

KUDD 107.9 FM

Spurious Emissions Report

On the morning of February 21st 2014, I made equipment performance measurements on behalf of radio station KUDD 107.9 FM Woodruff, Utah. These measurements were made as a condition of the Construction Permit File Number BMPH-20140206AJU.

KUDD is one of nine stations sharing a master antenna system at the Humpy Peak transmitter site in the Uinta Mountains, south of Evanston, WY. The outputs of the nine stations are combined using a constant impedance balanced band pass filter combining system Model 2540 designed and fabricated by Shively Labs of Bridgeton, ME.

Measurements were made while all stations were broadcasting program material typical to its daily operation. KUDD 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 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 $2X A - B =$ 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 107.9(FM).

With regards to the KUDD 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 with a large initial 'S'.

Scot Mathews
Consulting Engineer

Spurious Emissions

AN940

Serial # 1009

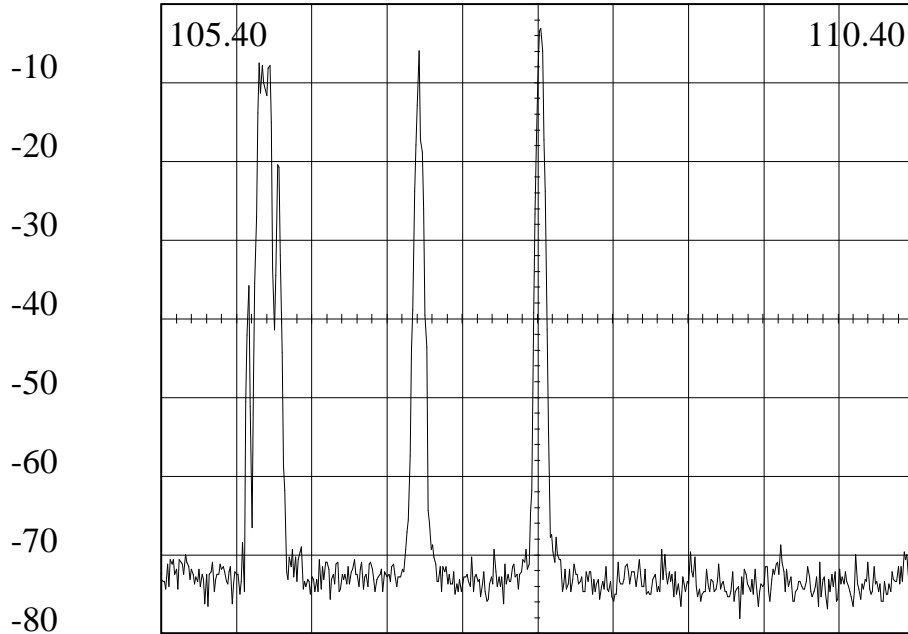
dBm
0

500.0
kHz/Div

107.90
MHz

9
kHz Res

107.9 w/o Mod
02/21/2014 11:32:14



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

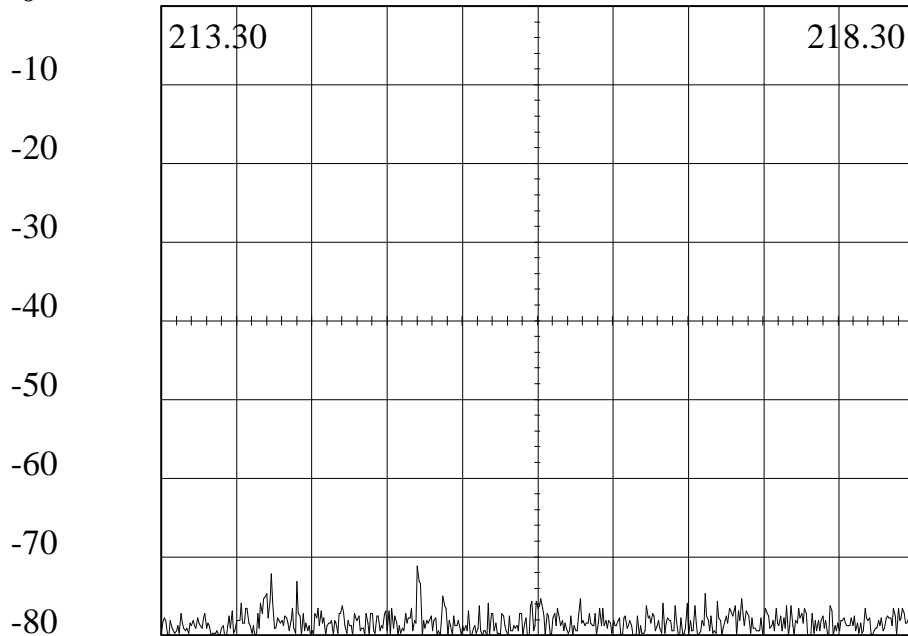
Video Filter: 1 kHz

Peak Freq: 107.9251

Peak Level: -3.14

Spurious Emissions

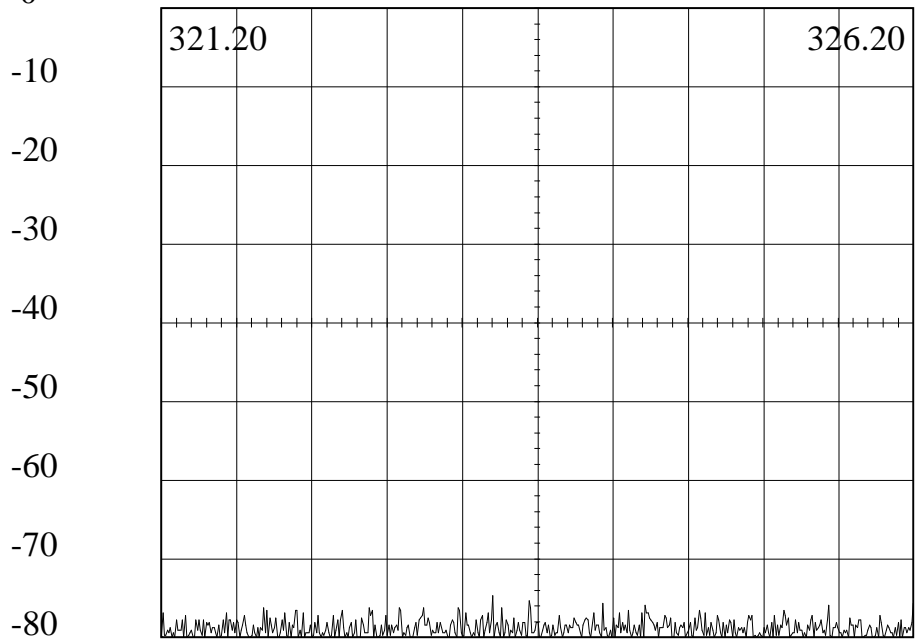
AN940 Serial # 1009
500.0 215.80 9 107.9 2nd Harmonic
kHz/Div MHz kHz Res 02/21/2014 11:34:33



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 215.0034 Peak Level: -71.22

Spurious Emissions

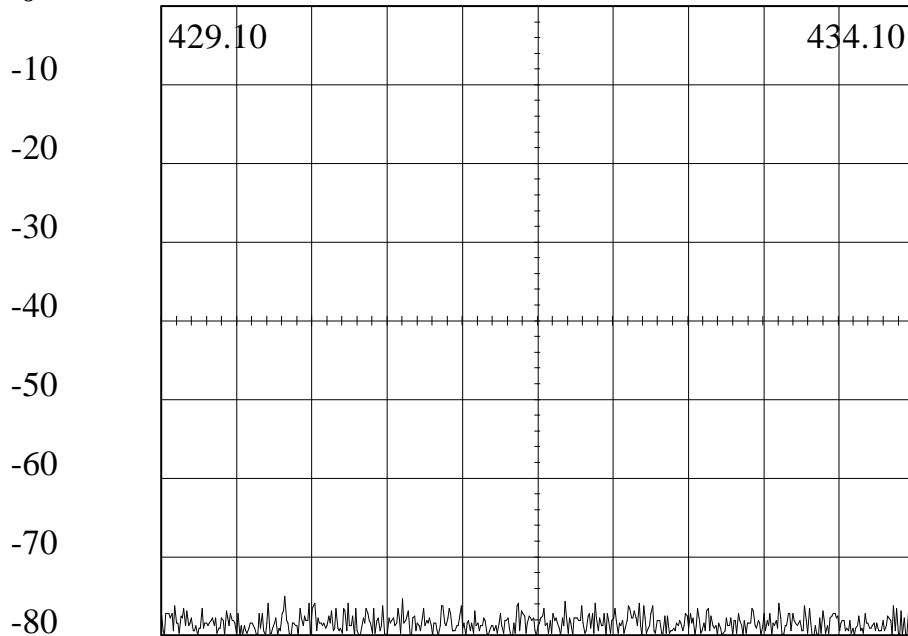
AN940 Serial # 1009
500.0 323.70 9 107.9 3rd Harmonic
kHz/Div MHz kHz Res 02/21/2014 11:36:19



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 323.4044 Peak Level: -74.67

