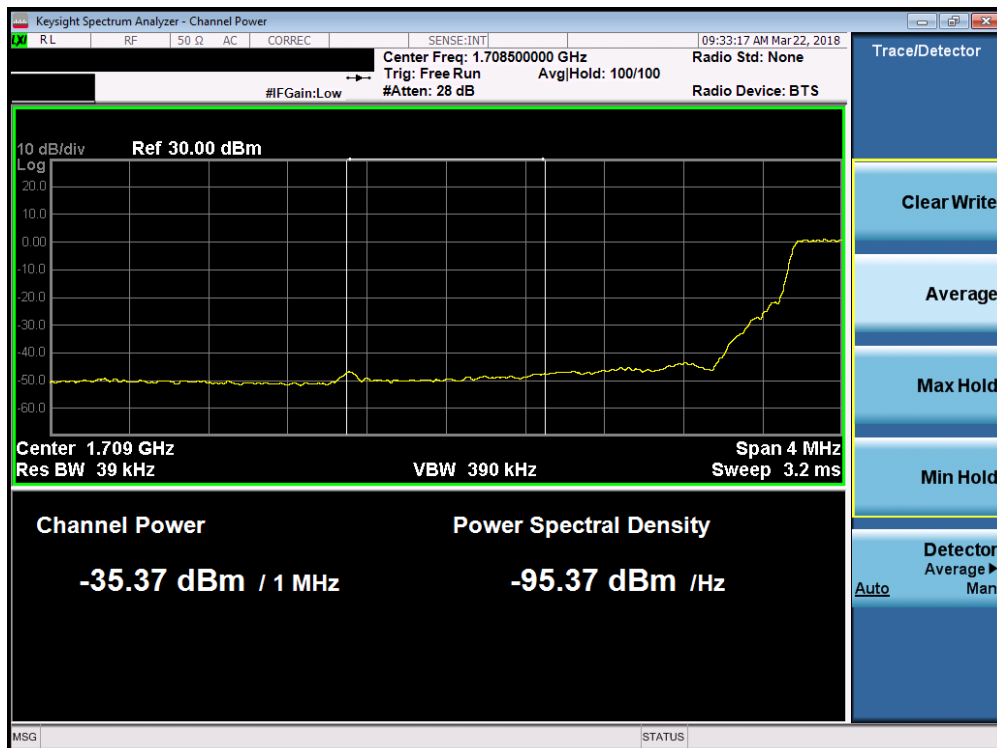
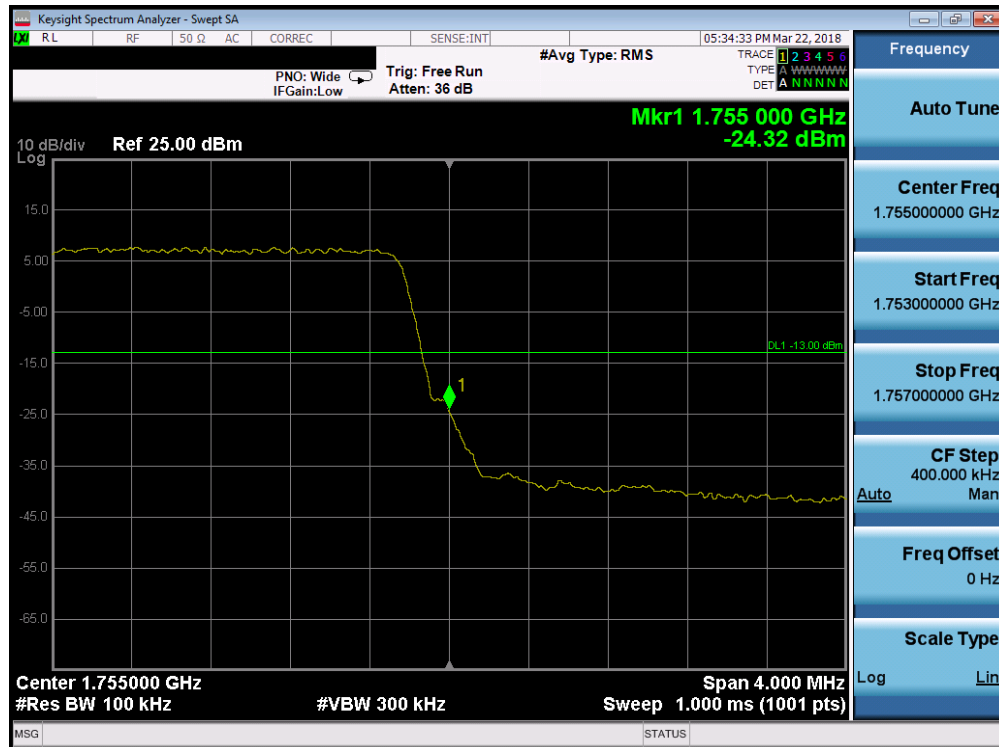


Plot 7-224. Lower Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

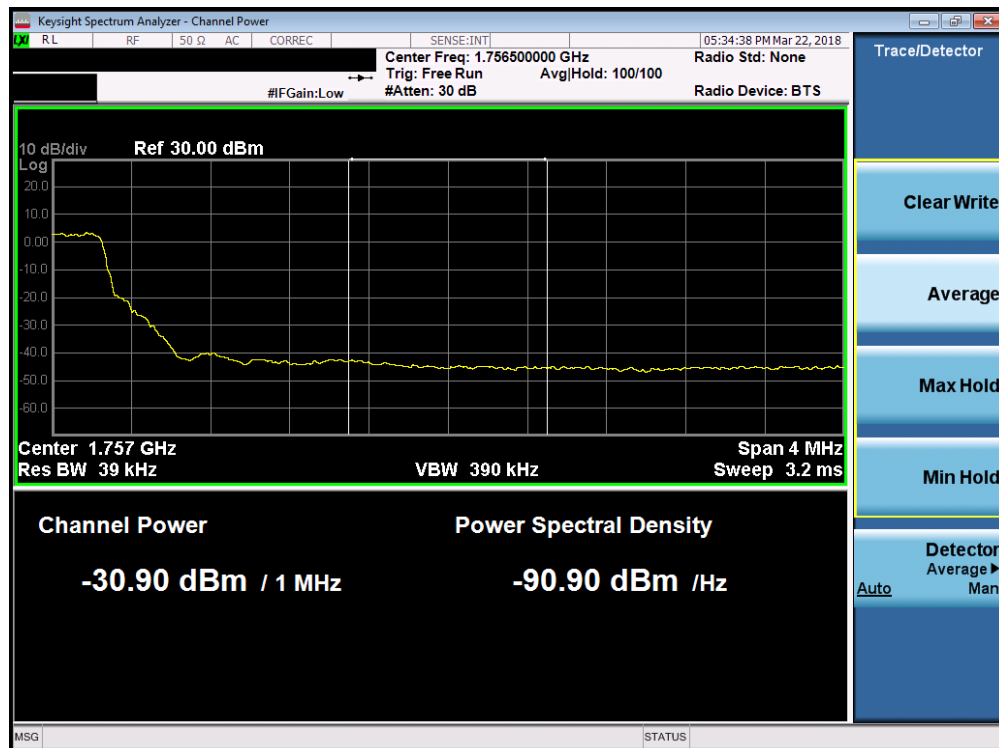


Plot 7-225. Lower Extended Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 136 of 262

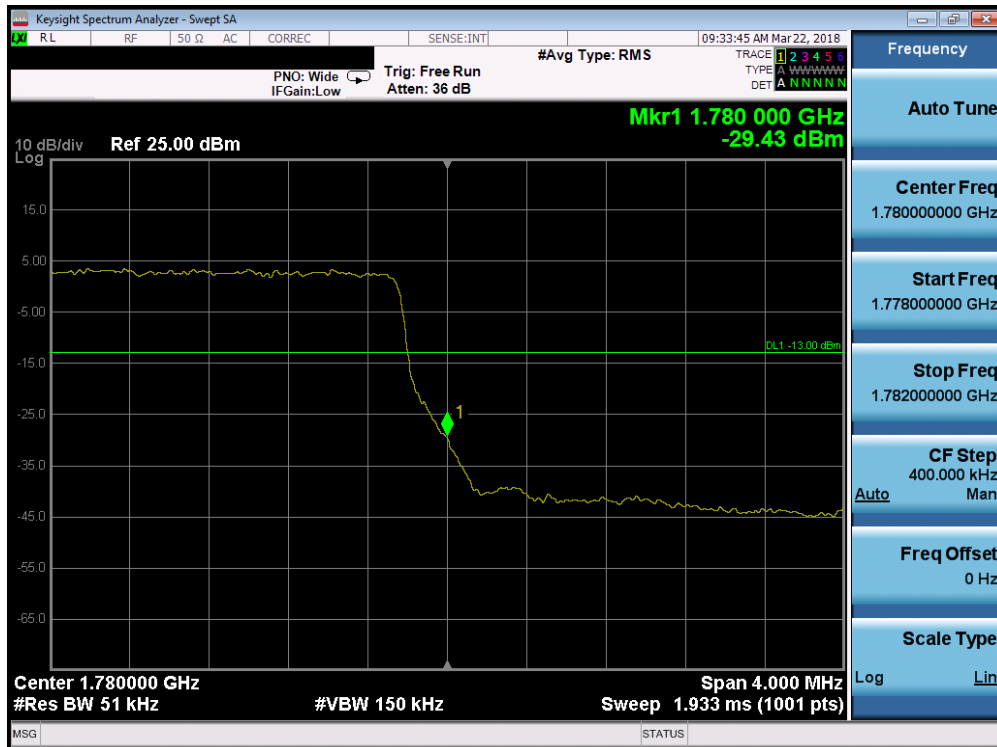


Plot 7-226. Upper Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)

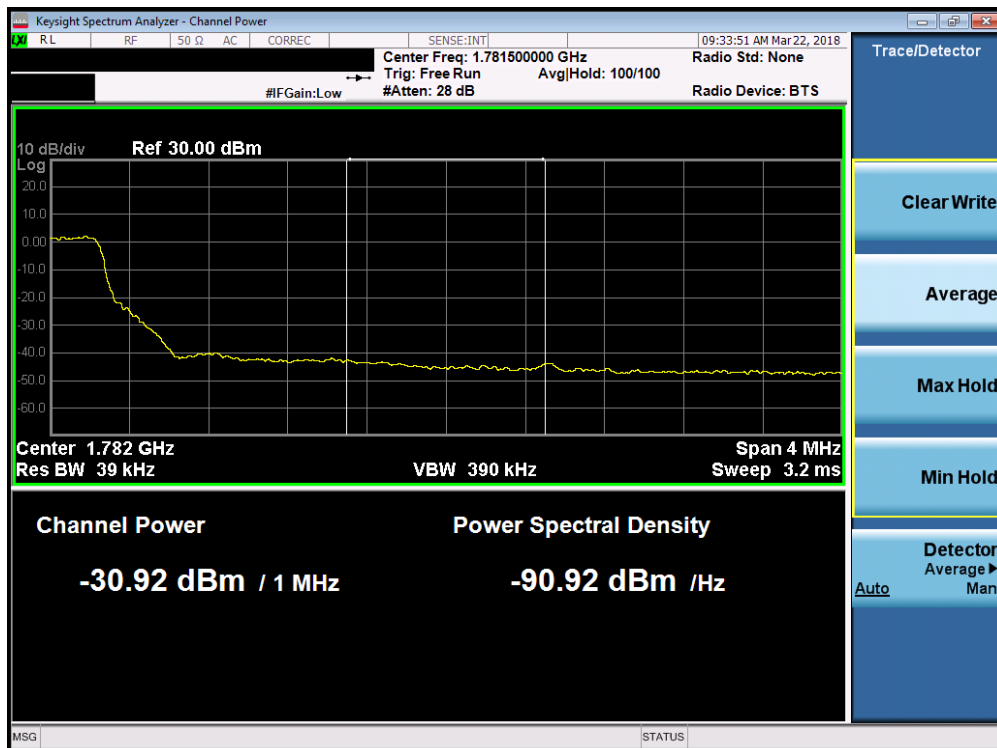


Plot 7-227. Upper Extended Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 137 of 262

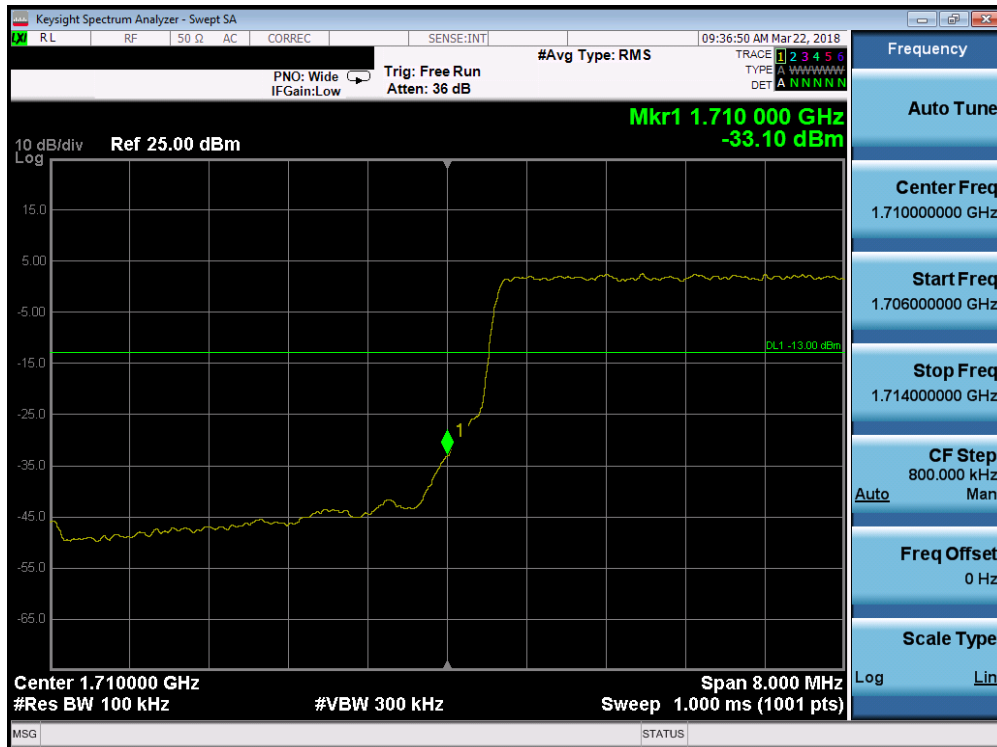


Plot 7-228. Upper Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)

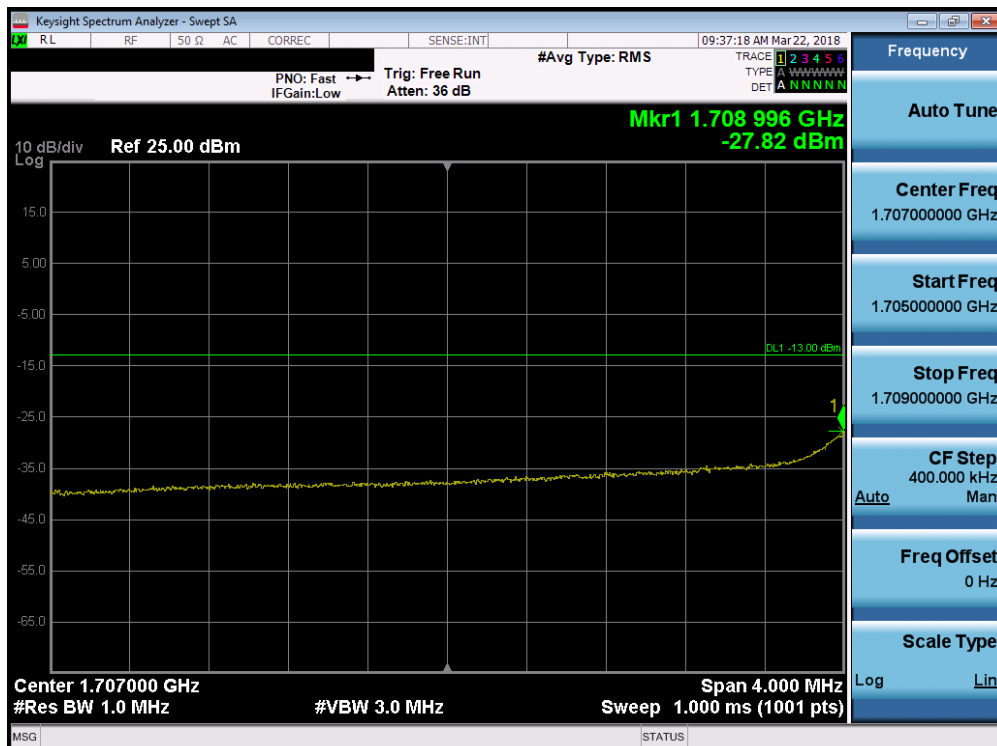


Plot 7-229. Upper Extended Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 138 of 262



Plot 7-230. Lower Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

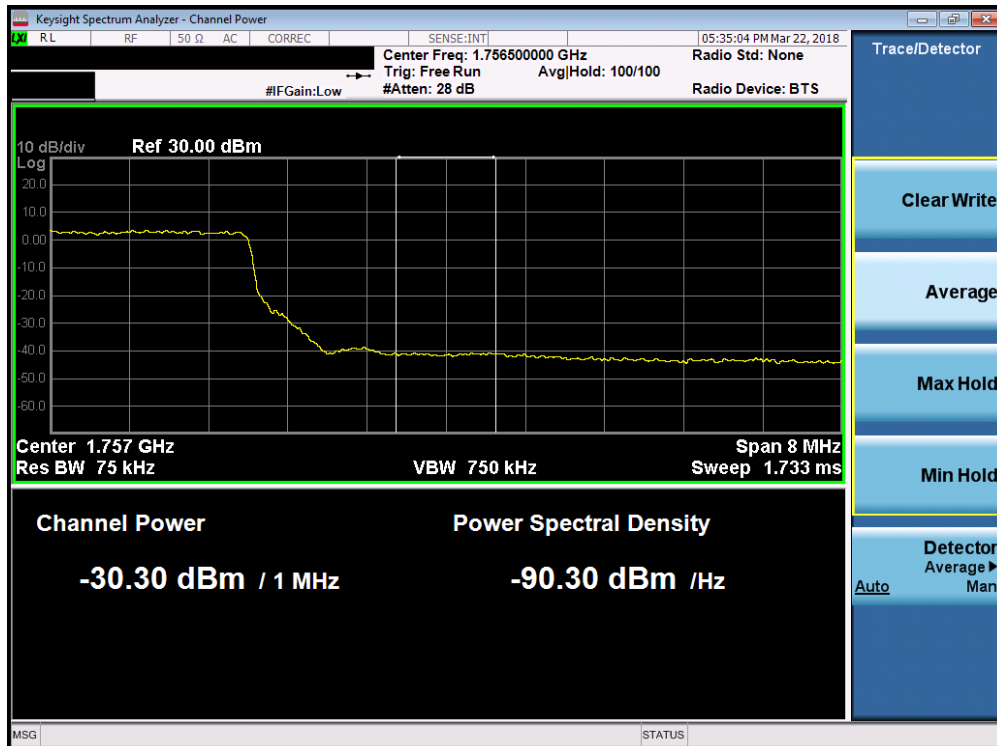


Plot 7-231. Lower Extended Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 139 of 262

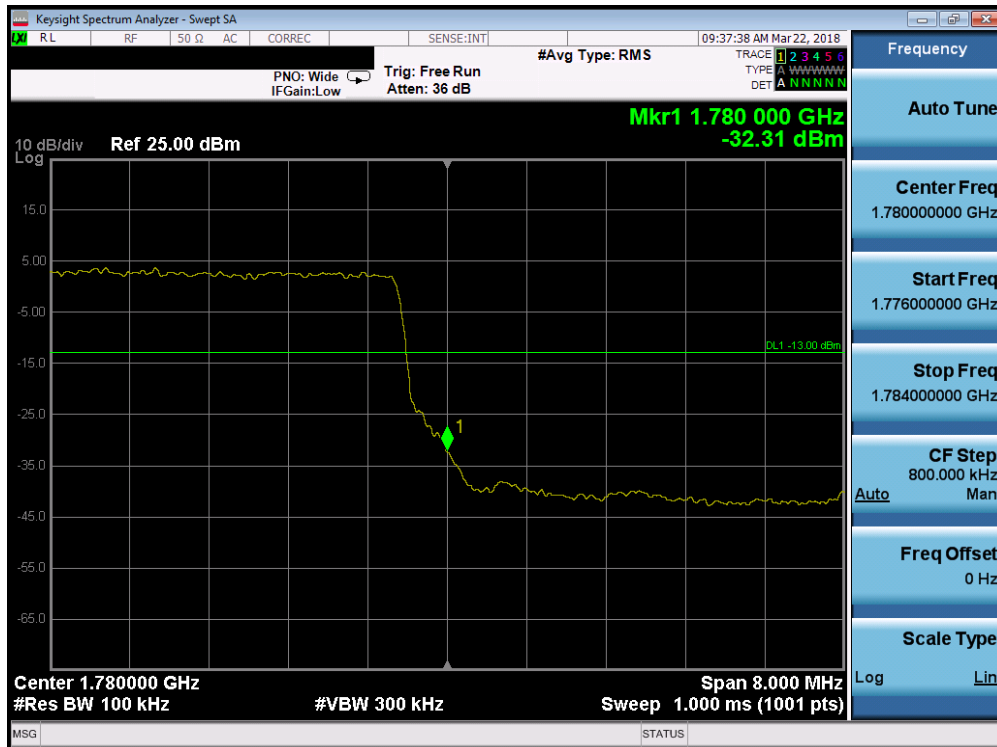


Plot 7-232. Upper Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

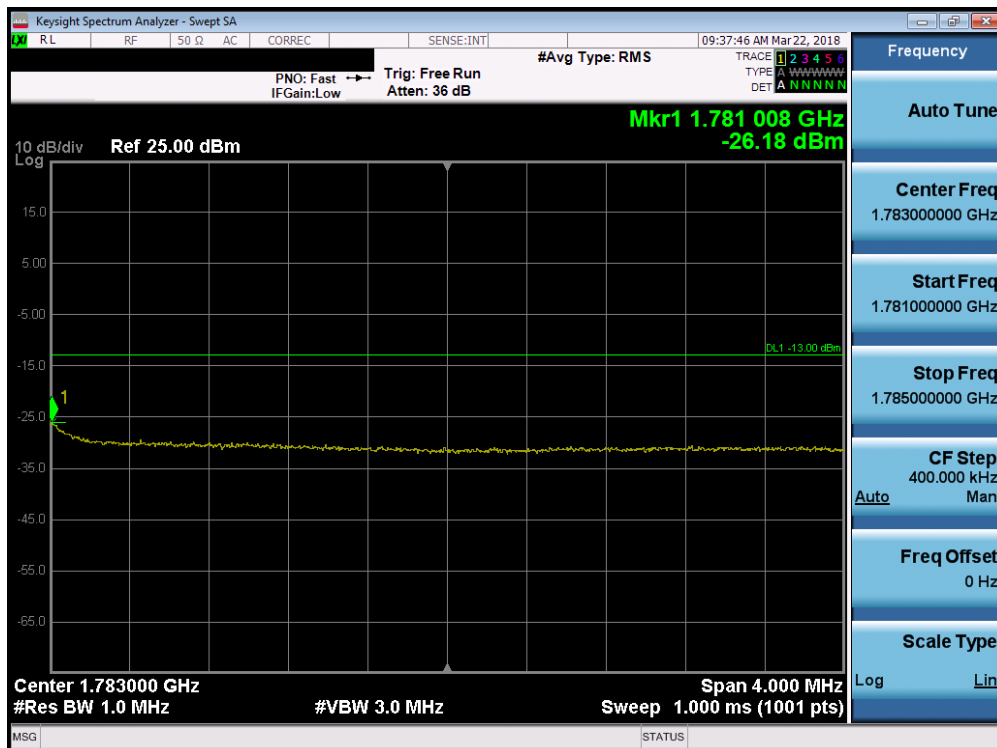


Plot 7-233. Upper Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 140 of 262

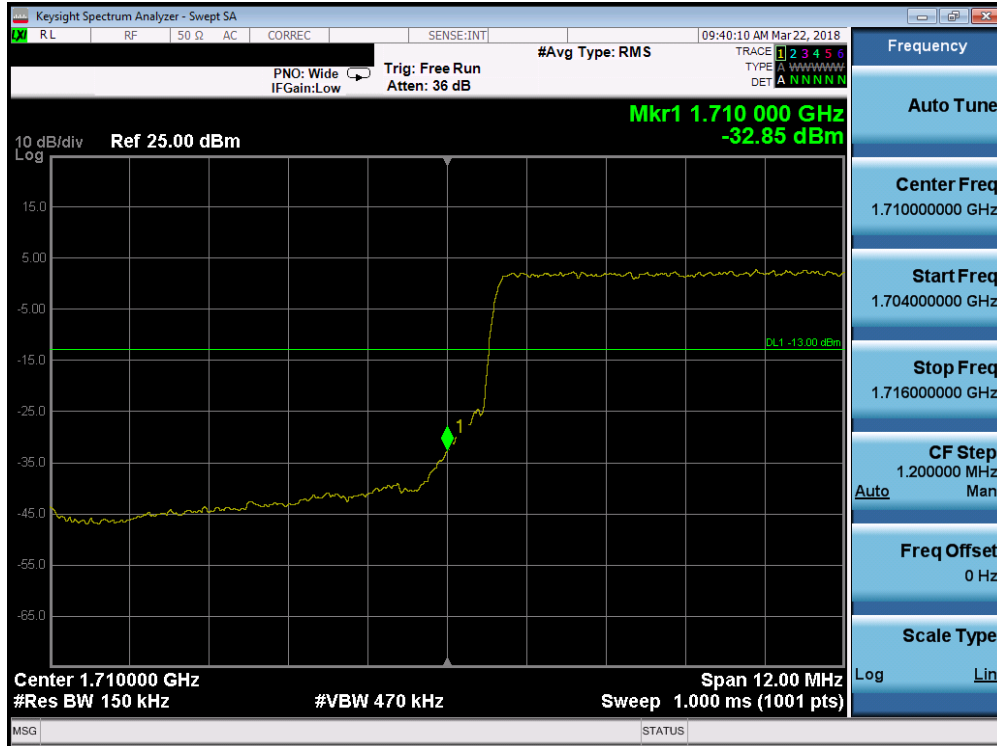


Plot 7-234. Upper Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)

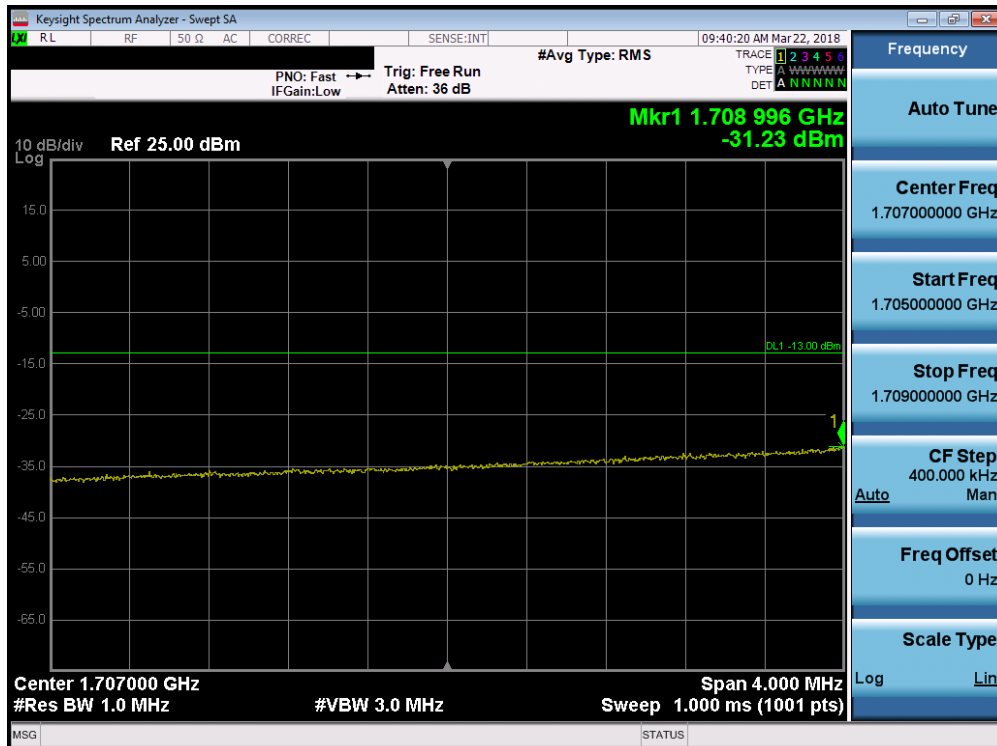


Plot 7-235. Upper Extended Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 141 of 262

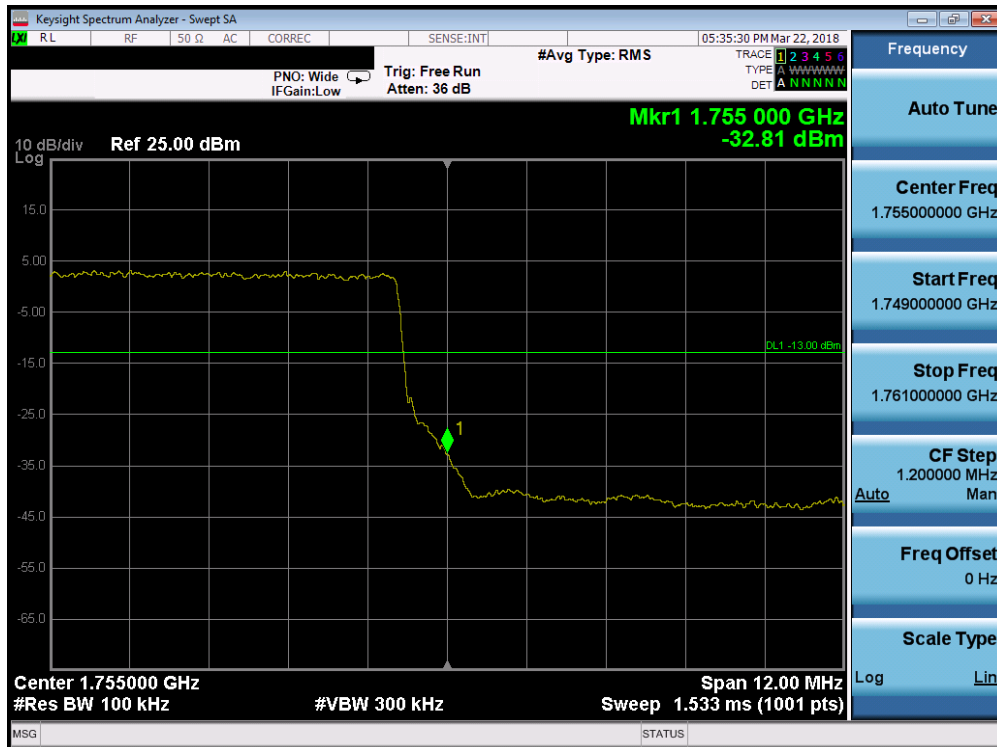


Plot 7-236. Lower Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

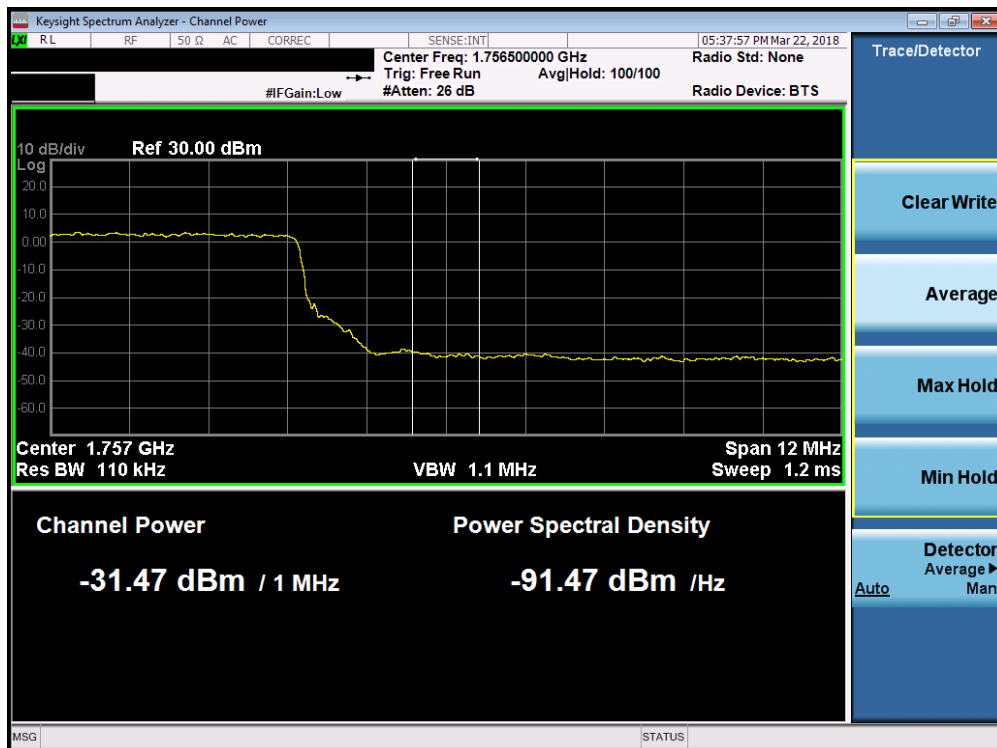


Plot 7-237. Lower Extended Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 142 of 262

