

Source: SWEDEN

Title: PICTURE AND GOB HEADER BITS

During the Orland CCITT meeting the following was decided:

1. A full CIF picture has 12 GOBs.
2. A quarter CIF picture has 3 GOBs.
3. Number of bits in Picture and GOB headers are as follows.

Picture Header
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PSC	TR	TYPE1	PEI1	PARITY	PEI2	PSPARE
20	5	13	1	0/8	1	0/16

Total: 40 bits (PARITY and PSPARE not sent)

GOB Header
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GBSC	GN	TYPE2	QUANT1	GEI	GSPARE
16	4	6	5	1	0/16

Total: 32 bits (GSPARE not sent)

If PARITY, PSPARE and GSPARE are not transmitted, the bit rates listed in Table 1 will be used for headers.

	30 Hz	15 Hz	10 Hz	7.5 Hz
CIF	12.72 kb/s	6.36 kb/s	4.24 kb/s	3.18 kb/s
QCIF	4.08 kb/s	2.04 kb/s	1.36 kb/s	1.02 kb/s

Table 1. Bit rate for Picture and GOB headers.

It was pointed out in Orlando that efforts should be put in to decrease the number of bits in the headers. The following possibilities may be discussed for the final recommendation. For the flexible hardware - leave it as it is, but make it flexible!

1. Remove TR
2. Less bits in TYPE1
3. Remove PEI1-PARITY
4. Remove PEI2-PSPARE
5. Less bits in TYPE2
6. Remove GEI-GSPARE
7. Less bits in PSC and GBSC
8. Allow omission of GOB headers for GOBs without data.

Emulation of GBSC by error free data.

The exact bit patterns for GBSC is 0000 0000 0000 0001

The following macro block layer structure is assumed:

MBA TYPE3 QUANT2 MV CBP COEFF

Error recovery performance is optimised if the GBSC is emulated by other error free data with as low probability as possibility. By inspection of the VLC sets in doc # 449 "VLCs FOR P-64 KBIT/S INITIAL COMPATIBILITY CHECK" one can find that the GBSC is emulated by the following combinations of code words. Other combinations may also be possible. More search is encouraged in order to produce a complete list.

escape/run=0/lev=0 something *) 000100 000000 00000000 00..01

escape/run=0/lev=1 *) 000100 000000 00000001

escape/run=16/lev=0 escape *) 000100 010000 00000000 000100

escape/run=32/lev=0 escape *) 000100 100000 00000000 000100

escape/run=48/lev=0 escape *) 000100 110000 00000000 000100

escape/run=x/lev=-128 14 bit VLC 000100xxxxxx10000000 000000001xxxxx

14 bit VLC is used for 32 different combinations of (run,lev).

If mean value for DC intra is allowed to be '0000 0000' this may emulate 15 zeroes.

TYPE2=xxx000 /QUANT1=00000/GEI=0/MBA=26-33

xxx000 00000 0 00000011xxx

At the moment the three last bits in TYPE2 are 'spare' and therefore set to '1'.

In case PSPARE and/or GSPARE are used, code words with many zeroes may emulate GBSC.

*) Normally not transmitted and should be specifically forbidden in the final recommendation, or be defined for special purpose.

CONCLUSION

The chance to emulate the GBSC with error free data seems to be very small. Even if it is not a primary goal, it may be possible to guarantee that it never occurs.