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Radio Test Report

FCC Part 90
896-901 MHz, 929-930 MHz & 935-940 MHz
FCC Part 101
928-960 MHz
and RSS-119
896-901MHz, 928-929 MHz, 931-935 MHz, 941-944 MHz, & 952-953 MHz

Model: LN900

COMPANY:	GE MDS LLC 175 Science Parkway Rochester, NY 14620
TEST SITE(S):	National Technical Systems - Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
REPORT DATE:	January 7, 2016
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FINAL TEST DATES:	October 26, 27, 28, 29 and 30, November 30, December 11, 14, 15, 16, 21 and 22, 2015
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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	January 7, 2016	First release	
1	January 20, 2016	Revised Part 90 frequency stability notation	David Bare

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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 Industry Canada.

- Code of Federal Regulations (CFR) Title 47 Part 2
- RSS-Gen Issue 4, November 2014
- CFR 47 Part 90 (Private Land Mobile Radio Service) Subparts P and S
- RSS-119, Issue 12, May 2015 (Land Mobile and Fixed Equipment Operating in the Frequency Range 27.41-960 MHz)

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

ANSI C63.4:2014
ANSI TIA-603-D

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

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

The test results recorded herein are based on a single type test of the GE MDS LLC model LN900 and therefore apply only to the tested sample. The sample was selected and prepared by Bill Yochum 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 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	40.8 dBm	100 Watts (50 dBm)	Complied
§2.1033 (c) (4) § 2.1047 § 90.210		Emission types	D1D	-	-
		Emission mask	Complied with mask	Masks D, G and J	Complied
		Occupied Bandwidth	5.19, 10.3, 10.8 and 17.2kHz	13.6 & 20 kHz	Complied
§ 2.1049 § 90.209		Occupied Bandwidth	5.19, 10.3, 10.8 and 17.2kHz	11.25 & 20 kHz	Complied
Transmitter spurious emissions					
§ 2.1051 § 2.1057		At the antenna terminals	-27.3 dBm @ 1858.9 MHz	-20.0 dBm	Complied
§ 2.1053 § 2.1057		Field strength	-24.6 dBm @ 9319.6 MHz	-20 dBm	Complied
Receiver spurious emissions					
15.109		At the antenna terminals	-69.5 dBm	< 1GHz: 2nW > 1GHz: 5nW	Complied
15.109		Field strength	31.4 dBµV/m @ 33.90 MHz (-8.6 dB)	See limit table on page 20	Complied
Other details					
§ 2.1055 § 90.213		Frequency stability	0.3 ppm	1.5[1] 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:
1 - FCC Part 90.213 (footnote 14) allows 1.5 ppm for control station operations.

RSS-119

Canada		Description	Measured	Limit	Result
Transmitter Modulation, output power and other characteristics					
RSS-119		Frequency range(s)	896-901 MHz, 935-940 MHz, 928-930 MHz, 931-935 MHz, 952-953 MHz, 941-944 MHz	896-901 MHz, 935-940 MHz, 928-930 MHz, 931-935 MHz, 952-953 MHz, 941-944 MHz	Complied
RSS-119, 5.4SRSP 504, -505, -506, & -507		RF power output at the antenna terminals	40.8 dBm	30 Watts (44.8 dBm)	Complied
RSS-119, 5.8		Emission types	D1D	-	-
		Emission mask	Complied with mask	Masks D, G and J	Complied
RSS-119, 5.5	896-901/935-940 MHz	Occupied Bandwidth	5.19, 10.3 and 10.8 kHz	13.6 kHz	Complied
RSS-119, 5.5	929-930 and 931-932 MHz	Occupied Bandwidth	5.19, 10.3, 10.8 and 17.2kHz	20 kHz	Complied
RSS-119, 5.5	All other bands	Occupied Bandwidth	5.19, 10.3, 10.8 and 17.2kHz	11.25 & 20 kHz	Complied
Transmitter spurious emissions					
RSS-119, 5.8		At the antenna terminals	-27.3 dBm @ 1858.9 MHz	-20.0 dBm	Complied
RSS-119, 5.8		Field strength	-24.6 dBm @ 9319.6 MHz	-20.0 dBm	Complied
Other details					
RSS-119, 5.3		Frequency stability	0.3 ppm[1]	0.1, 1.0, 1.5 and 2.5 ppm depending on frequency assignment	Complied
RSS-102		RF Exposure	See separate exhibit		Complied
-		Antenna Gain	Up to 16.5 dBi		

Notes:
1 – RSS-119 section 5.3 allows 1.5 ppm for 896-901/935/940 MHz control station operations.

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	40.9 dBm	-	-
§2.1033 (c) (6) §2.1033 (c) (7) § 2.1046 § 101.113		EIRP	40.9 dBm to 57.4 dBm	44 to 70 dBm	Complied
§2.1033 (c) (4) § 2.1047 § 101.111		Emission types	D1D		
		Emission mask	Within Mask	101.111(a)(5) or (a)(6)	Complied
§ 2.1049 § 101.109 § 101.147		Occupied Bandwidth	10.3, 10.8, 17.2, 21.5 kHz	12.5, 25 and 50 KHz	Complied
Transmitter spurious emissions					
§ 2.1051 § 2.1057 § 101.111		At the antenna terminals	-25.5 dBm	-20 dBm	Complied
§ 2.1053 § 2.1057 § 101.111		Field strength	-28.2 dBm @ 9439.9 MHz	-20 dBm	Complied
Receiver spurious emissions					
15.109		At the antenna terminals	-69.5 dBm	< 1GHz: 2nW > 1GHz: 5nW	Complied
15.109		Field strength	31.4 dBµV/m @ 33.90 MHz (-8.6 dB)	See limit table on page 20	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					

EXTREME CONDITIONS

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

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 90 and 101 and RSS-119 using 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 10-60 Volts DC.
The sample was received on October 26, 2015 and tested on October 26, 27, 28, 29 and 30, November 30, December 11, 14, 15, 16, 21 and 22, 2015. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
GE MDS LLC	LN900	Radio module	2690226 1412472	E5MDS-LN900
GE MDS LLC	LN900	Radio module	2629713 1080206	E5MDS-LN900

OTHER EUT DETAILS

The following EUT details should be noted: IC: 101D-LN900.

ENCLOSURE

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

MODIFICATIONS

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

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Agilent	E3610A	Power Source	MY40001912	None
EOS	LFZVC36FS12D	AC Adapter	E01-A-N329-1369	None

The following equipment was used as remote support equipment for emissions testing:

Company	Model	Description	Serial Number	FCC ID
HP	ProBook 6570b	Laptop	None	None
Cisco	SD2005	Ethernet Switch	DNI145303V1	None

EUT INTERFACE PORTS

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

Port		Cable(s)		
From	To	Description	Shielded/Unshielded	Length(m)
Interface board serial	Laptop via serial to USB	Cat 5	Unshielded	7
Interface board Ethernet	Remote Switch	Cat 5	Shielded	15

EUT OPERATION

During emissions testing the EUT was set to receive at the selected frequency.

TESTING

GENERAL INFORMATION

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

Radiated spurious emissions measurements were taken at the National Technical Systems - Silicon Valley Anechoic Chambers and/or Open Area Test Site(s) listed below. The sites conform to the requirements of ANSI C63.4: 2003 *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 16-1-4:2007 - *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 industry Canada.

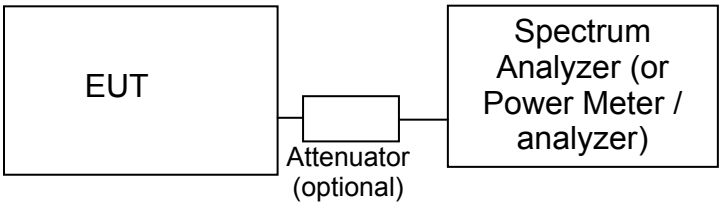
Site	Designation / Registration Numbers		Location
	FCC	Canada	
Chamber 3	US0027	IC 2845B-3	41039 Boyce Road Fremont, CA 94538-2435
Chamber 4	US0027	IC 2845B-4	
Chamber 5	US0027	IC 2845B-5	
Chamber 7	US0027	IC 2845B-7	

In the case of Open Area Test Sites, ambient levels are at least 6 dB below the specification limits with the exception of predictable local TV, radio, and mobile communications traffic.

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

RF PORT MEASUREMENT PROCEDURES

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



Test Configuration for Antenna Port Measurements

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

OUTPUT POWER

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

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

BANDWIDTH MEASUREMENTS

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

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.

TRANSIENT FREQUENCY BEHAVIOR:

The TIA/EIA 603 procedure is used to determine compliance with transient frequency timing requirements as the radio is keyed on and off.

The EUTs rf output is connected via a combiner/splitter to the test receiver/spectrum analyzer and to a diode detector. The test receiver or spectrum analyzer video output is connected to an oscilloscope, which is triggered by the output from the diode detector.

Plots showing Ton, T1, and T2 are made when turning on the transmitter and showing T3 when turning off the transmitter.

RADIATED EMISSIONS MEASUREMENTS

Receiver radiated spurious emissions measurements are made in accordance with ANSI ANSI C63.4:2003 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 centimeters above the floor. Floor mounted equipment is placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. 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 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

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 *SAMPLE CALCULATIONS –RADIATED FIELD STRENGTH*).

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.

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS-210 Table 2, RSS-GEN Table 1 and RSS-310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

Appendix A Test Equipment Calibration Data

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Antenna port measurements, 26-Oct-15					
NTS	NTS Mask Software (rev 3.8)	N/A	0		N/A
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
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	3/31/2015	3/31/2016
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
Radiated Emissions, 1,000 - 10,000 MHz, 29-Oct-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	10/17/2015	10/17/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/27/2014	6/27/2016
Micro-Tronics	High Pass Filter 2700 MHz	HPM50111	2326	3/19/2015	3/19/2016
Radiated Emissions, 30 - 1,000 MHz, 29-Oct-15					
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
Radio Antenna Port (Masks), 30-Nov-15					
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/22/2015	6/22/2016
Radiated Emissions, 30 - 10,000 MHz, 30-Nov-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
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	1561	6/27/2014	6/27/2016
Radio Antenna Port (Masks and Spurious Emissions), 11-Dec-15					

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
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
Radiated Emissions, 1,000 - 10,000 MHz, 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	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 3.5 GHz	P/N 84300-80038	1157	7/10/2015	7/10/2016
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
Substitutions, 16-Dec-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	10/12/2015	10/12/2016
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	5/2/2015	5/2/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	2733	11/18/2014	11/18/2016
Radiated Emissions, 30 - 3,000 MHz, 21-Dec-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/27/2014	6/27/2016
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
Com-Power	Preamplifier, 30-1000 MHz	PA-103	2465	9/1/2015	9/1/2016

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Conducted Emissions - AC Power Ports, 22-Dec-15					
EMCO	LISN, 10 kHz-100 MHz	3825/2	1292	7/24/2015	7/24/2016
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	6/2/2015	6/2/2016
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	5/14/2015	5/14/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	6/20/2015	6/20/2016

Appendix B Test Data

T99783 Pages 25 – 118

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.

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 Config. Used: 1

Test Engineer: Deniz Demirci Config Change: None

Test Location: Fremont Lab #6 EUT Voltage: 13.8 VDC

Cable Loss: 0.0 dB Attenuator: 30.0 dB Total Loss: 30.0 dB

Cable ID(s): None Attenuator IDs: Asset #1878 + #2097

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 Config. Used: 1
Test Engineer: Deniz Demirci & David Bare Config Change: None
Test Location: Fremont Lab #6 & #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.

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	G	Pass
40 dBm	16.0 ksps	25.0 kHz	16QAM	898.5	G	Pass
40 dBm	16.0 ksps	25.0 kHz	64QAM	898.5	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	D	Pass
40 dBm	9.6 ksps	12.5 kHz	16QAM	928.5	D	Pass
40 dBm	9.6 ksps	12.5 kHz	64QAM	928.5	D	Pass
40 dBm	10.0 ksps	12.5 kHz	4QAM	928.5	D	Pass
40 dBm	10.0 ksps	12.5 kHz	16QAM	928.5	D	Pass
40 dBm	10.0 ksps	12.5 kHz	64QAM	928.5	D	Pass
40 dBm	16.0 ksps	25.0 kHz	4QAM	928.5	G	Pass
40 dBm	16.0 ksps	25.0 kHz	16QAM	928.5	G	Pass
40 dBm	16.0 ksps	25.0 kHz	64QAM	928.5	G	Pass

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

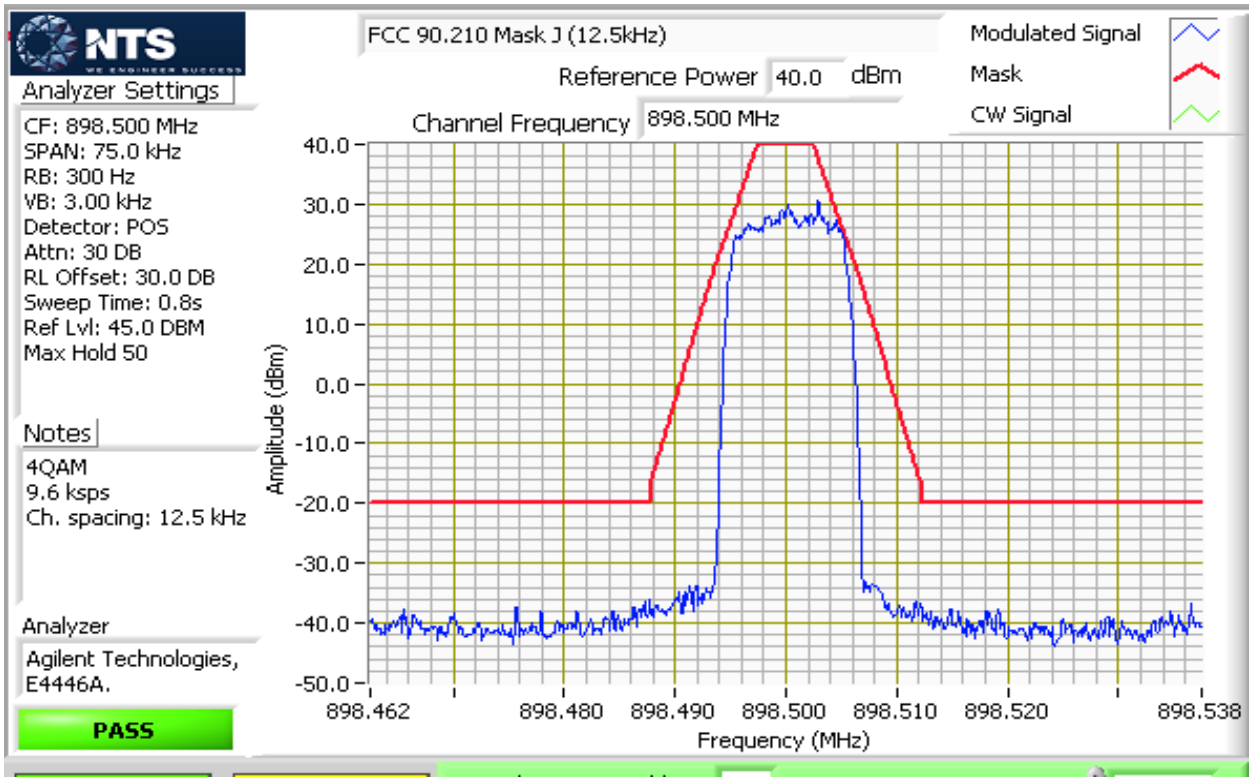
Power setting	Data rate	Channel plan	Modulation	Frequency (MHz)	Emission mask	Result
40 dBm	4.8 ksps	6.25 kHz	4QAM	929.5	G	Pass
40 dBm	4.8 ksps	6.25 kHz	16QAM	929.5	G	Pass
40 dBm	4.8 ksps	6.25 kHz	64QAM	929.5	G	Pass
40 dBm	9.6 ksps	12.5 kHz	4QAM	929.5	G	Pass
40 dBm	9.6 ksps	12.5 kHz	16QAM	929.5	G	Pass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

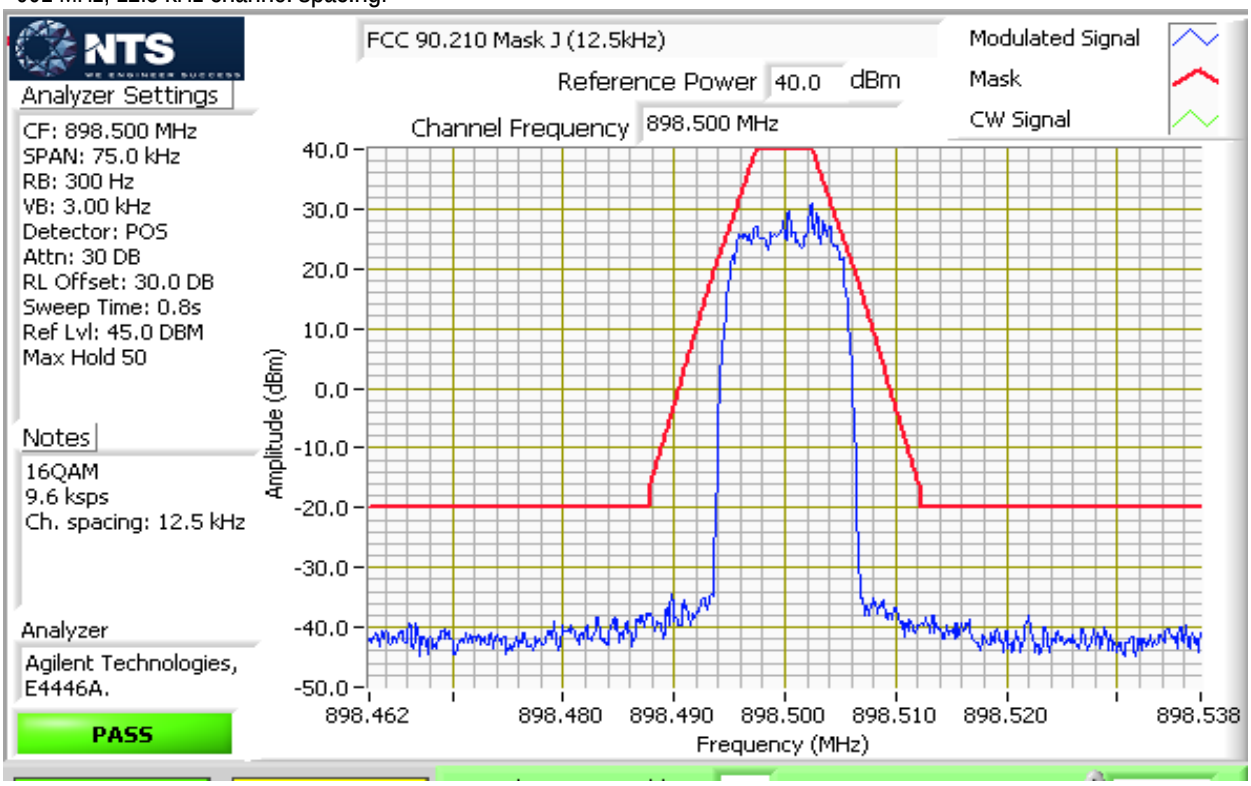
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



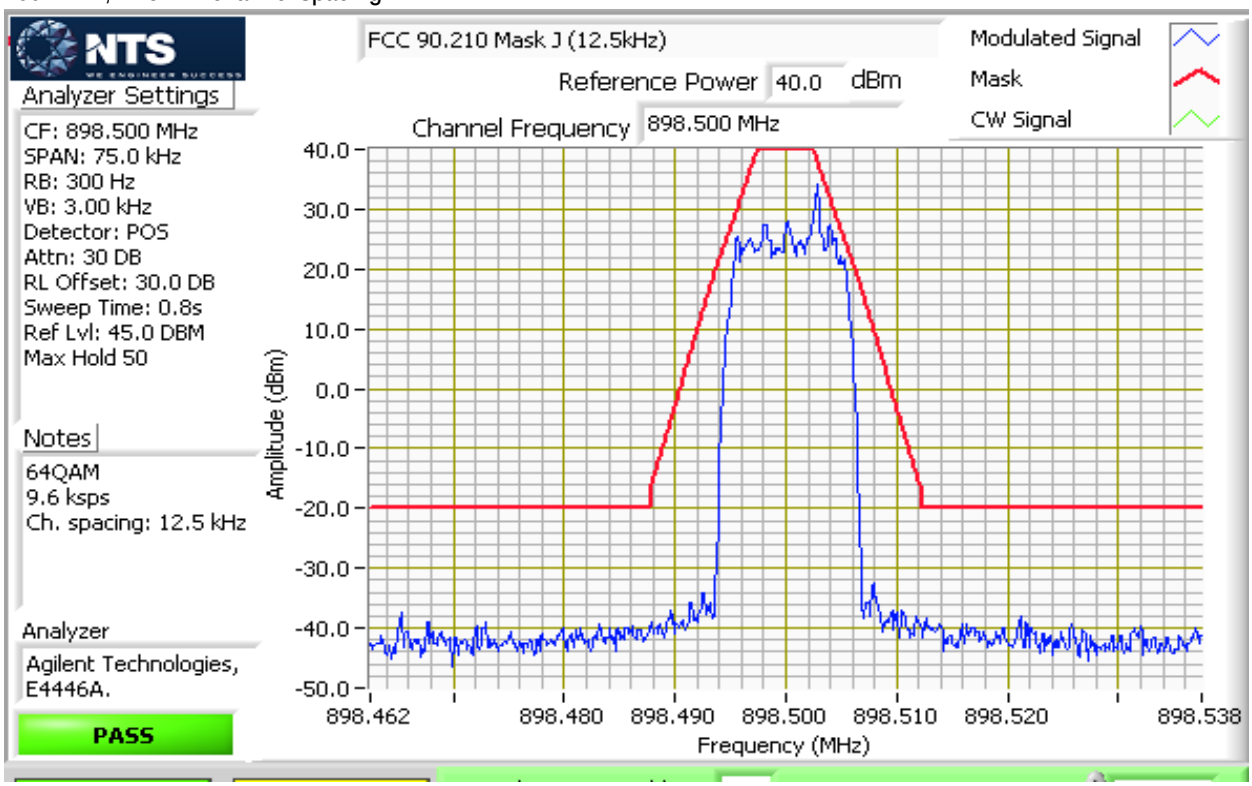
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



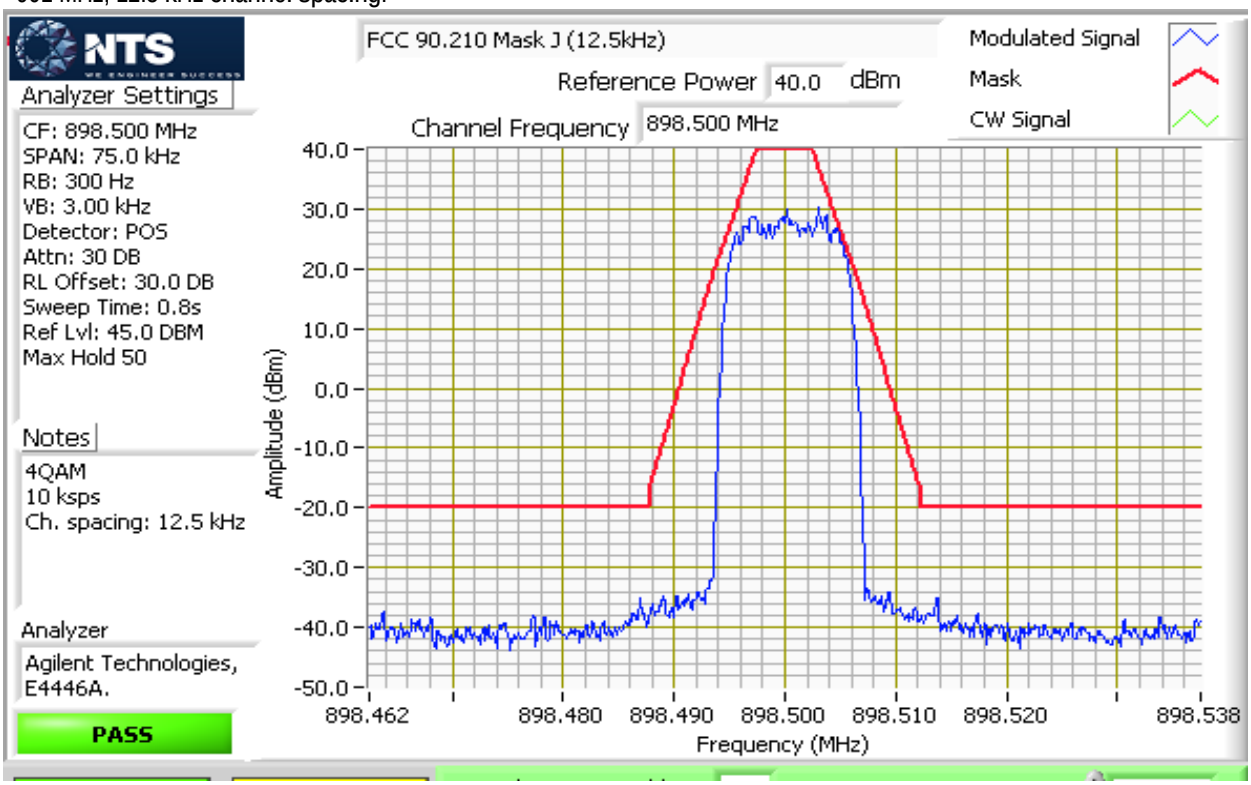
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



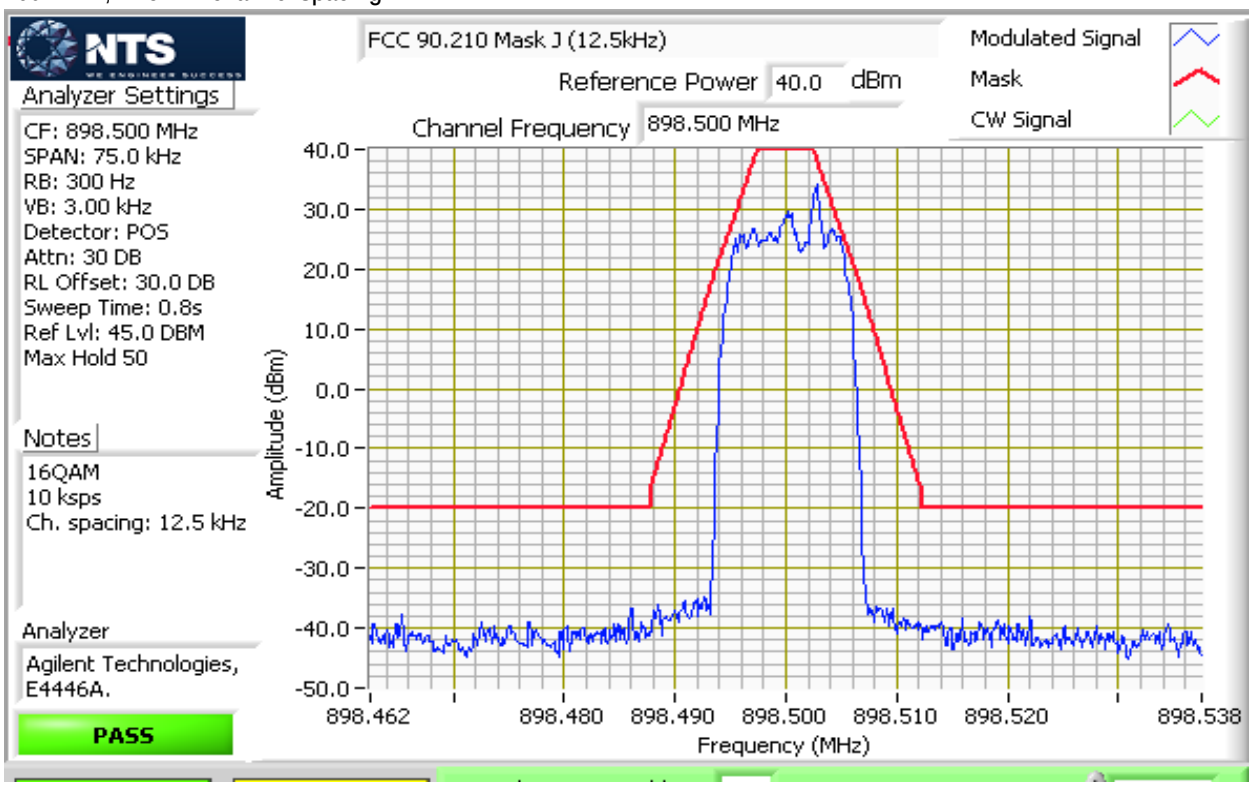
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



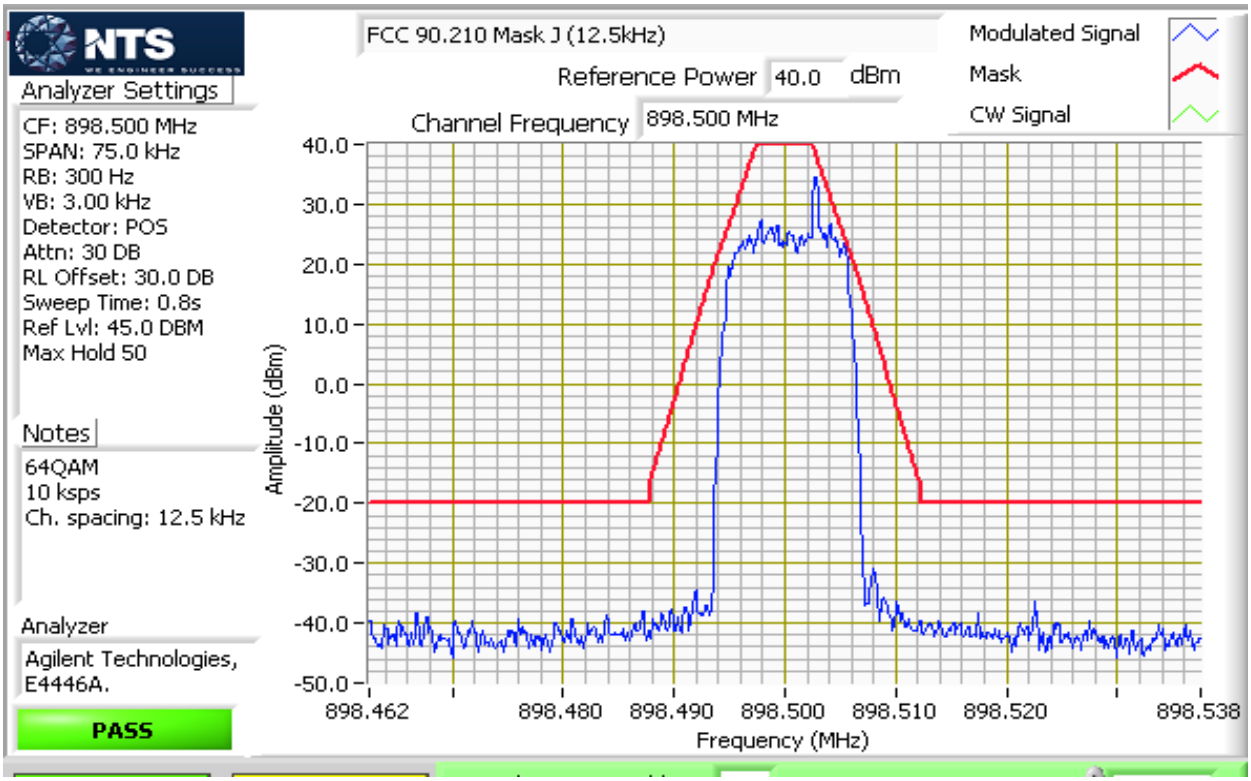
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



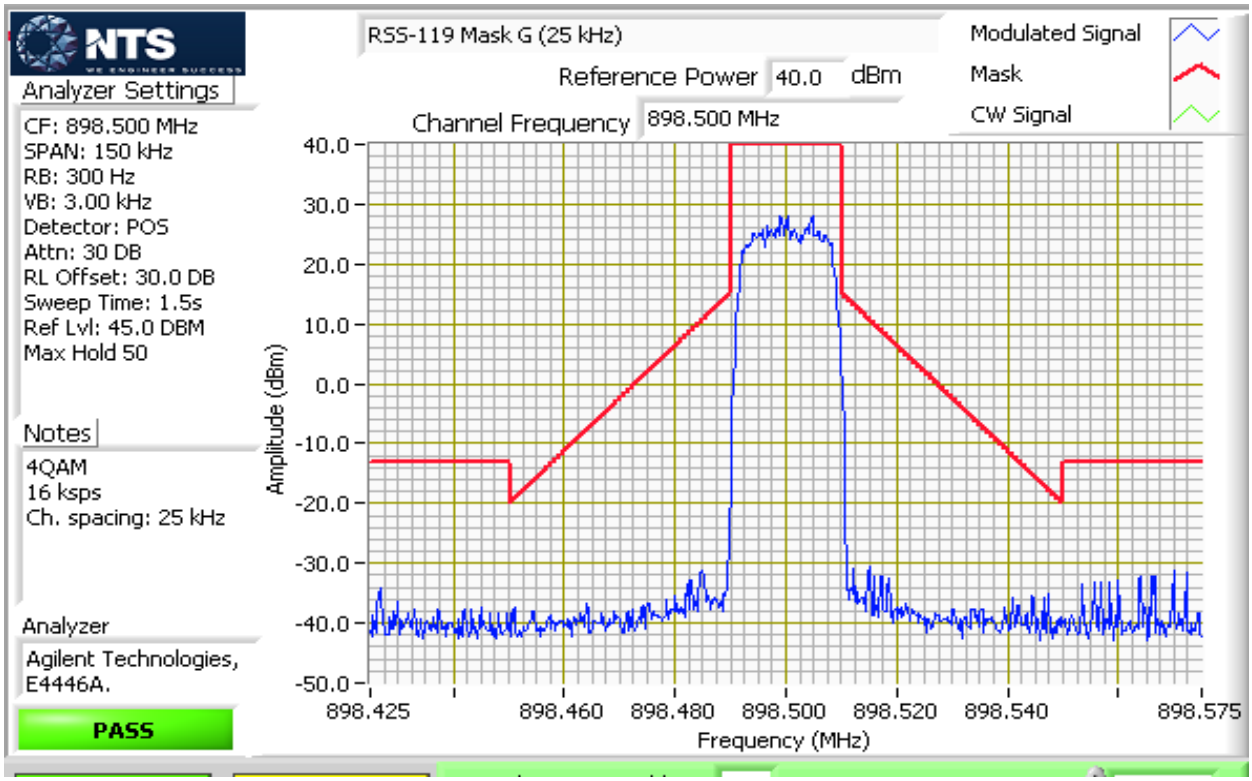
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 12.5 kHz channel spacing.