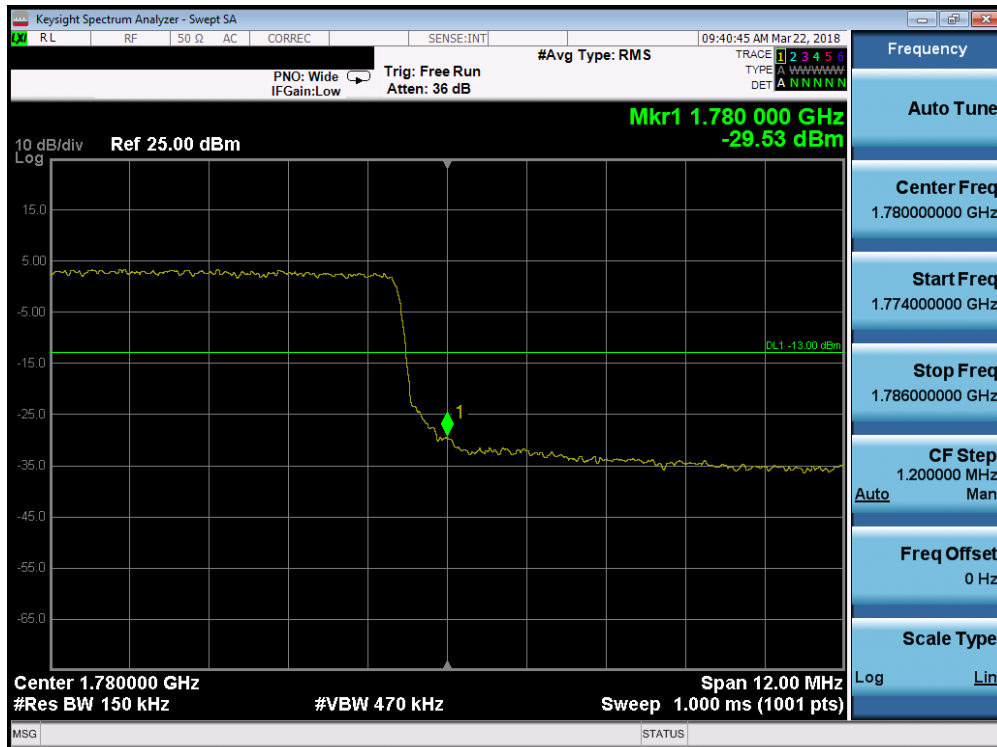


Plot 7-238. Upper Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

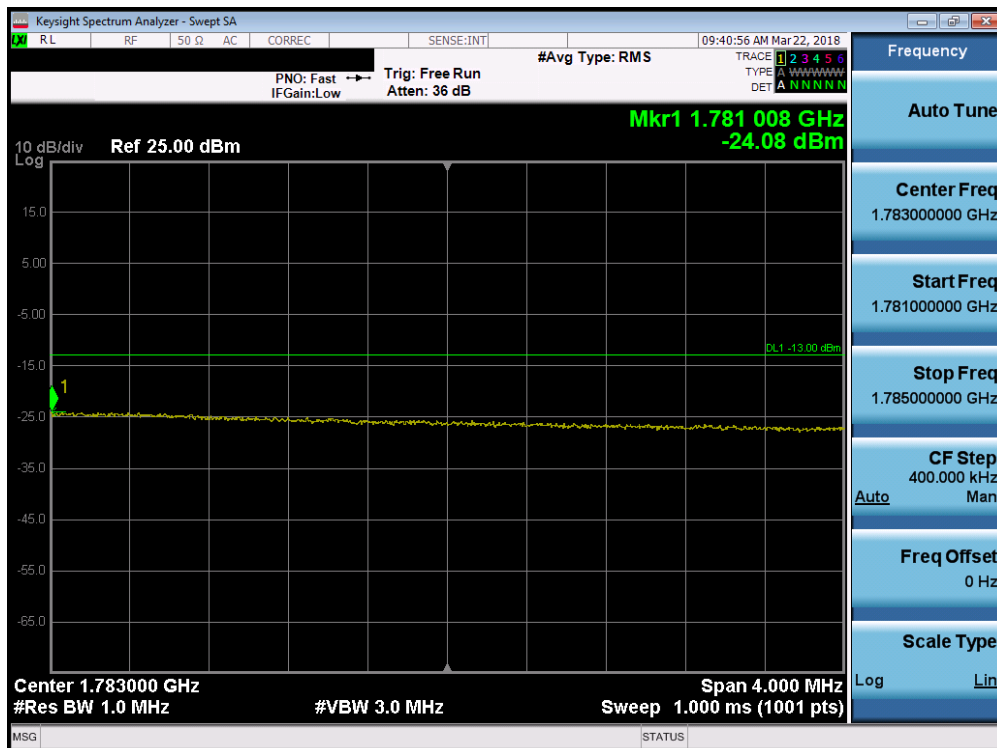


Plot 7-239. Upper Extended Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 143 of 262

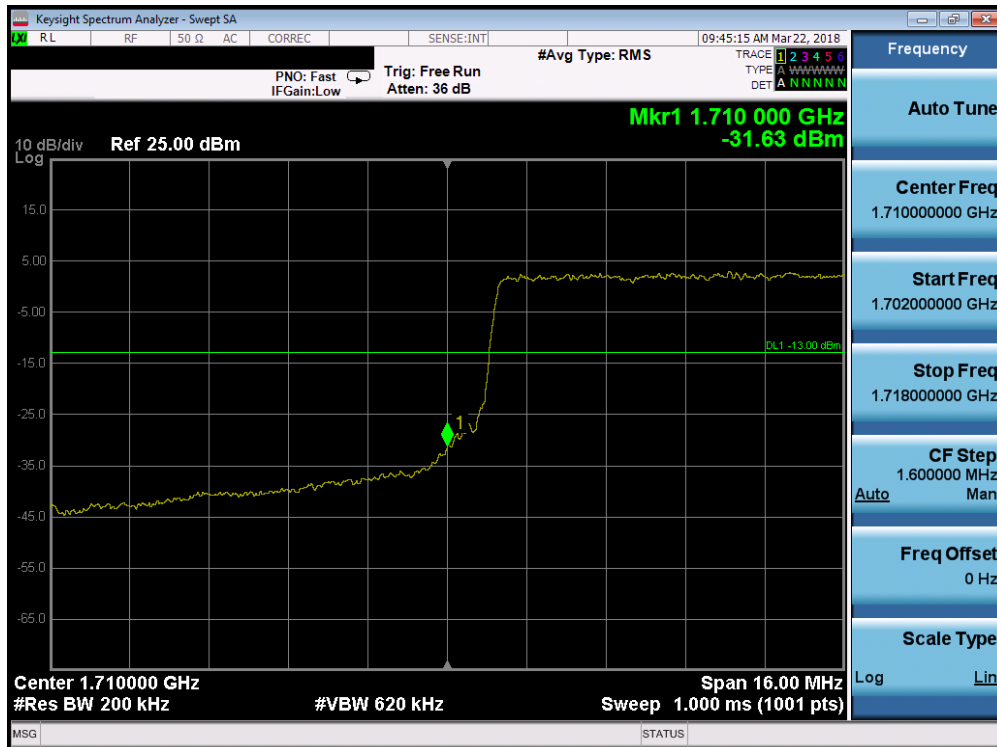


Plot 7-240. Upper Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)

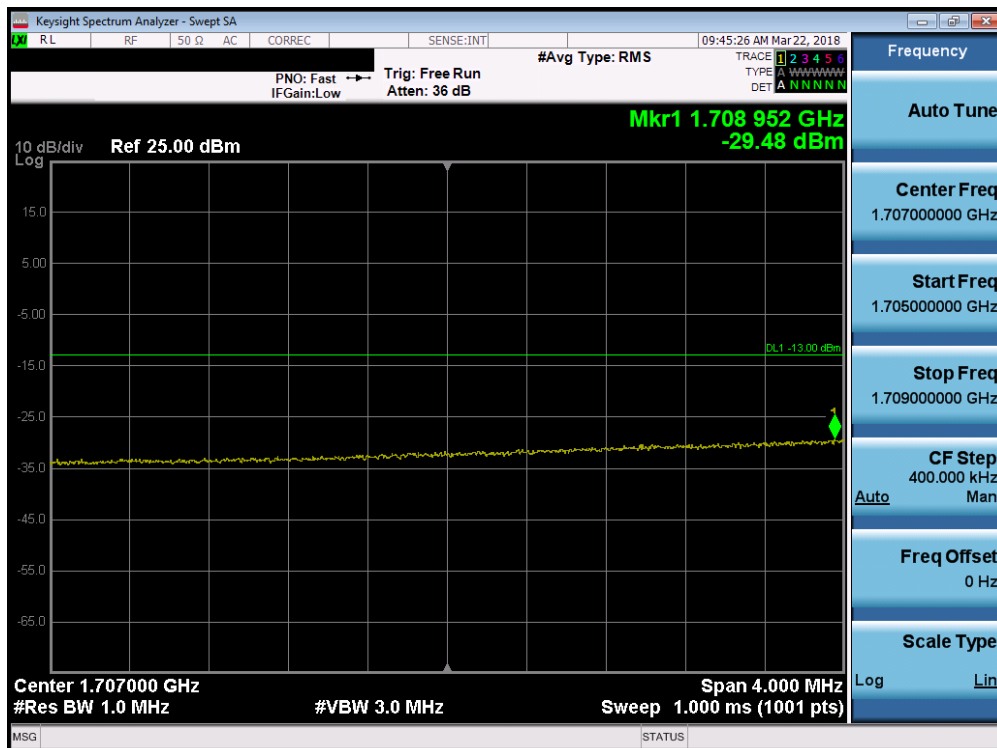


Plot 7-241. Upper Extended Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 144 of 262

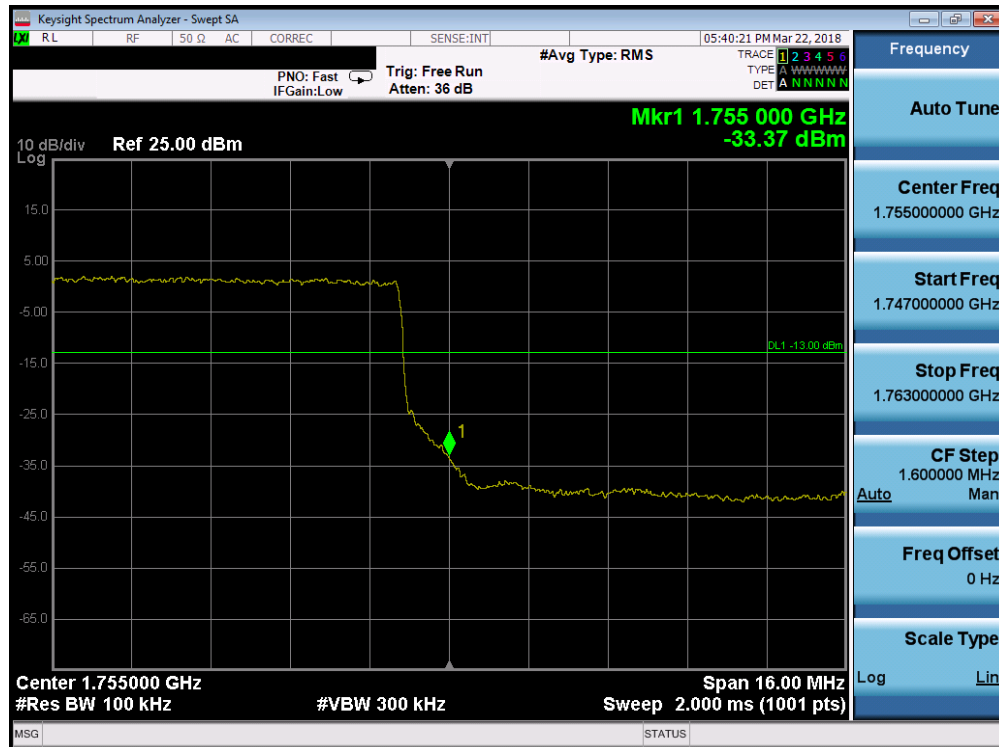


Plot 7-242. Lower Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

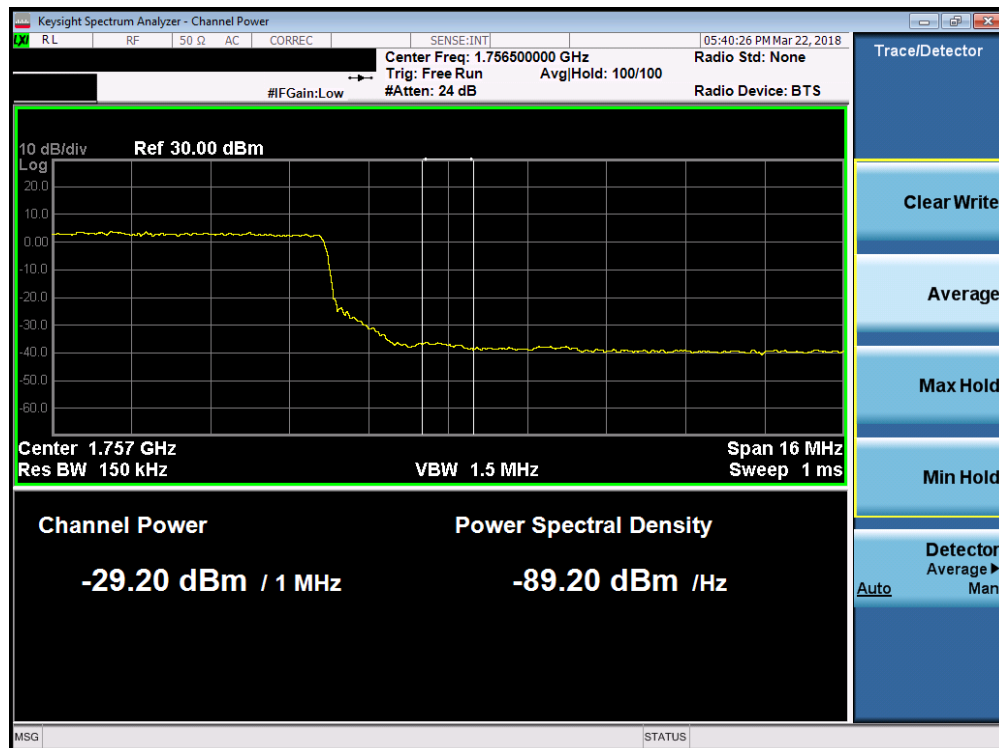


Plot 7-243. Lower Extended Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 145 of 262



Plot 7-244. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

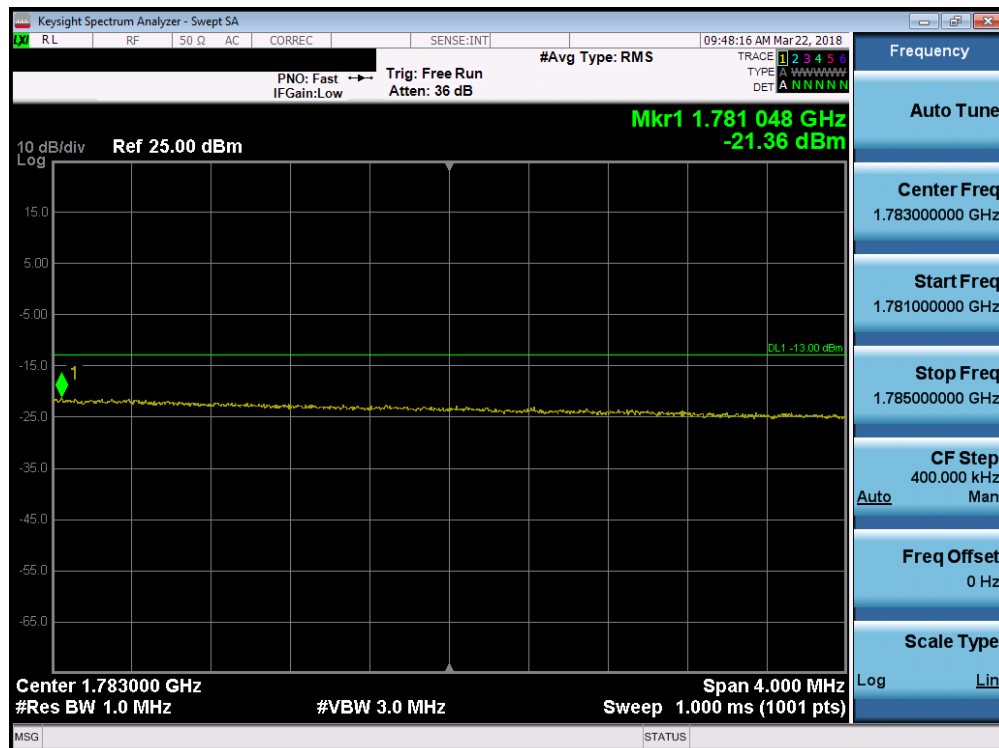


Plot 7-245. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 146 of 262



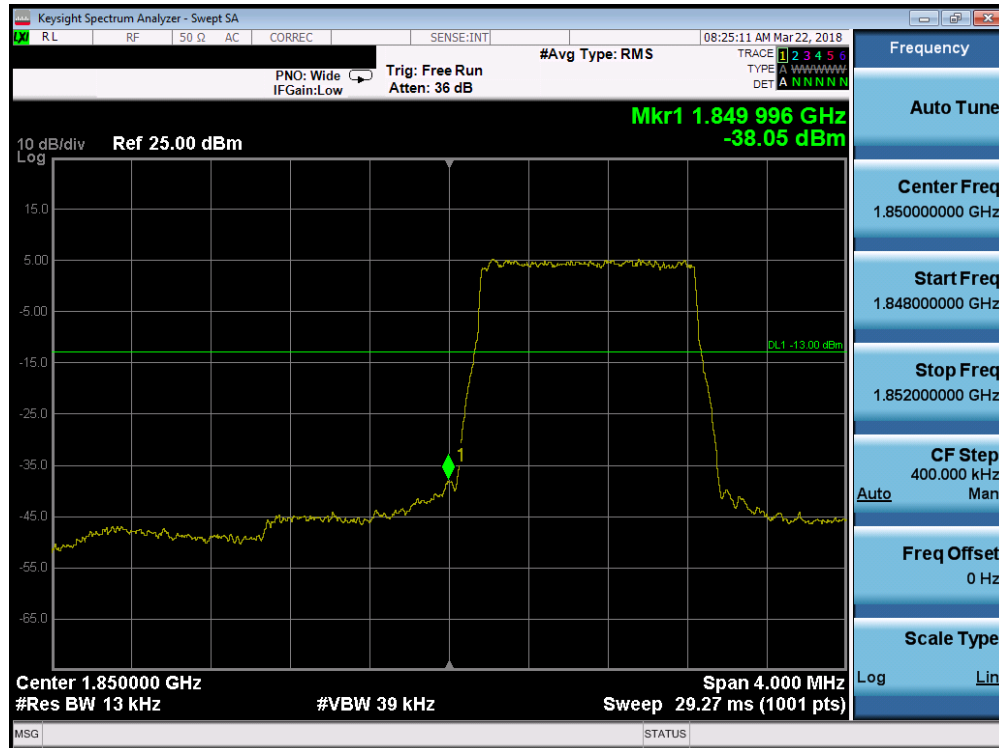
Plot 7-246. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)



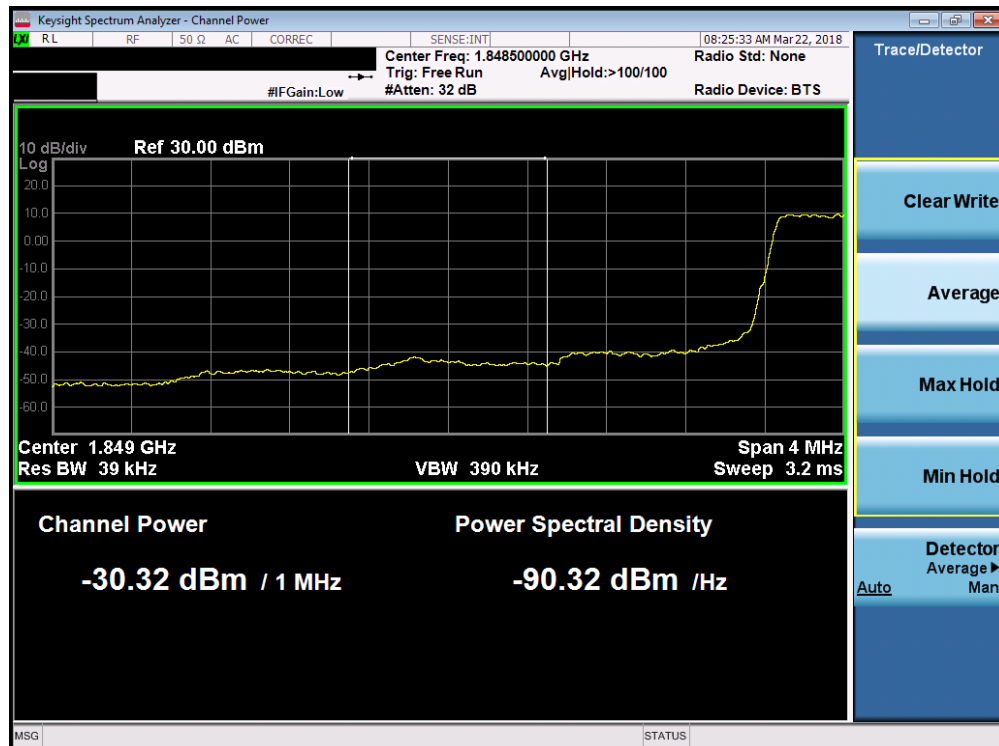
Plot 7-247. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 147 of 262	

Band 25/2

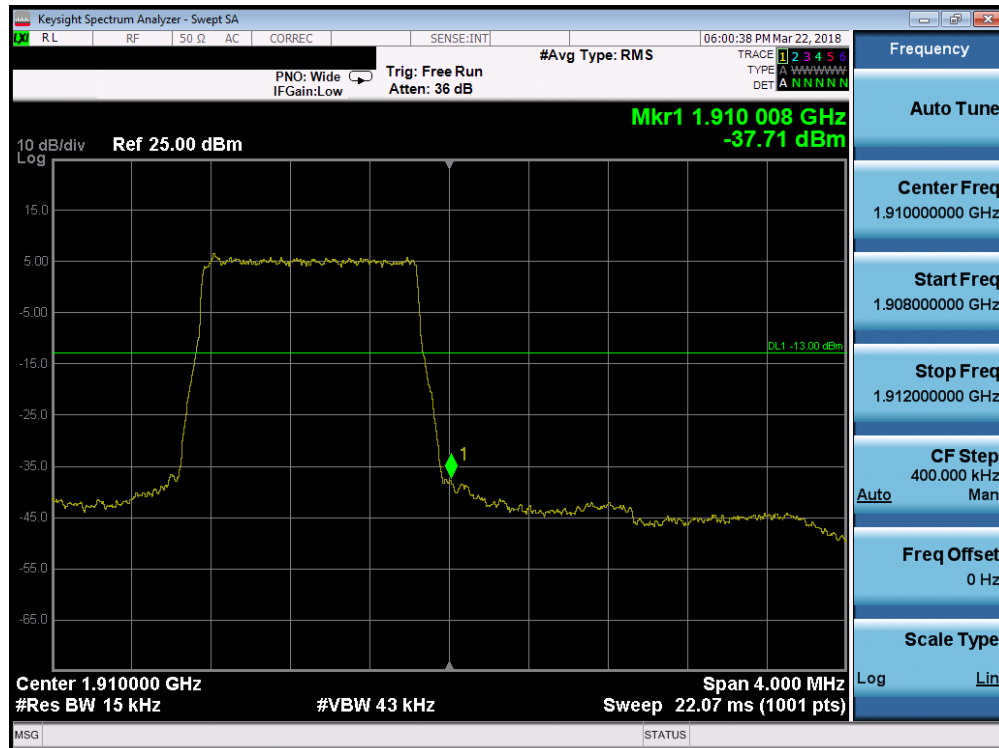


Plot 7-248. Lower Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

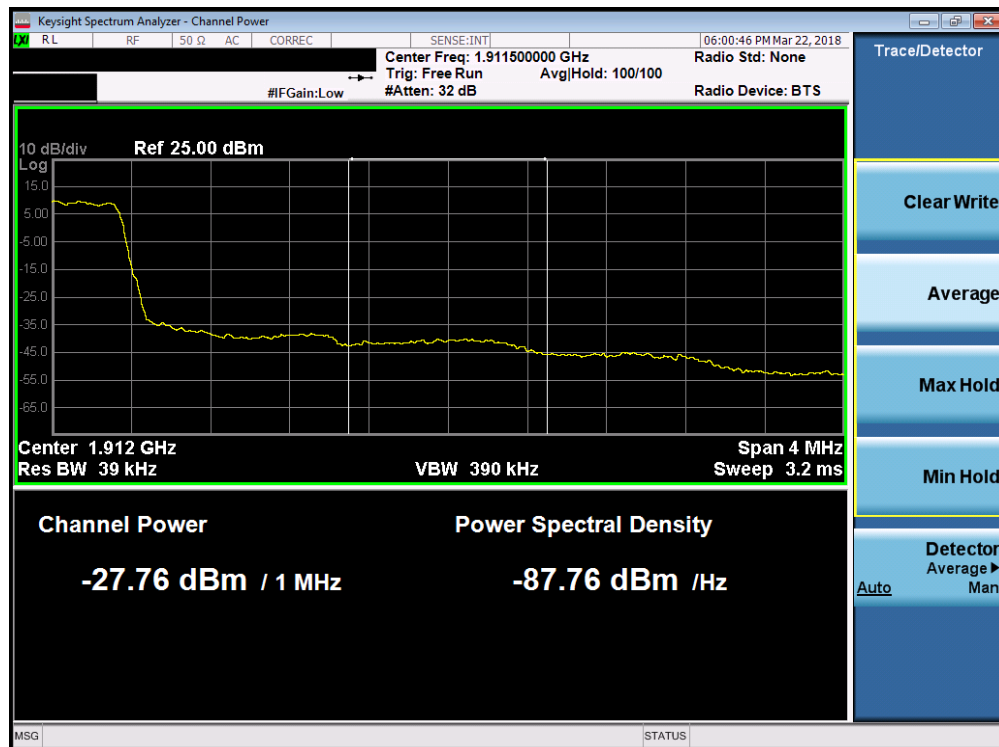


Plot 7-249. Lower Extended Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 148 of 262

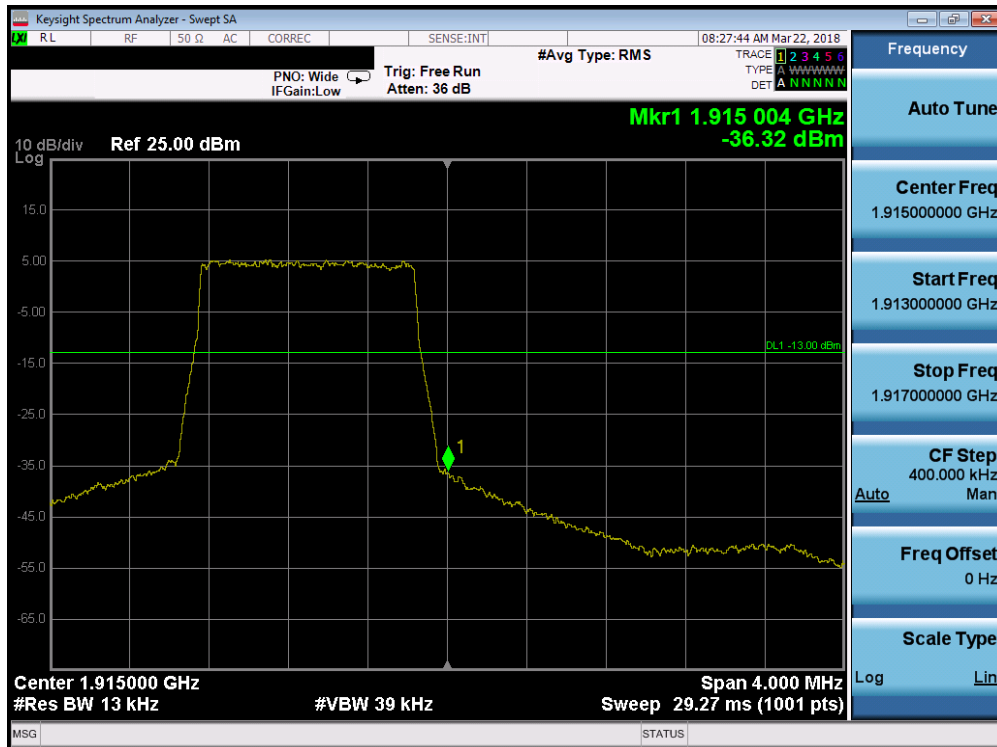


Plot 7-250. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

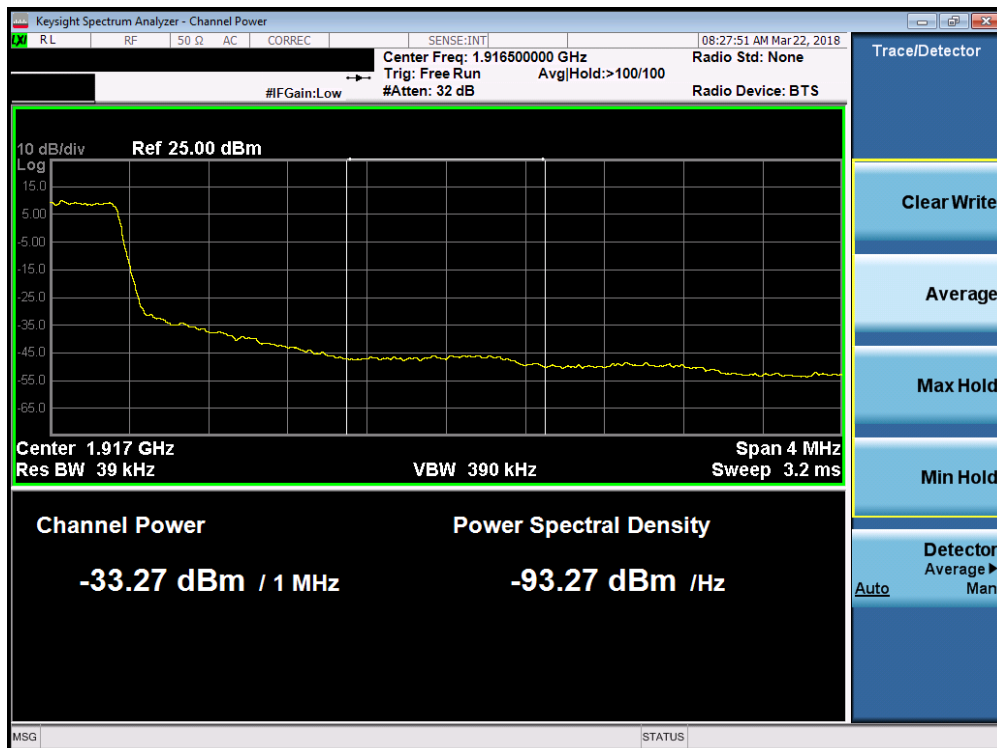


Plot 7-251. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 149 of 262

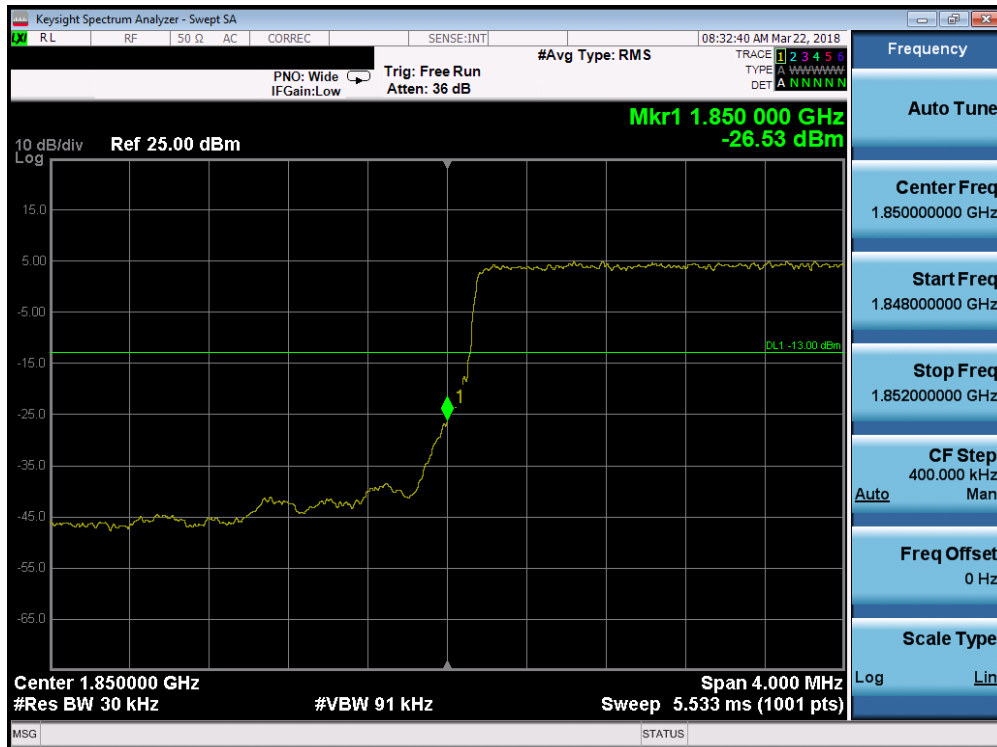


Plot 7-252. Upper Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)

