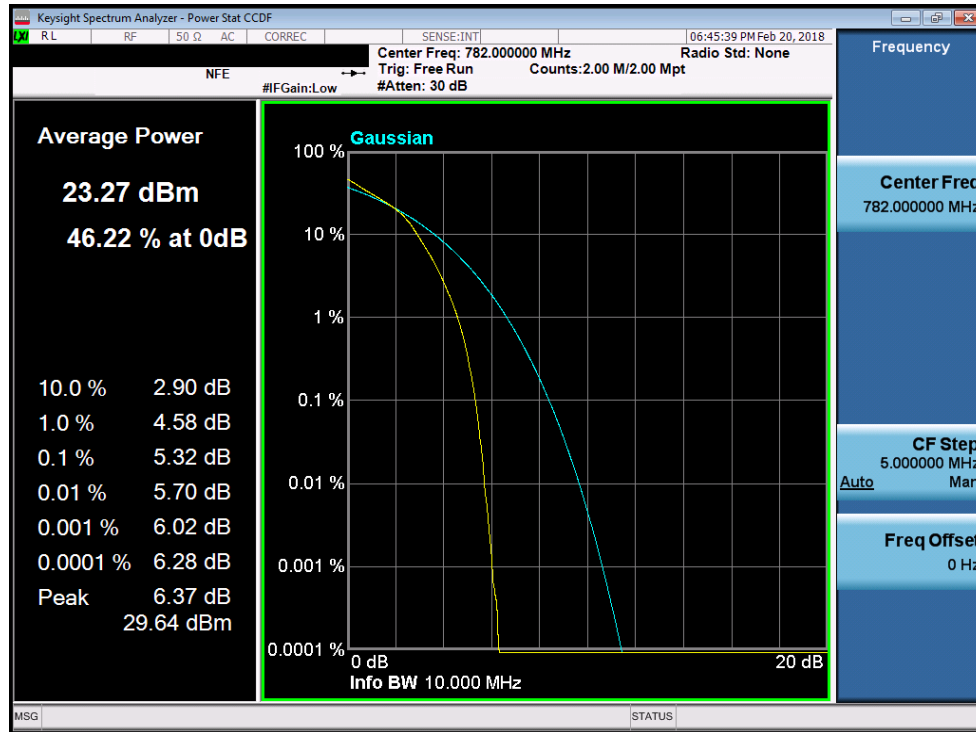


Plot 7-262. PAR Plot (Band 13 - 5.0MHz 64-QAM - Full RB Configuration)

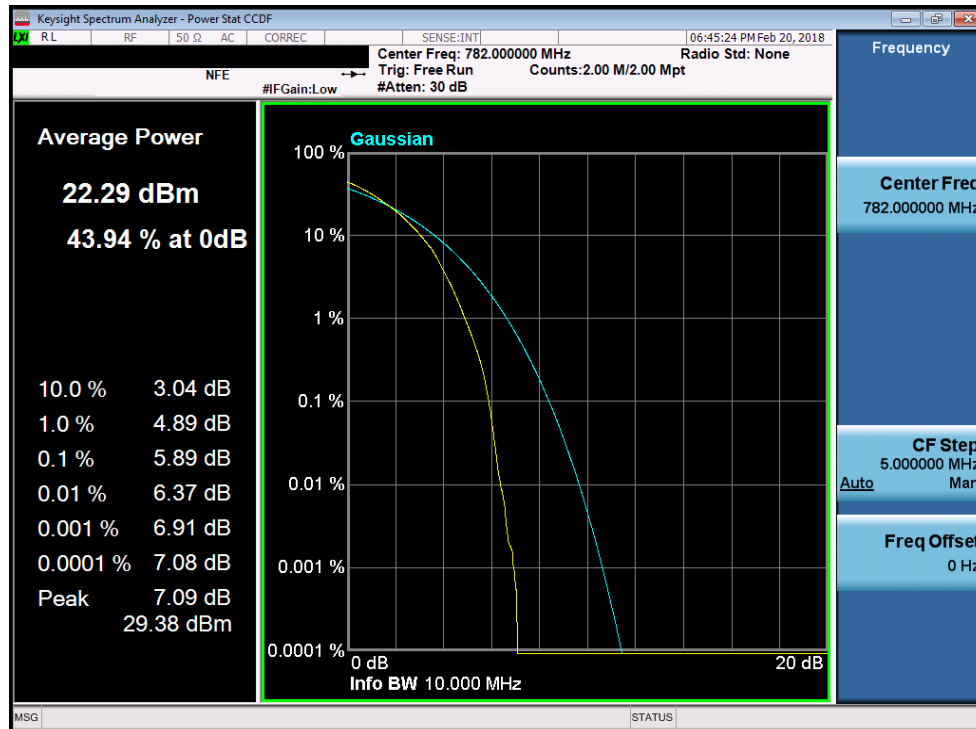


Plot 7-263. PAR Plot (Band 13 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 155 of 225



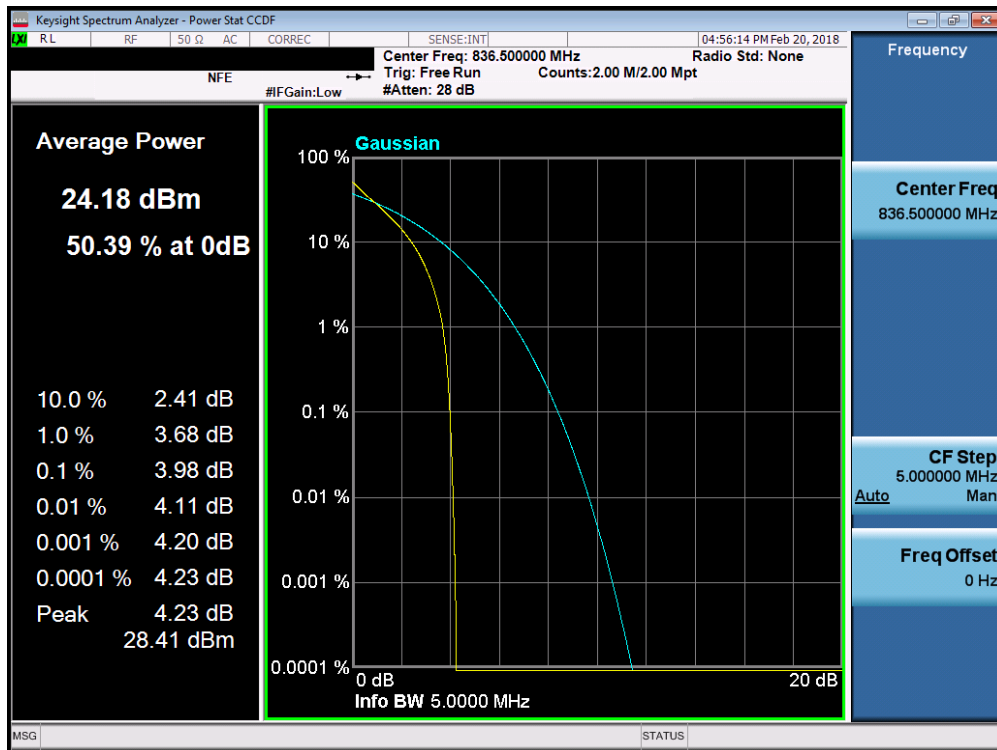
Plot 7-264. PAR Plot (Band 13 - 10.0MHz 16-QAM - Full RB Configuration)



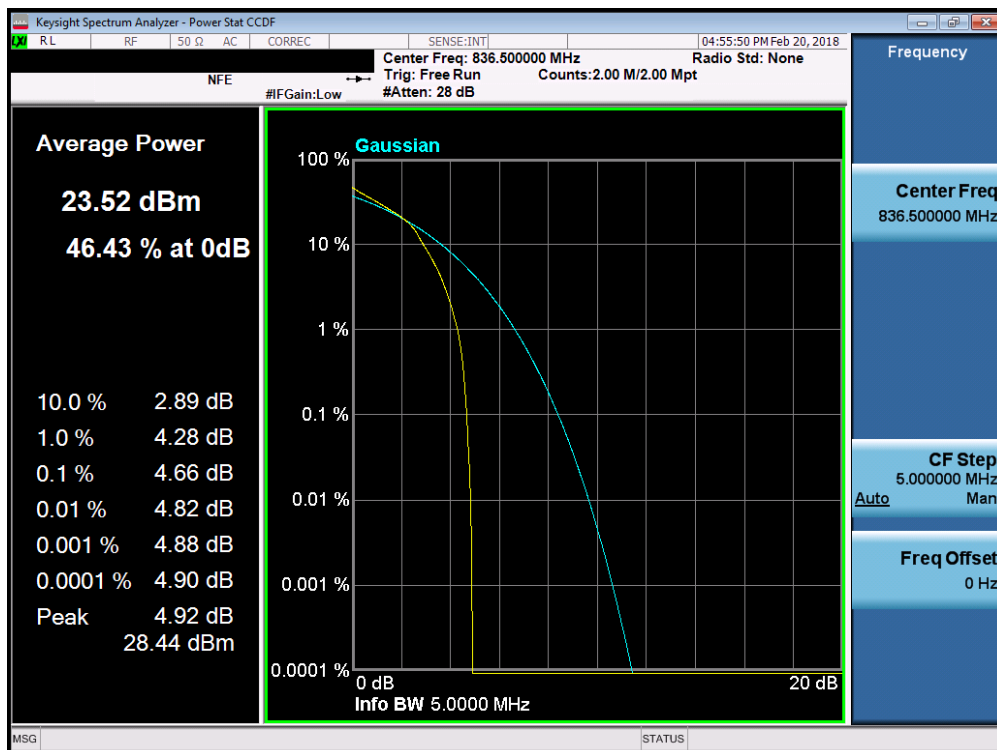
Plot 7-265. PAR Plot (Band 13 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 156 of 225

Band 5

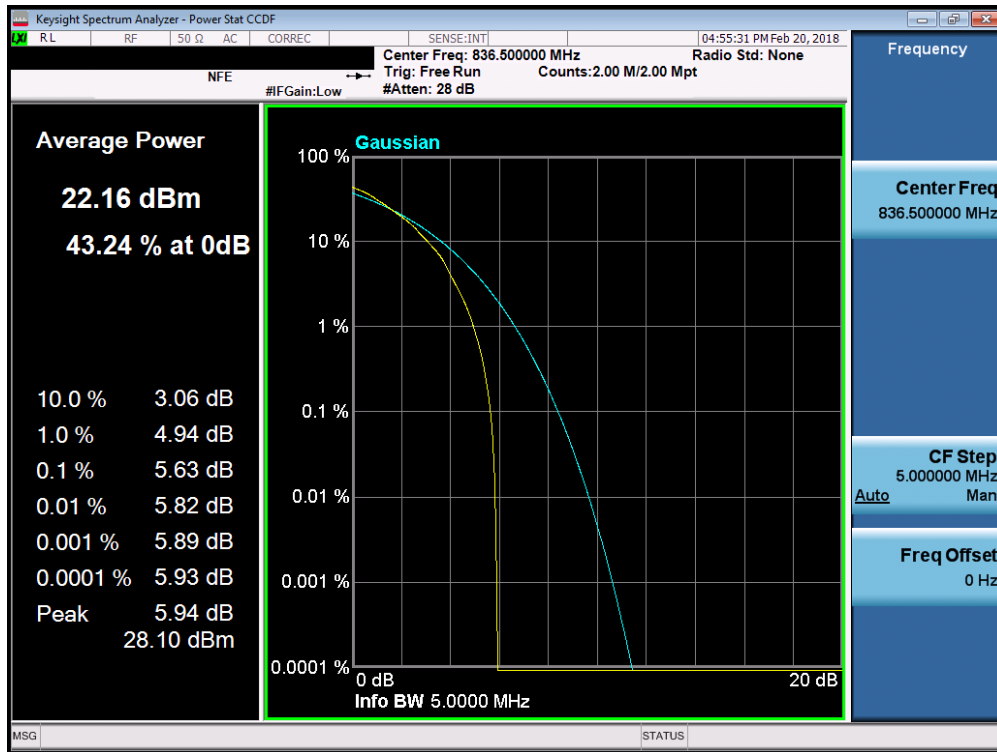


Plot 7-266. PAR Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

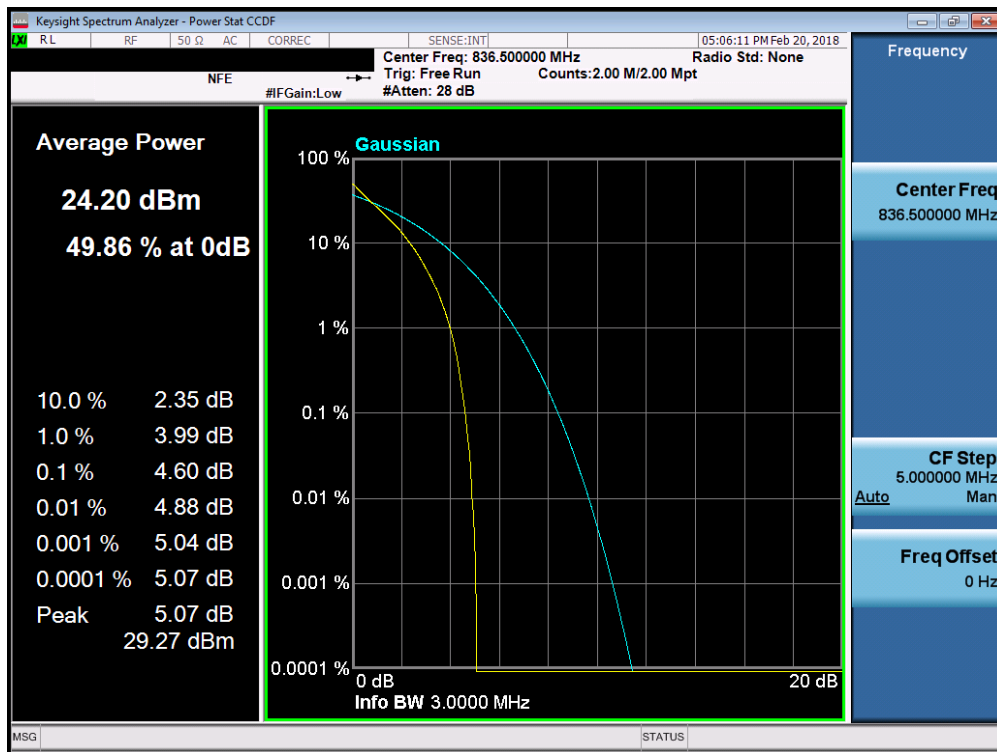


Plot 7-267. PAR Plot (Band 5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 157 of 225

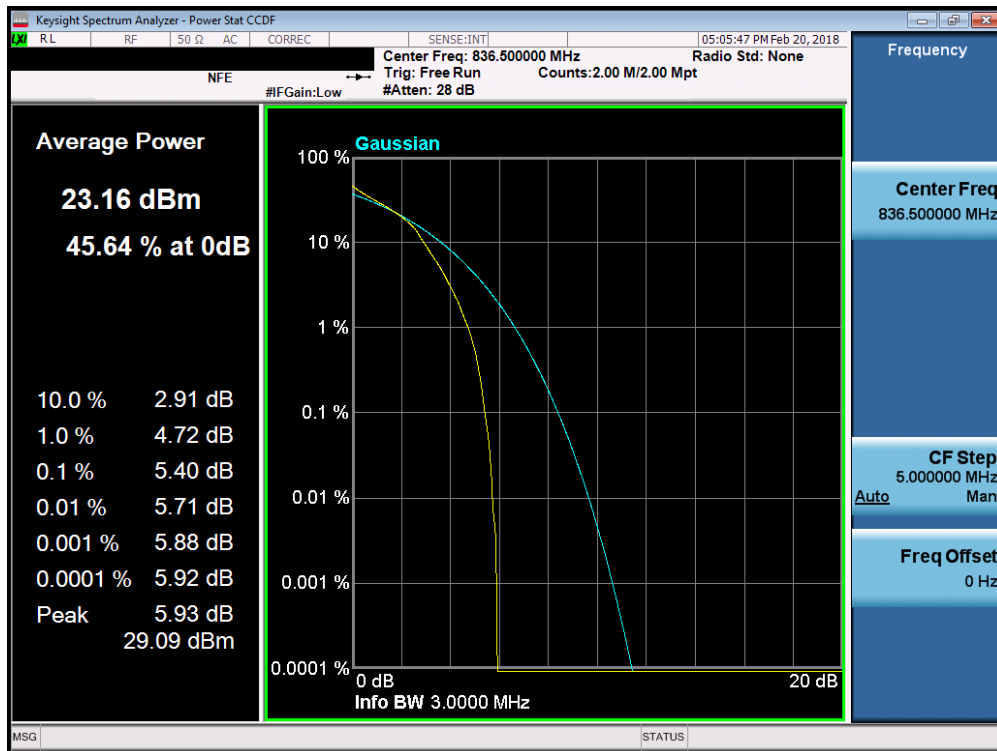


Plot 7-268. PAR Plot (Band 5 - 1.4MHz 64-QAM - Full RB Configuration)

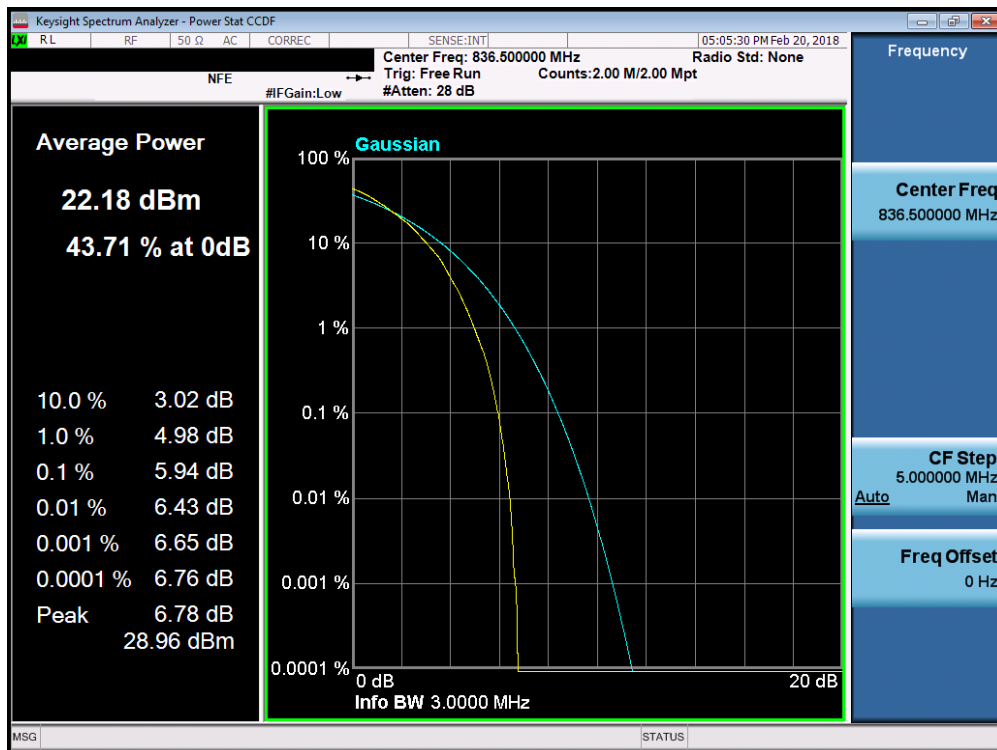


Plot 7-269. PAR Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 158 of 225

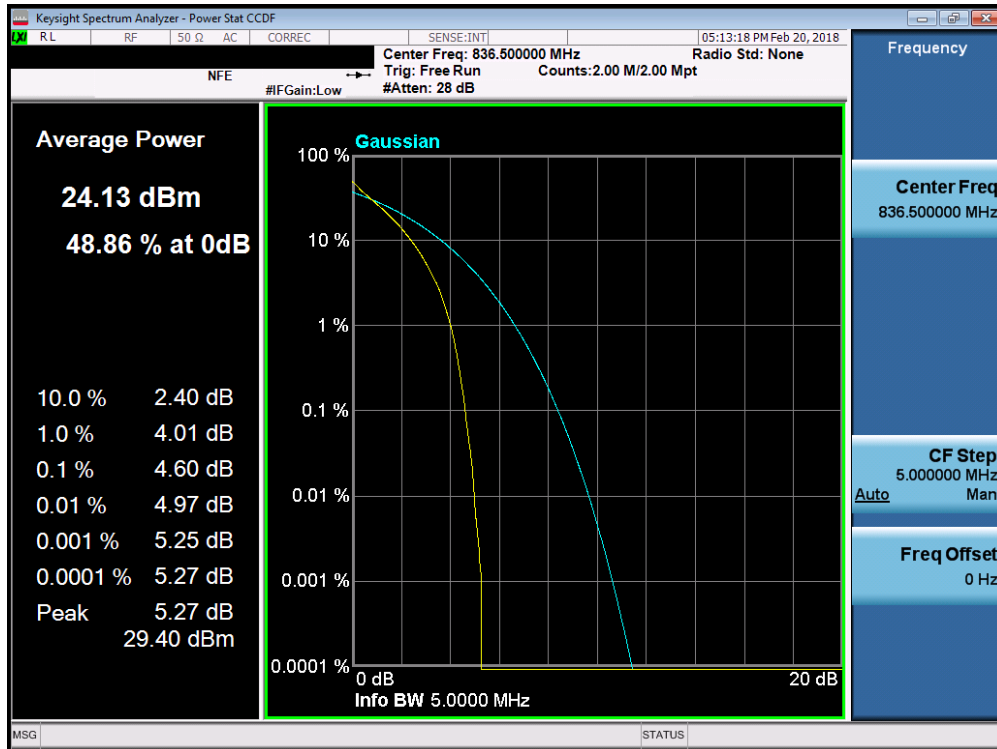


Plot 7-270. PAR Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)