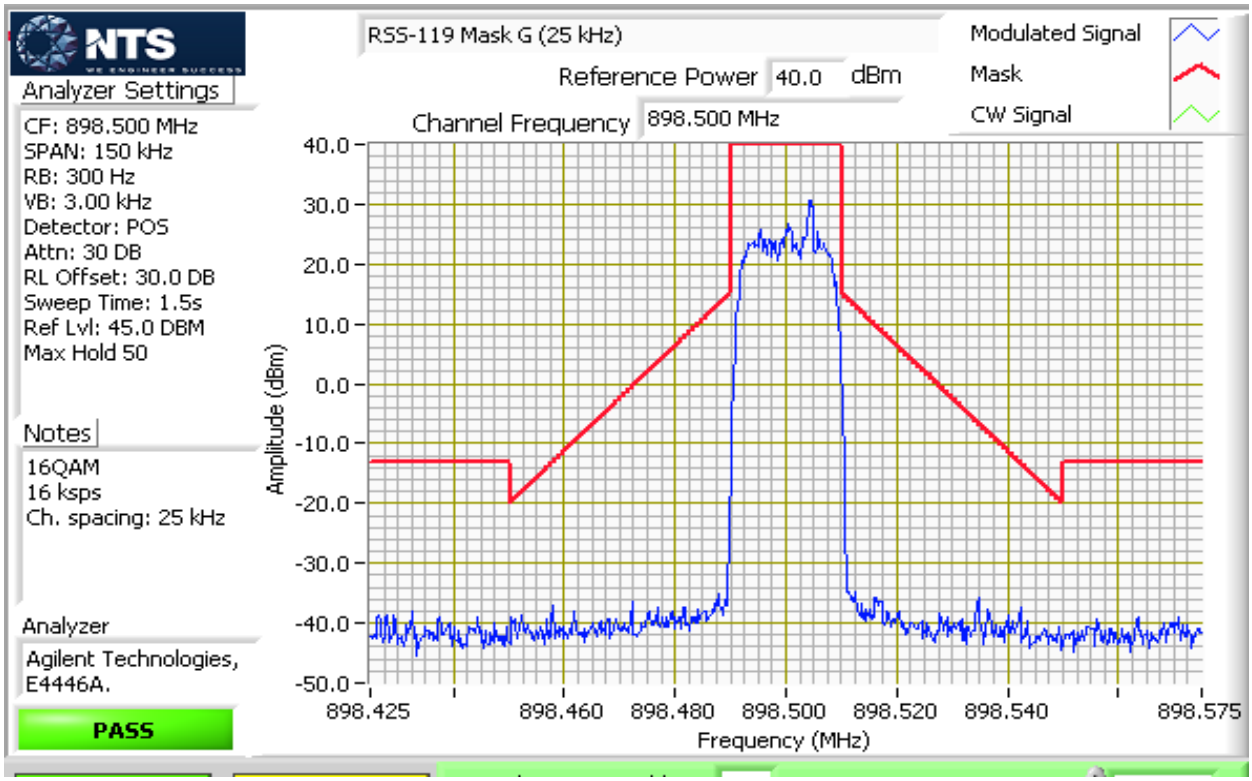
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 25 kHz channel spacing



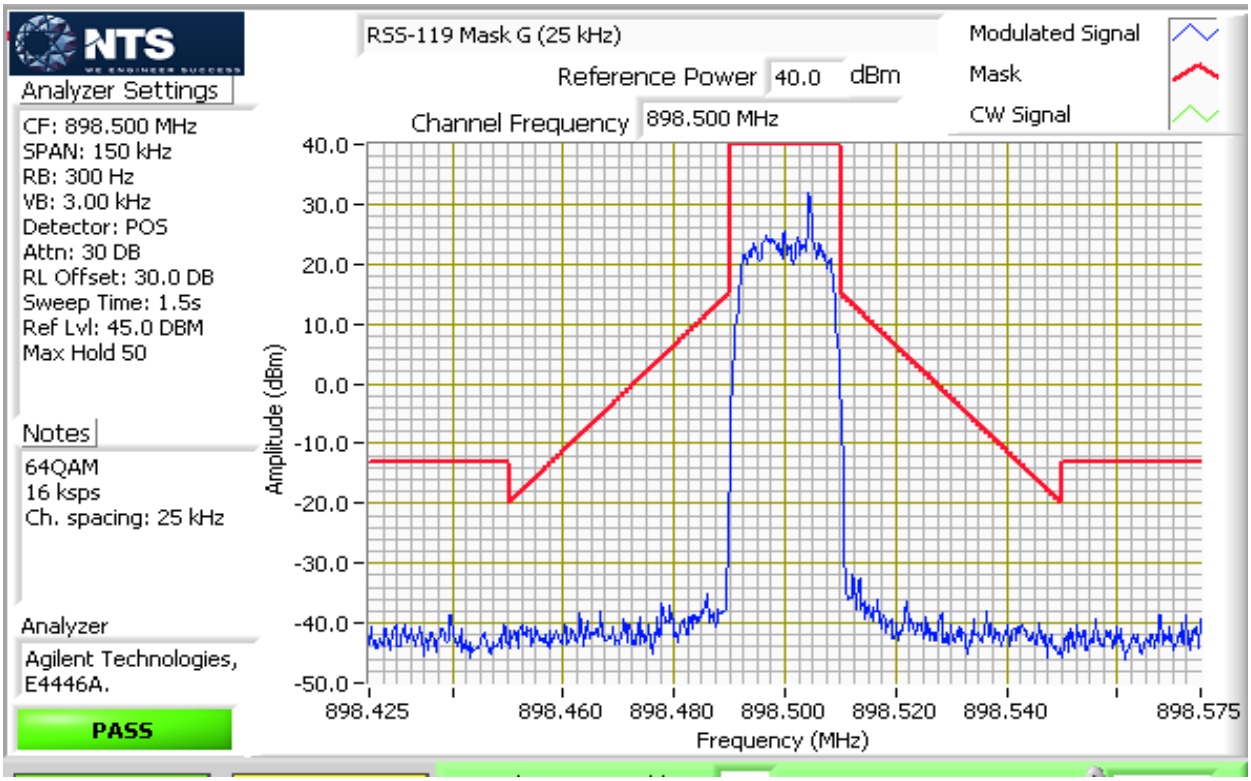
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 25 kHz channel spacing



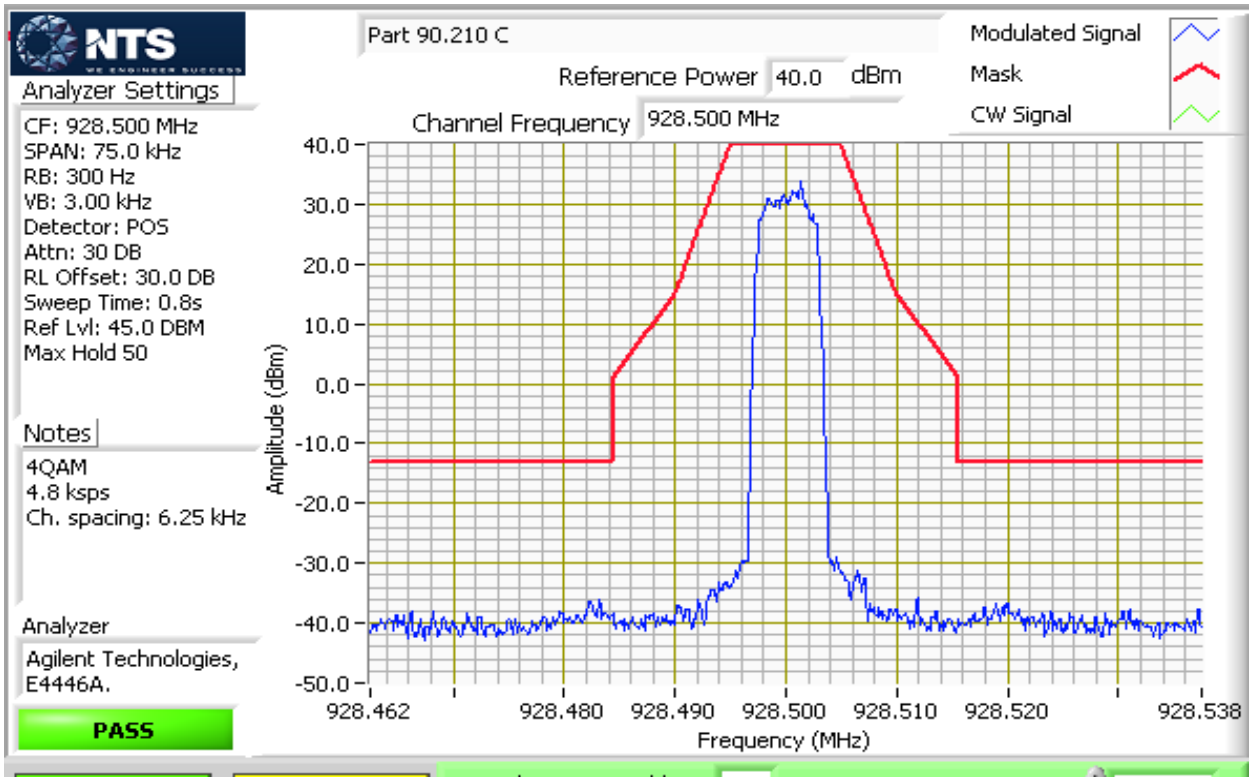
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

896 - 901 MHz, 25 kHz channel spacing



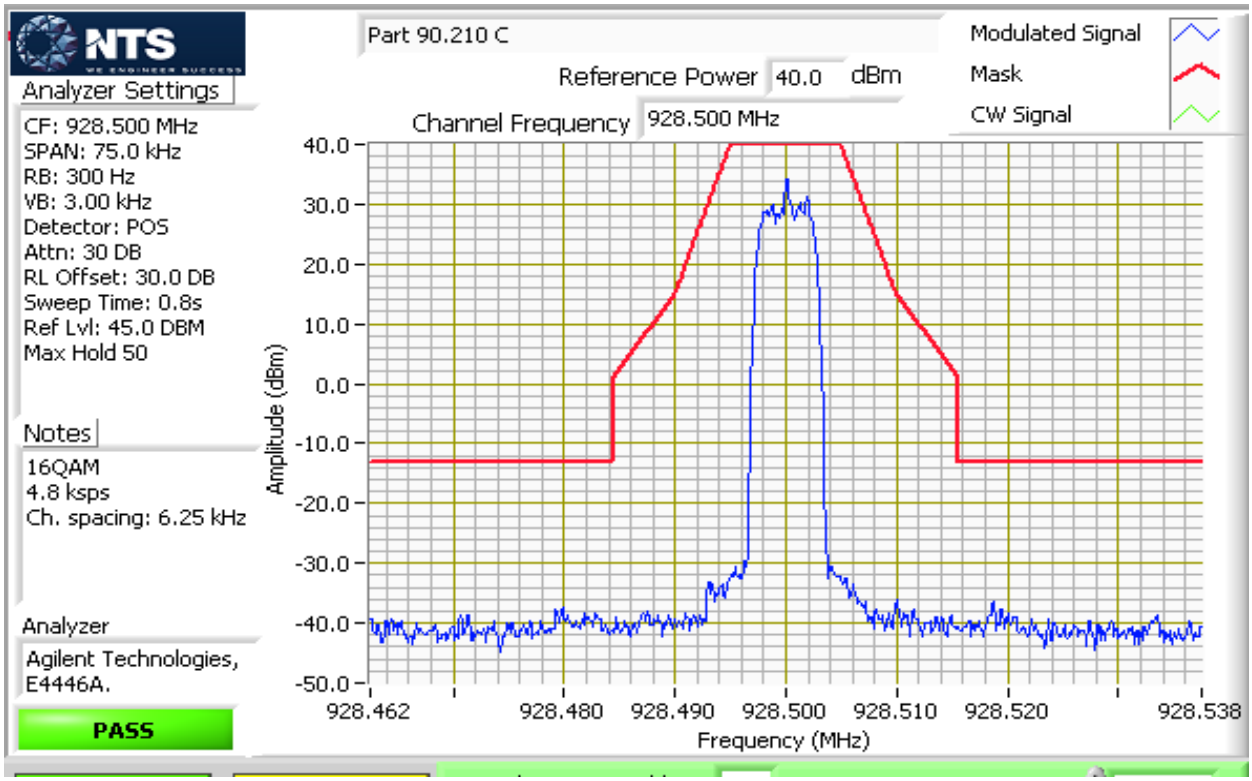
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 6.25 kHz channel spacing



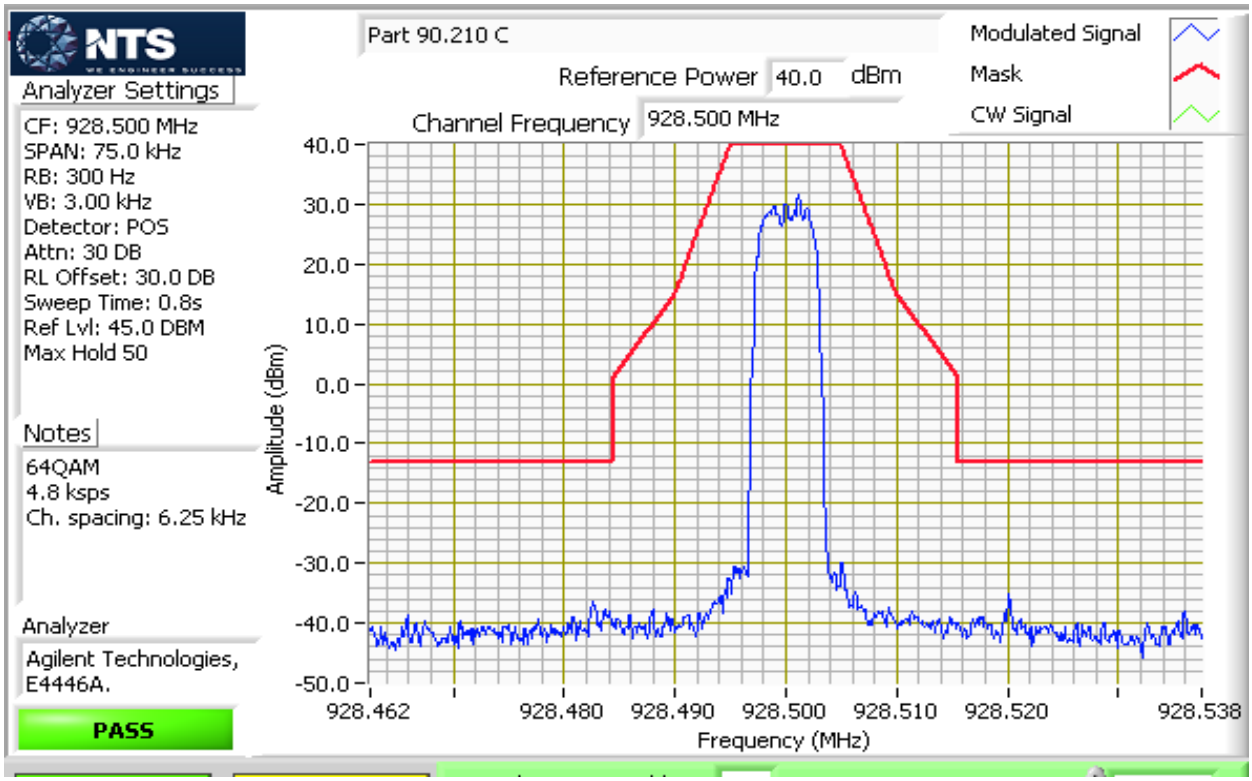
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 6.25 kHz channel spacing



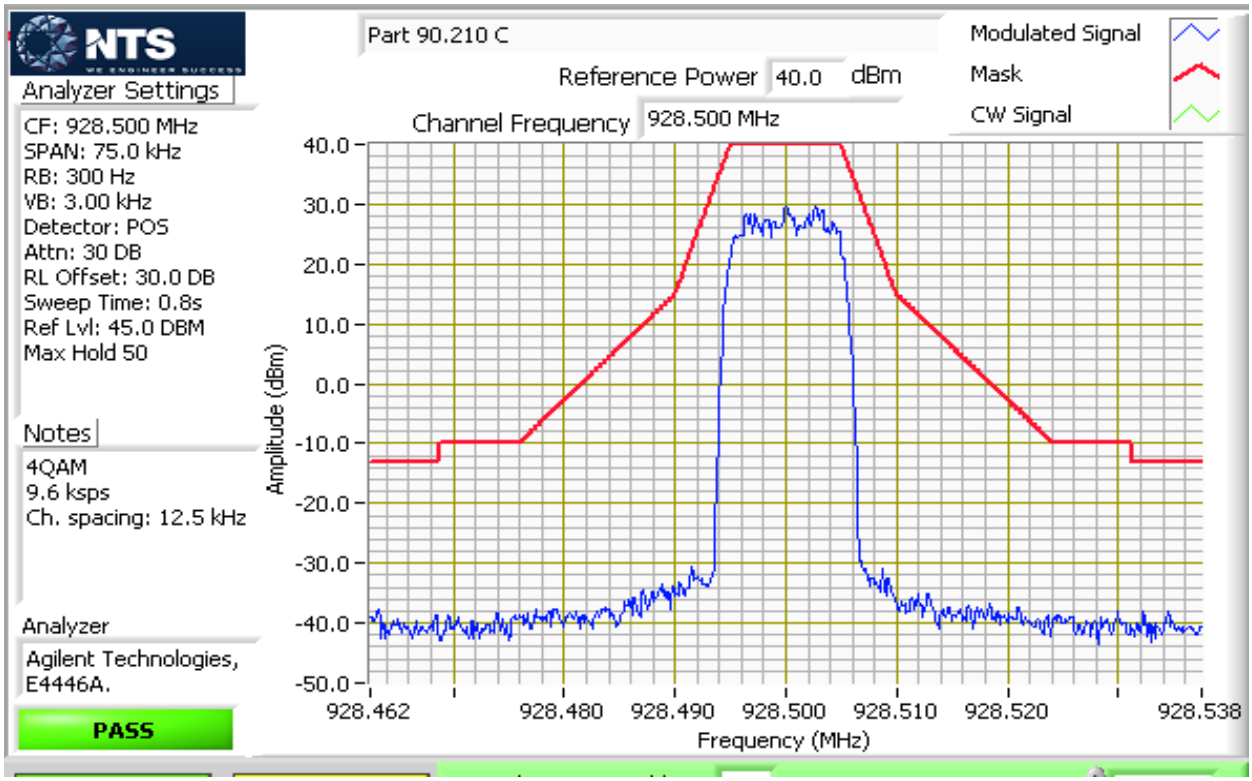
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 6.25 kHz channel spacing



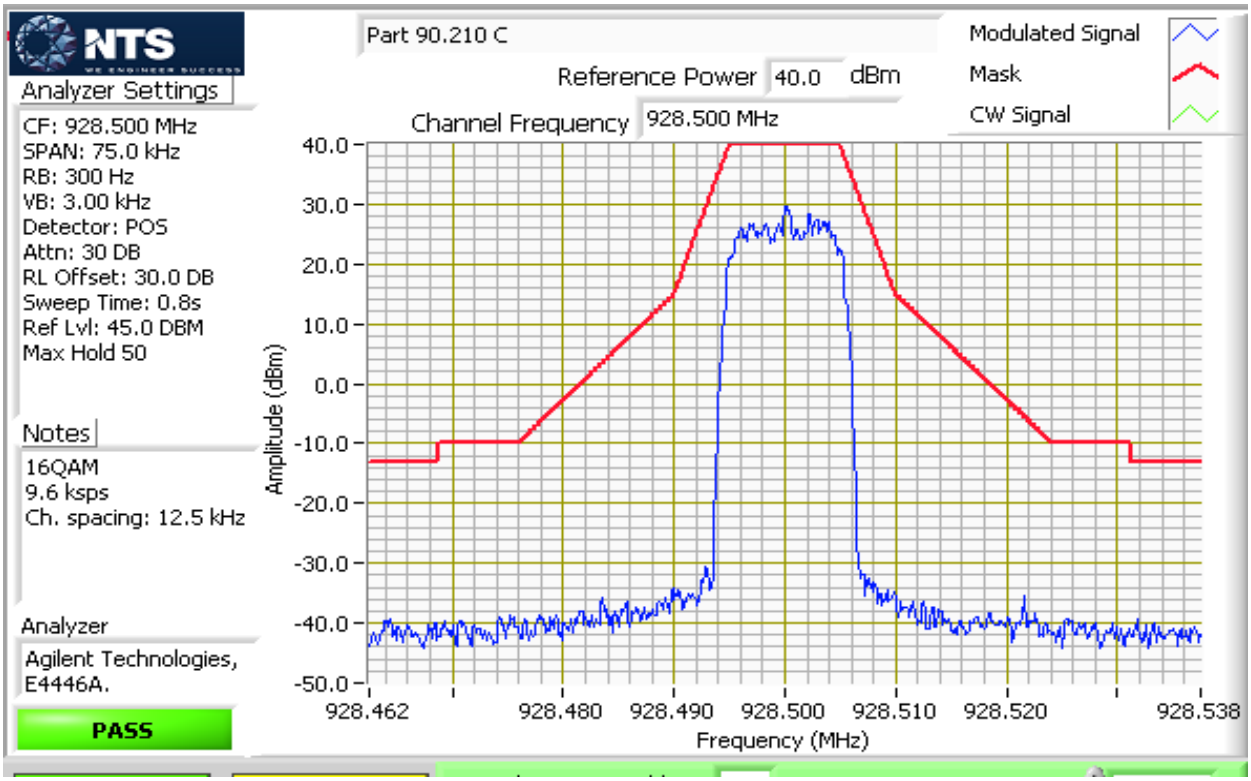
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing



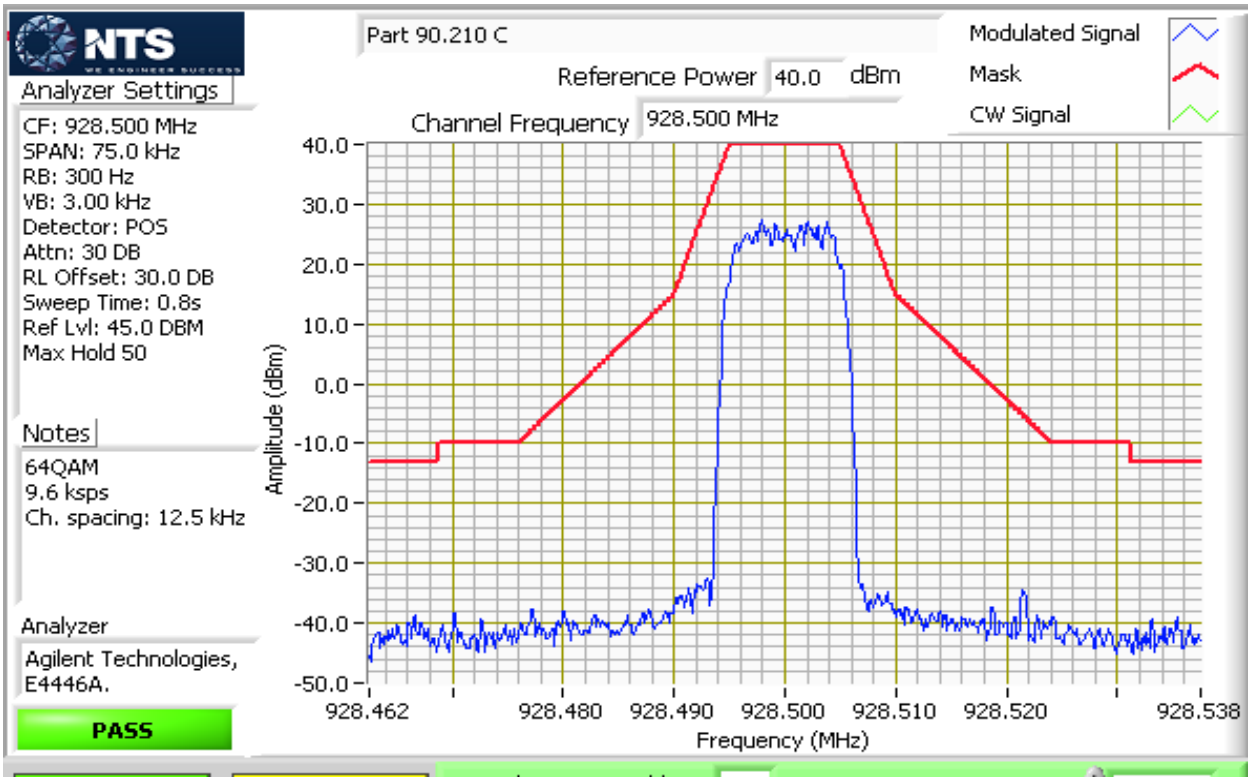
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing



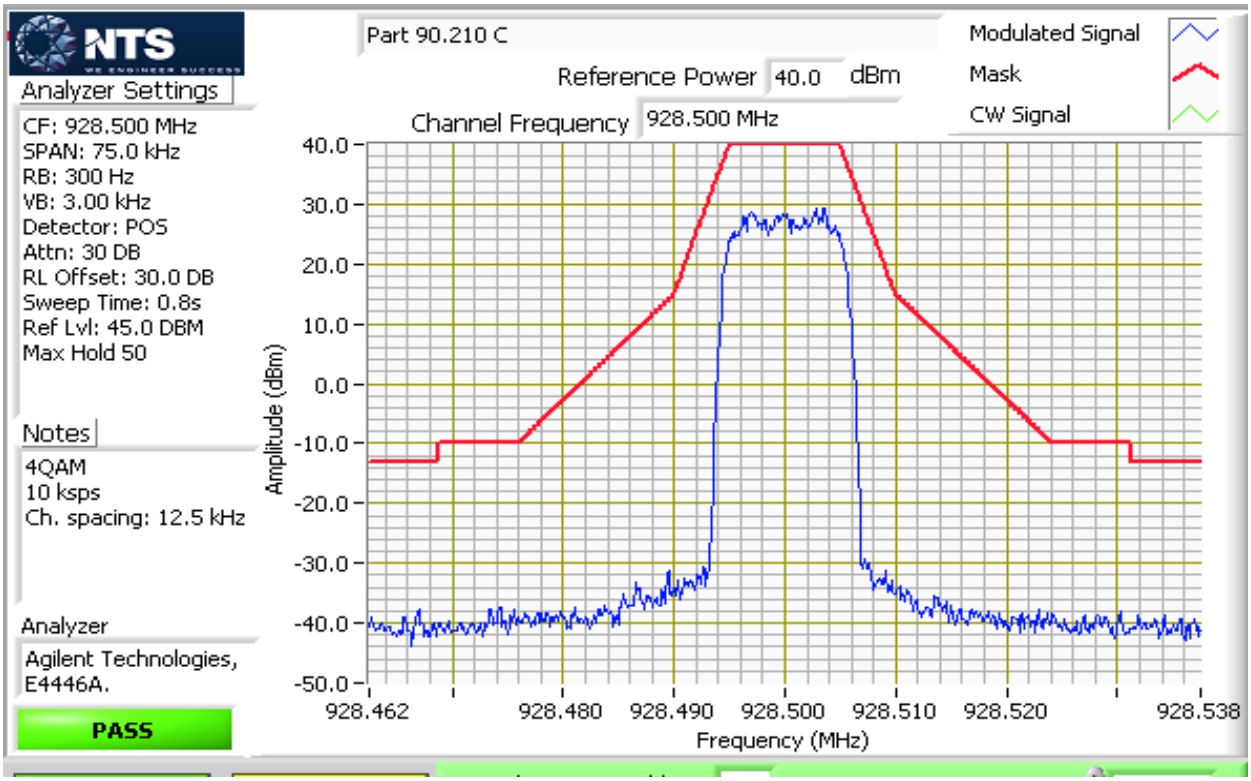
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing



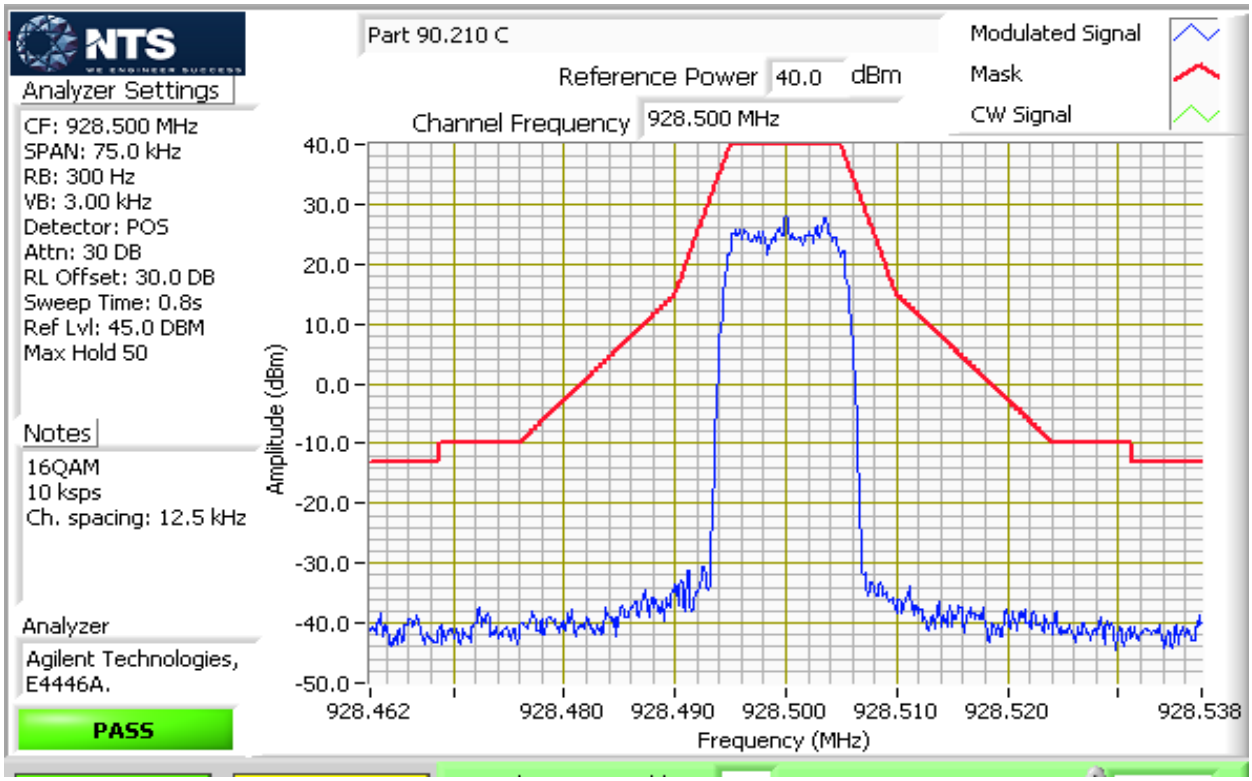
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing



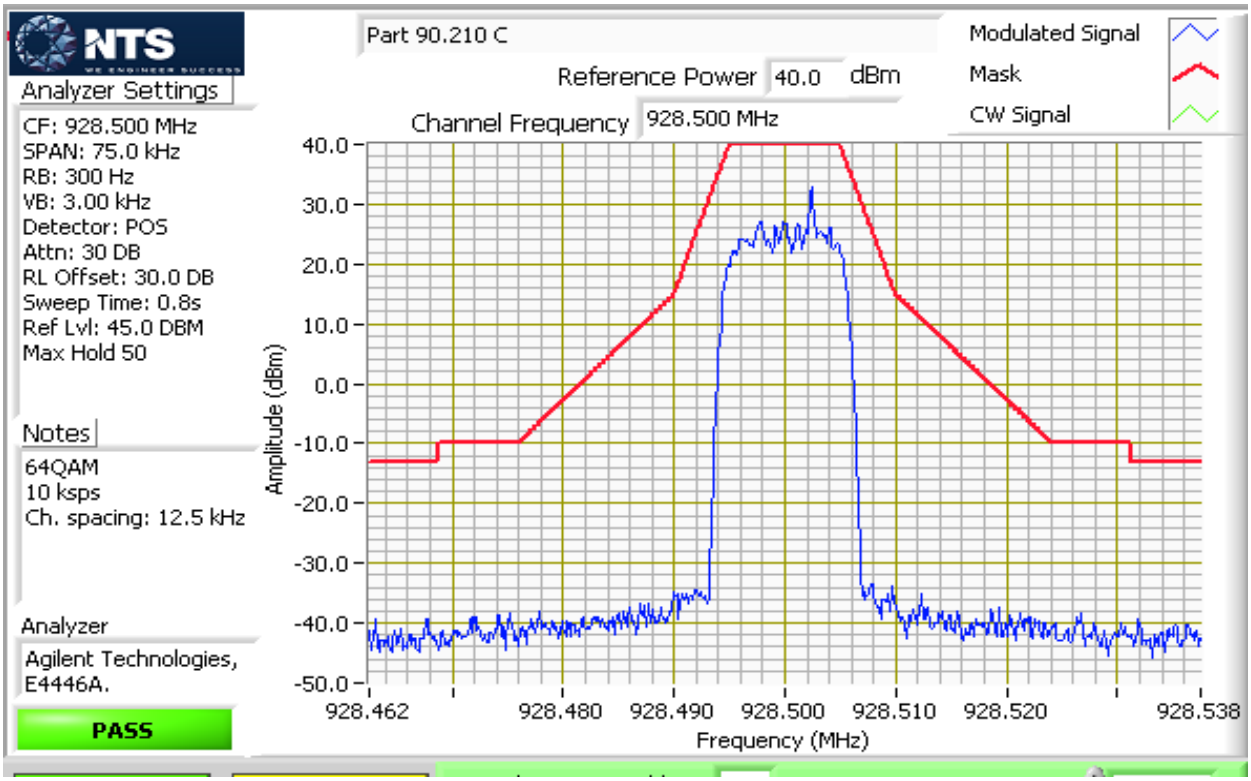
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing



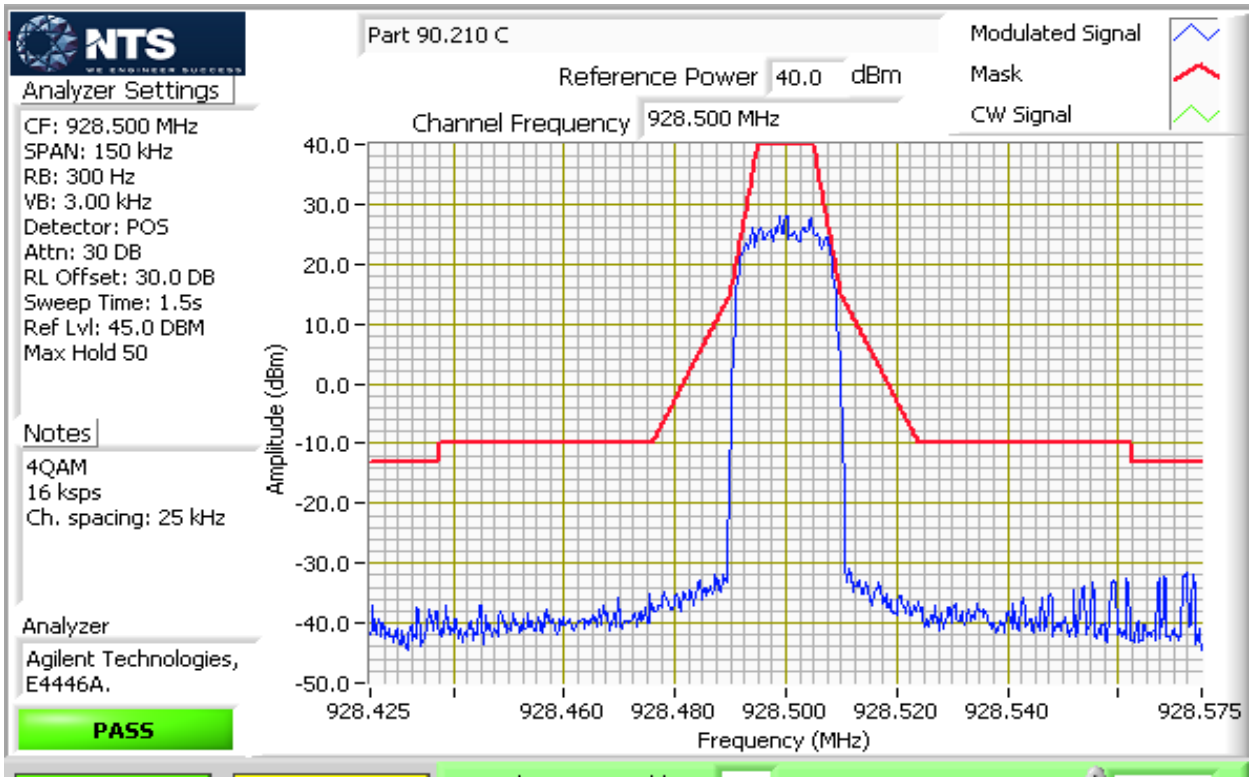
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 12.5 kHz channel spacing



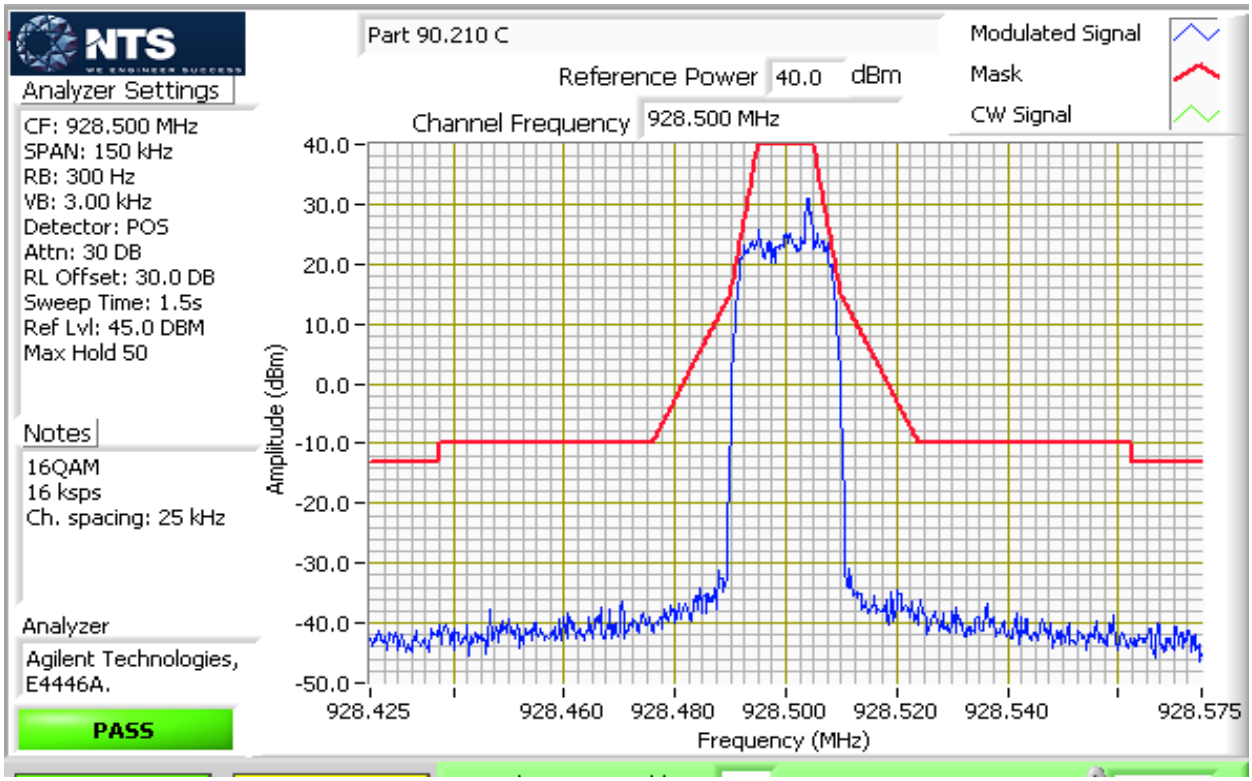
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 25 kHz channel spacing



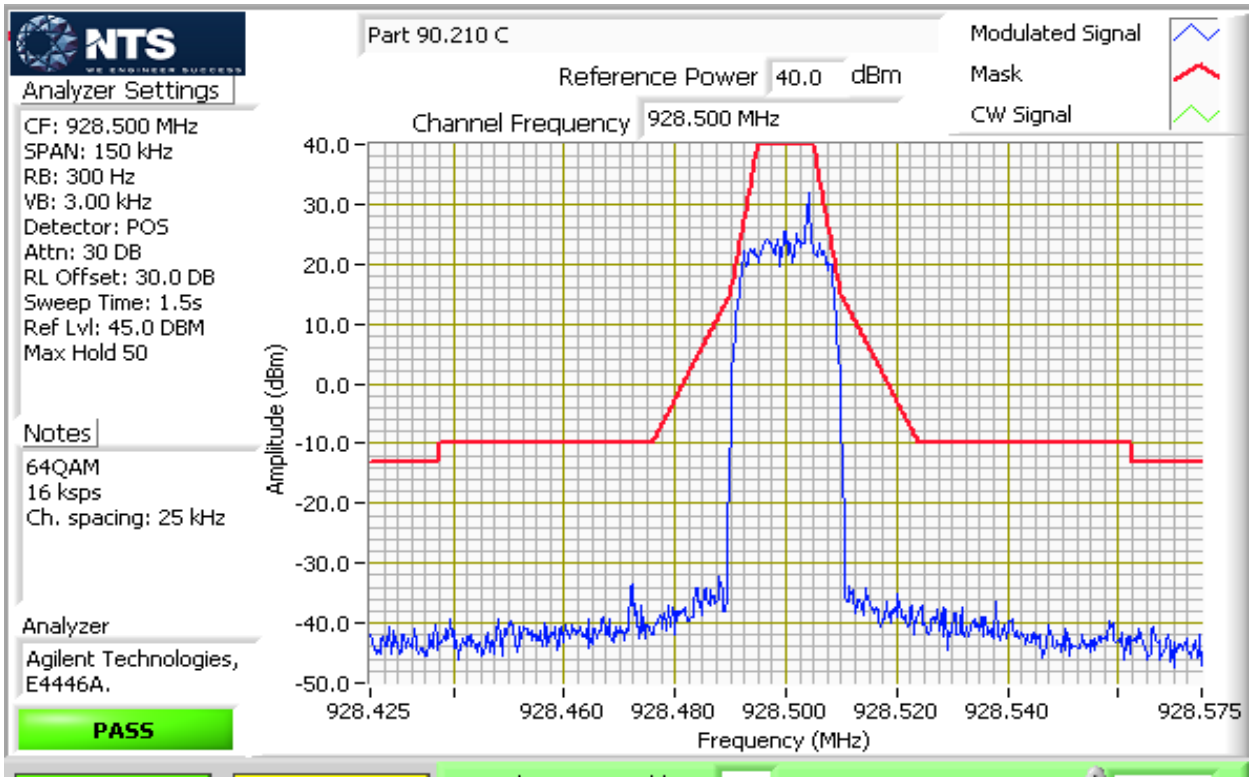
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 25 kHz channel spacing



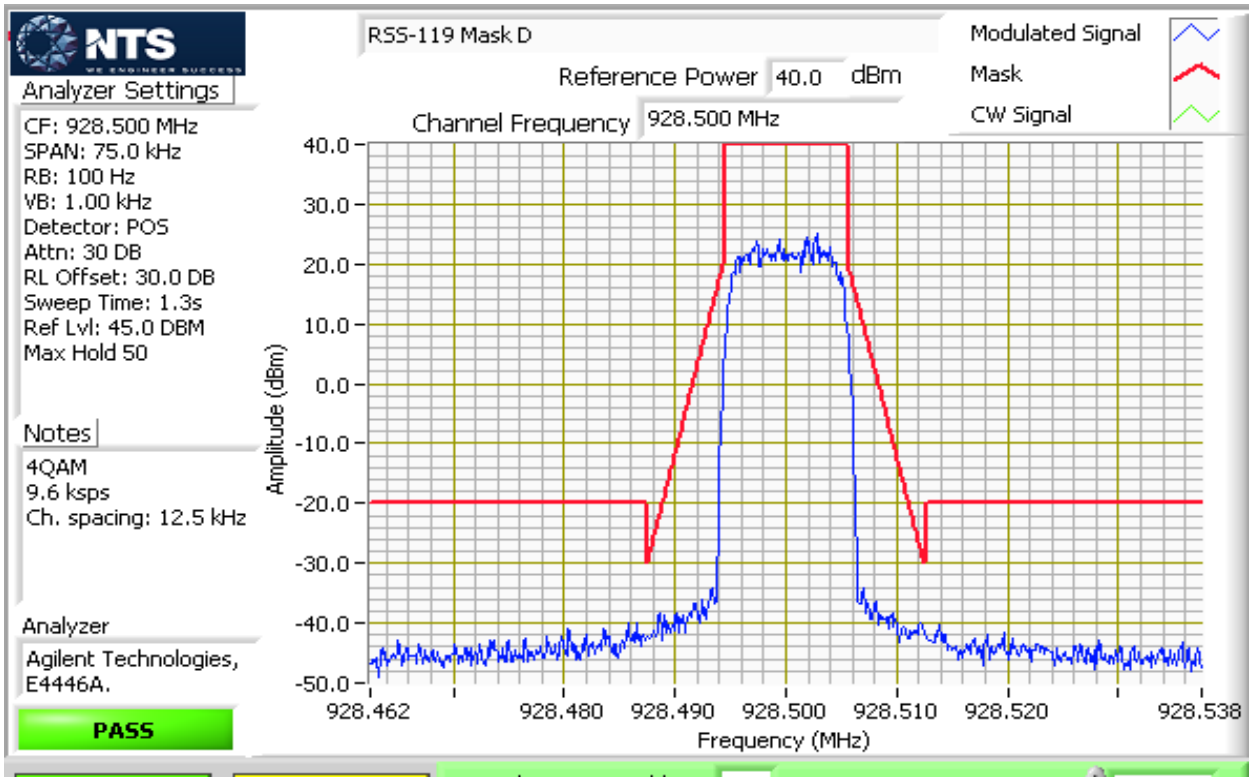
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 929 MHz, 25 kHz channel spacing



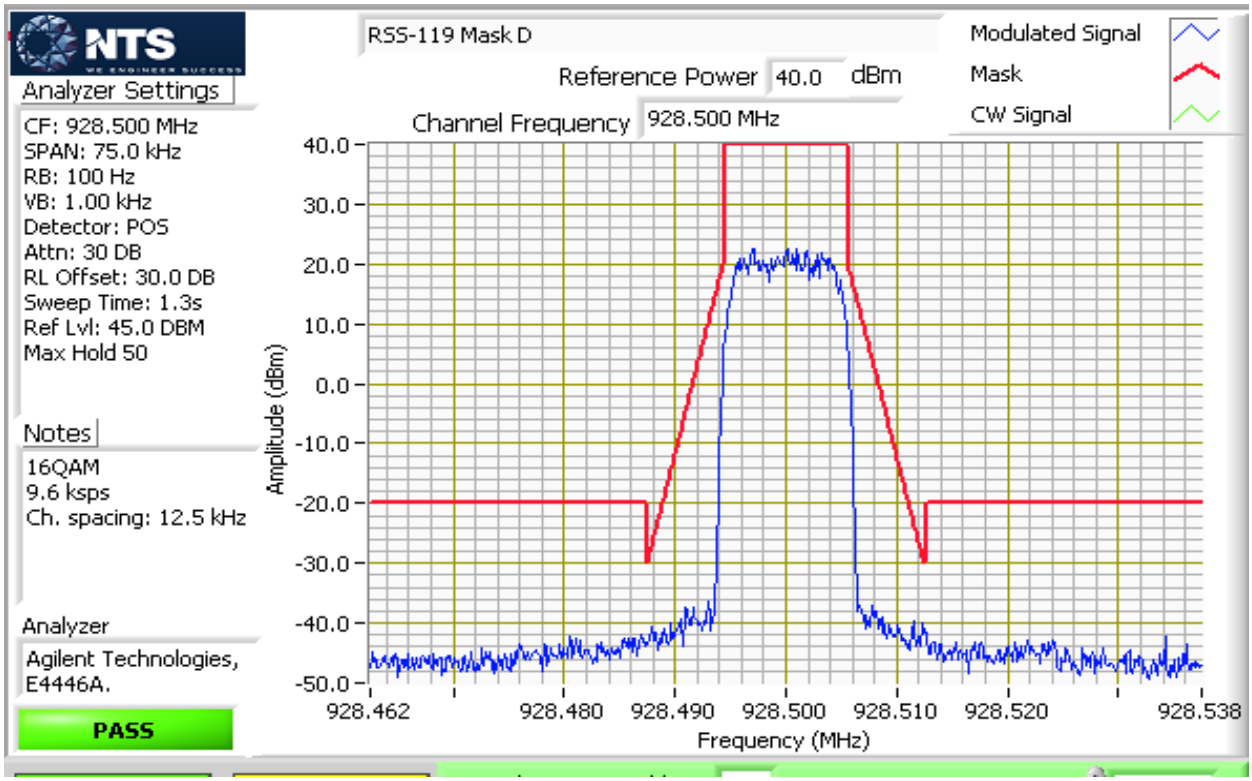
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



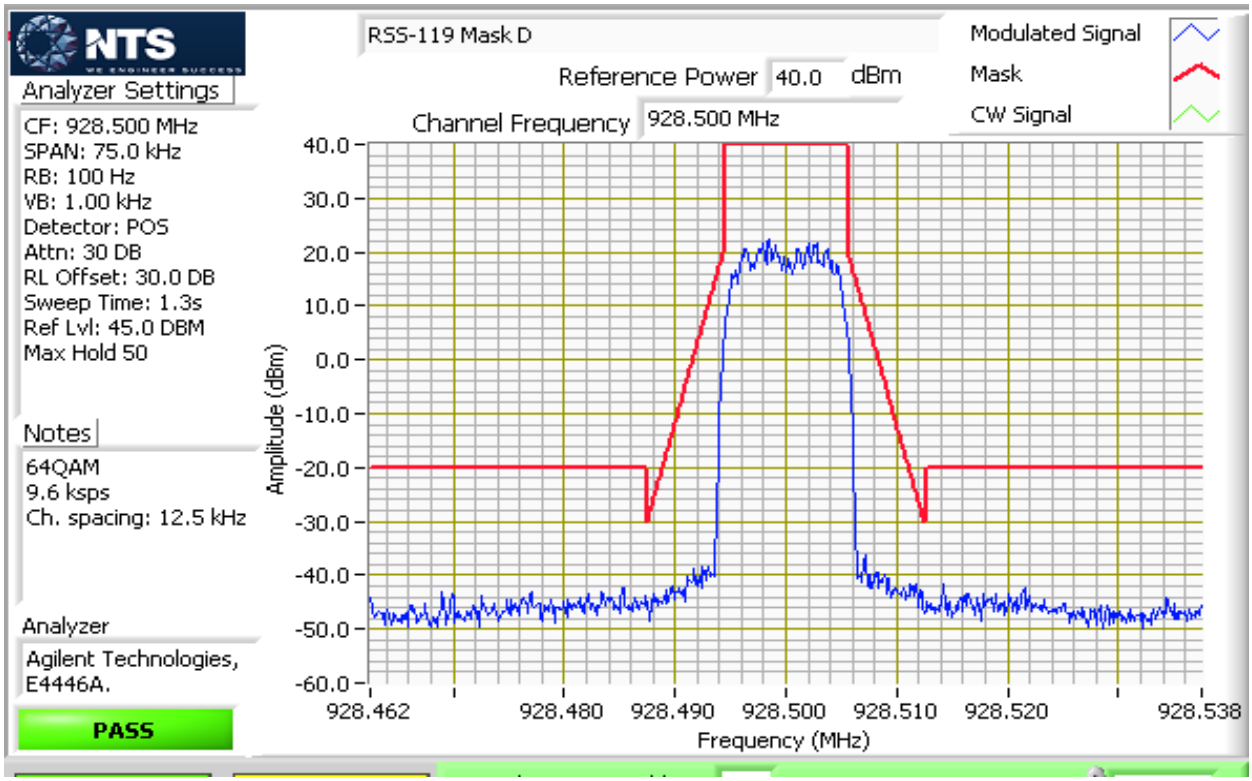
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



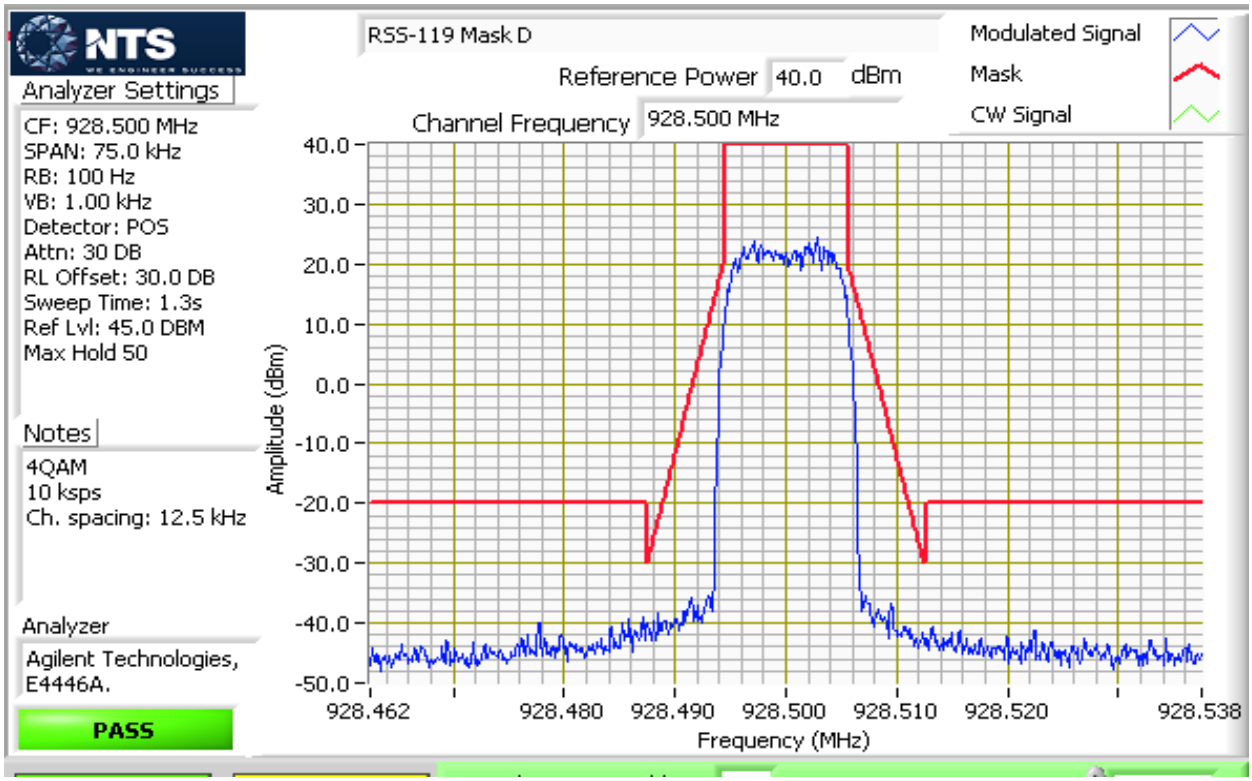
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



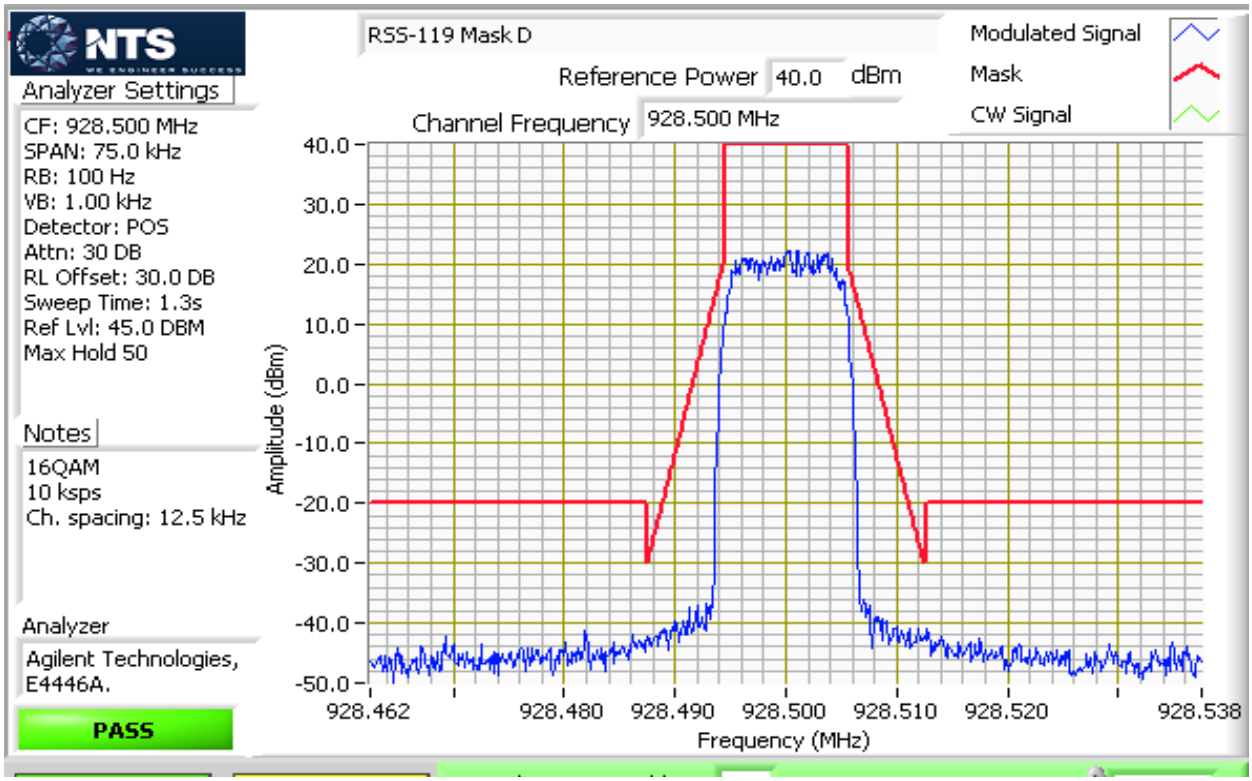
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



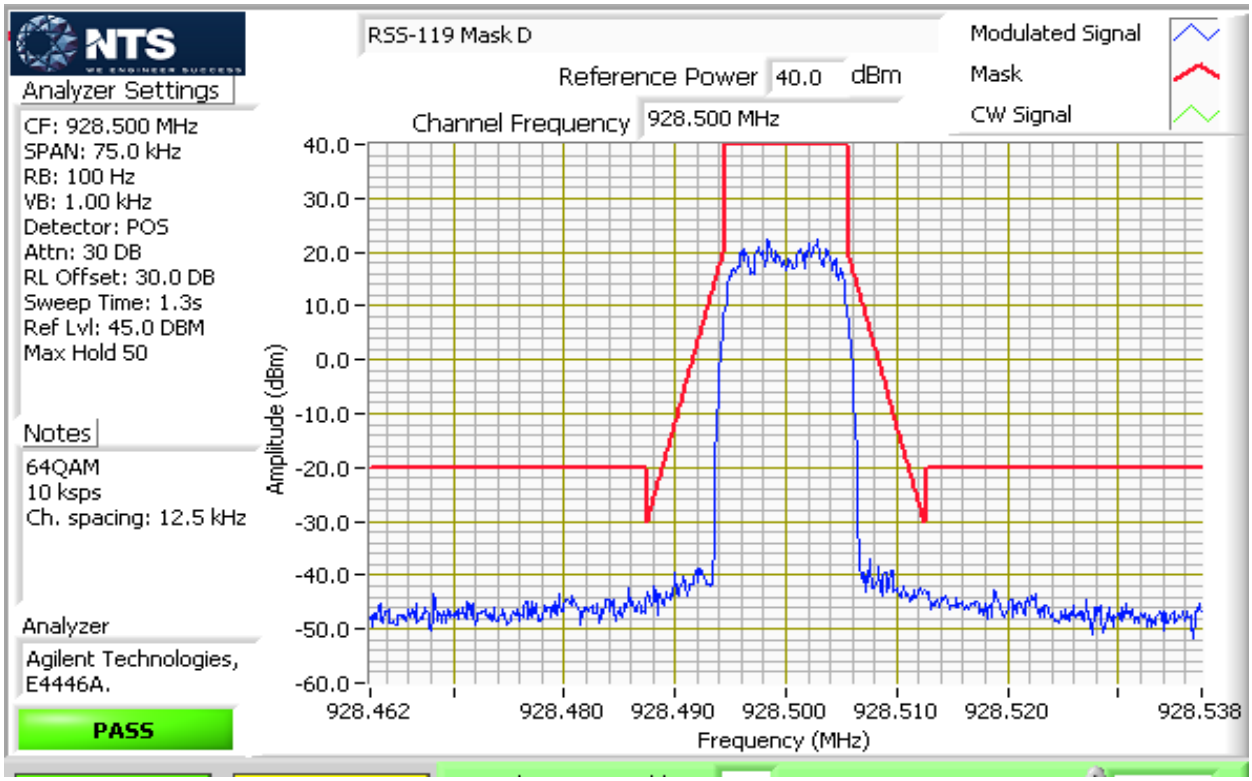
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



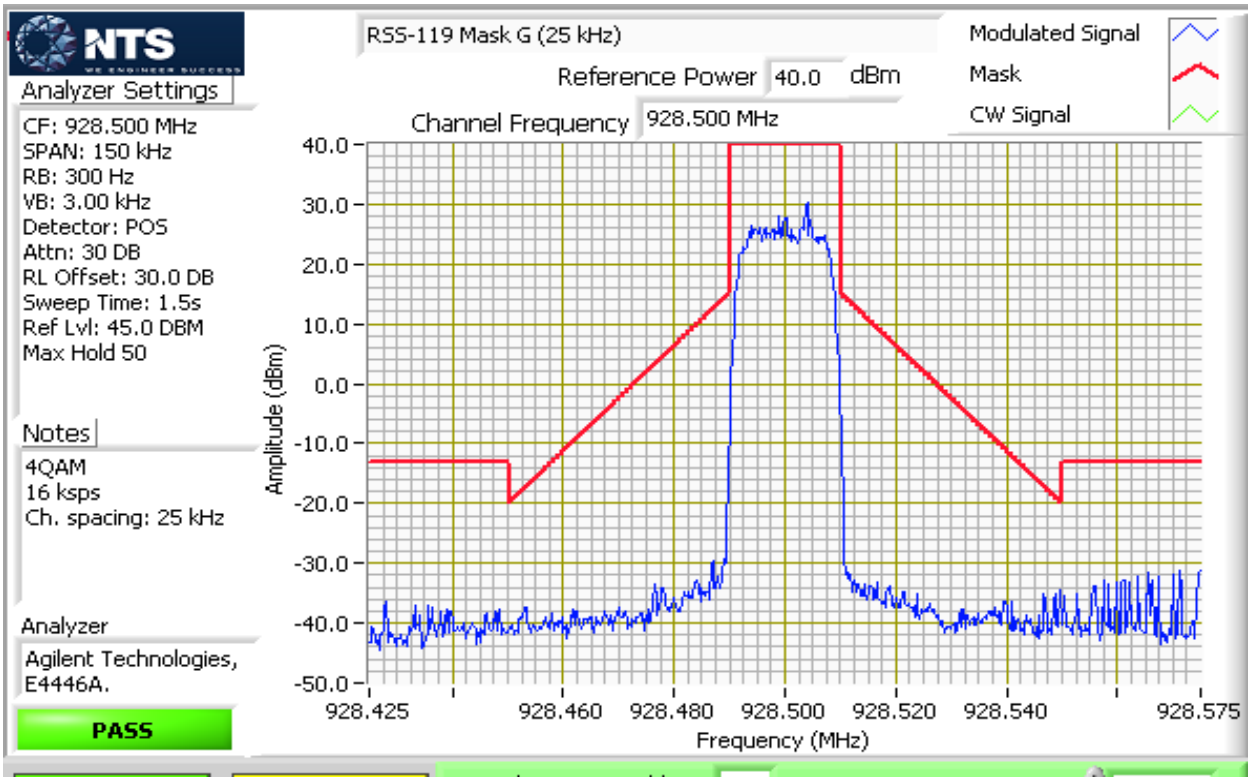
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