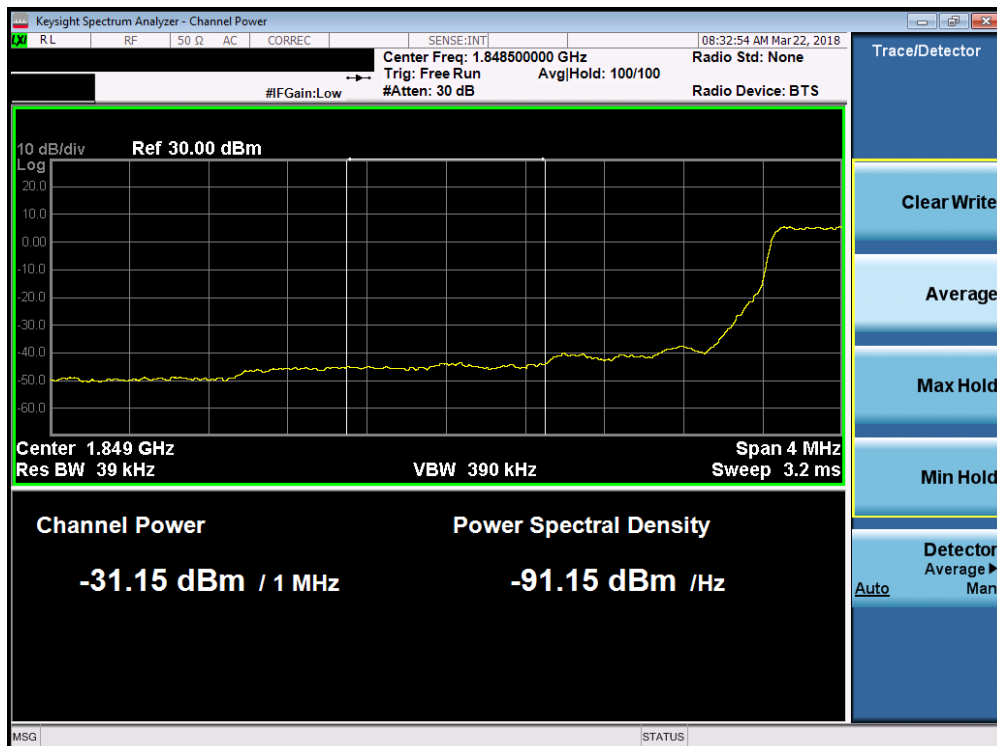


Plot 7-253. Upper Extended Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 150 of 262

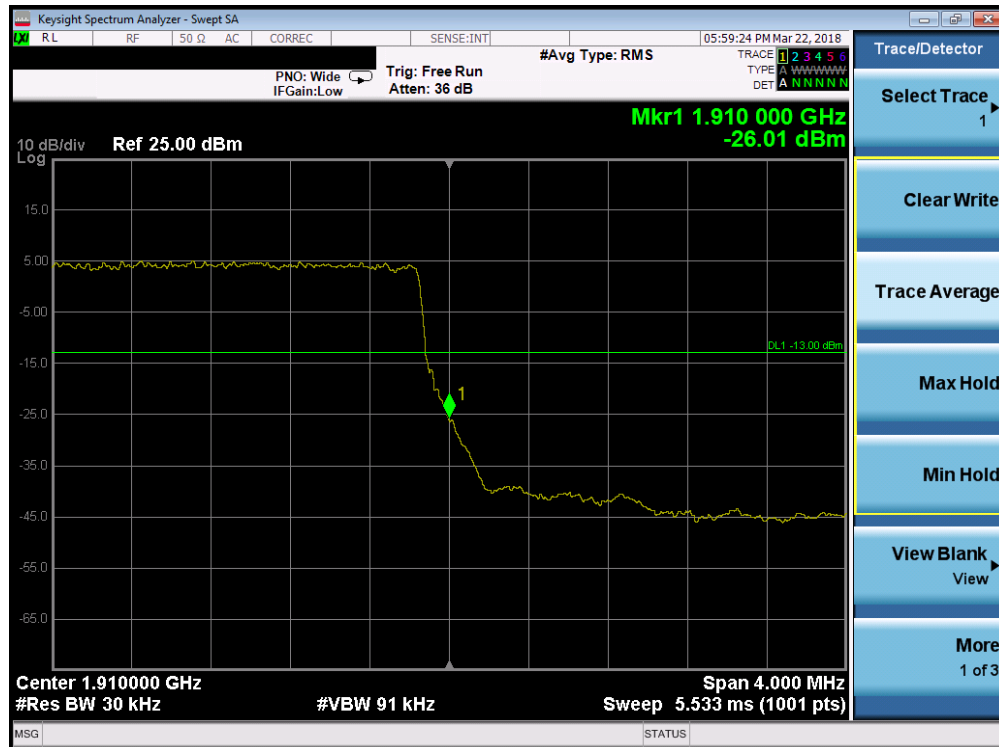


Plot 7-254. Lower Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

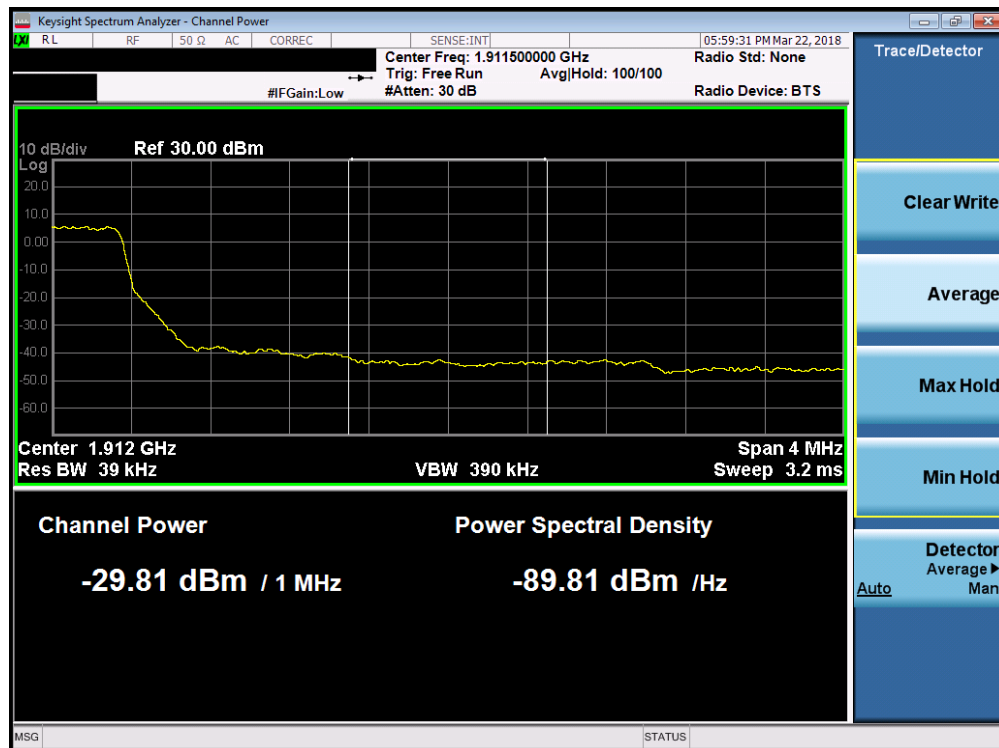


Plot 7-255. Lower Extended Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 151 of 262

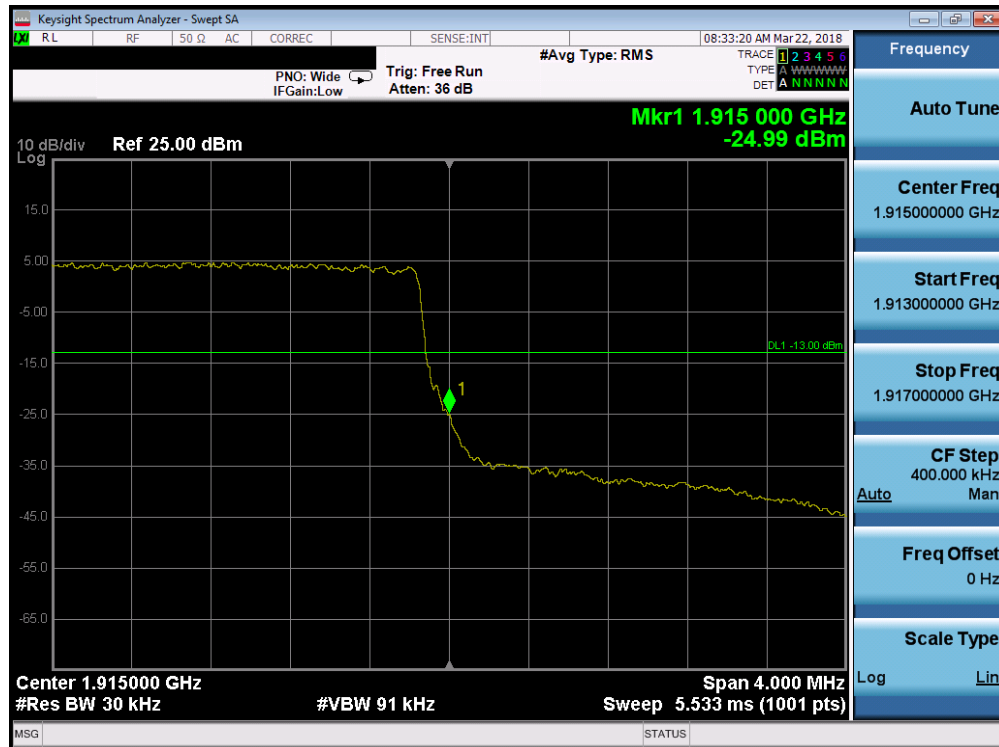


Plot 7-256. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

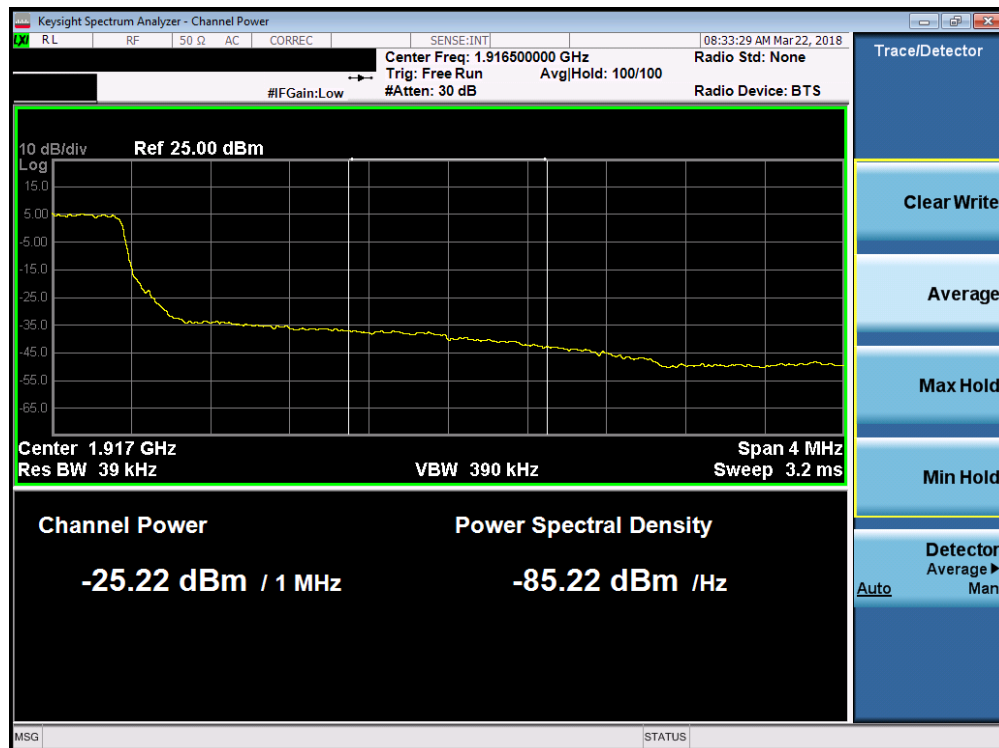


Plot 7-257. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 152 of 262

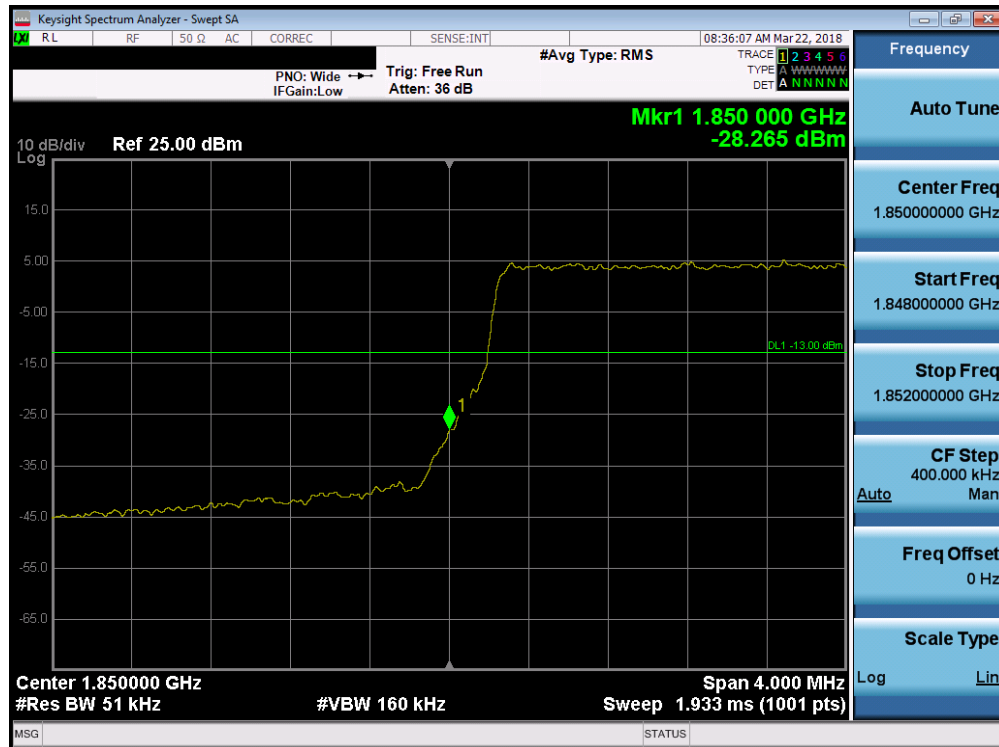


Plot 7-258. Upper Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)

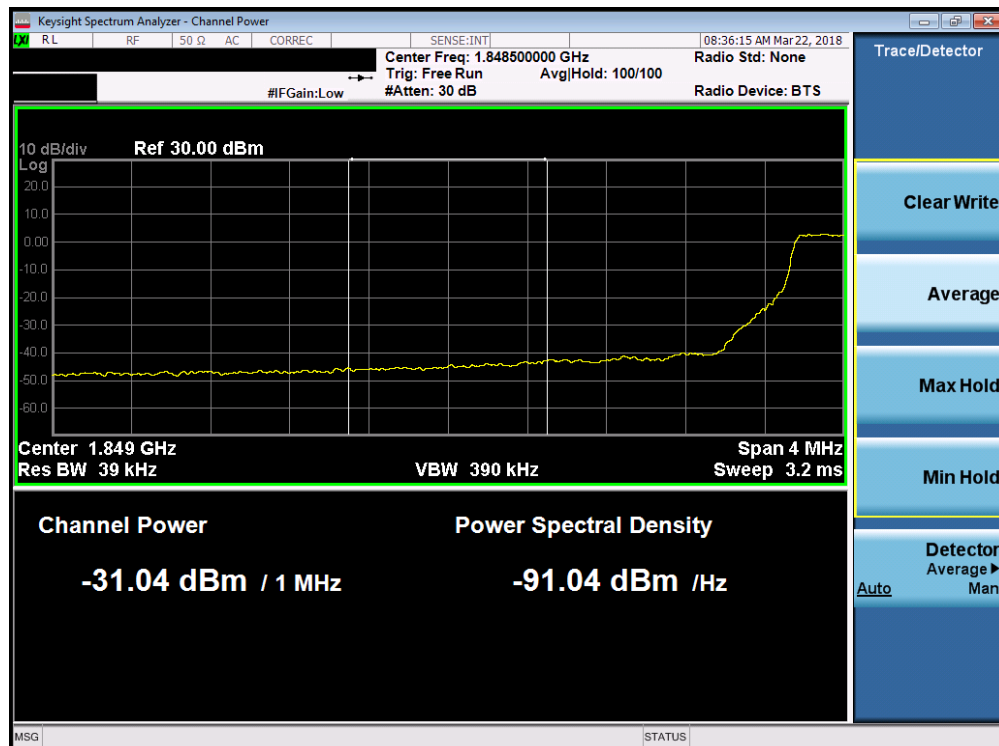


Plot 7-259. Upper Extended Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 153 of 262

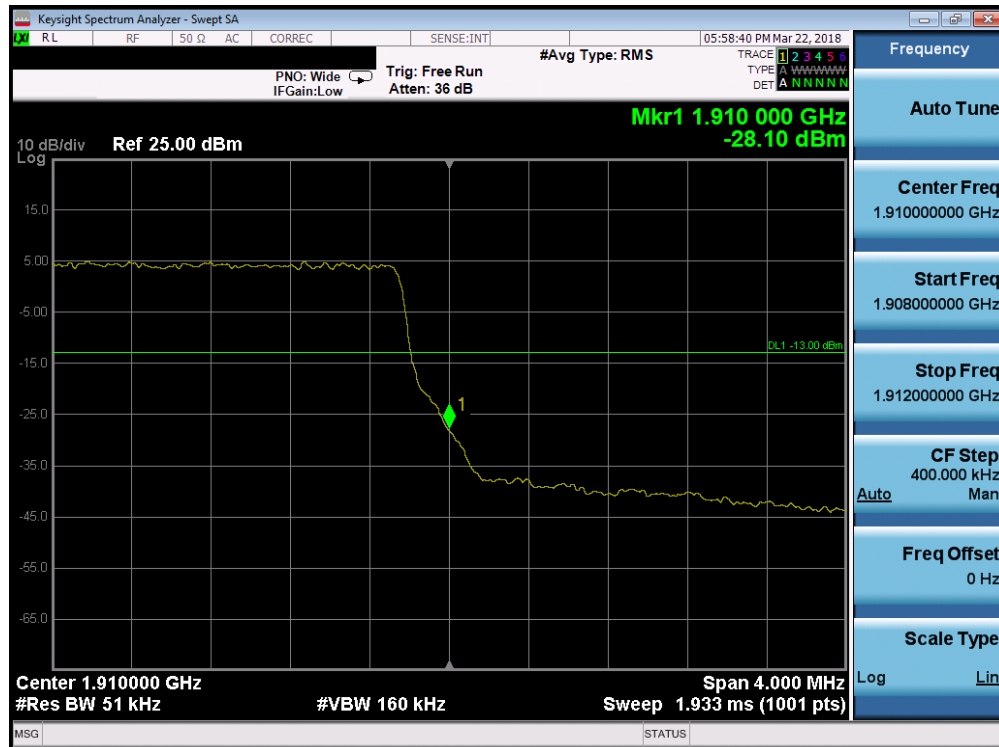


Plot 7-260. Lower Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

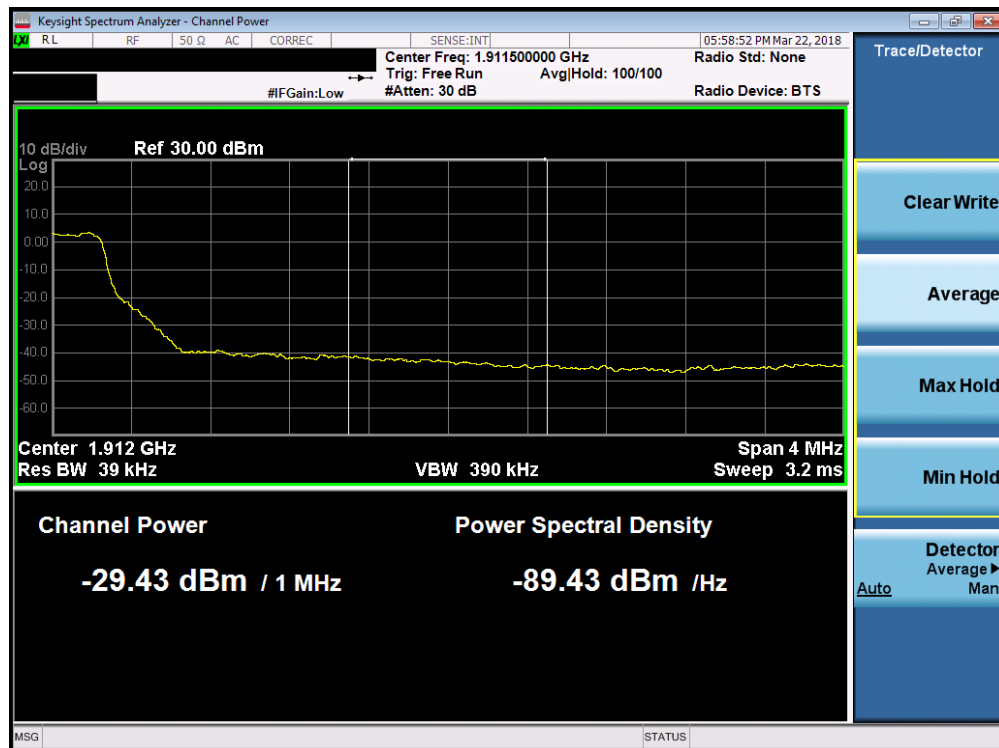


Plot 7-261. Lower Extended Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 154 of 262

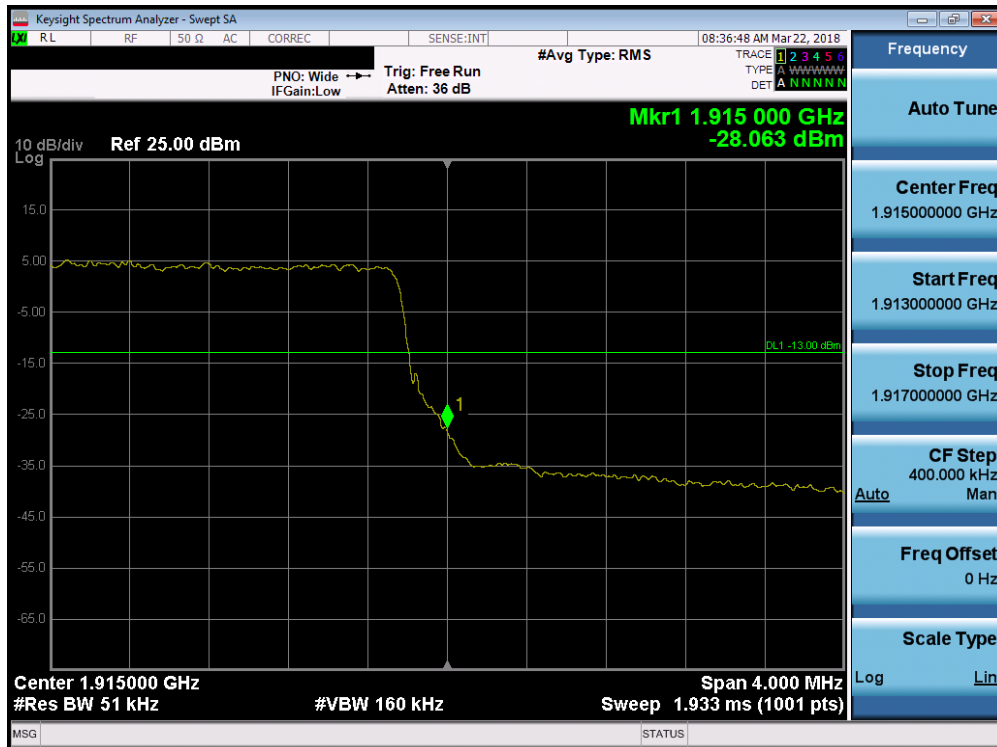


Plot 7-262. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

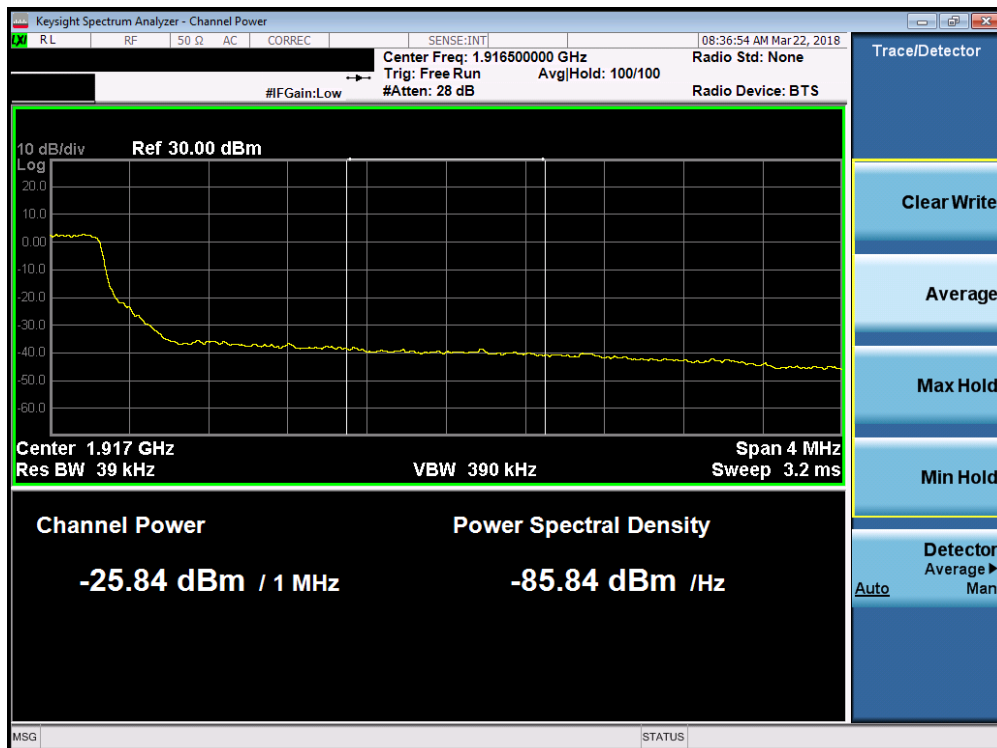


Plot 7-263. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 155 of 262

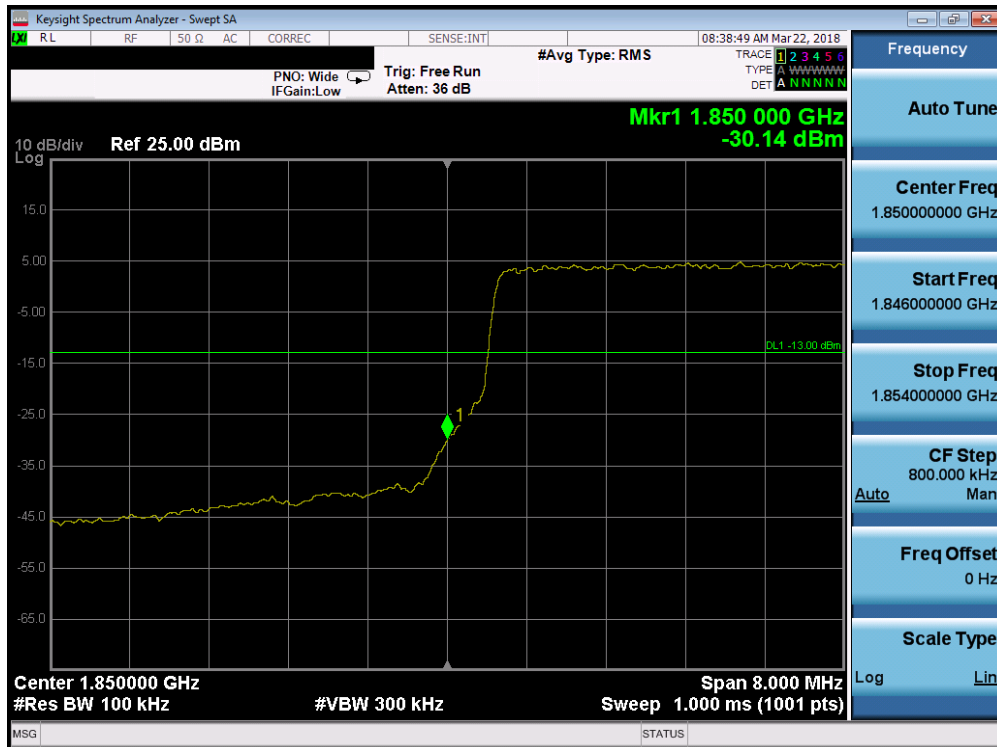


Plot 7-264. Upper Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)

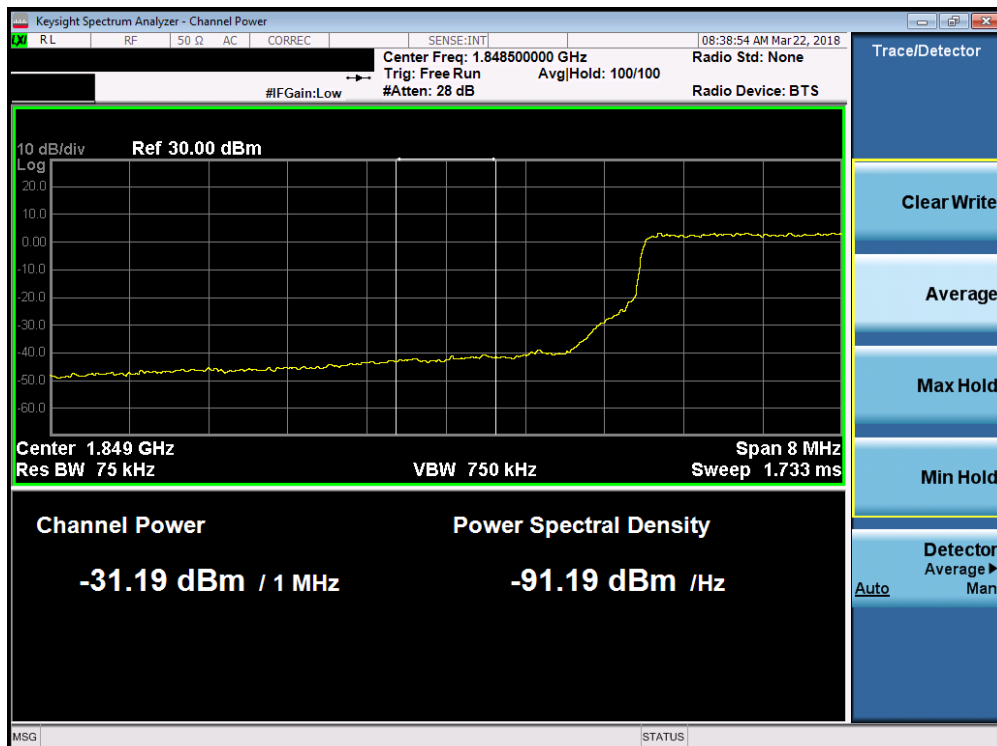


Plot 7-265. Upper Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 156 of 262

