

Radio Test Report
FCC Part 27
(757 MHz to 758 MHz and 787 to 788 MHz)

Model: LN700

FCC ID: E5MDS-LN700

COMPANY: GE MDS LLC
175 Science Parkway
Rochester, NY 14620

TEST SITE(S): National Technical Systems - Silicon Valley
41039 Boyce Road.
Fremont, CA. 94538-2435

REPORT DATE: July 10, 2017

RE-ISSUED DATE: July 12, 2017

FINAL TEST DATES: June 15, 16 and July 12, 2017

TOTAL NUMBER OF PAGES: 29



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VALIDATING SIGNATORIES

PROGRAM MGR

A handwritten signature in black ink, reading "David W. Bare", written over a horizontal line.

David W. Bare
Chief Engineer

TECHNICAL REVIEWER:

A handwritten signature in black ink, reading "David W. Bare", written over a horizontal line.

David W. Bare
Chief Engineer

FINAL REPORT PREPARER:

A handwritten signature in black ink, reading "Gary Izard", written over a horizontal line.

Gary Izard
Technical Writer

QUALITY ASSURANCE DELEGATE

A handwritten signature in black ink, reading "Breanne Siska", written over a horizontal line.

Breanne Siska
Technical Writer



REVISION HISTORY

Rev#	Date	Comments	Modified By
	July 10, 2017	First release	
1	July 12, 2017	Corrected block edge test data	DWB

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SCOPE

Tests have been performed on the GE MDS LLC model LN700, pursuant to the relevant requirements of the following standard(s) in order to obtain device certification against the regulatory requirements of the Federal Communications Commission and Innovation Science and Economic Development Canada.

- Code of Federal Regulations (CFR) Title 47 Part 2
- CFR 47 Part 27 Subpart C (Operation in 757–758 MHz and 787–788 MHz Bands)

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in National Technical Systems - Silicon Valley test procedures:

ANSI C63.4:2014

ANSI TIA-603-D June 2010

FCC KDB 971168 Licensed Digital Transmitters

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Innovation Science and Economic Development Canada performance and procedural standards.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the GE MDS LLC model LN700 and therefore apply only to the tested sample. The sample was selected and prepared by Dennis McCarthy of GE MDS LLC.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, the device requires certification. Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of GE MDS LLC model LN700 complied with the requirements of the standards and frequency bands declared in the scope of this test report.

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report for the test performed.

TEST RESULTS

FCC		Description	Measured	Limit	Result
Transmitter Modulation, output power and other characteristics					
§2.1033 (b) (5) §27.5		Frequency Range	757–758 MHz and 787–788 MHz	757–758 MHz and 787–788 MHz	Pass
§2.1033 (c) (4) §2.1047		Modulation Type	4, 16 and 64QAM	Any allowed	Pass
§2.1033 (c) (6) §2.1033 (c) (7) §2.1046 §27.5(b)(1) & (9)		ERP	55.1 dBm ERP (757-758MHz) 44.7 dBm ERP (787-788MHz)	1000 Watts (757 – 758 MHz) 30 Watts (787 – 788 MHz)	Pass
§2.1049 §27.53		Occupied Bandwidth	43.5 kHz	Remain in Block	Pass
Transmitter spurious emissions					
§2.1051 §2.1053 §2.1057 §27.53(c) & (f)		At the antenna terminals	All < -13 dBm	-13 dBm	Pass
		Field strength	No change from original filing		
Other details					
§2.1055 §27.54		Frequency stability	No change from original filing		
§2.1093		RF Exposure	No change from original filing		
§2.1033 (c) (8)		Final radio frequency amplifying circuit’s dc voltages and currents for normal operation over the power range	No change from original filing		
-	-	Antenna Gain	Maximum 16.5dBi		
Notes					
Note 1 – The measurement at the channel edge is made in a resolution bandwidth of at least 100kHz. For measurements < 100kHz from the edge of the channel, the measurement bandwidth is at least 30kHz. For emissions above 1GHz, the resolution bandwidth used is at least 1MHz.					

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2) and were calculated in accordance with NAMAS document NIS 81 and M3003.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF frequency	Hz	25 to 7,000 MHz	1.7×10^{-7}
RF power, conducted	dBm	25 to 7,000 MHz	± 0.52 dB
Conducted emission of transmitter	dBm	25 to 40,000 MHz	± 0.7 dB

EQUIPMENT UNDER TEST (EUT) DETAILS**GENERAL**

The GE MDS LLC model LN700 is a licensed radio module that is designed to operate in the 757-758 MHz and 787-788 MHz bands utilizing QAM modulations. Since the EUT could be placed in any position during operation, the EUT was treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 10-60 Volts DC, 2 Amps.

The sample was received on June 14, 2017 and tested on June 15, 16 and July 12, 2017. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
GE MDS LLC	LN700	Radio Module	2800415	E5MDS-LN700

OTHER EUT DETAILS

The following EUT details should be noted: The host product in which this product will be used "Orbit" is rated from -40°C to +70°C, 10-60 VDC input.

PROPOSED PRODUCT CHANGES

The EUT is identical to the previously tested product except that an additional selection for operation in a 50 kHz channel bandwidth for QAM modulation has been added to the software.

ENCLOSURE

The EUT does not have an enclosure as it is intended to be installed in a complete product. The PCB measures approximately 11 cm wide by 3.8 cm deep 0.6 cm high.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at National Technical Systems - Silicon Valley.

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Mastech	HY6020ES	DC Power Supply	NTS 2317	-
HP	Probook 6555b	Laptop	CNU0502BCT	-

EUT INTERFACE PORTS

The I/O cabling configuration during testing was as follows:

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
RF out	Load	Direct	-	-
DC power	Power Source	two wire	Unshielded	1.2
Com1	RJ45 to DB9 adapter	Cat 5	Unshielded	1.0

Additional on Support Equipment

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
Laptop Serial	RJ45 to DB9 adapter	Multiwire	Shielded	2.0
Load	Notch Filter	Coax	Shielded	1.0
Notch Filter	Spectrum Analyzer	Coax	Shielded	1.5

Note: The notch filter was used only during nearby 12 MHz wide out of band emissions tests.

EUT OPERATION

During testing the EUT was set to transmit a modulated signal at the desired frequency and power level using serial communications software on the laptop computer.

TESTING

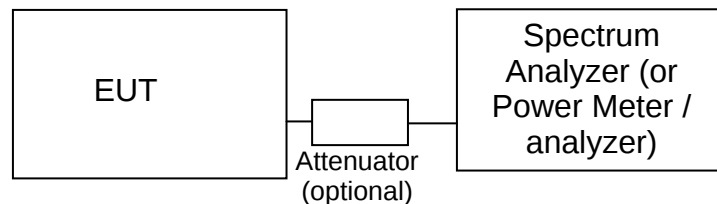
GENERAL INFORMATION

Antenna port measurements were taken at the National Technical Systems - Silicon Valley test site located at 41039 Boyce Road, Fremont, CA 94538-2435.

Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements.

RF PORT MEASUREMENT PROCEDURES

Conducted measurements are performed with the EUT's rf input/output connected to the input of a spectrum analyzer, power meter or modulation analyzer. When required an attenuator, filter and/or dc block is placed between the EUT and the spectrum analyzer to avoid overloading the front end of the measurement device. Measurements are corrected for the insertion loss of the attenuators and cables inserted between the rf port of the EUT and the measurement equipment.



Test Configuration for Antenna Port Measurements

For devices with an integral antenna the output power and spurious emissions are measured as a field strength at a test distance of (typically) 3m and then converted to an eirp using a substitution measurement (refer to Radiated Emissions Measurements). All other measurements are made as detailed below but with the test equipment connected to a measurement antenna directed at the EUT.

OUTPUT POWER

Output power is measured using a power meter and an average sensor head, a spectrum analyzer or a power meter and peak power sensor head as required by the relevant rule part(s). Where necessary measurements are gated to ensure power is only measured over periods that the device is transmitting.

Power measurements made directly on the rf power port are, when appropriate, converted to an EIRP by adding the gain of the highest gain antenna that can be used with the device under test, as specified by the manufacturer.

BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS-GEN. The measurement bandwidth is set to be at least 1% of the instrument's frequency span.

TRANSMITTER BLOCK EDGE MEASUREMENTS

The transmitter block edge measurements are made using resolution bandwidths as specified in the pertinent rule part(s). Where narrower bandwidths are used the measurement is corrected to account for the reduced bandwidth by either using the adjacent channel power function of the spectrum analyzer to sum the power across the required measurement bandwidth. The frequency span of the analyzer is set to ensure the fundamental signal and all significant sidebands are displayed.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the EUT antenna port and the test receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.



Appendix A Test Equipment Calibration Data

Radio Antenna Port (Power, Block Edge and Bandwidth), 15-Jun-17

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1422	3/10/2017	3/10/2018
Rohde & Schwarz	Peak Power Sensor 100uW - 2Watts (w/ 20dB pad, SN BJ5155)	NRV-Z32	1536	4/19/2017	4/21/2018
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/17/2016	7/17/2017

Radio Antenna Port (Block Edge), 12-Jul-17

Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	5/22/2017	5/22/2018
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Appendix B Test Data

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EMC Test Data

Client:	GE MDS LLC	Job Number:	JD105108
Product	LN700	T-Log Number:	T015210
System Configuration:	50 kHz Channel BW	Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	
Emissions Standard(s):	FCC Part 27	Class:	
Immunity Standard(s):		Environment:	Radio

EMC Test Data

For The

GE MDS LLC

Product

LN700

Date of Last Test: 7/12/2017



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD105108
Model:	LN700	T-Log Number:	T015210
Contact:	Dennis McCarthy	Project Manager:	Christine Krebill
Standard:	FCC Part 27	Project Coordinator:	-
		Class:	N/A

FCC Part 27 Power, Block Edge and Occupied Bandwidth

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

With the exception of the radiated spurious emissions tests, all measurements are made with the EUT's rf port connected to the measurement instrument via an attenuator or dc-block if necessary. All amplitude measurements are adjusted to account for the attenuation between EUT and measuring instrument. For frequency stability measurements the EUT was place inside an environmental chamber.

Radiated measurements are made with the EUT located on a non-conductive table, 3m from the measurement antenna.

Ambient Conditions:

Temperature: 23-25 °C
Rel. Humidity: 40-45 %

Summary of Results

Run #		Test Performed	Limit	Pass / Fail	Result / Margin
1		Output Power	27.53 (b)(1) or (b)(9) 44.8 or 60 dBm ERP	Pass	55.1 dBm ERP
2		Band Edge / Block Edge	27.53 (c)	Pass	Within block
3		99% or Occupied Bandwidth	1 MHz	Pass	43.5 kHz

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD105108
Model:	LN700	T-Log Number:	T015210
Contact:	Dennis McCarthy	Project Manager:	Christine Krebill
Standard:	FCC Part 27	Project Coordinator:	-
		Class:	N/A

Run #1: Output Power

Date of Test: 16-Jun
 Test Engineer: M. Birgani
 Test Location: Lab 4

Config. Used: Conducted
 Config Change: None
 EUT Voltage: 14 VDC

Cable Loss: 1.4 dB

Attenuator: 20.0 dB

Total Loss: 21.4 dB

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBd)	Result	ERP	
		(dBm) ¹	mW			dBm	W
39	787.9625	40.1	10232.9	4.6	Pass	44.7	29.512
30	787.9625	30.4	1096.5	14.3	Pass	44.7	29.512
40	757.9625	40.8	12022.6	14.3	Pass	55.1	323.594

Note 1: Output power measured using a peak power meter

Note 2: Power setting - the software power setting used during testing, included for reference only.



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD105108
Model:	LN700	T-Log Number:	T015210
Contact:	Dennis McCarthy	Project Manager:	Christine Krebill
Standard:	FCC Part 27	Project Coordinator:	-
		Class:	N/A

Run #2: Band edge/Block edge

On any frequency outside the 746-758 MHz and 776-788 MHz bands, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB (-13 dBm) (FCC §27.53(c)(1) & (2))

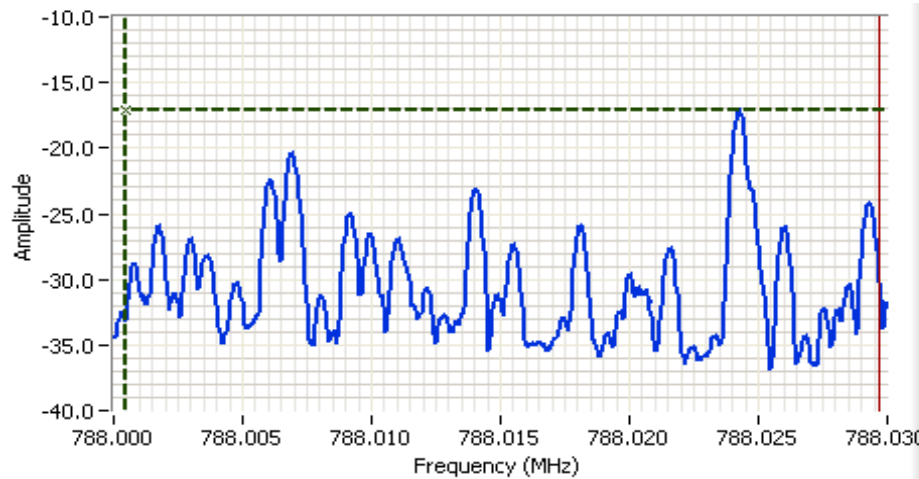
Compliance with this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed. (FCC §27.53(c)(5)).

