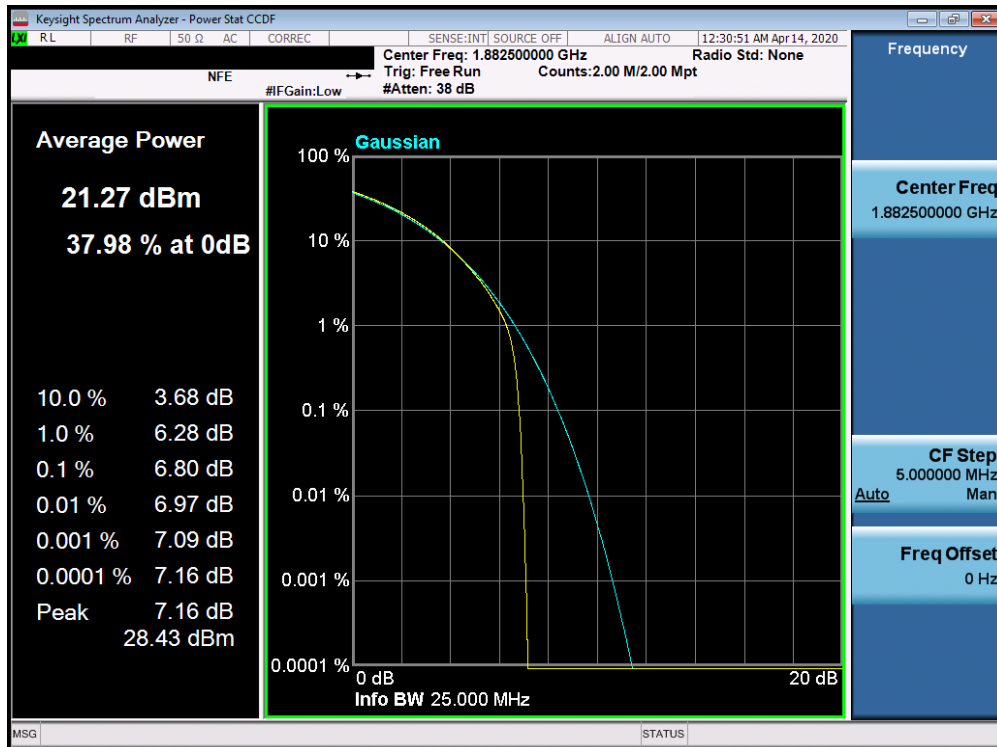
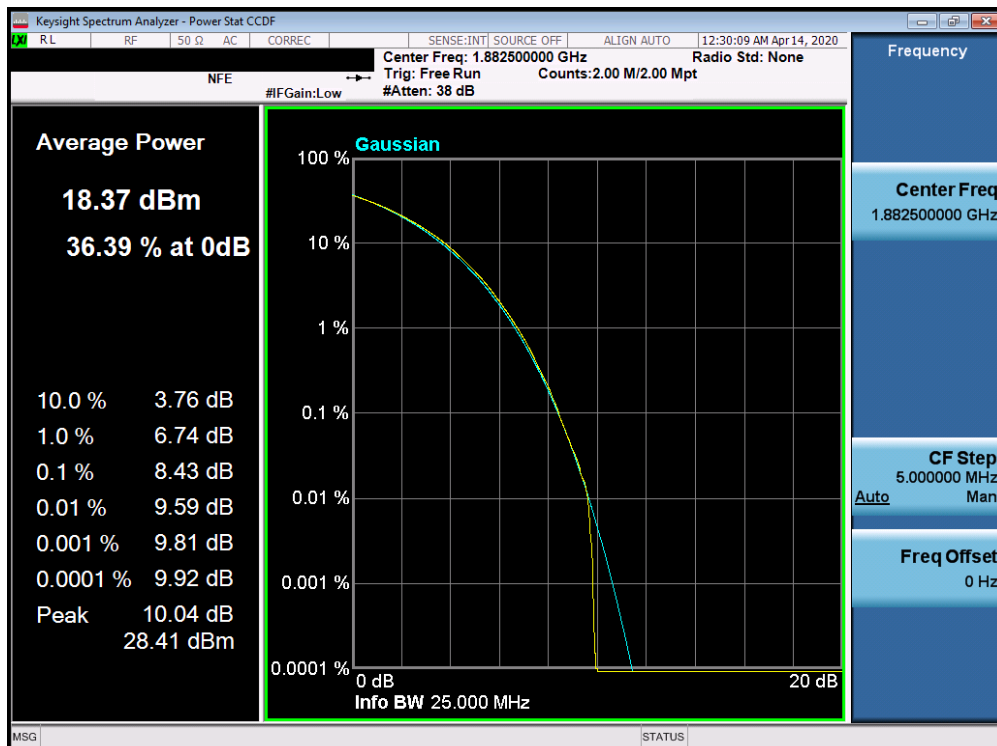




Plot 7-619. PAR Plot (5G sub6 n25/2 - 20.0MHz 64-QAM - Full RB Configuration)



Plot 7-620. PAR Plot (5G sub6 n25/2 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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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.

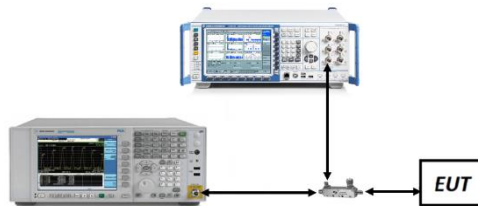


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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NR Band n41						
100 MHz Bandwidth						
Modulation	RB Size	RB Offset	509200 (2546MHz)	A-MPR' [dB]	MPR [dB]	Max(MPR, A-MPR') [dB]
DFT-s-OFDM $\pi/2$ BPSK	1	1	21.10	3.5	0	3.5
	1	137	24.98	0.0	0	0.0
	1	271	24.36	0.0	0	0.0
	135	0	21.21	3.5	0	3.5
	135	69	21.31	3.5	0	3.5
	135	138	24.41	0.0	0	0.0
	270	0	21.46	3.5	0	3.5
DFT-s-OFDM QPSK	1	1	20.75	4.0	0	4.0
	1	137	24.87	0.0	0	0.0
	1	271	24.54	0.0	0	0.0
	135	0	20.83	4.0	1	4.0
	135	69	20.75	4.0	0	4.0
	135	138	23.91	0.0	1	1.0
	270	0	20.92	4.0	1	4.0
DFT-s-OFDM 16QAM	1	1	20.01	4.0	1	4.0
	270	0	20.82	4.0	2	4.0
DFT-s-OFDM 64QAM	1	1	19.88	4.5	3	4.5
	270	0	20.77	4.0	3	4.0
DFT-s-OFDM 256QAM	1	1	17.97	6.0	5	6.0
	270	0	20.24	4.5	5	4.5
CP-OFDM QPSK	1	1	19.09	5.5	2	5.5
	273	0	19.38	5.5	3	5.5

Table 7-3. A-MPR Conducted Power Measurements

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 341 of 438

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.

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.

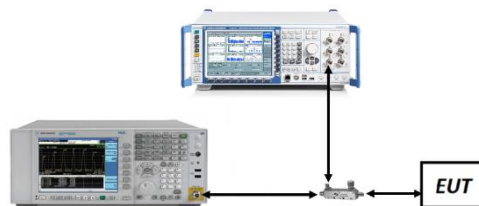


Figure 7-6. Test Instrument & Measurement Setup

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 342 of 438

Test Notes

1. 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.
2. 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.

Channel	Frequency [MHz]	BW [MHz]	Mod.	RB Size	RB Offset	Channel	Frequency [MHz]	BW [MHz]	Mod.	RB Size	RB Offset	ULCA Tx.Power (dBm)
20450	829.0	10	QPSK	1	0	20549	838.9	10	QPSK	1	0	12.51
20450	829.0	10	QPSK	1	49	20549	838.9	10	QPSK	1	49	13.27
20450	829.0	10	QPSK	1	0	20549	838.9	10	QPSK	1	49	12.44
20450	829.0	10	QPSK	1	25	20549	838.9	10	QPSK	1	25	13.41
20450	829.0	10	QPSK	1	49	20549	838.9	10	QPSK	1	0	25.89
20450	829.0	10	QPSK	50	0	20549	838.9	10	QPSK	50	0	23.83
20450	829.0	10	16-QAM	50	0	20549	838.9	10	16-QAM	50	0	22.91
20450	829.0	10	64-QAM	50	0	20549	838.9	10	64-QAM	50	0	22.68

Table 7-4. Conducted Powers (B5 with Various Combinations)

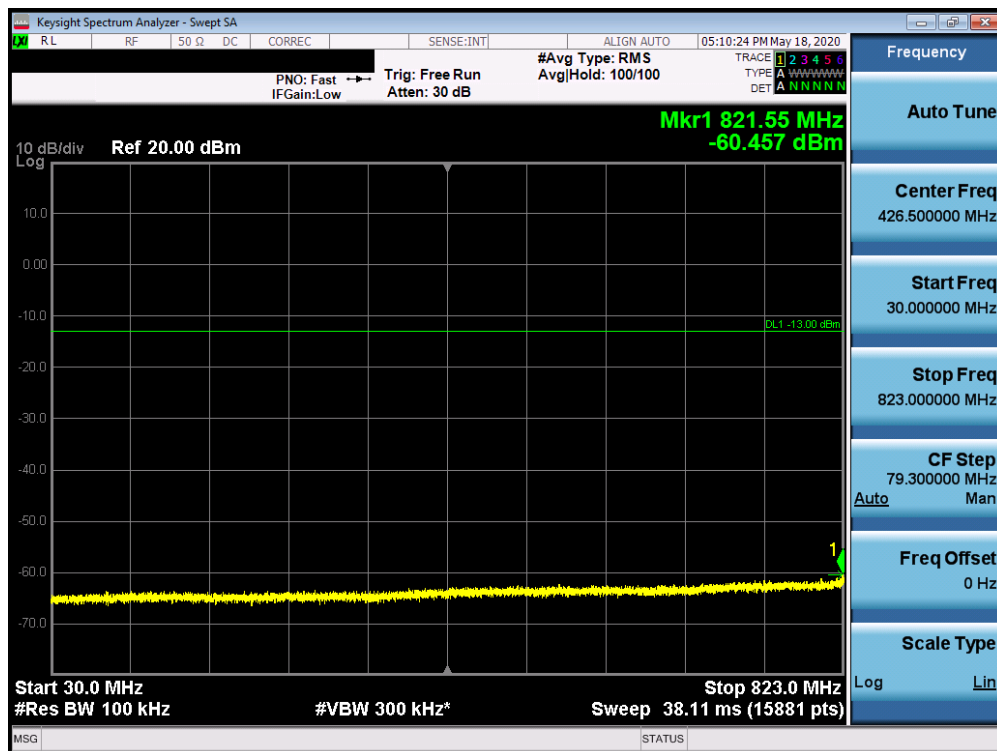


Table 7-621. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 343 of 438



Table 7-622. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

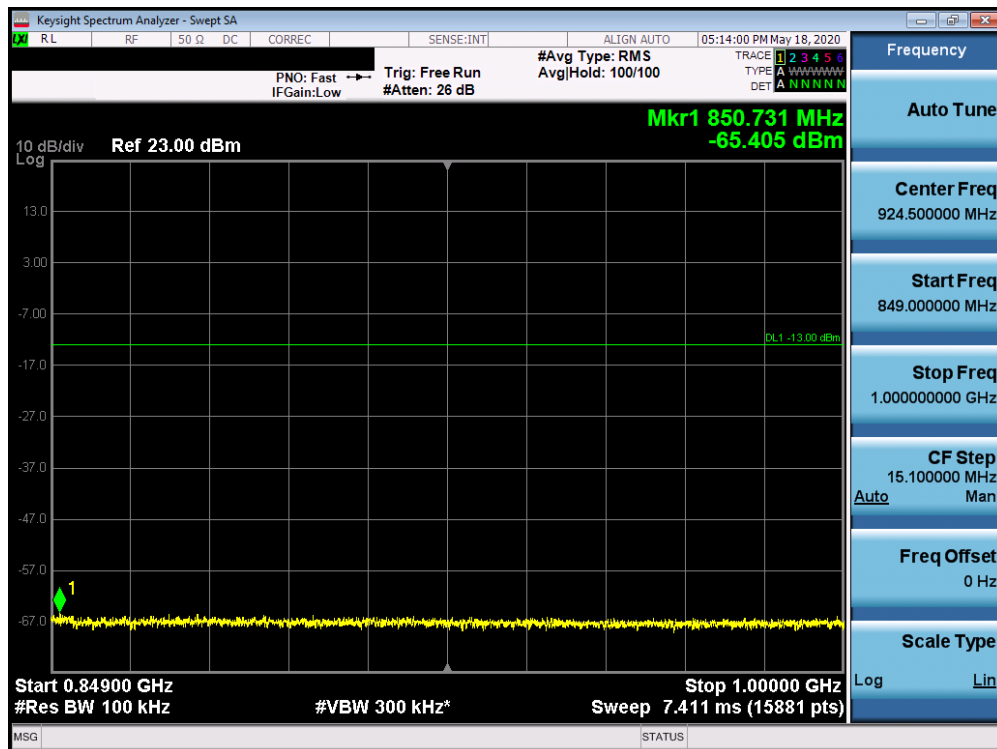


Table 7-623. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 344 of 438

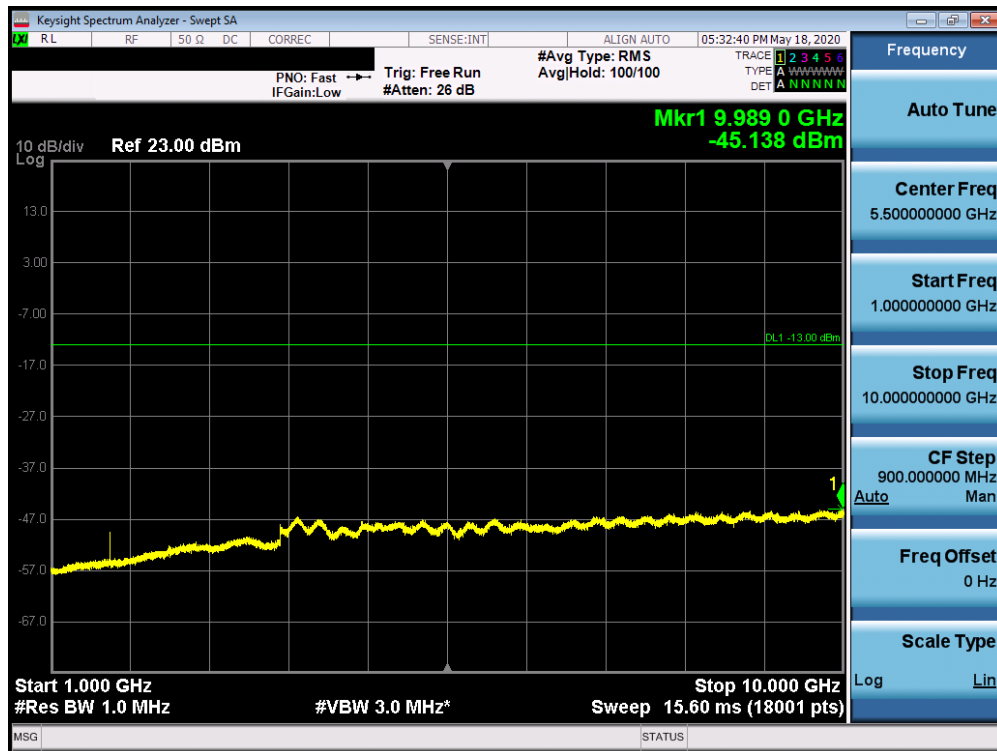


Table 7-624. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

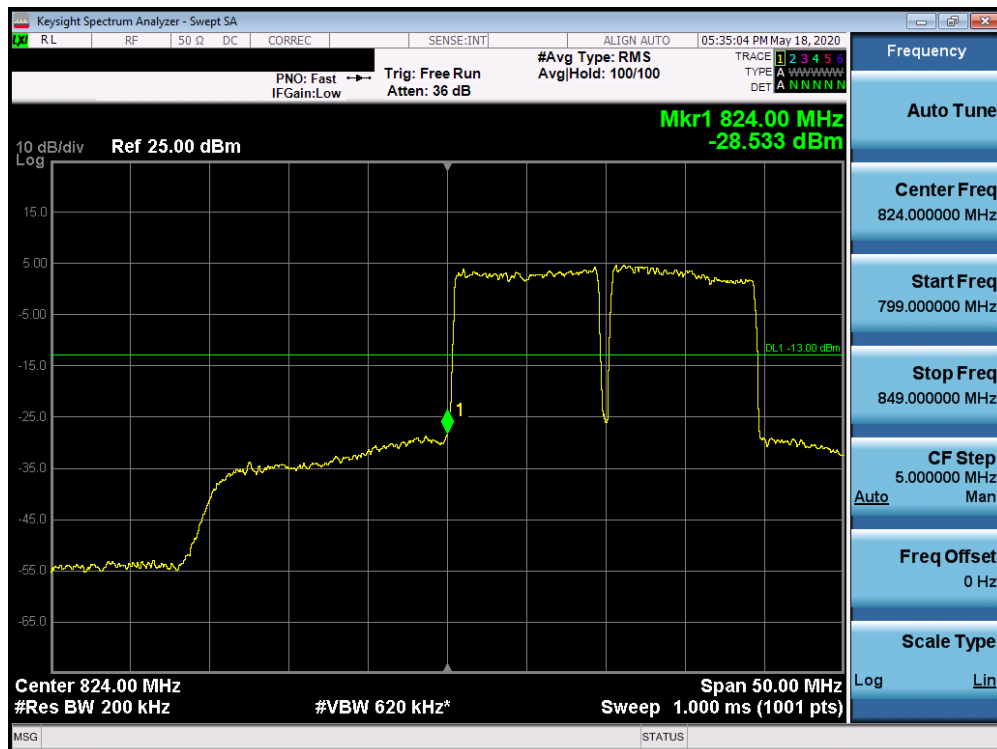


Table 7-625. Lower Band Edge Plot (Band 5 QPSK – PCC:10 MHz SCC:10 MHz – Full RB)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 345 of 438

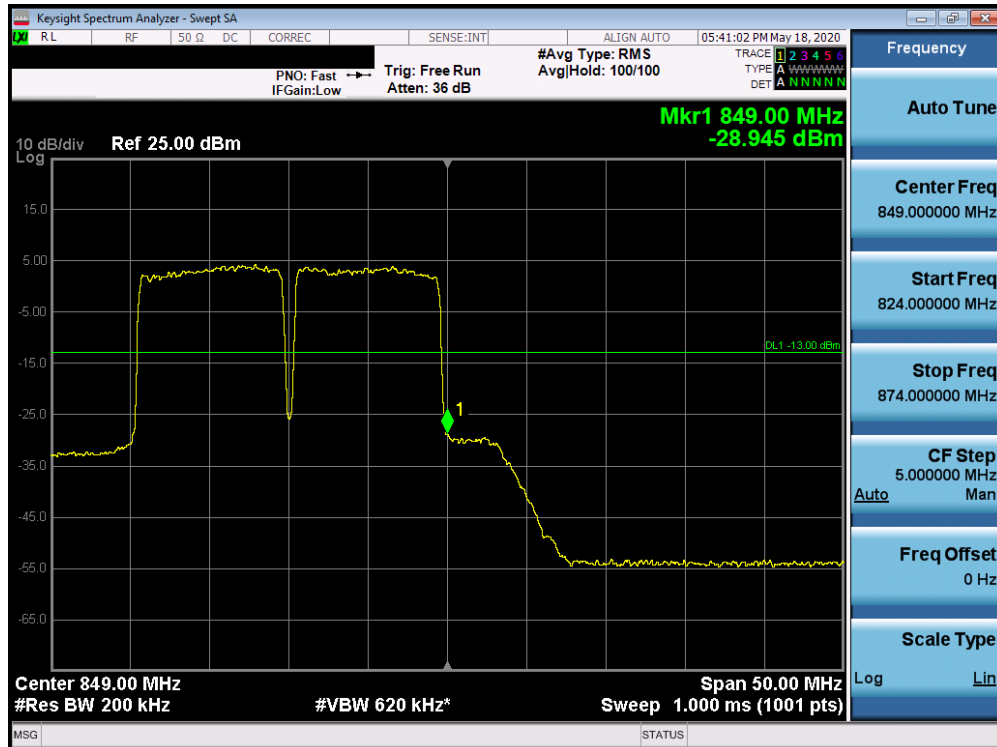


Table 7-626. Upper Band Edge Plot (Band 5 QPSK – PCC:10 MHz SCC:10 MHz – Full RB)

Power State	PCC					SCC					PCC Conducted Power [dBm]	SCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) channel	Mod.	PCC UL RB#/Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) channel	Mod.	SCC UL RB#/Offset			
Max	LB2	5	L	QPSK	1 / 0	LB5	5	L	QPSK	1 / 24	22.79	16.97	23.8
Max	LB2	5	M	QPSK	1 / 24	LB5	10	H	QPSK	1 / 0	22.88	17.24	23.93
Max	LB2	10	M	QPSK	1 / 25	LB5	5	H	QPSK	1 / 12	22.82	16.66	23.76
Max	LB2	10	H	QPSK	1 / 0	LB5	10	H	QPSK	1 / 0	22.76	17.30	23.85
Max	LB2	15	H	QPSK	1 / 74	LB5	5	M	QPSK	1 / 24	22.92	17.15	23.94
Max	LB2	15	H	QPSK	1 / 36	LB5	10	H	QPSK	1 / 25	23.46	16.20	24.21
Max	LB2	20	M	QPSK	1 / 0	LB5	5	L	QPSK	1 / 24	23.18	17.02	24.12
Max	LB2	20	M	QPSK	1 / 50	LB5	10	M	QPSK	1 / 0	22.97	17.11	23.97
Max	LB2	20	M	QPSK	1 / 99	LB5	10	H	QPSK	1 / 49	23.36	15.25	23.98
Max	LB2	20	M	16QAM	1 / 50	LB5	10	M	16QAM	1 / 0	22.41	16.17	23.34
Max	LB2	20	M	64QAM	1 / 50	LB5	10	M	64QAM	1 / 0	21.29	15.32	22.27

Table 7-5. Conducted Powers (2A-5A– PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 346 of 438

Power State	PCC					SCC					PCC Conducted Power [dBm]	SCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) channel	Mod.	PCC UL RB#/Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) channel	Mod.	SCC UL RB#/Offset			
Max	LB2	10	L	QPSK	50 / 0	LB5	5	L	QPSK	25 / 0	22.05	16.46	23.11
Max	LB2	10	H	QPSK	50 / 0	LB5	5	L	QPSK	25 / 0	21.91	16.47	23.00
Max	LB2	10	H	QPSK	50 / 0	LB5	10	H	QPSK	50 / 0	21.94	16.39	23.01
Max	LB2	5	H	QPSK	25 / 0	LB5	5	H	QPSK	25 / 0	22.00	16.33	23.04
Max	LB2	5	L	QPSK	25 / 0	LB5	5	L	QPSK	25 / 0	22.24	16.50	23.27
Max	LB2	5	H	QPSK	25 / 0	LB5	10	L	QPSK	50 / 0	22.05	16.25	23.06
Max	LB2	5	L	QPSK	25 / 0	LB5	10	H	QPSK	50 / 0	22.22	14.97	22.97
Max	LB2	10	L	QPSK	50 / 0	LB5	10	L	QPSK	50 / 0	22.02	16.10	23.01
Max	LB2	20	L	QPSK	100 / 0	LB5	5	H	QPSK	25 / 0	22.04	14.49	22.74
Max	LB2	15	L	QPSK	75 / 0	LB5	10	H	QPSK	50 / 0	22.18	14.96	22.93
Max	LB2	20	L	QPSK	100 / 0	LB5	5	L	QPSK	25 / 0	22.24	16.40	23.25
Max	LB2	15	L	QPSK	75 / 0	LB5	5	H	QPSK	25 / 0	22.28	16.32	23.26
Max	LB2	20	H	QPSK	100 / 0	LB5	10	L	QPSK	50 / 0	22.28	16.14	23.23
Max	LB2	20	H	QPSK	100 / 0	LB5	10	H	QPSK	50 / 0	22.15	16.35	23.16
Max	LB2	5	L	16QAM	25 / 0	LB5	5	L	16QAM	25 / 0	21.25	15.51	22.28
Max	LB2	5	L	64QAM	25 / 0	LB5	5	L	64QAM	25 / 0	20.34	14.56	21.36

Table 7-6. Conducted Powers (2A-5A with Various Combinations)

Power State	SCC					PCC					SCC Conducted Power [dBm]	PCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Frequency [MHz]	Mod.	SCC UL RB#/Offset	SCC Band	PCC Bandwidth [MHz]	PCC (UL) Frequency [MHz]	Mod.	PCC UL RB#/Offset			
Max	B12	10	L	QPSK	1 / 25	B2	20	L	QPSK	1 / 50	15.77	23.31	24.01
Max	B12	10	L	QPSK	1 / 25	B2	20	H	QPSK	1 / 50	16.65	23.40	24.23
Max	B12	5	M	QPSK	1 / 25	B2	20	H	QPSK	1 / 50	17.11	22.92	23.93
Max	B12	5	H	QPSK	1 / 24	B2	5	H	QPSK	1 / 0	17.12	22.67	23.74
Max	B12	5	H	QPSK	1 / 0	B2	5	M	QPSK	1 / 0	17.02	22.87	23.87
Max	B12	10	H	QPSK	1 / 25	B2	20	H	QPSK	1 / 50	15.08	23.37	23.97
Max	B12	10	M	QPSK	1 / 0	B2	10	L	QPSK	1 / 49	17.07	22.53	23.62
Max	B12	10	M	QPSK	1 / 25	B2	10	M	QPSK	1 / 49	17.11	22.58	23.66
Max	B12	10	M	QPSK	1 / 49	B2	10	H	QPSK	1 / 49	17.15	22.74	23.8
Max	B12	10	M	16QAM	1 / 25	B2	20	M	16QAM	1 / 0	16.33	22.34	23.31
Max	B12	10	M	64QAM	1 / 25	B2	20	M	64QAM	1 / 0	15.54	20.93	22.03

Table 7-7. Conducted Powers (2A-12A– PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

FCC ID: ZNFG900UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 347 of 438

Power State	SCC					PCC					SCC Conducted Power [dBm]	PCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	PCC Band	SCC Bandwidth [MHz]	SCC (UL) Frequency [MHz]	Mod.	SCC UL RB#/Offset	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Frequency [MHz]	Mod.	PCC UL RB#/Offset			
Max	B12	3	L	QPSK	15 / 0	B2	20	L	QPSK	100 / 0	14.74	22.39	23.08
Max	B12	3	H	QPSK	15 / 0	B2	15	L	QPSK	75 / 0	15.08	22.15	22.93
Max	B12	3	H	QPSK	15 / 0	B2	20	H	QPSK	100 / 0	14.56	22.34	23.01
Max	B12	10	H	QPSK	50 / 0	B2	5	H	QPSK	25 / 0	14.83	22.14	22.88
Max	B12	5	L	QPSK	25 / 0	B2	5	L	QPSK	25 / 0	15.68	22.16	23.04
Max	B12	10	H	QPSK	50 / 0	B2	5	L	QPSK	25 / 0	14.92	22.23	22.97
Max	B12	5	L	QPSK	25 / 0	B2	5	H	QPSK	25 / 0	14.66	22.15	22.86
Max	B12	10	L	QPSK	50 / 0	B2	10	L	QPSK	50 / 0	14.87	22.18	22.92
Max	B12	5	L	QPSK	25 / 0	B2	20	H	QPSK	100 / 0	15.80	22.45	23.3
Max	B12	10	L	QPSK	50 / 0	B2	15	H	QPSK	75 / 0	14.94	22.22	22.96
Max	B12	5	L	QPSK	25 / 0	B2	20	L	QPSK	100 / 0	14.71	22.79	23.42
Max	B12	5	L	QPSK	25 / 0	B2	15	H	QPSK	75 / 0	15.74	22.20	23.08
Max	B12	10	H	QPSK	50 / 0	B2	20	L	QPSK	100 / 0	14.81	22.06	22.81
Max	B12	10	H	QPSK	50 / 0	B2	20	H	QPSK	100 / 0	15.66	22.24	23.10
Max	B12	5	L	16QAM	25 / 0	B2	20	H	16QAM	100 / 0	14.63	23.50	24.03
Max	B12	5	L	64QAM	25 / 0	B2	20	H	64QAM	100 / 0	16.80	20.34	21.93

