

# Ku-Band Transceiver

## 5900 series

## SPECIFICATIONS

### TRANSMIT SECTION

<b>IF Input</b>	
Frequency range	70 ± 20 MHz/140 ± 20 MHz selectable
Narrow BW option	70 ± 20 MHz/140 ± 20 MHz selectable
Wide BW option	140 ± 40 MHz
Impedance	50/75 Ω selectable
Connector	N female
Return loss	18 dB minimum
<b>Gain specification</b>	
Gain	
4 W	64 dB nominal
8 W	68 dB nominal
16 W	71 dB nominal
Attenuator range	0 dB to 25 dB nominal
Attenuator step size	1 dB nominal
Gain flatness	
Over IF	
Narrow BW option	±1.0 dB maximum, 40 MHz
Wide BW option	±2.0 dB maximum, 80 MHz
Over frequency range	±2.0 dB maximum
Gain stability	±1.5 dB maximum, -40°C to +55°C
<b>RF output</b>	
Frequency range	14.0 to 14.5 GHz
Connector	WR75, PBR120 flange with M4 tapped holes
VSWR	1.5:1 maximum
<b>4 W SSPA</b>	
Output power (1 dB GCP)	+36.5 dBm (4.5 W) typical +36.0 dBm (4 W) minimum
Carrier to intermodulation ratio	-27 dBc, two carriers, each @ 6 dB OPBO from 1 dB GCP
<b>8 W SSPA</b>	
Output power (1 dB GCP)	+39.5 dBm (9 W) typical +39.0 dBm (8 W) minimum
Carrier to intermodulation ratio	-26 dBc, two carriers each @ 6 dB OPBO from 1 dB GCP
<b>16 W SSPA</b>	
Output power (1 dB GCP)	+42.3 dBm (17 W) typical +42.0 dBm (15.9 W) minimum
Carrier to intermodulation ratio	-25 dBc, two carriers each @ 6 dB OPBO from 1 dB GCP
<b>Spurious output</b>	
Meets EN 301 428 with 54 dBi antenna gain	
<b>Phase noise (SSB)*</b>	
100 Hz	-60 dBc/Hz maximum
1 kHz	-70 dBc/Hz maximum
10 kHz	-75 dBc/Hz maximum
100 kHz	-85 dBc/Hz maximum
<b>Synthesiser step size</b>	
1 MHz	
<b>Frequency stability</b>	
-40°C to +55°C	
±2 x 10 <sup>-8</sup>	
Aging	
±1 x 10 <sup>-7</sup> /year	

### RECEIVE SECTION (EXCLUDING LNB)

<b>RF Input</b>	
Frequency range	950 to 1700 MHz
Impedance	50 Ω
Connector	N female
VSWR	1.4:1 maximum
Noise figure	20 dB typical
DC output (switch selectable)	+15 V @ 30 to 425 mA
10 MHz output	0 dBm ± 1 dB
<b>IF output</b>	
Frequency range	
Narrow BW option	70 ± 20 MHz/140 ± 20 MHz selectable
Wide BW option	140 ± 40 MHz
Impedance	50/75 Ω selectable
3rd order intercept	+15 dBm minimum
Connector	N female
Return loss	18 dB minimum
<b>Gain specification</b>	
Gain	
35 dB nominal	
Attenuator range	
0 dB to 25 dB nominal	
Attenuator step size	
1 dB nominal	
Gain flatness	
Over IF	
Narrow BW option	±1.0 dB maximum, 40 MHz
Wide BW option	±2.0 dB maximum, 80 MHz
Over frequency range	±2.0 dB maximum
Gain stability	±3.0 dB maximum, -40°C to +55°C
<b>Image rejection</b>	
50 dB minimum	
<b>Spurious output</b>	
-65 dBm maximum	
<b>Phase noise (SSB)*</b>	
100 Hz	-60 dBc/Hz maximum
1 kHz	-70 dBc/Hz maximum
10 kHz	-80 dBc/Hz maximum
100 kHz	-90 dBc/Hz maximum
<b>Synthesiser step size</b>	
1 MHz	
<b>Frequency stability</b>	
-40°C to +55°C	
±2 x 10 <sup>-8</sup>	
Aging	
±1 x 10 <sup>-7</sup> /year	
<b>L-Band IF monitor port</b>	
Output frequency range	950 to 1700 MHz
Gain	10 ± 3 dB Rx RF I/P to L-Band monitor
Gain ripple	±2 dB maximum
Connector	N female
Impedance	50 Ω
Return loss	15 dB minimum

\*Meets Intelsat Phase Noise requirement using Limit-2 for data rates up to 8 Mbps. Excludes mains related sidebands.

