

4400X Series, X-Band Ext Ref LNB with Universal 12-hole gasket input isolator.

Orbital 4400X Series X-Band Ext Ref LNB



MIL Spec MIL-STD-188-164A, 45 dB internal filter

How to order an Orbital 4400X Series X-Band External Reference LNB

Frequencies (GHz):

LO	Input	Output	Bandwidth
6.30S - 7.25 to 7.75		.95 to 1.45	0.500

Bandwidth in MHz

'X' Signifies External Reference

Input Connector
X LNB is WR-112

LNB630S-500X-WN60-G12

Output Connector

F - F, 75 ohm
N - N, 50 ohm
S - SMA, 50 ohm
T - TNC, 50 ohm

Gain

40 - 40 dB
50 - 50 dB
55 - 55 dB
60 - 60 dB

Input Isolator

G12 - Isolator, 12 hole gasketed flange

Orbital Features:

The newly designed Orbital X-Band External Reference LNB comes with an attached input Isolator.

Orbital has standardized on a "Universal" type WR-112 rectangular gasket flange with 12-holes instead of 8. This "Universal" flange can interface to either type of flat flange: 4-hole or 8-hole.

Options include Military Mobile Vibration Mil-Std 810F Chapter 514.5C-1.

Orbital Specs:

- Image Rejection >60 dB
- P1 dB >15 dBm
- IP3 >25 dBm
- Internal Transmit Rejection >45 dB
- Noise Figure <0.7 dB
- Optional Mil-Std 188-164A for vibe and shock
- RoHS & REACH compliant

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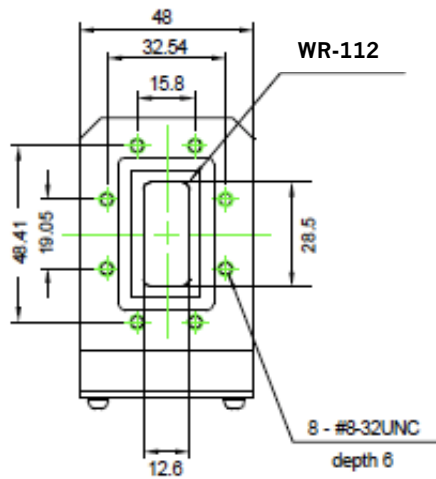
David Zuvic

Tel: 1-604-856-0305,

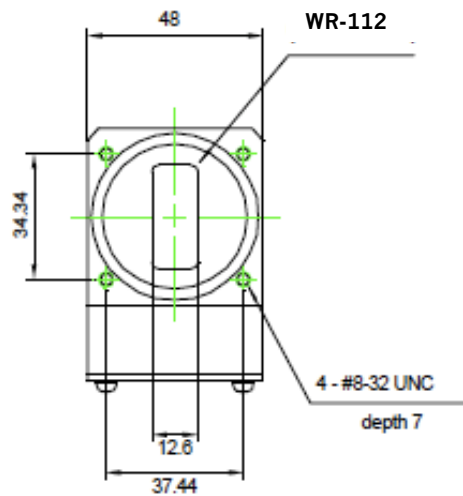
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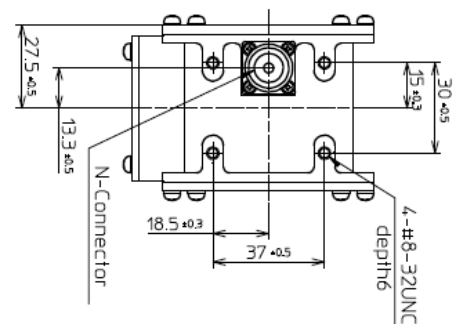
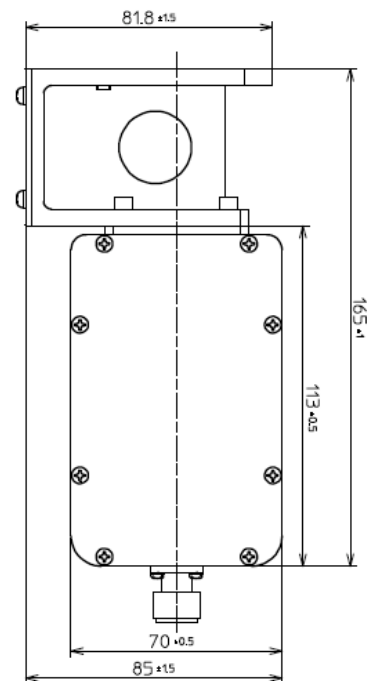
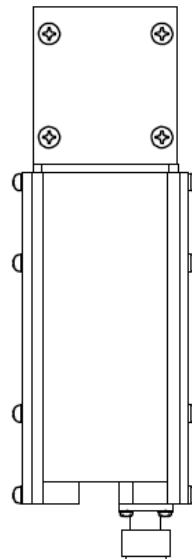
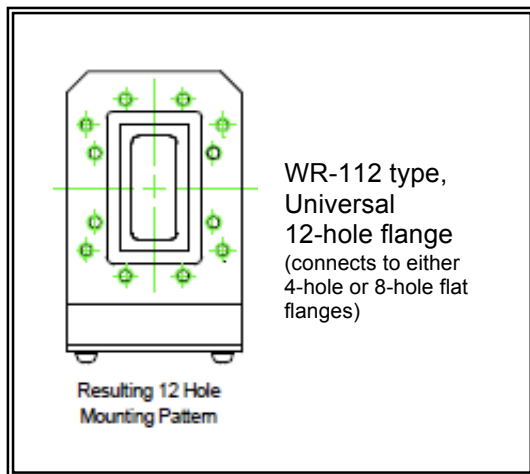
Orbital 4400X Series X-Band Ext Ref LNB Specs