Table 7-8. Conducted Powers (2A-12A with Various Combinations)

Power State	PCC					SCC					PCC Conducted Power [dBm]	SCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) channel	Mod.	PCC UL RB#/Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) channel	Mod.	SCC UL RB#/Offset			
Max	LB2	1.4	L	QPSK	1 / 0	LB66	5	L	QPSK	1 / 0	23.15	15.87	23.89
Max	LB2	1.4	M	QPSK	1 / 0	LB66	5	L	QPSK	1 / 24	23.17	15.76	23.89
Max	LB2	3	H	QPSK	1 / 14	LB66	5	M	QPSK	1 / 0	22.87	15.73	23.64
Max	LB2	3	L	QPSK	1 / 14	LB66	5	M	QPSK	1 / 24	23.20	15.46	23.88
Max	LB2	5	M	QPSK	1 / 0	LB66	5	H	QPSK	1 / 0	23.26	17.53	24.29
Max	LB2	5	H	QPSK	1 / 0	LB66	5	H	QPSK	1 / 24	22.22	17.48	23.48
Max	LB2	10	L	QPSK	1 / 49	LB66	10	M	QPSK	1 / 0	22.94	14.81	23.56
Max	LB2	10	M	QPSK	1 / 0	LB66	10	M	QPSK	1 / 25	22.96	16.54	23.85
Max	LB2	20	H	QPSK	1 / 49	LB66	20	M	QPSK	1 / 49	23.38	16.49	24.19
Max	LB2	20	M	16QAM	1 / 0	LB66	20	M	16QAM	1 / 25	22.83	15.58	23.58
Max	LB2	20	M	64QAM	1 / 0	LB66	20	M	64QAM	1 / 25	21.06	14.19	21.87

Table 7-9. Conducted Powers (2A-66A– PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 348 of 438

Power State	PCC					SCC					PCC Conducted Power [dBm]	SCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) channel	Mod.	PCC UL RB#/Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) channel	Mod.	SCC UL RB#/Offset			
Max	LB2	1.4	L	QPSK	6 / 0	LB66	5	L	QPSK	25 / 0	22.20	16.57	23.25
Max	LB2	1.4	H	QPSK	6 / 0	LB66	10	L	QPSK	50 / 0	22.21	16.54	23.25
Max	LB2	3	L	QPSK	15 / 0	LB66	5	H	QPSK	25 / 0	22.83	16.62	23.76
Max	LB2	3	H	QPSK	15 / 0	LB66	10	H	QPSK	50 / 0	23.19	16.63	24.06
Max	LB2	5	L	QPSK	25 / 0	LB66	5	L	QPSK	25 / 0	22.39	16.64	23.41
Max	LB2	5	H	QPSK	25 / 0	LB66	10	L	QPSK	50 / 0	22.34	16.17	23.28
Max	LB2	10	L	QPSK	50 / 0	LB66	5	H	QPSK	25 / 0	22.38	16.57	23.39
Max	LB2	10	H	QPSK	50 / 0	LB66	10	H	QPSK	50 / 0	22.23	16.55	23.27
Max	LB2	15	L	QPSK	75 / 0	LB66	5	L	QPSK	25 / 0	22.18	14.55	22.87
Max	LB2	15	H	QPSK	75 / 0	LB66	10	L	QPSK	50 / 0	22.84	16.59	23.76
Max	LB2	20	L	QPSK	100 / 0	LB66	10	L	QPSK	50 / 0	22.61	14.91	23.29
Max	LB2	20	H	QPSK	100 / 0	LB66	20	L	QPSK	50 / 0	22.39	16.81	23.45
Max	LB2	20	L	QPSK	100 / 0	LB66	10	H	QPSK	50 / 0	22.25	15.80	23.14
Max	LB2	20	H	QPSK	100 / 0	LB66	20	H	QPSK	50 / 0	22.35	16.75	23.41
Max	LB2	15	H	16QAM	75 / 0	LB66	10	L	16QAM	50 / 0	23.41	15.53	24.07
Max	LB2	15	H	64QAM	75 / 0	LB66	10	L	64QAM	50 / 0	22.17	14.26	22.82

Table 7-10. Conducted Powers (2A-66A with Various Combinations)

Power State	SCC					PCC					SCC Conducted Power [dBm]	PCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	SCC Band	SCC Bandwidth [MHz]	SCC (UL) channel	Mod.	SCC UL RB#/Offset	PCC Band	PCC Bandwidth [MHz]	PCC (UL) channel	Mod.	PCC UL RB#/Offset			
Max	LB5	5	L	QPSK	1 / 0	LB66	5	L	QPSK	1 / 0	17.08	22.92	23.93
Max	LB5	5	L	QPSK	1 / 24	LB66	15	M	QPSK	1 / 0	17.16	22.83	23.87
Max	LB5	5	M	QPSK	1 / 0	LB66	15	H	QPSK	1 / 74	17.10	22.98	23.98
Max	LB5	5	M	QPSK	1 / 24	LB66	15	L	QPSK	1 / 74	17.12	22.91	23.93
Max	LB5	5	H	QPSK	1 / 0	LB66	5	M	QPSK	1 / 0	16.01	22.69	23.53
Max	LB5	5	H	QPSK	1 / 24	LB66	5	H	QPSK	1 / 0	17.10	22.82	23.85
Max	LB5	10	M	QPSK	1 / 0	LB66	10	L	QPSK	1 / 49	17.51	22.33	23.57
Max	LB5	10	M	QPSK	1 / 25	LB66	20	M	QPSK	1 / 0	17.16	22.95	23.97
Max	LB5	10	M	QPSK	1 / 49	LB66	10	H	QPSK	1 / 49	17.22	22.58	23.69
Max	LB5	5	M	16QAM	1 / 0	LB66	15	H	16QAM	1 / 0	16.27	22.19	23.18
Max	LB5	5	M	64QAM	1 / 0	LB66	15	H	64QAM	1 / 0	15.28	20.98	22.02

Table 7-11. Conducted Powers (5A-66A– PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

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Power State	SCC					PCC					SCC Conducted Power [dBm]	PCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	SCC Band	SCC Bandwidth [MHz]	SCC (UL) channel	Mod.	SCC UL RB#/Offset	PCC Band	PCC Bandwidth [MHz]	PCC (UL) channel	Mod.	PCC UL RB#/Offset			
Max	LB5	5	L	QPSK	25 / 0	LB66	5	L	QPSK	25 / 0	16.49	22.10	23.15
Max	LB5	10	L	QPSK	50 / 0	LB66	15	L	QPSK	75 / 0	16.08	22.26	23.2
Max	LB5	5	H	QPSK	25 / 0	LB66	15	L	QPSK	75 / 0	14.22	22.11	22.76
Max	LB5	10	H	QPSK	50 / 0	LB66	15	H	QPSK	75 / 0	16.33	22.24	23.23
Max	LB5	5	H	QPSK	25 / 0	LB66	5	L	QPSK	25 / 0	14.43	22.06	22.75
Max	LB5	10	L	QPSK	50 / 0	LB66	5	H	QPSK	25 / 0	15.90	22.05	22.99
Max	LB5	5	H	QPSK	25 / 0	LB66	10	L	QPSK	50 / 0	14.25	22.10	22.76
Max	LB5	10	H	QPSK	50 / 0	LB66	10	H	QPSK	50 / 0	16.40	21.92	22.99
Max	LB5	5	L	QPSK	25 / 0	LB66	15	L	QPSK	75 / 0	16.28	22.10	23.11
Max	LB5	10	L	QPSK	50 / 0	LB66	15	H	QPSK	75 / 0	16.39	22.22	23.23
Max	LB5	10	L	QPSK	50 / 0	LB66	20	L	QPSK	100 / 0	16.38	22.18	23.19
Max	LB5	10	L	QPSK	50 / 0	LB66	20	H	QPSK	100 / 0	16.38	22.24	23.24
Max	LB5	10	H	QPSK	50 / 0	LB66	20	L	QPSK	100 / 0	16.37	22.23	23.23
Max	LB5	10	H	QPSK	50 / 0	LB66	20	H	QPSK	100 / 0	14.76	22.68	23.33
Max	LB5	10	H	16QAM	50 / 0	LB66	20	H	16QAM	100 / 0	15.40	21.24	22.25
Max	LB5	10	H	64QAM	50 / 0	LB66	20	H	64QAM	100 / 0	14.31	20.32	21.29

Table 7-12. Conducted Powers (5A-66A with Various Combinations)

Power State	PCC					SCC					PCC Conducted Power [dBm]	SCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Frequency [MHz]	Mod.	PCC UL RB#/Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Frequency [MHz]	Mod.	SCC UL RB#/Offset			
Max	B12	5	L	QPSK	1 / 0	B66	1.4	L	QPSK	1 / 0	22.81	10.97	23.09
Max	B12	5	L	QPSK	1 / 24	B66	1.4	M	QPSK	1 / 0	22.78	13.34	23.25
Max	B12	5	M	QPSK	1 / 0	B66	3	H	QPSK	1 / 14	22.91	14.73	23.52
Max	B12	5	M	QPSK	1 / 24	B66	3	L	QPSK	1 / 14	22.98	11.04	23.25
Max	B12	5	H	QPSK	1 / 0	B66	5	M	QPSK	1 / 0	22.86	13.22	23.31
Max	B12	5	H	QPSK	1 / 24	B66	5	H	QPSK	1 / 0	22.9	14.73	23.52
Max	B12	10	M	QPSK	1 / 0	B66	10	L	QPSK	1 / 49	22.83	11.4	23.13
Max	B12	10	M	QPSK	1 / 25	B66	10	M	QPSK	1 / 49	22.88	13.48	23.35
Max	B12	10	M	QPSK	1 / 49	B66	10	H	QPSK	1 / 49	22.9	14.67	23.51
Max	B12	10	M	16QAM	1 / 25	B66	20	M	16QAM	1 / 0	22.56	11.71	22.9
Max	B12	10	M	64QAM	1 / 25	B66	20	M	64QAM	1 / 0	21.25	10.83	21.63

Table 7-13. Conducted Powers (2A-66A– PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

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Power State	PCC					SCC					PCC Conducted Power [dBm]	SCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Frequency [MHz]	Mod.	PCC UL RB#/Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Frequency [MHz]	Mod.	SCC UL RB#/Offset			
Max	B12	5	L	QPSK	25 / 0	B66	1.4	L	QPSK	6 / 0	22.16	10.20	22.43
Max	B12	10	L	QPSK	50 / 0	B66	1.4	H	QPSK	6 / 0	22.11	13.99	22.73
Max	B12	5	H	QPSK	25 / 0	B66	3	L	QPSK	15 / 0	22.18	10.29	22.45
Max	B12	10	H	QPSK	50 / 0	B66	3	H	QPSK	15 / 0	22.05	14.05	22.69
Max	B12	5	L	QPSK	25 / 0	B66	5	L	QPSK	25 / 0	22.15	10.43	22.43
Max	B12	10	L	QPSK	50 / 0	B66	5	H	QPSK	25 / 0	22.10	14.04	22.73
Max	B12	5	H	QPSK	25 / 0	B66	10	L	QPSK	50 / 0	22.12	10.52	22.41
Max	B12	10	H	QPSK	50 / 0	B66	10	H	QPSK	50 / 0	22.11	13.87	22.72
Max	B12	5	L	QPSK	25 / 0	B66	15	L	QPSK	75 / 0	22.17	10.90	22.48
Max	B12	10	L	QPSK	50 / 0	B66	15	H	QPSK	75 / 0	22.12	14.02	22.75
Max	B12	10	L	QPSK	50 / 0	B66	20	L	QPSK	100 / 0	22.15	11.03	22.47
Max	B12	10	L	QPSK	50 / 0	B66	20	H	QPSK	100 / 0	22.13	13.91	22.74
Max	B12	10	H	QPSK	50 / 0	B66	20	L	QPSK	100 / 0	22.02	11.11	22.36
Max	B12	10	H	QPSK	50 / 0	B66	20	H	QPSK	100 / 0	22.05	13.92	22.67
Max	B12	10	L	16QAM	50 / 0	B66	15	H	16QAM	75 / 0	21.10	12.99	21.72
Max	B12	10	L	64QAM	50 / 0	B66	15	H	64QAM	75 / 0	20.12	12.05	20.75

Table 7-14. Conducted Powers (2A-66A with Various Combinations)

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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". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

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Test Setup

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

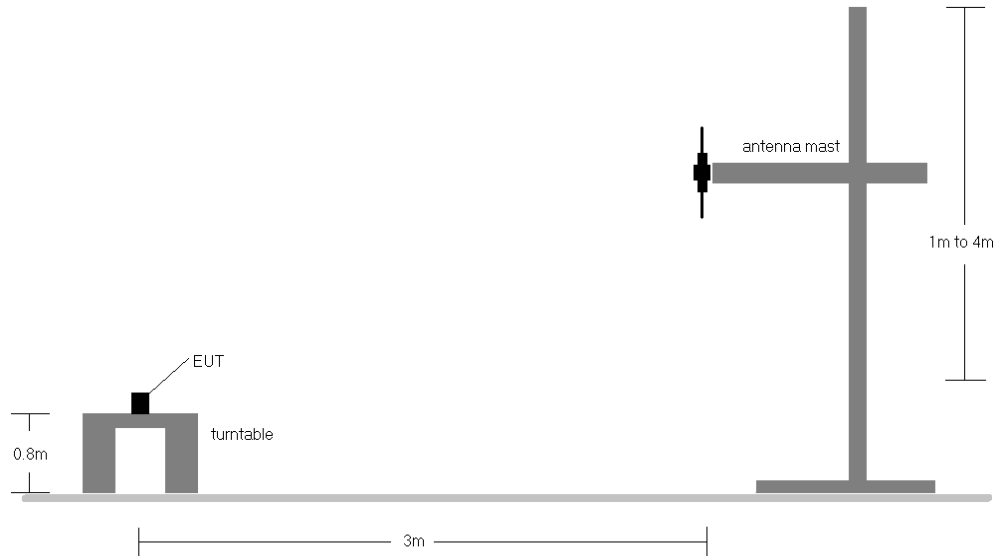


Figure 7-7. Radiated Test Setup <1GHz

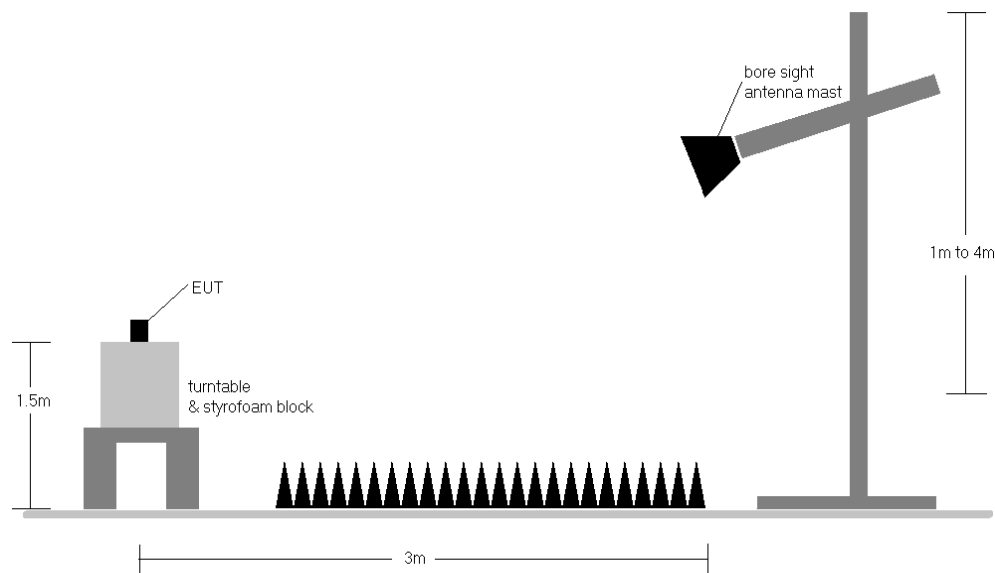


Figure 7-8. Radiated Test Setup >1GHz

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.

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
665.50	5	QPSK	V	173	178	1 / 0	13.14	3.79	14.78	0.030	34.77	-19.99
680.50	5	QPSK	V	185	175	1 / 0	14.02	4.24	16.11	0.041	34.77	-18.67
695.50	5	QPSK	V	184	176	1 / 0	14.70	4.58	17.13	0.052	34.77	-17.65
695.50	5	16-QAM	V	184	176	1 / 0	13.68	4.58	16.11	0.041	34.77	-18.67
695.50	5	64-QAM	V	184	176	1 / 0	12.49	4.58	14.92	0.031	34.77	-19.86
668.00	10	QPSK	V	175	174	1 / 0	13.00	3.82	14.67	0.029	34.77	-20.10
680.50	10	QPSK	V	189	173	1 / 0	14.10	4.24	16.19	0.042	34.77	-18.59
693.00	10	QPSK	V	179	172	1 / 0	14.50	4.44	16.79	0.048	34.77	-17.98
693.00	10	16-QAM	V	179	172	1 / 0	13.60	4.44	15.89	0.039	34.77	-18.88
693.00	10	64-QAM	V	179	172	1 / 0	12.37	4.44	14.66	0.029	34.77	-20.11
670.50	15	QPSK	V	180	170	1 / 0	13.05	3.96	14.86	0.031	34.77	-19.91
680.50	15	QPSK	V	185	176	1 / 0	14.27	4.24	16.36	0.043	34.77	-18.42
690.50	15	QPSK	V	182	174	1 / 0	14.58	4.41	16.84	0.048	34.77	-17.93
690.50	15	16-QAM	V	182	174	1 / 0	13.64	4.41	15.90	0.039	34.77	-18.87
690.50	15	64-QAM	V	182	174	1 / 0	12.45	4.41	14.71	0.030	34.77	-20.06
673.00	20	QPSK	V	178	175	1 / 99	14.41	4.09	16.35	0.043	34.77	-18.42
680.50	20	QPSK	V	187	170	1 / 50	14.69	4.24	16.78	0.048	34.77	-18.00
688.00	20	QPSK	V	186	169	1 / 0	14.66	4.48	16.99	0.050	34.77	-17.78
688.00	20	16-QAM	V	186	169	1 / 0	13.60	4.48	15.93	0.039	34.77	-18.84
688.00	20	64-QAM	V	186	169	1 / 0	12.50	4.48	14.83	0.030	34.77	-19.94
695.50	5	QPSK	H	302	98	1 / 0	14.08	4.24	16.17	0.041	34.77	-18.61
695.50	5 (WCP)	QPSK	V	160	178	1 / 0	10.26	4.24	12.35	0.017	34.77	-22.43

Table 7-15. ERP Data (Band 71)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	V	168	229	1 / 5	13.60	4.56	16.01	0.040	34.77	-18.76	18.16	0.065	36.99	-18.83
707.50	1.4	QPSK	V	176	209	1 / 5	13.85	4.62	16.32	0.043	34.77	-18.45	18.47	0.070	36.99	-18.52
715.30	1.4	QPSK	V	170	218	1 / 5	14.53	4.72	17.10	0.051	34.77	-17.67	19.25	0.084	36.99	-17.74
715.30	1.4	16-QAM	V	170	218	1 / 5	13.51	4.72	16.08	0.041	34.77	-18.69	18.23	0.067	36.99	-18.76
715.30	1.4	64-QAM	V	170	218	1 / 5	12.58	4.72	15.15	0.033	34.77	-19.62	17.30	0.054	36.99	-19.69
700.50	3	QPSK	V	166	234	1 / 14	13.72	4.59	16.16	0.041	34.77	-18.61	18.31	0.068	36.99	-18.68
707.50	3	QPSK	V	171	212	1 / 14	13.75	4.62	16.22	0.042	34.77	-18.55	18.37	0.069	36.99	-18.62
714.50	3	QPSK	V	175	215	1 / 14	14.65	4.71	17.21	0.053	34.77	-17.56	19.36	0.086	36.99	-17.63
714.50	3	16-QAM	V	175	215	1 / 14	13.59	4.71	16.15	0.041	34.77	-18.62	18.30	0.068	36.99	-18.69
714.50	3	64-QAM	V	175	215	1 / 14	12.55	4.71	15.11	0.032	34.77	-19.66	17.26	0.053	36.99	-19.73

Table 7-16. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
701.50	5	QPSK	V	171	230	1 / 24	13.77	4.60	16.22	0.042	34.77	-18.55	18.37	0.069	36.99	-18.62
707.50	5	QPSK	V	167	215	1 / 24	13.92	4.62	16.39	0.044	34.77	-18.38	18.54	0.072	36.99	-18.45
713.50	5	QPSK	V	178	217	1 / 24	14.73	4.70	17.28	0.053	34.77	-17.49	19.43	0.088	36.99	-17.56
713.50	5	16-QAM	V	178	217	1 / 24	13.63	4.70	16.18	0.041	34.77	-18.59	18.33	0.068	36.99	-18.66
713.50	5	64-QAM	V	178	217	1 / 24	12.63	4.70	15.18	0.033	34.77	-19.59	17.33	0.054	36.99	-19.66
704.00	10	QPSK	V	173	226	1 / 49	13.63	4.58	16.06	0.040	34.77	-18.71	18.21	0.066	36.99	-18.78
707.50	10	QPSK	V	171	213	1 / 49	14.00	4.62	16.47	0.044	34.77	-18.30	18.62	0.073	36.99	-18.37
711.00	10	QPSK	V	173	213	1 / 49	14.53	4.67	17.05	0.051	34.77	-17.72	19.20	0.083	36.99	-17.79
711.00	10	16-QAM	V	173	213	1 / 49	13.55	4.67	16.07	0.040	34.77	-18.70	18.22	0.066	36.99	-18.77
711.00	10	64-QAM	V	173	213	1 / 49	12.51	4.67	15.03	0.032	34.77	-19.74	17.18	0.052	36.99	-19.81
713.50	5	QPSK	H	283	98	1 / 24	14.21	4.62	16.68	0.047	34.77	-18.09	18.83	0.076	36.99	-18.16
713.50	5 (WCP)	QPSK	V	149	183	1 / 24	11.05	4.62	13.52	0.023	34.77	-21.25	15.67	0.037	36.99	-21.32

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

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
779.50	5	QPSK	V	157	303	1 / 0	13.39	5.77	17.01	0.050	34.77	-17.77	19.16	0.082	36.99	-17.83
782.00	5	QPSK	V	158	294	12 / 6	13.46	5.79	17.10	0.051	34.77	-17.67	19.25	0.084	36.99	-17.74
784.50	5	QPSK	V	166	286	12 / 6	13.59	5.82	17.26	0.053	34.77	-17.51	19.41	0.087	36.99	-17.58
784.50	5	16-QAM	V	166	286	12 / 6	12.68	5.82	16.35	0.043	34.77	-18.42	18.50	0.071	36.99	-18.49
784.50	5	64-QAM	V	166	286	12 / 6	11.67	5.82	15.34	0.034	34.77	-19.43	17.49	0.056	36.99	-19.50
782.00	10	QPSK	V	169	302	25 / 12	13.49	5.79	17.13	0.052	34.77	-17.64	19.28	0.085	36.99	-17.71
782.00	10	16-QAM	V	169	302	25 / 12	12.43	5.79	16.07	0.040	34.77	-18.70	18.22	0.066	36.99	-18.77
782.00	10	64-QAM	V	169	302	25 / 12	11.21	5.79	14.85	0.031	34.77	-19.92	17.00	0.050	36.99	-19.99
784.50	5	QPSK	H	248	80	12 / 6	12.83	5.79	16.47	0.044	34.77	-18.30	18.62	0.073	36.99	-18.37
784.50	5 (WCP)	QPSK	V	165	248	12 / 6	10.78	5.79	14.42	0.028	34.77	-20.35	16.57	0.045	36.99	-20.42

Table 7-18. ERP Data (Band 13)

FCC ID: ZNFG900UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	131	100	1 / 0	13.15	6.36	17.36	0.054	38.45	-21.10	19.51	0.089	40.61	-21.10
836.50	1.4	QPSK	V	153	89	1 / 0	13.22	6.38	17.45	0.056	38.45	-21.00	19.60	0.091	40.61	-21.01
848.30	1.4	QPSK	V	148	88	1 / 0	13.27	6.50	17.62	0.058	38.45	-20.83	19.77	0.095	40.61	-20.84
836.50	1.4	16-QAM	V	153	89	1 / 0	12.86	6.38	17.09	0.051	38.45	-21.36	19.24	0.084	40.61	-21.37
836.50	1.4	64-QAM	V	153	89	1 / 0	11.82	6.38	16.05	0.040	38.45	-22.40	18.20	0.066	40.61	-22.41
825.50	3	QPSK	V	136	96	1 / 0	13.20	6.36	17.41	0.055	38.45	-21.04	19.56	0.090	40.61	-21.04
836.50	3	QPSK	V	149	92	1 / 0	13.39	6.38	17.62	0.058	38.45	-20.83	19.77	0.095	40.61	-20.84
847.50	3	QPSK	V	151	90	1 / 0	13.35	6.49	17.69	0.059	38.45	-20.76	19.84	0.096	40.61	-20.76
836.50	3	16-QAM	V	149	92	1 / 0	12.90	6.38	17.13	0.052	38.45	-21.32	19.28	0.085	40.61	-21.33
836.50	3	64-QAM	V	149	92	1 / 0	11.90	6.38	16.13	0.041	38.45	-22.32	18.28	0.067	40.61	-22.33
826.50	5	QPSK	V	138	92	1 / 0	13.06	6.37	17.28	0.054	38.45	-21.17	19.43	0.088	40.61	-21.17
836.50	5	QPSK	V	153	90	1 / 0	13.47	6.38	17.70	0.059	38.45	-20.75	19.85	0.097	40.61	-20.76
846.50	5	QPSK	V	146	86	1 / 0	13.19	6.48	17.52	0.057	38.45	-20.93	19.67	0.093	40.61	-20.94
836.50	5	16-QAM	V	153	90	1 / 0	12.82	6.38	17.05	0.051	38.45	-21.40	19.20	0.083	40.61	-21.41
836.50	5	64-QAM	V	153	90	1 / 0	11.78	6.38	16.01	0.040	38.45	-22.44	18.16	0.065	40.61	-22.45
829.00	10	QPSK	V	136	97	1 / 0	13.18	6.40	17.43	0.055	38.45	-21.02	19.58	0.091	40.61	-21.03
836.50	10	QPSK	V	148	93	1 / 0	13.37	6.38	17.60	0.058	38.45	-20.85	19.75	0.094	40.61	-20.86
844.00	10	QPSK	V	151	83	1 / 0	13.31	6.46	17.62	0.058	38.45	-20.83	19.77	0.095	40.61	-20.84
836.50	10	16-QAM	V	148	93	1 / 0	12.90	6.38	17.13	0.052	38.45	-21.32	19.28	0.085	40.61	-21.33
836.50	10	64-QAM	V	148	93	1 / 0	11.75	6.38	15.98	0.040	38.45	-22.47	18.13	0.065	40.61	-22.48
836.50	10	QPSK	H	220	90	1 / 0	11.71	6.38	15.94	0.039	38.45	-22.51	18.09	0.064	40.61	-22.52

Table 7-19. ERP Data (Band 5)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 356 of 438