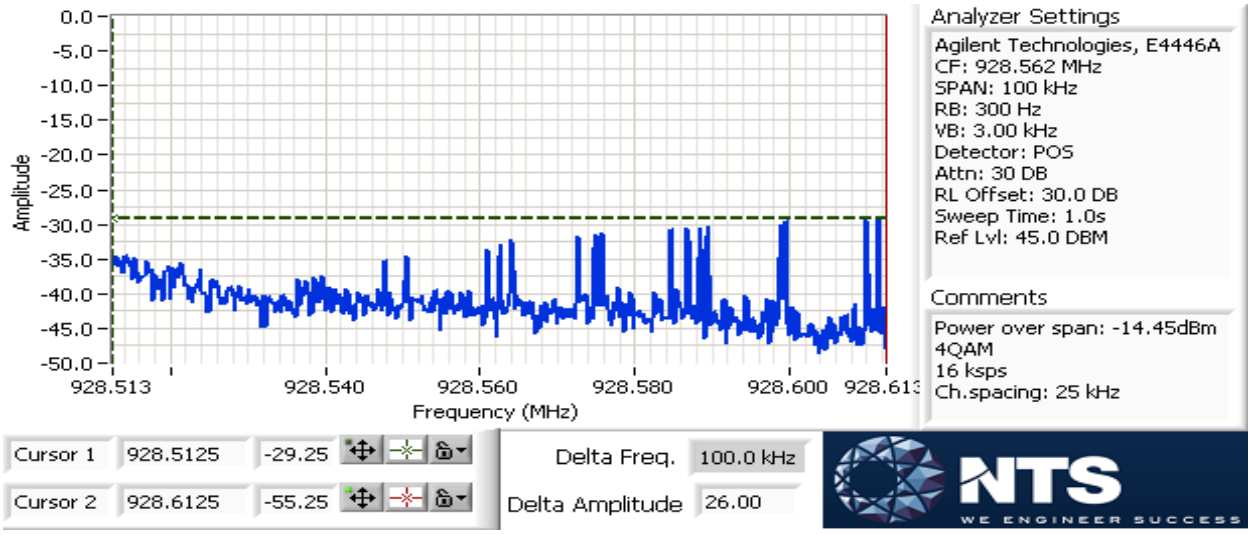
928 - 929 MHz, 12.5 kHz channel spacing (RSS-119)



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

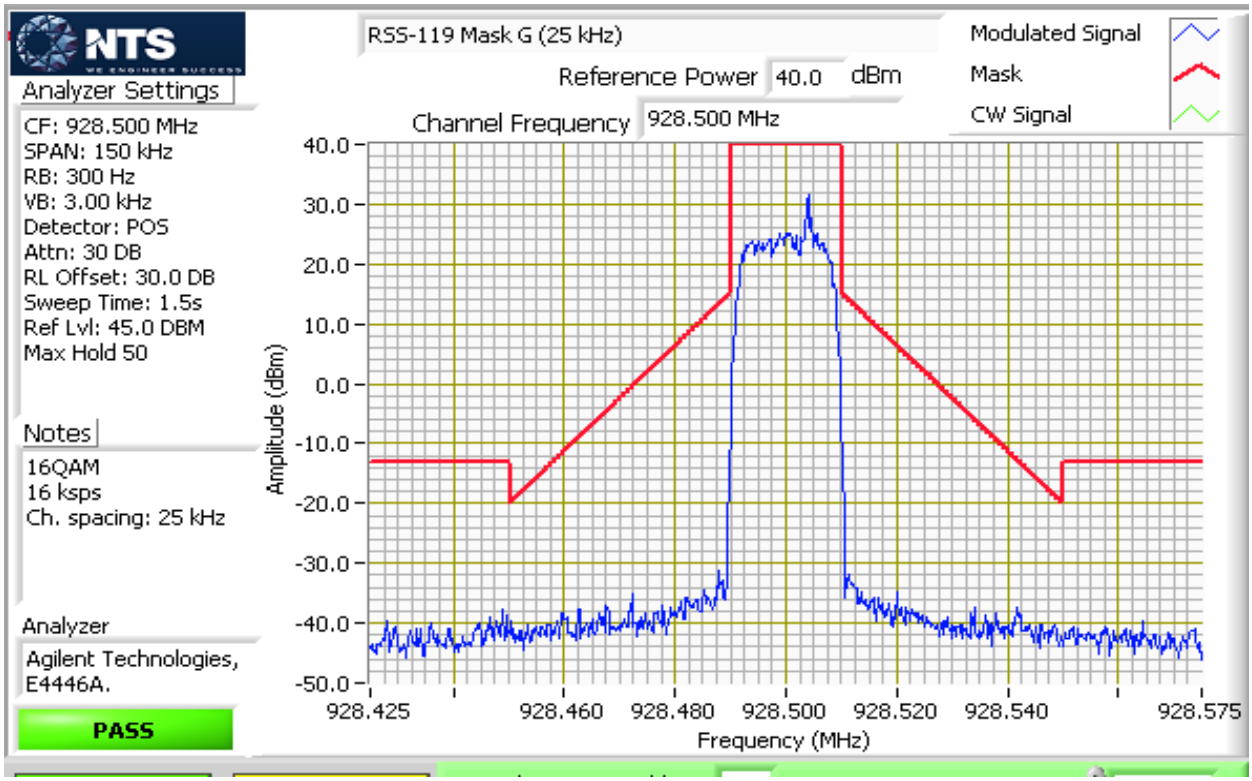
928 - 929 MHz, 25 kHz channel spacing (RSS-119)





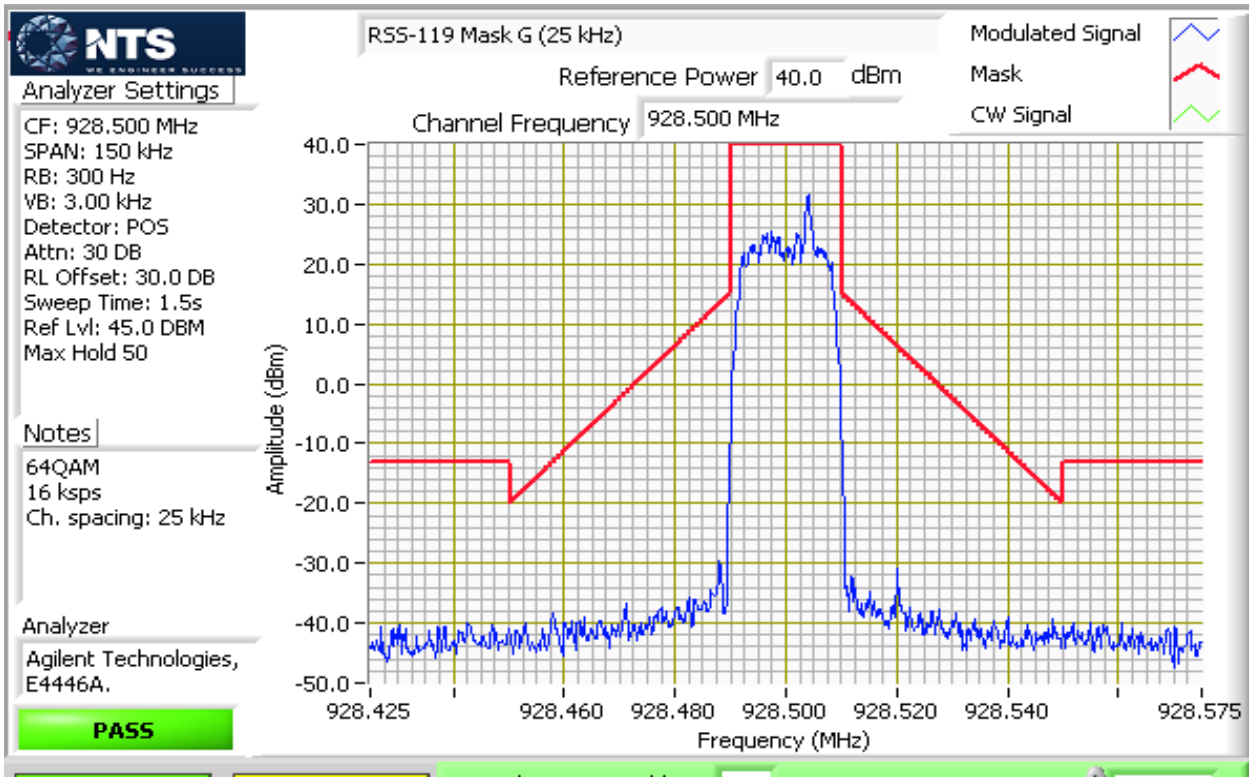
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



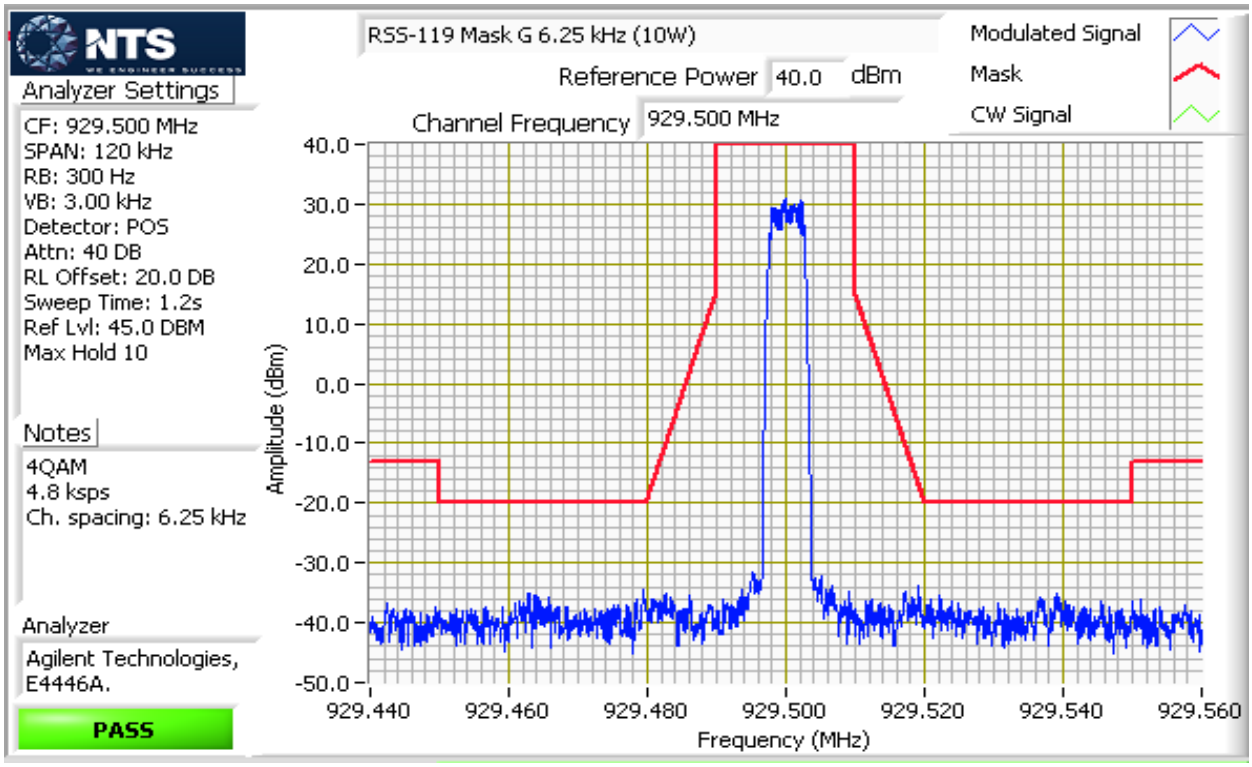
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



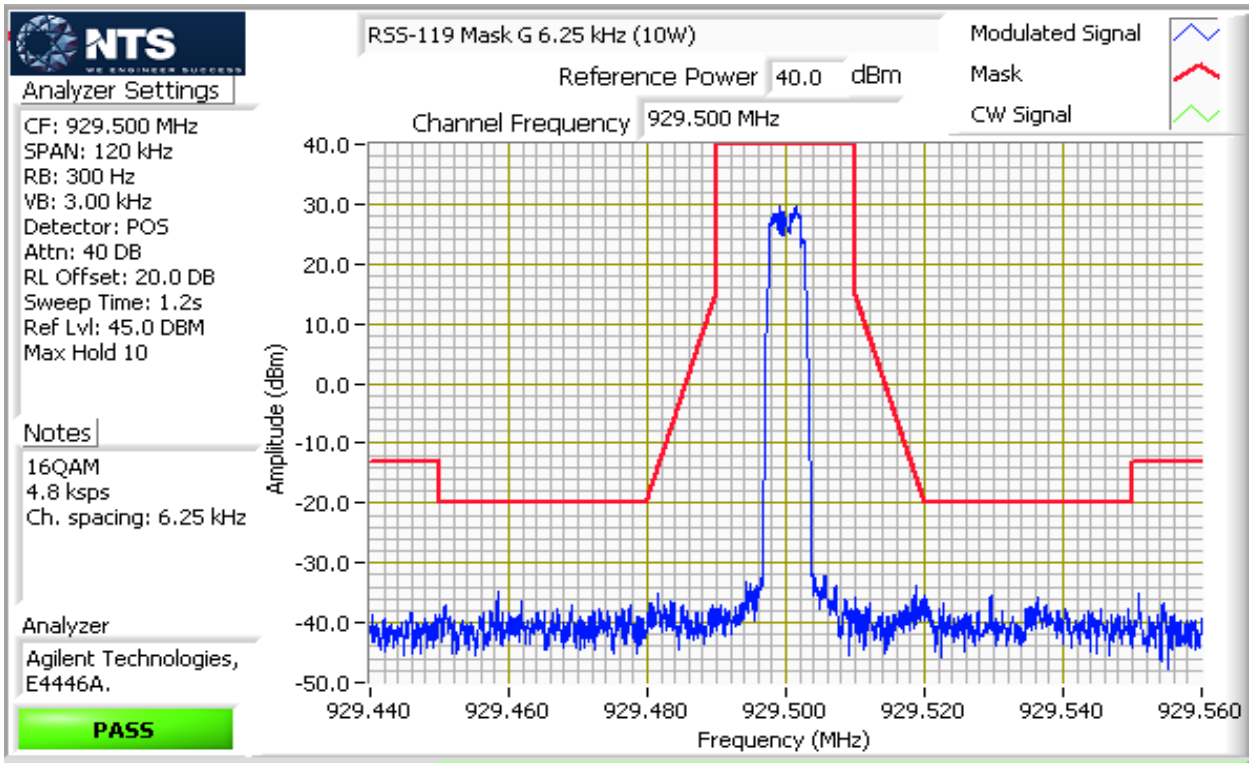
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



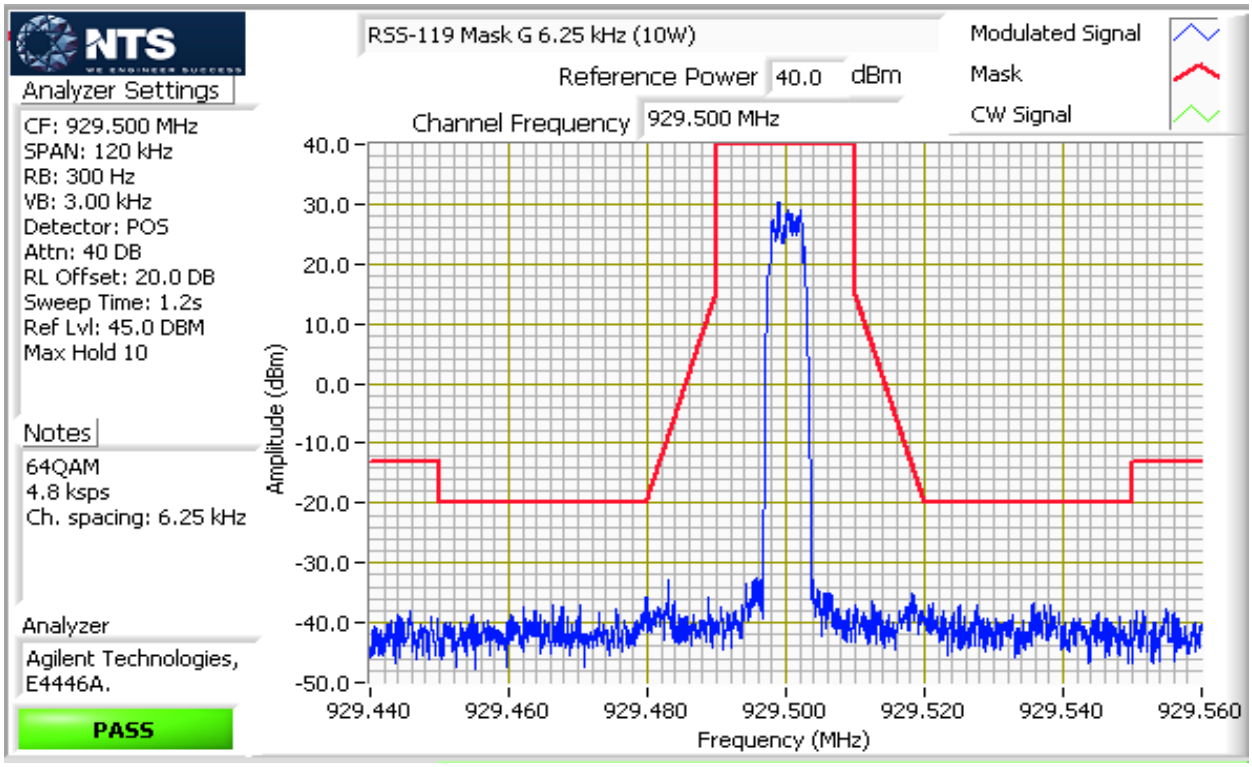
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



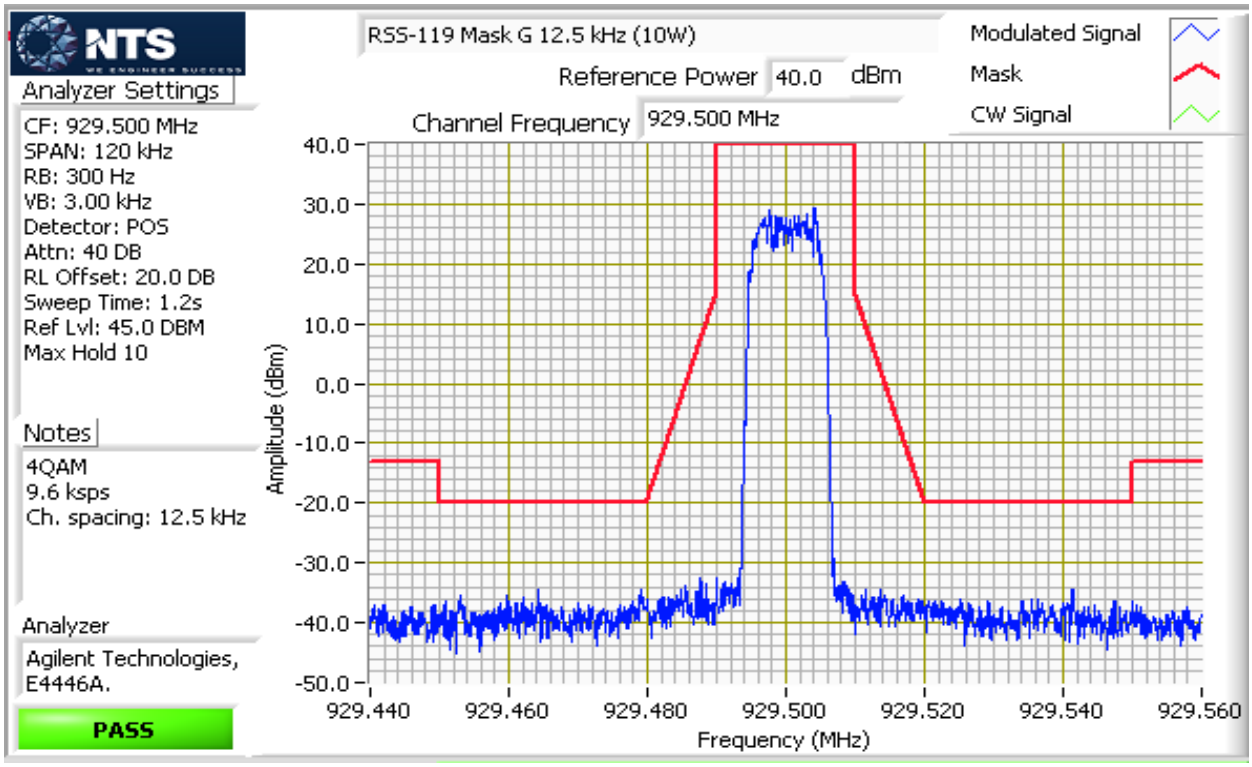
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



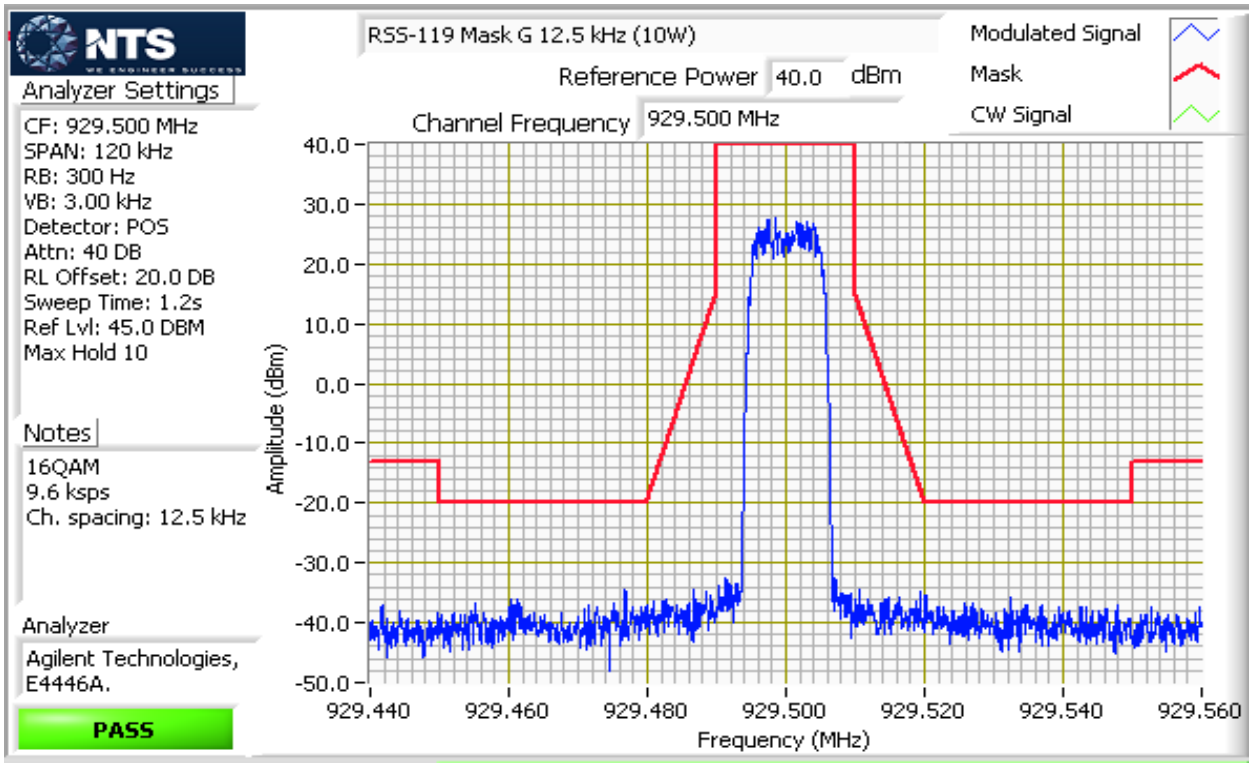
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



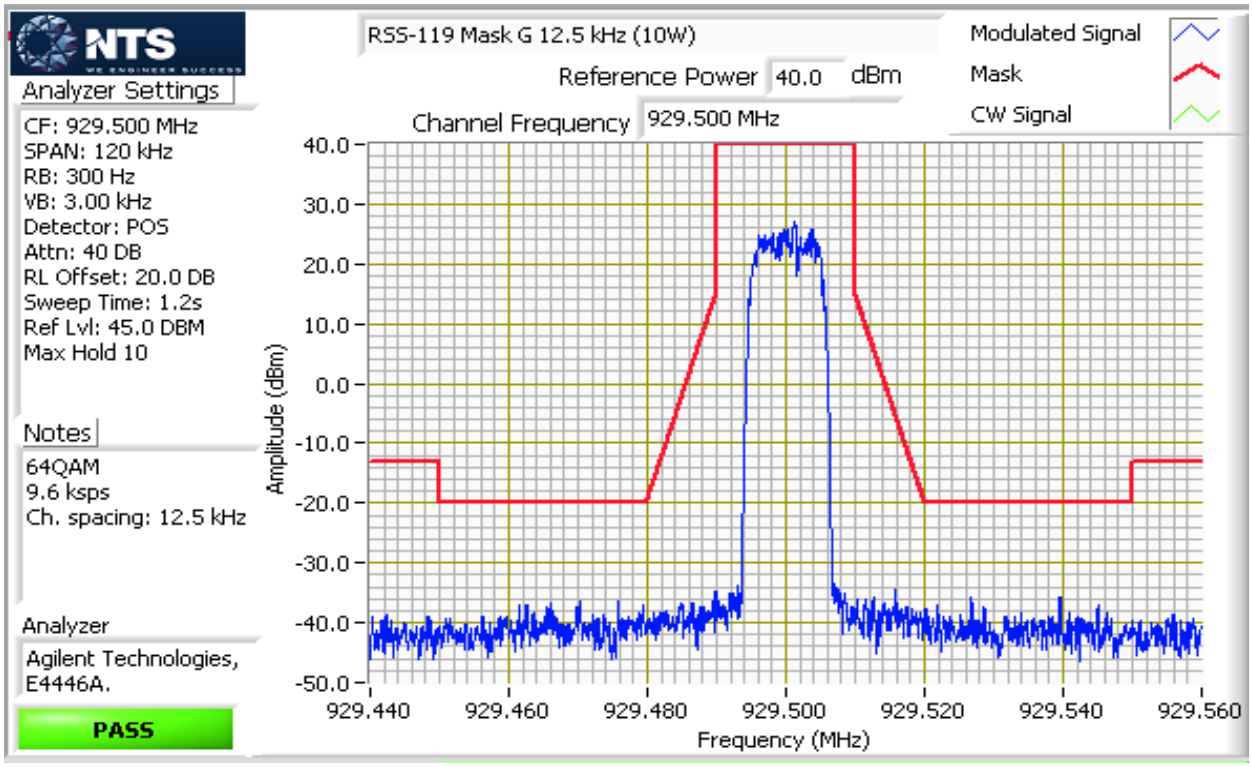
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



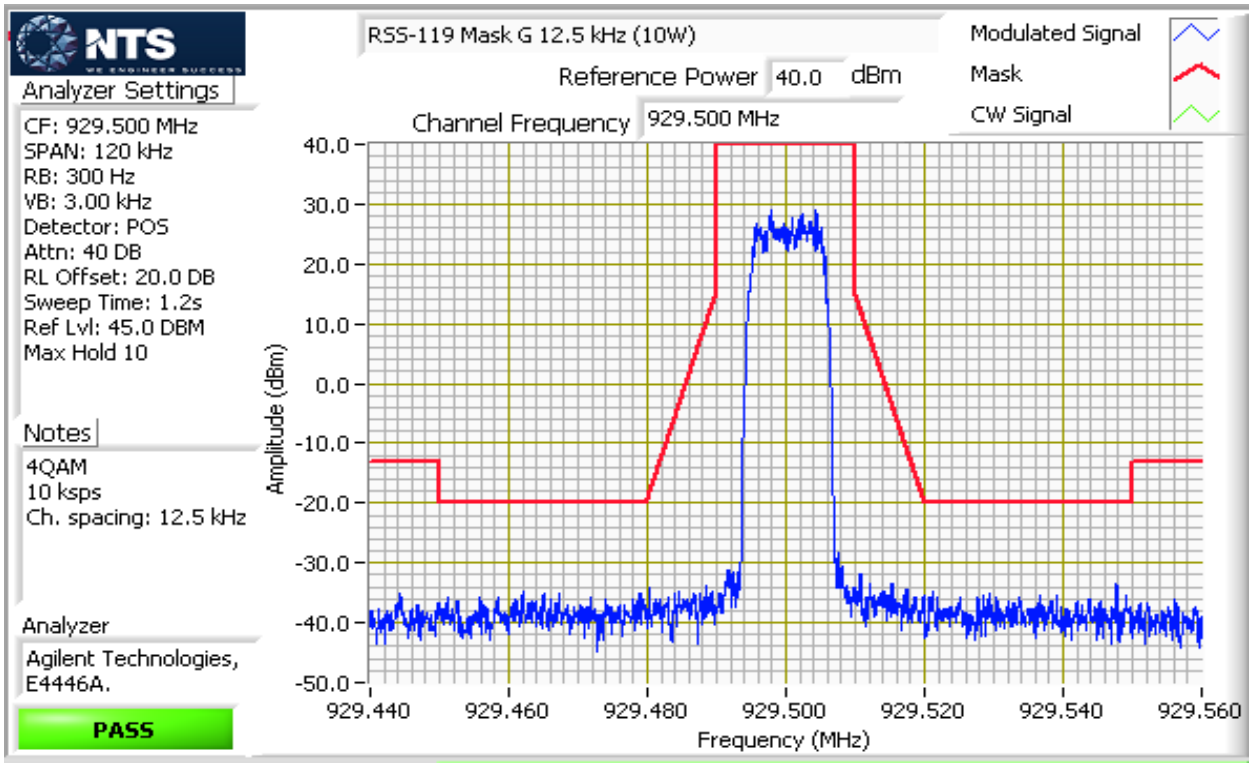
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



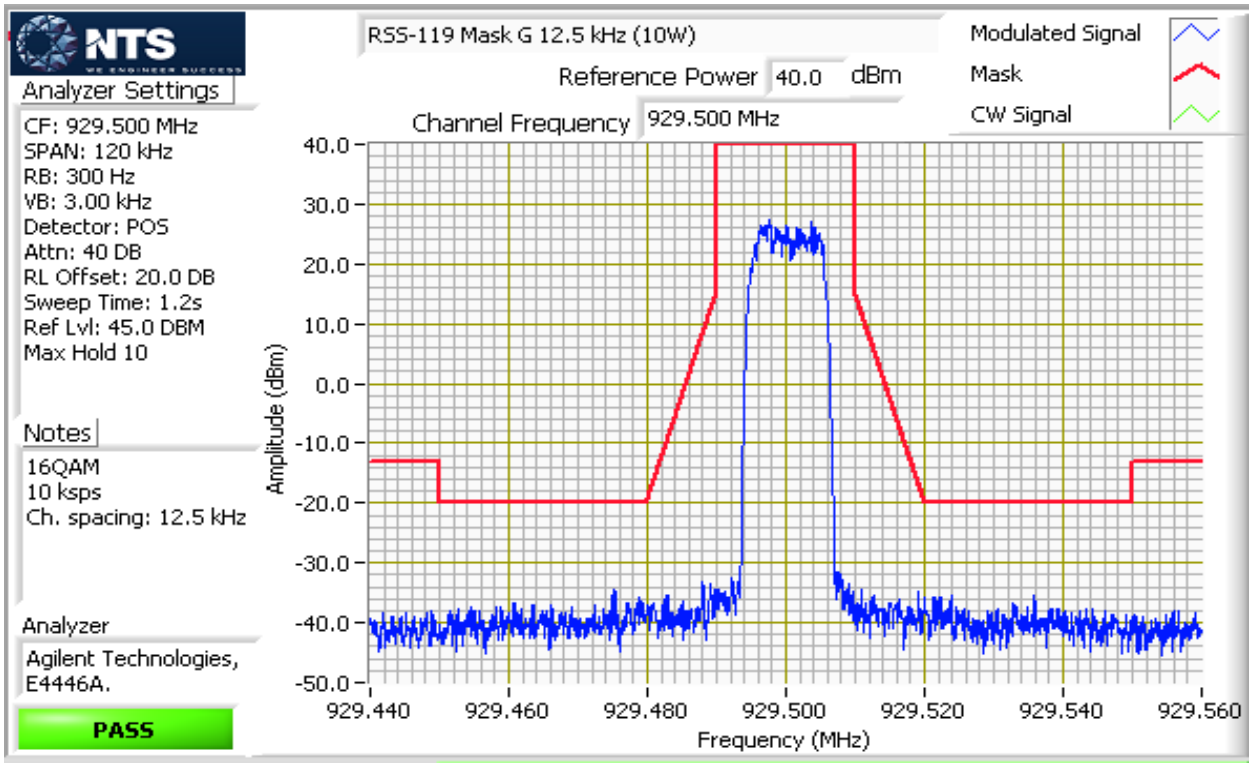
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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



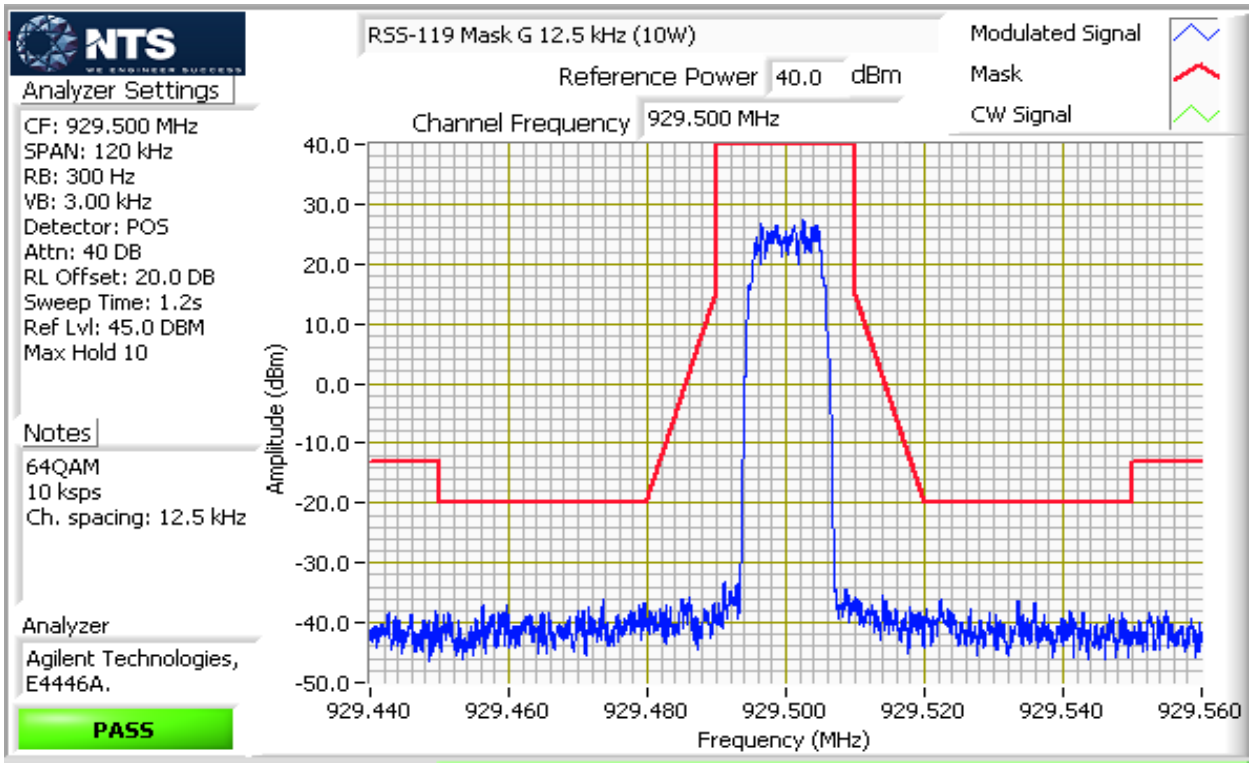
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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