On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations. (FCC §27.53(c)(3))

Compliance with this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Note 1:	Preliminary tests showed no difference in emissions between QAM4, QAM16 and QAM64 modulations. See Run #3
Note 2:	For operation in 787-788 MHz band, first 3 plots for the highest used channel shows compliance within 90 kHz of block edge, next plot shows compliance in the 210 kHz band that starts 90 kHz from the block edge, last plot shows compliance in the 793-805 MHz band.
Note 3:	For operation in the 787-788 MHz band, first 3 plots for the lowest used channel shows compliance within 90 kHz of block edge, next plot shows compliance in the 210 kHz band that starts 90 kHz from the block edge, last plot shows compliance in the 763-775 MHz band.
Note 4:	For operation in 757-758 MHz band, first 3 plot for the highest used channel shows compliance within 90 kHz of block edge, next plot shows compliance in the 210 kHz band that starts 90 kHz from the block edge, last plot shows compliance in the 763-775 MHz band.
Note 5:	For operation in the 757-758 MHz band, first 3 plots for the lowest used channel shows compliance within 90 kHz of block edge, next plot shows compliance in the 210 kHz band that starts 90 kHz from the block edge, last plot shows compliance in the 763-775 MHz band.
Note 6:	For operation in the 757-758 MHz band, lowest and highest channel frequencies are 757.0375 and 757.9625 MHz. For operation in the 787-788 MHz band, lowest and highest channel frequencies are 787.0375 and 787.9625 MHz.

Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A



Analyzer Settings

Rohde&Schwarz,FSQ
 CF: 788.015 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 40.0 DBM

Comments

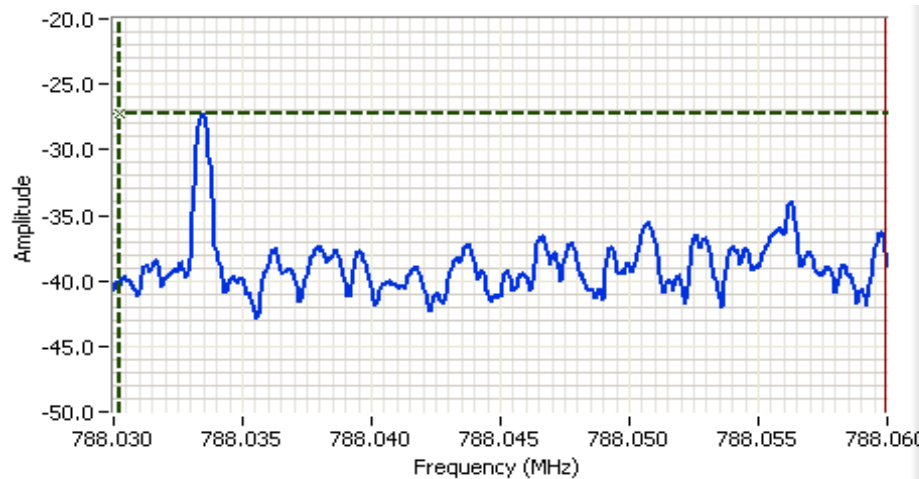
Power over span: -13.94dBm
 BAUD 40000, 64QAM, TX
 787.9625

Cursor 1 788.0004 -17.1

Cursor 2 788.0297 -43.1

Delta Freq. 29.2 kHz

Delta Amplitude 26.0



Analyzer Settings

Rohde&Schwarz,FSQ
 CF: 788.045 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 40.0 DBM

Comments

Power over span: -23.69dBm
 BAUD 40000, 64QAM, TX
 787.9625

Cursor 1 788.0302 -27.3

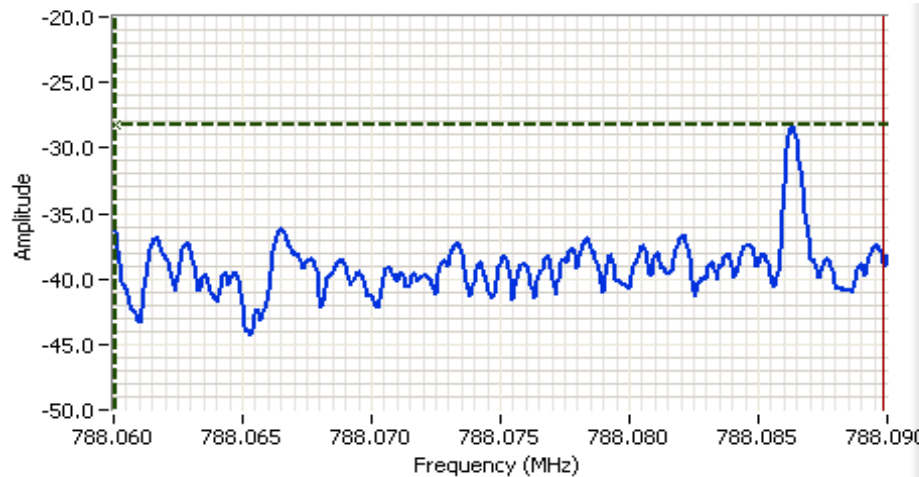
Cursor 2 788.0599 -53.3

Delta Freq. 29.7 kHz

Delta Amplitude 26.0



Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A



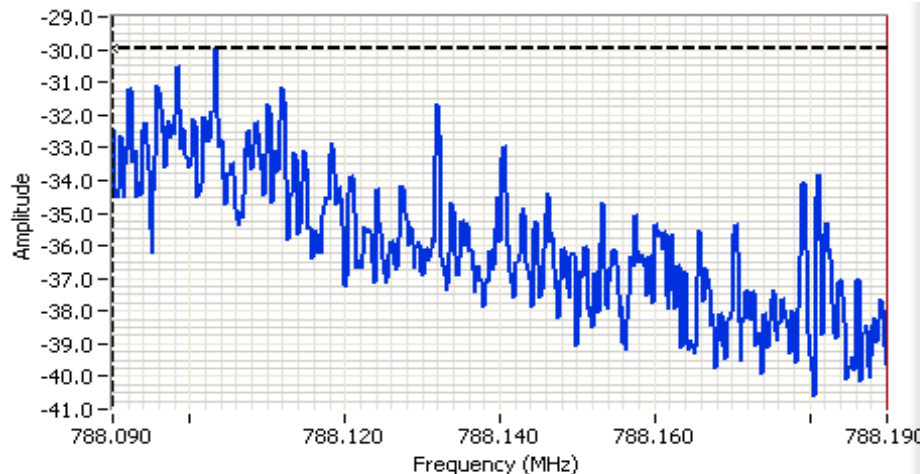
Analyzer Settings

Rohde&Schwarz,FSQ
 CF: 788.075 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 40.0 DBM

Comments

Power over span: -24.05dBm
 BAUD 40000, 64QAM, TX
 787.9625

Cursor 1 788.0600 -28.3
 Cursor 2 788.0899 -54.3
 Delta Freq. 29.8 kHz
 Delta Amplitude 26.0



Analyzer Settings

Agilent Technologies, E4446A
 CF: 788.140 MHz
 SPAN: 100 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: Normal
 Attn: 10 DB
 RL Offset: 30.0 DB
 Sweep Time: 95.6ms
 Ref Lvl: 20.0 DBM