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	125	23	1 / 0	9.03	9.38	18.41	0.069	30.00	-11.59
1745.00	1.4	QPSK	V	119	30	1 / 0	10.65	9.14	19.79	0.095	30.00	-10.21
1779.30	1.4	QPSK	V	127	13	1 / 0	9.58	9.20	18.78	0.075	30.00	-11.22
1745.00	1.4	16-QAM	V	119	30	1 / 0	10.18	9.14	19.32	0.085	30.00	-10.68
1745.00	1.4	64-QAM	V	119	30	1 / 0	9.14	9.14	18.28	0.067	30.00	-11.72
1711.50	3	QPSK	V	123	28	1 / 0	9.23	9.37	18.60	0.072	30.00	-11.40
1745.00	3	QPSK	V	121	24	1 / 0	10.58	9.14	19.72	0.094	30.00	-10.28
1778.50	3	QPSK	V	92	8	1 / 0	9.66	9.20	18.86	0.077	30.00	-11.14
1745.00	3	16-QAM	V	121	24	1 / 0	10.14	9.14	19.28	0.085	30.00	-10.72
1745.00	3	64-QAM	V	121	24	1 / 0	9.19	9.14	18.33	0.068	30.00	-11.67
1712.50	5	QPSK	V	125	24	1 / 0	9.09	9.37	18.46	0.070	30.00	-11.54
1745.00	5	QPSK	V	125	22	1 / 0	10.66	9.14	19.80	0.095	30.00	-10.20
1777.50	5	QPSK	V	87	4	1 / 0	9.54	9.19	18.73	0.075	30.00	-11.27
1745.00	5	16-QAM	V	125	22	1 / 0	10.06	9.14	19.20	0.083	30.00	-10.80
1745.00	5	64-QAM	V	125	22	1 / 0	9.07	9.14	18.21	0.066	30.00	-11.79
1715.00	10	QPSK	V	123	29	1 / 0	9.21	9.35	18.56	0.072	30.00	-11.44
1745.00	10	QPSK	V	120	25	1 / 0	10.56	9.14	19.70	0.093	30.00	-10.30
1775.00	10	QPSK	V	92	1	1 / 0	9.66	9.18	18.84	0.077	30.00	-11.16
1745.00	10	16-QAM	V	120	25	1 / 0	10.14	9.14	19.28	0.085	30.00	-10.72
1745.00	10	64-QAM	V	120	25	1 / 0	9.04	9.14	18.18	0.066	30.00	-11.82
1717.50	15	QPSK	V	128	25	1 / 0	9.26	9.33	18.59	0.072	30.00	-11.41
1745.00	15	QPSK	V	116	28	1 / 0	10.73	9.14	19.87	0.097	30.00	-10.13
1772.50	15	QPSK	V	95	3	1 / 0	9.74	9.18	18.92	0.078	30.00	-11.08
1745.00	15	16-QAM	V	116	28	1 / 0	10.18	9.14	19.32	0.085	30.00	-10.68
1745.00	15	64-QAM	V	116	28	1 / 0	9.12	9.14	18.26	0.067	30.00	-11.74
1720.00	20	QPSK	V	126	30	1 / 99	10.56	9.31	19.87	0.097	30.00	-10.13
1745.00	20	QPSK	V	111	31	1 / 49	10.83	9.14	19.97	0.099	30.00	-10.03
1770.00	20	QPSK	V	100	0	1 / 49	10.86	9.17	20.03	0.101	30.00	-9.97
1745.00	20	16-QAM	V	111	31	1 / 0	10.26	9.14	19.40	0.087	30.00	-10.60
1745.00	20	64-QAM	V	111	31	1 / 0	9.09	9.14	18.23	0.066	30.00	-11.77
1770.00	20	QPSK	H	125	123	1 / 49	7.30	9.17	16.47	0.044	30.00	-13.53

Table 7-20. EIRP Data (Band 66/4)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 357 of 438

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	154	55	1 / 0	10.56	9.51	20.07	0.102	33.01	-12.94
1882.50	1.4	QPSK	H	154	61	1 / 0	11.49	9.96	21.45	0.140	33.01	-11.56
1914.30	1.4	QPSK	H	165	72	1 / 0	10.37	10.32	20.69	0.117	33.01	-12.32
1882.50	1.4	16-QAM	H	154	61	1 / 0	11.33	9.96	21.29	0.135	33.01	-11.72
1882.50	1.4	64-QAM	H	154	61	1 / 0	10.40	9.96	20.36	0.109	33.01	-12.65
1851.50	3	QPSK	H	156	51	1 / 0	10.42	9.52	19.94	0.099	33.01	-13.07
1882.50	3	QPSK	H	158	59	1 / 0	11.57	9.96	21.53	0.142	33.01	-11.48
1913.50	3	QPSK	H	160	68	1 / 0	10.18	10.31	20.49	0.112	33.01	-12.52
1882.50	3	16-QAM	H	158	59	1 / 0	11.25	9.96	21.21	0.132	33.01	-11.80
1882.50	3	64-QAM	H	158	59	1 / 0	10.28	9.96	20.24	0.106	33.01	-12.77
1852.50	5	QPSK	H	161	47	1 / 0	10.47	9.54	20.01	0.100	33.01	-13.00
1882.50	5	QPSK	H	154	62	1 / 0	11.74	9.96	21.70	0.148	33.01	-11.31
1912.50	5	QPSK	H	163	70	1 / 0	10.26	10.30	20.56	0.114	33.01	-12.45
1882.50	5	16-QAM	H	154	62	1 / 0	11.29	9.96	21.25	0.133	33.01	-11.76
1882.50	5	64-QAM	H	154	62	1 / 0	10.36	9.96	20.32	0.108	33.01	-12.69
1855.00	10	QPSK	H	159	52	1 / 0	10.67	9.57	20.24	0.106	33.01	-12.77
1882.50	10	QPSK	H	156	56	1 / 0	11.67	9.96	21.63	0.146	33.01	-11.38
1910.00	10	QPSK	H	145	65	1 / 0	10.34	10.28	20.62	0.115	33.01	-12.39
1882.50	10	16-QAM	H	156	56	1 / 0	11.25	9.96	21.21	0.132	33.01	-11.80
1882.50	10	64-QAM	H	156	56	1 / 0	10.41	9.96	20.37	0.109	33.01	-12.64
1882.50	15	QPSK	H	160	54	1 / 0	11.75	9.96	21.71	0.148	33.01	-11.30
1907.50	15	QPSK	H	140	61	1 / 0	10.15	10.26	20.41	0.110	33.01	-12.60
1882.50	15	16-QAM	H	160	54	1 / 0	11.17	9.96	21.13	0.130	33.01	-11.88
1882.50	15	64-QAM	H	160	54	1 / 0	10.29	9.96	20.25	0.106	33.01	-12.76
1860.00	20	QPSK	H	159	53	1 / 99	10.93	9.64	20.57	0.114	33.01	-12.44
1882.50	20	QPSK	H	155	57	1 / 49	11.99	9.96	21.95	0.157	33.01	-11.06
1905.00	20	QPSK	H	145	58	1 / 99	10.29	10.24	20.53	0.113	33.01	-12.48
1882.50	20	16-QAM	H	155	57	1 / 0	11.25	9.96	21.21	0.132	33.01	-11.80
1882.50	20	64-QAM	H	155	57	1 / 0	10.26	9.96	20.22	0.105	33.01	-12.79
1882.50	20	QPSK	V	135	18	1 / 49	9.66	9.96	19.62	0.092	33.01	-13.39

Table 7-21. EIRP Data (Band 25)

FCC ID: ZNFG900UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset	Page 358 of 438

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	144	14	1 / 25	9.45	10.33	19.78	0.095	23.98	-4.19
2312.50	5	QPSK	H	153	19	1 / 25	9.54	10.34	19.88	0.097	23.98	-4.10
2312.50	5	16-QAM	H	153	19	1 / 25	8.80	10.34	19.14	0.082	23.98	-4.84
2307.50	5	64-QAM	H	144	14	1 / 25	7.83	10.33	18.16	0.066	23.98	-5.81
2310.00	10	QPSK	H	149	16	1 / 25	9.57	10.34	19.91	0.098	23.98	-4.07
2310.00	10	16-QAM	H	149	16	1 / 25	8.85	10.34	19.19	0.083	23.98	-4.79
2310.00	10	64-QAM	H	149	16	1 / 25	7.86	10.34	18.20	0.066	23.98	-5.78
2310.00	10	QPSK	V	155	32	1 / 25	7.49	10.34	17.83	0.061	23.98	-6.15

Table 7-22. EIRP Data (Band 30)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 359 of 438

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	143	49	1 / 0	8.88	9.46	18.34	0.068	33.01	-14.67
2535.00	5	QPSK	H	151	43	1 / 0	10.42	9.42	19.84	0.096	33.01	-13.17
2567.50	5	QPSK	H	141	37	1 / 0	10.41	9.48	19.89	0.098	33.01	-13.12
2567.50	5	16-QAM	H	141	37	1 / 0	10.35	9.48	19.83	0.096	33.01	-13.18
2567.50	5	64-QAM	H	141	37	1 / 0	9.48	9.48	18.96	0.079	33.01	-14.05
2505.00	10	QPSK	H	141	54	1 / 0	9.00	9.45	18.45	0.070	33.01	-14.56
2535.00	10	QPSK	H	146	46	1 / 0	10.32	9.42	19.74	0.094	33.01	-13.27
2565.00	10	QPSK	H	146	34	1 / 0	10.53	9.47	20.00	0.100	33.01	-13.01
2565.00	10	16-QAM	H	146	34	1 / 0	10.43	9.47	19.90	0.098	33.01	-13.11
2565.00	10	64-QAM	H	146	34	1 / 0	9.45	9.47	18.92	0.078	33.01	-14.09
2507.50	15	QPSK	H	146	50	1 / 0	9.05	9.45	18.50	0.071	33.01	-14.51
2535.00	15	QPSK	H	142	49	1 / 0	10.49	9.42	19.91	0.098	33.01	-13.10
2562.50	15	QPSK	H	149	36	1 / 0	10.61	9.46	20.07	0.102	33.01	-12.94
2562.50	15	16-QAM	H	149	36	1 / 0	10.47	9.46	19.93	0.098	33.01	-13.08
2562.50	15	64-QAM	H	149	36	1 / 0	9.53	9.46	18.99	0.079	33.01	-14.02
2510.00	20	QPSK	H	148	46	1 / 99	9.95	9.45	19.40	0.087	33.01	-13.61
2535.00	20	QPSK	H	146	47	1 / 49	10.60	9.42	20.02	0.101	33.01	-12.99
2560.00	20	QPSK	H	144	32	1 / 49	11.09	9.45	20.54	0.113	33.01	-12.47
2560.00	20	16-QAM	H	144	32	1 / 49	10.39	9.45	19.84	0.096	33.01	-13.17
2560.00	20	64-QAM	H	144	32	1 / 0	9.41	9.45	18.86	0.077	33.01	-14.15
2560.00	20	QPSK	V	159	13	1 / 49	6.50	9.45	15.95	0.039	33.01	-17.06

Table 7-23. EIRP Data (Band 7)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 360 of 438

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	125	48	12 / 6	11.92	9.46	21.38	0.137	33.01	-11.63
2593.00	5	QPSK	H	117	44	12 / 6	11.81	9.58	21.39	0.138	33.01	-11.62
2687.50	5	QPSK	H	172	17	12 / 6	10.04	9.85	19.89	0.097	33.01	-13.12
2593.00	5	16-QAM	H	117	44	12 / 6	11.46	9.58	21.04	0.127	33.01	-11.97
2498.50	5	64-QAM	H	125	48	12 / 6	11.28	9.46	20.74	0.119	33.01	-12.27
2501.00	10	QPSK	H	130	44	25 / 12	11.93	9.46	21.39	0.138	33.01	-11.62
2593.00	10	QPSK	H	115	47	25 / 12	12.01	9.58	21.59	0.144	33.01	-11.42
2685.00	10	QPSK	H	177	14	25 / 12	10.10	9.85	19.95	0.099	33.01	-13.06
2593.00	10	16-QAM	H	115	47	25 / 12	11.49	9.58	21.07	0.128	33.01	-11.94
2501.00	10	64-QAM	H	130	44	25 / 12	11.36	9.46	20.82	0.121	33.01	-12.19
2503.50	15	QPSK	H	123	49	36 / 18	12.05	9.45	21.50	0.141	33.01	-11.51
2593.00	15	QPSK	H	111	50	36 / 18	11.87	9.58	21.45	0.140	33.01	-11.56
2682.50	15	QPSK	H	183	12	36 / 18	9.92	9.86	19.78	0.095	33.01	-13.23
2593.00	15	16-QAM	H	111	50	36 / 18	11.58	9.58	21.16	0.131	33.01	-11.85
2503.50	15	64-QAM	H	123	49	36 / 18	10.56	9.45	20.01	0.100	33.01	-13.00
2506.00	20	QPSK	H	128	45	1 / 49	12.06	9.45	21.51	0.142	33.01	-11.50
2593.00	20	QPSK	H	109	53	1 / 49	12.07	9.58	21.65	0.146	33.01	-11.36
2680.00	20	QPSK	H	188	9	1 / 49	9.98	9.86	19.84	0.096	33.01	-13.17
2593.00	20	16-QAM	H	109	53	1 / 49	11.61	9.58	21.19	0.132	33.01	-11.82
2506.00	20	64-QAM	H	128	45	1 / 49	10.64	9.45	20.09	0.102	33.01	-12.92
2593.00	20	QPSK	V	212	52	1 / 49	9.85	9.58	19.43	0.088	33.01	-13.58

Table 7-24. EIRP Data (Band 41 – PC3)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 361 of 438

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
20 MHz	$\pi/2$ BPSK	673.0	V	175	52	4.09	1 / 104	11.86	13.80	0.024	34.77	-20.97
	QPSK	673.0	V	175	52	4.09	1 / 104	12.01	13.95	0.025	34.77	-20.82
		680.5	V	176	48	4.24	1 / 104	11.78	13.87	0.024	34.77	-20.91
		688.0	V	179	47	4.48	1 / 104	11.14	13.47	0.022	34.77	-21.30
	16-QAM	673.0	V	175	52	4.09	1 / 104	11.19	13.13	0.021	34.77	-21.64
	64-QAM	673.0	V	175	52	4.09	1 / 104	9.08	11.02	0.013	34.77	-23.75
	256-QAM	673.0	V	175	52	4.09	1 / 104	7.07	9.01	0.008	34.77	-25.76
15 MHz	$\pi/2$ BPSK	680.5	V	176	48	4.24	1 / 1	9.80	11.89	0.015	34.77	-22.88
	QPSK	670.5	V	175	52	3.96	1 / 77	11.70	13.51	0.022	34.77	-21.26
		680.5	V	176	48	4.24	1 / 37	11.79	13.88	0.024	34.77	-20.90
		690.5	V	179	47	4.41	1 / 77	11.30	13.56	0.023	34.77	-21.21
	16-QAM	680.5	V	176	48	4.24	1 / 77	8.87	10.96	0.012	34.77	-23.81
	64-QAM	680.5	V	176	48	4.24	1 / 77	8.98	11.07	0.013	34.77	-23.70
	256-QAM	680.5	V	176	48	4.24	1 / 77	7.01	9.10	0.008	34.77	-25.67
10 MHz	$\pi/2$ BPSK	680.5	V	176	48	4.24	1 / 26	9.73	11.82	0.015	34.77	-22.95
	QPSK	668.0	V	175	52	3.82	1 / 1	12.97	14.65	0.029	34.77	-20.12
		680.5	V	176	48	4.24	1 / 1	11.79	13.88	0.024	34.77	-20.90
		693.0	V	179	47	4.44	1 / 1	11.30	13.59	0.023	34.77	-21.18
	16-QAM	680.5	V	176	48	4.24	1 / 1	8.69	10.78	0.012	34.77	-23.99
	64-QAM	668.0	V	175	52	3.82	1 / 50	7.11	10.94	0.012	34.77	-23.83
	256-QAM	668.0	V	175	52	3.82	1 / 50	7.25	8.93	0.008	34.77	-25.84
5 MHz	$\pi/2$ BPSK	680.5	V	176	48	4.24	1 / 1	9.65	11.74	0.015	34.77	-23.03
	QPSK	665.5	V	175	52	3.79	1 / 1	12.85	14.49	0.028	34.77	-20.28
		680.5	V	176	48	4.24	1 / 23	11.62	13.71	0.023	34.77	-21.07
		695.5	V	179	47	4.58	1 / 23	11.08	13.50	0.022	34.77	-21.27
	16-QAM	680.5	V	176	48	4.24	1 / 23	8.80	10.89	0.012	34.77	-23.88
	64-QAM	665.5	V	175	52	3.79	1 / 23	7.51	11.30	0.013	34.77	-23.47
	256-QAM	665.5	V	175	52	3.79	1 / 23	7.65	9.29	0.008	34.77	-25.48
20 MHz	QPSK (CP-OFDM)	688.0	V	176	48	4.48	1 / 50	7.99	12.47	0.018	34.77	-22.30
20 MHz	QPSK (Opposite Pol.)	688.0	H	120	138	4.48	1 / 50	8.46	12.94	0.020	34.77	-21.83

Table 7-25. ERP Data (5G sub6 n71)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	$\pi/2$ BPSK	836.5	V	139	252	6.38	1 / 1	13.32	17.55	0.057	38.45	-20.90	19.70	0.093	40.61	-20.91
	QPSK	834.0	V	145	250	6.35	1 / 1	13.20	17.40	0.055	38.45	-21.05	19.55	0.090	40.61	-21.05
		836.5	V	139	252	6.38	1 / 1	13.40	17.63	0.058	38.45	-20.82	19.78	0.095	40.61	-20.83
		839.0	V	142	253	6.40	1 / 1	12.83	17.08	0.051	38.45	-21.37	19.23	0.084	40.61	-21.37
	16-QAM	836.5	V	139	252	6.38	1 / 1	12.23	16.46	0.044	38.45	-21.99	18.61	0.073	40.61	-22.00
	64-QAM	836.5	V	139	252	6.38	1 / 1	10.10	14.33	0.027	38.45	-24.12	16.48	0.044	40.61	-24.13
15 MHz	256-QAM	836.5	V	139	252	6.38	1 / 1	7.60	11.83	0.015	38.45	-26.62	13.98	0.025	40.61	-26.63
	$\pi/2$ BPSK	836.5	V	139	252	6.38	1 / 1	13.24	17.47	0.056	38.45	-20.98	19.62	0.092	40.61	-20.99
	QPSK	831.5	V	145	250	6.43	1 / 1	13.01	17.28	0.053	38.45	-21.17	19.43	0.088	40.61	-21.17
		836.5	V	139	252	6.38	1 / 1	13.30	17.53	0.057	38.45	-20.92	19.68	0.093	40.61	-20.93
		841.5	V	142	253	6.43	1 / 1	12.77	17.05	0.051	38.45	-21.40	19.20	0.083	40.61	-21.40
		836.5	V	139	252	6.38	1 / 1	12.30	16.53	0.045	38.45	-21.92	18.68	0.074	40.61	-21.93
10 MHz	16-QAM	836.5	V	139	252	6.38	1 / 1	10.00	14.23	0.026	38.45	-24.22	16.38	0.043	40.61	-24.23
	64-QAM	836.5	V	139	252	6.38	1 / 1	7.50	11.73	0.015	38.45	-26.72	13.88	0.024	40.61	-26.73
	256-QAM	836.5	V	139	252	6.38	1 / 1	13.06	17.29	0.054	38.45	-21.16	19.44	0.088	40.61	-21.17
	$\pi/2$ BPSK	829.0	V	145	250	6.40	1 / 1	12.96	17.21	0.053	38.45	-21.24	19.36	0.086	40.61	-21.24
	QPSK	836.5	V	139	252	6.38	1 / 1	13.12	17.35	0.054	38.45	-21.10	19.50	0.089	40.61	-21.11
		844.0	V	142	253	6.46	1 / 1	12.58	16.88	0.049	38.45	-21.57	19.03	0.080	40.61	-21.57
5 MHz	16-QAM	836.5	V	139	252	6.38	1 / 1	11.89	16.12	0.041	38.45	-22.33	18.27	0.067	40.61	-22.34
	64-QAM	836.5	V	139	252	6.38	1 / 1	9.72	13.95	0.025	38.45	-24.50	16.10	0.041	40.61	-24.51
	256-QAM	836.5	V	139	252	6.38	1 / 1	7.22	11.45	0.014	38.45	-27.00	13.60	0.023	40.61	-27.01
	$\pi/2$ BPSK	836.5	V	139	252	6.38	1 / 13	13.15	17.38	0.055	38.45	-21.07	19.53	0.090	40.61	-21.08
	QPSK	829.0	V	145	250	6.37	1 / 1	12.96	17.18	0.052	38.45	-21.27	19.33	0.086	40.61	-21.27
		836.5	V	139	252	6.38	1 / 1	13.20	17.43	0.055	38.45	-21.02	19.58	0.091	40.61	-21.03
20 MHz	64-QAM	844.0	V	142	253	6.48	1 / 1	12.57	16.90	0.049	38.45	-21.55	19.05	0.080	40.61	-21.55
	16-QAM	836.5	V	139	252	6.38	1 / 1	11.97	16.20	0.042	38.45	-22.25	18.35	0.068	40.61	-22.26
	64-QAM	836.5	V	139	252	6.38	1 / 1	9.52	13.75	0.024	38.45	-24.70	15.90	0.039	40.61	-24.71
	256-QAM	836.5	V	139	252	6.38	1 / 1	7.02	11.25	0.013	38.45	-27.20	13.40	0.022	40.61	-27.21
	QPSK (CP-OFDM)	836.5	V	139	252	6.38	1 / 1	11.34	15.57	0.036	38.45	-22.88	17.72	0.059	40.61	-22.89
	QPSK (Opposite Pol.)	836.5	H	136	81	6.38	1 / 1	12.25	16.48	0.044	38.45	-21.97	18.63	0.073	40.61	-21.98

Table 7-26. ERP Data (5G sub6 n5)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 362 of 438

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1720.0	H	152.0	132.0	9.41	1 / 99	13.31	22.72	0.187	30.00	-7.28
		1720.0	H	152.0	132.0	9.41	1 / 99	13.08	22.49	0.178	30.00	-7.51
		1745.0	H	155.0	123.0	9.26	1 / 99	13.38	22.64	0.184	30.00	-7.36
		1770.0	H	168.0	138.0	9.27	1 / 50	12.50	21.77	0.150	30.00	-8.23
	16-QAM	1745.0	H	155.0	123.0	9.26	1 / 99	12.25	21.51	0.142	30.00	-8.49
	64-QAM	1745.0	H	155.0	123.0	9.26	1 / 99	10.12	19.38	0.087	30.00	-10.62
15 MHz	QPSK	1745.0	H	155.0	123.0	9.26	1 / 99	8.37	17.63	0.058	30.00	-12.37
		1717.5	H	152.0	132.0	0.00	1 / 74	23.10	23.10	0.204	30.00	-6.90
		1717.5	H	152.0	132.0	0.00	1 / 74	22.94	22.94	0.197	30.00	-7.06
		1745.0	H	155.0	123.0	0.00	1 / 74	23.01	23.01	0.200	30.00	-6.99
		1772.5	H	168.0	138.0	0.00	1 / 74	22.22	22.22	0.167	30.00	-7.78
	16-QAM	1745.0	H	155.0	123.0	0.00	1 / 74	21.95	21.95	0.157	30.00	-8.05
10 MHz	QPSK	1745.0	H	155.0	123.0	0.00	1 / 74	19.74	19.74	0.094	30.00	-10.26
		1745.0	H	155.0	123.0	0.00	1 / 74	17.87	17.87	0.061	30.00	-12.13
		1715.0	H	152.0	132.0	0.00	1 / 49	22.68	22.68	0.186	30.00	-7.32
		1715.0	H	152.0	132.0	0.00	1 / 49	22.53	22.53	0.179	30.00	-7.47
		1745.0	H	155.0	123.0	0.00	1 / 49	22.66	22.66	0.185	30.00	-7.34
		1775.0	H	168.0	138.0	0.00	1 / 49	21.67	21.67	0.147	30.00	-8.33
5 MHz	QPSK	1745.0	H	155.0	123.0	0.00	1 / 49	22.89	22.89	0.195	30.00	-7.11
		1745.0	H	155.0	123.0	0.00	1 / 49	20.74	20.74	0.119	30.00	-9.26
		1745.0	H	155.0	123.0	0.00	1 / 49	18.99	18.99	0.079	30.00	-11.01
		1712.5	H	152.0	132.0	0.00	1 / 24	22.65	22.65	0.184	30.00	-7.35
		1712.5	H	152.0	132.0	0.00	1 / 24	22.47	22.47	0.177	30.00	-7.53
		1745.0	H	155.0	123.0	0.00	1 / 24	22.75	22.75	0.188	30.00	-7.25
20 MHz	QPSK	1777.5	H	168.0	138.0	0.00	1 / 24	21.95	21.95	0.157	30.00	-8.05
		1745.0	H	155.0	123.0	0.00	1 / 24	21.60	21.60	0.145	30.00	-8.40
		1745.0	H	155.0	123.0	0.00	1 / 24	19.47	19.47	0.089	30.00	-10.53
		1745.0	H	155.0	123.0	0.00	1 / 24	17.49	17.49	0.056	30.00	-12.51
	QPSK (CP-OFDM)	1720.0	H	152.0	132.0	9.41	1 / 99	11.06	20.47	0.111	30.00	-9.53
		1720.0	H	137.0	13.0	9.41	1 / 99	11.93	21.34	0.136	30.00	-8.66

Table 7-27. EIRP Data (5G sub6 n66)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 363 of 438

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	$\pi/2$ BPSK	1860.0	H	165.0	330.0	9.91	1 / 99	11.80	21.71	0.148	33.01	-11.30
	QPSK	1860.0	H	165.0	330.0	9.91	1 / 99	11.93	21.84	0.153	33.01	-11.17
		1880.0	H	153.0	341.0	9.76	1 / 99	11.43	21.19	0.132	33.01	-11.82
		1900.0	H	159.0	338.0	9.77	1 / 99	11.32	21.09	0.128	33.01	-11.92
	16-QAM	1880.0	H	153.0	341.0	9.76	1 / 99	10.76	20.52	0.113	33.01	-12.49
	64-QAM	1880.0	H	153.0	341.0	9.76	1 / 99	8.81	18.57	0.072	33.01	-14.44
256-QAM	1880.0	H	153.0	341.0	9.76	1 / 99	6.65	16.41	0.044	33.01	-16.60	
15 MHz	$\pi/2$ BPSK	1857.5	H	163.0	335.0	9.93	1 / 74	11.77	21.70	0.148	33.01	-11.31
	QPSK	1857.5	H	163.0	335.0	9.93	1 / 74	11.85	21.78	0.151	33.01	-11.23
		1880.0	H	157.0	331.0	9.76	1 / 74	11.34	21.10	0.129	33.01	-11.91
		1902.5	H	167.0	336.0	9.77	1 / 74	11.30	21.07	0.128	33.01	-11.94
	16-QAM	1857.5	H	163.0	335.0	9.93	1 / 74	9.98	19.91	0.098	33.01	-13.10
	64-QAM	1857.5	H	163.0	335.0	9.93	1 / 74	7.00	16.93	0.049	33.01	-16.08
256-QAM	1857.5	H	163.0	335.0	9.93	1 / 74	4.35	14.28	0.027	33.01	-18.73	
10 MHz	$\pi/2$ BPSK	1855.0	H	162.0	337.0	9.94	1 / 49	11.75	21.69	0.148	33.01	-11.32
	QPSK	1855.0	H	163.0	337.0	9.94	1 / 49	11.95	21.89	0.155	33.01	-11.12
		1880.0	H	157.0	327.0	9.76	1 / 49	11.26	21.02	0.126	33.01	-11.99
		1905.0	H	167.0	340.0	9.78	1 / 49	11.21	20.99	0.126	33.01	-12.02
	16-QAM	1855.0	H	162.0	337.0	9.94	1 / 49	10.90	20.84	0.121	33.01	-12.17
	64-QAM	1855.0	H	162.0	337.0	9.94	1 / 49	8.88	18.82	0.076	33.01	-14.19
256-QAM	1855.0	H	162.0	337.0	9.94	1 / 49	4.47	14.41	0.028	33.01	-18.60	
5 MHz	$\pi/2$ BPSK	1852.5	H	164.0	331.0	9.96	1 / 24	11.55	21.51	0.142	33.01	-11.50
	QPSK	1852.5	H	164.0	331.0	9.96	1 / 24	11.79	21.75	0.150	33.01	-11.26
		1880.0	H	139.0	333.0	9.76	1 / 24	11.45	21.21	0.132	33.01	-11.80
		1907.5	H	152.0	337.0	9.78	1 / 24	11.15	20.93	0.124	33.01	-12.08
	16-QAM	1852.5	H	164.0	331.0	9.96	1 / 24	10.75	20.71	0.118	33.01	-12.30
	64-QAM	1852.5	H	164.0	331.0	9.96	1 / 24	8.36	18.32	0.068	33.01	-14.69
256-QAM	1852.5	H	164.0	331.0	9.96	1 / 24	4.12	14.08	0.026	33.01	-18.93	
20 MHz	QPSK (CP-OFDM)	1860.0	H	165.0	330.0	9.91	1 / 99	10.21	20.12	0.103	33.01	-12.89
20 MHz	QPSK (Opposite Pol.)	1860.0	V	147.0	13.0	9.91	1 / 99	11.23	21.14	0.130	33.01	-11.87

