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Radio Test Report

FCC Part 27
757 MHz to 758 MHz and
787 MHz to 788 MHz

Model: Xeta7

COMPANY:	Xetawave LLC 258 S. Taylor Avenue Louisville, CO 80027
TEST SITE(S):	National Technical Systems - Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
REPORT DATE:	December 9, 2015
REISSUE DATE:	December 10, 2015
FINAL TEST DATES:	October 29, 30 and 31 and November 2, 3, 4, 5 and 6, 2015
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PROGRAM MGR / TECHNICAL REVIEWER:	QUALITY ASSURANCE DELEGATE / FINAL REPORT PREPARER:
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A2LA ACCREDITED
Testing Cert #0214.26

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	December 9, 2015	First release	-
1	December 10, 2015	Modulation type and EUT dimensions updated.	Deniz Demirci

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SCOPE

Tests have been performed on the Xetawave LLC model Xeta7, 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.

- Code of Federal Regulations (CFR) Title 47 Part 2
- CFR 47 Part 27 Subpart C (Operation in 746 - 758 MHz and 776 – 788 MHz Bands)

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

ANSI C63.4:2014
ANSI TIA-603-C August 17, 2004

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

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

The test results recorded herein are based on a single type test of the Xetawave LLC model Xeta7 and therefore apply only to the tested sample. The sample was selected and prepared by Sandee Malang of Xetawave 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.

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.).

Testing was performed only on model Xeta7.

STATEMENT OF COMPLIANCE

The tested sample of Xetawave LLC model Xeta7 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 27

FCC	Description	Measured	Limit	Result
Transmitter Modulation, output power and other characteristics				
§2.1033 (c) (5) §27.5 (i) (2)	Frequency range(s)	757 - 758 MHz 787 - 788 MHz	757 - 758 MHz 787 - 788 MHz	Pass
§2.1033 (c) (4) §2.1047	Modulation Type	MSK, QPSK, 8PSK, 16QAM and 32QAM	Any allowed	Pass
§2.1033 (c) (6) §2.1033 (c) (7) §2.1046 §27.50(b)	erp (Max 11 dBi antenna gain) §27.50(b)(1)	26.3[1] Watts to 20.4[2] Watts erp	757 - 758 MHz 1000 Watts erp	Pass
	erp (Max 11dBi antenna gain) §27.50(b)(9)	26.3[1] Watts to 20.0[2] Watts erp	787 - 788 MHz 30 Watts erp	Pass
§2.1049 §27.53	Occupied Bandwidth	See Run #2 and Run #3	Remain in Block	Pass
Transmitter spurious emissions				
§2.1051 §2.1053 §2.1057 §27.53(c)(1) §27.53(c)(2) §27.53(f)	At the antenna terminals	-17.4 dBm @ 789.367 MHz	-13 dBm	Pass/ -4.0 dB
	Field strength	-35.3 dBm@ 867.61 MHz	-13 dBm	Pass/ -22.3 dB
	Field strength at 1559 – 1610 MHz (With max gain of 11 dBi antenna)	-48.5 dBm @ 1574.8 MHz	-40 dBm/MHz eirp	Pass/ -8.5 dB
Other details				
§2.1055 §27.54	Frequency stability	542 Hz	Remain in block	Pass
§2.1051 §2.1053 §2.1057	Nominal conducted RF power	35 dBm, for 12.5 kHz and 25 kHz channel spacing operations. 34 dBm, for 50 kHz, 100 kHz, 200 kHz and 250 kHz channel spacing operations.		
§2.1093	RF Exposure	Refer to separate exhibit.		
§2.1033 (c) (8)	Final radio frequency amplifying circuit's dc voltages and currents for normal operation over the power range	Refer to operational description.		
Notes Note 1 – Maximum calculated erp for 12.5 kHz and 25 kHz channel spacing . Note 2 – Maximum calculated erp for 50 kHz, 100 kHz, 200 kHz and 250 kHz channel spacing.				

EXTREME CONDITIONS

Frequency stability is determined over extremes of temperature and voltage. The extremes of voltage were 85 to 115 percent of the nominal value.

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

MEASUREMENT UNCERTAINTIES

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

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF frequency	Hz	25 to 7,000 MHz	1.7×10^{-7}
RF power, conducted	dBm	25 to 7,000 MHz	± 0.52 dB
Conducted emission of transmitter	dBm	25 to 40,000 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 40,000 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 40,000 MHz	± 2.5 dB
Radiated emission (field strength)	dBµV/m	25 to 1,000 MHz 1 to 40 GHz	± 3.6 dB ± 6.0 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Xetawave LLC model Xeta7 is a radio module which is designed to be used for licensed radio operations for private data transmission networking or telemetry. Since the EUT would be placed on a tabletop during operation, the EUT was treated as tabletop equipment during testing to simulate the worst case user environment. The electrical rating of the EUT is 7.5 Volts DC, 3 Amps.

The sample was received on October 29, 2015 and tested on October 29, 30 and 31 and November 2, 3, 4, 5 and 6, 2015. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
XetaWave	Xeta7	Radio Module	-	-

OTHER EUT DETAILS

The highest internal source of the EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. In some cases, the highest internal source determines the frequency range of test for radiated emissions. The highest internal source of the EUT was declared as: 901 MHz (1st LO).

757 - 758 MHz band of operations;
EUT transmits 12.5 kHz, 25 kHz, 50 kHz, 100 kHz, 200 kHz and 250 kHz channel spacing with MSK, QPSK, 8PSK, 16QAM and 32QAM modulations.

787 - 788 MHz band of operations;
EUT transmits 12.5 kHz, 25 kHz, 50 kHz, 100 kHz, 200 kHz and 250 kHz channel spacing with MSK, QPSK, 8PSK, 16QAM and 32QAM modulations.

ENCLOSURE

The EUT does not have an enclosure. The radio module dimensions are 50 mm x 35 mm x 10 mm.

MODIFICATIONS

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

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Larsen	YA5740W	740 - 806 MHz Yagi Antenna	-	-
Xetawave	-	Heat sink	-	-
HP	6024A	AC/DC power supply	Asset# 3004	-

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

Company	Model	Description	Serial Number	FCC ID
HP	Pavilion dv7	Laptop	-	-

Note: The computer was used to configure the radio via serial port. It was not connected during the radiated emission tests.

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
DC power	AC/DC power supply	DC power cable	Unshielded.	1

EUT OPERATION

During emissions testing the EUT was transmitting with the rated RF power in each required modulation types and data rates.

TESTING

GENERAL INFORMATION

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

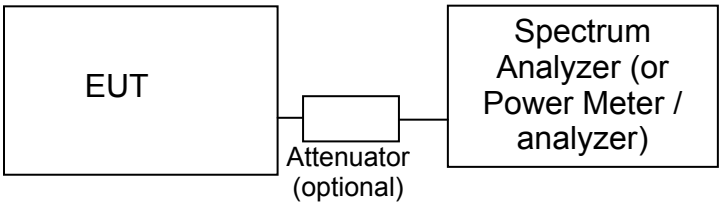
Radiated spurious emissions measurements were taken at the National Technical Systems - Silicon Valley Anechoic Chambers and/or Open Area Test Site(s) listed below. The sites conform to the requirements of ANSI C63.4: 2014 *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz* and CISPR 16-1-4:2007 - *Specification for radio disturbance and immunity measuring apparatus and methods Part 1-4: Radio disturbance and immunity measuring apparatus Ancillary equipment Radiated disturbances*. They are on file with the FCC and industry Canada.

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

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

RF PORT MEASUREMENT PROCEDURES

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



Test Configuration for Antenna Port Measurements

OUTPUT POWER

Output power is measured using 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 ERP 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). For transmitter measurements the appropriate detector (average, peak, normal, sample, quasi-peak) is used when making measurements for licensed devices.

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

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 20 dB of this limit are the subjected to a substitution measurement.

All radiated emissions measurements are performed in two phases. A preliminary scan of emissions is conducted in an anechoic chamber 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 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. For the final measurement the appropriate detectors (average, peak, normal, sample, quasi-peak) are used.

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

INSTRUMENTATION

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

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

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

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

FILTERS/ATTENUATORS

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

ANTENNAS

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

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

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

ANTENNA MAST AND EQUIPMENT TURNTABLE

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

Table mounted devices are placed on a non-conductive table at a height of 80 centimeters above the floor. Floor mounted equipment is placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. The EUT is positioned on a motorized turntable to allow it to be rotated during testing to determine the angel with the highest level of emissions.

SAMPLE CALCULATIONS

SAMPLE CALCULATIONS - CONDUCTED SPURIOUS EMISSIONS

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

$$R_r - S = M$$

where:

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

SAMPLE CALCULATIONS –RADIATED FIELD STRENGTH

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

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

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

where:

F_d = Distance Factor in dB
D_m = Measurement Distance in meters
D_s = Specification Distance in meters

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBµV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBµV/m

L_s = Specification Limit in dBµV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS –RADIATED POWER

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

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

where:

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

The field strength limit is then converted to decibel form (dBµV/m) and the margin of a given emission peak relative to the limit is calculated (refer to *SAMPLE CALCULATIONS –RADIATED FIELD STRENGTH*).

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

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

and

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

where:

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

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

Appendix A Test Equipment Calibration Data

Radiated Emissions, 30 - 10,000 MHz, 29-Oct-15

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/26/2014	6/26/2016
Filtek	Filter, 1 GHz High Pass	HP12/1000-5BA	957	5/11/2015	5/11/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	7/6/2015	7/6/2016
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	10/9/2015	10/9/2016
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	2237	8/29/2014	8/29/2016
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	2415	3/7/2015	3/7/2016

Substitution Measurements, 29-Oct-15

Agilent Technologies	PSG, Vector Signal Generator, (250kHz - 20GHz)	E8267C	1877	6/16/2015	6/16/2016
Compliance Design	Tuned Dipole Antenna	Roberts (400-1000MHz)	1896	1/2/2014	1/2/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	487	7/29/2014	7/29/2016

Antenna port measurements, 03-Nov-15

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
NTS	NTS EMI Software (rev 2.10)	N/A	0		N/A
NTS	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Rohde & Schwarz	Power Meter, Single Channel, +1795+1796	NRVS	1534	7/20/2015	7/20/2016
Rohde & Schwarz	Peak Power Sensor 100 uW - 2 Watts (w/ 20 dB pad, SN BJ5155)	NRV-Z32	1536	1/15/2015	1/15/2016
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/22/2015	6/22/2016

Frequency stability, 04-Nov-15

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
NTS	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Fluke	Mulitmeter, True RMS	111	1480	3/30/2015	3/30/2016
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/22/2015	6/22/2016
Watlow	Temp Chamber (w/ F4 Watlow Controller)	F4	2170	7/14/2015	7/14/2016

Radiated Emissions, 1,000 - 10,000 MHz, 05-Nov-15

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/26/2015	3/26/2016
Hewlett Packard	SpecAn 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
Filtek	Filter, 1 GHz High Pass	HP12/1000-5BA	957	5/11/2015	5/11/2016

Antenna port measurements, 06-Nov-15

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Rohde & Schwarz	Power Meter, Single Channel, +1795+1796	NRVS	1534	7/20/2015	7/20/2016
Rohde & Schwarz	Peak Power Sensor 100 uW - 2 Watts (w/ 20 dB pad, SN BJ5155)	NRV-Z32	1536	1/15/2015	1/15/2016
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/22/2015	6/22/2016

Radiated Emissions, 30 - 10,000 MHz, 06-Nov-15

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	3/26/2015	3/26/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	487	7/29/2014	7/29/2016
Filtek	Filter, 1 GHz High Pass	HP12/1000-5BA	957	5/11/2015	5/11/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	7/6/2015	7/6/2016
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	2237	8/29/2014	8/29/2016
Com-Power	Preamplifier, 1-1000 MHz	PAM-103	2885	10/13/2015	10/13/2016

Appendix B Test Data

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Client:	Xetawave LLC	Job Number:	JD99786
Product	Xeta7	T-Log Number:	T99881
System Configuration:	-	Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Emissions Standard(s):	FCC Part 27	Class:	A
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Xetawave LLC

Product

Xeta7

Date of Last Test: 12/2/2015

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

FCC Part 27

Power, Occupied Bandwidth, Frequency Stability and Spurious Emissions

Test Specific Details

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

General Test Configuration

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

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

Ambient Conditions:

Temperature: 20-22 °C

Rel. Humidity: 30-35 %

Summary of Results

Run #	Spacing	Data Rate	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	1000 W e.r.p.	Pass	Conducted, 34.2 - 35.3 dBm
2	-	-	Band Edge / Block Edge	- 13 dBm	Pass	Within the band/block
3	-	-	99 % or Occupied Bandwidth	-	-	See Run #3
4	-	-	Spurious Emissions (conducted)	- 13 dBm	Pass	-17.4 dBm @ 789.367 MHz (-4.0 dB)
5	-	-	Spurious emissions (radiated)	- 13 dBm e.r.p. 1559-1610 MHz -40 dBm/MHz e.i.r.p.	Pass	-48.5 dBm @ 1574.8 MHz (-8.5 dB)
6	-	-	Frequency Stability	Emissions must be within the band	Pass	within the band Max. dev. 542 Hz

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #1: Output Power

27.50(11) (b)

Date of Test: 10/31/2015, 11/2/2015, 11/3/2015 Config. Used: 1

Test Engineer: Deniz Demirci Config Change: None

Test Location: FT Lab #4b EUT Voltage: 7.5 VDC

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

Cable ID(s): 0 Attenuator IDs: #1878, #2097

Run #1a: Output power at 757-758 MHz band

Power setting	Frequency (MHz)	Modulation	Channel plan	Output Power (dBm) [1]	Output Power W	Ant. Gain (dBi)	Result	ERP (dBm)[3]	ERP W
21000	757.5	MSK	12.5 kHz	35.3	3.39	11.0	Pass	44.2	26.303
26000	757.5	QPSK	12.5 kHz	35.0	3.16	11.0	Pass	43.9	24.547
26000	757.5	8PSK	12.5 kHz	35.0	3.16	11.0	Pass	43.9	24.547
26000	757.5	16QAM	12.5 kHz	35.0	3.16	11.0	Pass	43.9	24.547
26000	757.5	32QAM	12.5 kHz	35.0	3.16	11.0	Pass	43.9	24.547
18000	757.5	MSK	25.0 kHz	35.3	3.39	11.0	Pass	44.2	26.303
25000	757.5	QPSK	25.0 kHz	35.0	3.16	11.0	Pass	43.9	24.547
25000	757.5	8PSK	25.0 kHz	35.0	3.16	11.0	Pass	43.9	24.547
25000	757.5	16QAM	25.0 kHz	35.0	3.16	11.0	Pass	43.9	24.547
25000	757.5	32QAM	25.0 kHz	35.0	3.16	11.0	Pass	43.9	24.547
14000	757.5	MSK	50.0 kHz	34.1	2.57	11.0	Pass	43.0	19.953
14000	757.5	QPSK	50.0 kHz	34.1	2.57	11.0	Pass	43.0	19.953
14000	757.5	8PSK	50.0 kHz	34.1	2.57	11.0	Pass	43.0	19.953
18000	757.5	16QAM	50.0 kHz	34.0	2.51	11.0	Pass	42.9	19.498
18000	757.5	32QAM	50.0 kHz	34.1	2.57	11.0	Pass	43.0	19.953
13200	757.5	MSK	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14200	757.5	QPSK	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14200	757.5	8PSK	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14200	757.5	16QAM	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14200	757.5	32QAM	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14000	757.5	MSK	200 kHz	34.1	2.57	11.0	Pass	43.0	19.953
15000	757.5	QPSK	200 kHz	34.0	2.51	11.0	Pass	42.9	19.498
15000	757.5	8PSK	200 kHz	34.0	2.51	11.0	Pass	42.9	19.498
15000	757.5	16QAM	200 kHz	34.0	2.51	11.0	Pass	42.9	19.498
15000	757.5	32QAM	200 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14000	757.5	MSK	250 kHz	34.2	2.63	11.0	Pass	43.1	20.417
15000	757.5	QPSK	250 kHz	34.1	2.57	11.0	Pass	43.0	19.953
15000	757.5	8PSK	250 kHz	34.0	2.51	11.0	Pass	42.9	19.498
15000	757.5	16QAM	250 kHz	34.1	2.57	11.0	Pass	43.0	19.953
15000	757.5	32QAM	250 kHz	34.0	2.51	11.0	Pass	42.9	19.498

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #1b: Output power at 787-788 MHz band.

Power setting	Frequency (MHz)	Modulation	Channel plan	Output Power (dBm) [1]	Output Power W	Ant. Gain (dBi)	Result	ERP (dBm) [3]	ERP W
18000	787.5	MSK	12.5 kHz	35.3	3.39	11.0	Pass	44.2	26.303
26500	787.5	QPSK	12.5 kHz	35.0	3.16	11.0	Pass	43.9	24.547
26500	787.5	8PSK	12.5 kHz	35.1	3.24	11.0	Pass	44.0	25.119
26500	787.5	16QAM	12.5 kHz	35.1	3.24	11.0	Pass	44.0	25.119
26500	787.5	32QAM	12.5 kHz	35.0	3.16	11.0	Pass	43.9	24.547
16000	787.5	MSK	25.0 kHz	35.0	3.16	11.0	Pass	43.9	24.547
26000	787.5	QPSK	25.0 kHz	35.1	3.24	11.0	Pass	44.0	25.119
26000	787.5	8PSK	25.0 kHz	35.0	3.16	11.0	Pass	43.9	24.547
26000	787.5	16QAM	25.0 kHz	35.1	3.24	11.0	Pass	44.0	25.119
26000	787.5	32QAM	25.0 kHz	35.0	3.16	11.0	Pass	43.9	24.547
12000	787.5	MSK	50.0 kHz	34.0	2.51	11.0	Pass	42.9	19.498
8800	787.5	QPSK	50.0 kHz	34.0	2.51	11.0	Pass	42.9	19.498
9800	787.5	8PSK	50.0 kHz	34.1	2.57	11.0	Pass	43.0	19.953
8800	787.5	16QAM	50.0 kHz	34.1	2.57	11.0	Pass	43.0	19.953
8800	787.5	32QAM	50.0 kHz	34.0	2.51	11.0	Pass	42.9	19.498
12000	787.5	MSK	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
13200	787.5	QPSK	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
13200	787.5	8PSK	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
13300	787.5	16QAM	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
13300	787.5	32QAM	100 kHz	34.0	2.51	11.0	Pass	42.9	19.498
12500	787.5	MSK	200 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14000	787.5	QPSK	200 kHz	34.1	2.57	11.0	Pass	43.0	19.953
14200	787.5	8PSK	200 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14200	787.5	16QAM	200 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14200	787.5	32QAM	200 kHz	34.0	2.51	11.0	Pass	42.9	19.498
12500	787.5	MSK	250 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14200	787.5	QPSK	250 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14200	787.5	8PSK	250 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14500	787.5	16QAM	250 kHz	34.0	2.51	11.0	Pass	42.9	19.498
14500	787.5	32QAM	250 kHz	34.0	2.51	11.0	Pass	42.9	19.498

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:	Transmit power (erp) = Output Power (dBm) + Ant. Gain (dBi) - 2.1

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #2: Band edge/Block edge

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

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

Date of Test: 10/31/2015, 11/3/2015
Test Engineer: Deniz Demirci
Test Location: FT Lab #4b

Config. Used: 1
Config Change: None
EUT Voltage: 7.5 VDC

Run #2a: Block edge at 757 MHz

Power setting	Data rate	Channel plan	Modulation	Channel Frequency (MHz)	Measured dBm	Limit dBm	Result Pass/Fail
21000	10 kbps	12.5 kHz	MSK	757.031250	**-13.3**	-13.00	Pass
26000	23 kbps	12.5 kHz	QPSK	757.031250	-14.2	-13.00	Pass
26000	34 kbps	12.5 kHz	8PSK	757.031250	-15.6	-13.00	Pass
26000	45 kbps	12.5 kHz	16QAM	757.031250	-15.5	-13.00	Pass
26000	57 kbps	12.5 kHz	32QAM	757.031250	-14.8	-13.00	Pass
18000	19 kbps	25.0 kHz	MSK	757.043750	-15.4	-13.00	Pass
25000	36 kbps	25.0 kHz	QPSK	757.043750	-15.7	-13.00	Pass
25000	52 kbps	25.0 kHz	8PSK	757.043750	**-14.2**	-13.00	Pass
25000	70 kbps	25.0 kHz	16QAM	757.043750	-15.8	-13.00	Pass
25000	87 kbps	25.0 kHz	32QAM	757.043750	-16.7	-13.00	Pass
18000	39 kbps	50.0 kHz	MSK	757.062500	-14.4	-13.00	Pass
25000	71 kbps	50.0 kHz	QPSK	757.062500	**-13.3**	-13.00	Pass
25000	101 kbps	50.0 kHz	8PSK	757.062500	-13.8	-13.00	Pass
25000	137 kbps	50.0 kHz	16QAM	757.062500	-15.2	-13.00	Pass
25000	175 kbps	50.0 kHz	32QAM	757.062500	-14.6	-13.00	Pass
13200	76 kbps	100 kHz	MSK	757.168750	-17.6	-13.00	Pass
14200	160 kbps	100 kHz	QPSK	757.168750	**-15.5**	-13.00	Pass
14200	240 kbps	100 kHz	8PSK	757.168750	-15.8	-13.00	Pass
14200	320 kbps	100 kHz	16QAM	757.168750	-17.7	-13.00	Pass
14200	400 kbps	100 kHz	32QAM	757.168750	-18.6	-13.00	Pass

Note 1:	50 kHz channel plan operation power settings were higher than regulatory power settings (35 dBm) for band edge measurements which give worst case margins.

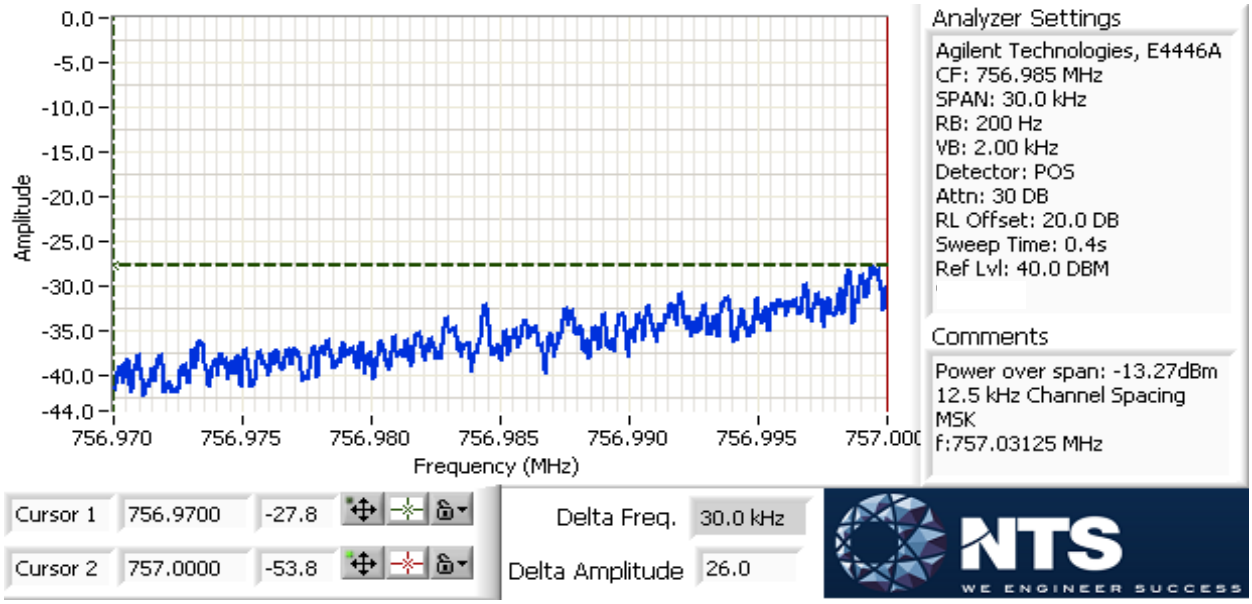
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

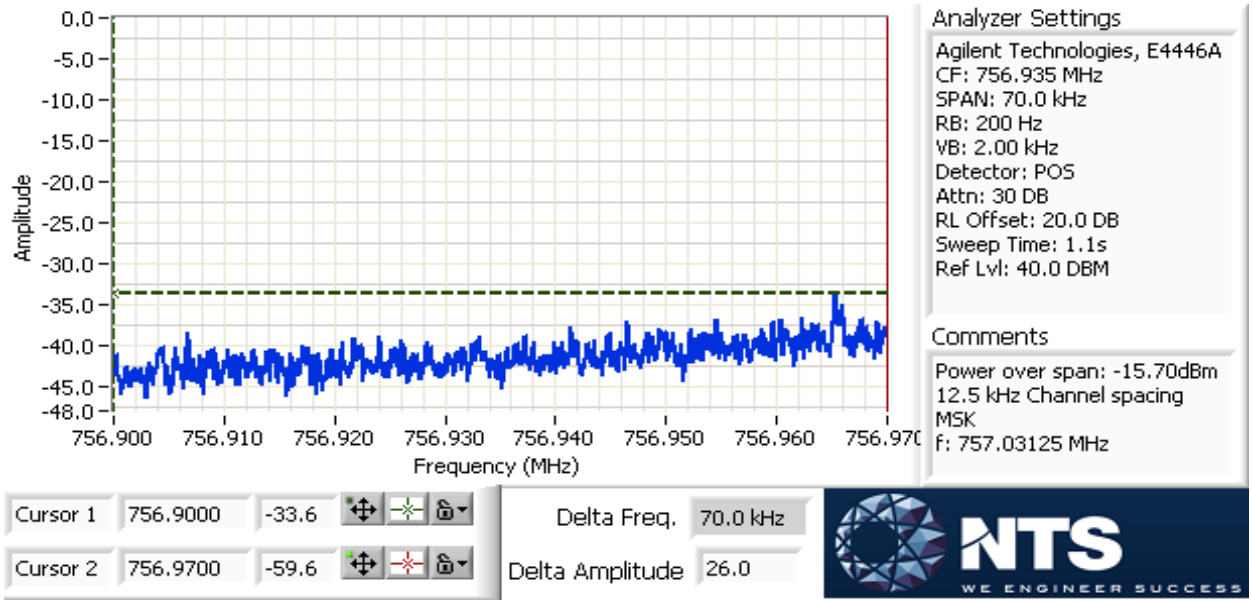
Run #2a: Block edge at 757 MHz

Power setting	Data rate	Channel plan	Modulation	Channel Frequency (MHz)	Measured dBm	Limit dBm	Result Pass/Fail
12500	153 kbps	200 kHz	MSK	757.243750	-16.9	-13.00	Pass
14000	320 kbps	200 kHz	QPSK	757.243750	-18.7	-13.00	Pass
14200	480 kbps	200 kHz	8PSK	757.243750	**-16.6**	-13.00	Pass
14200	640 kbps	200 kHz	16QAM	757.243750	-17.7	-13.00	Pass
14200	800 kbps	200 kHz	32QAM	757.243750	-18.5	-13.00	Pass
12500	194 kbps	250 kHz	MSK	757.300000	-17.1	-13.00	Pass
14200	403 kbps	250 kHz	QPSK	757.300000	-17.7	-13.00	Pass
14200	605 kbps	250 kHz	8PSK	757.300000	**-16.9**	-13.00	Pass
14500	806 kbps	250 kHz	16QAM	757.300000	-18.4	-13.00	Pass
14500	1008 kbps	250 kHz	32QAM	757.300000	-19.6	-13.00	Pass

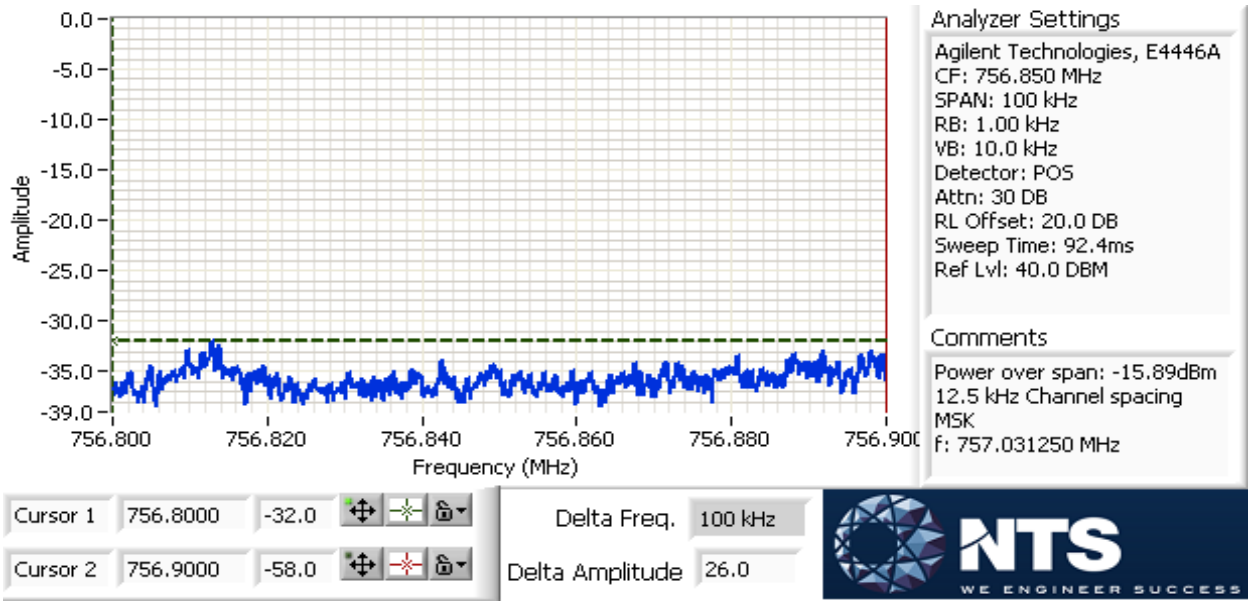
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 757 MHz, 12.5 kHz channel spacing (RF power: 35 dBm)



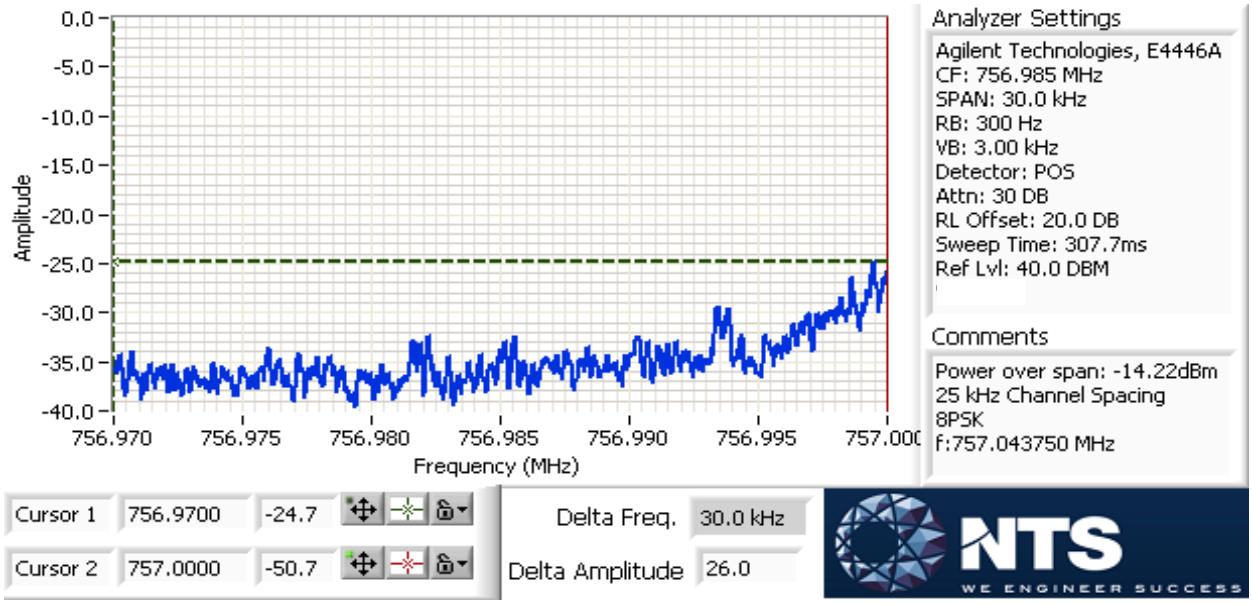


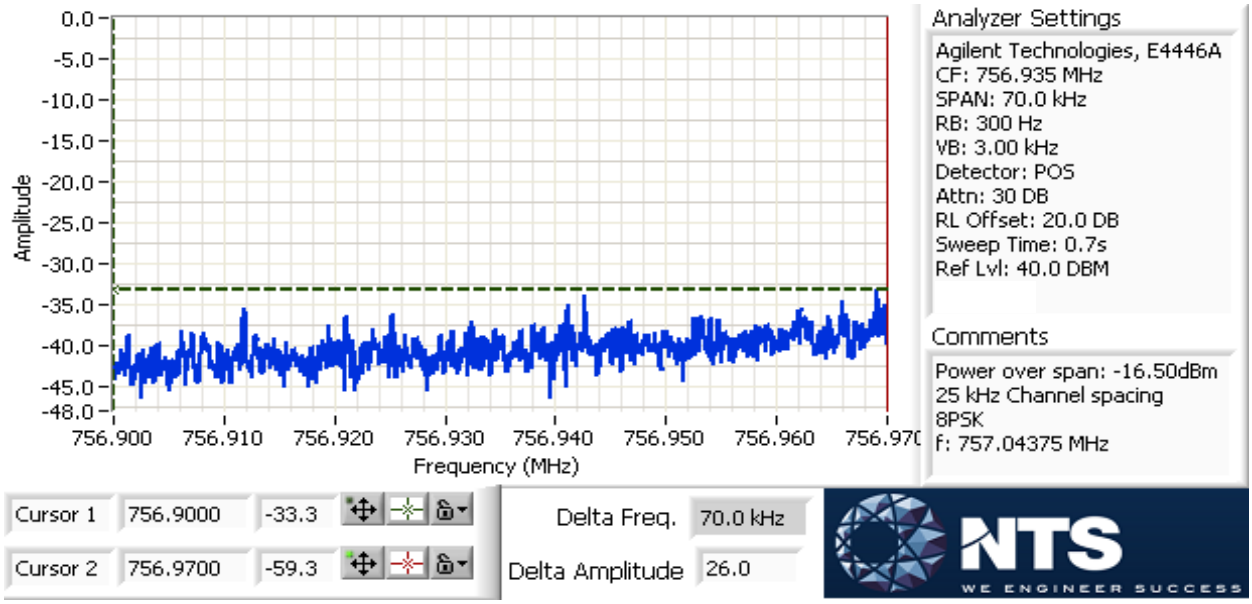
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



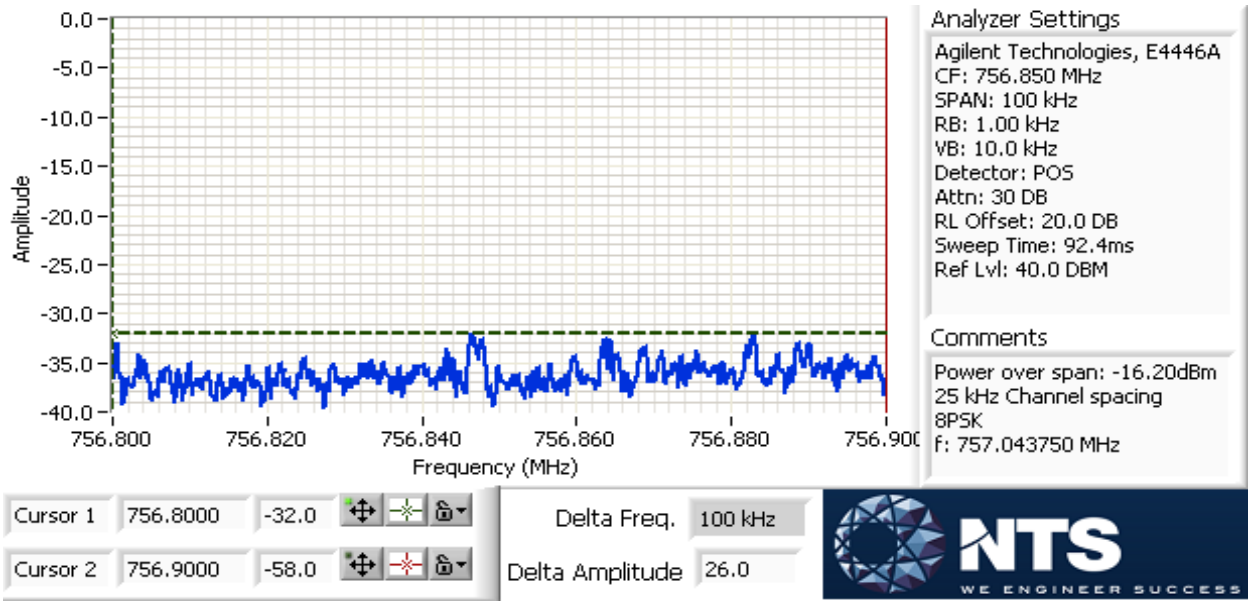
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 757 MHz, 25 kHz channel spacing (RF power: 35 dBm)



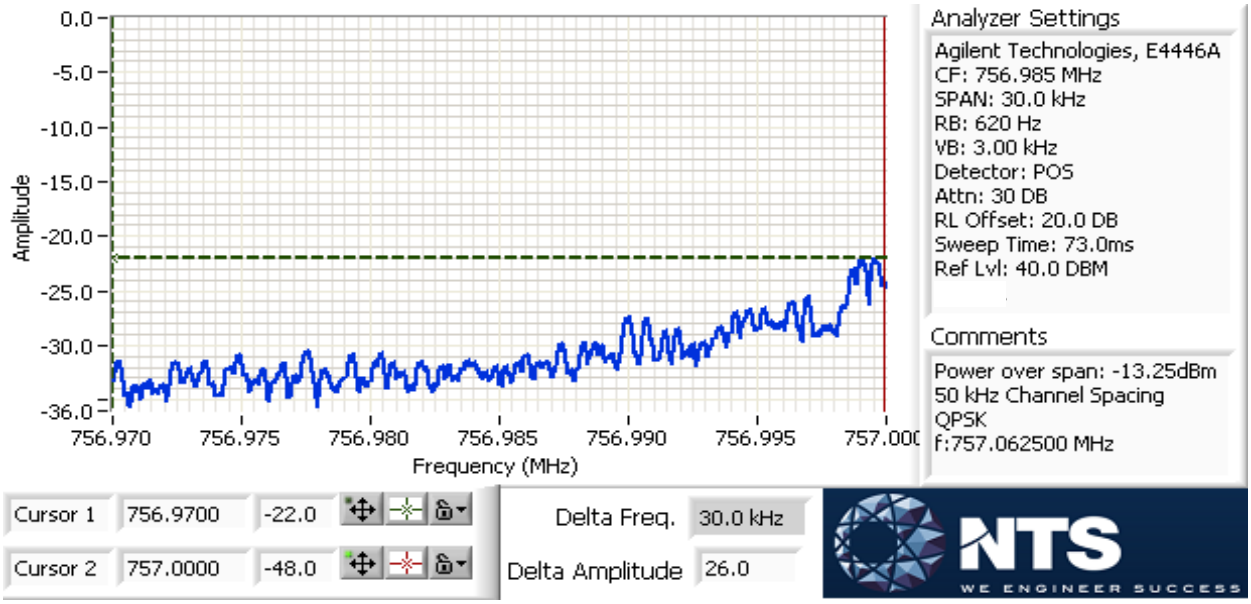


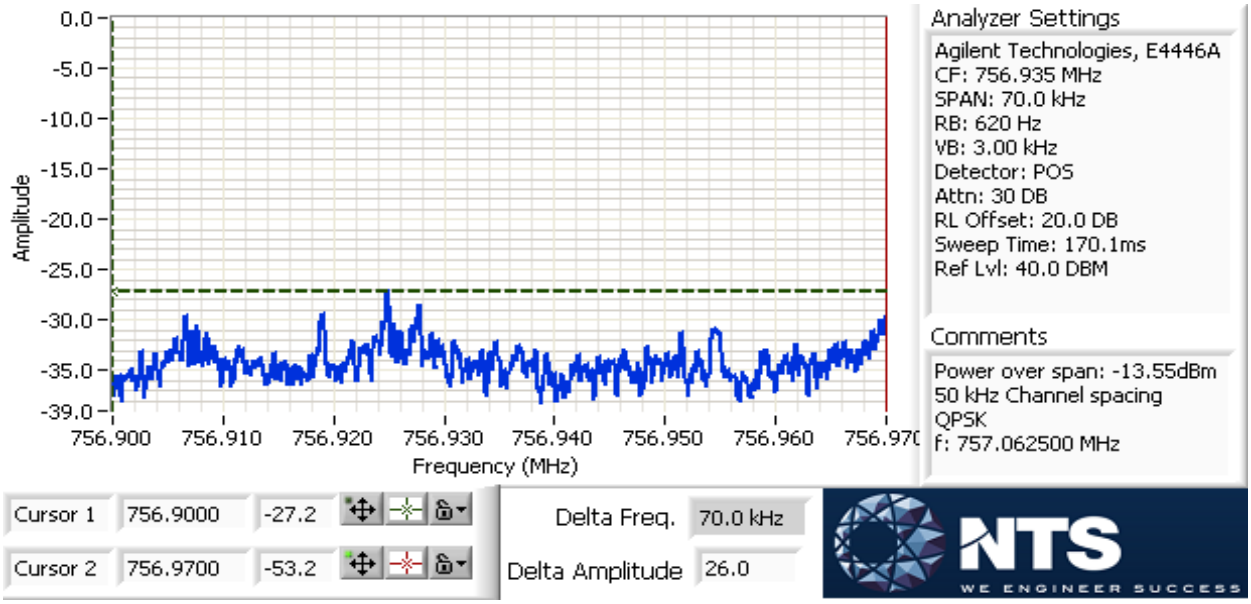
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



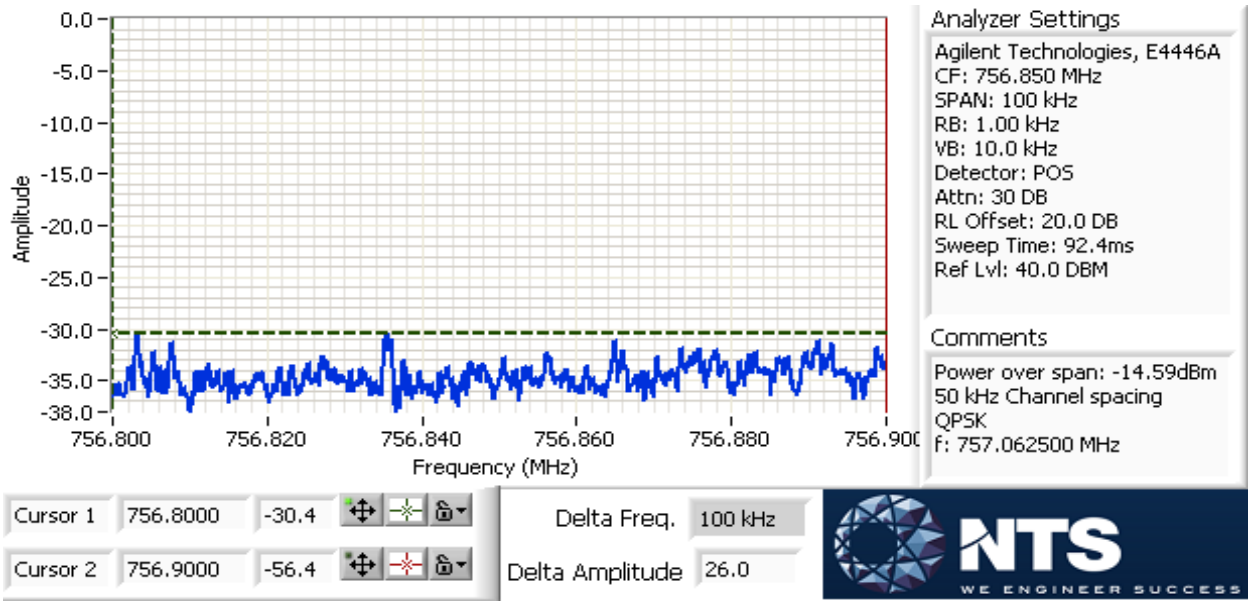
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 757 MHz, 50 kHz channel spacing (RF power: 35 dBm)



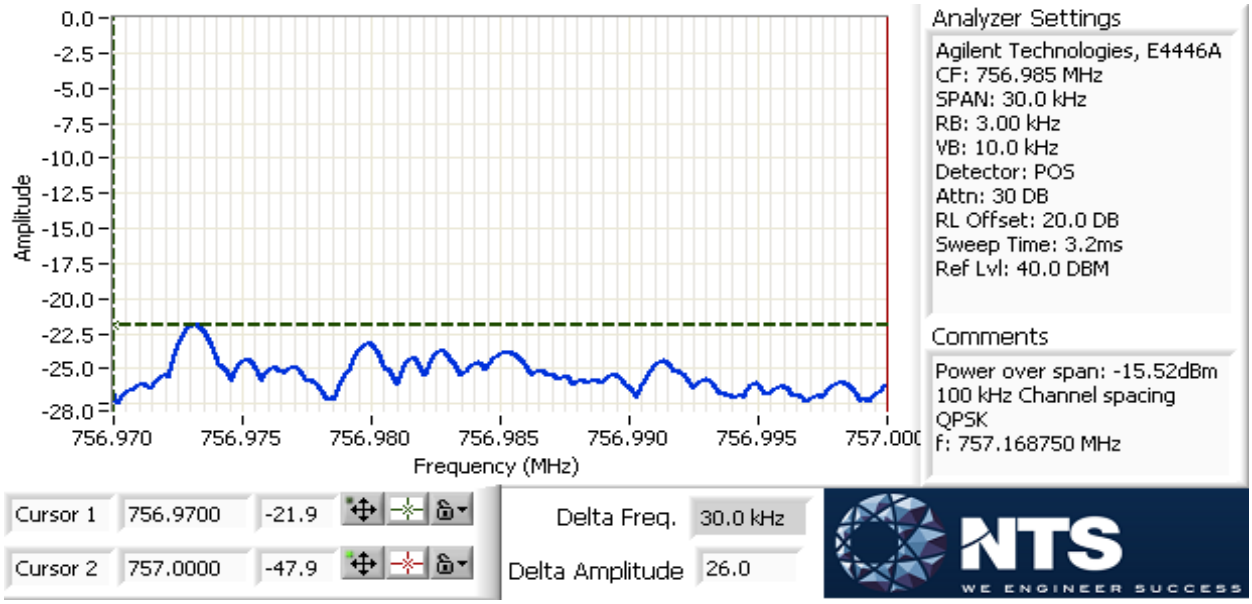


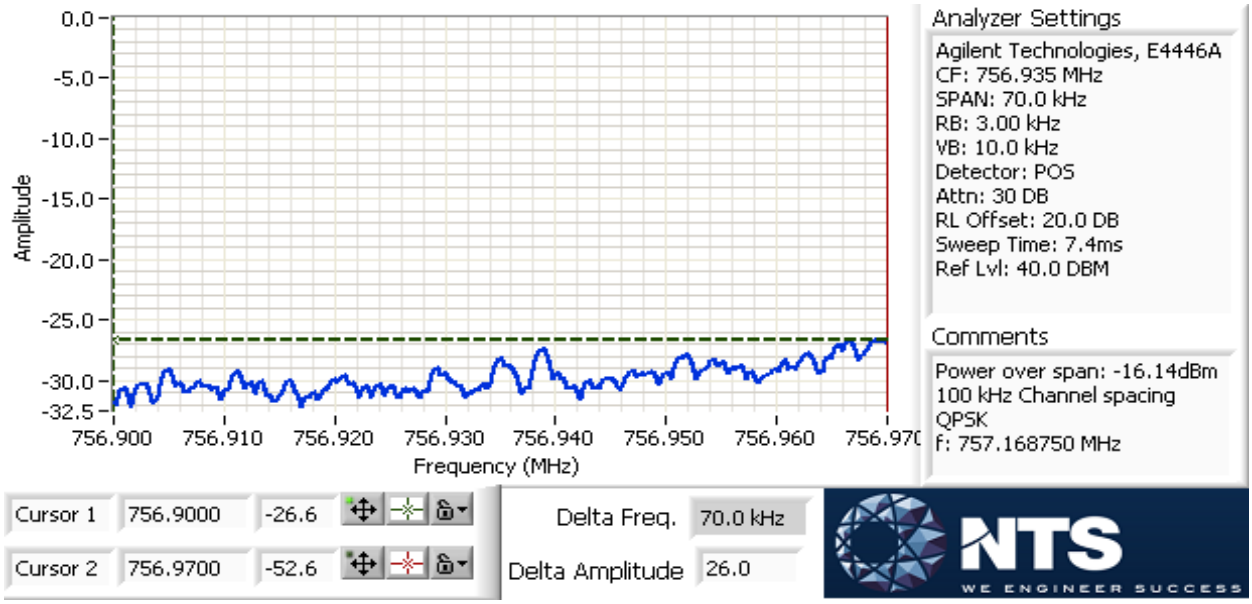
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



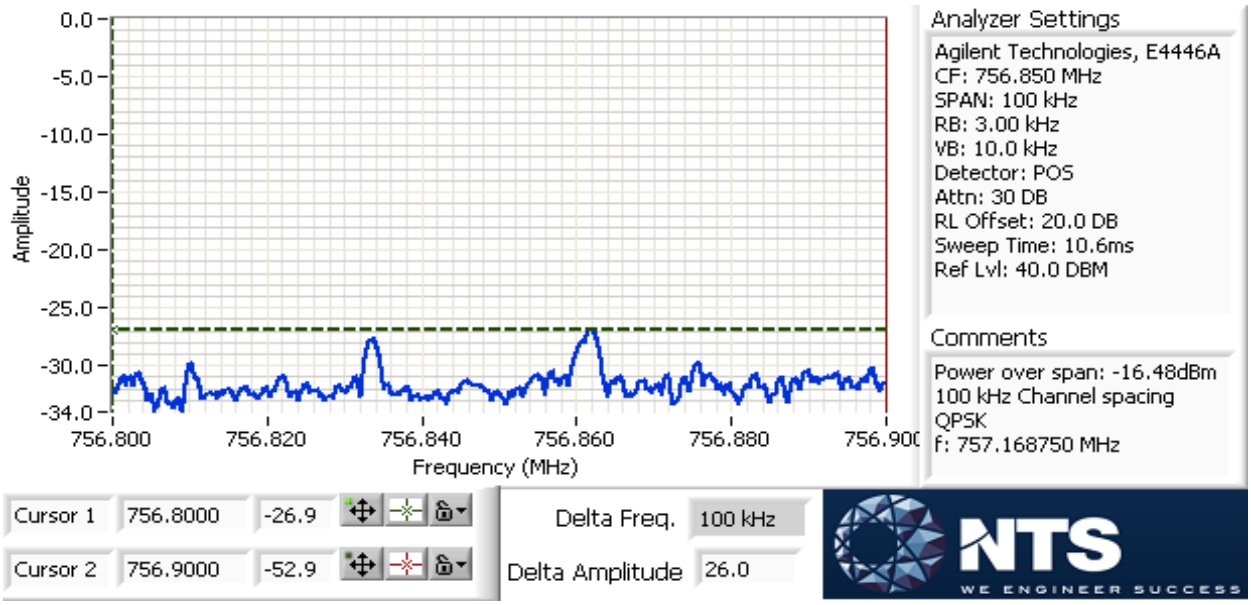
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 757 MHz, 100 kHz channel spacing (RF power: 34 dBm)



