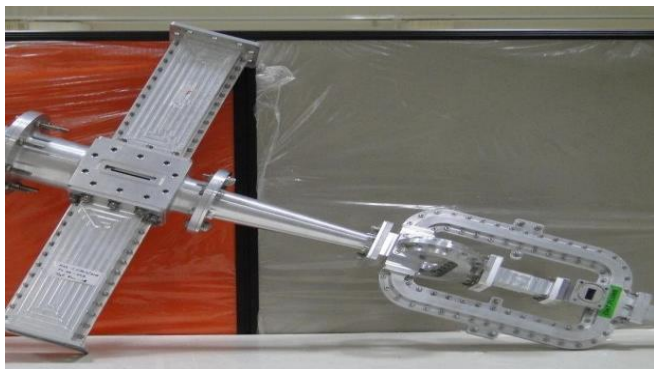


C/Ku Ortho Mode transducer for Combined C/Ku Receive Feed Systems

Space Applications Centre has developed a C/Ku Ortho Mode Transducer for combined C/Ku receive feed systems. Such an Ortho Mode Transducer permits combination of separate C and Ku terminals into a single system thereby effecting infrastructure and cost savings.

Technical Description



The polarization and frequency duplexing for combined C/Ku Feed system is carried out by two distinct OMTs on each for the respective bands. The Ortho Mode Transducers serves to separate the incoming signals depending on the polarization and the frequency and make them available at distinct ports for further processing. The configuration for OMTs in the respective bands differs as considerations for realizing requisite in band performance are different. The OMTs are connected by appropriate waveguide transitions.

C Band OMT

The C band OMT configuration comprises of a common circular waveguide with different diameters at both ends which communicates both C and Ku band signals. The signals of vertical and horizontal polarization are coupled through a pair of axial slots placed around

Isolation

C -Band Lin-V to Lin- H: 35 dB min
C -Band to Ku-Band: 70 dB min
Ku -Band Lin-V to Lin- H: 35 dB
Ku-Band to C-Band: 70 dB

the periphery of the common circular waveguide at an angular interval of 90° between the slots. The slots are uniquely profiled for effecting coupling of the C band signals and not degrading the Ku band signals. The symmetrical configuration and unique profile of the slot ensures that no higher order modes are generated at such discontinuities which may degrade the Ku band signals. The branching waveguide network then communicate the coupled signals from each pair of slots to suitable power combining components such as Magic T, one each for the respective polarization.

Applications

VSAT Network

ISRO offers to transfer technology of combined C/Ku Receive feed system to industries in India with adequate experience and facilities. Enterprises interested in obtaining knowhow may write giving details of their present activities, infrastructure and facilities.

Ku Band OMT

The Ku band OMT consist of a central circular waveguide closed at one end with four branching rectangular waveguides symmetrically arranged around it. A pair of such collinear rectangular waveguides communicates signals of the same polarization to the power combining network. The central circular waveguide consist of a unique matching element. The matching element serves to effect a good match for the incoming signals. The symmetrical configuration chosen is to circumvent that no higher order modes are generated at the common junctions. The power combining network can either be effected with Magic T or simple E plane bifurcated waveguide power combiners.

Specifications

Frequency Bands

- C - Band : 3.7 GHz - 4.2 GHz
- Ku - Band : 10.95 GHz - 12.75 GHz

Polarization

- Dual - Linear [Lin- V/ Lin- H]

VSWR

- C -Band : 1.65 @3.7 GHz - 4.2 GHz
- Ku- Band : 1.4 @10.95 GHz - 12.75 GHz

Insertion Loss

- C -Band : 0.5 dB [Typ] @3.7 GHz - 4.2 GHz
- Ku- Band : 0.7 dB [Typ] @10.95 GHz - 12.75 GHz

Technology Transfer from ISRO

ISRO is willing to offer the knowhow of this technology to suitable entrepreneurs / industries in India. Capable manufacturing industries interested in acquiring this knowhow may write with details of their present activities, requirements and plans for implementation, infrastructure and technical expertise available with them, their own market assessment, if any, and plans for diversification to the address given below: