



,

/ . . .

(/)

2014/710/EC 9

2014 .

(4

ex ante).

2013 2015 .

).

V

(V)

. 155, .1 .2

()

1,

¹ 1954/27.09.2012 .

	.....	2
I.	.....	5
1.	.....	5
1.1.	.....	5
1.2.	.....	7
2. ,	.....	8
2.1.	.....	8
2.2.	.....	9
3.	.....	10
I .	.....	12
I .	.....	13
1.	.....	13
2. ,	.....	14
3. ,	.....	16
4.	.....	18
4.1.	.....	18
4.2.	.....	19
5.	.....	22
5.1.	.....	22
5.2.	.....	35
5.3.	.....	37
6.	.....	37
6.1.	.....	37

6.2.	2013-2015 .	
	.....	40
6.3.	.....	45
V.	,	
	.....	49
1.	.....	49
	.....	49
1.1.	.....	52
1.2.	.....	63
1.3.	.....	63
1.4.	.....	63
2.	.....	64
	.....	64
2.1.	.....	64
2.2.	,	
	.....	64
2.3.	.....	75
V.	.....	76

I.
1.
1.1.

/ , - () ,
1998 .

(*acquis communautaire*)

’ ” (”) . ,
’ - .
ex ante

/ . ,
- .

’ . 16(6)
2002/21/ () ,

’ , - .
’ . 15(3) 2002/21/

9 . 15(1) . () ,
2014 .
2002/21/ , *ex ante*

2014/710/EC/ 2014 .) .
(4 2014/710/EC).

2007/879/ 17 2007 . (6
2007/879/ 17 2007 .)

2

2014

ex ante

15 (3)

2002/21/

6 7

(4 2014/710/EC).

3

/

12

19

()

()

/

16(4)

2014

4

2014

19(1)

2002/21/

² Explanatory Note accompanying the Commission Recommendation on relevant product and service markets within the electronic communications sector, <https://ec.europa.eu/digital-single-market/en/news/explanatory-note-accompanying-commission-recommendation-relevant-product-and-service-markets>.

³ Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03).

⁴ 2.

(),

. 19(2)

2002/21/

. 3(3)

() 1211/2009,

1.2.

().

”)

13.11.2012 .)(

().

. 150, . 1

2076 23.10.2012 .

. . . 89 . 30, . 1-4

2.

ex ante . 15 . 16
. 150-157
. 152, . 1

2014

. 3, . 1

2014

ex ante

2014

. 3, . 2

2.1.

. 4, . 2).

(. 152, . 2

()

(. 5)

2014 . ,

(.4, .4).

(.

10):;

1.

;

2.

/ .

(, , , ,).

. 152, . 5 , ,

3 :

1.

;

2.

;

3.

. 1

2014 .

. 152, . 6 ,

. 152, . 5

4

2014/710/EC,

. 152, . 5

2.2.

(. 154, . 2).

), . 14, (§1, . 51
2

3.

(ex ante),

, . 78

, , . 78

, ,

, . 31 . 32
. 16 (4)

. 30, . 4 . 150, . 1 ,

. 154, . 1 , /

154, . 2). (.

I .

.

I .
1.

2014 .,
ex ante

. 4.2.1
2014 . . 44

2014 .
:

(
IV)

),
372/13.08.2015 .

(download)
2014 .

(upload)

Ethernet

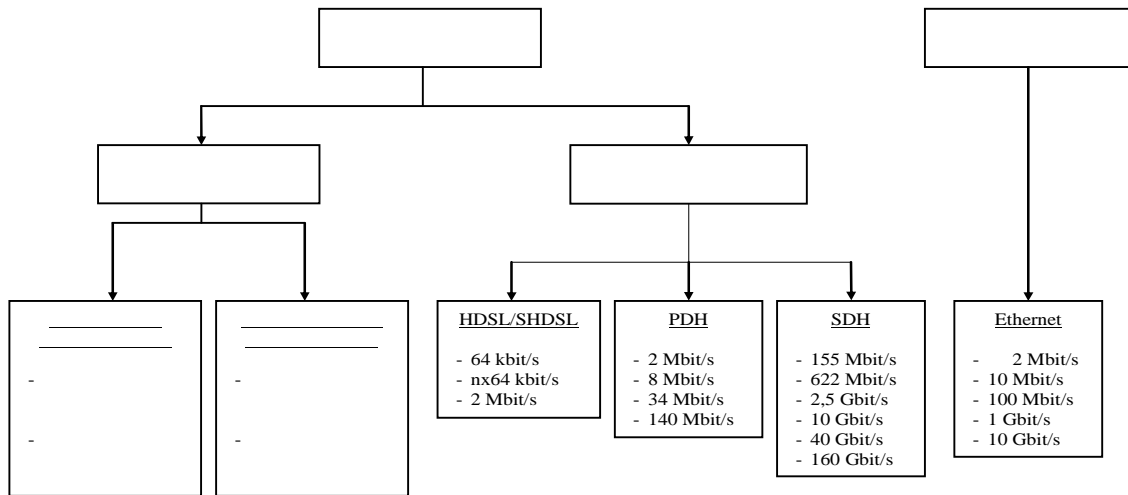
2.

