


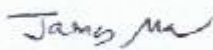
FCC PART 22, 90 TYPE APPROVALS  
MEASUREMENT AND TEST REPORT

For

**Raveon Technologies Corporation**

1750 Bella Laguna Ct.  
Encinitas, CA 92024

**FCC ID: SRS-RV-M7-UC**

<b>This Report Concerns:</b> <input checked="" type="checkbox"/> Original Report		<b>Product type:</b> StingRay UHF Band Data Radio Modem	
<b>Test Engineer:</b>	Dan Corona		
<b>Report Number:</b>	R07101910		
<b>Report Date:</b>	2007-11-14		
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**Note:** This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

The Raveon Technologies Corporation's product model: RV-M7-UC or the "EUT" as referred to in this report is a 12.5 kHz and 25 kHz channel spacing, Simplex or half duplex StingRay UHF data transceiver is a rugged 1-5 watt UHF data radio modem with RS-232 or 485 serial interface, perfect for SCADA and telemetry applications. It has an optional GPS and IP65 weatherproof aluminum enclosure for use in AVL and asset tracking applications. Operating frequency range: 450-480 MHz.

Technical Specifications	
Frequency Band	450 – 480 MHz
Modulation Type	F2D, F1D
RF Output Power	1 – 5 Watts
Channel Spacing	12.5 kHz / 25 kHz
Number of Channels	16
Power Supply	10-16 VDC
Antenna Type	Standard Male Connection Type for External Antenna

### Mechanical Description

The Raveon Technologies Corporation product is a StingRay UHF Band 1-5 Watts Data Radio Modem transmitter of metallic construction, which measures approximately 78 mm L x 115 mmW x 24 mmH and weighs 0.17 kg.

\* The test data gathered are from production sample, serial number: 7268001 provided by the manufacturer.

### EUT Photo



Additional Photo in Exhibit C

## Objective

This Type approval report is prepared on behalf of *Raveon Technologies Corporation* in accordance with Part 22, and Part 90 of the Federal Communication Commissions rules.

## Related Submittal(s)/Grant(s)

No related submittal(s).

## Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2, Sub-part J as well as the following individual parts:

Part 22 – Public Mobile Services, Part and Part 90 – Private Land Mobile Radio Service

Applicable Standards: TIA-603-C and ANSI 63.4-2003, American National Standard for Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed by Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Test Facility

The Test site used by BACL Corp. to collect radiated and conducted emission measurement data is located at 1274 Anvilwood Ave, Sunnyvale, California 94085, USA.

Test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the test methods and procedures set forth in ANSI C63.4-2003& TIA/EIA-603.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and is listed under FCC registration number: 90464 and VCCI Registration Number: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations is attached hereinafter and can also be found at

<http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>

## SYSTEM TEST CONFIGURATION

### Justification

The EUT was configured for testing according to TIA-603-C.

The EUT was tested in the normal (native) operating mode to represent *worst-case* results during the final qualification test.

### Equipment Modifications

No modifications were made to the EUT.

### Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number
KEPCO	Power Supply	JQE 25- 10 M	H134525

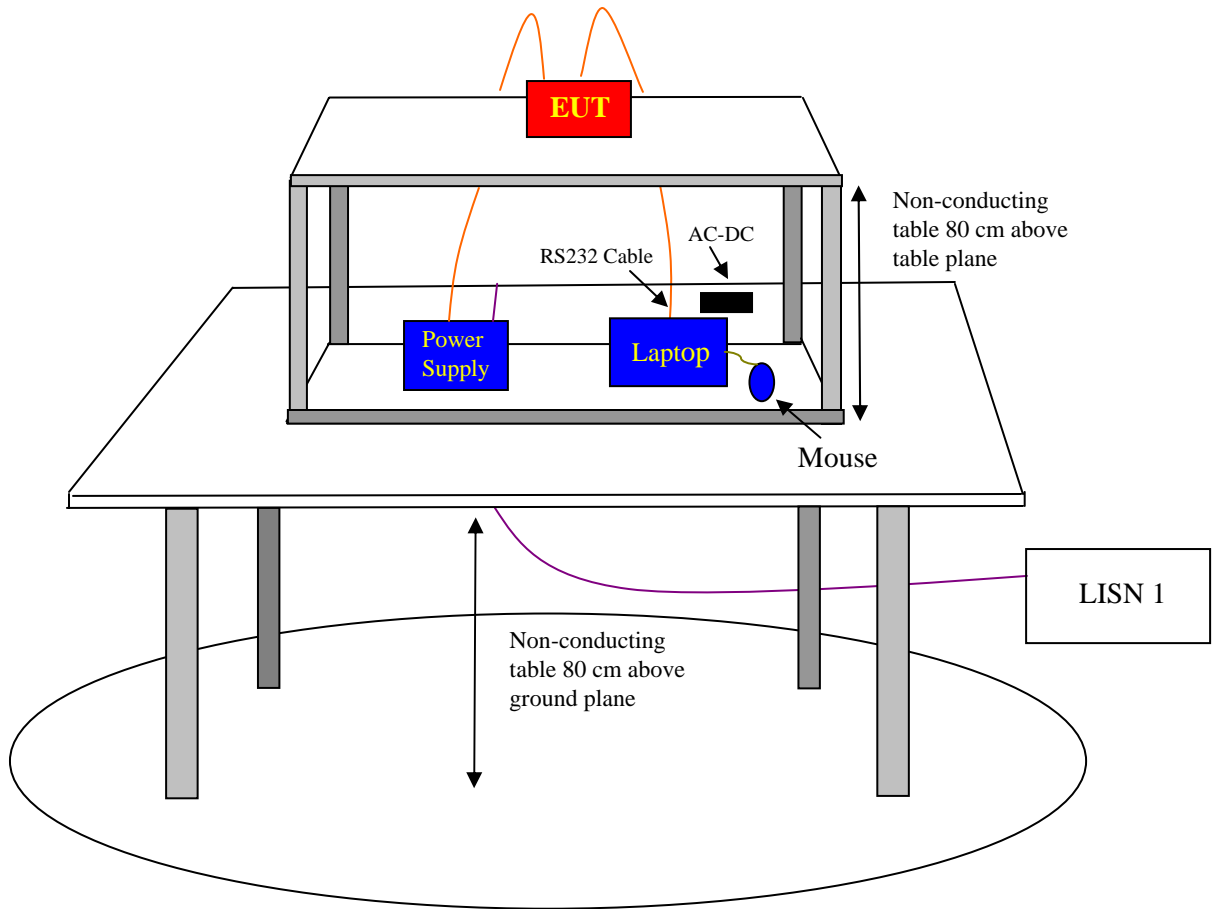
### Local Support Equipment

Manufacturer	Description	Model	Serial Number
DELL	Notebook	300m	1561-4564-5876

### External I/O Cabling List and Details

Cable Description	Length (cm)	Port/From	To
RS232 cable	20	Notebook serial port	EUT
Power cable	30	DC power supply	EUT

### Radiated Emission Test Setup Block Diagram



## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
47 CFR §1.1310, 47 CFR §2.1091	RF Exposure	Compliant
47 CFR §2.1046 §90.205	RF Output Power	Compliant
47 CFR §2.1047 47 CFR §90.207	Modulation Characteristic	Compliant
47 CFR §2.1049, 47 CFR §90.209	Occupied Bandwidth, Emission Masks and Emission Limitation	Compliant
47 CFR §2.1051	Spurious Emissions at Antenna Terminals	Compliant
47 CFR §2.1055, 47 CFR §22.355 §90.213	Frequency stability	Compliant
47 CFR §2.1053, 47 CFR § 90.210	Field strength of spurious radiation,	Compliant
47 CFR § 90.214	Transient Frequency Behavior	Compliant



## **§1.1310 and §2.1091 - RF EXPOSURE**

According to §1.1307, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
<b>Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

\* = Plane-wave equivalent power density

### **MPE Prediction**

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 36.62 (dBm)

Maximum peak output power at antenna input terminal: 4592 (mW)

Prediction distance: 60 (cm)

Predication frequency: 450 (MHz)

Antenna Gain (typical): 0 (dBd)

Antenna gain: 1.0 (numeric)

Power density at predication frequency at 60 cm: 0.102 (mW/cm<sup>2</sup>)

MPE limit for uncontrolled exposure at prediction frequency: 0.3 (mW/cm<sup>2</sup>)

### **Test Result**

The EUT is a radio modem device. For UHF, the worst power density level at 40 cm for the maximum output power is 0.102 mW/cm<sup>2</sup>, which is below the uncontrolled limit of 0.3 mW/cm<sup>2</sup>.

More information, please refer to the user's manual.

## §2.1046 - RF OUTPUT POWER

### Applicable Standard

According to FCC §2.1046 and §90.205 maximum ERP is dependent upon the station's antenna HAAT and required service area.

### Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Spectrum Analyzer Setting:

RBW	Video BW
300 kHz	1 MHz

### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	40 %
ATM Pressure:	102 kPa

\* The testing was performed by Dan Corona on 2007-10-25.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26
Agilent	Analyzer, Spectrum	8565EC	3946A00131	2007-01-24

\* **Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

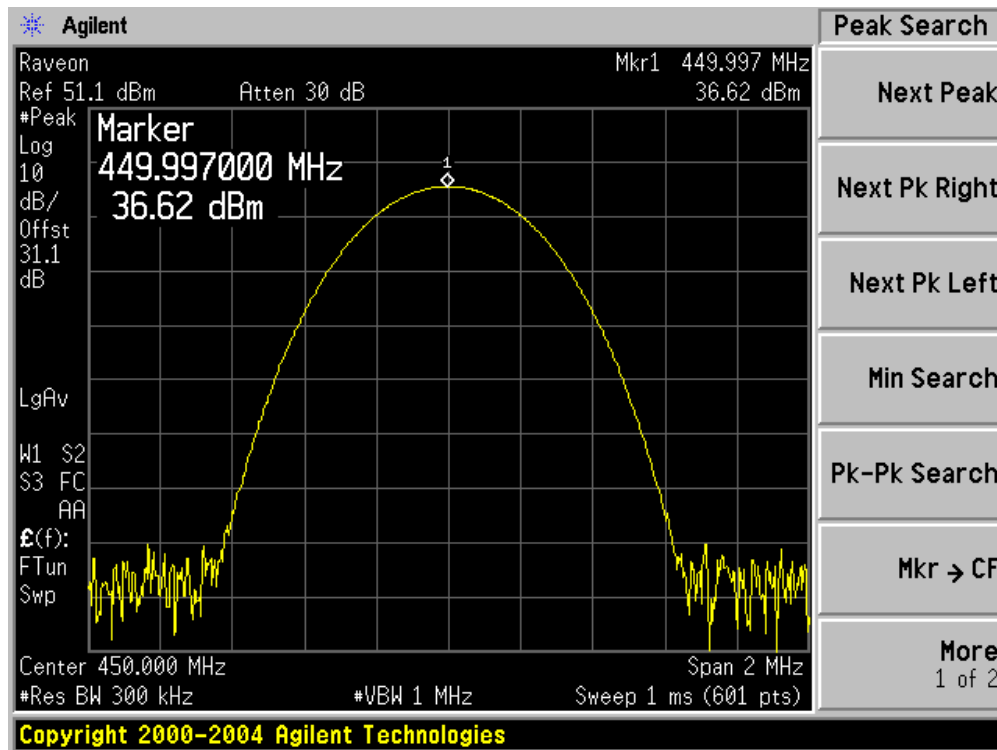
**Test Result**

Please refer to the tables and polots hereinafter.

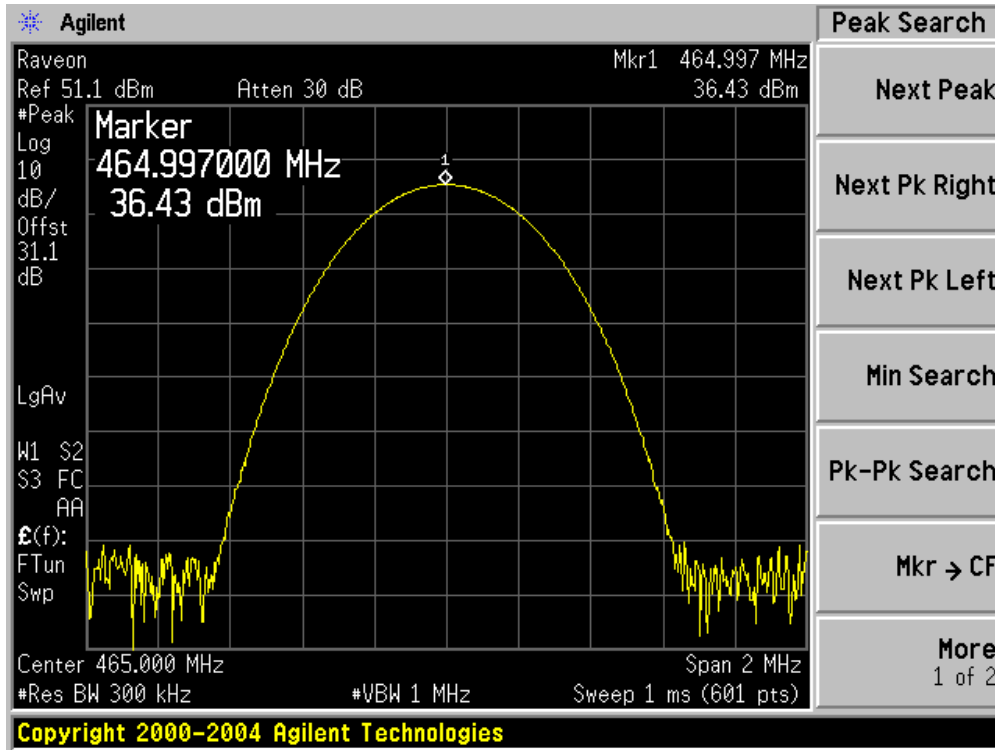
**Channel Bandwidth 12.5 kHz**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (Watt)
1	450.0	36.62	4.59
2	465.0	36.43	4.40
3	480.0	35.38	3.45

