Specification NRK Teletext Generators

1   General.

NRK will purchase three teletext generators, we will use two for a master/standby configuration transmitting one channel and one for test purpose.

NRK has an inhouse teletext managing system which will drive the generators for normal teletext pages.

For subtitling, NRK uses an inhouse system for live subtitling and Screen Subtitling for pre produced subtitling.

NRK prefers to purchase only necessary teletext generator cards to install in our standard server hardware. All necessary software and licenses shall be included in the offer.

The teletext generator shall:
- Have unchanged contents (i.e. teletext-pages and setup) after a restart or power off.
- Handle teletext level 1.5.
- Keep at least 5 000 level 1.5 pages.
- All system parameters shall be changeable while the system is running.

2 INTERFACE

2.1 Hardware

RJ45 connector for TCP/IP network with at least 100 Mbit/s
BNC connectors for blackburst reference signal and teletext output.
230 V AC connector for power.

2.2 Teletext output

Please specify if SDI teletext output is available in addition to analogue.

2.3 Protocols

All protocol specification shall be available.

2.4 System control

The teletext generator shall have a system control interface. All setup shall be by software control.

2.5 Client connections

The teletext generator shall have TCP/IP interface able to handle simultaneously page updates from at least two clients and subtitling from at least four clients.

2.6 Teletext pages

The unit shall handle at least 50 level 1 page updates per second.

The unit shall at least have commands for the following: write teletext page, delete single teletext page, delete whole teletext pageset, read single teletext page, read a magazine status page.

2.7 Subtitling

NRK will transmit subtitling on three separate magazines, using parallel mode and separate streams. There will be subtitling on two page numbers for each stream. These streams will also contain normal teletext pages.

Since there will be max 2 whole VBI-lines for each stream, the subtitling pages must interrupt the teletext page being transmitted.

The preferred protocol is Newfor with a multi-language extension allowing up to 4 independent subtitling "channels" on each connection, each with their own transmission parameters. R26 for extended character set shall be possible. One subtitle connection must be able to subtitle on three streams.

The response time from "Display-command" to the subtitle is ON-AIR shall be maximum 250 milliseconds for a subtitle with tree lines.

2.8 PDC

The system should be able to transmit PDC using X8/30 format 2. Protocol specification shall then be available.

2.9   Clock synchronization

One of following:

VITC: The unit shall read a VITC signal with local Norwegian time. This signal will carry date information in the user-bits, the unit shall read both date and time from the VITC-signal if present. Both Evertz legacy date format and SMPTE standard for date information should be available. or

Timeserver: The unit shall be able to synchronise its internal clock to an external timeserver on the TCP network.

3   TRANSMISSION:

Possibility for the following features:

- Separate transmit interval for "out of sequence" pages.
- Full parallel transmission with up to 8 streams.
- Specify separate header layout all streams.
- Row adaptive transmission.
- Separate setup of VBI-lines for even and odd fields.
- Hex page numbers.
- Status page showing: *Number of pages in each stream, cycle time for each stream, total number of sequential pagesets/pages, total number of relative-time pagesets/pages.*
- Fast update. When updating a page on-air, the first transmission shall normally be at the transmit-time for the page. But it shall be possible to have a fast update (with an option on the command line) so the page also will be transmitted as soon as possible.

3.1   MULTIPAGES:

For multipages it shall be possible to specify separate display time and to transmit the page in or out of sequence.

If a multipage is transmitted out of sequence the page shall be transmitted only once at the specified rolling time, and for a few pages per stream it shall be possible to have a rolling at one second.

If a multipage is transmitted in sequence the page shall change when the rolling time is passed, i.e. if the cycle time is 15 s. and the rolling time is set to 25 s., this page shall change every 30 s.

Possibility to specify subcode for each page in a multipageset.

Possibility to specify a subpage in the pageset where the pageset carousel shall start when the pageset is updated.

3.2   Dummy subtitle pages

Possibility to activate dummy subtitle pages. When no subtitles are on air or 30 seconds after a subtitle was transmitted, the system shall transmit a dummy subtitle header on this page-number at specified time interval.

It shall be possible to activate "dummy subtitles" for up to four page numbers.

The time interval should be selectable from 4 to 30 seconds. After a restart the system shall assume that no subtitles are on air.