Spurious Emissions

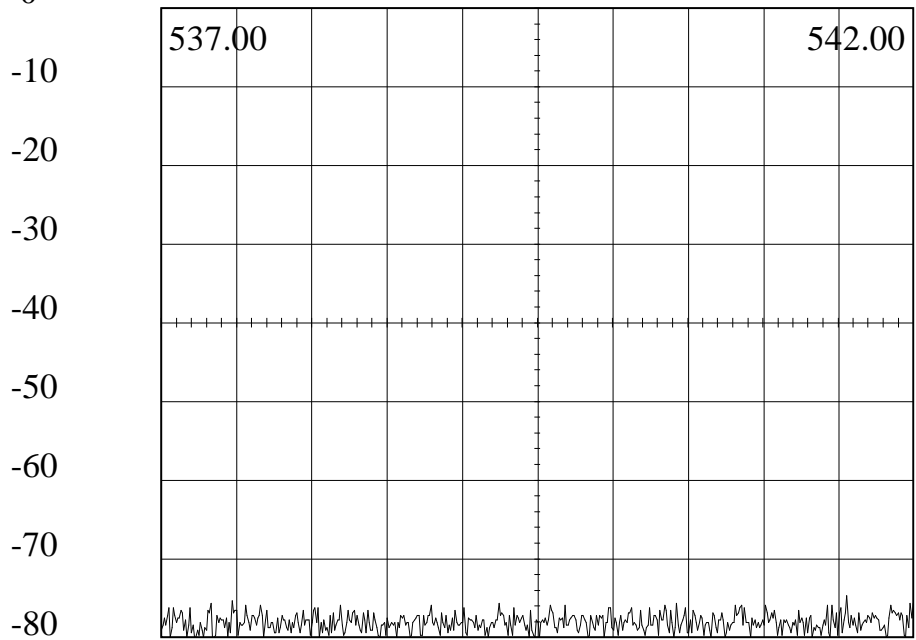
AN940 Serial # 1009
500.0 431.60 9 107.9 4th Harmonic
kHz/Div MHz kHz Res 02/21/2014 11:37:53



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 429.9216 Peak Level: -74.98

Spurious Emissions

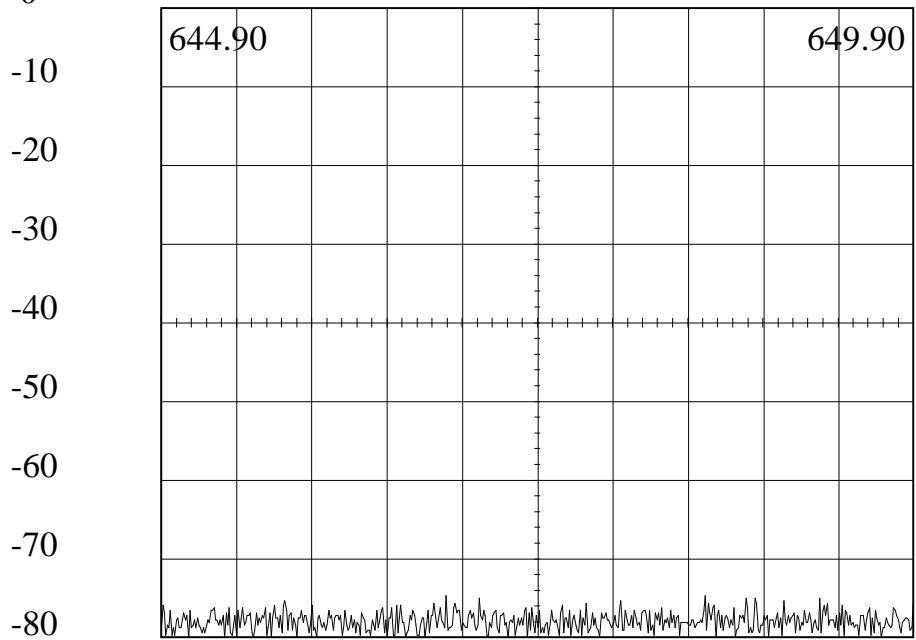
AN940 Serial # 1009
 500.0 539.50 9 107.9 5th Harmonic
 kHz/Div MHz kHz Res 02/21/2014 11:38:45



30 dB Attn Gen --- dBm 50 mSecs
 0 dB IF Gain Video Filter: 1 kHz
 Peak Freq: 541.5591 Peak Level: -74.67

Spurious Emissions

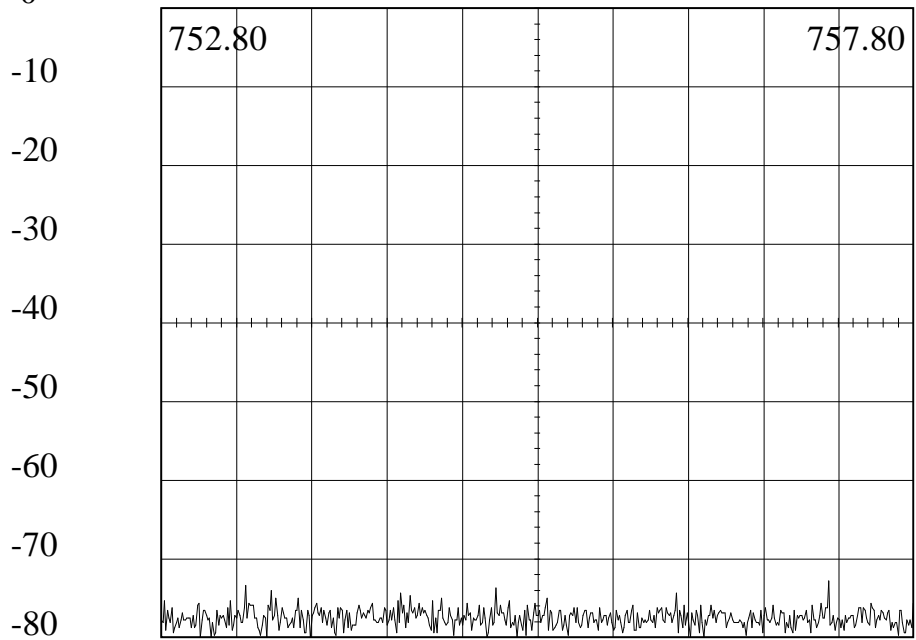
AN940 Serial # 1009
500.0 647.40 9 107.9 6th Harmonic
kHz/Div MHz kHz Res 02/21/2014 11:39:14



