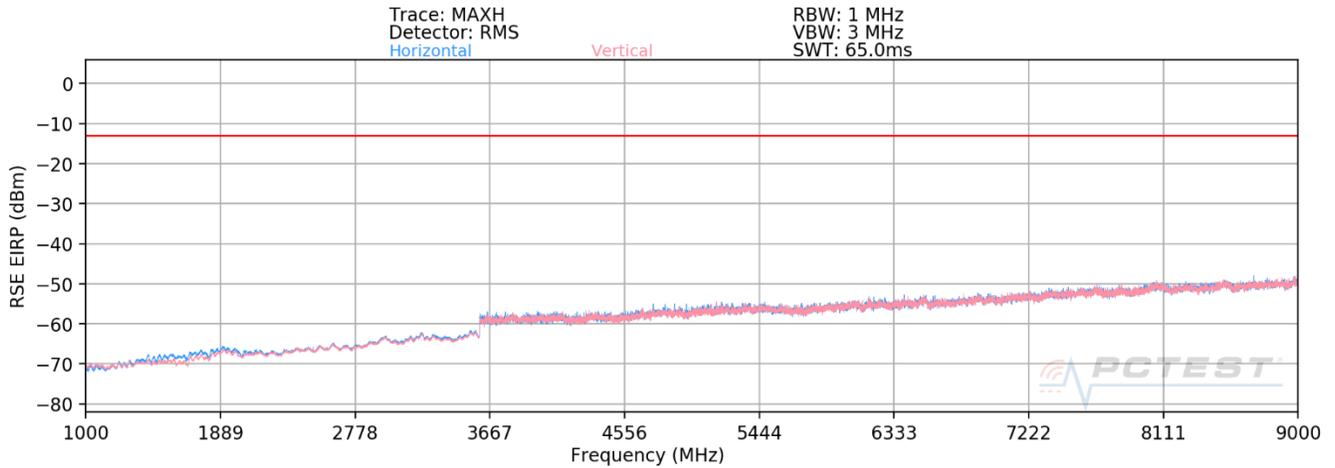
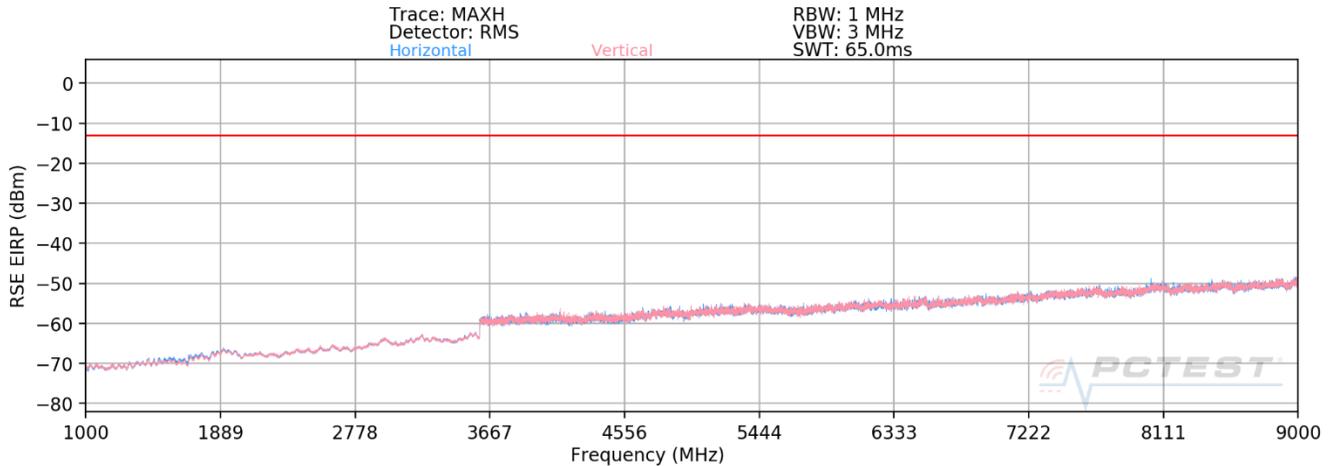


## ULCA Band 5



**Plot 7-423. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 Low Channel – PCC/SCC: 1RB)**



**Plot 7-424. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 High Channel – PCC/SCC: 1RB)**

FCC ID: ZNFF100VM	 <b>PCTEST</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 268 of 301

OPERATING FREQUENCY (PCC): \_\_\_\_\_ 829.00 MHz  
 OPERATING FREQUENCY (SCC): \_\_\_\_\_ 838.90 MHz  
 CHANNEL (PCC): \_\_\_\_\_ 20450  
 CHANNEL (SCC): \_\_\_\_\_ 20549  
 MODULATION SIGNAL: \_\_\_\_\_ QPSK  
 BANDWIDTH: \_\_\_\_\_ 10+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]
1658.00	H	398	325	-78.18	8.98	-69.20	-56.2
2487.00	H	398	354	-78.35	9.73	-68.61	-55.6
3316.00	H	-	-	-75.24	9.62	-65.62	-52.6
4145.00	H	-	-	-74.18	10.24	-63.94	-50.9

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

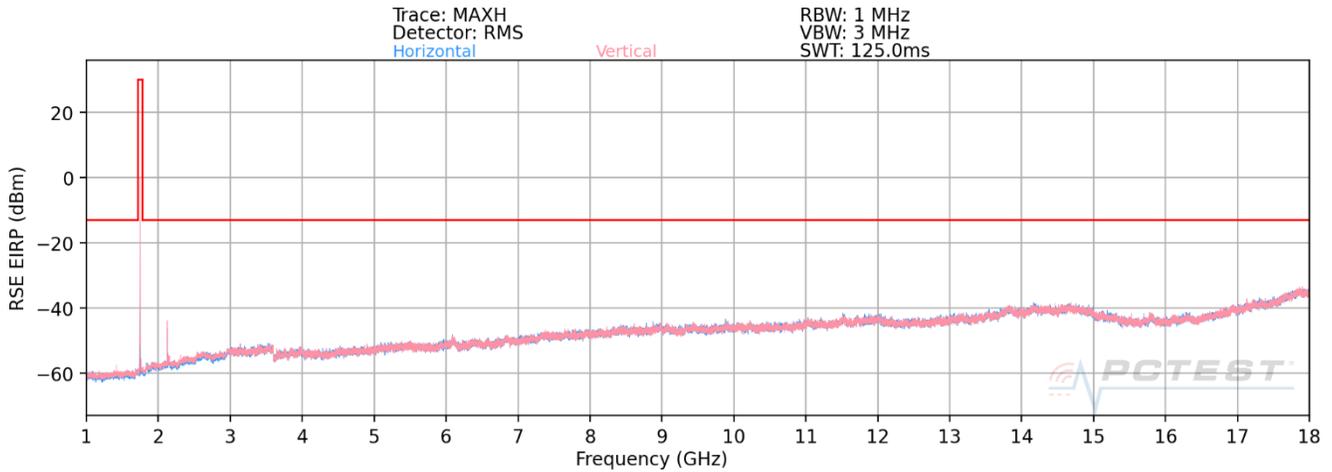
OPERATING FREQUENCY (PCC): \_\_\_\_\_ 844.00 MHz  
 OPERATING FREQUENCY (SCC): \_\_\_\_\_ 834.10 MHz  
 CHANNEL (PCC): \_\_\_\_\_ 20600  
 CHANNEL (SCC): \_\_\_\_\_ 20501  
 MODULATION SIGNAL: \_\_\_\_\_ QPSK  
 BANDWIDTH: \_\_\_\_\_ 10+10 MHz  
 DISTANCE: \_\_\_\_\_ 3 meters  
 LIMIT: \_\_\_\_\_ -13 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]
1688.00	H	383	35	-76.79	8.98	-67.81	-54.8
2532.00	H	400	304	-78.19	9.78	-68.42	-55.4
3376.00	H	-	-	-75.53	9.74	-65.80	-52.8
4220.00	H	-	-	-75.20	10.51	-64.68	-51.7

**Table 7-47. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)**

FCC ID: ZNFF100VM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 269 of 301

## Inter-band Uplink CA Conducted Powers 12A-66A



**Plot 7-425. Radiated Spurious Plot 1GHz - 18GHz (ULCA 12A-66A)**

OPERATING FREQUENCY (PCC): 1720.00 MHz  
 OPERATING FREQUENCY (SCC): 704.00 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]
1408.00	V	246	342	-78.49	7.57	-70.92	-57.9
2112.00	V	204	191	-65.29	8.88	-56.41	-43.4
2816.00	V	-	-	-77.84	10.15	-67.69	-54.7
3440.00	V	-	-	-74.62	9.87	-64.74	-51.7
5160.00	V	-	-	-73.88	10.74	-63.14	-50.1

