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Radio Test Report

FCC Part 24
(901-902 MHz and 930-941 MHz)

FCC Part 90
(896-901 MHz, 929-930 MHZ & 935-940 MHz

FCC Part 101
(928 To 960 MHz)

Model: LN900

FCC ID:	E5MDS-LN900-1
COMPANY:	GE MDS LLC 175 Science Parkway Rochester, NY 14620
TEST SITE(S):	National Technical Systems 41039 Boyce Road. Fremont, CA. 94538-2435
PROJECT NUMBER:	PR085381
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VALIDATING SIGNATORIES

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REVISION HISTORY

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-	September 13, 2018	First release	
1	September 17, 2018	Added additional test data for FSK modulation	dwb
2	September 25, 2018	Corrected typos on page 8, 24 and 47	dwb
3	October 9, 2018	Added notes regarding emissions masks to pages 55, 56, 63, 64 and 65	dwb

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SCOPE

Tests have been performed on the GE MDS LLC model LN900, 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 24 (Personal Communication Services) Subpart D
- CFR 47 Part 90 (Private Land Mobile Radio Services) Subparts P and S
- CFR 47 Part 101 (Fixed Microwave Services)

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 test procedures:

ANSI C63.26:2015

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.

National Technical Systems is accredited by the A2LA, certificate number 0214.26, to perform the test(s) listed in this report, except where noted otherwise.

The test results recorded herein are based on a single type test of the GE MDS LLC model LN900 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 LN900 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.

TEST RESULTS

FCC Part 101

FCC		Description	Measured	Limit	Result
Transmitter Modulation, output power and other characteristics					
§2.1033 (c) (5) §101.101		Frequency range(s)	928-960 MHz	928-960 MHz	Complied
		RF power output at the antenna terminals	20 - 41 dBm	-	-
§2.1033 (c) (6) §2.1033 (c) (7) §2.1046 §101.113		EIRP	36.5 dBm to 57.4 dBm	44 - 70 dBm	Complied
§2.1033 (c) (4) §2.1047 §101.111		Emission types	F1D, F2D, F3D, D1D		
		Emission mask	Complied with Mask	101.111(a)(5) or 101.111(a)(6)	Complied
§2.1049 §101.147		Occupied Bandwidth	10.2 kHz 10.3 kHz 10.8 kHz 15.4 kHz 17.2 kHz 21.5 kHz 43.2 kHz	12.5, 25 or 50 kHz	Complied
Transmitter spurious emissions					
§2.1051 §2.1057		At the antenna terminals	-25.5 dBm	-20 dBm	Complied
§2.1053 §2.1057		Field strength	-28.2 dBm @ 9439.9 MHz	-20 dBm	Complied
Other details					
§2.1055 §101.107		Frequency stability	0.3 ppm	1.5 ppm	Complied
§2.1093		RF Exposure	See separate exhibit		Complied
§2.1033 (c) (8)		Final radio frequency amplifying circuit's dc voltages and currents for normal operation over the power range	34.5 VDC, 755 mA		
-	-	Antenna Gain	Up to 16.5 dBi		
Notes					

FCC Part 90

FCC		Description	Measured	Limit	Result
Transmitter Modulation, output power and other characteristics					
§2.1033 (c) (5) §90.35		Frequency range(s)	896-901 MHz, 929-930 MHz 935-940 MHz	896-901 MHz, 929-930 MHz 935-940 MHz	Complied
§2.1033 (c) (6) §2.1033 (c) (7) §2.1046 §90.205 §90.635		RF power output at the antenna terminals	20 dBm to 40.8 dBm	50 dBm	Complied
§2.1033 (c) (4) §2.1047 §90.210		Emission types	F1D, F2D, F3D, D1D	-	-
		Emission mask	Complied with Mask	Masks D, G and J	Complied
§2.1049 §90.209		Occupied Bandwidth	5.19kHz 10,2kHz 10.3kHz 10.8kHz 15.4kHz 17.2kHz	11.5 or 20 kHz	Complied
Transmitter spurious emissions					
§2.1051 §2.1057 §90.210		At the antenna terminals	-27.3 dBm @ 1858.9 MHz	-20 dBm	Complied
§2.1053 §2.1057 §90.210		Field strength	-24.6 dBm @ 9319.6 MHz	-20 dBm	Complied
Other details					
§2.1055 §90.213		Frequency stability	0.3 ppm	1.5 ppm[1]	Complied
§2.1093		RF Exposure	See separate exhibit		Complied
§2.1033 (c) (8)		Final radio frequency amplifying circuit's dc voltages and currents for normal operation over the power range	34.5 VDC, 755 mA		
-	-	Antenna Gain	Up to 16.5 dBi		
Notes 1 – FCC Part 90.213 (footnote 14) allows 1.5 ppm for control station operations					

FCC Part 24

FCC		Description	Measured	Limit	Result
Transmitter Modulation, output power and other characteristics					
§2.1033 (c) (5) §24.129		Frequency Range	901-902 MHz 930-941 MHz	901-902 MHz 930-941 MHz	Complied
§2.1033 (c) (6) §2.1033 (c) (7) §2.1046 §24.132		ERP	20 to 38.5 dBm	901-902 MHz 7 Watts	Complied
§2.1033 (c) (6) §2.1033 (c) (7) §2.1046 §24.132		ERP	20 to 40.7 dBm	930-941 MHz 7 Watts mobile 3500 W fixed	Complied
§2.1033 (c) (4) §2.1047 §24.133		Emission types	D1D	-	-
		Emission mask	Complied with Mask	24.133(a)(2)	Complied
§2.1049 §24.131		Occupied Bandwidth	10.3 kHz 10.8 kHz 17.2 kHz 21.5 kHz 43.2 kHz	20 or 45kHz	Complied
Transmitter spurious emissions					
§2.1051 §2.1057 §24.133		At the antenna terminals	All emission < -13 dBm	-13 dBm	Complied
§2.1053 §2.1057 §24.133		Field strength	-13.1 dBm @ 9009.03 MHz	-13 dBm	Complied
Other details					
§2.1055 §24.135		Frequency stability	0.3 ppm	1.0 ppm	Complied
§2.1093		RF Exposure	See separate exhibit		Complied
§2.1033 (c) (8)		Final radio frequency amplifying circuit's dc voltages and currents for normal operation over the power range	34.5 VDC, 755 mA		
-	-	Antenna Gain	Up to 16.5 dBi		
Notes Note 1 – The measurement at the mask edge is made in a reference bandwidth of 300 Hz and the measured power is integrated over 30 kHz.					

EXTREME CONDITIONS

Frequency stability is determined over extremes of temperature and voltage. The extremes of voltage were 10 to 60 VDC.

The extremes of temperature were -30°C to +50°C as specified in FCC §2.1055(a)(1).

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
Conducted emission of receiver	dBm	25 to 40,000 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 40,000 MHz	± 2.5 dB
Radiated emission (field strength)	dBµV/m	25 to 1,000 MHz 1 to 40 GHz	± 3.6 dB ± 6.0 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The GE MDS LLC model LN900 is a 900 MHz radio module that is designed for licensed operation under FCC rule parts 24, 90 and 101 and RSS-119 using FSK and QAM modulations Since the EUT could be placed in any position, the EUT and interface adapter board were treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 11.8-52.2 Volts DC.

The samples were received on October 28, 2015, May 23, 2016 and August 24, 2018 and tested on October 28, December 11 and 14, 2015, May 23, 24 and 26, 2016 and August 29, 30 and September 4, 2018. The following samples of the EUT were used for testing.

Company	Model	Description	Serial Number	FCC ID
GE MDS LLC	LN900	Wireless Transceiver Module	2954262	E5MDS-LN900-1
GE MDS LLC	LN900	Wireless Transceiver Module	2954264	E5MDS-LN900-1
GE MDS LLC	LN900	Wireless Transceiver Module	2690226	E5MDS-LN900-1
GE MDS LLC	LN900	Wireless Transceiver Module	2629713	E5MDS-LN900-1

ENCLOSURE

The EUT has no enclosure. It is designed to be installed within the enclosure of a host product.

MODIFICATIONS

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

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
HP	ProBook 6570b	Laptop	5CB2480TRQ	-
Agilent	E3610A	Power Supply	MY40011740	-
HP	6024A	Power Supply	2430A-03013	-

Note: The Agilent PS was only used for radiated emissions testing
Note: The Laptop was used to setup the radio module and then removed for radiated emissions tests.

No remote support equipment was used during testing.

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
RF	Termination	-	-	-

Additional on Support Equipment

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Adapter Board PS Input	Power Supply	Four wire	Unshielded	1.5
Adapter Board Serial	Laptop	Multiwire	Shielded	2
Adapter board Gnd	Ground Plane	Braided wire	Unshielded	2.4

Note: For radiated emissions testing an additional cable from the second PS was used.

EUT OPERATION

During emissions testing the EUT was configured using the laptop to transmit a continuous modulated signal on the selected frequency at the programmed power setting.

TESTING

GENERAL INFORMATION

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

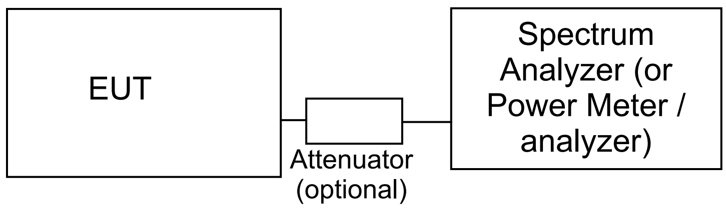
Radiated spurious emissions measurements were taken at the National Technical Systems Anechoic Chambers and/or Open Area Test Site(s) listed below. The sites conform to the requirements of ANSI C63.4 *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz* and CISPR 16-1-4 - *Specification for radio disturbance and immunity measuring apparatus and methods Part 1-4: Radio disturbance and immunity measuring apparatus Ancillary equipment Radiated disturbances*. They are on file with the FCC and Innovation Science and Economic Development Canada.

Site	Designation / Registration Numbers		Location
	FCC	Canada	
Chamber 4	US0027	IC 2845B-4	41039 Boyce Road Fremont, CA 94538-2435

ANSI C63.4 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement. The test site(s) contain separate areas for radiated and conducted emissions testing. Results from testing performed in this chamber have been correlated with results from an open area test site. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4.

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.

CONDUCTED SPURIOUS EMISSIONS

Initial scans are made using a peak detector (RBW=VBW) and using scan rates to ensure that the EUT transmits before the sweep moves out of each resolution bandwidth (for transmit mode measurements). Where the limits are expressed as an average power the spectrum analyzer is tunes to that frequency with a narrow span (wide enough to capture the emission and its sidebands) and the resolution and video bandwidths are adjusted as required by the reference measurement standards. For transmitter measurements the appropriate detector (average, peak, normal ,sample, quasi-peak) is used when making measurements for licensed devices. For receiver conducted spurious measurements the detector is set to peak.

TRANSMITTER MASK MEASUREMENTS

The transmitter mask 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.

The top of the mask may be set by the total output power of the signal, the power of the unmodulated signal or the peak value of the signal in the reference bandwidth being used for the mask measurement.

FREQUENCY STABILITY

The EUT is placed inside a temperature chamber with all support and test equipment located outside of the chamber. The temperature is varied across the specified frequency range in 10 degree increments with frequency measurements made at each temperature step. The EUT is allowed enough time to stabilize at each temperature variation.

The spectrum analyzer is configured to give a 5- or 6-digit display for the marker-frequency function. The spectrum analyzer's built-in frequency counter is used to measure the maximum deviation of the fundamental frequency at each temperature. Where possible the device is set to transmit an unmodulated signal. Where this is not possible the frequency drift is determined by finding a stable point on the signal (e.g. the null at the centre of an OFDM signal) or by calculating a centre frequency based on the upper and lower XdB points (where X is typically 6dB or 10dB) on the signal’s skirts.

RADIATED EMISSIONS MEASUREMENTS

Receiver radiated spurious emissions measurements are made in accordance with ANSI ANSI C63.26:2015 by measuring the field strength of the emissions from the device at a specific test distance and comparing them to a field strength limit. Where the field strength limit is specified at a longer distance than the measurement distance the measurement is extrapolated to the limit distance.

Transmitter radiated spurious emissions are initially measured as a field strength. The eirp or erp limit as specified in the relevant rule part(s) is converted to a field strength at the test distance and the emissions from the EUT are then compared to that limit. Emissions within 20dB of this limit are the subjected to a substitution measurement.

All radiated emissions measurements are performed in two phases. A preliminary scan of emissions is conducted in either an anechoic chamber or on an OATS during which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed across the complete frequency range of interest and at each operating frequency identified in the reference standard. One or more of these is with the antenna polarized vertically while the one or more of these is with the antenna polarized horizontally. Initial scans are made using a peak detector (RBW=VBW) and using scan rates to ensure that the EUT transmits before the sweep moves out of each resolution bandwidth (for transmit mode).

During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit. For transmitter spurious emissions, where the limit is expressed as an effective radiated power, the eirp or erp is converted to a field strength limit.

Final measurements are made on an OATS or in a semi-anechoic chamber at the significant frequencies observed during the preliminary scan(s) using the same process of rotating the EUT and raising/lowering the measurement antenna to find the highest level of the emission. The field strength is recorded and, for receiver spurious emissions, compared to the field strength limit. For the final measurement the appropriate detectors (average, peak, normal, sample, quasi-peak) are used. For receiver measurements below 1GHz the detector is a Quasi-Peak detector, above 1GHz a peak detector is used and the peak value (RB=VB=1MHz) and average value (RB=1MHz, VB=10Hz) are recorded.

For transmitter spurious emissions, the radiated power of all emissions within 20dB of the calculated field strength limit are determined using a substitution measurement. The substitution measurement is made by replacing the EUT with an antenna of known gain (typically a dipole antenna or a double-ridged horn antenna), connected to a signal source. The output power of the signal generator is adjusted until the maximum field strength from the substitution antenna is similar to the field strength recorded from the EUT. The erp of the EUT is then calculated.

INSTRUMENTATION

An EMI receiver as specified in CISPR 16-1-1 is used for radiated emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 7000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary.

For measurements above the frequency range of the receivers and for all conducted measurements a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis.

Measurement bandwidths for the test instruments are set in accordance with the requirements of the standards referenced in this document.

Software control is used to correct the measurements for transducer factors (e.g. antenna) and the insertion loss of cables, attenuators and other series elements to obtain the final measurement value. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are exported in a graphic and/or tabular format, as appropriate.

FILTERS/ATTENUATORS

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

ANTENNAS

A combination of biconical, log periodic or bi-log antennas are used to cover the range from 30 MHz to 1000 MHz. Broadband antennas or tuned dipole antennas are used over the entire 25 to 1000 MHz frequency range as the reference antenna for substitution measurements.

Above 1000 MHz, a dual-ridge guide horn antenna or octave horn antenna are used as reference and measurement antennas.

The antenna calibration factors are included in site factors that are programmed into the test receivers and instrument control software when measuring the radiated field strength.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height.

Table mounted devices are placed on a non-conductive table at a height of 80 or 150 centimeters above the floor depending on frequency. The EUT is positioned on a motorized turntable to allow it to be rotated during testing to determine the angel with the highest level of emissions.

SAMPLE CALCULATIONS

SAMPLE CALCULATIONS - CONDUCTED SPURIOUS EMISSIONS

Measurements are compared directly to the conducted emissions specification limit (decibel form). The calculation is as follows:

$$R_r - S = M$$

where:

R_r = Measured value in dBm
S = Specification Limit in dBm
M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS –RADIATED POWER

The erp/eirp limits for transmitter spurious measurements are converted to a field strength in free space using the following formula:

$$E = \frac{\sqrt{30\,P\,G}}{d}$$

where:

E = Field Strength in V/m
P = Power in Watts
G = Gain of isotropic antenna (numeric gain) = 1
D = measurement distance in meters

The field strength limit is then converted to decibel form (dBuV/m) and the margin of a given emission peak relative to the limit is calculated (refer to ***Error! Not a valid bookmark self-reference.***).

When substitution measurements are required (all signals with less than 20dB of margin relative to the calculated field strength limit) the eirp of the spurious emission is calculated using:

$$P_{EUT} = P_S - (E_S - E_{EUT})$$

and

$$P_S = G + P_{in}$$

where:

P_S = effective isotropic radiated power of the substitution antenna (dBm)
P_{in} = power input to the substitution antenna (dBm)
G = gain of the substitution antenna (dBi)
E_S = field strength the substitution antenna (dBm) at eirp P_S
E_{EUT} = field strength measured from the EUT

Where necessary the effective isotropic radiated power is converted to effective radiated power by subtracting the gain of a dipole (2.2dBi) from the eirp value.

SAMPLE CALCULATIONS –RADIATED FIELD STRENGTH

Measurements of radiated field strength are compared directly to the specification limit (decibel form). The receiver and/or control software corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor is sued when measurements are made at a test distance that is different to the specified limit distance by using the following formula:

$$F_d = 20*LOG_{10}(D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10}(D_m/D_s)$$

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

Appendix A Test Equipment Calibration Data

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Antenna port measurements, 28-Oct-15					
NTS	NTS Mask Software (rev 3.8)	N/A	0		N/A
NTS	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Fluke	Fluke Mulitmeter, True RMS	175	1447	7/23/2015	7/23/2016
Rohde & Schwarz	Power Meter, Single Channel, +1795+1796	NRVS	1534	7/20/2015	7/20/2016
Rohde & Schwarz	Peak Power Sensor 100 uW - 2 Watts (w/ 20 dB pad, SN BJ5155)	NRV-Z32	1536	1/15/2015	1/15/2016
Watlow	Temp Chamber (w/ F4 watlow Controller)	96A0	2171	7/14/2015	7/14/2016
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	3/31/2015	3/31/2016
Radio Antenna Port, 11-Dec-15					
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	3/31/2015	3/31/2016
Radiated Emissions, 30 - 10,000 MHz, 14-Dec-15					
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/26/2015	3/26/2016
Hewlett Packard	Spectrum Analyzer (Spare SA26) 9 KHz-26.5 GHz, Non-Program	8563E	284	3/14/2015	3/14/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	487	7/29/2014	7/29/2016
Hewlett Packard	High Pass filter, 3.5 GHz	P/N 84300-80038	1157	7/10/2015	7/10/2016
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657	6/25/2014	6/25/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/20/2015	6/20/2016
Substitution Measurements, 15-Dec-15					
EMCO	Antenna, Horn, 1-18 GHz	3115	487	7/29/2014	7/29/2016
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	SA40 Head (Red)	Miteq	1145	7/17/2015	7/17/2016
Hewlett Packard	High Pass filter, 3.5 GHz	P/N 84300-80038	1157	7/10/2015	7/10/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	3/24/2015	3/24/2017
Rohde & Schwarz	Power Sensor, 1 nW-20 mW, 10 MHz-18 GHz, 50ohms	NRV-Z1	2114	10/26/2015	10/26/2016
Agilent Technologies	PSG, Vector Signal Generator, (250kHz - 20MHz)	E8267D	3011	1/8/2015	1/8/2016
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	3/26/2015	3/26/2016
Antenna port measurements, 23-May-16					
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	12/17/2015	12/17/2016

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Rohde & Schwarz	Peak Power Sensor 100 uW - 2 Watts (w/ 20 dB pad, SN BJ5155)	NRV-Z32	1536	3/10/2016	3/10/2017
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	5/6/2016	5/6/2017
Antenna port measurements, 24, 26-May-16					
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	5/6/2016	5/6/2017
Radio Antenna Port (Power and Spurious Emissions), 29, 30 -Aug-18					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
National Technical Systems	NTS Mask Software (rev 3.8)	N/A	0		N/A
National Technical Systems	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	4/4/2018	4/4/2019
Rohde & Schwarz	Peak Power Sensor 100 uW - 2 Watts (w/ 20 dB pad, SN BJ5155)	NRV-Z32	1536	6/21/2018	6/21/2019
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	7/27/2018	7/27/2019
Conducted Emissions - RF Port, 04-Sep-18					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	7/27/2018	7/27/2019
Radiated Emissions, Below 30 MHz, 04-Sep-18					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1756	7/7/2018	7/7/2019
Rhode & Schwarz	Magnetic Loop Antenna, 9 kHz-30 MHz	HFH2-Z2	WC062 457	1/5/2018	1/5/2020

Appendix B Test Data

TL085381-RA Pages 23 – 51
T99783 Pages 52 – 145
T101706 Pages 146 – 164

Client:	GE MDS LLC	PR Number:	PR085381
Product	LN900	T-Log Number:	TL085381-RA
System Configuration:	Module on test PCB	Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Engineer:	David Bare
Emissions Standard(s):	FCC parts 24, 90 and 101	Class:	-
Immunity Standard(s):	-	Environment:	Radio

EMC Test Data

For The

GE MDS LLC

Product

LN900

Date of Last Test: 9/4/2018

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

FCC Part 24

Power, Occupied Bandwidth, Frequency Stability and Spurious Emissions

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: 20-24 °C

Rel. Humidity: 35-47 %

Summary of Results

Run #			Test Performed	Limit	Pass / Fail	Result / Margin
1			Output Power	901-902 MHz 7W ERP	Pass	20 to 38 dBm Conducted
				931-941 MHz 7W ERP mobile, 3500W ERP fixed		20 to 40.7 dBm Conducted
2			Spectral Mask	Within Mask	Pass	Within Masks
3			99% or Occupied Bandwidth	20 or 45 kHz based on 25 and 50 KHz channels	-	10.3 kHz 10.8 kHz 17.2 kHz 21.5 kHz 43.2 kHz
4			Spurious Emissions (conducted)	-13 dBm	Pass	
5			Spurious emissions (radiated)	-13 dBm	Pass	

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.

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Test Notes

Based on the previous testing of this product, QAM4, QAM16 and QAM64 all produce the same results. Therefore testing for part 24 is limited to QAM4 modulation.

Run #1: Output Power FCC §24.132

Date of Test: 8/29/2018
Test Engineer: David Bare
Test Location: Fremont EMC Lab #4B
Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Cable Loss:
Cable ID(s): -
Attenuator: 20.0 dB
Attenuator IDs: WC068107
Total Loss: 20.0 dB

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	ERP dBm	ERP W	
26	901	24.1	257.0	16.5	Pass	38.4	6.918	FB 7
39	901	38.0	6309.6	2.2	Pass	38.0	6.310	FB 20
40	930	40.7	11749.0	16.5	Pass	55.0	316.228	FB 23
40	941	40.5	11220.2	16.5	Pass	54.8	301.995	FB 22

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.
Note 3:	Antenna Gain of 2.2 dBi = 0 dBd

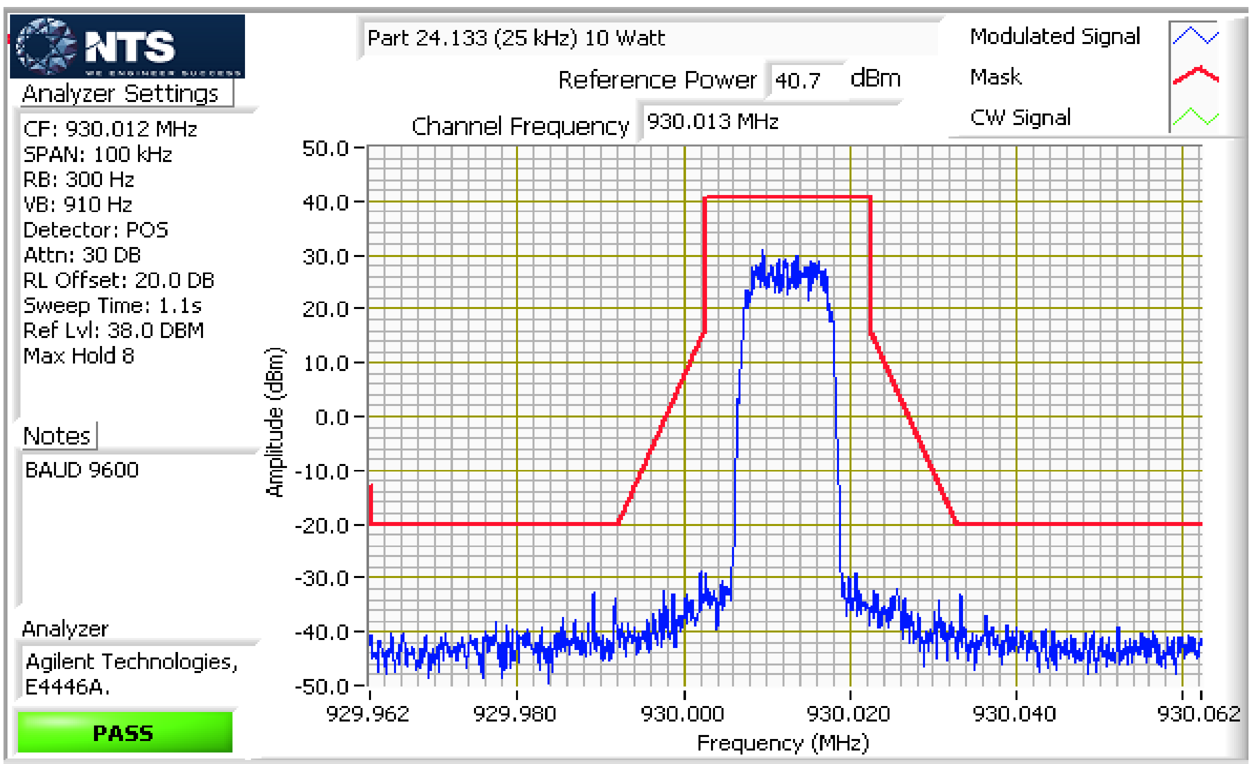
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #2: Spectral Mask, FCC §24.133(a)(1)

Date of Test: 8/30/2018
Test Engineer: David Bare
Test Location: Fremont EMC Lab #4B

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

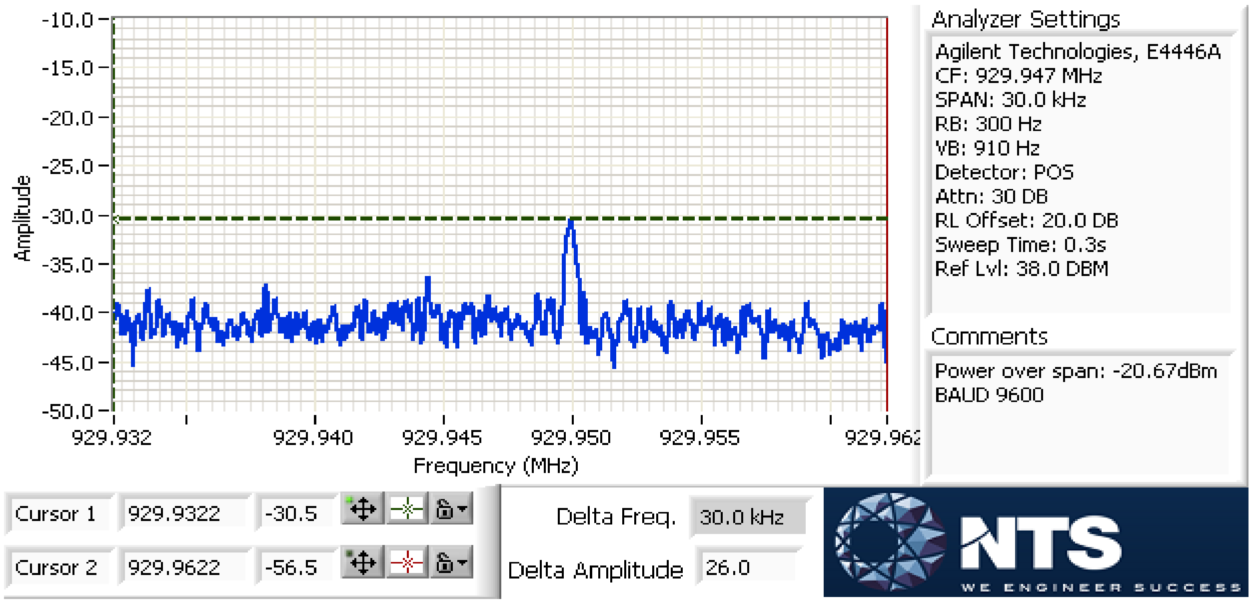
Note 1:	RBW=300 Hz and VBW=1 kHz within mask, Top of mask set to the measured power.

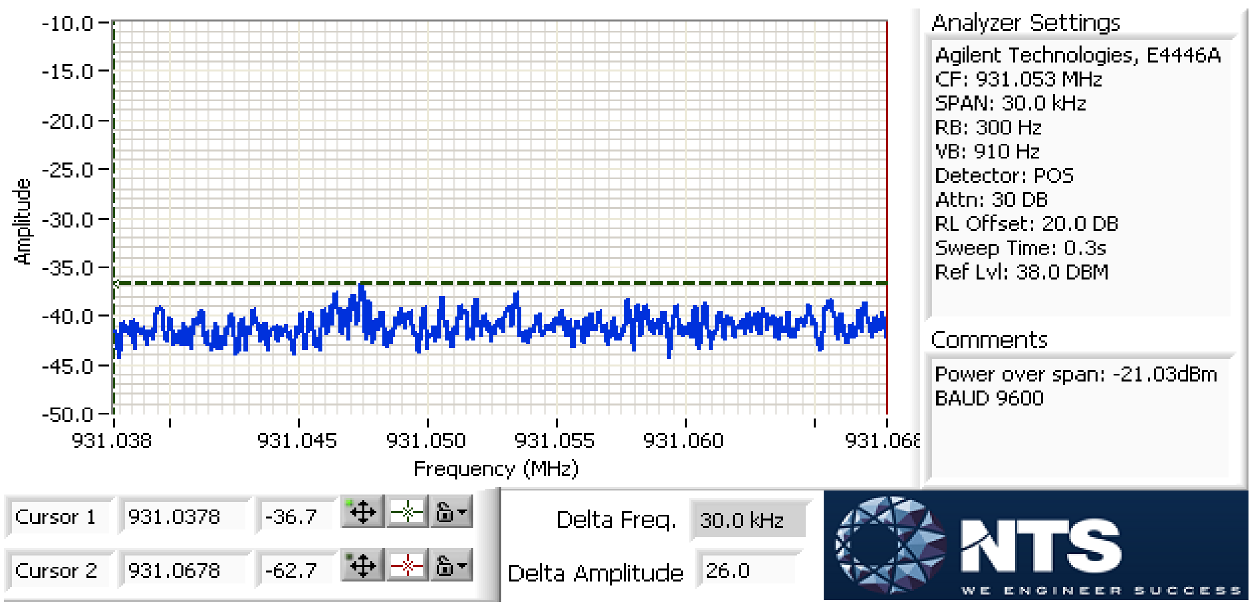


NTS

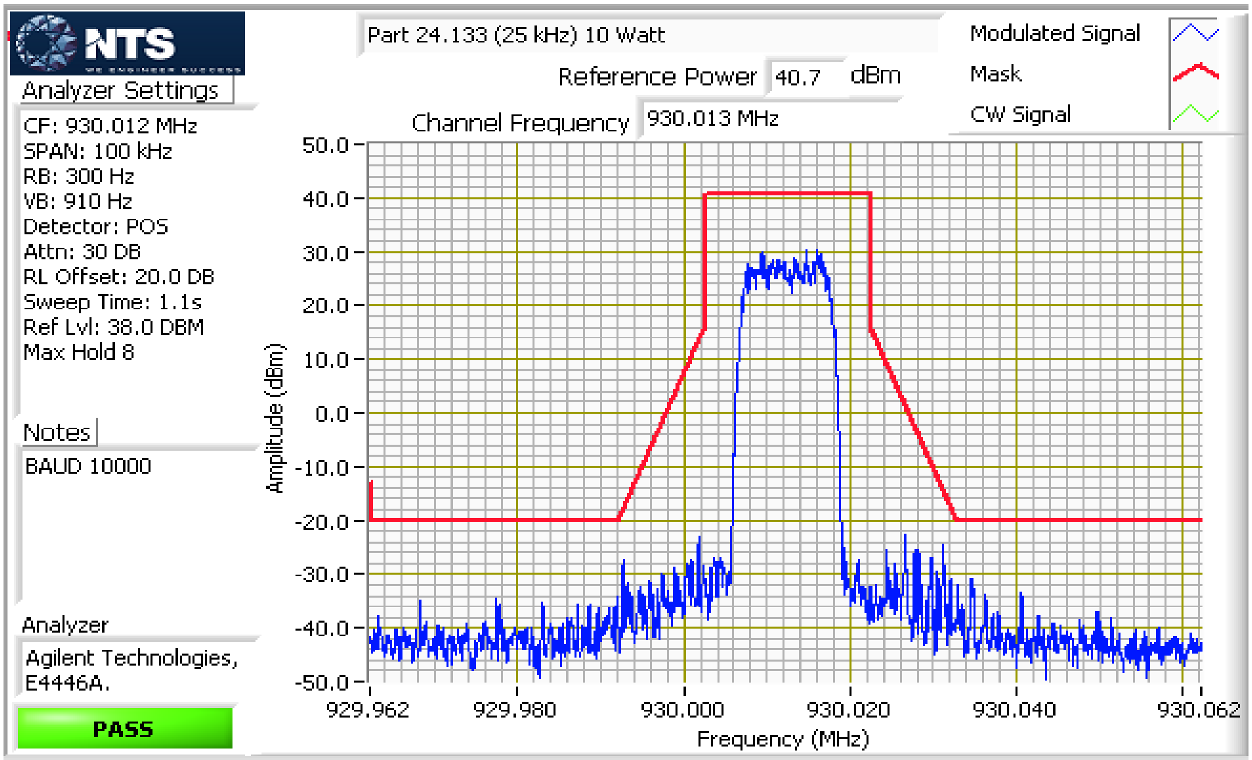
EMC Test Data

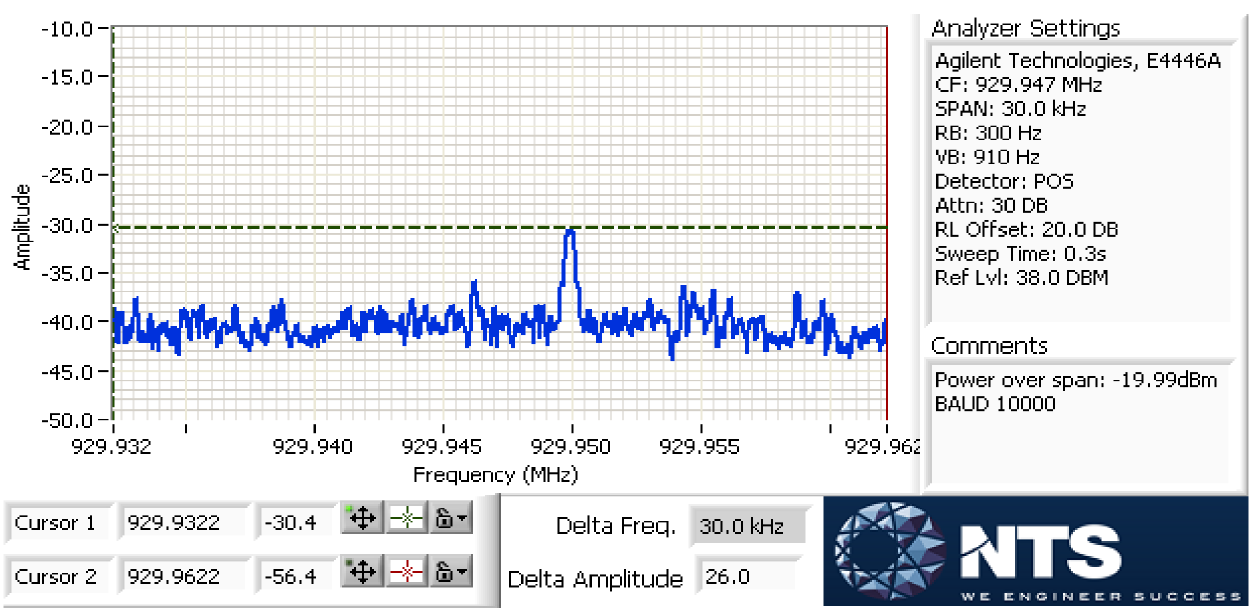
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A



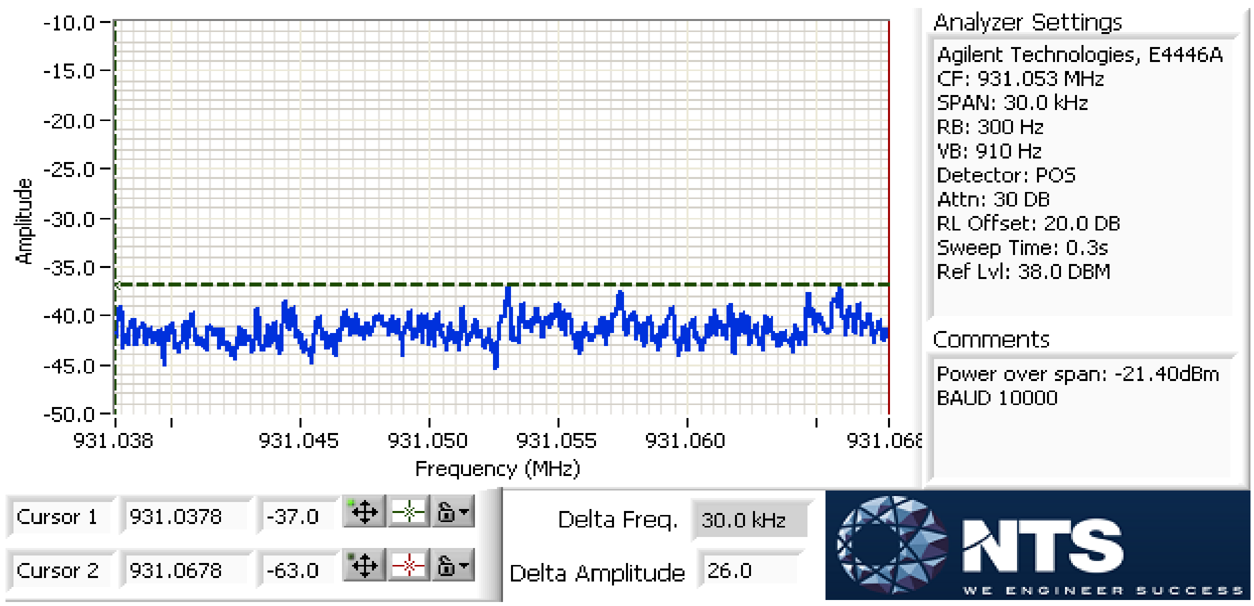


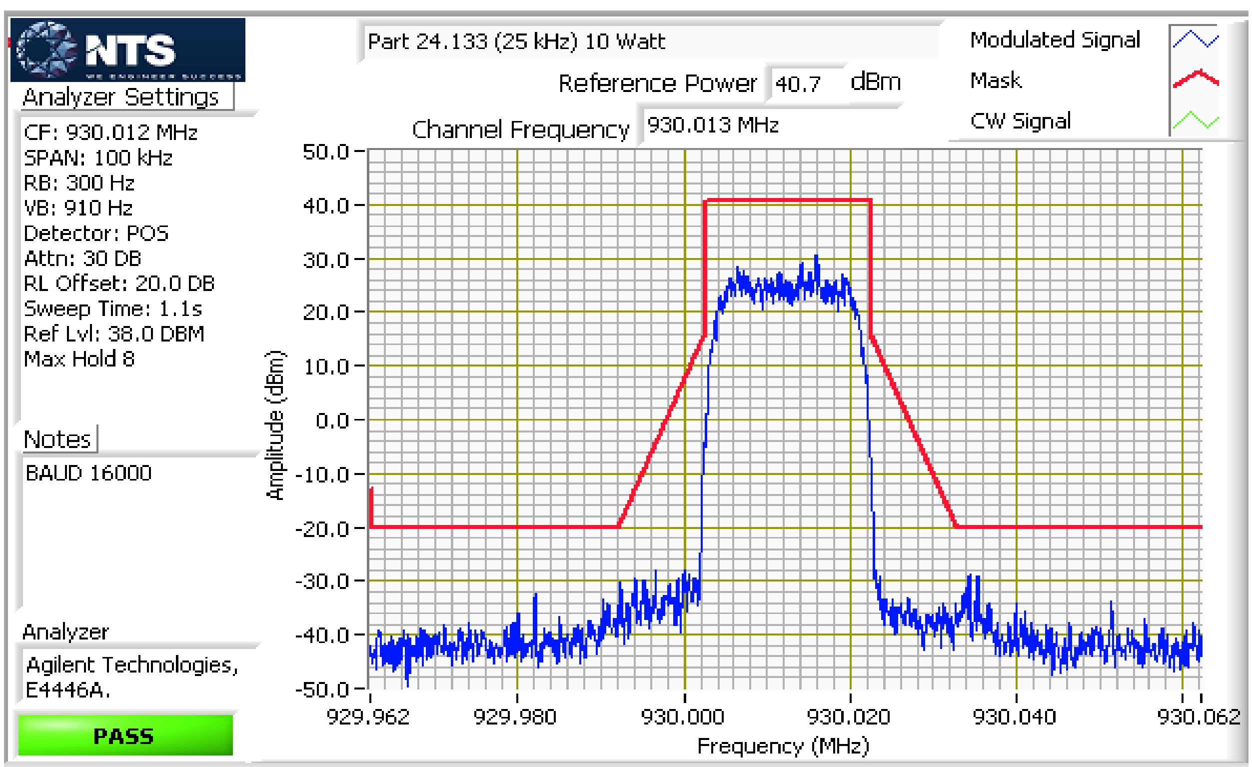
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A



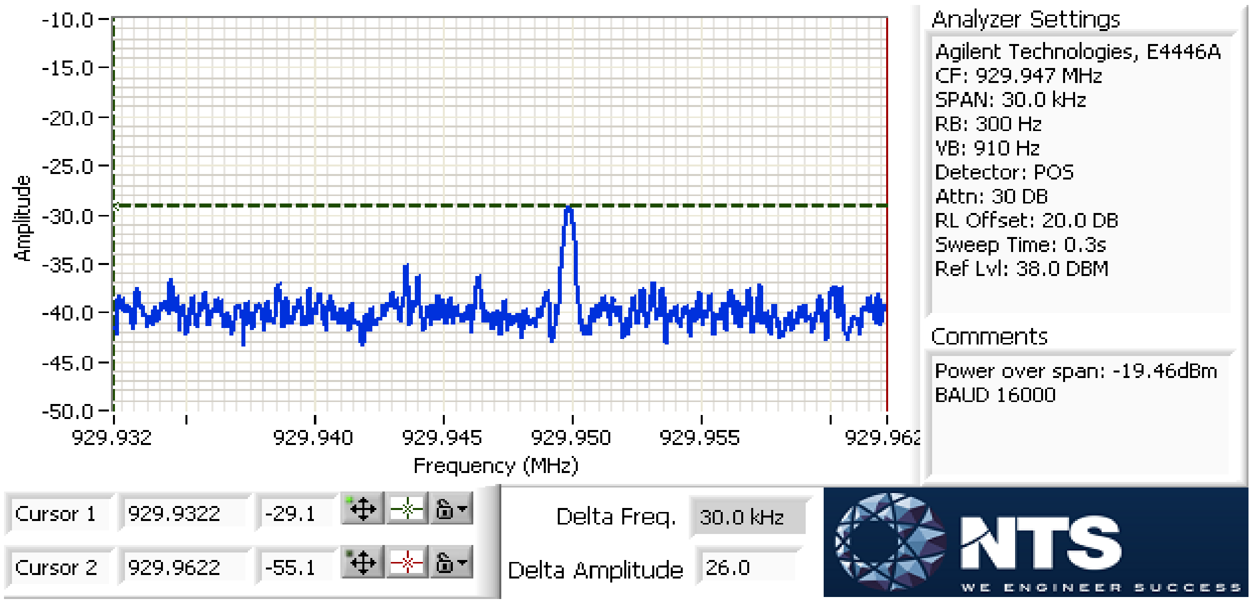


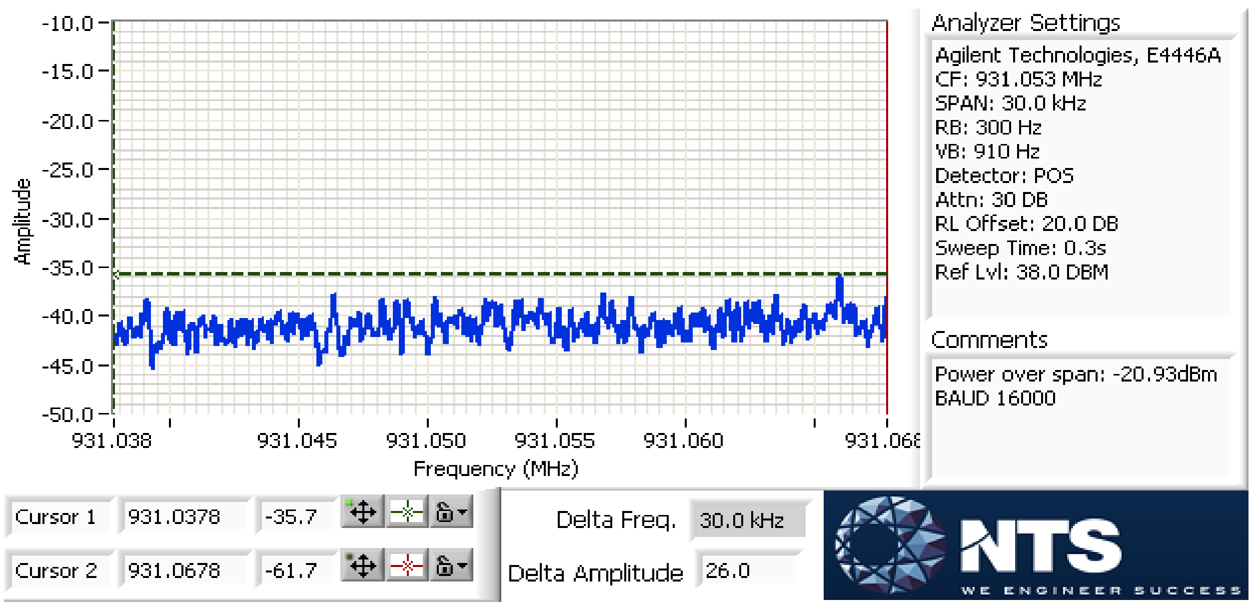
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A



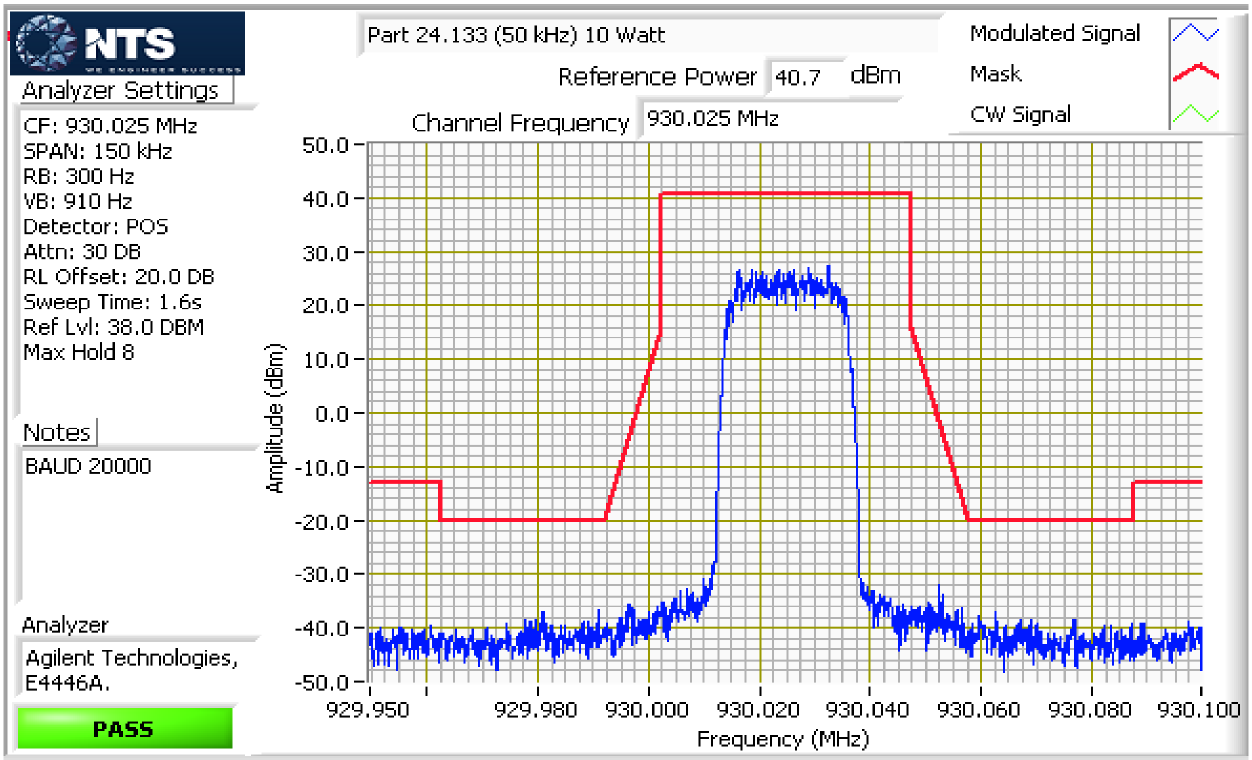


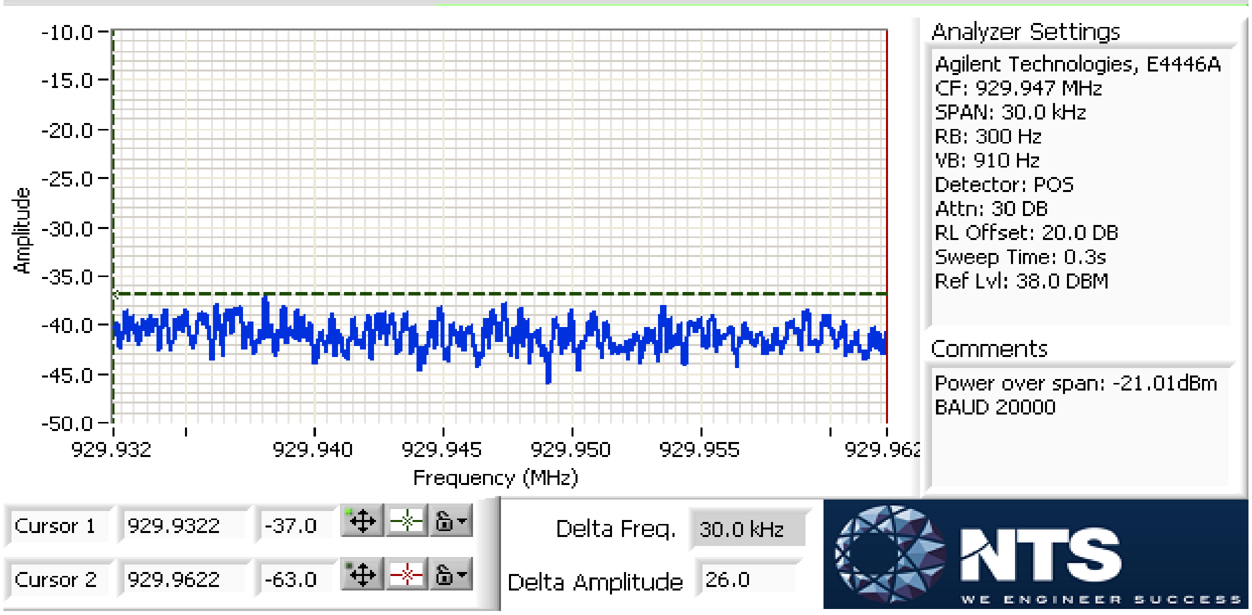
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A



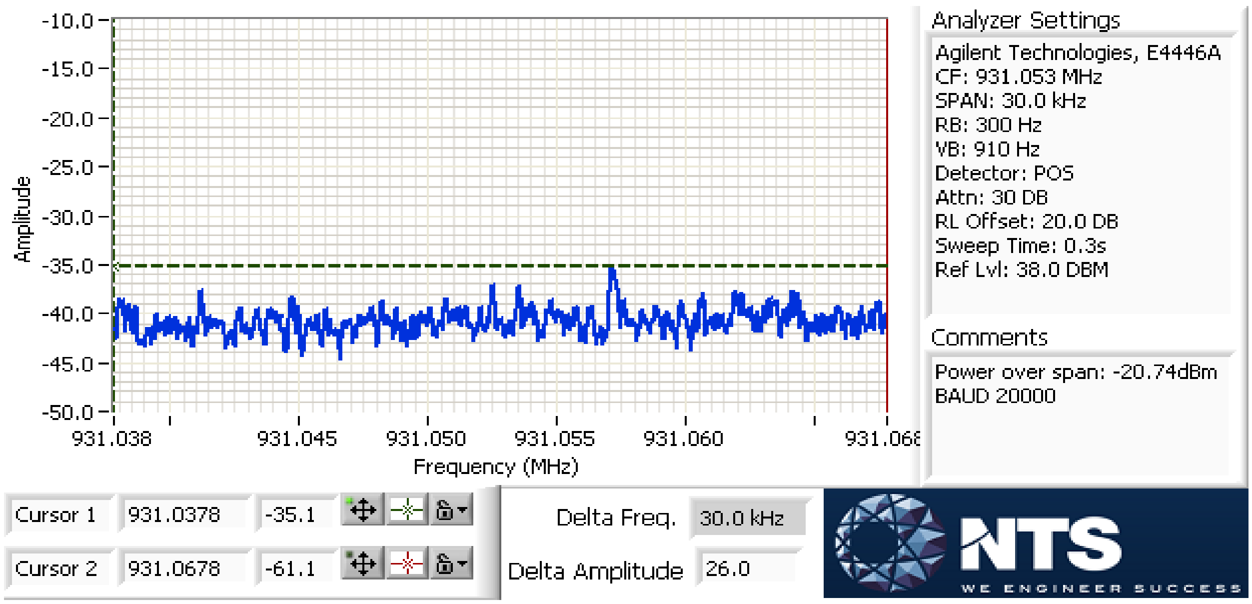


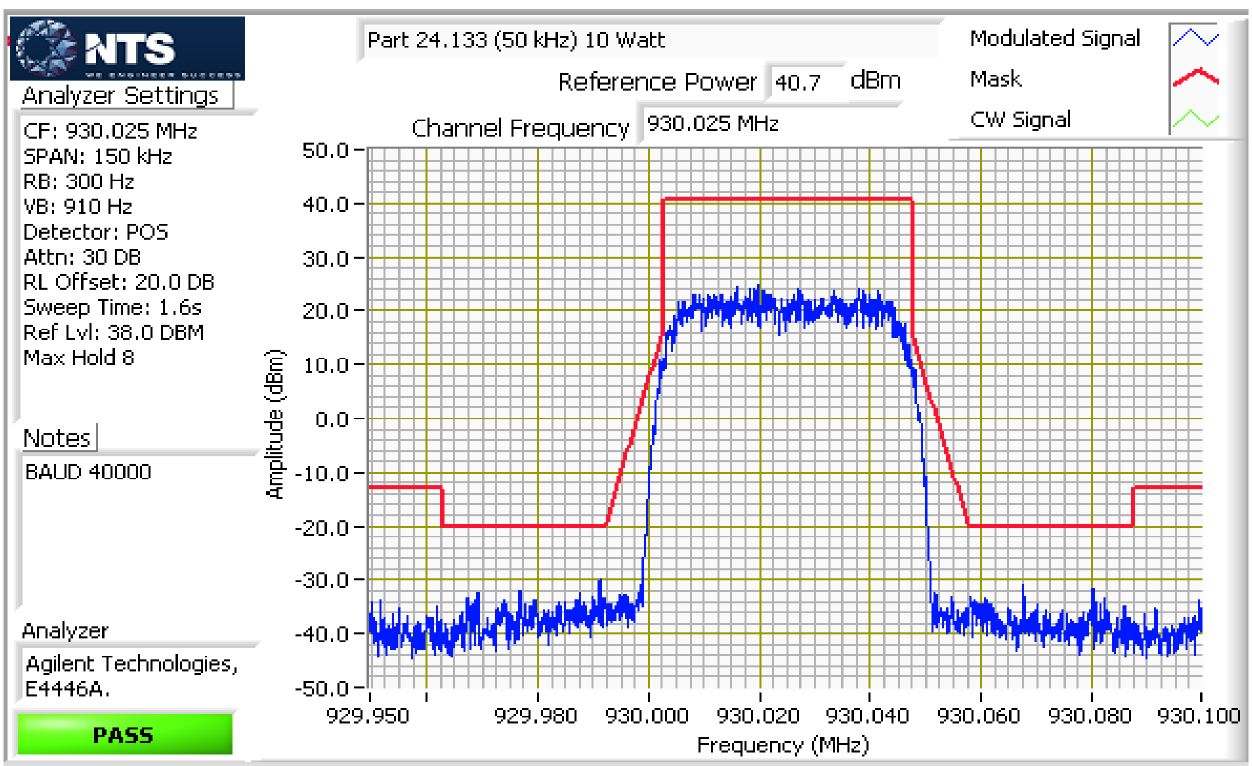
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A