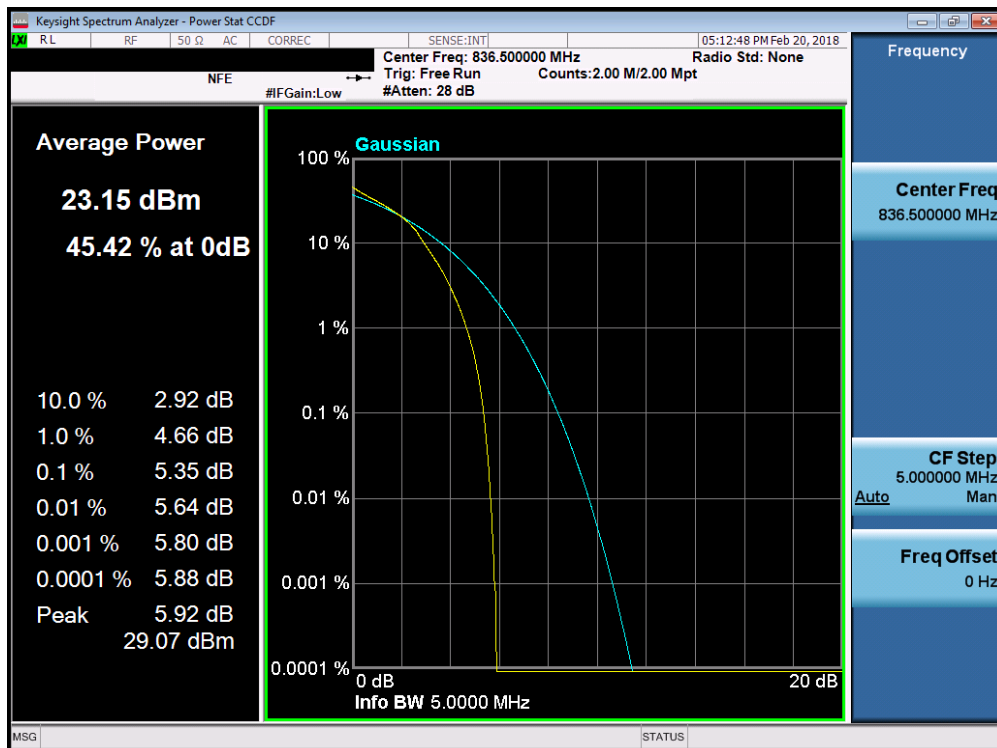


Plot 7-271. PAR Plot (Band 5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 159 of 225

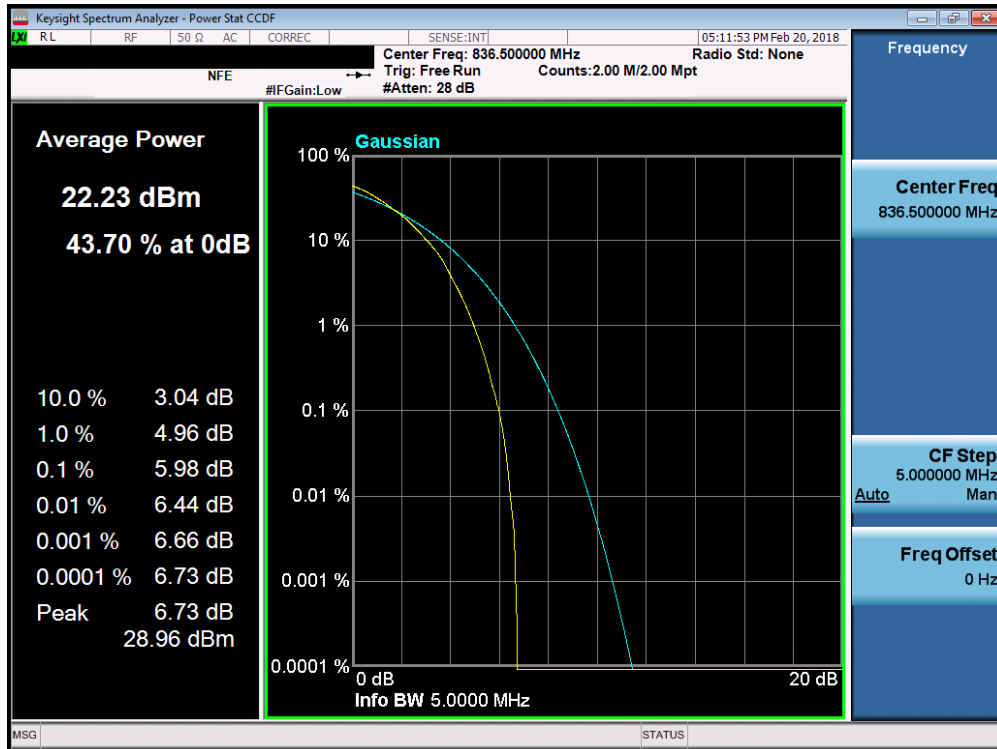


Plot 7-272. PAR Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)

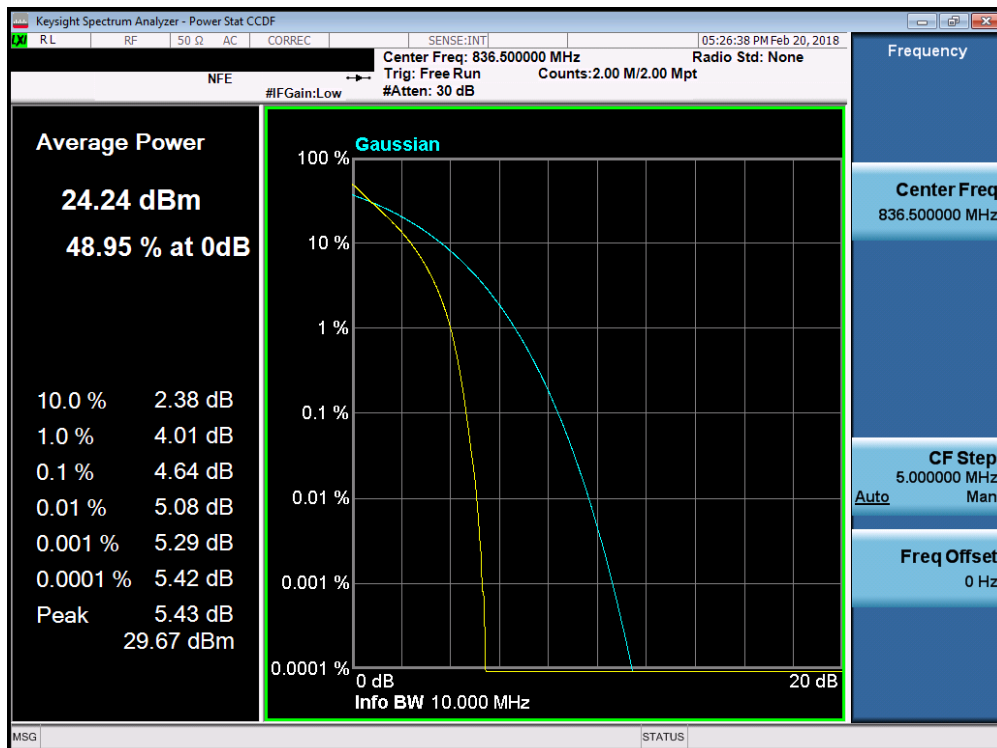


Plot 7-273. PAR Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 160 of 225

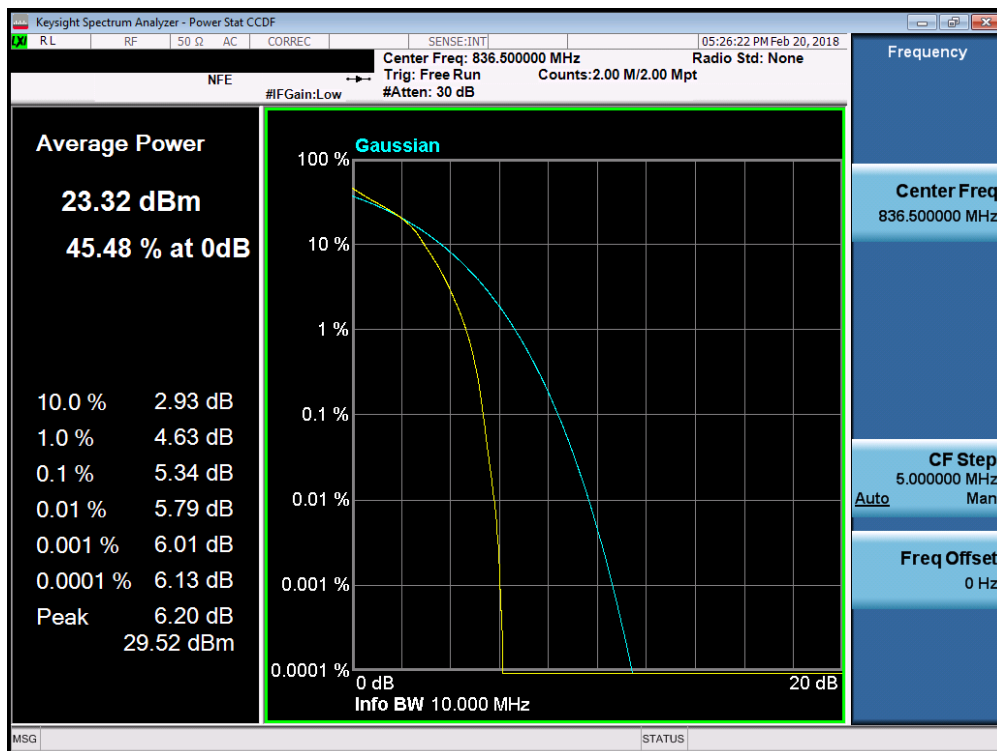


Plot 7-274. PAR Plot (Band 5 - 5.0MHz 64-QAM - Full RB Configuration)

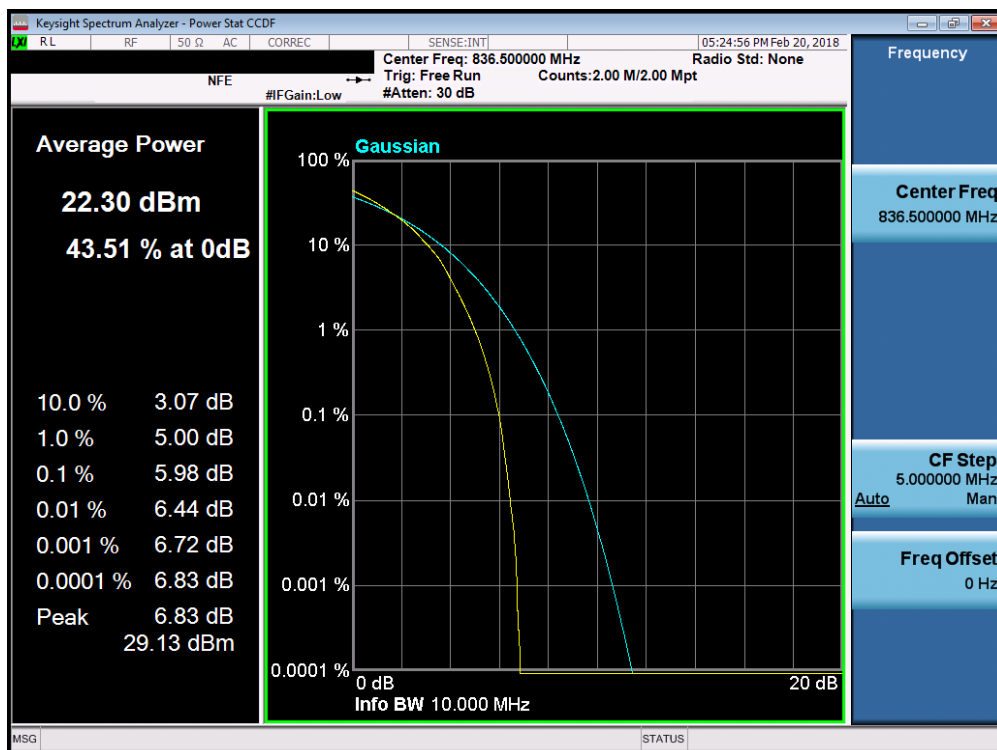


Plot 7-275. PAR Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 161 of 225



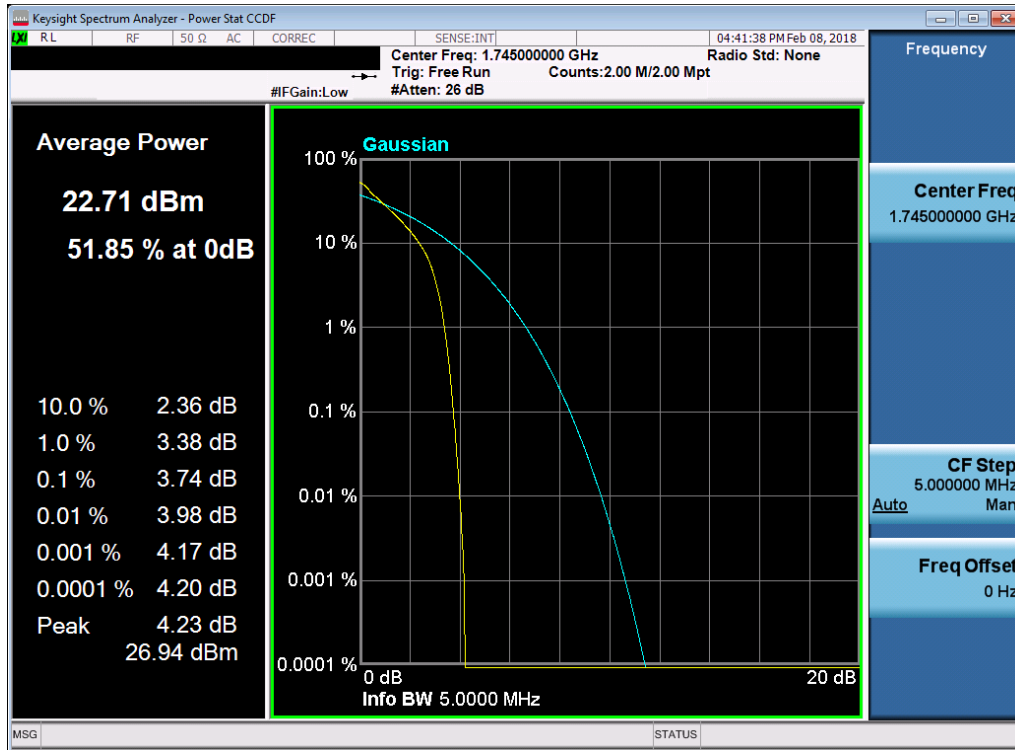
Plot 7-276. PAR Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)



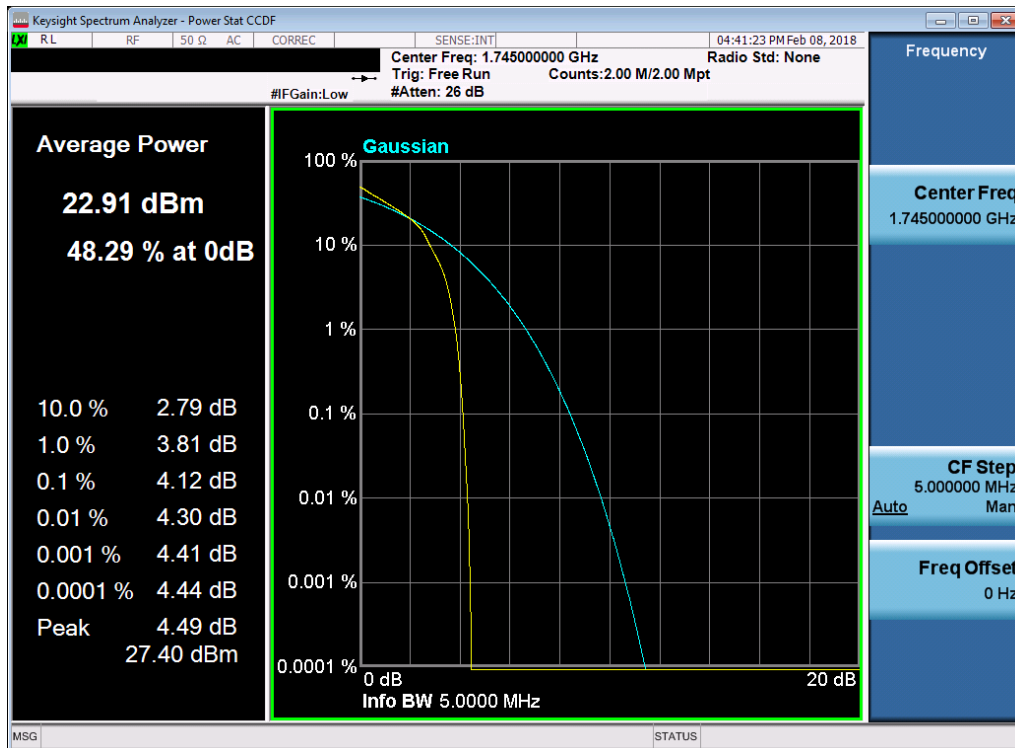
Plot 7-277. PAR Plot (Band 5 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 162 of 225

Band 66/4

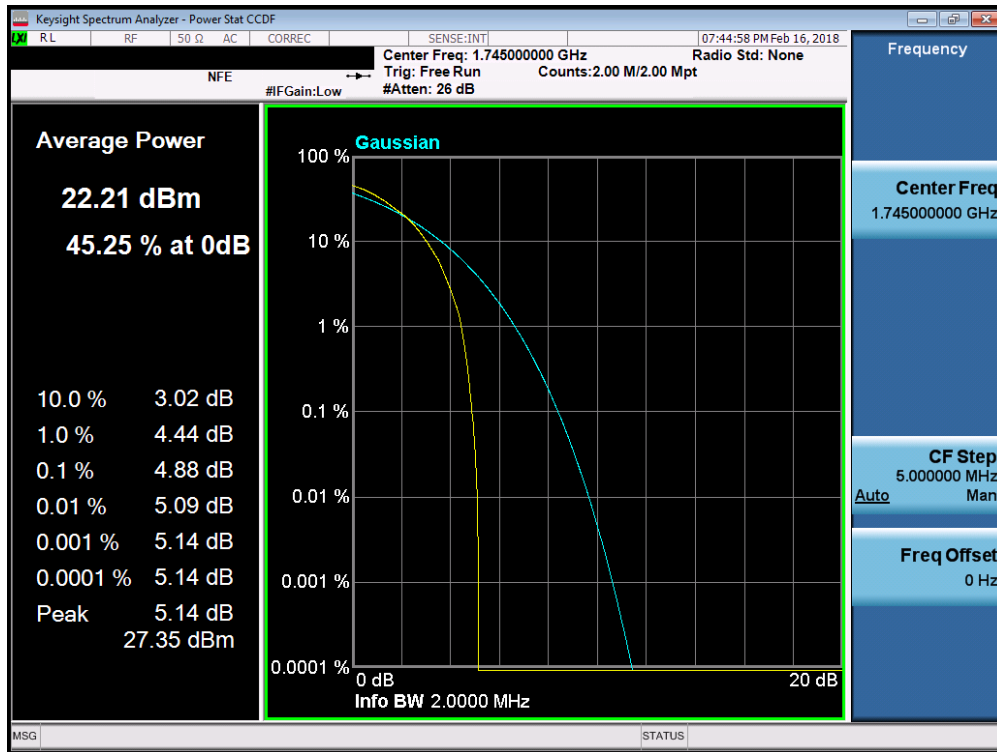


Plot 7-278. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

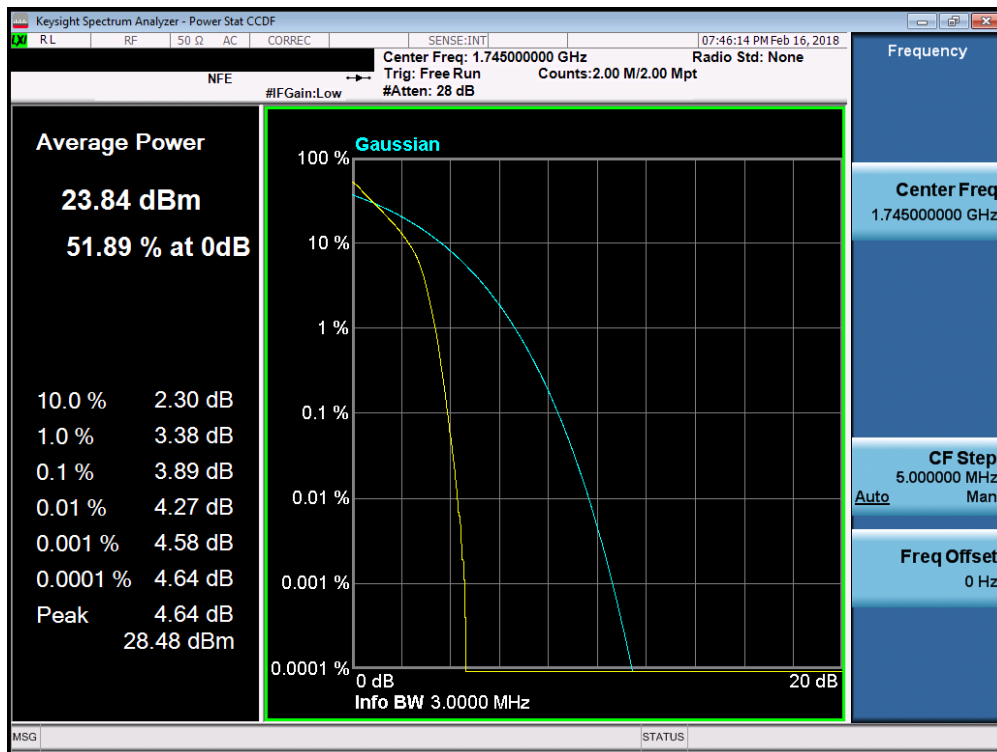


Plot 7-279. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 163 of 225

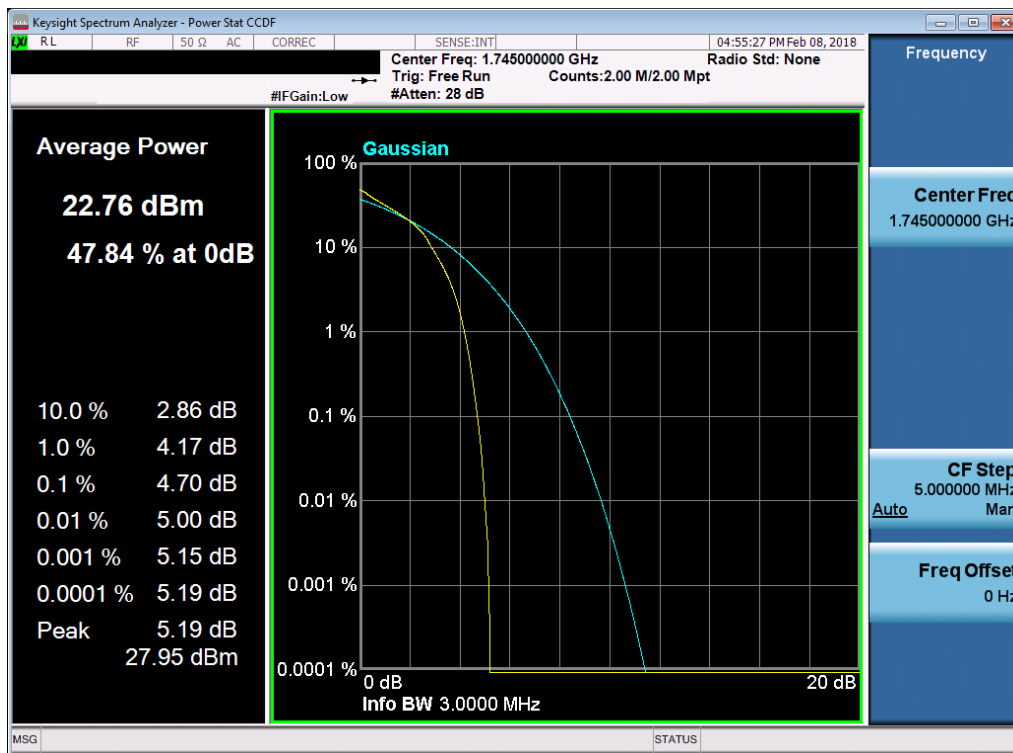


Plot 7-280. PAR Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)

