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A				04.07.2013	M. Reuben	S. Cohen

**EMC Laboratory**

# MICOM Z TRUNK

**FCC ID\_Y05MICOM-TRK125W**




**Manufactured by**

**Elbit Systems Land and C4I Ltd.**

## Test Report

**According to FCC Part 90 Requirements**

**June 2013**

	Fonction/Title	Name	Signature	Date
Prepared by:	Technical Writer	M. Reuben		04.07.2013
Checked by:	Test Engineer	O.Dror		03.07.2013
Approved By:	EMC Lab. Manager	S.Cohen		July 4, 2013

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## 1. Introduction

### 1.1. Scope

This document describes the measurement procedures and tests for FCC part 90 of the Micom Z Trunk, manufactured by Elbit Systems Land and C<sup>4</sup>I - Ltd.

### 1.2. Description of equipment Under Test

Equipment Under Test:	Micom Z Trunk
FCCID	YO5MICOM-TRK125W
Manufacturer:	Elbit Systems Land and C <sup>4</sup> I - Ltd.
Serial Numbers:	13B51729
Transmit Frequency Range	1.6 to 30 MHz in 10-Hz steps
Receiver Frequency Range	0.1 to 30 MHz in 10-Hz steps (0.1 to 1.6 MHz reduced performance)
Transmit Power	25, 62, 100, 125 W P.E.P and average
RF Impedance (antenna)	-50Ω for dipole and broadband -Internal automatic tuner for whip
Number of RF Channels	200 simplex or half duplex
Scanning	5 groups of 100 channels, guard channel
ALE	MIL-STD-188-141B, J1TC certified
Mode of Operation:	USB, LSB, PILOT, AME
Services	-Analog voice -Digital voice (vocoder option) -50-4800 bps (internal modem option) COMSEC (option)
Date, Remote Control	RS-232C
GPS Receiver (optional)	Location, movement and time
Power Source	FRN8577 Rechargeable Lithium-Ion Battery (14.4 V, 230 Wh)
Receiver operating frequency:	MHZ
Year of Manufacture:	2013

### 1.3. Applicant Information:

Applicant:	Elbit Systems Land and C <sup>4</sup> I - Ltd.
Applicant Address	26 Hashoftim St. P.O.B. 267, 58102 Holon, Israel
Telephone:	+972-3-5574476
FAX:	+972-3-5575320
The testing was observed by:	Samuel Cohen
Following applicant's personnel:	Samuel Cohen

**1.4. Test Performance:**

Date of reception for testing:	15/10/2009
Dates of testing	10.08.2011
Test Laboratory Location	Elbit Systems Land and C <sup>4</sup> I – Ltd., EMC LAB, Hashoftim 26 Holon 58102 ISRAEL Tel: 972-3-5574476 Fax: 972-3-5575320
Applicable EMC Specification:	
Code of Federal Regulations	47, FCC Docket 89-103, Part 15: Radio Frequency Devices, Sections 15.109, 15.209, 15.231, & 15.207

**2. Test Summary and Signatures.**

Elbit Systems Land and C<sup>4</sup>I Ltd., EMC Laboratory has completed testing of E.U.T in accordance with the requirements of the FCC Part 90 Regulations for Class B equipment.

The E.U.T was found to comply with the requirements of the FCC Part 90 Regulations given below

Test	Test Description	Section	PASS/FAIL
1	RF Power Output	2.1046	PASS
2	Audio Frequency Response	2.1047	PASS
3	Audio Low-Pass Filter Response	2.1047	N/A (1)
4	Modulation Limiting	2.1047	PASS
5	Occupied Bandwidth	2.1049	PASS
6	Carrier Suppression at Antenna Terminals	2.1051	PASS
7	Spurious Emissions at Antenna Terminals	2.1051	PASS
8	Field Strength of Spurious Emissions	2.1053	PASS
9	Frequency Stability	2.1055	PASS
10	Transient Frequency Behavior	90.214	N/A (2)


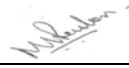

**2.1. Footnotes for N/A's**

- (1) The apparatus is not required to have a low-pass filter.
- (2) The apparatus does not operate in the required frequency range.

**2.2. Test Conditions:**

Indoor	Temperature	24 <sup>0</sup> C
	Humidity	28%

Outdoor	Temperature	29 <sup>0</sup> C
	Humidity	47%

	Function/Title	Name	Signature	Date
Test performed by	Test Engineer	S. Kozliner		03.07.2013
Test Report prepared by	Technical Writer	M. Reuben		04.07.2013
Test Report Approved by	EMC Lab. Manager	S Cohen		04.07.2013

**3. E.U.T Information**

**3.1. E.U.T description**

The Micom-Z transceiver is a complete HF/SSB receiver-transmitter capable of receiving and transmitting voice, data, and continuous-wave (CW) telegraphy using upper-sideband (USB), lower-sideband (LSB), AME and pilot carrier modulation. High selectivity and a wide dynamic range ensure clear, undisturbed signal reception.

The transmit power can be selected by the operator for optimum transmission performance (125 W PEP for maximum range; 100 W, 60 W or 25 W to reduce interference to nearby stations, and decrease power dissipation).

**3.2. Changes made to EUT**

**No changes were made.**

#### 4. RF Power Output – Part 2.1046

E.U.T: Micom Z Trunk  
 S/N: 13B51729  
 Date: 20.06.2013  
 Standard: 90.205 (a)  
 Relative Humidity: 28%  
 Ambient Temperature: 24<sup>0</sup>C  
 Air Pressure: 1010hPa  
 Testing Engineer: D. Oshri Date 20.06.2013

##### 4.1. Test Results Summary & Conclusions

The E.U.T was found to comply with RF Power Output – Part 2.1046.

##### 4.2. Measured Data

Measured at Dipole Antenna terminal. PEP using two tones.  
 Rated RF Output Power: 25 watts PEP, 44dBm  
 Measured using 400 Hz and 1800 Hz tones adjusted for rated RF output power.  
 Frequencies examined: 1.65 MHz, 16.5 MHz, & 29.9 MHz  
 Transmitting power: 25W, 62W, 100W & 125W

##### 4.3. Test Instrumentation and Equipment

*Table 1: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date Calibration
Audio Analyzer	8903A	HP	23.12.2013
Power Reflection Meter	NAP	R&S	04.06.2014
Power Head	NAP Z-7	R&S	04.06.2014
Attenuator 30 dB	769-30	Narda	21.05.2015

##### 4.4. Test Results

Frequencies examined: 1.65 MHz, 15.6 MHz, 29.9 MHz  
 Transmitting Power: 5W, 10W, 15W & 25W

Rate	Tx 1.65MHz		Tx 16.5MHz		Tx 29.9MHz	
	dBm	W	dBm	W	dBm	W
Max (125W)	51	124.9	51	124.6	50.9	124.2
High (100W)	50	101	51	101.1	50.1	102.1
Med (62W)	47.9	61.9	47.9	62	48.1	65
Low (25W)	43.4	21.9	43.6	22.8	44.3	26.6



**5. Audio Frequency Response – Part 2.1047**

E.U.T Micom Z Trunk  
 S/N: 13B51729  
 Date: 17.06.2013  
 Standard 90.210 (a)  
 Relative Humidity: 28%  
 Ambient Temperature: 24<sup>0</sup> C  
 Air Pressure: 1010hPa  
 Testing Engineer: S. Kozliner Date 17.06.2013

**5.1. Test Results Summary & Conclusions**

The E.U.T was found to be in compliance with Audio Frequency Response – Part 2.1047.

**5.2. Test Instrumentation and Equipment**

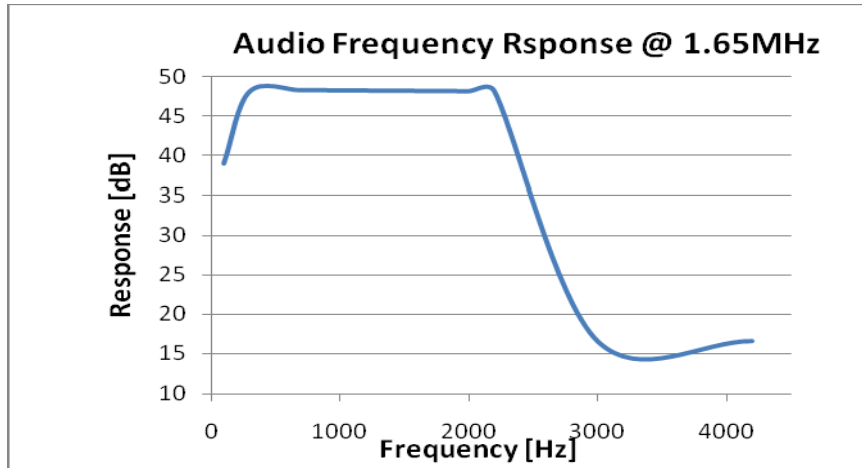
*Table 2: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date Calibration
Audio Analyzer	8903A	HP	23.12.2013
Spectrum Analyzer	8593E	HP	23.05.2013
Power Reflection Meter	NAP	R&S	04.06.2014
Power Head	NAP Z-7	R&S	04.06.2014

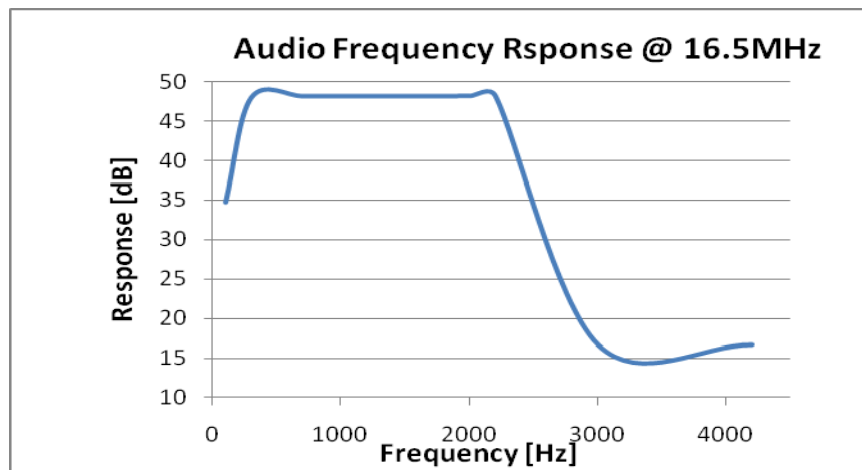
**5.3. Test Results**

Frequencies examined: 1.65 MHz, 16.5 MHz, and 29.9 MHz

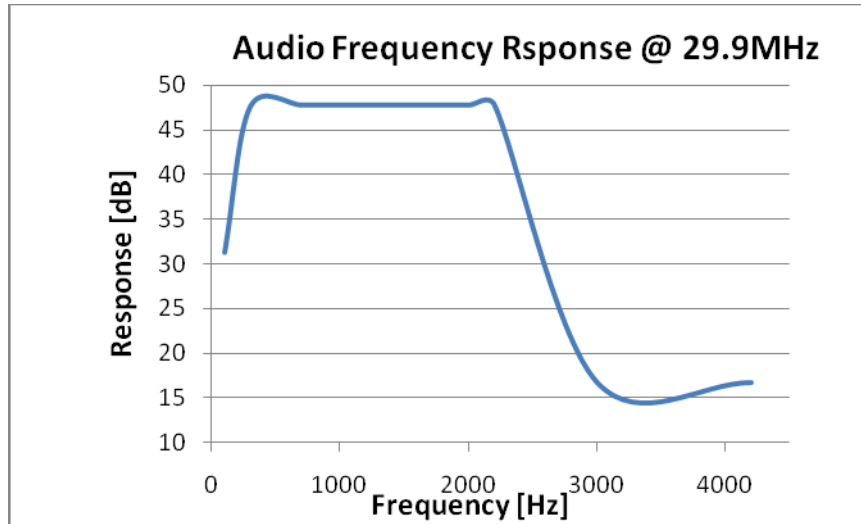
Transmitting Power: 25W, 62W, 100W & 125W



Frequency Response @ 1.65MHz [dB]					
Tx Power	25W	62W	100W	125W	
Audio Freq [Hz]					<b>average</b>
100	39.2	39	39.2	38.7	39.025
300	43.6	47.9	50.1	51.1	48.175
700	44	48	50.2	51.2	48.35
1000	44	48	50.1	51.2	48.325
2000	43.8	47.9	50.1	51.1	48.225
2200	43.8	47.9	50.1	51.1	48.225
3000	16	17	16.7	16.7	16.6
4200	16	17	16.7	16.7	16.6



Frequency Response @ 16.5MHz [dB]					
Tx Power	25W	62W	100W	125W	
Audio Freq [Hz]					<b>average</b>
100	35.3	34.7	34.3	34.5	34.7
300	43.4	47.6	49.9	50.8	47.925
700	43.7	47.8	50	50.9	48.1
1000	43.7	47.8	50	50.9	48.1
2000	43.8	47.8	50	50.9	48.125
2200	43.7	47.9	50	51	48.15
3000	16.7	16.7	16.7	16.7	16.7
4200	16.7	16.7	16.7	16.7	16.7



Frequency Response @ 29.9MHz [dB]					
Tx Power	25W	62W	100W	125W	
Audio Freq [Hz]					<b>average</b>
100	31.3	31.4	31.1	31.2	31.25
300	43.5	47.7	49.5	49.6	47.575
700	43.7	47.9	49.7	49.7	47.75
1000	43.7	47.9	49.7	49.7	47.75
2000	43.7	47.8	49.7	49.7	47.725
2200	43.7	47.9	49.7	49.7	47.75
3000	16.7	16.7	16.7	16.7	16.7
4200	16.7	16.7	16.7	16.7	16.7

## 6. Modulation Limiting – Part 2.1047

E.U.T Micom Z Trunk  
 S/N: 13B51729  
 Date: 10.06.2013  
 Standard N/A  
 Relative Humidity: 28%  
 Ambient Temperature: 24<sup>0</sup> C  
 Air Pressure: 1010hPa  
 Testing Engineer: S. Kozliner Date 10.06.2013

### 6.1. Test Results Summary & Conclusions

The E.U.T was found to be in compliance with Modulation Limiting – Part 2.1047

### 6.2. Test Instrumentation and Equipment

*Table 3: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date Calibration
Audio Analyzer	8903A	HP	23.12.2013
Power Reflection Meter	NAP	R&S	04.06.2014
Power Head	NAP Z-7	R&S	04.06.2014
Attenuator 30 dB	769-30	Narda	21.05.2015

### 6.3. Test Results

Frequencies examined: 3 MHz, 15 MHz, & 25 MHz

Transmitting power: 25W, 62W, 100W & 125W

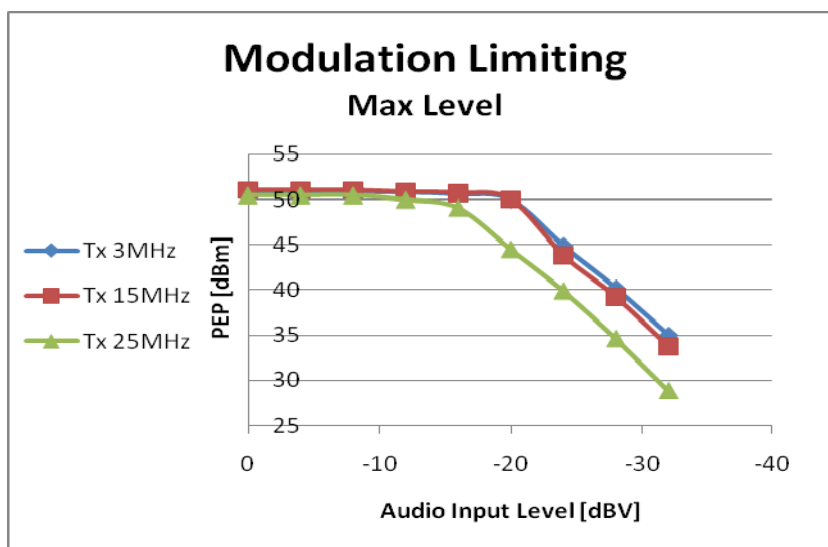
The test results are shown below.

Tx Power	Modulation Limiting @ 3MHz [dBm]			
	25W	62W	100W	125W
Audio Level [dBv]				
0	43.8	47.9	49.9	50.9
-4	43.8	47.9	49.9	50.9
-8	43.6	47.8	49.9	50.9
-12	42.9	47.5	49.8	50.8
-16	42.4	47.2	49.7	50.6
-20	41.9	47	48.9	50
-24	41.3	45.2	44.9	44.9
-28	39.8	40.3	40.1	40.2
-32	35.5	35	35	35

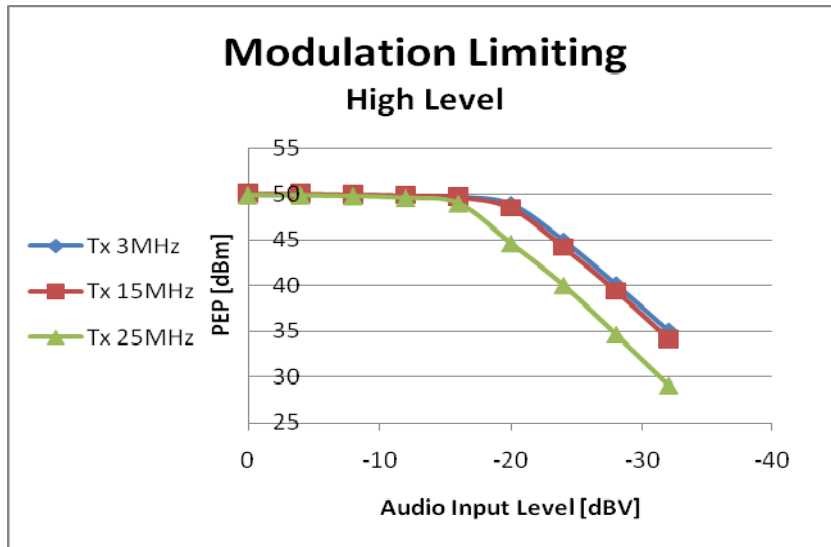
Modulation Limiting @ 15MHz [dBm]				
Tx Power	25W	62W	100W	125W
Audio Level [dBv]				
0	44	47.9	50.1	51
-4	44	47.9	50.1	51
-8	43.8	47.9	50	51
-12	43.3	47.6	49.9	50.8
-16	42.9	47.4	49.7	50.7
-20	42.4	46.9	48.5	50
-24	41.9	43.9	44.2	43.8
-28	39.8	39.2	39.4	39.2
-32	34	33.8	34.1	33.7

Modulation Limiting @ 25MHz [dBm]				
Tx Power	25W	62W	100W	125W
Audio Level [dBv]				
0	43.7	47.8	49.9	50.5
-4	43.7	47.8	49.9	50.5
-8	43.6	47.7	49.8	50.5
-12	43.1	47.5	49.6	50
-16	42.7	47.1	49	49.1
-20	42.2	44.4	44.6	44.5
-24	40.1	40	40	39.9
-28	35	34.7	34.6	34.6
-32	29.8	29.1	29	28.8