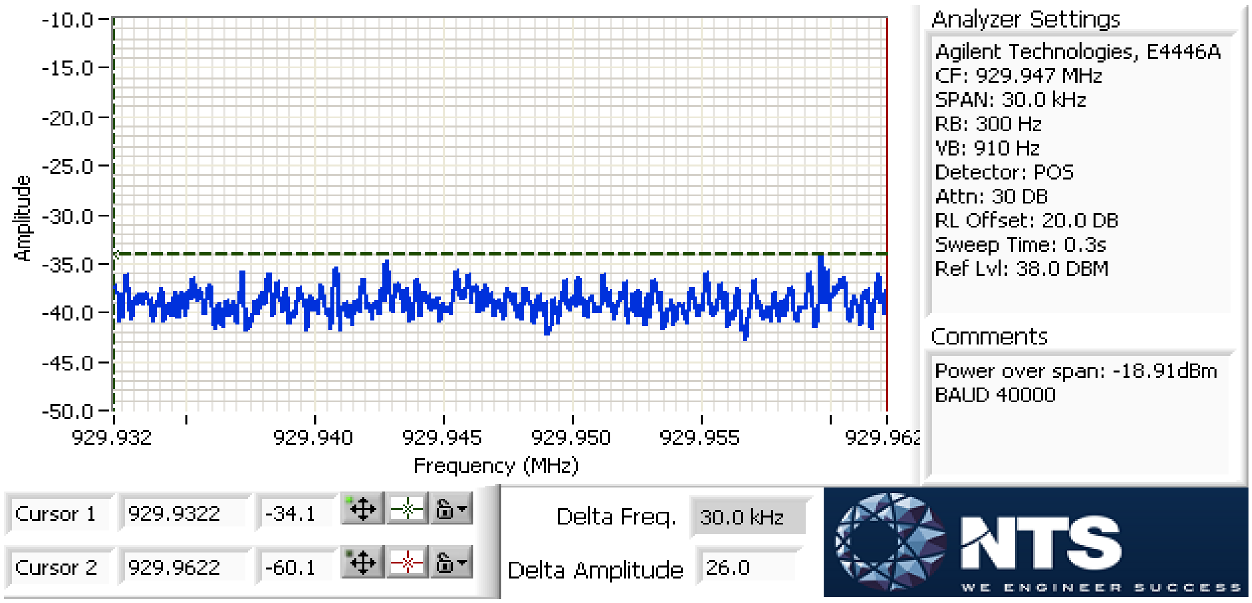
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

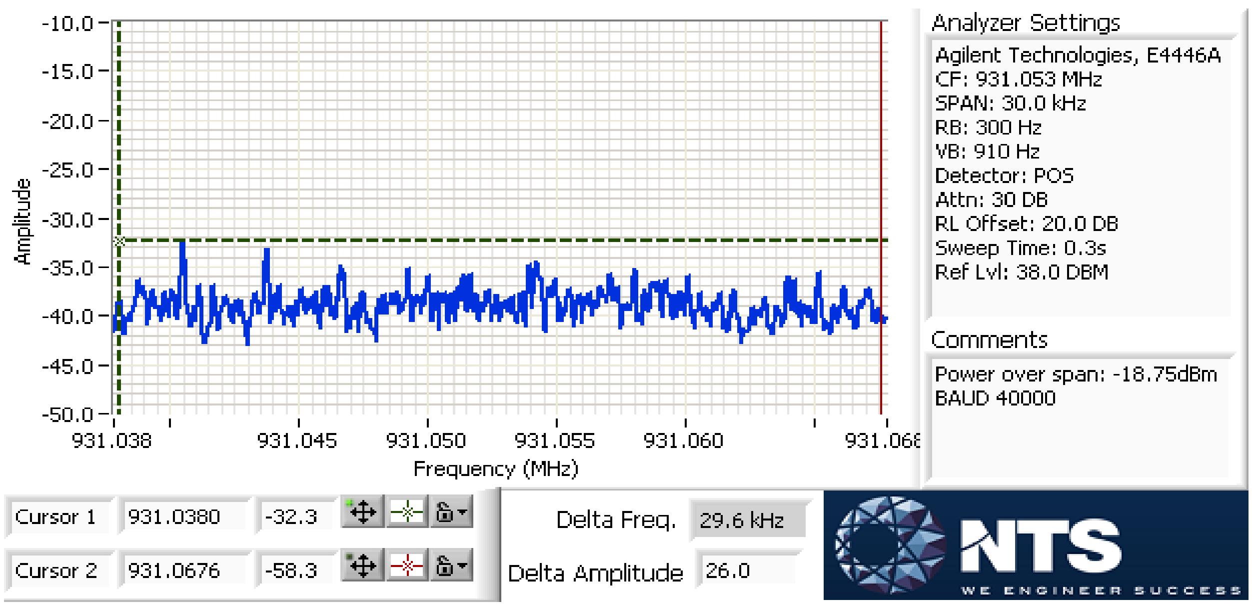




4

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A





Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #3: Signal Bandwidth FCC §24.131

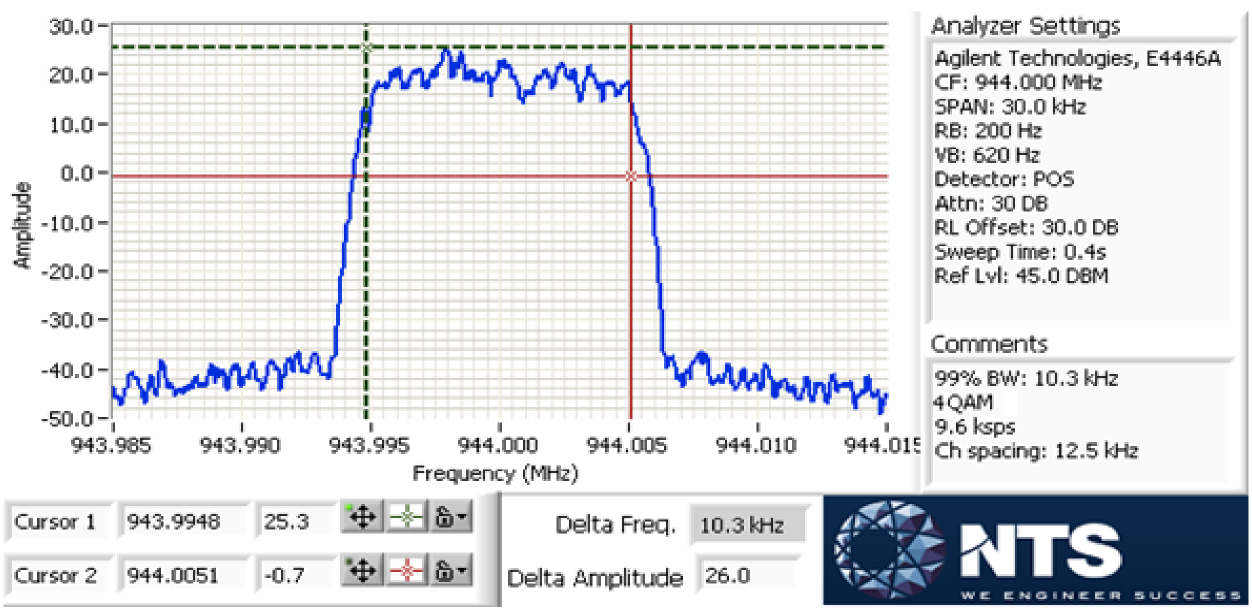
Date of Test: 10/28/2015 & 8/29/2018
Test Engineer: Deniz Demirci & David Bare
Test Location: Fremont EMC Lab #4B

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz)		Setting	
				99%		
40	944	200 Hz		10.3	BAUD 9600	9.6 kbps
40	944	200 Hz		10.8	BAUD 10000	10 kbps
40	944	200 Hz		17.2	BAUD 16000	16 kbps
40	944	300 Hz		21.5	BAUD 20000	20 kbps
40	940	510 Hz		43.2	BAUD 40000	40 kbps

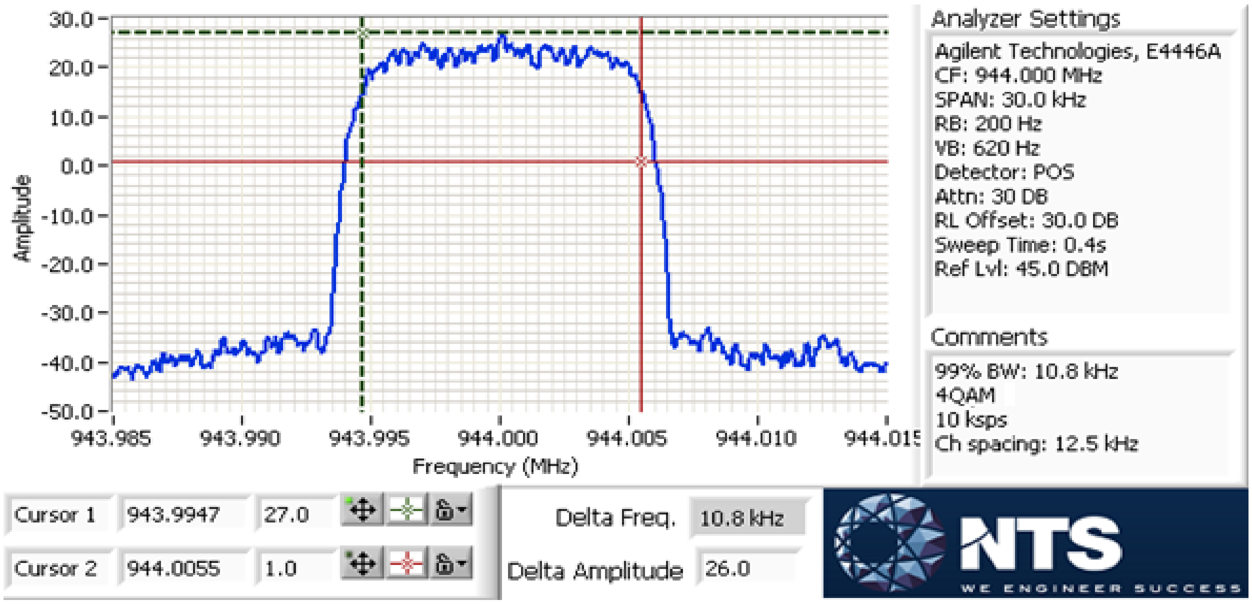
Note 1: 99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.

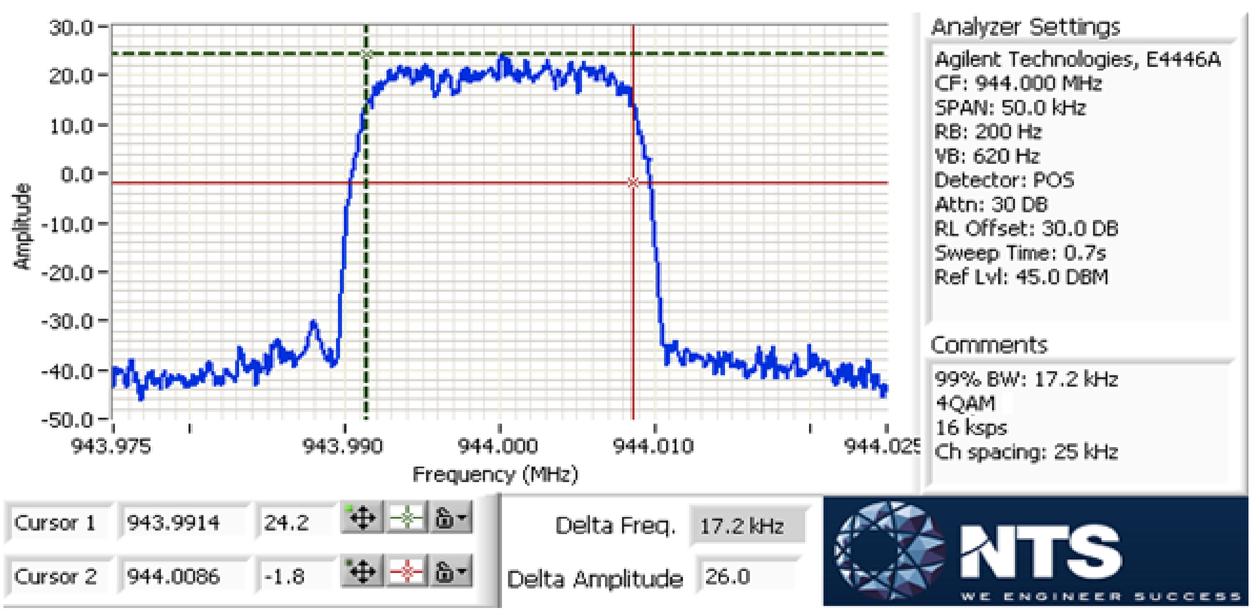
Note 2: Limit is 10 kHz for 12.5 kHz channels and 5 kHz less than the aggregrated channel width for aggregrated channels.



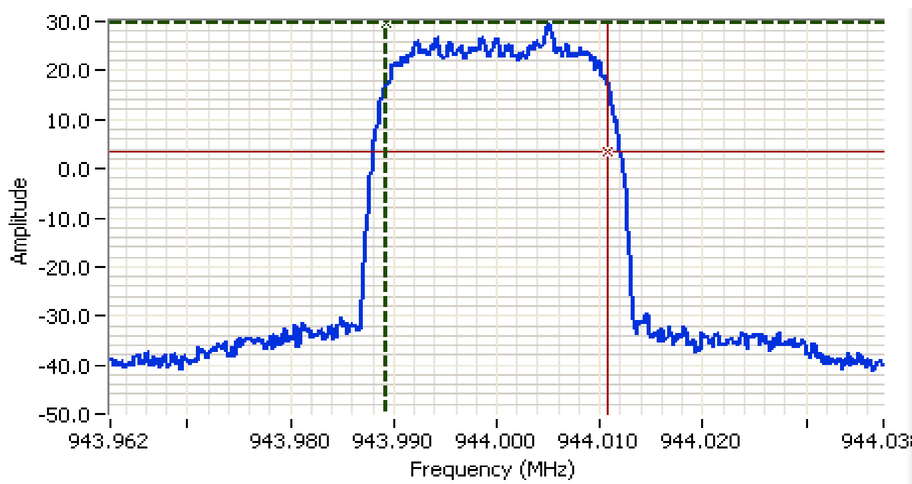
EMC Test Data

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A





Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A



Analyzer Settings

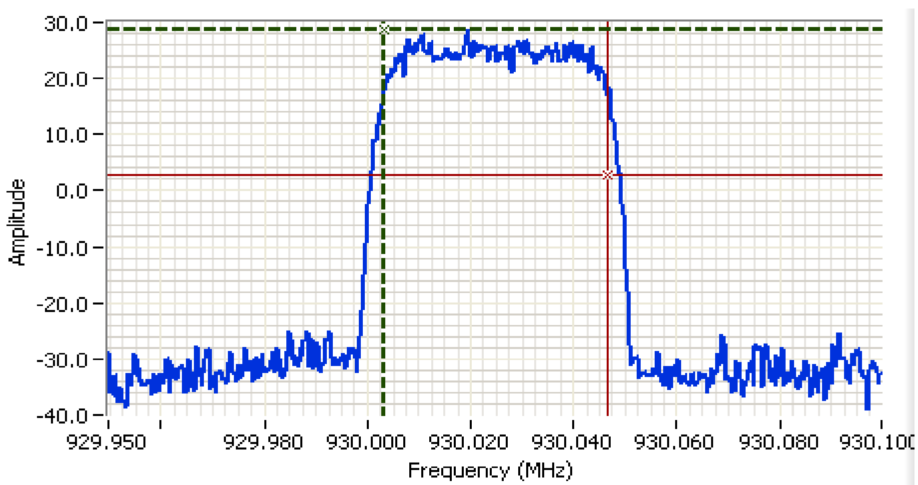
Agilent Technologies, E4446A
CF: 944.000 MHz
SPAN: 75.0 kHz
RB: 300 Hz
VB: 1.00 kHz
Detector: POS
Attn: 30 DB
RL Offset: 30.0 DB
Sweep Time: 0.8s
Ref Lvl: 45.0 DBM

Comments

99% BW: 21.5 kHz
4QAM
20 ksps
Ch spacing: 25 kHz

Cursor 1	943.9893	29.4
Cursor 2	944.0108	3.4

Delta Freq. 21.5 kHz
Delta Amplitude 26.0



Analyzer Settings

Agilent Technologies, E4446A
CF: 930.025 MHz
SPAN: 150 kHz
RB: 510 Hz
VB: 1.50 kHz
Detector: POS
Attn: 30 DB
RL Offset: 20.0 DB
Sweep Time: 0.6s
Ref Lvl: 40.0 DBM

Comments

99% power BW: 43.2 kHz
BAUD 40000

Cursor 1	930.0034	28.7
Cursor 2	930.0465	2.7

Delta Freq. 43.2 kHz
Delta Amplitude 26.0

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

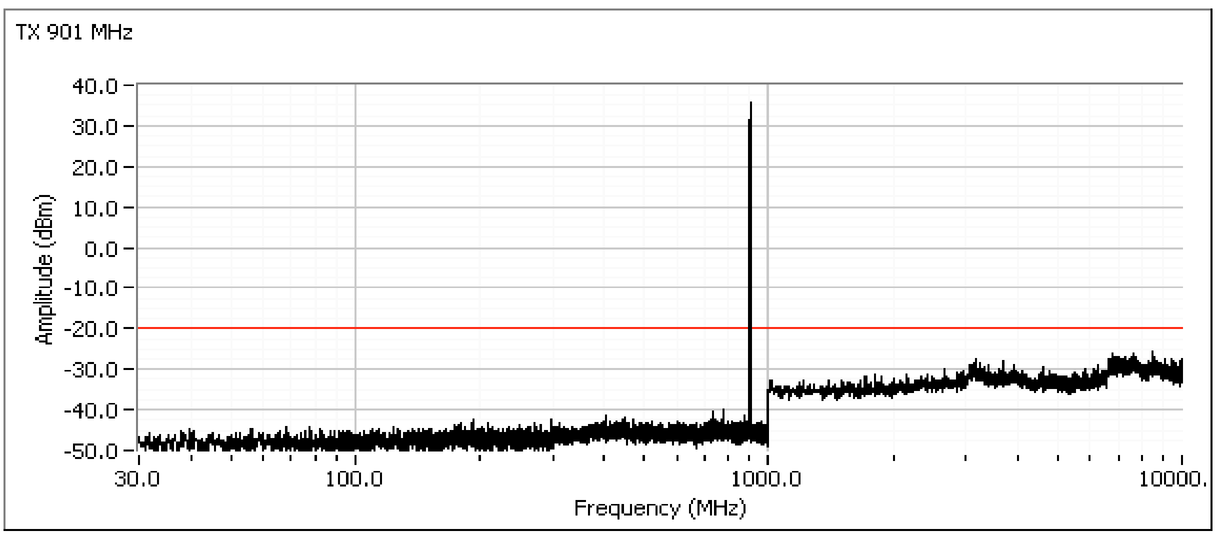
Run #4: Out of Band Spurious Emissions, Conducted

Date of Test:	12/11/2015 & 8/29/2018	Config. Used:	1
Test Engineer:	David Bare & Jude Semana	Config Change:	None
Test Location:	Fremont EMC Lab #4B	EUT Voltage:	13.8 VDC

Frequency (MHz)	Limit	Result
901	-13	Pass
930	-13	Pass
941	-13	Pass

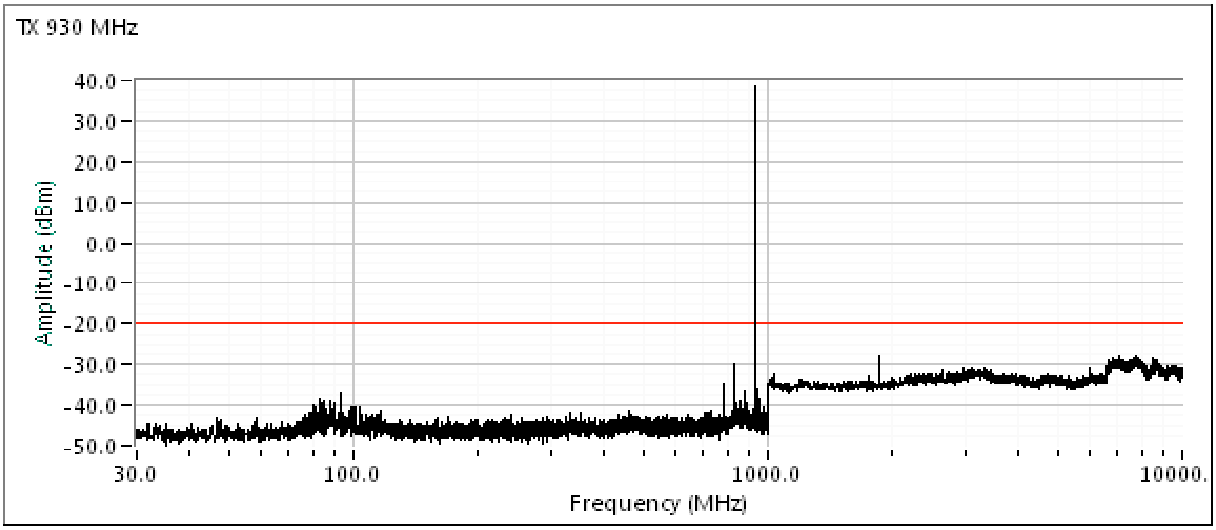
The limit is taken from FCC Part 24 Mask 24.133 (-13 dBm). Data in plots is compared to a limit of -20 dBm.

Plots for low channel, power setting(s) = 38

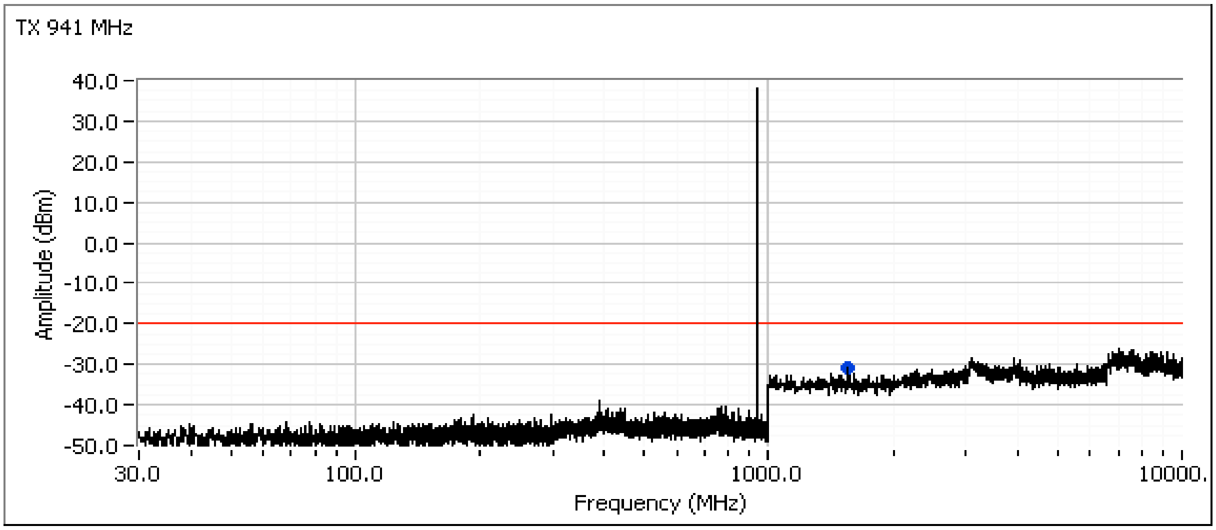


Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Plots for center channel, power setting(s) = 40



Plots for high channel, power setting(s) = 40



Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #5: Out of Band Spurious Emissions, Radiated

Conducted limit (dBm):	-13
Approximate field strength limit @ 3m:	82.3

The limit is taken from FCC Part 24 Mask 24.133 (-13 dBm). Data in some plots is compared to a limit of -20 dBm.

Run #5a - Preliminary measurements - chamber scans

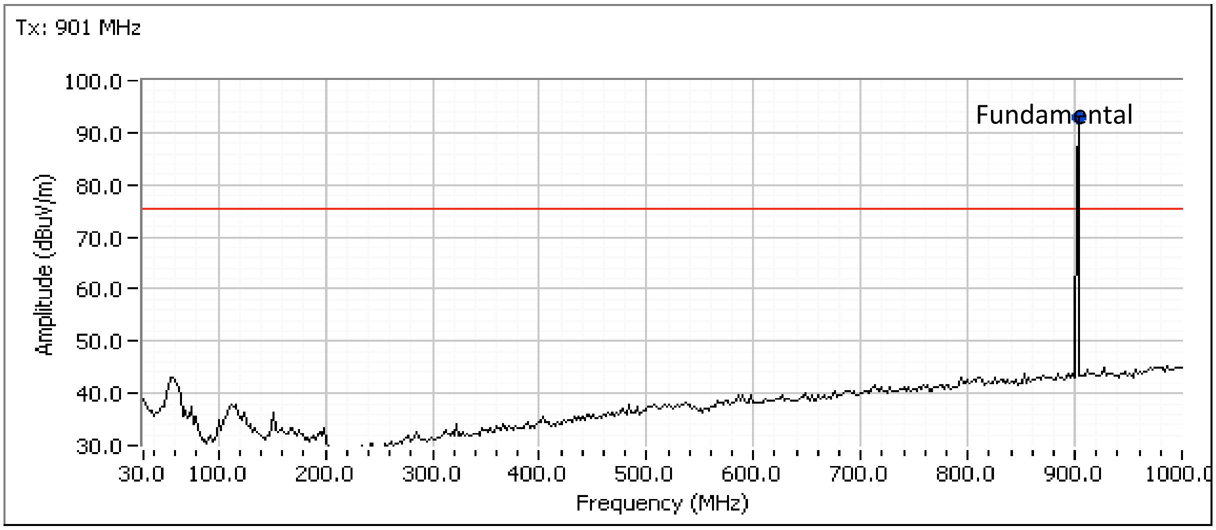
Date of Test:	12/14/2015 & 8/29/2018	Config. Used:	1
Test Engineer:	Deniz Demirci &	Config Change:	None
Test Location:	Fremont Chamber #4	EUT Voltage:	13.8 & 5.25 VDC

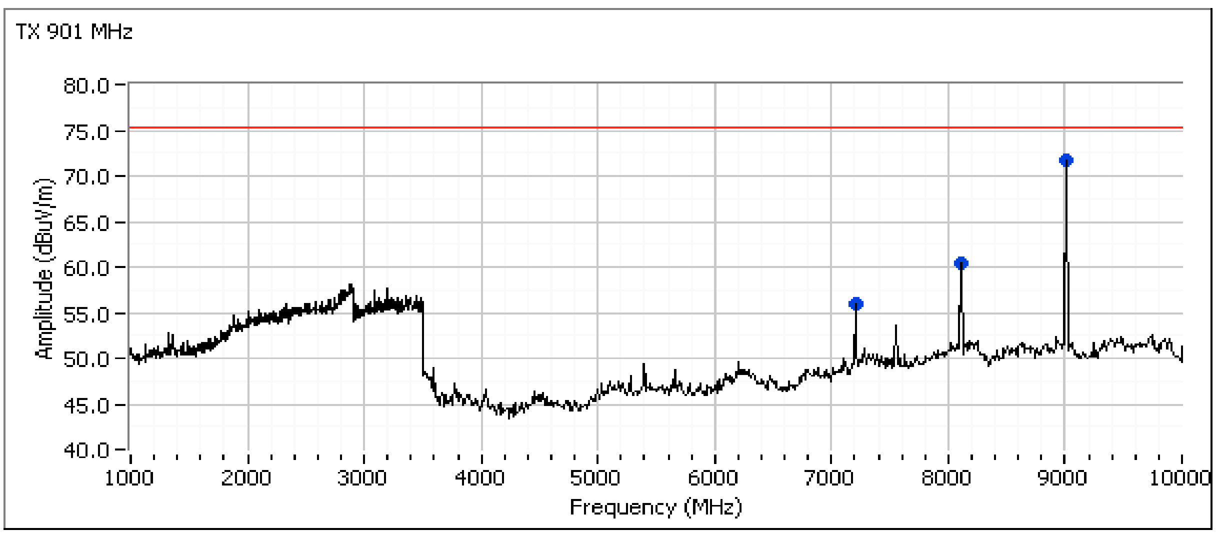
Frequency	Level	Pol	FCC Part 24		Detector	Azimuth	Height	Comments	Channel
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
901.006	93.1	H	-	-	PK	240	1.0	Carrier frequency	901.0
7208.000	55.9	V	82.3	-26.4	Peak	360	2.5		901.0
8109.000	60.4	V	82.3	-21.9	Peak	180	2.0		901.0
9010.000	71.8	V	82.3	-10.5	Peak	42	2.0		901.0
929.860	93.3	H	-	-	Peak	280	4.0	*Carrier frequency*	930.0
1862.500	54.9	V	82.3	-27.4	Peak	81	2.2		
2791.670	61.8	V	82.3	-20.5	Peak	116	2.5		
4648.330	59.9	V	82.3	-22.4	Peak	229	1.6		
5580.000	62.8	V	82.3	-19.5	Peak	10	2.2		
5840.000	61.6	V	82.3	-20.7	Peak	91	2.5		
7443.330	68.9	V	82.3	-13.4	Peak	182	2.5		
8375.000	64.8	V	82.3	-17.5	Peak	45	2.2		
9306.670	62.1	V	82.3	-20.2	Peak	308	1.0		
941.003	95.0	V	-	-	PK	208	1.5	Carrier frequency	941.0
8469.000	65.8	V	82.3	-16.5	Peak	201	2.0		941.0
9410.000	62.2	V	82.3	-20.1	Peak	352	1.5		941.0

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: $E=\sqrt{(30PG)}/d$. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 20dB of margin relative to this field strength limit is determined using substitution measurements.
Note 2:	Measurements are made with the antenna port terminated.

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

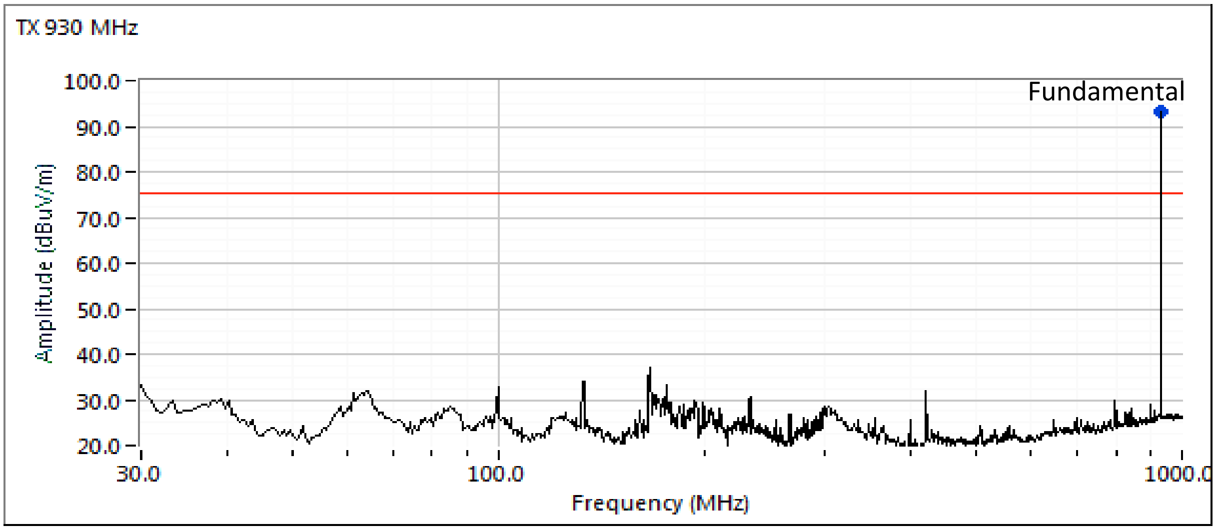
Plots for low channel, power setting(s) = 38

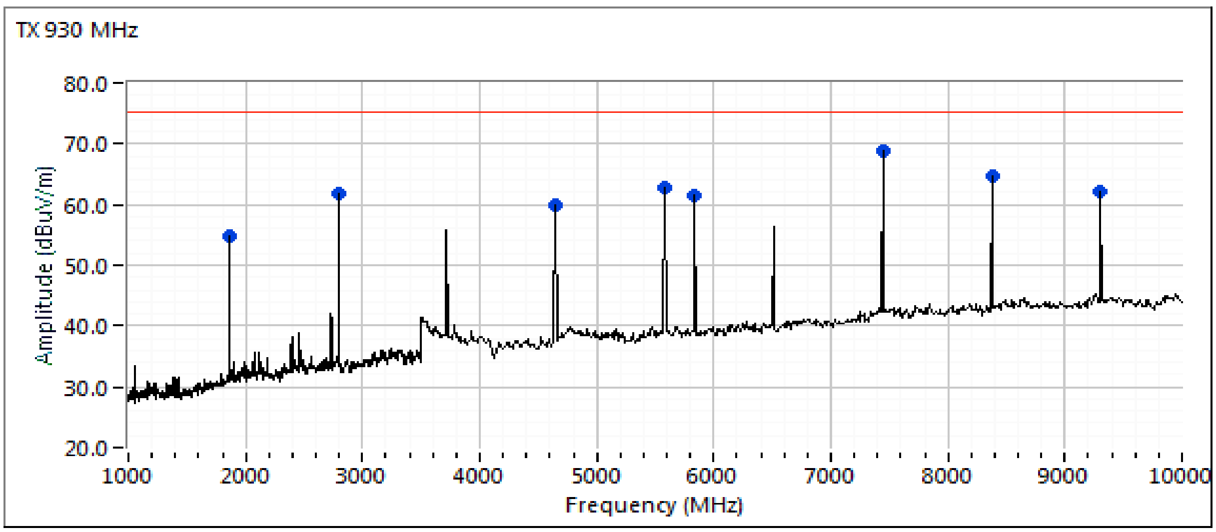




Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

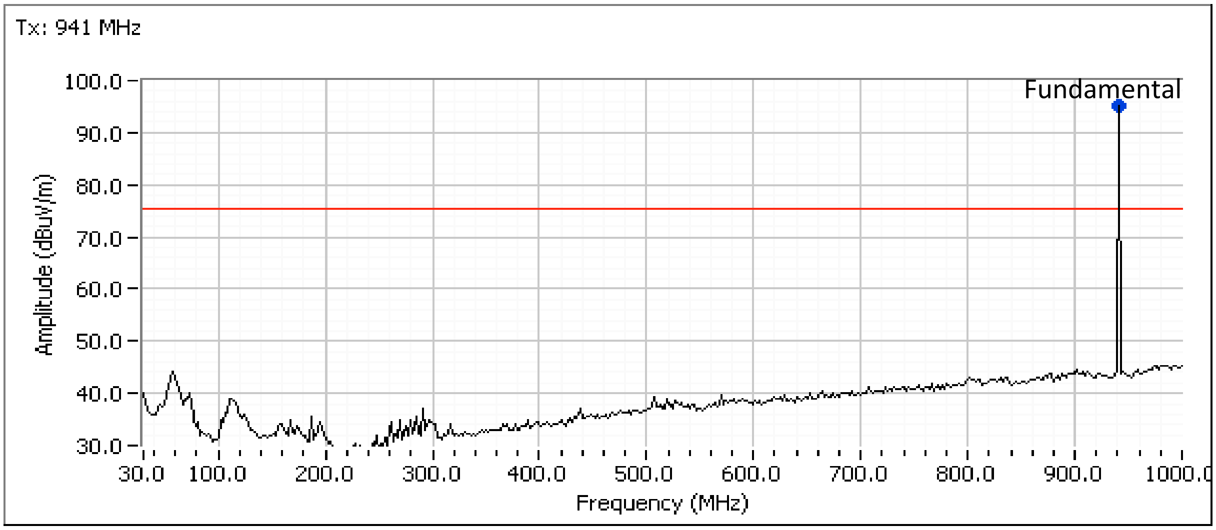
Plots for center channel, power setting(s) = 40

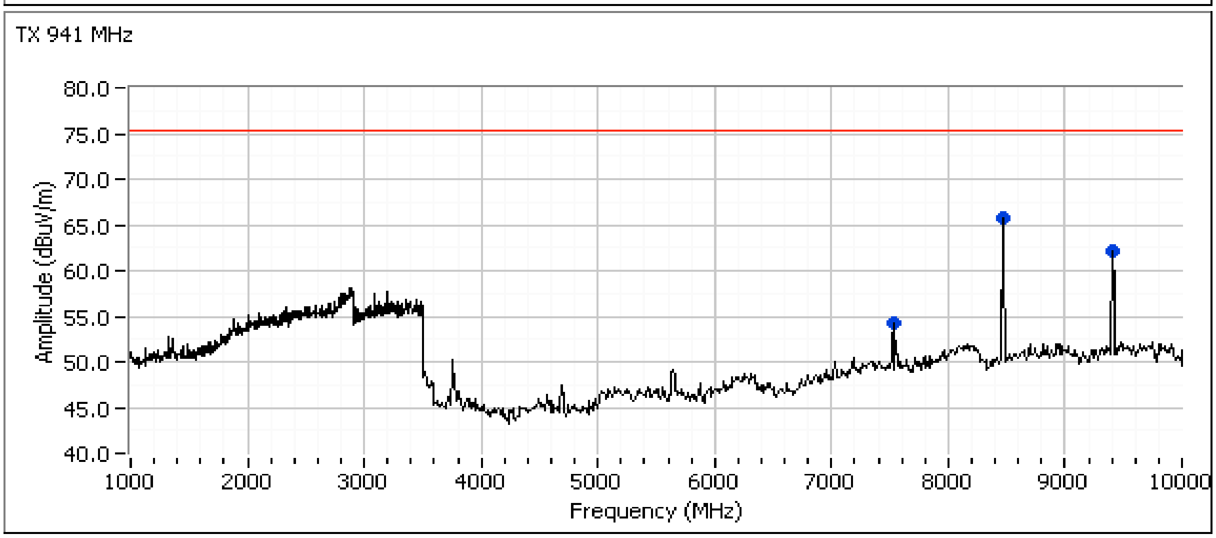




Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Plots for high channel, power setting(s) = 40





NTS

EMC Test Data

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #5b: - Final Field Strength Measurements and Substitution Measurements

Date of Test: 12/14/2015 & 8/30/2018
Test Engineer: Deniz Demirci & Jude Semana
Test Location: Fremont Chamber #4

Config. Used: 1
Config Change: Additional PS used for 5.25V
EUT Voltage: 5.25 & 13.8 VDC

EUT Field Strength

Frequency	Level	Pol	FCC 24.133		Detector	Azimuth	Height	Comments	Freq
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
7207.870	58.4	H	82.3	-23.9	Pk	360	2.3	RB 1 MHz;VB 3 MHz;Peak	901.0
8109.330	65.0	V	82.3	-17.3	Pk	180	2.0	RB 1 MHz;VB 3 MHz;Peak	901.0
9009.030	73.8	V	82.3	-8.5	Pk	40	2.0	RB 1 MHz;VB 3 MHz;Peak	901.0
1862.500	55.1	V	82.3	-27.2	Pk	83	2.2	RB 1 MHz;VB 3 MHz;Peak	930.0
2791.670	61.9	V	82.3	-20.4	Pk	116	2.6	RB 1 MHz;VB 3 MHz;Peak	930.0
4648.330	61.0	V	82.3	-21.3	Pk	230	1.7	RB 1 MHz;VB 3 MHz;Peak	930.0
5580.000	63.1	V	82.3	-19.2	Pk	10	2.6	RB 1 MHz;VB 3 MHz;Peak	930.0
5840.000	61.7	V	82.3	-20.6	Pk	91	2.5	RB 1 MHz;VB 3 MHz;Peak	930.0
7443.330	68.9	V	82.3	-13.4	Pk	185	2.5	RB 1 MHz;VB 3 MHz;Peak	930.0
8375.000	65.0	V	82.3	-17.3	Pk	48	2.2	RB 1 MHz;VB 3 MHz;Peak	930.0
9306.670	62.1	V	82.3	-20.2	Pk	310	1.0	RB 1 MHz;VB 3 MHz;Peak	930.0
8469.720	66.8	V	82.3	-15.5	PK	202	2.0	RB 1 MHz;VB 3 MHz;Peak	941.0
9410.060	70.2	V	82.3	-12.1	PK	353	1.5	RB 1 MHz;VB 3 MHz;Peak	941.0
7529.250	57.6	V	82.3	-24.7	PK	353	2.5	RB 1 MHz;VB 3 MHz;Peak	941.0

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 20dB of margin relative to this field strength limit is determined using substitution measurements.
Note 2:	Measurements are made with the antenna port terminated.

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Substitution measurements
Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
5580.000	-12.8	10.8	92.5	94.5	63.1	-31.4	-33.6		-13.0	-20.6
7443.000	-13.5	11.0	93.6	96.1	68.9	-27.2	-29.4		-13.0	-16.4
8375.000	-13.6	10.6	92.6	95.6	65.0	-30.6	-32.8		-13.0	-19.8
8109.330	-40.1	11.1	68.1	97.1	65.0	-32.1	-34.3		-13.0	-21.3
9009.030	-40.2	10.9	68.4	97.7	73.8	-23.9	-26.1		-13.0	-13.1
8469.720	-40.1	11.0	67.5	96.6	66.8	-29.8	-32.0		-13.0	-19.0
9410.060	-40.2	11.5	68.1	96.8	70.2	-26.6	-28.8		-13.0	-15.8

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

FCC Part 101

Power, Occupied Bandwidth, Frequency Stability and Spurious Emissions

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 °C
Rel. Humidity: 44 %

Summary of Results

Run #			Test Performed	Limit	Pass / Fail	Result / Margin
1			Output Power	Depends on license	Pass	20 - 41 dBm Conducted
2			Spectral Mask	Within Mask	Pass	
3			99% or Occupied Bandwidth	45 kHz	-	43.2 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.

Test Notes

Based on the previous testing of this product, QAM4, QAM16 and QAM64 all produce the same results. Therefore testing for part 24 is limited to QAM4 modulation.

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #1: Output Power

Date of Test: 8/30/2018
Test Engineer: David Bare
Test Location: Fremont EMC Lab #4B
Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Cable Loss:
Cable ID(s): -
Attenuator: 20.0 dB
Attenuator IDs: WC068107
Total Loss: 20.0 dB

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP dBm	EIRP W
40	928	40.8	12022.6	16.5	Pass	57.3	537.032
40	944	41.0	12589.3	16.5	Pass	57.5	562.341
40	960	41.0	12589.3	16.5	Pass	57.5	562.341

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.

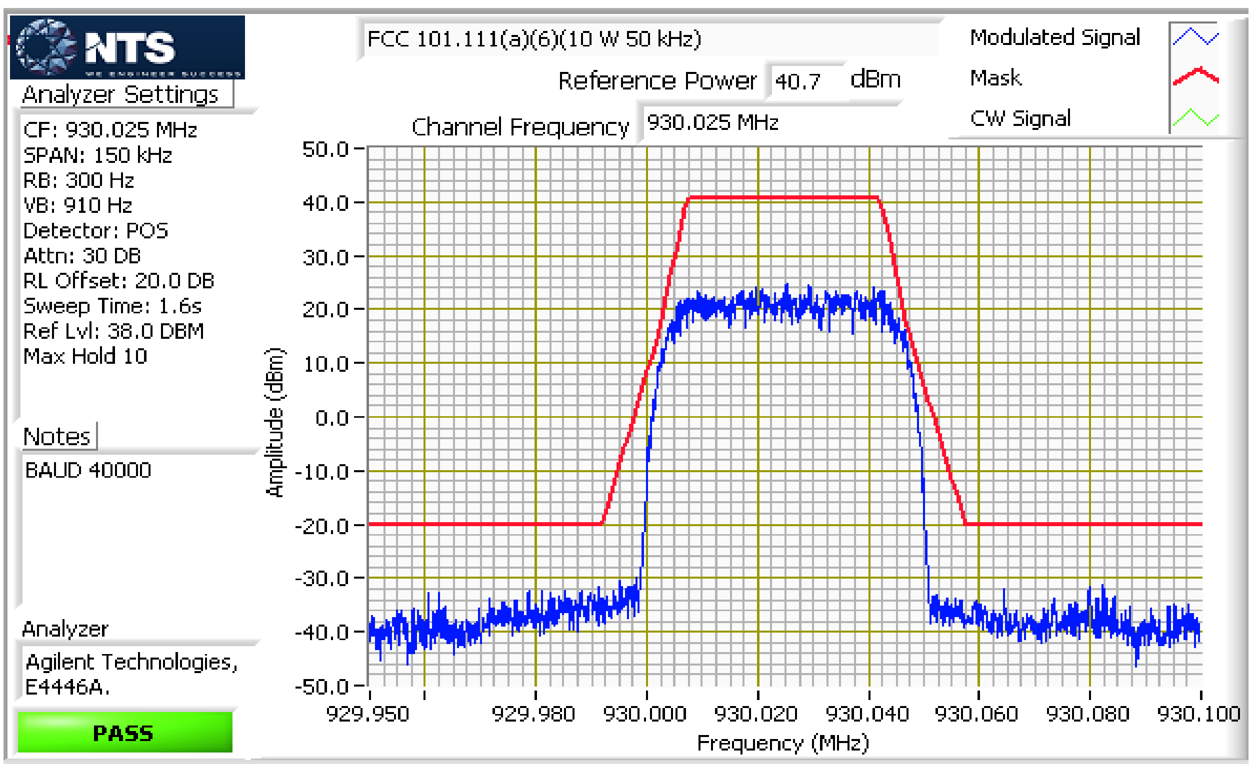
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #2: Spectral Mask, FCC Part 101 Mask 101.111(a)(6)

Date of Test:	8/29/2018	Config. Used:	1
Test Engineer:	David Bare	Config Change:	None
Test Location:	Fremont EMC Lab #4B	EUT Voltage:	13.8 VDC

Note 1: RBW=300 Hz and VBW=1 kHz within mask, Top of mask set to the measured power.

928 - 960 MHz, 50 kHz channel spacing.
FCC 101.147(b) and RSS-119 section 5.6 allow up to 50 kHz channels



EMC Test Data

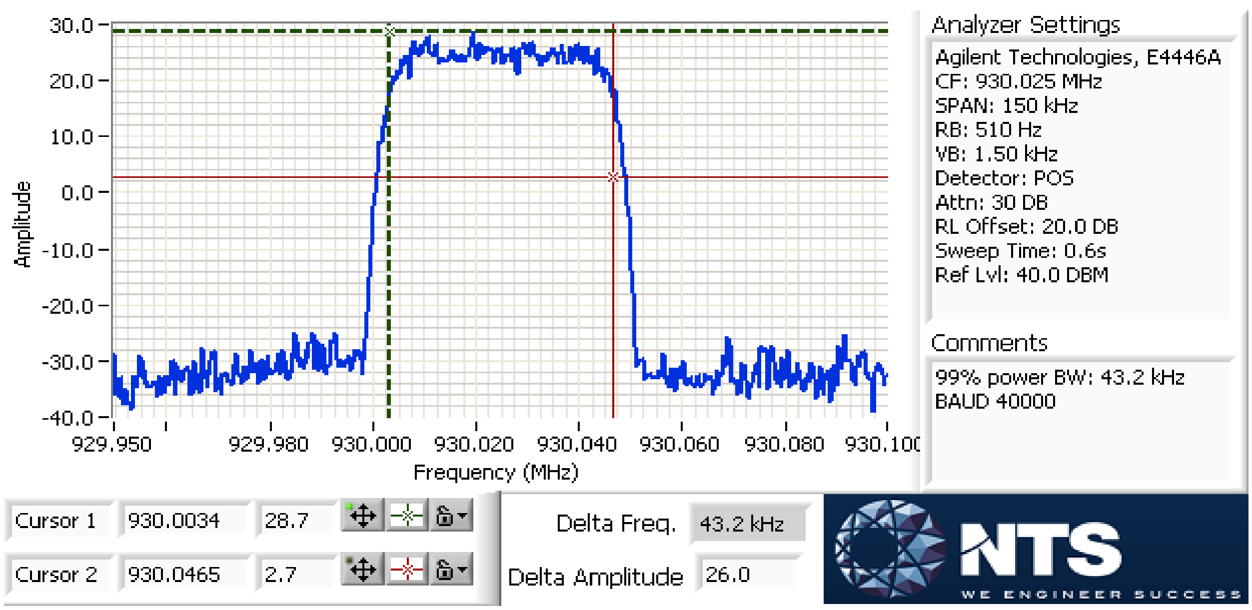
Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #3: Signal Bandwidth

Date of Test: 8/29/2018 | Config. Used: 1
Test Engineer: David Bare | Config Change: None
Test Location: Fremont EMC Lab #4B | EUT Voltage: 13.8 VDC

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz)		
				99%	
40	930	510 Hz		43.20	BAUD 40000

Note 1: 99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.



Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

FCC

Spurious Emissions < 30 MHz

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

All measurements are made with the EUT's rf port connected to a RF load. The EUT was placed inside a semi anechoic chmaber. Measurements were made with the EUT located on a non-conductive table 80 cm above the floor, 3m from the measurement antenna.

Ambient Conditions:

Temperature:	21 °C
Rel. Humidity:	42 %

Summary of Results

Run #			Test Performed	Limit	Pass / Fail	Result / Margin
4			Spurious Emissions (conducted)	-20 dBm	Pass	No emissions from EUT
5			Spurious emissions (radiated)	-20 dBm	Pass	No emissions from EUT

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.

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #4: Out of Band Spurious Emissions, Conducted

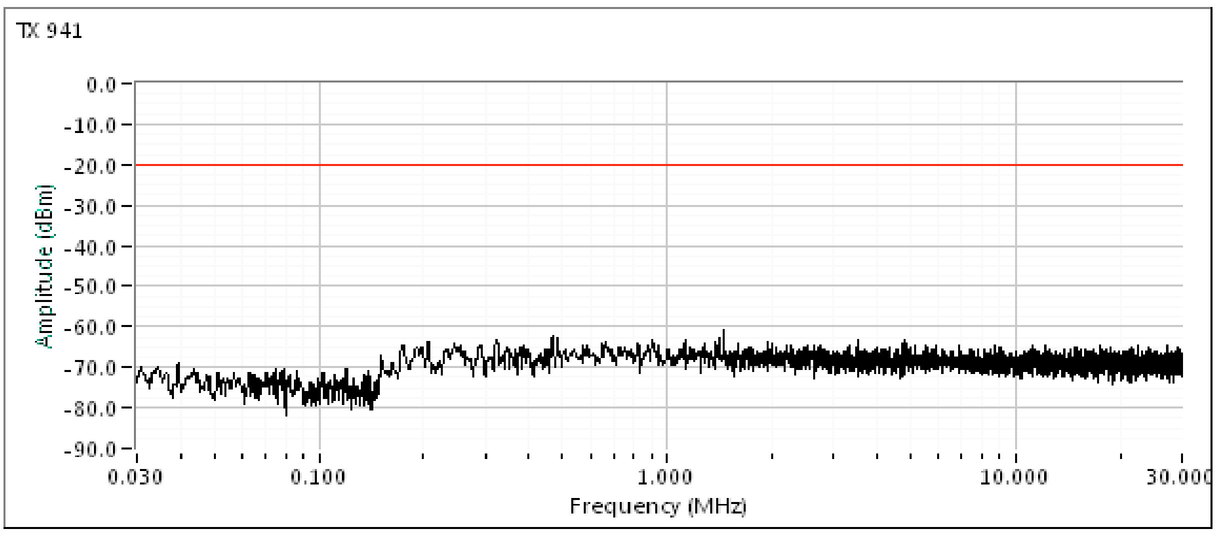
Date of Test: 9/4/2018
Test Engineer: David Bare
Test Location: Fremont EMC Lab #4B

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Frequency (MHz)	Limit	Result
941	-20 dBm	Pass

The limit is taken from FCC Part 90 Mask D

Plots for center channel, power setting(s) = 40



Note:	No emissions from the EUT were observed above the noise floor of the measurments system from 30 kHz to 30 MHz.

