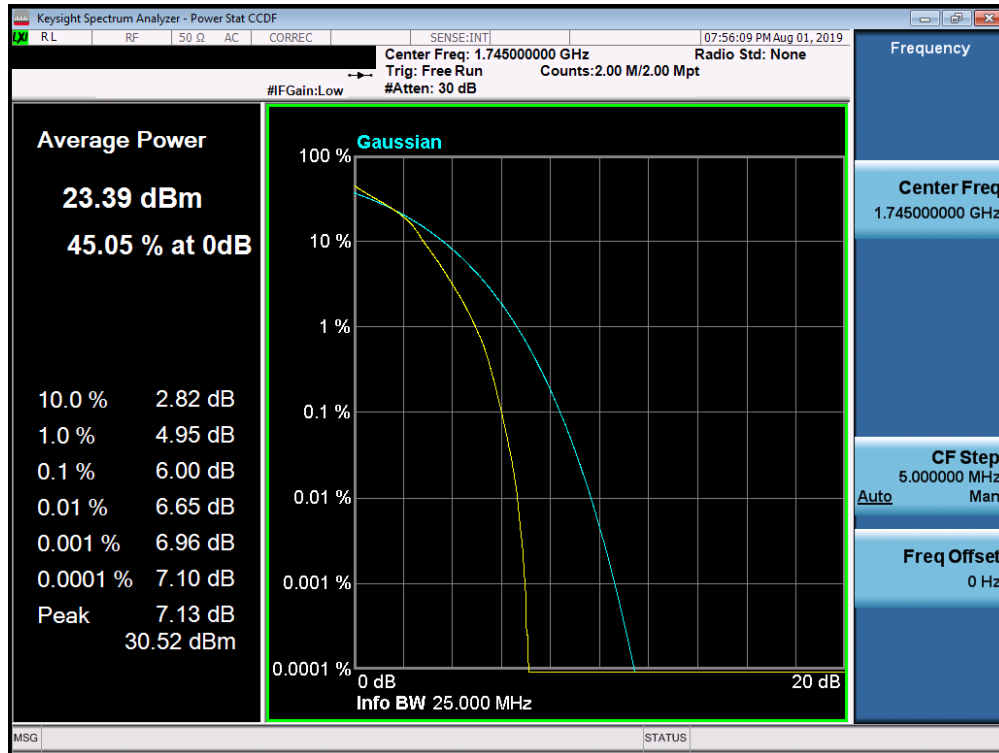
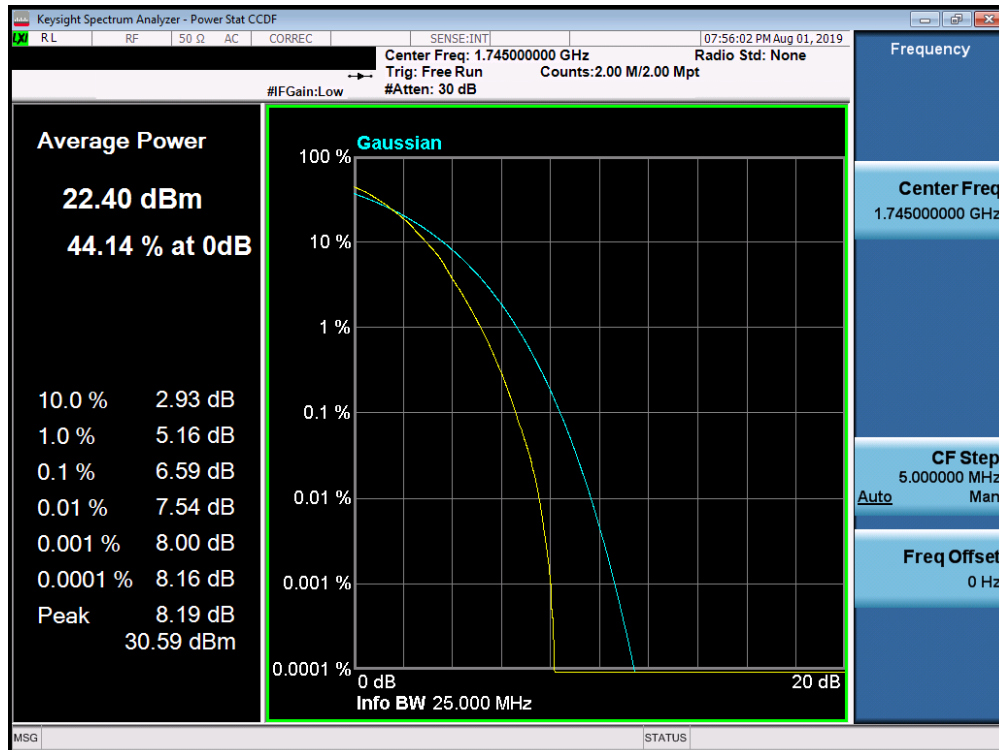




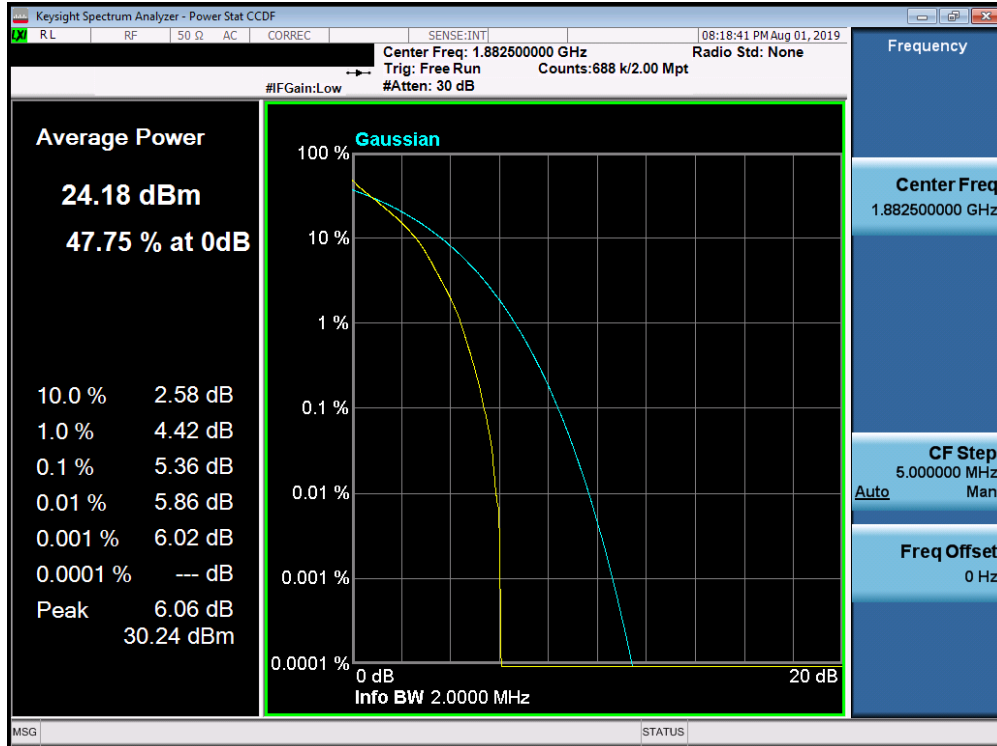
Plot 7-334. PAR Plot (Band 66/4 – 20.0MHz 16-QAM - Full RB Configuration)



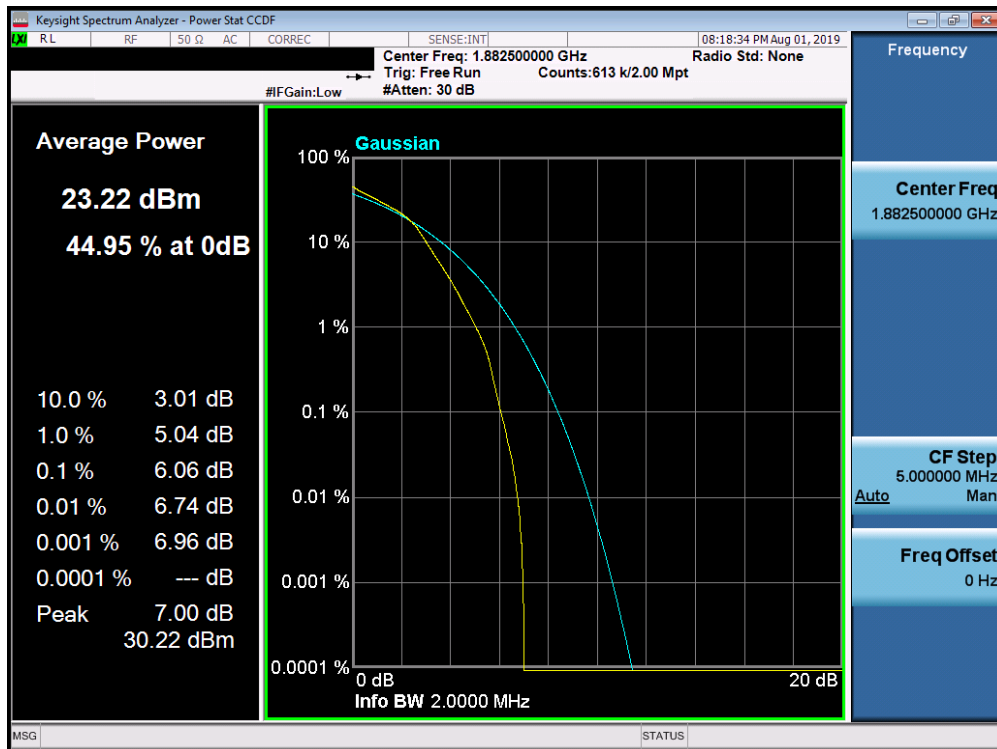
Plot 7-335. PAR Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 194 of 283

Band 25/2

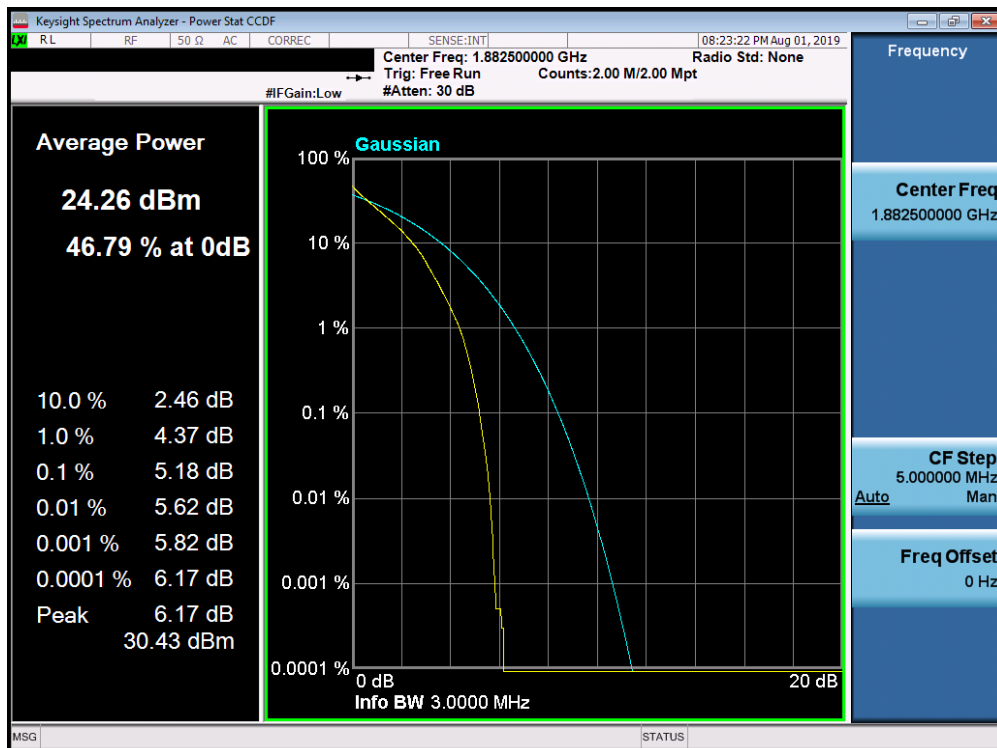
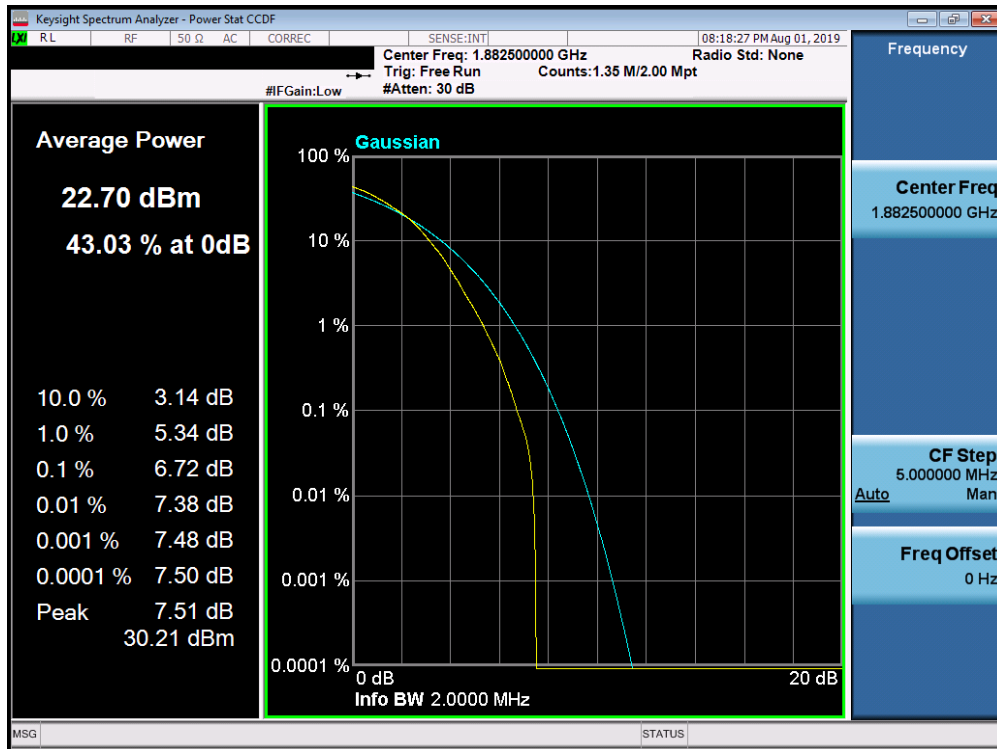


Plot 7-336. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

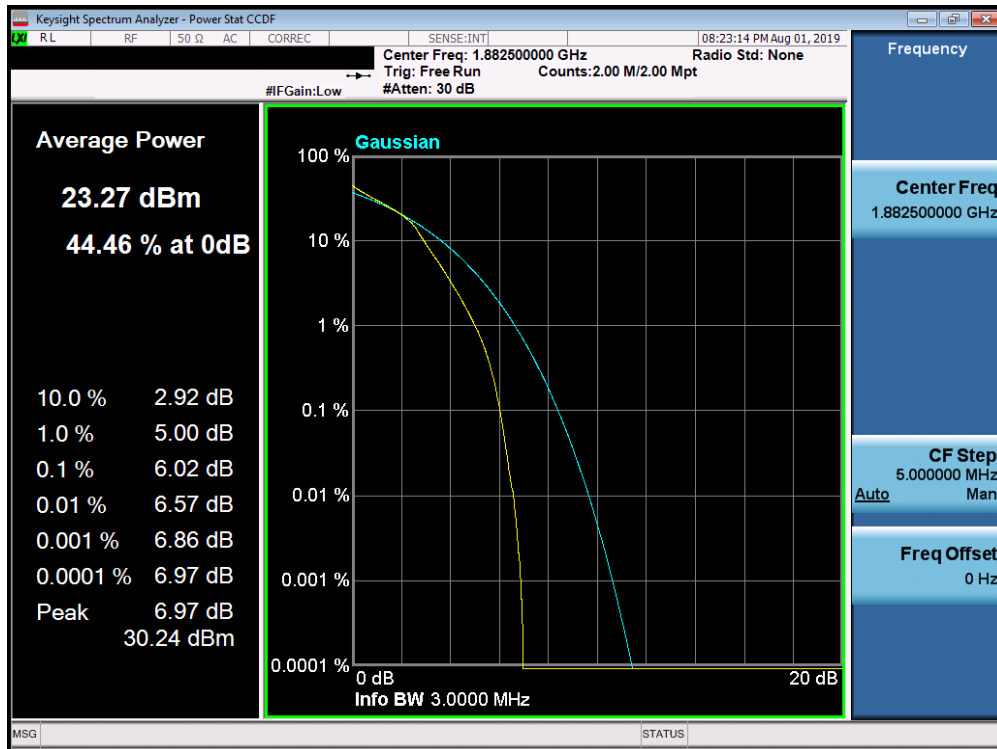


Plot 7-337. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

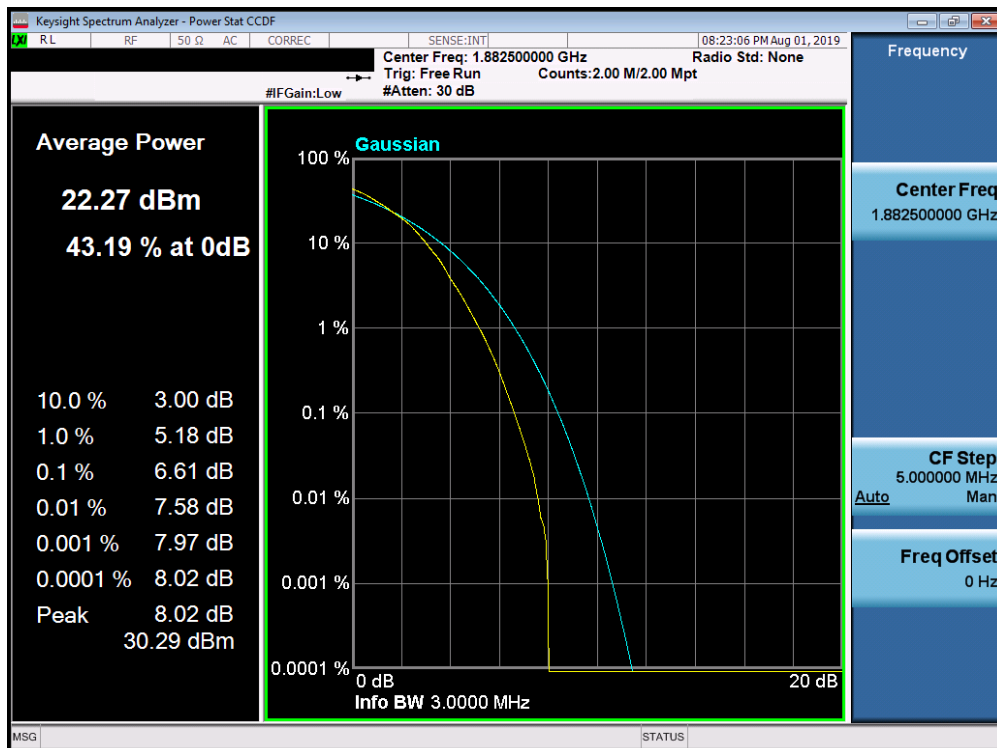
FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 195 of 283



FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 196 of 283

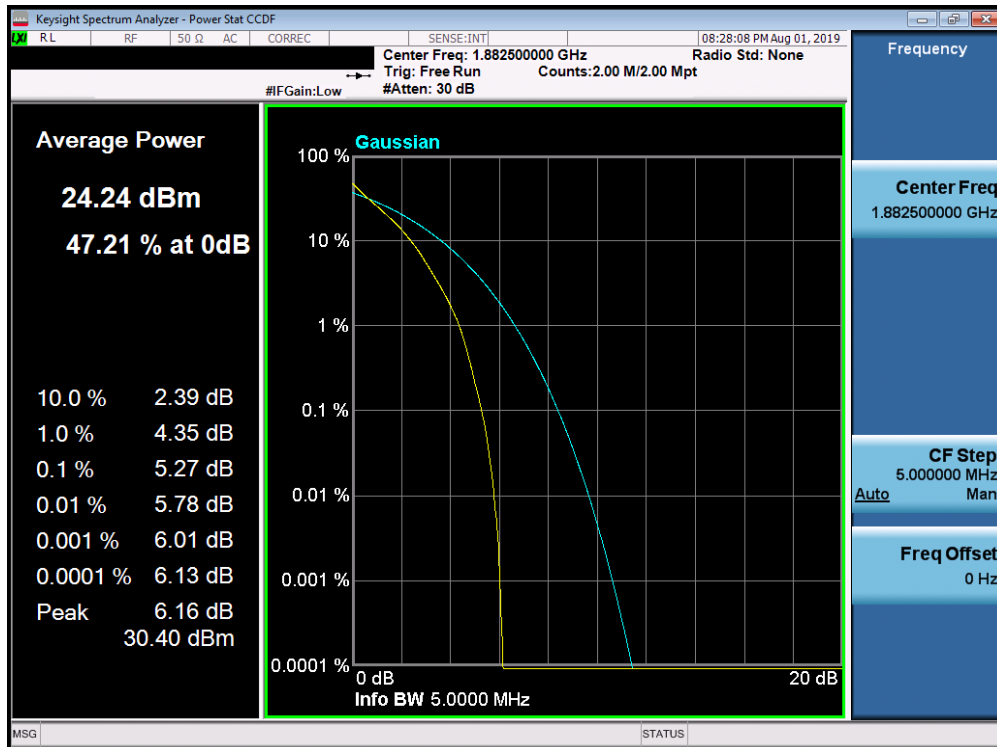


Plot 7-340. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

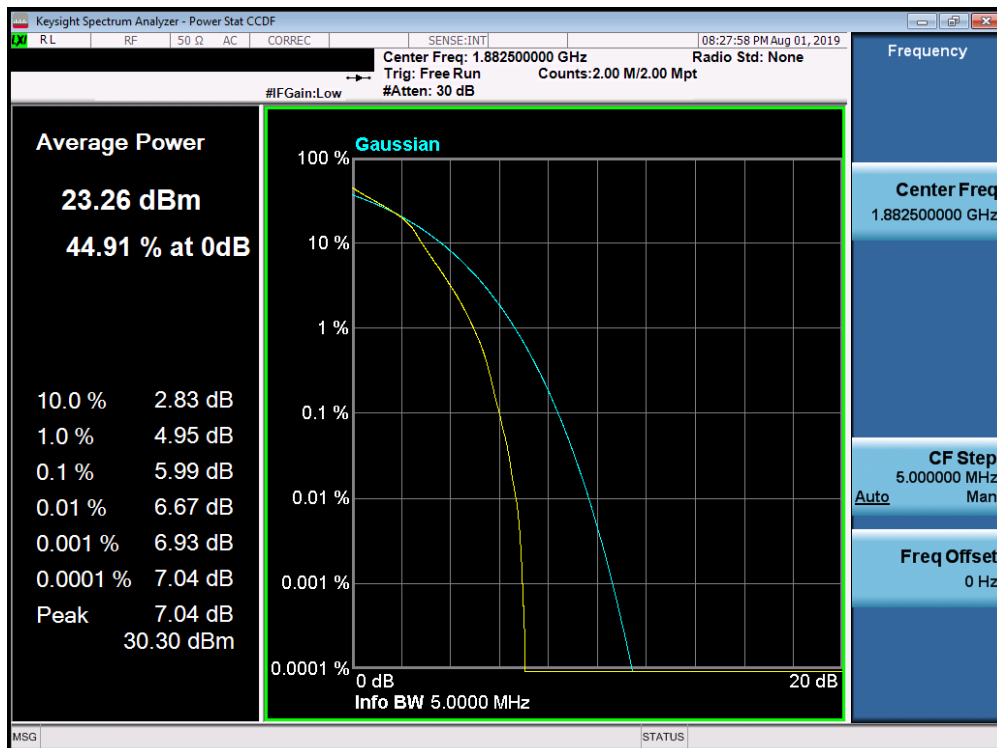


Plot 7-341. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 197 of 283

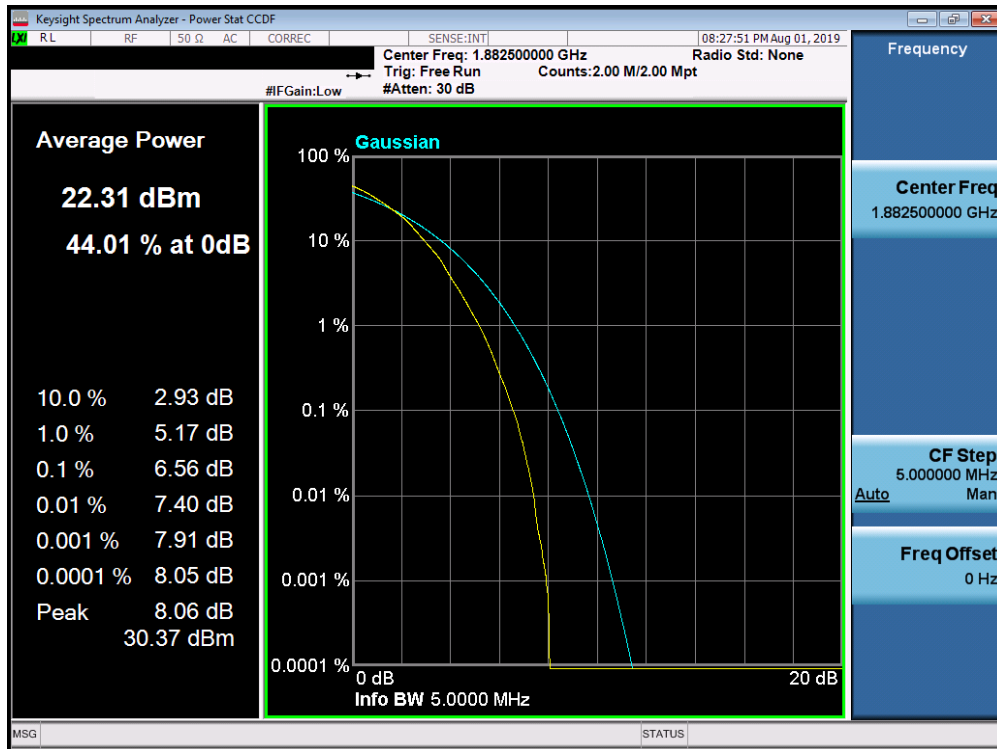


Plot 7-342. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

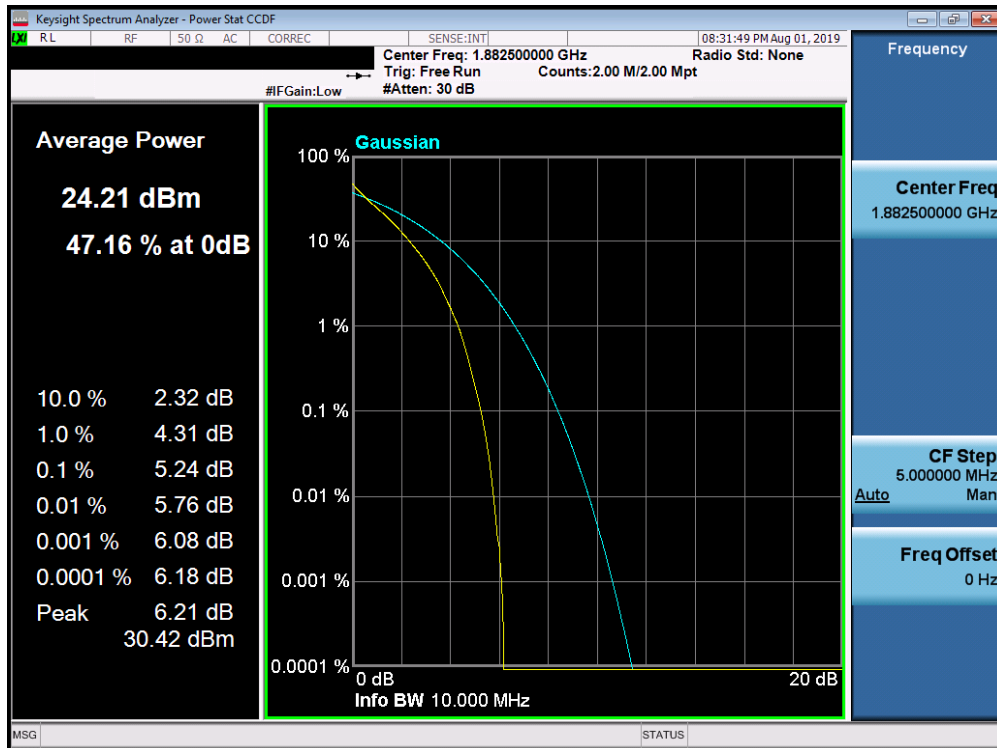


Plot 7-343. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 198 of 283

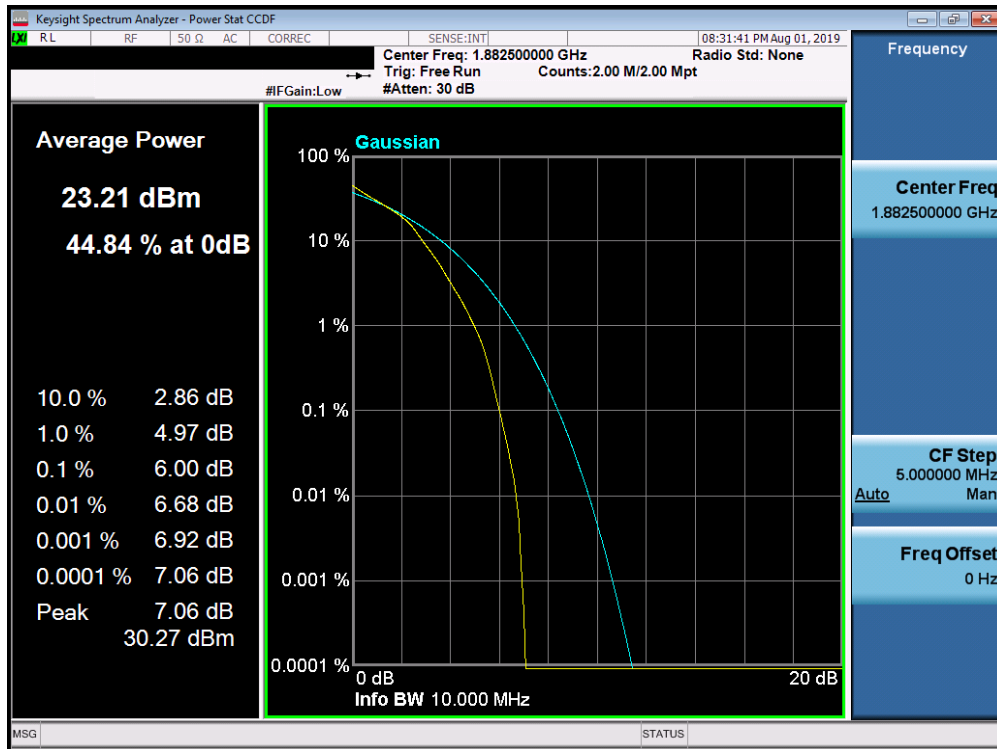


Plot 7-344. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

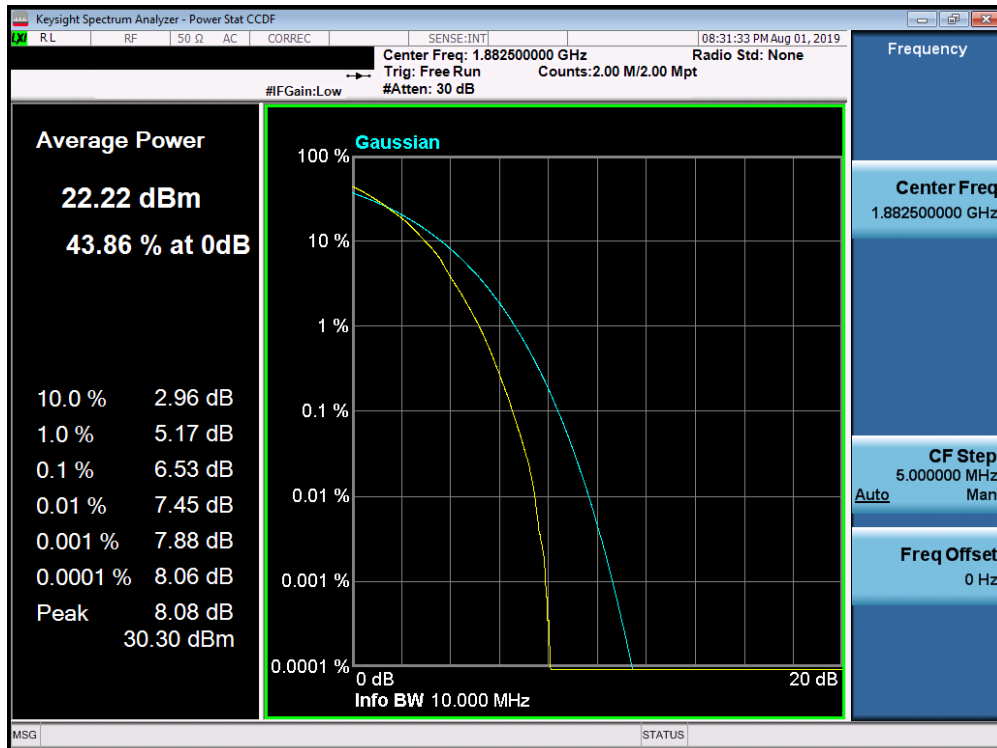


Plot 7-345. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 199 of 283

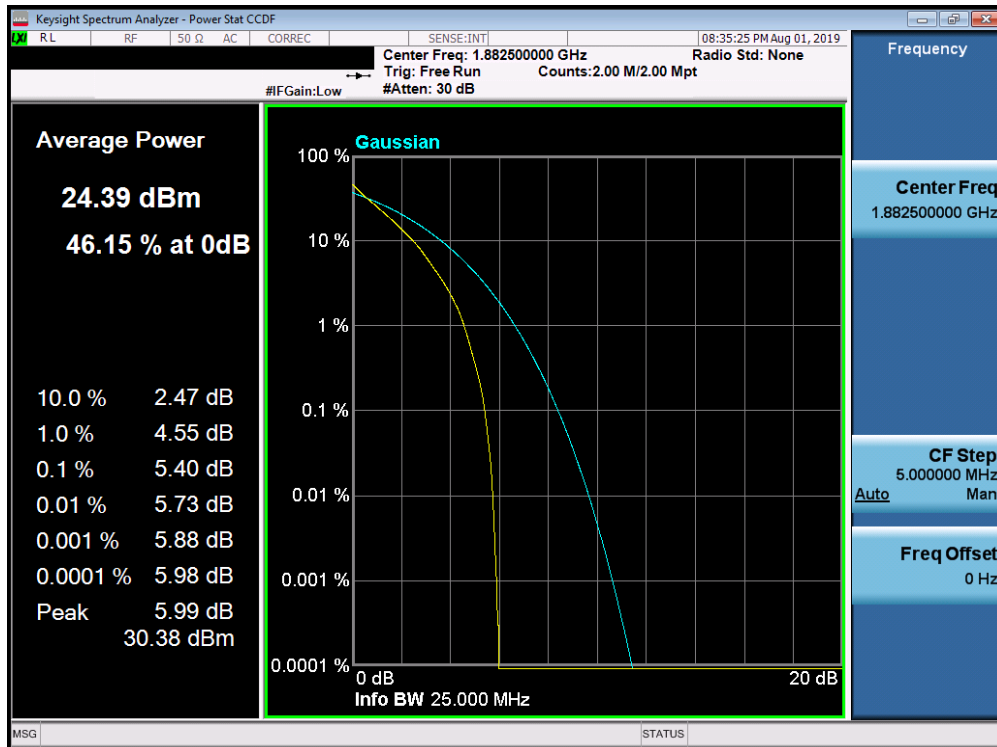


Plot 7-346. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

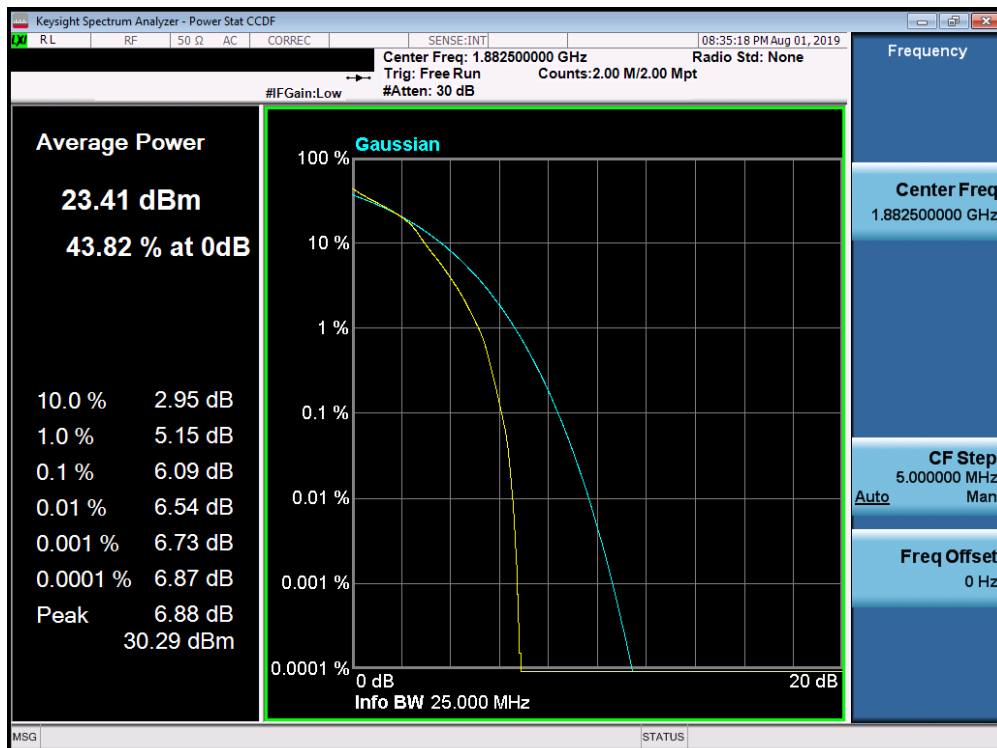


Plot 7-347. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 200 of 283

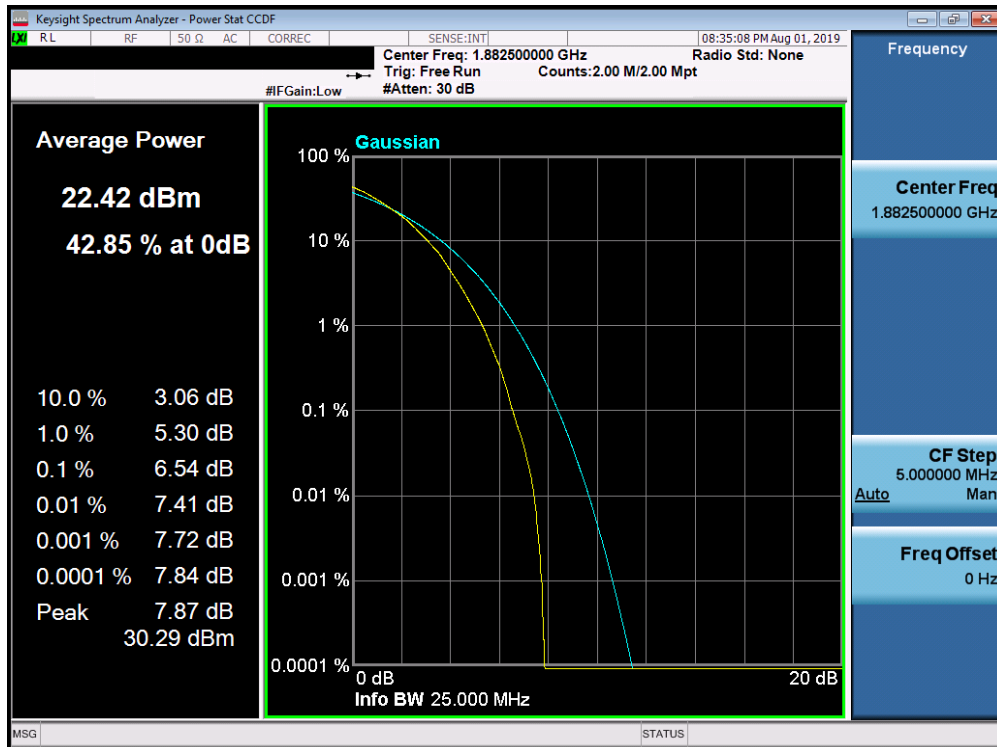


Plot 7-348. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

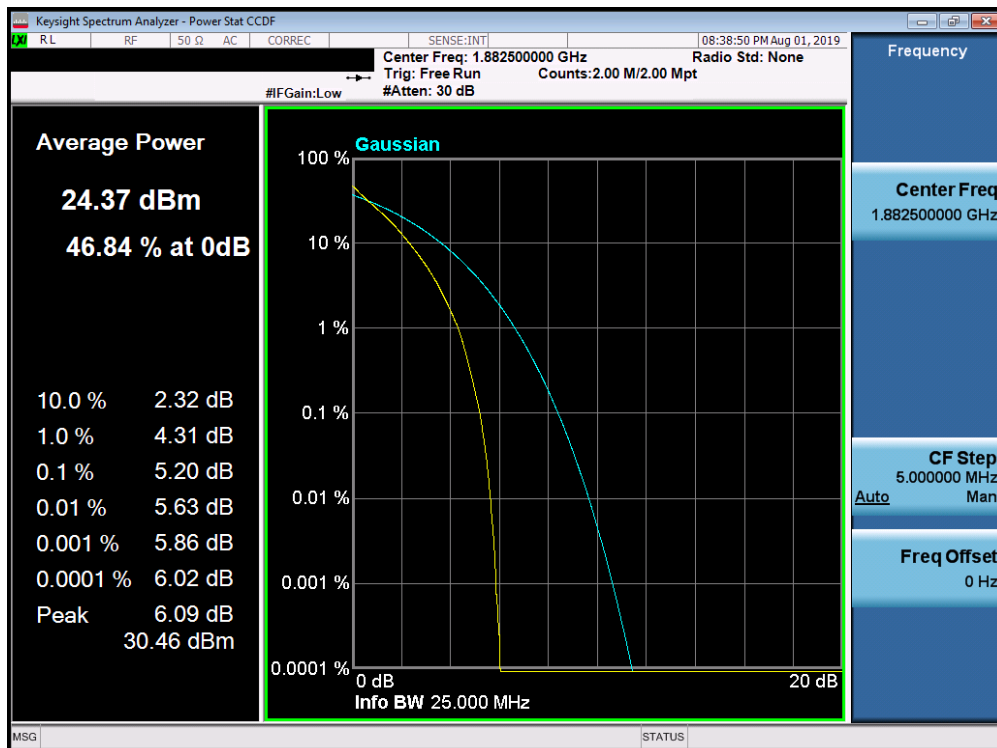


Plot 7-349. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 201 of 283

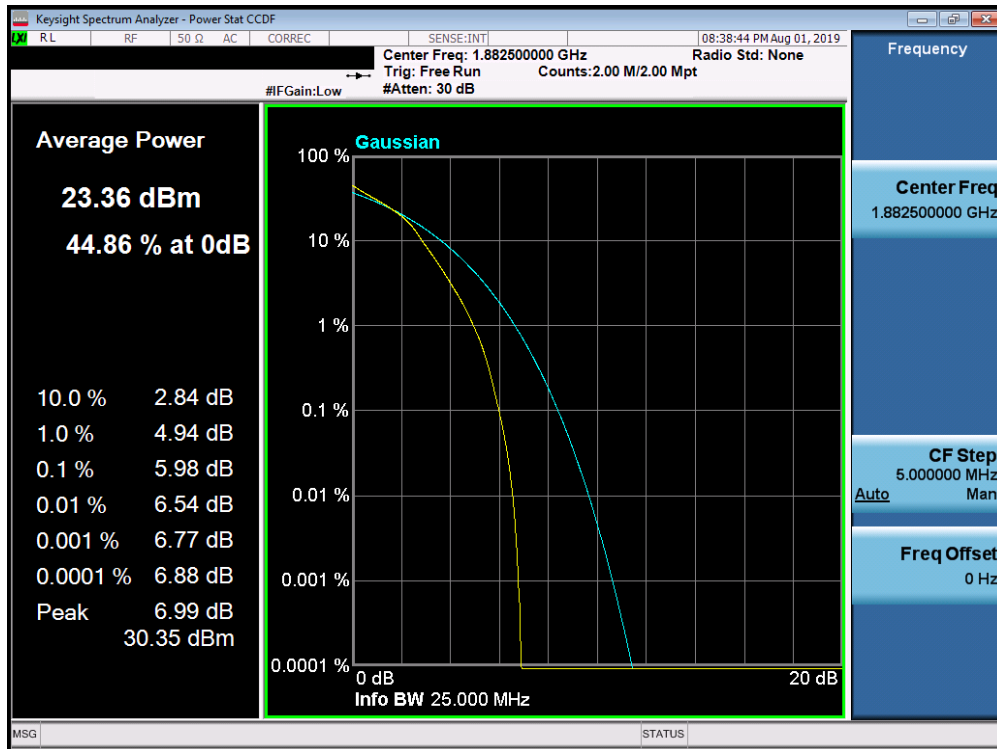


Plot 7-350. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

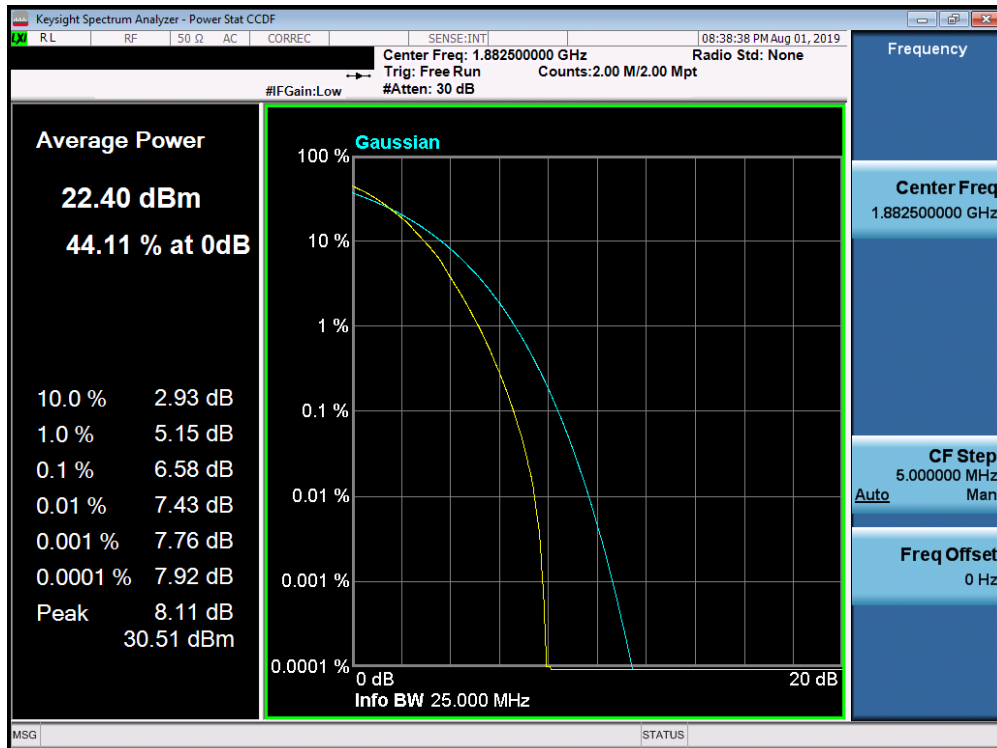


Plot 7-351. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 202 of 283



Plot 7-352. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-353. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 203 of 283

7.6 Additional Maximum Power Reduction (A-MPR)

§2.1046

Test Overview

A-MPR is implemented in this device when operating at Power Class 2 in LTE Band 41 per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.2.2

Test Settings

1. Span = 2 x OBW to 3 x OBW
2. RBW = 1% to 5% of the OBW
3. Number of measurement points in sweep $\geq 2 \times \text{span} / \text{RBW}$
4. Sweep = auto-couple (less than transmission burst duration)
5. Detector = RMS (power)
6. Trigger was set to enable power measurements only on full power bursts
7. Trace was allowed to stabilize
8. Spectrum analyzer's "Channel Power" function was used to compute the power by integrating the spectrum across the OBW of the signal

Test Setup

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

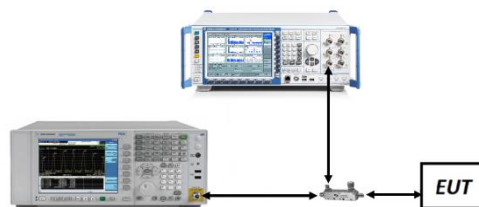


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 204 of 283

Test Case	NS	MCC	MNC	Channel BW [MHz]	Channel Number	Channel Frequency [MHz]	Modulation	RB Size	RB Offset	MPR [dB]	A-MPR [dB]	Measured Power [dBm]
1	01	311	490	5	39675	2498.5	QPSK	1	0	0	≤ 3	24.08
							16-QAM			≤ 1		23.25
							64-QAM			≤ 2		22.17
2				5	39675	2498.5	QPSK	1	9	0	0	26.60
							16-QAM			≤ 1		26.35
							64-QAM			≤ 2		24.63
3				10	39700	2501	QPSK	1	0	0	≤ 5	26.57
							16-QAM	1	0	≤ 1		26.16
							64-QAM	1	0	≤ 2		25.12
4				10	39700	2501	QPSK	20	0	0	≤ 2	24.13
							16-QAM	20	0	≤ 1		23.18
							64-QAM	20	0	≤ 2		22.14
5				10	39700	2501	QPSK	50	0	0	≤ 3	23.18
							16-QAM	50	0	≤ 1		22.16
							64-QAM	50	0	≤ 2		21.18
6				10	39700	2501	QPSK	25	20	0	≤ 1	25.21
							16-QAM	25	20	≤ 1		24.16
							64-QAM	25	20	≤ 2		23.23
7				10	39700	2501	QPSK	1	36	0	0	26.48
							16-QAM	1	36	≤ 1		26.20
							64-QAM	1	36	≤ 2		24.81
8				15	39725	2503.5	QPSK	1	0	0	≤ 5	26.52
							16-QAM	1	0	≤ 1		26.32
							64-QAM	1	0	≤ 2		24.66
9				15	39725	2503.5	QPSK	20	0	0	≤ 2	24.14
							16-QAM	20	0	≤ 1		23.13
							64-QAM	20	0	≤ 2		22.13
10				15	39725	2503.5	QPSK	75	0	0	≤ 4	22.20
							16-QAM	75	0	≤ 1		21.26
							64-QAM	75	0	≤ 2		20.19
11				15	39725	2503.5	QPSK	50	15	0	≤ 3	23.22
							16-QAM	50	15	≤ 1		22.32
							64-QAM	50	15	≤ 2		21.32
12				15	39725	2503.5	QPSK	1	60	0	0	26.58
							16-QAM	1	60	≤ 1		26.26
							64-QAM	1	60	≤ 2		24.87
13				20	39750	2506	QPSK	1	0	0	≤ 5	26.58
							16-QAM	1	0	≤ 1		26.30
							64-QAM	1	0	≤ 2		25.07
14				20	39750	2506	QPSK	20	0	0	≤ 2	24.10
							16-QAM	20	0	≤ 1		23.03
							64-QAM	20	0	≤ 2		22.14
15				20	39750	2506	QPSK	100	0	0	≤ 4	22.22
							16-QAM	100	0	≤ 1		21.27
							64-QAM	100	0	≤ 2		20.21
16				20	39750	2506	QPSK	75	24	0	≤ 3	23.15
							16-QAM	75	24	≤ 1		22.26
							64-QAM	75	24	≤ 2		21.19
17				20	39750	2506	QPSK	1	77	0	0	26.61
							16-QAM	1	77	≤ 1		26.30
							64-QAM	1	77	≤ 2		24.48
18	01	312	530	5	39675	2498.5	QPSK	1	0	0	≤ 3	23.95
							16-QAM			≤ 1		23.2
							64-QAM			≤ 2		22.04
19	01	001	01	5	39675	2498.5	QPSK	1	0	0	0	26.47
							16-QAM			≤ 1		26.14
							64-QAM			≤ 2		24.72

Table 7-2. A-MPR Conducted Power Measurements

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 205 of 283

7.7 Uplink Carrier Aggregation

§27.53(m)

Test Overview

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

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

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

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

Test Setup

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

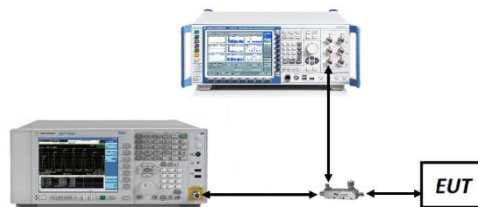


Figure 7-6. Test Instrument & Measurement Setup

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 206 of 283

Test Notes

1. For Band 41, uplink carrier aggregation is only supported in this EUT while operating in Power Class 2.
2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-503 and 7-504 below, with both carriers set to transmit using 1RB.
3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 207 of 283

Uplink CA Configuration 5B

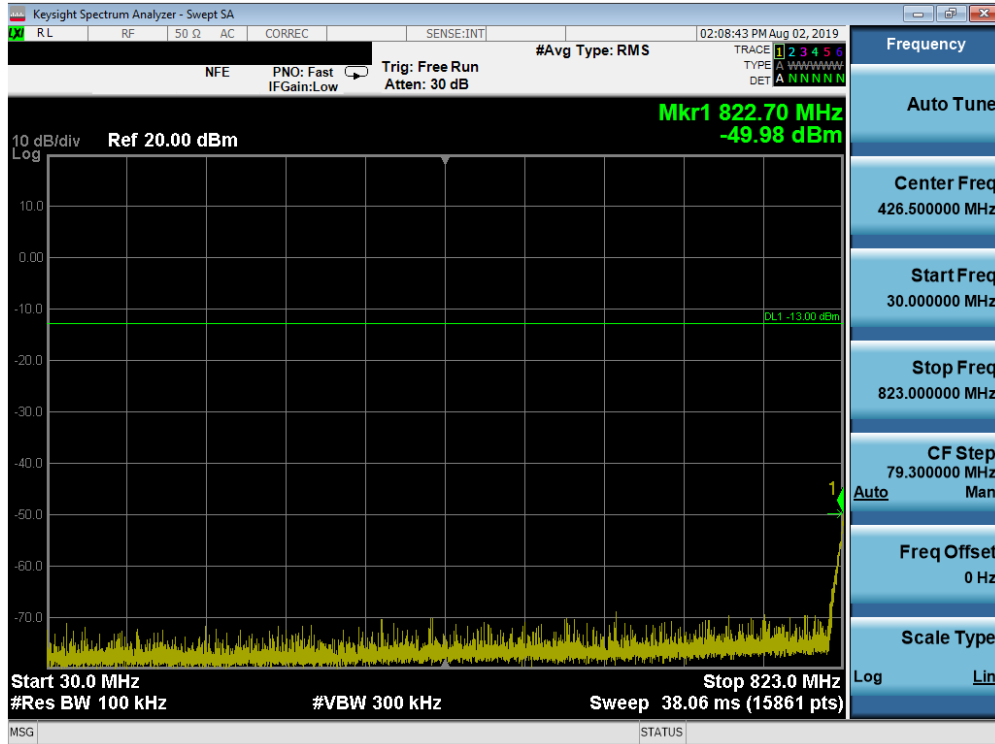
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B41	10	20549	838.9	QPSK	1	0	25.60
Max	LTE B5	10	20525	836.5	QPSK	1	49	LTE B5	5	20597	843.7	QPSK	1	0	25.44
Max	LTE B5	10	20600	844	QPSK	1	0	LTE B5	10	20501	834.1	QPSK	1	49	25.65

Table 7-3. Conducted Powers (B5 –PCC RB Size 1 Offset Max SCC: RB Size1 Offset 0)

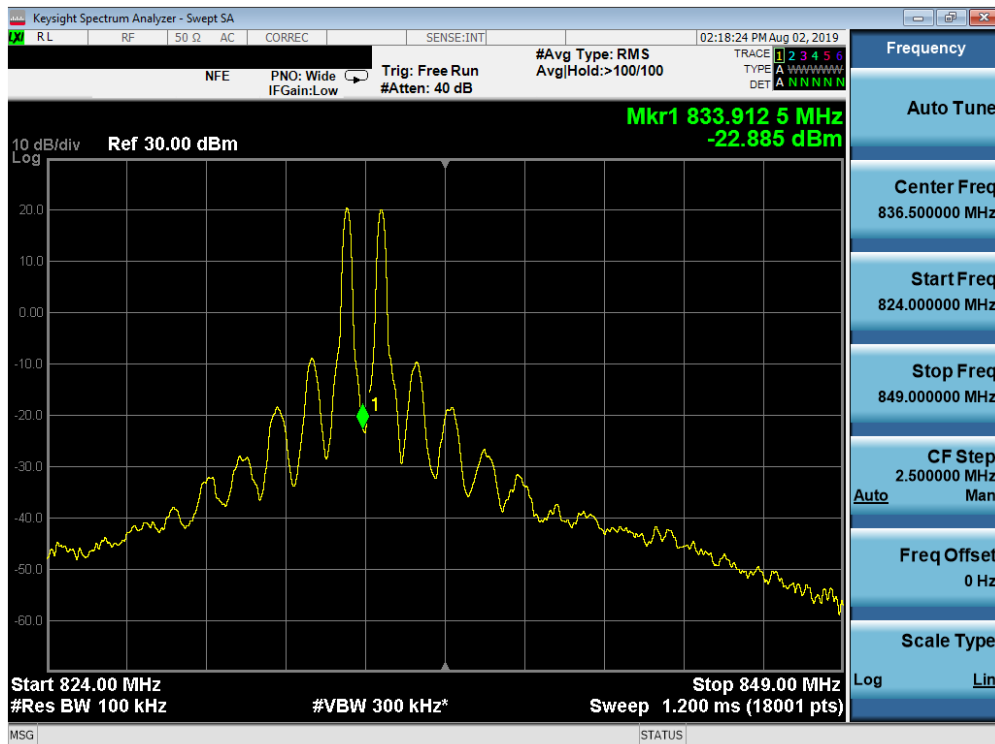
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B5	10	20600	844	QPSK	50	0	LTE B5	10	20501	834.1	QPSK	50	0	23.09
Max	LTE B5	10	20600	844	16-QAM	50	0	LTE B5	10	20501	834.1	16-QAM	50	0	22.37
Max	LTE B5	10	20600	844	64-QAM	50	0	LTE B5	10	20501	834.1	64-QAM	50	0	21.46

