

Composite Aural STL Transmitter

Features and Benefits

- Frequency Agile-Provides accurate, stable, and field programmable frequency
- IF Modulation-Provides superior SNR and stereo separation. (U.S.A. Patent No. 4,710,970)
- Composite Baseband - Accommodates stereo composite, RBDS, two SCA channels and FM subcarriers
- Digital Application-Upgradable to Digital STL System
- Redundancy-Provision for Hot Standby Operation
- Reciter and FM Synchronous Booster Applications-Provides a single modulation source.
- FCC ID No. BI09100

General Description

The Model 9100A Composite Aural STL Transmitter is designed to meet today's most demanding FM broadcast transmission standards. The operating frequency is

synthesized and programmable in 12.5 kHz steps so that a frequency change can easily be made in the field. The composite STL system allows all audio processing, stereo and subcarrier generating equipment to be located at the studio for optimum performance and ease of maintenance.

The rugged, modular construction contributes to easy field servicing and low maintenance costs. A front panel meter and distinctive pushbutton switches provide diagnostic readings for forward power, reverse power, program and MUX modulation levels and other important monitoring points.

Leader in STL Technology

TFT, Inc. founded in 1970, is an industry leader in broadcast-quality Studio-Transmitter-Links (STL) and Inter-City-Relays (ICR) for stereo, monaural, digital and multi-channel programs. Four U.S. Letters Patent pertaining to the design of STL

equipment and modulation monitors have been granted to TFT.

IF Modulation

The FM modulation taking place at an intermediate frequency (IF) is phase-locked to an oven-controlled crystal oscillator. The modulated IF carrier is then up converted to the output RF frequency by a patented Phase-Locked-Loop design. Because no frequency multiplier is used, the RF carrier is an exact reproduction of the modulated IF carrier. Degradation of signal-to-noise ratio, spurious signals and stereo performance due to frequency multiplication and post-heterodyne filtering is eliminated.

Universal Composite Transmitter

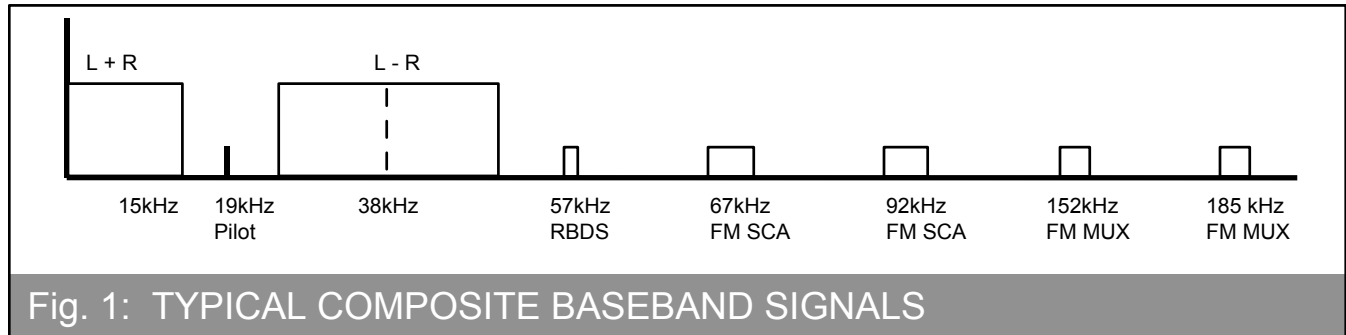
The Model 9100A Transmitter is an excellent companion to the TFT 9107B high performance, frequency-synthesized, composite receiver. The 9100A is also compatible with other TFT STL receivers and the TFT Reciter/FM Booster System. It can also be used in conjunction with the TFT DMM92 Digital Modem and Multiplexer for digital audio transmission.