Client:	GE MDS LLC	Job Number:	PR085381
Model:	LN900	T-Log Number:	TL085381-RA
		Project Manager:	Christine Krebill
Contact:	Jack Priebe	Project Coordinator:	David Bare
Standard:	FCC parts 24, 90 and 101	Class:	N/A

Run #5: Spurious Emissions, Radiated

Conducted limit (dBm): -20
Approximate field strength limit @ 3m: 75.3

The limit is taken from FCC Part 90 Mask D

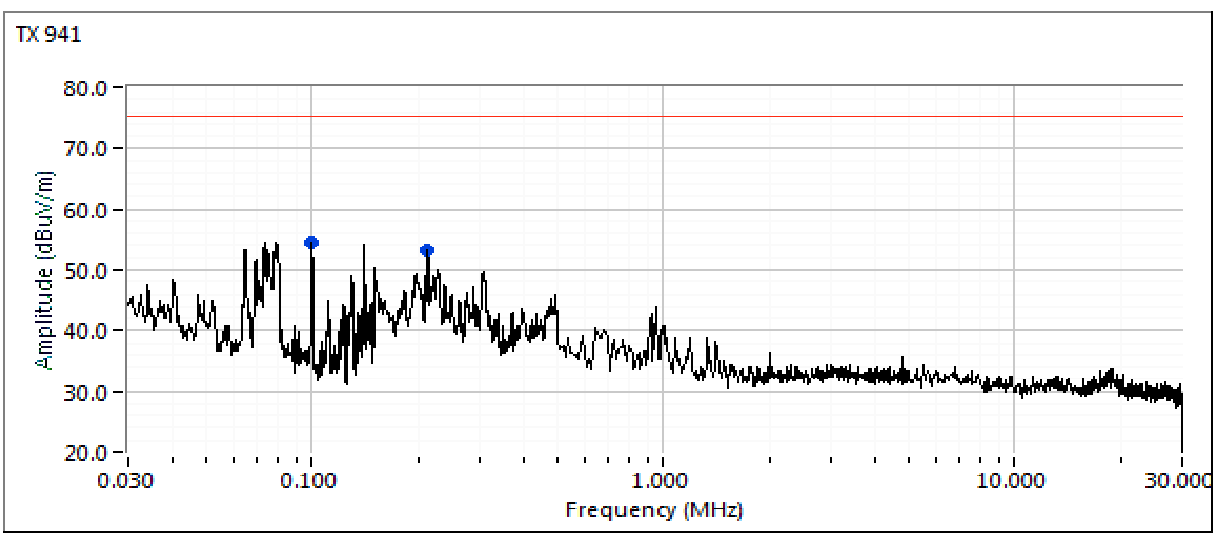
Date of Test: 9/4/2018
Test Engineer: David Bare
Test Location: Fremont Chmaber #4

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 & 5.25 VDC

Frequency	Level	Pol	FCC Part 90		Detector	Azimuth	Height	Comments	Channel
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
0.214	53.2	V	75.3	-22.1	Peak	115	1.0		941
0.100	54.5	V	75.3	-20.8	Peak	156	1.0		941

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included.
Note 2:	No emissions related to the EUT Tx frequency from the EUT were observed as all observed emisisons did not change when the transmitter output was keyed.

Plots for center channel, power setting(s) = 40



Client:	GE MDS LLC	Job Number:	JD99760
Product	LN900	T-Log Number:	T99783
System Configuration:	Module	Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Emissions Standard(s):	FCC Parts 15, 90 and 101, RSS-119	Class:	-
Immunity Standard(s):		Environment:	Radio

EMC Test Data

For The

GE MDS LLC

Product

LN900

Date of Last Test: 12/22/2015

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

RSS-119 and FCC Part 90

Power, Occupied Bandwidth, Frequency Stability and Spurious Emissions

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: 20-22 °C
Rel. Humidity: 30-36 %

Summary of Results

Run #	Spacing	Data Rate	Test Performed	Limit	Pass / Fail	Result / Margin
1			Output Power	Depends on license	Pass	40.8 dBm
2			Spectral Mask	varies with modulation	Pass	Complied with Mask
3			99% or Occupied Bandwidth	varies with modulation	-	See below
4			Spurious Emissions (conducted)	-20 dBm	Pass	-27.3 dBm @ 1858.9 MHz (-7.3 dB)
5			Spurious emissions (radiated)	-20 dBm	Pass	-24.6 dBm @ 9319.6 MHz (-4.6 dB)
6			Frequency Stability	1.5 ppm[1]	Pass	0.3 ppm

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.

NTS WE ENGINEER SUCCESS

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Notes

Part 90: 896-901MHz & 935-940MHz, 12.5 & 25 kHz channel spacings, 929-930MHz, 6.25, 12.5 & 25 kHz channel spacings. RSS-119: 896-901MHz, 928-929 MHz, 931-935 MHz, 941-944 MHz, and 952-953 MHz, 12.5, 25 kHz channel spacings, 929-930 MHz and 931-932 MHz, 25 kHz channel spacing.

Target power: 10 Watts (40 dBm). QAM modulation (FCC Waiver for D1D emission type); need to know rated power and tolerance which cannot exceed measured power. Power limits in § 90.205 (k), (m), § 90.635 & § 90.494

[1] FCC Part 90.213 (footnote 14) and RSS-119 Section 5.3 allow 1.5 ppm for control station operations.

Limited Modular approval

Run #1: Output Power

Date of Test: 10/26/2015
Test Engineer: Deniz Demirci
Test Location: Fremont Lab #6

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Cable Loss: 0.0 dB
Cable ID(s): None

Attenuator: 30.0 dB
Attenuator IDs: Asset #1878 + #2097

Total Loss: 30.0 dB

FCC Part 90 & RSS-119

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP dBm	EIRP W
40 dBm	896.0	40.7	11749.0	16.5		57.2	524.807
40 dBm	901.0	40.6	11481.5	16.5		57.1	512.861
40 dBm	929.0	40.7	11749.0	16.5		57.2	524.807
40 dBm	930.0	40.8	12022.6	16.5		57.3	537.032
40 dBm	935.0	40.7	11749.0	16.5		57.2	524.807
40 dBm	940.0	40.6	11481.5	16.5		57.1	512.861

RSS-119 only

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP dBm	EIRP W
40 dBm	941.0	40.6	11481.5	16.5		57.1	512.861
40 dBm	944.0	40.7	11749.0	16.5		57.2	524.807
40 dBm	952.5	40.8	12022.6	16.5		57.3	537.032

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.

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #2: Spectral Mask, FCC Part 90 Masks C, G for 929-930 MHz and J for 896-901 MHz and 935-940 MHz
RSS-119 Mask J for 12.5 KHz channels (896-901 MHz and 935-940 MHz), Mask D for 12.5 kHz channels in all other bands and Mask G for 25 kHz channels

Date of Test: 10/26, 10/27, 12/11/2015
Test Engineer: Deniz Demirci & David Bare
Test Location: Fremont Lab #6 & #4B
Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Note 1:	EUT does not transmit unmodulated carrier with full power setting. The measured power levels (using peak power meter) are higher than the declared nominal power for every channel frequency. Nominal 40 dBm reference power level used for spectral mask measurements as worst case results.

Run #2a: Spectral Mask for 896 - 901 & 935-940 MHz bands (FCC Part 90 and RSS-119)

Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	4.8 ksps	6.25 kHz	4QAM	898.5	N/A	
40 dBm	4.8 ksps	6.25 kHz	16QAM	898.5	N/A	
40 dBm	4.8 ksps	6.25 kHz	64QAM	898.5	N/A	
40 dBm	9.6 ksps	12.5 kHz	4QAM	898.5	J	Pass
40 dBm	9.6 ksps	12.5 kHz	16QAM	898.5	J	Pass
40 dBm	9.6 ksps	12.5 kHz	64QAM	898.5	J	Pass
40 dBm	10.0 ksps	12.5 kHz	4QAM	898.5	J	Pass
40 dBm	10.0 ksps	12.5 kHz	16QAM	898.5	J	Pass
40 dBm	10.0 ksps	12.5 kHz	64QAM	898.5	J	Pass
40 dBm	16.0 ksps	25.0 kHz	4QAM	898.5	J & G	Pass
40 dBm	16.0 ksps	25.0 kHz	16QAM	898.5	J & G	Pass
40 dBm	16.0 ksps	25.0 kHz	64QAM	898.5	J & G	Pass

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #2b: Spectral Mask at 928 - 929 & 929 - 930 MHz bands (RSS-119)

Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	4.8 ksps	6.25 kHz	4QAM	928.5	N/A	
40 dBm	4.8 ksps	6.25 kHz	16QAM	928.5	N/A	
40 dBm	4.8 ksps	6.25 kHz	64QAM	928.5	N/A	
40 dBm	9.6 ksps	12.5 kHz	4QAM	928.5	C & D	Pass
40 dBm	9.6 ksps	12.5 kHz	16QAM	928.5	C & D	Pass
40 dBm	9.6 ksps	12.5 kHz	64QAM	928.5	C & D	Pass
40 dBm	10.0 ksps	12.5 kHz	4QAM	928.5	C & D	Pass
40 dBm	10.0 ksps	12.5 kHz	16QAM	928.5	C & D	Pass
40 dBm	10.0 ksps	12.5 kHz	64QAM	928.5	C & D	Pass
40 dBm	16.0 ksps	25.0 kHz	4QAM	928.5	C & G	Pass
40 dBm	16.0 ksps	25.0 kHz	16QAM	928.5	C & G	Pass
40 dBm	16.0 ksps	25.0 kHz	64QAM	928.5	C & G	Pass

Run #2c: Spectral Mask at 929 - 930 MHz band (FCC Part 90)

Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	4.8 ksps	6.25 kHz	4QAM	929.5	G	Pass
40 dBm	4.8 ksps	6.25 kHz	16QAM	929.5	G	Pass
40 dBm	4.8 ksps	6.25 kHz	64QAM	929.5	G	Pass
40 dBm	9.6 ksps	12.5 kHz	4QAM	929.5	G	Pass
40 dBm	9.6 ksps	12.5 kHz	16QAM	929.5	G	Pass
40 dBm	9.6 ksps	12.5 kHz	64QAM	929.5	G	Pass
40 dBm	10.0 ksps	12.5 kHz	4QAM	929.5	G	Pass
40 dBm	10.0 ksps	12.5 kHz	16QAM	929.5	G	Pass
40 dBm	10.0 ksps	12.5 kHz	64QAM	929.5	G	Pass

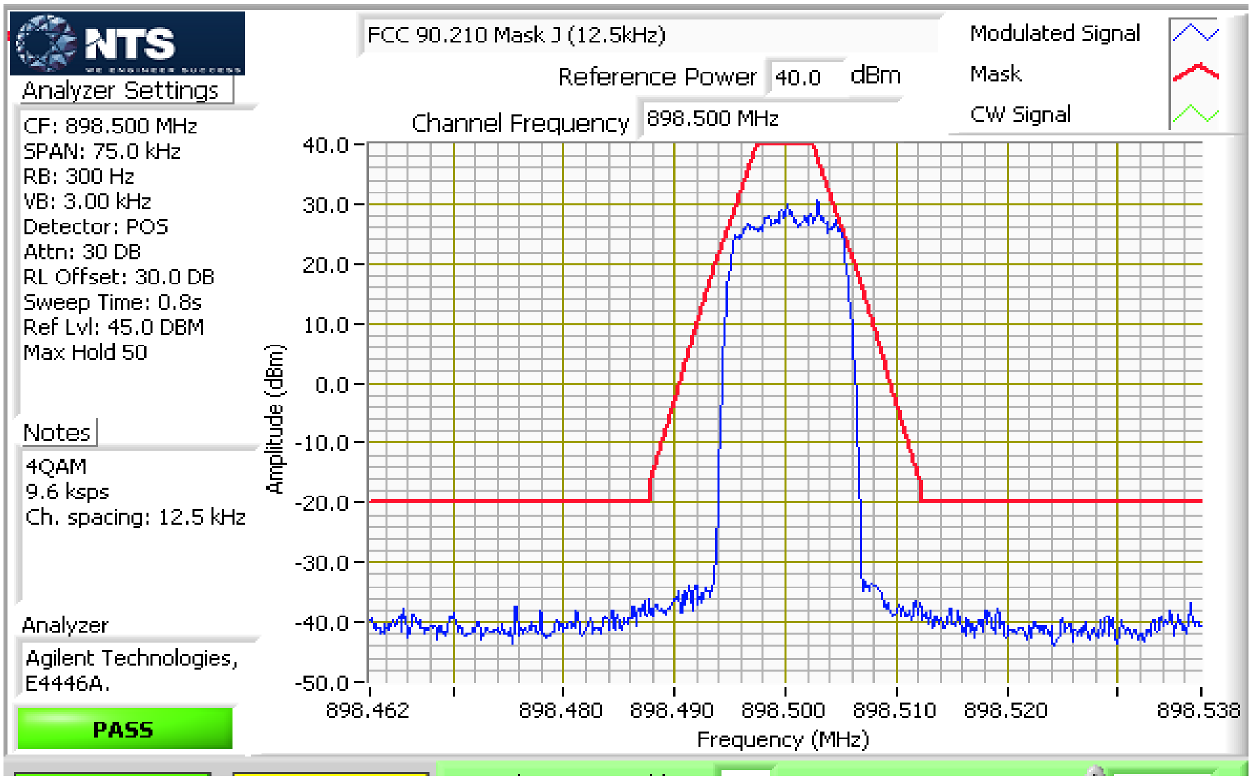
Run #2d: Spectral Mask at 932 - 944 and 952-953 MHz bands (RSS-119)

Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	9.6 ksps	12.5 kHz	4QAM	944	D	Pass
40 dBm	9.6 ksps	12.5 kHz	16QAM	944	D	Pass
40 dBm	9.6 ksps	12.5 kHz	64QAM	944	D	Pass
40 dBm	10.0 ksps	12.5 kHz	4QAM	944	D	Pass
40 dBm	10.0 ksps	12.5 kHz	16QAM	944	D	Pass
40 dBm	10.0 ksps	12.5 kHz	64QAM	944	D	Pass
40 dBm	16.0 ksps	25.0 kHz	4QAM	944	G	Pass
40 dBm	16.0 ksps	25.0 kHz	16QAM	944	G	Pass
40 dBm	16.0 ksps	25.0 kHz	64QAM	944	G	Pass

EMC Test Data

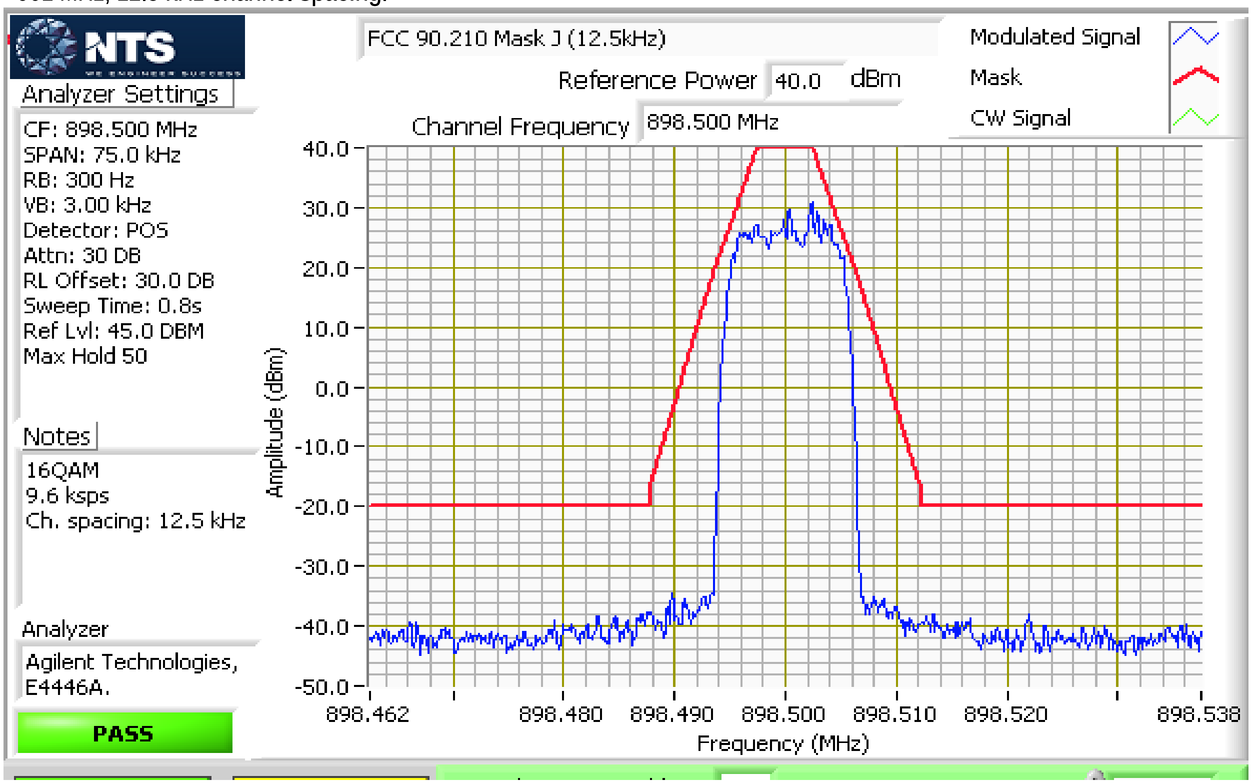
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



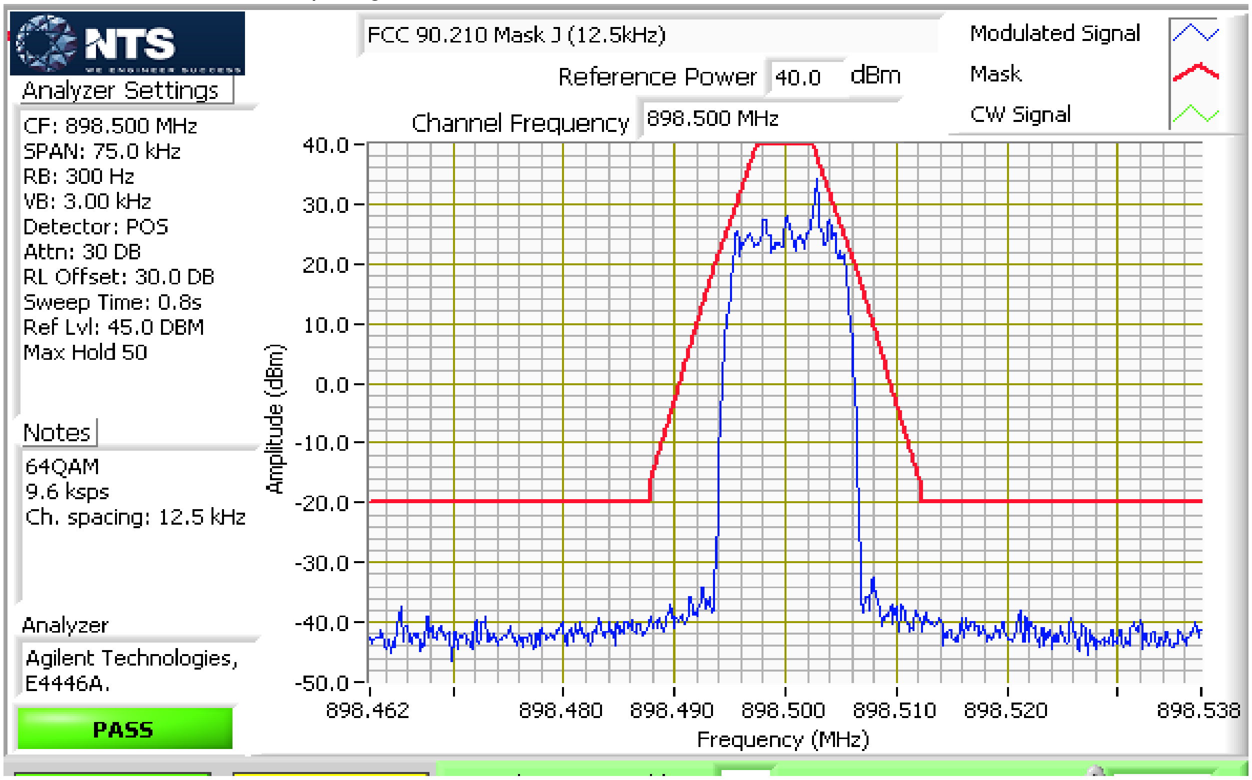
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

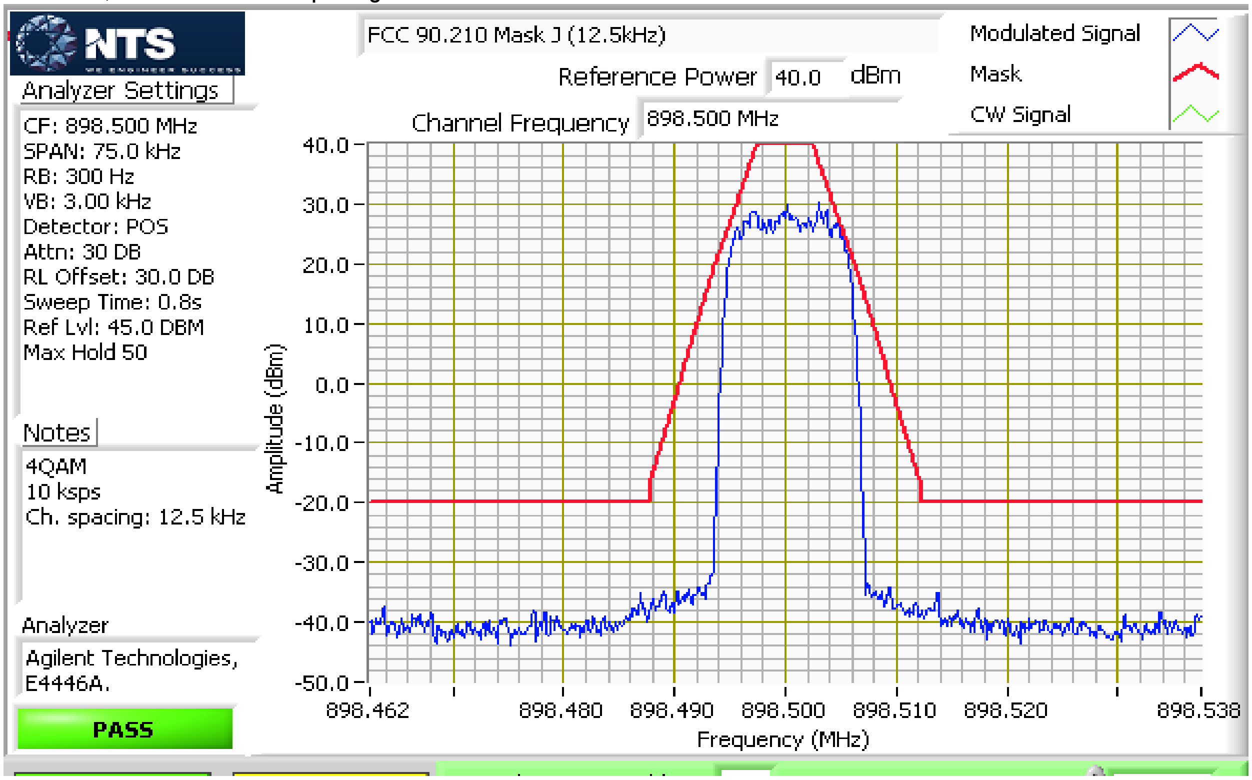
896 - 901 MHz, 12.5 kHz channel spacing.



EMC Test Data

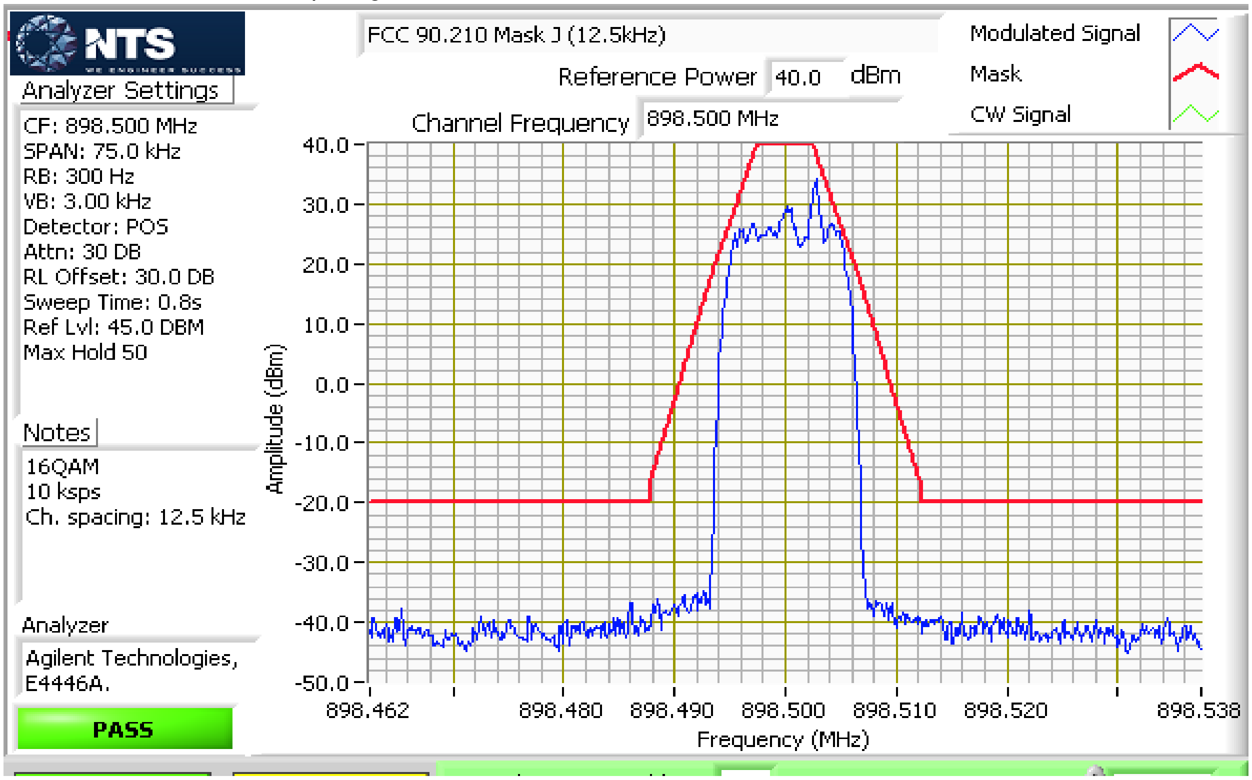
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

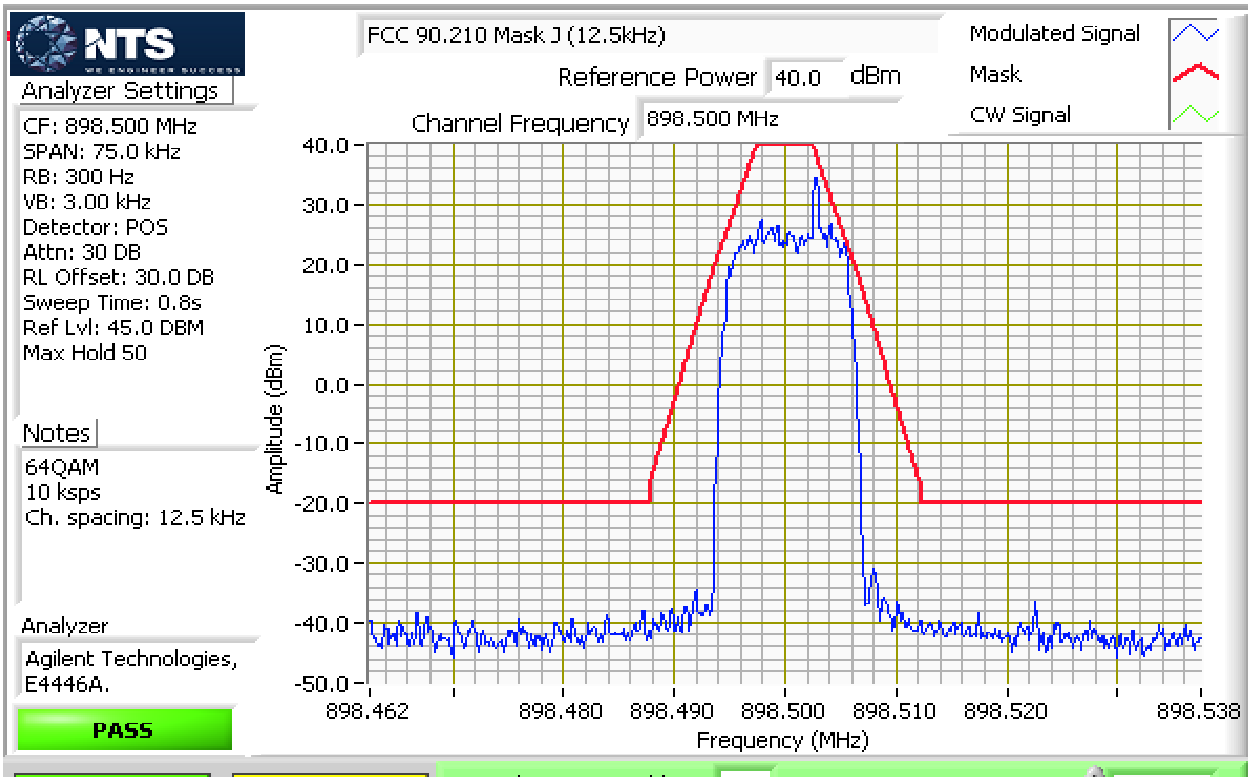
896 - 901 MHz, 12.5 kHz channel spacing.



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

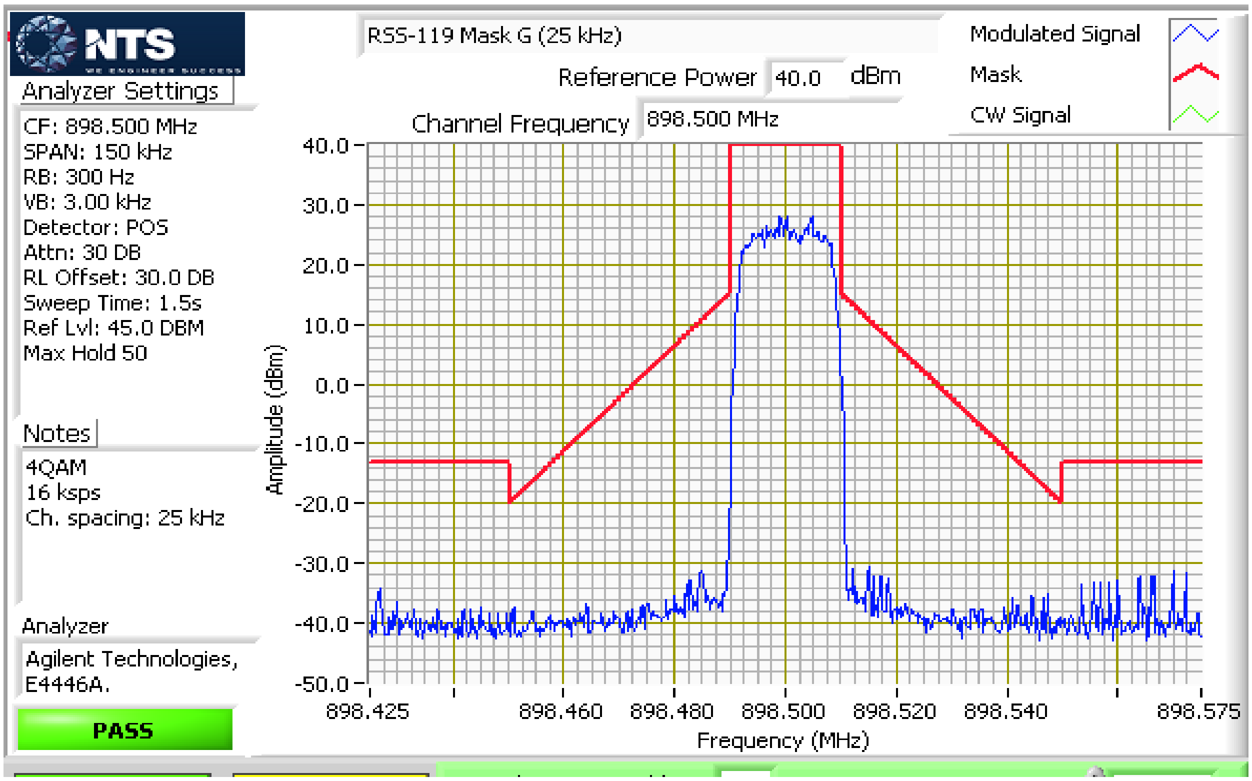
896 - 901 MHz, 12.5 kHz channel spacing.



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 25 kHz channel spacing

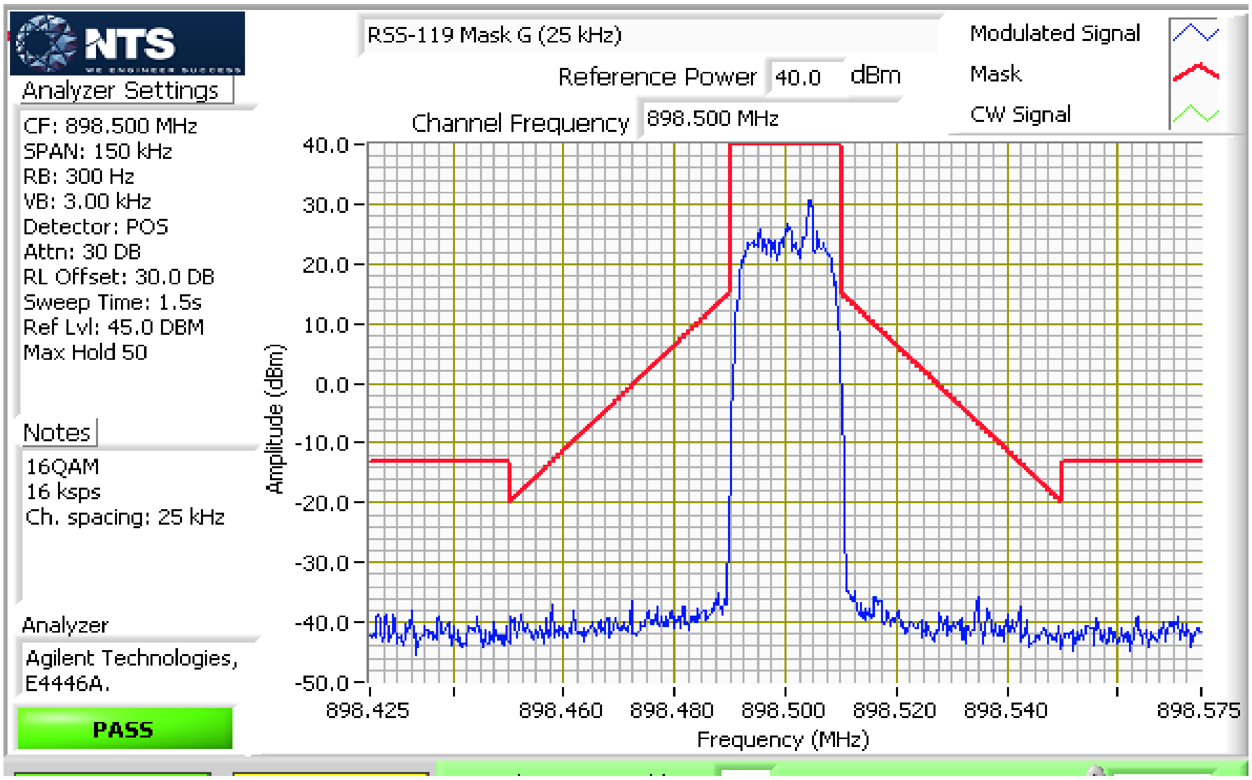


Note:	FCC part 90 requires the use of Mask J which is more restrictive from an offset of 8.75 kHz to 10 KHz (7.5 dB at 10 kHz) than Mask G. Since the observed emissions at offsets of 8.75 to 10 kHz are more than 10 dB below the reference, compliance is demonstrated for Mask J.

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 25 kHz channel spacing

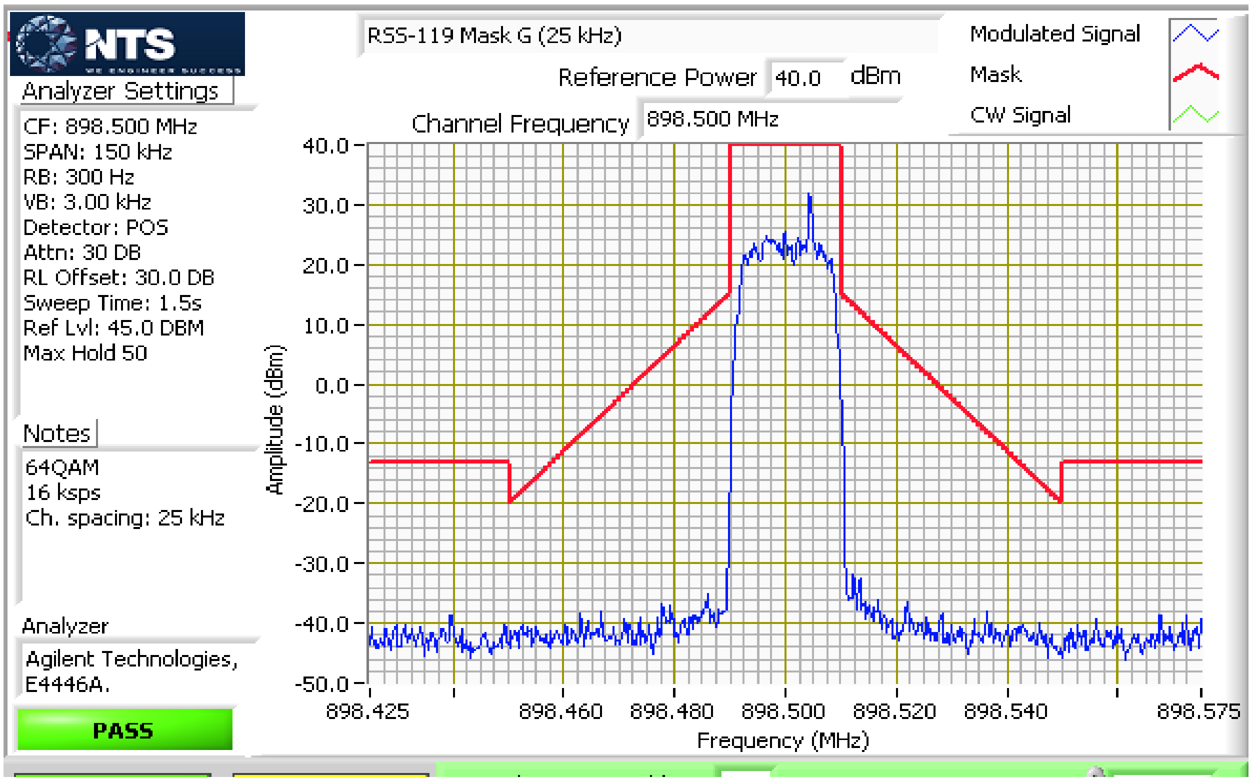


Note:	FCC part 90 requires the use of Mask J which is more restrictive from an offset of 8.75 kHz to 10 KHz (7.5 dB at 10 kHz) than Mask G. Since the observed emissions at offsets of 8.75 to 10 kHz are more than 10 dB below the reference, compliance is demonstrated for Mask J.

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 25 kHz channel spacing

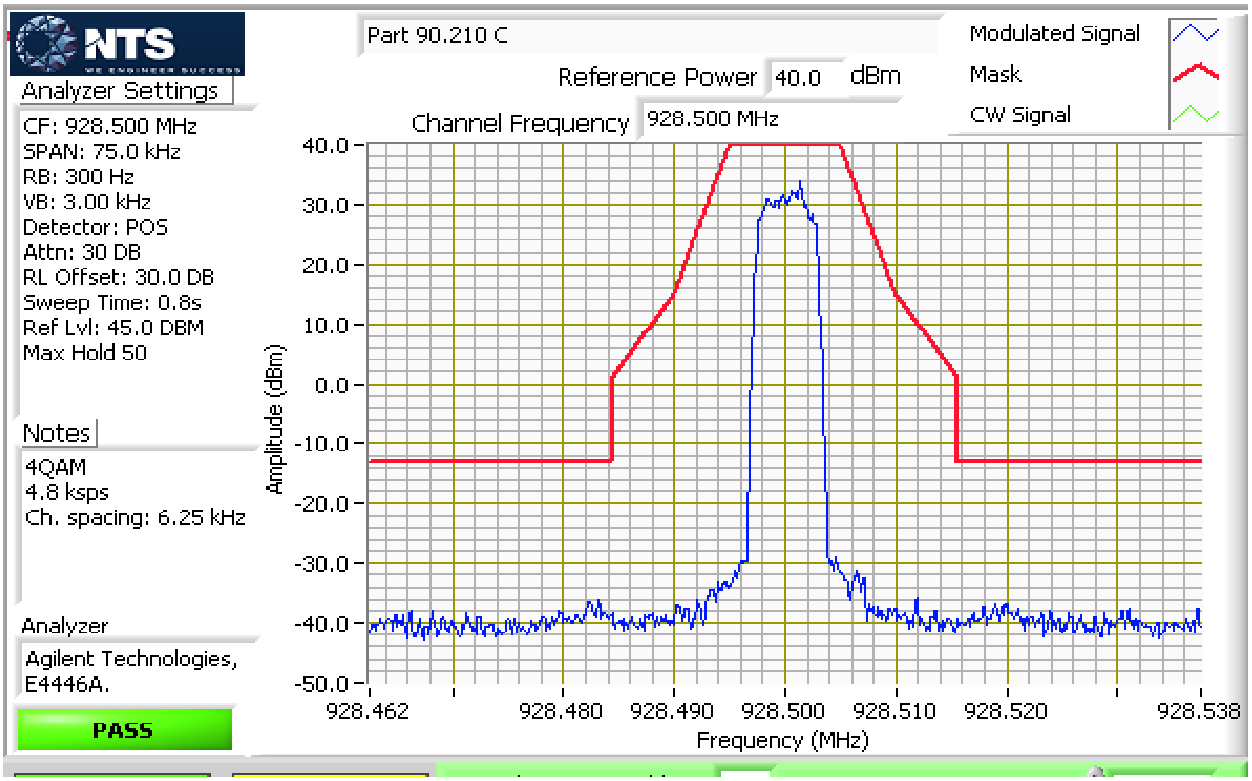


Note:	FCC part 90 requires the use of Mask J which is more restrictive from an offset of 8.75 kHz to 10 KHz (7.5 dB at 10 kHz) than Mask G. Since the observed emissions at offsets of 8.75 to 10 kHz are more than 10 dB below the reference, compliance is demonstrated for Mask J.

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

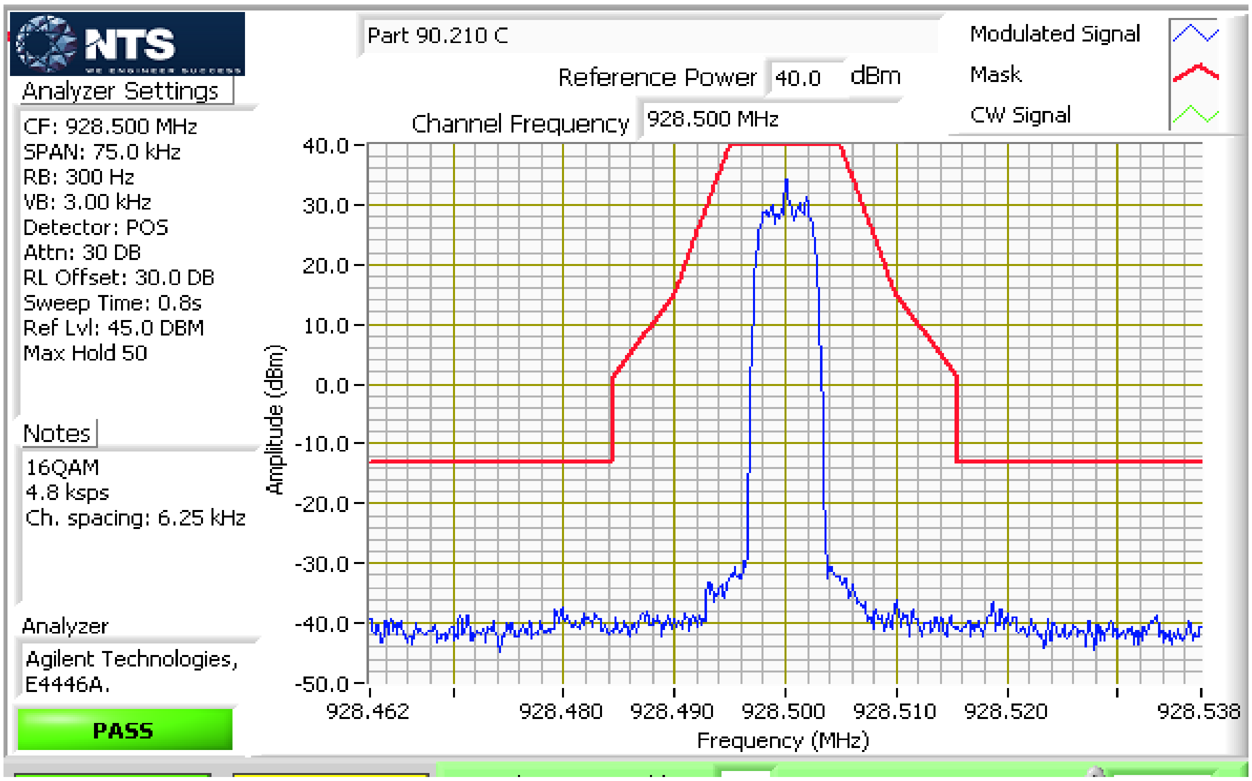
928 - 929 MHz, 6.25 kHz channel spacing



EMC Test Data

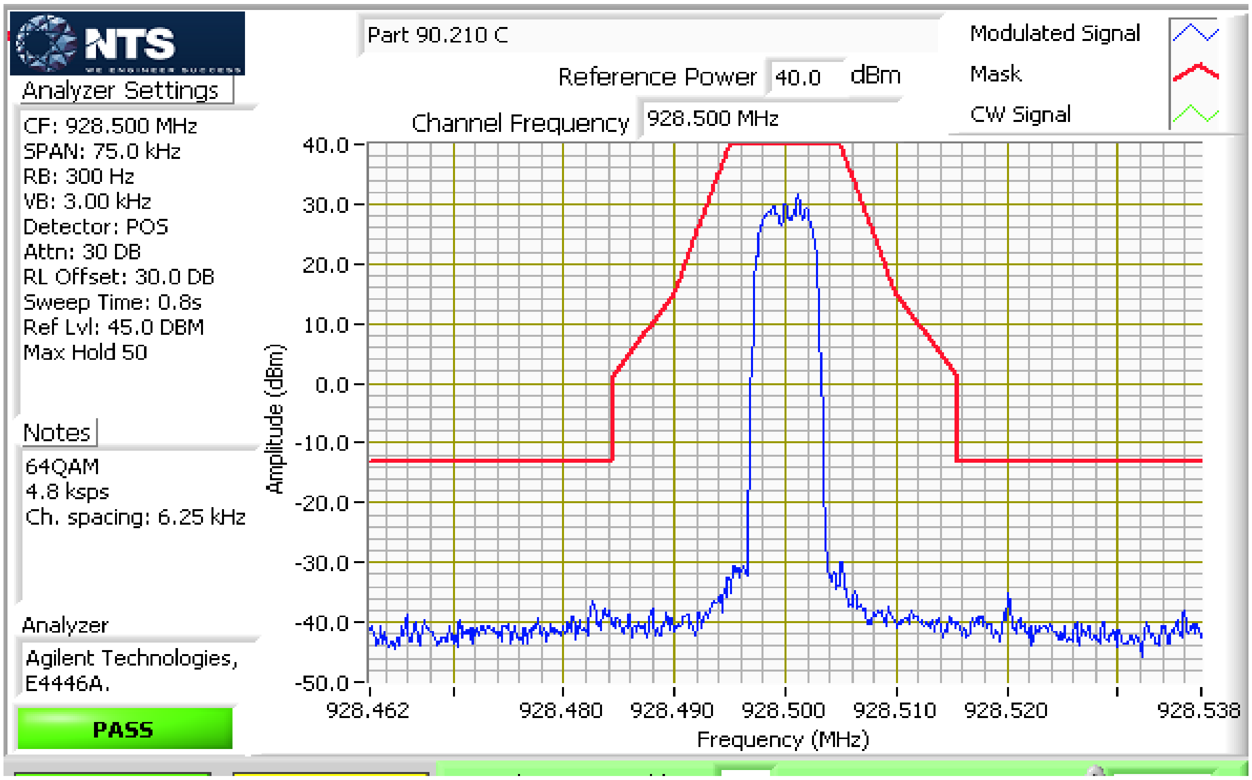
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 6.25 kHz channel spacing



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

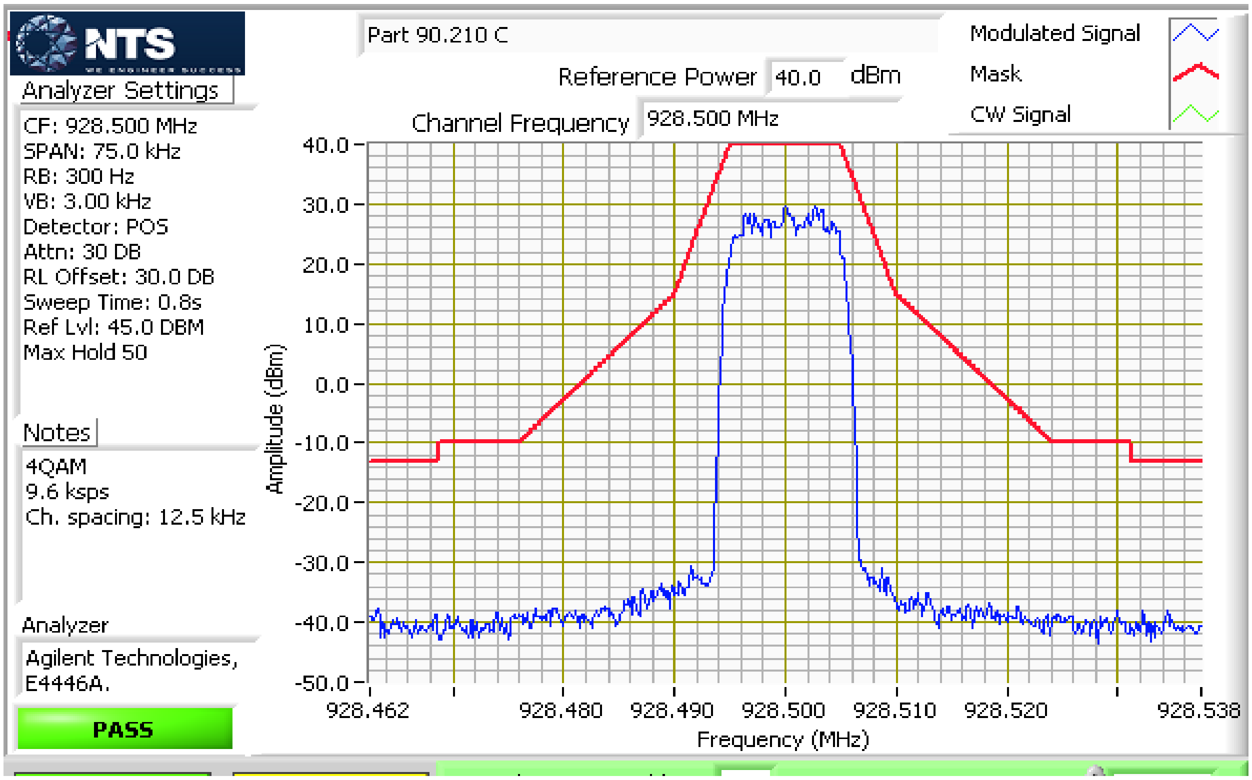
928 - 929 MHz, 6.25 kHz channel spacing



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing

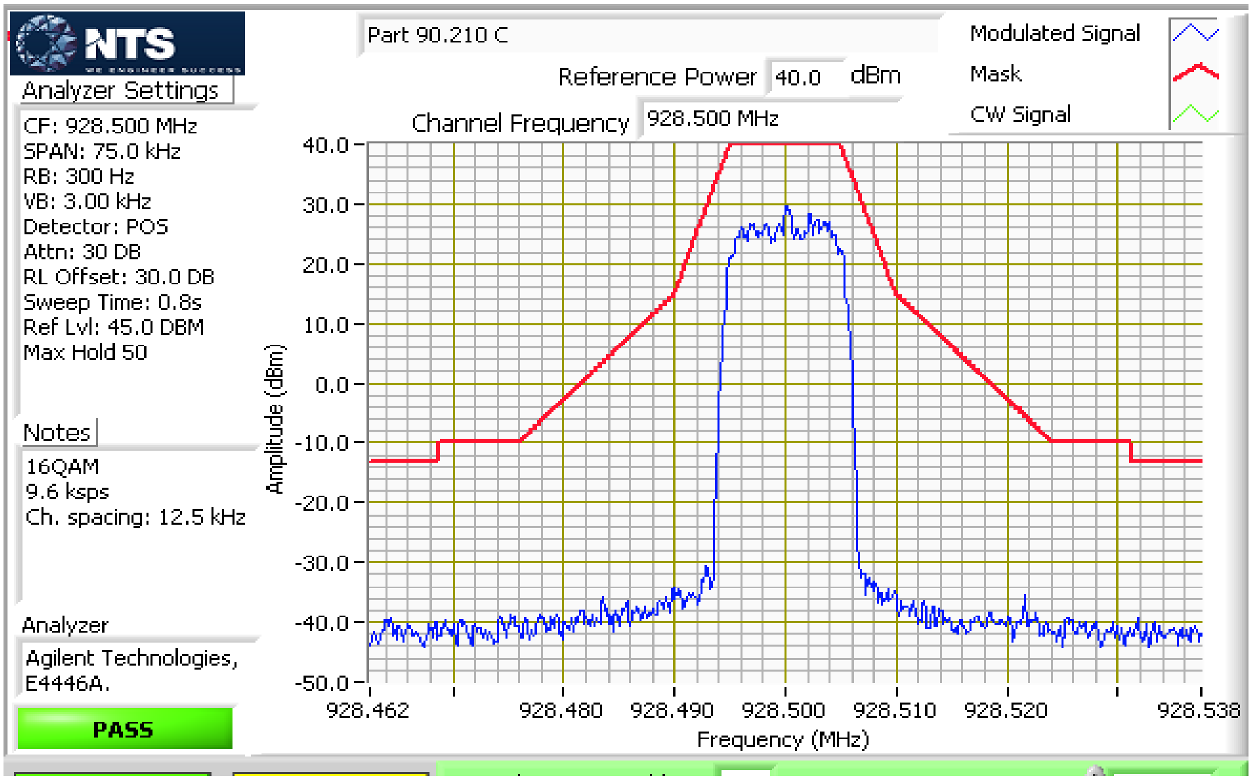


NTS WE ENGINEER SUCCESS

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

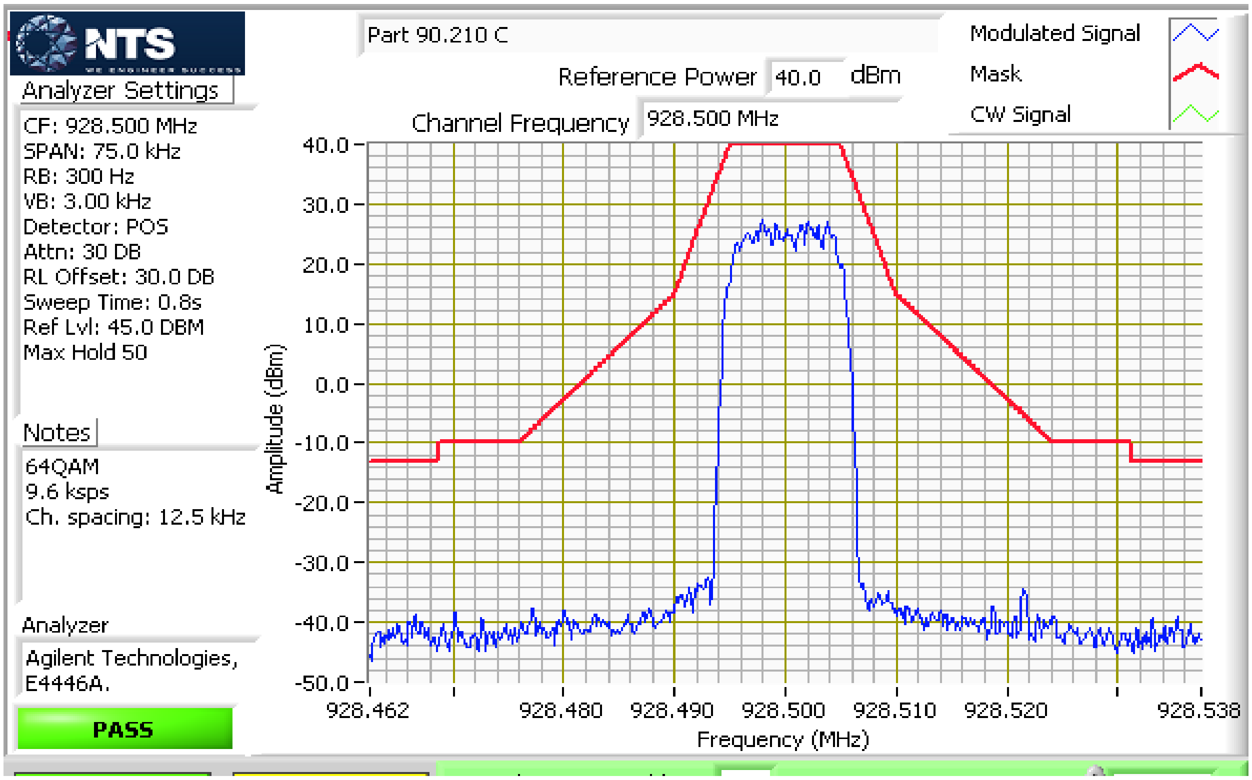
928 - 929 MHz, 12.5 kHz channel spacing



EMC Test Data

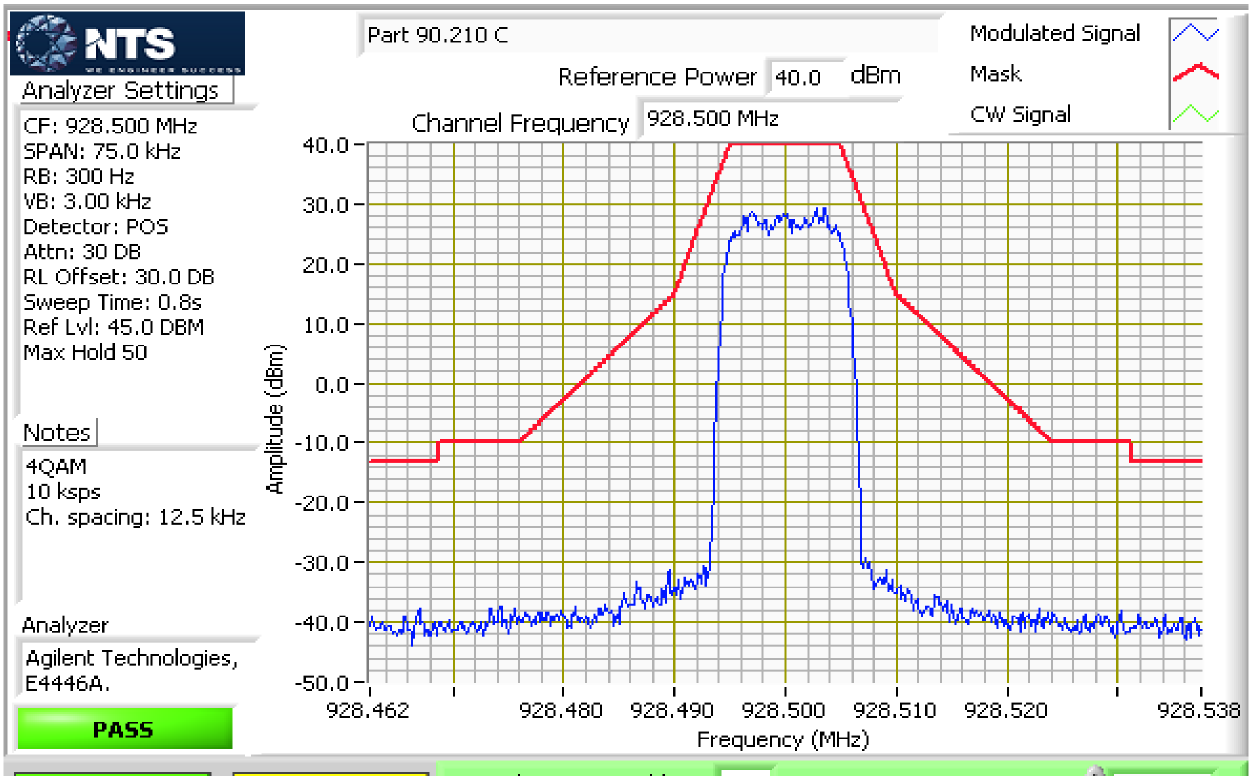
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

