HITEC-FM-130-S

13 meter full-motion S-Band
TT&C Satellite Ground Antenna System

KEY FEATURES

Full-motion over two axes

High system availability due to high level of subsystem redundancy

Equipped with dual channel Monopulse tracking system

Designed for harsh environments with operational wind speeds up to 150 km/h and survival speeds up to 200 km/h

REFERENCES

Client:
European Space Agency (ESA)

Location:
Kiruna, Sweden
Kourou, French-Guiana

Use & deployment:
Tracking and Tracing IOV Phase Galileo Program

13-METER FULL MOTION ANTENNA FOR TELEMETRY, TRACKING & CONTROL (TT&C)

The FM-130-S is a highly specialised, low maintenance and future proof antenna system, providing our international client base a robust, reliable and high performance solution.

Operating in S-Band, the system is ideally suited to control medium earth orbit satellite fleets. Two FM-130-S high end satellite ground antenna systems are in use for the in-orbit validation (IOV) phase of the Galileo program.

The shaped reflector, 13-meters in diameter, is optimized for high S-Band efficiency and performance. Constructed of bonded aluminium panels the reflector offers state-of-the-art transmission capabilities.

Designed for harsh environments the entire system ensures excellent operational capabilities at wind speeds up to 150km/h (peak) and survival up to 200 km/h.

HITEC LUXEMBOURG

QUALITY ASSURED FIRM ISO 9001

Version 08/2012

ANTENNA SYSTEM CHARACTERISTICS: HITEC-FM-130-S

SYSTEM PERFORMANCE

Tracking	Program Track Step Track Monopulse (autotrack)
Frequency bands	Designed for S-band (Tx 2025 MHz - 2120 MHz; Rx 2200 MHz - 2300 MHz) Adaptable to frequency bands from L- to C-band (1 - 8 GHz)
Antenna gain (ref. feed horn)	48.3 dBi @ 2300 MHz
Antenna Noise Temperature (ref. feed horn)	83.5K @ 5° Elevation 74.3 @ 10° Elevation 68.0K @ 30° Elevation
Radiation pattern	Complies with ITU-S 580-6, ITU-R S.465-5
Accuracy	Tracking, no wind: 0.048° Pointing, no wind: 0.023° Tracking, at 45 km/h and 60 km/h gusting: 0.060° Pointing, at 45 km/h and 60 km/h gusting: 0.065°

ANTENNA OPTICS

Configuration	Cassegrain optics
Reflector diameter	Designed for 13.0 m Adaptable to other diameters: 11 m to 15 m
Reflector surface accuracy	< 0.7 mm RMS (over full elevation range)
Polarization	Tx: Circular Polarization Rx: Circular Polarization
3dB Beamwidth	0.61° @ 2300 MHz
Axial Ratio (within 3σ Tracking Error)	≤ 1.0 dB

HUB CHARACTERISTICS

Available space for housing RF equipment	~ 1.4 m x 1.6 m x 1.7 m
Environment	Closed sealed space Temperature controlled

AXIS DESIGN

Full motion elevation over azimuth mount, triple backlash compensated drives

ELEVATION

Operational travel range	-1 to 181 deg
Maximum rate	5 deg/sec
Maximum acceleration	5 deg/sec^2

AZIMUTH

Operational travel range	± 360 deg
Maximum rate	15 deg/sec
Maximum acceleration	7.5 deg/sec^2

ENVIRONMENTAL CONDITIONS

Drive limit	150 km/h
Wind operational limit	Mean 110 km/h Peak 150 km/h
Survival wind	200 km/h (in stow position)
Temperature	Operational -55°C to +65°C Survival -55°C to +65°C
Power supply	3x400 V
Snow & Ice	1000 kg
Corrosion	Region: Coastal and Polar

CONTACT

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