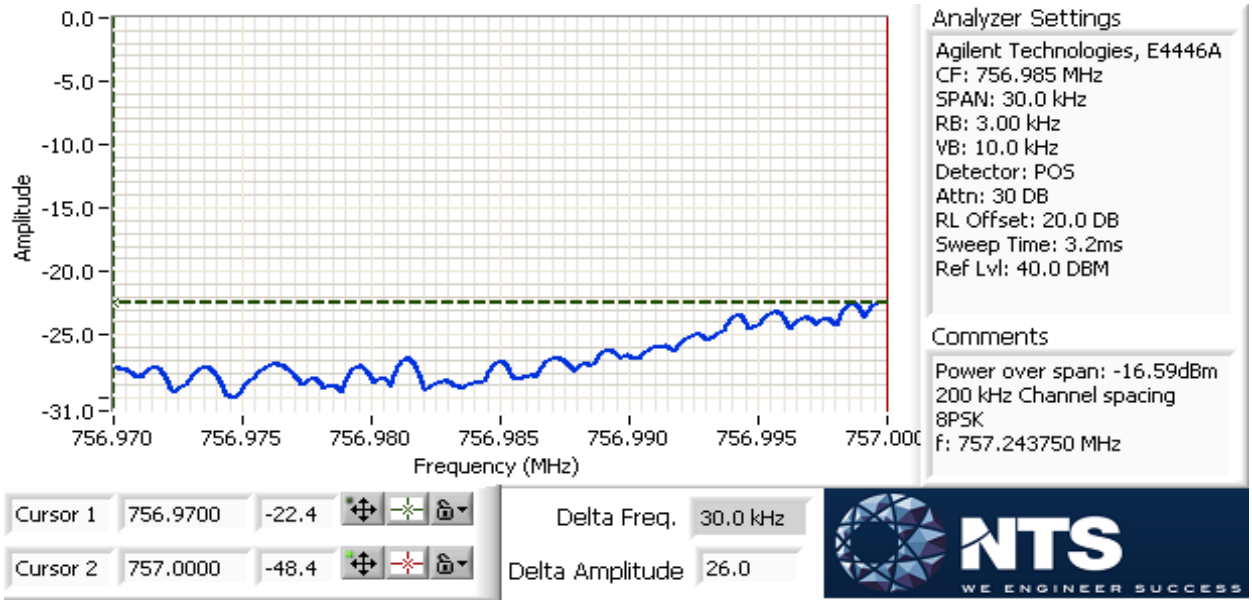


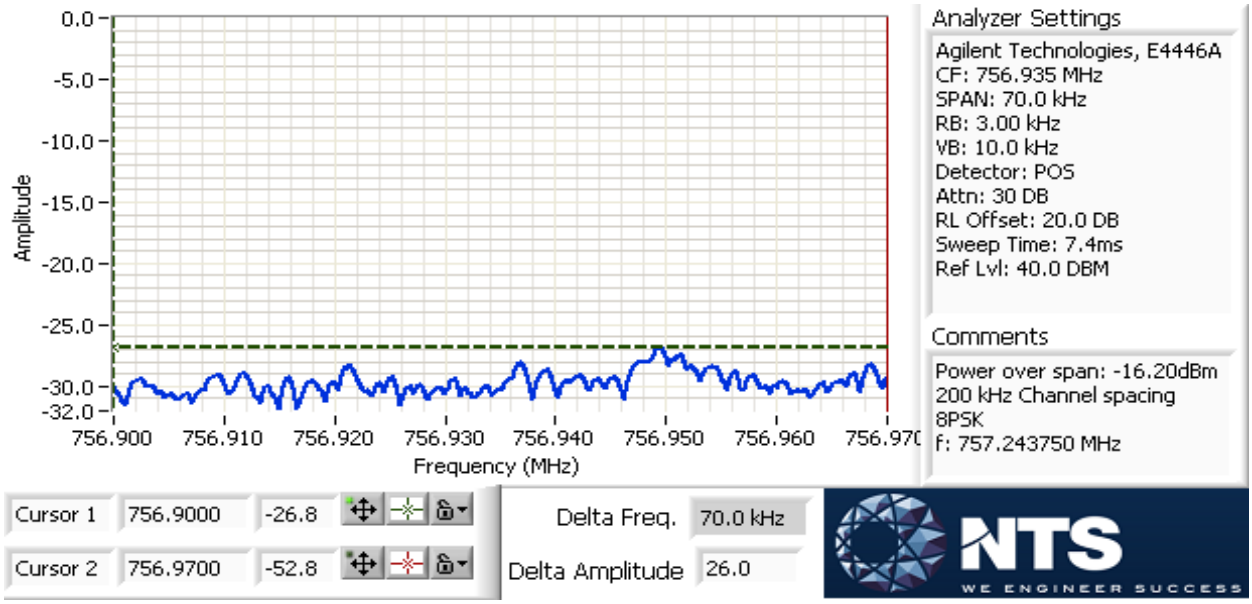
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



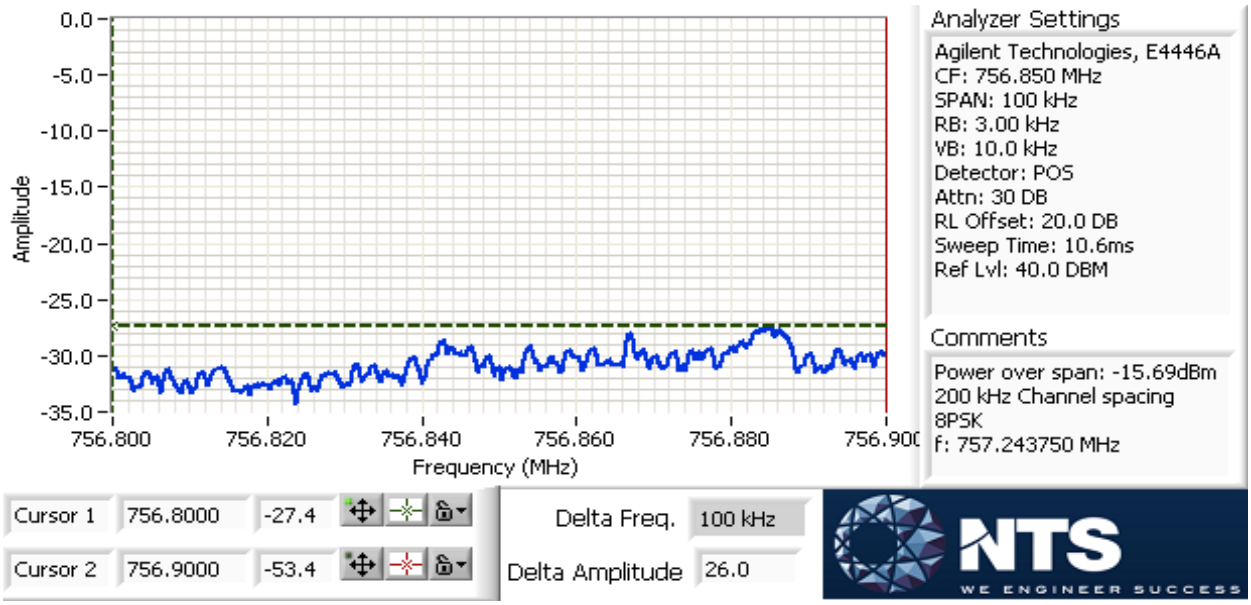
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 757 MHz, 200 kHz channel spacing (RF power: 34 dBm)



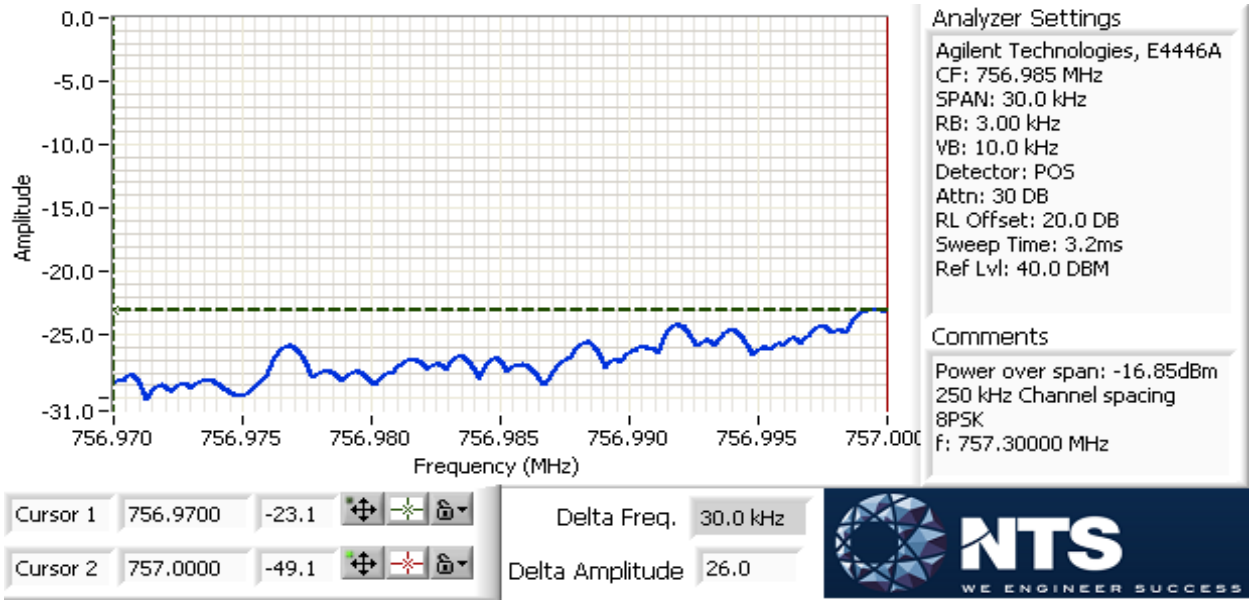


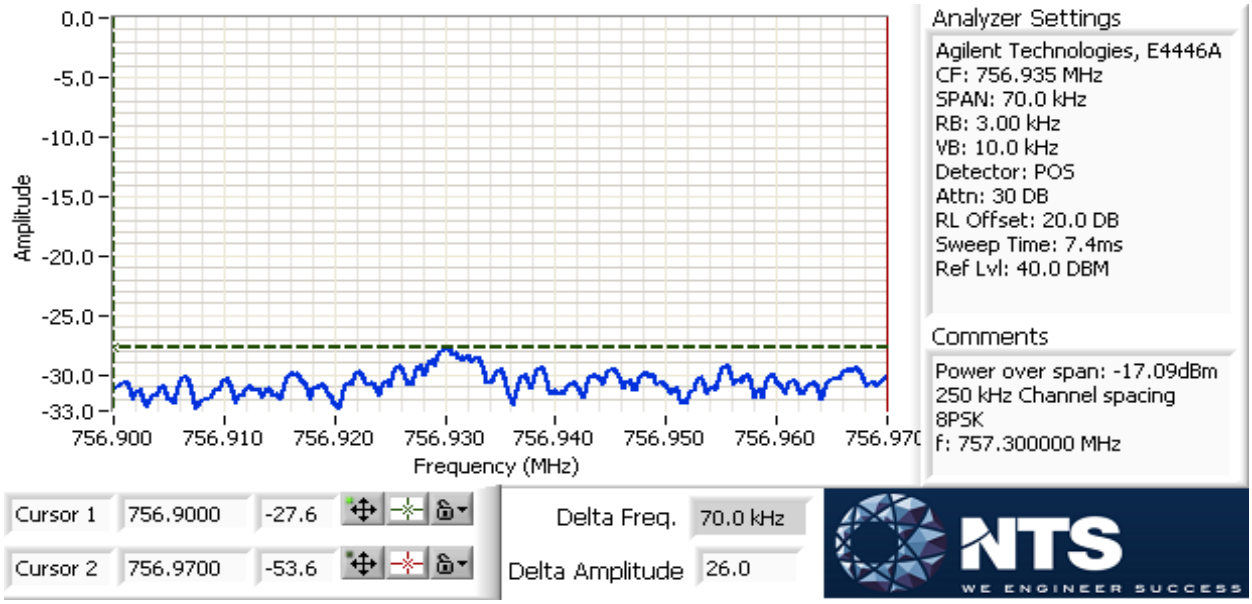
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



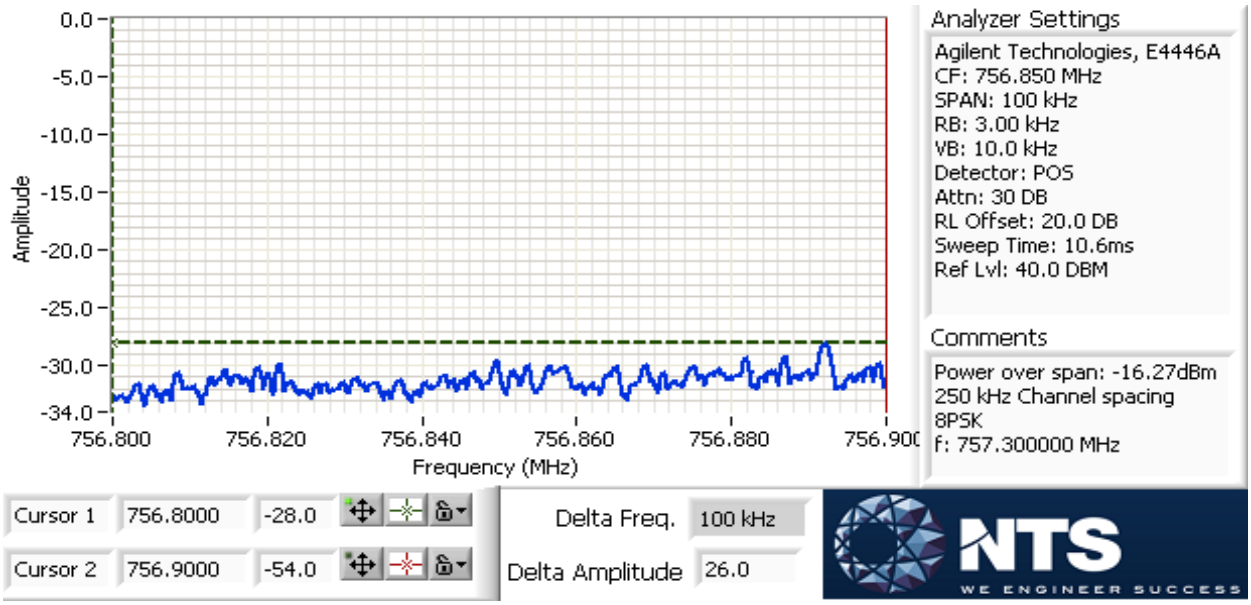
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 757 MHz, 250 kHz channel spacing (RF power: 34 dBm)





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



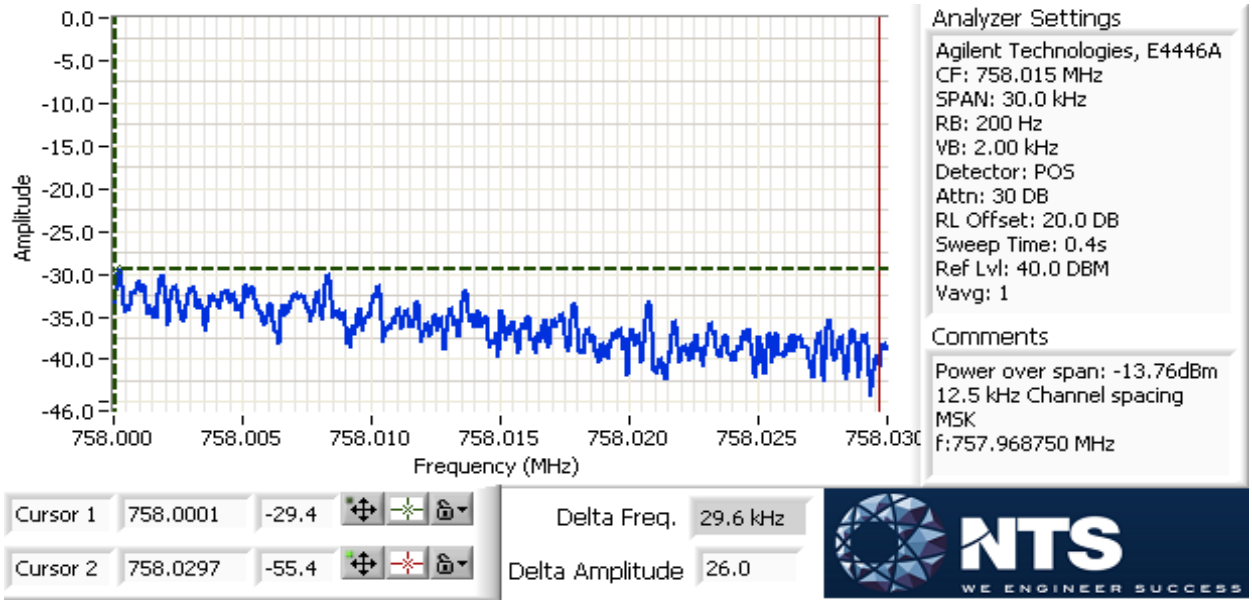
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

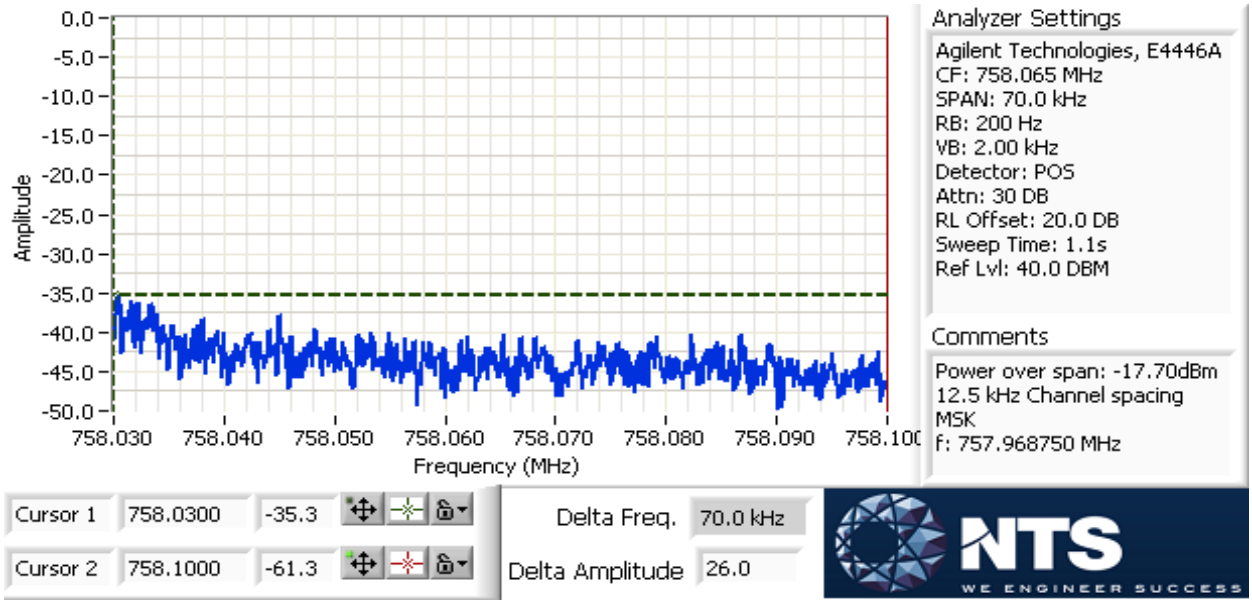
Run #2b: Band edge at 758 MHz

Power setting	Data rate	Channel plan	Modulation	Channel Frequency (MHz)	Measured dBm	Limit dBm	Result Pass/Fail
21000	10 kbps	12.5 kHz	MSK	757.968750	**-13.8**	-13.00	Pass
26000	23 kbps	12.5 kHz	QPSK	757.968750	-15.0	-13.00	Pass
26000	34 kbps	12.5 kHz	8PSK	757.968750	-15.6	-13.00	Pass
26000	45 kbps	12.5 kHz	16QAM	757.968750	-14.9	-13.00	Pass
26000	57 kbps	12.5 kHz	32QAM	757.968750	-15.7	-13.00	Pass
18000	19 kbps	25.0 kHz	MSK	757.956250	**-15.0**	-13.00	Pass
25000	36 kbps	25.0 kHz	QPSK	757.956250	-16.1	-13.00	Pass
25000	52 kbps	25.0 kHz	8PSK	757.956250	-15.5	-13.00	Pass
25000	70 kbps	25.0 kHz	16QAM	757.956250	-16.7	-13.00	Pass
25000	87 kbps	25.0 kHz	32QAM	757.956250	-18.9	-13.00	Pass
18000	39 kbps	50.0 kHz	MSK	757.937500	-16.1	-13.00	Pass
25000	71 kbps	50.0 kHz	QPSK	757.937500	-15.5	-13.00	Pass
25000	101 kbps	50.0 kHz	8PSK	757.937500	-15.4	-13.00	Pass
25000	137 kbps	50.0 kHz	16QAM	757.937500	**-13.2**	-13.00	Pass
25000	175 kbps	50.0 kHz	32QAM	757.937500	-16.1	-13.00	Pass
13200	76 kbps	100 kHz	MSK	757.831250	-19.1	-13.00	Pass
14200	160 kbps	100 kHz	QPSK	757.831250	**-17.9**	-13.00	Pass
14200	240 kbps	100 kHz	8PSK	757.831250	-19.2	-13.00	Pass
14200	320 kbps	100 kHz	16QAM	757.831250	-20.7	-13.00	Pass
14200	400 kbps	100 kHz	32QAM	757.831250	-20.8	-13.00	Pass
12500	153 kbps	200 kHz	MSK	757.756250	**-18.3**	-13.00	Pass
14000	320 kbps	200 kHz	QPSK	757.756250	-19.0	-13.00	Pass
14200	480 kbps	200 kHz	8PSK	757.756250	-18.9	-13.00	Pass
14200	640 kbps	200 kHz	16QAM	757.756250	-20.5	-13.00	Pass
14200	800 kbps	200 kHz	32QAM	757.756250	-20.6	-13.00	Pass
12500	194 kbps	250 kHz	MSK	757.700000	**-18.5**	-13.00	Pass
14200	403 kbps	250 kHz	QPSK	757.700000	-19.8	-13.00	Pass
14200	605 kbps	250 kHz	8PSK	757.700000	-19.9	-13.00	Pass
14500	806 kbps	250 kHz	16QAM	757.700000	-19.9	-13.00	Pass
14500	1008 kbps	250 kHz	32QAM	757.700000	-20.8	-13.00	Pass

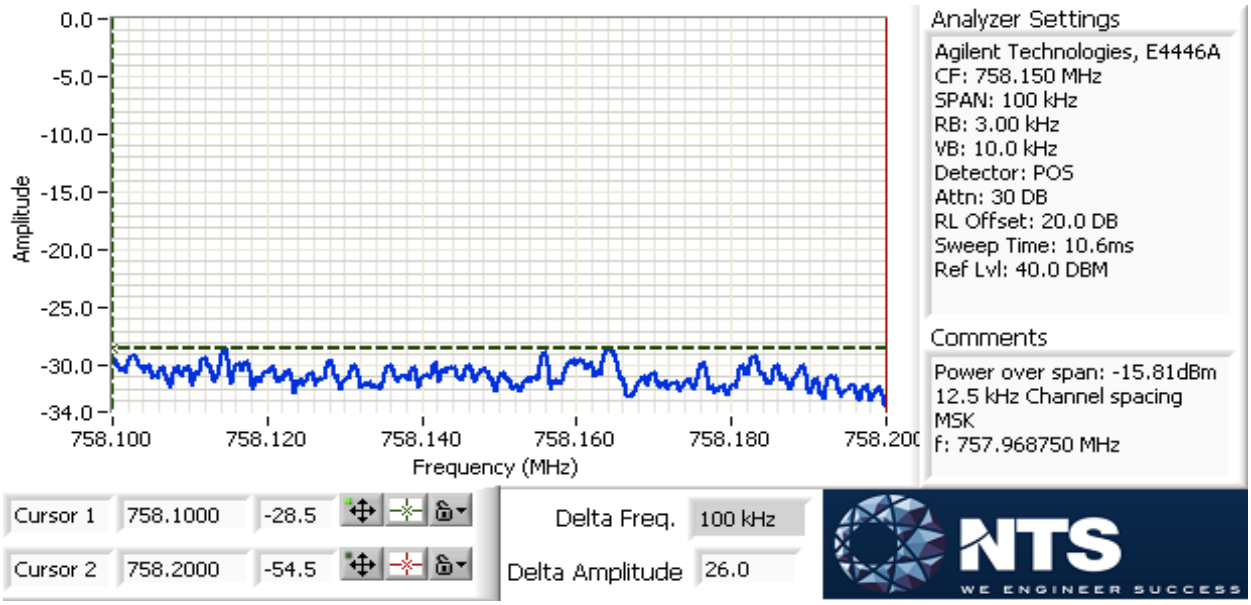
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 758 MHz, 12.5 kHz channel spacing (RF power: 35 dBm)



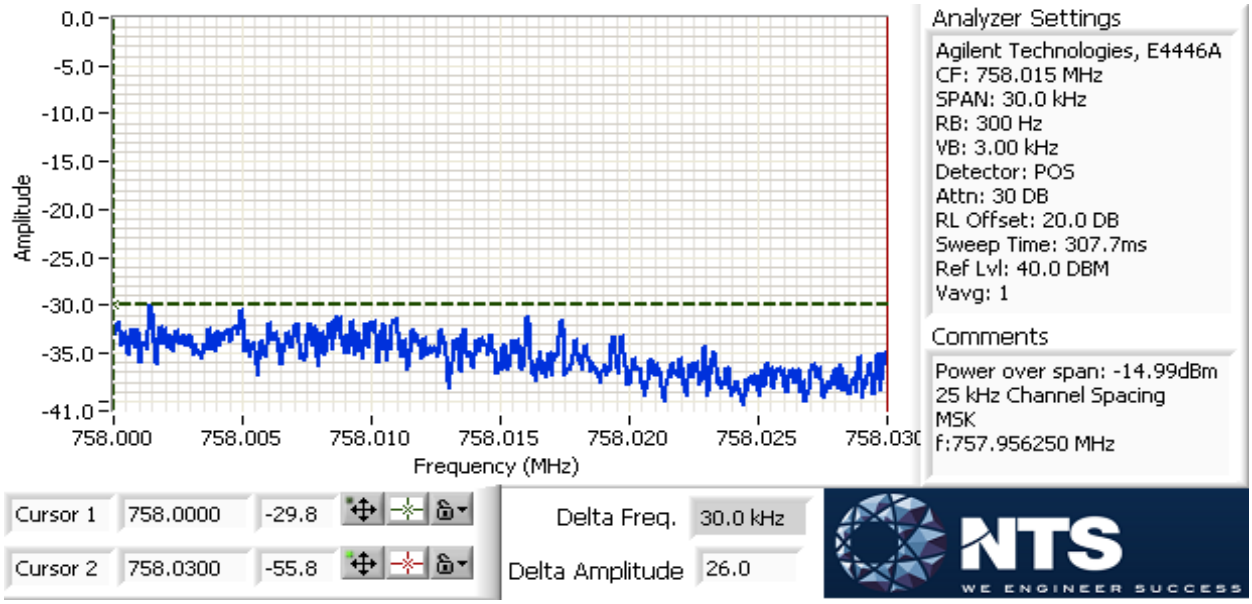


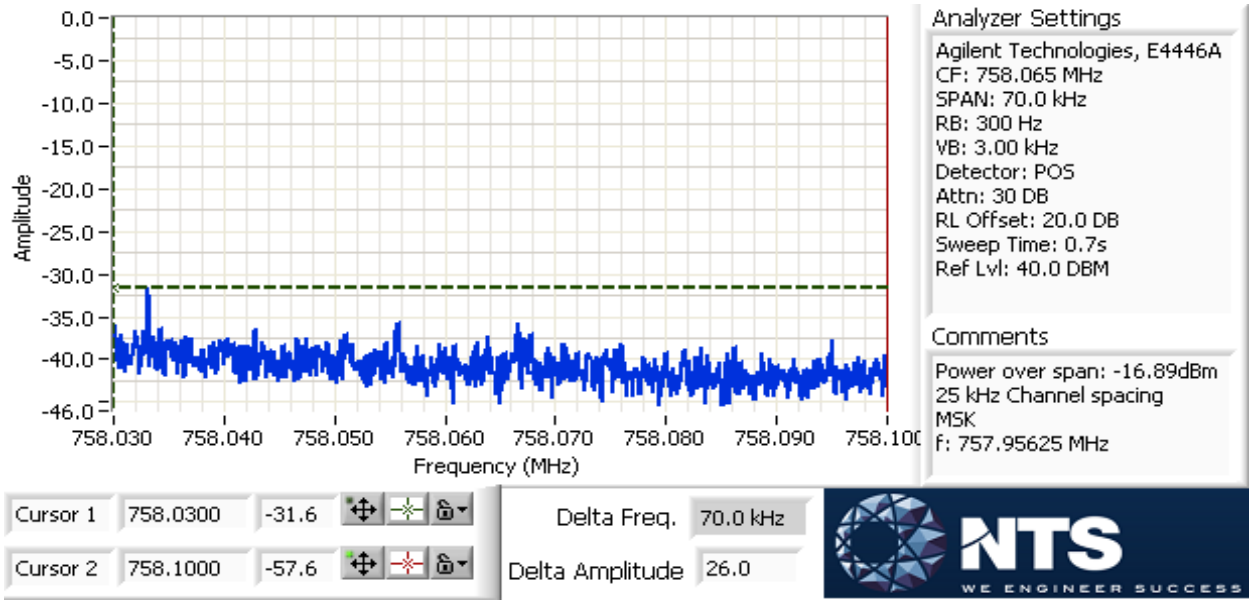
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



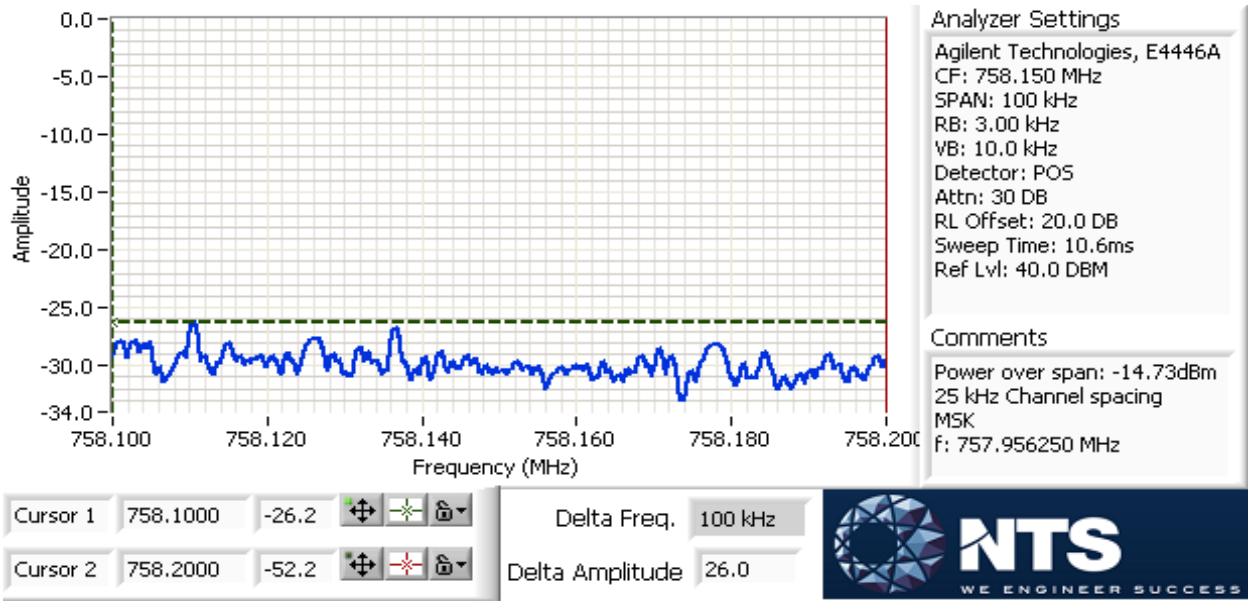
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 758 MHz, 25 kHz channel spacing (RF power: 35 dBm)



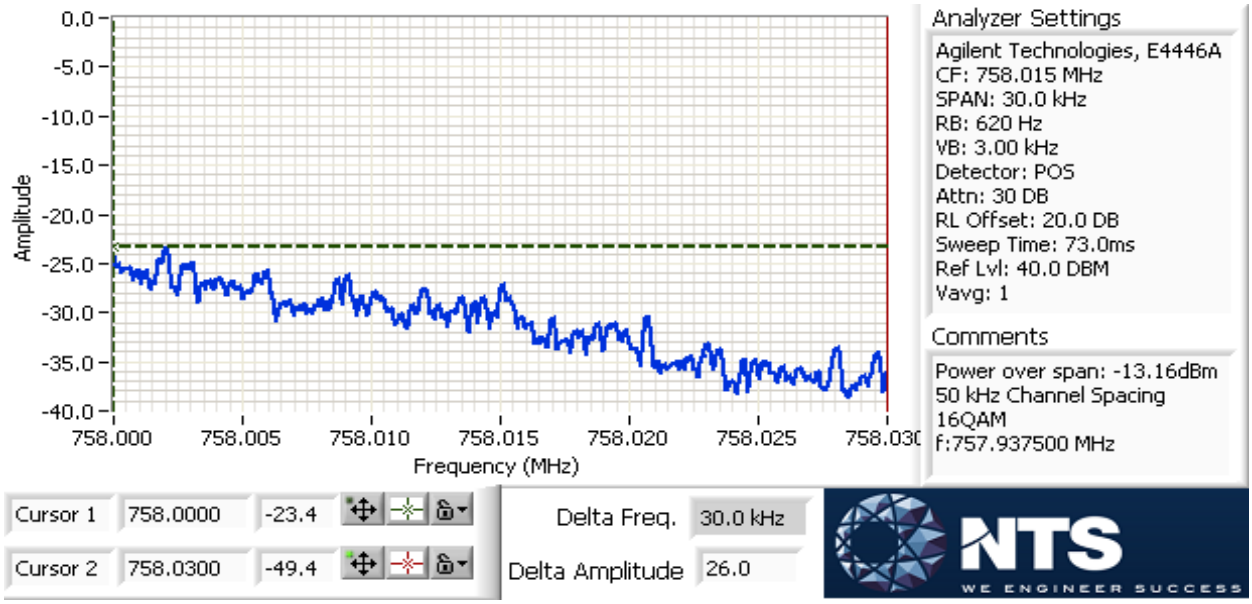


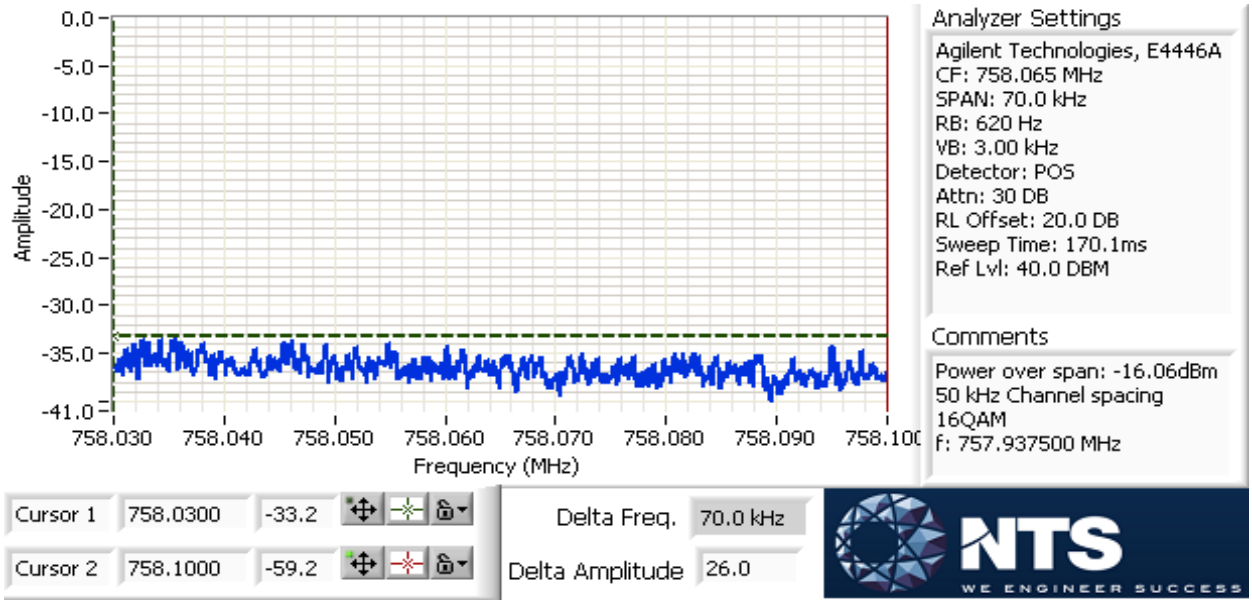
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



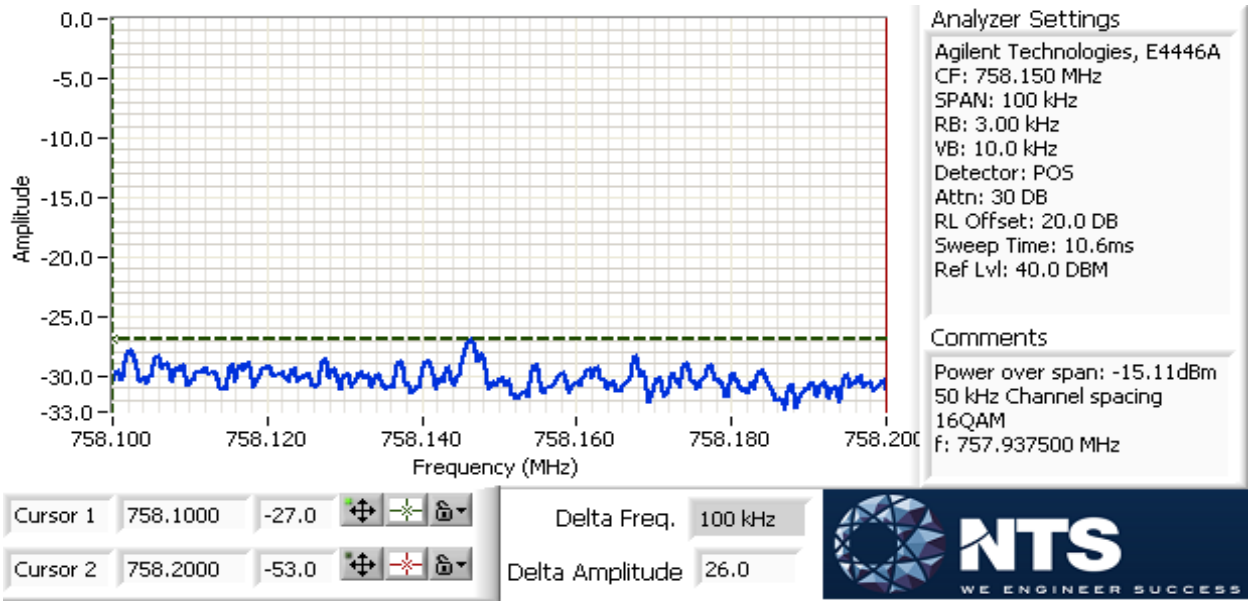
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 758 MHz, 50 kHz channel spacing (RF power: 35 dBm)



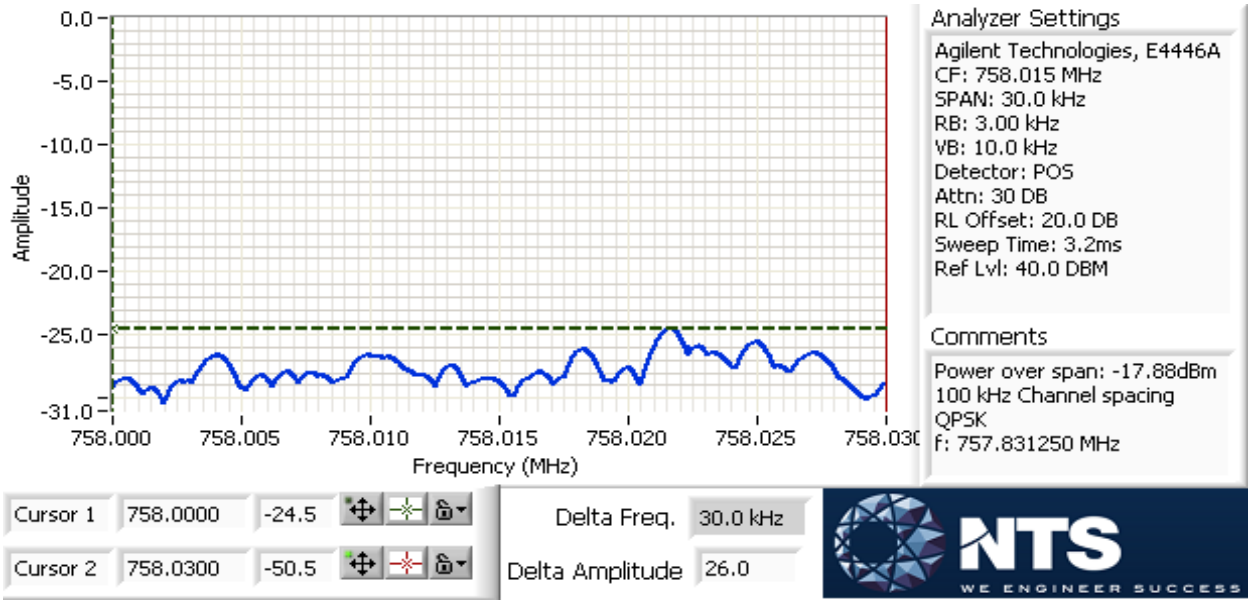


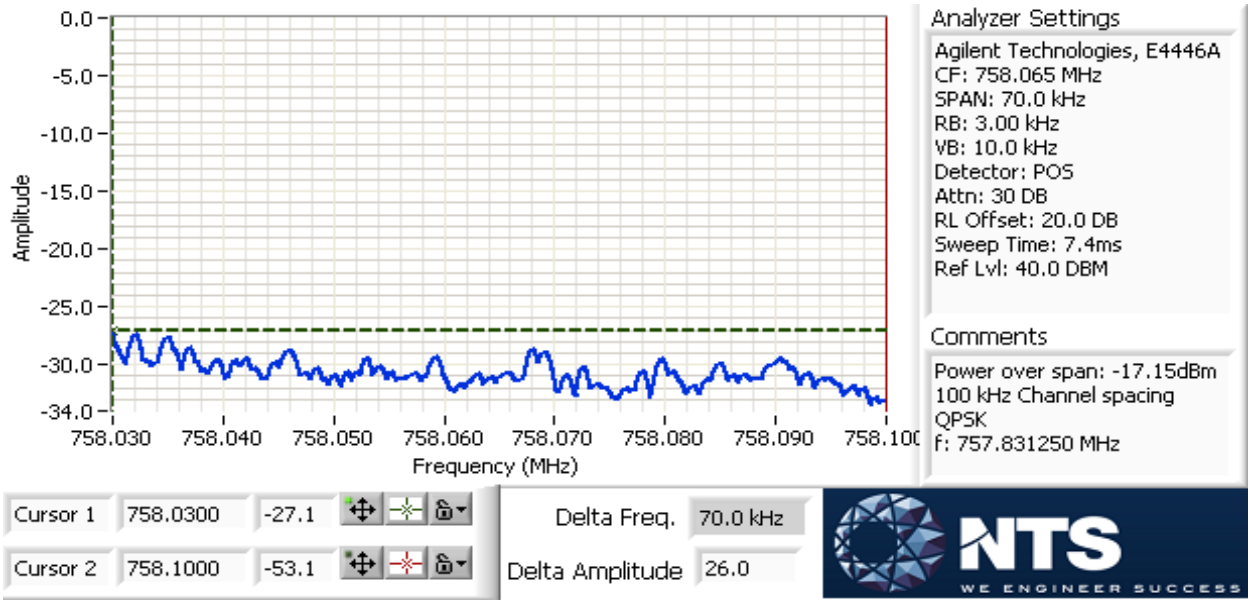
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



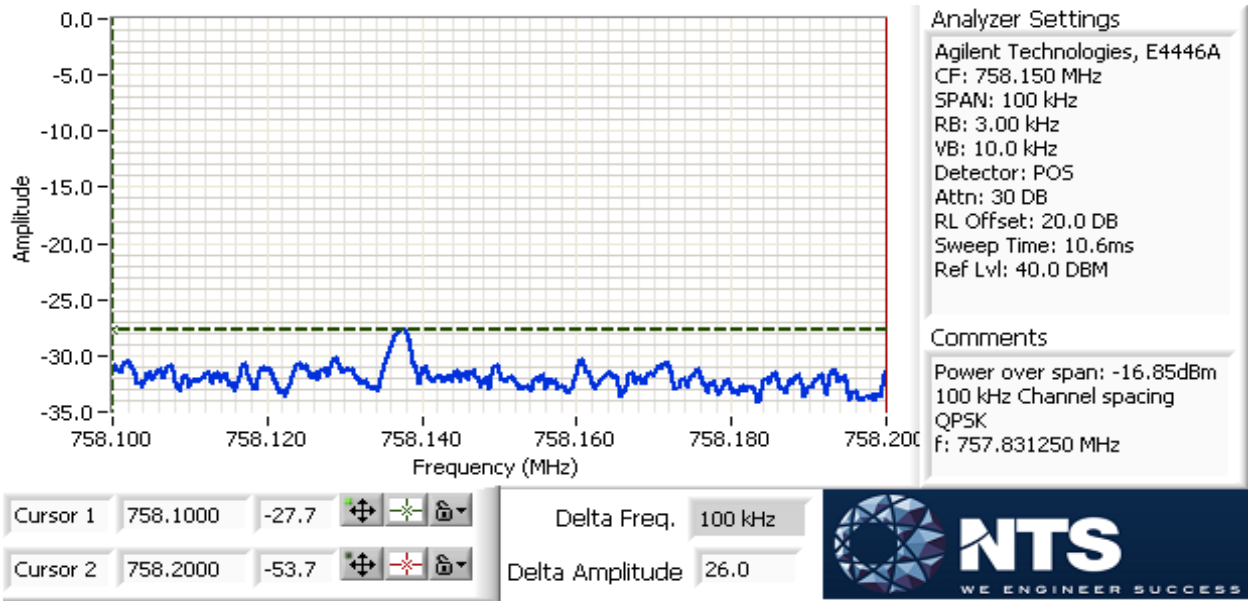
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 758 MHz, 100 kHz channel spacing (RF power: 34 dBm)



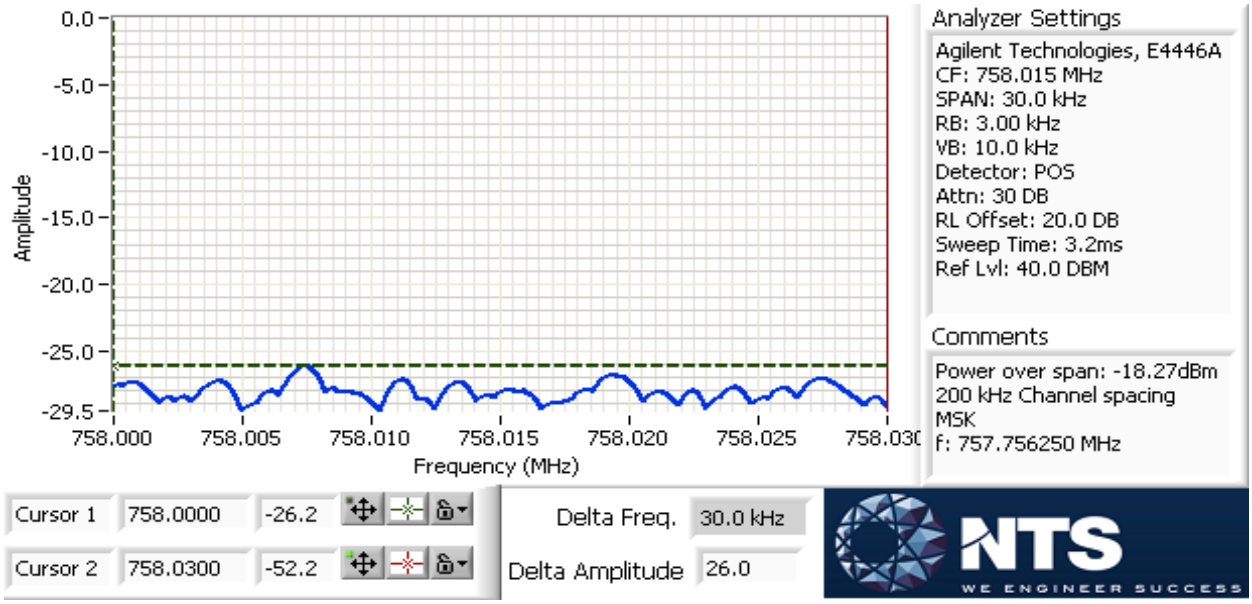


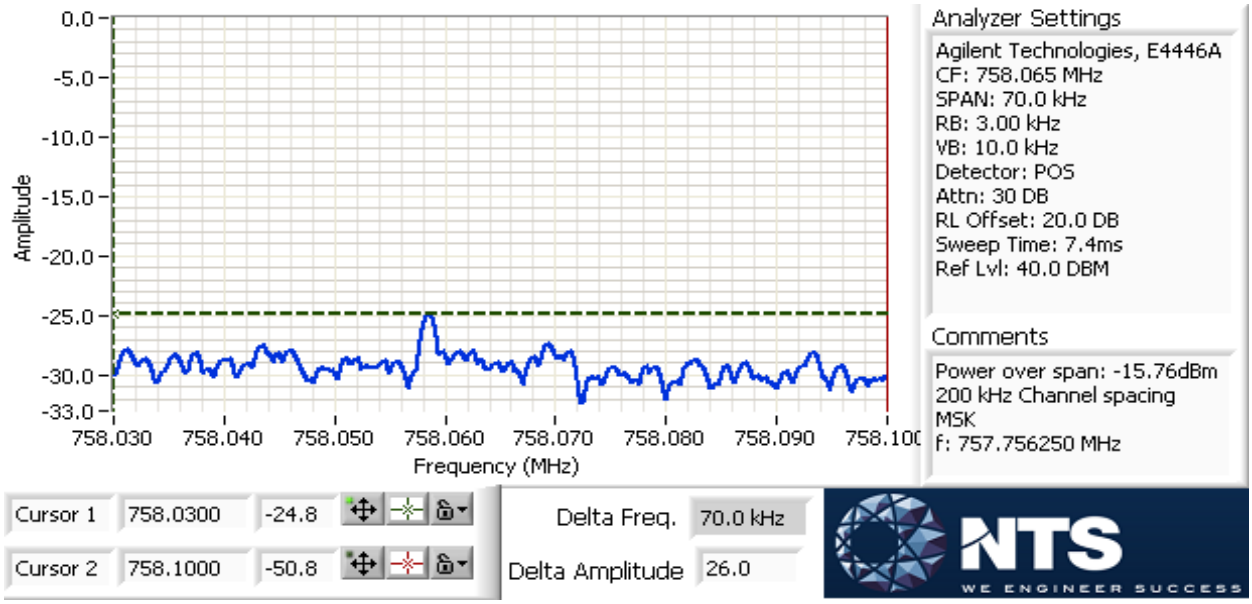
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