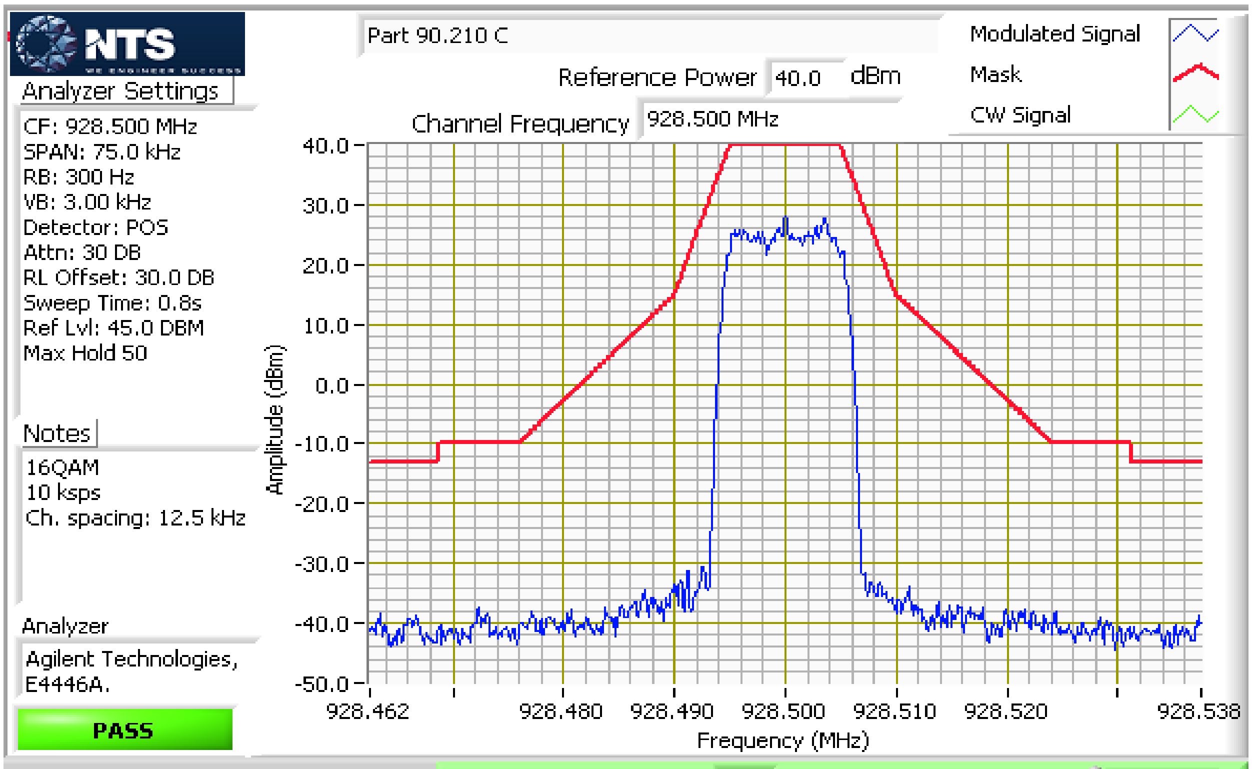
928 - 929 MHz, 12.5 kHz channel spacing



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

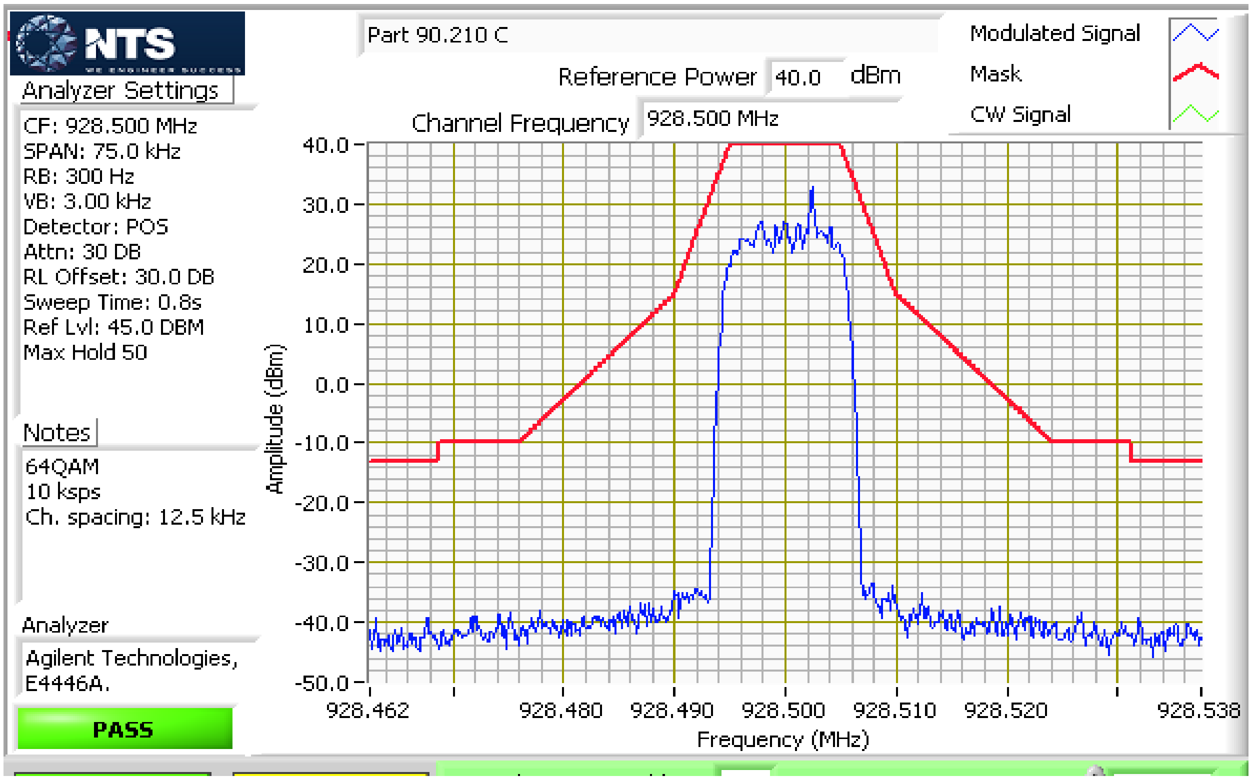
928 - 929 MHz, 12.5 kHz channel spacing



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

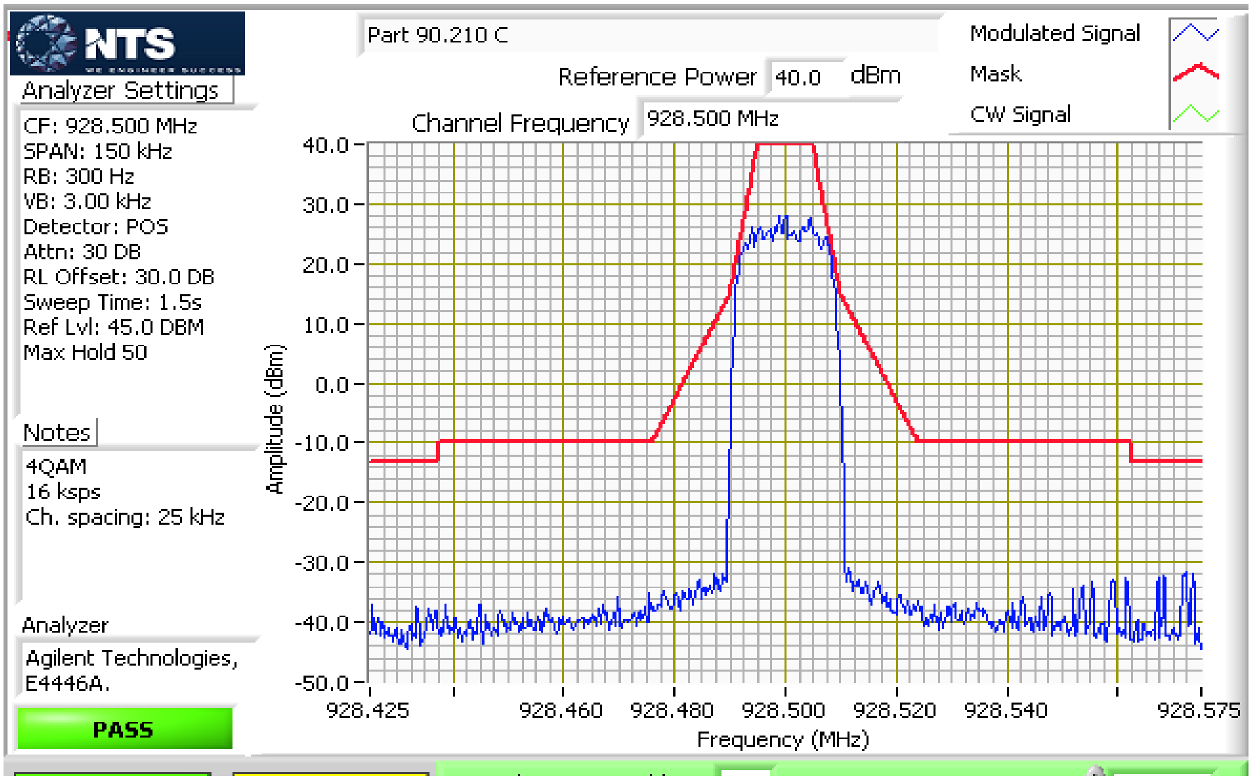
928 - 929 MHz, 12.5 kHz channel spacing



EMC Test Data

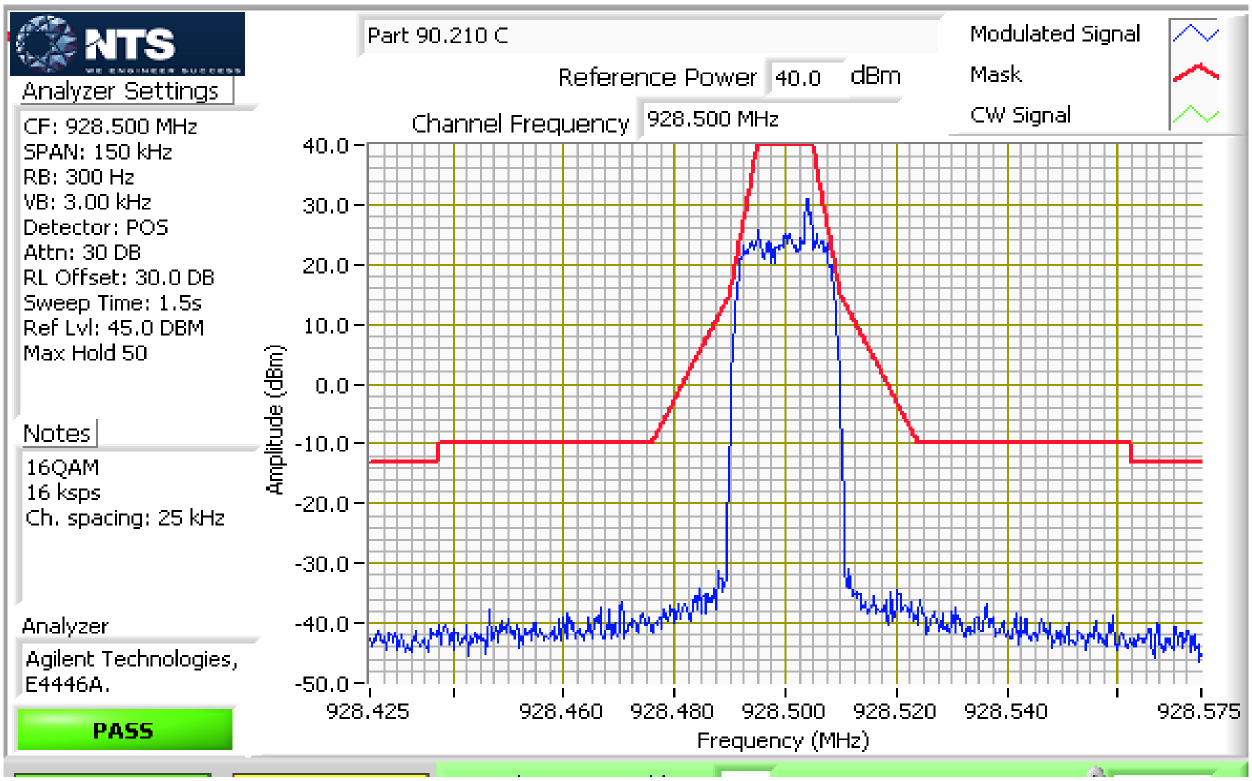
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 25 kHz channel spacing



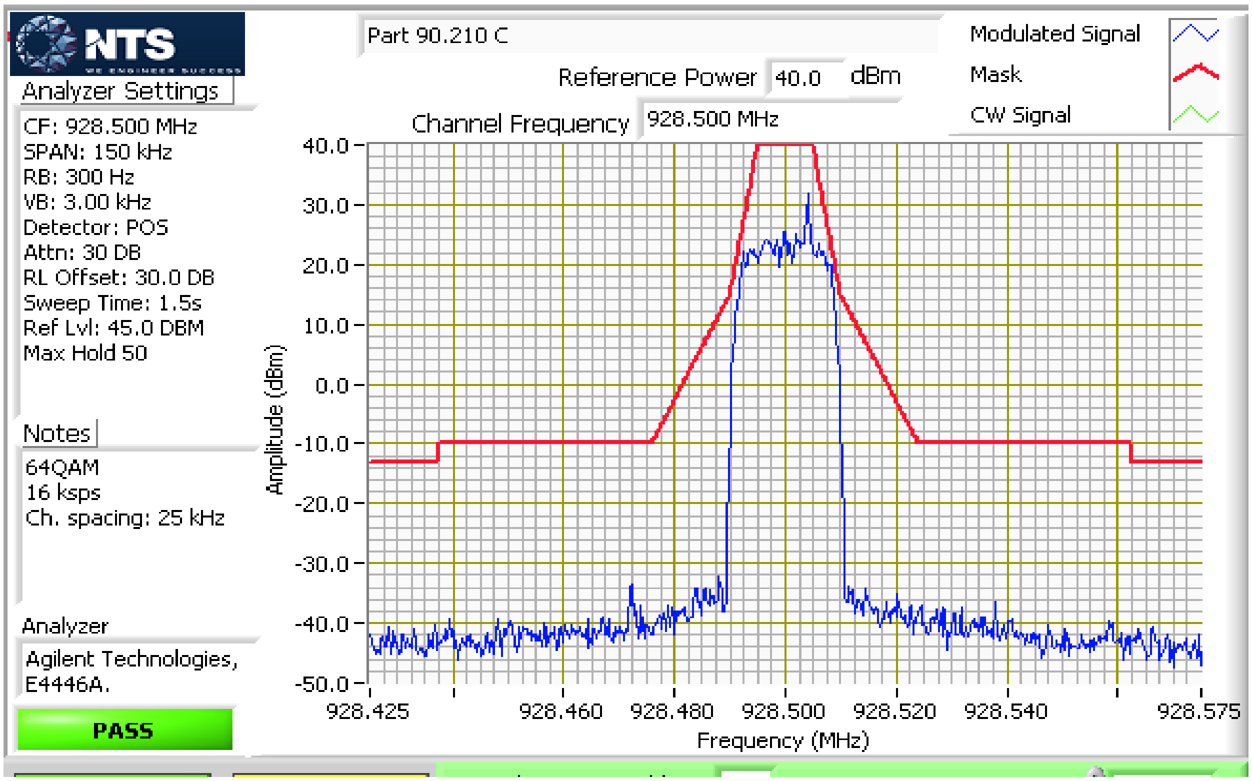
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 25 kHz channel spacing



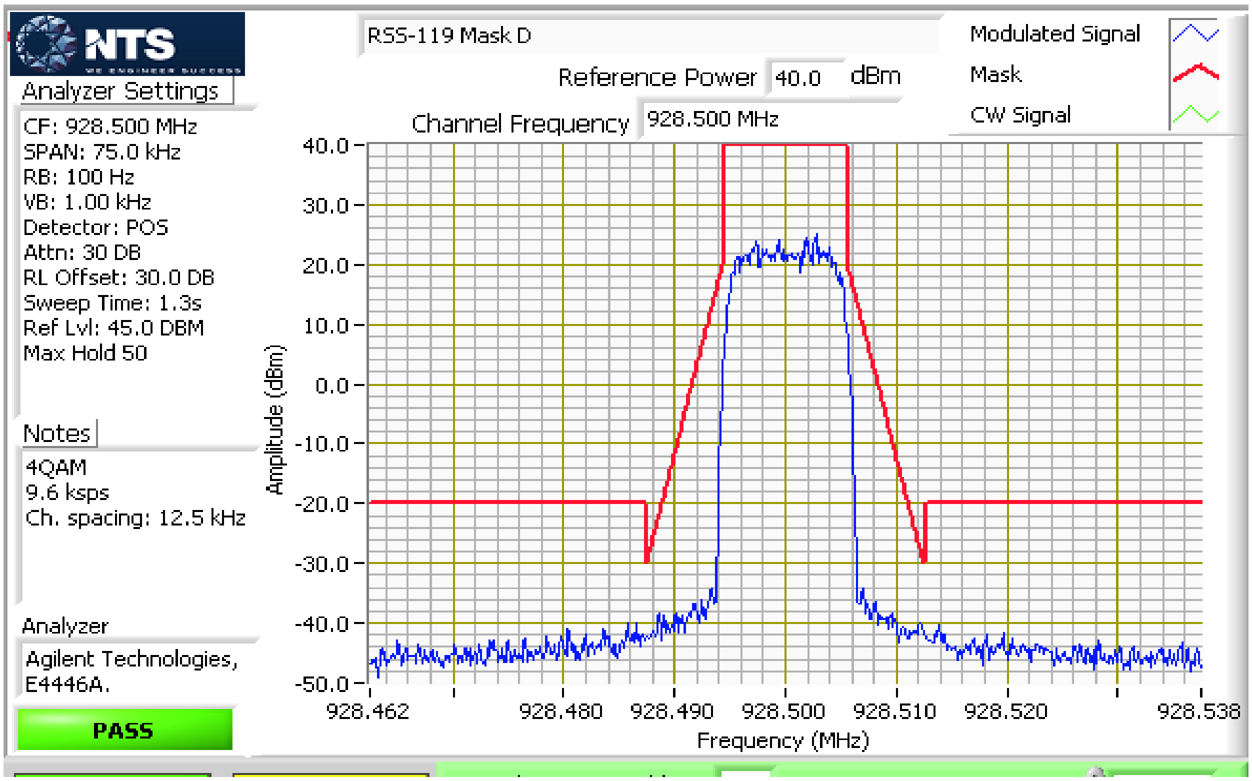
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 25 kHz channel spacing



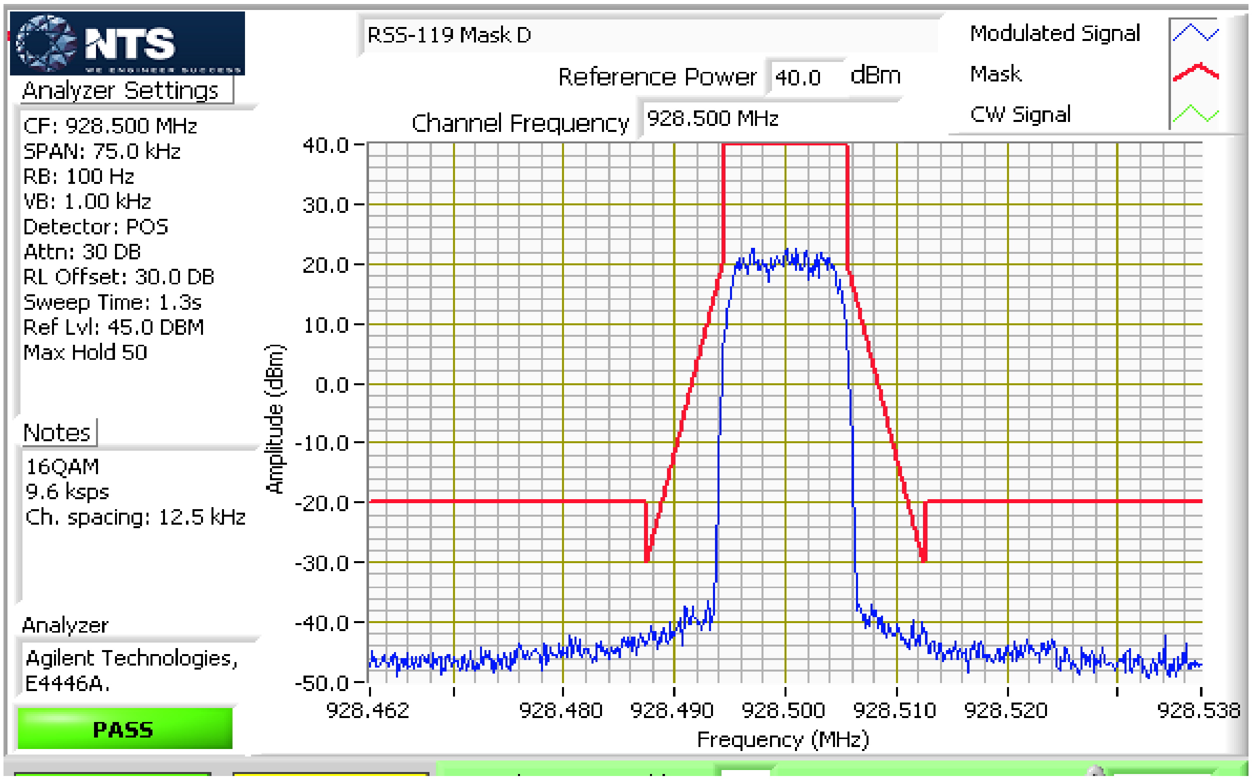
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing (RSS-119)



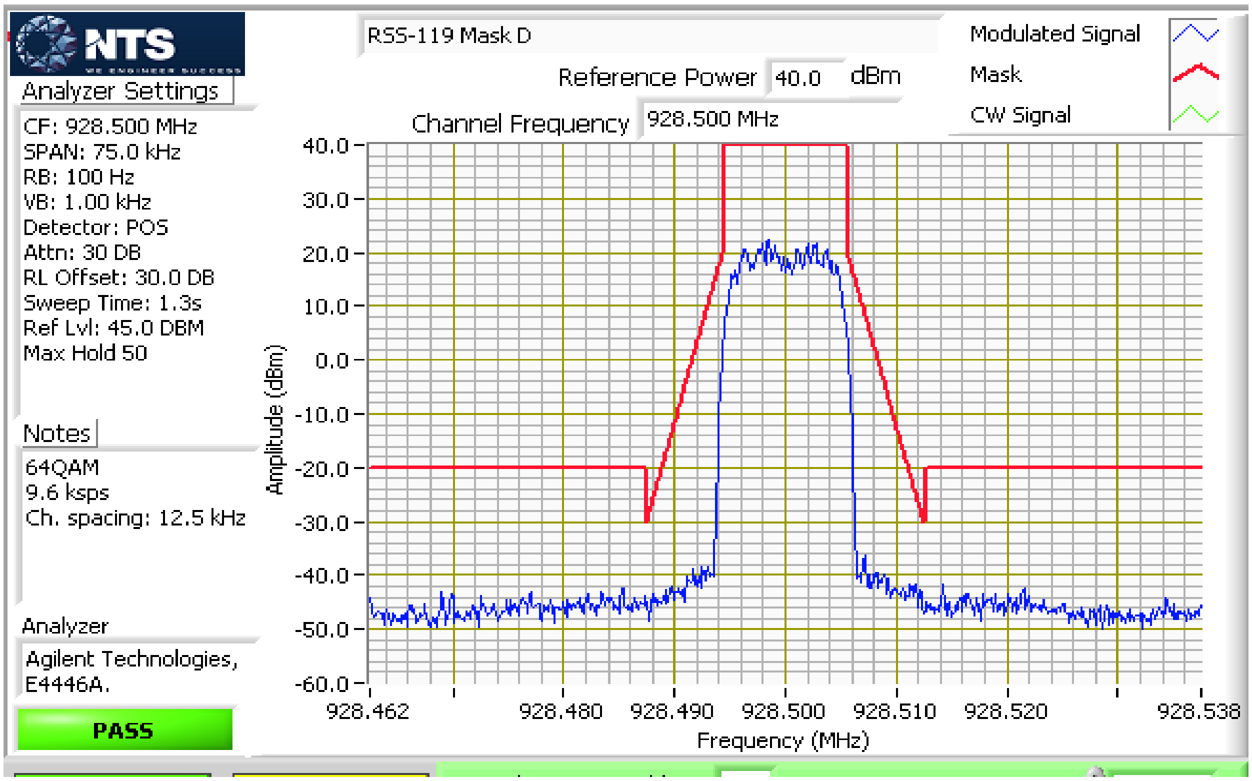
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing (RSS-119)



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

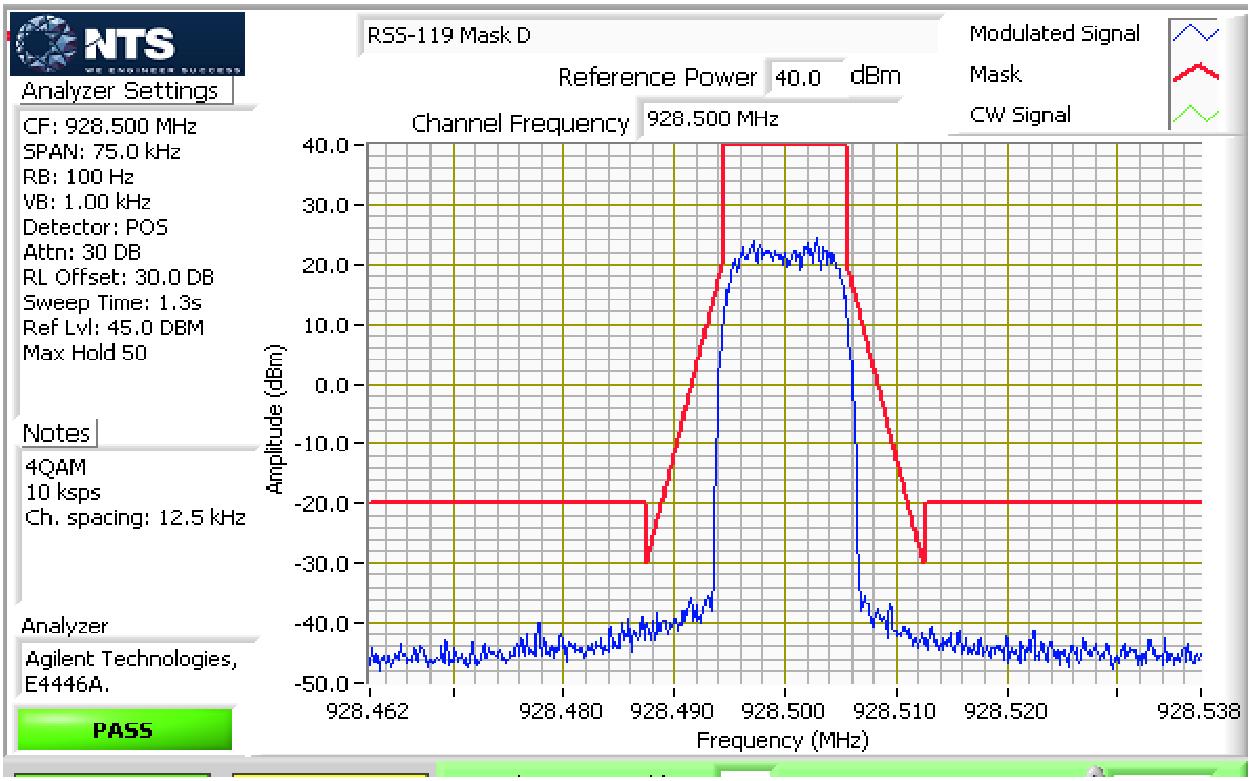
928 - 929 MHz, 12.5 kHz channel spacing (RSS-119)



EMC Test Data

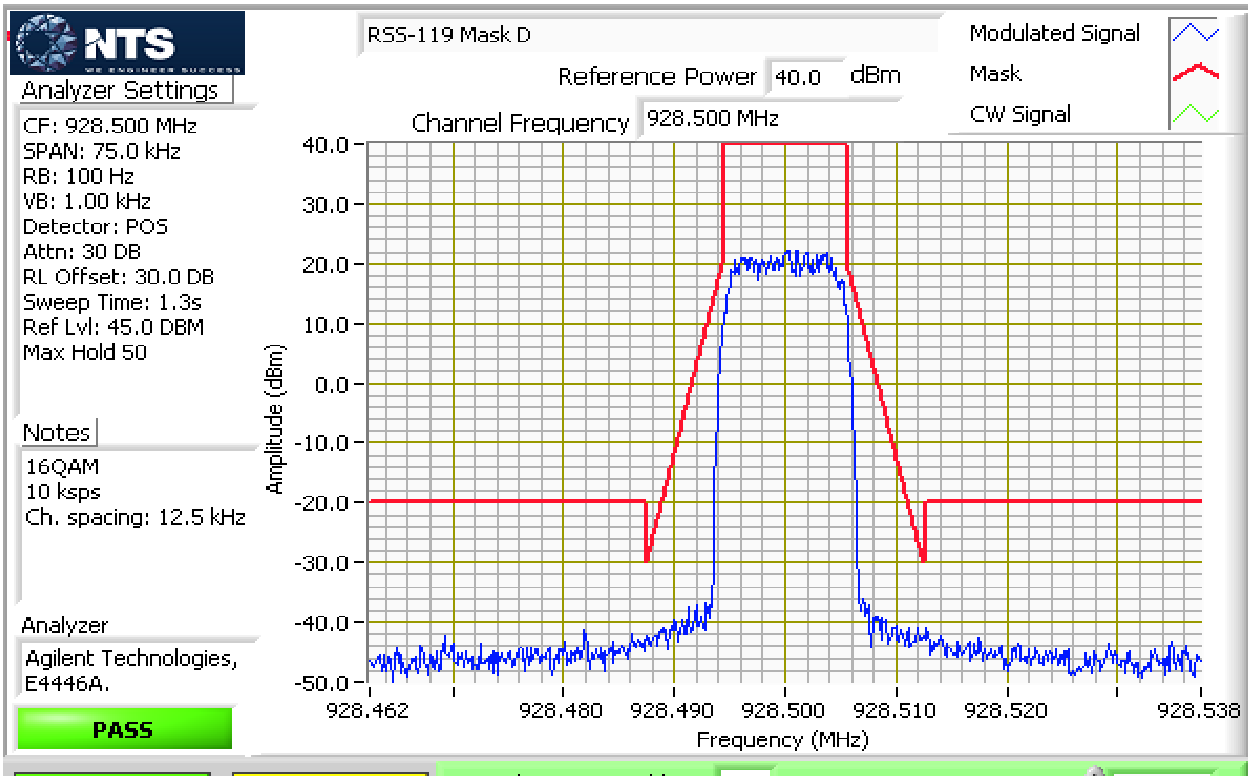
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing (RSS-119)



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

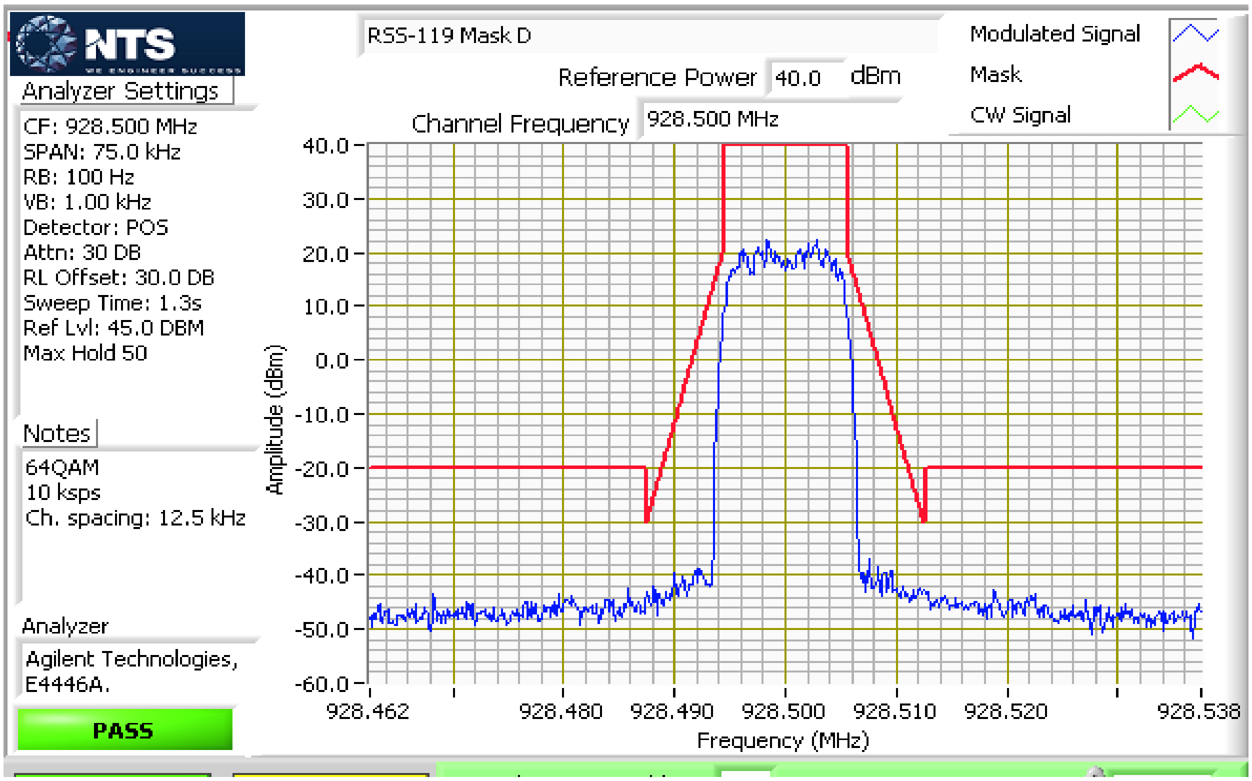
928 - 929 MHz, 12.5 kHz channel spacing (RSS-119)



EMC Test Data

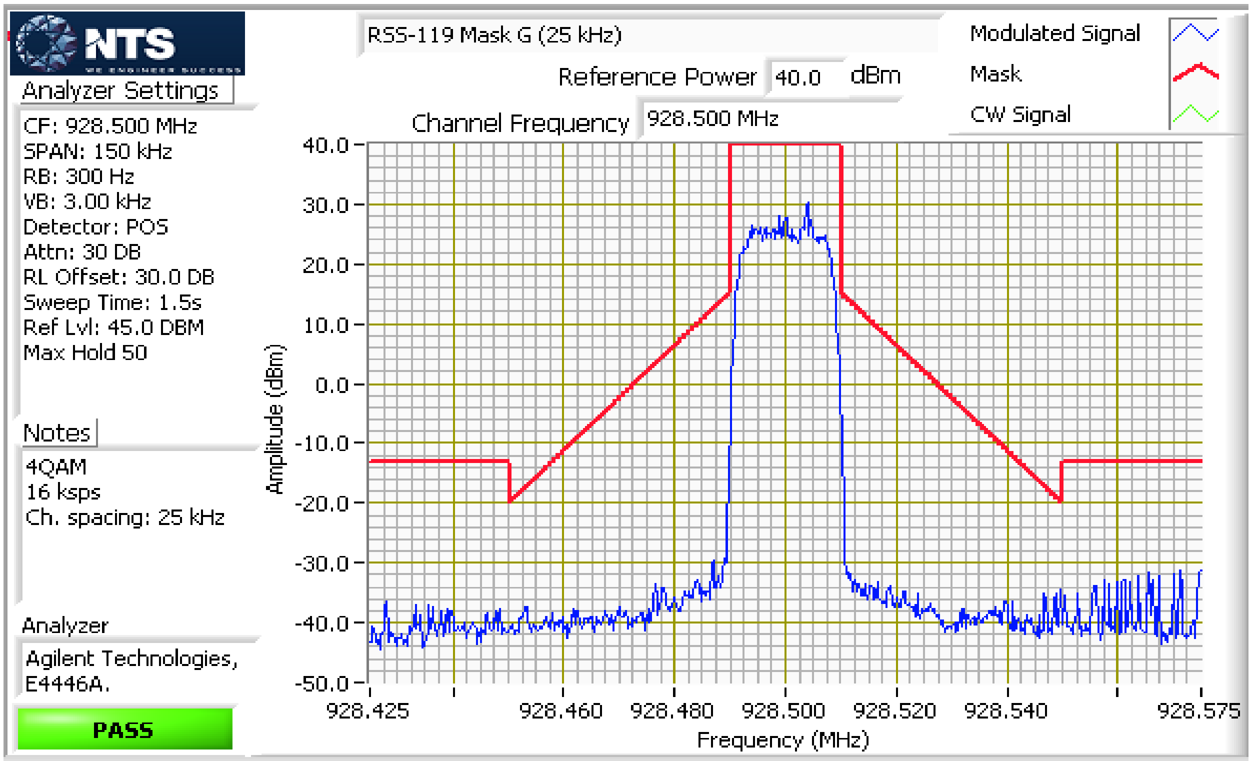
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

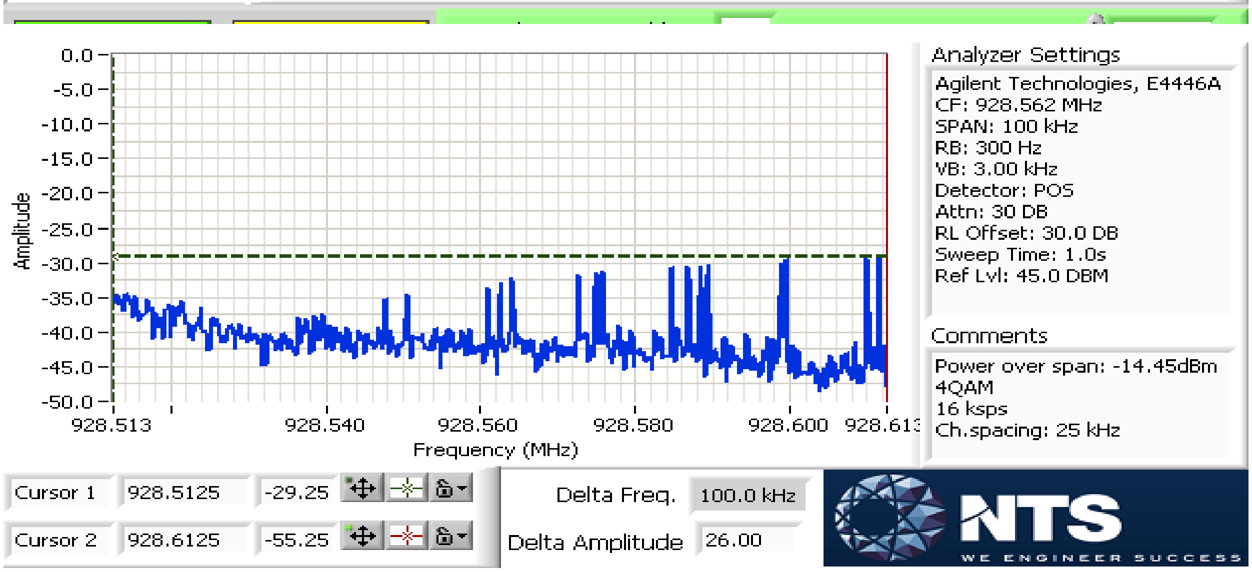
928 - 929 MHz, 12.5 kHz channel spacing (RSS-119)



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

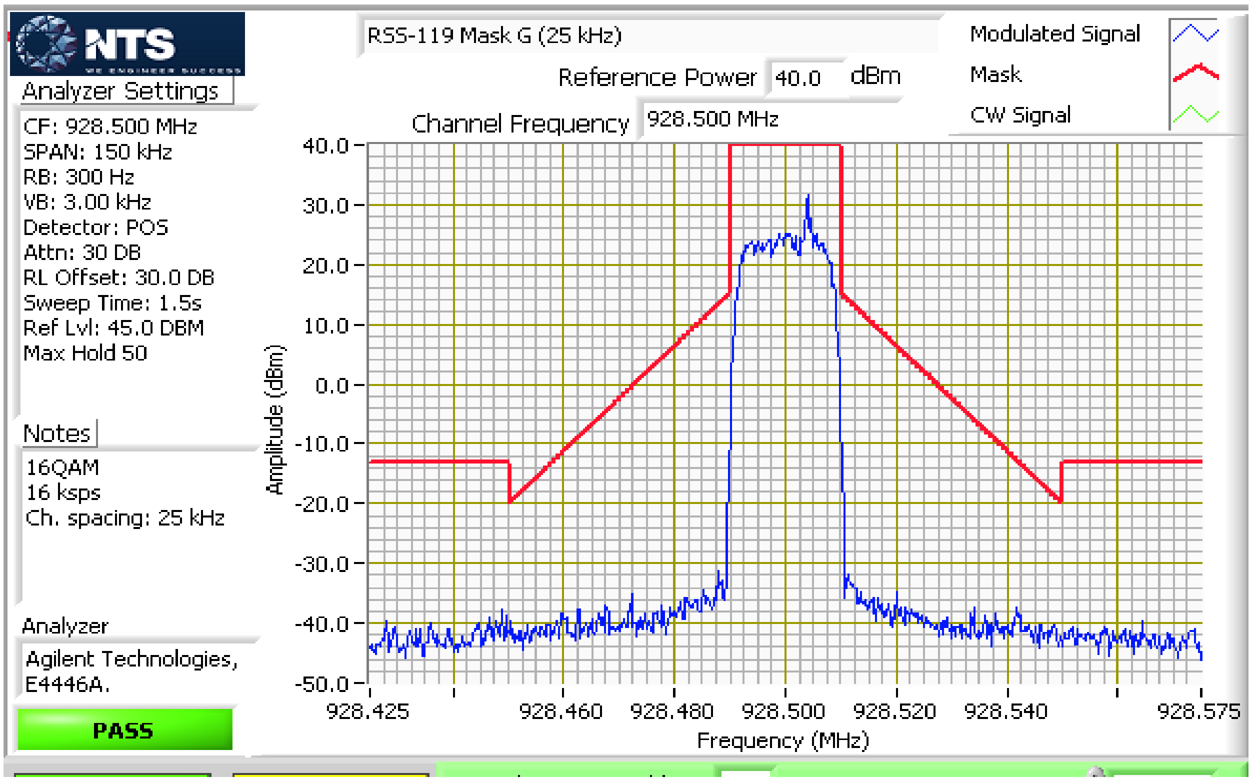
928 - 929 MHz, 25 kHz channel spacing (RSS-119)





Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

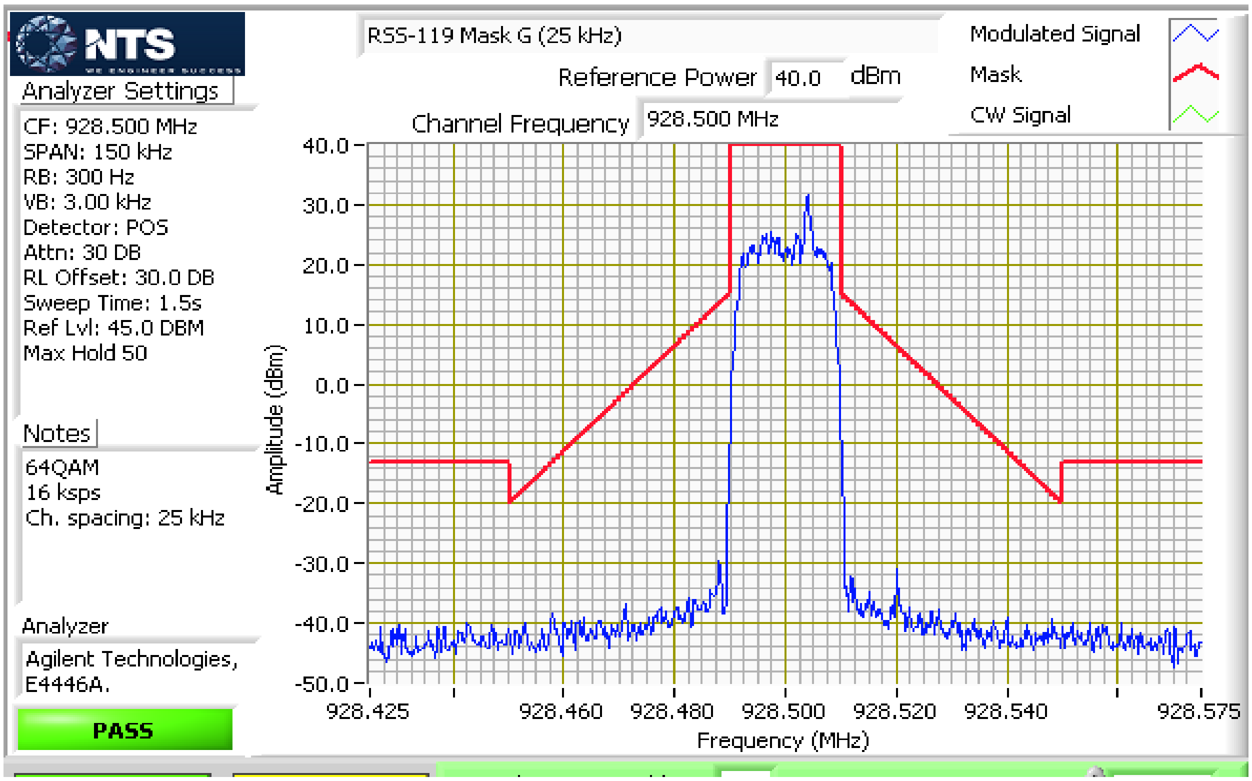
928 - 929 MHz, 25 kHz channel spacing (RSS-119)



EMC Test Data

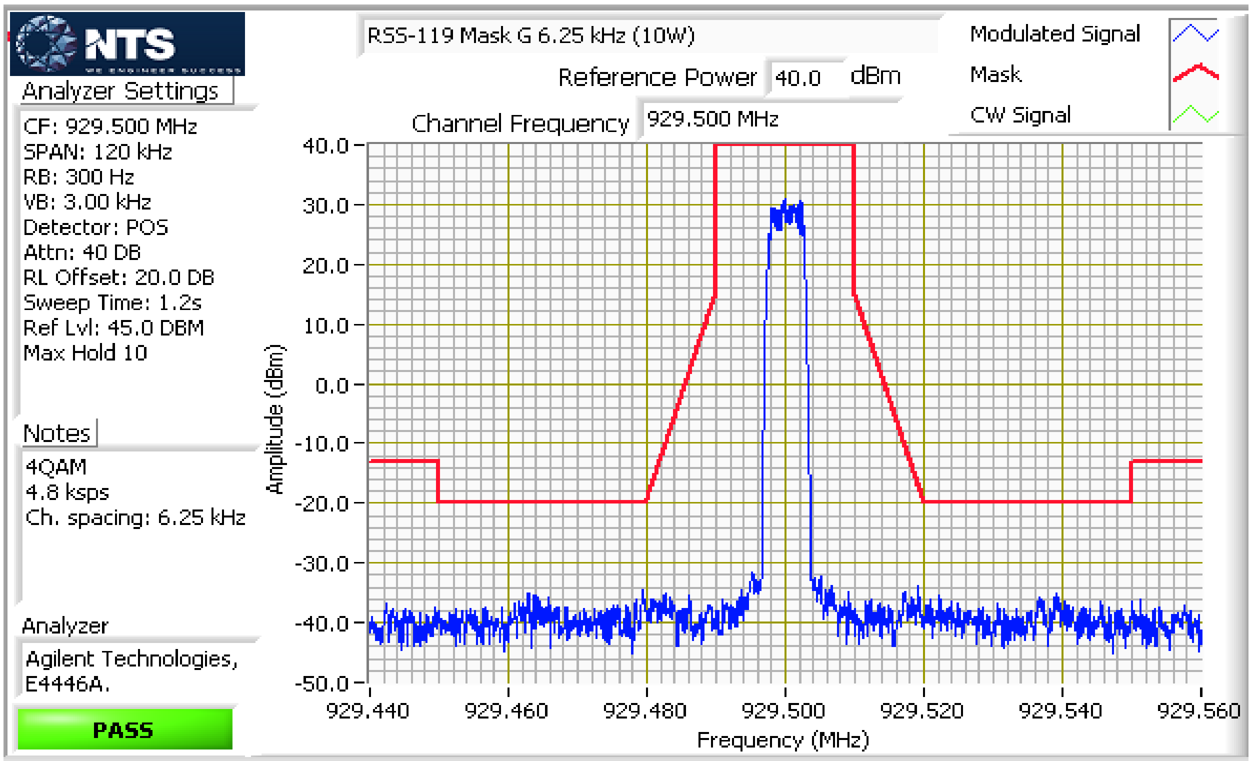
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 25 kHz channel spacing (RSS-119)