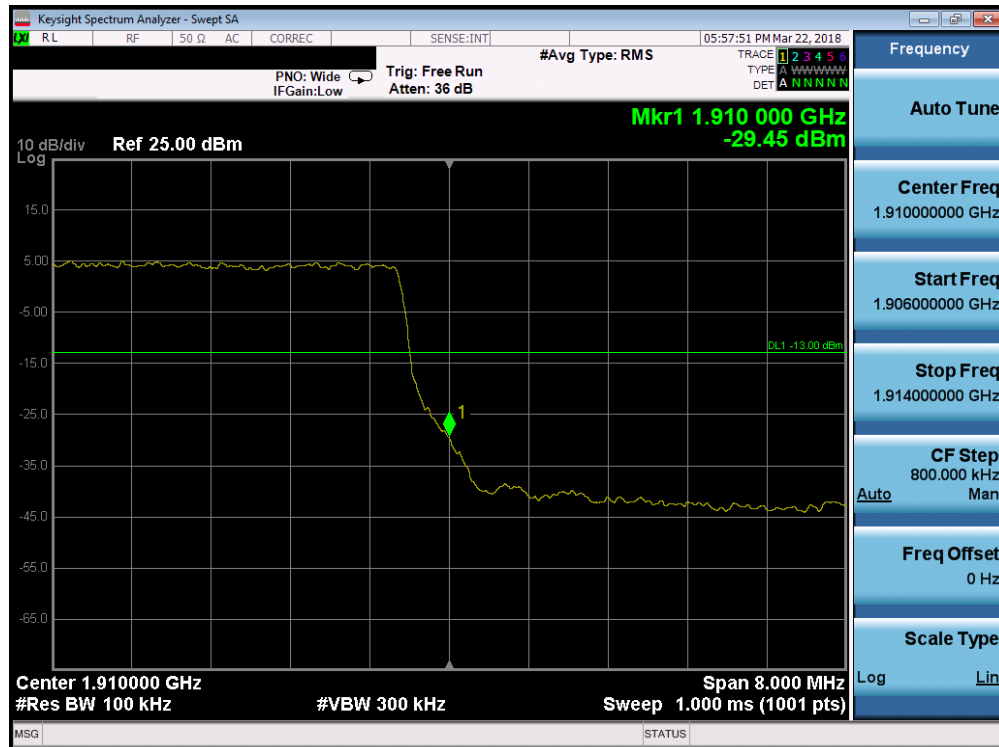


Plot 7-266. Lower Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

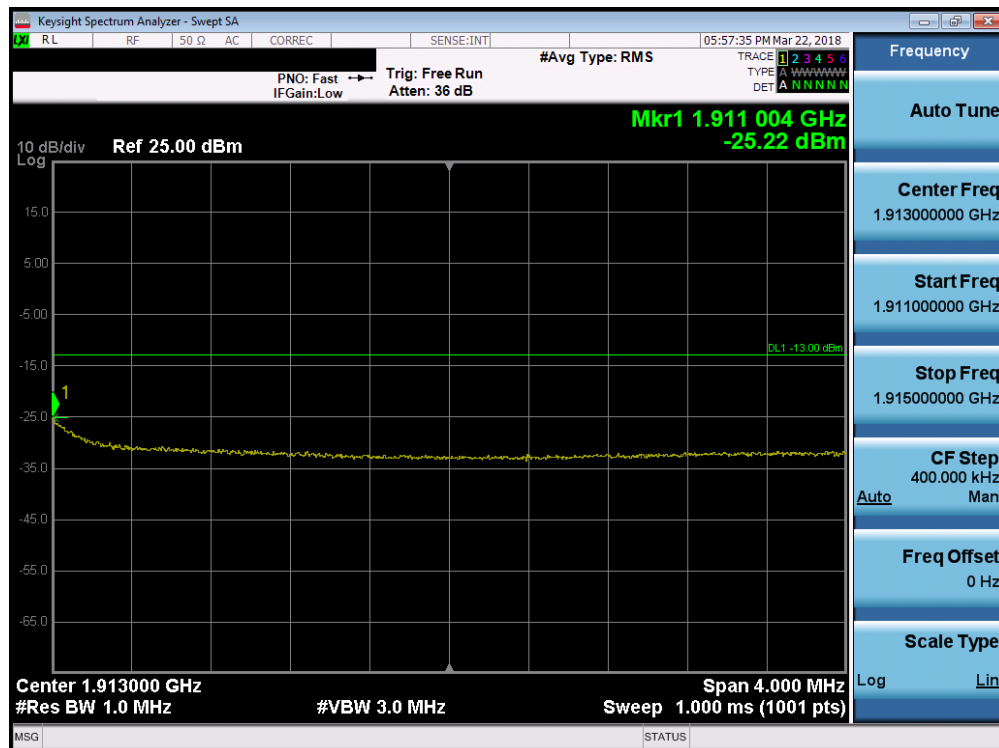


Plot 7-267. Lower Extended Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 157 of 262

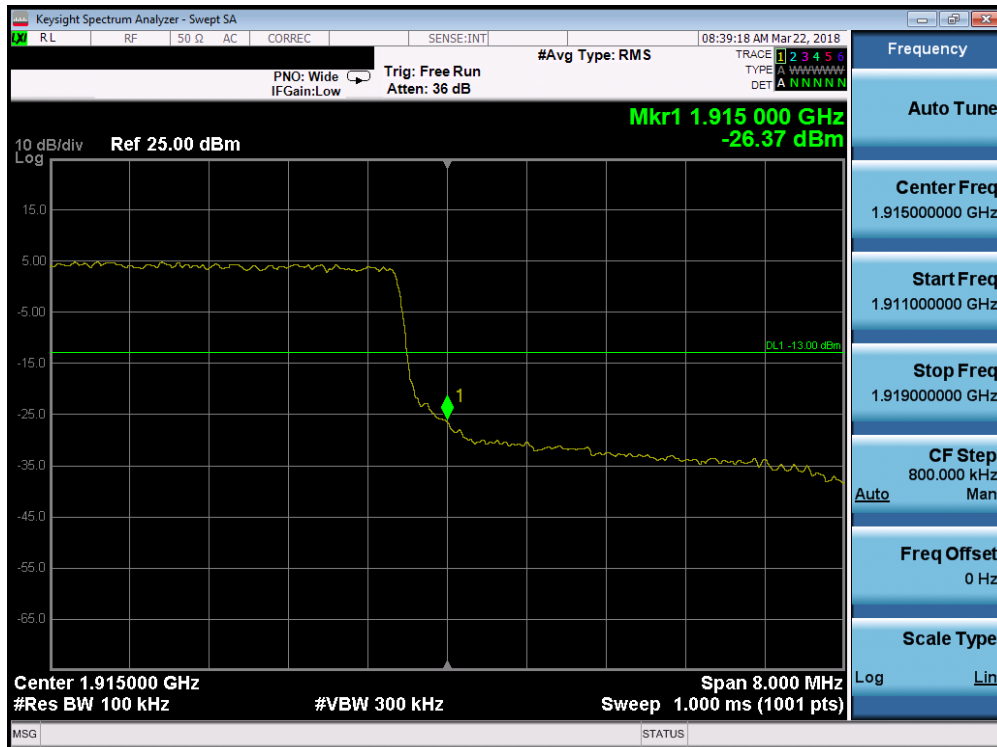


Plot 7-268. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

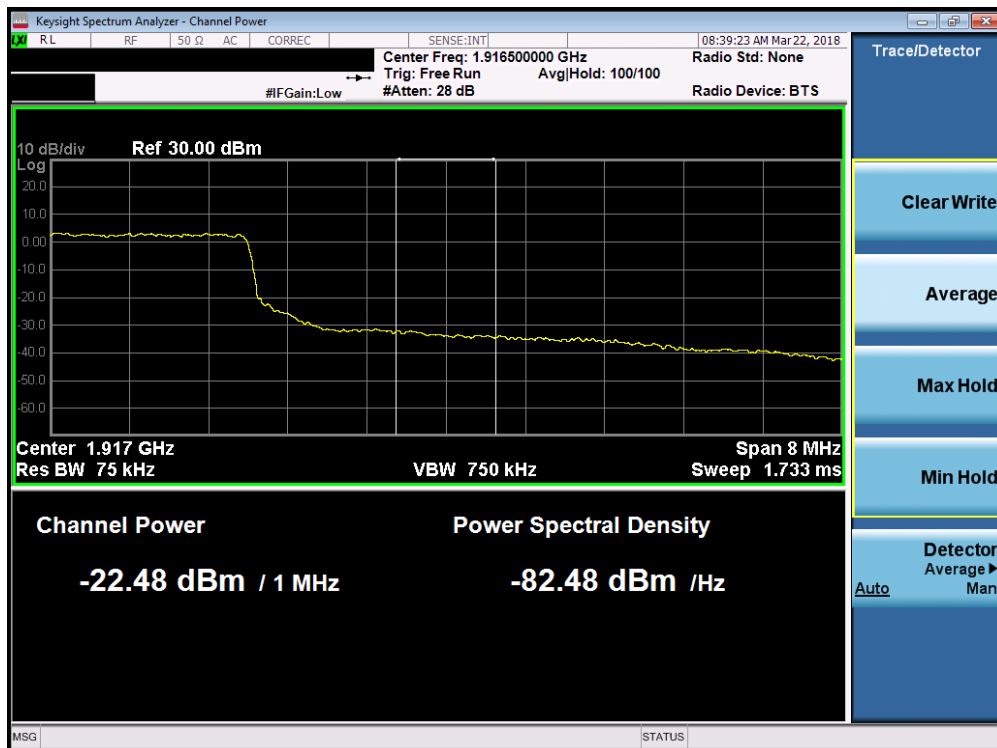


Plot 7-269. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 158 of 262

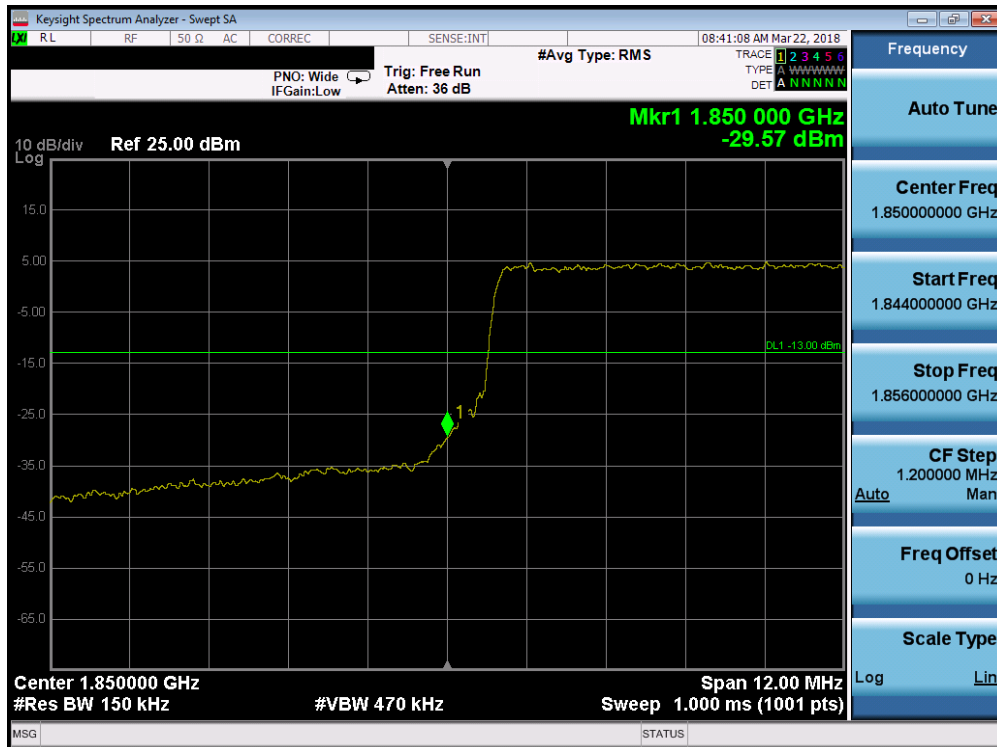


Plot 7-270. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

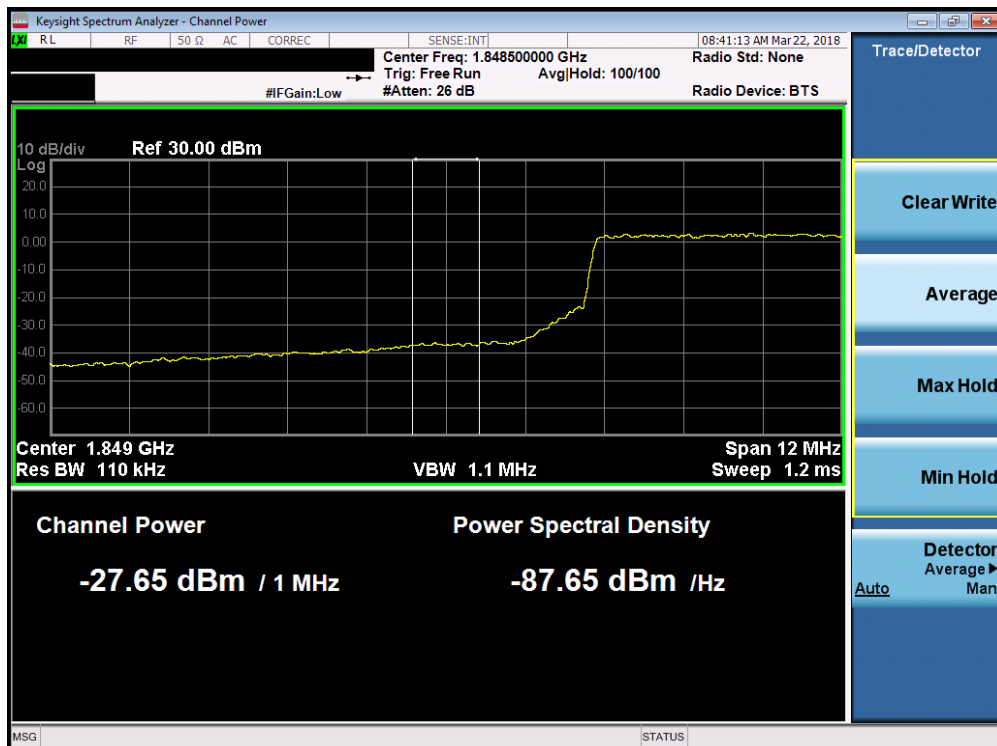


Plot 7-271. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 159 of 262

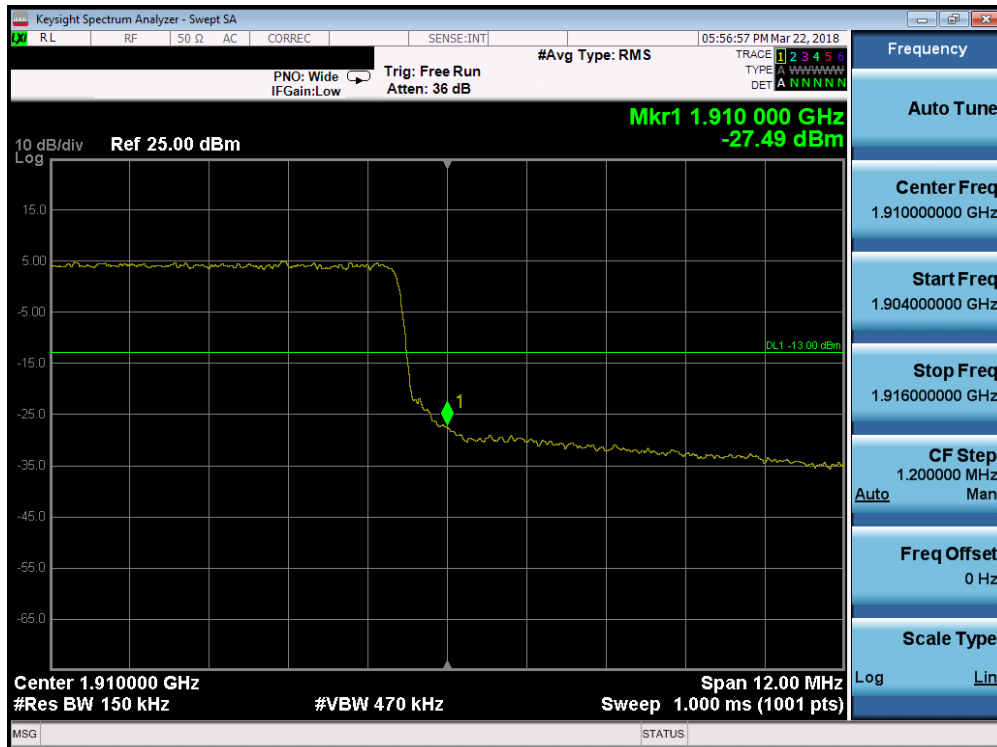


Plot 7-272. Lower Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

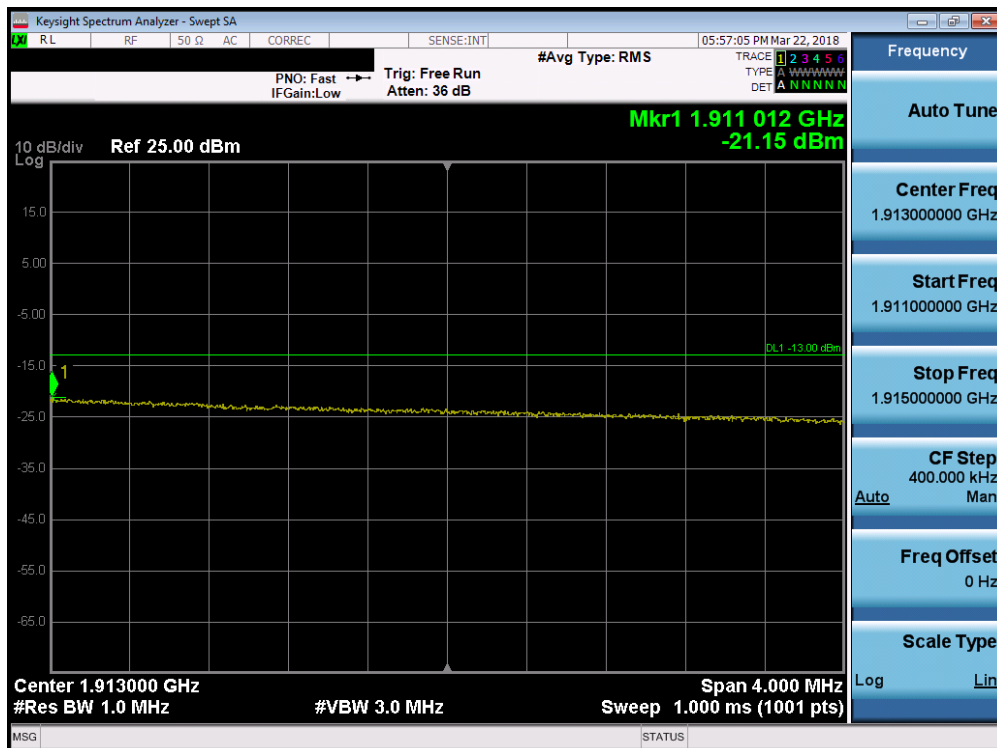


Plot 7-273. Lower Extended Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 160 of 262

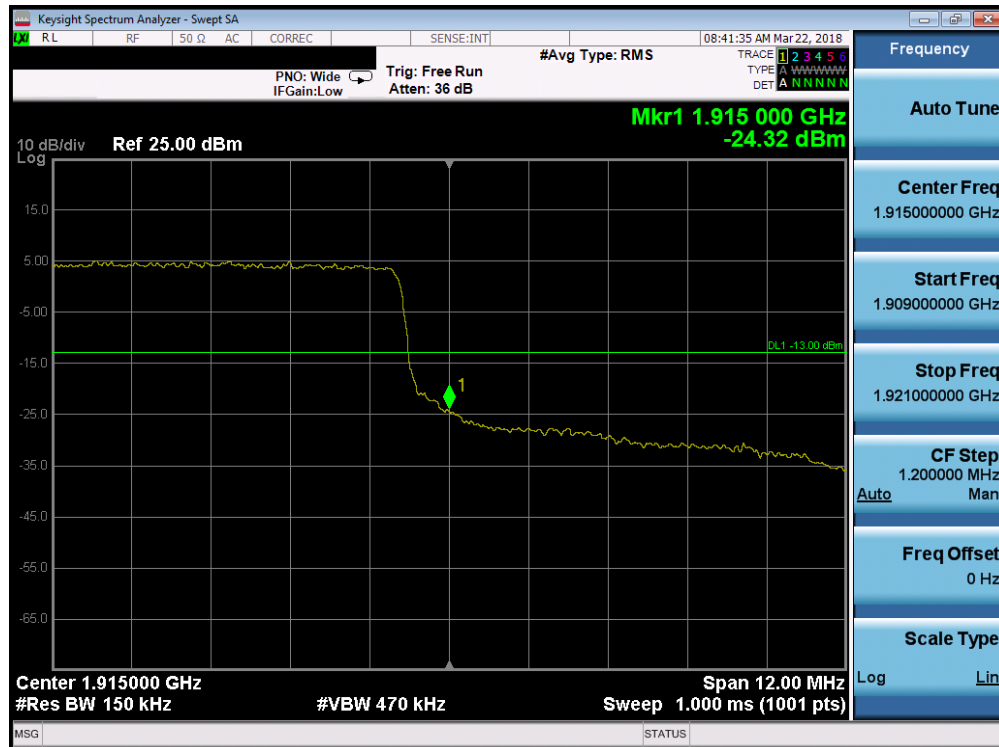


Plot 7-274. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

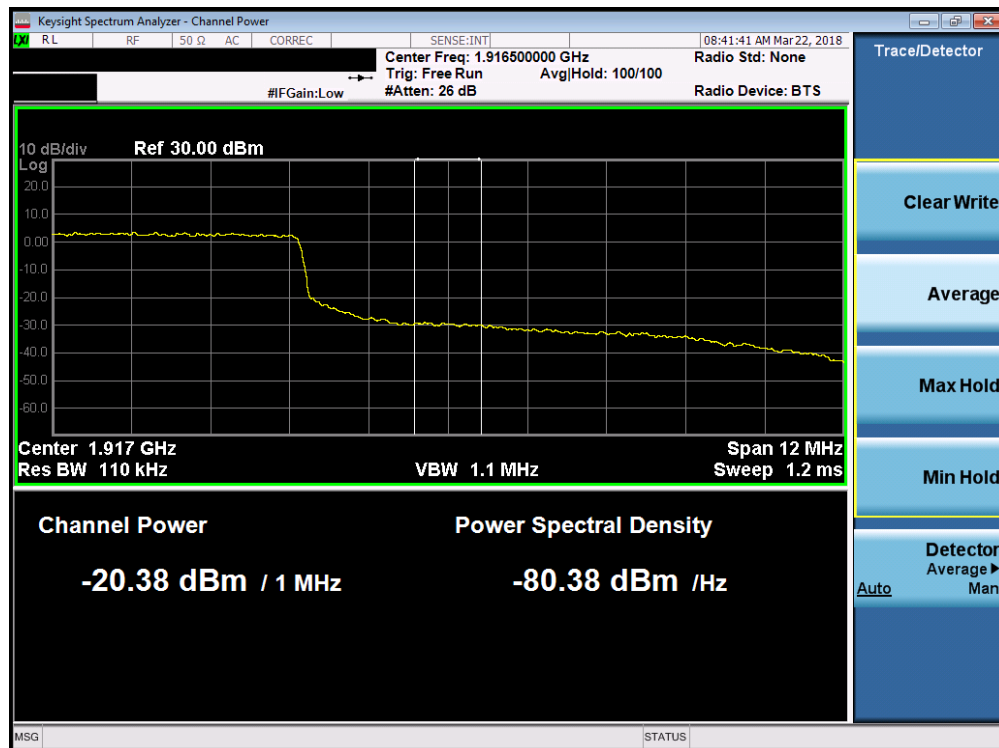


Plot 7-275. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 161 of 262	

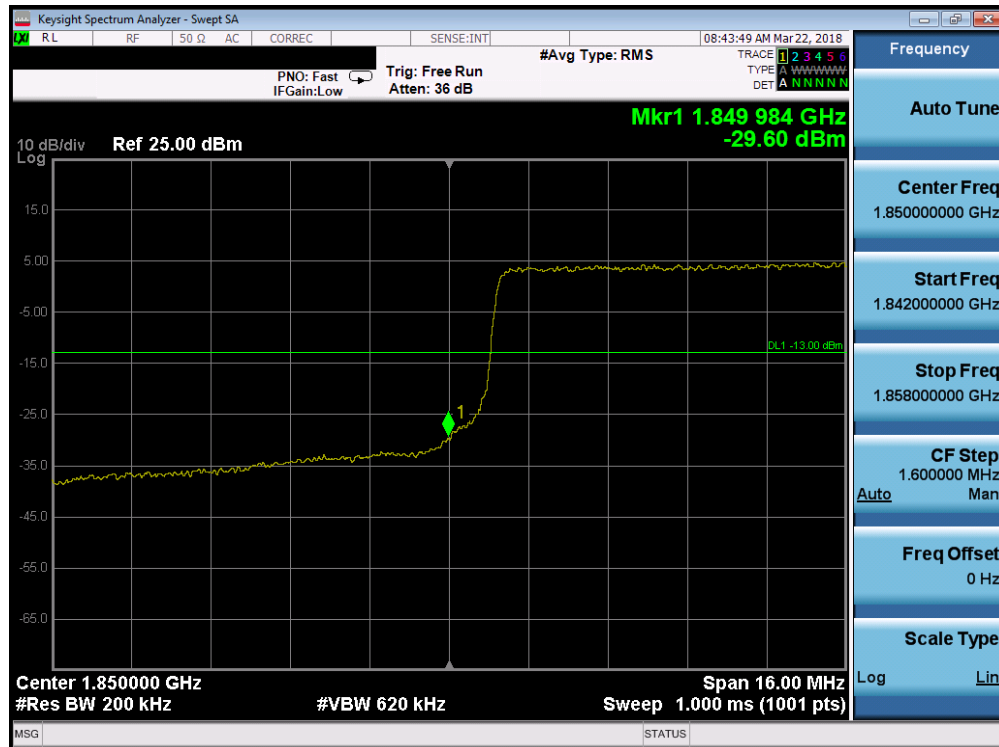


Plot 7-276. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

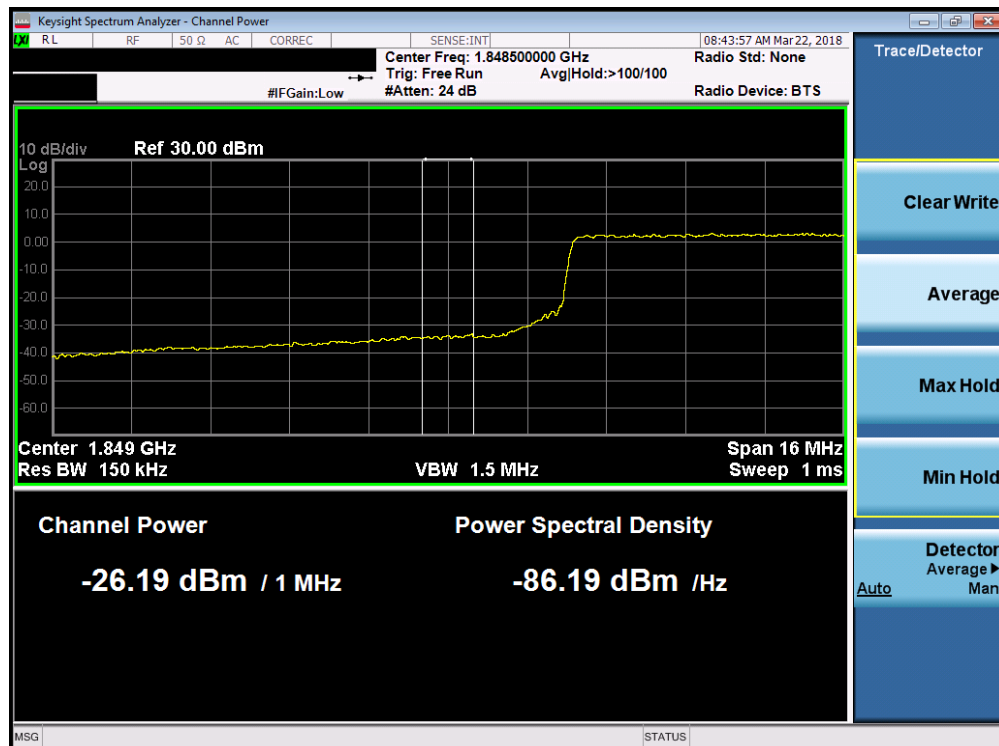


Plot 7-277. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 162 of 262



Plot 7-278. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

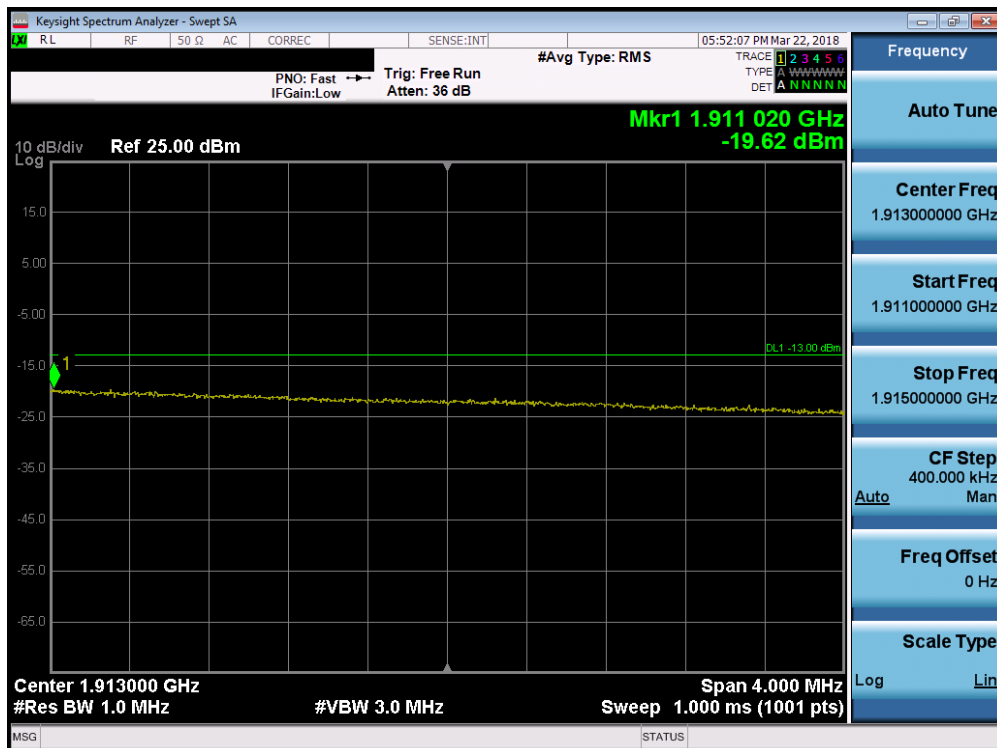


Plot 7-279. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 163 of 262



Plot 7-280. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

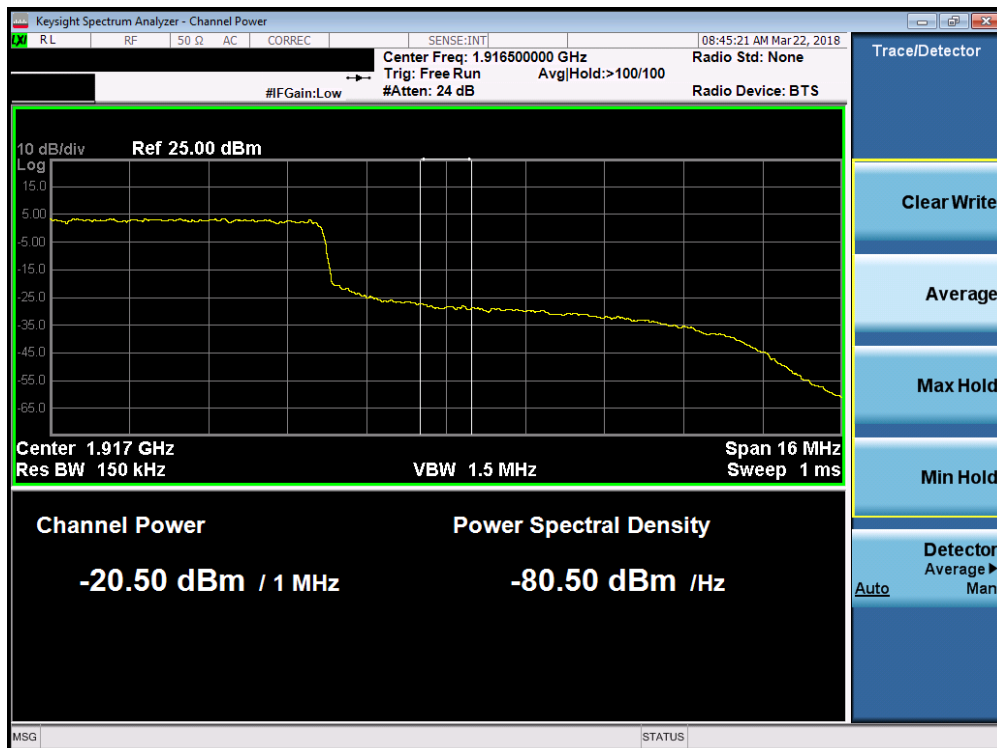


Plot 7-281. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 164 of 262



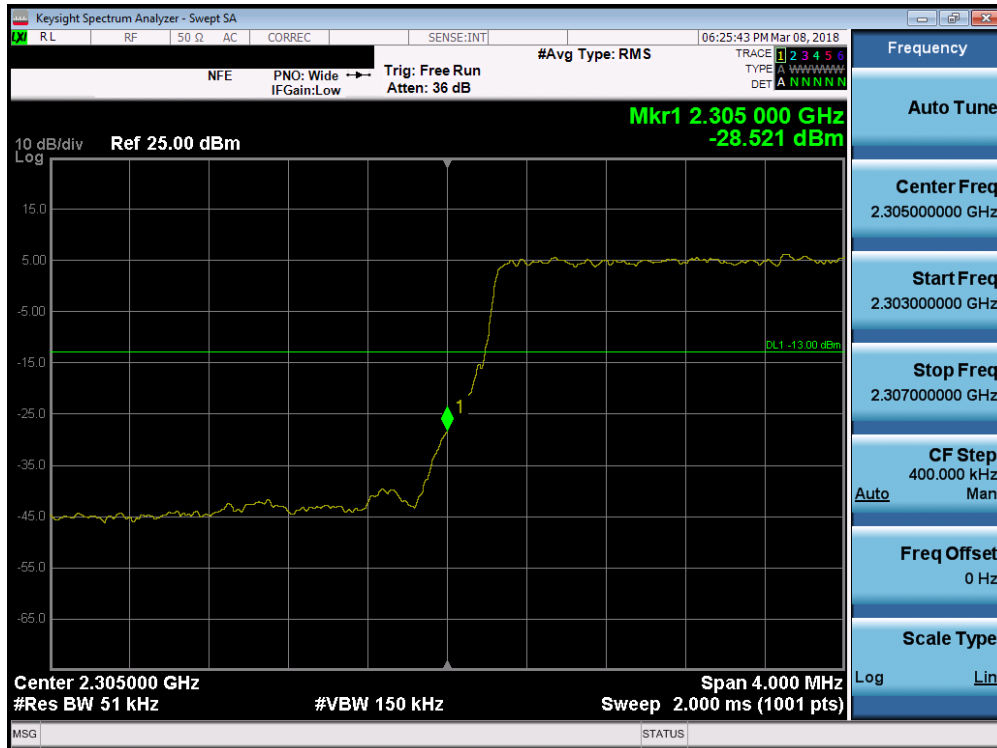
Plot 7-282. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-283. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 165 of 262

