MSBT is Thales Alenia Space Spain’s fifth generation of Tracking, Telemetry and Command (TT&C) transponder, with a flawless track record of more than 330 units delivered to our customers of the various product generations for all types of space missions and applications: Earth observation, science, exploration, telecommunication, navigation, space vehicles, orbital infrastructure and proximity links.

/// Coherent mode and ranging functions
/// Spread Spectrum TT&C function available
/// Telemetry command decryption function available
/// The only European supplier of TDRSS compatible transponder certified by NASA
/// Extremely flexible product with large in-flight configurability

COMPETITIVE ADVANTAGES

/// New generation product based on qualified processes with large flight heritage & zero failures in 30 years
/// Reuse of RF design and MMICs from previous product generation (ISBT) with well proven performances
/// Mass and volume improvement: 50% less mass and volume compared with the previous generation
/// Cost optimized solution
/// Compatible with all ground segments (ESA, NASA, JAXA, KARI…)
/// Compatible with most of the main satellite platforms
/// New CAN BUS interface available in the standard product
/// In-flight configuration capabilities: multi-frequency, multi-modulation, output power
/// Compatible with all type of orbits: LEO, MEO, GEO, Near Earth

MSBT product suite
Miniaturized S-Band Transponder
GENERAL

/// Mass: 1.5 kg transceiver + 0.3 kg diplexer
/// Transceiver size: 85 x 113 x 137 mm³
/// Primary bus voltage: 21-51V and 100V
/// Redundant TC & TM data interfaces
/// TM/TC housekeeping interface options:
///  - CAN BUS
///  - Pulse high level command
///  - Serial interface

RANGING MODES

/// ESA/NASA two tone and ESA MPTS, alone or simultaneous with TM
/// Regenerative code ranging NASA SNUG 450

RECEIVER

/// S-Band (2025-2120 MHz): Commandable
/// Carrier Acquisition Threshold: < -128 dBm
/// Input dynamic range: -128 to -50 dBm
/// Commandable residual and suppressed carrier modulation modes.
/// Crypto function available: AES per NIST FIPS PUB 197, certified FIPS-140-2
/// Advanced decoding options available

TRANSMITTER

/// S-Band (2200-2300 MHz): Commandable
/// Coherent mode available
/// Commandable RF output power: up to 37 dBm
/// Advanced encoding options available
/// Modulation modes: Commandable
/// PM with internal subcarrier generation
/// QPSK, OQPSK, GMSK
/// Spread spectrum

EXPERIENCE

/// On-going contracts for PROBA-3, FLEX, NOVA-C, ETS-9, 2 GEO military telecommunication programs and an export radar program (27 units).
/// Over 400 S band transponders sold worldwide from various product generations.

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