

Spurious Emissions Report

KEGH 107.1 (FM)

Provo “Y” Communications Site

Provo, Utah

On the Afternoon of June 27th 2014 equipment performance measurements were made on behalf of FM broadcast booster station KEGH-FM4 as part requirements set forth by the FCC file permit number: BNPFTB-20131209XFU

This Engineering evaluation report and RF proof of performance measurements were prepared in support of the operation of the specified transmitting system herein as to comply with 47 C.F.R. Section 73.317 (b) through 73.317 (d). KEGH-FM4 is one of six stations sharing a master antenna system at the Provo “Y” Communications site located in the Provo, Utah serving the Provo and Orem area. The outputs of the five stations are combined using a balanced filter combining system Model RCCC .8 designed and fabricated by Jampro Antennas in Sacramento, CA

Measurements were made while all stations broadcast programming material. All stations were operating into the combined antenna system at the full permitted power during measurements.

In the case of the KEGH-FM4 transmission system, the measurement equipment was feed 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 use of the IFR AN940 Serial Number 1009 spectrum analyzer within current calibration was used to make all measurements. The assigned carrier frequency level was recorded. All other harmonic intermodulation products or spurious emission levels were referenced to this initial carrier frequency reference level with a noise floor of -80dBC. The radio spectrum from 50 MHz up to the stations 10th carrier frequency harmonic was tuned to look for any unusual emissions.

A set of Trilithic bandpass filters model VF-40003 Serial #200514038 was used to reduce the effects of multi signal mixing in the IFR AN940 analyzer; all insertion losses have been accounted for to reflect accuracy in this report.

The intermodulation products measured in this study 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.

All of the signals noted were identified as being either signals from other stations in the combined system or ingress from other known transmitters.

No intermodulation products, spurious signals or harmonics were found that could be attributed to the operation of KEGH-FM4.

With consideration to the KEGH-FM4 transmission system, I believe that the station is in compliance with the requirements of 47 CFR § 73.1590 (a) & (b) and 47 CFR § 73.317 (b-d). This report and associated exhibits were prepared by me and are 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 W. Mathews
Consulting Engineer

