



Ministerial
Programme 2012



Case Study: Germany – from start to finish

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Bundesnetzagentur



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Thematic Workshop Case Study: Germany – from start to finish

Dr. Rüdiger Hahn

Barcelona, 27th February 2012

Overview

Starting position

Decisions

Auction

Aftermath

Overview

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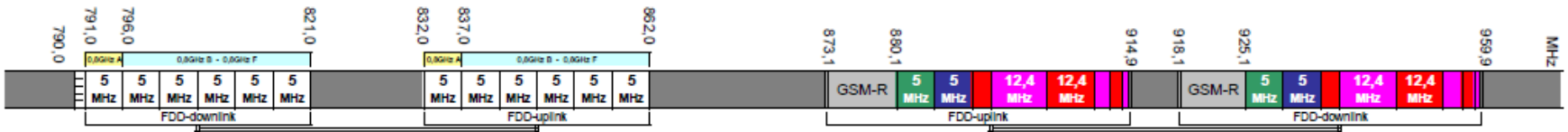
Auction

Aftermath

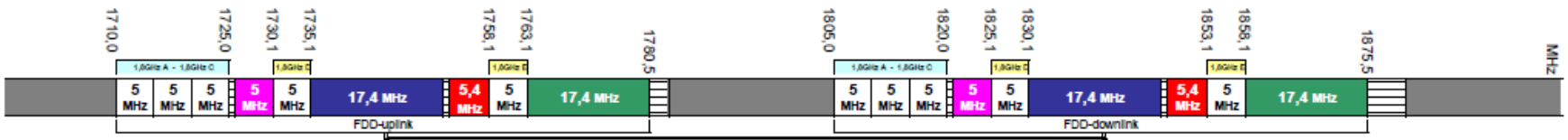
Spectrum before Auction



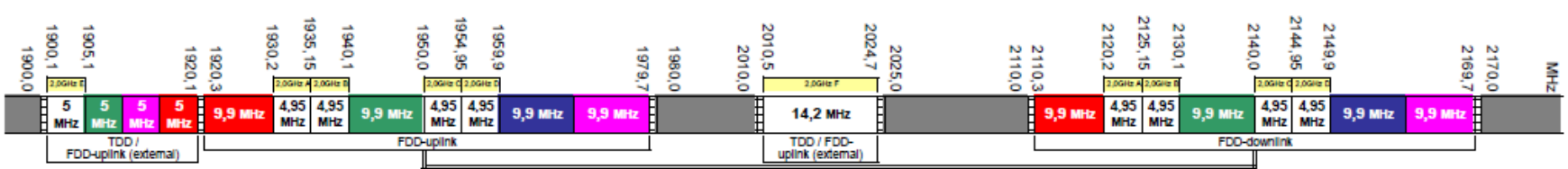
• Frequency bands 800 MHz and 900 MHz



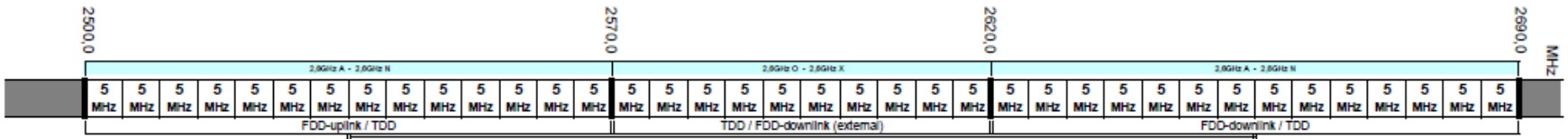
• Frequency band 1.8 GHz



• Frequency band 2.0 GHz







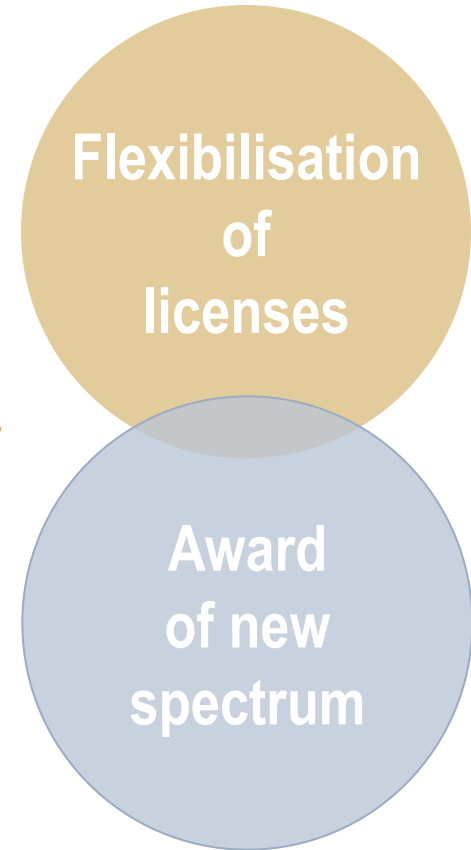
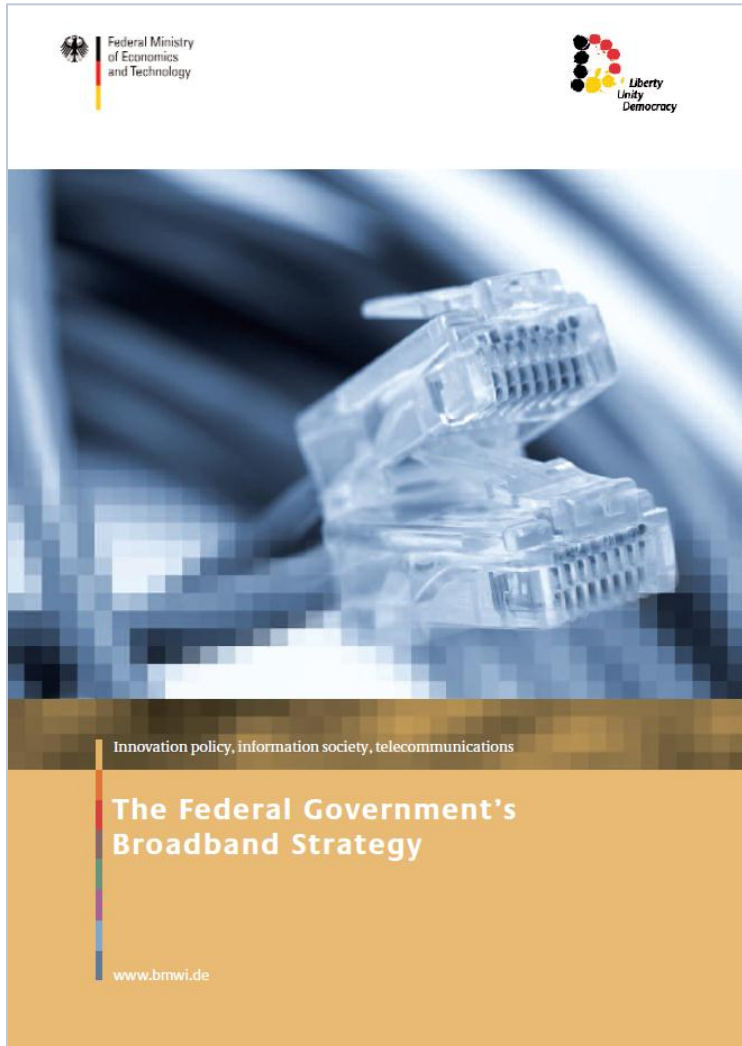
• Frequency band 2.6 GHz



Frequency holdings before Auction



Frequency Range				
900 MHz	2 × 12,4	2 × 12,4	2 × 5	2 × 5
1.8 GHz	2 × 5	2 × 5,4	2 × 17,4	2 × 17,4
2.1 GHz	2 × 9,9	2 × 9,9	2 × 9,9	2 × 9,9
Σ paired spectrum	2 × 27,3	2 × 27,7	2 × 32,3	2 × 32,3
2.1 GHz (unpaired)	5	5	5	0
Σ spectrum (in total)	59,6	60,4	69,6	64,6



