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## ***Radio Test Report***

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

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

***FCC Part 101  
(928 To 960 MHz)***

***Model: LN900***

FCC ID: E5MDS-LN900-1

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

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

PROJECT NUMBER: PR085381

REPORT DATE: September 13, 2018

RE-ISSUED DATE: October 9, 2018

FINAL TEST DATES: October 28, December 11 and 14, 2015, May  
23, 24 and 26, 2016 and August 29, 30 and  
September 4, 2018

TOTAL NUMBER OF PAGES: 165



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## REVISION HISTORY

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

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## SCOPE

Tests have been performed on the GE MDS LLC model LN900, pursuant to the relevant requirements of the following standard(s) in order to obtain device certification against the regulatory requirements of the Federal Communications Commission and Innovation Science and Economic Development Canada.

- Code of Federal Regulations (CFR) Title 47 Part 2
- CFR 47 Part 24 (Personal Communication Services) Subpart D
- CFR 47 Part 90 (Private Land Mobile Radio Services) Subparts P and S
- CFR 47 Part 101 (Fixed Microwave Services)

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

ANSI C63.26:2015

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

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

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

The test results recorded herein are based on a single type test of the GE MDS LLC model LN900 and therefore apply only to the tested sample. The sample was selected and prepared by Dennis McCarthy of GE MDS LLC.

**OBJECTIVE**

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

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

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

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

**STATEMENT OF COMPLIANCE**

The tested sample of GE MDS LLC model LN900 complied with the requirements of the standards and frequency bands declared in the scope of this test report.

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

**DEVIATIONS FROM THE STANDARDS**

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

## TEST RESULTS

### FCC Part 101

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

**FCC Part 90**

| FCC                                                                             |   | Description                                                                                                   | Measured                                                       | Limit                                      | Result   |
|---------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------|----------|
| Transmitter Modulation, output power and other characteristics                  |   |                                                                                                               |                                                                |                                            |          |
| §2.1033 (c) (5)<br>§90.35                                                       |   | Frequency range(s)                                                                                            | 896-901 MHz,<br>929-930 MHz<br>935-940 MHz                     | 896-901 MHz,<br>929-930 MHz<br>935-940 MHz | Complied |
| §2.1033 (c) (6)<br>§2.1033 (c) (7)<br>§2.1046<br>§90.205<br>§90.635             |   | RF power output at the antenna terminals                                                                      | 20 dBm to 40.8 dBm                                             | 50 dBm                                     | Complied |
| §2.1033 (c) (4)<br>§2.1047<br>§90.210                                           |   | Emission types                                                                                                | F1D, F2D,<br>F3D, D1D                                          | -                                          | -        |
|                                                                                 |   | Emission mask                                                                                                 | Complied with Mask                                             | Masks D, G and J                           | Complied |
| §2.1049<br>§90.209                                                              |   | Occupied Bandwidth                                                                                            | 5.19kHz<br>10.2kHz<br>10.3kHz<br>10.8kHz<br>15.4kHz<br>17.2kHz | 11.5 or 20 kHz                             | Complied |
| Transmitter spurious emissions                                                  |   |                                                                                                               |                                                                |                                            |          |
| §2.1051<br>§2.1057<br>§90.210                                                   |   | At the antenna terminals                                                                                      | -27.3 dBm @<br>1858.9 MHz                                      | -20 dBm                                    | Complied |
| §2.1053<br>§2.1057<br>§90.210                                                   |   | Field strength                                                                                                | -24.6 dBm @<br>9319.6 MHz                                      | -20 dBm                                    | Complied |
| Other details                                                                   |   |                                                                                                               |                                                                |                                            |          |
| §2.1055<br>§90.213                                                              |   | Frequency stability                                                                                           | 0.3 ppm                                                        | 1.5 ppm <sup>1</sup>                       | Complied |
| §2.1093                                                                         |   | RF Exposure                                                                                                   | See separate exhibit                                           |                                            | Complied |
| §2.1033 (c) (8)                                                                 |   | Final radio frequency amplifying circuit's dc voltages and currents for normal operation over the power range | 34.5 VDC, 755 mA                                               |                                            |          |
| -                                                                               | - | Antenna Gain                                                                                                  | Up to 16.5 dBi                                                 |                                            |          |
| Notes                                                                           |   |                                                                                                               |                                                                |                                            |          |
| 1 – FCC Part 90.213 (footnote 14) allows 1.5 ppm for control station operations |   |                                                                                                               |                                                                |                                            |          |

**FCC Part 24**

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



**EXTREME CONDITIONS**

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

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

**MEASUREMENT UNCERTAINTIES**

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

| Measurement Type                        | Measurement Unit | Frequency Range                | Expanded Uncertainty         |
|-----------------------------------------|------------------|--------------------------------|------------------------------|
| RF frequency                            | Hz               | 25 to 7,000 MHz                | $1.7 \times 10^{-7}$         |
| RF power, conducted                     | dBm              | 25 to 7,000 MHz                | $\pm 0.52$ dB                |
| Conducted emission of transmitter       | dBm              | 25 to 40,000 MHz               | $\pm 0.7$ dB                 |
| Conducted emission of receiver          | dBm              | 25 to 40,000 MHz               | $\pm 0.7$ dB                 |
| Radiated emission (substitution method) | dBm              | 25 to 40,000 MHz               | $\pm 2.5$ dB                 |
| Radiated emission (field strength)      | dB $\mu$ V/m     | 25 to 1,000 MHz<br>1 to 40 GHz | $\pm 3.6$ dB<br>$\pm 6.0$ dB |

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

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

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

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

**ENCLOSURE**

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

**MODIFICATIONS**

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

**SUPPORT EQUIPMENT**

The following equipment was used as support equipment for testing:

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

Note: The Agilent PS was only used for radiated emissions testing

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

No remote support equipment was used during testing.

## EUT INTERFACE PORTS

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

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

### Additional on Support Equipment

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

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

## EUT OPERATION

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

## TESTING

### GENERAL INFORMATION

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

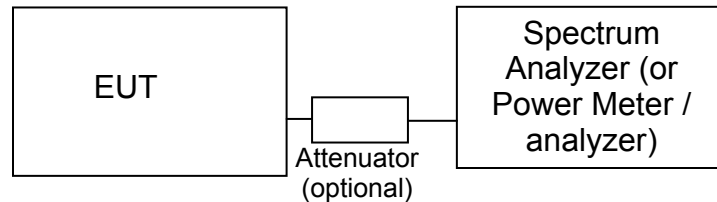
Radiated spurious emissions measurements were taken at the National Technical Systems Anechoic Chambers and/or Open Area Test Site(s) listed below. The sites conform to the requirements of ANSI C63.4 *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical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

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

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

## **RF PORT MEASUREMENT PROCEDURES**

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



Test Configuration for Antenna Port Measurements

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

### **OUTPUT POWER**

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

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

**BANDWIDTH MEASUREMENTS**

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

**CONDUCTED SPURIOUS EMISSIONS**

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

**TRANSMITTER MASK MEASUREMENTS**

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

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

**FREQUENCY STABILITY**

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

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

## **RADIATED EMISSIONS MEASUREMENTS**

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

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

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

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

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

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



**INSTRUMENTATION**

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

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

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

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

**FILTERS/ATTENUATORS**

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

**ANTENNAS**

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

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

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

**ANTENNA MAST AND EQUIPMENT TURNTABLE**

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

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

$$\begin{aligned} R_r &= \text{Measured value in dBm} \\ S &= \text{Specification Limit in dBm} \\ M &= \text{Margin to Specification in +/- dB} \end{aligned}$$

### 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:

$$\begin{aligned} E &= \text{Field Strength in V/m} \\ P &= \text{Power in Watts} \\ G &= \text{Gain of isotropic antenna (numeric gain)} = 1 \\ D &= \text{measurement distance in meters} \end{aligned}$$

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

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

$$P_{EUT} = P_s - (E_s - E_{EUT})$$

and

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

where:

$$\begin{aligned} P_s &= \text{effective isotropic radiated power of the substitution antenna (dBm)} \\ P_{in} &= \text{power input to the substitution antenna (dBm)} \\ G &= \text{gain of the substitution antenna (dBi)} \\ E_s &= \text{field strength the substitution antenna (dBm) at eirp } P_s \\ E_{EUT} &= \text{field strength measured from the EUT} \end{aligned}$$

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

**SAMPLE CALCULATIONS –RADIATED FIELD STRENGTH**

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

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

$$F_d = 20 * \text{LOG}_{10} (D_m/D_s)$$

where:

$$F_d = \text{Distance Factor in dB}$$

$$D_m = \text{Measurement Distance in meters}$$

$$D_s = \text{Specification Distance in meters}$$

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:

$$F_d = 40 * \text{LOG}_{10} (D_m/D_s)$$

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:

$$R_r = \text{Receiver Reading in dBuV/m}$$

$$F_d = \text{Distance Factor in dB}$$

$$R_c = \text{Corrected Reading in dBuV/m}$$

$$L_s = \text{Specification Limit in dBuV/m}$$

$$M = \text{Margin in dB Relative to Spec}$$

## Appendix A Test Equipment Calibration Data

| <u>Manufacturer</u>                                   | <u>Description</u>                                           | <u>Model</u>    | <u>Asset #</u> | <u>Calibrated</u> | <u>Cal Due</u> |
|-------------------------------------------------------|--------------------------------------------------------------|-----------------|----------------|-------------------|----------------|
| <b>Antenna port measurements, 28-Oct-15</b>           |                                                              |                 |                |                   |                |
| 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 Multimeter, 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      |
| <b>Radio Antenna Port, 11-Dec-15</b>                  |                                                              |                 |                |                   |                |
| Agilent Technologies                                  | 3Hz -44GHz PSA Spectrum Analyzer                             | E4446A          | 2796           | 3/31/2015         | 3/31/2016      |
| <b>Radiated Emissions, 30 - 10,000 MHz, 14-Dec-15</b> |                                                              |                 |                |                   |                |
| 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      |
| <b>Substitution Measurements, 15-Dec-15</b>           |                                                              |                 |                |                   |                |
| 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      |
| <b>Antenna port measurements, 23-May-16</b>           |                                                              |                 |                |                   |                |
| Rohde & Schwarz                                       | Power Meter, Single Channel                                  | NRVS            | 1290           | 12/17/2015        | 12/17/2016     |



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

## ***Appendix B Test Data***

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



## EMC Test Data

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

## EMC Test Data

For The

**GE MDS LLC**

Product

LN900

Date of Last Test: 9/4/2018



## EMC Test Data

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

### FCC Part 24

#### Power, Occupied Bandwidth, Frequency Stability and Spurious Emissions

#### Test Specific Details

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

#### General Test Configuration

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

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

#### Ambient Conditions:

Temperature: 20-24 °C

Rel. Humidity: 35-47 %

#### Summary of Results

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

#### Modifications Made During Testing

No modifications were made to the EUT during testing

#### Deviations From The Standard

No deviations were made from the requirements of the standard.





## EMC Test Data

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

### Test Notes

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

Run #1: Output Power FCC §24.132

Date of Test: 8/29/2018

Test Engineer: David Bare

Test Location: Fremont EMC Lab #4B

Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC

Cable Loss: XXXXXXXXXX

Cable ID(s): -

Attenuator: XXXXXXXXXX

Attenuator IDs: WC068107

Total Loss: XXXXXXXXXX

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

Note 1: Output power measured using a peak power meter

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

Note 3: Antenna Gain of 2.2 dBi = 0 dBd



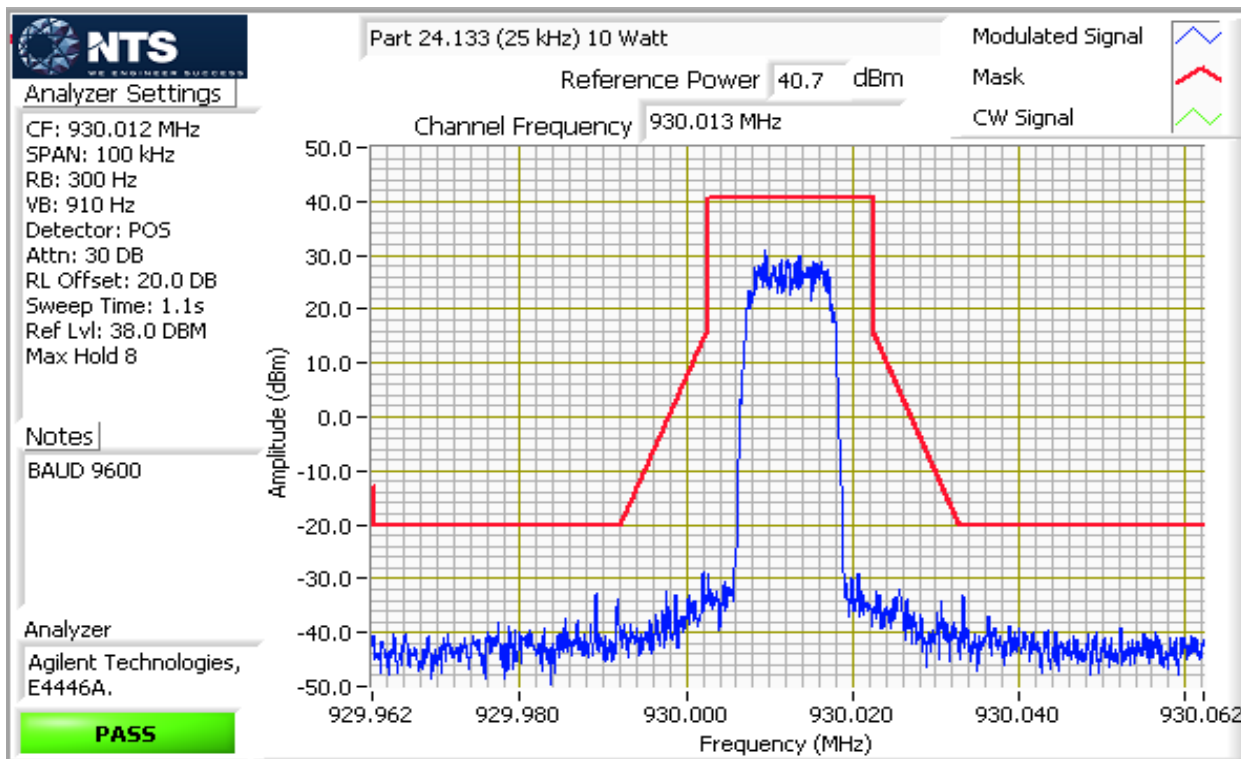
# EMC Test Data

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

Run #2: Spectral Mask, FCC §24.133(a)(1)  
 Date of Test: 8/30/2018  
 Test Engineer: David Bare  
 Test Location: Fremont EMC Lab #4B

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

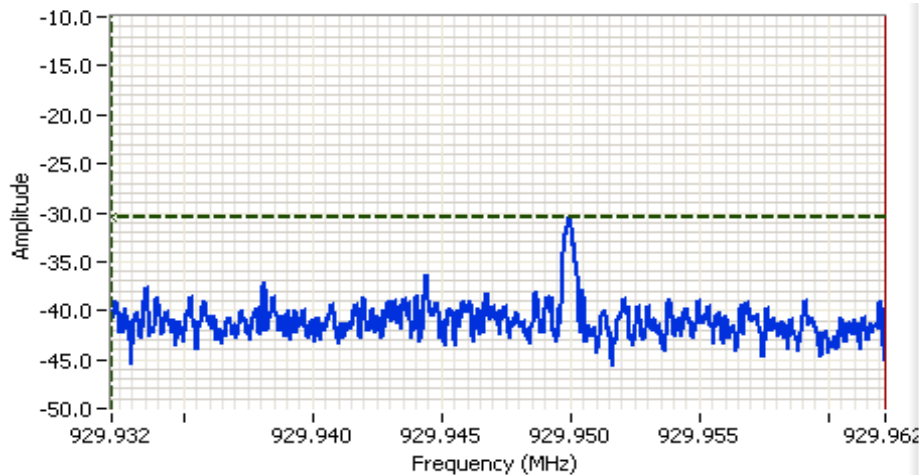
Note 1: RBW=300 Hz and VBW=1 kHz within mask, Top of mask set to the measured power.





## EMC Test Data

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



### Analyzer Settings

Agilent Technologies, E4446A  
CF: 929.947 MHz  
SPAN: 30.0 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 0.3s  
Ref Lvl: 38.0 DBM

### Comments

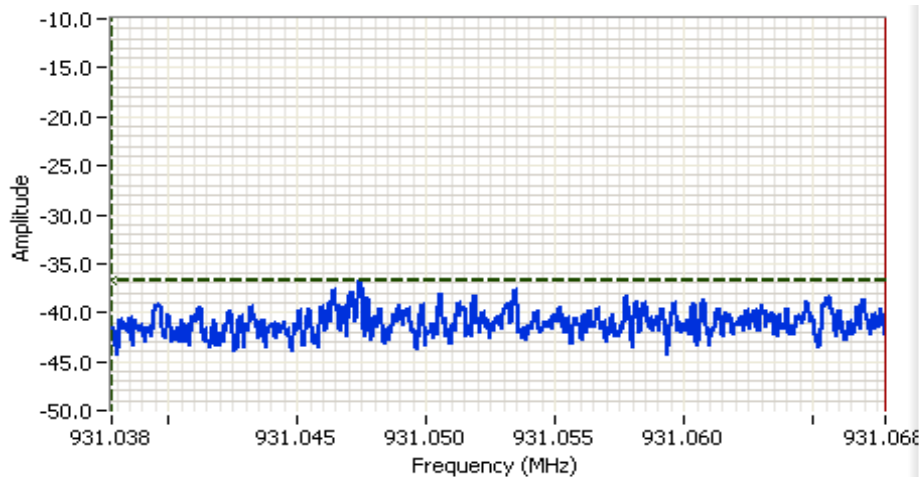
Power over span: -20.67dBm  
BAUD 9600

Cursor 1 929.9322 -30.5

Cursor 2 929.9622 -56.5

Delta Freq. 30.0 kHz

Delta Amplitude 26.0



### Analyzer Settings

Agilent Technologies, E4446A  
CF: 931.053 MHz  
SPAN: 30.0 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 0.3s  
Ref Lvl: 38.0 DBM

### Comments

Power over span: -21.03dBm  
BAUD 9600

Cursor 1 931.0378 -36.7

Cursor 2 931.0678 -62.7

Delta Freq. 30.0 kHz

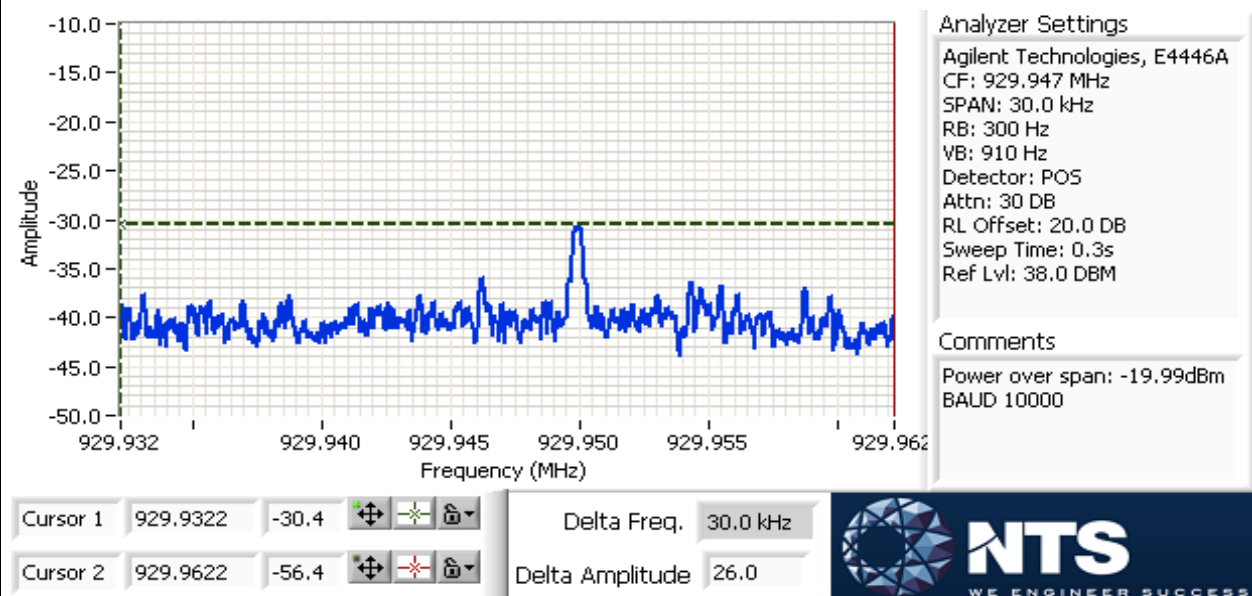
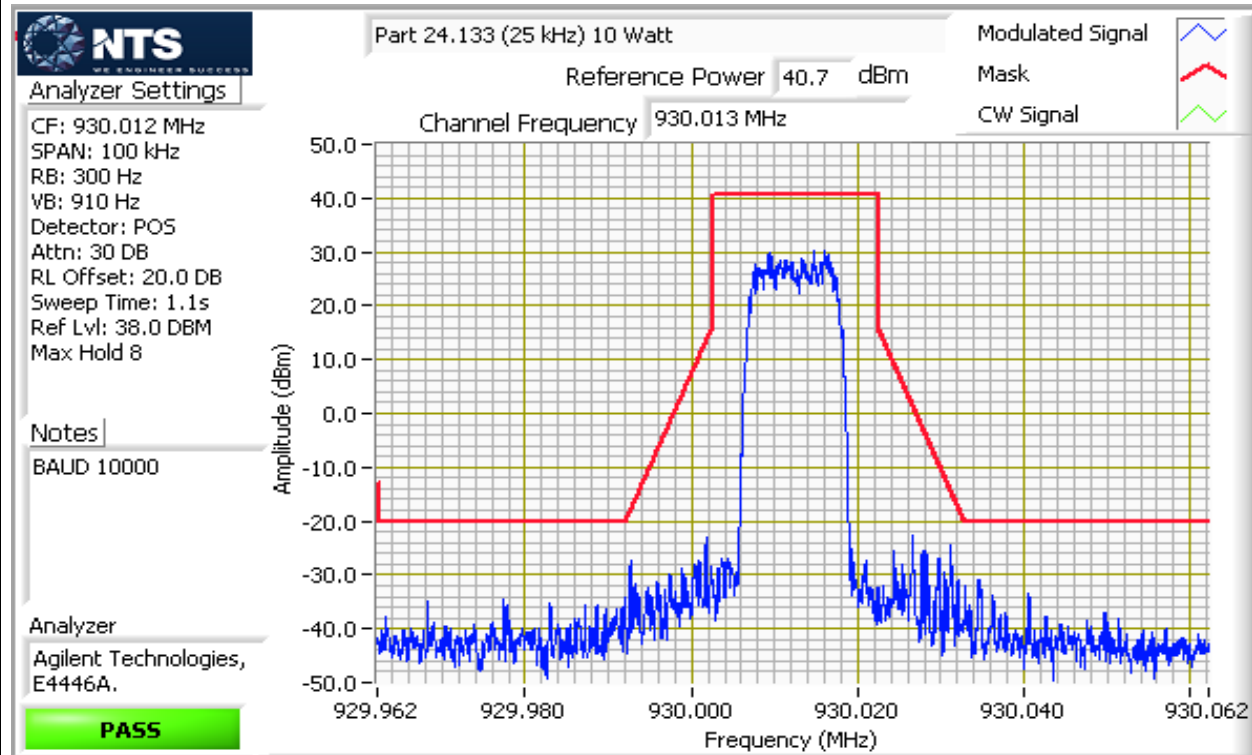
Delta Amplitude 26.0





## EMC Test Data

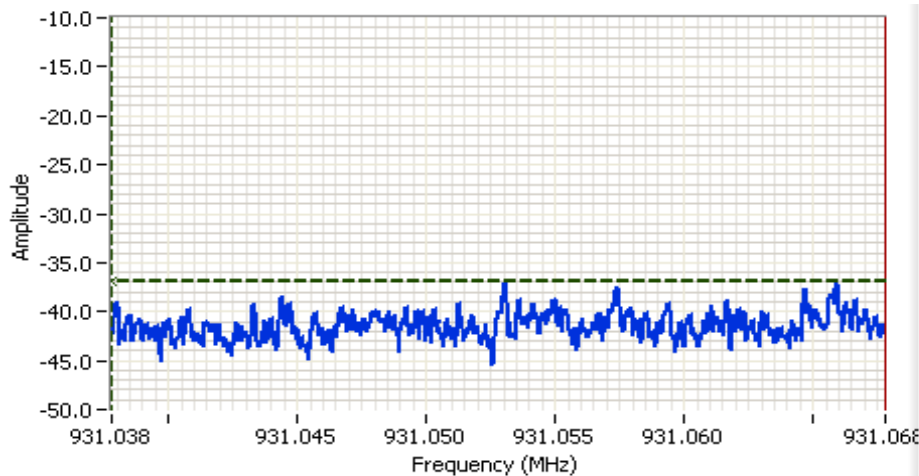
|           |                          |                      |                   |
|-----------|--------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC               | Job Number:          | PR085381          |
| Model:    | LN900                    | T-Log Number: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





## EMC Test Data

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



### Analyzer Settings

Agilent Technologies, E4446A  
CF: 931.053 MHz  
SPAN: 30.0 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 0.3s  
Ref Lvl: 38.0 DBM

### Comments

Power over span: -21.40dBm  
BAUD 10000

Cursor 1 931.0378 -37.0

Cursor 2 931.0678 -63.0

Delta Freq. 30.0 kHz

Delta Amplitude 26.0



Part 24.133 (25 kHz) 10 Watt

Reference Power 40.7 dBm

Modulated Signal

Mask

CW Signal

### Analyzer Settings

CF: 930.012 MHz  
SPAN: 100 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 1.1s  
Ref Lvl: 38.0 DBM  
Max Hold 8

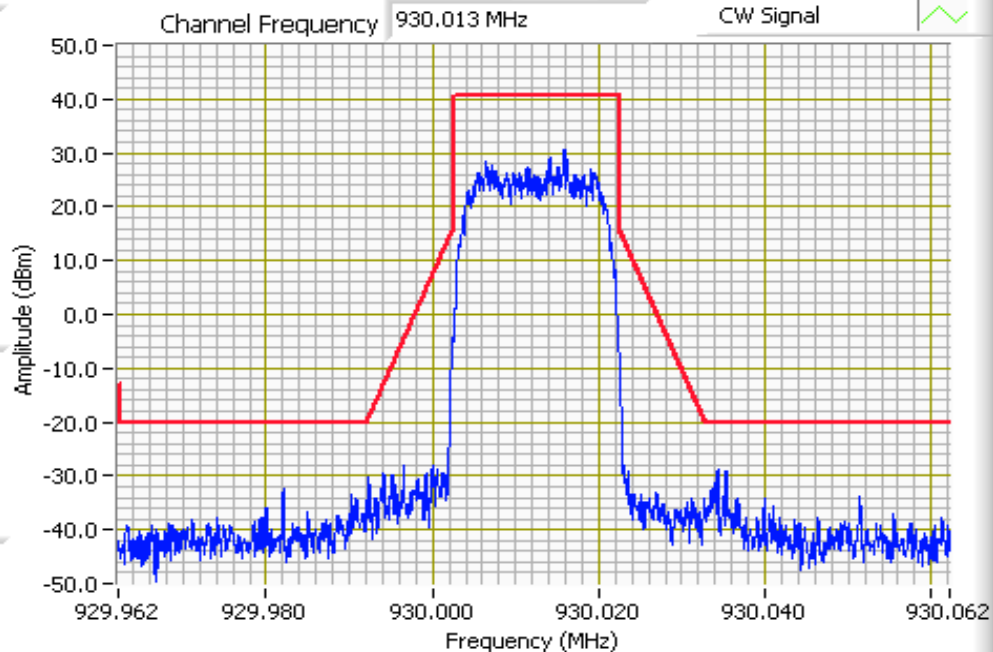
### Notes

BAUD 16000

### Analyzer

Agilent Technologies,  
E4446A.

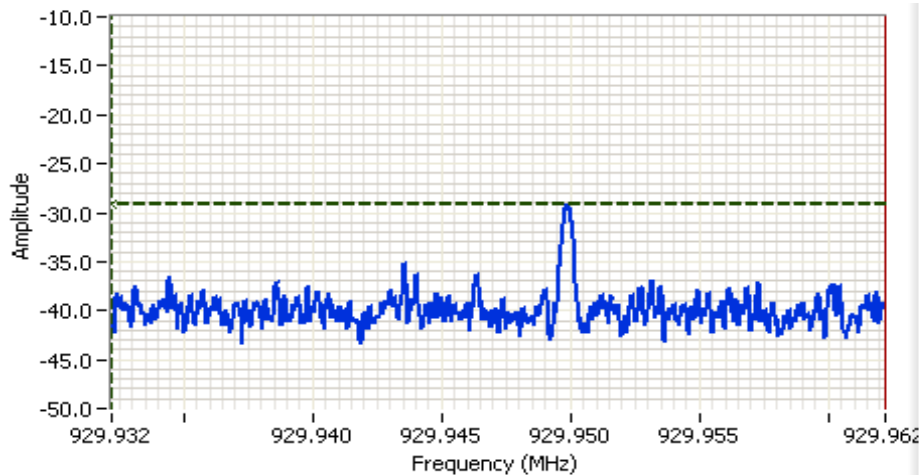
**PASS**





## EMC Test Data

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



### Analyzer Settings

Agilent Technologies, E4446A  
CF: 929.947 MHz  
SPAN: 30.0 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 0.3s  
Ref Lvl: 38.0 DBM

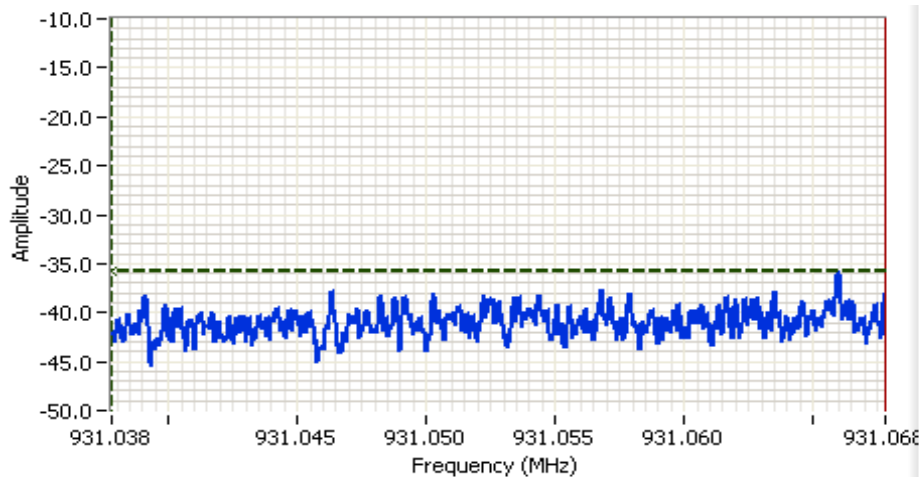
### Comments

Power over span: -19.46dBm  
BAUD 16000

Cursor 1 929.9322 -29.1  
Cursor 2 929.9622 -55.1

Delta Freq. 30.0 kHz

Delta Amplitude 26.0



### Analyzer Settings

Agilent Technologies, E4446A  
CF: 931.053 MHz  
SPAN: 30.0 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 0.3s  
Ref Lvl: 38.0 DBM

### Comments

Power over span: -20.93dBm  
BAUD 16000

Cursor 1 931.0378 -35.7  
Cursor 2 931.0678 -61.7

Delta Freq. 30.0 kHz

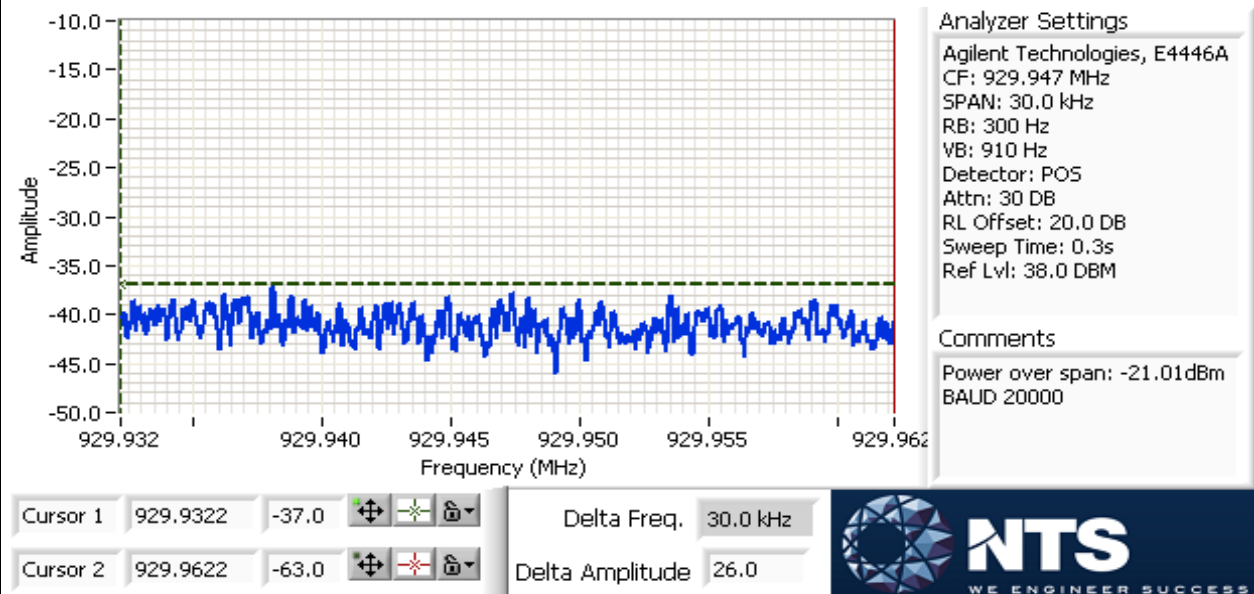
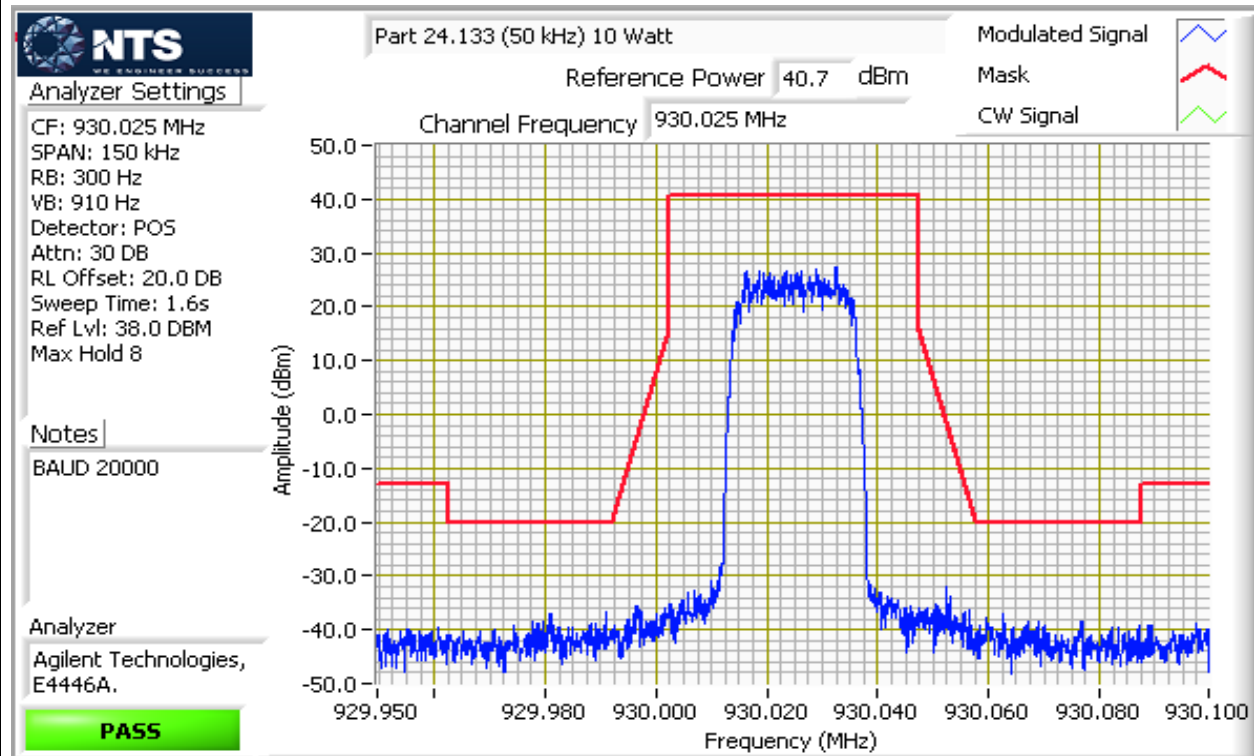
Delta Amplitude 26.0





## EMC Test Data

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

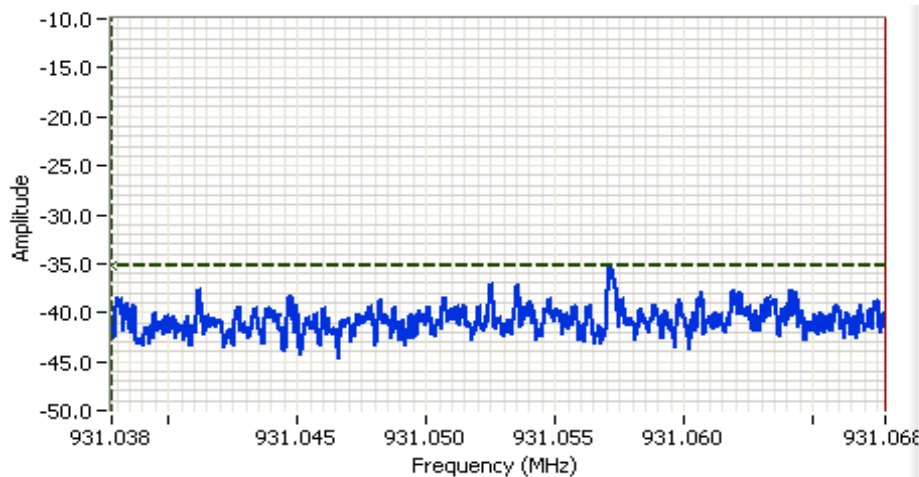






## EMC Test Data

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



### Analyzer Settings

Agilent Technologies, E4446A  
CF: 931.053 MHz  
SPAN: 30.0 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 0.3s  
Ref Lvl: 38.0 DBM

### Comments

Power over span: -20.74dBm  
BAUD 20000

Cursor 1 931.0378 -35.1

Cursor 2 931.0678 -61.1

Delta Freq. 30.0 kHz

Delta Amplitude 26.0



### Analyzer Settings

CF: 930.025 MHz  
SPAN: 150 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 1.6s  
Ref Lvl: 38.0 DBM  
Max Hold 8

### Notes

BAUD 40000

### Analyzer

Agilent Technologies,  
E4446A.

**PASS**

Part 24.133 (50 kHz) 10 Watt

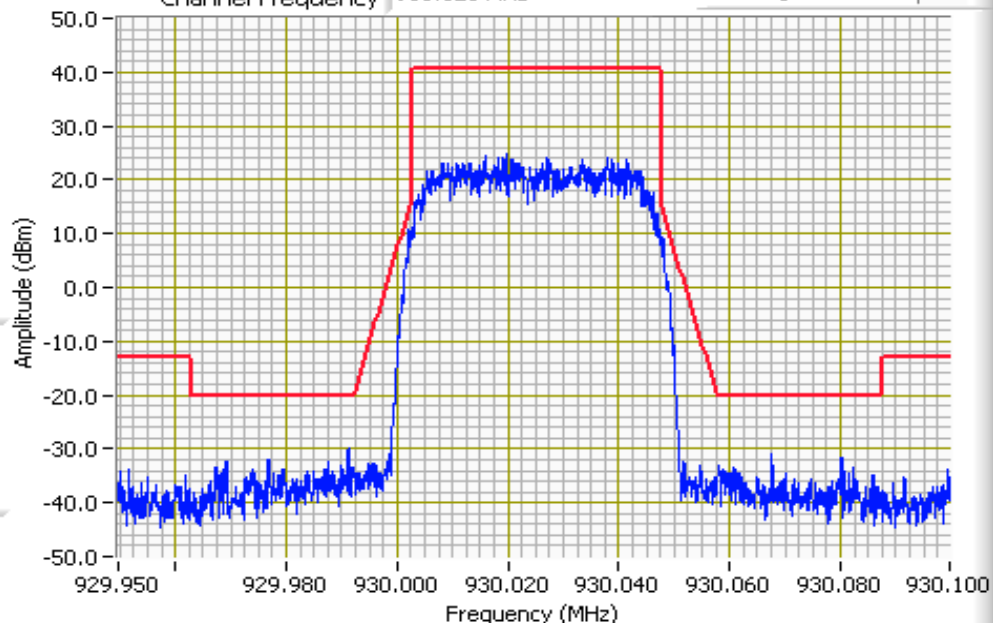
Reference Power 40.7 dBm

Channel Frequency 930.025 MHz

Modulated Signal

Mask

CW Signal

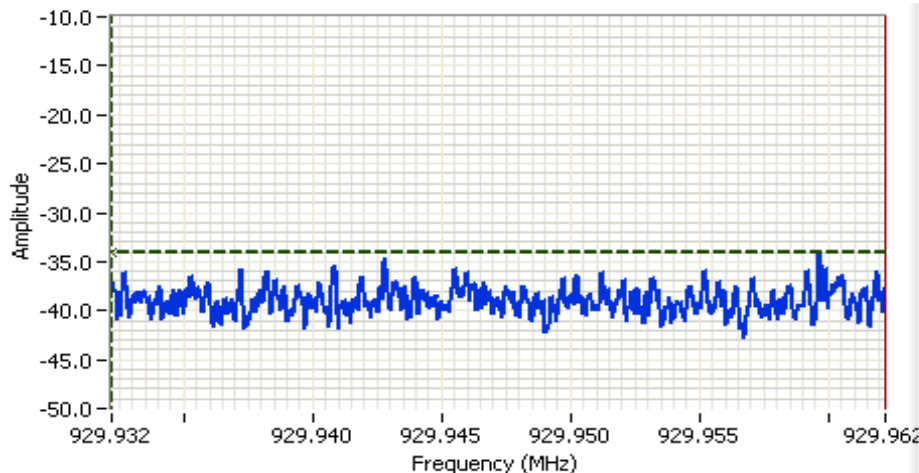






## EMC Test Data

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



### Analyzer Settings

Agilent Technologies, E4446A  
CF: 929.947 MHz  
SPAN: 30.0 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 0.3s  
Ref Lvl: 38.0 DBM

### Comments

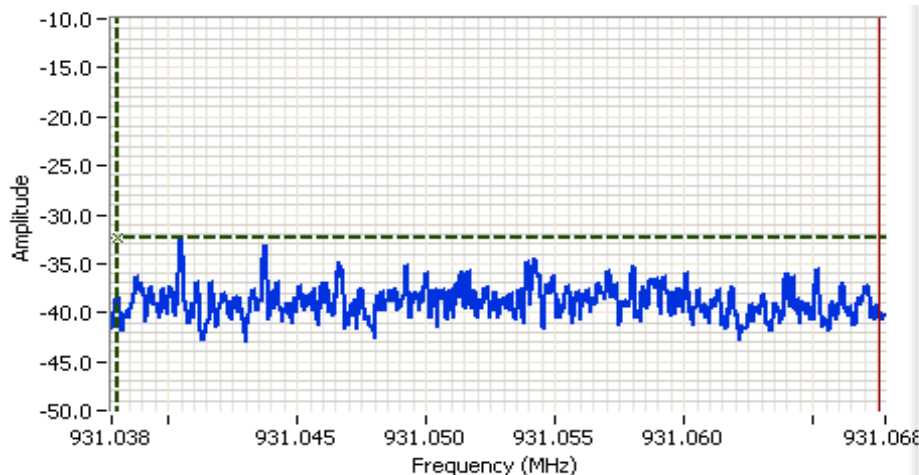
Power over span: -18.91dBm  
BAUD 40000

Cursor 1 929.9322 -34.1

Cursor 2 929.9622 -60.1

Delta Freq. 30.0 kHz

Delta Amplitude 26.0



### Analyzer Settings

Agilent Technologies, E4446A  
CF: 931.053 MHz  
SPAN: 30.0 kHz  
RB: 300 Hz  
VB: 910 Hz  
Detector: POS  
Attn: 30 DB  
RL Offset: 20.0 DB  
Sweep Time: 0.3s  
Ref Lvl: 38.0 DBM

### Comments

Power over span: -18.75dBm  
BAUD 40000

Cursor 1 931.0380 -32.3

Cursor 2 931.0676 -58.3

Delta Freq. 29.6 kHz

Delta Amplitude 26.0





## EMC Test Data

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

### Run #3: Signal Bandwidth FCC §24.131

Date of Test: 10/28/2015 & 8/29/2018

Test Engineer: Deniz Demirci & David Bare

Test Location: Fremont EMC Lab #4B

Config. Used: 1

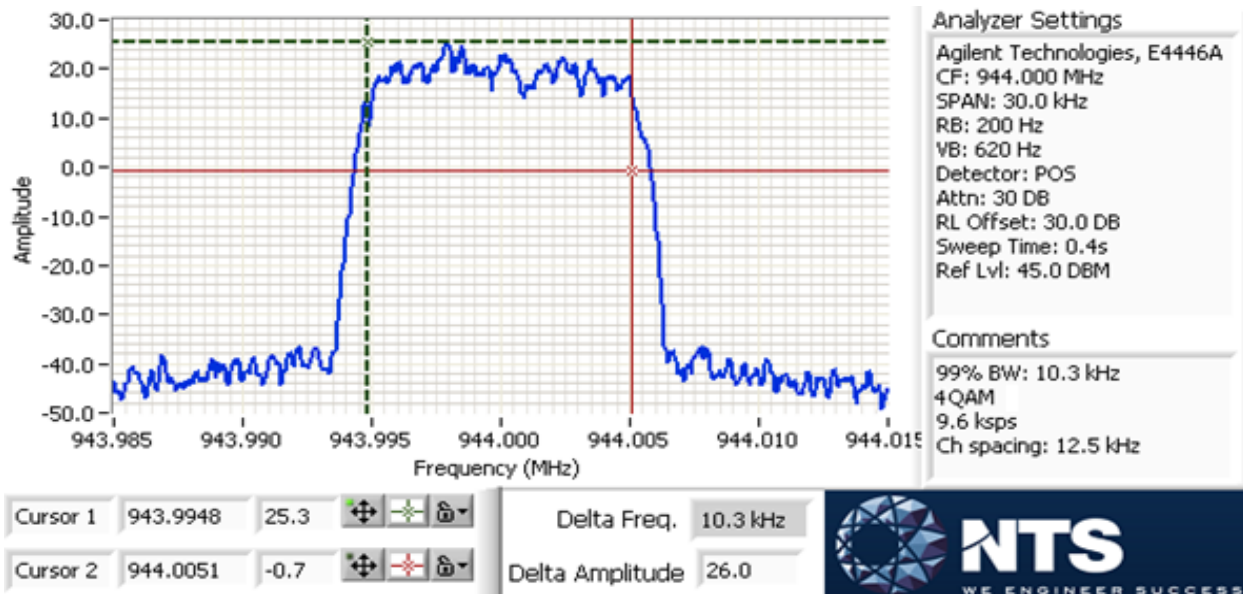
Config Change: None

EUT Voltage: 13.8 VDC

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

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

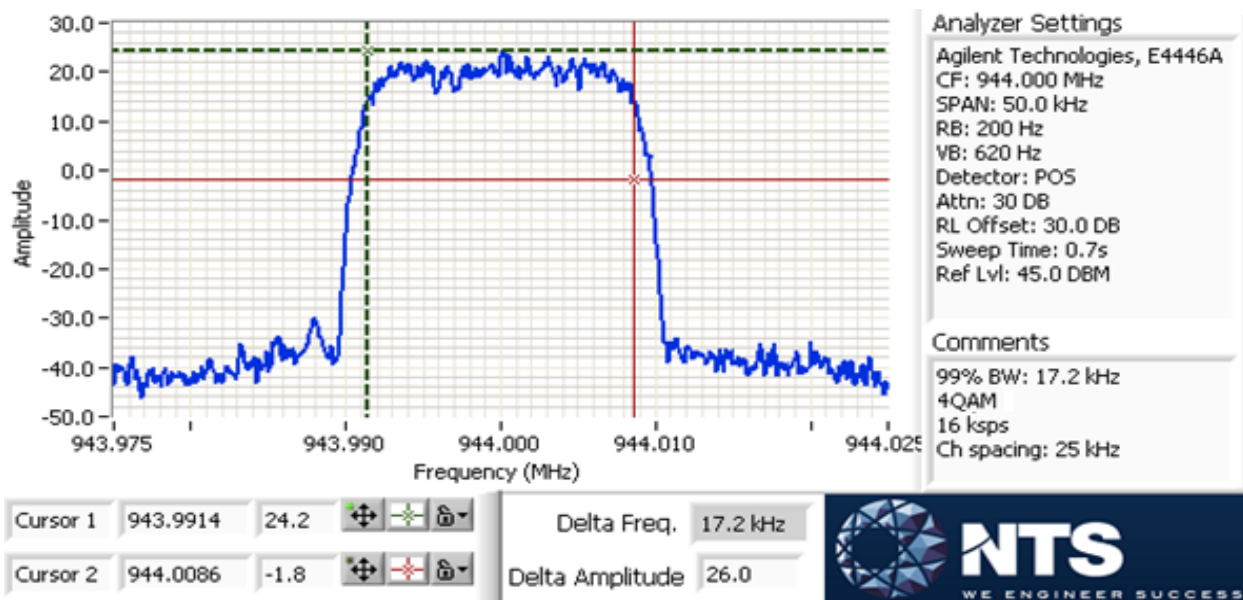
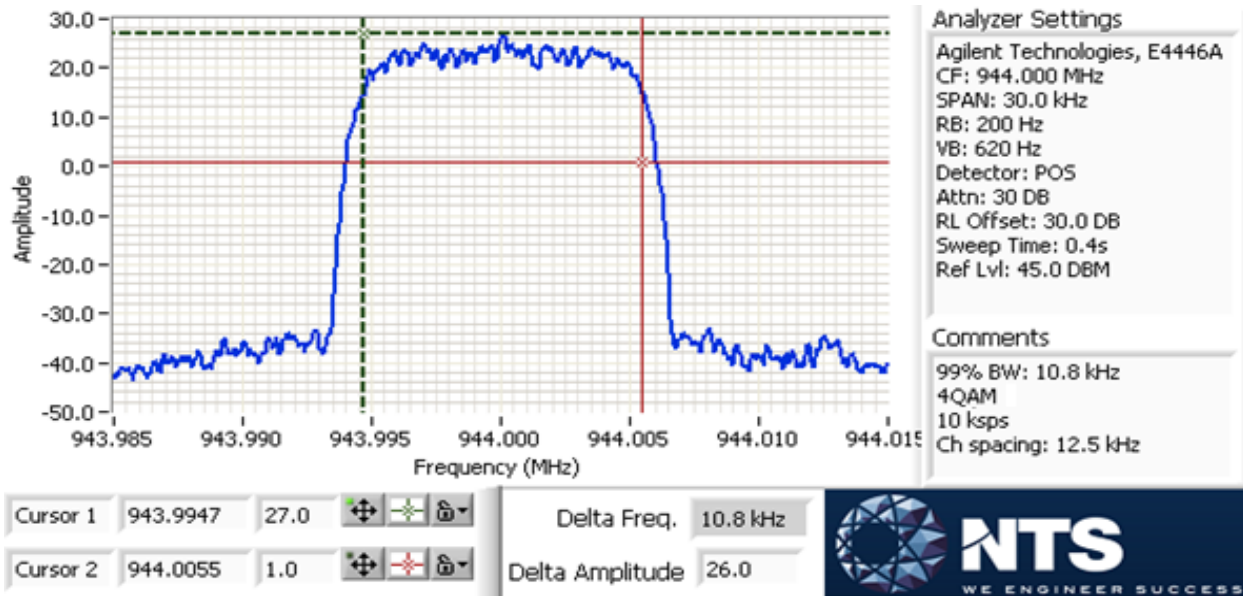
Note 2: Limit is 10 kHz for 12.5 kHz channels and 5 kHz less than the aggregated channel width for aggregated channels.