**Table 7-48. Radiated Spurious Data (ULCA 12A-66A – Low Channel)**

FCC ID: ZNFF100VM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 270 of 301

OPERATING FREQUENCY (PCC): 1745.00 MHz  
 OPERATING FREQUENCY (SCC): 707.50 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]
1415.00	V	166	57	-75.58	7.66	-67.91	-54.9
2122.50	V	127	328	-64.52	8.89	-55.63	-42.6
2830.00	V	-	-	-77.92	10.12	-67.79	-54.8
3490.00	V	-	-	-74.68	9.94	-64.74	-51.7
5235.00	V	366	193	-69.66	10.76	-58.90	-45.9
6980.00	V	-	-	-73.23	11.85	-61.38	-48.4

Table 7-49. Radiated Spurious Data (ULCA 12A-66A – Mid Channel)

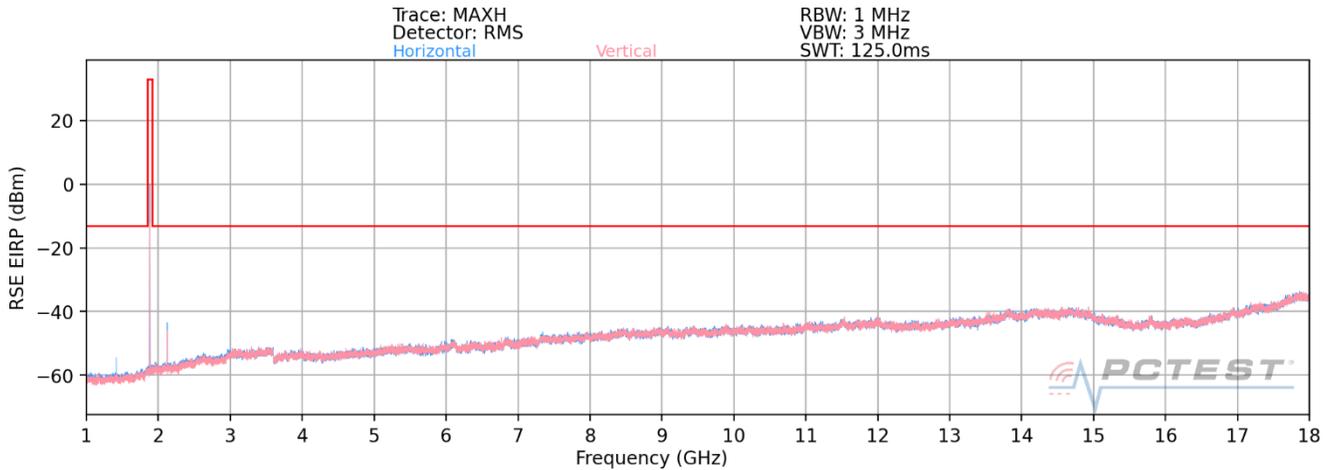
OPERATING FREQUENCY (PCC): 1770.00 MHz  
 OPERATING FREQUENCY (SCC): 711.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20+10 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

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]
1422.00	V	128	211	-64.73	7.75	-56.98	-44.0
2133.00	V	133	324	-55.68	8.90	-46.78	-33.8
2844.00	V	-	-	-78.46	10.10	-68.36	-55.4
3540.00	V	-	-	-74.50	9.92	-64.58	-51.6
5310.00	V	-	-	-73.57	10.72	-62.85	-49.9

Table 7-50. Radiated Spurious Data (ULCA 12A-66A – High Channel)

FCC ID: ZNFF100VM	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset	Page 271 of 301	

## Inter-band Uplink CA Conducted Powers 2A-12A



**Plot 7-426. Radiated Spurious Plot 1GHz - 18GHz (ULCA 2A-12A)**

OPERATING FREQUENCY (PCC): 1860.00 MHz  
 OPERATING FREQUENCY (SCC): 704.00 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]
1408.00	H	-	-	-79.18	7.57	-71.61	-58.6
2112.00	H	356	111	-76.83	8.88	-67.95	-55.0
2816.00	H	-	-	-77.93	10.15	-67.78	-54.8
3720.00	H	115	197	-69.13	9.54	-59.60	-46.6
5580.00	H	364	352	-60.51	11.02	-49.49	-36.5
7440.00	H	-	-	-70.91	11.01	-59.89	-46.9

**Table 7-51. Radiated Spurious Data (ULCA 2A-12A – Low Channel)**

FCC ID: ZNFF100VM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 272 of 301

OPERATING FREQUENCY (PCC): 1880.00 MHz  
 OPERATING FREQUENCY (SCC): 707.50 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]
1415.00	H	153	340	-64.54	7.66	-56.87	-43.9
2122.50	H	129	304	-64.57	8.89	-55.68	-42.7
2830.00	H	-	-	-78.23	10.12	-68.10	-55.1
3760.00	H	-	-	-73.45	9.40	-64.05	-51.1
5640.00	H	-	-	-74.07	11.20	-62.87	-49.9

Table 7-52. Radiated Spurious Data (ULCA 2A-12A – Mid Channel)

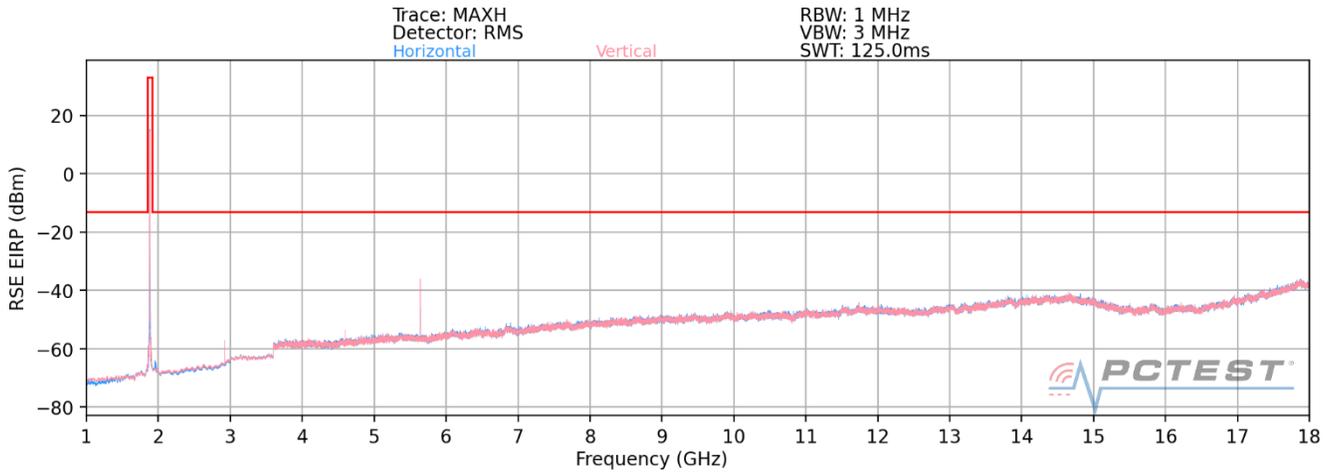
OPERATING FREQUENCY (PCC): 1900.00 MHz  
 OPERATING FREQUENCY (SCC): 711.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

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]
1422.00	H	-	-	-79.47	7.75	-71.72	-58.7
2133.00	H	302	137	-78.04	8.90	-69.14	-56.1
2844.00	H	-	-	-77.97	10.10	-67.87	-54.9
3800.00	H	-	-	-74.02	9.31	-64.71	-51.7
5700.00	H	-	-	-74.23	11.34	-62.90	-49.9

Table 7-53. Radiated Spurious Data (ULCA 2A-12A – High Channel)

FCC ID: ZNFF100VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset	Page 273 of 301	

## Inter-band Uplink CA Conducted Powers 2A-5A



**Plot 7-427. Radiated Spurious Plot 1GHz - 18GHz (ULCA 2A-5A)**

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]
1658.00	V	-	-	-78.31	8.98	-69.33	-56.3
3720.00	V	-	-	-72.87	9.54	-63.33	-50.3
5580.00	V	306	36	-57.37	11.02	-46.36	-33.4
7440.00	V	-	-	-71.27	11.01	-60.25	-47.3

**Table 7-54. Radiated Spurious Data (ULCA 2A-5A – Low Channel)**

FCC ID: ZNFF100VM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 274 of 301

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]
1673.00	V	-	-	-79.21	8.98	-70.22	-57.2
2509.50	V	-	-	-78.71	9.78	-68.93	-55.9
2923.72	V	387	322	-72.38	9.87	-62.51	-49.5
3760.00	V	-	-	-73.35	9.40	-63.95	-51.0
5640.00	V	322	40	-48.76	11.20	-37.56	-24.6
7520.00	V	-	-	-70.80	11.14	-59.66	-46.7

