









FCC ID: ZNFV600VM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-208. Ant3 Upper Band Edge (100MHz-1CC – QPSK Full RB)





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Plot 7-212. Ant3 Upper Band Edge (100MHz-4CC – QPSK Full RB)

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7.6 Frequency Stability / Temperature Variation §2.1055

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. 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 C63.5-2015 Section 5.6 KDB 842590 D01 v01 Section 4.5

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 measured using horn antenna connected to a spectrum analyzer. The EUT was placed inside an environmental chamber. Using a foam plug, the horn antenna measured the frequency of the fundamental signal.

Test Notes

The Frequency Deviation column in the table below is the amount of deviation measured from the center frequency of the Reference measurement (first row).

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Frequency Stability Measurements (Band n261) §2.1055

OPERATING FREQUENCY:	27,922,080,000	Hz
CHANNEL:	2077867	
REFERENCE VOLTAGE:	3.90	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.90	+ 20 (Ref)	27,996,080,000	0	0.0000000
100 %		- 30	27,882,080,000	114,000,000	0.4082790
100 %		- 20	27,917,080,000	79,000,000	0.2829302
100 %		- 10	27,877,080,000	119,000,000	0.4261860
100 %		0	27,848,080,000	148,000,000	0.5300465
100 %		+ 10	27,911,080,000	85,000,000	0.3044186
100 %		+ 20	27,836,080,000	160,000,000	0.5730232
100 %		+ 30	28,007,080,000	-11,000,000	-0.0393953
100 %		+ 40	27,961,080,000	35,000,000	0.1253488
100 %		+ 50	27,995,080,000	1,000,000	0.0035814
BATT. ENDPOINT	3.60	+ 20	27,835,080,000	161,000,000	0.5766046
Table 7 404 Fragman ov Stability Data (p264)					

Table 7-101. Frequency Stability Data (n261)

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.

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Frequency Stability Measurements (Band n261) §2.1055

Table 7-102. Frequency Stability Graph (n261)

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Frequency Stability Measurements (Band n260) §2.1055

OPERATING FREQUENCY:	38,499,744,000	Hz
CHANNEL:	2254123	
REFERENCE VOLTAGE:	3.90	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.90	+ 20 (Ref)	38,568,744,000	0	0.0000000
100 %		- 30	38,583,744,000	-15,000,000	-0.0389613
100 %		- 20	38,506,744,000	62,000,000	0.1610400
100 %		- 10	38,621,744,000	-53,000,000	-0.1376633
100 %		0	38,578,744,000	-10,000,000	-0.0259742
100 %		+ 10	38,521,744,000	47,000,000	0.1220787
100 %		+ 20	38,534,744,000	34,000,000	0.0883123
100 %		+ 30	38,597,744,000	-29,000,000	-0.0753252
100 %		+ 40	38,608,744,000	-40,000,000	-0.1038968
100 %		+ 50	38,616,744,000	-48,000,000	-0.1246762
BATT. ENDPOINT	3.60	+ 20	38,550,744,000	18,000,000	0.0467536
Table 7 402 Ereguanov Stability Data (n260)					

Table 7-103. Frequency Stability Data (n260)

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.

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Frequency Stability Measurements (Band n260) §2.1055

Table 7-104. Frequency Stability Graph (n260)

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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: ZNFV600VM** complies with all the requirements of Part 30.

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9.0 APPENDIX A

9.1 VDI Mixer Verification Certificate

Virginia Diodes, Inc 979 2nd St. SE Suite 309 Charlottesville, VA 22902 Phone: 434-297-3257 Fax: 434-297-3258

Certificate of Conformance

To: PCTEST Engineering Laboratory 7185 Oakland Mills Road Columbia, MD 21046 United States From: Virginia Diodes, Inc 979 2nd St. SE Suite 309 Charlottesville, VA 22902

Packing List No: 193065

Today's Date: 10/02/19

Quantity <u>Shipped</u> 1

Unit Description EA VDIWR19.0SAX WR19SAX / SN: SAX 411 Order-Job Number 19329-01

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature Virginia Diodes, Inc

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Virginia Diodes, Inc

979 2nd St. SE Suite 309 Charlottesville, VA 22902 Phone: 434-297-3257 Fax: 434-297-3258

Certificate of Conformance

To: PCTEST Engineering Laboratory 6660-B Dobbin Road Columbia, MD 21045 United States From: Virginia Diodes, Inc 979 2nd St. SE Suite 309 Charlottesville, VA 22902

Shipping Date: 05/14/18

Today's Date: 05/14/18

Quantity

Unit Description

<u>Shipped</u> 1

EA VDIWR12.0SAX WR12SAX - Spectrum Analyzer Extension Module / SN: SAX 252

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature Virginia Diodes, Inc

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Certificate of Conformance

To: PCTEST Engineering Laboratory 6660-B Dobbin Road Columbia, MD 21045 United States From: Virginia Diodes, Inc 979 2nd St. SE Suite 309 Charlottesville, VA 22902

Shipping Date: 05/08/18

Today's Date: 05/08/18

Quantity

- Unit Description
- 1 EA

VDIWR8.0SAX WR8.0SAX - Spectrum Analyzer Extension Module; SN: SAX 253.

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

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To: PCTEST Engineering Laboratory 6660-B Dobbin Road Columbia, MD 21045 United States From: Virginia Diodes, Inc 979 2nd St. SE Suite 309 Charlottesville, VA 22902

Shipping Date: 05/21/18

Today's Date: 05/22/18

Quantity

Shipped Unit 1 EA Description VDIWR5.1SAX WR5.1SAX - Spectrum Analyzer Extension Module; SN: SAX 254.

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature Virginia Diodes, Inc

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