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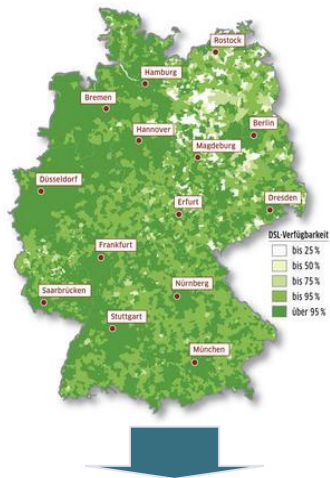
Auction

Aftermath



Principle obligation:

- at least 25% of the population as from 1 January 2014
- at least 50% as from 1 January 2016



Special obligation for “digital dividend”:

- Federal Government’s Broadband Strategy
- Federal states compiled “white spaces” on municipality level
- Four priority stages:
 - (1) inhabitants < 5,000
 - (2) 5,000 < inhabitants < 20,000
 - (3) 20,000 < inhabitants < 50,000
 - (4) 50,000 < inhabitants
- at least 90% of the population of the relevant municipalities per Federal state by end of 2016



Acceleration of bidding process

Low barriers for SME

Prove seriousness of application

As-if no auction

Fees as reference figure

Block	Minimum bid
2 x 5 MHz (paired)	€ 2,500,000
1 x 5 MHz (unpaired)	€ 1,250,000
1 x 14.2 MHz (unpaired)	€ 3,550,000

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12 April 2010: Starting the clock



Results of the final bidding round



End of Auction

Frequenzbereich	Block	Ausstattung	Höchstbieter	Höchstgebot (€ in Tsd)
-----------------	-------	-------------	--------------	------------------------