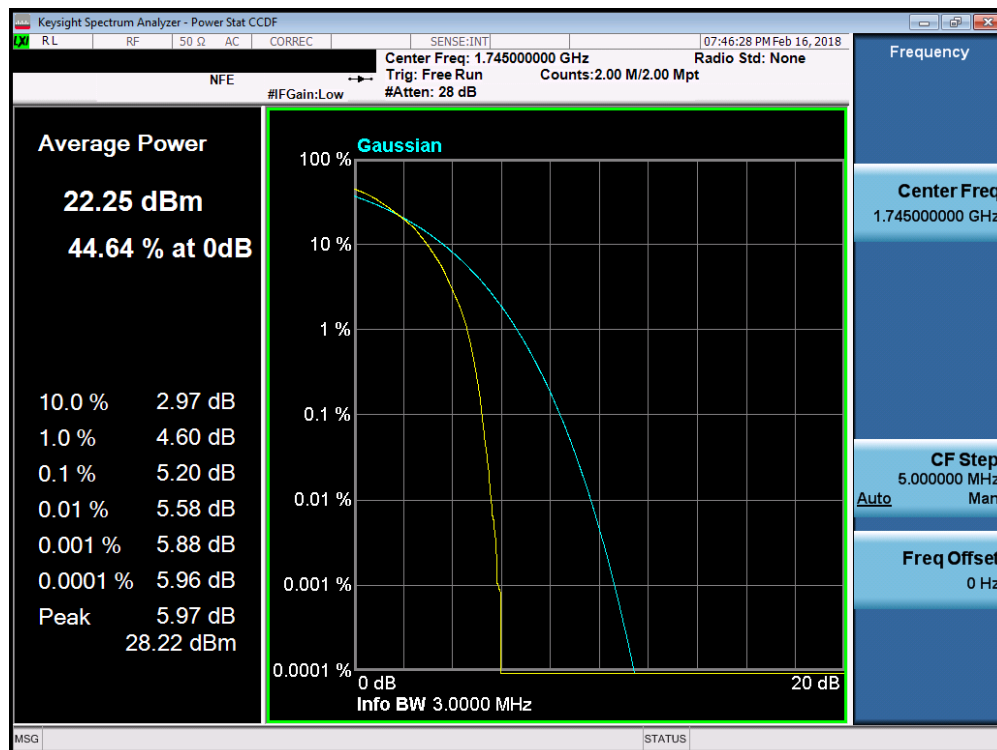


Plot 7-281. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 164 of 225

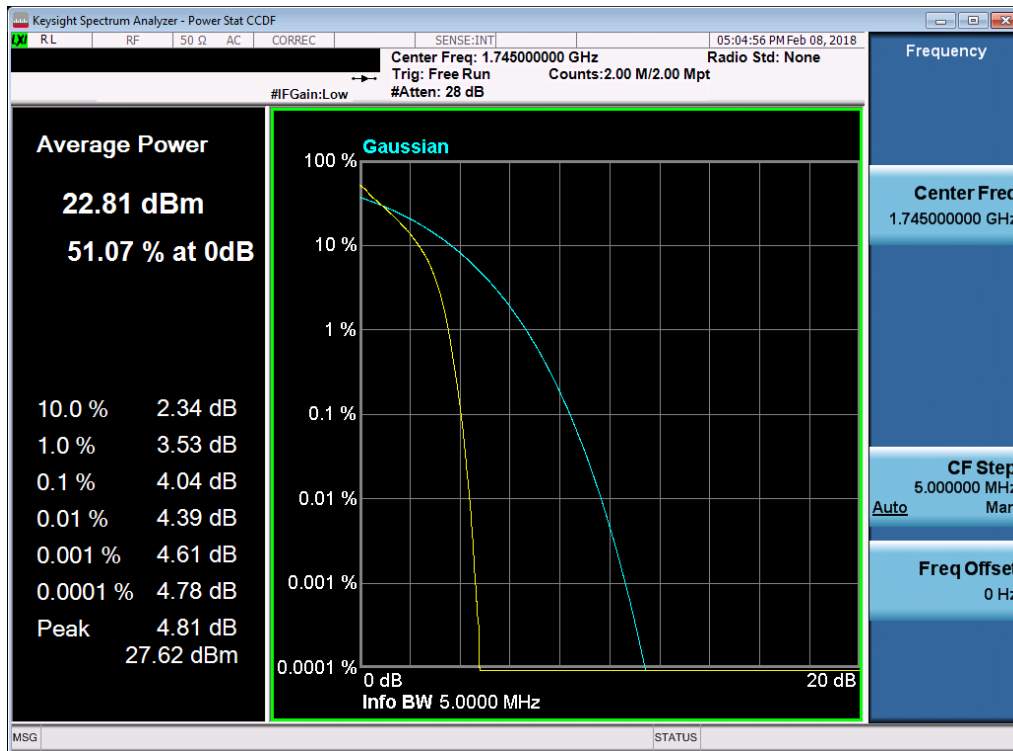


Plot 7-282. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

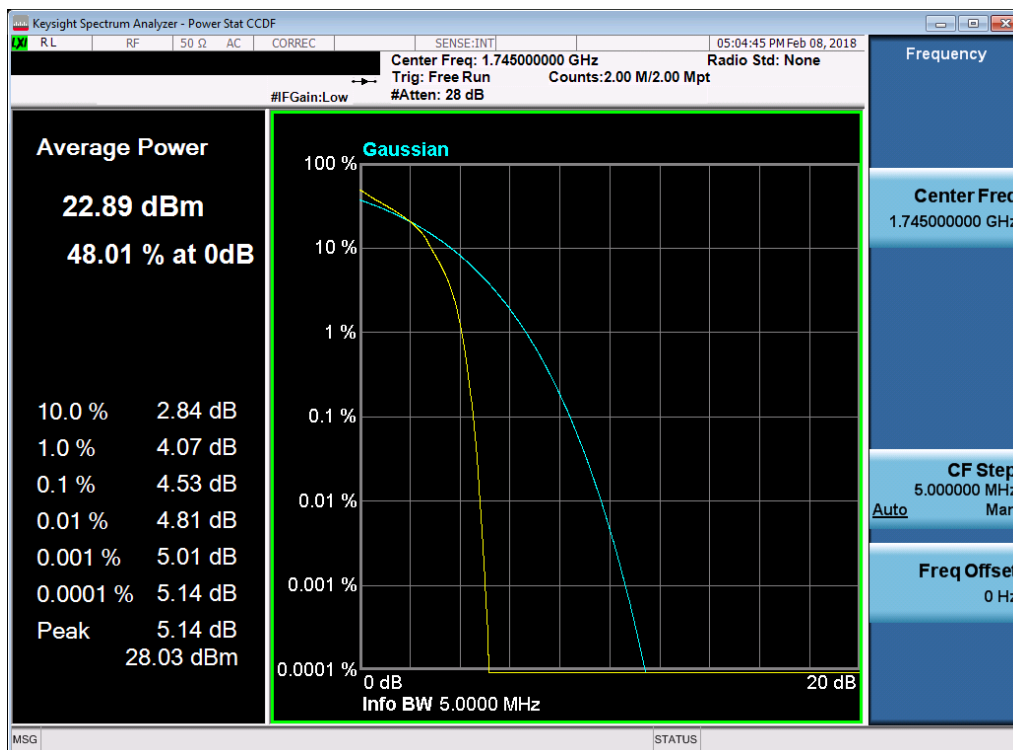


Plot 7-283. PAR Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 165 of 225

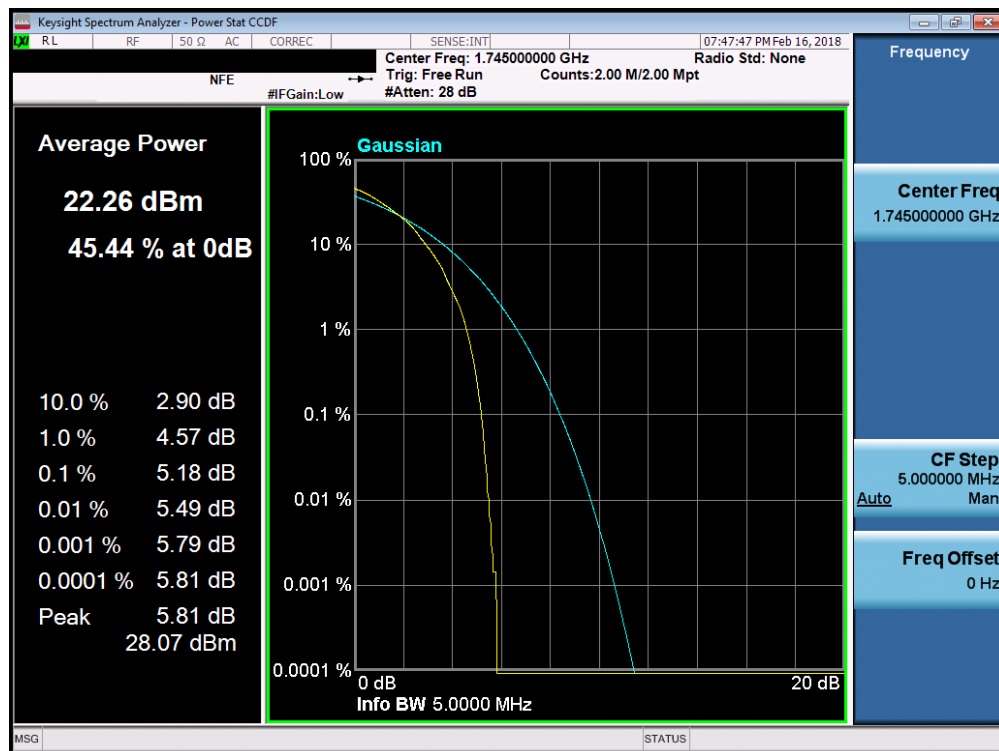


Plot 7-284. PAR Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

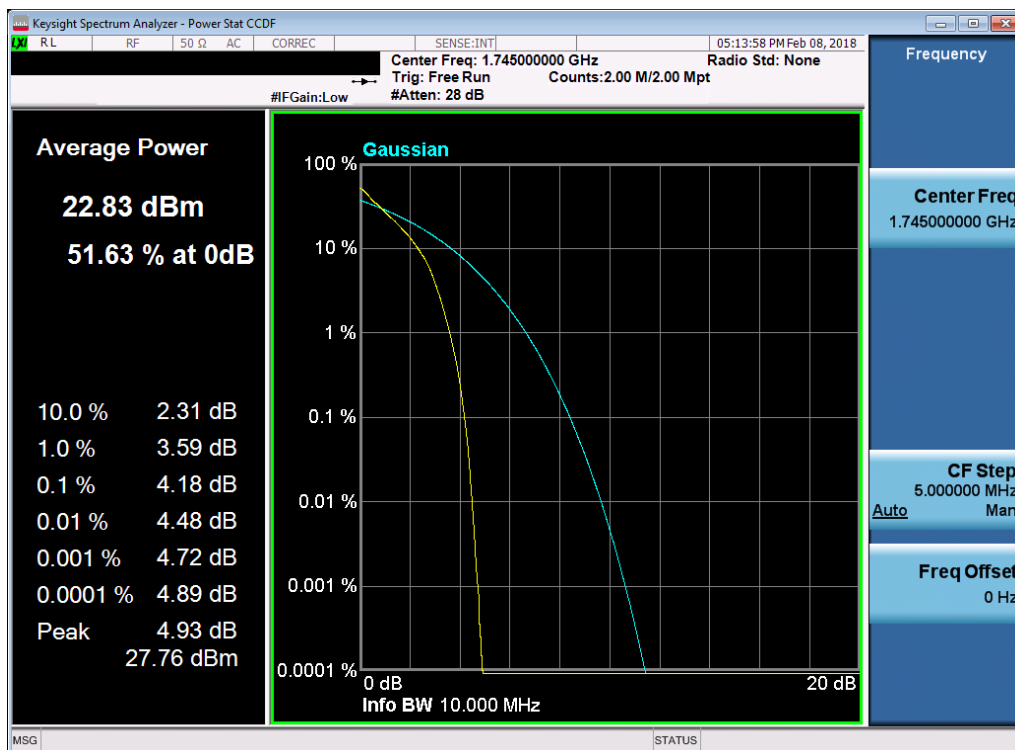


Plot 7-285. PAR Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 166 of 225

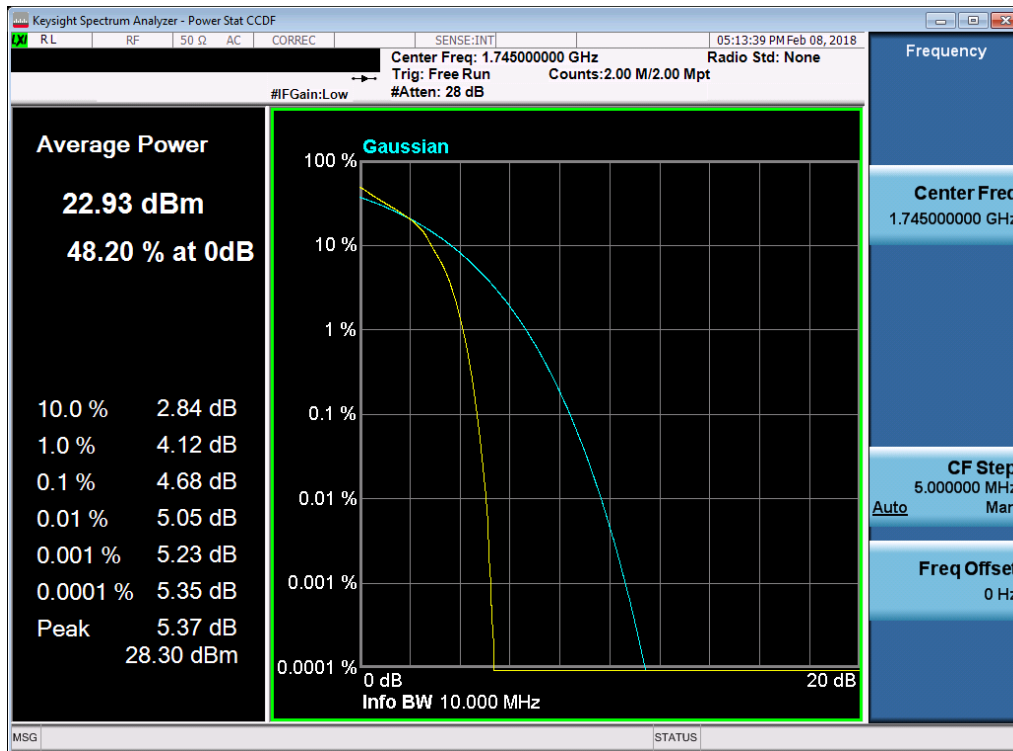


Plot 7-286. PAR Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)

