



- * *Totally Solid State*
- * *Multi-Channel/Multi-Mode*
- * *1 Part in 10^8 per day Stability*
- * *Rapid Digital Frequency Selection*
- * *Up to 250 milliwatts PEP Output Power*
- * *Independent Channel Activity Indicators*
- * *Operating Modes: ISB, SSB, AM, AME, CW, FSK, and FAX with external accessories*
- * *Compatible, including ALDC, with all TMC and other Standard Linear Amplifier Systems*
- * *Independent Channel Priority Controls (apportions percentage of Exciter Output Power allocated per Channel)*
- * *4 Discrete 3 kHz Channels, with Independent Channel Squelch and VOX (for Idle Channel Squelch and Voice Frequency reactivation)*

The TMC Model SBG()-4A Four Channel Independent Sideband Exciter is an all solid state, compact, professional unit designed particularly to accommodate the high capacity, multi-channel voice, teletype, data and FAX requirements of critical commercial and government point-to-point and tactical circuits. Yet it is readily adaptable to the less sophisticated single channel CW, FSK, FAX, USB or LSB requirements of back-up or other circuits where frequency allocations or operational needs dictate.

The small size, versatility and operational simplicity of this Exciter make it especially suitable for transportable applications. Radio operators will immediately appreciate the ease of operation. Output Frequencies are easily set up without any calculation, and are displayed clearly in digital form. No tuning or peaking is required.

By the use of the Model SBG()-4A, four separate and discrete voice-frequency channels may be transmitted simultaneously by a single transmitter. The 250 kHz Intermediate Frequency employed in this Exciter permits the use of the latest "state-of-the-art" channel passband filters designed by TMC for operation on the U.S. Defense Communications System trunk circuits. These filters feature the low ripple and low Envelope Delay Distortion characteristics required for high speed data circuit accuracy and reliability.

Idle Channel Squelch and VOX control are particularly valuable for intermittent channel usage, to preclude idle channel noise trans-

mission, by the transmitter, when a channel is not in use. VOX reactivation of the idle channel is automatic and virtually instantaneous whenever the idle channel is activated. When all four voice-frequency channels are inactive for a settable period of time, an Exciter Standby circuit can be activated to place an entire transmitter in the Standby condition pending re-activation of a channel. An associated bonus of the Idle Channel Squelch feature accrues with modern transmitters, such as those of TMC having an automatic Power Output Level Control, inasmuch as the total Transmitter Output Power (Average) remains the same whenever channels are inactivated, thus increasing the output power per active channel(s). The SBG()-4A has an ALDC input which can be employed with an associated linear amplifier to maintain constant drive level and prevent over-modulation of the amplifier during input level changes.

As indicated by the foregoing, the TMC Model SBG()-4A is an exceptionally versatile, simple and functionally adaptable unit; yet it has the advanced "state-of-the-art" circuitry and applicability which project it into the future, while accommodating the past! It is an ideal unit for updating and stabilizing (1 Part in 10⁸, with external higher stability standard input) older SSB transmitters. But it really comes into its own for high-fidelity, high-speed transmissions when employed as the "initial" Exciter in conjunction with modern Linear Amplifier/Transmitters featuring low-noise, low-distortion and low-spurious emissions. See further Technical Characteristics, as follows:

TECHNICAL SPECIFICATIONS, TMC MODEL SBG()-4A

FREQUENCY RANGE:	1.6 - 29.9999MHz in 100 Hz increments. Remote tuning available- See OPTIONS.
FREQUENCY PRESENTATION:	Direct Reading.
MODES OF OPERATION:	ISB, SSB, AM, AME, CW, FSK and FAX with external accessories.
OUTPUT POWER:	Continuously adjustable from 0 to 250 milliwatts PEP for any mode of operation.
OUTPUT IMPEDANCE:	50 ohms nominal.
FREQUENCY STABILITY:	1 Part in 10^8 per day with ambient temperature change of 15 degrees within the range of 0 - 50 degrees Centigrade.
METERING:	Built-in multi-meter permits monitoring RF Output and critical RF circuits. VU meter permits monitoring channel input levels.
TUNING:	Digital frequency selection is made by front panel controls.
SIGNAL DISTORTION RATIO:	Distortion products are at least 40 db below either tone of a two tone test at 250 mw, which exceeds FCC requirements.
UNWANTED SIDEBAND REJECTION:	A signal at 500 Hz is at least 60 db down from PEP in the unwanted sideband.
SPURIOUS SIGNALS:	Spurious signals greater than 120 Hz removed from the carrier are at least 60 db below full PEP output.
HUM AND NOISE LEVEL:	Noise level is at least 60 db below either tone of a two tone test.
CARRIER SUPPRESSION:	0, -3, -6, -20, -30 db and FULL (-55 db).
ALDC:	Accepts 0 to approximately -11 Volts DC from ALDC circuit of an associated linear amplifier to improve linearity, limit distortion and deliver a relatively constant output level during high modulation peaks or load changes.
AUDIO INPUT CHANNELS:	Four, designated A1, A2, B1, B2.
CHANNEL INPUT IMPEDANCE:	600 ohms, balanced or unbalanced.
CHANNEL RESPONSE:	Passband filter ripple within ± 1 db, 250-3040 Hz on direct channels and 350-3040 Hz on translated (outboard) channels. Passband Group Delay: 500 usecs maximum from $F_0 \pm 382$ Hz to $F_0 + 2946$ Hz. 200 usecs maximum from $F_0 + 2946$ Hz to $F_0 + 3020$ Hz. Maximum increment change of differential group delay in any 100 Hz band shall be less than 100 usec from $F_0 + 382$ Hz to $F_0 + 2946$ Hz.

TECHNICAL SPECIFICATIONS, TMC MODEL SBG()-4A (Cont)

CHANNEL RESPONSE: (Cont)	Maximum absolute delay of 8 millisecs from F_0+382 Hz to F_0+3020 Hz.
INPUT DYNAMIC RANGE:	-20 dbm to +5 dbm.
IF CARRIER FREQUENCY:	250 kHz.
SUB-CARRIER FREQUENCY:	6290 Hz from Carrier Frequency.
CHANNEL PRIORITY CONTROL:	Power allocation for each channel controllable from 5% to 100% by individual front panel controls.
SQUELCH AND VOX:	Inactive channels automatically disabled to prevent transmission of noise. VOX control on each channel reactivates channel when audio input exceeds -20dbm.
ENVIRONMENTAL CONDITIONS:	Designed to operate in any ambient temperature between 0 degrees Centigrade and +50 degrees Centigrade, and any value of humidity up to 95%.
INSTALLATION DATA:	Size: 12¼ inches High x 19 inches Wide x 20 inches Deep. Weight: Approximately 65 lbs.
PRIMARY POWER:	115/230 Volts +10%, 50/60 Hz, Single Phase, 100 Watts.
LOOSE ITEMS:	Mating coaxial fittings (BNC), Power cords and technical manuals.
COMPONENTS AND CONSTRUCTION:	All equipment manufactured in accordance with U.S. JAN/MIL specifications wherever practicable.
OPTIONS AND ACCESSORIES:	Priced Separately.
CSS-2, EXTERNAL STANDARD:	Provides 1 part in 10^9 Stability.
REMOTE OPERATIONS:	May be equipped for remote operation of the digital frequency selector and mode selection. Please consult your "TMC" representative for the most economical solution to your remote control requirement.

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