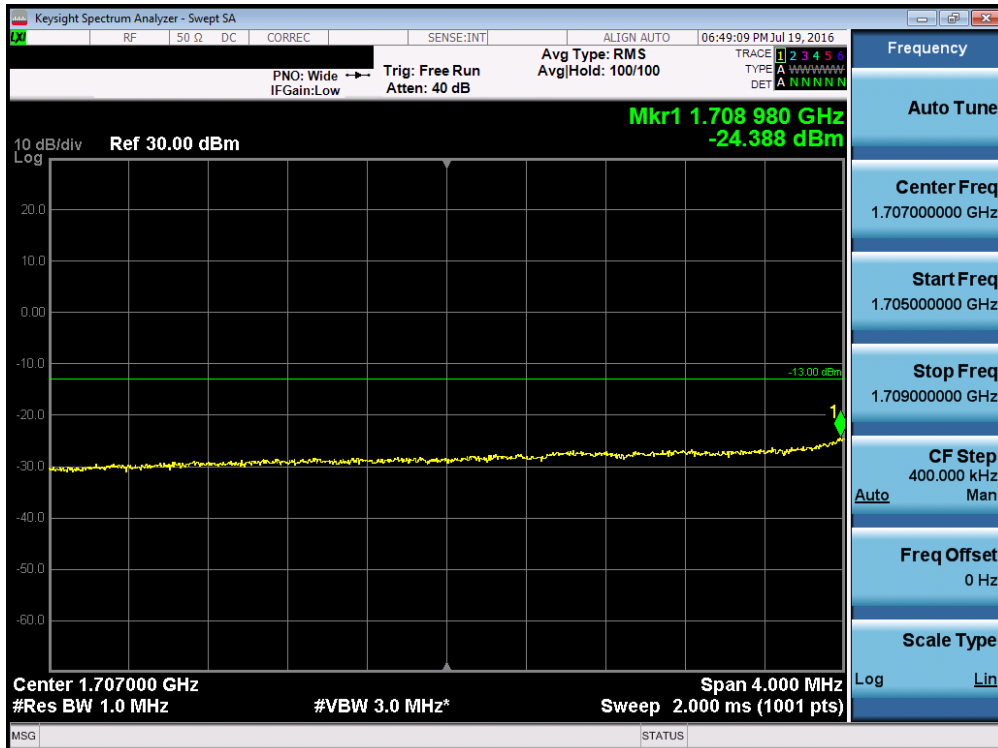
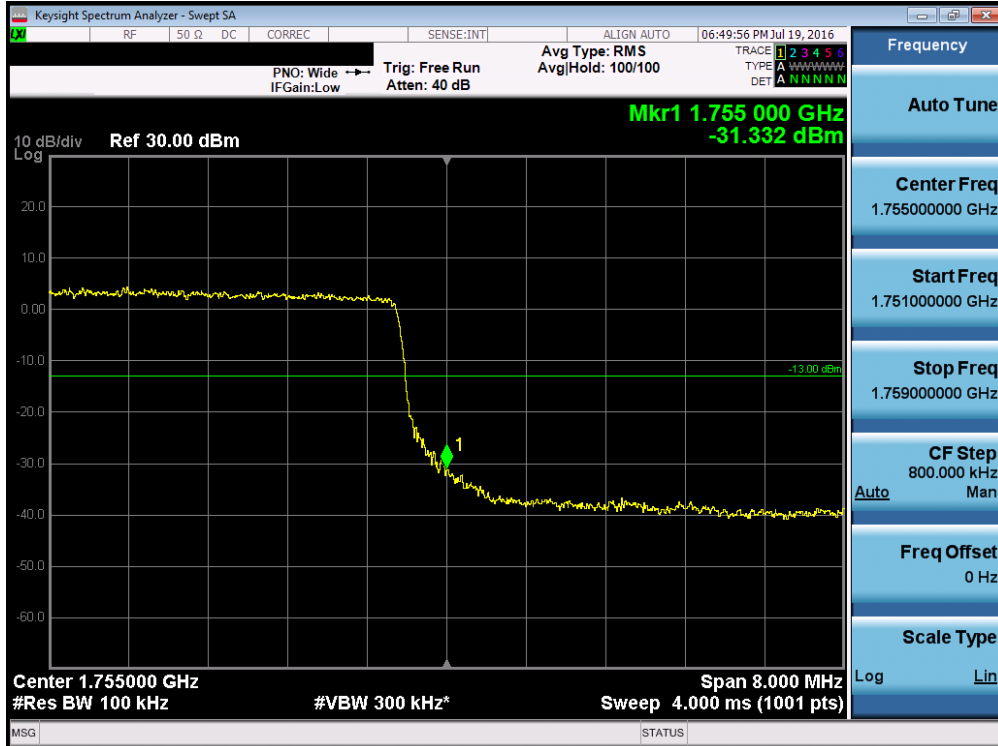