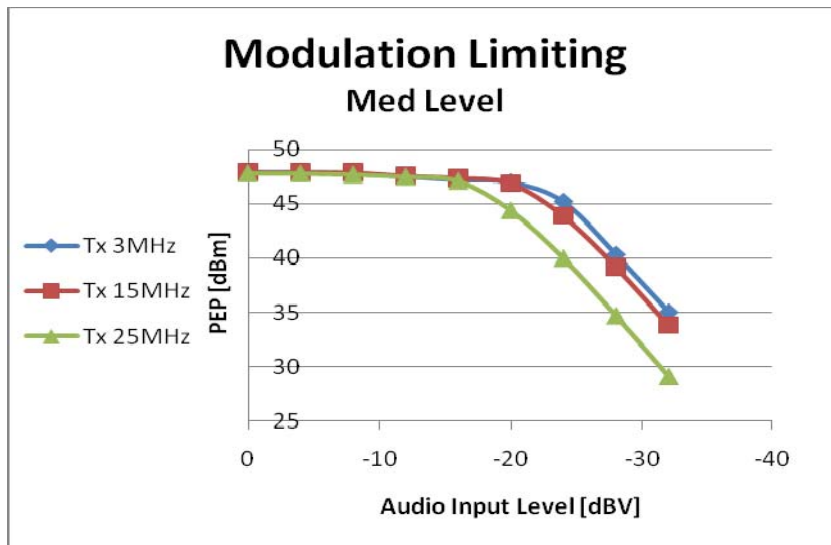
1. Power Maximum



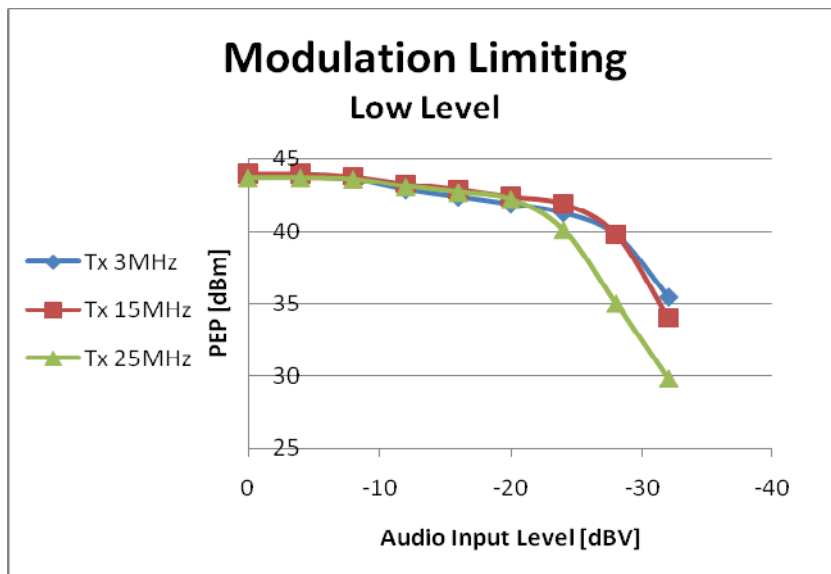
2. Power High



3. Power Medium



4. Power Low



**7. Occupied Bandwidth – Part 2.1049**

E.U.T	Micom Z Trunk
S/N:	13B51729
Date:	17.06.2013
Standard	90.210 (a)
Relative Humidity:	28%
Ambient Temperature:	24 <sup>0</sup> C
Air Pressure:	1010hPa
Testing Engineer:	D. Oshri
Date	17.06.2013

**7.1. Test Results Summary & Conclusions**

The E.U.T was found to be in compliance with Occupied Bandwidth – Part 2.1049

**7.2. Test Instrumentation and Equipment**

*Table 4: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date of Calibration
Spectrum Analyzer	E7405A	Agilent	09.11.2013
Attenuator 30 dB	769-30	Narda	21.05.2015
Audio Analyzer	8903A	HP	23.12.2013

**7.3. Test Results**

Frequencies examined: 1.65 MHz, 16.5 MHz & 29.9 MHz

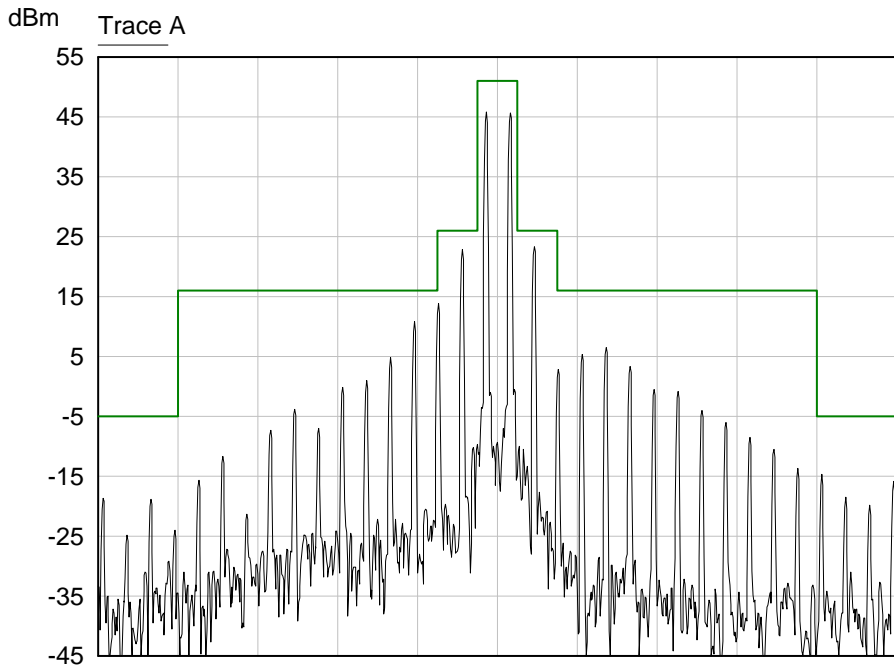
Transmitting Power: 25W, 62W, 100W & 125W

**Table 5: Test Results**

Mode of Operation	Frequency (MHz)	Power	Compliance Y/N
AME	1.65	Maximum	Y
	1.65	High	Y
	1.65	Medium	Y
	1.65	Low	Y
	15.6	Maximum	Y
	15.6	High	Y
	15.6	Medium	Y
	15.6	Low	Y
	29.9	Maximum	Y
	29.9	High	Y
	29.9	Medium	Y
	29.9	Low	Y
SSB	1.65	Maximum	Y
	1.65	High	Y
	1.65	Medium	Y
	1.65	Low	Y
	15.6	Maximum	Y
	15.6	High	Y
	15.6	Medium	Y
	15.6	Low	Y
	29.9	Maximum	Y
	29.9	High	Y
	29.9	Medium	Y
	29.9	Low	Y



Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=1.65MHz

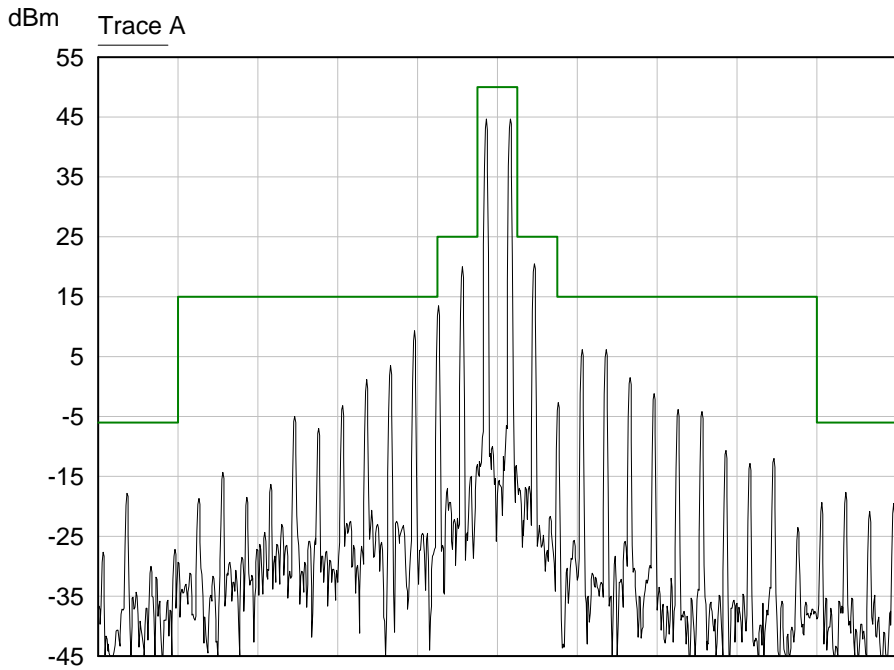


Tx=1.65MHz P=Max

Start: 1.6257 MHz Stop: 1.6757 MHz  
Res BW: 100 Hz Vid BW: 100 Hz Sweep: 26.93 ms  
6/20/2013 15:09:47 N9020A

***Plot Occupied Bandwidth - AME/ 1***

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=1.65MHz

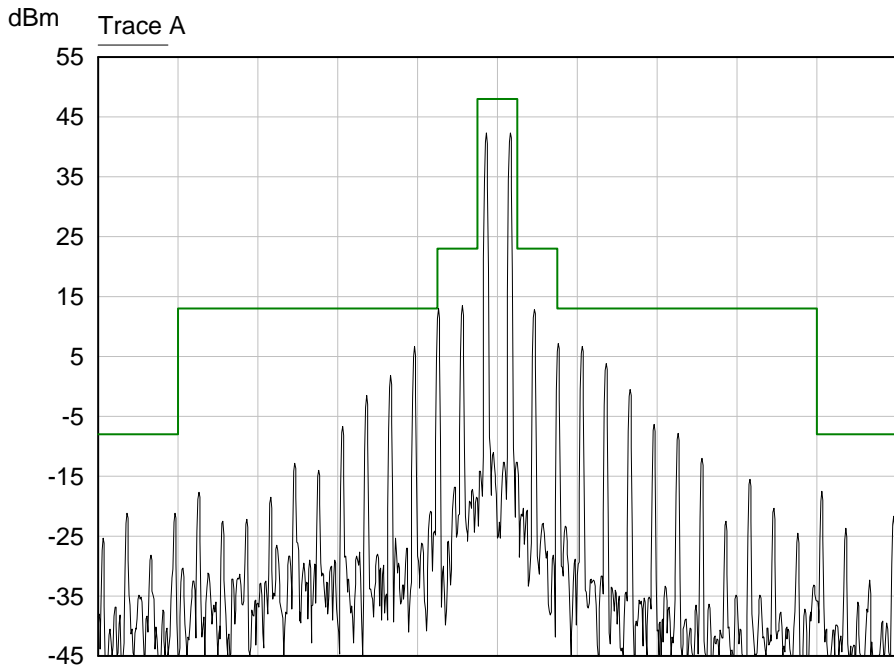


Tx=1.65MHz P=High

Start: 1.6257 MHz Stop: 1.6757 MHz  
Res BW: 100 Hz Vid BW: 100 Hz Sweep: 26.93 ms  
6/20/2013 15:11:47 N9020A

***Plot Occupied Bandwidth - AME/ 2***

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=1.65MHz

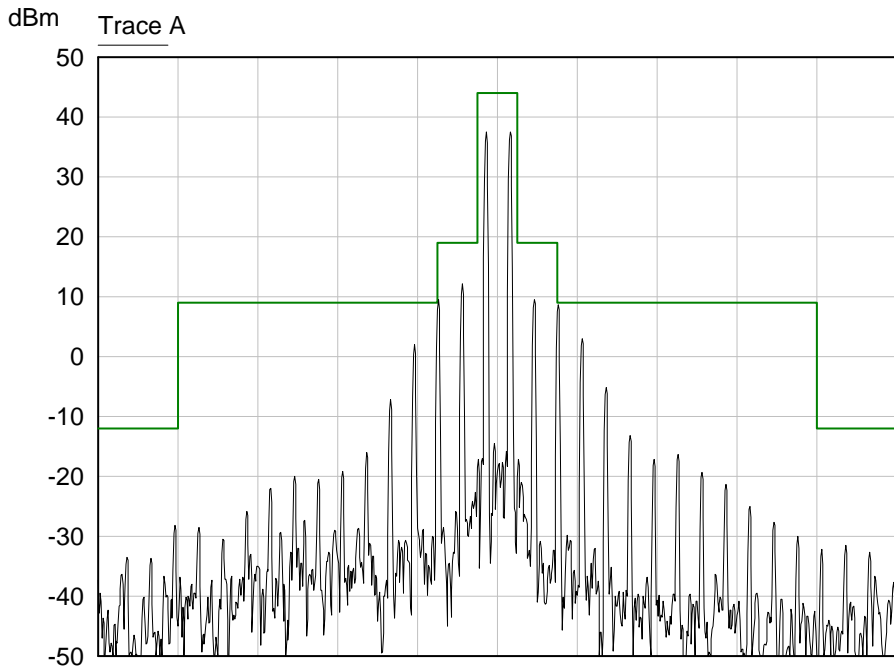


Tx=1.65MHz P=Med

Start: 1.6257 MHz	Stop: 1.6757 MHz
Res BW: 100 Hz	Vid BW: 100 Hz
6/20/2013 15:13:41	Sweep: 26.93 ms
	N9020A

***Plot Occupied Bandwidth - AME/ 3***

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=1.65MHz



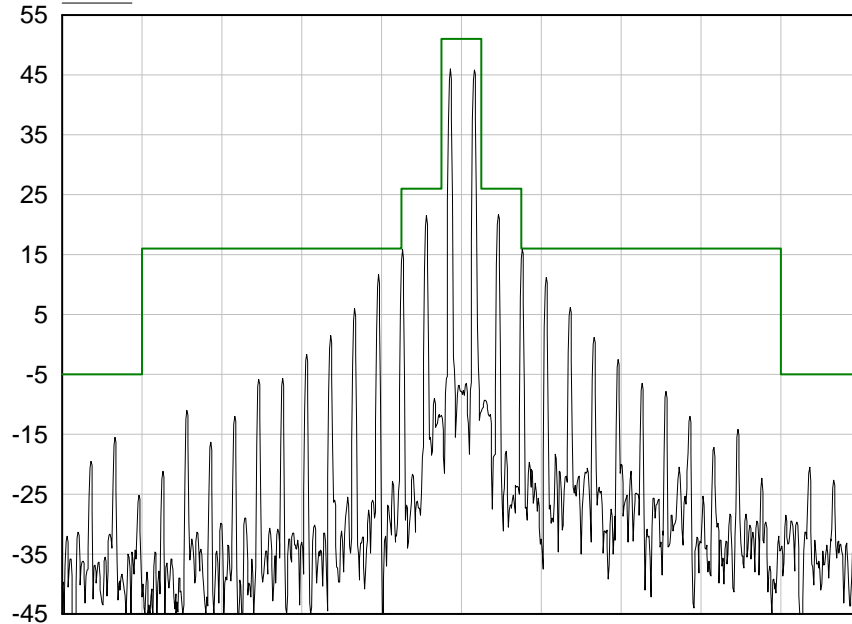
Tx=1.65MHz P=Low

Start: 1.6257 MHz	Stop: 1.6757 MHz
Res BW: 100 Hz	Vid BW: 100 Hz
6/20/2013 15:16:11	Sweep: 26.93 ms
	N9020A

***Plot Occupied Bandwidth - AME/ 4***

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=16.5MHz

dBm Trace A



Tx=16.5MHz P=Max

Start: 16.4757 MHz

Stop: 16.5257 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

Sweep: 26.93 ms

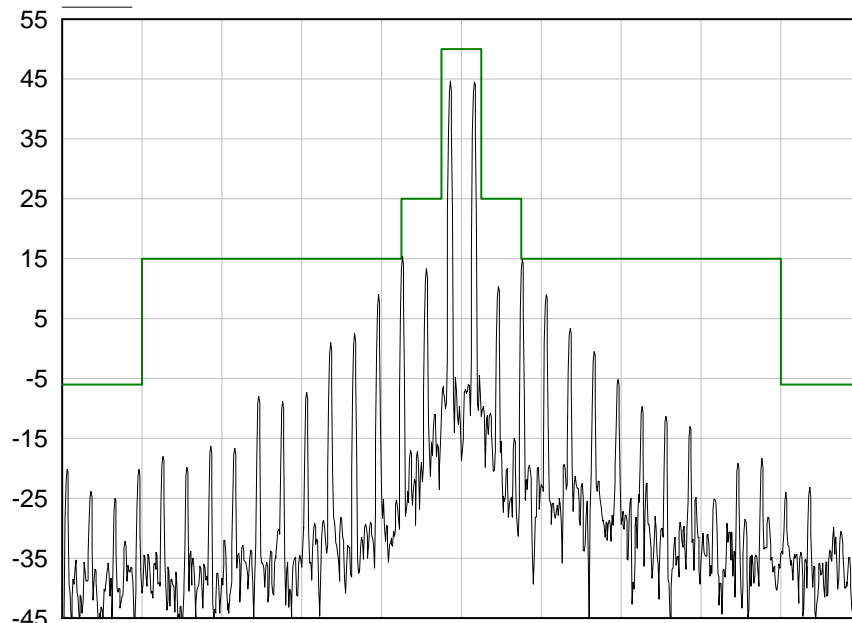
6/20/2013 15:20:55

N9020A

***Plot Occupied Bandwidth - AME/ 5***

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=16.5MHz

dBm Trace A



Tx=16.5MHz P=High

Start: 16.4757 MHz

Stop: 16.5257 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

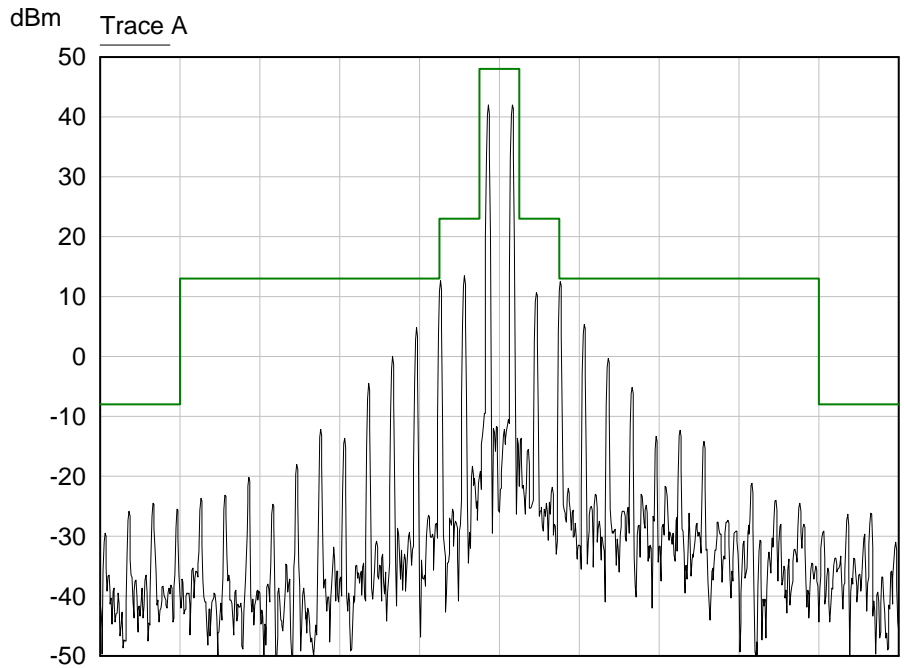
Sweep: 26.93 ms

6/20/2013 15:23:02

N9020A

***Plot Occupied Bandwidth - AME/ 6***

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=16.5MHz



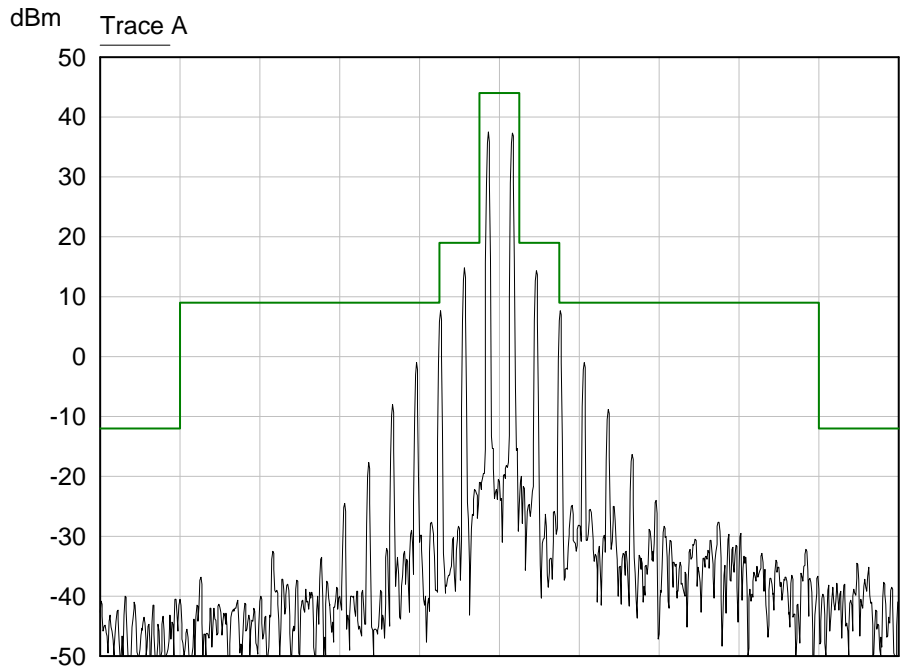
Tx=16.5MHz P=Med

Start: 16.4757 MHz  
Res BW: 100 Hz  
6/20/2013 15:24:25

Stop: 16.5257 MHz  
Sweep: 26.93 ms  
N9020A

***Plot Occupied Bandwidth - AME/ 7***

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=16.5MHz



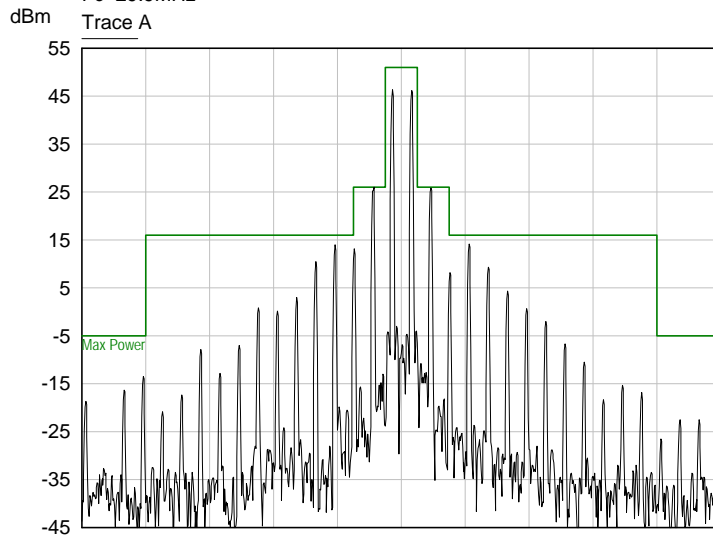
Tx=16.5MHz P=Low

Start: 16.4757 MHz  
Res BW: 100 Hz  
6/20/2013 15:25:35

Stop: 16.5257 MHz  
Sweep: 26.93 ms  
N9020A

***Plot Occupied Bandwidth - AME/ 8***

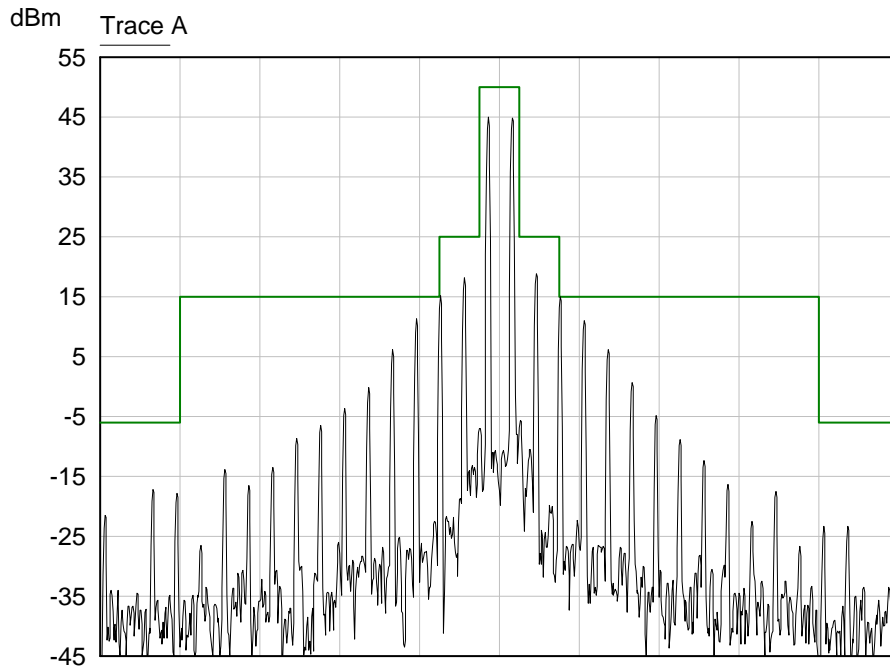
Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=29.9MHz