## EMC Test Data

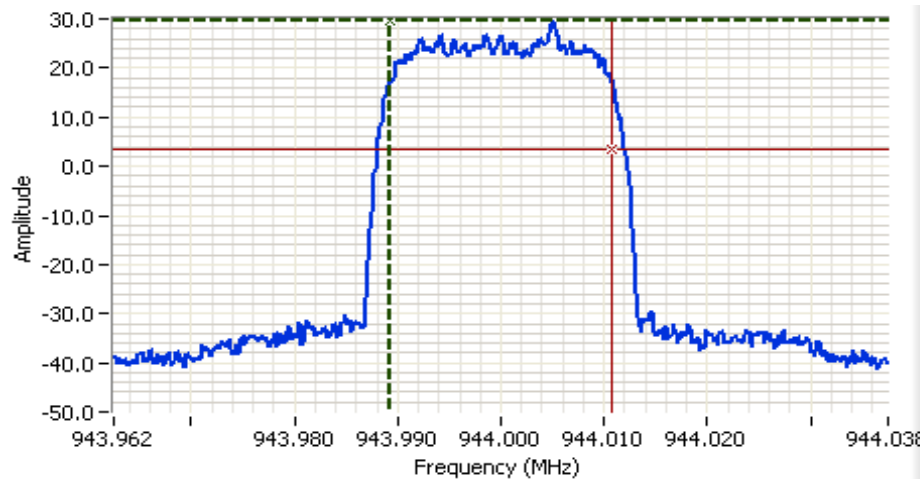
|           |                          |                      |                   |
|-----------|--------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC               | Job Number:          | PR085381          |
| Model:    | LN900                    | T-Log Number: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





## EMC Test Data

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



### Analyzer Settings

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

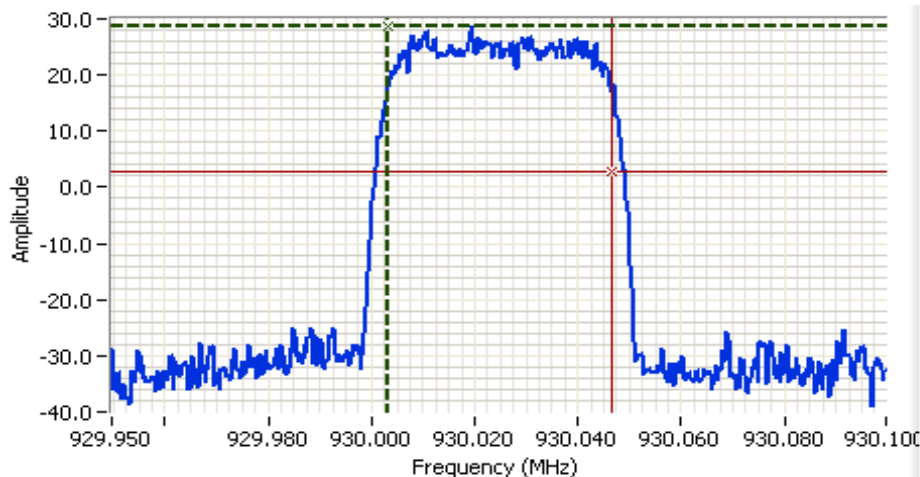
### Comments

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

Cursor 1 943.9893 29.4  
Cursor 2 944.0108 3.4

Delta Freq. 21.5 kHz

Delta Amplitude 26.0



### Analyzer Settings

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

### Comments

99% power BW: 43.2 kHz  
BAUD 40000

Cursor 1 930.0034 28.7  
Cursor 2 930.0465 2.7

Delta Freq. 43.2 kHz

Delta Amplitude 26.0





## EMC Test Data

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

### Run #4: Out of Band Spurious Emissions, Conducted

Date of Test: 12/11/2015 & 8/29/2018

Test Engineer: David Bare & Jude Semana

Test Location: Fremont EMC Lab #4B

Config. Used: 1

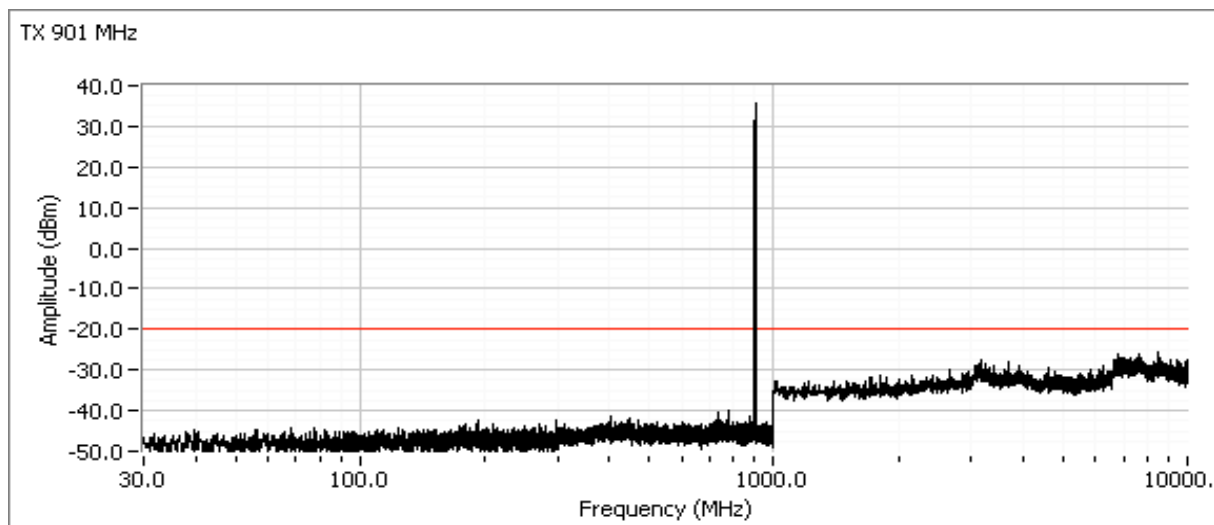
Config Change: None

EUT Voltage: 13.8 VDC

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

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

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

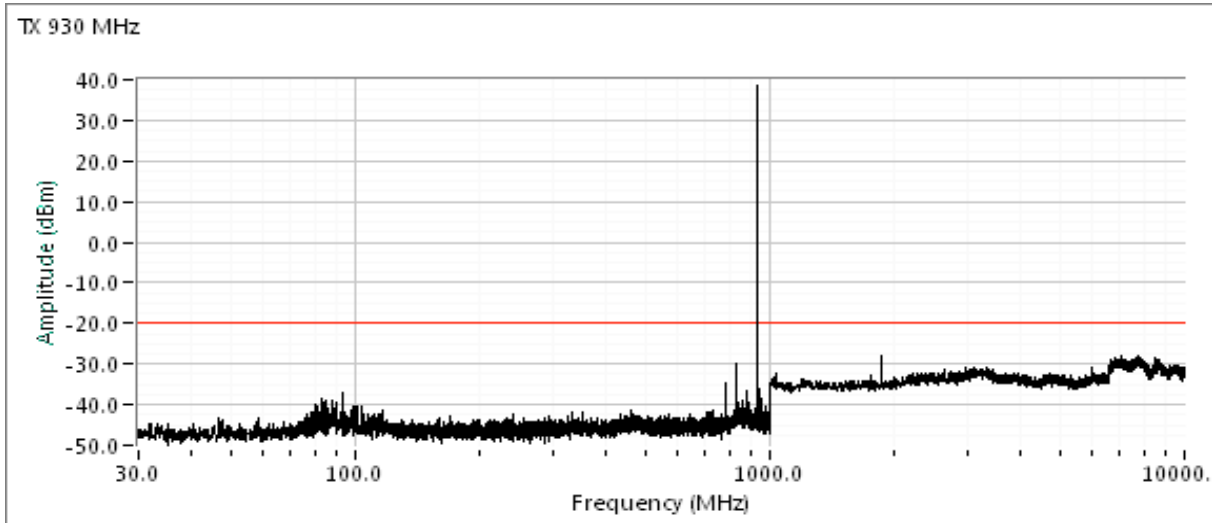




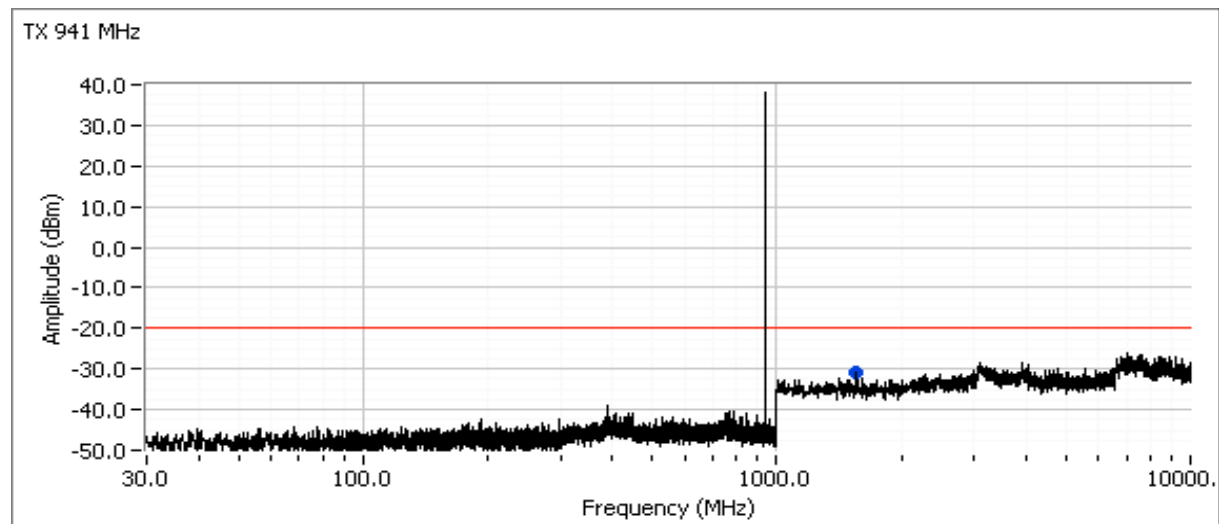
# EMC Test Data

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

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



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





# EMC Test Data

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

## Run #5: Out of Band Spurious Emissions, Radiated

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

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

## Run #5a - Preliminary measurements - chamber scans

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

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

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

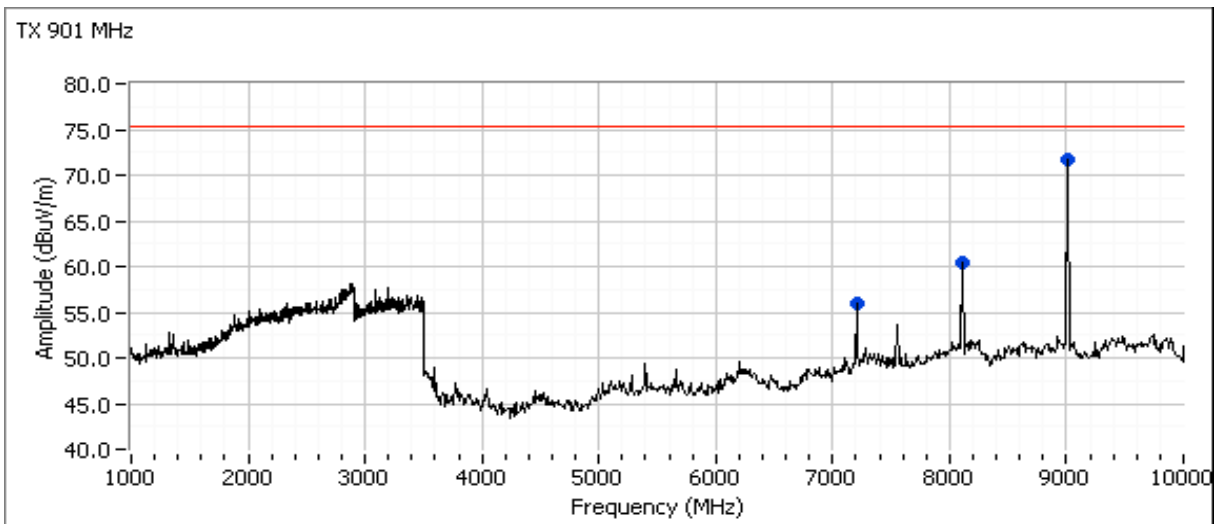
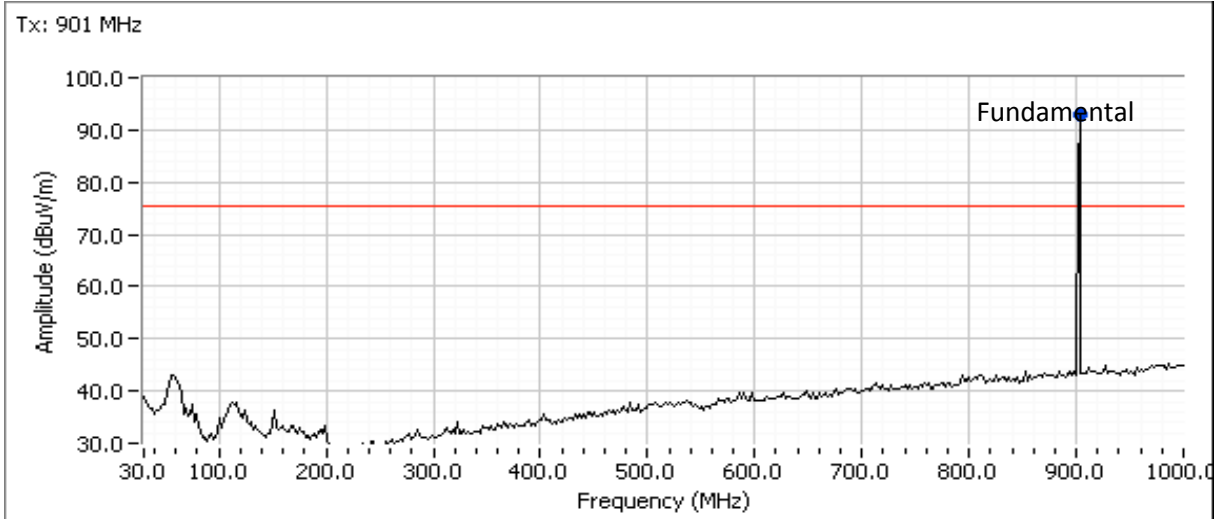




# EMC Test Data

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

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



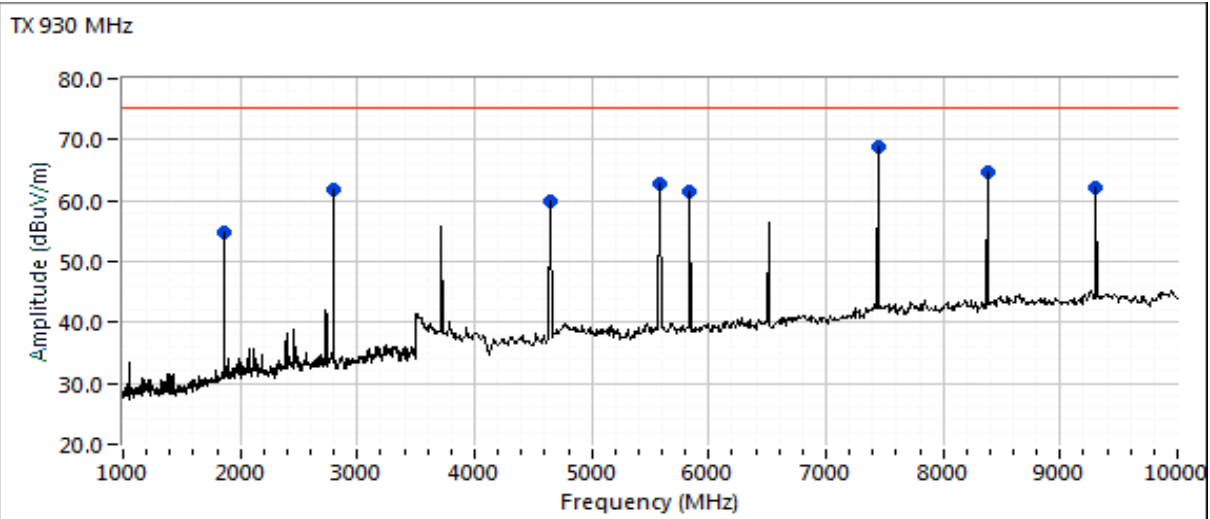
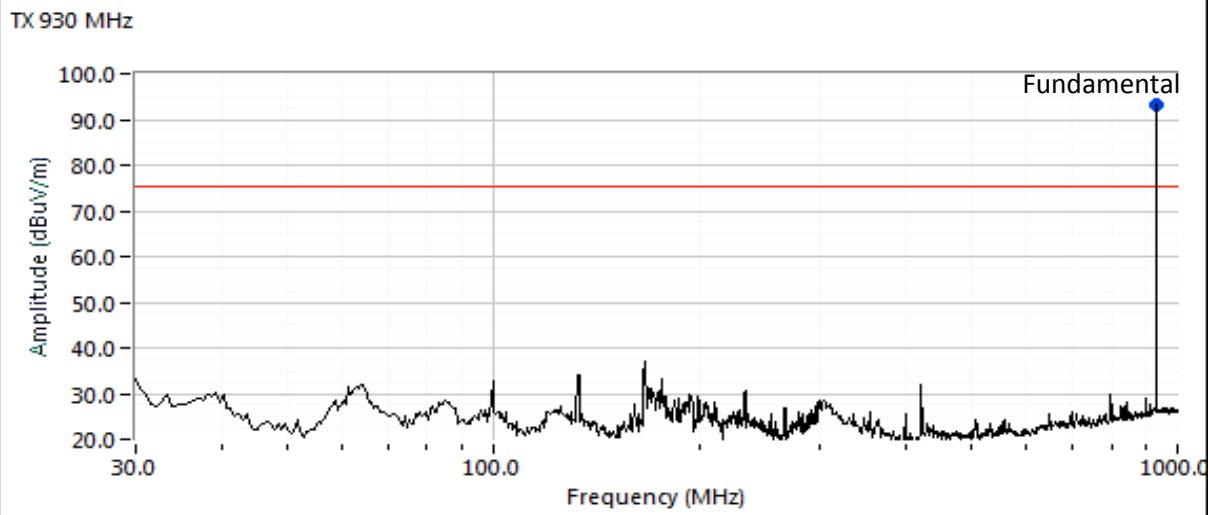




# EMC Test Data

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

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

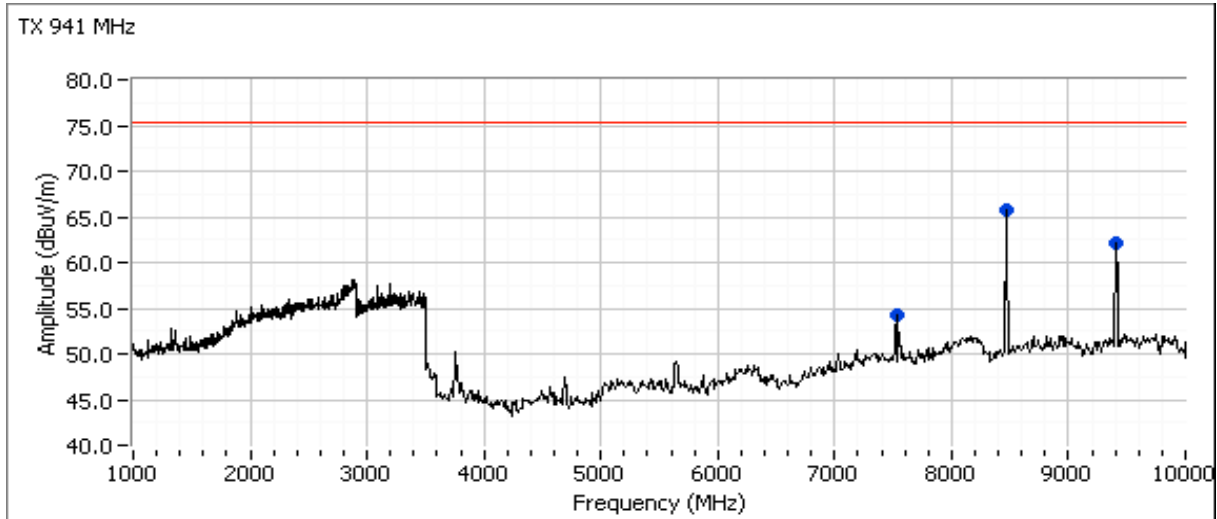
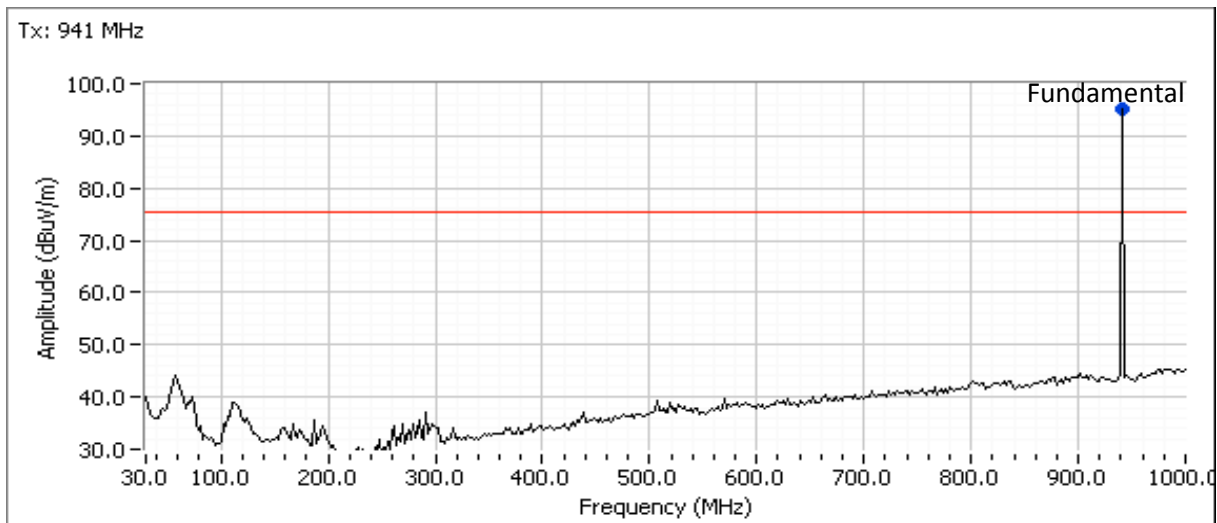




## EMC Test Data

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

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





# EMC Test Data

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

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

Date of Test: 12/14/2015 & 8/30/2018

Config. Used: 1

Test Engineer: Deniz Demirci & Jude Semana

Config Change: Additional PS used for 5.25V

Test Location: Fremont Chamber #4

EUT Voltage: 5.25 & 13.8 VDC

## EUT Field Strength

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

Note 1: The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation:  $E = \sqrt{(30PG)/d}$ . 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.



# EMC Test Data

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

## Substitution measurements

### Vertical

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

Note 1: Pin is the input power (dBm) to the substitution antenna

Note 2: Gain is the gain (dBi) for the substitution antenna.

Note 3: FS is the field strength (dBuV/m) measured from the substitution antenna.

Note 4: Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.

Note 5: EUT field strength as measured during initial run.



## EMC Test Data

|           |                          |                      |                   |
|-----------|--------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC               | Job Number:          | PR085381          |
| Model:    | LN900                    | T-Log Number:        | TL085381-RA       |
| Contact:  | Jack Priebe              | Project Manager:     | Christine Krebill |
| Standard: | FCC parts 24, 90 and 101 | Project Coordinator: | David Bare        |
|           |                          | 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 placed inside an environmental chamber.

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

Ambient Conditions:                      Temperature:              23 °C  
                                                         Rel. Humidity:              44 %

#### Summary of Results

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

#### Modifications Made During Testing

No modifications were made to the EUT during testing

#### Deviations From The Standard

No deviations were made from the requirements of the standard.

#### Test Notes

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



## EMC Test Data

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

### Run #1: Output Power

Date of Test: 8/30/2018

Test Engineer: David Bare

Test Location: Fremont EMC Lab #4B

Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC

Cable Loss: XXXXXXXXXX

Cable ID(s): -

Attenuator: 20.0 dB

Attenuator IDs: WC068107

Total Loss: 20.0 dB

| Power Setting <sup>2</sup> | Frequency (MHz) | Output Power       |         | Antenna Gain (dBi) | Result | EIRP |         |
|----------------------------|-----------------|--------------------|---------|--------------------|--------|------|---------|
|                            |                 | (dBm) <sup>1</sup> | mW      |                    |        | dBm  | W       |
| 40                         | 928             | 40.8               | 12022.6 | 16.5               | Pass   | 57.3 | 537.032 |
| 40                         | 944             | 41.0               | 12589.3 | 16.5               | Pass   | 57.5 | 562.341 |
| 40                         | 960             | 41.0               | 12589.3 | 16.5               | Pass   | 57.5 | 562.341 |

Note 1: Output power measured using a peak power meter

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



## EMC Test Data

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

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

Date of Test: 8/29/2018

Test Engineer: David Bare

Test Location: Fremont EMC Lab #4B

Config. Used: 1

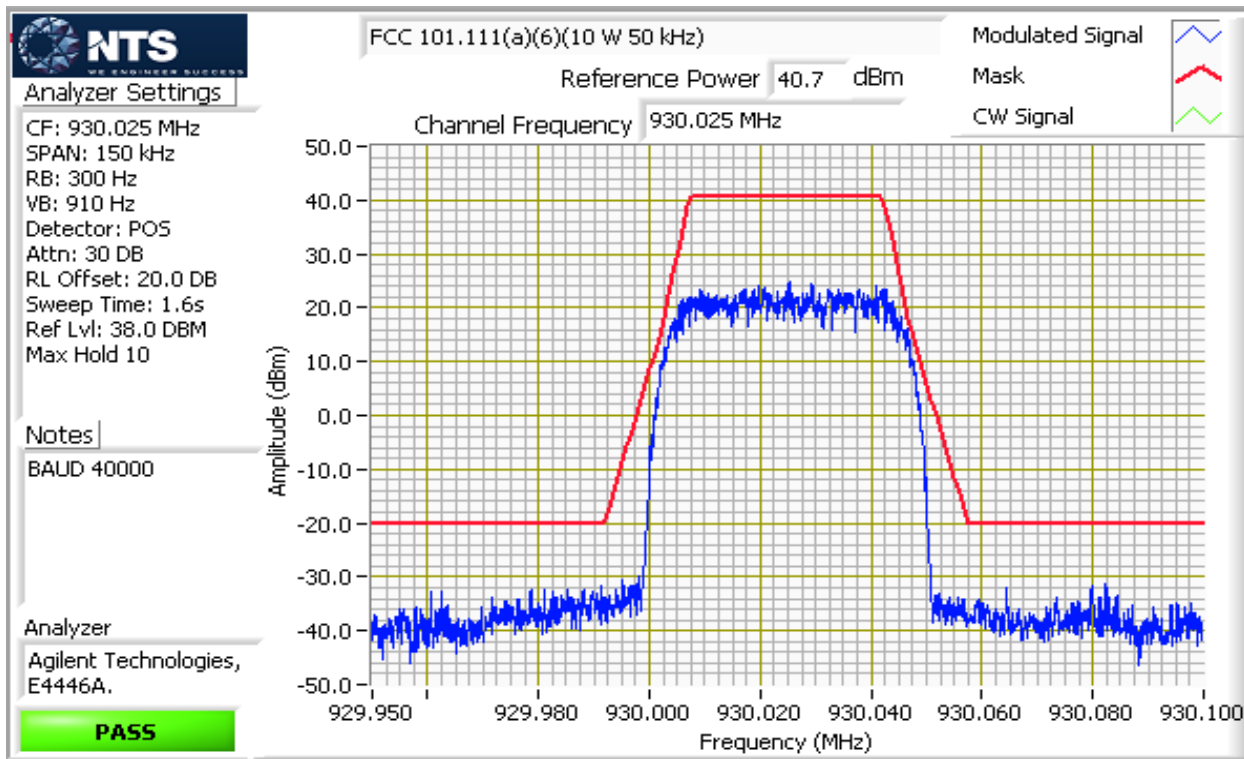
Config Change: None

EUT Voltage: 13.8 VDC

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

928 - 960 MHz, 50 kHz channel spacing.

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





## EMC Test Data

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

### Run #3: Signal Bandwidth

Date of Test: 8/29/2018

Test Engineer: David Bare

Test Location: Fremont EMC Lab #4B

Config. Used: 1

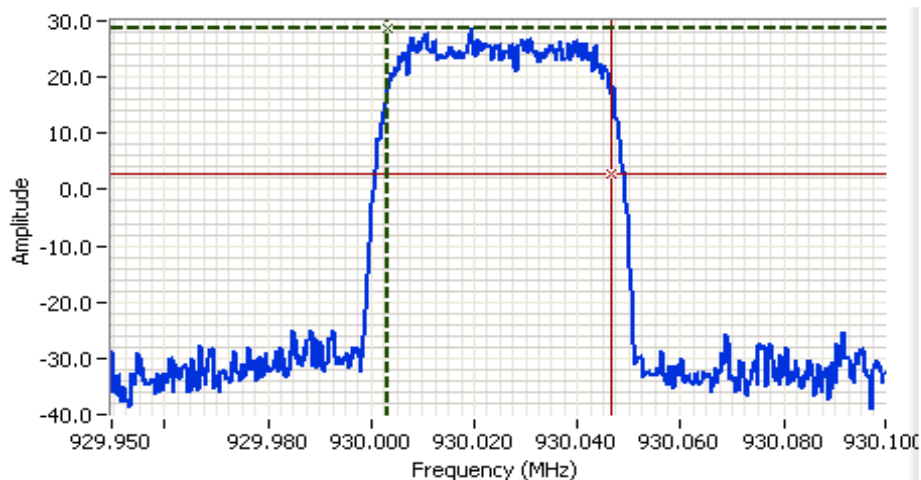
Config Change: None

EUT Voltage: 13.8 VDC

| Power Setting | Frequency (MHz) | Resolution Bandwidth | Bandwidth (kHz) |
|---------------|-----------------|----------------------|-----------------|
| 40            | 930             | 510 Hz               | 99%<br>43.20    |

BAUD 40000

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



#### Analyzer Settings

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

#### Comments

99% power BW: 43.2 kHz  
BAUD 40000

|          |          |      |  |
|----------|----------|------|--|
| Cursor 1 | 930.0034 | 28.7 |  |
| Cursor 2 | 930.0465 | 2.7  |  |

Delta Freq. 43.2 kHz

Delta Amplitude 26.0







## EMC Test Data

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

### FCC Spurious Emissions < 30 MHz

#### Test Specific Details

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

#### General Test Configuration

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

Ambient Conditions:                      Temperature:              21 °C  
                                                         Rel. Humidity:              42 %

#### Summary of Results

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

#### Modifications Made During Testing

No modifications were made to the EUT during testing

#### Deviations From The Standard

No deviations were made from the requirements of the standard.



## EMC Test Data

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

### Run #4: Out of Band Spurious Emissions, Conducted

Date of Test: 9/4/2018

Test Engineer: David Bare

Test Location: Fremont EMC Lab #4B

Config. Used: 1

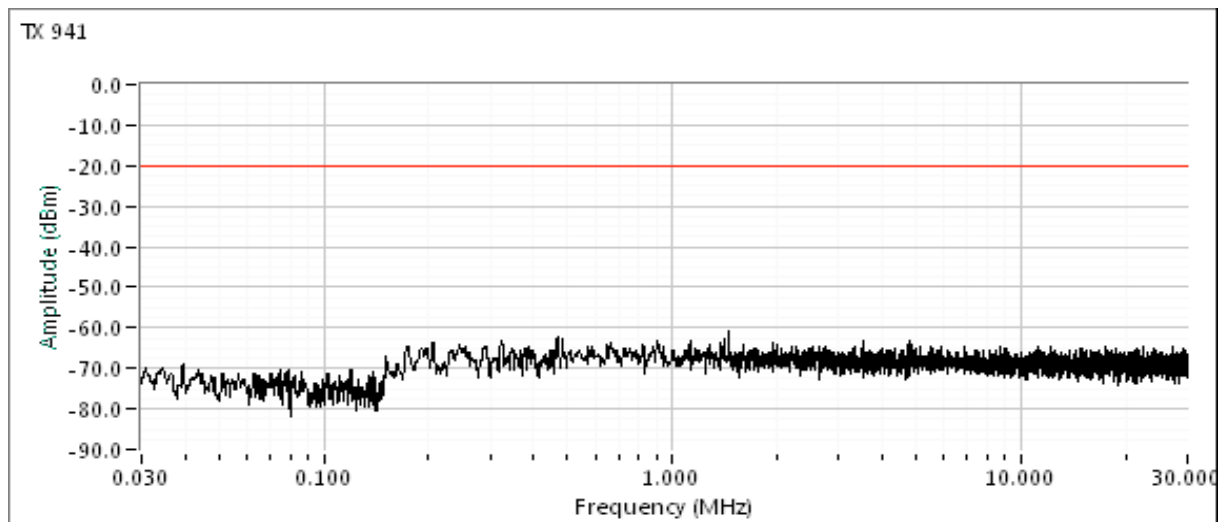
Config Change: None

EUT Voltage: 13.8 VDC

| Frequency (MHz) | Limit   | Result |
|-----------------|---------|--------|
| 941             | -20 dBm | Pass   |

The limit is taken from FCC Part 90 Mask D

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



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



# EMC Test Data

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

## Run #5: Spurious Emissions, Radiated

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

The limit is taken from FCC Part 90 Mask D

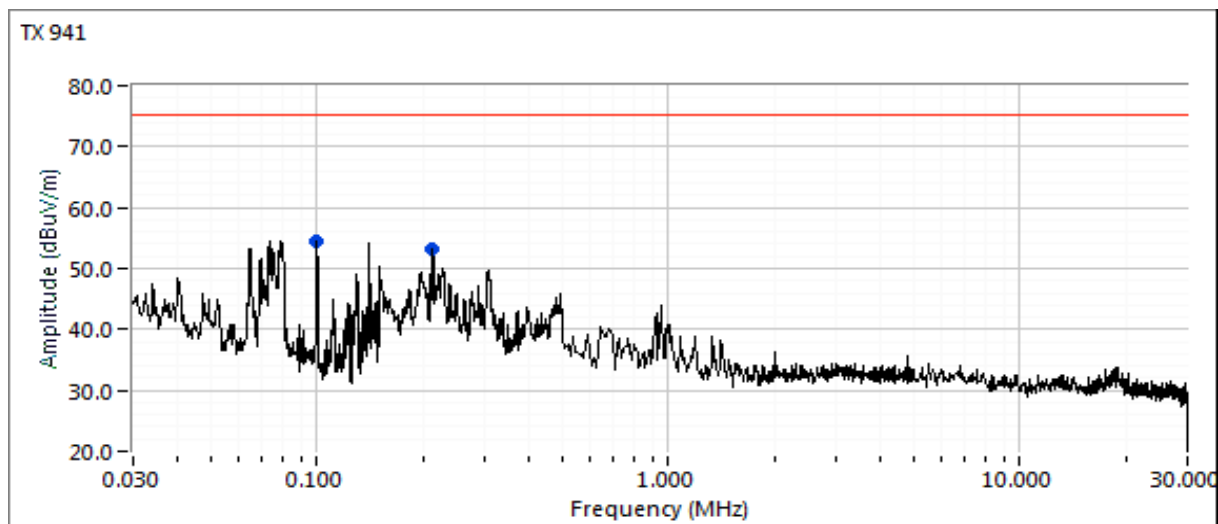
Date of Test: 9/4/2018  
Test Engineer: David Bare  
Test Location: Fremont Chmaber #4

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

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

|         |                                                                                                                                                                                                                                                                                                                                         |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note 1: | The field strength limit in the tables above was calculated from the erp/eirp limit detailed in the standard using the free space propagation equation: $E = \sqrt{(30PG)/d}$ . 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. |
| Note 2: | No emissions related to the EUT Tx frequency from the EUT were observed as all observed emisisions did not change when the transmitter output was keyed.                                                                                                                                                                                |

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





## EMC Test Data

|                        |                                   |                      |                   |
|------------------------|-----------------------------------|----------------------|-------------------|
| 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



## EMC Test Data

|           |                                   |                      |                   |
|-----------|-----------------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC                        | Job Number:          | JD99760           |
| Model:    | LN900                             | T-Log Number:        | T99783            |
| Contact:  | Dennis McCarthy                   | Project Manager:     | Christine Krebill |
| Standard: | FCC Parts 15, 90 and 101, RSS-119 | Project Coordinator: | -                 |
|           |                                   | 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 placed 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 <sup>1</sup>   | 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.



## EMC Test Data

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

<sup>1</sup> FCC Part 90.213 (footnote 14) and RSS-119 Section 5.3 allow 1.5 ppm for control station operations.

Limited Modular approval

### Run #1: Output Power

Date of Test: 10/26/2015

Test Engineer: Deniz Demirci

Test Location: Fremont Lab #6

Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC

Cable Loss: 0.0 dB

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 <sup>2</sup> | Frequency (MHz) | Output Power       |         | Antenna Gain (dBi) | Result | EIRP |         |
|----------------------------|-----------------|--------------------|---------|--------------------|--------|------|---------|
|                            |                 | (dBm) <sup>1</sup> | mW      |                    |        | dBm  | 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 <sup>2</sup> | Frequency (MHz) | Output Power       |         | Antenna Gain (dBi) | Result | EIRP |         |
|----------------------------|-----------------|--------------------|---------|--------------------|--------|------|---------|
|                            |                 | (dBm) <sup>1</sup> | mW      |                    |        | dBm  | 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            |
| Contact:  | Dennis McCarthy                   | Project Manager:     | Christine Krebill |
| Standard: | FCC Parts 15, 90 and 101, RSS-119 | Project Coordinator: | -                 |
|           |                                   | 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           | J & G         | Pass   |
| 40 dBm        | 16.0 ksps | 25.0 kHz     | 16QAM      | 898.5           | J & G         | Pass   |
| 40 dBm        | 16.0 ksps | 25.0 kHz     | 64QAM      | 898.5           | J & G         | Pass   |

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

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

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

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

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

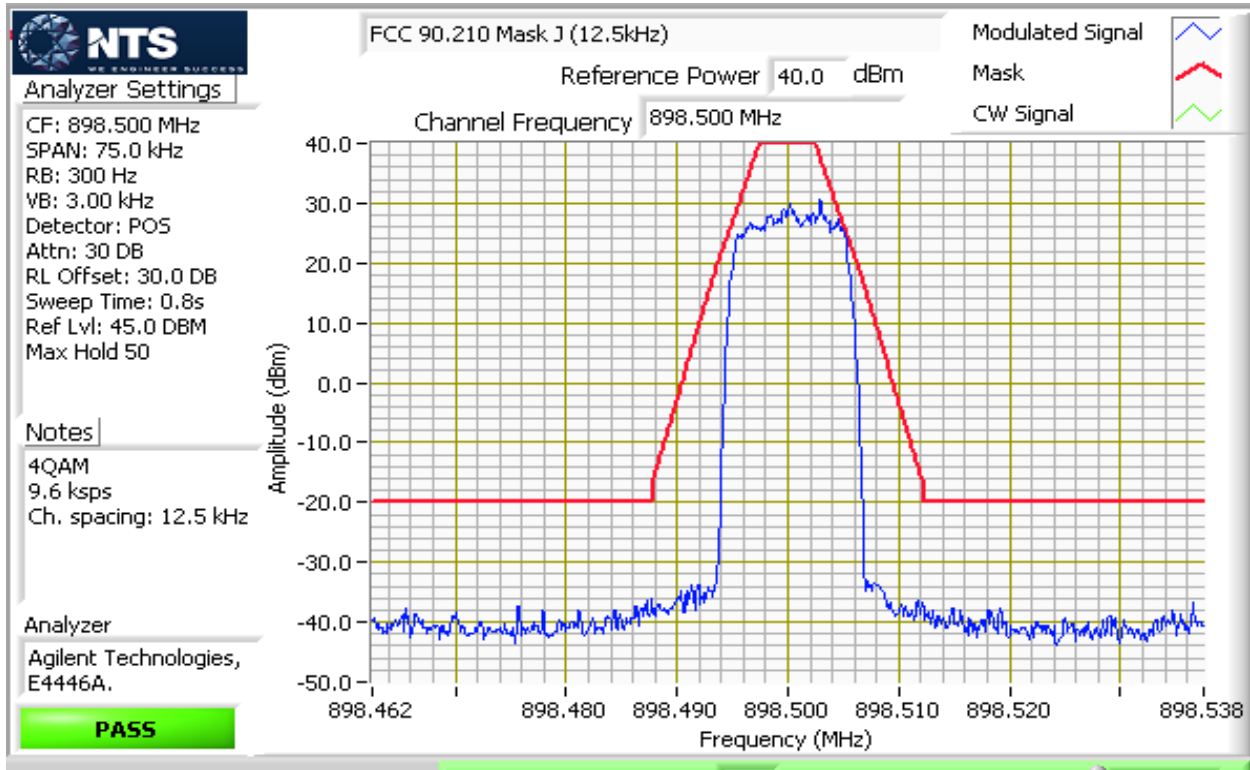
## Run #2d: Spectral Mask at 932 - 944 and 952-953 MHz bands (RSS-119)

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



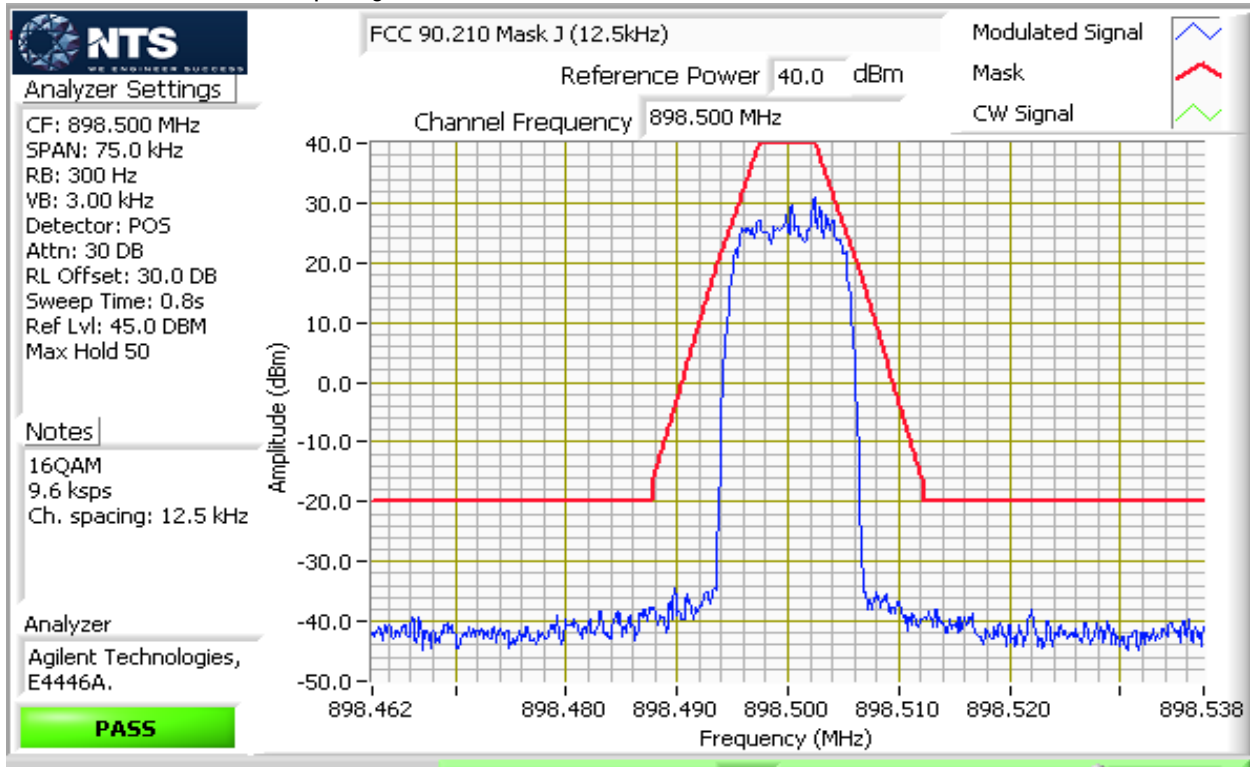
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

896 - 901 MHz, 12.5 kHz channel spacing.