MAN

IP VPN,

(HDSL, PDH, SDH Ethernet).

1



1

- HDSL/SHDSL, PDH, SDH, DWDM

OSI

OSI, Ethernet
 OSI (IEEE 802.1q)
 (VLAN-id), Ethernet
 Ethernet
 10 Mbit/s, 100 Mbit/s, 1 Gbit/s, 10 Gbit/s, IEEE
 802.3. Ethernet

Ethernet
 HDSL/SHDSL
 (MAN), 8 Mbit/s.
 MAN (Metropolitan Area Network)
 Ethernet (backbone) / OSI). MAN
 (POP- point of presence),

(MAN). MAN
 (VLAN),
 VLAN-id
 , MAN-
 Ethernet
 IP
 , MAN

IP VPN (L3) OSI, IP/MPLS
 MPLS - Traffic
 Engineering (TE),
 (connection oriented service) IP

(connectionless network).

IP VPN

IT

(, ,),

3.

1954/27.09.2012 .

2012 2013 . ” 2013 .
MAN

2013 .,

2015 .,

” (),

1 - .

MAN
MAN

MAN

2014 .

- ”

2013-2015 .

35

I

	2013 .	2014 .	2015 .
	√		
			√
	√	√	√
	√	√	√
	√		√
	√	√	√
			√
21		√	√
- 2008	√	√	√
	√		√
	√		
	√	√	√
		√	√
	√		√
	√	√	√
	√	√	√
		√	√
			√
	√	√	√
1		√	√
	√	√	√
		√	√
		√	√
-	√	√	√
		√	
	√	√	√
	√		
			√
			√
			√
	√	√	√
	√	√	
	√		
		√	√
			√
	√	√	√
	√	√	√
	√	√	√
		√	√
	√	√	√
	√	√	√

: ,

31.12.2015

36,
)

2013-2015
(2015 2014)

11 (44%
8

MAN

4.

N

4.1.

DWDM⁵

IP/MPLS

SDH, Ethernet IP

(27⁶,

)

⁵ Dense Wave Division Multiplexing –
⁶

(http://www.nsi.bg/files/Classifics/nuts3_2011.pdf).

NUTS , 28-
3.
27 ()

TDM , HDSL/SHDSL, PDH, SDH

80,2%, FTTN/FTTC (NGN).

(8 Mbit/s)
HDSL

2011 .

FTTH/FTTB , ” ”
NGN/NGA ,

19 .

MAN Ethernet/IP/MPLS-
MAN MAN 200⁷
1 Gbit/s.
Ethernet
MAN Intercity⁸,

Ethernet- 70

MAN ,

3 ,

4.2.

2013 – 2015 .. , ,

DWDM, DOCSIS 3.0, Ethernet IP.

⁷ <http://www.vivacom.bg/bg/business/ceni-i-uslugi/prenos-na-danni>

⁸ <https://www.vivacom.bg/bg/business/ceni-i-uslugi/prenos-na-danni/metropolitan-area-network-man#tab-man-intercity>

27-

50%

DWDM

IP/MPLS

, 19

2

1	!

27-

3 -

3

	2014 .		2015 .	
	5	6	7	8
	7	7	8	7
	9	7	10	10
	9	9	11	11
	2	1	7	2
	3	5	5	5
	4	4	5	3
	8	4	9	4
	2	4	2	4
	4	4	6	4
	3	7	7	5
	4	3	6	3
	3	10	5	10
	4	3	8	4
	4	4	6	6
	11	17	14	24
	2	3	3	3
	10	3	11	4
	2	2	4	3
	6	4	7	4
	2	2	4	4
	17	4	18	5
	4	9	7	12
	5	10	6	7
	3	2	4	2
	7	7	7	5
	4	4	6	2
	3	2	4	2

3 2014-2015 .
 2015 .
 5 130.

MAN

5.

5.1.

2014 ., 9, 2014 ., (dedicated capacity), / (upload/download). (SLA), 24, 7, (Help Desk Support), . 2 Ethernet (MAN). 1954/27.09.2012 .