0,8 GHz (gepaart)	0,8 GHz A	2x5 MHz konkret	To2 GER	616.595
	0,8 GHz B	2x5 MHz abstrakt	To2 GER	595.760
	0,8 GHz C	2x5 MHz abstrakt	Telekom D	570.849
	0,8 GHz D	2x5 MHz abstrakt	Telekom D	582.949
	0,8 GHz E	2x5 MHz abstrakt	Vodafone	583.005
	0,8 GHz F	2x5 MHz abstrakt	Vodafone	627.317

1,8 GHz (gepaart)	1,8 GHz A	2x5 MHz abstrakt	Telekom D	20.700
	1,8 GHz B	2x5 MHz abstrakt	Telekom D	20.700
	1,8 GHz C	2x5 MHz abstrakt	Telekom D	19.869
	1,8 GHz D	2x5 MHz konkret	E-Plus Grp	21.550
	1,8 GHz E	2x5 MHz konkret	E-Plus Grp	21.536

2,0 GHz (gepaart)	2,0 GHz A	2x4,95 MHz konkret	Vodafone	93.757
	2,0 GHz B	2x4,95 MHz konkret	E-Plus Grp	103.323
	2,0 GHz C	2x4,95 MHz konkret	E-Plus Grp	84.064
	2,0 GHz D	2x4,95 MHz konkret	To2 GER	66.931

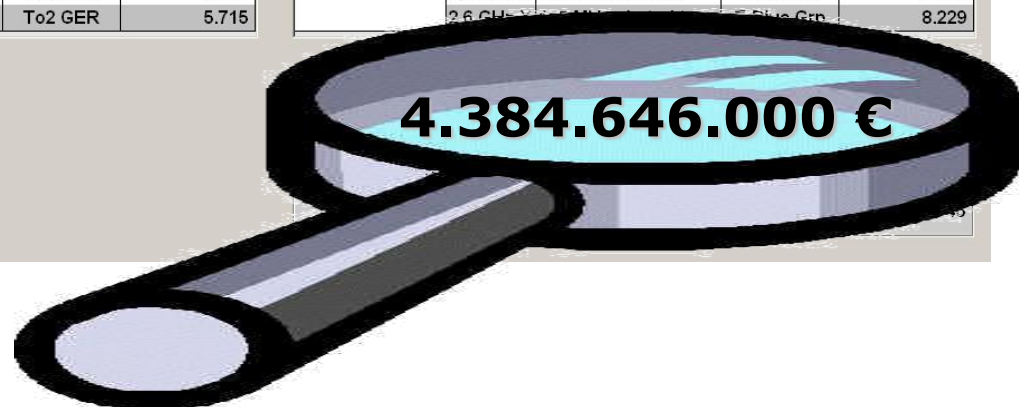
2,0 GHz (ungepaart)	2,0 GHz E	1x5 MHz konkret	To2 GER	5.731
	2,0 GHz F	1x14,2 MHz konkret	To2 GER	5.715

Frequenzbereich	Block	Ausstattung	Höchstbieter	Höchstgebot (€ in Tsd)
-----------------	-------	-------------	--------------	------------------------

2,6 GHz (gepaart)	2,6 GHz A	2x5 MHz abstrakt	Telekom D	19.096
	2,6 GHz B	2x5 MHz abstrakt	Telekom D	19.025
	2,6 GHz C	2x5 MHz abstrakt	To2 GER	17.364
	2,6 GHz D	2x5 MHz abstrakt	To2 GER	17.364
	2,6 GHz E	2x5 MHz abstrakt	Vodafone	18.948
	2,6 GHz F	2x5 MHz abstrakt	Vodafone	19.025
	2,6 GHz G	2x5 MHz abstrakt	Telekom D	19.069
	2,6 GHz H	2x5 MHz abstrakt	Telekom D	19.038
	2,6 GHz I	2x5 MHz abstrakt	To2 GER	18.948
	2,6 GHz J	2x5 MHz abstrakt	E-Plus Grp	18.931
	2,6 GHz K	2x5 MHz abstrakt	E-Plus Grp	17.739
	2,6 GHz L	2x5 MHz abstrakt	To2 GER	17.739
	2,6 GHz M	2x5 MHz abstrakt	Vodafone	17.739
	2,6 GHz N	2x5 MHz abstrakt	Vodafone	17.752