Band 30

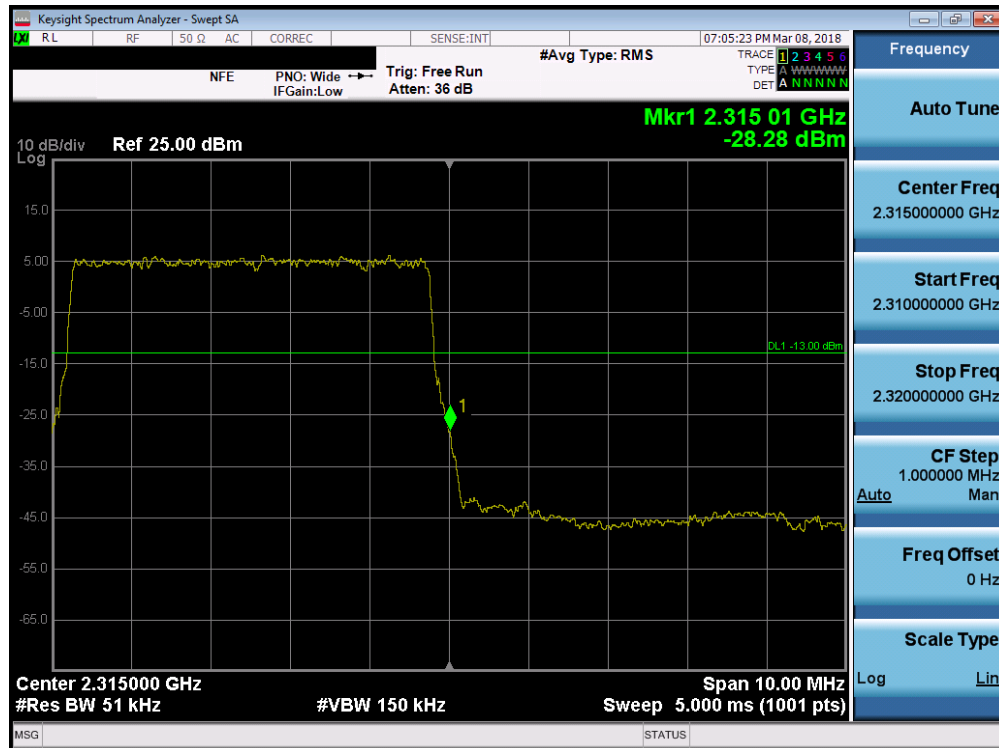


Plot 7-284. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

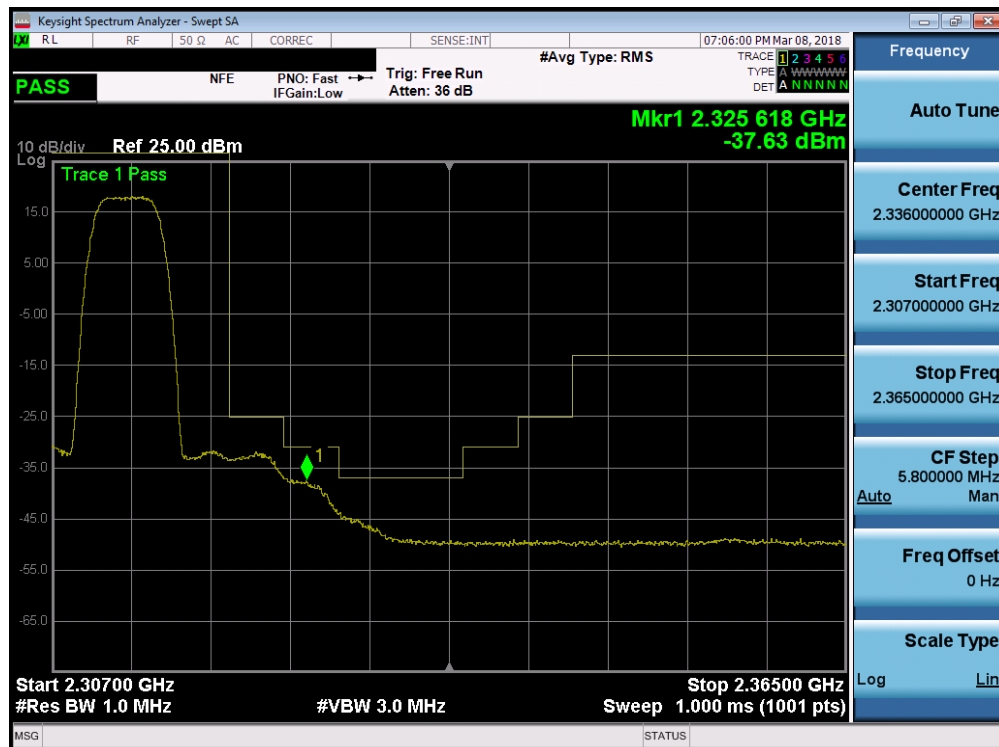


Plot 7-285. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 166 of 262

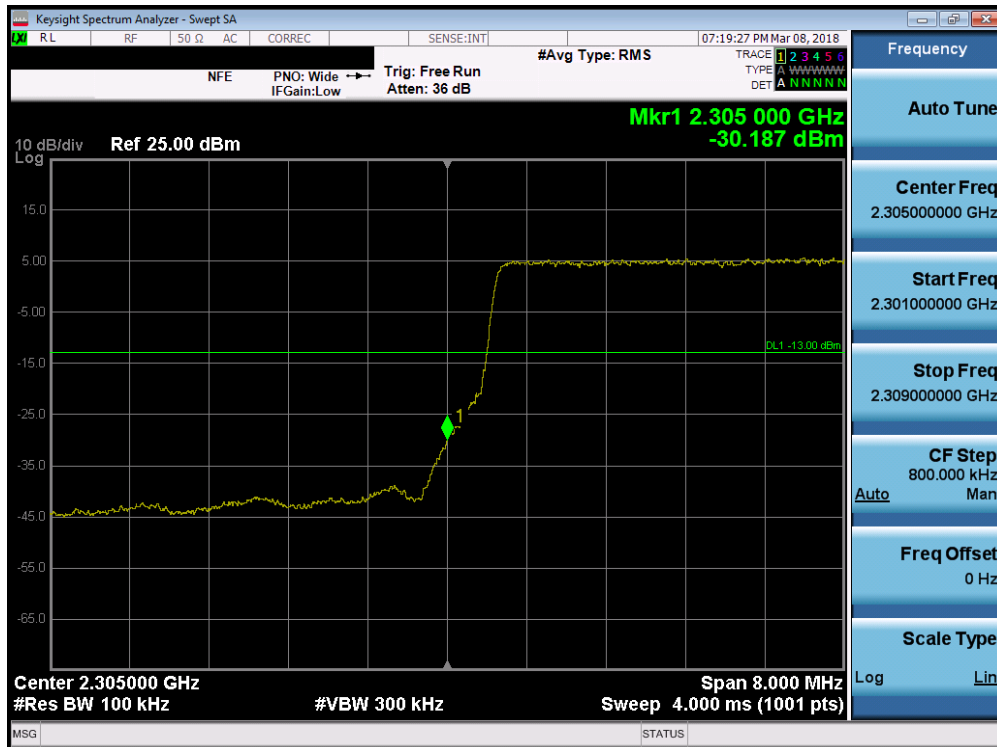


Plot 7-286. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

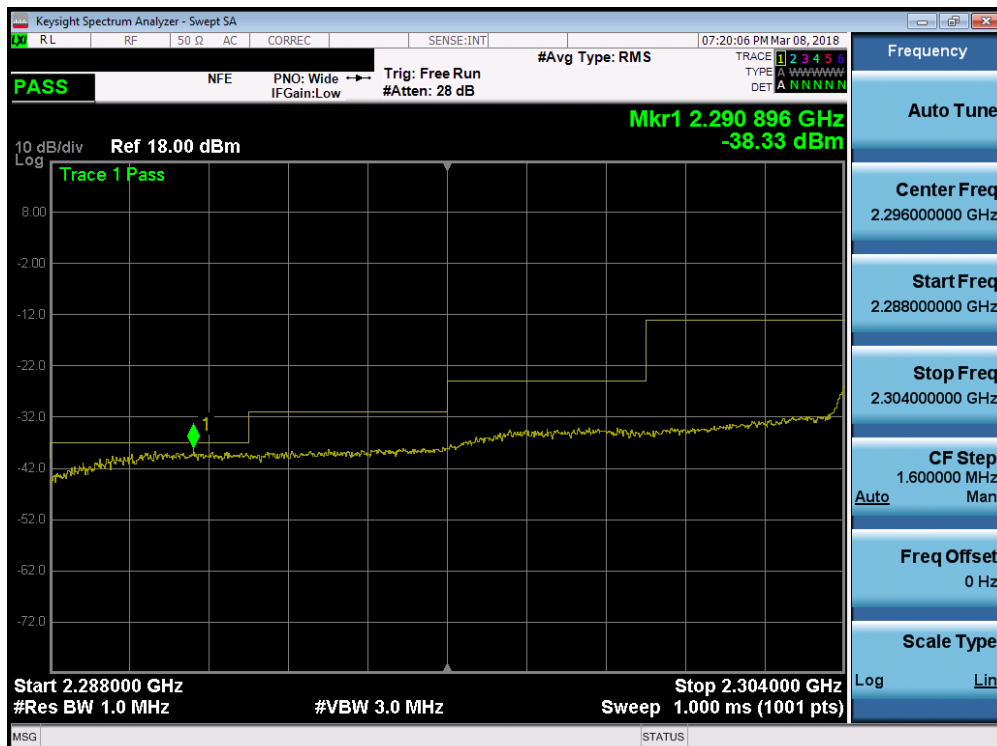


Plot 7-287. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 167 of 262



Plot 7-288. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

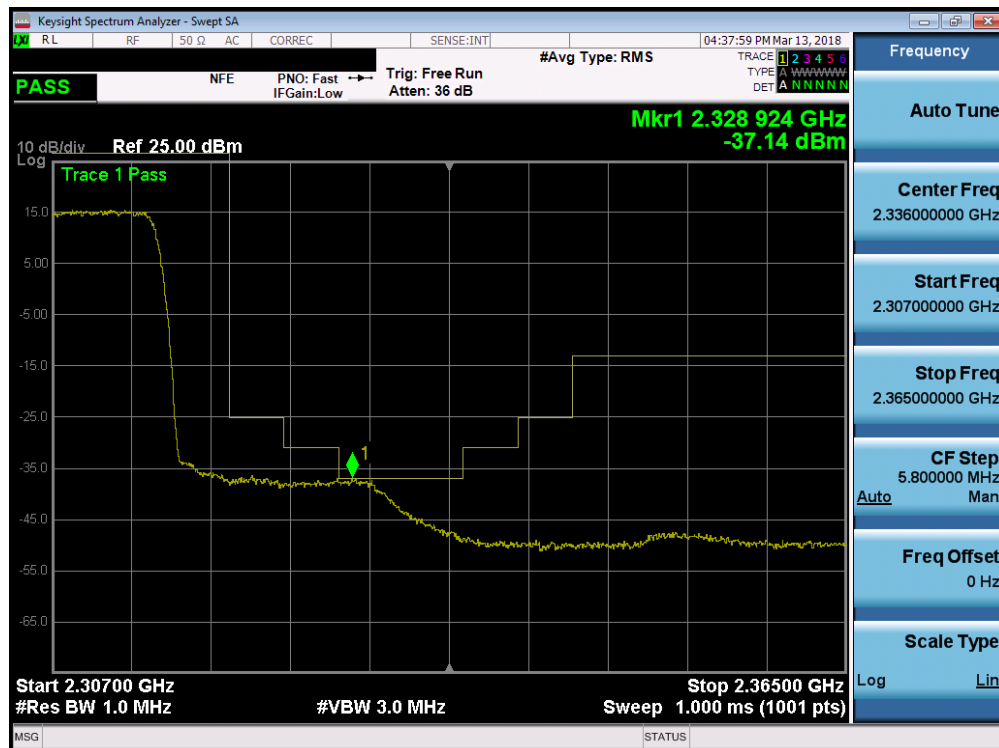


Plot 7-289. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 168 of 262



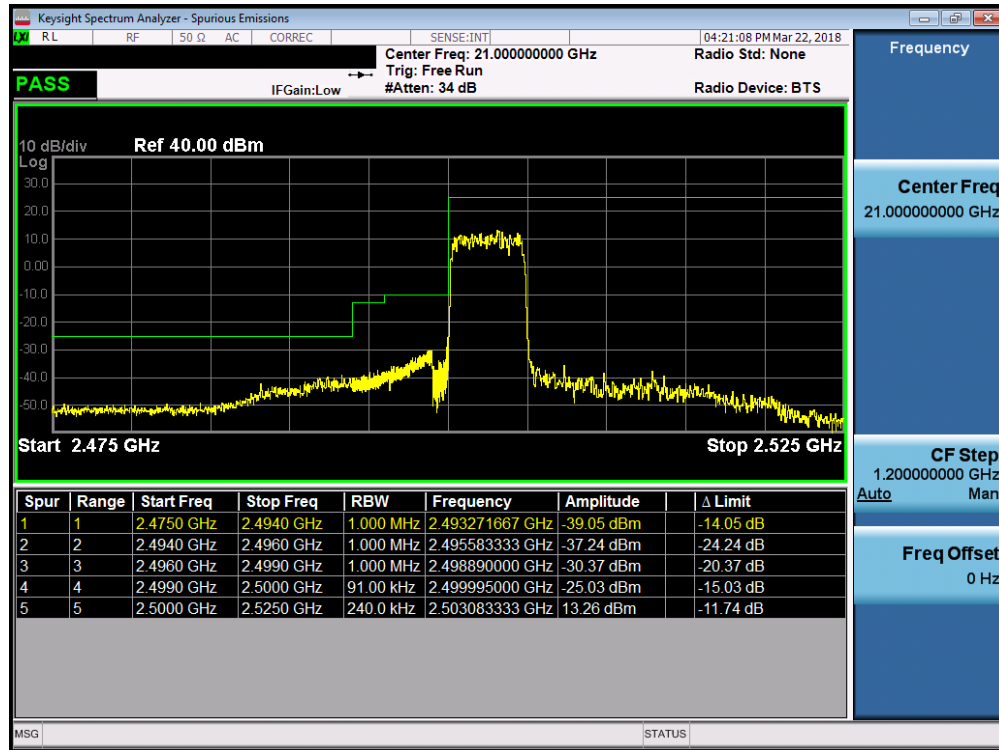
Plot 7-290. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



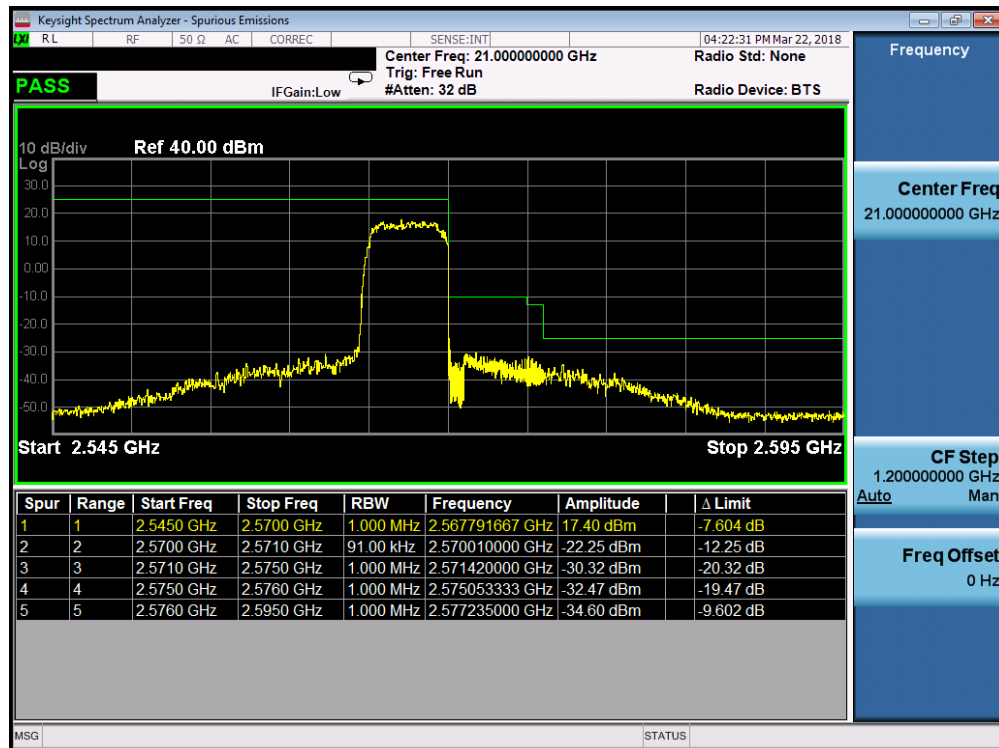
Plot 7-291. Upper Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 169 of 262

Band 7

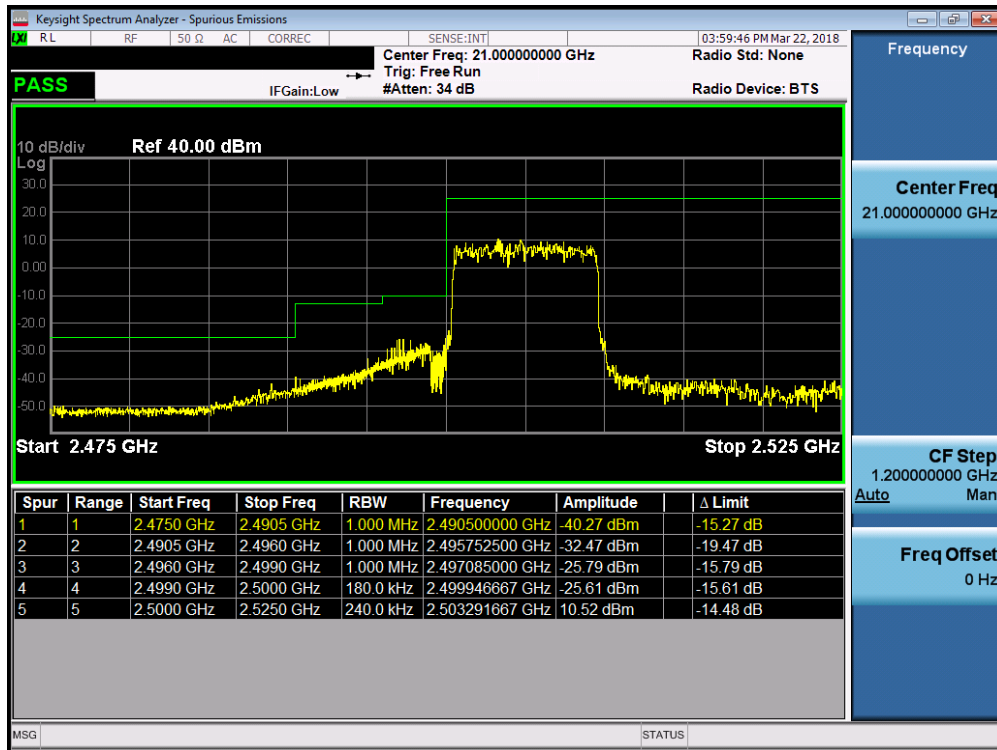


Plot 7-292. Lower ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)

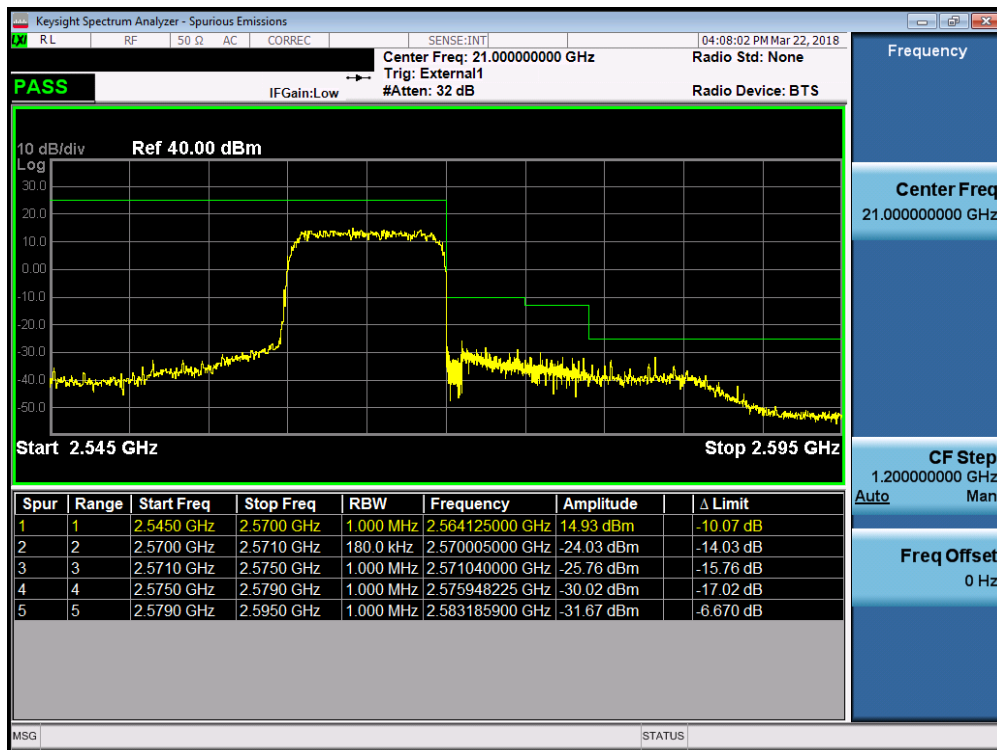


Plot 7-293. Upper ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 170 of 262

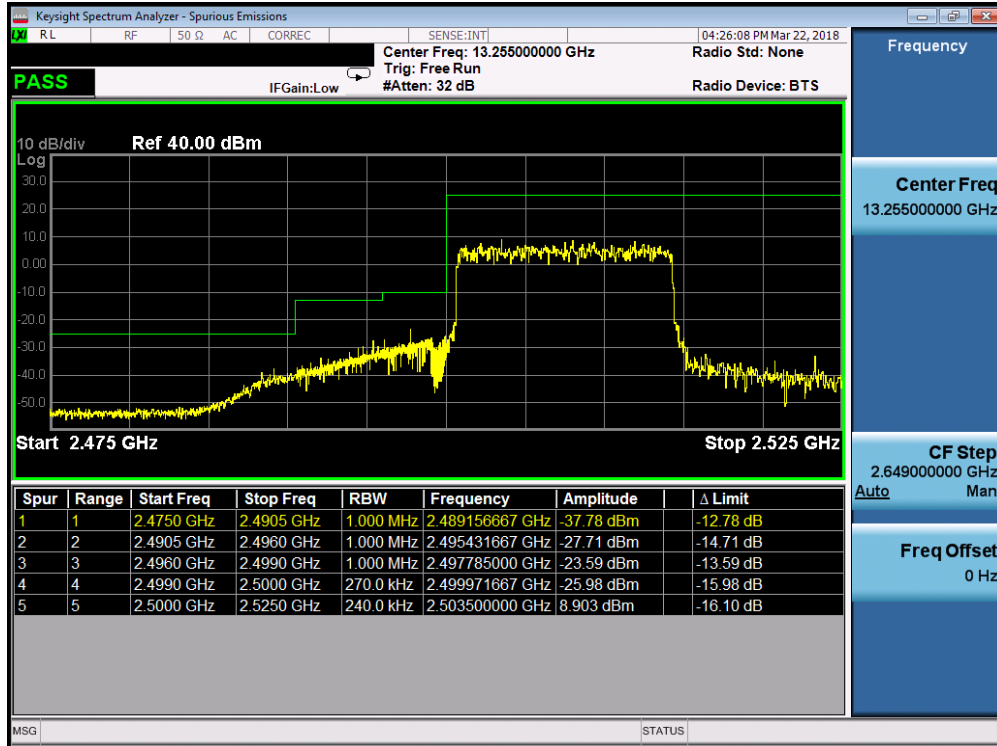


Plot 7-294. Lower ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 25)

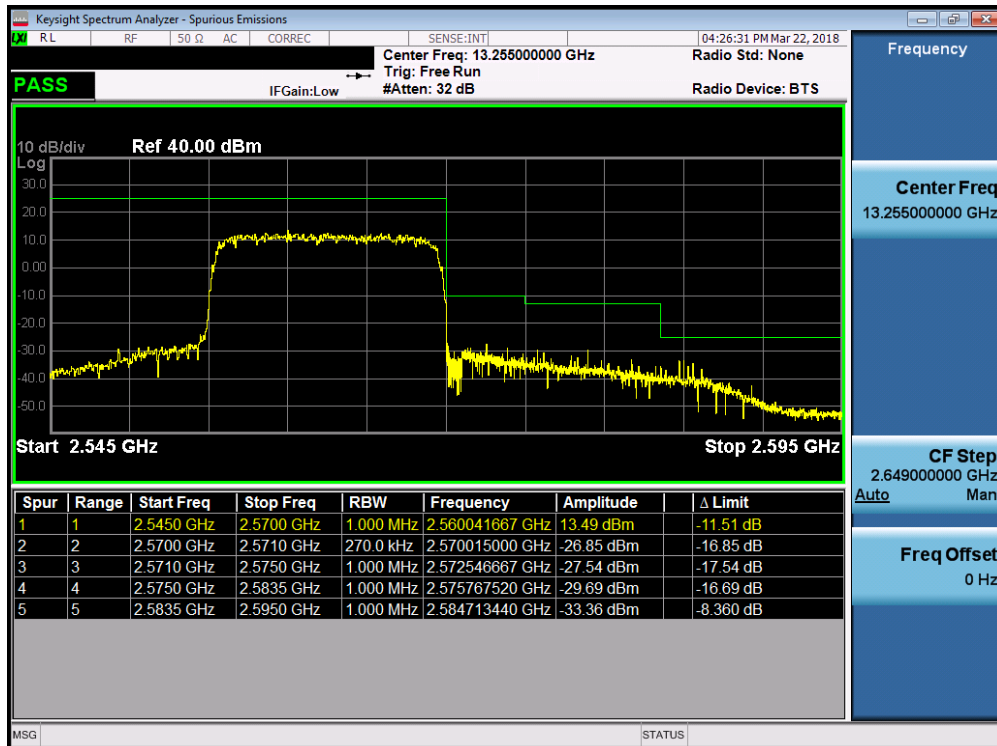


Plot 7-295. Upper ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 25)

FCC ID: ZNFG710TM			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset			Page 171 of 262

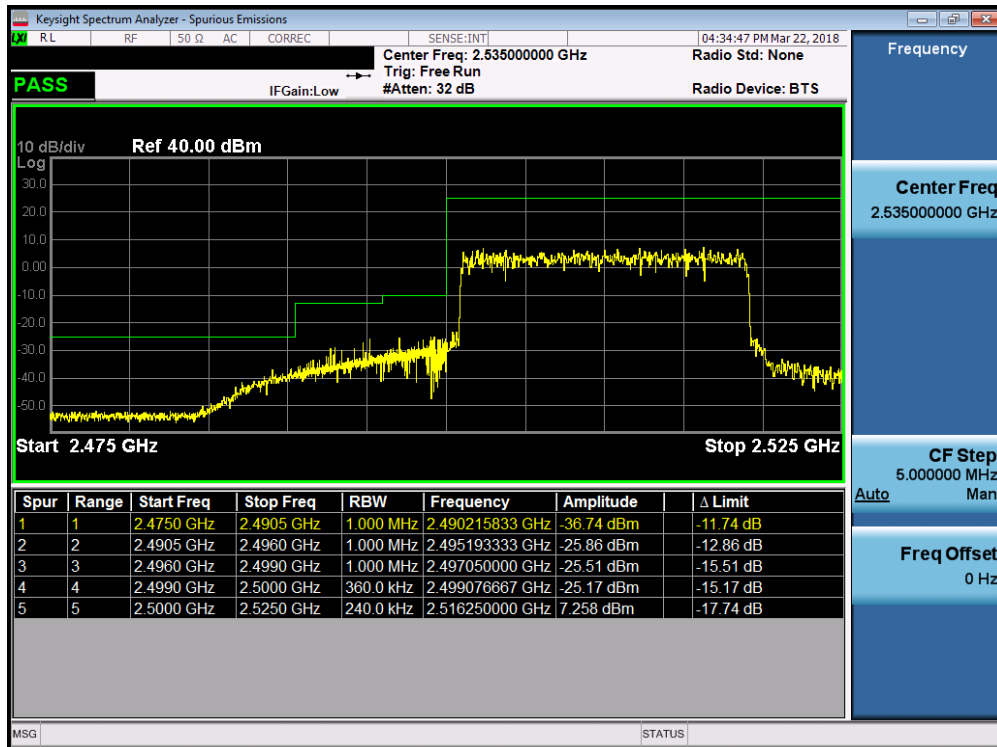


Plot 7-296. Lower ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 25)

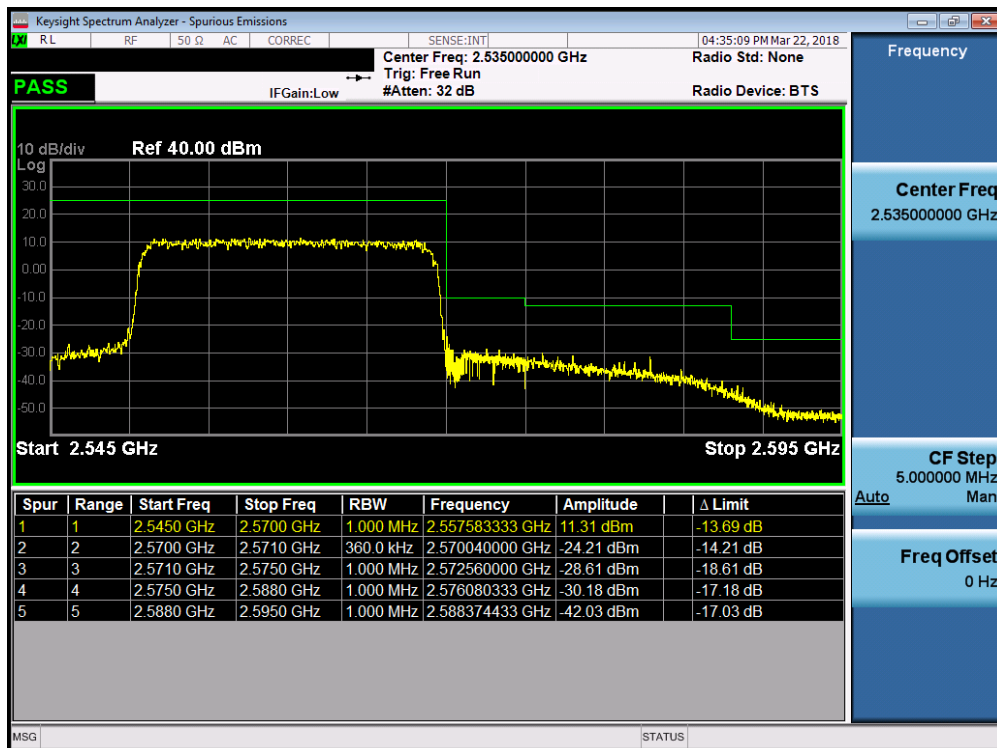


Plot 7-297. Upper ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 25)

FCC ID: ZNFG710TM			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset			Page 172 of 262