Table 7-55. Radiated Spurious Data (ULCA 2A-5A – Mid Channel)

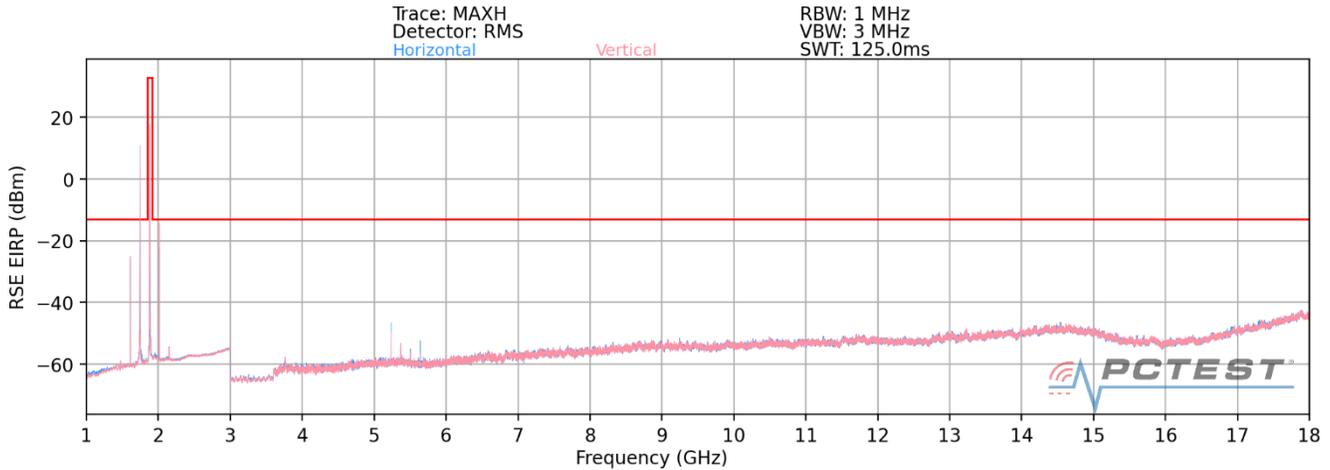
OPERATING FREQUENCY (PCC): 1900.00 MHz  
 OPERATING FREQUENCY (SCC): 844.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20+10 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

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]
1688.00	V	-	-	-78.03	8.98	-69.05	-56.0
3800.00	V	-	-	-74.15	9.31	-64.84	-51.8
5700.00	V	318	35	-55.27	11.34	-43.93	-30.9
7600.00	V	-	-	-71.64	11.27	-60.37	-47.4

Table 7-56. Radiated Spurious Data (ULCA 2A-5A – High Channel)

FCC ID: ZNFF100VM	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset	Page 275 of 301	

## Inter-band Uplink CA Conducted Powers 2A-66A



**Plot 7-428. Radiated Spurious Plot 1GHz - 18GHz (ULCA 2A-66A)**

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]
3720.00	H	400	127	-69.06	9.54	-59.52	-46.5
5580.00	H	400	13	-63.61	11.02	-52.60	-39.6
7440.00	H	-	-	-70.52	11.01	-59.50	-46.5
3440.00	H	-	-	-74.31	9.87	-64.44	-51.4
5160.00	H	-	-	-73.61	10.74	-62.87	-49.9

**Table 7-57. Radiated Spurious Data (ULCA 2A-66A – Low Channel)**

FCC ID: ZNFF100VM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 276 of 301

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]
3760.00	H	398	135	-68.58	9.40	-59.18	-46.2
5640.00	H	398	4	-61.63	11.20	-50.43	-37.4
7520.00	H	-	-	-70.07	11.14	-58.93	-45.9
3490.00	H	-	-	-74.28	9.94	-64.34	-51.3
5235.00	H	400	264	-72.12	10.76	-61.36	-48.4
6980.00	H	-	-	-73.46	11.85	-61.61	-48.6

**Table 7-58. Radiated Spurious Data (ULCA 2A-66A – Mid Channel)**

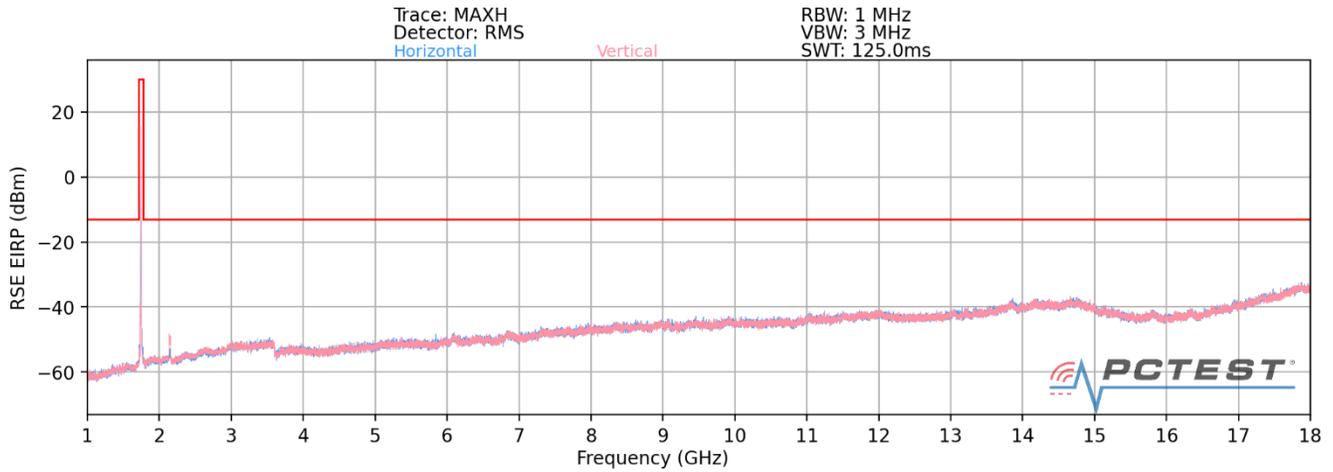
OPERATING FREQUENCY (PCC): \_\_\_\_\_ 1900.00 \_\_\_\_\_ MHz  
 OPERATING FREQUENCY (SCC): \_\_\_\_\_ 1770.00 \_\_\_\_\_ MHz  
 MODULATION SIGNAL: \_\_\_\_\_ QPSK \_\_\_\_\_  
 BANDWIDTH: \_\_\_\_\_ 20+20 \_\_\_\_\_ MHz  
 DISTANCE: \_\_\_\_\_ 3 \_\_\_\_\_ meters  
 LIMIT: \_\_\_\_\_ -13 \_\_\_\_\_ dBm

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]
3800.00	H	396	149	-71.32	9.31	-62.01	-49.0
5700.00	H	283	7	-63.65	11.34	-52.31	-39.3
7600.00	H	398	352	-69.37	11.27	-58.10	-45.1
3540.00	H	-	-	-73.57	9.92	-63.65	-50.7
5310.00	H	-	-	-73.58	10.72	-62.87	-49.9

**Table 7-59. Radiated Spurious Data (ULCA 2A-66A – High Channel)**

FCC ID: ZNFF100VM	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset	Page 277 of 301	

## Inter-band Uplink CA Conducted Powers 5A-66A



**Plot 7-429. Radiated Spurious Plot 1GHz - 18GHz (ULCA 5A-66A)**

OPERATING FREQUENCY (PCC): 1720.00 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]
1658.00	H	228	360	-78.22	8.98	-69.24	-56.2
2487.00	H	-	-	-77.86	9.73	-68.12	-55.1
3440.00	H	400	14	-74.11	9.87	-64.24	-51.2
5160.00	H	111	51	-58.03	10.74	-47.29	-34.3
6880.00	H	-	-	-72.18	11.71	-60.47	-47.5

**Table 7-60. Radiated Spurious Data (ULCA 5A-66A – Low Channel)**

FCC ID: ZNFF100VM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 278 of 301

OPERATING FREQUENCY (PCC): 1745.00 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]
1673.00	H	281	356	-76.92	8.98	-67.93	-54.9
2509.50	H	-	-	-77.79	9.78	-68.01	-55.0
3490.00	H	400	23	-72.94	9.94	-63.00	-50.0
5235.00	H	113	70	-62.02	10.76	-51.26	-38.3
6980.00	H	-	-	-72.54	11.45	-61.10	-48.1

**Table 7-61. Radiated Spurious Data (ULCA 5A-66A – Mid Channel)**

OPERATING FREQUENCY (PCC): 1770.00 MHz  
 OPERATING FREQUENCY (SCC): 844.00 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]
1688.00	H	-	-	-78.55	8.98	-69.57	-56.6
2532.00	H	-	-	-78.35	9.78	-68.58	-55.6
3540.00	H	258	10	-69.16	9.92	-59.24	-46.2
5310.00	H	112	5	-59.66	10.72	-48.95	-35.9
7080.00	H	-	-	-73.34	11.46	-61.88	-48.9