9 Ethernet

• ” — ”
 , ;
 • / , .
 :
 • , :
 ○ ;
 ○ (HDSL/SHDSL, PDH, SDH);
 • Ethernet ,
 ” — ”.
 .
 .2 .
 ” — ” Ethernet , ,
 VLAN-id (.
)
 /) VLAN-id (.
 19 1954/27.09.2012 .).
 IP , . . .
 (IP VPN/L3 VPN).
 2014 . , - , ,
 , - ,
 . ,
 ”, , Ethernet (MAN) IP ” —
 (IP VPN).
 .
 . 9 / , :

-
-

;

.

,

/

,

/

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¹⁰

,

,

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/

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,

,

, 1 () ,

¹¹

,

,

:

✓

MAN ”

(

”

–

(IP

VPN);

,

✓

5.1.1.

. 4.2.1

2014 .

Ethernet

).

(

,

¹⁰ . 6, . 1

¹¹ . 7, . 1

MAN IP VPN, MAN IP VPN.

5.1

MAN (IP VPN)

MAN „MAN”

IP VPN

IP/MPLS (SLA). IP VPN

IP VPN

5.1

MAN Ethernet

(VLAN),

MAN

(„ – ”

” – ”),
(VLAN)

4.2.2.3

Ethernet

” – ”, ” – ”.

MAN

VLAN

” , ” – ”.

VLAN.

MAN

IP VPN,

MAN

OSI

(IP)

” – ” ” – ”.

IP VPN

MAN

„MAN”

IP VPN.

/ ,

” / ” , . . .

(IEEE 802.1p)

Ethernet

Ethernet ,

Ethernet , MAN
IEEE 802.1p,
„MAN”

„MAN”

OSI ,

IP , IP VPN ,

OSI (MAN). IP VPN
– ,

31.12.2015 . 30% 229/07.04.2016 .
IP VPN ,

IP VPN , IP VPN

MAN ,

„IP VPN” ,

IP VPN ,

(,)
MAN

„MAN”

IP VPN - ,

” ”

MAN

MAN

8,3%

–

2014 .

2015 .

MAN

11,4% –

2013 - 2015 .

2015 .

6,2%

MAN

.6

VPN,

,

IP VPN

IP

MAN

2014 .

¹²,

(Ethernet)

13 .

(),

¹²
¹³

2014 ., . 50

14

(Ethernet)

2015

MAN (Ethernet)
10 Mbit/s, 100 Mbit/s 1 Gbit/s.

(Ethernet)
2015

4

	Ethernet							
	2 Mbit/s	10 Mbit/s	100 Mbit/s	1 Gbit/s	128 kbit/s	512 kbit/s	1024 kbit/s	2 Mbit/s
()	2 673	968	1 114	2 933	3657	5 882	6 380	8 056

:

(Ethernet) MAN
2015

5

	MAN			Ethernet		
	10 Mbit/s	100 Mbit/s	1 Gbit/s	10 Mbit/s	100 Mbit/s	1 Gbit/s
()	1 025	1 165	3 206	968	1 114	2 933

:

4 - ,

2 Mbit/s,

5

MAN

10 Mbit/s, 100 Mbit/s 1 Gbit/s

(5-10%),

MAN

MAN

(1)

MAN

IP VPN,

IP VPN.

MAN

MAN

5.1.2.

„MAN”

15

(L2

VLAN)