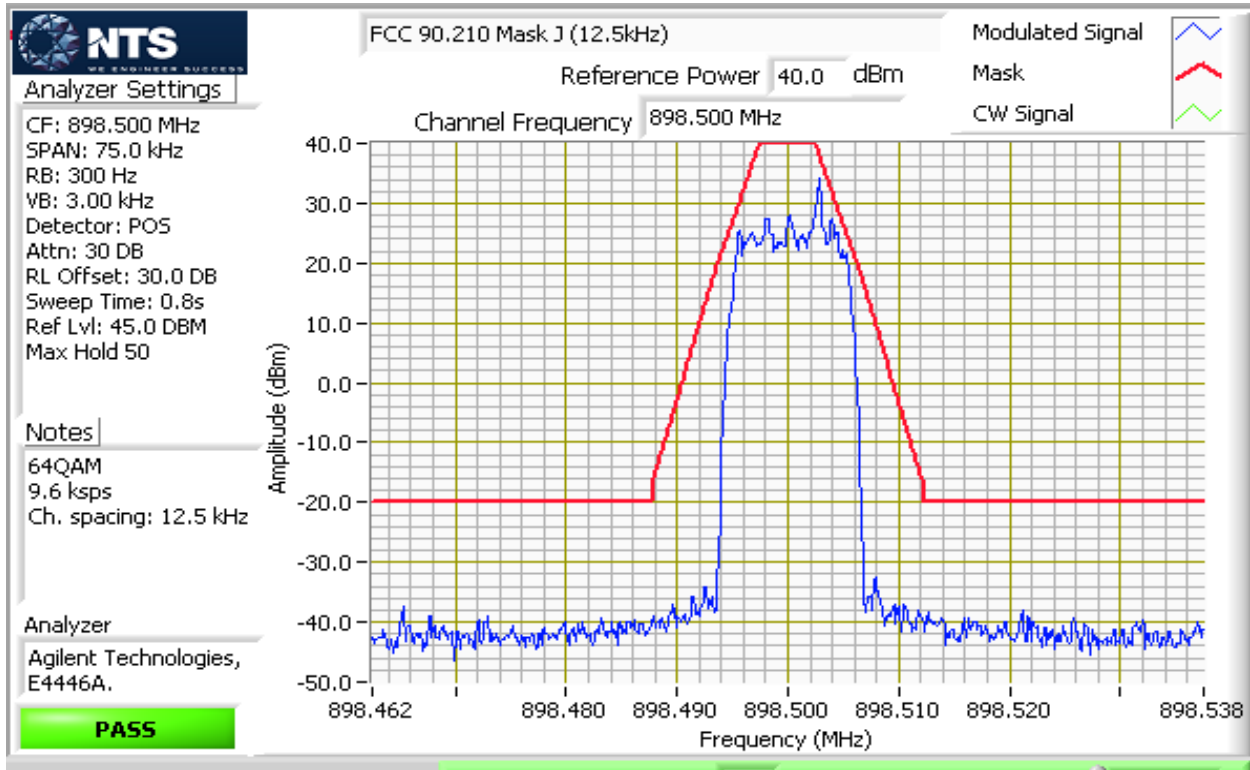
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

896 - 901 MHz, 12.5 kHz channel spacing.



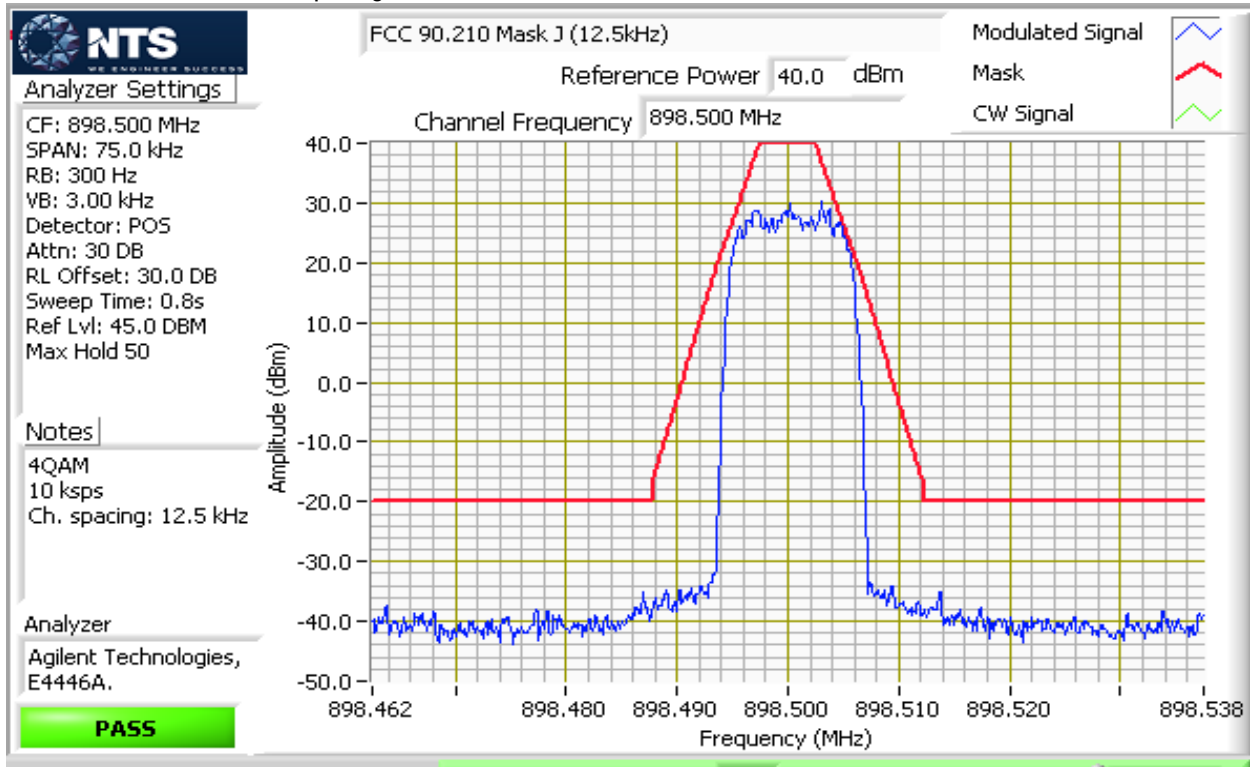
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

896 - 901 MHz, 12.5 kHz channel spacing.



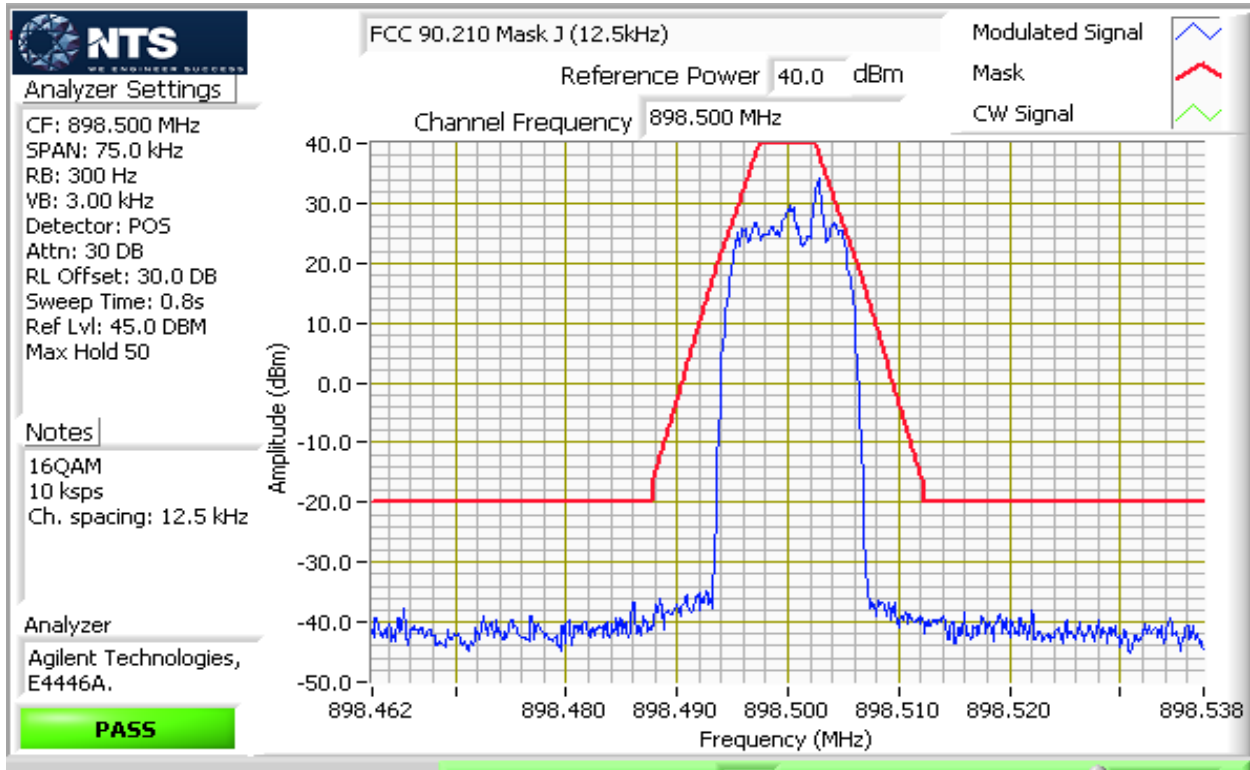
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

896 - 901 MHz, 12.5 kHz channel spacing.



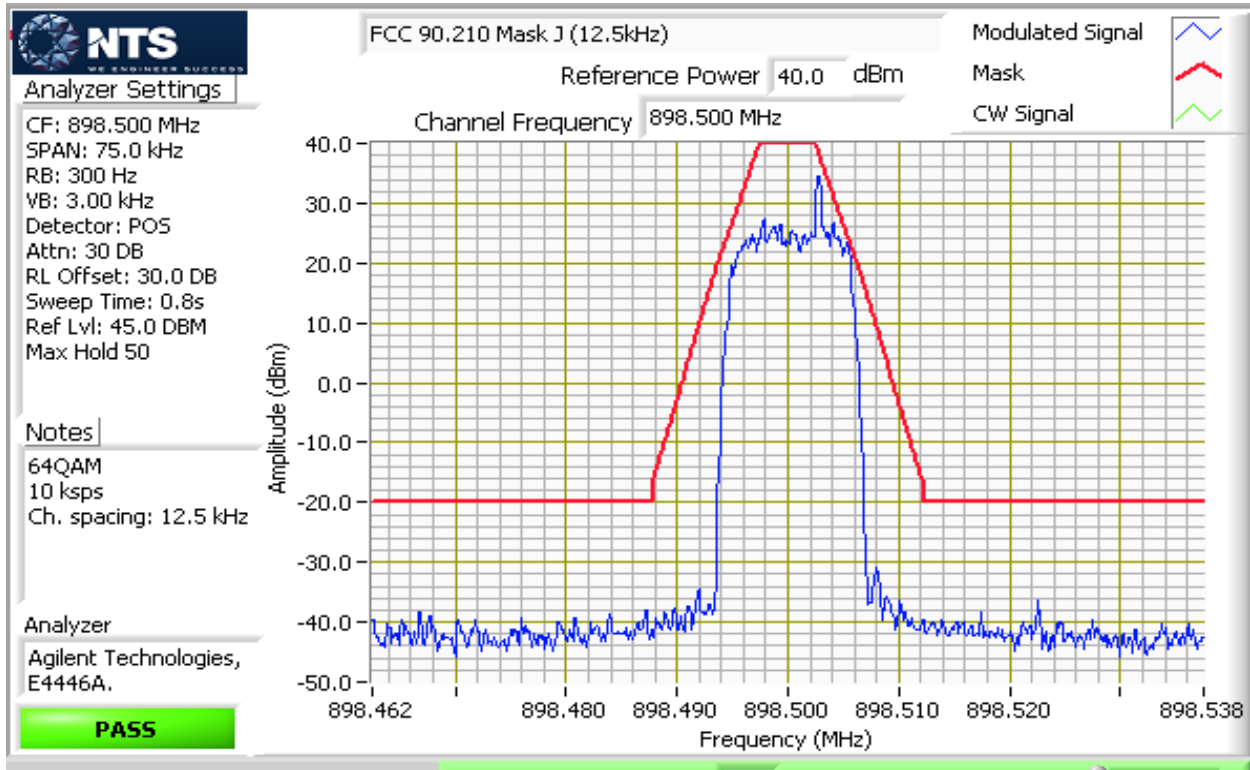
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

896 - 901 MHz, 12.5 kHz channel spacing.



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

896 - 901 MHz, 12.5 kHz channel spacing.

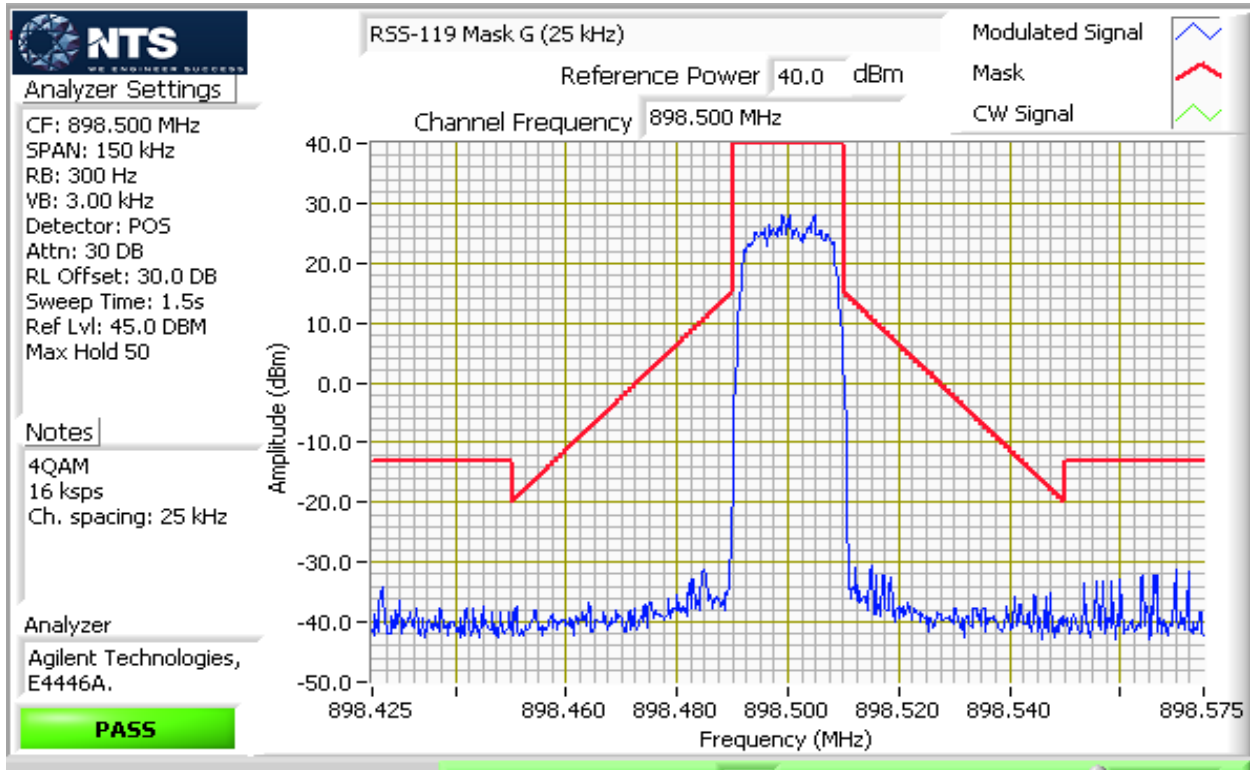




## EMC Test Data

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

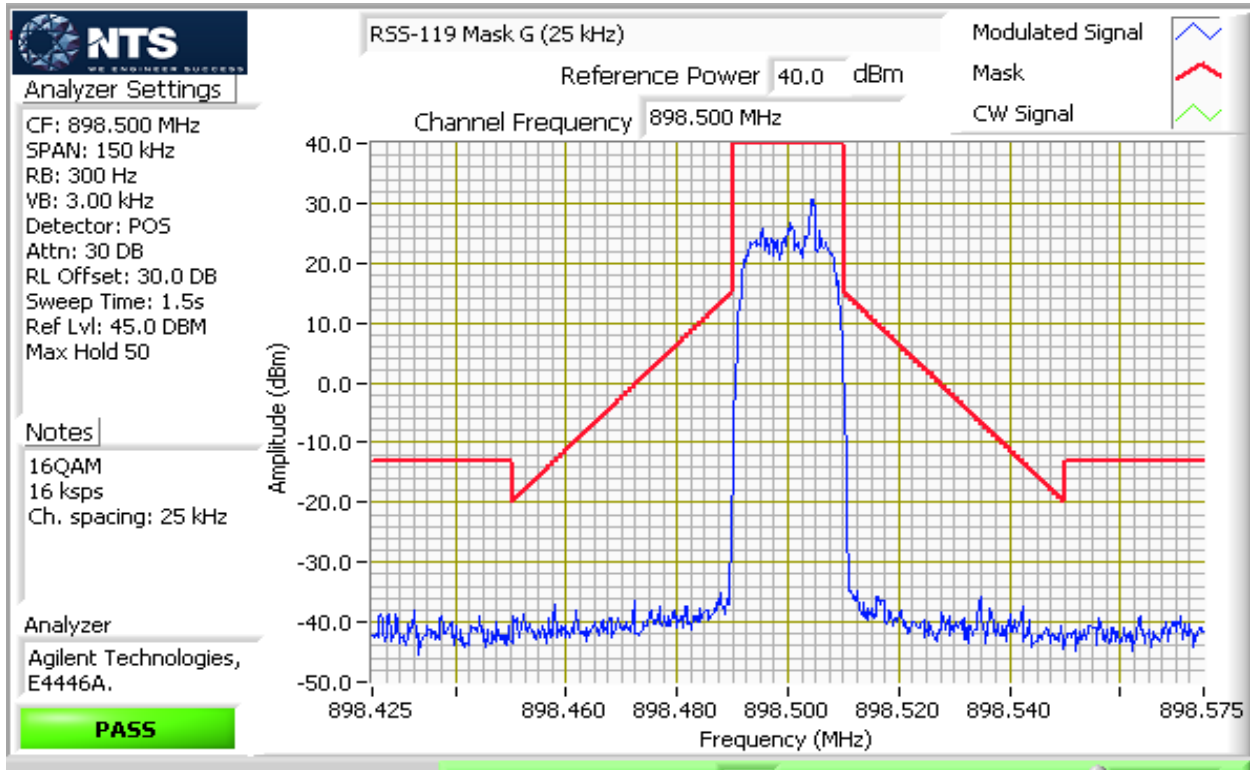
896 - 901 MHz, 25 kHz channel spacing



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

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

896 - 901 MHz, 25 kHz channel spacing

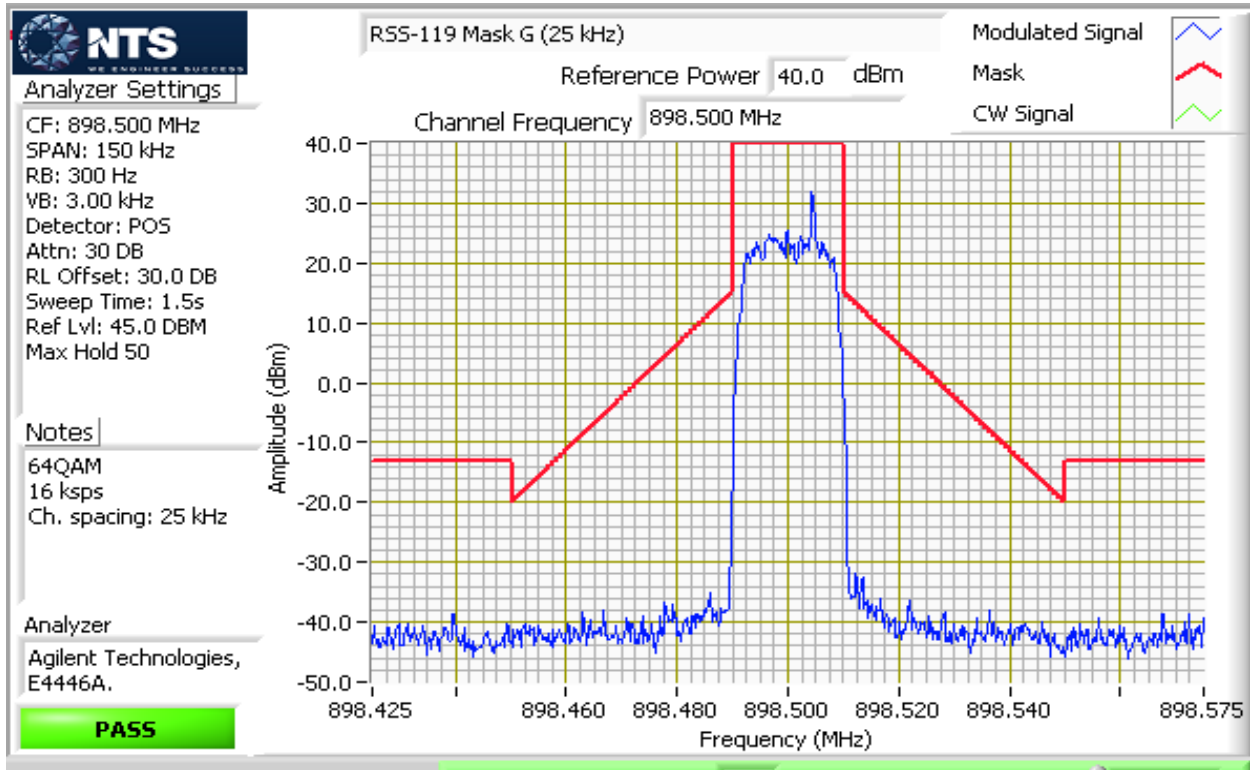


Note: FCC part 90 requires the use of Mask J which is more restrictive from an offset of 8.75 kHz to 10 KHz (7.5 dB at 10 kHz) than Mask G. Since the observed emissions at offsets of 8.75 to 10 kHz are more than 10 dB below the reference, compliance is demonstrated for Mask J.



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

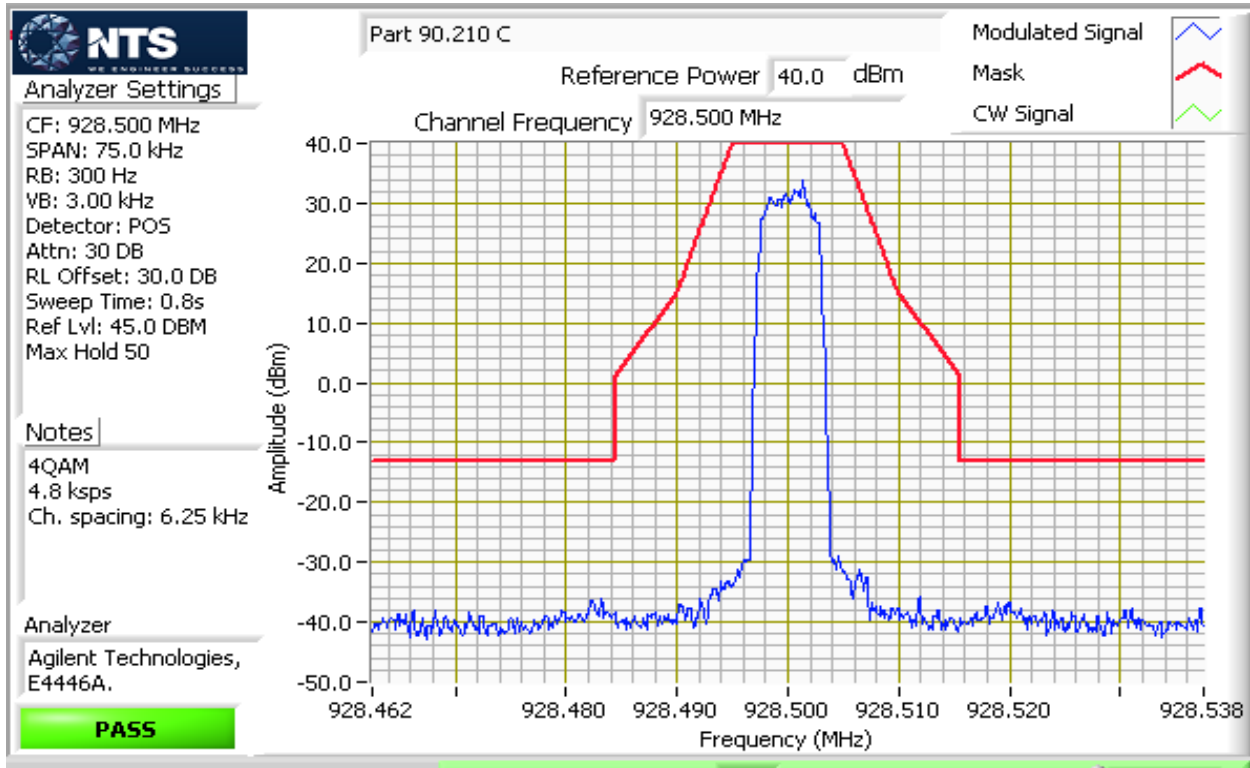
896 - 901 MHz, 25 kHz channel spacing



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

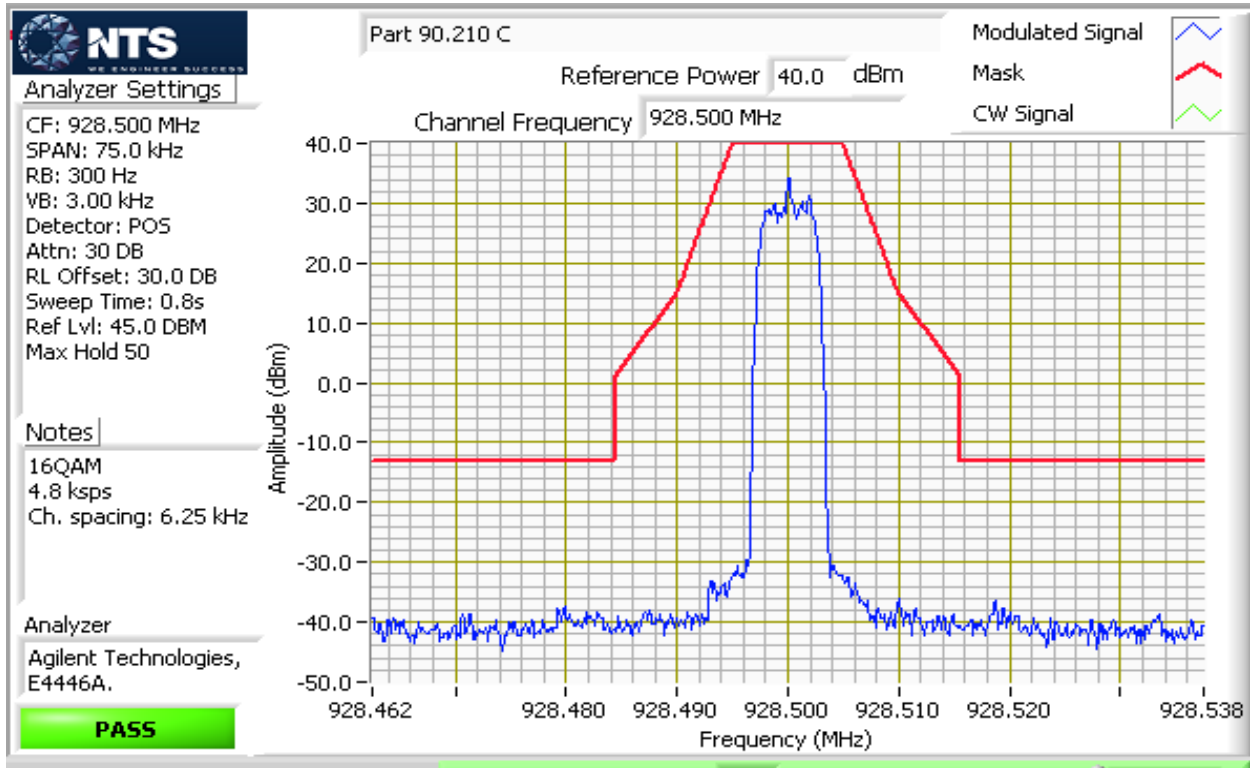
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

928 - 929 MHz, 6.25 kHz channel spacing



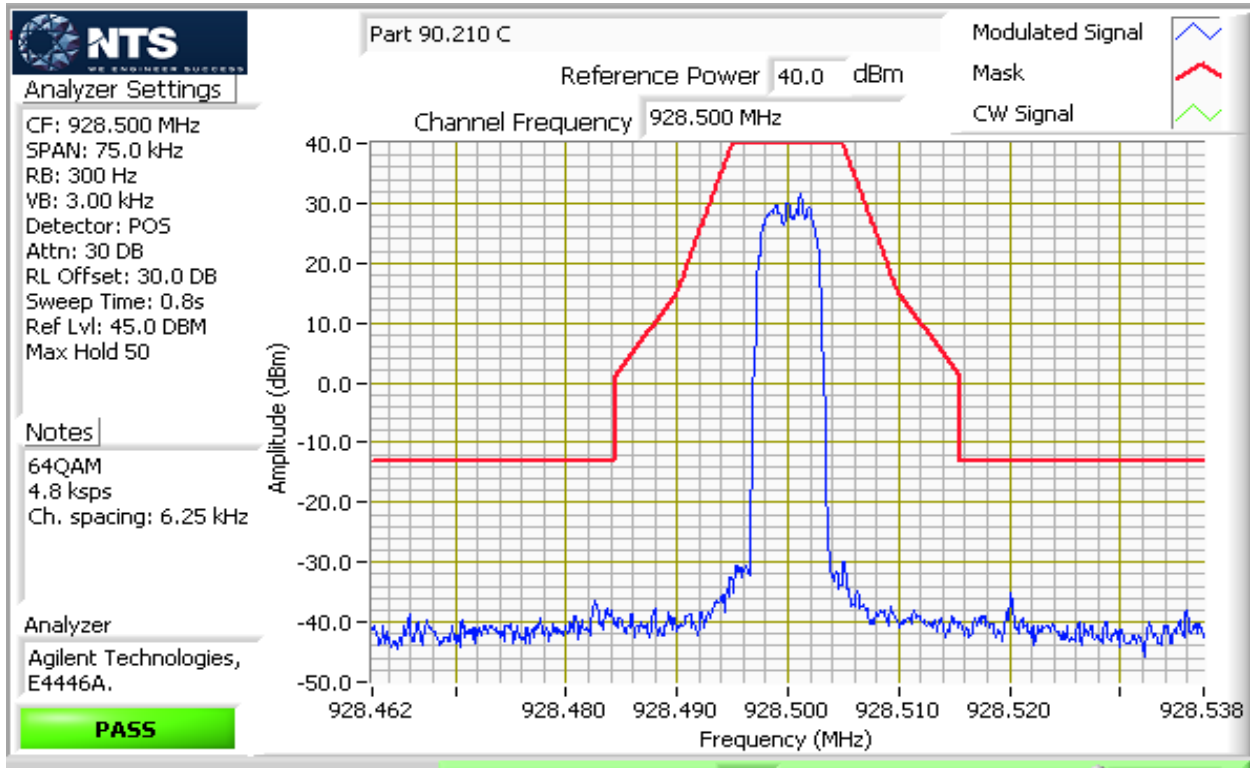
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

928 - 929 MHz, 6.25 kHz channel spacing



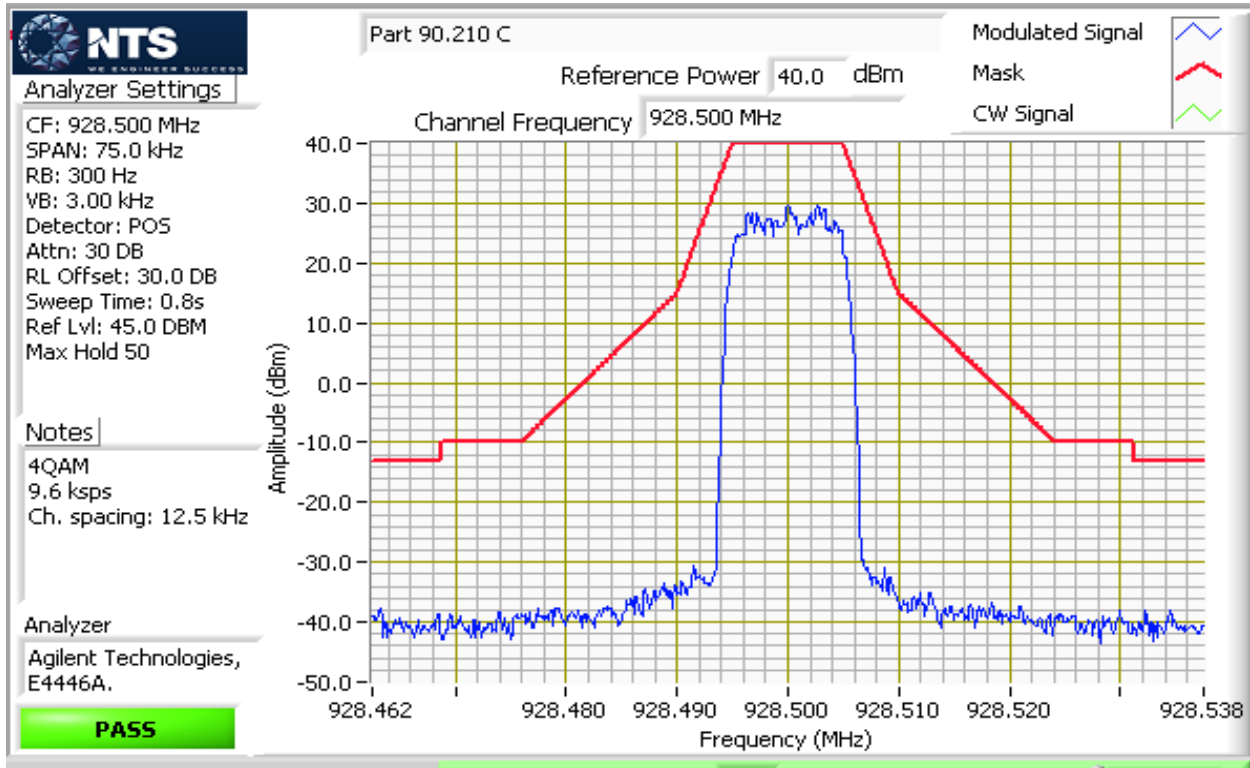
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

928 - 929 MHz, 6.25 kHz channel spacing



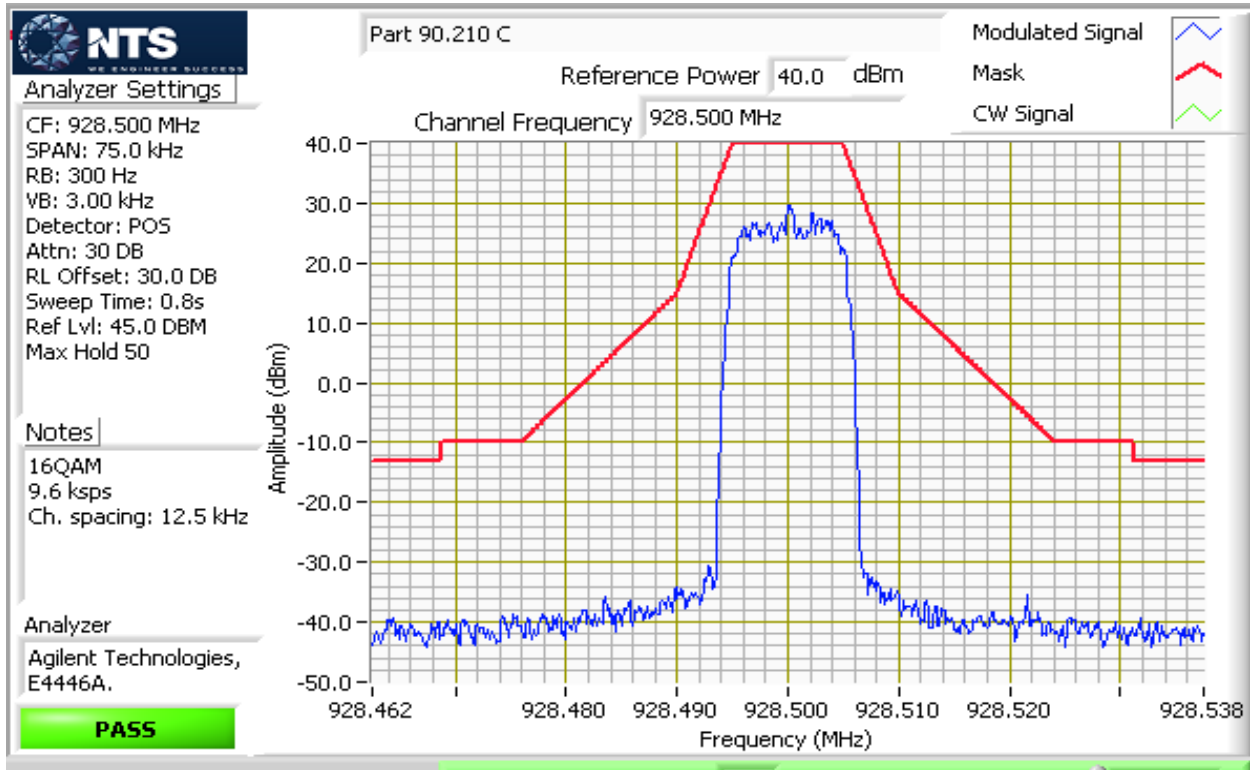
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

928 - 929 MHz, 12.5 kHz channel spacing



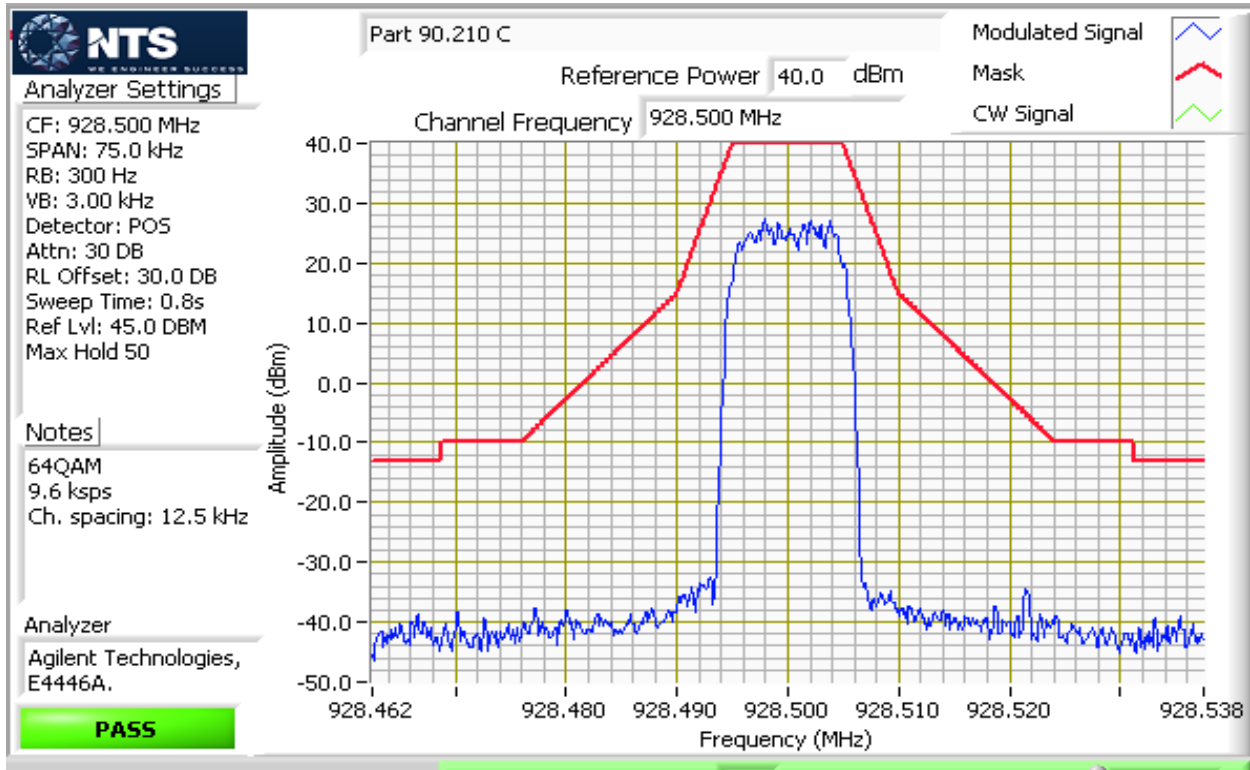
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

928 - 929 MHz, 12.5 kHz channel spacing



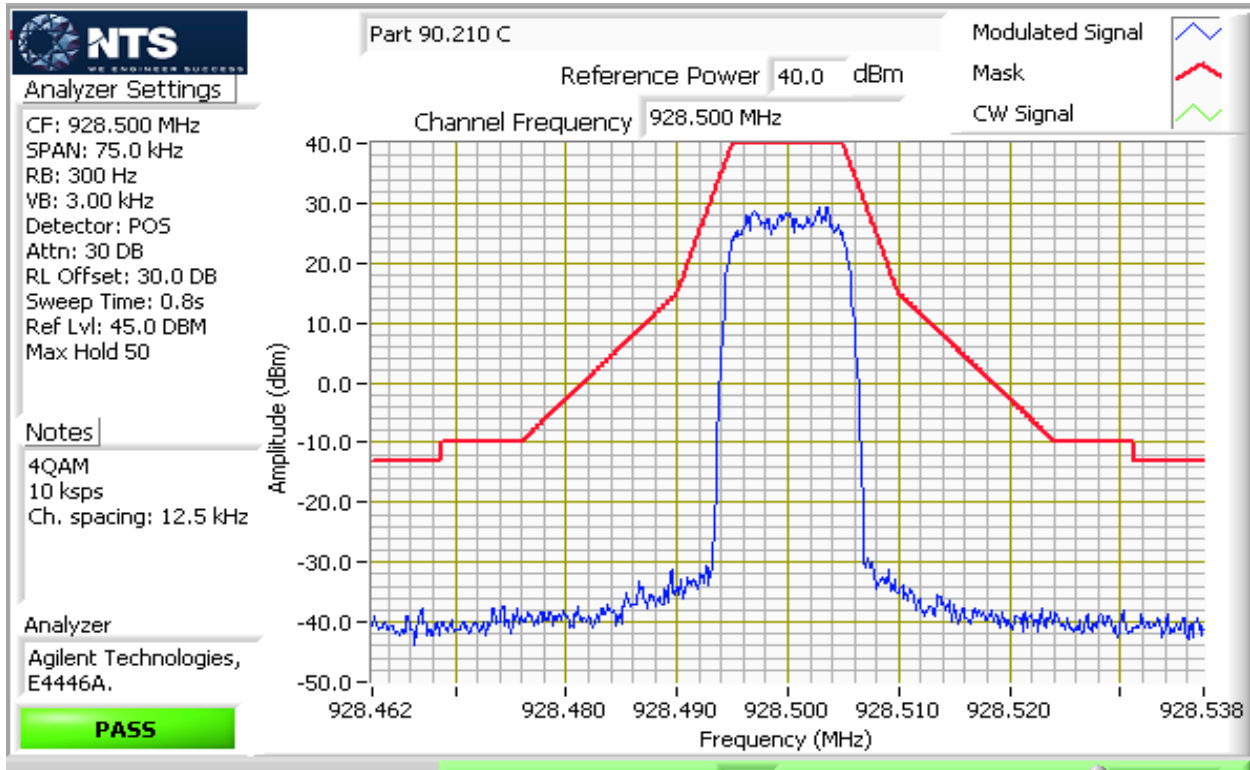
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