**Table 7-62. Radiated Spurious Data (ULCA 5A-66A – High Channel)**

FCC ID: ZNFF100VM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset	Page 279 of 301	

## 7.10 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.

### 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: ZNFF100VM	 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: 4.41 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)	
100 %	4.41	+ 20 (Ref)	707,499,909	-91	-0.0000129	
100 %		- 30	707,500,049	49	0.0000069	
100 %		- 20	707,500,126	126	0.0000178	
100 %		- 10	707,500,200	200	0.0000283	
100 %		0	707,499,813	-187	-0.0000264	
100 %		+ 10	707,499,973	-27	-0.0000038	
100 %		+ 20	707,500,199	199	0.0000281	
100 %		+ 30	707,500,113	113	0.0000160	
100 %		+ 40	707,499,871	-129	-0.0000182	
100 %		+ 50	707,500,251	251	0.0000355	
85 %			+ 20	707,500,015	15	0.0000021
BATT. ENDPOINT		3.51	+ 20	707,499,869	-131	-0.0000185

**Table 7-63. Frequency Stability Data (Band 12)**

**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: ZNFF100VM	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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## Band 12 Frequency Stability Measurements

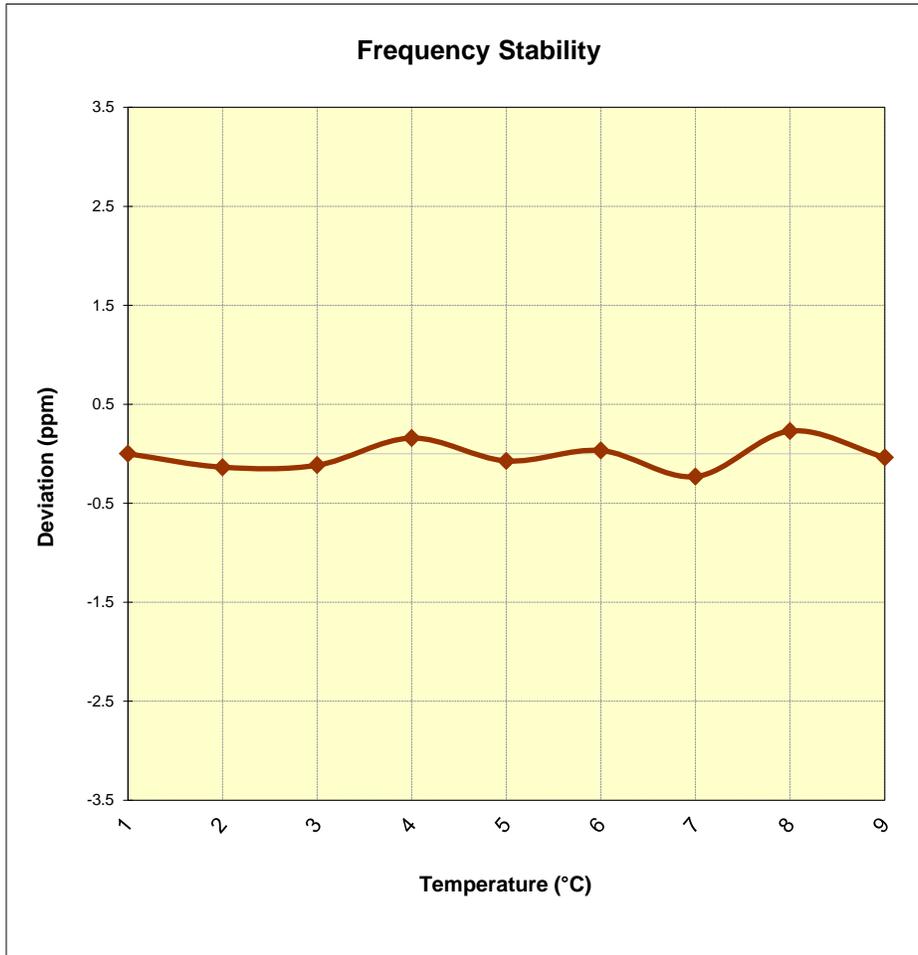


Figure 7-10. Frequency Stability Graph (Band 12)

FCC ID: ZNFF100VM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Band 13 Frequency Stability Measurements

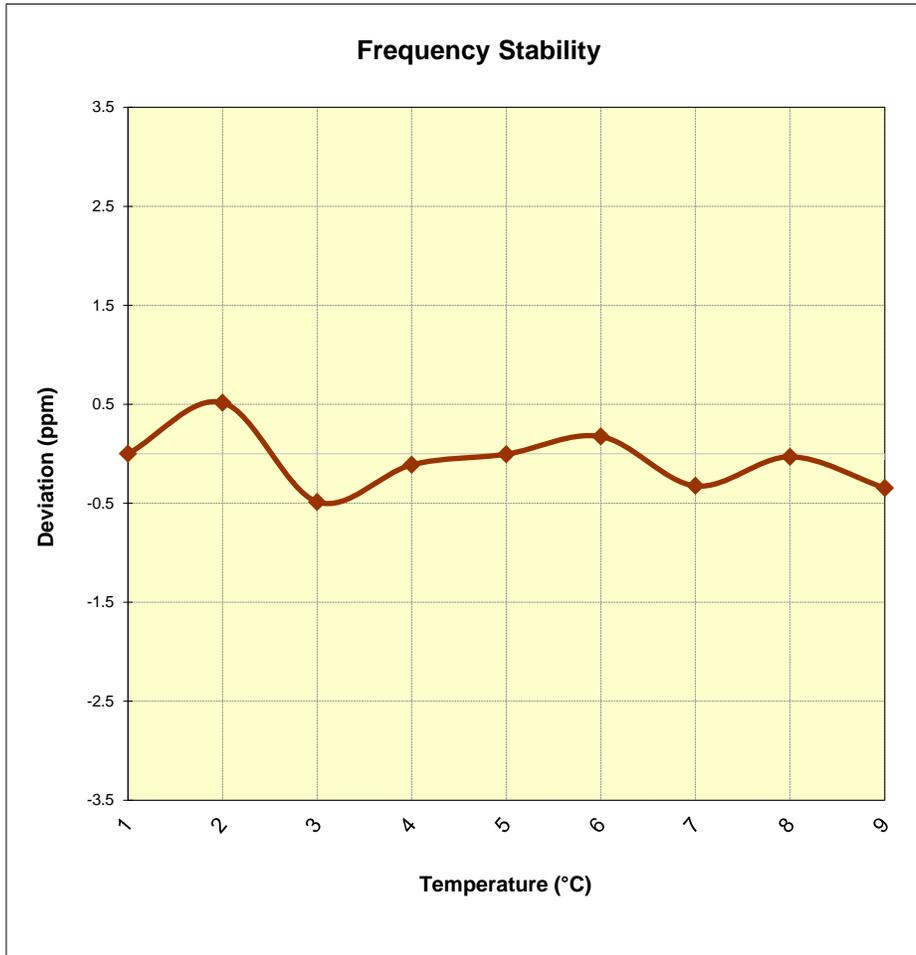
OPERATING FREQUENCY: 782,000,000 Hz  
 CHANNEL: 23230  
 REFERENCE VOLTAGE: 4.41 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	+ 20 (Ref)	781,999,772	-228	-0.0000292
100 %		- 30	782,000,086	86	0.0000110
100 %		- 20	781,999,920	-80	-0.0000102
100 %		- 10	781,999,756	-244	-0.0000312
100 %		0	782,000,235	235	0.0000301
100 %		+ 10	782,000,011	11	0.0000014
100 %		+ 20	781,999,962	-38	-0.0000049
100 %		+ 30	781,999,941	-59	-0.0000075
100 %		+ 40	782,000,191	191	0.0000244
100 %		+ 50	782,000,032	32	0.0000041
85 %		+ 20	782,000,379	379	0.0000485
BATT. ENDPOINT		3.51	+ 20	781,999,863	-137

Table 7-64. Frequency Stability Data (Band 13)

FCC ID: ZNFF100VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Band 13 Frequency Stability Measurements



**Figure 7-11. Frequency Stability Graph (Band 13)**

<b>FCC ID:</b> ZNFF100VM	 Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2006150096-03.ZNF	<b>Test Dates:</b> 06/26/2020-08/18/2020	<b>EUT Type:</b> Portable Handset		Page 284 of 301