Plot 7-101. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

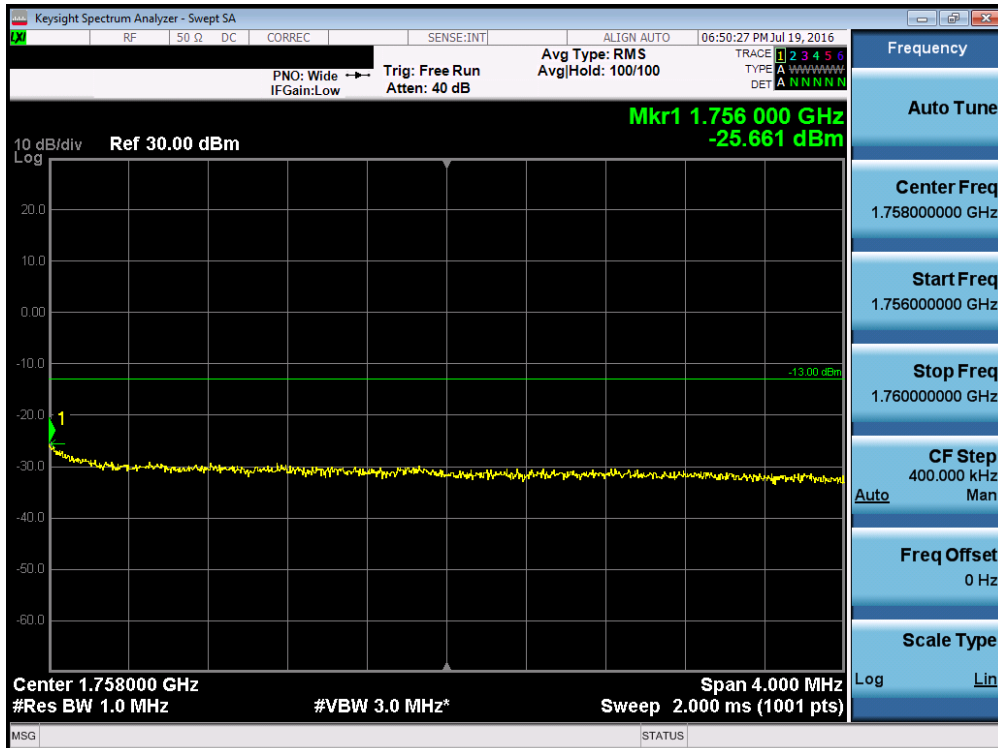


Plot 7-102. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 67 of 117	

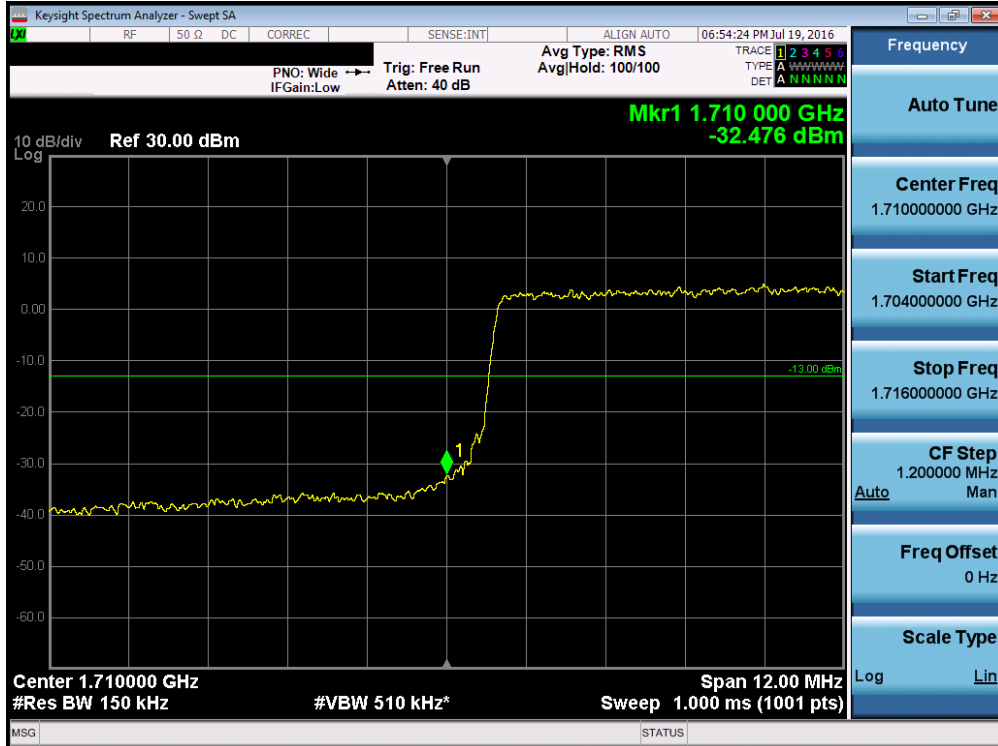


Plot 7-103. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

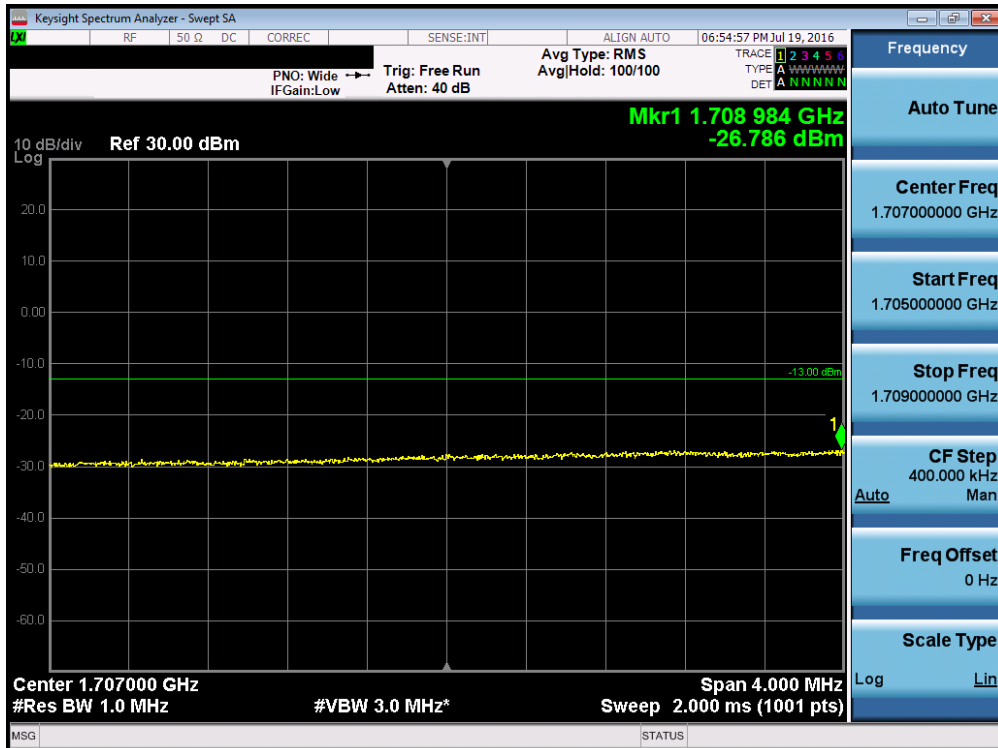


Plot 7-104. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 68 of 117

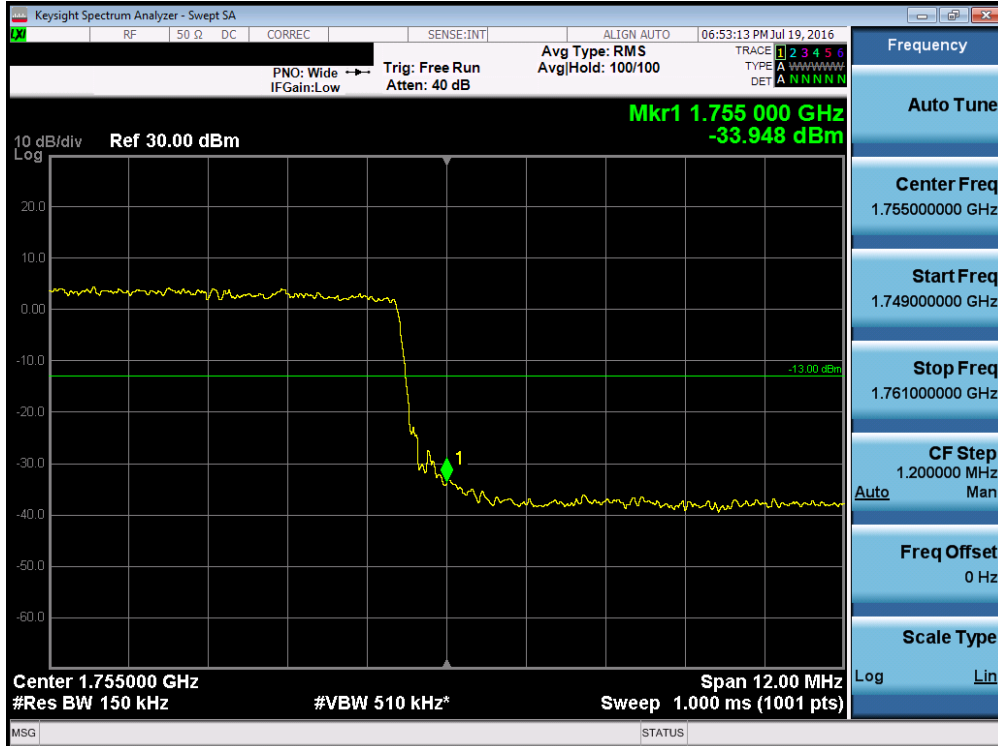


Plot 7-105. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

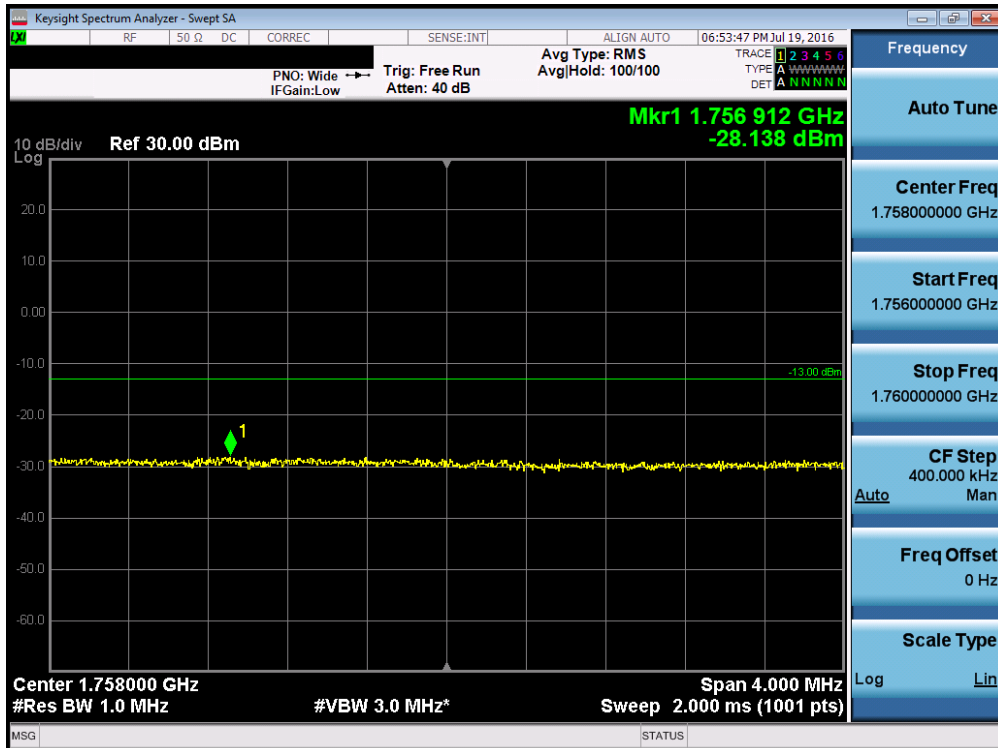


Plot 7-106. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 69 of 117

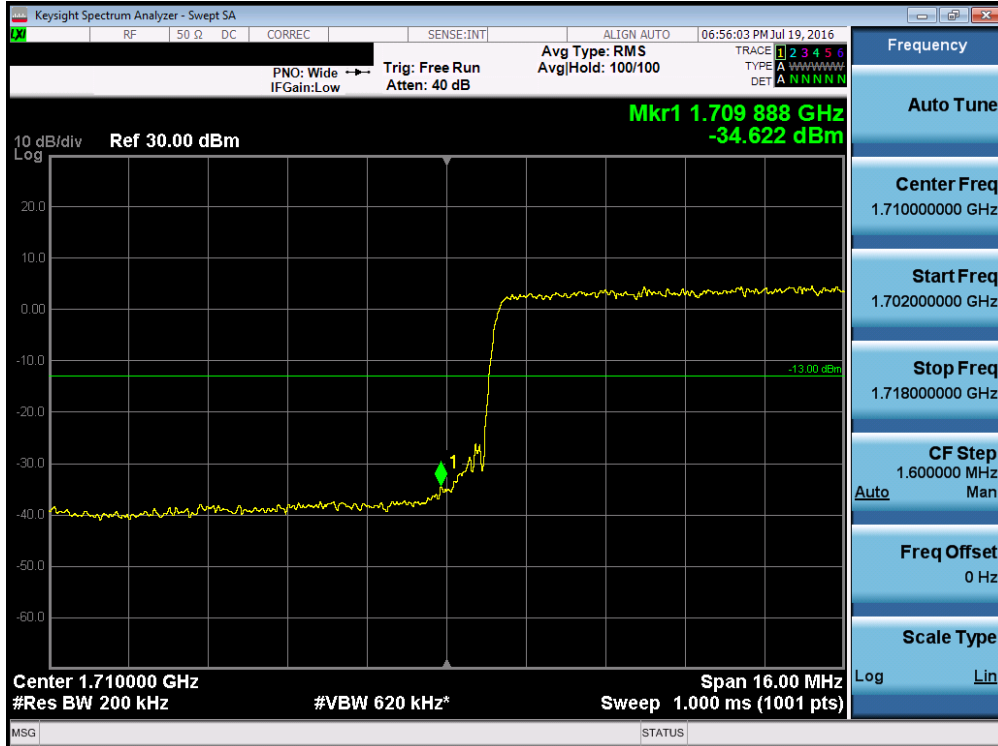


Plot 7-107. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

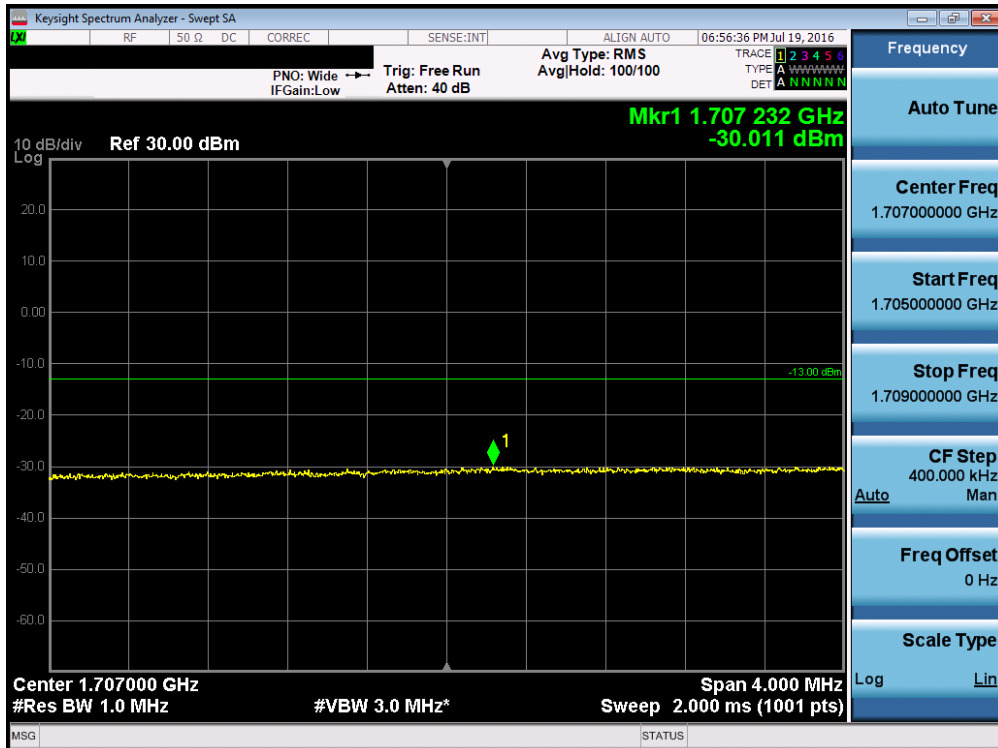


Plot 7-108. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 70 of 117

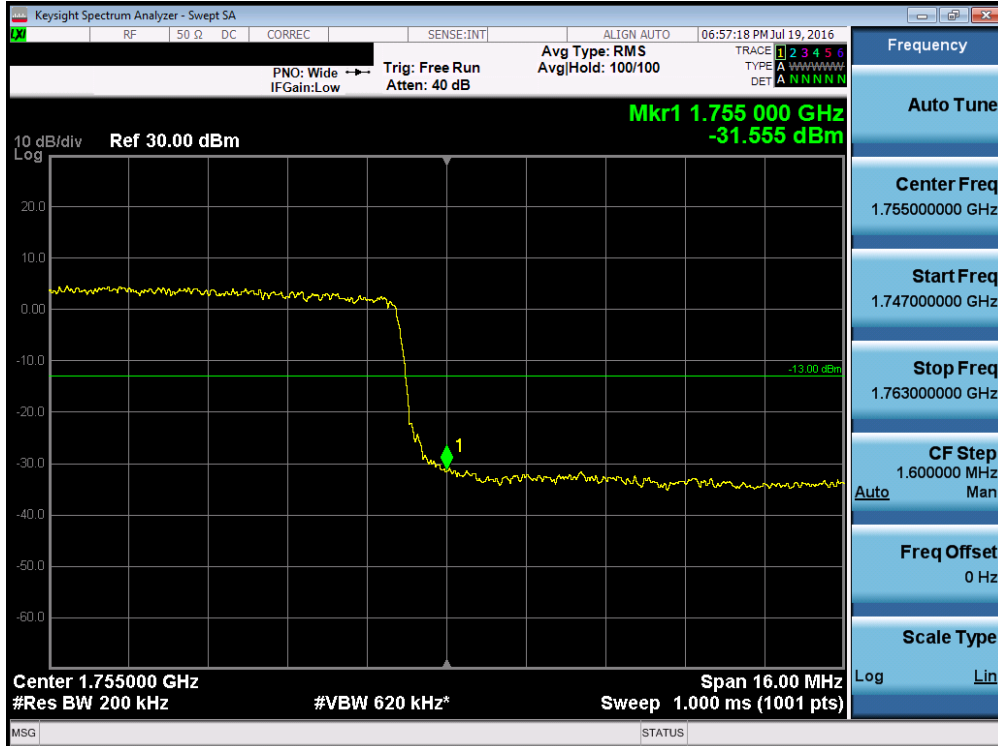


Plot 7-109. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

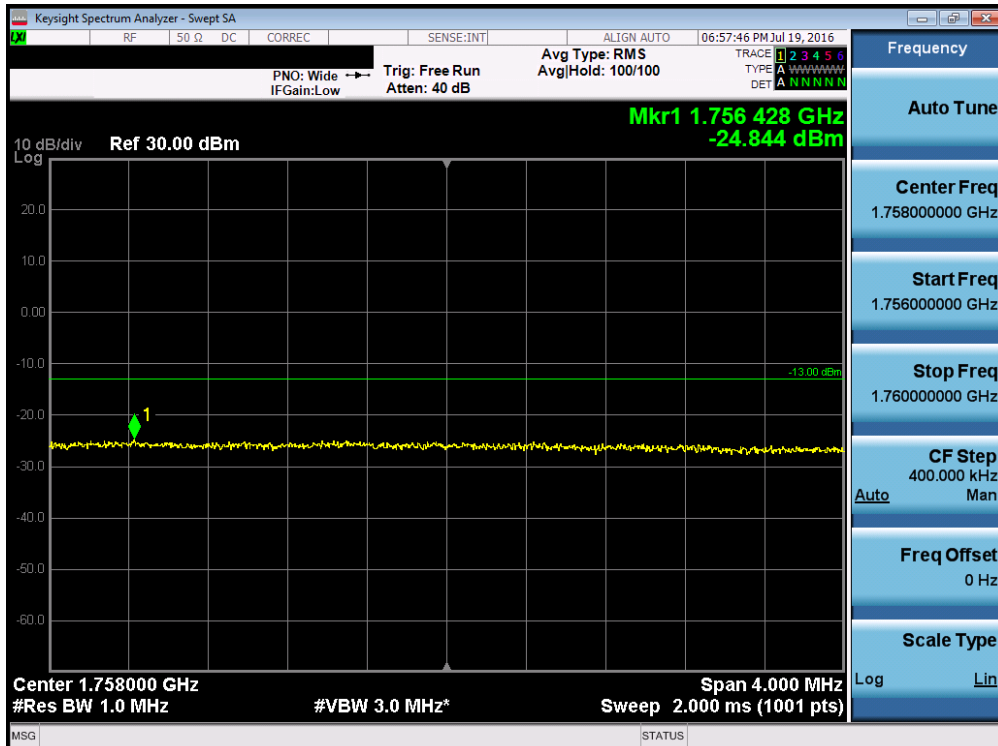


Plot 7-110. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 71 of 117

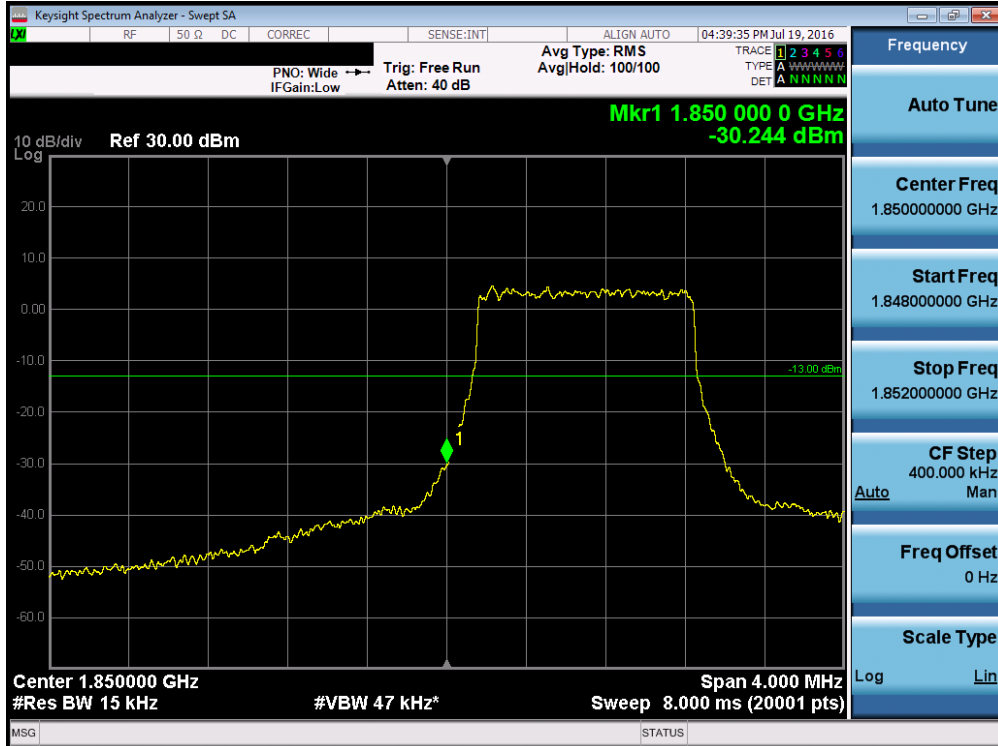


Plot 7-111. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

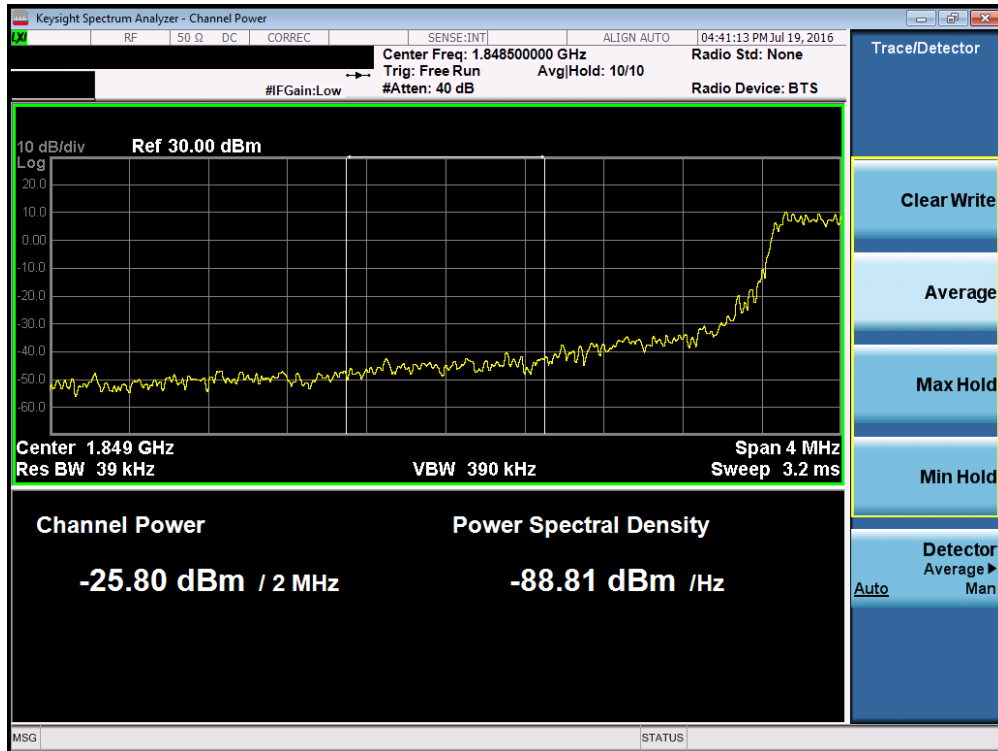