928 - 929 MHz, 12.5 kHz channel spacing



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

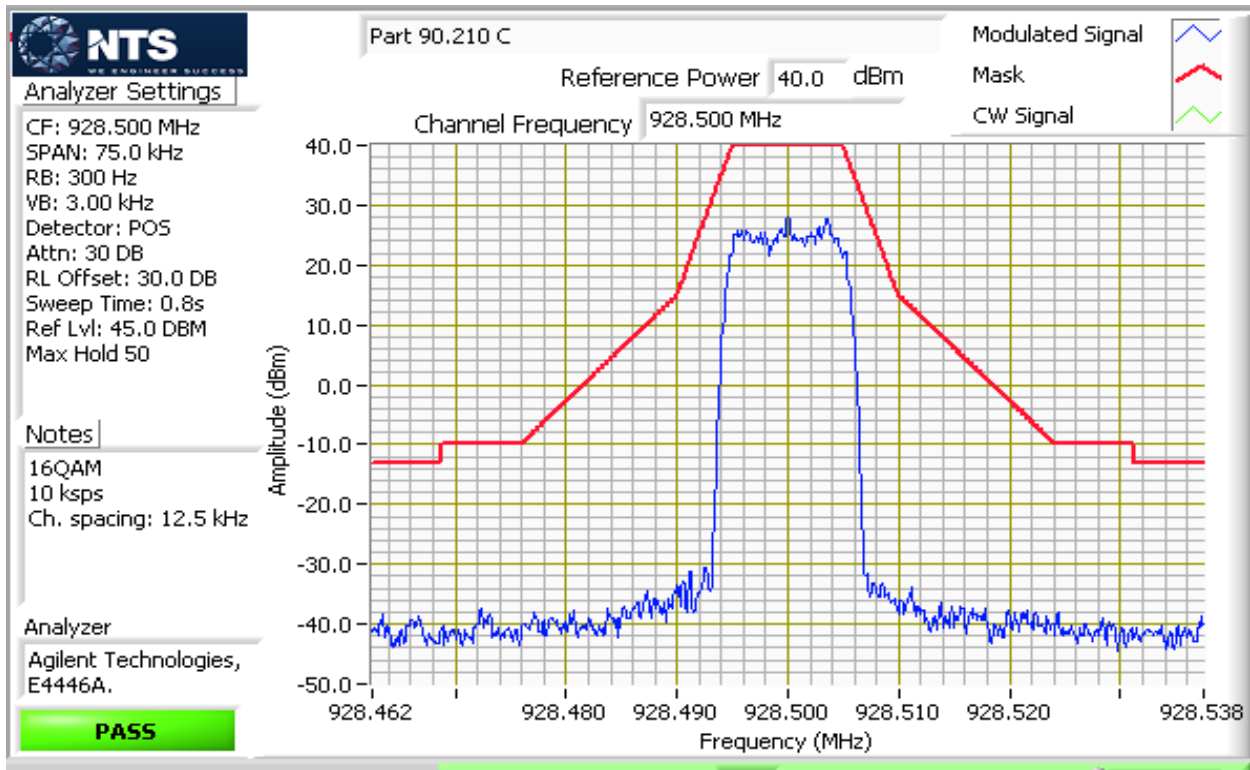
928 - 929 MHz, 12.5 kHz channel spacing





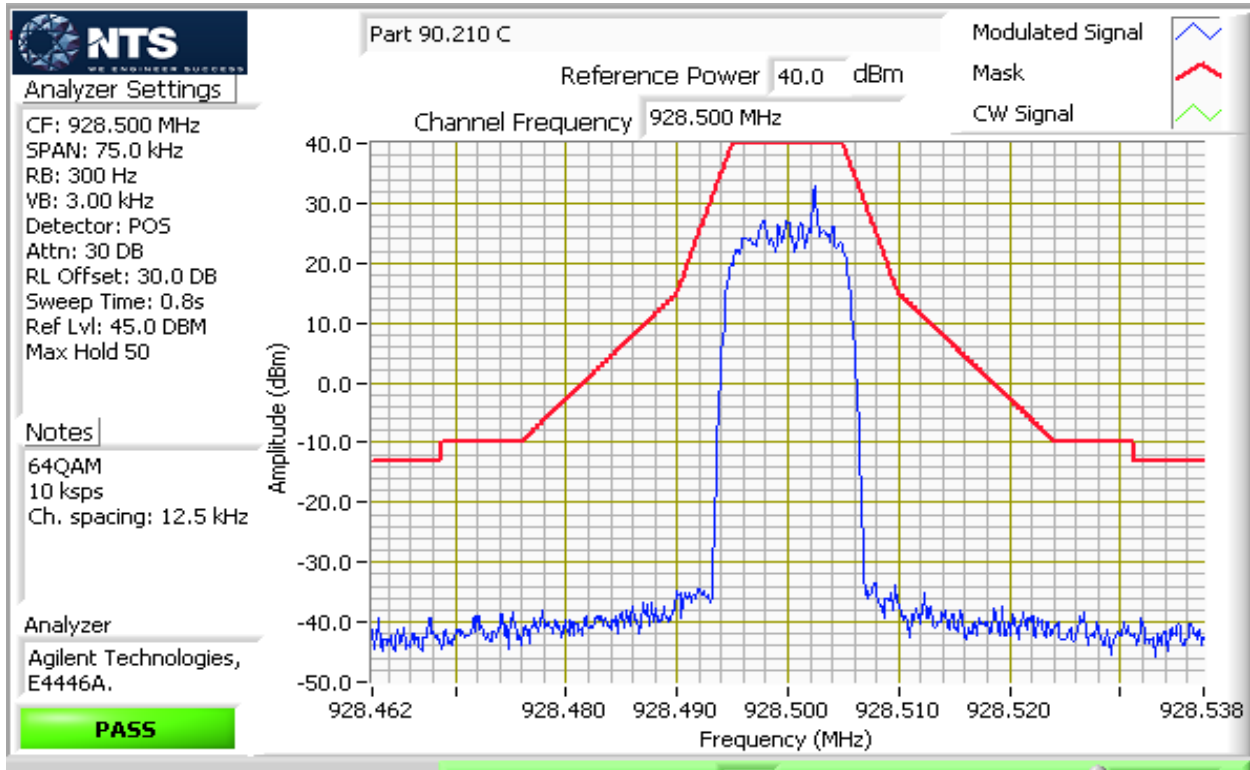
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

928 - 929 MHz, 12.5 kHz channel spacing



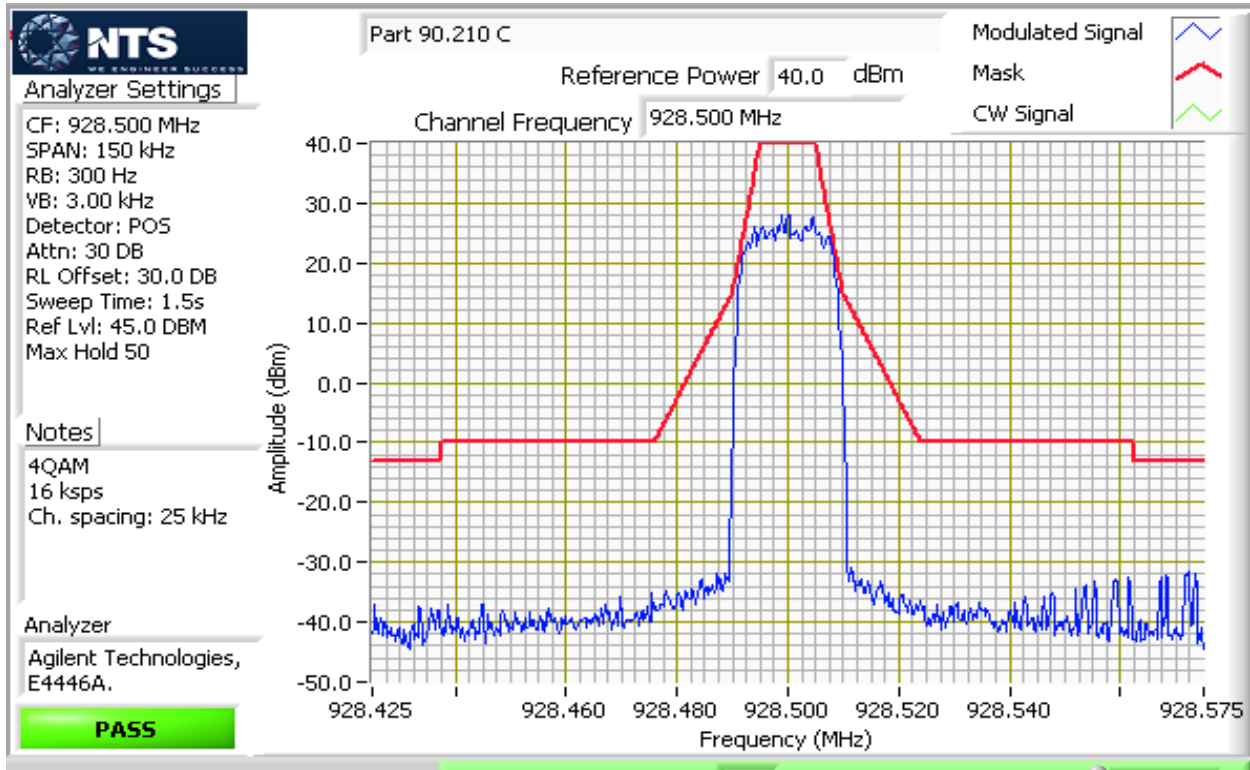
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

928 - 929 MHz, 12.5 kHz channel spacing



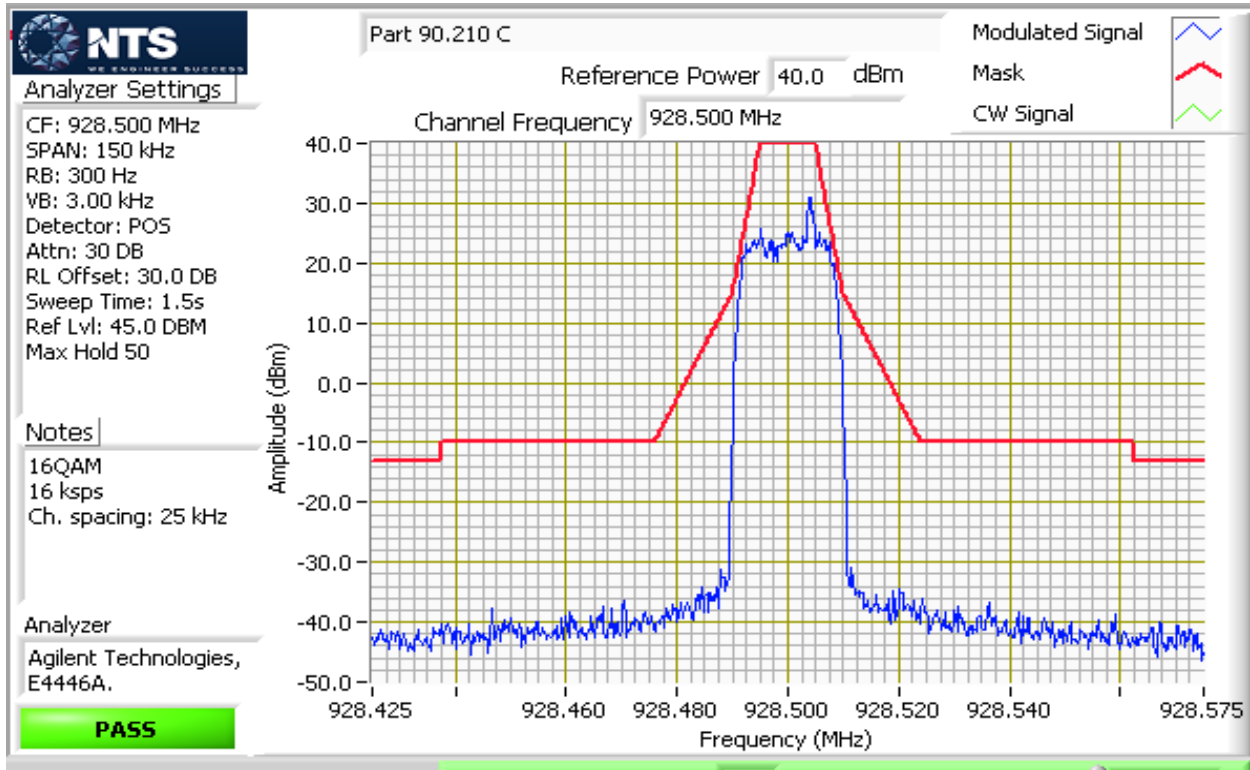
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

928 - 929 MHz, 25 kHz channel spacing



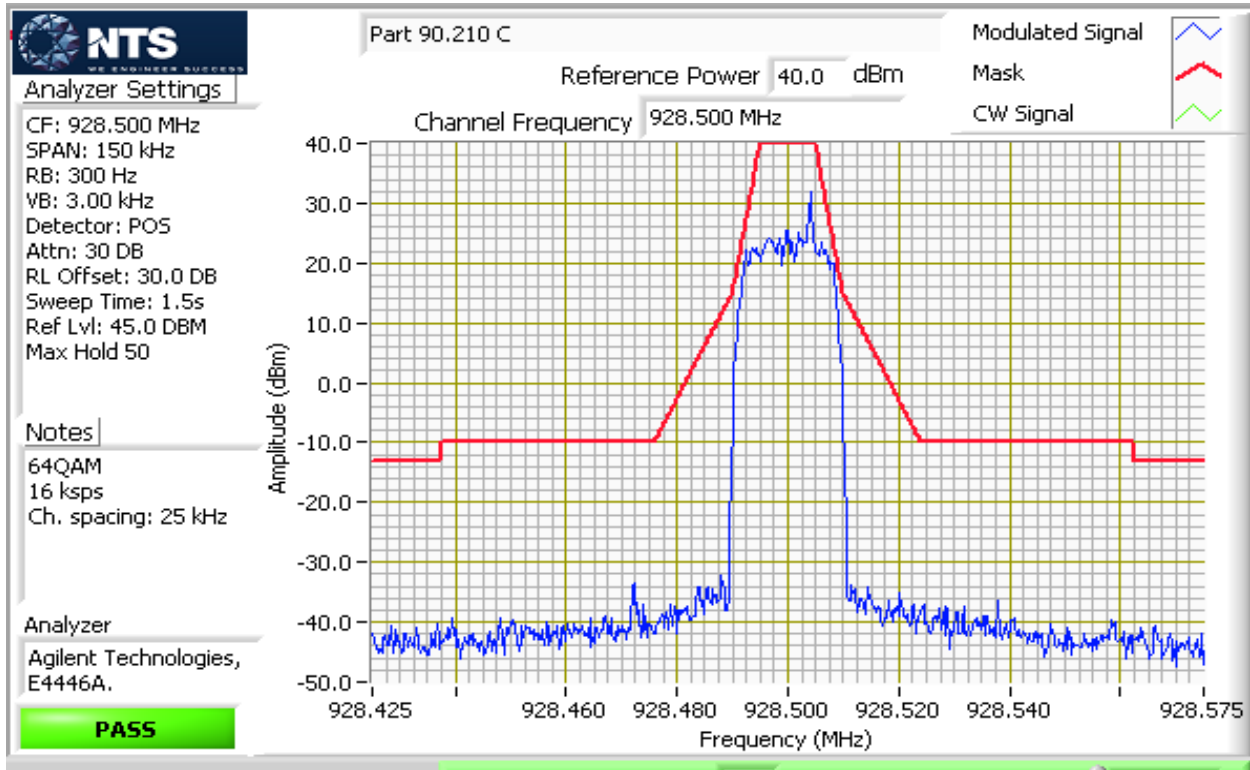
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

928 - 929 MHz, 25 kHz channel spacing



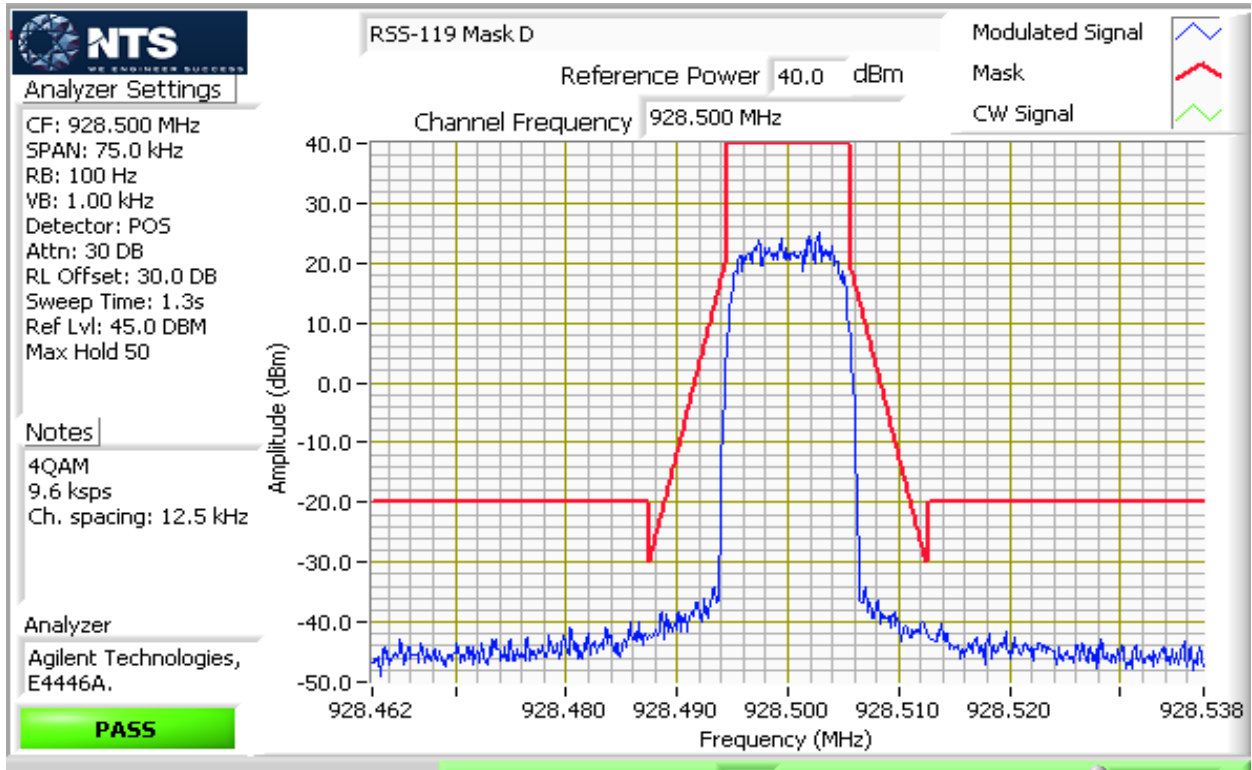
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

928 - 929 MHz, 25 kHz channel spacing



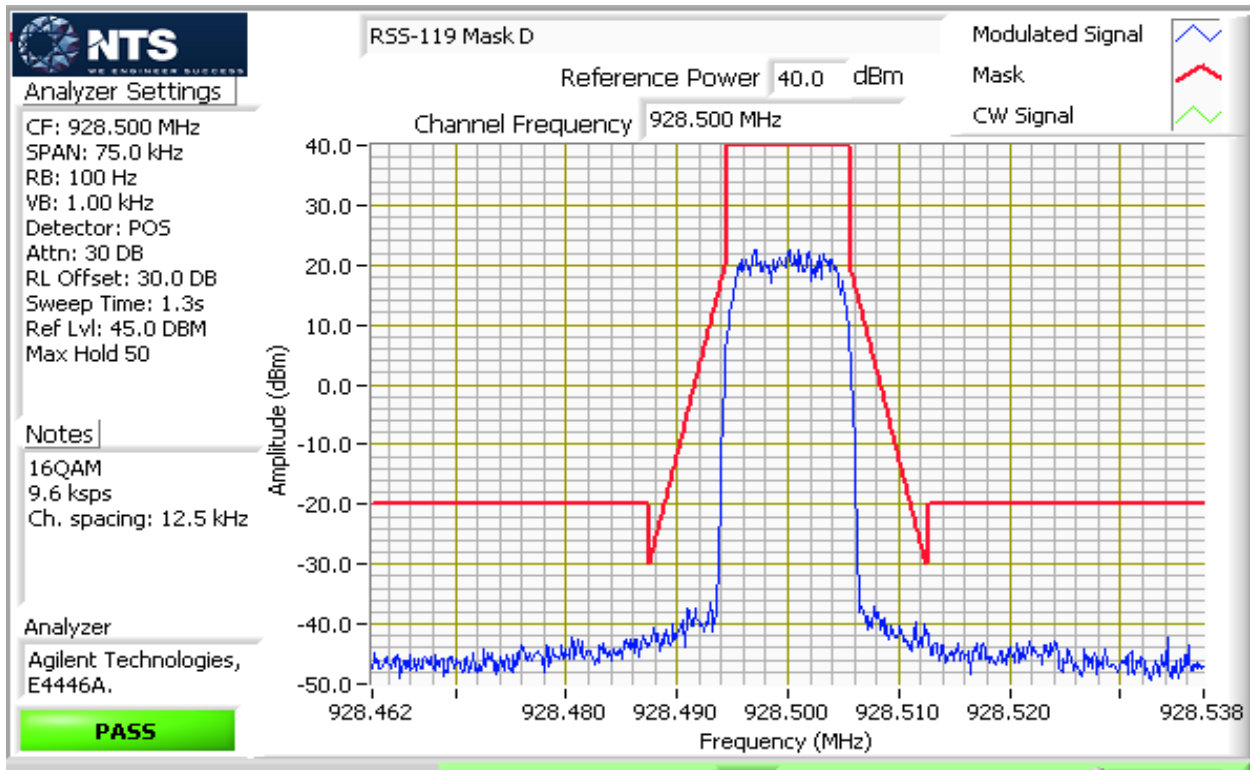
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

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



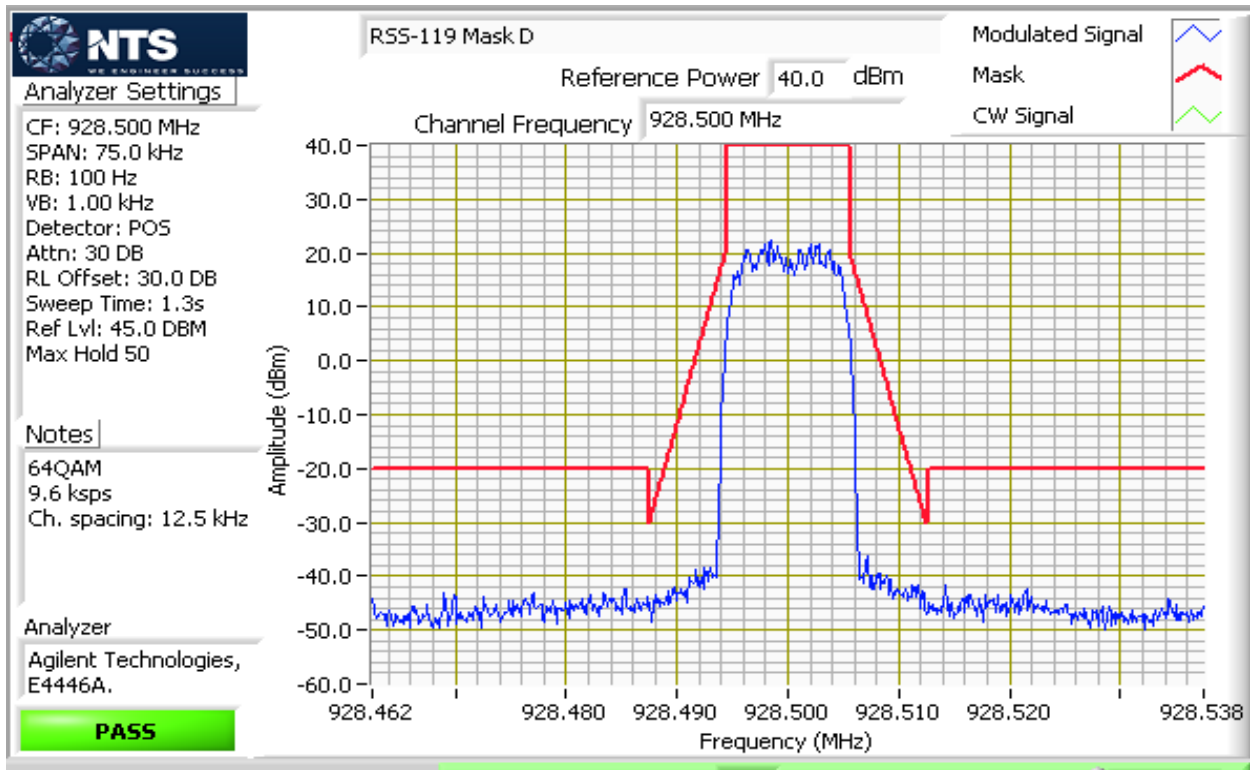
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

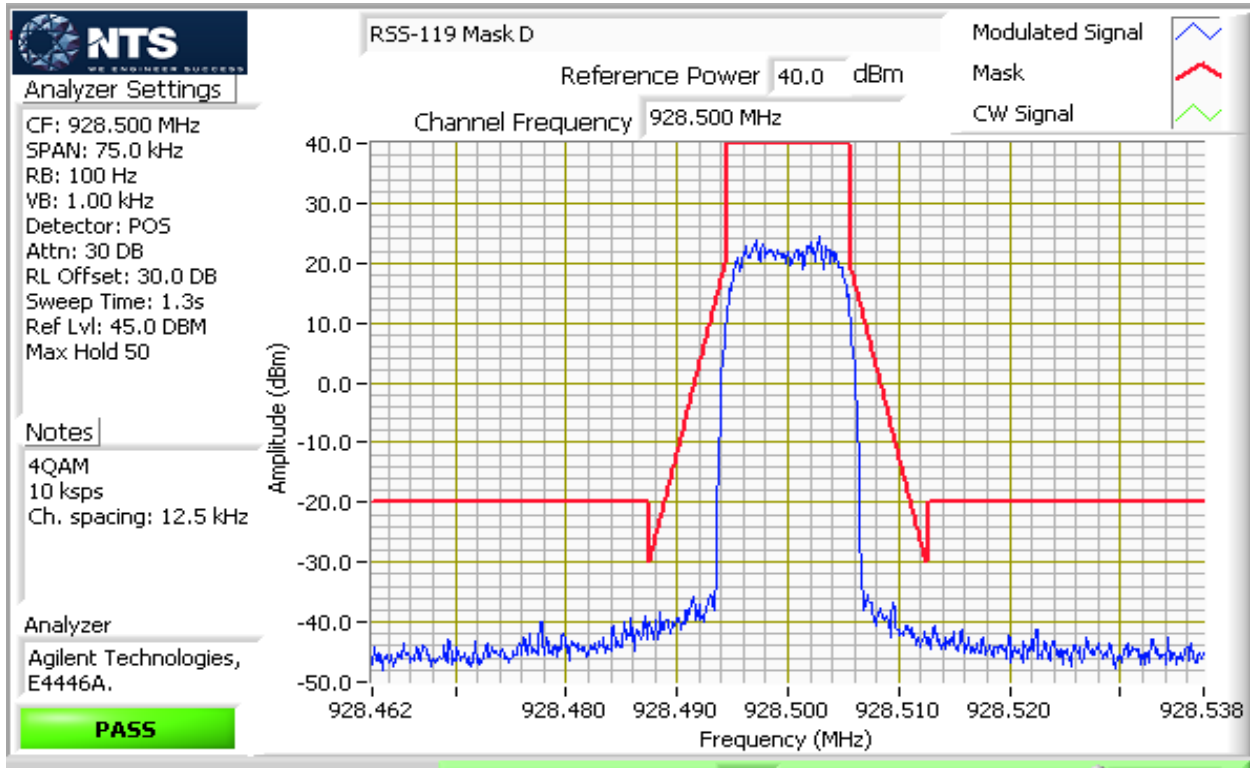
928 - 929 MHz, 12.5 kHz channel spacing (RSS-119)





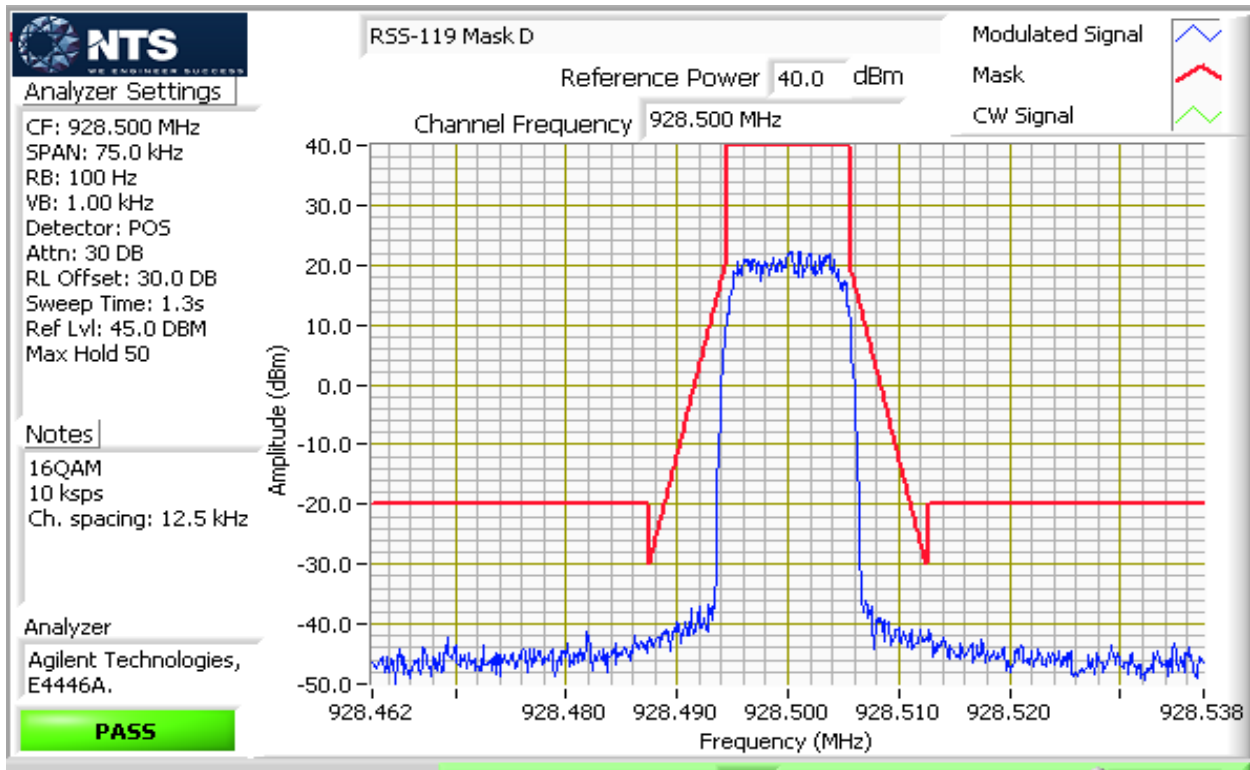
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

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



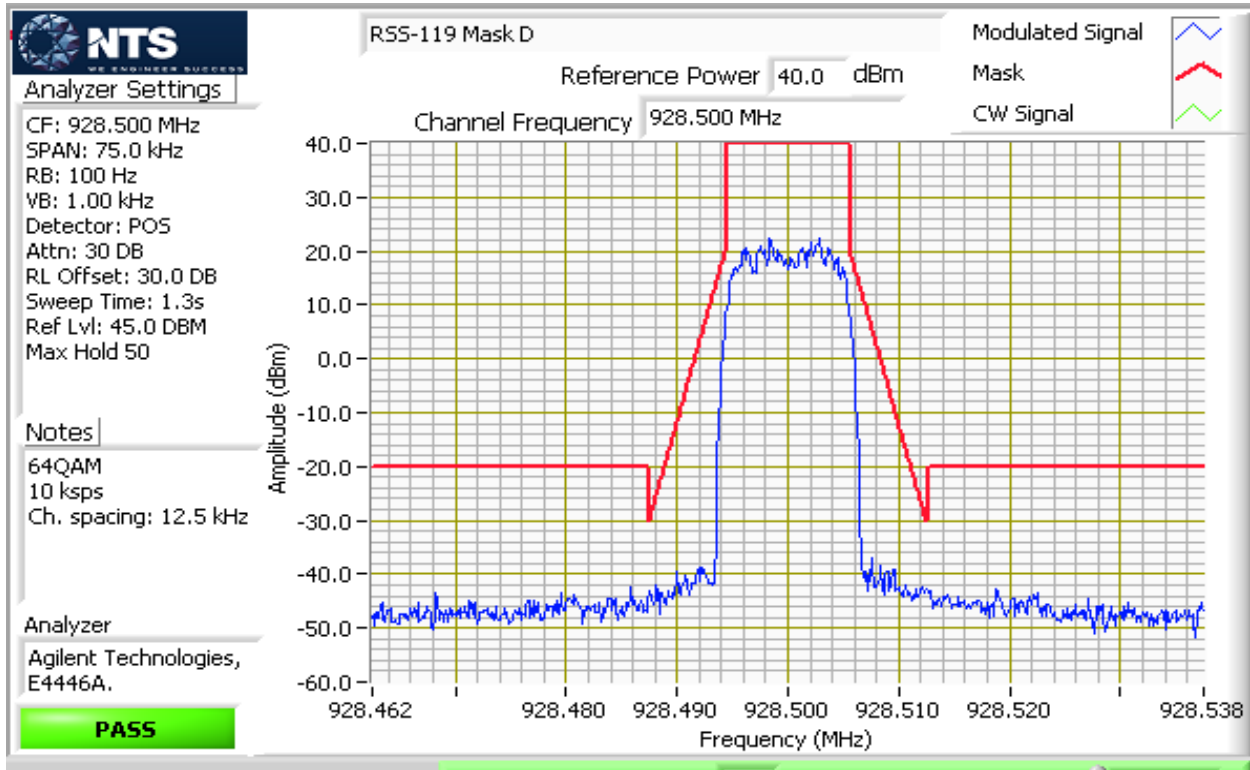
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

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



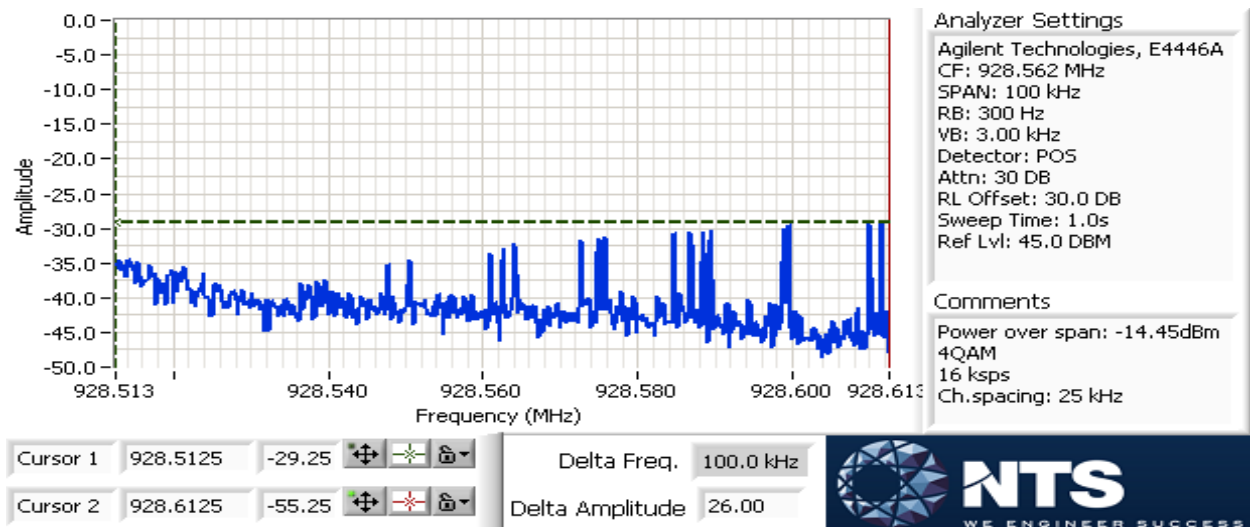
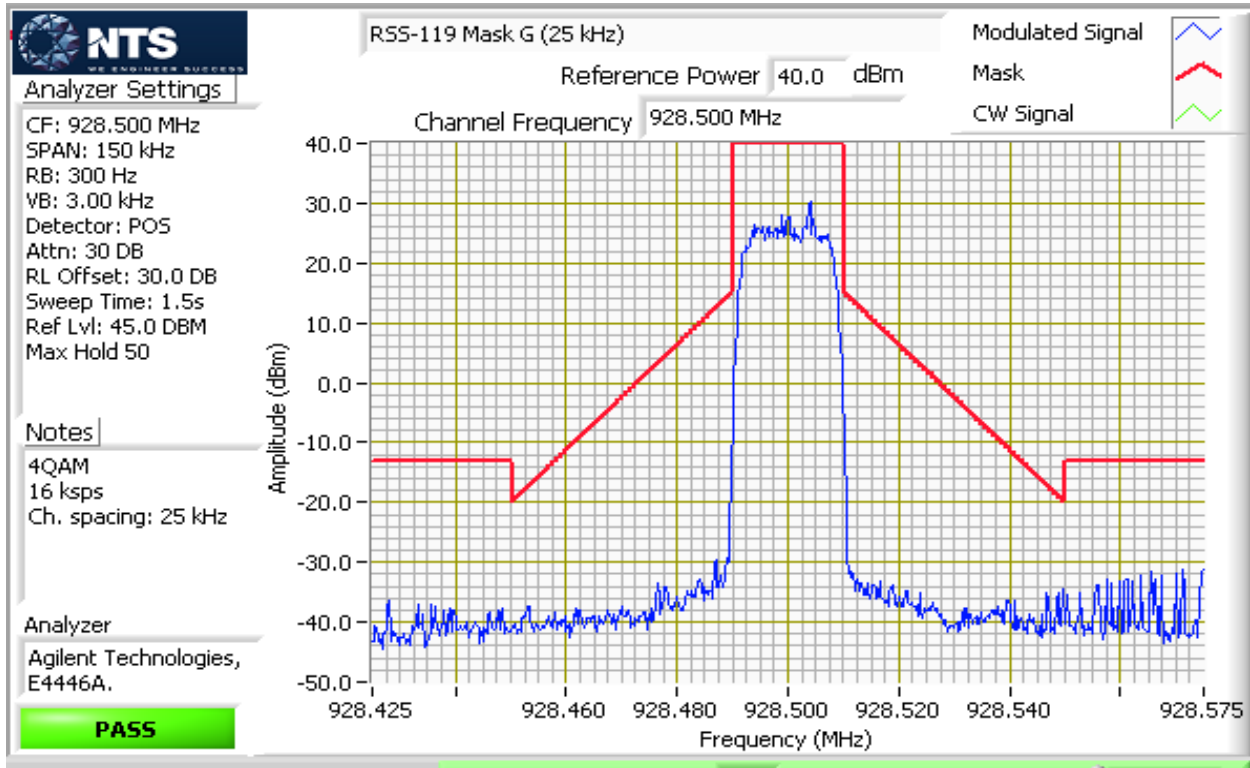
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

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



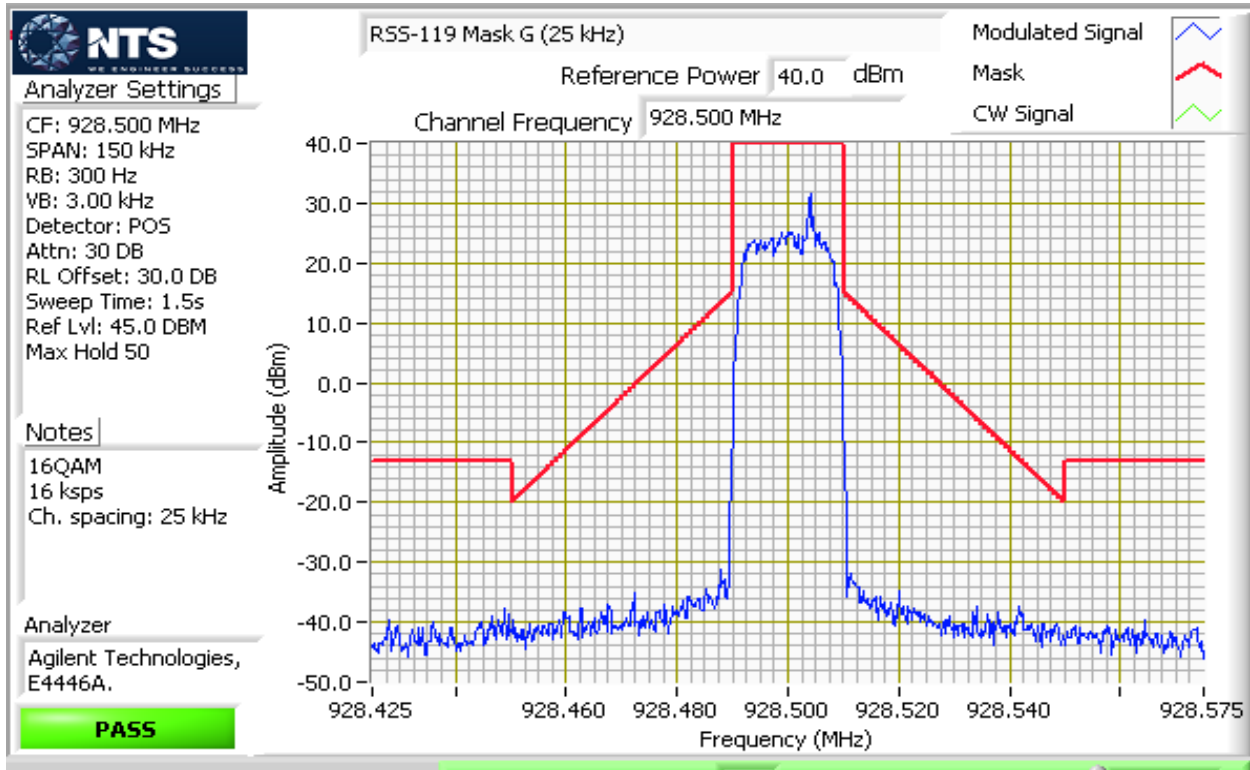
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

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



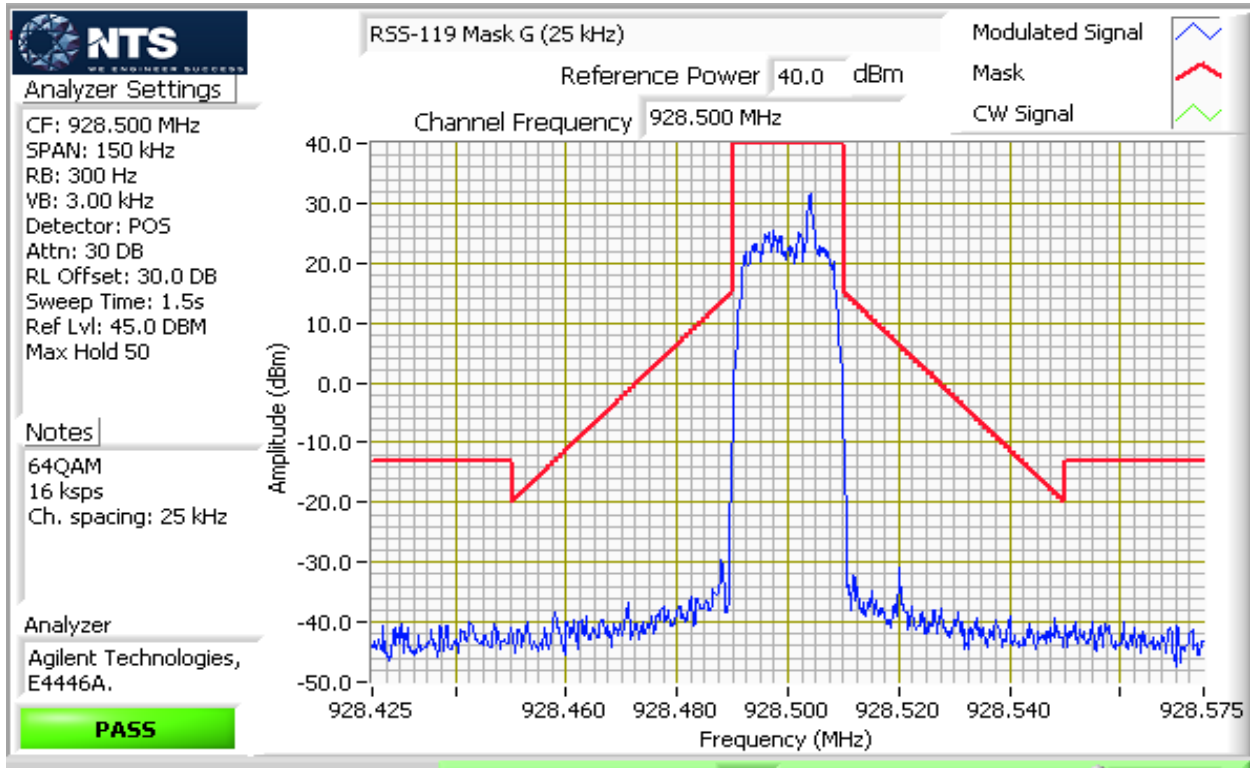
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

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



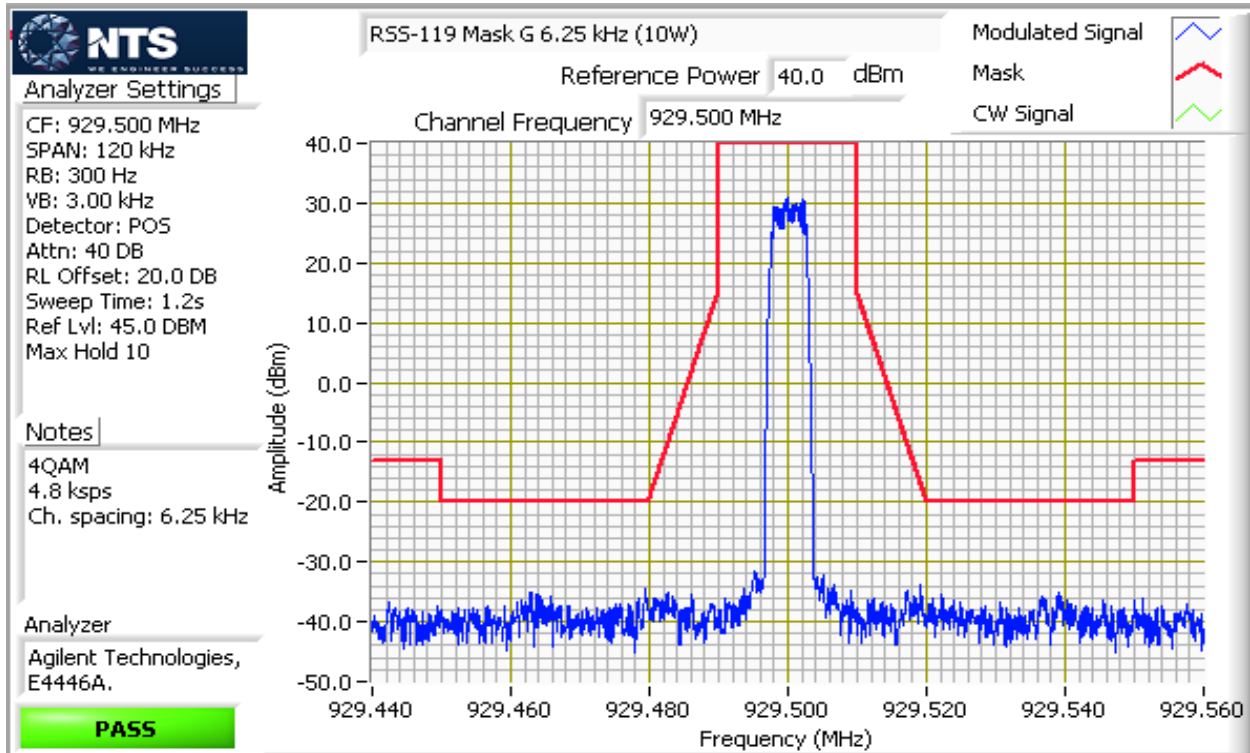
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| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783               |
| Contact: Dennis McCarthy                    | Project Manager: Christine Krebill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