Start: 29.8757 MHz      Stop: 29.9257 MHz  
Res BW: 100 Hz      Vid BW: 100 Hz      Sweep: 26.93 ms  
6/20/2013 15:33:10      N9020A

**Plot Occupied Bandwidth - AME/ 9**

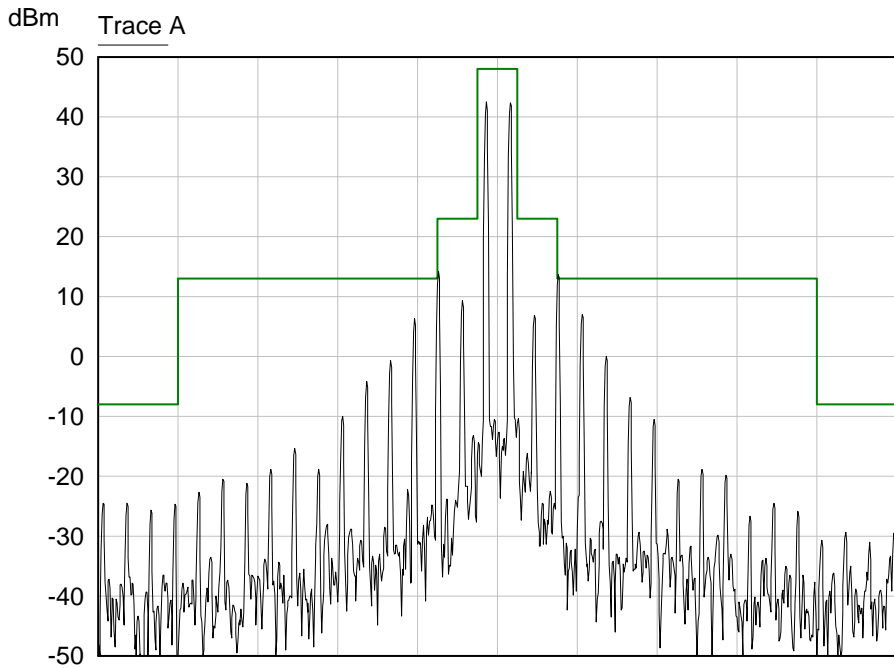
Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=29.9MHz



Start: 29.8757 MHz      Stop: 29.9257 MHz  
Res BW: 100 Hz      Vid BW: 100 Hz      Sweep: 26.93 ms  
6/20/2013 15:36:25      N9020A

**Plot Occupied Bandwidth - AME/ 10**

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=29.9MHz



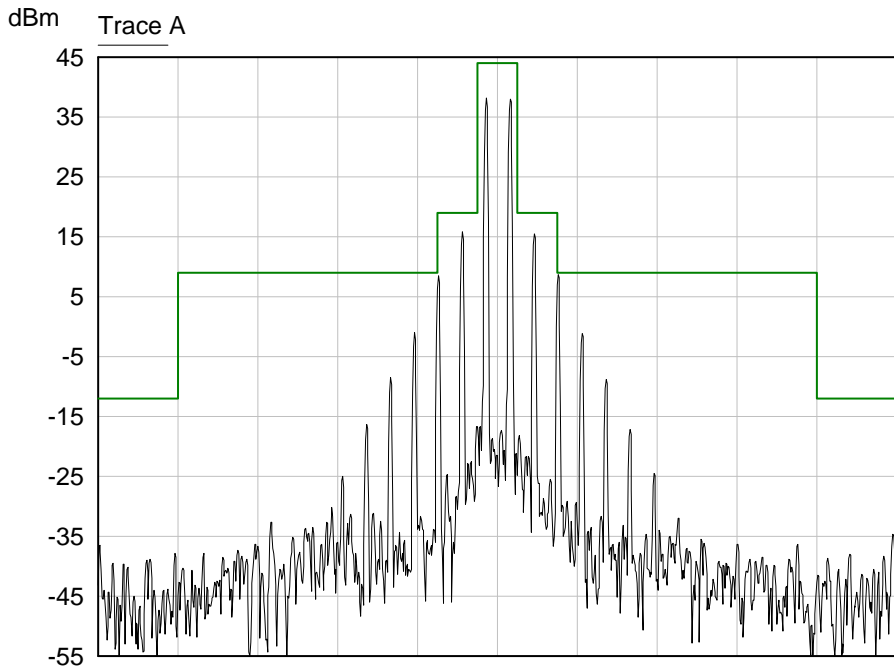
Tx=29.9MHz P=Med

Start: 29.8757 MHz  
Res BW: 100 Hz  
6/20/2013 15:37:51

Stop: 29.9257 MHz  
Sweep: 26.93 ms  
N9020A

***Plot Occupied Bandwidth - AME/ 11***

Occupied Bandwidth: One Tone AME Modulation (1500Hz),  
Fc=29.9MHz



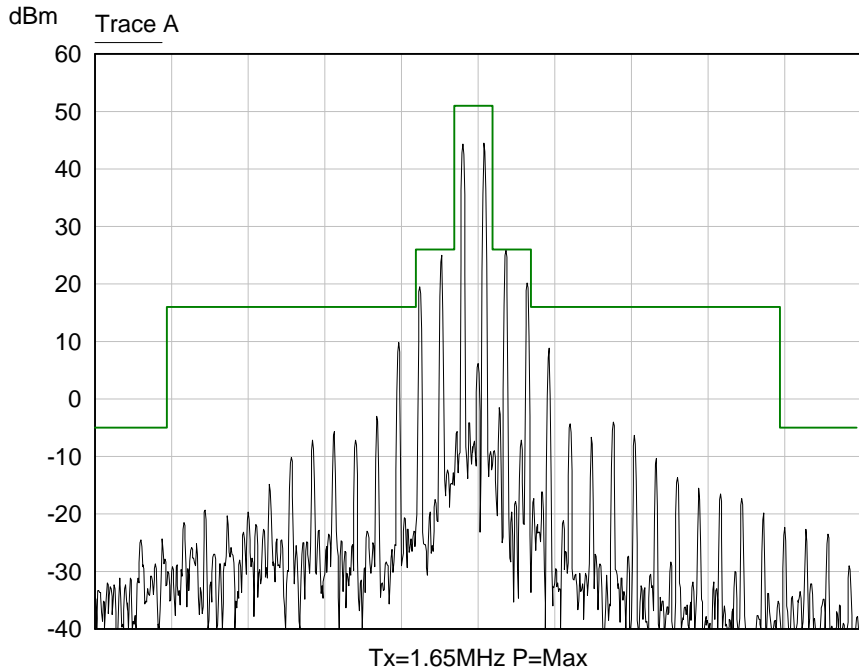
Tx=29.9MHz P=Low

Start: 29.8757 MHz  
Res BW: 100 Hz  
6/20/2013 15:39:44

Stop: 29.9257 MHz  
Sweep: 26.93 ms  
N9020A

***Plot Occupied Bandwidth - AME/ 12***

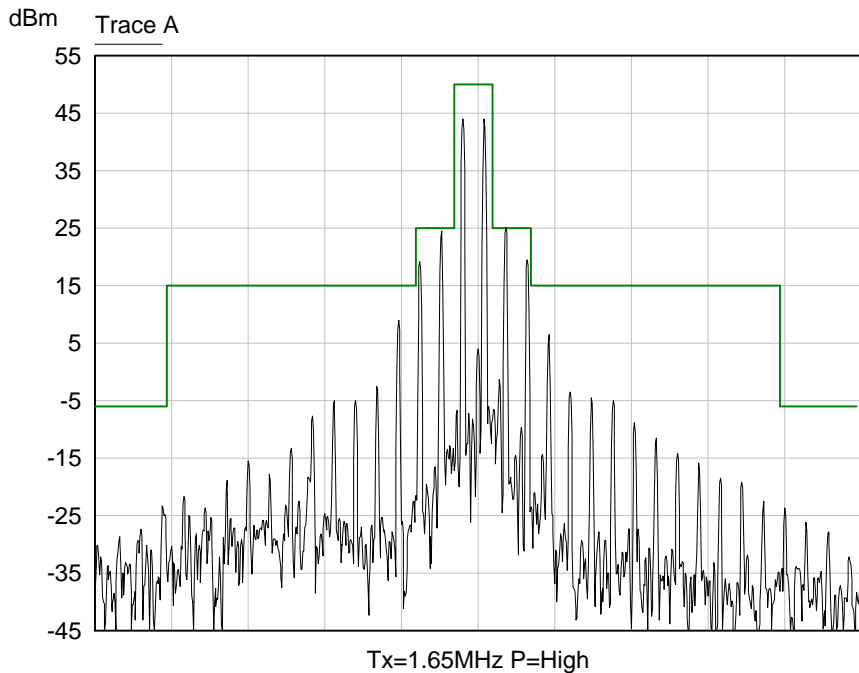
Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=1.65MHz



Start: 1.6264 MHz Stop: 1.6764 MHz  
Res BW: 100 Hz Vid BW: 100 Hz Sweep: 26.93 ms  
6/17/2013 12:16:12 N9020A

**Plot Occupied Bandwidth - SSB/ 13**

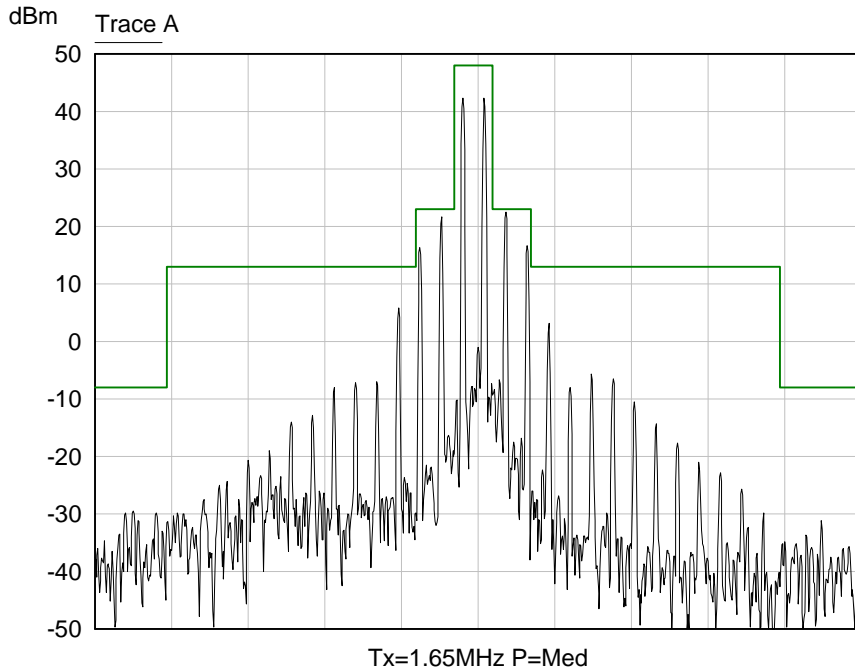
Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=1.65MHz



Start: 1.6264 MHz Stop: 1.6764 MHz  
Res BW: 100 Hz Vid BW: 100 Hz Sweep: 26.93 ms  
6/17/2013 12:45:42 N9020A

**Plot Occupied Bandwidth - SSB/ 14**

Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
F<sub>c</sub>=1.65MHz



Tx=1.65MHz P=Med

Start: 1.6264 MHz

Stop: 1.6764 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

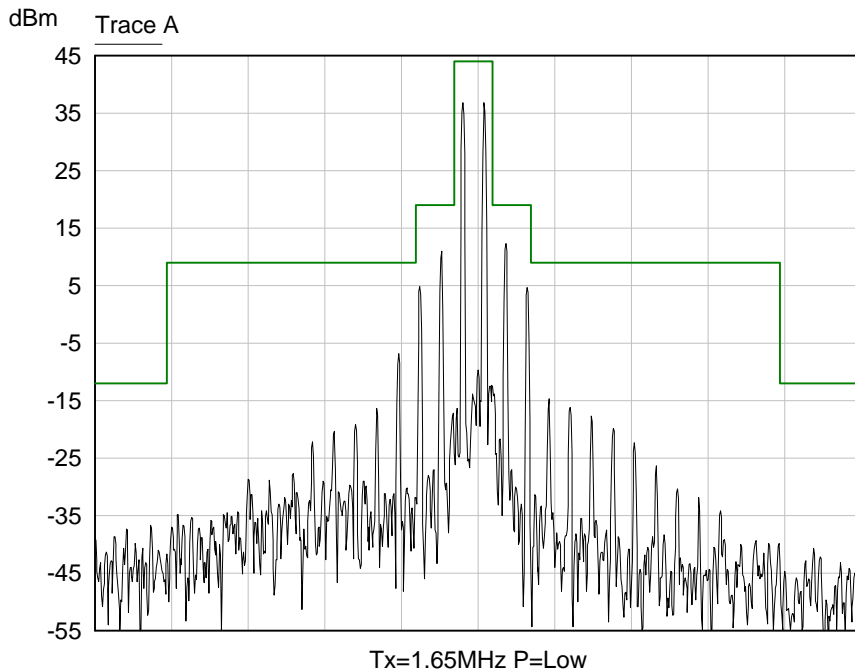
Sweep: 26.93 ms

6/17/2013 12:47:38

N9020A

***Plot Occupied Bandwidth - SSB/ 15***

Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
F<sub>c</sub>=1.65MHz



Tx=1.65MHz P=Low

Start: 1.6264 MHz

Stop: 1.6764 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

Sweep: 26.93 ms

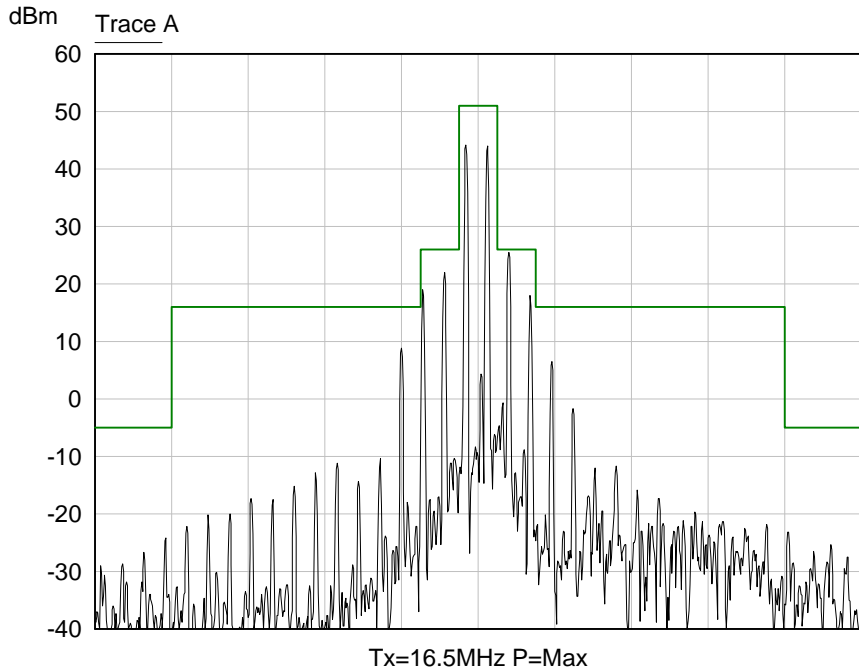
6/17/2013 12:49:20

N9020A

***Plot Occupied Bandwidth - SSB/ 16***



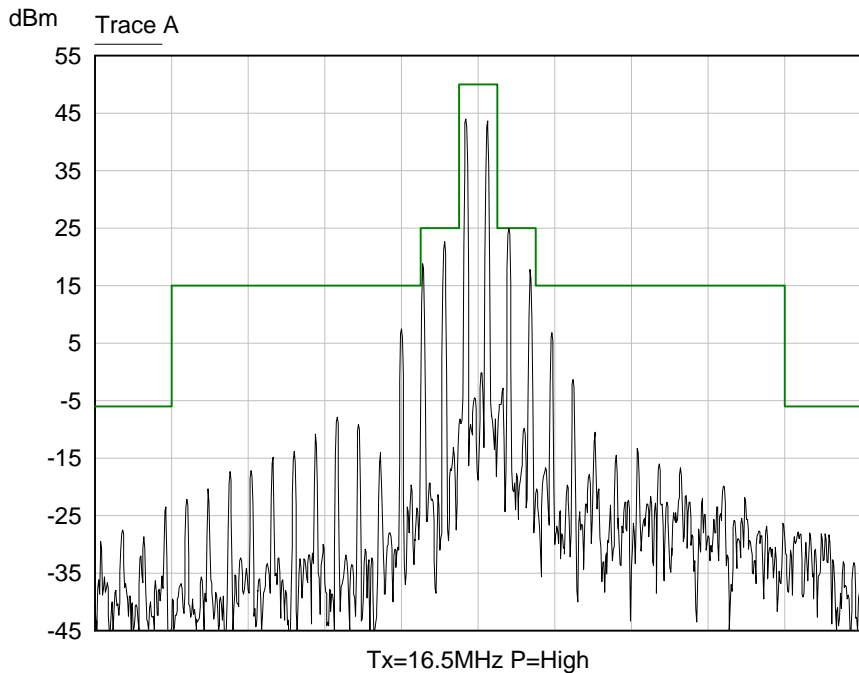
Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=16.5MHz



Start: 16.4762 MHz Stop: 16.5262 MHz  
Res BW: 100 Hz Vid BW: 100 Hz Sweep: 26.93 ms  
6/18/2013 13:00:30 N9020A