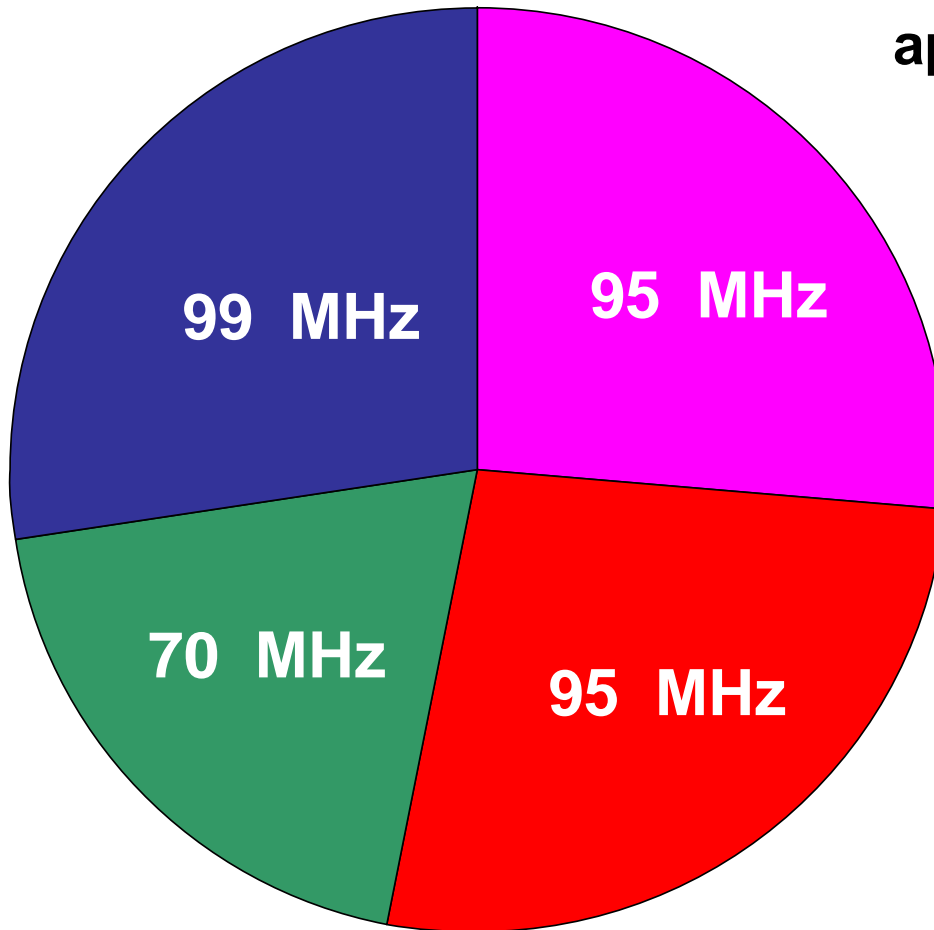
2,6 GHz (ungepaart)	2,6 GHz O	1x5 MHz abstrakt	Vodafone	9.130
	2,6 GHz P	1x5 MHz abstrakt	Vodafone	9.130
	2,6 GHz Q	1x5 MHz abstrakt	Telekom D	8.598
	2,6 GHz R	1x5 MHz abstrakt	Vodafone	8.598
	2,6 GHz S	1x5 MHz abstrakt	Vodafone	9.051
	2,6 GHz T	1x5 MHz abstrakt	Vodafone	9.051
	2,6 GHz U	1x5 MHz abstrakt	E-Plus Grp	8.273
	2,6 GHz V	1x5 MHz abstrakt	To2 GER	8.229
	2,6 GHz W	1x5 MHz abstrakt	To2 GER	8.229
	2,6 GHz X	1x5 MHz abstrakt	E-Plus Grp	8.229

Ausgeschiedene Bieter:





- **360** MHz
- **41** frequency blocks
- **4** frequency bands (800 MHz, 1.8 GHz, 2.1 GHz, 2.6 GHz)
- **1** auction
- **6** applicants
- **4** bidders
- **6** weeks
- **224** rounds



