Spectrum Emission Compliance

Tests were conducted to determine compliance with 47 C.F.R. 73.317(b) through 73.317(d) in fulfillment of Construction Permit requirements for W273BO and W253AR to share a common transmit antenna using a transmit combiner.

Method used for gathering data

Signals were measured with a transmitter for each station connected to the proper port of a Telewave combiner designated for each proper operating frequency. A Bird Wattmeter model 43 serial number 108668 was connected directly between the antenna port of the combiner and the antenna feedline for the antenna system. A Bird 50 dB sample port element model 4274-025 was used for obtaining a test signal for making measurements.

The measurement data was gathered using a Hewlett Packard model 8920B service monitor/spectrum analyzer serial number US39064691 with options 001, 004, 006, 013, 014, 031, 054, 102 and 800. I used software program BTS Laptop Utility to transfer screen shots from the HP 8920B via serial port to a Dell Latitude model 830 notebook computer.

W273BO Measurements

Figure 1 shows the transmitter level with TPO set for 0.019 KW ERP with no modulation as reference level at 107.0 dBuV. The carrier peak is indicated by the diamond at the top of the screen and with that reference level indicated at the middle of the lower panel. The indication of 103.21 dBuV at the right side-panel was set for very long-term average and may be disregarded for the shorter-term measurements used for all measurements herein.

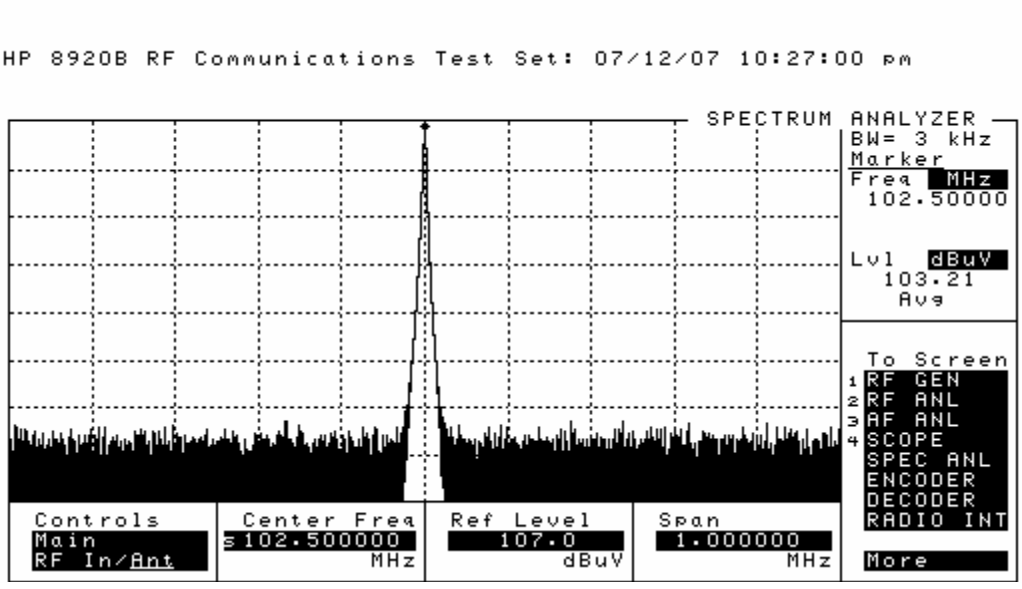

Figure 1

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The same transmitter modulated with normal programming audio for these tests is displayed in Figure 2. This measurement was taken over a period of several minutes with using peak-hold feature to indicate all occurrences of spectrum occupation during that period of time. I added lines to show limits of emissions occupying the spectrum.