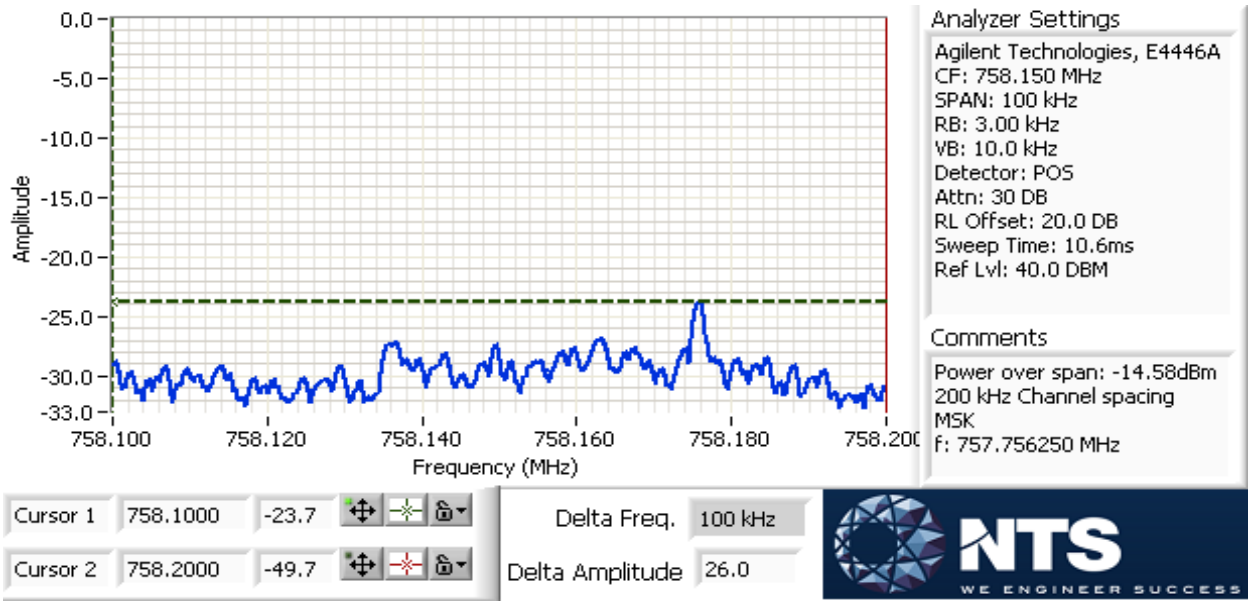
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 758 MHz, 200 kHz channel spacing (RF power: 34 dBm)



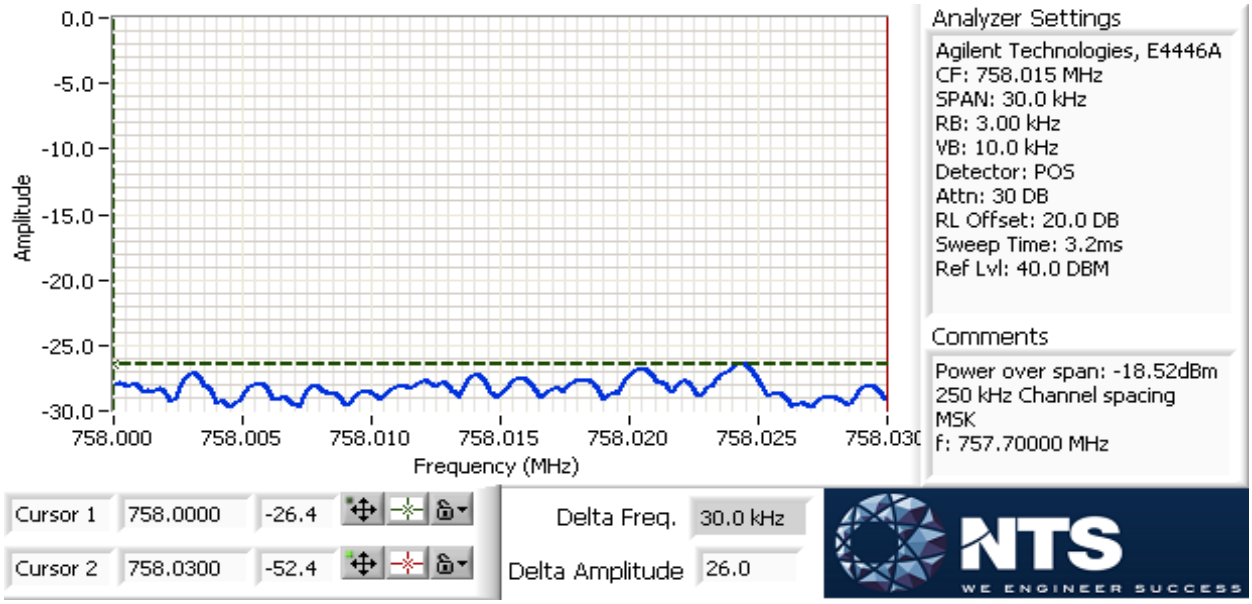


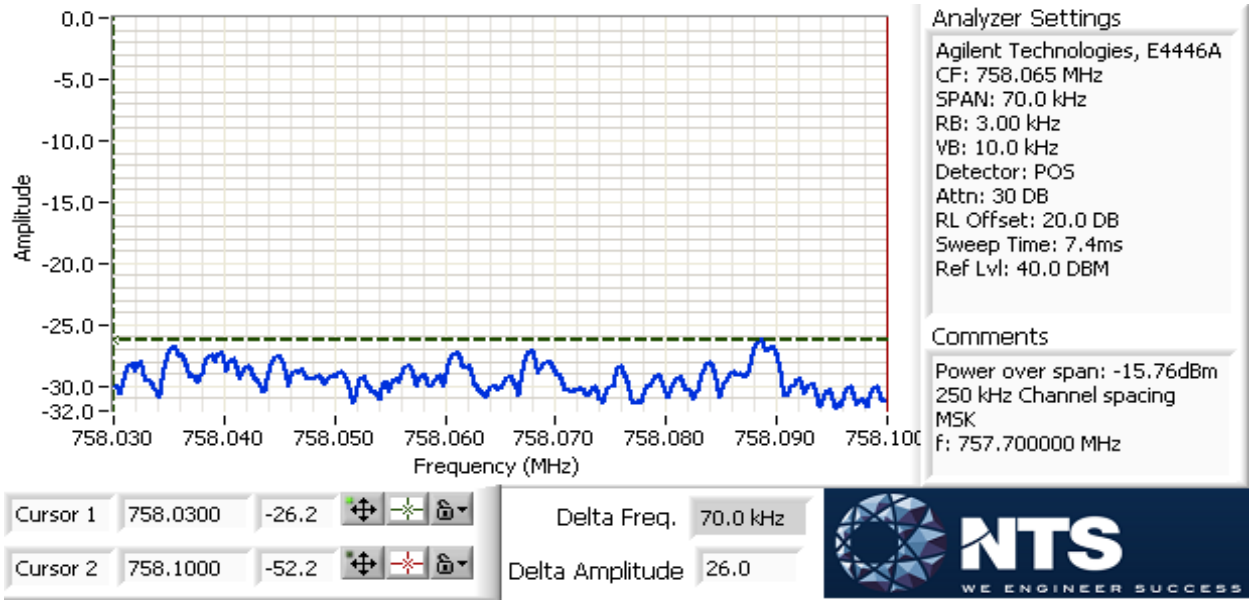
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



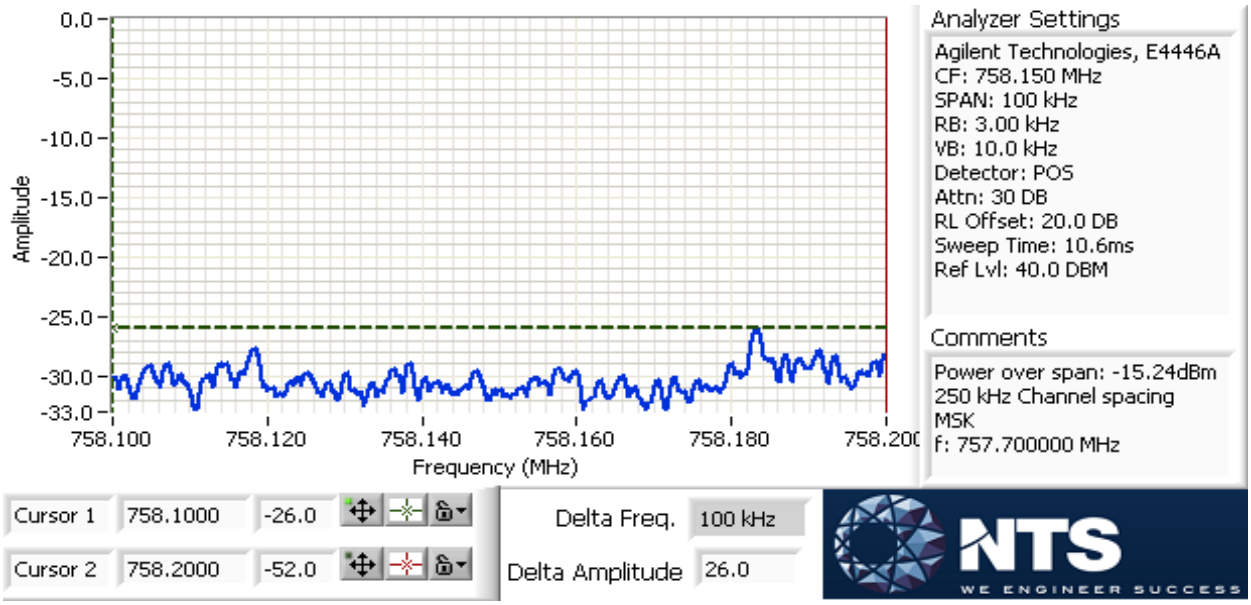
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 758 MHz, 250 kHz channel spacing (RF power: 34 dBm)





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



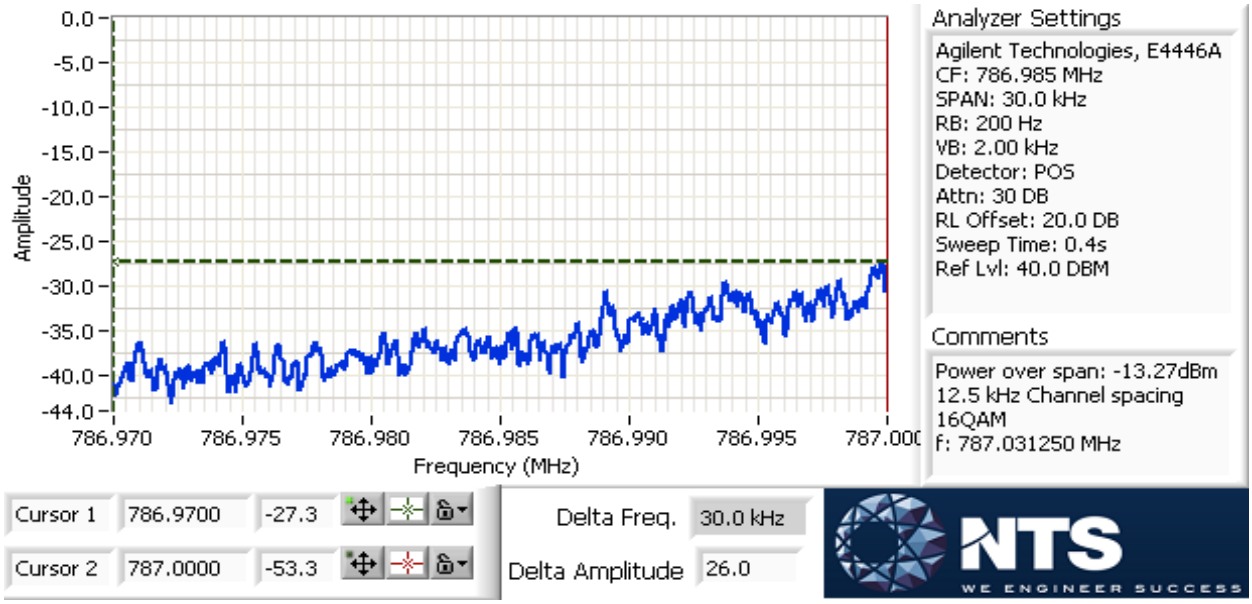
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

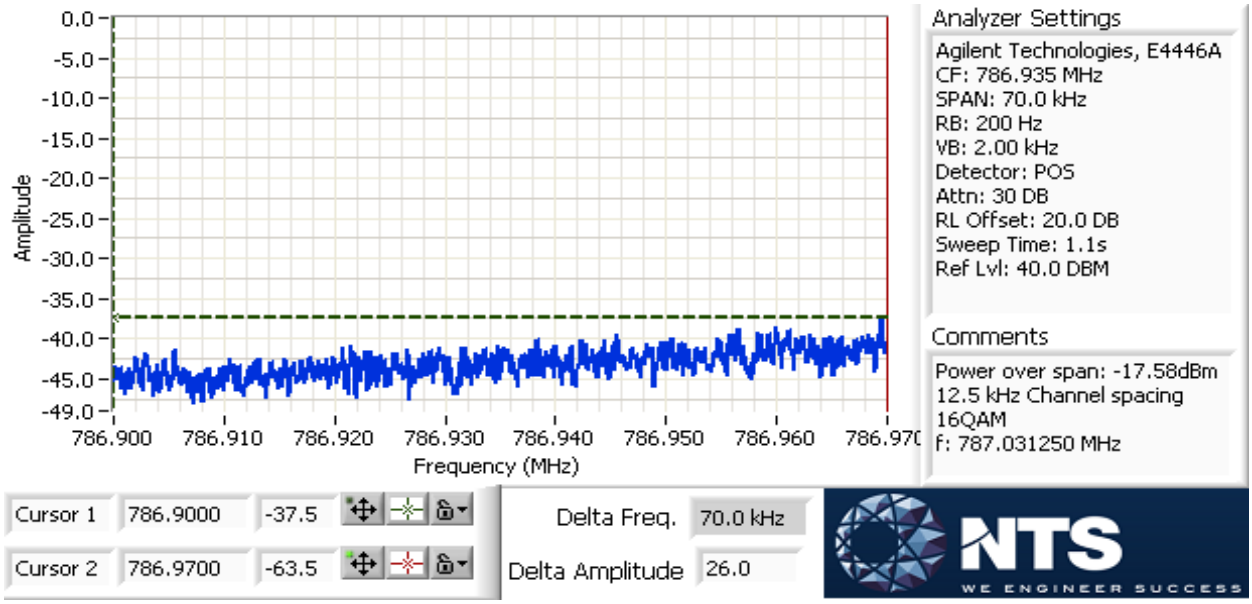
Run #2c: Block edge at 787 MHz

Power setting	Data rate	Channel plan	Modulation	Channel Frequency (MHz)	Measured dBm	Limit dBm	Result Pass/Fail
18000	10 kbps	12.5 kHz	MSK	787.031250	-13.8	-13.00	Pass
26500	23 kbps	12.5 kHz	QPSK	787.031250	-13.6	-13.00	Pass
26500	34 kbps	12.5 kHz	8PSK	787.031250	-13.5	-13.00	Pass
26500	45 kbps	12.5 kHz	16QAM	787.031250	**-13.3**	-13.00	Pass
26500	57 kbps	12.5 kHz	32QAM	787.031250	-14.4	-13.00	Pass
16000	19 kbps	25.0 kHz	MSK	787.043750	-15.5	-13.00	Pass
26000	36 kbps	25.0 kHz	QPSK	787.043750	**-13.1**	-13.00	Pass
26000	52 kbps	25.0 kHz	8PSK	787.043750	-13.2	-13.00	Pass
26000	70 kbps	25.0 kHz	16QAM	787.043750	-14.1	-13.00	Pass
26000	87 kbps	25.0 kHz	32QAM	787.043750	-14.9	-13.00	Pass
12000	39 kbps	50.0 kHz	MSK	787.062500	**-16.0**	-13.00	Pass
8800	71 kbps	50.0 kHz	QPSK	787.062500	-21.6	-13.00	Pass
9800	101 kbps	50.0 kHz	8PSK	787.062500	-21.3	-13.00	Pass
8800	137 kbps	50.0 kHz	16QAM	787.062500	-22.3	-13.00	Pass
8800	175 kbps	50.0 kHz	32QAM	787.062500	-23.2	-13.00	Pass
12000	76 kbps	100 kHz	MSK	787.168750	-17.9	-13.00	Pass
13200	160 kbps	100 kHz	QPSK	787.168750	**-14.3**	-13.00	Pass
13200	240 kbps	100 kHz	8PSK	787.168750	-14.5	-13.00	Pass
13300	320 kbps	100 kHz	16QAM	787.137500	-14.7	-13.00	Pass
13300	400 kbps	100 kHz	32QAM	787.137500	-15.7	-13.00	Pass
12500	153 kbps	200 kHz	MSK	787.243750	-17.2	-13.00	Pass
14000	320 kbps	200 kHz	QPSK	787.243750	-13.8	-13.00	Pass
14200	480 kbps	200 kHz	8PSK	787.243750	**-13.5**	-13.00	Pass
14200	640 kbps	200 kHz	16QAM	787.243750	-14.6	-13.00	Pass
14200	800 kbps	200 kHz	32QAM	787.243750	-15.6	-13.00	Pass
12500	194 kbps	250 kHz	MSK	787.300000	-17.3	-13.00	Pass
14200	403 kbps	250 kHz	QPSK	787.300000	-14.1	-13.00	Pass
14200	605 kbps	250 kHz	8PSK	787.300000	**-13.3**	-13.00	Pass
14500	806 kbps	250 kHz	16QAM	787.300000	-14.8	-13.00	Pass
14500	1008 kbps	250 kHz	32QAM	787.300000	-16.2	-13.00	Pass

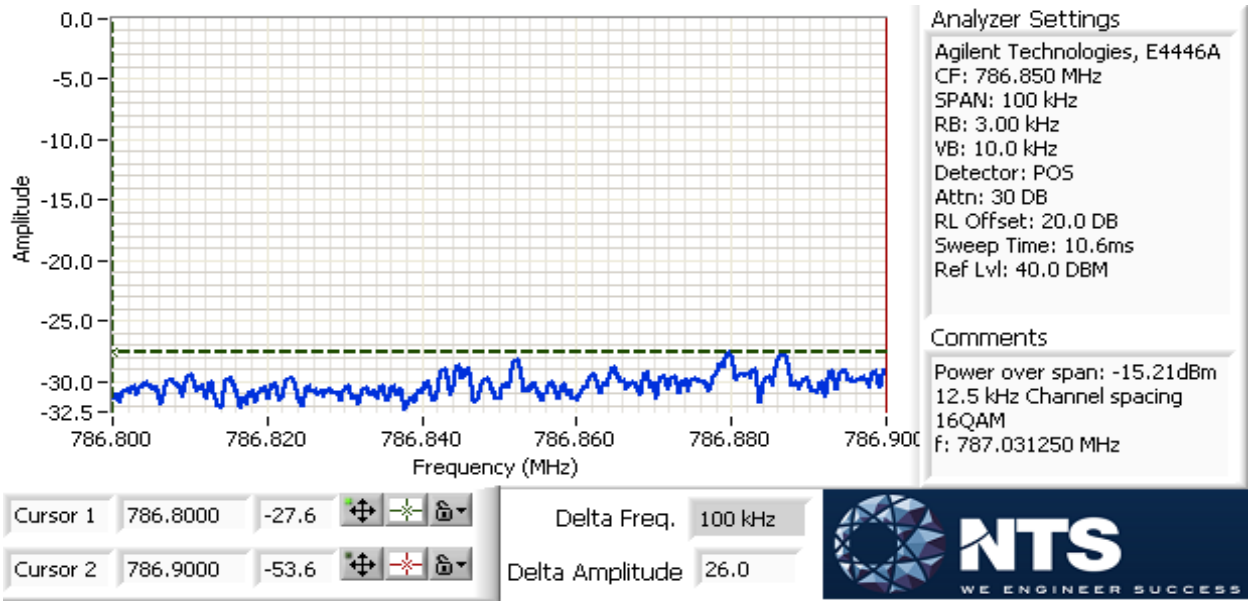
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 787 MHz, 12.5 kHz channel spacing (RF power: 35 dBm)



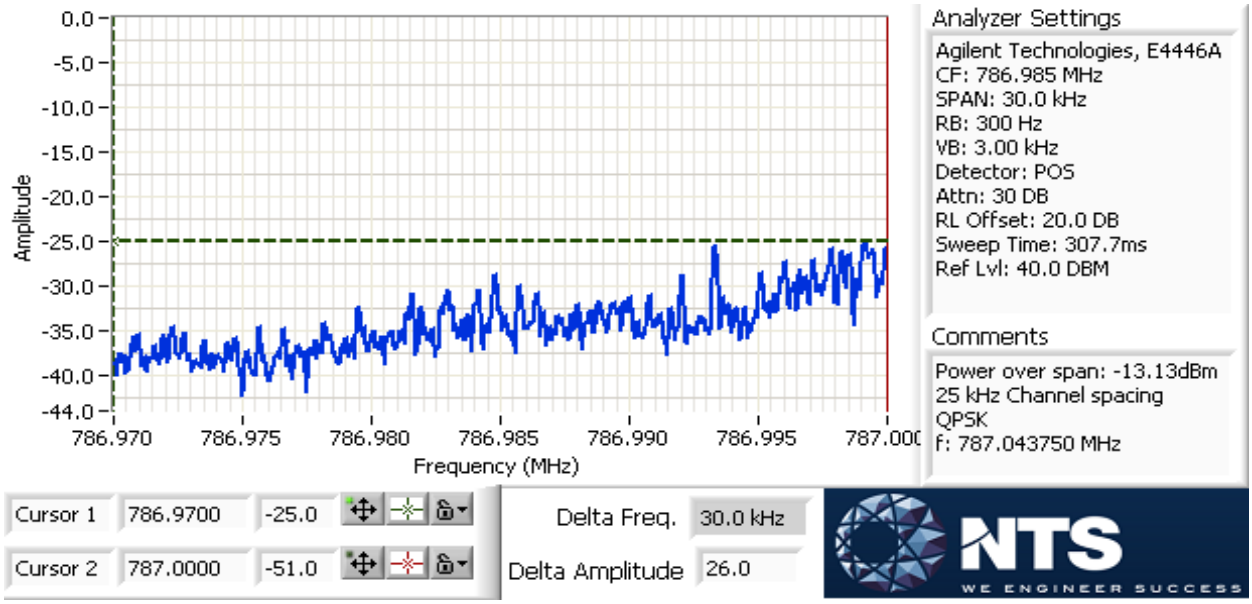


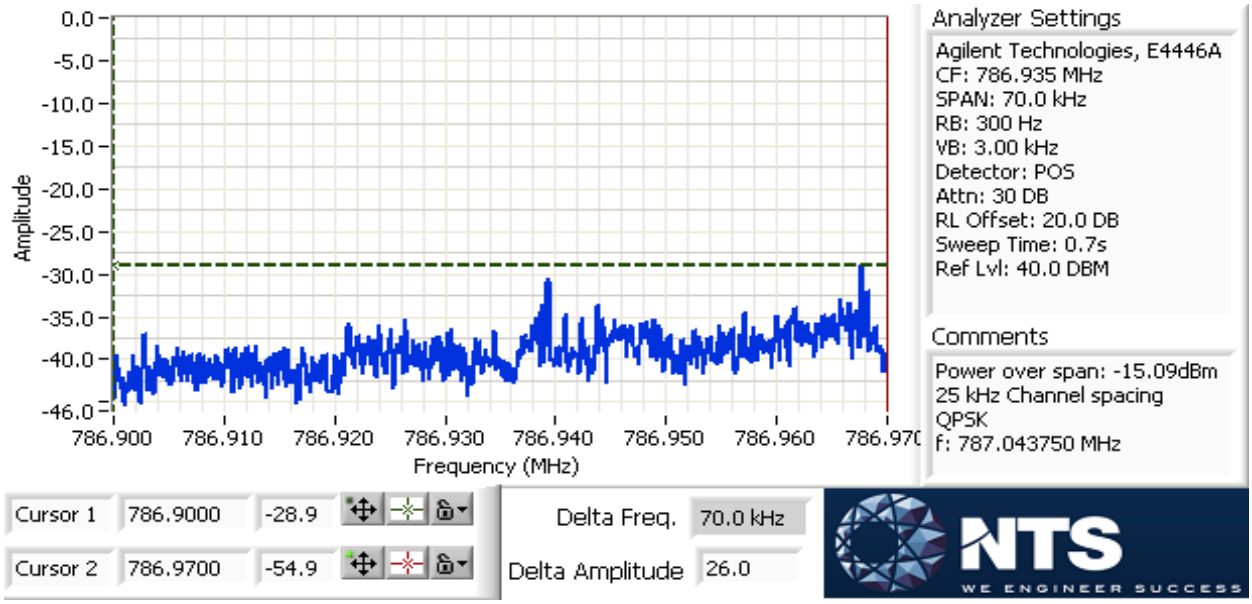
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



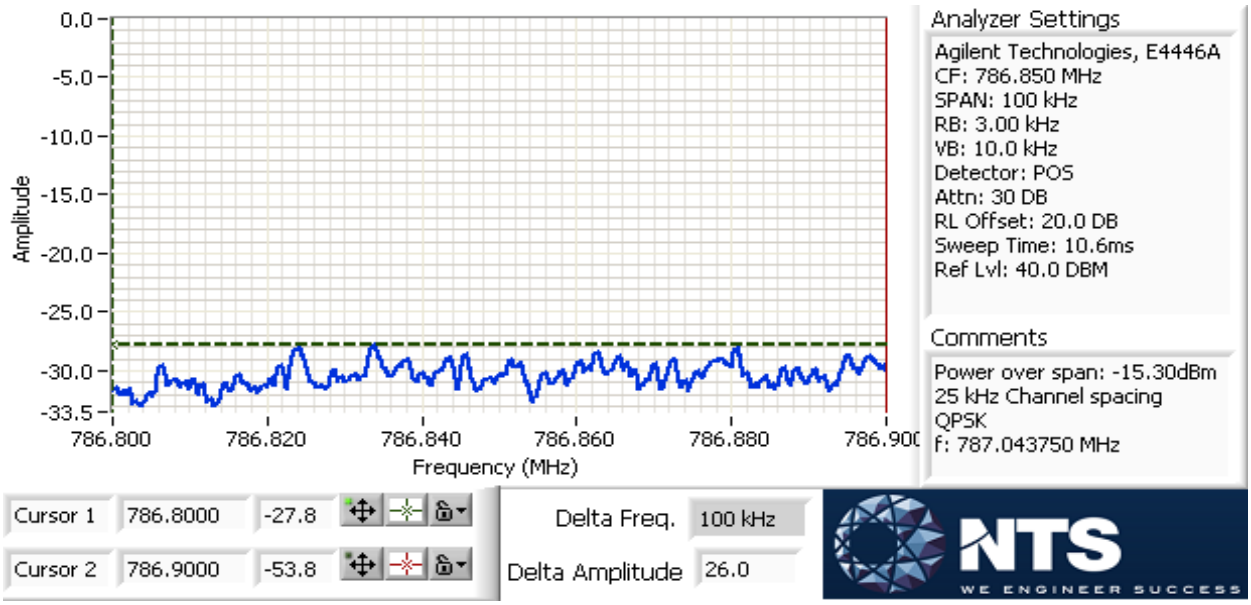
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 787 MHz, 25 kHz channel spacing (RF power: 35 dBm)



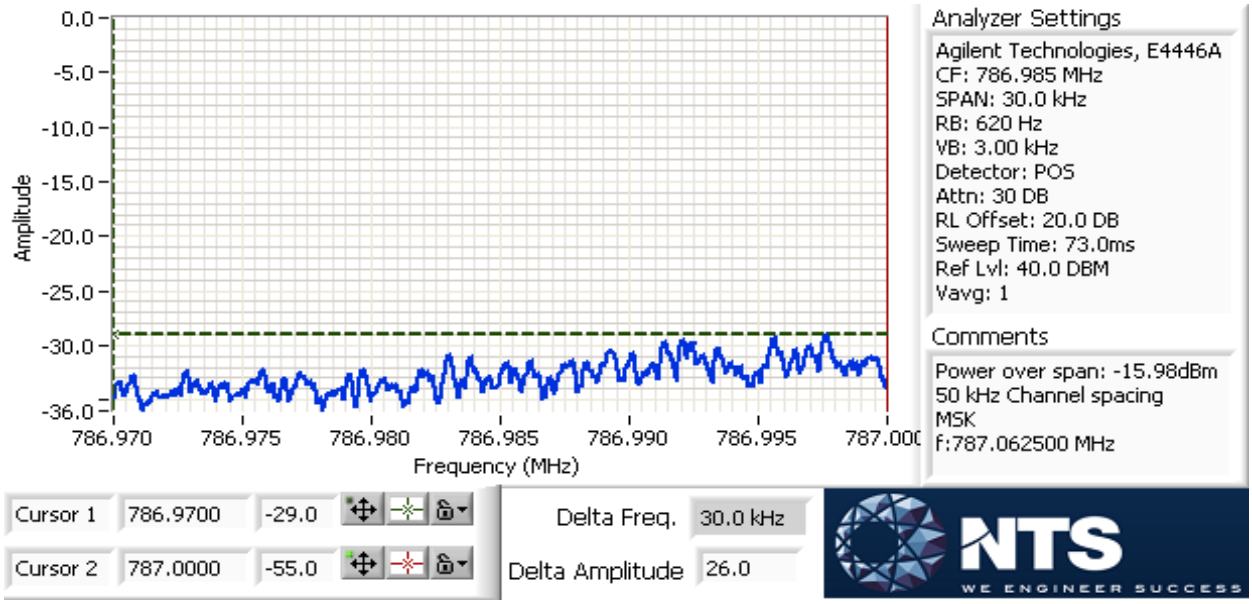


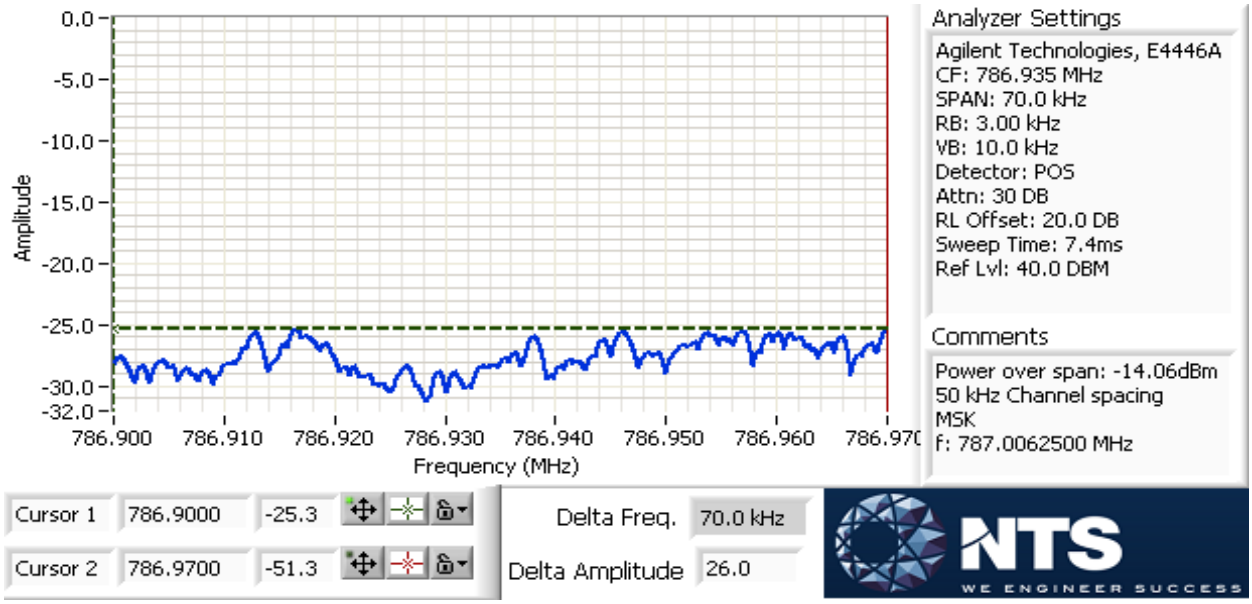
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



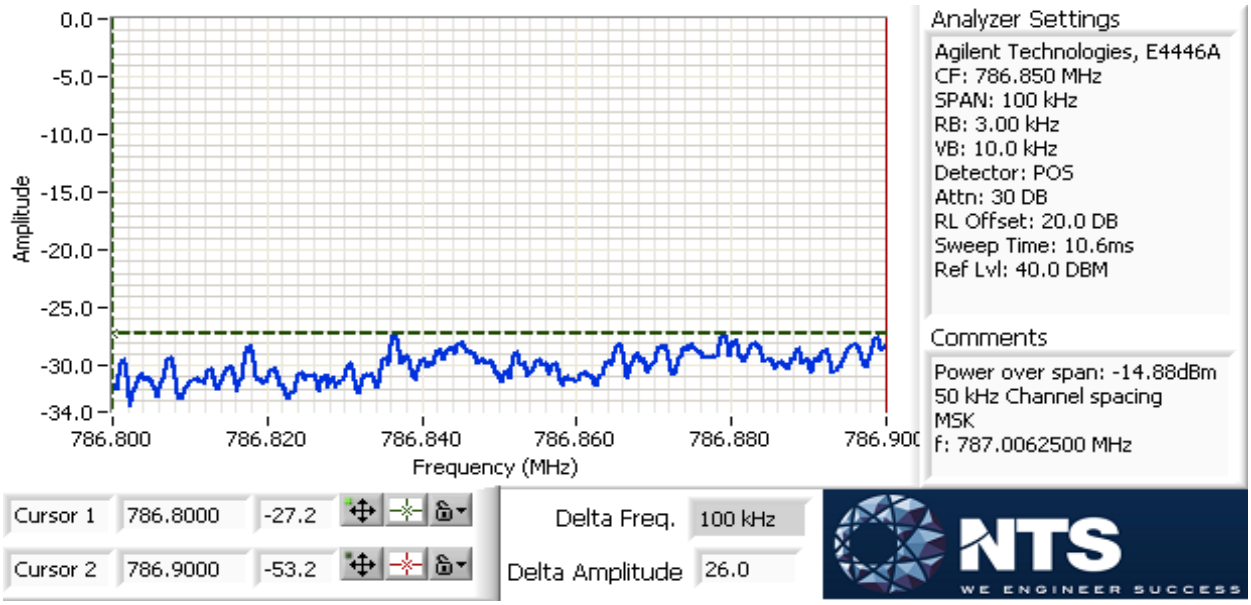
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 787 MHz, 50 kHz channel spacing (RF power: 34 dBm)



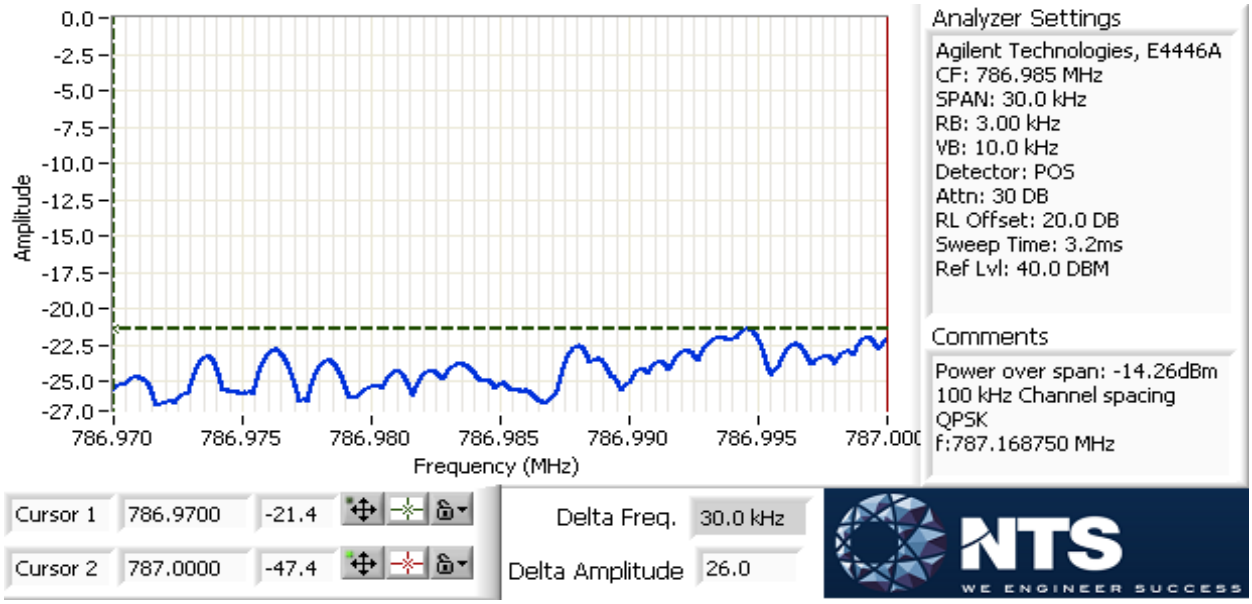


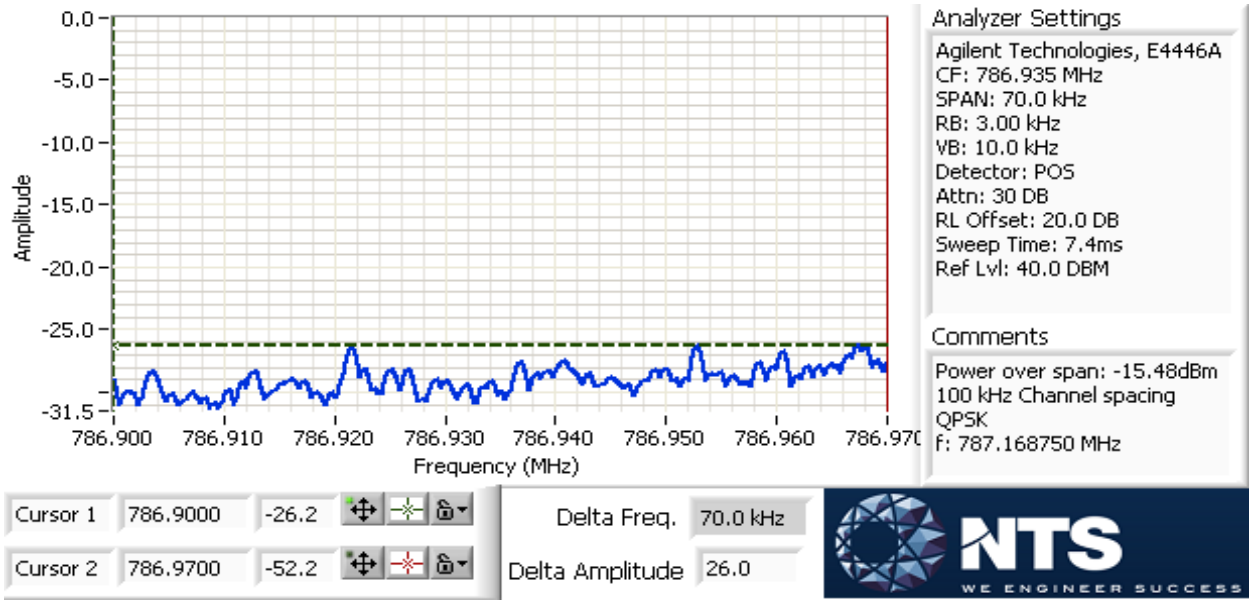
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



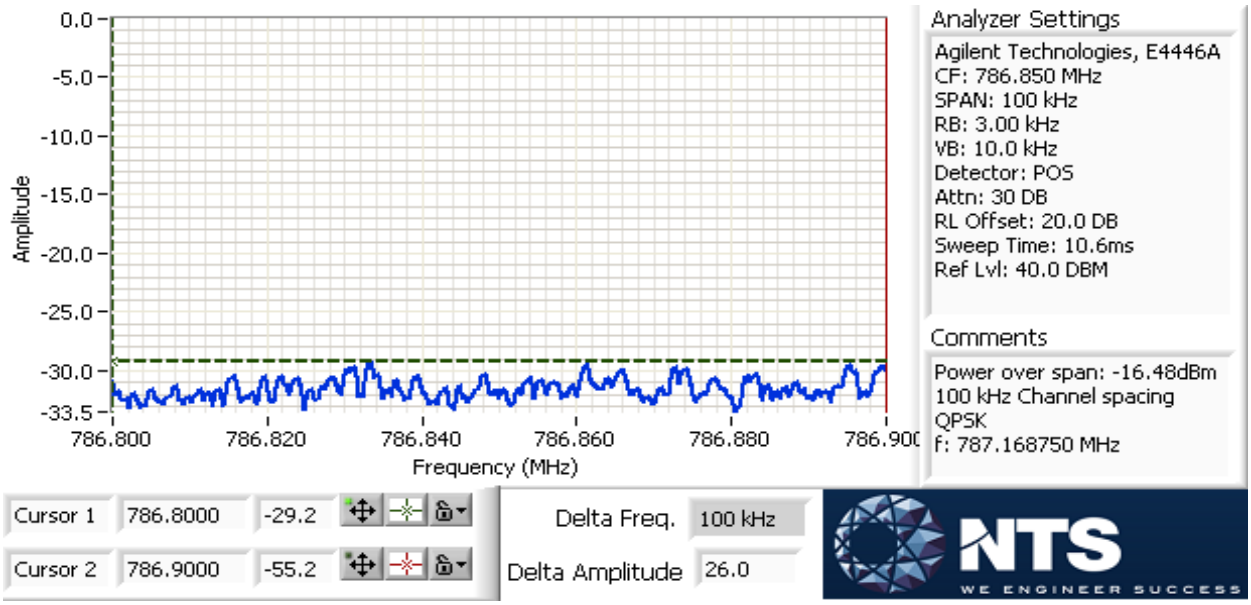
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 787 MHz, 100 kHz channel spacing (RF power: 34 dBm)



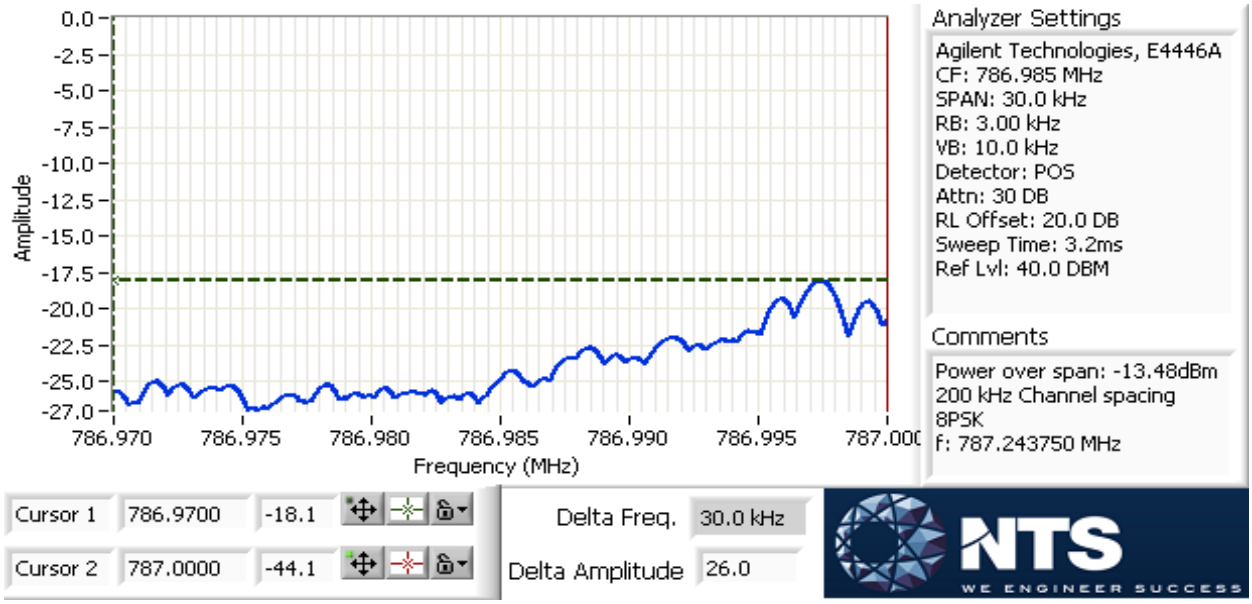


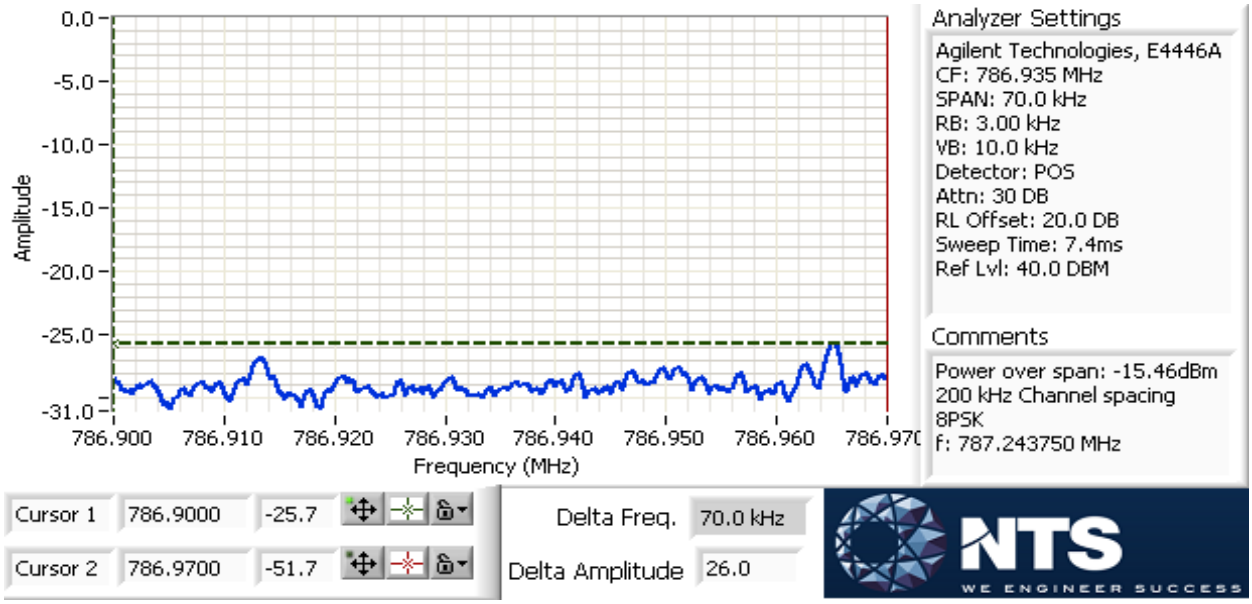
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



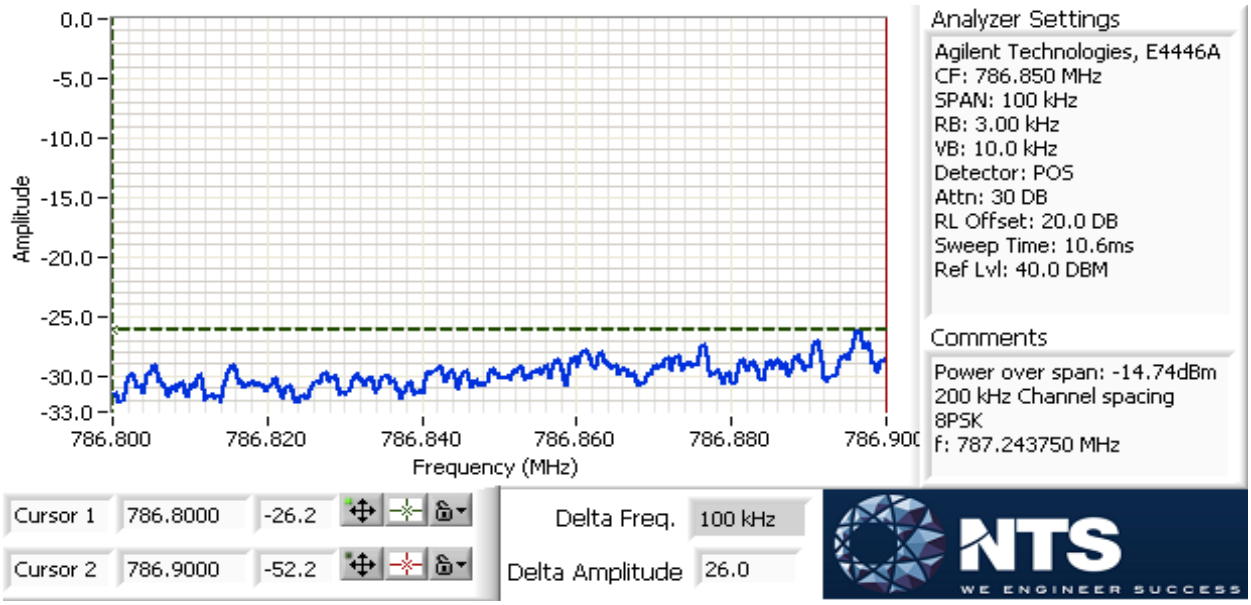
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 787 MHz, 200 kHz channel spacing (RF power: 34 dBm)