## Band 5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz  
 CHANNEL: 20525  
 REFERENCE VOLTAGE: 4.41 VDC  
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	+ 20 (Ref)	836,499,625	-375	-0.0000448
100 %		- 30	836,500,082	82	0.0000098
100 %		- 20	836,500,458	458	0.0000548
100 %		- 10	836,500,103	103	0.0000123
100 %		0	836,500,039	39	0.0000047
100 %		+ 10	836,499,937	-63	-0.0000075
100 %		+ 20	836,500,044	44	0.0000053
100 %		+ 30	836,499,958	-42	-0.0000050
100 %		+ 40	836,500,257	257	0.0000307
100 %		+ 50	836,499,905	-95	-0.0000114
85 %		+ 20	836,500,266	266	0.0000318
BATT. ENDPOINT		3.51	+ 20	836,500,076	76

**Table 7-65. Frequency Stability Data (Band 5)**

FCC ID: ZNFF100VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Band 5 Frequency Stability Measurements

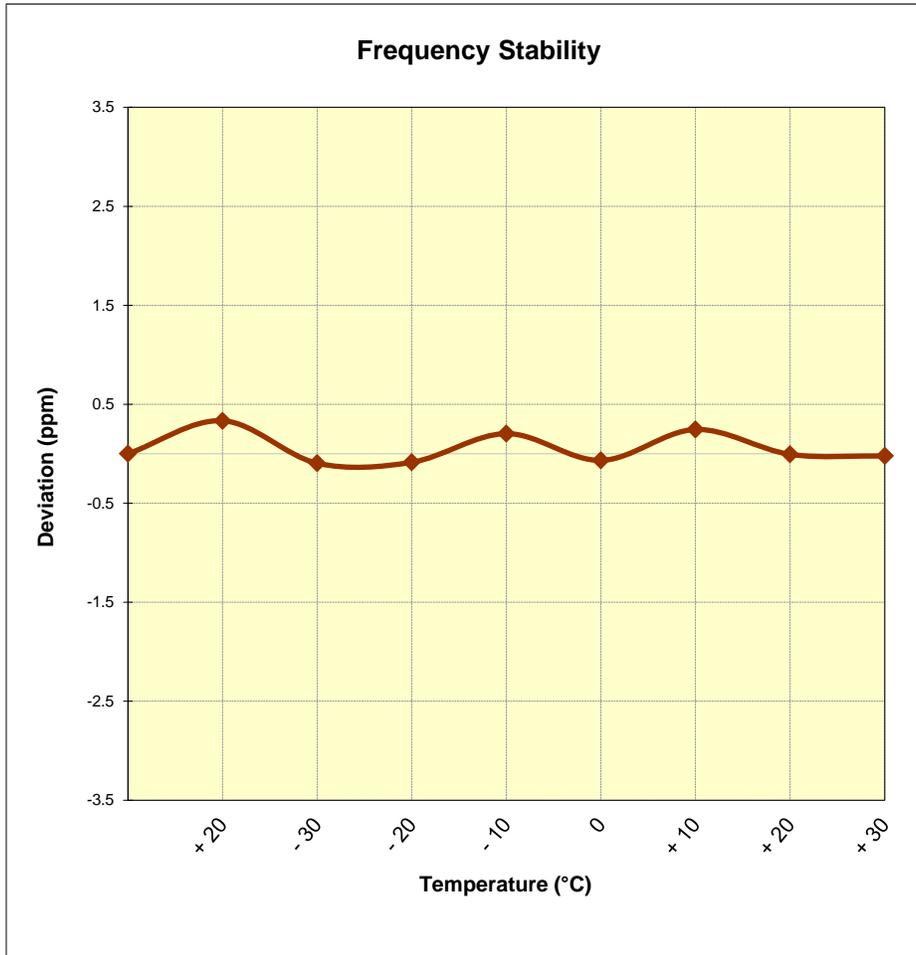


Figure 7-12. Frequency Stability Graph (Band 5)

FCC ID: ZNFF100VM	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	 <b>LG</b>	<b>Approved by:</b> Quality Manager
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## Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz  
 CHANNEL: 132322  
 REFERENCE VOLTAGE: 4.41 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)	
100 %	4.41	+ 20 (Ref)	1,744,999,790	-210	-0.0000120	
100 %		- 30	1,744,999,952	-48	-0.0000028	
100 %		- 20	1,744,999,677	-323	-0.0000185	
100 %		- 10	1,744,999,985	-15	-0.0000009	
100 %		0	1,745,000,080	80	0.0000046	
100 %		+ 10	1,744,999,968	-32	-0.0000018	
100 %		+ 20	1,745,000,289	289	0.0000166	
100 %		+ 30	1,745,000,392	392	0.0000225	
100 %		+ 40	1,744,999,669	-331	-0.0000190	
100 %		+ 50	1,745,000,099	99	0.0000057	
85 %			+ 20	1,744,999,958	-42	-0.0000024
BATT. ENDPOINT		3.51	+ 20	1,744,999,984	-16	-0.0000009

Table 7-66. 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: ZNFF100VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Band 66/4 Frequency Stability Measurements

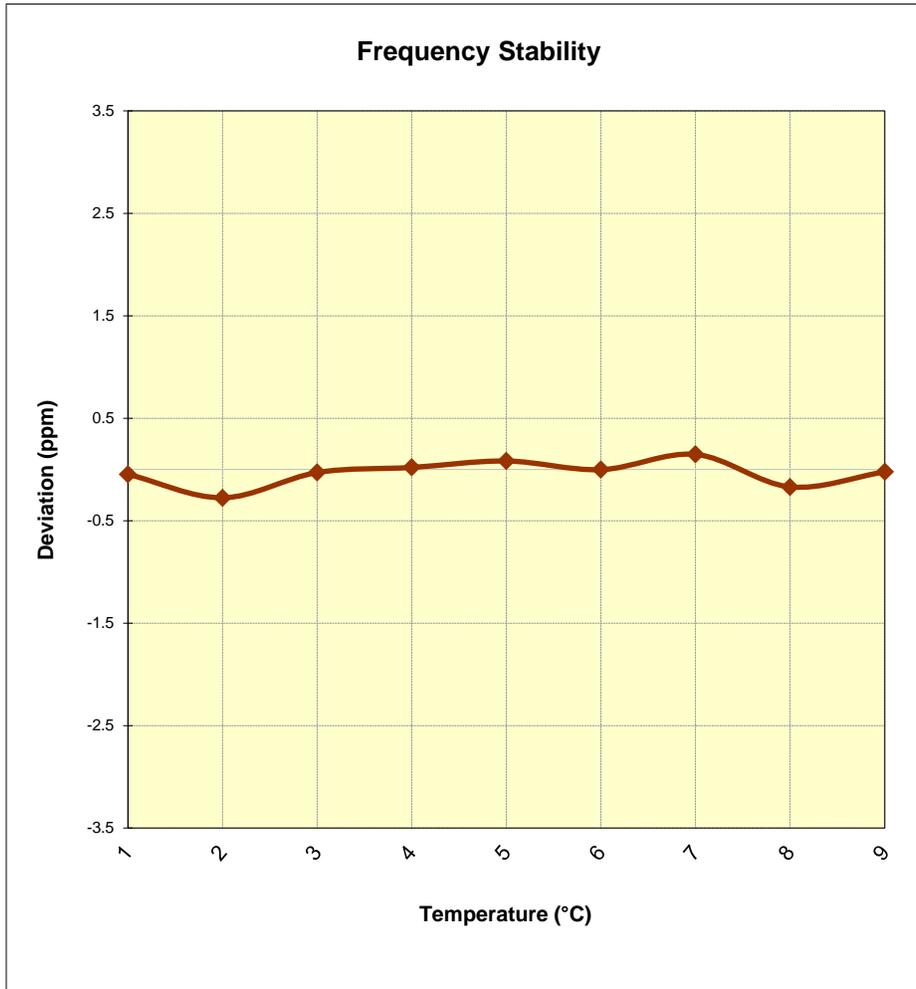


Figure 7-13. Frequency Stability Graph (Band 66/4)

<b>FCC ID:</b> ZNFF100VM		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2006150096-03.ZNF	<b>Test Dates:</b> 06/26/2020-08/18/2020	<b>EUT Type:</b> Portable Handset		Page 288 of 301

## Band 2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,880,000,000 Hz  
 CHANNEL: 18900  
 REFERENCE VOLTAGE: 4.41 VDC  
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)	
100 %	4.41	+ 20 (Ref)	1,879,999,843	-157	-0.0000084	
100 %		- 30	1,880,000,127	127	0.0000068	
100 %		- 20	1,879,999,739	-261	-0.0000139	
100 %		- 10	1,880,000,015	15	0.0000008	
100 %		0	1,879,999,675	-325	-0.0000173	
100 %		+ 10	1,879,999,976	-24	-0.0000013	
100 %		+ 20	1,880,000,127	127	0.0000068	
100 %		+ 30	1,879,999,768	-232	-0.0000123	
100 %		+ 40	1,880,000,044	44	0.0000023	
100 %		+ 50	1,879,999,865	-135	-0.0000072	
85 %			+ 20	1,880,000,270	270	0.0000144
BATT. ENDPOINT		3.51	+ 20	1,879,999,994	-6	-0.0000003