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



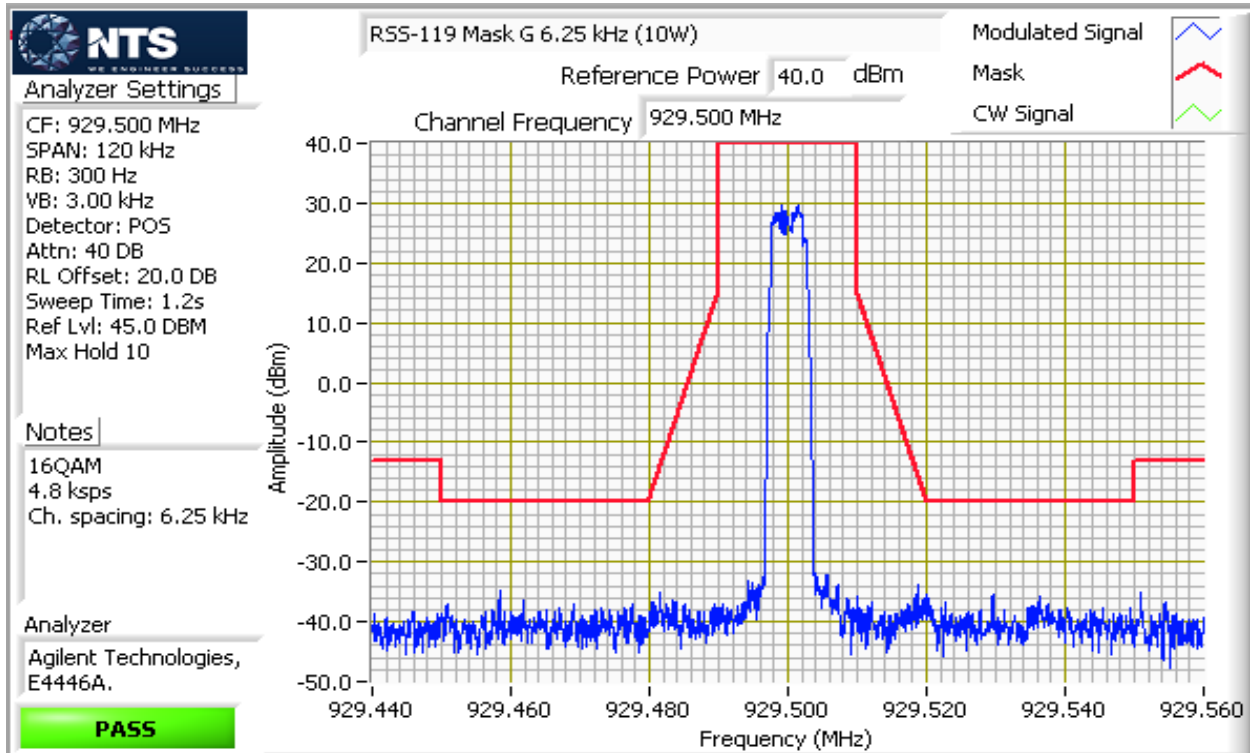
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

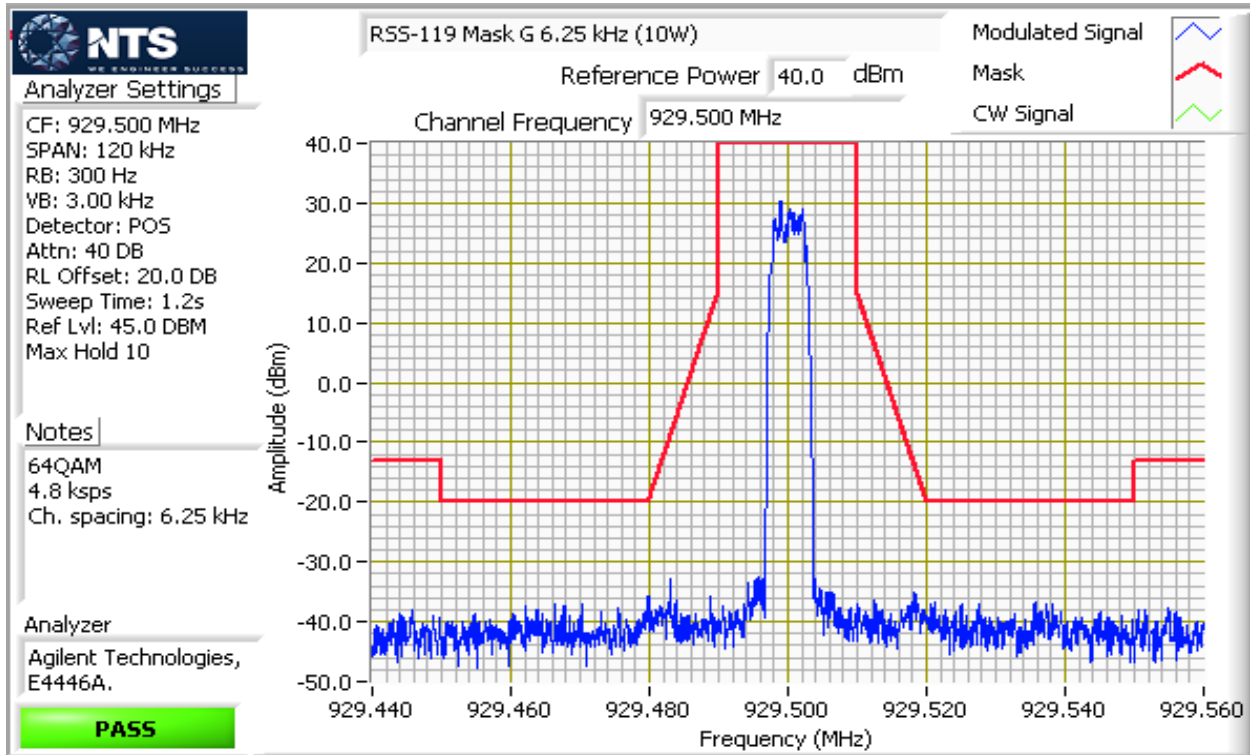
929 - 930 MHz, 6.25 kHz channel spacing.(FCC Part 90)





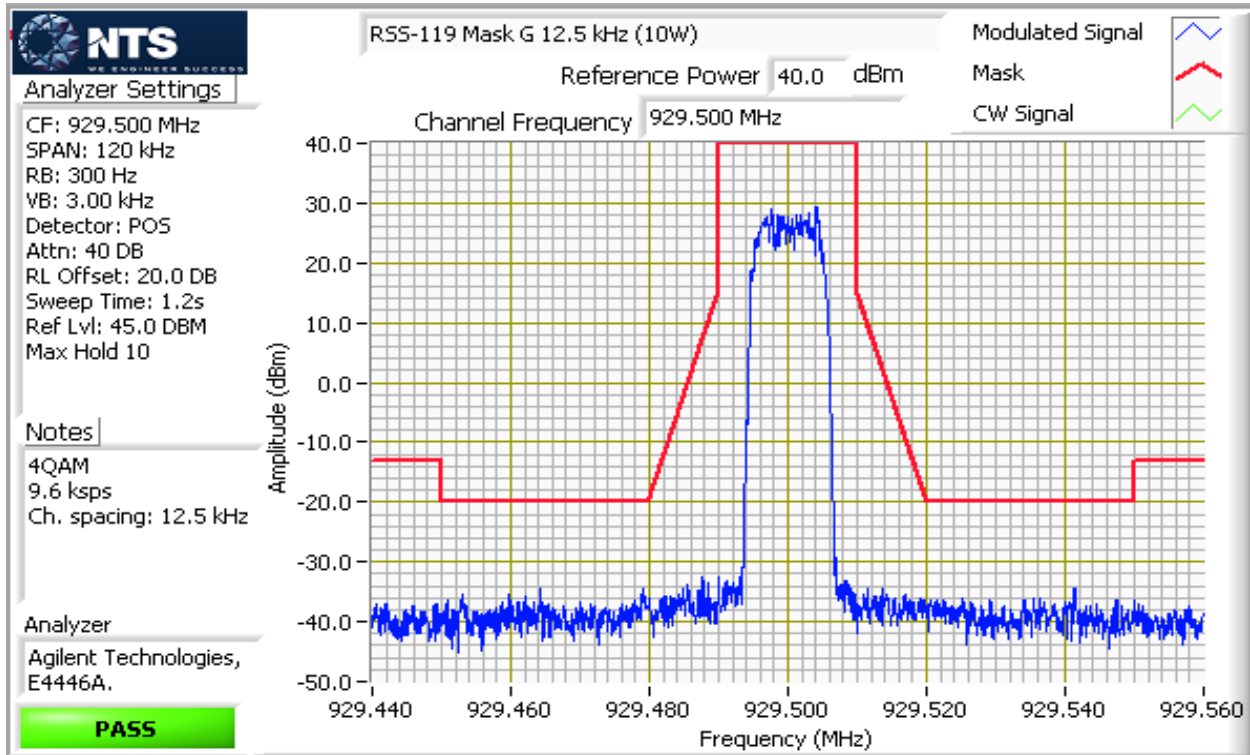
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

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



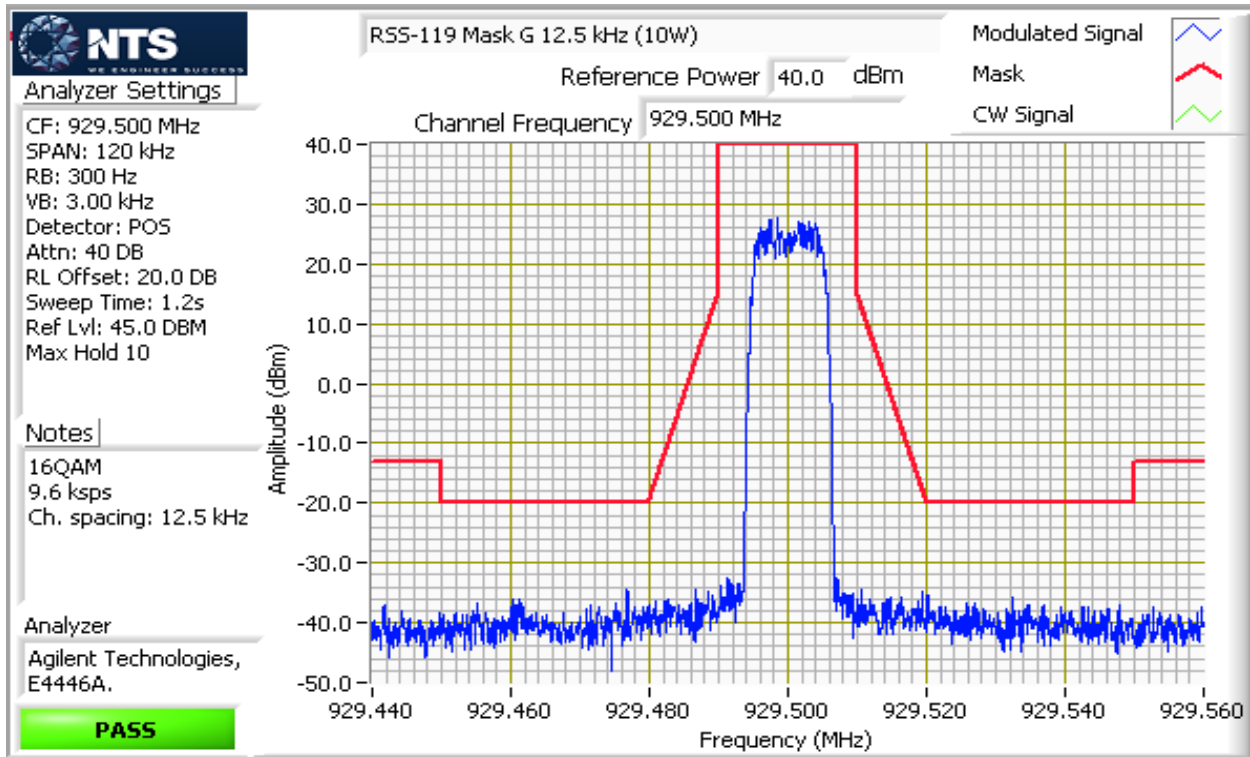
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

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



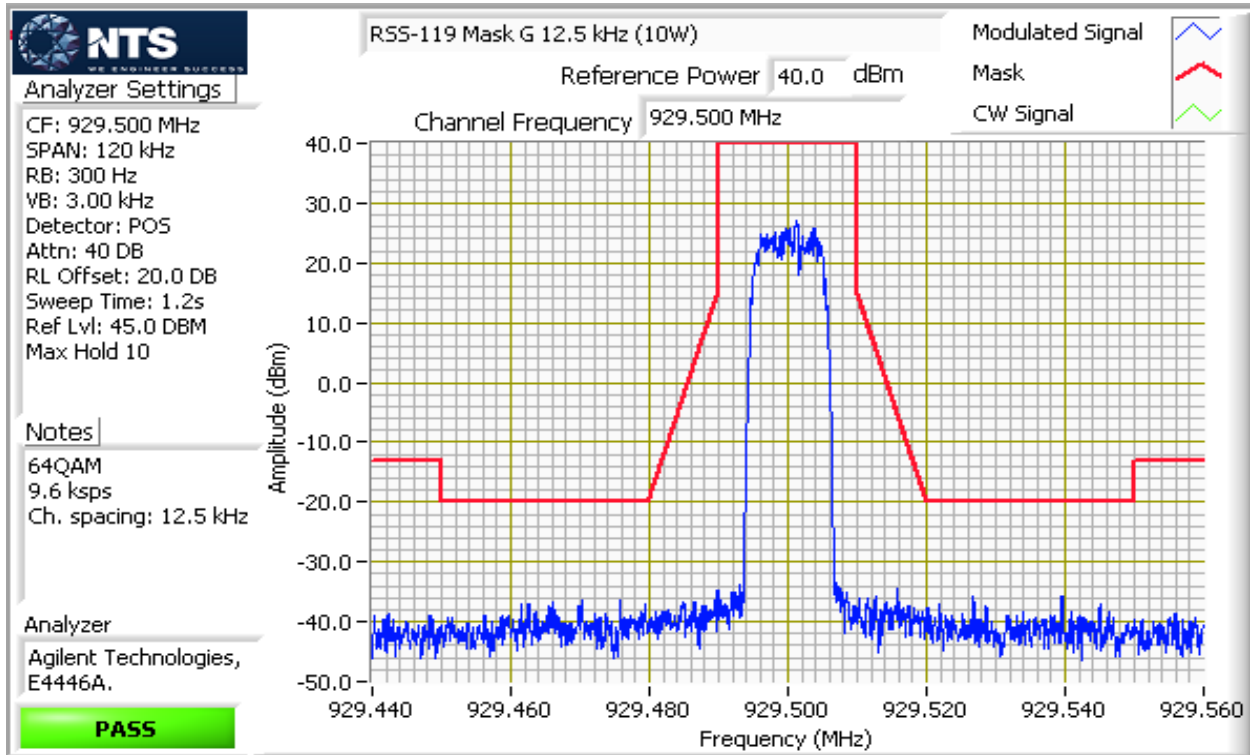
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

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



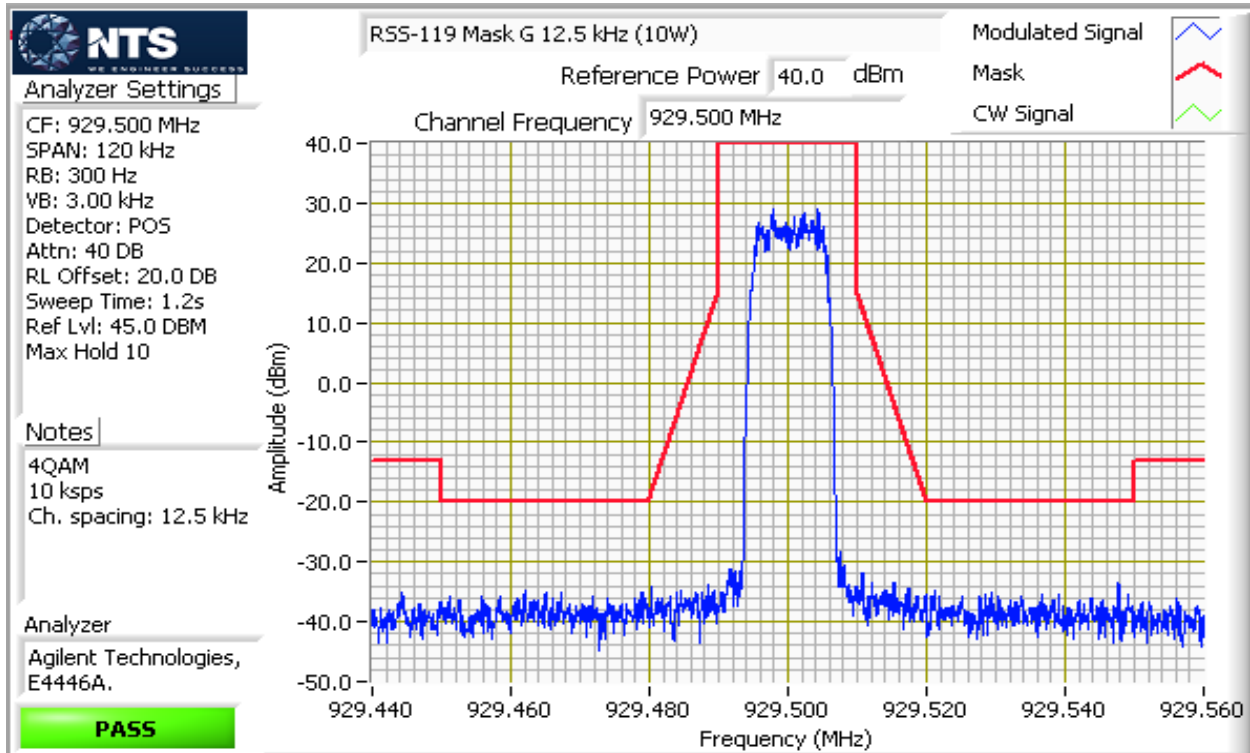
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

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



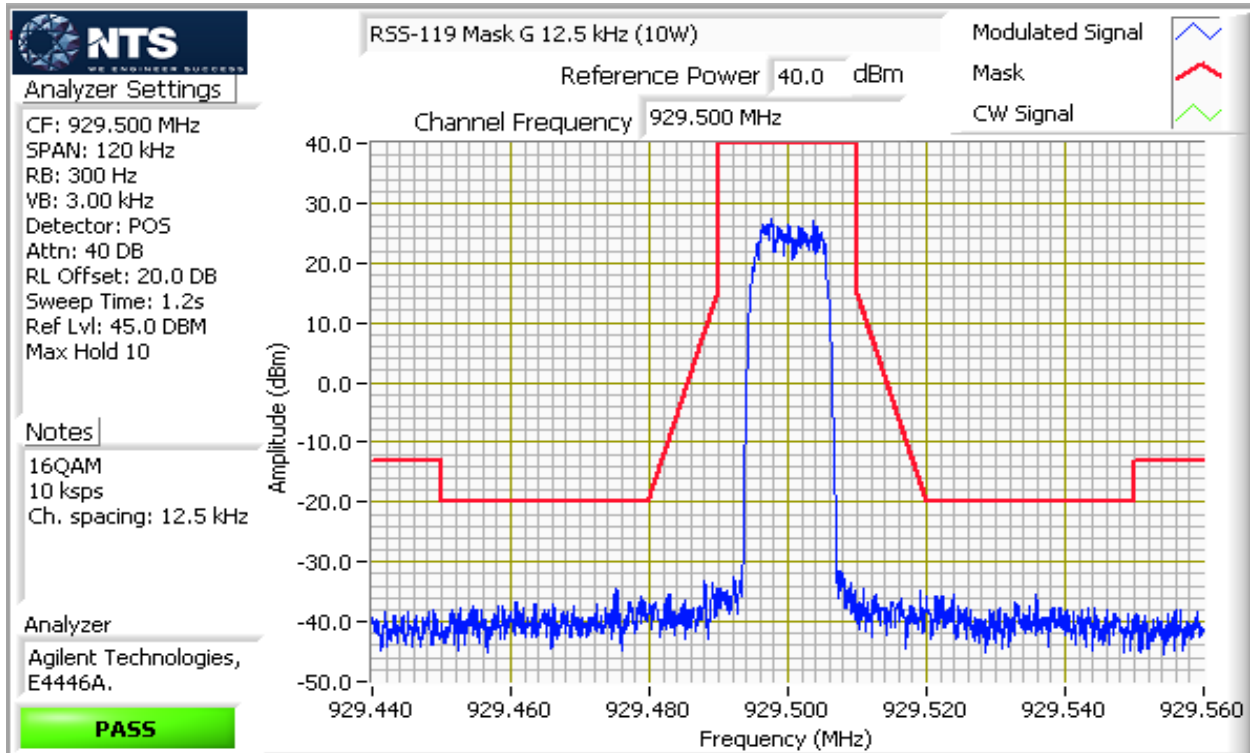
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

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



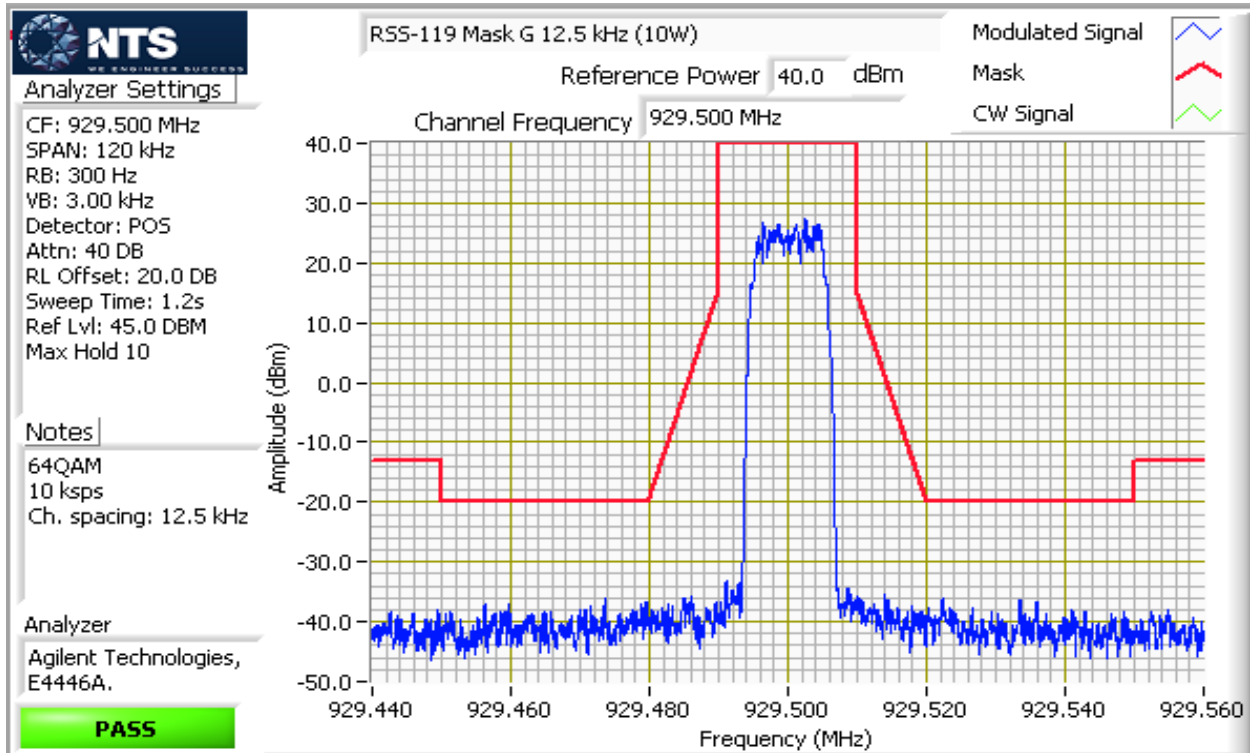
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|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                                | T-Log Number: T99783         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

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





## EMC Test Data

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

### Run #3: Signal Bandwidth

Date of Test: 10/27/2015  
 Test Engineer: Deniz Demirci  
 Test Location: FT Lab #6

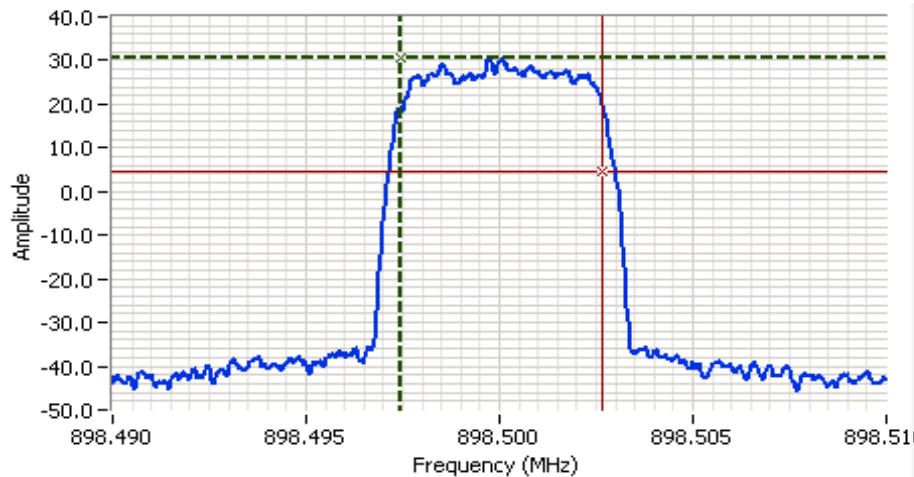
Config. Used: 1  
 Config Change: None  
 EUT Voltage: 13.8 VDC

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

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



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



## Analyzer Settings

Agilent Technologies, E4446A  
 CF: 898.500 MHz  
 SPAN: 20.0 kHz  
 RB: 200 Hz  
 VB: 620 Hz  
 Detector: POS  
 Attn: 30 DB  
 RL Offset: 30.0 DB  
 Sweep Time: 253.2ms  
 Ref Lvl: 45.0 DBM

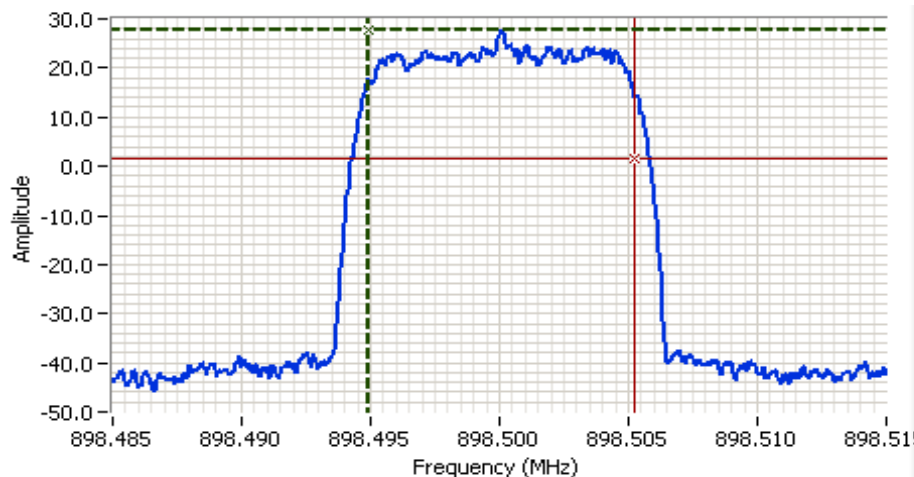
## Comments

99% BW: 5.19 kHz  
 4QAM  
 4.8 kbps  
 Ch. spacing: 6.25 kHz

|          |          |       |  |
|----------|----------|-------|--|
| Cursor 1 | 898.4975 | 30.42 |  |
| Cursor 2 | 898.5026 | 4.42  |  |

Delta Freq. 5.19 kHz

Delta Amplitude 26.00



## Analyzer Settings

Agilent Technologies, E4446A  
 CF: 898.500 MHz  
 SPAN: 30.0 kHz  
 RB: 200 Hz  
 VB: 620 Hz  
 Detector: POS  
 Attn: 30 DB  
 RL Offset: 30.0 DB  
 Sweep Time: 0.4s  
 Ref Lvl: 45.0 DBM

## Comments

99% BW: 10.3 kHz  
 16QAM  
 9.6 kbps  
 Ch. spacing: 12.5 kHz

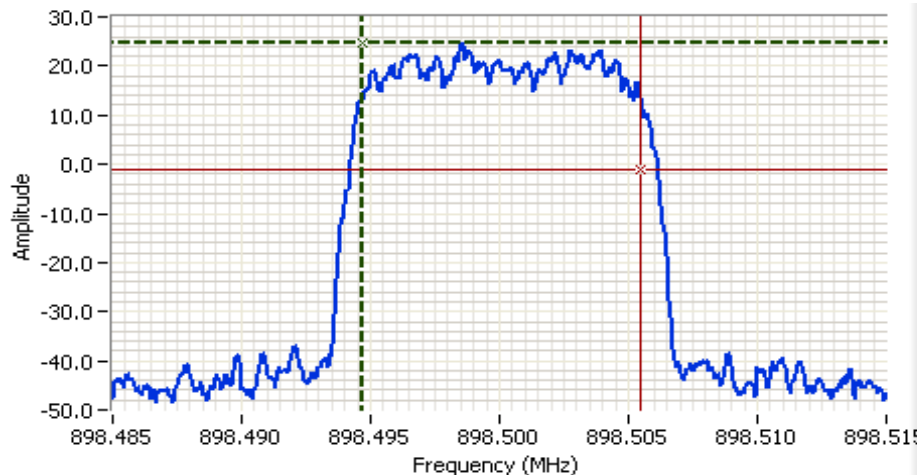
|          |          |       |  |
|----------|----------|-------|--|
| Cursor 1 | 898.4949 | 27.70 |  |
| Cursor 2 | 898.5052 | 1.70  |  |

Delta Freq. 10.3 kHz

Delta Amplitude 26.00



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



## Analyzer Settings

Agilent Technologies, E4446A  
 CF: 898.500 MHz  
 SPAN: 30.0 kHz  
 RB: 200 Hz  
 VB: 620 Hz  
 Detector: POS  
 Attn: 30 DB  
 RL Offset: 30.0 DB  
 Sweep Time: 0.4s  
 Ref Lvl: 45.0 DBM

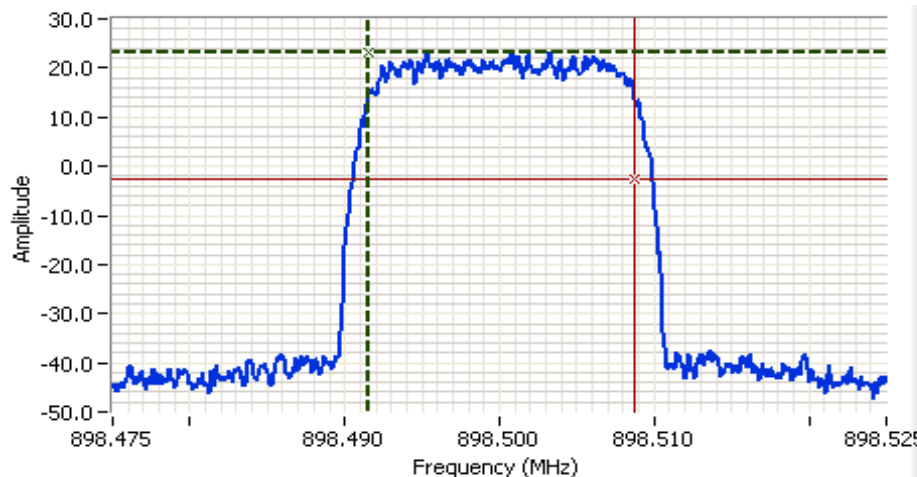
## Comments

99% BW: 10.8 kHz  
 64QAM  
 10 ksps  
 Ch. spacing: 12.5 kHz

Cursor 1 898.4947 24.9  
 Cursor 2 898.5055 -1.1

Delta Freq. 10.8 kHz

Delta Amplitude 26.0



## Analyzer Settings

Agilent Technologies, E4446A  
 CF: 898.500 MHz  
 SPAN: 50.0 kHz  
 RB: 200 Hz  
 VB: 620 Hz  
 Detector: POS  
 Attn: 30 DB  
 RL Offset: 30.0 DB  
 Sweep Time: 0.7s  
 Ref Lvl: 45.0 DBM

## Comments

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

Cursor 1 898.4916 23.3  
 Cursor 2 898.5088 -2.7

Delta Freq. 17.2 kHz

Delta Amplitude 26.0



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

## Run #4: Out of Band Spurious Emissions, Conducted

The limit is taken from FCC Part 90 Mask D

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

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

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

Note 1: The amplitude of emisisions 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.

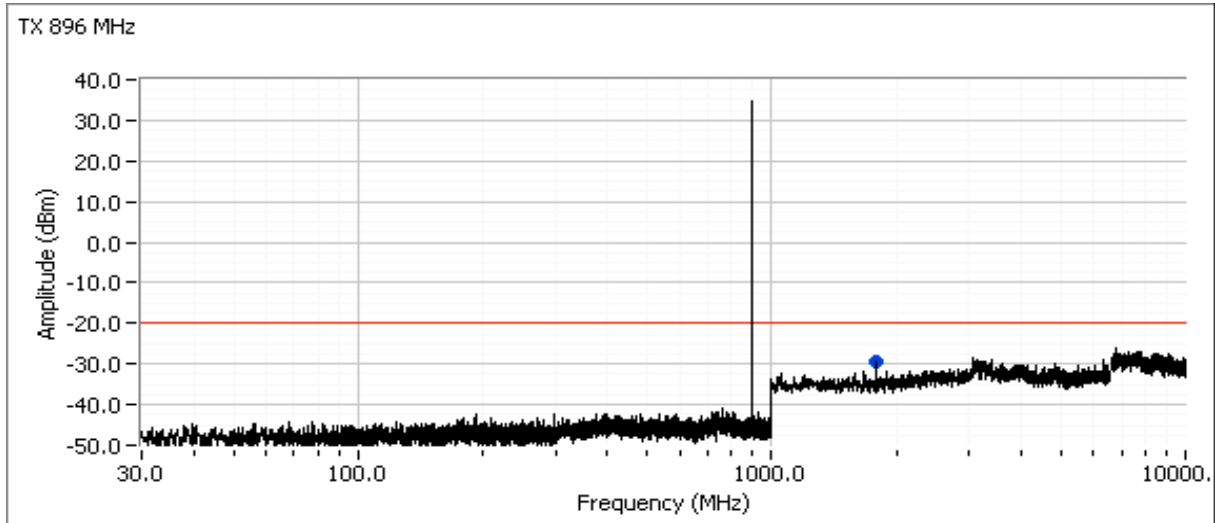
| Bands         | Channels to be tested |
|---------------|-----------------------|
| 896 - 901 MHz | 896 MHz and 901 MHz   |
| 935 - 940 MHz | 935 MHz and 940 MHz   |
| 928 - 929 MHz | -                     |
| 929 - 930 MHz | 929 MHz               |
| 932 - 935 MHz | 932 MHz               |
| 941 -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

928 MHz tested under Part 101

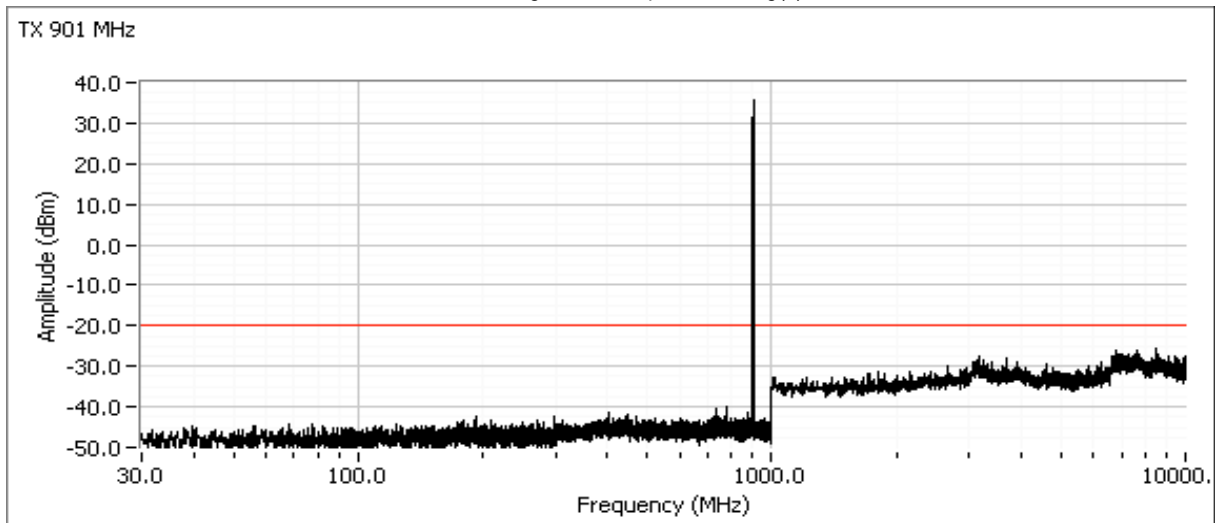
944 MHz tested under Part 101

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

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

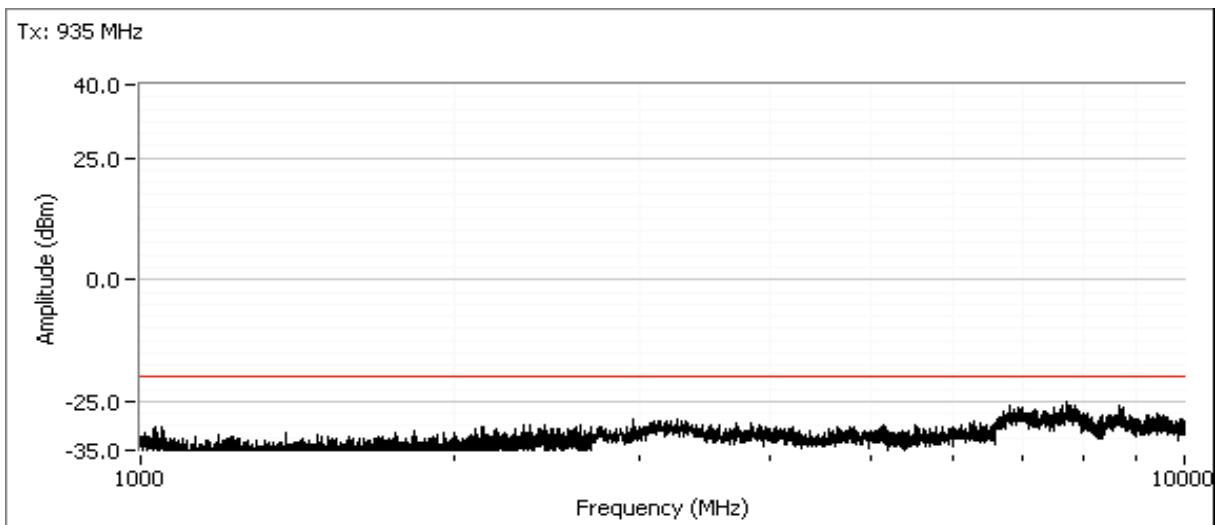
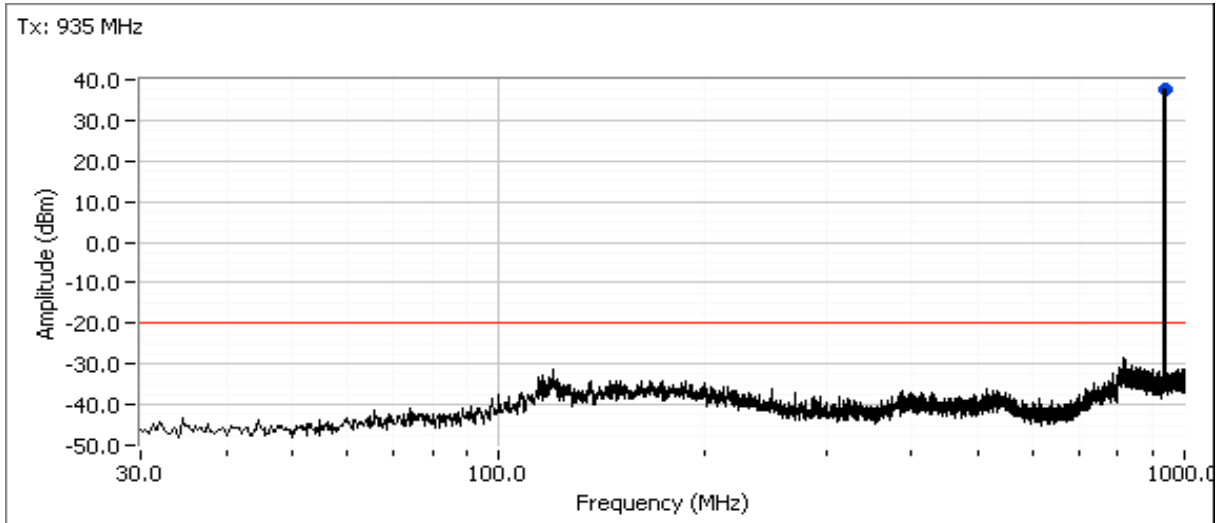


Plots for high channel, power setting(s) = 40 dBm



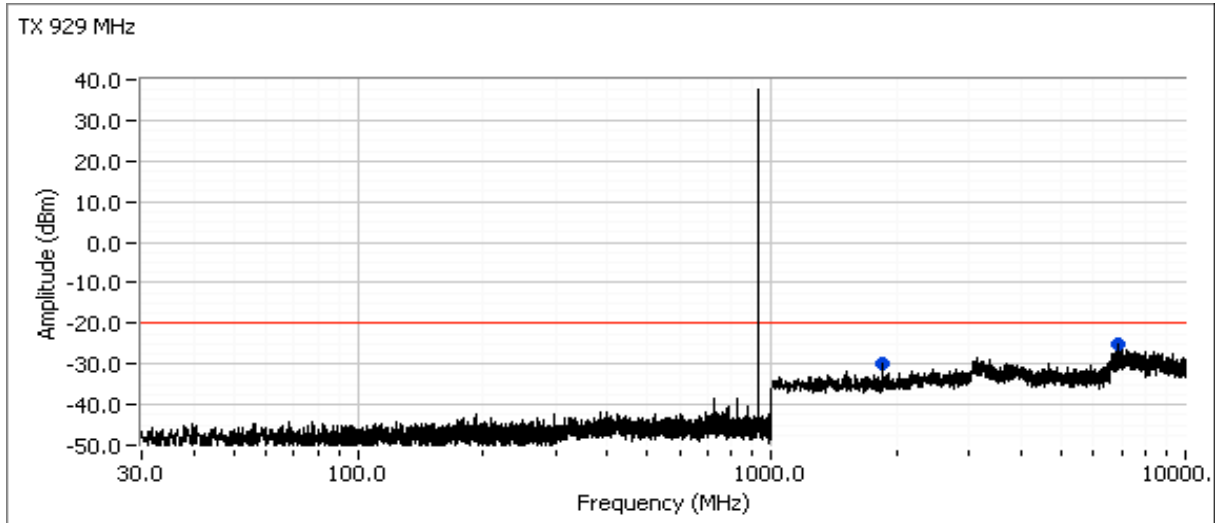
|           |                                   |                      |                   |
|-----------|-----------------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC                        | Job Number:          | JD99760           |
| Model:    | LN900  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

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

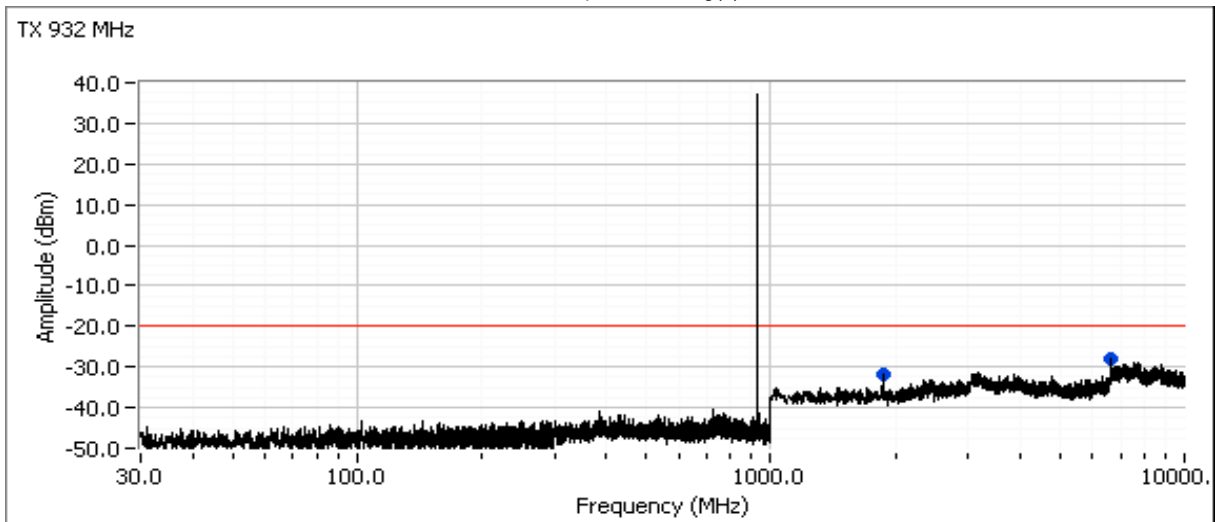


|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

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

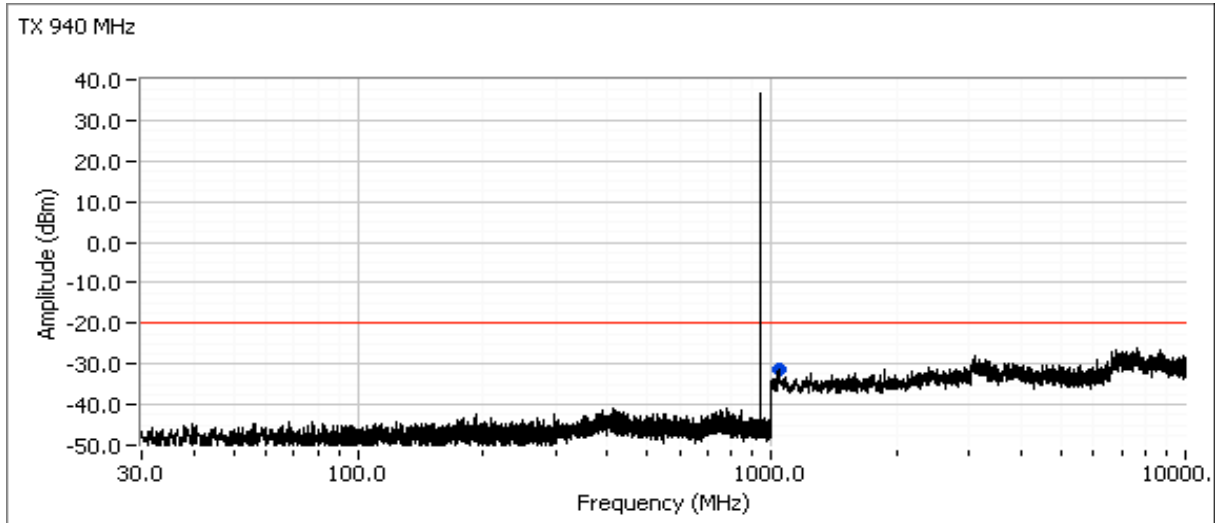


Plot for low channel, power setting(s) = 40 dBm

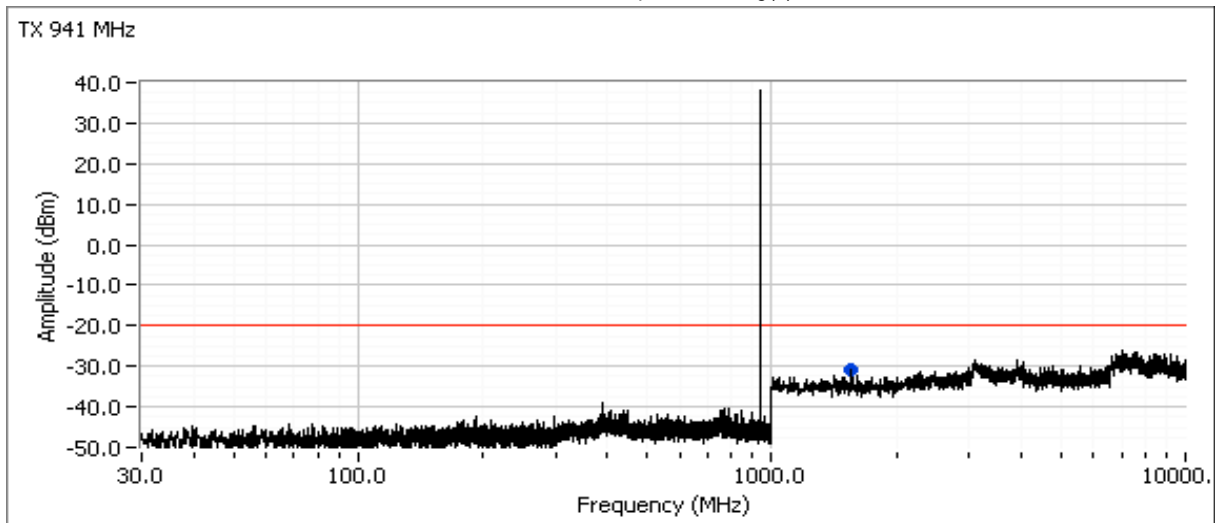


|           |                                   |                      |                   |
|-----------|-----------------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC                        | Job Number:          | JD99760           |
| Model:    | LN900  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