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

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 208 of 283	

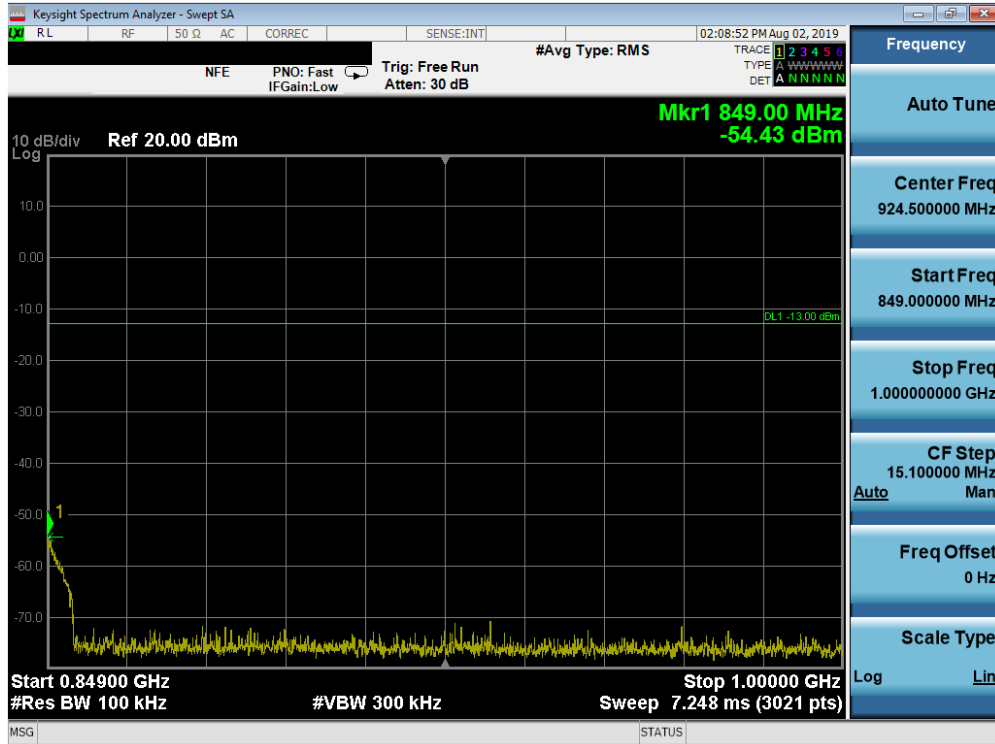


Plot 7-354. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

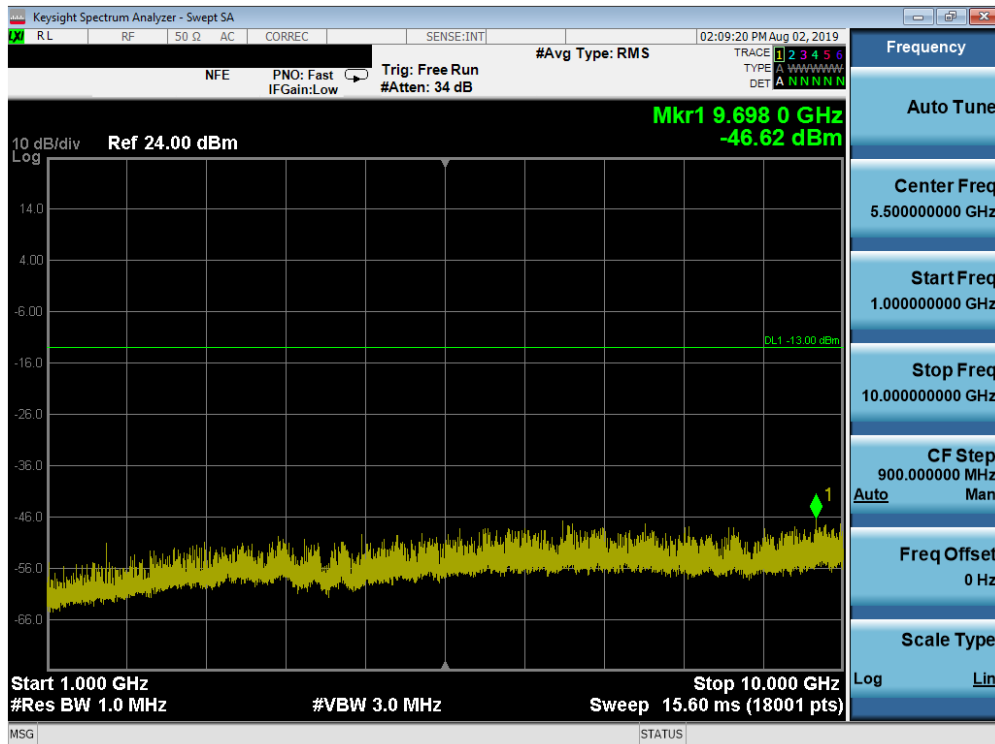


Plot 7-355. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 209 of 283

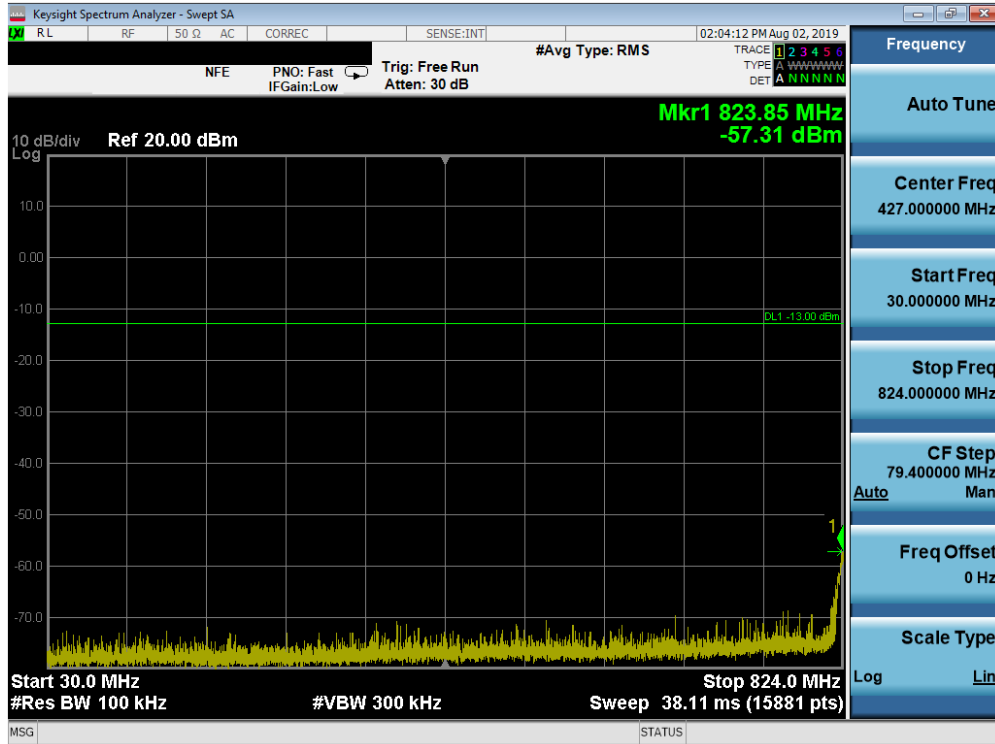


Plot 7-356. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

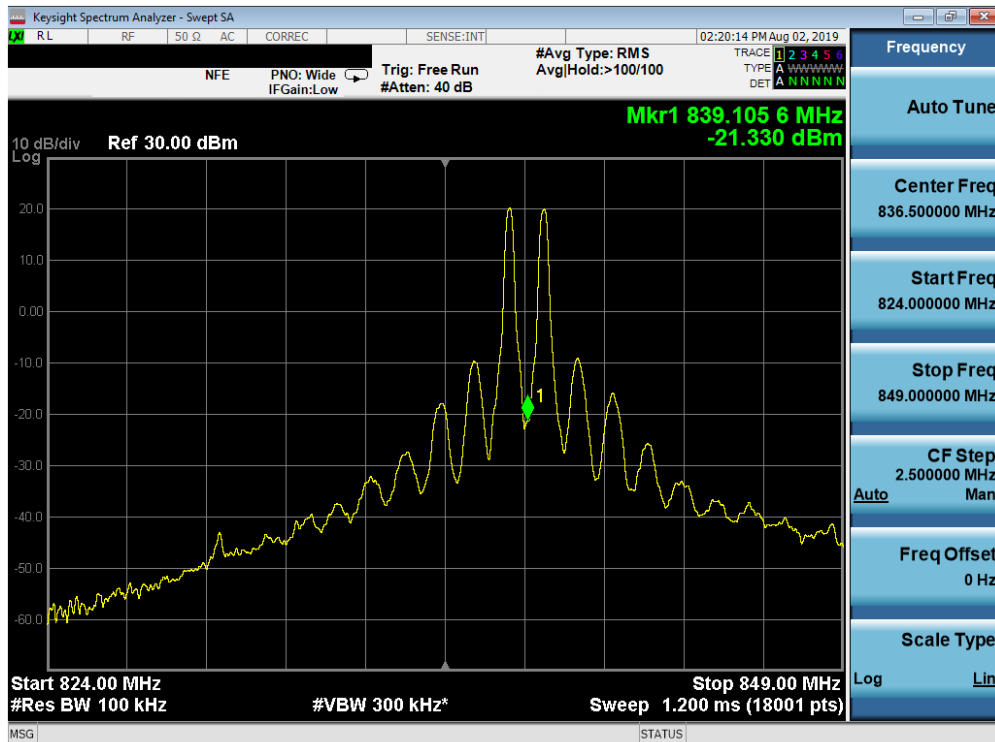


Plot 7-357. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 210 of 283

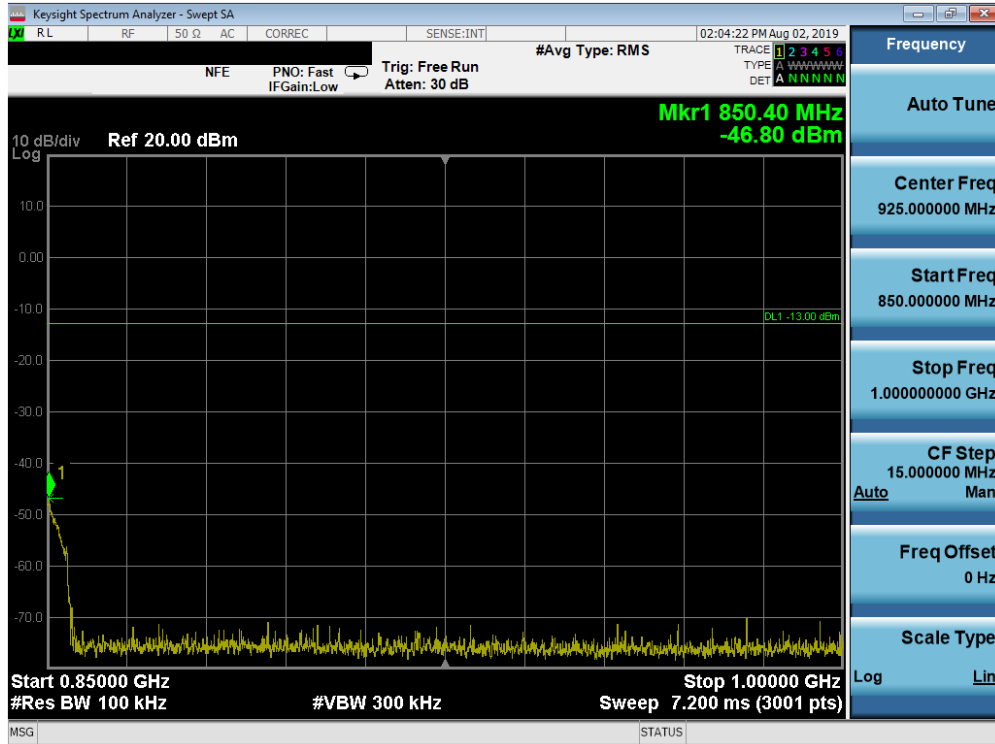


Plot 7-358. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – High Channel)

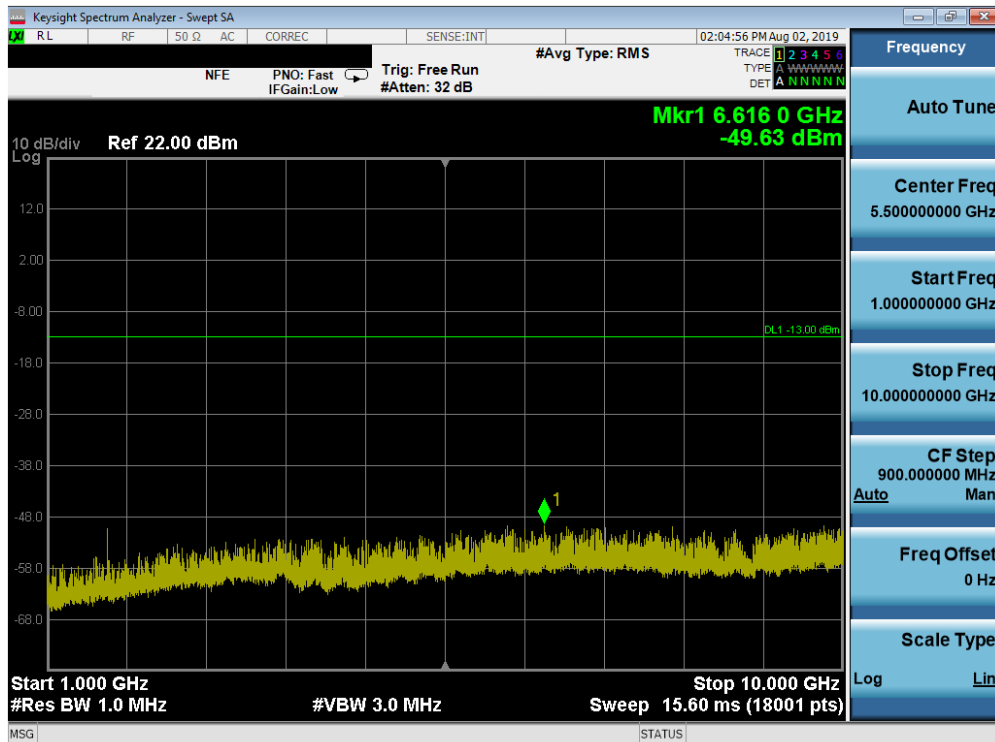


Plot 7-359. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – High Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 211 of 283

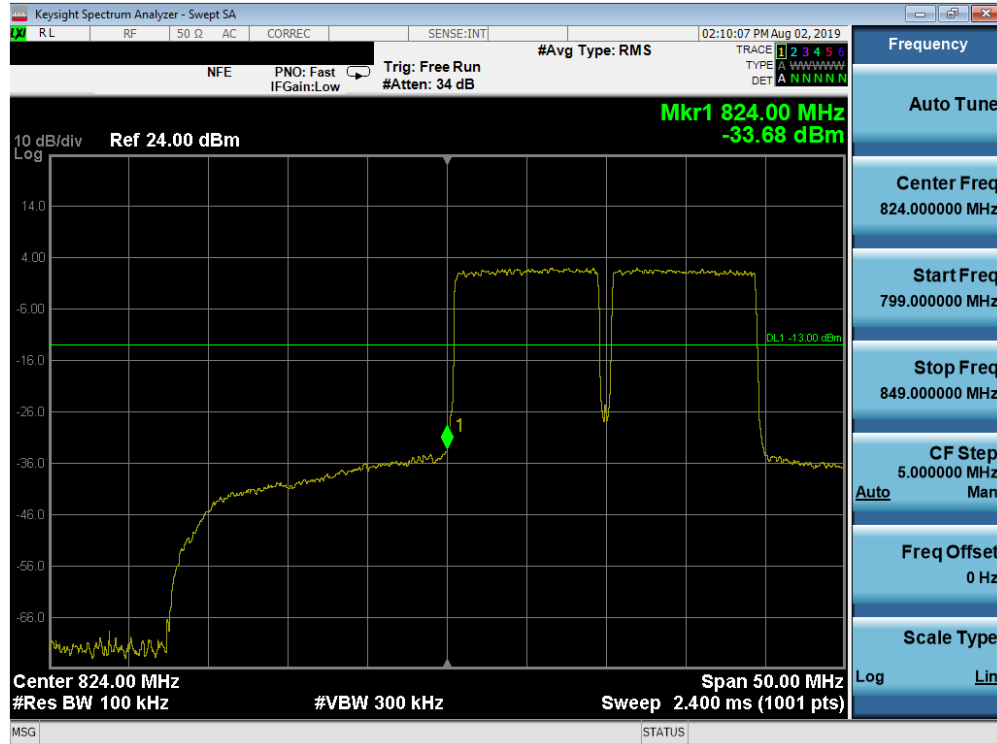


Plot 7-360. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – High Channel)

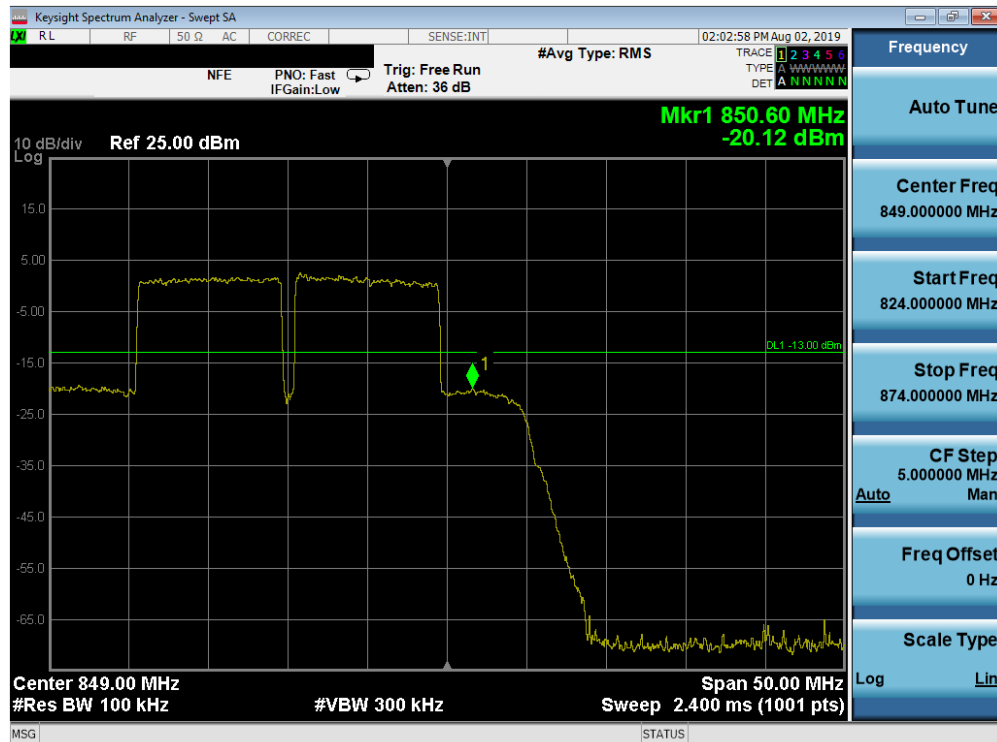


Plot 7-361. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – High Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 212 of 283



Plot 7-362. Lower Band Edge Plot (Band 5 - QPSK – PCC: 10 MHz SCC:10 MHz – Full RB)



Plot 7-363.Upper Band Edge Plot (Band 5 - QPSK – PCC: 10 MHz SCC:10 MHz – Full RB)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 213 of 283

Uplink CA Configuration 41 (PC2)

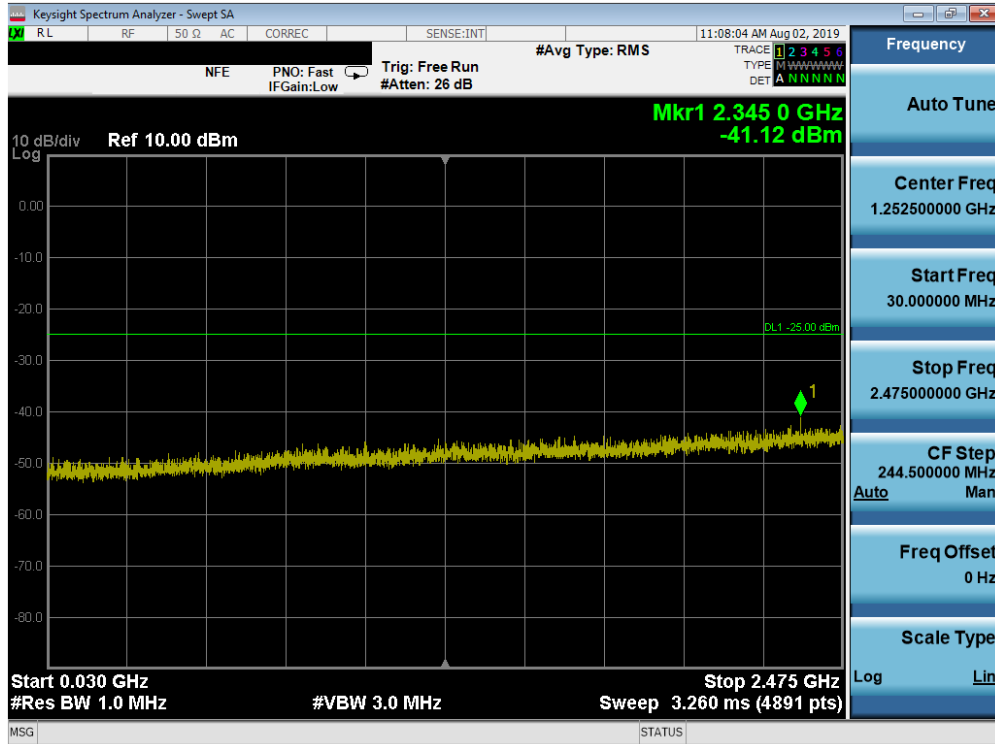
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	27.57
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	26.67
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	26.53

Table 7-5. Conducted Powers (B41 PC2 –20MHz + 20MHz Channel Bandwidth- PCC/SCC: 1RB)

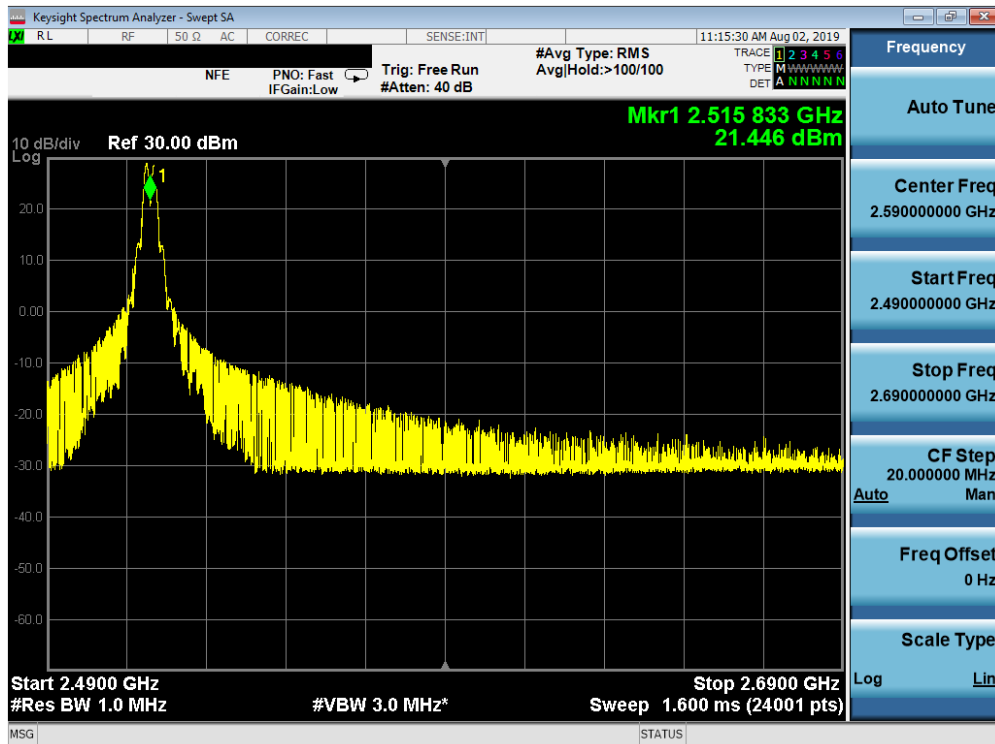
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	23.06
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	22.57
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	21.99

Table 7-6. Conducted Powers (B41 PC2 with Various Combinations for 20MHz + 20MHz Channel Bandwidth)

FCC ID: ZNFG850UM	 PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset			Page 214 of 283

