

## KUDD-FM4 Modification

Simmons-SLC, LS, LLC. Licensee of KUDD-FM4 is requesting a modification of licensed facility BLFTB-20031103ABU as it prepares to move its current facilities to fulfill construction permit BMPH-20140206AJU. As such the Commission is requiring a modification to bring the facility into compliance with Section 74.1232 (f). The follow is the documentation of compliance being submitted with the 302-FM application for license.

The following will demonstrate new compliance for KUDD-FM4 and will show the new operating parameters for: Spurious Emissions, Radio Frequency Radiation, Transmitter power output calculations, antenna type, model, etc.

40° 50' 5.00 " N Latitude  
111° 52' 3.00 " W Longitude (NAD 27)  
Effective Radiated Power (ERP) – 2.2KW  
AMSL – 1828m  
AGL – 19m  
Antenna tabulations (See Exhibit 5)  
Pattern Rotation: 0.0  
Antenna Model: Jampro JCPD 4H/3V-15

**Exhibit #1** demonstrates the transmitter power output for KUDD-FM4

**Exhibit #2** shows the new contour for the KUDD-FM4 within the 60 dbu contour of the main facility.

**Exhibit #3** RFR study of proposed modifications

**Exhibit #4** Spurious Emissions Report

**Exhibit #5** Antenna Tabulations

## Exhibit #1

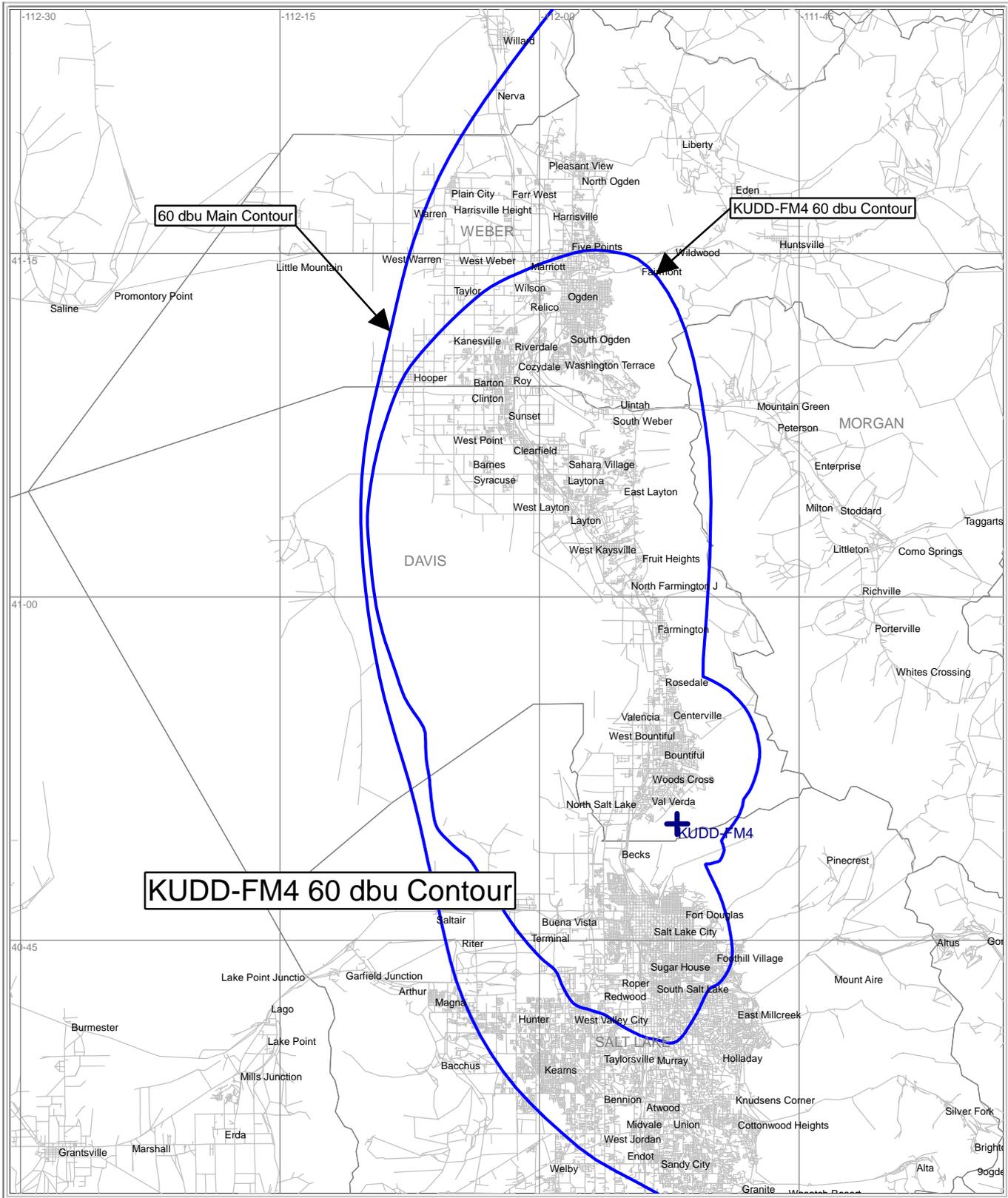
### KUDD-FM4

#### TRANSMITTER POWER CALCULATIONS

The antenna system is a directional jampro panel antenna model jcpd 4h/3v-1s with power gain of 5.25 db or (7.22 db antenna gain) being feed by 75 ft of andrew 2 heliax model hj12-50 air dielectric with losses of .142 db per 75 ft. It is connected to jampro filter/combiner model rccc-29a -0.8 with losses of .8 db that accommodate other broadcast stations being combined into one common antenna. And finally there is the system feeder which uses Andrew cable LDF4-50A into the filter system with a loss of .18 db.

To make the necessary ERP the transmitter output will be:

TX output 540 watts total losses of 1.12 db + antenna gain of 5.25 = 2.2 kw ERP



New ERP of 2.2 KW

## Exhibit #3

### Summerwood RFR Study

This Engineering Statement was prepared on behalf of Summerwood Communications Site located in Bountiful, Utah. The facility constructed is an established communication Site. The area coordinates are 40° 50' 5.00" N Latitude 111° 52' 3.00" W Longitude (NAD 27) With an AMSL of 1823 meters as this statement provides the radio frequency electromagnetic exposure measurements for the purpose of compliance for radio station booster KUDD-FM4 107.9 FM and was conducted in accordance of the FCC Guidelines (OET Bulletin No. 65 edition 97-01 August 1997) Radiofrequency Electromagnetic Exposure.

A radiofrequency electromagnetic field survey was completed in the vicinity of this single tower site know as Summerwood, as detailed in this document, it ensures radiofrequency exposures do not exceed the FCC guidelines for human exposure to RF fields.