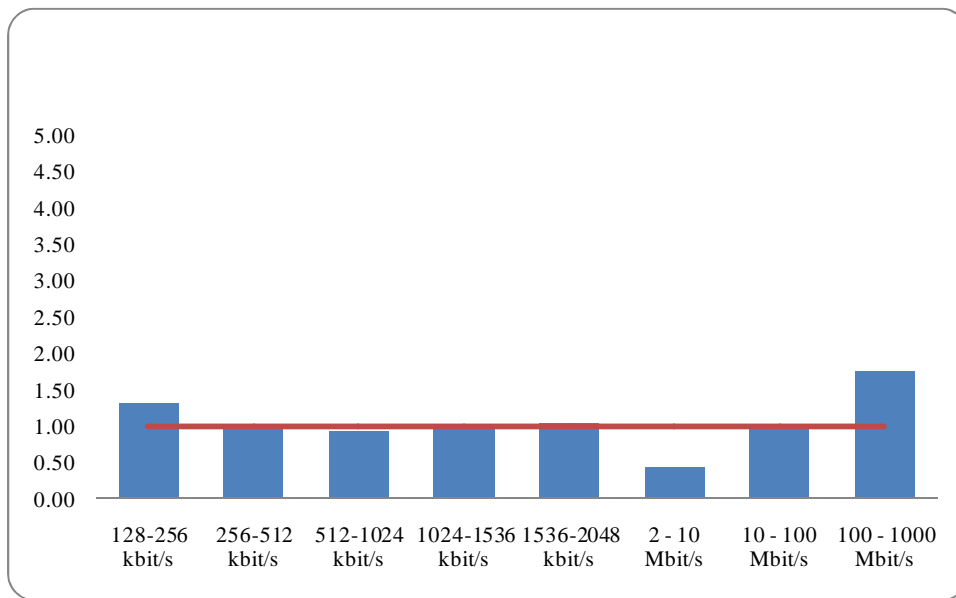
MAN

MAN

64 kbit/s 2 Mbit/s,
10 Mbit/s, 100 Mbit/s 1 Gbit/s.

MAN

2015 16 128 kbit/s 1000 bit/s



:

2

2,

10%.

1,

2, 10 Mbit/s,

1.

2 Mbit/s
 10 Mbit/s
 MAN
 2 Mbit/s
 10 Mbit/s.
 2,
 1,

/ AN
 ()

8 Mbit/s
 ()

8 Mbit/s
 HDSL

8 Mbit/s

()

8 Mbit/s,

8 Mbit/s
- HDSL

250

8 Mbit/s,

372/13.08.2015

„MAN
, MAN

MAN

MAN

MAN

8 Mbit/s,

MAN

MAN

MAN

MAN

5.2.

. 4, . 4

/

. 10, . 1

:

-
-

/

(, , , ,).

(backup)

(

IP

.)

31.12.2015
(66,4%)

MAN 70

„MAN”

¹⁷ „...Account has to be taken of the scope of the potential SMP operator's network and whether that potential SMP operator acts uniformly across its network area or whether it faces appreciably different conditions of competition to a degree that its activities are constrained in some areas but not in others”, Explanatory Note 2014, . 2.5

5.3.

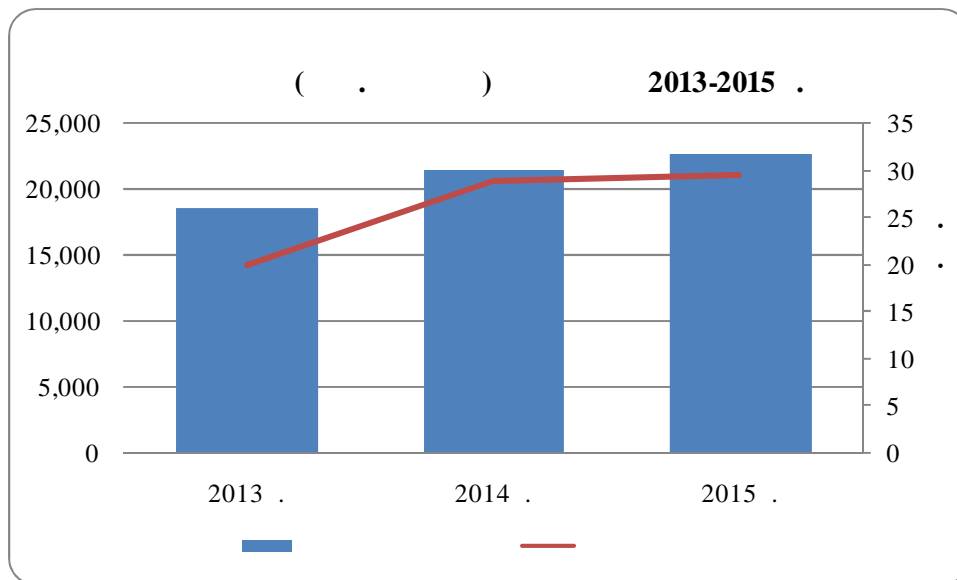
MAN

ex ante

6.

6.1.