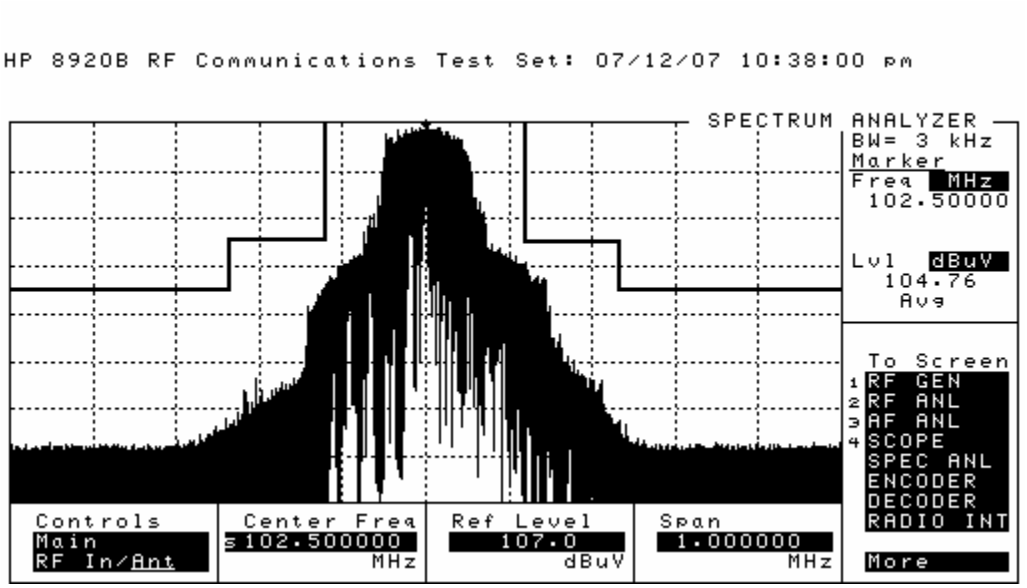

Figure 2

According to 47 C.F.R. 73.317(d) the limits for emissions more than 600 KHz from the assigned carrier frequency is equal to "43 + 10 Log10 (Power, in watts) dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation." Therefore the limit is 43 + 10 Log10(19 Watts) = 43 + 12.8 = 55.8 dB below the unmodulated reference carrier.

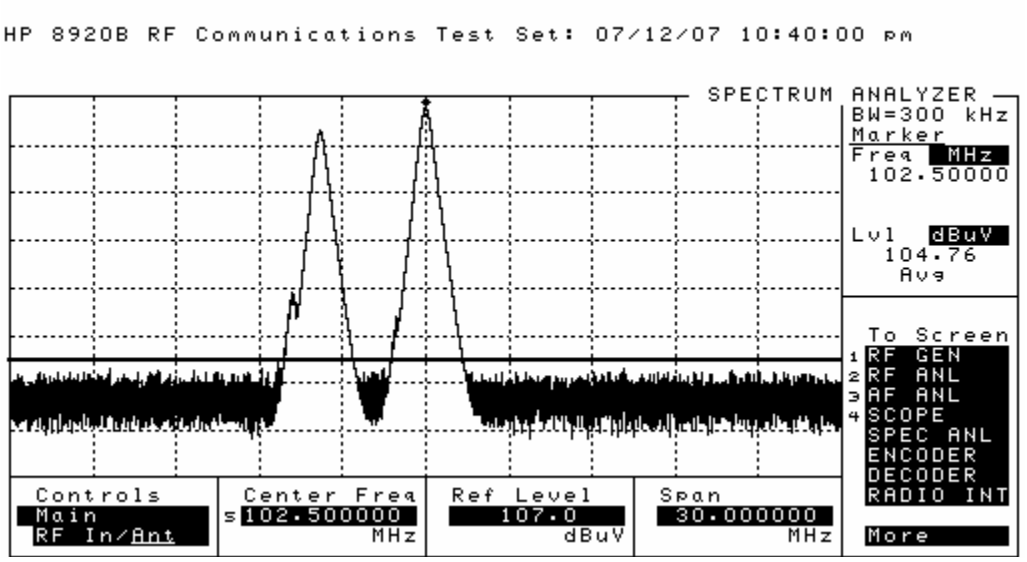

Figure 3

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A 30 MHz-wide view of the spectrum is indicated in Figure 3 to include the RF within the entire FM-Broadcast Band. I placed a horizontal line to indicate the -55.8 dB limit for all emissions outside 600 KHz.