Table 7-67. Frequency Stability Data (Band 2)

**Note:**

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

FCC ID: ZNFF100VM	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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## Band 2 Frequency Stability Measurements

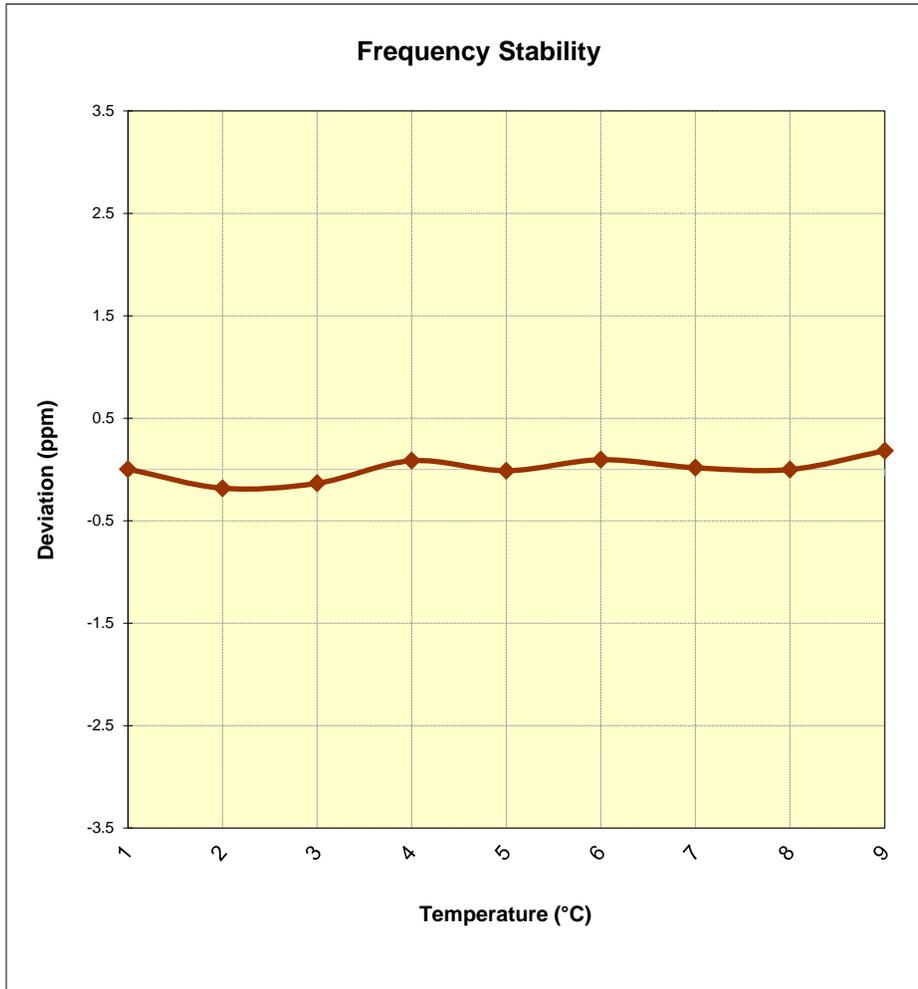


Figure 7-14. Frequency Stability Graph (Band 2)

FCC ID: ZNFF100VM	 <b>PCTEST</b> Proud to be part of 	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: 4.41 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	+ 20 (Ref)	2,309,999,705	-295	-0.0000128
100 %		- 30	2,310,000,124	124	0.0000054
100 %		- 20	2,309,999,848	-152	-0.0000066
100 %		- 10	2,310,000,247	247	0.0000107
100 %		0	2,310,000,245	245	0.0000106
100 %		+ 10	2,310,000,250	250	0.0000108
100 %		+ 20	2,310,000,450	450	0.0000195
100 %		+ 30	2,309,999,857	-143	-0.0000062
100 %		+ 40	2,309,999,834	-166	-0.0000072
100 %		+ 50	2,310,000,131	131	0.0000057
85 %		+ 20	2,310,000,316	316	0.0000137
BATT. ENDPOINT		3.51	+ 20	2,310,000,387	387

**Table 7-68. 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: ZNFF100VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Band 30 Frequency Stability Measurements

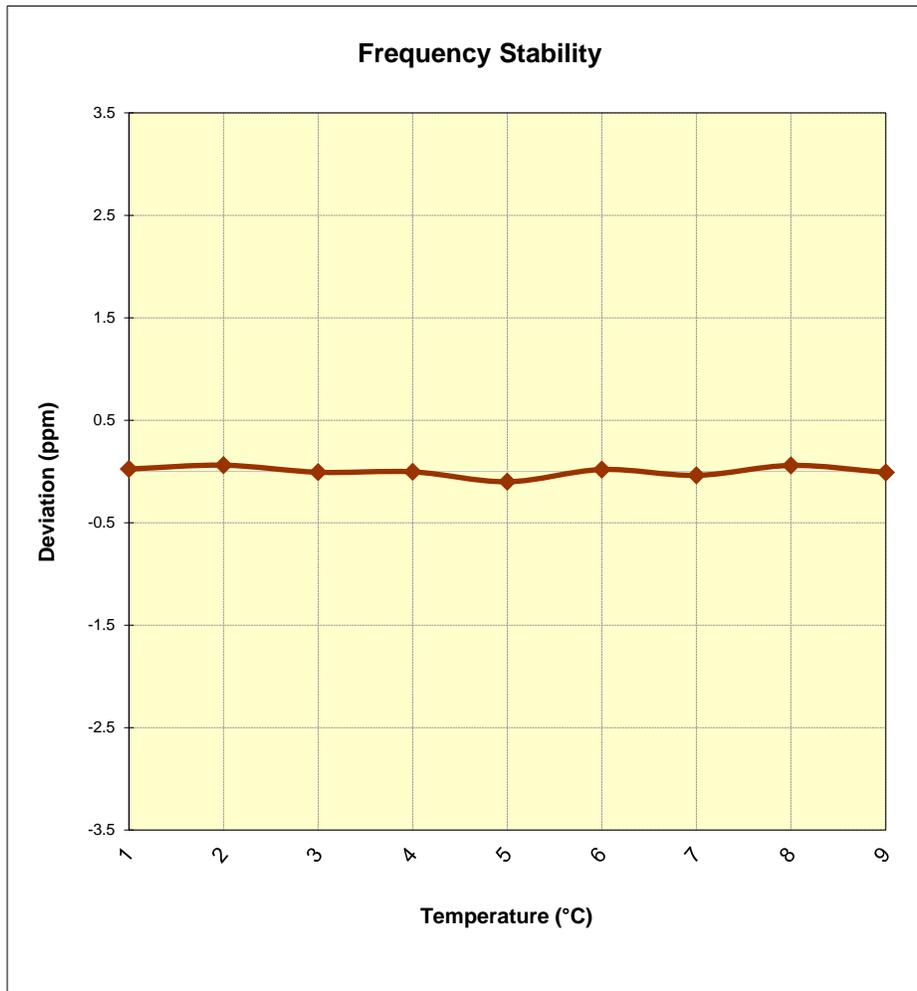


Figure 7-15. Frequency Stability Graph (Band 30)

FCC ID: ZNFF100VM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz  
 CHANNEL: 40620  
 REFERENCE VOLTAGE: 4.41 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	+ 20 (Ref)	2,593,000,134	134	0.0000052
100 %		- 30	2,593,000,384	384	0.0000148
100 %		- 20	2,592,999,963	-37	-0.0000014
100 %		- 10	2,593,000,158	158	0.0000061
100 %		0	2,593,000,335	335	0.0000129
100 %		+ 10	2,593,000,239	239	0.0000092
100 %		+ 20	2,592,999,839	-161	-0.0000062
100 %		+ 30	2,592,999,844	-156	-0.0000060
100 %		+ 40	2,592,999,902	-98	-0.0000038
100 %		+ 50	2,593,000,043	43	0.0000017
85 %		+ 20	2,592,999,694	-306	-0.0000118
BATT. ENDPOINT		3.51	+ 20	2,592,999,959	-41

**Table 7-69. 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: ZNFF100VM	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset	Page 293 of 301	

