

INFOSAT C/Ku-Band Combifeed with Integrated DiSEqC Switch

Thomas Haring and Sylvain Oscul

We have often touched on the C-band subject in TELE-satellite magazine, sometimes with larger antennas and sometimes with smaller ones. One thing was always true: a Combifeed for the reception of C-band and Ku-band with integrated DiSEqC switch (to switch between bands) as well as 14/18-volt polarization switching and 22Khz for switching between the low and high bands has not been tested by us up to this point.

The Combifeed is offered by INFOSAT in Bangkok, Thailand. While the C-band is not in all that much use anymore in Europe, it does offer some significant advantages in heavy downpours or high humidity compared to the Ku-band. Receiving both bands with a single Combifeed does make quite a bit of sense; you save the cost of having to set up a second antenna. This actually gives us a reason to once again play around with the C-band here in Europe since all that is really involved is swapping out the LNB.

The C/Ku-band feed delivered from Thailand was designed primarily for use on prime focus antennas; although with a little modification ingenuity, it can

be fitted on an offset antenna. For our first test we opted to use a 1.2-meter antenna already installed on the roof of our testing facility. Oddly enough, this antenna symbolizes the exact problem that DXer's face in Europe: if you don't have a backyard to call your own and have no choice but to install your antennas on a steep roof or on your balcony, it is often difficult to consider using a larger antenna.

Thanks to modern C-band and Ku-band satellites that transmit with more and more power, a larger antenna may not necessarily be required. A 1.2-meter antenna already gives you access to thousands of channels from around the world in the Ku-band. But as



▲ Included in the package: the Combination LNB with C and Ku-Band LNB in one housing with feed and jumper cable for the built-in DiSEqC switch.



▲ A look inside the feed opening: clearly recognizable is the dielectric that is necessary for reception of circularly polarized signals. Remove it and you have linear reception.

numerous as the Ku-band availability really is, long-distance reception is typically achieved only with C-band and thanks to this new Combifeed, it is quite easy to retrofit your current system for C-band reception.

Since offset antennas are not normally designed to

◀ The INFOSAT C/Ku-LNB can be seen here installed on a 1.8m parabolic antenna.



handle C-band feeds, a cable clip, available from any electrical installer, was used to secure the Combifeed to the antenna. It's not exactly a professional solution, but it is very effective and inexpensive. The installation required some dexterity but after several attempts and some fine tuning adjustments, the feed was in the correct position.

The entire assembly including antenna motor was previously aligned using a standard 40mm Ku-band LNB; the less sensitive C-band should therefore be no problem. An Eycos S55.12PVR and the Prodig-5 signal analyzer were used as receivers. With great expecta-

12.75 GHz using LOF (local oscillator frequency) values of 9.75 and 10.6 GHz as well as a C-band range of 3.4 to 4.2 GHz with an LOF of 5.150 GHz. The specifications also claim a gain of 65dB with a noise figure of 0.3.dB.

Our first tests were aimed at the C-band so we quickly set up the correct LOF and then had a look at our spectrum analyzer. It indicated a strong signal located at 3675R. We quickly started a channel scan and found numerous Russian channels with plenty of signal strength. According to the SatcoDX channel lists, South American channels with relatively high signal strength

TELE-satellite editor Thomas Haring aligns the C/ Ku-Band LNB on a 1.2m offset antenna



tions, we turned the antenna to the especially strong EXPRESS A1R C-band satellite at 40° east.

According to INFOSAT, the Combifeed has a Ku-band reception range of 10.7 to

could be found on NSS 806 at 40.5° west. A number of MCPC and SCPC transponders were receivable in sufficient quality. Especially strong were Rede Gospel on 4108R and RCN TV on 4016R; unfortunately, this channel was encrypted. Even

the ImpSat Package from Venezuela on 3880R could be received but without any bad weather reserves. A few other transponders were also receivable.

We were less successful

when we tried NSS7 at 22° west where we could only receive 3650R without any problems. On Atlantic Bird 3 at 5° west we were able to easily view 4157L but all the other transponders hovered around the threshold level of

the receiver. Even though the signal analyzer identified a number of clearly recognizable peaks on the display, they were still not strong enough for actual reception.