Run #3: Signal Bandwidth

Date of Test: 10/27/2015 Config. Used: 1

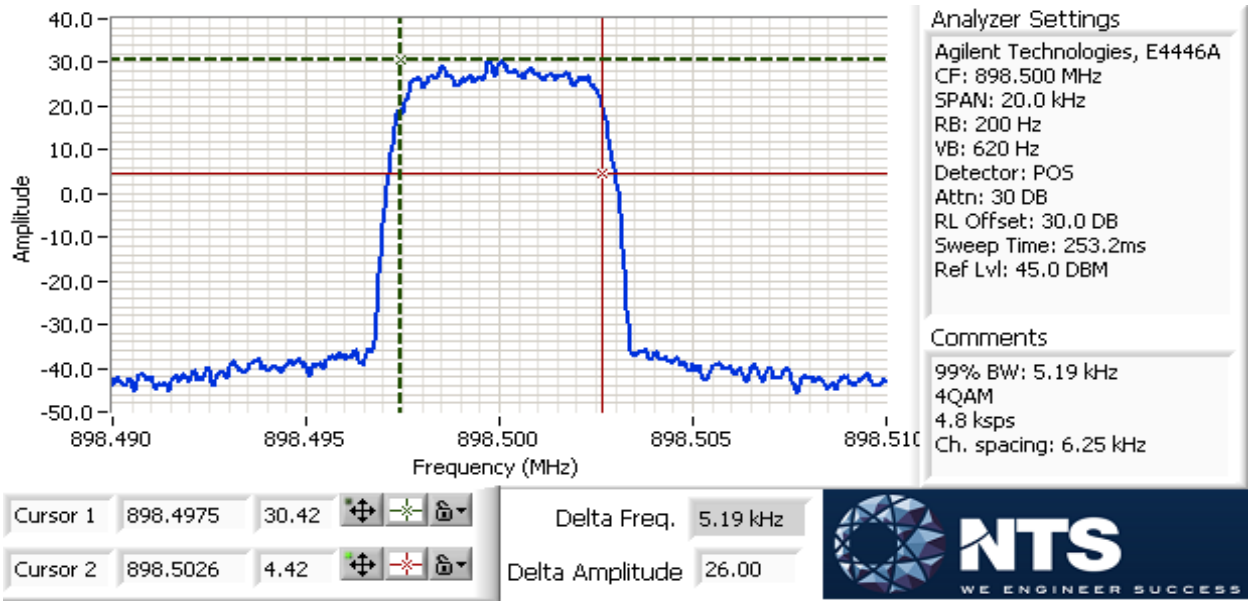
Test Engineer: Deniz Demirci Config Change: None

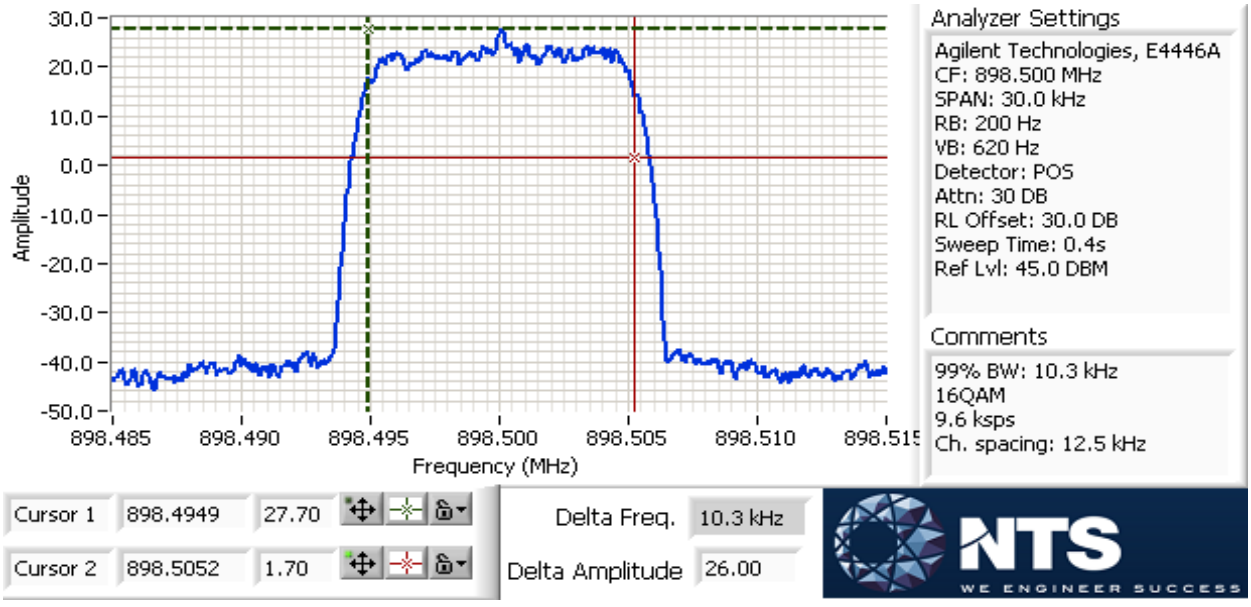
Test Location: FT Lab #6 EUT Voltage: 13.8 VDC

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

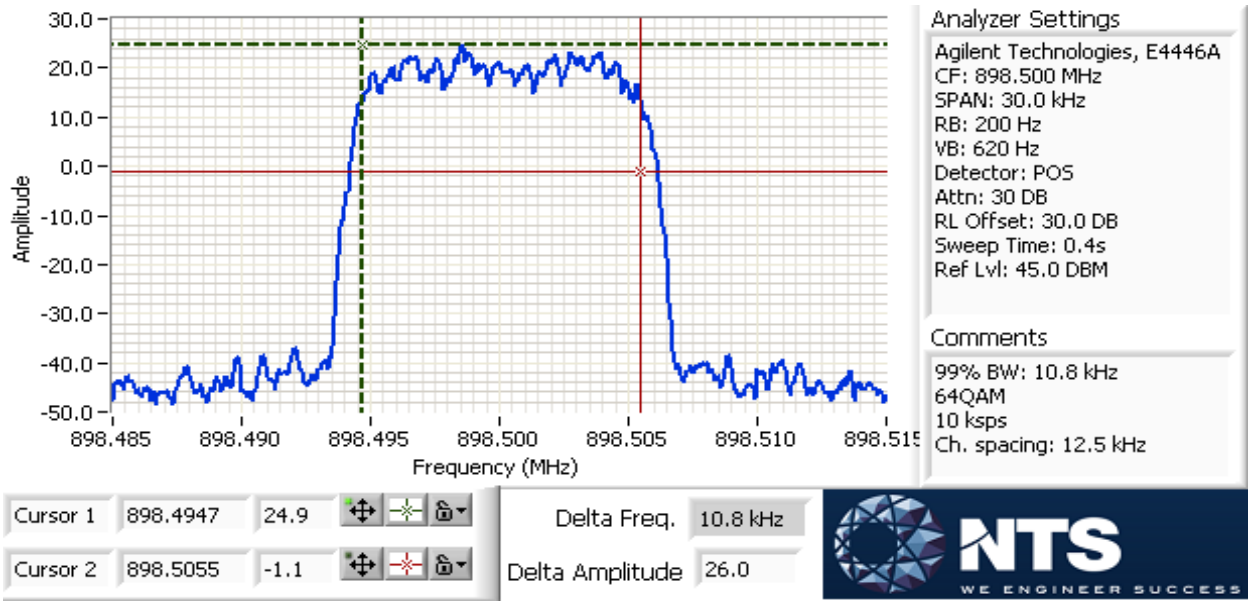
Note 1:	99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.

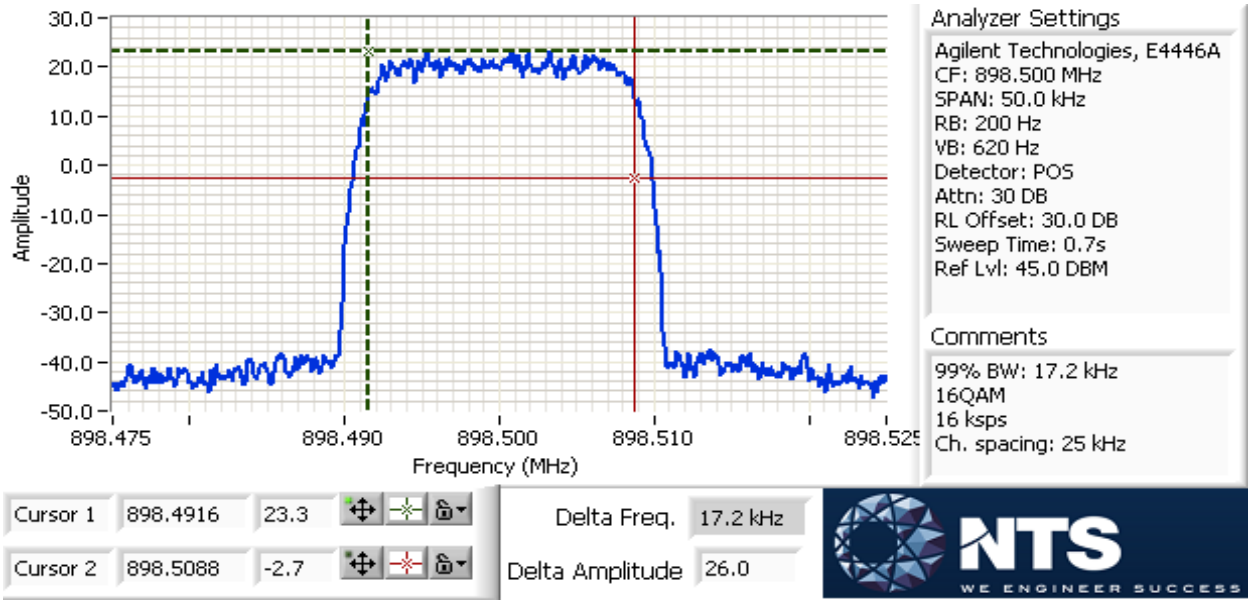
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A





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 Config. Used: 1
Test Engineer: Deniz Demirci & David Bare Config Change: None
Test Location: Fremont Ch #3 and Lab #4B EUT Voltage: 13.8 VDC

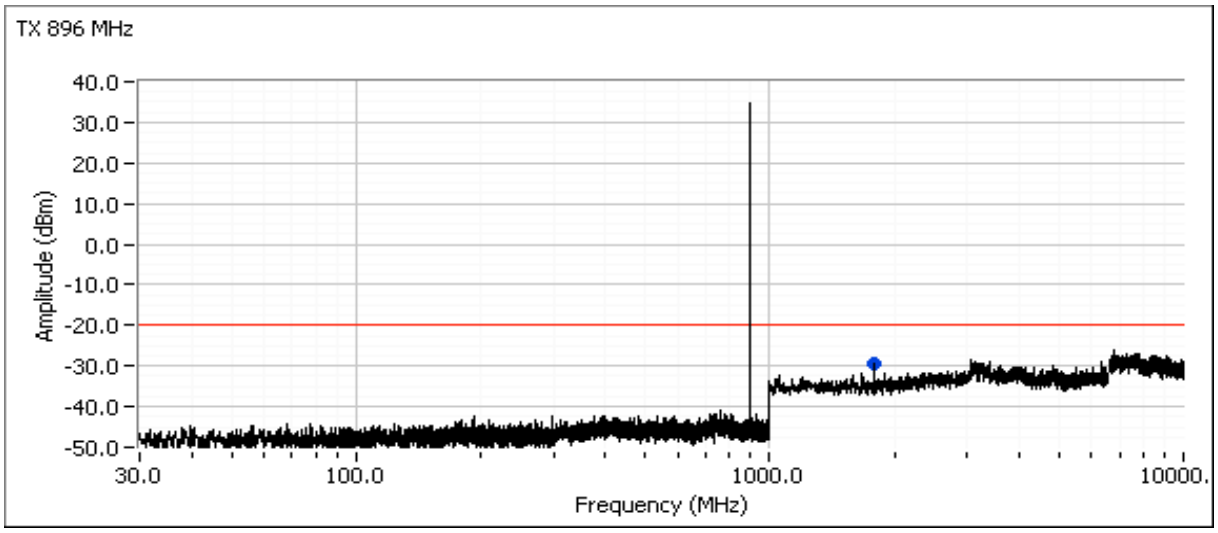
Frequency MHz	Level dBµV	AC Line	FCC Part 90 Limit	FCC Part 90 Margin	Detector	Comments	Channel MHz
1869.580	-28.2	RF Port	-20.0	-8.2	PK	PK (CISPR)-RB 1 MHz; VB: 3 MHz	932
6653.350	-48.9	RF Port	-20.0	-28.9	PK	PK (CISPR)-RB 1 MHz; VB: 8 MHz	932
1858.860	-27.3	RF Port	-20.0	-7.3	PK	PK (CISPR)-RB 1 MHz; 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.

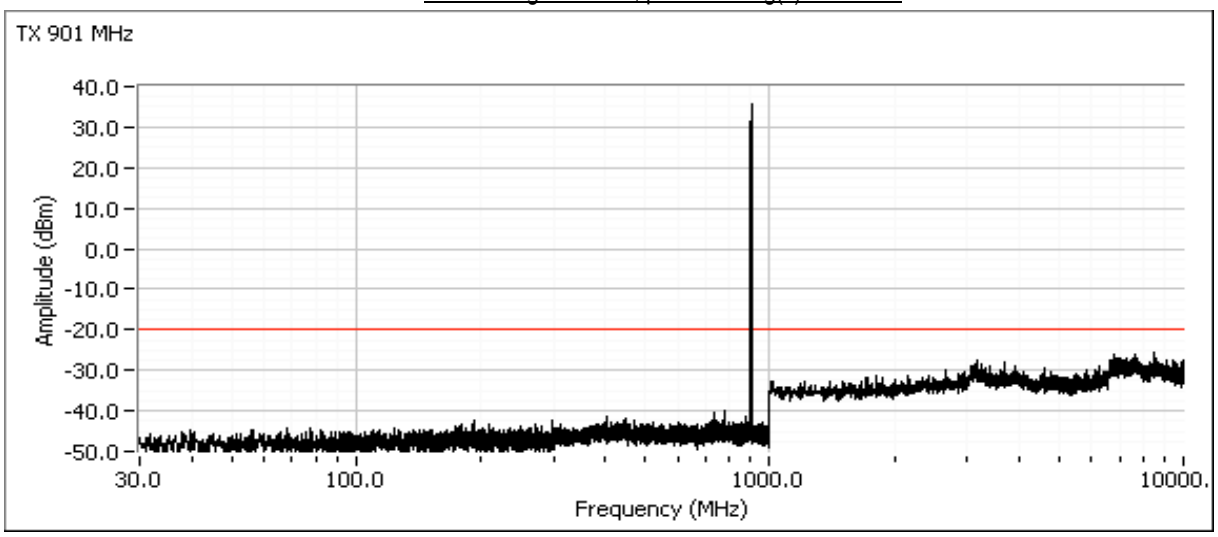
Bands	Channels to be tested	
896 - 901 MHz	896 MHz and 901 MHz	
935 - 940 MHz	935 MHz and 940 MHz	
928 - 929 MHz	-	928 MHz tested under Part 101
929 - 930 MHz	929 MHz	
932 - 935 MHz	932 MHz	
941 - 944 MHz	941 MHz	944 MHz tested under Part 101
952 - 953 MHz	952.5 MHz	

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

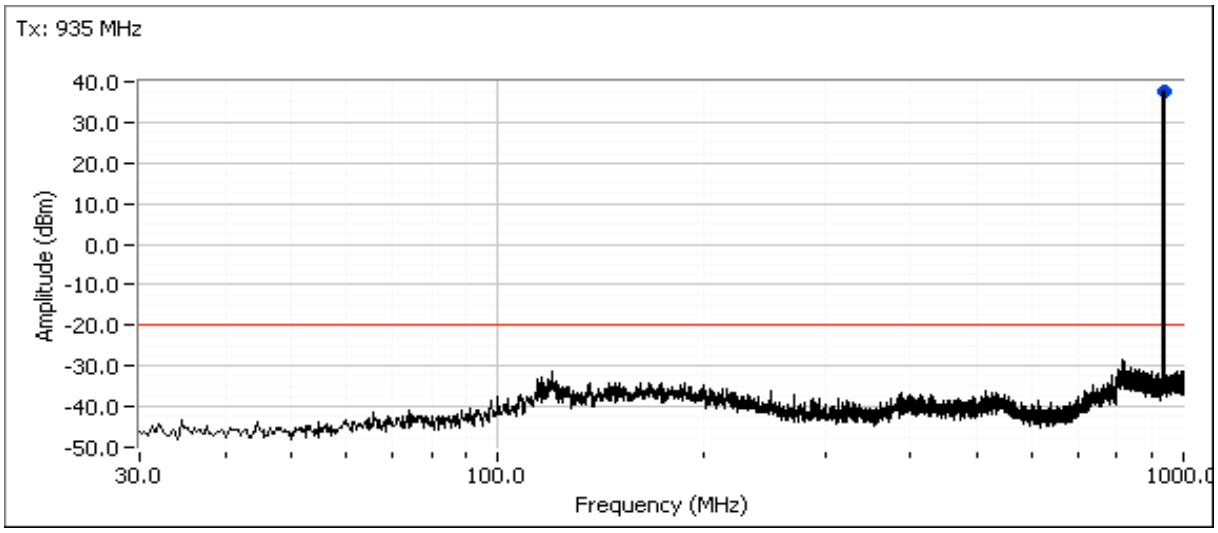


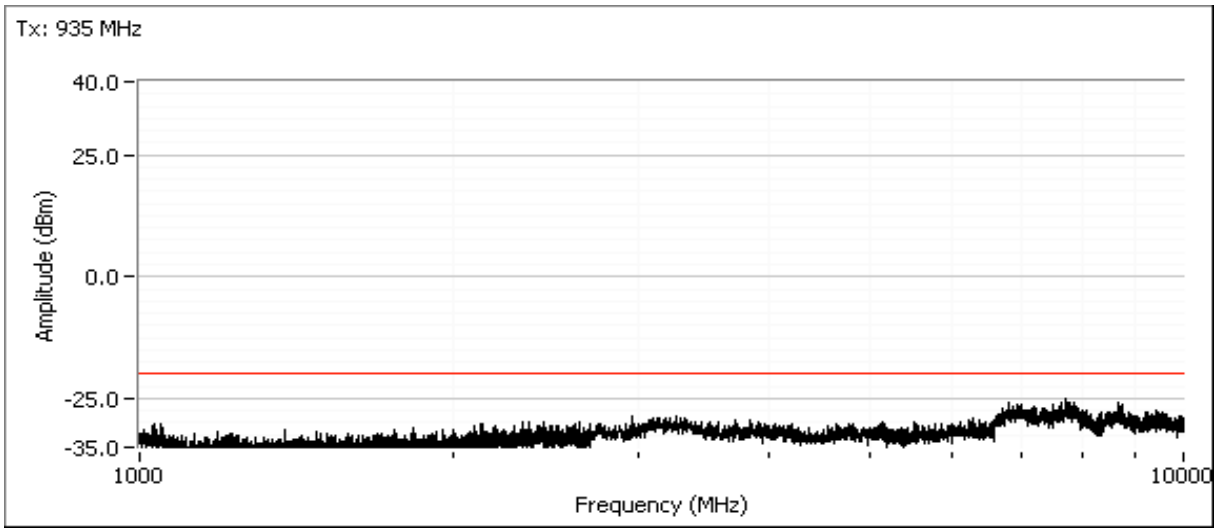
Plots for high channel, power setting(s) = 40 dBm



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

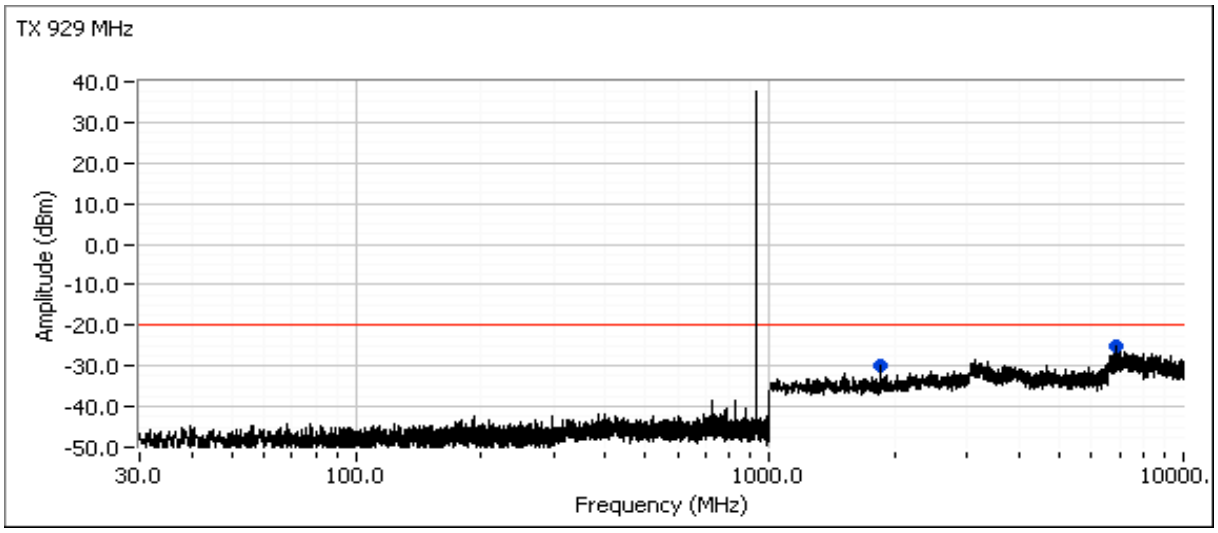
Plots for low channel, power setting(s) = 40 dBm



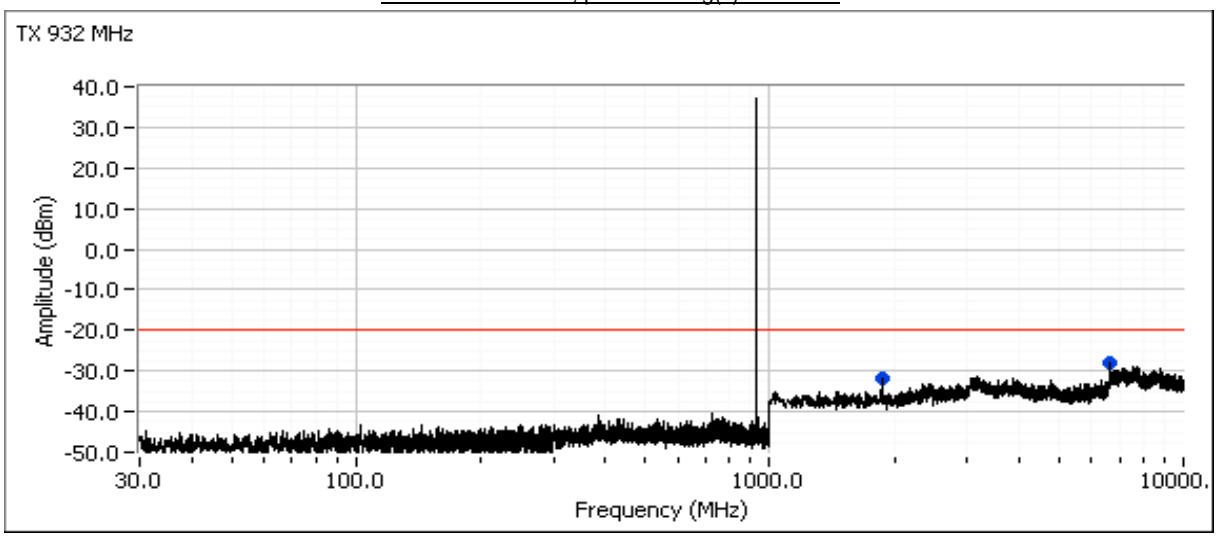


Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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

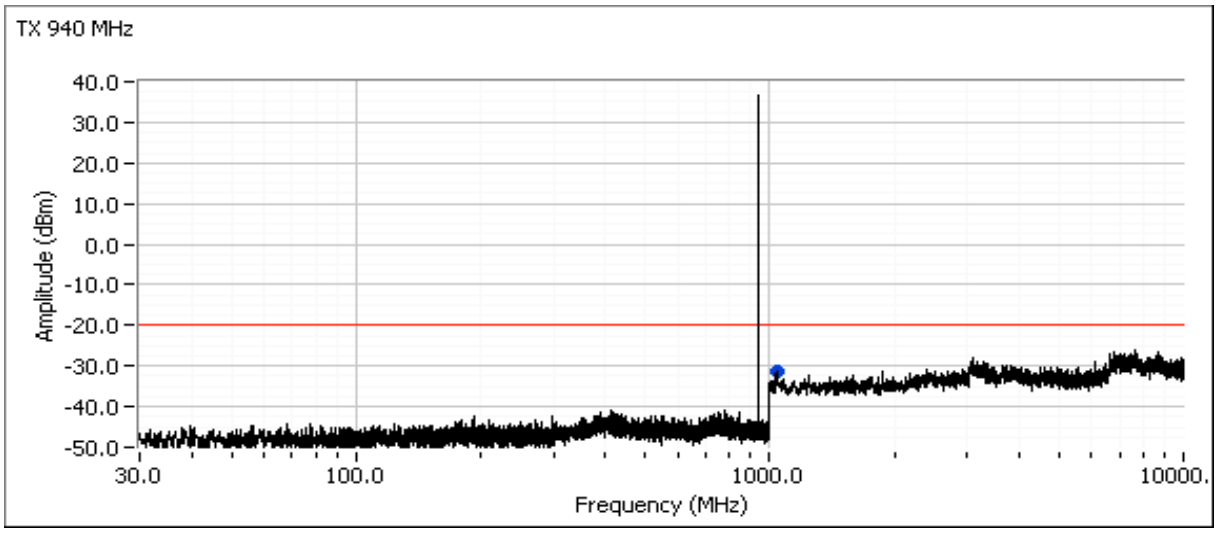


Plot for low channel, power setting(s) = 40 dBm

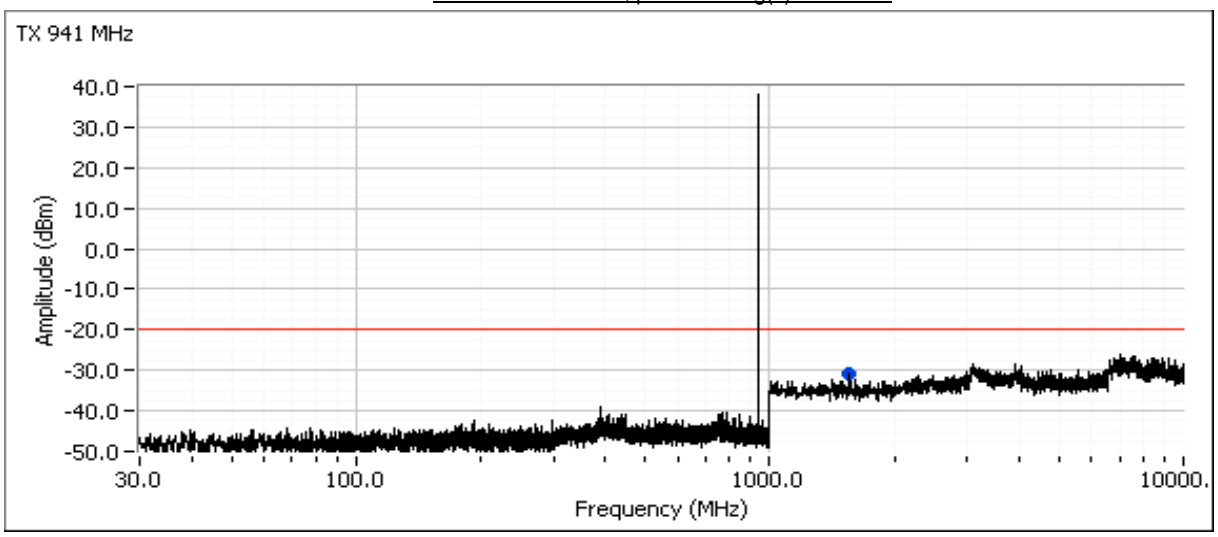


Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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

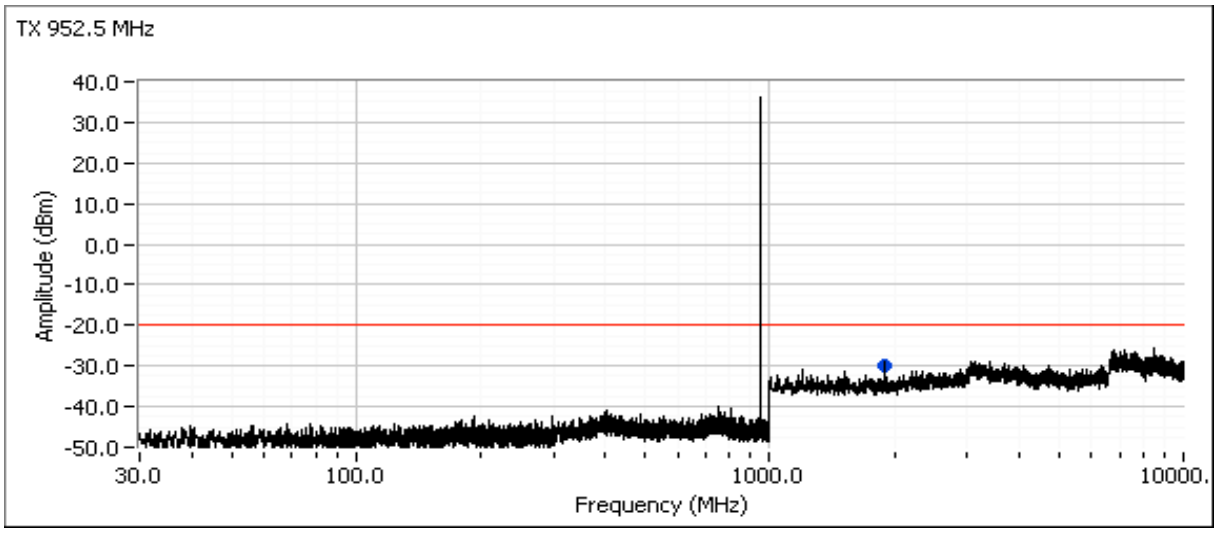


Plot for low channel, power setting(s) = 40 dBm



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 Config. Used: 1
Test Engineer: Deniz Demirci, David Bare Config Change: None
Test Location: FT Ch #3 & 7 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		

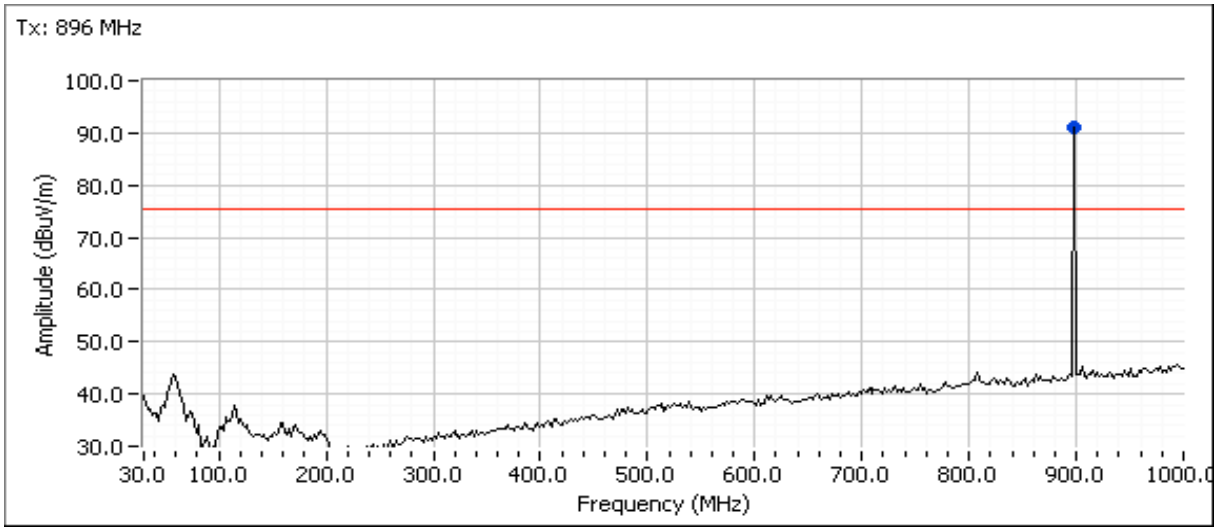
Note 1:	The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) 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.