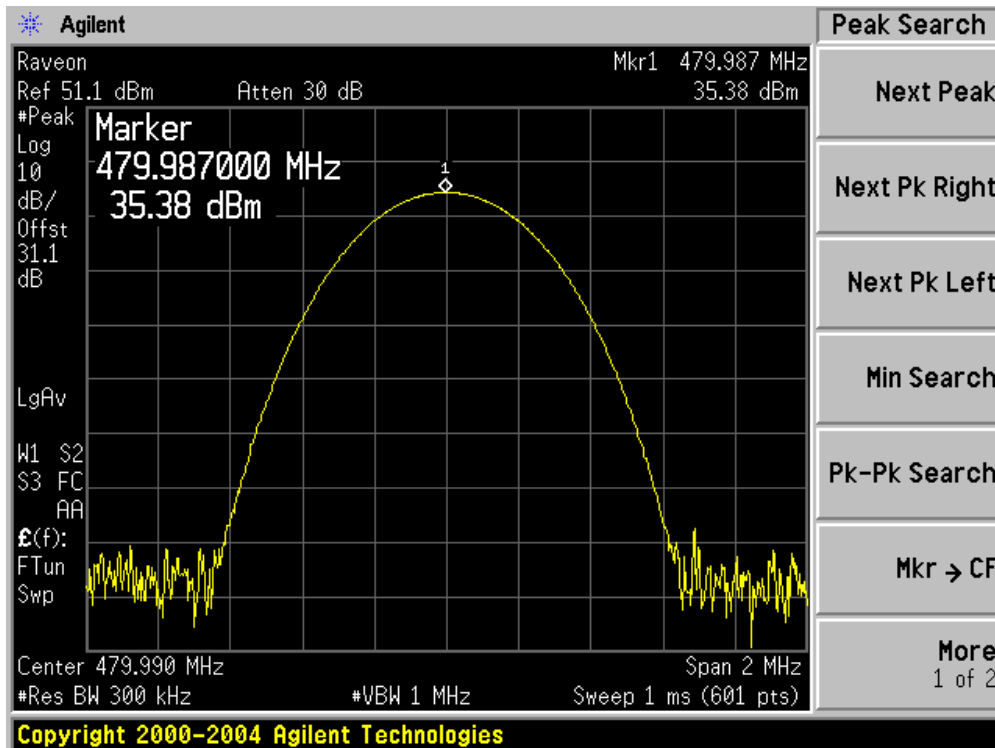
**450.0 MHz**



465.0 MHz



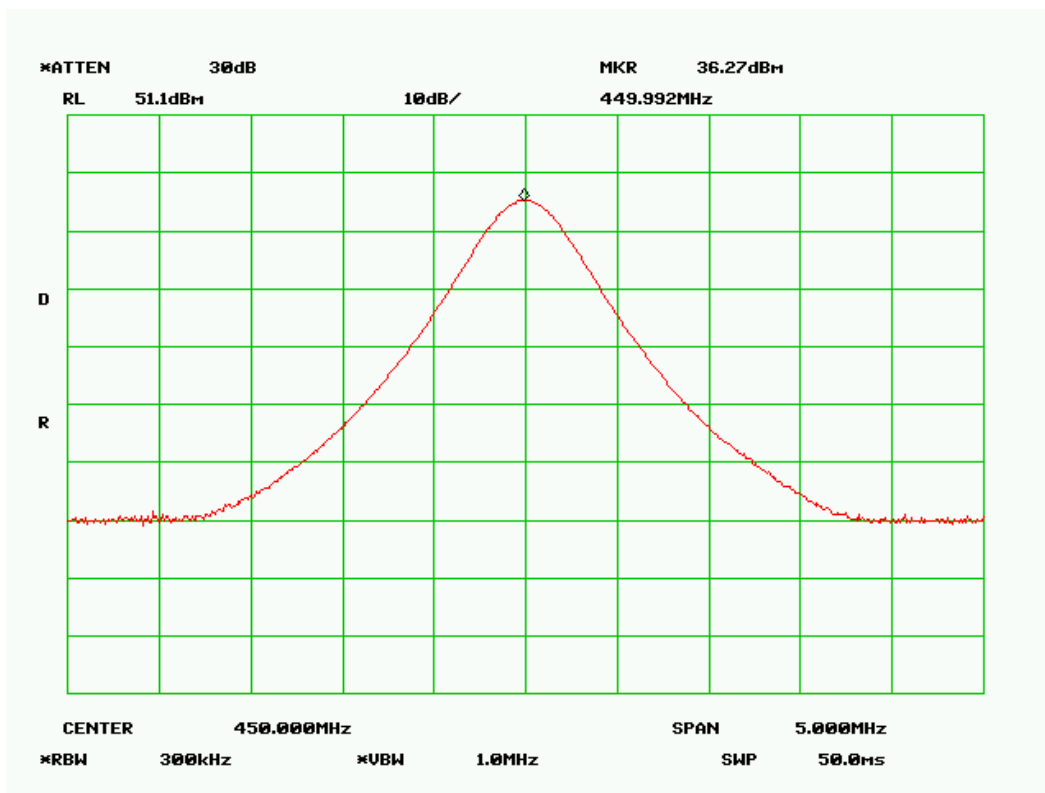
480.0 MHz



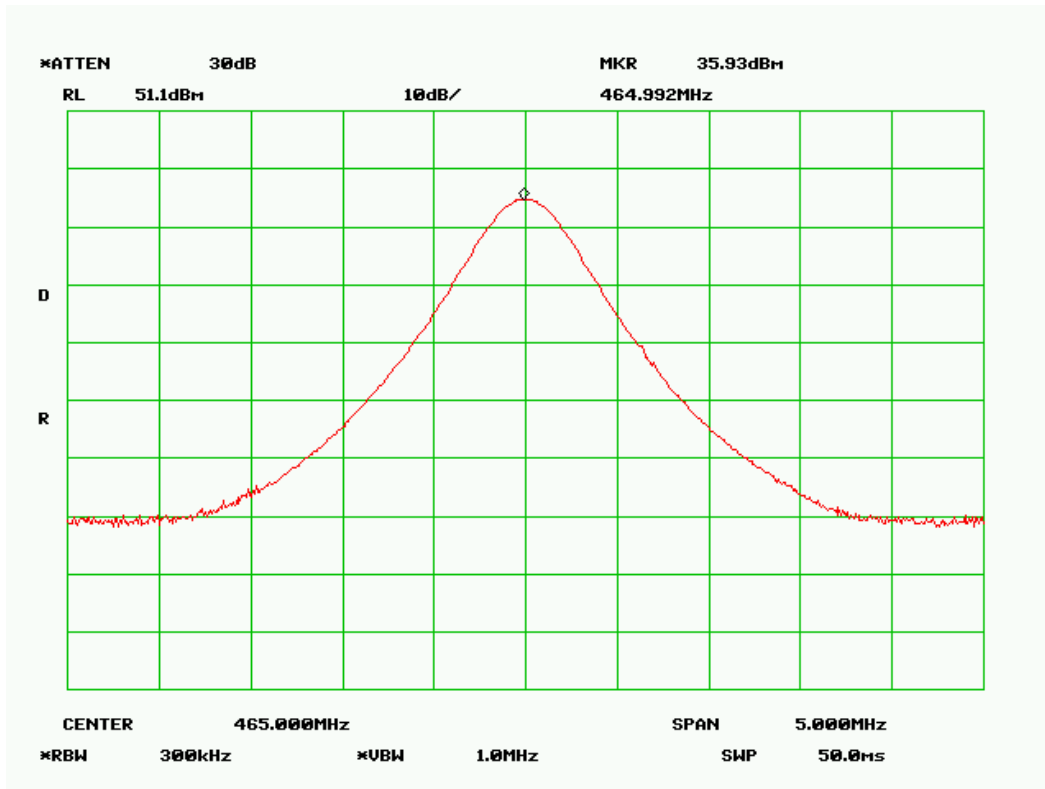
**Channel Bandwidth 25 kHz**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (Watt)
1	450.0	36.27	4.24
2	465.0	35.93	3.92
3	480.0	34.27	2.67

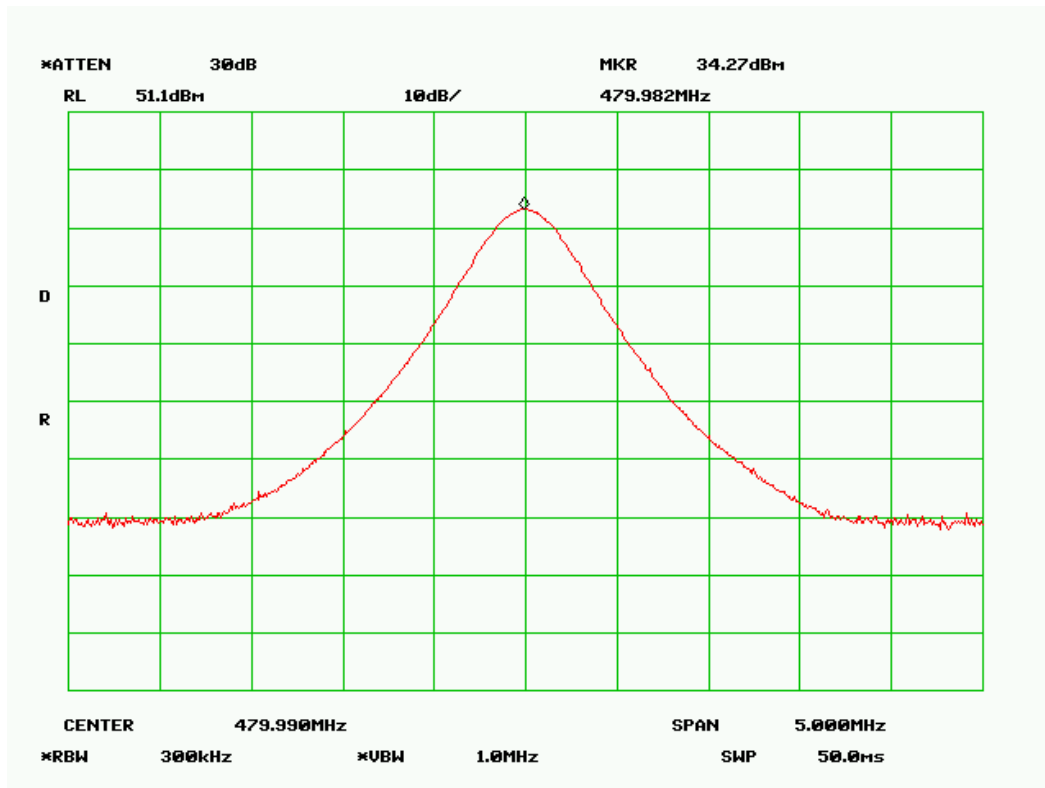
**450.0 MHz**



### 465.0 MHz



### 480.0 MHz



## §2.1047 and §90.207 - MODULATION CHARACTERISTIC

### Applicable Standard

§2.1047 & §90.207:

- (a) Equipment which utilizes voice modulated communication shall show the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz. for equipment which is required to have a low pass filter, the frequency response of the filter, or all of the circuitry installed between the modulation limited and the modulated stage shall be supplied.
- (b) Equipment which employs modulation limiting, a curve showing the percentage of modulation versus the modulation input voltage shall be supplied.

### Test Procedure

Test Method: TIA/EIA-603-C 2.2.3

### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	40 %
ATM Pressure:	102 kPa

\* The testing was performed by Dan Corona on 2007-10-25.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
HP	RF Communication Test Set	8920A	2026A00847	2007-10-18

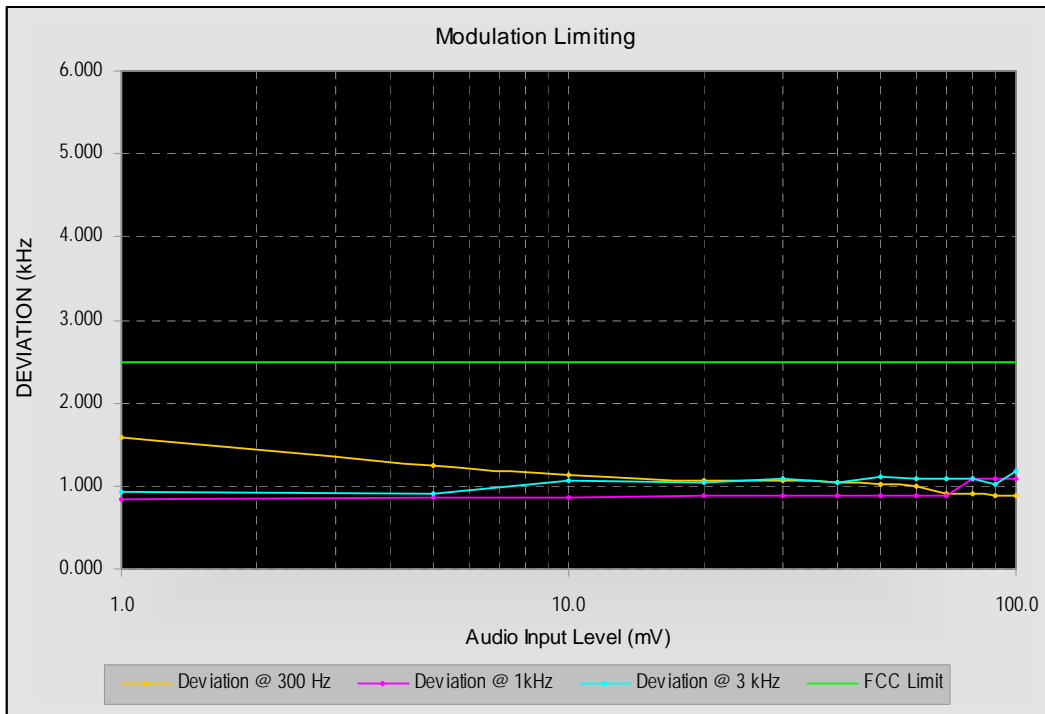
\* **Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