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 646.7938 Peak Level: -74.67

Spurious Emissions

AN940 Serial # 1009
500.0 755.30 9 107.9 7th Harmonic
kHz/Div MHz kHz Res 02/21/2014 11:40:24



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 757.2389 Peak Level: -72.78

Spurious Emissions

AN940

Serial # 1009

500.0

863.20

9

107.9 8th Harmonic

kHz/Div

MHz

kHz Res

02/21/2014 11:41:19

dBm
0

-10

-20

-30

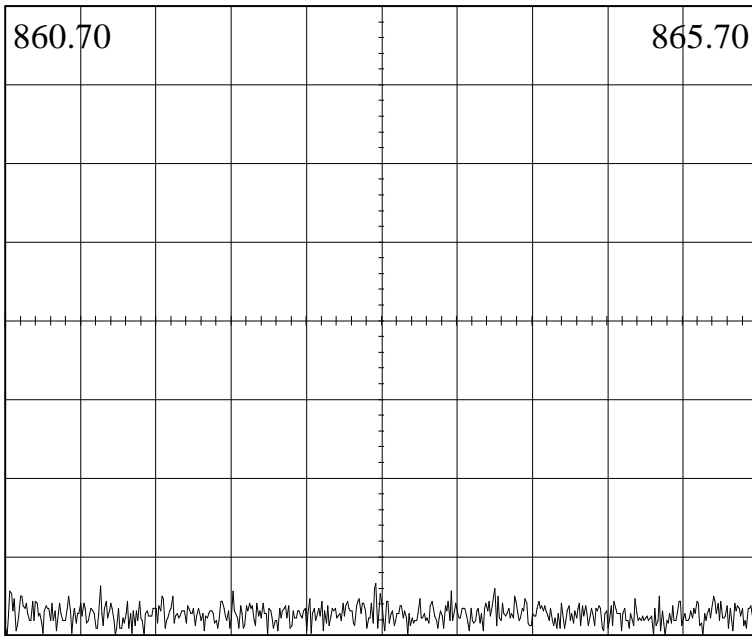
-40

-50

-60

-70

-80



30 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