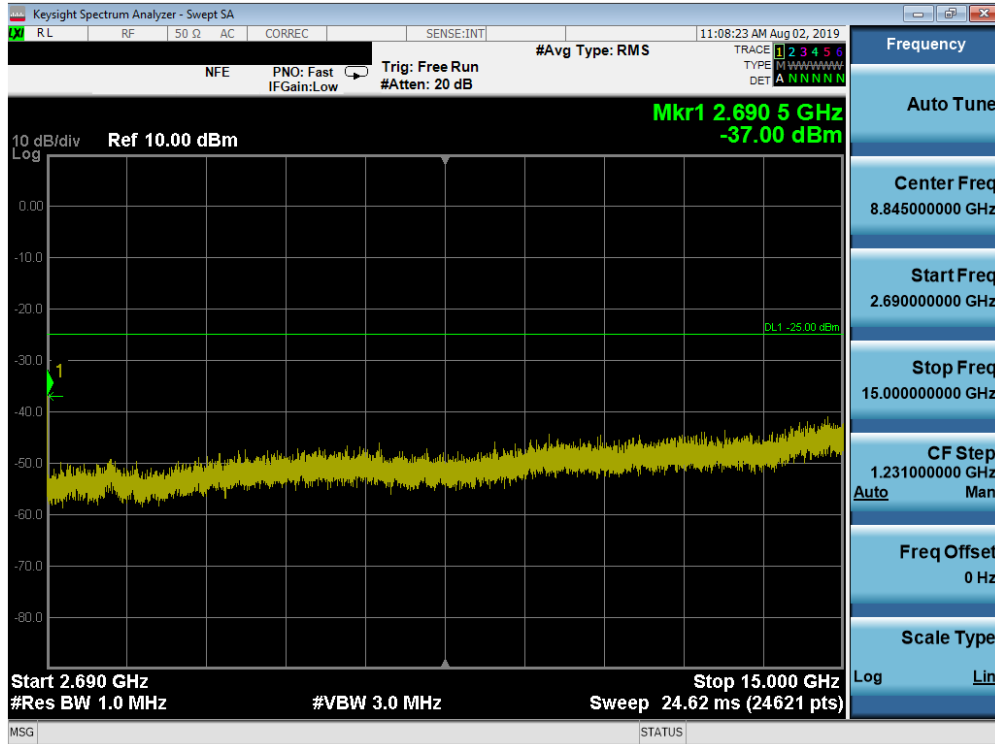


Plot 7-364. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

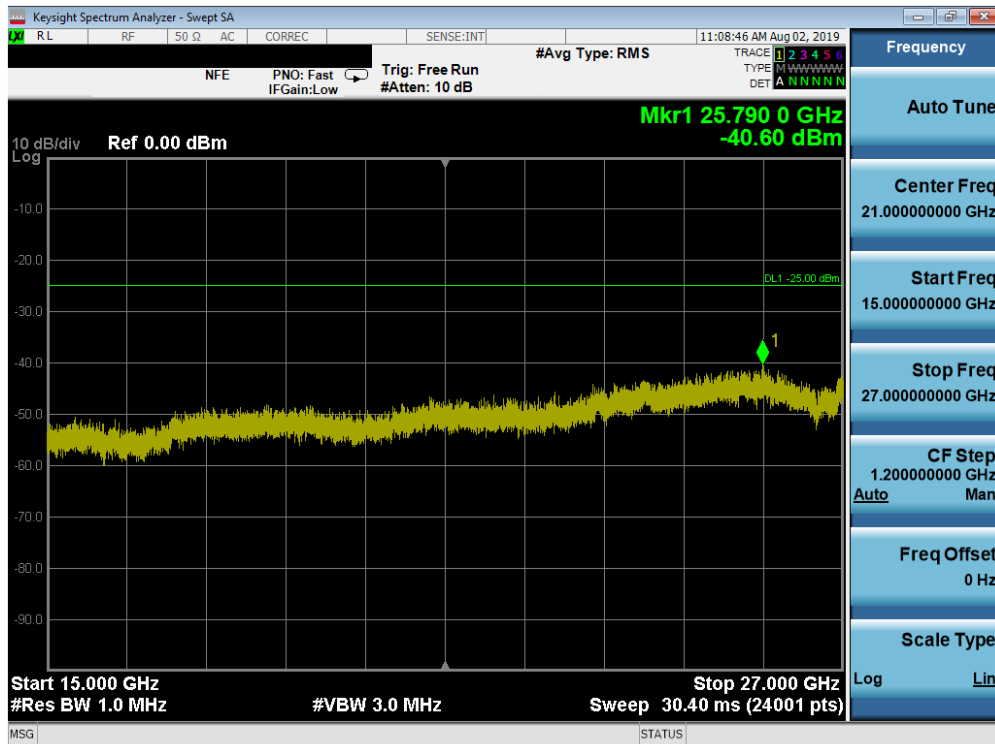


Plot 7-365. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 215 of 283

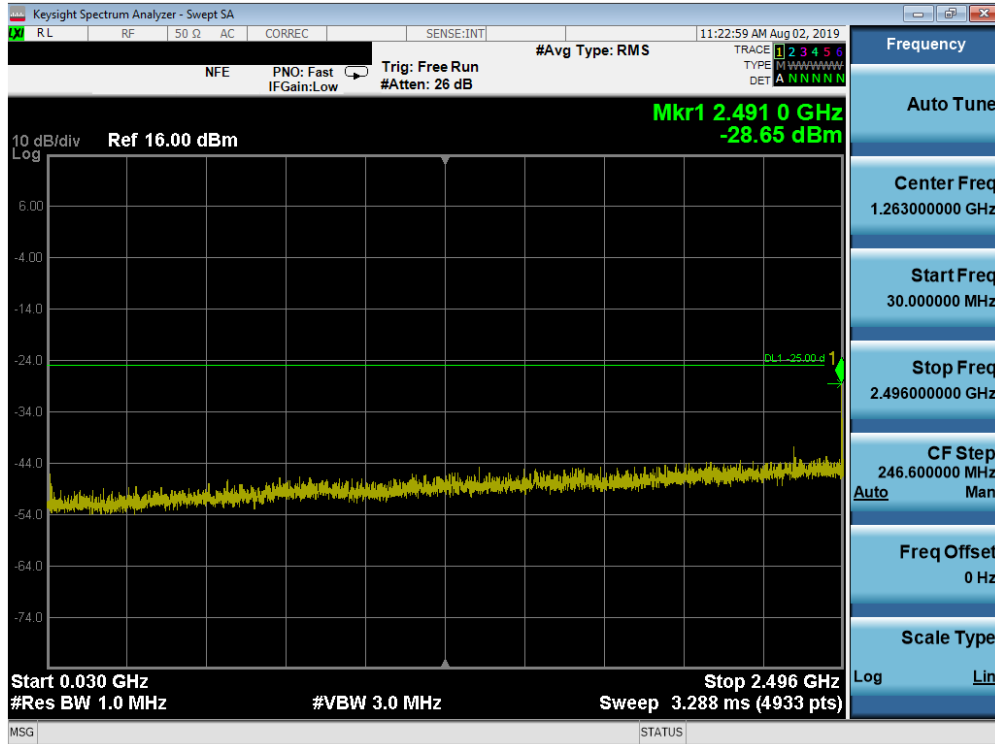


Plot 7-366. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

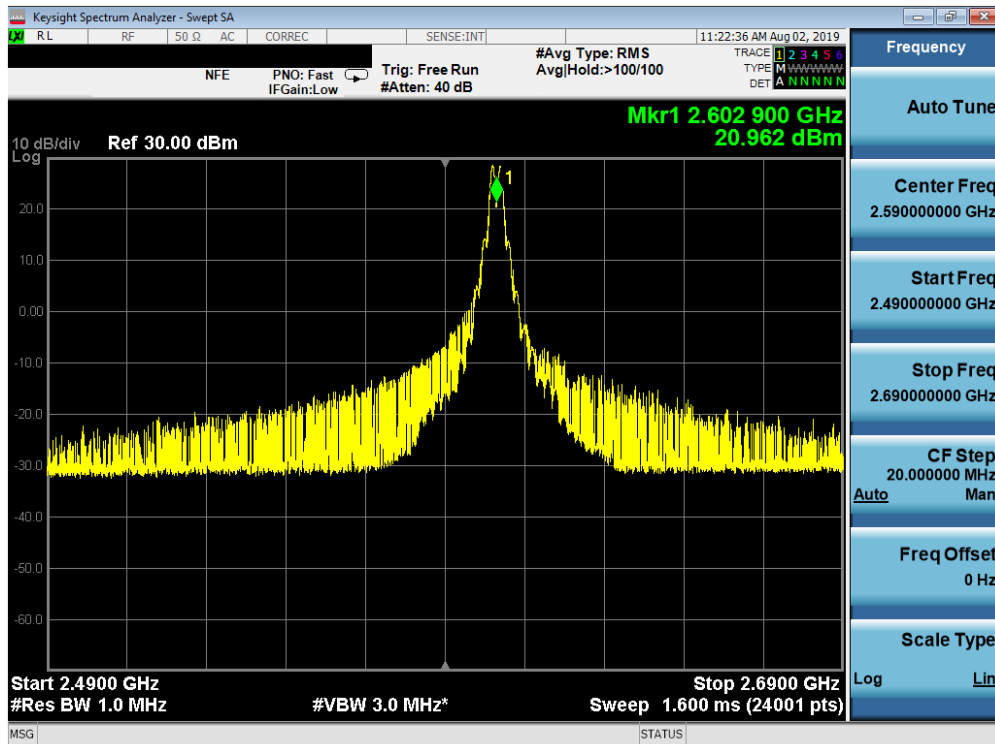


Plot 7-367. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 216 of 283

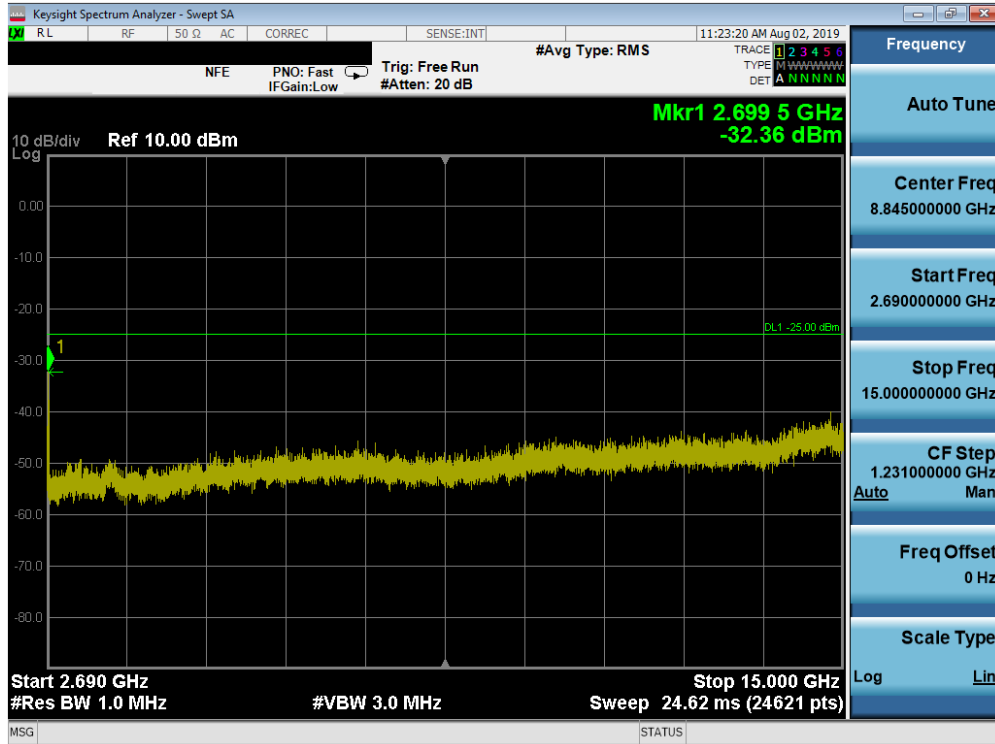


Plot 7-368. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

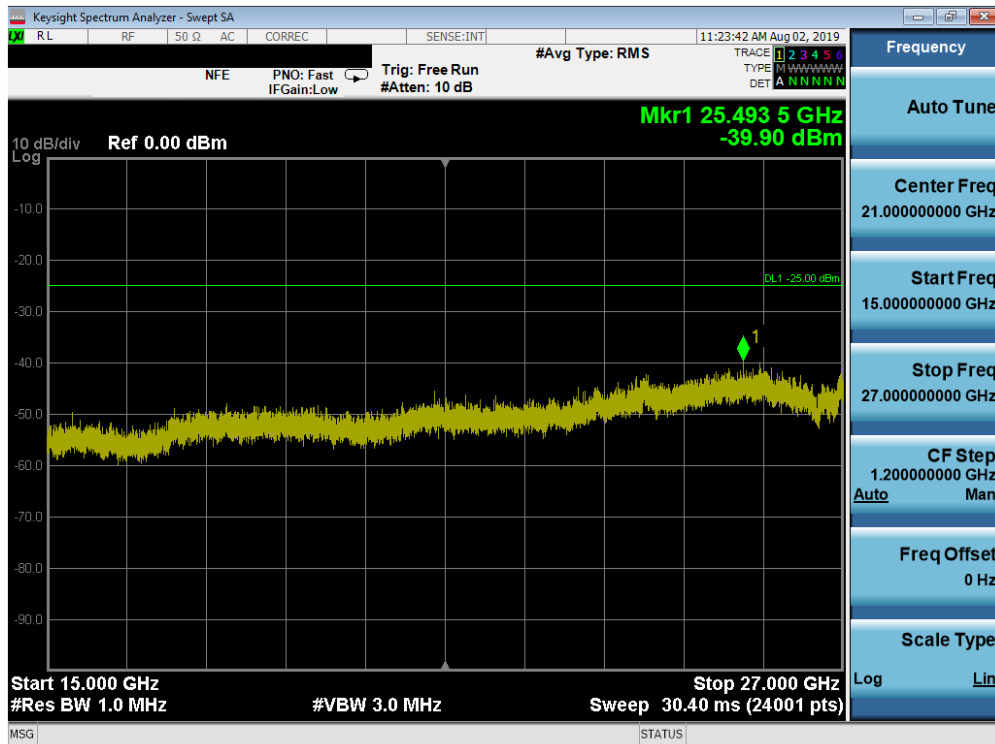


Plot 7-369. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 217 of 283

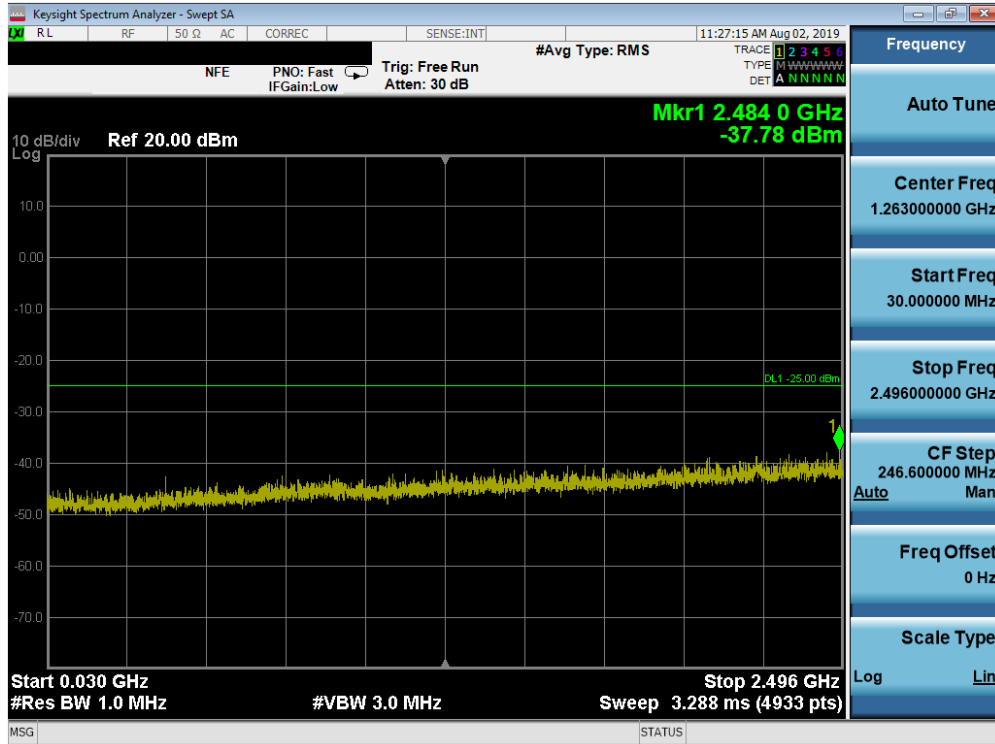


Plot 7-370. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

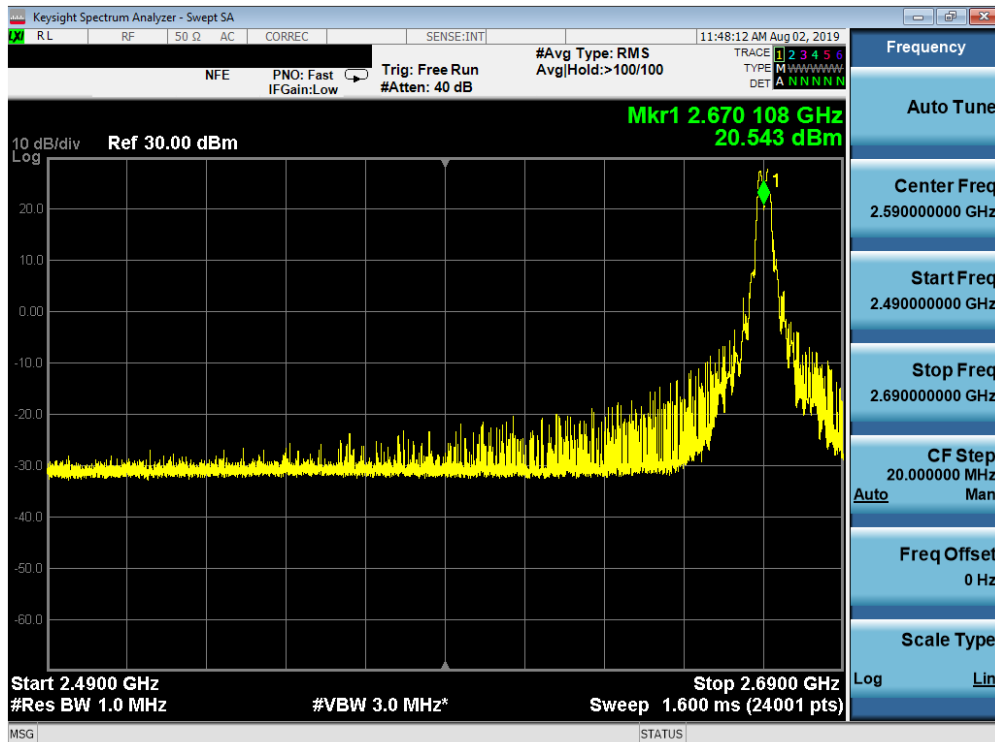


Plot 7-371. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 218 of 283

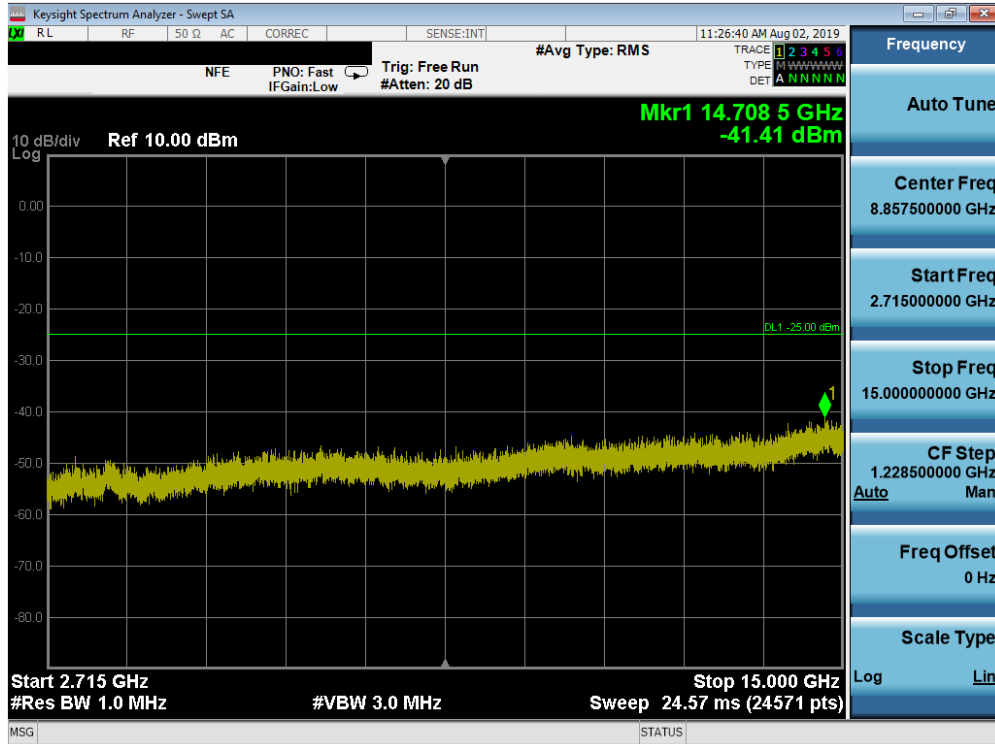


Plot 7-372. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

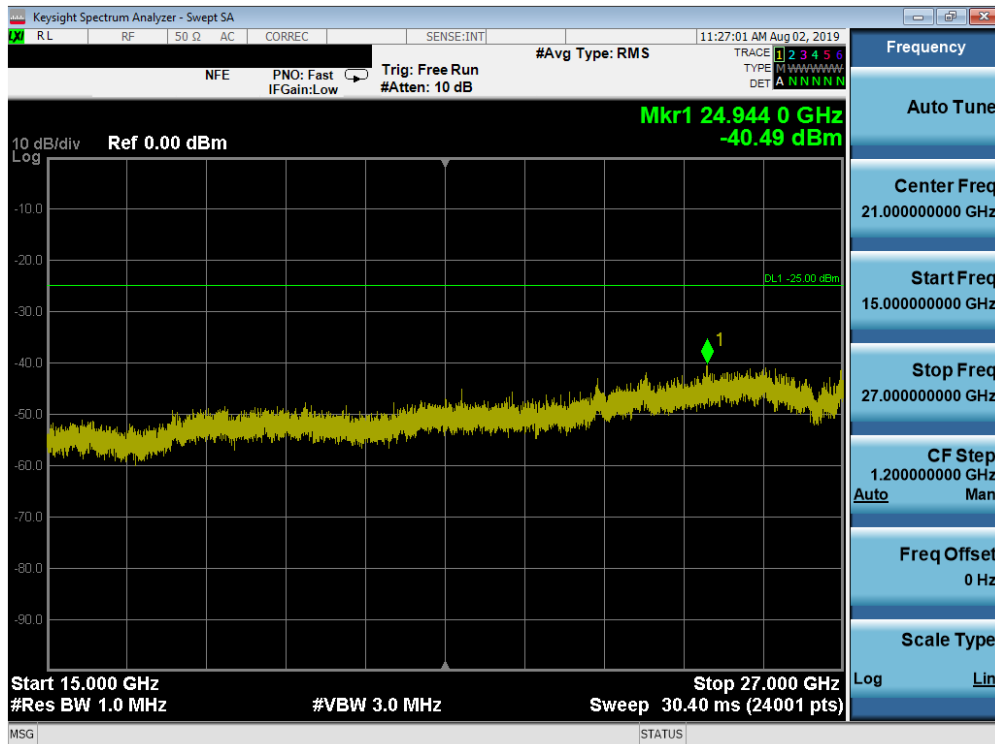


Plot 7-373. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 219 of 283

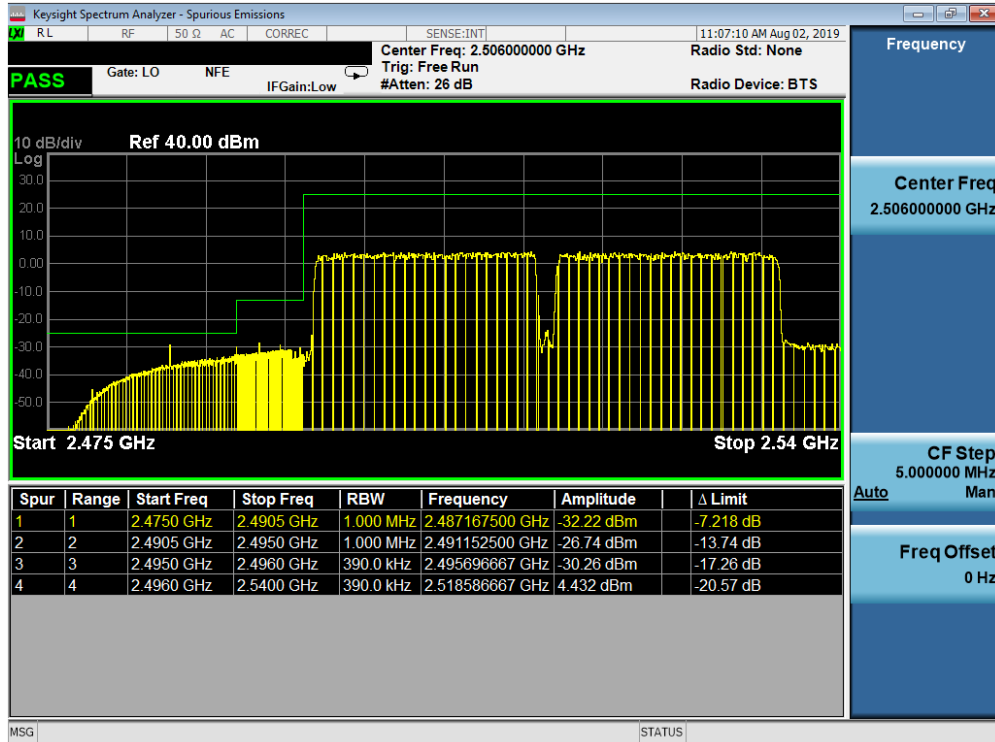


Plot 7-374. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

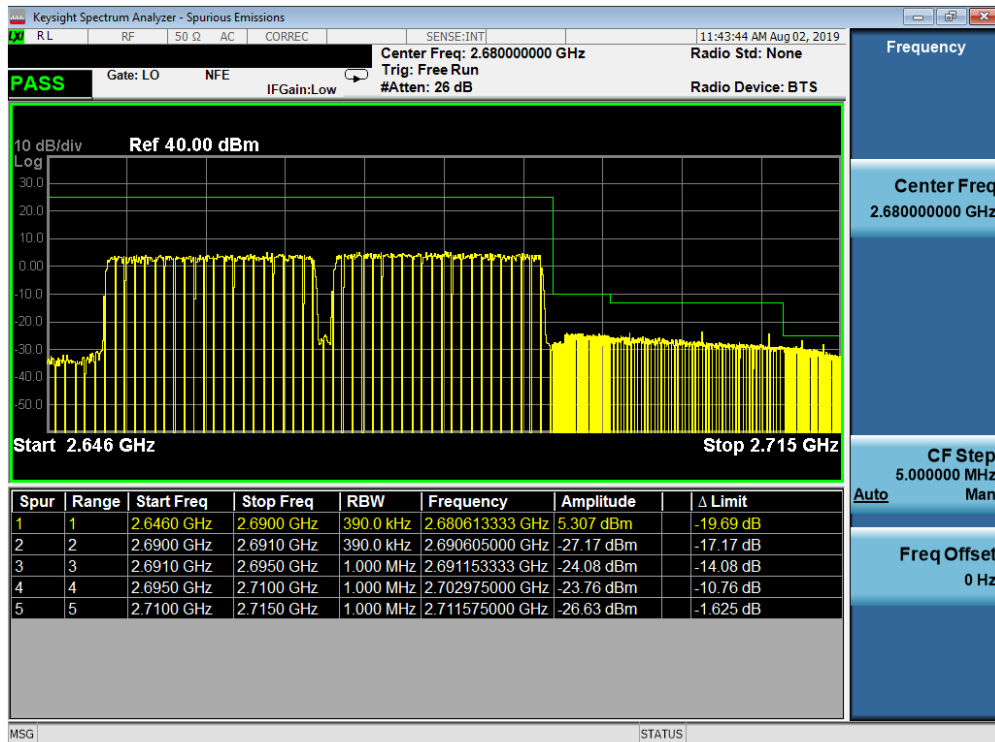


Plot 7-375. Conducted Spurious Plot (Band 41 (PC2) – 20.0MHz QPSK – PCC 1/0 SCC 1/99 – High Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 220 of 283



Plot 7-376. Lower ACP Plot (Band 41 (PC2) - QPSK – PCC: 20 MHz SCC:20 MHz – Full RB)



Plot 7-377. Upper ACP Plot (Band 41 (PC2) - QPSK – PCC: 20 MHz SCC:20 MHz – Full RB)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 221 of 283

7.8 Radiated Power (ERP/EIRP)

Test Overview

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

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
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: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 222 of 283

Test Setup

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

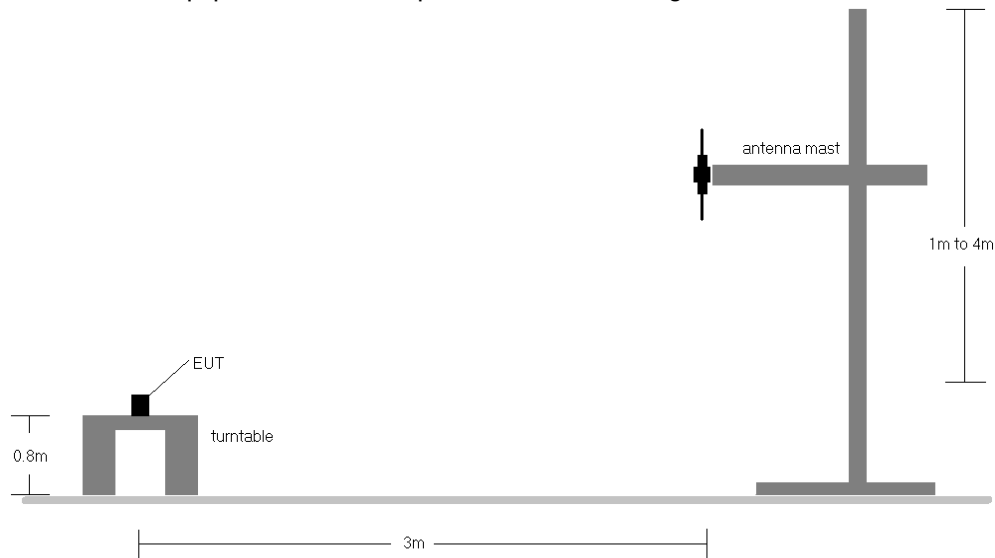


Figure 7-7. Radiated Test Setup <1GHz

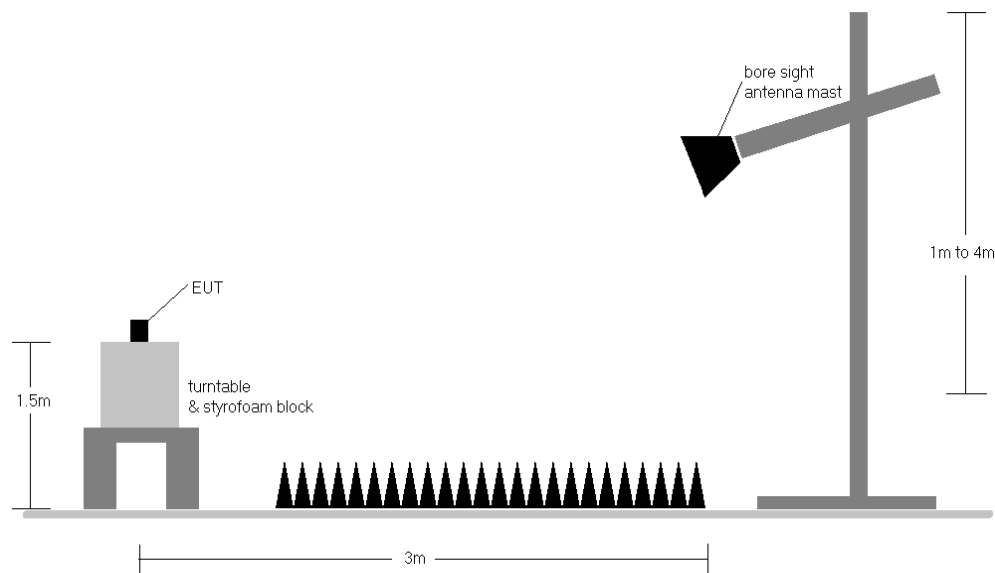


Figure 7-8. Radiated Test Setup >1GHz

Test Notes

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

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 223 of 283

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	180	141	1 / 24	14.14	2.90	14.89	0.031	34.77	-19.88
680.50	5	QPSK	H	183	120	1 / 24	14.16	3.20	15.21	0.033	34.77	-19.56
695.50	5	QPSK	H	179	121	1 / 24	13.97	3.30	15.12	0.033	34.77	-19.65
680.50	5	16-QAM	H	183	120	1 / 24	12.82	3.20	13.87	0.024	34.77	-20.90
680.50	5	64-QAM	H	183	120	1 / 24	11.32	3.20	12.37	0.017	34.77	-22.40
668.00	10	QPSK	H	184	133	1 / 49	14.12	2.90	14.87	0.031	34.77	-19.90
680.50	10	QPSK	H	177	125	1 / 49	14.15	3.20	15.20	0.033	34.77	-19.57
693.00	10	QPSK	H	185	127	1 / 49	13.95	3.30	15.10	0.032	34.77	-19.67
680.50	10	16-QAM	H	177	125	1 / 49	13.14	3.20	14.19	0.026	34.77	-20.58
680.50	10	64-QAM	H	177	125	1 / 49	12.25	3.20	13.30	0.021	34.77	-21.47
670.50	15	QPSK	H	190	133	1 / 74	13.75	3.00	14.60	0.029	34.77	-20.17
680.50	15	QPSK	H	180	137	1 / 74	14.21	3.20	15.26	0.034	34.77	-19.51
690.50	15	QPSK	H	179	129	1 / 74	14.52	3.30	15.67	0.037	34.77	-19.10
690.50	15	16-QAM	H	179	129	1 / 74	13.42	3.30	14.57	0.029	34.77	-20.20
690.50	15	64-QAM	H	179	129	1 / 74	12.66	3.30	13.81	0.024	34.77	-20.96
673.00	20	QPSK	H	188	126	1 / 99	13.97	3.10	14.92	0.031	34.77	-19.85
680.50	20	QPSK	H	179	114	1 / 99	14.43	3.20	15.48	0.035	34.77	-19.29
688.00	20	QPSK	H	183	118	1 / 99	14.74	3.30	15.89	0.039	34.77	-18.88
688.00	20	16-QAM	H	183	118	1 / 99	13.72	3.30	14.87	0.031	34.77	-19.90
688.00	20	64-QAM	H	183	118	1 / 99	12.64	3.30	13.79	0.024	34.77	-20.98
695.50	5	256-QAM	V	100	99	25 / 0	13.32	4.40	15.57	0.036	34.77	-19.20
695.50	5 (WCP)	256-QAM	H	158	342	25 / 0	11.14	3.30	12.29	0.017	34.77	-22.48