Plot 7-112. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 72 of 117

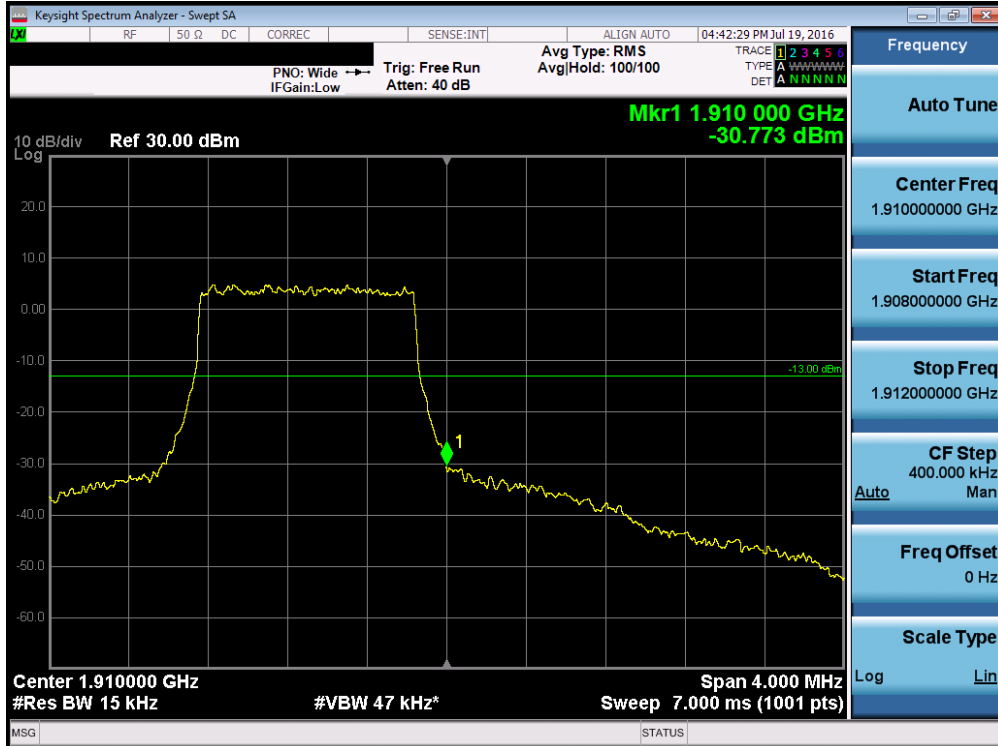


Plot 7-113. Lower Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

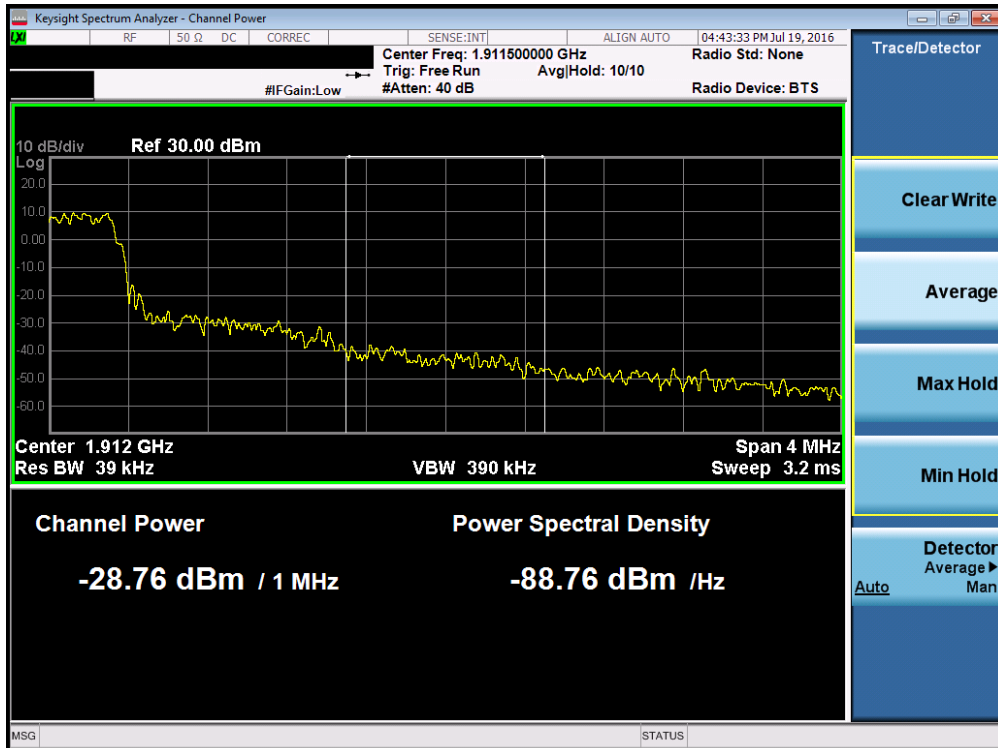


Plot 7-114. Lower Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 73 of 117

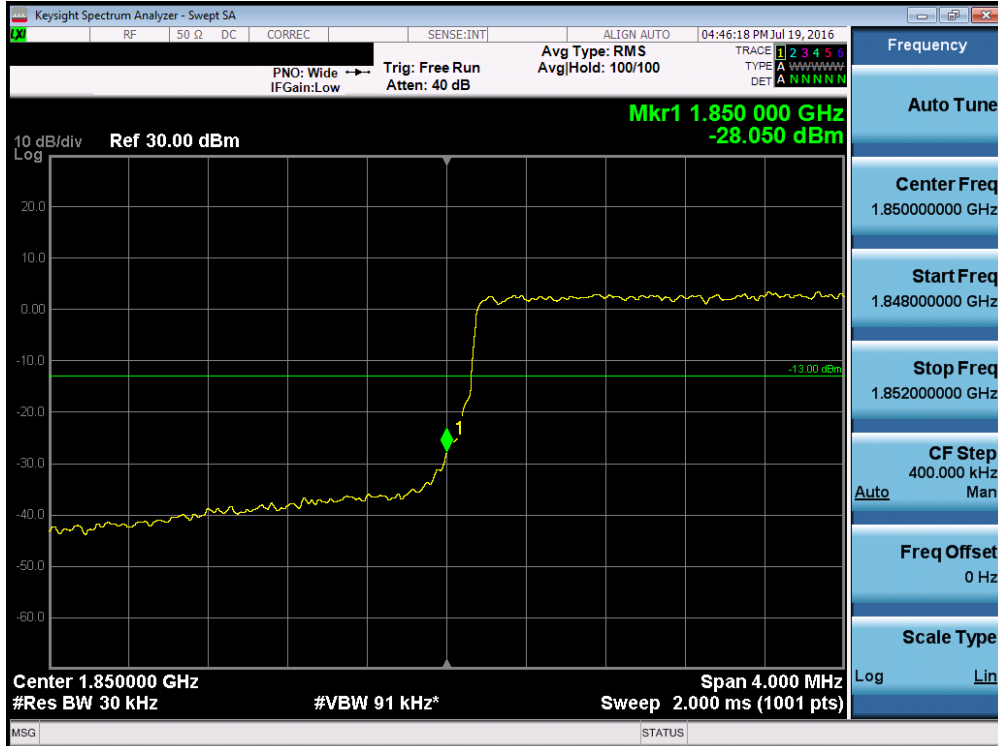


Plot 7-115. Upper Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

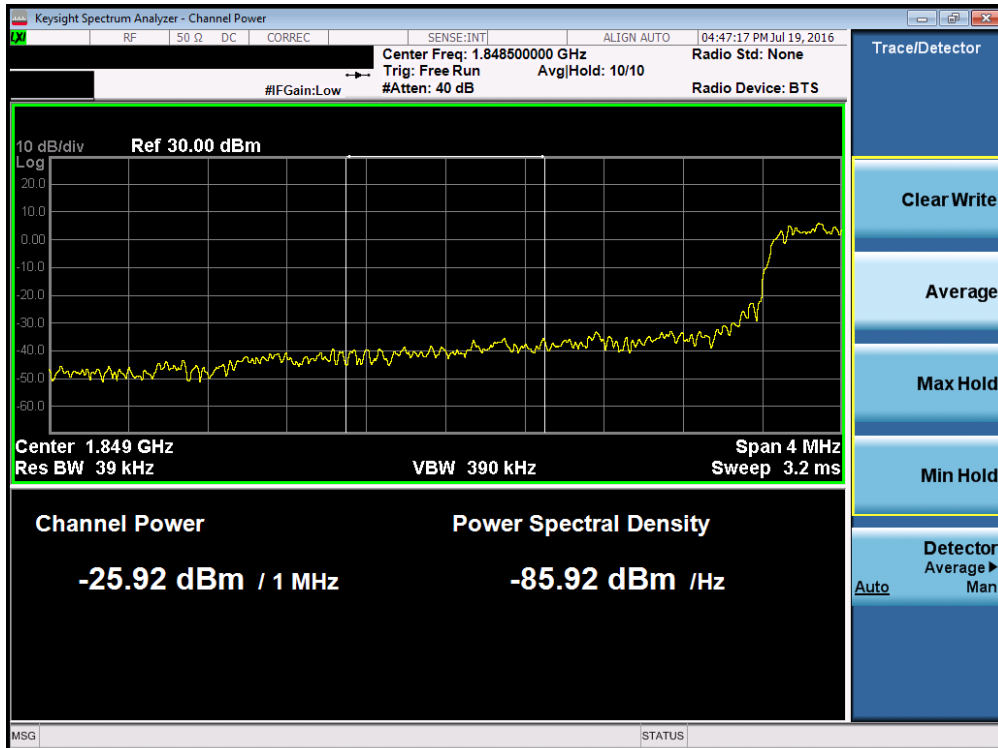


Plot 7-116. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 74 of 117

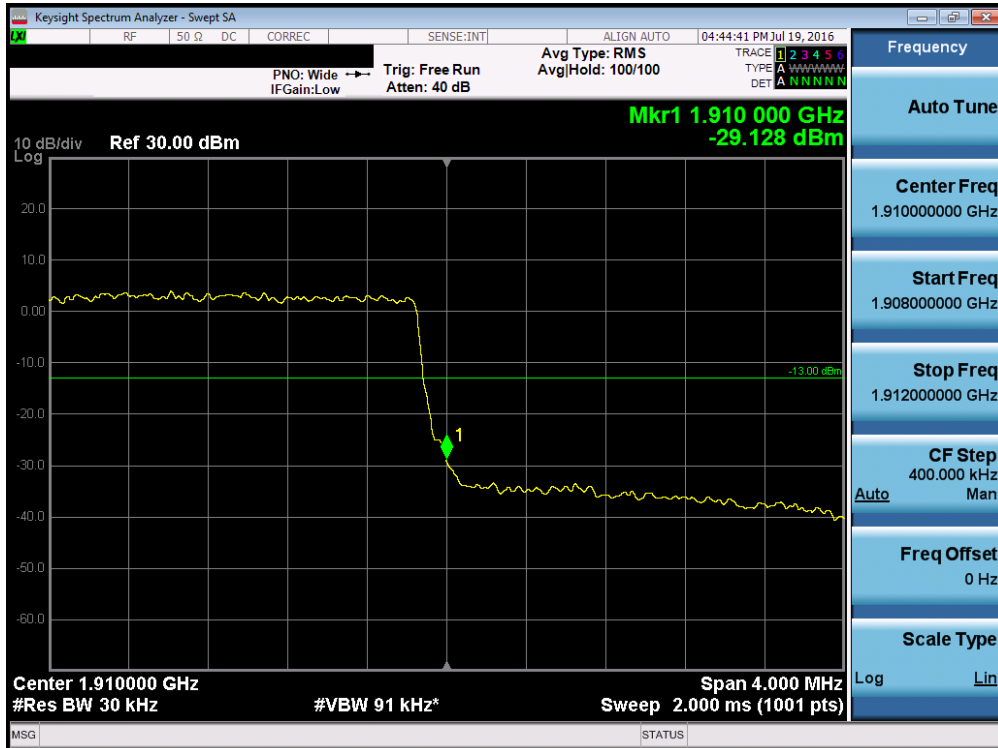


Plot 7-117. Lower Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

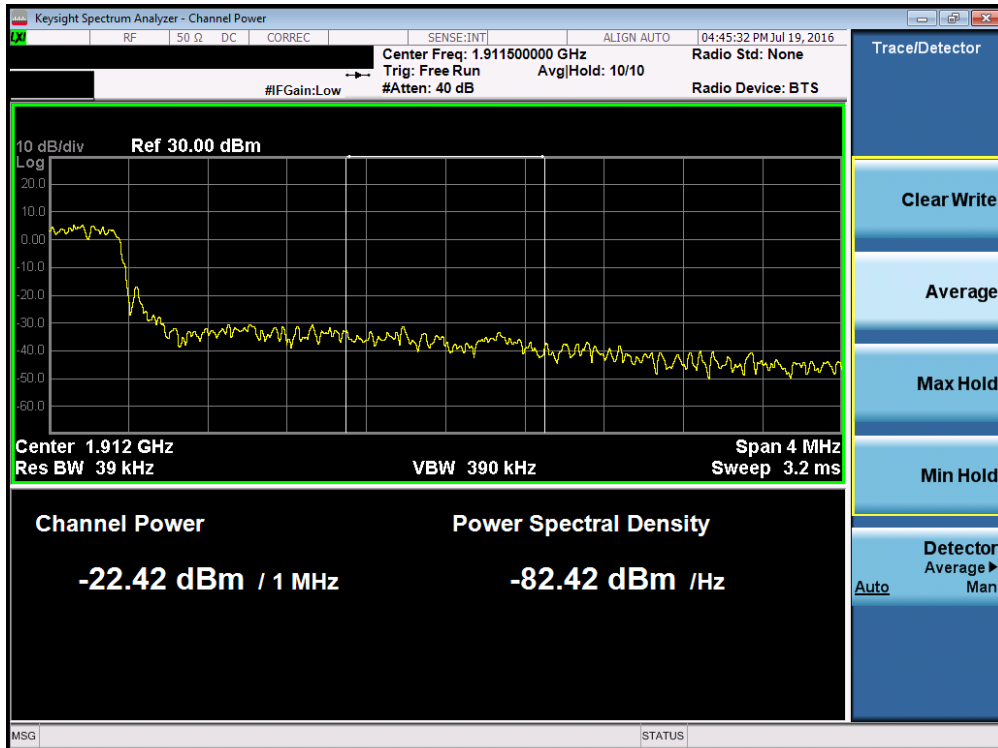


Plot 7-118. Lower Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 75 of 117

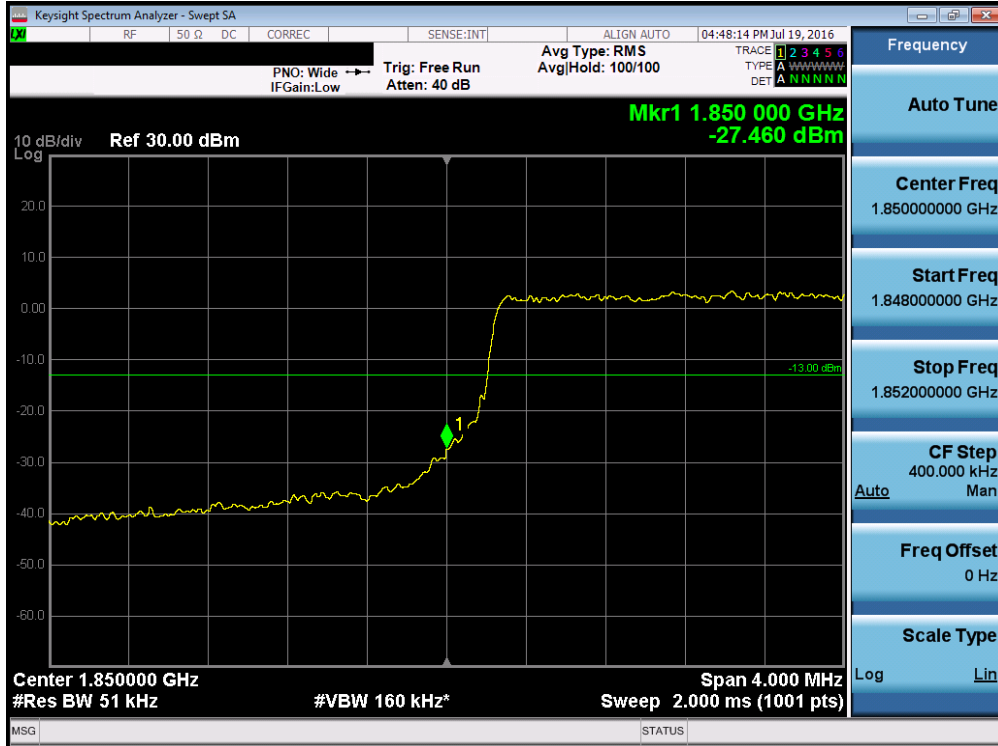


Plot 7-119. Upper Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

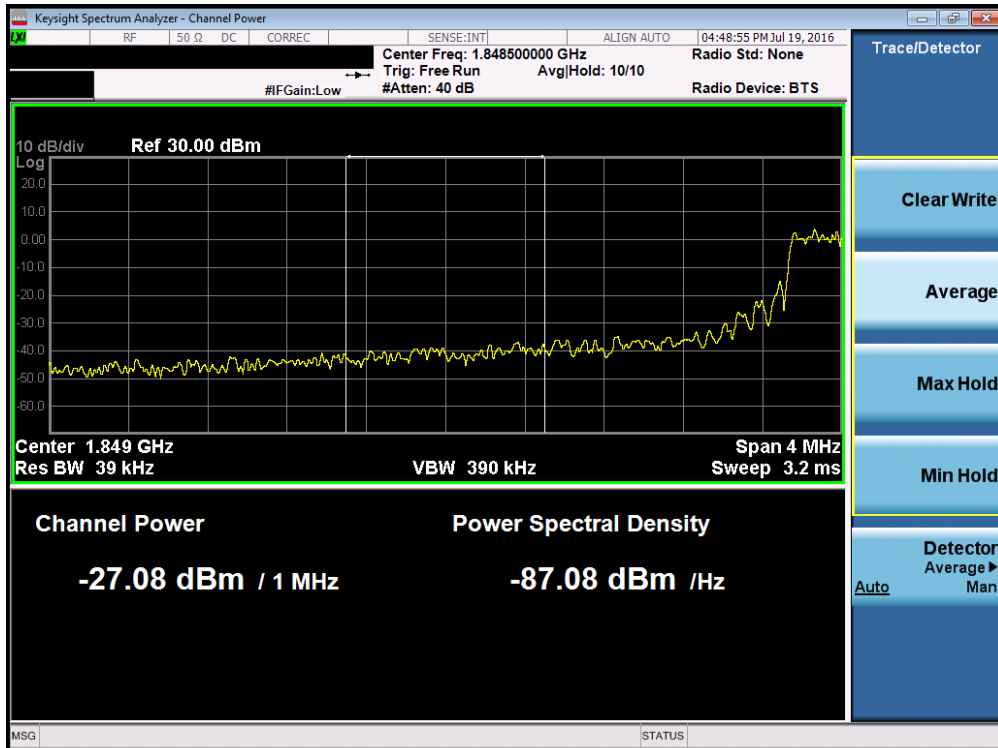


Plot 7-120. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 76 of 117

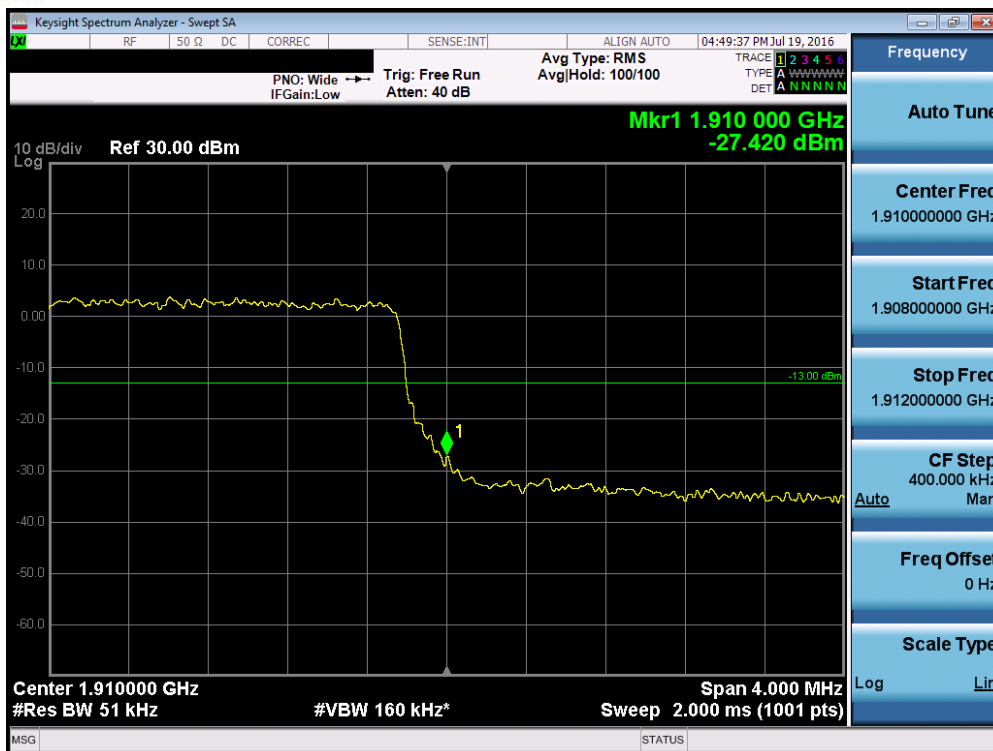


Plot 7-121. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

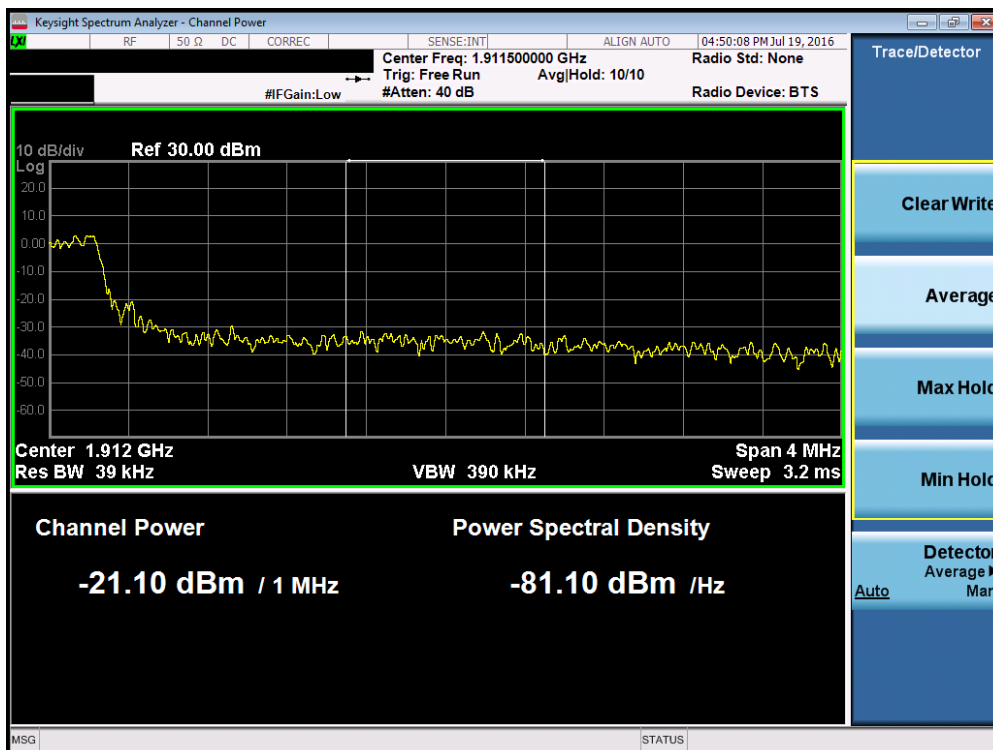


Plot 7-122. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 77 of 117