2013-2015 3 -



:

3

2015

2013-

22,7 31.12.2015 2015 2014 22% 48% 30

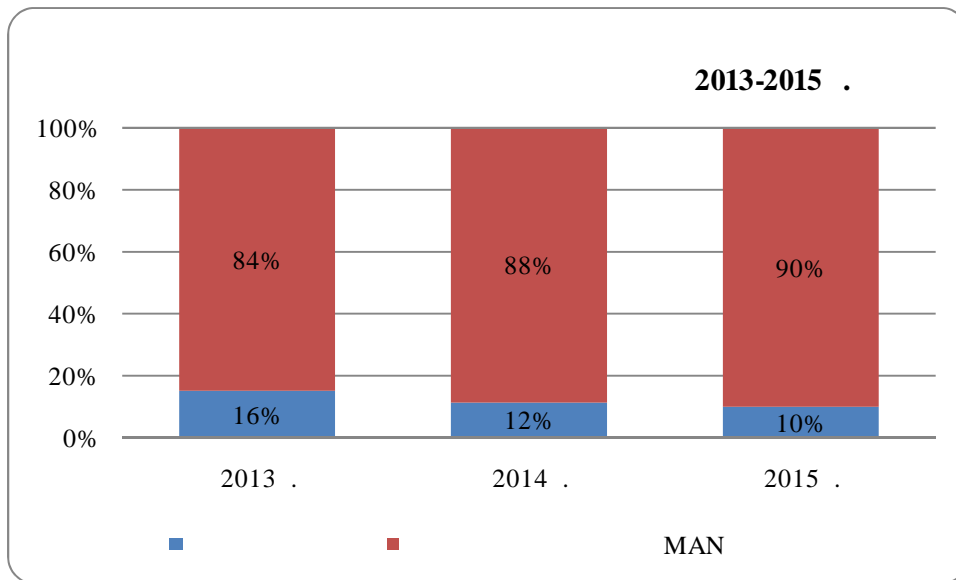
MAN

MAN

MAN

MAN

2013-2015



:

4

- 19%

2,3

6

(4),

MAN

30%

20,3

2015

MAN

MAN

()

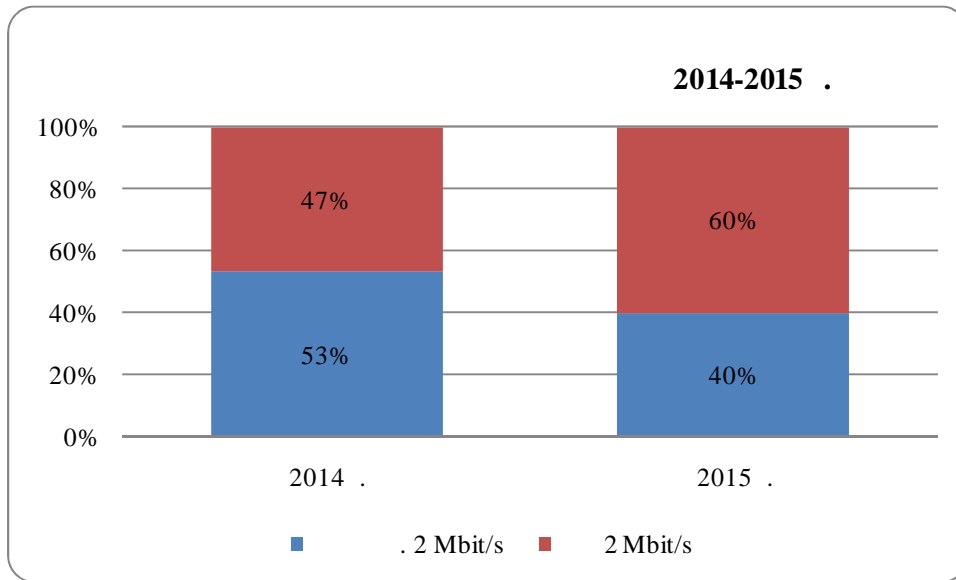
MAN

18

5

2013

2014 2015



:

5

5, 2014-2015
 2 Mbit/s 13
 2015 60%.
 2 Mbit/s 36%

-

-

MAN

;

- ;
- ,

MAN

6.2.

2013-2015

2014 .,

(. 5 (),) MAN

2015 .

2013-

31.12.2015 .

36,)

2013-2015 . (2015 2014 .)

11 (44% 8

1,5% 2015 .

1%

MAN

(MAN)

2015 ., (36), - 23, 19, 24
9 20 3
- 20%. 1%,

MAN

2015 ., - - 0,5% 1%
2013 . 2015 . 63%
3

2013-2015 .

19

20 2015 . 2014 . 2013 . 20 (27 21),

2013-2015 . , 2015 .
 35 , .3 .
 (, MAN)
 2013-2015 .