Table 7-7. ERP Data (Band 71)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 224 of 283

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]
699.70	1.4	QPSK	V	104	109	1 / 0	14.18	4.50	16.53	0.045	34.77	-18.24
707.50	1.4	QPSK	V	100	115	1 / 0	14.08	4.60	16.53	0.045	34.77	-18.24
715.30	1.4	QPSK	V	103	104	1 / 5	14.07	4.63	16.55	0.045	34.77	-18.22
699.70	1.4	16-QAM	V	104	109	1 / 0	13.15	4.50	15.50	0.035	34.77	-19.27
715.30	1.4	64-QAM	V	103	104	1 / 5	11.76	4.63	14.24	0.027	34.77	-20.53
700.50	3	QPSK	V	110	104	1 / 0	14.00	4.55	16.40	0.044	34.77	-18.37
707.50	3	QPSK	V	108	110	1 / 0	14.08	4.60	16.53	0.045	34.77	-18.24
714.50	3	QPSK	V	102	97	1 / 14	14.08	4.60	16.53	0.045	34.77	-18.24
714.50	3	16-QAM	V	102	97	1 / 14	12.93	4.60	15.38	0.035	34.77	-19.39
714.50	3	64-QAM	V	102	97	1 / 14	11.86	4.60	14.31	0.027	34.77	-20.46

Table 7-8. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
701.50	5	QPSK	V	107	110	1 / 0	13.90	4.60	16.35	0.043	34.77	-18.42
707.50	5	QPSK	V	105	100	1 / 0	14.08	4.60	16.53	0.045	34.77	-18.24
713.50	5	QPSK	V	103	90	1 / 24	14.08	4.60	16.53	0.045	34.77	-18.24
701.50	5	16-QAM	V	107	110	1 / 0	13.12	4.60	15.57	0.036	34.77	-19.20
701.50	5	64-QAM	V	107	110	1 / 0	11.18	4.60	13.63	0.023	34.77	-21.14
704.00	10	QPSK	V	100	108	1 / 49	14.04	4.50	16.39	0.044	34.77	-18.38
707.50	10	QPSK	V	102	86	1 / 49	14.02	4.60	16.47	0.044	34.77	-18.30
711.00	10	QPSK	V	100	95	1 / 0	14.19	4.60	16.64	0.046	34.77	-18.13
711.00	10	16-QAM	V	100	95	1 / 0	13.13	4.60	15.58	0.036	34.77	-19.19
711.00	10	64-QAM	V	100	95	1 / 0	11.57	4.60	14.02	0.025	34.77	-20.75
711.00	10	QPSK	H	163	111	1 / 0	14.90	3.70	16.45	0.044	34.77	-18.32
711.00	10 (WCP)	QPSK	V	138	338	1 / 0	7.54	4.60	9.99	0.010	34.77	-24.78

Table 7-9. ERP Data (Band 12/17)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 225 of 283

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	102	60	1 / 24	11.18	5.70	14.73	0.030	34.77	-20.04	16.88	0.049	36.99	-20.11
782.00	5	QPSK	V	110	61	1 / 24	11.08	5.80	14.73	0.030	34.77	-20.04	16.88	0.049	36.99	-20.11
784.50	5	QPSK	V	100	64	1 / 24	11.48	5.80	15.13	0.033	34.77	-19.64	17.28	0.053	36.99	-19.71
784.50	5	16-QAM	V	100	64	1 / 24	10.21	5.80	13.86	0.024	34.77	-20.91	16.01	0.040	36.99	-20.98
784.50	5	64-QAM	V	100	64	1 / 24	9.14	5.80	12.79	0.019	34.77	-21.98	14.94	0.031	36.99	-22.05
782.00	10	QPSK	V	162	125	1 / 0	12.35	5.80	16.00	0.040	34.77	-18.77	18.15	0.065	36.99	-18.84
782.00	10	16-QAM	V	162	125	1 / 0	11.27	5.80	14.92	0.031	34.77	-19.85	17.07	0.051	36.99	-19.92
782.00	10	64-QAM	V	162	125	1 / 0	9.79	5.80	13.44	0.022	34.77	-21.33	15.59	0.036	36.99	-21.40
782.00	10	QPSK	H	258	105	1 / 0	11.93	5.80	15.58	0.036	34.77	-19.19	17.73	0.059	36.99	-19.26
782.00	10 (WCP)	QPSK	V	316	115	1 / 0	6.18	5.80	9.83	0.010	34.77	-24.94	11.98	0.016	36.99	-25.01

Table 7-10. ERP Data (Band 13)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 226 of 283

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	V	115	98	1 / 5	12.14	6.30	16.29	0.043	38.45	-22.16	18.44	0.070	40.61	-22.17
836.50	1.4	QPSK	V	116	104	1 / 0	12.08	6.40	16.33	0.043	38.45	-22.12	18.48	0.070	40.61	-22.13
848.30	1.4	QPSK	V	121	121	1 / 0	12.00	6.50	16.35	0.043	38.45	-22.10	18.50	0.071	40.61	-22.11
848.30	1.4	16-QAM	V	121	121	1 / 0	11.36	6.50	15.71	0.037	38.45	-22.74	17.86	0.061	40.61	-22.75
848.30	1.4	64-QAM	V	121	121	1 / 0	9.08	6.50	13.43	0.022	38.45	-25.02	15.58	0.036	40.61	-25.03
825.50	3	QPSK	V	117	107	1 / 14	12.20	6.30	16.35	0.043	38.45	-22.10	18.50	0.071	40.61	-22.11
836.50	3	QPSK	V	125	112	1 / 0	12.07	6.40	16.32	0.043	38.45	-22.13	18.47	0.070	40.61	-22.14
847.50	3	QPSK	V	109	109	1 / 0	12.04	6.50	16.39	0.044	38.45	-22.06	18.54	0.071	40.61	-22.07
847.50	3	16-QAM	V	109	109	1 / 0	11.01	6.50	15.36	0.034	38.45	-23.09	17.51	0.056	40.61	-23.10
825.50	3	64-QAM	V	117	107	1 / 14	9.19	6.30	13.34	0.022	38.45	-25.11	15.49	0.035	40.61	-25.12
826.50	5	QPSK	V	123	112	1 / 24	12.21	6.30	16.36	0.043	38.45	-22.09	18.51	0.071	40.61	-22.10
836.50	5	QPSK	V	117	101	1 / 0	11.98	6.40	16.23	0.042	38.45	-22.22	18.38	0.069	40.61	-22.23
846.50	5	QPSK	V	121	98	1 / 0	12.18	6.50	16.53	0.045	38.45	-21.92	18.68	0.074	40.61	-21.93
826.50	5	16-QAM	V	123	112	1 / 24	11.24	6.30	15.39	0.035	38.45	-23.06	17.54	0.057	40.61	-23.07
826.50	5	64-QAM	V	123	112	1 / 24	9.28	6.30	13.43	0.022	38.45	-25.02	15.58	0.036	40.61	-25.03
829.00	10	QPSK	V	120	110	1 / 49	12.02	6.30	16.17	0.041	38.45	-22.28	18.32	0.068	40.61	-22.29
836.50	10	QPSK	V	121	107	1 / 0	12.23	6.40	16.48	0.044	38.45	-21.97	18.63	0.073	40.61	-21.98
844.00	10	QPSK	V	127	102	1 / 0	12.16	6.40	16.41	0.044	38.45	-22.04	18.56	0.072	40.61	-22.05
836.50	10	16-QAM	V	121	107	1 / 0	11.27	6.40	15.52	0.036	38.45	-22.93	17.67	0.058	40.61	-22.94
836.50	10	64-QAM	V	121	107	1 / 0	9.24	6.40	13.49	0.022	38.45	-24.96	15.64	0.037	40.61	-24.97
846.50	5	QPSK	H	209	89	1 / 0	11.63	6.70	16.18	0.041	38.45	-22.27	18.33	0.068	40.61	-22.28
846.50	5 (WCP)	QPSK	V	130	77	1 / 0	7.56	6.35	11.76	0.015	38.45	-26.69	13.91	0.025	40.61	-26.70

Table 7-11. ERP Data (Band 26/5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
831.50	15	QPSK	V	130	106	1 / 74	12.30	6.35	16.50	0.045	38.45	-21.95	18.65	0.073	40.61	-21.96
836.50	15	QPSK	V	127	99	1 / 0	11.98	6.40	16.23	0.042	38.45	-22.22	18.38	0.069	40.61	-22.23
841.50	15	QPSK	V	131	110	1 / 0	12.18	6.40	16.43	0.044	38.45	-22.02	18.58	0.072	40.61	-22.03
831.50	15	16-QAM	V	130	106	1 / 74	11.30	6.35	15.50	0.035	38.45	-22.95	17.65	0.058	40.61	-22.96
841.50	15	64-QAM	V	131	110	1 / 0	9.91	6.40	14.16	0.026	38.45	-24.29	16.31	0.043	40.61	-24.30

Table 7-12. ERP Data (Band 26)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 227 of 283

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	287	328	1 / 5	13.39	9.35	22.74	0.188	30.00	-7.26
1745.00	1.4	QPSK	V	280	311	1 / 0	14.03	9.11	23.14	0.206	30.00	-6.86
1779.30	1.4	QPSK	V	311	331	1 / 0	13.02	9.17	22.19	0.166	30.00	-7.81
1745.00	1.4	16-QAM	V	280	311	1 / 0	13.79	9.11	22.90	0.195	30.00	-7.10
1745.00	1.4	64-QAM	V	280	311	1 / 0	12.34	9.11	21.45	0.140	30.00	-8.55
1711.50	3	QPSK	V	298	330	1 / 14	13.43	9.34	22.77	0.189	30.00	-7.23
1745.00	3	QPSK	V	280	320	1 / 0	14.47	9.11	23.58	0.228	30.00	-6.42
1778.50	3	QPSK	V	311	318	1 / 0	13.70	9.17	22.87	0.194	30.00	-7.13
1745.00	3	16-QAM	V	280	320	1 / 0	13.79	9.11	22.90	0.195	30.00	-7.10
1745.00	3	64-QAM	V	280	320	1 / 0	12.37	9.11	21.48	0.141	30.00	-8.52
1712.50	5	QPSK	V	291	331	1 / 24	13.55	9.34	22.89	0.194	30.00	-7.11
1745.00	5	QPSK	V	277	310	1 / 0	14.13	9.11	23.24	0.211	30.00	-6.76
1777.50	5	QPSK	V	307	322	1 / 0	13.16	9.16	22.32	0.171	30.00	-7.68
1745.00	5	16-QAM	V	277	310	1 / 0	13.84	9.11	22.95	0.197	30.00	-7.05
1745.00	5	64-QAM	V	277	310	1 / 0	12.44	9.11	21.55	0.143	30.00	-8.45
1715.00	10	QPSK	V	280	327	1 / 49	13.44	9.32	22.76	0.189	30.00	-7.24
1745.00	10	QPSK	V	290	320	1 / 0	14.19	9.11	23.30	0.214	30.00	-6.70
1775.00	10	QPSK	V	311	317	1 / 0	13.17	9.16	22.33	0.171	30.00	-7.67
1745.00	10	16-QAM	V	290	320	1 / 0	13.92	9.11	23.03	0.201	30.00	-6.97
1745.00	10	64-QAM	V	290	320	1 / 0	12.48	9.11	21.59	0.144	30.00	-8.41
1717.50	15	QPSK	V	287	330	1 / 74	13.66	9.30	22.96	0.198	30.00	-7.04
1745.00	15	QPSK	V	292	329	1 / 0	14.56	9.11	23.67	0.233	30.00	-6.33
1772.50	15	QPSK	V	307	321	1 / 0	13.41	9.15	22.56	0.180	30.00	-7.44
1745.00	15	16-QAM	V	292	329	1 / 0	14.07	9.11	23.18	0.208	30.00	-6.82
1745.00	15	64-QAM	V	292	329	1 / 0	12.68	9.11	21.79	0.151	30.00	-8.21
1720.00	20	QPSK	V	300	338	1 / 99	13.73	9.28	23.01	0.200	30.00	-6.99
1745.00	20	QPSK	V	291	333	1 / 0	14.47	9.11	23.58	0.228	30.00	-6.42
1770.00	20	QPSK	V	314	330	1 / 0	13.70	9.14	22.84	0.192	30.00	-7.16
1745.00	20	16-QAM	V	291	333	1 / 0	13.69	9.11	22.80	0.190	30.00	-7.20
1745.00	20	64-QAM	V	291	333	1 / 0	12.50	9.11	21.61	0.145	30.00	-8.39
1745.00	15	QPSK	H	100	219	1 / 0	12.02	9.23	21.25	0.133	30.00	-8.75
1745.00	15 (WCP)	QPSK	V	162	302	1 / 0	11.82	9.11	20.93	0.124	30.00	-9.07

Table 7-13. EIRP Data (Band 66/4)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 228 of 283

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	110	362	1 / 0	14.13	9.48	23.61	0.230	33.01	-9.40
1882.50	1.4	QPSK	H	107	4	1 / 5	14.18	9.94	24.12	0.258	33.01	-8.90
1914.30	1.4	QPSK	H	100	358	1 / 0	14.03	10.29	24.32	0.270	33.01	-8.69
1914.30	1.4	16-QAM	H	100	358	1 / 0	13.70	10.29	23.99	0.251	33.01	-9.02
1914.30	1.4	64-QAM	H	100	358	1 / 0	12.38	10.29	22.67	0.185	33.01	-10.34
1851.50	3	QPSK	H	100	7	1 / 0	14.15	9.50	23.65	0.231	33.01	-9.36
1882.50	3	QPSK	H	104	2	1 / 14	14.27	9.94	24.21	0.263	33.01	-8.81
1913.50	3	QPSK	H	108	4	1 / 0	14.01	10.29	24.30	0.269	33.01	-8.72
1913.50	3	16-QAM	H	108	4	1 / 0	13.70	10.29	23.99	0.250	33.01	-9.03
1913.50	3	64-QAM	H	108	4	1 / 0	12.42	10.29	22.71	0.186	33.01	-10.31
1852.50	5	QPSK	H	107	5	1 / 0	14.12	9.51	23.63	0.231	33.01	-9.38
1882.50	5	QPSK	H	110	3	1 / 0	14.34	9.94	24.28	0.268	33.01	-8.74
1912.50	5	QPSK	H	105	362	1 / 0	14.00	10.28	24.28	0.268	33.01	-8.73
1912.50	5	16-QAM	H	105	362	1 / 0	13.72	10.28	24.00	0.251	33.01	-9.01
1912.50	5	64-QAM	H	105	362	1 / 0	12.43	10.28	22.71	0.187	33.01	-10.30
1855.00	10	QPSK	H	108	7	1 / 0	14.15	9.55	23.70	0.234	33.01	-9.31
1882.50	10	QPSK	H	110	363	1 / 0	14.21	9.94	24.15	0.260	33.01	-8.87
1910.00	10	QPSK	H	107	3	1 / 0	14.10	10.26	24.36	0.273	33.01	-8.65
1910.00	10	16-QAM	H	107	3	1 / 0	13.67	10.26	23.93	0.247	33.01	-9.08
1910.00	10	64-QAM	H	107	3	1 / 0	12.42	10.26	22.68	0.185	33.01	-10.33
1857.50	15	QPSK	H	118	359	1 / 0	14.22	9.58	23.80	0.240	33.01	-9.21
1882.50	15	QPSK	H	107	7	1 / 0	14.32	9.94	24.26	0.266	33.01	-8.76
1907.50	15	QPSK	H	100	10	1 / 0	14.34	10.24	24.58	0.287	33.01	-8.43
1907.50	15	16-QAM	H	100	10	1 / 0	13.80	10.24	24.04	0.253	33.01	-8.97
1907.50	15	64-QAM	H	100	10	1 / 0	12.53	10.24	22.77	0.189	33.01	-10.24
1860.00	20	QPSK	H	100	4	1 / 0	14.35	9.62	23.97	0.249	33.01	-9.04
1882.50	20	QPSK	H	102	3	1 / 99	14.41	9.94	24.35	0.272	33.01	-8.67
1905.00	20	QPSK	H	100	363	1 / 0	14.43	10.22	24.65	0.292	33.01	-8.36
1905.00	20	16-QAM	H	100	363	1 / 0	13.52	10.22	23.74	0.237	33.01	-9.27
1905.00	20	64-QAM	H	100	363	1 / 0	12.39	10.22	22.61	0.182	33.01	-10.40
1905.00	20	QPSK	V	331	261	1 / 0	12.22	10.22	22.44	0.175	33.01	-10.57
1905.00	20 (WCP)	QPSK	H	100	1	1 / 0	14.05	10.22	24.27	0.267	33.01	-8.74

Table 7-14. EIRP Data (Band 25/2)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 229 of 283

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]
2307.50	5	QPSK	H	115	340	1 / 24	8.90	10.31	19.21	0.083	23.98	-4.77
2312.50	5	QPSK	H	121	339	1 / 24	9.01	10.31	19.32	0.085	23.98	-4.66
2312.50	5	16-QAM	H	121	339	1 / 24	8.40	10.31	18.71	0.074	23.98	-5.27
2312.50	5	64-QAM	H	121	339	1 / 24	7.45	10.31	17.76	0.060	23.98	-6.22
2310.00	10	QPSK	H	100	336	1 / 49	9.71	10.31	20.02	0.100	23.98	-3.96
2310.00	10	16-QAM	H	100	336	1 / 49	8.88	10.31	19.19	0.083	23.98	-4.79
2310.00	10	64-QAM	H	100	336	1 / 49	8.13	10.31	18.44	0.070	23.98	-5.54
2310.00	10	QPSK	V	324	92	1 / 49	8.15	10.22	18.37	0.069	23.98	-5.61
2310.00	10 (WCP)	QPSK	H	100	16	1 / 0	3.80	10.31	14.11	0.026	23.98	-9.87

Table 7-15. EIRP Data (Band 30)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 230 of 283

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	112	299	1 / 24	12.23	9.43	21.66	0.146	33.01	-11.35
2535.00	5	QPSK	H	107	307	1 / 24	12.66	9.39	22.05	0.160	33.01	-10.96
2567.50	5	QPSK	H	101	308	1 / 24	12.90	9.45	22.35	0.172	33.01	-10.66
2567.50	5	16-QAM	H	101	308	1 / 24	11.66	9.45	21.11	0.129	33.01	-11.90
2535.00	5	64-QAM	H	107	307	1 / 24	10.65	9.39	20.04	0.101	33.01	-12.97
2505.00	10	QPSK	H	107	311	1 / 49	12.28	9.43	21.71	0.148	33.01	-11.30
2535.00	10	QPSK	H	111	298	1 / 49	12.56	9.39	21.95	0.157	33.01	-11.06
2565.00	10	QPSK	H	109	301	1 / 49	12.85	9.44	22.29	0.169	33.01	-10.72
2565.00	10	16-QAM	H	109	301	1 / 49	11.76	9.44	21.20	0.132	33.01	-11.81
2535.00	10	64-QAM	H	111	298	1 / 49	10.64	9.39	20.03	0.101	33.01	-12.98
2507.50	15	QPSK	H	110	307	1 / 74	12.22	9.42	21.64	0.146	33.01	-11.37
2535.00	15	QPSK	H	104	311	1 / 74	12.51	9.39	21.90	0.155	33.01	-11.11
2562.50	15	QPSK	H	101	307	1 / 74	12.82	9.43	22.25	0.168	33.01	-10.76
2535.00	15	16-QAM	H	104	311	1 / 74	11.75	9.39	21.14	0.130	33.01	-11.87
2535.00	15	64-QAM	H	104	311	1 / 74	10.62	9.39	20.01	0.100	33.01	-13.00
2510.00	20	QPSK	H	100	304	1 / 99	12.16	9.42	21.58	0.144	33.01	-11.43
2535.00	20	QPSK	H	113	305	1 / 99	12.51	9.39	21.90	0.155	33.01	-11.11
2560.00	20	QPSK	H	100	312	1 / 99	12.58	9.42	22.00	0.158	33.01	-11.01
2560.00	20	16-QAM	H	100	312	1 / 99	11.59	9.42	21.01	0.126	33.01	-12.00
2560.00	20	64-QAM	H	100	312	1 / 99	10.49	9.42	19.91	0.098	33.01	-13.10
2567.50	5	256-QAM	V	100	98	25 / 0	9.64	9.42	19.06	0.081	33.01	-13.95
2567.50	5 (WCP)	256-QAM	H	399	1	25 / 0	8.43	9.42	17.85	0.061	33.01	-15.16

Table 7-16. EIRP Data (Band 7)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 231 of 283

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	H	167	305	1 / 24	12.95	9.43	22.38	0.173	33.01	-10.63
2593.00	5	QPSK	H	155	313	1 / 0	14.71	9.55	24.26	0.267	33.01	-8.75
2687.50	5	QPSK	H	165	312	1 / 24	14.43	9.82	24.25	0.266	33.01	-8.76
2593.00	5	16-QAM	H	155	313	1 / 0	13.39	9.55	22.94	0.197	33.01	-10.07
2593.00	5	64-QAM	H	155	313	1 / 0	12.21	9.55	21.76	0.150	33.01	-11.25
2501.00	10	QPSK	H	115	319	1 / 0	12.81	9.43	22.24	0.167	33.01	-10.77
2593.00	10	QPSK	H	107	323	1 / 0	13.67	9.55	23.22	0.210	33.01	-9.79
2685.00	10	QPSK	H	119	308	1 / 49	14.00	9.82	23.82	0.241	33.01	-9.19
2685.00	10	16-QAM	H	119	308	1 / 49	12.76	9.82	22.58	0.181	33.01	-10.43
2685.00	10	64-QAM	H	119	308	1 / 49	10.64	9.82	20.46	0.111	33.01	-12.55
2503.50	15	QPSK	H	100	320	1 / 74	15.04	9.43	24.47	0.280	33.01	-8.54
2593.00	15	QPSK	H	100	319	1 / 0	15.66	9.55	25.21	0.332	33.01	-7.80
2682.50	15	QPSK	H	110	310	1 / 74	14.82	9.83	24.65	0.292	33.01	-8.36
2593.00	15	16-QAM	H	100	319	1 / 0	14.51	9.55	24.06	0.255	33.01	-8.95
2593.00	15	64-QAM	H	100	319	1 / 0	13.37	9.55	22.92	0.196	33.01	-10.09
2506.00	20	QPSK	H	118	320	1 / 0	12.17	9.42	21.59	0.144	33.01	-11.42
2593.00	20	QPSK	H	106	318	1 / 0	14.36	9.55	23.91	0.246	33.01	-9.10
2680.00	20	QPSK	H	104	315	1 / 0	12.73	9.83	22.56	0.181	33.01	-10.45
2593.00	20	16-QAM	H	106	318	1 / 0	13.61	9.55	23.16	0.207	33.01	-9.85
2593.00	20	64-QAM	H	106	318	1 / 0	12.68	9.55	22.23	0.167	33.01	-10.78
2593.00	15	QPSK	V	107	51	1 / 0	9.36	9.55	18.91	0.078	33.01	-14.10
2593.00	15 (WCP)	QPSK	H	105	321	1 / 0	12.97	9.55	22.52	0.179	33.01	-10.49

Table 7-17. EIRP Data (Band 41 – PC2)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 232 of 283

7.9 Radiated Spurious Emissions Measurements

Test Overview

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

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

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

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 233 of 283

Test Setup

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

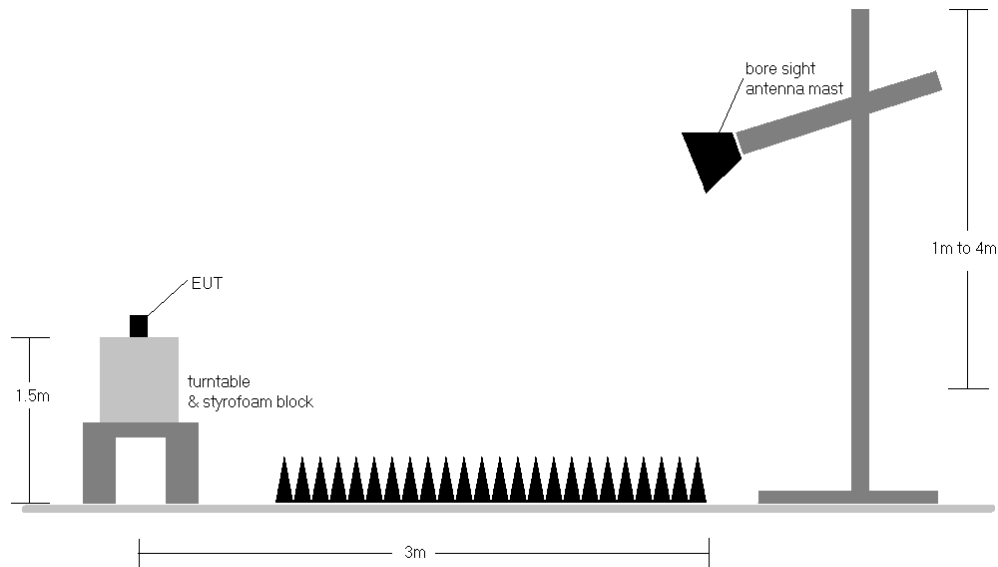


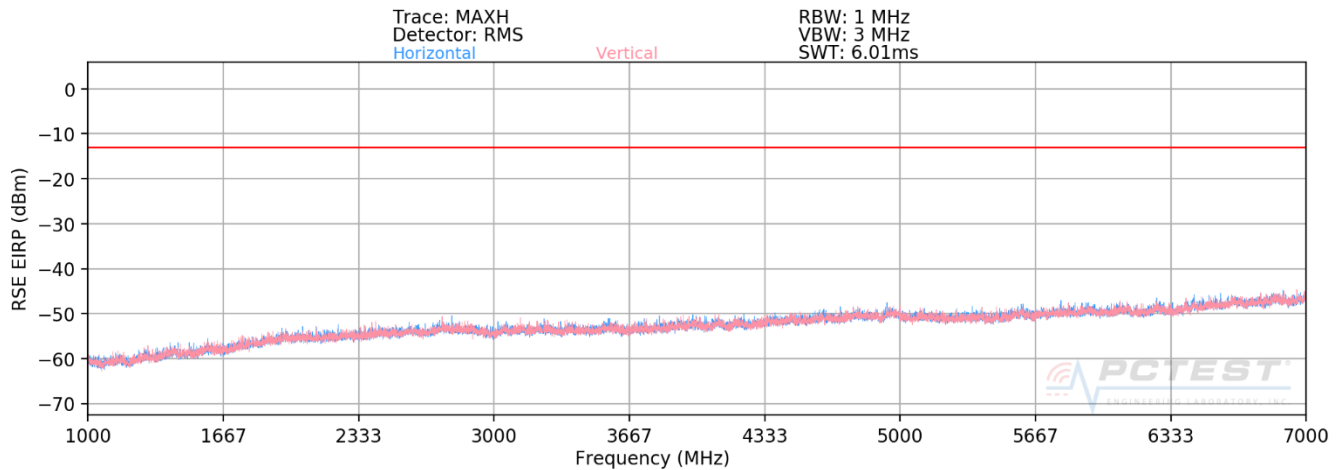
Figure 7-9. Test Instrument & Measurement Setup

Test Notes

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

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 234 of 283

Band 71



Plot 7-378. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY: 673.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	V	294	101	-74.87	7.47	-67.39	-54.4
2019.00	V	-	-	-72.72	8.68	-64.04	-51.0

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

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 235 of 283

OPERATING FREQUENCY: 680.50 MHz
 MODULATION SIGNAL: 133297.00
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	V	133	175	-73.29	7.48	-65.80	-52.8
2041.50	V	-	-	-72.13	8.76	-63.37	-50.4

Table 7-19. Radiated Spurious Data (Band 71 – Mid Channel)

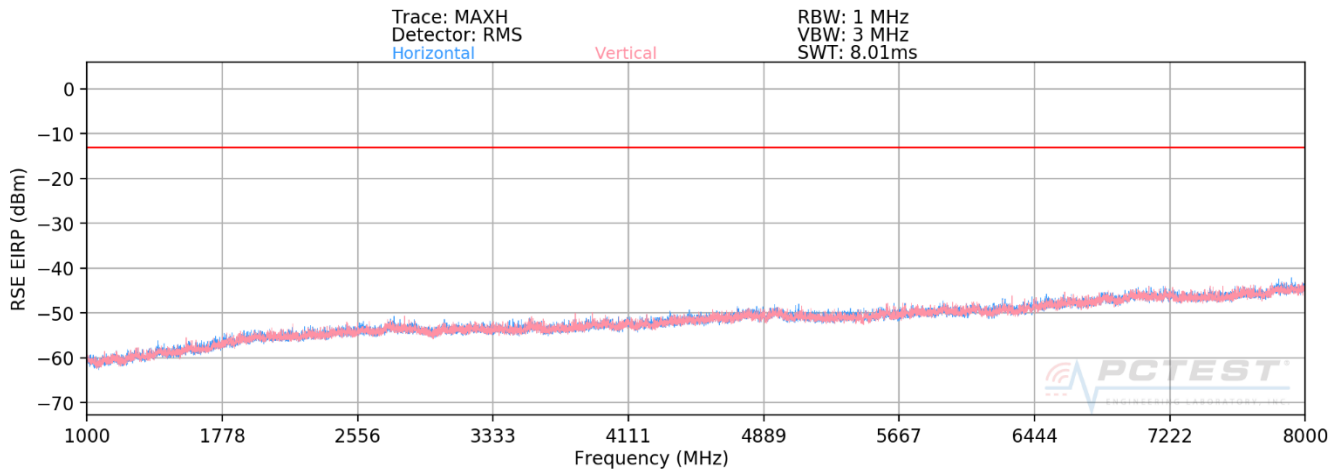
OPERATING FREQUENCY: 688.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	V	121	188	-73.26	7.46	-65.80	-52.8
2064.00	V	-	-	-71.77	8.80	-62.96	-50.0

