Diamond line LNB's of GT-SAT International

Powerful LNB's

TELE SATELLITE AWARD & BROADBAND 08-09/2008

GT-SAT INTERNATIONAL DIAMOND LINE LNB'S
High output and low distortion make these LNBs ideal solutions for any satellite installation

A few years ago, we were observing the improvement in noise performance of LNB's. The older LNBs that had the noise figure of 0.8 dB or even larger than 1 dB have been replaced by LNBs with noise figures specified as 0.6, 0.3 or even 0.2 dB (typically). If you read regularly TELE-satellite, you know that not always the measurements do prove that 0.2 dB marked devices are better than 0.6 dB devices for every frequency or polarization. Our recent tests showed that there is a rather low difference in noise performance of today's good quality products. So, how can a manufacturer make a difference and offer a customer a better product?

Another parameter that is quite important for systems with long coax cables is the output power provided by the LNB. Since a coax cable attenuates the signal, if we need to feed a receiver that is far away from an LNB, we need to insert an amplifier at the LNB output. Such amplifier means additional cost. It can also spoil the noise performance of the system.

The alternative is to use an LNB that already provides a stronger signal. And the Diamond high gain line of GT-SAT International are just such products, which we took from the market: single, twin, quad and quattro LNB's (GT-LST40D, GT-T40D, GT-QD40D and GT-QT40D). These products have high conversion gain, so when compared with a regular LNB they should create visible stronger signal at the output.

To check this, we quickly build the measurement system: 60 cm dish aimed at HOTBIRD 13° East, 0.3dB reference LNB, satellite signal analyzer, 10dB signal attenu-

Transponder	Pol.	Freq.
Tr-1	V	10719
Tr-2	H	10723
Tr-4	V	11240
Tr-3	H	11296
Tr-5	H	11642
Tr-6	V	11662
Tr-8	V	11727
Tr-7	H	11747
Tr-9	H	12092
Tr-10	V	12111
Tr-11	V	12713
Tr-12	H	12731

Table 1. Transponders selected as signal sources.

ator, a piece of coax cable and a few 75 ohm terminations (to terminate not connected outputs of a quad and quattro LNB's). We selected transponders situated at the beginning, at the end and in the middle of the low and high subband of Ku-Band. Six transponders for vertical and six for horizontal polarization – see Table 1.

Graphs in Figure 1 and 2 show the results. The yellow bar represents the reference LNB. The specification was not overoptimistic. Everybody can see that the whole family provide much stronger signal than the regular LNB by 7 to 12 dB. Please mind that a coax cable introduces 20~30 dB attenuation per 100 m. Based on our results, we can say that the diamond line LNB's compensate the attenuation introduced by 30~50 meters of a coax cable. That is 10~15 stories of a building!

We knew already before the measurements that these LNB's should have bigger output power than normally. So it was not a big surprise. But there are no free lunches. If you improve one parameter, you usually have to agree for a degradation of something else. In this case, we were afraid that the noise performance had suffered. We measured the modulation error ratio (MER). This is the very practical method to check noise performance when real life signals like transponders are used.

In Figure 3 and 4 you can see that our fears were baseless. The single and twin LNB's proved to be very comparable with our reference.

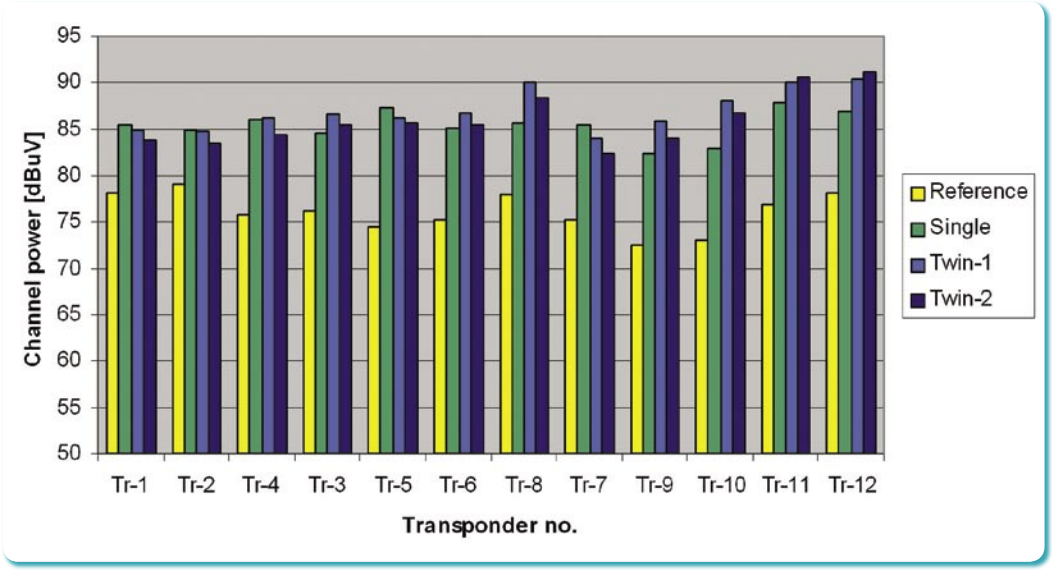

Fig. 1. Outputs of the single and twin LNB's of GT-SAT compared to the reference LNB.