Composite Baseband Signals

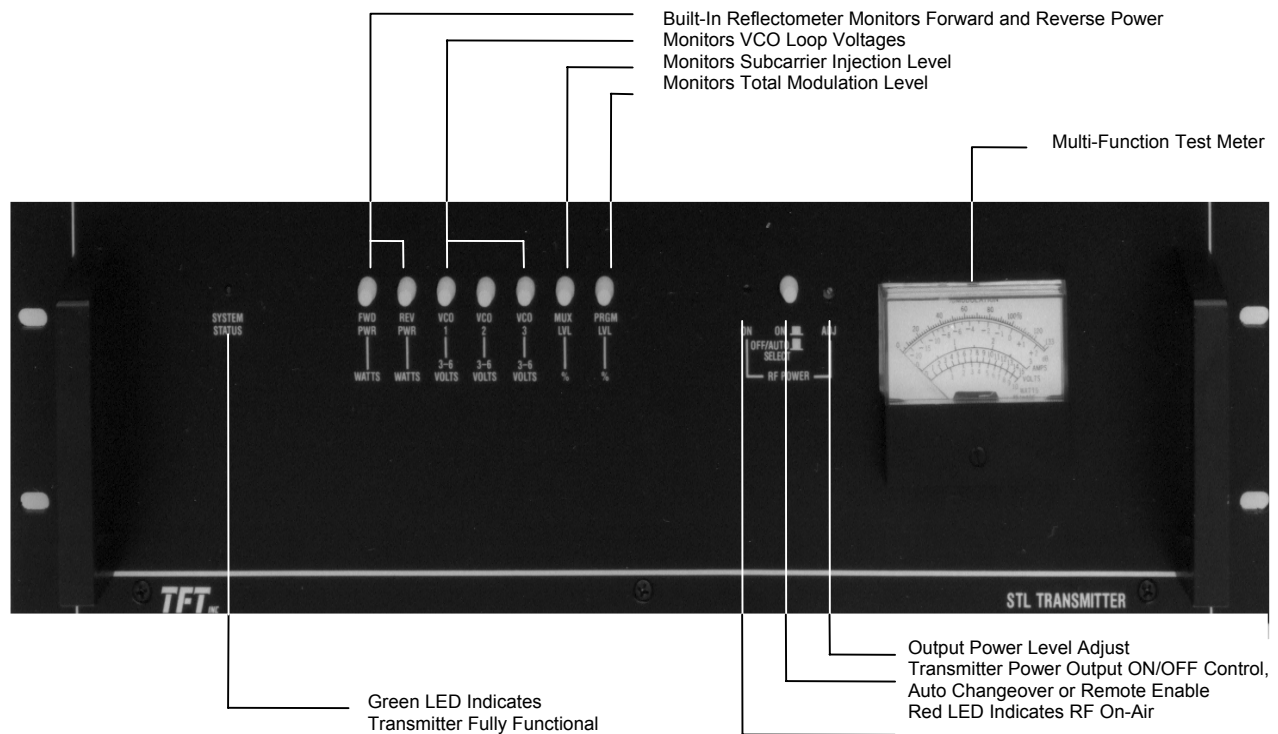
The composite signal shown in Fig. 1, can be transmitted in the

baseband of the 9100A to provide stereo channels, RBDS, MUX and FM subcarriers for

supervisory, data transmission and many other applications.



9100 Front Panel



Reciter Application

The TFT Reciter is a single chassis unit which combines the functions of an STL receiver and a FM exciter by using a frequency synthesized converter. When the 9100A Transmitter is used in conjunction with the Reciter (See Fig. 2) it effectively

eliminates the weakest link in the FM broadcast chain, which is the demodulation circuit of an STL receiver.

The Reciter system can achieve greater than 80 dB SNR and 0.05% THD.

It improves audio quality by the elimination of the demodulation and remodulation processes found in a conventional STL Receiver/FM Exciter System. No digital compression technique is utilized; therefore, the FM signal generated is complete and very low in distortion.