Table 7-20. Radiated Spurious Data (Band 71 – High Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 236 of 283

Band 12/17



Plot 7-379. Radiated Spurious Plot above 1GHz (Band 12/17)

OPERATING FREQUENCY: 704.00 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	V	-	-	-74.25	7.54	-66.71	-53.7
2112.00	V	-	-	-72.73	8.85	-63.89	-50.9

Table 7-21. Radiated Spurious Data (Band 12/17 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 237 of 283

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	V	-	-	-74.35	7.63	-66.72	-53.7
2122.50	V	-	-	-72.61	8.86	-63.75	-50.7

Table 7-22. Radiated Spurious Data (Band 12/17 – Mid Channel)

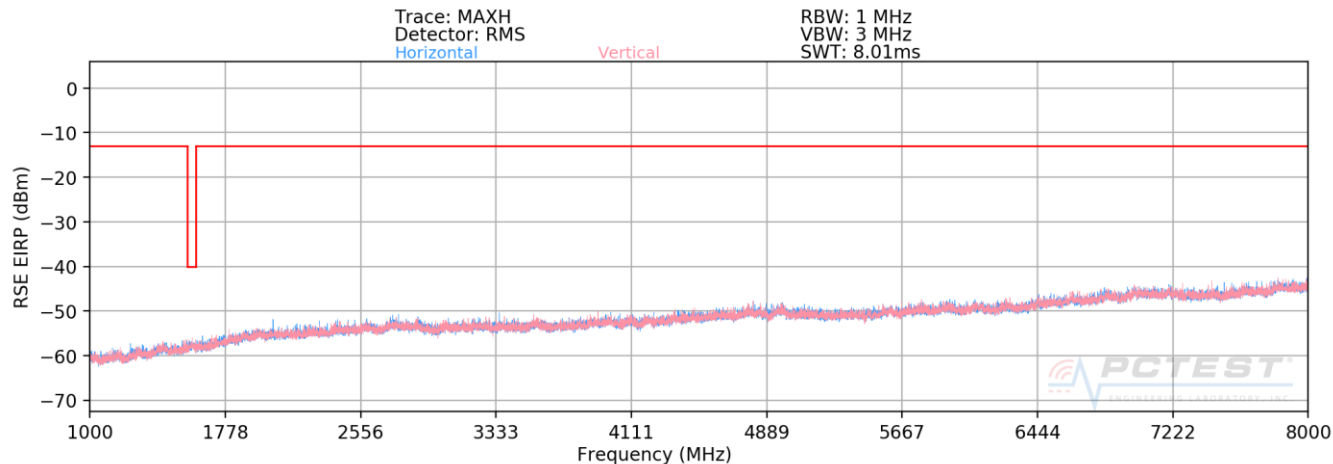
OPERATING FREQUENCY: 711.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	V	-	-	-74.35	7.72	-66.62	-53.6
2133.00	V	-	-	-72.42	8.87	-63.55	-50.6

Table 7-23. Radiated Spurious Data (Band 12/17 – High Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 238 of 283

Band 13



Plot 7-380. Radiated Spurious Plot above 1GHz (Band 13)

OPERATING FREQUENCY: 782.00 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	V	-	-	-74.35	8.53	-65.82	-52.8
2346.00	V	-	-	-72.72	9.43	-63.29	-50.3

Table 7-24. Radiated Spurious Data (Band 13 – Mid Channel)

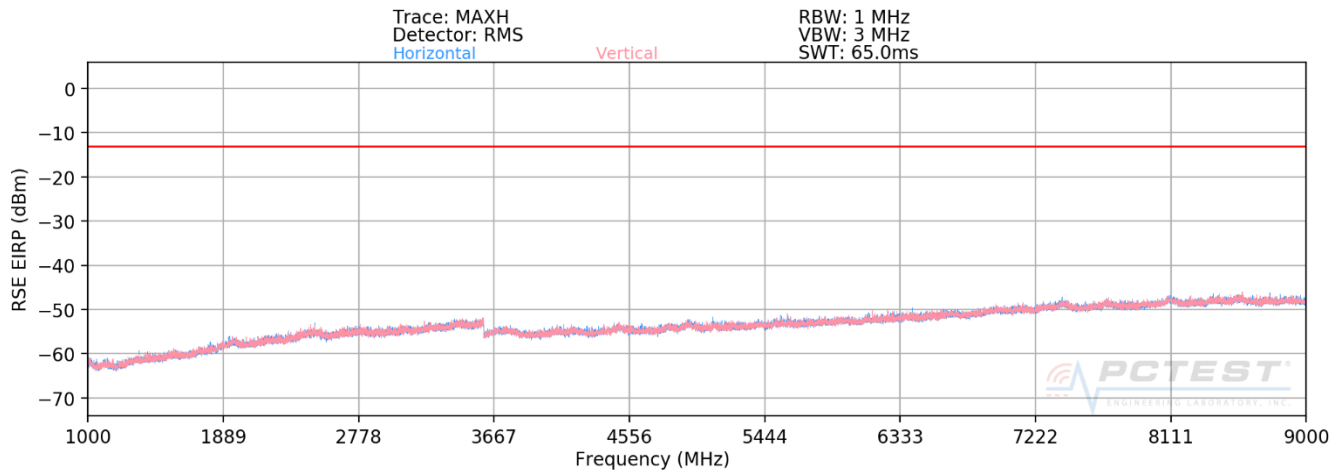
MODULATION SIGNAL: QPSK
BANDWIDTH: 10.00 MHz
DISTANCE: 3 meters
NARROWBAND EMISSION LIMIT: -50 dBm
WIDEBAND EMISSION LIMIT: -40 dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	V	140	214	-74.76	8.53	-66.23	-26.2

Table 7-25. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2-ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 239 of 283

Band 26/5



Plot 7-381. Radiated Spurious Plot above 1GHz (Band 26/5)

OPERATING FREQUENCY: 831.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1663.00	V	-	-	-73.22	8.95	-64.27	-51.3
2494.50	V	141	179	-68.50	9.73	-58.77	-45.8
3326.00	V	-	-	-68.88	9.59	-59.29	-46.3

Table 7-26. Radiated Spurious Data (Band 26/5 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 240 of 283

OPERATING FREQUENCY: 836.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	V	-	-	-73.17	8.95	-64.22	-51.2
2509.50	V	174	179	-66.06	9.75	-56.31	-43.3
3346.00	V	-	-	-68.75	9.60	-59.15	-46.1

Table 7-27. Radiated Spurious Data (Band 26/5 – Mid Channel)

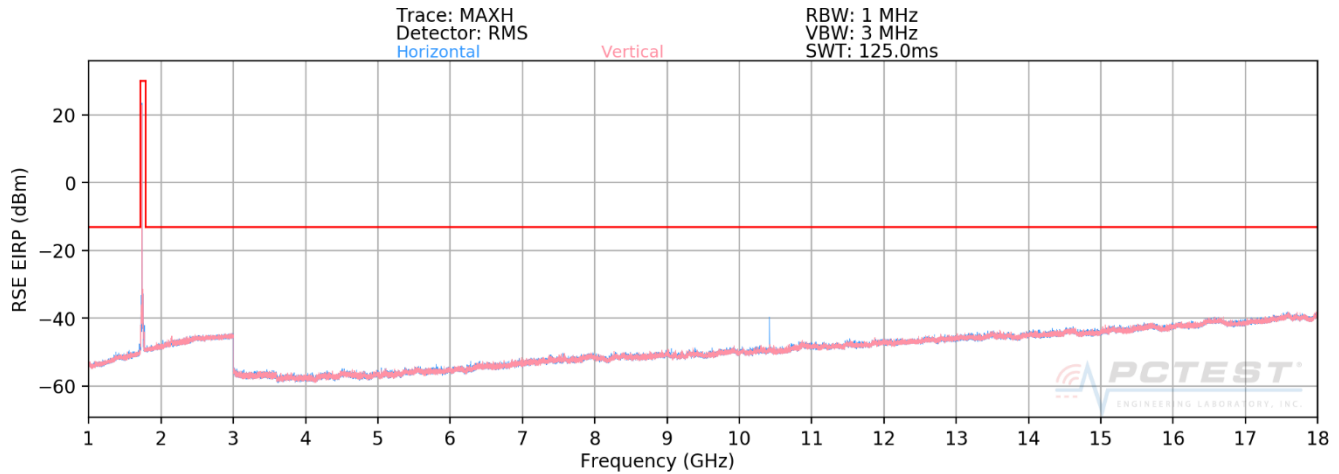
OPERATING FREQUENCY: 841.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1683.00	V	331	359	-72.81	8.95	-63.86	-50.9
2524.50	V	198	359	-66.09	9.75	-56.34	-43.3
3366.00	V	-	-	-68.54	9.67	-58.87	-45.9

Table 7-28. Radiated Spurious Data (Band 26/5 – High Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 241 of 283

Band 66/4



Plot 7-382. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY: 1720.00 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 20.0 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	H	109	217	-37.91	9.84	-28.07	-15.1
5160.00	H	104	44	-49.75	10.71	-39.04	-26.0
6880.00	H	100	23	-51.55	11.68	-39.87	-26.9
8600.00	H	399	320	-60.12	11.08	-49.04	-36.0
10320.00	H	-	-	-63.89	12.38	-51.51	-38.5
12040.00	H	-	-	-62.19	12.71	-49.48	-36.5

Table 7-29. Radiated Spurious Data (Band 66/4 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 242 of 283

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	100	231	-44.16	9.91	-34.25	-21.3
5235.00	H	102	35	-55.88	10.73	-45.15	-32.1
6980.00	H	116	21	-65.90	11.82	-54.07	-41.1
8725.00	H	-	-	-65.88	11.00	-54.88	-41.9

Table 7-30. Radiated Spurious Data (Band 66/4 – Mid Channel)

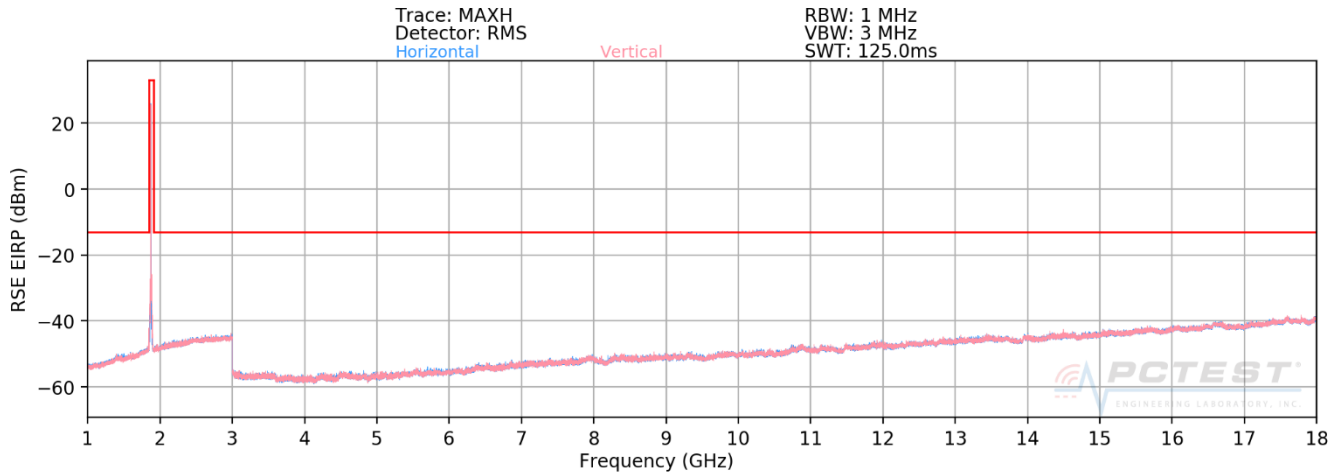
OPERATING FREQUENCY: 1770.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	H	207	224	-60.56	9.89	-50.66	-37.7
5310.00	H	-	-	-70.71	10.69	-60.02	-47.0

Table 7-31. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 243 of 283

Band 25/2



Plot 7-383. Radiated Spurious Plot above 1GHz (Band 25/2)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3720.00	H	-	-	-68.70	9.51	-59.19	-46.2
5580.00	H	-	-	-68.25	10.99	-57.27	-44.3

Table 7-32. Radiated Spurious Data (Band 25/2 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset			Page 244 of 283

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	-	-	-68.51	9.36	-59.15	-46.2
5647.50	H	-	-	-68.39	11.19	-57.20	-44.2

Table 7-33. Radiated Spurious Data (Band 25/2 – Mid Channel)

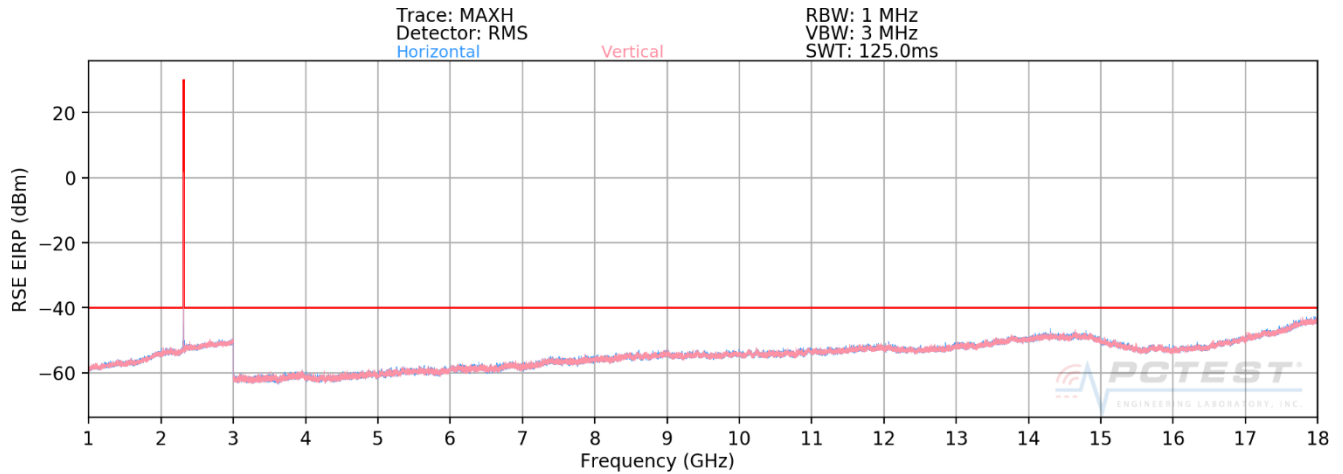
OPERATING FREQUENCY: 1905.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3810.00	H	-	-	-68.07	9.29	-58.77	-45.8
5715.00	H	-	-	-68.31	11.35	-56.97	-44.0

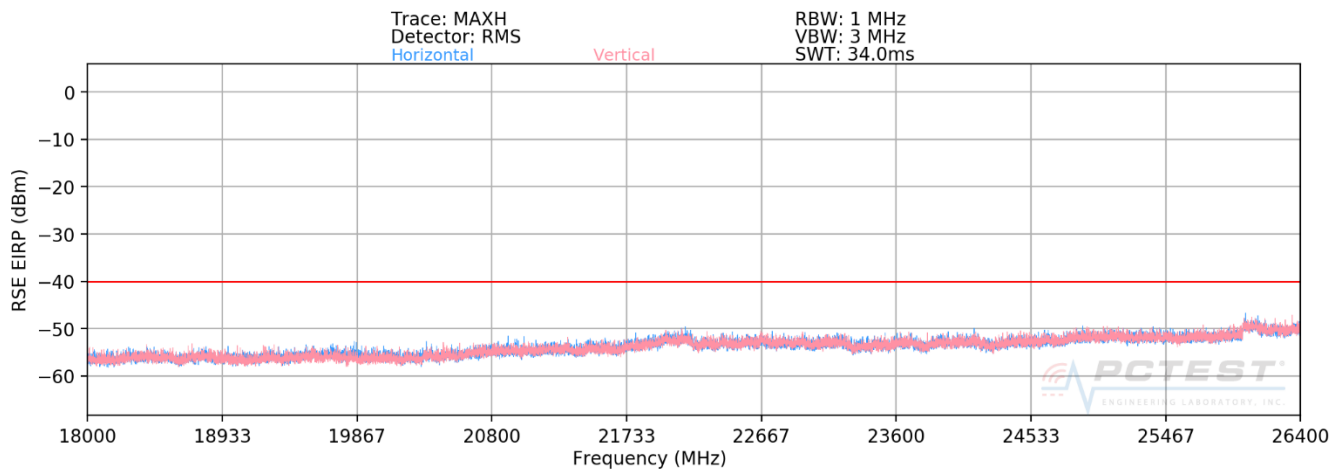
Table 7-34. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 245 of 283

Band 30



Plot 7-384. Radiated Spurious Plot 1GHz - 18GHz (Band 30)



Plot 7-385. Radiated Spurious Plot 18GHz - 26.5GHz (Band 30)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 246 of 283

OPERATING FREQUENCY: 2310.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	V	188	335	-75.16	10.92	-64.25	-24.2
6930.00	V	348	309	-68.56	11.74	-56.81	-16.8
9240.00	V	-	-	-70.15	11.62	-58.53	-18.5
11550.00	V	-	-	-69.78	12.72	-57.06	-17.1

Table 7-35. Radiated Spurious Data (Band 30 – Mid Channel)

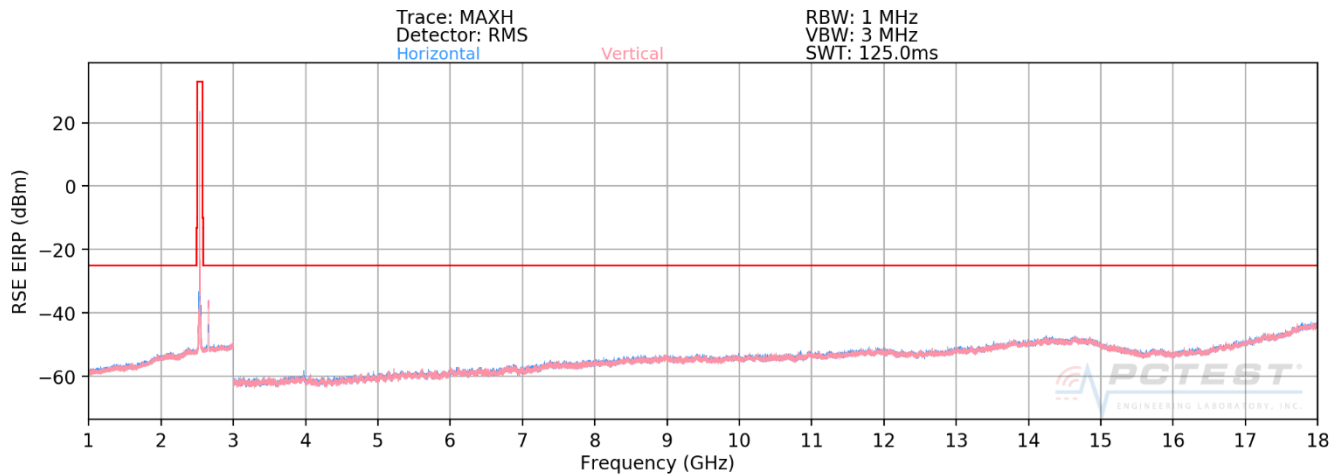
OPERATING FREQUENCY: 2310.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	V	-	-	-75.33	10.92	-64.42	-24.4
6930.00	V	-	-	-73.61	11.74	-61.86	-21.9

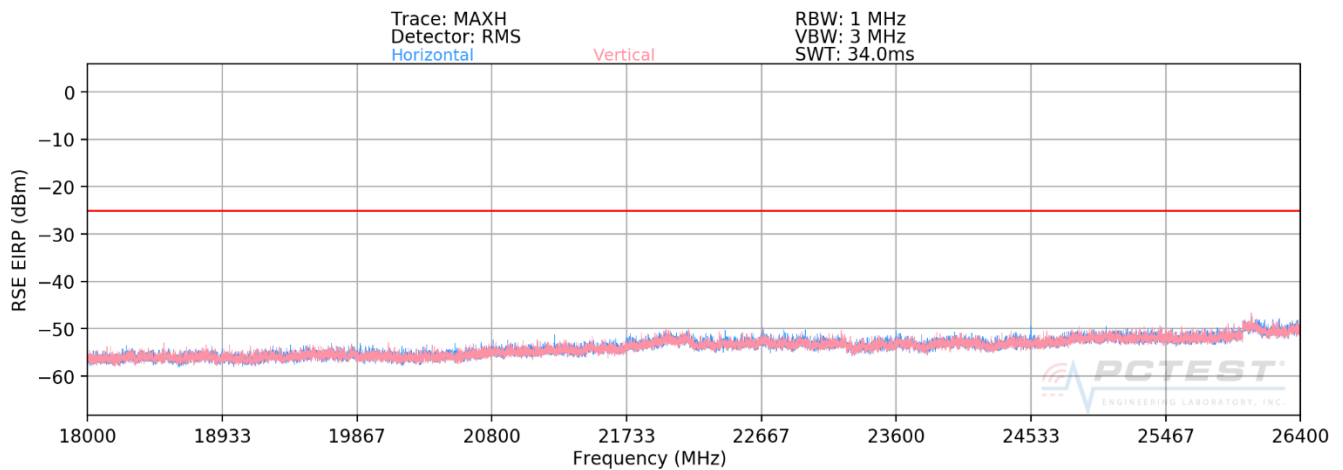
Table 7-36. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 247 of 283

Band 7



Plot 7-386. Radiated Spurious Plot 1GHz - 18GHz (Band 7)



Plot 7-387. Radiated Spurious Plot 18GHz - 26.5GHz (Band 7)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 248 of 283

OPERATING FREQUENCY: 2510.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	V	400	155	-74.18	10.88	-63.29	-38.3
7530.00	V	-	-	-71.29	11.13	-60.16	-35.2
10040.00	V	-	-	-70.23	11.99	-58.24	-33.2

Table 7-37. Radiated Spurious Data (Band 7 – Low Channel)

OPERATING FREQUENCY: 2535.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	V	133	246	-73.33	10.75	-62.58	-37.6
7605.00	V	-	-	-71.72	11.25	-60.47	-35.5
10140.00	V	-	-	-69.94	12.07	-57.87	-32.9

Table 7-38. Radiated Spurious Data (Band 7 – Mid Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 249 of 283

OPERATING FREQUENCY: 2560.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	V	400	344	-74.33	10.68	-63.64	-38.6
7680.00	V	-	-	-71.75	11.39	-60.36	-35.4
10240.00	V	-	-	-69.53	12.18	-57.35	-32.3

Table 7-39. Radiated Spurious Data (Band 7 – High Channel)

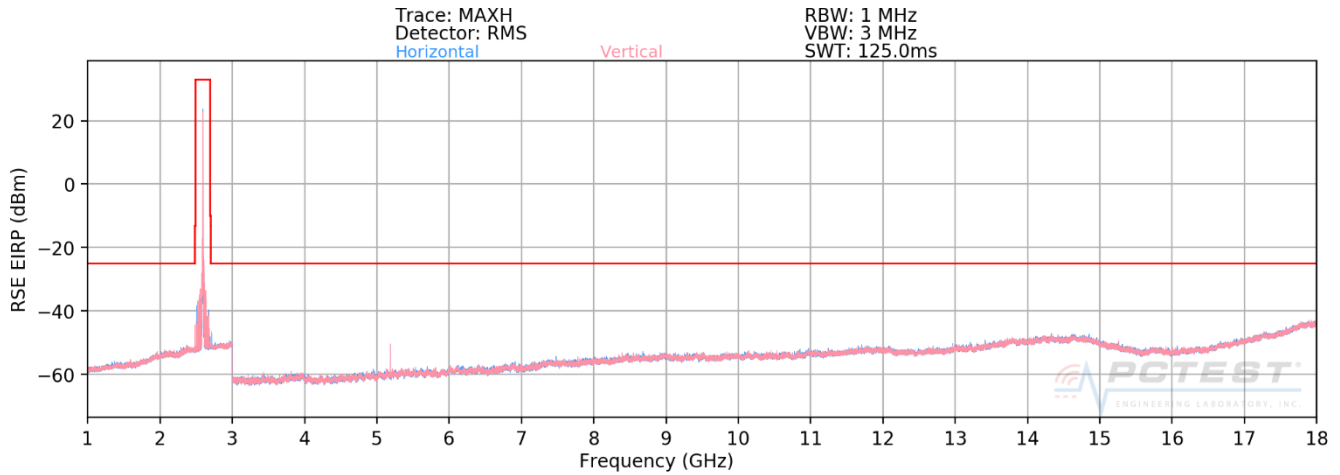
OPERATING FREQUENCY: 2560.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	V	400	116	-74.37	10.68	-63.68	-38.7
7680.00	V	-	-	-71.40	11.39	-60.01	-35.0
10240.00	V	-	-	-69.82	12.18	-57.64	-32.6

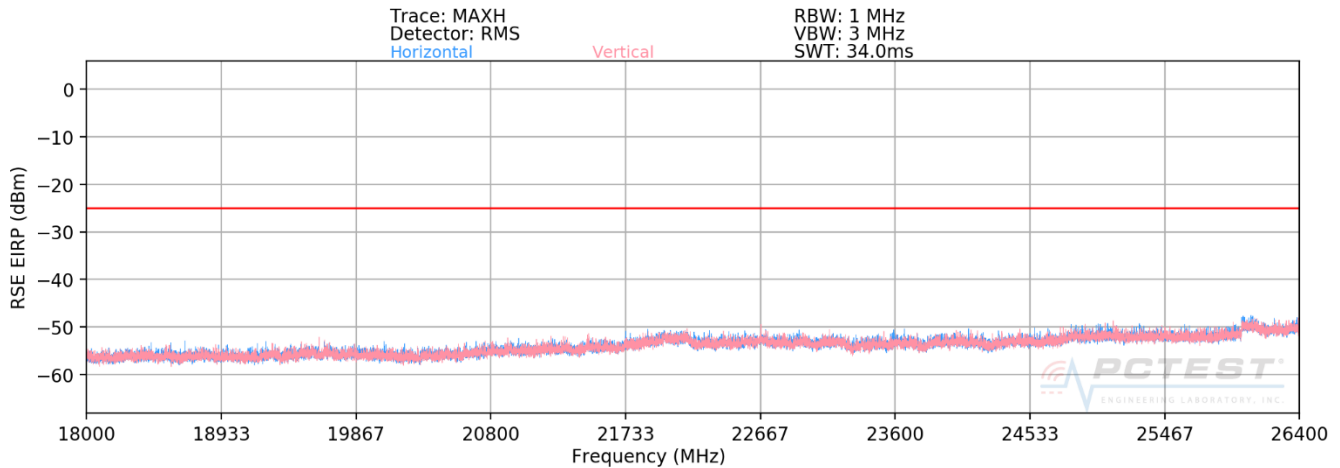
Table 7-40. Radiated Spurious Data with WCP (Band 7 – High Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 250 of 283

Band 41 (PC2)



Plot 7-388. Radiated Spurious Plot 1GHz - 18GHz (Band 41 (PC2))



Plot 7-389. Radiated Spurious Plot 18GHz - 26.5GHz (Band 41 (PC2))

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 251 of 283

OPERATING FREQUENCY: 2510.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	120	313	-68.80	10.88	-57.91	-32.9
7530.00	H	123	9	-56.59	11.13	-45.46	-20.5
10040.00	H	165	33	-63.81	11.99	-51.82	-26.8
12550.00	H	112	348	-63.87	13.56	-50.31	-25.3
15060.00	H	278	7	-64.18	13.58	-50.60	-25.6
17570.00	H	187	327	-53.31	11.59	-41.72	-16.7

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

OPERATING FREQUENCY: 2593.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	199	12	-59.08	10.74	-48.34	-23.3
7779.00	H	211	39	-59.44	11.44	-48.00	-23.0
10372.00	H	166	30	-60.21	12.42	-47.78	-22.8
12965.00	H	112	345	-57.04	13.29	-43.74	-18.7
15558.00	H	141	282	-70.68	16.33	-54.35	-29.4

Table 7-42. Radiated Spurious Data (Band 41 (PC2) – Mid Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 252 of 283

OPERATING FREQUENCY: 2680.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	277	14	-59.07	10.70	-48.37	-23.4
8040.00	H	122	36	-58.59	11.16	-47.43	-22.4
10720.00	H	128	12	-65.26	12.59	-52.67	-27.7
13400.00	H	136	315	-48.12	12.59	-35.52	-10.5
16080.00	H	129	279	-55.61	16.68	-38.93	-13.9

Table 7-43. Radiated Spurious Data (Band 41 (PC2) – High Channel)

OPERATING FREQUENCY: 2680.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	277	14	-59.07	10.70	-48.37	-23.4
8040.00	H	122	36	-58.59	11.16	-47.43	-22.4
10720.00	H	128	12	-65.26	12.59	-52.67	-27.7
13400.00	H	136	315	-48.12	12.59	-35.52	-10.5
16080.00	H	129	279	-55.61	16.68	-38.93	-13.9

Table 7-44. Radiated Spurious Data with WCP (Band 41 (PC2) – High Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 253 of 283

7.10 Uplink Carrier Aggregation Radiated Measurements

§2.1053, §27.53(m)