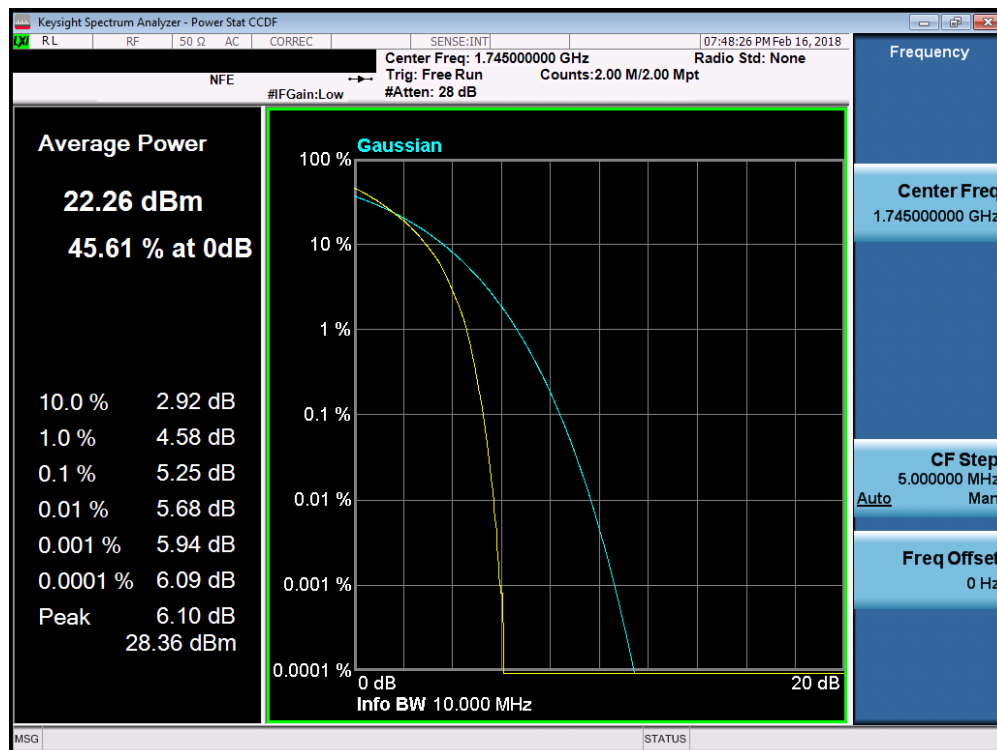


Plot 7-287. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 167 of 225

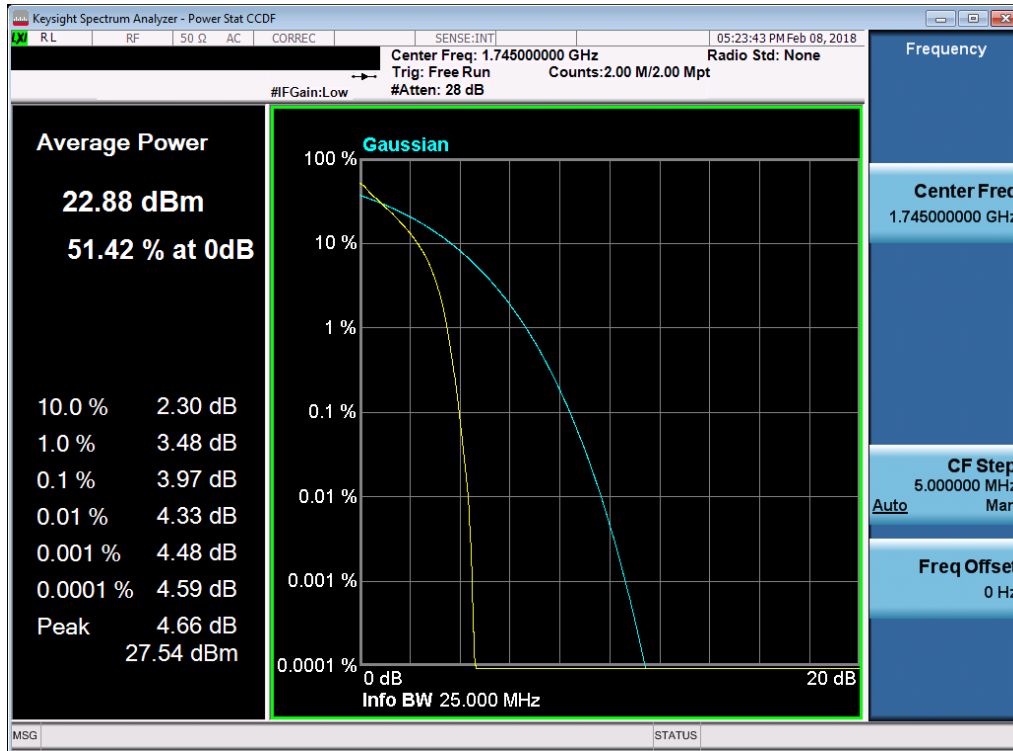


Plot 7-288. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

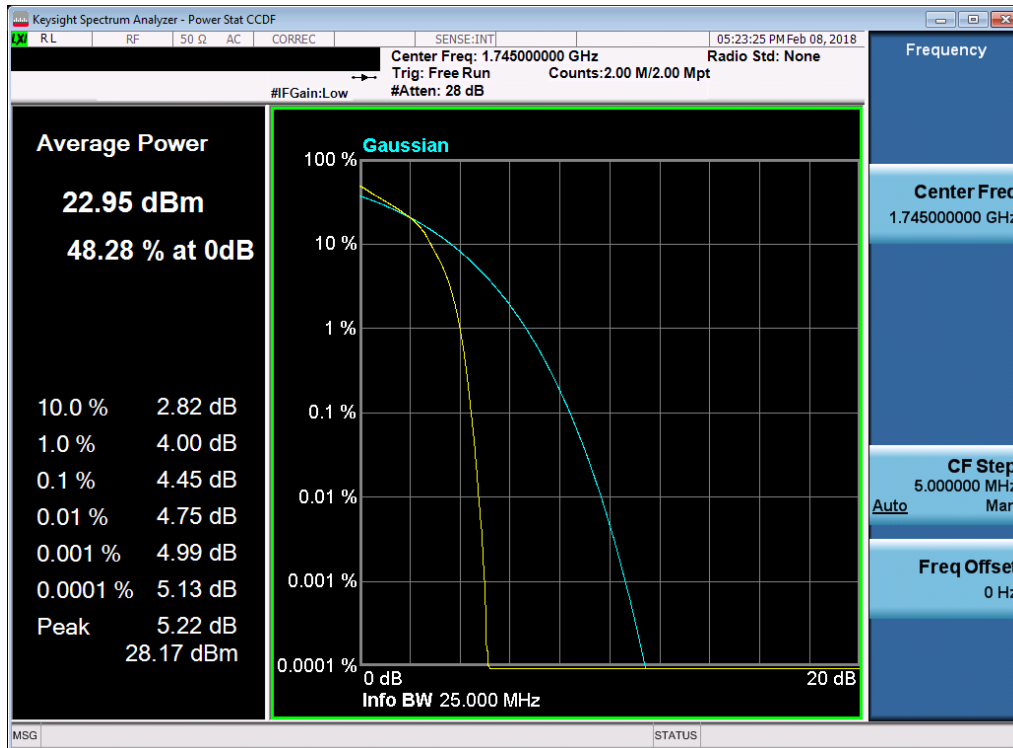


Plot 7-289. PAR Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 168 of 225

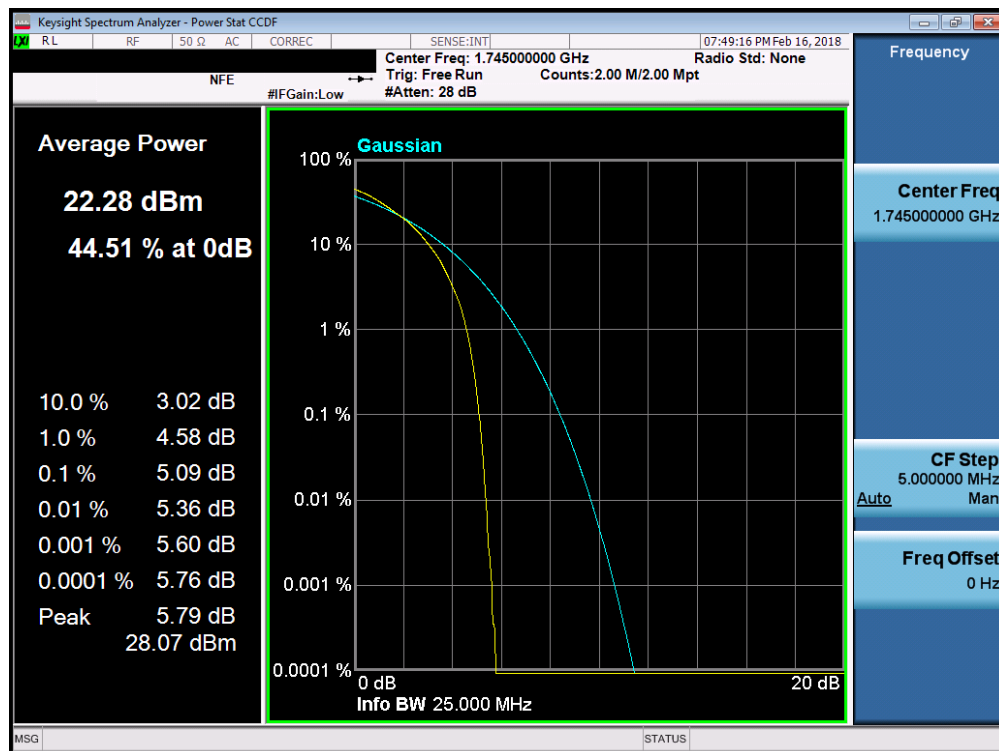


Plot 7-290. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

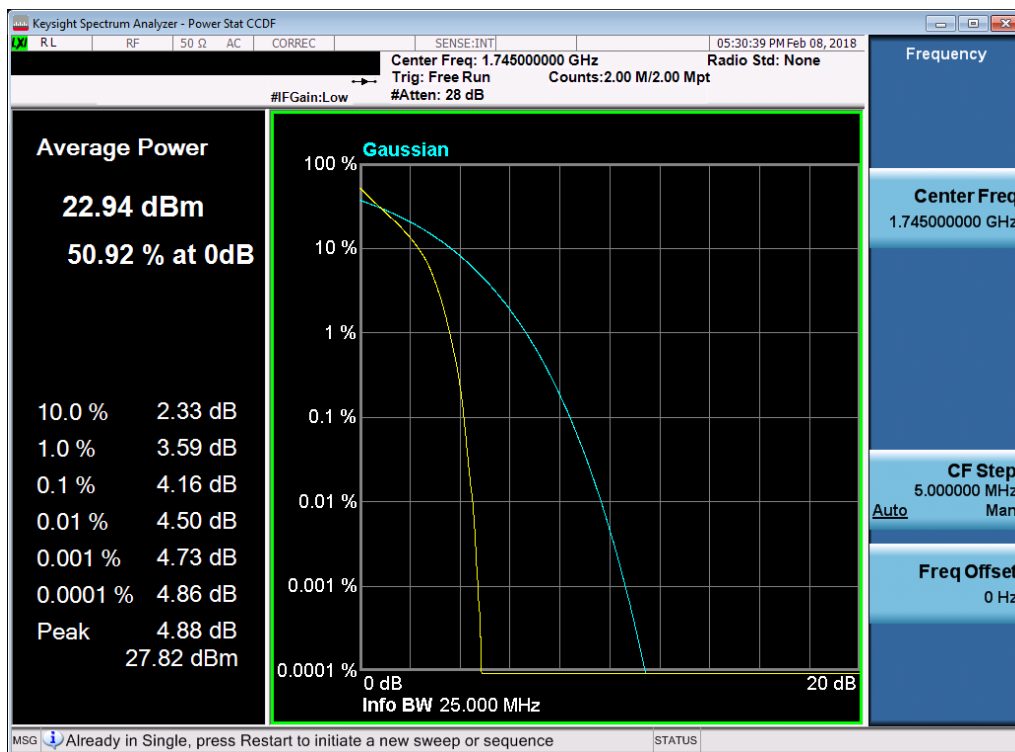


Plot 7-291. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 169 of 225

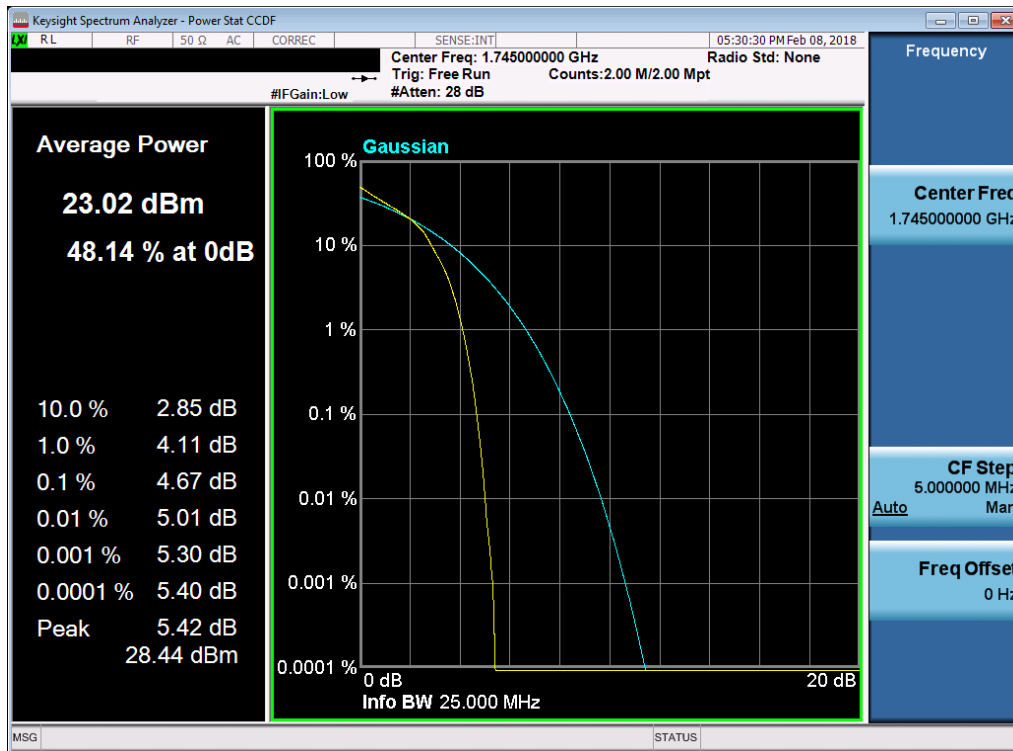


Plot 7-292. PAR Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)

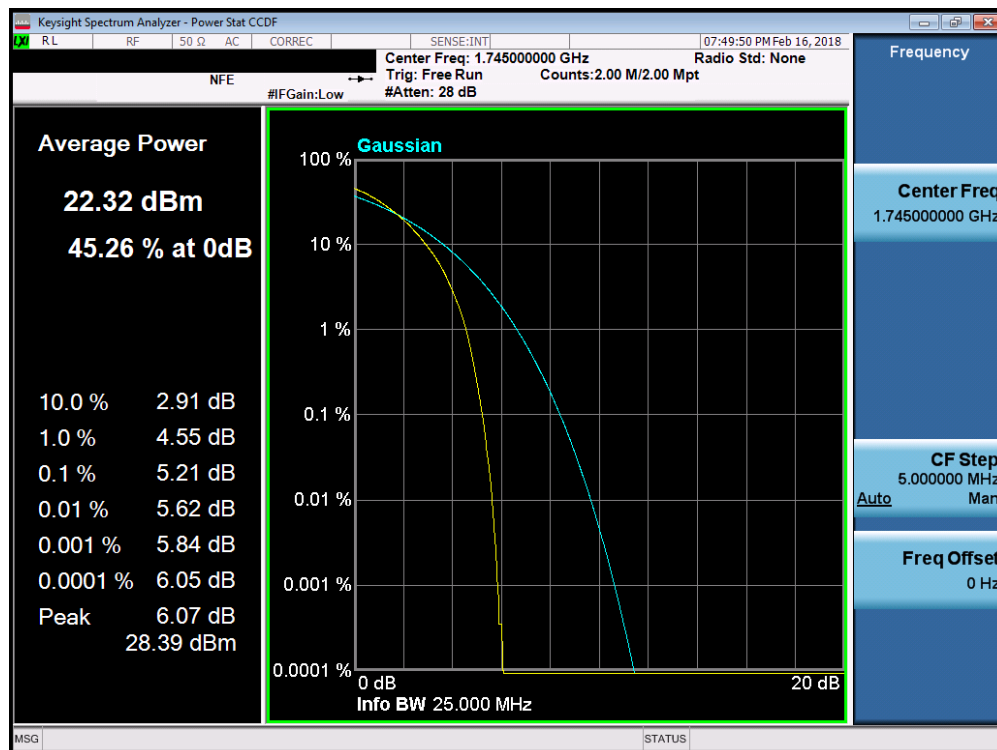


Plot 7-293. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 170 of 225



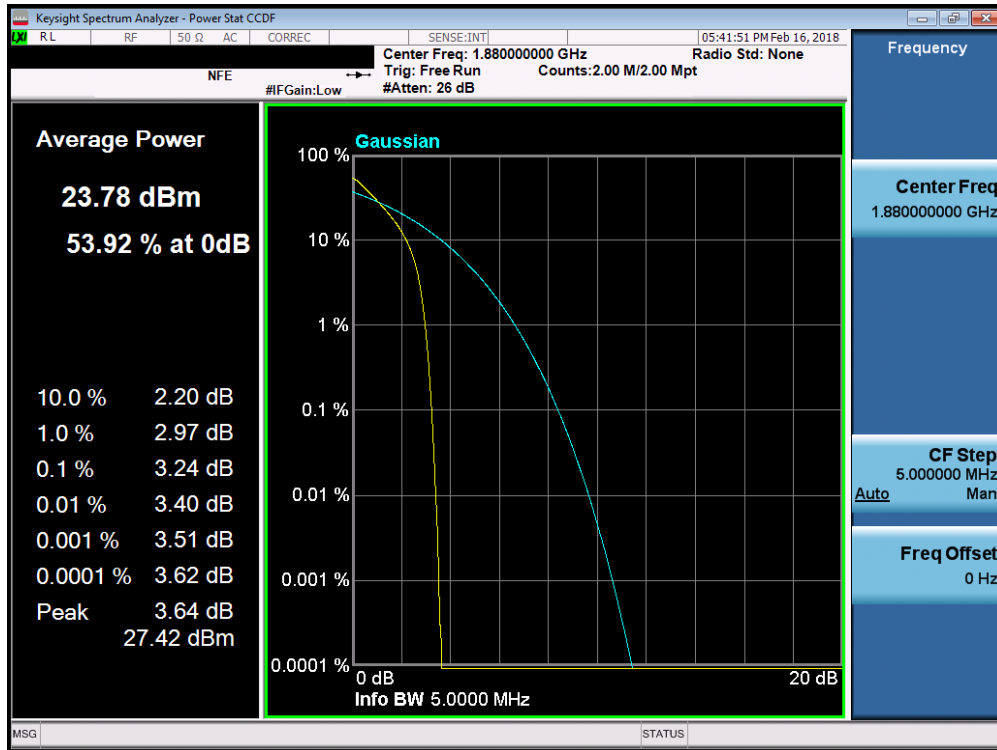
Plot 7-294. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



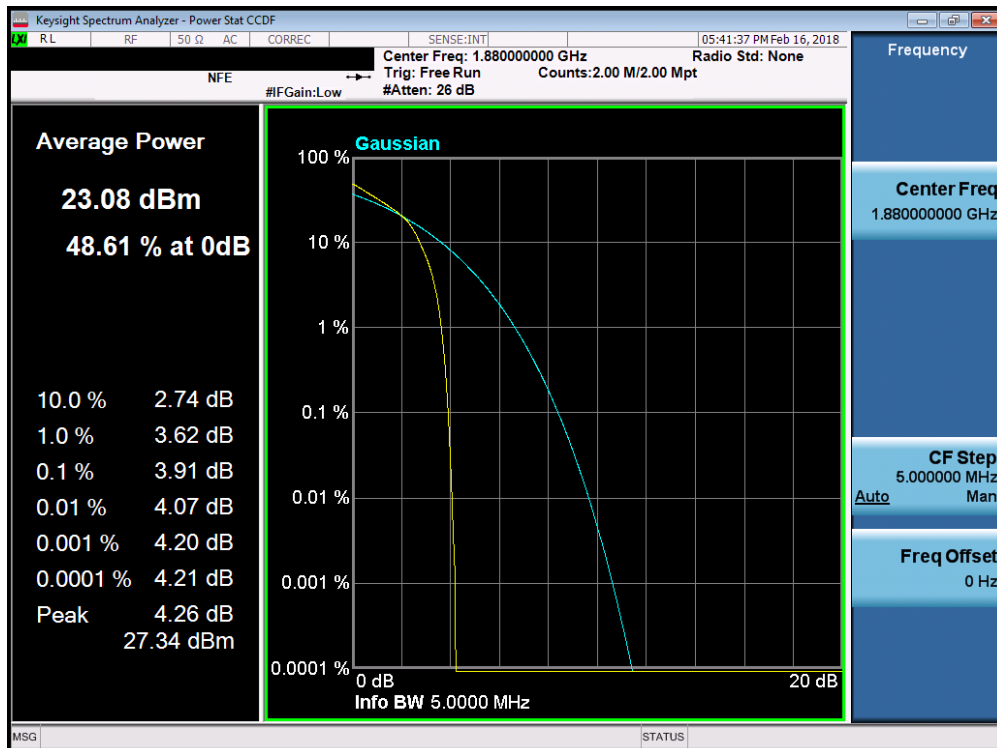
Plot 7-295. PAR Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 171 of 225

Band 2

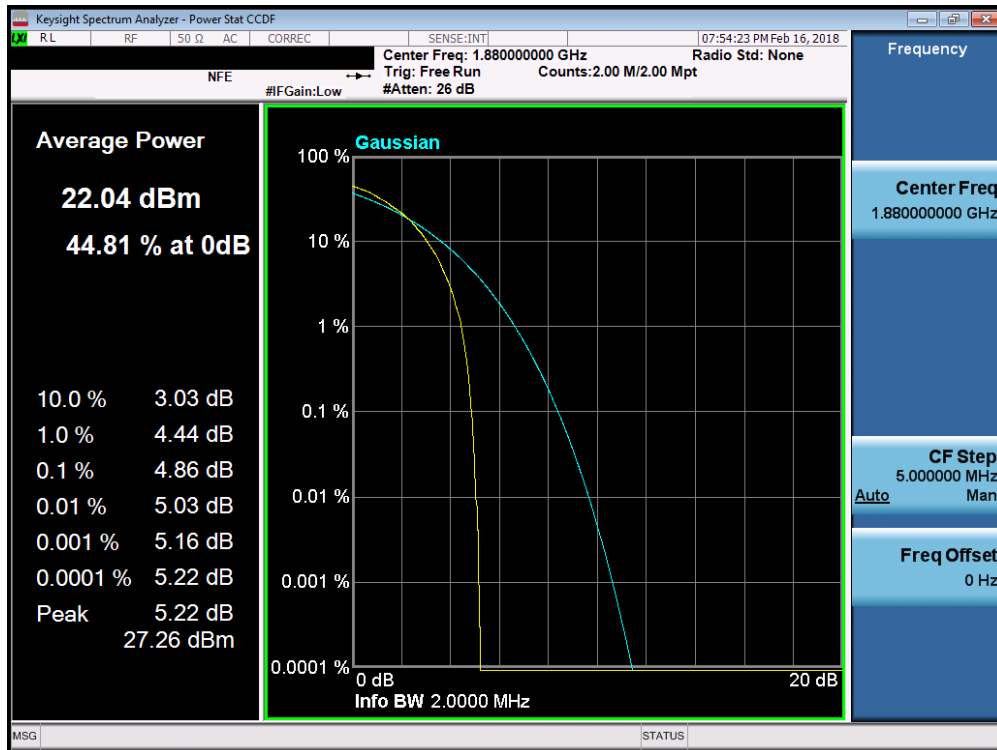


Plot 7-296. PAR Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

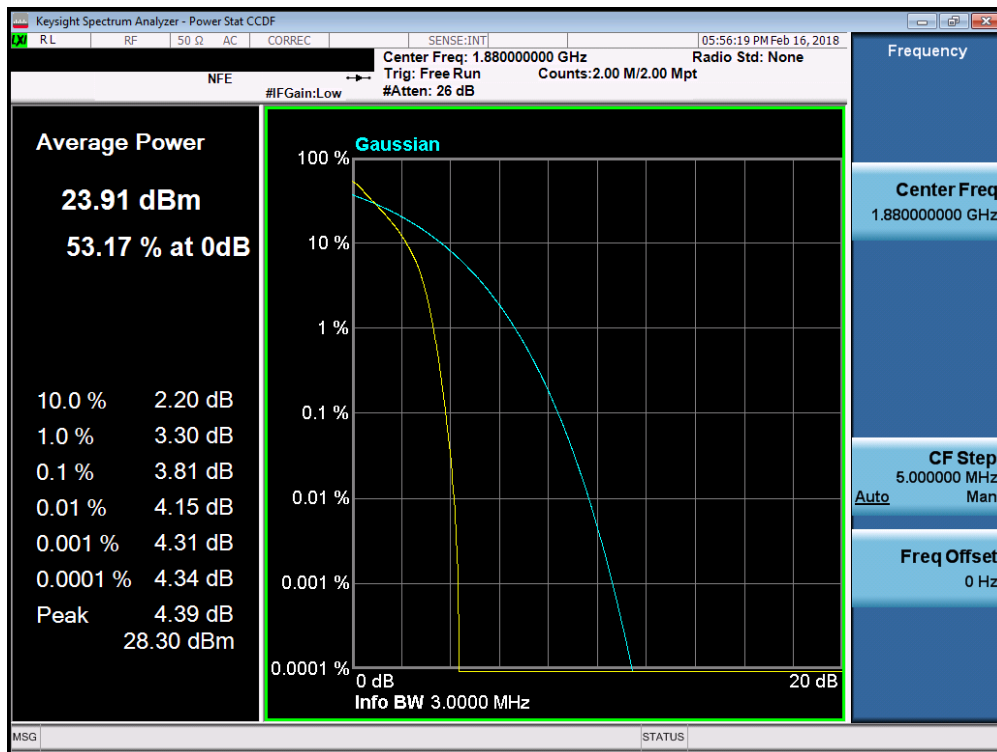


Plot 7-297. PAR Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 172 of 225

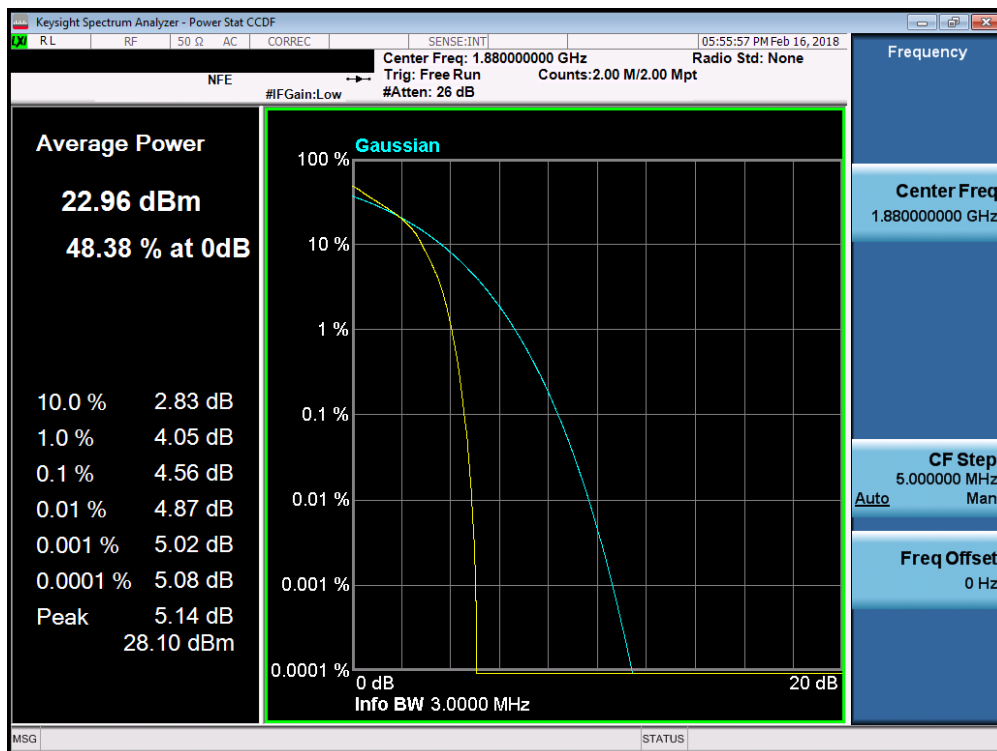


Plot 7-298. PAR Plot (Band 2 - 1.4MHz 64-QAM - Full RB Configuration)