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

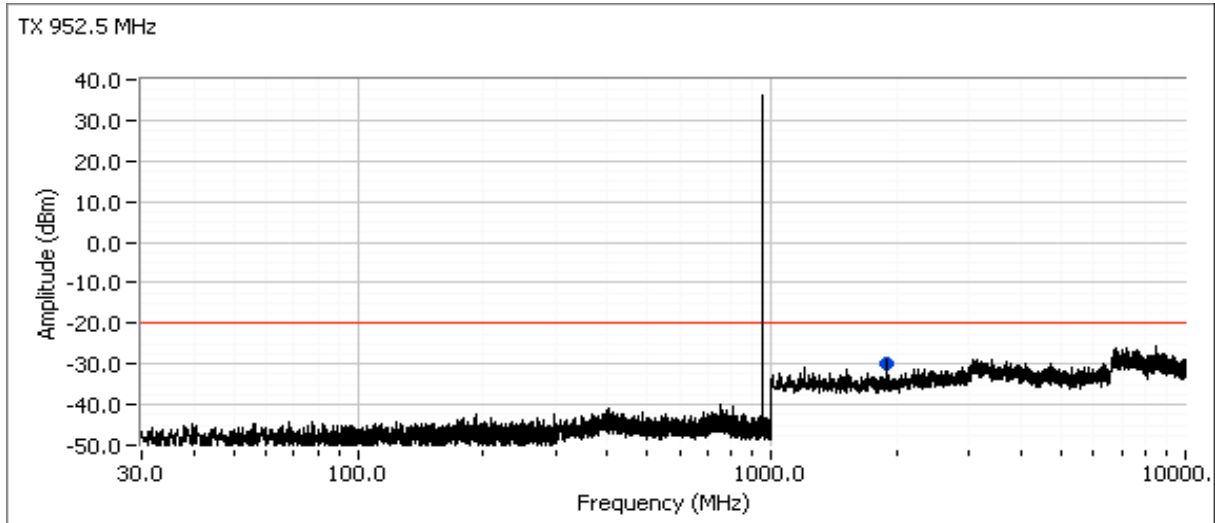


Plot for low channel, power setting(s) = 40 dBm



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

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







## EMC Test Data

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

### Run #5: Out of Band Spurious Emissions, Radiated

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

The limit is taken from FCC Part 90 Mask D

### Run #5a - Preliminary measurements - chamber scans

Date of Test: 12/14/2015, 12/15/2015

Test Engineer: Deniz Demirci, David Bare

Test Location: FT Ch #3 & 7

Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC and 5 VDC

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



## EMC Test Data

|           |                                   |                      |                   |
|-----------|-----------------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC                        | Job Number:          | JD99760           |
| Model:    | LN900                             | T-Log Number:        | T99783            |
| Contact:  | Dennis McCarthy                   | Project Manager:     | Christine Krebill |
| Standard: | FCC Parts 15, 90 and 101, RSS-119 | Project Coordinator: | -                 |
|           |                                   | 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:  $E = \sqrt{(30PG)/d}$ . 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 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

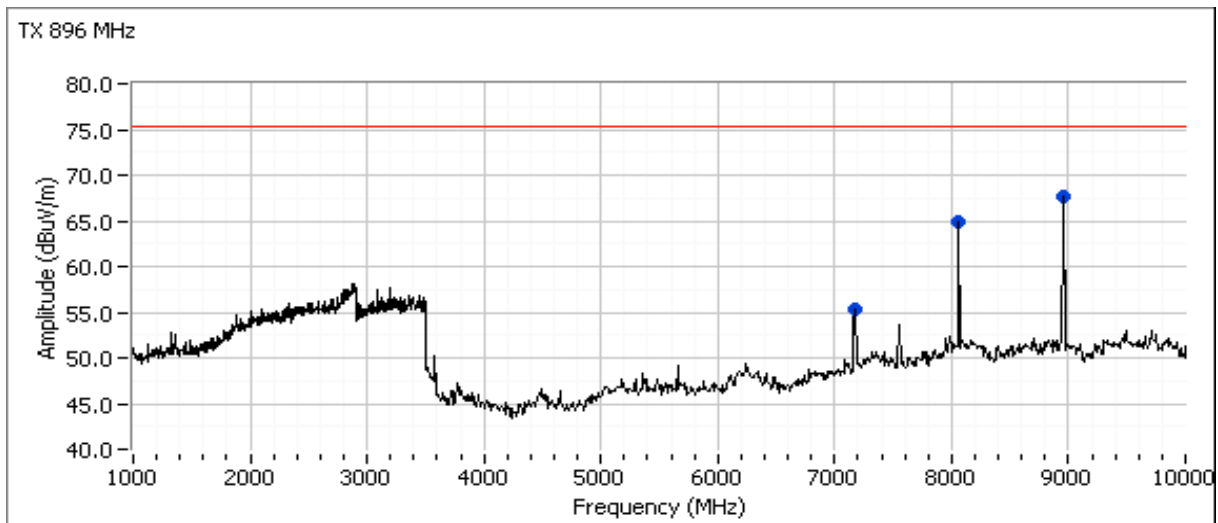
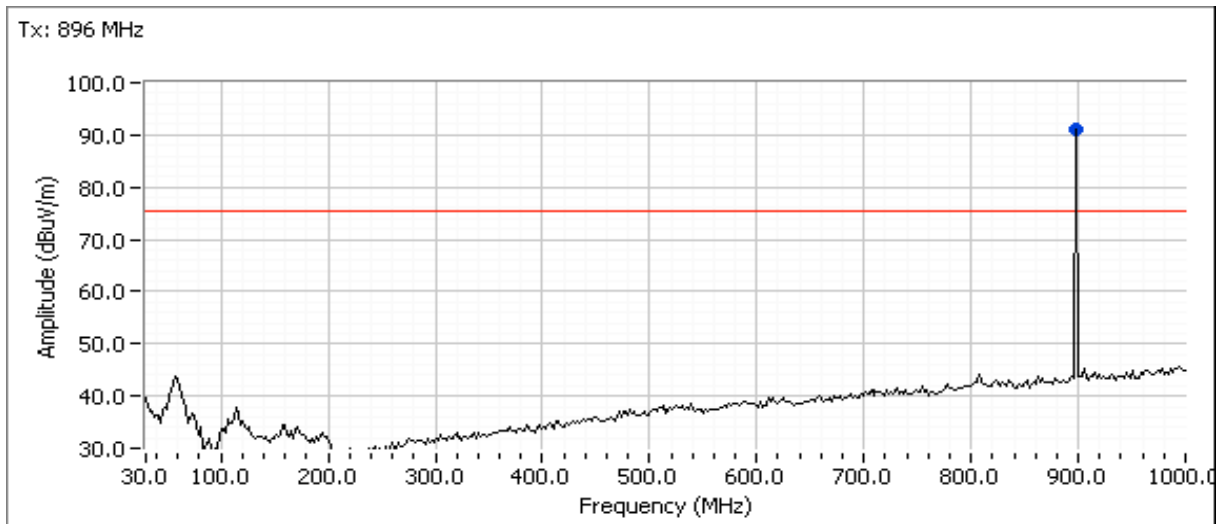
| Bands         | Channels to be tested |
|---------------|-----------------------|
| 896 - 901 MHz | 896 MHz and 901 MHz   |
| 935 - 940 MHz | 935 MHz and 940 MHz   |
| 928 - 929 MHz | -                     |
| 929 - 930 MHz | 929 MHz               |
| 932 - 935 MHz | 932 MHz               |
| 941 -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

928 MHz tested under Part 101

944 MHz tested under Part 101

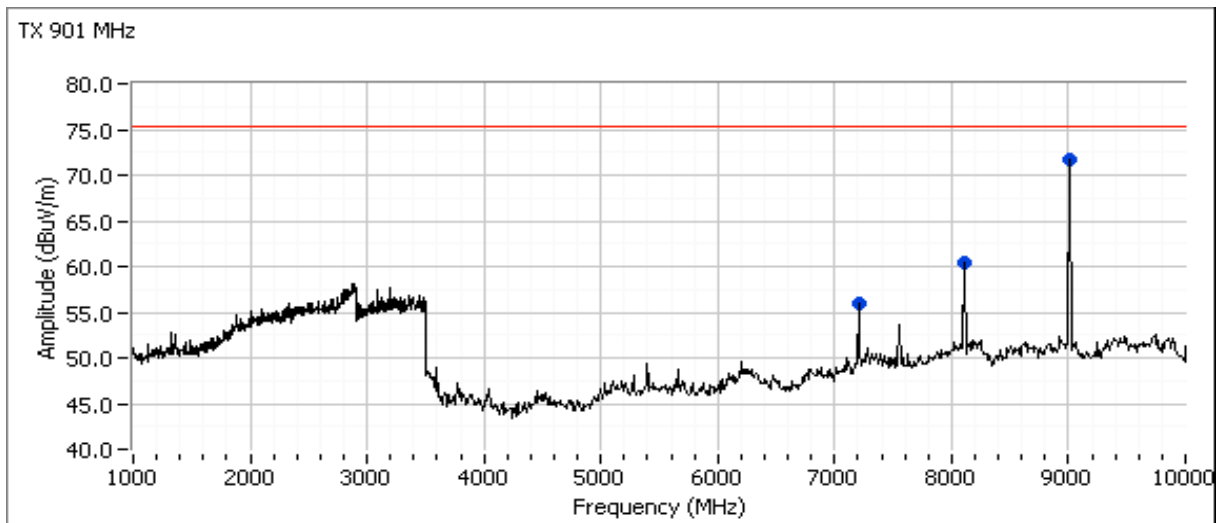
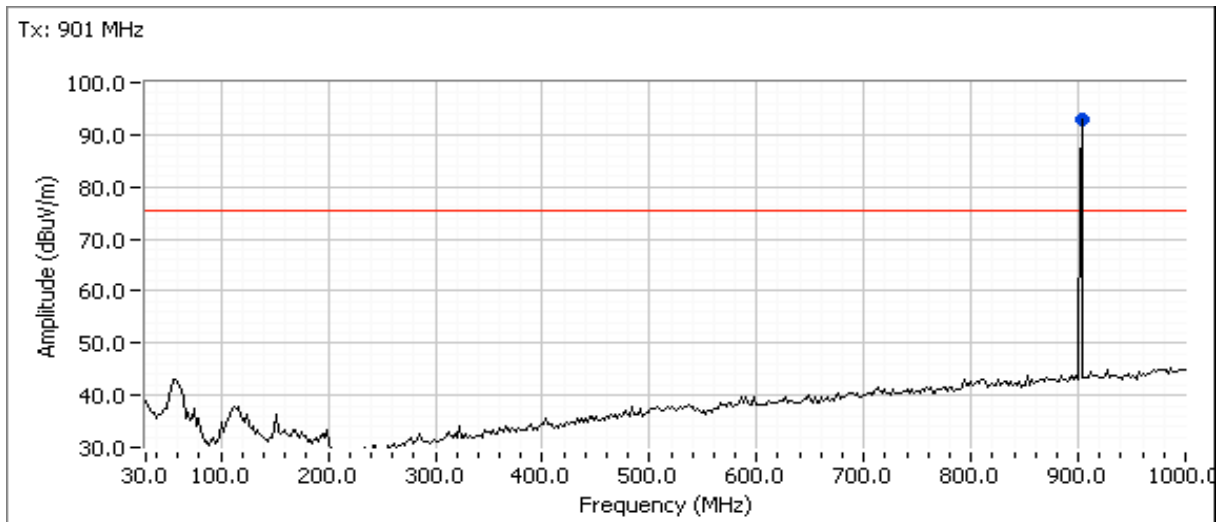
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

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



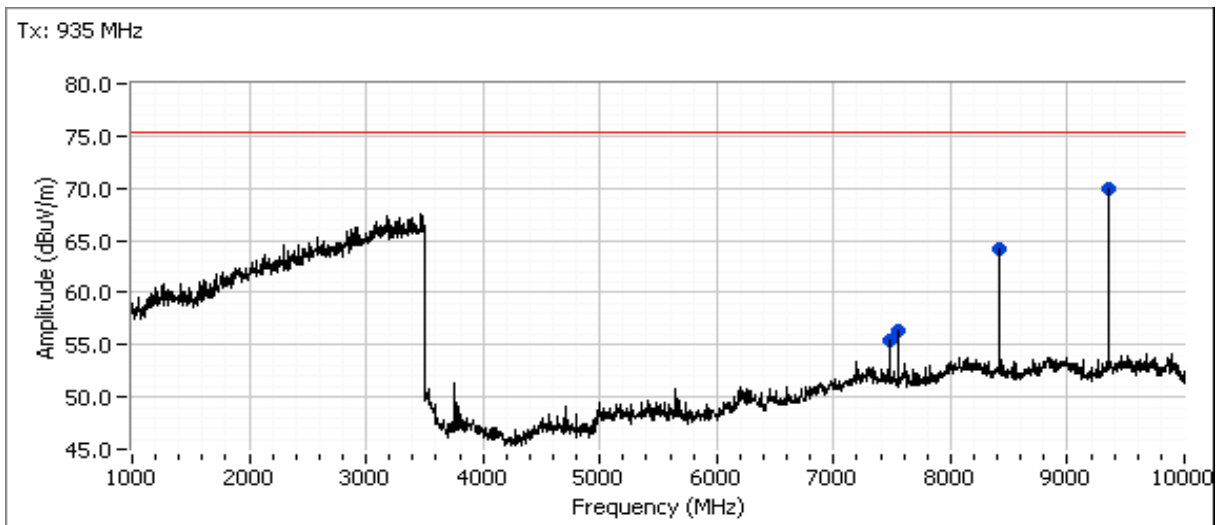
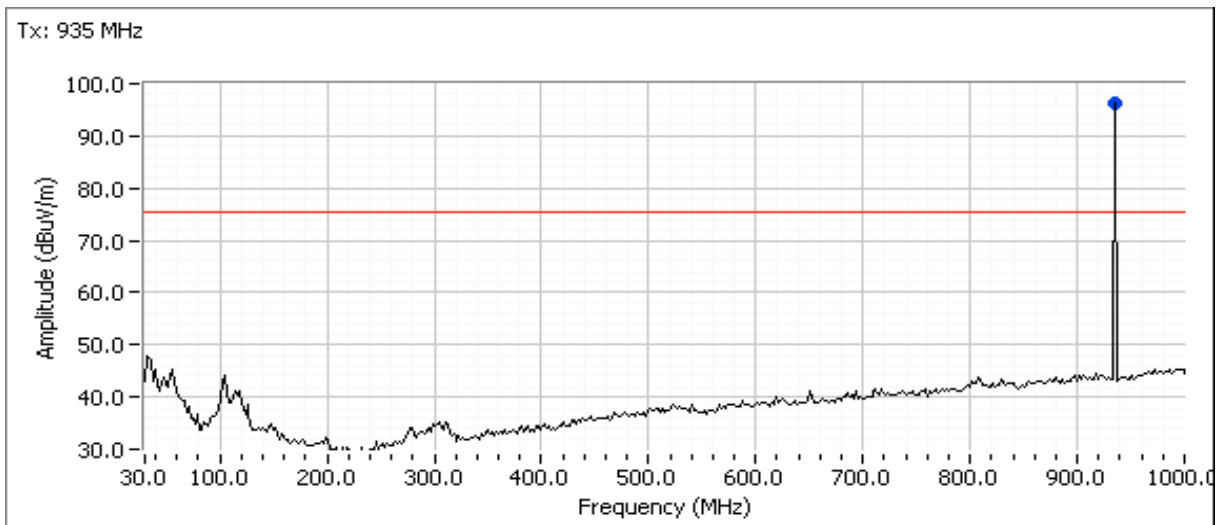
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

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



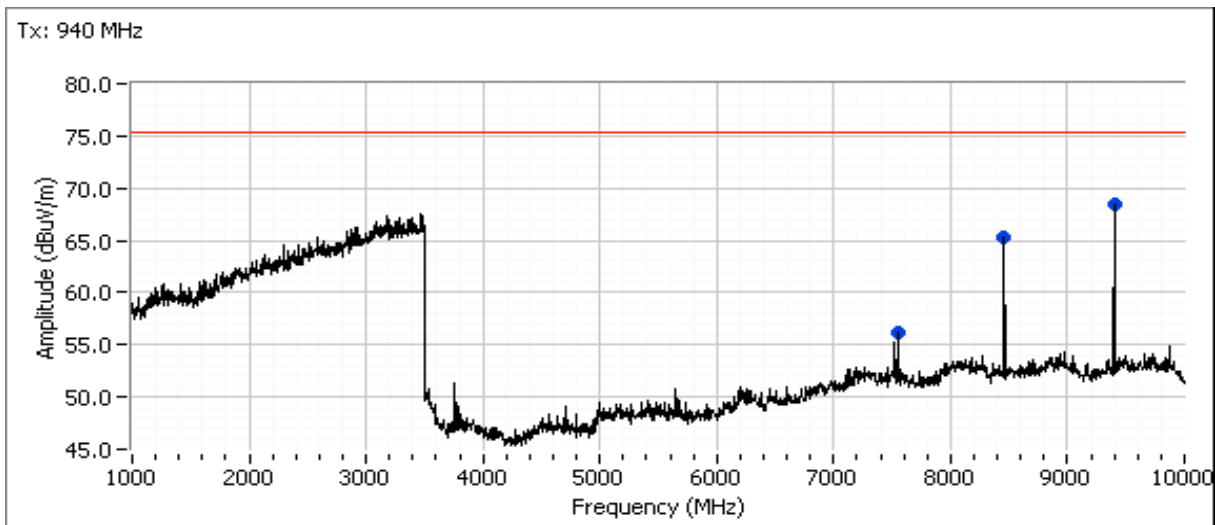
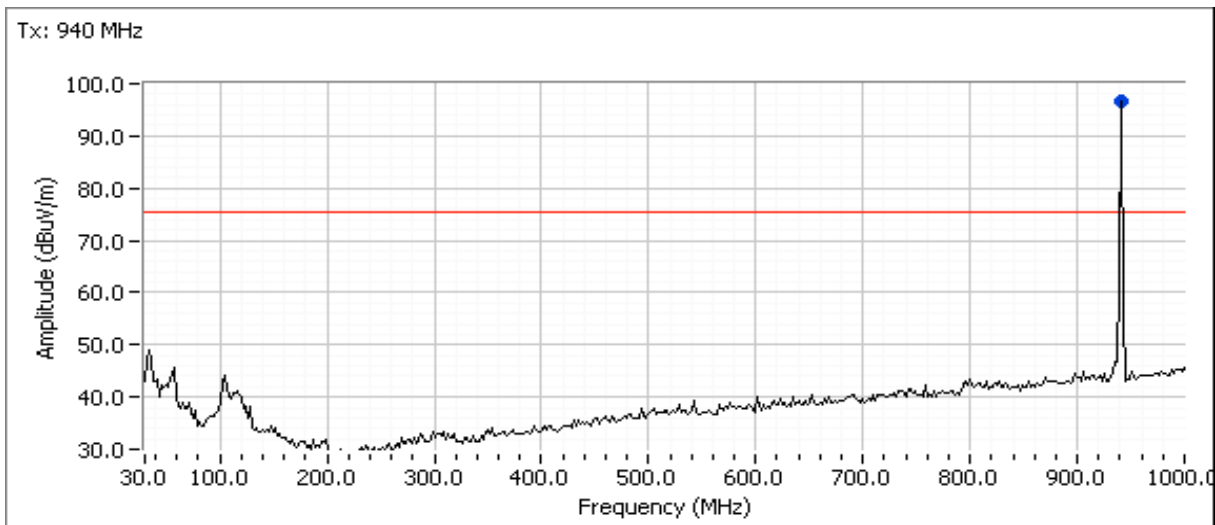
|           |                                   |                      |                   |
|-----------|-----------------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC                        | Job Number:          | JD99760           |
| Model:    | LN900  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

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



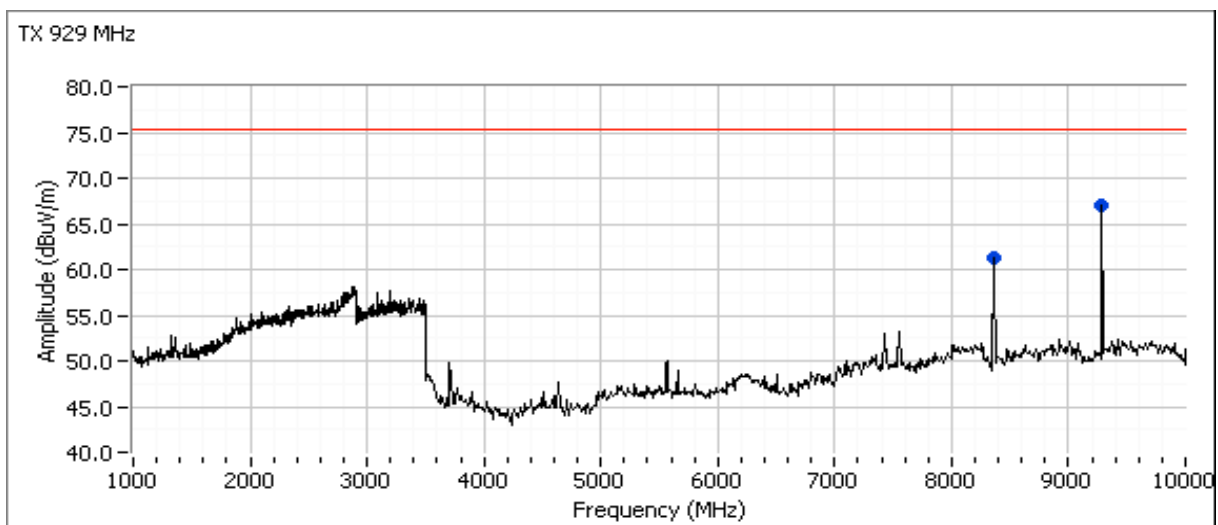
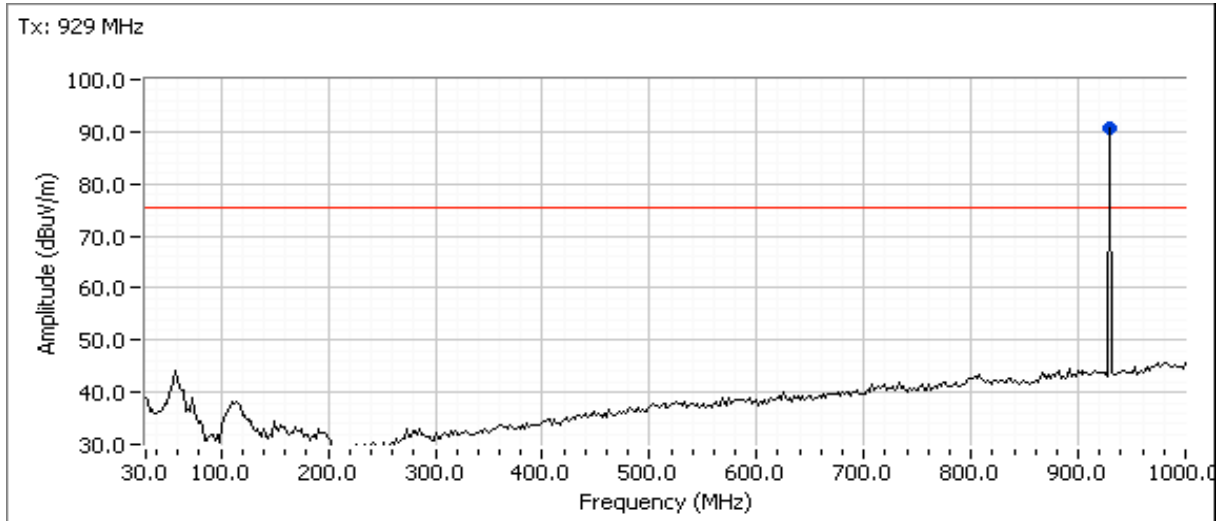
|           |                                   |                      |                   |
|-----------|-----------------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC                        | Job Number:          | JD99760           |
| Model:    | LN900  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

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



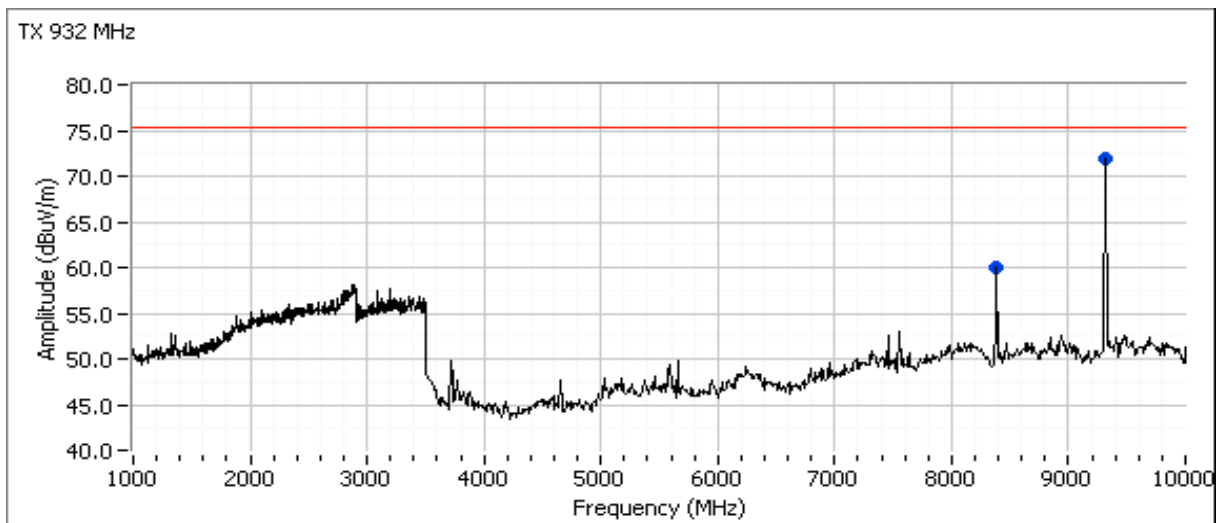
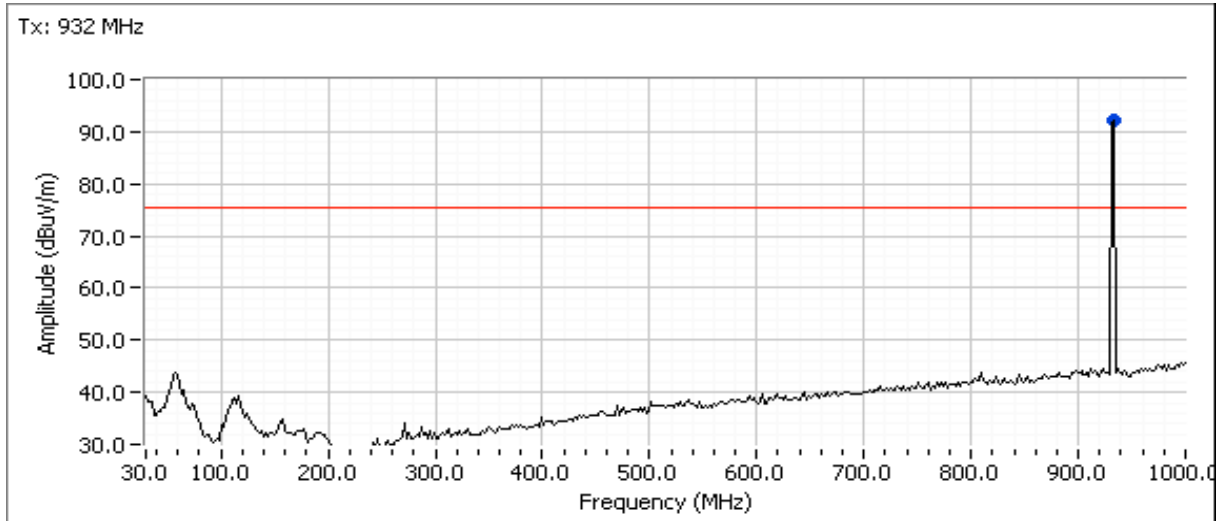
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

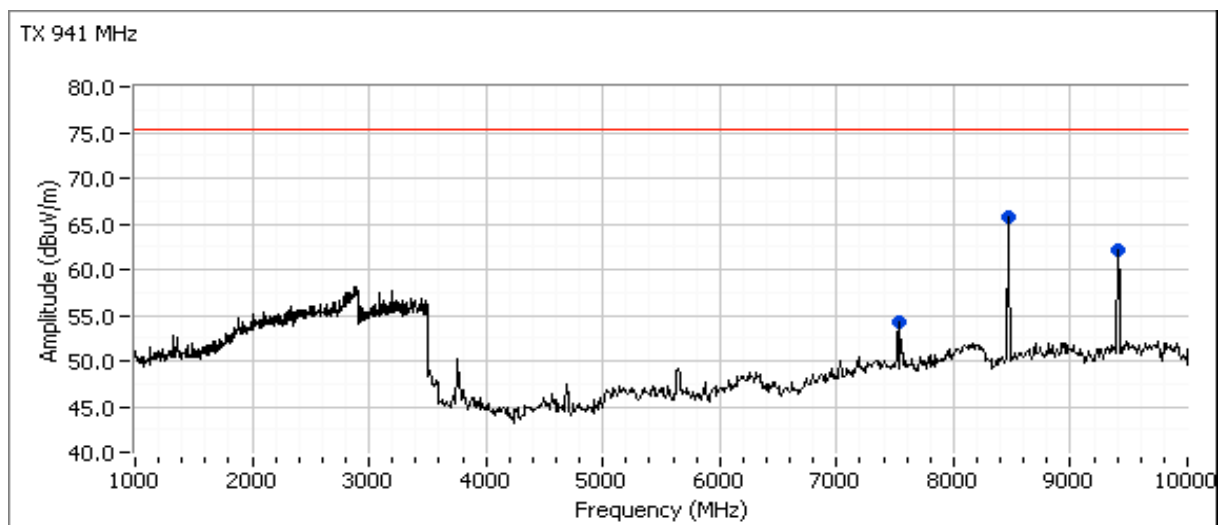
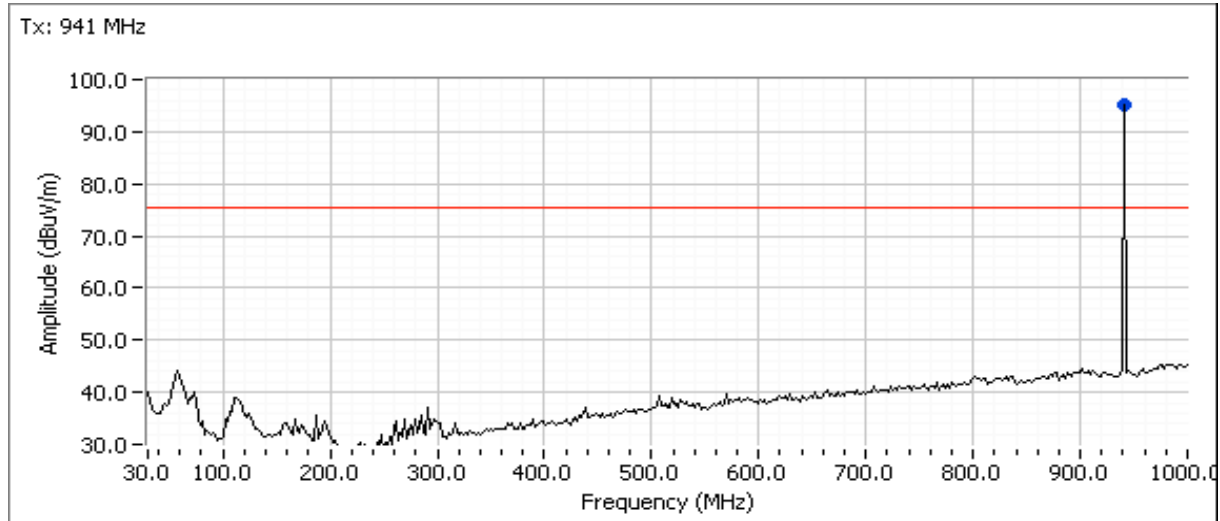
Plots for low channel (932 MHz), power setting(s) = 40 dBm





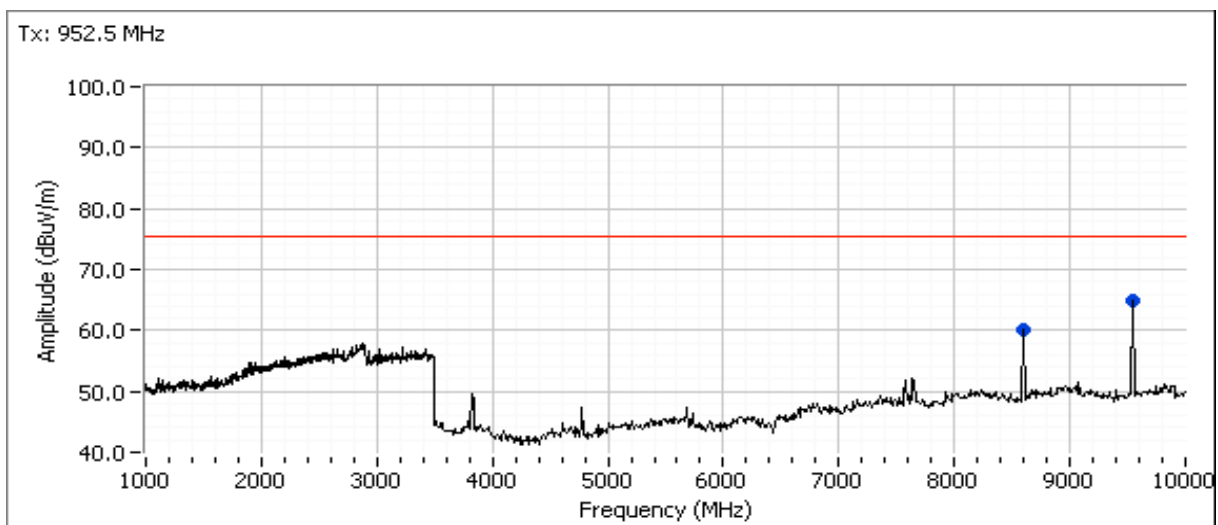
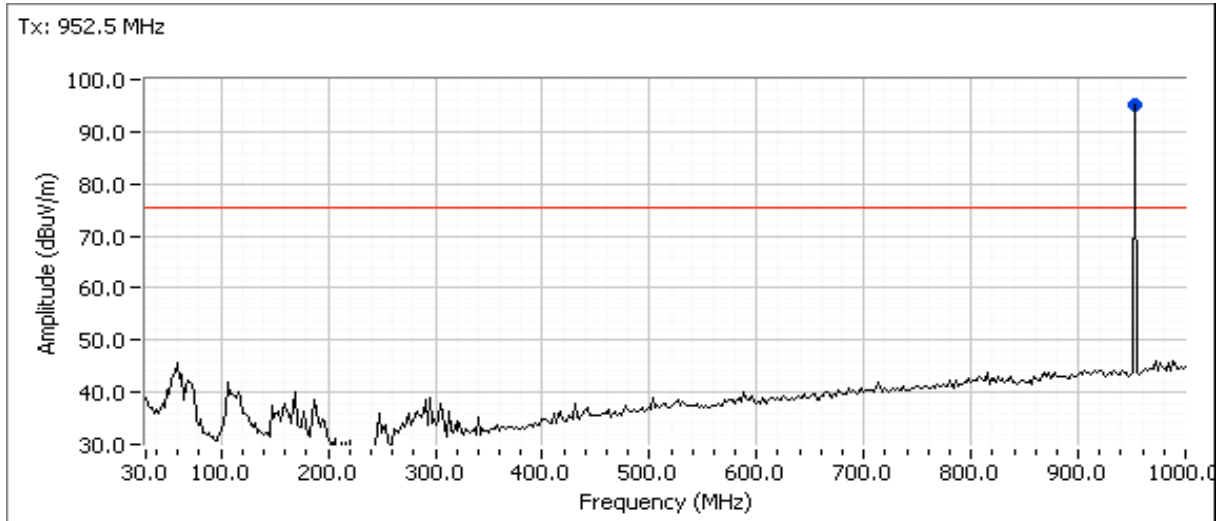
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

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





## EMC Test Data

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

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

Date of Test: 12/15/2015

Test Engineer: David Bare

Test Location: Fremont Chamber #3

Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC and 5 VDC

### EUT Field Strength

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

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

Note 2: Measurements are made with the antenna port terminated.



## EMC Test Data

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

### Substitution measurements

#### Horizontal

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

#### Vertical

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

Note 1: Pin is the input power (dBm) to the substitution antenna

Note 2: Gain is the gain (dBi) for the substitution antenna.

Note 3: FS is the field strength (dBuV/m) measured from the substitution antenna.

Note 4: Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.

Note 5: EUT field strength as measured during initial run.



## EMC Test Data

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

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

Date of Test: 11/30 & 12/16/2015

Test Engineer: David Bare

Test Location: Fremont Chamber #7

Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC and 5 VDC

### EUT Field Strength

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

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

Note 2: Measurements are made with the antenna port terminated.

### Substitution measurements

#### Vertical

| Frequency | Substitution measurements |                   |                 | Site                | EUT measurements |            |           | eirp Limit | erp Limit | Margin |
|-----------|---------------------------|-------------------|-----------------|---------------------|------------------|------------|-----------|------------|-----------|--------|
| MHz       | Pin <sup>1</sup>          | Gain <sup>2</sup> | FS <sup>3</sup> | Factor <sup>4</sup> | FS <sup>5</sup>  | 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 (dB $\mu$ V/m) measured from the substitution antenna.

Note 4: Site Factor - this is the site factor to convert from a field strength in dB $\mu$ V/m to an eirp in dBm.

Note 5: EUT field strength as measured during initial run.



## EMC Test Data

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



## EMC Test Data

|           |                                   |                      |                   |
|-----------|-----------------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC                        | Job Number:          | JD99760           |
| Model:    | LN900                             | T-Log Number:        | T99783            |
| Contact:  | Dennis McCarthy                   | Project Manager:     | Christine Krebill |
| Standard: | FCC Parts 15, 90 and 101, RSS-119 | Project Coordinator: | -                 |
|           |                                   | 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 placed 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 modulation; need to know rated power and tolerance which cannot exceed measured power

Limited Modular approval



## EMC Test Data

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

### Run #1: Output Power

Date of Test: 10/28/2015

Test Engineer: Deniz Demirci

Test Location: FT Lab #4b

Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC

Cable Loss: 0.0 dB

Cable ID(s): None

Attenuator: 30.0 dB

Attenuator IDs: Asset #1878 + #2097

Total Loss: 30.0 dB

| Power Setting <sup>2</sup> | Frequency (MHz) | Output Power       |         | Antenna Gain (dBi) | Result | EIRP |         |
|----------------------------|-----------------|--------------------|---------|--------------------|--------|------|---------|
|                            |                 | (dBm) <sup>1</sup> | mW      |                    |        | dBm  | 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            |
| Contact:  | Dennis McCarthy                   | Project Manager:     | Christine Krebill |
| Standard: | FCC Parts 15, 90 and 101, RSS-119 | Project Coordinator: | -                 |
|           |                                   | 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

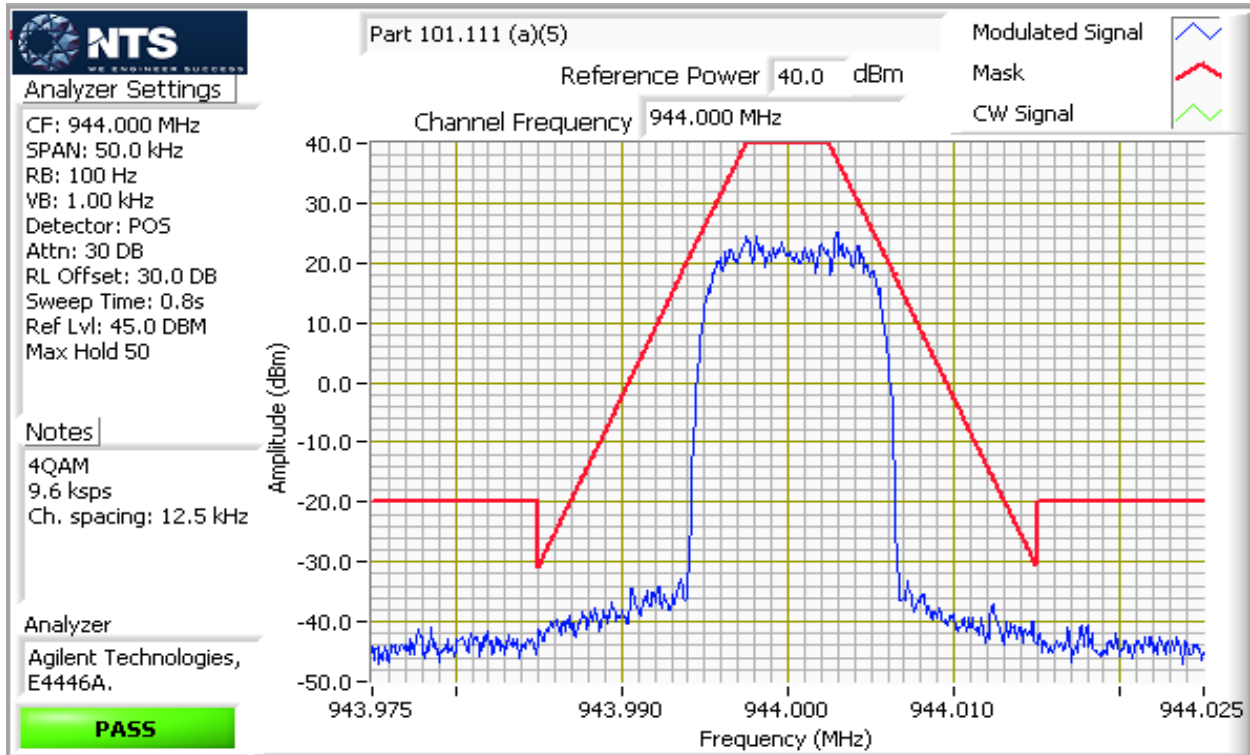
Note 1: EUT does not transmit unmodulated carrier with full power setting. The measured power levels (using peak power meter) are higher than the declared nominal power for every channel frequency. Nominal 40 dBm reference power level used for spectral mask measurements as worst case results.

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   |

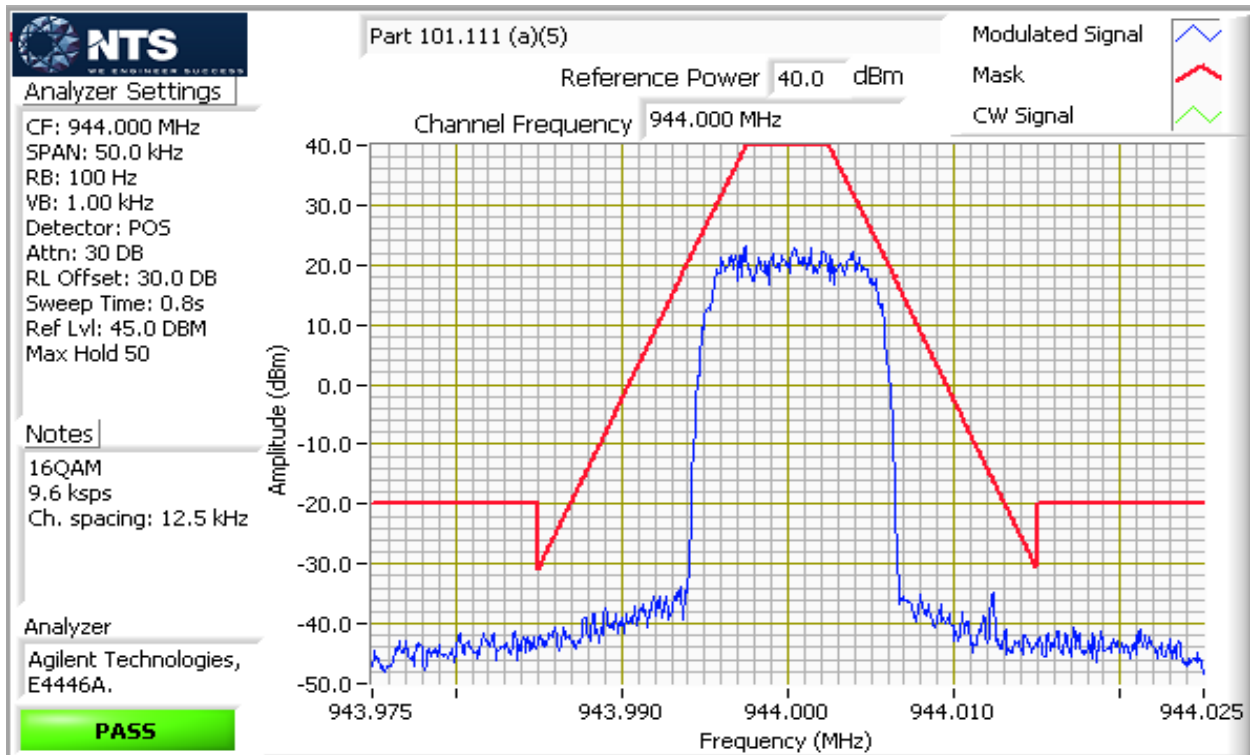
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

928 - 960 MHz, 12.5 kHz channel spacing.