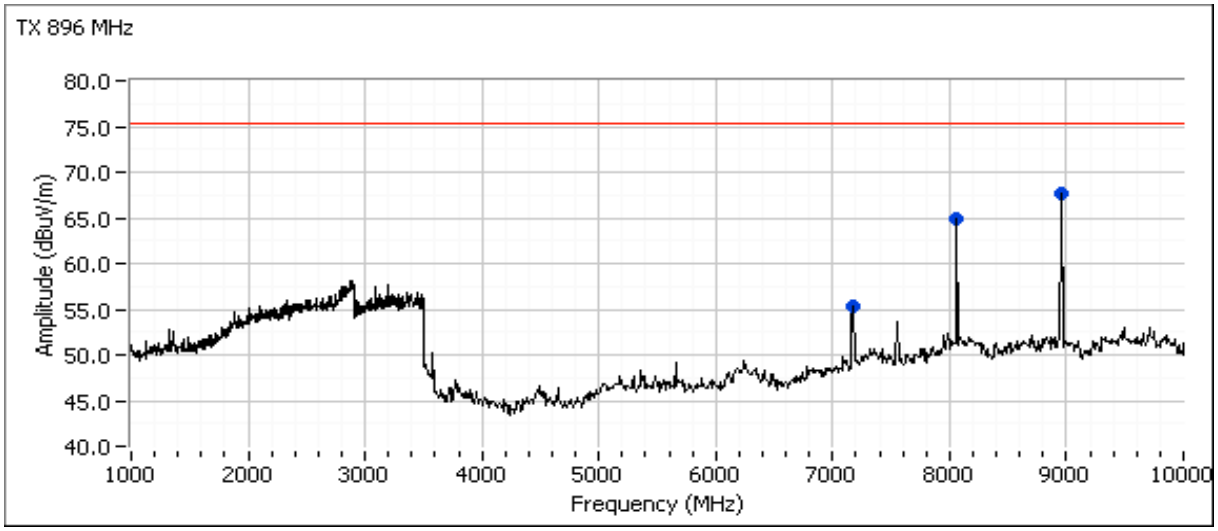
Engineering notes:
1 - 3.5 GHz no LNA, RBW: 100 kHz, VBW: 300 kHz
3.5 - 10 GHz with LNA and Filter #1157 RBW: 1 MHz, VBW: 3 MHz

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	

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

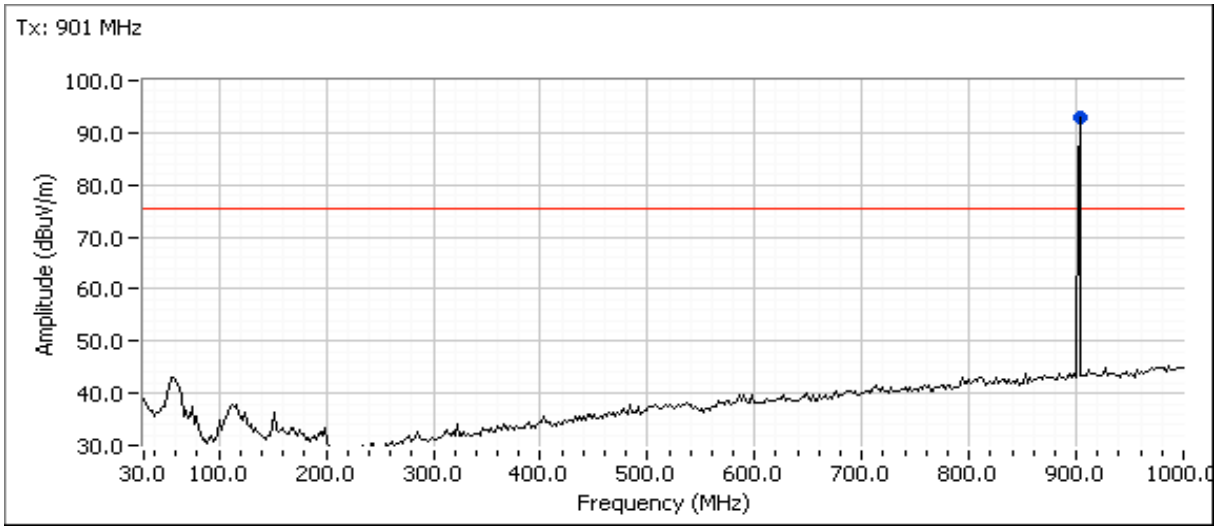
Plots for low channel (896 MHz), power setting(s) = 40 dBm

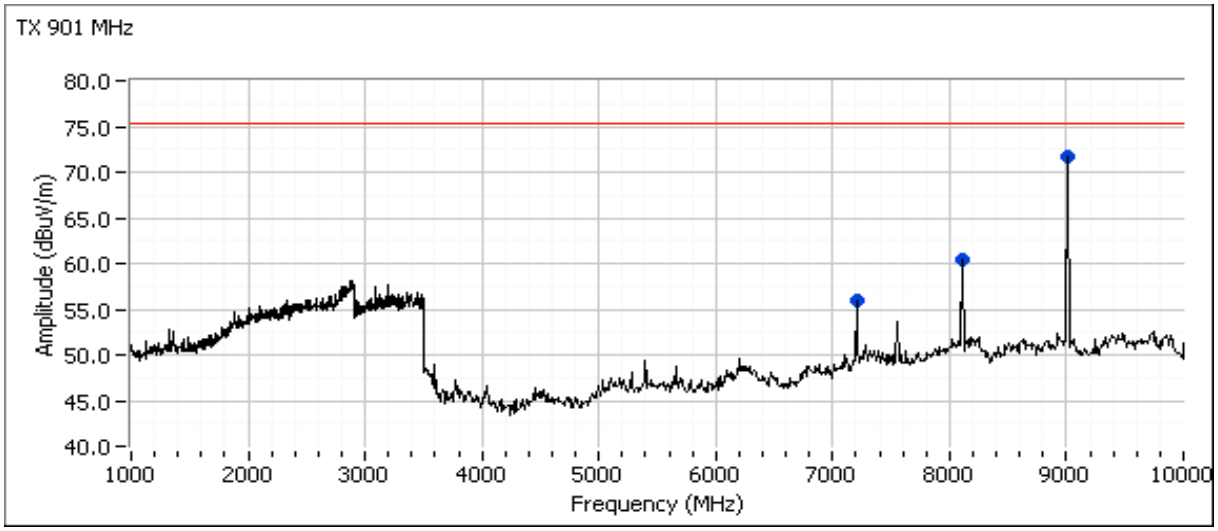




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

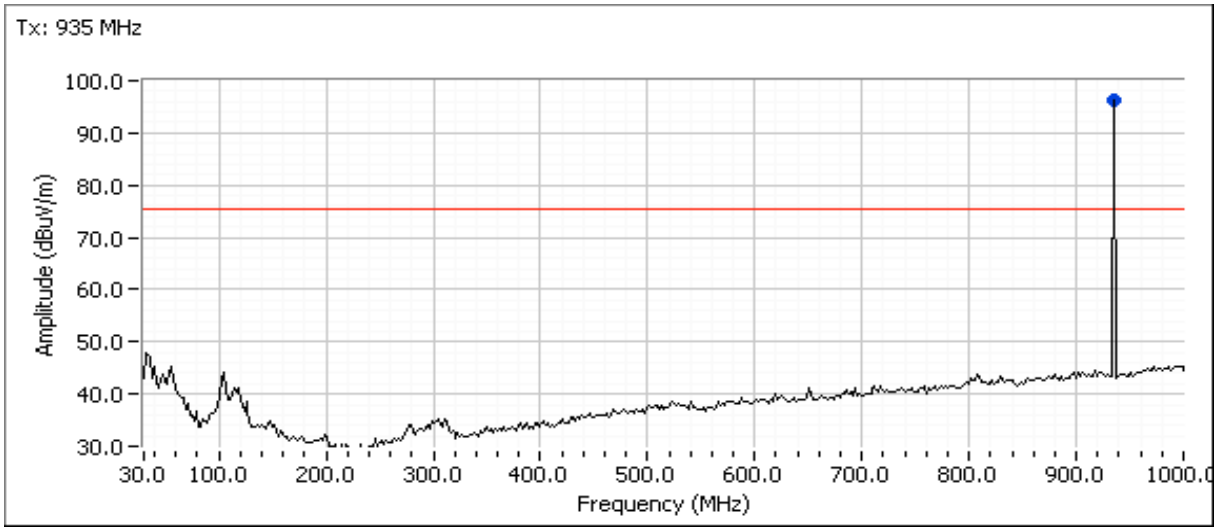
Plots for high channel (901 MHz), power setting(s) = 40 dBm

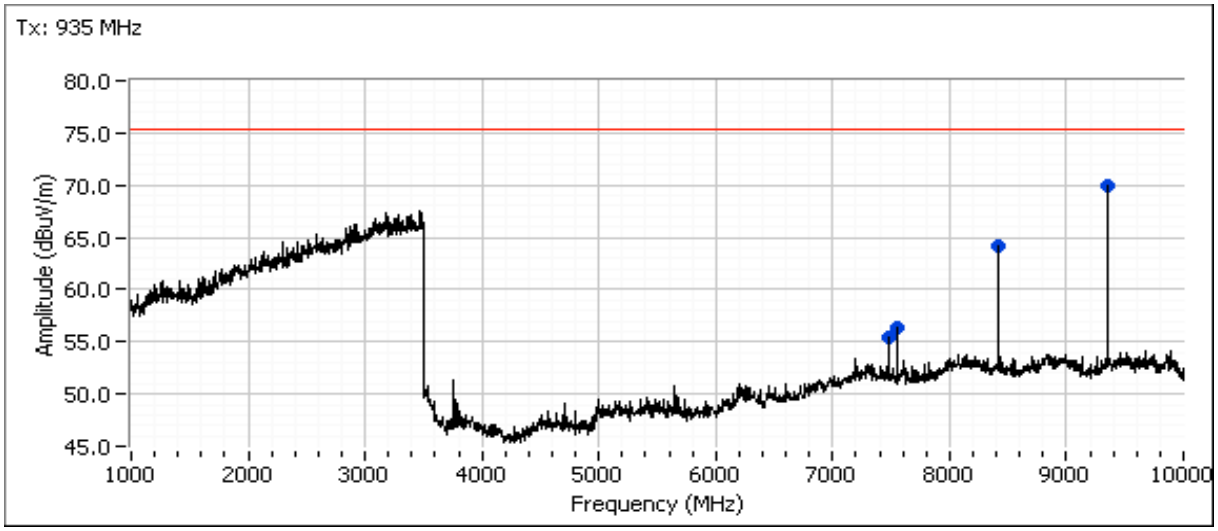




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

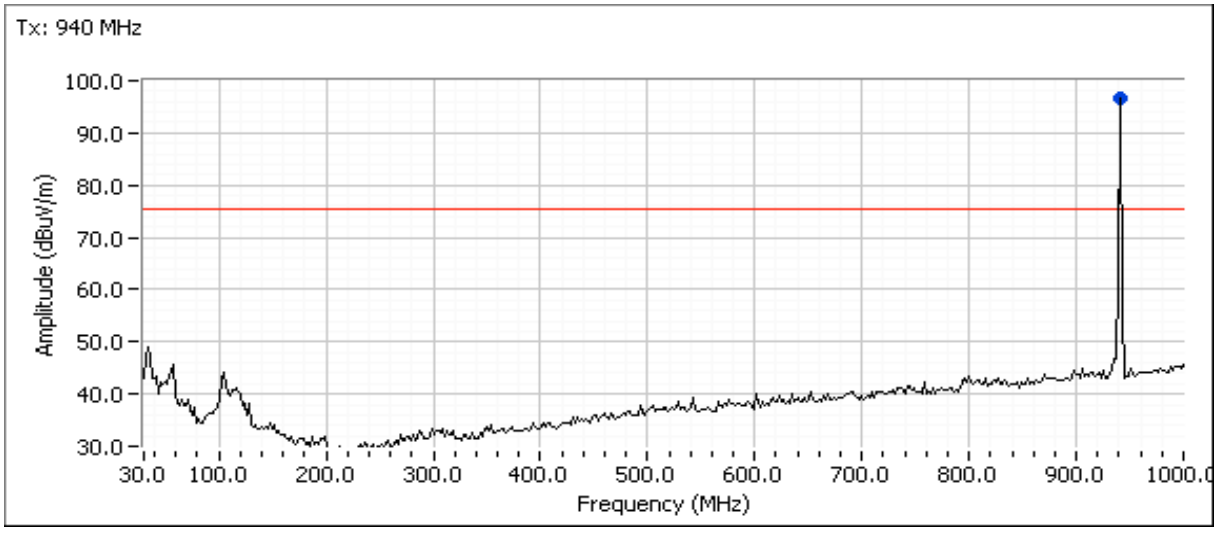
Plots for low channel (935 MHz), power setting(s) = 40 dBm

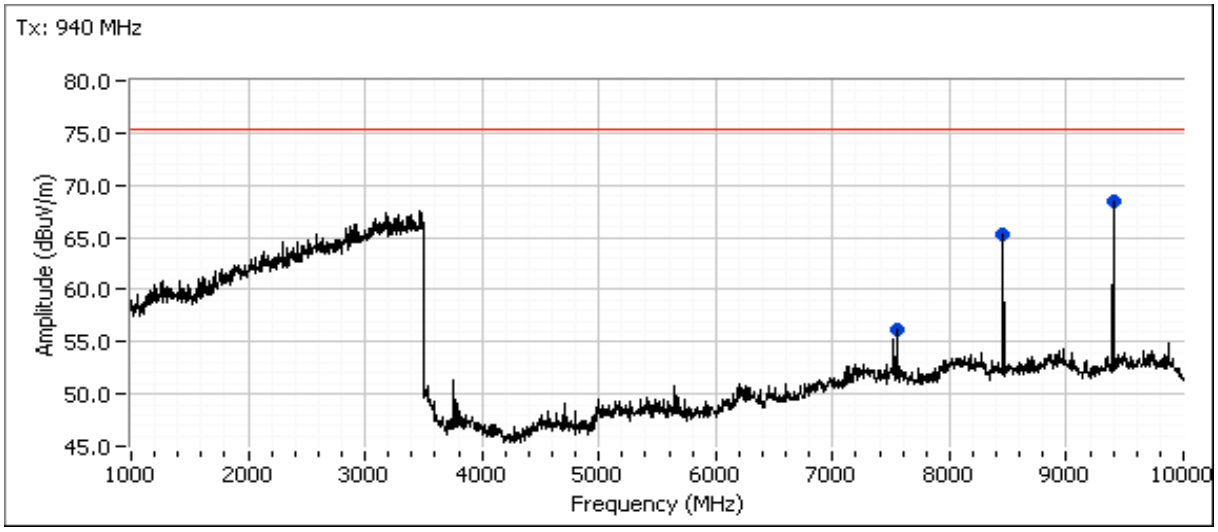




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

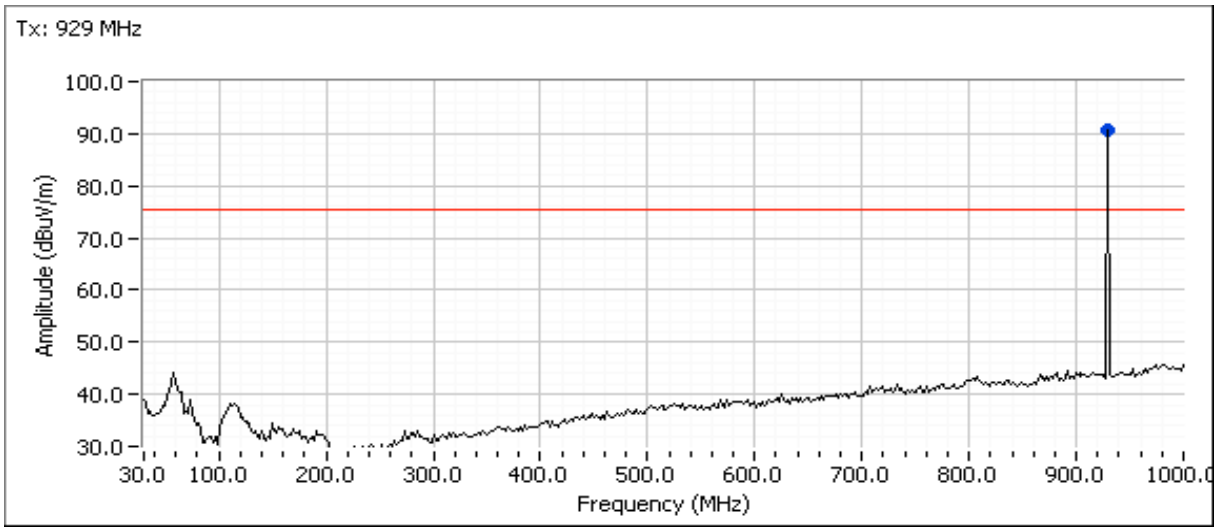
Plots for high channel (940 MHz), power setting(s) = 40 dBm

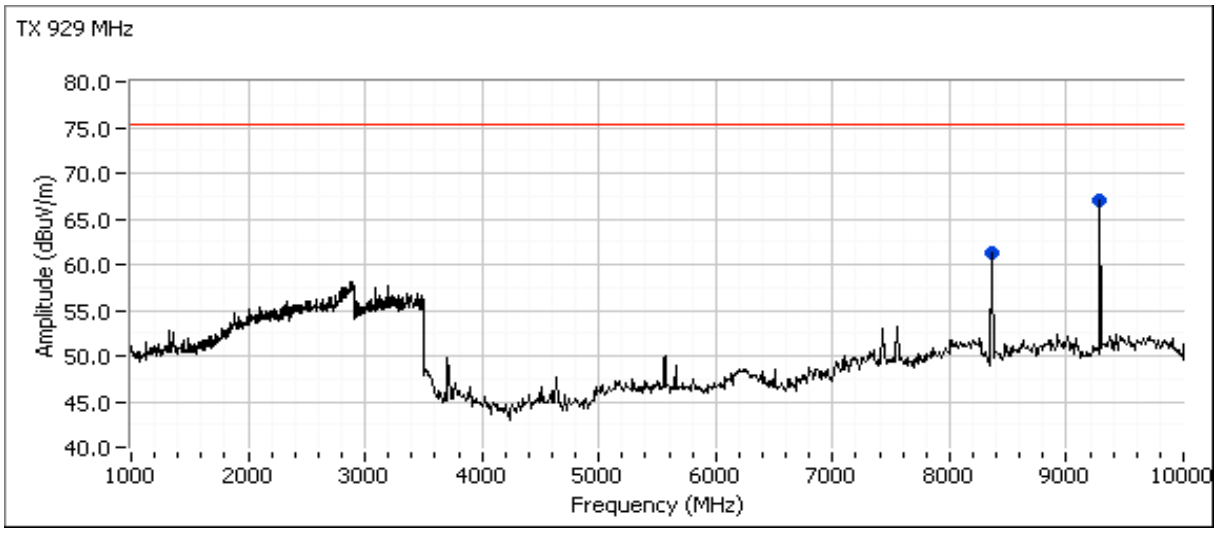




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

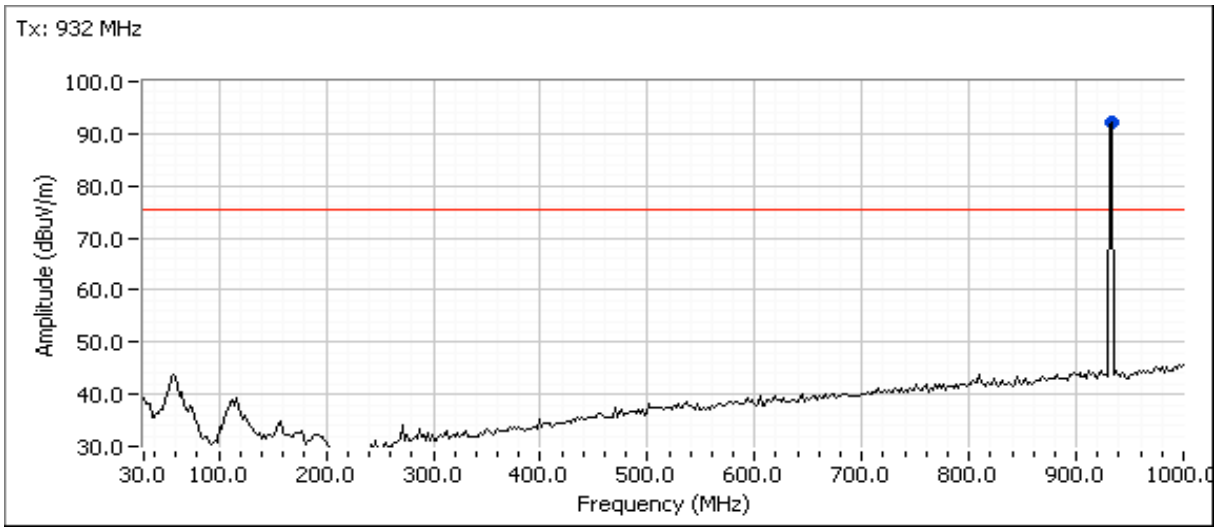
Plots for low channel (929 MHz), power setting(s) = 40 dBm

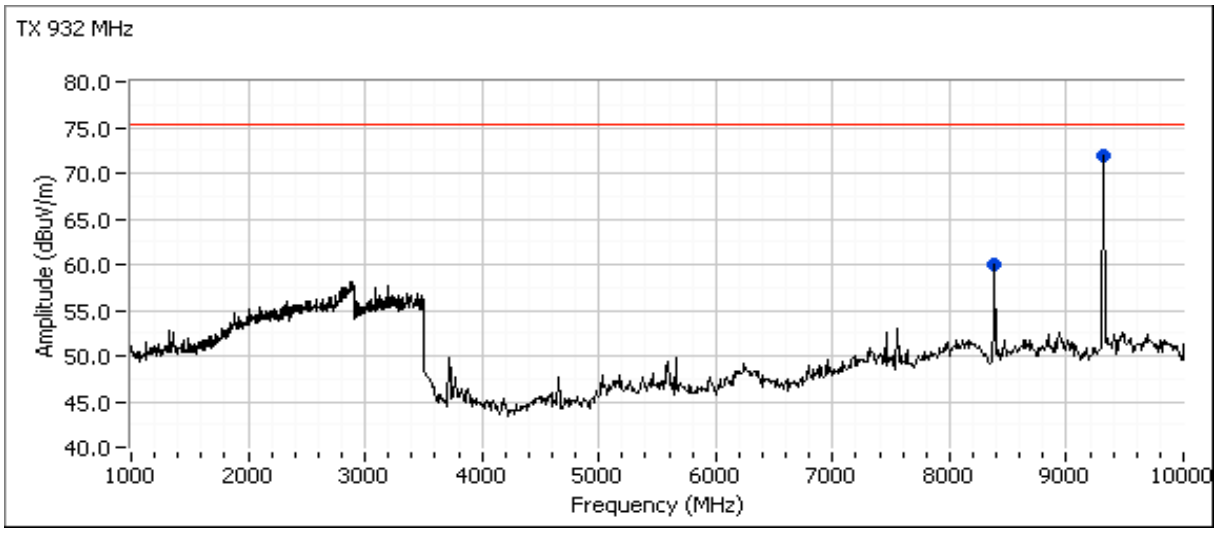




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

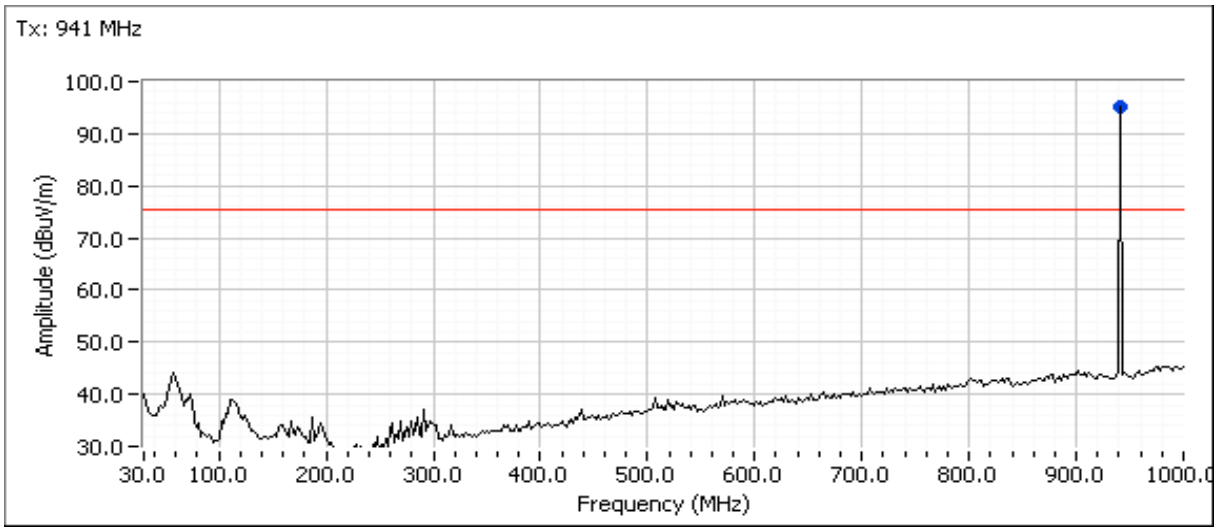
Plots for low channel (932 MHz), power setting(s) = 40 dBm

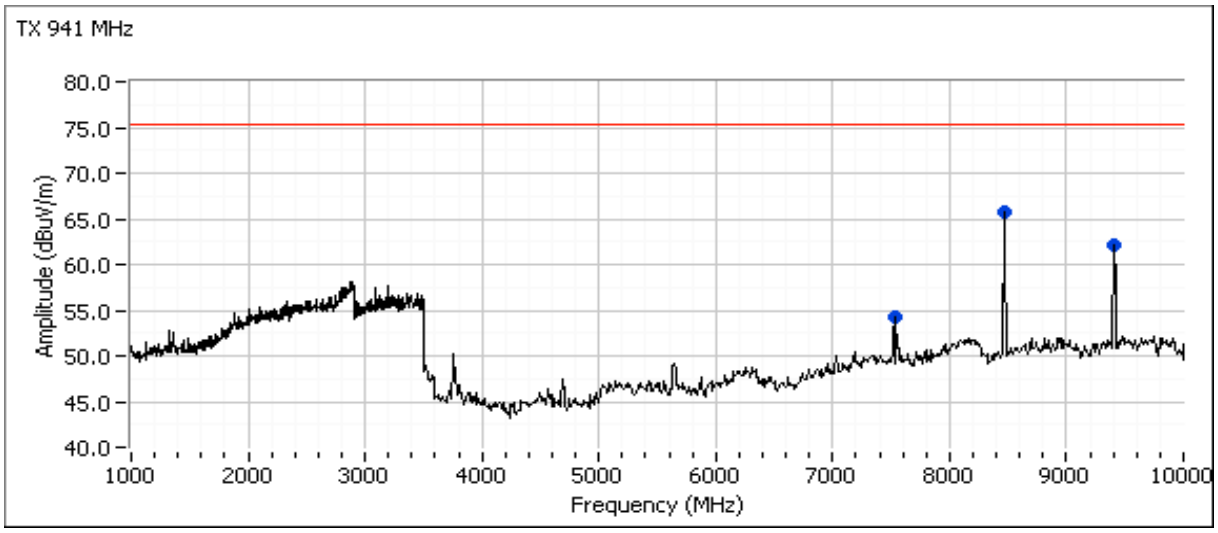




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

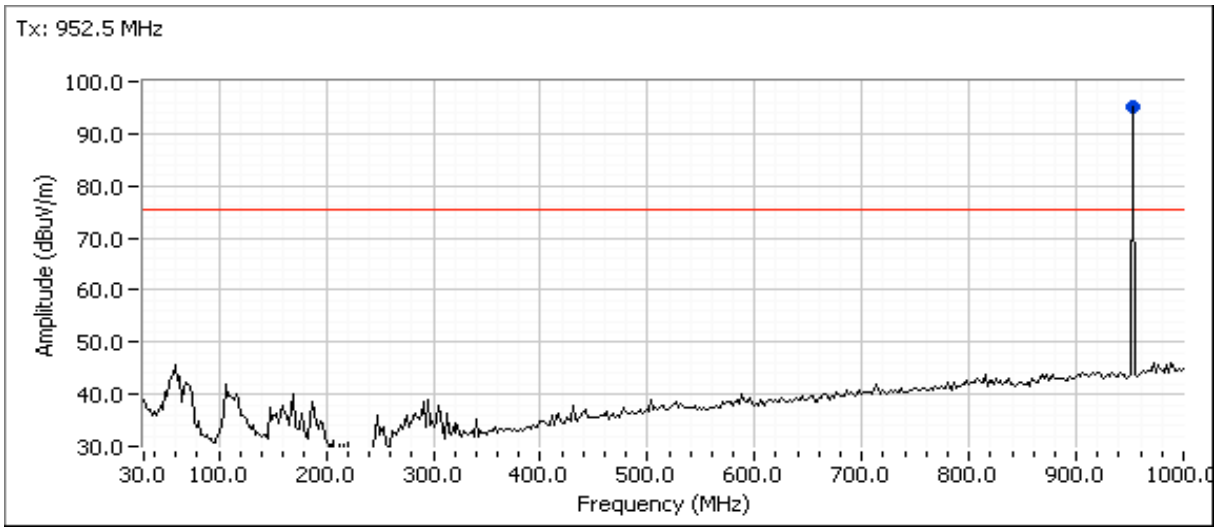
Plots for low channel (941 MHz), power setting(s) = 40 dBm

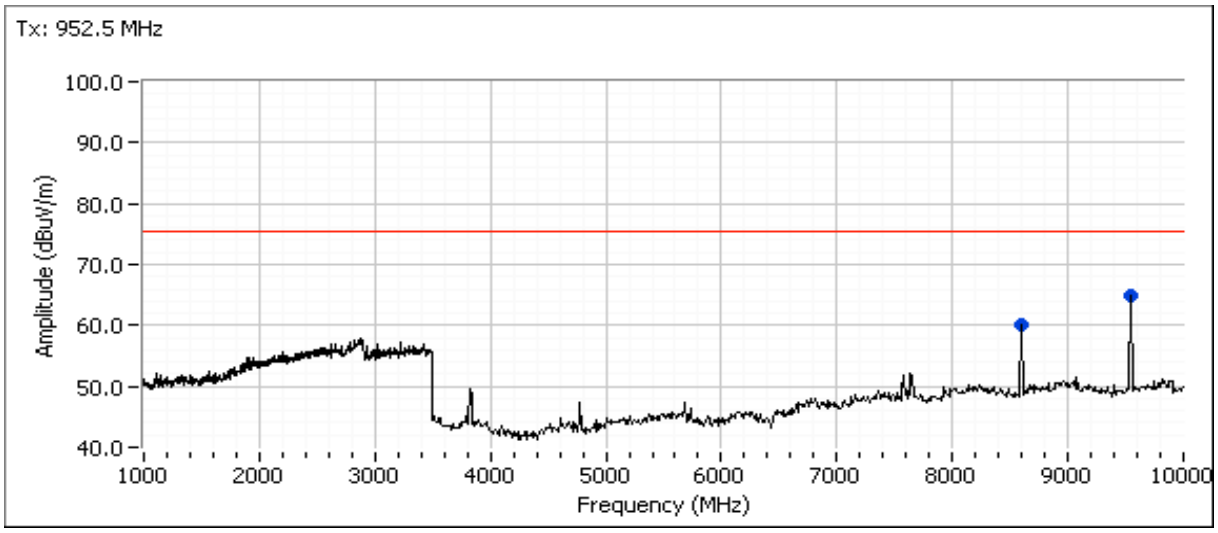




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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 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 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=√(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.

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 Config. Used: 1

Test Engineer: David Bare Config Change: None

Test Location: Fremont Chamber #7 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=√(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.