Spurious Emissions

AN940

Serial # 1009

500.0 107.10 9 107.1 Main w/o Mod
kHz/Div MHz kHz Res 06/27/2014 11:54:34

dBm
-30

-40

-50

-60

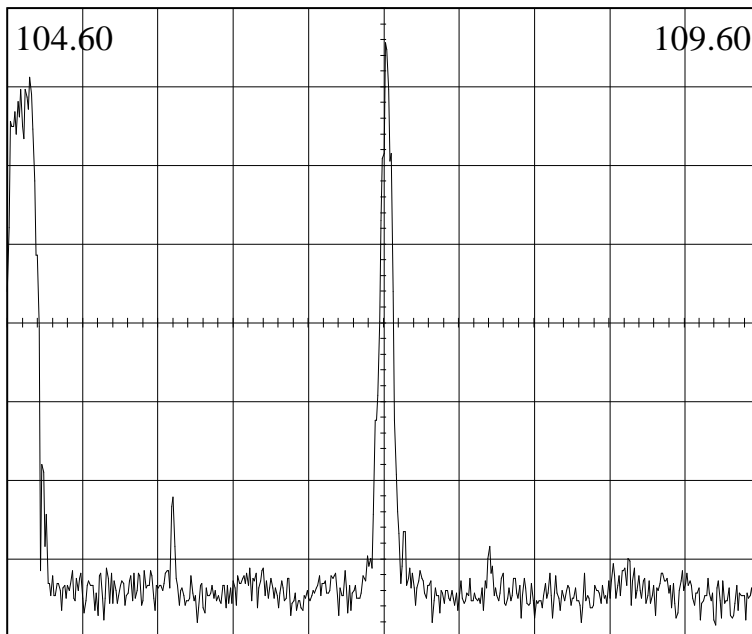
-70

-80

-90

-100

-110



0 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

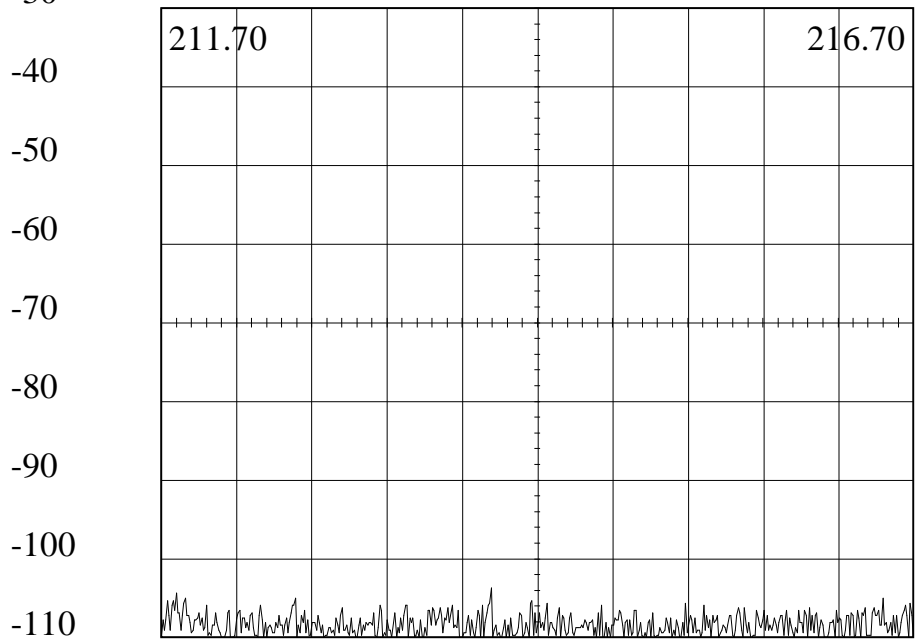
Video Filter: 1 kHz

Peak Freq: 107.115

Peak Level: -34.39

Spurious Emissions

AN940 Serial # 1009
500.0 214.20 9 107.1 2nd Harmonic
kHz/Div MHz kHz Res 06/27/2014 12:11:48



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 213.8944 Peak Level: -103.73