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

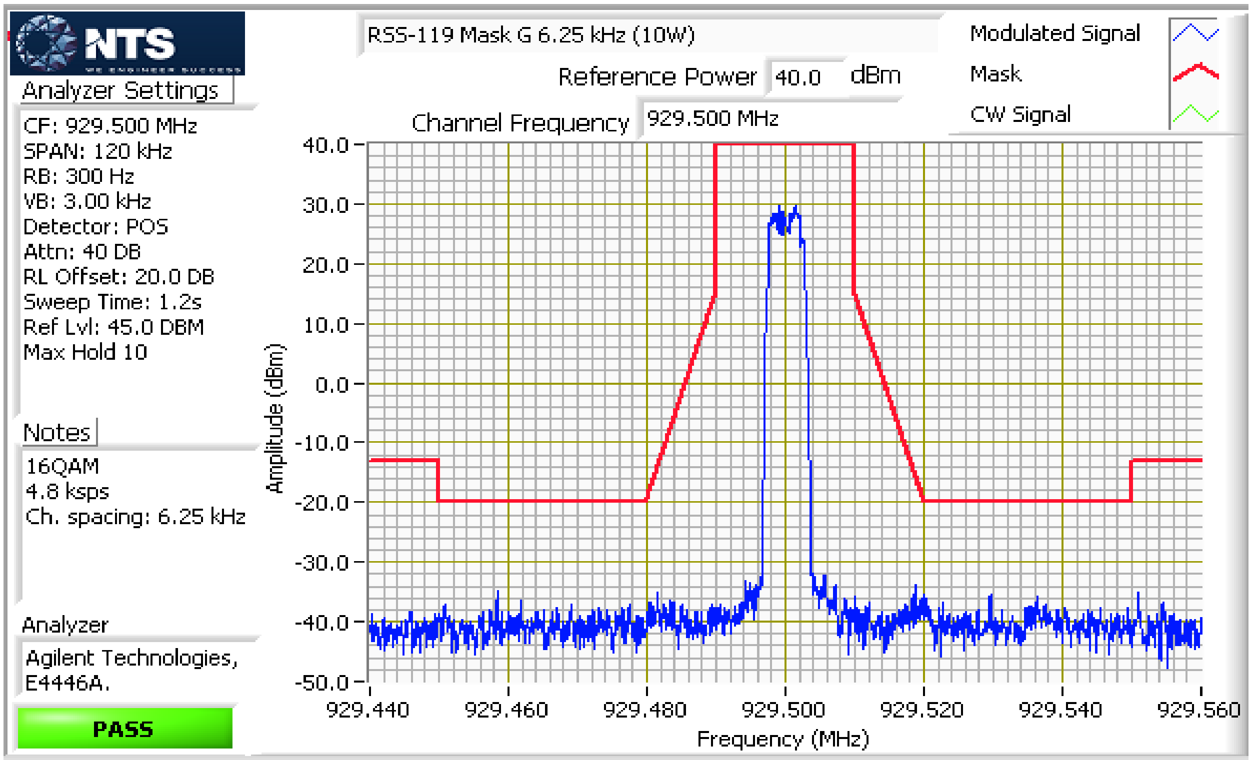
929 - 930 MHz, 6.25 kHz channel spacing.(FCC Part 90)



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

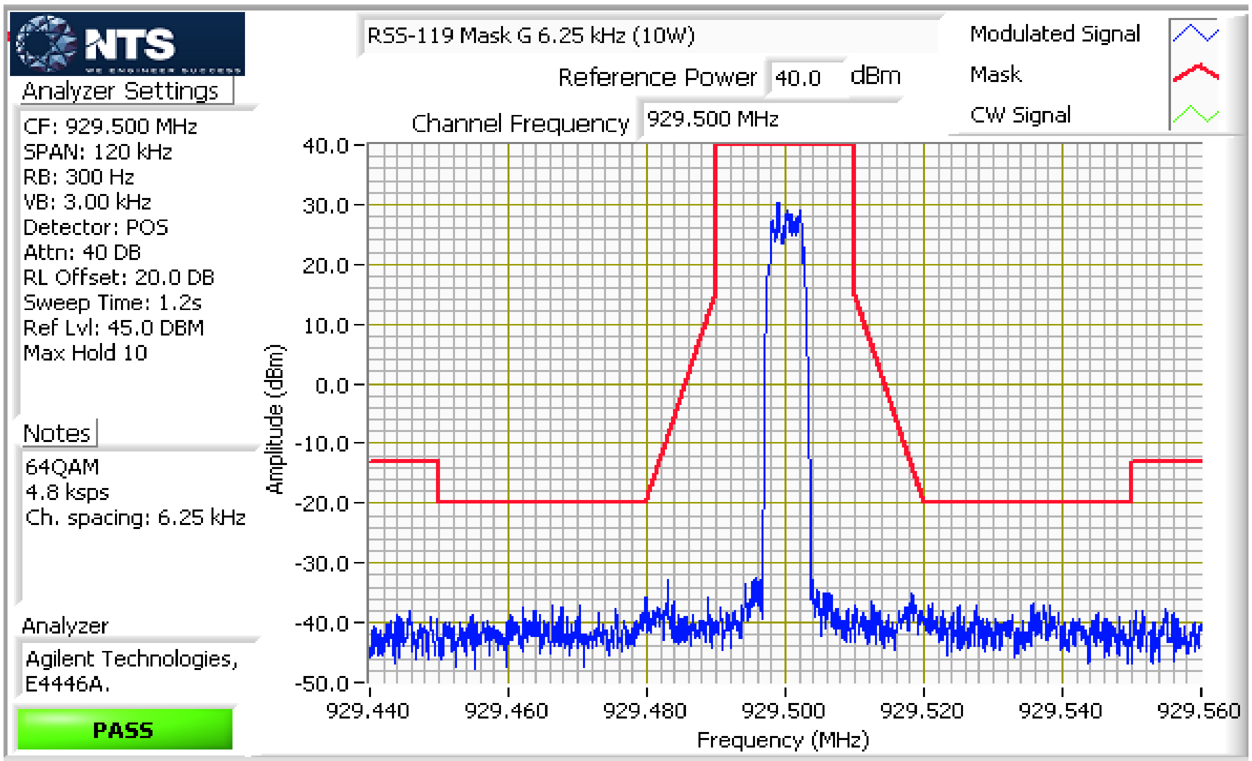
929 - 930 MHz, 6.25 kHz channel spacing.(FCC Part 90)



EMC Test Data

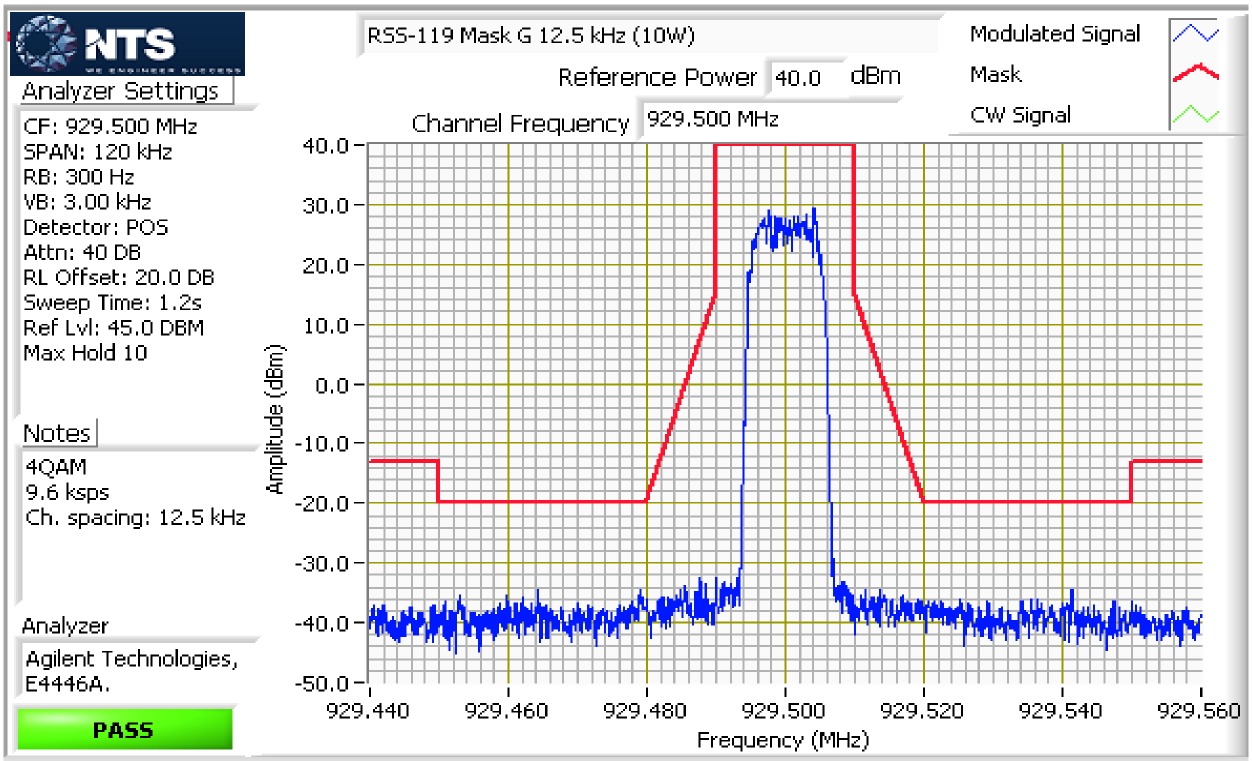
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

929 - 930 MHz, 6.25 kHz channel spacing.(FCC Part 90)



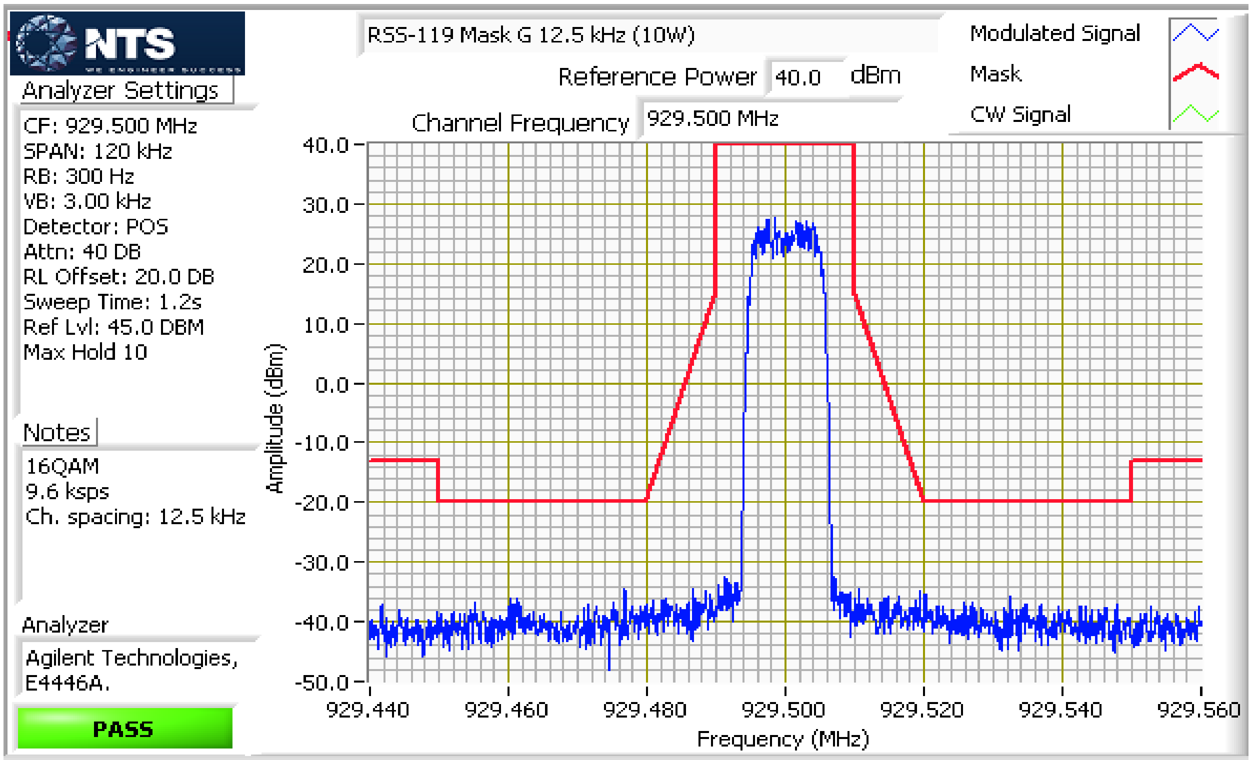
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

929 - 930 MHz, 12.5 kHz channel spacing.(FCC Part 90)



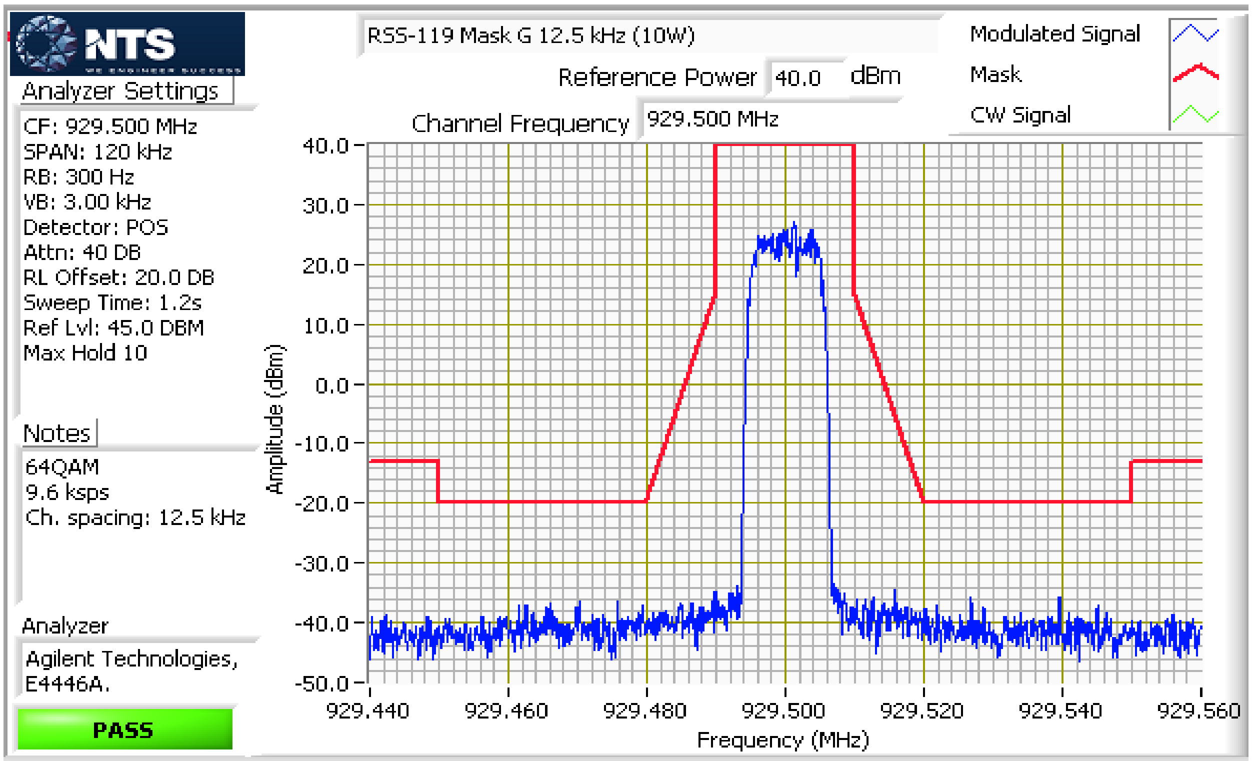
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

929 - 930 MHz, 12.5 kHz channel spacing.(FCC Part 90)



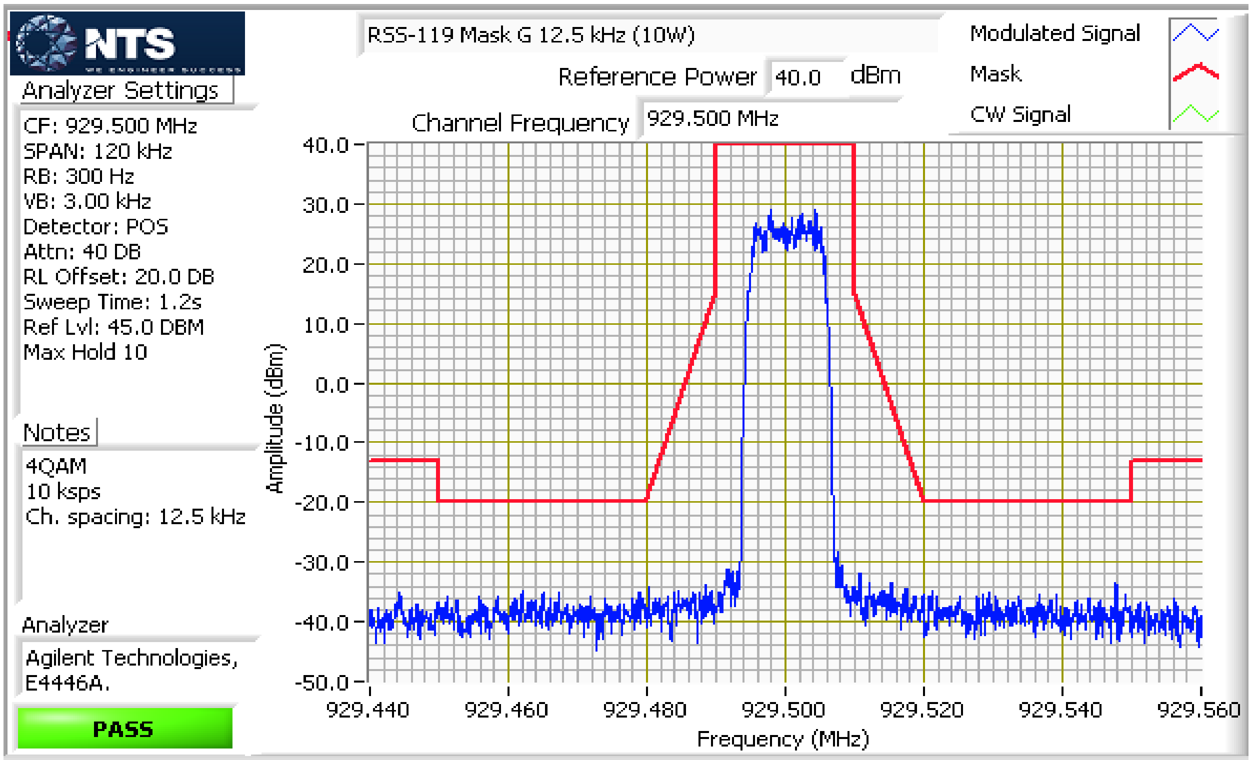
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

929 - 930 MHz, 12.5 kHz channel spacing.(FCC Part 90)



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

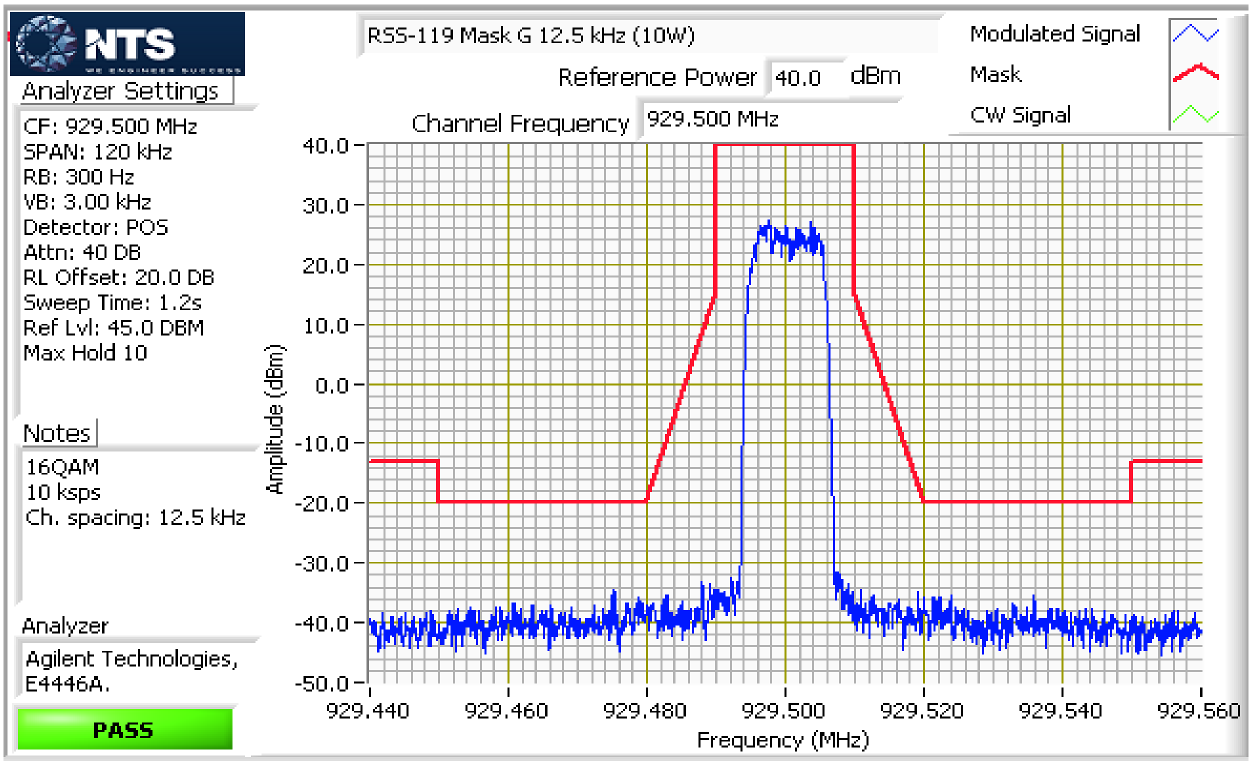
929 - 930 MHz, 12.5 kHz channel spacing.(FCC Part 90)



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

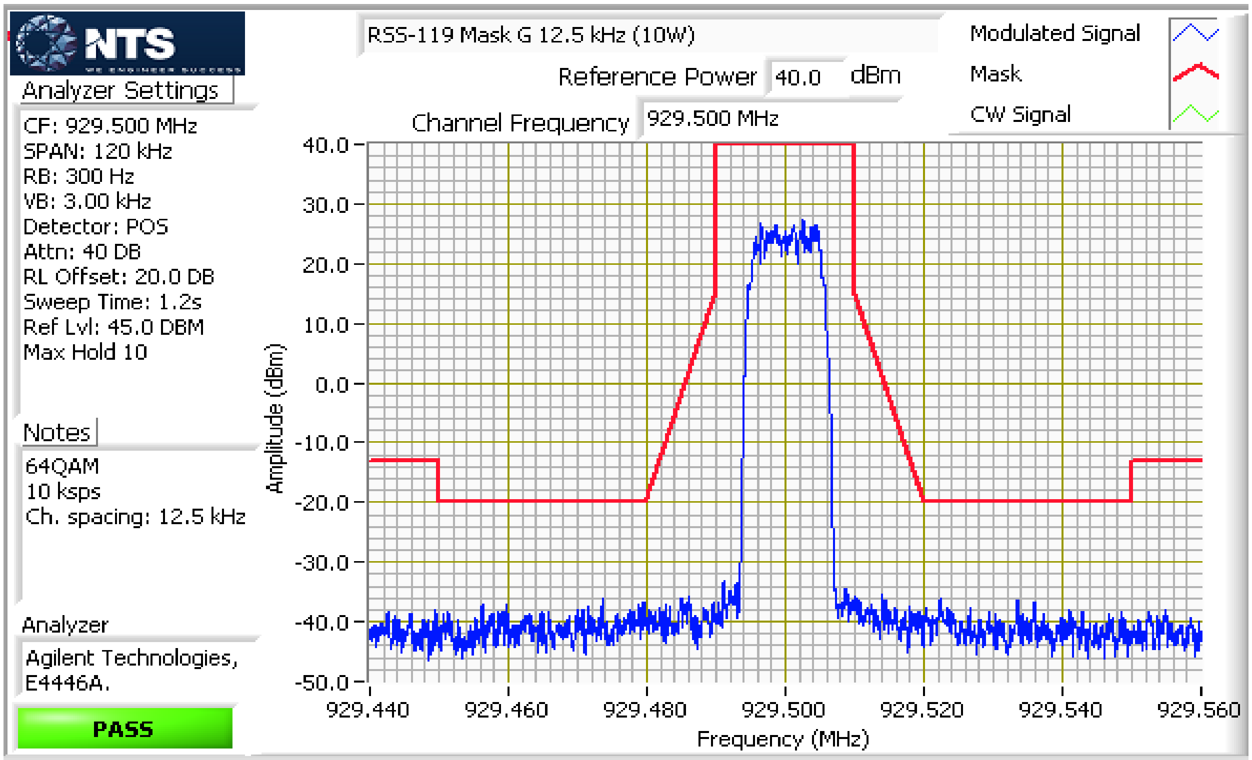
929 - 930 MHz, 12.5 kHz channel spacing.(FCC Part 90)



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

929 - 930 MHz, 12.5 kHz channel spacing.(FCC Part 90)



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

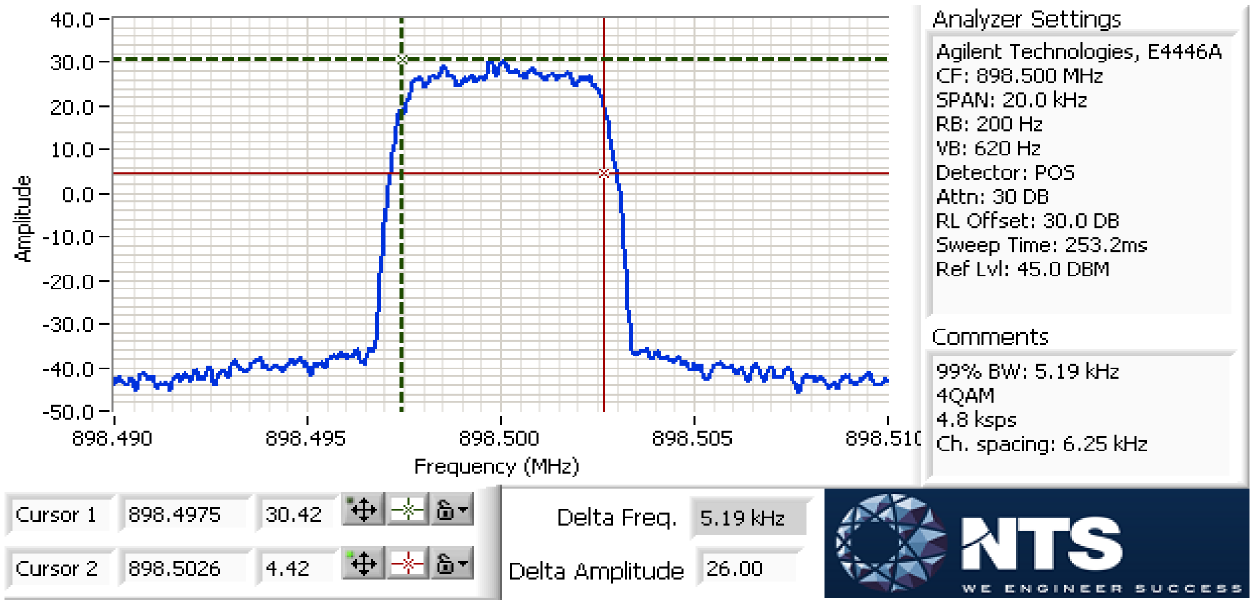
Run #3: Signal Bandwidth

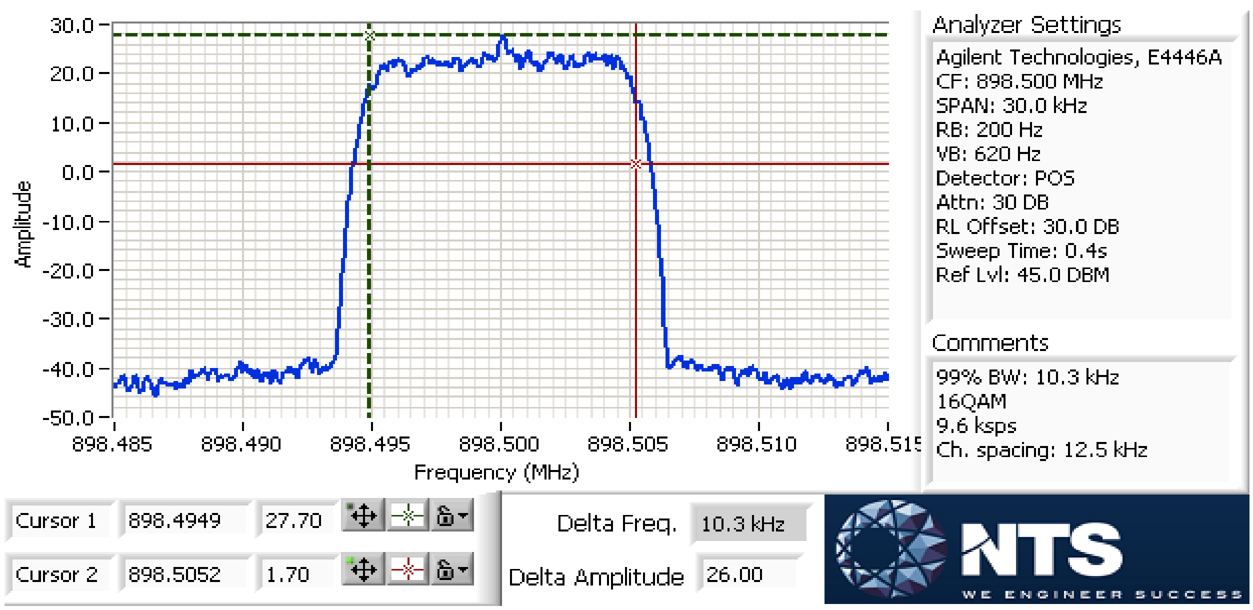
Date of Test: 10/27/2015
Test Engineer: Deniz Demirci
Test Location: FT Lab #6
Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz)	
							99%
40 dBm	4.8 ksps	6.25 kHz	4QAM	898.5	200 Hz		5.19
40 dBm	4.8 ksps	6.25 kHz	16QAM	898.5	200 Hz		5.19
40 dBm	4.8 ksps	6.25 kHz	64QAM	898.5	200 Hz		5.19
40 dBm	9.6 ksps	12.5 kHz	4QAM	898.5	200 Hz		10.3
40 dBm	9.6 ksps	12.5 kHz	16QAM	898.5	200 Hz		10.3
40 dBm	9.6 ksps	12.5 kHz	64QAM	898.5	200 Hz		10.3
40 dBm	10.0 ksps	12.5 kHz	4QAM	898.5	200 Hz		10.8
40 dBm	10.0 ksps	12.5 kHz	16QAM	898.5	200 Hz		10.8
40 dBm	10.0 ksps	12.5 kHz	64QAM	898.5	200 Hz		10.8
40 dBm	16.0 ksps	25.0 kHz	4QAM	898.5	200 Hz		17.2
40 dBm	16.0 ksps	25.0 kHz	16QAM	898.5	200 Hz		17.2
40 dBm	16.0 ksps	25.0 kHz	64QAM	898.5	200 Hz		17.1

Note 1: 99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.

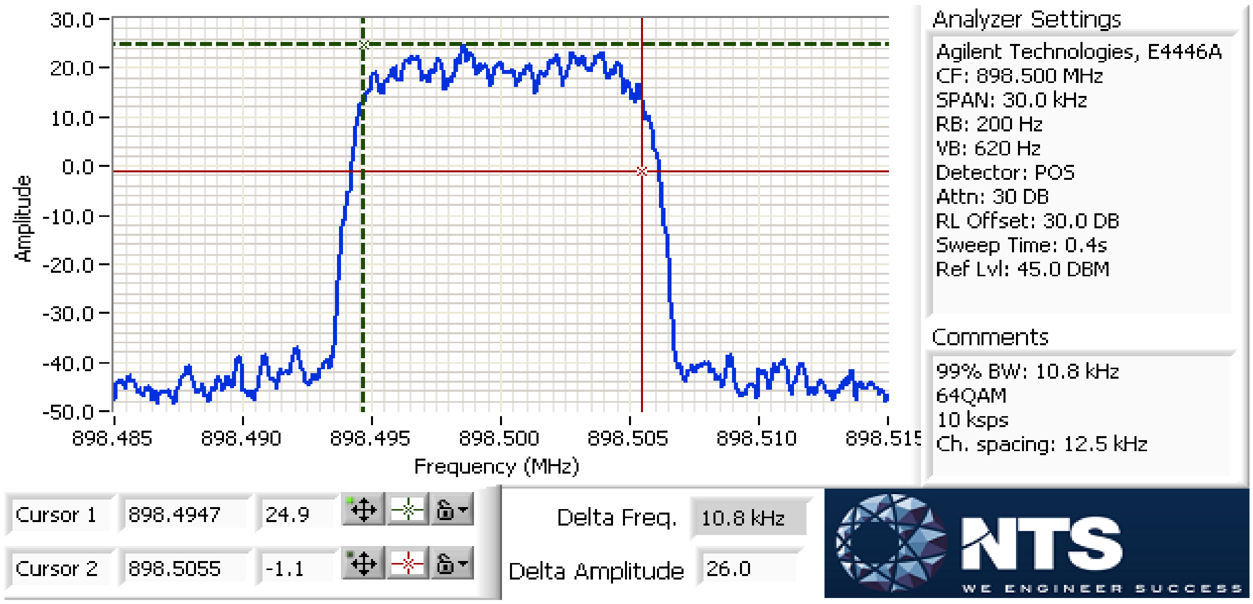
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

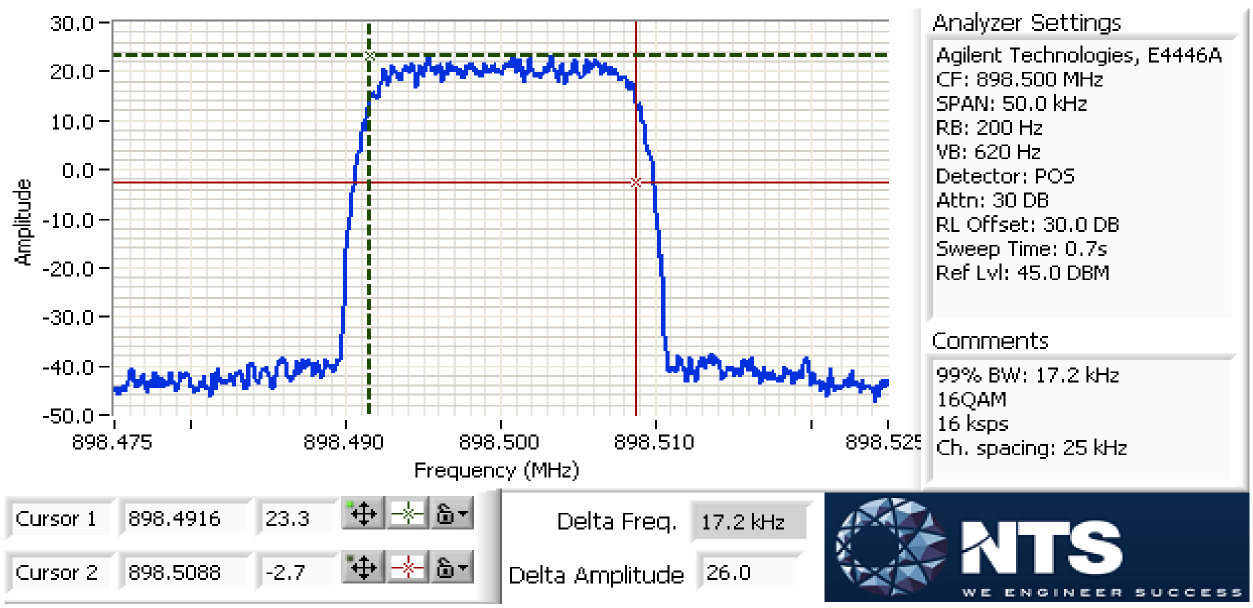




EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A





Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #4: Out of Band Spurious Emissions, Conducted

The limit is taken from FCC Part 90 Mask D

Date of Test: 10/29, 10/30, 12/11/2015
Test Engineer: Deniz Demirci & David Bare
Test Location: Fremont Ch #3 and Lab #4B

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

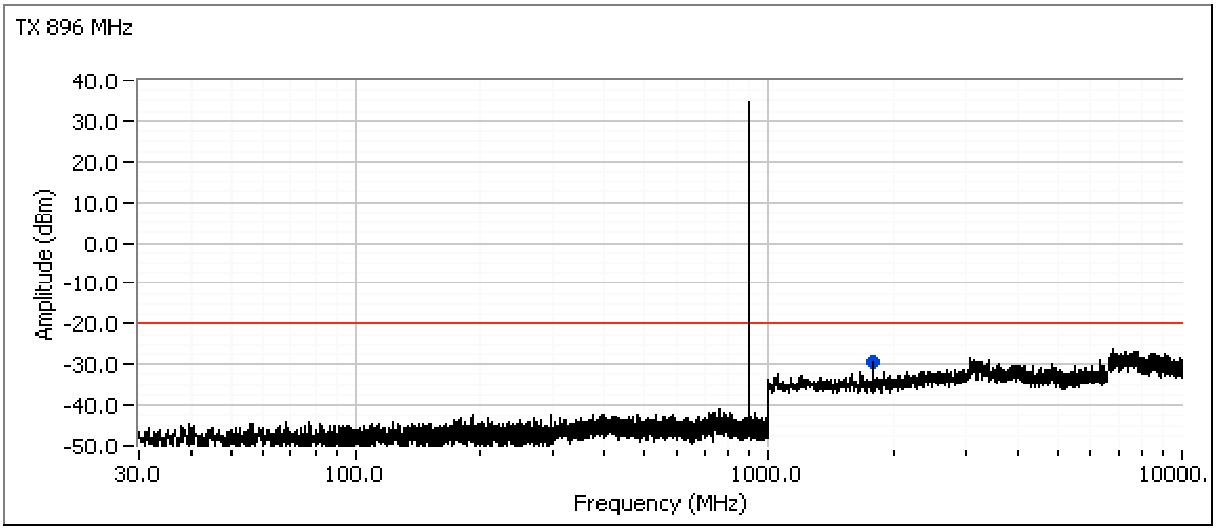
Frequency	Level	AC	FCC Part 90		Detector	Comments	Channel
MHz	dBμV	Line	Limit	Margin			MHz
1869.580	-28.2	RF Port	-20.0	-8.2	PK	PK (CISPR)-RB 1 MHz; VB: 3 MHz	932
6653.350	-48.9	RF Port	-20.0	-28.9	PK	PK (CISPR)-RB 1 MHz; VB: 8 MHz	932
1858.860	-27.3	RF Port	-20.0	-7.3	PK	PK (CISPR)-RB 1 MHz; VB: 3 MHz	929
6886.100	-49.5	RF Port	-20.0	-29.5	PK	PK (CISPR)-RB 1 MHz; VB: 8 MHz	929
1906.340	-28.8	RF Port	-20.0	-8.8	PK	PK (CISPR)-RB 1 MHz; VB: 8 MHz	952.5
1791.970	-27.8	RF Port	-20.0	-7.8	PK	PK (CISPR)-RB 1 MHz; VB: 8 MHz	896

Note 1: The amplitude of emisisons above 5 Ghz in the table above are lower than in the plots due to the use of less attenuation for the tabular values. These were found to be only due to the noise floor of the measurement system.

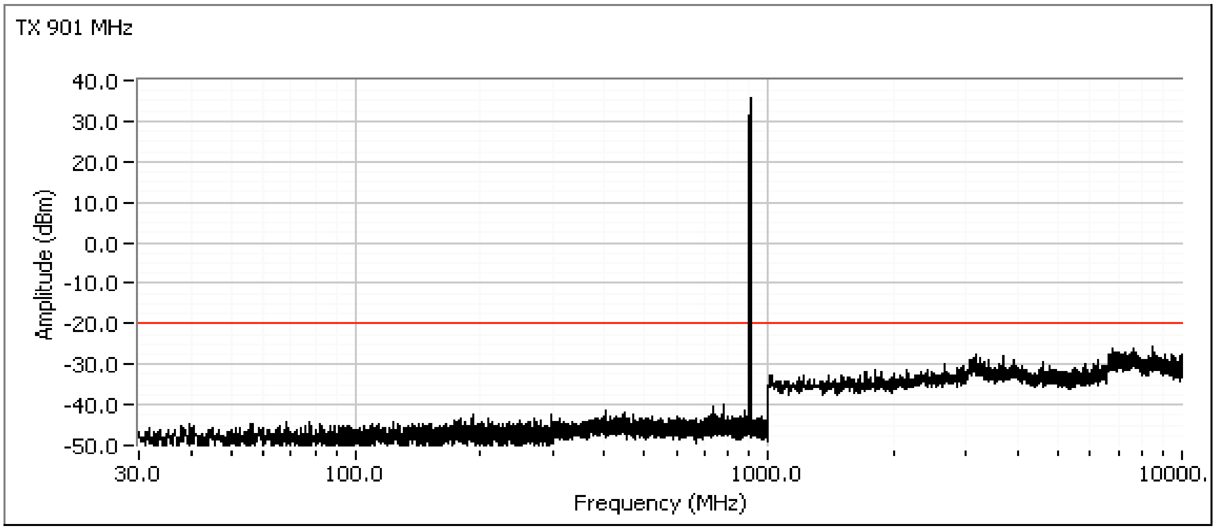
Bands	Channels to be tested	
896 - 901 MHz	896 MHz and 901 MHz	
935 - 940 MHz	935 MHz and 940 MHz	
928 - 929 MHz	-	928 MHz tested under Part 101
929 - 930 MHz	929 MHz	
932 - 935 MHz	932 MHz	
941 - 944 MHz	941 MHz	944 MHz tested under Part 101
952 - 953 MHz	952.5 MHz	

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plots for low channel, power setting(s) = 40 dBm

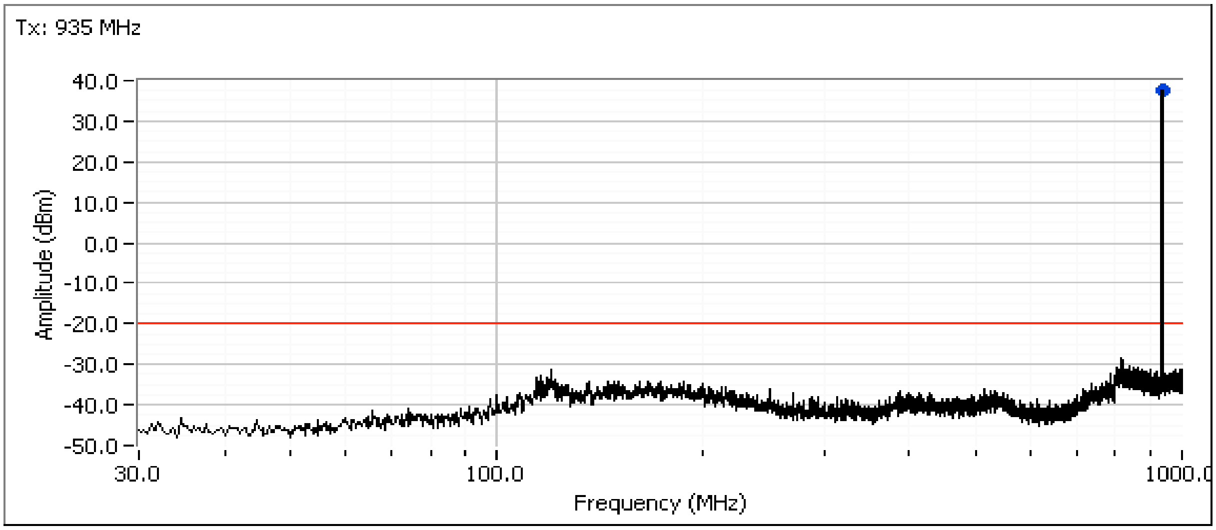


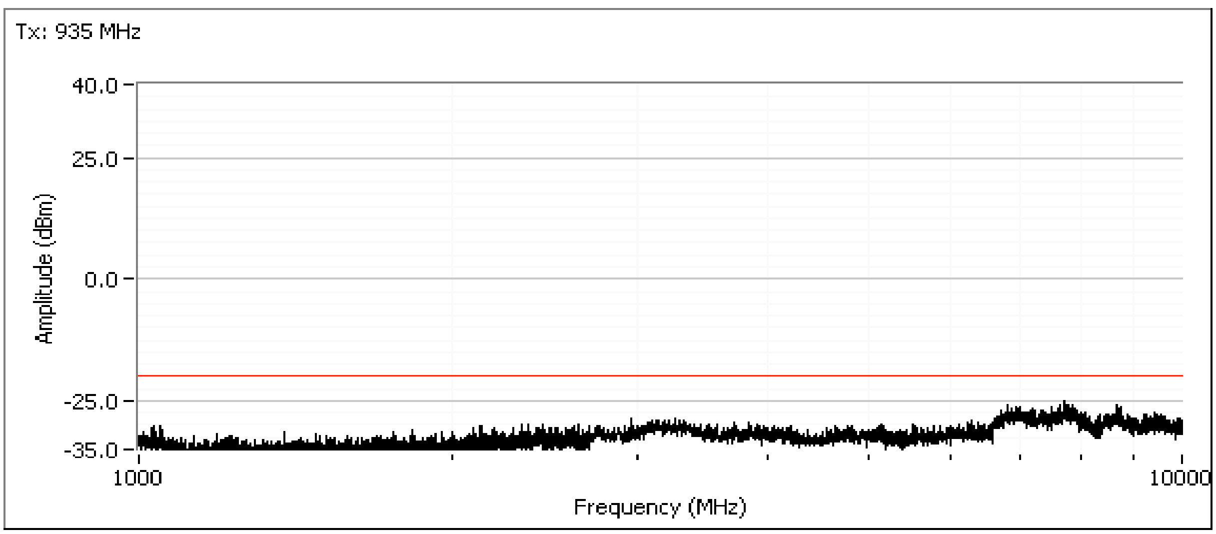
Plots for high channel, power setting(s) = 40 dBm



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

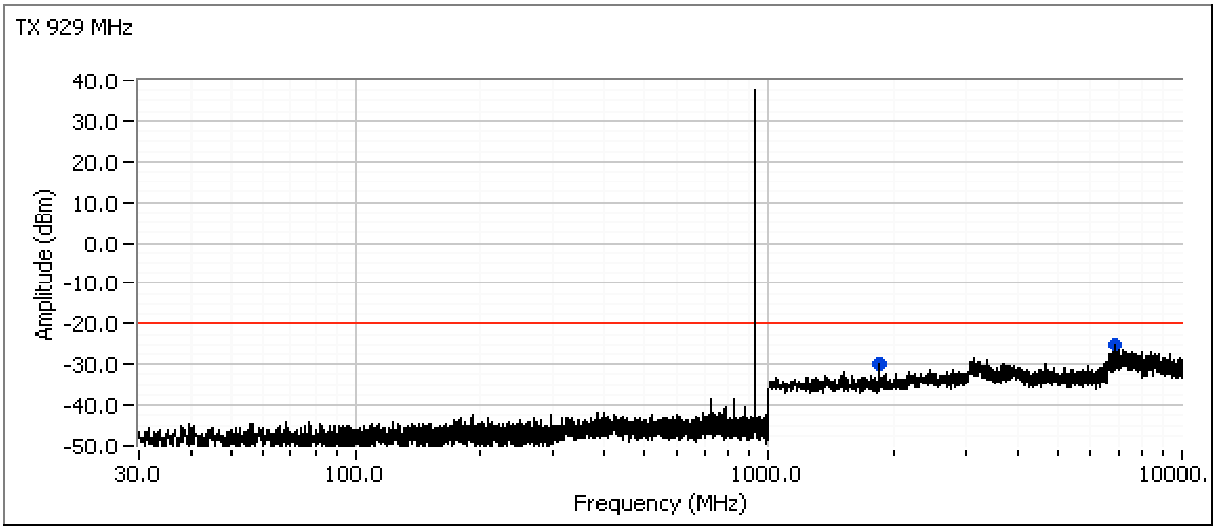
Plots for low channel, power setting(s) = 40 dBm



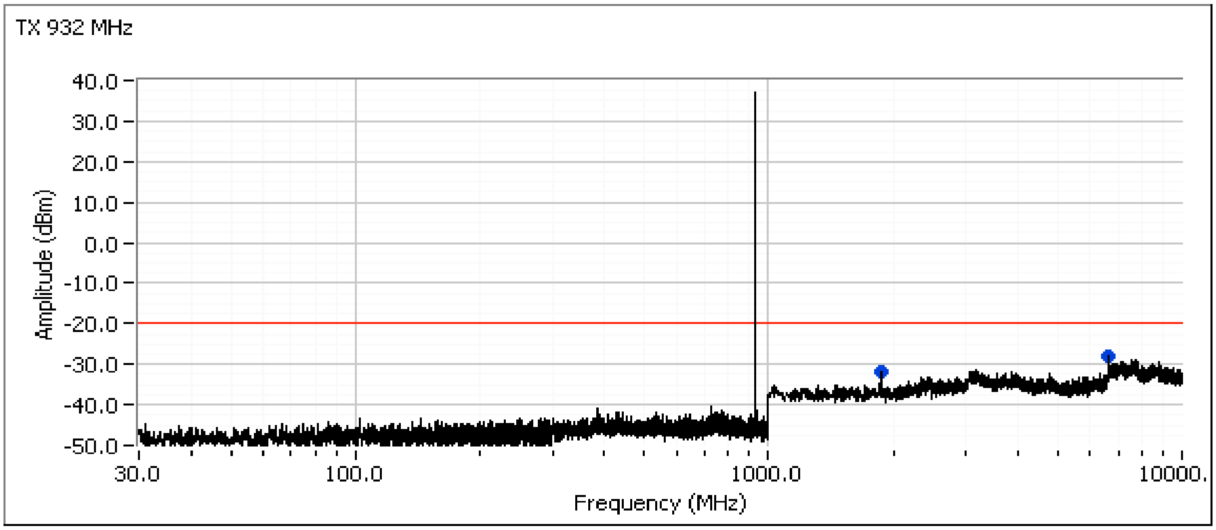


Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plot for low channel, power setting(s) = 40 dBm

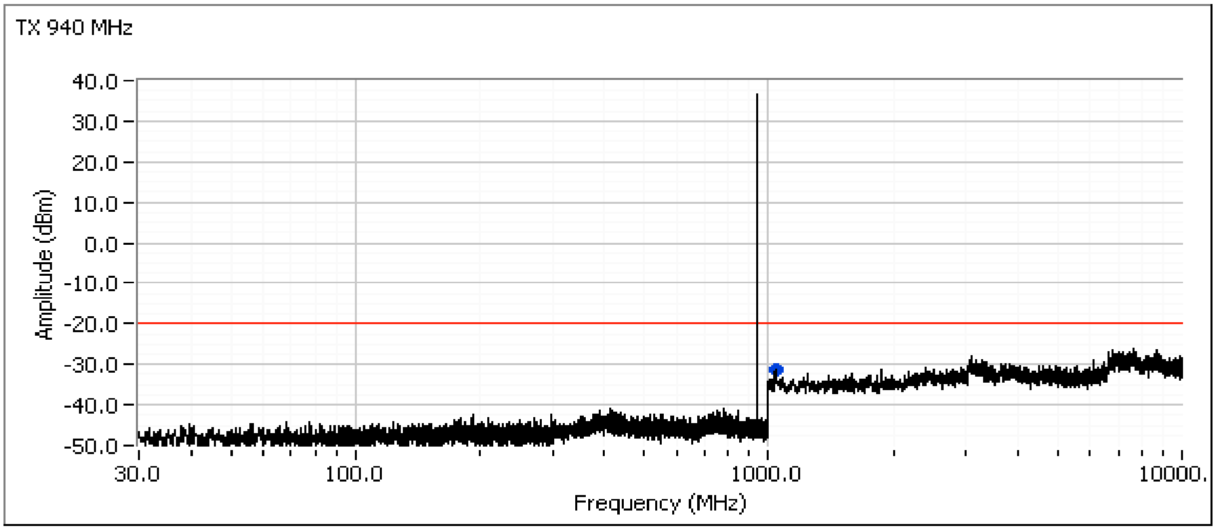


Plot for low channel, power setting(s) = 40 dBm

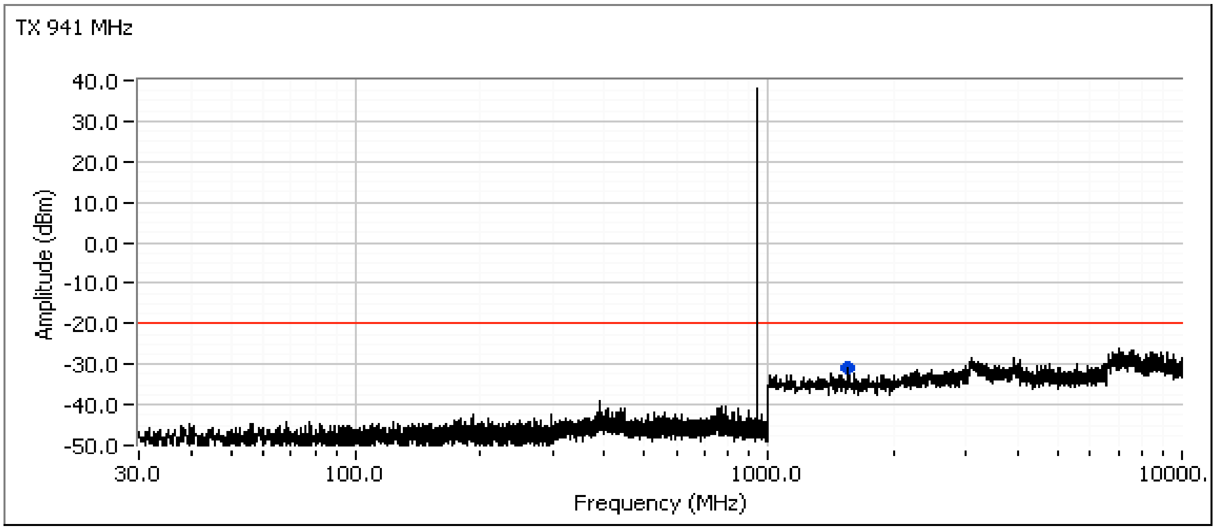


Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plots for high channel, power setting(s) = 40 dBm

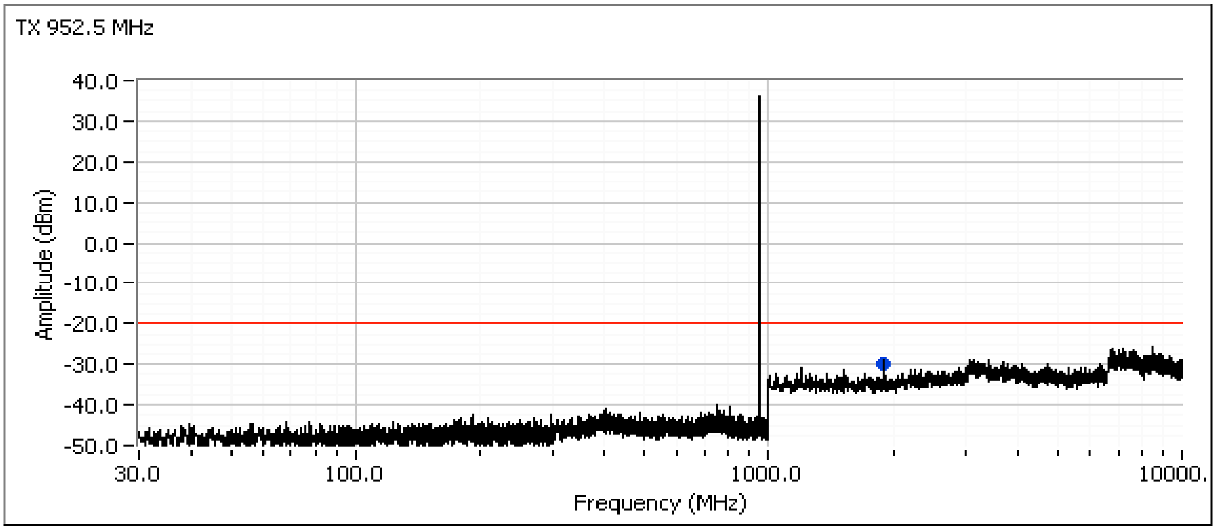


Plot for low channel, power setting(s) = 40 dBm



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plot for center channel, power setting(s) = 40 dBm



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #5: Out of Band Spurious Emissions, Radiated

Conducted limit (dBm): -20
Approximate field strength limit @ 3m: 75.3

The limit is taken from FCC Part 90 Mask D

Run #5a - Preliminary measurements - chamber scans

Date of Test: 12/14/2015, 12/15/2015
Test Engineer: Deniz Demirci, David Bare
Test Location: FT Ch #3 & 7

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC and 5 VDC

Frequency	Level	Pol	FCC Part 90		Detector	Azimuth	Height	Comments	Channel
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		MHz
896.008	90.9	H	-	-	PK	41	1.0	Carrier frequency	896.0
7168.000	55.4	V	75.3	-19.9	Peak	100	2.5		896.0
8064.000	64.9	V	75.3	-10.4	Peak	190	2.5		896.0
8960.000	67.6	V	75.3	-7.7	Peak	38	2.0		896.0
901.006	93.1	H	-	-	PK	240	1.0	Carrier frequency	901.0
7208.000	55.9	V	75.3	-19.4	Peak	360	2.5		901.0
8109.000	60.4	V	75.3	-14.9	Peak	180	2.0		901.0
9010.000	71.8	V	75.3	-3.5	Peak	42	2.0		901.0
929.020	90.7	H	-	-	PK	204	1.0	Carrier frequency	929.0
8361.000	61.3	V	75.3	-14.0	Peak	181	1.5		929.0
9290.000	67.1	V	75.3	-8.2	Peak	181	1.5		929.0
932.008	92.3	H	-	-	PK	272	1.0	Carrier frequency	932.0
8388.000	59.9	V	75.3	-15.4	Peak	175	2.5		932.0
9320.000	72.0	V	75.3	-3.3	Peak	61	2.5		932.0
941.003	95.0	V	-	-	PK	208	1.5	Carrier frequency	941.0
8469.000	65.8	V	75.3	-9.5	Peak	201	2.0		941.0
9410.000	62.2	V	75.3	-13.1	Peak	352	1.5		941.0
7528.000	54.3	V	75.3	-21.0	Peak	353	2.5		941.0
952.497	95.1	V	-	-	PK	228	2.0	Carrier frequency	952.5
8572.700	69.7	V	75.3	-5.6	Peak	61	2.4		952.5
9525.190	67.1	V	75.3	-8.2	Peak	26	1.0		952.5
935.052	96.2	H	-	-	PK	262	1.0	Carrier frequency	935.0
7480.000	55.5	V	75.3	-19.8	Peak	176	2.2		
7552.880	56.3	V	75.3	-19.0	Peak	348	2.5		
8415.000	64.1	V	75.3	-11.2	Peak	183	2.2		
9350.000	70.0	V	75.3	-5.3	Peak	32	2.5		

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Frequency	Level	Pol	FCC Part 90		Detector	Azimuth	Height	Comments	Channel
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		MHz
939.992	96.8	H	-	-	PK	267	1.0	Carrier frequency	940.0
7520.000	55.1	V	75.3	-20.2	Peak	152	1.9		
7552.850	56.1	V	75.3	-19.2	Peak	152	1.9		
8460.000	65.3	V	75.3	-10.0	Peak	170	2.2		
9400.000	68.5	V	75.3	-6.8	Peak	357	2.2		

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 20 dB of margin relative to this field strength limit is determined using substitution measurements.
Note 2:	Measurements are made with the antenna port terminated.

