

C-band With a Ku-band Dish? Could It Be?

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I was sitting here looking at all the work I had to do for this issue trying to decide where to start when an e-mail popped up on my PC screen. It was from a DXer in Canada and he wanted to know if we'd be interested in hearing about his success with C-band reception using a small dish. I replied by saying that I too have a small prime focus C-band dish that is 1.6 meters in diameter and that I've had good results with that. "Well, what about a 1.2-meter or even a 1.0-meter offset dish?" he then asked. Naturally, upon hearing this, I had no choice but to stop what I was doing and find out more.



| The Cone-shaped Scalar Ring

| Vito and Tony Setting Up the 1.2-Meter Antenna

C-band reception with antennas this small is unheard of and to the best of our knowledge has been attempted in the past but never with any positive results. Of course, the C-band satellites that are in orbit today are much more powerful than those from just a few years ago so it stands to reason

that you can get away with smaller dishes. But, only 1.2 meters? And even smaller? This we had to see.

Vito Carriero lives in Toronto, Ontario, Canada. He has been an avid DXer for many years. One day he decided to see what

he could do with a 1.2-meter dish pointed at some of the more popular C-band satellites. The "ingredients" for his experiment included:

*Fortec Star 1.2-Meter Offset Dish
Stab HH 120 Motor*

Eagle Aspen C Band LNBF (NR: 15°K, Gain: 62dB)

Cone Shaped Scalar Ring

C-Band LNBF Holder for an Offset Dish

Fortec Star 5400NA Receiver

Some of you might be saying right now: Scalar Ring? C-band LNBF? On an offset dish? Clearly, these items are normally not found on an offset dish so some modification of the LNB mount was necessary. The standard Ku mount was removed in favor of a customized C-band mount with a clamp large enough to accommodate the diameter of the C-band LNBF. The 1.2-meter antenna was mounted on a Stab H-H motor, which in turn was installed on a vertical pole cemented into the ground. This was all connected to a Fortec Star 5400NA receiver.

The antenna was first fitted with a Ku-band LNBF so that its alignment could be optimized. The antenna was moved from one end of the satellite arc to the other to verify everything was properly adjusted. The Ku LNBF was then replaced with the Eagle Aspen C-band LNBF so that the fun could begin.

Vito first pointed his dish to Intelsat 805 at 55.5° west primarily because of its strong beams but also because of his interest in foreign language programming. Initial results were impressive: the receiver was able to lock onto 15 C-band transponders of which 14 of these signals produced stable video and audio! Vito first used a standard Scalar ring but discovered that using a cone-shaped scalar ring improved signal quality by roughly 10%.

So, with the success of Intelsat 805, it was time to move on to other satellites to see what could be done. Similar results were obtained with numerous other C-band satellites. The receiver was able to lock on to C-band transponders from Pas 1R, Pas 9, AMC 6, AMC 3, Galaxy 11, Intelsat Americas 6, Galaxy 3C, Intelsat Americas 5, Galaxy 4R, AMC 4, AMC 1 and Anik F1. Most of the transponders on these satellites that were recognizable by the receiver produced stable video and audio. There were of course a few

transponders with signals that were borderline and made for unstable video and audio but overall the results were quite good.

The next logical question would be: what about a dish that's even smaller? Tony DiRienzo, a DXer also out of Toronto in Canada, was thinking along the same lines. He decided to attempt C-band reception with a 1.0-meter dish. His recipe included the following:

Fortec Star 1.0-Meter Offset Dish

Stab HH 100 Motor

Astrotel Precision C Band LNBF (NR: 20°K, Gain: 65dB)

Cone Shaped Scalar Ring

C-Band LNBF Holder for an Offset Dish

Fortec Star 5400NA Receiver

Just like Vito did with his 1.2-meter experiment, Tony also first used a Ku-band LNBF to optimize the alignment of his antenna. Once this task was finished, he switched over to the C-band LNBF to see what he could do.

Believe it or not, he too was able to show that C-band reception with a small 1.0-meter dish was possible! The dish was first pointed to AMC 12 because it is known to have a very strong transponder at 3.866 V. He was not disappointed. The receiver quickly locked onto this transponder and identified three channels. It went on from there. He achieved the most success on Galaxy 11 by locking onto a total of 15 channels of which 12 were religious channels and two were encrypted. He was also successful in locking onto transponders on Intelsat Americas 13, Anik F2, Anik F1, AMC1, AMC4, Galaxy 4, AMC6, Intelsat 805, Panamsat 1, NSS 806 and NSS 7.

All in all, it is safe to say that these experiments were very successful. DXer's and weekend satellite hobbyists alike always want to be able to get as many channels as possible with the system they have. The problem with C-band has always been that it required a much larger diameter antenna than Ku-band. Even if the cost of a 10-foot dish was not an obstacle, its installation usu-



Astrotel LNBF with Cone-shaped Scalar Ring on the 1.0-Meter Dish |



The Complete 1.0-Meter Dish Assembly |



The 1.0-Meter Dish on a STAB HH 100 Motor |

ally was. C-band antennas take up quite a bit of space and were usually never an option for those who lived in apartment buildings or in houses in and around populated areas.

But now that it has been shown that C-band signals can be received with a dish as small as 1.0 meter in diameter, it is quite possible that this entire train of thought is about to change. All of the C-band testing described above was performed in perfect weather conditions. The situation hardly changes even if the weather turns sour. Unlike the Ku-band where a rain shower could have a profound effect on signal reception, only marginal degradation of the C-band signal was observed in bad weather. Even so, this is a giant step in the right direction!



Screenshot of NASA TV on AMC 6 (4040 V) with 1.2-Meter Dish |



Screenshot of Peru TV on IS 805 (3794 H) with 1.2-Meter Dish |