Spurious Emissions

AN940

Serial # 1009

500.0 321.30 9 107.1 3rd Harmonic
kHz/Div MHz kHz Res 06/27/2014 12:13:30

dBm
-30

-40

-50

-60

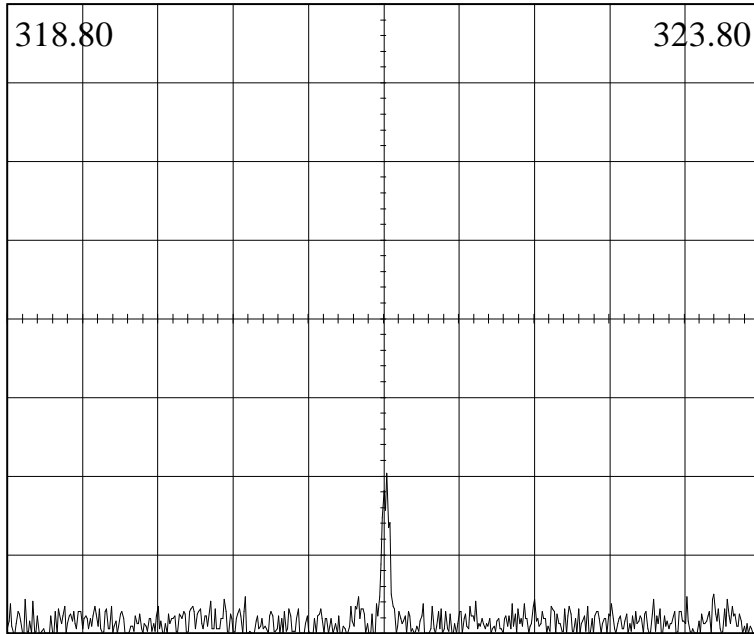
-70

-80

-90

-100

-110



0 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

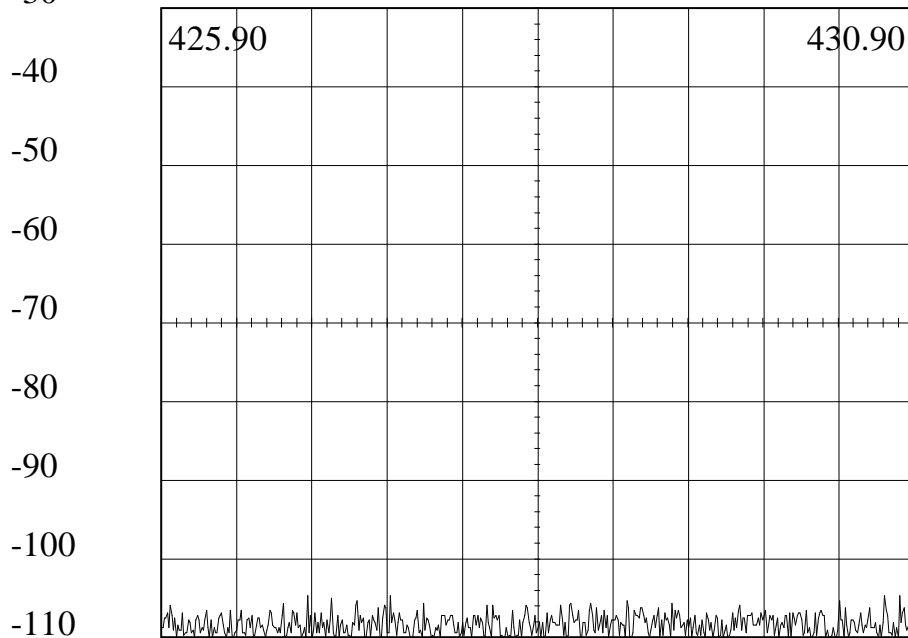
Video Filter: 1 kHz

Peak Freq: 321.3251

Peak Level: -89.61

Spurious Emissions

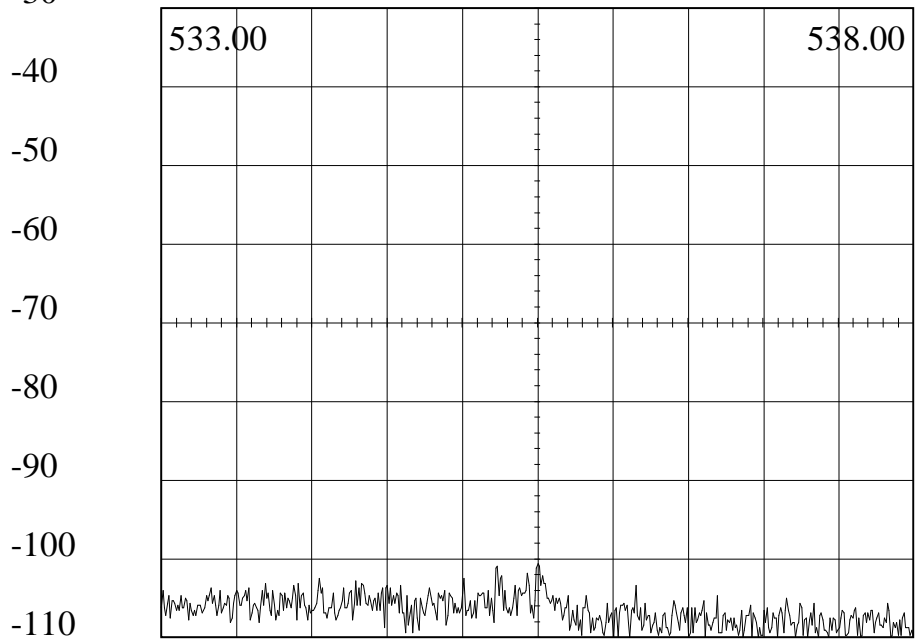
AN940 Serial # 1009
500.0 428.40 9 107.1 4th Harmonic
kHz/Div MHz kHz Res 06/27/2014 12:14:17



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 426.8719 Peak Level: -104.67