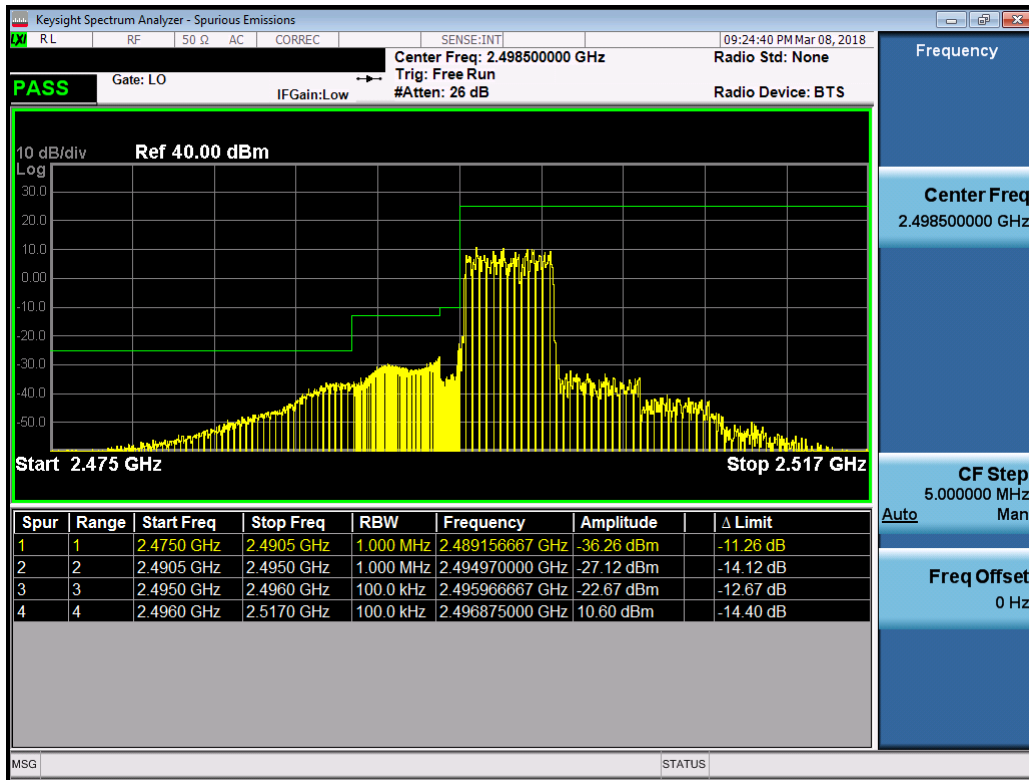
Plot 7-298. Lower ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 25)



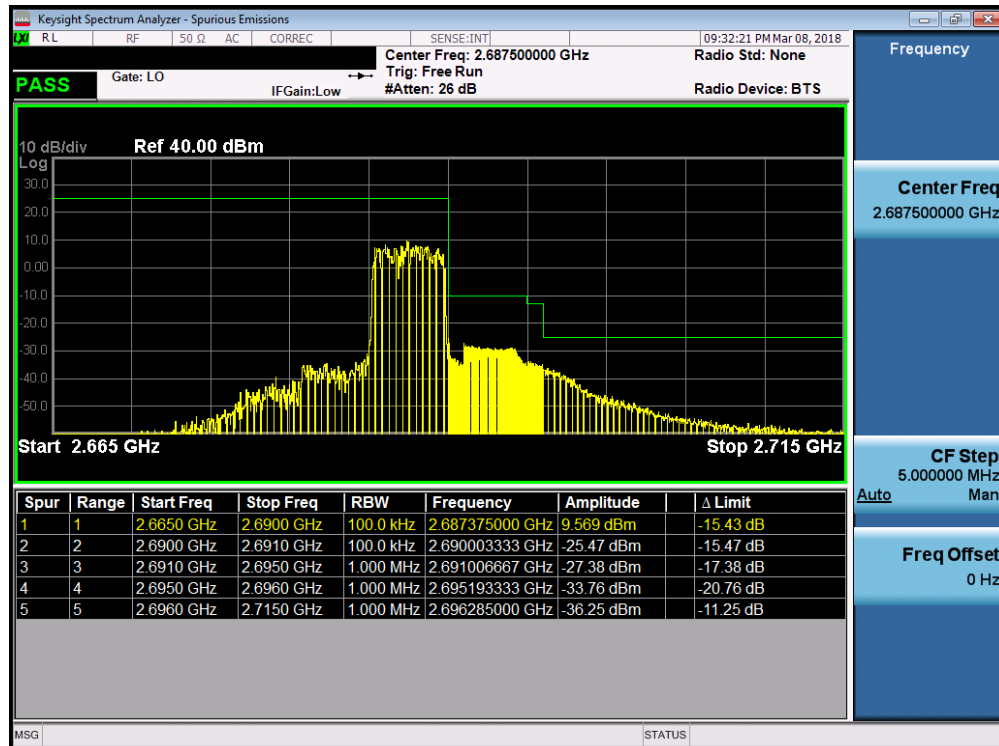
Plot 7-299. Upper ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 25)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 173 of 262	

Band 41

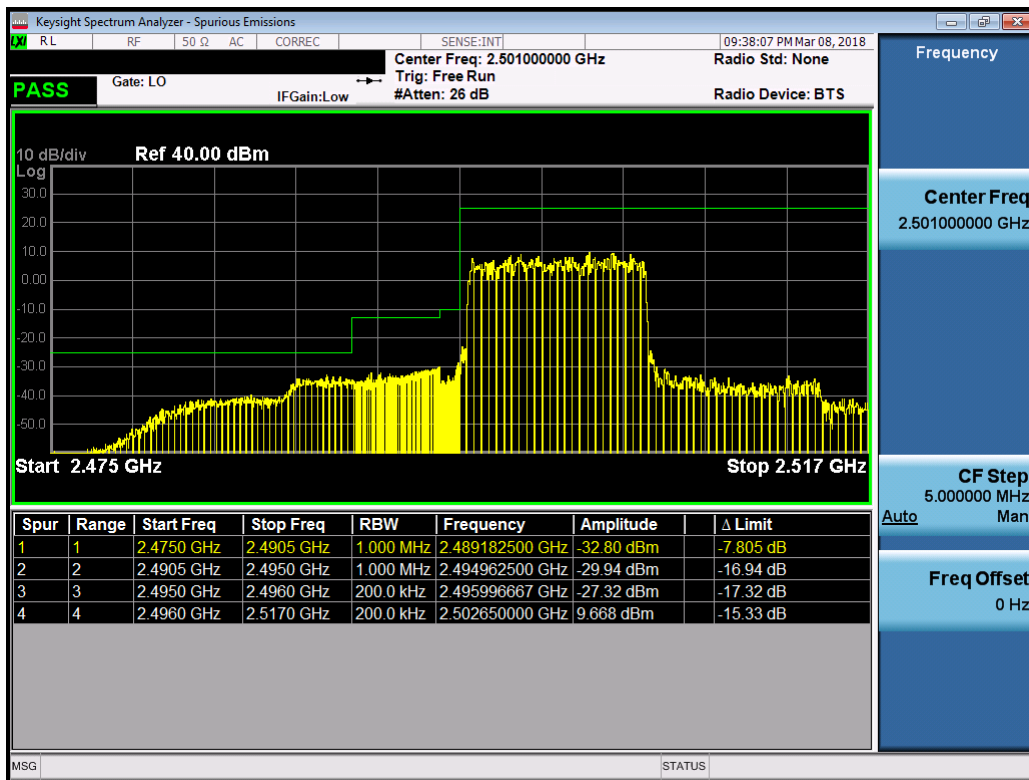


Plot 7-300. Lower ACP Plot at 2496 MHz (Band 41 - 5.0MHz QPSK - RB Size 25)

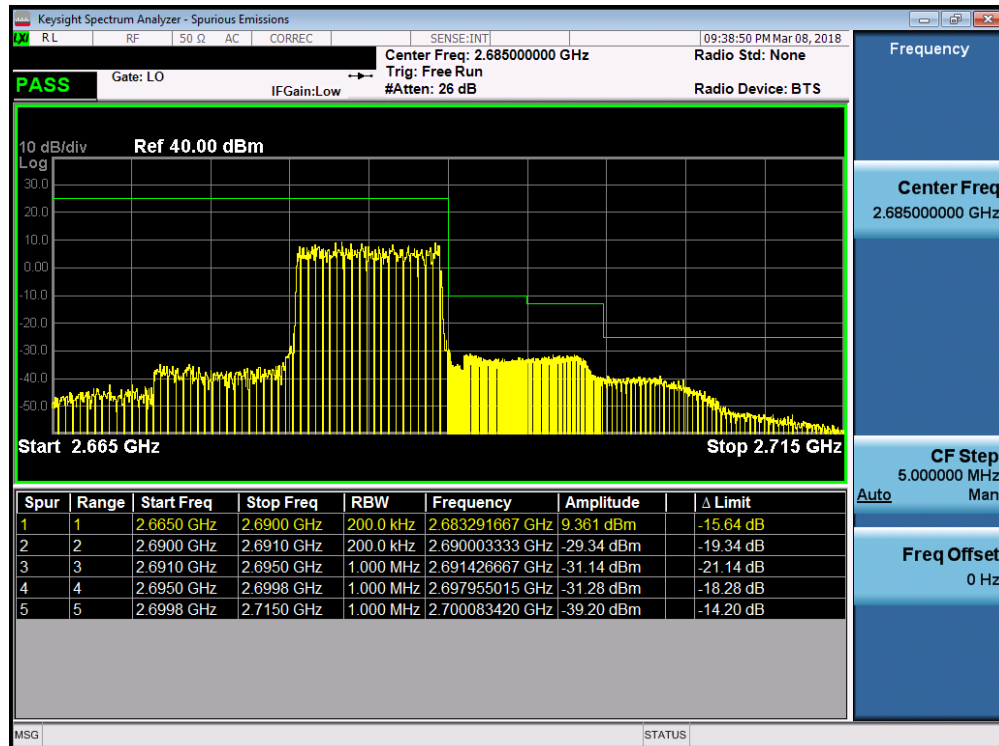


Plot 7-301. Upper ACP Plot (Band 41 - 5.0MHz QPSK - RB Size 25)

FCC ID: ZNFG710TM			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset			Page 174 of 262

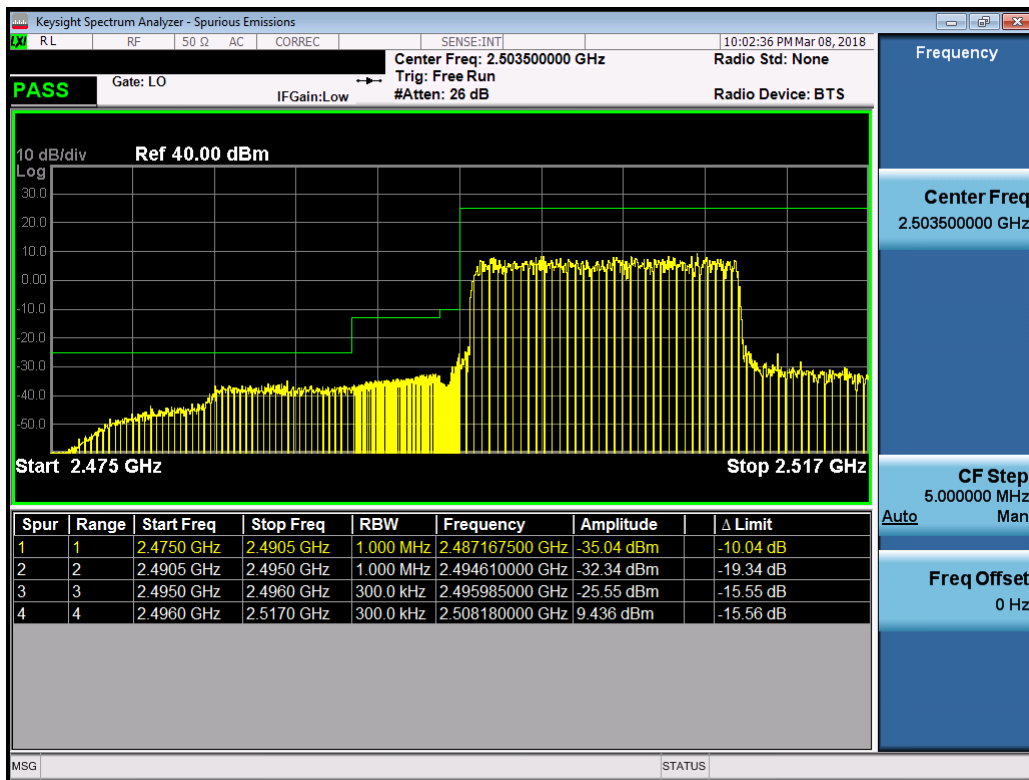


Plot 7-302. Lower ACP Plot at 2496 MHz (Band 41 - 10.0MHz QPSK - RB Size 25)

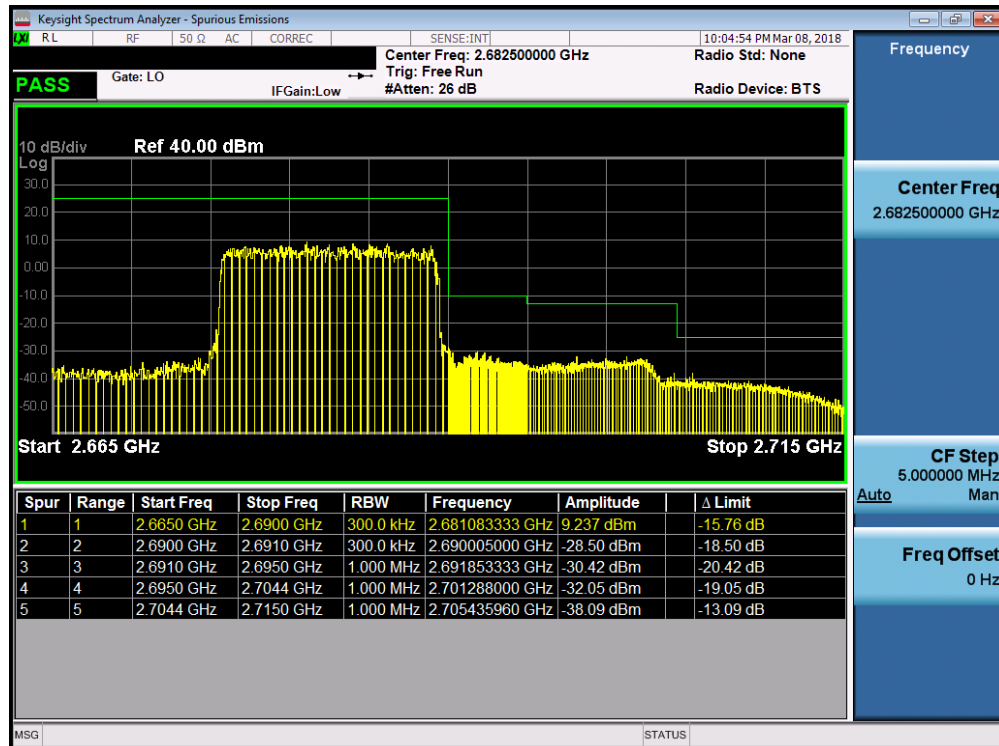


Plot 7-303. Upper ACP Plot (Band 41 - 10.0MHz QPSK - RB Size 25)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 175 of 262	

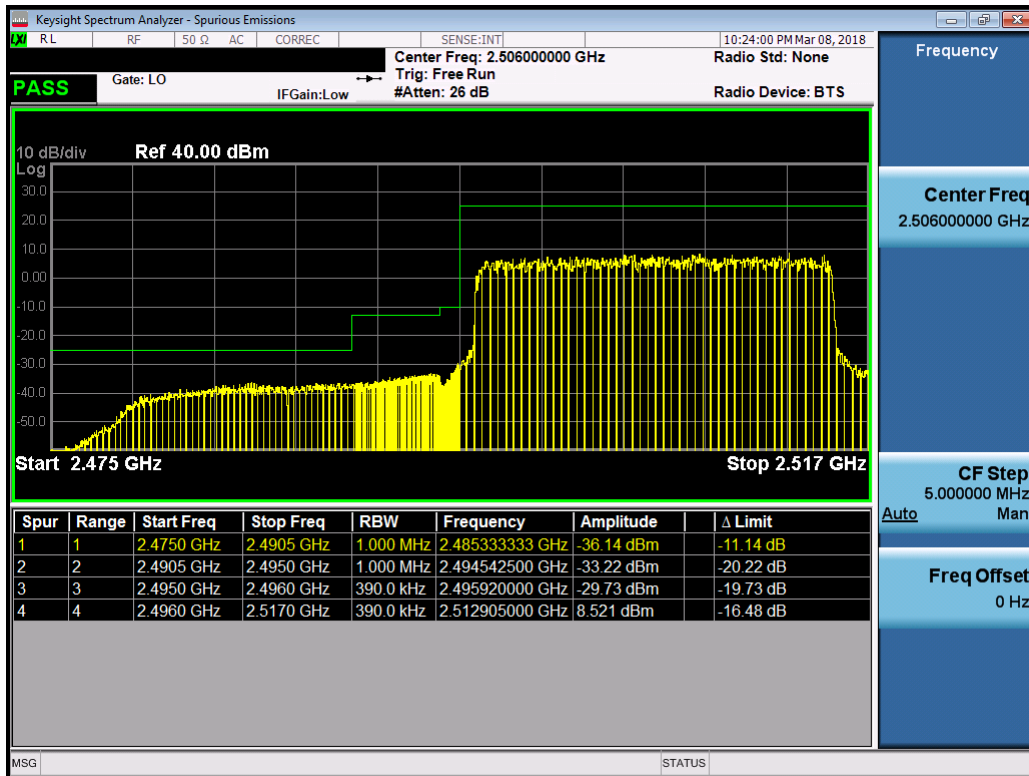


Plot 7-304. Lower ACP Plot at 2496 MHz (Band 41 - 15.0MHz QPSK - RB Size 25)

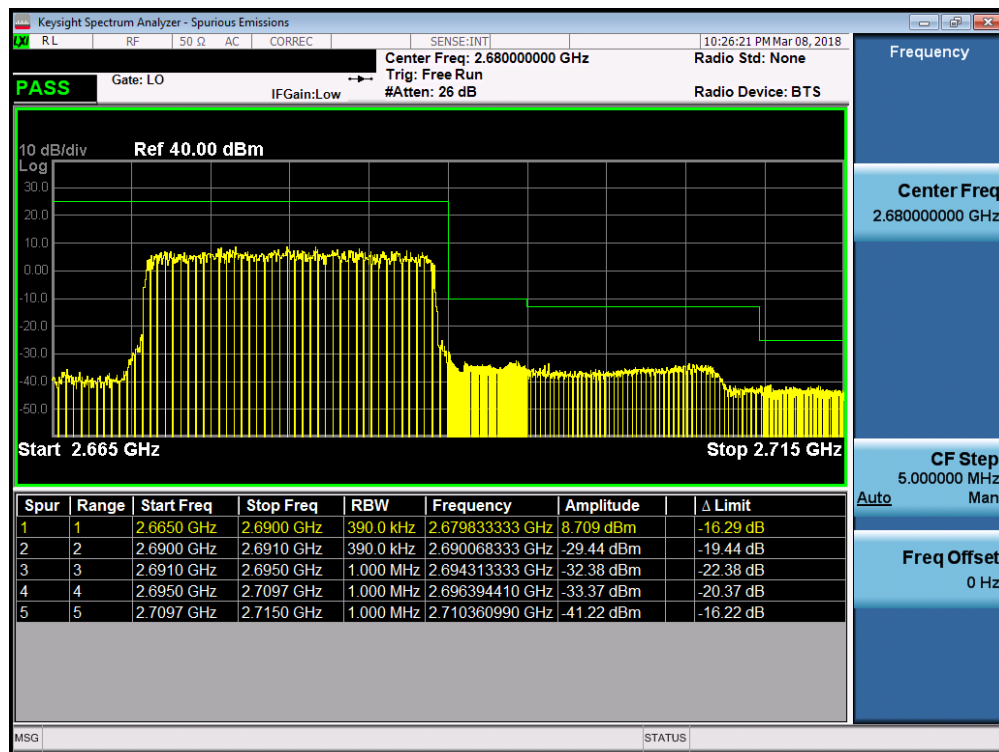


Plot 7-305. Upper ACP Plot (Band 41 - 15.0MHz QPSK - RB Size 25)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 176 of 262	



Plot 7-306. Lower ACP Plot at 2496 MHz (Band 41 - 20.0MHz QPSK - RB Size 25)



Plot 7-307. Upper ACP Plot (Band 41 - 20.0MHz QPSK - RB Size 25)

FCC ID: ZNFG710TM			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 177 of 262		

7.5 Peak-Average Ratio

24.232(d)

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.

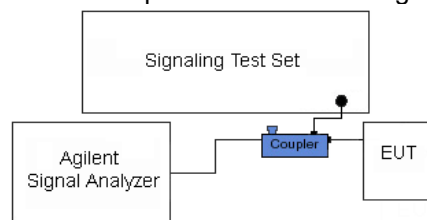


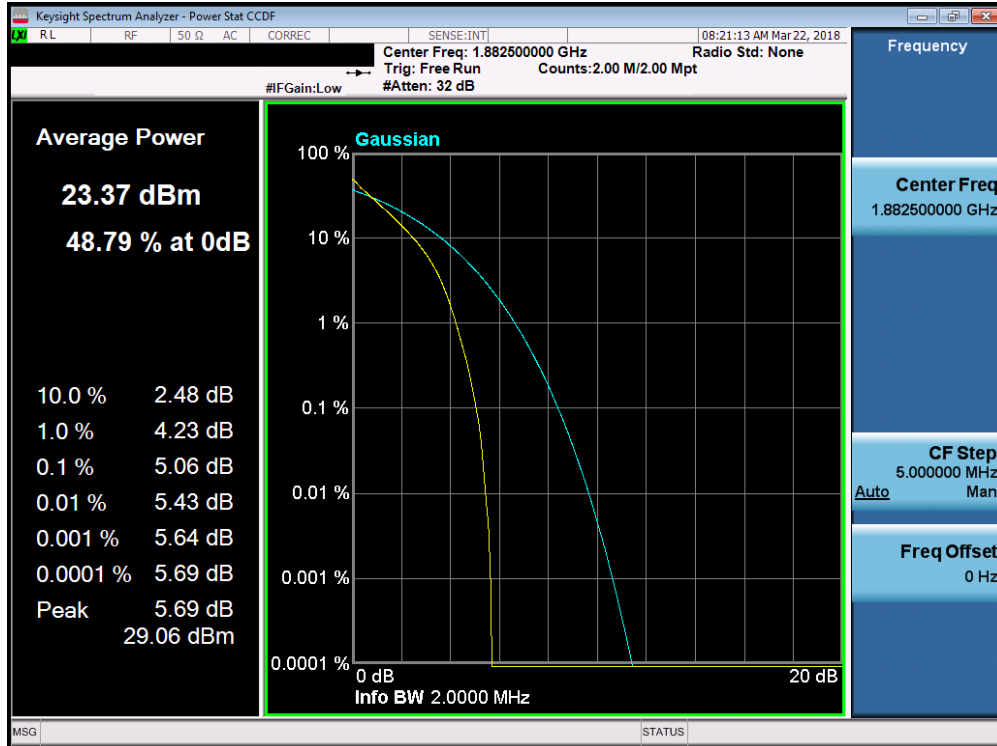
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

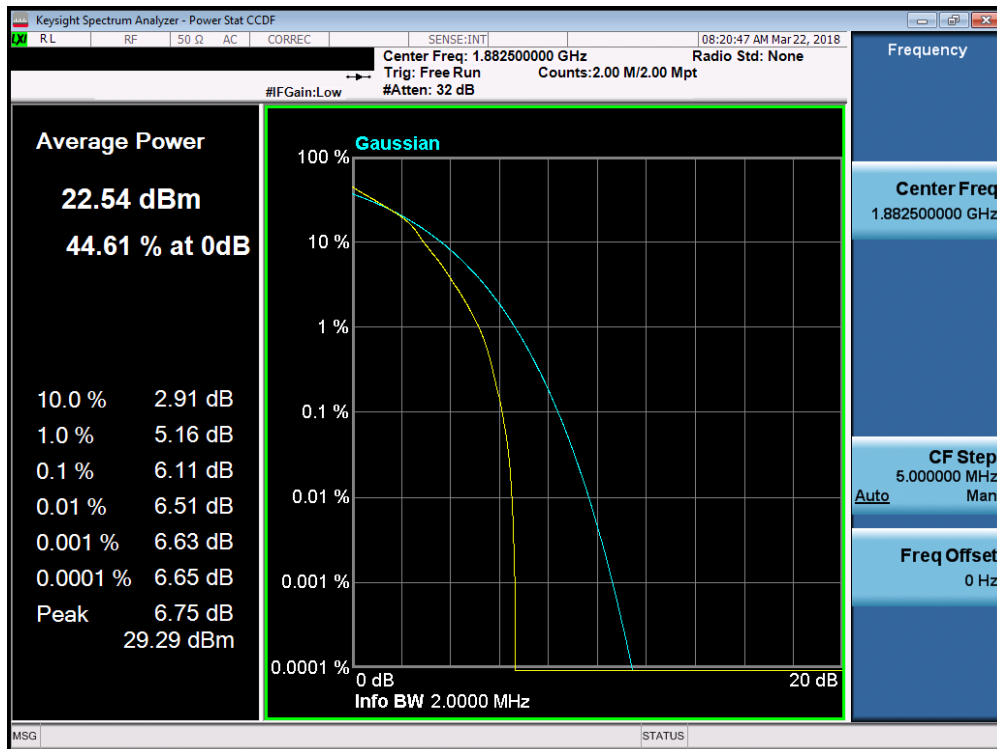
None.