approx total 359 MHz

- Telekom
- Vodafone
- E-Plus
- Telefonica

Highest bids per operator

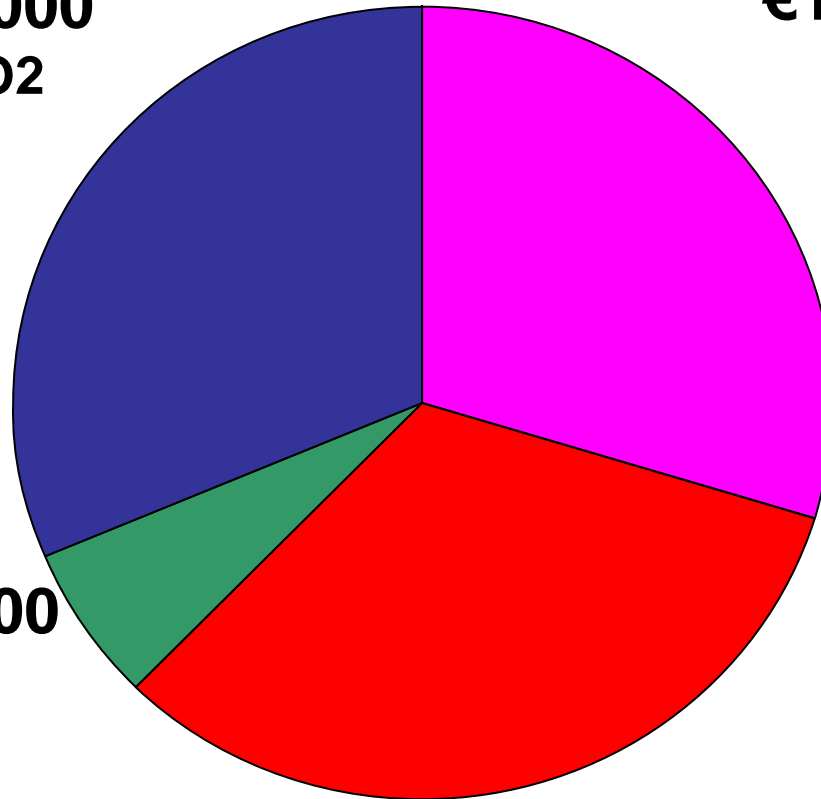


€1,378,605,000
Telefonica O2

€1,299,893,000
Telekom

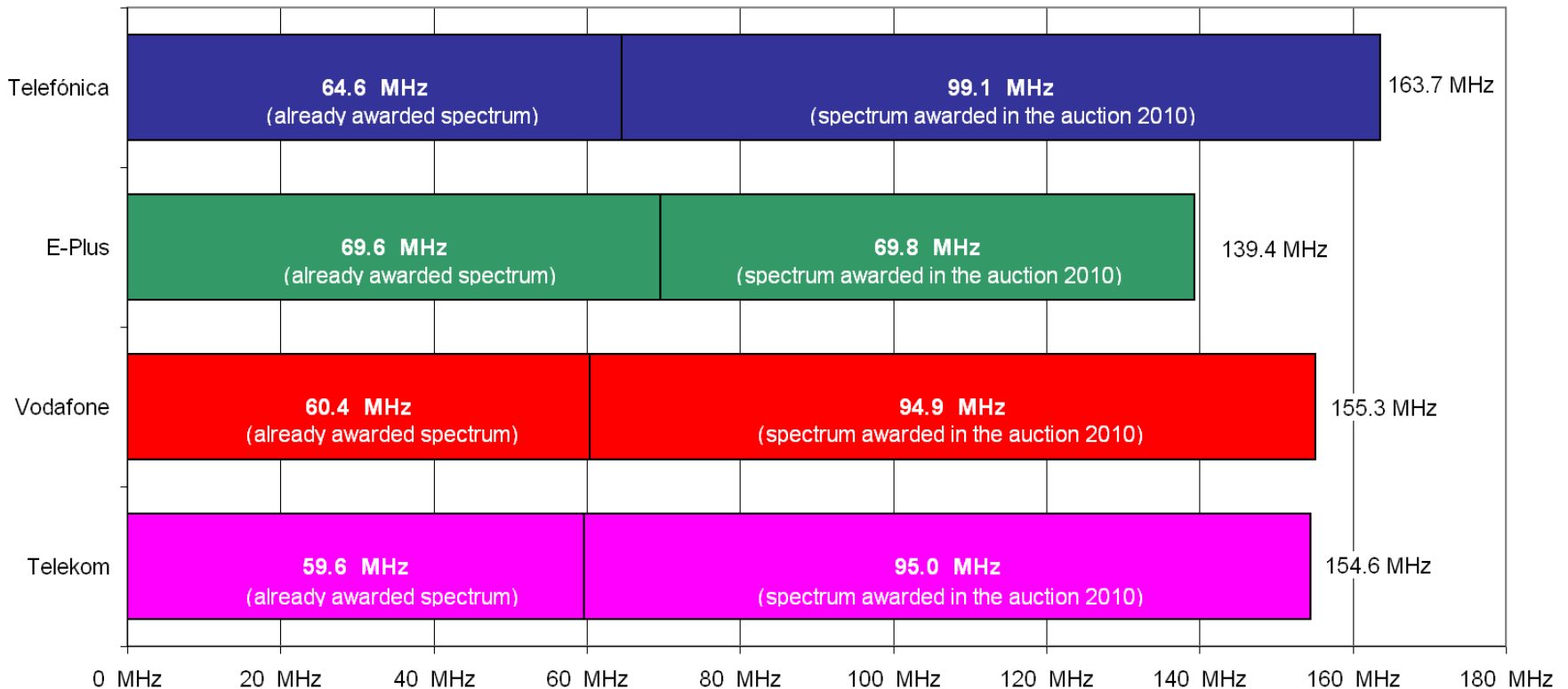
€283,645,000
E-Plus

€1,422,503,000
Vodafone





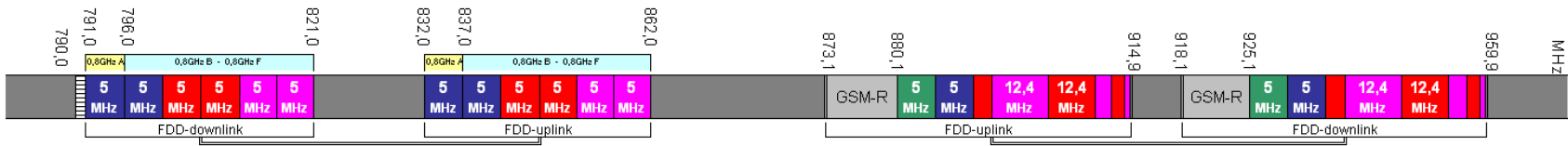
Spectrum of the mobile network operators after the auction



