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Matlab-based Gse -generic Stream Encapsulation- Packet Generation User Interface Ui: Dvb-s2/s2x Ip Communications

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Abstract

The project constitutes an educational and technological solution based on the interaction between DVB-S2 protocol (Digital Video Broadcasting via Satellite 2 and generation) and IP (Internet Protocol), for the generation of GSE (generic stream encapsulation) packets. This work includes a graphical user interface (GUI) based on MATLAB that allows users to interactively generate GSE packets designed for DVB-S2 IP transmission. This tool enables the creation of packets compliant with the ETSI TS 102 606 standard "Digital Video Broadcasting (DVB); Generic Stream Encapsulation (GSE) Protocol" for satellite IP transmission. The user interface facilitates the configuration of multiple parameters, such as:

- Packet type selection: choose between full packet data unit (PDU) packets or fragmented packets.
- Addressing options to select between 3-byte or 6-byte MAC addresses.
- Fragmentation parameters: fields to specify padding bytes, fragment identifiers, and fragmentation lengths.

The tool includes a user-friendly interface for data entry and displays the resulting GSE packets along with their lengths. It is compatible with MATLAB R2024b and later versions. The code is available on MATLAB File Exchange GSE -Generic Stream Encapsulation- Packet Generation V.1.1.0 - File Exchange - MATLAB Central. The user interface consists of 3 drop-down lists, which would be executed in series, namely: the main one "PADDING, PDU, RESET", "NO-FRAGM (meaning complete PDU packet), FRGMNT (to generate GSE packets from a fragmented PDU packet)", and "MAC 6 BYTES, MAC 3 BYTES" (to choose a 6- or 3-byte NPA addresses.

Keywords: Matlab; User Interface Ui; Gse -Generic Stream Encapsulation-; Dvb-S2, Ip Communications