Table 7-28. EIRP Data (5G sub6 n25/2)

FCC ID: ZNFG900UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 364 of 438

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	2593.0	H	109.0	131.0	9.58	1 / 273	12.44	22.02	0.159	33.01	-10.99
		2546.0	H	113.0	192.0	9.41	1 / 273	9.92	19.33	0.086	33.01	-13.68
	QPSK	2593.0	H	109.0	131.0	9.58	1 / 273	12.58	22.16	0.164	33.01	-10.85
		2640.0	H	109.0	201.0	9.87	1 / 273	11.20	21.07	0.128	33.01	-11.94
	16-QAM	2593.0	H	109.0	131.0	9.58	1 / 273	11.48	21.06	0.128	33.01	-11.95
	64-QAM	2593.0	H	109.0	131.0	9.58	1 / 273	8.02	17.60	0.058	33.01	-15.41
	256-QAM	2593.0	H	109.0	131.0	9.58	1 / 273	7.19	16.77	0.048	33.01	-16.24
	π/2 BPSK	2593.0	H	121.0	136.0	9.58	1 / 243	12.39	21.97	0.157	33.01	-11.04
	QPSK	2541.0	H	103.0	183.0	9.42	1 / 243	9.69	19.11	0.081	33.01	-13.90
		2593.0	H	121.0	136.0	9.58	1 / 243	12.46	22.04	0.160	33.01	-10.97
	16-QAM	2645.0	H	104.0	201.0	9.90	1 / 243	11.05	20.95	0.125	33.01	-12.06
		2593.0	H	121.0	136.0	9.58	1 / 243	10.91	20.49	0.112	33.01	-12.52
90 MHz	64-QAM	2593.0	H	121.0	136.0	9.58	1 / 243	7.56	17.14	0.052	33.01	-15.87
	256-QAM	2593.0	H	121.0	136.0	9.58	1 / 243	6.56	16.14	0.041	33.01	-16.87
	π/2 BPSK	2593.0	H	121.0	136.0	9.58	1 / 215	12.30	21.88	0.154	33.01	-11.13
	QPSK	2536.0	H	103.0	183.0	9.42	1 / 215	10.02	19.44	0.088	33.01	-13.57
		2593.0	H	121.0	136.0	9.58	1 / 215	12.76	22.34	0.171	33.01	-10.67
	16-QAM	2650.0	H	104.0	201.0	9.93	1 / 215	11.29	21.22	0.133	33.01	-11.79
	64-QAM	2593.0	H	121.0	136.0	9.58	1 / 215	10.85	20.43	0.110	33.01	-12.58
	256-QAM	2593.0	H	121.0	136.0	9.58	1 / 215	7.47	17.05	0.051	33.01	-15.96
	π/2 BPSK	2593.0	H	121.0	136.0	9.58	1 / 215	6.38	15.96	0.039	33.01	-17.05
	QPSK	2593.0	H	108.0	142.0	9.58	1 / 160	12.14	21.72	0.149	33.01	-11.29
		2526.0	H	115.0	187.0	9.43	1 / 160	10.04	19.47	0.089	33.01	-13.54
	16-QAM	2593.0	H	108.0	142.0	9.58	1 / 160	12.87	22.45	0.176	33.01	-10.56
		2660.0	H	107.0	193.0	9.91	1 / 160	11.54	21.45	0.140	33.01	-11.56
80 MHz	64-QAM	2593.0	H	108.0	142.0	9.58	1 / 160	11.08	20.66	0.116	33.01	-12.35
	256-QAM	2593.0	H	108.0	142.0	9.58	1 / 160	7.37	16.95	0.050	33.01	-16.06
	π/2 BPSK	2593.0	H	108.0	142.0	9.58	1 / 160	6.60	16.18	0.042	33.01	-16.83
	QPSK	2593.0	H	109.0	147.0	9.58	1 / 131	12.71	22.29	0.169	33.01	-10.72
		2521.0	H	108.0	192.0	9.44	1 / 131	10.09	19.53	0.090	33.01	-13.48
	16-QAM	2593.0	H	109.0	147.0	9.58	1 / 131	12.81	22.39	0.173	33.01	-10.62
	64-QAM	2665.0	H	111.0	198.0	9.90	1 / 131	11.50	21.40	0.138	33.01	-11.61
	256-QAM	2593.0	H	109.0	147.0	9.58	1 / 131	11.48	21.06	0.128	33.01	-11.95
	π/2 BPSK	2593.0	H	109.0	147.0	9.58	1 / 131	7.50	17.08	0.051	33.01	-15.93
	QPSK	2593.0	H	109.0	147.0	9.58	1 / 131	7.18	16.76	0.047	33.01	-16.25
		2593.0	H	99.0	129.0	9.58	1 / 104	12.90	22.48	0.177	33.01	-10.53
	16-QAM	2516.0	H	109.0	199.0	9.44	1 / 104	10.45	19.89	0.098	33.01	-13.12
		2593.0	H	99.0	129.0	9.58	1 / 104	13.15	22.73	0.188	33.01	-10.28
60 MHz	64-QAM	2670.0	H	99.0	212.0	9.89	1 / 104	11.77	21.66	0.146	33.01	-11.35
	256-QAM	2593.0	H	99.0	129.0	9.58	1 / 104	11.47	21.05	0.127	33.01	-11.96
	π/2 BPSK	2593.0	H	99.0	129.0	9.58	1 / 104	7.71	17.29	0.054	33.01	-15.72
	QPSK	2593.0	H	99.0	129.0	9.58	1 / 104	7.21	16.79	0.048	33.01	-16.22
		2593.0	H	120.0	115.0	9.58	1 / 50	13.02	22.60	0.182	33.01	-10.41
	16-QAM	2506.0	H	113.0	190.0	9.45	1 / 50	9.80	19.25	0.084	33.01	-13.76
	64-QAM	2593.0	H	120.0	115.0	9.58	1 / 50	13.05	22.63	0.183	33.01	-10.38
	256-QAM	2680.0	H	109.0	204.0	9.86	1 / 50	11.55	21.41	0.138	33.01	-11.60
	π/2 BPSK	2593.0	H	120.0	115.0	9.58	1 / 50	10.89	20.47	0.111	33.01	-12.54
	QPSK	2593.0	H	120.0	115.0	9.58	1 / 50	7.85	17.43	0.055	33.01	-15.58
		2593.0	H	120.0	115.0	9.58	1 / 50	6.25	15.83	0.038	33.01	-17.18
	16-QAM	2593.0	H	120.0	115.0	9.58	1 / 50	6.25	15.83	0.038	33.01	-17.18
	256-QAM	2593.0	H	120.0	115.0	9.58	1 / 50	6.25	15.83	0.038	33.01	-17.18
40 MHz	QPSK (CP-OFDM)	2593.0	H	109.0	131.0	9.58	1 / 273	9.58	20.64	0.116	33.01	-12.37
	QPSK (Opposite Pol.)	2593.0	V	128.0	130.0	9.58	1 / 273	9.58	22.04	0.160	33.01	-10.97
	QPSK (WCP)	2593.0	H	152.0	28.0	9.58	1 / 273	9.58	21.58	0.144	33.01	-11.43

Table 7-29. EIRP Data (5G sub6 n41 – PC3)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 365 of 438

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: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 366 of 438

Test Setup

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

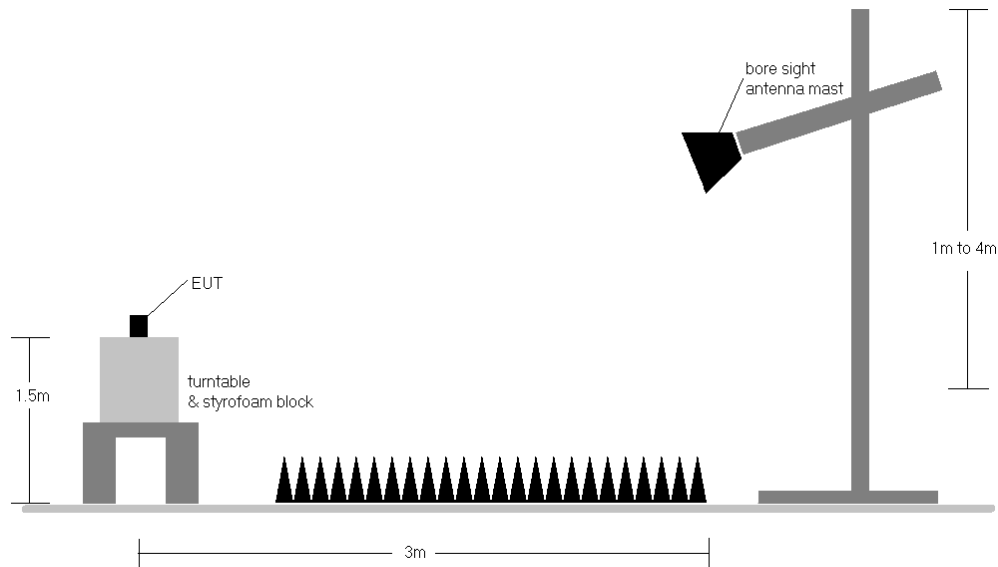


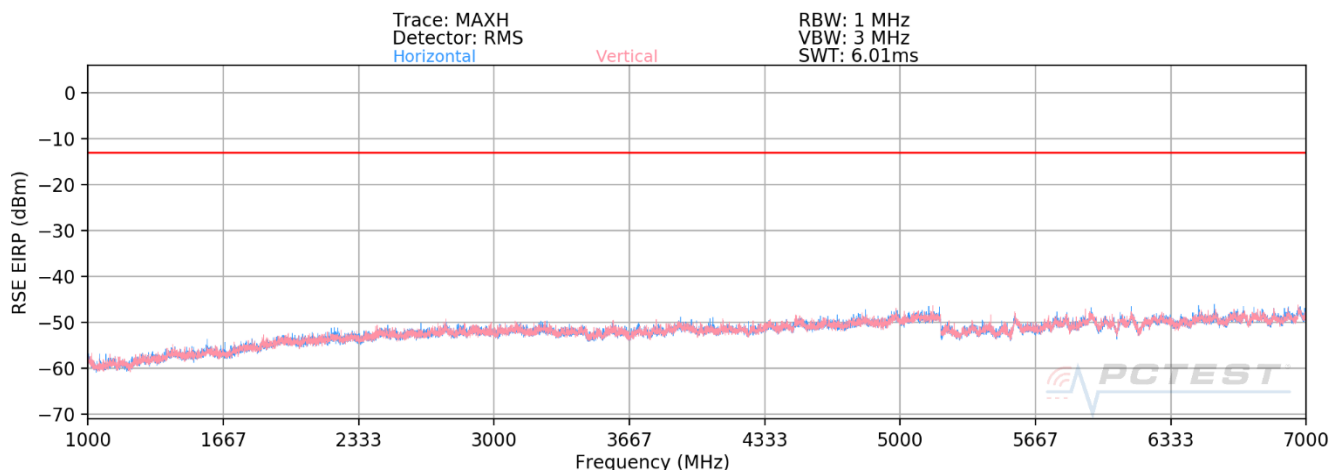
Figure 7-9. Test Instrument & Measurement Setup

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: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 71



Plot 7-627. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY: 665.50 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1331.00	V	-	-	-62.74	3.50	-59.24	-46.2
1996.50	V	-	-	-58.73	2.82	-55.91	-42.9

Table 7-30. Radiated Spurious Data (Band 71 – Low Channel)

OPERATING FREQUENCY: 680.50 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	V	-	-	-67.64	3.58	-64.06	-51.1
2041.50	V	-	-	-63.40	2.95	-60.45	-47.5

Table 7-31. Radiated Spurious Data (Band 71 – Mid Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 368 of 438

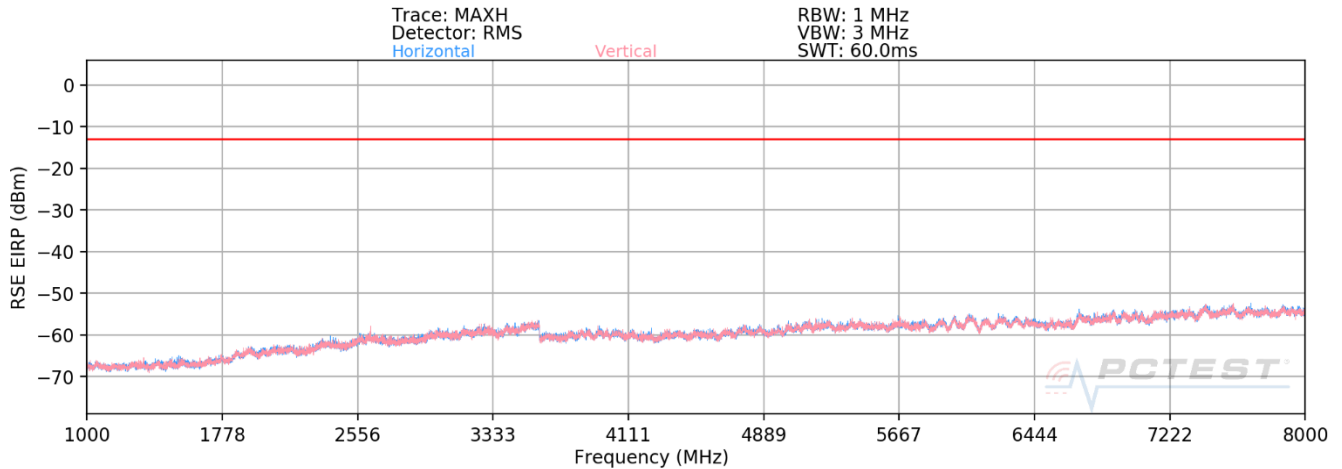
OPERATING FREQUENCY: 695.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1391.00	V	-	-	-62.31	3.10	-59.20	-46.2
2086.50	V	-	-	-56.23	3.05	-53.18	-40.2

Table 7-32. Radiated Spurious Data (Band 71 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 369 of 438

Band 12/17



Plot 7-628. Radiated Spurious Plot above 1GHz (Band 12/17)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1403.00	V	-	-	-56.71	3.16	-53.55	-40.6
2104.50	V	-	-	-50.55	3.10	-47.45	-34.5

Table 7-33. Radiated Spurious Data (Band 12/17 – Low Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	V	-	-	-54.33	3.26	-51.06	-38.1
2122.50	V	-	-	-48.86	3.18	-45.68	-32.7

Table 7-34. Radiated Spurious Data (Band 12/17 – Mid Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 370 of 438

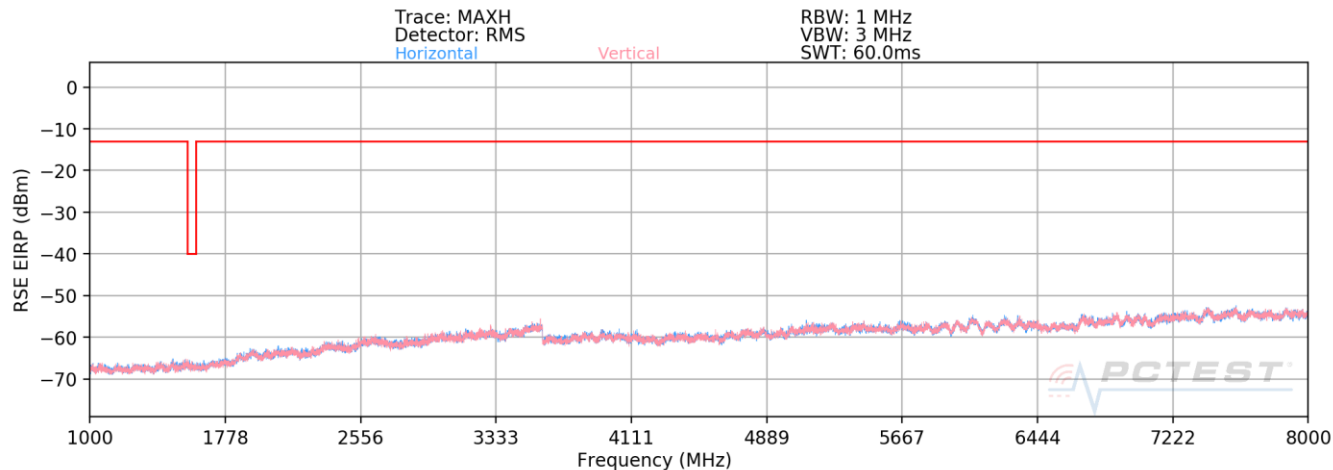
OPERATING FREQUENCY: 713.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1427.00	V	-	-	-56.24	3.43	-52.80	-39.8
2140.50	V	-	-	-50.57	3.27	-47.30	-34.3

Table 7-35. Radiated Spurious Data (Band 12/17 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 371 of 438

Band 13



Plot 7-629. Radiated Spurious Plot above 1GHz (Band 13)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	V	120	87	-63.69	9.46	-54.23	-41.2
3128.00	V	-	-	-66.67	9.37	-57.30	-44.3
3910.00	V	-	-	-68.76	9.40	-59.36	-46.4

Table 7-36. Radiated Spurious Data (Band 13 – Mid Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 372 of 438

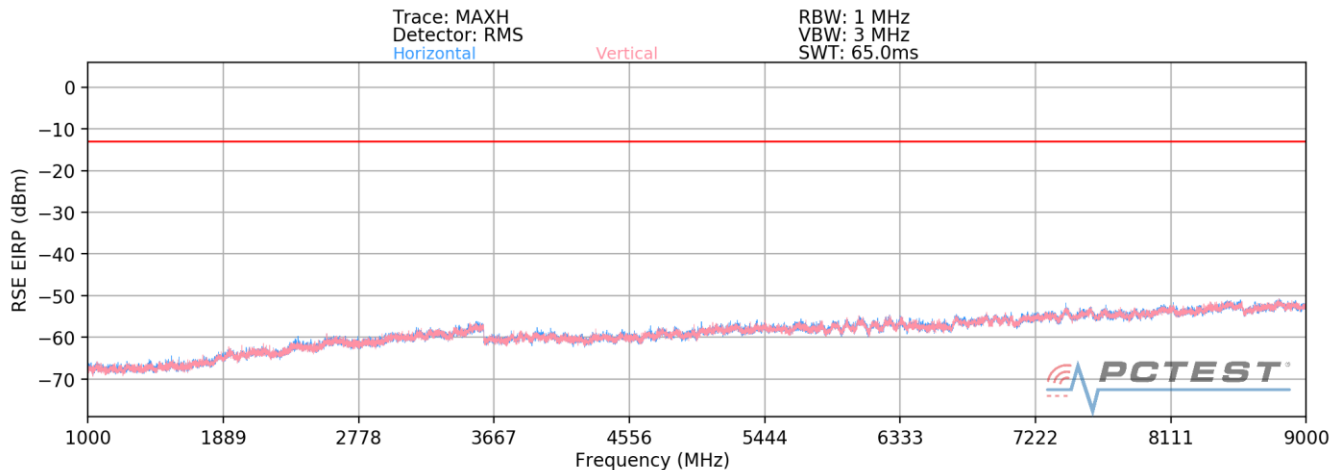
MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

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]
1559.00	V	294	213	-71.92	8.54	-63.38	-23.4

Table 7-37. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 373 of 438

Band 5



Plot 7-630. Radiated Spurious Plot above 1GHz (Band 5)

OPERATING FREQUENCY: 829.00 MHz
MODULATION SIGNAL: _____
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	125	39	-66.41	3.80	-62.61	-49.6
2487.00	V	133	33	-53.88	4.34	-49.55	-36.5
3316.00	V	-	-	-62.84	6.51	-56.33	-43.3

Table 7-38. Radiated Spurious Data (Band 5 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 374 of 438

OPERATING FREQUENCY: 836.50 MHz

MODULATION SIGNAL: _____

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]
1673.00	V	137	49	-64.90	3.69	-61.21	-48.2
2509.50	V	129	30	-52.56	4.20	-48.36	-35.4
3346.00	V	-	-	-62.83	6.55	-56.28	-43.3
4182.50	V	-	-	-67.11	7.97	-59.14	-46.1

Table 7-39. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY: 844.00 MHz

MODULATION SIGNAL: _____

BANDWIDTH: 10.0 MHz

DISTANCE: 3 meters

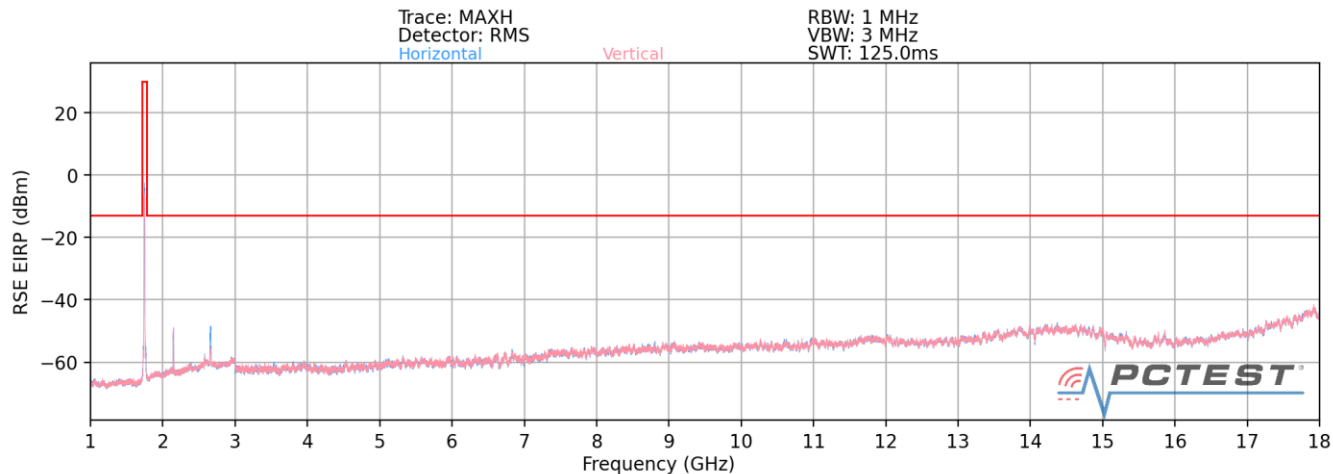
LIMIT: -13 dBm

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	120	352	-62.98	3.70	-59.28	-46.3
2532.00	V	125	18	-50.82	4.36	-46.46	-33.5
3376.00	V	-	-	-59.92	6.60	-53.32	-40.3
4220.00	V	-	-	-63.79	8.03	-55.76	-42.8

Table 7-40. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 375 of 438

Band 66/4



Plot 7-631. 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	111	313	-60.91	9.87	-51.03	-38.0
5160.00	H	357	300	-49.64	10.74	-38.90	-25.9
6880.00	H	-	-	-68.39	11.71	-56.68	-43.7
8600.00	H	327	282	-64.83	11.11	-53.72	-40.7
10320.00	H	217	166	-63.28	12.42	-50.86	-37.9
12040.00	H	201	146	-54.75	12.75	-42.00	-29.0
13760.00	H	-	-	-60.31	12.03	-48.27	-35.3

Table 7-41. Radiated Spurious Data (Band 66/4 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 376 of 438

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	113	312	-63.90	9.94	-53.96	-41.0
5235.00	H	351	209	-49.33	10.76	-38.57	-25.6
6980.00	H	-	-	-69.89	11.85	-58.03	-45.0
8725.00	H	392	279	-65.11	11.03	-54.08	-41.1
10470.00	H	207	175	-64.82	12.64	-52.18	-39.2
12215.00	H	252	158	-57.45	13.15	-44.30	-31.3
13960.00	H	-	-	-59.90	11.90	-48.00	-35.0

Table 7-42. Radiated Spurious Data (Band 66/4 – Mid Channel)

OPERATING FREQUENCY: 1770.00 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 20.0 MHz

DISTANCE: 3 meters

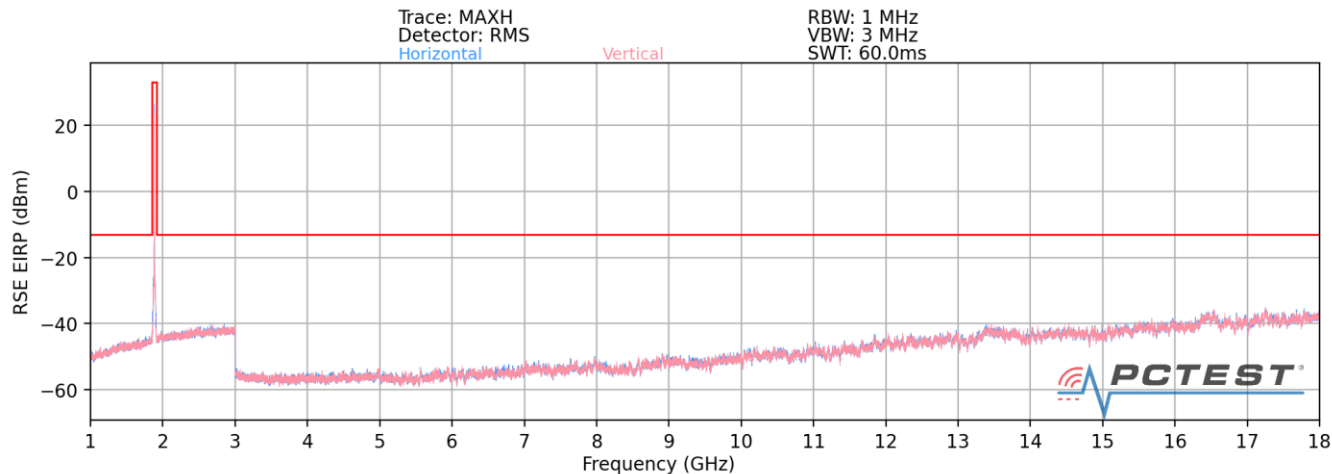
LIMIT: -13 dBm

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	111	70	-45.70	9.92	-35.78	-22.8
5310.00	H	112	257	-53.45	10.72	-42.74	-29.7
7080.00	H	117	248	-48.94	11.82	-37.13	-24.1
8850.00	H	118	292	-62.17	11.02	-51.15	-38.2
10620.00	H	382	41	-50.77	12.62	-38.16	-25.2
12390.00	H	281	356	-59.15	13.39	-45.75	-32.8
14160.00	H	-	-	-58.94	11.58	-47.36	-34.4
15930.00	H	-	-	-67.94	16.80	-51.14	-38.1
17700.00	H	-	-	-53.44	10.57	-42.88	-29.9

Table 7-43. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 377 of 438

Band 25/2



Plot 7-632. 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	112	254	-65.01	9.54	-55.47	-42.5
5580.00	H	113	324	-63.78	11.02	-52.77	-39.8

Table 7-44. Radiated Spurious Data (Band 25/2 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 378 of 438

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	114	270	-66.76	9.39	-57.38	-44.4
5647.50	H	112	70	-61.02	11.22	-49.80	-36.8
7530.00	H	-	-	-63.68	11.16	-52.51	-39.5
9412.50	H	248	313	-61.07	11.60	-49.47	-36.5
11295.00	H	-	-	-62.09	12.78	-49.31	-36.3

Table 7-45. Radiated Spurious Data (Band 25/2 – Mid Channel)

