Effective broadcasting solutions

Development and manufacture of TV/Radio transmitters, antenna-feeder systems and devices

System integration of digital TV/radio and telecommunications equipment

Complex project realization of nationwide, regional and local broadcast DVB-T/T2 networks

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LLC «RPE «Kvant-Efir»

- Founded in 1992

- «Kvant-Efir» today:
  - Over 2000 sq. m. own manufacturing areas;
  - Over 140 highly skilled engineers;
  - Full equipment and system development, manufacturing, delivery and service cycle;
  - Successfully realized projects in Ukraine, central Europe and Asia.
• Full equipment development and production cycle:
  - research-and-development activities;
  - manufacturing;
  - factory testing (heat chambers, vibrating tables, breakdown complex);
  - balancing and commissioning, warranty service, advanced technical support.
Main production:

- VHF/UHF digital (DVB-T/T2) transmitters with output power up to 10 kW r.m.s;
- VHF/UHF digital (DVB-T/T2) gap-fillers with output power up to 40 W r.m.s;
- VHF/UHF analog) transmitters with output power up to 40 kW;
- FM transmitters with output power up to 10 kW;
- Pulse amplifiers for radar stations with output power up to 30 kW;
- FM/VHF/UHF diplexers, multiplexes, filters and other passive devices with the output power of up to 70 kW;
- Receiving antennas for DVB-T/T2 broadcasting standards;
Head-end and distribution equipment:

- MPEG-2/MPEG-4 SD/HD encoders, DVB multiplexers;
- DVB-S/S2 DVB modulators, demodulators, professional receivers;
- Equipment for audio/video signal transmitting over fiber optic;
- DVB-T2 Gateways.
Services:

- Development and turnkey realization of complex projects of DVB-T/T2 and analog TV and FM broadcast networks;
- DVB-T/T2, DVB-S/S2 head-ends system integration;
- Development of applied methods of design DVB-T/T2 networks for regional and local broadcast networks and transformation of analog networks into DVB-T/T2 SFN / MFN;
- Warranty support;
- Post-warranty service, advanced technical support.
Productive and scientific potential

For the last 3 years:

- over 1000 analog-digital TV transmitters with output power 10 W – 40 kW are manufactured and delivered;

- over 190 DVB-T transmitters with output power 40 W - 2.5 kW are manufactured and delivered;

- over 350 FM transmitters with output power 40 W - 2.5 kW are manufactured and delivered;

- DVB-T broadcasting test areas are implemented.
Implemented DVB-T broadcasting projects:

- **Concern RRT - Ukraine.** Supply of the equipment for the first stage of DVB-T trial along with the development of technical documentation and carrying out of research work.
- **The National Television and Radio Broadcasting Council of Ukraine.** Research and development of projects for the first stage of DVB-T broadcasting in Kyiv, Lugansk, Zakarpatskyy regions and the autonomous republic of Crimea.
- **Ukrainian Digital TV Network”, Ltd.** Developing and supplying on a turnkey basis of the DVB-T/H head-end, transmitting equipment complex.
- **JSC «Kyrgyztelecom».** Realization of the pilot DVB-T network project (1 multiplex, MPEG-4 AVC compression format and 32 TX sites) in the Batkenskiy region of the Republic of Kyrgyzstan.
Implemented DVB-T broadcasting projects (continuation):

- **Concern RRT.** Development and turnkey realization of two SFN networks (Kyiv and Zhytomyr regions.) including:
  - head-end delivery, H.264 | MPEG-4, 10 SD TV programs;
  - building of distribution network based on IP-network;
  - development of the DVB-T SFN networks adjusting methods;
  - carrying out theoretical calculations and practical coverage area research.

- **Concern RRT.** The project of implementation of DVB-T broadcasting in 9 cities of Ukraine, building the first distribution network in Ukraine based on MPLS technology.
Main scientific and technical achievements

At conference of IBC 2006 report of representatives of “Kvant-Efir” “Business-Model of stage-by-stage introduction of digital terrestrial television in Ukraine” was declared the best.

The IBC conference is known for the whole world quality of the reports selected from around the world. Therefore winning of reward of IBC for the best publication is a huge scientific and technical achievement.

In the evening on September, 10, 2006 a reward was handed to the Ukrainian coauthors for the best report about development of digital terrestrial surface television in Ukraine.

Except well carefully thought out content, format and obvious of presentation the expert committee of IBC conference marked carefully thought out, integrated and boldness of technical ideas of authors.

«IBC Daily news» 11.09.2006
Customers

First-rate commercial and state broadcasting companies, satellite and terrestrial broadcasting networks operators:

- First-rate nationwide channels and regional broadcasters of Ukraine;
- KRRT (Ukraine);
- RUE BBTC (Byelarus);
- JSC “Kyrgyztelecom”, RPA RRLTR, NTN (Kyrgyzstan);
- PA “Teleradio” (Azerbaijan);
- TC’s “Rustavi-2”, “Sakartvello” (Georgia);
- PC “Teleradiokom” (Tajikistan);
- DIXI Media (Moldova);
- Space Communications (Israel);
- SES Astra (Sweden).