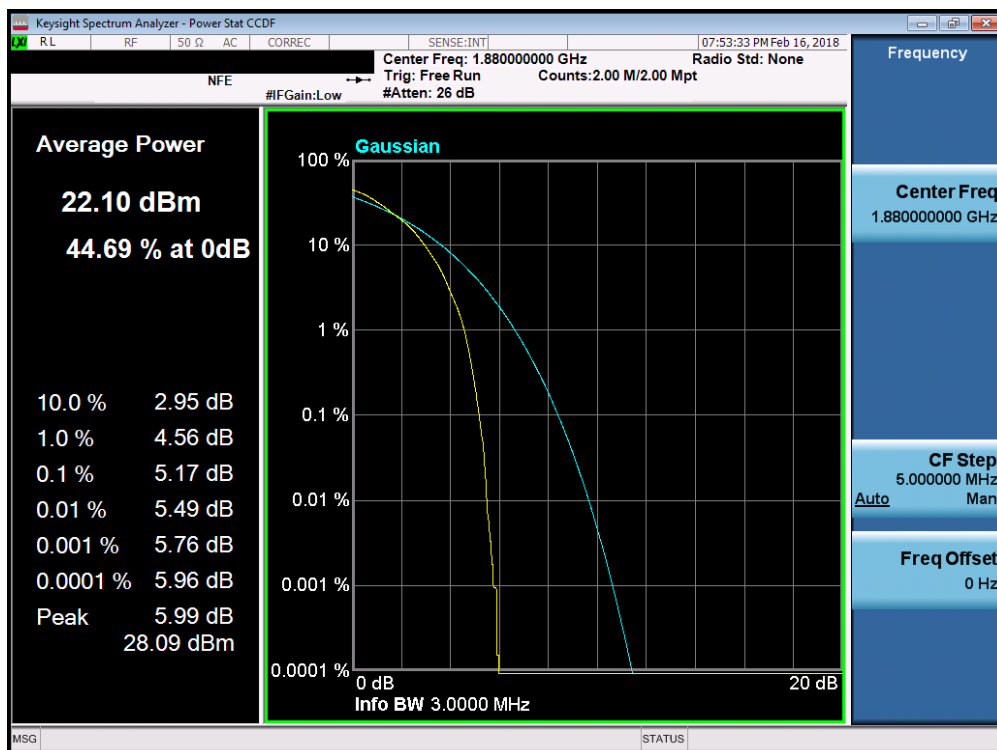


Plot 7-299. PAR Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 173 of 225

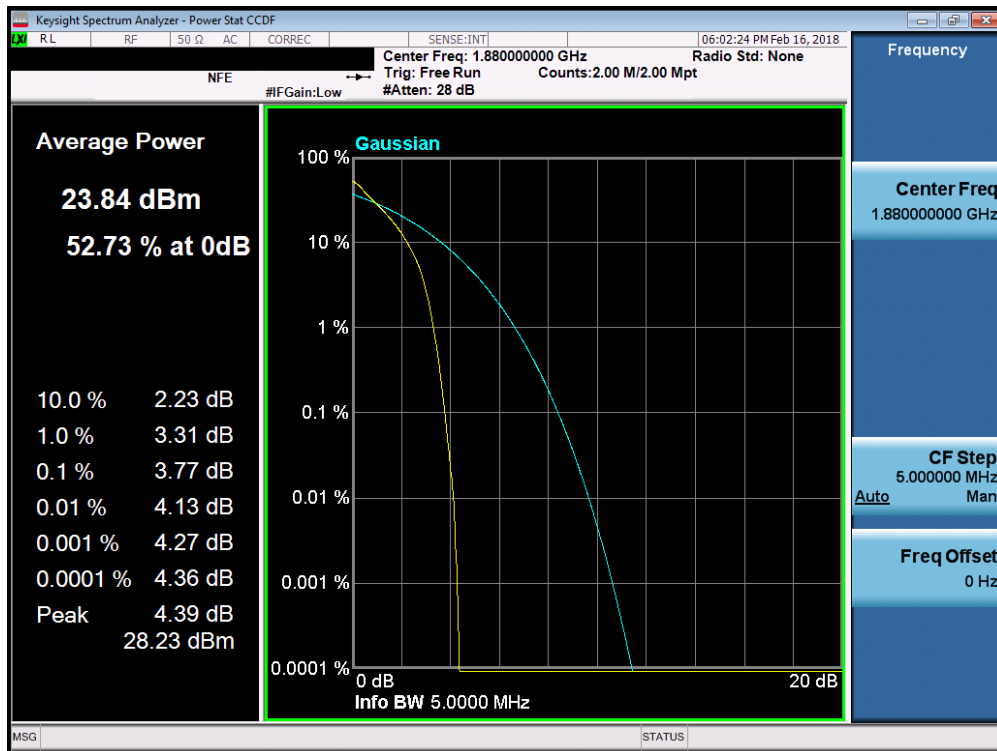


Plot 7-300. PAR Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

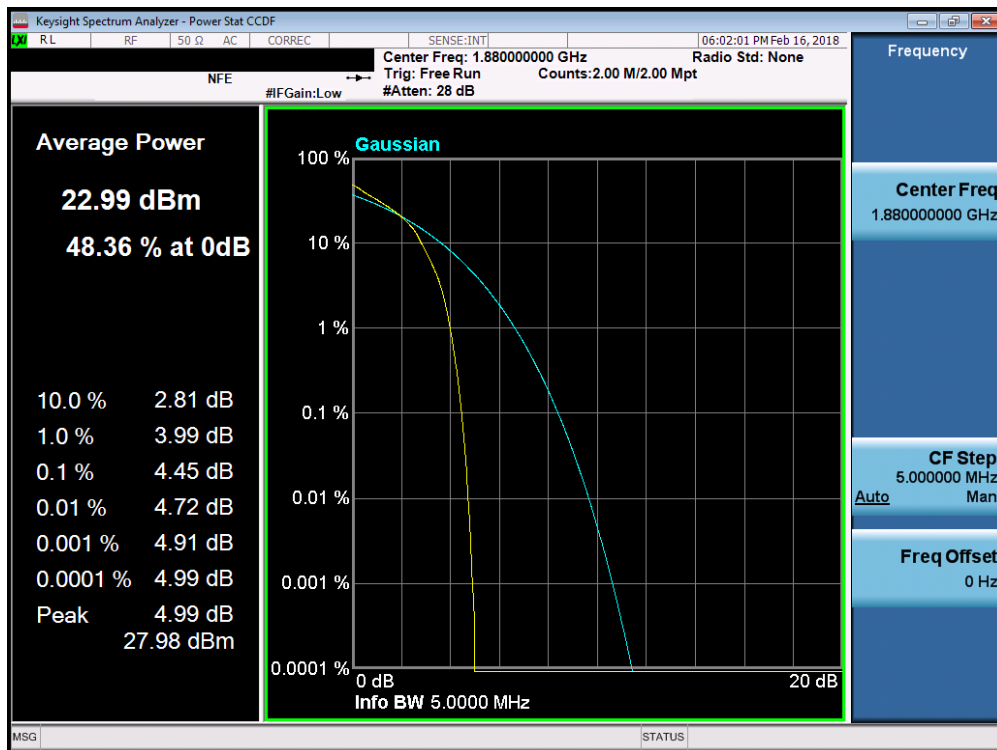


Plot 7-301. PAR Plot (Band 2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 174 of 225

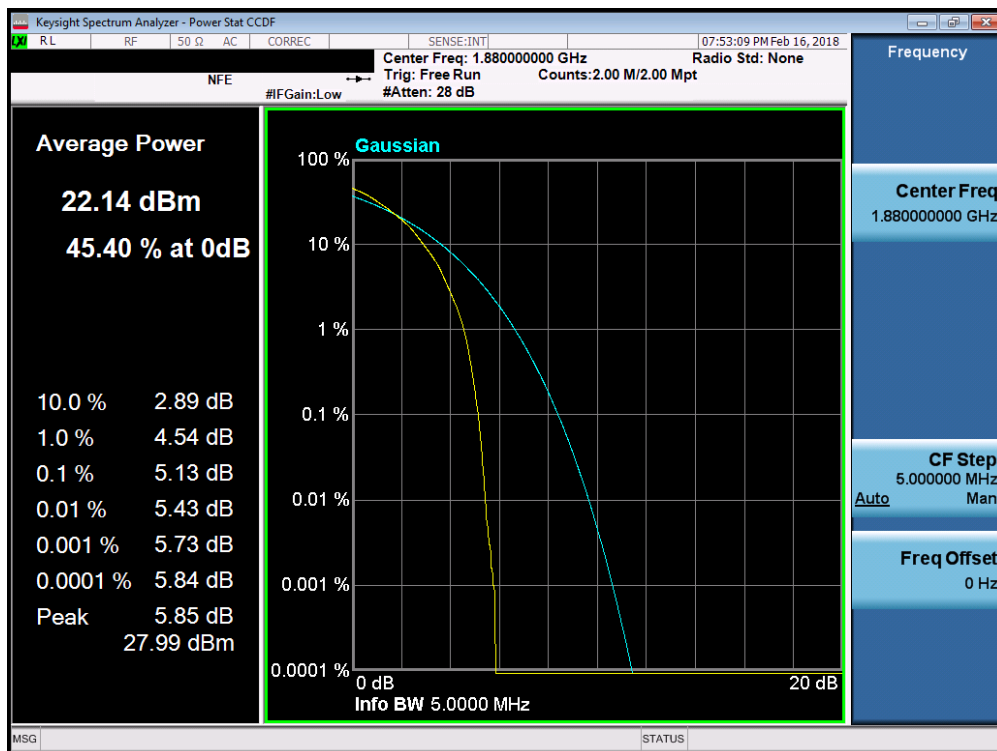


Plot 7-302. PAR Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

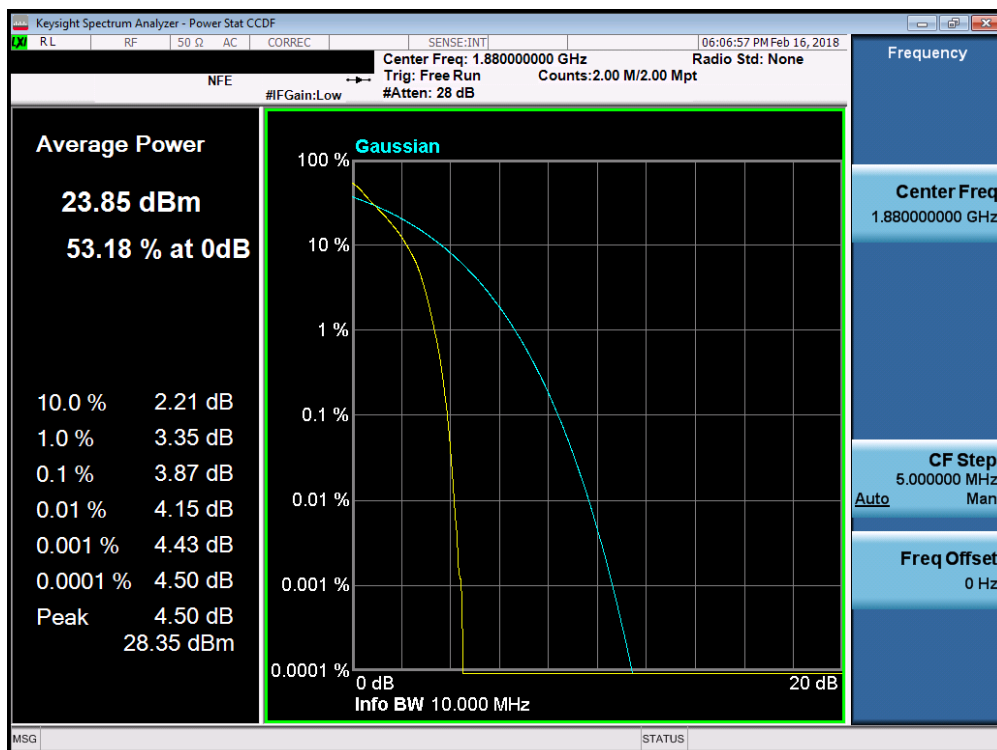


Plot 7-303. PAR Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 175 of 225

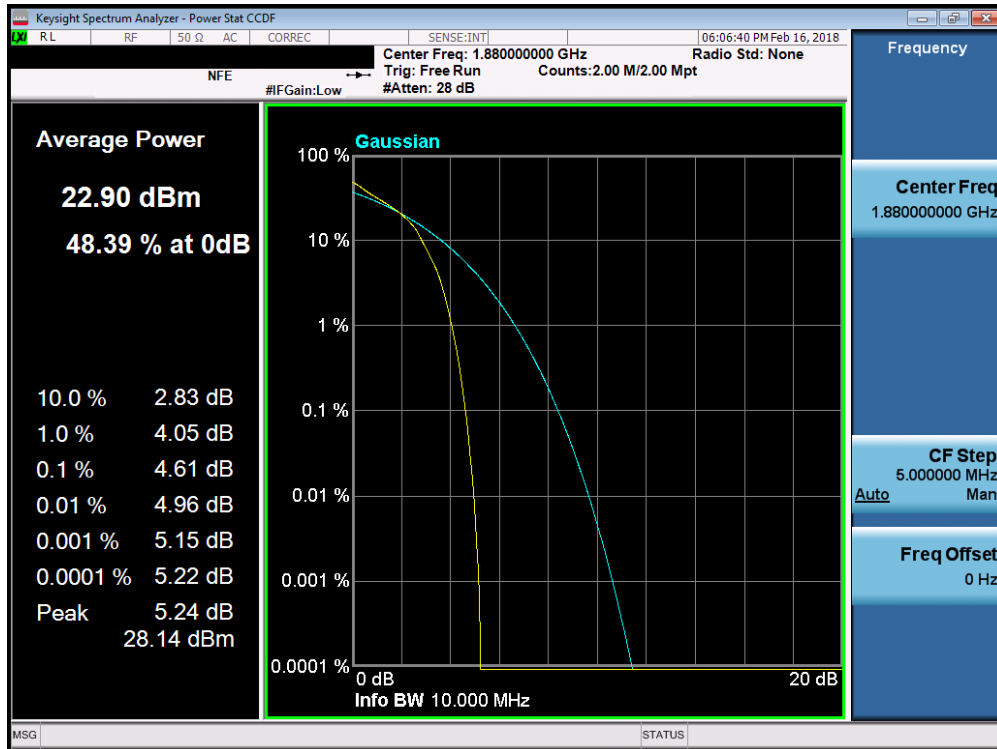


Plot 7-304. PAR Plot (Band 2 - 5.0MHz 64-QAM - Full RB Configuration)

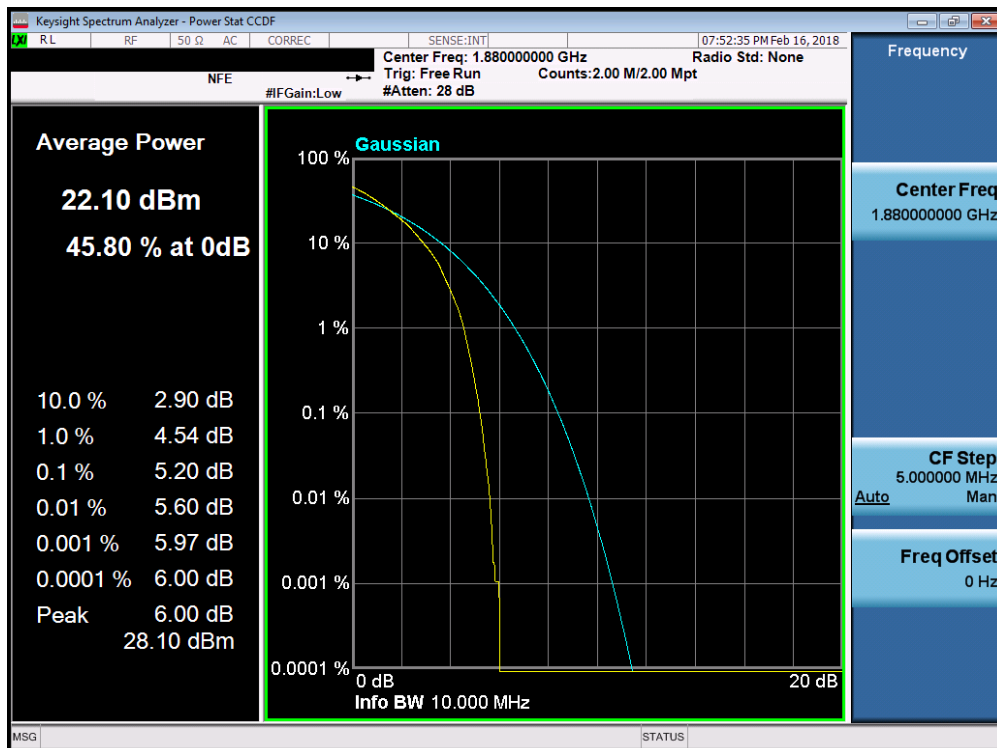


Plot 7-305. PAR Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 176 of 225

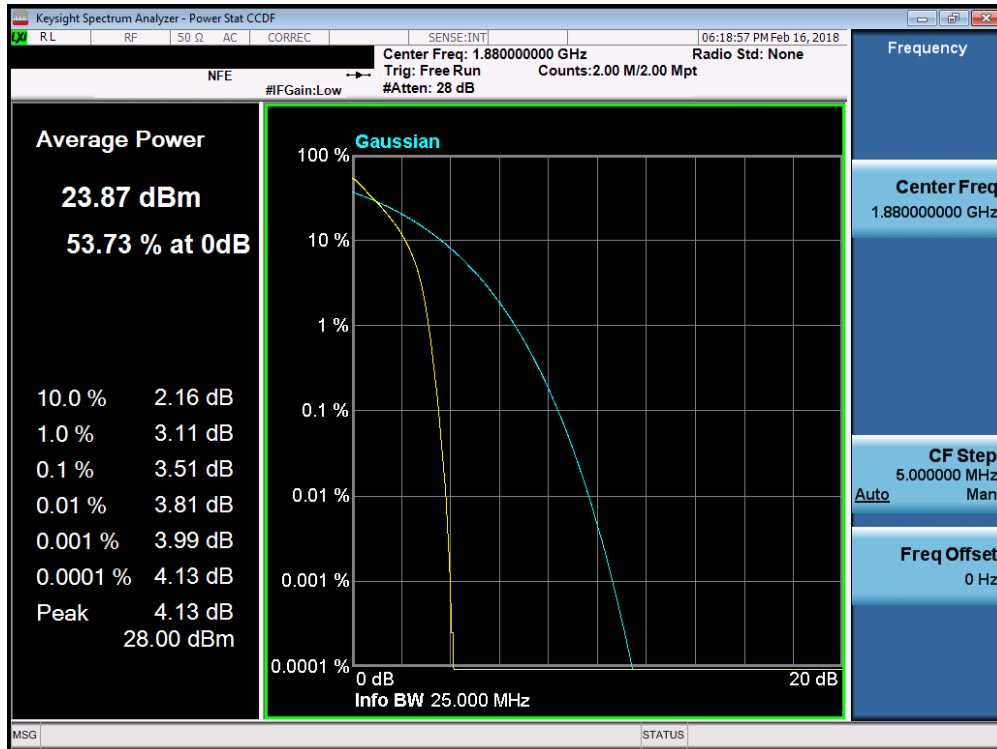


Plot 7-306. PAR Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

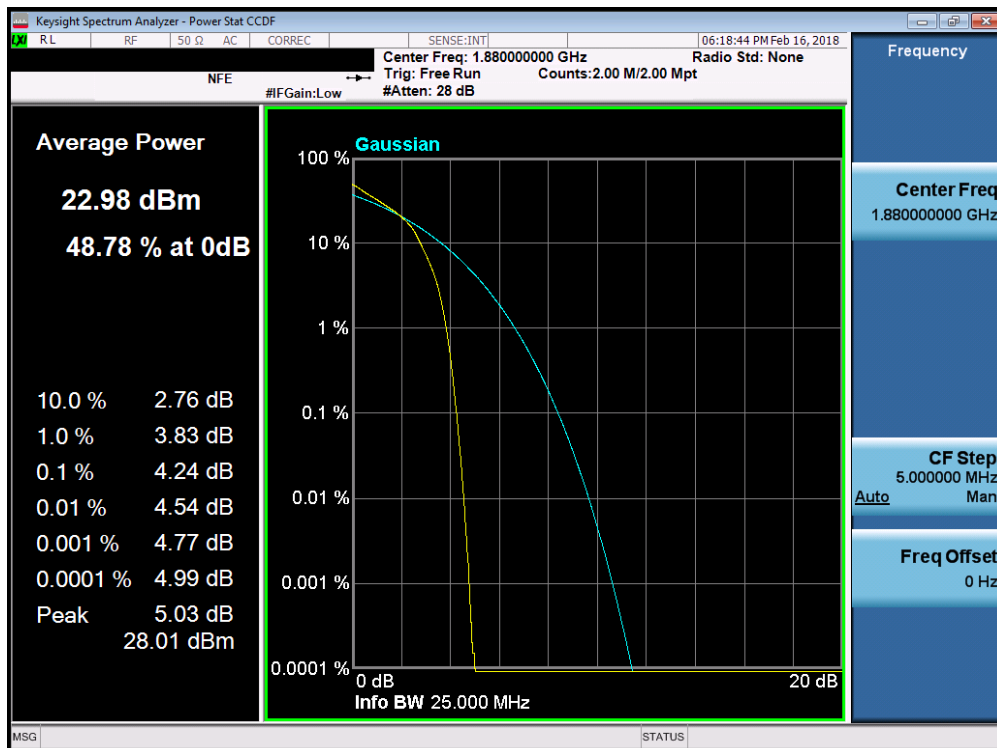


Plot 7-307. PAR Plot (Band 2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 177 of 225

