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Broadcast Technology Associates, Inc.

Proof of Performance Measurement

FOR

KPTE-FM, Bayfield, Colorado

And

KKDG-FM, Durango, Colorado

Station Information

Station	Frequency	C.P. File Number	License File Number	Facility ID No.
KPTE-FM	92.9 MHz	BPH-20130625ABK	---	164121
KKDG-FM	99.7 MHz	---	BLH-19950711KC	8779

Introduction. The two stations mentioned above operate into a combined antenna system at a common facility utilizing a Propagation Systems, Inc. 4 bay antenna, fed by a Starpoint combiner manufactured by P Qubed, Inc. designed and engineered for the two frequencies.

To assure the proper operation and assure that any intermodulation products that can be produced when inadequate port to port filtering exists, measurements contained herein were made to verify compliance with Federal Communications Commission Rules and Regulations section 73.317,b,c,d.

Process. For measurement purposes, a coaxial sample port line section was installed in the output port of the Combiner system, this port was utilized to sample the signals being applied to the feedline and antenna system. Using a recently calibrated properly operating spectrum analyzer, the total signals from the sample port was connected through a series of step attenuators to set the carrier level, taking care not to overload the input of the analyzer.

After the gain of the system was established, a VHF high pass filter was installed in the line feeding the spectrum analyzer to reduce the desired signals by at least 30 dB, assuring that there was no unwanted mixing in the input stages of the analyzer, and to allow examination of the band area where calculated and expected second order products might exist.

Station	Carrier Frequency	Calculated TPO	Operating ERP	Notes
KPTE-FM	92.9 MHz	7.7 KW	9.2 KW	
KKDG-FM	99.7 MHz	7.7 KW	9.2 KW	

The span of frequencies between 50 MHz and 600 MHz were checked for any evidence of intermod products resulting from the 2 stations transmitters being combined into one output, and there were no spurious signals detected. In the FM band plot there were other signals, however every signal indication could be associated with signals other than the 2 subject stations.

In addition to the expected frequencies shown above, a scan of frequencies from 50 MHz to 600 MHz was made, the results showed no abnormal spurious signals, and those signals that did show up were not attributable to the subject stations.

Based on the above measurements made at the time, it can be concluded that the above described transmission system is operating in accordance with Federal Communications Rules and Regulations.

Engineer's Certification. I, James R. Burt, Principal Engineer for BTA, Inc., a Company providing technical service to the Broadcast Industry, and having been involved in the field of radio engineering for more than 25 years, and hold FCC General Radio Telephone License number PG-15-6264, am familiar with the requirements and procedures for making RF Intermodulation Product measurements.

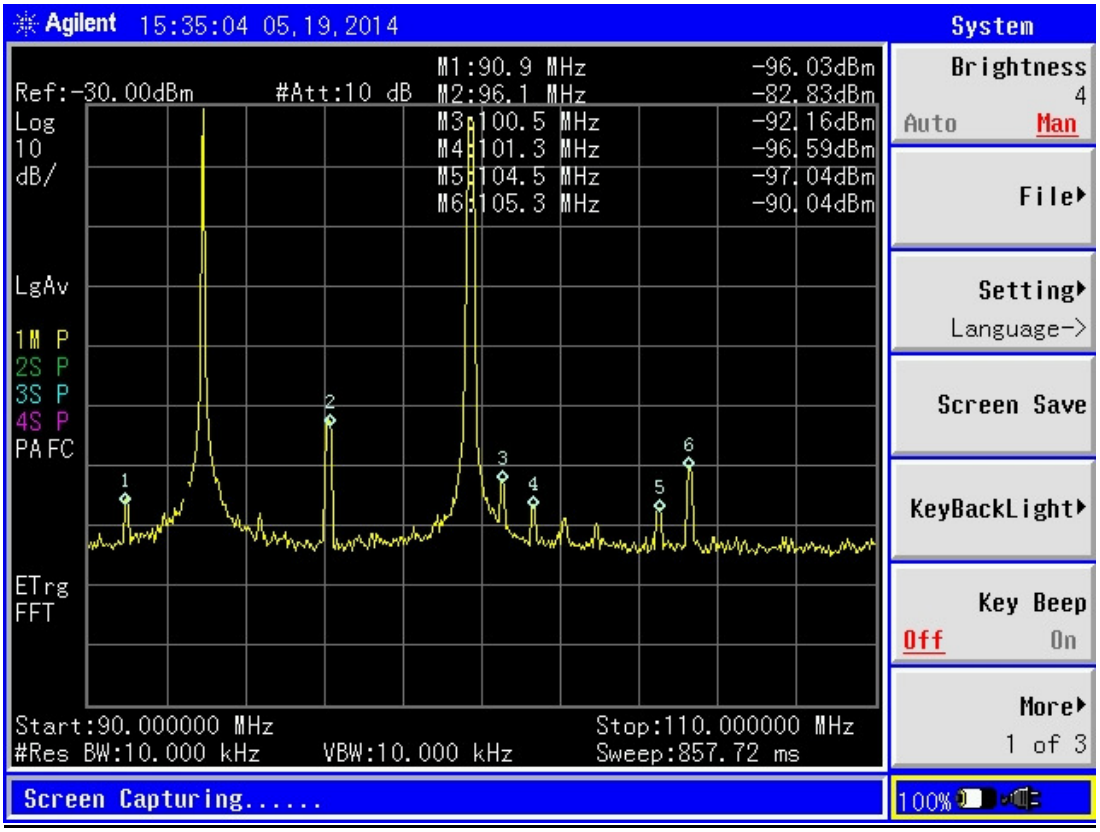
I hereby certify that the measurements discussed above were made by myself or under my supervision on May 19, 2014, May 23, 2014, and that all representations contained herein are true and accurate to the best of my knowledge.