On the evening of March 20<sup>th</sup>, 2014 using a Narda SRM-3000 narrow band radiofrequency measurement test set with a 300 KHz–3 GHz three axis probe designed for E-field measurements, the meter was set to “Safety Evaluation mode” this function allows for a summary analysis of the site and is divided into nine frequency ranges that are labeled and measured. With the meter set to a “MAX AVERAGE” this allowed for a “worse case scenario”. 30 measurements were conducted at various locations from 5 to 150 feet. The following is the RF percentage table of the FCC Occupational.

- FM Radio 3.23%
- TV channels 7-13 .213%
- TV channels 14-69 .179%
- SMR tx 0.005%
- AMPS tx 0.0089%
- ESMR 0.0282%
- GSM Tx 0.0097%
- PCS Tx 0.019%
- Others 1.53%
- Total 5.208%**

After completion of the “Safety Evaluation” the meter was then set to analyzer mode and scanned for the highest RF emitter. Measurements commenced around the tower to look for any “Hot Spots” that may cause concern. All measurements were made using the percentage table of the FCC General Population (OET Bulletin No. 65 edition 97-01 August 1997) a table of the measurements with the high RF signals is noted: NONE

The radiofrequency environment at Summerwood is considered an occupational/controlled environment. This is a remote mountain top site at 1823 meters above mean sea level. The area is

off limits to the general public and is protected by 2 lower gates at the road entry. The locked gates prevent general public from accessing the site. Additionally, the access road is not serviceable during 6 months of the year due to deep snow base. A snow vehicle or helicopter is required to access the site during that time of the year. No general public resides within several thousand feet of the site. Warning signs are posted in accordance to FCC rules and regulations. The measurements made do not exceed Limits for Maximum permissible exposure (MPE) Summerwood can be considered a controlled radiofrequency environment.

I Scot Mathews preformed the radiofrequency field survey. A Narda SRM-3000 narrow band radiofrequency measurement test set with a 300 KHz–3 GHz three axis probe designed for E-field measurements was employed. Manufacturer calibration is in accordance to the device and operates correctly. I also state that the Guidelines for human exposure to RF field measurements of the FCC Guidelines (OET Bulletin No. 65 edition 97-01 August 1997) taken with Narda Model SRM-3000 with current calibration on the 22<sup>nd</sup> day of March 2014 are true and accurate to the best of my knowledge.

Respectfully Submitted,

A handwritten signature in black ink that reads "Scot W. Mathews". The signature is written in a cursive, flowing style.

Scot Mathews  
Contract Engineer

# **KUDD-FM4 107.9 FM**

## **Spurious Emissions Report**

On the evening of March 21<sup>st</sup> 2014, equipment performance measurements were made on behalf of radio station KUDD-FM4 107.9 FM Bountiful, Utah. These measurements were made as a condition of the Construction Permit File Number BMPH-20140206AJU.

KUDD-FM4 is one of eight stations sharing a master antenna system at the Summer Wood transmitter site on Bountiful bench, north of Salt Lake City, Utah. The outputs of the eight stations are combined using a constant impedance balanced band pass filter combining system Model RCCC.08 designed and fabricated by Jampro Antenna, Inc.

Measurements were made while all stations were broadcasting program material typical to its daily operation. KUDD-FM4 operates stereophonically and has no subsidiary communications services. All stations were operating into the combined antenna system at the full permitted power during the measurements.

Section 73.317 (b) and (c) require that all signals between 120 and 240 kHz removed from the carrier be attenuated below the level of the carrier by at least 25 dB, all signals between 240 kHz and 600 kHz removed from the carrier be attenuated by at least 35 dB below the level of the carrier, and that all signals greater than 600 kHz removed from the carrier be attenuated by at least 80 dB below the level of the carrier.

In the case of the KUDD-FM4 transmission system, the measurement equipment was fed by a directional coupler at the combined output. Measurements were made on the station's carrier frequency for reference purposes and to look at occupied bandwidth for any spurious emissions. The calibration of the IFR AN940 Serial Number 1009 spectrum analyzer was used to make all measurements. The assigned carrier frequency level was recorded. All other harmonic intermodulation product or spurious emission levels were referenced to this initial carrier frequency reference level. The radio spectrum from 50 MHz up to the stations 10th carrier frequency harmonic was tuned to look for any unusual emissions. (See exhibits)

The intermodulation products measured in this report were calculated as the common  $2 \times A - B =$  intermodulation product. As in the case herein the carrier frequency of the station under test was multiplied times 2 and then the carrier frequency of the each of the combined individual stations was subtracted one at a time from the 2X sum to find the common intermodulation product.

No unusual spurious emissions, carrier frequency harmonics or intermodulation products were noted on the main transmission system for station KUDD-FM4 107.9(FM).

With regards to the KUDD-FM4 transmission system, I believe that the station is in compliance with the requirements of Section 73.317. This report was prepared by me and is based on measurements made by myself. I believe them to be true and accurate to the best of my knowledge.

Respectfully Submitted,

A handwritten signature in black ink that reads "Scot W. Mathews". The signature is written in a cursive, flowing style.

