

8566-T1.txt 20-Apr-2000

Packet Telemetry Details

ISUAL sends telemetry to the ROCSAT2 spacecraft as a series of Pseudo Virtual Channel Frames (PVCF).

A PVCF is 1106 bytes long; it is a portion of a CCSDS Transfer Frame. The spacecraft fills out the rest of the Transfer Frame before transmitting it to the ground.

ISUAL telemetry products are CCSDS Source Packets. These packets are chopped up into PVCFs. Some packets will be split among two or more PVCFs.

The PVCF will be packed full before sending to the spacecraft. If it is found necessary to send a PCVF before it is full, a ISUAL-generated "pad" packet will be inserted to fill the PVCF.

The format of an ISUAL-generated PCVF is:

byte 0

Virtual channel frame count.

This will be 0 in the first PVCF transmitted after ISUAL is turned on. It will be incremented by 1 (modulo 256) for each subsequent frame.

byte 1

bit 0 [high order bit]

secondary header flag - always 0

(meaning: Transfer Frame secondary header not present)

bit 1

synchronization flag - always 0

(meaning: data are 8-bit bytes/octets)

bit 2

packet order flag - always 0

bits 3,4

segment length identifier - always 11

(because synchronization flag is 0)

bits 5..7

high 3 bits of First Header Pointer

byte 2

bits 0..7

low 8 bits of First Header Pointer

bytes 3..1105

1103 data bytes

(CCSDS Source Packets, in whole or in part)

The "First Header Pointer" is the byte-offset within the 1103 data bytes to the beginning of the first CCSDS Source packet (first byte of primary header). If no CCSDS Source Packet begins in the PVCF, the First Header Pointer is set to all 1's.

The CCSDS Source packet primary header for ISUAL packets is defined as follows:

Version No. - 000

Type indicator - 0

Secondary Header flag - may be 0 or 1 (some packets have a secondary header)

Application Process Identifier (ApID) is a different number for each packet. ISUAL ApIDs are 1,2,..23 (may be more) plus 0x7FF for the Idle packet

Grouping Flags - 11 (no grouping)

Source Sequence Count - a 14-bit number which starts at 0 for the first packet sent, and is incremented by 1 for each subsequent packet (except Idle packets).

Packet Data length is the sum of the secondary header length (if present) and the number of data bytes, minus 1.