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May 8, 2008

RF SIGNAL PURITY PROOF FOR COMBINED MASTER ANTENNA W276CB and W281AU

Translators W276CB (103.1 MHz) and W281AU (104.1 MHz) will be operating from a combined antenna on the WZBK-AM tower.

A three bay Nicom antenna is being fed from a Kintronics Lab FMC-1.5 isocoupler which in turn receives the combined RF from both translators through a Shively Labs 2930-2/3 2 branch combiner.

On May 8th 2008 I ran RF signal purity tests on this newly constituted antenna system

With both translators operating at required TPO's to produce licensed ERP I measured the combined RF output with a Tektronix 2712 spectrum analyzer Serial Number BO 21660. RF sample was provided by a precision directional coupler inserted between antenna feed line and the output of the combiner. The AM broadcast transmitter was also operating at normal power.

A quick check of the RF spectrum showed no discernable carriers other than the two translators as supplied here in.

With the analyzer set for 30 kHz RBW and 500 kHz per division span I centered the analyzer on each of the 1st through 5th order potential mixing products. I was unable to detect any products 80 dB below carrier level with the exception of the 1 MHz product. And that was an analyzer IMD product. Since that measured -75 dBc at the output of the combiner one can assume the radiated product would be further reduced by greater than 20 dB as 1 MHz is 1/100th the frequency that could be efficiently radiated by an FM antenna.

When looking at the reflected energy through the directional coupler the only FM band carriers seen where those of the translators 103.1 and 104.1 and a very tiny WKNE FM 103.7 which would be expected. 103.7 was obviously modulated while the translators were not.