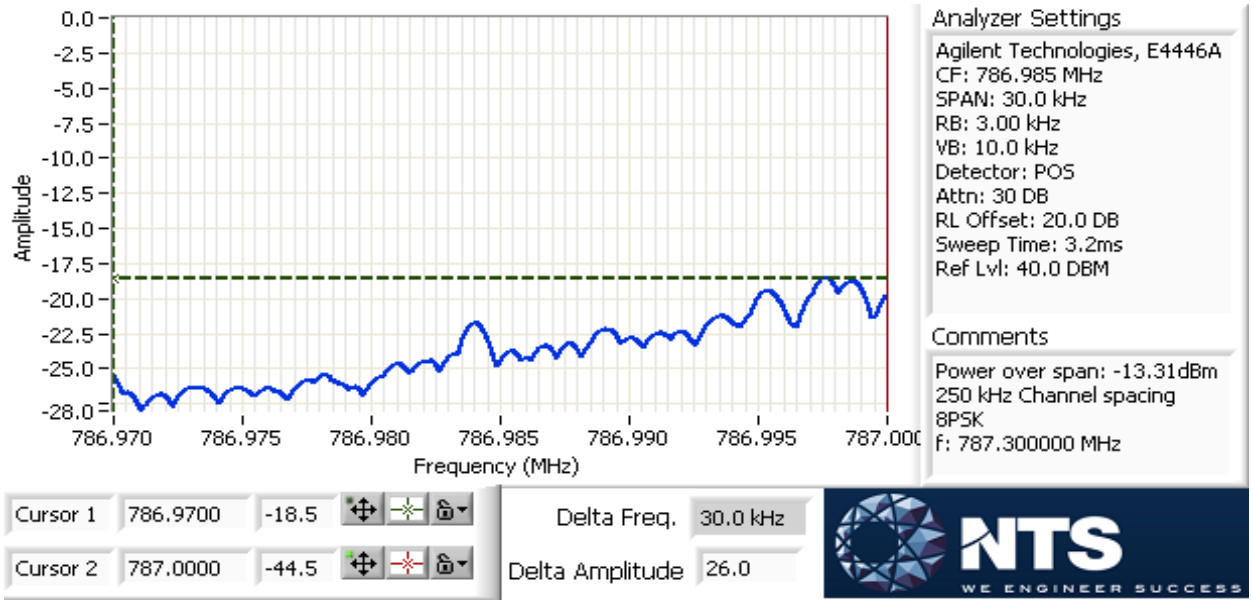


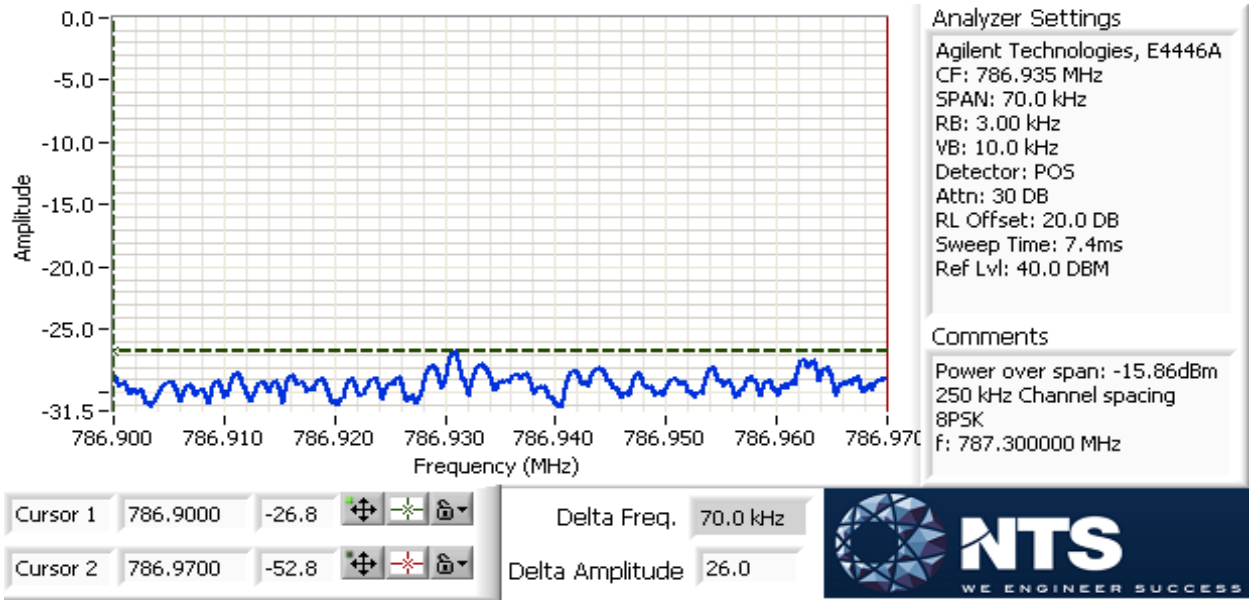
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



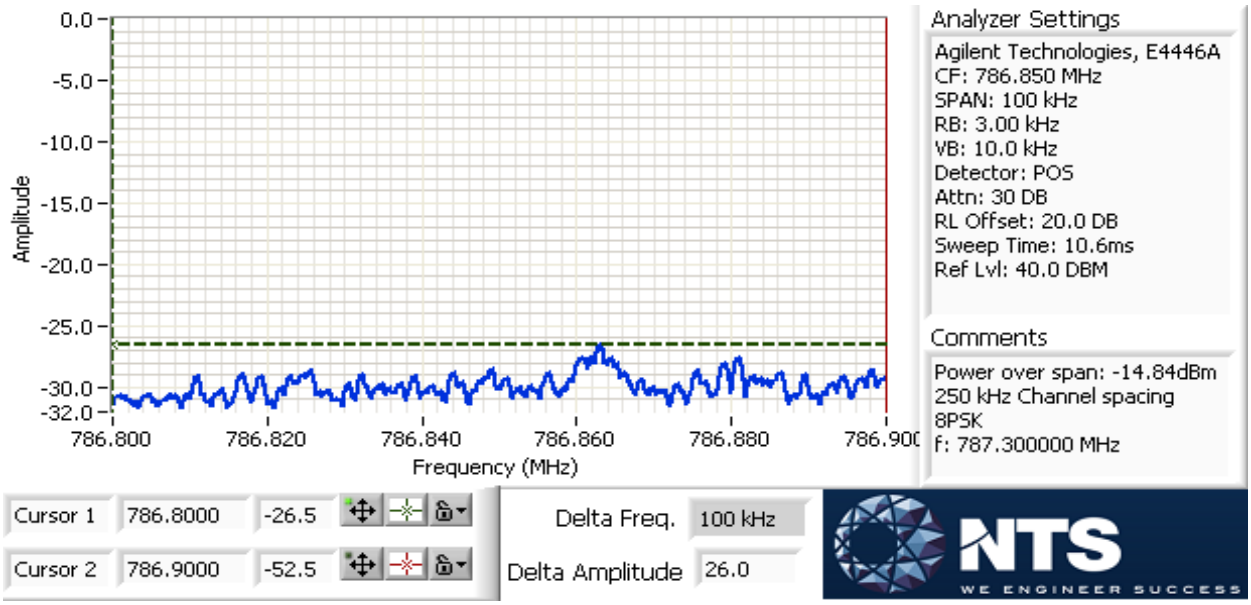
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case block edge at 787 MHz, 250 kHz channel spacing (RF power: 34 dBm)





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



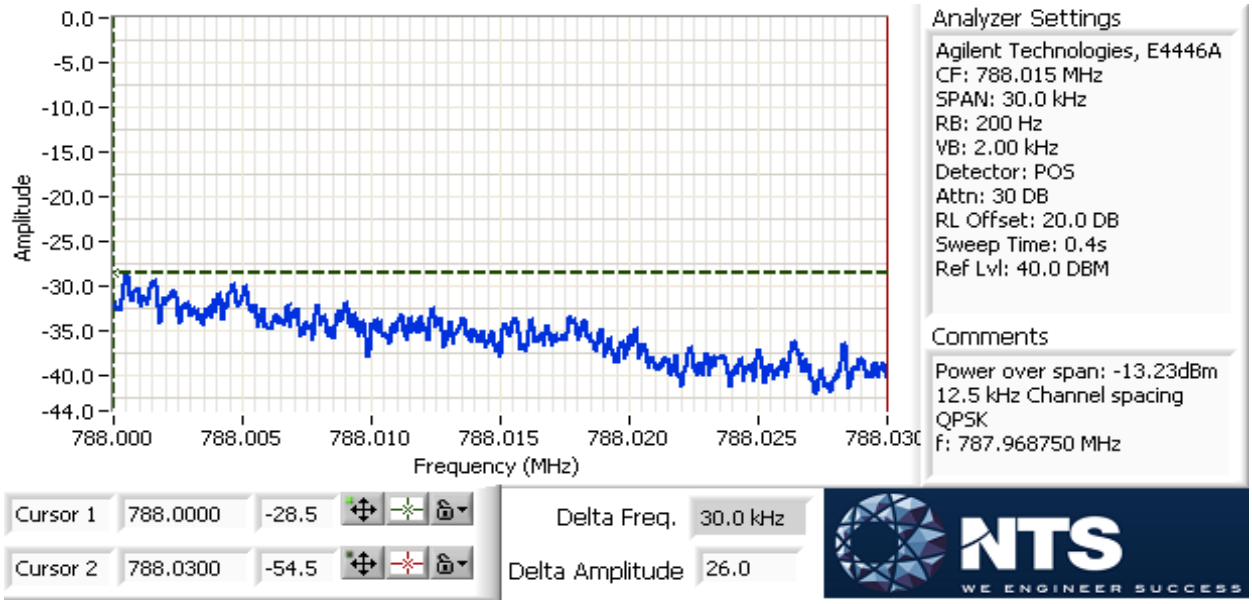
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

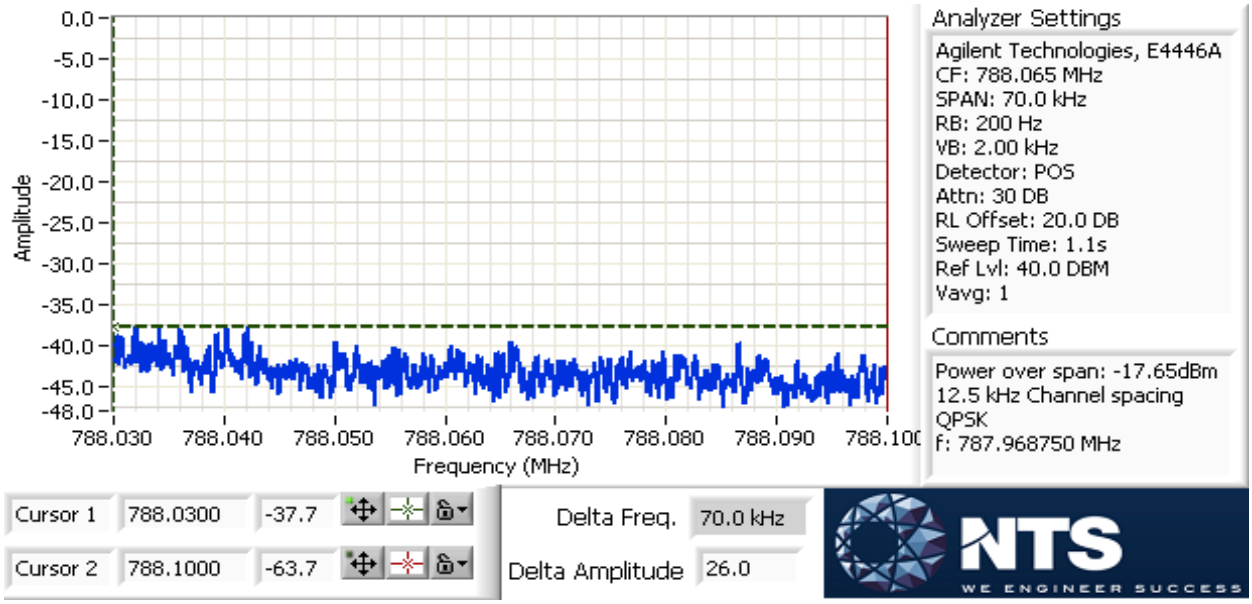
Run #2d: Band edge at 788 MHz

Power setting	Data rate	Channel plan	Modulation	Channel Frequency (MHz)	Measured dBm	Limit dBm	Result Pass/Fail
18000	10 kbps	12.5 kHz	MSK	787.968750	-14.6	-13.00	Pass
26500	23 kbps	12.5 kHz	QPSK	787.968750	**-13.2**	-13.00	Pass
26500	34 kbps	12.5 kHz	8PSK	787.968750	-14.2	-13.00	Pass
26500	45 kbps	12.5 kHz	16QAM	787.968750	-15.1	-13.00	Pass
26500	57 kbps	12.5 kHz	32QAM	787.968750	-15.5	-13.00	Pass
16000	19 kbps	25.0 kHz	MSK	787.956250	**-13.3**	-13.00	Pass
26000	36 kbps	25.0 kHz	QPSK	787.956250	-13.3	-13.00	Pass
26000	52 kbps	25.0 kHz	8PSK	787.956250	-14.7	-13.00	Pass
26000	70 kbps	25.0 kHz	16QAM	787.956250	-16.7	-13.00	Pass
26000	87 kbps	25.0 kHz	32QAM	787.956250	-16.3	-13.00	Pass
12000	39 kbps	50.0 kHz	MSK	787.937500	**-17.0**	-13.00	Pass
8800	71 kbps	50.0 kHz	QPSK	787.937500	-23.5	-13.00	Pass
9800	101 kbps	50.0 kHz	8PSK	787.937500	-23.2	-13.00	Pass
8800	137 kbps	50.0 kHz	16QAM	787.937500	-24.2	-13.00	Pass
8800	175 kbps	50.0 kHz	32QAM	787.937500	-25.1	-13.00	Pass
12000	76 kbps	100 kHz	MSK	787.831250	-19.1	-13.00	Pass
13200	160 kbps	100 kHz	QPSK	787.831250	**-16.0**	-13.00	Pass
13200	240 kbps	100 kHz	8PSK	787.831250	-17.1	-13.00	Pass
13300	320 kbps	100 kHz	16QAM	787.831250	-17.4	-13.00	Pass
13300	400 kbps	100 kHz	32QAM	787.831250	-18.3	-13.00	Pass
12500	153 kbps	200 kHz	MSK	787.756250	-18.0	-13.00	Pass
14000	320 kbps	200 kHz	QPSK	787.756250	-15.5	-13.00	Pass
14200	480 kbps	200 kHz	8PSK	787.756250	**-15.5**	-13.00	Pass
14200	640 kbps	200 kHz	16QAM	787.756250	-16.4	-13.00	Pass
14200	800 kbps	200 kHz	32QAM	787.756250	-17.5	-13.00	Pass
12500	194 kbps	250 kHz	MSK	787.700000	-18.1	-13.00	Pass
14200	403 kbps	250 kHz	QPSK	787.700000	-15.0	-13.00	Pass
14200	605 kbps	250 kHz	8PSK	787.700000	**-14.4**	-13.00	Pass
14500	806 kbps	250 kHz	16QAM	787.700000	-15.4	-13.00	Pass
14500	1008 kbps	250 kHz	32QAM	787.700000	-16.1	-13.00	Pass

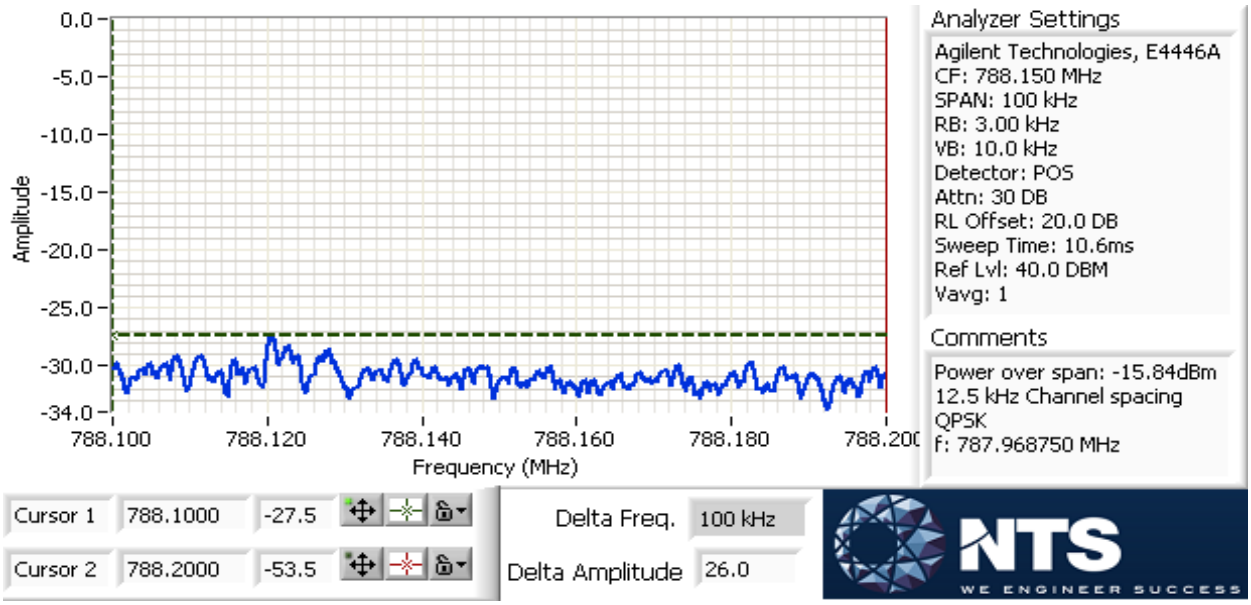
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case band edge at 788 MHz, 12.5 kHz channel spacing (RF power: 35 dBm)



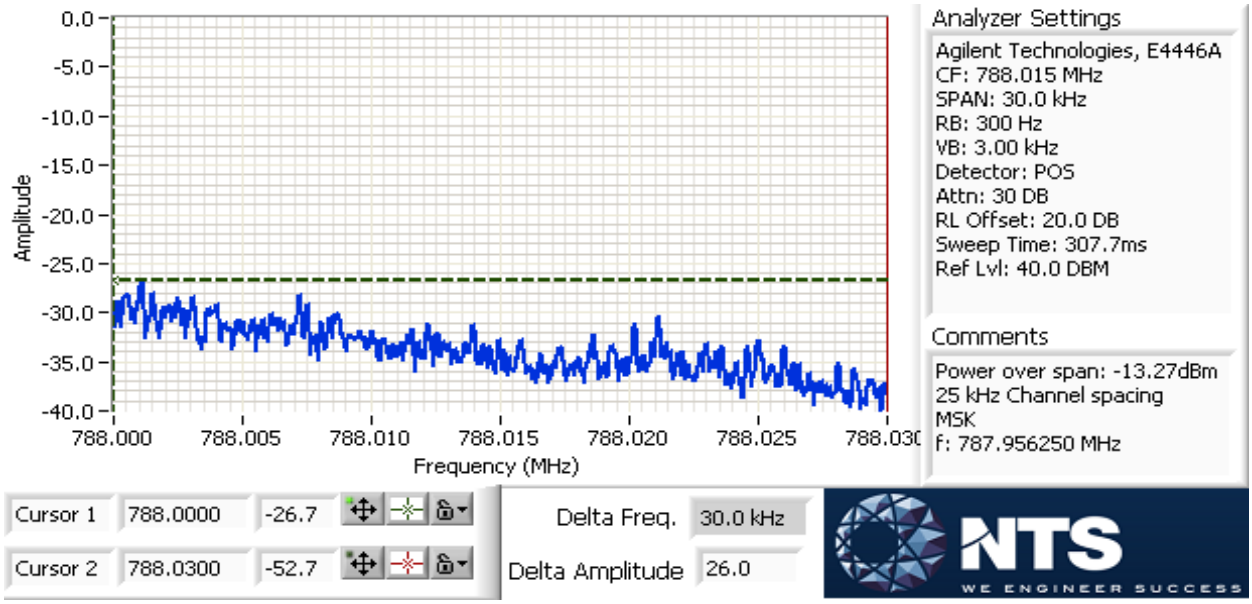


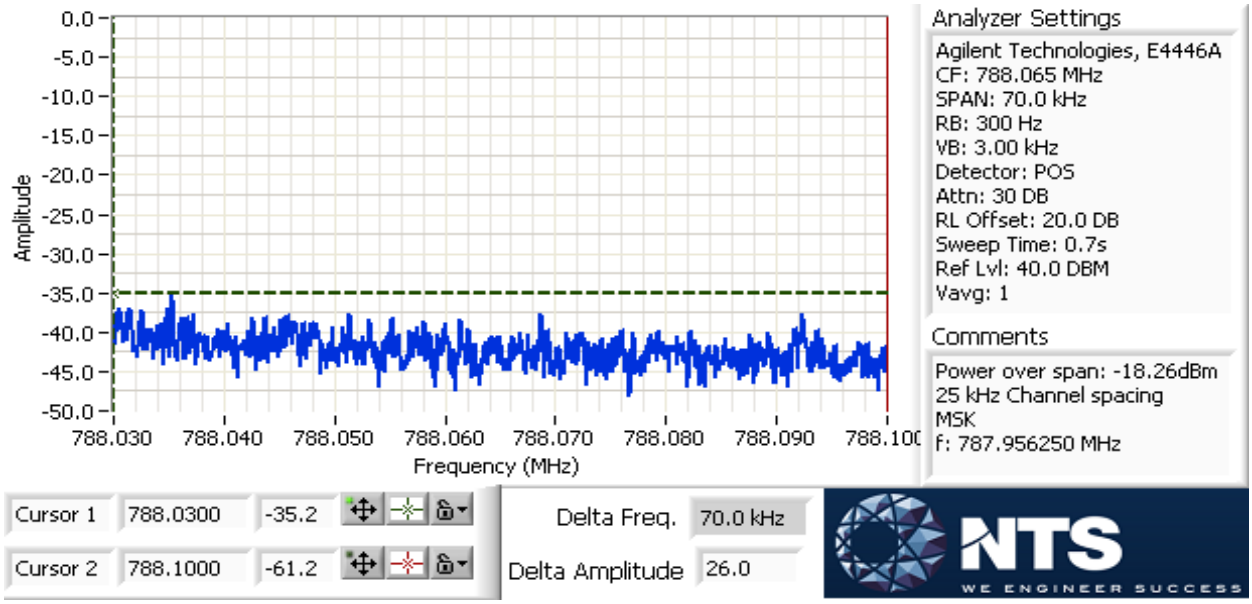
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



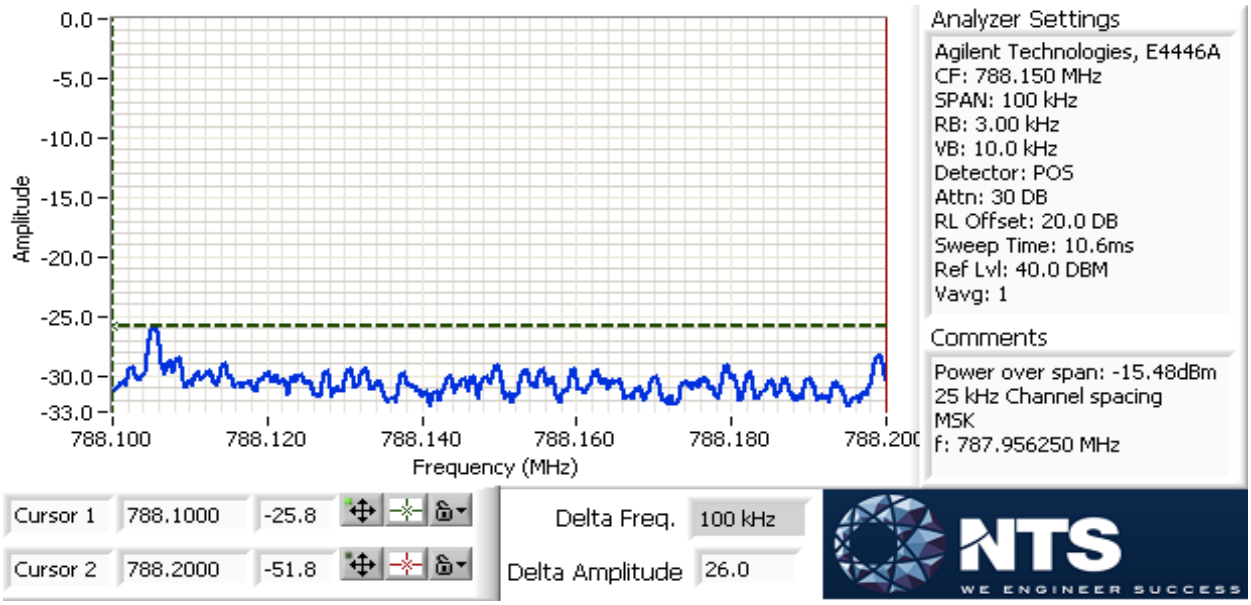
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case band edge at 788 MHz, 25 kHz channel spacing (RF power: 35 dBm)



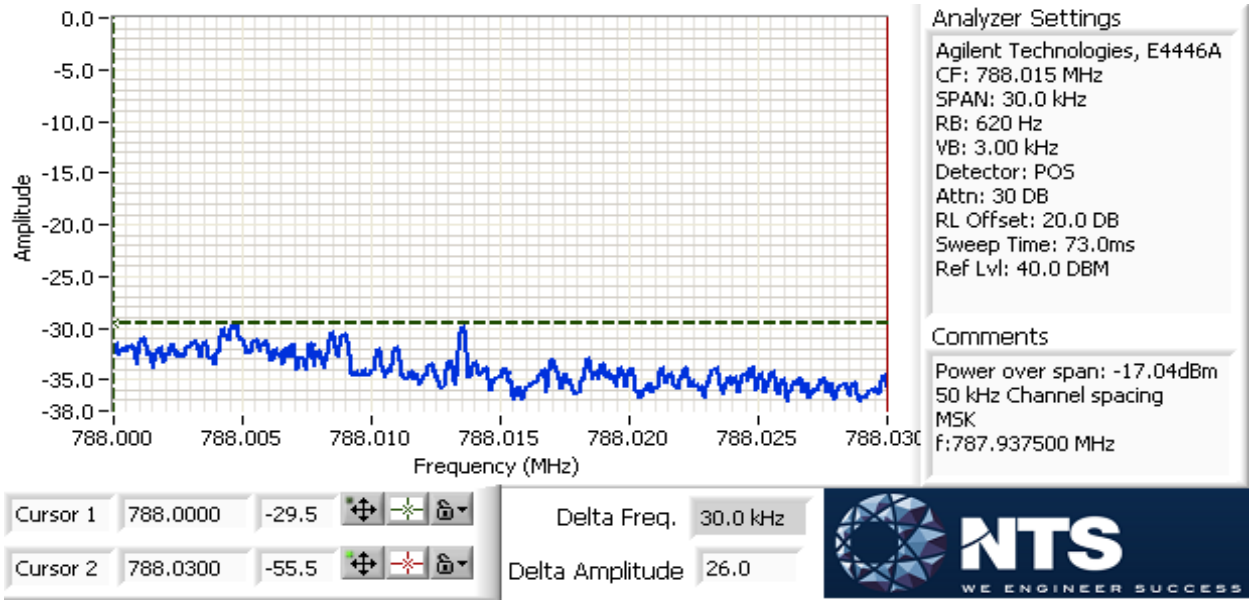


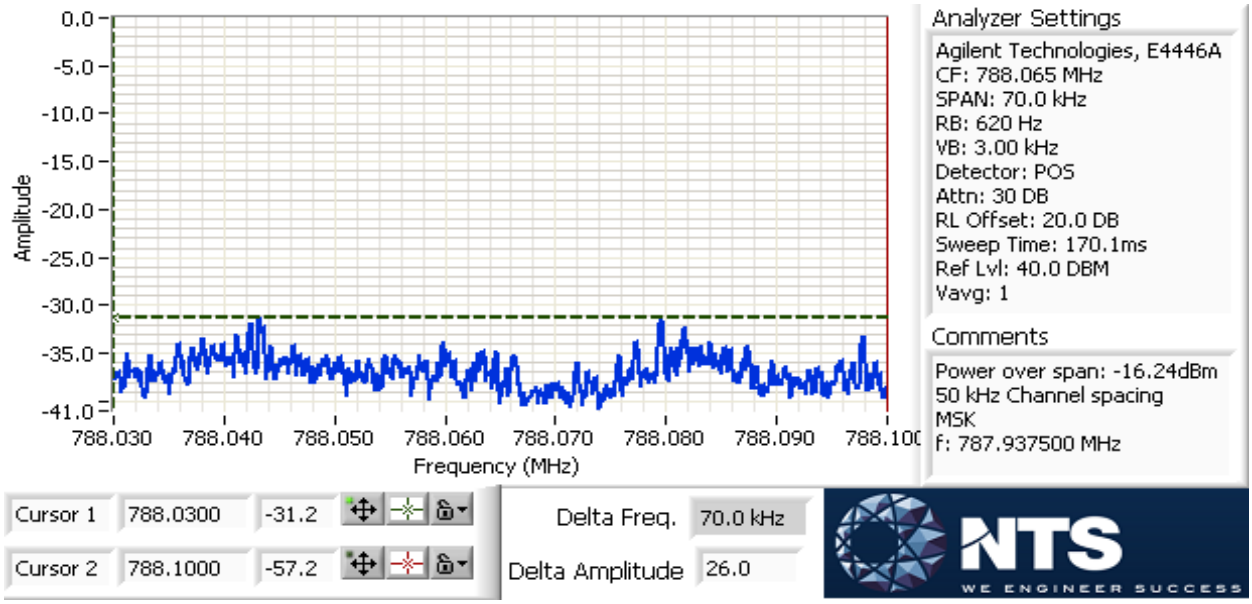
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



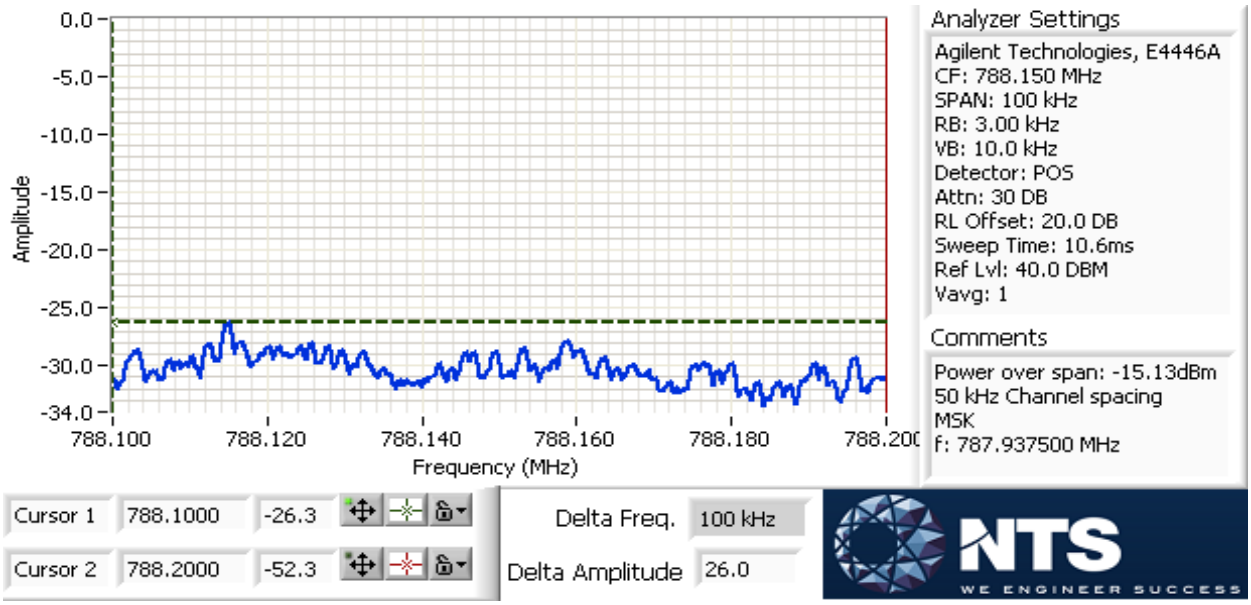
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case band edge at 788 MHz, 50 kHz channel spacing (RF power: 34 dBm)



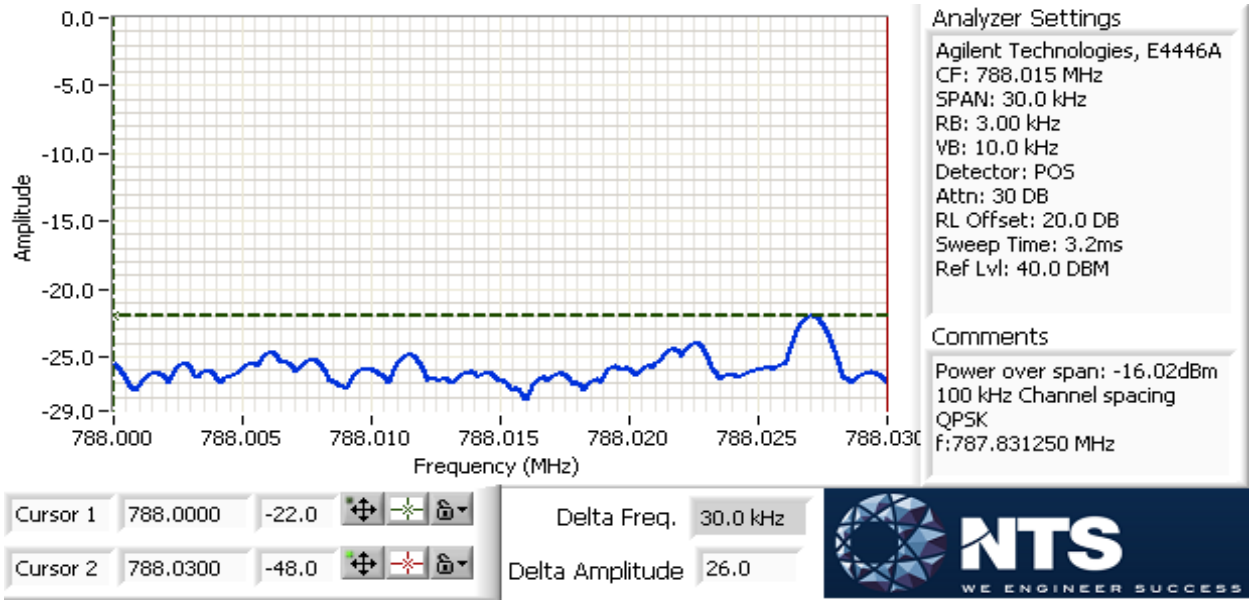


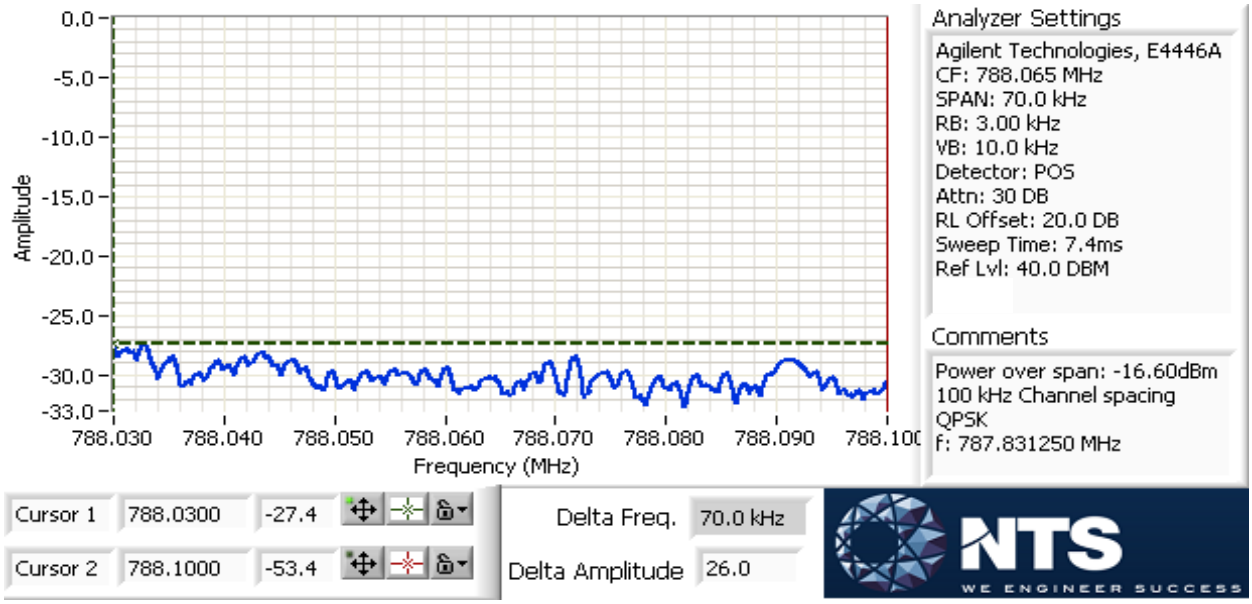
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



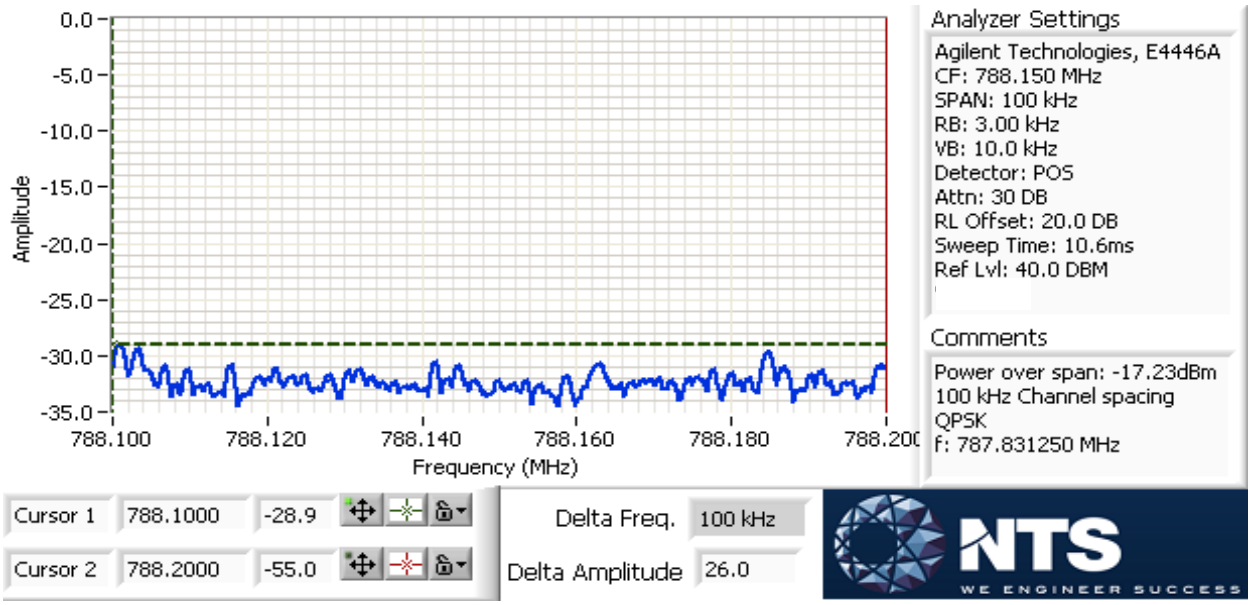
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case band edge at 788 MHz, 100 kHz channel spacing (RF power: 34 dBm)



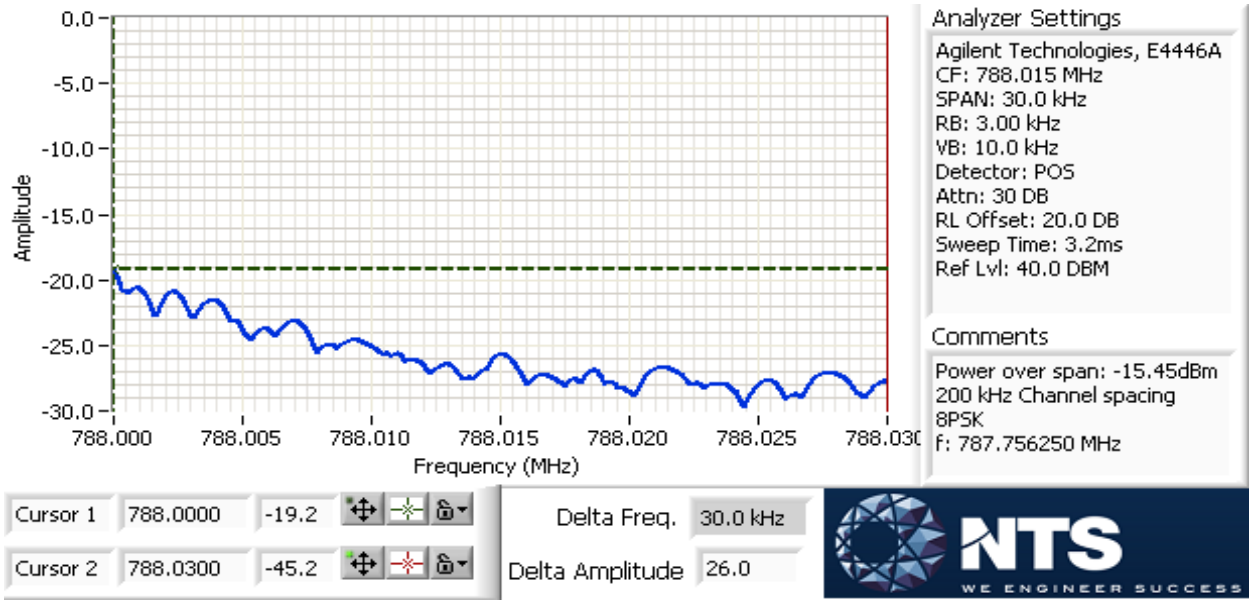


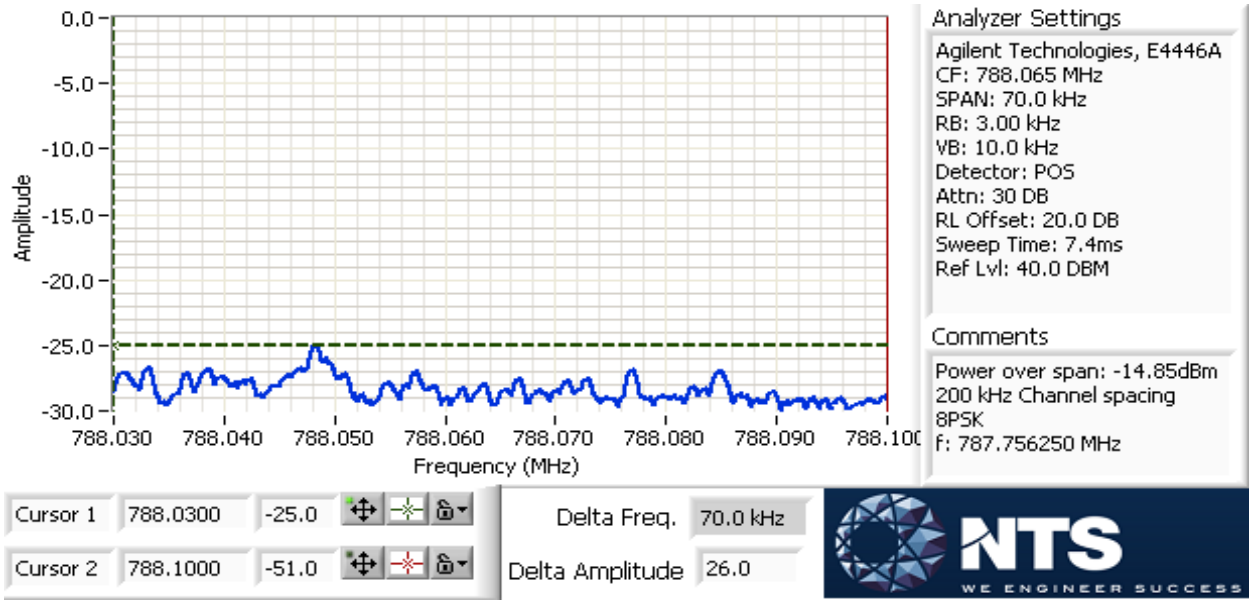
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



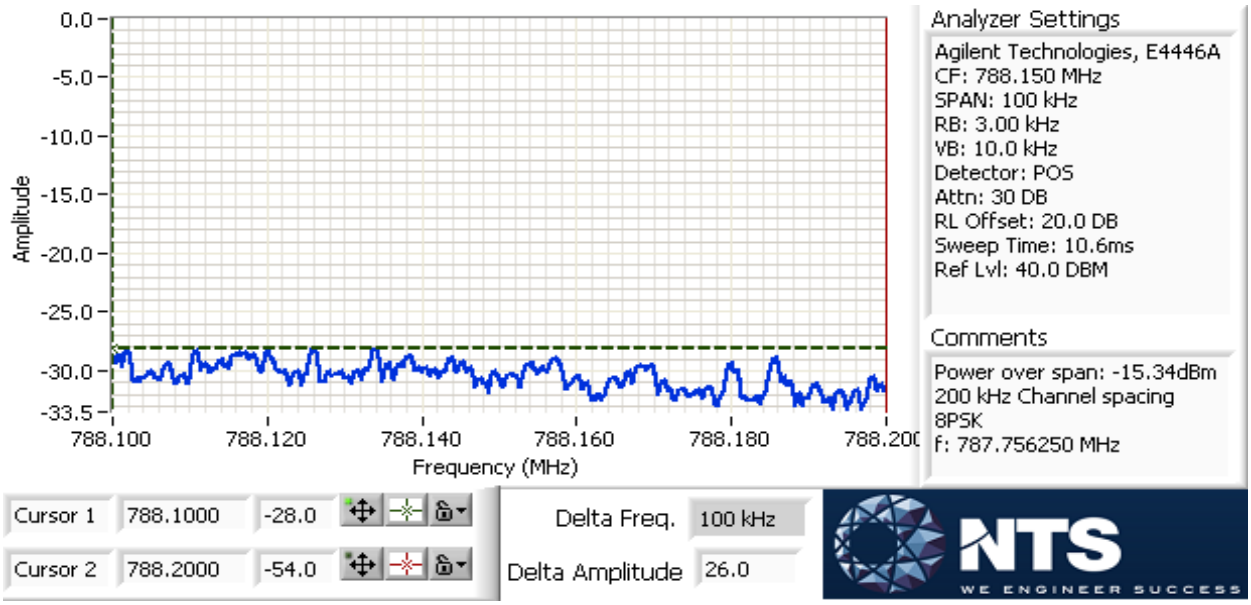
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case band edge at 788 MHz, 200 kHz channel spacing (RF power: 34 dBm)



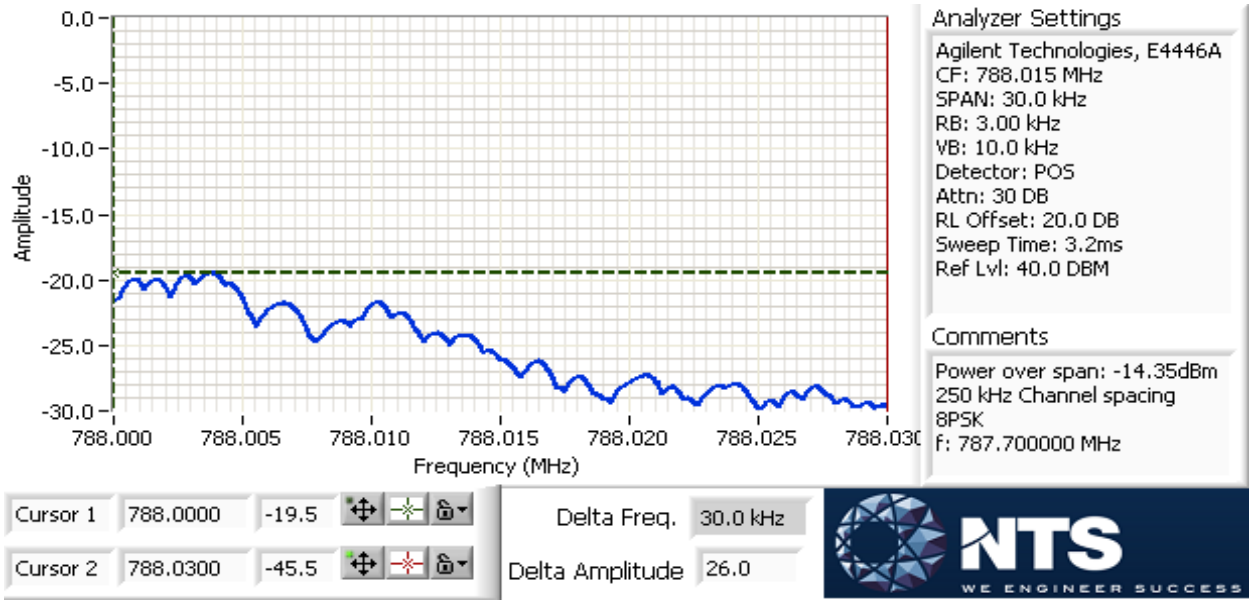


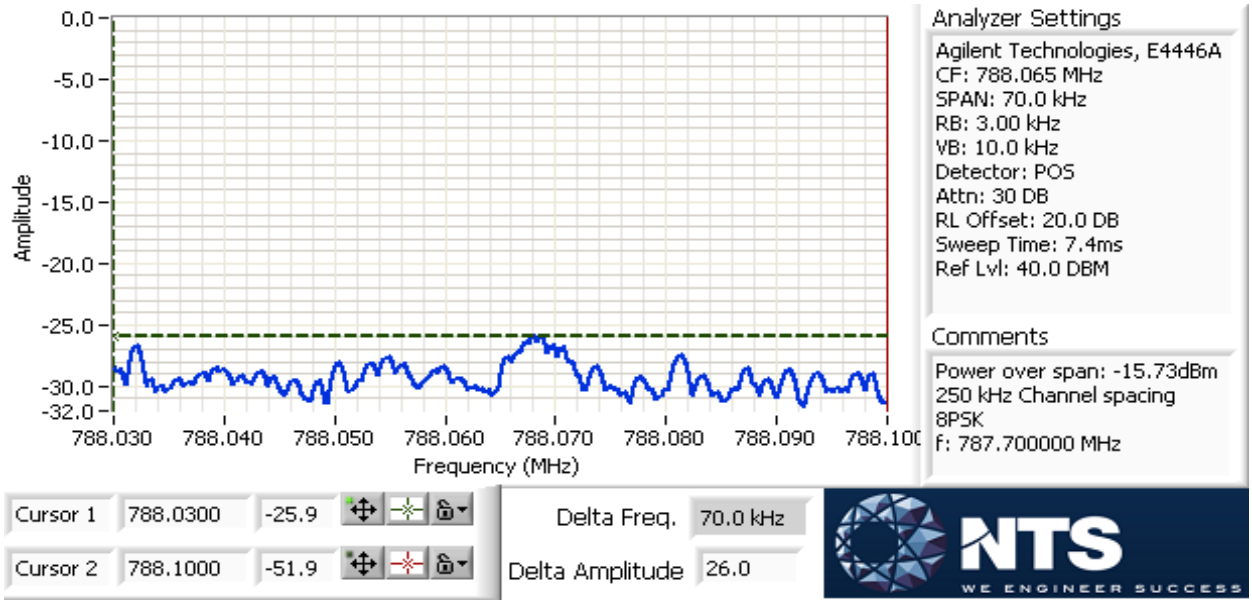
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