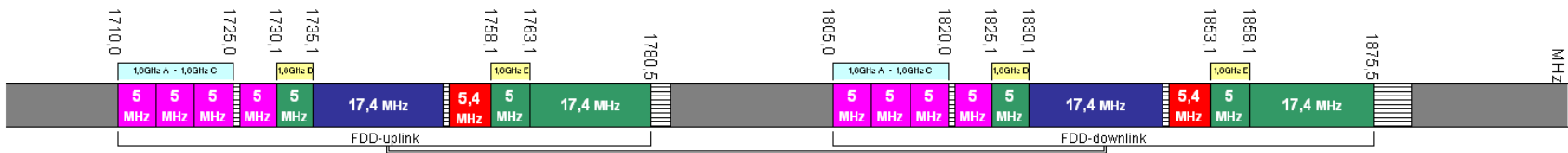
Current spectrum distribution



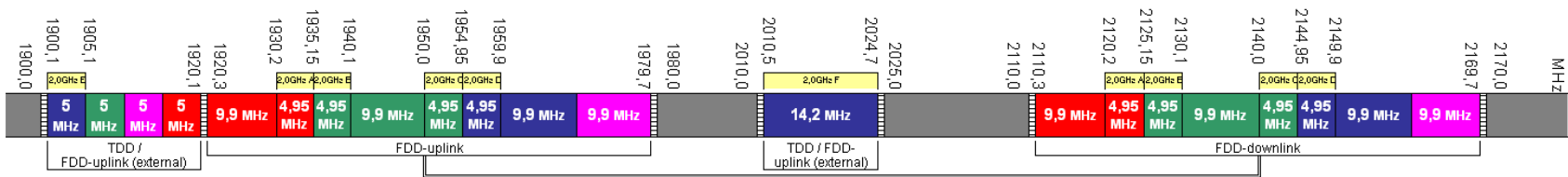
- Frequency bands 800 MHz and 900 MHz



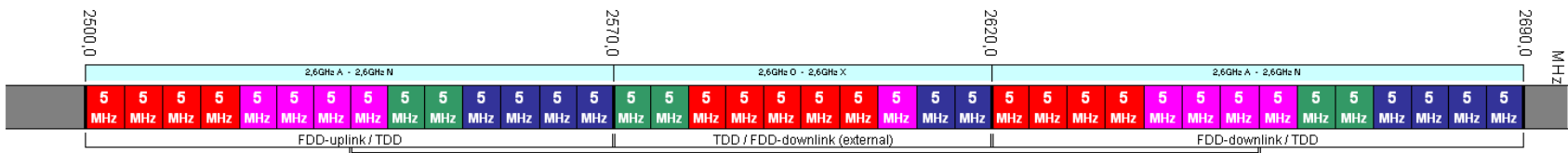
- Frequency band 1.8 GHz



- Frequency band 2.1 GHz



- Frequency band 2.6 GHz



 Telekom Deutschland
 E-Plus-Gruppe
 Telefónica O₂ Germany
 Vodafone
 0,8GHz A concrete awarded
 0,8GHz B - 0,8GHz F abstract awarded

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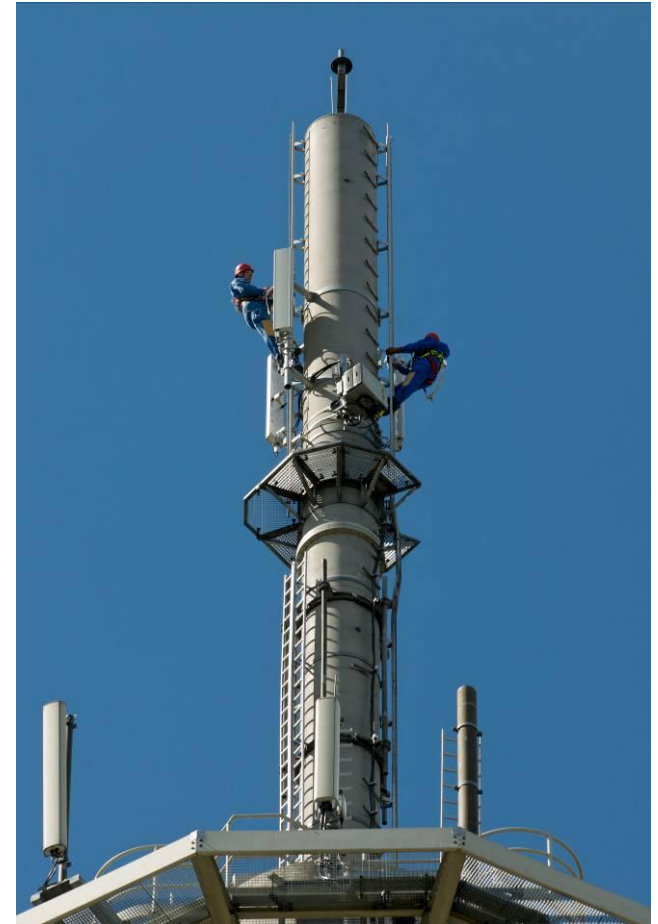
Aftermath