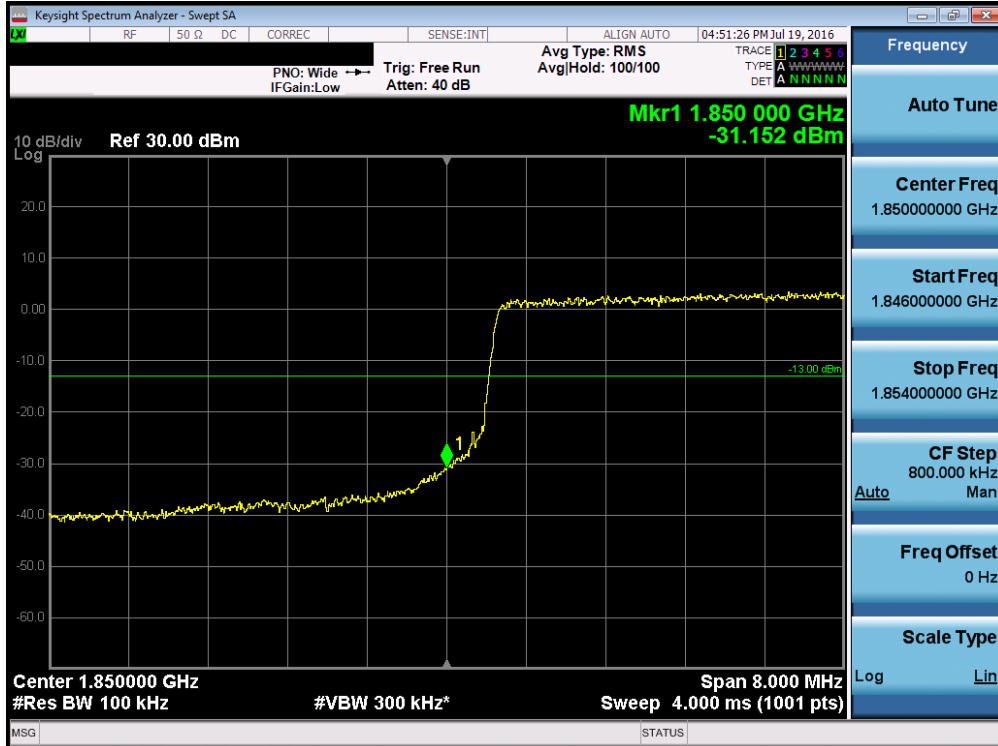


Plot 7-123. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

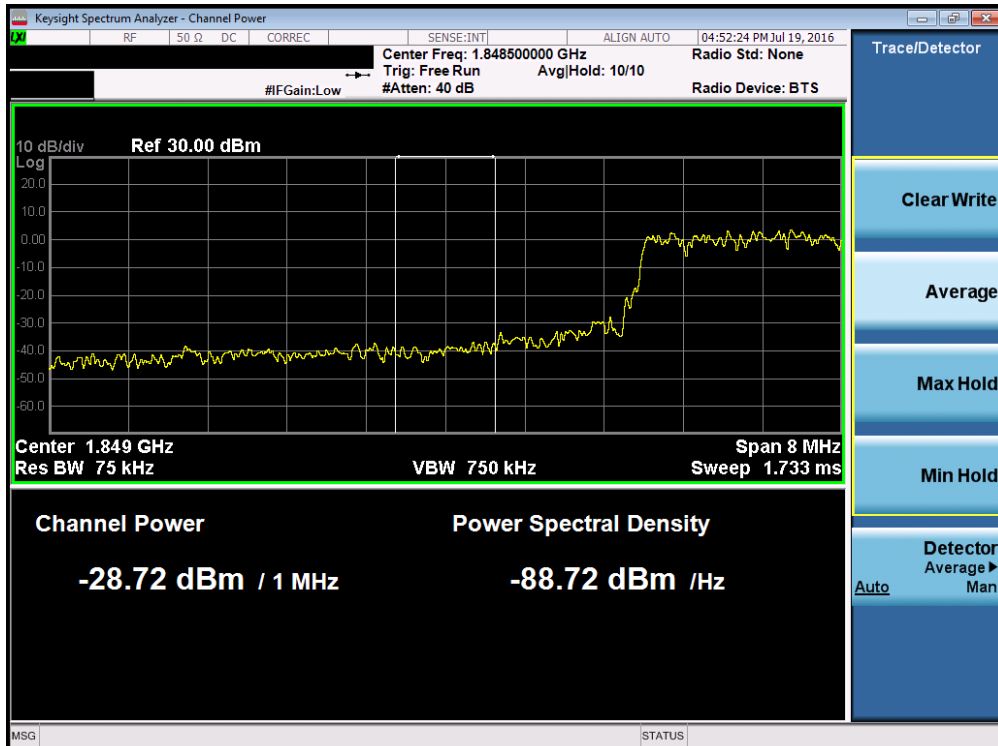


Plot 7-124. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 78 of 117

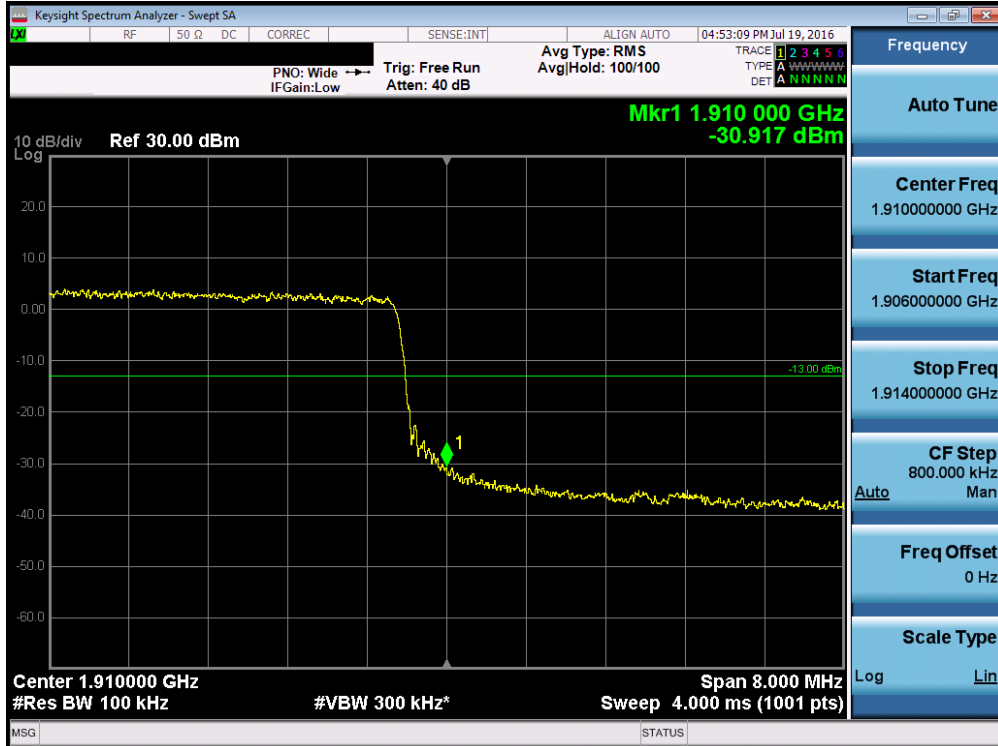


Plot 7-125. Lower Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

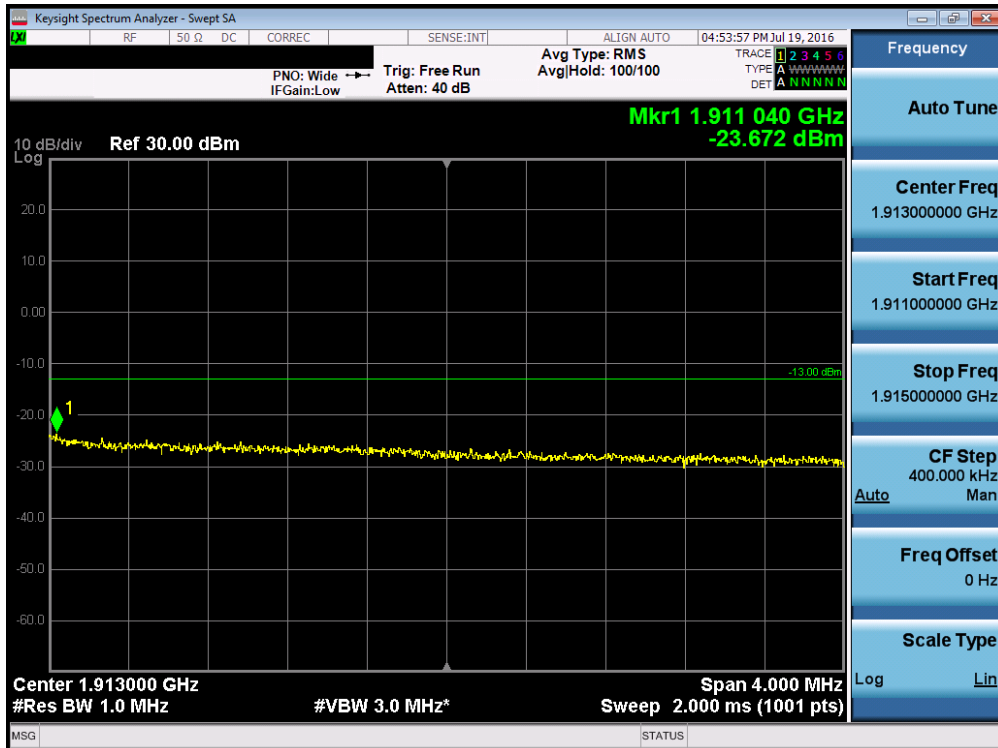


Plot 7-126. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 79 of 117

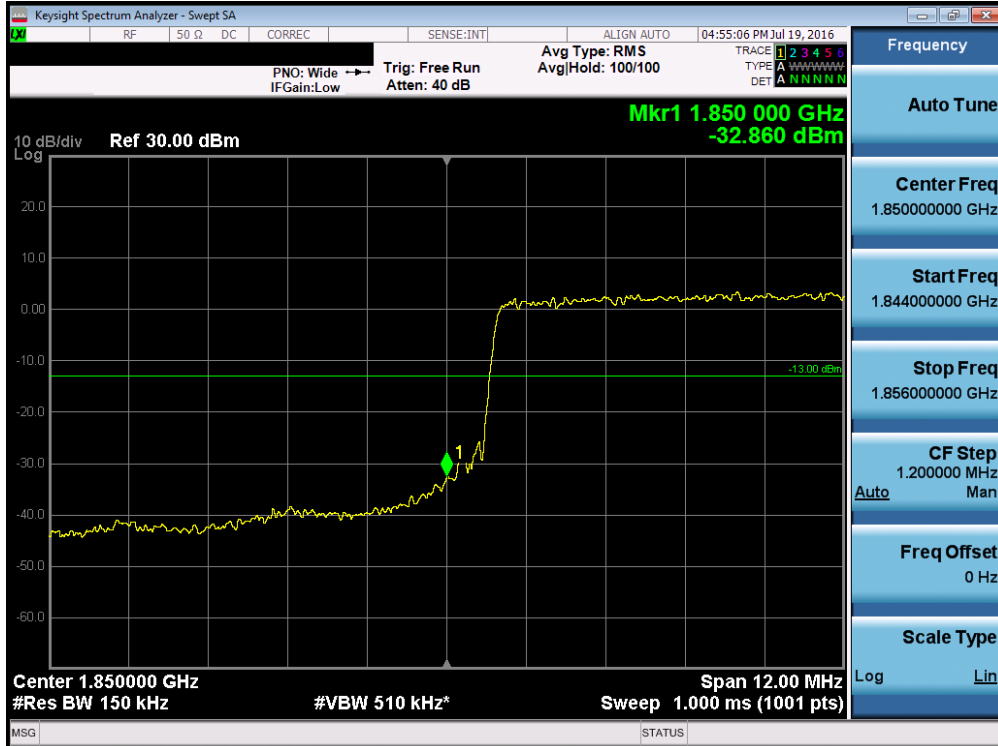


Plot 7-127. Upper Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

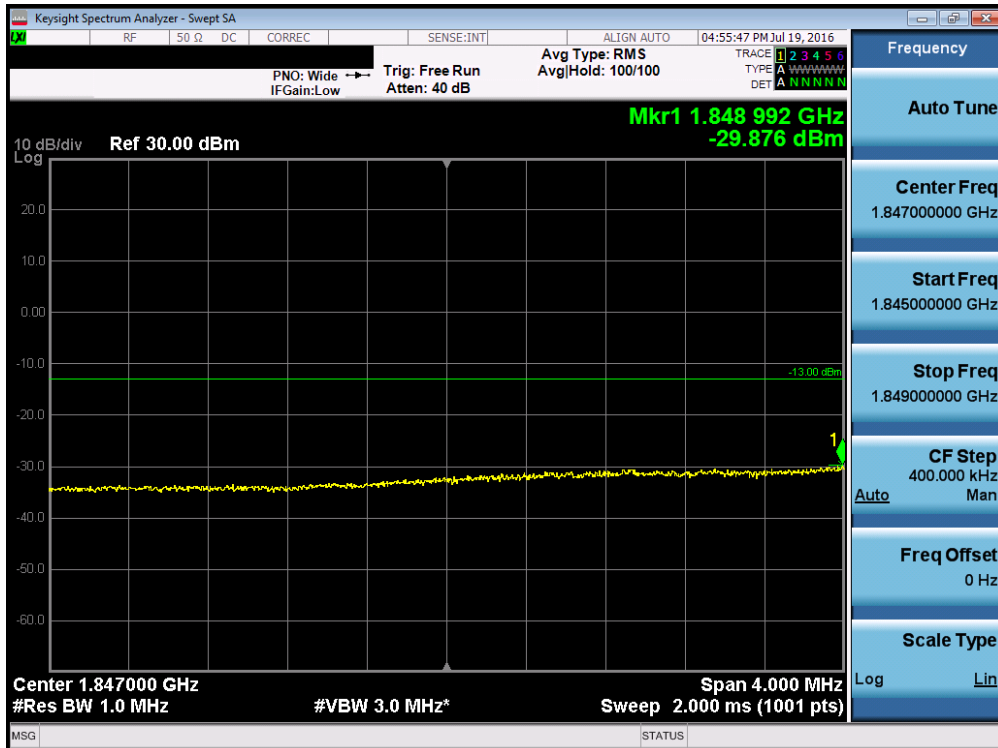


Plot 7-128. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 80 of 117

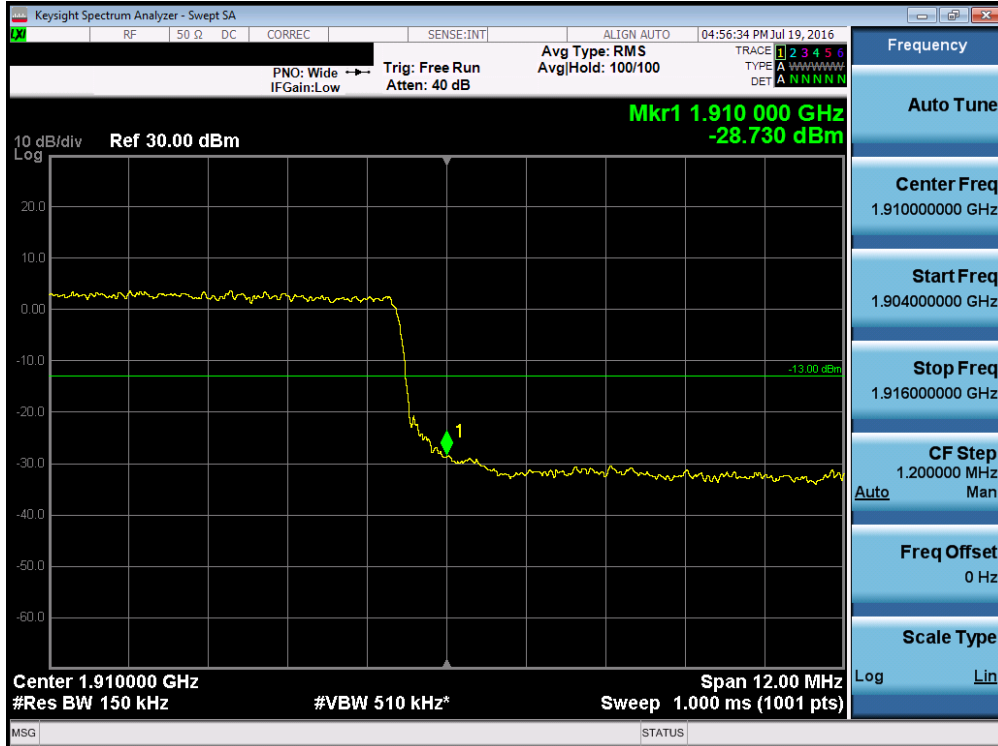


Plot 7-129. Lower Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

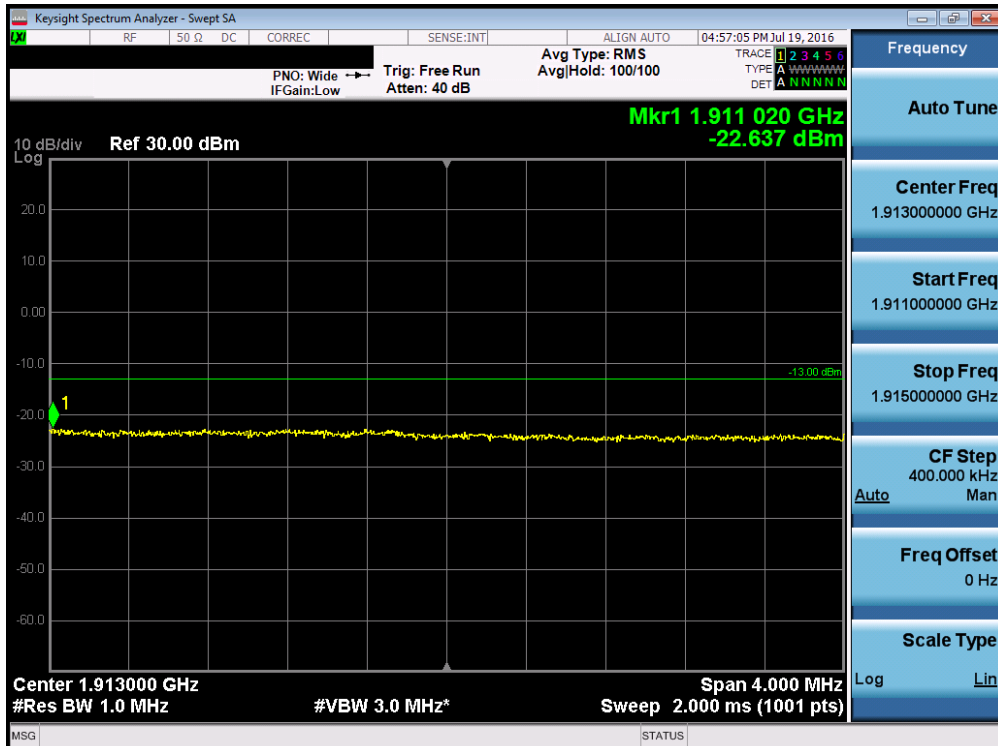


Plot 7-130. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 81 of 117

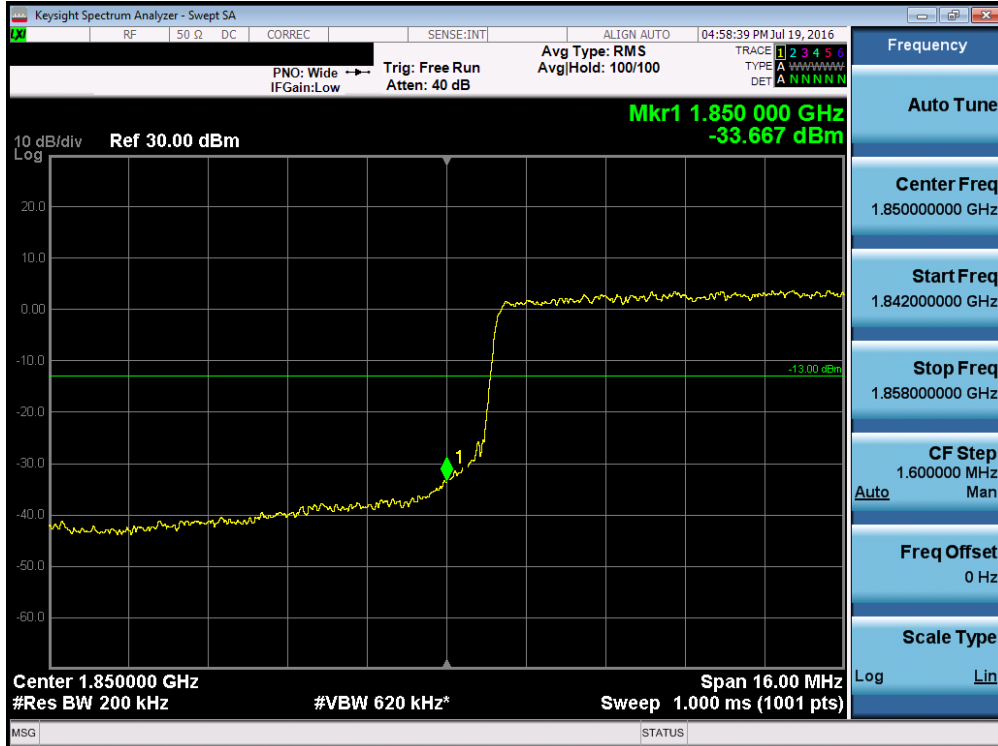


Plot 7-131. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

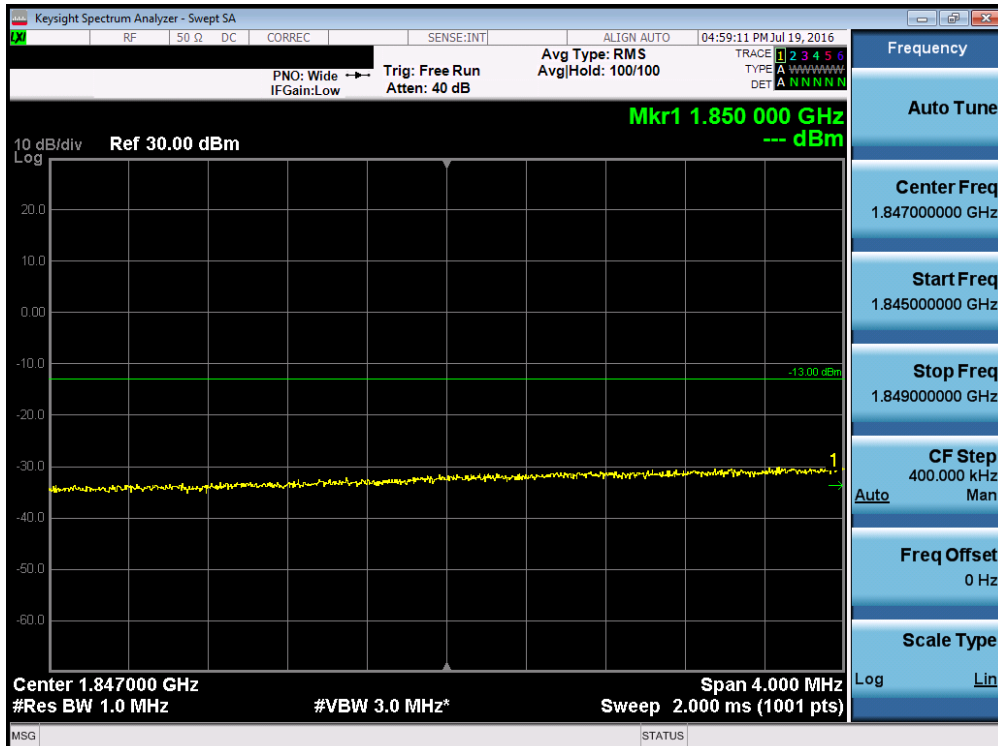


Plot 7-132. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 82 of 117



Plot 7-133. Lower Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