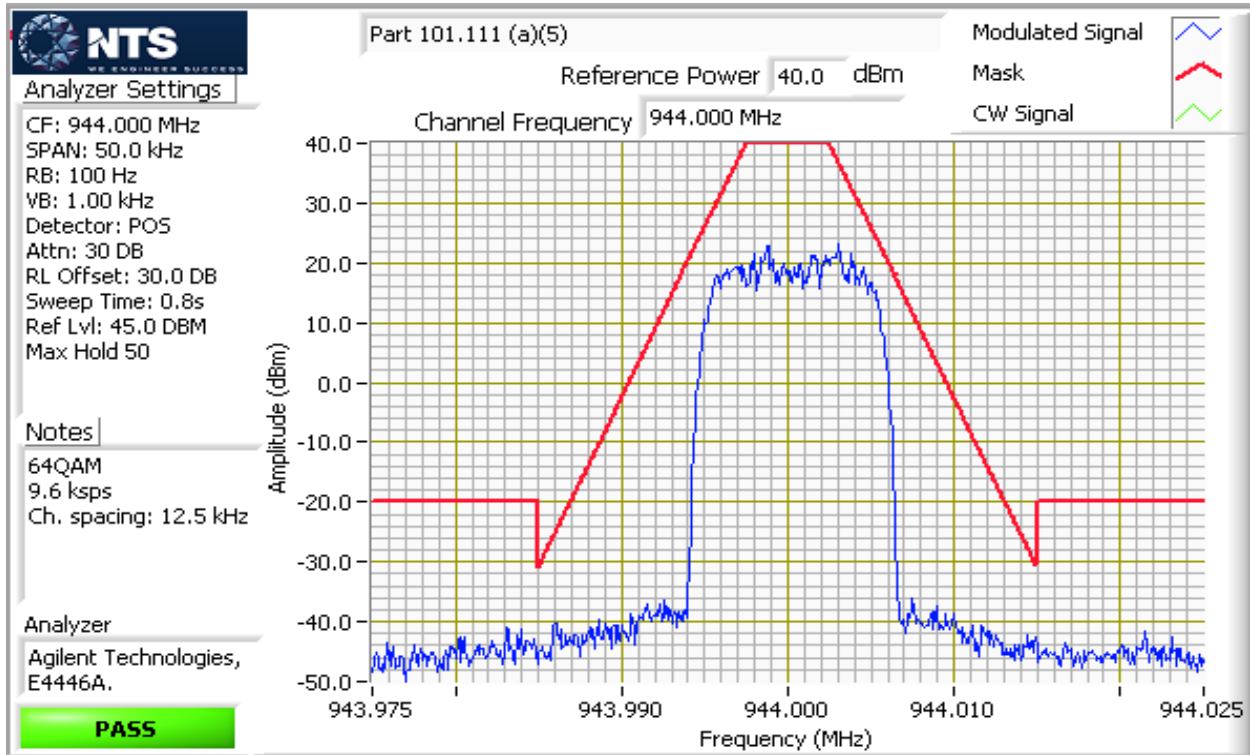
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

928 - 960 MHz, 12.5 kHz channel spacing.



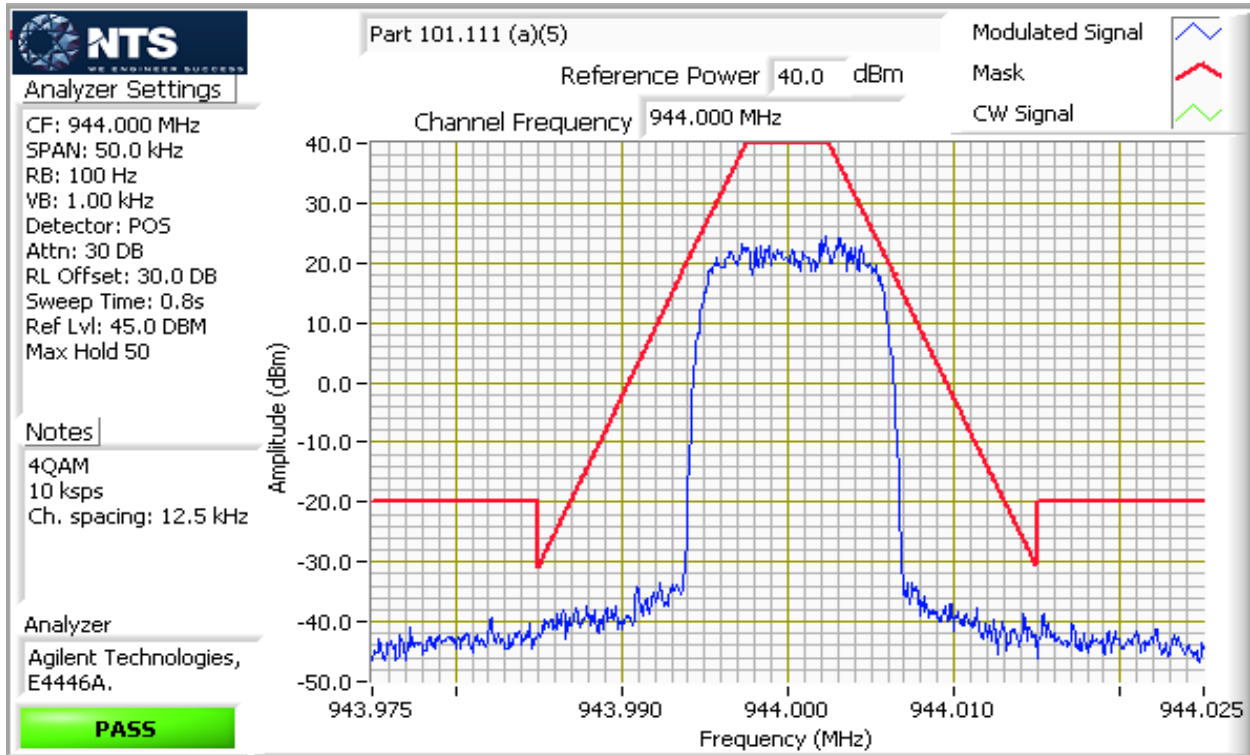
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

928 - 960 MHz, 12.5 kHz channel spacing.



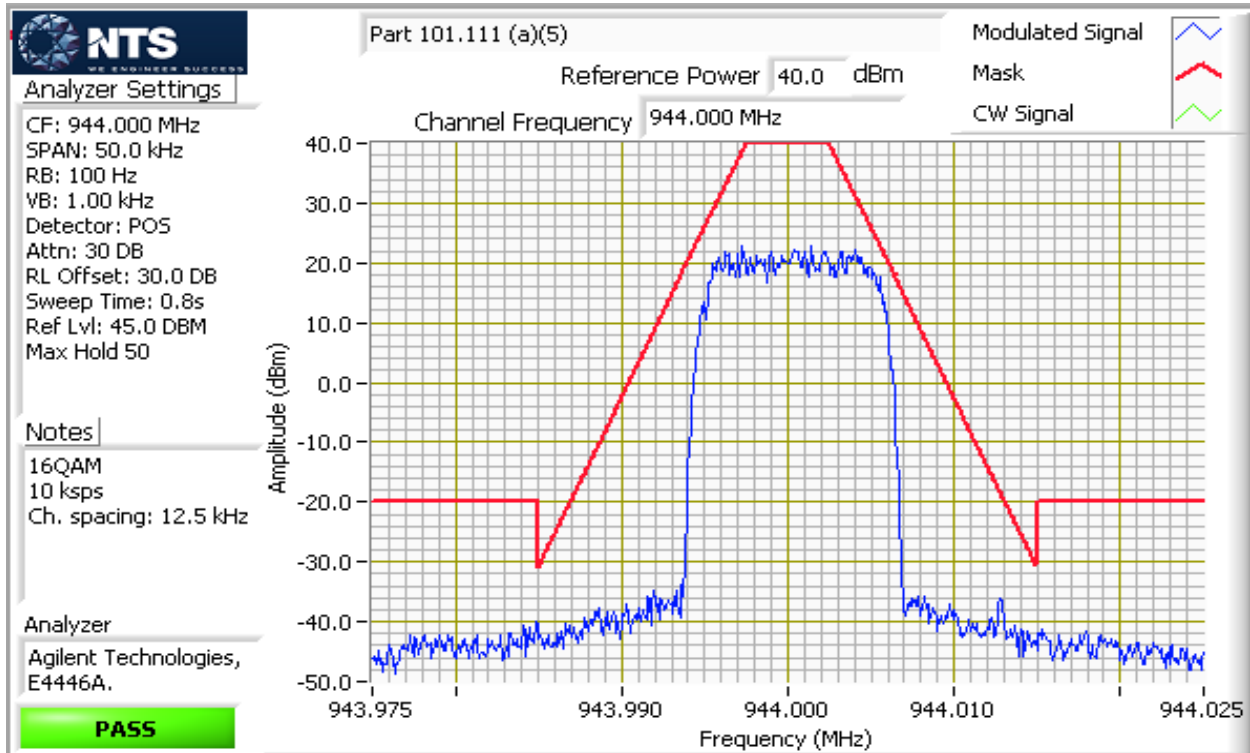
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

928 - 960 MHz, 12.5 kHz channel spacing.



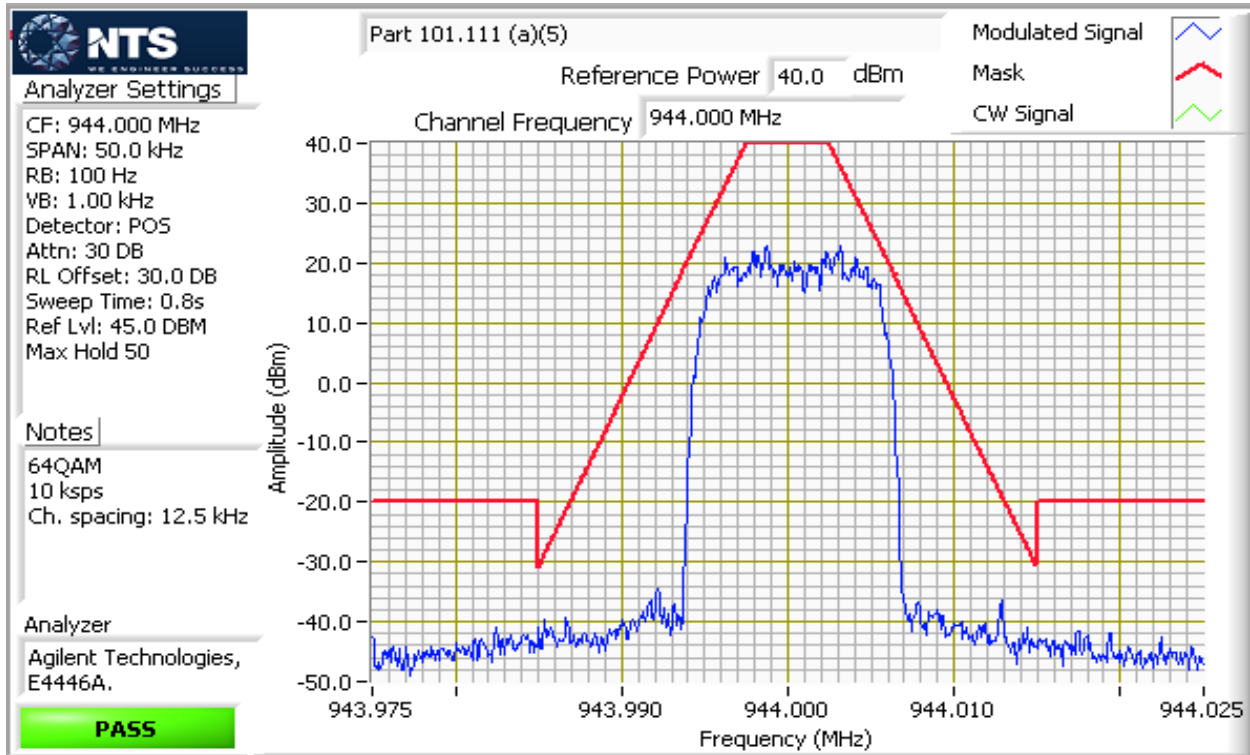
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

928 - 960 MHz, 12.5 kHz channel spacing.



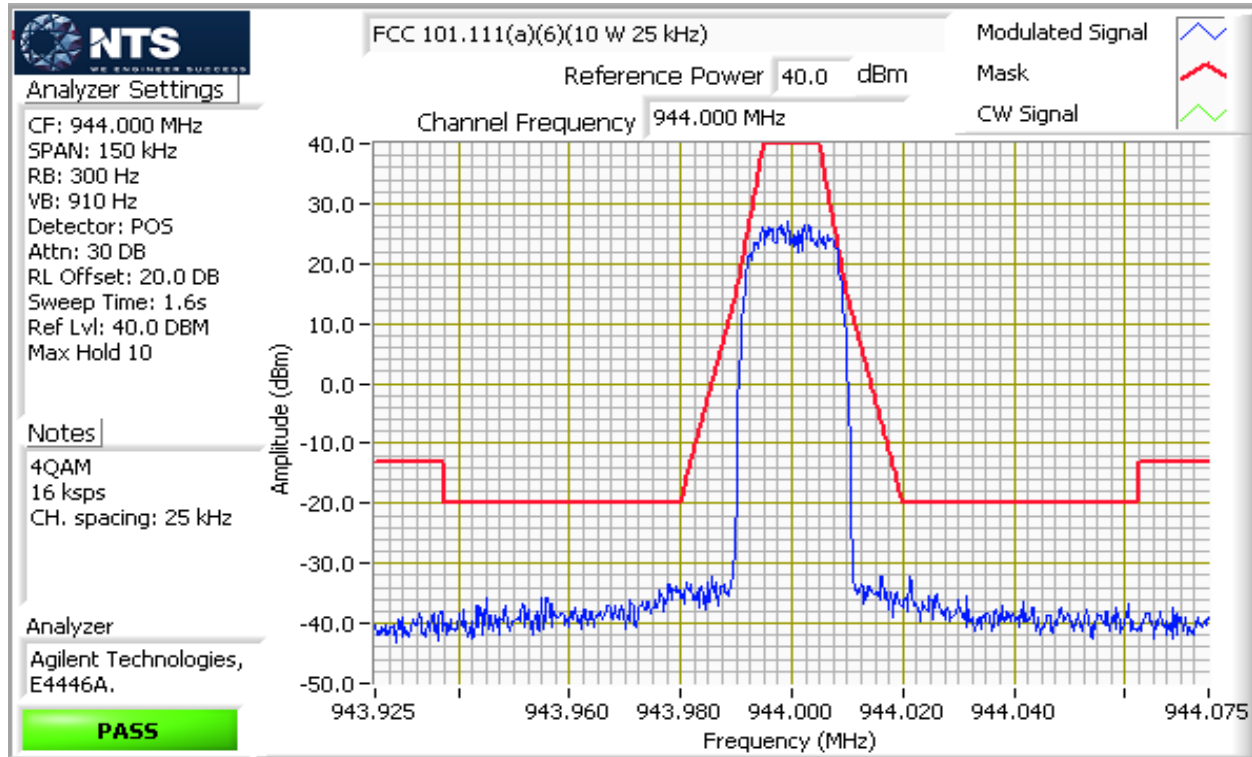
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

928 - 960 MHz, 12.5 kHz channel spacing.



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

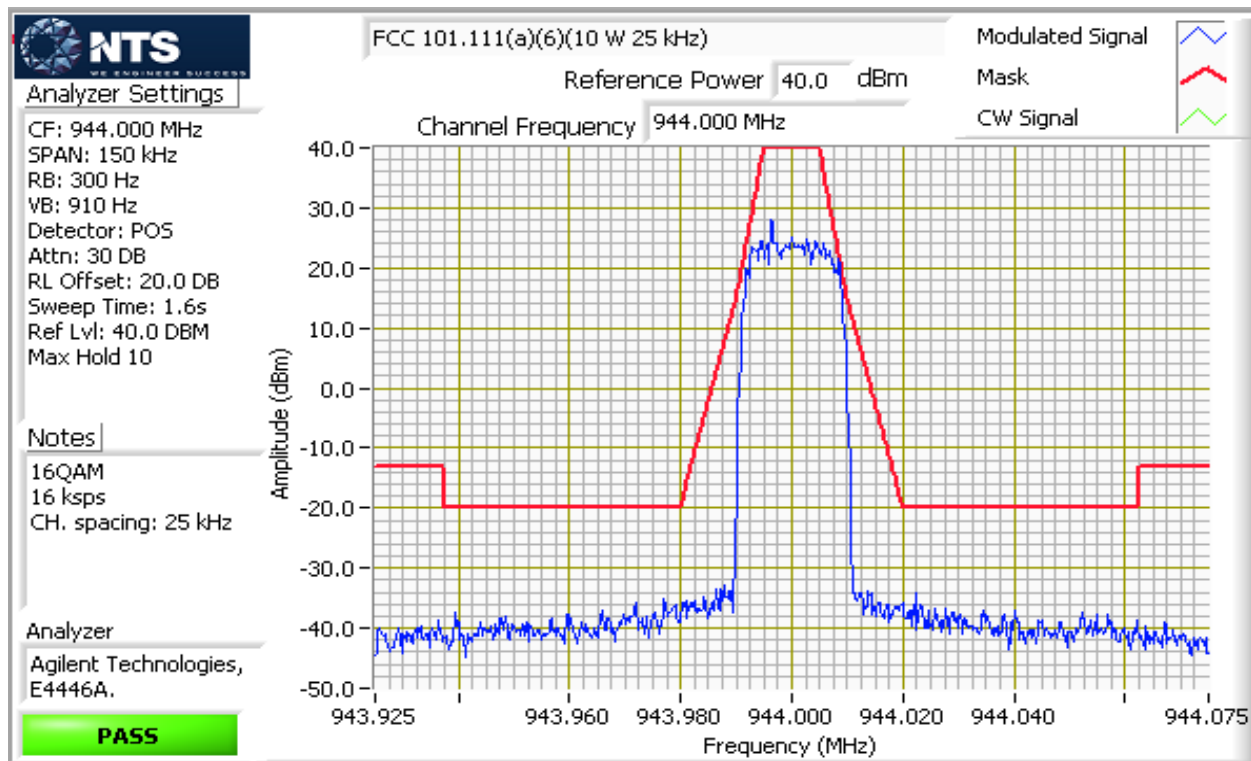
928 - 960 MHz, 25 kHz channel spacing.





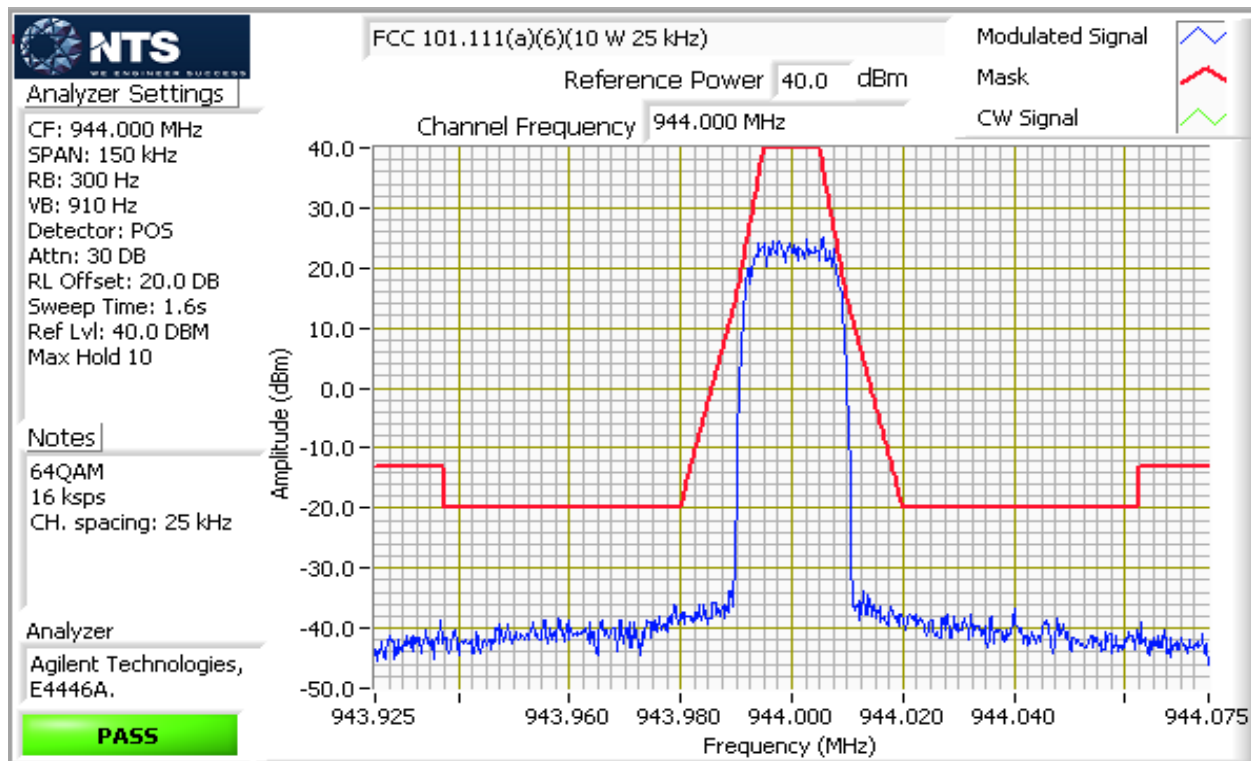
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

928 - 960 MHz, 25 kHz channel spacing.



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

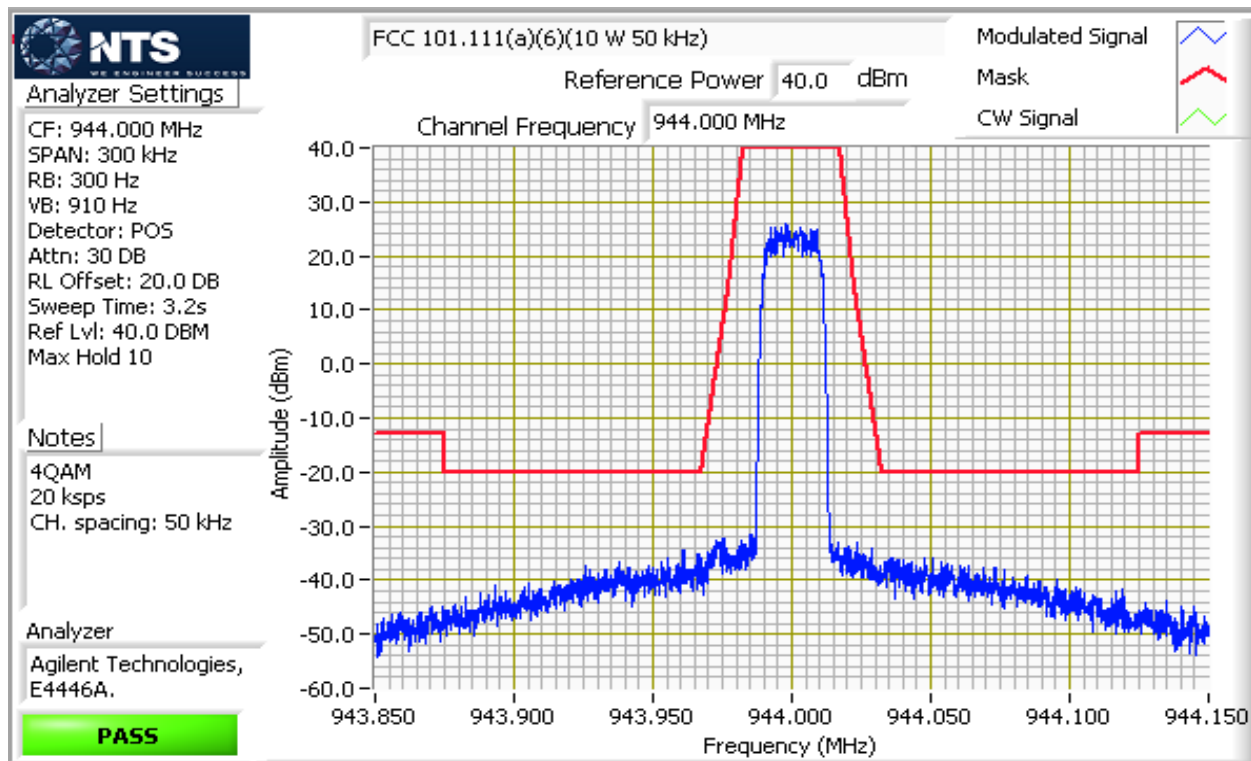
928 - 960 MHz, 25 kHz channel spacing.



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

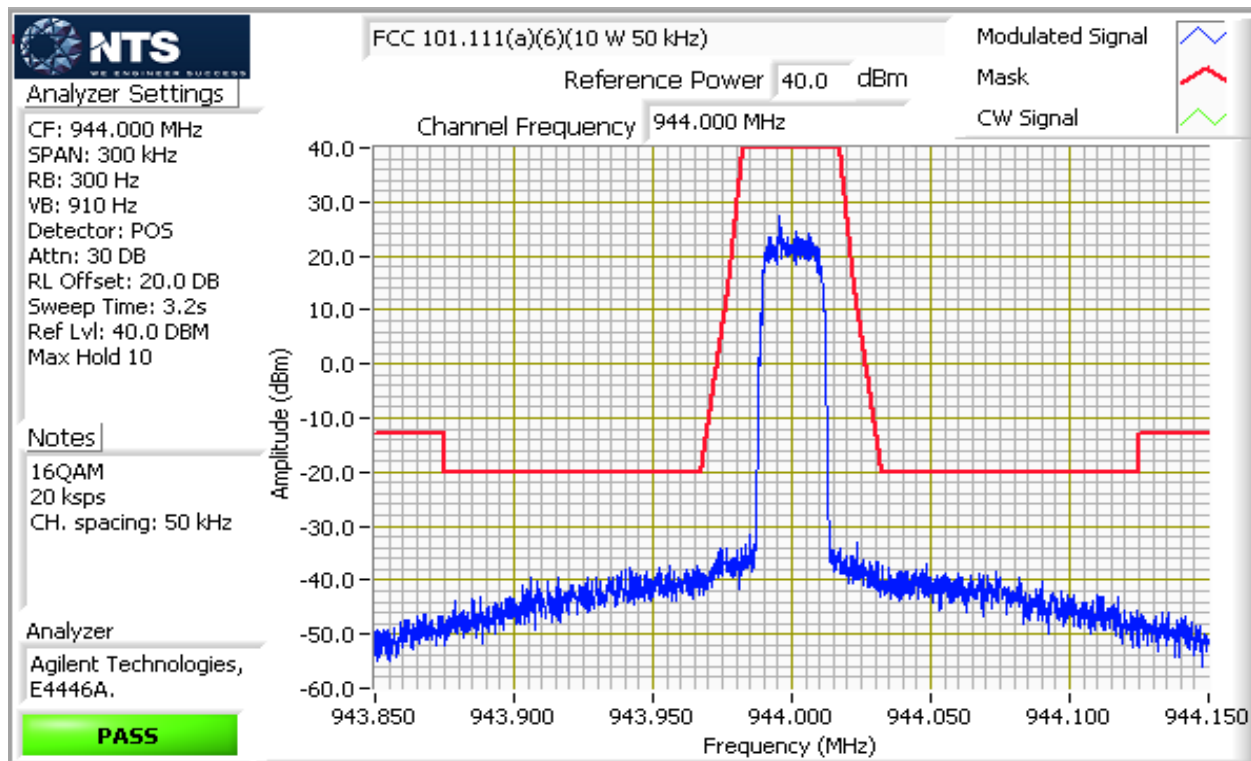


The emissions mask does not result in more adjacent cahnnel interference than the narrower band mask in RSS-119 Table 1

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

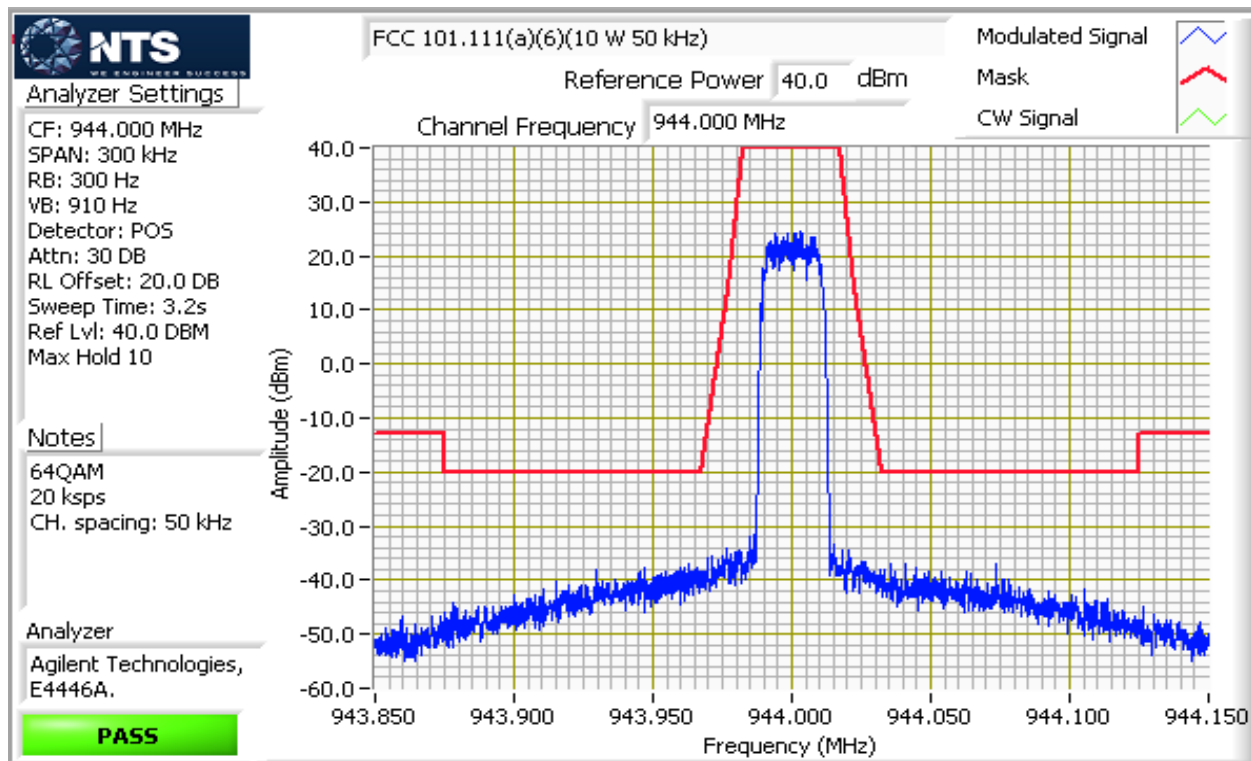


The emissions mask does not result in more adjacent channel interference than the narrower band mask in RSS-119 Table 1

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

928 - 960 MHz, 50 kHz channel spacing.

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



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



## EMC Test Data

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

### Run #3: Signal Bandwidth

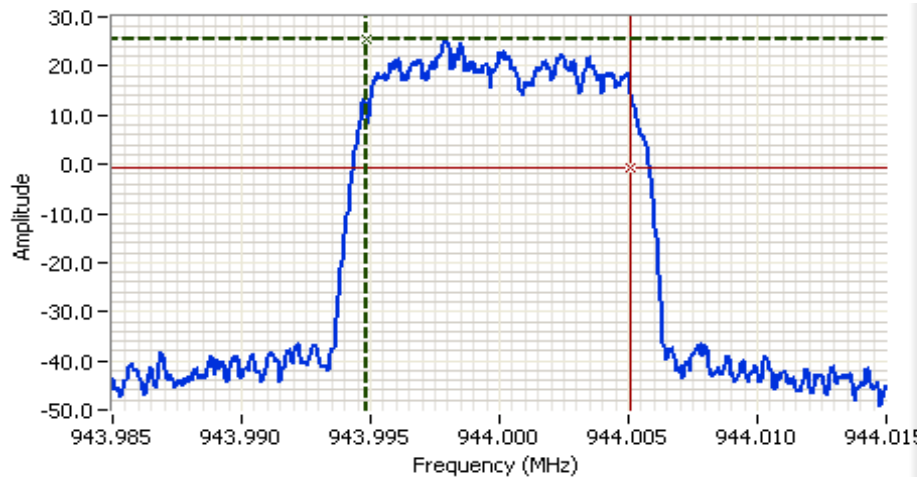
Date of Test: 10/28/2015  
 Test Engineer: Deniz Demirci  
 Test Location: FT Lab #4b

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

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

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

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



## Analyzer Settings

Agilent Technologies, E4446A  
 CF: 944.000 MHz  
 SPAN: 30.0 kHz  
 RB: 200 Hz  
 VB: 620 Hz  
 Detector: POS  
 Attn: 30 DB  
 RL Offset: 30.0 DB  
 Sweep Time: 0.4s  
 Ref Lvl: 45.0 DBM

## Comments

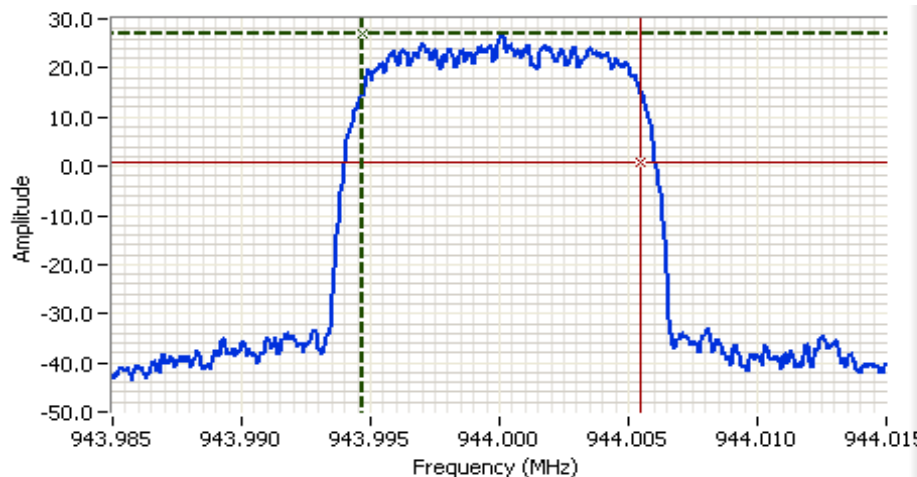
99% BW: 10.3 kHz  
 64QAM  
 9.6 ksps  
 Ch spacing: 12.5 kHz

Cursor 1 943.9948 25.3

Cursor 2 944.0051 -0.7

Delta Freq. 10.3 kHz

Delta Amplitude 26.0



## Analyzer Settings

Agilent Technologies, E4446A  
 CF: 944.000 MHz  
 SPAN: 30.0 kHz  
 RB: 200 Hz  
 VB: 620 Hz  
 Detector: POS  
 Attn: 30 DB  
 RL Offset: 30.0 DB  
 Sweep Time: 0.4s  
 Ref Lvl: 45.0 DBM

## Comments

99% BW: 10.8 kHz  
 16QAM  
 10 ksps  
 Ch spacing: 12.5 kHz

Cursor 1 943.9947 27.0

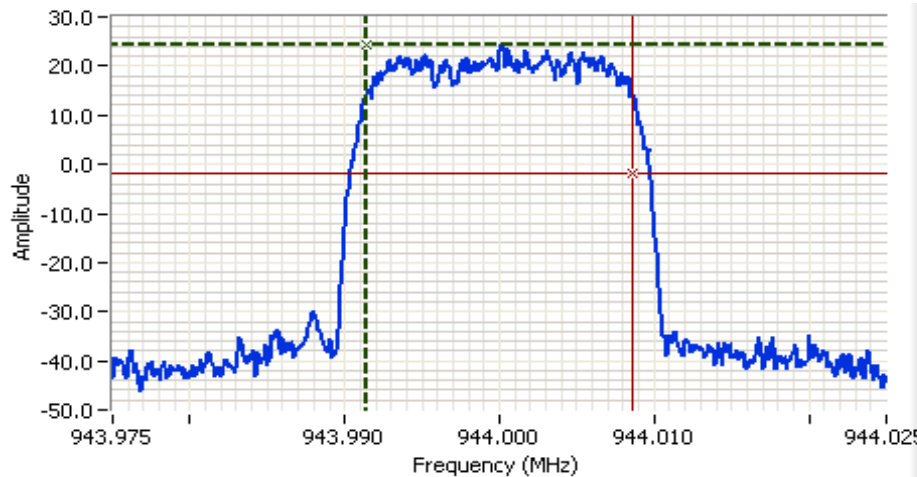
Cursor 2 944.0055 1.0

Delta Freq. 10.8 kHz

Delta Amplitude 26.0



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

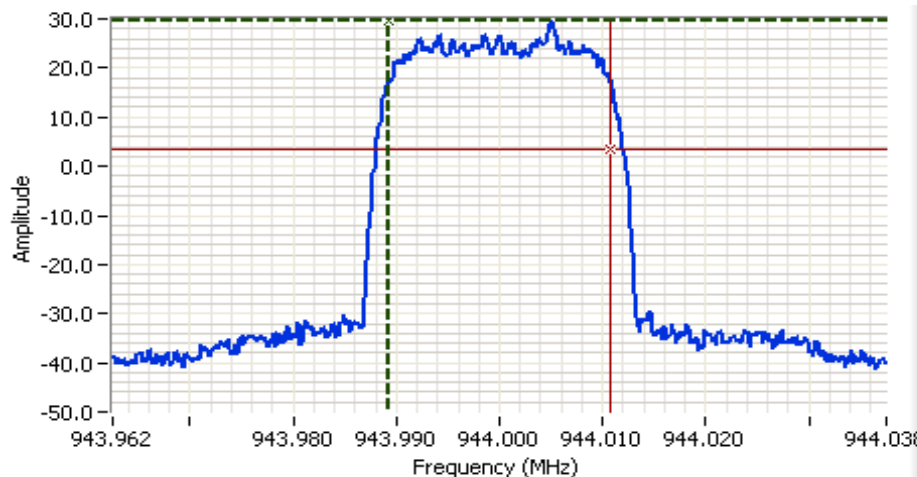


## Analyzer Settings

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

## Comments

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



## Analyzer Settings

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

## Comments

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







## EMC Test Data

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

### Run #4: Out of Band Spurious Emissions, Conducted

Date of Test: 12/11/2015

Test Engineer: David Bare

Test Location: Fremont Lab #4B

Config. Used: 1

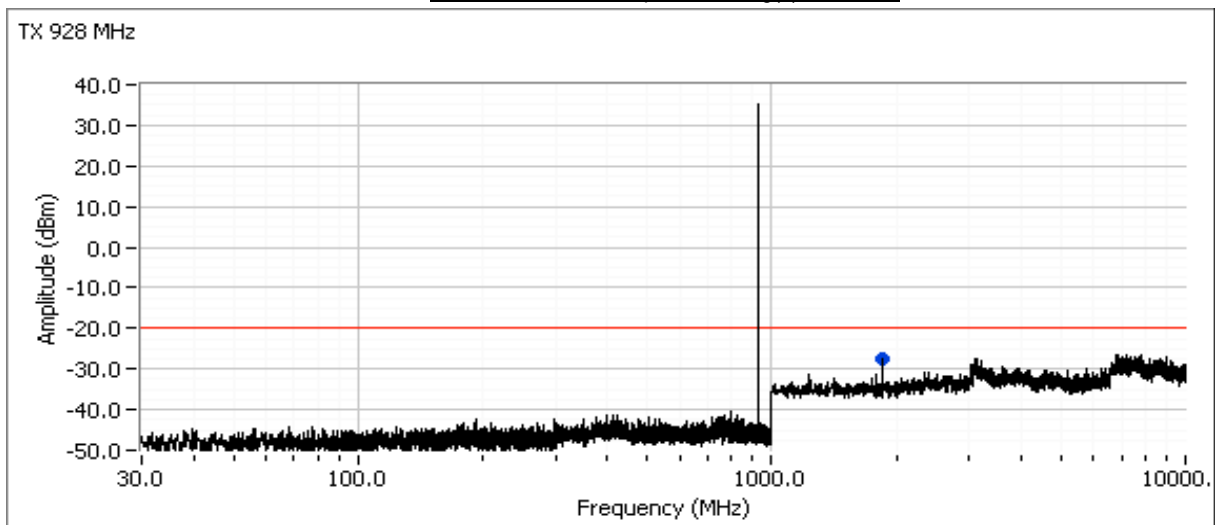
Config Change: None

EUT Voltage: 13.8 VDC

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

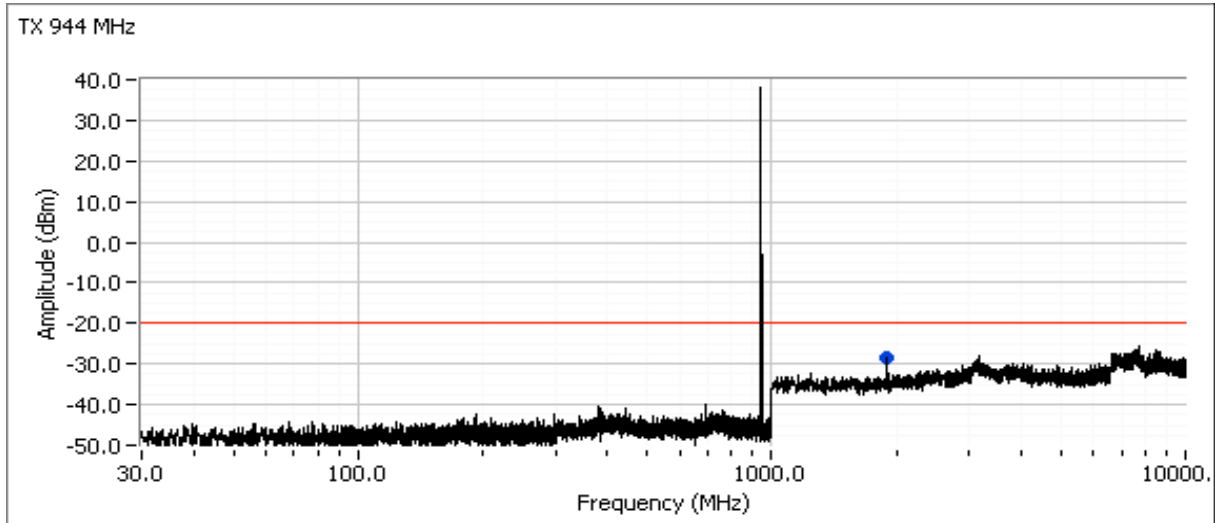
The limit is taken from FCC Part 90 Mask D

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

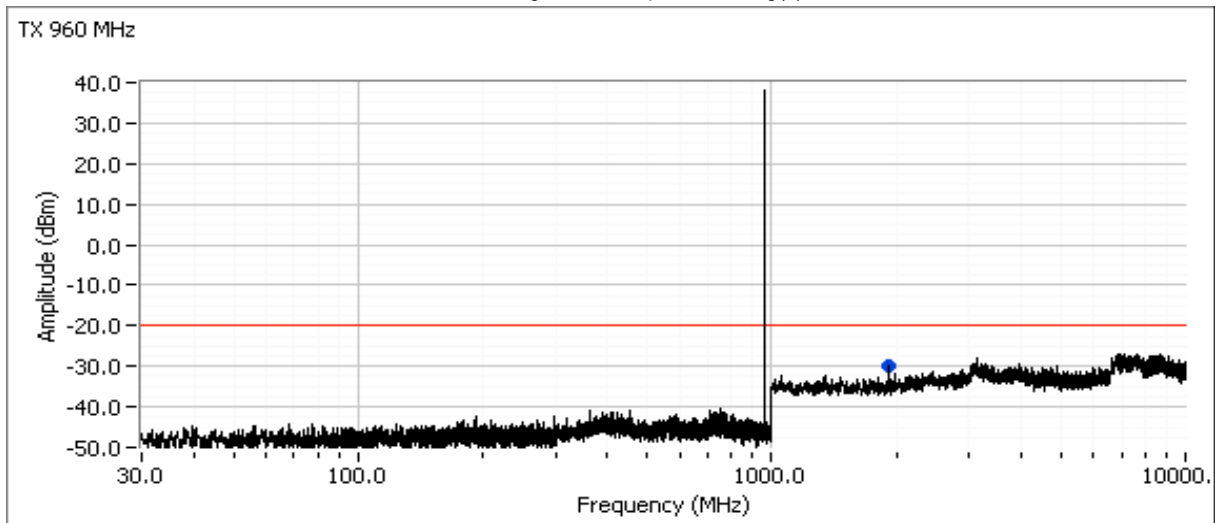


|           |                                   |                      |                   |
|-----------|-----------------------------------|----------------------|-------------------|
| Client:   | GE MDS LLC                        | Job Number:          | JD99760           |
| Model:    | LN900  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

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



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





## EMC Test Data

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

### Run #5: Out of Band Spurious Emissions, Radiated

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

The limit is taken from FCC Part 90 Mask D

#### Run #5a - Preliminary measurements

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

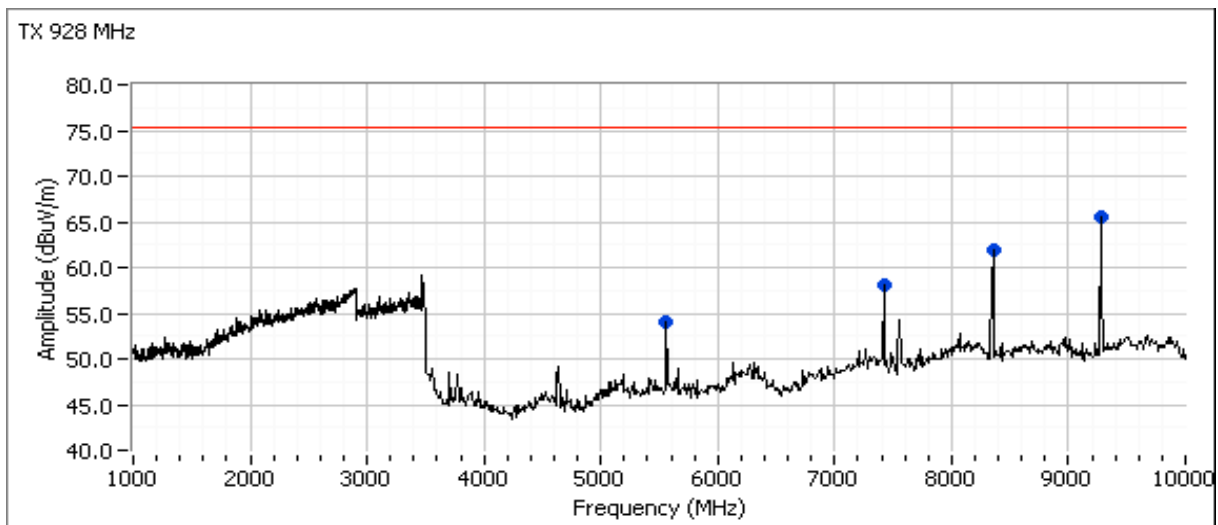
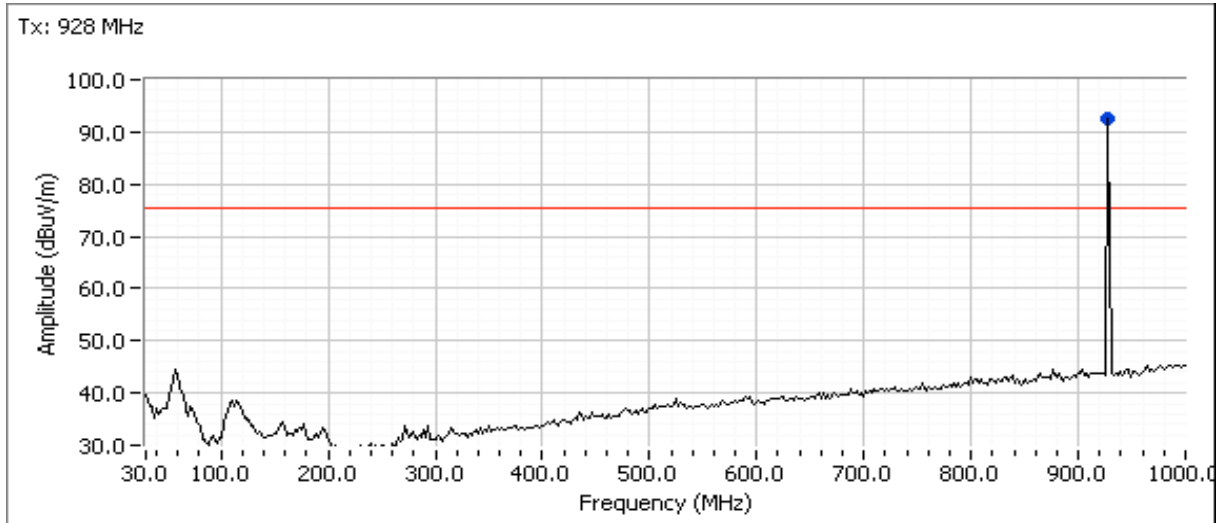
Config. Used: 1  
Config Change: None  
EUT Voltage: 13.8 VDC and 5 VDC

| Frequency | Level  | Pol | FCC Part 101 |        | Detector  | Azimuth | Height | Comments              | Channel |
|-----------|--------|-----|--------------|--------|-----------|---------|--------|-----------------------|---------|
| MHz       | dBuV/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;Pei | 960.000 |
| 8639.870  | 68.0   | H   | 75.3         | -7.3   | PK        | 223     | 1.9    | RB 1 MHz;VB 3 MHz;Pei | 960.000 |
| 7679.560  | 59.1   | V   | 75.3         | -16.2  | PK        | 184     | 1.4    | RB 1 MHz;VB 3 MHz;Pei | 960.000 |
| 3840.040  | 54.2   | V   | 75.3         | -21.1  | PK        | 43      | 2.0    | RB 1 MHz;VB 3 MHz;Pei | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                    |