Sincerely,

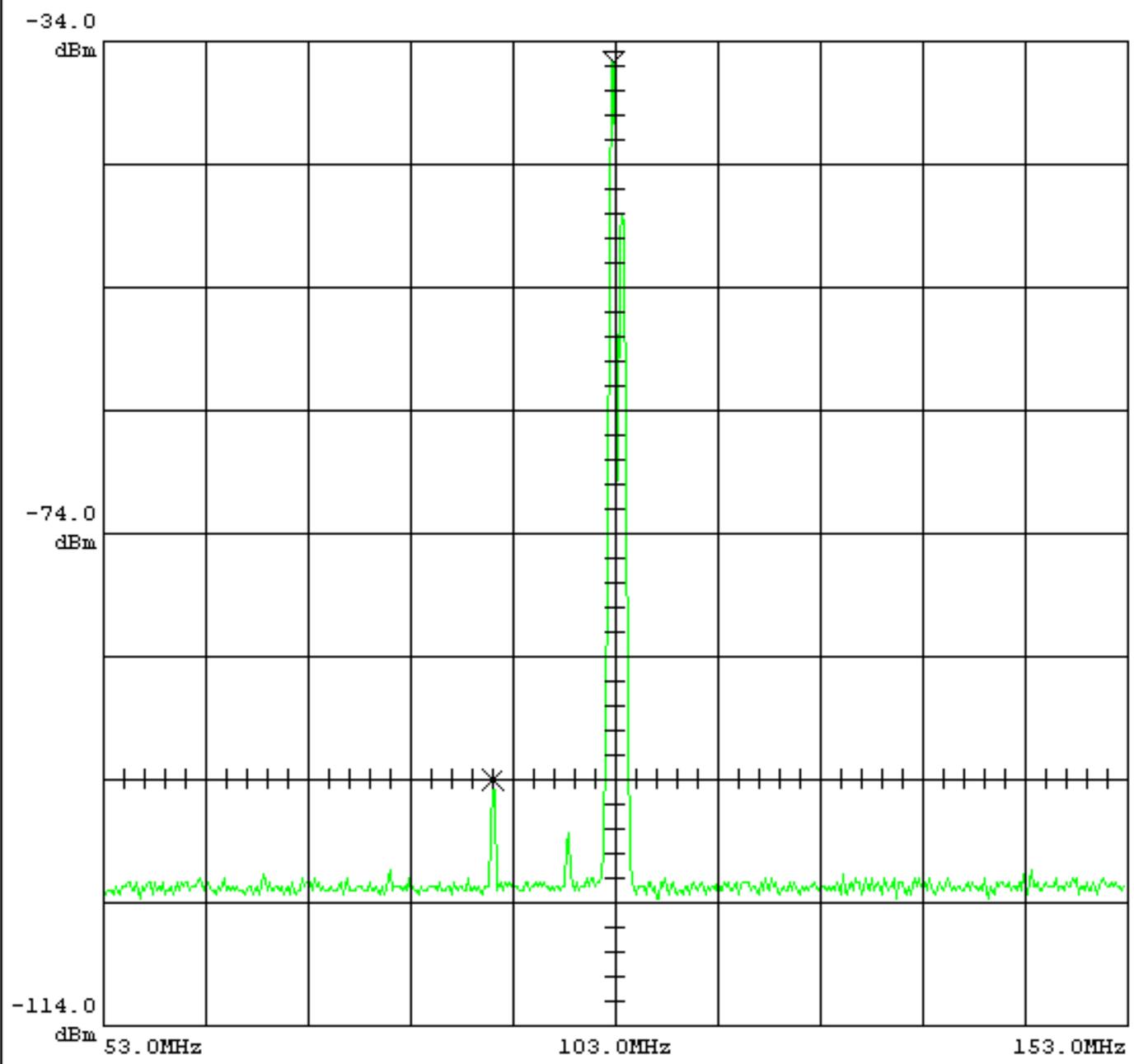


Ira A. Wilner

Tek
2712

Wide-band view of both carriers. The small carriers do not change when the translators are turned off.

C -



103.0MHz
-34.0dBm
10.0MHz/
300KHz RBW

ATTN 0dB
VF 3kHz
10 dB/
D -11.8MHz
D -57.6dB

TIME: 50 ms/DIV

× -- MARKER 1
▽ -- MARKER 2

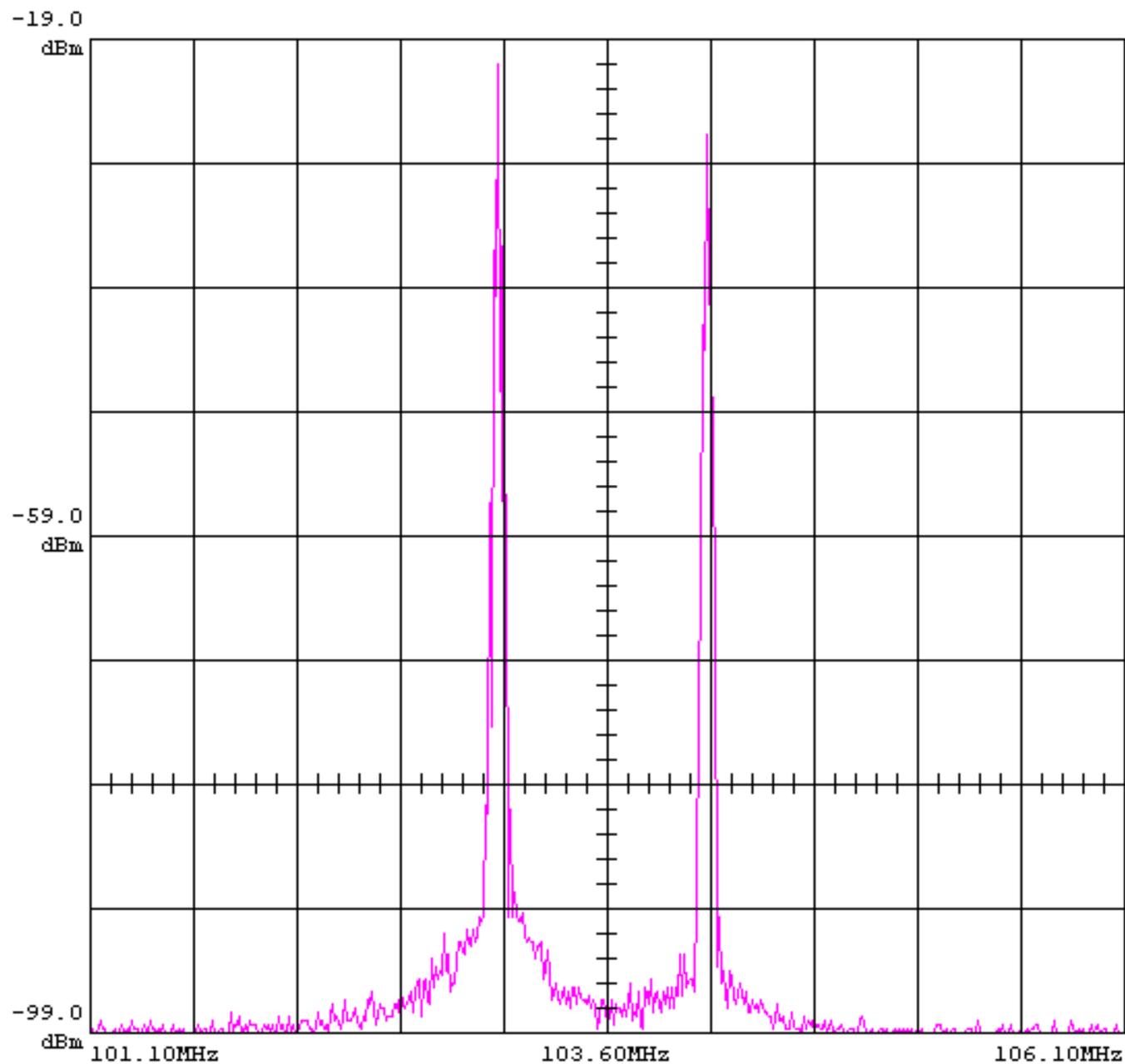
PEAK MODE

TIME: 10:37:13
DATE: 08-MAY-08

Note: Readouts correspond to waveform 'C'

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A - 103.1 and 104.1 carriers from directional coupler.