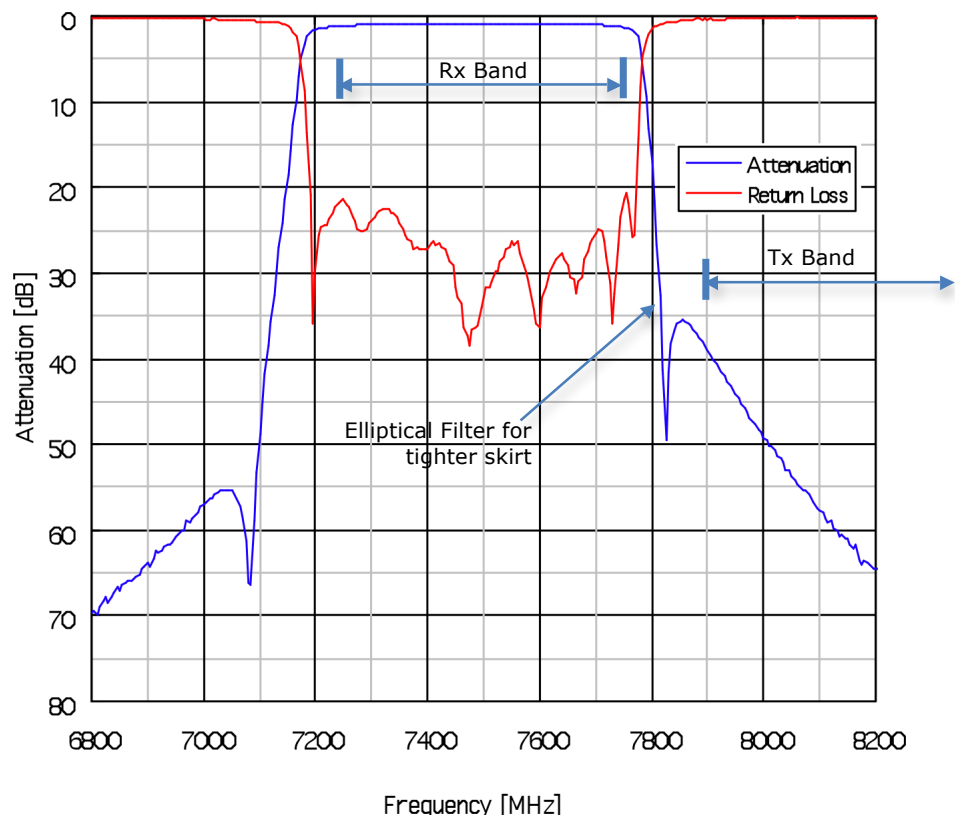
Standard 8 hole flange



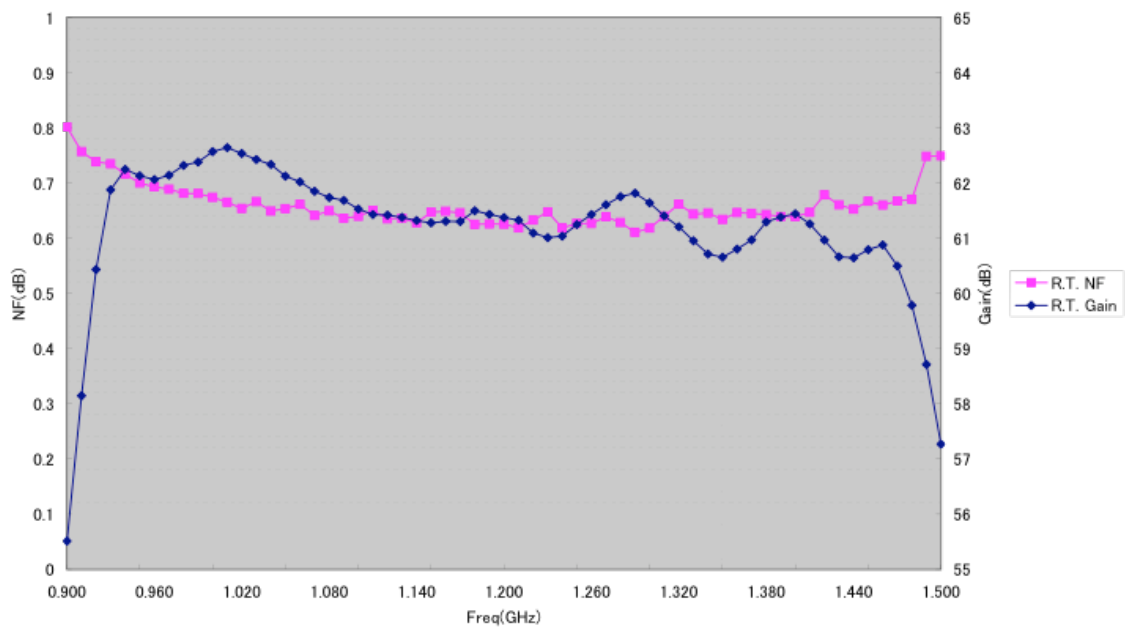
Standard 4 hole flange



Item	4400X Series X-Band LNB with Isolator
Size	(L) 165mm x (W) 85mm x (H) 55mm
Weight	Approx. 800 g
NF	0.7 dB max. @+23C
VSWR	1.3 : 1