FCC ID: ZNFG710TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 178 of 262

Band 25/2

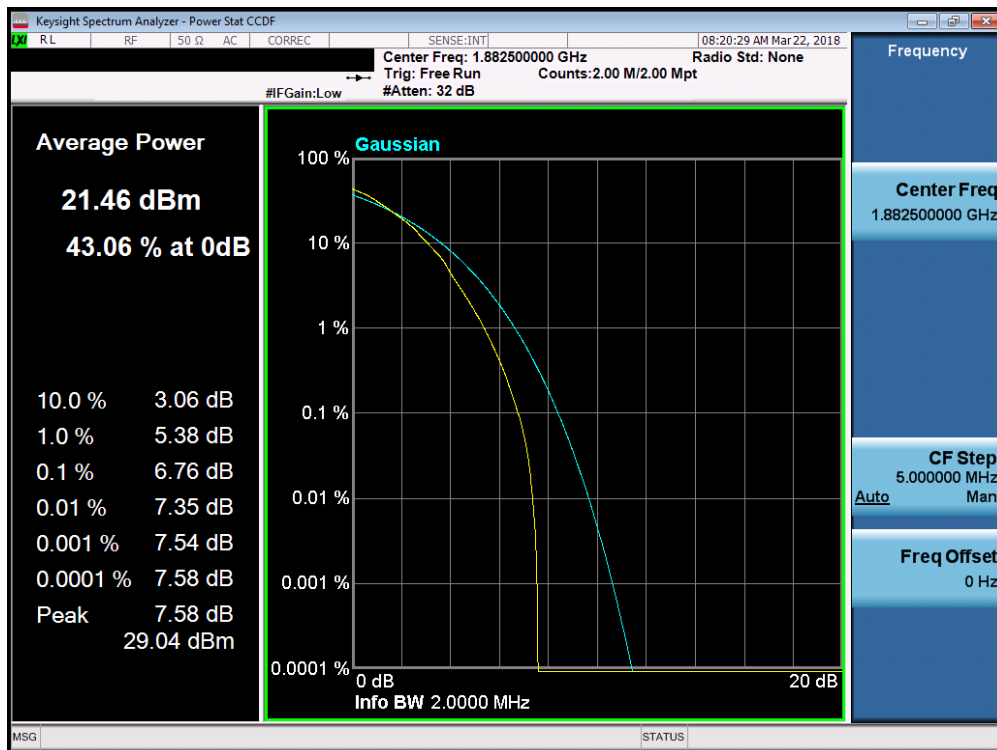


Plot 7-308. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

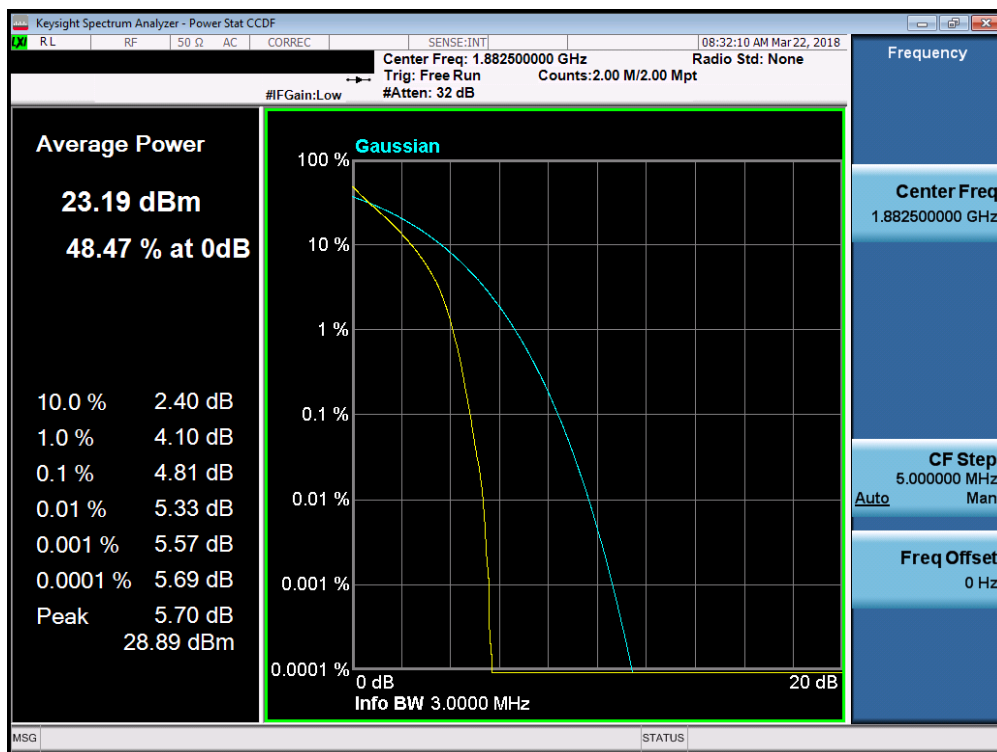


Plot 7-309. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 179 of 262

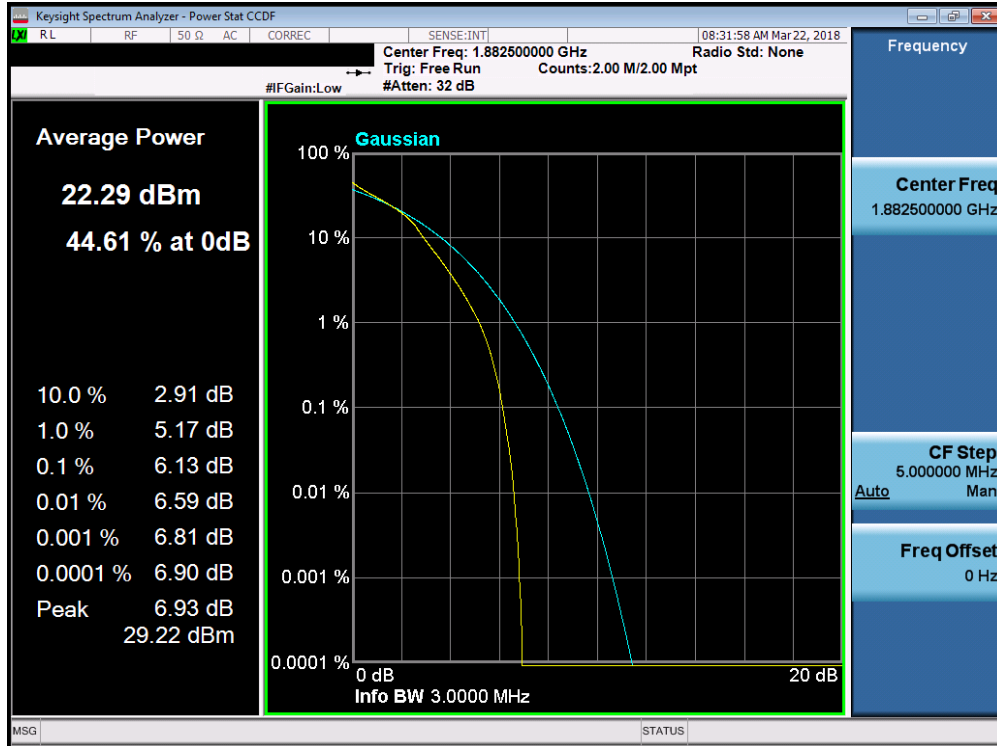


Plot 7-310. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

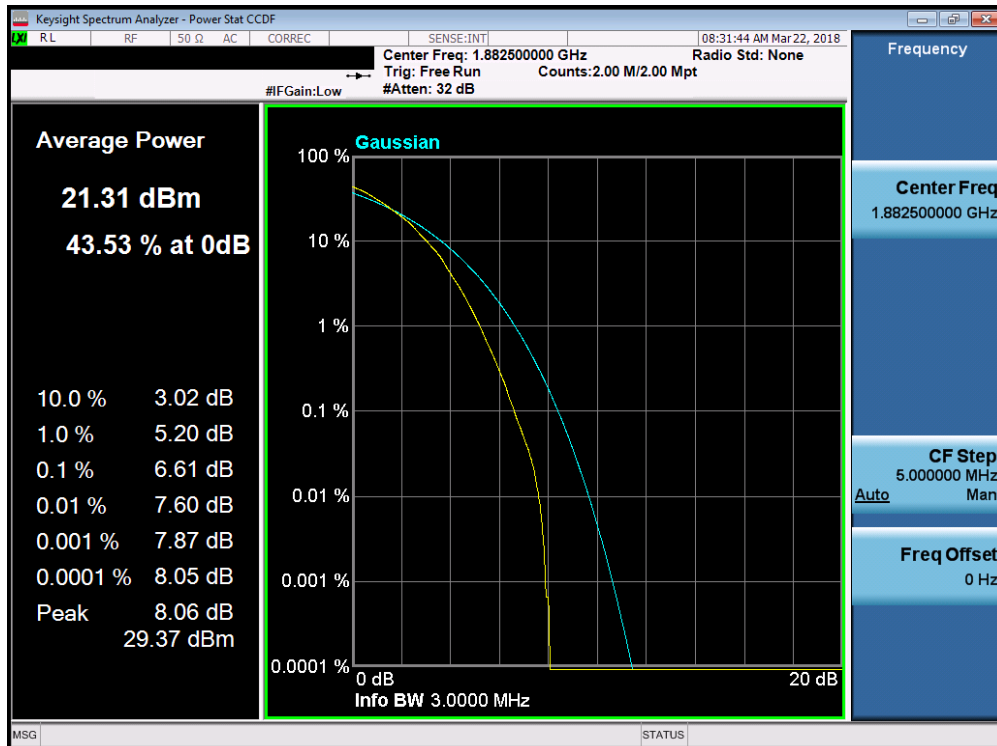


Plot 7-311. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 180 of 262

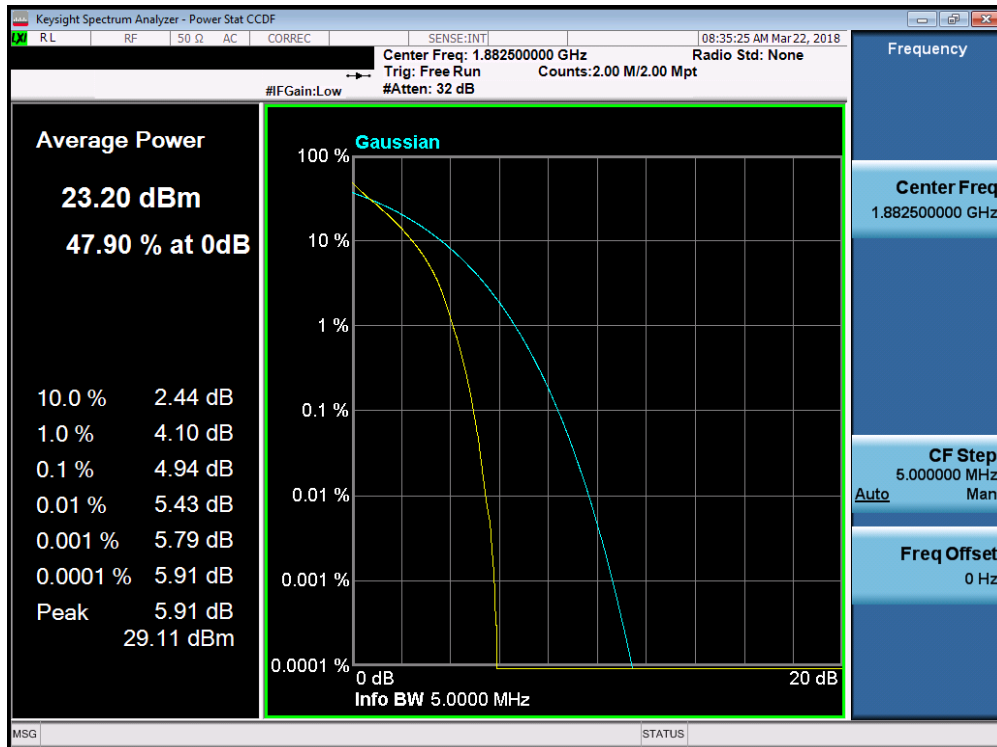


Plot 7-312. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

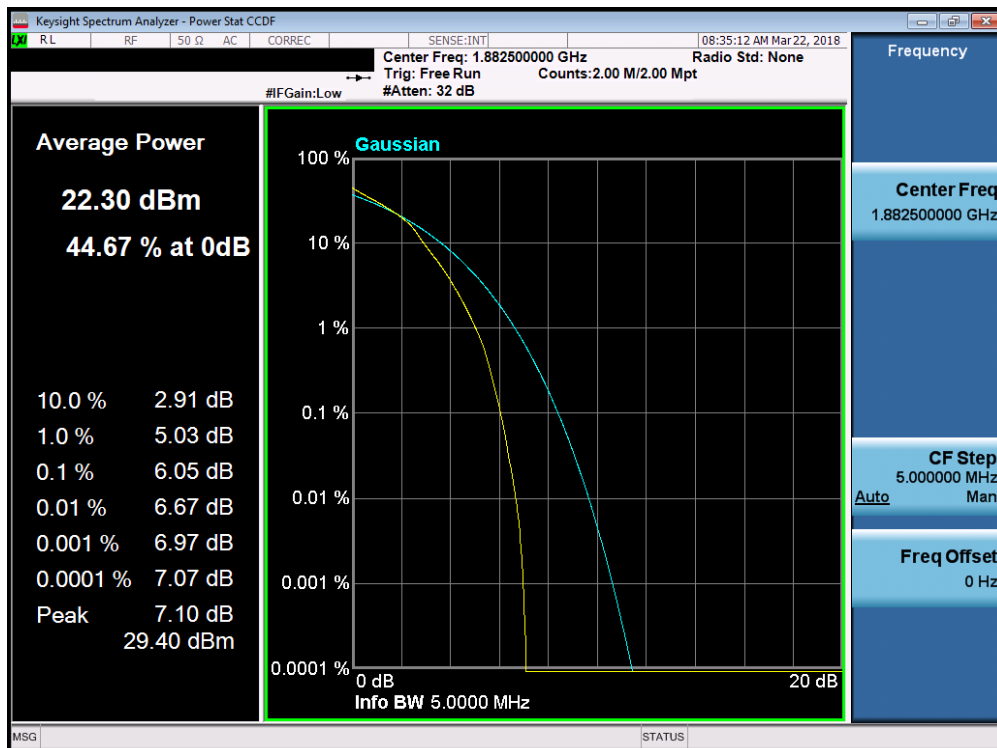


Plot 7-313. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 181 of 262

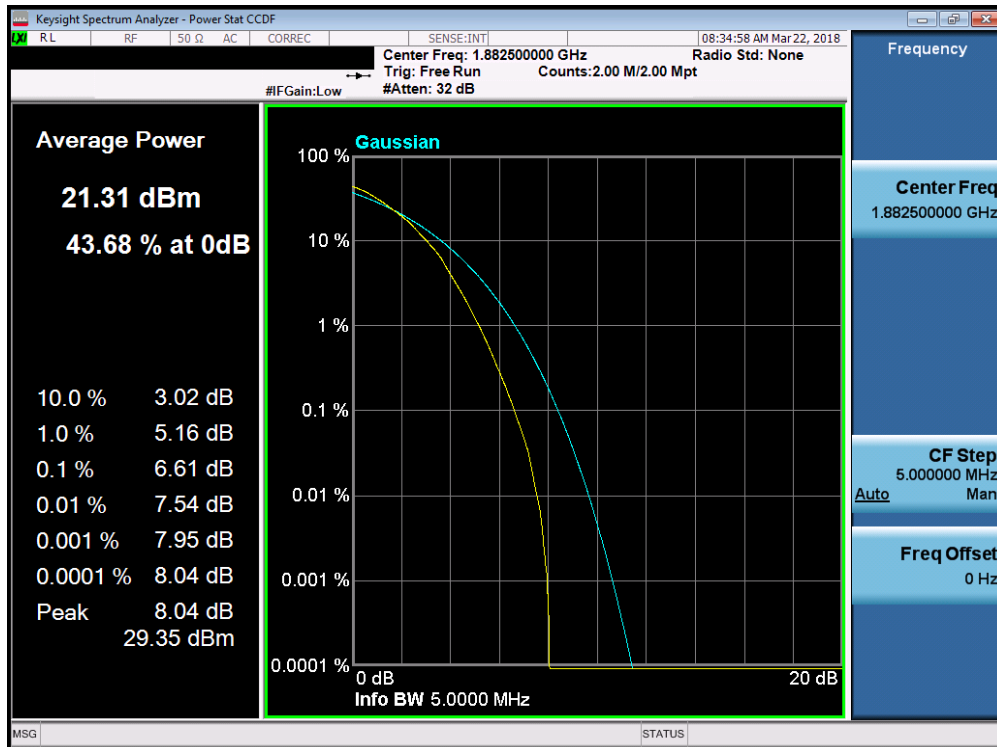


Plot 7-314. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

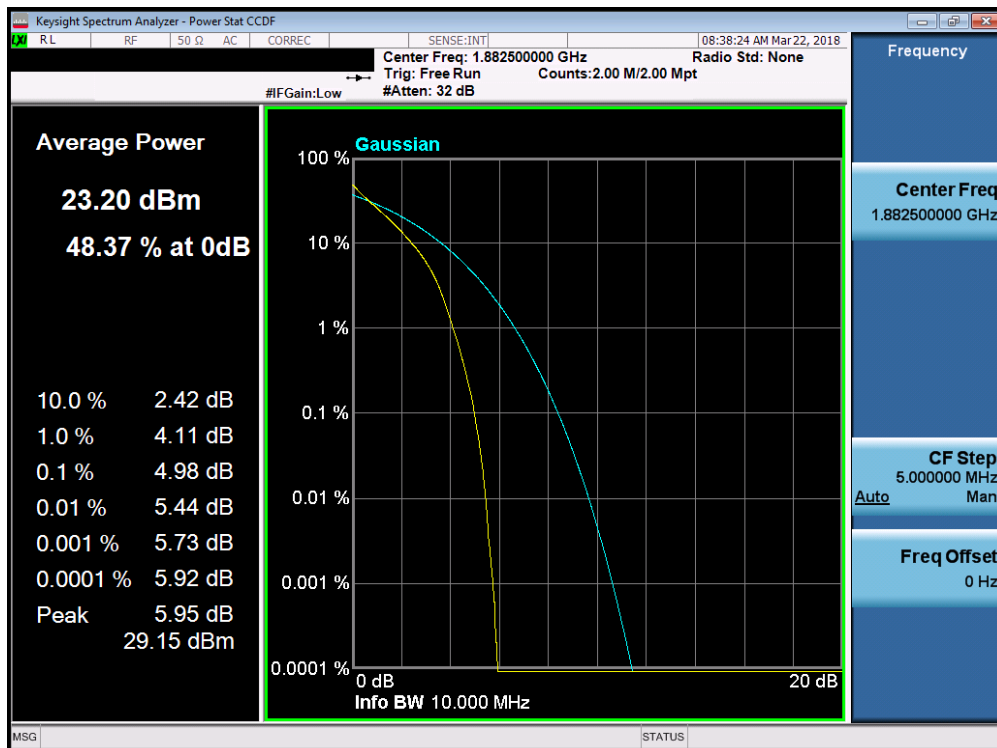


Plot 7-315. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 182 of 262

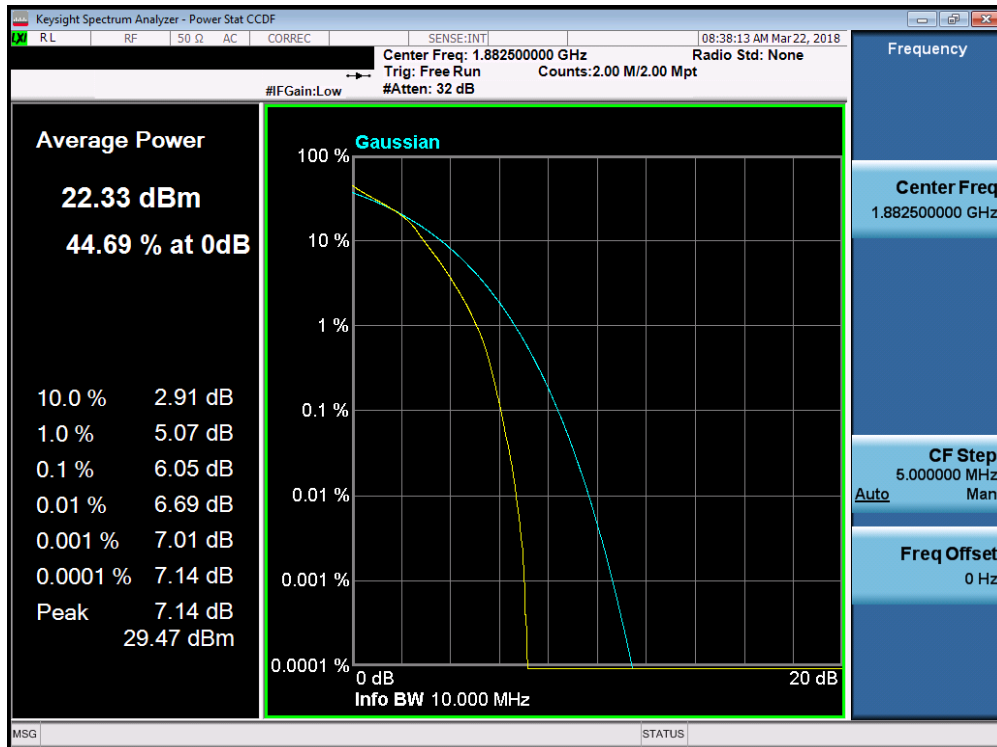


Plot 7-316. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

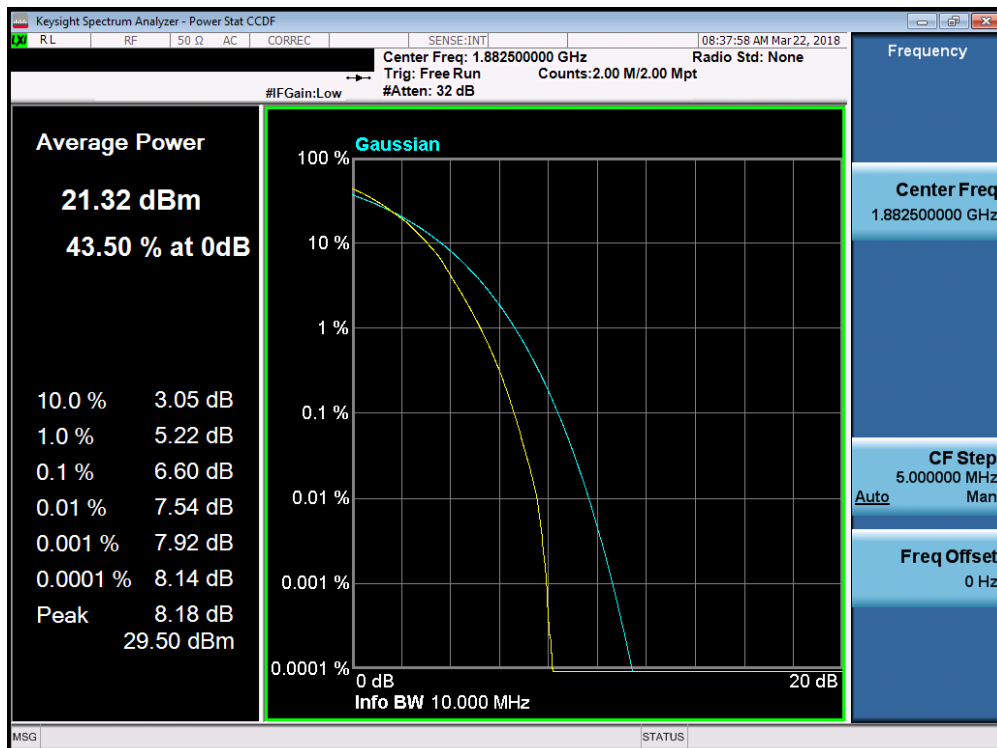


Plot 7-317. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 183 of 262

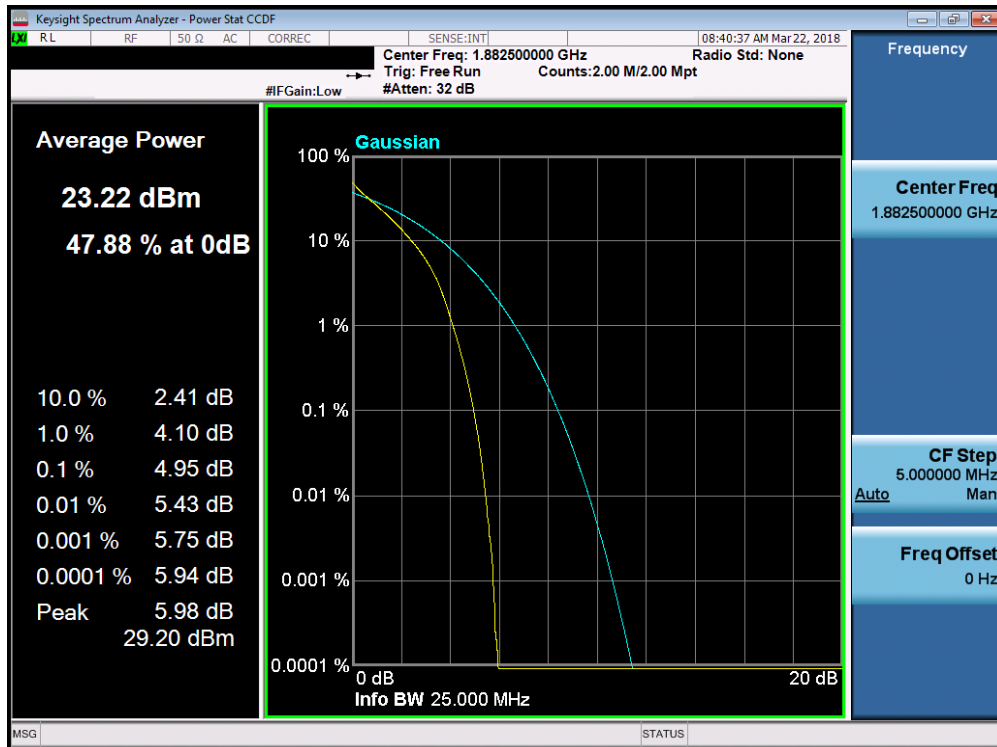


Plot 7-318. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

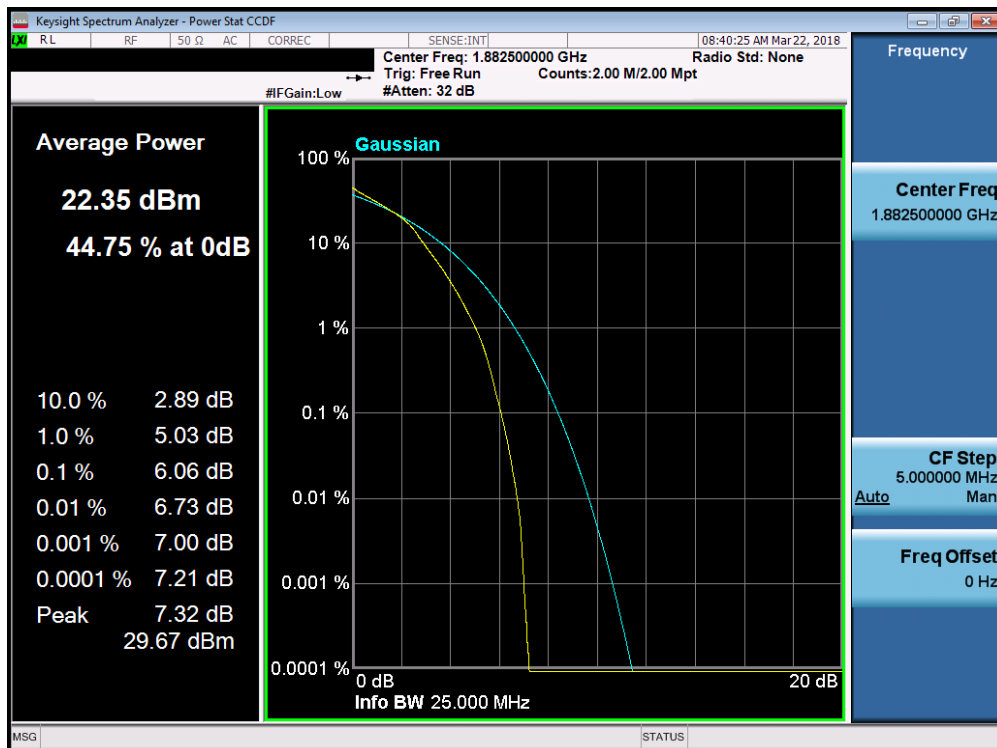


Plot 7-319. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 184 of 262

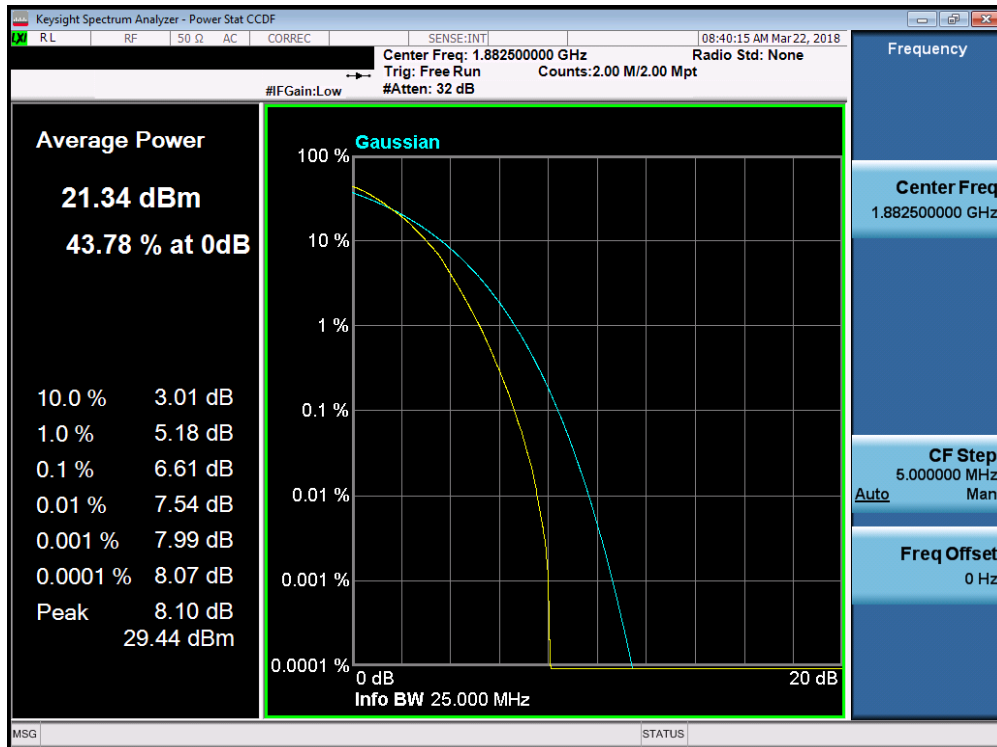


Plot 7-320. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

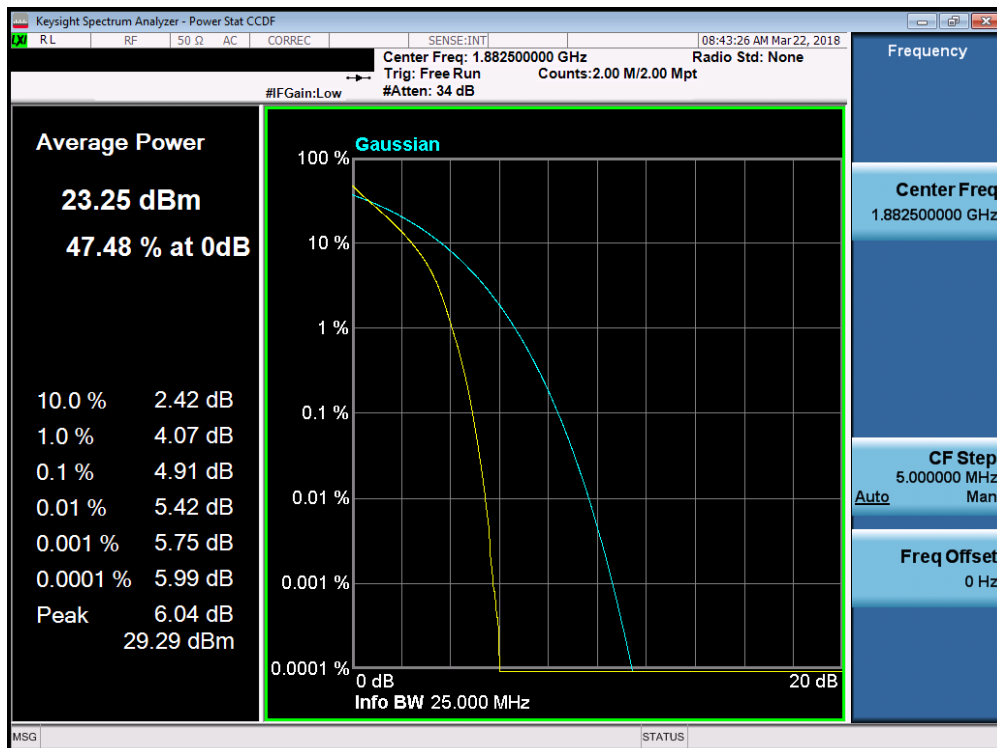


Plot 7-321. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 185 of 262

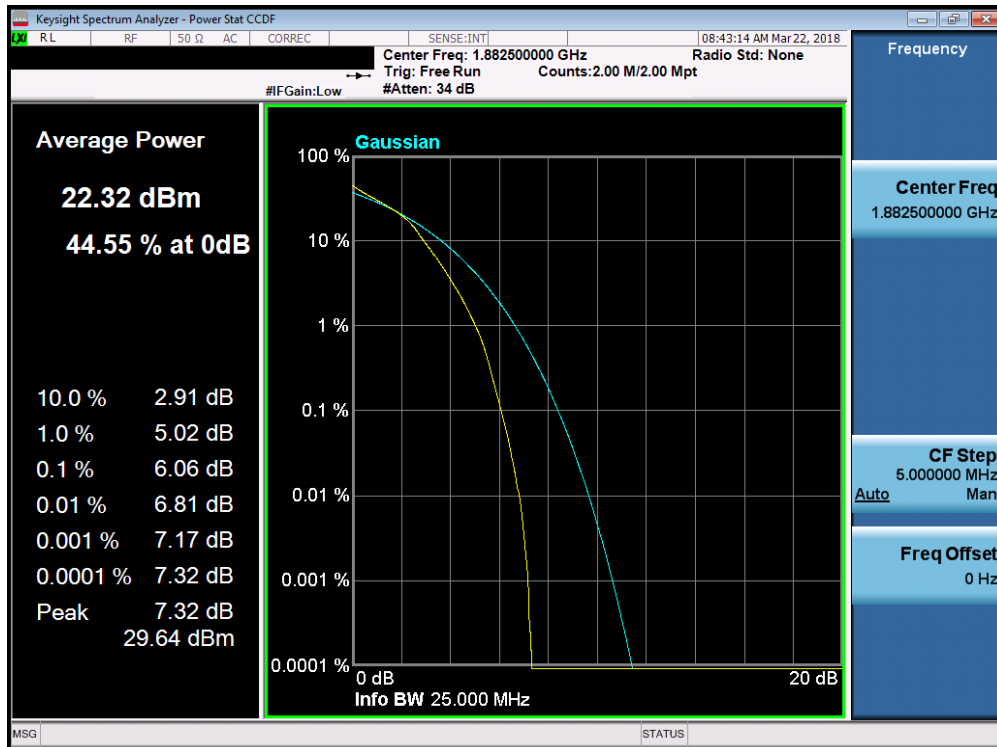


Plot 7-322. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

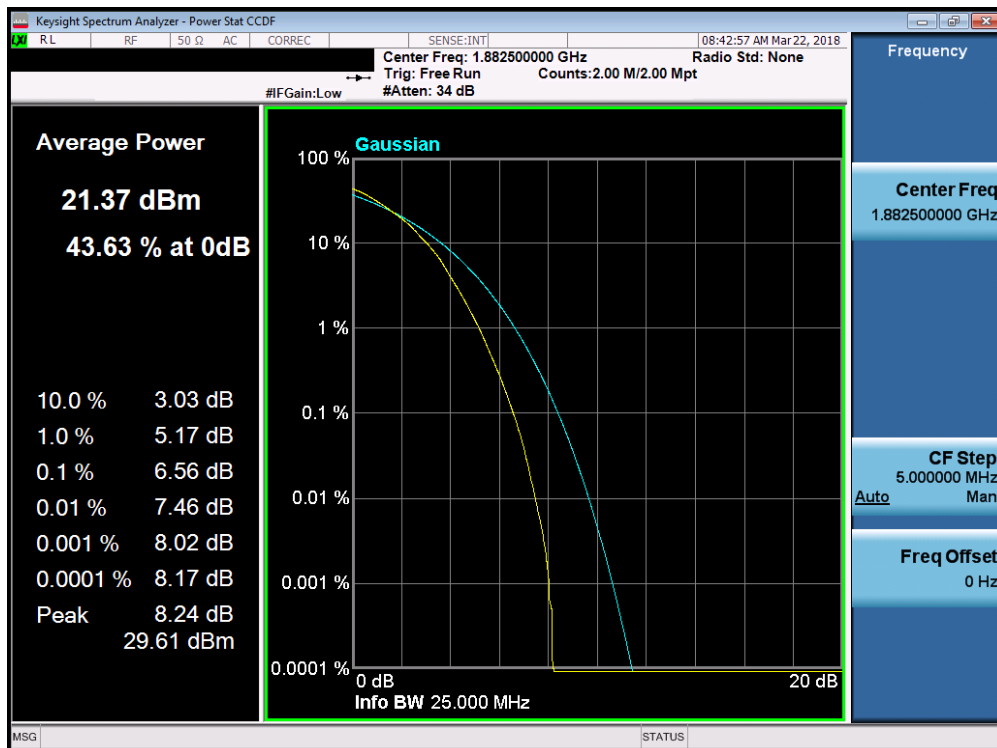


Plot 7-323. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 186 of 262



Plot 7-324. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-325. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 187 of 262

7.6 Uplink Carrier Aggregation

§27.53(m)

Test Overview

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

For Band 5, the minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P_{\text{Watts}})$.