Spurious Emissions

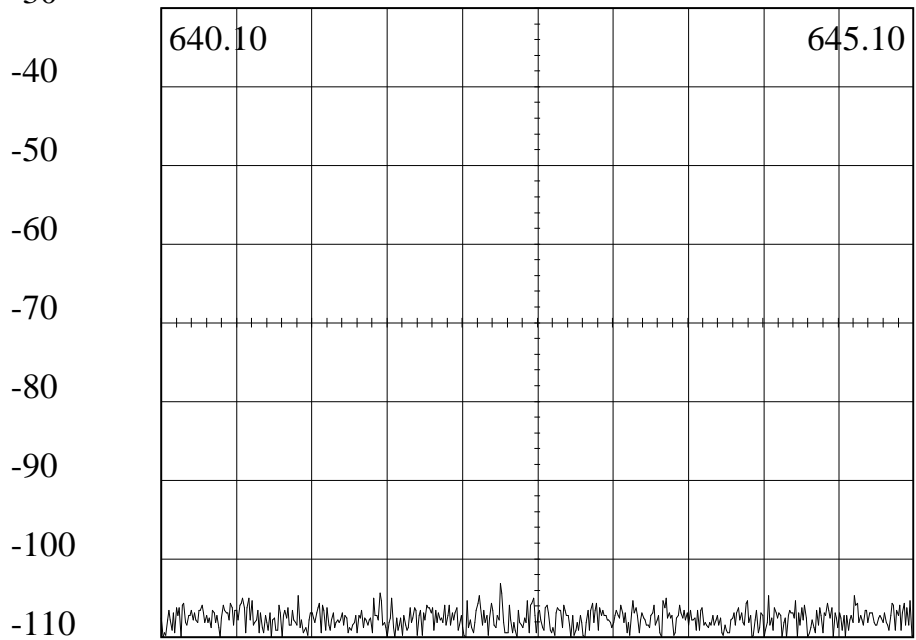
AN940 Serial # 1009
500.0 535.50 9 107.1 5th Harmonic
kHz/Div MHz kHz Res 06/27/2014 12:17:27



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 535.505 Peak Level: -100.59

Spurious Emissions

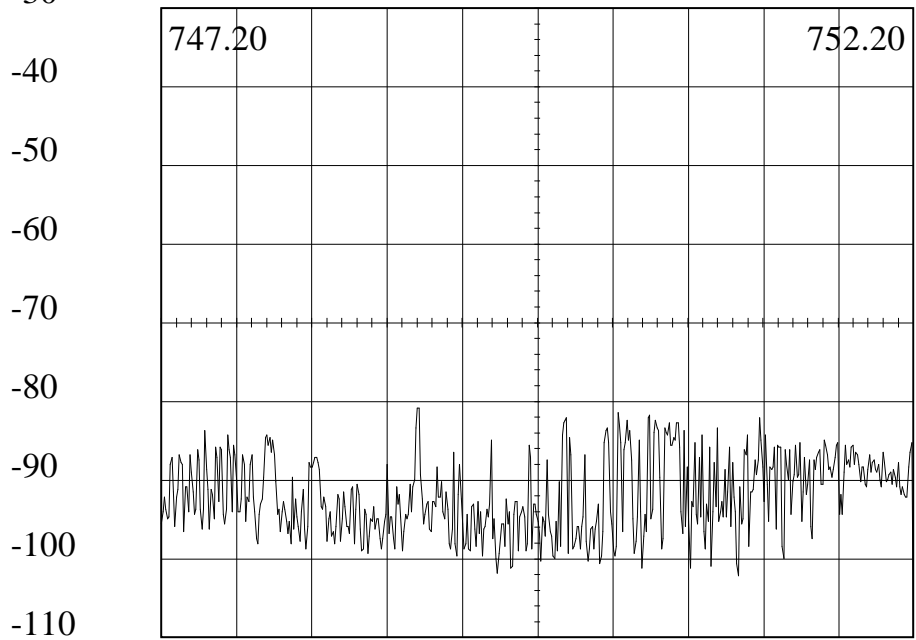
AN940 Serial # 1009
500.0 642.60 9 107.1 6th Harmonic
kHz/Div MHz kHz Res 06/27/2014 12:18:38



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 642.3545 Peak Level: -103.1

Spurious Emissions

AN940 Serial # 1009
500.0 749.70 9 107.1 7th Harmonic
kHz/Div MHz kHz Res 06/27/2014 12:29:06



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 748.9034 Peak Level: -80.82