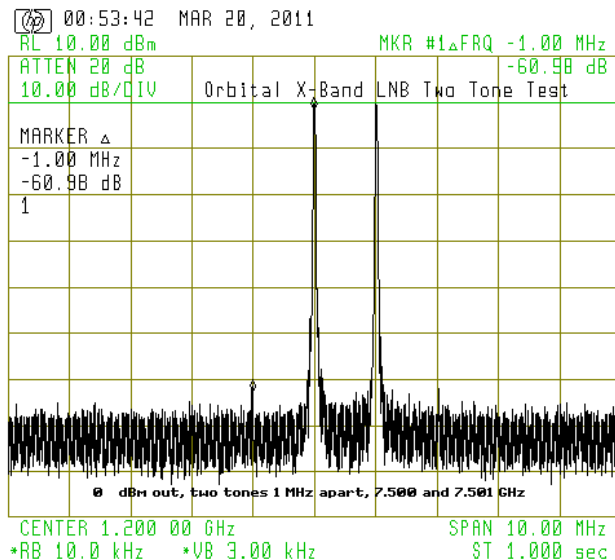
Internal Filter Frequency Response



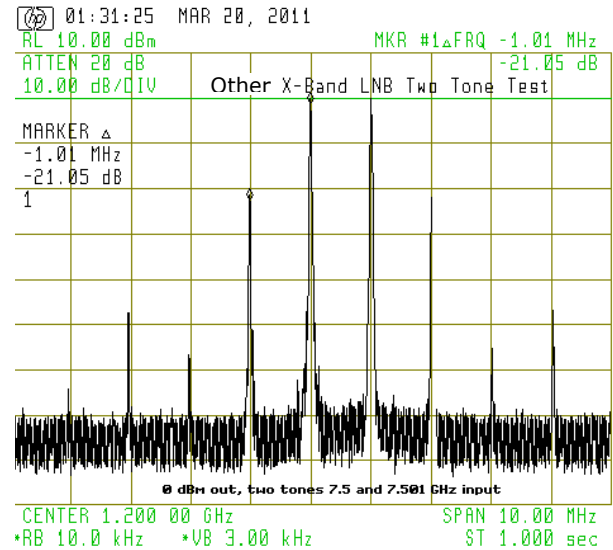
Noise Figure and Gain

Two Tone Test

The two plots below compare gain linearity for the Orbital design with competitor designs. Two tones at 7.500 GHz and 7.501 GHz are injected into the LNBs to provide 0 dBm out. The first spur in the Orbital design is over -60 dBc down compared to the multiple spurs on the competitive LNB starting at only -20 dB down. Intermodulation (IM) distortion for a given output is reduced in the Orbital LNB while providing higher overall gain, 60 dB minimum for the Orbital LNB.



Orbital LNB



Competitor LNB

The LNB has to amplify the multiple signals from the satellite by a factor of a million (60 dB) without adding significant noise (noise figure), but also to perform this conversion without adding distortion. The above graphs represent the comparative levels of distortion between the Orbital design and competitive designs. Basically, if you put two signals into the LNB, you should get two signals, and only two signals, out. You can imagine the mess using a poor quality LNB when you amplify and convert the dozens or even hundreds of signals from the satellite.

While an LNB would never be operated at 0 dBm output level, the test and design represent the linear conversion quality of each LNB and the P1 dB compression point. The Two Tone tests are proxies for the quality of conversion that is absolutely necessary for low bit error rate satellite transmissions. LNB non-linearity starts at much lower levels than 0 dBm output, and the 2 tone test is the best method of comparing the quality of design and manufacture of LNBs. The ultimate benefit to the end user is lower noise figure, higher conversion gain, and most importantly, lower bit error rate for their digital transmissions.

ELECTRICAL SPECIFICATIONS

Item		Spec (with Isolator)
RF Input Frequency		7.25 to 7.75GHz