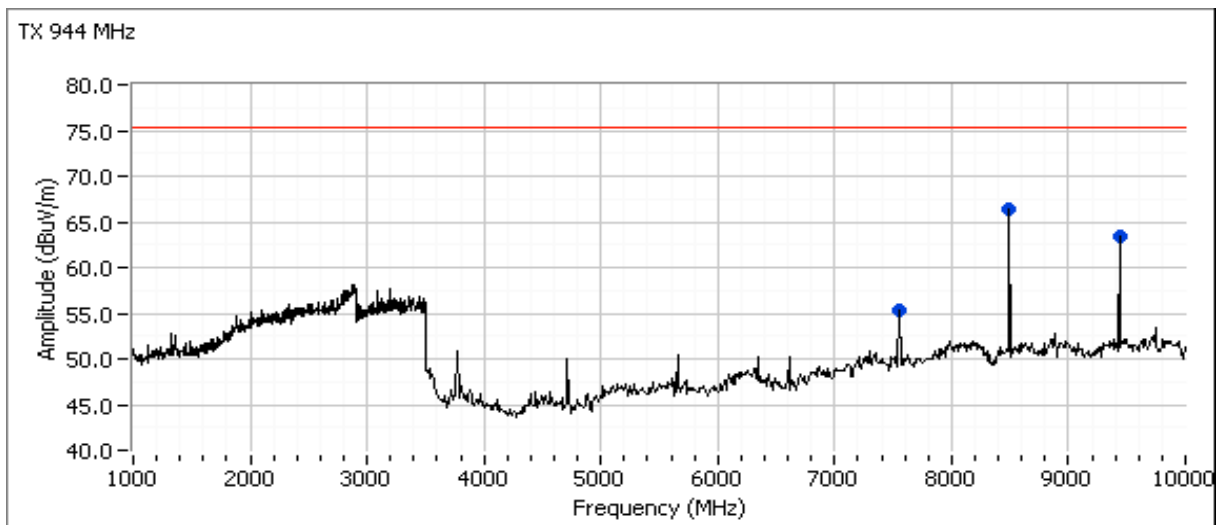
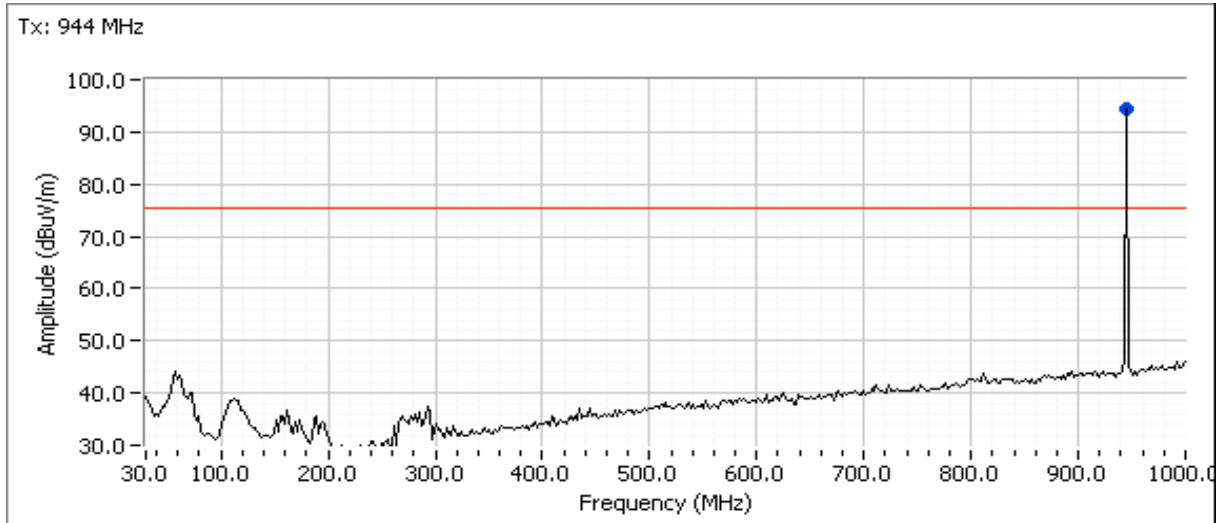
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

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



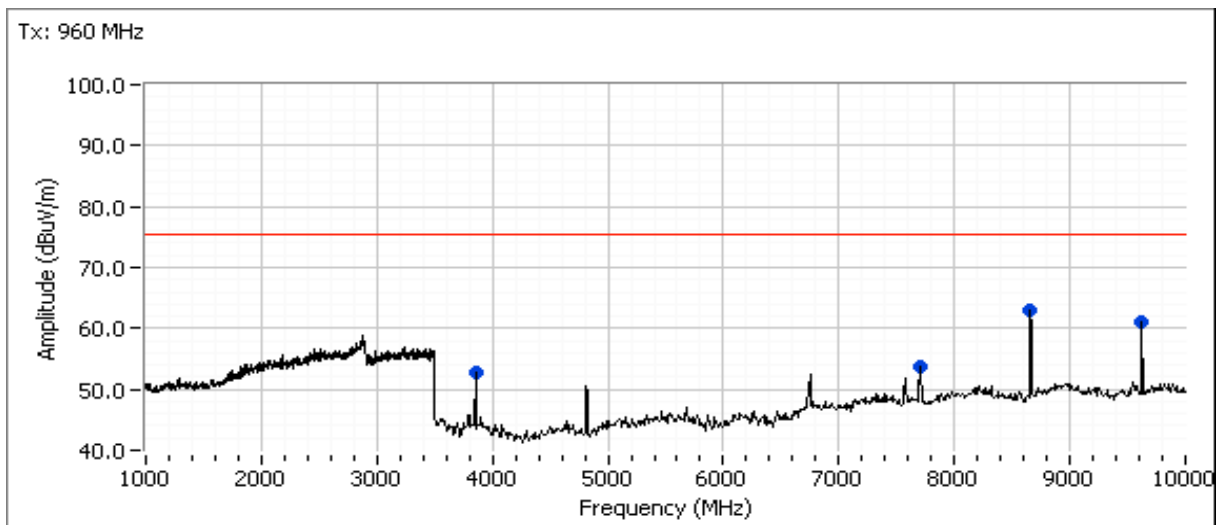
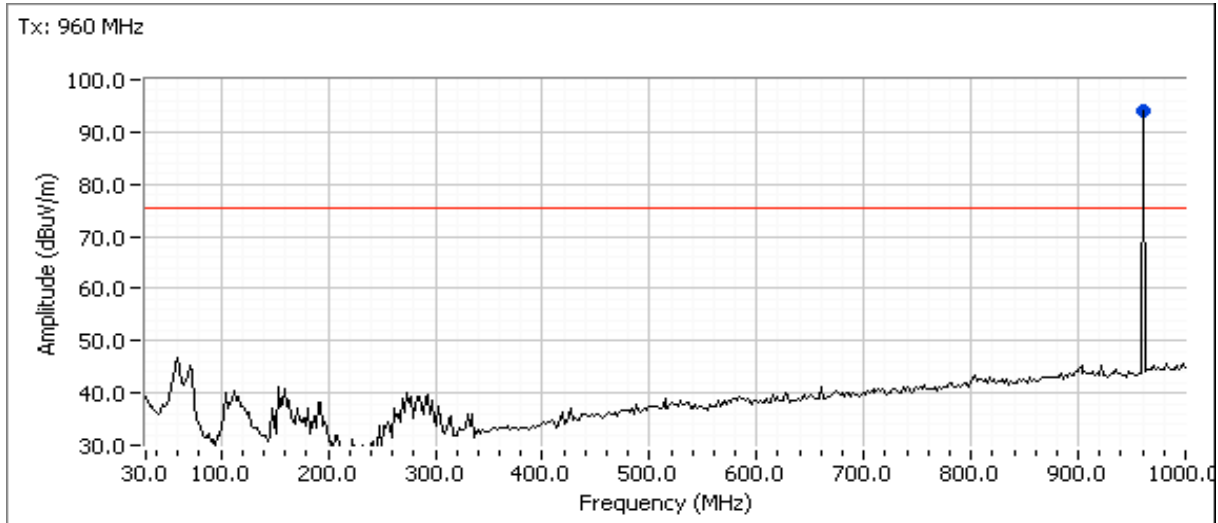
|                                             |                                    |
|---------------------------------------------|------------------------------------|
| Client: GE MDS LLC                          | Job Number: JD99760                |
| Model: LN900                               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

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





## EMC Test Data

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

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

Date of Test: 12/15/2015

Test Engineer: David Bare

Test Location: Fremont Chamber #3

Config. Used: 1

Config Change: None

EUT Voltage: 13.8 VDC and 5 VDC

### EUT Field Strength

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

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



## EMC Test Data

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

### Substitution measurements

#### Horizontal

| Frequency<br>MHz | Substitution measurements |                   |                 | Site<br>Factor <sup>4</sup> | EUT measurements |            |           | eirp Limit<br>dBm | erp Limit<br>dBm | Margin<br>dB |
|------------------|---------------------------|-------------------|-----------------|-----------------------------|------------------|------------|-----------|-------------------|------------------|--------------|
|                  | Pin <sup>1</sup>          | Gain <sup>2</sup> | FS <sup>3</sup> |                             | FS <sup>5</sup>  | eirp (dBm) | erp (dBm) |                   |                  |              |
| 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<br>MHz | Substitution measurements |                   |                 | Site<br>Factor <sup>4</sup> | EUT measurements |            |           | eirp Limit<br>dBm | erp Limit<br>dBm | Margin<br>dB |
|------------------|---------------------------|-------------------|-----------------|-----------------------------|------------------|------------|-----------|-------------------|------------------|--------------|
|                  | Pin <sup>1</sup>          | Gain <sup>2</sup> | FS <sup>3</sup> |                             | FS <sup>5</sup>  | eirp (dBm) | erp (dBm) |                   |                  |              |
| 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.





## EMC Test Data

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



## EMC Test Data

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

## EMC Test Data

For The

**GE MDS LLC**

Product

LN900

Date of Last Test: 5/26/2016



## EMC Test Data

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

### RSS 119 and FCC Part 90 Power, Occupied Bandwidth

#### Test Specific Details

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

#### General Test Configuration

All measurements are made with the EUT's rf port connected to the measurement instrument via an attenuator or dc-block if necessary. All amplitude measurements are adjusted to account for the attenuation between EUT and measuring instrument.

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

#### Summary of Results

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

#### Modifications Made During Testing

No modifications were made to the EUT during testing

#### Deviations From The Standard

No deviations were made from the requirements of the standard.

#### Notes

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

Target power: 10 Watts (40 dBm). 3-level FSK modulations; need to know rated power and tolerance which cannot exceed measured power. Power limits in § 90.205 (k), (m), § 90.635 & § 90.494

<sup>1</sup> FCC Part 90.213 (footnote 14) and RSS-119 Section 5.3 allow 1.5 ppm for control station operations.

Limited Modular approval



## EMC Test Data

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

### Run #1: Output Power

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

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

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

Attenuator: 20.0 dB  
 Attenuator IDs: 1878.0

Total Loss: 20.0 dB

### FCC Part 90 & RSS-119

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

### RSS-119 only

| Power Setting <sup>2</sup> | Frequency (MHz) | Output Power       |         | Antenna Gain (dBi) | Result | EIRP |         |
|----------------------------|-----------------|--------------------|---------|--------------------|--------|------|---------|
|                            |                 | (dBm) <sup>1</sup> | mW      |                    |        | dBm  | W       |
| 40 dBm                     | 941.0           | 40.7               | 11749.0 | 16.5               | Pass   | 57.2 | 524.807 |
| 40 dBm                     | 944.0           | 40.8               | 12022.6 | 16.5               | Pass   | 57.3 | 537.032 |
| 40 dBm                     | 952.5           | 40.8               | 12022.6 | 16.5               | Pass   | 57.3 | 537.032 |

Note 1: Output power measured using a peak power meter

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

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

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

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

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

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

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

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

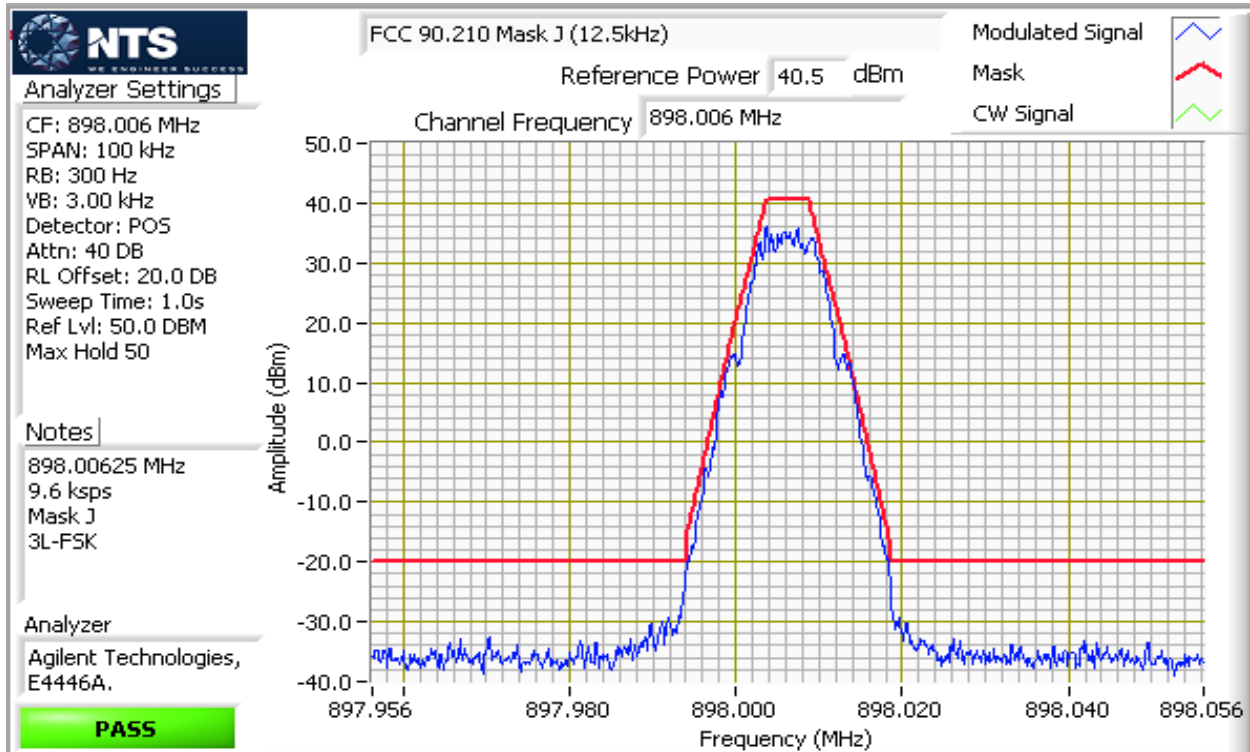
Run #2b: Spectral Mask at 928 - 929, 929 - 930, 932-944 & 952-953 MHz bands (RSS-119)

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

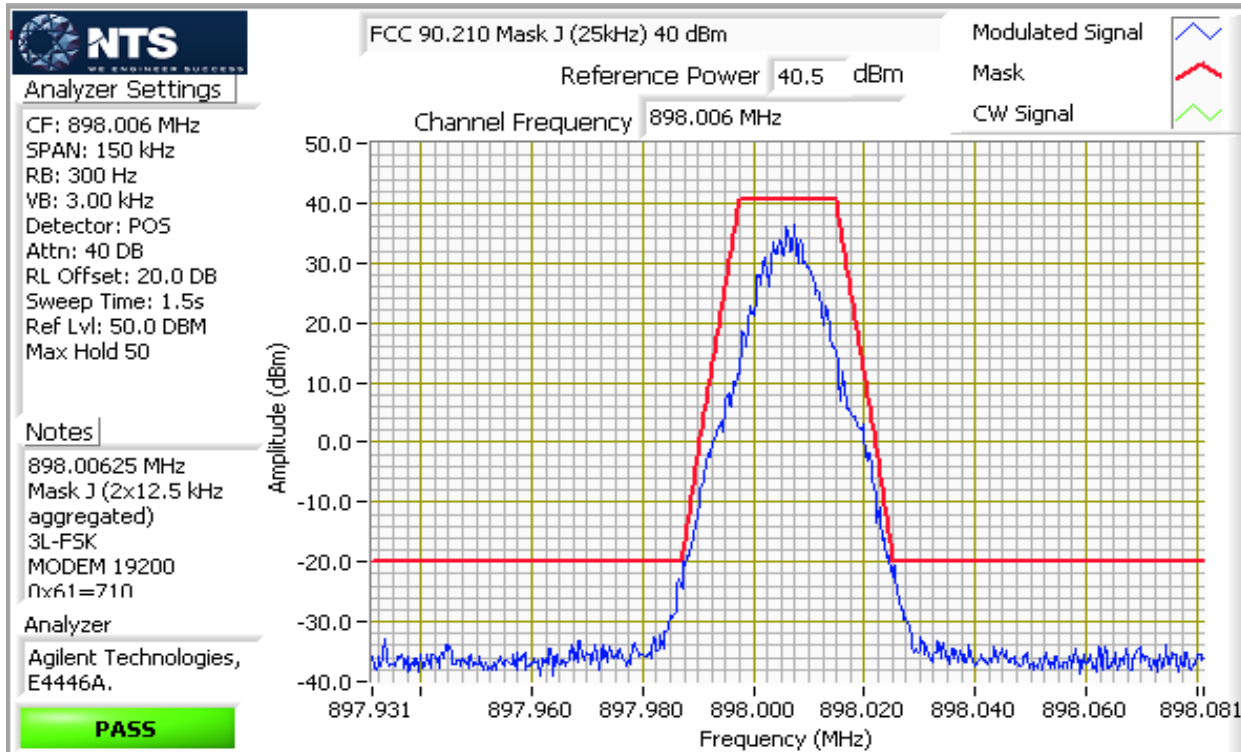
Run #2c: Spectral Mask at 929 - 930 MHz band (FCC Part 90)

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

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



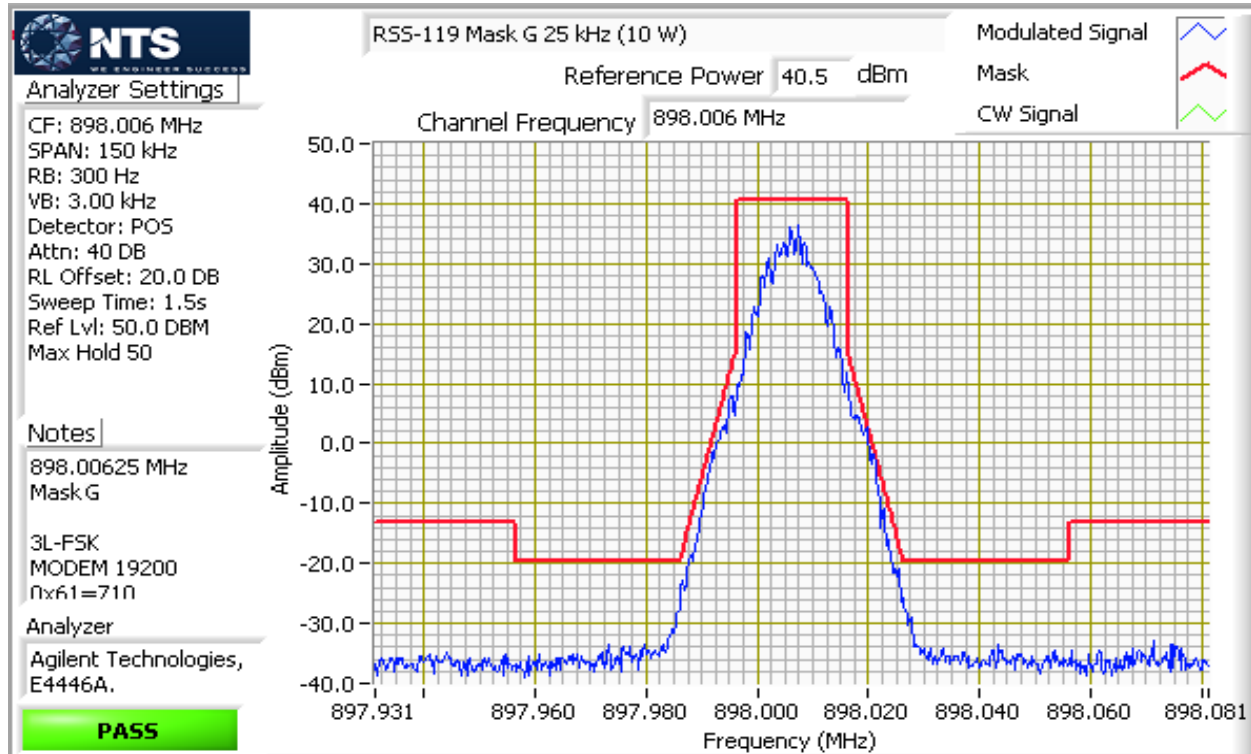
|                                         |                                    |
|-----------------------------------------|------------------------------------|
| Client: GE MDS LLC                      | Job Number: JD101659               |
| Model: LN900                            | T-Log Number: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





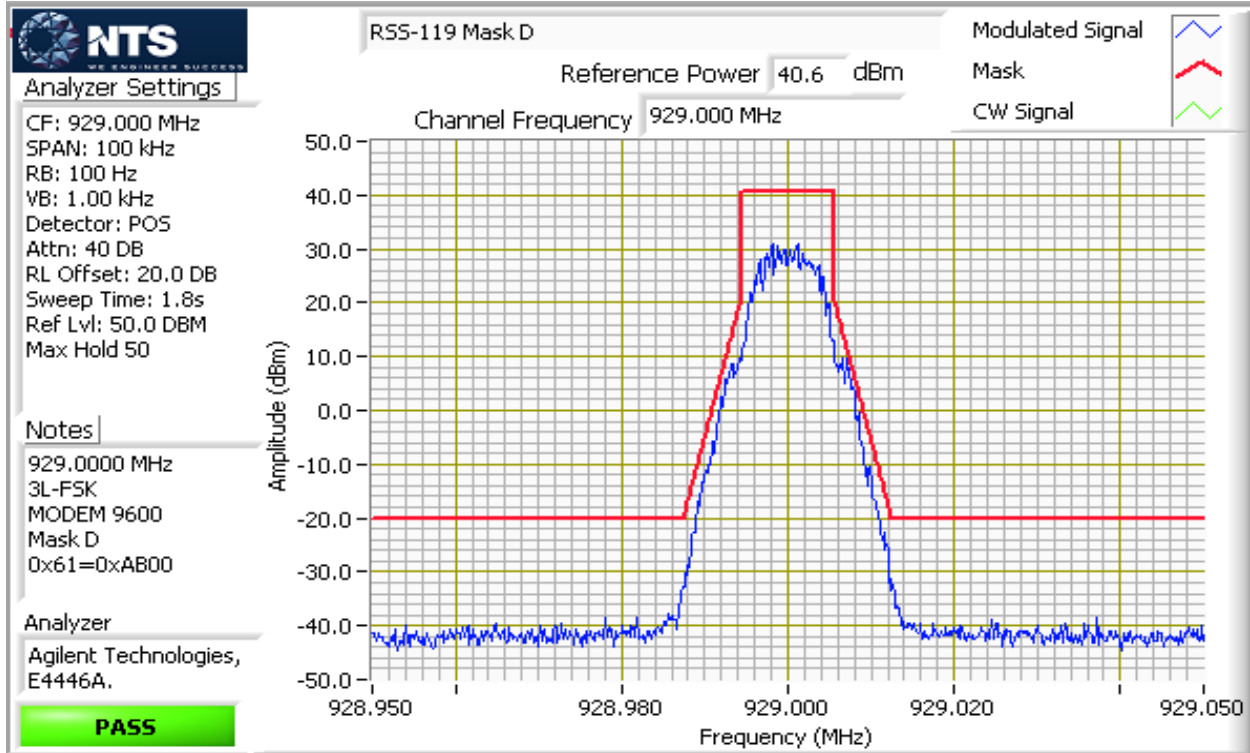
## EMC Test Data

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





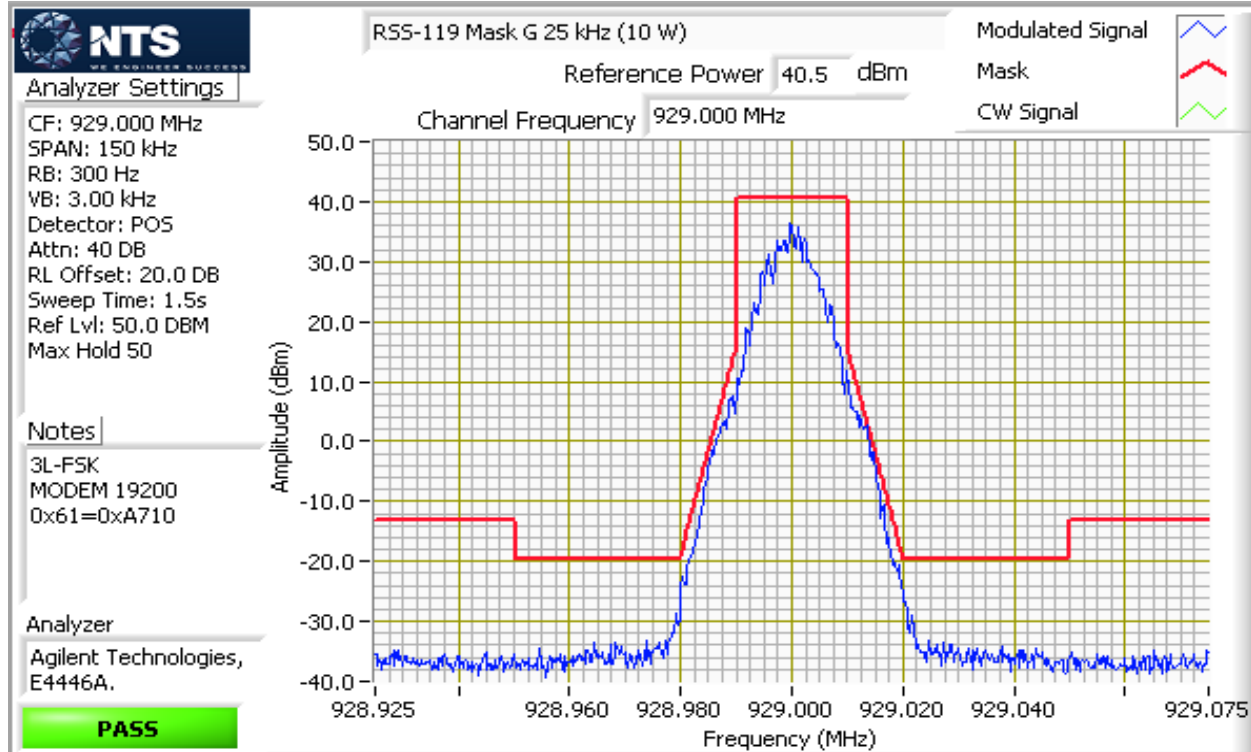
|                                         |                                    |
|-----------------------------------------|------------------------------------|
| Client: GE MDS LLC                      | Job Number: JD101659               |
| Model: LN900                            | T-Log Number: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



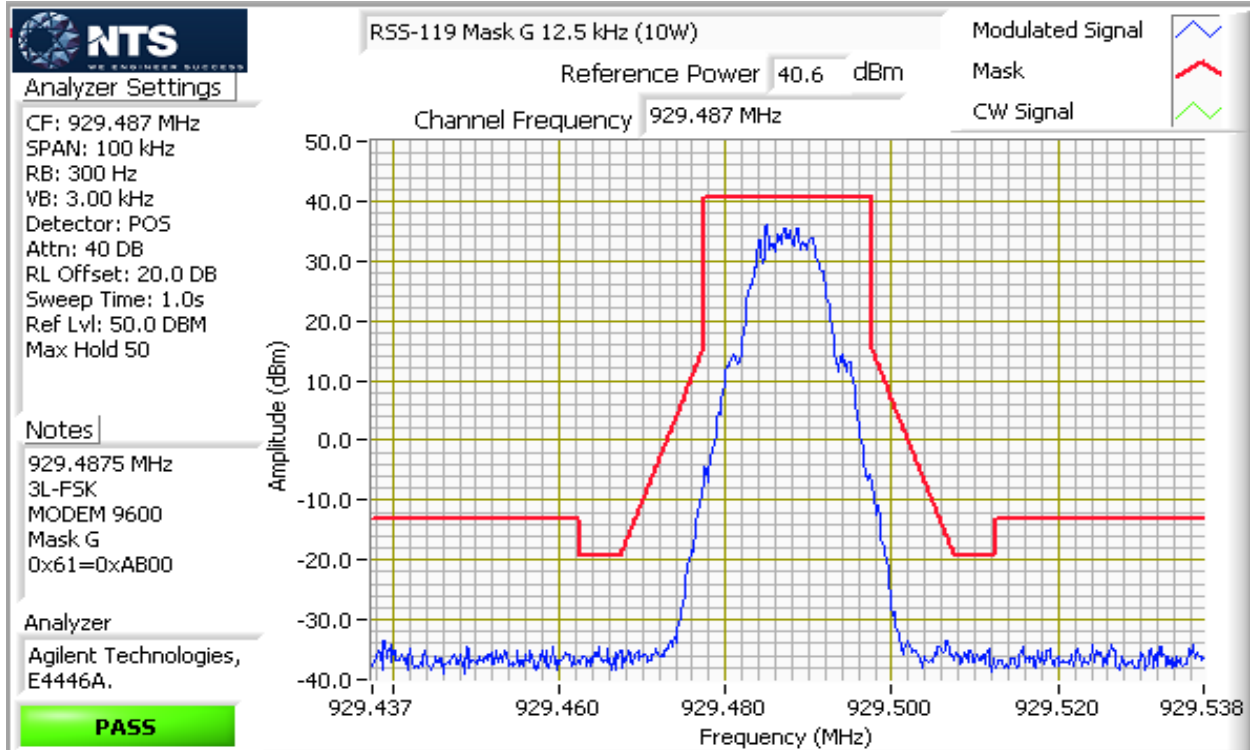


## EMC Test Data

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



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





## EMC Test Data

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

### Run #3: Signal Bandwidth

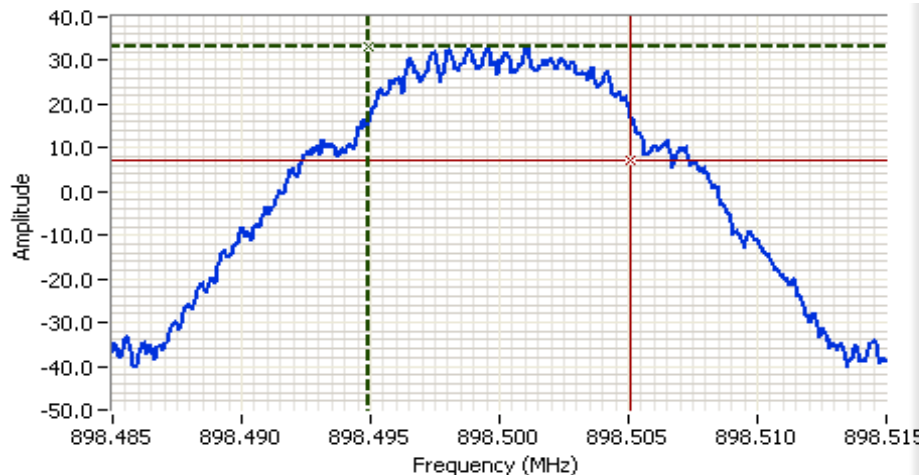
Date of Test: 23-May-16  
 Test Engineer: Deniz Demirci  
 Test Location: FT Lab #4

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

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

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

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



## Analyzer Settings

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

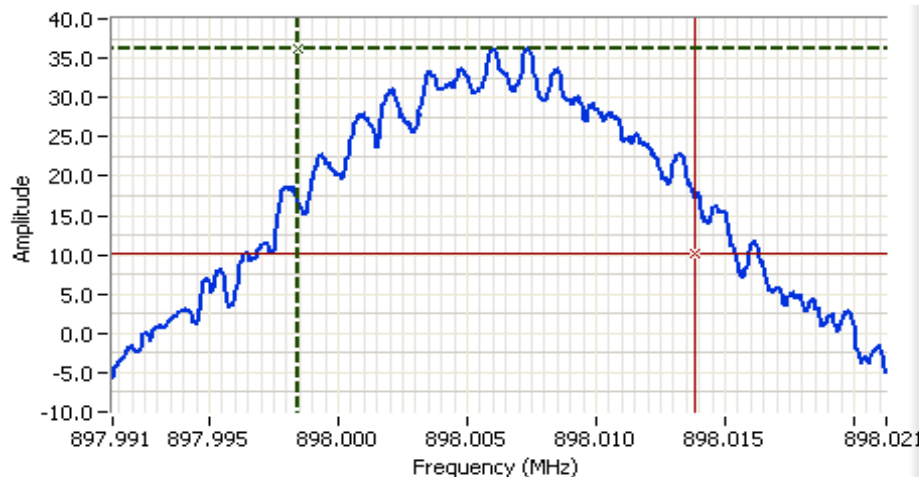
## Comments

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

|          |          |      |  |
|----------|----------|------|--|
| Cursor 1 | 898.4949 | 33.3 |  |
| Cursor 2 | 898.5051 | 7.3  |  |

Delta Freq. 10.2 kHz

Delta Amplitude 26.0



## Analyzer Settings

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

## Comments

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

|          |          |      |  |
|----------|----------|------|--|
| Cursor 1 | 897.9984 | 36.2 |  |
| Cursor 2 | 898.0138 | 10.2 |  |

Delta Freq. 15.4 kHz

Delta Amplitude 26.0



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

## FCC Part 101

### Power, Occupied Bandwidth, Frequency Stability and Spurious Emissions

#### Test Specific Details

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

#### General Test Configuration

All measurements are made with the EUT's rf port connected to the measurement instrument via an attenuator or dc-block if necessary. All amplitude measurements are adjusted to account for the attenuation between EUT and measuring instrument.

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

#### Summary of Results

| Run # | Spacing               | Data Rate             | Test Performed            | Limit                                    | Pass / Fail | Result / Margin      |
|-------|-----------------------|-----------------------|---------------------------|------------------------------------------|-------------|----------------------|
| 1     | -                     | -                     | Output Power              | Determined at time of Licensing          | Pass        | 40.7 dBm             |
| 2     | 12.5 kHz,<br>25.0 kHz | 9.6 ksps<br>19.2 ksps | Spectral Mask             | Part 101.111(a)(5)<br>Part 101.111(a)(6) | Pass        | Within mask          |
| 3     | 12.5 kHz,<br>25.0 kHz | 9.6 ksps<br>19.2 ksps | 99% or Occupied Bandwidth | 12.5, 25.0 and 200 kHz                   | Pass        | 10.2 kHz<br>15.4 kHz |

#### Modifications Made During Testing

No modifications were made to the EUT during testing

#### Deviations From The Standard

No deviations were made from the requirements of the standard.



## EMC Test Data

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

### Run #1: Output Power

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

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

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

Attenuator: 20.0 dB  
 Attenuator IDs: 1878

Total Loss: 20.0 dB

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

|         |                                                                                              |
|---------|----------------------------------------------------------------------------------------------|
| Note 1: | Output power measured using a peak power meter                                               |
| Note 2: | Power setting - the software power setting used during testing, included for reference only. |



## EMC Test Data

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

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

Date of Test: 5/24 & 5/26/2016

Test Engineer: Deniz Demirci

Test Location: FT Lab #4

Config. Used: 1

Config Change: none

EUT Voltage: 13.8 VDC

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

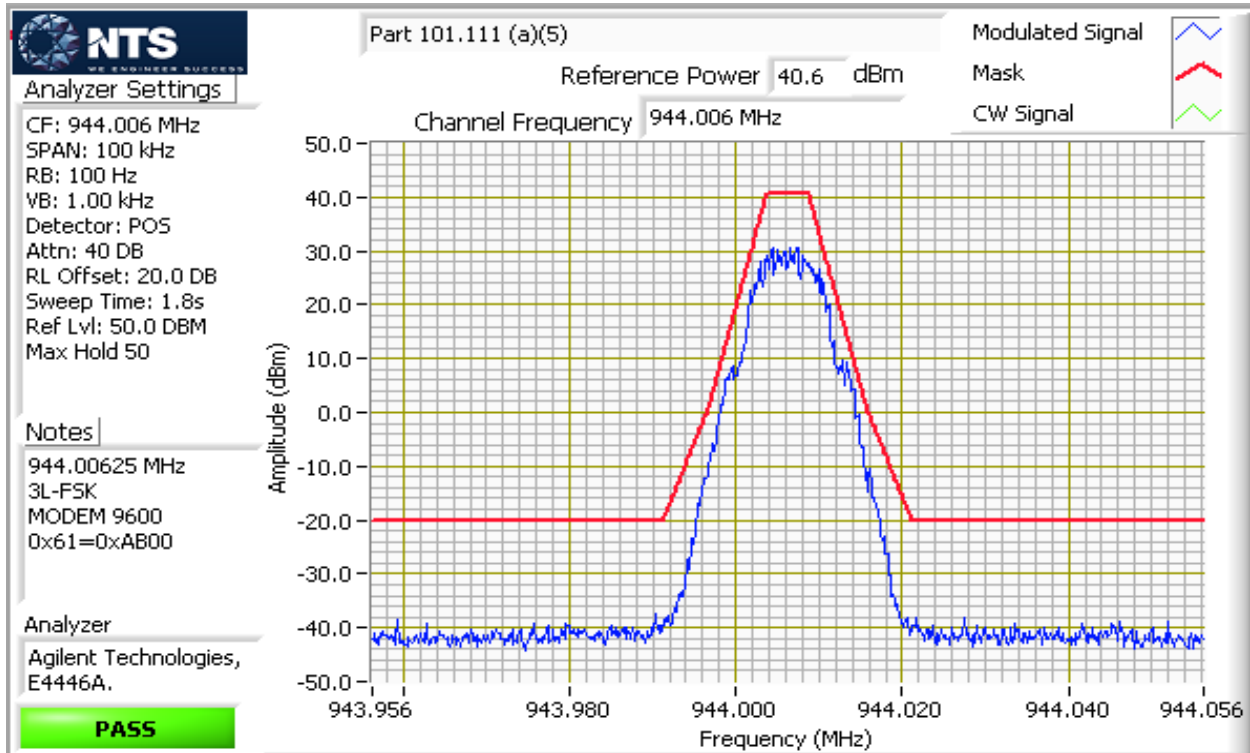
Spectral Mask at 928 - 960 MHz band (FCC Part 101)

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



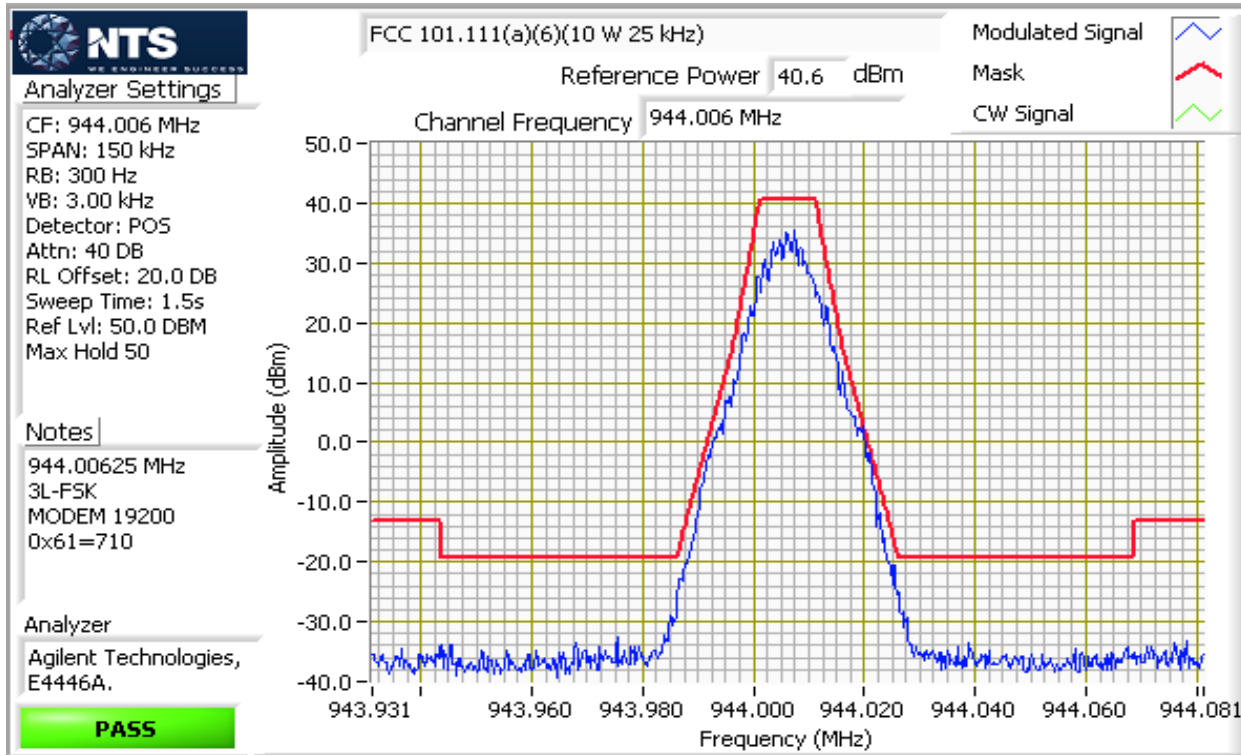
|                                         |                                    |
|-----------------------------------------|------------------------------------|
| Client: GE MDS LLC                      | Job Number: JD101659               |
| Model: LN900                            | T-Log Number: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

928 - 960 MHz, 12.5 kHz channel spacing.



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

928 - 960 MHz, 25 kHz channel spacing.





## EMC Test Data

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

### Run #3: Signal Bandwidth

Date of Test: 5/23 & 5/26/2016

Test Engineer: Deniz Demirci

Test Location: FT Lab #4

Config. Used: 1

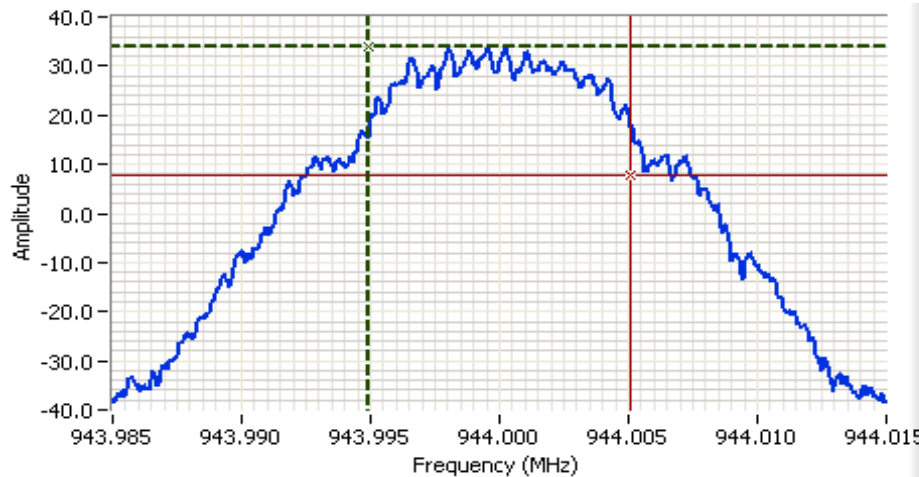
Config Change: none

EUT Voltage: 13.8 VDC

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

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

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



## Analyzer Settings

Agilent Technologies, E4446A  
 CF: 944.000 MHz  
 SPAN: 30.0 kHz  
 RB: 200 Hz  
 VB: 620 Hz  
 Detector: POS  
 Attn: 40 DB  
 RL Offset: 20.0 DB  
 Sweep Time: 0.4s  
 Ref Lvl: 50.0 DBM

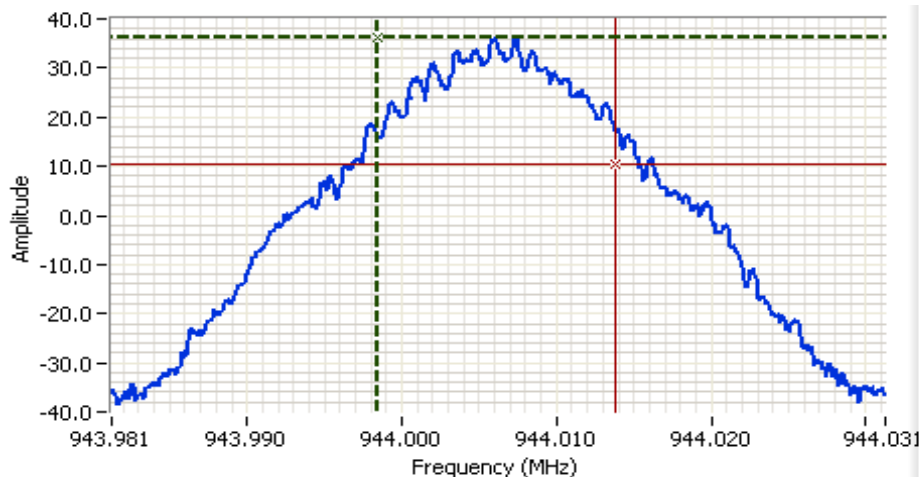
## Comments

99% power BW: 10.2 kHz  
 3L-FSK, 9.6 kpsps

Cursor 1 943.9949 33.9  
 Cursor 2 944.0051 7.9

Delta Freq. 10.2 kHz

Delta Amplitude 26.0



## Analyzer Settings

Agilent Technologies, E4446A  
 CF: 944.006 MHz  
 SPAN: 50.0 kHz  
 RB: 300 Hz  
 VB: 3.00 kHz  
 Detector: POS  
 Attn: 40 DB  
 RL Offset: 20.0 DB  
 Sweep Time: 0.5s  
 Ref Lvl: 50.0 DBM

## Comments

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

Cursor 1 943.9984 36.3  
 Cursor 2 944.0138 10.3

Delta Freq. 15.4 kHz

Delta Amplitude 26.0



### ***End of Report***

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