103.60MHz
-19.0dBm
500.0kHz/
3KHz RBW

ATTN 12dB
VF 3kHz
10 dB/

TIME: 200 ms/DIV

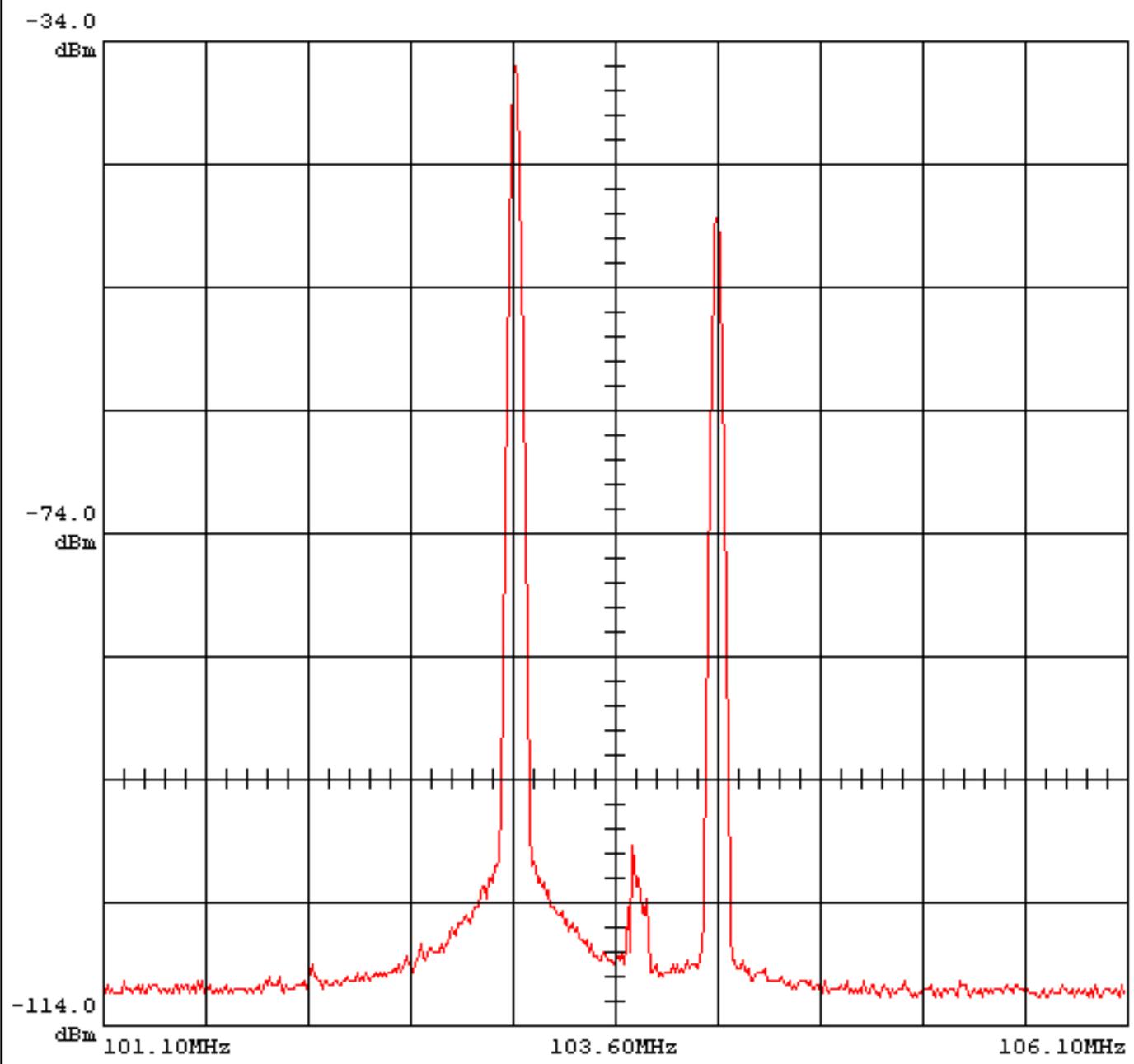
PEAK MODE

TIME: 09:36:34
DATE: 08-MAY-08

Note: Readouts
correspond to
waveform 'A'

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103.1 and 104.1 carrier return power from antenna with
B - WKNE's modulated carrier in evidence.



103.60MHz
-34.0dBm
500.0kHz/
30KHz RBW

ATTN 0dB
VF 300Hz
10 dB/

TIME: 200 ms/DIV

PEAK MODE

TIME: 10:34:33
DATE: 08-MAY-08

Note: Readouts correspond to waveform 'B'