

## Spectral Compatibility Issues of Intermediate Devices

In figure 1 below, there are only wire center fed services and no remote terminal or repeater/amplifier xDSL services. Since all services originate at the wire center, all signals are of equal strength relative to each other as they travel from the wire center through the F1 and F2 cables. A household that is closer to the wire center does not adversely affect a household that is farther down the cable. Because services co-exist, households that are not subscribers today, have options from a number of carriers and service providers should they decide to become xDSL subscribers.

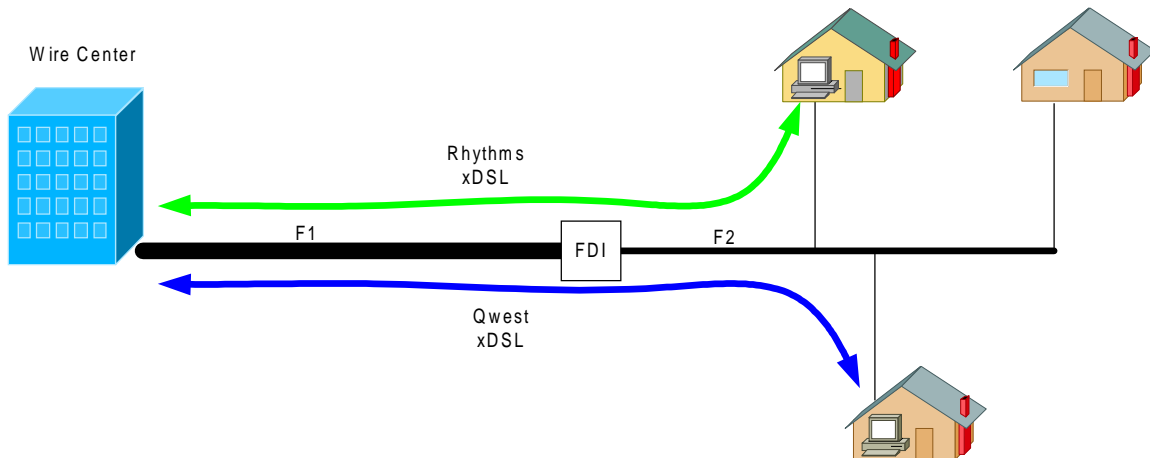


Figure 1

The Spectrum Management standard T1.417 provides the guidelines to ensure that the wire center based services can co-exist. The co-existence that T1.417 provides is based entirely upon symmetrical services self-limiting characteristics<sup>1</sup> and all services having equal access to the loop plant at the wire center. The standard does not however address the issues that arise from repeatered services such as T1, HDSL, HDSL2 that are used by Qwest to deliver T1 services nor does it address VDSL, ADSL, T1, HDSL, or HDSL2 services deployed by Qwest from a remote terminal.

Figure 2 below shows the impact of Qwest adding a remote terminal to the loop plant that provides ADSL or VDSL services. When ADSL is deployed from a remote terminal and is fed into the F2 cable, it eliminates the possibility of Rhythms offering ADSL service from the wire center to any existing or future households on the same F2 cable. The elimination is because of the relative power levels of the signals from the wire center compared to those of the remote terminal. If the remote terminal was located at 14,000 feet from the wire center, its ADSL signal would represent a power level that is approximately 100,000 times that of the power level of the wire center ADSL signal. The remote deployed ADSL is higher because of the signal loss that the wire center ADSL has encountered while it traversed the F1 cable. The two unequal signals traverse the same portion of the F2 cable, shown in red, where the higher remote terminal ADSL signal causes enough interference to the wire center ADSL signal to make it inoperable<sup>2</sup>. Because of this condition, existing Rhythms' subscribers fed from the wire center will go out of service as well as future Rhythms' subscribers could not be serviced from the wire center in the serving area.

<sup>1</sup> Telcordia, Adtran, Conexant, Globespan, and Paradyne, "SDSL Reaches And DMT Rates Calculated for the Ft. Lauderdale Agreement," T1E1.4/2000-057.