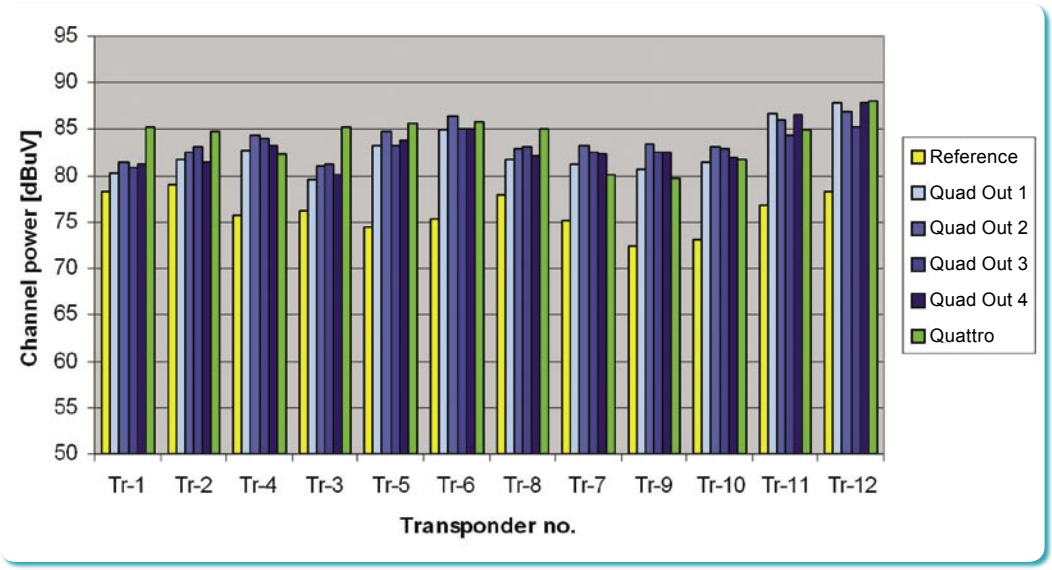

Fig. 2. Outputs of the quad and quattro LNB's of GT-SAT compared to the reference LNB.

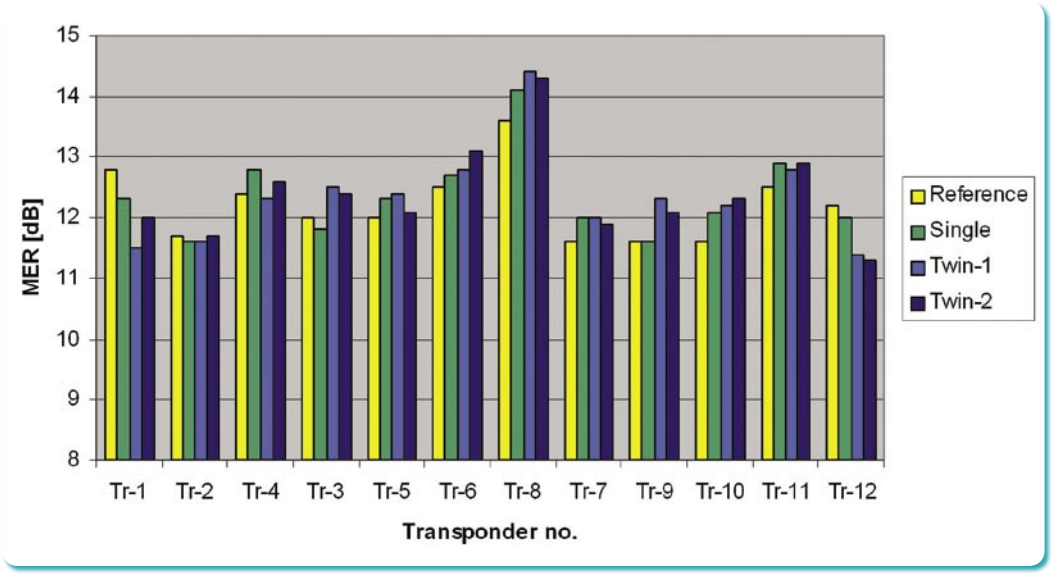

Fig. 3. Noise performance of the single and twin LNB's of GT-SAT compared to the reference LNB.