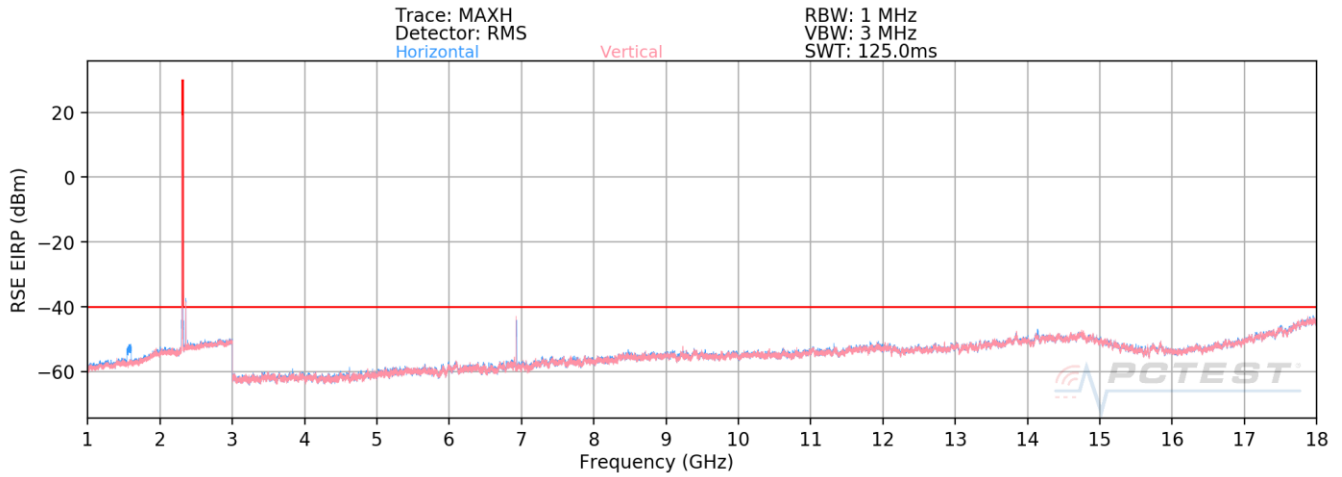
OPERATING FREQUENCY: 1905.00 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

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	112	75	-63.32	9.32	-54.00	-41.0
5715.00	H	111	255	-56.12	11.38	-44.75	-31.7
7620.00	H	-	-	-67.49	12.38	-55.12	-42.1
9525.00	H	-	-	-63.89	11.32	-52.58	-39.6
11430.00	H	112	63	-54.91	11.76	-43.15	-30.1
13335.00	H	364	52	-53.42	12.87	-40.55	-27.6
15240.00	H	-	-	-62.12	12.84	-49.28	-36.3
17145.00	H	-	-	-61.19	14.83	-46.35	-33.4

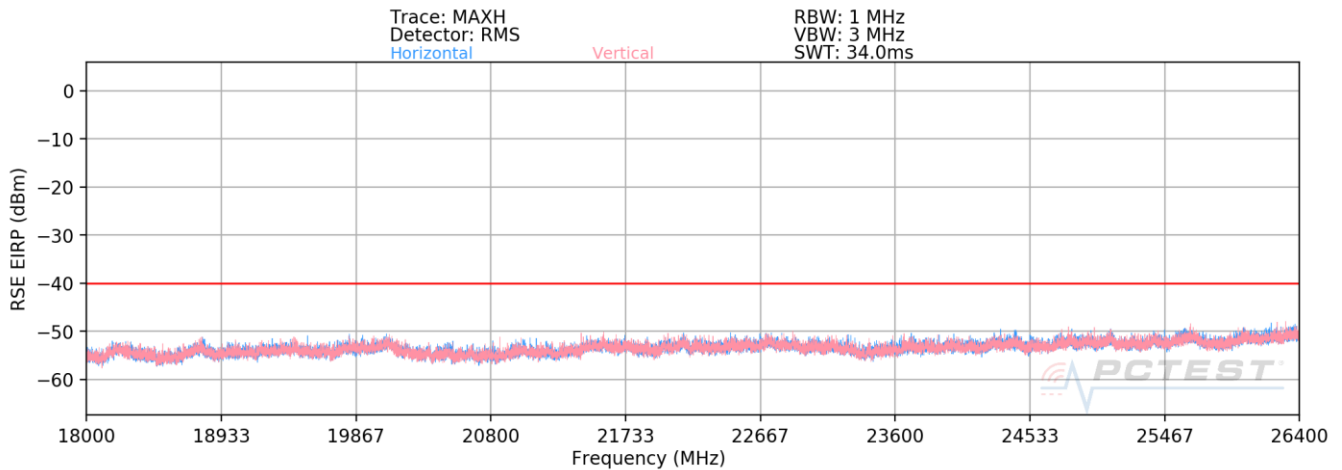
Table 7-46. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 379 of 438

Band 30



Plot 7-633. Radiated Spurious Plot 1GHz - 18GHz (Band 30)



Plot 7-634. Radiated Spurious Plot 18GHz - 26.5GHz (Band 30)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 380 of 438

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	126	359	-67.57	10.95	-56.63	-16.6
6930.00	V	314	4	-55.83	11.77	-44.06	-4.1
9240.00	V	135	43	-66.61	11.65	-54.96	-15.0
11550.00	V	393	12	-68.15	12.76	-55.39	-15.4
13860.00	V	334	357	-60.35	12.04	-48.31	-8.3
16170.00	V	-	-	-72.75	16.64	-56.10	-16.1

Table 7-47. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY: 2310.00 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 10.0 MHz

DISTANCE: 3 meters

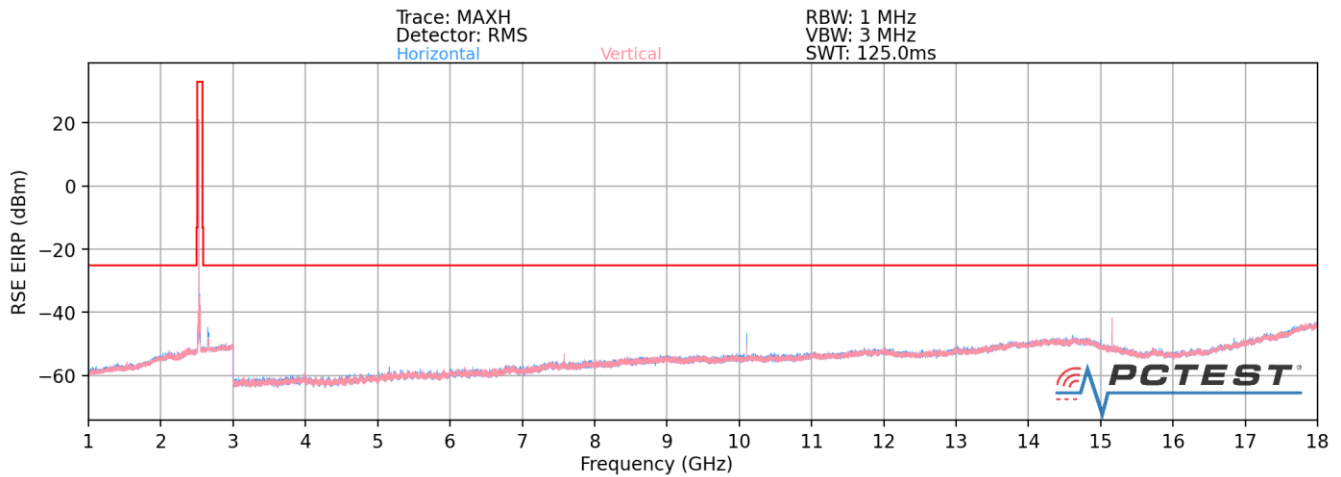
LIMIT: -40 dBm

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	H	107	199	-60.61	8.44	-52.17	-12.2
6930.00	H	144	13	-53.81	9.51	-44.31	-4.3
9240.00	H	100	184	-60.18	9.54	-50.64	-10.6
11550.00	H	-	-	-58.47	9.56	-48.91	-8.9

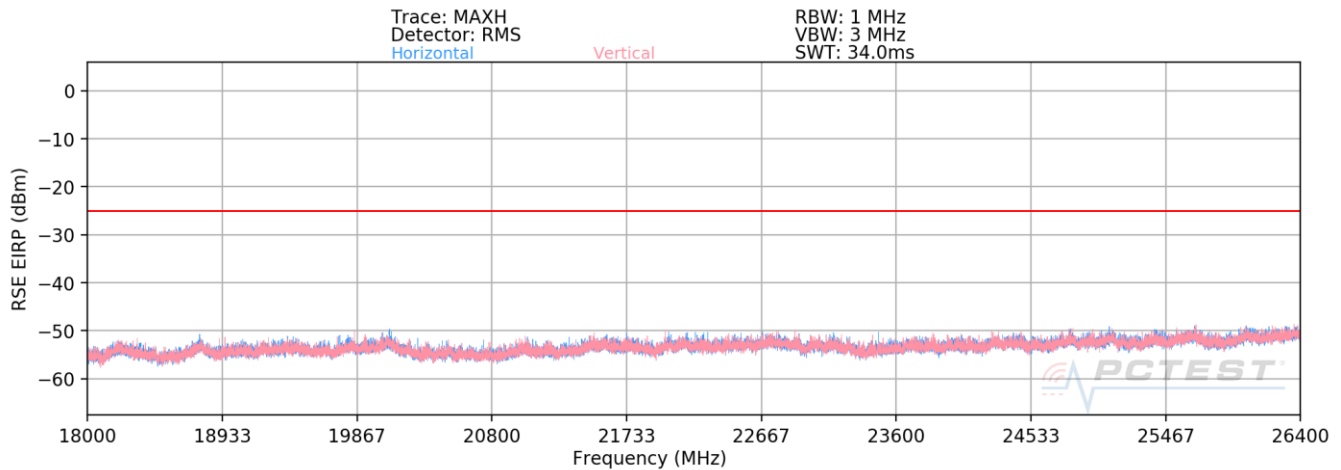
Table 7-48. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 381 of 438

Band 7



Plot 7-635. Radiated Spurious Plot 1GHz - 18GHz (Band 7)



Plot 7-636. Radiated Spurious Plot 18GHz - 26.5GHz (Band 7)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 382 of 438

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	304	34	-64.19	8.86	-55.33	-30.3
7530.00	H	346	356	-59.37	9.44	-49.92	-24.9
10040.00	H	218	286	-59.46	9.55	-49.91	-24.9
12550.00	H	153	335	-60.23	9.30	-50.93	-25.9
15060.00	V	305	36	-51.96	9.07	-42.90	-17.9
17570.00	H	-	-	-56.22	8.44	-47.78	-22.8

Table 7-49. 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	H	292	36	-66.73	8.94	-57.79	-32.8
7605.00	H	345	5	-61.16	9.37	-51.79	-26.8
10140.00	H	214	289	-55.80	9.59	-46.21	-21.2
12675.00	H	150	336	-61.90	9.27	-52.63	-27.6
15210.00	V	301	33	-51.94	8.98	-42.96	-18.0
17745.00	H	-	-	-52.87	8.52	-44.35	-19.4

Table 7-50. Radiated Spurious Data (Band 7 – Mid Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 383 of 438

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	H	334	44	-68.49	9.01	-59.48	-34.5
7680.00	H	349	3	-59.03	9.40	-49.63	-24.6
10240.00	H	203	293	-55.38	9.56	-45.82	-20.8
12800.00	H	206	345	-61.54	9.28	-52.25	-27.3
15360.00	V	116	339	-51.09	8.86	-42.24	-17.2
17920.00	H	-	-	-52.36	8.49	-43.87	-18.9

Table 7-51. Radiated Spurious Data (Band 7 – High Channel)

OPERATING FREQUENCY: 2560.00 MHz

MODULATION SIGNAL: QPSK

BANDWIDTH: 20.0 MHz

DISTANCE: 3 meters

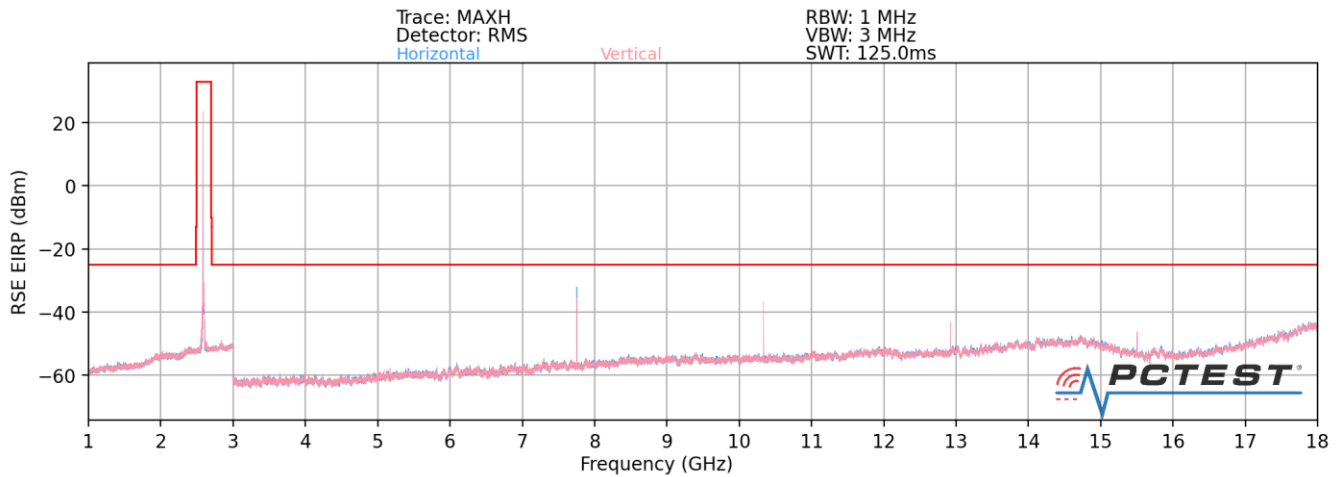
LIMIT: -25 dBm

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	115	187	-68.63	8.86	-59.77	-34.8
7680.00	V	100	141	-48.43	9.44	-38.98	-14.0
10240.00	V	142	356	-54.20	9.55	-44.65	-19.6
12800.00	V	230	228	-59.87	9.30	-50.57	-25.6
15360.00	V	237	225	-57.79	9.07	-48.73	-23.7
17920.00	V	-	-	-55.34	8.44	-46.90	-21.9

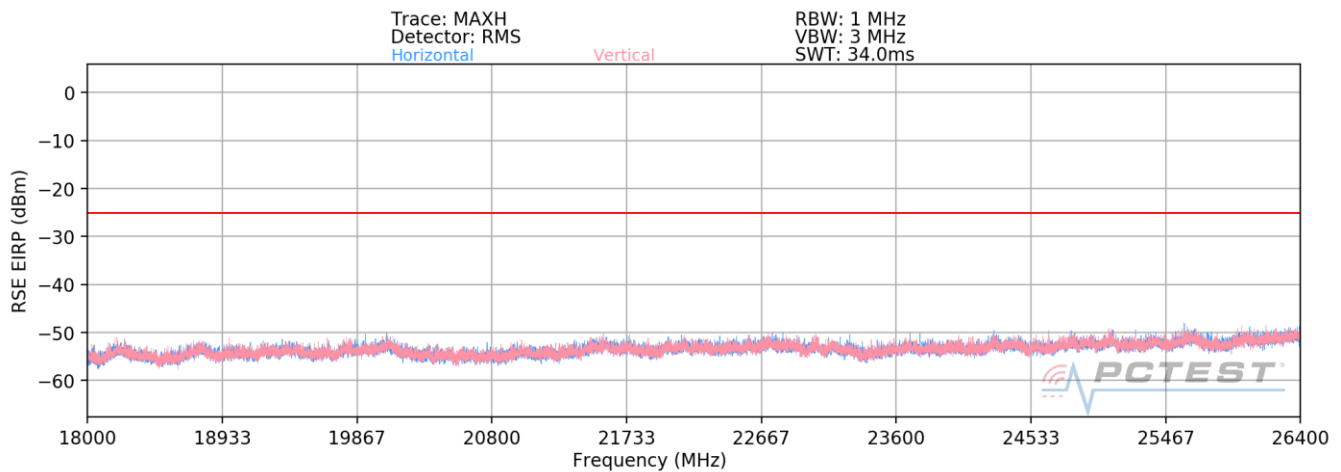
Table 7-52. Radiated Spurious Data with WCP (Band 7 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 384 of 438

Band 41



Plot 7-637. Radiated Spurious Plot 1GHz - 18GHz (Band 41)



Plot 7-638. Radiated Spurious Plot 18GHz - 26.5GHz (Band 41)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 385 of 438

OPERATING FREQUENCY: 2506.00 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]
5012.00	H	358	39	-67.35	8.85	-58.50	-33.5
7518.00	H	350	357	-49.41	9.44	-39.97	-15.0
10024.00	H	193	292	-58.07	9.54	-48.53	-23.5
12530.00	H	202	349	-46.21	9.29	-36.92	-11.9
15036.00	H	119	39	-54.96	9.09	-45.87	-20.9
17542.00	H	-	-	-52.36	8.46	-43.91	-18.9

Table 7-53. Radiated Spurious Data (Band 41 – 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	369	252	-66.35	9.13	-57.22	-32.2
7779.00	H	256	358	-41.51	9.38	-32.14	-7.1
10372.00	H	210	16	-57.64	9.52	-48.11	-23.1
12965.00	H	197	350	-57.07	9.17	-47.90	-22.9
15558.00	H	199	287	-55.75	8.75	-47.00	-22.0

Table 7-54. Radiated Spurious Data (Band 41 – Mid Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 386 of 438

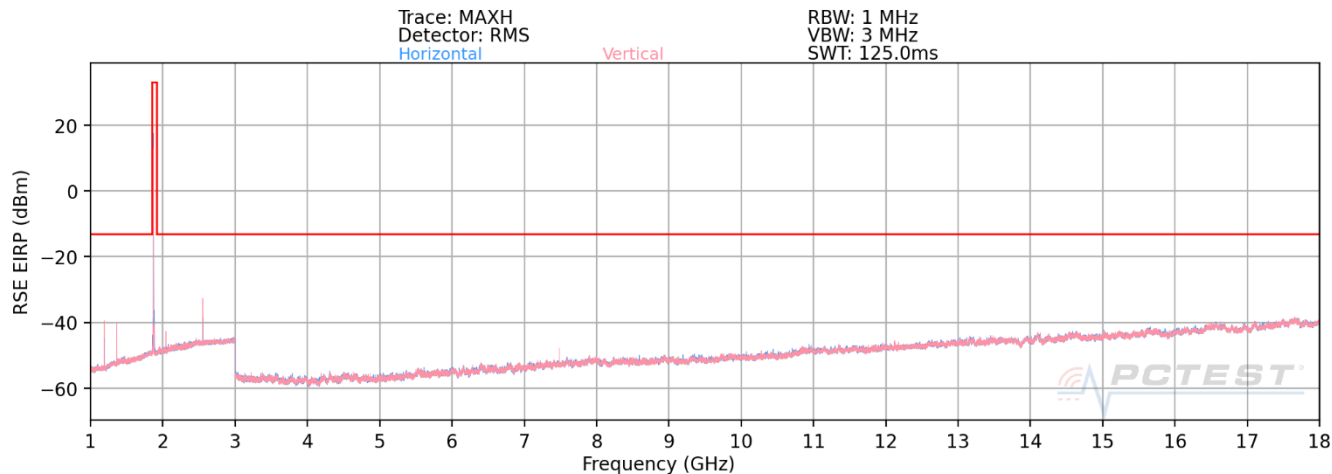
OPERATING FREQUENCY: 2680.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -25 dBm

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	358	106	-67.86	9.13	-58.73	-33.7
8040.00	H	345	11	-38.88	9.41	-29.47	-4.5
10720.00	H	256	14	-53.93	9.49	-44.44	-19.4
13400.00	H	222	20	-56.74	9.03	-47.71	-22.7
16080.00	H	180	296	-58.42	9.01	-49.41	-24.4

Table 7-55. Radiated Spurious Data (Band 41 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 387 of 438

5G sub6 EN-DC n71 + LTE B2



Plot 7-639. Radiated Spurious Plot above 1GHz (5G sub6 n71)

5G OPERATING FREQUENCY: 673.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1860
LTE MODULATION SIGNAL: QPSK
LTE 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	H	-	-	-68.18	3.15	-65.03	-52.0
2692.00	H	-	-	-64.25	4.77	-59.48	-46.5
3720.00	H	394	133	-54.97	6.58	-48.39	-35.4
5580.00	H	270	40	-58.33	8.74	-49.60	-36.6
7440.00	H	109	356	-41.48	8.41	-33.07	-20.1
9300.00	H	-	-	-59.30	9.33	-49.97	-37.0

Table 7-56. Radiated Spurious Data (5G sub6 n71 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 388 of 438

5G OPERATING FREQUENCY: 680.50 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1880
LTE MODULATION SIGNAL: QPSK
LTE 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	H	-	-	-68.66	3.04	-65.62	-52.6
2041.50	H	-	-	-64.93	3.49	-61.44	-48.4
3760.00	H	382	138	-53.61	6.67	-46.94	-33.9
5640.00	H	243	21	-56.44	8.81	-47.63	-34.6
7520.00	H	115	308	-40.23	8.48	-31.74	-18.7
9400.00	H	-	-	-59.72	9.32	-50.40	-37.4

Table 7-57. Radiated Spurious Data (5G sub6 n71 – Mid Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 389 of 438

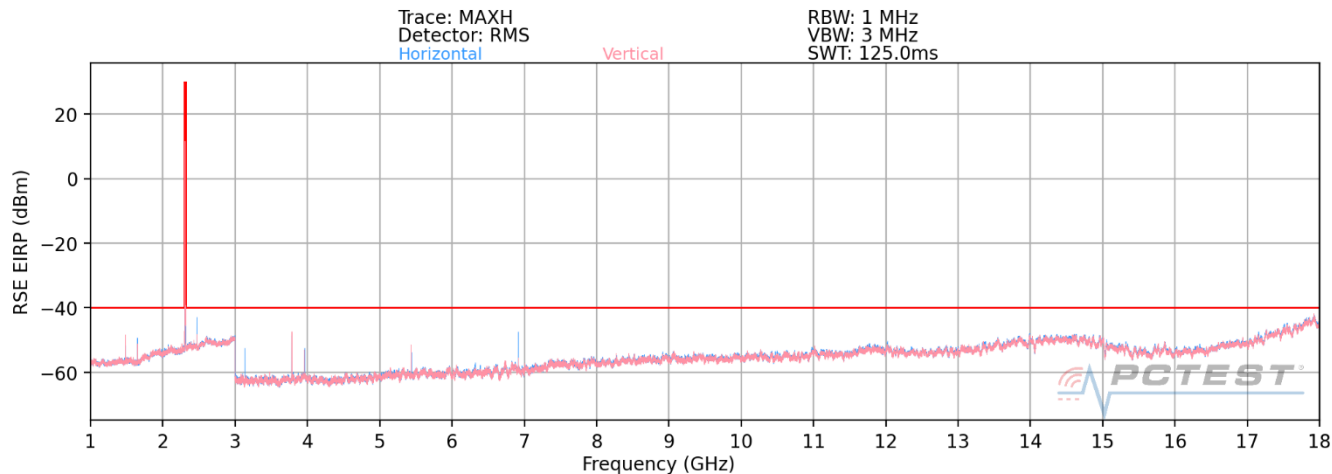
5G OPERATING FREQUENCY: 688.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1900
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

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	H	-	-	-68.33	2.88	-65.45	-52.5
2064.00	H	-	-	-64.75	3.50	-61.25	-48.2
3800.00	H	236	108	-53.51	6.87	-46.63	-33.6
5700.00	H	226	56	-53.69	8.76	-44.93	-31.9
7600.00	H	137	304	-42.16	8.47	-33.69	-20.7
9500.00	H	-	-	-59.07	9.37	-49.70	-36.7

Table 7-58. Radiated Spurious Data (5G sub6 n71 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 390 of 438

5G sub6 EN-DC n5 + B30



Plot 7-640. Radiated Spurious Plot above 1GHz (5G sub6 n5)

5G OPERATING FREQUENCY: 829.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 10.0 MHz
LTE OPERATING FREQUENCY: 2310.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -40 / -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	387	107	-74.67	3.61	-71.06	-58.1
2487.00	V	154	197	-67.75	4.25	-63.51	-50.5
4620.00	V	150	15	-61.68	1.96	-59.72	-19.7
6930.00	V	400	349	-67.86	3.61	-64.25	-24.3
9240.00	V	114	16	-58.67	4.25	-54.42	-14.4
11550.00	V	-	-	-54.43	4.25	-50.19	-10.2

Table 7-59. Radiated Spurious Data (5G sub6 n5 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 391 of 438

5G OPERATING FREQUENCY: 836.50 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 10.0 MHz
LTE OPERATING FREQUENCY: 2310.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -40 / -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	253	120	-73.33	3.62	-69.72	-56.7
2509.50	V	162	186	-69.74	4.33	-65.40	-52.4
4620.00	V	148	25	-66.56	8.26	-58.30	-18.3
6930.00	V	387	341	-66.26	8.72	-57.55	-17.5
9240.00	V	193	13	-59.35	9.49	-49.86	-9.9
11550.00	V	-	-	-56.39	9.83	-46.56	-6.6

Table 7-60. Radiated Spurious Data (5G sub6 n5 – Mid Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 392 of 438

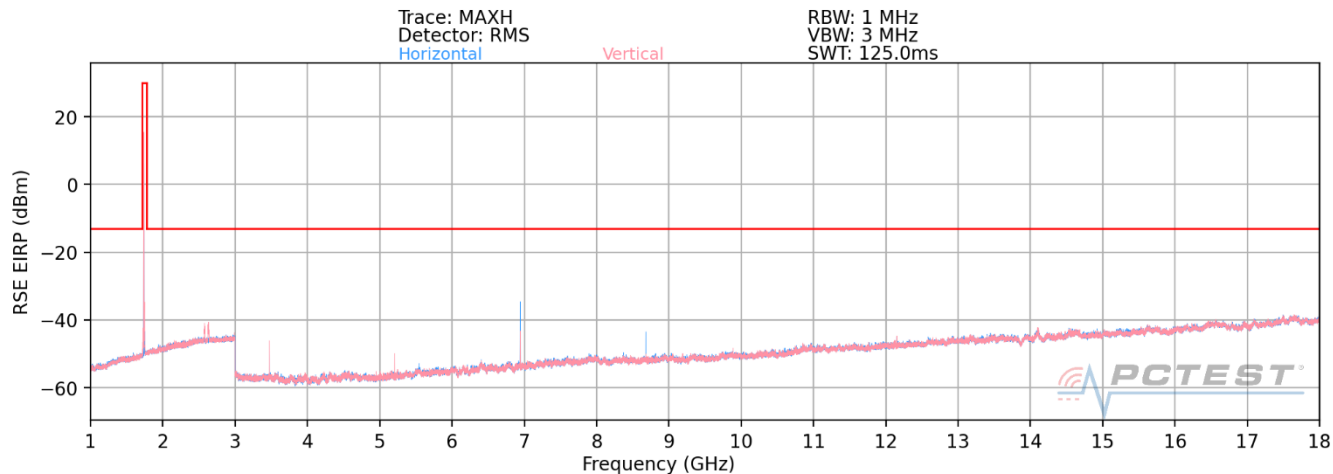
5G OPERATING FREQUENCY: 844.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 10.0 MHz
LTE OPERATING FREQUENCY: 2310.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -40 / -13 dBm

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	351	112	-73.42	3.63	-69.79	-56.8
2532.00	V	120	218	-69.16	4.47	-64.69	-51.7
4620.00	V	138	13	-65.42	6.05	-59.37	-19.4
6930.00	V	393	2	-74.12	7.75	-66.37	-26.4
9240.00	V	248	128	-65.34	8.59	-56.75	-16.7
11550.00	V	-	-	-58.74	8.89	-49.85	-9.9

Table 7-61. Radiated Spurious Data (5G sub6 n5 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 393 of 438

5G sub6 EN-DC n66 + LTE B5



Plot 7-641. Radiated Spurious Plot above 1GHz (5G sub6 n66)

5G OPERATING FREQUENCY: 1720.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 829.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE 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]
3440.00	H	-	-	-55.32	6.22	-49.10	-36.1
5160.00	H	239	110	-54.31	8.68	-45.63	-32.6
6880.00	H	-	-	-52.67	8.76	-43.92	-30.9

Table 7-62. Radiated Spurious Data (5G sub6 n66 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 394 of 438