### LOW NOISE BLOCK CONVERTER

Indicative specifications.

<b>Input</b>	
Frequency range	
Band 1	10.95 to 11.7 GHz
Band 2	11.7 to 12.2 GHz
Band 3	12.25 to 12.75 GHz
Interface	WR75
VSWR	2.5:1 typical
<b>Noise figure</b>	
1.2 dB @ 25°C maximum 1.0 dB typical	
<b>Gain specification</b>	
Gain	
60 dB typical	
Gain flatness	
±1.5 dB maximum full band	
<b>Output</b>	
1 dB GCP	
0 dBm minimum	
3rd order intercept	
+11 dBm minimum	
Impedance	
50 Ω	
Connector	
N female	
VSWR	
1.5:1 typical	

### TRANSMIT REJECT FILTER (OPTIONAL)

Pass band	10.95 to 12.75 GHz
Insertion loss	0.05 dB maximum
Reject band	13.75 to 14.5 GHz
Rejection	55 dB maximum

### GENERAL

<b>Input voltage</b>	
42 to 72 V DC (floating input) standard 115/230 V AC ± 15% with power supply unit	
<b>Power consumption</b>	
DC	4 W
	8 W
	16 W
	115 W maximum SSPA On 165 W maximum SSPA On 250 W maximum SSPA On 50 W maximum SSPA Off
AC	4 W
	8 W
	16 W
	180 VA typ. @ nom. AC voltage SSPA On 260 VA typ. @ nom. AC voltage SSPA On 390 VA typ. @ nom. AC voltage SSPA On

### MONITOR AND CONTROL

**Control panel facilities**  
Indicators: Standby, On, Warm-up, SSPA activated, Converter fault, LNB fault, SSPA fault, Temperature fault, Fan fault

**Controls:** Power control (off/standby/on), SSPA (inhibit/remote/activate), Serial interface settings, LNB supply via Rx RF input connector, Mains/Battery supply select

### Remote monitor and control facilities

<b>Serial interface standards:</b>	RS232, RS422 (RS485)
<b>Protocol standards:</b>	ASCII, Packet (RS485)
<b>Protocol address range:</b>	0 to 127

**Remote monitoring functions (serial interface):** Standby, On, Warm-up, SSPA activated, SSPA output power (8 and 16 watt transceivers only), Converter and SSPA temperatures, Converter fault, LNB fault, SSPA fault, Temperature fault, Fan fault, SSPA inhibit control, SSPA activate control, Transmit frequency, Receive frequency, Transmit attenuation, Receive attenuation, Cable compensation, Reference oscillator override, SSPA alarm enable, LNB alarm enable, Temperature compensation select, Packet address (ASCII mode only), Packet address range (ASCII mode only), Packet protocol select (ASCII mode only), SSPA mode select, Converter lock, Status change poll, Power-up mode

**Remote control functions (serial interface):** Power control (standby/on), SSPA inhibit control, SSPA activate control, Transmit frequency, Receive frequency, Transmit attenuation, Receive attenuation, Cable compensation, Reference oscillator override, SSPA alarm enable, LNB alarm enable, Temperature compensation select, Address range select (ASCII mode only), Packet protocol select (ASCII mode only), SSPA mode select, Reset, Reset change bits, Power-up mode

**Remote monitoring functions (contact closure):** Standby, Warm-up, SSPA activated, Converter fault, LNB fault, SSPA fault, Temperature fault, Fan fault

**Remote control functions (contact closure):** Power control (standby/on), SSPA inhibit control, SSPA activate control

### ENVIRONMENTAL

#### Converter module and SSPA module

Temperature	-40°C to +55°C
Relative humidity	100%
Cooling	Converter—Convection 4 W—Convection 8 W, 16 W—Forced air
Weatherproofing	Sealed to 34 kPa

#### Power supply unit

Temperature	-40°C to +55°C
Relative humidity	100%
Cooling	Convection
Weatherproofing	Sealed to IP65

### PHYSICAL

All dimensions are measured over the connectors.

#### Size

Converter module	110 mm W x 410 mm D x 240 mm H
SSPA module, 4 W	140 mm W x 300 mm D x 145 mm H
SSPA module, 8 W, 16 W	140 mm W x 335 mm D x 195 mm H
Power Supply Unit	200 mm W x 160 mm D x 370 mm H

#### Weight

Converter module	8 kg
SSPA module, 4 W	5.1 kg
SSPA module, 8 W, 16 W	6 kg
Power Supply Unit	9 kg

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Specifications subject to change without notice or obligation



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