Scot Mathews  
Consulting Engineer

# Spurious Emissions

AN940

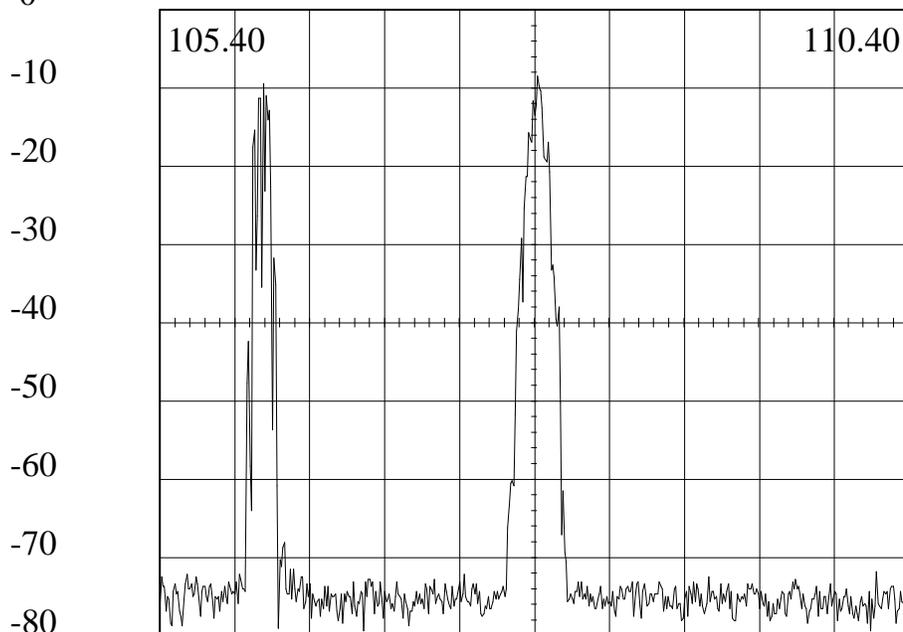
Serial # 1009

dBm  
0  
kHz/Div

107.90  
MHz

9  
kHz Res

107.9 w/ Mod  
03/20/2014 22:29:52



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 107.9251

Peak Level: -8.47

# Spurious Emissions

AN940

Serial # 1009

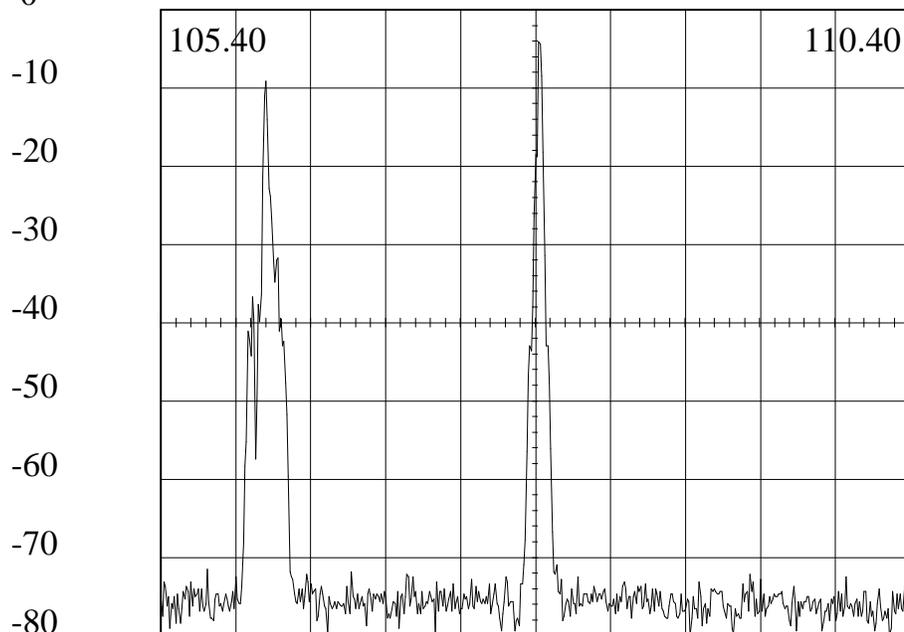
500.0  
kHz/Div

107.90  
MHz

9  
kHz Res

107.9 without Mod  
03/20/2014 22:37:07

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 107.9251

Peak Level: -4.08

# Spurious Emissions

AN940

Serial # 1009

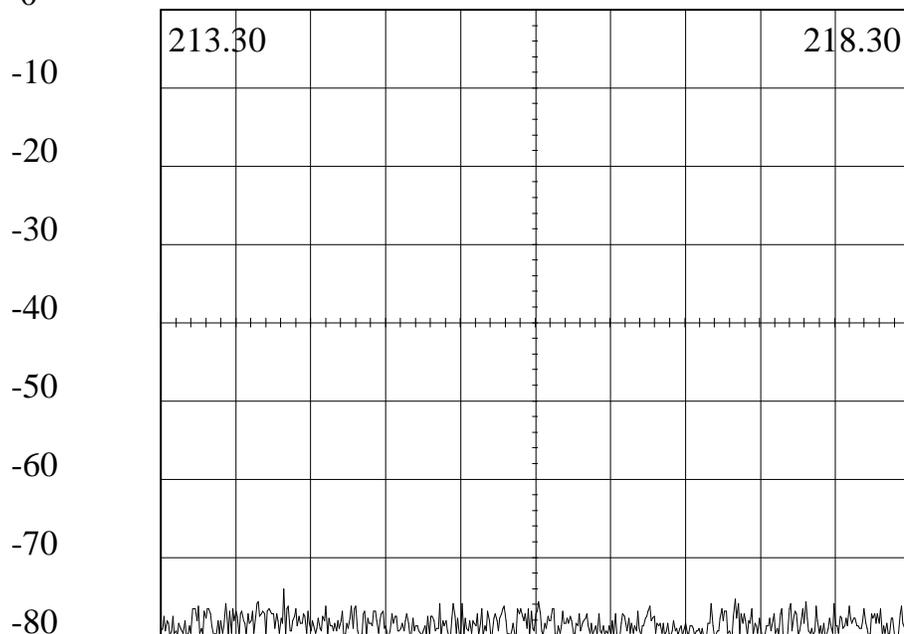
500.0  
kHz/Div

215.80  
MHz

9  
kHz Res

107.9 2nd Harmonic  
03/20/2014 22:37:59

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 214.1216

Peak Level: -74.04

# Spurious Emissions

AN940

Serial # 1009

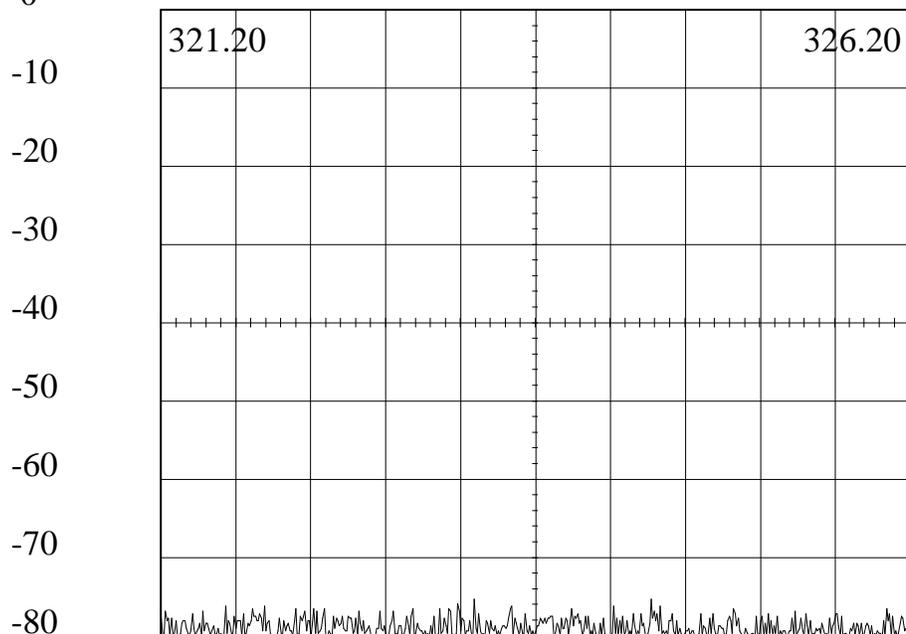
500.0  
kHz/Div

323.70  
MHz

9  
kHz Res

107.9 3rd Harmonic  