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 Config. Used: 1
Test Engineer: Deniz Demirci Config Change: None
Test Location: FT Lab #4b EUT Voltage: 13.8 VDC

Cable Loss: 0.0 dB Attenuator: 30.0 dB Total Loss: 30.0 dB
Cable ID(s): None Attenuator IDs: Asset #1878 + #2097

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

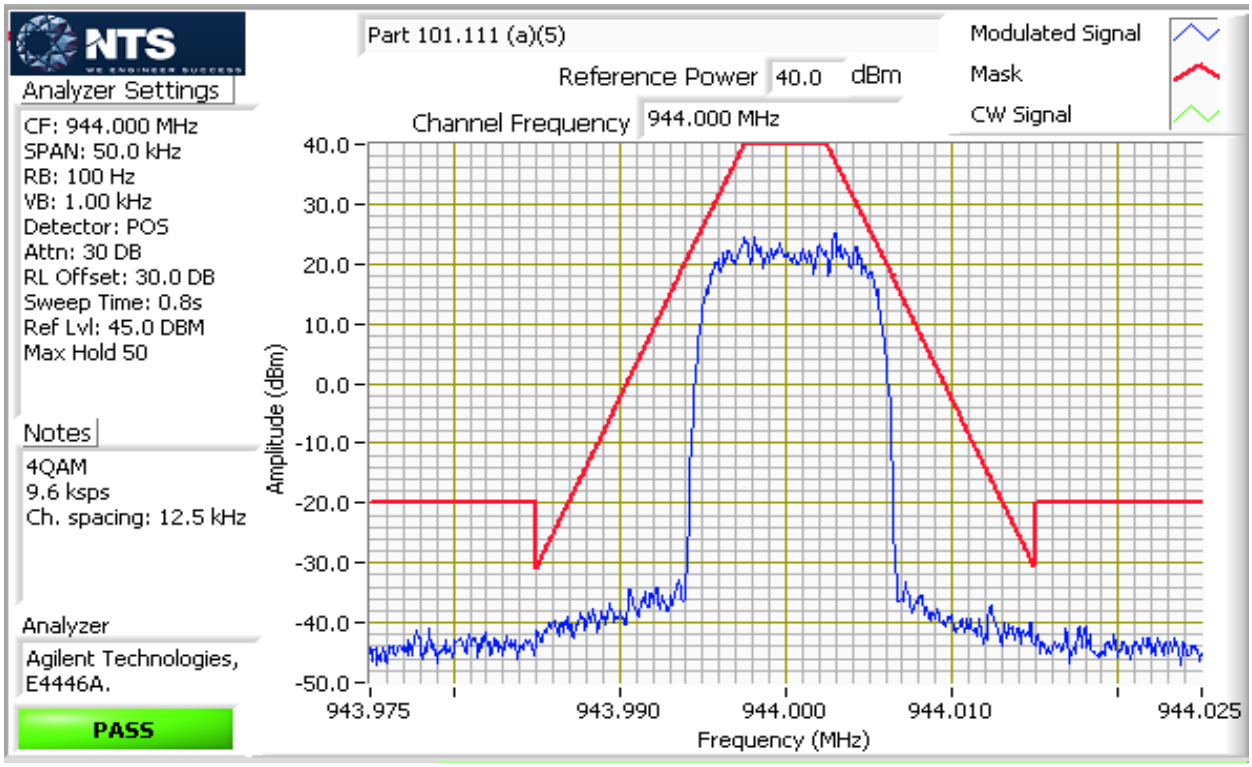
Note 1:	EUT does not transmit unmodulated carrier with full power setting. The measured power levels (using peak power meter) are higher than the declared nominal power for every channel frequency. Nominal 40 dBm reference power level used for spectral mask measurements as worst case results.

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

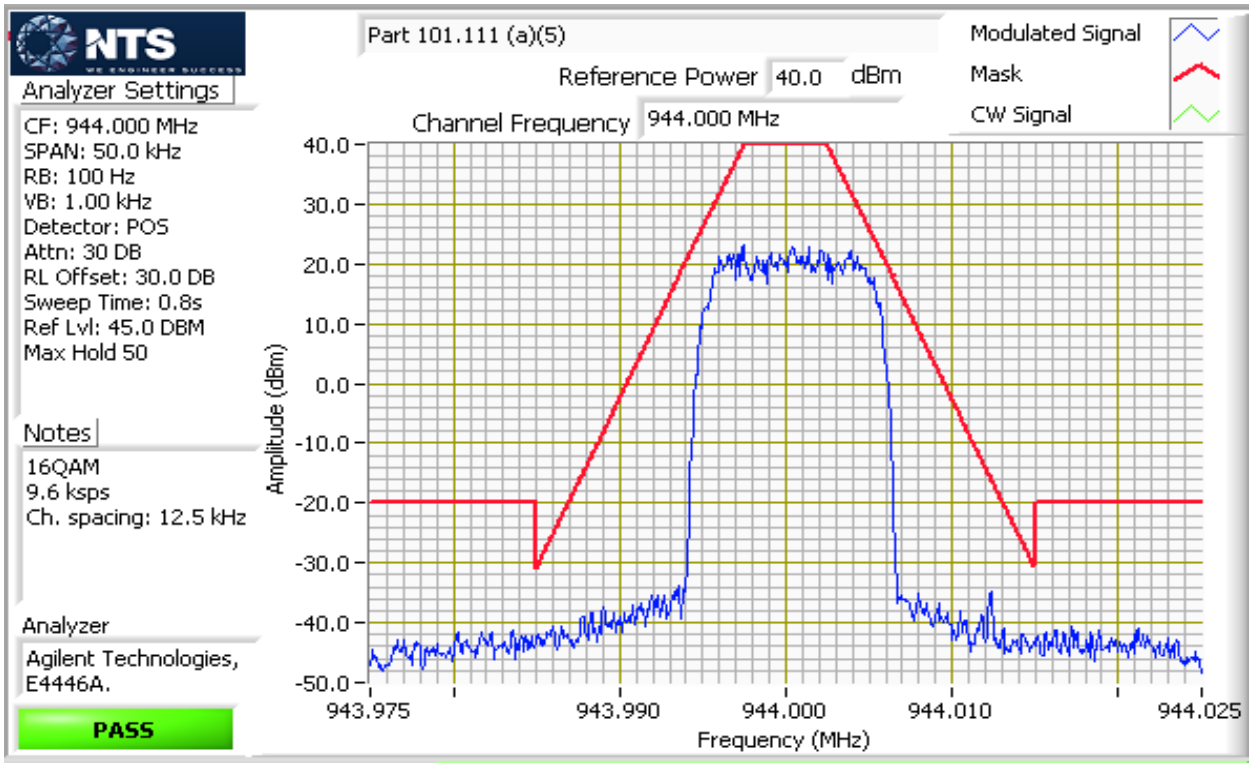
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



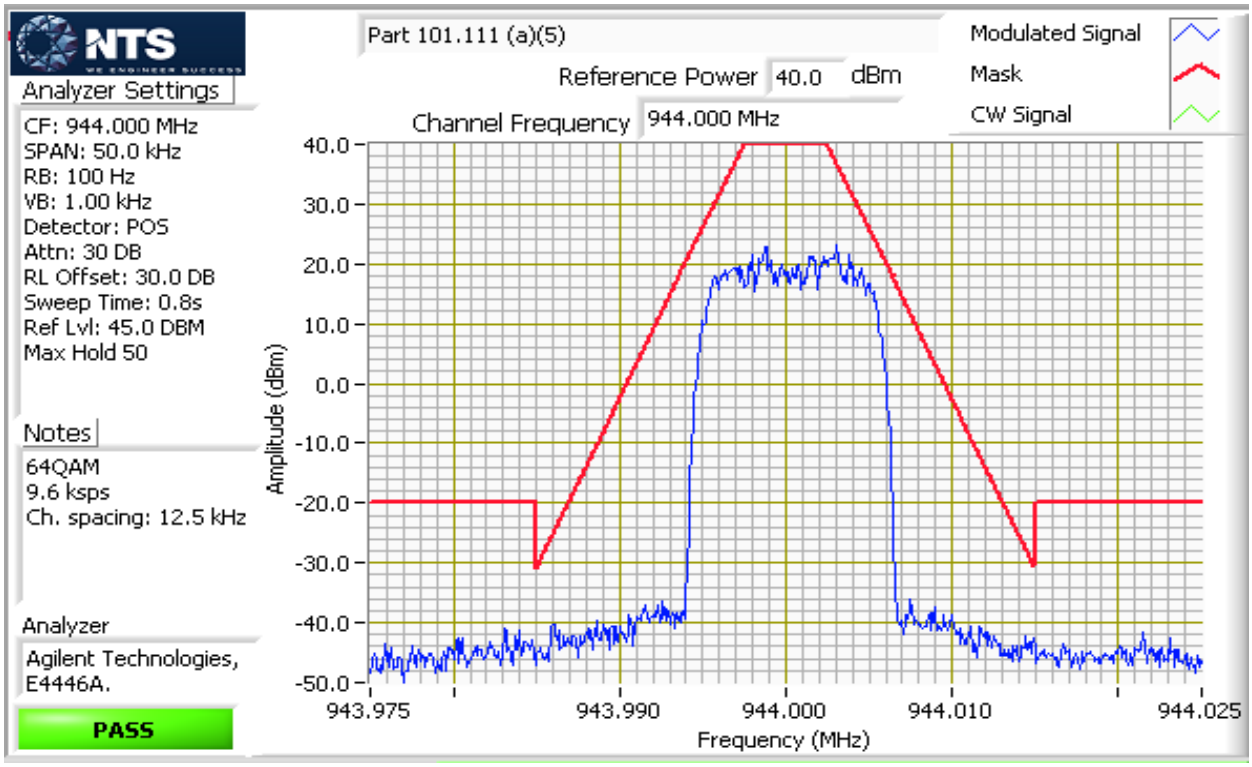
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



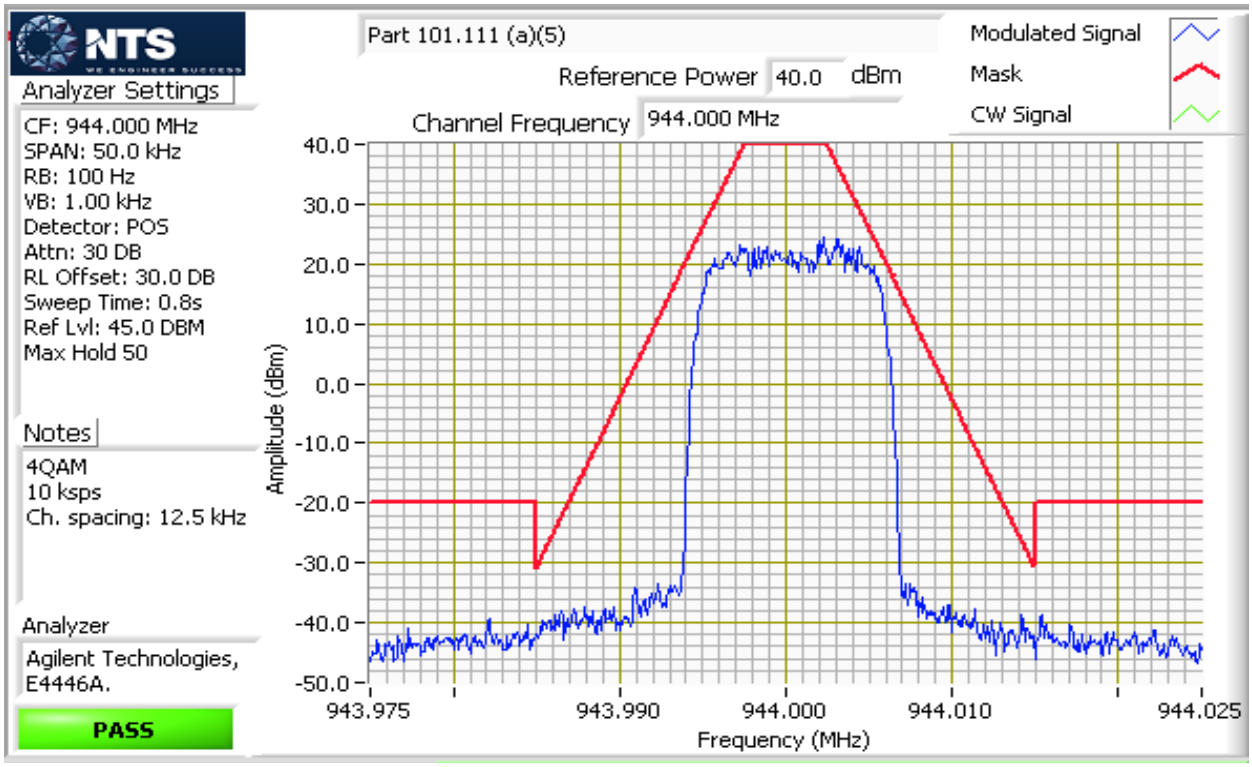
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



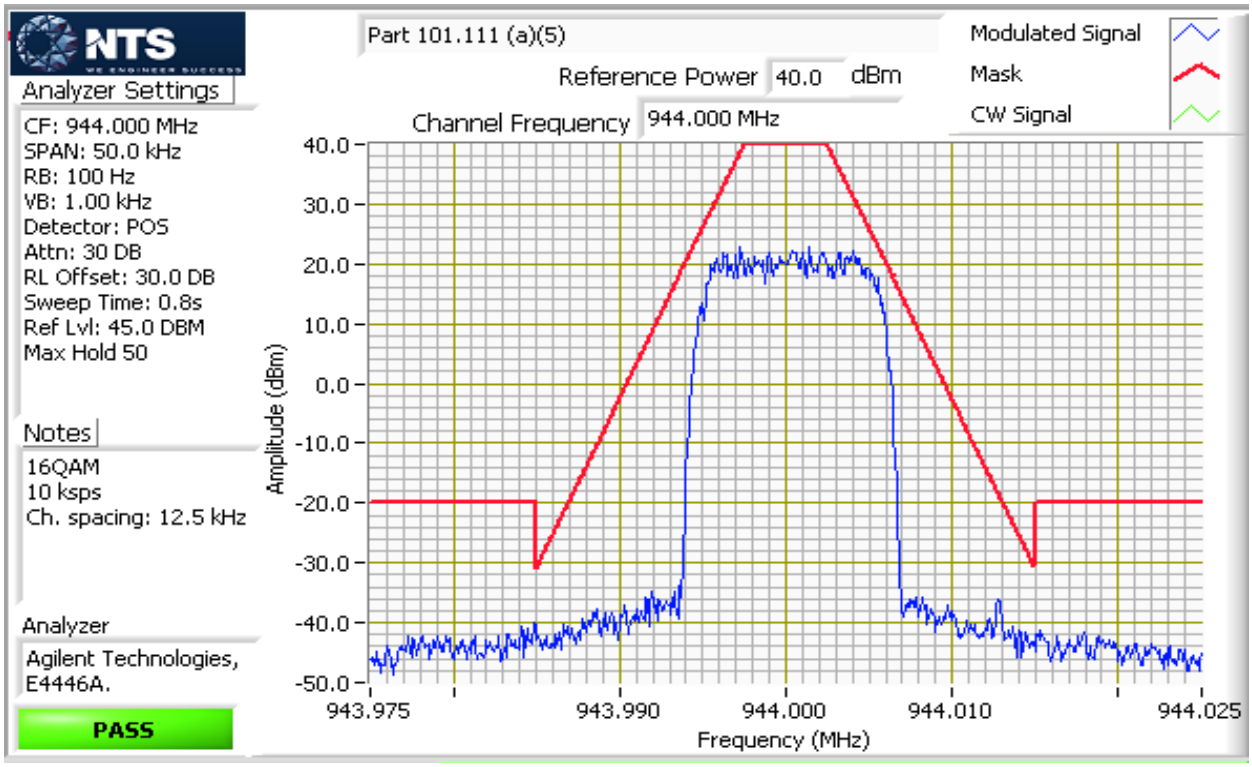
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



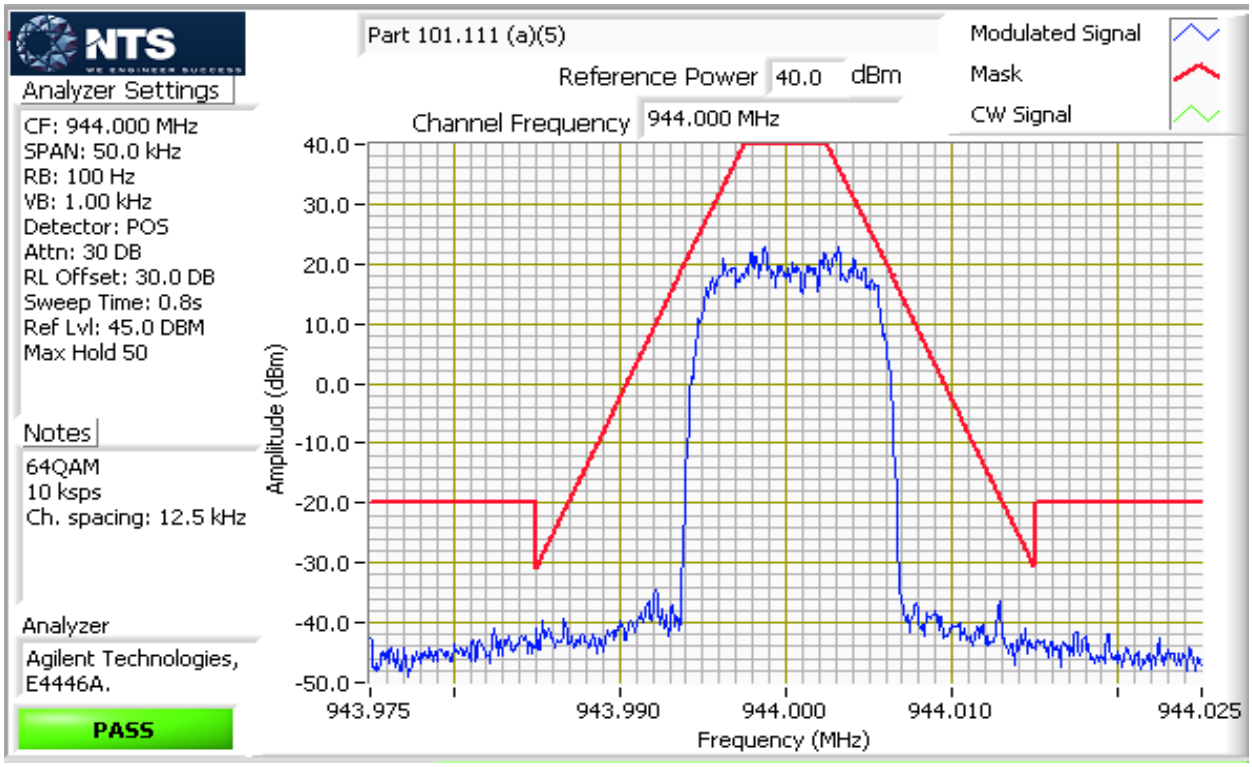
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



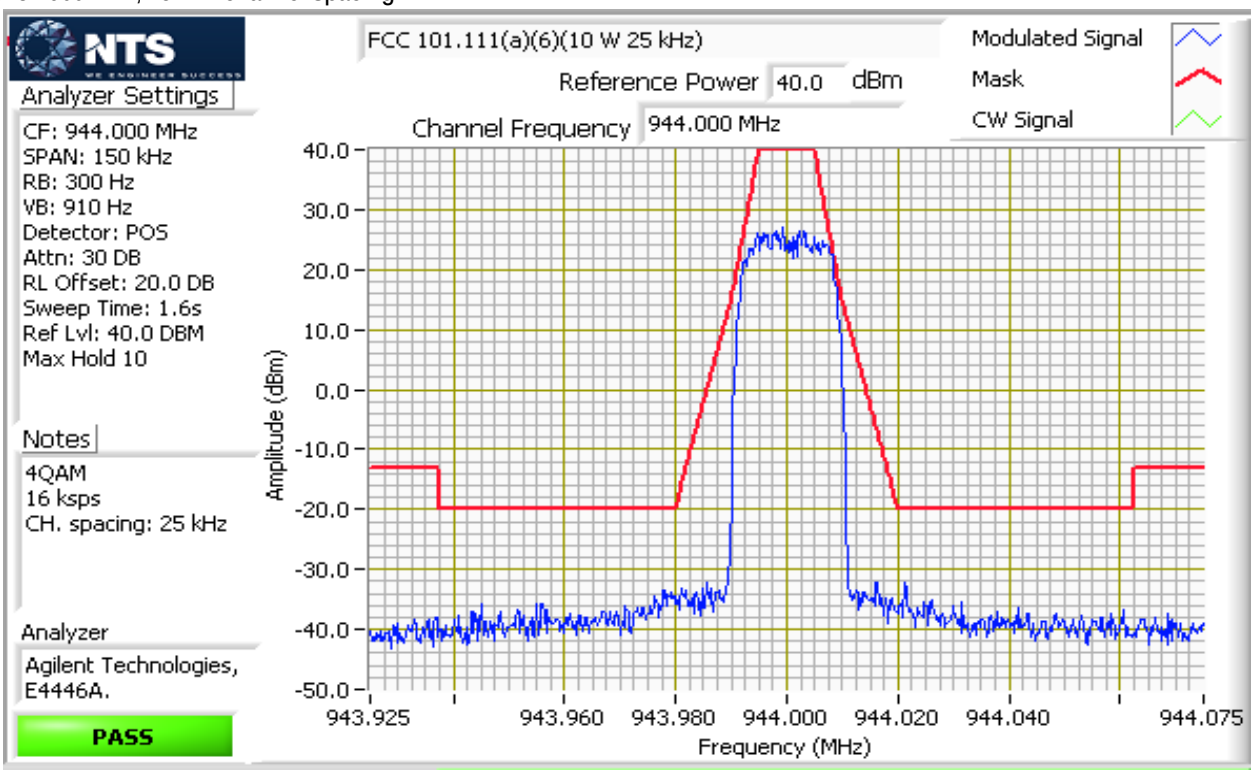
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 12.5 kHz channel spacing.



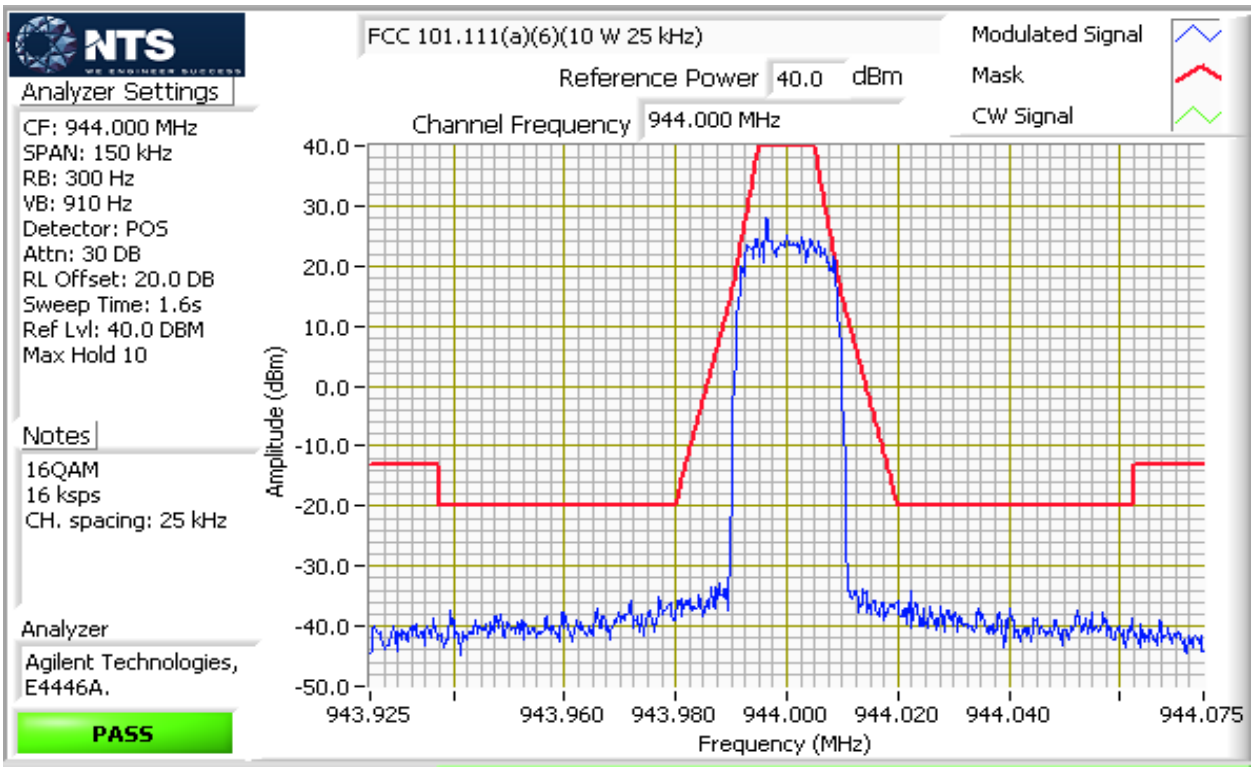
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 25 kHz channel spacing.



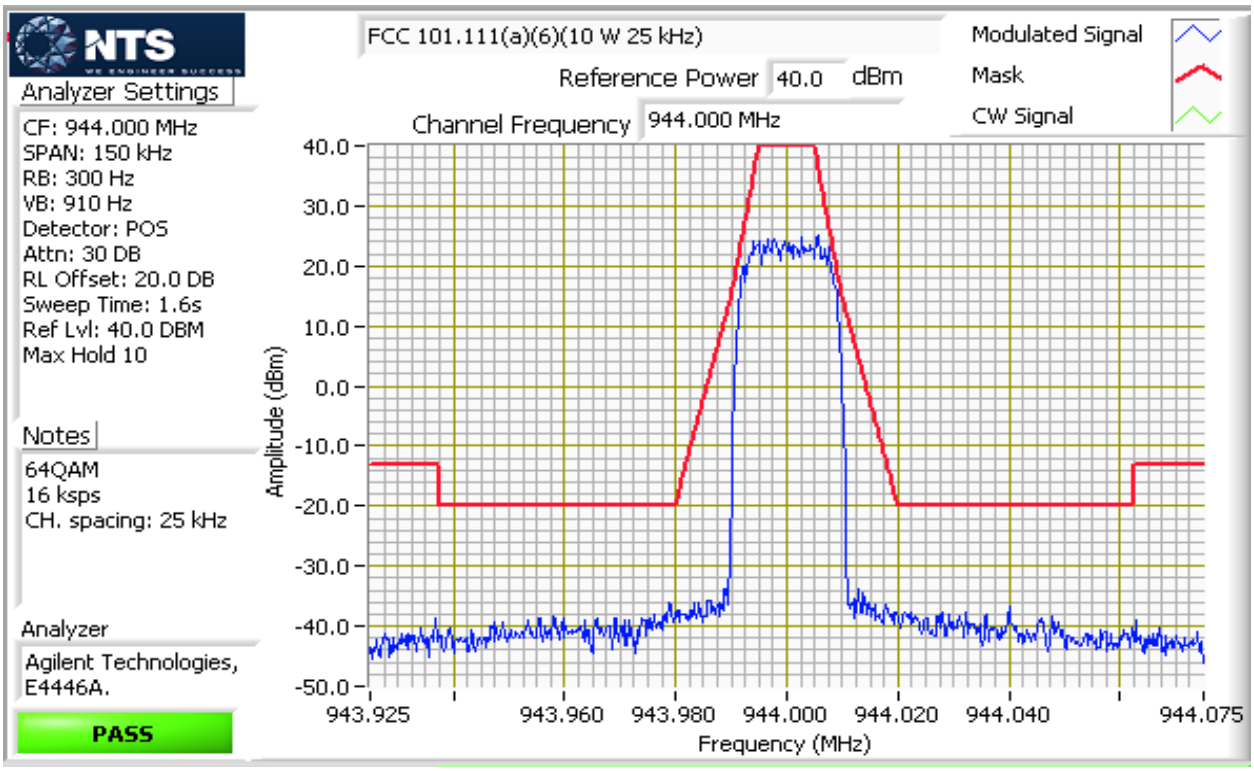
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

928 - 960 MHz, 25 kHz channel spacing.



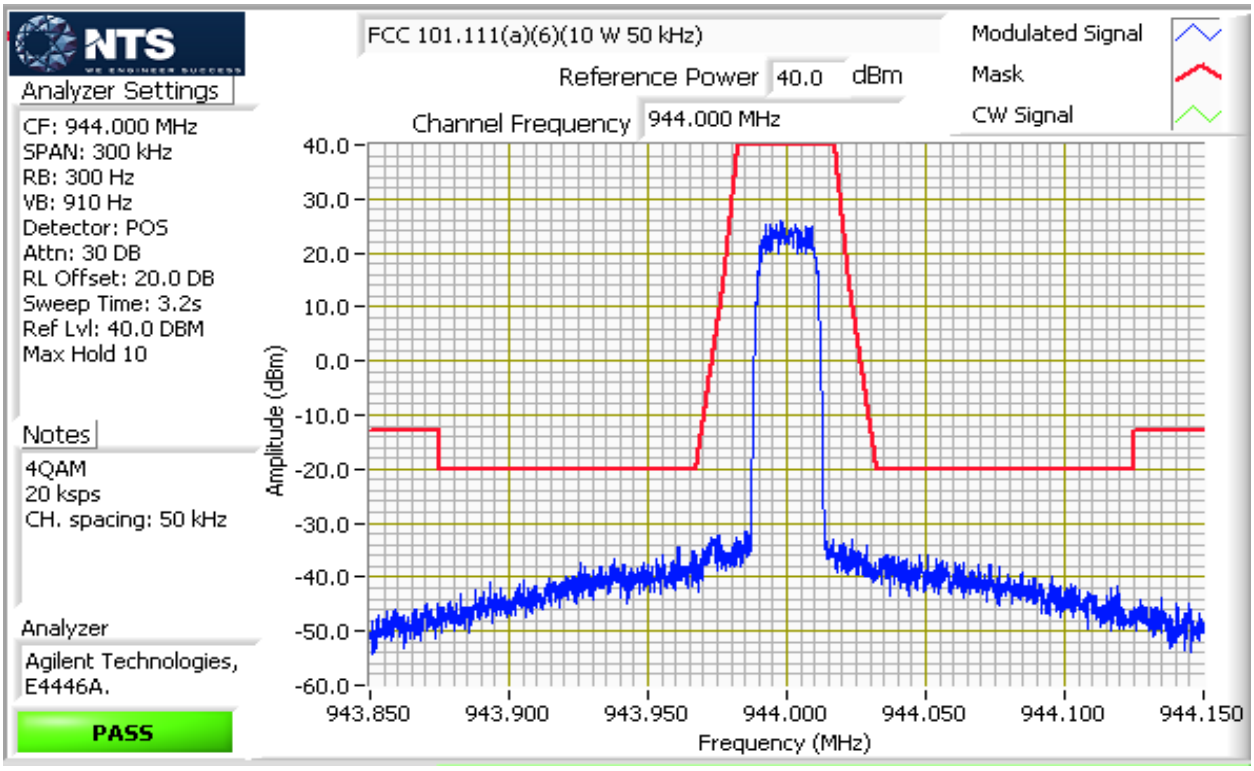
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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

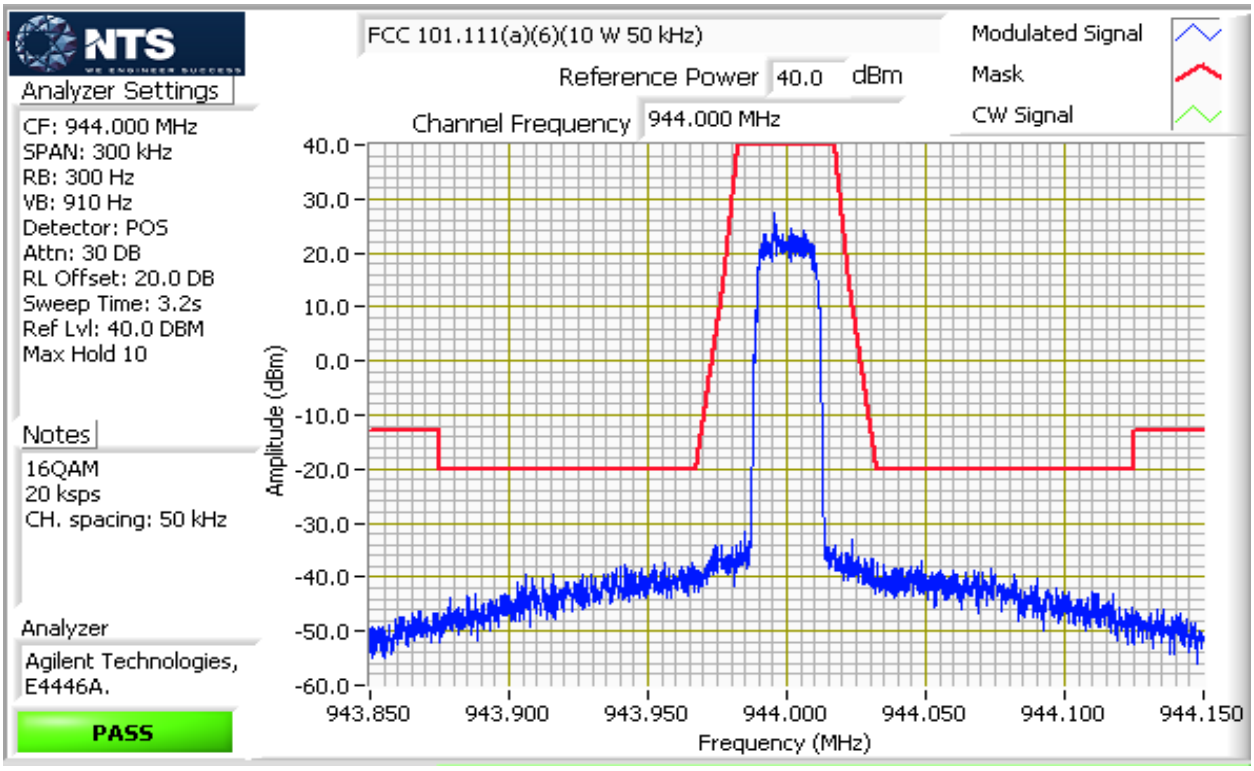
928 - 960 MHz, 50 kHz channel spacing.
FCC 101.147(b) and RSS-119 section 5.6 allow up to 50 kHz channels