Spurious Emissions

AN940

Serial # 1009

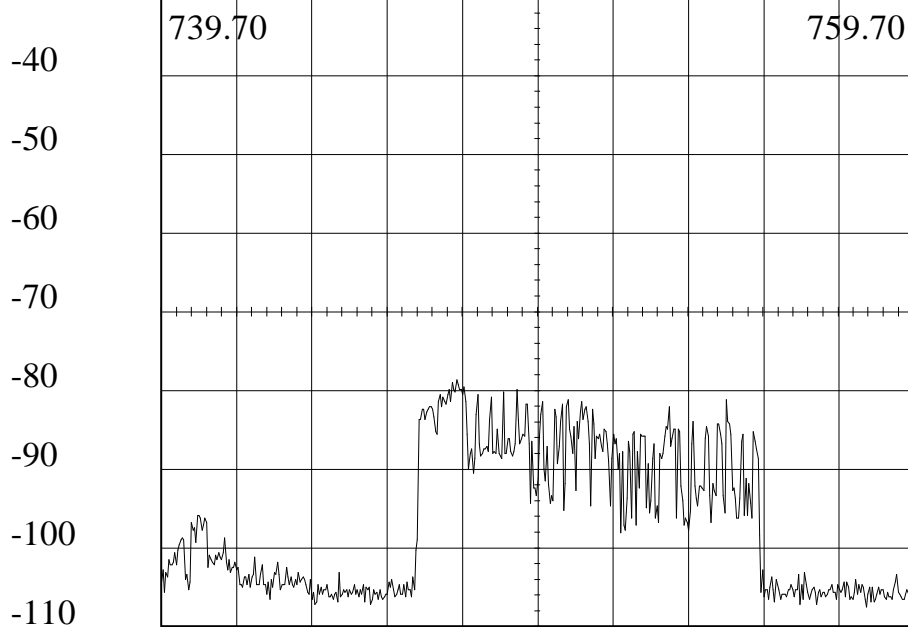
dBm
-30

2
MHz/Div

749.70
MHz

9
kHz Res

PCS Service/MISC
06/27/2014 12:33:07



0 dB Attn

Gen --- dBm

50 mSecs

0 dB IF Gain

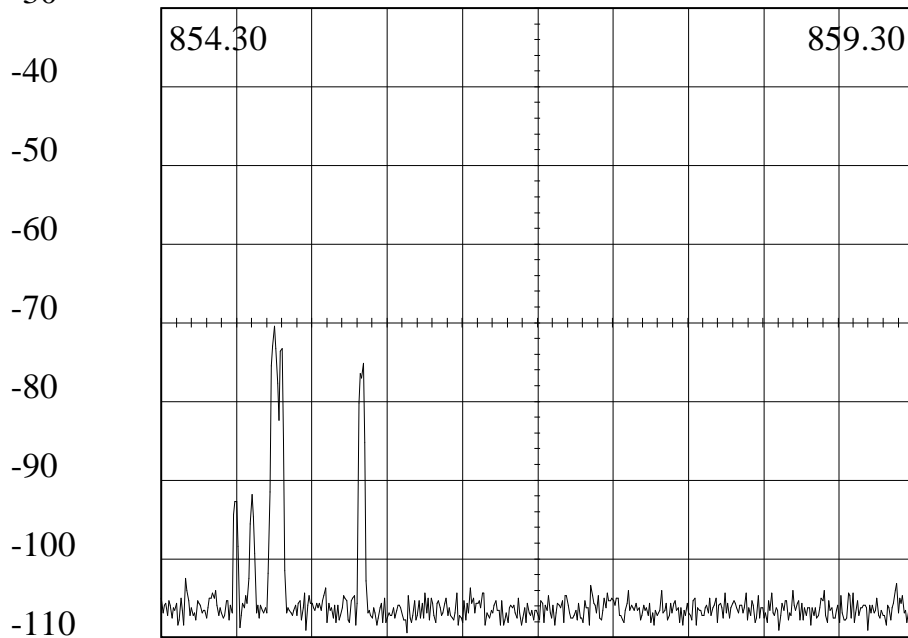
Video Filter: 1 kHz

Peak Freq: 747.5557

Peak Level: -78.63

Spurious Emissions

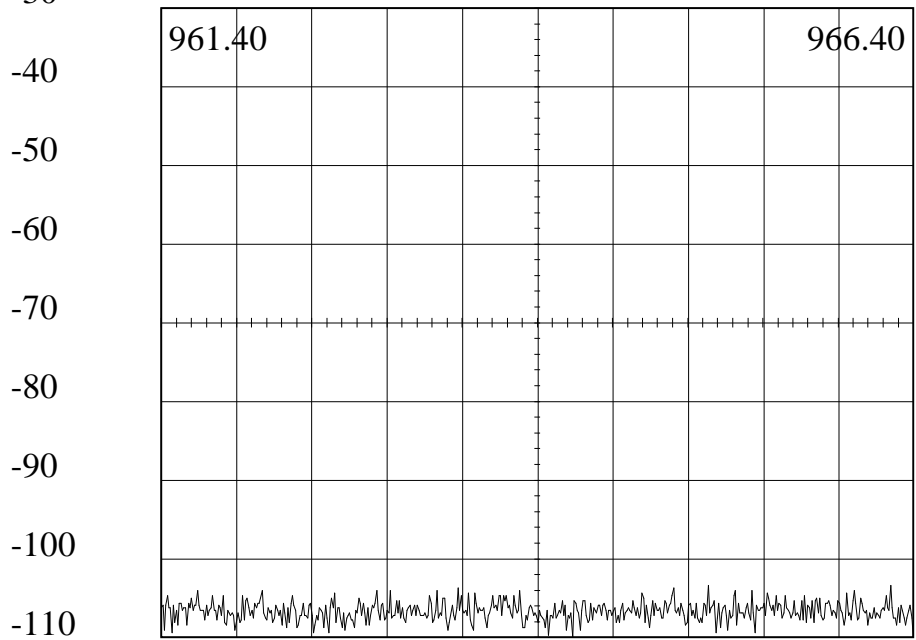
AN940 Serial # 1009
500.0 856.80 9 107.1 8th Harmonic
kHz/Div MHz kHz Res 06/27/2014 12:34:41



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 855.0515 Peak Level: -70.47

Spurious Emissions

AN940 Serial # 1009
500.0 963.90 9 107.1 9th Harmonic
kHz/Div MHz kHz Res 06/27/2014 12:36:17



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 965.0373 Peak Level: -103.41