**Plot Occupied Bandwidth - SSB/ 17**

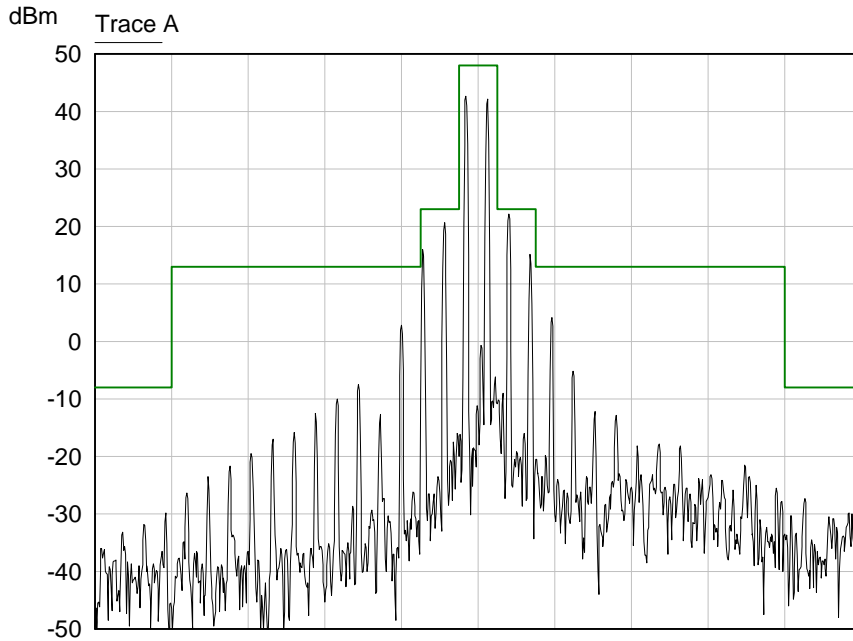
Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=16.5MHz



Start: 16.4762 MHz Stop: 16.5262 MHz  
Res BW: 100 Hz Vid BW: 100 Hz Sweep: 26.93 ms  
6/17/2013 13:21:32 N9020A

**Plot Occupied Bandwidth - SSB/ 18**

Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=16.5MHz



Tx=16.5MHz P=Med

Start: 16.4762 MHz

Stop: 16.5262 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

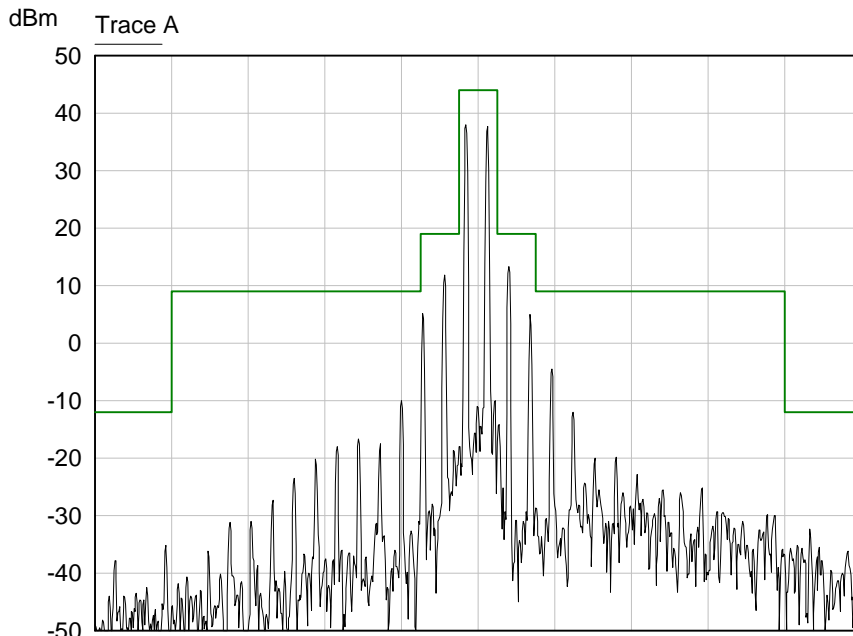
Sweep: 26.93 ms

6/17/2013 13:23:53

N9020A

***Plot Occupied Bandwidth - SSB/ 19***

Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=16.5MHz



Tx=16.5MHz P=Low

Start: 16.4762 MHz

Stop: 16.5262 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

Sweep: 26.93 ms

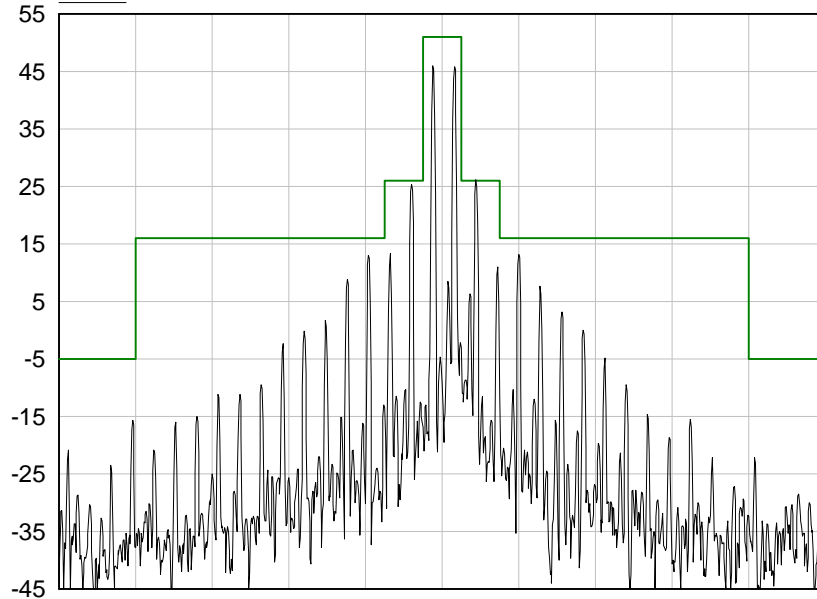
6/17/2013 13:25:14

N9020A

***Plot Occupied Bandwidth - SSB/ 20***

Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=29.9MHz

dBm Trace A



Tx=29.9MHz P=Max

Start: 29.8760 MHz

Stop: 29.9260 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

Sweep: 26.93 ms

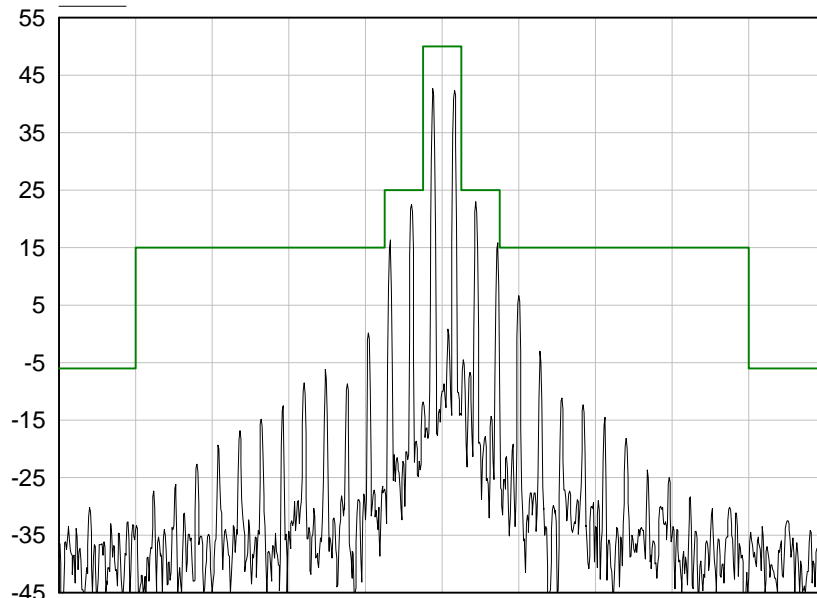
6/20/2013 14:50:16

N9020A

***Plot Occupied Bandwidth - SSB/ 21***

Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=29.9MHz

dBm Trace A



Tx=29.9MHz P=High

Start: 29.8760 MHz

Stop: 29.9260 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

Sweep: 26.93 ms

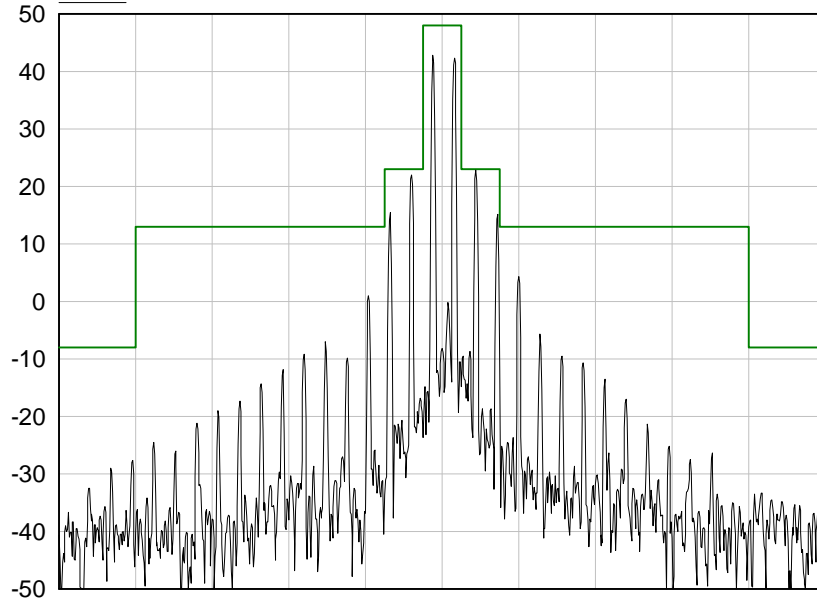
6/17/2013 16:13:56

N9020A

***Plot Occupied Bandwidth - SSB/ 22***

Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=29.9MHz

dBm Trace A



Tx=29.9MHz P=Med

Start: 29.8760 MHz

Stop: 29.9260 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

Sweep: 26.93 ms

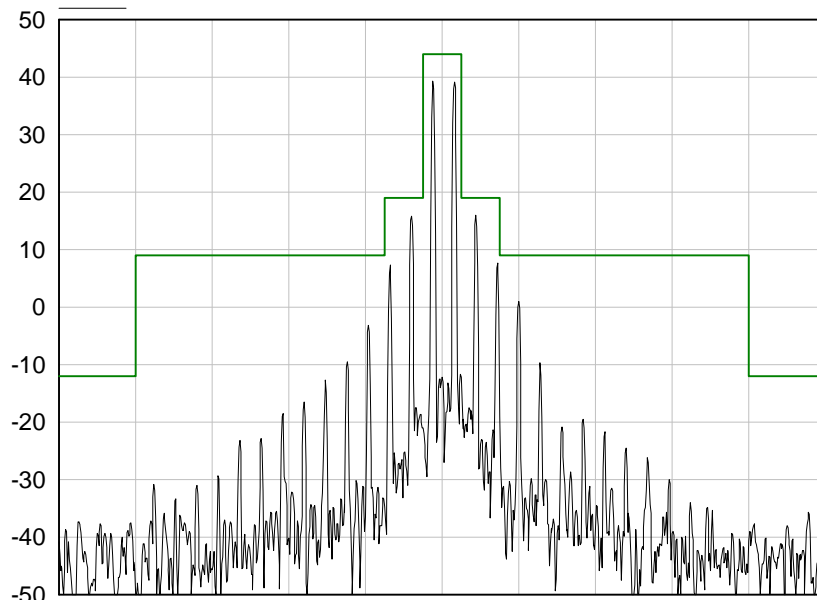
6/17/2013 15:42:14

N9020A

***Plot Occupied Bandwidth - SSB/ 23***

Occupied Bandwidth: Two Tone SSB Modulation (1800Hz & 400Hz),  
Fc=29.9MHz

dBm Trace A



Tx=29.9MHz P=Low

Start: 29.8760 MHz

Stop: 29.9260 MHz

Res BW: 100 Hz

Vid BW: 100 Hz

Sweep: 26.93 ms

6/17/2013 15:37:15

N9020A

***Plot Occupied Bandwidth - SSB/ 24***

**8. Spurious Emissions at Antenna Terminals – Part 2.1051**

E.U.T	Micom Z Trunk
S/N:	13B51729
Date:	04.07.2013
Standard	90.210 (a) (3)
Relative Humidity:	28%
Ambient Temperature:	24 <sup>0</sup> C
Air Pressure:	1010hPa
Testing Engineer:	D. Oshri
Date	04.07.2013

**8.1. Test Results Summary & Conclusions**

The E.U.T was found to be in compliance with the Spurious Emissions at Antenna Terminals – Part 2.1051

**8.2. Test Instrumentation and Equipment**

*Table 6: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date of Calibration
Spectrum Analyzer	E7405A	Agilent	09.11.2013
Attenuator 30 dB	769-30	Narda	21.05.2015
Audio Analyzer	8903A	HP	23.12.2013

**8.3. Test Results**

Frequencies examined: 1.65 MHz, 16.5 MHz, and 27 MHz

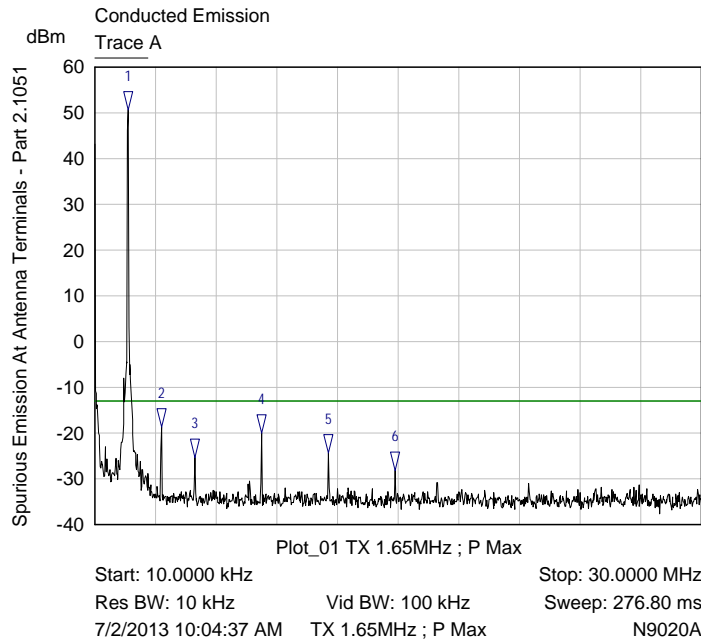
Frequency range: 0.01 – 30 MHz & 30 – 300 MHz

All emissions were measured using the following input criteria:

- Two Tone Modulation 400 Hz and 1800 Hz
- Input level set to 10dB above the level required for Max PEP 125 Watts

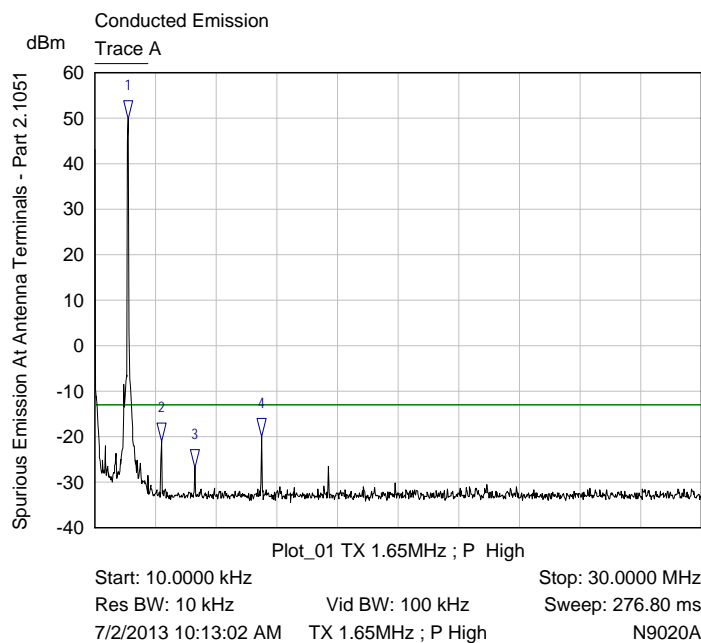
**Table 7: Test Results**

Frequency (MHz)	Frequency Range	Power	Difference bet 1 & 2 (dB)	Compliance Y/N
1.65	0.01 – 30 MHz	Maximum	69.73	Y
1.65		High	71.05	Y
1.65		Medium	71.19	Y
1.65		Low	66.65	Y
16.5		Maximum	70.92	Y
16.5		High	71.88	Y
16.5		Medium	72.11	Y
16.5		Low	70.91	Y
27		Maximum	66.09	Y
27		High	67.20	Y
27		Medium	68.70	Y
27		Low	68.41	Y
1.65	30 – 300 MHz	Maximum		Y
1.65		High		Y
1.65		Medium		Y
1.65		Low		Y
16.5		Maximum		Y
16.5		High		Y
16.5		Medium		Y
16.5		Low		Y
27		Maximum		Y
27		High		Y
27		Medium		Y
27		Low		Y



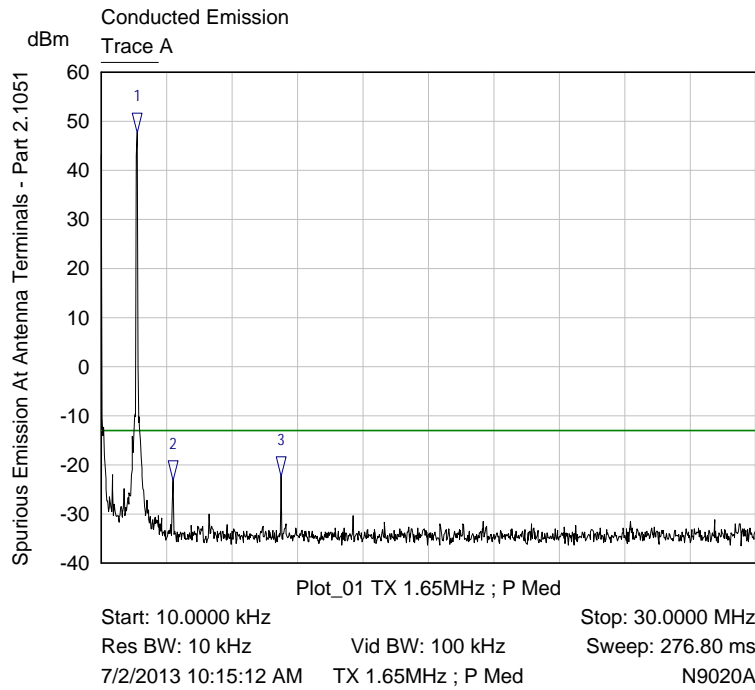
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	1.6595 MHz	50.62 dBm	
2 ▽	Trace A	3.3089 MHz	-18.73 dBm	
3 ▽	Trace A	4.9584 MHz	-25.41 dBm	
4 ▽	Trace A	8.2573 MHz	-20.01 dBm	
5 ▽	Trace A	11.5562 MHz	-24.37 dBm	
6 ▽	Trace A	14.8551 MHz	-28.21 dBm	

***Plot Spurious Emissions – Antenna Terminal – Tx 1.65 MHz P Max/ 1***



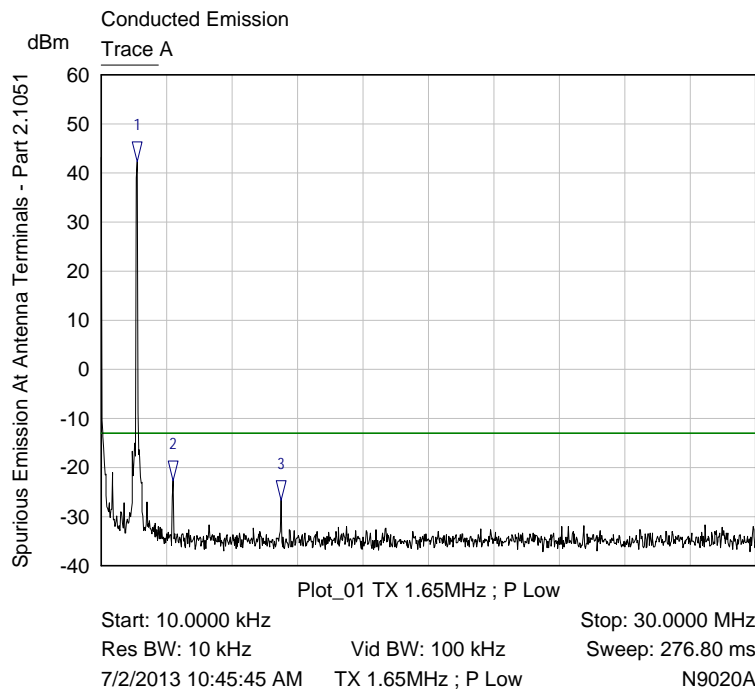
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	1.6595 MHz	49.80 dBm	
2 ▽	Trace A	3.3089 MHz	-21.05 dBm	
3 ▽	Trace A	4.9584 MHz	-26.82 dBm	
4 ▽	Trace A	8.2573 MHz	-20.04 dBm	