<ftp://ftp.t1.org/t1e1/e1.4/DIR2000/0e140570.doc>

<sup>2</sup> Rhythms, "Performance of CO Deployed ADSL due to Crosstalk from RT Deployed ADSL," T1E1.4/2000-302. <ftp://ftp.t1.org/t1e1/e1.4/DIR2000/0e143020.doc>

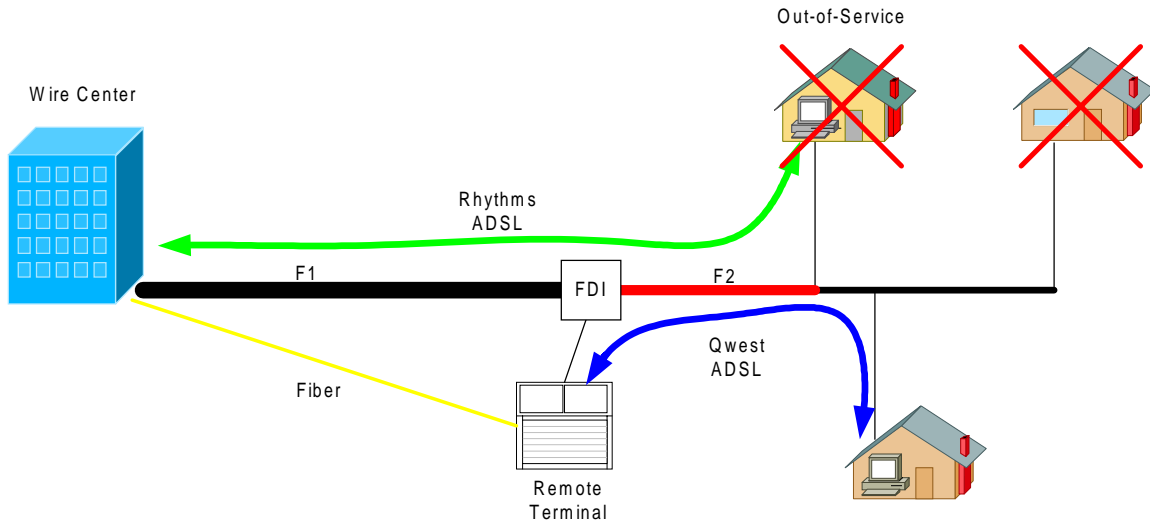


Figure 2

The same condition is true for repeatered/amplified services<sup>3</sup> and remotely deployed VDSL services. VDSL is the same as an ADSL signal<sup>4</sup> lowered by 20 dB. Qwest has not provided guidance for the deployment of these services to ensure that wireline network spectral integrity is maintained while helping to safeguard competitive neutrality. The lack of guidance is by no means an oversight as these services are currently only being deployed by Qwest. If Rhythms were deploying remote terminals with xDSL services that were jeopardizing Qwest's business, Qwest would certainly develop guidelines for the deployment of such devices.

The ability to provide universal T1 services and remote ADSL services without causing interference to other carriers has been proposed in the ATIS T1E1.4 working group by incumbent carriers other than Qwest. In a paper presented at the T1E1 meeting in February 2001, it was shown and agreed that HDSL4, a transport technology used to deliver T1 services, could be deployed in a repeatered fashion without causing interference to ADSL or other xDSL services.<sup>5</sup> It was also shown at the February 2001 meeting that remote deployments of ADSL do not have to cause interference to wire center based ADSL or other xDSL services.<sup>6</sup>

Without guidelines on the deployment of remote terminals and repeaters/amplifiers to ensure that ALL carriers are maintaining the wireline network spectral integrity while helping to safeguard competitive neutrality, there is a distinct disadvantage to the competing carrier.

Rhythms is not asking for a leg-up, only for a level playing field.

<sup>3</sup> Rhythms, "T1.417 Spectrum Management Annex G update," T1E1.4/2000-263.

<http://ftp.tl.org/t1e1/e1.4/DIR2000/0e142630.doc>

<sup>4</sup> Verizon, "Impact and Performance of Reduced Power RT-deployed ADSL," T1E1.4/2000-336.

<http://ftp.tl.org/t1e1/e1.4/DIR2000/0E143360.pdf>

<sup>5</sup> Telcordia Technologies, pursuant to work supported by BellSouth, SBC, and Verizon, "Spectral Compatibility of Repeatered HDSL4," T1E1.4/2001-082.

<http://ftp.tl.org/t1e1/e1.4/Dir2001/1E140820.pdf>

<sup>6</sup> Telcordia Technologies, pursuant to work supported by BellSouth, SBC, and Verizon, "More work on Spectrally Compatible RT-Based ADSL," T1E1.4/2001-080.

<http://ftp.tl.org/t1e1/e1.4/Dir2001/1E140800.pdf>