

Programmable C/Ku band Telecommand and Ranging Receiver

U R Rao Satellite Centre (URSC) of Indian Space Research Organisation (ISRO) has developed Programmable C/Ku band Telecommand and Ranging Receiver to allow change of TTC uplink frequency by command from Ground Station. Such a feature accords the satellite fleet operator the liberty to reposition the spacecraft into a different orbital slot during the lifetime of the spacecraft.



Salient Features

- ✦ Programmable Receiver relies on a Fractional N PLL Local Oscillator Synthesizer to generate high quality stable signals to down convert the uplink signal to fixed second IF.
- ✦ Fixed 20 MHz Reference TCXO is used for Synthesizer IC.
- ✦ Design confers adequate flexibility in selection of uplink frequency by command from Ground Station.
- ✦ In cases where command enabled frequency change is not desired, frequency can be changed anytime even after integration of Receiver in spacecraft by a conveniently located program connector on the Receiver.
- ✦ C band Receiver employs an in house developed wideband MMIC LNA.

Major Specifications

Frequency

Frequency of operation	:	5800–7000 MHz (C band) 12750–13250MHz (Ku band)
Frequency Resolution	:	40 KHz in C band 80 KHz in Ku band

Command Channel

Modulation	:	FM / PSK/ PCM (NRZ-L)
Bit rate	:	500 bps
BER @ -110 dBm	:	1×10^{-5}
Output signal	:	Data, Clock, Lock (Differential)

Ranging Channel

Modulation	:	FM
Frequency Deviation	:	± 400 KHz
SNDR @ -100 dBm	:	60 dB-Hz
Output type	:	Differential

Interface

DC power consumption	:	10 W (Typical)
Size	:	280 x 95.5 x 198 mm ³
Mass	:	2.9 kg
Power	:	10 W

Technology Transfer

URSC/ISRO offers to transfer this technology of Programmable C/Ku band Telecommand and Ranging Receiver to industries in India with adequate experience and facilities. Industries interested in obtaining know how may write giving details of their present activities, infrastructure and facilities.

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