5G OPERATING FREQUENCY: 1745.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 836.50 MHz
LTE MODULATION SIGNAL: QPSK
LTE 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]
3490.00	H	-	-	-55.44	6.32	-49.12	-36.1
5235.00	H	202	123	-54.09	8.71	-45.38	-32.4
6980.00	H	-	-	-52.56	8.74	-43.82	-30.8

Table 7-63. Radiated Spurious Data (5G sub6 n66 – Mid Channel)

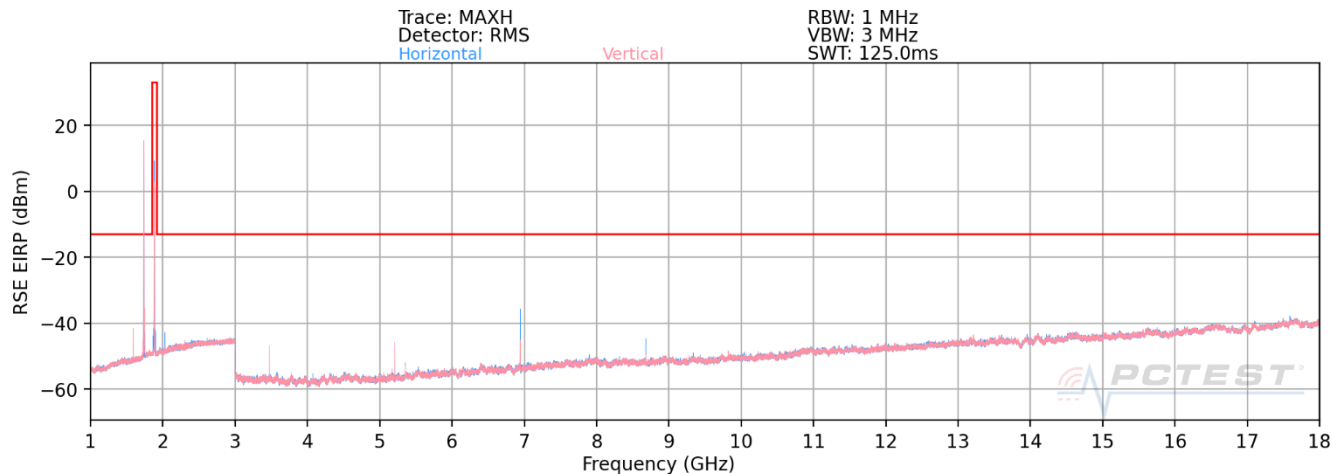
5G OPERATING FREQUENCY: 1770.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 844.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

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]
3540.00	H	-	-	-55.79	6.31	-49.48	-36.5
5310.00	H	228	135	-54.20	8.74	-45.46	-32.5
7080.00	H	-	-	-51.79	8.66	-43.13	-30.1

Table 7-64. Radiated Spurious Data (5G sub6 n66 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 395 of 438

5G sub6 EN-DC n25 + LTE B66



Plot 7-642. Radiated Spurious Plot above 1GHz (5G sub6 n25)

5G OPERATING FREQUENCY: 1860.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1720.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE 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	117	122	-58.87	6.68	-52.18	-39.2
5160.00	H	136	118	-49.80	8.97	-40.82	-27.8
7020.00	H	135	138	-57.91	9.41	-48.50	-35.5
8740.00	H	-	-	-58.62	9.56	-49.06	-36.1

Table 7-65. Radiated Spurious Data (5G sub6 n25 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 396 of 438

5G OPERATING FREQUENCY: 1882.50 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1745.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE 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	126	108	-58.23	6.82	-51.42	-38.4
5235.00	H	142	91	-49.97	9.03	-40.94	-27.9
6980.00	H	153	285	-58.08	9.45	-48.63	-35.6
8725.00	H	-	-	-57.37	9.58	-47.79	-34.8

Table 7-66. Radiated Spurious Data (5G sub6 n25 – Mid Channel)

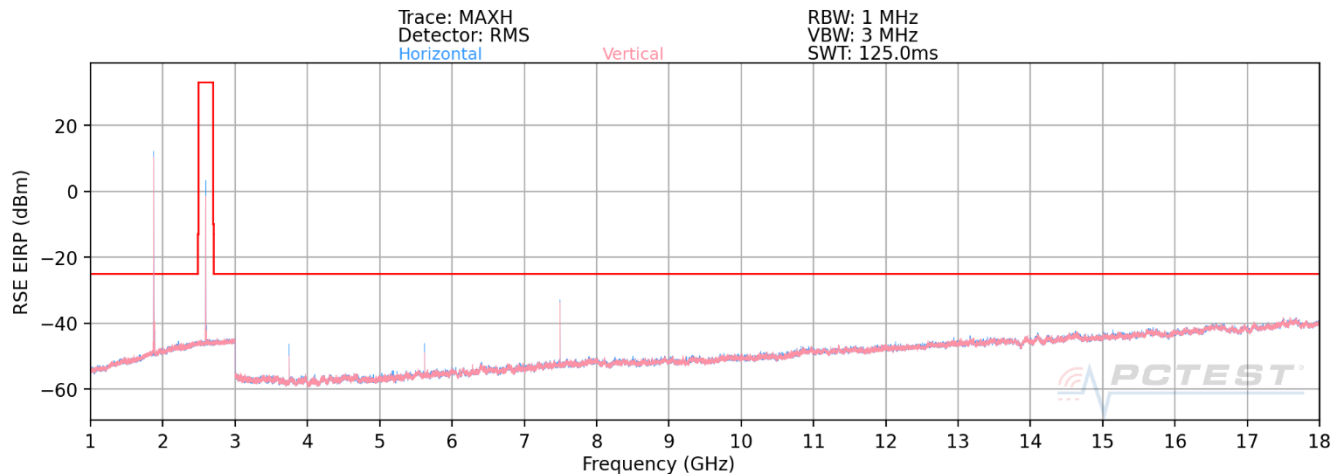
5G OPERATING FREQUENCY: 1905.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1770.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

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	138	147	-57.14	6.76	-50.38	-37.4
5310.00	H	127	103	-48.16	9.00	-39.16	-26.2
7080.00	H	137	140	-56.98	9.39	-47.59	-34.6
8850.00	H	-	-	-57.03	9.55	-47.48	-34.5

Table 7-67. Radiated Spurious Data (5G sub6 n25 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 397 of 438

5G sub6 EN-DC n41 + LTE B2



Plot 7-643. Radiated Spurious Plot 1GHz - 18GHz (5G sub6 n41)

5G OPERATING FREQUENCY: 2506.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1860.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -13 / -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	262	50	-63.23	8.67	-54.56	-29.6
7518.00	H	-	-	-67.83	9.29	-58.54	-33.5
3720.00	H	270	41	-52.98	7.21	-45.77	-32.8
5580.00	H	292	114	-59.54	9.28	-50.26	-37.3
7440.00	H	150	131	-59.82	9.26	-50.56	-37.6
9300.00	H	-	-	-59.82	9.39	-50.43	-37.4

Table 7-68. Radiated Spurious Data (5G sub6 n41 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 398 of 438

5G OPERATING FREQUENCY: 2593.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1880.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -13 / -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	246	28	-63.53	9.04	-54.49	-29.5
7779.00	H	-	-	-66.34	9.27	-57.07	-32.1
3760.00	H	149	38	-53.67	7.24	-46.44	-33.4
5640.00	H	256	106	-56.81	9.30	-47.51	-34.5
7520.00	H	142	130	-57.92	9.29	-48.63	-35.6
9400.00	H	-	-	-58.60	9.42	-49.18	-36.2

Table 7-69. Radiated Spurious Data (5G sub6 n41 – Mid Channel)

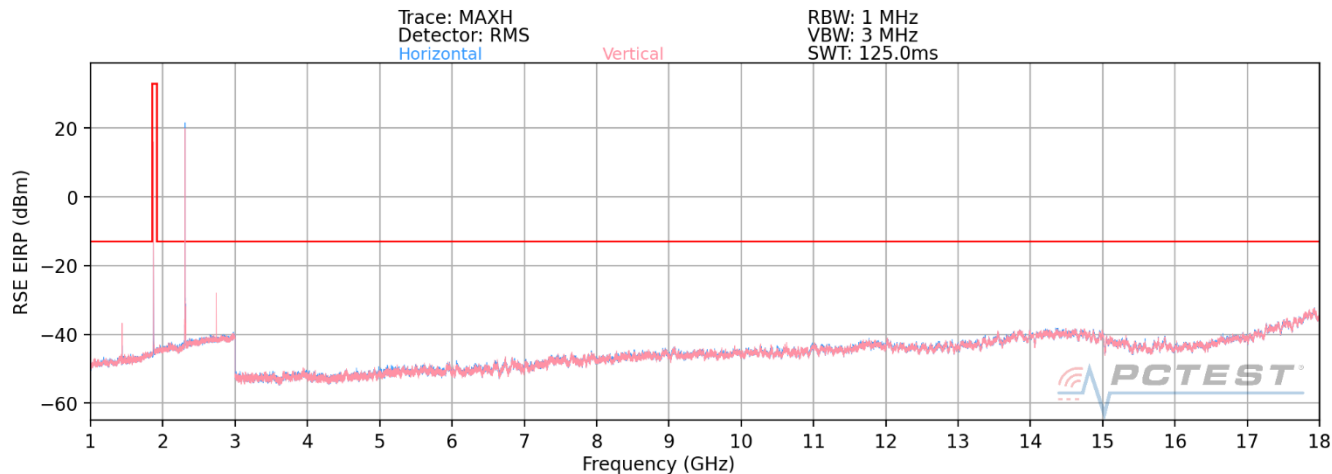
5G OPERATING FREQUENCY: 2560.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 1900.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -13 / -25 dBm

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	H	238	74	-62.04	8.89	-53.15	-28.2
7680.00	H	-	-	-66.81	9.28	-57.53	-32.5
3800.00	H	264	30	-52.96	7.26	-45.70	-32.7
5700.00	H	276	116	-61.81	9.28	-52.53	-39.5
7600.00	H	160	108	-58.33	9.26	-49.08	-36.1

Table 7-70. Radiated Spurious Data (5G sub6 n41 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 399 of 438

5G sub6 EN-DC n2 + LTE B30



Plot 7-644. Radiated Spurious Plot above 1GHz (5G sub6 n2)

5G OPERATING FREQUENCY: 1860.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 2310.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE 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]
1410.00	H	145	157	-39.39	2.81	-36.57	-23.6
2760.00	H	138	38	-45.63	5.05	-40.58	-27.6
4620.00	V	108	140	-58.87	8.32	-50.54	-10.5
6930.00	V	137	210	-59.03	8.62	-50.41	-10.4
9240.00	V	161	301	-59.20	9.48	-49.72	-9.7
11550.00	V	-	-	-59.58	9.28	-50.30	-10.3

Table 7-71. Radiated Spurious Data (5G sub6 n2 – Low Channel)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 400 of 438

5G OPERATING FREQUENCY: 1880.00 MHz
5G MODULATION SIGNAL: QPSK
5G BANDWIDTH: 20.0 MHz
LTE OPERATING FREQUENCY: 2310.00 MHz
LTE MODULATION SIGNAL: QPSK
LTE 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]
1450.00	H	175	136	-40.72	3.46	-37.26	-24.3
2740.00	H	126	41	-41.39	4.98	-36.41	-23.4
4620.00	V	113	156	-58.35	8.32	-50.02	-10.0
6930.00	V	121	192	-58.17	8.62	-49.55	-9.5
9240.00	V	112	315	-56.69	9.48	-47.21	-7.2
11550.00	V	-	-	-58.89	9.28	-49.61	-9.6

Table 7-72. Radiated Spurious Data (5G sub6 n2 – Mid Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 401 of 438

5G OPERATING FREQUENCY: 1900.00 MHz
 5G MODULATION SIGNAL: QPSK
 5G BANDWIDTH: 20.0 MHz
 LTE OPERATING FREQUENCY: 2310.00 MHz
 LTE MODULATION SIGNAL: QPSK
 LTE 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]
1490.00	H	132	105	-39.18	3.69	-35.49	-22.5
2720.00	H	120	57	-40.18	5.02	-35.16	-22.2
4620.00	V	176	146	-59.97	8.32	-51.64	-11.6
6930.00	V	102	185	-65.14	8.62	-56.52	-16.5
9240.00	V	354	299	-62.23	9.48	-52.75	-12.8
11550.00	V	-	-	-59.67	9.28	-50.39	-10.4

Table 7-73. Radiated Spurious Data (5G sub6 n2 – High Channel)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 402 of 438

7.10 Uplink Carrier Aggregation Radiated Measurements

§2.1053,

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: ZNFG900UM	 PCTEST [®] Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 403 of 438

Test Setup

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

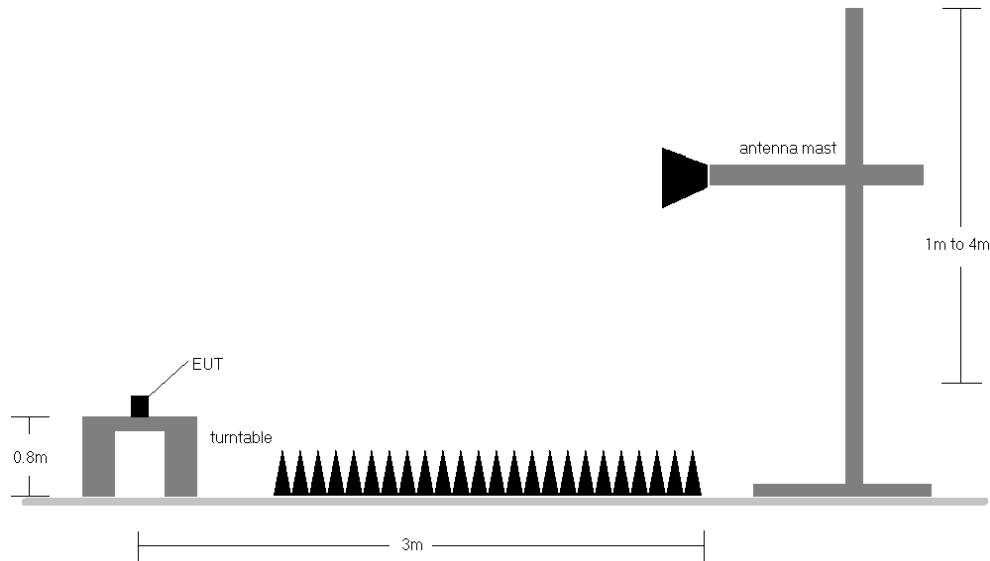
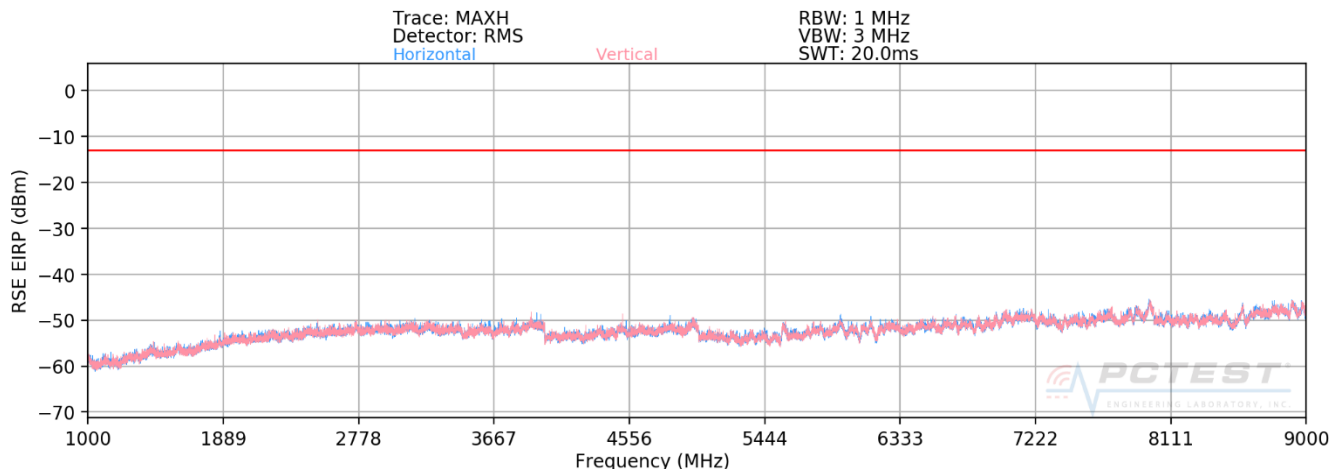


Figure 7-10. Test Instrument & Measurement Setup

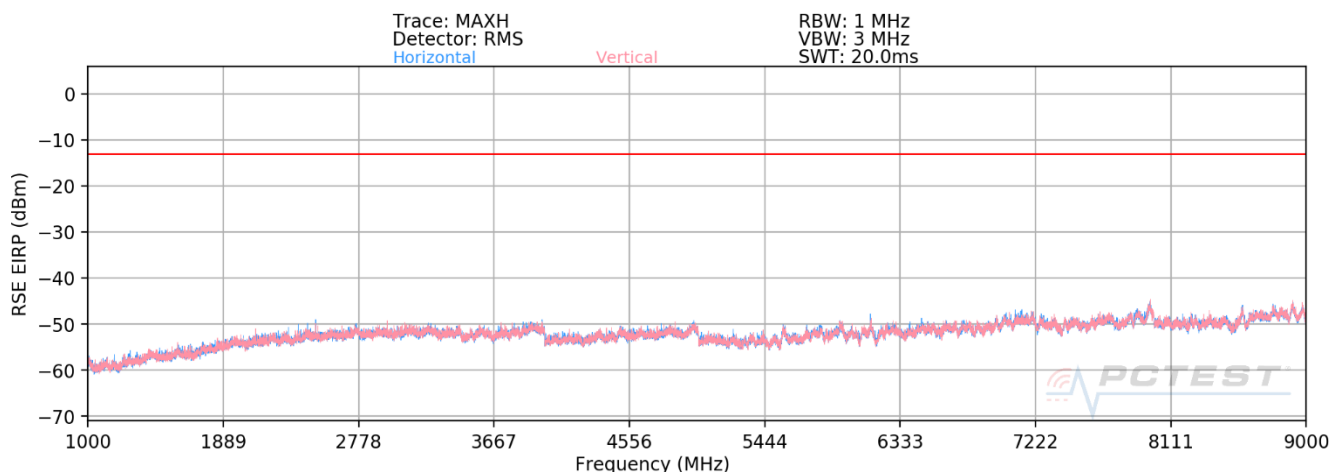
Test Notes

- 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.

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 404 of 438



Plot 7-74. Radiated Spurious Plot (ULCA B5 PCC: RB 50 Offset 0, SCC: RB 50 Offset 0)



Plot 7-75. Radiated Spurious Plot (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

OPERATING FREQUENCY (PCC): 829.00 MHz
 OPERATING FREQUENCY (SCC): 838.90 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]
1658.00	V	400	143	-71.14	8.99	-62.15	-49.2
2487.00	V	111	261	-69.86	9.16	-60.71	-47.7

Plot 7-76. Radiated Spurious Data – Low (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 405 of 438

OPERATING FREQUENCY (PCC): 831.50 MHz
 OPERATING FREQUENCY (SCC): 841.40 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

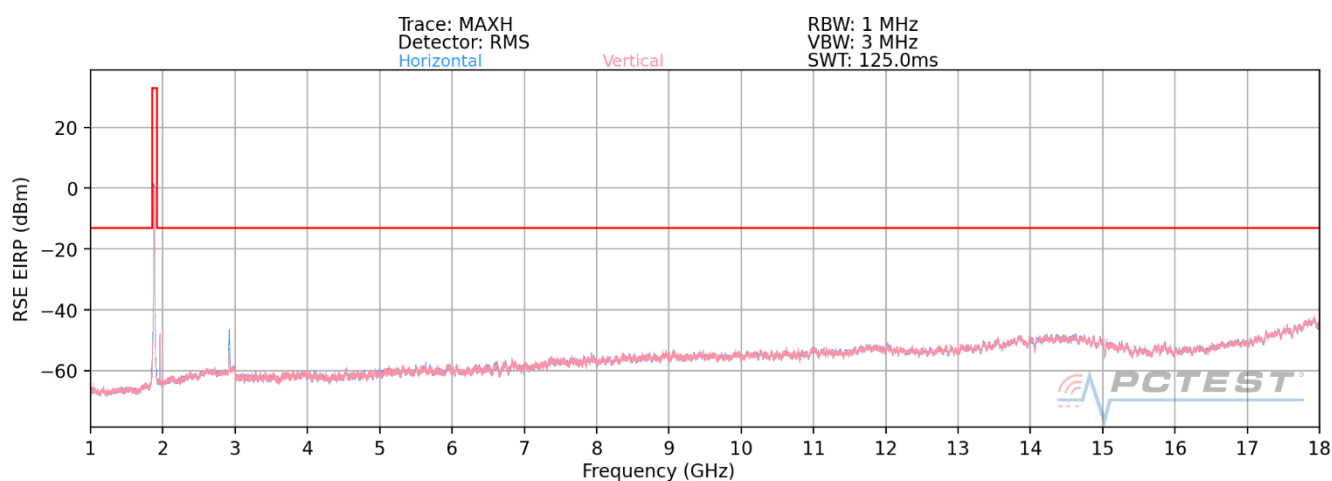
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1663.00	V	397	94	-76.11	8.95	-67.16	-54.2
2494.50	V	-	-	-73.89	9.16	-64.73	-51.7

Plot 7-77. Radiated Spurious Data – Mid (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

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

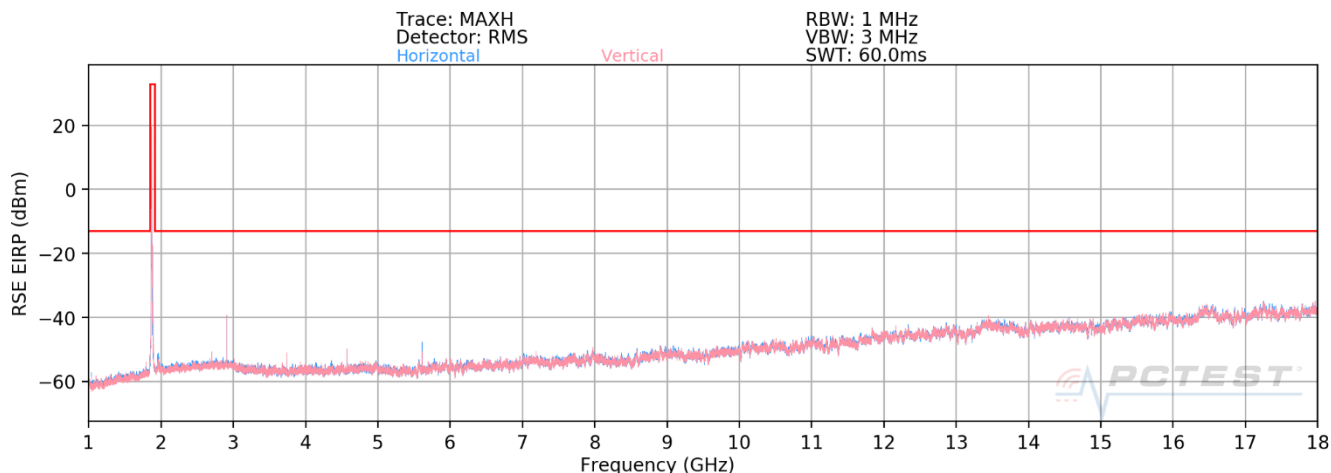
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	400	84	-75.58	8.77	-66.81	-53.8
2532.00	V	-	-	-72.78	9.27	-63.52	-50.5

Plot 7-78. Radiated Spurious Data – High (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)



Plot 7-79. Radiated Spurious Plot (ULCA 2A-5A PCC: RB 50 Offset 0, SCC: RB 50 Offset 0)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 406 of 438



Plot 7-80. Radiated Spurious Plot (ULCA 2A-5A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

OPERATING FREQUENCY (PCC): 1860.00 MHz
 OPERATING FREQUENCY (SCC): 829.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 + 10 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	400	7	-67.30	9.69	-57.61	-44.6
5580.00	H	394	0	-64.53	11.06	-53.47	-40.5
7440.00	H	112	135	-68.21	10.89	-57.32	-44.3
9300.00	H	-	-	-69.05	12.32	-56.73	-43.7

Plot 7-81. Radiated Spurious Data – Low (ULCA 2A-5A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 407 of 438

OPERATING FREQUENCY (PCC): 1880.00 MHz
 OPERATING FREQUENCY (SCC): 836.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 + 10 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]
3760.00	H	113	38	-65.01	9.53	-55.49	-42.5
5640.00	H	360	356	-64.78	11.19	-53.59	-40.6
7520.00	H	118	143	-68.33	11.06	-57.27	-44.3
9400.00	H	-	-	-68.41	12.22	-56.19	-43.2

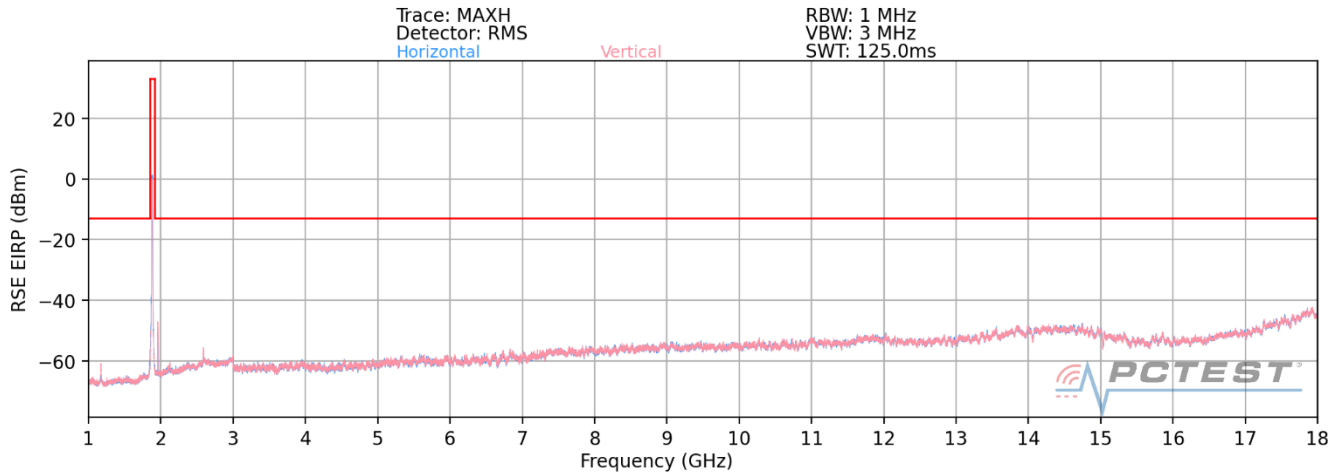
Plot 7-82. Radiated Spurious Data – Mid (ULCA 2A-5A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

OPERATING FREQUENCY (PCC): 1900.00 MHz
 OPERATING FREQUENCY (SCC): 846.50 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 + 10 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

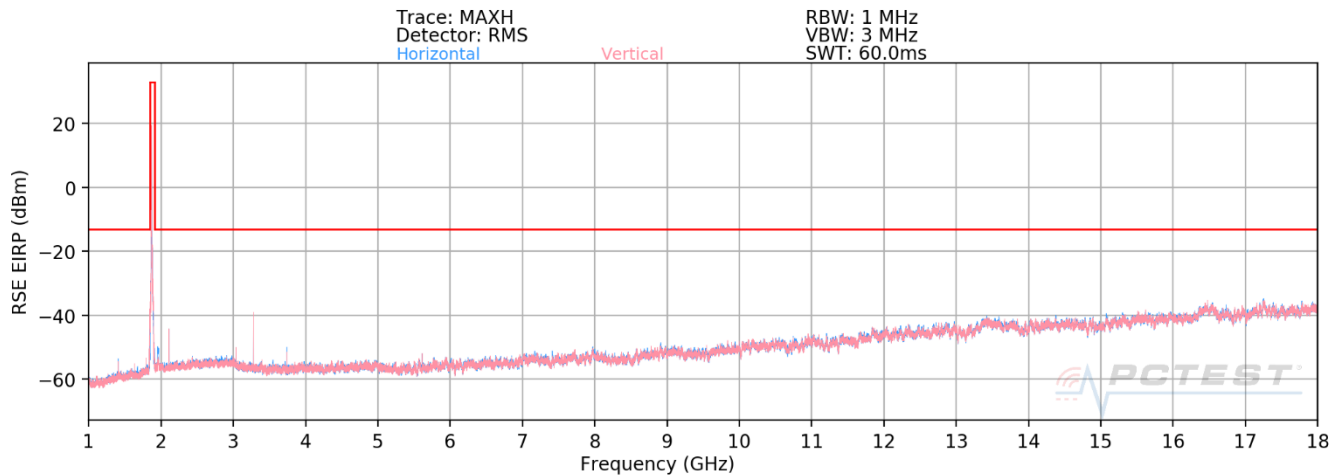
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3800.00	H	386	37	-68.68	9.38	-59.31	-46.3
5700.00	H	120	345	-62.75	11.32	-51.43	-38.4
7600.00	H	121	146	-65.97	11.24	-54.73	-41.7
9500.00	H	-	-	-68.84	12.23	-56.60	-43.6