***Plot Spurious Emissions – Antenna Terminal – Tx 1.65 MHz P High/ 2***



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	1.6595 MHz	47.74 dBm	
2 ▽	Trace A	3.3089 MHz	-23.19 dBm	
3 ▽	Trace A	8.2573 MHz	-22.39 dBm	

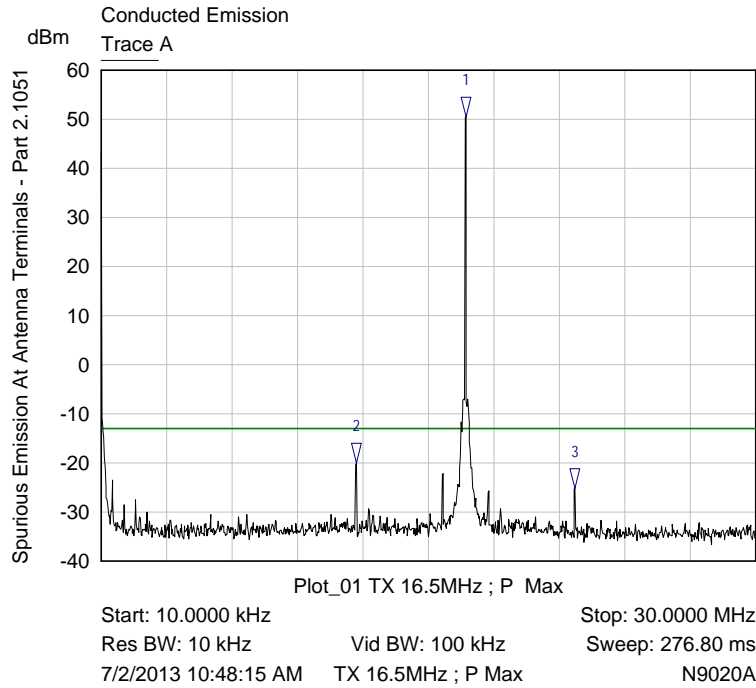
**Plot Spurious Emissions – Antenna Terminal – Tx 1.65 MHz P Medium/ 3**



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	1.6595 MHz	42.35 dBm	
2 ▽	Trace A	3.3089 MHz	-22.65 dBm	
3 ▽	Trace A	8.2573 MHz	-26.71 dBm	

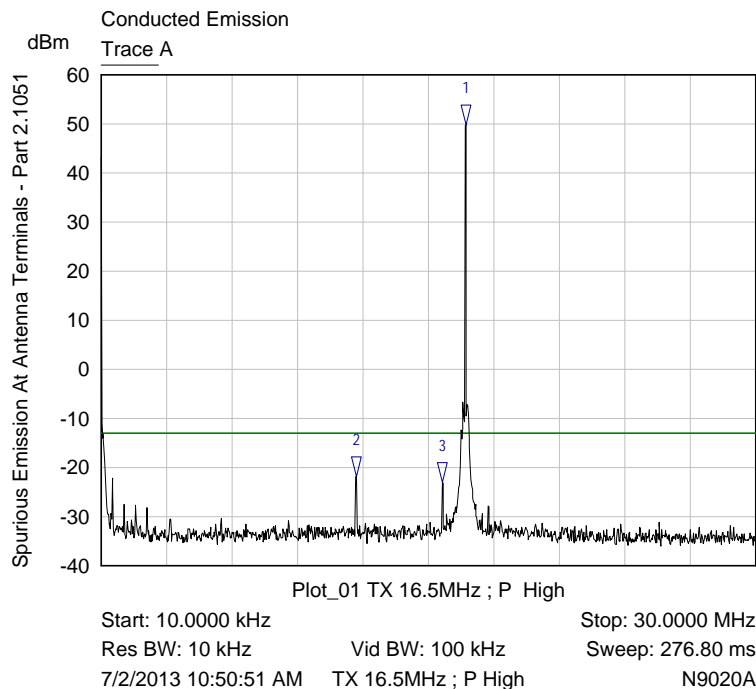
**Plot Spurious Emissions – Antenna Terminal – Tx 1.65 MHz P Low/ 4**





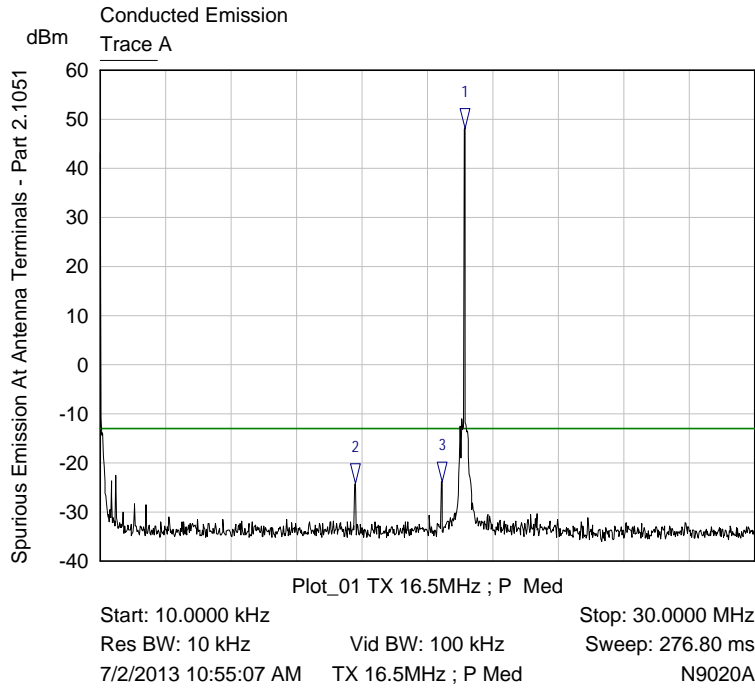
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	16.7144 MHz	50.43 dBm	
2 ▽	Trace A	11.7061 MHz	-19.92 dBm	
3 ▽	Trace A	21.7228 MHz	-25.12 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 16.5 MHz P Max/ 5**



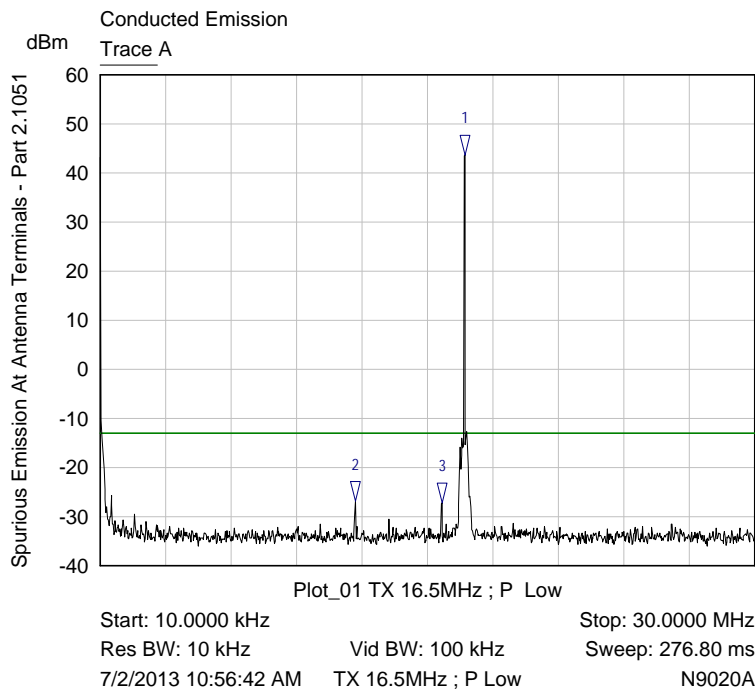
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	16.7144 MHz	49.85 dBm	
2 ▽	Trace A	11.7061 MHz	-21.88 dBm	
3 ▽	Trace A	15.6348 MHz	-23.07 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 16.5 MHz P High/ 6**



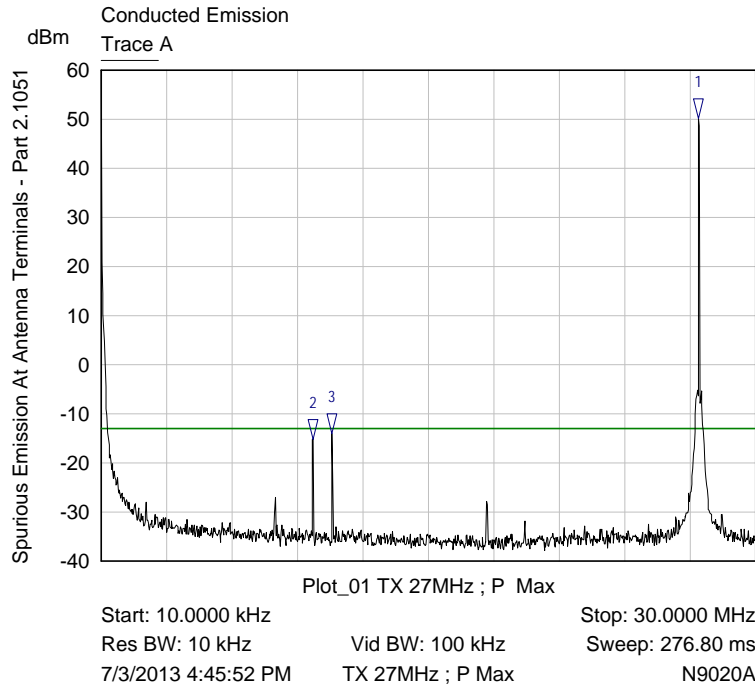
Mkr	Trace	X-Axis	Value	Notes
1 ▾	Trace A	16.7144 MHz	48.13 dBm	
2 ▾	Trace A	11.7061 MHz	-24.11 dBm	
3 ▾	Trace A	15.6648 MHz	-23.81 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 16.5 MHz P Medium/ 7**



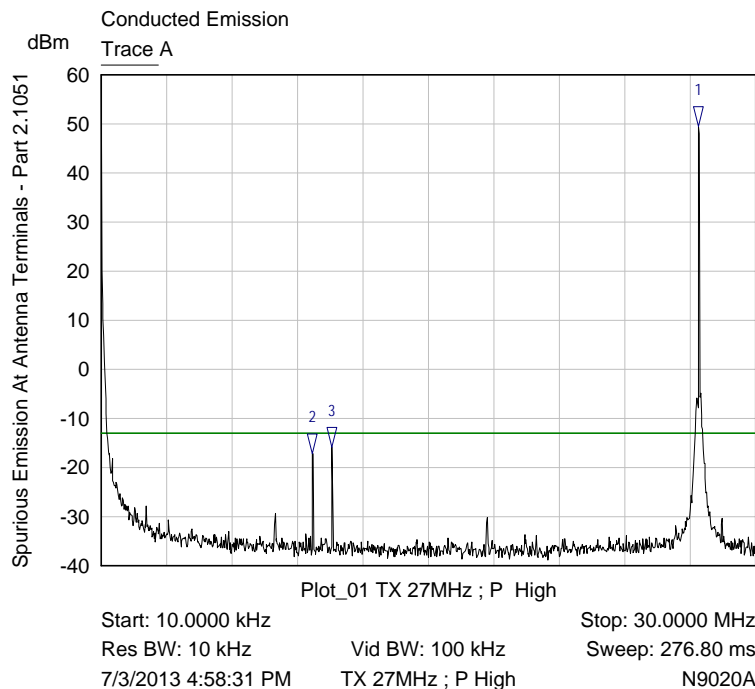
Mkr	Trace	X-Axis	Value	Notes
1 ▾	Trace A	16.7144 MHz	43.60 dBm	
2 ▾	Trace A	11.7061 MHz	-26.91 dBm	
3 ▾	Trace A	15.6648 MHz	-27.11 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 16.5 MHz P Low/ 8**



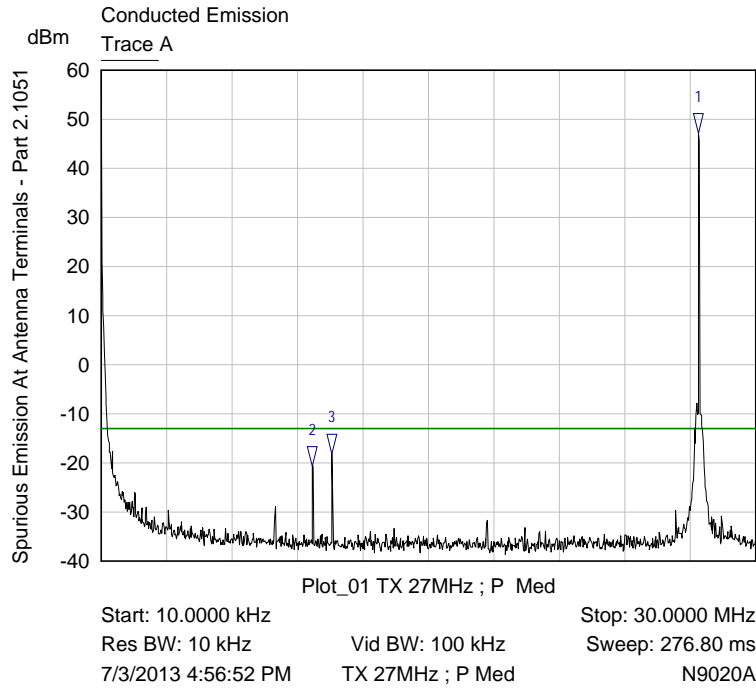
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	27.3909 MHz	50.15 dBm	
2 ▽	Trace A	9.7268 MHz	-15.09 dBm	
3 ▽	Trace A	10.5965 MHz	-14.00 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 27 MHz P Max/ 9**



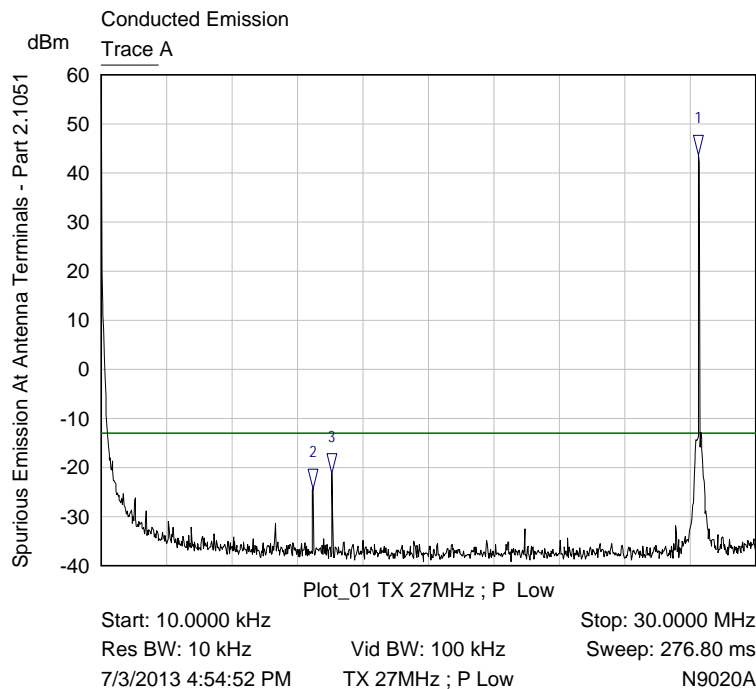
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	27.3909 MHz	49.50 dBm	
2 ▽	Trace A	9.6968 MHz	-17.20 dBm	
3 ▽	Trace A	10.5965 MHz	-15.90 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 27 MHz P High/ 10**



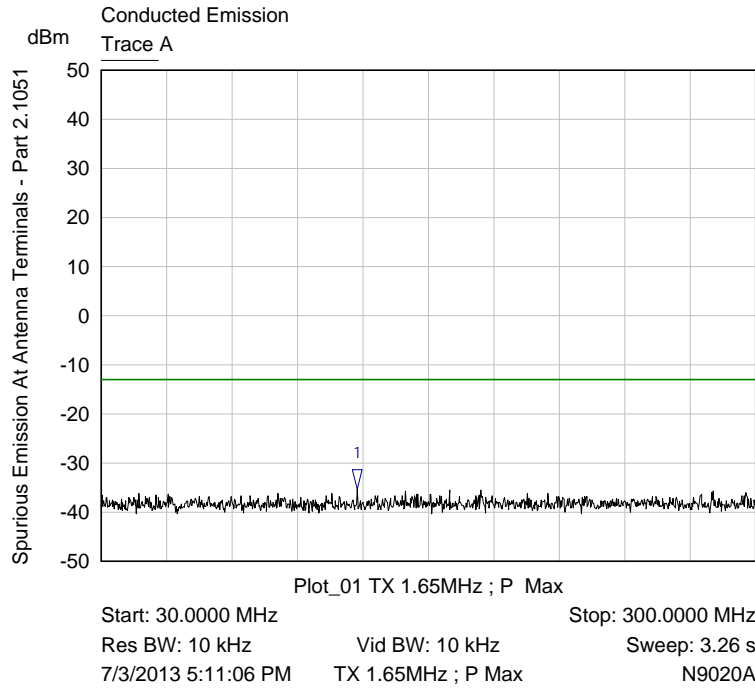
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	27.3909 MHz	47.15 dBm	
2 ▽	Trace A	9.6968 MHz	-20.70 dBm	
3 ▽	Trace A	10.5965 MHz	-18.13 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 27 MHz P Medium/ 11**



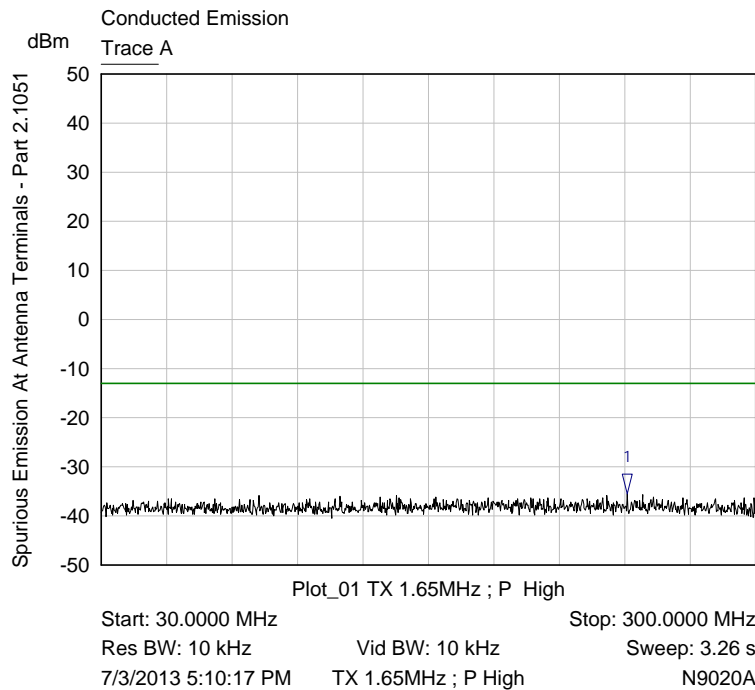
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	27.3909 MHz	43.61 dBm	
2 ▽	Trace A	9.7268 MHz	-24.41 dBm	
3 ▽	Trace A	10.5965 MHz	-21.15 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 27 MHz P Low/ 12**



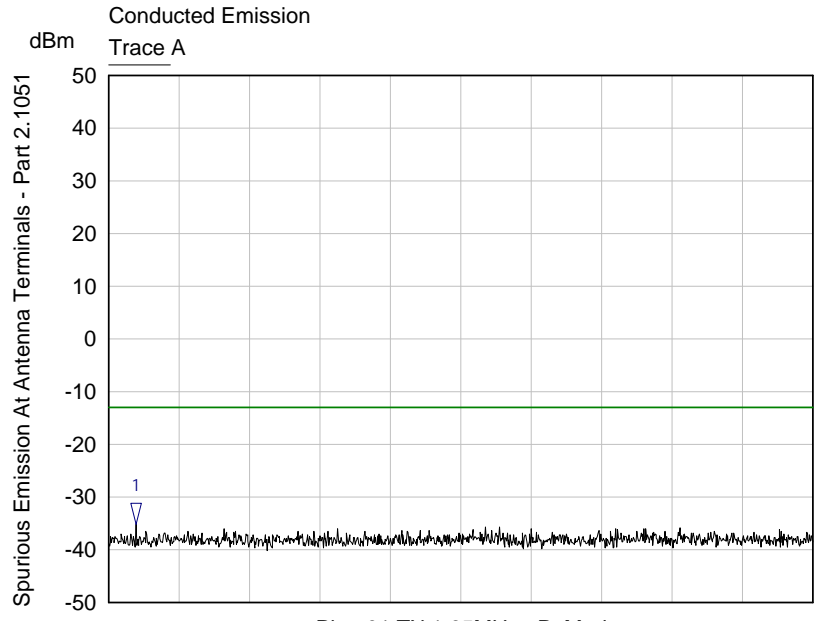
Mkr	Trace	X-Axis	Value	Notes
1 ▾	Trace A	135.5700 MHz	-35.32 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 1.65 MHz P Max/ 13**