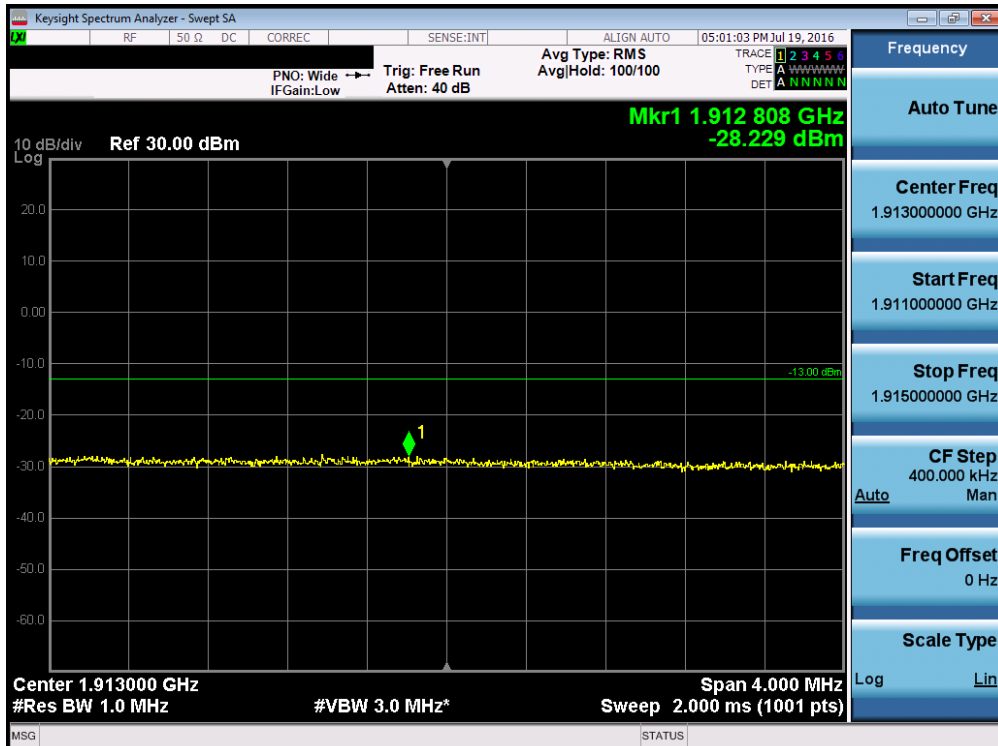


Plot 7-134. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 83 of 117



Plot 7-135. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-136. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 84 of 117

7.5 Peak-Average Ratio

§24.232(d)

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v02r02 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

Test Setup

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

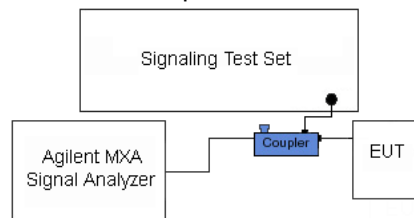


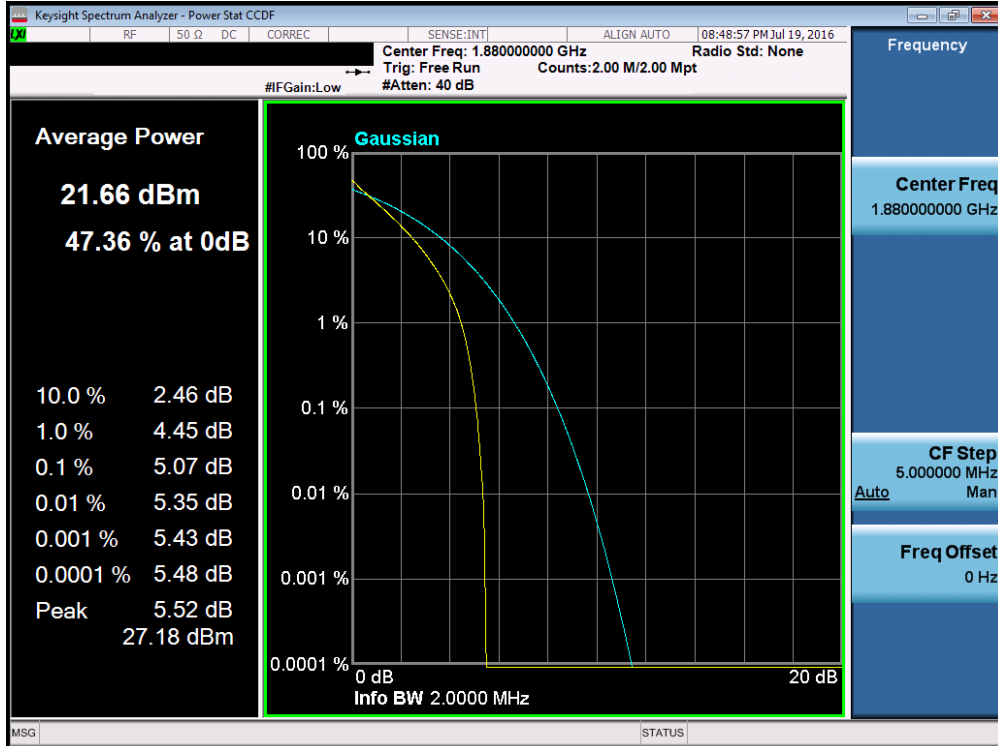


Figure 7-4. Test Instrument & Measurement Setup

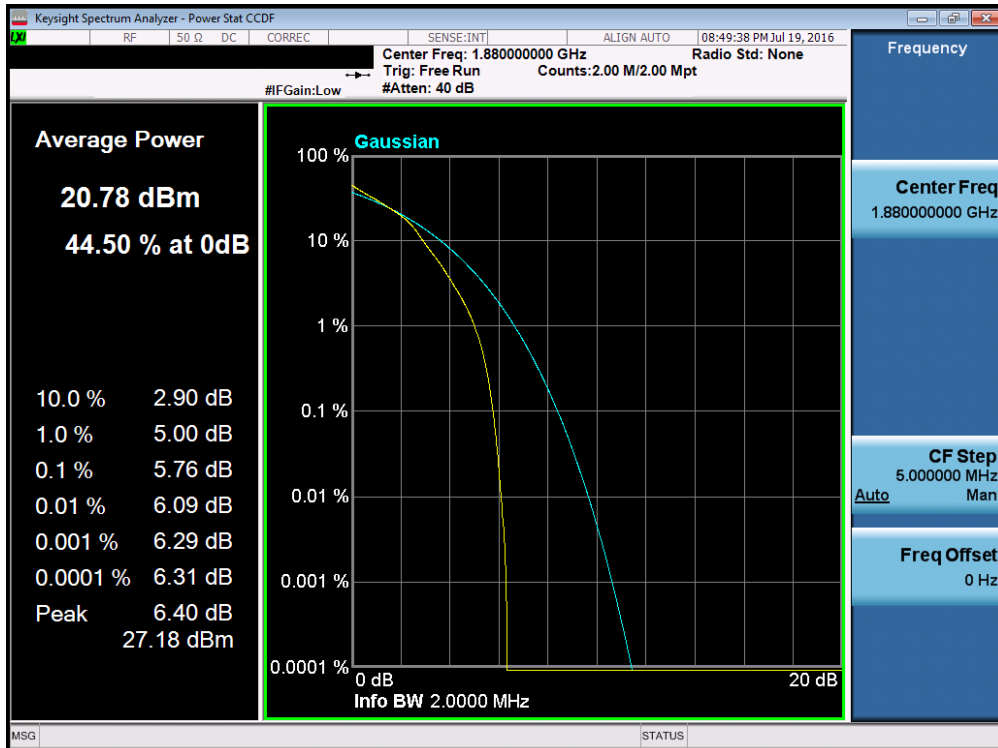
Test Notes

None.

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 85 of 117	

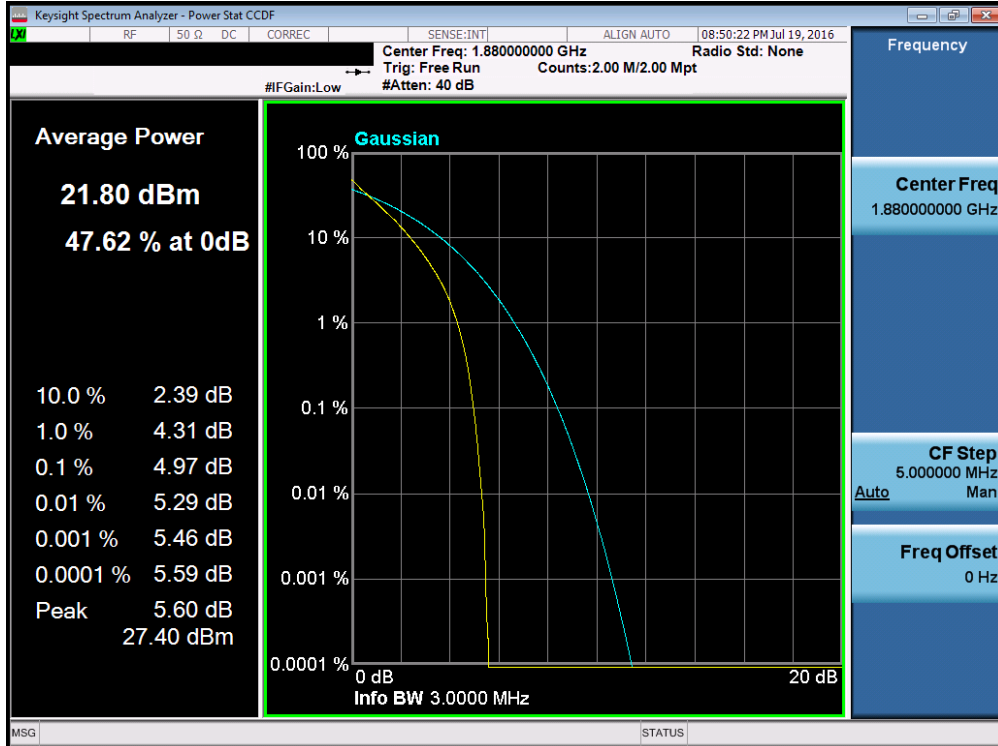


Plot 7-137. PAR Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

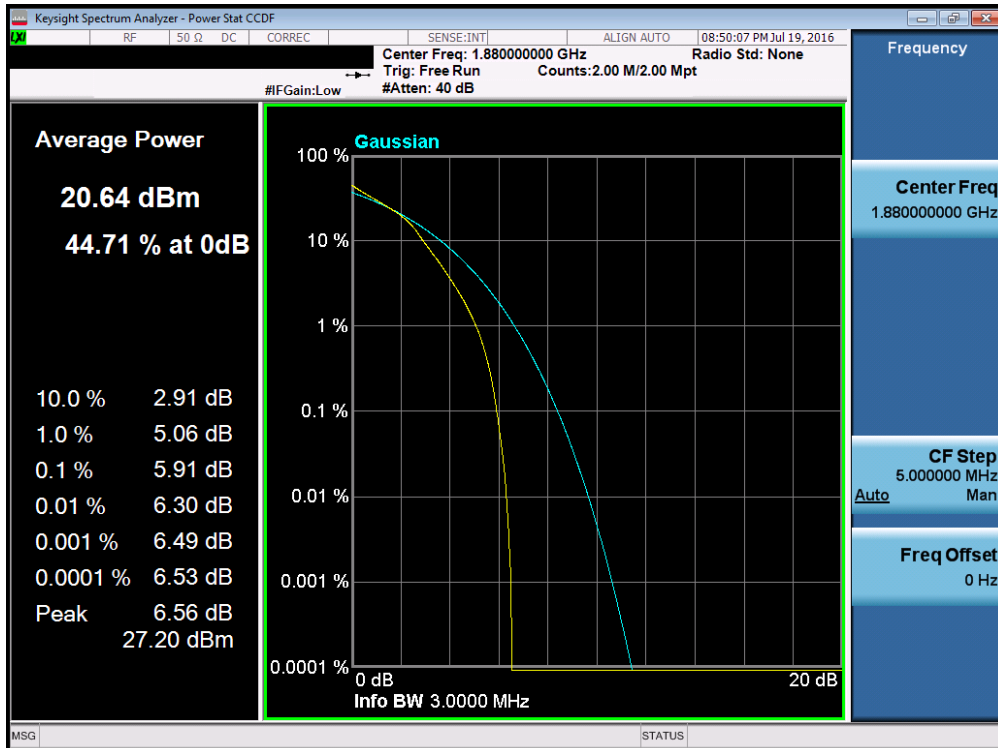


Plot 7-138. PAR Plot (Band 2 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 86 of 117

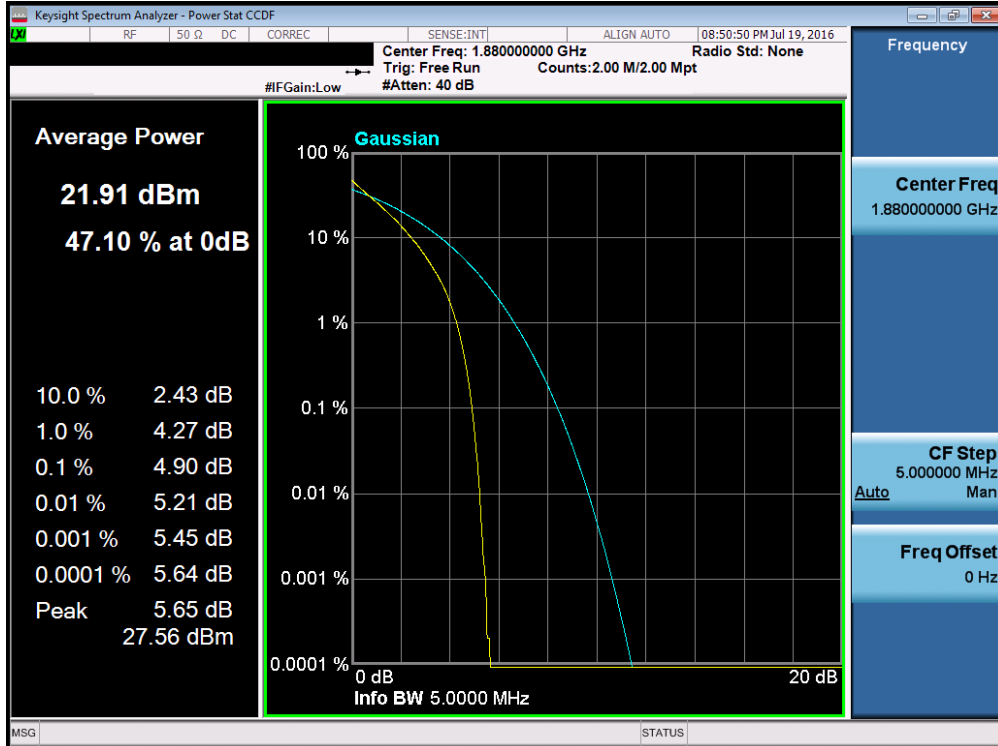


Plot 7-139. PAR Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

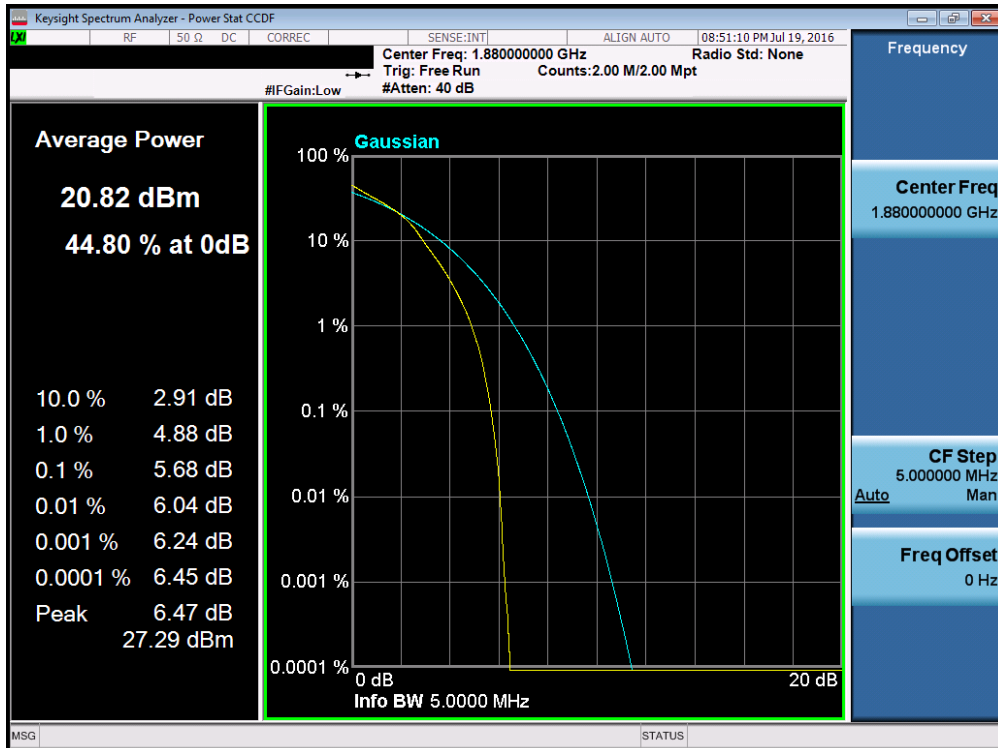


Plot 7-140. PAR Plot (Band 2 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 87 of 117