03/20/2014 22:39:03

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 323.2942

Peak Level: -75.29

# Spurious Emissions

AN940

Serial # 1009

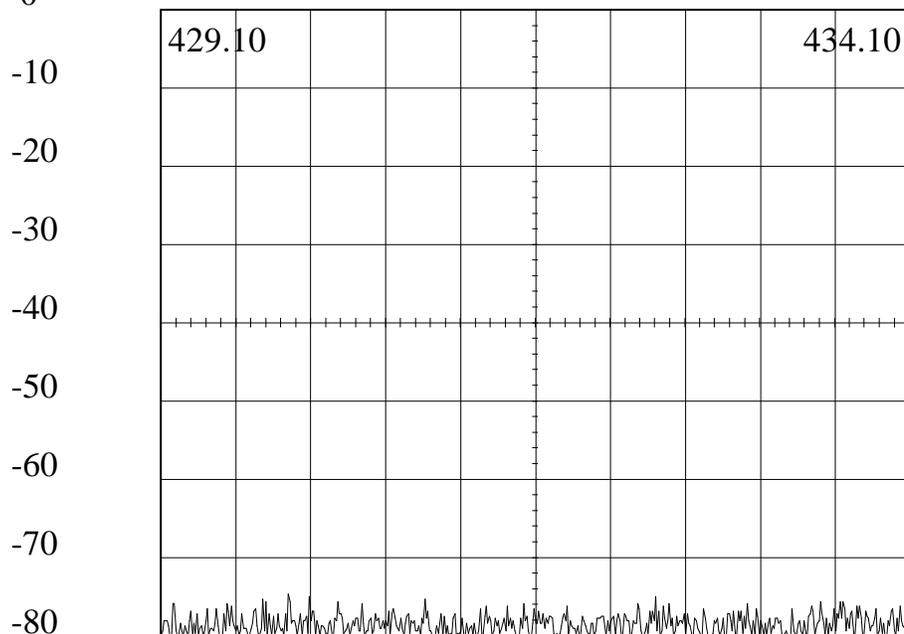
500.0  
kHz/Div

431.60  
MHz

9  
kHz Res

107.9 4th Harmonic  
03/20/2014 22:40:03

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 429.9517

Peak Level: -74.67

# Spurious Emissions

AN940

Serial # 1009

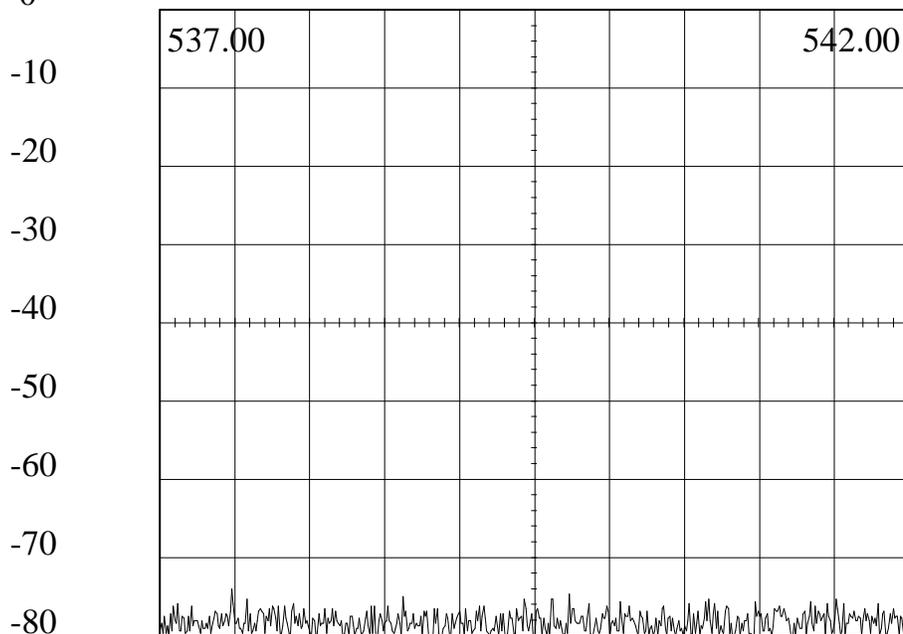
500.0  
kHz/Div

539.50  
MHz

9  
kHz Res

107.9 5th Harmonic  
03/20/2014 22:40:53

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 537.481

Peak Level: -74.04

# Spurious Emissions

AN940

Serial # 1009

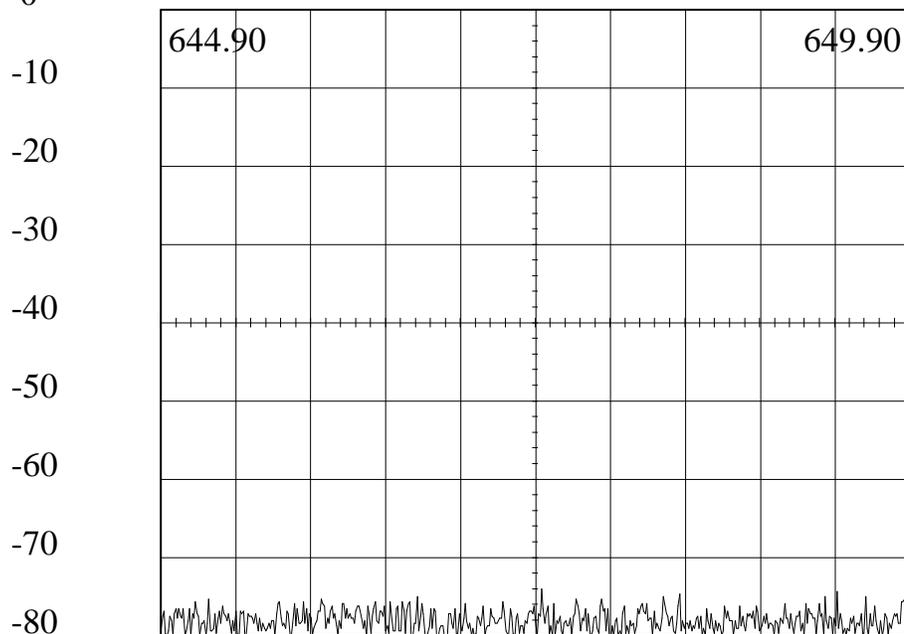
500.0  
kHz/Div

647.40  
MHz

9  
kHz Res

107.9 6th Harmonic  
03/20/2014 22:41:32

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 647.4451

Peak Level: -74.04

# Spurious Emissions

AN940

Serial # 1009

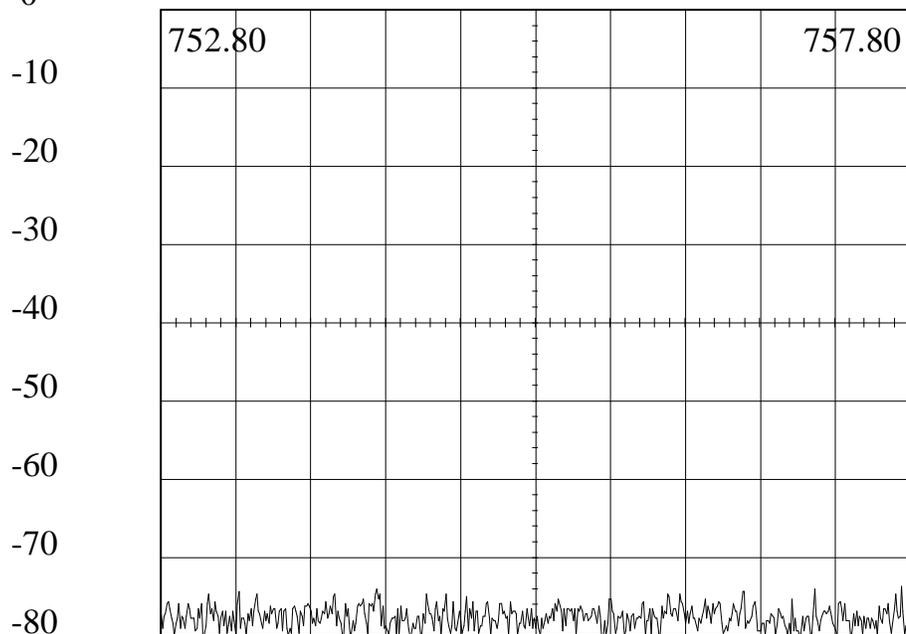