Mkr	Trace	X-Axis	Value	Notes
1 ▾	Trace A	247.0800 MHz	-35.54 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 1.65 MHz P High/ 14**

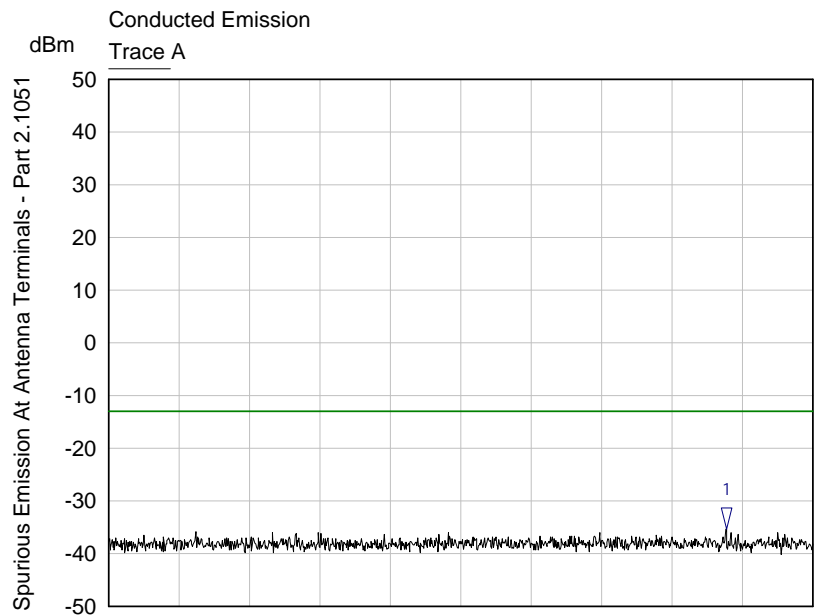


Plot\_01 TX 1.65MHz ; P Med

Start: 30.0000 MHz Stop: 300.0000 MHz  
 Res BW: 10 kHz Vid BW: 10 kHz Sweep: 3.26 s  
 7/3/2013 5:08:47 PM TX 1.65MHz ; P Med N9020A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	40.5300 MHz	-35.20 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 1.65 MHz P Medium/ 15**

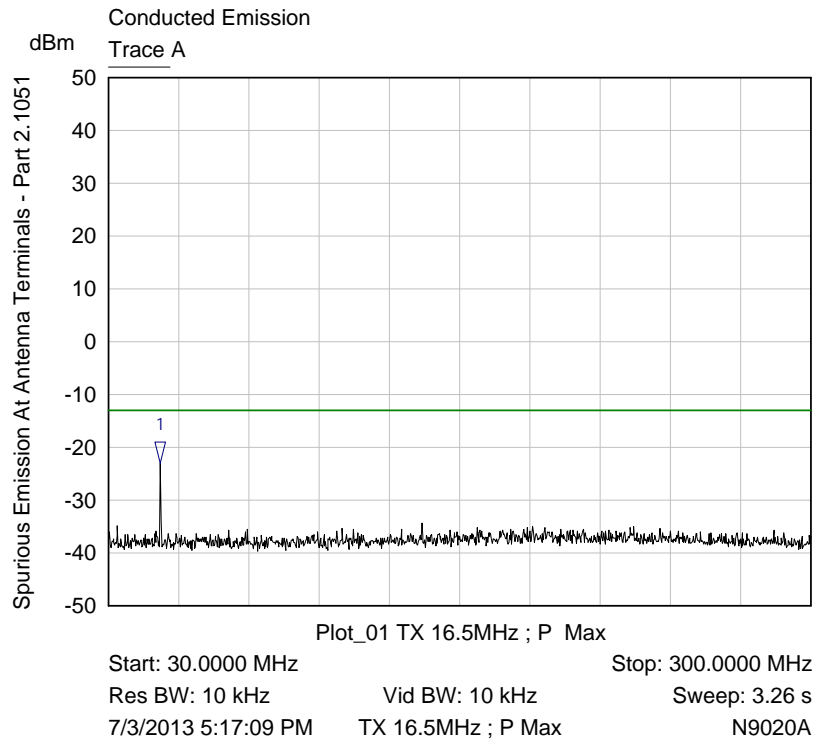


Plot\_01 TX 1.65MHz ; P Low

Start: 30.0000 MHz Stop: 300.0000 MHz  
 Res BW: 10 kHz Vid BW: 10 kHz Sweep: 3.26 s  
 7/3/2013 5:07:32 PM TX 1.65MHz ; P Low N9020A

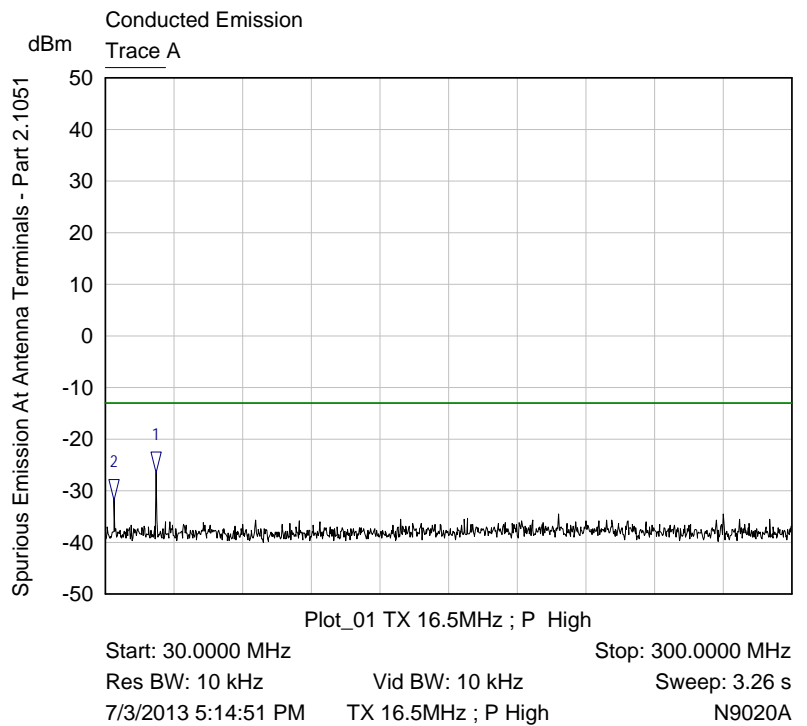
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	266.7900 MHz	-35.27 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 1.65 MHz P Low/ 16**



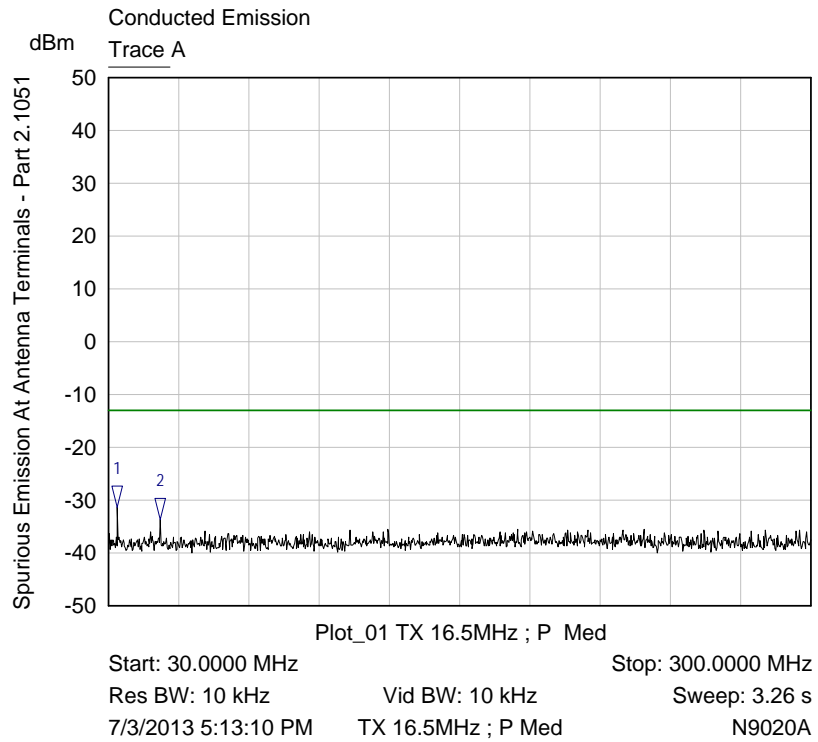
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	49.9800 MHz	-23.06 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 16.5 MHz P Max/ 17**



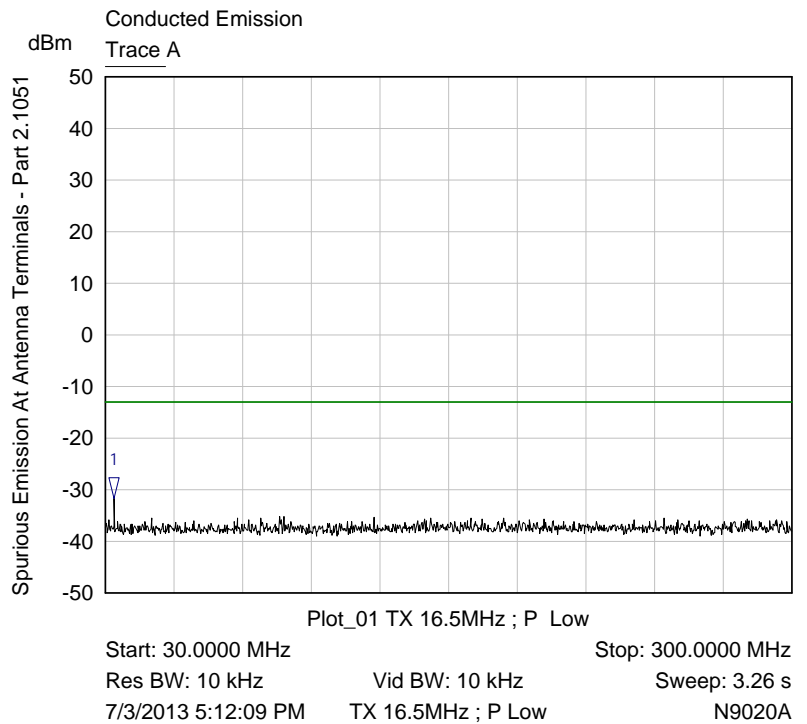
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	49.9800 MHz	-26.49 dBm	
2 ▽	Trace A	33.5100 MHz	-31.91 dBm	

**Plot Spurious Emissions – Antenna Terminal – Tx 16.5 MHz P High/ 18**



Mkr	Trace	X-Axis	Value	Notes
1 ▾	Trace A	33.5100 MHz	-31.36 dBm	
2 ▾	Trace A	49.9800 MHz	-33.73 dBm	

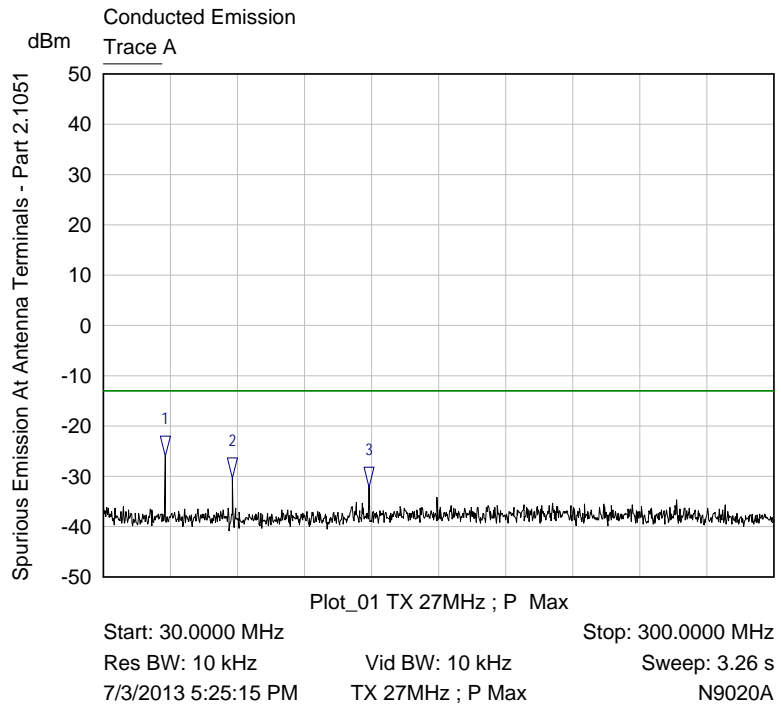
**Plot Spurious Emissions – Antenna Terminal – Tx 16.5 MHz P Medium/ 19**



Mkr	Trace	X-Axis	Value	Notes
1 ▾	Trace A	33.5100 MHz	-31.65 dBm	

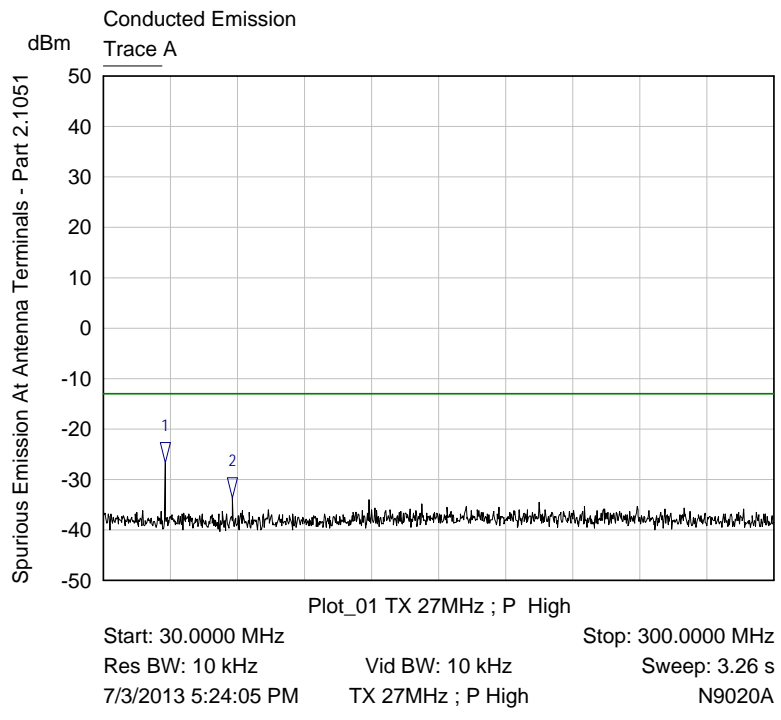
**Plot Spurious Emissions – Antenna Terminal – Tx 16.5 MHz P Low/ 20**





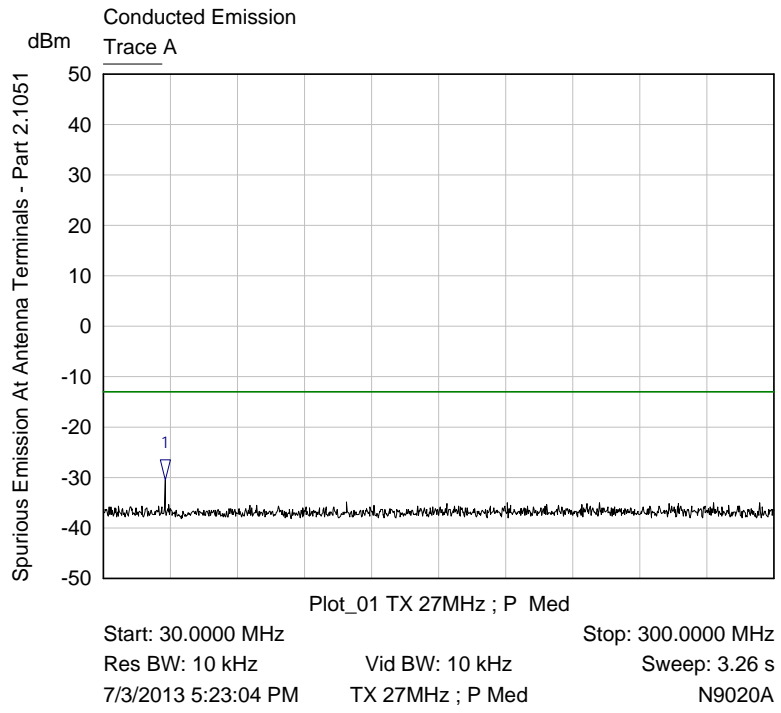
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	54.8400 MHz	-26.05 dBm	
2 ▽	Trace A	82.1100 MHz	-30.32 dBm	
3 ▽	Trace A	136.9200 MHz	-32.14 dBm	

***Plot Spurious Emissions – Antenna Terminal – Tx 27 MHz P Max/ 21***



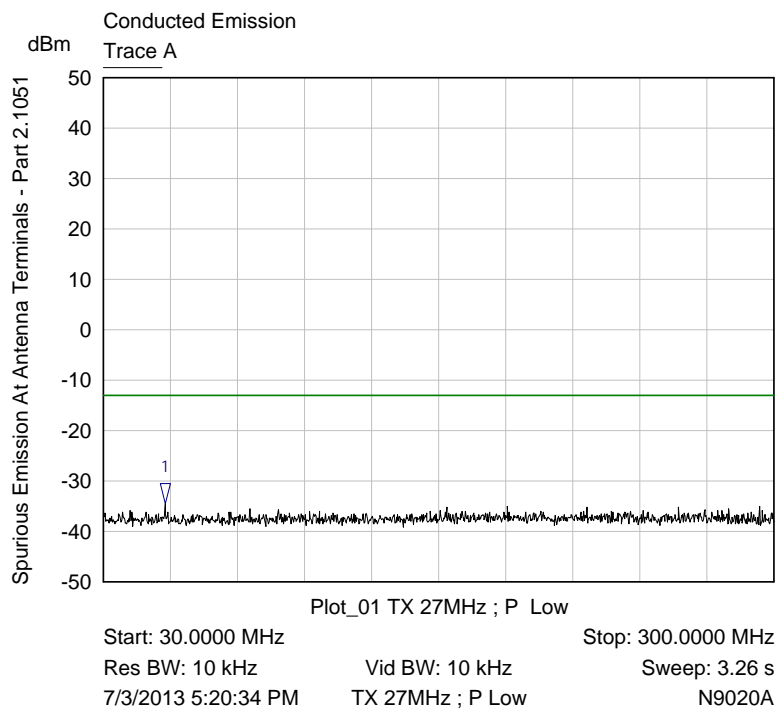
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	54.8400 MHz	-26.65 dBm	
2 ▽	Trace A	82.1100 MHz	-33.63 dBm	

***Plot Spurious Emissions – Antenna Terminal – Tx 27 MHz P High/ 22***



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	54.8400 MHz	-30.58 dBm	

***Plot Spurious Emissions – Antenna Terminal – Tx 27 MHz P Medium/ 23***



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	54.8400 MHz	-34.42 dBm	

***Plot Spurious Emissions – Antenna Terminal – Tx 27 MHz P Low/ 24***

**9. Carrier Suppression at Antenna Terminals – Part 2.1051**

E.U.T Micom Z Trunk  
 S/N: 13B51729  
 Date: 18.06.2013  
 Standard 90.210 (a)  
 Relative Humidity: 28%  
 Ambient Temperature: 24<sup>0</sup> C  
 Air Pressure: 1010hPa  
 Testing Engineer: D. Oshri Date 18.06.2013

**9.1. Test Results Summary & Conclusions**

The E.U.T was found to be in compliance with Carrier Suppression at Antenna Terminals – Part 2.1051

**9.2. Test Instrumentation and Equipment**

*Table 8: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date of Calibration
Spectrum Analyzer	E7405A	Agilent	09.11.2013
Attenuator 30 dB	769-30	Narda	21.05.2015
Audio Analyzer	8903A	HP	23.12.2013