Comments

Power over span: -15.57dBm
 BAUD 40000, 64QAM,
 TX 787.9625MHz

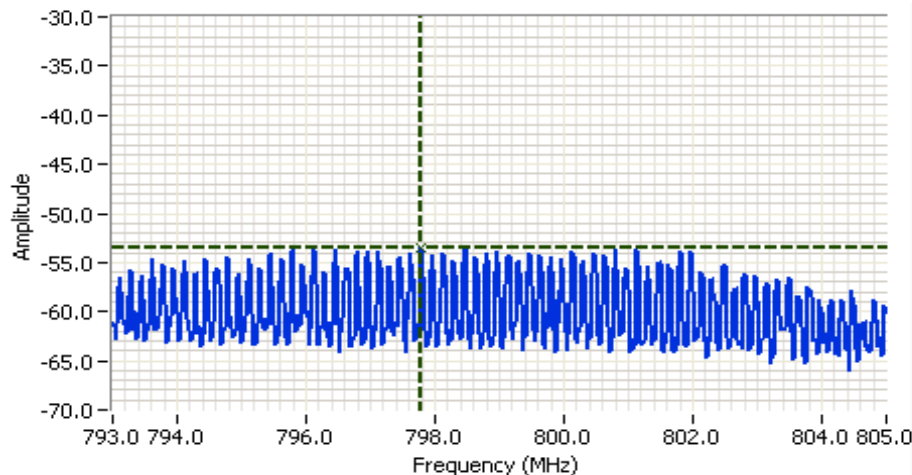
Cursor 1 788.0900 -30.0
 Cursor 2 788.1900 -56.0
 Delta Freq. 100 kHz
 Delta Amplitude 26.0





EMC Test Data

Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A

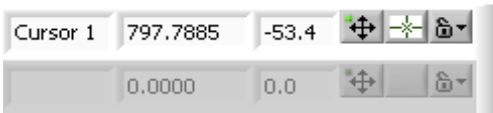


Analyzer Settings

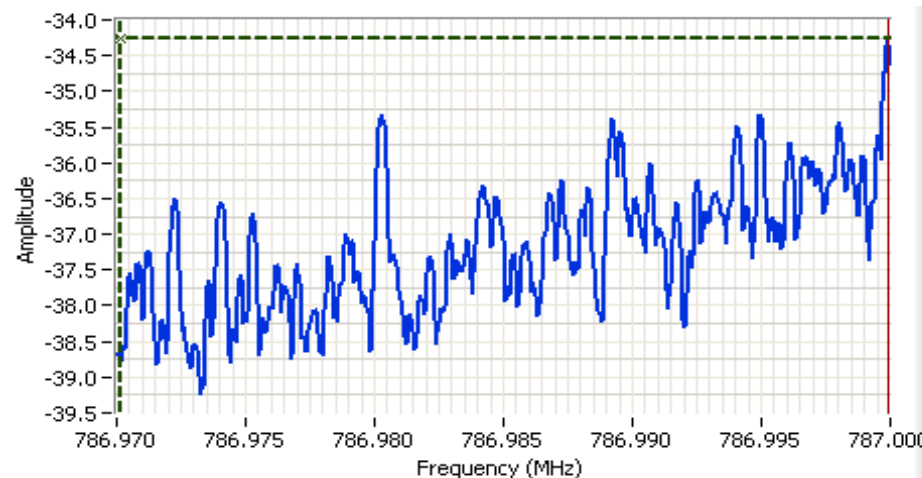
Rohde&Schwarz,F5Q
CF: 799.000 MHz
SPAN: 12.000 MHz
RB: 10.0 kHz
VB: 30.0 kHz
Detector: POS
Attn: 5 DB
RL Offset: 21.4 DB
Sweep Time: 120.0ms
Ref Lvl: 0.0 DBM

Comments

BAUD 40000, 64QAM
TX 787.9625MHz



Attenuation of $76 + 10 \cdot \log(P) = -46$ dBm absolute



Analyzer Settings

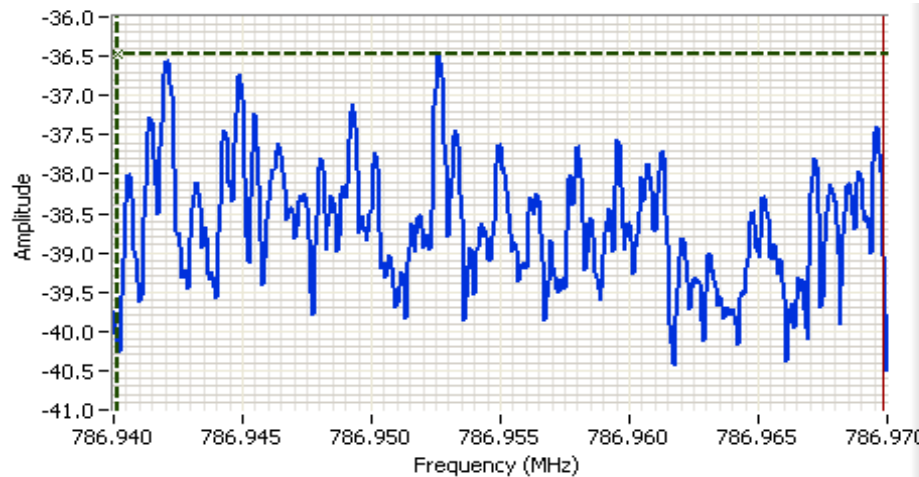
Rohde&Schwarz,F5Q
CF: 786.985 MHz
SPAN: 30.0 kHz
RB: 1.00 kHz
VB: 3.00 kHz
Detector: POS
Attn: 40 DB
RL Offset: 21.4 DB
Sweep Time: 30.0ms
Ref Lvl: 35.0 DBM

Comments

Power over span: -22.78dBm
BAUD 40000, 64QAM, TX
787.0375MHz



Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A



Analyzer Settings

Rohde&Schwarz,F5Q
 CF: 786.955 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 35.0 DBM

Comments

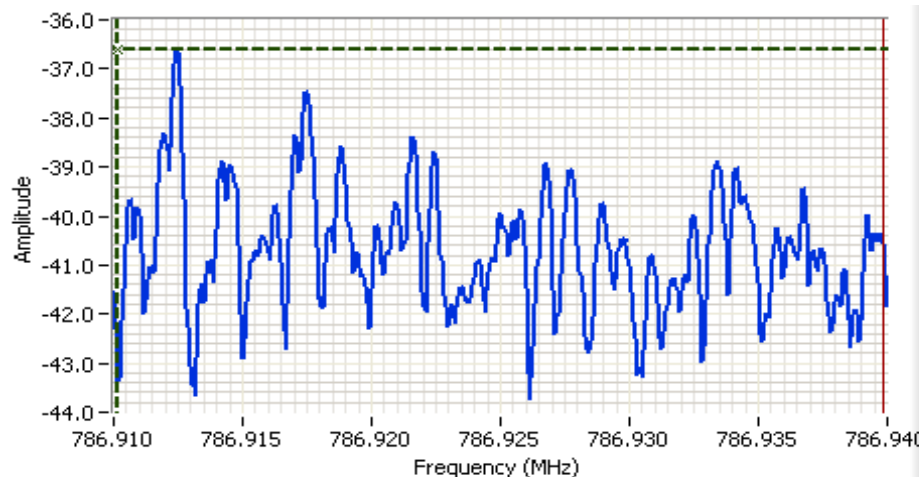
Power over span: -24.28dBm
 BAUD 40000, 64QAM, TX
 787.0375MHz