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

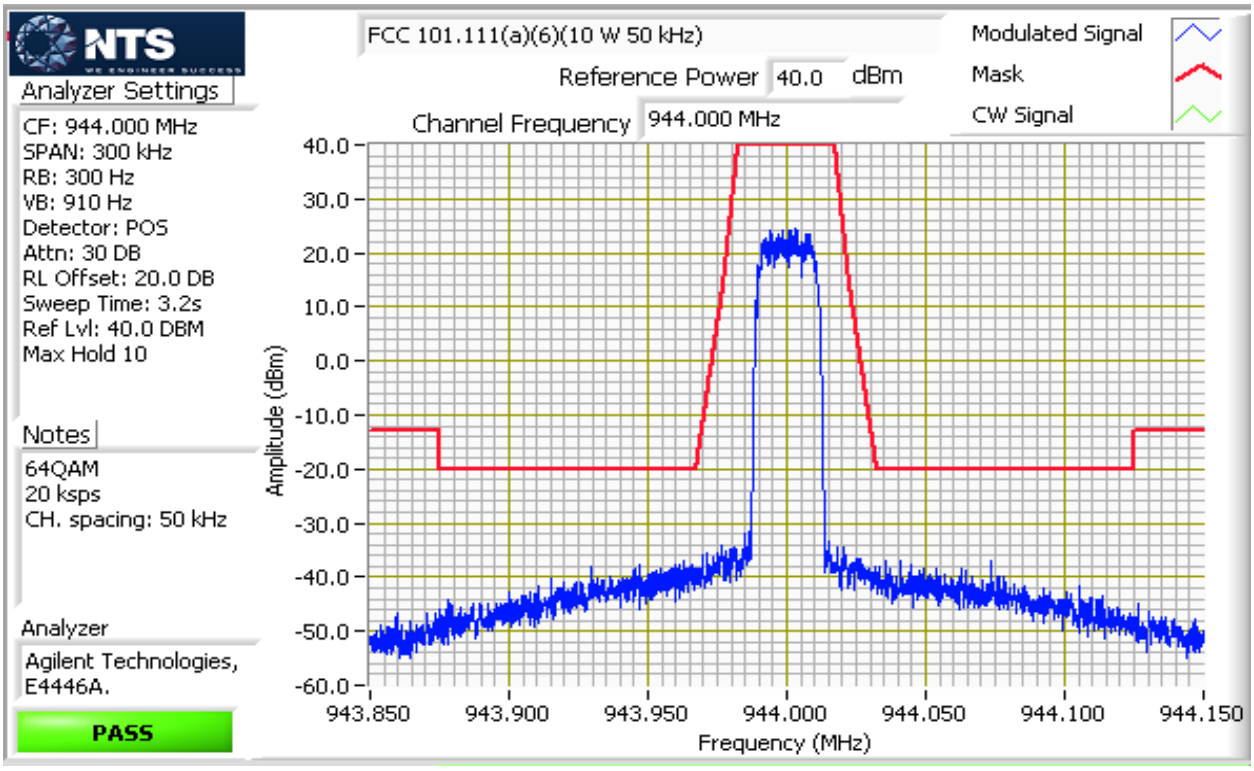
928 - 960 MHz, 50 kHz channel spacing.
FCC 101.147(b) and RSS-119 section 5.6 allow up to 50 kHz channels



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

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 Config. Used: 1

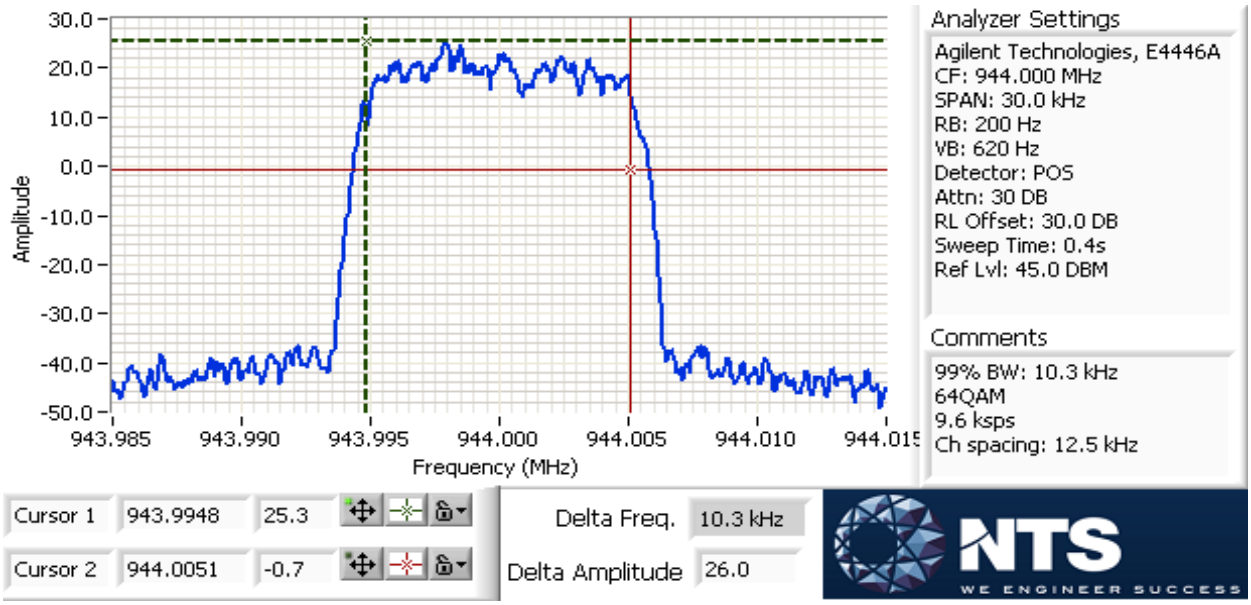
Test Engineer: Deniz Demirci Config Change: None

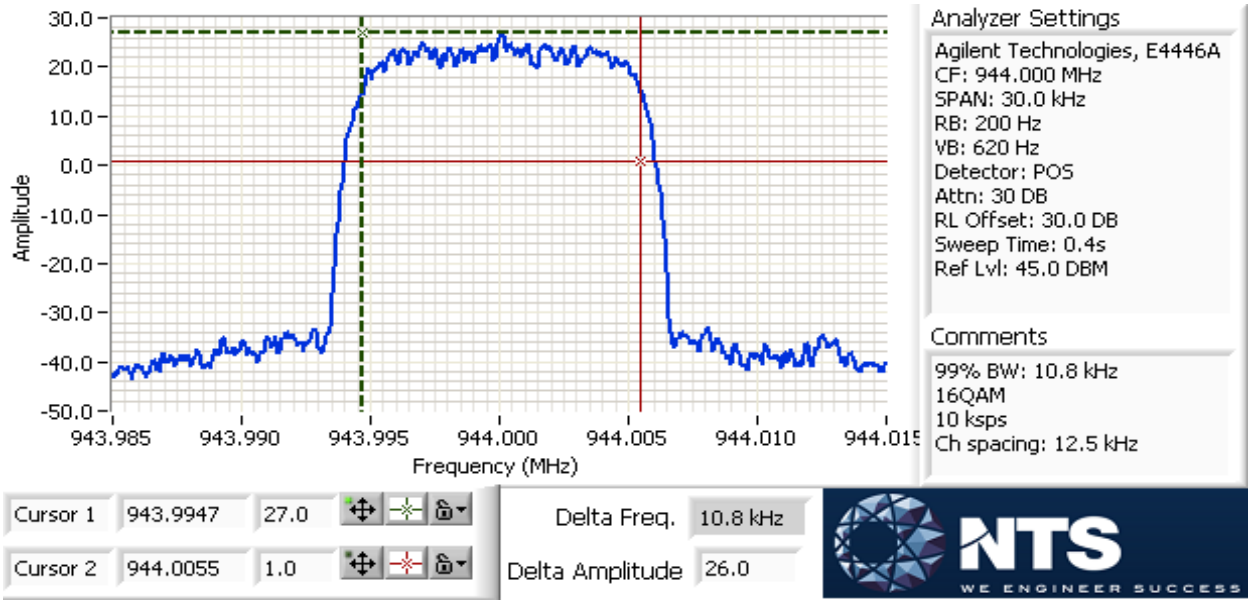
Test Location: FT Lab #4b EUT Voltage: 13.8 VDC

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

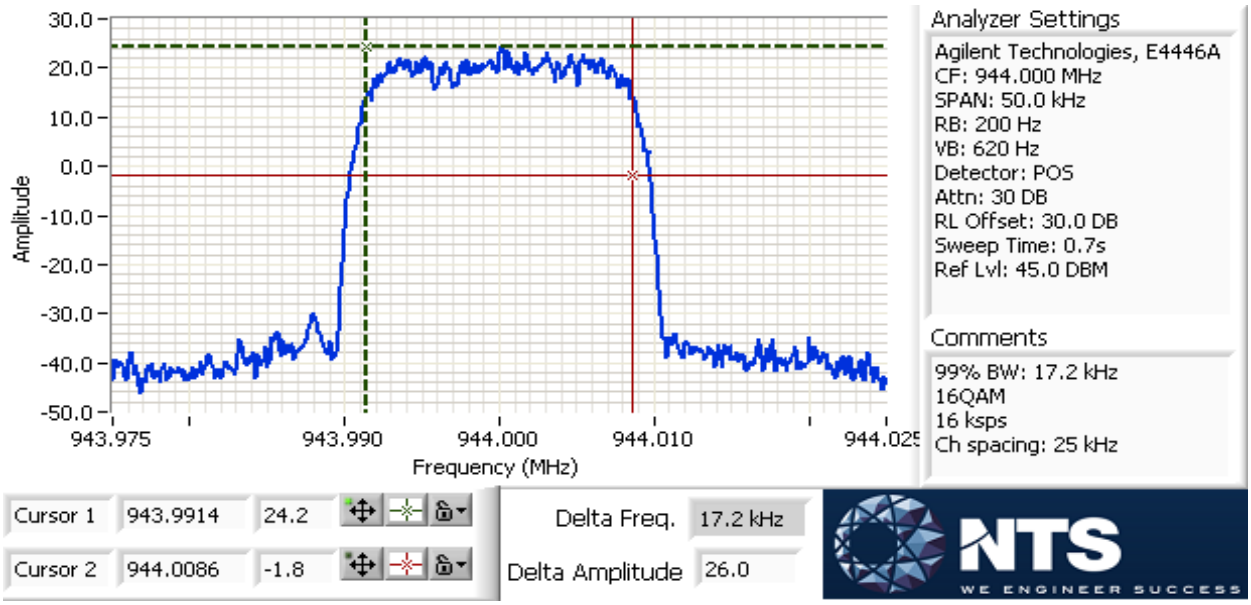
Note 1:	99% bandwidth measured in accordance with ANSI C63.10, with RB between 1% and 5% of the measured bandwidth and VB ≥ 3*RB and Span ≥ 1.5% and ≤ 5% of measured bandwidth.

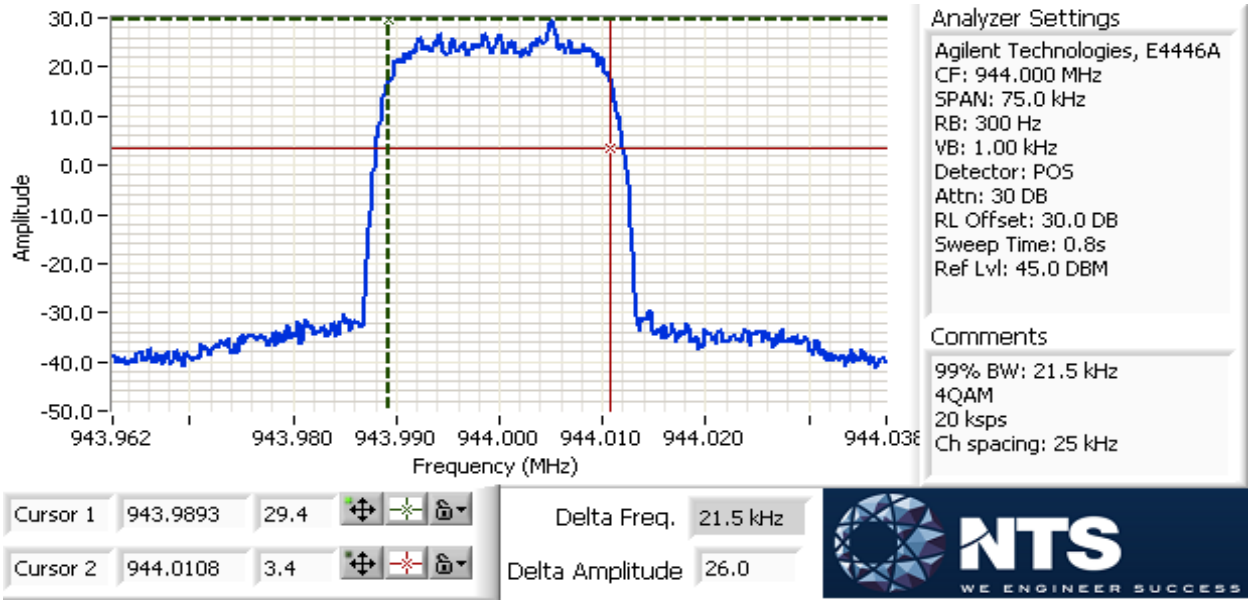
Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A





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

Date of Test: 12/11/2015 Config. Used: 1

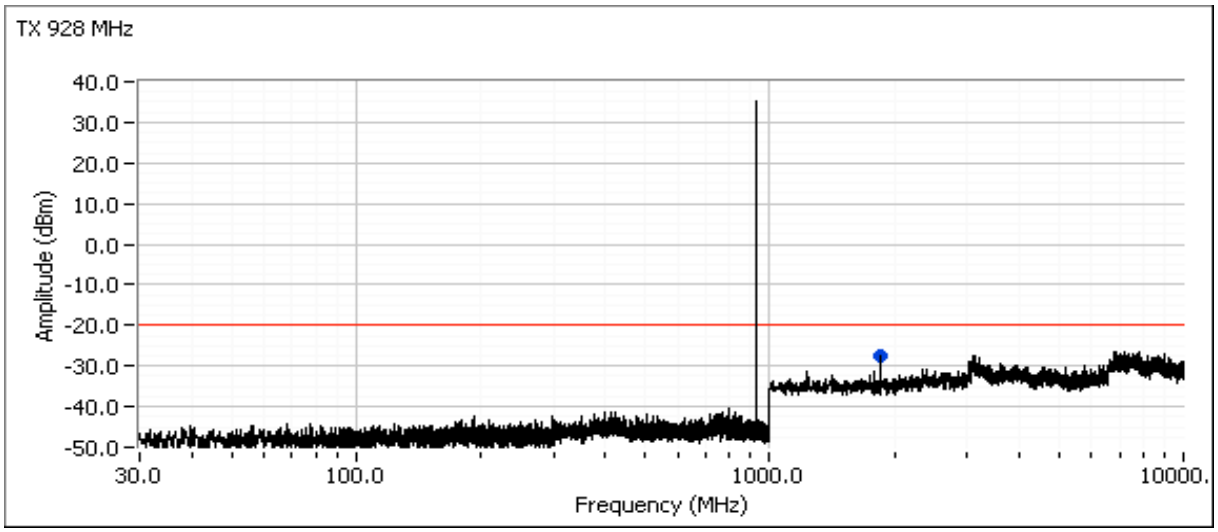
Test Engineer: David Bare Config Change: None

Test Location: Fremont Lab #4B EUT Voltage: 13.8 VDC

Frequency MHz	Level dBµV	AC Line	FCC Part 90 Limit	FCC Part 90 Margin	Detector	Comments	Channel 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

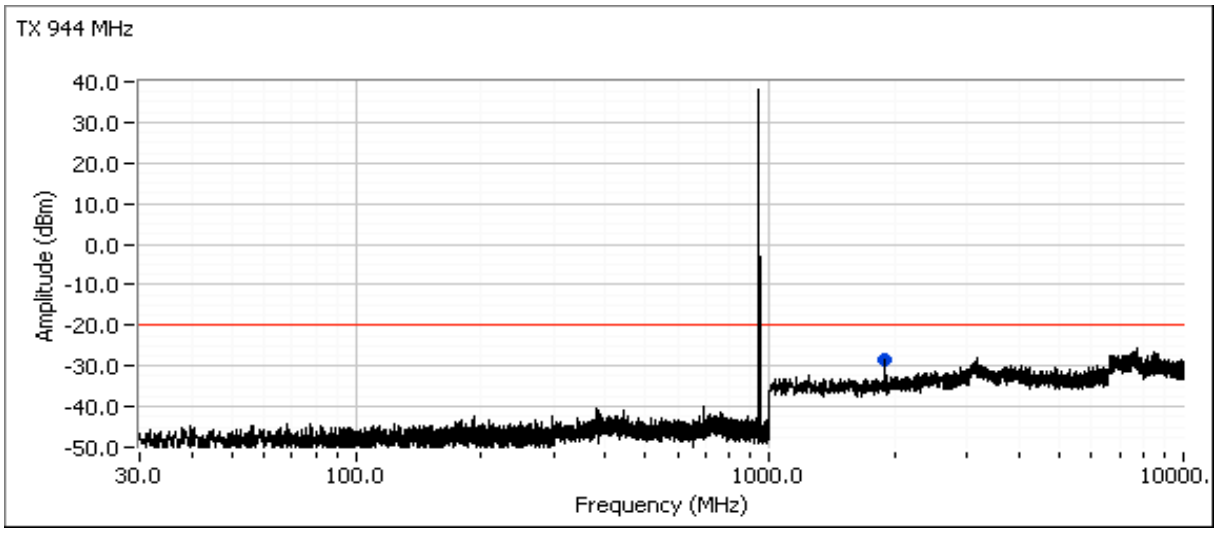
The limit is taken from FCC Part 90 Mask D

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

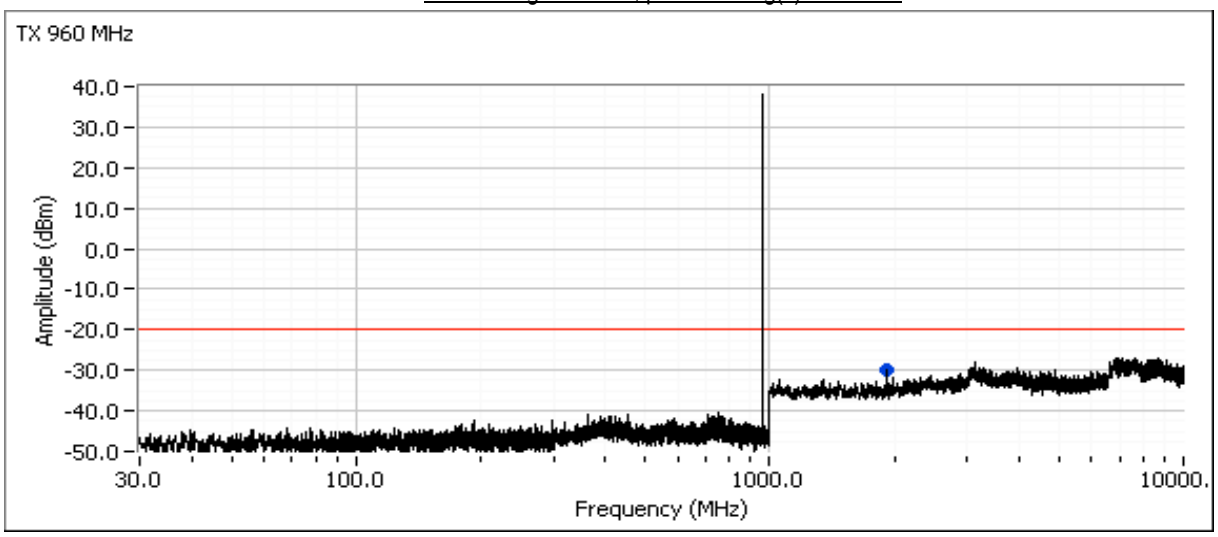


Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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

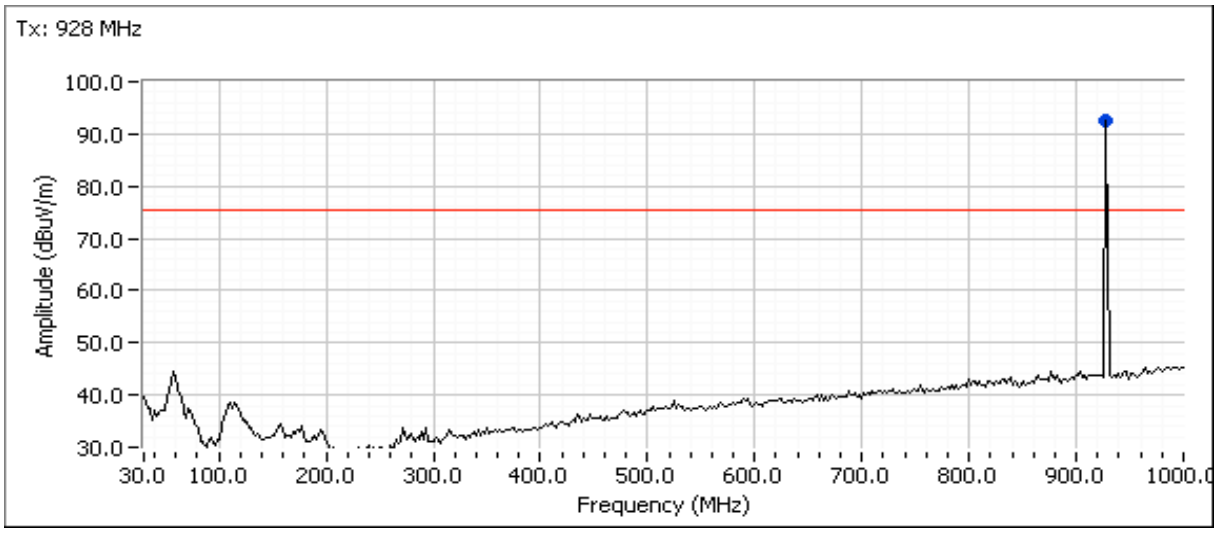
Date of Test: 12/14 & 12/15/2015 Config. Used: 1
Test Engineer: Deniz Demirci & David Bare Config Change: None
Test Location: FT Ch #3 EUT Voltage: 13.8 VDC and 5 VDC

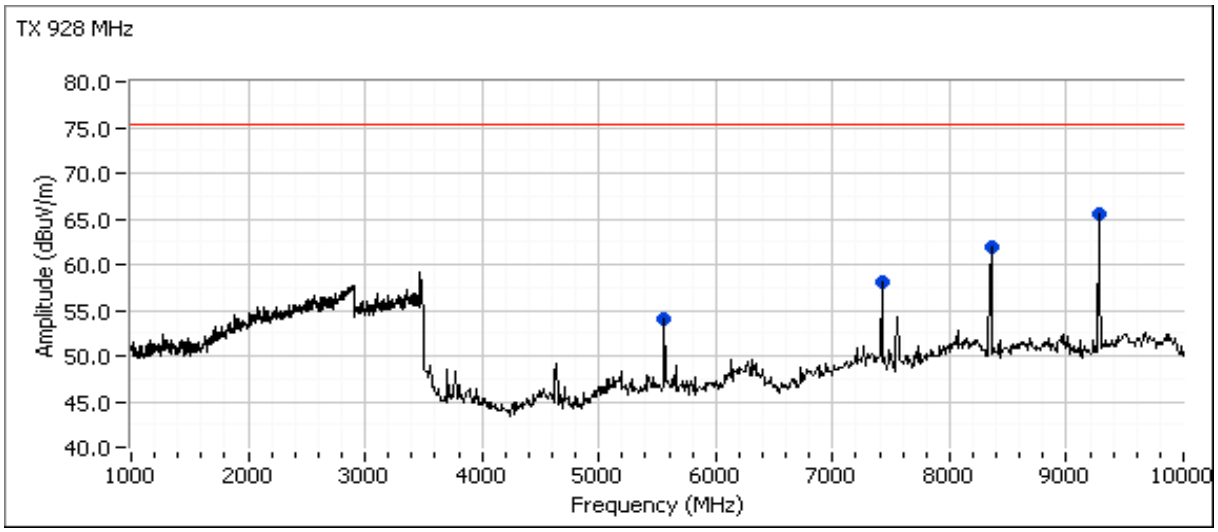
Frequency	Level	Pol	FCC Part 101		Detector	Azimuth	Height	Comments	Channel
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
928.000	92.4	H	-	-	PK	110	1.0	Carrier frequency	928.000
7424.000	58.1	V	75.3	-17.2	Peak	183	2.0		928.000
8352.000	61.9	V	75.3	-13.4	Peak	183	2.0		928.000
9280.000	65.6	V	75.3	-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: $E=\sqrt{(30PG)}/d$. 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

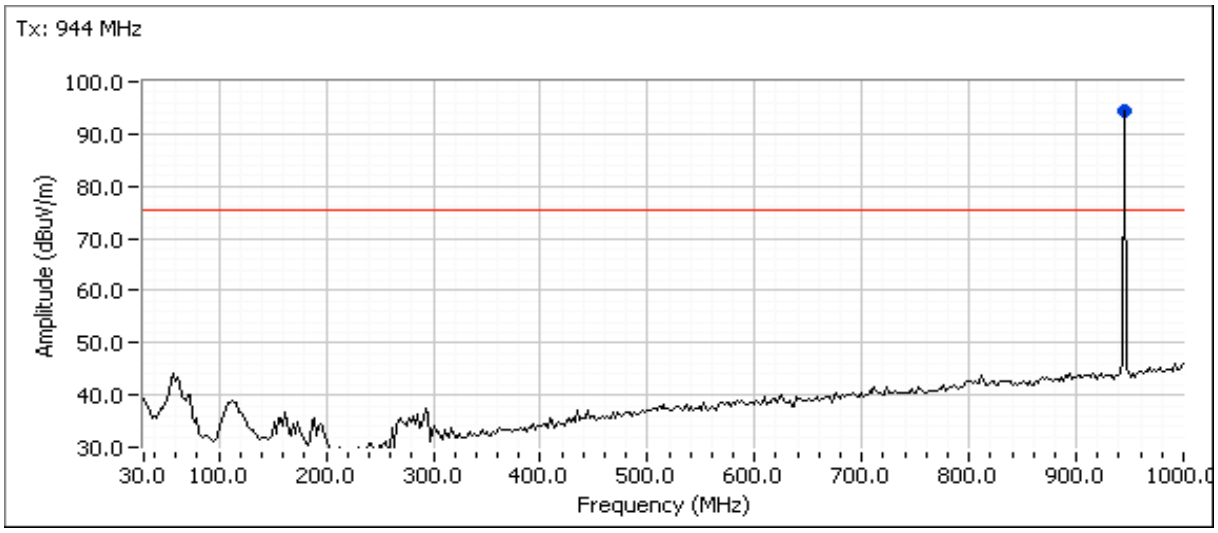
Plots for low channel, power setting(s) = 40 dBm

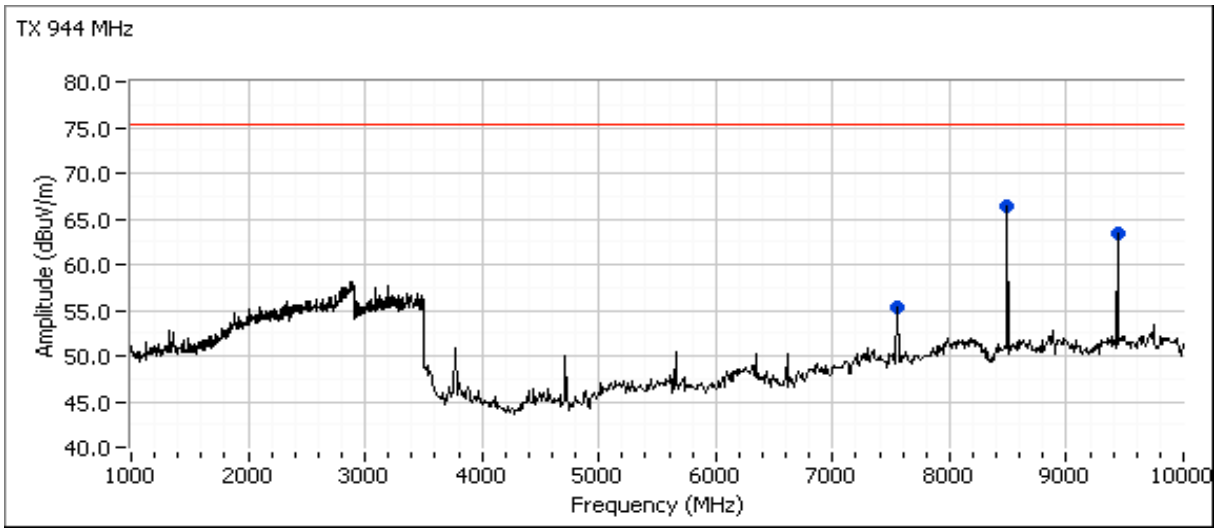




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

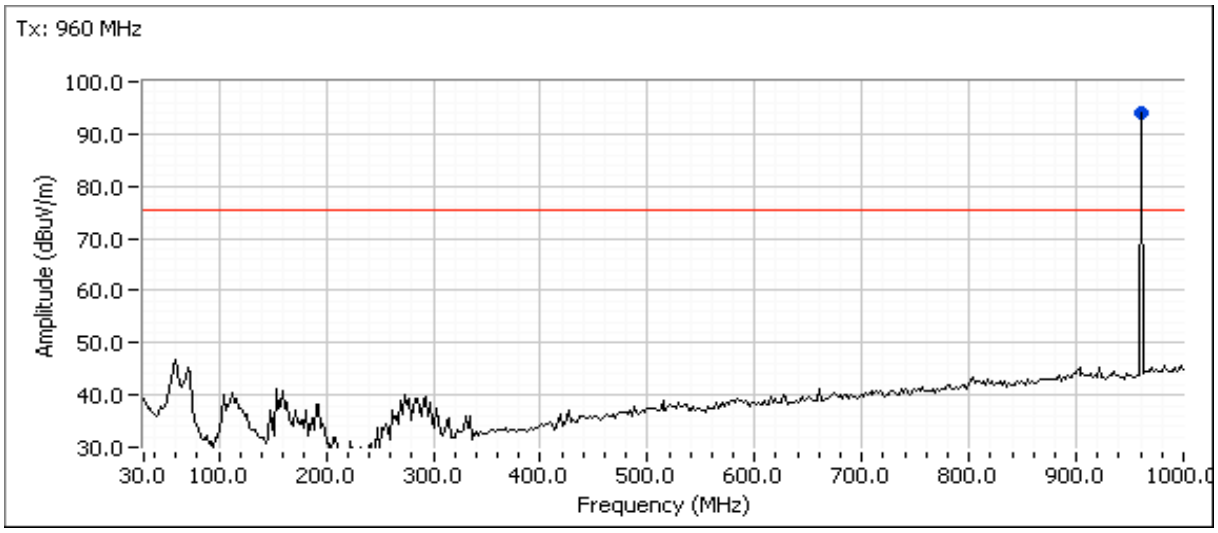
Plots for center channel, power setting(s) = 40 dBm

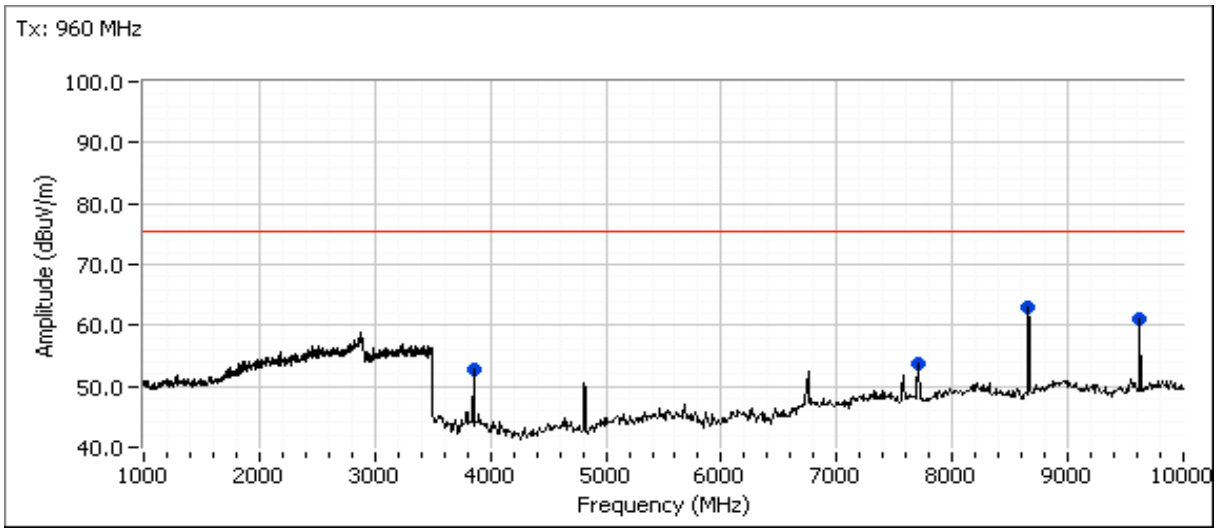




Client:	GE MDS LLC	Job Number:	JD99760
Model:	LN900	T-Log Number:	T99783
		Project Manager:	Christine Krebill
Contact:	Dennis McCarthy	Project Coordinator:	-
Standard:	FCC Parts 15, 90 and 101, RSS-119	Class:	N/A

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=√(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.

End of Report

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