500.0  
kHz/Div

755.30  
MHz

9  
kHz Res

107.9 7th Harmonic  
03/20/2014 22:43:06

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 757.7499

Peak Level: -73.73

# Spurious Emissions

AN940

Serial # 1009

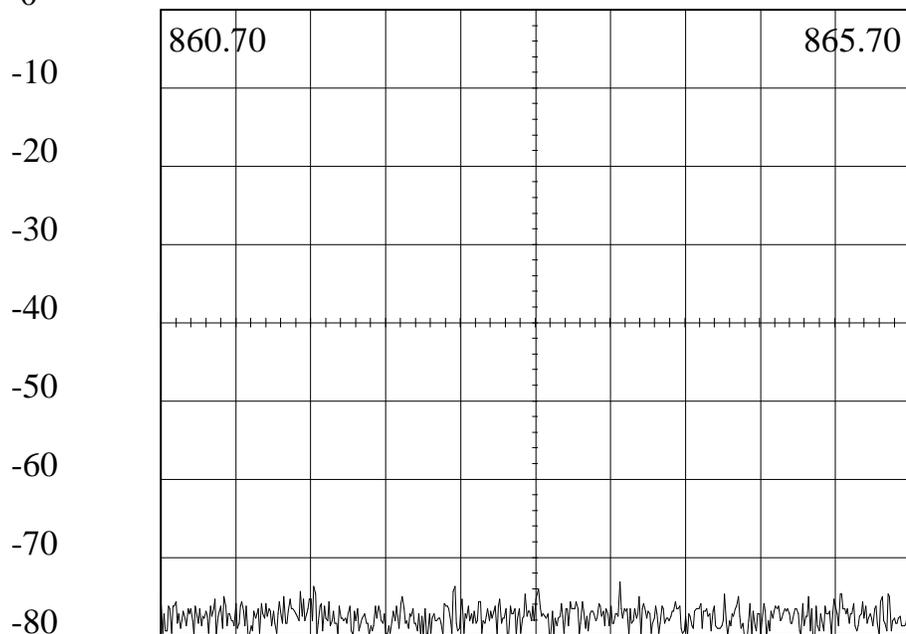
500.0  
kHz/Div

863.20  
MHz

9  
kHz Res

107.9 8th Harmonic  
03/20/2014 22:43:42

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 863.7661

Peak Level: -73.1

# Spurious Emissions

AN940

Serial # 1009

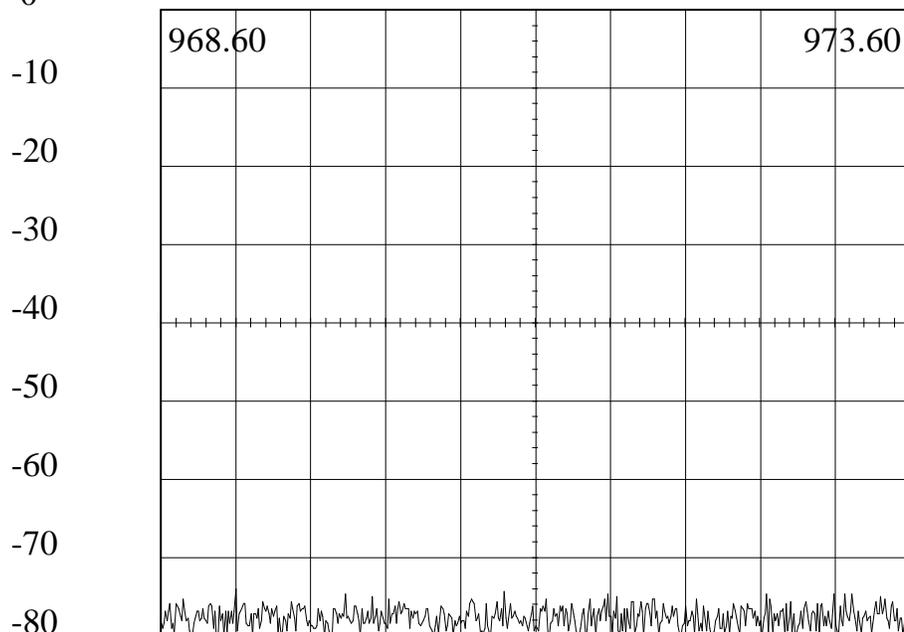
500.0  
kHz/Div

971.10  
MHz

9  
kHz Res

107.9 9th Harmonic  
03/20/2014 22:44:49

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 969.101

Peak Level: -74.04

# Spurious Emissions

AN940

Serial # 1009

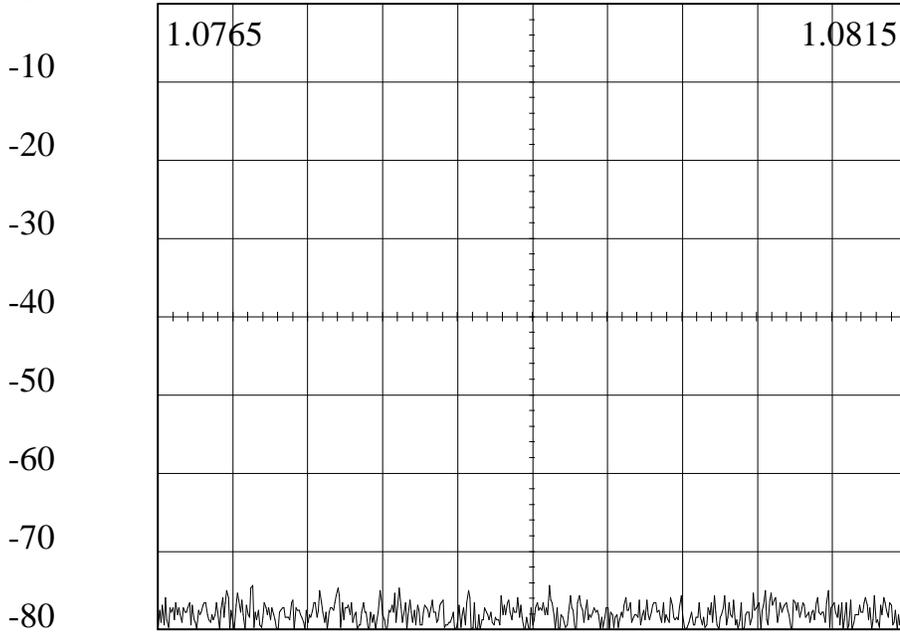
500.0  
kHz/Div

1.079  
GHz

9  
kHz Res

107.9 10th Harmonic  
03/20/2014 22:45:35

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 1077.1313

Peak Level: -74.35

# Spurious Emissions

AN940