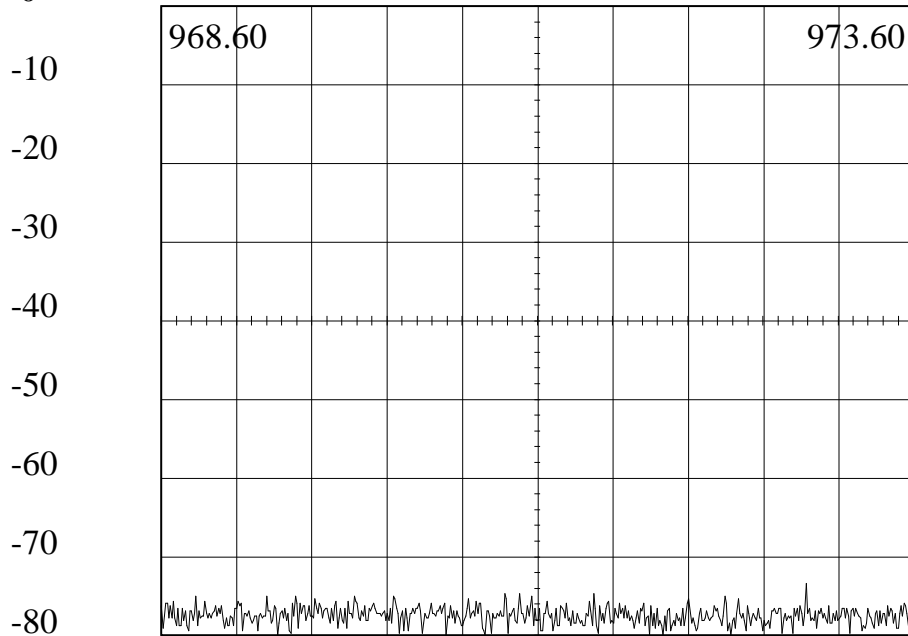
Video Filter: 1 kHz

Peak Freq: 863.1649

Peak Level: -73.41

Spurious Emissions

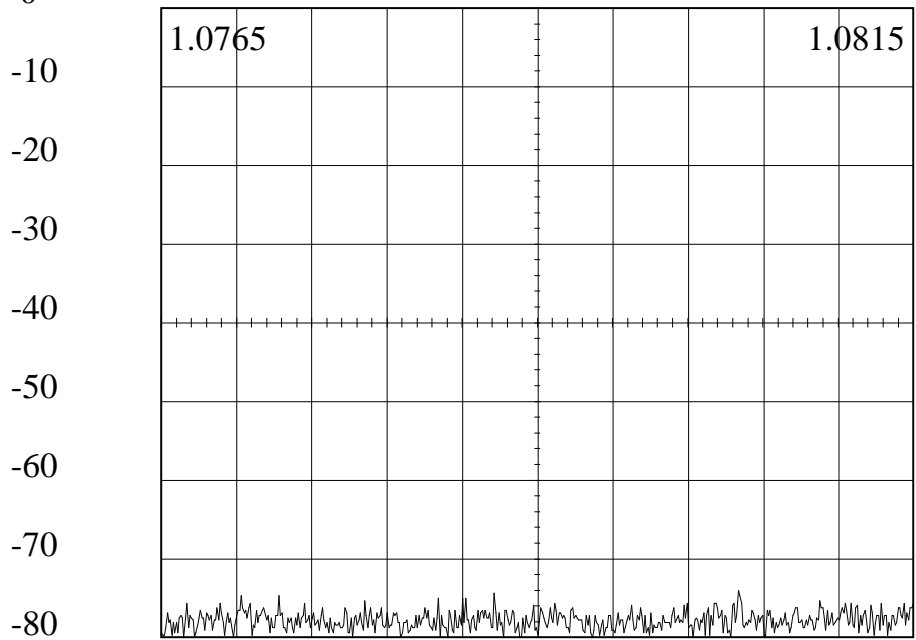
AN940 Serial # 1009
500.0 971.10 9 107.9 9th Harmonic
kHz/Div MHz kHz Res 02/21/2014 11:41:59



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 972.8886 Peak Level: -73.41

Spurious Emissions

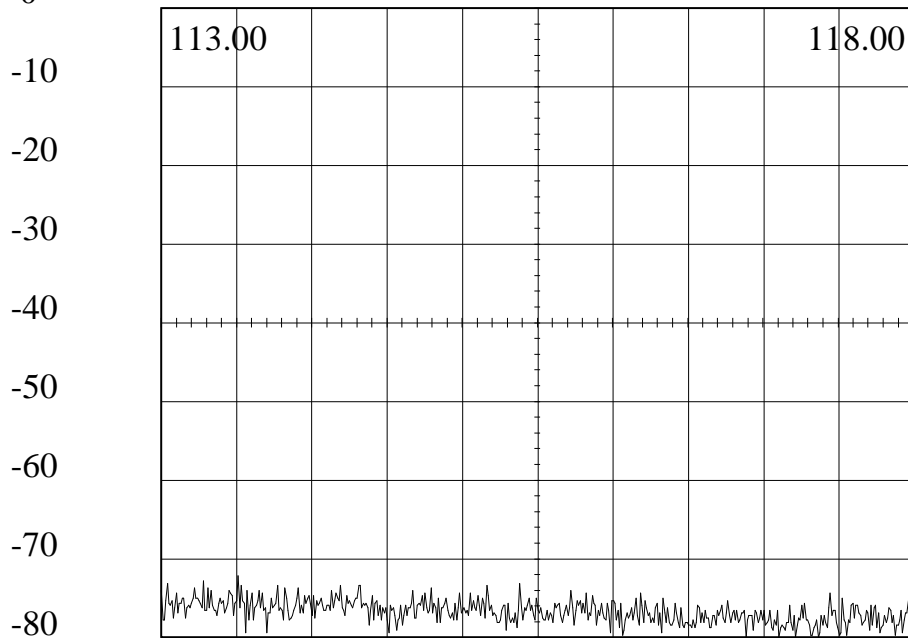
AN940 Serial # 1009
500.0 1.079 9 107.9 10th Harmonic
kHz/Div GHz kHz Res 02/21/2014 11:42:40



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 1080.3377 Peak Level: -74.04