### Test Result

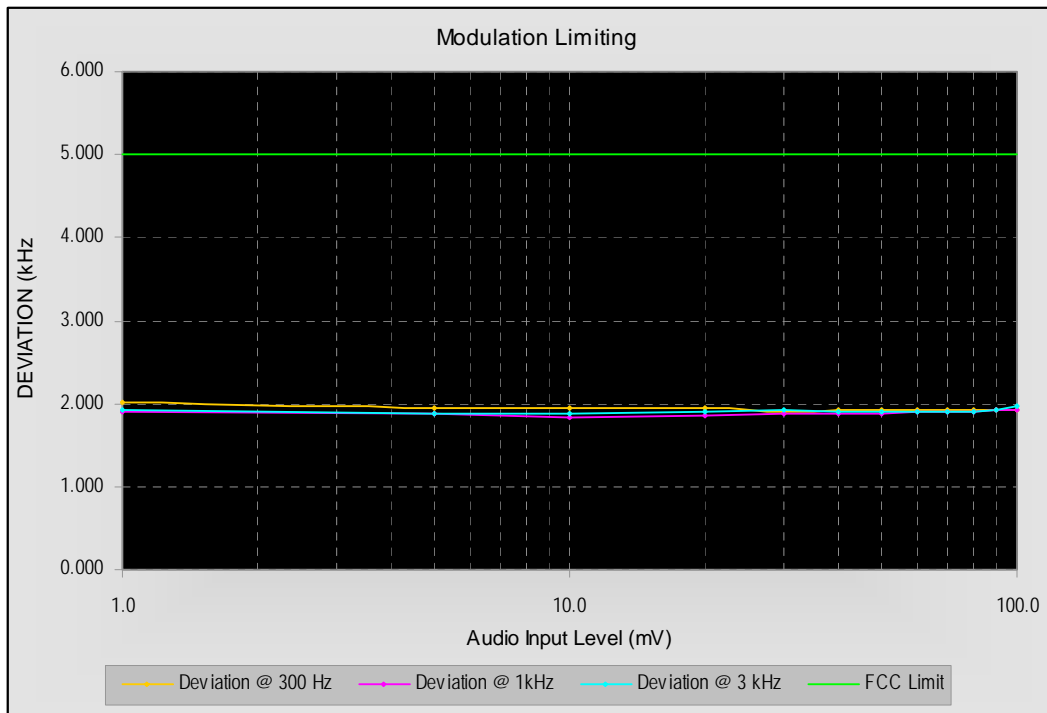
*Test Mode: Transmitting*

**Middle Channel: 465 MHz**

**Channel Bandwidth 12.5 kHz**



**Channel Bandwidth 25 kHz**





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## §2.1049, §22.359 and §22.359 – OCCUPIED BANDWIDTH & EMISSION LIMITATION

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### Applicable Standard

§90.209

Operations using equipment using a 25 kHz bandwidth will be authorized a 20 kHz bandwidth. Operations using equipment designed to operate with a 12.5 kHz channel bandwidth will be authorized an 11.25 kHz bandwidth.

§2.1049, §90.210

Emission Mask D—12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

- 1) For any frequency removed from the center of the authorized bandwidth  $f_0$  to 5.625 kHz removed from  $f_0$ , 0dB.
- 2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 5.625kHz but no more than 12.5kHz, at least  $7.27 (f_d - 2.88\text{kHz})$  dB.
- 3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 12.5kHz at least:

$50 + 10 \log P = 50 + 10 \log (P)$  or 70 dB, whichever is the lesser attenuation.

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

- 1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.
- 2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.
- 3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least  $43 + \log (P)$  dB.

The resolution bandwidth was 100Hz or greater for measuring up to 250kHz from the edge of the authorized frequency segment, and 30kHz or greater for measuring more than 250kHz from the authorized frequency segment.

### Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 100 Hz and the spectrum was recorded in the frequency band  $\pm 50$  kHz from the carrier frequency.

**Environmental Conditions**

Temperature:	25° C
Relative Humidity:	40 %
ATM Pressure:	102 kPa

*\* The testing was performed by Dan Corona on 2007-10-25.*

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26

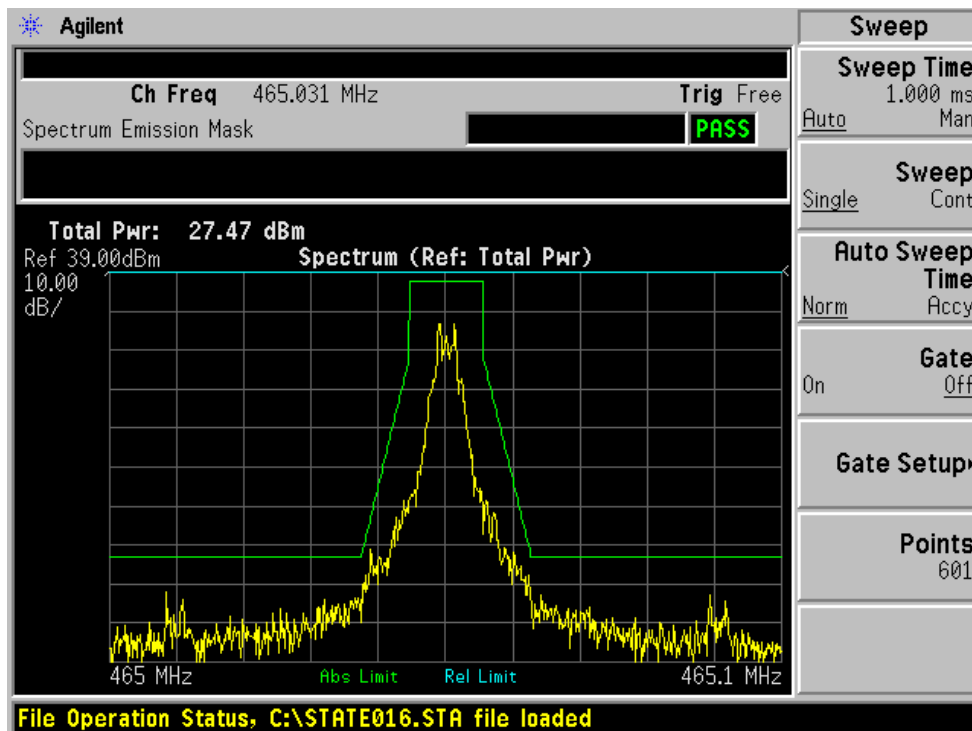
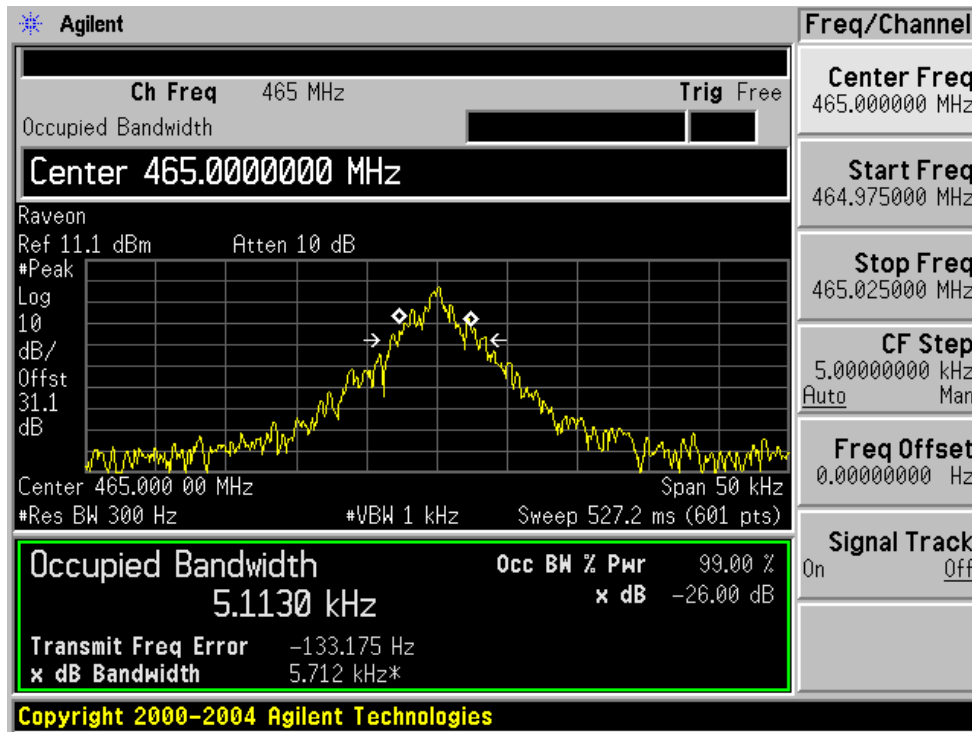
**\* Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

**Test Result**

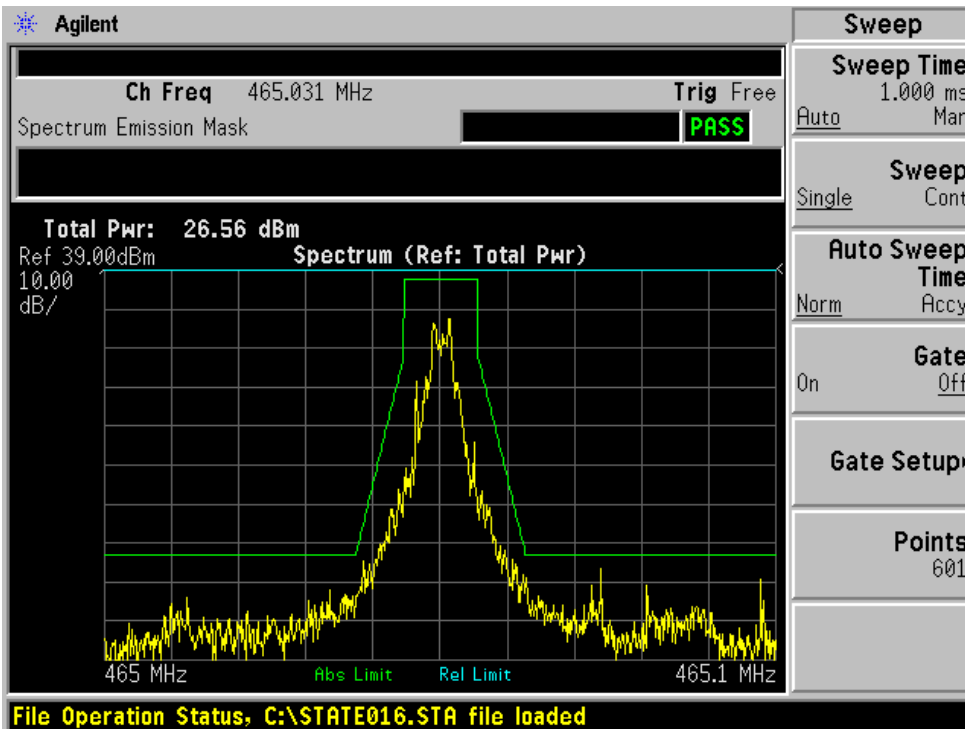
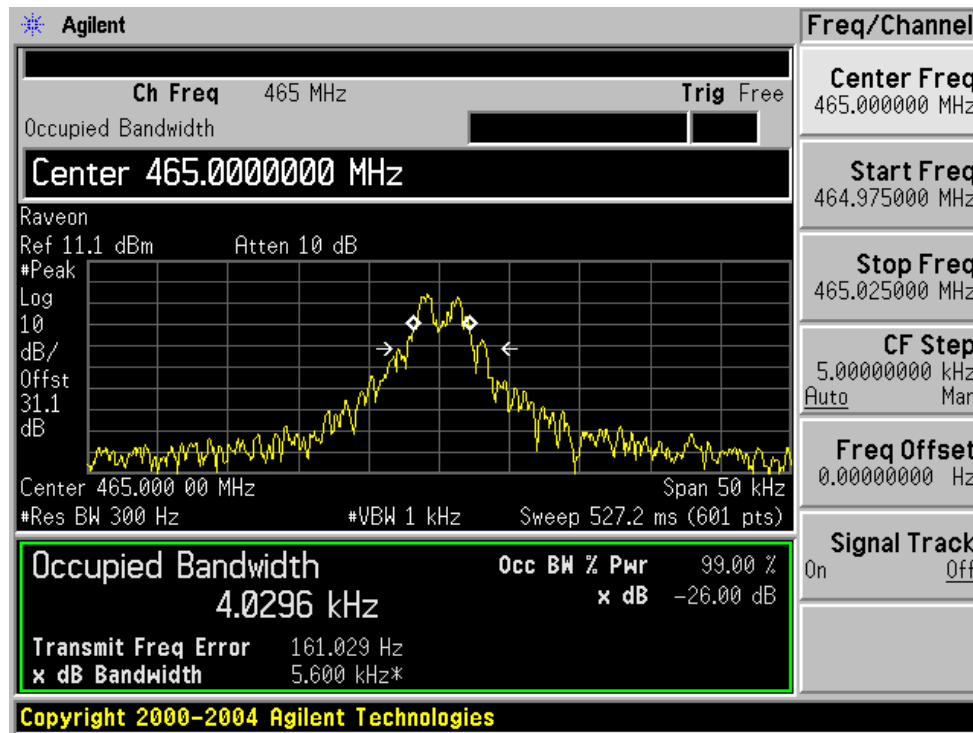
Please refer to the hereinafter plots.