Cursor 1 786.9402 -36.5

Cursor 2 786.9699 -62.5

Delta Freq. 29.7 kHz

Delta Amplitude 26.0



Analyzer Settings

Rohde&Schwarz,F5Q
 CF: 786.925 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 35.0 DBM

Comments

Power over span: -26.20dBm
 BAUD 40000, 64QAM, TX
 787.0375MHz

Cursor 1 786.9102 -36.6

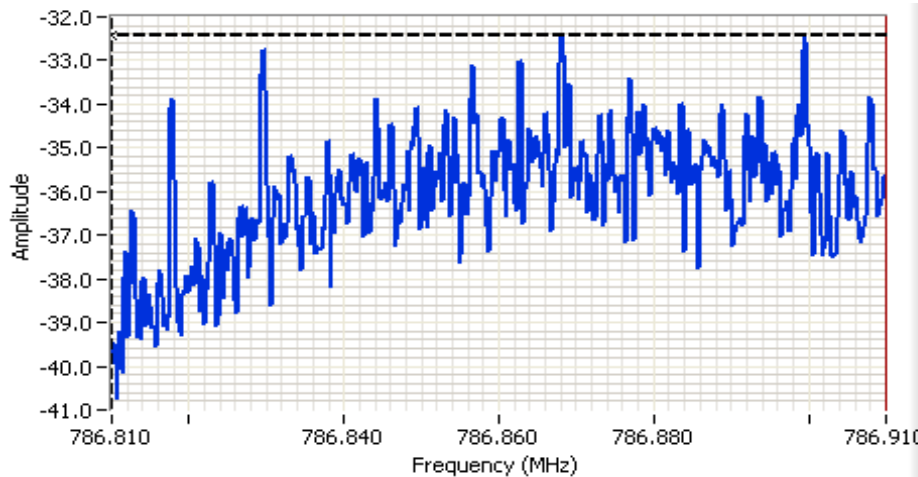
Cursor 2 786.9399 -62.6

Delta Freq. 29.7 kHz

Delta Amplitude 26.0



Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A

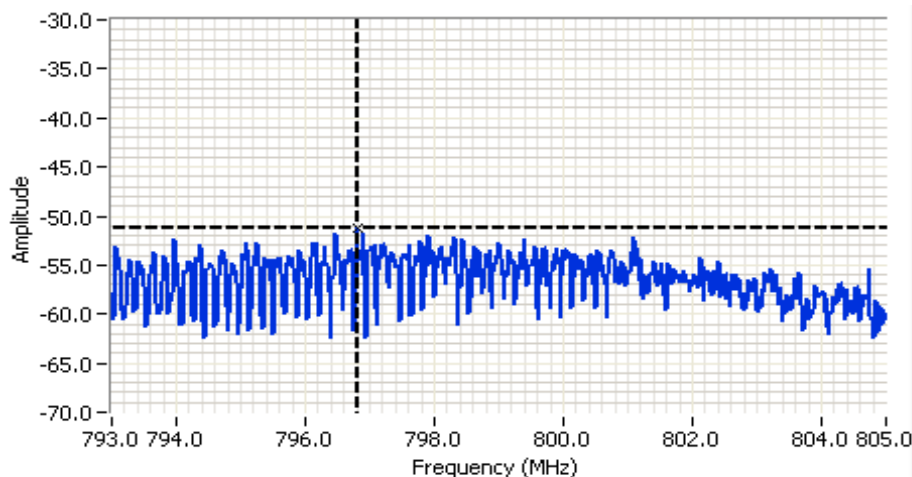


Analyzer Settings

Agilent Technologies, E4446A
 CF: 786.860 MHz
 SPAN: 100 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: Normal
 Attn: 10 DB
 RL Offset: 30.0 DB
 Sweep Time: 95.6ms
 Ref Lvl: 20.0 DBM

Comments

Power over span: -16.04dBm
 BAUD 40000, 64QAM, TX
 787.0375MHz

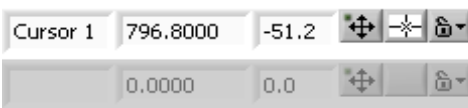


Analyzer Settings

Agilent Technologies, E4446A
 CF: 799.000 MHz
 SPAN: 12.000 MHz
 RB: 10.0 kHz
 VB: 30.0 kHz
 Detector: Normal
 Attn: 10 DB
 RL Offset: 30.0 DB
 Sweep Time: 114.7ms
 Ref Lvl: 20.0 DBM