**9.3. Test Results**

Frequencies examined: 1.65 MHz, 16.5 MHz, & 29.9 MHz

Transmitting Power: 25W, 62W, 100W & 125W

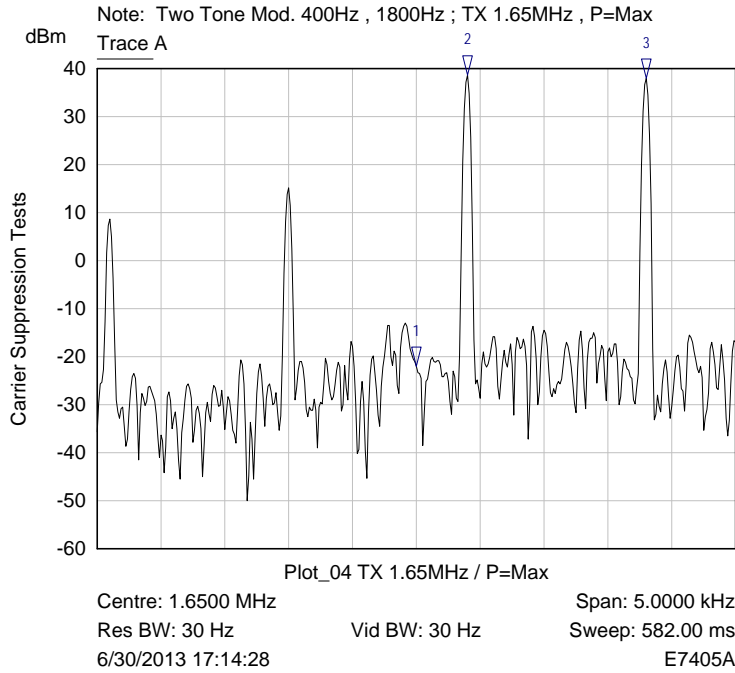
All emissions were measured using the following input criteria:

- Two Tone Modulation 400 Hz and 1800 Hz
- Input level set to 10dB above the level required for Max PEP 125 Watts

*Table 9: Test Results*

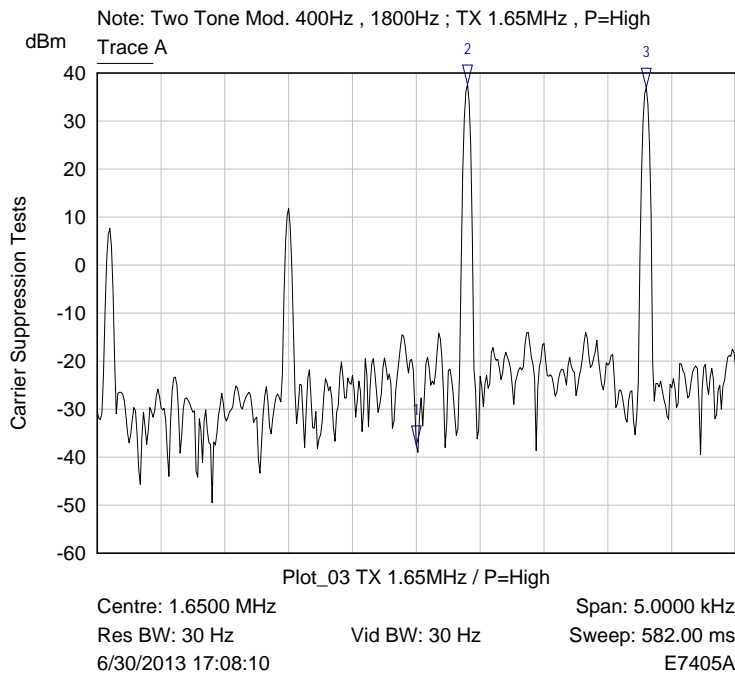
Frequency (MHz)	Power	Suppression	Limit (dB)	Compliance Y/N
1.65	Maximum	72.99	60	Y
1.65	High	87.56	60	Y
1.65	Medium	69.46	60	Y
1.65	Low	77.46	60	Y
16.5	Maximum	66.10	60	Y
16.5	High	69.47	60	Y
16.5	Medium	68.87	60	Y
16.5	Low	64.23	60	Y
29.9	Maximum	65.54	60	Y
29.9	High	66.95	60	Y
29.9	Medium	61.24	60	Y
29.9	Low	63.85	60	Y

See attached plots



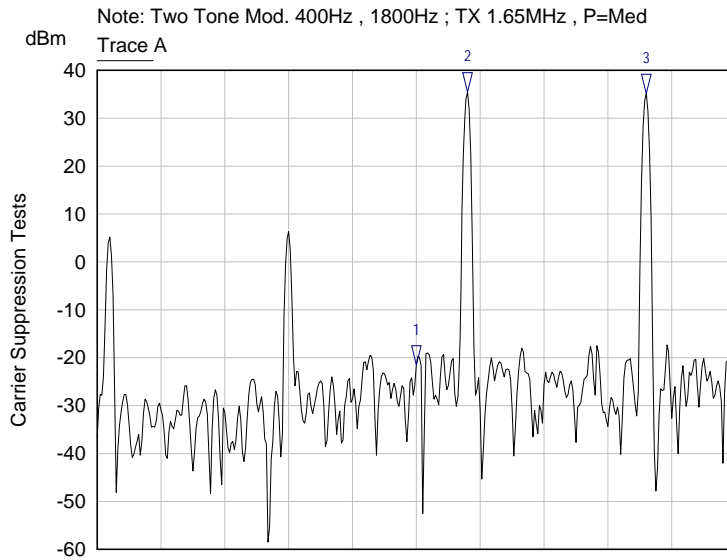
Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	1.6500 MHz	-22.02 dBm	Carrier
2 ▽	Trace A	1.6504 MHz	38.59 dBm	Tone 1
3 ▽	Trace A	1.6518 MHz	38.08 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 1.65 MHz P Maximum/ 1**



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	1.6500 MHz	-37.56 dBm	Carrier
2 ▽	Trace A	1.6504 MHz	37.61 dBm	Tone 1
3 ▽	Trace A	1.6518 MHz	37.08 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 1.65 MHz P High/ 2**

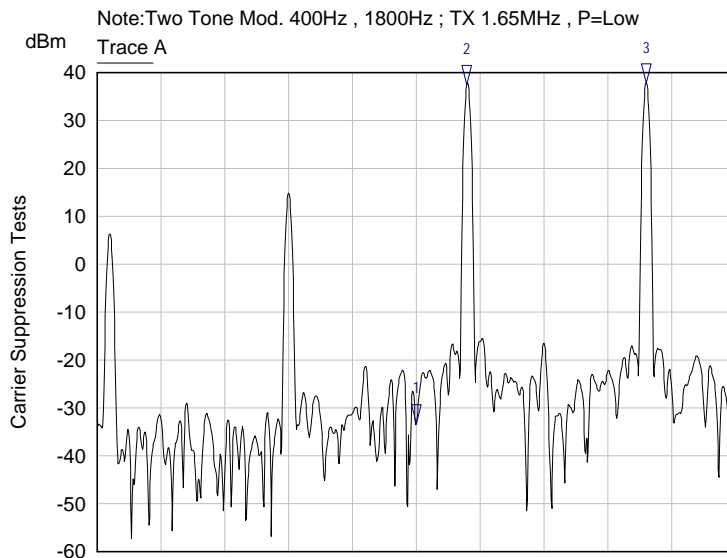


Plot\_02 TX 1.65MHz / P=Med

Centre: 1.6500 MHz      Span: 5.0000 kHz  
Res BW: 30 Hz      Vid BW: 30 Hz      Sweep: 582.00 ms  
6/30/2013 16:59:50      E7405A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	1.6500 MHz	-21.54 dBm	Carrier
2 ▽	Trace A	1.6504 MHz	35.45 dBm	Tone 1
3 ▽	Trace A	1.6518 MHz	35.09 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 1.65 MHz P Medium/ 3**

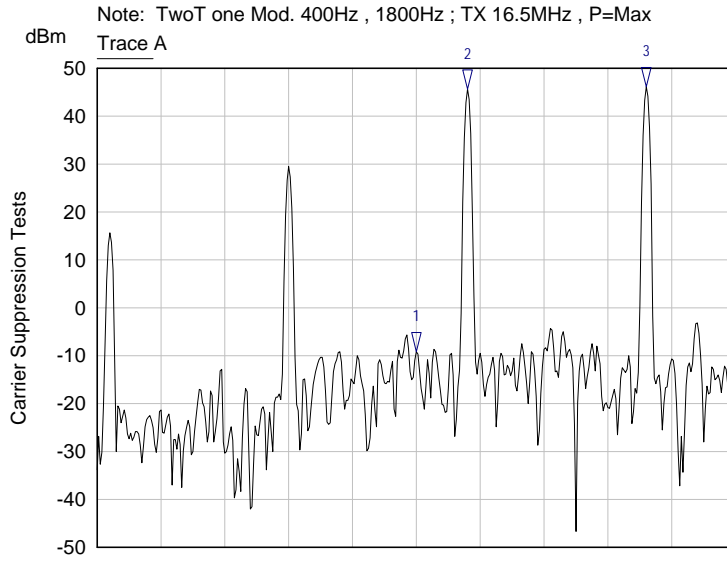


Plot\_01 TX 1.65MHz / P=Low

Centre: 1.6500 MHz      Span: 5.0000 kHz  
Res BW: 30 Hz      Vid BW: 30 Hz      Sweep: 64.20 ms  
6/12/2013 13:39:53      N9020A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	1.6500 MHz	-33.36 dBm	Carrier
2 ▽	Trace A	1.6504 MHz	37.54 dBm	Tone 1
3 ▽	Trace A	1.6518 MHz	37.88 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 1.65 MHz P Low/ 4**

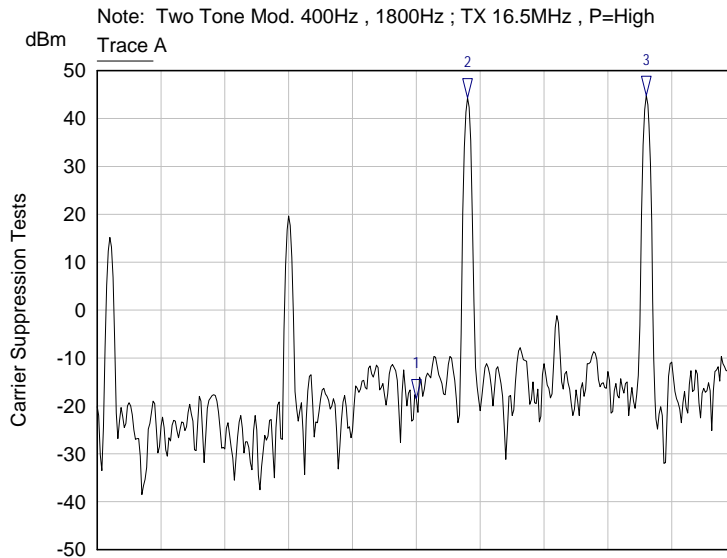


Plot\_08 TX 16.5MHz / P=Max

Centre: 16.5000 MHz Span: 5.0000 kHz  
Res BW: 30 Hz Vid BW: 30 Hz Sweep: 582.00 ms  
6/30/2013 17:31:54 E7405A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	16.5000 MHz	-9.10 dBm	Carrier
2 ▽	Trace A	16.5004 MHz	45.66 dBm	Tone 1
3 ▽	Trace A	16.5018 MHz	46.16 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 15.6 MHz P Maximum/ 5**

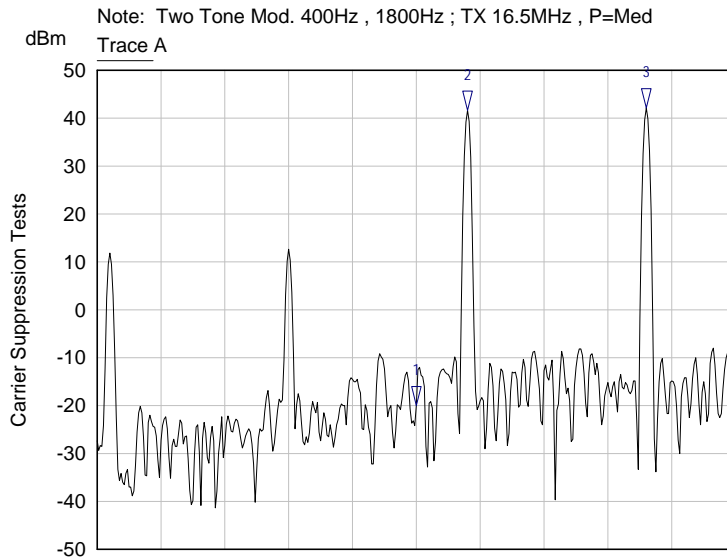


Plot\_07 TX 16.5MHz / P=High

Centre: 16.5000 MHz Span: 5.0000 kHz  
Res BW: 30 Hz Vid BW: 30 Hz Sweep: 582.00 ms  
6/30/2013 17:28:32 E7405A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	16.5000 MHz	-18.50 dBm	Carrier
2 ▽	Trace A	16.5004 MHz	44.34 dBm	Tone 1
3 ▽	Trace A	16.5018 MHz	44.78 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 15.6 MHz P High/ 6**

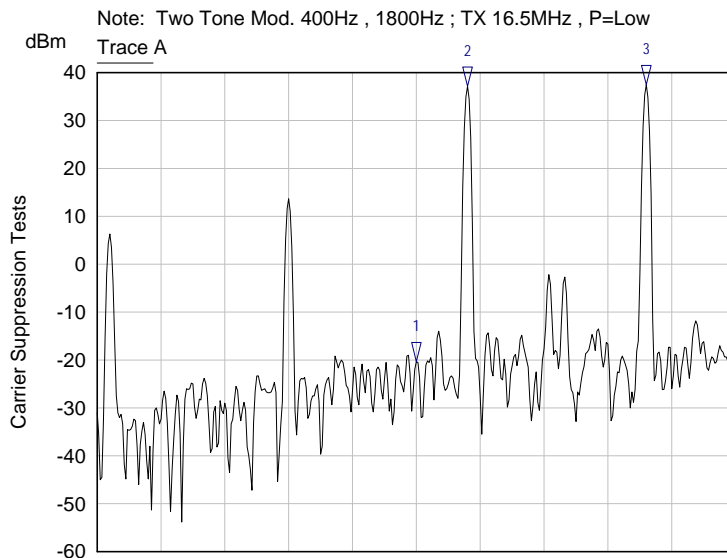


Plot\_06 TX 16.5MHz / P=Med

Centre: 16.5000 MHz      Span: 5.0000 kHz  
Res BW: 30 Hz      Vid BW: 30 Hz      Sweep: 582.00 ms  
6/30/2013 17:25:00      E7405A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	16.5000 MHz	-19.95 dBm	Carrier
2 ▽	Trace A	16.5004 MHz	41.73 dBm	Tone 1
3 ▽	Trace A	16.5018 MHz	42.16 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 15.6 MHz P Medium/ 7**

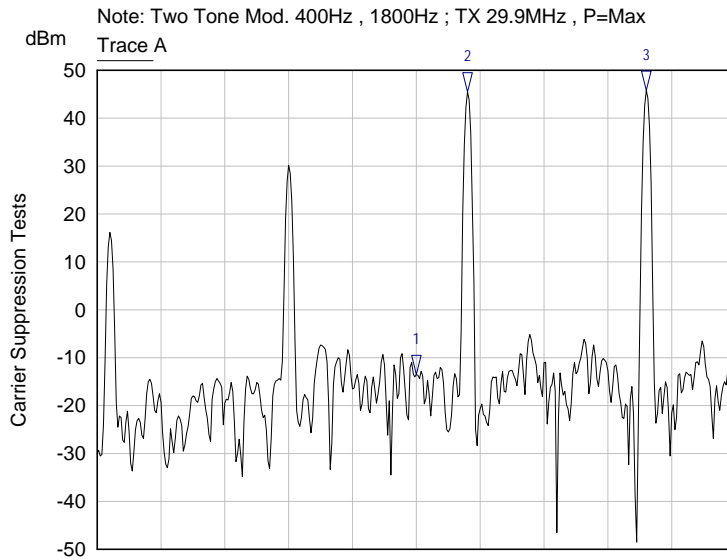


Plot\_05 TX 16.5MHz / P=Low

Centre: 16.5000 MHz      Span: 5.0000 kHz  
Res BW: 30 Hz      Vid BW: 30 Hz      Sweep: 582.00 ms  
6/30/2013 17:22:21      E7405A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	16.5000 MHz	-20.25 dBm	Carrier
2 ▽	Trace A	16.5004 MHz	37.16 dBm	Tone 1
3 ▽	Trace A	16.5018 MHz	37.52 dBm	Tone 2

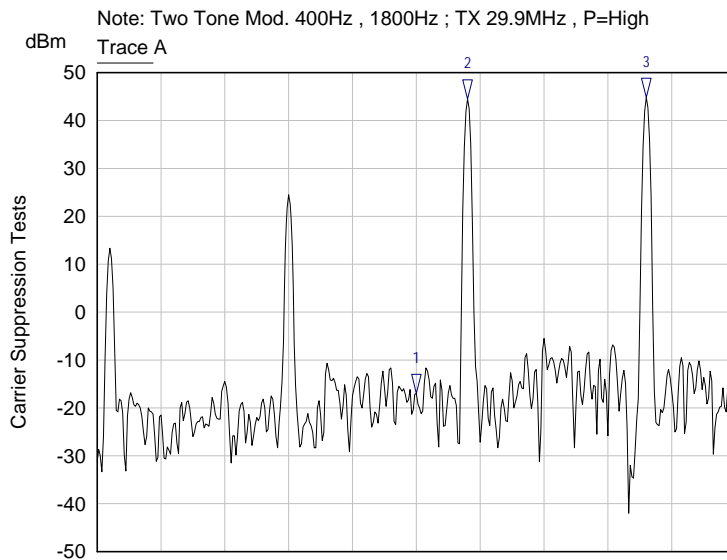
**Plot Carrier Suppression – Antenna Terminal – TX 15.6 MHz P Low/ 8**



Centre: 29.9000 MHz Span: 5.0000 kHz  
Res BW: 30 Hz Vid BW: 30 Hz Sweep: 582.00 ms  
6/30/2013 17:40:33 E7405A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	29.9000 MHz	-13.57 dBm	Carrier
2 ▽	Trace A	29.9004 MHz	45.56 dBm	Tone 1
3 ▽	Trace A	29.9018 MHz	45.86 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 29.9 MHz P Maximum/ 9**

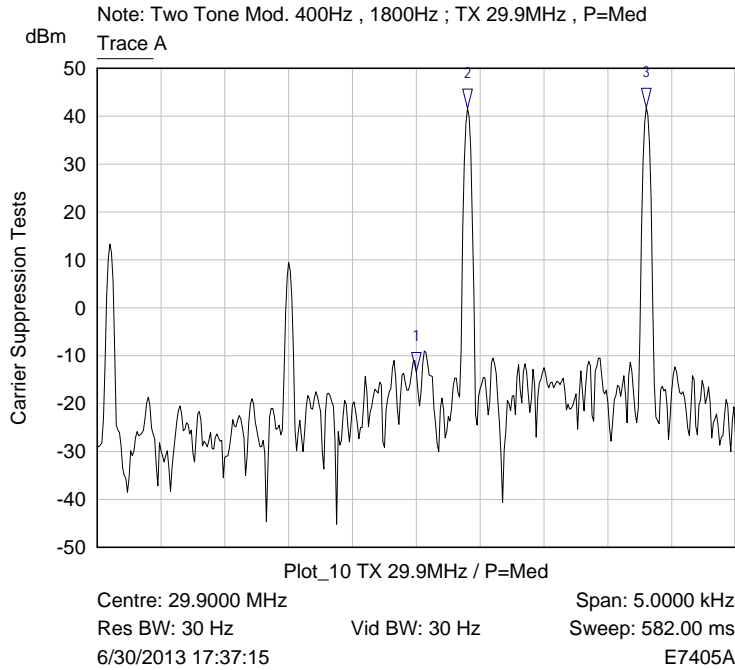


Centre: 29.9000 MHz Span: 5.0000 kHz  
Res BW: 30 Hz Vid BW: 30 Hz Sweep: 582.00 ms  
6/30/2013 17:39:08 E7405A

Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	29.9000 MHz	-16.95 dBm	Carrier
2 ▽	Trace A	29.9004 MHz	44.57 dBm	Tone 1
3 ▽	Trace A	29.9018 MHz	44.79 dBm	Tone 2

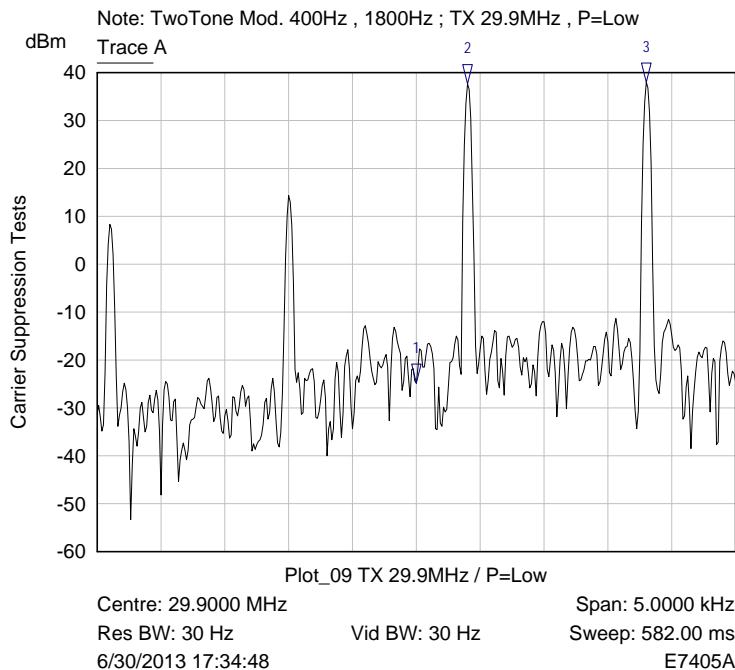
**Plot Carrier Suppression – Antenna Terminal – TX 29.9 MHz P High/ 10**





Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	29.9000 MHz	-13.32 dBm	Carrier
2 ▽	Trace A	29.9004 MHz	41.67 dBm	Tone 1
3 ▽	Trace A	29.9018 MHz	41.89 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 29.9 MHz P Medium/ 11**



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Trace A	29.9000 MHz	-24.87 dBm	Carrier
2 ▽	Trace A	29.9004 MHz	37.72 dBm	Tone 1
3 ▽	Trace A	29.9018 MHz	38.00 dBm	Tone 2

**Plot Carrier Suppression – Antenna Terminal – TX 29.9 MHz P Low/ 12**

**10. Field Strength of Spurious Emissions – Part 2.1053**

E.U.T	Micom Z Trunk
S/N:	13B51729
Date:	09.06.2013
Standard	90.210 (a) (3)
Relative Humidity:	28%
Ambient Temperature:	24 <sup>0</sup> C
Air Pressure:	1010hPa
Testing Engineer:	S. Kozliner
Date	09.06.2013

**10.1. Test Results Summary & Conclusions**

The E.U.T was found to be in compliance with the Field Strength of Spurious Emissions – Part 2.1053

**10.2. Test Instrumentation and Equipment**

*Table 10: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date of Calibration
Spectrum Analyzer	E7405A	Agilent	09.11.2013
Attenuator 30 dB	769-30	Narda	21.05.2015
Audio Analyzer	8903A	HP	23.12.2013
Antenna	BTA-L	FRANKONIA	N.P.C.R.
Loop Antenna	HFH2-Z2	R&S	03.04.2013

**10.3. Test Results**

Frequencies examined: 1.65 MHz, 16.5 MHz & 29.9 MHz

Transmitting Power: 25W, 62W, 100W & 125W

All emissions were at least 30 dB below the specified limit.