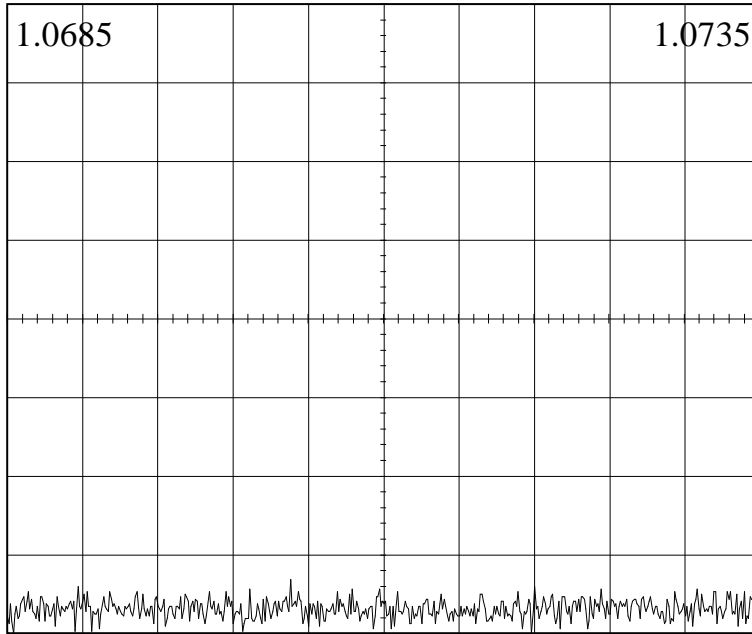
Spurious Emissions

AN940

Serial # 1009

500.0 1.071 9 107.1 10th Harmonic
kHz/Div GHz kHz Res 06/27/2014 12:37:14

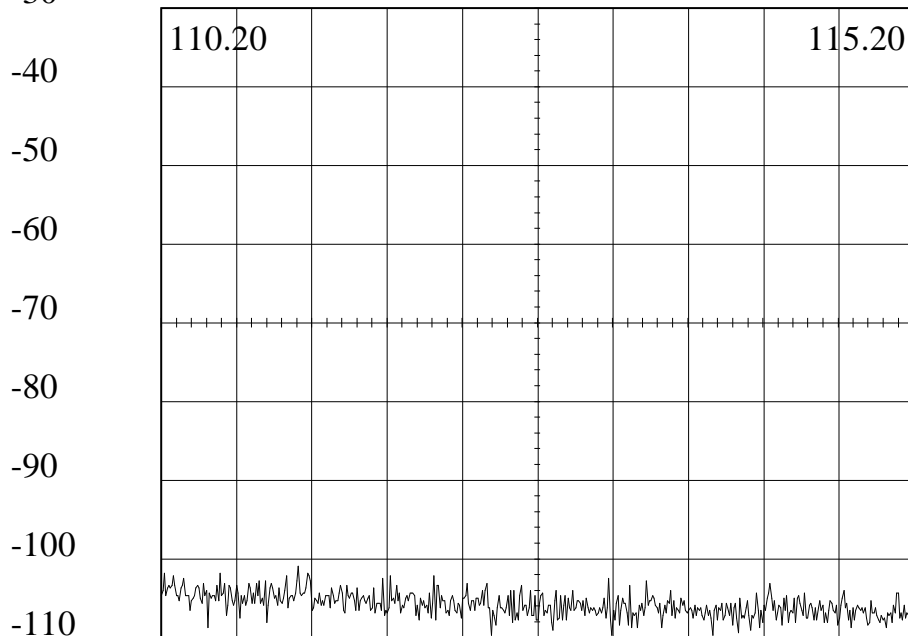
dBm
-30
-40
-50
-60
-70
-80
-90
-100
-110



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 1070.3838 Peak Level: -103.1

Spurious Emissions

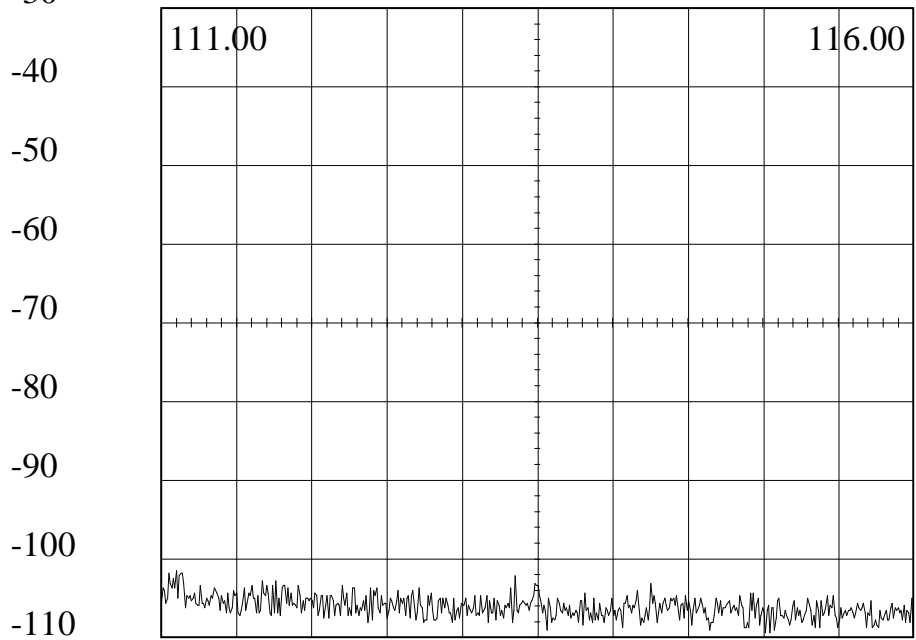
AN940 Serial # 1009
500.0 112.70 9 107.1 IM with 101.5
kHz/Div MHz kHz Res 06/27/2014 12:41:11



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 111.1118 Peak Level: -100.9