Things looked a little better on INTELSAT 907 at 27.5° west where we could receive three transponders (3715R, 3831R and 4048R). On INTELSAT 801 at 31.5° west and INTELSAT 903 at 34.5° west, only one transponder on each was receivable.

For all the others our antenna was simply too small. The normally strong EXPRESS A3 satellite at 11° west could not be received with our 120cm antenna; the signals that we saw on the spectrum analyzer were simply too weak.

The next step involved taking a closer look towards the east. We stumbled across a few surprises: the (unfortunately encrypted) AFN package on INTELSAT 906 at 64.2° on east 4080L was identified by our receiver, the Hope Chan-

nel on INTELSAT 7 at 68.5° east on 3516V was viewable, Bangla Vision could be seen on TELSTAR 10 at 76.5° east on 4049H and the Express AM1 at 40° east delivered a number of Russian channels with plenty of bad weather reserve.

Up until now we were quite pleased with the results we had gotten; now it was time to take a look at Ku-band reception.

The strong DTH positions such as ASTRA at 19.2° east, HOTBIRD at 13° east, ASTRA2 at 28.2° east or ASTRA 3A at 23.5° east could all be received without any problems. We should mention at this point that the INFOSAT C/Ku-band Combifeed is configured for reception of circularly polarized signals. With that said, the circularly polarized signals on EUTELSAT W4 at 36° east could be received in surprisingly good quality.

If you remove the dielectric in the feed, then standard Ku-band H/V signals could be

received effortlessly.

The reasons for the diminished performance of the Combifeed in the Ku-band are fairly obvious. On the one hand, the included feed was not designed for use on offset antennas so you really can't blame the manufacturer for this shortfall.

On the other hand, the homemade feed holder makes it rather difficult to perfectly align the LNB in the focal point of the antenna. And let's not forget that the C-band is much more forgiving compared to the Ku-band in terms of antenna alignment.

So let's switch things around and mount the Combifeed on a real 1.8-meter parabolic antenna that happens to be located at the SatcoDX station in Lyon, France. The Combifeed is actually designed for this type of antenna.

And it didn't take long for us to be surprised by the reception results. In the C-band the

Combifeed, fitted with a 17K LNB, could be compared with a more expensive 15K LNB. As our signal analyzer measurements showed, the Combifeed actually performed better in some frequencies than the more expensive LNB.

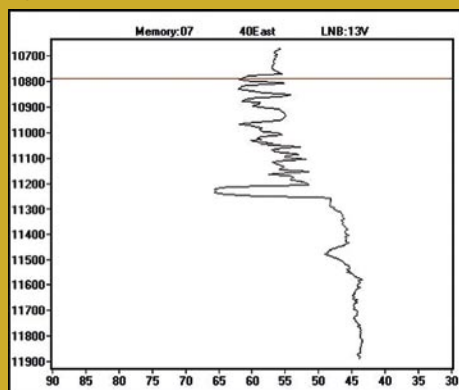
As already seen in the tests with an offset antenna, reception in the Ku-band was somewhat different because the dielectric had to be removed. Then the reception results represented those of a 1.5-meter antenna.

Overall we can say that it definitely pays to replace your current LNB with the INFOSAT C/Ku-band Combifeed. Don't expect miracles with signal quality in the Ku-band, but for the reception of the strong C and Ku-band positions, the Combifeed would be the perfect choice.

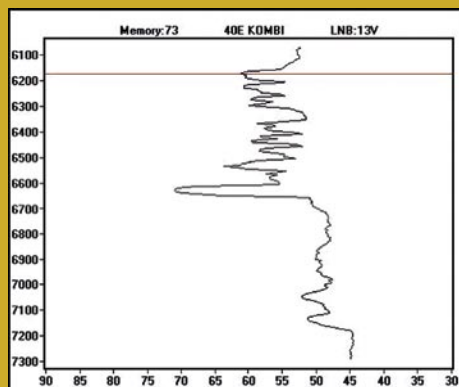
At the same time, it gives you a peek at the wonderful world of C-band even with a small antenna without having to eliminate the Ku-band.