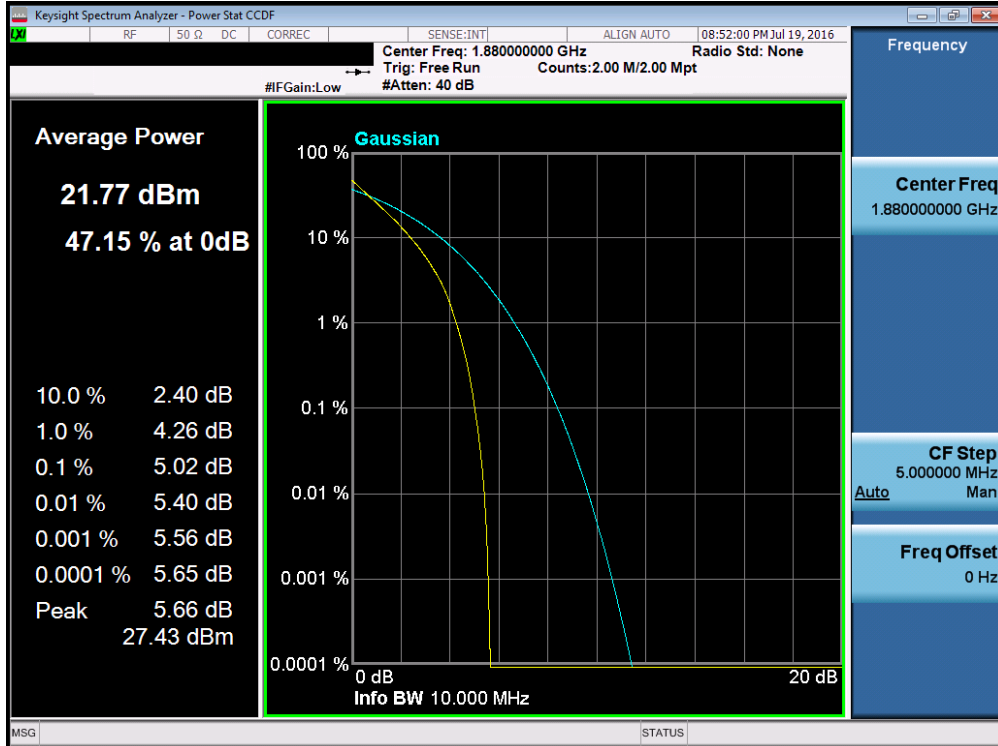


Plot 7-141. PAR Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

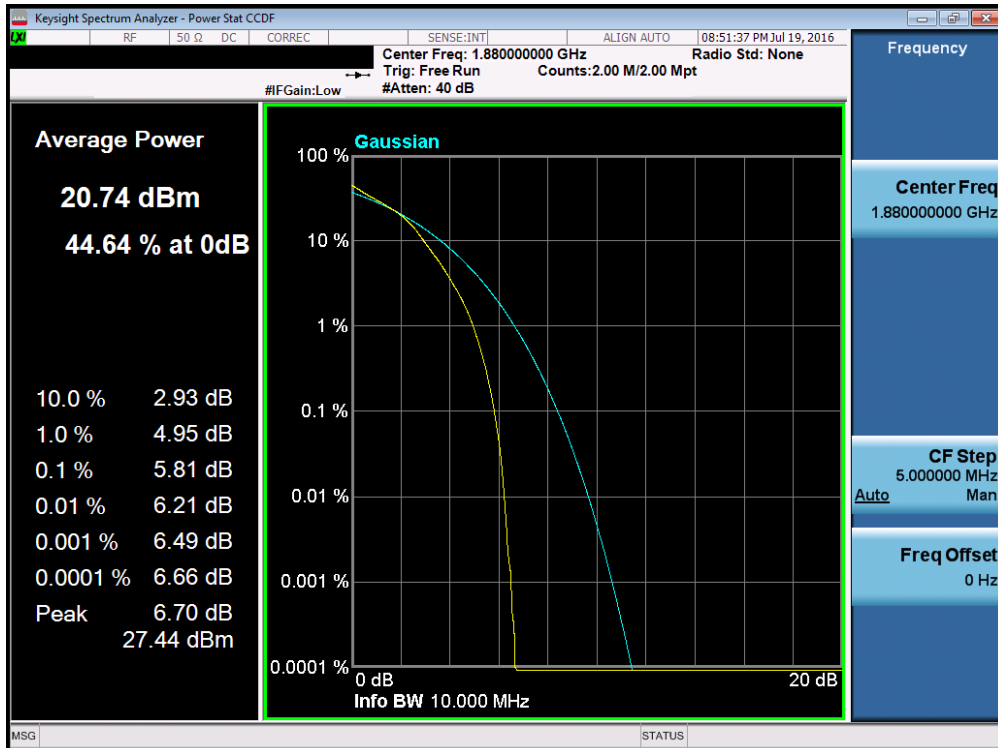


Plot 7-142. PAR Plot (Band 2 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 88 of 117

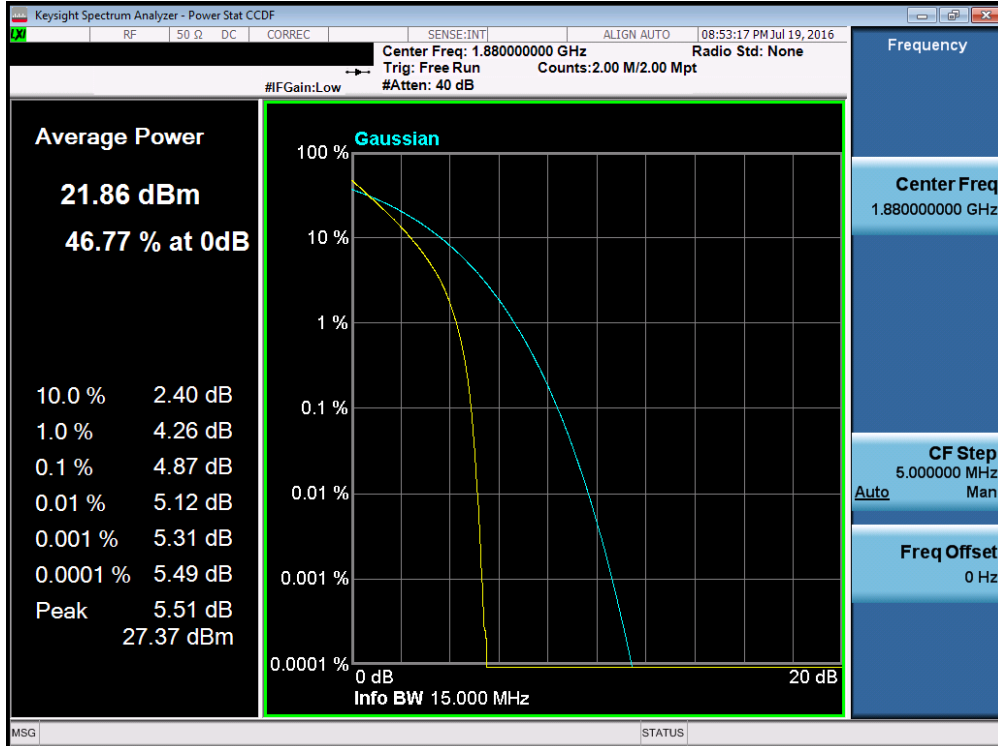


Plot 7-143. PAR Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

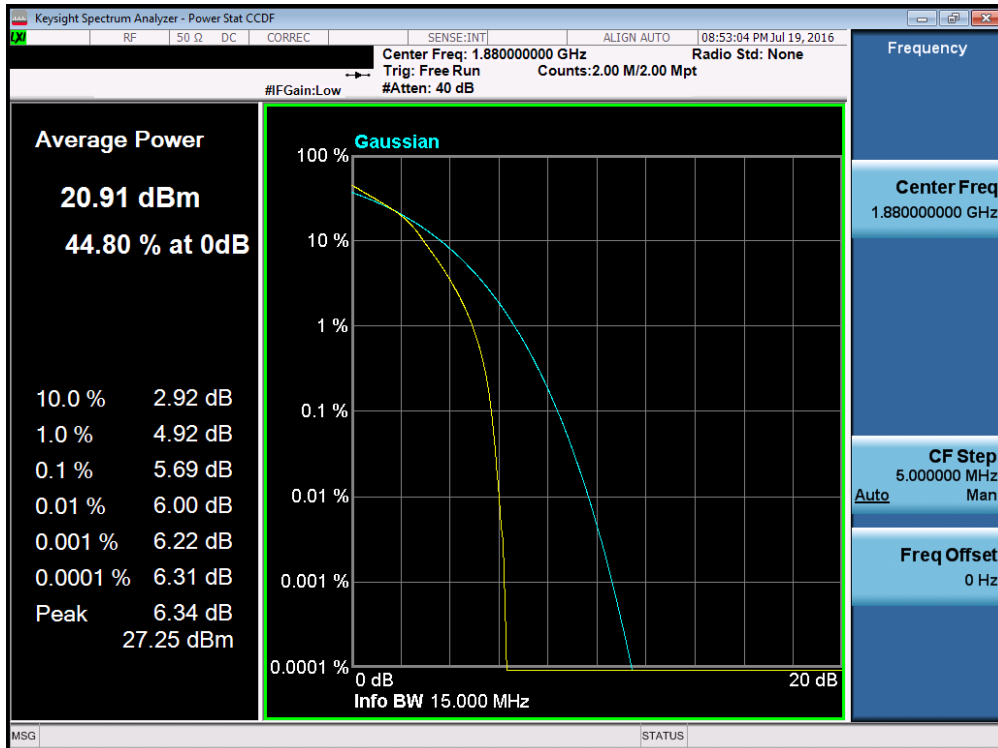


Plot 7-144. PAR Plot (Band 2 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 89 of 117

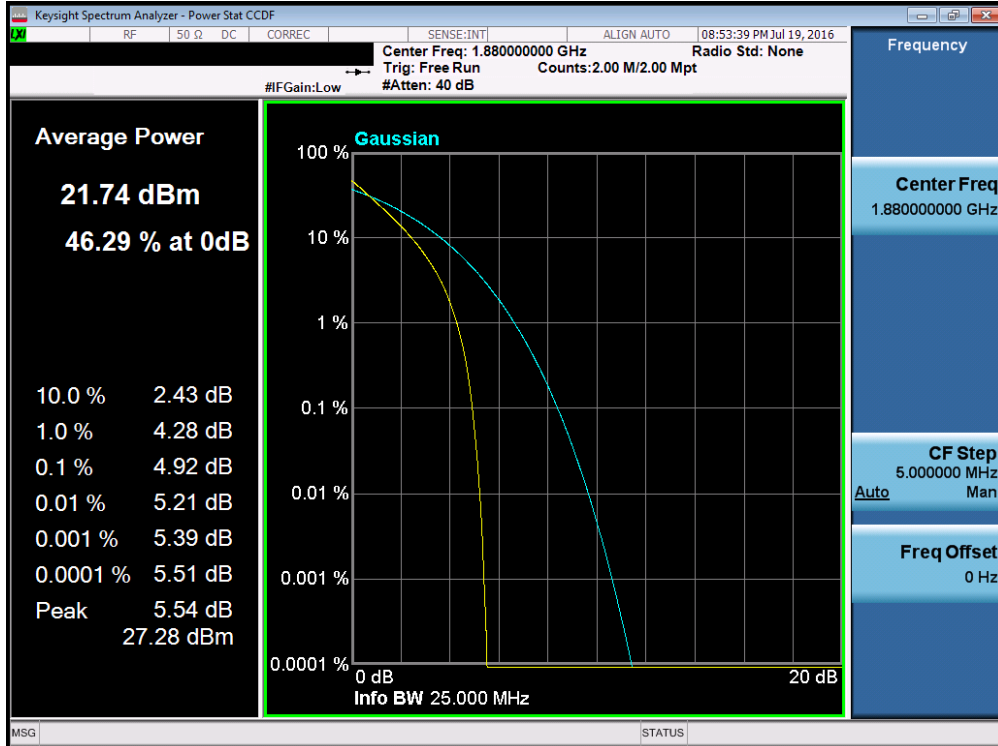


Plot 7-145. PAR Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

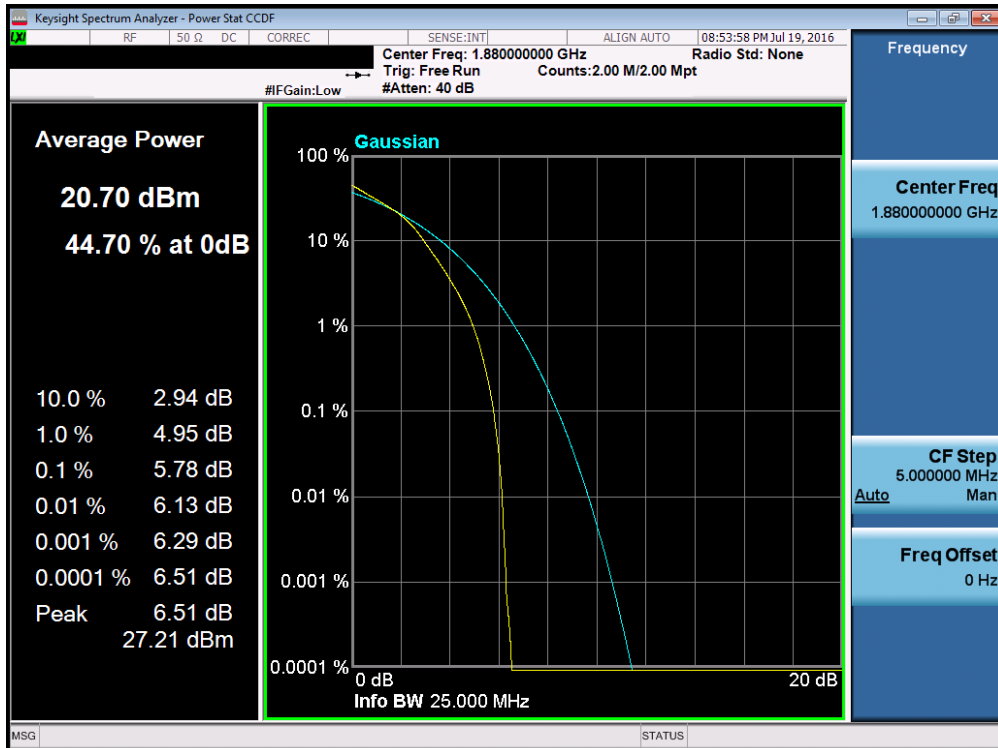


Plot 7-146. PAR Plot (Band 2 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 90 of 117



Plot 7-147. PAR Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-148. PAR Plot (Band 2 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 91 of 117

7.6 Radiated Power (ERP/EIRP)
§22.913(a.2) §24.232(c.2) §27.50(b.10) §27.50(d.4)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) 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 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 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer’s “channel power” measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW \geq 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points \geq 2 x span / RBW
6. Detector = RMS
7. Trigger is set to “free run” for signals with continuous operation with the sweep times set to “auto”.
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 92 of 117	

Test Setup

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

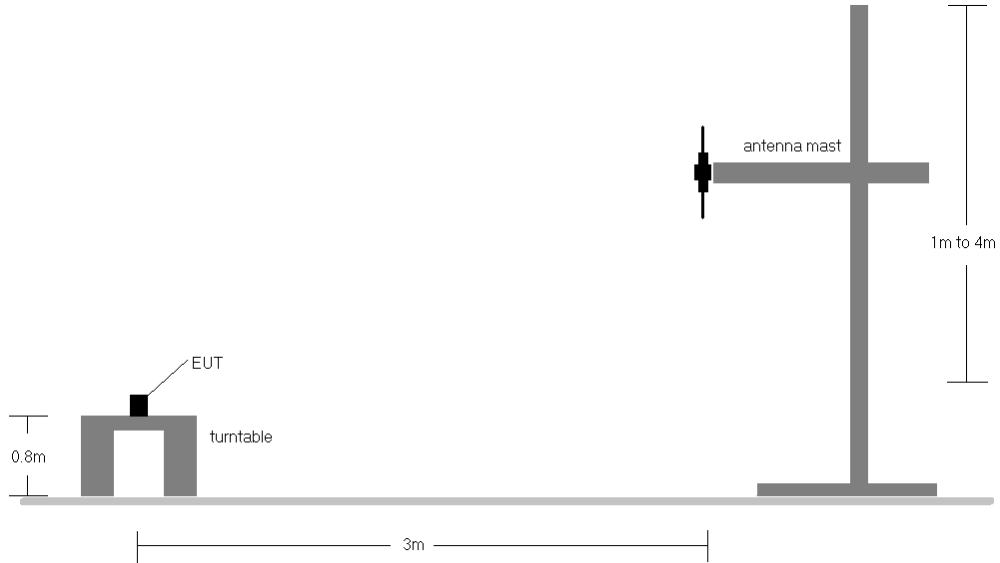


Figure 7-5. Radiated Test Setup <1GHz

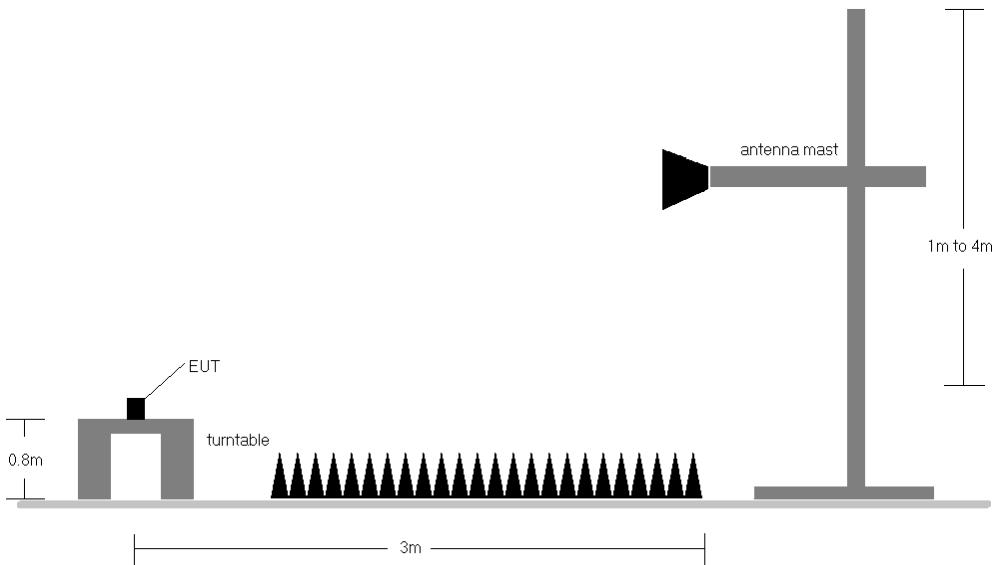


Figure 7-6. Radiated Test Setup >1GHz



Test Notes

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

FCC ID: ZNFW280	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 93 of 117



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	213	10	1 / 0	9.49	4.19	13.68	34.77	-21.09
782.00	5	QPSK	H	209	1	1 / 24	9.86	4.25	14.11	34.77	-20.66
784.50	5	QPSK	H	215	8	1 / 0	9.84	4.32	14.16	34.77	-20.61
779.50	5	16QAM	H	213	10	1 / 0	8.71	4.19	12.90	34.77	-21.87
782.00	5	16QAM	H	209	1	1 / 24	9.11	4.25	13.36	34.77	-21.41
784.50	5	16QAM	H	215	8	1 / 0	9.05	4.32	13.37	34.77	-21.40
782.00	10	QPSK	H	198	21	1 / 0	10.10	4.25	14.35	34.77	-20.42
782.00	10	16QAM	H	198	21	1 / 0	9.48	4.25	13.73	34.77	-21.04
782.00	10	QPSK	V	115	121	1 / 0	9.65	4.25	13.90	34.77	-20.87