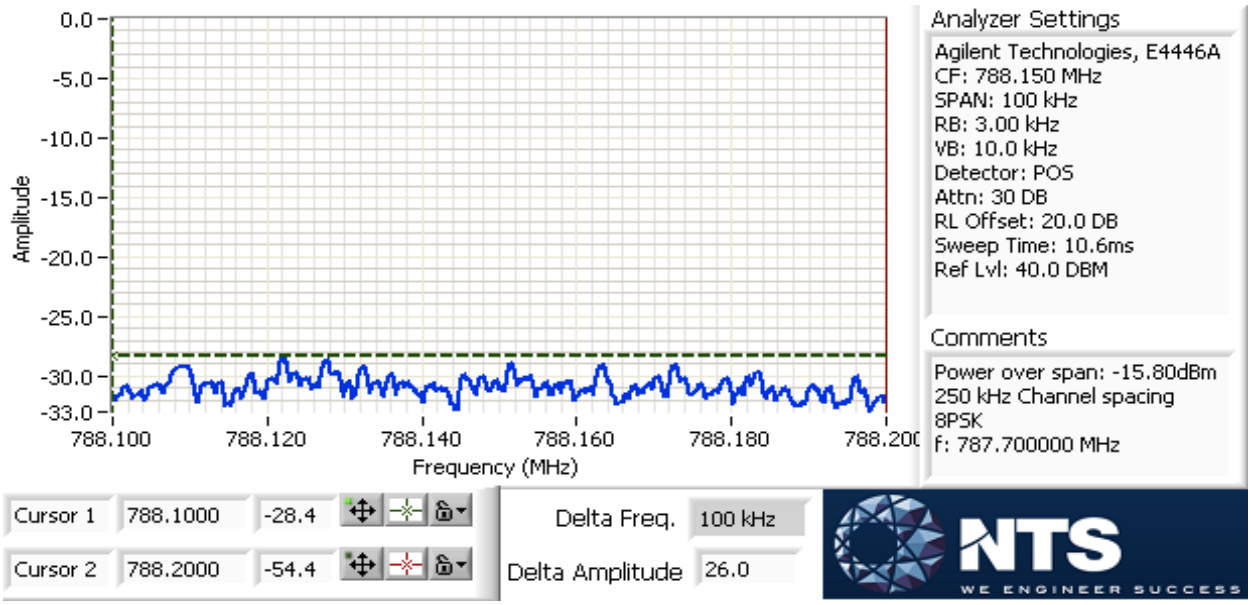
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Worst case band edge at 788 MHz, 200 kHz channel spacing (RF power: 34 dBm)





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

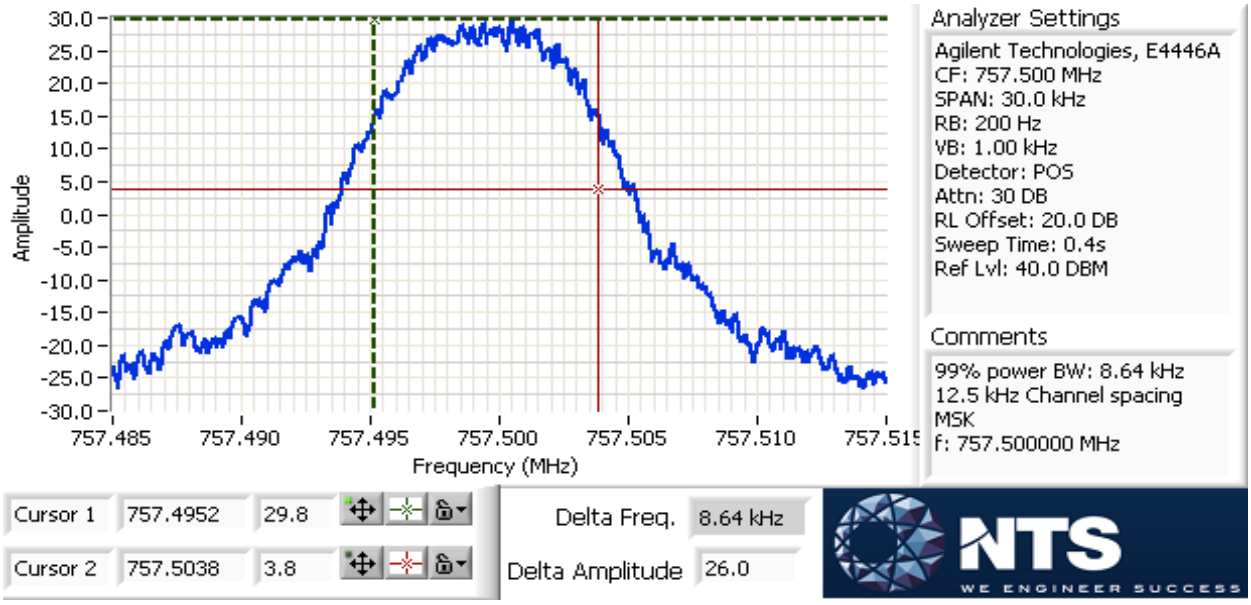


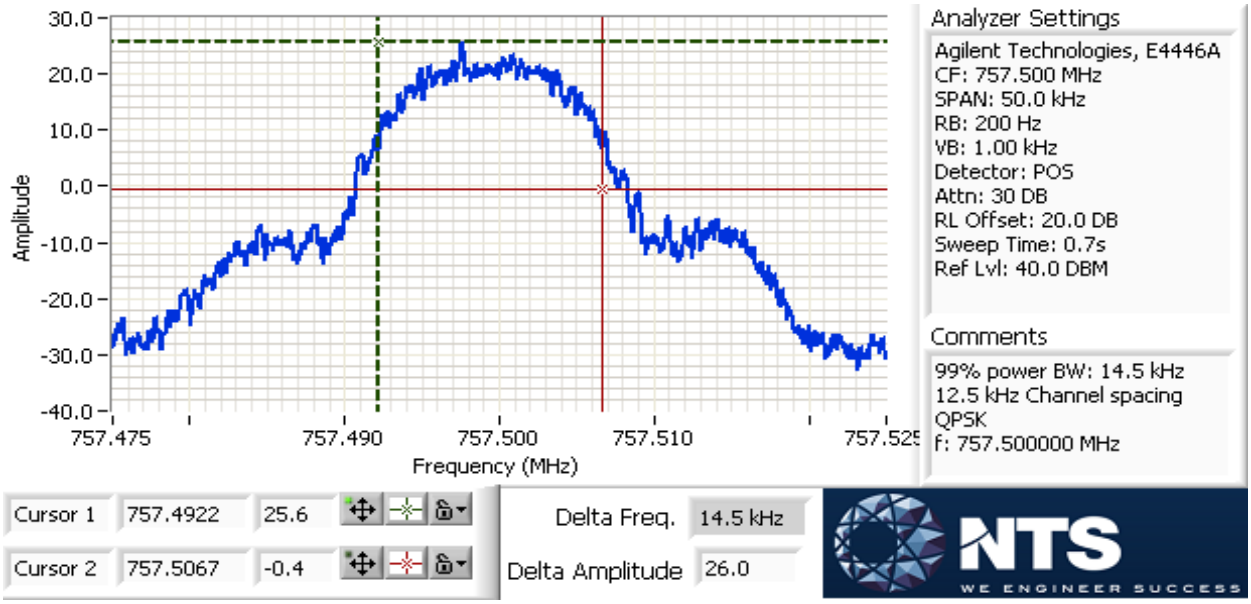
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #3: Signal Bandwidth at 757 - 758 MHz and 787 - 788 MHz bands

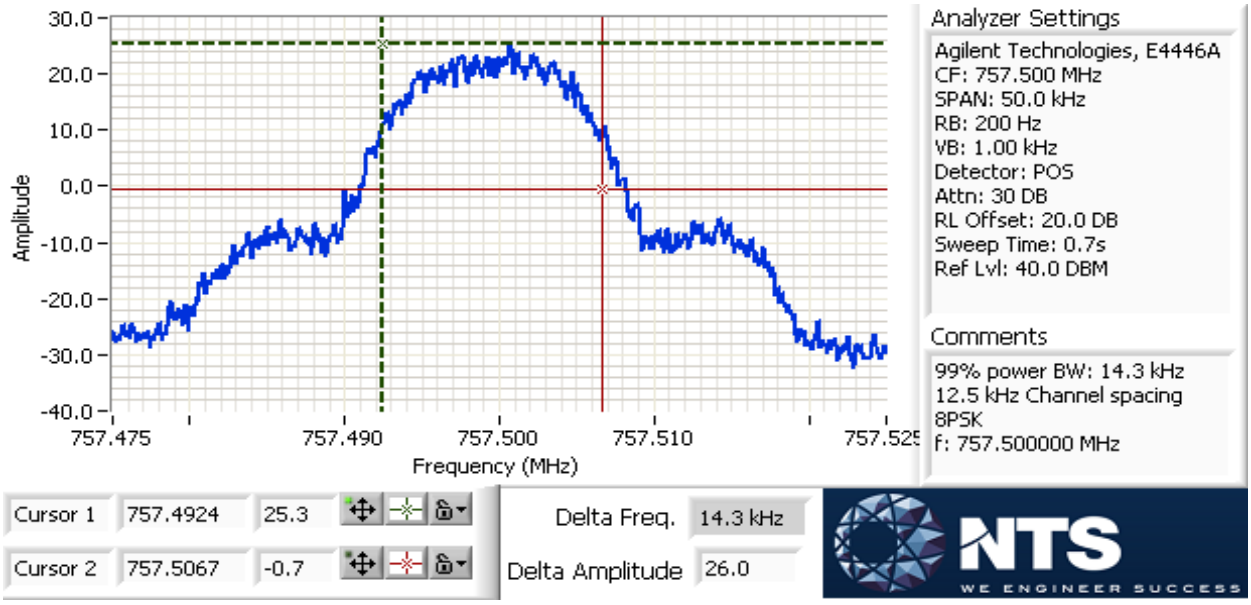
Power setting	Data rate	Channel plan	Modulation	Frequency MHz	RB (Hz)	Bandwidth (kHz) 26 dB	Bandwidth (kHz) 99%	Authorized bandwidth
21000	10 kbps	12.5 kHz	MSK	757.5	200	10.6	8.64	
26000	23 kbps	12.5 kHz	QPSK	757.5	200	16.9	14.5	
26000	34 kbps	12.5 kHz	8PSK	757.5	200	17.1	14.3	
26000	45 kbps	12.5 kHz	16QAM	757.5	200	16.9	14.5	
26000	57 kbps	12.5 kHz	32QAM	757.5	200	16.9	14.2	
18000	19 kbps	25.0 kHz	MSK	757.5	300	21.3	17.3	
25000	36 kbps	25.0 kHz	QPSK	757.5	300	27.2	21.9	
25000	52 kbps	25.0 kHz	8PSK	757.5	300	26.8	21.7	
25000	70 kbps	25.0 kHz	16QAM	757.5	300	26.4	21.7	
25000	87 kbps	25.0 kHz	32QAM	757.5	300	26.2	21.7	
14000	39 kbps	50.0 kHz	MSK	757.5	400	45.4	37.2	
14000	71 kbps	50.0 kHz	QPSK	757.5	510	53.9	43.4	
14000	101 kbps	50.0 kHz	8PSK	757.5	510	50.5	41.3	
18000	137 kbps	50.0 kHz	16QAM	757.5	510	51.8	42.5	
18000	175 kbps	50.0 kHz	32QAM	757.5	510	52.3	43.0	
13200	76 kbps	100 kHz	MSK	757.5	1000	86.5	67.6	
14200	160 kbps	100 kHz	QPSK	757.5	1000	100	88.2	
14200	240 kbps	100 kHz	8PSK	757.5	1000	99.8	87.9	
14200	320 kbps	100 kHz	16QAM	757.5	1000	100	87.9	
14200	400 kbps	100 kHz	32QAM	757.5	1000	100	87.9	
14000	153 kbps	200 kHz	MSK	757.5	2000	171	134	
15000	320 kbps	200 kHz	QPSK	757.5	2000	199	174	
15000	480 kbps	200 kHz	8PSK	757.5	2000	201	175	
15000	640 kbps	200 kHz	16QAM	757.5	2000	200	175	
15000	800 kbps	200 kHz	32QAM	757.5	2000	199	174	
14000	194 kbps	250 kHz	MSK	757.5	3000	213	168	
15000	403 kbps	250 kHz	QPSK	757.5	3000	251	220	
15000	605 kbps	250 kHz	8PSK	757.5	3000	250	220	
15000	806 kbps	250 kHz	16QAM	757.5	3000	250	218	
15000	1008 kbps	250 kHz	32QAM	757.5	3000	251	220	

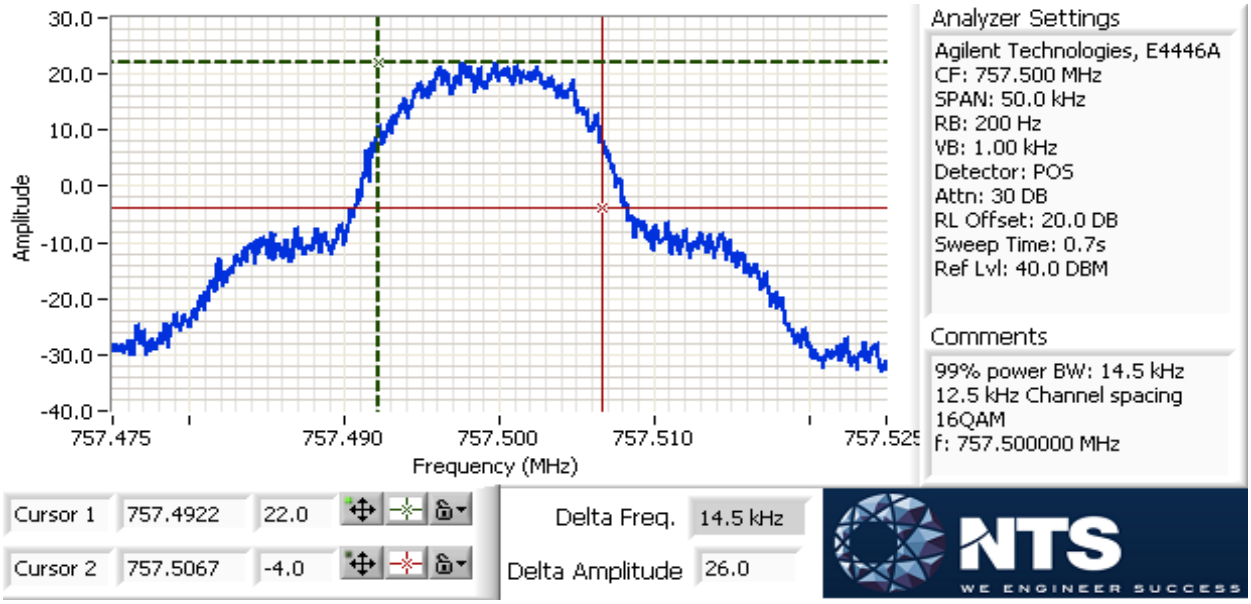
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



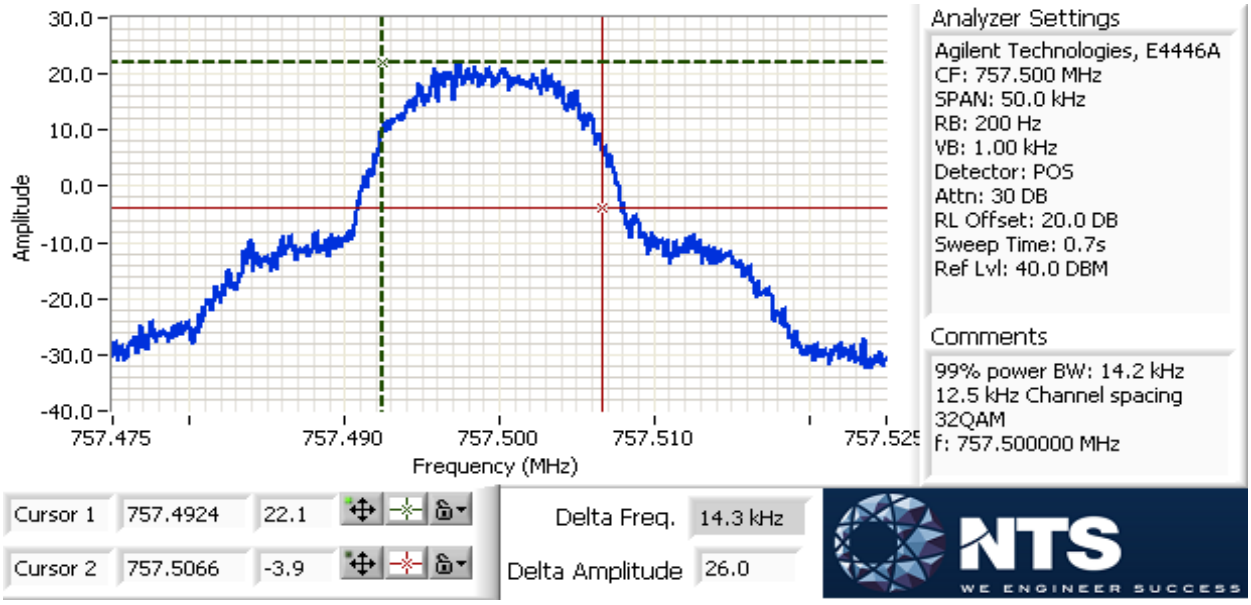


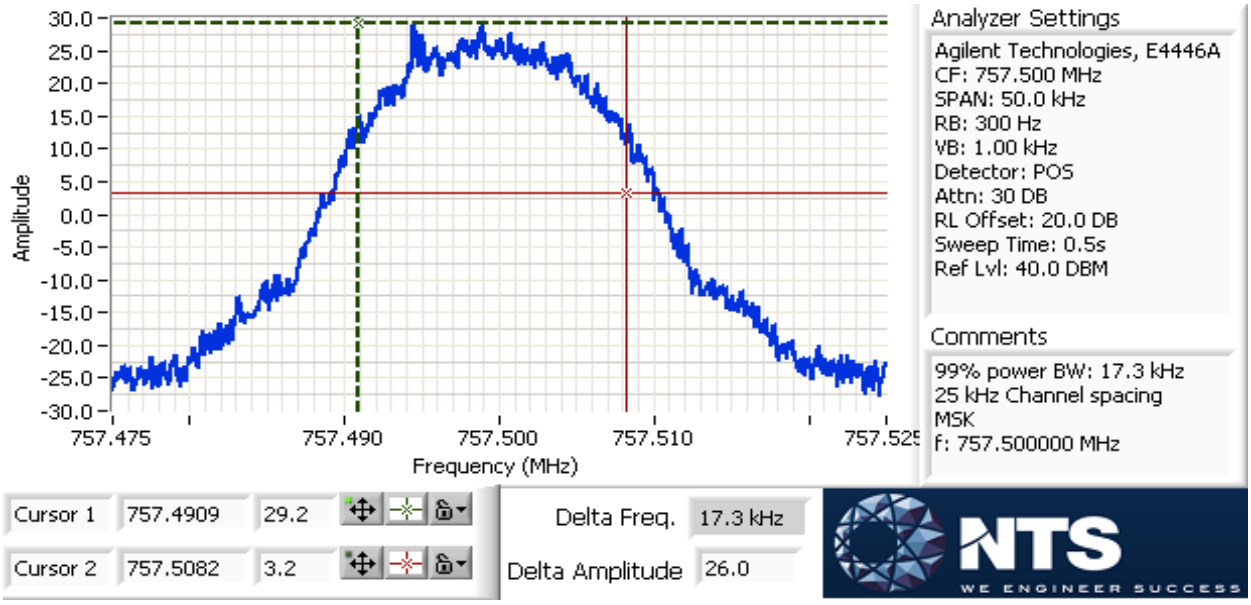
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



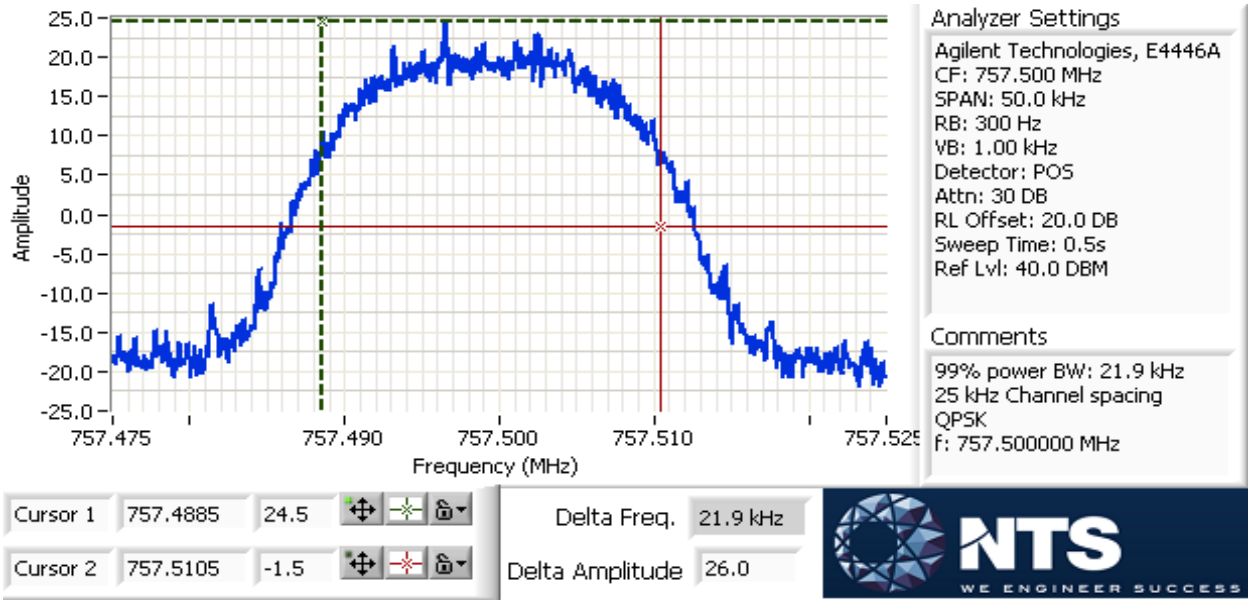


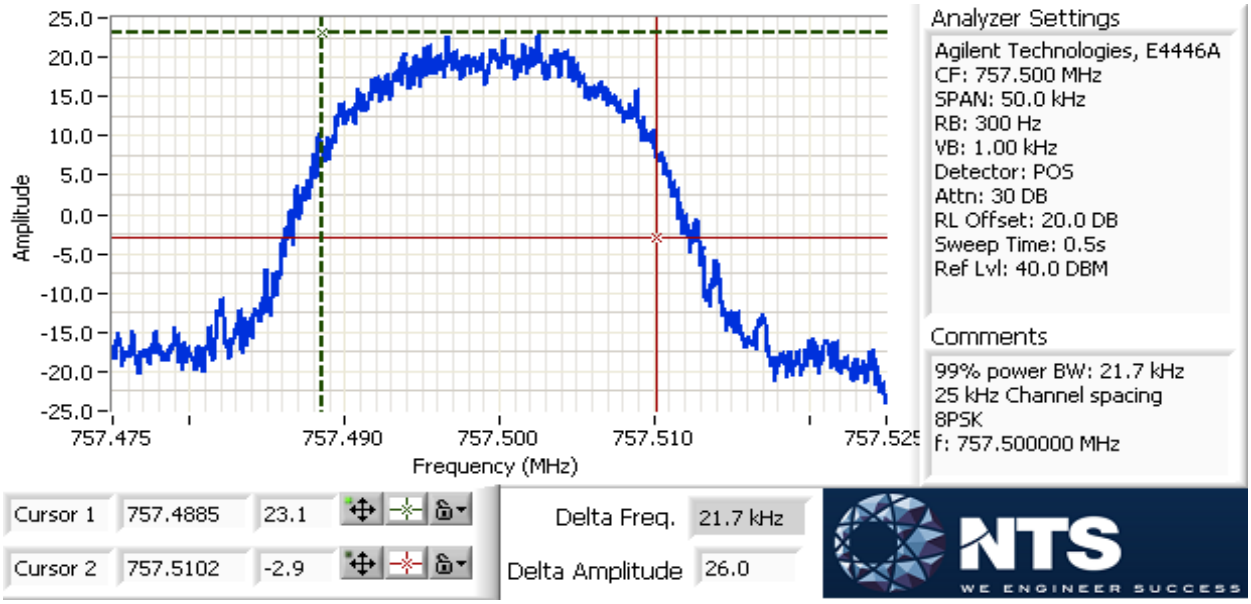
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



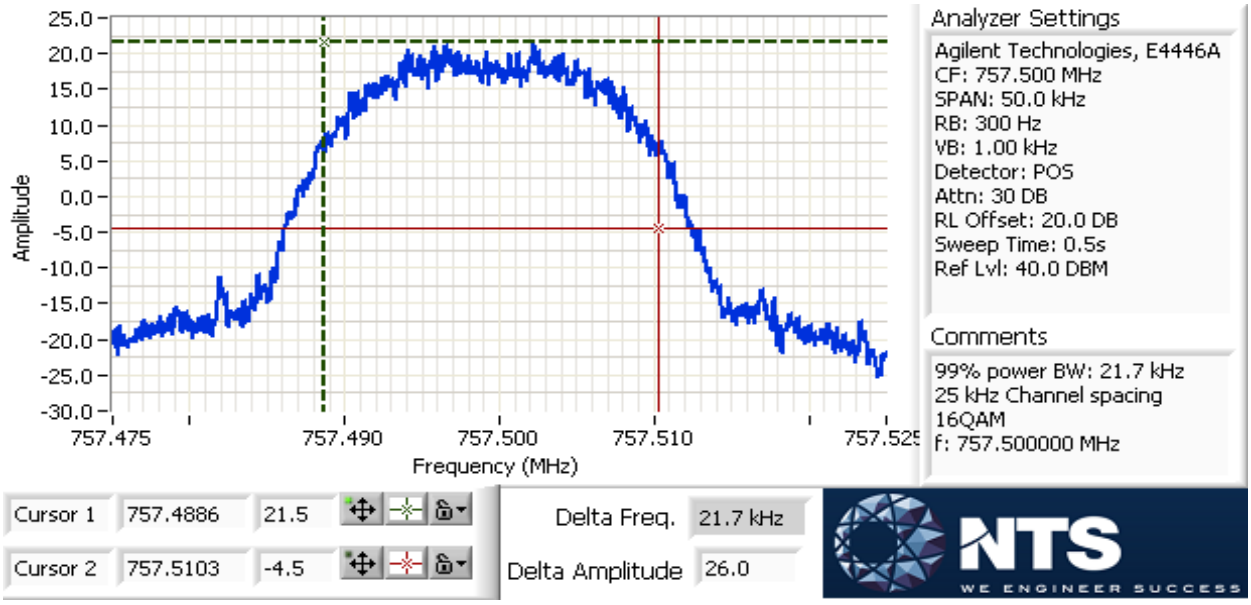


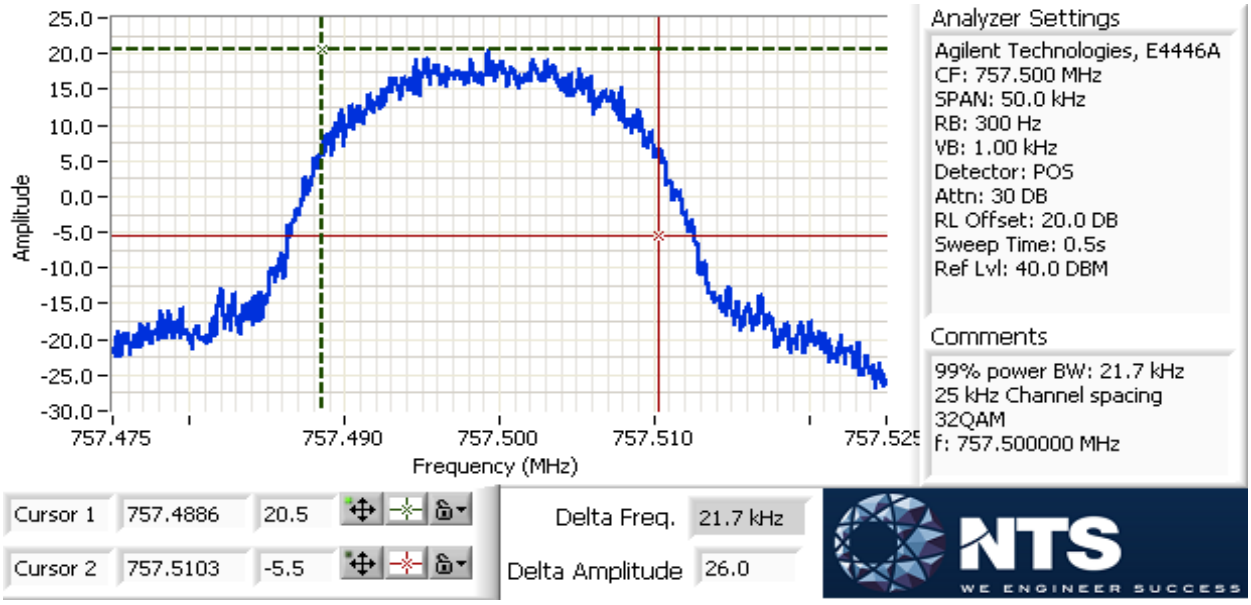
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



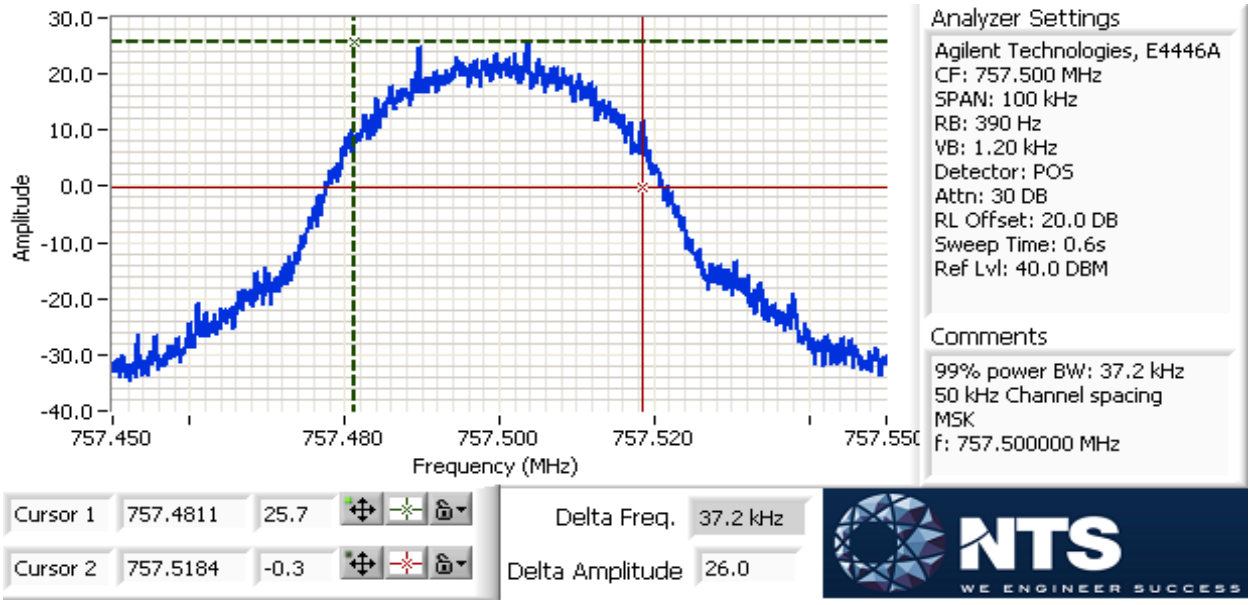


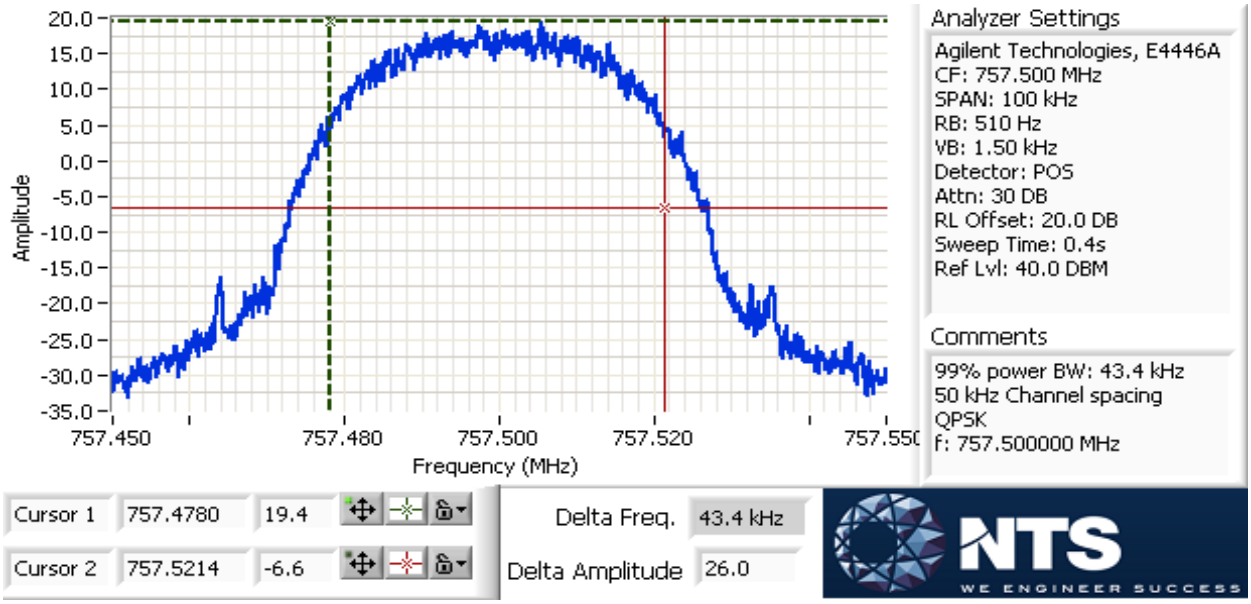
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



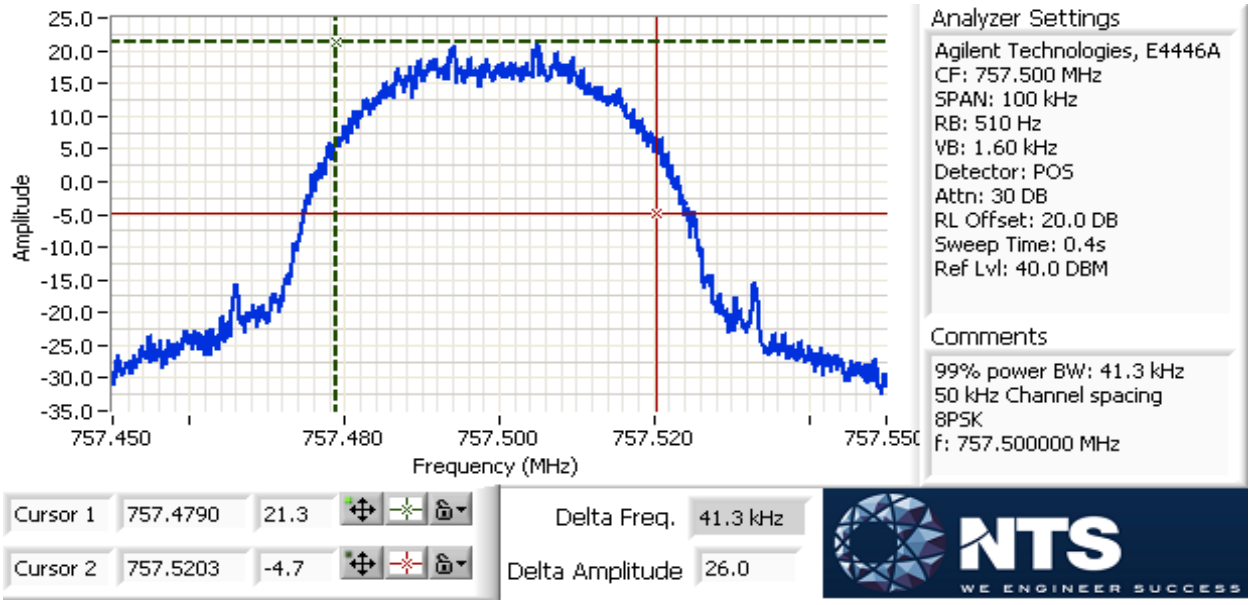


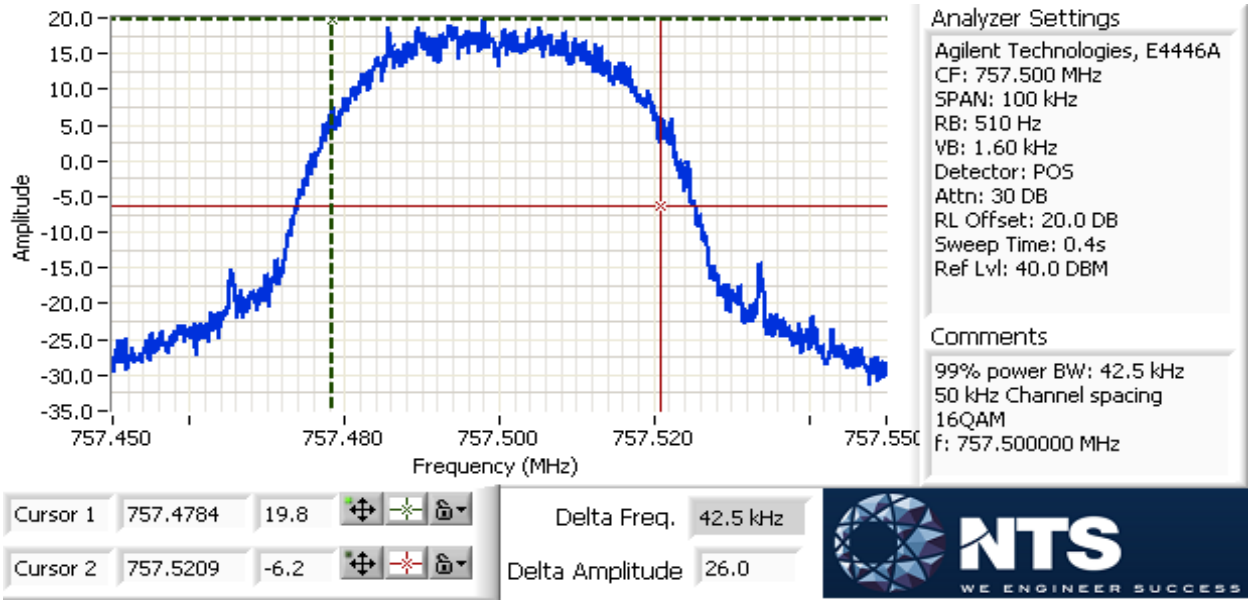
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



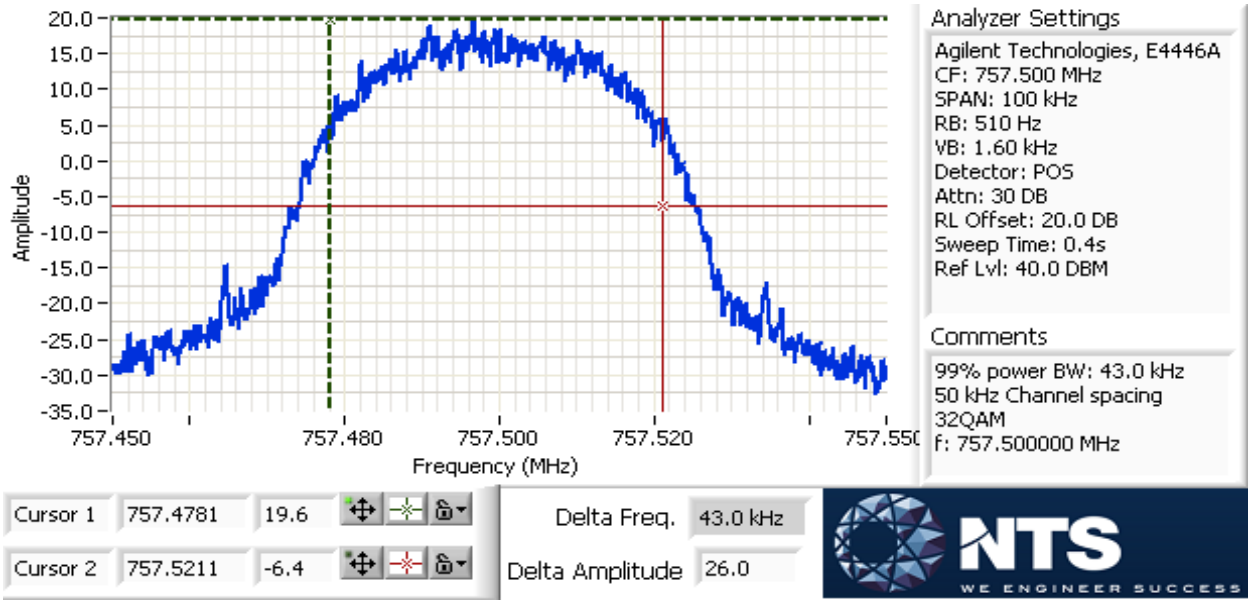


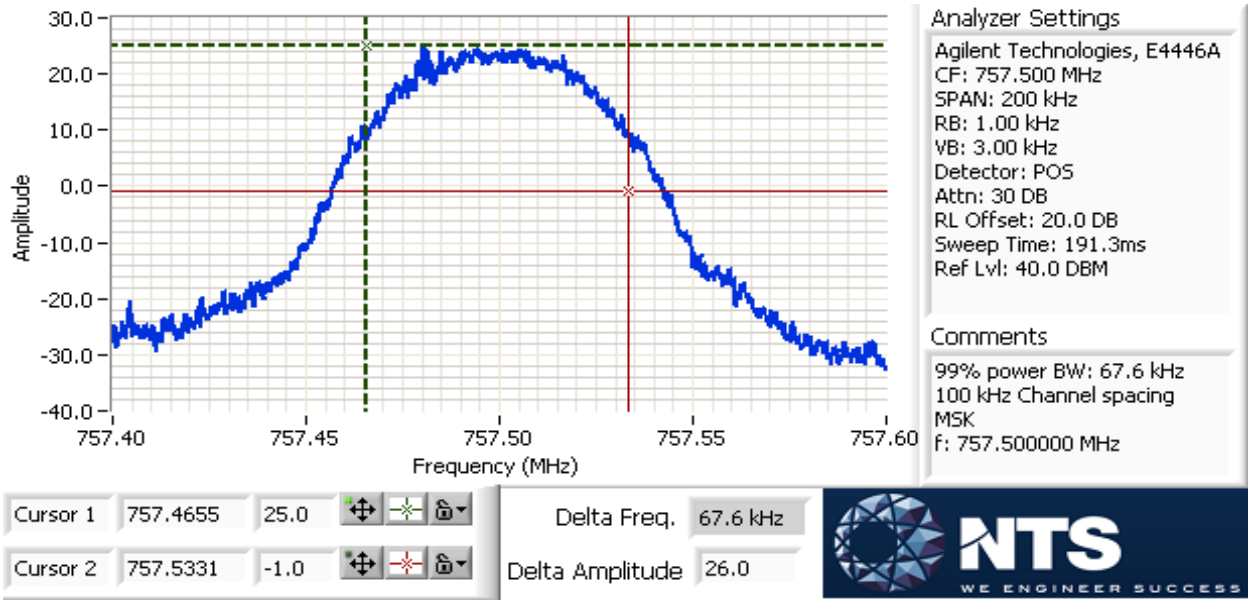
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



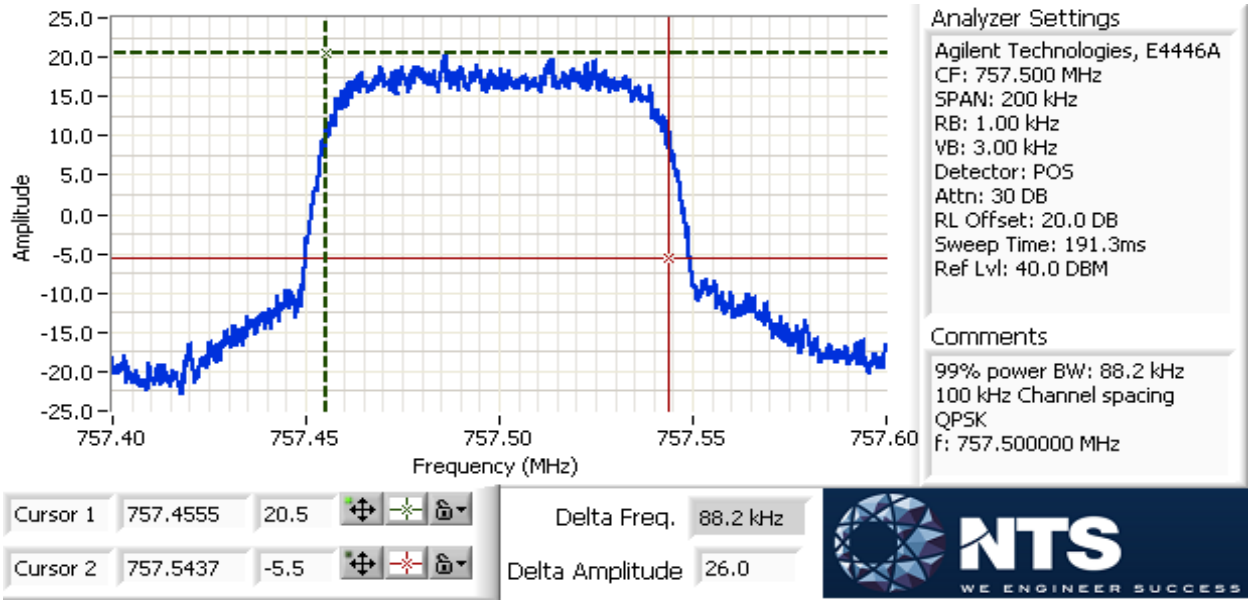


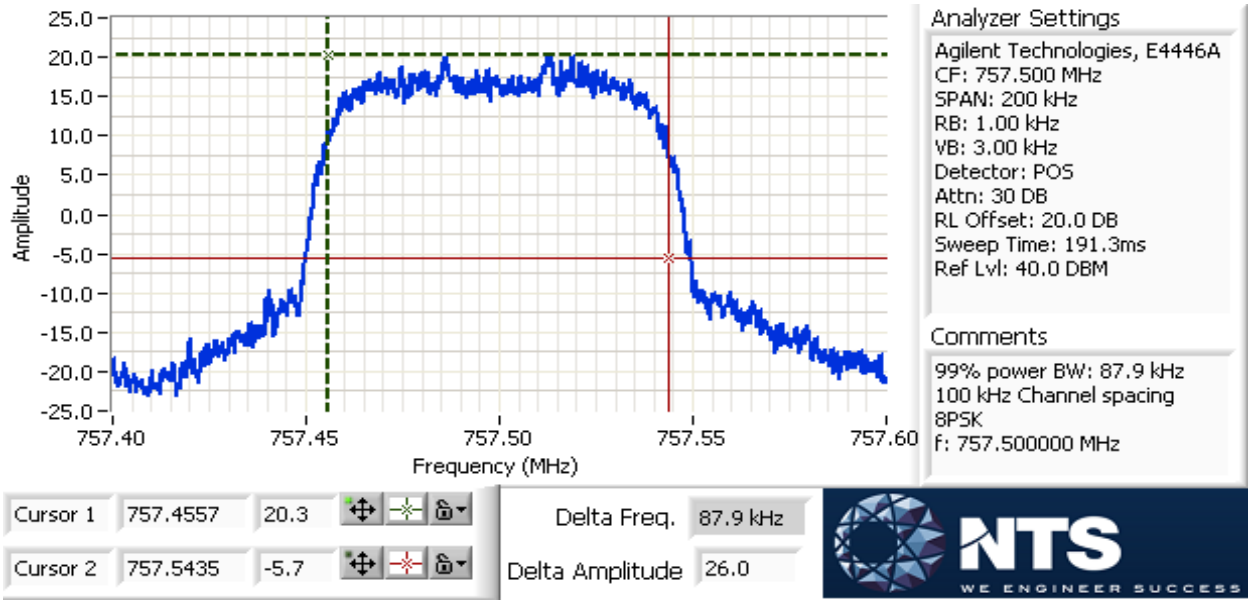
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



