

DoubleTalk Carrier-in-Carrier Overview

DoubleTalk bandwidth compression technology. DoubleTalk uses “Adaptive Cancellation,” a patented technology that allows the transmit and receive carriers of a full-duplex satellite link to be transmitted in the same transponder space.

When combined with advanced forward error correction and modulation techniques, DoubleTalk Carrier-in-Carrier can deliver unprecedented operating expense savings.

In addition to operating expense (OPEX) savings, DoubleTalk Carrier-in-Carrier can also provide capital expenditure (CAPEX) savings by allowing a smaller BUC/HPA and/or antenna.

Figure 1 shows the typical full-duplex satellite link, where the two carriers are adjacent to each other. Figure 2 shows the typical DoubleTalk Carrier-in-Carrier operation, where the two carriers are overlapping, thus sharing the same spectrum.

When observed over a spectrum analyzer, only the Composite is visible. Carrier 1 and Carrier 2 are shown in Figure 2 for reference only.

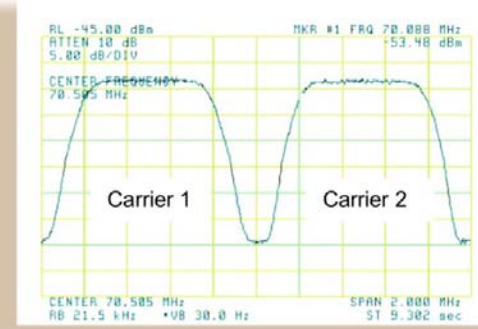


Figure 1: Without DoubleTalk Carrier-in-Carrier

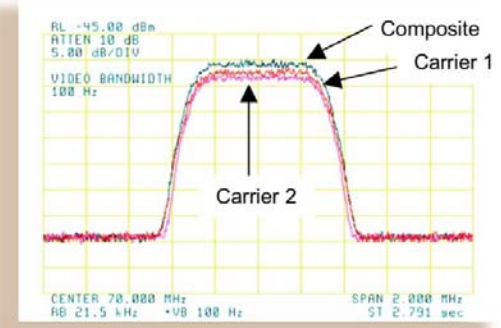


Figure 2: With DoubleTalk Carrier-in-Carrier

A New Dimension in Bandwidth Efficiency

DoubleTalk Carrier-in-Carrier is complementary to all advances in modem technology, including advanced FEC and modulation techniques. As these technologies approach theoretical limits of power and bandwidth efficiencies, DoubleTalk Carrier-in-Carrier (utilizing advanced signal processing techniques) provides a new dimension in bandwidth efficiency.

DoubleTalk Carrier-in-Carrier allows satellite users to achieve spectral efficiencies (i.e. bps/Hz) that cannot be achieved with traditional links. For example, DoubleTalk Carrier-in-Carrier when used with 16-QAM approaches the bandwidth efficiency of 256-QAM (8bps/Hz).

As DoubleTalk Carrier-in-Carrier allows equivalent spectral efficiency using a lower order Modulation and/or FEC Code, it can simultaneously reduce CAPEX by allowing a smaller BUC/HPA and/or antenna.

DoubleTalk Carrier-in-Carrier can be used to save transponder bandwidth and/or transponder power, thereby allowing successful deployment in *bandwidth-limited* as well as *power-limited* scenarios.





The Savings Illustrated

The following example illustrates the typical process for implementing DoubleTalk Carrier-in-Carrier in a power-limited scenario:

<p>The conventional link is using 8-PSK, TPC ¾:</p>	
<p>Spread the signal by switching to a lower order modulation and/or FEC code – say QPSK, TPC 7/8. This increases the total transponder bandwidth, while reducing the total transponder power:</p>	
<p>Now, using DoubleTalk Carrier-in-Carrier, the second QPSK, TPC 7/8 carrier can be moved over the first carrier – thereby reducing the total transponder bandwidth and total transponder power when compared to the original side-by-side 8-PSK, TPC ¾ carriers:</p>	

Selection of Form Factors

DoubleTalk Carrier-in-Carrier is currently available in the following form factors:

- As an option for the CDM-750 Advanced High-Speed Trunking Modem
- As an option for the SLM-5650A Satellite Modem
- As an option for the DMD2050 Universal Satellite Modem
- As an option for the CDM-625 Advanced Satellite Modem
- As an option for the CDM-Qx and CDM-QxL Multi-Channel Satellite Modems
- As an option for the DMD20 Universal Satellite Modem
- As an option for the DMD20 LBST L-Band Satellite Modem
- CLO-10 Link Optimizer (modem agnostic)



Consider DoubleTalk Carrier-in-Carrier for Your Network

Our revolutionary and award-winning DoubleTalk Carrier-in-Carrier is a proven technology. Globally accepted, DoubleTalk Carrier-in-Carrier is installed by the major operators and service providers, governments and enterprises. And, recognized twice by the World Teleport Association, this technology was awarded “Teleport Technology of the Year” in 2007 and was integral to the “Teleport Technology of the Year” award in 2010 for the CDM-625 Advanced Satellite Modem.

Does DoubleTalk Carrier-in-Carrier make sense for your satellite links? An easy way to analyze the possible benefits is to download our Excel-based Link Optimization Tool. We created this tool to highlight the multi-dimensional optimization that can be achieved with our advanced technologies. Explore the value today and download this free tool via <http://www.comtechefdata.com/toolstco.asp>

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