Either of two reference earthing points may be used. In order of preference they are: 1) the screen of the cable or 2) the primary protection ground terminal, protective earth, or nearby grounded metal work. Since it affects the result, the reference earthing point used for a measurement should be stated.

Note - For transverse measurements, a connection to a reference point may not be required, but care must be taken with the capacitance of the measurement equipment to ground. This may be done by using battery powered measuring equipment. An isolating transformer for mains powered equipment, or a balun termination network, must be used when measuring metallic transverse voltage.

iii) Termination Network to use at the central office

On inside house wire (such as the S/T interface line of ISDN) it is important to terminate the far end of the cable. However, when measuring at the entry point of the local network into the customer's premises (such as the two-wire interface to NT1 of ISDN), it is not important to have a termination at the far end if the cable lengths exceeds 1 km. Below 1 km, it may still be possible to make measurements without terminating the far end, depending on the frequency of the interfering signal and the make-up of the local network.

3) Detector type

The detector shall have fundamental characteristics as defined in Section 1 of CISPR specification for radio interference measuring apparatus and measurement method, CISPR 16, 1987.

4) Bandwidth of measurement

The bandwidth of measurement shall have fundamental characteristics as defined in Section 1 of CISPR specification for radio interference measuring apparatus and measurement method, CISPR 16, 1987.

Improvements in narrowing the bandwidth and the standardization of appropriate measuring equipment needs further study in cooperation with CISPR.

5) Electric field immunity of measurement equipment

The test equipment should have an overall immunity to electromagnetic fields in accordance with CISPR publication 16. Adequate accuracy should be provided for extending the use of the equipment to locations with field strengths above 3 V/M to 10 V/M.

Recommendation K.24

METHOD FOR MEASURING RADIO FREQUENCY INDUCED NOISE ON TELECOMMUNICATIONS PAIRS

1.Purpose of this Recommendation

This Recommendation is intended to standardize the method for measuring radio frequency induced noise that may cause degradation of equipment performance and transmission quality. Standardization of the method for measuring induced noise makes possible the international standardization of the quality of the telecommunication system.

2.Scope

This Recommendation considers measurement methods for radio frequency induced noise at any telecommunication pair. Locations for measurement are both the cable entry point into a building and the interface point of a terminal equipment.

The frequency range to be considered is 10 kHz to 30 MHz.

Note - Above 30 MHz, the technical problems of making measurements have not been solved and are therefore still under study.

3.Circuits for measuring radio frequency induced noise voltage

1) Measured mode of induced noise voltage

Both transverse and longitudinal voltages should be measured.

2) Measured condition of telecommunication line

Measurements should be made with all telecommunications equipment disconnected at measuring end and with a measurement termination network.

i) Termination network for measurements

Measurements should be made at both the cable entry point into the subscribers premises and at the terminal equipment point. In the measurement, a T network shown in Figure 1 should be used. The longitudinal conversion loss of the T network should be at least 10 dB higher than the value of the LCL for the cable type to be measured (e.g., 60 dB cable requires 70 dB measurement termination network).

Note - Values of Rx and Ry are under consideration. Administrations and RPOAs are requested to make measurements at both sets of values indicated in Figure 1.

ii) Reference earthing point