

Design Of Ku-band Tx/Rx Dual Linear with Monopulse Tracking Cassegrain Feed

Space Applications Centre of Indian Space Research Organisation, ISRO has designed Ku-band Cassegrain feed for its own payload missions. This feed is used in earth station antenna.

Earth station antenna is used to provide communication and/or tracking, telemetry and telecommand to various in-orbit satellites. Earth station antenna for communication and/or tracking for geostationary orbit satellites typically consists of main reflector, sub-reflector, feed system, LNA, power amplifiers, control units, network control management and its associated circuitry.

One of the most important elements in earth station antenna is feed system. Feed system is used to transmit/receive power from amplifier to sub/main reflector.

It also serves to provide the desired radiation patterns to reflectors to achieve the specified gain.

Feed system combines / separates different polarizations and/or transmit /receive/tracking frequency bands.

It is the feed system's insertion-loss, return-loss, tracking performance, radiation patterns, polarization and transmit / receive isolation, power handling capability – which determines the overall earth station antenna performance, governs EIRP and G/T.

ISRO offers to transfer technology of this feed to industries in India. Enterprises interested in obtaining knowhow may write giving details of their present activities, infrastructure and facilities.

Applications

Feed system for Earth station Antenna

Specifications

Ku band Cassegrain feed system with Monopulse Tracking

| No. | Item description | Specification |
|-----|--|--|
| 1 | Operating Frequency Receive Transmit Tracking | 10.70 GHz to 12.25 GHz 12.75 GHz to 14.50 GHz 10.70 GHz to 12.25 GHz |
| 2 | Feed Type | Monopulse tracking feed Having 6-port (2-Tx, 2-Rx, 2-Tracking Ports) LP rotatable frequency re-use feed. |



Specifications

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| No. | Item description | Specification |
|-----|--|--|
| 3 | Feed Insertion Loss Receive 1.1 dB Transmit 0.9 dB | |
| 4 | Feed VSWR at feed flange Tx & Rx 1.3:1 Typical Tracking 1.6:1 Typical | |
| 5 | Power Rating | 1 KW CW Per Port of Tx |
| 6 | Isolation Tx-Tx 35dB Min. Rx-Rx 35dB Min. Tx-Rx 85dB Min. Tx-Tracking 85dB Min. Rx-Tracking 35dB Min. | |
| 7 | Cross Polarization | 35dB Min. |
| 8 | Sum Peak to Difference Peak Difference | LHCP, Tracking Band : -10 dB (Typ) RHCP, Tracking Band : -10 dB (Typ) |
| 9 | Polarization Tx & Rx Tracking Internal Vector Polarization Alignment Dual Linear (Vertical and Horizontal) LHCP and RHCP in Tracking | |
| 10 | Waveguide Interface Tx & Rx Tracking CPR 75 (square flange, four hole) CPR 75 (square flange, four hole) | |

Technology Transfer

SAC/ISRO offers to transfer this technology of the **Design of Ku Band Cassegrain Feed** developed by SAC to industries in India with adequate experience and facilities. Enterprises interested in obtaining knowhow may register and submit their proposal to IN-SPACE, Ahmedabad at www.inspace.gov.in

For more details, Contact:

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