Case study #	2.2
Title	Lightning surge troubles on CSM
Type of trouble	Damage.
Source of trouble	Lightning surge.
System affected	Transmission equipment.
Location	Telecom centre.
Keywords	Damage, lightning surge.
Version date	2004-01-01

System configuration

The system configuration and estimated lightning surge current flows are shown in Figure 2.2-1. The figure shows two telecom buildings in the same area. One telecom building has a high-altitude antenna tower with coaxial cables connecting it to building B. The two buildings' earthing systems were separated from each other, and the power mains were fed by different routes. However, a clock line was located between the two buildings, as shown in Figure 2.2-1. The antenna tower was not used at this installation.

The investigation determined that a lightning surge entered via the power mains of building A and that a power fault had occurred near the buildings. The surge current entered building A, flowing to its earthing. The increase in potential was caused by the lightning surge current. Buildings A and B were connected by the 64-kHz clock line; however, the earthing systems of the two buildings were independent from each other. Therefore, there was potential difference between a clock unit of the telecom equipment (CLK Unit), in Building A, and a clock interface of the CSM (Clock Supply Module) in Building B. As a result of surge current flows, the two equipments were damaged. It was estimated that the surge current went through the CSM to earthing E0.

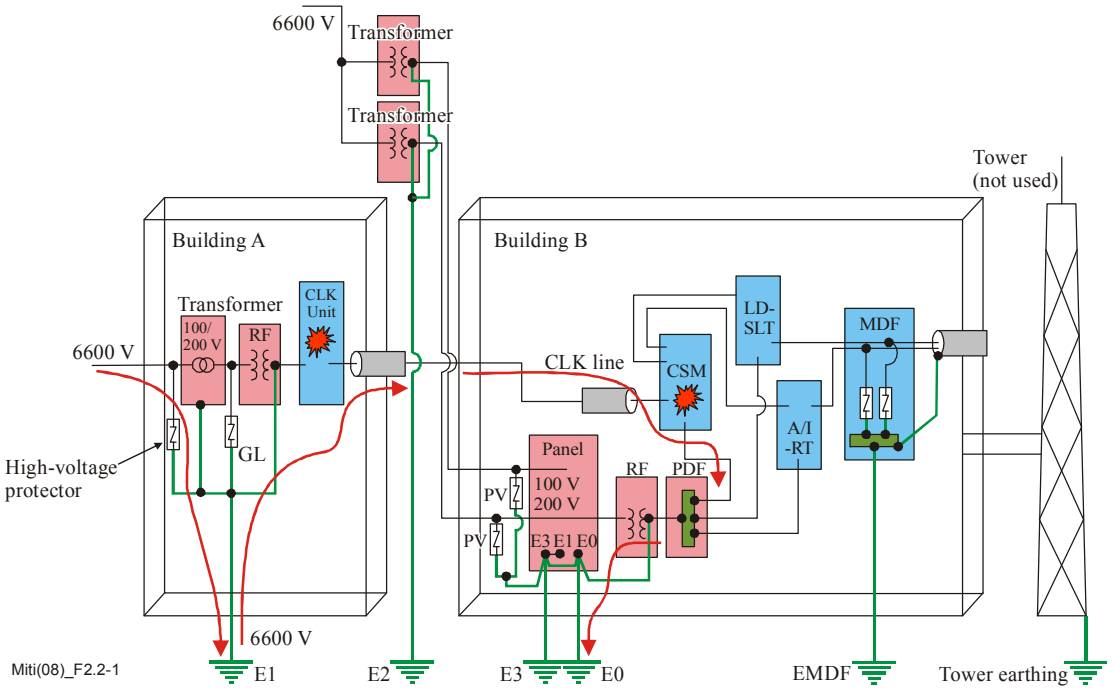

Figure 2.2-1 – System configuration and estimated surge current flows