

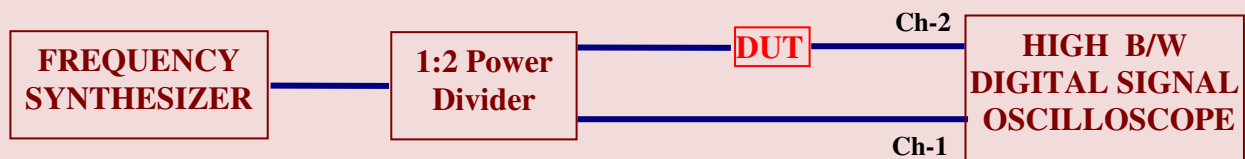
ADVANCED TECHNOLOGIES FROM ISRO

Interest Exploration Note

TT / 09 / 08 / SAC

Method for Evaluation of Gain and Phase Characteristics of Transmit Receive Module

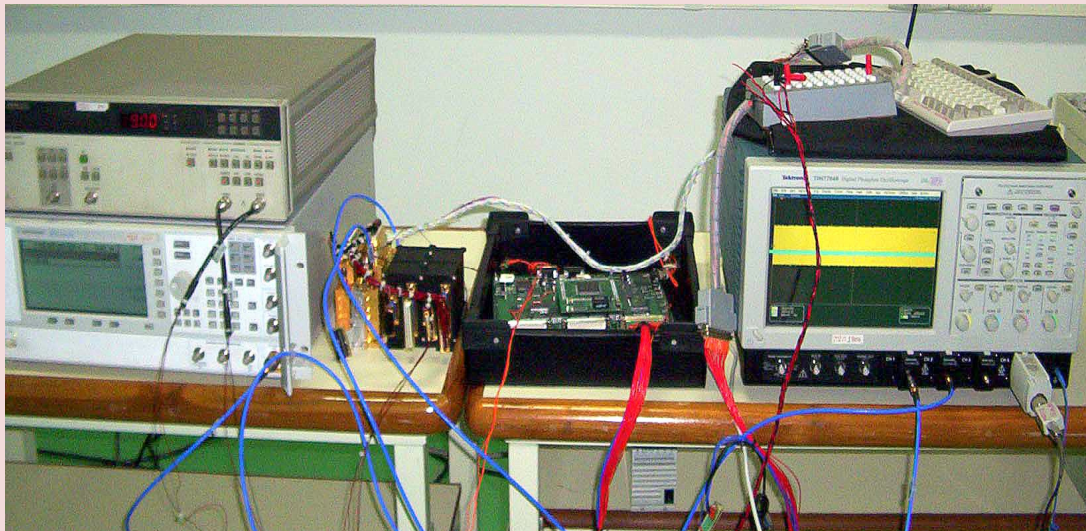
The Indian Space Research Organisation (ISRO) has developed a method for evaluation of Gain & Phase Characteristics of a Transmit Receive Module (TR) with a minimum instrument system consisting of a Frequency Synthesizer and a High Bandwidth Digital Signal Oscilloscope.



In this Time-domain testing of TR Module, the RF signal from the Frequency Synthesizer (FS) is split into two paths by a 1:2 Power Divider where one path is directly used at the High Bandwidth Digital Signal Oscilloscope (DSO) as a reference signal while other passes through a DUT-Device under Test to second channel of the DSO. The two signals at the DSO channels are IQ demodulated for evaluation of phase difference between the two signals. Gain of the DUT can be calculated from the signal power at the DUT channel of the DSO and a knowledge of the signal power at the input of the DSO. The TRM can be tested at desired operational temperature and across the operational bandwidth.

SPECIFICATIONS

- Frequency & Bandwidth of Operation : Selectable
- Transmit / Receive Mode of Operation : Selectable
- Phase Measurement Repeatability : 0.10
- Gain Measurement Repeatability : 0.01 dB
- RF Signal Interface : SMA Type
- Input drive levels of TR Module : Selectable



SALIENT FEATURES

- Uses simple instruments readily available in the market.
- No complex or bulky hardware involved.
- Reduces the cost of the total test setup as compared to the other setups used for testing the TR Module.
- Speeds up the operation of the system.
- Provides remote control over all the units of the system.
- Calibration is done simultaneously with the measurement.

APPLICATION(S)

- Designing of a TR Module.
- Designing of an Active Array Antenna.
- Characterization of an Amplifier.

TECHNOLOGY TRANSFER FROM ISRO

ISRO is willing to offer the know-how of this technology to entrepreneurs / industries in India. Capable manufacturing industries in acquiring this know-how 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. Alternatively, you can also fill in the response form provided in this website.

For further details, please contact:

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