**Channel Bandwidth 12.5 kHz**

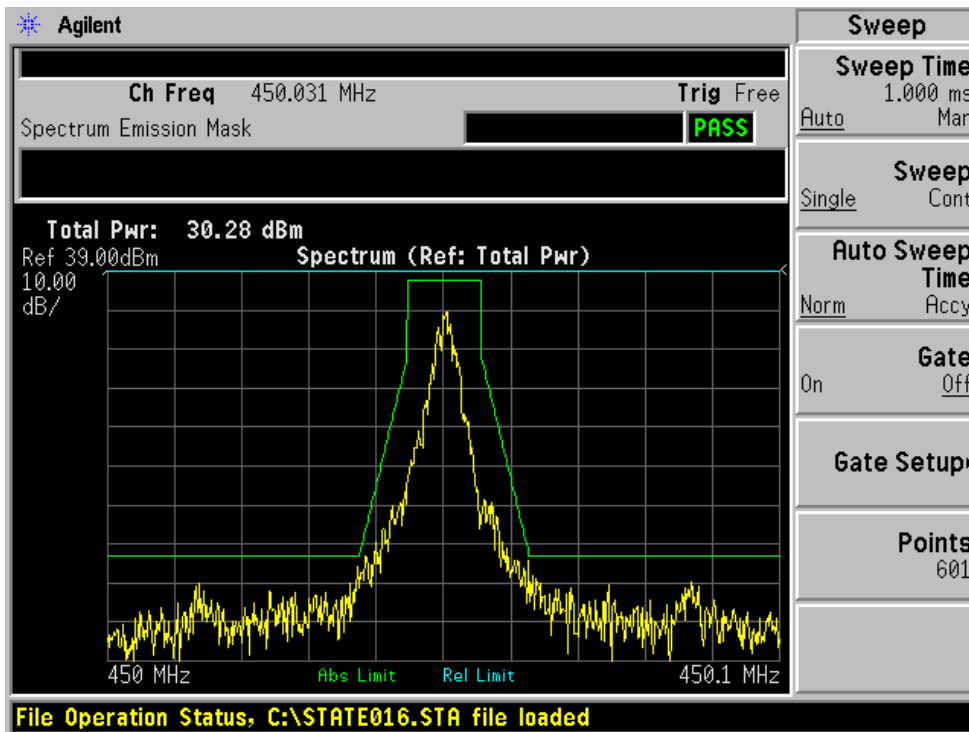
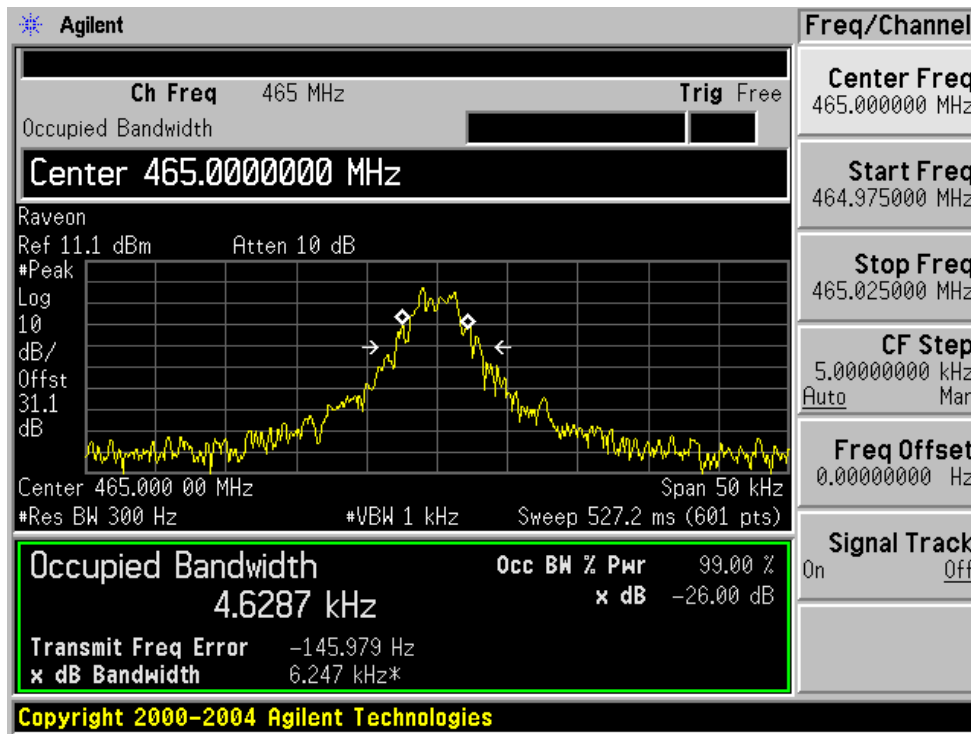
*Baud Rates: 1200 bps*



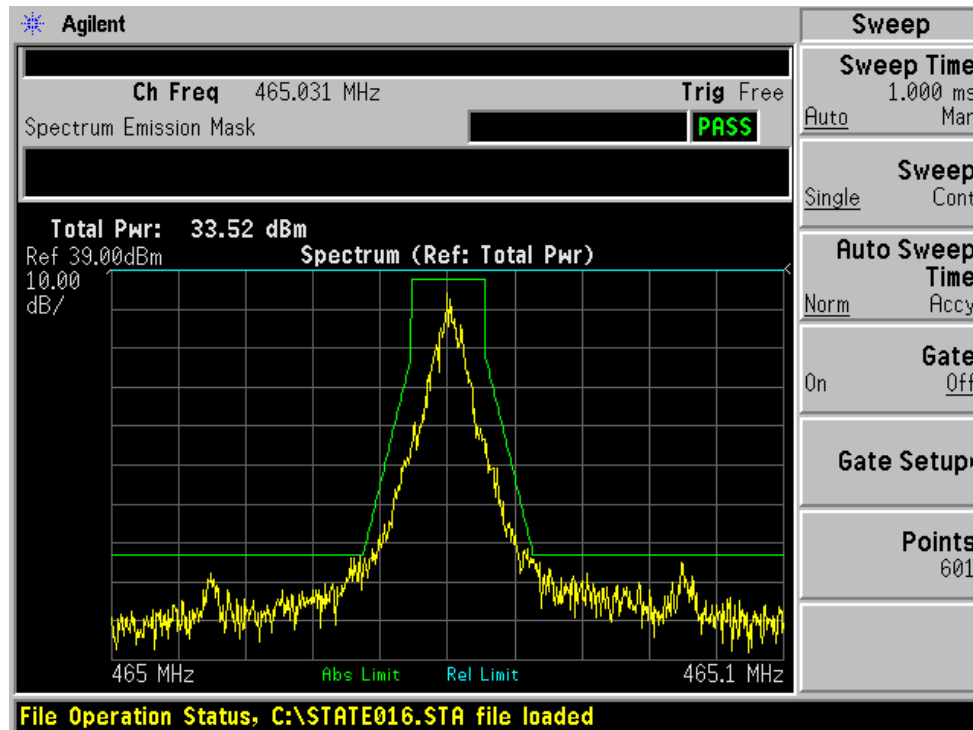
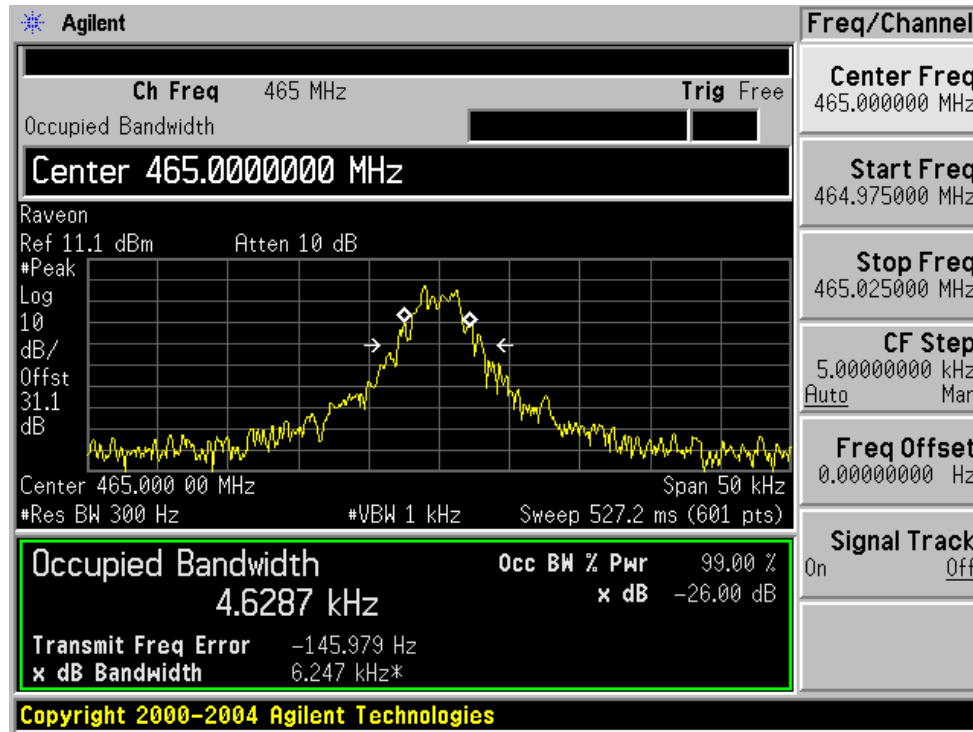
Baud Rates: 2400 bps



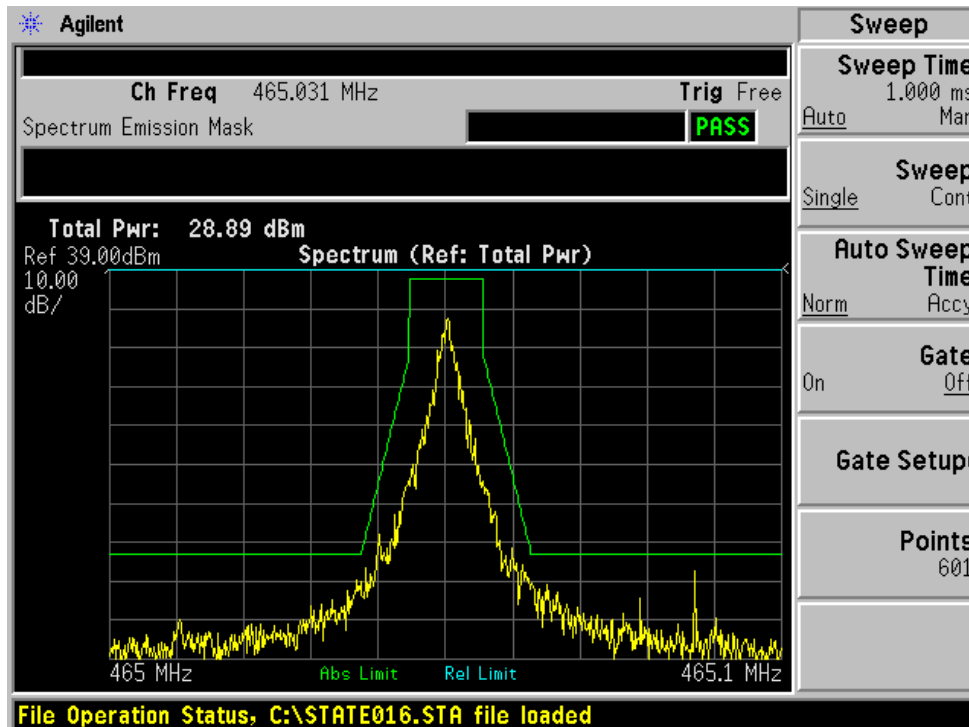
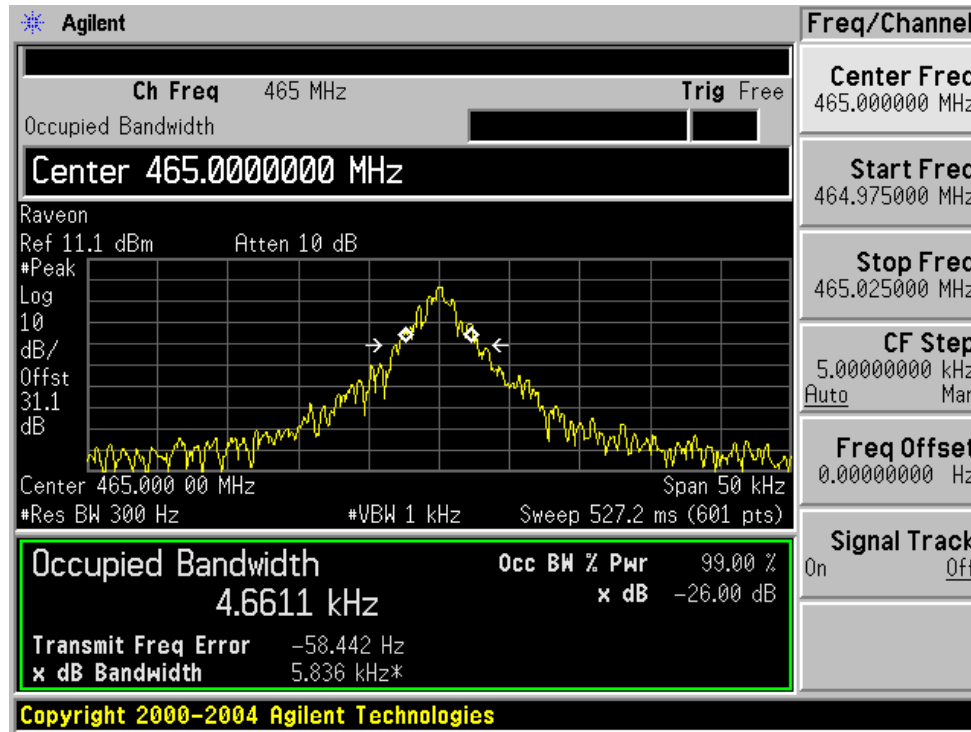
Baud Rates: 4800 bps