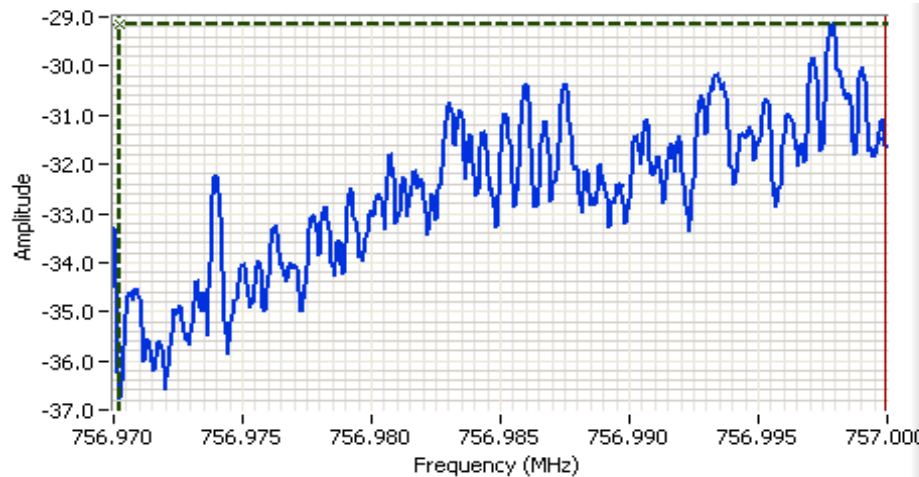
Comments

BAUD 40000, 64QAM,
 TX 787.0375MHz



Attenuation of $76 + 10 \cdot \log(P) = -46$ dBm absolute

Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A



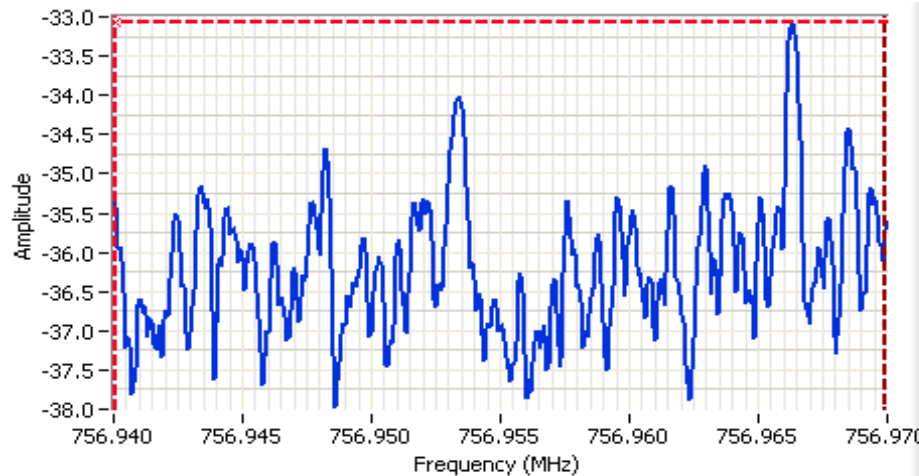
Analyzer Settings

Rohde&Schwarz,F5Q
 CF: 756.985 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 35.0 DBM

Comments

Power over span: -18.03dBm
 BAUD 40000, 64QAM, TX
 757.0375MHz

Cursor 1	756.9702	-29.1		Delta Freq.	29.7 kHz
Cursor 2	756.9999	-55.1		Delta Amplitude	26.0



Analyzer Settings

Rohde&Schwarz,F5Q
 CF: 756.955 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 35.0 DBM

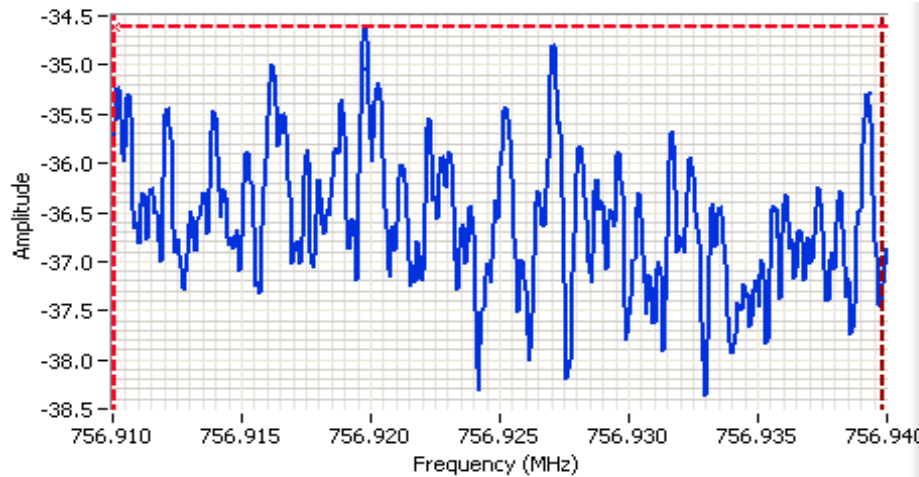
Comments

Power over span: -21.82dBm
 BAUD 40000, 64QAM, TX
 757.0375MHz

Cursor 1	756.9401	-33.1		Delta Freq.	29.8 kHz
Cursor 2	756.9699	-59.1		Delta Amplitude	26.0



Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A



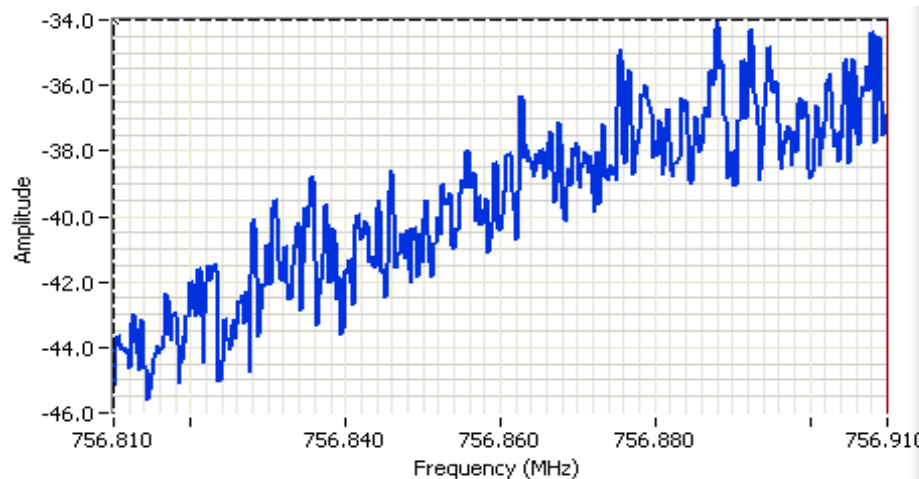
Analyzer Settings

Rohde&Schwarz,FSQ
 CF: 756.925 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 35.0 DBM

Comments

Power over span: -22.20dBm
 BAUD 40000, 64QAM, TX
 757.0375MHz

Cursor 1 756.9101 -34.6
 Cursor 2 756.9399 -60.6
 Delta Freq. 29.8 kHz
 Delta Amplitude 26.0



Analyzer Settings

Agilent Technologies, E4446A
 CF: 756.860 MHz
 SPAN: 100 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: Normal
 Attn: 10 DB
 RL Offset: 30.0 DB
 Sweep Time: 95.6ms
 Ref Lvl: 20.0 DBM

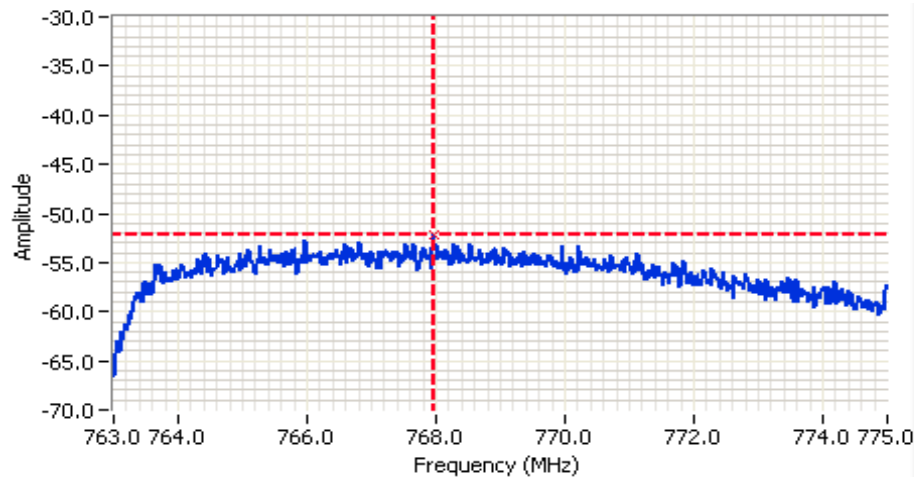
Comments

Power over span: -19.02dBm
 BAUD 40000, 64QAM, TX
 757.0375MH

Cursor 1 756.8100 -34.0
 Cursor 2 756.9100 -60.0
 Delta Freq. 100 kHz
 Delta Amplitude 26.0



Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A

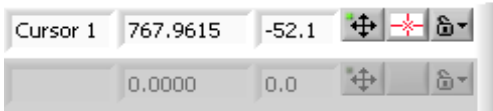


Analyzer Settings

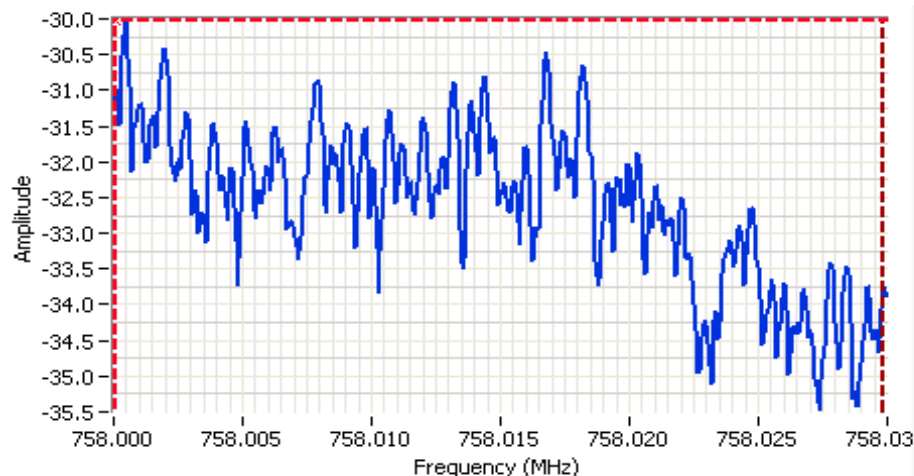
Rohde&Schwarz,F5Q
 CF: 769.000 MHz
 SPAN: 12.000 MHz
 RB: 10.0 kHz
 VB: 30.0 kHz
 Detector: POS
 Attn: 5 DB
 RL Offset: 21.4 DB
 Sweep Time: 120.0ms
 Ref Lvl: 0.0 DBM

Comments

BAUD 40000, 64QAM, TX
 757.0375MHz



Attenuation of $76 + 10 \cdot \log(P) = -46$ dBm absolute

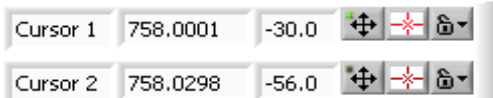


Analyzer Settings

Rohde&Schwarz,F5Q
 CF: 758.015 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 35.0 DBM

Comments

Power over span: -18.16dBm
 BAUD 40000, 64QAM, TX
 757.9625MHz

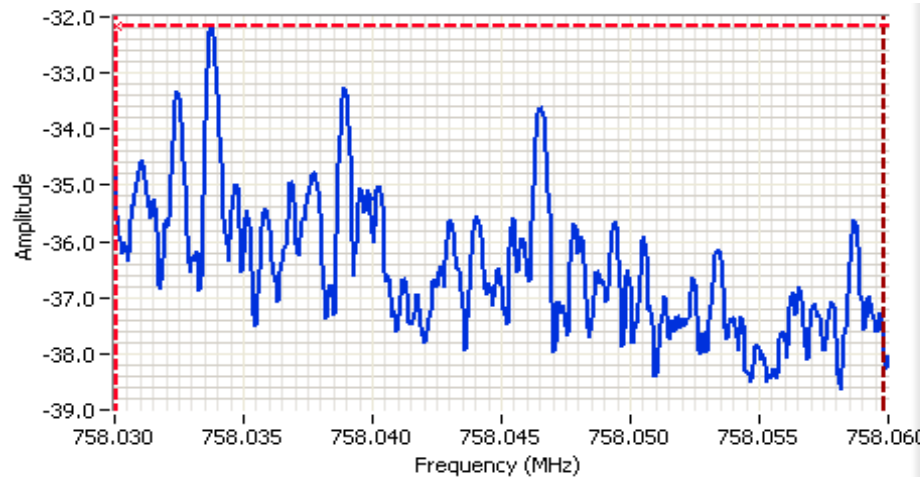


Delta Freq. 29.7 kHz

Delta Amplitude 26.0



Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A



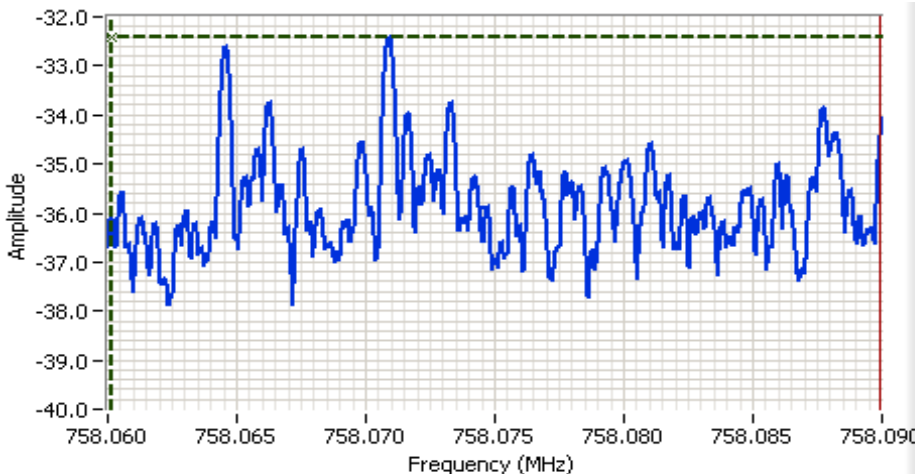
Analyzer Settings

Rohde&Schwarz,FSQ
 CF: 758.045 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 40 DB
 RL Offset: 21.4 DB
 Sweep Time: 30.0ms
 Ref Lvl: 35.0 DBM

Comments

Power over span: -21.95dBm
 BAUD 40000, 64QAM, TX
 757.9625MHz

Cursor 1	758.0301	-32.2		Delta Freq.	29.7 kHz
Cursor 2	758.0598	-58.2		Delta Amplitude	26.0



Analyzer Settings

Agilent Technologies, E4446A
 CF: 758.075 MHz
 SPAN: 30.0 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 20 DB
 RL Offset: 31.0 DB
 Sweep Time: 28.8ms
 Ref Lvl: 40.0 DBM