Table 7-2. ERP Data (Band 13)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 94 of 117



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	142	195	3 / 2	10.55	5.01	15.56	38.45	-22.89
836.50	1.4	QPSK	H	135	201	3 / 2	10.29	5.16	15.45	38.45	-23.00
848.30	1.4	QPSK	H	146	181	3 / 2	10.23	5.30	15.53	38.45	-22.92
824.70	1.4	16-QAM	H	142	195	3 / 2	9.78	5.01	14.79	38.45	-23.66
836.50	1.4	16-QAM	H	135	201	3 / 2	9.44	5.16	14.60	38.45	-23.85
848.30	1.4	16-QAM	H	146	181	3 / 2	9.32	5.30	14.62	38.45	-23.83
825.50	3	QPSK	H	140	206	1 / 14	10.99	5.02	16.01	38.45	-22.44
836.50	3	QPSK	H	146	197	1 / 0	10.58	5.16	15.74	38.45	-22.71
847.50	3	QPSK	H	152	211	1 / 0	10.68	5.29	15.97	38.45	-22.48
825.50	3	16-QAM	H	140	206	1 / 14	10.13	5.02	15.15	38.45	-23.30
836.50	3	16-QAM	H	146	197	1 / 0	9.68	5.16	14.84	38.45	-23.61
847.50	3	16-QAM	H	152	211	1 / 0	9.64	5.29	14.93	38.45	-23.52
826.50	5	QPSK	H	150	189	1 / 0	10.93	5.03	15.96	38.45	-22.49
836.50	5	QPSK	H	139	163	1 / 0	10.64	5.16	15.80	38.45	-22.65
846.50	5	QPSK	H	167	194	1 / 0	10.56	5.28	15.84	38.45	-22.61
826.50	5	16-QAM	H	150	189	1 / 0	10.15	5.03	15.18	38.45	-23.27
836.50	5	16-QAM	H	139	163	1 / 0	9.88	5.16	15.04	38.45	-23.41
846.50	5	16-QAM	H	167	194	1 / 0	9.68	5.28	14.96	38.45	-23.49
829.00	10	QPSK	H	149	188	1 / 0	10.63	5.06	15.69	38.45	-22.76
836.50	10	QPSK	H	144	206	1 / 0	10.32	5.16	15.48	38.45	-22.97
844.00	10	QPSK	H	155	200	1 / 0	10.36	5.25	15.61	38.45	-22.84
829.00	10	16-QAM	H	149	188	1 / 0	9.87	5.06	14.93	38.45	-23.52
836.50	10	16-QAM	H	144	206	1 / 0	9.52	5.16	14.68	38.45	-23.77
844.00	10	16-QAM	H	155	200	1 / 0	9.49	5.25	14.74	38.45	-23.71
825.50	3	QPSK	V	227	137	1 / 0	9.71	5.02	14.73	38.45	-23.72

Table 7-3. ERP Data (Band 5)

FCC ID: ZNFW280	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 95 of 117



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 Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	206	244	3 / 2	7.06	9.66	16.72	30.00	-13.28
1732.50	1.4	QPSK	H	209	251	3 / 2	7.47	9.61	17.08	30.00	-12.92
1754.30	1.4	QPSK	H	213	241	3 / 2	7.08	9.57	16.65	30.00	-13.35
1710.70	1.4	16-QAM	H	206	244	3 / 2	6.16	9.66	15.82	30.00	-14.18
1732.50	1.4	16-QAM	H	209	251	3 / 2	6.58	9.61	16.19	30.00	-13.81
1754.30	1.4	16-QAM	H	213	241	3 / 2	6.12	9.57	15.69	30.00	-14.31
1711.50	3	QPSK	H	214	236	1 / 14	8.94	9.65	18.59	30.00	-11.41
1732.50	3	QPSK	H	209	245	1 / 0	8.48	9.61	18.09	30.00	-11.91
1753.50	3	QPSK	H	209	242	1 / 14	8.81	9.57	18.38	30.00	-11.62
1711.50	3	16-QAM	H	214	236	1 / 14	8.00	9.65	17.65	30.00	-12.35
1732.50	3	16-QAM	H	209	245	1 / 0	7.59	9.61	17.20	30.00	-12.80
1753.50	3	16-QAM	H	209	242	1 / 14	7.89	9.57	17.46	30.00	-12.54
1712.50	5	QPSK	H	200	261	1 / 24	9.14	9.65	18.79	30.00	-11.21
1732.50	5	QPSK	H	209	244	1 / 0	8.62	9.61	18.23	30.00	-11.77
1752.50	5	QPSK	H	216	255	1 / 24	9.56	9.57	19.13	30.00	-10.87
1712.50	5	16-QAM	H	200	261	1 / 24	8.13	9.65	17.78	30.00	-12.22
1732.50	5	16-QAM	H	209	244	1 / 0	7.90	9.61	17.51	30.00	-12.49
1752.50	5	16-QAM	H	216	255	1 / 24	8.82	9.57	18.39	30.00	-11.61
1715.00	10	QPSK	H	199	250	1 / 49	8.57	9.65	18.22	30.00	-11.78
1732.50	10	QPSK	H	210	239	1 / 49	7.79	9.61	17.40	30.00	-12.60
1750.00	10	QPSK	H	216	245	1 / 49	8.46	9.58	18.04	30.00	-11.96
1715.00	10	16-QAM	H	199	250	1 / 49	7.62	9.65	17.27	30.00	-12.73
1732.50	10	16-QAM	H	210	239	1 / 49	6.77	9.61	16.38	30.00	-13.62
1750.00	10	16-QAM	H	216	245	1 / 49	7.59	9.58	17.17	30.00	-12.83
1717.50	15	QPSK	H	222	215	1 / 74	8.26	9.64	17.90	30.00	-12.10
1732.50	15	QPSK	H	207	246	1 / 0	7.86	9.61	17.47	30.00	-12.53
1747.50	15	QPSK	H	215	264	1 / 74	8.18	9.58	17.76	30.00	-12.24
1717.50	15	16-QAM	H	222	215	1 / 74	7.29	9.64	16.93	30.00	-13.07
1732.50	15	16-QAM	H	207	246	1 / 0	6.78	9.61	16.39	30.00	-13.61
1747.50	15	16-QAM	H	215	264	1 / 74	7.23	9.58	16.81	30.00	-13.19
1720.00	20	QPSK	H	226	264	1 / 0	8.82	9.64	18.46	30.00	-11.54
1732.50	20	QPSK	H	200	238	1 / 0	8.38	9.61	17.99	30.00	-12.01
1745.00	20	QPSK	H	218	216	1 / 0	8.52	9.59	18.11	30.00	-11.89
1720.00	20	16-QAM	H	226	264	1 / 0	7.77	9.64	17.41	30.00	-12.59
1732.50	20	16-QAM	H	200	238	1 / 0	7.46	9.61	17.07	30.00	-12.93
1745.00	20	16-QAM	H	218	216	1 / 0	7.40	9.59	16.99	30.00	-13.01
1752.50	5	QPSK	V	143	298	1 / 0	7.41	9.57	16.98	30.00	-13.02

Table 7-4. EIRP Data (Band 4)

FCC ID: ZNFW280	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 96 of 117

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 Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	143	192	1 / 0	8.84	9.35	18.19	33.01	-14.82
1880.00	1.4	QPSK	H	140	183	3 / 2	8.72	9.27	17.99	33.01	-15.02
1909.30	1.4	QPSK	H	151	200	1 / 0	9.71	9.25	18.96	33.01	-14.05
1850.70	1.4	16-QAM	H	143	192	1 / 0	8.03	9.35	17.38	33.01	-15.63
1880.00	1.4	16-QAM	H	140	183	1 / 5	7.84	9.27	17.11	33.01	-15.90
1909.30	1.4	16-QAM	H	151	200	1 / 0	8.97	9.25	18.22	33.01	-14.79
1851.50	3	QPSK	H	142	205	1 / 0	10.02	9.35	19.37	33.01	-13.64
1880.00	3	QPSK	H	139	212	1 / 14	9.90	9.27	19.17	33.01	-13.84
1908.50	3	QPSK	H	136	199	1 / 0	11.08	9.25	20.33	33.01	-12.68
1851.50	3	16-QAM	H	142	205	1 / 0	9.27	9.35	18.62	33.01	-14.39
1880.00	3	16-QAM	H	139	212	1 / 14	9.02	9.27	18.29	33.01	-14.72
1908.50	3	16-QAM	H	136	199	1 / 0	8.47	9.25	17.72	33.01	-15.29
1852.50	5	QPSK	H	146	203	1 / 24	9.97	9.34	19.31	33.01	-13.70
1880.00	5	QPSK	H	148	199	1 / 24	10.16	9.27	19.43	33.01	-13.58
1907.50	5	QPSK	H	152	210	1 / 0	10.76	9.24	20.00	33.01	-13.01
1852.50	5	16-QAM	H	146	203	1 / 24	8.98	9.34	18.32	33.01	-14.69
1880.00	5	16-QAM	H	148	199	1 / 24	8.99	9.27	18.26	33.01	-14.75
1907.50	5	16-QAM	H	152	210	1 / 0	10.02	9.24	19.26	33.01	-13.75
1855.00	10	QPSK	H	144	216	1 / 49	9.40	9.34	18.74	33.01	-14.27
1880.00	10	QPSK	H	140	210	1 / 49	9.54	9.27	18.81	33.01	-14.20
1905.00	10	QPSK	H	153	200	1 / 0	9.91	9.24	19.15	33.01	-13.86
1855.00	10	16-QAM	H	144	216	1 / 49	8.72	9.34	18.06	33.01	-14.95
1880.00	10	16-QAM	H	140	210	1 / 49	8.73	9.27	18.00	33.01	-15.01
1905.00	10	16-QAM	H	153	200	1 / 0	9.16	9.24	18.40	33.01	-14.61
1857.50	15	QPSK	H	133	220	1 / 74	9.69	9.33	19.02	33.01	-13.99
1880.00	15	QPSK	H	142	208	1 / 74	9.83	9.27	19.10	33.01	-13.91
1902.50	15	QPSK	H	146	195	1 / 74	9.97	9.23	19.20	33.01	-13.81
1857.50	15	16-QAM	H	133	220	1 / 74	8.92	9.33	18.25	33.01	-14.76
1880.00	15	16-QAM	H	142	208	1 / 74	9.04	9.27	18.31	33.01	-14.70
1902.50	15	16-QAM	H	146	195	1 / 74	9.26	9.23	18.49	33.01	-14.52
1860.00	20	QPSK	H	152	198	1 / 99	9.60	9.32	18.92	33.01	-14.09
1880.00	20	QPSK	H	146	211	1 / 99	9.80	9.27	19.07	33.01	-13.94
1900.00	20	QPSK	H	137	206	1 / 99	9.86	9.22	19.08	33.01	-13.93
1860.00	20	16-QAM	H	152	198	1 / 99	8.83	9.32	18.15	33.01	-14.86
1880.00	20	16-QAM	H	146	211	1 / 99	9.06	9.27	18.33	33.01	-14.68
1900.00	20	16-QAM	H	137	206	1 / 99	9.00	9.22	18.22	33.01	-14.79
1908.50	3	QPSK	V	185	148	1 / 0	9.43	9.25	18.68	33.01	-14.33

Table 7-5. EIRP Data (Band 2)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 97 of 117	

7.7 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(c) §27.53(f) §27.53(h)

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 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points \geq 2 x span / RBW
5. Detector = Peak
6. Trace mode = max hold
7. The trace was allowed to stabilize

FCC ID: ZNFW280	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 98 of 117

Test Setup

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

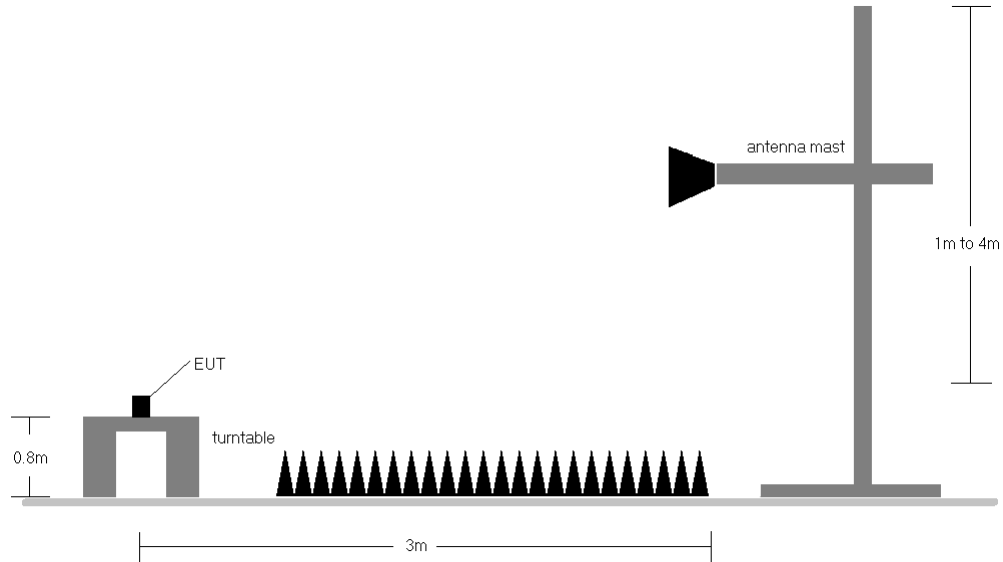




Figure 7-7. Test Instrument & Measurement Setup

Test Notes

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

FCC ID: ZNFW280	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 99 of 117

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 14.35 dBm = 0.027 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 27.35 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2346.00	H	-	-	-63.37	7.33	-56.04	70.4
3128.00	H	-	-	-59.88	7.20	-52.68	67.0
3910.00	H	-	-	-55.11	7.34	-47.77	62.1

Table 7-6. 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 [dBd]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	-	-	-65.75	6.57	-59.18	-19.2

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

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 14.35 dBm = 0.027 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 27.35 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2346.00	H	-	-	-63.54	7.33	-56.21	70.6
3128.00	H	-	-	-60.39	7.20	-53.19	67.5
3910.00	H	-	-	-55.64	7.34	-48.30	62.7

Table 7-8. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

OPERATING FREQUENCY: 825.50 MHz
 CHANNEL: 20415
 MEASURED OUTPUT POWER: 16.01 dBm = 0.040 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 29.01 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1651.00	H	110	206	-60.66	6.70	-53.97	70.0
2476.50	H	190	54	-53.60	7.53	-46.07	62.1
3302.00	H	-	-	-58.99	7.37	-51.63	67.6
4127.50	H	-	-	-56.14	8.09	-48.05	64.1

Table 7-9. Radiated Spurious Data (Band 5 – Low Channel)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 101 of 117	

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 MEASURED OUTPUT POWER: 15.74 dBm = 0.037 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 28.74 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	H	110	227	-61.54	6.70	-54.84	70.6
2509.50	H	183	37	-51.93	7.63	-44.31	60.0
3346.00	H	-	-	-58.62	7.51	-51.11	66.8
4182.50	H	-	-	-57.01	8.23	-48.78	64.5

Table 7-10. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY: 847.50 MHz
 CHANNEL: 20635
 MEASURED OUTPUT POWER: 15.97 dBm = 0.040 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 28.97 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1695.00	H	113	209	-60.64	6.70	-53.94	69.9
2542.50	H	167	56	-53.69	7.60	-46.09	62.1
3390.00	H	-	-	-59.39	7.66	-51.73	67.7
4237.50	H	-	-	-56.68	8.39	-48.29	64.3

Table 7-11. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 102 of 117	

OPERATING FREQUENCY: 825.50 MHz
 CHANNEL: 20415
 MEASURED OUTPUT POWER: 16.01 dBm = 0.040 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 29.01 dBc



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1651.00	H	110	185	-61.36	6.70	-54.67	70.7
2476.50	H	156	41	-54.43	7.53	-46.90	62.9
3302.00	H	-	-	-59.17	7.37	-51.81	67.8

Table 7-12. Radiated Spurious Data with WCP (Band 5 –Low Channel)

OPERATING FREQUENCY: 1712.50 MHz
 CHANNEL: 19975
 MEASURED OUTPUT POWER: 18.79 dBm = 0.076 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.79 dBc

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]	[dBc]
3425.00	H	110	198	-54.65	9.87	-44.78	63.6
5137.50	H	110	75	-51.92	10.76	-41.16	60.0
6850.00	H	117	62	-45.42	11.67	-33.75	52.5
8562.50	H	134	201	-44.72	11.06	-33.65	52.4
10275.00	H	-	-	-51.09	12.37	-38.72	57.5

Table 7-13. Radiated Spurious Data (Band 4 – Low Channel)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 103 of 117	

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 18.23 dBm = 0.067 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.23 dBc


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]	[dBc]
3465.00	H	110	215	-55.30	9.91	-45.39	63.6
5197.50	H	110	62	-51.64	10.75	-40.89	59.1
6930.00	H	121	51	-45.44	11.76	-33.68	51.9
8662.50	H	155	231	-43.96	11.00	-32.96	51.2
10395.00	H	-	-	-50.48	12.65	-37.84	56.1

Table 7-14. Radiated Spurious Data (Band 4 – Mid Channel)

OPERATING FREQUENCY: 1752.50 MHz
 CHANNEL: 20375
 MEASURED OUTPUT POWER: 19.13 dBm = 0.082 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.13 dBc

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]	[dBc]
3505.00	H	110	197	-54.83	9.95	-44.88	64.0
5257.50	H	110	100	-51.33	10.71	-40.62	59.8
7010.00	H	113	82	-45.51	11.83	-33.68	52.8
8762.50	H	143	261	-43.08	10.96	-32.12	51.3
10515.00	H	-	-	-49.14	12.67	-36.47	55.6

Table 7-15. Radiated Spurious Data (Band 4 – High Channel)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 104 of 117	