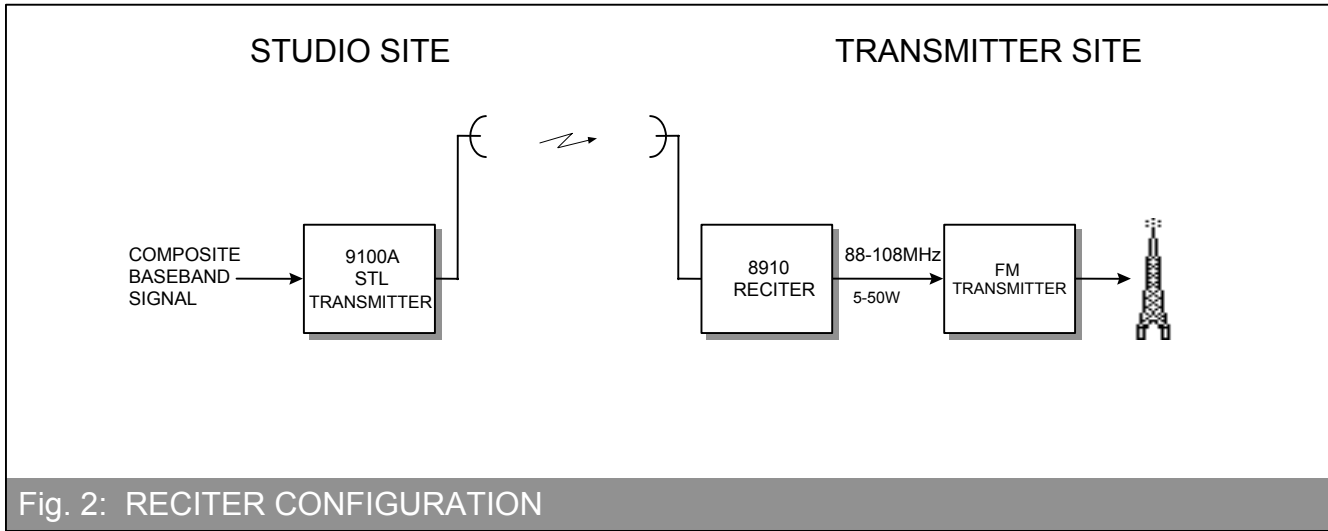


Fig. 2: RECITER CONFIGURATION

FM Synchronous Booster Application

The 9100A Transmitter can be used in conjunction with TFT Model 8900 Reciters, Model 8920 Super Stable Timebase and Model 8920 Digital Delay Line as the one and only FM modulation source in TFT FM synchronous FM booster systems.

For more information on booster applications, please contact TFT for assistance.

Digital STL Application

The 9100A is upgradable to a digital STL system by the addition of DMM92 series Digital Modems and Multiplexers

(See Fig. 3). In addition to 20dB improvement in fade margin, the system can also provide up to four 15kHz program channels with either analog or AES/EBU digital audio interface and an optional 32 kbps data channel or two 3kHz voice channels. The digital modulation can co-exist with analog FM subcarriers placed above 152kHz in the composite baseband.

