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Construction of an electronic device for monitoring the voltage standing wave ratio of a transmission antenna

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A special electronic system, which prevents the destruction of delicate amplifiers due to sudden impedance mismatches raised in telecommunication antenna systems has been designed and constructed. These impedance mismatches occur due to bad weather and other failures and result in a reflection of high portion of power back to the amplifier of the transmitter. Although there are expensive systems which saefguard transmitters from such reflection of power available in the market, developing of a low cost system is the objective of the project.

An electronic device that measures the magnitude of forward and reflected power of the transmitter and converts them to digital signals has been constructed. Signal was then fed to a computer and the computer software has the capability of calculating Voltage Standing Wave Ratio (VSWR). Return Loss, Mismatch Loss and the percentage of the power reflection. When the value of VSWR reaches a critical level, the system creates an alarming signal warning the user. In addition the system will automatically isolate the antenna system from the amplifier to prevent further reflections and which would otherwise destroy the amplifier. The user has provisions to set the cut-off level at a desired and suitable value. The developed measuring circuitry and the software can be used for similar requirements of other systems.