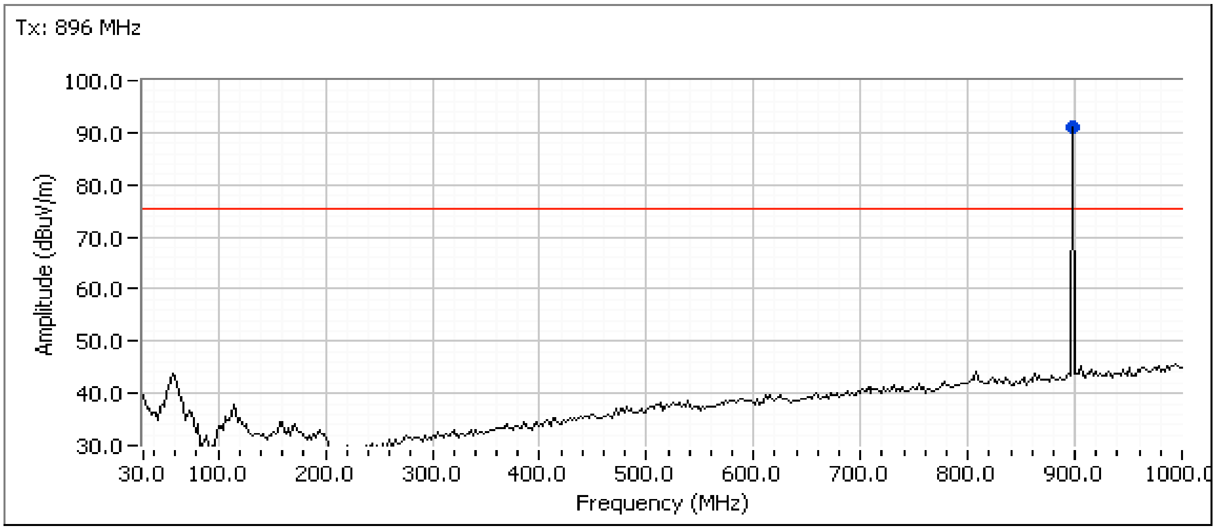
Engineering notes:
1 - 3.5 GHz no LNA, RBW: 100 kHz, VBW: 300 kHz
3.5 - 10 GHz with LNA and Filter #1157 RBW: 1 MHz, VBW: 3 MHz

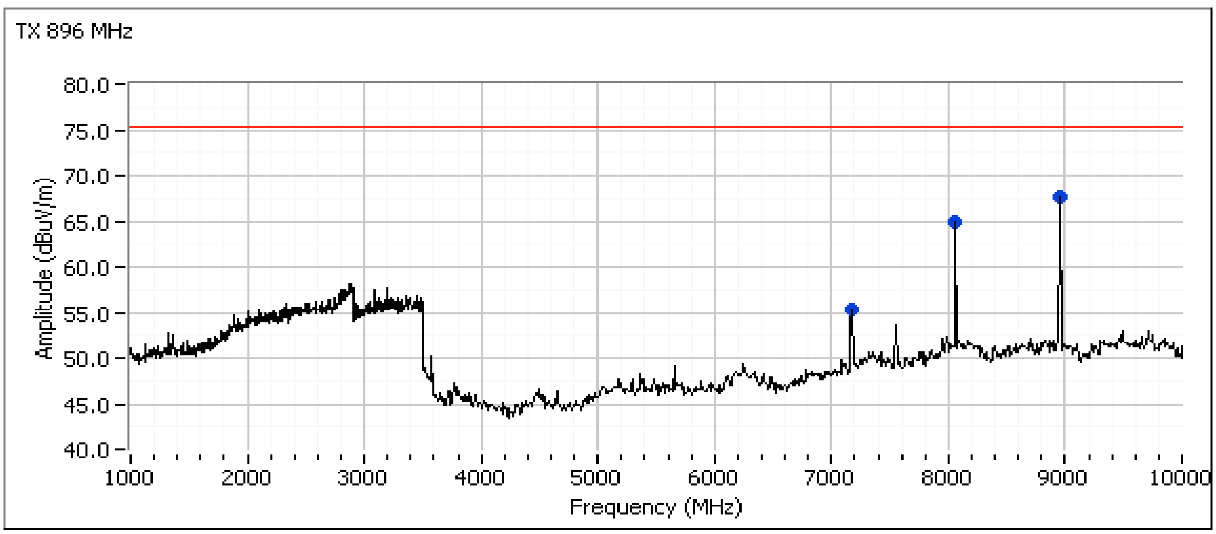
Bands	Channels to be tested	
896 - 901 MHz	896 MHz and 901 MHz	
935 - 940 MHz	935 MHz and 940 MHz	
928 - 929 MHz	-	928 MHz tested under Part 101
929 - 930 MHz	929 MHz	
932 - 935 MHz	932 MHz	
941 - 944 MHz	941 MHz	944 MHz tested under Part 101
952 - 953 MHz	952.5 MHz	

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

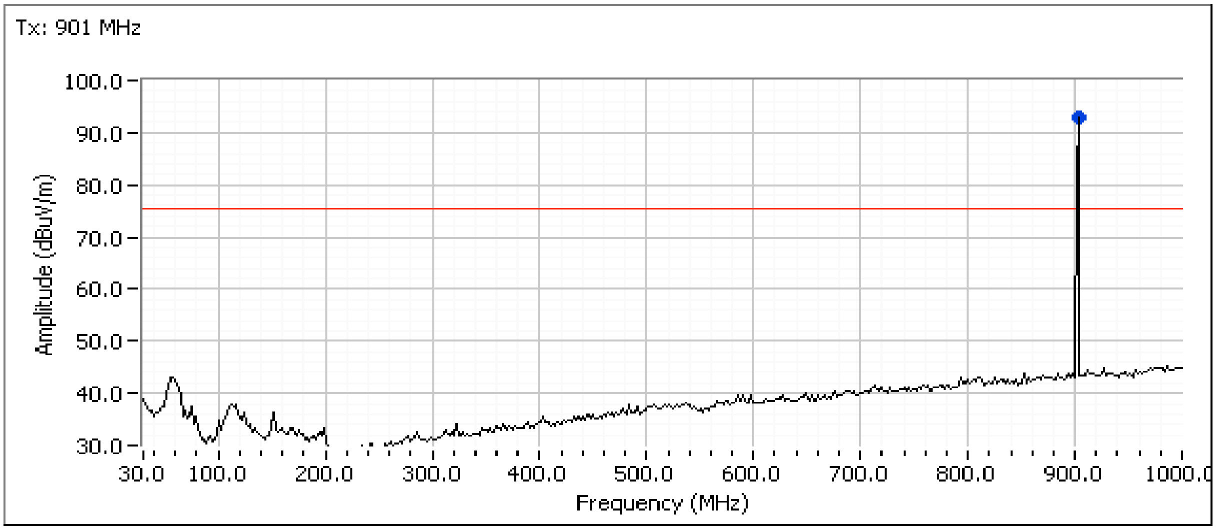
Plots for low channel (896 MHz), power setting(s) = 40 dBm

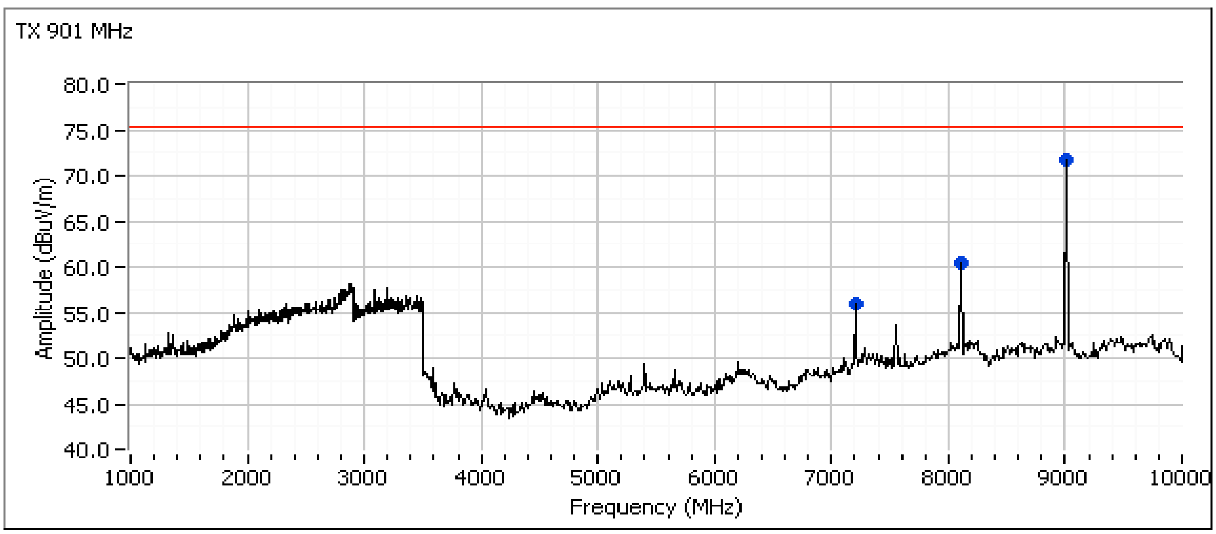




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

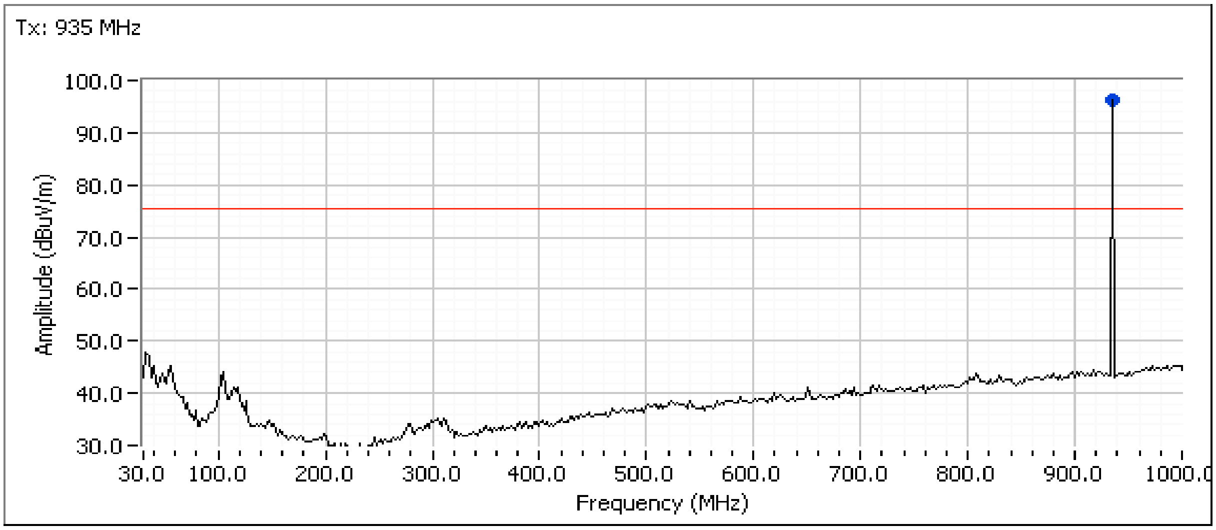
Plots for high channel (901 MHz), power setting(s) = 40 dBm

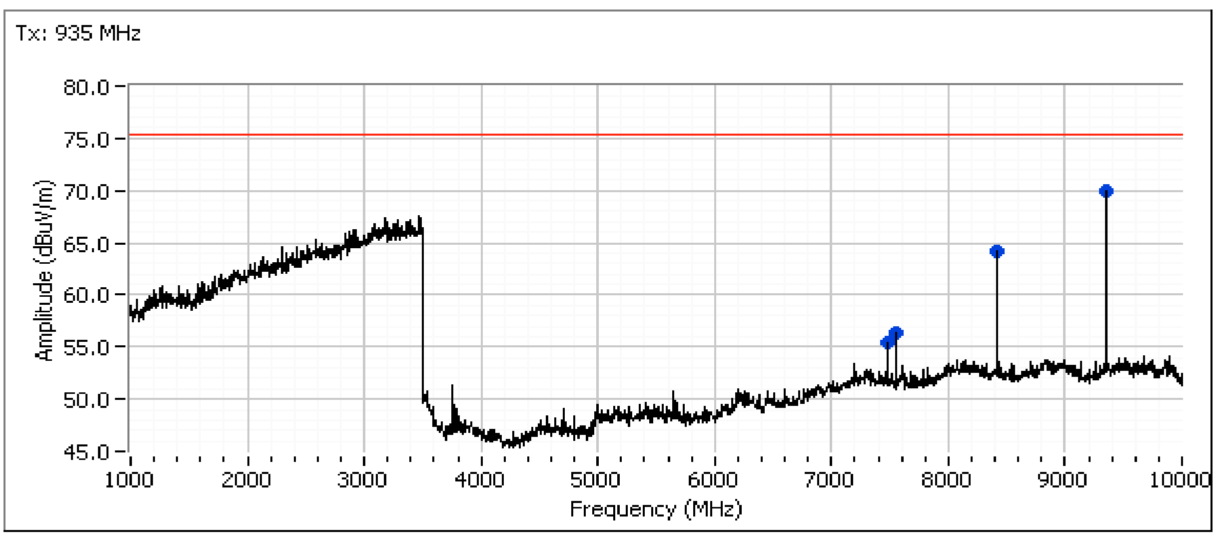




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

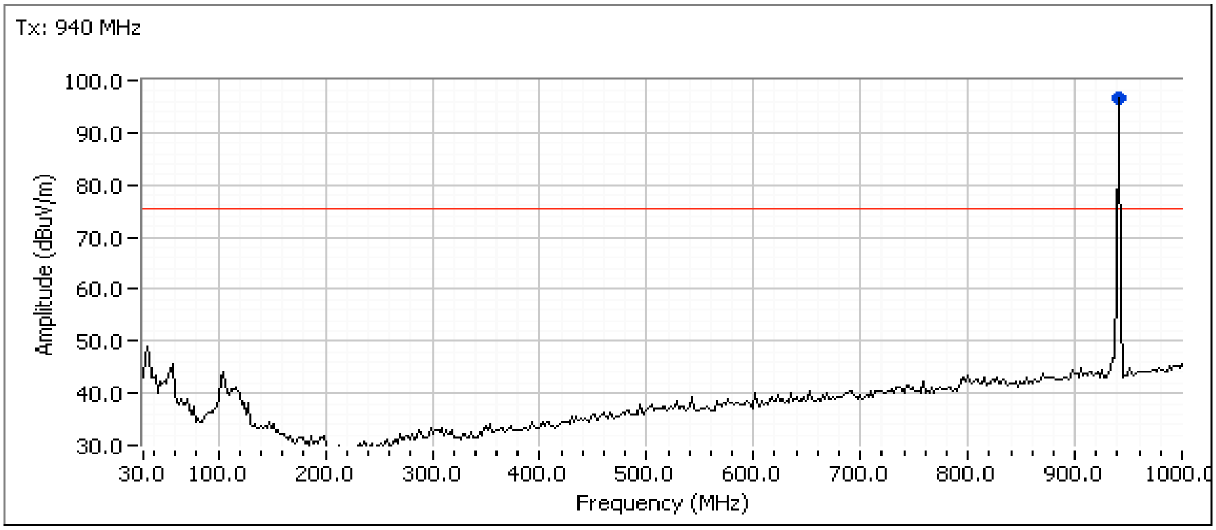
Plots for low channel (935 MHz), power setting(s) = 40 dBm

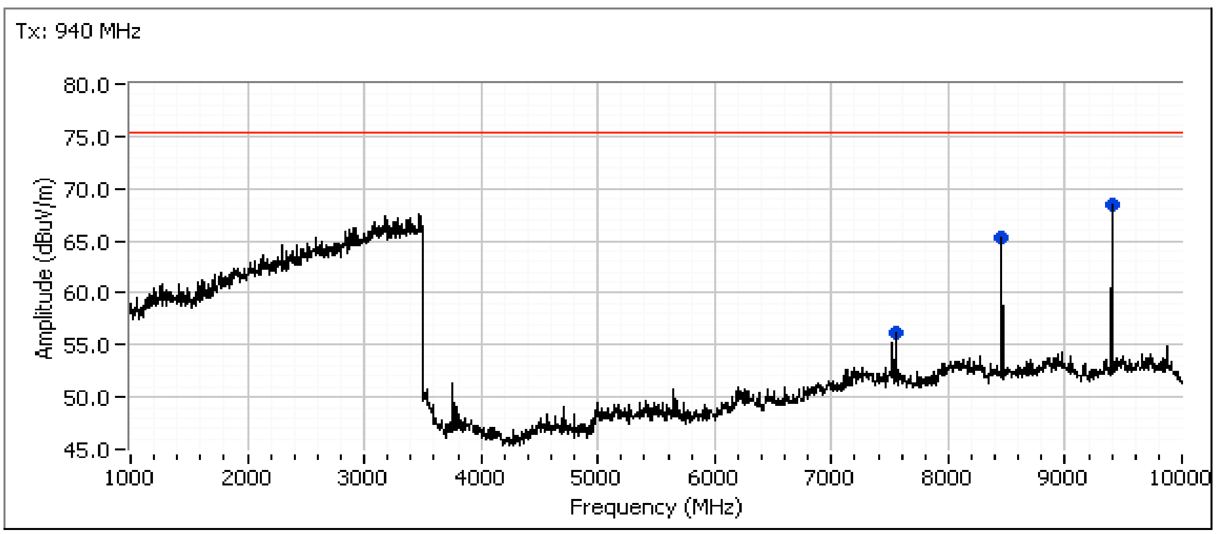




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plots for high channel (940 MHz), power setting(s) = 40 dBm

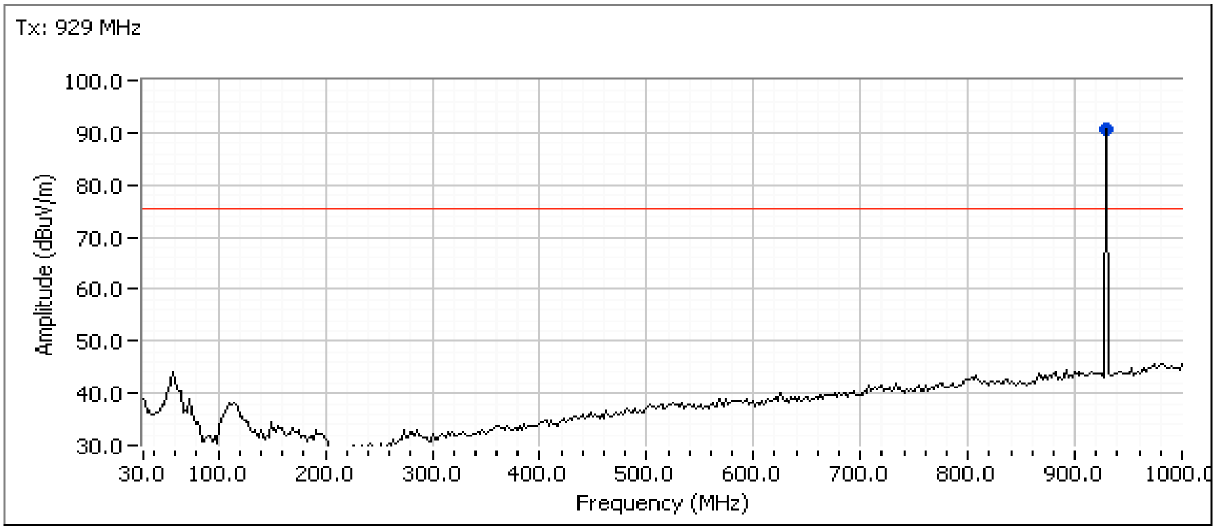


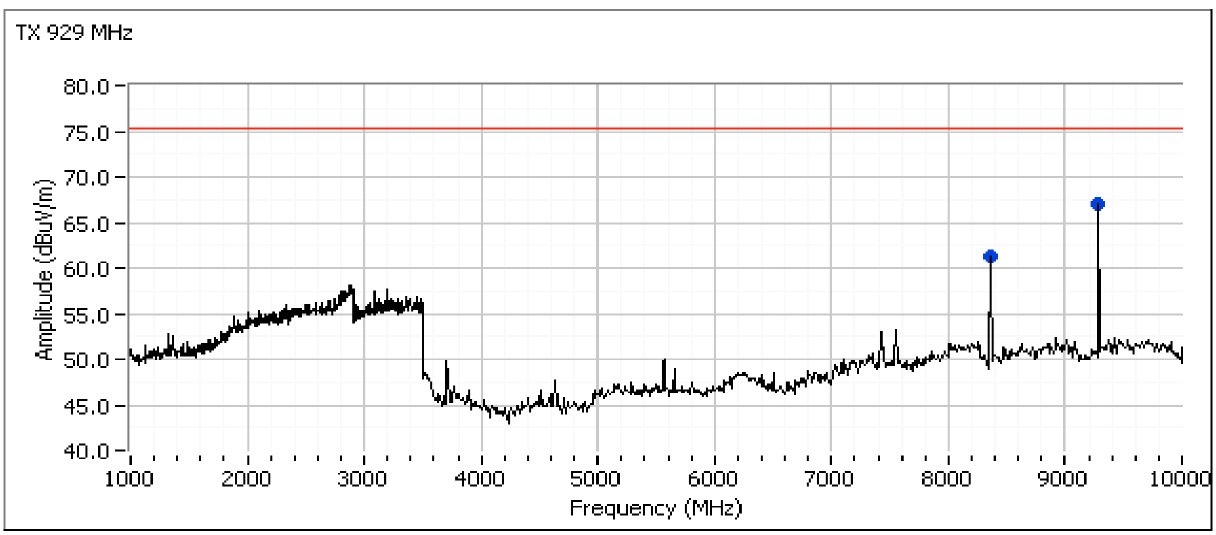


EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

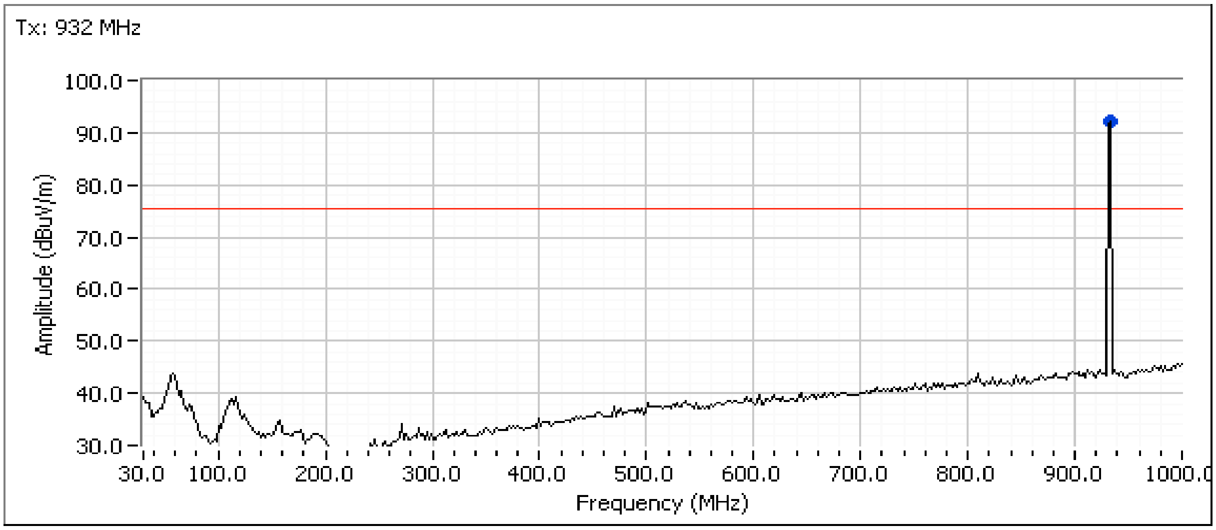
Plots for low channel (929 MHz), power setting(s) = 40 dBm

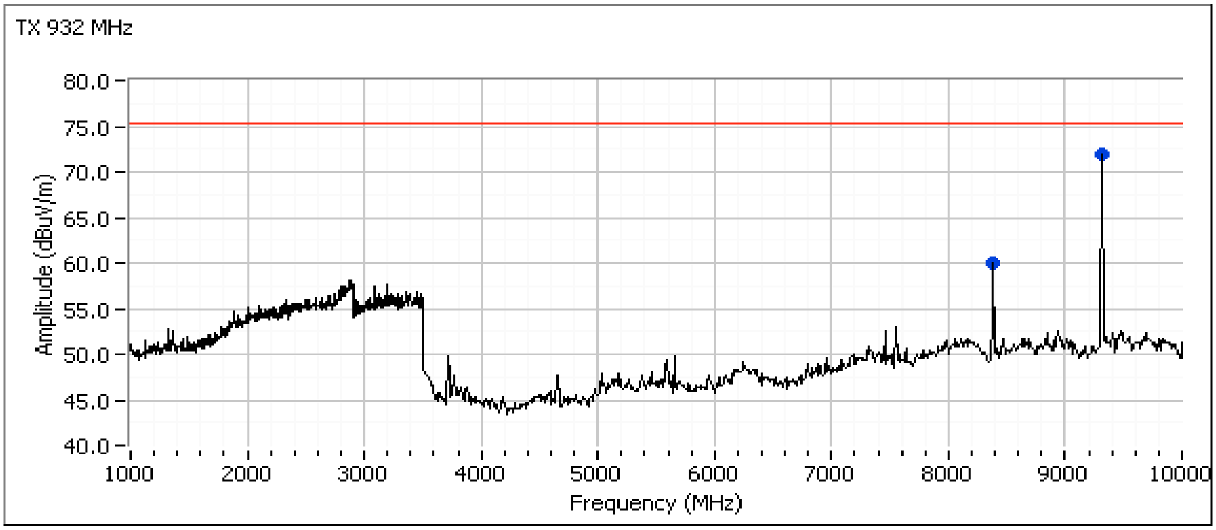




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

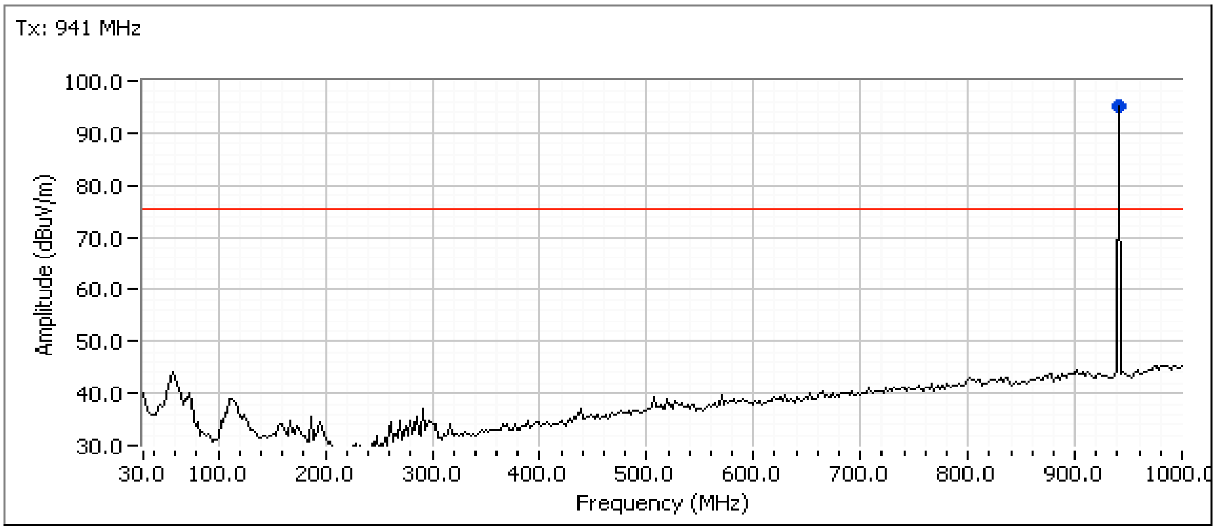
Plots for low channel (932 MHz), power setting(s) = 40 dBm

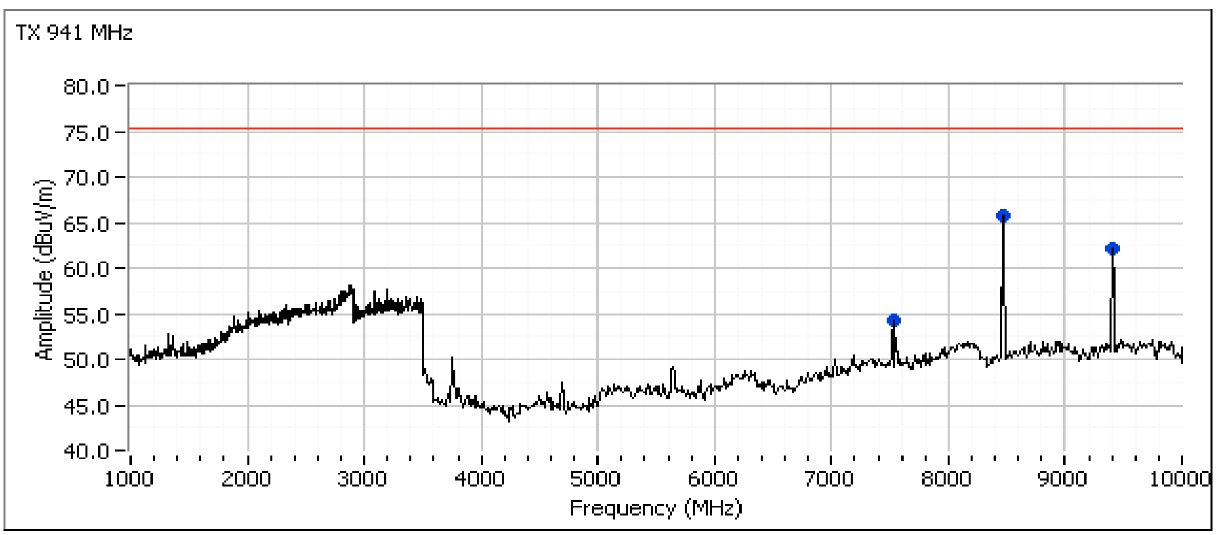




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plots for low channel (941 MHz), power setting(s) = 40 dBm



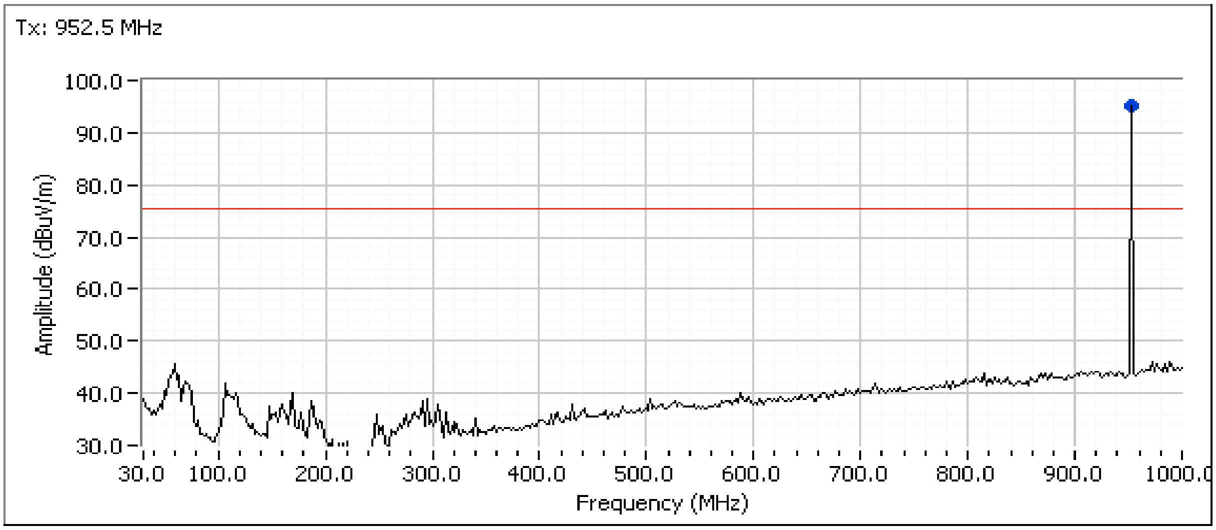


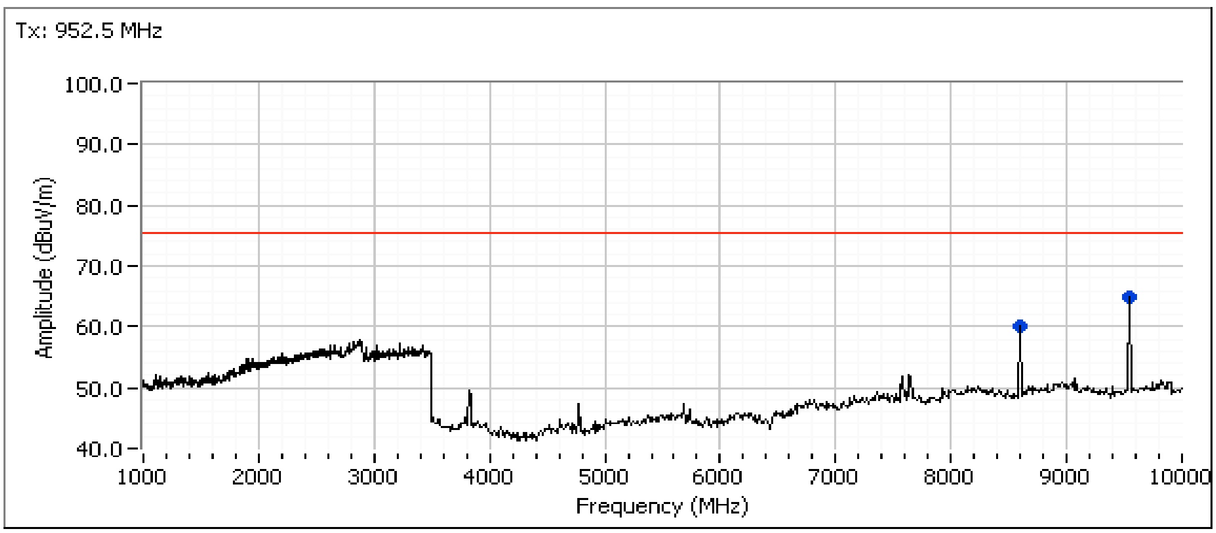
NTS WE ENGINEER SUCCESS

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plots for low channel (952.5 MHz), power setting(s) = 40 dBm





Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #5b: - Final Field Strength and Substitution Measurements

Date of Test: 12/15/2015
Test Engineer: David Bare
Test Location: Fremont Chamber #3

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC and 5 VDC

EUT Field Strength

Frequency	Level	Pol	FCC Part 90		Detector	Azimuth	Height	Comments	Channel
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
7166.670	57.1	V	75.3	-18.2	PK	101	2.4	RB 1 MHz;VB 3 MHz;Peak	896.0
8064.760	64.9	V	75.3	-10.4	PK	191	2.4	RB 1 MHz;VB 3 MHz;Peak	896.0
8960.710	69.1	V	75.3	-6.2	PK	40	2.0	RB 1 MHz;VB 3 MHz;Peak	896.0
7207.870	58.4	H	75.3	-16.9	PK	360	2.3	RB 1 MHz;VB 3 MHz;Peak	901.0
8109.330	65.0	V	75.3	-10.3	PK	180	2.0	RB 1 MHz;VB 3 MHz;Peak	901.0
9009.030	73.8	V	75.3	-1.5	PK	40	2.0	RB 1 MHz;VB 3 MHz;Peak	901.0
8360.080	69.2	V	75.3	-6.1	PK	182	1.5	RB 1 MHz;VB 3 MHz;Peak	929.0
9290.670	69.5	V	75.3	-5.8	PK	182	1.5	RB 1 MHz;VB 3 MHz;Peak	929.0
8388.290	64.0	V	75.3	-11.3	PK	172	2.5	RB 1 MHz;VB 3 MHz;Peak	932.0
9319.590	74.3	V	75.3	-1.0	PK	59	2.5	RB 1 MHz;VB 3 MHz;Peak	932.0
8469.720	66.8	V	75.3	-8.5	PK	202	2.0	RB 1 MHz;VB 3 MHz;Peak	941.0
9410.060	70.2	V	75.3	-5.1	PK	353	1.5	RB 1 MHz;VB 3 MHz;Peak	941.0
7529.250	57.6	V	75.3	-17.7	PK	353	2.5	RB 1 MHz;VB 3 MHz;Peak	941.0
8572.700	69.7	V	75.3	-5.6	PK	61	2.4	RB 1 MHz;VB 3 MHz;Peak	952.5
9525.190	67.1	V	75.3	-8.2	PK	26	1.0	RB 1 MHz;VB 3 MHz;Peak	952.5

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: $E=\sqrt{(30PG)}/d$. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 20dB of margin relative to this field strength limit is determined using substitution measurements.
Note 2:	Measurements are made with the antenna port terminated.

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Substitution measurements

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
7207.870	-40.0	10.2	65.5	95.3	58.4	-36.9	-39.1			

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
7166.670	-40.0	10.5	67.0	96.5	57.1	-39.4	-41.6		-20.0	-21.6
8064.760	-40.1	10.8	68.1	97.4	64.9	-32.5	-34.7		-20.0	-14.7
8960.710	-40.2	11.0	68.2	97.4	69.1	-28.3	-30.5		-20.0	-10.5
8109.330	-40.1	11.1	68.1	97.1	65.0	-32.1	-34.3		-20.0	-14.3
9009.030	-40.2	10.9	68.4	97.7	73.8	-23.9	-26.1		-20.0	-6.1
8360.080	-40.1	11.1	67.4	96.4	69.2	-27.2	-29.4		-20.0	-9.4
9290.670	-40.2	11.5	68.0	96.7	69.5	-27.2	-29.4		-20.0	-9.4
8388.290	-40.1	11.1	67.5	96.5	64.0	-32.5	-34.7		-20.0	-14.7
9319.590	-40.2	11.5	68.0	96.7	74.3	-22.4	-24.6		-20.0	-4.6
8469.720	-40.1	11.0	67.5	96.6	66.8	-29.8	-32.0		-20.0	-12.0
9410.060	-40.2	11.5	68.1	96.8	70.2	-26.6	-28.8		-20.0	-8.8
7529.250	-40.0	11.5	67.6	96.1	57.6	-38.5	-40.7		-20.0	-20.7
8572.700	-40.1	10.8	67.6	96.9	69.7	-27.2	-29.4		-20.0	-9.4
9525.190	-40.2	11.6	68.1	96.7	67.1	-29.6	-31.8		-20.0	-11.8

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #5c: - Final Field Strength and Substitution Measurements

Date of Test: 11/30 & 12/16/2015
Test Engineer: David Bare
Test Location: Fremont Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC and 5 VDC

EUT Field Strength

Frequency	Level	Pol	FCC Part 90		Detector	Azimuth	Height	Comments	Channel
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
8415.100	69.1	V	75.3	-6.2	PK	183	2.2	RB 1 MHz;VB 3 MHz;Peak	935
9349.790	69.9	V	75.3	-5.4	PK	32	2.4	RB 1 MHz;VB 3 MHz;Peak	935
7552.710	54.9	V	75.3	-20.4	PK	151	1.8	RB 1 MHz;VB 3 MHz;Peak	940
8460.390	74.6	V	75.3	-0.7	PK	170	2.2	RB 1 MHz;VB 3 MHz;Peak	940
9400.510	69.9	V	75.3	-5.4	PK	357	2.2	RB 1 MHz;VB 3 MHz;Peak	940
				0.0					

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: $E=\sqrt{30PG}/d$. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 20dB of margin relative to this field strength limit is determined using substitution measurements.
Note 2:	Measurements are made with the antenna port terminated.

Substitution measurements
Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
8415.100	-40.1	11.1	67.5	96.5	69.1	-27.4	-29.6		-20.0	-9.6
9349.790	-40.2	11.5	68.4	97.1	69.9	-27.2	-29.4		-20.0	-9.4
7552.710	-40.0	11.5	67.5	96.0	54.9	-41.1	-43.3		-20.0	-23.3
8460.390	-40.1	11.1	67.3	96.3	74.6	-21.7	-23.9		-20.0	-3.9
9400.510	-40.2	11.5	68.2	96.9	69.9	-27.0	-29.2		-20.0	-9.2

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

NTS WE ENGINEER SUCCESS

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #6: Frequency Stability

Date of Test: 10/28/2015
Test Engineer: Deniz Demirci
Test Location: FT Lab #4b

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Nominal Frequency: 898.50000 MHz

Frequency Stability Over Temperature

The EUT was soaked at each temperature for a minimum of 30 minutes prior to making the measurements to ensure the EUT and chamber had stabilized at that temperature.

Temperature	Frequency Measured	Drift	
(Celsius)	(MHz)	(Hz)	(ppm)
-30	898.500153	153	0.2
-20	898.500087	87	0.1
-10	898.500245	245	0.3
0	898.500092	92	0.1
10	898.499992	-8	0.0
20	898.500050	50	0.1
30	898.500255	255	0.3
40	898.500283	283	0.3
50	898.500283	283	0.3
	Worst case:	283	0.3

Frequency Stability Over Input Voltage

Nominal Voltage range is 11.8 - 52.2 Vdc.

Voltage	Frequency Measured	Drift	
(DC)	(MHz)	(Hz)	(ppm)
10	898.500057	57	0.1
60	898.500057	57	0.1
	Worst case:	57	0.3

Note 1:	Maximum drift of fundamental frequency before it shut down at 9.2 Vdc is 57 Hz.

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

FCC Part 101

Power, Occupied Bandwidth, Frequency Stability and Spurious Emissions

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: 18-22 °C
Rel. Humidity: 30-36 %

Summary of Results

Run #			Test Performed	Limit	Pass / Fail	Result / Margin
1			Output Power	Depends on license	Pass	40.9 dBm
2			Spectral Mask	varies with modulation	Pass	Complied with Mask
3			99% or Occupied Bandwidth	varies with modulation	-	See below
4			Spurious Emissions (conducted)	-20 dBm	Pass	-25.5 dBm @ 1920.2 MHz (-5.5 dB)
5			Spurious emissions (radiated)	-20 dBm	Pass	-28.2 dBm @ 9439.9 MHz (-8.2 dB)
6			Frequency Stability	1.5 ppm	Pass	0.3 ppm

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.

Test Notes

Part 101: 928-960MHz, 12.5, 25 & 50 kHz channel spacings.
Target power: 10 Watts (40 dBm). QAM modulaiton; need to know rated power and tolerance which cannot exceed measured power
Limited Modular approval

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #1: Output Power

Date of Test: 10/28/2015
Test Engineer: Deniz Demirci
Test Location: FT Lab #4b

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Cable Loss: 0.0 dB
Cable ID(s): None

Attenuator: 30.0 dB
Attenuator IDs: Asset #1878 + #2097

Total Loss: 30.0 dB

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP dBm	EIRP W
40 dBm	928.0	40.7	11749.0	16.5	Pass	57.2	524.807
40 dBm	944.0	40.8	12022.6	16.5	Pass	57.3	537.032
40 dBm	960.0	40.9	12302.7	16.5	Pass	57.4	549.541

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.

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #2: Spectral Mask, FCC Part 101.111(a)(5) and 101.111(a)(6)

Date of Test: 10/28 & 11/30/2015 Config. Used: 1
Test Engineer: Deniz Demirci & David Bare Config Change: None
Test Location: FT Lab #4b EUT Voltage: 13.8 VDC

Note 1: EUT does not transmit unmodulated carrier with full power setting. The measured power levels (using peak power meter) are higher than the declared nominal power for every channel frequency. Nominal 40 dBm reference power level used for spectral mask measurements as worst case results.

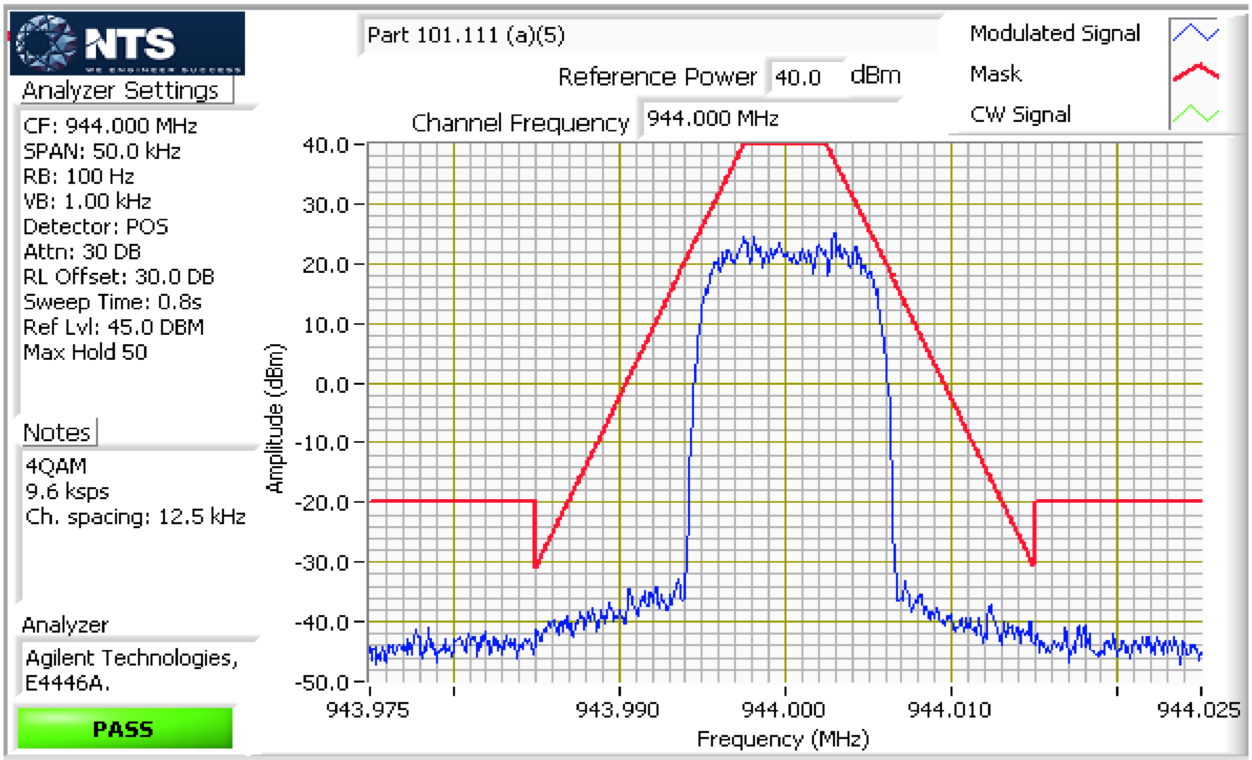
Spectral Mask at 928 - 960 MHz band (FCC Part 101)

Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	9.6 ksps	12.5 kHz	4QAM	944.0	101.111(a)(5)	Pass
40 dBm	9.6 ksps	12.5 kHz	16QAM	944.0	101.111(a)(5)	Pass
40 dBm	9.6 ksps	12.5 kHz	64QAM	944.0	101.111(a)(5)	Pass
40 dBm	10.0 ksps	12.5 kHz	4QAM	944.0	101.111(a)(5)	Pass
40 dBm	10.0 ksps	12.5 kHz	16QAM	944.0	101.111(a)(5)	Pass
40 dBm	10.0 ksps	12.5 kHz	64QAM	944.0	101.111(a)(5)	Pass
40 dBm	16.0 ksps	25.0 kHz	4QAM	944.0	101.111(a)(6)	Pass
40 dBm	16.0 ksps	25.0 kHz	16QAM	944.0	101.111(a)(6)	Pass
40 dBm	16.0 ksps	25.0 kHz	64QAM	944.0	101.111(a)(6)	Pass
40 dBm	20.0 ksps	50.0 kHz	4QAM	944.0	101.111(a)(6)	Pass
40 dBm	20.0 ksps	50.0 kHz	16QAM	944.0	101.111(a)(6)	Pass
40 dBm	20.0 ksps	50.0 kHz	64QAM	944.0	101.111(a)(6)	Pass

EMC Test Data

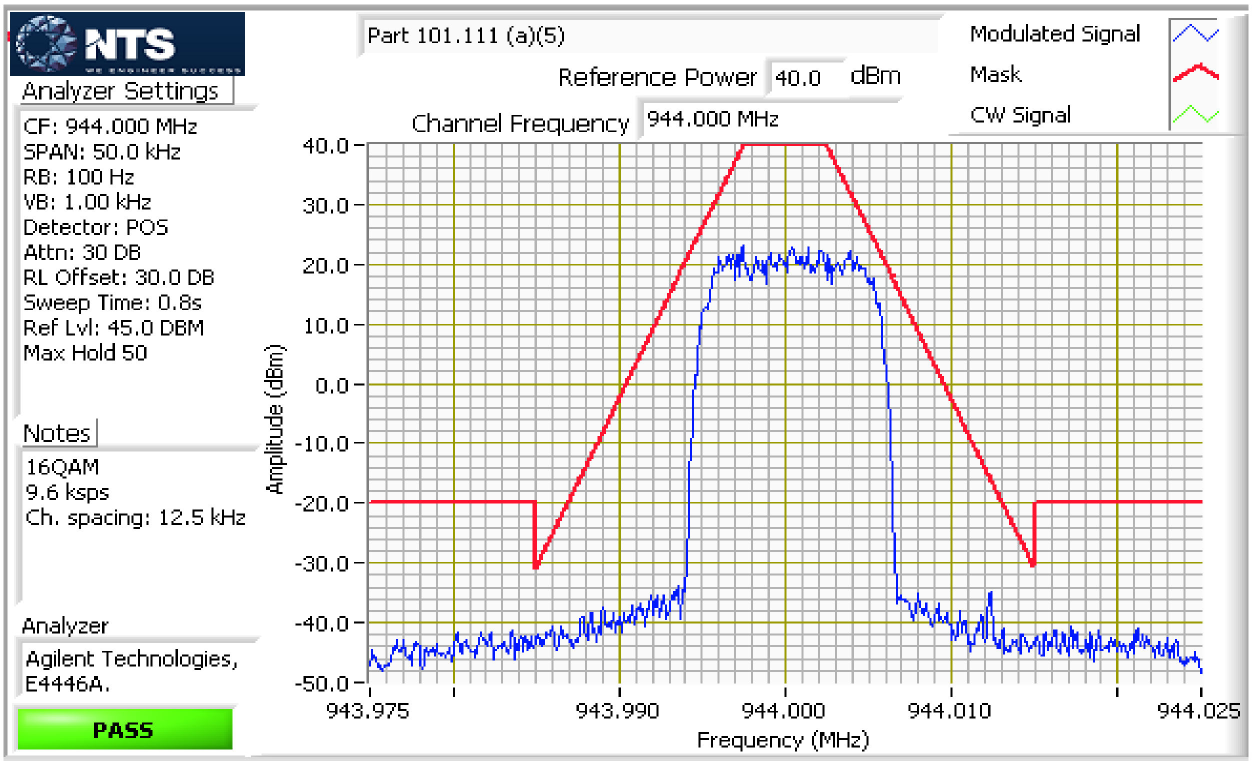
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

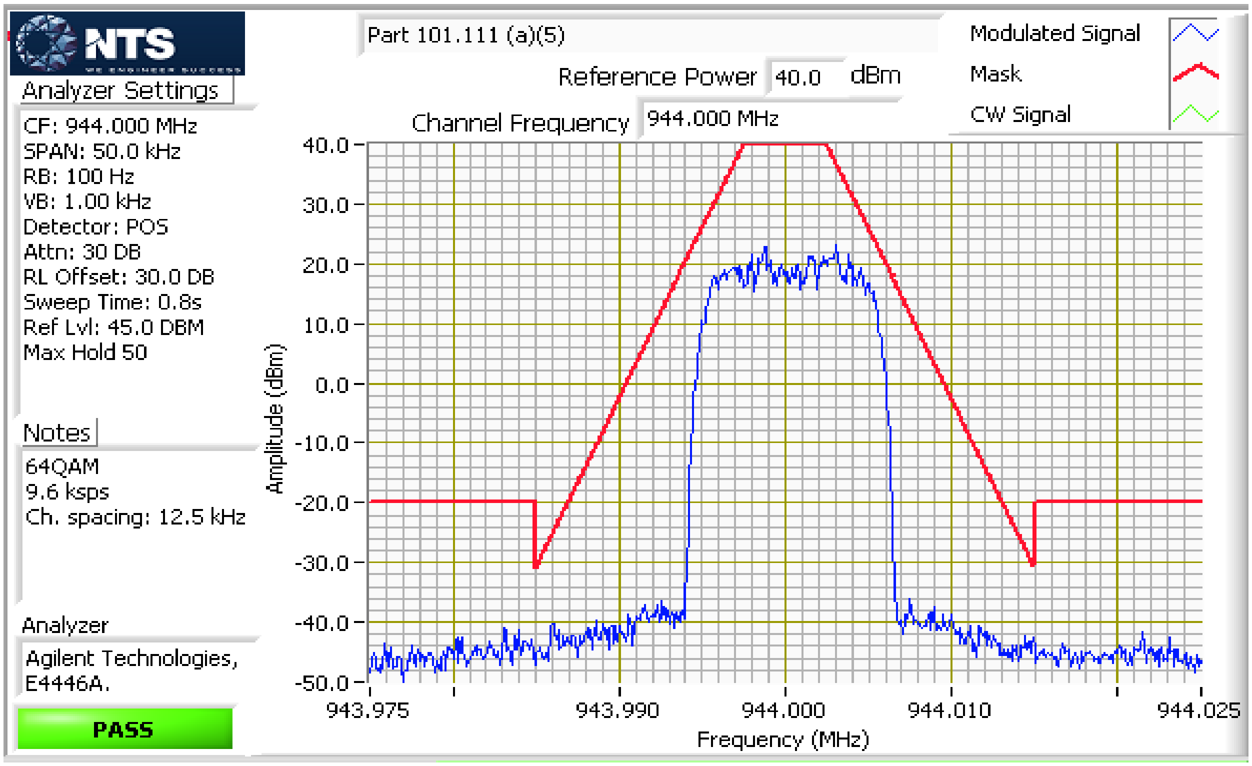
928 - 960 MHz, 12.5 kHz channel spacing.