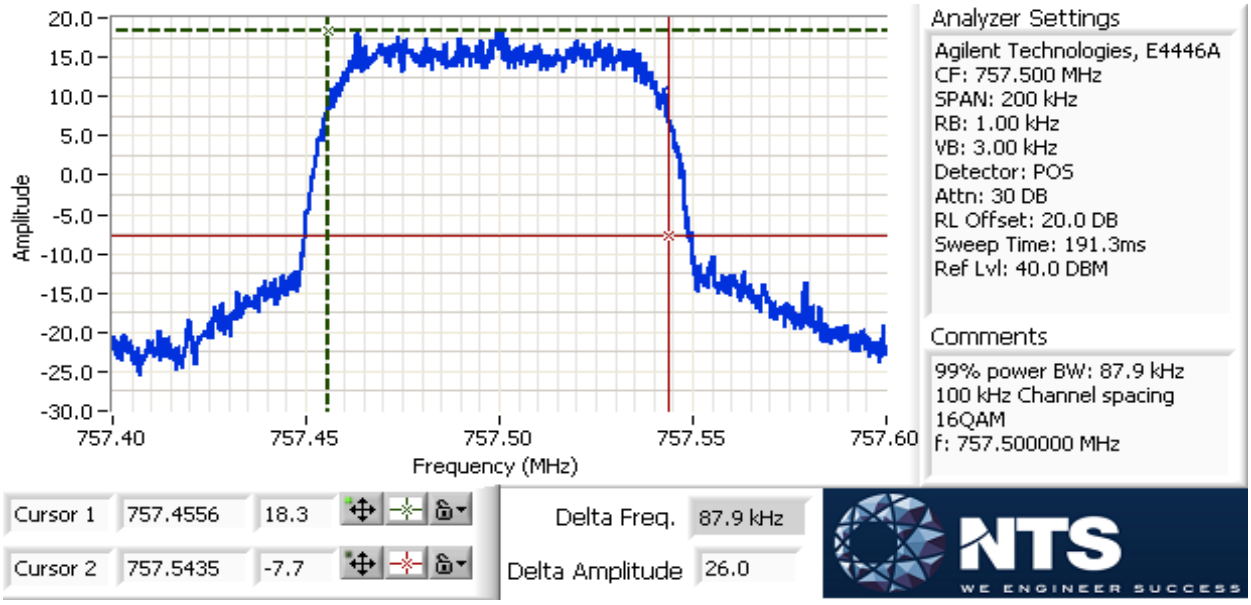


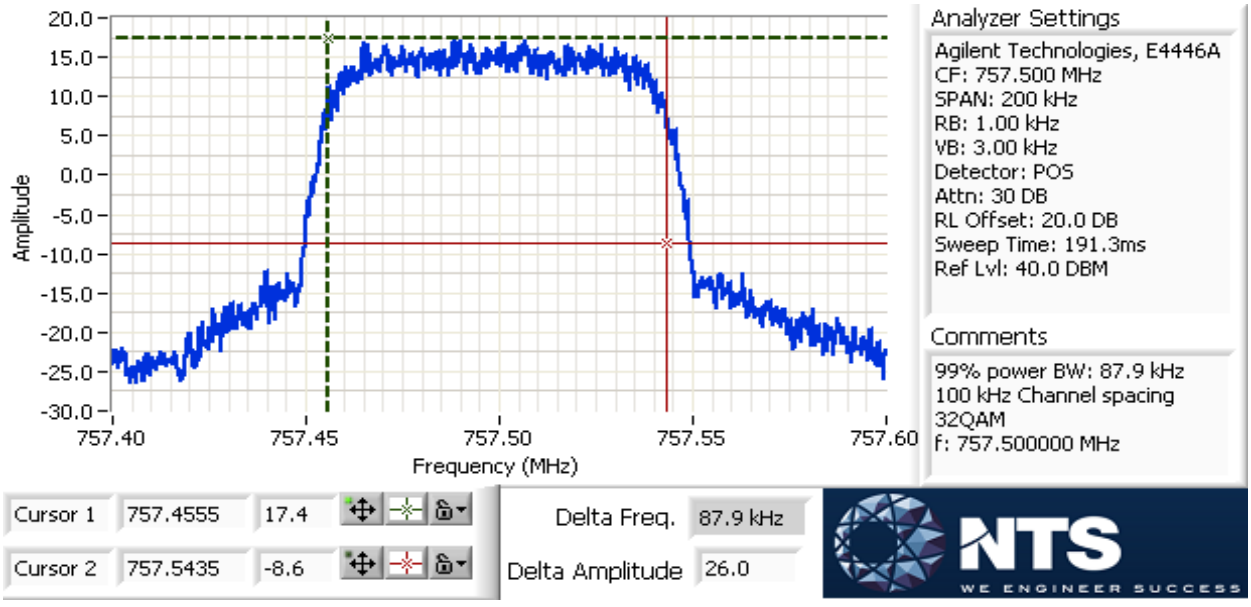
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



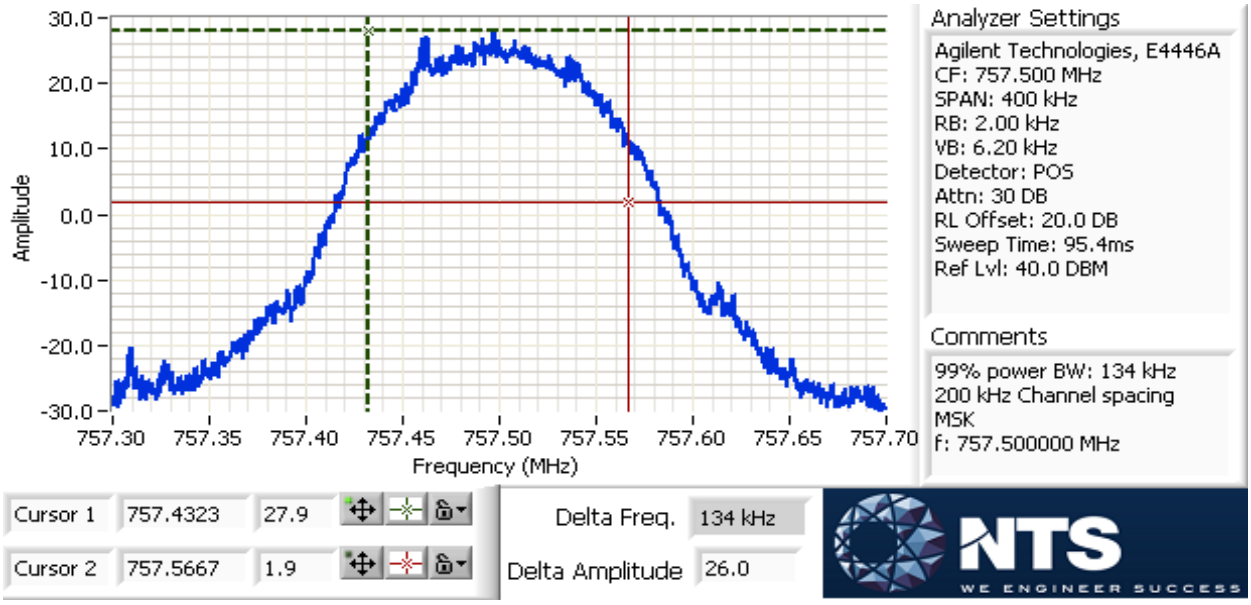


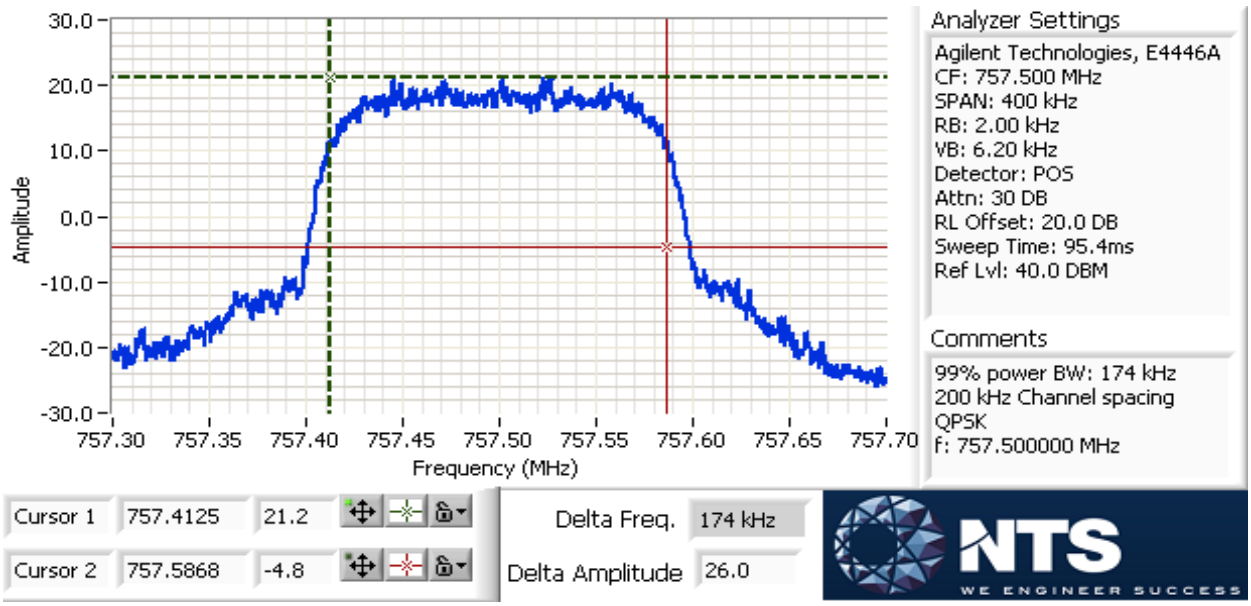
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



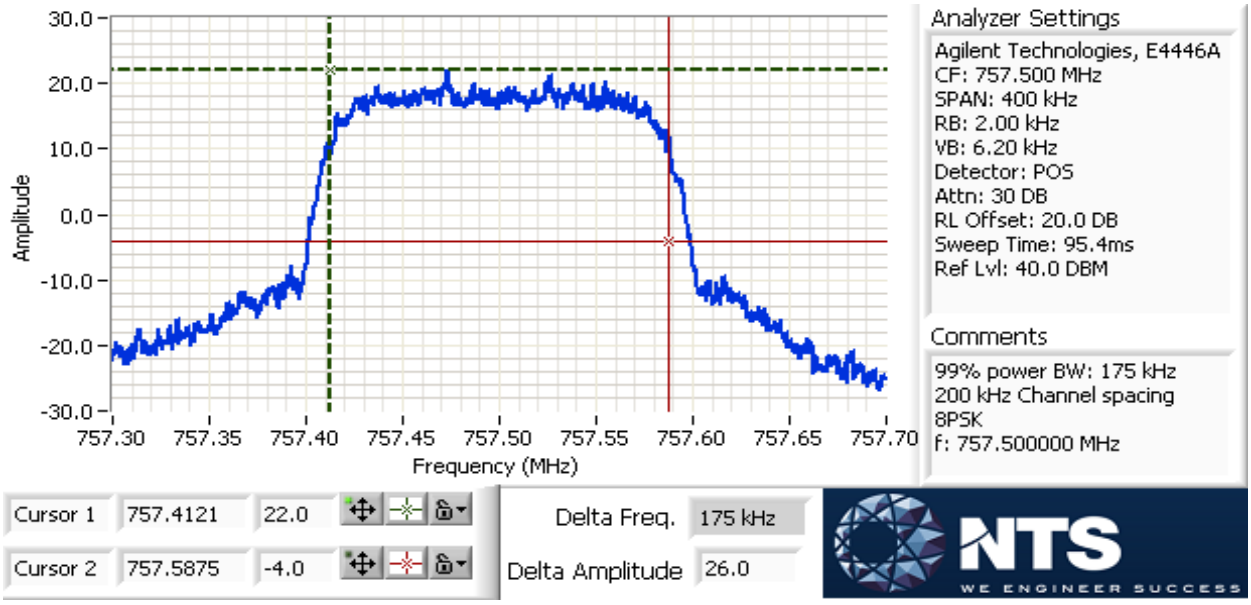


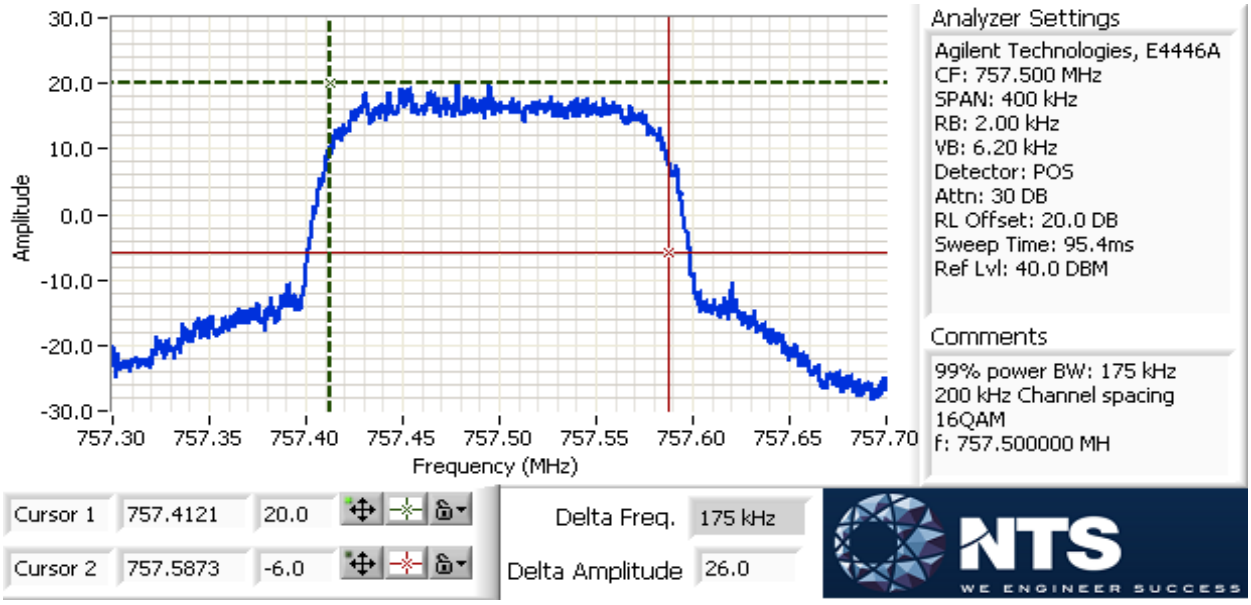
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



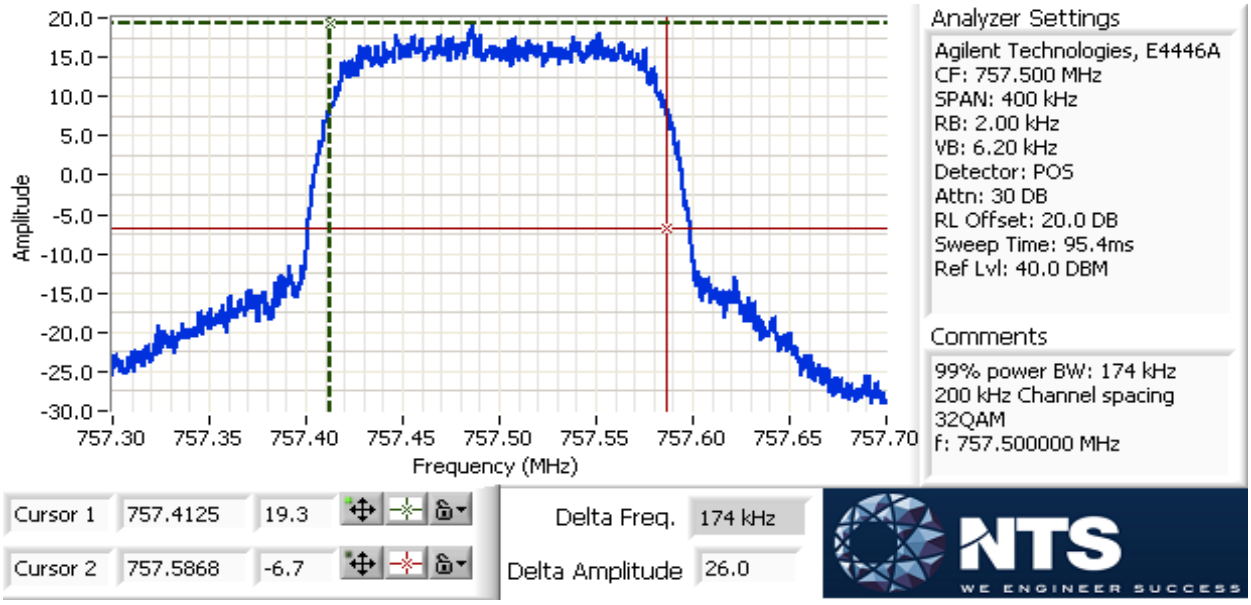


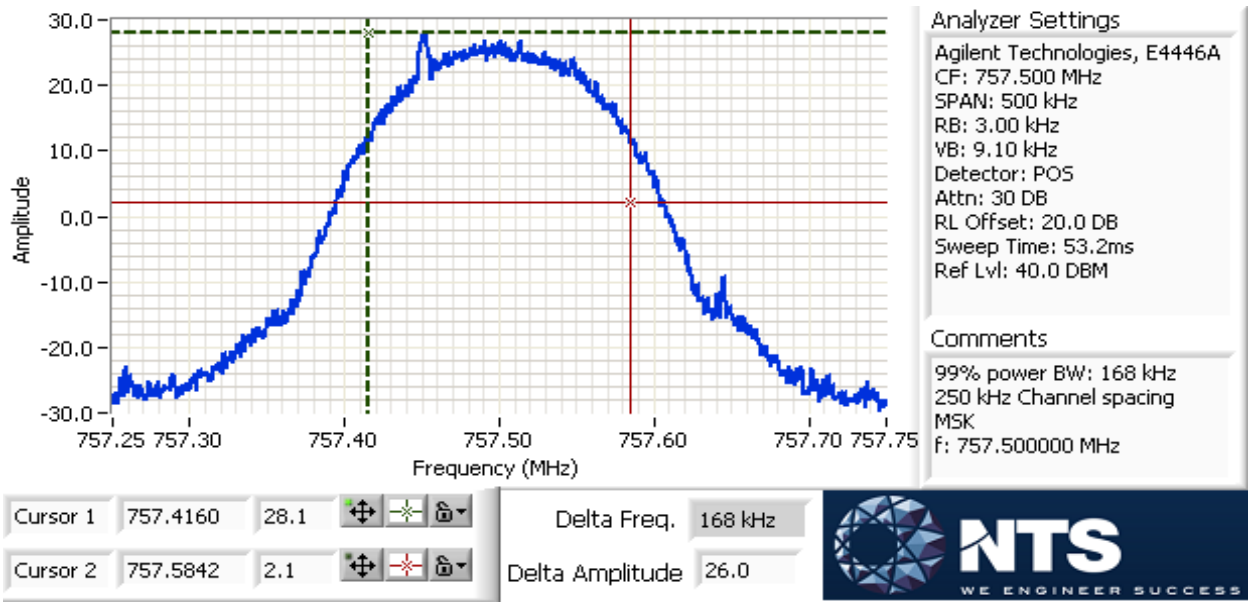
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



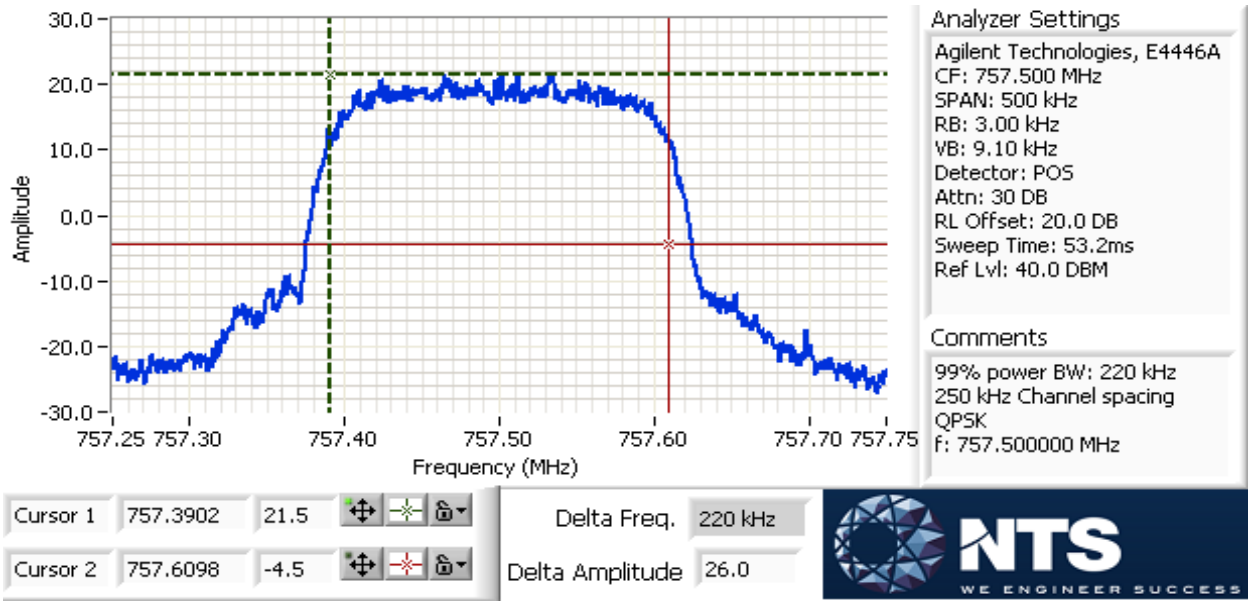


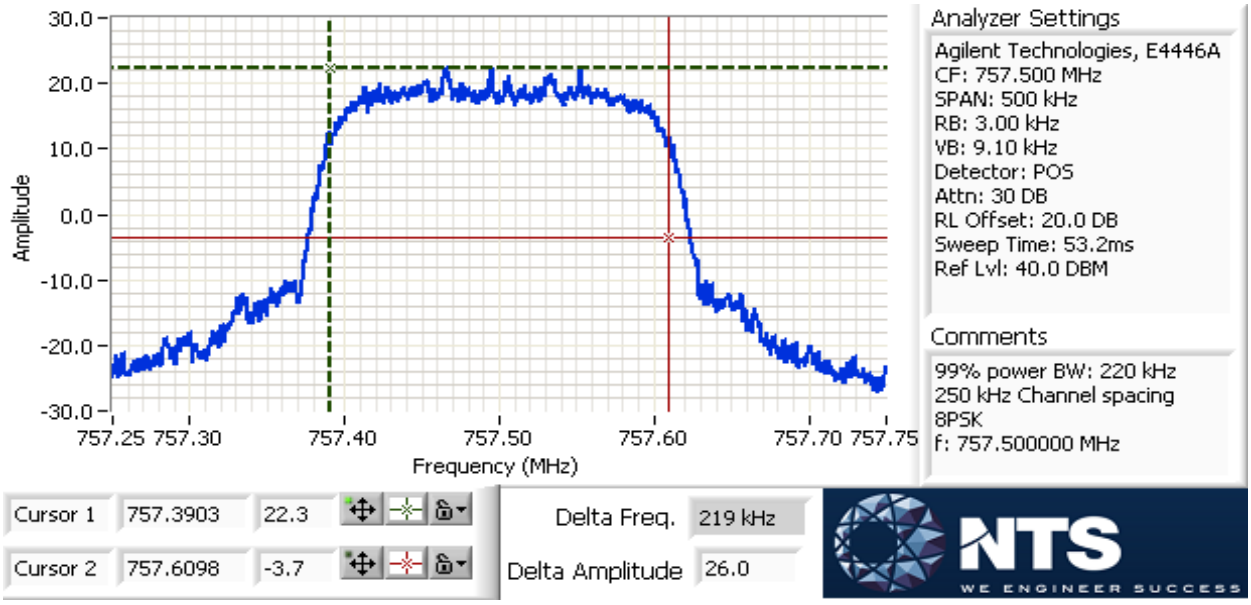
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



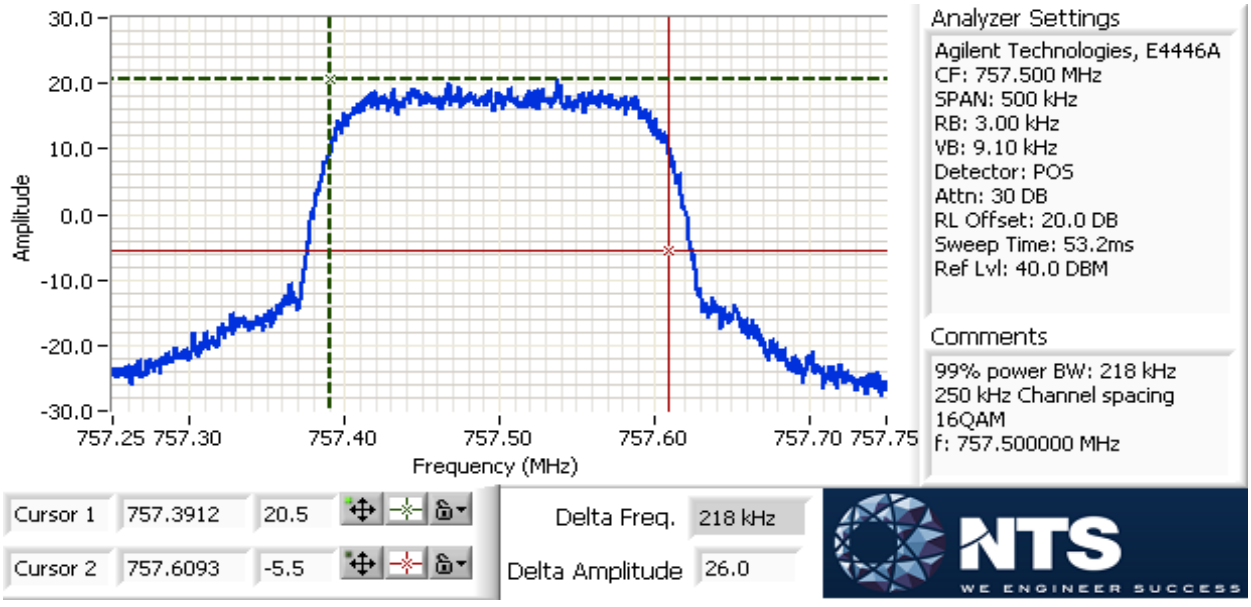


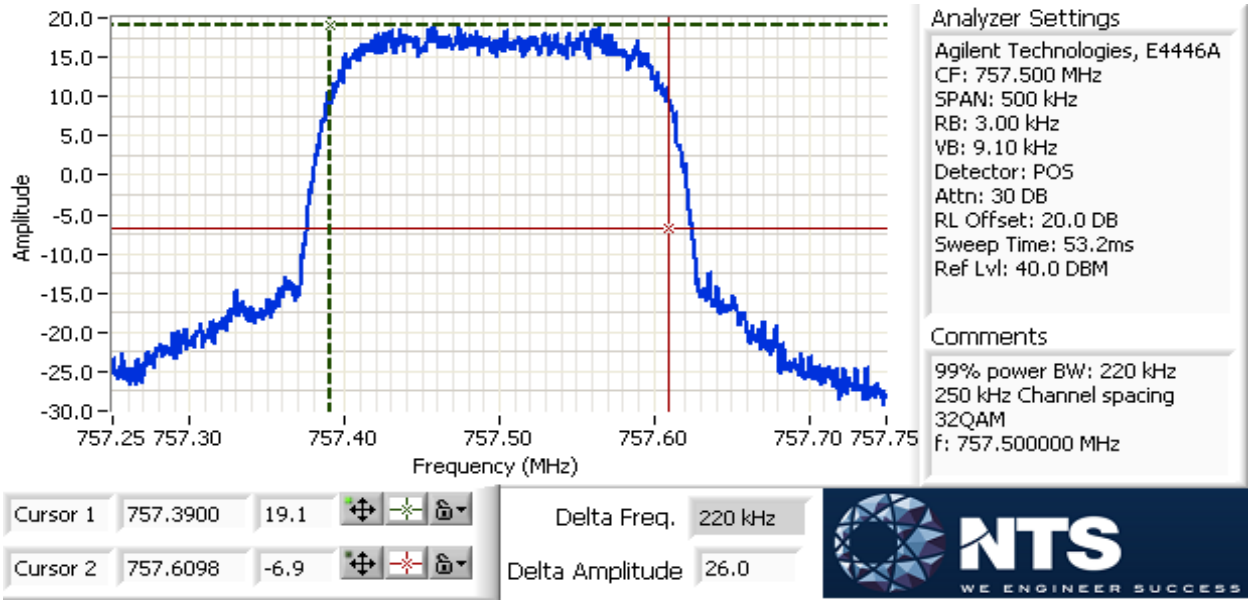
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #4: Out of Band Spurious Emissions, Conducted

Date of Test: 11/6/2015
Test Engineer: Deniz Demirci
Test Location: FT Ch #4

Config. Used: 1
Config Change: None
EUT Voltage: 7.5 VDC

Frequency	Level	Port	Limit	Margin	Detector	Azimuth	Height	Comments	Channel
MHz	dBm		dBm	dB	Pk/QP/Avg	degrees	meters		
113.728	-31.0	RF Port	-13.0	-18.0	Peak			12.5 kHz	757.5 MHz
871.390	-27.6	RF Port	-13.0	-14.6	Peak			12.5 kHz	757.5 MHz
754.067	-30.8	RF Port	-13.0	-17.8	Peak			12.5 kHz	757.5 MHz
755.800	-26.4	RF Port	-13.0	-13.4	Peak			12.5 kHz	757.5 MHz
757.533	35.2	RF Port	-	-	Peak			12.5 kHz	757.5 MHz
759.233	-27.2	RF Port	-13.0	-14.2	Peak			12.5 kHz	757.5 MHz
761.000	-33.2	RF Port	-13.0	-20.2	Peak			12.5 kHz	757.5 MHz
767.267	-36.0	RF Port	-13.0	-23.0	Peak			12.5 kHz	757.5 MHz
871.390	-20.6	RF Port	-13.0	-7.6	Peak			250 kHz	757.5 MHz
643.815	-36.1	RF Port	-13.0	-23.1	Peak			250 kHz	757.5 MHz
113.728	-27.9	RF Port	-13.0	-14.9	Peak			250 kHz	757.5 MHz
753.667	-25.8	RF Port	-13.0	-12.8	Peak			250 kHz	757.5 MHz
755.633	-17.8	RF Port	-13.0	-4.8	Peak			250 kHz	757.5 MHz
757.500	34.2	RF Port	-	-	Peak			250 kHz	757.5 MHz
759.367	-18.0	RF Port	-13.0	-5.0	Peak			250 kHz	757.5 MHz
761.367	-26.3	RF Port	-13.0	-13.3	Peak			250 kHz	757.5 MHz
227.526	-32.2	RF Port	-13.0	-19.2	Peak			12.5 kHz	787.5 MHz
560.020	-30.9	RF Port	-13.0	-17.9	Peak			12.5 kHz	787.5 MHz
901.267	-22.1	RF Port	-13.0	-9.1	Peak			12.5 kHz	787.5 MHz
113.818	-32.7	RF Port	-13.0	-19.7	Peak			12.5 kHz	787.5 MHz
778.767	-26.9	RF Port	-13.0	-13.9	Peak			12.5 kHz	787.5 MHz
784.033	-30.9	RF Port	-13.0	-17.9	Peak			12.5 kHz	787.5 MHz
787.000	-17.8	RF Port	-13.0	-4.8	Peak			12.5 kHz	787.5 MHz
788.067	-19.5	RF Port	-13.0	-6.5	Peak			12.5 kHz	787.5 MHz
787.500	35.1	RF Port	-13.0	48.1	Peak			12.5 kHz	787.5 MHz
789.233	-26.0	RF Port	-13.0	-13.0	Peak			12.5 kHz	787.5 MHz
796.267	-23.0	RF Port	-13.0	-10.0	Peak			12.5 kHz	787.5 MHz
559.787	-34.5	RF Port	-13.0	-21.5	Peak			250 kHz	787.5 MHz
673.691	-37.5	RF Port	-13.0	-24.5	Peak			250 kHz	787.5 MHz
901.267	-22.1	RF Port	-13.0	-9.1	Peak			250 kHz	787.5 MHz
113.728	-32.3	RF Port	-13.0	-19.3	Peak			250 kHz	787.5 MHz
227.616	-34.8	RF Port	-13.0	-21.8	Peak			250 kHz	787.5 MHz
785.633	-18.4	RF Port	-13.0	-5.4	Peak			250 kHz	787.5 MHz

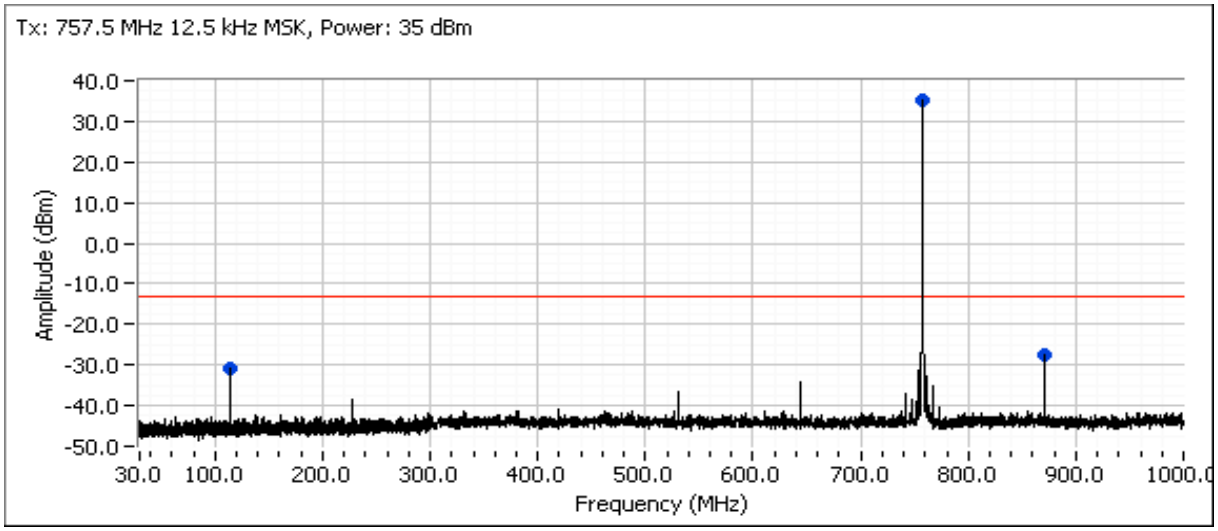
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

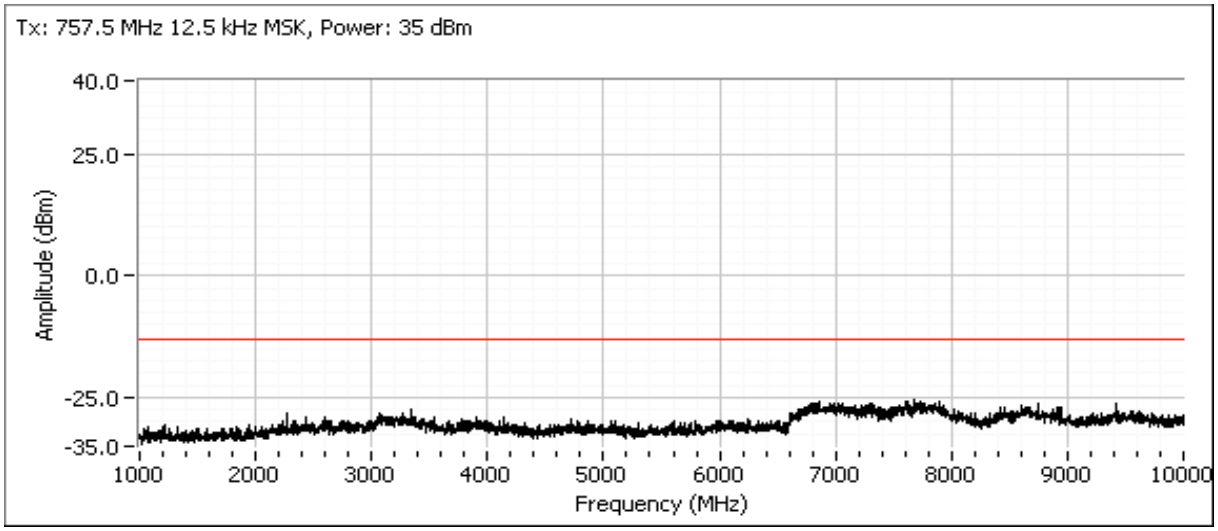
Frequency	Level	Port	Limit	Margin	Detector	Azimuth	Height	Comments	Channel
MHz	dBm		dBm	dB	Pk/QP/Avg	degrees	meters		
789.367	-17.0	RF Port	-13.0	**-4.0**	Peak			250 kHz	787.5 MHz
791.333	-24.9	RF Port	-13.0	-11.9	Peak			250 kHz	787.5 MHz
783.667	-26.4	RF Port	-13.0	-13.4	Peak			250 kHz	787.5 MHz
778.767	-32.0	RF Port	-13.0	-19.0	Peak			250 kHz	787.5 MHz
796.267	-26.0	RF Port	-13.0	-13.0	Peak			250 kHz	787.5 MHz
787.500	34.0	RF Port	-	-	Peak			250 kHz	787.5 MHz

Note 1:	EUT was set to transmit 12.5 kHz and 250 kHz bandwidths with MSK modulation during the emission tests (MSK has the highest PSD).

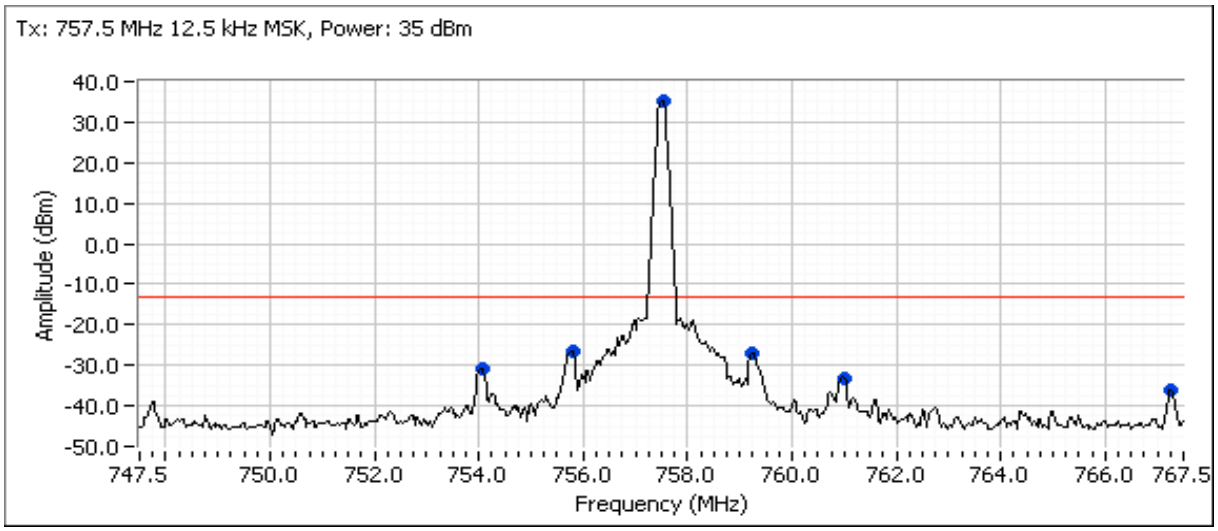
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Plots for center channel of 757.5 MHz, 12.5 kHz bandwidth with MSK modulation. power setting(s) = 35 dBm



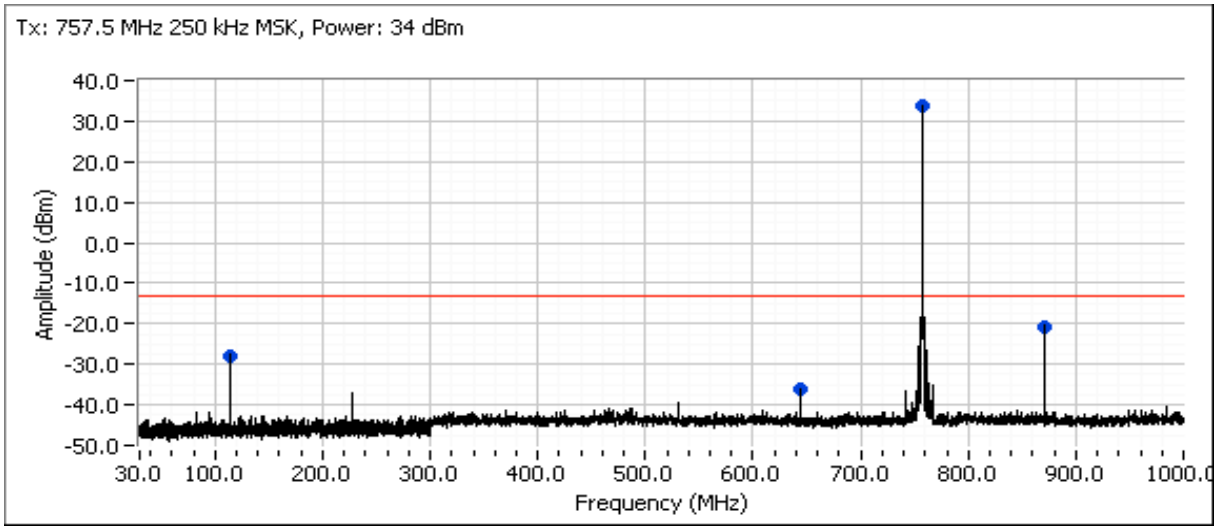


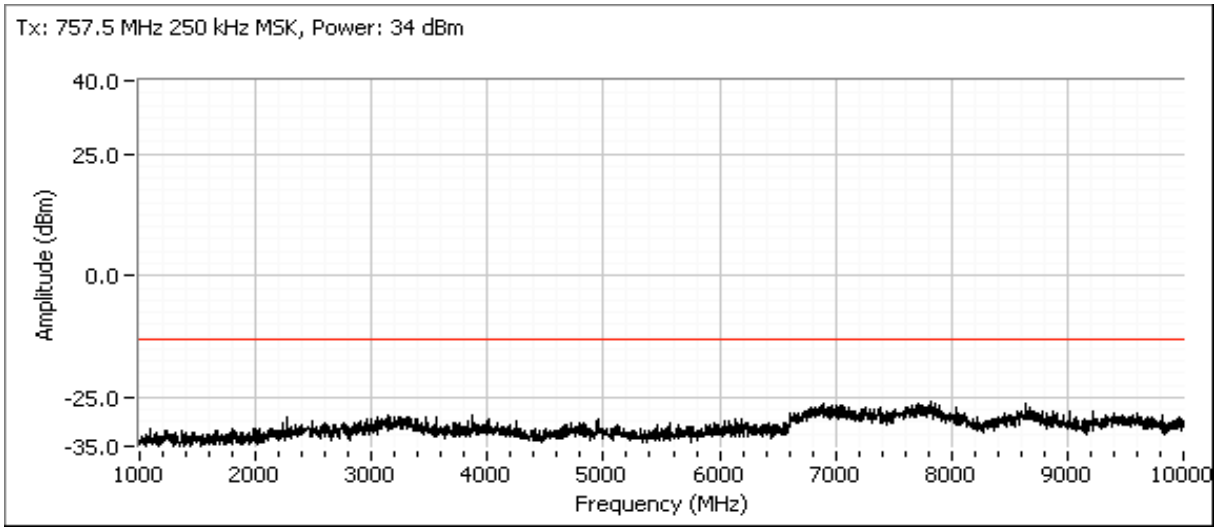
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



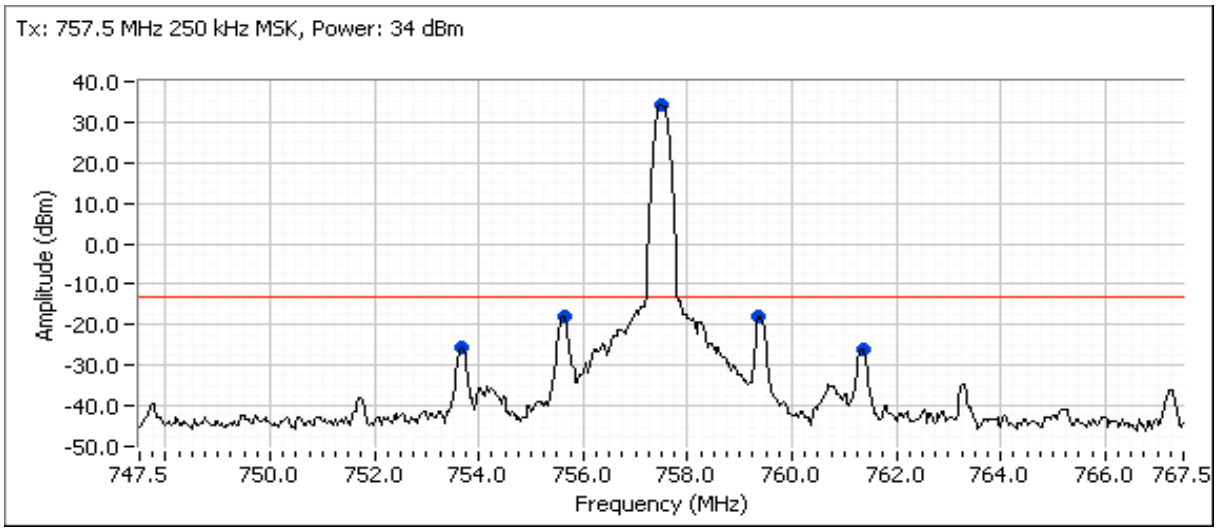
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Plots for center channel of 757.5 MHz, 250 kHz bandwidth with MSK modulation. power setting(s) = 34 dBm



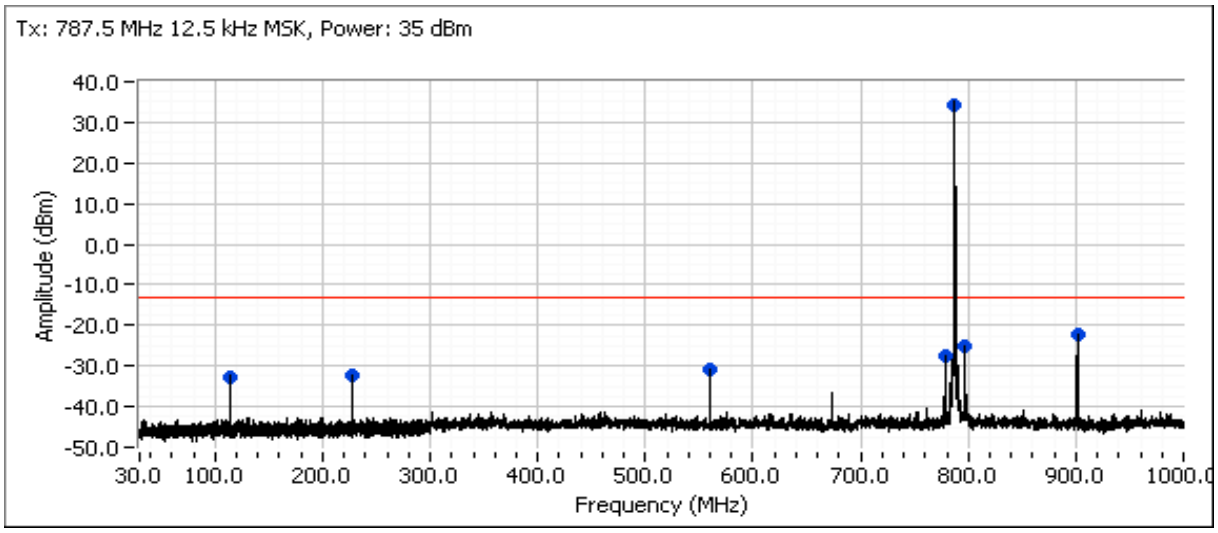


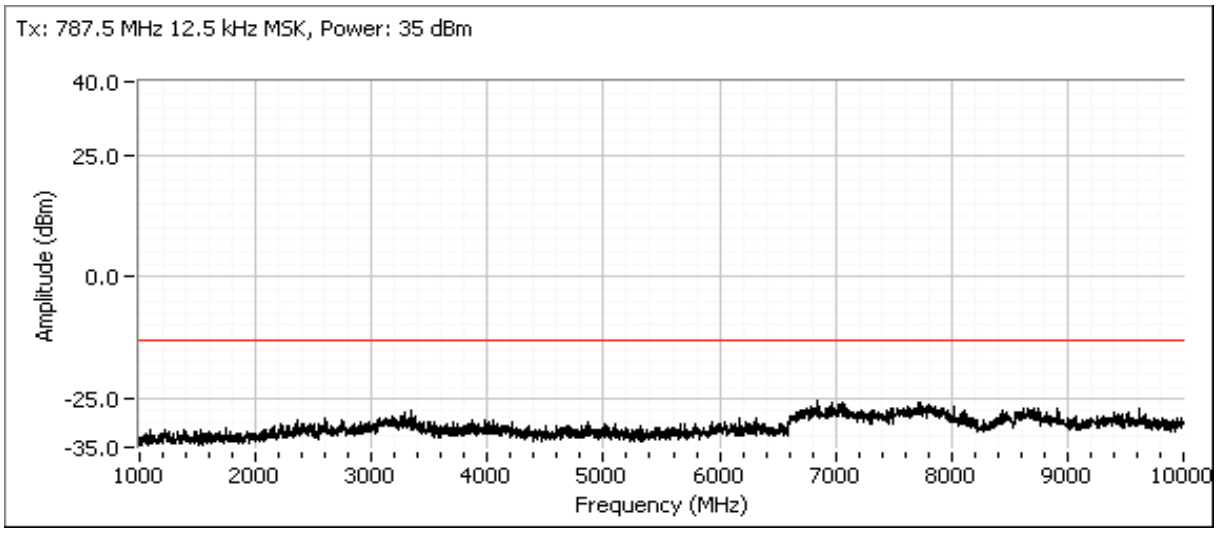
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



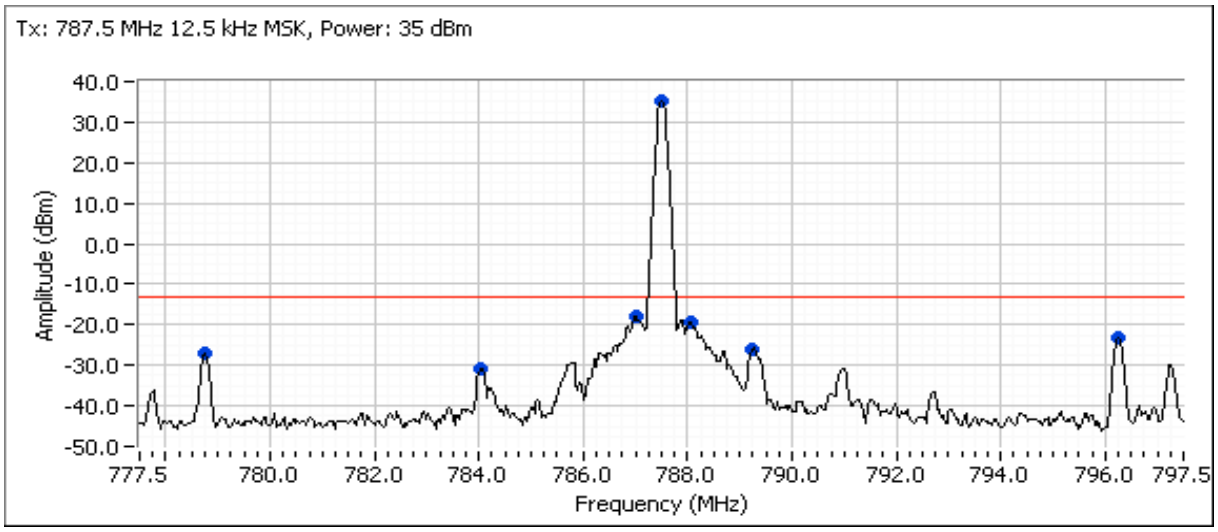
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Plots for center channel of 787.5 MHz, 12.5 kHz bandwidth with MSK modulation. power setting(s) = 35 dBm