**10.4. Setup Photographs for Field Strength of Spurious Radiation**



*Setup Photograph/ 1*



*Setup Photograph/ 2*



*Setup Photograph/ 3*



*Setup Photograph/ 4*



*Setup Photograph/ 5*



*Setup Photograph/ 6*

**11. Frequency Stability – Part 2.1055**

E.U.T Micom Z Trunk  
 S/N: 13B51729  
 Date: 26.06.2013  
 Standard 90.213 (a)  
 Relative Humidity: 28%  
 Ambient Temperature: 24<sup>0</sup> C  
 Air Pressure: 1010hPa  
 Testing Engineer: D. Oshri Date 26.06.2013

**11.1. Test Results Summary & Conclusions**

The E.U.T was found to be in compliance with Frequency Stability – Part 2.1055

**11.2. Test Instrumentation and Equipment**

*Table 11: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date of Calibration
Spectrum Analyzer	E7405A	Agilent	09.11.2013
Attenuator 30 dB	769-30	Narda	21.05.2015
Audio Analyzer	8903A	HP	23.12.2013
Antenna	BTA-L	FRANKONIA	N.P.C.R.
Loop Antenna	HFH2-Z2	R&S	03.04.2013

**11.3. Test Results**

Frequencies examined: 1.65 MHz, 16.5 MHz & 29.9 MHz

Transmitting Power: 25W, 62W, 100W & 125W

*Table 12: For Maximum Power*

Test Condition	Frequency (MHz)	Frequency Drift (Hz)
+50 °C, 13.8 VDC	15.599997	3
+40 °C, 13.8 VDC	15.599995	5
+30 °C, 13.8 VDC	15.599995	5
+20 °C, 15.87 VDC	15.599994	6
+20 °C, 11.73 VDC	15.599991	9
+20 °C, 13.8 VDC	15.599994	6
+10 °C, 13.8 VDC	15.599988	12
0 °C, 13.8 VDC	15.599984	16
-10 °C, 13.8 VDC	15.599975	25
-20 °C, 13.8 VDC	15.599975	25
-30 °C, 13.8 VDC	15.599975	25

**Table 13: For High Power**

Test Condition	Frequency (MHz)	Frequency Drift (Hz)
+50 °C, 13.8 VDC	15.599997	3
+40 °C, 13.8 VDC	15.599996	4
+30 °C, 13.8 VDC	15.599994	6
+20 °C, 15.87 VDC	15.599993	7
+20 °C, 11.73 VDC	15.599993	7
+20 °C, 13.8 VDC	15.599993	7
+10 °C, 13.8 VDC	15.599994	6
0 °C, 13.8 VDC	15.599994	6
-10 °C, 13.8 VDC	15.599996	4
-20 °C, 13.8 VDC	15.599997	3
-30 °C, 13.8 VDC	15.599998	2

**Table 14: For Medium Power**

Test Condition	Frequency (MHz)	Frequency Drift (Hz)
+50 °C, 13.8 VDC	15.599997	3
+40 °C, 13.8 VDC	15.599996	4
+30 °C, 13.8 VDC	15.599994	6
+20 °C, 15.87 VDC	15.599993	7
+20 °C, 11.73 VDC	15.599993	7
+20 °C, 13.8 VDC	15.599993	7
+10 °C, 13.8 VDC	15.599994	6
0 °C, 13.8 VDC	15.599994	6
-10 °C, 13.8 VDC	15.599996	4
-20 °C, 13.8 VDC	15.599997	3
-30 °C, 13.8 VDC	15.599998	2

**Table 15: For Low Power**

Test Condition	Frequency (MHz)	Frequency Drift (Hz)
+50 °C, 13.8 VDC	15.599997	3
+40 °C, 13.8 VDC	15.599996	4
+30 °C, 13.8 VDC	15.599994	6
+20 °C, 15.87 VDC	15.599993	7
+20 °C, 11.73 VDC	15.599993	7
+20 °C, 13.8 VDC	15.599993	7
+10 °C, 13.8 VDC	15.599994	6
0 °C, 13.8 VDC	15.599994	6
-10 °C, 13.8 VDC	15.599996	4
-20 °C, 13.8 VDC	15.599997	3
-30 °C, 13.8 VDC	15.599998	2

**11.4. Setup Photographs for Frequency Stability**



*Setup Photograph/ 1*



## 12. **Abbreviations and Acronyms**

The following abbreviations and acronyms are applicable in this document

BW	Bandwidth
R.BW	Resolution Bandwidth
V.BW	Video Bandwidth
db	Decibel
EMI	Electromagnetic interference
E.U.T	Equipment under test
LISN	Line impedance stabilization network
S/N	Serial number
QP	Quasi peak
PK	Peak

### 13. Appendix: Radiated Emission for Lap-top as per Part 15.109

E.U.T: Micom Z Trunk  
 S/N: 13B51729  
 Date: 18.06.2013  
 Relative Humidity: 28%  
 Ambient Temperature: 24<sup>0</sup>C  
 Air Pressure: 1010hPa  
 Testing Engineer: S. Kozliner Date 18.06.2013

#### 13.1. Test Results Summary & Conclusions

The E.U.T was found to comply with 15.109.

#### 13.2. Limits of Radiated Interference Field Strength according 15.109

The test unit shall meet the limits of Table 7.c for Class B equipment.

*Table 16: Limits for 15.109 Class B equipment*

Frequency Range (MHz)	Quasi-peak Limits (dB $\mu$ V/m)
30 - 88	40
88 - 216	43
216 - 960	46
960 - 2000	54

#### 13.3. Test Instrumentation and Equipment

*Table 17: Test Instrumentation and Equipment*

Item	Model	Manufacturer	Next Date Calibration
Spectrum Analyzer	8593E	HP	23.05.2013
Double Ridge Guide Antenna(1-18GHz)	DRG-118/A	ARA	09.12.2013
Broadband Antenna(30-1000MHz)	BTA-L	FRANKONIA	28.07.2013
Low Noise Amplifier (0-1GHz)	AM-1300-N	MITEQ	02.04.2013
Low Noise Amplifier (1-4GHz)	AMM 003N	Avantek	02.04.2013
Low Noise Amplifier (2-18GHz)	PE 2-38	Planar	06.08.2013

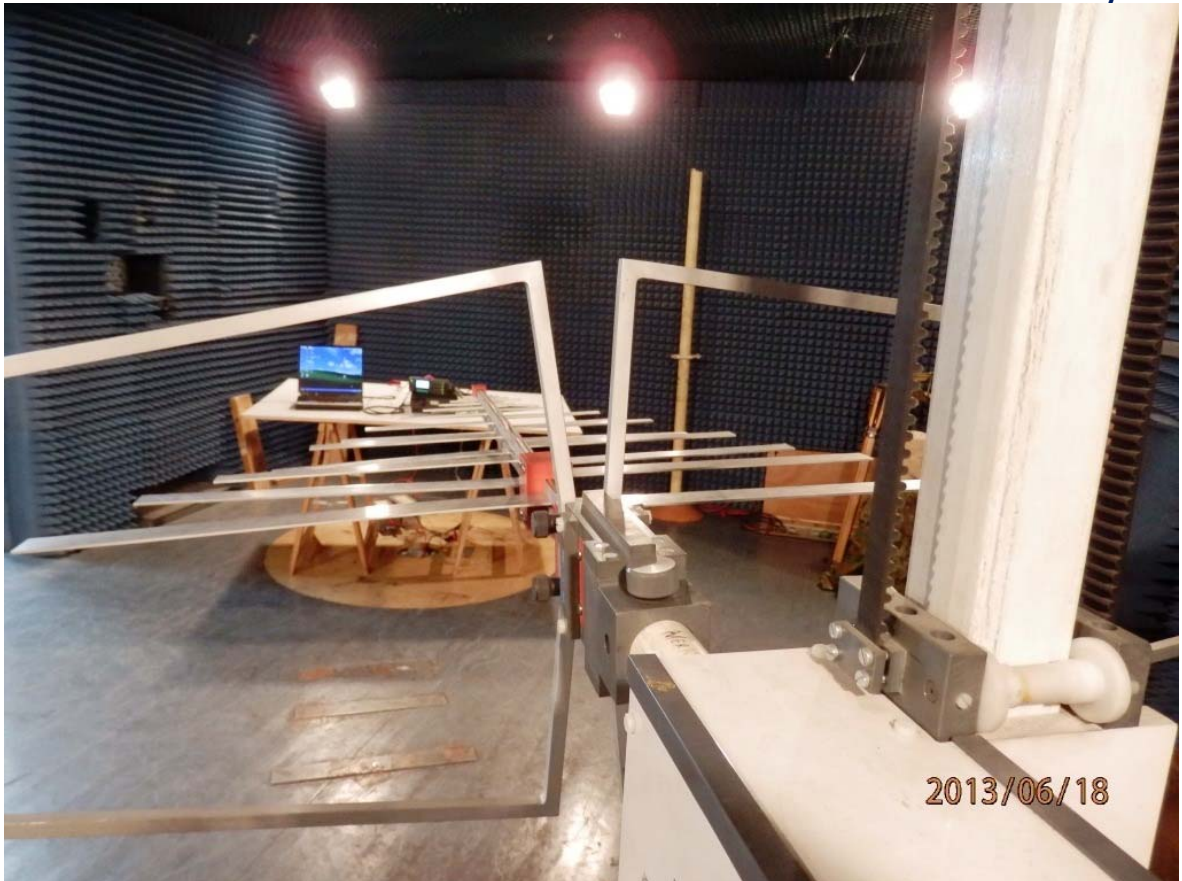
#### 13.4. Test Results

*Table 18: RX Mode 15.109*

Polarization	Frequency (MHz)	Mode Of Operation	Limit dB $\mu$ V/m	Margin (dB)	Polarity Ver/Hor	Height (m)	Pass/Fail
Vertical	30 - 1000	RX	Plot 1				Pass
Horizontal			Plot 2				Pass

#### 13.5. Test Procedure

See paragraph 14.4



*Photograph of Radiated Emission/ 1*



*Photograph of Radiated Emission/ 2*

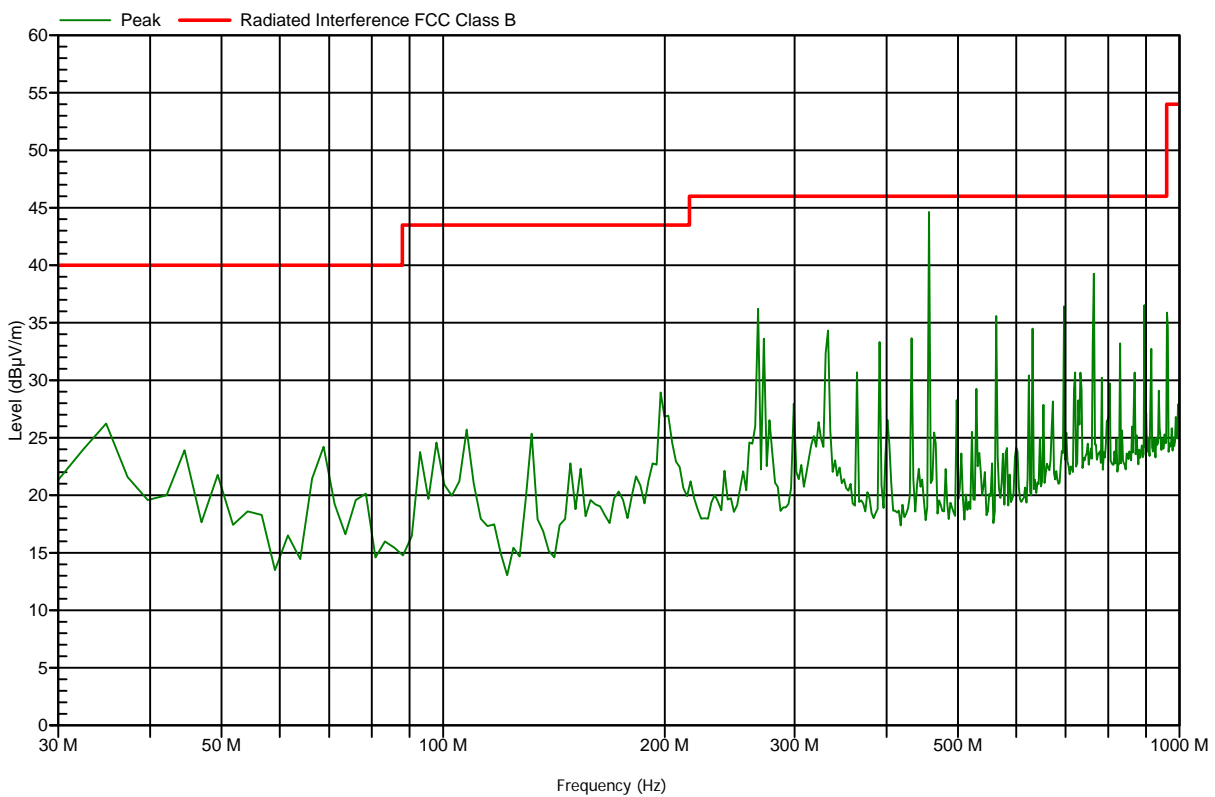
Test Results Plot No 1

FCC 30-1000 MHz RX VER

Test & EUT General Information		Receiver Setting	
EUT Name:	Micom Z Trunk	Spect. Analyzer	Hewlett Packard 7405A DC Coupling
S/N:	13B51729	Ref. Level:	90 dB $\mu$ V
Date of Test:	18.06.2013	RBW:	120 kHz
Test Engineer:	SHIMON KOZLINER	VBW:	1000 kHz
Antenna:	Frankonia gray BTA-L_B 3m	Sweep Time:	Auto [151.88 ms]
Polarization:	Vertical	Pre Amplifier	LNA 10k-1GHz 30dB

**TEST REMARKS:** Tuesday, June 18, 2013 5:57:41 PM

Rx Mode Connected To Laptop



**MAXIMUM RESULT DEVIATION:**

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

Nr	Frequency (MHz)	PK MaxHold (dB $\mu$ V/m)	QP Value (dB $\mu$ V/m)	QP Limit (dB $\mu$ V/m)	Result	Angle (degrees)	Height (m)	H/V
1	456.747	45.5	44.3	46		0	1.3	V

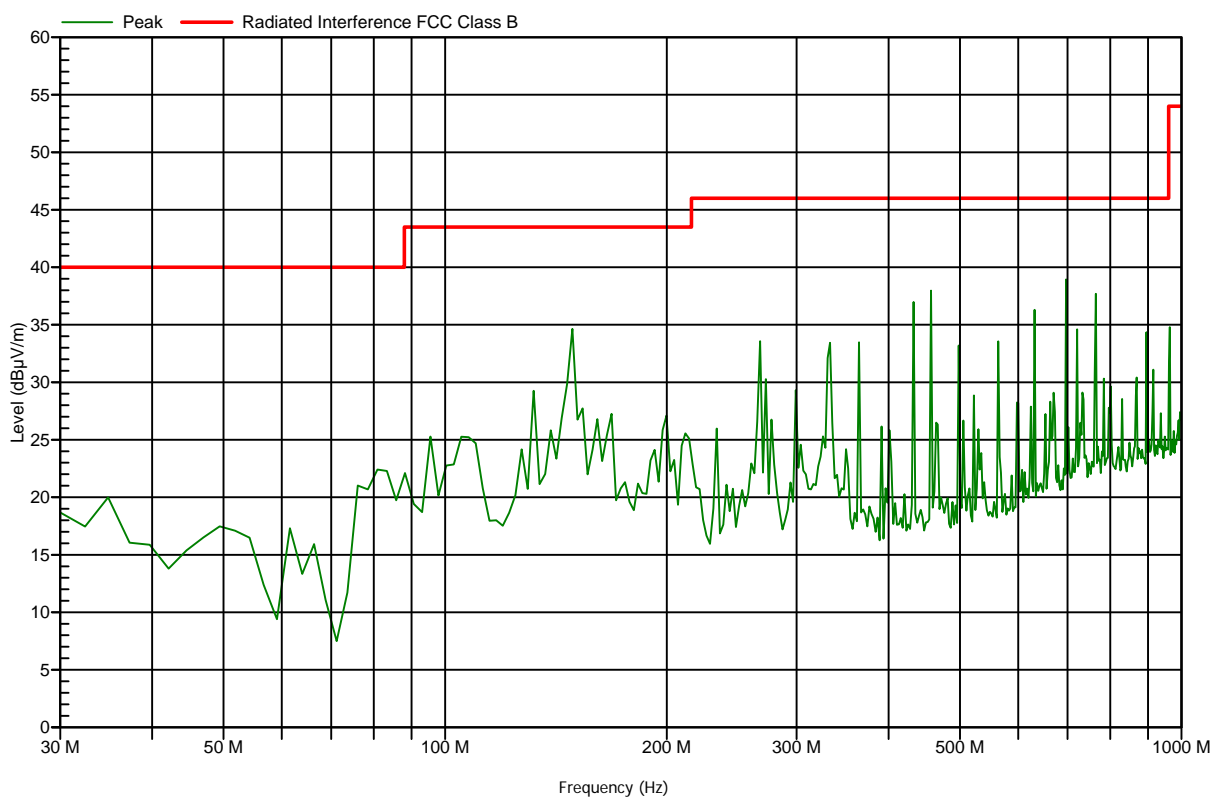
**Test Results Plot No 2**

**FCC 30-1000 MHz RX HOR**

Test & EUT General Information		Receiver Setting	
EUT Name:	Micom Z Trunk	Spect. Analyzer	Hewlett Packard 7405A DC Coupling
S/N:	13B51729	Ref. Level:	90 dB $\mu$ V
Date of Test:	18.06.2013	RBW:	120 kHz
Test Engineer:	SHIMON KOZLINER	VBW:	1000 kHz
Antenna:	Frankonia gray BTA-L_B 3m	Sweep Time:	Auto [151.88 ms]
Polarization:	Horizontal	Pre Amplifier	LNA 10k-1GHz 30dB

**TEST REMARKS:** Tuesday, June 18, 2013 5:50:48 PM

Rx Mode Connected To Laptop



**MAXIMUM RESULT DEVIATION:**

Detect all peaks above 6 dB below the limit line with a maximum of 6 peaks.

None