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

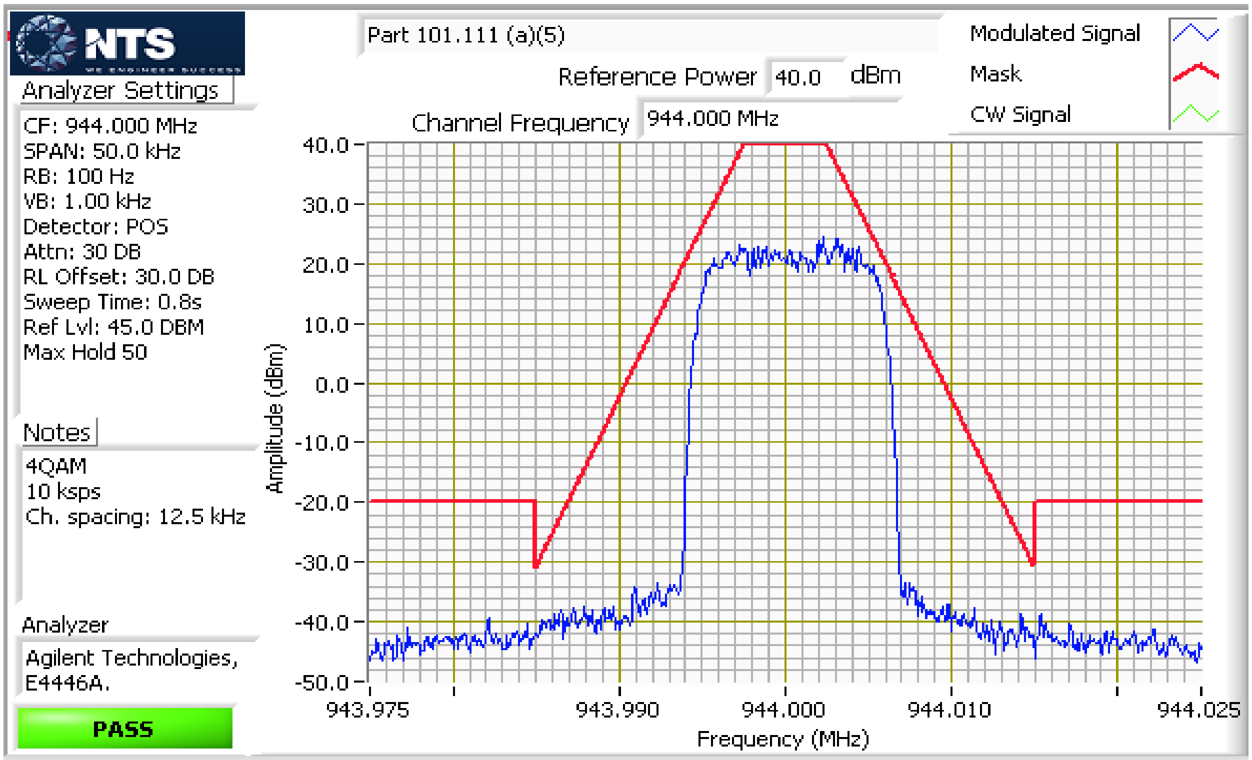
928 - 960 MHz, 12.5 kHz channel spacing.



EMC Test Data

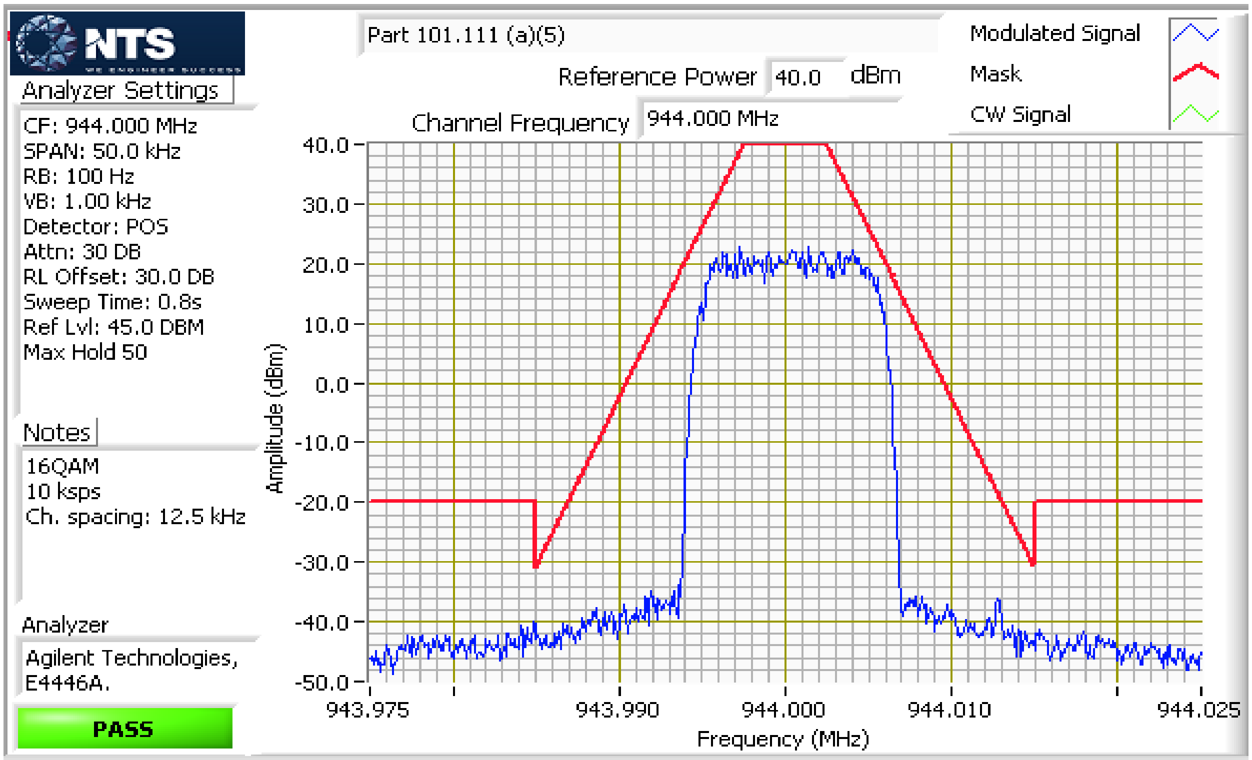
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



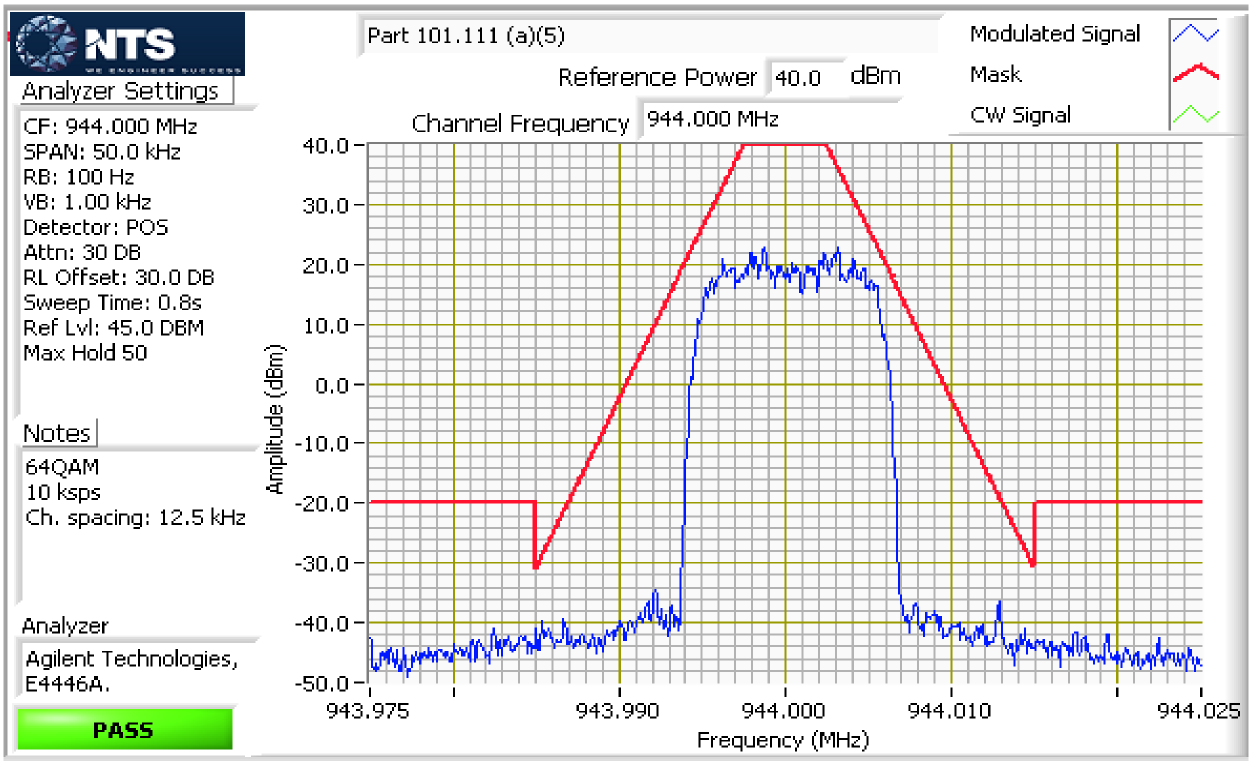
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

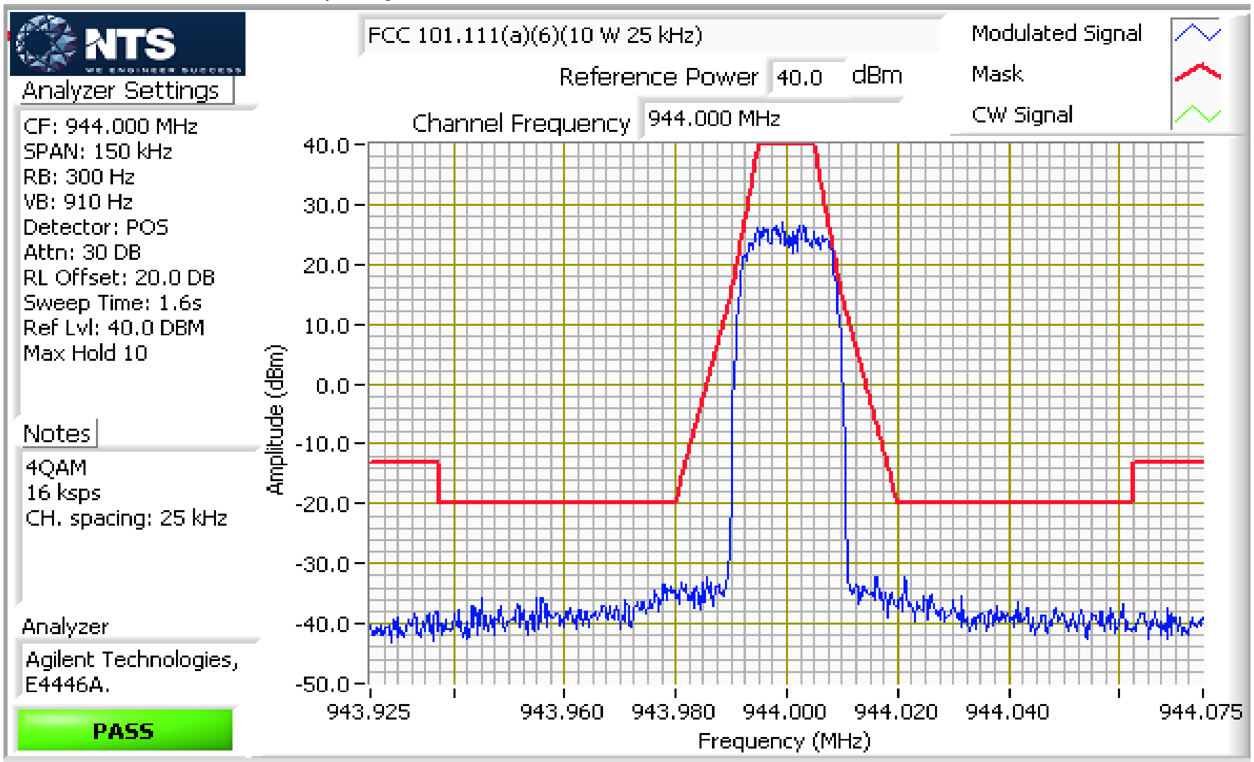
928 - 960 MHz, 12.5 kHz channel spacing.



EMC Test Data

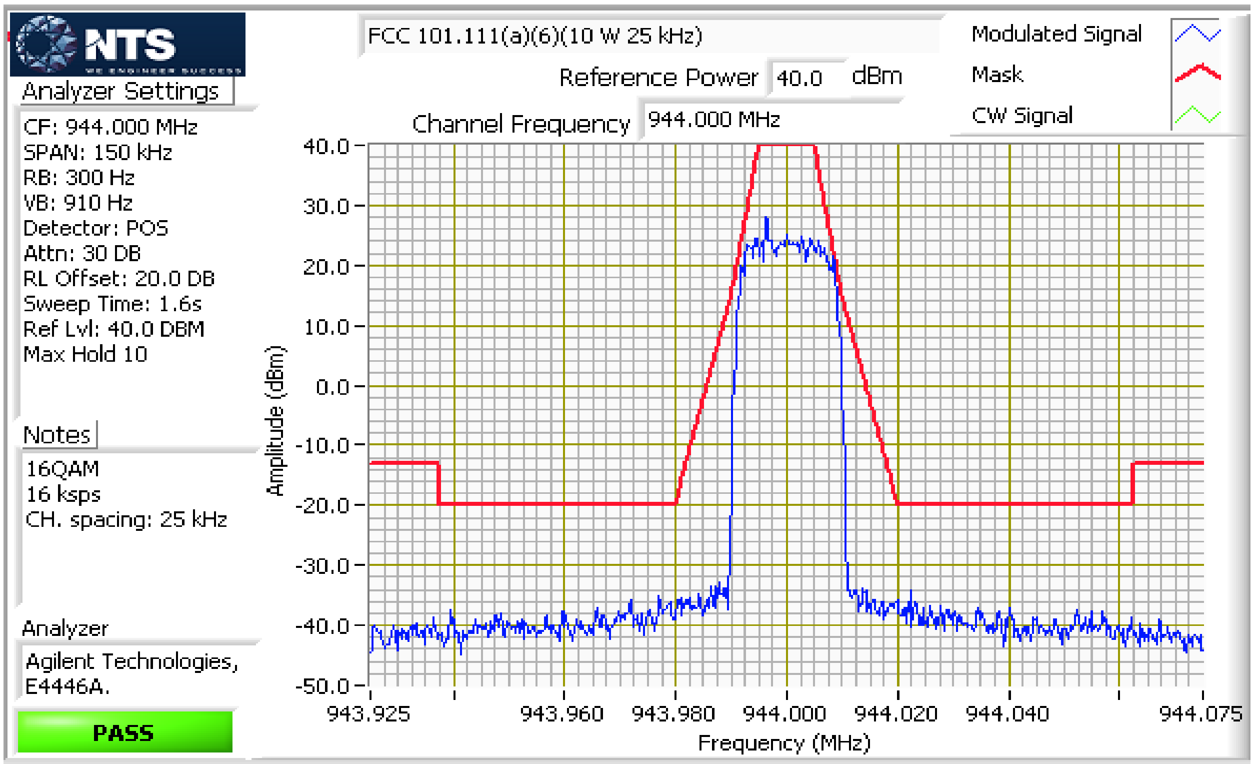
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 25 kHz channel spacing.



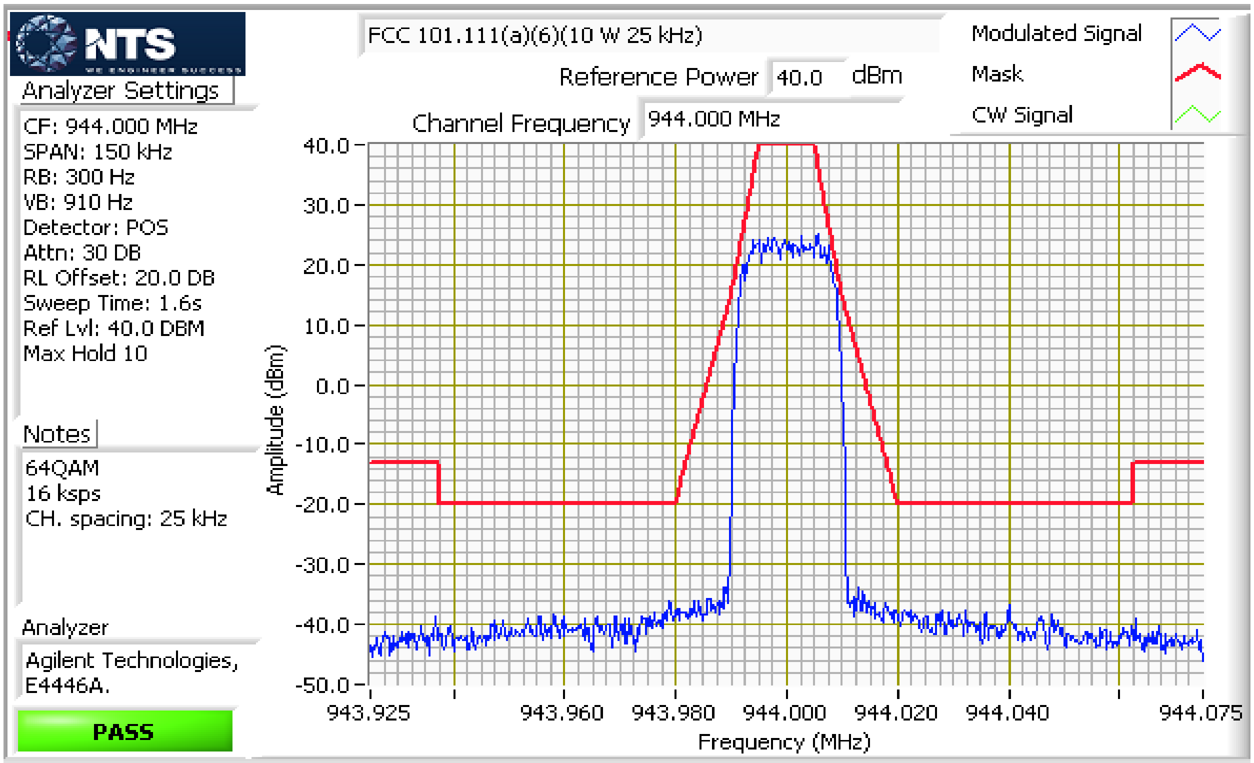
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 25 kHz channel spacing.



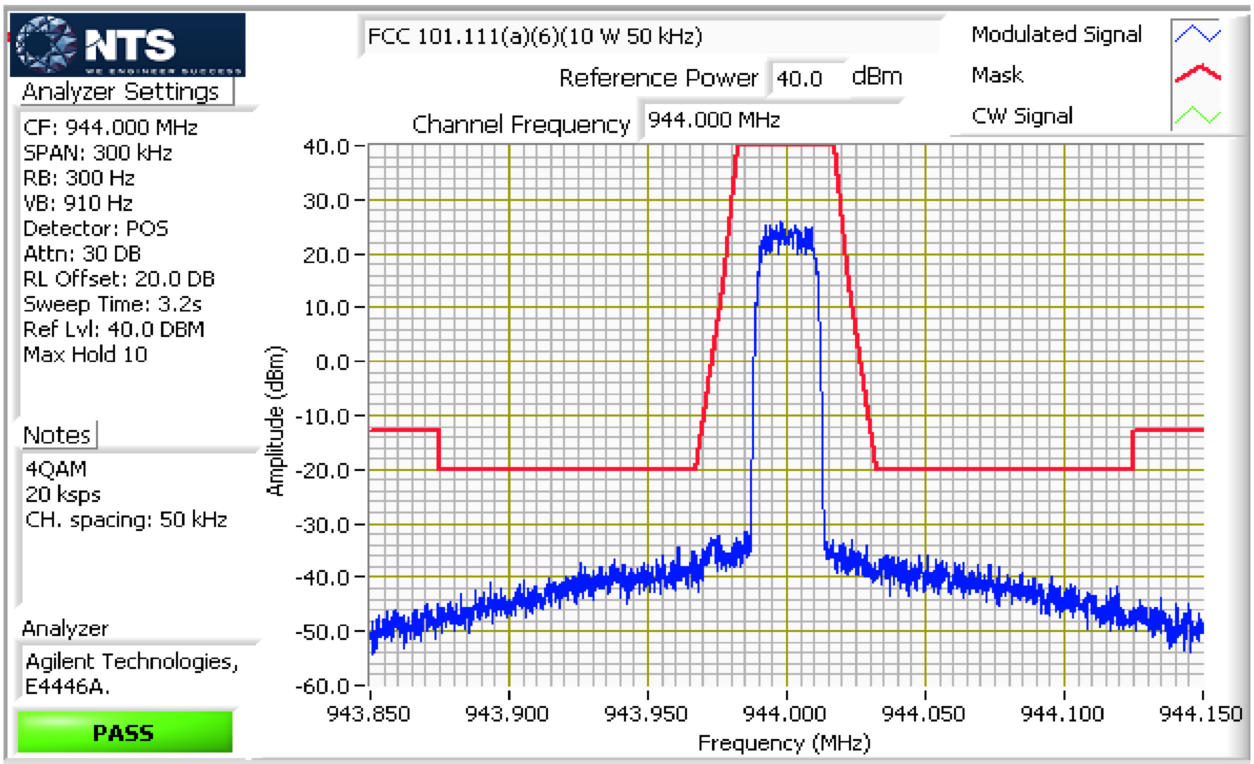
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 25 kHz channel spacing.



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

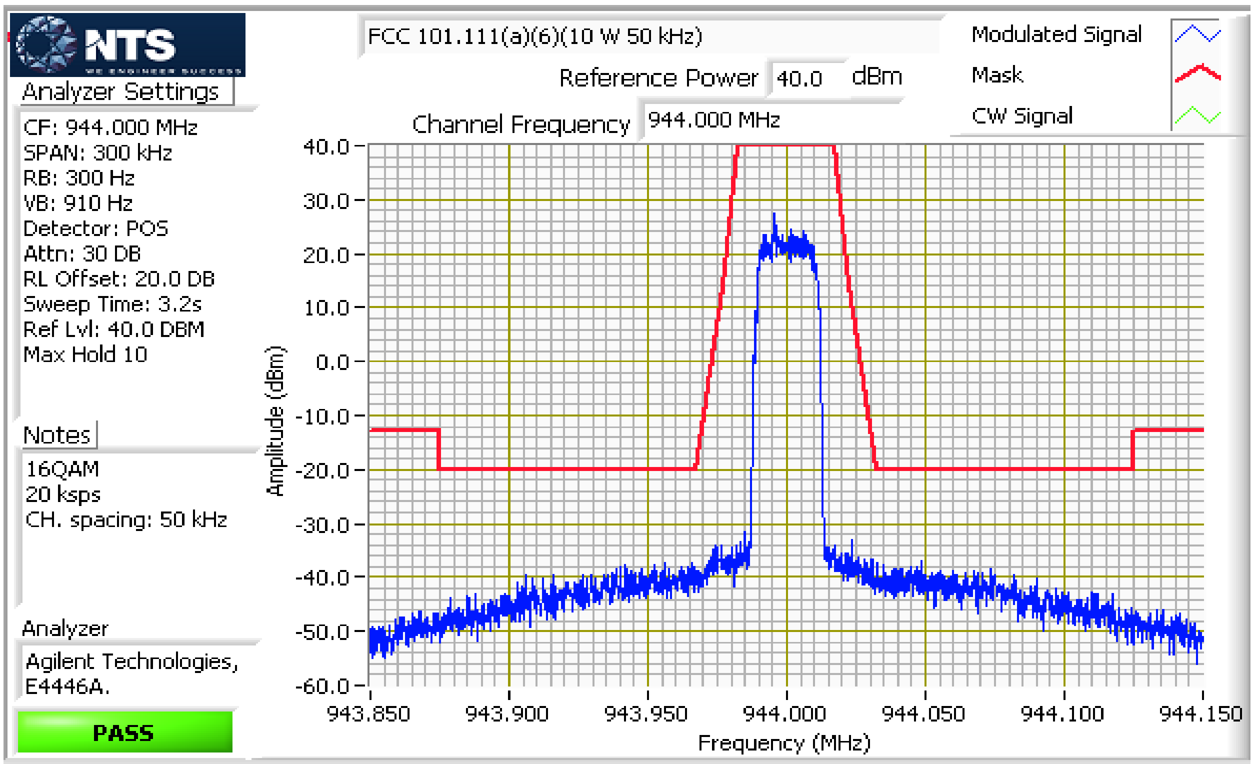
928 - 960 MHz, 50 kHz channel spacing.
FCC 101.147(b) and RSS-119 section 5.6 allow up to 50 kHz channels



The emissions mask does not result in more adjacent cahnnel interference than the narrower band mask in RSS-119 Table 1

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 50 kHz channel spacing.
FCC 101.147(b) and RSS-119 section 5.6 allow up to 50 kHz channels

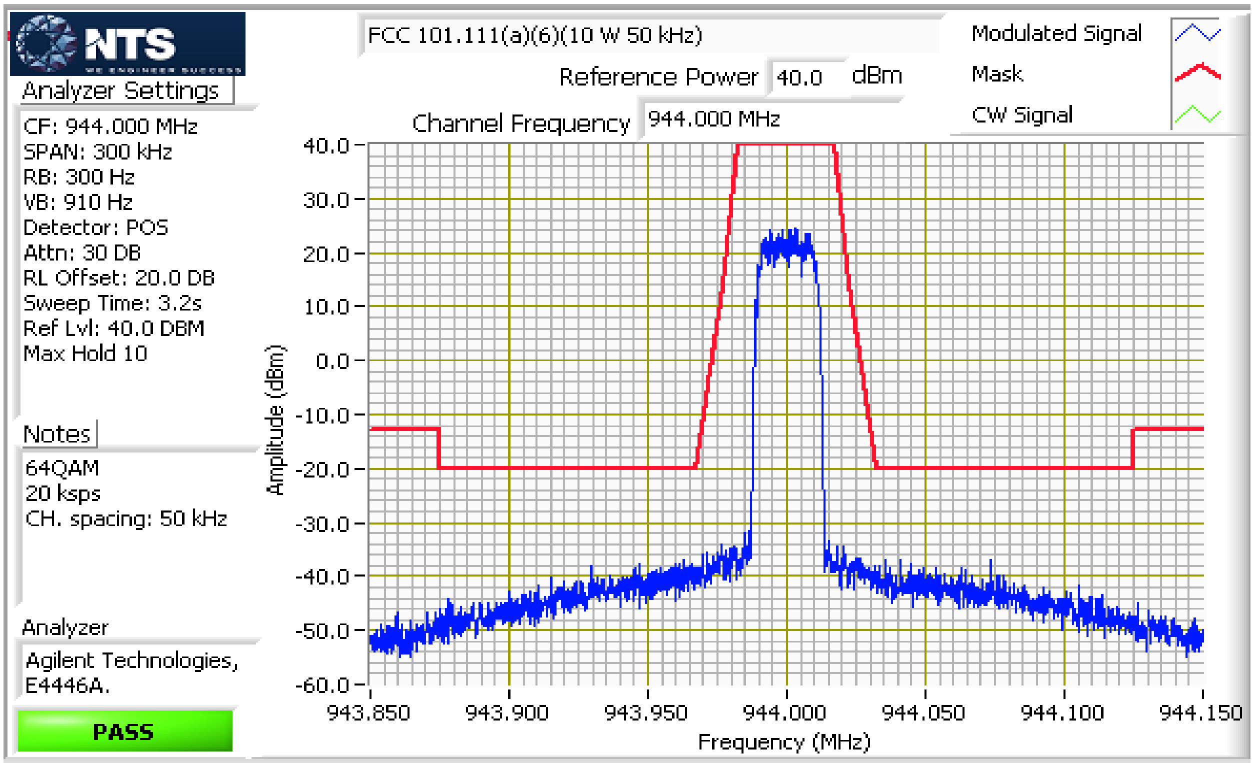


The emissions mask does not result in more adjacent cahnnel interference than the narrower band mask in RSS-119 Table 1

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 50 kHz channel spacing.

FCC 101.147(b) and RSS-119 section 5.6 allow up to 50 kHz channels



The emissions mask does not result in more adjacent cahnnel interference than the narrower band mask in RSS-119 Table 1

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

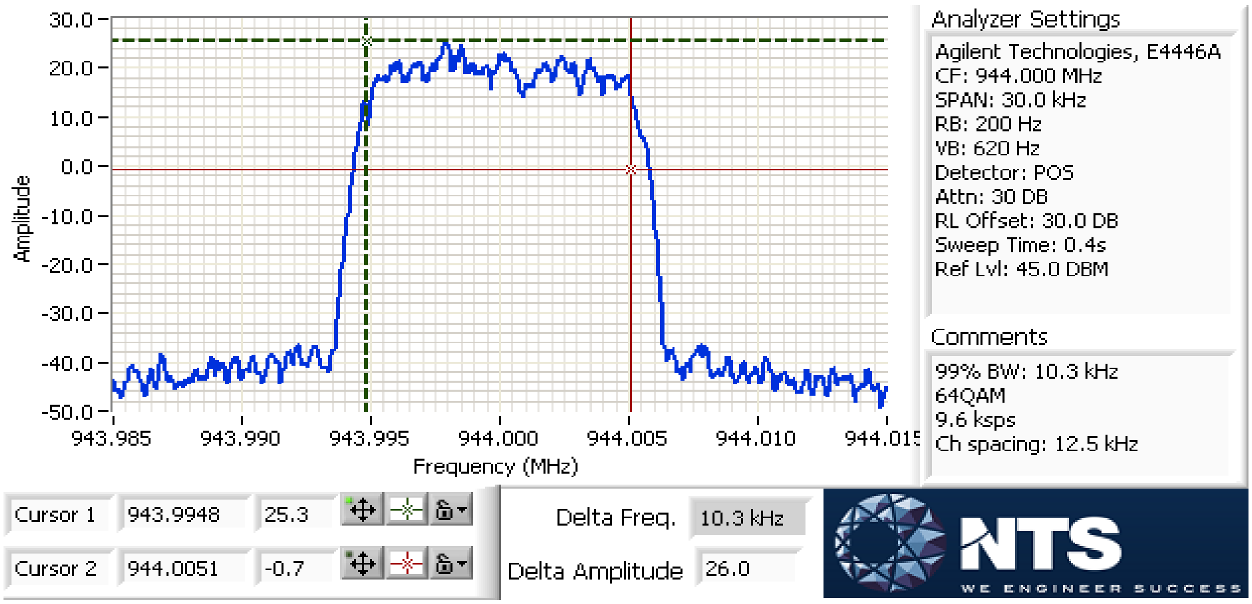
Run #3: Signal Bandwidth

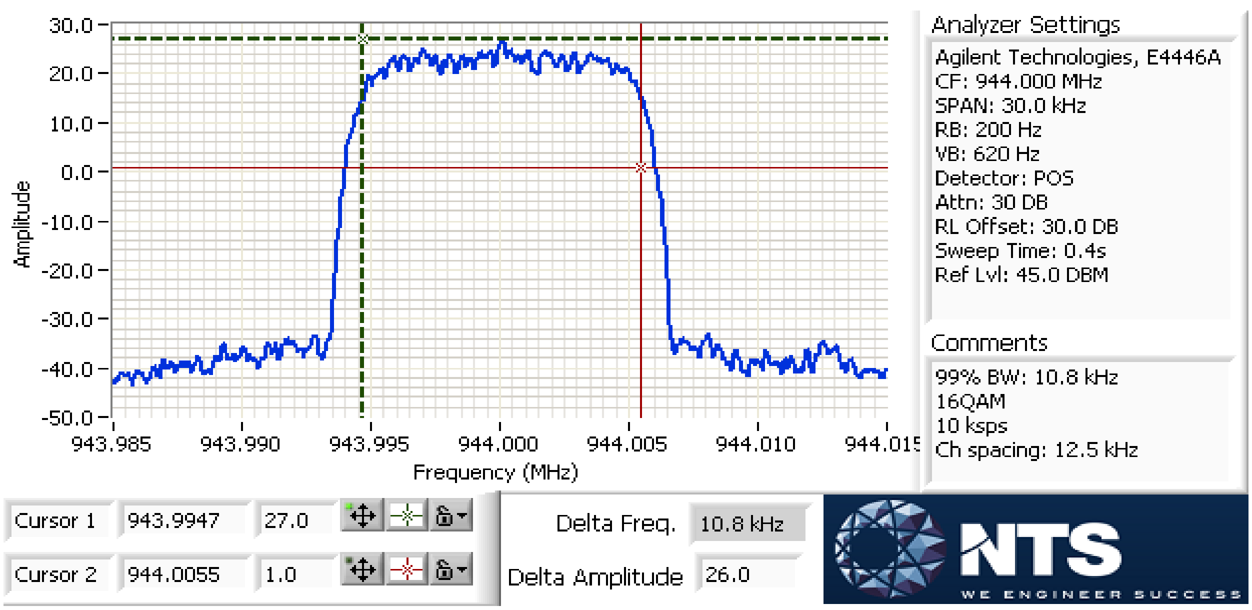
Date of Test: 10/28/2015
Test Engineer: Deniz Demirci
Test Location: FT Lab #4b
Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz)	
							99%
40 dBm	9.6 ksps	12.5 kHz	4QAM	944.0	200 Hz		10.3
40 dBm	9.6 ksps	12.5 kHz	16QAM	944.0	200 Hz		10.3
40 dBm	9.6 ksps	12.5 kHz	64QAM	944.0	200 Hz		10.3
40 dBm	10.0 ksps	12.5 kHz	4QAM	944.0	200 Hz		10.8
40 dBm	10.0 ksps	12.5 kHz	16QAM	944.0	200 Hz		10.8
40 dBm	10.0 ksps	12.5 kHz	64QAM	944.0	200 Hz		10.7
40 dBm	16.0 ksps	25.0 kHz	4QAM	944.0	200 Hz		17.1
40 dBm	16.0 ksps	25.0 kHz	16QAM	944.0	200 Hz		17.2
40 dBm	16.0 ksps	25.0 kHz	64QAM	944.0	200 Hz		17.1
40 dBm	20.0 ksps	50.0 kHz	4QAM	944.0	300 Hz		21.5
40 dBm	20.0 ksps	50.0 kHz	16QAM	944.0	300 Hz		21.5
40 dBm	20.0 ksps	50.0 kHz	64QAM	944.0	300 Hz		21.2

Note 1:	99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.

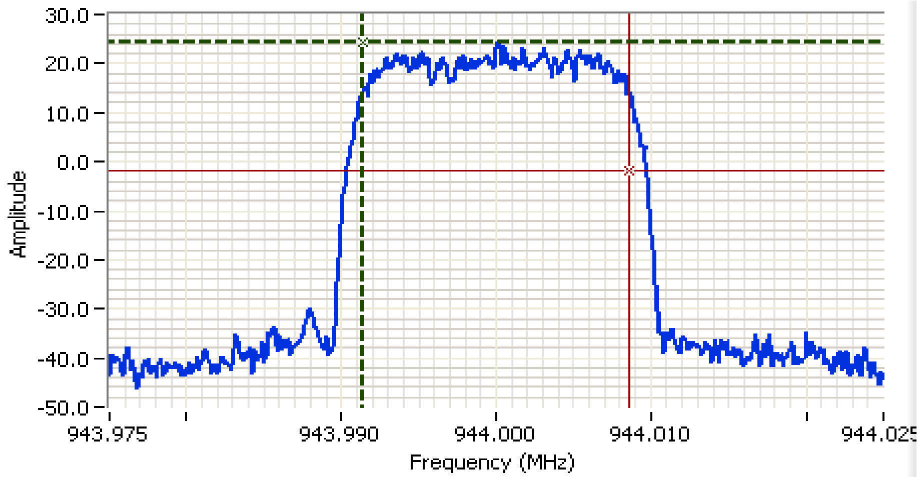
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A





EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

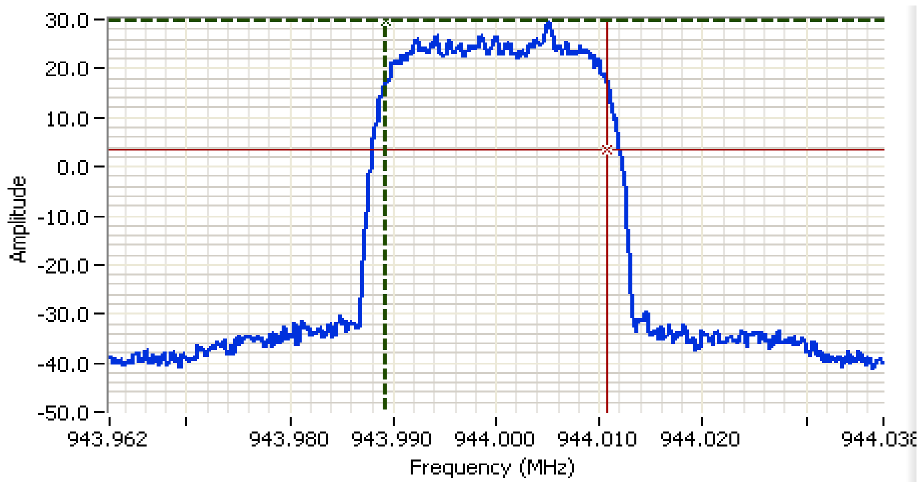


Analyzer Settings
Agilent Technologies, E4446A
CF: 944.000 MHz
SPAN: 50.0 kHz
RB: 200 Hz
VB: 620 Hz
Detector: POS
Attn: 30 DB
RL Offset: 30.0 DB
Sweep Time: 0.7s
Ref Lvl: 45.0 DBM

Comments
99% BW: 17.2 kHz
16QAM
16 ksps
Ch spacing: 25 kHz

Cursor 1	943.9914	24.2
Cursor 2	944.0086	-1.8

Delta Freq. 17.2 kHz
Delta Amplitude 26.0



Analyzer Settings
Agilent Technologies, E4446A
CF: 944.000 MHz
SPAN: 75.0 kHz
RB: 300 Hz
VB: 1.00 kHz
Detector: POS
Attn: 30 DB
RL Offset: 30.0 DB
Sweep Time: 0.8s
Ref Lvl: 45.0 DBM

Comments
99% BW: 21.5 kHz
4QAM
20 ksps
Ch spacing: 25 kHz

Cursor 1	943.9893	29.4
Cursor 2	944.0108	3.4

Delta Freq. 21.5 kHz
Delta Amplitude 26.0

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

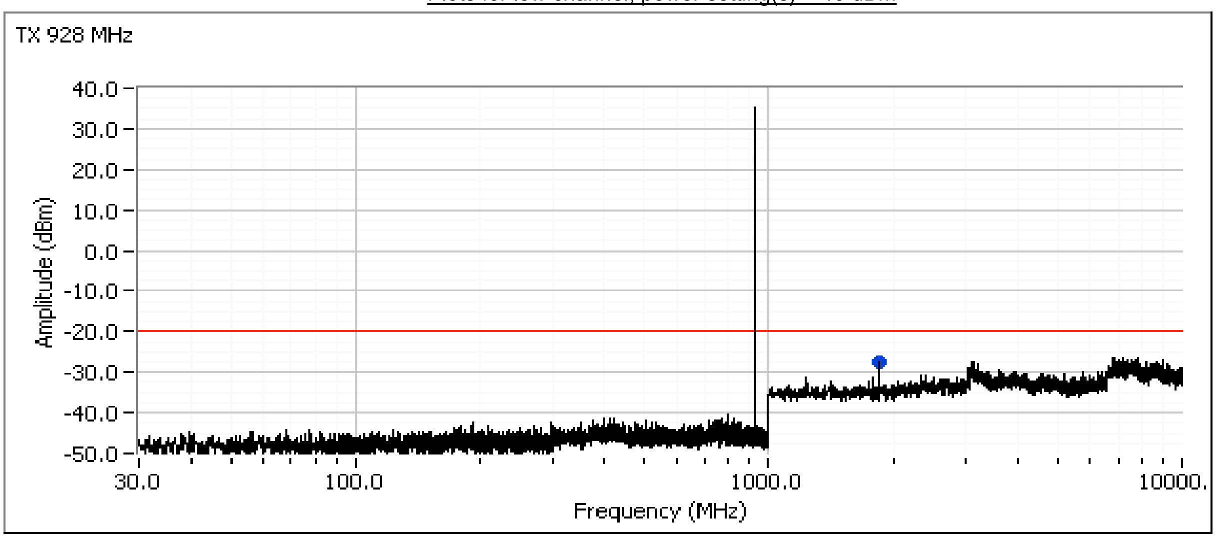
Run #4: Out of Band Spurious Emissions, Conducted

Date of Test: 12/11/2015
Test Engineer: David Bare
Test Location: Fremont Lab #4B
Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Frequency	Level	AC	FCC Part 90		Detector	Comments	Channel
MHz	dBμV	Line	Limit	Margin			MHz
1856.000	-27.7	RF Port	-20.0	-7.7	PK	PK (CISPR)-RB 1 MHz; VB: 3 MHz	928
1888.000	-28.3	RF Port	-20.0	-8.3	PK	PK (CISPR)-RB 1 MHz; VB: 8 MHz	944
1920.160	-25.5	RF Port	-20.0	-5.5	PK	PK (CISPR)-RB 1 MHz; VB: 8 MHz	960

The limit is taken from FCC Part 90 Mask D

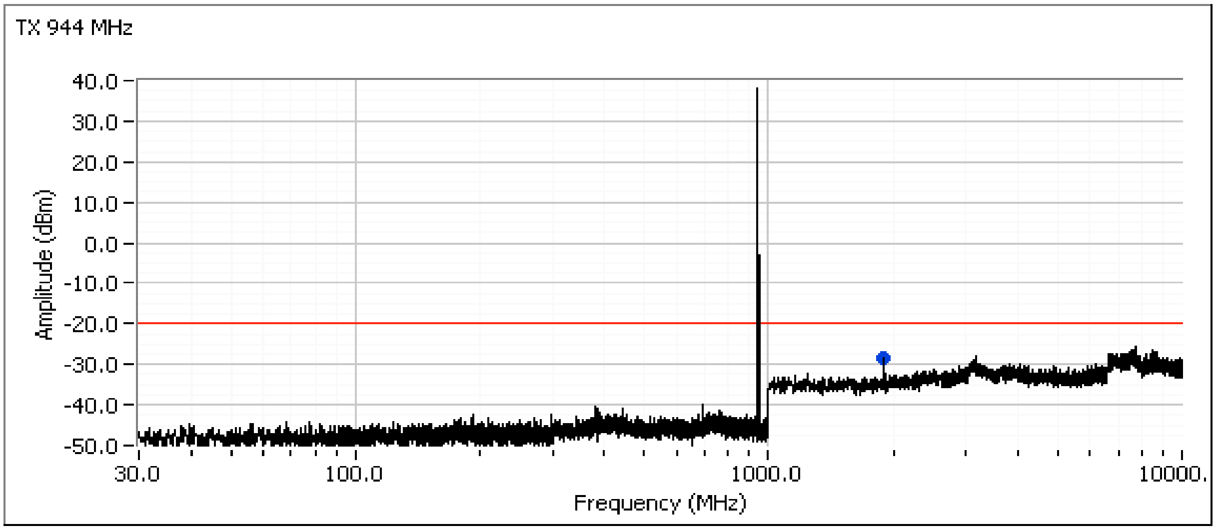
Plots for low channel, power setting(s) = 40 dBm



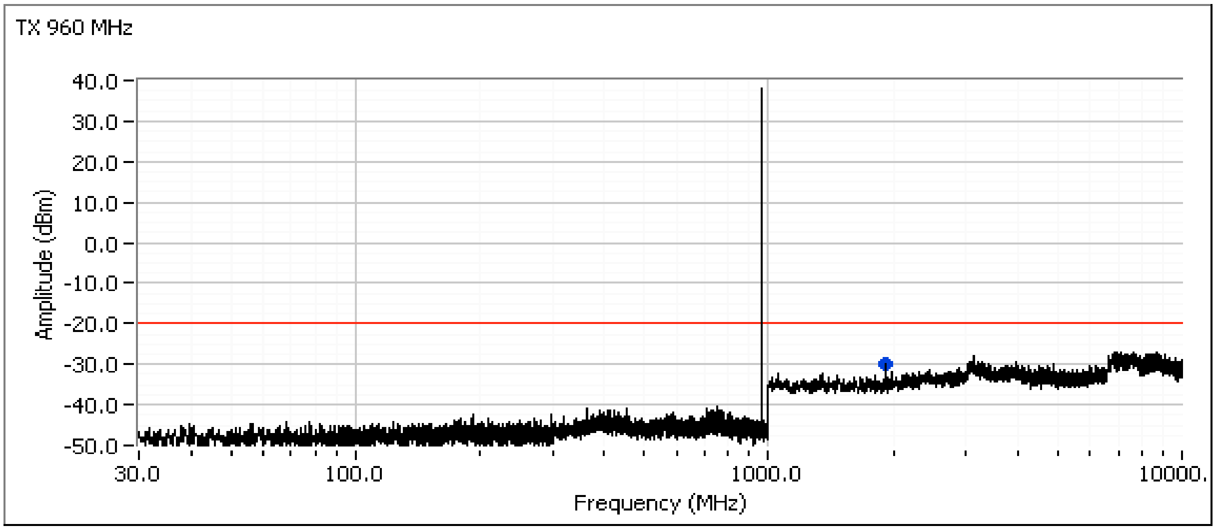
EMC Test Data

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plots for center channel, power setting(s) = 40 dBm



Plots for high channel, power setting(s) = 40 dBm



Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #5: Out of Band Spurious Emissions, Radiated

Conducted limit (dBm): -20
Approximate field strength limit @ 3m: 75.3

The limit is taken from FCC Part 90 Mask D

Run #5a - Preliminary measurements

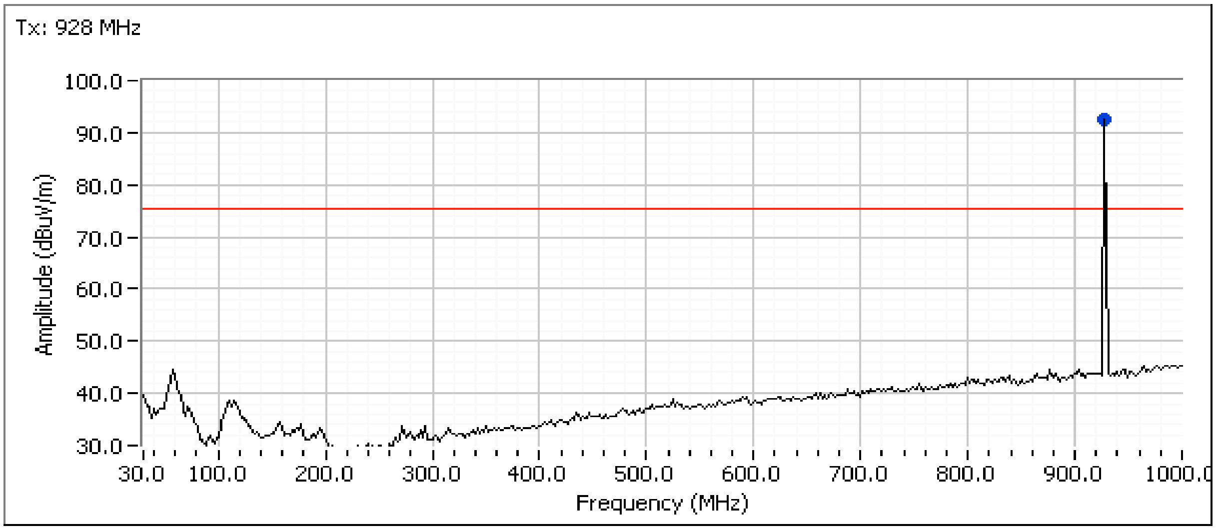
Date of Test: 12/14 & 12/15/2015
Test Engineer: Deniz Demirci & David Bare
Test Location: FT Ch #3
Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC and 5 VDC

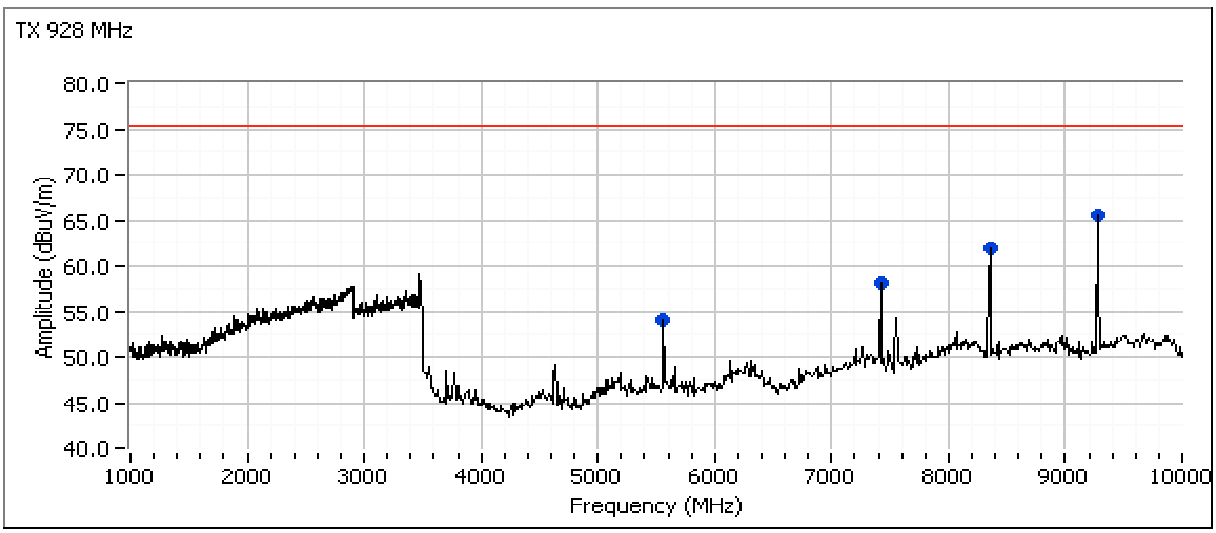
Frequency	Level	Pol	FCC Part 101		Detector	Azimuth	Height	Comments	Channel
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
928.000	92.4	H	-	-	PK	110	1.0	Carrier frequency	928.000
7424.000	58.1	V	75.3	-17.2	Peak	183	2.0		928.000
8352.000	61.9	V	75.3	-13.4	Peak	183	2.0		928.000
9280.000	65.6	V	75.3	-9.7	Peak	105	1.5		928.000
5568.000	54.0	V	75.3	-21.3	Peak	82	2.5		928.000
944.000	94.3	V	-	-	PK	174	1.5	Carrier frequency	944.000
7552.000	55.4	V	75.3	-19.9	Peak	354	2.5		
8496.000	66.3	H	75.3	-9.0	Peak	137	2.0		
9440.000	63.4	V	75.3	-11.9	Peak	225	2.5		
960.000	94.1	H	-	-	PK	89	2.5	Carrier frequency	960.000
9600.230	61.3	H	75.3	-14.0	PK	124	1.0	RB 1 MHz;VB 3 MHz;Pe	960.000
8639.870	68.0	H	75.3	-7.3	PK	223	1.9	RB 1 MHz;VB 3 MHz;Pe	960.000
7679.560	59.1	V	75.3	-16.2	PK	184	1.4	RB 1 MHz;VB 3 MHz;Pe	960.000
3840.040	54.2	V	75.3	-21.1	PK	43	2.0	RB 1 MHz;VB 3 MHz;Pe	960.000

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 20dB of margin relative to this field strength limit is determined using substitution measurements.
Note 2:	Measurements are made with the antenna port terminated.