Test Procedure Used

KDB 971168 D01 v03 – Section 6.0

Test Settings

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

Test Setup

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

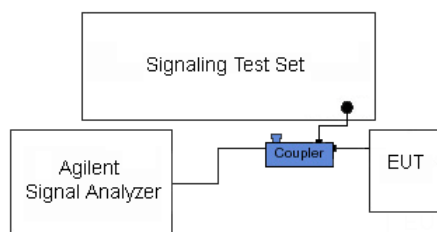


Figure 7-5. Test Instrument & Measurement Setup

FCC ID: ZNFG710TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 188 of 262

Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.
2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels (LTE CA-5B) using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-3 and 7-4 below, with both carriers set to transmit using 1RB.
3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

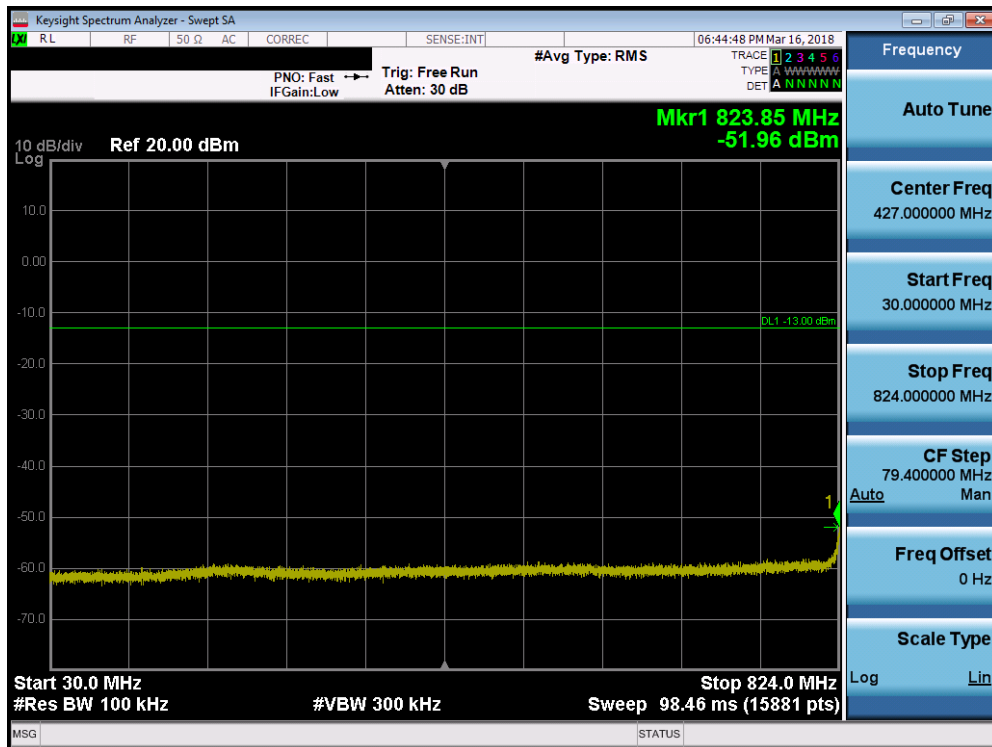
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	
Max	LTE B5	5	20425	826.50	QPSK	1	24	LTE B5	10	20497	833.7	QPSK	1	0	25.28
Max	LTE B5	5	20525	831.60	QPSK	1	24	LTE B5	10	20548	838.8	QPSK	1	0	25.23
Max	LTE B5	5	20625	836.8	QPSK	1	24	LTE B5	10	20600	844	QPSK	1	0	25.32
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	5	20522	836.20	QPSK	1	0	25.12
Max	LTE B5	10	20600	831.6	QPSK	1	49	LTE B5	5	20548	838.80	QPSK	1	0	25.29
Max	LTE B5	10	20550	839	QPSK	1	49	LTE B5	5	20622	846.2	QPSK	1	0	25.25
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.11
Max	LTE B5	10	20600	831.6	QPSK	1	49	LTE B5	10	20575	841.5	QPSK	1	0	25.33
Max	LTE B5	10	20501	834.1	QPSK	1	49	LTE B5	10	20600	844	QPSK	1	0	25.31

Table 7-3. Conducted Powers (B5 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

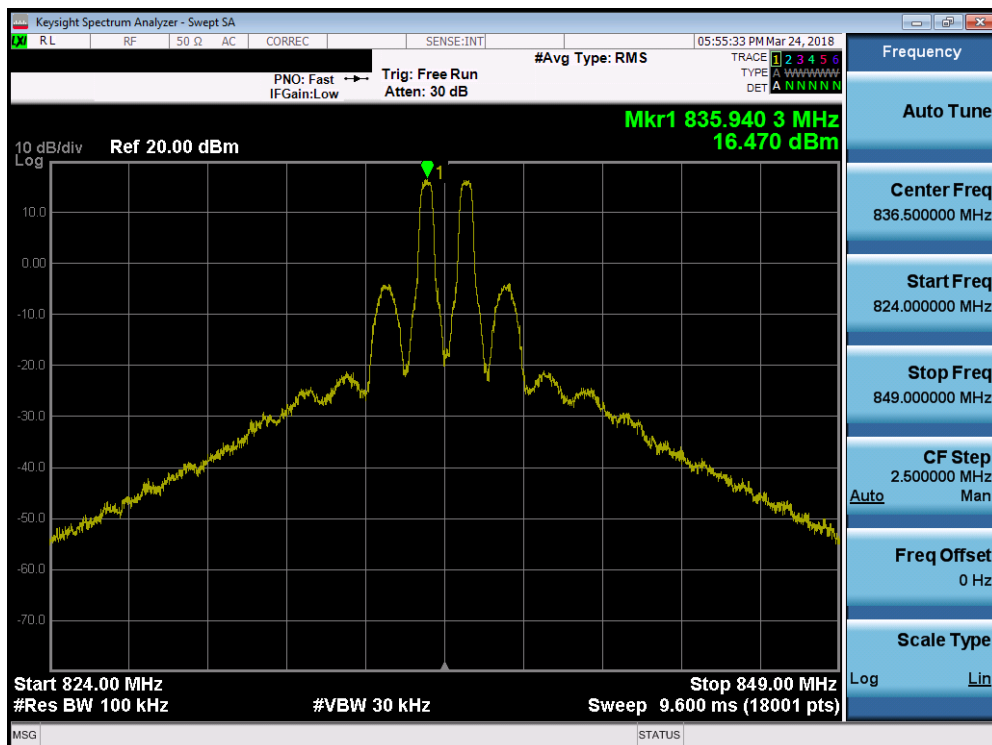
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	
Max	LTE B5	10	20450	829	QPSK	1	0	LTE B5	10	20549	838.9	QPSK	1	49	25.04
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.11
Max	LTE B5	10	20450	829	QPSK	50	0	LTE B5	10	20549	838.9	QPSK	50	0	23.58
Max	LTE B5	10	20450	829	16-QAM	50	0	LTE B5	10	20549	838.9	16-QAM	50	0	22.70
Max	LTE B5	10	20450	829	64-QAM	50	0	LTE B5	10	20549	838.9	64-QAM	50	0	21.61

Table 7-4. Conducted Powers (B5 with Various Combinations for 10MHz Channel Bandwidth)

FCC ID: ZNFG710TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 189 of 262

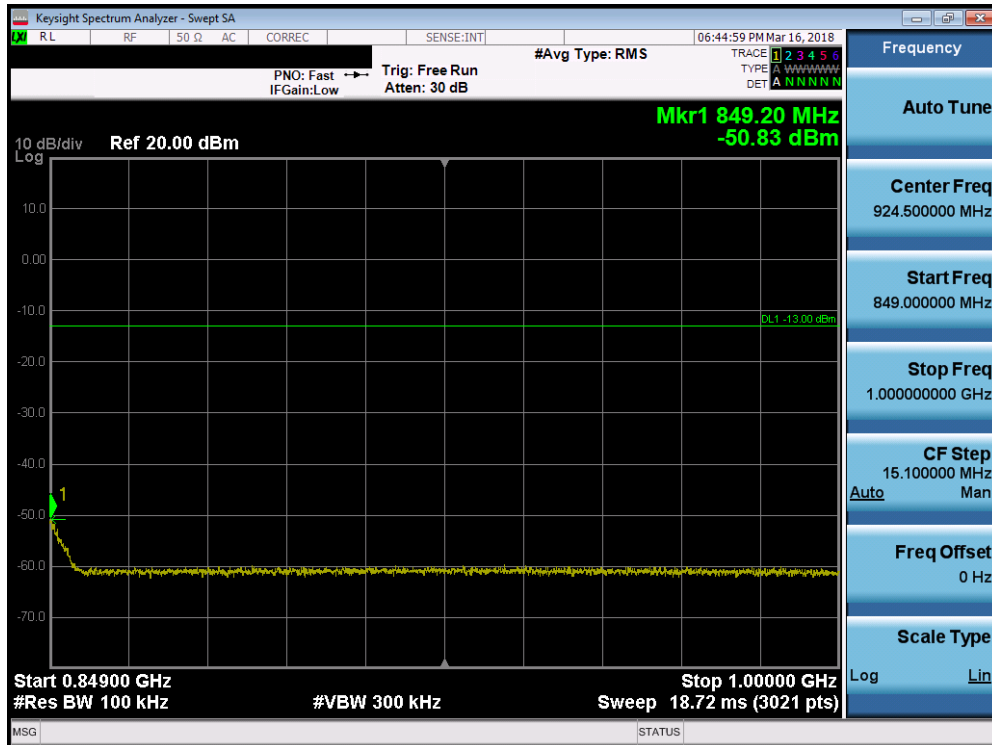


Plot 7-326. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

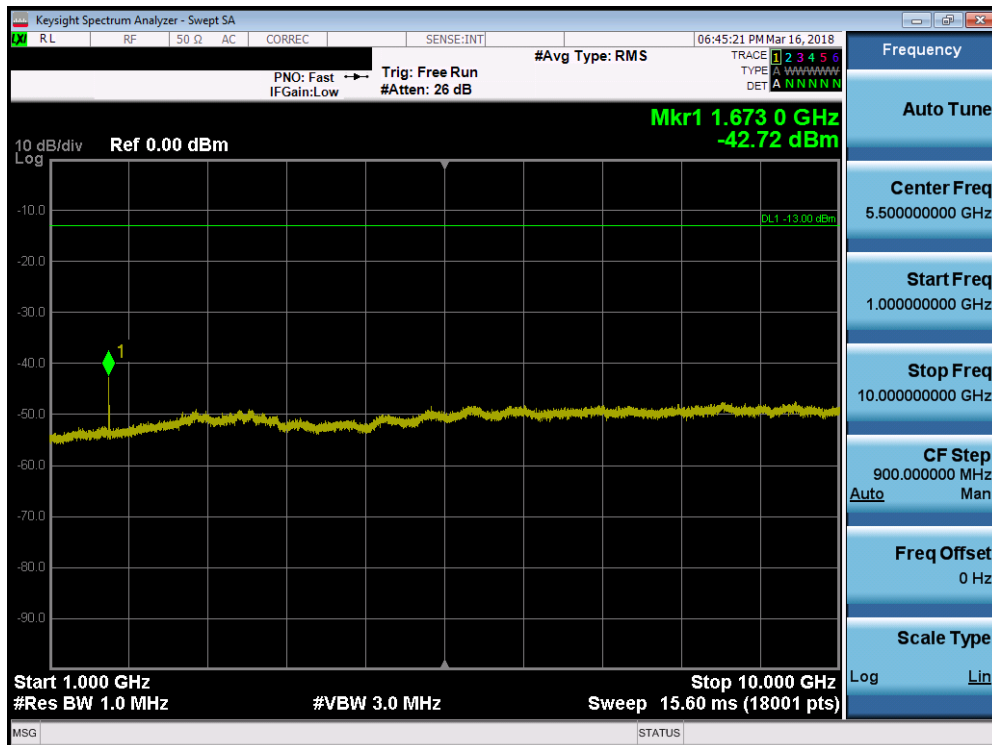


Plot 7-327. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 190 of 262	

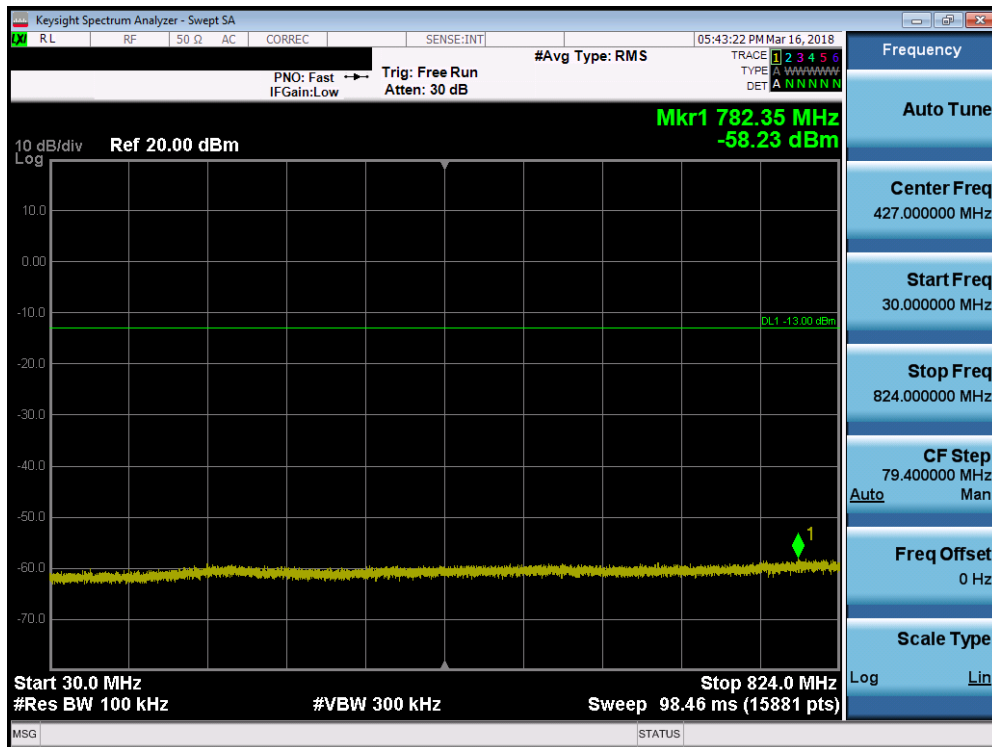


Plot 7-328. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

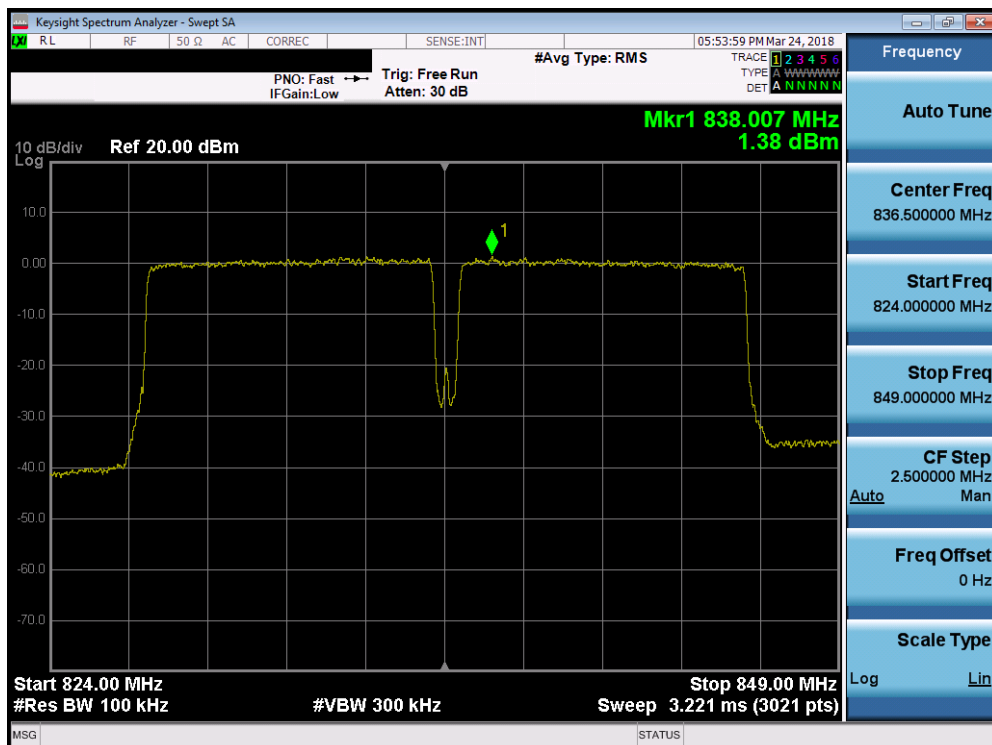


Plot 7-329. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 191 of 262

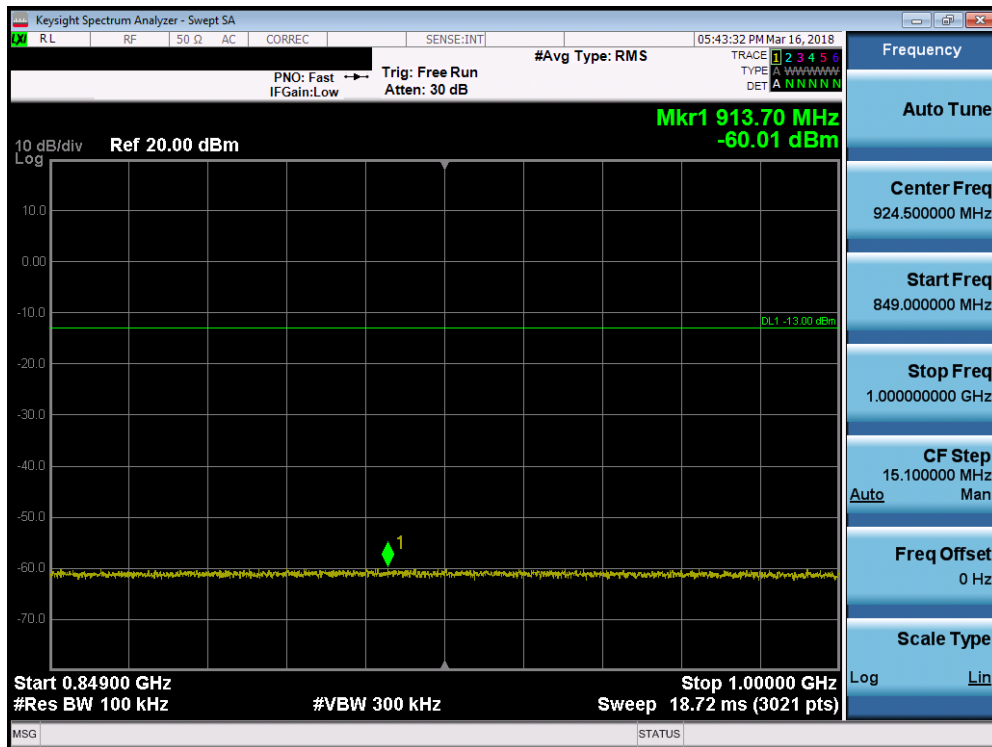


Plot 7-330. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

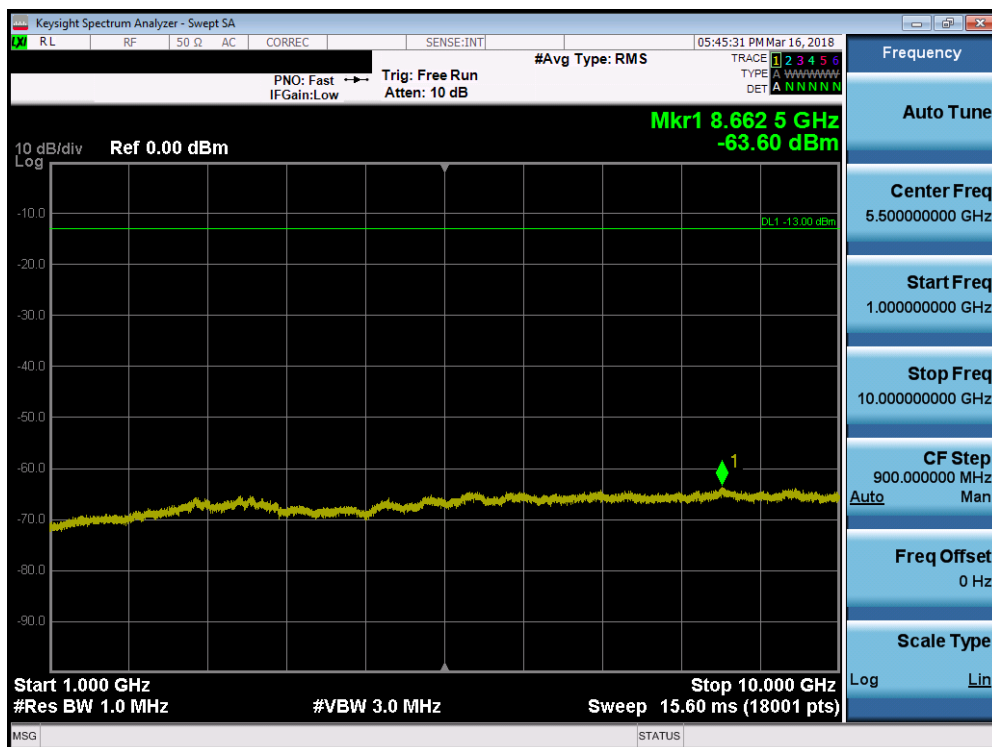


Plot 7-331. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 192 of 262

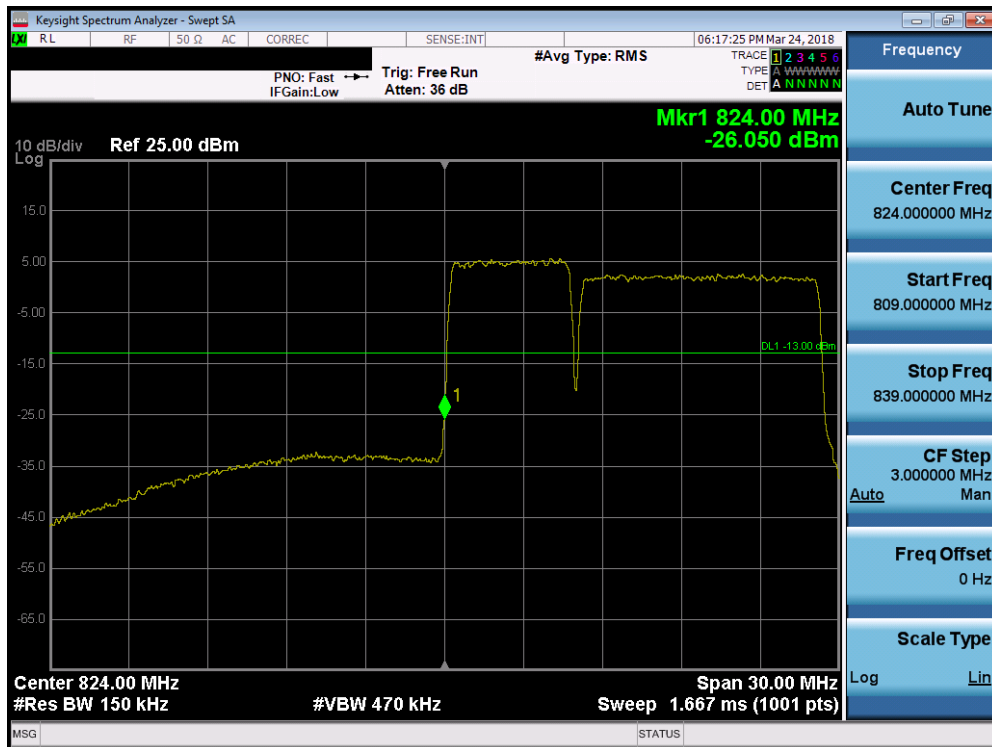


Plot 7-332. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

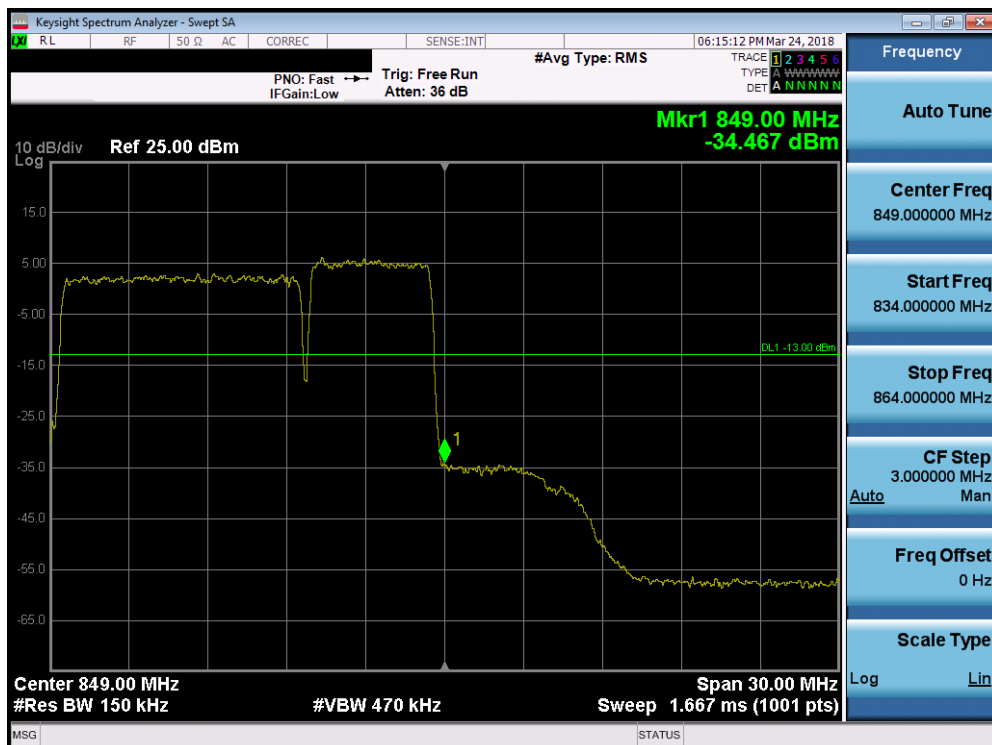


Plot 7-333. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

FCC ID: ZNFG710TM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 193 of 262

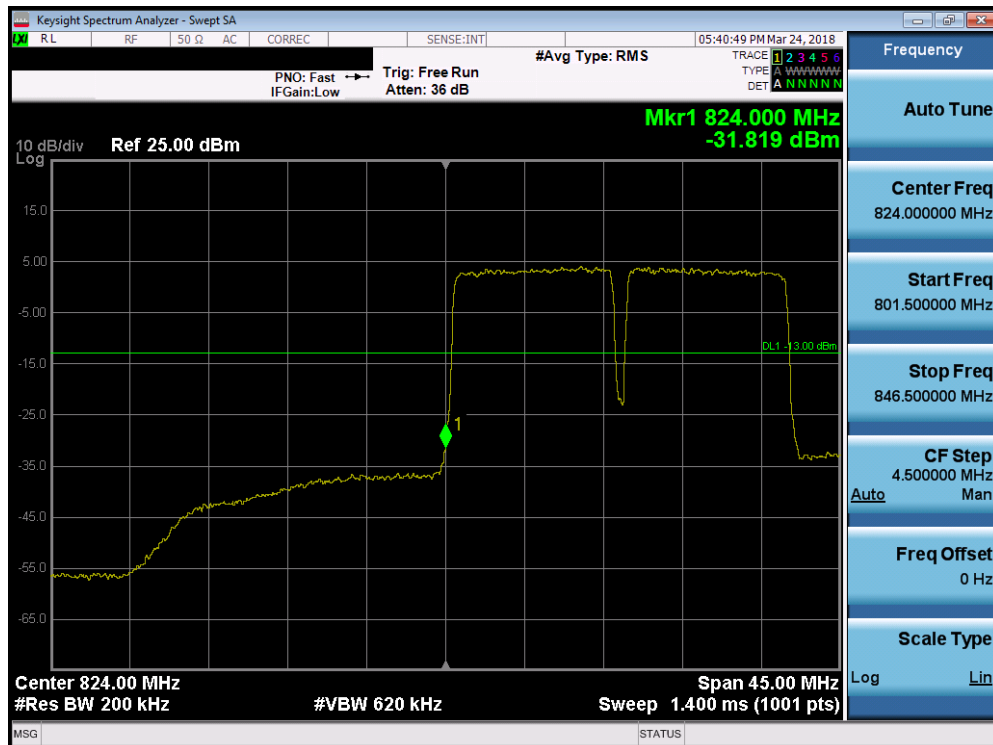


Plot 7-334. Lower Band Edge Plot (Band 5 - QPSK – PCC:5 MHz SCC:10 MHz – Full RB)

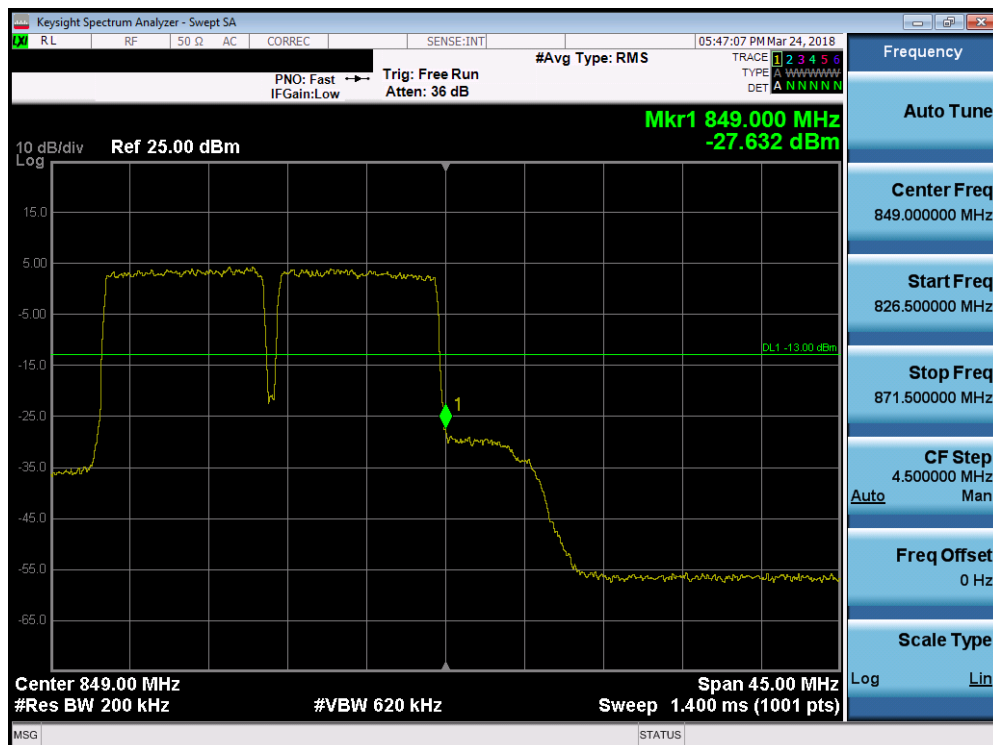


Plot 7-335. Upper Band Edge Plot (Band 5 - QPSK – PCC:10 MHz SCC:5 MHz – Full RB)

FCC ID: ZNFG710TM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset	Page 194 of 262



Plot 7-336. Lower Band Edge Plot (Band 5 - QPSK - PCC:10 MHz SCC:10 MHz - Full RB)



Plot 7-337. Upper Band Edge Plot (Band 5 - QPSK - PCC:10 MHz SCC:10 MHz - Full RB)

FCC ID: ZNFG710TM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 195 of 262

7.7 Radiated Power (ERP/EIRP)

§22.913(a)(2) §24.232(c.2) §27.50(h)(2) §27.50(b)(10) §27.50(c)(10) §27.50(d)(4) §27.50(a)(3)

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

FCC ID: ZNFG710TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1.ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 196 of 262

Test Setup

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

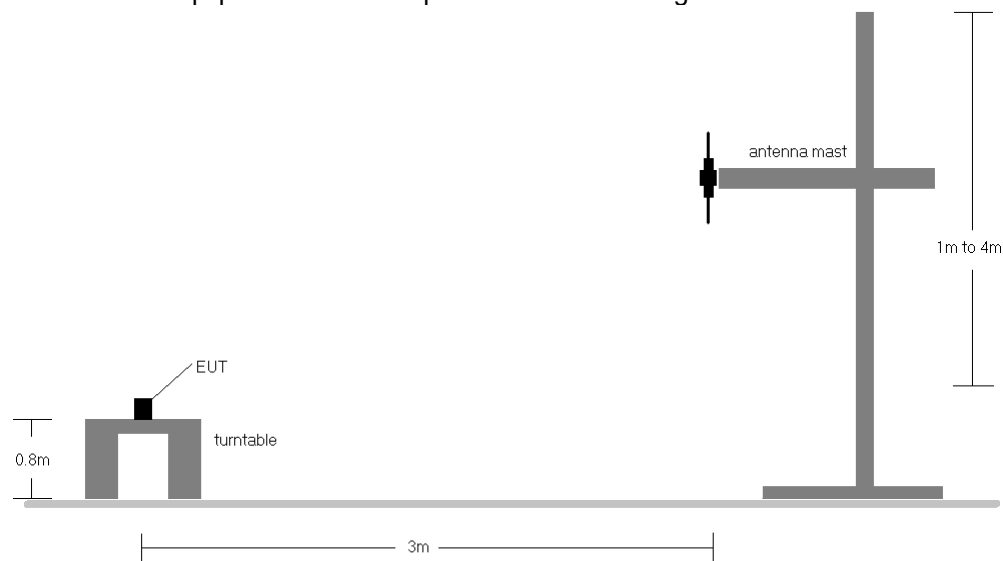


Figure 7-6. Radiated Test Setup <1GHz

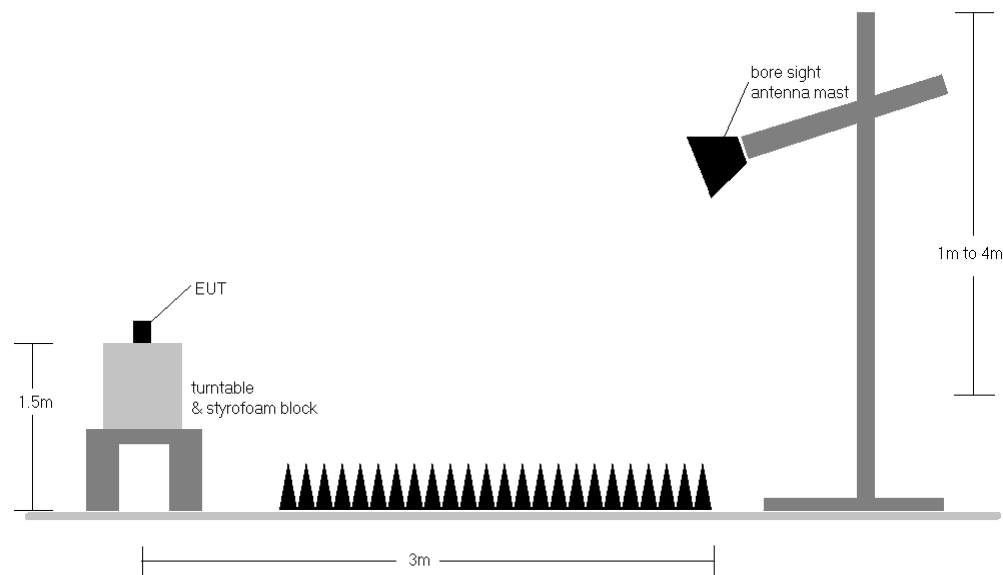


Figure 7-7. Radiated Test Setup >1GHz

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: ZNFG710TM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1802260030-03-R1-ZNF	Test Dates: 2/27-3/27/2018	EUT Type: Portable Handset		Page 197 of 262