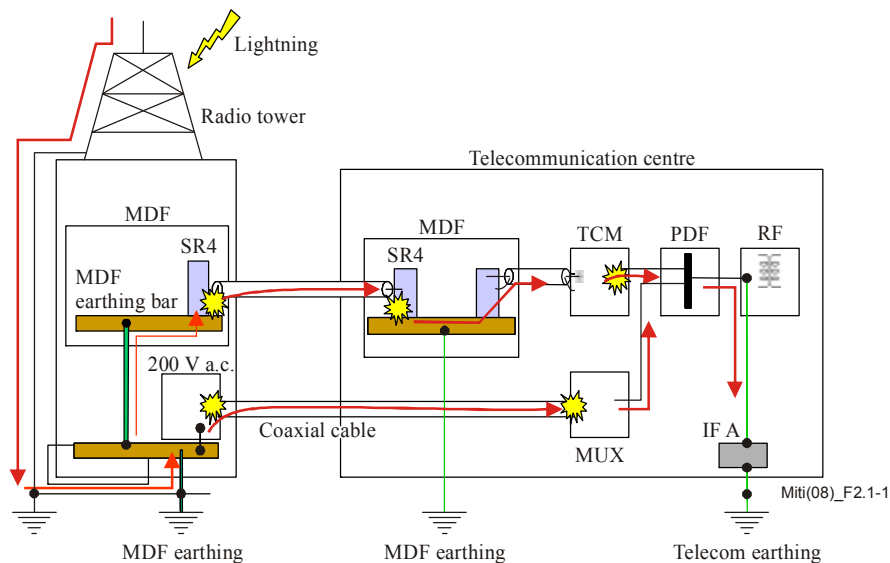


<b>Case study #</b>	2.1
<b>Title</b>	Lightning surge troubles on transmission equipment, TCM, and MUX
<b>Type of trouble</b>	Damage.
<b>Source of trouble</b>	Lightning surge.
<b>System affected</b>	Transmission equipment and MUX.
<b>Location</b>	Telecommunication centre.
<b>Keywords</b>	Damage, lightning surge.
<b>Version date</b>	2004-01-01

### System configuration

The system configuration for a lightning surge trouble case is shown in Figure 2.1-1. As depicted in the figure, a transmission equipment, a TCM (transmission communication module), was located in the telecommunication centre, and there was a building with an antenna tower next to the telecommunication centre. Coaxial cables were used between the two buildings to connect the transmission equipment with the radio equipment. The earthing of the telecommunication centre and the earthing of the building were not connected to each other. The main distribution frame (MDF) earthing was not connected to the telecommunication centre earthing, either.



**Figure 2.1-1 – System configuration**

### Measurement/Searching techniques/Experiment

As a result of the investigation, lightning surge strikes were detected at the radio antenna tower by visual inspection. Lightning surge current flowed through the tower, the earthing, power supply, MUX and TCM. It was considered that the surge current in the coaxial cables could damage the telecom equipment, TCM and MUX.