6

	2013 .		2014 .		2015 .	
	74,8%	82,6%	70,9%	74,4%	66,4%	58,5%
	25,2%	17,4%	29,1%	25,6%	33,6%	41,5%

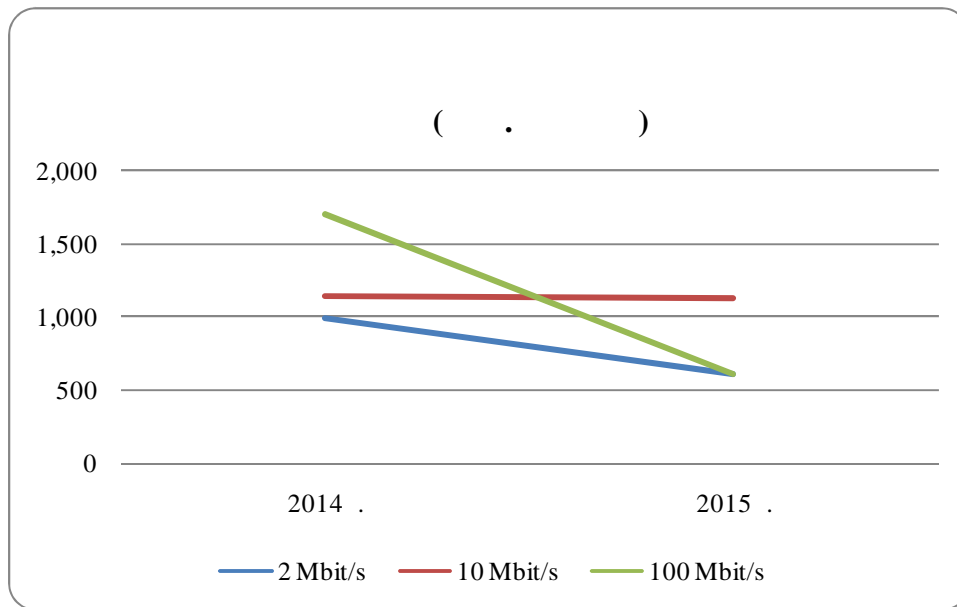
: ,
 6, 3- ,
 8
 24 , 66,4% 58,5% . ,

2015 . , , ,
 , , ,
 6
 , , ,

2008-2011 . , ,
 99% MAN , ,

. 5.1.1. , , ,
 , , ,
 () ,

2014 2015



:

6

6,

40% 2 Mbit/s, 0,2% 10 Mbit/s 64% 100 Mbit/s.

(Ethernet MAN),

(7).

2014 2015 .

7

	2 Mbit/s	10 Mbit/s	100 Mbit/s
2014 .	1 032	956	1 498
2015 .	664	963	1 161

Mbit/s, 2014 2015 . () - 2, 10 100
 2 100 Mbit/s, 36% 23%,
 10 Mbit/s

0,7%.

2015 .,

2015

MAN

24

8

2013-2015 .;

6.3.

2014 .,

21

1954/27.09.2012 .,

. 8 Mbit/s –

. 8 Mbit/s,

MAN),

. 6.1.

MAN

2015 .

90%

8%

2015 .

19%

2013 .,

8 Mbit/s,

8 Mbit/s

2015 .. 36. -

...% ()

2014 2015 .

2014 2015 .

8

			8 Mbit/s
2014 .	2 381	!	
2015 .	2 692		

2015 .

8 Mbit/s

(),

()

13%,

8 Mbit/s, 8% 17%.

. 8 Mbit/s

MAN

. 286

2014 .),

3 3²² (372/13.08.2015 .

() .

(-)

22

372/13.08.2015 .

(3),

(3)

,

,

,

.

V.

1.

2014

4.2.2.3
2014

(upload/download).

(TDM)

Ethernet²³,

Ethernet

(SLA),

24

,7

(upload),

()

²³Carrier-grade Ethernet

- Ethernet VLAN (e.g. through an additional header allowing for several layers of virtual LANs).

Ethernet

MAN

ex ante

(1954/27.09.2012)

2007

4

V

1954/27.09.2012

,
 ,
 :
 • , ;
 • , 27-
 - , -
 , ;
 • , ,
 , .

1954/2012 .
(. 4.1 . 4.2

III)

MAN

MAN

MAN

MAN

MAN

2014 .,

✓

MAN

✓

”;

(

);

✓

);

(FTTx

✓

1.1.

. V.1,

,
,

”

/

(SSNIP).

1.1.1.

MAN

”

”

1954/27.09.2012 .)

” : (1)

27-

; (2)

); (3)

Ethernet

”

”.

2007 .)

(6

(. 4.2 III), MAN 27-

Ethernet

MAN

MAN

MAN

Ethernet

VLAN

IEEE 802.1q,

(VLAN) MAN

Ethernet

(tag) VLAN,

Ethernet

Ethernet

(tag) VLAN (VLAN

MAN

Ethernet

VLAN).

MAN

1.1.2.

MAN

372/13.08.2015 .)