Site-specific parameters

Transparent procedure

No interference yet



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10 of 16 Federal states covered

7448* LTE-800 sites approved

2332* sites in commercial operation



* as of January 2012

Site-specific parameters



LTE at 800 MHz

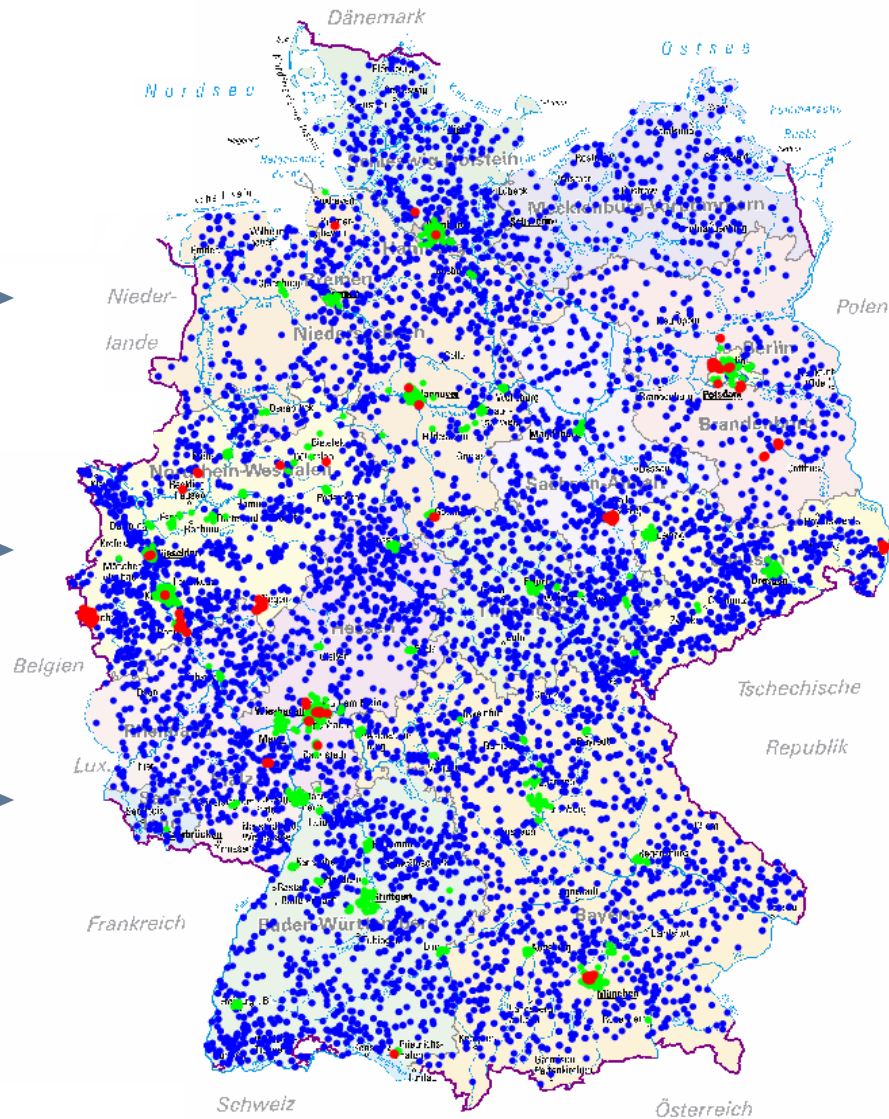
7,448 sites

LTE at 1.8 GHz

1,254 sites

LTE at 2.6 GHz

203 sites





2. Member States shall, when implementing this Directive, examine whether the existing assignment of the 900 MHz band to the competing mobile operators in their territory is likely to distort competition in the mobile markets concerned and, where justified and proportionate, they shall address such distortions in accordance with Article 14 of Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive) (**).