Plot 7-83. Radiated Spurious Data – High (ULCA 2A-5A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 408 of 438



Plot 7-84. Radiated Spurious Plot (ULCA 2A-12A PCC: RB 50 Offset 0, SCC: RB 50 Offset 0)



Plot 7-85. Radiated Spurious Plot (ULCA 2A-12A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 409 of 438

OPERATING FREQUENCY (PCC): 704.00 MHz
 OPERATING FREQUENCY (SCC): 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]
1608.00	H	-	-	-77.37	8.85	-68.52	-55.5
3268.00	H	-	-	-70.03	9.40	-60.63	-47.6
2816.00	H	-	-	-73.77	10.13	-63.64	-50.6
5580.00	V	130	190	-59.75	11.06	-48.68	-35.7
7440.00	V	-	-	-63.31	10.89	-52.42	-39.4

Plot 7-86. Radiated Spurious Data – Low (ULCA 2A-12A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

OPERATING FREQUENCY (PCC): 707.50 MHz
 OPERATING FREQUENCY (SCC): 1880.00 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]
1637.50	H	-	-	-78.07	8.99	-69.08	-56.1
3295.00	H	-	-	-70.73	9.40	-61.34	-48.3
2830.00	H	-	-	-72.75	10.16	-62.59	-49.6
5640.00	V	106	172	-59.11	11.19	-47.91	-34.9
7520.00	V	-	-	-61.61	11.06	-50.55	-37.6

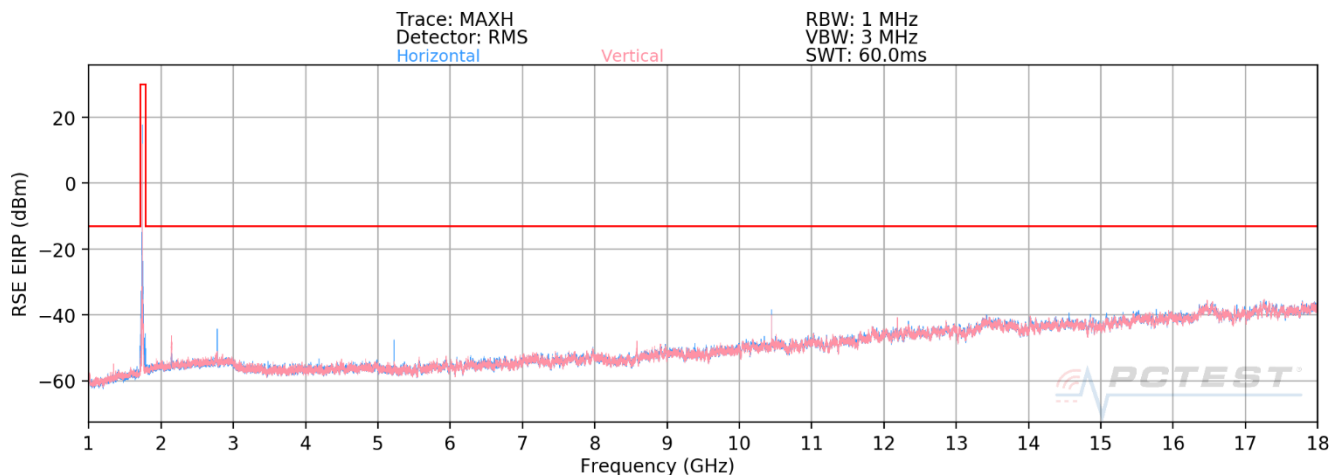
Plot 7-87. Radiated Spurious Data – Mid (ULCA 2A-12A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 410 of 438

OPERATING FREQUENCY (PCC): 711.00 MHz
 OPERATING FREQUENCY (SCC): 1900.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

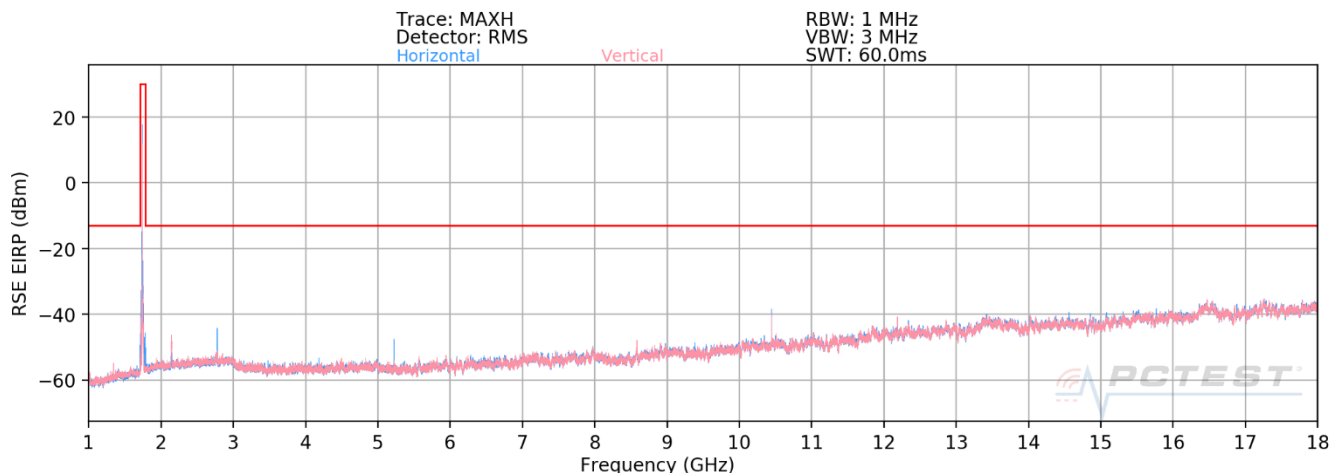
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1667.00	H	-	-	-76.90	8.92	-67.98	-55.0
3322.00	H	-	-	-71.74	9.39	-62.35	-49.3
2844.00	H	-	-	-73.81	10.19	-63.61	-50.6
5700.00	V	119	176	-59.53	11.32	-48.21	-35.2
7600.00	V	-	-	-64.53	11.24	-53.29	-40.3

Plot 7-88. Radiated Spurious Data – High (ULCA 2A-12A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)



Plot 7-89. Radiated Spurious Plot (ULCA 12A-66A PCC: RB 50 Offset 0, SCC: RB 50 Offset 0)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 411 of 438



Plot 7-90. Radiated Spurious Plot (ULCA 12A-66A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

OPERATING FREQUENCY (PCC): 714.50 MHz
 OPERATING FREQUENCY (SCC): 1770.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 + 20 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]
2143.50	H	-	-	-72.26	8.88	-63.37	-50.4
2843.30	H	101	180	-71.43	10.19	-61.24	-48.2
5310.00	H	-	-	-71.35	10.99	-60.36	-47.4
8850.00	H	-	-	-67.74	11.98	-55.76	-42.8
10620.00	H	-	-	-65.13	12.69	-52.44	-39.4
12390.00	H	-	-	-62.70	12.66	-50.03	-37.0

Plot 7-91. Radiated Spurious Data – Low (ULCA 12A-66A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 412 of 438

OPERATING FREQUENCY (PCC): 707.50 MHz
 OPERATING FREQUENCY (SCC): 1745.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 + 20 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]
3160.00	H	-	-	-65.76	9.48	-56.28	-43.3
2782.50	H	-	-	-60.58	10.03	-50.55	-37.6
1415.00	H	159	45	-50.31	8.12	-42.19	-29.2
3490.00	H	-	-	-27.67	9.68	-17.99	-5.0

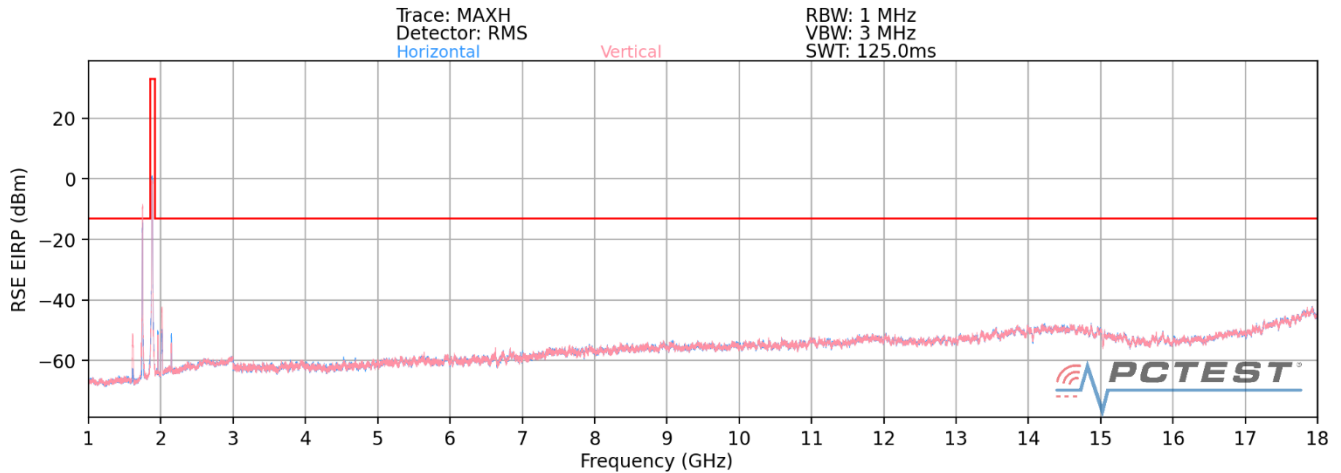
Plot 7-92. Radiated Spurious Data – Mid (ULCA 12A-66A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

OPERATING FREQUENCY (PCC): 704.00 MHz
 OPERATING FREQUENCY (SCC): 1770.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 + 20 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

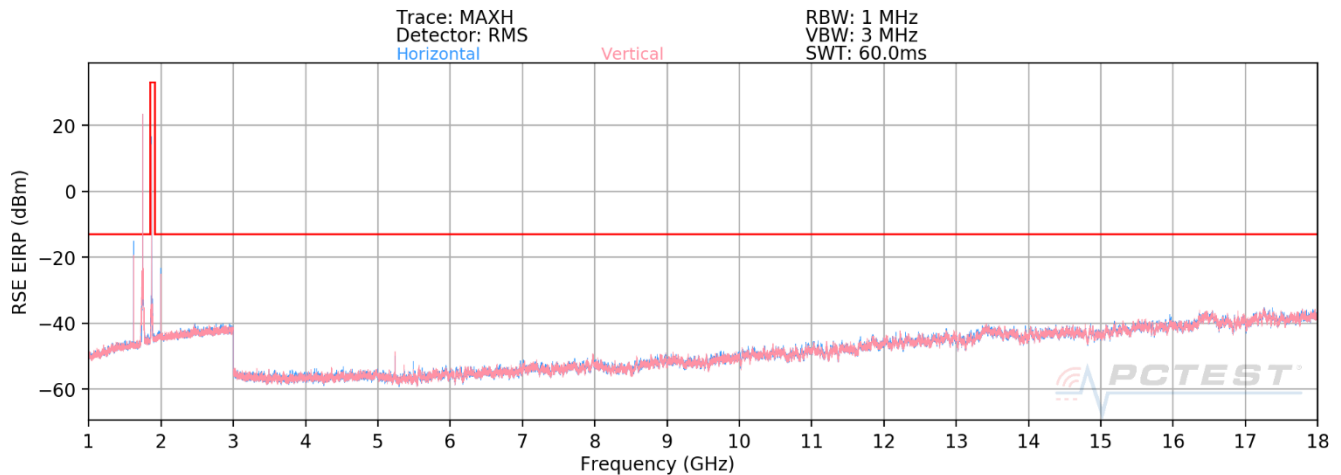
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3178.00	H	-	-	-64.76	9.46	-55.30	-42.3
2836.00	H	-	-	-57.79	10.17	-47.62	-34.6
1408.00	H	155	48	-31.74	8.03	-23.71	-10.7
3540.00	H	-	-	-41.91	9.72	-32.19	-19.2

Plot 7-93. Radiated Spurious Data – High (ULCA 12A-66A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 413 of 438



Plot 7-94. Radiated Spurious Plot (ULCA 2A-66A PCC: RB 50 Offset 0, SCC: RB 50 Offset 0)



Plot 7-95. Radiated Spurious Plot (ULCA 2A-66A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 414 of 438

OPERATING FREQUENCY (PCC): 1860.00 MHz
 OPERATING FREQUENCY (SCC): 1720.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20+20 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]
5440.00	V	143	28	-49.38	10.77	-38.61	-25.6
1580.00	V	183	51	-60.91	8.62	-52.29	-39.3
3720.00	V	-	-	-67.99	9.54	-58.45	-45.5
3440.00	V	-	-	-69.98	9.87	-60.11	-47.1
5580.00	V	-	-	-64.58	11.02	-53.56	-40.6
5160.00	V	-	-	-62.94	10.74	-52.20	-39.2

Plot 7-96. Radiated Spurious Data – Low (ULCA 2A-66A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

OPERATING FREQUENCY (PCC): 1880.00 MHz
 OPERATING FREQUENCY (SCC): 1745.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20+20 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]
5505.00	V	158	47	-46.24	10.88	-35.35	-22.4
1610.00	V	192	108	-56.09	8.75	-47.34	-34.3
3760.00	V	-	-	-68.79	9.40	-59.39	-46.4
3490.00	V	-	-	-70.55	9.94	-60.61	-47.6
5640.00	V	-	-	-66.21	11.20	-55.01	-42.0
5235.00	V	-	-	-64.88	10.76	-54.12	-41.1

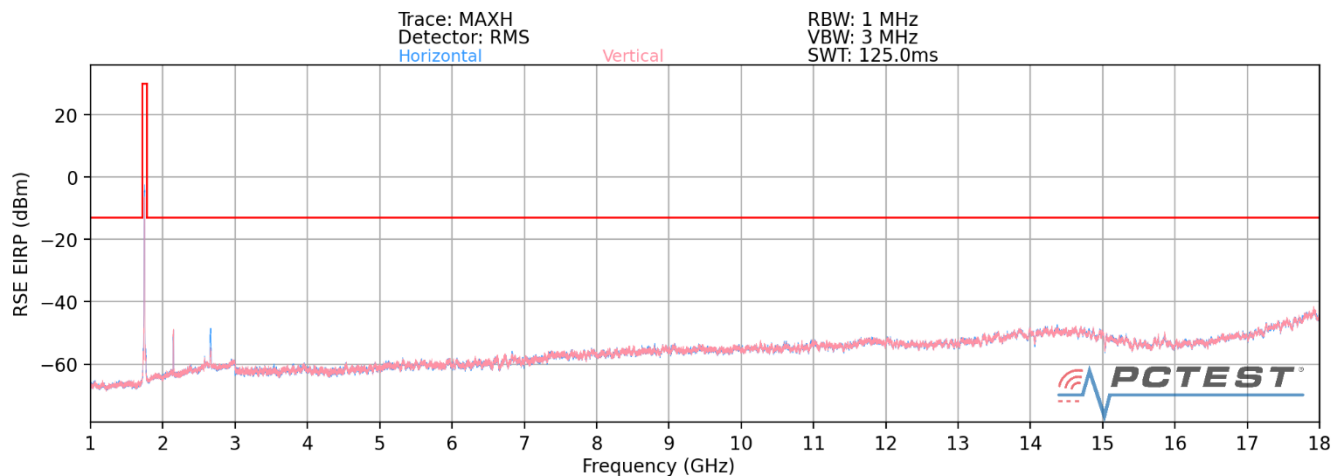
Plot 7-97. Radiated Spurious Data – Mid (ULCA 2A-66A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 415 of 438

OPERATING FREQUENCY (PCC): 1900.00 MHz
 OPERATING FREQUENCY (SCC): 1770.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20+20 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

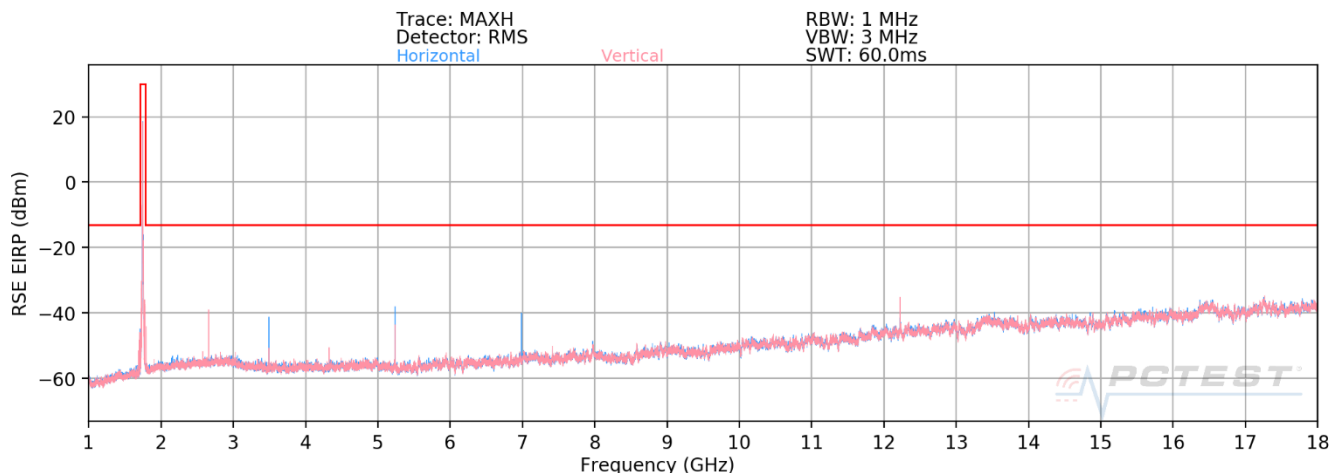
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5570.00	V	145	49	-50.50	11.00	-39.50	-26.5
1640.00	V	176	60	-56.87	8.92	-47.95	-34.9
3800.00	V	-	-	-67.12	9.31	-57.80	-44.8
3540.00	V	-	-	-67.36	9.92	-57.44	-44.4
5700.00	V	-	-	-65.08	11.34	-53.75	-40.7
5310.00	V	-	-	-63.69	10.72	-52.97	-40.0

Plot 7-98. Radiated Spurious Data – High (ULCA 2A-66A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)



Plot 7-99. Radiated Spurious Plot (ULCA 5A-66A PCC: RB 50 Offset 0, SCC: RB 50 Offset 0)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Plot 7-100. Radiated Spurious Plot (ULCA 5A-66A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

OPERATING FREQUENCY (PCC): 829.00 MHz
 OPERATING FREQUENCY (SCC): 1720.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 + 20 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	384	298	-64.85	9.57	-55.28	-42.3
5160.00	H	123	183	-56.22	10.82	-45.39	-32.4
6880.00	H	138	27	-62.90	10.89	-52.01	-39.0
8600.00	H	387	28	-57.86	11.72	-46.14	-33.1
10320.00	H	-	-	-67.22	12.52	-54.69	-41.7
12040.00	V	139	10	-56.40	12.26	-44.14	-31.1

Plot 7-101. Radiated Spurious Data – Low (ULCA 5A-66A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY (PCC): 831.50 MHz
 OPERATING FREQUENCY (SCC): 1745.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 + 20 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	382	158	-67.16	9.68	-57.48	-44.5
5235.00	H	139	2	-57.17	10.96	-46.21	-33.2
6980.00	H	131	95	-62.09	10.99	-51.10	-38.1
8725.00	H	400	34	-60.61	11.86	-48.75	-35.8
10470.00	H	-	-	-68.35	12.58	-55.76	-42.8
12215.00	V	125	23	-58.42	12.45	-45.97	-33.0

Plot 7-102. Radiated Spurious Data – Mid (ULCA 5A-66A PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

OPERATING FREQUENCY (PCC): 844.00 MHz
 OPERATING FREQUENCY (SCC): 1770.00 MHz
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10 + 20 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	V	400	302	-64.17	9.72	-54.44	-41.4
5310.00	V	158	173	-57.41	10.99	-46.42	-33.4
7080.00	V	117	12	-62.10	11.04	-51.06	-38.1
8850.00	V	400	18	-55.05	11.98	-43.07	-30.1
10620.00	V	-	-	-66.93	12.69	-54.24	-41.2
12390.00	V	108	37	-55.38	12.66	-42.72	-29.7

Plot 7-103. Radiated Spurious Data – High (ULCA 5A-66A PCC: RB 1 Offset 0, SCC: RB 1 Offset 49)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 418 of 438

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: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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Band 71 Frequency Stability Measurements

OPERATING FREQUENCY: 680,500,000 Hz
CHANNEL: 133297
REFERENCE VOLTAGE: 4.42 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	680,500,095	95	0.0000140
100 %		- 20	680,500,356	356	0.0000523
100 %		- 10	680,499,764	-236	-0.0000347
100 %		0	680,499,960	-40	-0.0000059
100 %		+ 10	680,500,357	357	0.0000525
100 %		+ 20	680,500,056	56	0.0000082
100 %		+ 30	680,499,932	-68	-0.0000100
100 %		+ 40	680,499,863	-137	-0.0000201
100 %		+ 50	680,500,117	117	0.0000172
BATT. ENDPOINT	3.67	+ 20	680,499,819	-181	-0.0000266

Table 7-104. 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: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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Band 71 Frequency Stability Measurements

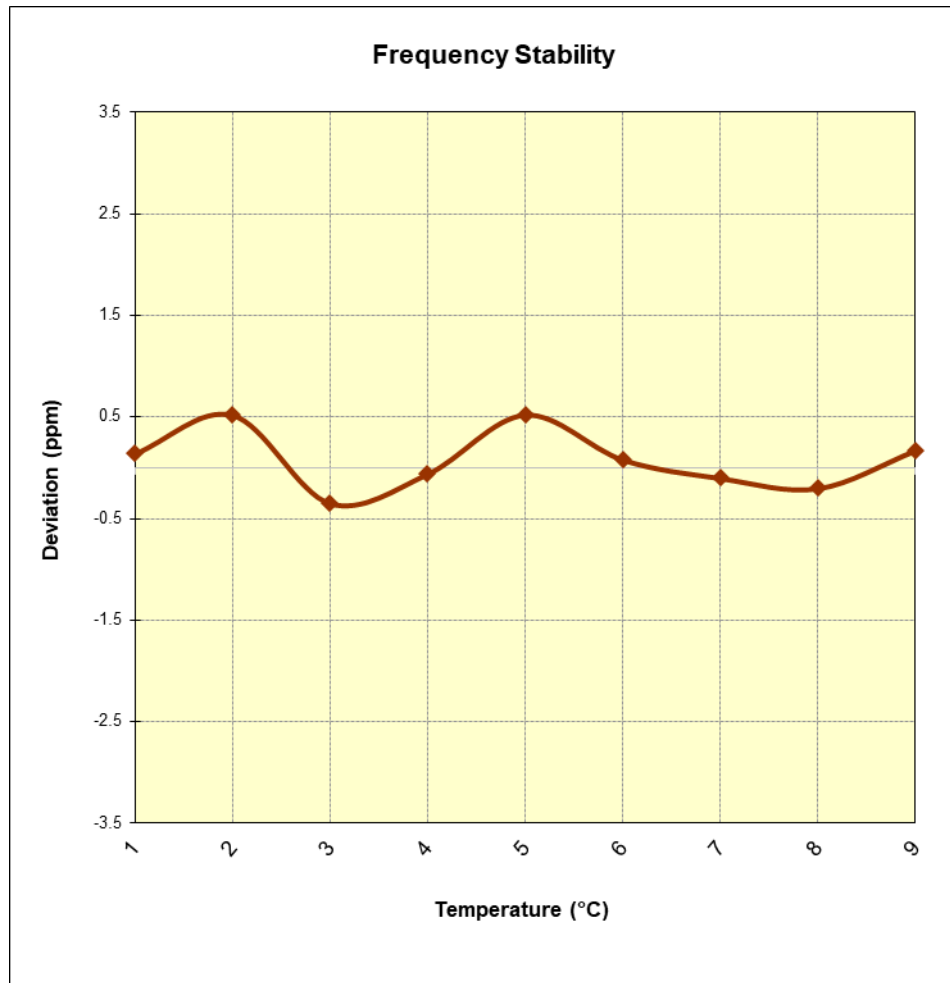


Figure 7-11. Frequency Stability Graph (Band 71)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz
CHANNEL: 23790
REFERENCE VOLTAGE: 4.42 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	707,499,879	-121	-0.0000171
100 %		- 20	707,500,306	306	0.0000433
100 %		- 10	707,499,928	-72	-0.0000102
100 %		0	707,500,035	35	0.0000049
100 %		+ 10	707,500,079	79	0.0000112
100 %		+ 20	707,499,734	-266	-0.0000376
100 %		+ 30	707,499,809	-191	-0.0000270
100 %		+ 40	707,499,927	-73	-0.0000103
100 %		+ 50	707,499,941	-59	-0.0000083
BATT. ENDPOINT	3.67	+ 20	707,500,071	71	0.0000100

Table 7-105. 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: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12 Frequency Stability Measurements

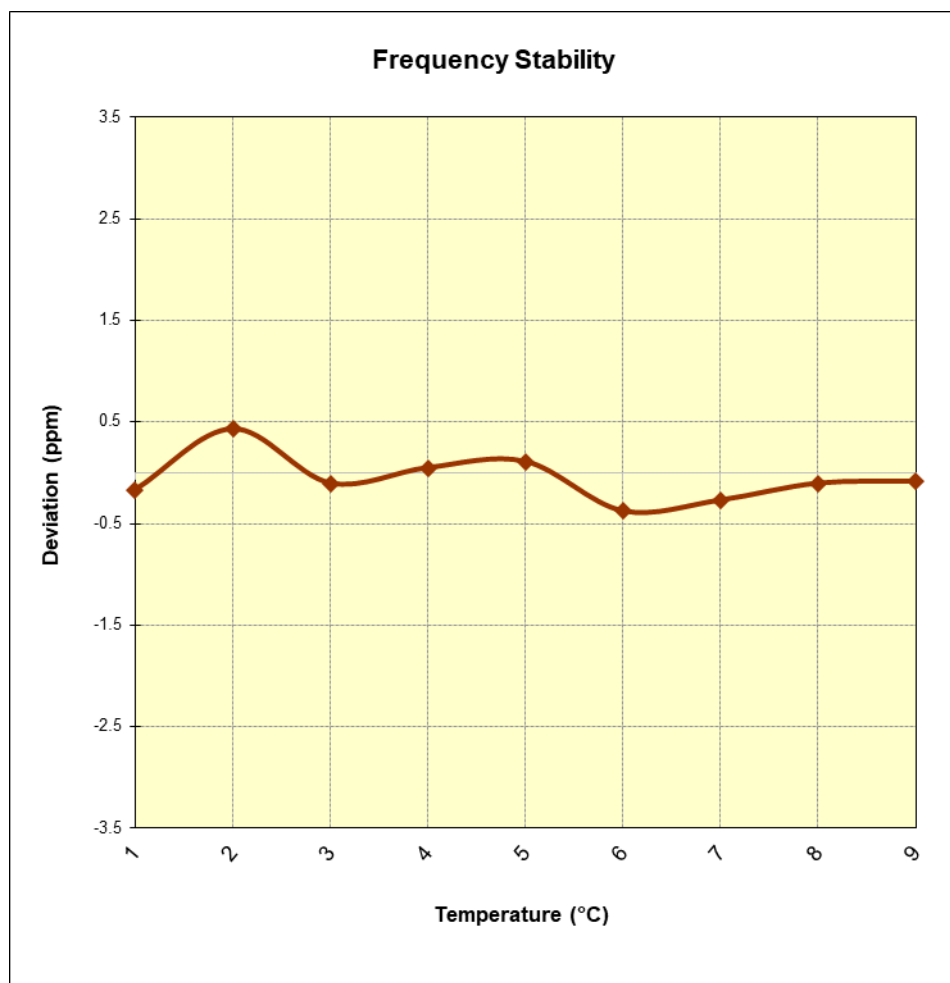


Figure 7-12. Frequency Stability Graph (Band 12)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz
CHANNEL: 23230
REFERENCE VOLTAGE: 4.42 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	782,000,010	10	0.0000013
100 %		- 20	781,999,652	-348	-0.0000445
100 %		- 10	781,999,679	-321	-0.0000410
100 %		0	781,999,782	-218	-0.0000279
100 %		+ 10	782,000,334	334	0.0000427
100 %		+ 20	782,000,437	437	0.0000559
100 %		+ 30	782,000,161	161	0.0000206
100 %		+ 40	781,999,854	-146	-0.0000187
100 %		+ 50	781,999,725	-275	-0.0000352
BATT. ENDPOINT	3.67	+ 20	782,000,047	47	0.0000060