MAN

MAN

MAN

()

(VULA).

1.1.3.

)

(FTTx

(. 1.2 VII

372/13.08.2015 .)

-
-
-
-
-

(best effort QoS);
(contention ratio);

(FTTx

).

ADSL

(...)

(1:1),

1.1.4.

5.1.2

II

MAN

5.1.2

II)

9 -

MAN

2014 - 2015

MAN

MAN

2014 - 2015

()

Mbit/s
34 Mbit/s

3,62
- 2,22

2 Mbit/s

2

34 Mbit/s 155 Mbit/s 4,44
 155 Mbit/s – 1,41

MAN
 , 2014 - 2015 .

9

	2 Mbit/s	> 2 Mbit/s 8 Mbit/s	> 8 Mbit/s 34 Mbit/s	> 34 Mbit/s 155 Mbit/s	> 155 Mbit/s
2014 .	17,82%	3,18%	36,48%	24,53%	17,99%
2015 .	14,20%	2,77%	34,67%	28,97%	19,40%

:

MAN

MAN

MAN

() .

HDSL

8 Mbit/s,

8 Mbit/s

8 Mbit/s 8 Mbit/s.

MAN

MAN

MAN (64 kbit/s 2 Mbit/s, 10/100 Mbit/s 1 Gbit/s, 100 Mbit/s 1 Gbit/s. Ethernet 10 Mbit/s, 100 Mbit/s 1 Gbit/s. 8 Mbit/s, MAN 8 Mbit/s.

MAN Ethernet

31.12.2015 .89,8%

MAN Ethernet

Ethernet

TDM

8 Mbit/s.

MAN

1.2.

MAN

-
-
-

1.3.

„MAN“

1.4.

MAN

2.

2.1.

III

19²⁴

III

. 14, . 2

. 21

25

2.2.

. 75

I,

²⁴ „If, however, a national regulatory authority concludes that, absent regulation at the wholesale level, the retail market(s) as defined display(s) sustainable competition, it should also conclude that ex ante regulation is no longer needed at the wholesale level.”

²⁵ . 25, . 2

26 , 27 .

1. ;

2. :

- ;
- , ;
- ;
- ;

3. .

2.2.1.

25

.31 28 .

MAN

” 2012 . 2013 . ”

2014 . ,

2013 . , (

)

.1

2013-2015 .

2015 . ,

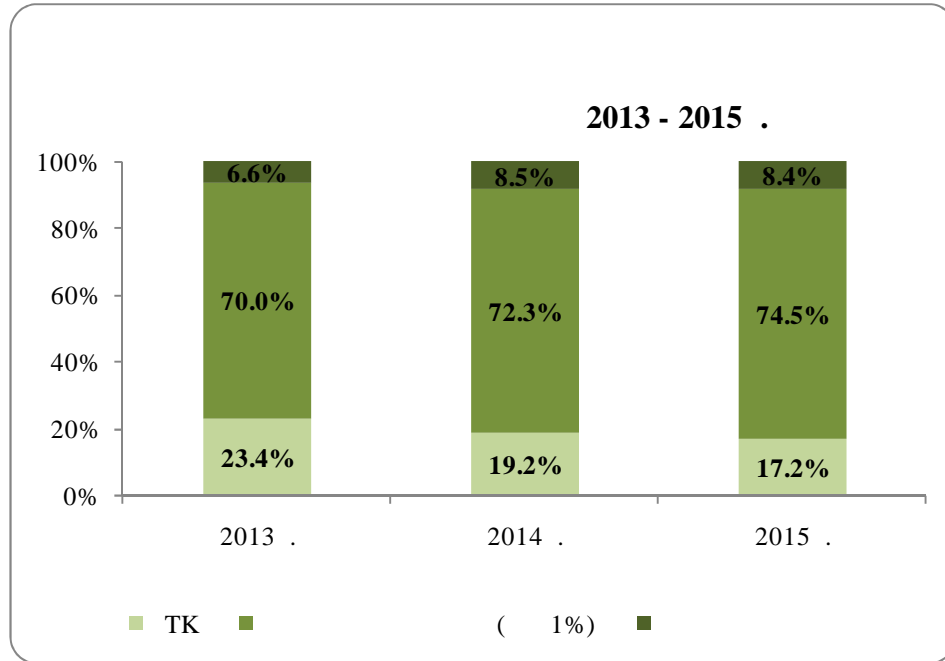
44 .

10.

26 . 78

27 . 31 . 32

28 . 28



:

7

2013 – 2015

(17%)

14%

4,4

-(14% 13%).