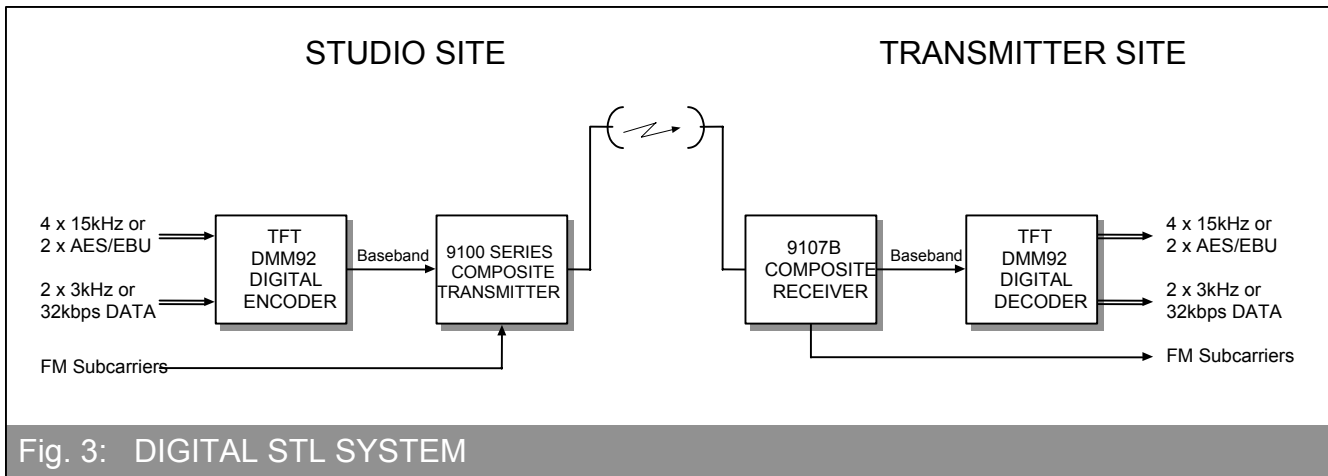


Fig. 3: DIGITAL STL SYSTEM

FCC Part 94 Application

The 9100A can operate between 928 MHz and 960 MHz for inter-city relay and repeater applications under FCC Part 94, Private Operational-Fixed Microwave Service. At 200 kHz bandwidth restriction, the FCC emission designator for this application is 200KF8E.

Accessories and Options

Plug-in FM Subcarrier (SCA) Generator Option (Part No. 7100-4227) - An optional plug-in SCA generator sub-assembly is available for generation of an FM subcarrier at a user specified frequency between 29 kHz and 185 kHz for supervisory or remote control function.

Model 7770 Automatic Transmitter

Changeover - An optional 1-3/4" high rack mount unit which monitors critical parameters of the on-air STL transmitter and automatically switches to a hot standby transmitter upon detection of any malfunction. The Model 7770 is self-powered and has a built-in RF coaxial relay with a 1kW rating.

Specifications

Model Numbers, Frequency Range and RF Power Output...

Model	9100A	9140	9130	9120	9110
Freq. Range in MHz	800-960	400-480	300-330	200-240	140-180
Power Output	6 - 8 W	14 - 20 W			

Frequency synthesized, field programmable in 12.5 kHz steps.

Output Connector.....50 ohm, Type N female

Frequency Stability..... $\pm 0.0002\%$, 0°C to + 50°C

Spurious Signal Emission.....60 dB below maximum carrier power

Baseband Frequency Response..... ± 0.1 dB or better, 50 Hz to 53 kHz. ± 0.3 dB or better, 30 Hz to 100 kHz, the 3 dB roll off is approximately 220 kHz.

Stereo Separation.....> 55 dB at 1 kHz modulating frequency

Total Harmonic Distortion.....0.02%, 75 μ sec de-emphasis

Signal-to-Noise Ratio.....80 dB below ± 75 kHz deviation, 75 μ sec de-emphasis

Nonlinear Crosstalk.....50 dB or better

Subchannel-to-Main..... 60 dB or better

Modulation Capability.....Stereo channel and MUX input for RBDS, SCA, or MUX

Modulation Input Levels.....Composite: 3 Vp-p into 2k ohms for ± 50 kHz deviation. MUX 1: 1.2 Vp-p into 2 k ohms for ± 12 kHz deviation

Input Connectors.....BNC

AC Line Power..... 50 watts for 7.5 watts RF output (120/240 VAC, 50/60 Hz). 80 watts for 20 watt RF output

Operating Temperature Range.....0°C to + 50°C

Dimensions..... 5.25" (13.3 cm) H x 19" (48.3 cm) W x 14" (35.6 cm) D

Weight..... 19 lbs. (8.6 kg) net; 27lbs. (12.3 kg) shipping

FCC ID Number.....BIO9100 (950 MHz Model)



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