DATE: May 23, 2014

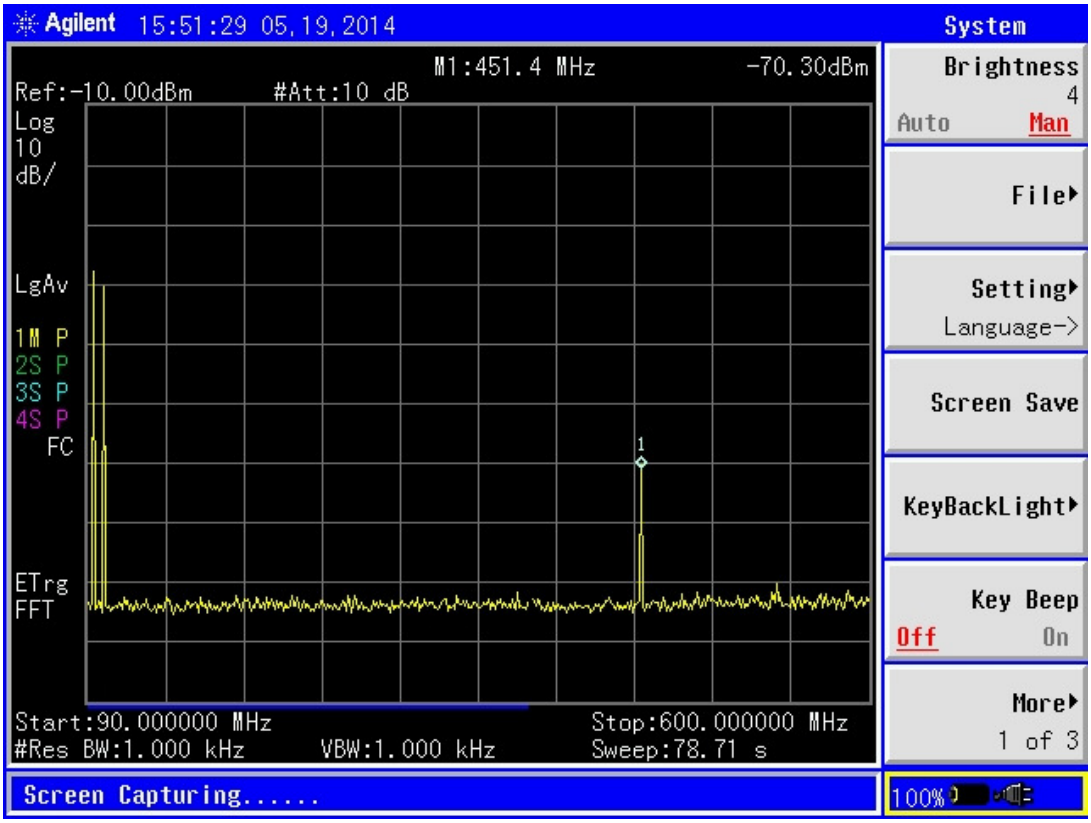
BY: James R. Burt

KPTE-FM / KKDG-FM

Plot One

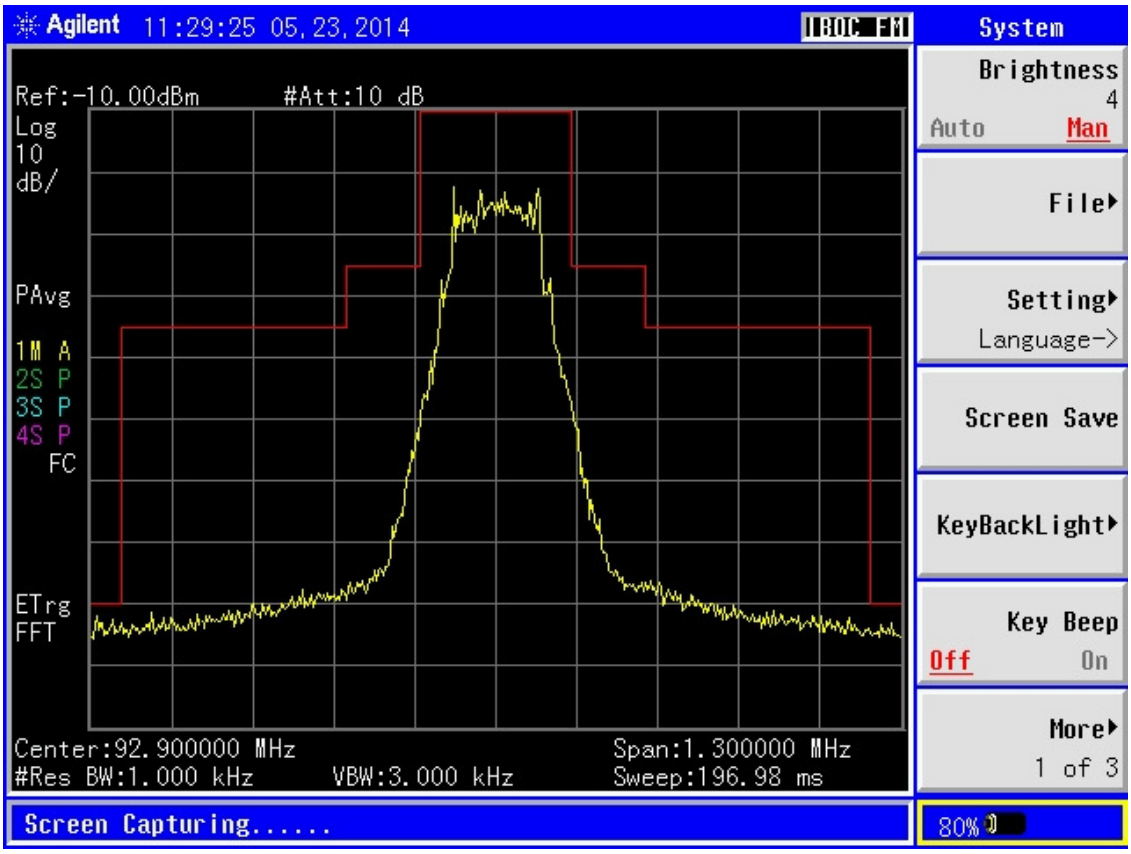


Plot Two



KPTE-FM / KKDG-FM

Plot Three
Occupied Bandwidth



Spectrum Plot Discussion

Spectrum Plot One Shows the initial signal settings, specifically the two subject signals, 92.9 MHz, and 99.7 MHz, this screen sets the gain for the remainder of the measurements. The external attenuators were set to reduce the sampled signals so as not to overload the input of the analyzer. Signals other than the desired two frequencies were marked and the frequencies shown. The signals consisted of other licensed FM broadcast stations that were not unexpected.

Spectrum Plot Two Shows an expanded spectrum sample, however, the 2 subject signals have been attenuated by the installation of the VHF high pass filter, previously discussed in this document, for the purpose of attenuating only the 2 subject carrier frequencies, and creating minimal effect to the rest of the spectrum above the FM band.

A marker was placed on the only found signal and it is While frequency accuracy is harder to achieve in the expanded frequency plot, it was determined that this signal is generated by the KKDG station's auxiliary TSL transmitter, KPN746 at 450.980 mHz.

Spectrum Plot Three Shows the subject station's Occupied Bandwidth Plot demonstrating compliance with FCC Rules and Regulations 73.317 (b), (c). & (d).

Conclusions The included spectrum plots show the instrument setup for measurements. As discussed earlier in the first page of this report, a complete check of spectrum from 50 MHz through 600 MHz, and above showed no signs of any intermodulation products produced by the subject stations, with these measurements good down to a noise level of at least –80 dBc. The indications are that the combiner system is functioning as designed and in accordance with FCC Rules and Regulations, specifically Part 73.317 b, c, &d.