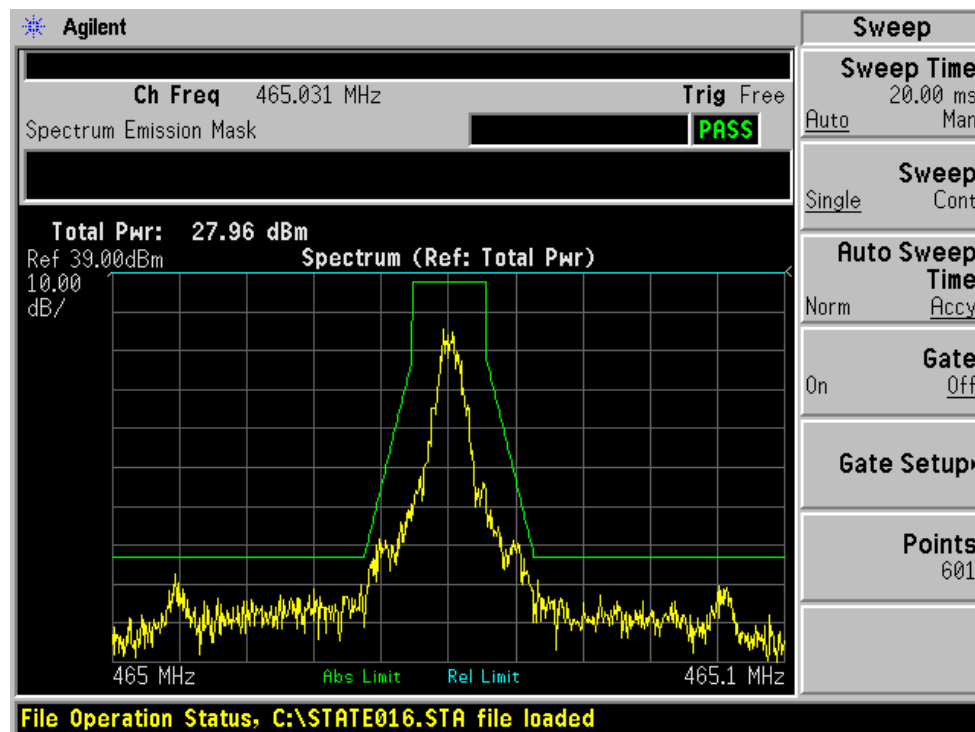
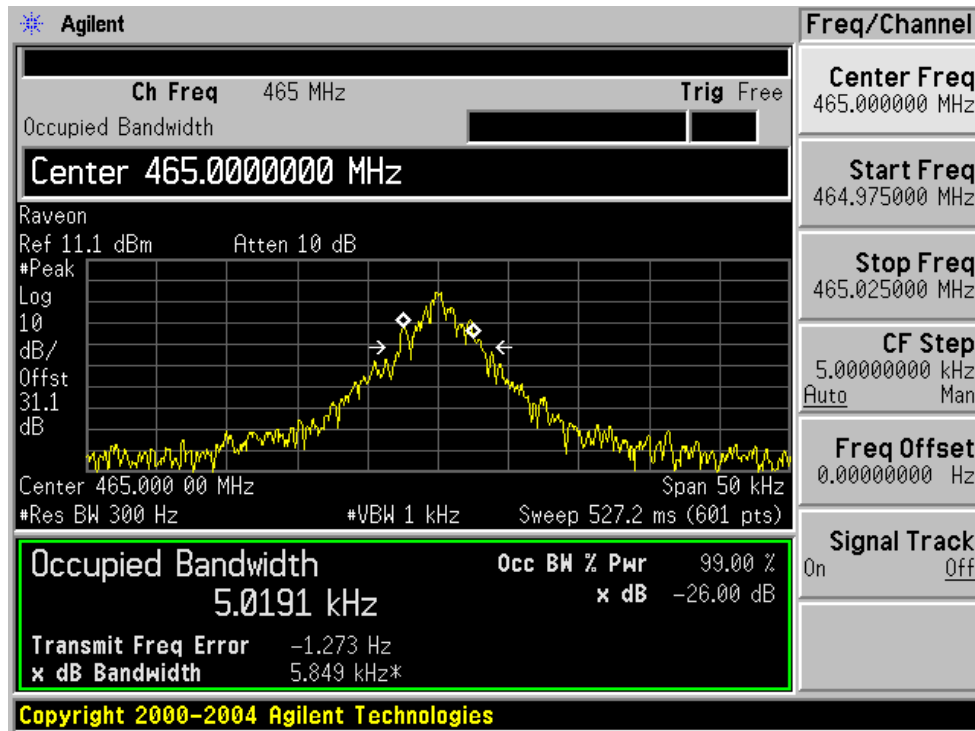
Baud Rates: 9600 bps



Baud Rates: 19200 bps



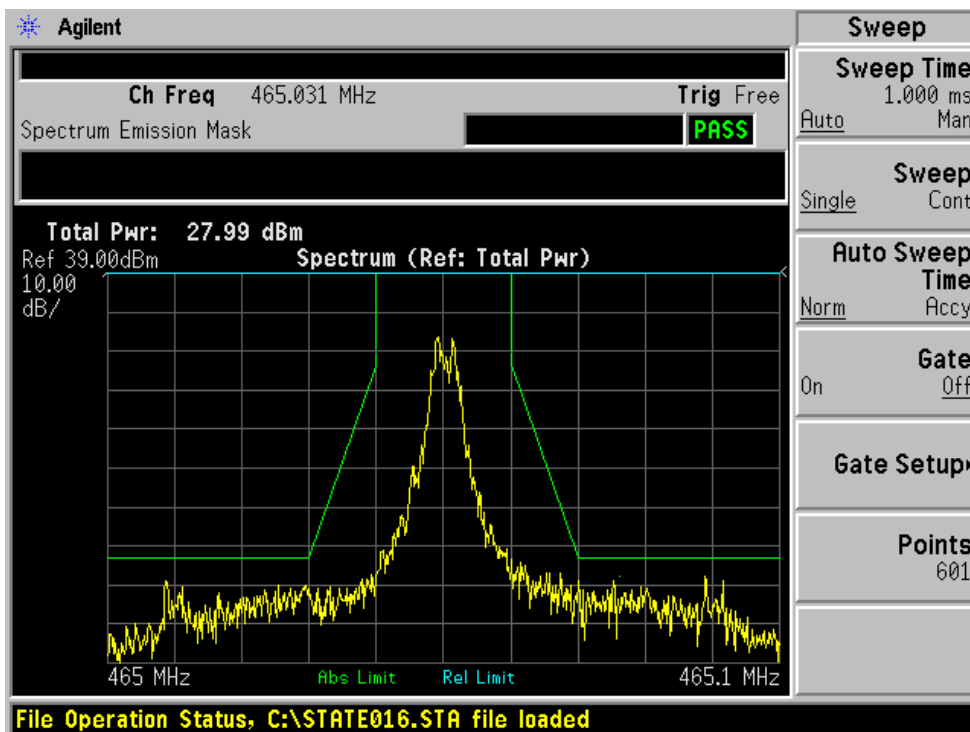
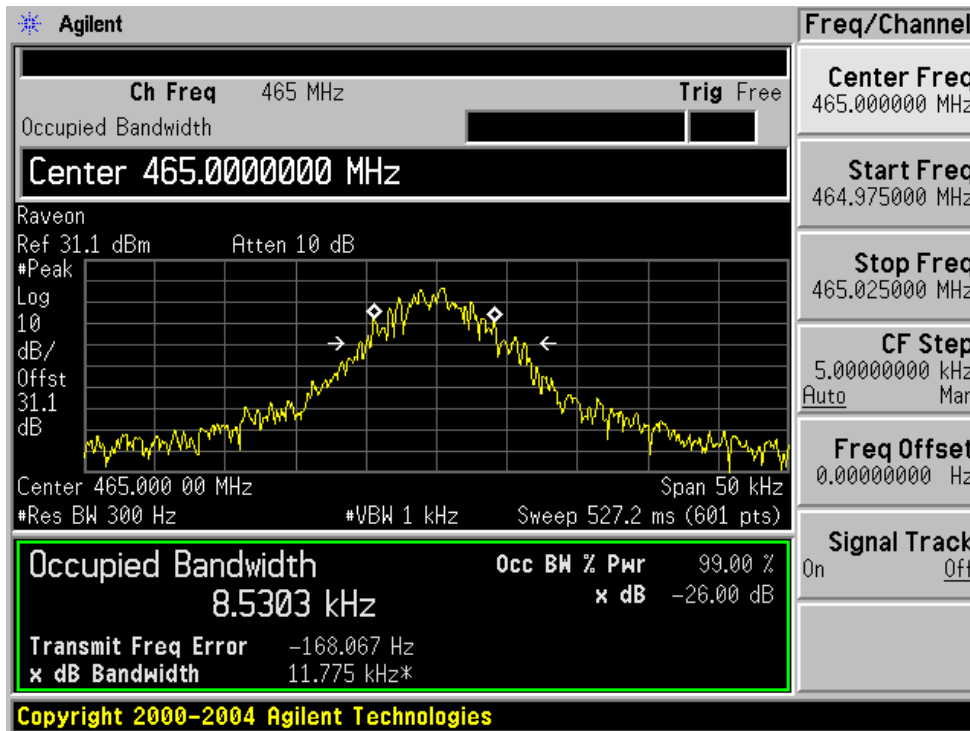
Baud Rates: 57600 bps



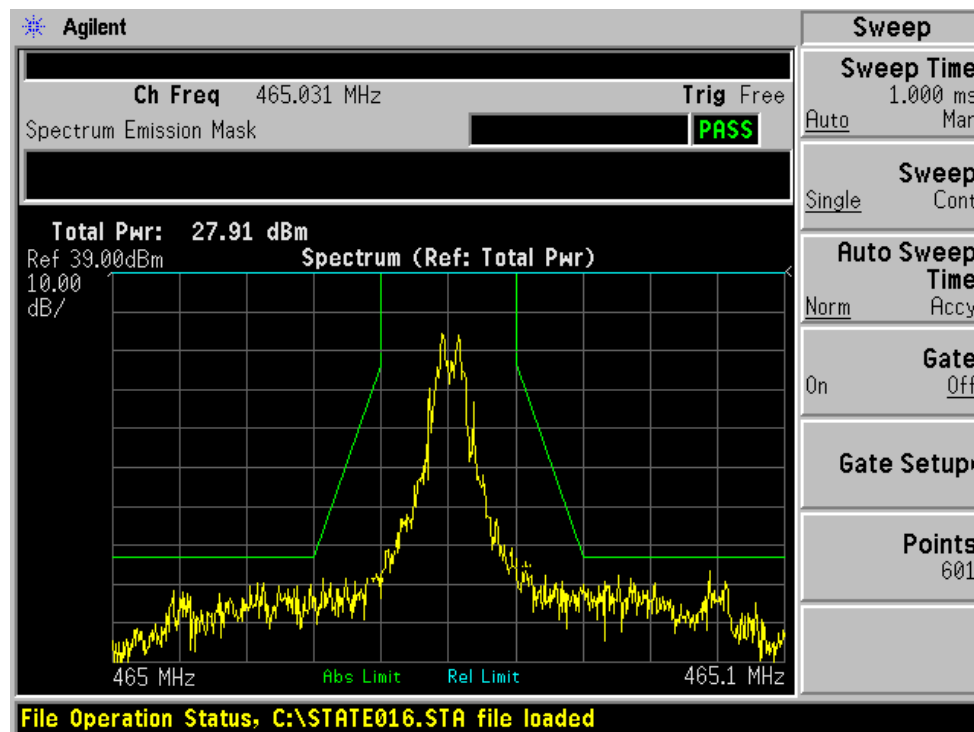
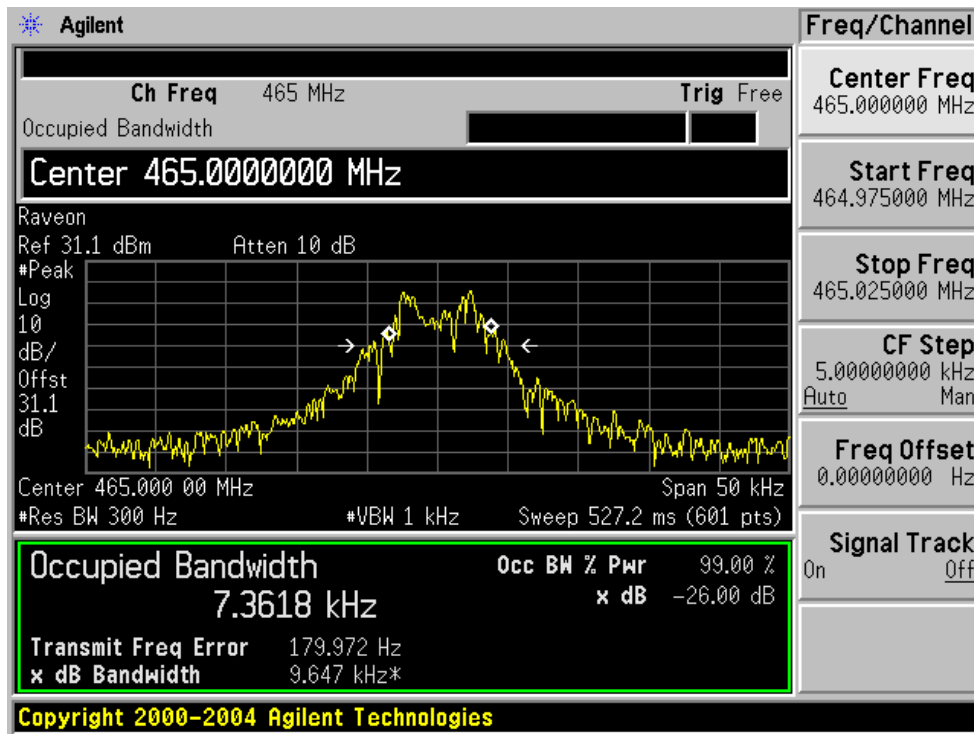