IF Output Frequency		950 to 1450MHz
Local Frequency		6.3GHz
Local Frequency Stability		Phase locked to external 10MHz reference
10MHz Reference	Insertion	Multiplexed onto the IF coaxial connector
	Input Level	-5 to +5dBm
	Phase Noise	-135dBc/Hz max. @100Hz -148dBc/Hz max. @1KHz -152dBc/Hz max. @10KHz -155dBc/Hz max. @100KHz
	LO Phase Noise	-65dBc/Hz max. @100Hz -75dBc/Hz max. @1KHz -85dBc/Hz max. @10KHz -95dBc/Hz max. @100KHz -105dBc/Hz max. @1MHz
LO Leakage		Virtually eliminated
Noise Figure		0.7dB typ. @+23°C
Gain		62dB±4dB over temperature and frequency
Gain Flatness		±2.0dB max over frequency
Gain Stability		±1.0dB max over a 24hr period, at +25°C
Input VSWR		1.3:1 max.
Output VSWR		2.0:1 max.
Attenuation (in Tx band, 7.9 to 8.4 GHz)		45 dB
Image Rejection		-60dBc max.
P1dB Compression point		+15dBm min.
Signal Independent Spurious		-60dBm max. @Rx-band
Signal Related Spurious		-65dBc max. @0dBm output, Rx-band
Desense level		-20dBm, 7.9-8.4GHz at no more than 0.1dB of noise figure degradation
Overdrive		-20dBm @Non-damaging
Input DC Power		+15 to +24VDC, 410mA Multiplexed on a single coaxial connector with the IF and 10MHz reference signal.
Input Interface		WR-112 waveguide, 12-hole flange
Output Interface		50Ω, N-type female coaxial connector

MECHANICAL SPECIFICATIONS

Size	(L) 165mm x (W) 85mm x (H) 55mm 6.5 x 3.4 x 2.2 inches
Weight	approx. 800g 1.8 lbs
Color	White Munsell N9.5 semigloss standard. Optional colors include: MIL-STD-595-33303, 33446, 34094. Other colors available

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40°C to +60°C
Operating Altitude	10,000 ft ASL
Operating Relative Humidity	100%, condensing
Non-operating Temperature	-50°C to +70°C
F Shock	20g, 11ms, half sine
Vibration	MIL-STD-810E, method 514-4
MTBF	>125,000 hours
Optional Military Mobile Vibration	Mil-Spec 810F chapter 514.5C-1, & temp range of -30 to +70°C
Compliances	RoHS & REACH

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