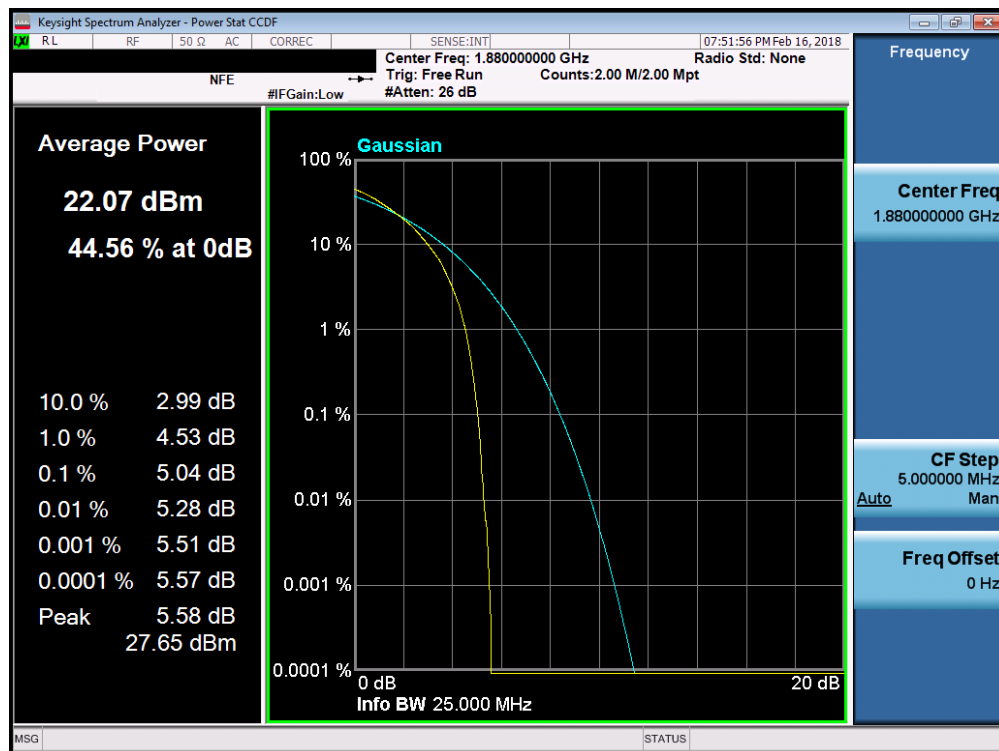


Plot 7-308. PAR Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

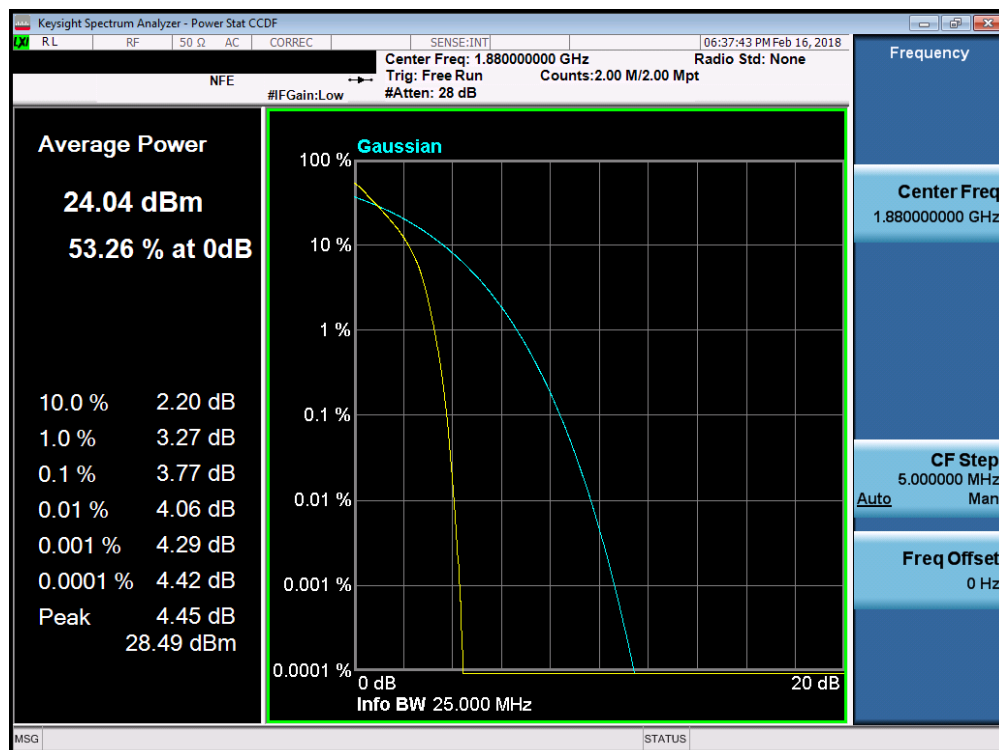


Plot 7-309. PAR Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 178 of 225

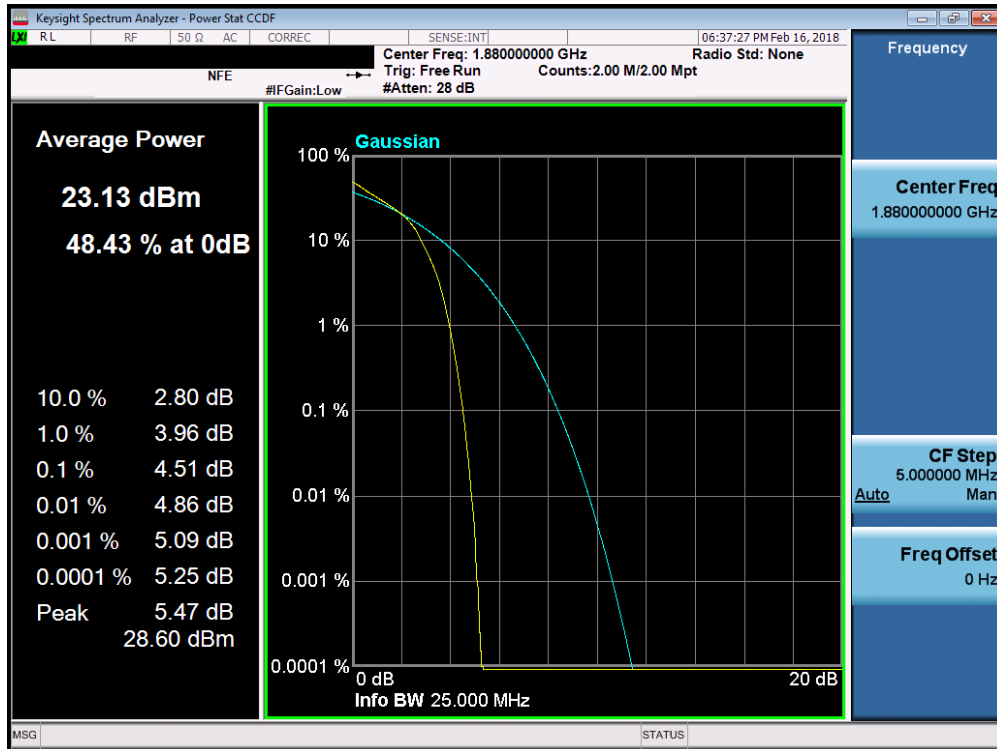


Plot 7-310. PAR Plot (Band 2 - 15.0MHz 64-QAM - Full RB Configuration)

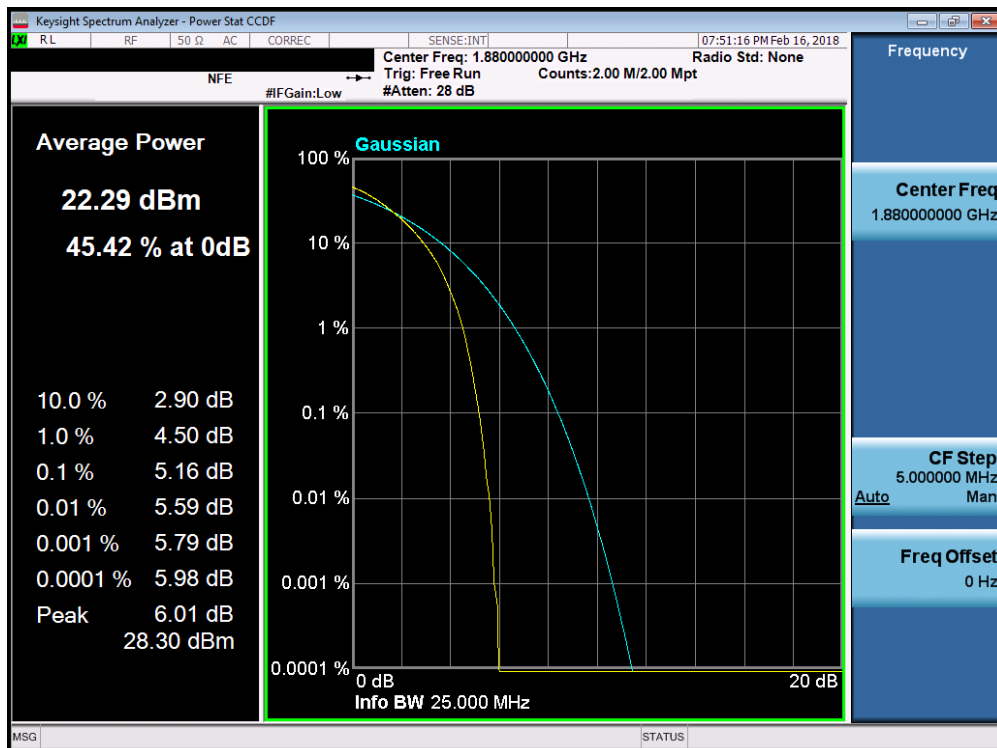


Plot 7-311. PAR Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 179 of 225



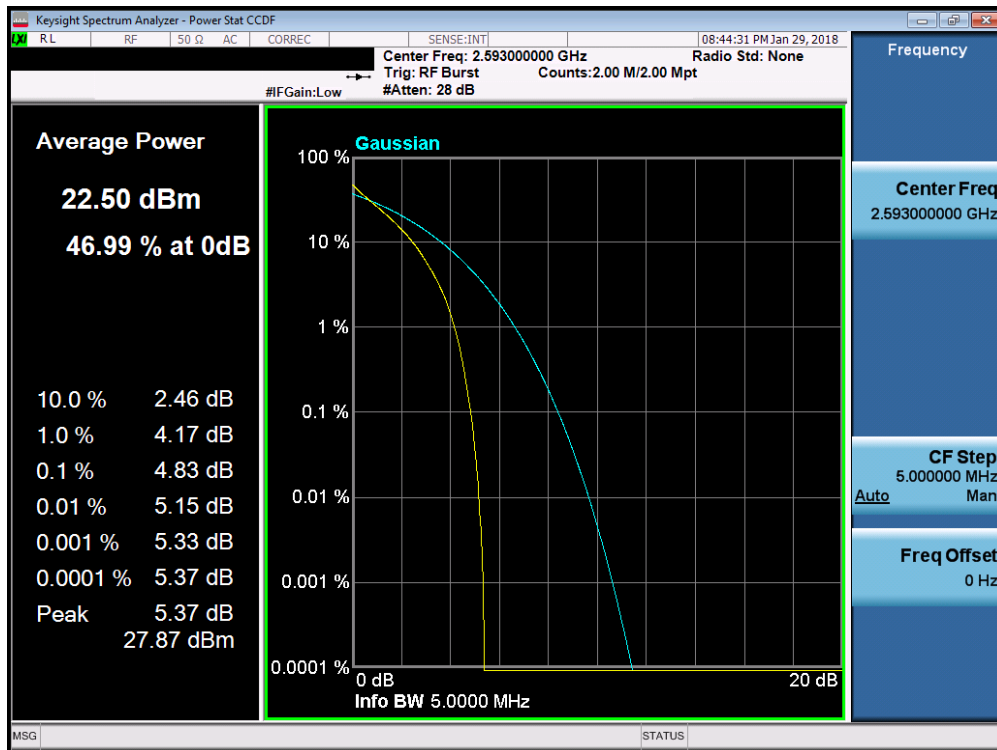
Plot 7-312. PAR Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)



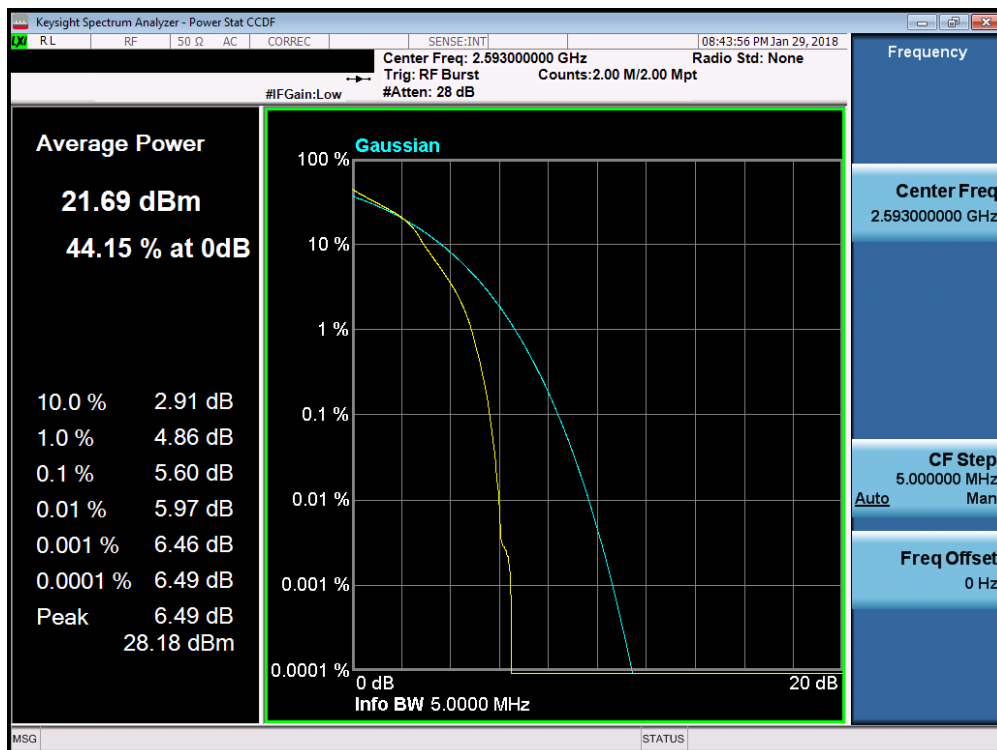
Plot 7-313. PAR Plot (Band 2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 180 of 225

Band 41

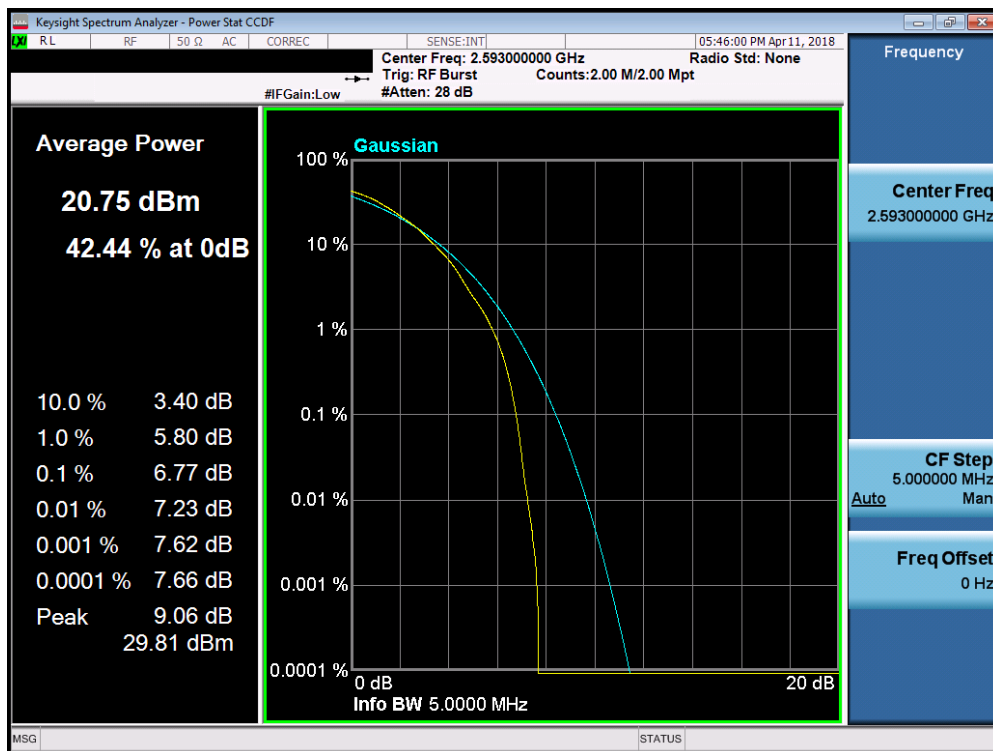


Plot 7-314. PAR Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

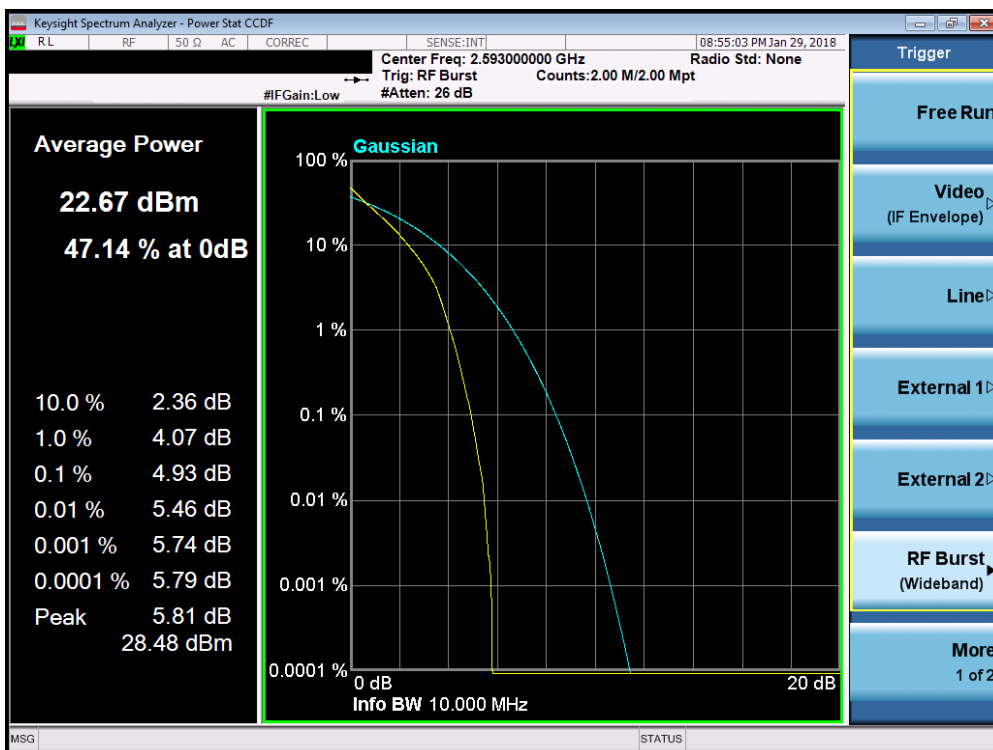


Plot 7-315. PAR Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 181 of 225

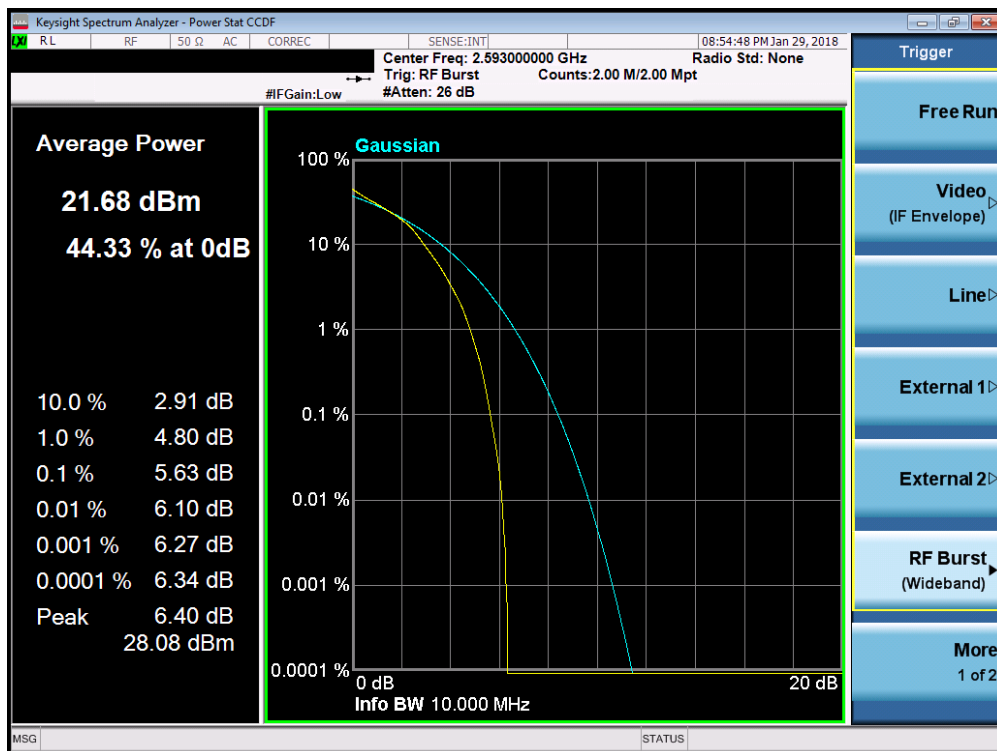


Plot 7-316. PAR Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)

