Y-Packet 2

MKE1-84 switch module
(option)

5...24 GHZ
FULL ODU

CAPACITY UP TO 1 GBPS
1 + 0 / 1 + 1 HSB / 1 + 1 FD / 2 + 0 RLA / 2 + 0 XPIC RLA

FULL LAYER 2 STACK SUPPORT

MEF CE 2.0, MPLS-TP, PWE3
OPERATION IN MULTISERVICE NETWORKS

LOW CAPEX AND OPEX

TOUCHLESS CONFIGURATION
NFC CHIP

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Y-Packet 2

Y-Packet 2 is a high capacity Full-Ethernet point-to-point microwave radio, designed to deliver voice and premium data services to public and private enterprise networks, covering a frequency range from 5 to 24 GHz in both Licensed & Unlicensed (17 & 24 GHz) bands. Y-Packet was designed to be easy to configure, manage and monitor.

Full outdoor execution simplifies the design / installation (CAPEX) and significantly reduces rental costs (OPEX), when creating data networks by Internet service providers and telecom operators. Optical interface allows connecting Y-Packet 2 to the network infrastructure several tens of kilometers away.

The implemented adaptive modulation algorithms from QPSK to 1024QAM (ARM) and automatic transmitter power control (ATPC) allow to achieve a highly reliable communication channel with low-level interference on other systems.

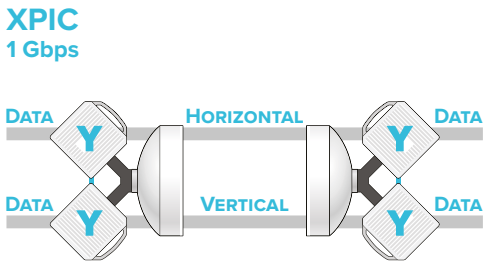
High modulation types, wide channel bandwidth, adaptive modulation feature, different radio protection options even with space diversity and full Layer 2 stack support —
all this makes Y-Packet 2 the ideal solution for any network.

Y-Packet 2 provides a web management interface based on AJAX technology — a unique and innovative touchless configuration. Y-Packet 2 is equipped with an NFC chip, which allows to set parameters by bringing a smartphone close to the radio even when it is unpowered.

To secure installation sites, the in-built GPS records equipment position, and is able to lock transmission in case it is removed from site without authorization.

Remote assistance on equipment can be activated with the click of a button: a secure tunnel to device will be established with zero configuration efforts. Y-Packet 2 can be managed over secure protocols, like HTTPS and SSH. User authentication and authorization can be done on local database or against a remote RADIUS server.

Co-channel dual polarization (**CCDP**) mode with crosspolarization interference canceller (**XPIC**).



The XPIC system allows to double radio spectrum efficiency. Opposite polarized signals are cancelled out at receiver side. The two channels H and V are independent, reaching a maximum of 500 Mbps each. The best utilization of XPIC is in combination with the Radio Link Aggregation.

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CASE STUDY

Russian Television and Radio Broadcasting Network

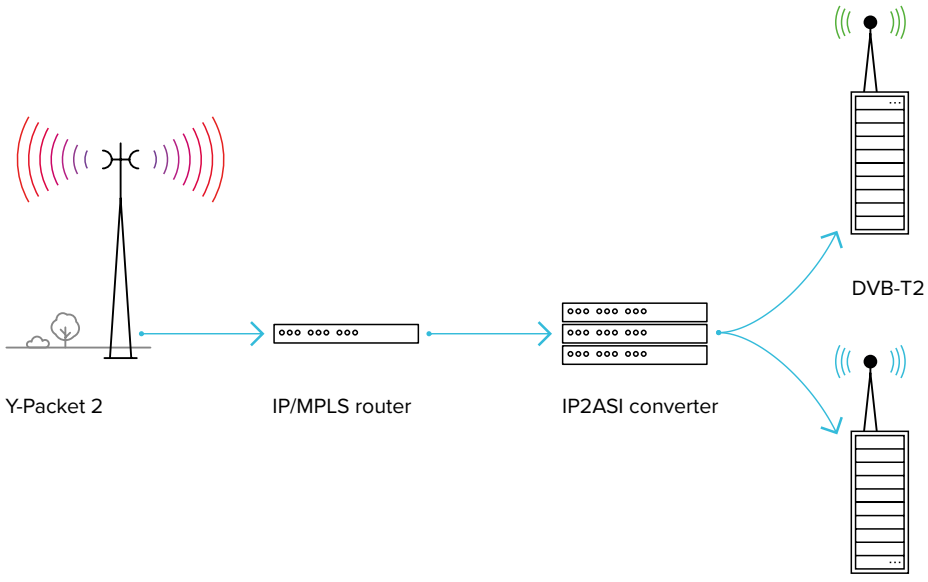
Yaroslavl

Objective: connect 24 sites for DTV and Radio broadcasting with two rings of protection.
Solution: Y-Packet 2, 8 GHz.
Network summary: 25 links, 750 km in total, with two links more than 45 km.
Configuration: 2 + 0 XPIC, Optical GE interface.

