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提出元: Conexant Systems, Inc.

題名: Regarding Spectral Compatibility of CO deployed DSLs with RT deployed DSLs.

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### **ABSTRACT**

In this contribution, we describe the issue of defining spectral compatibility requirements for systems deployed from the central office (CO) with systems deployed from a remote terminal (RT) or cabinet.

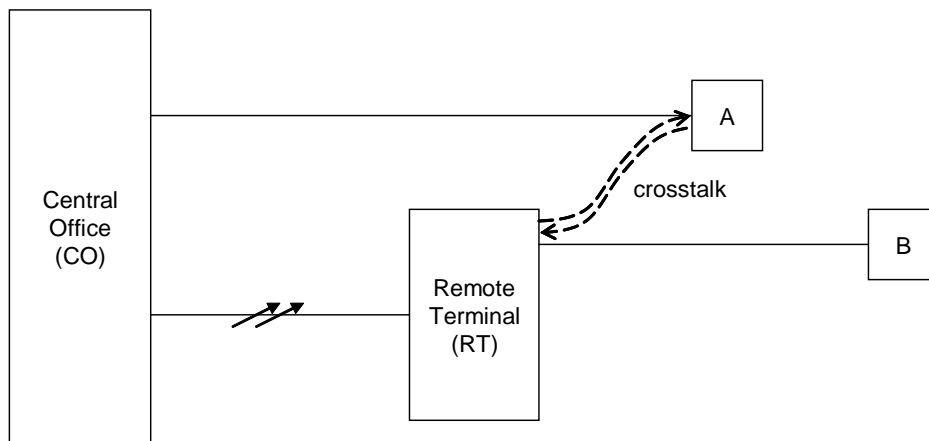
## 1 Introduction

In this contribution, we describe the issue of defining spectral compatibility requirements for systems deployed from the central office (CO) with systems deployed from a remote terminal (RT) or cabinet.

## 2 Discussion

The block diagram in Figure 1 shows a CO deployed DSL (with CPE device A) and a RT deployed DSL (CPE device B). Shown in the figure are the key points of crosstalk between the RT and CO deployed systems. The downstream signal of system B introduces additional FEXT into the downstream channel of system A; similarly, the upstream signal of system A introduces additional FEXT into the upstream channel of system B. The level of FEXT into the disturbed systems is generally greater than the FEXT levels would be if the systems were collocated. The magnitude and impact of the higher FEXT levels depends on the distance of the CO deployed unit and the distance of the RT from the CO.

Given the infinite possibilities of deployment distances, defining spectral compatibility rules for systems deployed from the CO with systems deployed from a RT that share common frequency bands is very difficult if not impossible.



**Figure 1:** Interference between CO deployed and RT deployed DSL systems.

A possible solution in addressing these spectral incompatibility problems is to apply some level of power back off (PBO) to a disturbing signal. The level of power back off depends on the distance of the CO deployed system, the distance of the RT from the CO and the distance of RT deployed system. In addition, the expected service quality for the CO and RT based systems must be considered in determining the level PBO. For any given distance of RT from the central office, it is always possible to construct scenarios where service quality objectives cannot be met, but would be met if deployments were all collocated.

This problem has been discussed at great length in T1E1.4 for the development of spectral compatibility rules of CO deployed systems with RT deployed systems. Given the unmanageable possibilities of interference, it was not possible to define an acceptable set of spectral compatibility rules if the RT and CO systems share common frequency bands. However, based on industry studies from incumbent telephone companies, the group did agree that the probability of occurrence is very small. Resolution of situations where there is a spectral incompatibility between RT and CO deployed systems can be handled on a case by case basis. With regard to the spectral compatibility of RT and CO deployed systems, T1.417-2003 contains informative Annex M that describes a general method for computing the levels spectral interference for the given RT and CO deployment values.

### **3 Summary**

We recommend that JJ-100.01 does not define spectral compatibility guidelines for CO deployed systems with RT deployed systems. Generally, all DSL systems provide a PBO capability. As with the North American network we expect the probability of occurrence to be very low.

### **4 References:**

- [1] T1.417-2003, American National Standard for Telecommunication Systems – Spectrum Management for Loop Transmission Systems, [www.atis.org](http://www.atis.org).