## Band 41 Frequency Stability Measurements

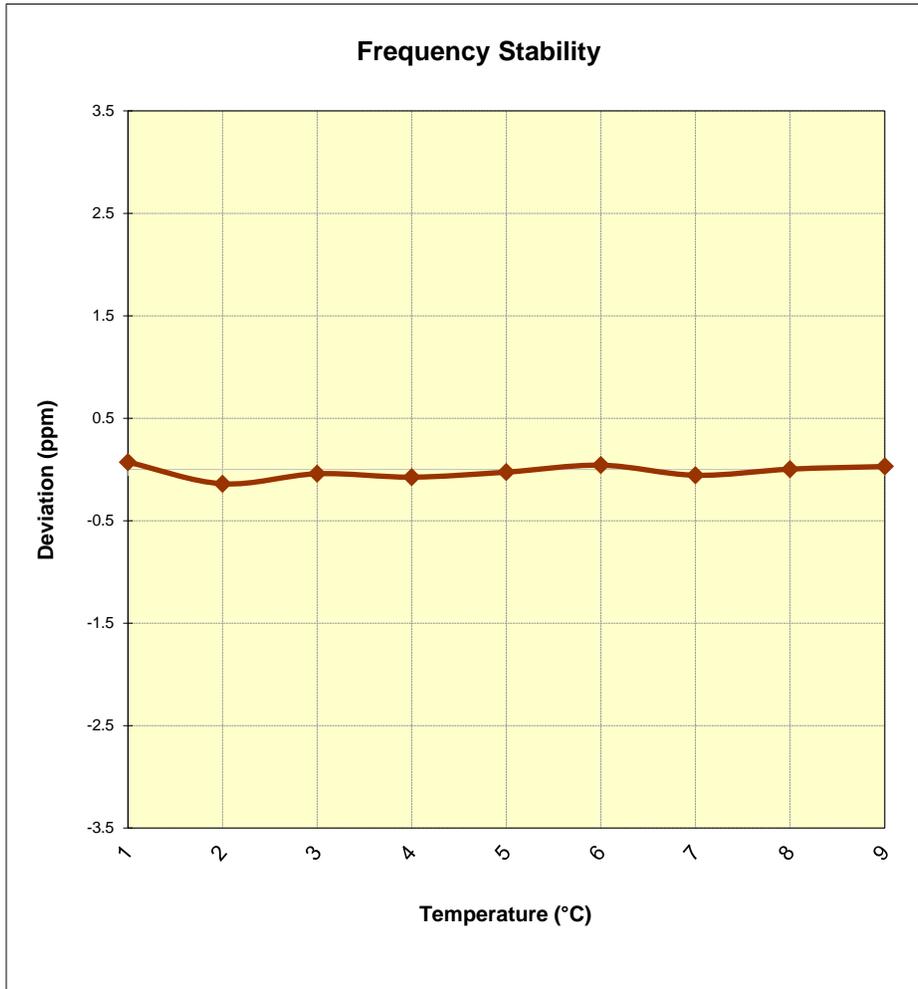


Figure 7-16. Frequency Stability Graph (Band 41)

FCC ID: ZNFF100VM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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## Band n5 Frequency Stability Measurements

<b>NR Band n5</b>					
Operating Frequency (Hz):		836,500,000			
Ref. Voltage (VDC):		4.41			
Deviation Limit:		± 0.00025% or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	836,500,279	74	0.0000088
		- 20	836,499,920	-285	-0.0000341
		- 10	836,499,928	-277	-0.0000331
		0	836,500,170	-35	-0.0000042
		+ 10	836,499,944	-261	-0.0000312
		+ 20 (Ref)	836,500,205	0	0.0000000
		+ 30	836,499,995	-210	-0.0000251
		+ 40	836,499,981	-224	-0.0000268
		+ 50	836,500,088	-117	-0.0000140
Battery Endpoint	3.51	+ 20	836,500,102	-103	-0.0000123

**Table 7-70. Frequency Stability Data (Band n5)**

FCC ID: ZNFF100VM	 <b>PCTEST</b> Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
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## Band n5 Frequency Stability Measurements

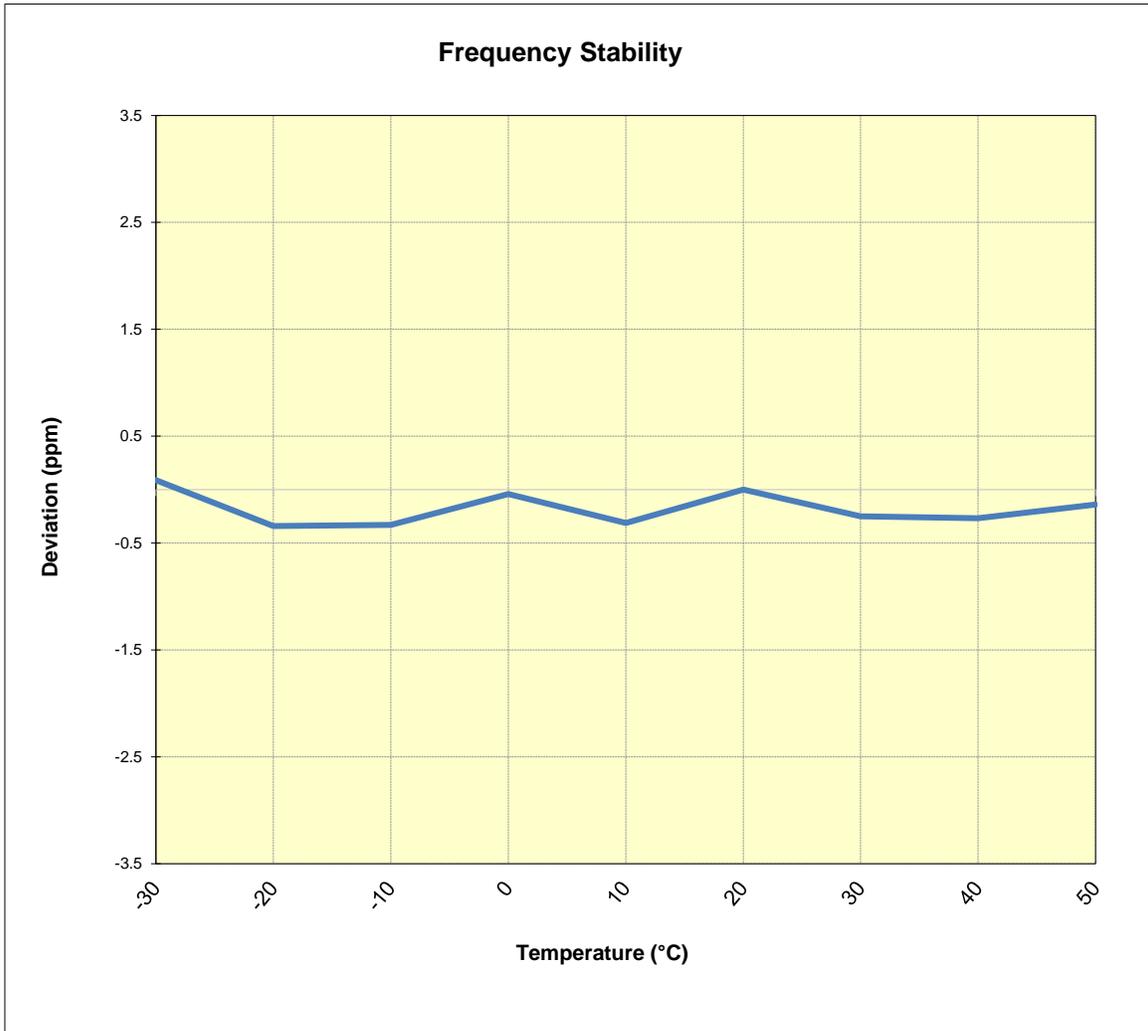


Figure 7-17. Frequency Stability Graph (Band n5)

FCC ID: ZNFF100VM	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	 <b>LG</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2006150096-03.ZNF	<b>Test Dates:</b> 06/26/2020-08/18/2020	<b>EUT Type:</b> Portable Handset	Page 296 of 301	

## Band n66 Frequency Stability Measurements

<b>LTE Band n66</b>					
		Operating Frequency (Hz):		1,745,000,000	
		Ref. Voltage (VDC):		4.41	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	1,732,499,981	-92	-0.0000053
		- 20	1,732,499,924	-149	-0.0000086
		- 10	1,732,499,832	-241	-0.0000139
		0	1,732,499,875	-198	-0.0000114
		+ 10	1,732,499,978	-95	-0.0000055
		+ 20 (Ref)	1,732,500,073	0	0.0000000
		+ 30	1,732,499,855	-218	-0.0000126
		+ 40	1,732,500,139	66	0.0000038
		+ 50	1,732,500,346	273	0.0000158
Battery Endpoint	3.51	+ 20	1,732,499,876	-197	-0.0000114

**Table 7-71. Frequency Stability Data (Band n66)**

FCC ID: ZNFF100VM	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
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## Band n66 Frequency Stability Measurements