... and many others.
All equipment and services offered by Kvant-Efir comply with the requirements of CCIR, FCC и ETSI.

All production processes are certified according to «ISO 9001-2001».
TV and Radio transmitters “Innovation”

Analog-digital VHF/UHF transmitters

Antenna-feeder devices and systems
Family of state of the art High-efficiency UHF DVB-T/T2 transmitters

INNOVATION

Distinctive features of transmitters:
- Last generation of powerful LD-MOS transistors
- Multistage energy saving air cooling system
- Efficiency up to 24%
- Easy step-by-step upgradeable
- Reduced dimensions and weight
- Low acoustic noise
Family of state of the art High-efficiency UHF DVB-T/T2 transmitters INNOVATION

Distinctive features of transmitters (continuation):

- Fanless power supplies
- Low power inputs
- Microprocessor protection from voltage surges and interruptions of primary power supply
- Support of redundancy system “N+1”
- Transmitters control system supports remote control mode via Ethernet, RS485, RS232
- Transport stream over IP interface
Family of state of the art High-efficiency UHF DVB-T/T2 transmitters
INNOVATION

DVB-T/T2 transmitter/exciter for analog transmitters upgrade

- Automatic output power stabilization
- Increased linearity (shoulder distance >38дБ)
- Adaptive corrector of linear and non-linear distortions
- Built-in GPS receiver
- Output power in transmitter mode 20W r.m.s. and 10W r.m.s. in exciter mode.
Family of state of the art High-efficiency UHF DVB-T/T2 transmitters

INNOVATION

Example of energy saving due to innovative technologies:

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>TXTU-1200-R-2-N</th>
<th>Transmitters of the majority of leading manufacturers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output power</td>
<td>2 kW</td>
<td>2 kW</td>
</tr>
<tr>
<td>Efficiency</td>
<td>24 %</td>
<td>15…20 %</td>
</tr>
<tr>
<td>Power consumption</td>
<td>8350 W/h</td>
<td>13300…10000 W/h</td>
</tr>
<tr>
<td>Energy saving</td>
<td>1650…4950 W/h</td>
<td>0</td>
</tr>
</tbody>
</table>
Family of state of the art cost-effective FM transmitters INNOVATION

Distinctive features of FM transmitters:

- Last generation of powerful LD-MOS transistors
- Increased power efficiency
- Compact design (500 W and 1 kW in 19” 2U only)
- Microprocessor protection from voltage surges and interruptions of primary power supply
Family of state of the art cost-effective FM transmitters INNOVATION

Distinctive features of FM transmitters (continuation):

- Possibility of operation with SWR up to 2.0
- Integrated RDS encoder, AES/EBU inputs (optional)
- Fanless power supplies
- Low acoustic noise
- Innovations in cooling systems
VHF/UHF analogue-digital transmitters

Distinctive features of transmitters:
- Easy to convert from analogue to DVB-T/T2
- Innovation air cooling system
- Output power up to 40 kW (VHF) and 20 kW (UHF)

TXTU-10000-R-1
(10 kW, analogue mode)
TXTU-2500-R-2
(2.5 kW, digital mode)

TXTU-20000-R-1 (20 kW, analogue mode)
TXTU-5000-R-2 (5 kW, digital mode)
VHF/UHF analogue-digital transmitters

Distinctive features of transmitters:

- High-power transmitters (20 kW and 40 kW) in configuration 10 kW + 10 kW and 20 kW + 20 kW are able to be delivered
- Protection system from voltage surges and interruptions of primary power supply
- Efficiency 42% in “black burst” mode for analogue mode and 22% for DVB-T/T2 modes.
Bandpass filters for VHF/UHF bands:

- 2 and 3 resonator VHF band (FM-band) filters with operating power up to 5 kW;
- VHF band channel filters with operating power up to 10 kW;
- UHF band channel filters with operating power up to 10 kW;
- Notch filters with operating power up to 10 kW.
Antenna-feeder devices and systems

Power combiners:

- VHF band (FM-band) combiners with operating power up to 15 kW;
- VHF band combiners with operating power up to 15 kW;
- UHF band combiners with operating power up to 40 kW;
- Couplers (bridges), combiners of type as a “star”
Antenna-feeder devices and systems

• Impedance buffers;
• Couplers;
• Dummy loads with operating power up to 5 kW;
Antenna-feeder devices and systems

- FM-band radio transmitting antennas with operating power up to 10 kW;
- VHF band TV transmitting antennas with operating power up to 40 kW;
- UHF band TV transmitting antennas with operating power up to 70 kW;
- Active receiving DVB-T/T2 antennas
Thank you for your attention!
We invite you to cooperation!

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