



Four Channel Synthesized Exciter Model SBG-4

TECHNICAL BULLETIN 204-4112

- **100 mW, 2-30MHz**
- **Solid State**
- **Rapid Digital Frequency selection**
- **Independent Channel squelch and VOX operation**
- **Individual channel A.L.C.**
- **Remote control capability**



The TMC Model SBG-4 Series, Four Channel Independent Sideband Exciter is a compact all solid state 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. It is readily adaptable however to the less sophisticated single channel CW, 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-4 Series Exciter, four separate and discrete voice-frequency channels may be transmitted simultaneously by a single transmitter.

Idle Channel Squelch and VOX control are particularly valuable for intermittent channel usage, to preclude idle channel noise transmission, 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 preset period of time, an Exciter Standby circuit can be activated to place an entire transmitter in the Standby condition pending reactivation of a channel. The Idle Channel Squelch feature is particularly valuable with modern transmitters having an automatic power output level control, inasmuch as the total average transmitter output power remains the same whenever channels are inactivated, thus increasing the output power per activated channel. The SBG-4 Series Exciter 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.

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TECHNICAL SPECIFICATIONS

OPERATING PARAMETERS

FREQUENCY RANGE	2-29.9999MHz
Optional	1.6-29.9999MHz
FREQUENCY SELECTION	Direct synthesis in 100Hz steps
FREQUENCY STABILITY	One part in 10 ⁸ per day/15°C change
Optional	One part in 10 ⁹ per day/15°C change
FREQUENCY DISPLAY	Front-panel digital
MODES OF OPERATION	CW (A1)/AME (A3H)/USB, LSB (A3A, A3J)/2ISB (A3B)
Optional	3ISB or 4ISB (A9B)
POWER OUTPUT	100 milli-watts PEP and Average (CW)
INPUT/OUTPUT IMPEDANCE	50-ohm (nominal) unbalanced. BNC-type connector
TUNING	Six front-panel rotary switches
REMOTE CONTROL	Optional Interface circuits are available for remote monitoring and control of frequency, mode, carrier, RF level, mains power, and status of complete exciter system including antenna.

AUDIO PARAMETERS

AUDIO SIDEBAND RESPONSE	250-3040Hz, ± 1.5 db CCIR; Other filters on request.
EQUALIZED FILTERS	Optional 250-3040Hz; 1.5 db max; Other filters on request.
Optional	Phase Jitter: Less than 5 degrees in two successive 10 msec. periods
Optional	Envelope delay: Less than 500 usec, 600-2900Hz
	Less than 150 usec for any 100 Hz step, 500-3050Hz
SUB-CARRIER FREQUENCY	± 6290 Hz from Carrier Frequency, synthesized
Optional	± 6250 Hz (CCIR)
AUDIO INPUT	1. Independent 600-ohm channels, balanced or unbalanced
	-20 to + 10 dbm; rear-apron terminals
KEYING INPUT	1. CW key jack on front panel; 200-baud; dry contact
Note	Tone keyers are available for audio FSK operation (single or multi-tone)

TRANSMIT CHARACTERISTICS

UNWANTED SIDEBAND	
REJECTION	500Hz tone is minimum 60 db below PEP
SPURIOUS SIGNALS	Minimum 60 db below PEP
INTERMODULATION	
DISTORTION	Minimum 40 db below either tone of a two-tone test at rated PEP
RESIDUAL NOISE AND HUM	Minimum 70 db below PEP. Power supply ripple 55 db below PEP
CARRIER SUPPRESSION	Selectable at -6, -20, -30, -55 db (FULL); Other values on request

ENVIRONMENTAL AND INSTALLATIONS

COOLING	Convection.
ACOUSTIC NOISE	Less than 70 db above reference level of 10 ⁻¹⁶ w/cm ² at 3.25 feet. from cabinet (average conversation) when installed to TMC spec.
OPERATING CONDITIONS	0 to ± 50°; up to 90% relative humidity at MSL
STORAGE CONDITIONS	-30° to + 80°C; up to 95% relative humidity at MSL
POWER SUPPLY	Totally solid-state.
SIZE AND WEIGHT	115 or 230 volts AC + 10%, 50/60/400Hz, single-phase
	12.25" (31.1 cm) high x 19" (48.3 cm) wide x 20" (50.8 cm) deep
	64 pounds/29.1 kg installed.
SHIPPING DATA	Commercial packing for domestic U.S. (air) shipment.
	One (1) container — 18" x 30" x 30"
	Total weight/cube — 104 pounds/9.4 cu. ft.

Specifications Are Subject to Change Without Notice

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