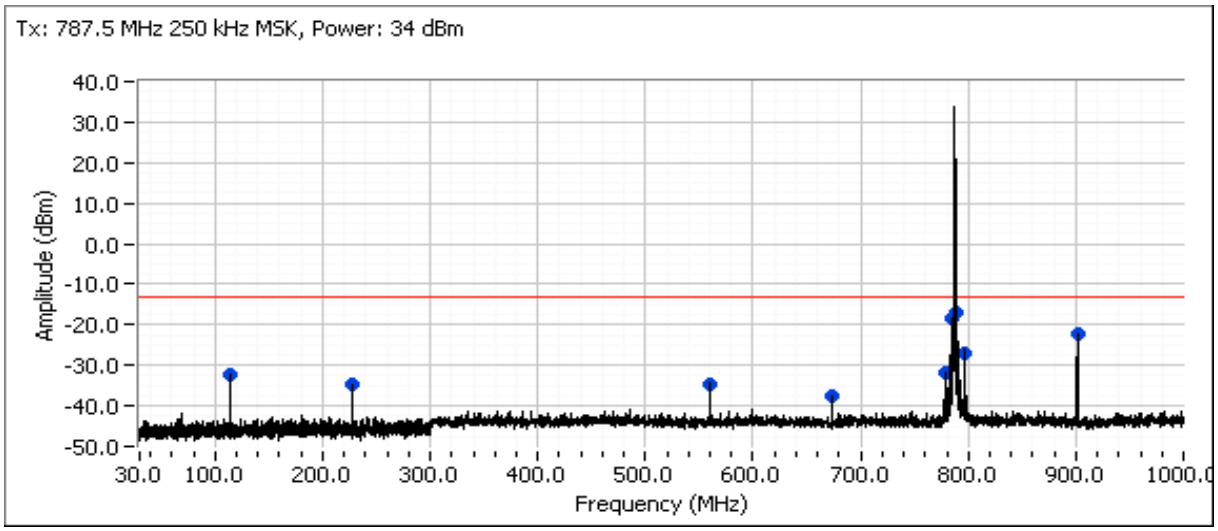


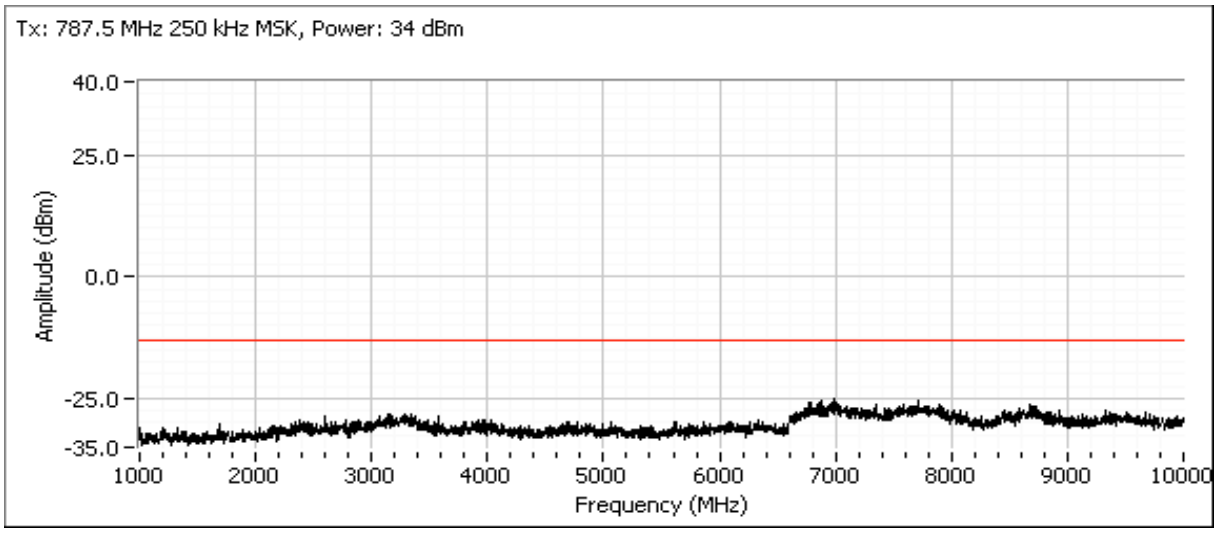
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



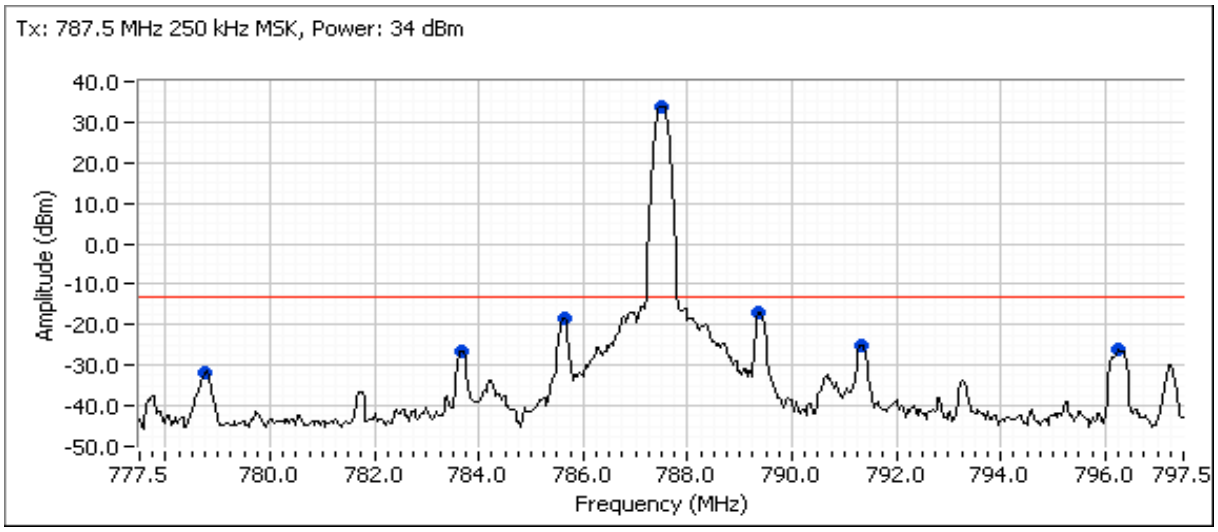
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Plots for center channel of 787.5 MHz, 250 kHz bandwidth with MSK modulation. power setting(s) = 34 dBm





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A



Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #5: Out of Band Spurious Emissions, Radiated

Date of Test: 10/29/2015, 11/3/2015
Test Engineer: Mehran Birgani, Deniz Demirci
Test Location: FT Ch #7, FT Ch #5

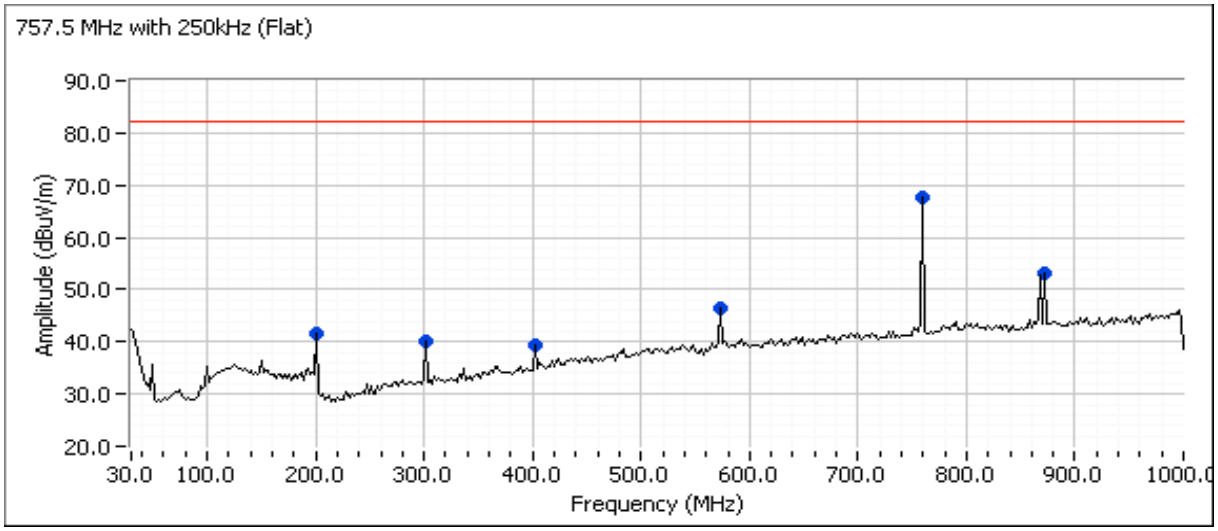
Config. Used: 1
Config Change: None
EUT Voltage: 7.5 VDC

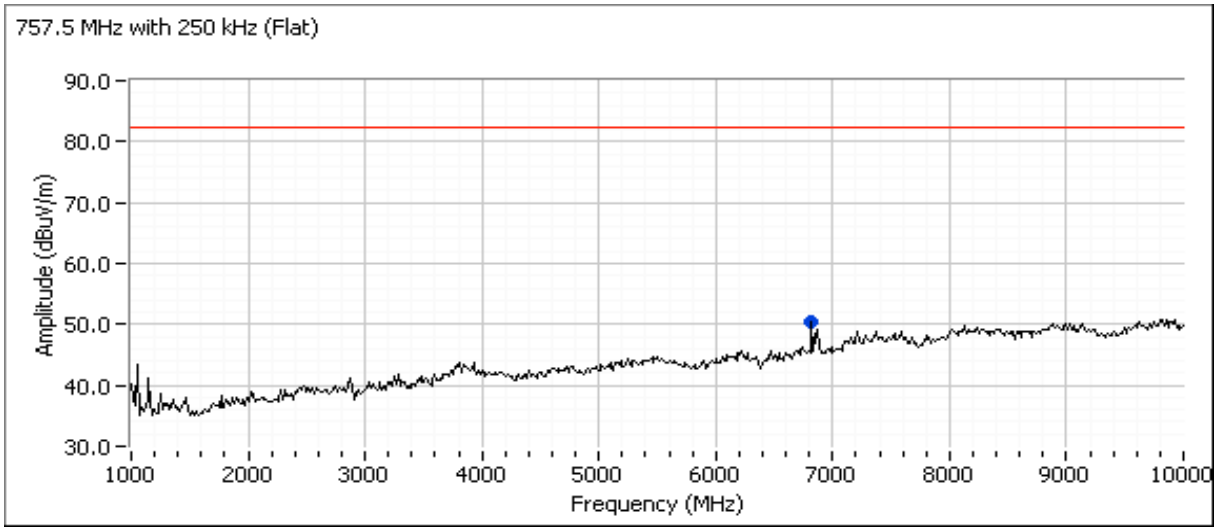
Run #5a - Preliminary measurements

Frequency	Level	Pol			Detector	Azimuth	Height	Comments	Channel
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		
Flat (757.5MHz and 250kHz)									
757.619	68.2	H	-	-	PK	228	1.0	POS; RB 100 kHz; VB: 300 kHz	
6856.150	55.5	V	82.2	-26.7	PK	39	2.2	RB 1 MHz;VB 3 MHz;Peak	
867.600	53.8	H	82.2	-28.4	PK	300	1.0	POS; RB 100 kHz; VB: 300 kHz	
3470.310	49.4	V	82.2	-32.8	PK	119	2.5	RB 1 MHz;VB 3 MHz;Peak	
1057.700	48.3	H	82.2	-33.9	PK	229	1.0	RB 1 MHz;VB 3 MHz;Peak	
302.257	42.2	V	82.2	-40.0	PK	91	1.0	POS; RB 100 kHz; VB: 300 kHz	
201.499	41.6	H	82.2	-40.6	PK	130	2.5	POS; RB 100 kHz; VB: 300 kHz	
575.952	38.5	H	82.2	-43.7	PK	1	1.2	POS; RB 100 kHz; VB: 300 kHz	
397.877	33.1	H	82.2	-49.1	PK	130	1.0	POS; RB 100 kHz; VB: 300 kHz	
Side (757.5MHz and 250kHz)									
757.683	71.9	V	-	-	PK	121	1.4	POS; RB 100 kHz; VB: 300 kHz	
867.606	55.8	H	82.2	-26.4	PK	256	1.0	POS; RB 100 kHz; VB: 300 kHz	
201.486	42.2	H	82.2	-40.0	PK	152	1.5	POS; RB 100 kHz; VB: 300 kHz	
50.381	34.0	V	82.2	-48.2	PK	104	2.0	POS; RB 100 kHz; VB: 300 kHz	
3470.540	50.4	H	82.2	-31.8	PK	238	2.2	RB 1 MHz;VB 3 MHz;Peak	
6856.270	52.2	H	82.2	-30.0	PK	182	2.2	RB 1 MHz;VB 3 MHz;Peak	
Upright (757.5MHz and 250kHz)									
Frequency	Level	Pol			Detector	Azimuth	Height	Comments	Channel
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
755.621	45.8	H	-	-	PK	87	1.8	POS; RB 100 kHz; VB: 300 kHz	
867.605	64.0	H	82.2	-18.2	PK	106	1.0	POS; RB 100 kHz; VB: 300 kHz	
302.279	42.5	V	82.2	-39.7	PK	335	1.0	POS; RB 100 kHz; VB: 300 kHz	
201.532	42.0	V	82.2	-40.2	PK	100	1.2	POS; RB 100 kHz; VB: 300 kHz	
3470.480	51.7	V	82.2	-30.5	PK	262	2.2	RB 1 MHz;VB 3 MHz;Peak	
6856.230	54.3	H	82.2	-27.9	PK	356	2.2	RB 1 MHz;VB 3 MHz;Peak	

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

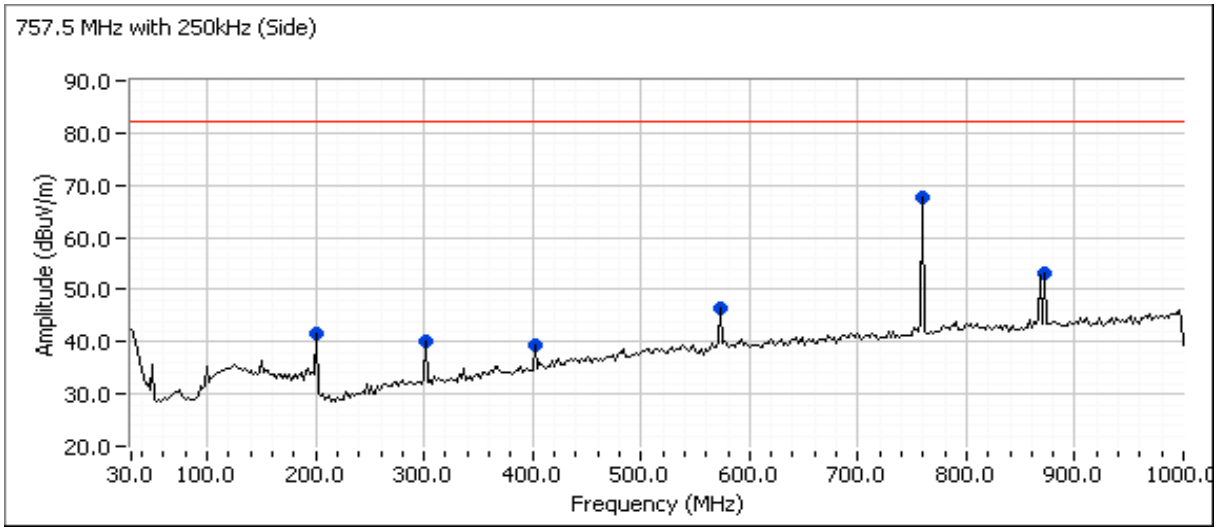
Plots for center channel of 757.5 MHz, 250 kHz bandwidth with MSK modulation. power setting(s) = 35.0 dBm (Flat)

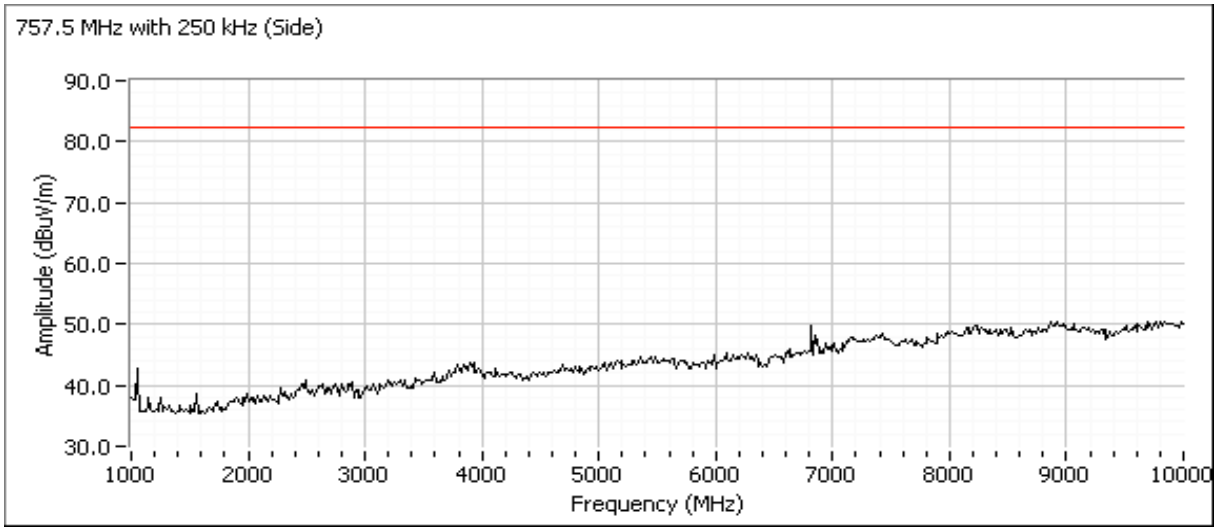




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

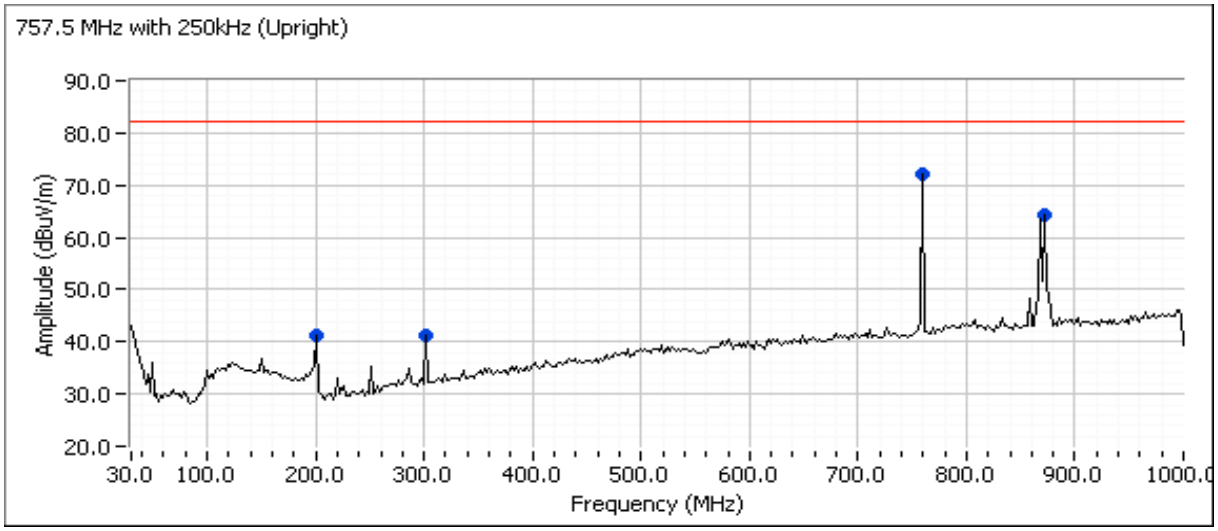
Plots for center channel of 757.5 MHz, 250 kHz bandwidth with MSK modulation. power setting(s) = 35.0 dBm (Side)

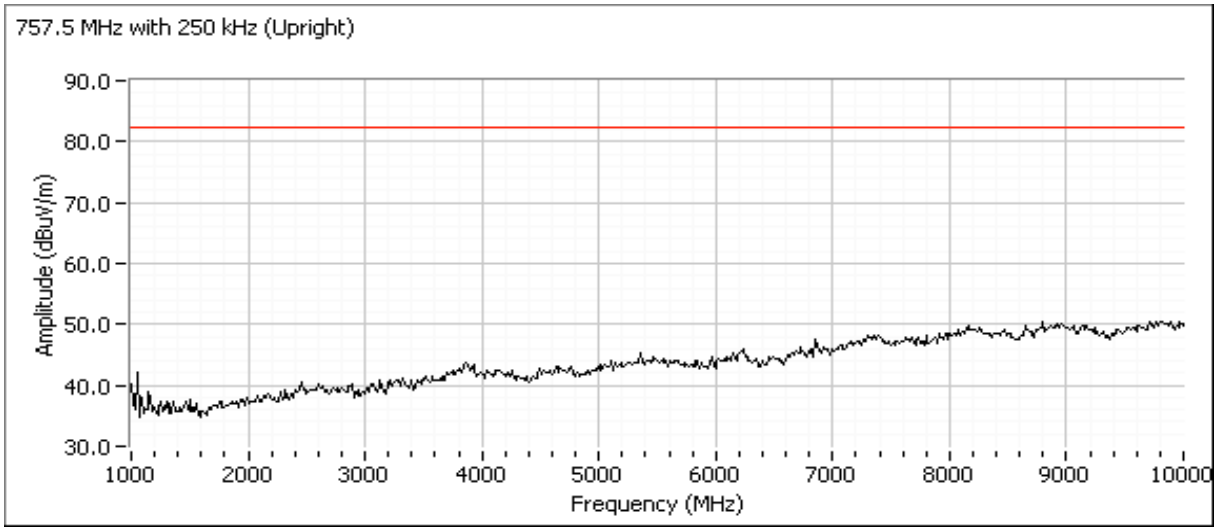




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Plots for center channel of 757.5 MHz, 250 kHz bandwidth with MSK modulation. power setting(s) = 35.0 dBm (Upright)





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

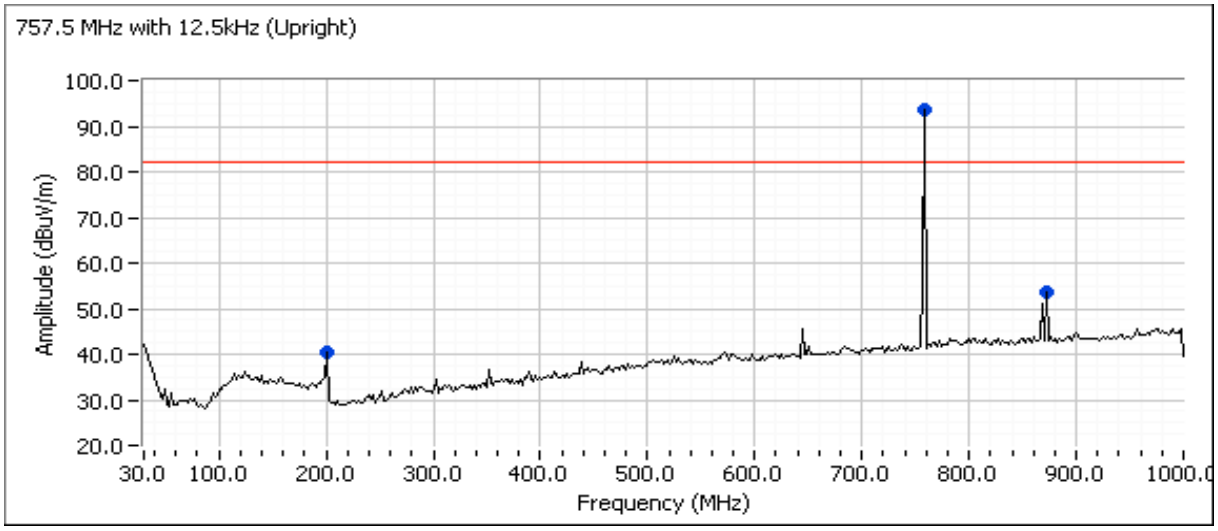
Run #5b - Final measurements

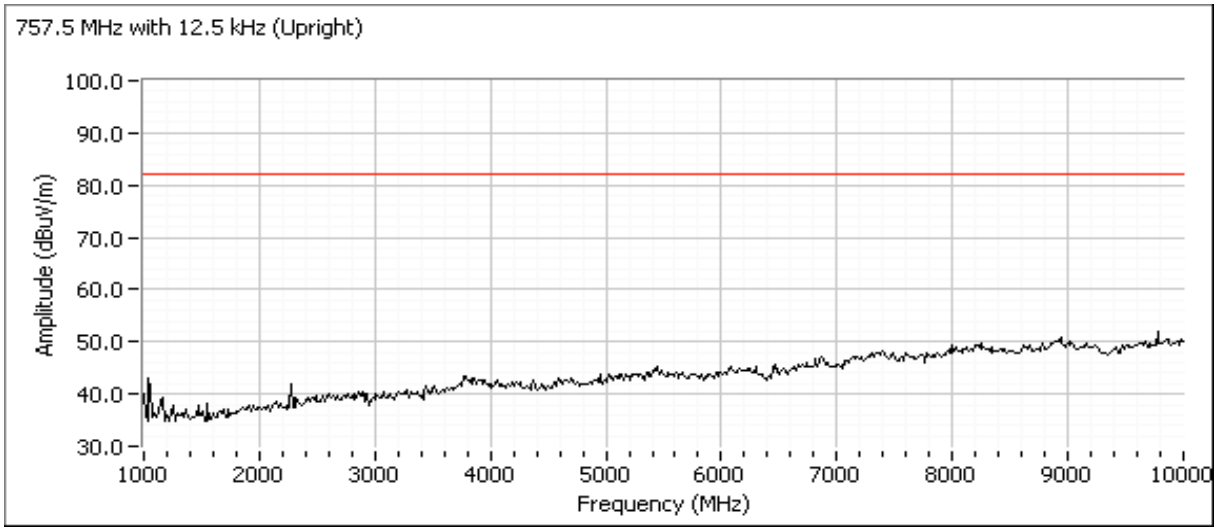
Frequency	Level	Pol			Detector	Azimuth	Height	Comments	Channel
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		
Upright (757.5MHz and 12.5kHz)									
757.628	81.3	H	-	-	PK	304	2.0	POS; RB 100 kHz; VB: 300 kHz	
867.586	51.9	V	82.2	-30.3	PK	294	2.0	POS; RB 100 kHz; VB: 300 kHz	
201.571	38.6	V	82.2	-43.6	PK	309	1.0	POS; RB 100 kHz; VB: 300 kHz	
Upright (757.5MHz and 250kHz)									
757.621	72.8	H	-	-	PK	87	1.8	POS; RB 100 kHz; VB: 300 kHz	
1561.640	45.0	H	**55.2**	**-10.2**	PK	57	1.0	Broadband signal, Note 2	
867.605	64.0	H	82.2	**-18.2**	PK	106	1.0	POS; RB 100 kHz; VB: 300 kHz	
302.279	42.5	V	82.2	-39.7	PK	335	1.0	POS; RB 100 kHz; VB: 300 kHz	
201.532	42.0	V	82.2	-40.2	PK	100	1.2	POS; RB 100 kHz; VB: 300 kHz	
Upright (787.5MHz and 12.5kHz)									
Frequency	Level	Pol			Detector	Azimuth	Height	Comments	Channel
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters		
787.436	81.5	V	-	-	PK	183	2.0	POS; RB 100 kHz; VB: 300 kHz	
901.288	51.8	V	82.2	-30.4	PK	119	1.0	POS; RB 100 kHz; VB: 300 kHz	
52.550	29.3	V	82.2	-52.9	PK	305	2.0	POS; RB 100 kHz; VB: 300 kHz	
1575.730	45.9	V	**55.2**	**-9.3**	PK	87	2.5	Broadband signal, Note 2	
7629.810	51.4	V	82.2	-30.8	PK	220	1.0	RB 1 MHz;VB 3 MHz;Peak	
7874.730	53.5	H	82.2	-28.7	PK	83	2.0	RB 1 MHz;VB 3 MHz;Peak	
Upright (787.5MHz and 250kHz)									
Frequency	Level	Pol			Detector	Azimuth	Height	Comments	Channel
787.436	88.1	V	-	-	PK	183	2.0	POS; RB 100 kHz; VB: 300 kHz	
867.606	51.5	V	82.2	-30.7	PK	304	2.0	POS; RB 100 kHz; VB: 300 kHz	
673.814	48.2	H	82.2	-34.0	PK	229	1.0	POS; RB 100 kHz; VB: 300 kHz	
151.140	36.7	V	82.2	-45.5	PK	22	1.0	POS; RB 100 kHz; VB: 300 kHz	
1574.750	49.0	H	**55.2**	**-6.2**	PK	116	1.9	Broadband signal, Note 2	
7874.750	57.4	V	82.2	-24.8	PK	66	2.5	RB 1 MHz;VB 3 MHz;Peak	

Note 1:	Measurements are made with the antenna port terminated.
Note 2:	Measurements are made with a representative antenna.
Note 3:	EUT was pre-scanned in all 3 orientations. Upright orientation was the worst case orientation for all spurious emissions. The final measurements were taken with this orientation.
Note 4:	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. 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.

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

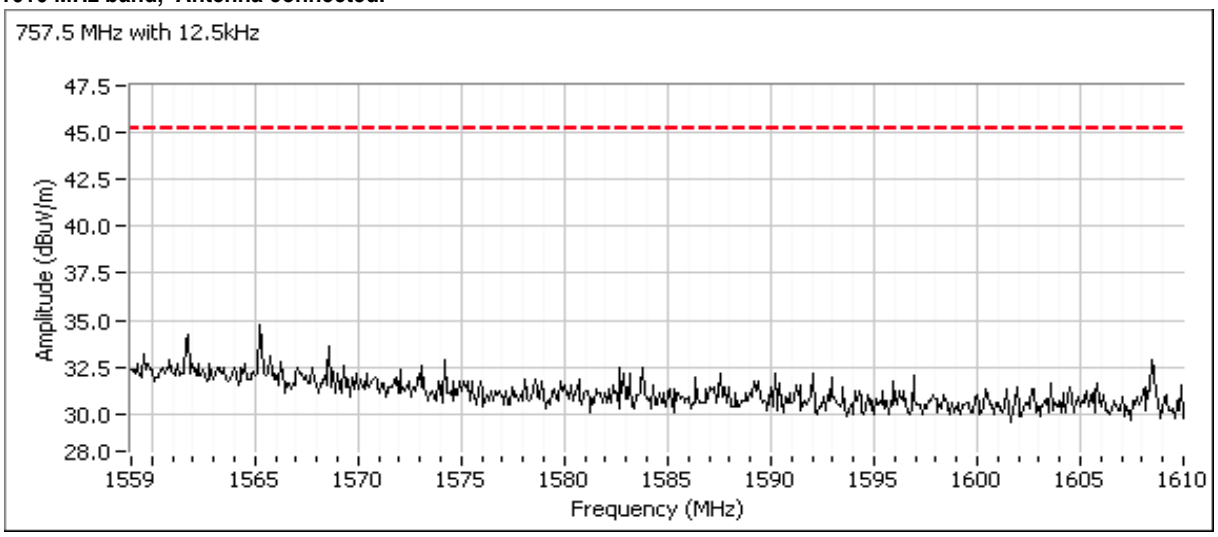
Plots for center channel of 757.5 MHz, 12.5 kHz bandwidth with MSK modulation. power setting(s) = 35 dBm





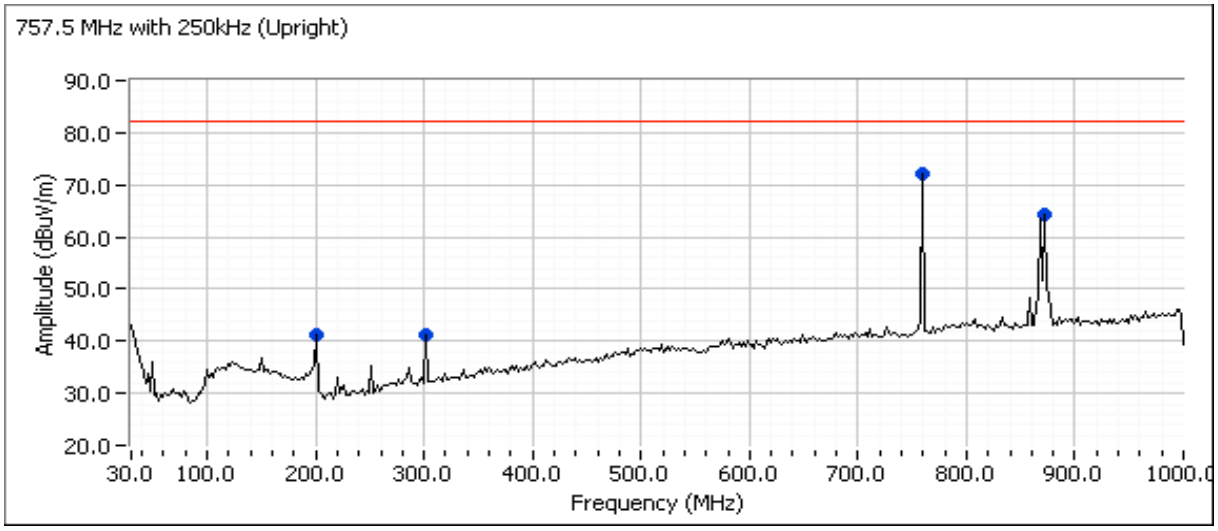
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

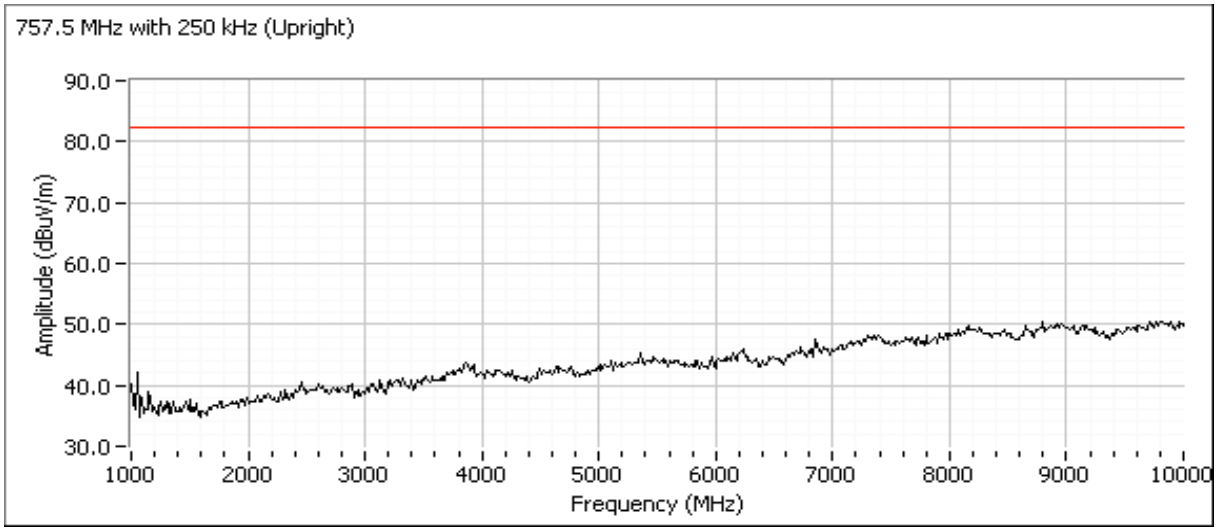
1559-1610 MHz band, Antenna connected.



Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

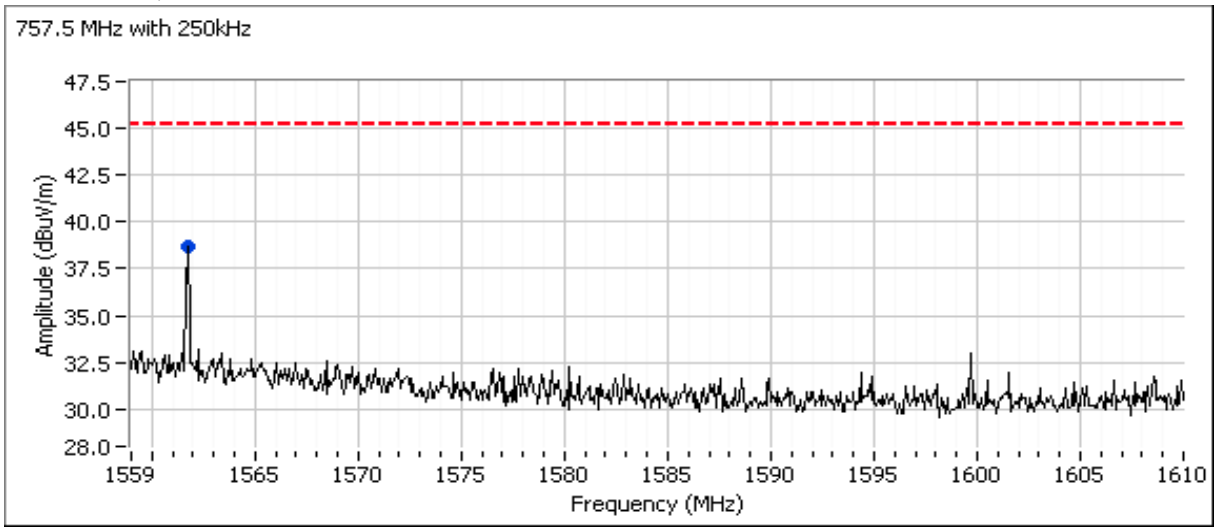
Plots for center channel of 757.5 MHz, 250 kHz bandwidth with MSK modulation. power setting(s) = 35.0 dBm





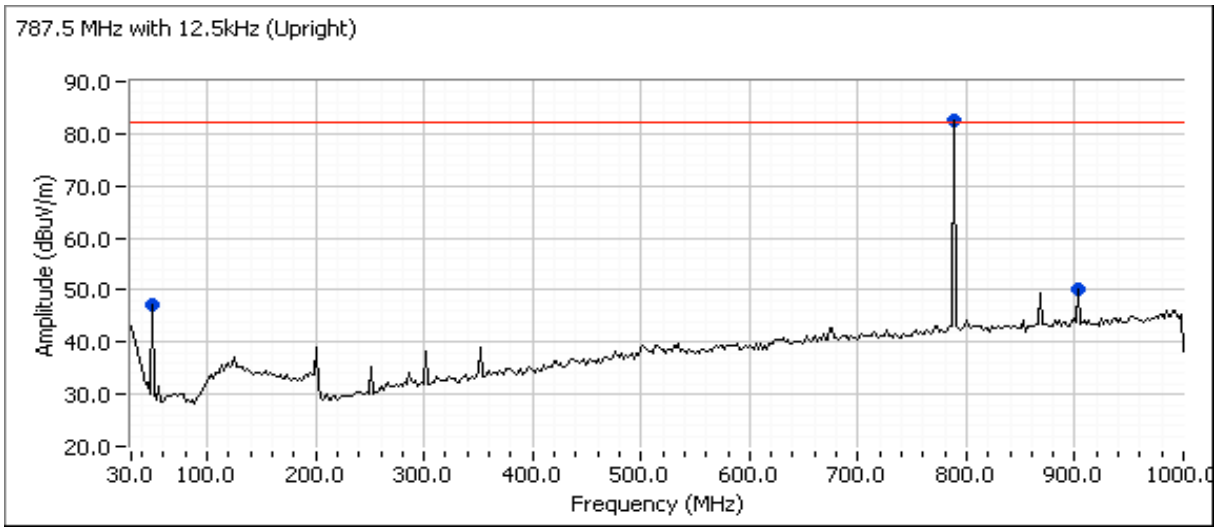
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

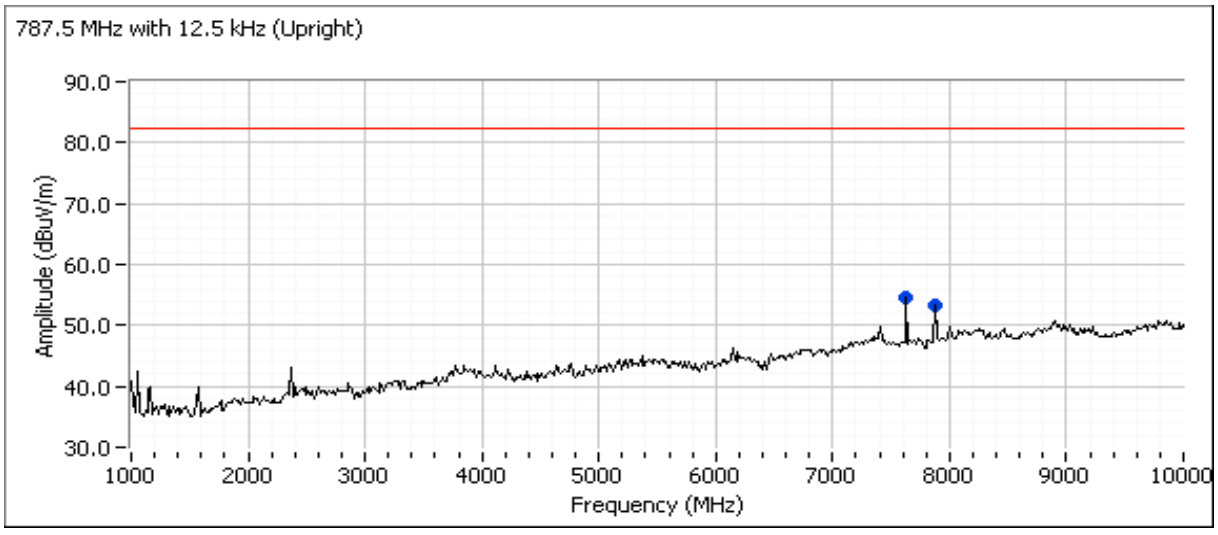
1559-1610 MHz band, Antenna connected.



Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

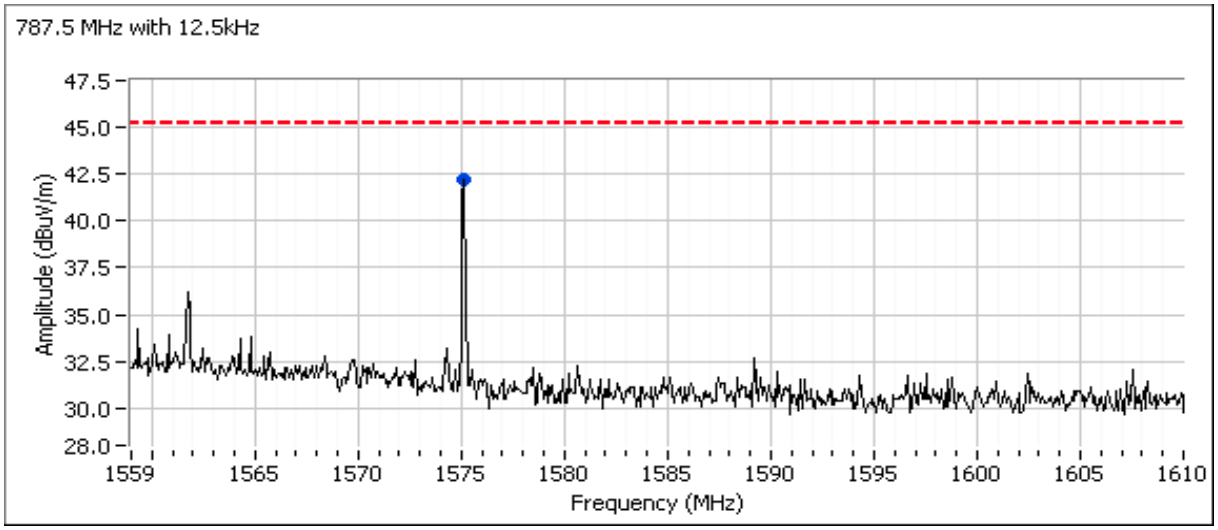
Plots for center channel of 787.5 MHz, 12.5 kHz bandwidth with MSK modulation. power setting(s) = 35 dBm





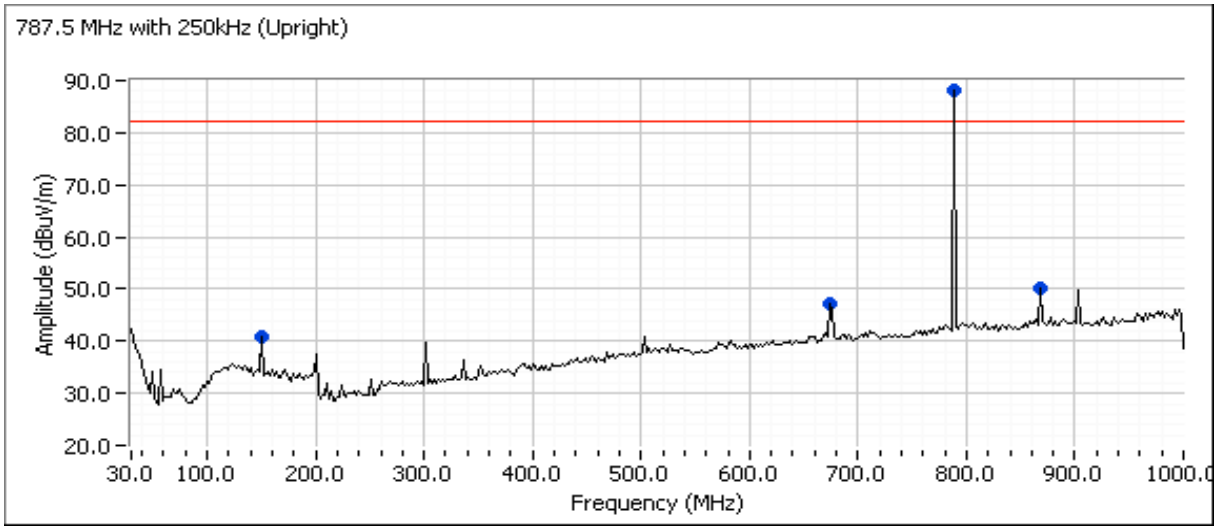
Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

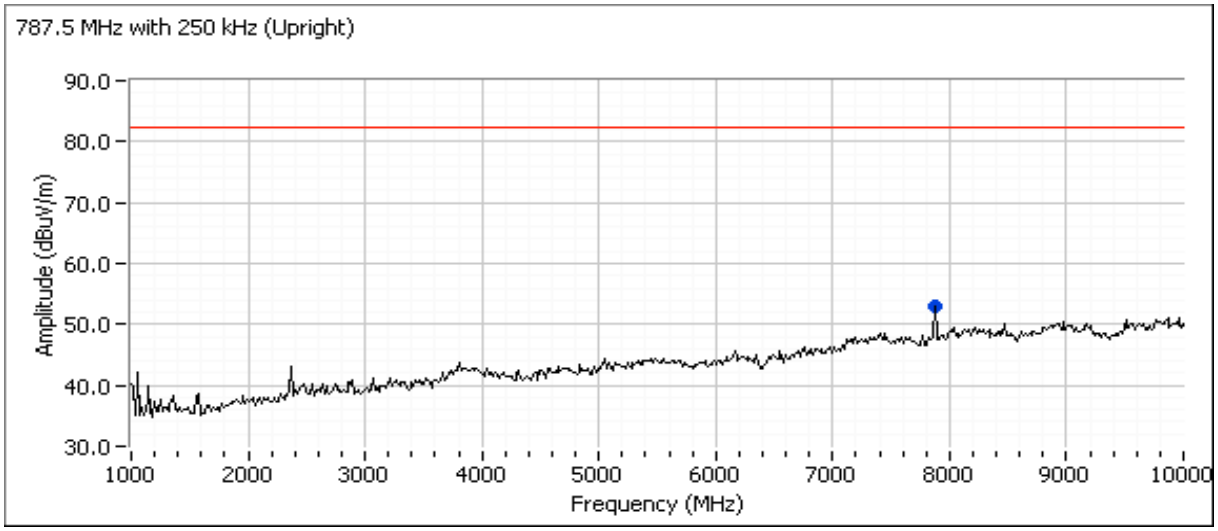
1559-1610 MHz band, Antenna connected.



Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

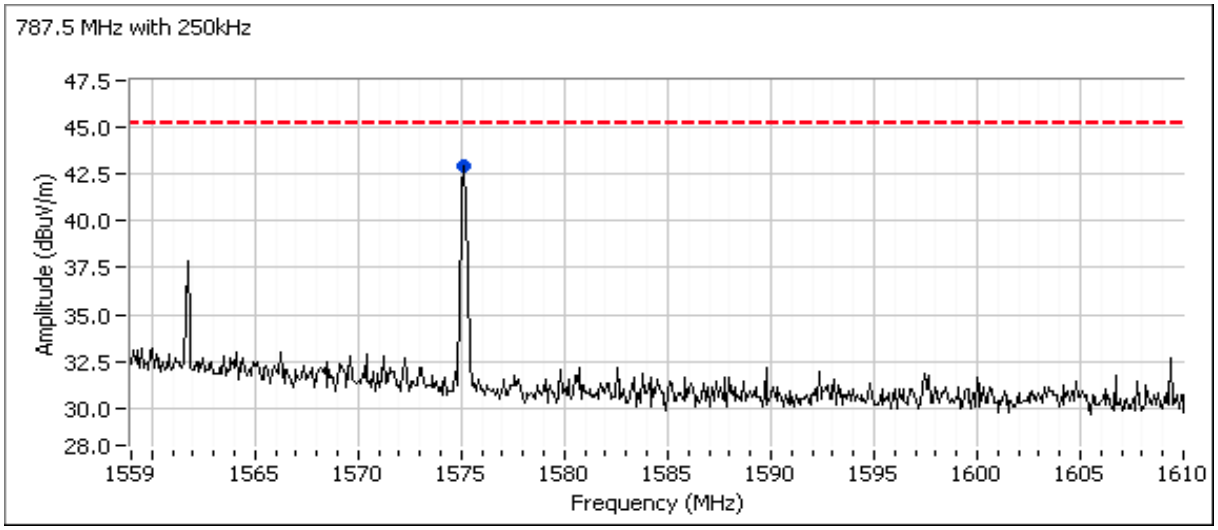
Plots for center channel of 787.5 MHz, 250 kHz bandwidth with MSK modulation. power setting(s) = 35 dBm





Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

1559-1610 MHz band, Antenna connected.



Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #5c: - Substitution Measurements

Date of Test: 10/29/2015 Config. Used: 1
Test Engineer: Mehran Birgani Config Change: -
Test Location: Chamber #4 EUT Voltage: 7.5VDC

Substitution measurements
Horizontal

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
867.61	-21.6	1.7	77.2	97.1	64.0	-33.1	-35.3		-13.0	-22.3
1561.64	-22.9	3.5	78.3	97.7	45.0	-52.7	-54.9	-40.0		-12.7
1574.75	-23.1	3.5	77.9	97.5	49.0	-48.5	-50.7	-40.0		-8.5

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
1575.730	-23.1	3.5	75.5	95.1	45.9	-49.2	-51.4	-40.0		-9.2

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

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #6: Frequency Stability

Date of Test: 11/4/2015 Config. Used: 1
Test Engineer: Deniz Demirci Config Change: None
Test Location: FT Lab #4b EUT Voltage: 7.5 Vdc

Run #6a: Frequency Stability at 757 - 758 MHz band.