Serial # 1009

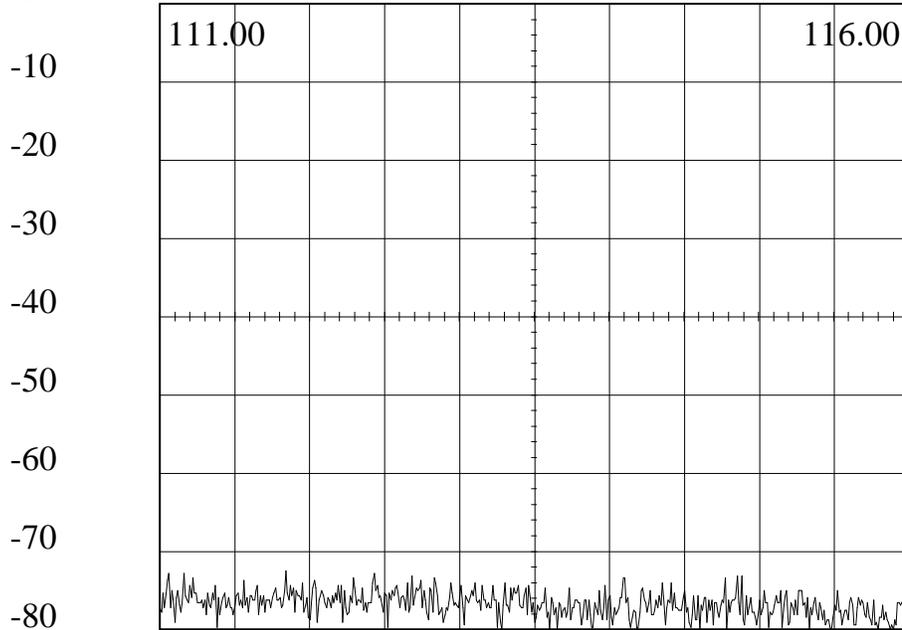
500.0  
kHz/Div

113.50  
MHz

9  
kHz Res

107.9 IM with 102.3  
03/20/2014 22:53:49

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 111.8417

Peak Level: -72.47

# Spurious Emissions

AN940

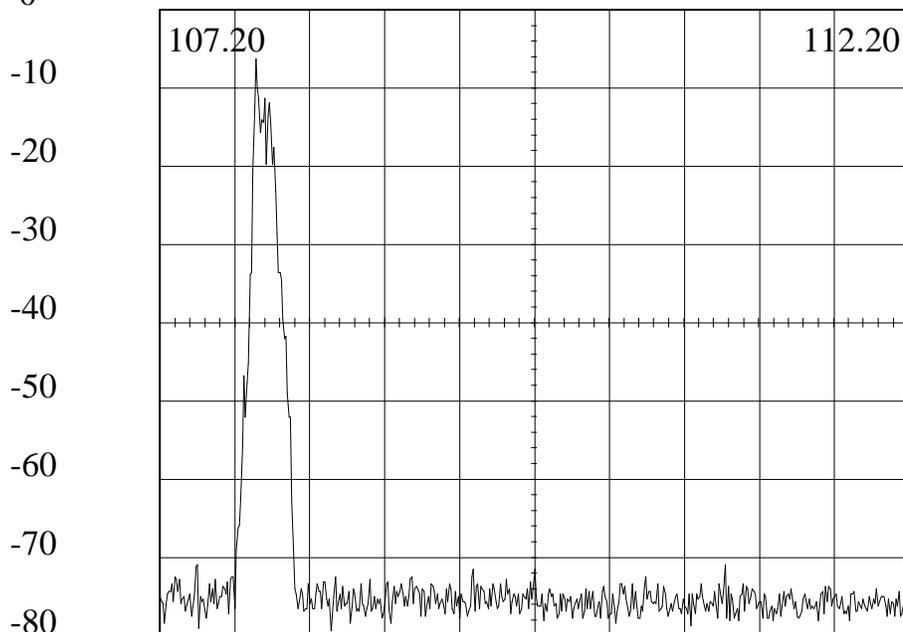
Serial # 1009

500.0  
kHz/Div

109.70  
MHz

9  
kHz Res

107.9 IM with 106.1  
03/20/2014 22:55:07



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 107.8413

Peak Level: -6.27

# Spurious Emissions

AN940

Serial # 1009

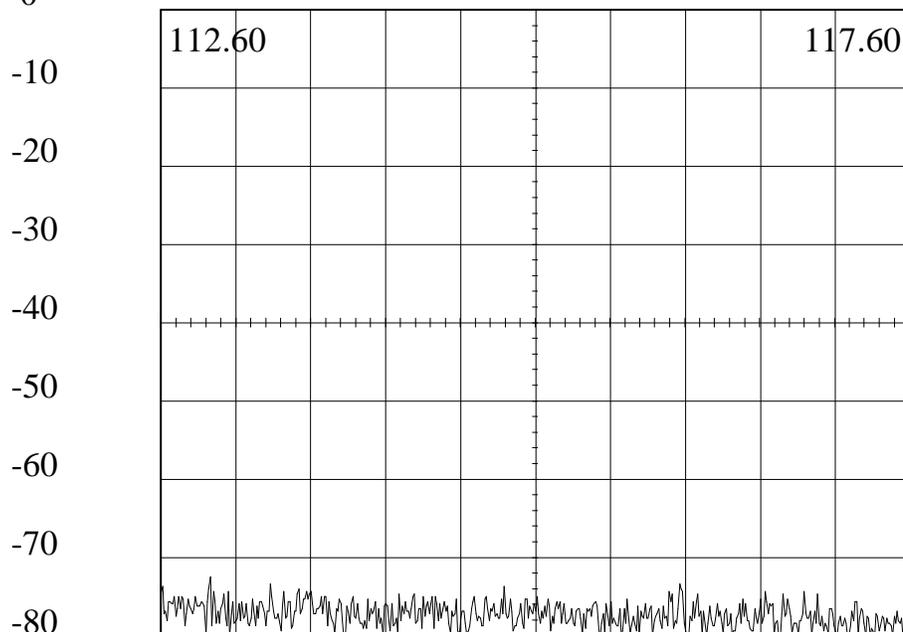
500.0  
kHz/Div

115.10  
MHz

9  
kHz Res

107.9 IM with 100.7  
03/20/2014 22:49:41

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 112.9307

Peak Level: -72.47

# Spurious Emissions

AN940

Serial # 1009

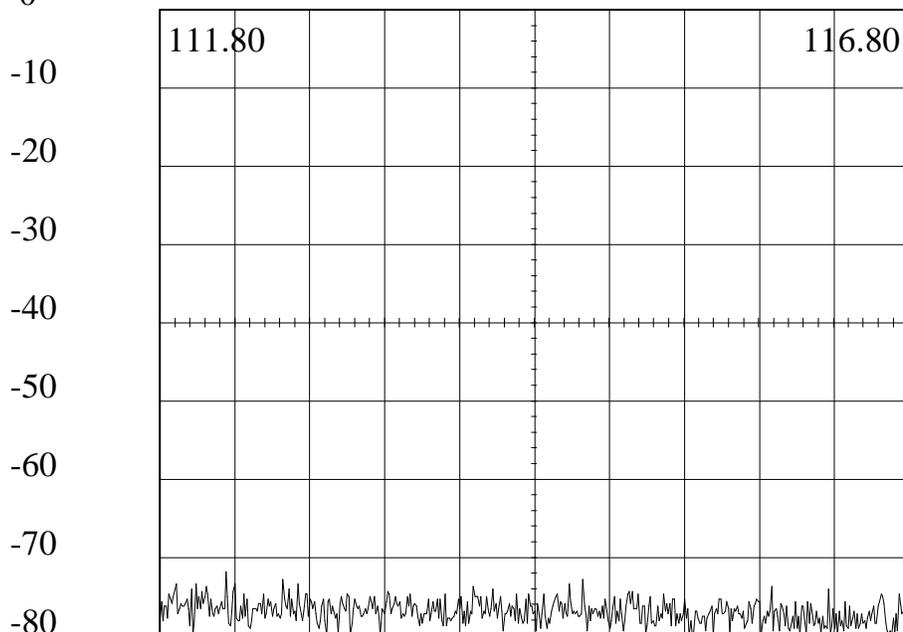
dBm  
0

500.0  
kHz/Div

114.30  
MHz

9  
kHz Res

107.9 IM with 101.5  
03/20/2014 22:50:32