**Channel Bandwidth 25 kHz**

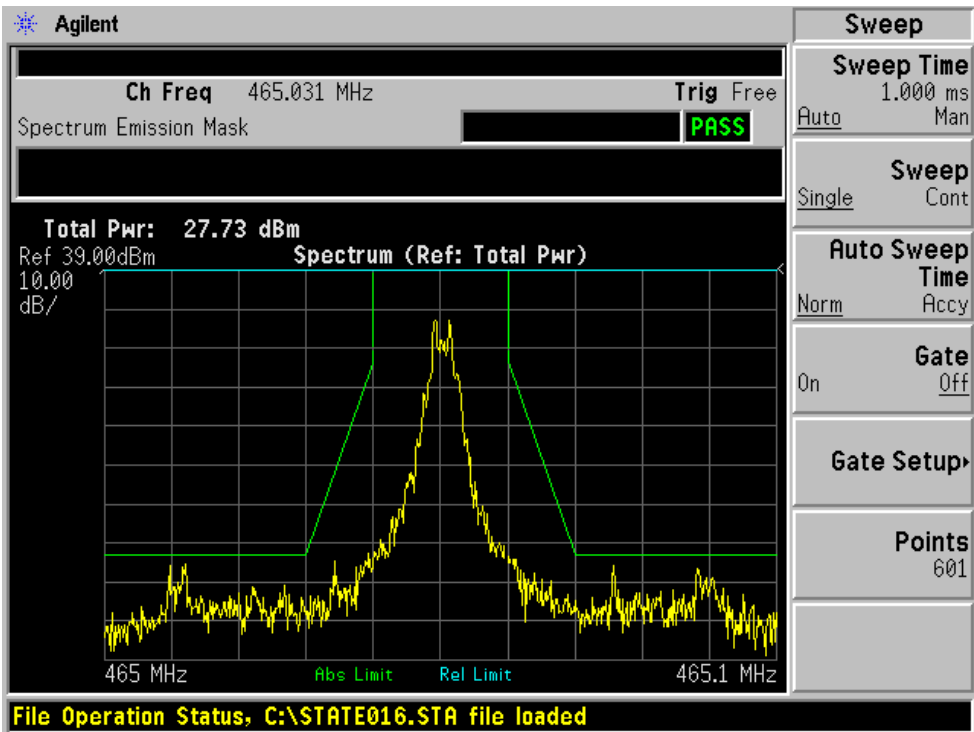
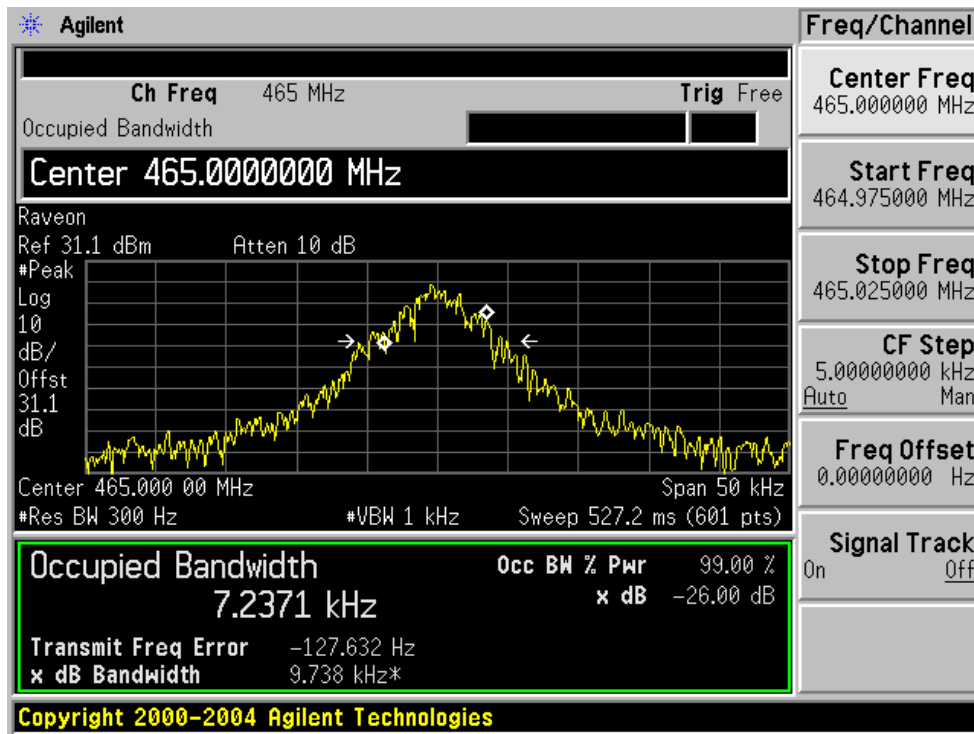
*Baud Rates: 1200 bps*



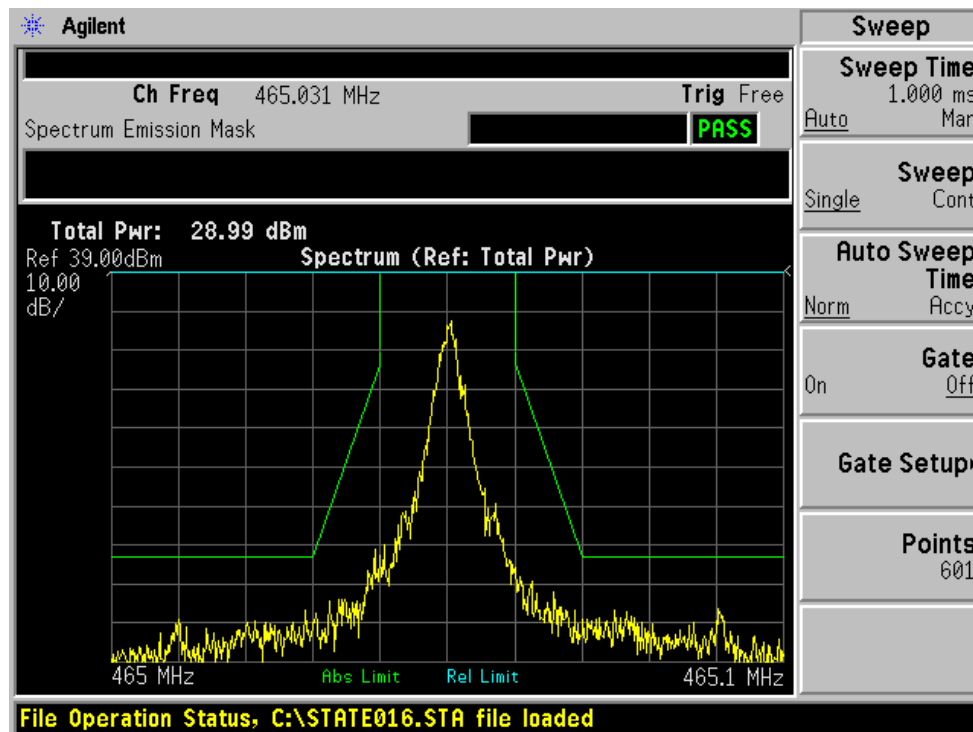
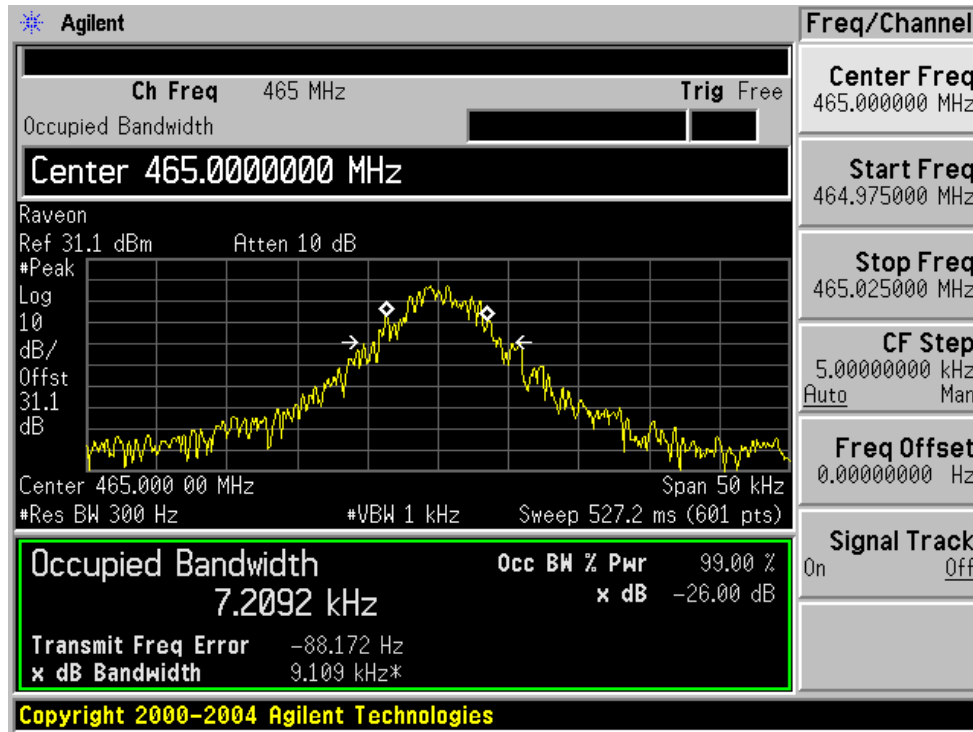
Baud Rates: 2400 bps



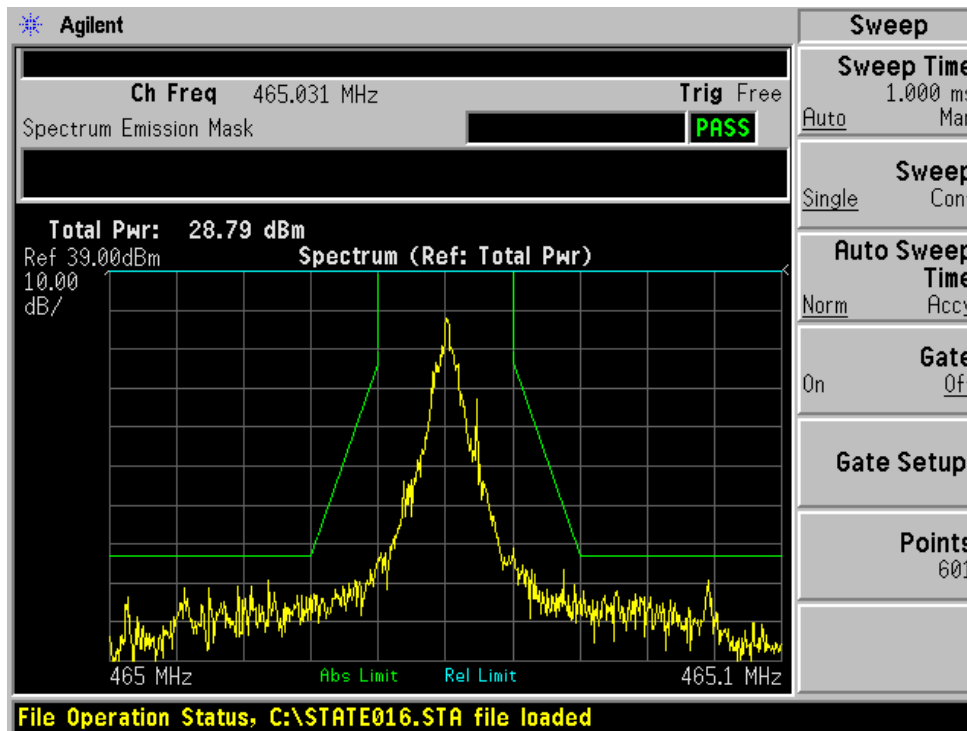
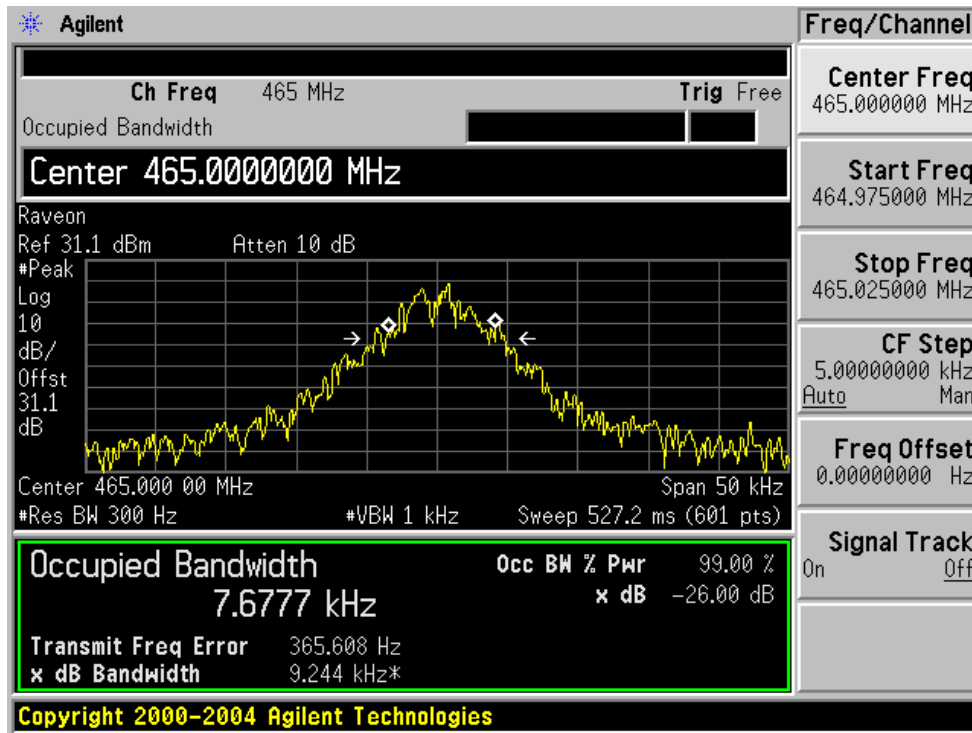
Baud Rates: 4800 bps