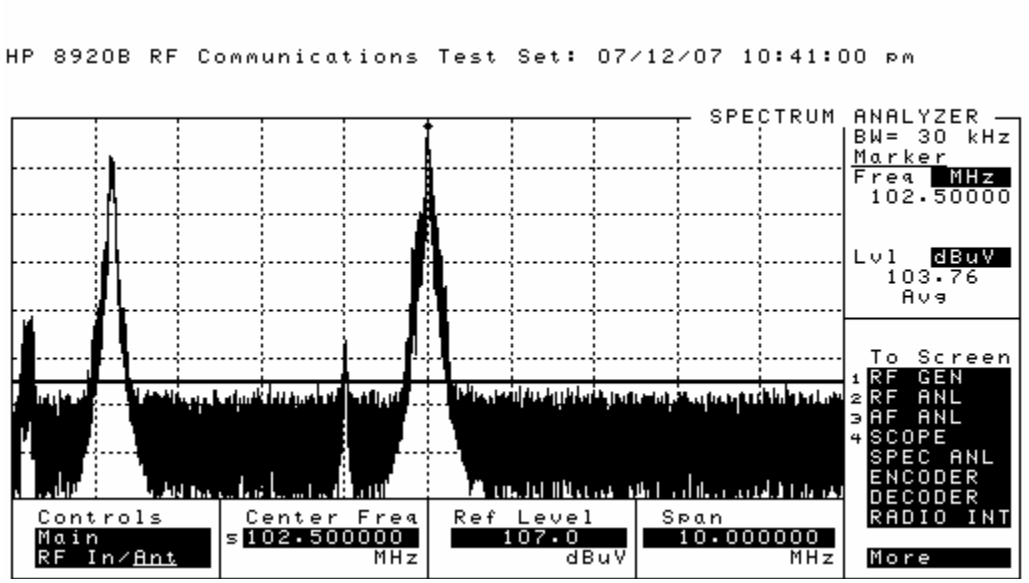

Figure 4

Due to the HP 8920B automatically using a 300KHz bandwidth filter for this wider scan, presence of adjacent channels are masked. You can see the signal for the other station combined into this antenna. There are also two full-power FM stations located at this site. Since they are on channels near to those of the translators using this combiner, they do not appear obvious in Figure 3. The equipment provides a better indication of them with a 10 MHz-wide spectrum using a 30 KHz-wide bandwidth filter in Figure 4, also with the added -55.8 dB limit line.

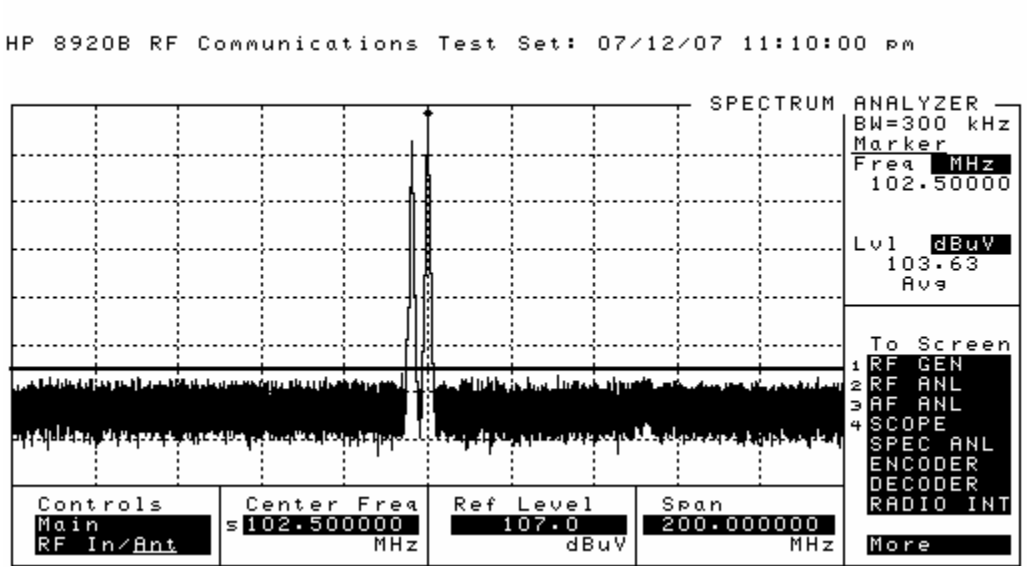

Figure 5

Spectrum Emission Compliance

It is notable that the two translator signals using this combiner are at different levels because of the different ERP authorized each of the two translators (0.019 KW and 0.006 KW).

Figure 5 shows a wider 200 MHz view of the spectrum with the added -55.8 dB limit line.

After discounting the two nearby full-power stations, Figure 4 clearly shows no emissions above the limit outside 600 KHz from assigned carriers of both translators combined to radiate from this antenna.

According to all measurements observed, including but not limited to that presented herein, W237BO is in full compliance with all FCC requirements of 47 C.F.R. 73.317(b) through 73.317(d) in fulfillment of Construction Permit requirements for W273BO to share a common transmit antenna with W253AR using the transmit combiner installed for that purpose.

Certification

I hereby certify that I hold FCC Lifetime General Radiotelephone license PG-6-18888 and as a member of the Society of Broadcast Engineers (SBE) am a Certified Professional Broadcast Engineer (CPBE). I have made numerous representations before the Federal Communications Commission with an unblemished reputation.

I also certify that I personally conducted all measurements and prepared all statements within this document as represented herein and that all such work was done using good engineering practice.

Alan F. Kilgore, CPBE