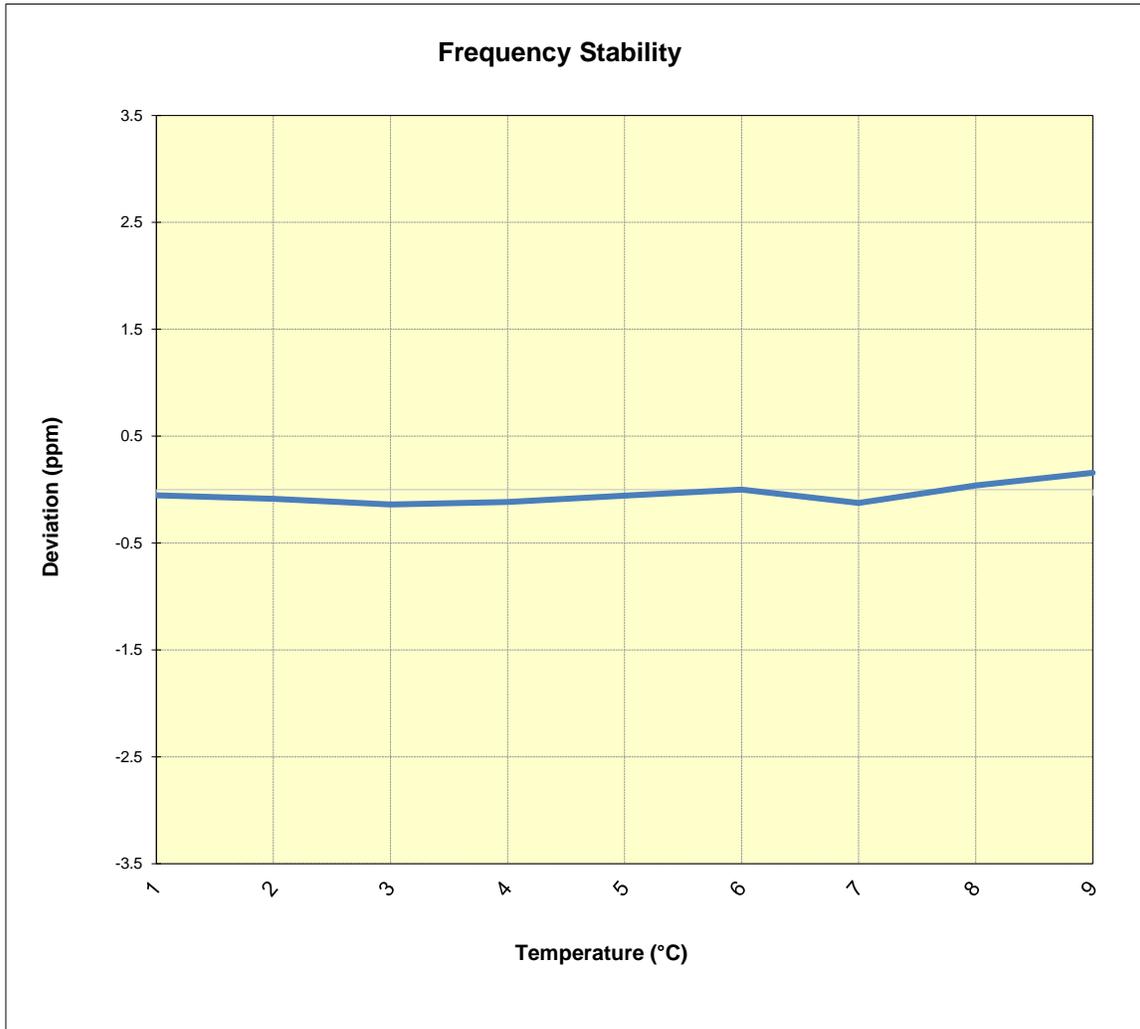


Figure 7-18. Frequency Stability Graph (Band n66)

FCC ID: ZNFF100VM	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 298 of 301

## Band n2 Frequency Stability Measurements

<b>NR Band n2</b>					
		Operating Frequency (Hz):		1,880,000,000	
		Ref. Voltage (VDC):		4.41	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	1,882,500,145	132	0.0000070
		- 20	1,882,499,914	-99	-0.0000053
		- 10	1,882,500,106	93	0.0000049
		0	1,882,499,967	-46	-0.0000024
		+ 10	1,882,499,718	-295	-0.0000157
		+ 20 (Ref)	1,882,500,013	0	0.0000000
		+ 30	1,882,500,117	104	0.0000055
		+ 40	1,882,500,181	168	0.0000089
		+ 50	1,882,500,038	25	0.0000013
Battery Endpoint	3.51	+ 20	1,882,500,349	336	0.0000178

**Table 7-72. Frequency Stability Data (Band n2)**

FCC ID: ZNFF100VM	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M2006150096-03.ZNF	<b>Test Dates:</b> 06/26/2020-08/18/2020	<b>EUT Type:</b> Portable Handset	Page 299 of 301	

## Band n2 Frequency Stability Measurements

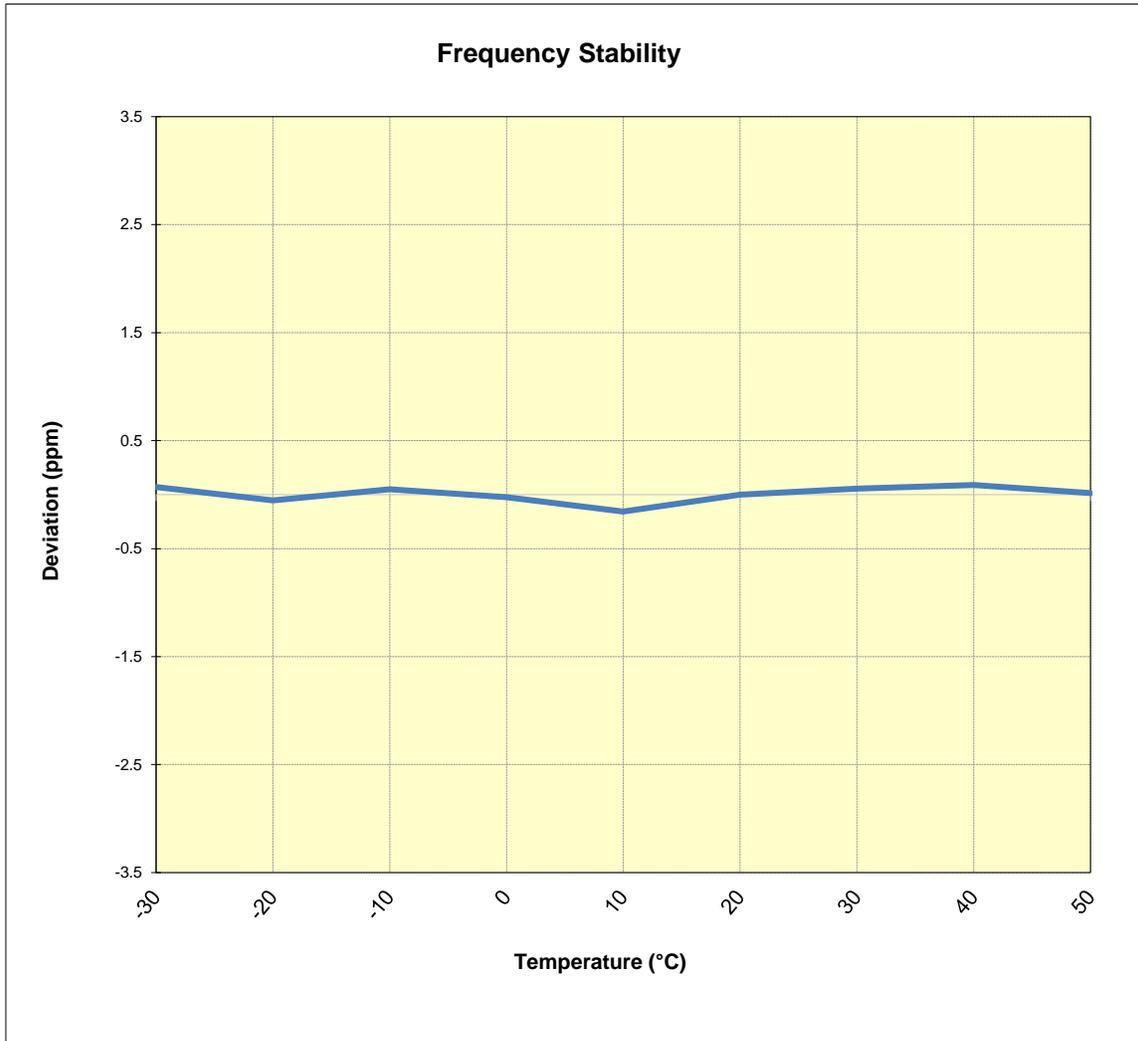


Figure 7-19. Frequency Stability Graph (Band n2)

FCC ID: ZNFF100VM	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 300 of 301

## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFF100VM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: ZNFF100VM	 Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M2006150096-03.ZNF	Test Dates: 06/26/2020-08/18/2020	EUT Type: Portable Handset		Page 301 of 301