



FM BROADCAST TRANSMITTER **QUANTUM MBB Series 2-kW & 5-kW**

QEI Solid State FM Transmitters, precision crafted to be the very best. Designed for years of trouble free service, the totally solid-state **QUANTUM MBB-Series** of broadband FM transmitters provide unsurpassed signal performance. The **QUANTUM MBB-Series** of 2 and 5 kilowatt transmitters offer the FM broadcaster the benefits of QEI's experience in designing broadband solid-state FM RF amplifiers and combining systems. QEI developed the **QUANTUM MBB-Series** utilizing decades of real-world field experience in solid-state FM transmitter design. This completely solid-state design offers significant savings by eliminating tube replacement costs. The **QUANTUM MBB-Series** operate with high efficiency resulting in additional savings in power consumption and reduced heat loads.

For about the same price as tube transmitters, you can now own one of QEI's **QUANTUM MBB-Series** broadband solid-state transmitters and gain the **maximum performance advantage.** The **QUANTUM MBB-Series** of transmitters feature modular power amplifiers and are available in power levels of 2 and 5 kilowatts. *You can buy precisely the amount of power you need.* This makes the **QUANTUM MBB-Series** of transmitters affordable to own and operate

By using modern CAD techniques and computer assisted manufacturing, QEI has produced an internal modular system that is easy to maintain and allows the transmitter to be upgraded to a higher power level in the field. Yet even in this package, the **QUANTUM MBB-Series** house the exciter, IPA, FET power amplifier modules, output combiner, power supplies and harmonic filter/directional coupler assemblies in one unit.

QEI designed the **QUANTUM MBB-Series** to deliver what broadcasters need **RELIABILITY.** Every step of the way QEI selected only the highest quality components. You can feel it in the ergonomically placed controls and metering, and see it in the attention to detail on the FET power amplifier modules. The **QUANTUM MBB-Series** are expertly crafted to be the best broadcast transmitters available in the world today!



The power amplifier modules are comprised of two FET's combined for 500 Watts of broadband output power. A self-aligning connector feeds each module to the high power combiner. This provides reliable, low-loss matching and isolation of the power amplifiers. This QEI exclusive design eliminates all trouble prone connections and high loss cabling. Filtered air positively pressurizes the cabinet eliminating dust infiltration. The power amplifier module compartment has multiple, super quiet fans for redundancy and to ensure even cooling of all modules.

The **QUANTUM 20M** exciter is used in the **Quantum M2BB** and the

Quantum 50M exciter is used in the **Quantum M5BB.** No other transmitter manufacturer has taken such care in the development of the entire transmitter/exciter package. QEI developed the first truly linear frequency modulated oscillator (FMO) over 20 years ago with our best selling Model 675 exciter. The 20M continues the tradition with our new *Super-Linear FMO.* This new advance in FMO technology is the secret to the **QUANTUM MBB-Series** transmitter's superior sound.

QEI's **QUANTUM MBB-Series** of Solid-State FM Broadcast Transmitters are designed and manufactured in our New Jersey, U.S.A. facility.

QEI QUANTUM MBB Series FM Transmitters

Technical Specifications

GENERAL

Power Output:

QUANTUM M2BB:..... 600 to 2000 Watts

QUANTUM M5BB:..... 600 to 5000 Watts

Frequency Range:87.5 to 108 MHz (other frequencies optional)

RF Flatness (87.5 to 108 MHz):..... +/- 1dB

RF Load Impedance:.....50 ohms

Output Connector:..... 1-5/8-inch EIA, male

VSWR:1.6:1 maximum at full power (automatic power control provides for operation at reduced power into any phase or magnitude).

RF Harmonic/Spurious:..... Suppression meets or exceeds all FCC/DOC/CCIR specifications

Frequency Stability:.....±200 Hz from 0° to 50° C.

Modulation Type:.....Direct FM

Modulation Capability:Greater than ±350 kHz

Modulation Sensitivity vs. Temperature: 0.01% per degree Centigrade

Pre-Emphasis:

Standard:..... 75µsec (FCC)

Optional:.....50µsec (CCIR)

Asynchronous AM S/N Ratio (AM Noise):-55 dBc (no FM modulation present)

Synchronous AM S/N Ratio (Incidental AM):-50 dBc with 100 % FM Modulation

ELECTRICAL/MECHANICAL

AC Power:208/240 VAC, 60Hz, single or three phase (Tap range 198 to 250 VAC, other line voltages and frequencies are available)

Ambient Temperature Range:

Operating:..... -15° C to +50° C

Startup:..... 0° C to +50° C

Maximum Humidity:..... 95% non-condensing

Maximum Altitude:..... 10,000 feet AMSL

Cabinet Size: ... 24" (61 cm) W x 34" (86 cm) D x 59" (149 cm) H

MONAURAL PERFORMANCE

Input Impedance:.....600 ohms balanced

CMRR:>60 dB

Input Level: +10 dBm for 75 kHz deviation at 100 Hz

Frequency Response:.....±0.5 dB, 30 Hz to 15 kHz

THD+N:..... 0.025% at 400 Hz

FM S/N Ratio: Greater than 75 dB below 75 kHz deviation at 400 Hz, measured in a 50 Hz to 15 kHz bandwidth with 75 µsec de-emphasis

WIDEBAND COMPOSITE PERFORMANCE

Inputs: (1) unbalanced on rear panel, BNC connector

Input Impedance:..... 10K ohms

Input Level:..... 3.5 V_{P-P} for 75 kHz deviation

FM S/N Ratio:..... Greater than 80 dB below 75 kHz deviation at 400 Hz, measured in a 50 Hz to 15 kHz bandwidth with 75 µsec de-emphasis

THD+N:.....0.025% at 400 Hz

Amplitude Response:.....±0.01 dB, 30 Hz to 75 kHz

Composite Slew Rate:..... 9 v/µsec, symmetrical

Phase Response:±0.1 degrees from linear phase, 30 Hz to 75 kHz

STEREO PERFORMANCE*

Modulation Type: True numeric digital stereo generation, digitally generated pilot; no alignment required.

Frequency Response: ±0.1 dB, 30 Hz to 15 kHz

THD+N:.....0.025% at 400 Hz

FM S/N Ratio:..... Greater than 80 dB below 75 kHz deviation at 400 Hz, measured in a 50 Hz to 15 kHz bandwidth with 75 µsec de-emphasis

Stereo Separation:..... >60 dB

Dynamic Stereo Separation: >60 dB

Crosstalk (linear):..... >60 dB

Crosstalk (non-linear): >60 dB

SCA PERFORMANCE

Subcarrier Inputs: (3) total, unbalanced, BNC connectors

Subcarrier Input Impedance: 10K ohms

Subcarrier Input Level: 1.0 V_{rms}, nominal for 10% injection

Subcarrier Amplitude Response:±0.2 dB, 40 kHz to 100 kHz

The QUANTUM MBB Series FM transmitters include a remote control interface compatible with all standard broadcast transmitter remote control systems.

*Model QUANTUM MBB Series performance is specified using 710A digital stereo generator at rated exciter power output into a 50 ohm resistive load.

Since measurement techniques vary, care should be observed in comparing specifications of different manufacturers.

QEI maintains an ongoing program of research and development to insure the finest product performance and quality.

All specifications are subject to change without notice.

© 2002 QEI Corporation all rights reserved.