Y-Packet 2 is a cost-effective solution for fast ROI: it provides quick & easy installation, and high system gain along with adaptive modulation algorithms ensures highest network stability without using large antennas. In comparison to competitor solutions for TDD systems, Y-Packet provides really low latency, critical for SFN DVB-T networks.

Each site contains

- One DVB-T2 broadcasting terminal
- IP to ASI converters for two multiplexes
- IP/MPLS router for service creation and ring protection
- MW system for backbone



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SPECIFICATIONS

Band name	5	6	6.5	7	8	11	13	15	17	18	23	24
Frequencies, GHz	4.4...5.0	5.925...6.425	6.425...7.11	7.25...7.55	7.9...8.4	10.7...11.7	12.75...13.25	14.5...15.35	17.1...17.3	17.7...19.7	21.2...23.6	24.0...24.25
ITU-R recommendation	F.1099	F.383	F.384	F.385	F.386	F.387	F.497	F.636	—	F.595	F.637	—
Duplex diversion, MHz	312	266	340	161	266	530	266	420	144	1010	1232	194
Frequency tuning	programmed, in an RF filter band with 250 kHz step											
System configurations	1 + 0 / 1 + 1 HSB / 1 + 1 FD / 2 + 0 RLA / 2 + 0 XPIC RLA											

Rx sensitivity at BER = 10^{-6}, dBm

	Band name	5	6...8	10.7...15	17	18/23	24
7 MHz	4QAM	−93	−94	−94	−93	−94	−92
	16QAM	−88	−86	−86	−85	−86	−84
	32QAM	−86	−83	−83	−82	−83	−81
	64QAM	−82	−79	−79	−78	−79	−77
	128QAM	−78	−76	−75	−74	−75	−73
	256QAM	−73	−72	−71	−70	−71	−69
14 MHz	4QAM	−93	−92	−92	−91	−92	−90
	16QAM	−85	−84	−83	−82	−83	−81
	32QAM	−82	−81	−80	−79	−80	−78
	64QAM	−79	−78	−77	−76	−77	−75
	128QAM	−75	−74	−73	−72	−73	−71
	256QAM	−72	−70	−69	−68	−69	−67
28 MHz	4QAM	−90	−90	−89	−88	−89	−87
	16QAM	−82	−82	−81	−80	−81	−79
	32QAM	−79	−79	−78	−77	−78	−76
	64QAM	−75	−75	−74	−73	−74	−72
	128QAM	−73	−72	−71	−70	−71	−69
	256QAM	−69	−68	−67	−66	−67	−65
	512QAM	−66	−65	−63	−62	−63	−61
	1024QAM	−62	−62	−60	−59	−60	−58
56 MHz	4QAM	−87	−86	−86	−85	−86	−84
	16QAM	−79	−78	−77	−76	−77	−75
	32QAM	−76	−75	−75	−74	−75	−73
	64QAM	−72	−72	−71	−70	−71	−69
	128QAM	−69	−69	−68	−67	−68	−66
	256QAM	−66	−65	−65	−64	−65	−63
	512QAM	−63	−62	−61	−60	−61	−59
	1024QAM	−59	−59	−58	−57	−58	−56
60 MHz	4QAM	—	−86	−86	−85	−86	−84
	16QAM	—	−78	−77	−76	−77	−75
	32QAM	—	−75	−75	−74	−75	−73
	64QAM	—	−72	−71	−70	−71	−69
	128QAM	—	−69	−68	−67	−68	−66
	256QAM	—	−65	−65	−64	−65	−63
	512QAM	—	−62	−61	−60	−61	−59
	1024QAM	—	−59	−58	−57	−58	−56

Maximum output power, dBm

Band name	5	6...7	8	10.7...15	17	18/23	24
4QAM	34	32	34	26	16	25	16
16QAM	32	31	32	24	16	24	16
32QAM	32	30	31	24	16	23	16
64QAM	31	29	30	23	16	22	16
128QAM	30	29	30	22	16	21	16
256QAM	29	29	29	22	16	21	16
512QAM	28	29	29	21	16	20	16
1024QAM	28	28	28	21	16	20	16
ATPC range	5...34	10...32	10...34	5...28	−15...16	0...25	−15...16

Capacity, Mbps

	7 MHz	14 MHz	28 MHz	56 MHz	60 MHz
4QAM	9.5	19.0	38.0	75.9	81.4
16QAM	20.1	40.2	82.9	169.3	181.3
32QAM	25.7	51.4	106.0	216.4	231.8
64QAM	31.3	62.5	129.1	263.5	282.3
128QAM	36.9	73.7	152.2	310.6	332.8
256QAM	42.4	84.9	175.3	362.2	388.1
512QAM	48.0	96.1	198.3	409.9	439.2
1024QAM	52.1	104.3	215.3	444.9	476.7
Modulations	Manual / Adaptive mode				

Other

Power voltage, V	~220 / −48 (PoE) or −48 (ODU)
Power consumption, Standard / High Power, W	45 / 65
Operating temperature, °C	−50...+50
Dimensions, mm	225 × 230 × 115
Weight, kg	4.9...5.8

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