Test Overview

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

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

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

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 254 of 283

Test Setup

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

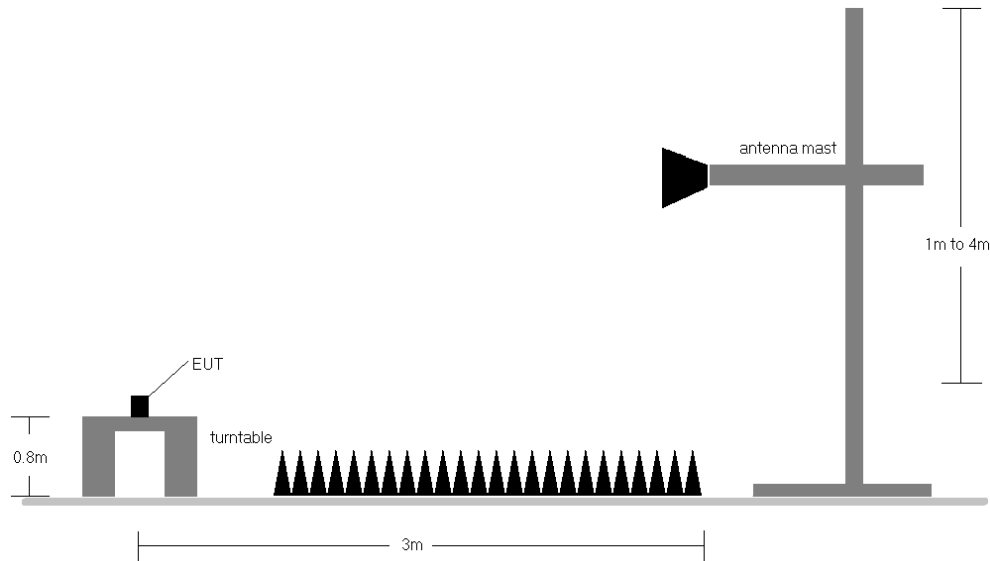


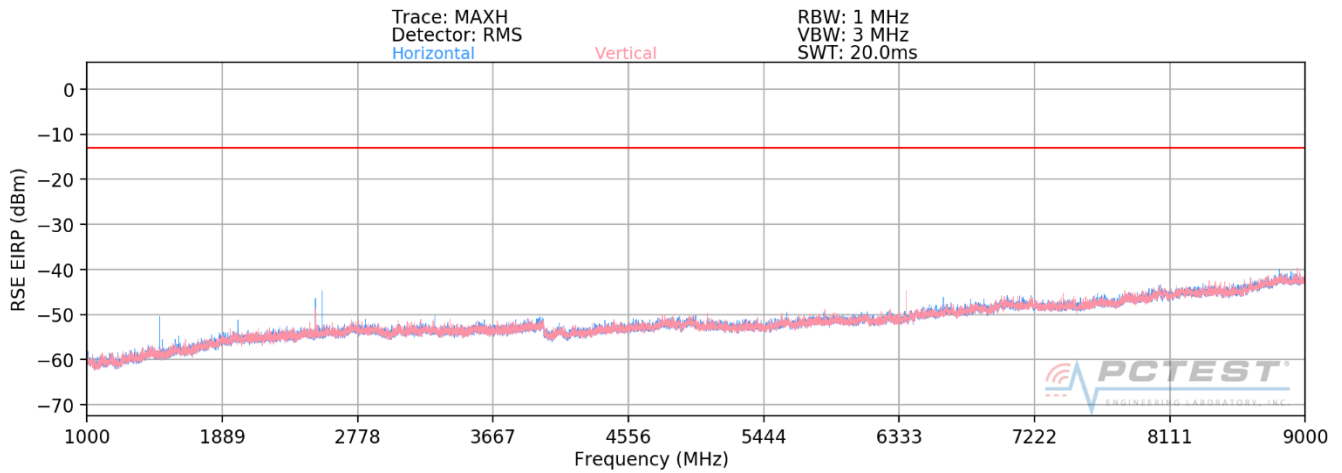
Figure 7-10. Test Instrument & Measurement Setup

Test Notes

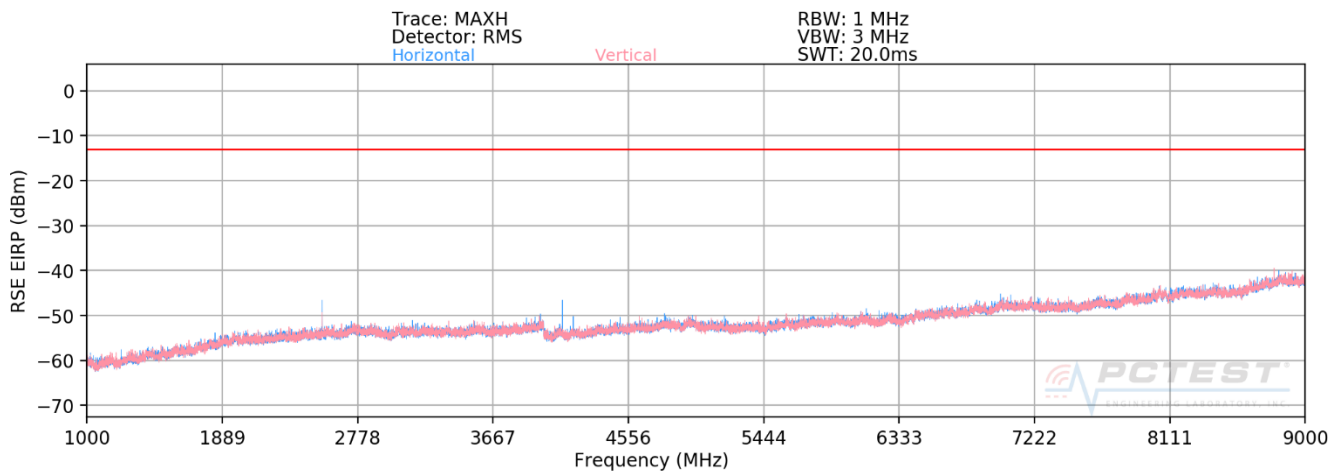
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with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

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 255 of 283

ULCA Band 5



Plot 7-390. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 Low Channel – PCC/SCC: 1RB)



Plot 7-391. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 High Channel – PCC/SCC: 1RB)

FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 256 of 283

OPERATING FREQUENCY (PCC): 829.00 MHz
 OPERATING FREQUENCY (SCC): 838.90 MHz
 CHANNEL (PCC): 20450
 CHANNEL (SCC): 20549
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	V	174	172	-68.38	3.61	-64.77	-64.8
2487.00	V	-	-	-65.10	4.25	-60.85	-60.9

Plot 7-45. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

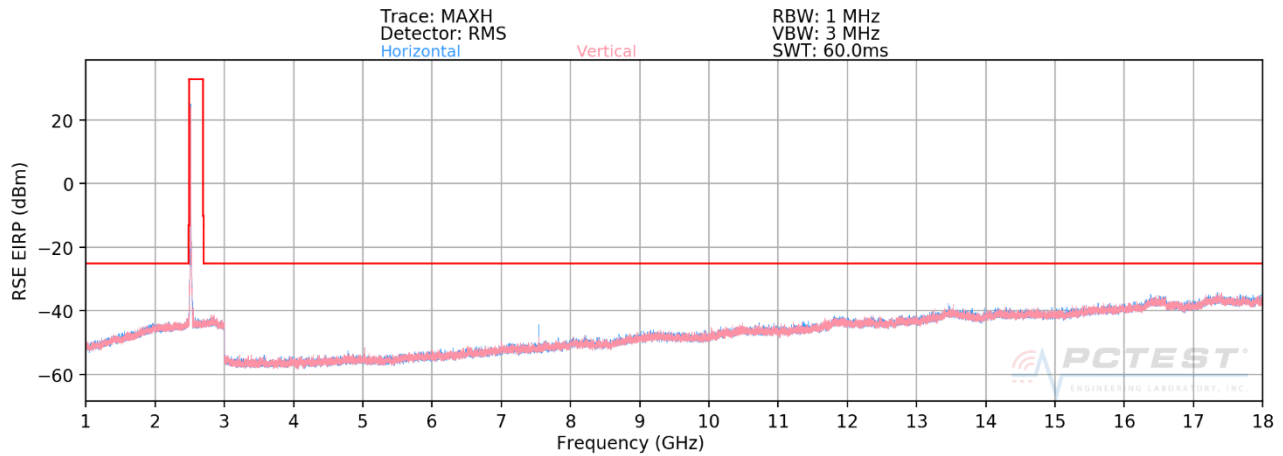
OPERATING FREQUENCY (PCC): 844.00 MHz
 OPERATING FREQUENCY (SCC): 834.10 MHz
 CHANNEL (PCC): 20600
 CHANNEL (SCC): 20501
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	-	-	-68.11	3.63	-64.48	-64.5
2532.00	V	-	-	-65.61	4.47	-61.14	-61.1

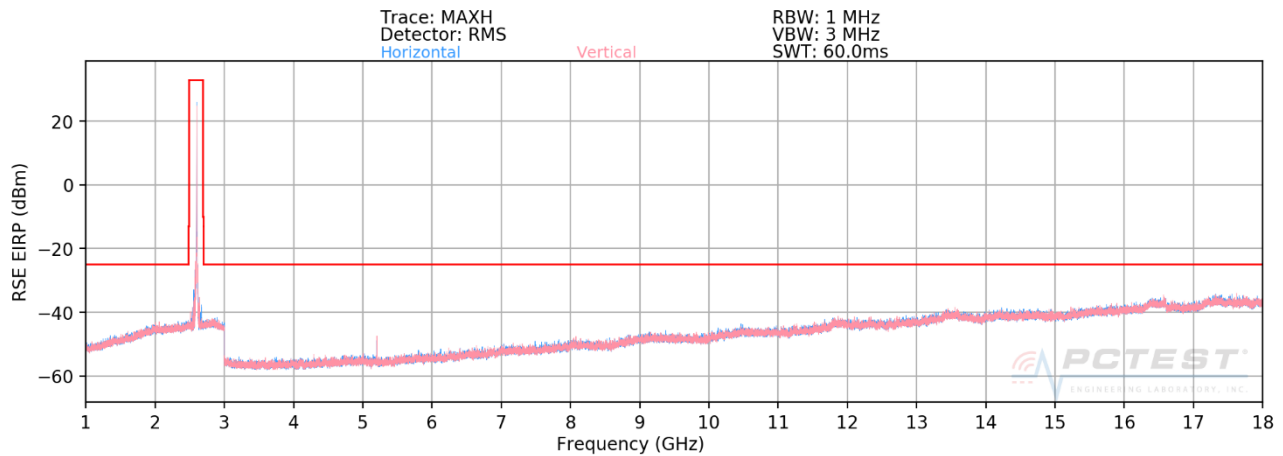
Plot 7-46. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 257 of 283

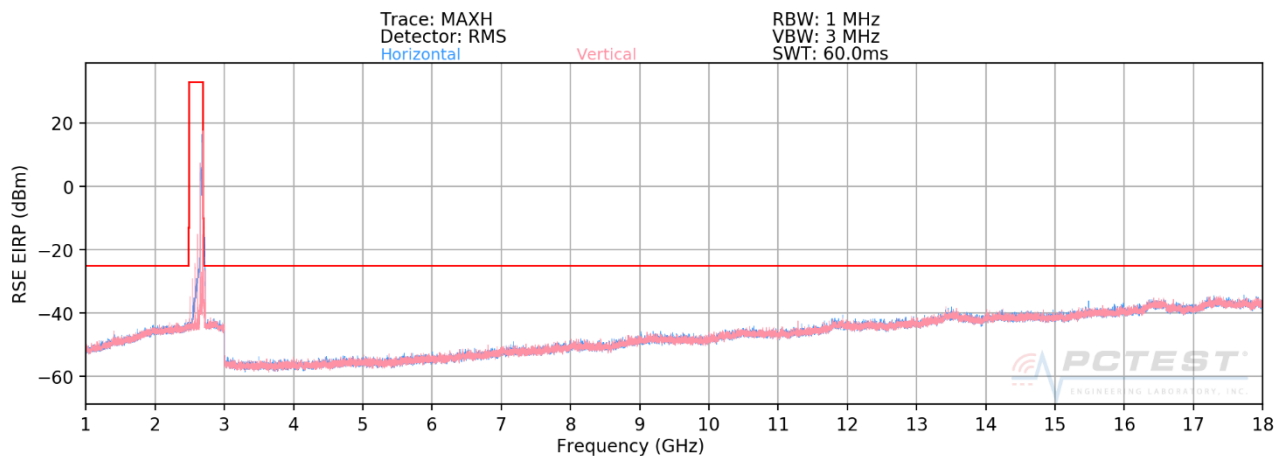
ULCA Band 41 (PC2)



Plot 7-392. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) Low Channel – PCC/SCC: 1RB)

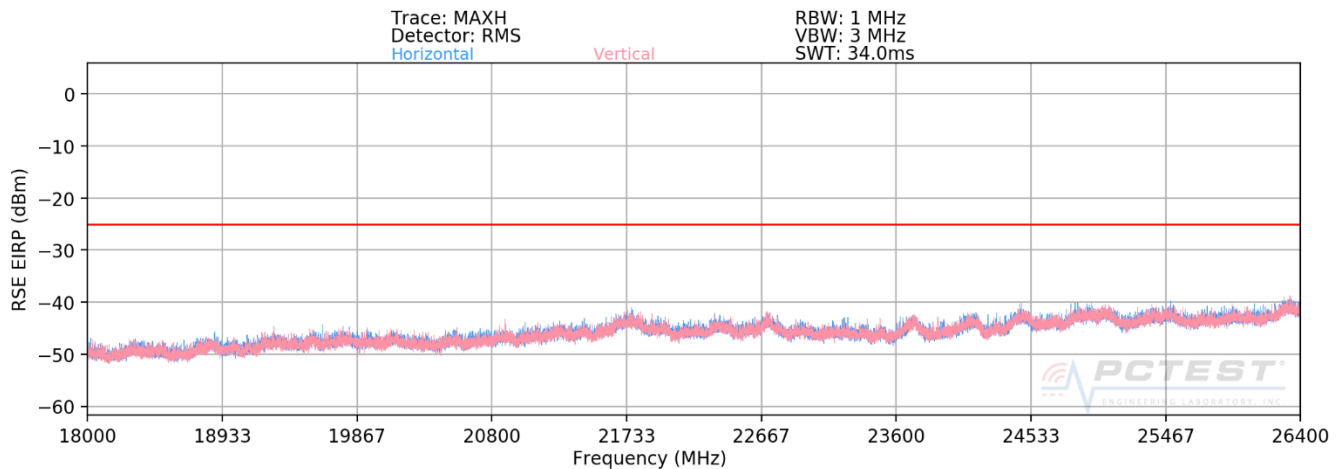


Plot 7-393. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) Mid Channel – PCC/SCC: 1RB)



Plot 7-394. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) High Channel – PCC/SCC: 1RB)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 258 of 283



Plot 7-395. Radiated Spurious Plot 18GHz – 26.5GHz (ULCA Band 41 (PC2))

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	H	349	33	-67.13	8.56	-58.57	-58.6
7518.00	H	168	341	-52.47	8.49	-43.98	-44.0
10024.00	H	-	-	-61.74	9.85	-51.89	-51.9

Plot 7-47. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 259 of 283

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	122	343	-62.02	8.70	-53.32	-53.3
7779.00	H	135	291	-58.05	8.69	-49.36	-49.4
10372.00	H	294	302	-58.31	9.62	-48.69	-48.7
12965.00	H	237	370	-52.37	8.99	-43.38	-43.4
15558.00	H	-	-	-53.66	8.32	-45.34	-45.3

Plot 7-48. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

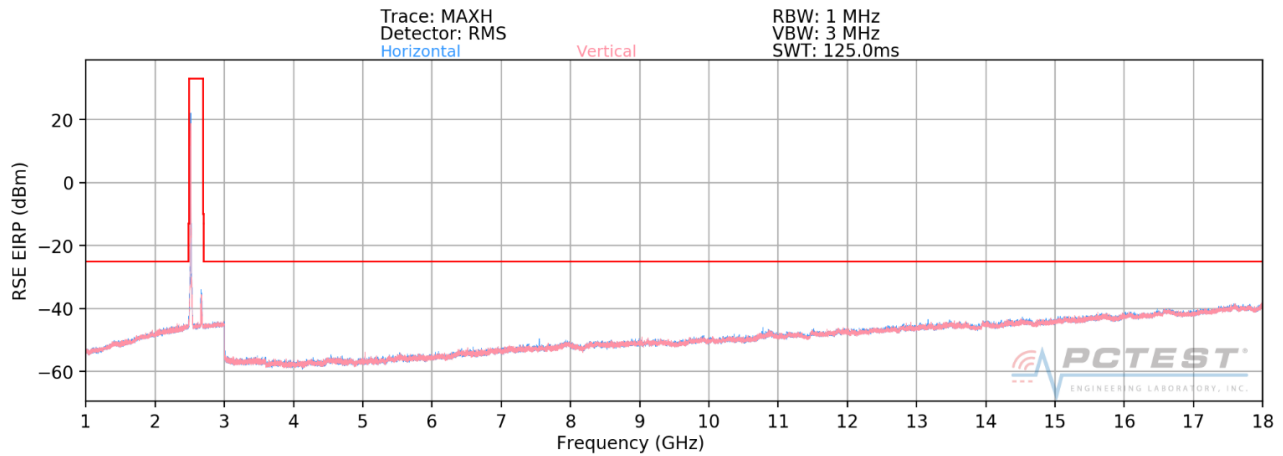
OPERATING FREQUENCY (PCC): 2680.00 MHz
 OPERATING FREQUENCY (SCC): 2660.20 MHz
 CHANNEL (PCC): 41490
 CHANNEL (SCC): 41292
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	124	341	-62.92	8.70	-54.23	-54.2
8040.00	H	-	-	-62.45	8.95	-53.50	-53.5

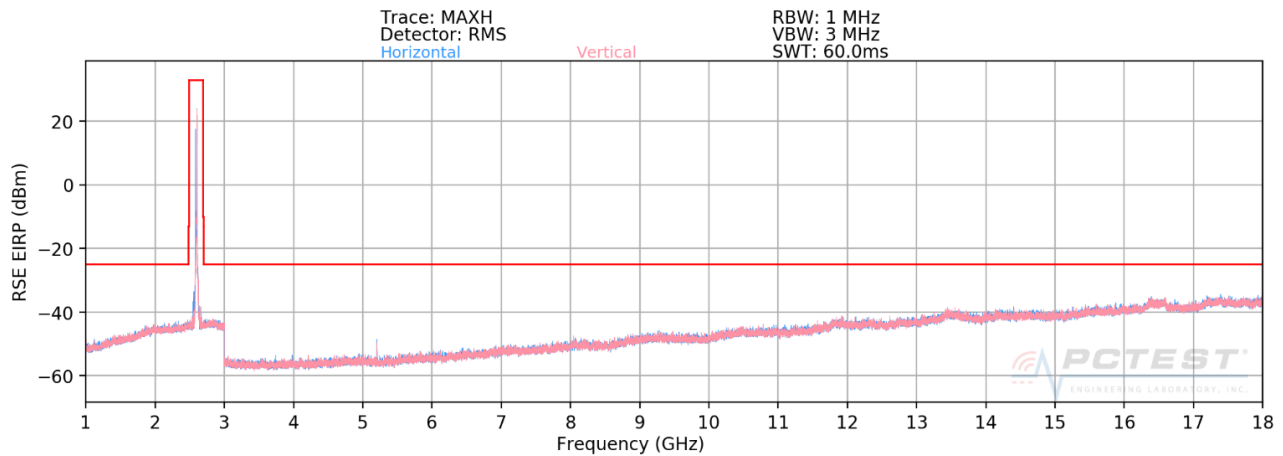
Plot 7-49. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

FCC ID: ZNFG850UM			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset			Page 260 of 283

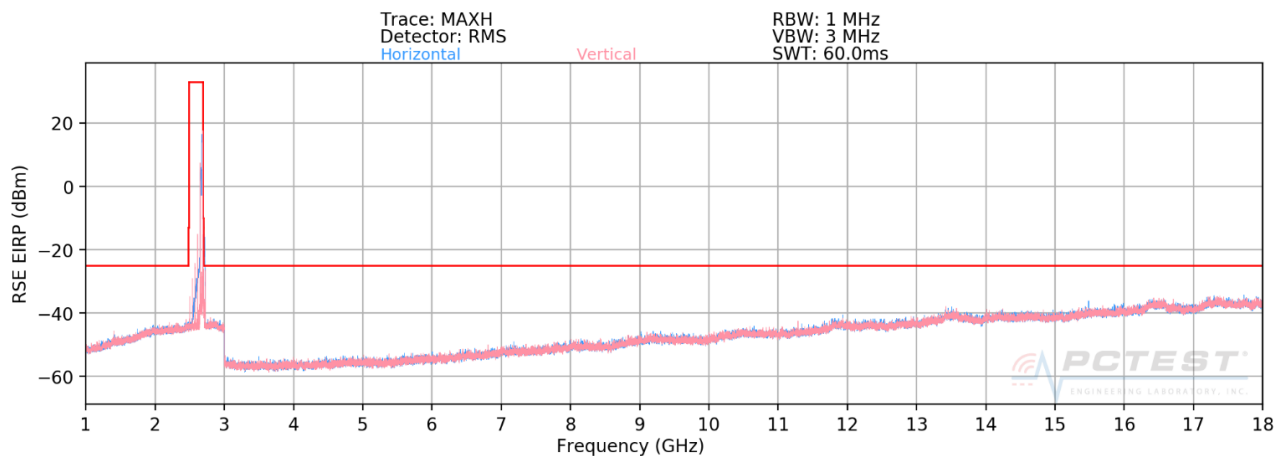
ULCA Band 41 (PC3)



Plot 7-396. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC3) Low Channel – PCC/SCC: 1RB)

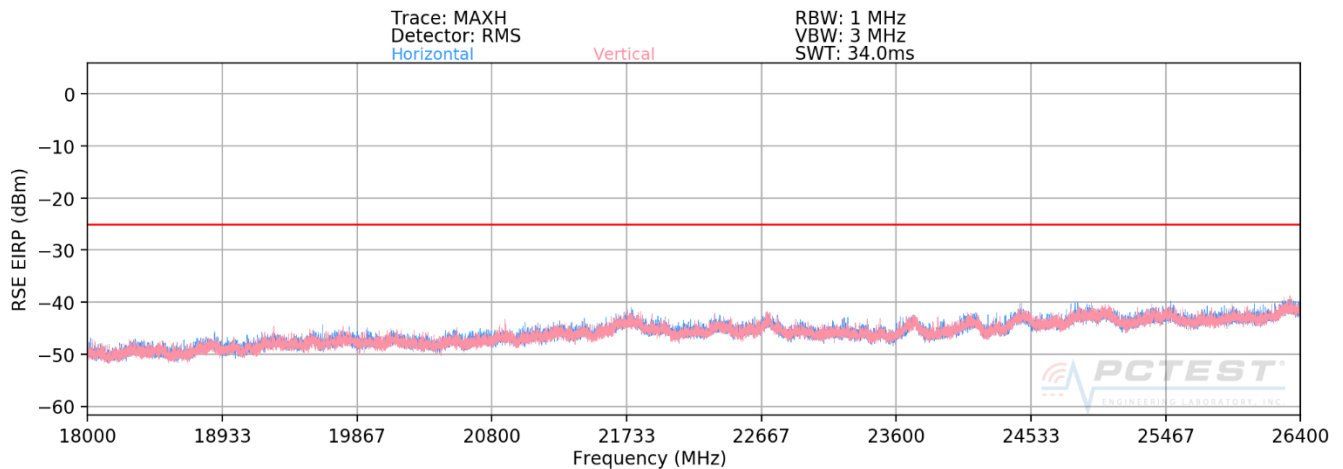


Plot 7-397. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC3) Mid Channel – PCC/SCC: 1RB)



Plot 7-398. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC3) High Channel – PCC/SCC: 1RB)

FCC ID: ZNFG850UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 261 of 283



Plot 7-399. Radiated Spurious Plot 18GHz – 26.5GHz (ULCA Band 41 (PC3))

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	H	168	10	-66.22	8.56	-57.66	-57.7
7518.00	H	140	344	-53.93	8.49	-45.44	-45.4
10024.00	H	-	-	-61.63	9.85	-51.78	-51.8

Plot 7-50. Radiated Spurious Data (ULCA B41 (PC3) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

FCC ID: ZNFG850UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 262 of 283

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	119	359	-60.87	8.70	-52.17	-52.2
7779.00	H	105	2	-57.22	8.69	-48.53	-48.5
10372.00	H	228	370	-57.69	9.62	-48.07	-48.1
12965.00	H	250	16	-52.93	8.99	-43.94	-43.9
15558.00	H	-	-	-53.21	8.32	-44.89	-44.9

Plot 7-51. Radiated Spurious Data (ULCA B41 (PC3) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	226	43	-62.80	8.70	-54.11	-54.1
8040.00	H	-	-	-62.20	8.95	-53.25	-53.2

Plot 7-52. Radiated Spurious Data (ULCA B41 (PC3) PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

FCC ID: ZNFG850UM			MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset			Page 263 of 283

7.11 Frequency Stability / Temperature Variation

Test Overview and Limit

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

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

For Part 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24, Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 264 of 283

Band 71 Frequency Stability Measurements

OPERATING FREQUENCY: 680,500,000 Hz
 CHANNEL: 133372
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	680,499,748	-252	-0.0000370
100 %		- 20	680,499,984	-16	-0.0000024
100 %		- 10	680,500,018	18	0.0000026
100 %		0	680,499,742	-258	-0.0000379
100 %		+ 10	680,499,527	-473	-0.0000695
100 %		+ 20	680,500,036	36	0.0000053
100 %		+ 30	680,500,201	201	0.0000295
100 %		+ 40	680,499,722	-278	-0.0000409
100 %		+ 50	680,500,067	67	0.0000098
BATT. ENDPOINT	2.20	+ 20	680,499,899	-101	-0.0000148

Table 7-53. Frequency Stability Data (Band 71)

Note:

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

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 265 of 283

Band 71 Frequency Stability Measurements

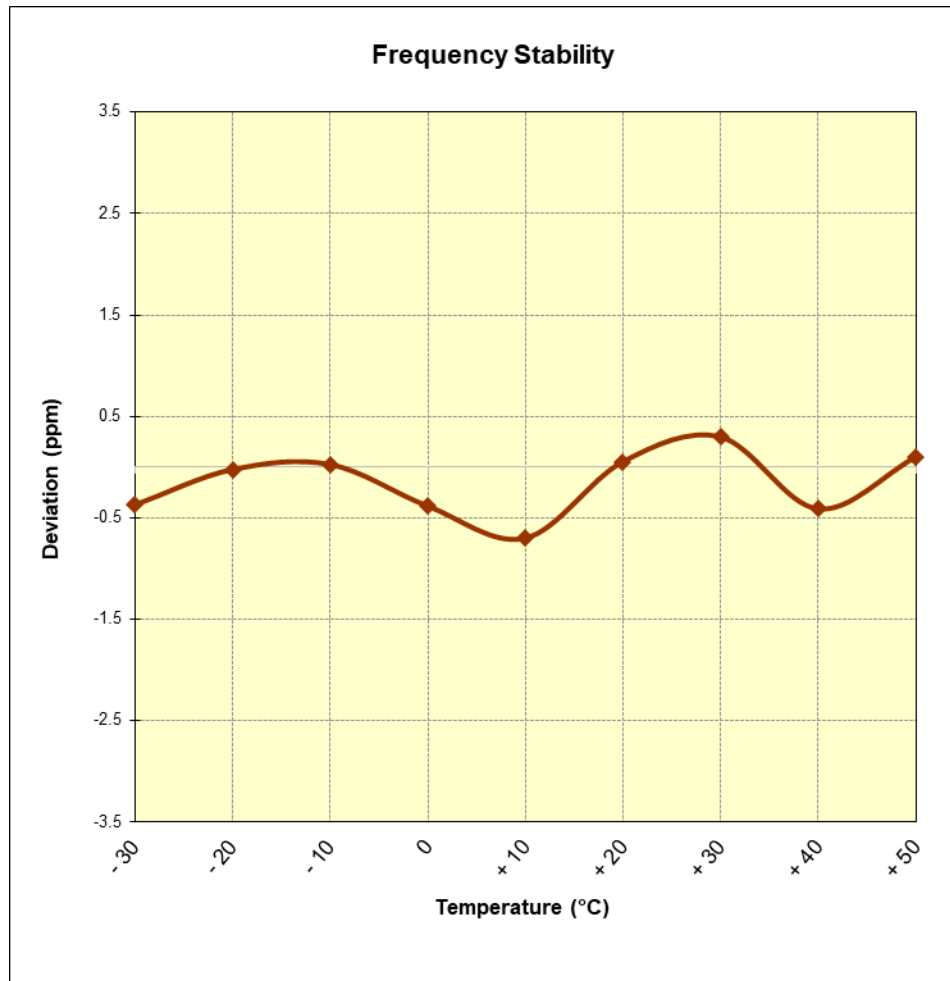


Figure 7-11. Frequency Stability Graph (Band 71)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 266 of 283

Band 12/17 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	707,499,977	-23	-0.0000033
100 %		- 20	707,500,107	107	0.0000151
100 %		- 10	707,500,073	73	0.0000103
100 %		0	707,500,068	68	0.0000096
100 %		+ 10	707,500,417	417	0.0000589
100 %		+ 20	707,499,872	-128	-0.0000181
100 %		+ 30	707,499,992	-8	-0.0000011
100 %		+ 40	707,499,945	-55	-0.0000078
100 %		+ 50	707,500,056	56	0.0000079
BATT. ENDPOINT	2.20	+ 20	707,500,024	24	0.0000034

Table 7-54. Frequency Stability Data (Band 12/17)

Note:

