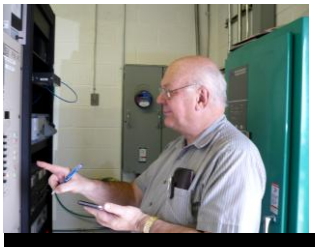

The
Broadcasters' Desktop Resource
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... edited by Barry Mishkind – the Eclectic Engineer

Checking It Out

Fanfare Receivers Work Where Others Do Not

[February 2012] Just like a chef will taste food as it leaves the kitchen, most broadcasters are keenly interested in knowing how their station sounds to listeners. But there are other reasons for having a great monitor receiver.

Is your transmitted audio clean? How about on your translator? Are your listeners happy with what they hear? A lot depends on the receiver you use.

Off-air monitoring has come a long way since the days when stations routinely used rack-mounted car radios or modulation monitors to drive the Control Room speakers. Added to the need for critical analysis of the air product there are other reasons for having a very good off-air receiver – such as feeding a translator.

This later use is especially important at those sites where a lot of RF is found. Many translators suffer from interference from on-channel, adjacent-channel, and intermod signals. It is in these situations that the Fanfare AM/FM receivers have become an industry favorite.

FANFARE

Fanfare, in Bowmansville, NY (near Buffalo), began its life designing and making audiophile tuners. The receivers also are designed with sensitivity and selectivity to perform well in difficult receive conditions. And the pro version receivers share the same designs. According to the manufacturer the Fanfare receivers will reproduce the original signal with 99% accuracy.

The Fanfare FT-1AP Monitor Receiver

The Fanfare receivers are based on an ultra-high performance tuner section having a triple, dual-stage tuned-radio-frequency (TRF) front end, and a linear modulator based RF-to-IF conversion system.

This circuitry can exhibit a 20 to 40 dB advantage over a conventional mixer in noisy reception conditions.

In addition to TRF control circuits that do not drift and mixers that do not combine impulse noise with the signal, there is an IF strip with a wide bandwidth but very steep and deep flanges and a very high speed AGC.

This AGC is used to remove any envelope content (AM interference - usually caused by multipath) from the IF signal before it is sent to the converter unit, which takes the cleaned and regulated IF signal from the receiver unit and, using a linear modulator technique similar to the one in the receiver, reconverts it back to a frequency on the FM band.

OUT IN THE FIELD

Many users have installed Fanfare receivers at translator sites and found almost immediate improvement in the received audio. The translator output, in turn, was nearly indistinguishable from the input.

Chuck Conrad, General Manager at KZQX said it worked out well for the station: *"The changeover to the Fanfare receiver only took a few minutes. The FT-1AP's super sharp filters gave us the desired signal and none of the first adjacent. We are now able to run the station in stereo all the time. We did not need the 10 dB pad to keep the front end from being swamped by the transmitter."*

Operation was described by Conrad as *"super stable and reliable."* He said, *"I like things that do not require a lot of hands on attention. In fact, I liked this enough that I convinced the translator owners to purchase another one."*

POSITIVE CONTROL

Many people know that Part 74 requires the translator to go off the air if the main channel goes down. This is important especially in dealing with sites that become inaccessible for a time, perhaps even months.

To accomplish control, Fanfare FM translator receivers will output 12 Volts DC from a rear apron BNC connector upon loss of signal, and mute the transmitter's RF output if the received signal drops out for a pre-determined time.

But Gary Peterson, CE of New Rushmore Radio, Inc. in Rapid City, SD, had an additional need: to comply with the FCC Rules regarding operation of translators.

The back panel of a Fanfare FT-1AP

Peterson pointed out that there is another facet of the Rules operators need to observe.

Section 74.1234 (a) (1) requires transmitters at sites where access is limited at times must be able to turn the transmitter *"on and off at will from a point which is readily accessible at all hours and in all seasons."* An example might be a remote area where a blizzard might make it impossible to access a site for weeks or months.

Peterson has a translator site in just such a location.

A TONE-BASED SOLUTION

Rather than install a remote control system just for the translator, Peterson conferred with Fanfare's owner, Marv Southcott.

Together they came up with a DTMF-based solution. They reasoned that since it is quite unlikely that a station would be contacted and told to turn off a translator because it was causing harmful interference, the use of very occasional DTMF tones in the program audio was not an issue.

This resulted in a receiver that could decode two, sequential DTMF tones sent out over the parent station's program channel. One two-tone pair would effectively place the receiver on standby, via the 12 Volt DC feed.

Another two-tone pair would re-activate the receiver and remove the voltage. Muting or un-muting the translator to comply with the rule was now easy.

Peterson recorded and edited the two DTMF tone pairs, and dubbed them into our hard disk audio storage system, available via "hot keys," on the touch screen of our Scott Studios control room SS-32. One hot key is labeled "**XLATOR OFF**" and the other is "**XLATOR ON**." After some minor software (timing) adjustments, the decoders in the receiver performed flawlessly, whether the tones came from the Scott hot keys or the keypad on the control room telephone.

Peterson was pleased with the results: *"No false decoding was observed from heavily processed program audio,"* he said. *"A Fanfare receiver with the remote control option is a very simple and reliable FCC compliance feature. Though the possibility is remote, it could keep me from having to snow shoe up a mountain trail to shut down a malfunctioning translator."*

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More information on the Fanfare receivers is available on their website at:
http://www.fanfarefm.com

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Techie Stats

Usable sensitivity - mono:	-3.0µv / 9.5dBf	Capture Ratio:	1.5dB;
Usable Sensitivity - stereo:	3.25µv / 10.5dBf	AM supression:	-70dB;
50dB quieting sensitivity - mono:	5.6µv / 15dBf	SCA supression:	-70dB;
50dB quieting sensitivity - stereo:	30.5µ / 31.0dBf	Total Harmonic Distortion - mono:	0.15%;
Adjacent Channel Selectivity - wide:	10dB;	Total Harmonic Distortion - stereo:	0.25%;
Adjacent Channel Selectivity - narrow:	25dB;	Audio frequency response	(±1.5dB): 30Hz - 15KHz;
Alternate Channel Selectivity - wide:	55dB;	Power: 120, 220 or 240VAC @ 50 W(max);	
Alternate Channel Selectivity - narrow:	75dB;	Dimensions (US): 19"(w)(or 17") x 10.25"(d) x 3.5"(h);	
Stereo Separation (1KHz):	>45dB;	Dimensions (mm): 483(w)(or 432) x 260(d) x 89(h);	
Signal-to-Noise Ratio(SNR) (A-weighted):	75dB;	Weight: 16lb (7.25Kg)	

Return to The BDR Menu