Comments

Power over span: -21.18dBm
 BAUD 40000, 64QAM, TX
 757.9625MHz

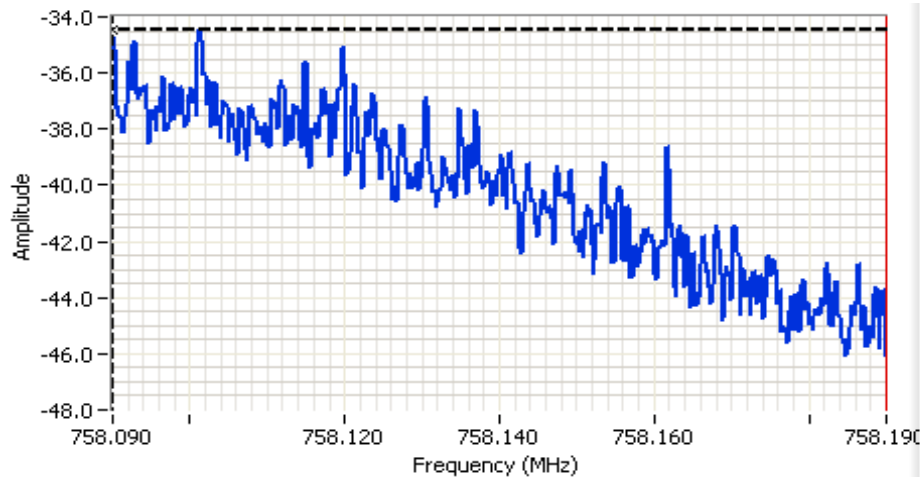
Cursor 1	758.0602	-32.4		Delta Freq.	29.7 kHz
Cursor 2	758.0899	-58.4		Delta Amplitude	26.0





EMC Test Data

Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A

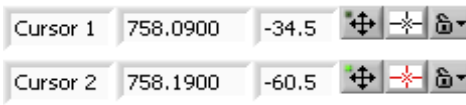


Analyzer Settings

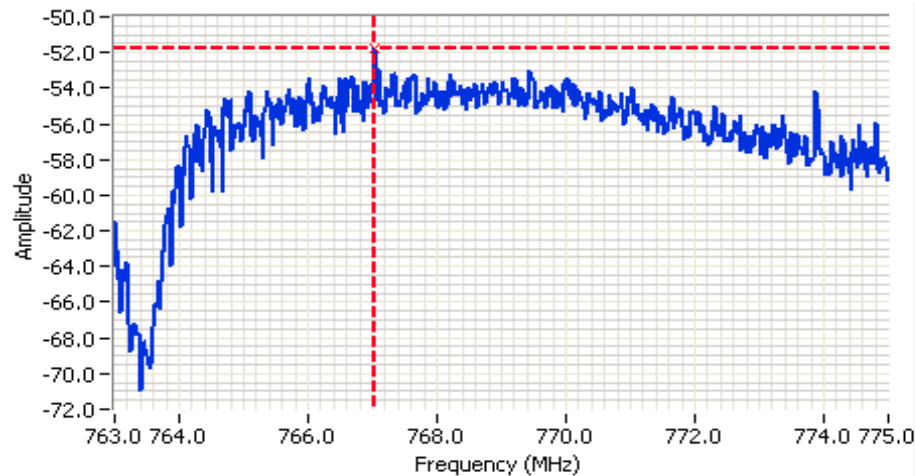
Agilent Technologies, E4446A
CF: 758.140 MHz
SPAN: 100 kHz
RB: 1.00 kHz
VB: 3.00 kHz
Detector: Normal
Attn: 10 DB
RL Offset: 30.0 DB
Sweep Time: 95.6ms
Ref Lvl: 20.0 DBM

Comments

Power over span: -19.67dBm
BAUD 40000, 64QAM, TX
757.9625MHz



Delta Freq. 100 kHz
Delta Amplitude 26.0

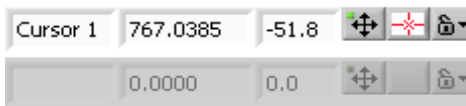


Analyzer Settings

Rohde&Schwarz,FSQ
CF: 769.000 MHz
SPAN: 12.000 MHz
RB: 10.0 kHz
VB: 30.0 kHz
Detector: POS
Attn: 5 DB
RL Offset: 21.4 DB
Sweep Time: 120.0ms
Ref Lvl: 0.0 DBM

Comments

BAUD 40000, 64QAM, TX
757.9625MHz



Attenuation of $76+10*\log(P) = -46$ dBm absolute



EMC Test Data

Client: GE MDS LLC	Job Number: JD105108
Model: LN700	T-Log Number: T015210
Contact: Dennis McCarthy	Project Manager: Christine Krebill
Standard: FCC Part 27	Project Coordinator: -
	Class: N/A

Run #3: Signal Bandwidth

Date of Test: 6/15/2017

Test Engineer: David Bare

Test Location: Fremont EMC Lab #4A

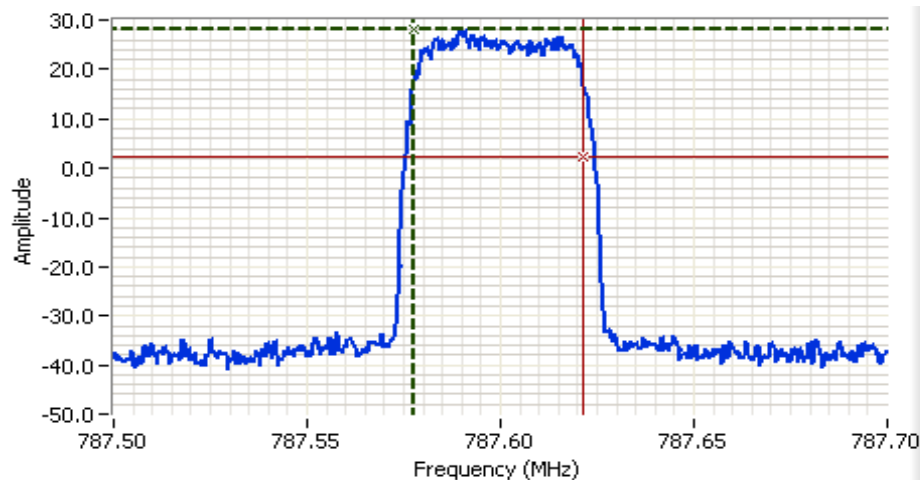
Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz)
40	787.6	1 kHz	99%
			43.50

Note 1: 99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and $VB \geq 3 \cdot RB$ and Span $\geq 1.5\%$ and $\leq 5\%$ of measured bandwidth.



Analyzer Settings

Rohde&Schwarz,FSQ
 CF: 787.600 MHz
 SPAN: 200 kHz
 RB: 1.00 kHz
 VB: 3.00 kHz
 Detector: POS
 Attn: 50 DB
 RL Offset: 20.0 DB
 Sweep Time: 200.0ms
 Ref Lvl: 45.0 DBM

Comments

99% power BW: 43.5 kHz
 Modem 64QAM, BAUD 40000

Cursor 1	787.5778	28.2	
Cursor 2	787.6213	2.2	

Delta Freq. 43.5 kHz
 Delta Amplitude 26.0



End of Report

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