(HHI)²⁹,

919

2015 .,

)

(

. 31

2.2.2.

30

²⁹ . 30
³⁰ . 81

2.2.2.1.

8 Mbit/s

1954/2012

. 4

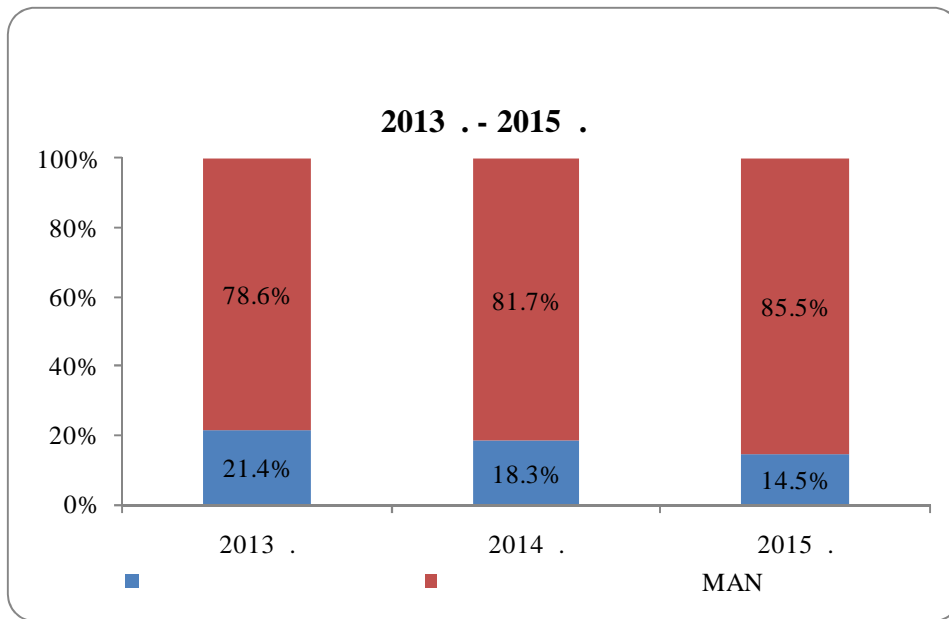
III

19
2015 .

37%

()

8.



:

8

8,

()

6,9

20,2%.

2015 .

6,3%.

2013 .

2015 .

(30%)

2013 . -

21%,

29%

2015 .

„MAN“

1954/2012

MAN
MAN

2015 . 2013 .

„) „ ” „ 1” (”

. 2.2.2.4.). 2015 . 65%

2.2.2.2.

(sunk costs)

2015 .

),

(sunk costs)

2013-2015 .

³¹

550 .

(45%

1%

25%

- 20%.

2014 .,
100%.

2013 .

2015 .

2.2.2.3.

()

2.2.2.4.

„

32

31.12.2015 .
2013 . 14%.

27%

2015 ., 7

29%

2.2.3.

³² .31, .7

33

2015 .

11

2015 .

2015 .

11

-		
		13,7%
	!	13,0%
		4,0%
		4,0%

11

(228)

2015 .

80%

2015 .		
1		
E		
VERIZON UK		

: ,
 12
 - 85% ,
 ,9% - 1% 2015 . 5%
 9
 2014 . 10%
 18%
 ” ” -
 2015 ., 10% ,
 80% - (1%)
 20%
 1% , 90%
 75%.

12

44% 2015 .

(

/) ,

2.3.

V.

. 1 . 2 , (4 2014/710/EC). . 155,
, , /
, ,
1954/27.09.2012

8 Mbit/s, :

1.

1.1.

8 Mbit/s”,

1.2.

1.3.

1.4.

-

-

-

-

8 Mbit/s,

3 () -

64 Kbit/s, 64 Kbit/s

95%

-

•

64 Kbit/s, 64 Kbit/s, 8 Mbit/s:

○

○

○

○

•

8 Mbit/s:

○

○

○

•

31

8 Mbit/s,

64 Kbit/s,

64 Kbit/s

.167, .2

3.

3.1.

”8 Mbit/s”

3.2.

”Mbit/s”,

()

8

4.

•

18%.

2 Mbit/s

•

2 Mbit/s

8 Mbit/s,
2 Mbit/s

:

	2 Mbit/s
2 Mbit/s	1
4 Mbit/s	1,35
8 Mbit/s	1,97

•

•

6434/2013 . , VII ..
, 5 . - .
28.10.2013 .

14080/2013 .

1954/2012

•

. 155, . 2 ,
”
1954/27.09.2012 . ”
. 16(3) 2002/21/

1954/27.09.2012 .,