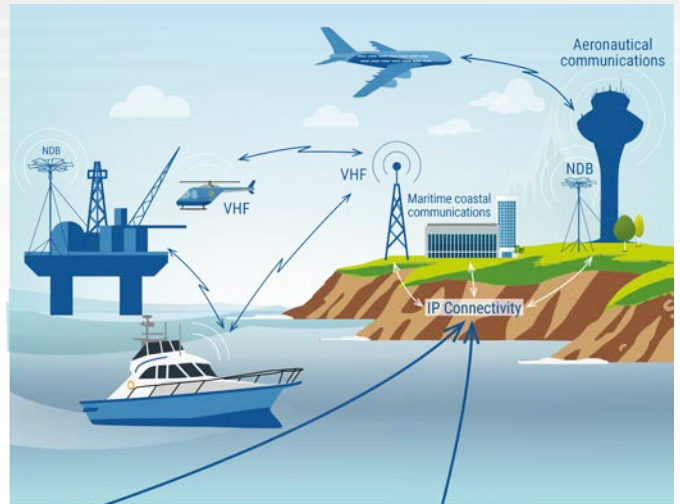


TELERAD

Aeronautical and Maritime Radiocommunication Systems

VHF MARINE
SOFTWARE DEFINED
RADIOS

EM9000-2GM | RE9000-2GM



■ EM9000-2GM TRANSMITTER

- 100W RF output power
- Low power consumption
- High reliability
- Outstanding ACP performance
- Built-in-test



■ RE9000-2GM RECEIVER

- Outstanding sensitivity and cositing performance
- High reliability
- Built-in-test

■ OVERVIEW

The TELERAD Series 9000-2GM radio systems are specifically designed to meet the operational requirements of air and maritime traffic control centers, commercial airports or harbours. Fully scalable and with growth capacity, they feature high reliability, and remote control and maintenance capability.

■ MAIN FEATURES

- Multimode functionality in one Software Defined Radio
- FM (G3E or F3E), DSC compatible
- Wide band 156-163 MHz, in FM, with option to extend down to 150 MHz and up to 174 MHz
- 2 to 100 W RF Output Power
- Remote control and maintenance capability, Built-in test
- SNMP, JBUS
- VoIP conform to EUROCAE ED-137
- 2 Ethernet ports for redundancy
- Optional extension to Aero communications in AM mode / frequency range 118-144 MHz

GENERAL DATA

Frequency range:

FM: 156-163 MHz (150-174 MHz in option)

Frequency stability:

≤ 0.3 ppm

Channel spacing:

25 kHz, 12.5 kHz

Modulation:

- F3E / G3E (voice)
- G2B (DSC)

Maintenance:

- Local (RS232) or remote (J-BUS/RS485) or SNMP/Ethernet
- Maintenance: Built-In Test, software loading
- Setup functions: frequency, operation, parameters
- Measurements: Tx output power, VSWR, DC voltage, Rx, AGC voltage...

Temperature:

- Operating: -20°C to +55°C
- Relative humidity: 95 % at +40°C (non-condensing)
- Storage: -40°C to +80°C

Power supply:

- EM9000A-2GM and RE9000A-2GM versions:
AC: 85-265 V, 50-60 Hz
DC: 24 V_{DC} (21-31 V_{DC})
Automatic switching from AC to DC input
- EM9000C-2GM and RE9000C-2GM versions:
DC: 24 V_{DC} (21-31 V_{DC})

IP technology:

- VoIP (according to ED-137-1)
- SNMP V1, V2c, V3 (according to ED-137-4)
- 2 Ethernet ports IPv4, IPv6

Standards:

- EN 301 929-1: G3E
- EN 300 162-1: F3E
- EUROCAE ED-137: VoIP

EM9000-2GM TRANSMITTER

Mechanical characteristics:

- Width: 483 mm
- Overall depth: 430 mm
- Height: 132 mm, 3 U
- Weight: < 14 kg

Power consumption (100 W FM):

- 24 V_{DC}: 14 A (Typ.)
- 230 V_{AC}: 1.8 A (Typ.)
- 115 V_{AC}: 3.9 A (typ.)

RF output power:

2-100 W in 0.5 dB steps

VSWR:

Up to a VSWR of 2:1 without power reduction

Protections:

Power reduction on overheating, low voltage and high VSWR

Duty cycle:

100 % (with external fan)

G3E modulation:

- Frequency deviation: ≤ ± 5 kHz
- Audio input adjustable from -30 to 0 dBm (maximum +10 dBm)
- Audio input impedance: 600 Ω
- AFC AGC regulation: < 0.5 dB for +30 dB
- Audio bandwidth at 25 kHz channel spacing: 300-3000 Hz, + 6 dB/ octave
- Audio bandwidth at 12.5 kHz channel spacing: 300-2550 Hz, + 6 dB/ octave

Data Mode:

DSC: > -3 dB 200-3000 Hz

Tx Time Out:

Adjustable from 5 to 300 s in 5 s steps (can be disabled)

Spectral purity:

- Harmonics: < -36 dBm (< -86 dBc)
- Spurious: < -54 dBm (< -104 dBc)
- Noise at 1 % of the carrier: < -150 dBc/Hz

Adjacent channel power (ACP):

- 25 kHz channel spacing: ≤ 80 dB
- 12.5 kHz channel spacing: ≤ 70 dB

RE9000-2GM RECEIVER

Mechanical characteristics:

- Width: 483 mm
- Overall depth: 430 mm
- Height: 44.5 mm, 1 U
- Weight: < 4 kg

Power consumption (receiving):

- 24 V_{DC}: 500 mA (Typ.)
- 230 V_{AC}: 140 mA (Typ.)
- 115 V_{AC}: 270 mA (Typ.)

Sensitivity:

- G3E: ≤ 0,35 μV (SINAD 20dB CCITT, 3 kHz dev. @ 1 kHz)
- G2B: ≤ 0,35 μV (BER < 10⁻²)

Distortion (3 kHz dev. @ 1 kHz):

≤ 5 %

AF Bandwidth (G3E):

- 25 kHz channel spacing: ≥ 300-3000 Hz, -6 dB/octave
- 12.5 kHz channel spacing: ≥ 300-2550 Hz, -6 dB/octave

AF Noise (30 dBμV, 3 kHz dev. @ 1 kHz):

> 50 dB (65 dB Typ.)

Effective Bandwidth at 6 dB:

- 25 kHz channel spacing: ± 11 kHz
- 12.5 kHz channel spacing: ± 3.5 kHz

Adjacent channel selectivity:

- 25 kHz channel spacing ≥ 85 dB (87 dB Typ.)
- 12.5 kHz channel spacing ≥ 65 dB

Spurious rejection:

≥ 85,5 dB

3rd order Intermodulation (3 signals)

≥ 85 dB

Desensitization or Blocking

≥ 95 dBμV (105 dBμV Typ.)

AGC Response (G3E voice):

- Dynamic range: > 100 dB (110 dB Typ.)
- Attack time: < 20 ms
- Release time: < 25 ms

Audio Line Output:

- Adjustable from -11 to +10 dBm in 0.5 dB step
- Impedance: 600 Ω

Squelch:

- Attenuation: ≥ 60 dB
- Type: Carrier detection or Signal/Noise ratio

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