Nominal Frequency: 757.03125 MHz Block edge: 757.00000 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	Band Edge Frequency Measured	Center Frequency Measured	Drift	
(Celsius)	(MHz)	(MHz)	(Hz)	(ppm)
-30	757.024400	757.031315	65	0.1
-20	757.031250	757.031308	58	0.1
-10	757.024200	757.031302	52	0.1
0	757.024200	757.031257	7	0.0
10	757.024000	757.031782	532	0.7
20	757.023700	757.030900	-350	-0.5
30	757.031250	757.030925	-325	-0.4
40	757.023900	757.030942	-308	-0.4
50	757.023700	757.030892	-358	-0.5
	Worst case:	757.031782	532	0.7

Frequency Stability Over Input Voltage

Nominal Voltage is 7.5 Vdc. (6.37 - 8.63 Vdc)

Voltage	Band Edge Frequency	Center Frequency	Drift	
(DC)	(MHz)	(MHz)	(Hz)	(ppm)
85%	757.023900	757.0308150	-435	-0.6
115%	757.024000	757.0308580	-392	-0.5
	Worst case:	757.0308580	-392	-0.5

Note 1:	Center frequency was measured with unmodulated carrier. Band edge frequency was measured with channel spacing 12.5 kHz, QPSK modulation.
Note 2:	Maximum drift of fundamental frequency before it shut down at 3.3 Vdc is 2709 Hz.

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Run #6b: Frequency Stability at 787 - 788 MHz band.

Nominal Frequency: 787.96875 MHz Block edge: 788.00000 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	Block Edge Frequency Measured	Center Frequency Measured	Drift	
(Celsius)	(MHz)	(MHz)	(Hz)	(ppm)
-30	787.976000	787.9688750	125	0.2
-20	787.975900	787.9687320	-18	0.0
-10	787.976000	787.9687150	-35	0.0
0	787.975700	787.9686240	-126	-0.2
10	787.961400	787.9684920	-258	-0.3
20	787.975300	787.9683680	-382	-0.5
30	787.975300	787.9683250	-425	-0.5
40	787.975300	787.9682920	-458	-0.6
50	787.968750	787.9682920	-458	-0.6
	Worst case:	787.9682920	-458	-0.6

Frequency Stability Over Input Voltage

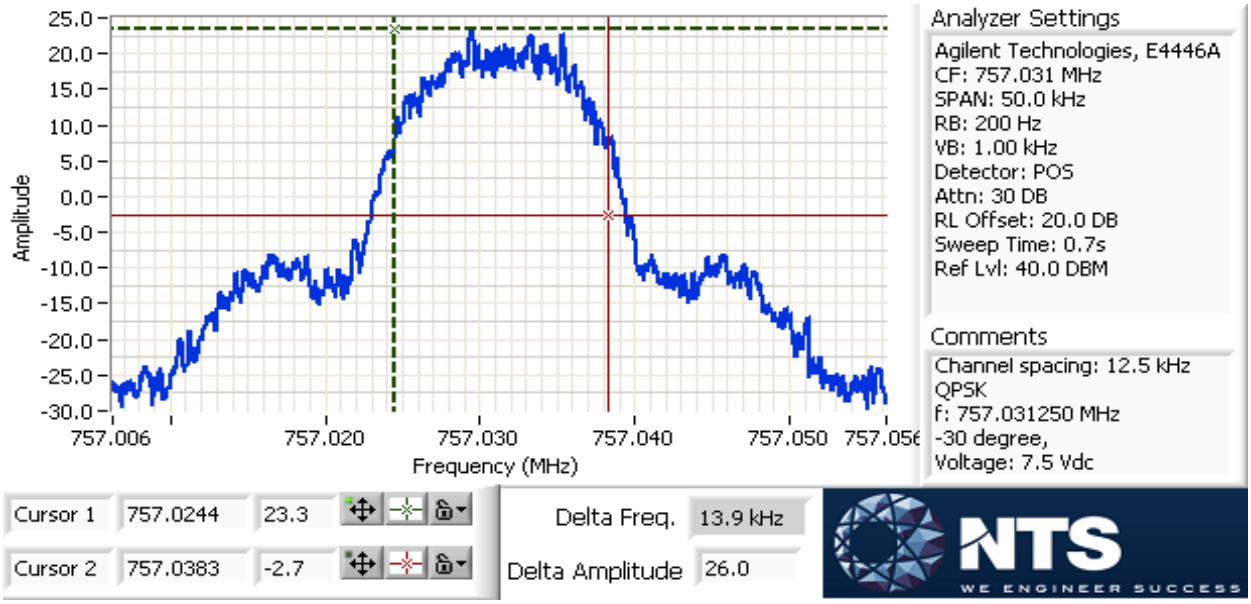
Nominal Voltage is 7.5 Vdc. (6.37 - 8.63 Vdc)

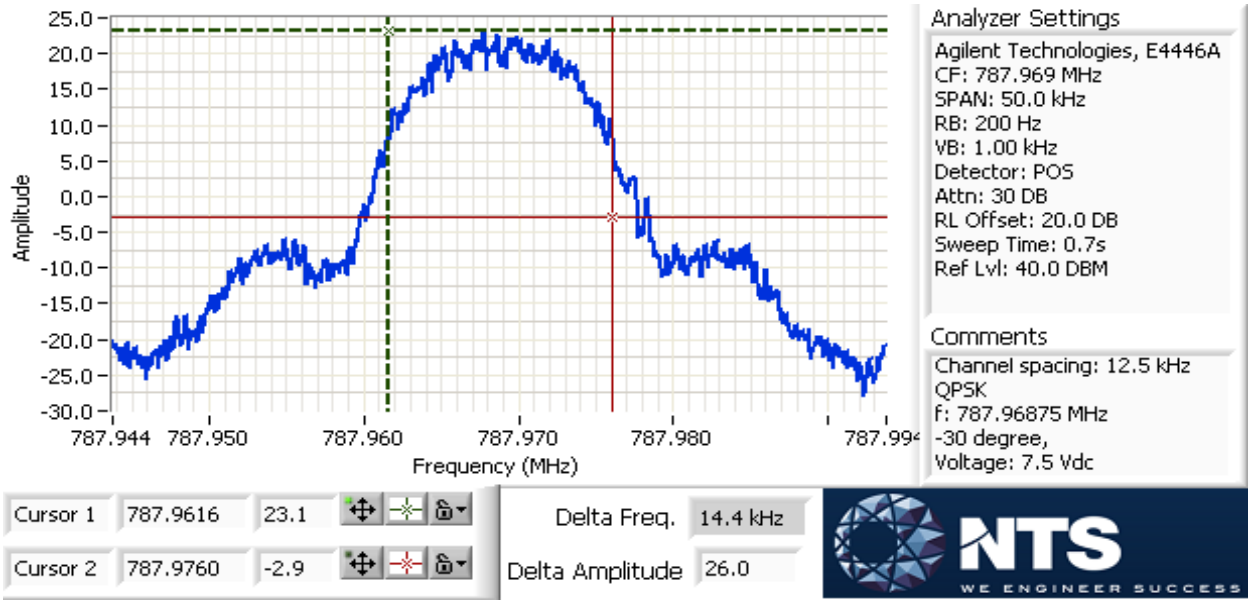
Voltage	Band Edge Frequency	Center Frequency	Drift	
(DC)	(MHz)	(MHz)	(Hz)	(ppm)
85%	787.975200	787.9683620	-388	-0.5
115%	787.975200	787.9682080	-542	-0.7
	Worst case:	787.9682080	-542	-0.7

Note 1:	Center frequency was measured with unmodulated carrier. Band edge frequency was measured with channel spacing 12.5 kHz, QPSK modulation.
Note 2:	Maximum drift of fundamental frequency before it shut down at 3.3 Vdc is 2709 Hz.

Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

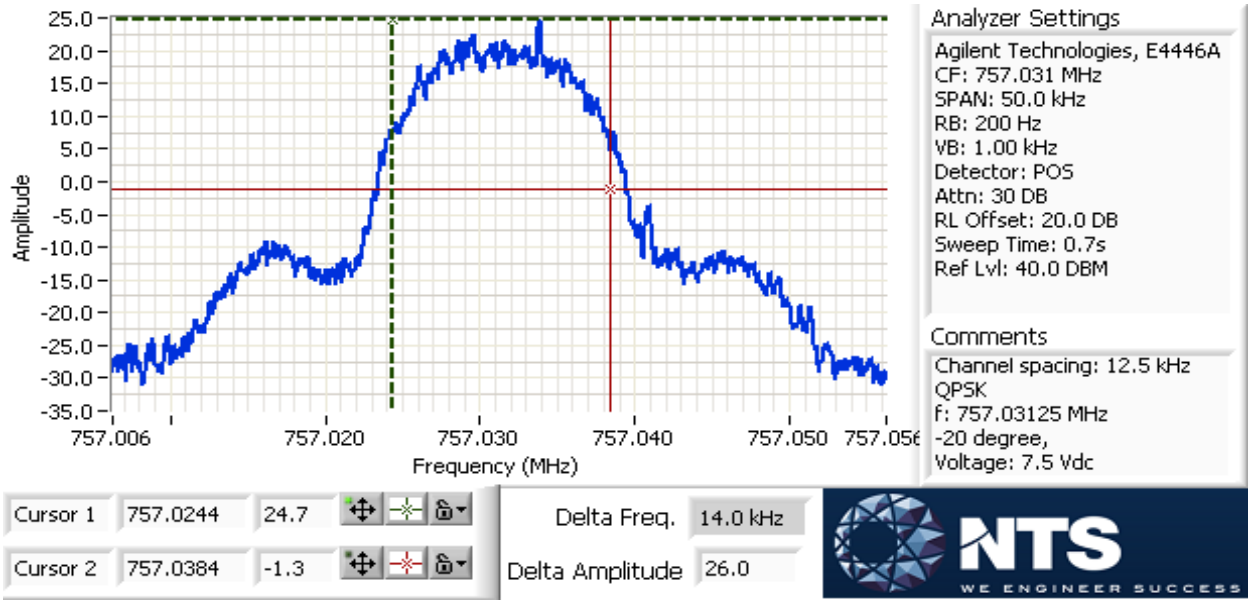
Frequency stability at -30°C

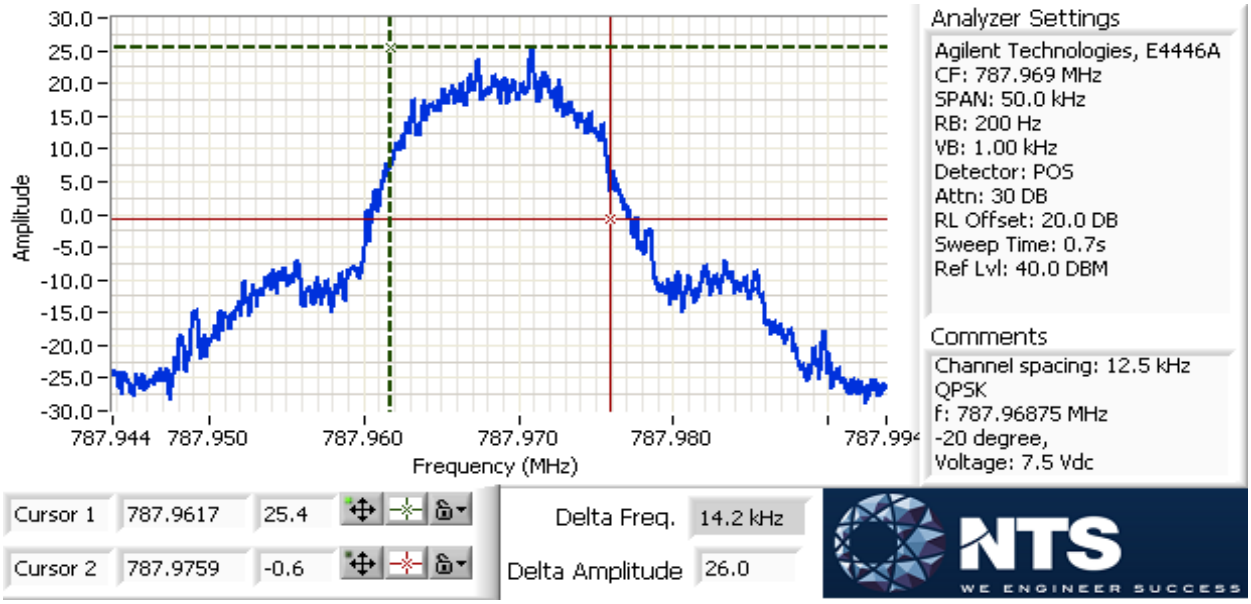




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

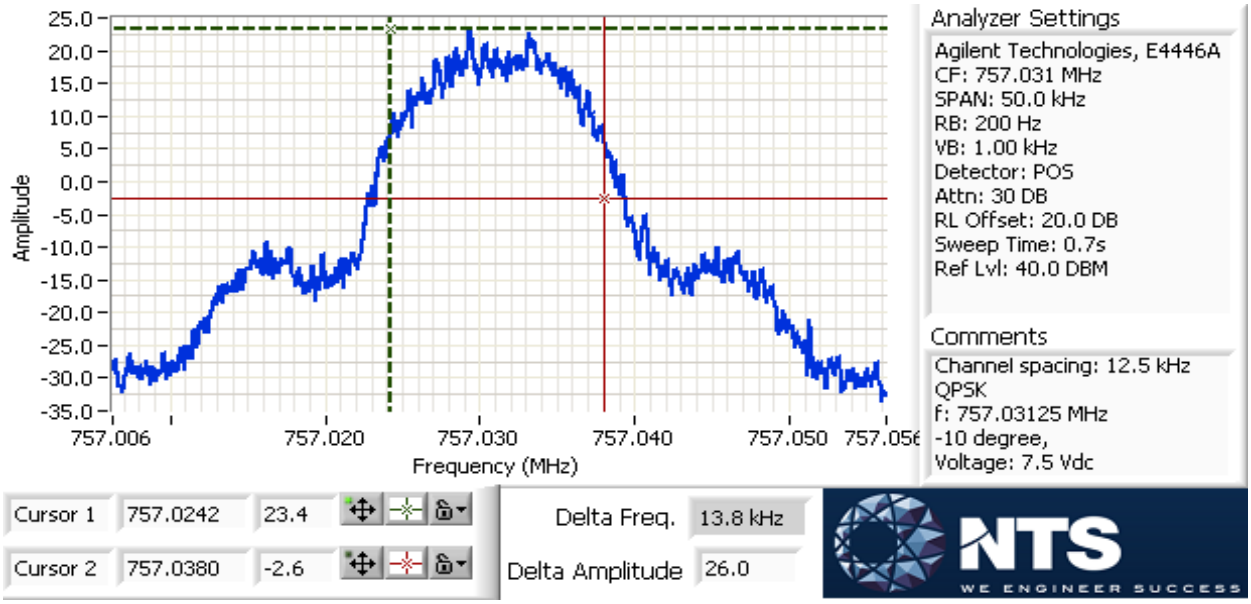
Frequency stability at -20°C

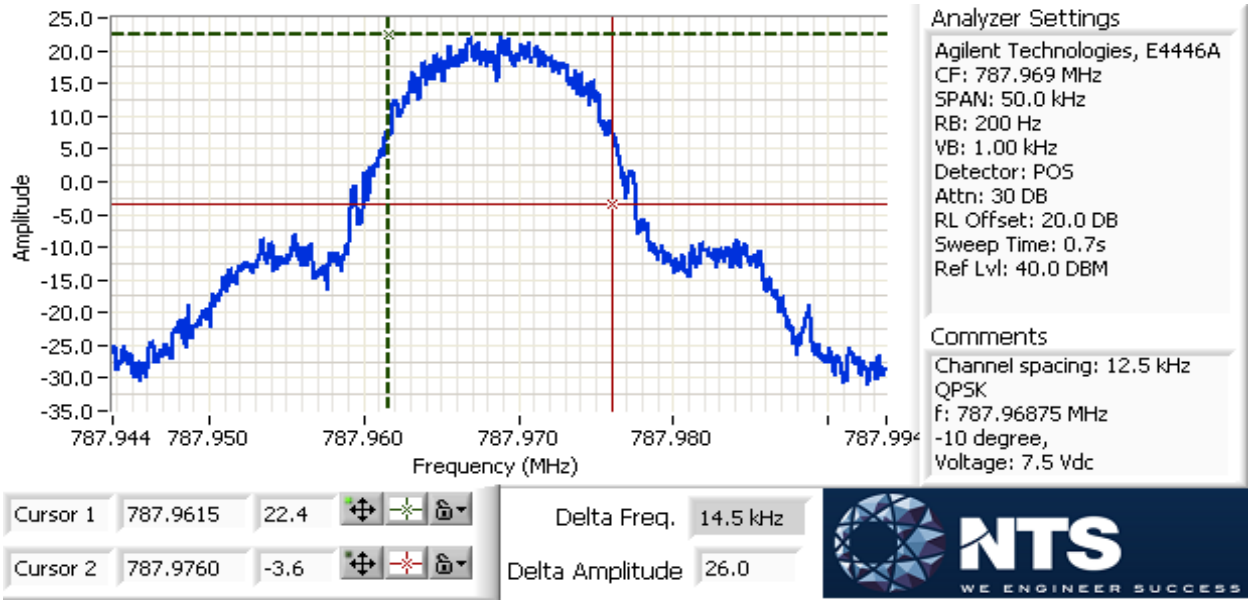




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

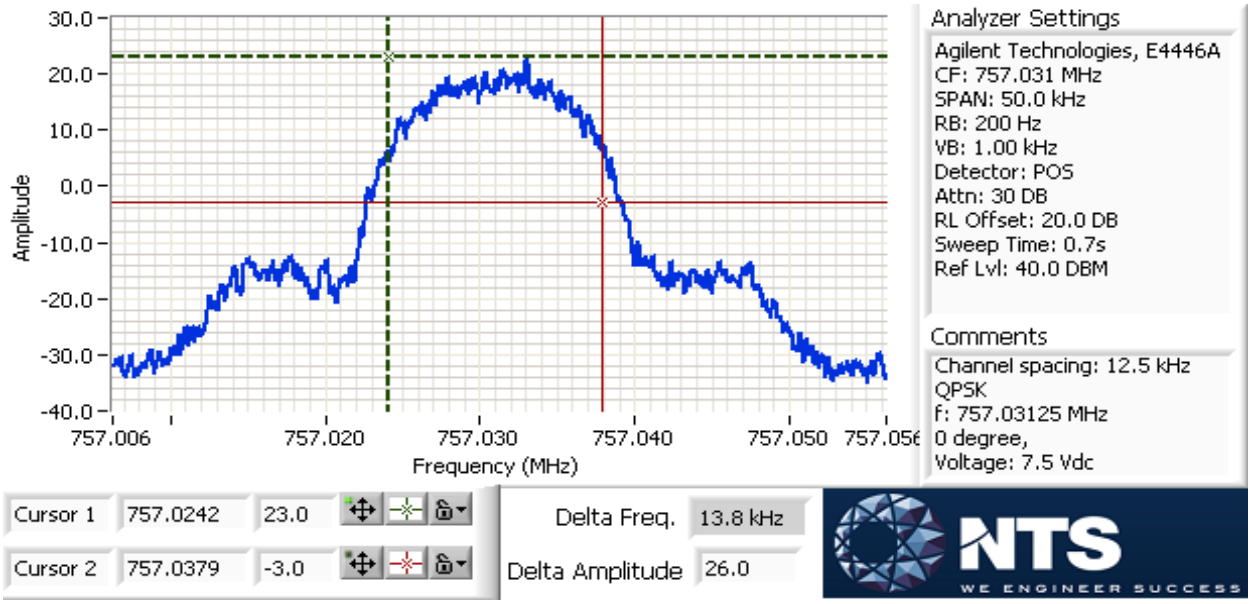
Frequency stability at -10°C

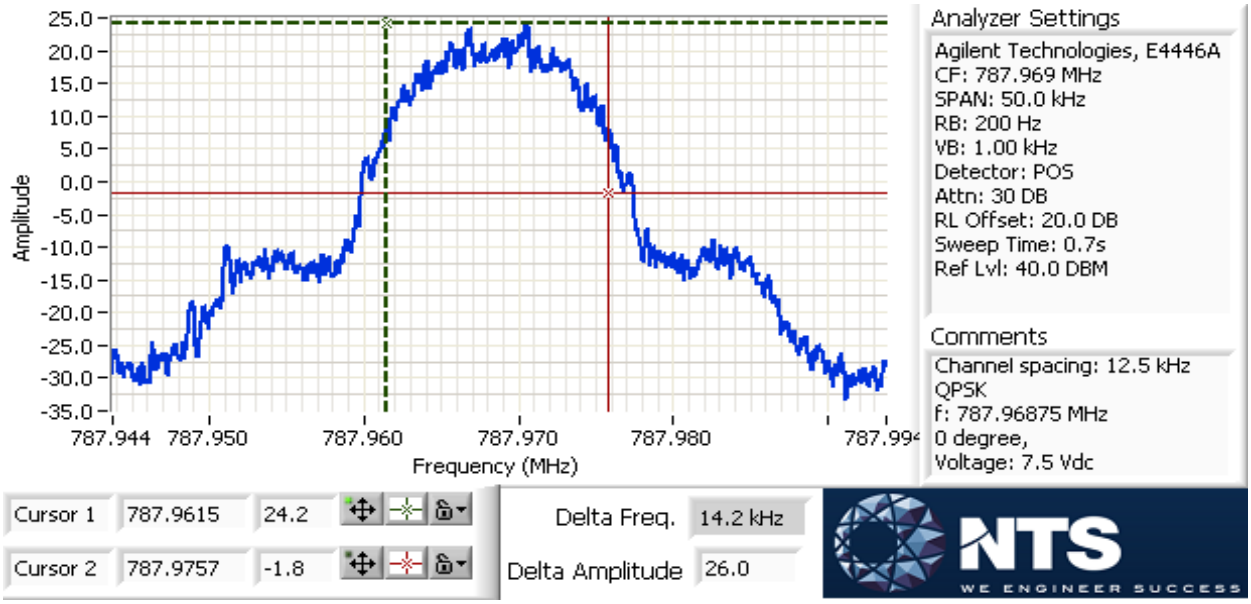




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

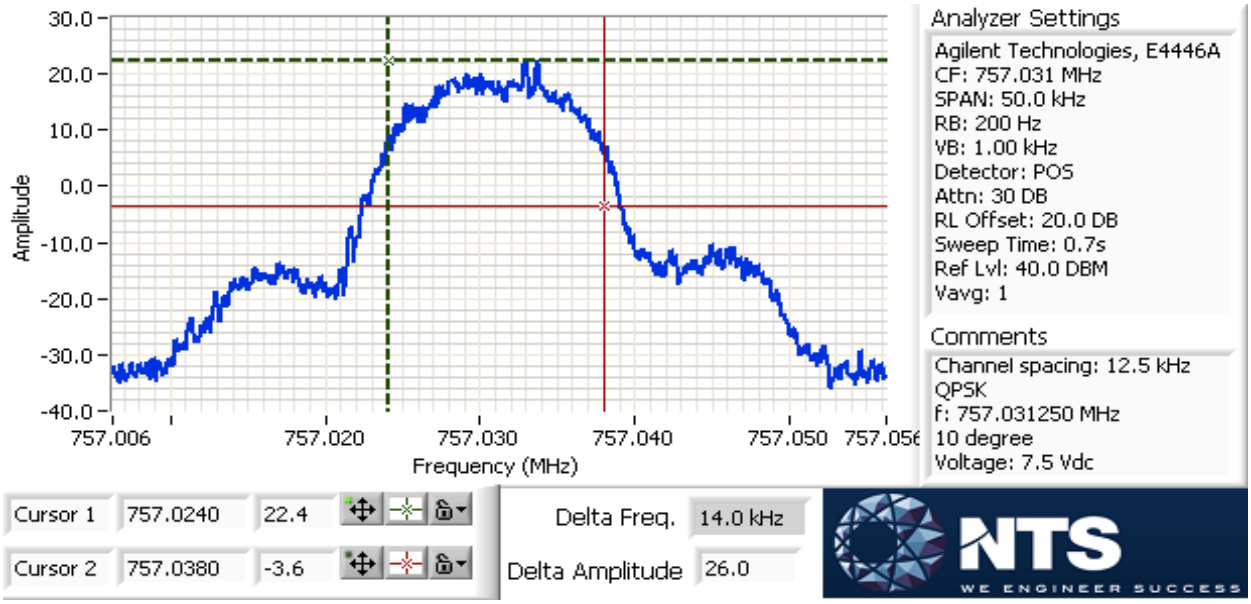
Frequency stability at 0°C

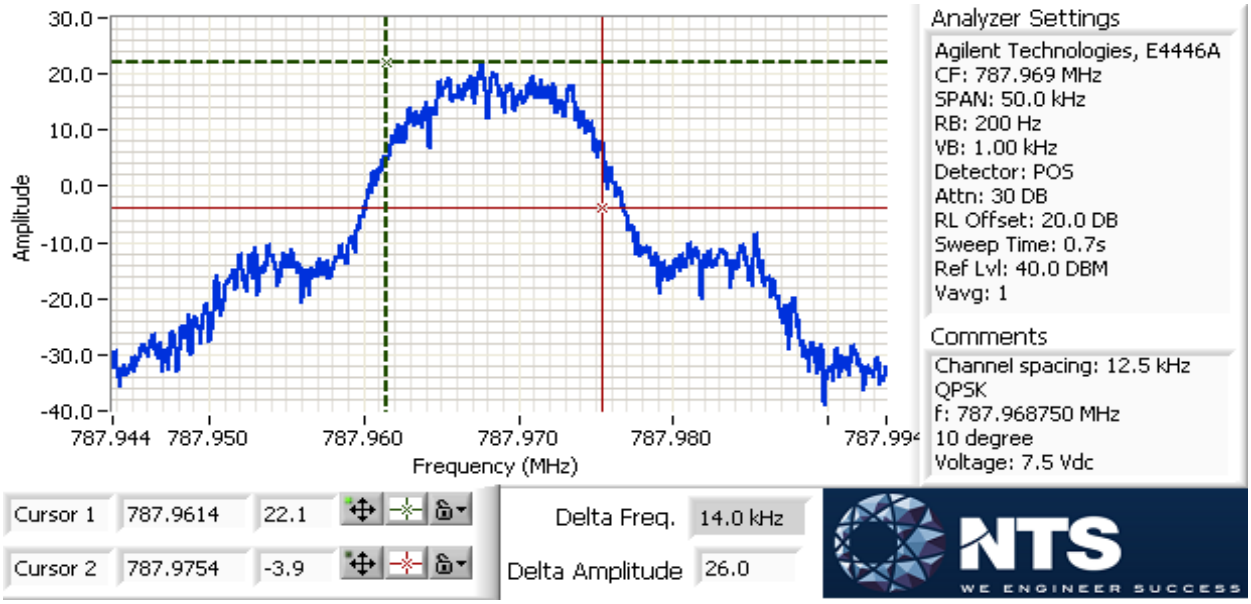




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

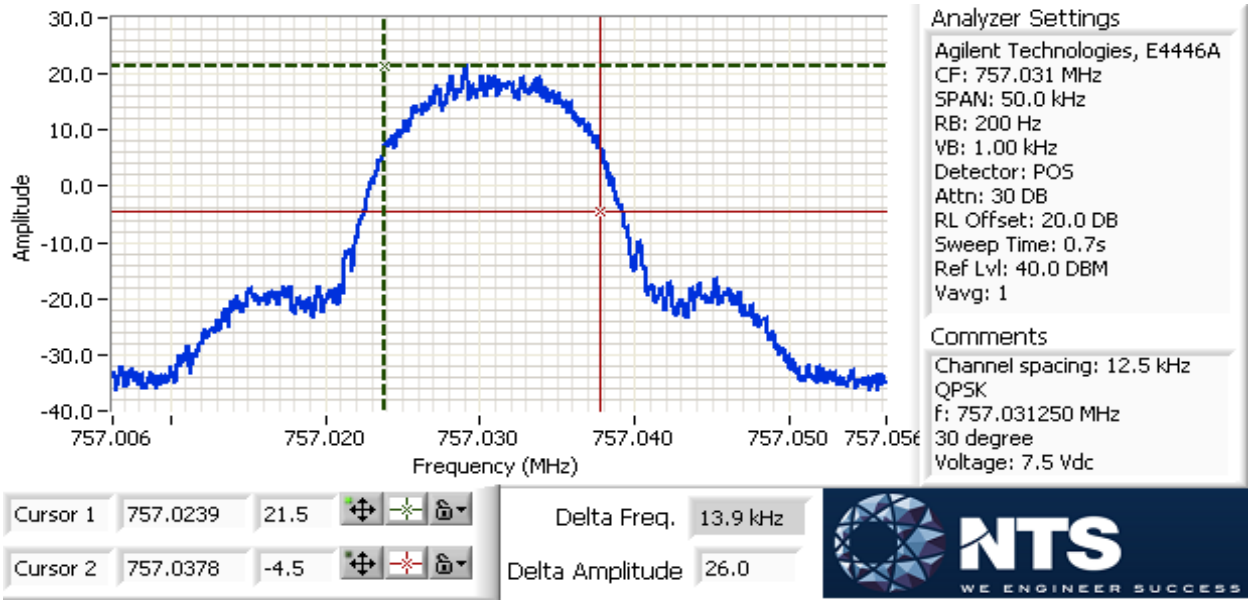
Frequency stability at 10°C

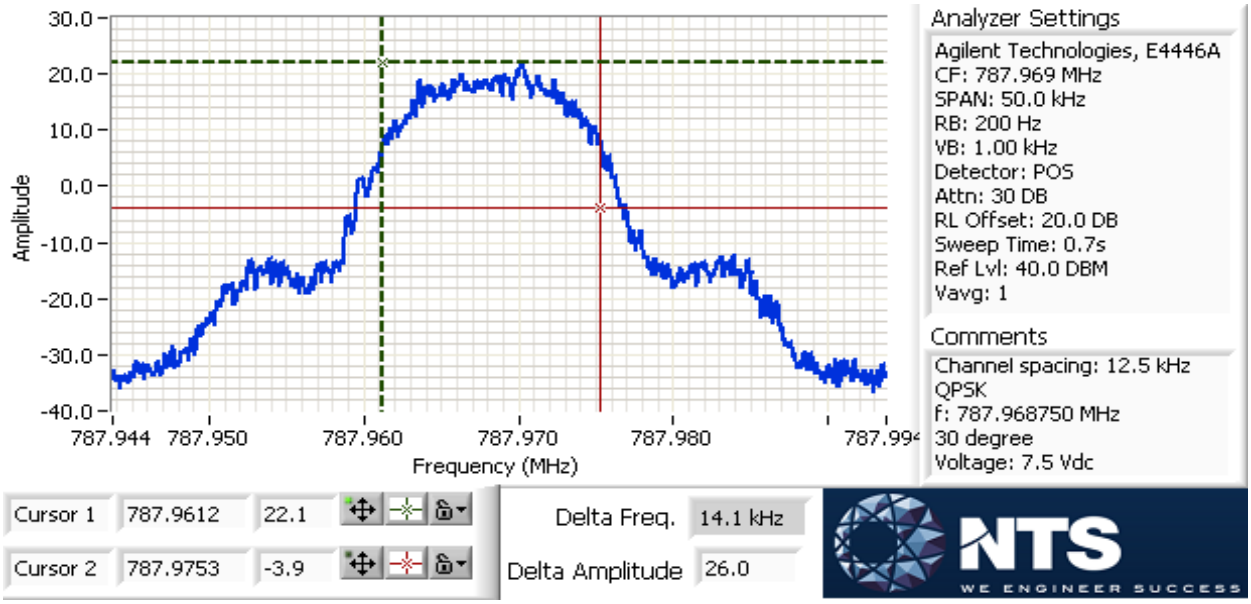




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

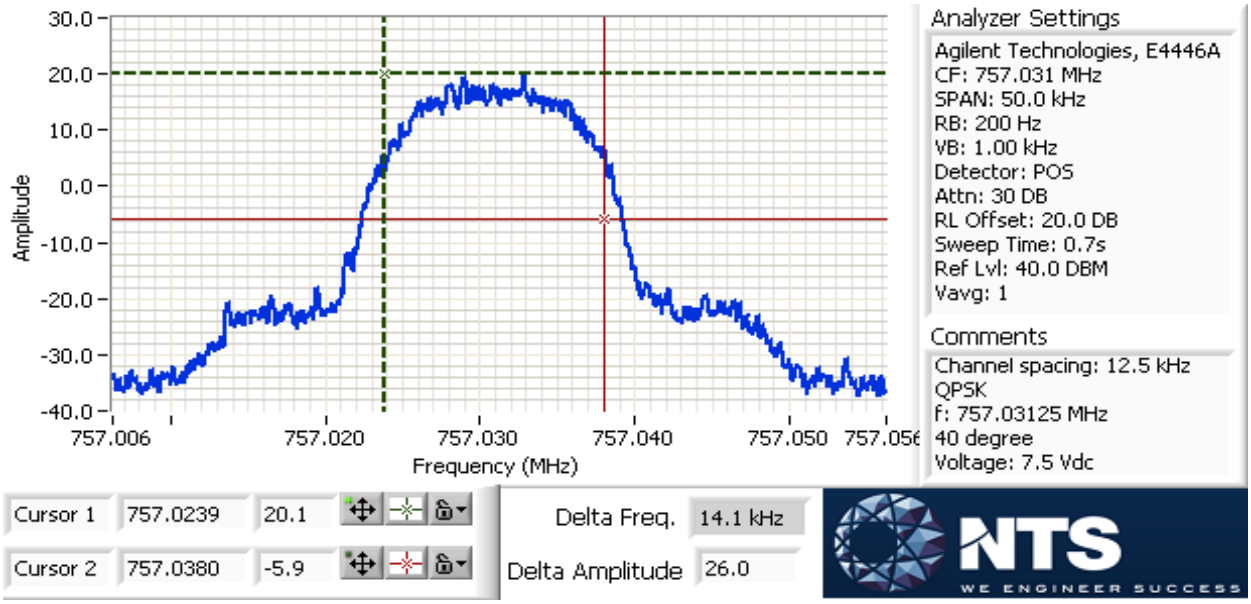
Frequency stability at 30°C

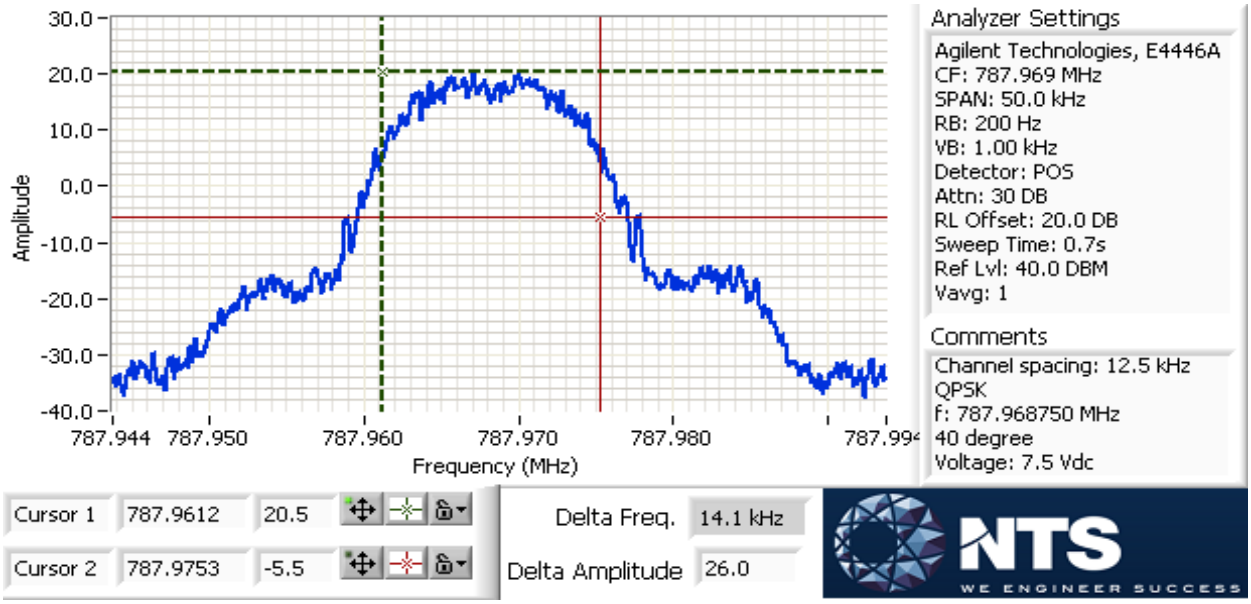




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

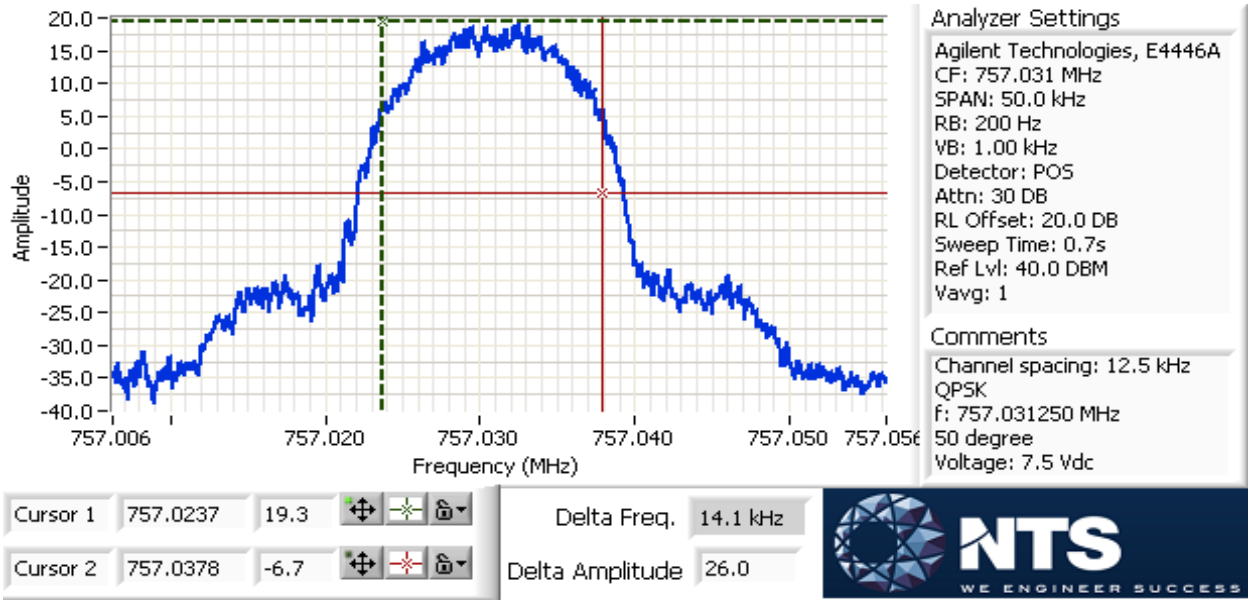
Frequency stability at 40°C

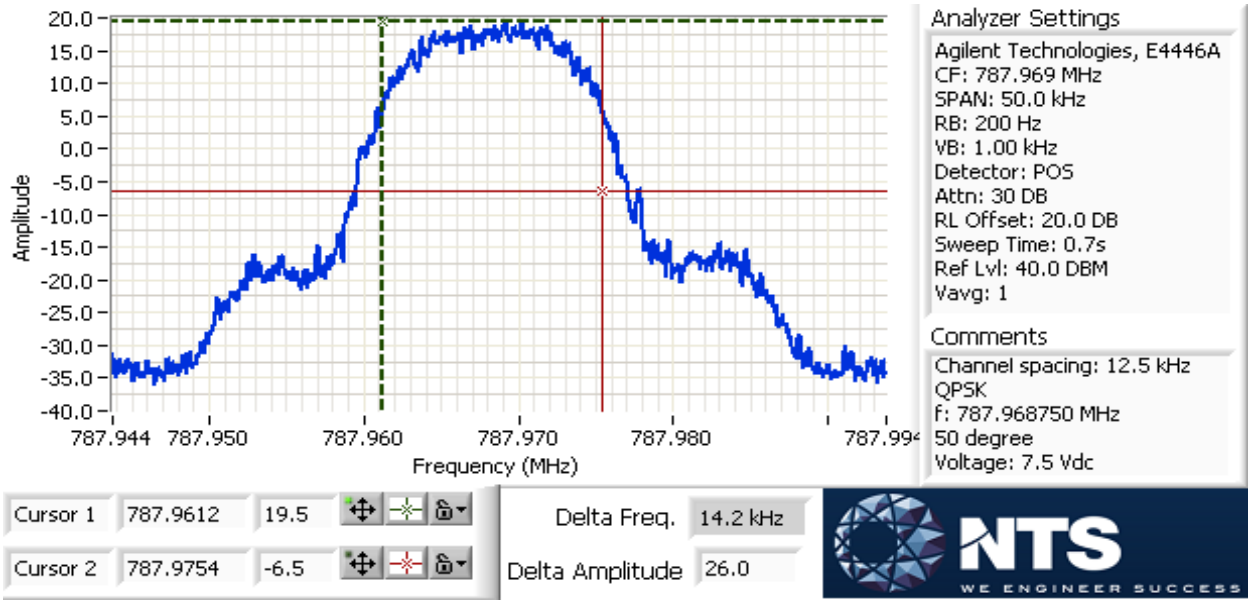




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

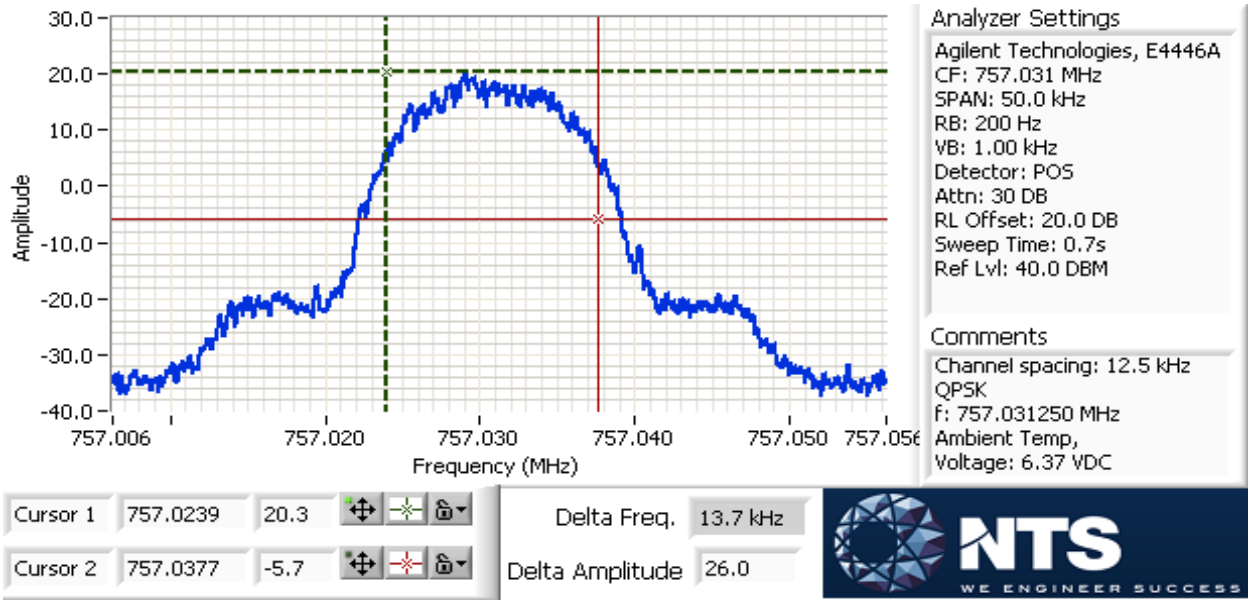
Frequency stability at 50°C

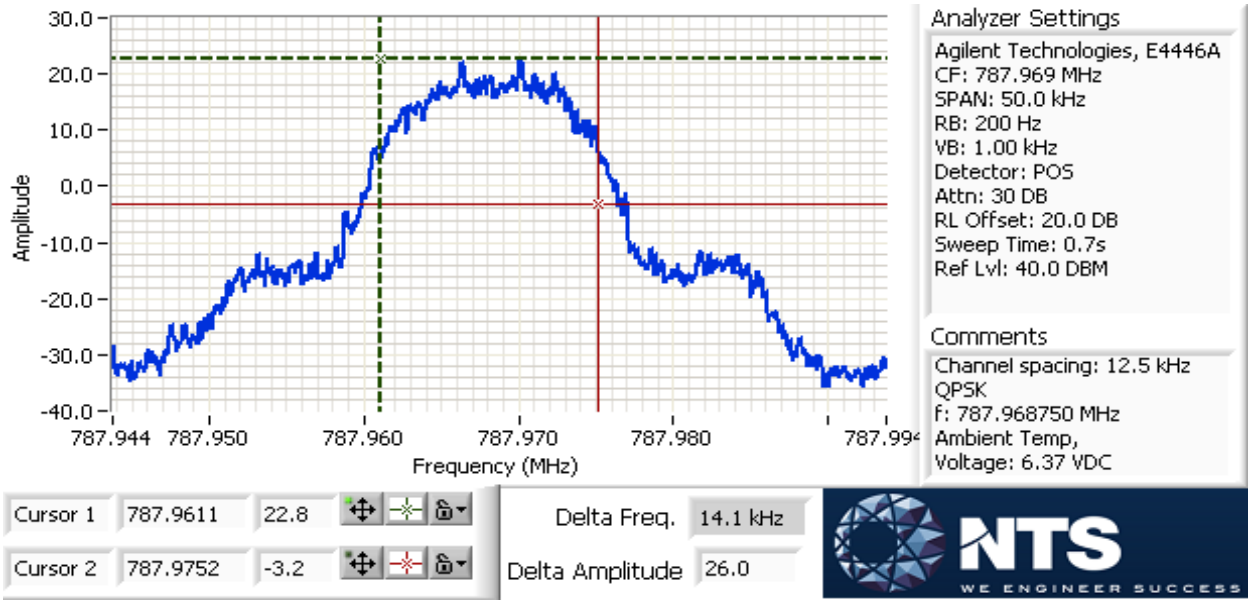




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

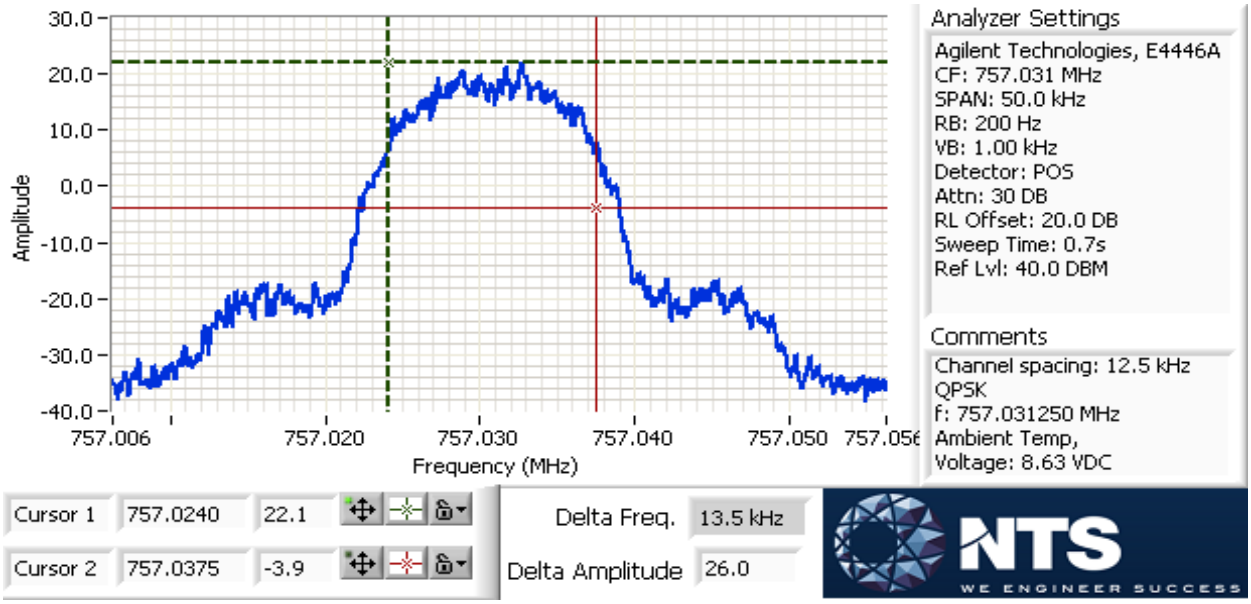
Frequency stability over 85% of Input voltage

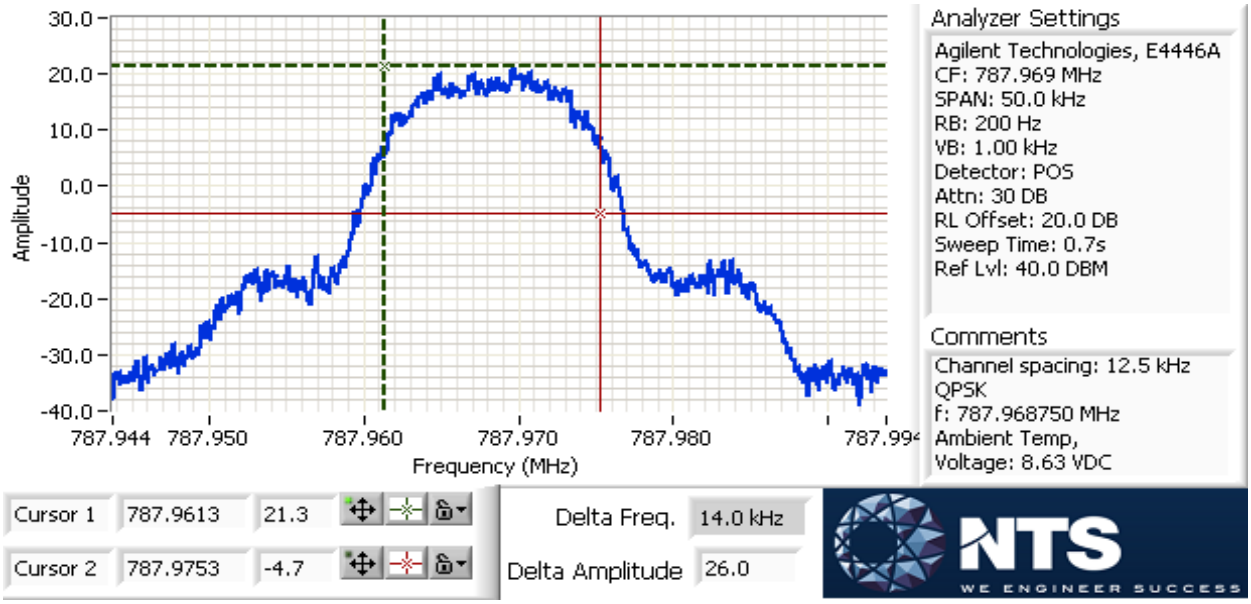




Client:	Xetawave LLC	Job Number:	JD99786
Model:	Xeta7	T-Log Number:	T99881
		Project Manager:	Christine Krebill
Contact:	Sandee Malang	Project Coordinator:	-
Standard:	FCC Part 27	Class:	N/A

Frequency stability over 115% of Input voltage





End of Report

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