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 112.2409

Peak Level: -71.84

# Spurious Emissions

AN940

Serial # 1009

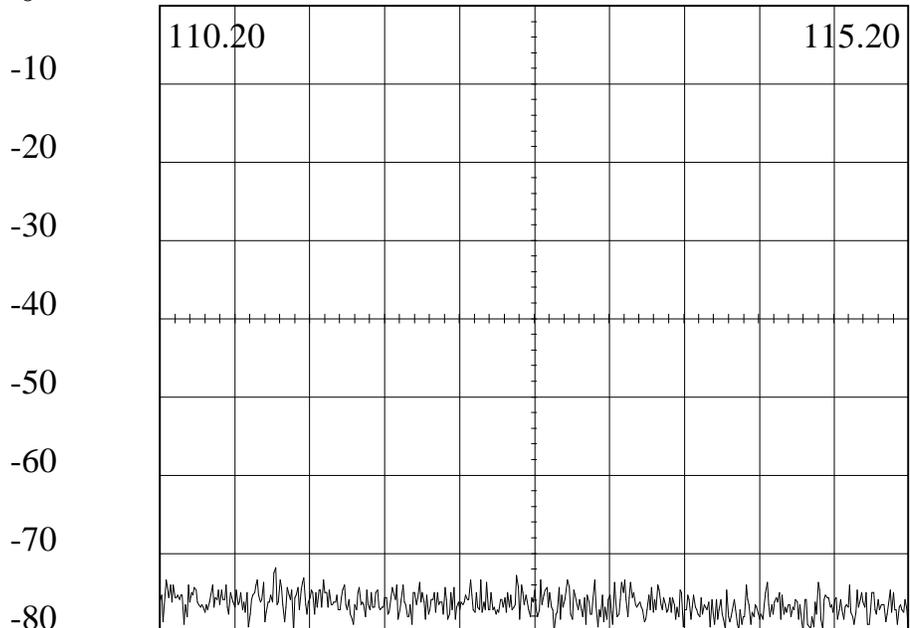
500.0  
kHz/Div

112.70  
MHz

9  
kHz Res

107.9 IM with 103.1  
03/20/2014 22:51:28

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 110.9715

Peak Level: -71.84

# Spurious Emissions

AN940

Serial # 1009

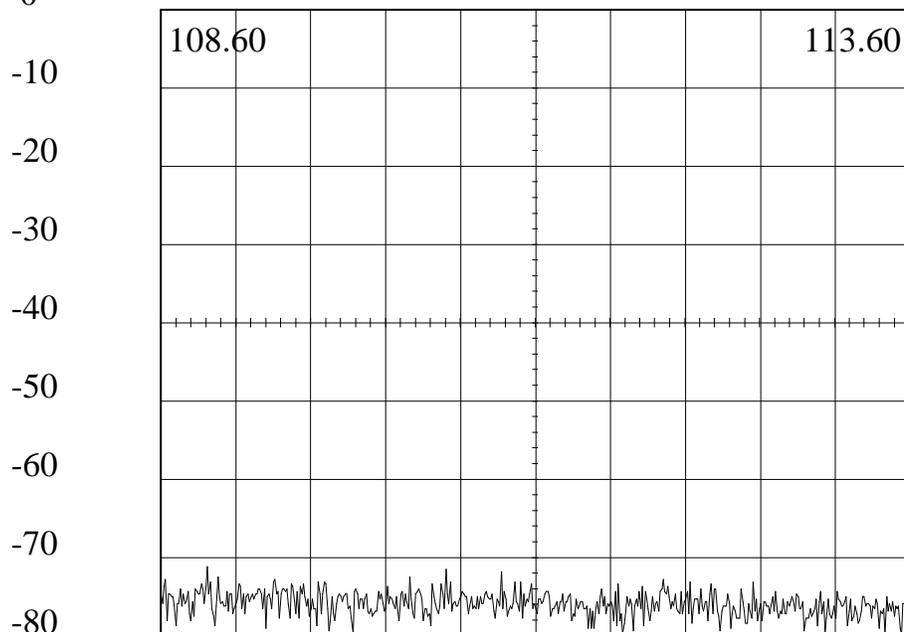
500.0  
kHz/Div

111.10  
MHz

9  
kHz Res

107.9 IM with 104.7  
03/20/2014 22:52:24

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

Peak Freq: 108.9106

Peak Level: -71.22

# Spurious Emissions

AN940

Serial # 1009

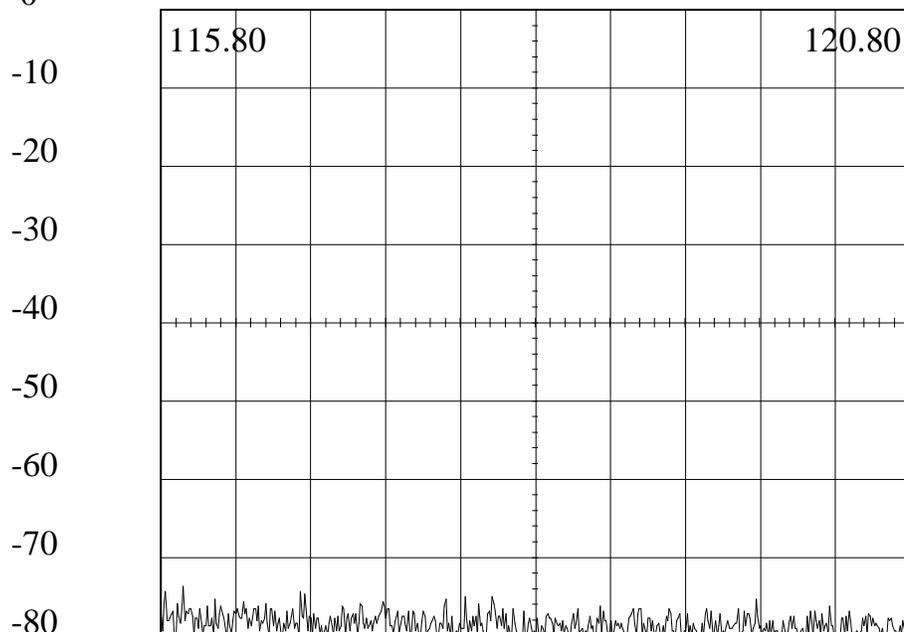
500.0  
kHz/Div

118.30  
MHz

9  
kHz Res

107.9 IM with 97.5  
03/20/2014 22:53:01

dBm  
0



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

Video Filter: 1 kHz

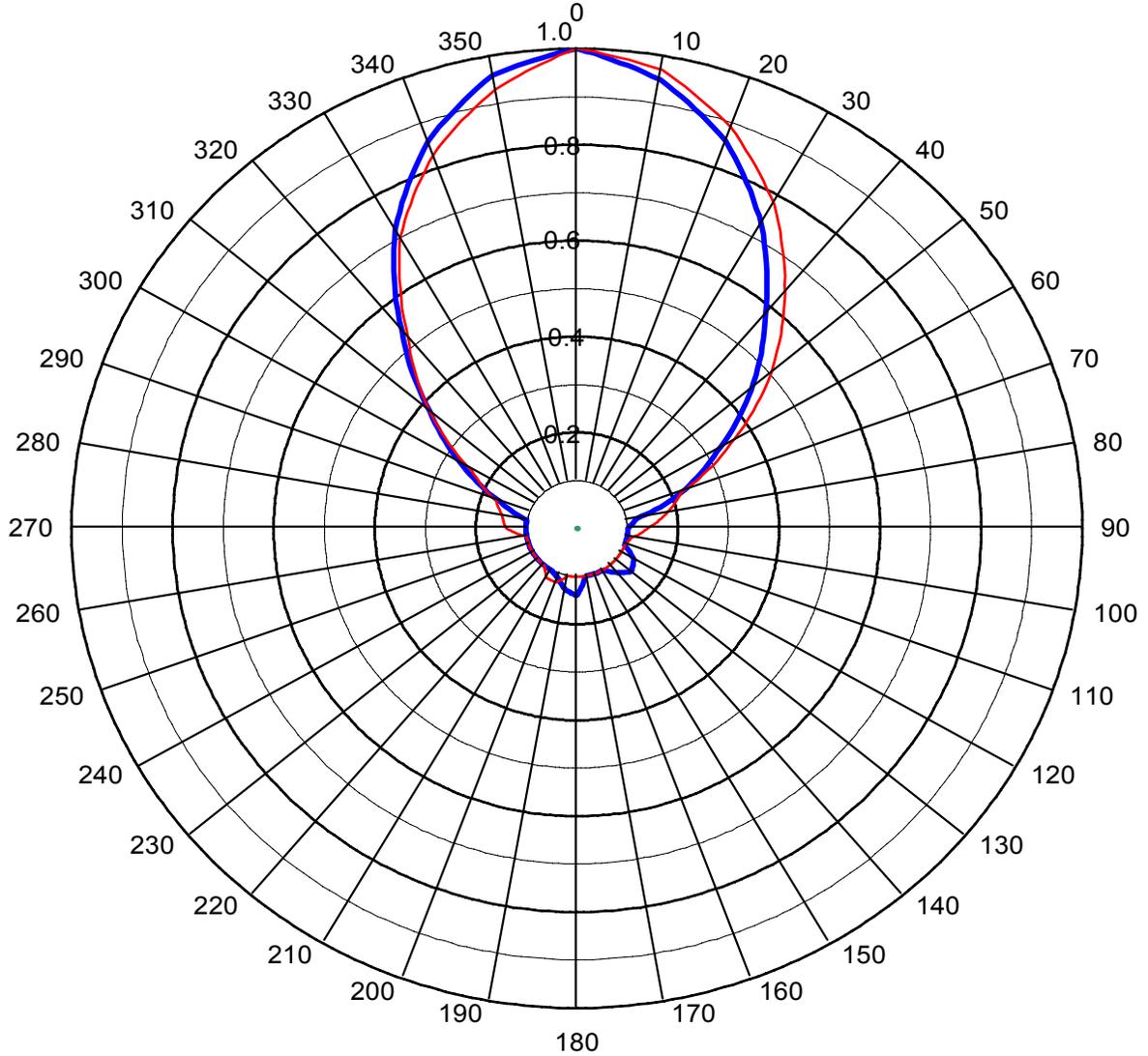
Peak Freq: 115.9503

Peak Level: -73.73



6340 Sky Creek Drive  