	Refrence	Single	Twin-1	Twin-2	Quad-1	Quad-2	Quad-3	Quad-4	Quattro
HI Band	139	146	198	199	196	198	198	200	243
LO Band	122	129	183	182	181	182	183	183	228

Table 2. DC current consumption [mA]

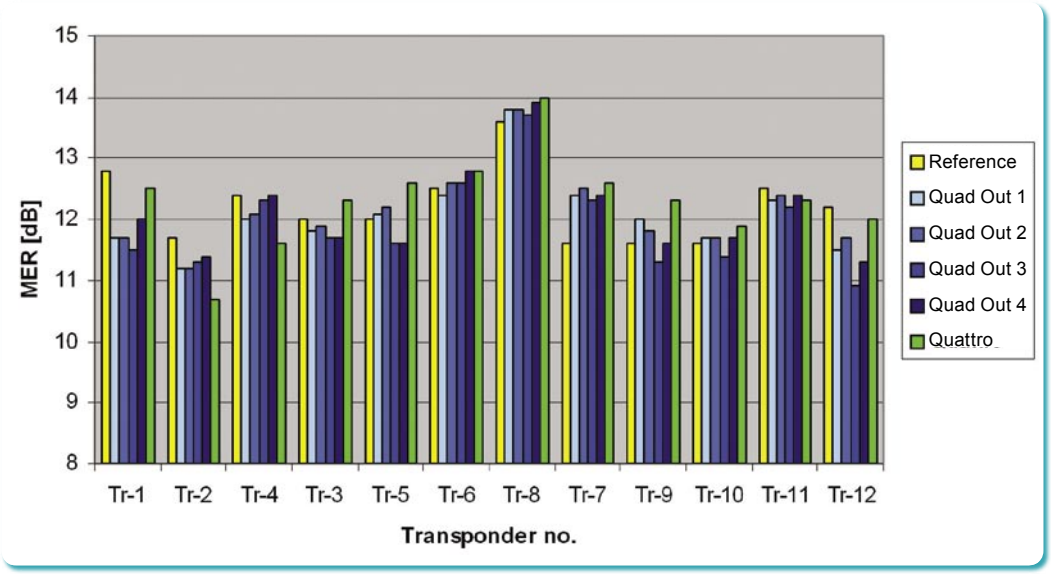

Fig. 4. Noise performance of the quad and quattro LNB's of GT-SAT compared to the reference LNB.

Although for some transponders they were slightly worse but for the other – they were better! All in all, we think GT-SAT Diamond line single and twin models were even better than our reference. If we compared the quad model in Figure 4, we would say it was slightly worse. The quattro LNB was again better than our reference.

Generally, when compared with today's regular low noise LNBs, the Diamond Line family is significantly better in output power and more or less equal in noise performance.

Finally, we also measured the current consumed by the devices – see table 2. The single model consumed less than 100 mA, the twin and quad models less than 200 mA and the quattro a little bit more than 200 mA. That's slightly more than the regular LNB's but it is something one should expect from a high power output devices.

These LNBs are the perfect choice for difficult reception areas and allow for plenty of bad weather signal reduction.

Expert Opinion

Jacek Pawlowski
TELE-satellite
Test Center
Poland

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Increased output power allows you to extend the coax cable by 30-50 meters or introduce lossy distribution devices. Very good noise performance – the same as the good regular devices have. Connectors located not too close each other. Weather protection of F-connectors in all models. Good workmanship.

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none

TECHNIC

DATA	
Manufacturer/Distributor	GT Sat International s.a.r.l 16, Rue Millewee, L-7257 Helmsange-Walferdange, Luxembourg
E-mail	info@gt-sat.com
Telephone	+352-26432203
Fax	+352-26432204
Models	GT-LST40D (single) GT-T40D (twin) GT-QD40D (quad) GT-QT40D (quattro)
Description	Universal Ku-Band LNBF's for Offset Dishes
Noise Figure	0.2 dB (typical)
LOF	9.750 and 10.600 GHz
L.O. Frequency Stability	+/-1 MHz (Max) @ Room Temp.
Conversion Gain	63 ~ 67 dB
Gain Flatness 26 MHz Bandwidth	+/-0.5dB (Typ.)
Cross-Pol. Isolation	27 dB (Typ.)
Image Rejection	45 dB (Min.)
Operating Temperature Range	-40°C ~ +65°C