Spurious Emissions

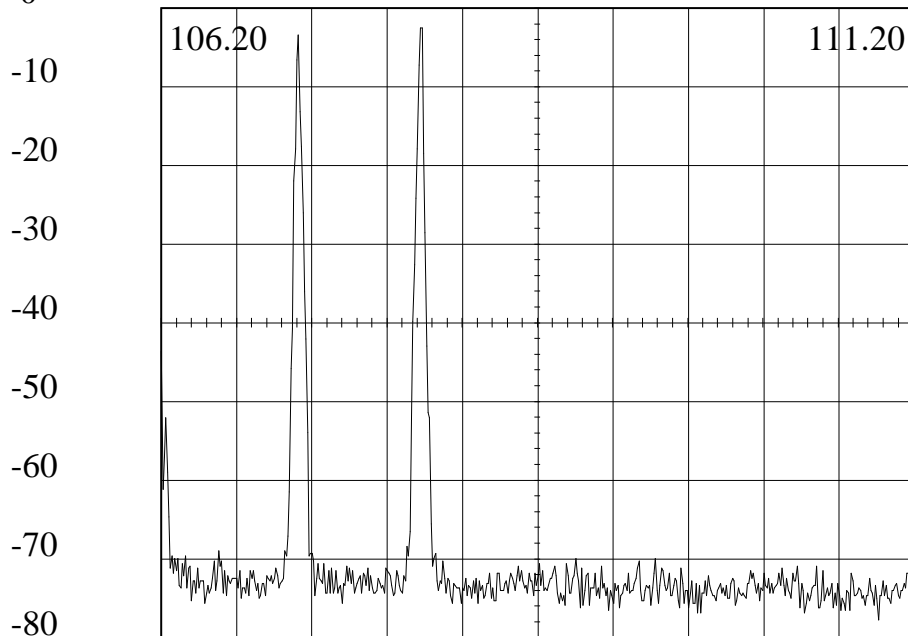
AN940 Serial # 1009
500.0 115.50 9 107.9 IM with 100.7
kHz/Div MHz kHz Res 02/21/2014 11:50:27



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 113.511 Peak Level: -72.16

Spurious Emissions

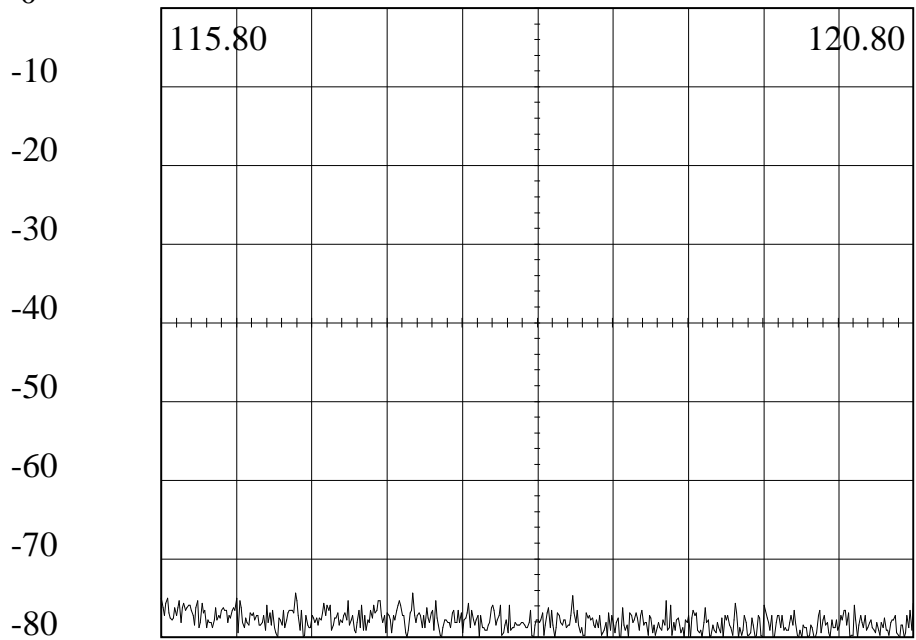
AN940 Serial # 1009
500.0 108.70 9 107.9 IM with 107.1
kHz/Div MHz kHz Res 02/21/2014 11:43:45



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 107.9234 Peak Level: -2.51

Spurious Emissions

AN940 Serial # 1009
500.0 118.30 9 107.9 IM with 97.5
kHz/Div MHz kHz Res 02/21/2014 11:44:42