From our point of view a combination of spectrum costs and networks costs is the most suitable indicator to objectively determine competitive distortions. [...] We do not see indicators for distortions of competition stemming from spectrum distribution and the flexibilization of the 900 MHz band.



**Expiry of GSM licences
by the end of 2016**

**Statements of interest in
usage by January 2012**

Project 2016

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Translation¹

**Demand identification proceedings
for the frequency bands at 900 MHz and 1800 MHz**

(BK - 1-11/003)

Also the Bundesnetzagentur's Official Gazette No. 23/2011

¹ In case of divergent interpretation only the German text shall prevail.



Bundesnetzagentur

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Legal Aspects of Telecommunications Regulation, Frequency Regulation

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Thank You

Please visit www.gsma.com/DDtoolkit for
detailed information



Digital Dividend Toolkit

Digital Dividend | Introduction of the Digital Dividend Toolkit

1.0 Introduction to the Toolkit

The GSMA's Digital Dividend Toolkit is designed to give one-to-one access to the latest policies on the Digital Dividend, allow existing thinking on the subject and highlight areas of best practice.

By creating information on the Digital Dividend, enabling cross-national, technical, political and financial guidance to help an understanding that leads to how mobile operators can address the digital divide through mobile broadband, 3G, 2G and 2.5G, and help to further spread access towards Digital Dividend objectives through the world. Giving consumers access to broadband and the internet is a key focus for governments around the world. Mobile broadband services coupled with a range of applications to enhance healthcare, education, financial services and other services available to consumers offers the affordable, equitable broadband access in a cost-effective manner. However, access and usage still remain quite limited in broadband, particularly when comparing the importance of ensuring that there is no digital divide between urban and rural areas. One measure to the long-term sustained, sustainable development, is the Digital Dividend.

The Digital Dividend is seen as a key to the question that is becoming more and more relevant to be used in a world of the greater efficiency of digital. To the maximum potential of opening the energy market by increasing access and promoting the opportunity to release spectrum for other services. The Digital Dividend spectrum is a key to achieving mobile broadband. It is a key to ensuring that the current mobile broadband spectrum, meaning that there have been different measures to cover the same geographic area. The best measurement steps are being operated to provide greater, affordable, much as we see in our own country without necessarily be considered as a success. By allowing a portion of the spectrum to be used by mobile operators, governments can give operators the flexibility to provide more affordable broadband services and to help bridge the Digital Divide.




Digital Dividend | Introduction of the Digital Dividend Toolkit

2.1 Networks and Devices for Mobile Broadband

Mobile broadband as delivered by the GSM family of technologies has been a global success. The market has grown from less than 100 million mobile broadband users in 2000 to over 200 million by May 2011. Operators are now looking to the Digital Dividend to deploy the next generation of mobile technologies, LTE, with several LTE networks already deployed and nearly 30 early commercial trials using the digital dividend.

LTE

	Total	Market	Launched	Number of the 3G operators
USA	1	1	1	1
Japan	15	15	15	15
Asia Pacific	49	2	2	2
Europe Eastern	40	0	0	0
Europe Western	49	0	0	0
Africa and MEA	12	0	0	0
South America	31	0	0	0

Source: GSMA Intelligence, GSMA Mobile Broadband Statistics Q3 2011

The technology has improved over the years to be able to support 100Mbit/s offering a better user experience of 4G LTE system. With the use of 4G LTE operators are required to provide a better user experience and a better user experience.

The technology is being used in a number of ways to be able to support 100Mbit/s offering a better user experience of 4G LTE system. With the use of 4G LTE operators are required to provide a better user experience and a better user experience.

Keynote address by the speaker
LTE
GSMA Executive Park
Executive Park

"Continuing to build on the success of the digital dividend is the key to the development of the next generation of mobile technologies, LTE, with several LTE networks already deployed and nearly 30 early commercial trials using the digital dividend."




Digital Dividend | Introduction of the Digital Dividend Toolkit

3.2 ITU Processes

Long before consumers are able to make use of affordable, mobile broadband devices, governments and industry must work together to achieve international agreement on a number of issues. Chief among these is the identification of internationally harmonized spectrum bands.

There is a key role for the ITU in this process. It is the responsibility of the ITU to identify and allocate spectrum bands for mobile broadband services. The ITU is the only organization that has the authority to do this. The ITU is the only organization that has the authority to do this.

ITU Process

ITU process timeline: 2004-2005 ITU-T Study Group 5, 2006-2007 ITU-T Study Group 5, 2008-2009 ITU-T Study Group 5, 2010-2011 ITU-T Study Group 5, 2012-2013 ITU-T Study Group 5, 2014-2015 ITU-T Study Group 5, 2016-2017 ITU-T Study Group 5.

ITU-T Study Group 5
ITU-T Study Group 5 is the main body responsible for the study and allocation of spectrum bands for mobile broadband services. The ITU-T Study Group 5 is the main body responsible for the study and allocation of spectrum bands for mobile broadband services.

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