OPERATING FREQUENCY: 1752.50 MHz
 CHANNEL: 20375
 MEASURED OUTPUT POWER: 19.13 dBm = 0.082 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.13 dBc



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]	[dBc]
3505.00	H	110	188	-55.34	9.95	-45.39	64.5
5257.50	H	110	134	-51.91	10.71	-41.20	60.3
7010.00	H	110	102	-45.06	11.83	-33.23	52.4
8762.50	H	155	235	-43.66	10.96	-32.70	51.8
10515.00	H	-	-	-49.62	12.67	-36.95	56.1

Table 7-16. Radiated Spurious Data with WCP (Band 4 – High Channel)

OPERATING FREQUENCY: 1851.50 MHz
 CHANNEL: 18615
 MEASURED OUTPUT POWER: 19.37 dBm = 0.086 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.37 dBc

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]	[dBc]
3703.00	H	110	198	-49.17	9.52	-39.65	59.0
5554.50	H	154	237	-50.14	11.02	-39.12	58.5
7406.00	H	161	222	-49.48	10.95	-38.53	57.9
9257.50	H	138	168	-44.06	11.52	-32.54	51.9
11109.00	H	-	-	-47.78	12.81	-34.97	54.3

Table 7-17. Radiated Spurious Data (Band 2 – Low Channel)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 105 of 117	

OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 18900
 MEASURED OUTPUT POWER: 19.17 dBm = 0.083 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.17 dBc



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]	[dBc]
3760.00	H	116	215	-48.83	9.39	-39.45	58.6
5640.00	H	167	250	-51.07	11.22	-39.85	59.0
7520.00	H	158	238	-48.61	11.10	-37.50	56.7
9400.00	H	126	136	-43.27	11.54	-31.73	50.9
11280.00	H	-	-	-48.39	12.76	-35.63	54.8

Table 7-18. Radiated Spurious Data (Band 2 – Mid Channel)

OPERATING FREQUENCY: 1908.50 MHz
 CHANNEL: 19185
 MEASURED OUTPUT POWER: 20.33 dBm = 0.108 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.33 dBc

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]	[dBc]
3817.00	H	110	237	-47.82	9.32	-38.50	58.8
5725.50	H	167	255	-49.80	11.36	-38.45	58.8
7634.00	H	158	221	-48.18	11.33	-36.86	57.2
9542.50	H	126	158	-43.35	11.76	-31.59	51.9
11451.00	H	-	-	-46.01	12.69	-33.32	53.6



Table 7-19. Radiated Spurious Data (Band 2 – High Channel)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 106 of 117	

OPERATING FREQUENCY: 1908.50 MHz
 CHANNEL: 19185
 MEASURED OUTPUT POWER: 20.33 dBm = 0.108 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.33 dBc

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]	[dBc]
3817.00	H	110	211	-48.14	9.32	-38.82	59.1
5725.50	H	154	215	-50.61	11.36	-39.26	59.6
7634.00	H	161	239	-49.25	11.33	-37.93	58.3
9542.50	H	147	177	-43.30	11.76	-31.54	51.9
11451.00	H	-	-	-45.71	12.69	-33.02	53.3

Table 7-20. Radiated Spurious Data with WCP (Band 2 – High Channel)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 107 of 117	

7.8 Frequency Stability / Temperature Variation

§2.1055 §22.355 §24.235 §27.54

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. 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 and 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-D-2010

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: ZNFW280	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		 Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 108 of 117

Band 13 Frequency Stability Measurements
§2.1055 §27.54

OPERATING FREQUENCY: 782,000,000 Hz
 CHANNEL: 23230
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	781,999,718	-282	-0.0000361
100 %		- 30	782,000,243	243	0.0000311
100 %		- 20	781,999,994	-6	-0.0000008
100 %		- 10	782,000,030	30	0.0000038
100 %		0	781,999,871	-129	-0.0000165
100 %		+ 10	781,999,827	-173	-0.0000221
100 %		+ 20	782,000,070	70	0.0000090
100 %		+ 30	782,000,392	392	0.0000501
100 %		+ 40	781,999,714	-286	-0.0000366
100 %		+ 50	782,000,143	143	0.0000183
BATT. ENDPOINT	3.40	+ 20	781,999,838	-162	-0.0000207

Table 7-21. Frequency Stability Data (Band 13)

Band 13 Frequency Stability Measurements
§2.1055 §27.54

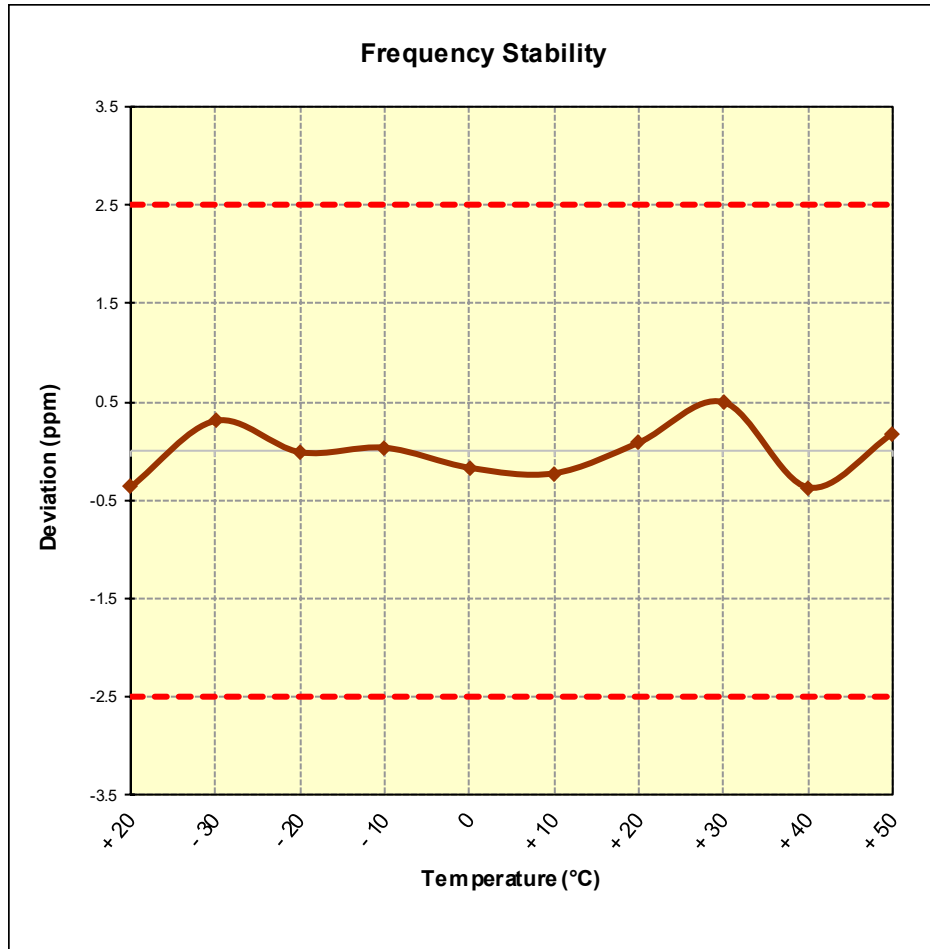




Figure 7-8. Frequency Stability Graph (Band 13)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 110 of 117	

Band 5 Frequency Stability Measurements

§2.1055 §22.355

OPERATING FREQUENCY: 836,500,000 Hz
 CHANNEL: 20525
 REFERENCE VOLTAGE: 3.80 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	836,500,027	27	0.000032
100 %		- 30	836,500,165	165	0.0000197
100 %		- 20	836,500,294	294	0.0000351
100 %		- 10	836,499,701	-299	-0.0000357
100 %		0	836,500,253	253	0.0000302
100 %		+ 10	836,499,788	-212	-0.0000253
100 %		+ 20	836,499,940	-60	-0.0000072
100 %		+ 30	836,500,093	93	0.0000111
100 %		+ 40	836,500,287	287	0.0000343
100 %		+ 50	836,499,975	-25	-0.0000030
BATT. ENDPOINT		3.40	+ 20	836,499,749	-251

Table 7-22. Frequency Stability Data (Band 5)

Band 5 Frequency Stability Measurements
§2.1055 §22.355

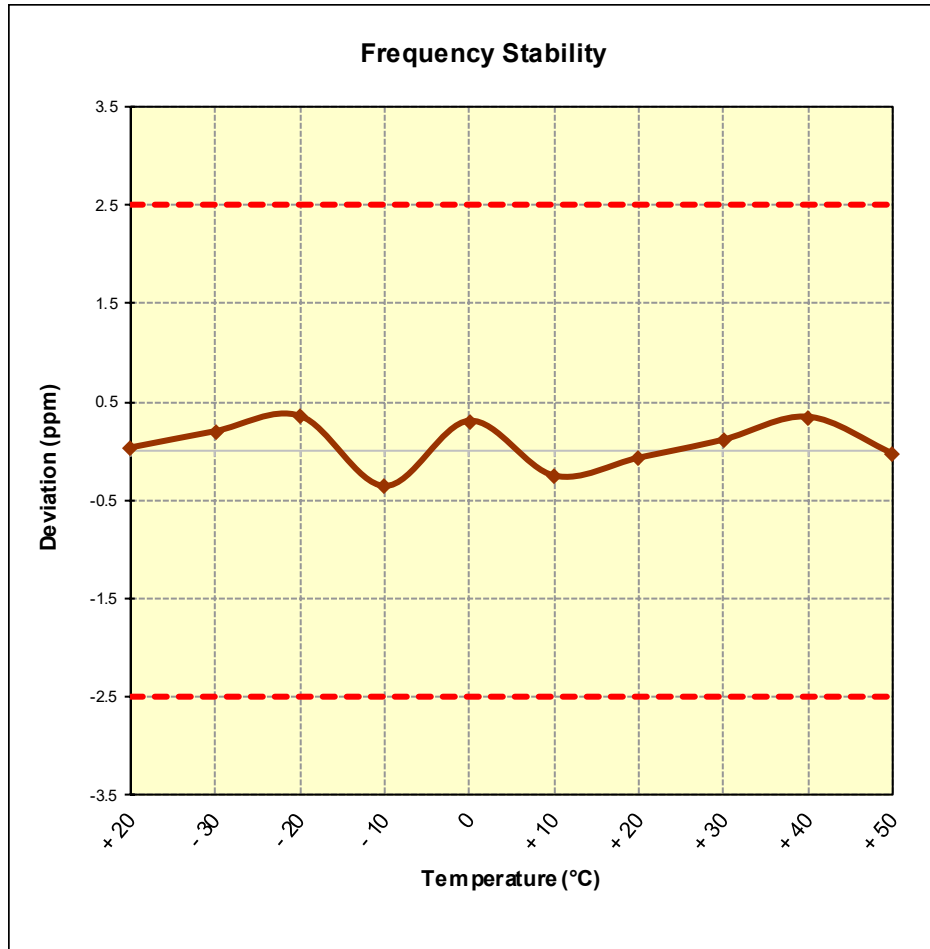




Figure 7-9. Frequency Stability Graph (Band 5)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 112 of 117

Band 4 Frequency Stability Measurements

§2.1055 §§27.54

OPERATING FREQUENCY: 1,732,500,000 Hz
 CHANNEL: 20175
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,500,008	8	0.0000005
100 %		- 30	1,732,499,989	-11	-0.0000006
100 %		- 20	1,732,499,920	-80	-0.0000046
100 %		- 10	1,732,499,809	-191	-0.0000110
100 %		0	1,732,500,275	275	0.0000159
100 %		+ 10	1,732,499,670	-330	-0.0000190
100 %		+ 20	1,732,500,349	349	0.0000201
100 %		+ 30	1,732,499,951	-49	-0.0000028
100 %		+ 40	1,732,500,033	33	0.0000019
100 %		+ 50	1,732,500,181	181	0.0000104
BATT. ENDPOINT	3.40	+ 20	1,732,499,722	-278	-0.0000160

Table 7-23. Frequency Stability Data (Band 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: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 113 of 117	

Band 4 Frequency Stability Measurements
§2.1055 §§27.54

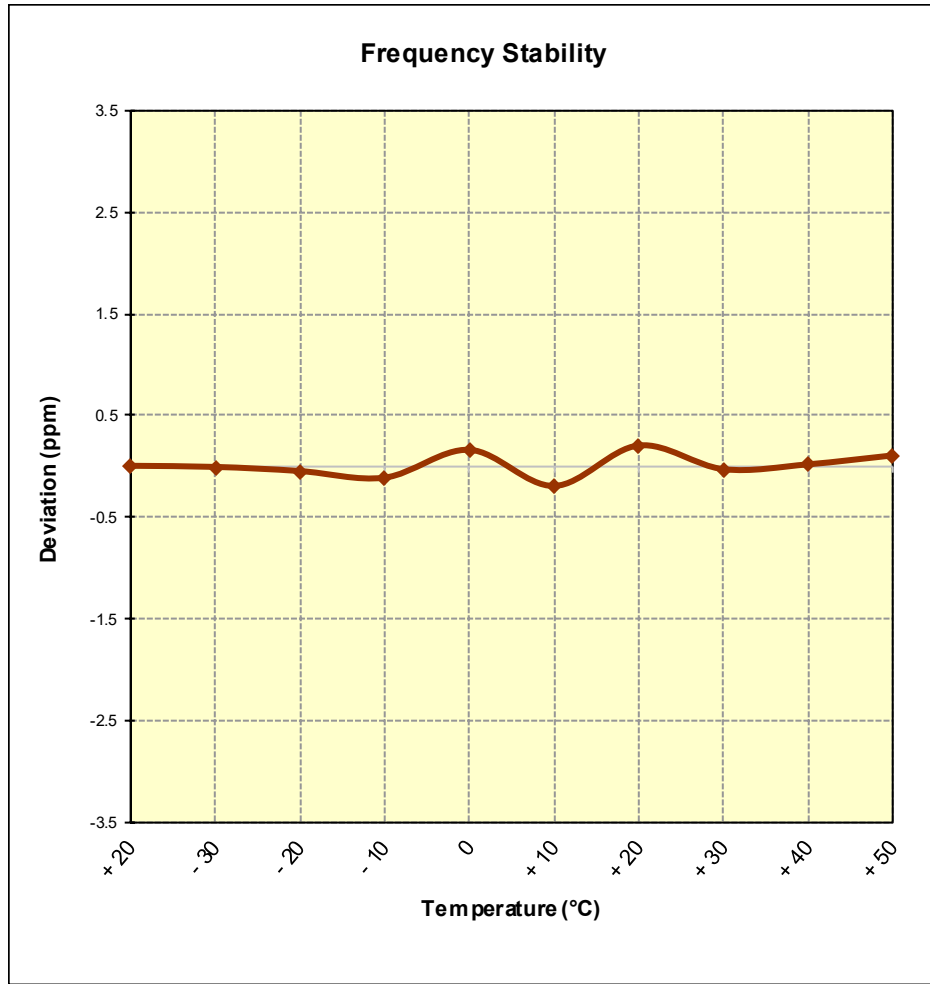


Figure 7-10. Frequency Stability Graph (Band 4)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 114 of 117	

Band 2 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY: 1,880,000,000 Hz
 CHANNEL: 18900
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,879,999,916	-84	-0.0000045
100 %		- 30	1,880,000,101	101	0.0000054
100 %		- 20	1,880,000,099	99	0.0000053
100 %		- 10	1,880,000,190	190	0.0000101
100 %		0	1,879,999,662	-338	-0.0000180
100 %		+ 10	1,879,999,919	-81	-0.0000043
100 %		+ 20	1,880,000,232	232	0.0000123
100 %		+ 30	1,880,000,082	82	0.0000044
100 %		+ 40	1,880,000,293	293	0.0000156
100 %		+ 50	1,880,000,180	180	0.0000096
BATT. ENDPOINT	3.40	+ 20	1,879,999,934	-66	-0.0000035

Table 7-24. Frequency Stability Data (Band 2)

Note:

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

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 115 of 117	

Band 2 Frequency Stability Measurements
§2.1055 §24.235

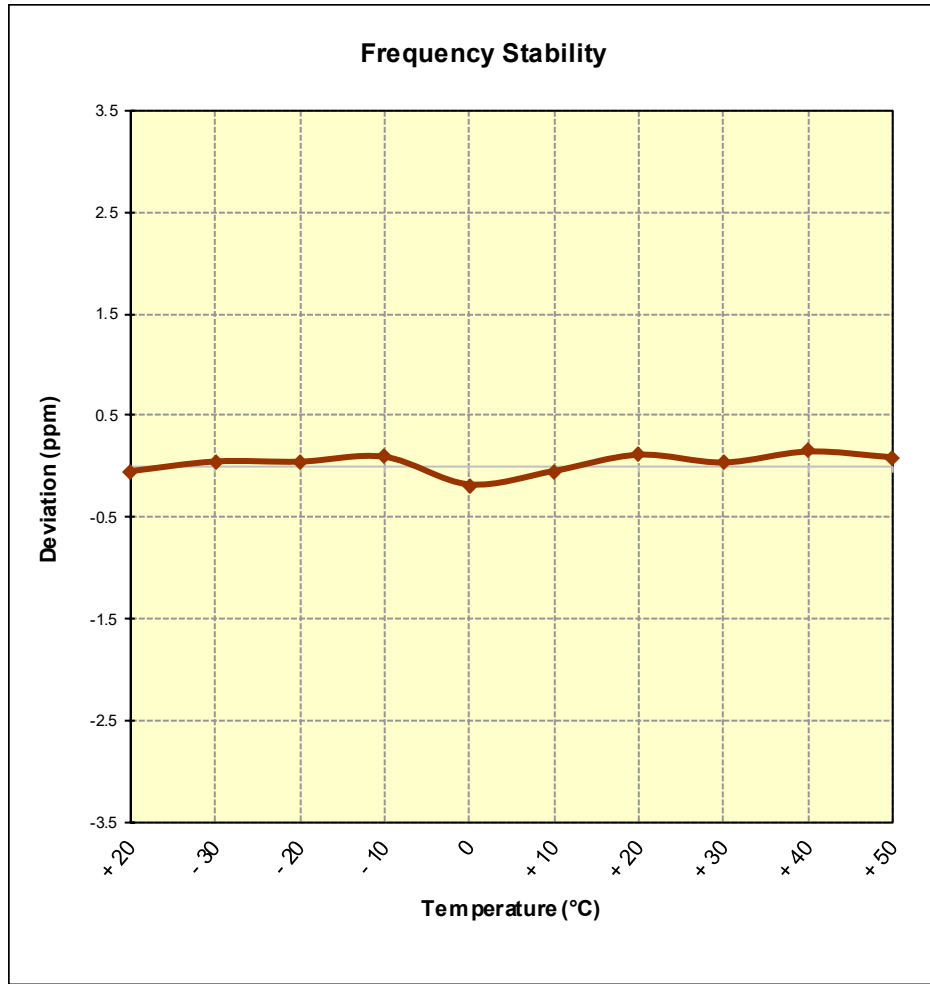




Figure 7-11. Frequency Stability Graph (Band 2)

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device	Page 116 of 117	

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Wrist Device FCC ID: ZNFW280** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: ZNFW280		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y0607131263.ZNF	Test Dates: 7/14 - 7/29/2016	EUT Type: Portable Wrist Device		Page 117 of 117