Spurious Emissions

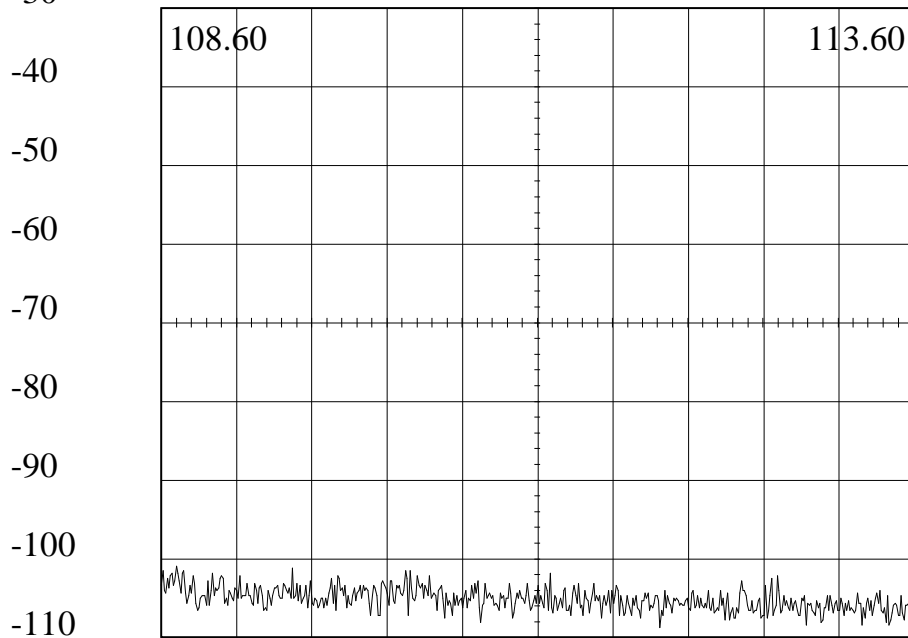
AN940 Serial # 1009
500.0 113.50 9 107.1 IM with 100.7
kHz/Div MHz kHz Res 06/27/2014 12:42:54



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 111.1002 Peak Level: -101.53

Spurious Emissions

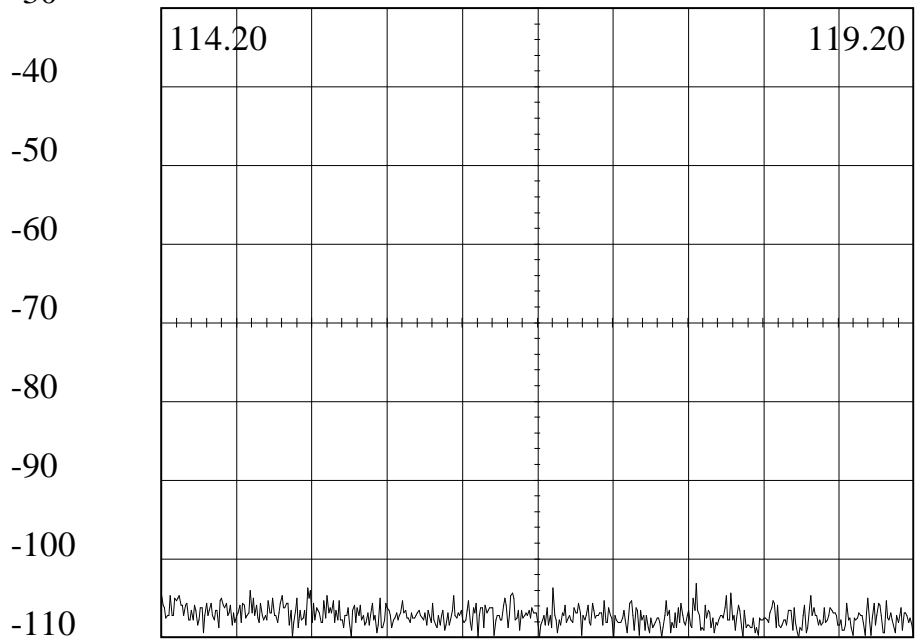
AN940 Serial # 1009
500.0 111.10 9 107.1 IM with 103.1
kHz/Div MHz kHz Res 06/27/2014 12:43:59



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 108.7002 Peak Level: -100.9

Spurious Emissions

AN940 Serial # 1009
500.0 116.70 9 107.1 IM with 97.5
kHz/Div MHz kHz Res 06/27/2014 12:45:34



0 dB Attn Gen --- dBm 50 mSecs
0 dB IF Gain Video Filter: 1 kHz
Peak Freq: 117.7571 Peak Level: -103.1