Sacramento, California 95828 USA

Telephone (916) 383-1177  
Fax (916) 383-1182



Millcreek Broadcasting / Simmons Media



JCPD 4H/3V - 1S



Booster Panel Antenna



Power Gain = 5.25

Gain = 7.2 dB



6340 Sky Creek Drive  
Sacramento, California 95828 USA

Telephone (916) 383-1177  
Fax (916) 383-1182

<u>AZIMUTH</u>	<u>HPOL</u>	<u>VPOL</u>	<u>AZIMUTH</u>	<u>HPOL</u>	<u>VPOL</u>
0	1.000	1.000	180	0.140	0.100
10	0.950	0.970	190	0.130	0.100
20	0.860	0.890	200	0.110	0.120
30	0.730	0.780	210	0.100	0.120
40	0.580	0.640	220	0.100	0.100
50	0.450	0.500	230	0.100	0.100
60	0.320	0.350	240	0.100	0.100
70	0.220	0.220	250	0.100	0.100
80	0.120	0.180	260	0.100	0.110
90	0.100	0.140	270	0.100	0.140
100	0.100	0.110	280	0.100	0.150
110	0.100	0.100	290	0.160	0.170
120	0.130	0.100	300	0.260	0.240
130	0.140	0.100	310	0.380	0.380
140	0.120	0.100	320	0.540	0.520
150	0.100	0.100	330	0.720	0.700
160	0.100	0.100	340	0.860	0.830
170	0.100	0.100	350	0.960	0.930