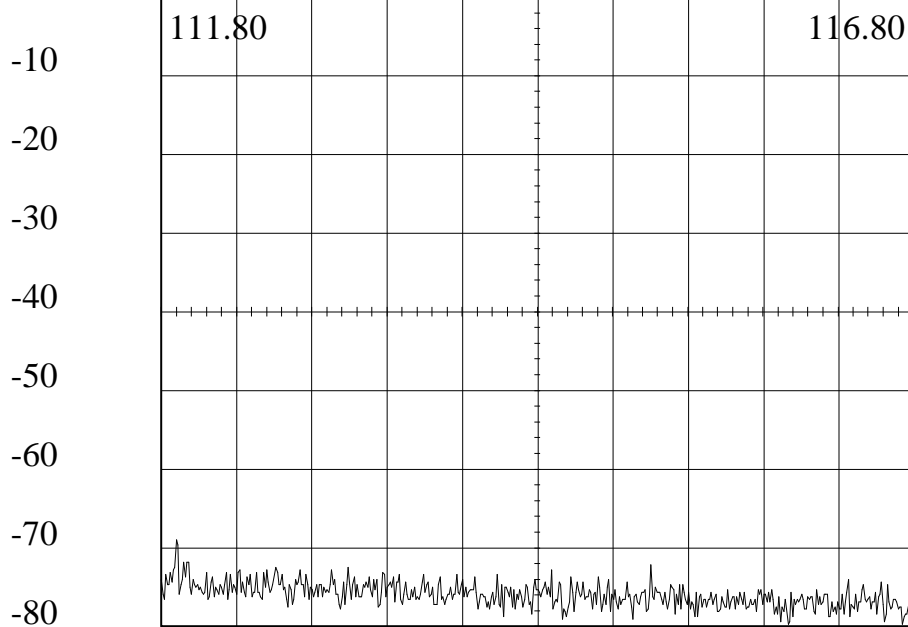


30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 116.6918 Peak Level: -74.35

Spurious Emissions

AN940 Serial # 1009
500.0 114.30 9 107.9 IM with 101.5
kHz/Div MHz kHz Res 02/21/2014 11:45:34

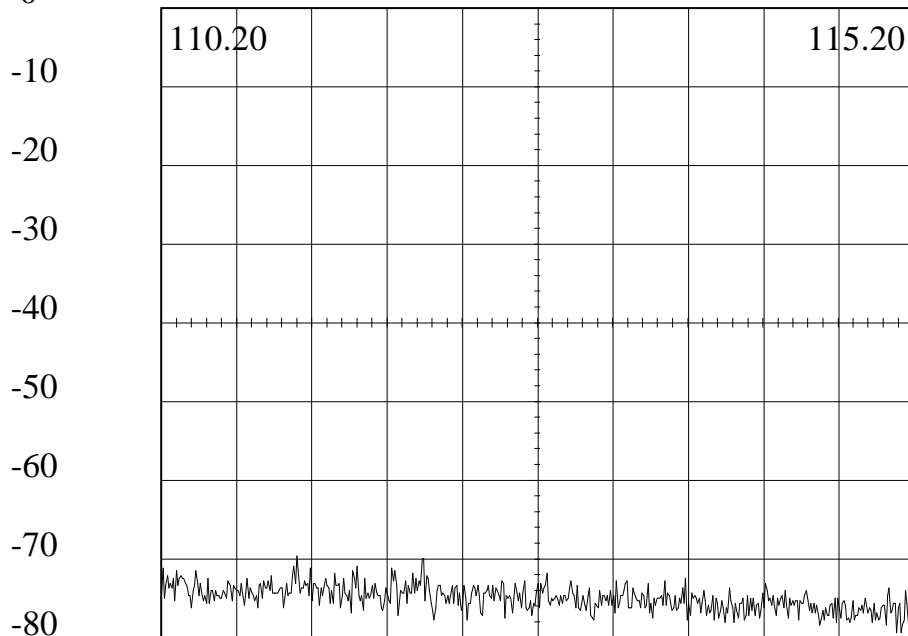
dBm
0



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 111.9002 Peak Level: -69.02

Spurious Emissions

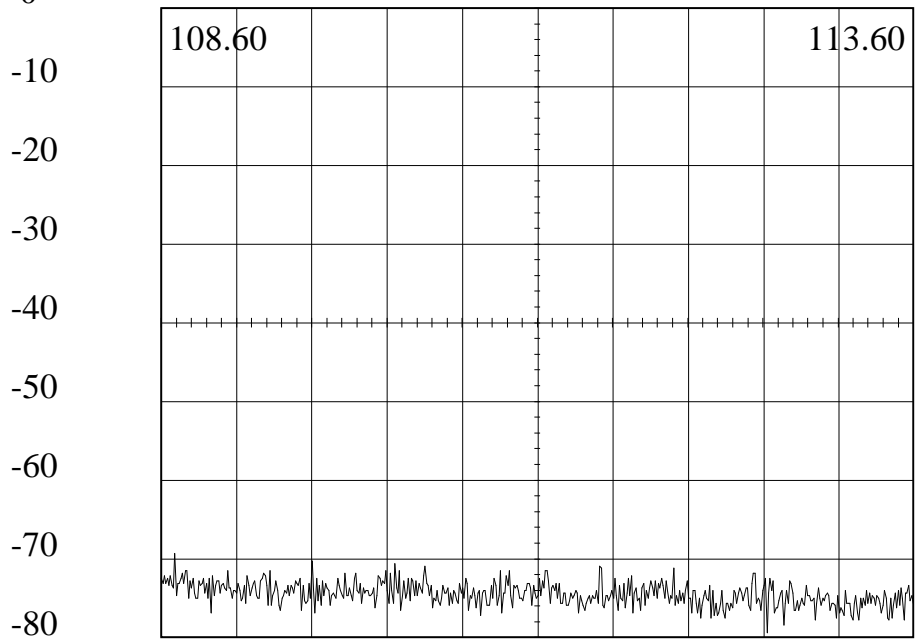
AN940 Serial # 1009
500.0 112.70 9 107.9 IM with 103.1
kHz/Div MHz kHz Res 02/21/2014 11:47:07



