

# INVACOM LNB's

## TWH-031 and TWF-031



### The Magic 0.3dB

The problem is as old as satellite reception itself. A signal barely breaks the threshold level of the receiver. With good weather, reception of this signal is just about tolerable but as soon as a few clouds make an appearance, the signal disappears. Experts would say, "You need a bigger antenna". But what are you supposed to do if this solution is not an option? Naturally questions about an LNB with higher amplification and lower noise figure begin to emerge. Up until now, the experts really advise against the LNB solution since what was written on the LNB package wasn't always true: the magical 0.3 dB.

### INVACOM TWH-031 and TWF-031

The TSI test department wanted to know exactly what was so special about these highly touted LNB's from INVACOM. All we heard was a typical noise figure of 0.3 dB at 20°C. Fortunately, the importer Olbort Satellitentechnik from the Austrian town of Oeynhausen was able to help us out with two INVACOM LNB's. In our tests we were less interested in confirming the measured values. No, we were more interested in a practical comparison. Both were Twin LNB's. The slightly higher cost for a Twin LNB is more than worth it since they allow two different receivers to fully control the LNB completely independent from each other.

The model TWF-031 with the C-120 flange is designed for use on almost any antenna with

a feed. In the case of this test it was a 90cm Gregory antenna. It was fitted with an LNB that had a gain of 53 dB with a noise figure of 0.6 dB. This is no problem for DTH satellites. On Telstar 11 (data transmissions) and with the channels for exiled Iranians on Telstar 12, the situation when the weather turned ugly didn't look good at all. Switching LNB's was not a problem and could be handled even by beginners. The package included the rustproof hardware and a truly effective gasket. Of course there are also a pair of rubber boots to keep the F-connectors nice and dry. If at first only one F-connector on the Twin LNB is used, the unused F-connector can be covered with one of the included caps to protect it from moisture.

The differences between many of the previously tested LNB's and the INVACOM's were not only measurable (C/N from 0.7db to 0.9 dB at 55 dB amplification on TELSTAR 12, 12.595 GHz), but also visible. In rainy weather the signal remained usable even if it was right on the edge.

For another test the Twin-type TWH-031 with integrated feed was installed on a 60cm antenna. With its 40mm feed size the TWH-031 is compatible with most any offset antenna. In central Europe the feed signals on EUTELSAT W2 normally require a 75cm antenna. After fitting the 60cm antenna with the TWH-031, these signals were visible without any degradation of the video. With the last transmission of DrDish-TV, this LNB was tested in Rome on a 1.2-meter antenna. DrDish-TV was transmitted on the Nordic beam of Intelsat 707 and Rome lies outside of this satellite's central beam. During a test transmission the week before, this antenna was fitted with a standard LNB (0.6dB/52db). Reliable reception of this test transmission could not be realized.

The solid aluminum housing (with plastic end caps) makes the LNB watertight and above all protects it from any external interference. The only opening to the outside world is the feed pointed in the direction of the satellite. It is an ideal LNB for use in Iran where the regime is constantly fighting against illegal satellite systems with terrestrial jamming signals. All INVACOM models are designed as universal LNB's (14/18 volt and 22 kHz) with the input frequency ranges 10.7-11.7 GHz and 11.7-12.75 GHz. The typical local oscillator frequency drift is roughly +/- 1 MHz. At extreme temperatures, this

value could climb to +/- 3 MHz. Power consumption is within limits. With only one output in use it is 170 mA. If both outputs are used it climbs to only 200 mA.

### Conclusion

INVACOM's new TWH-031 and TWF-031 LNB's deliver results exactly as promised. Noticeably better signal reception was demonstrated in our tests. Its workmanship is exemplary. Both models are currently undergoing long-term testing with extreme temperature variations, the results of which will be reported at the end of the testing phase.

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#### Model:

INVACOM TWH-031 and TWF-031

#### Function:

LNB (with C 120 Flange) and LNBF

#### Input:

10.7-11.7 GHz/11.7-12.75 GHz

#### Noise Figure:

0.3 dB typ.

#### Gain:

50-60 dB

#### LOF:

Low 9.75 GHz / High 10.6 GHz

#### Image Rejection:

>40 dB

#### Cross Polar Isolation:

>30 dB

#### High to Low Isolation:

>30 dB

#### Two Tone 3rd Intercept Point:

>15 dB

#### Connector:

2 x F

#### Impedance:

75 Ohm

#### Return Loss:

>10 dB

#### In Band Spurious (primarily 1700 MHz):

<-65 dBm

#### Out of Band Spurious (primarily 850 MHz):

<-45 dBm