Signal Measurements using the C/KU-Band Combifeed

EXPRESS AM1 at 40° east, right-hand polarization

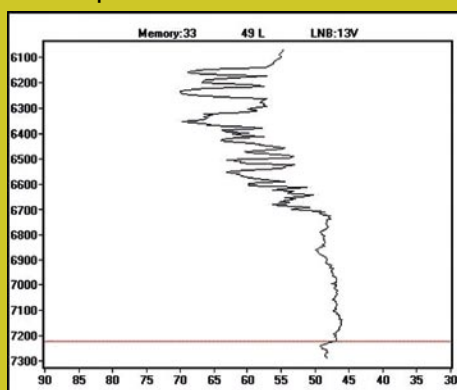


Measurement with Standard LNB

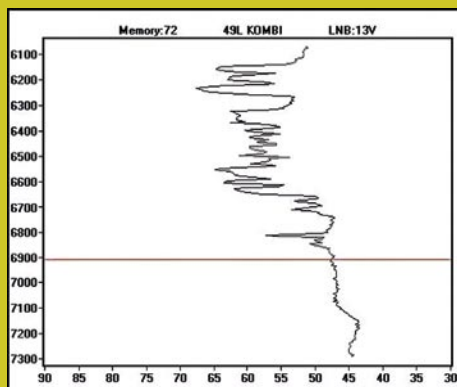


Measurement with C/Ku-Band Combifeed

YAMAL 202 at 49° east, left-hand polarization

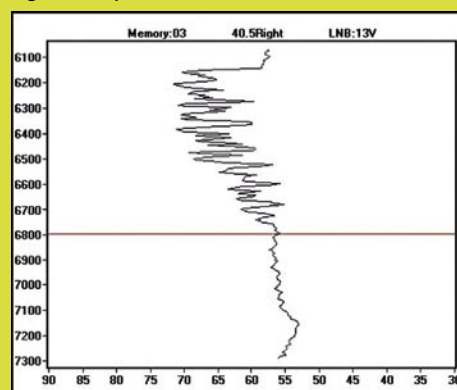


Measurement with Standard LNB

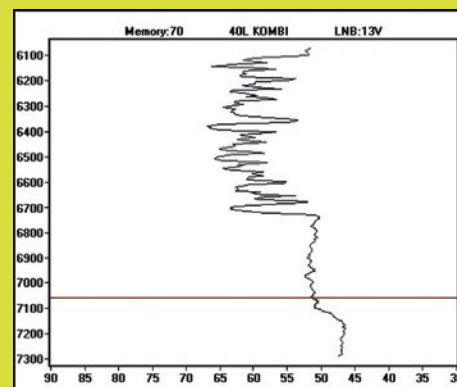


Measurement with C/Ku-Band Combifeed

NSS 806 auf 319.5° east (40.5° west), right-hand polarization



Measurement with Standard LNB



Measurement with C/Ku-Band Combifeed

TECHNIC DATA

Model	CKU Digital LNBF
Function	C/Ku-Band Combifeed
Manufacturer	Infosat Intertrade Co., Ltd., 46/22 Moo. 5, Tiwanon Road, Baanmai, Pakkred, Nonthaburi, Thailand
Homepage	www.infosats.com
Email	niran@infosats.com
Input Frequency Range	Ku: 10.7~11.7 GHz/ 11.7~12.75 GHz linear/circular C: 3.4~4.2 GHz linear/circular
L.O. Frequency	Ku: 9.75GHz / 10.6GHz C: 5.150 GHz
Conversion Gain	65 dB
Band Switching	22 KHz
Polarization Switching	14/18V
C/KU-Band Switching	DiSEqC
Noise Figure	0.3 db (Typ.)
Output Connectors	75 Ohm F Type

Some examples
of C-band
channels that
were receivable
with the
C/Ku-band
Combifeed:



RTG1 on 5° west



VOA via 27.5° west



TV Centro on 40.5° west



Rede Gospel on
NSS806 40.5° west



TV5 Africa at
NSS7 22° west



Hope Channel on INTELSAT7
68° east



Russian channels
on 40° east