Table 7-106. 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: ZNFG900UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

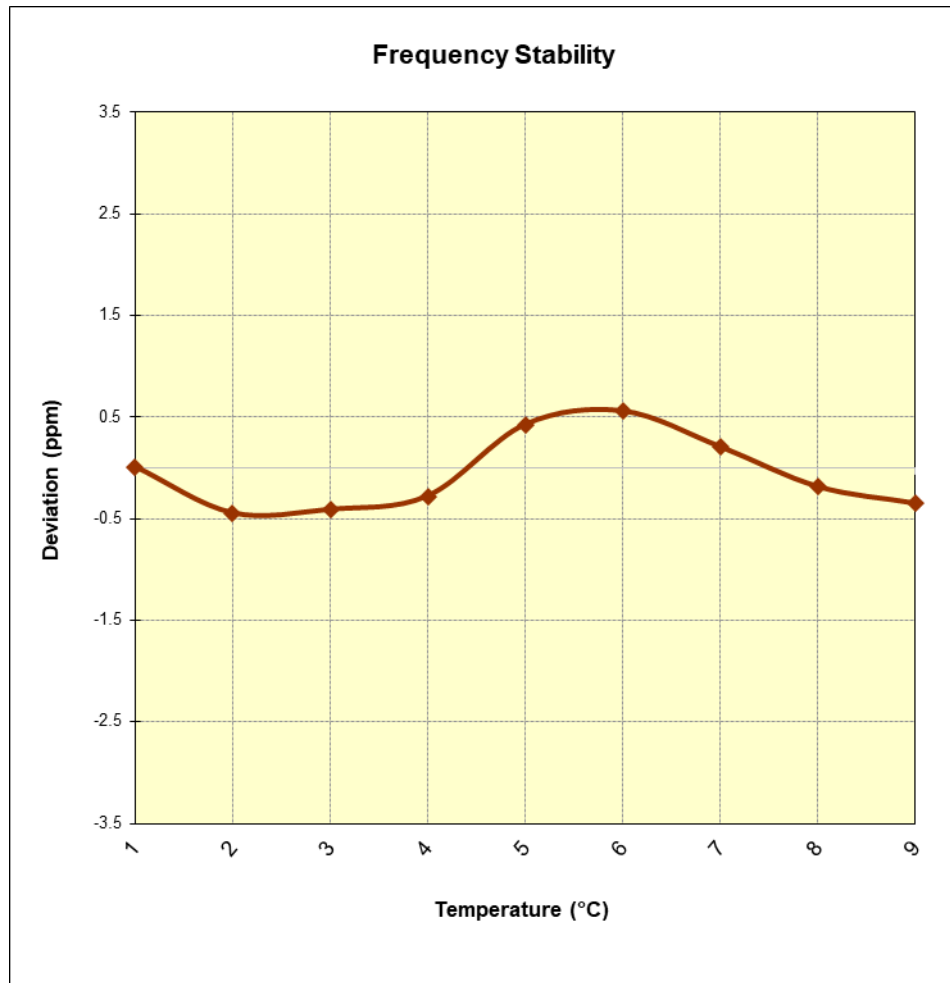


Figure 7-13. Frequency Stability Graph (Band 13)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Band 5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz
 CHANNEL: 20525
 REFERENCE VOLTAGE: 4.42 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	836,500,120	120	0.0000143
100 %		- 20	836,500,149	149	0.0000178
100 %		- 10	836,500,268	268	0.0000320
100 %		0	836,499,995	-5	-0.0000006
100 %		+ 10	836,500,358	358	0.0000428
100 %		+ 20	836,500,089	89	0.0000106
100 %		+ 30	836,499,879	-121	-0.0000145
100 %		+ 40	836,499,686	-314	-0.0000375
100 %		+ 50	836,499,671	-329	-0.0000393
BATT. ENDPOINT	3.67	+ 20	836,499,871	-129	-0.0000154

Table 7-107. Frequency Stability Data (Band 5)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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Band 5 Frequency Stability Measurements

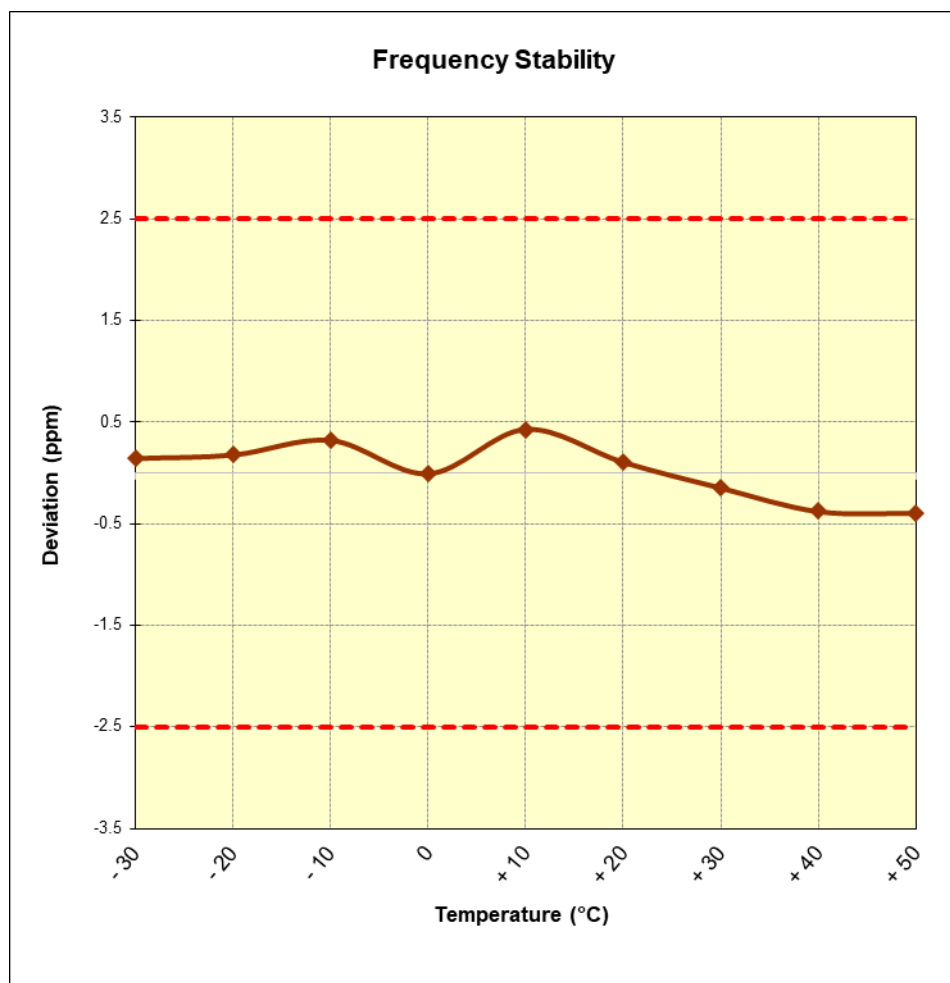


Figure 7-14. Frequency Stability Graph (Band 5)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz
CHANNEL: 132322
REFERENCE VOLTAGE: 4.42 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	1,744,999,967	-33	-0.0000019
100 %		- 20	1,744,999,632	-368	-0.0000211
100 %		- 10	1,744,999,642	-358	-0.0000205
100 %		0	1,744,999,999	-1	-0.0000001
100 %		+ 10	1,745,000,030	30	0.0000017
100 %		+ 20	1,744,999,957	-43	-0.0000025
100 %		+ 30	1,744,999,929	-71	-0.0000041
100 %		+ 40	1,745,000,190	190	0.0000109
100 %		+ 50	1,744,999,970	-30	-0.0000017
BATT. ENDPOINT	3.67	+ 20	1,744,999,799	-201	-0.0000115

Table 7-108. 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: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

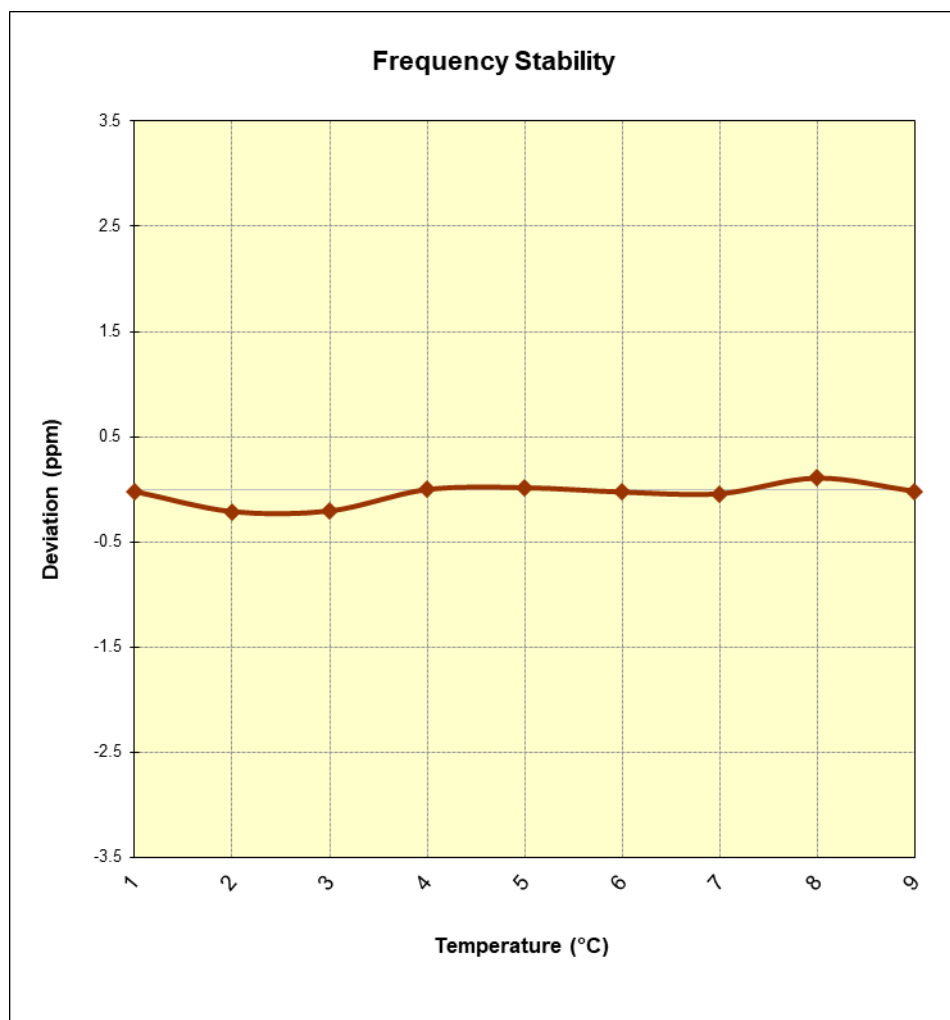


Figure 7-15. Frequency Stability Graph (Band 66/4)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz
 CHANNEL: 26365
 REFERENCE VOLTAGE: 4.42 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	1,882,500,014	14	0.0000007
100 %		- 20	1,882,499,607	-393	-0.0000209
100 %		- 10	1,882,500,000	0	0.0000000
100 %		0	1,882,499,977	-23	-0.0000012
100 %		+ 10	1,882,500,000	0	0.0000000
100 %		+ 20	1,882,500,284	284	0.0000151
100 %		+ 30	1,882,500,038	38	0.0000020
100 %		+ 40	1,882,500,012	12	0.0000006
100 %		+ 50	1,882,500,201	201	0.0000107
BATT. ENDPOINT	3.67	+ 20	1,882,500,413	413	0.0000219

Table 7-109. Frequency Stability Data (Band 25/2)

FCC ID: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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Band 25 Frequency Stability Measurements

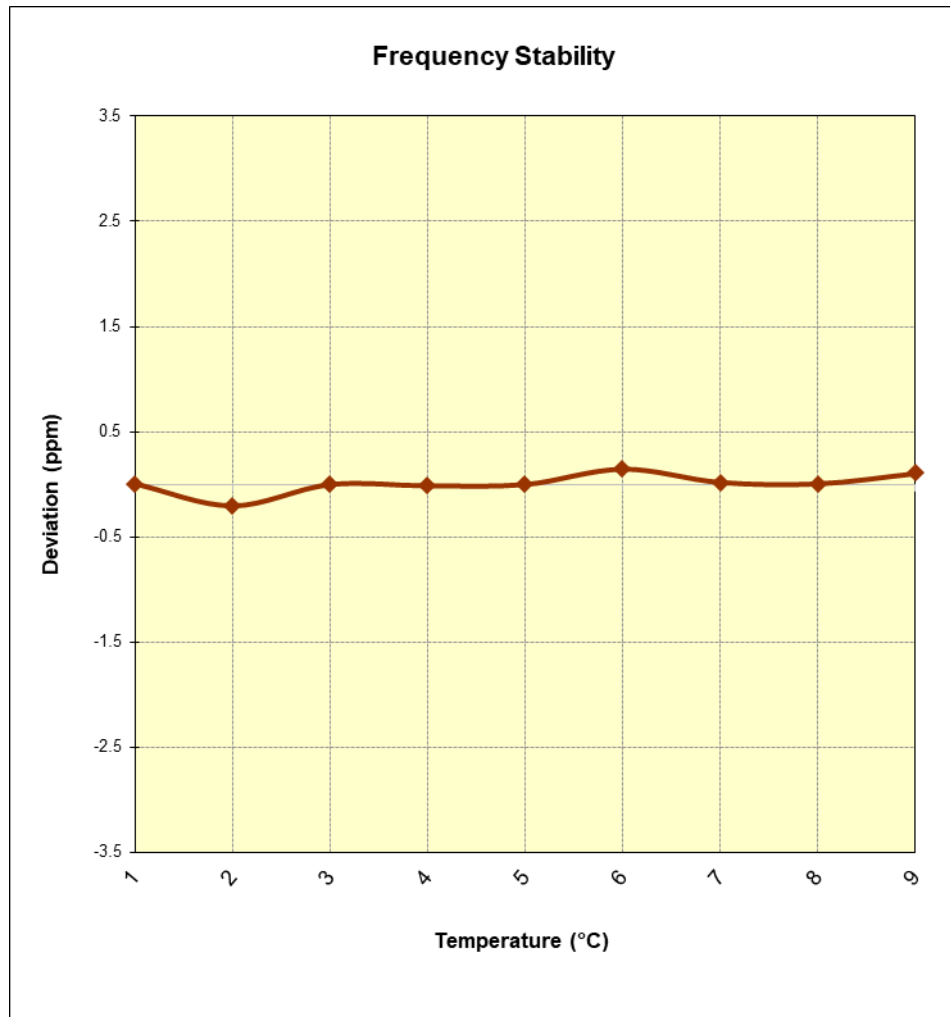


Figure 7-16. Frequency Stability Graph (Band 25)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 30 Frequency Stability Measurements

OPERATING FREQUENCY: 2,310,000,000 Hz
CHANNEL: 27710
REFERENCE VOLTAGE: 4.42 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	2,309,999,933	-67	-0.0000029
100 %		- 20	2,310,000,050	50	0.0000022
100 %		- 10	2,309,999,911	-89	-0.0000039
100 %		0	2,309,999,925	-75	-0.0000032
100 %		+ 10	2,309,999,834	-166	-0.0000072
100 %		+ 20	2,309,999,747	-253	-0.0000110
100 %		+ 30	2,309,999,996	-4	-0.0000002
100 %		+ 40	2,309,999,739	-261	-0.0000113
100 %		+ 50	2,310,000,085	85	0.0000037
BATT. ENDPOINT	3.67	+ 20	2,309,999,789	-211	-0.0000091

Table 7-110. 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: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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Band 30 Frequency Stability Measurements

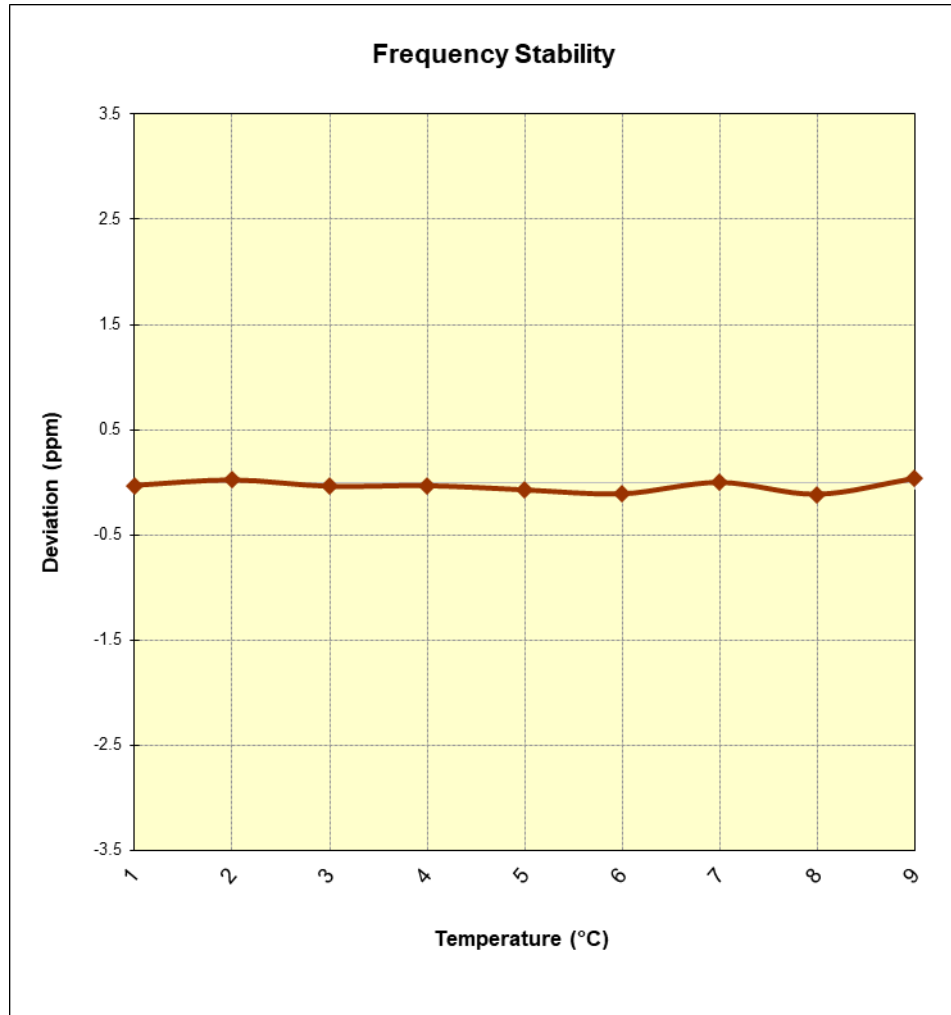


Figure 7-17. Frequency Stability Graph (Band 30)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 7 Frequency Stability Measurements

OPERATING FREQUENCY: 2,535,000,000 Hz
CHANNEL: 21100
REFERENCE VOLTAGE: 4.42 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	2,534,999,924	-76	-0.0000030
100 %		- 20	2,534,999,775	-225	-0.0000089
100 %		- 10	2,534,999,938	-62	-0.0000024
100 %		0	2,535,000,348	348	0.0000137
100 %		+ 10	2,534,999,995	-5	-0.0000002
100 %		+ 20	2,534,999,833	-167	-0.0000066
100 %		+ 30	2,535,000,012	12	0.0000005
100 %		+ 40	2,535,000,175	175	0.0000069
100 %		+ 50	2,534,999,881	-119	-0.0000047
BATT. ENDPOINT	3.67	+ 20	2,535,000,338	338	0.0000133

Table 7-111. 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: ZNFG900UM	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 434 of 438

Band 7 Frequency Stability Measurements

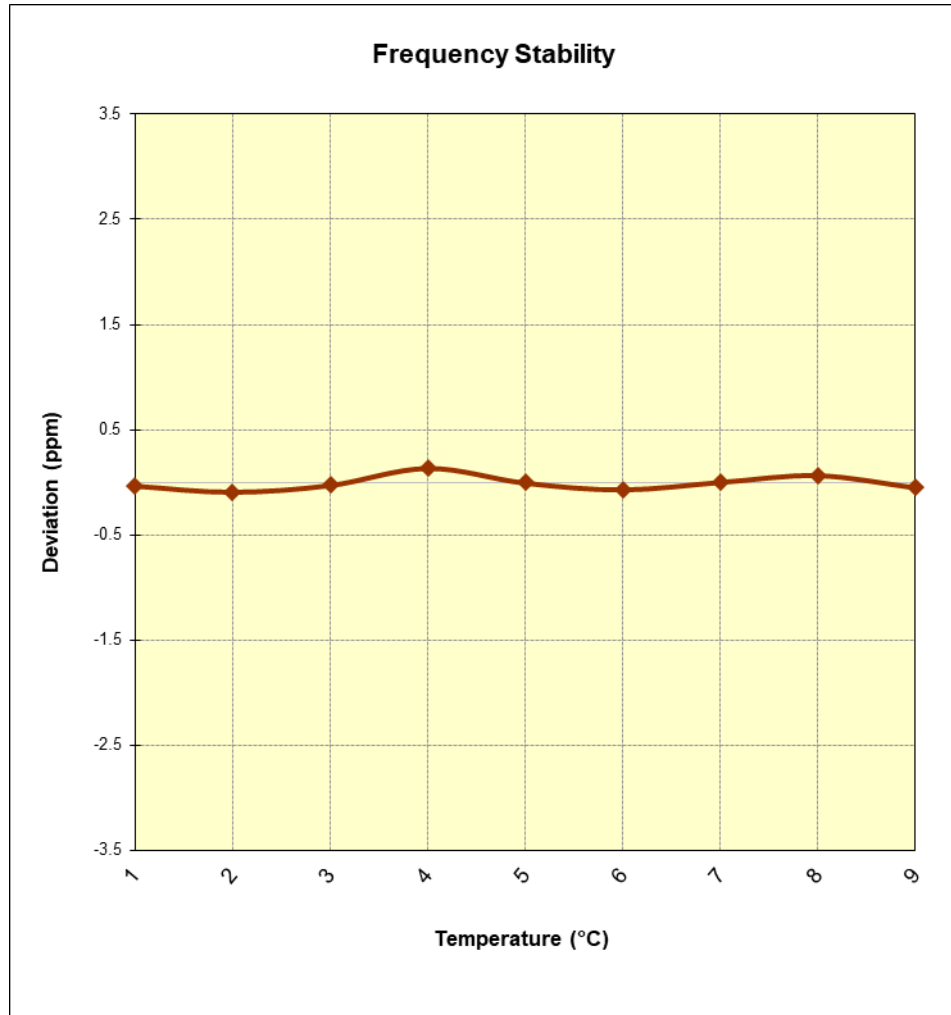


Figure 7-18. Frequency Stability Graph (Band 7)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz
CHANNEL: 40620
REFERENCE VOLTAGE: 4.42 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.42	- 30	2,593,000,192	192	0.0000074
100 %		- 20	2,592,999,891	-109	-0.0000042
100 %		- 10	2,592,999,730	-270	-0.0000104
100 %		0	2,593,000,274	274	0.0000106
100 %		+ 10	2,593,000,384	384	0.0000148
100 %		+ 20	2,593,000,135	135	0.0000052
100 %		+ 30	2,593,000,408	408	0.0000157
100 %		+ 40	2,592,999,832	-168	-0.0000065
100 %		+ 50	2,592,999,920	-80	-0.0000031
BATT. ENDPOINT	3.67	+ 20	2,593,000,278	278	0.0000107

Table 7-112. Frequency Stability Data (Band 41)

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: ZNFG900UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

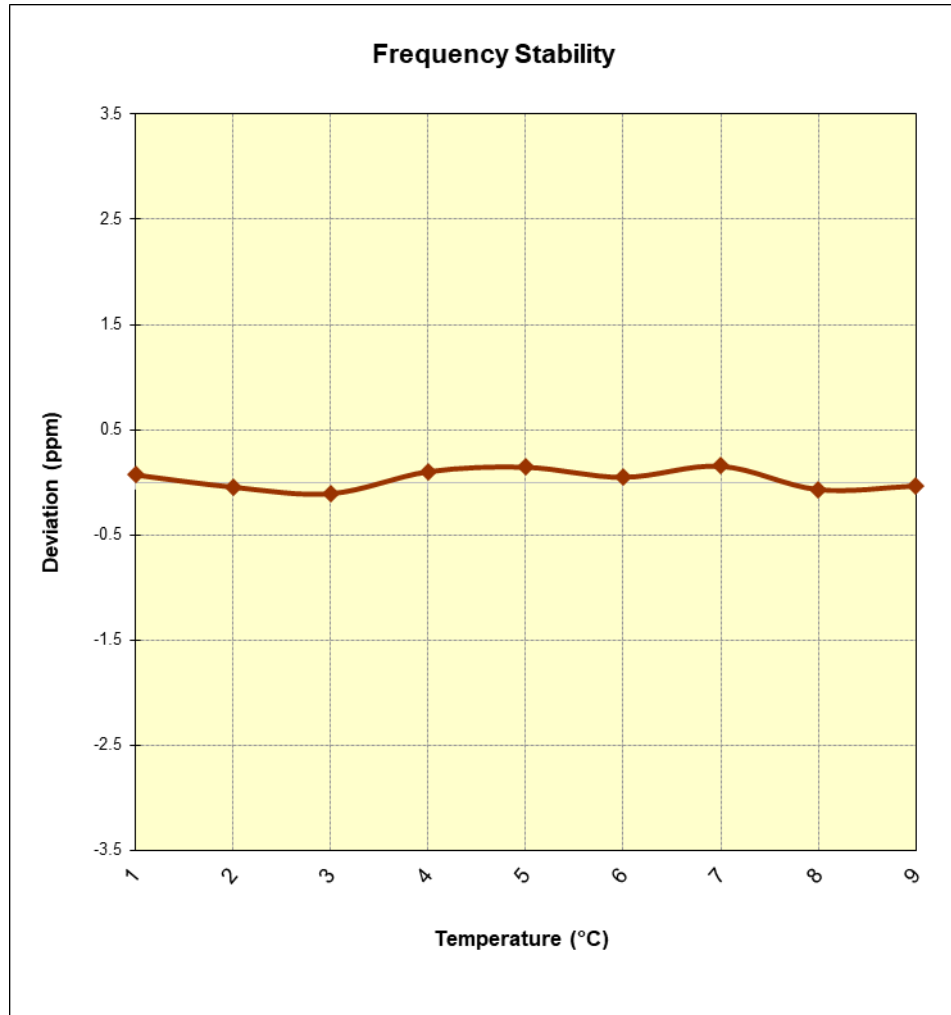


Figure 7-19. Frequency Stability Graph (Band 41)

FCC ID: ZNFG900UM	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFG900UM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: ZNFG900UM	 PCTEST Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2003200048-03.ZNF	Test Dates: 3/23-5/29/2020	EUT Type: Portable Handset		Page 438 of 438