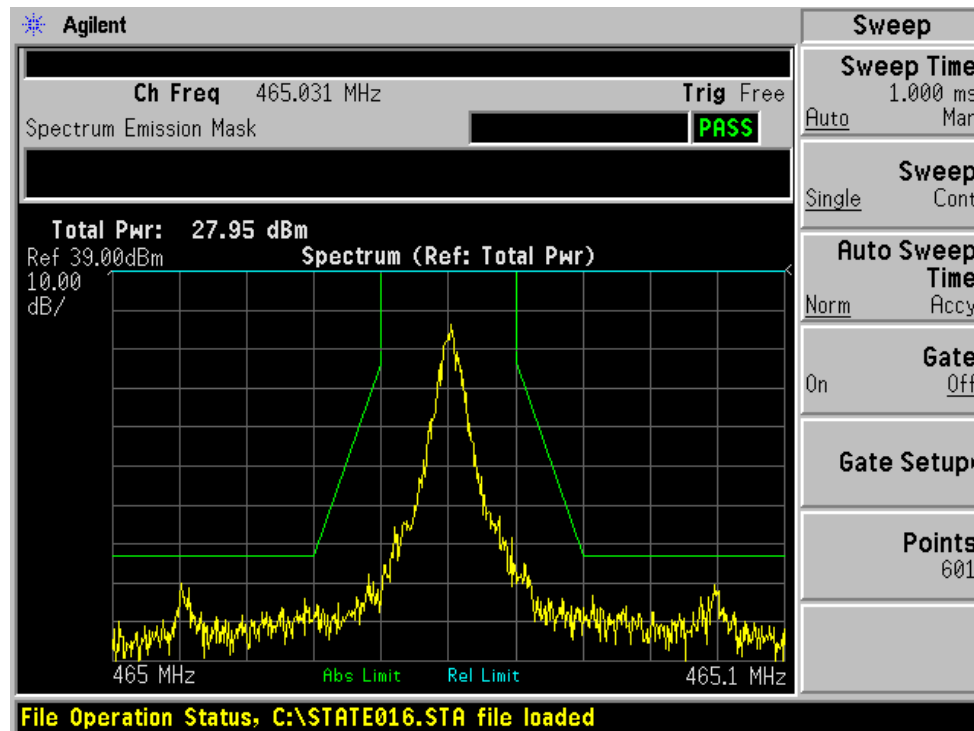
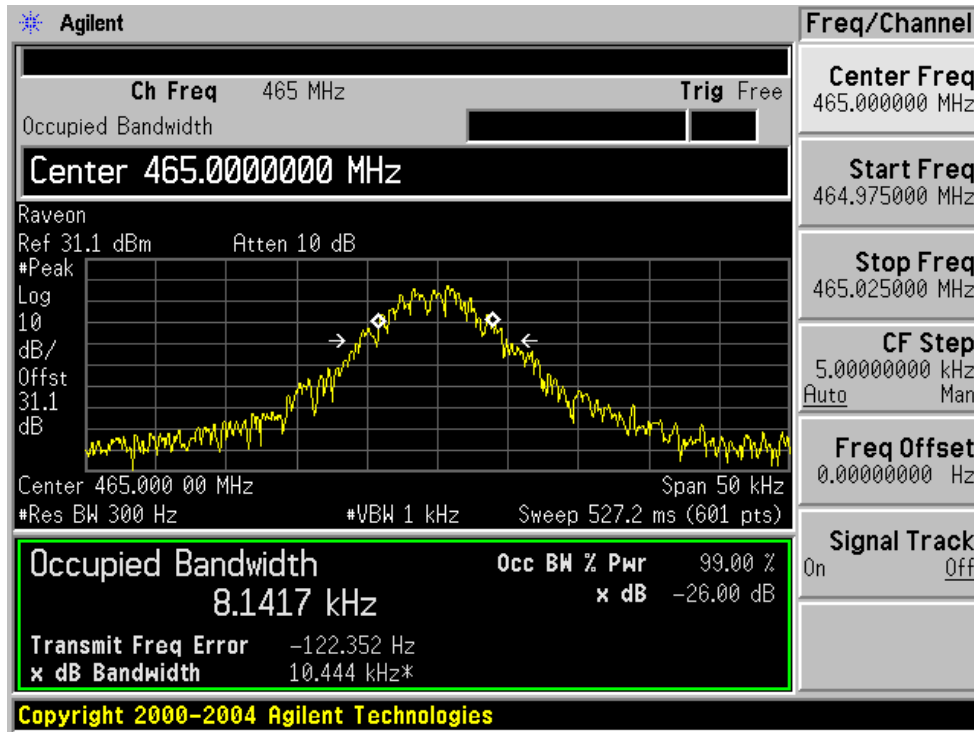
Baud Rates: 9600 bps



Baud Rates: 19200 bps



Baud Rates: 57600 bps



## **§2.1051 and §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS**

### **Applicable Standard**

§90.210 (12.5 kHz bandwidth only)

On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 12.5kHz at least:

50+10logP or 70 dB

§2.1051and §90.210 (25 kHz bandwidth and 20 kHz bandwidth)

On any frequency removed from the center of the assigned channel by more than 250 percent at least:

43+10log (P)

### **Test Procedure**

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10<sup>th</sup> harmonic.

### **Environmental Conditions**

Temperature:	25° C
Relative Humidity:	40 %
ATM Pressure:	102 kPa

\* The testing was performed by Dan Corona on 2007-10-25.

### **Test Equipment List and Details**

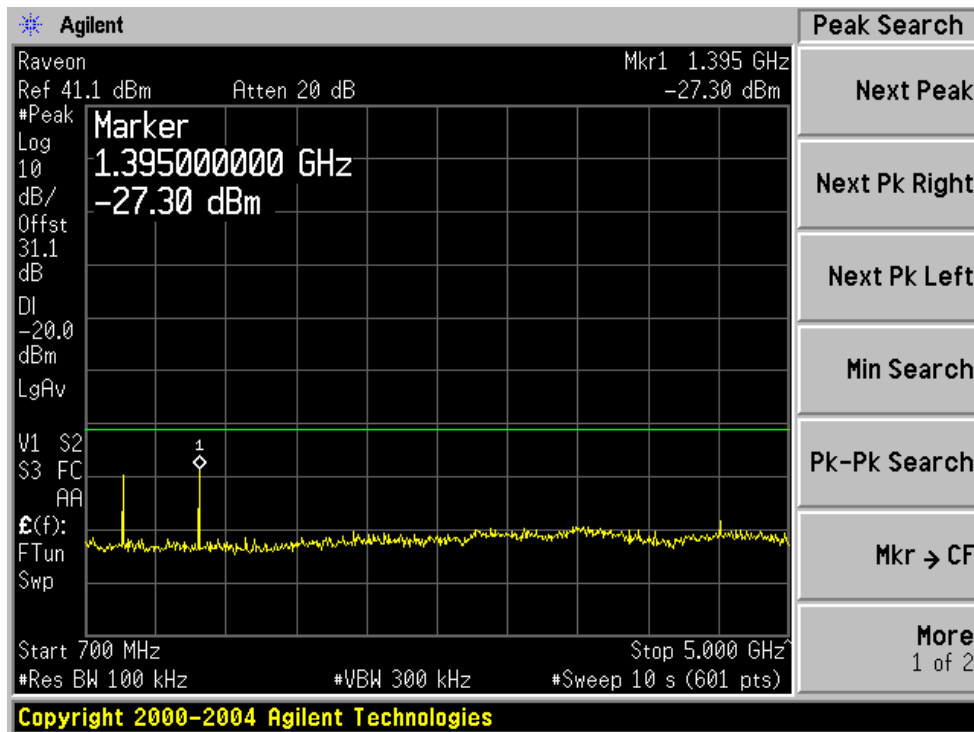
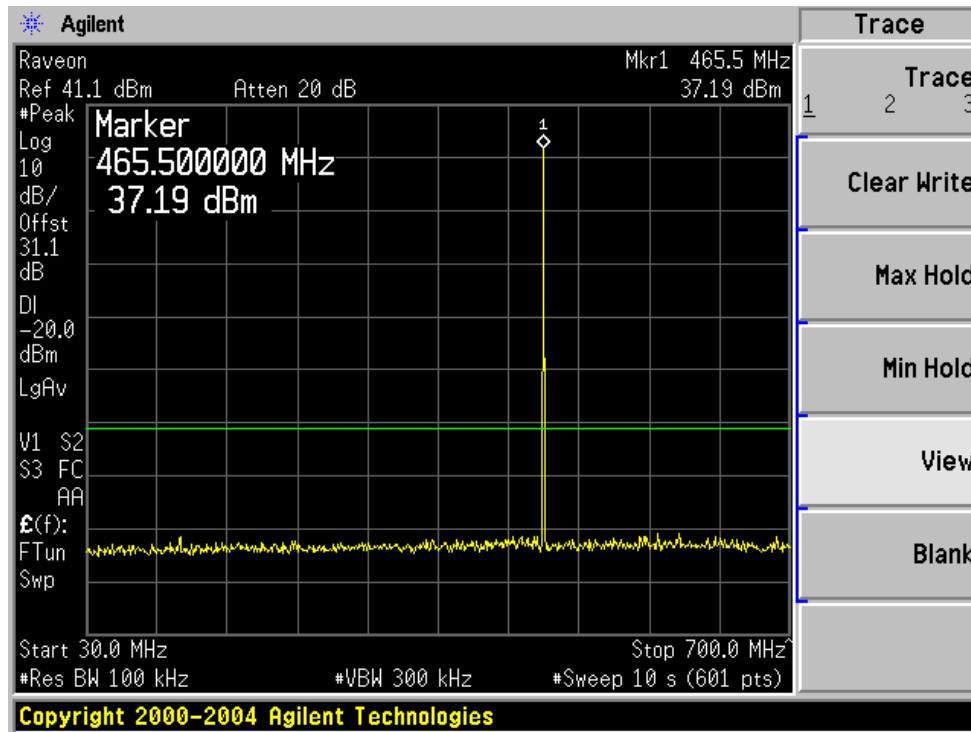
<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>
Agilent	Analyzer, Spectrum	8565EC	3946A00131	2007-01-24

\* **Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

### **Test Results**

*Test Mode: Transmitting Using Conducted measuring method*

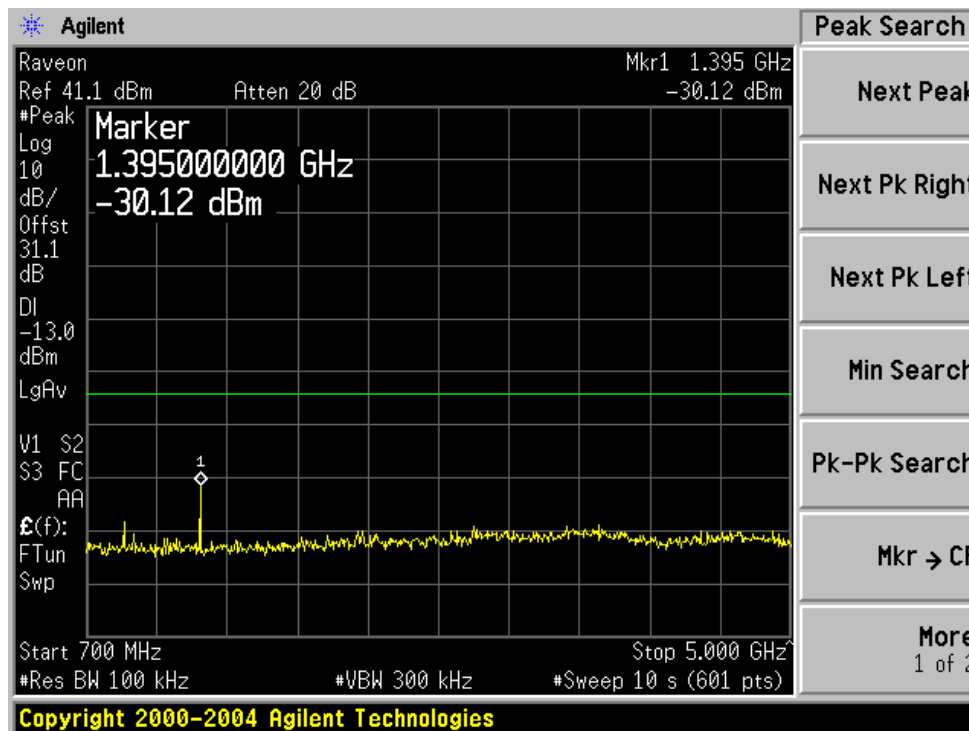
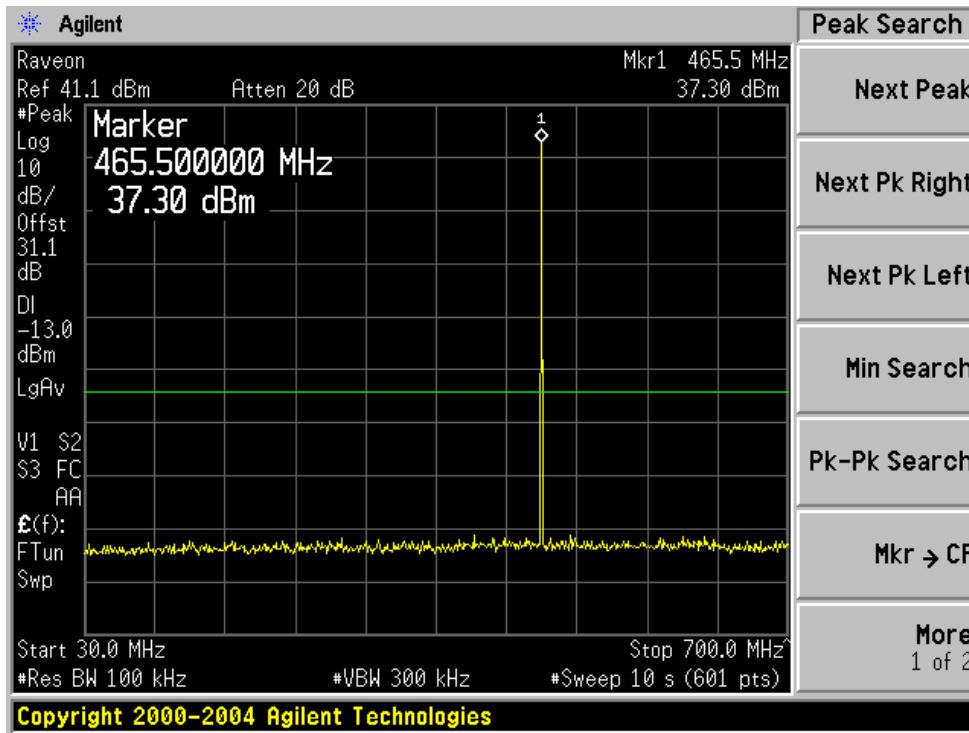
**Channel Bandwidth 12.5 kHz**



\*Note: measured with high pass filter.