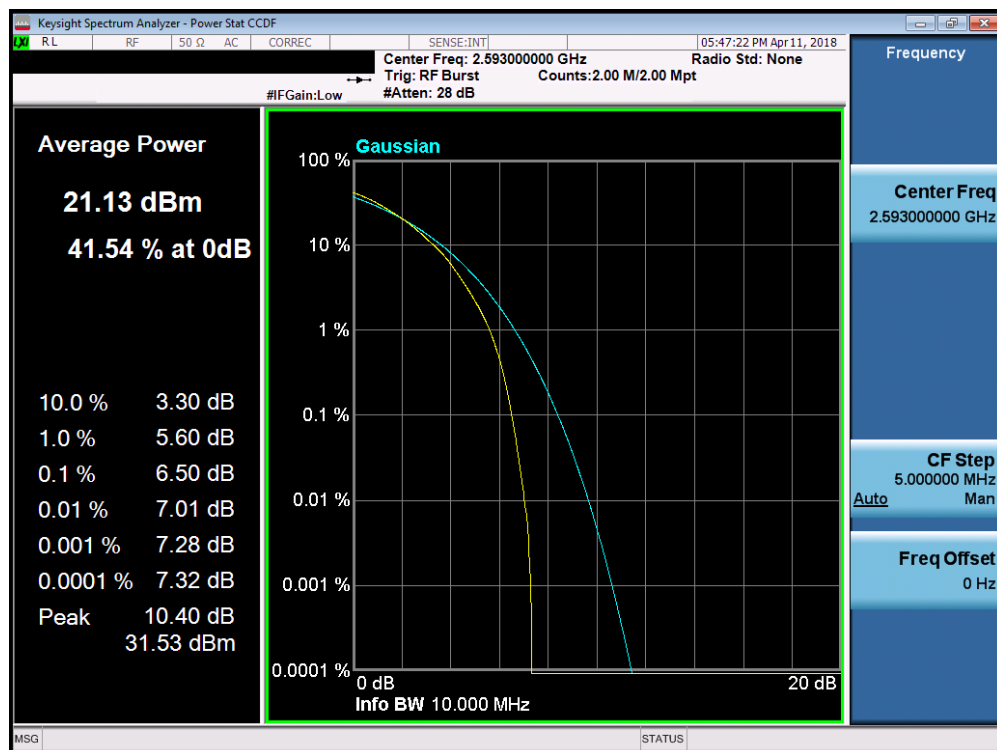


Plot 7-317. PAR Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 182 of 225

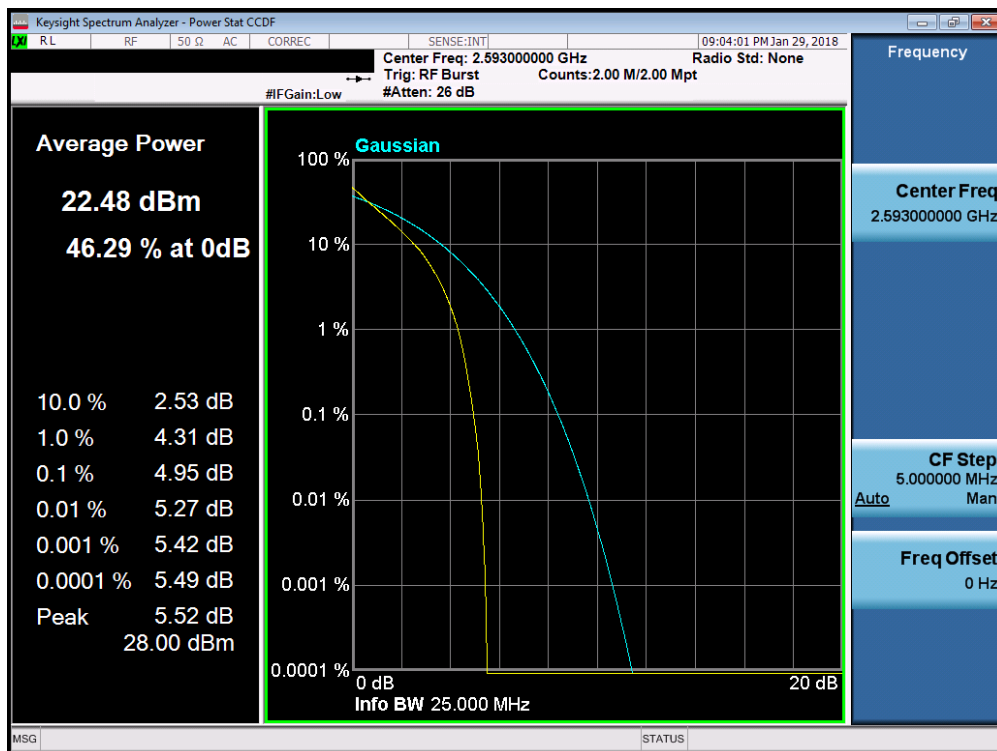


Plot 7-318. PAR Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)

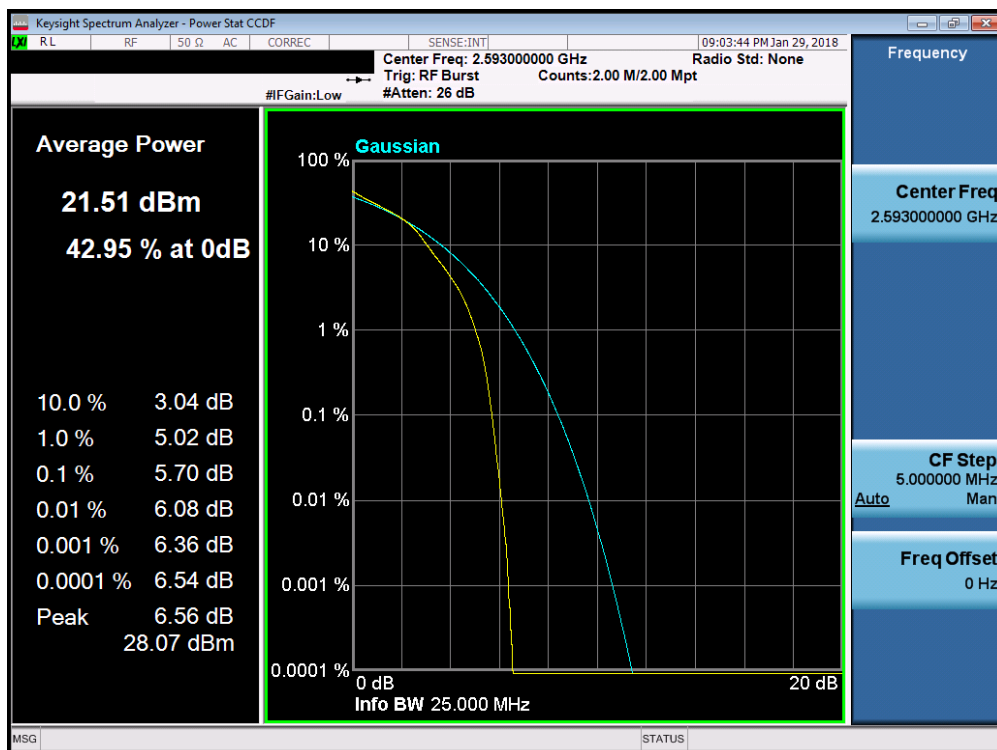


Plot 7-319. PAR Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 183 of 225

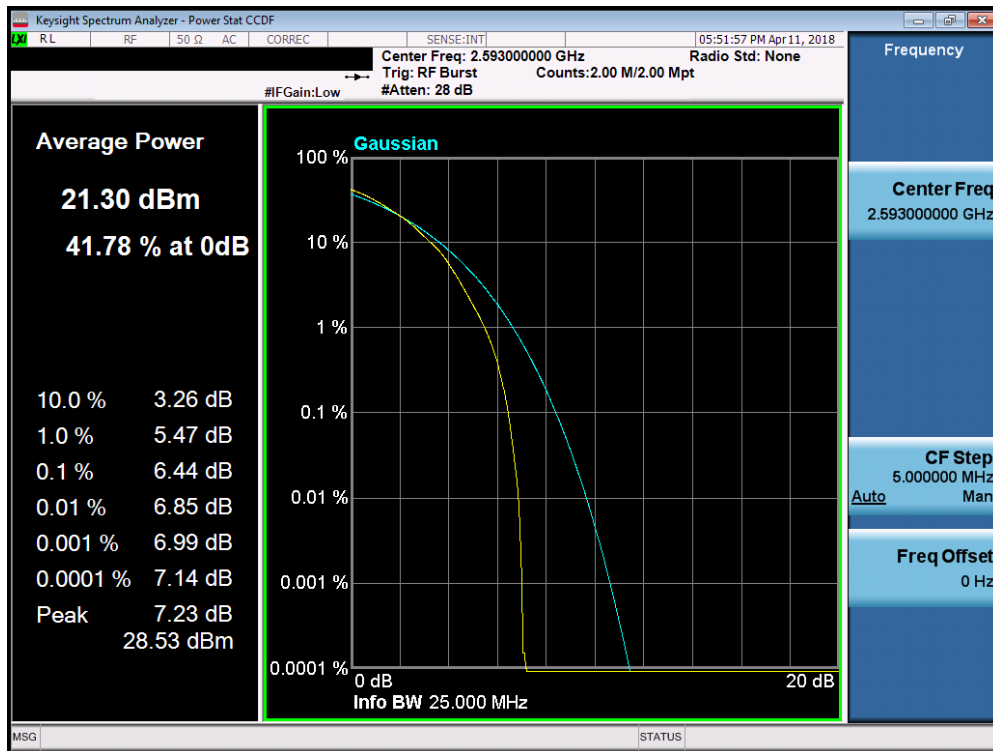


Plot 7-320. PAR Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)

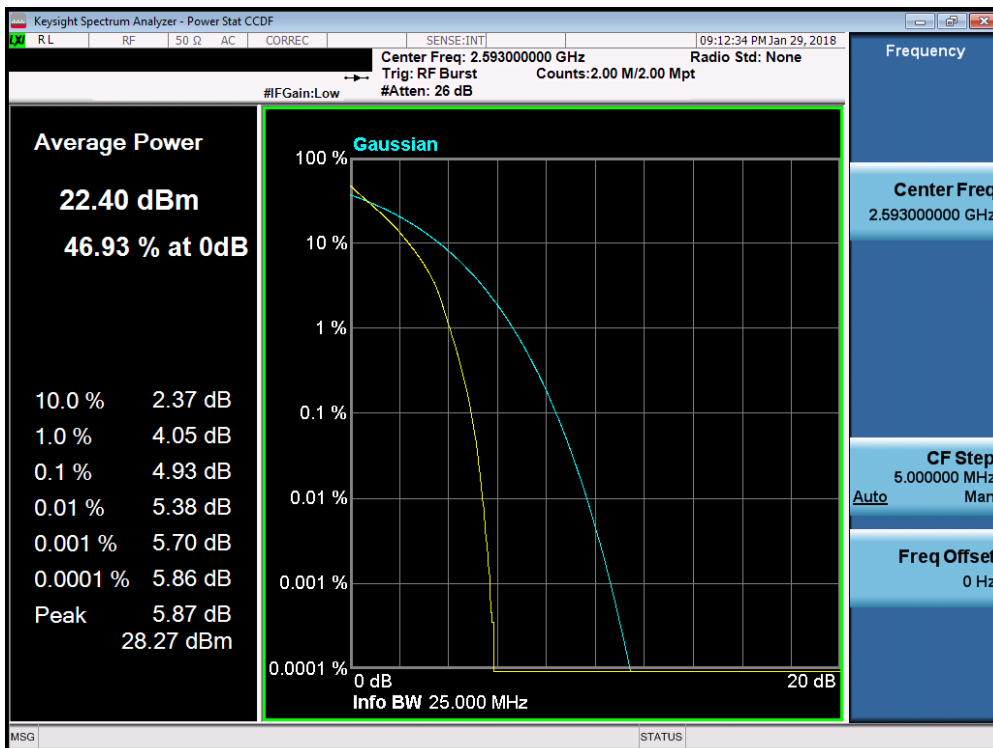


Plot 7-321. PAR Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 184 of 225

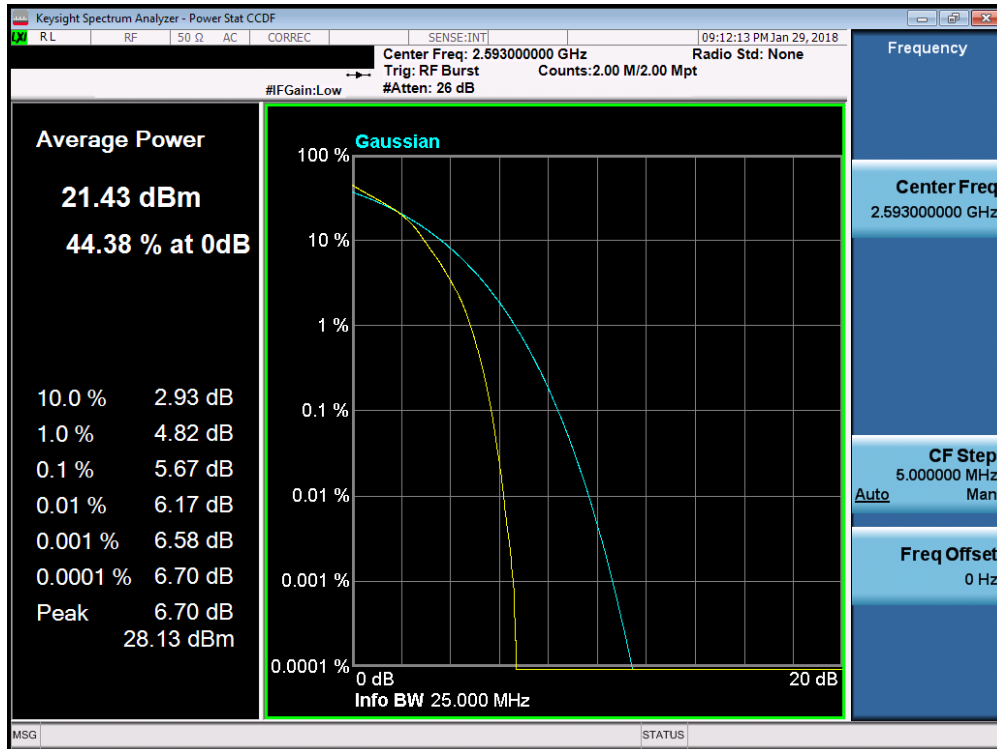


Plot 7-322. PAR Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)

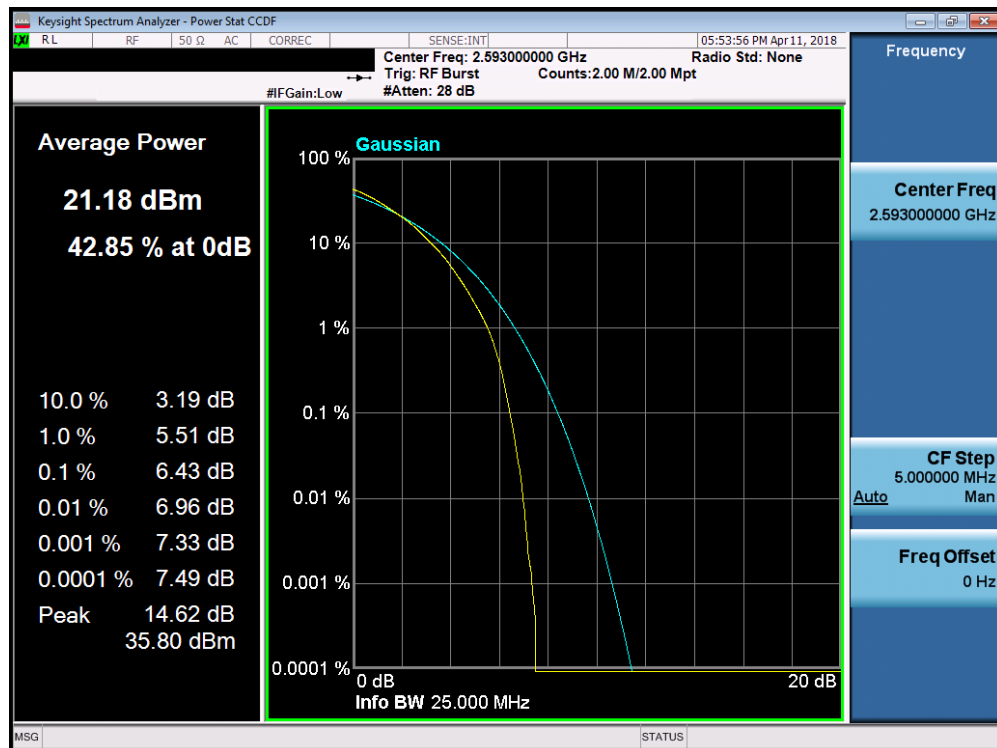


Plot 7-323. PAR Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ710TS	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 185 of 225



Plot 7-324. PAR Plot (Band 41 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-325. PAR Plot (Band 41 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFQ710TS	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1-ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset		Page 186 of 225

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 v03 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