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

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 267 of 283

Band 12/17 Frequency Stability Measurements

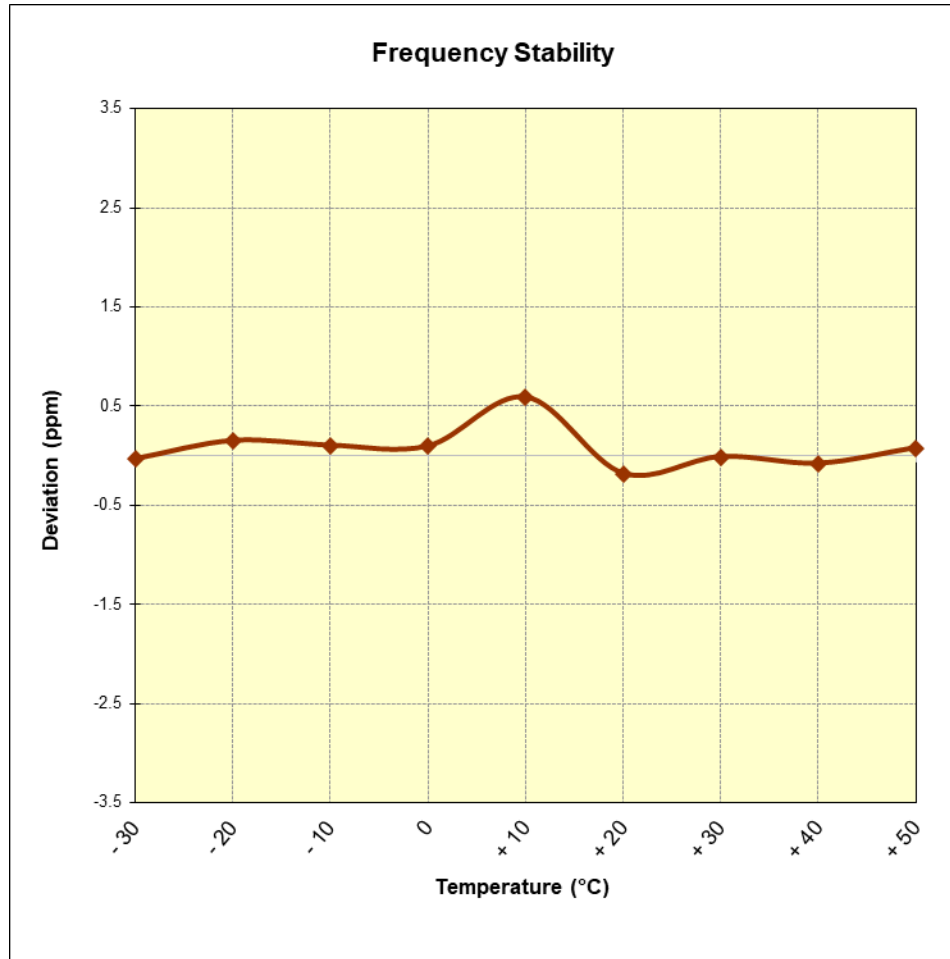


Figure 7-12. Frequency Stability Graph (Band 12/17)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 268 of 283

Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz
 CHANNEL: 23230
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	782,000,120	120	0.0000153
100 %		- 20	781,999,973	-27	-0.0000035
100 %		- 10	782,000,023	23	0.0000029
100 %		0	781,999,898	-102	-0.0000130
100 %		+ 10	781,999,763	-237	-0.0000303
100 %		+ 20	782,000,268	268	0.0000343
100 %		+ 30	782,000,124	124	0.0000159
100 %		+ 40	782,000,106	106	0.0000136
100 %		+ 50	781,999,857	-143	-0.0000183
BATT. ENDPOINT	2.20	+ 20	782,000,142	142	0.0000182

Table 7-55. Frequency Stability Data (Band 13)

Note:

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

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 269 of 283

Band 13 Frequency Stability Measurements

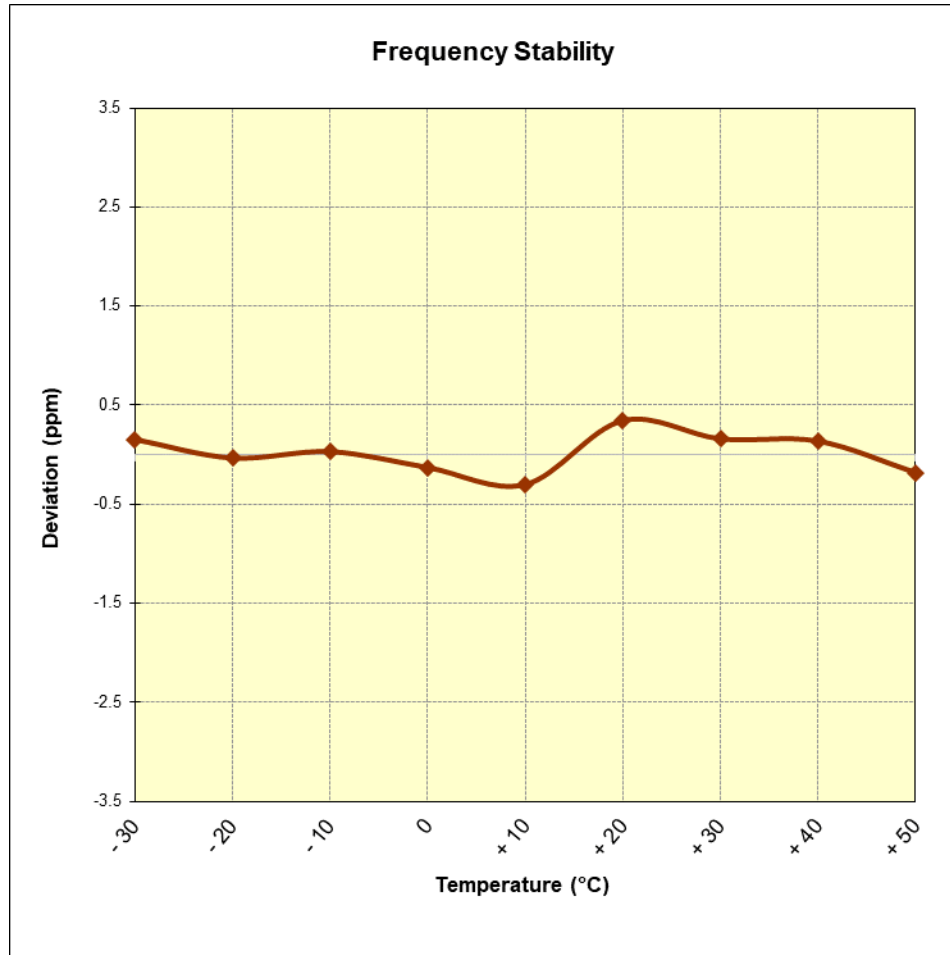


Figure 7-13. Frequency Stability Graph (Band 13)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 270 of 283

Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 831,500,000 Hz
 CHANNEL: 26865
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	831,499,922	-78	-0.0000094
100 %		- 20	831,499,669	-331	-0.0000398
100 %		- 10	831,500,446	446	0.0000536
100 %		0	831,500,097	97	0.0000117
100 %		+ 10	831,500,168	168	0.0000202
100 %		+ 20	831,500,131	131	0.0000158
100 %		+ 30	831,499,845	-155	-0.0000186
100 %		+ 40	831,500,161	161	0.0000194
100 %		+ 50	831,500,038	38	0.0000046
BATT. ENDPOINT	2.20	+ 20	831,499,922	-78	-0.0000094

Table 7-56. Frequency Stability Data (Band 26/5)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 271 of 283

Band 26/5 Frequency Stability Measurements

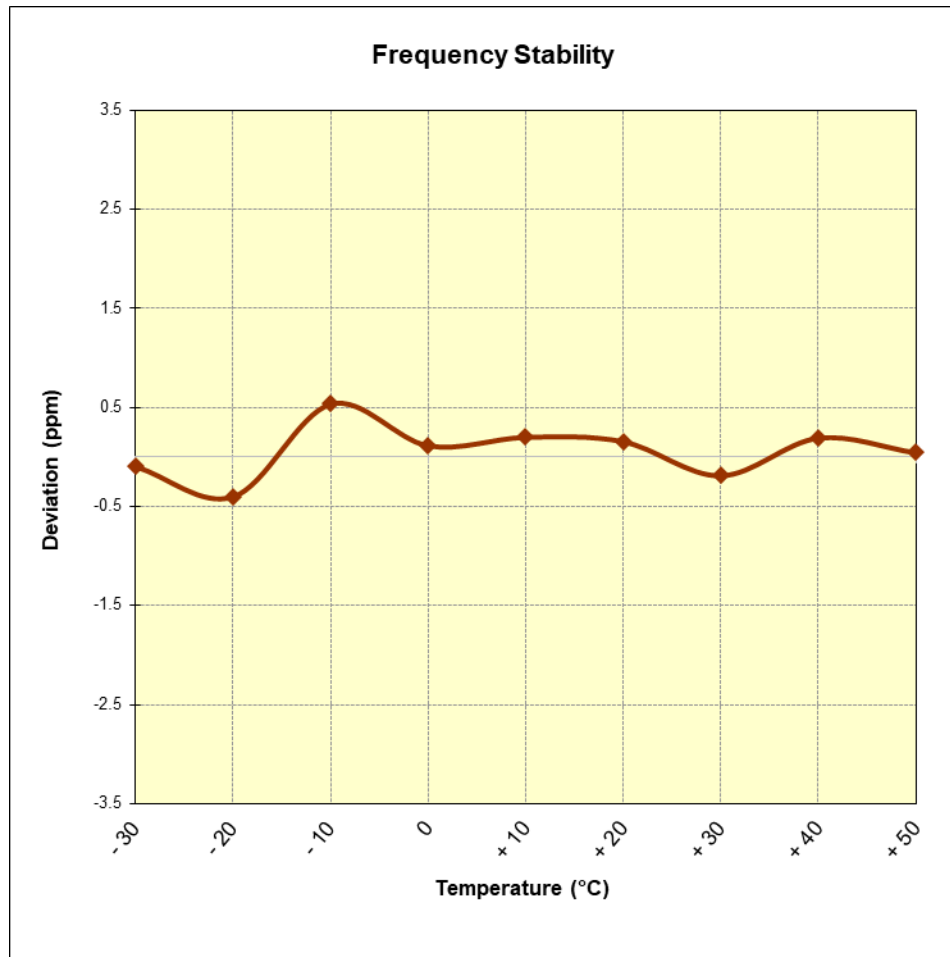


Figure 7-14. Frequency Stability Graph (Band 26/5)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 272 of 283

Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz
 CHANNEL: 132322
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	1,745,000,216	216	0.0000124
100 %		- 20	1,744,999,627	-373	-0.0000214
100 %		- 10	1,745,000,014	14	0.0000008
100 %		0	1,745,000,208	208	0.0000119
100 %		+ 10	1,744,999,849	-151	-0.0000087
100 %		+ 20	1,744,999,789	-211	-0.0000121
100 %		+ 30	1,744,999,739	-261	-0.0000150
100 %		+ 40	1,744,999,875	-125	-0.0000072
100 %		+ 50	1,744,999,705	-295	-0.0000169
BATT. ENDPOINT	2.20	+ 20	1,745,000,032	32	0.0000018

Table 7-57. Frequency Stability Data (Band 66/4)

Note:

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

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 273 of 283

Band 66/4 Frequency Stability Measurements

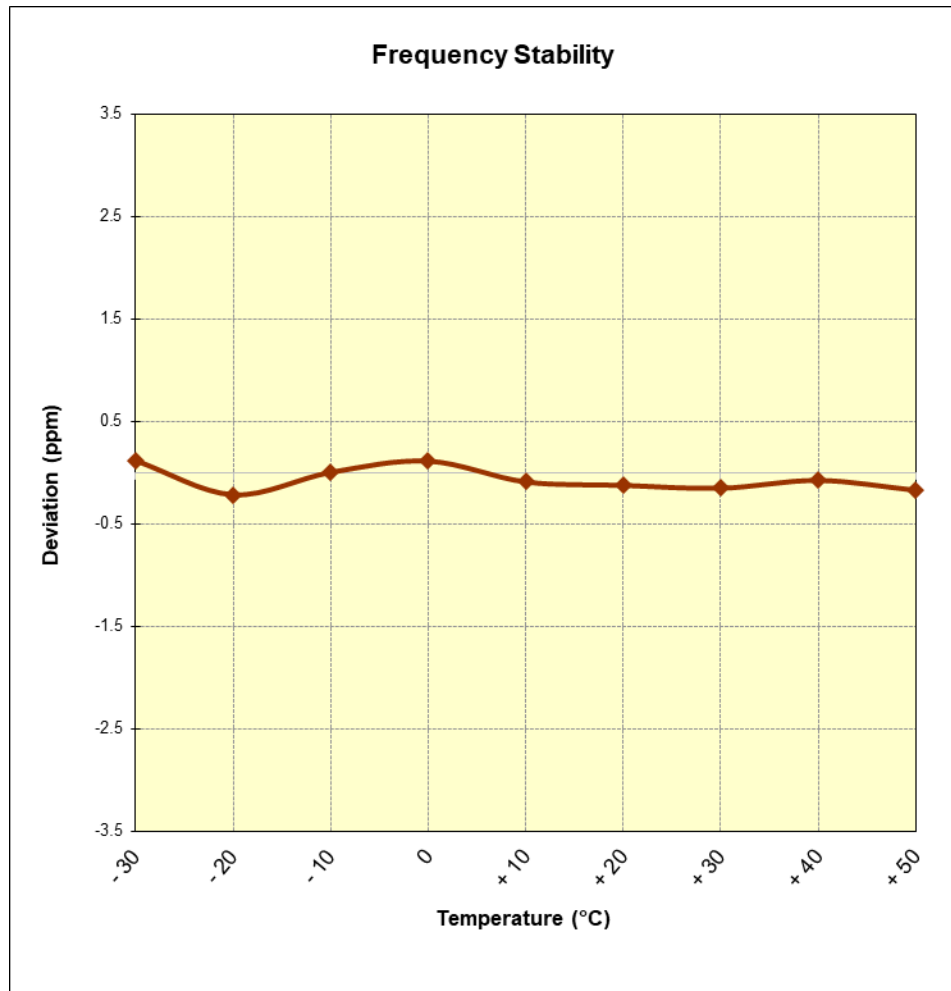


Figure 7-15. Frequency Stability Graph (Band 66/4)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 274 of 283

Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz
 CHANNEL: 26365
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	1,882,499,919	-81	-0.0000043
100 %		- 20	1,882,500,007	7	0.0000004
100 %		- 10	1,882,499,971	-29	-0.0000015
100 %		0	1,882,500,153	153	0.0000081
100 %		+ 10	1,882,500,177	177	0.0000094
100 %		+ 20	1,882,500,028	28	0.0000015
100 %		+ 30	1,882,500,281	281	0.0000149
100 %		+ 40	1,882,499,772	-228	-0.0000121
100 %		+ 50	1,882,500,060	60	0.0000032
BATT. ENDPOINT	2.20	+ 20	1,882,500,194	194	0.0000103

Table 7-58. Frequency Stability Data (Band 25/2)

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 275 of 283

Band 25/2 Frequency Stability Measurements

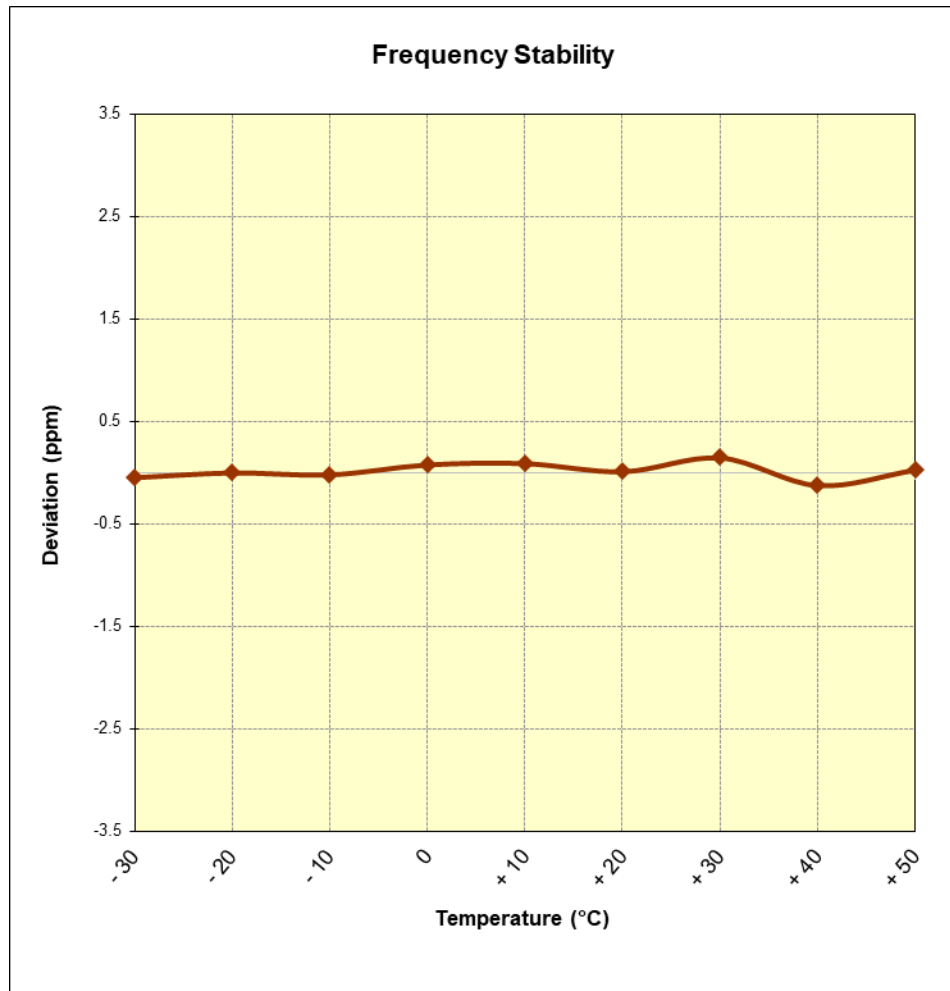


Figure 7-16. Frequency Stability Graph (Band 25/2)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 276 of 283

Band 30 Frequency Stability Measurements

OPERATING FREQUENCY: 2,310,000,000 Hz
 CHANNEL: 27710
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	2,310,000,094	94	0.0000041
100 %		- 20	2,310,000,334	334	0.0000145
100 %		- 10	2,310,000,252	252	0.0000109
100 %		0	2,310,000,028	28	0.0000012
100 %		+ 10	2,309,999,927	-73	-0.0000032
100 %		+ 20	2,309,999,981	-19	-0.0000008
100 %		+ 30	2,310,000,374	374	0.0000162
100 %		+ 40	2,310,000,192	192	0.0000083
100 %		+ 50	2,310,000,087	87	0.0000038
BATT. ENDPOINT	2.20	+ 20	2,310,000,303	303	0.0000131

Table 7-59. Frequency Stability Data (Band 30)

Note:

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

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 277 of 283

Band 30 Frequency Stability Measurements

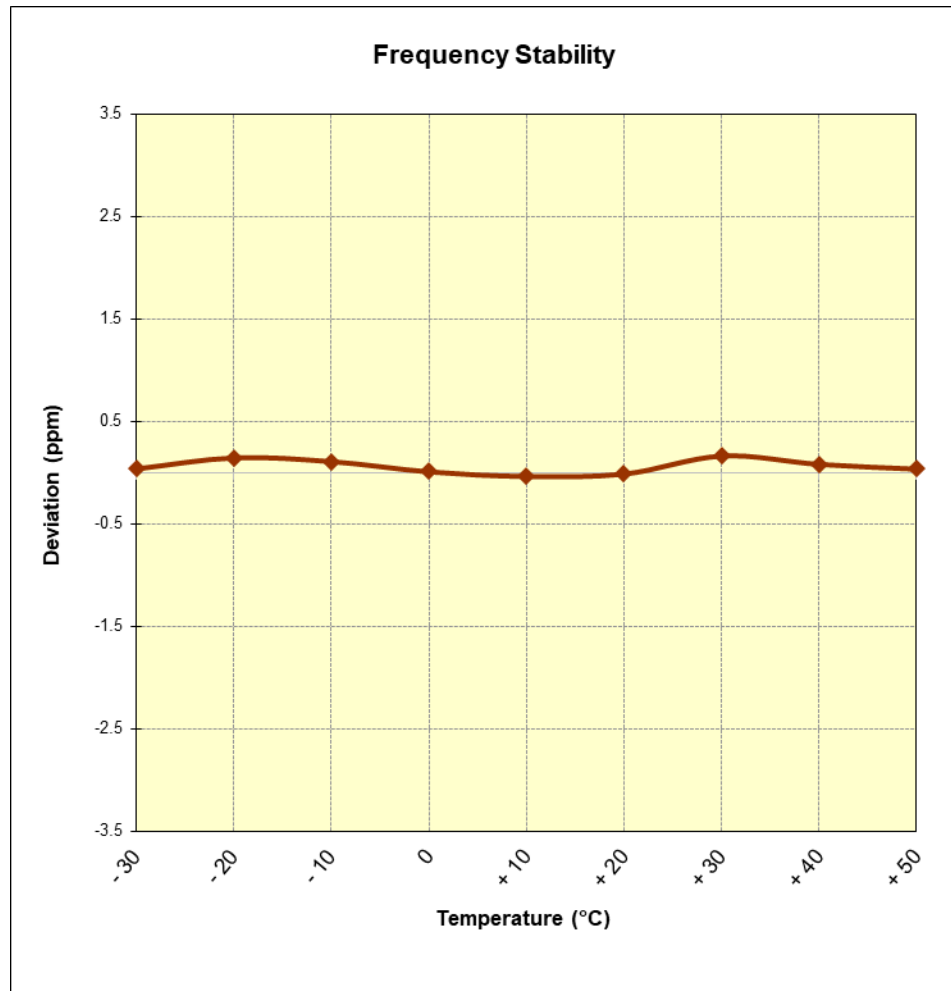


Figure 7-17. Frequency Stability Graph (Band 30)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 278 of 283

Band 7 Frequency Stability Measurements

OPERATING FREQUENCY: 2,535,000,000 Hz
 CHANNEL: 21100
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	2,535,000,152	152	0.0000060
100 %		- 20	2,535,000,037	37	0.0000015
100 %		- 10	2,534,999,841	-159	-0.0000063
100 %		0	2,534,999,902	-98	-0.0000039
100 %		+ 10	2,534,999,978	-22	-0.0000009
100 %		+ 20	2,535,000,210	210	0.0000083
100 %		+ 30	2,535,000,190	190	0.0000075
100 %		+ 40	2,534,999,627	-373	-0.0000147
100 %		+ 50	2,534,999,647	-353	-0.0000139
BATT. ENDPOINT	2.20	+ 20	2,534,999,986	-14	-0.0000006

Table 7-60. Frequency Stability Data (Band 7)

Note:

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

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 279 of 283

Band 7 Frequency Stability Measurements

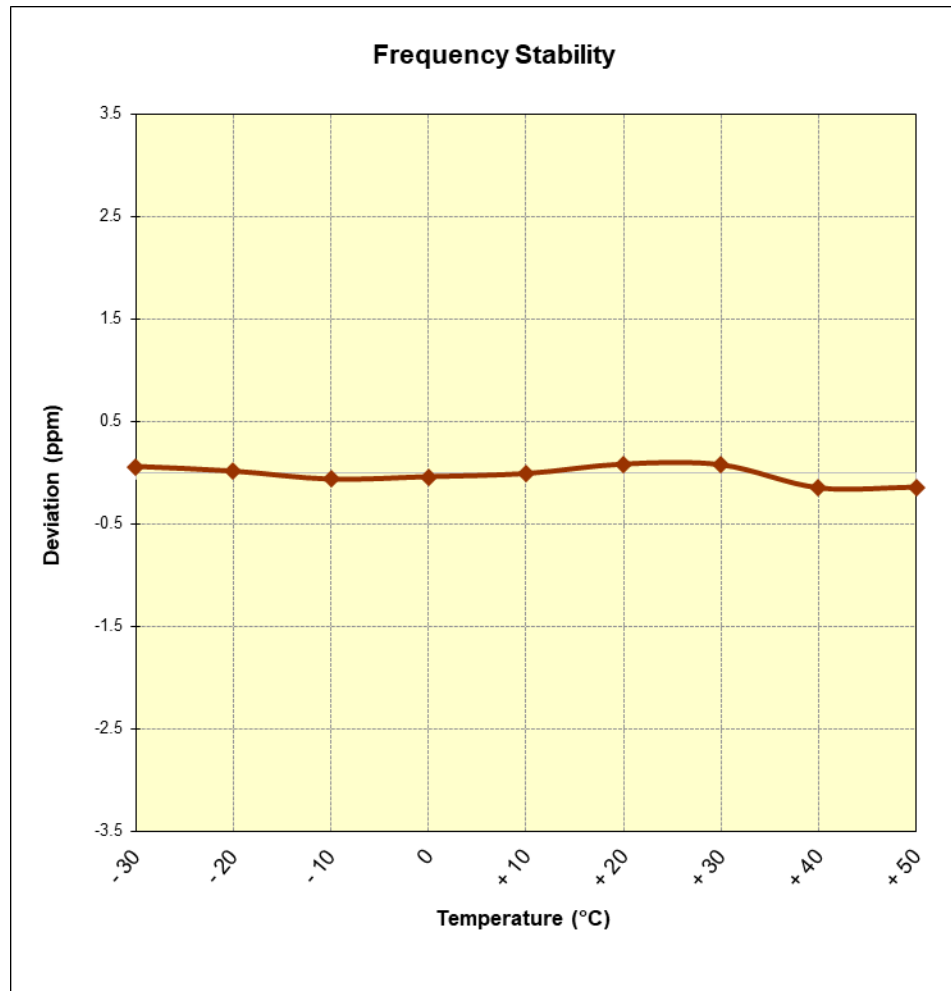


Figure 7-18. Frequency Stability Graph (Band 7)

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 280 of 283

Band 41 (PC2) Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz
 CHANNEL: 40620
 REFERENCE VOLTAGE: 4.39 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	2,592,999,775	-225	-0.0000087
100 %		- 20	2,593,000,327	327	0.0000126
100 %		- 10	2,593,000,019	19	0.0000007
100 %		0	2,592,999,887	-113	-0.0000044
100 %		+ 10	2,592,999,667	-333	-0.0000128
100 %		+ 20	2,593,000,152	152	0.0000059
100 %		+ 30	2,592,999,994	-6	-0.0000002
100 %		+ 40	2,593,000,051	51	0.0000020
100 %		+ 50	2,593,000,416	416	0.0000160
BATT. ENDPOINT	2.20	+ 20	2,592,999,945	-55	-0.0000021

Table 7-61. Frequency Stability Data (Band 41 (PC2))

Note:

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

FCC ID: ZNFG850UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset	Page 281 of 283

Band 41 (PC2) Frequency Stability Measurements

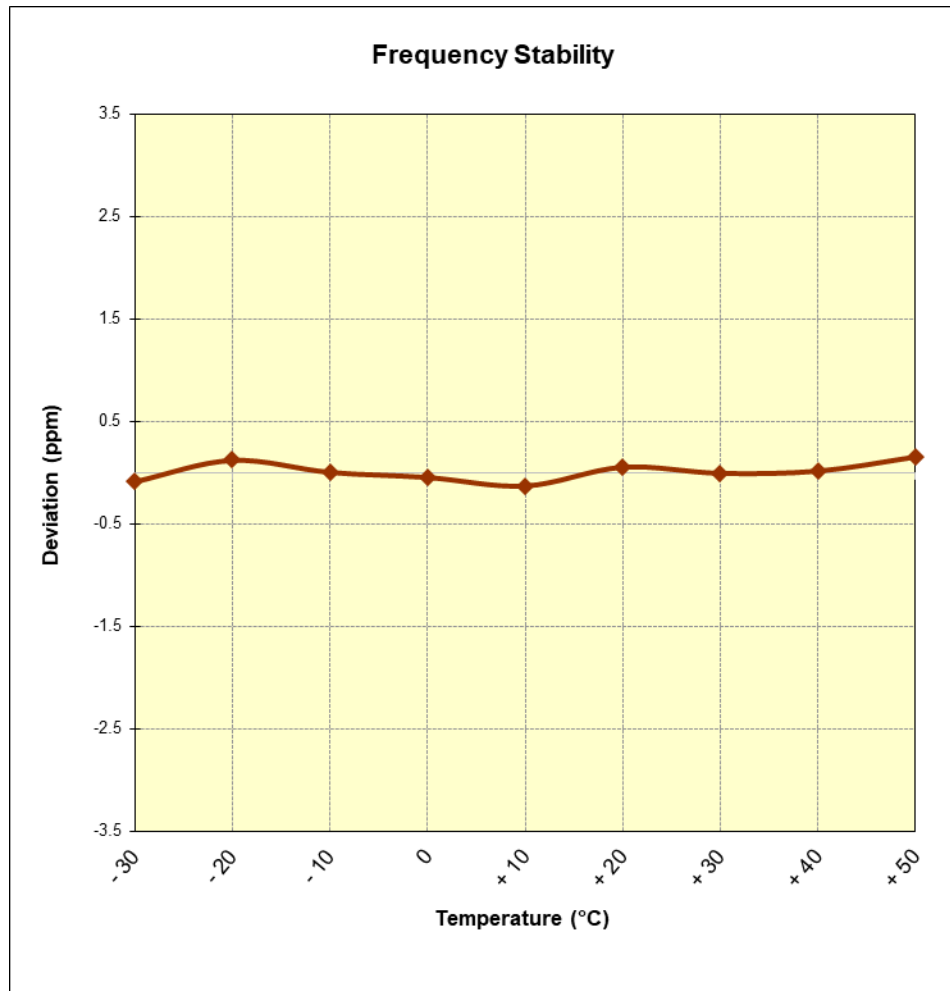


Figure 7-19. Frequency Stability Graph (Band 41 (PC2))

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 282 of 283

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFG850UM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: ZNFG850UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1907250129-03-R2.ZNF	Test Dates: 7/26 - 8/16/2019	EUT Type: Portable Handset		Page 283 of 283