**Channel Bandwidth 25 kHz**



\* Note: measured with high pass filter.

## §2.1055 (d), §22.355 and §90.213 - FREQUENCY STABILITY

### Applicable Standard

§90.213

For output power > 2 watts, the limit is 5.0 ppm.

§22.353

For base, fixed, the limit is 2.5 ppm.

### Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to the Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to 110% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

### Environmental Conditions

Temperature:	25° C
Relative Humidity:	40 %
ATM Pressure:	102 kPa

\* The testing was performed by Dan Coronia on 2007-10-25.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26
Tenny	Oven, Temperature	VersaTenn	12.431-8	2007-06-27

\*Equipment is subjected to two year calibration cycles

**Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

### Test Result

*Test Mode: Transmitting*

**Frequency vs. Temperature**

Condition		Reference Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (PPM)	Limit (PPM)
Voltage (VDC)	Temperature (°C)				
10	60	465.00000	465.00111	2.38709	2.50
10	50	465.00000	465.00104	2.23655	2.50
10	40	465.00000	465.00103	2.21505	2.50
10	30	465.00000	465.00100	2.15053	2.50
10	10	465.00000	465.00101	2.17204	2.50
10	0	465.00000	464.99911	-1.91398	2.50
10	-10	465.00000	464.99916	-1.80645	2.50
10	-20	465.00000	464.99913	-1.87097	2.50
10	-30	465.00000	464.99915	-1.82796	2.50

**Frequency vs. Voltage**

Condition		Reference Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (PPM)	Limit (PPM)
Voltage (VDC)	Temperature (°C)				
11	20	465.00000	464.99918	-1.76344	2.50
8.5	20	465.00000	464.99917	-1.78495	2.50

## **§2.1053 and §90.210 (b) (d) - FIELD STRENGTH OF SPURIOUS RADIATION, EMISSION MASKS**

### **Applicable Standard**

§2.1053 (a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of §2.1049, as appropriate. and §90.210(b),(d): Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (m) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere in this part, the table in this section specifies the emission masks for equipment operating in the frequency bands governed under this part.

### **Test Procedure**

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

### **Environmental Conditions**

Temperature:	25° C
Relative Humidity:	40 %
ATM Pressure:	102 kPa

*\* The testing was performed by Dan Corona on 2007-10-25.*

**Test Equipment**

Manufacturer	Description	Model	Serial Number	Calibration Date
Sunol Sciences	30 - 3000 MHz	JB3	A020106-3 / S006628	2007-03-05
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26
Sonoma Instrument	Pre-amplifier	317	260407	2007-04-26
ARA	Antenna Horn	DRG-118/A	1132	2007-06-18
HP	Generator, Signal	8648C	3347M00143	2006-09-13*

\*Equipment is subjected to two year calibration cycles.

**Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

**Test Result**

**-16.48 dB at 930.00 MHz in the Vertical polarization**

**Middle Channel at High Power**

Indicated		Azimuth degrees	Test Antenna		Substituted					Limit (dBm)	Margin (dB)
Freq. (MHz)	Amp. (dBuV)		Height (m)	Polar H/V	Freq. (MHz)	Level (dBm)	Antenna Correction	Cable Loss (dB)	Absolute Level (dBm)		
930	72.16	100	1.90	V	930	-34.87	6.37	0.98	-29.48	-13.00	-16.48
930	63.90	160	1.80	H	930	-45.60	6.37	0.98	-40.21	-13.00	-27.21
2790	46.93	240	2.00	H	2790	-50.32	9.91	1.71	-42.12	-13.00	-29.12
2790	46.56	230	1.80	V	2790	-50.45	9.91	1.71	-42.25	-13.00	-29.25
3255	47.79	95	1.90	V	3255	-50.72	9.48	2.01	-43.25	-13.00	-30.25
3255	47.62	130	1.60	H	3255	-50.65	9.48	2.01	-43.18	-13.00	-30.18
1860	47.83	200	2.40	V	1860	-52.61	9.16	1.50	-44.95	-13.00	-31.95
1860	57.30	180	1.80	H	1860	-53.60	9.16	1.50	-45.94	-13.00	-32.94
1395	53.04	120	2.00	H	1395	-55.26	7.84	1.04	-48.46	-13.00	-35.46
1395	53.60	90	1.60	V	1395	-55.61	7.84	1.04	-48.81	-13.00	-35.81

## §90.214 - TRANSIENT FREQUENCY BEHAVIOR

### Applicable Standard

§90.214: Transmitters designed to operate in the 450–480 MHz frequency bands must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

Time Intervals <sup>1,2</sup>	Maximum Frequency Difference <sup>3</sup>	All Equipment
		421 to 512 MHz
<b>Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels</b>		
$t_1^4$	±25.0 kHz	10.0 ms
$t_2$	±12.5 kHz	25.0 ms
$t_3^4$	±25.0 kHz	10.0 ms
<b>Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels</b>		
$t_1^4$	±12.5 kHz	10.0 ms
$t_2$	±6.25 kHz	25.0 ms
$t_3^4$	±12.5 kHz	10.0 ms

### Test Procedure

TIA/EIA-603-C 2.2.19

### Environmental Conditions

Temperature:	25° C
Relative Humidity:	40 %
ATM Pressure:	102 kPa

\* The testing was performed by Dan Corona on 2007-10-25.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
HP	Generator, Signal ( 100 kHz - 3200 MHz )	8648C	3347M00143	2006-09-13*
Agilent	Analyzer, Spectrum	E4446A	US44300386	2007-04-26
HP	Modulation Analyzer	8901A	2026A00847	2007-04-27
Tektronix	Oscilloscope	TDS7104	B020557	2007-02-13

\*Equipment is subjected to two year calibration cycles

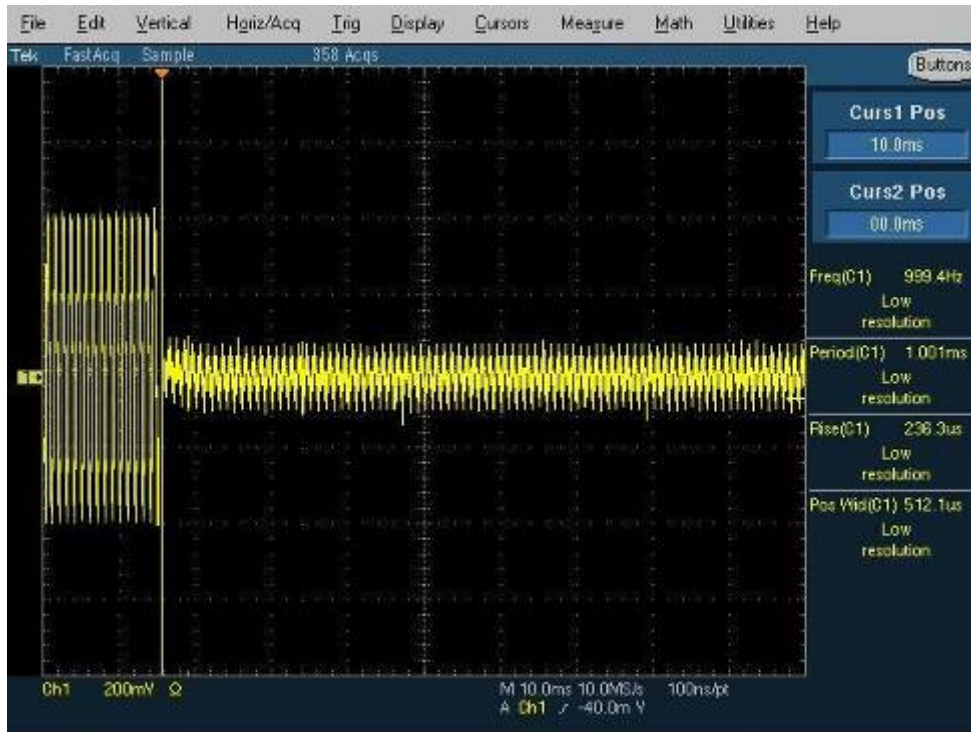
**Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

### Test Result

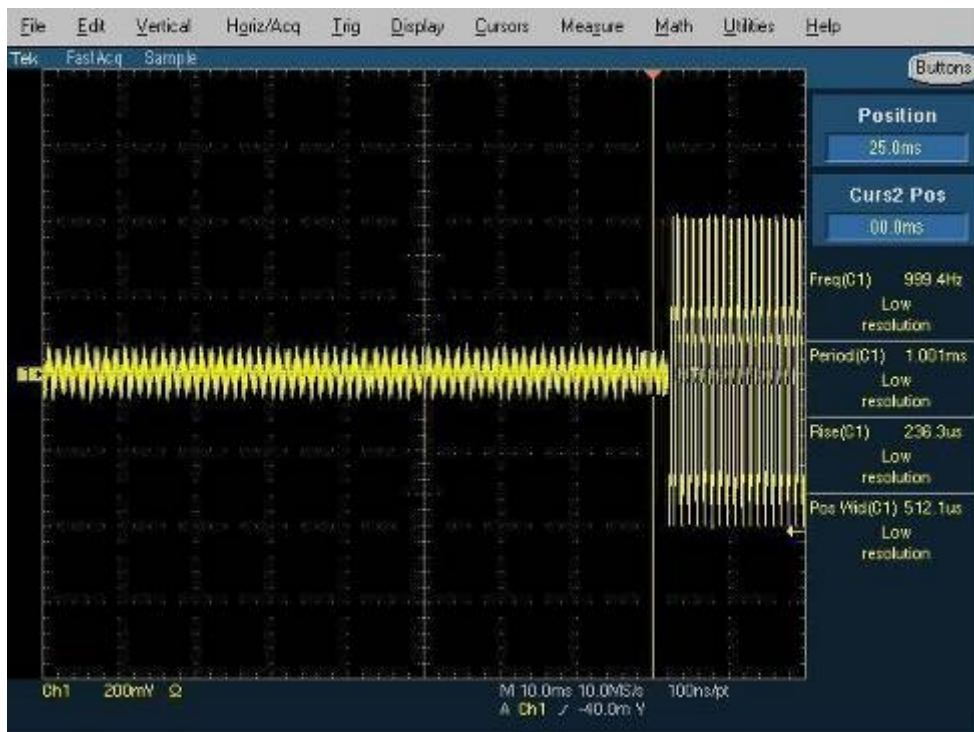
Please refer to the following plots

**Channel Bandwidth 12.5 kHz**

**ON**



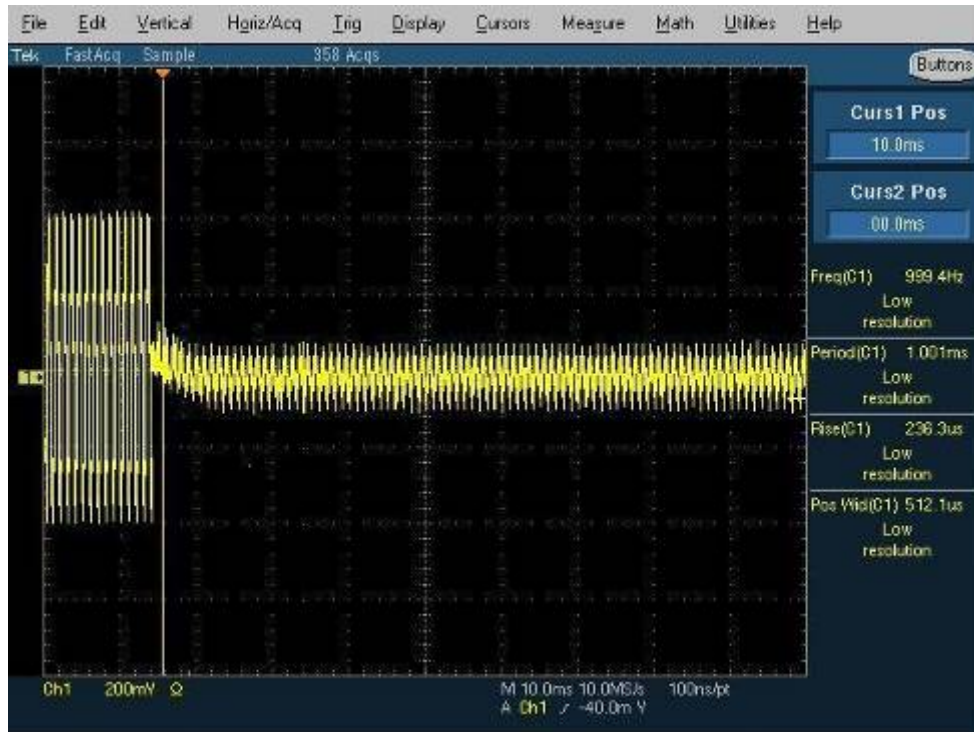
**OFF**





**Channel Bandwidth 25 kHz**

**ON**



**OFF**