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Test Setup

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

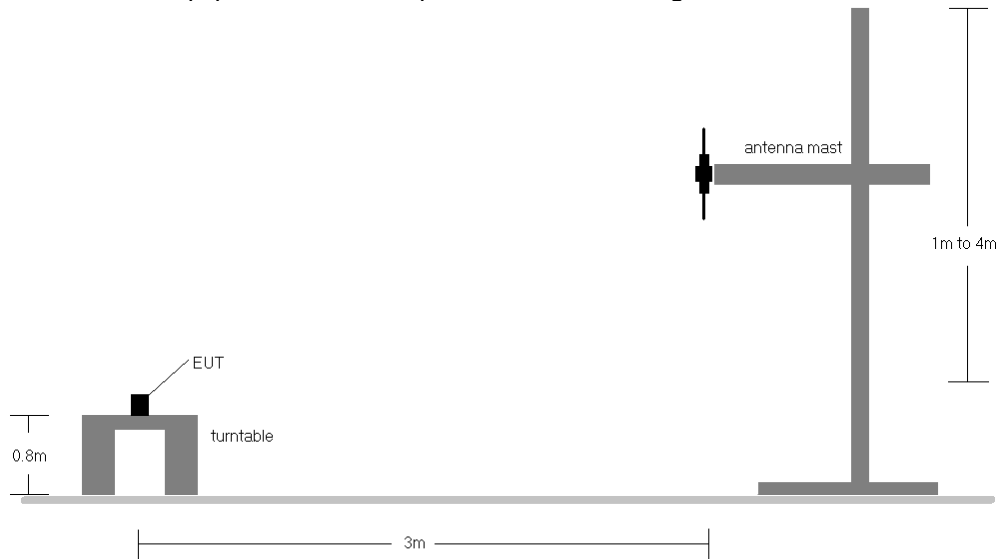


Figure 7-5. Radiated Test Setup <1GHz

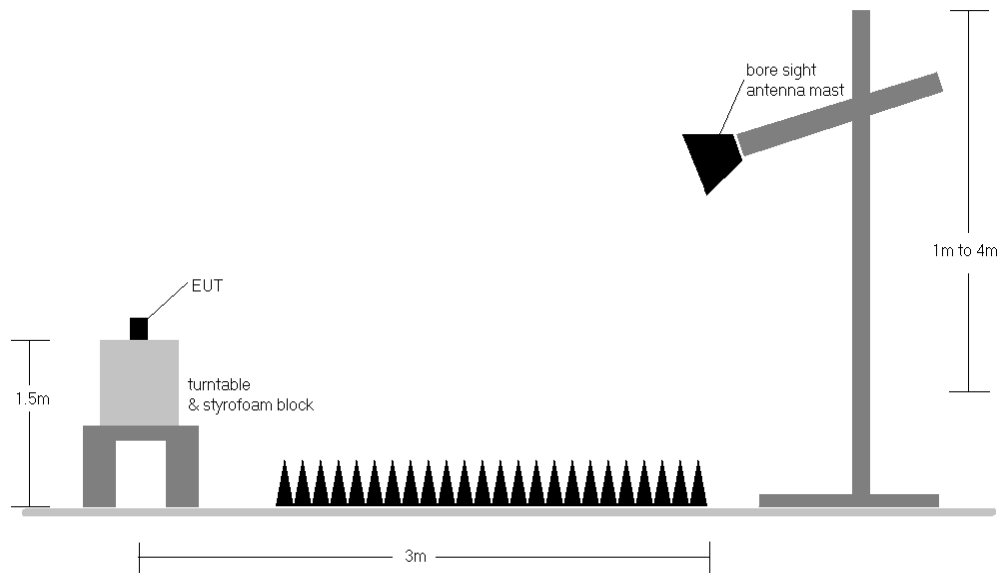


Figure 7-6. Radiated Test Setup >1GHz

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: ZNFQ710TS		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
665.50	5	QPSK	H	150	273	1 / 0	15.84	1.10	14.79	0.030	34.77	-19.98
680.50	5	QPSK	H	150	265	1 / 0	17.46	1.10	16.41	0.044	34.77	-18.36
695.50	5	QPSK	H	150	276	1 / 0	18.80	1.10	17.75	0.060	34.77	-17.02
695.50	5	16-QAM	H	150	276	1 / 0	18.67	1.10	17.62	0.058	34.77	-17.15
695.50	5	64-QAM	H	150	276	1 / 0	17.89	1.10	16.84	0.048	34.77	-17.93
668.00	10	QPSK	H	150	279	1 / 49	16.89	1.10	15.84	0.038	34.77	-18.93
680.50	10	QPSK	H	150	281	1 / 49	18.30	1.10	17.25	0.053	34.77	-17.52
693.00	10	QPSK	H	150	278	1 / 49	19.17	1.10	18.12	0.065	34.77	-16.65
693.00	10	16-QAM	H	150	278	1 / 49	19.09	1.10	18.04	0.064	34.77	-16.73
693.00	10	64-QAM	H	150	278	1 / 49	17.97	1.10	16.92	0.049	34.77	-17.85
670.50	15	QPSK	H	150	279	1 / 74	17.33	1.10	16.28	0.042	34.77	-18.49
680.50	15	QPSK	H	150	270	1 / 74	18.23	1.10	17.18	0.052	34.77	-17.59
690.50	15	QPSK	H	150	266	1 / 74	19.07	1.10	18.02	0.063	34.77	-16.75
690.50	15	16-QAM	H	150	266	1 / 74	18.81	1.10	17.76	0.060	34.77	-17.01
690.50	15	64-QAM	H	150	266	1 / 74	17.88	1.10	16.83	0.048	34.77	-17.94
673.00	20	QPSK	H	150	275	1 / 99	17.42	1.10	16.37	0.043	34.77	-18.40
680.50	20	QPSK	H	150	281	1 / 99	18.10	1.10	17.05	0.051	34.77	-17.72
688.00	20	QPSK	H	150	263	1 / 99	18.59	1.10	17.54	0.057	34.77	-17.23
688.00	20	16-QAM	H	150	263	1 / 99	19.04	1.10	17.99	0.063	34.77	-16.78
688.00	20	64-QAM	H	150	263	1 / 99	18.12	1.10	17.07	0.051	34.77	-17.70
693.00	10	QPSK	V	150	238	1 / 0	14.89	1.10	13.84	0.024	34.77	-20.93

Table 7-3. ERP/EIRP Data (Band 71)

FCC ID: ZNFQ710TS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 189 of 225

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	V	150	90	1 / 5	18.15	1.10	17.10	0.051	34.77	-17.67	19.25	0.084	36.99	-17.74
707.50	1.4	QPSK	V	150	90	1 / 5	18.98	1.13	17.96	0.063	34.77	-16.81	20.11	0.103	36.99	-16.88
715.30	1.4	QPSK	V	150	90	1 / 5	19.29	1.16	18.30	0.068	34.77	-16.47	20.45	0.111	36.99	-16.54
715.30	1.4	16-QAM	V	150	90	1 / 5	18.61	1.16	17.62	0.058	34.77	-17.15	19.77	0.095	36.99	-17.22
715.30	1.4	64-QAM	V	150	90	1 / 5	14.60	1.16	13.61	0.023	34.77	-21.16	15.76	0.038	36.99	-21.23
700.50	3	QPSK	V	150	101	1 / 14	18.60	1.10	17.55	0.057	34.77	-17.22	19.70	0.093	36.99	-17.29
707.50	3	QPSK	V	150	102	1 / 14	19.12	1.13	18.10	0.064	34.77	-16.68	20.25	0.106	36.99	-16.74
714.50	3	QPSK	V	150	102	1 / 14	18.93	1.16	17.94	0.062	34.77	-16.83	20.09	0.102	36.99	-16.90
714.50	3	16-QAM	V	150	102	1 / 14	18.73	1.16	17.74	0.059	34.77	-17.03	19.89	0.097	36.99	-17.10
714.50	3	64-QAM	V	150	102	1 / 14	17.63	1.16	16.64	0.046	34.77	-18.13	18.79	0.076	36.99	-18.20
701.50	5	QPSK	V	150	107	1 / 24	18.82	1.11	17.78	0.060	34.77	-17.00	19.93	0.098	36.99	-17.06
707.50	5	QPSK	V	150	108	1 / 24	19.45	1.13	18.43	0.070	34.77	-16.34	20.58	0.114	36.99	-16.41
713.50	5	QPSK	V	150	105	1 / 24	19.26	1.15	18.26	0.067	34.77	-16.51	20.41	0.110	36.99	-16.58
713.50	5	16-QAM	V	150	105	1 / 24	18.96	1.15	17.96	0.063	34.77	-16.81	20.11	0.103	36.99	-16.88
713.50	5	64-QAM	V	150	105	1 / 24	18.06	1.15	17.06	0.051	34.77	-17.71	19.21	0.083	36.99	-17.78
704.00	10	QPSK	V	150	95	1 / 49	19.10	1.12	18.07	0.064	34.77	-16.70	20.22	0.105	36.99	-16.77
707.50	10	QPSK	V	150	96	1 / 49	19.45	1.13	18.43	0.070	34.77	-16.34	20.58	0.114	36.99	-16.41
711.00	10	QPSK	V	150	96	1 / 49	19.79	1.14	18.78	0.076	34.77	-15.99	20.93	0.124	36.99	-16.06
711.00	10	16-QAM	V	150	96	1 / 49	18.97	1.14	17.96	0.063	34.77	-16.81	20.11	0.103	36.99	-16.88
711.00	10	64-QAM	V	150	96	1 / 49	18.06	1.14	17.05	0.051	34.77	-17.72	19.20	0.083	36.99	-17.79
707.50	10	16-QAM	H	150	91	1 / 49	20.60	1.13	19.58	0.091	34.77	-15.19	21.73	0.149	36.99	-15.26

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

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
779.50	5	QPSK	V	150	108	1 / 24	19.41	1.32	18.58	0.072	34.77	-16.19	20.73	0.118	36.99	-16.26
782.00	5	QPSK	V	150	109	1 / 24	19.87	1.33	19.05	0.080	34.77	-15.72	21.20	0.132	36.99	-15.79
784.50	5	QPSK	V	150	109	1 / 24	19.68	1.34	18.87	0.077	34.77	-15.90	21.02	0.126	36.99	-15.97
779.50	5	16-QAM	V	150	108	1 / 24	19.84	1.32	19.01	0.080	34.77	-15.76	21.16	0.131	36.99	-15.83
784.50	5	64-QAM	V	150	109	1 / 24	18.54	1.34	17.73	0.059	34.77	-17.04	19.88	0.097	36.99	-17.11
782.00	10	QPSK	V	150	114	1 / 49	20.10	1.33	19.28	0.085	34.77	-15.49	21.43	0.139	36.99	-15.56
782.00	10	16-QAM	V	150	114	1 / 49	19.24	1.33	18.42	0.069	34.77	-16.35	20.57	0.114	36.99	-16.42
782.00	10	64-QAM	V	150	114	1 / 49	18.34	1.33	17.52	0.056	34.77	-17.25	19.67	0.093	36.99	-17.32
782.00	10	QPSK	H	150	6	1 / 49	18.06	1.33	17.24	0.053	34.77	-17.53	19.39	0.087	36.99	-17.60

Table 7-5. ERP/EIRP Data (Band 13)

FCC ID: ZNFQ710TS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	0	100	1 / 0	18.26	1.50	17.61	0.058	38.45	-20.84	19.76	0.095	40.61	-20.85
836.50	1.4	QPSK	H	3	101	1 / 0	18.04	1.50	17.39	0.055	38.45	-21.06	19.54	0.090	40.61	-21.07
848.30	1.4	QPSK	H	3	101	1 / 0	18.05	1.50	17.40	0.055	38.45	-21.05	19.55	0.090	40.61	-21.06
824.70	1.4	16-QAM	H	0	100	1 / 0	18.10	1.50	17.45	0.056	38.45	-21.00	19.60	0.091	40.61	-21.01
824.70	1.4	64-QAM	H	0	100	1 / 0	16.89	1.50	16.24	0.042	38.45	-22.21	18.39	0.069	40.61	-22.22
825.50	3	QPSK	H	355	104	1 / 0	18.22	1.50	17.57	0.057	38.45	-20.88	19.72	0.094	40.61	-20.89
836.50	3	QPSK	H	357	106	1 / 0	18.07	1.50	17.42	0.055	38.45	-21.03	19.57	0.091	40.61	-21.04
847.50	3	QPSK	H	357	106	1 / 0	18.03	1.50	17.38	0.055	38.45	-21.07	19.53	0.090	40.61	-21.08
825.50	3	16-QAM	H	355	104	1 / 0	17.76	1.50	17.11	0.051	38.45	-21.34	19.26	0.084	40.61	-21.35
825.50	3	64-QAM	H	355	104	1 / 0	16.92	1.50	16.27	0.042	38.45	-22.18	18.42	0.070	40.61	-22.19
826.50	5	QPSK	H	345	93	1 / 0	18.27	1.50	17.62	0.058	38.45	-20.83	19.77	0.095	40.61	-20.84
836.50	5	QPSK	H	347	94	1 / 0	18.26	1.50	17.61	0.058	38.45	-20.84	19.76	0.095	40.61	-20.85
846.50	5	QPSK	H	345	94	1 / 0	18.16	1.50	17.51	0.056	38.45	-20.94	19.66	0.092	40.61	-20.95
826.50	5	16-QAM	H	345	93	1 / 0	17.70	1.50	17.05	0.051	38.45	-21.40	19.20	0.083	40.61	-21.41
826.50	5	64-QAM	H	345	93	1 / 0	16.58	1.50	15.93	0.039	38.45	-22.52	18.08	0.064	40.61	-22.53
829.00	10	QPSK	H	352	100	1 / 0	18.50	1.50	17.85	0.061	38.45	-20.60	20.00	0.100	40.61	-20.61
836.50	10	QPSK	H	353	101	1 / 0	18.63	1.50	17.98	0.063	38.45	-20.47	20.13	0.103	40.61	-20.48
844.00	10	QPSK	H	351	100	1 / 0	18.23	1.50	17.58	0.057	38.45	-20.87	19.73	0.094	40.61	-20.88
829.00	10	16-QAM	H	352	100	1 / 0	17.89	1.50	17.24	0.053	38.45	-21.21	19.39	0.087	40.61	-21.22
829.00	10	64-QAM	H	352	100	1 / 0	16.86	1.50	16.21	0.042	38.45	-22.24	18.36	0.069	40.61	-22.25
836.50	10	QPSK	V	6	96	1 / 0	17.79	1.50	17.14	0.052	38.45	-21.31	19.29	0.085	40.61	-21.32

Table 7-6. ERP/EIRP Data (Band 5)

FCC ID: ZNFQ710TS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1803050033-03-R1.ZNF	Test Dates: 1/29/2018-3/30/2018	EUT Type: Portable Handset	Page 191 of 225

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	10	352	1 / 5	18.10	5.56	23.66	0.232	30.00	-6.34
1745.00	1.4	QPSK	H	7	350	1 / 5	18.06	5.41	23.47	0.222	30.00	-6.53
1779.30	1.4	QPSK	H	8	350	1 / 5	17.99	5.26	23.25	0.211	30.00	-6.75
1745.00	1.4	16-QAM	H	7	350	1 / 5	17.52	5.41	22.93	0.196	30.00	-7.07
1710.70	1.4	64-QAM	H	10	352	1 / 5	16.24	5.56	21.80	0.151	30.00	-8.20
1711.50	3	QPSK	H	10	358	1 / 14	18.40	5.55	23.95	0.248	30.00	-6.05
1745.00	3	QPSK	H	10	357	1 / 14	18.26	5.41	23.67	0.233	30.00	-6.33
1778.50	3	QPSK	H	8	0	1 / 14	18.21	5.26	23.47	0.223	30.00	-6.53
1711.50	3	16-QAM	H	10	358	1 / 14	17.61	5.55	23.16	0.207	30.00	-6.84
1711.50	3	64-QAM	H	10	358	1 / 14	16.66	5.55	22.21	0.166	30.00	-7.79
1712.50	5	QPSK	H	11	0	1 / 0	18.02	5.55	23.57	0.227	30.00	-6.43
1745.00	5	QPSK	H	10	0	1 / 0	18.08	5.41	23.49	0.223	30.00	-6.51
1777.50	5	QPSK	H	5	1	1 / 0	18.42	5.27	23.69	0.234	30.00	-6.31
1712.50	5	16-QAM	H	11	0	1 / 0	17.39	5.55	22.94	0.197	30.00	-7.06
1712.50	5	64-QAM	H	11	0	1 / 0	16.25	5.55	21.80	0.151	30.00	-8.20
1715.00	10	QPSK	H	346	5	1 / 49	18.26	5.53	23.78	0.239	30.00	-6.22
1745.00	10	QPSK	H	345	7	1 / 49	18.66	5.41	24.07	0.255	30.00	-5.93
1775.00	10	QPSK	H	347	7	1 / 49	18.25	5.29	23.54	0.226	30.00	-6.46
1775.00	10	16-QAM	H	347	7	1 / 49	17.77	5.29	23.06	0.202	30.00	-6.94
1775.00	10	64-QAM	H	347	7	1 / 49	17.23	5.29	22.52	0.179	30.00	-7.48
1717.50	15	QPSK	H	353	1	1 / 74	17.70	5.51	23.21	0.209	30.00	-6.79
1745.00	15	QPSK	H	353	1	1 / 74	18.28	5.41	23.69	0.234	30.00	-6.31
1772.50	15	QPSK	H	352	2	1 / 74	17.66	5.31	22.97	0.198	30.00	-7.03
1717.50	15	16-QAM	H	353	1	1 / 74	16.99	5.51	22.50	0.178	30.00	-7.50
1772.50	15	64-QAM	H	352	2	1 / 74	15.95	5.31	21.26	0.134	30.00	-8.74
1720.00	20	QPSK	H	5	0	1 / 99	18.09	5.49	23.58	0.228	30.00	-6.42
1745.00	20	QPSK	H	7	0	1 / 99	18.28	5.41	23.69	0.234	30.00	-6.31
1770.00	20	QPSK	H	5	0	1 / 99	17.91	5.32	23.23	0.211	30.00	-6.77
1720.00	20	16-QAM	H	5	0	1 / 99	17.26	5.49	22.75	0.189	30.00	-7.25
1745.00	20	64-QAM	H	7	0	1 / 99	16.15	5.41	21.56	0.143	30.00	-8.44
1745.00	10	QPSK	V	84	286	1 / 49	15.69	5.41	21.10	0.129	30.00	-8.90

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

FCC ID: ZNFQ710TS	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	9	345	1 / 0	20.22	4.82	25.04	0.319	33.01	-7.97
1880.00	1.4	QPSK	H	10	347	3 / 2	20.26	4.74	25.00	0.316	33.01	-8.01
1909.30	1.4	QPSK	H	9	347	1 / 0	20.29	4.68	24.97	0.314	33.01	-8.04
1850.70	1.4	16-QAM	H	9	345	1 / 0	19.51	4.82	24.33	0.271	33.01	-8.68
1850.70	1.4	64-QAM	H	9	345	1 / 0	18.38	4.82	23.20	0.209	33.01	-9.81
1851.50	3	QPSK	H	10	348	1 / 0	20.34	4.82	25.16	0.328	33.01	-7.85
1880.00	3	QPSK	H	10	349	1 / 0	20.31	4.74	25.05	0.320	33.01	-7.96
1908.50	3	QPSK	H	6	348	1 / 0	20.17	4.68	24.85	0.306	33.01	-8.16
1880.00	3	16-QAM	H	10	349	1 / 0	19.53	4.74	24.27	0.267	33.01	-8.74
1851.50	3	64-QAM	H	10	348	1 / 0	19.04	4.82	23.86	0.243	33.01	-9.15
1852.50	5	QPSK	H	6	350	1 / 0	20.30	4.81	25.11	0.325	33.01	-7.90
1880.00	5	QPSK	H	8	349	1 / 0	20.36	4.74	25.10	0.324	33.01	-7.91
1907.50	5	QPSK	H	8	350	1 / 0	20.06	4.68	24.74	0.298	33.01	-8.27
1852.50	5	16-QAM	H	6	350	1 / 0	19.62	4.81	24.43	0.278	33.01	-8.58
1852.50	5	64-QAM	H	6	350	1 / 0	18.96	4.81	23.77	0.238	33.01	-9.24
1855.00	10	QPSK	H	1	353	1 / 0	20.75	4.81	25.56	0.359	33.01	-7.45
1880.00	10	QPSK	H	1	355	1 / 0	20.09	4.74	24.83	0.304	33.01	-8.18
1905.00	10	QPSK	H	0	354	1 / 0	19.69	4.68	24.37	0.274	33.01	-8.64
1855.00	10	16-QAM	H	1	353	1 / 0	20.06	4.81	24.87	0.307	33.01	-8.14
1855.00	10	64-QAM	H	1	353	1 / 0	19.24	4.81	24.05	0.254	33.01	-8.96
1857.50	15	QPSK	H	5	353	1 / 0	20.64	4.80	25.44	0.350	33.01	-7.57
1880.00	15	QPSK	H	7	351	1 / 0	20.50	4.74	25.24	0.334	33.01	-7.77
1902.50	15	QPSK	H	5	354	1 / 0	20.09	4.69	24.78	0.300	33.01	-8.23
1857.50	15	16-QAM	H	5	353	1 / 0	19.64	4.80	24.44	0.278	33.01	-8.57
1902.50	15	64-QAM	H	5	354	1 / 0	18.87	4.69	23.56	0.227	33.01	-9.45
1860.00	20	QPSK	H	9	350	1 / 0	20.48	4.79	25.27	0.337	33.01	-7.74
1880.00	20	QPSK	H	10	349	1 / 0	20.35	4.74	25.09	0.323	33.01	-7.92
1900.00	20	QPSK	H	10	349	1 / 0	20.09	4.69	24.78	0.300	33.01	-8.23
1860.00	20	16-QAM	H	9	350	1 / 0	19.61	4.79	24.40	0.276	33.01	-8.61
1860.00	20	64-QAM	H	9	350	1 / 0	19.05	4.79	23.84	0.242	33.01	-9.17
1855.00	10	QPSK	V	287	301	1 / 49	19.25	4.80	24.05	0.254	33.01	-8.96

Table 7-8. EIRP Data (Band 2)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	V	150	328	1 / 24	12.61	5.73	18.34	0.068	33.01	-14.67
2593.00	5	QPSK	H	150	308	1 / 24	12.62	6.07	18.69	0.074	33.01	-14.32
2687.50	5	QPSK	H	150	304	1 / 24	13.48	6.48	19.96	0.099	33.01	-13.05
2687.50	5	16-QAM	H	150	304	1 / 24	11.94	6.48	18.42	0.070	33.01	-14.59
2687.50	5	64-QAM	H	150	304	1 / 24	11.19	6.48	17.67	0.059	33.01	-15.34
2501.00	10	QPSK	H	150	238	1 / 49	13.51	5.73	19.24	0.084	33.01	-13.77
2593.00	10	QPSK	H	150	238	1 / 49	15.52	6.07	21.59	0.144	33.01	-11.42
2685.00	10	QPSK	H	150	237	1 / 49	16.48	6.47	22.95	0.197	33.01	-10.06
2685.00	10	16-QAM	H	150	237	1 / 49	15.56	6.47	22.03	0.160	33.01	-10.98
2685.00	10	64-QAM	H	150	237	1 / 49	14.49	6.47	20.96	0.125	33.01	-12.05
2503.50	15	QPSK	H	150	327	1 / 74	14.48	5.74	20.22	0.105	33.01	-12.79
2593.00	15	QPSK	H	150	321	1 / 74	15.49	6.07	21.56	0.143	33.01	-11.45
2682.50	15	QPSK	H	150	304	1 / 74	16.55	6.46	23.01	0.200	33.01	-10.00
2682.50	15	16-QAM	H	150	304	1 / 74	15.56	6.46	22.02	0.159	33.01	-10.99
2682.50	15	64-QAM	H	150	304	1 / 74	14.60	6.46	21.06	0.128	33.01	-11.95
2506.00	20	QPSK	H	150	328	1 / 0	15.55	5.75	21.30	0.135	33.01	-11.71
2593.00	20	QPSK	H	150	234	1 / 99	16.58	6.07	22.65	0.184	33.01	-10.36
2680.00	20	QPSK	H	150	324	1 / 99	16.82	6.45	23.27	0.212	33.01	-9.74
2680.00	20	16-QAM	H	150	324	1 / 99	15.86	6.45	22.31	0.170	33.01	-10.70
2680.00	20	64-QAM	H	150	324	1 / 99	14.48	6.45	20.93	0.124	33.01	-12.08
2680.00	20	QPSK	V	150	128	1 / 99	14.29	6.48	20.77	0.120	33.01	-12.24

Table 7-9. EIRP Data (Band 41)

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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 v03 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

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