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

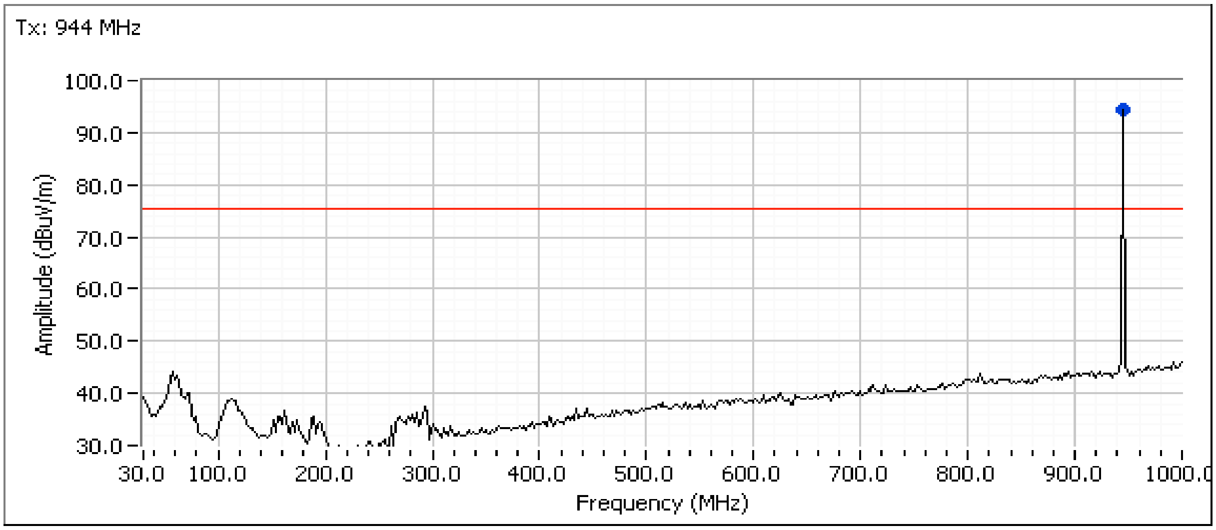
Plots for low channel, power setting(s) = 40 dBm

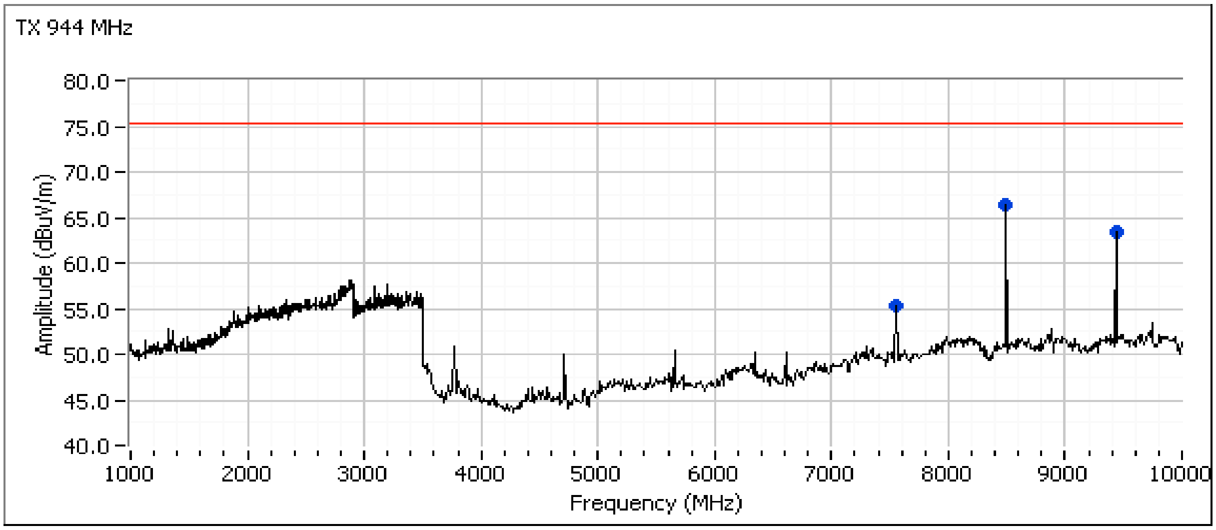




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

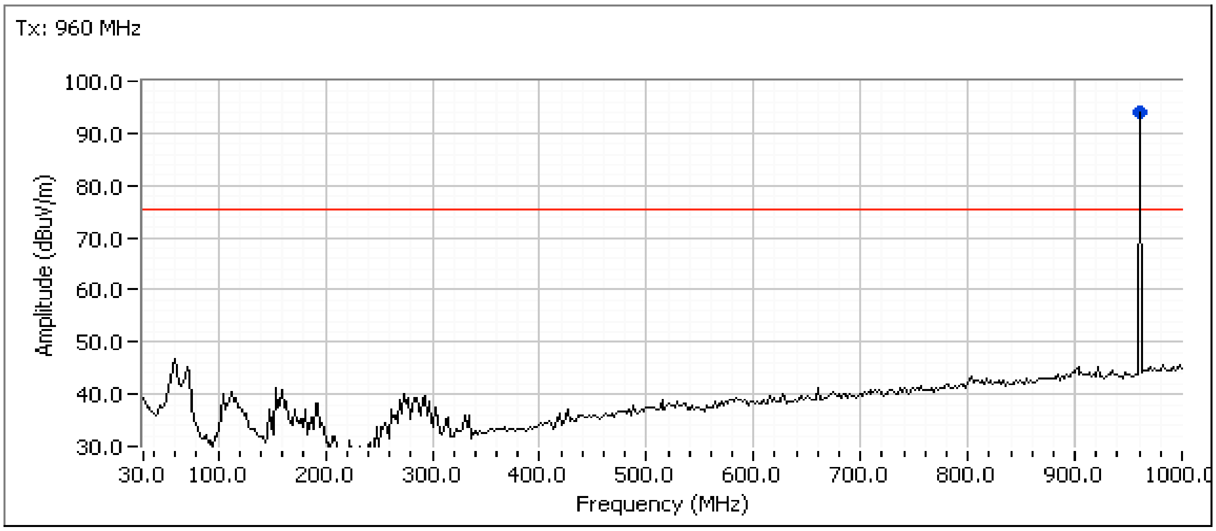
Plots for center channel, power setting(s) = 40 dBm

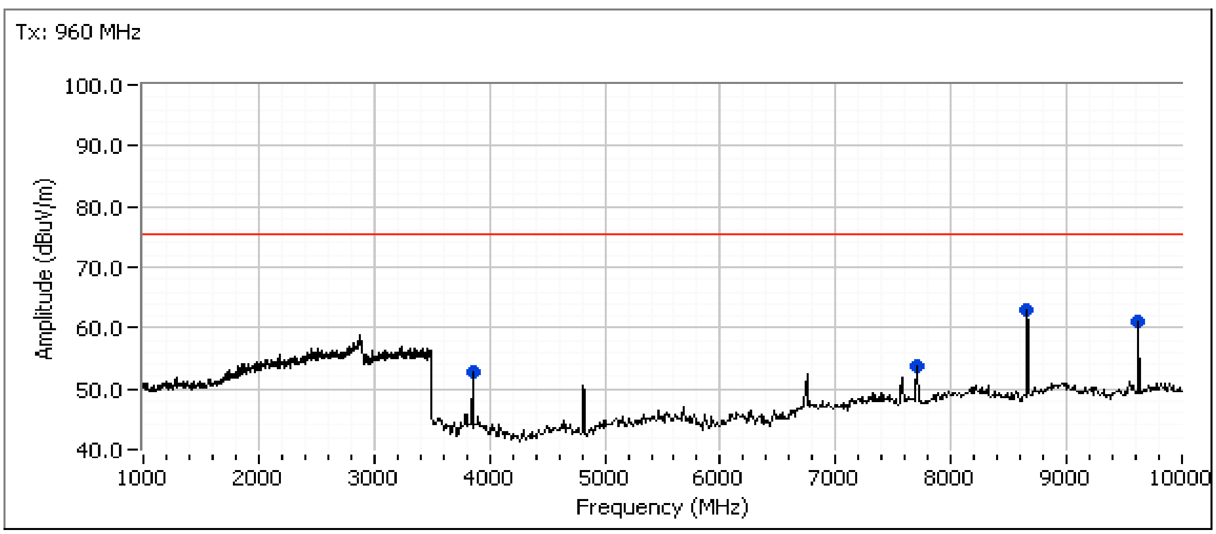




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Plots for high channel, power setting(s) = 40 dBm





Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #5b: - Final Field Strength and Substitution Measurements

Date of Test: 12/15/2015 Config. Used: 1
Test Engineer: David Bare Config Change: None
Test Location: Fremont Chamber #3 EUT Voltage: 13.8 VDC and 5 VDC

EUT Field Strength

Frequency	Level	Pol	FCC Part 101		Detector	Azimuth	Height	Comments	Channel
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
7424.050	58.2	V	75.3	-17.1	PK	184	1.8	RB 1 MHz;VB 3 MHz;Peak	928
8353.180	68.0	V	75.3	-7.3	PK	184	1.8	RB 1 MHz;VB 3 MHz;Peak	928
9278.720	67.7	V	75.3	-7.6	PK	102	1.6	RB 1 MHz;VB 3 MHz;Peak	928
5567.980	53.8	V	75.3	-21.5	PK	83	2.5	RB 1 MHz;VB 3 MHz;Peak	928
7551.920	60.5	V	75.3	-14.8	PK	355	2.5	RB 1 MHz;VB 3 MHz;Peak	944
9439.890	70.8	V	75.3	-4.5	PK	222	2.5	RB 1 MHz;VB 3 MHz;Peak	944
8494.760	66.6	H	75.3	-8.7	PK	135	2.0	RB 1 MHz;VB 3 MHz;Peak	944
9600.230	61.3	H	75.3	-14.0	PK	124	1.0	RB 1 MHz;VB 3 MHz;Peak	960
8639.870	68.0	H	75.3	-7.3	PK	223	1.9	RB 1 MHz;VB 3 MHz;Peak	960
7679.560	59.1	V	75.3	-16.2	PK	184	1.4	RB 1 MHz;VB 3 MHz;Peak	960
3840.040	54.2	V	75.3	-21.1	PK	43	2.0	RB 1 MHz;VB 3 MHz;Peak	960

Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: $E=\sqrt{(30PG)}/d$. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 20dB of margin relative to this field strength limit is determined using substitution measurements.
Note 2:	Measurements are made with the antenna port terminated.

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Substitution measurements

Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
8494.760	-40.1	10.9	66.6	95.8	66.6	-29.2	-31.4		-20.0	-11.4
8639.870	-40.1	10.6	66.2	95.7	68.0	-27.7	-29.9		-20.0	-9.9
9600.230	-40.2	11.8	67.6	96.0	61.3	-34.7	-36.9		-20.0	-16.9

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
7424.050	-40.0	10.1	67.1	97.0	58.2	-38.8	-41.0		-20.0	-21.0
7551.920	-40.0	10.6	67.6	97.0	60.5	-36.5	-38.7		-20.0	-18.7
7679.560	-40.0	10.7	67.6	96.9	59.1	-37.8	-40.0		-20.0	-20.0
8353.180	-40.1	11.1	67.4	96.4	68.0	-28.4	-30.6		-20.0	-10.6
9278.720	-40.2	11.4	68.0	96.8	67.7	-29.1	-31.3		-20.0	-11.3
9439.890	-40.2	11.5	68.1	96.8	70.8	-26.0	-28.2		-20.0	-8.2

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

Run #6: Frequency Stability

Date of Test: 10/28/2015
Test Engineer: Deniz Demirci
Test Location: FT Lab #4b

Config. Used: 1
Config Change: None
EUT Voltage: 13.8 VDC

Nominal Frequency: 937.50000 MHz

Frequency Stability Over Temperature

The EUT was soaked at each temperature for a minimum of 30 minutes prior to making the measurements to ensure the EUT and chamber had stabilized at that temperature.

Temperature	Frequency Measured	Drift	
(Celsius)	(MHz)	(Hz)	(ppm)
-30	937.500150	150	0.2
-20	937.500090	90	0.1
-10	937.500245	245	0.3
0	937.500096	96	0.1
10	937.499995	-5	0.0
20	937.500050	50	0.1
30	937.500250	250	0.3
40	937.500280	280	0.3
50	937.500280	280	0.3
	Worst case:	280	0.3

Frequency Stability Over Input Voltage

Nominal Voltage range is 11.8 - 52.2 Vdc.

Voltage	Frequency Measured	Drift	
(DC)	(MHz)	(Hz)	(ppm)
10	937.500060	60	0.1
60	937.500060	60	0.1
	Worst case:	60	0.3

Note 1: Maximum drift of fundamental frequency before it shut down at 9.2 Vdc is 57 Hz.

Client:	GE MDS LLC	Job Number:	JD101659
Product	LN900	T-Log Number:	T101706
System Configuration:	Module	Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Emissions Standard(s):	FCC Parts 90 and 101, RSS-119	Class:	-
Immunity Standard(s):	-	Environment:	Radio

EMC Test Data

For The

GE MDS LLC

Product

LN900

Date of Last Test: 5/26/2016

NTS
WE ENGINEER SUCCESS

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

RSS 119 and FCC Part 90
Power, 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

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.

Ambient Conditions:

Temperature: 20-22 °C
Rel. Humidity: 30-35 %

Summary of Results

Run #	Spacing	Data Rate	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	Determined at time of Licensing	Pass	40.8 dBm
2	12.5 kHz, 25.0 kHz	9.6 ksps 19.2 ksps	Spectral Mask	Mask D, G, J	Pass	Within mask
3	12.5 kHz, 25.0 kHz	9.6 ksps 19.2 ksps	99% or Occupied Bandwidth	11.25 kHz 20.0 kHz	Pass	10.2 kHz 15.4 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.

Notes

Part 90: 896-901MHz & 935-940MHz, 12.5 & 25 kHz channel spacings, 929-930MHz, 12.5 & 25 kHz channel spacings. RSS-119: 896-901MHz, 928-929 MHz, 931-935 MHz, 941-944 MHz, and 952-953 MHz, 12.5, 25 kHz channel spacings, 929-930 MHz and 931-932 MHz, 25 kHz channel spacing.
Target power: 10 Watts (40 dBm). 3-level FSK modulations; need to know rated power and tolerance which cannot exceed measured power. Power limits in § 90.205 (k), (m), § 90.635 & § 90.494
[1] FCC Part 90.213 (footnote 14) and RSS-119 Section 5.3 allow 1.5 ppm for control station operations.
Limited Modular approval

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

Run #1: Output Power

Date of Test: 23-May-16
Test Engineer: Deniz Demirci
Test Location: FT Lab #4

Config. Used: 1
Config Change: none
EUT Voltage: 13.8 VDC

Cable Loss: 0.0 dB
Cable ID(s): -

Attenuator: 20.0 dB
Attenuator IDs: 1878.0

Total Loss: 20.0 dB

FCC Part 90 & RSS-119

Power Setting[2]	Frequency (MHz)	Output Power (dBm)[1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP dBm	EIRP W
40 dBm	896.0	40.5	11220.2	16.5	Pass	57.0	501.187
40 dBm	901.0	40.5	11220.2	16.5	Pass	57.0	501.187
40 dBm	929.0	40.6	11481.5	16.5	Pass	57.1	512.861
40 dBm	930.0	40.6	11481.5	16.5	Pass	57.1	512.861
40 dBm	935.0	40.6	11481.5	16.5	Pass	57.1	512.861
40 dBm	940.0	40.7	11749.0	16.5	Pass	57.2	524.807

RSS-119 only

Power Setting[2]	Frequency (MHz)	Output Power (dBm)[1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP dBm	EIRP W
40 dBm	941.0	40.7	11749.0	16.5	Pass	57.2	524.807
40 dBm	944.0	40.8	12022.6	16.5	Pass	57.3	537.032
40 dBm	952.5	40.8	12022.6	16.5	Pass	57.3	537.032

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.

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

Run #2: Spectral Mask, FCC Part 90 Masks C, G for 929-930 MHz and J for 896-901 MHz and 935-940 MHz
RSS-119 Mask J for 12.5 KHz channels (896-901 MHz and 935-940 MHz), Mask D for 12.5 kHz channels in all other bands and Mask G for 25 kHz channels

Date of Test: 5/23, 5/24, 5/26/2016
Test Engineer: Deniz Demirci
Test Location: FT Lab #4

Config. Used: 1
Config Change: none
EUT Voltage: 13.8 VDC

Note 1: Peak power measurements were used as a spectral mask power reference.

Run #2a: Spectral Mask for 896 - 901 & 935-940 MHz bands (FCC Part 90 and RSS-119)

Power setting	Data rate	Channel BW	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	9.6 ksps	12.5 kHz	3-level FSK	898.00625	J	Pass
40 dBm	19.2 ksps	25.0 kHz	3-level FSK	898.00625	J	Pass
40 dBm	19.2 ksps	25.0 kHz	3-level FSK	898.00625	G	Pass

Run #2b: Spectral Mask at 928 - 929, 929 - 930, 932-944 & 952-953 MHz bands (RSS-119)

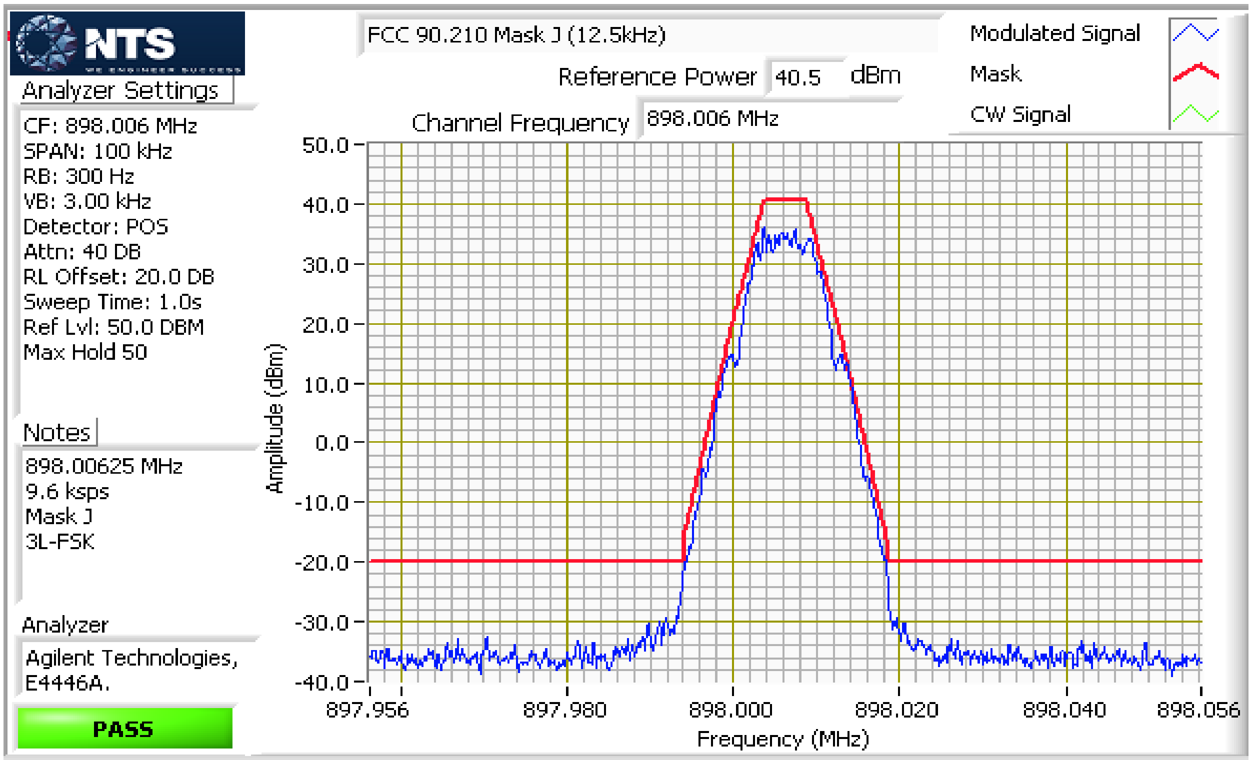
Power setting	Data rate	Channel BW	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	9.6 ksps	12.5 kHz	3-level FSK	929.00000	D	Pass
40 dBm	19.2 ksps	25.0 kHz	3-level FSK	929.00000	G	Pass

Run #2c: Spectral Mask at 929 - 930 MHz band (FCC Part 90)

Power setting	Data rate	Channel BW	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	9.6 ksps	12.5 kHz	3-level FSK	929.48750	G	Pass

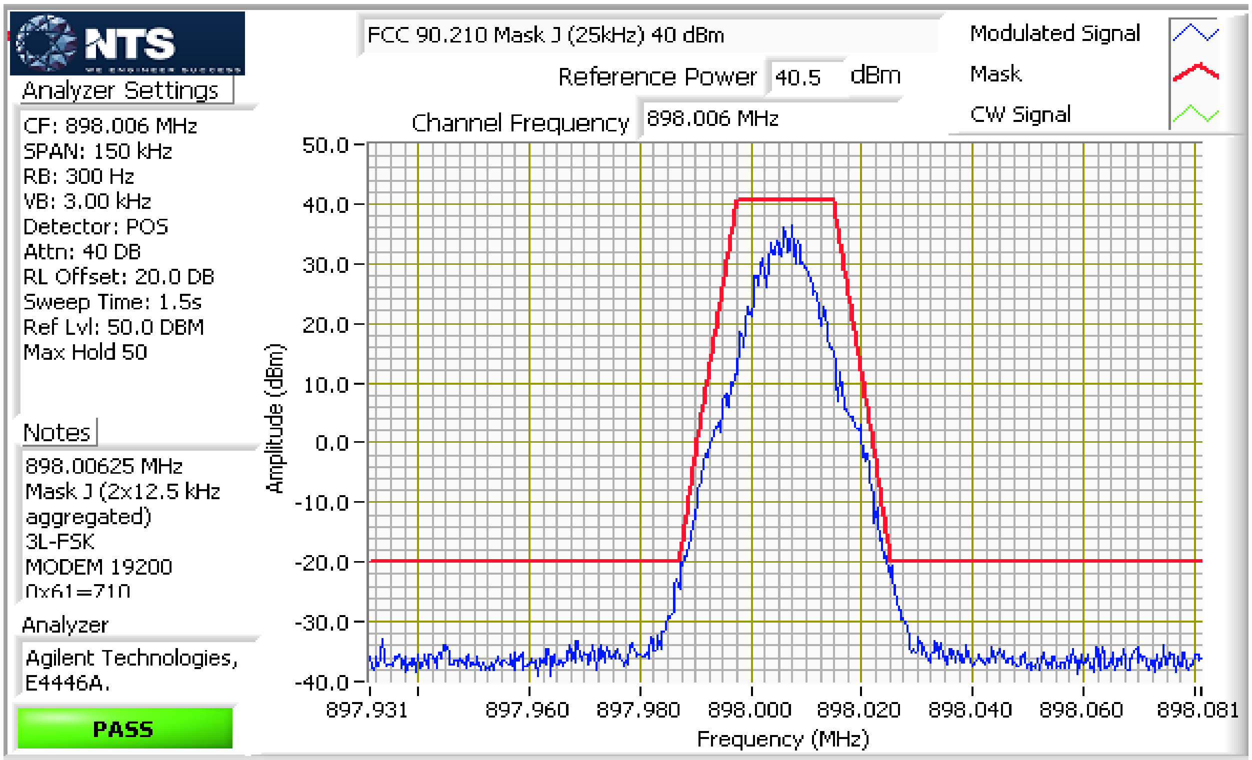
EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

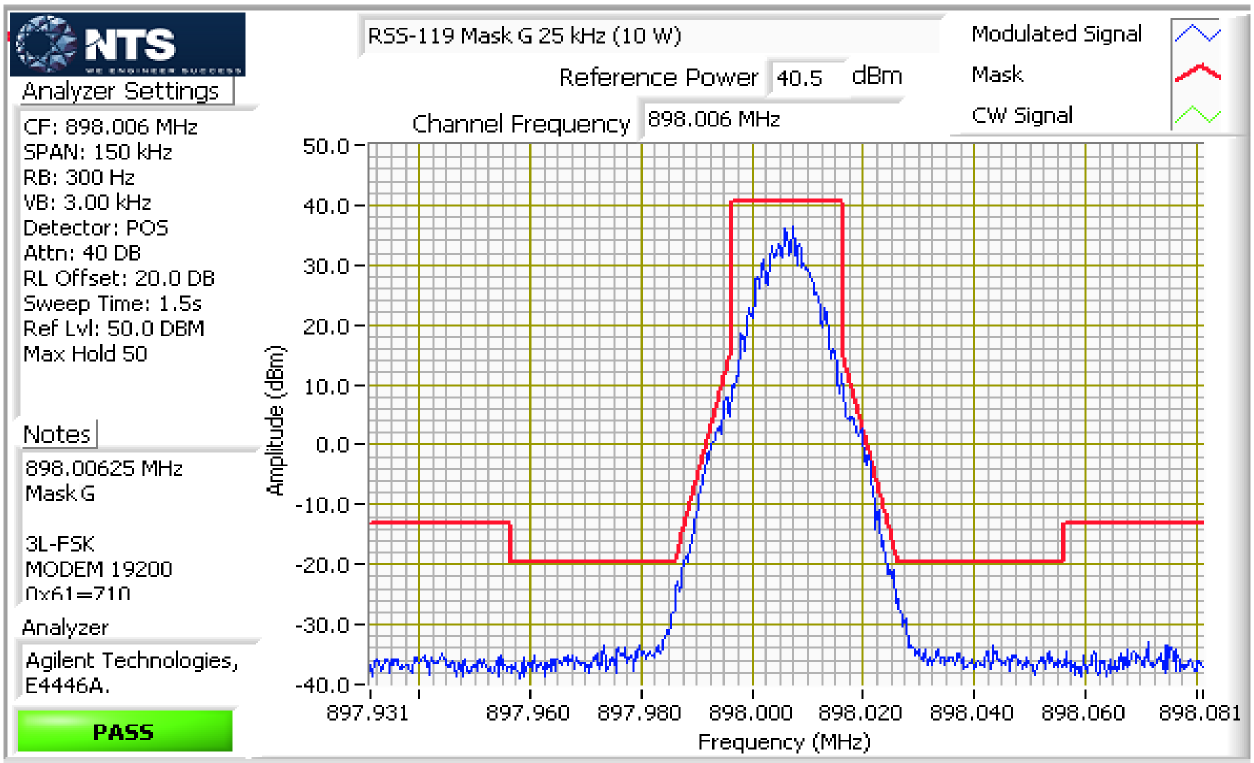


EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

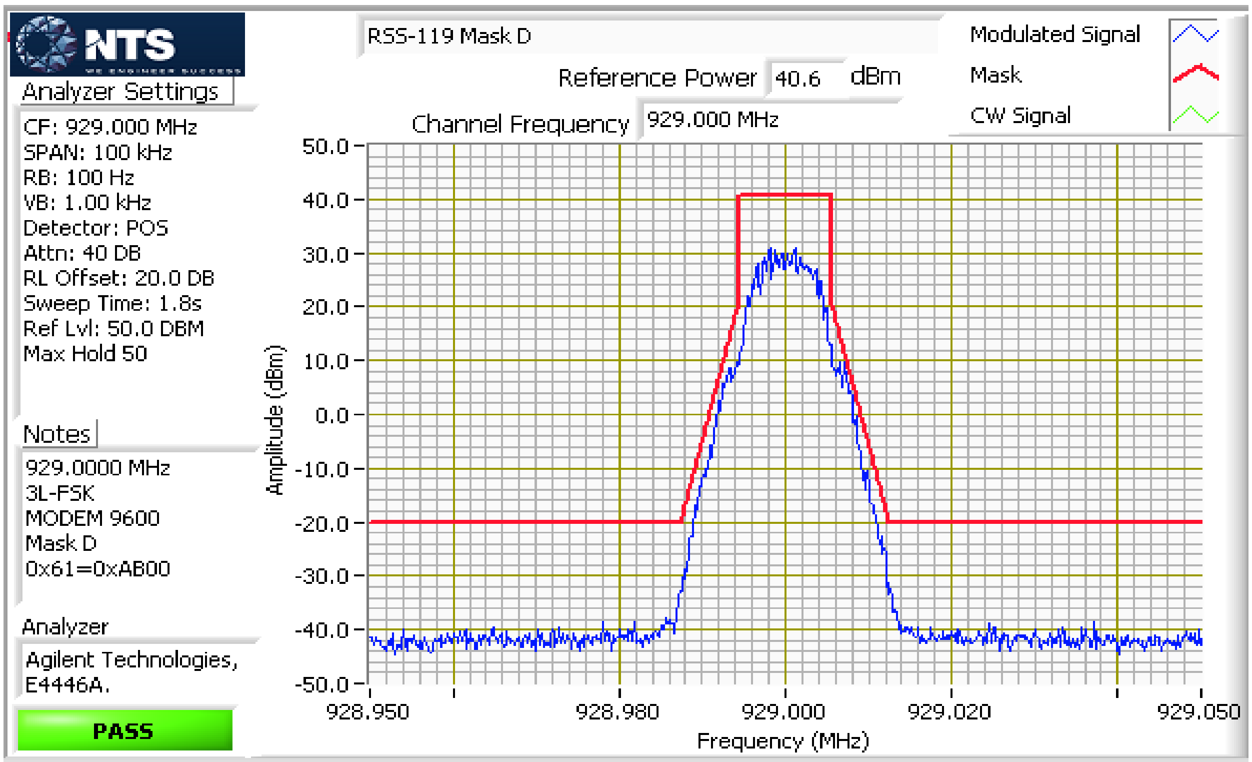


Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

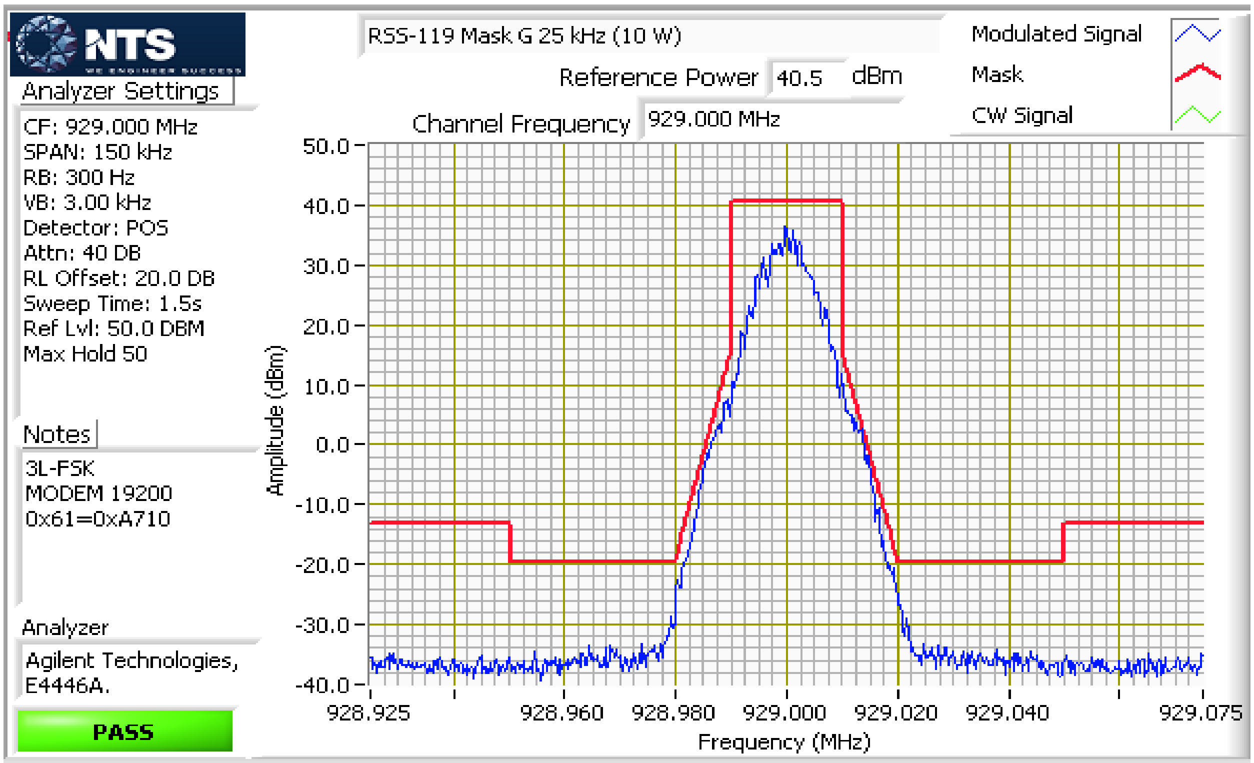


EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

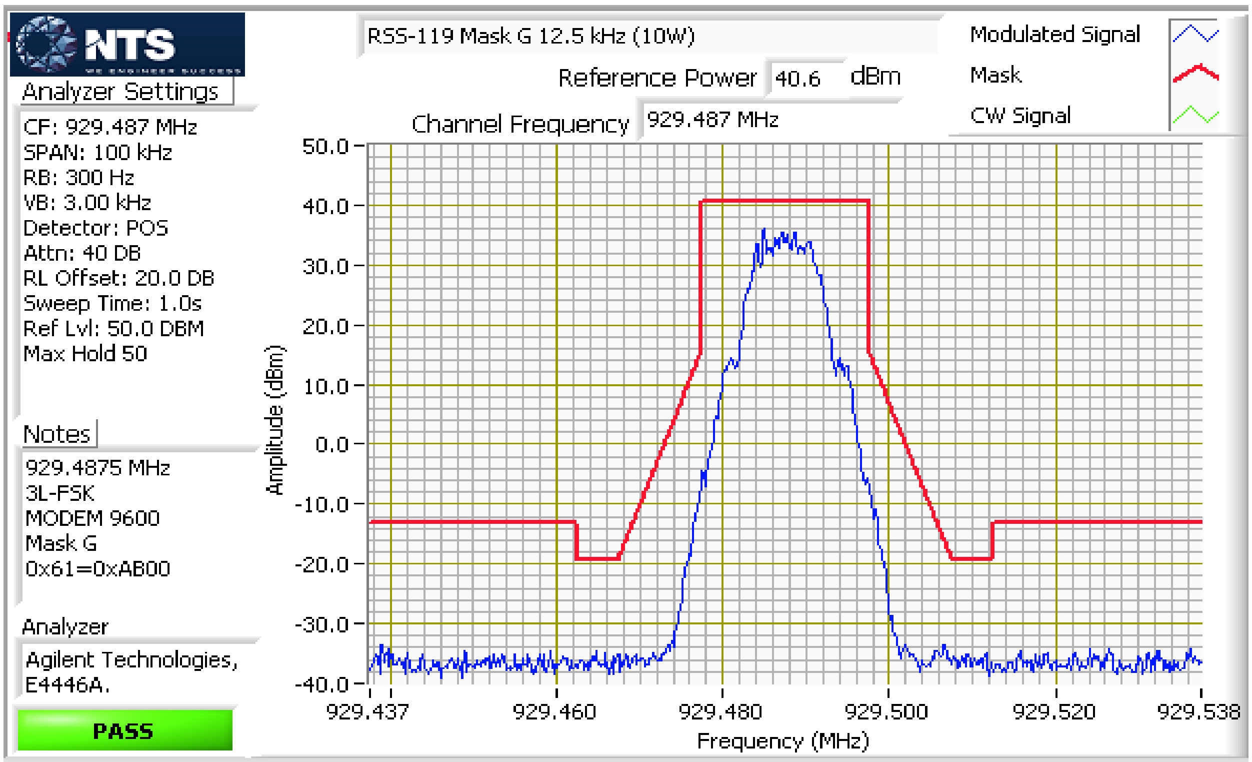


Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A



Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

Run #3: Signal Bandwidth

Date of Test: 23-May-16
Test Engineer: Deniz Demirci
Test Location: FT Lab #4

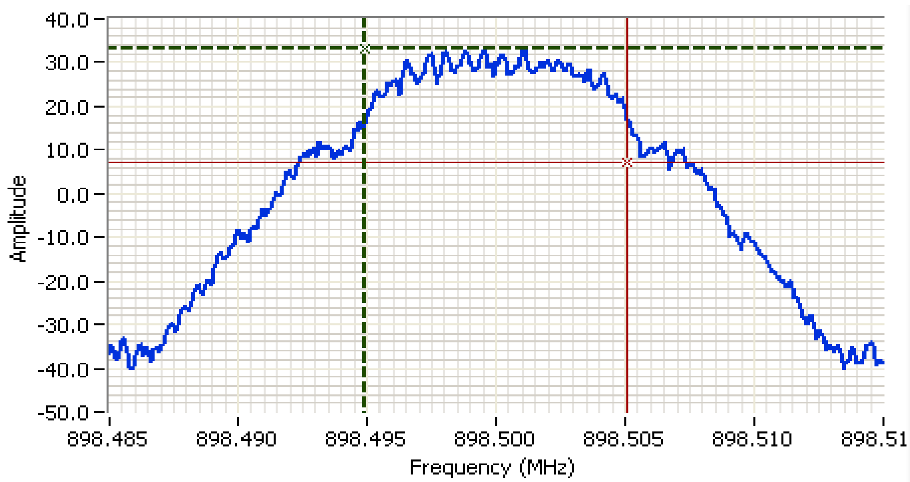
Config. Used: 1
Config Change: none
EUT Voltage: 13.8 VDC

Power Setting	Data rate	Channel BW	Modulation	Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz)	
							99%
40 dBm	9.6 ksps	12.5 kHz	3-level FSK	898.5	200		10.2
40 dBm	19.2 ksps	25.0 kHz	3-level FSK	898.5	300		15.4

Note 1: 99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A



Analyzer Settings

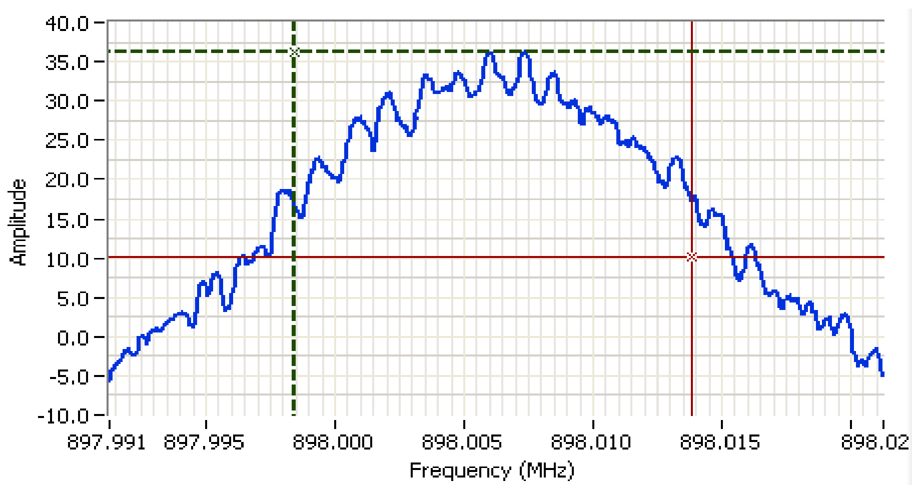
Agilent Technologies, E4446A
CF: 898.500 MHz
SPAN: 30.0 kHz
RB: 200 Hz
VB: 3.00 kHz
Detector: POS
Attn: 40 DB
RL Offset: 20.0 DB
Sweep Time: 0.4s
Ref Lvl: 50.0 DBM

Comments

99% power BW: 10.2 kHz
3L-FSK, MODEM 9600,
0x61=0xAB00

Cursor 1	898.4949	33.3
Cursor 2	898.5051	7.3

Delta Freq. 10.2 kHz
Delta Amplitude 26.0



Analyzer Settings

Agilent Technologies, E4446A
CF: 898.006 MHz
SPAN: 30.0 kHz
RB: 300 Hz
VB: 3.00 kHz
Detector: POS
Attn: 40 DB
RL Offset: 20.0 DB
Sweep Time: 307.7ms
Ref Lvl: 50.0 DBM

Comments

99% power BW: 15.4 kHz
3L-FSK, MODEM 19200,
0x61=0x710

Cursor 1	897.9984	36.2
Cursor 2	898.0138	10.2

Delta Freq. 15.4 kHz
Delta Amplitude 26.0

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

FCC Part 101

Power, Occupied Bandwidth, Frequency Stability and Spurious Emissions

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

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.

Ambient Conditions:

Temperature: 20-22 °C

Rel. Humidity: 30-35 %

Summary of Results

Run #	Spacing	Data Rate	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	Determined at time of Licensing	Pass	40.7 dBm
2	12.5 kHz, 25.0 kHz	9.6 ksps 19.2 ksps	Spectral Mask	Part 101.111(a)(5) Part 101.111(a)(6)	Pass	Within mask
3	12.5 kHz, 25.0 kHz	9.6 ksps 19.2 ksps	99% or Occupied Bandwidth	12.5, 25.0 and 200 kHz	Pass	10.2 kHz 15.4 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:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

Run #1: Output Power

Date of Test: 23-May-16
Test Engineer: Deniz Demirci
Test Location: FT Lab #4

Config. Used: 1
Config Change: none
EUT Voltage: 13.8 VDC

Cable Loss: 0.0 dB
Cable ID(s): -

Attenuator: 20.0 dB
Attenuator IDs: 1878

Total Loss: 20.0 dB

Power Setting[2]	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP	
		(dBm) [1]	mW			dBm	W
40 dBm	928.0	40.5	11220.2	16.5	Pass	57.0	501.187
40 dBm	944.0	40.6	11481.5	16.5	Pass	57.1	512.861
40 dBm	960.0	40.7	11749.0	16.5	Pass	57.2	524.807

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:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

Run #2: Spectral Mask, FCC Part 101.111(a)(5) and 101.111(a)(6)

Date of Test: 5/24 & 5/26/2016
Test Engineer: Deniz Demirci
Test Location: FT Lab #4

Config. Used: 1
Config Change: none
EUT Voltage: 13.8 VDC

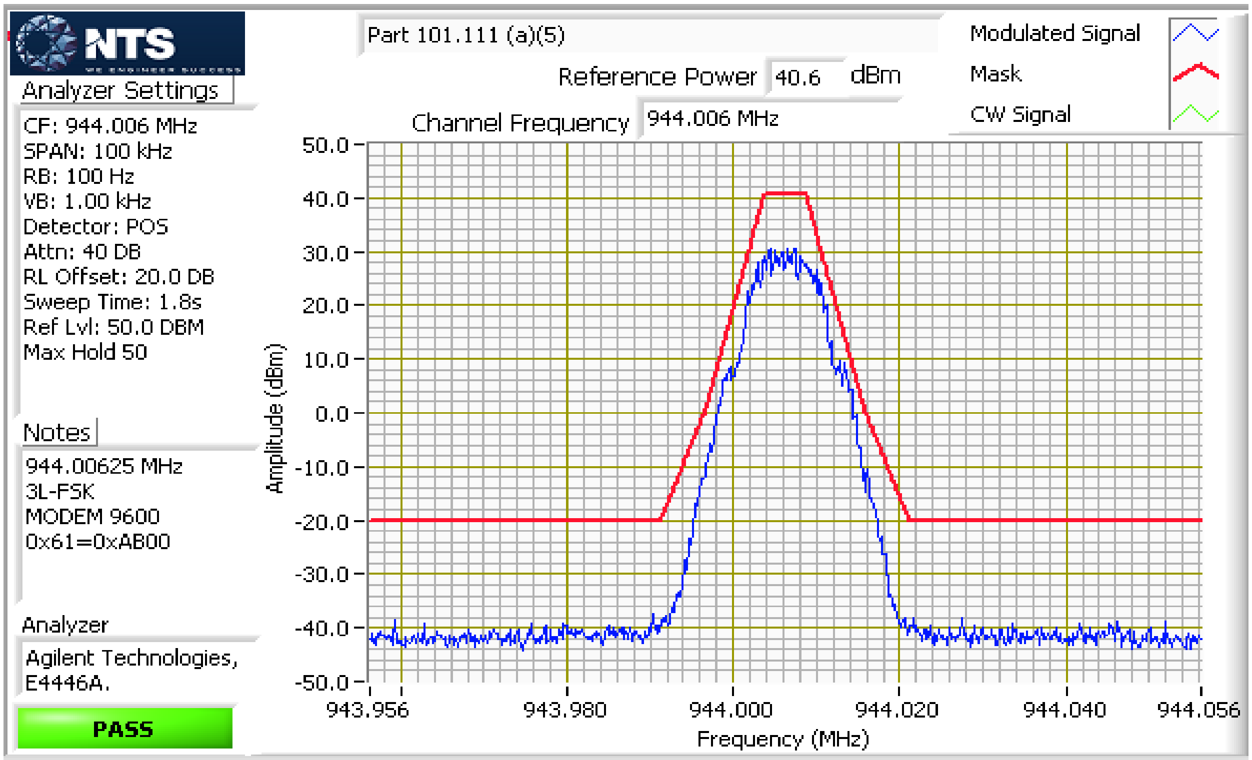
Note 1: EUT does not transmit unmodulated carrier with full power setting. The measured power levels (using peak power meter) are higher than the declared nominal power for every channel frequency. Nominal 40 dBm reference power level used for spectral mask measurements as worst case results.

Spectral Mask at 928 - 960 MHz band (FCC Part 101)

Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	9.6 ksps	12.5 kHz	3-level FSK	944.00625	101.111(a)(5)	Pass
40 dBm	19.2 ksps	25.0 kHz	3-level FSK	944.00625	101.111(a)(6)	Pass

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

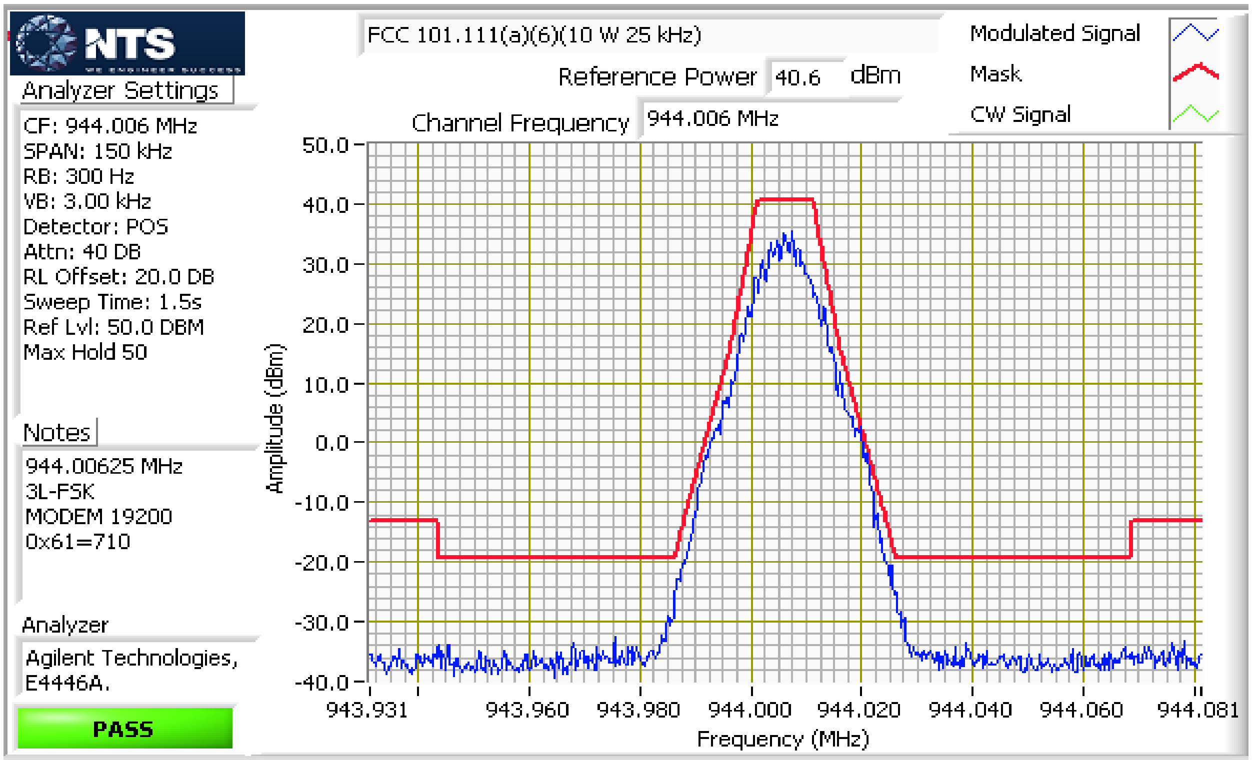
928 - 960 MHz, 12.5 kHz channel spacing.



EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 25 kHz channel spacing.



Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A

Run #3: Signal Bandwidth

Date of Test: 5/23 & 5/26/2016
Test Engineer: Deniz Demirci
Test Location: FT Lab #4

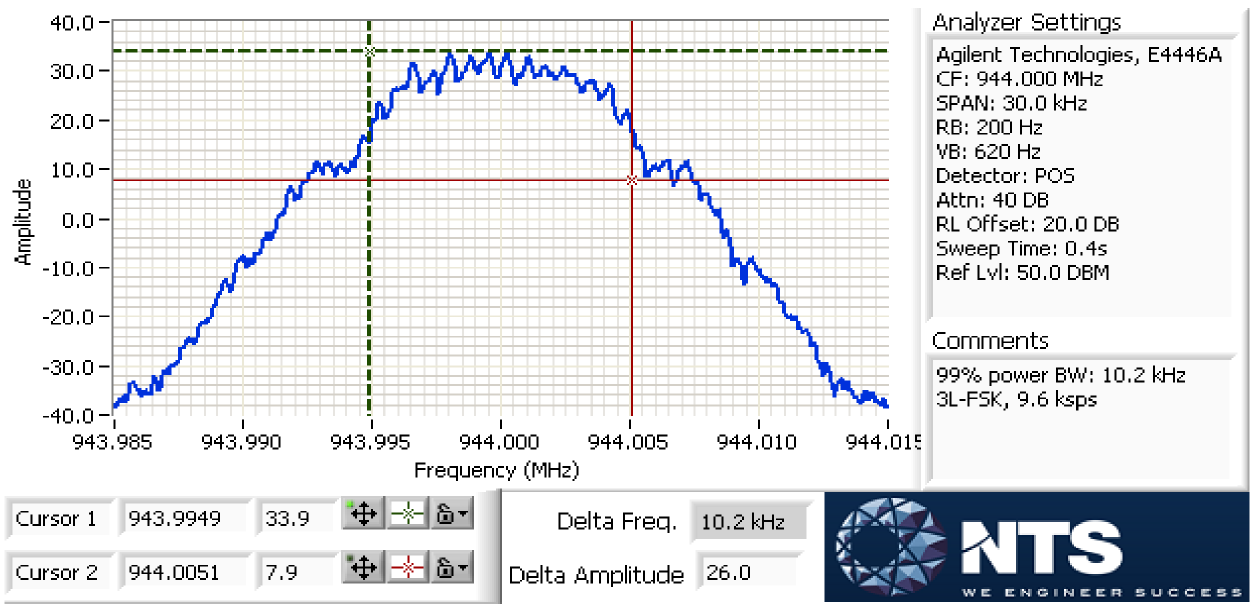
Config. Used: 1
Config Change: none
EUT Voltage: 13.8 VDC

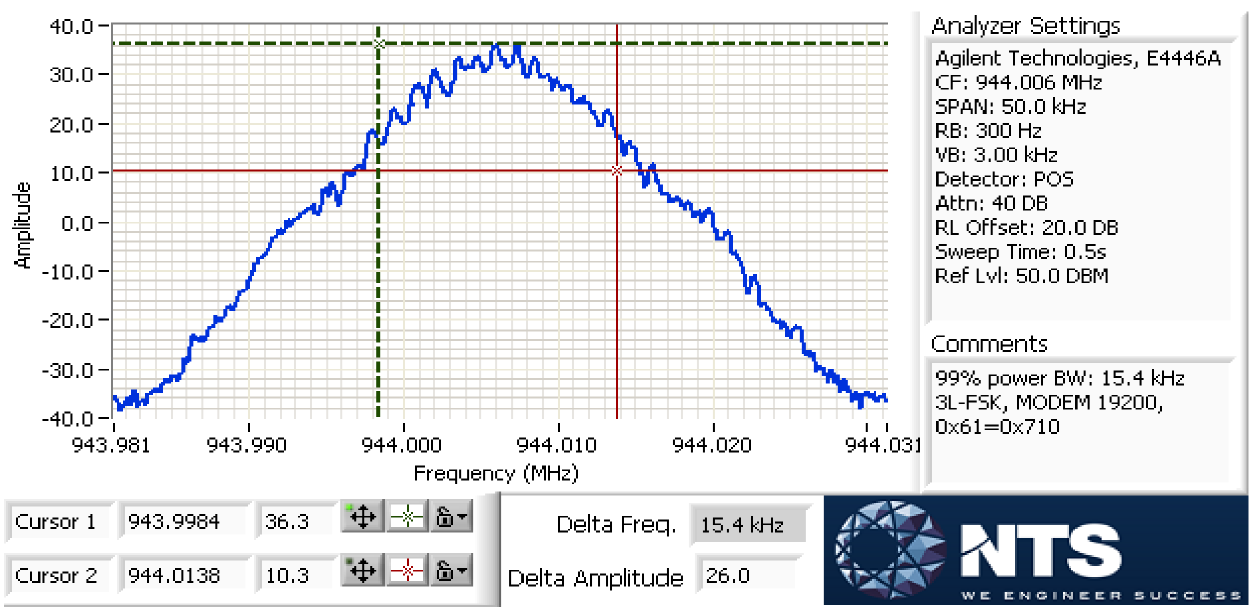
Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Resolution Bandwidth	Bandwidth (kHz)	
							99%
40 dBm	9.6 ksps	12.5 kHz	3-level FSK	944.0	200 Hz		10.2
40 dBm	19.2 ksps	25.0 kHz	3-level FSK	944.0	300 Hz		15.4

Note 1: 99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.

EMC Test Data

Client:	GE MDS LLC	Job Number:	JD101659
Model:	LN900	T-Log Number:	T101706
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 90 and 101, RSS-119	Class:	N/A





End of Report

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