Jiuzhou Skytrack JSU33

LNBF for multifeed systems

If you ask a satellite fan what is most important when choosing the right LNBF for the Ku-Band reception system, you will most probably hear that this is the conversion gain and the noise figure. The first should be as high as possible and the second on the contrary: the lower the better. Most likely, all our readers know that high conversion gain means that the LNBF output signal level is high and thanks to that long coaxial cables and signal splitters/switches may be used without a fear that the signal will get too weak for reception.

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JIUZHOU SKYTRACK JSU33
Lightweight LNBF very suitable for multifeed installations.

TELE-satellite Test Editor Jacek Pawlowski mounts the new Skytrack LNB from Jiuzhou to a regular offset dish pointing to HOTBIRD at 13°E. The JSU33 LNB is surprisingly small and lightweight

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

Table 1. Transponders used as test signals.

For the purpose of our test, we selected twelve transponders on HOTBIRD satellite (13° East). Their parameters are listed in table 1. As you can see, there are 3 transponders for every sub-band (upper/lower) and every polarization. In this way, we check the performance for both LOF's: 9750 and 10600 MHz, both polarizations: vertical and horizontal and for the beginning, middle and end of a sub-band.

Figure 1 shows the noise performance of the devices. MER is a modulation error ratio – a parameter strongly related to C/N and telling us how many bit errors are detected in the incoming signal. Do we need to add that those errors are caused by noise? The better noise performance of an LNBF, the higher MER values.

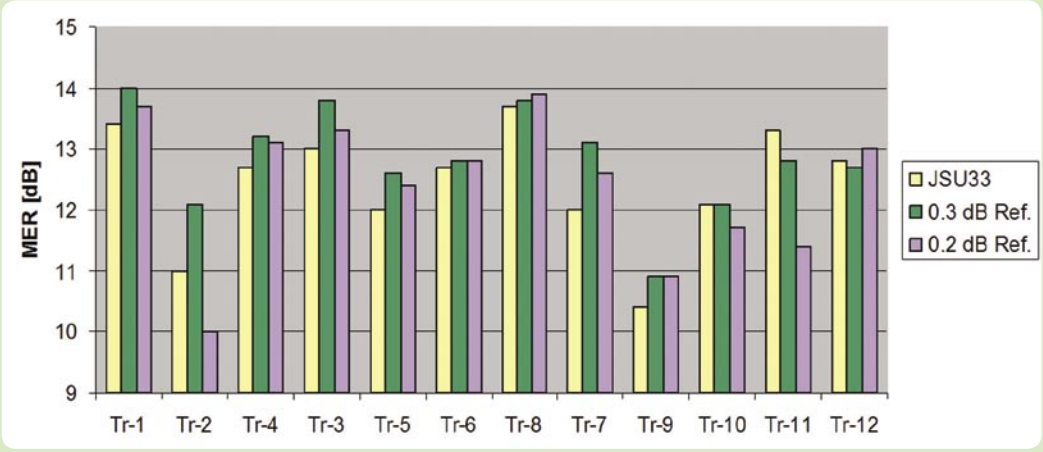

Fig. 1. MER for twelve different transponders of HOTBIRD satellite (13° East).

While for 8 lower frequency transponders, the noise performance of the JSU33 was worse that the reference devices, for the four remaining ones, it beat at least one competitor and once even both (Tr-11). And yes, you are right – the 0.2 dB device did not seem to be better than 0.3 dB LNBF! That's why we explained earlier that the noise figure itself is not the only parameter one must take into account and only the real life test can reveal everything!

The low noise figure should ensure good signal to noise ratio at the output of LNBF, or more properly for digital transmissions: carrier-to-noise ratio. Low C/N is needed to ensure the reception of weaker transponders. It also provides high margin for bad weather conditions. Unfortunately, the noise performance of the real device is not that easy to predict. Except for the noise figure, there are other parameters that influence the carrier-to-noise ratio.

These parameters are: the phase noise of the local oscillator of an LNBF and its spurious content, reverse polarization isolation, level of intermodulation, image rejection. So, the only practical way to asses the LNBF is to apply it on a real antenna and make it receive real world signals. The presence of neighboring transponders makes life harder for an LNBF and degrades carrier-to-noise performance.

In a test like that, we compare the actual performance of LNBF under test with other LNBF's available on the market. That's what we did also when testing the LNBF of Jiuzhou: Skytrack JSU33. Its noise figure is specified as 0.6 dB. We compared it with 2 other contemporary LNBF's: one with NF specified as 0.3 dB and the other with NF=0.2 dB.

And what about the other parameter? It is presented in figure 2. And here the situation is the opposite: it is JSU33 that beat all the rest. For 11 out of 12 transponders, the output power was bigger than the competitors. It is especially true for the 0.3 dB which was the winner in noise performance.

What conclusions you can draw out of those results? Skytrack JSU33's strong point is its high output power. So it can be a preferred choice for multi-satellite reception when we use multiswitches and long cable to distribute the signal to many receivers. The other advantage of this LNBF for multifeed system is its lower profile and weight (ca. 100 g) when compared with other typical devices.

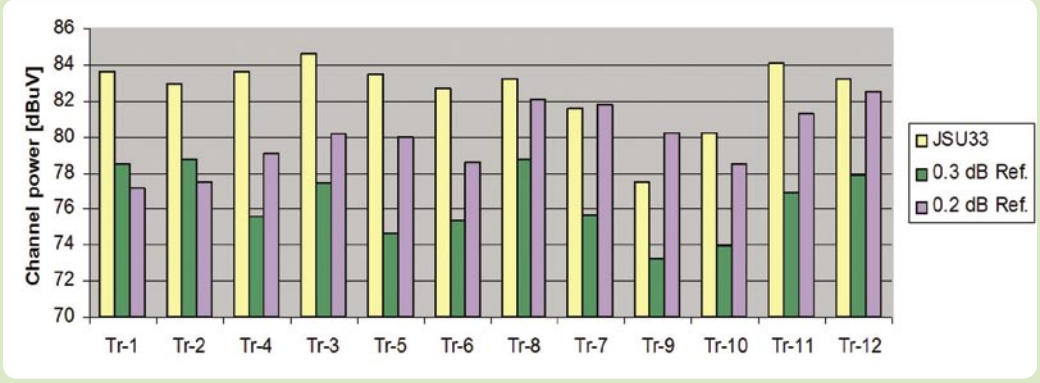

Figure 2. Output power of the LNBF's.

Expert Opinion

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Lightweight, low profile LNBF very suitable for multifeed installations. High output power is another advantage in this application. Good workmanship.

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It will not be a choice for a DX-er.

TECHNIC

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Manufacturer	Shenzhen Xiangcheng Electric Technology Co., Ltd.
Internet	www.skytrack.cn/www.jiuzhou.com.cn
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Telephone	+86 755 26715445/26947236
Fax	+86 755 26947266/26715408
Model	JSU33
Function	Universal Ku-Band Single LNB
Input Frequency	10.7 GHz – 12 GHz
Output Frequency	950 MHz – 2150 MHz
LOF Initial Accuracy	1 MHz @ 25°C
LOF Thermal Drift	2 MHz (-30 ~ +60°C)
Noise Figure	0.6 dB max. @ 25°C
Conversion gain	60 dB min.
DC Current consumption	120 mA max.