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 111.1018 Peak Level: -69.65

Spurious Emissions

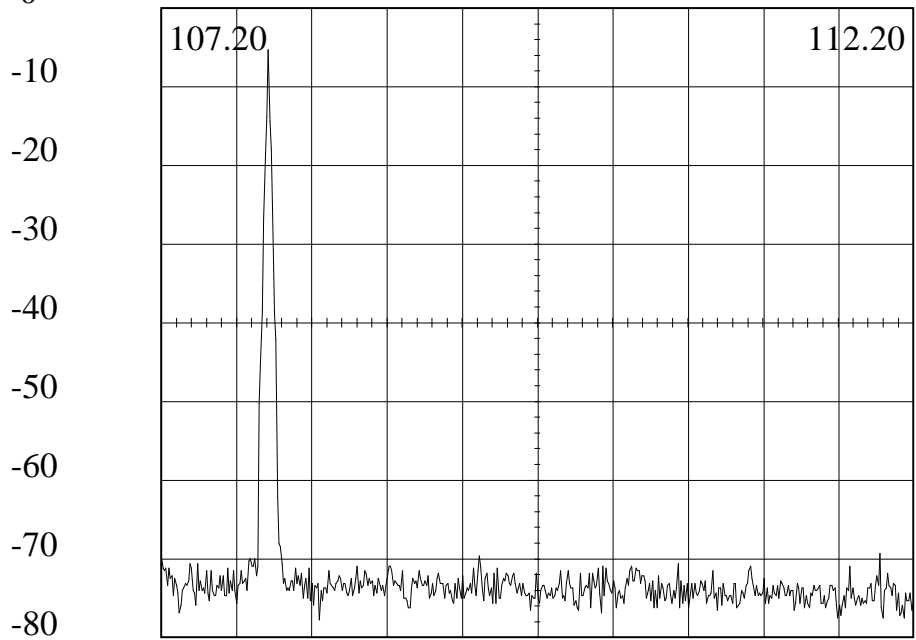
AN940 Serial # 1009
 500.0 111.10 9 107.9 IM with 104.7
 kHz/Div MHz kHz Res 02/21/2014 11:47:38



30 dB Attn Gen --- dBm 50 mSecs
 0 dB IF Gain Video Filter: 1 kHz
 Peak Freq: 108.6902 Peak Level: -69.33

Spurious Emissions

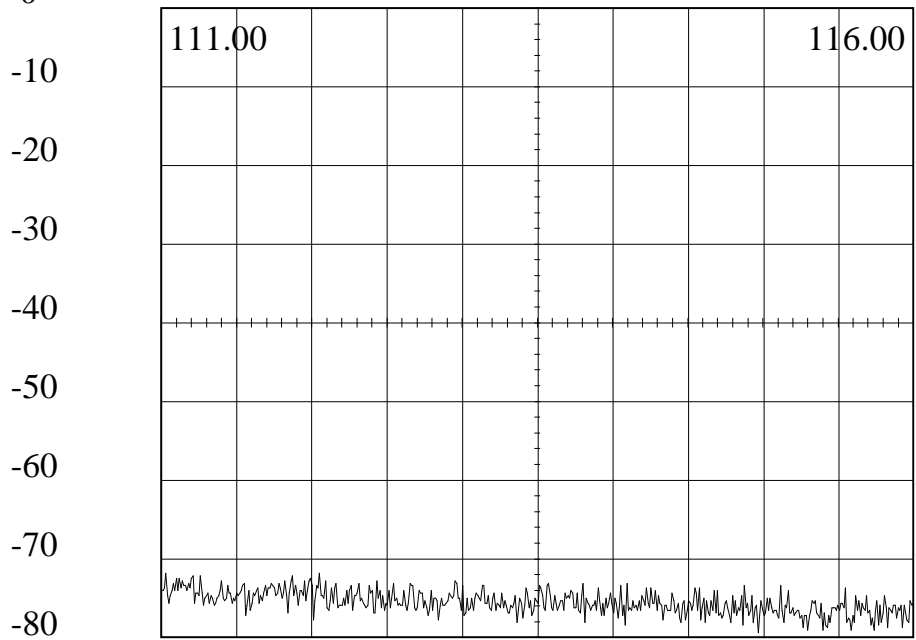
AN940 Serial # 1009
500.0 109.70 9 107.9 IM with 106.1
kHz/Div MHz kHz Res 02/21/2014 11:48:29



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 107.9114 Peak Level: -5.33

Spurious Emissions

AN940 Serial # 1009
500.0 113.50 9 107.9 IM with 102.3
kHz/Div MHz kHz Res 02/21/2014 11:49:14



30 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 111.0301 Peak Level: -71.84