

DISC 8 & Prime(Space) Re-open
(19.2 - DISC 8) (3.1 & 6.2 - Prime(Space))

DISC 8 Challenges

S. No	Composite Challenge S.No	Component Challenge S. No	Composite Challenge Title	Component Challenge Title
12		19.2		Development of Anti-Spoofing Circuits for PNT services

Prime(Space) Challenges

S. No	Composite Challenge S.No	Component Challenge S. No	Composite Challenge Title	Component Challenge Title
3		3.1		Intelligent Onboard System for satellite mission planning
5		6.2		Miniaturisation of Payloads (IR & Hyperspectral) for a small satellite upto 150 kgs

DISC 8 & DISC 8 Prime Challenges with Description

3.1 Intelligent Onboard System for Satellite Mission Planning (Indian Air Force)

As a component of challenge 3^[3], it is proposed to develop an Intelligent On-board System for Mission Planning of Satellites with RF sensors. This intelligent on-board system should be able to execute missions autonomously based on inputs from ground control and collect critical RF data in an efficient manner for successful detection of various RF sources.

6.2 Miniaturisation of Payloads (IR & Hyper spectral) for a small satellite upto 150 kgs (Indian Air Force)

As a component of challenge 6^[6], it is proposed to develop miniaturised Infra-Red sensor and Hyper Spectral sensor to be integrated on a miniaturised small satellite as a single package. The developed sensors package should be able to integrate easily into a small satellite with overall weight less than 150 kgs and provide complete imagery data for on-board processing.

19.2 Development of Anti-Spoofing Circuits for PNT services (Indian Army)

As a component of challenge 19^[19], the PNT data being received may be spoofed to deceive the user. In this regard, it is proposed to develop anti-spoofing circuits, particularly for PNT services, which would be integrated with the SatPhone under development.

Annexure A

(Reference Challenges)

3. Development of Multiband Programmable RF Sensor Satellite (Indian Air Force)

Multiband Programmable RF Sensor Satellite which is capable of detecting RF sources (0.5-40 GHz) from LEO. Critical parameters that are to be measured from the space-based sensor include intercepted parameters comprising of emitter identification along with time of arrival, direction of arrival, frequency range for emitter (minimum and maximum with deviation), all frequency pattern (Fixed, Agile, Batch, Dwell and switch etc.), Pulse Repetition Interval and Pulse Group Repetition Interval (with all PRI pattern like Constant, Jitter, Stagger, Dwell & Switch etc.), PRI associated with each spot frequency Pulse Width, Effective radiated power of emitter along with type of Antenna Scan, Scan Rate, Polarization, Beam width (Elevation and Azimuth), Side Lobe Level (with Standard deviation), Time on Target Wave, Localisation Information (in user defined format) along with Intra Pulse data.

6. Miniaturised Multi-Payload Satellite (EO, IR, SAR, Hyper Spectral) upto 150 Kgs (Indian Air Force)

With the advancement in electronics, many payloads earlier deployed on dedicated large satellites are now being miniaturised. These payloads can be easily integrated into a small satellite with an overall weight of 150 kg. An advantage of such small sats is the ease of manufacture, low cost and ease of launch. It is proposed to design and develop a modular type small satellite, which should be able to integrate these miniaturised payloads (Electro-Optical, Infrared, Synthetic Aperture Radar and Hyper Spectral).

19. Secure, Compact, Handheld SatPhone capable of Multimedia (voice/data/image/video/PNT) transmission/reception (Indian Army)

Communication-on-the-Go (COTG) is an inescapable requirement for agile troop deployments. Hence there is a requirement of user terminal which is capable of supporting voice/video/images/text and PNT info being transmitted on a single form factor. Hence, it is proposed to develop a secure, compact, handheld SatPhone terminal to support secure communication protocols. The SatPhone has to be compliant with MSS standard of satellite communication. The handset should be capable of:

- SATCOM – Enable voice and msg comm
- PNT – Be able to receive and transmit Satl NavIC Data.
- ISR – Capability to receive satl imagery and terrain/ weather updates.