

# Chapter 10. Technical Specification

## 10.1 Technical Specification

Dimensions		
Satellite Antenna Unit (with Base Frame)	3.9 m x 4.3 m (153.54" x 169.29")	
Reflector size	2.4 m offset antenna	
	Height	Diameter
Radome (154")	With Base Frame: 4,307 mm (169.56") Without Base Frame: 3,762 mm (148.11")	Ø3,912 mm (154.01")
Radome Frame Typ.	Short leg and long leg supported	
Antenna Control Unit	431 mm x 381 mm x 44.4 mm (16.96" x 14.96" x 1.74")	
Weight		
Satellite Antenna Unit	595 kg (1,311.75 lbs)	
Radome (including Base and Air-conditioner Frame)	538 kg (1,186.09 lbs)	
ADU total weight	1,133 kg (2497.84 lbs)	
Radome Weight (excluding base frame)	222 kg (489.43 lbs)	
Antenna Control Unit	3.5 kg (7.7 lbs)	
Antenna System Performance		
Platform	Three Axis: Azimuth, Elevation, Cross-level	
Positioning	3-axis Velocity Mode Servo Control: Azimuth, Elevation, Cross-Level	
Pedestal Motion Range	Azimuth	Unlimited
	Elevation	-15° to +120°
	Cross-Level	Up to ±30°
Ship Motions	Roll	±20° at 8 ~ 12 second
	Pitch	±10° at 6~ 12 second
	Yaw	±8° at 15 ~ 30 second
	Turning rate	Up to 12° /sec, 5°/sec <sup>2</sup>
Time for Cold Start	Less than 2 minutes	
Tracking Error	±0.2° for Ku-band 0.7 dB ~ 1.0 dB RMS (under ship motion)	
Power Source	220 V AC, 50 ~ 60 Hz	
Power Consumption	Max. 3.0 kW	
Ship’s Gyro Interface	NMEA 2000, NMEA 0183	
ADU to ACU Communication	FSK (400 MHz, 433 MHz)	
ADU to ACU RF Interface	Coaxial	
BUC M&C Interface	RS-232, Ethernet	
PC Serial Interface	RS-232 (57,600 bps, 8, N, 1)	
Modem Interface	RS-232/RS-422, I/O Console, Ethernet	

RF Specification		
C-band	Rx Frequency	3.625 GHz ~ 4.2 GHz
	Rx Gain	38.0 dBi @ 3.91 GHz
	Tx Frequency	5.85 GHz ~ 6.425 GHz
	Tx Gain	41.6 dBi @ 6.14 GHz
	G/T (EL deg. = 30°)	Min. 18.0 dB/K @ 3.91 GHz (Min.19.0 dB/K by calculation)
	EIRP	64 dBW (250W BUC)
	CPI (Tx)	Circular: 25 dBc, Linear 28 dBc
	Polarization	Circular • Tx-RHCP and Rx-LHCP • Tx-LHCP and Rx-RHCP Linear • Tx-V and Rx-H • Tx-H and Rx-V
	Tx to Rx Isolation	80 dBc
	Radar rejection	DC to 3.1 GHz 60 dB min. 4.5 to 4.9 GHz 60 dB min.
	Radiation Patterns	FCC 25-209 and 1st side lobe : 17 dBc over 2 degrees
Ku-band	Rx Frequency	10.7 GHz ~ 12.75 GHz
	Rx Gain	47.3 dBi @ 11.85 GHz
	Tx Frequency	13.75 GHz ~ 14.5 GHz
	Tx Gain	48.2 dBi @ 14.25 GHz
	EIRP	67.5 dBW (125 W BUC)
	CPI (Tx)	30 dBc
	G/T (EL deg. = 30°)	Min. 27.0 dB/K @ 12.75 GHz (28 dB/K by calculation)
	Polarization	Linear (Co-pol, Cross-pol) • Co-Pol : Tx-V and Rx-V, Tx-H and Rx-H • Cross-Pol : Tx-V and Rx-H, Tx-H and Rx-V
	Tx to Rx Isolation	80 dBc
	Radar rejection	DC to 10 GHz 70 dB min.
	Radiation Patterns	FCC 25-209
Antenna Control Unit (ACU)		
Display	2 Line 40 Character Graphic VFD Module	
Key	Touch Keys	
LED Indicator	3 LEDs for Power, Tracking, Error	
USB Port	PC Connection Firmware Upgrade Logs Download	
RF Interface	Coaxial (Antenna Rx: N-type, Modem Rx: F-type)	
Ship's Gyrocompass Interface	NMEA 2000, NMEA 0183	
GPS	NMEA In, NMEA Out	
PC Serial Interface	RS-232 (57,600 bps, 8, N, 1), USB	
BUC M&C Interface	RS-232, Ethernet	
Modem Interface	RS-232/RS-422, I/O Console, Ethernet	
Ethernet Port	RJ 45, TCP/IP connection, Intellian LAN, Connection with iDirect modem (OpenAMIP)	
Communication with ADU	FSK (400 MHz, 433 MHz)	
ACU Installation	19-inch Rack Bracket Type	

Link Gain	0 dB typ. ( ±3 dB)
Link Gain Ripple (any 216 MHz)	<2 dB p-p
Input / Output Impedance	50 Ω
Power Source	100~240 V AC, 50~60 Hz, 1 A

Table 43: Technical Specification

## 10.2 Environmental Specification

Test	Intellian Standard		
<b>Vibration</b>	<ul style="list-style-type: none"> <li>MIL-STD-167A-1</li> <li>IEC 60945</li> </ul>		
<b>Shock</b>	According to MIL-STD-810, IEC 60068-2-27 (10g/11ms, 20g/7ms)		
<b>Temperature</b>	Operational	Survival	Storage
	-25 °C ~ +55 °C	-40 °C ~ +85 °C	-40 °C ~ +85 °C
<b>Damp Heat</b>	<ul style="list-style-type: none"> <li>Preconditioning (3 hours (±30 min))               <ul style="list-style-type: none"> <li>Temp.: 25 °C ± 3 °C</li> <li>Humidity: more than 95 %</li> </ul> </li> <li>9 hours (±30 min) at 55 °C ±2 °C, 93 % ±3 % (humidity) 3 to 6 hours temperature fall</li> <li>9 to 6 hours at 25 °C ±3 °C, more than 95 % (humidity) 2 cycles</li> </ul>		
<b>Salt Mist</b>	<ul style="list-style-type: none"> <li>Number of spraying: 4</li> <li>Storage period in damp chamber: 7days after each spraying, 28 days total</li> <li>Spraying duration: 2 Hour</li> <li>Temperature: 25 °C ±10 °C</li> <li>Saline solution: 5 %NaCl, PH6.5 to 7.2 at 20 °C ±2 °C</li> <li>Storage temperature: 40 °C ±2 °C</li> <li>Humidity in chamber during storage: 93 % +2 %, -3 %</li> <li>IEC-60068-2-52</li> </ul>		
<b>Cold Test</b>	2 hours at -40 °C ±2 °C		
<b>Solar Radiation</b>	Operational at +32 °C ambient air temperature with the addition of 670 Watt/m <sup>2</sup> of solar radiation per IEC 60945-Annex B.		
<b>Humidity</b>	Operational per IEC 60068-2-30, Test Db, Variant 1		
<b>Altitude</b>	In a stowed configuration for shipping, shall survive without damage when exposed to altitudes to 15,000 feet or 4572 meters.		
<b>Dry Heat</b>	<ul style="list-style-type: none"> <li>Relative Humidity: Max. 55 %</li> <li>16 hours at 55 °C +2 hours at 70 °C</li> <li>Tolerances: Temp.: ±2 °C</li> <li>Humidity: ±10 %</li> </ul>		
<b>Waterproof</b>	Resistant to water penetration sprayed from any direction Standard: IPX6		
<b>Wind Speed</b>	125 mph		
<b>Packaging</b>	Comply with ISTA 3. Additionally, packaging shall be designed with proper mechanical bracing to prevent Terminal equipment damage from shipment per ISTA 3.		
<b>MTBF</b>	At least 40,000 hours		

Table 44: Environmental Specification