



WP6: ERATec

European **R**adio **A**stronomy **T**echnical Forum

Reinhard Keller

Max-Planck-Institute for Radio Astronomy, Bonn, Germany

ERATec RFI @ large bandwidth
Bonn, 8.-12.4.2013

ERATec Objectives

- ▣ communication, training and scientific interaction
- ▣ development and operation of radio-astronomical instruments
- ▣ collaboration between the groups working on development and operation
- ▣ address scientists whose work is closely related to telescopes and instrumentation

ERATec Tradition

- TOG: Technical Operation Group:
 - Since FP5
 - Basis of engineering collaborations
 - successful operation of the EVN

- Engineering Forum:
 - Since FP6
 - Workshops on technical Topics
 - Forum for Discussions and Collaborations

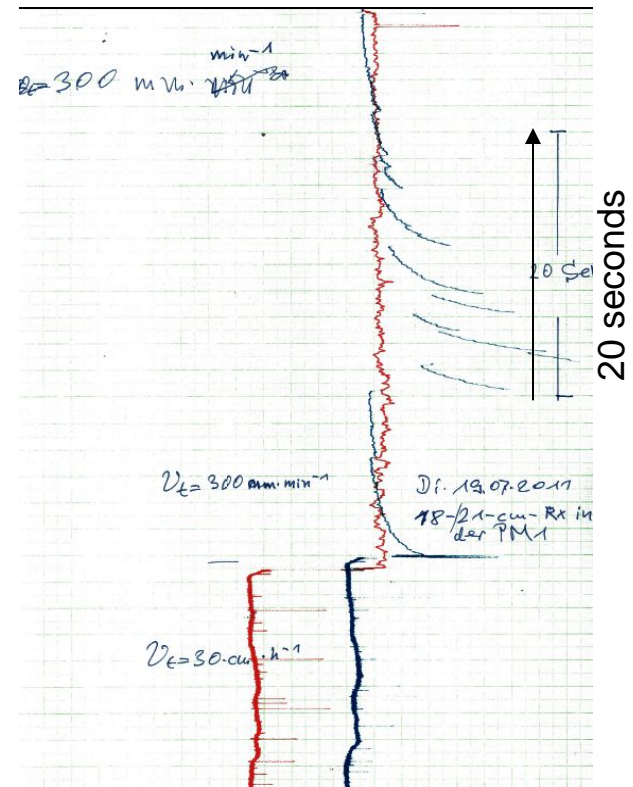
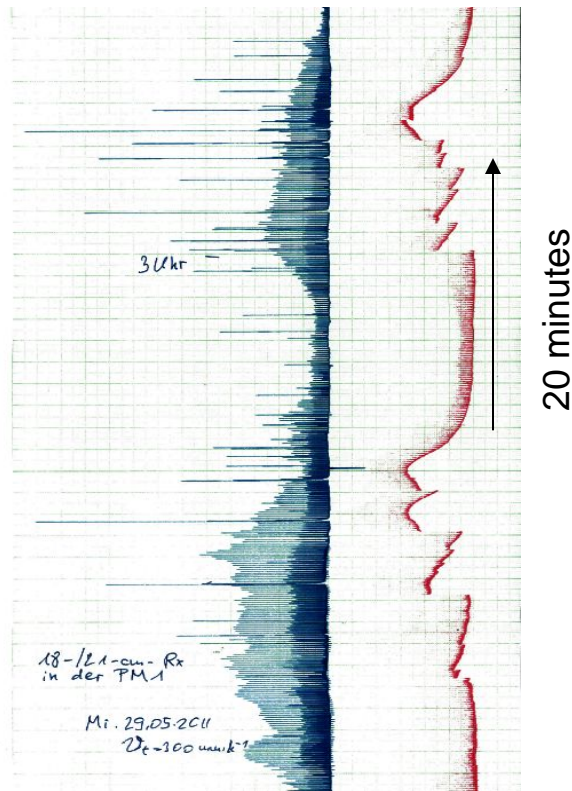
ERATec Extended Scope

- TWS: Technical Workshops:
 - Connecting TOG and Engineering Workshop,
 - Include Instrumentation oriented Scientists
 - 1 or 2 Days, dedicated Topics
- European Radio Astronomy Engineering Special Sessions:
 - Special Sessions within existing Events (EuMC, etc.)
 - Broaden Scope and Dissipation
 - Attract Interest of Researchers in related Fields for Collaboration

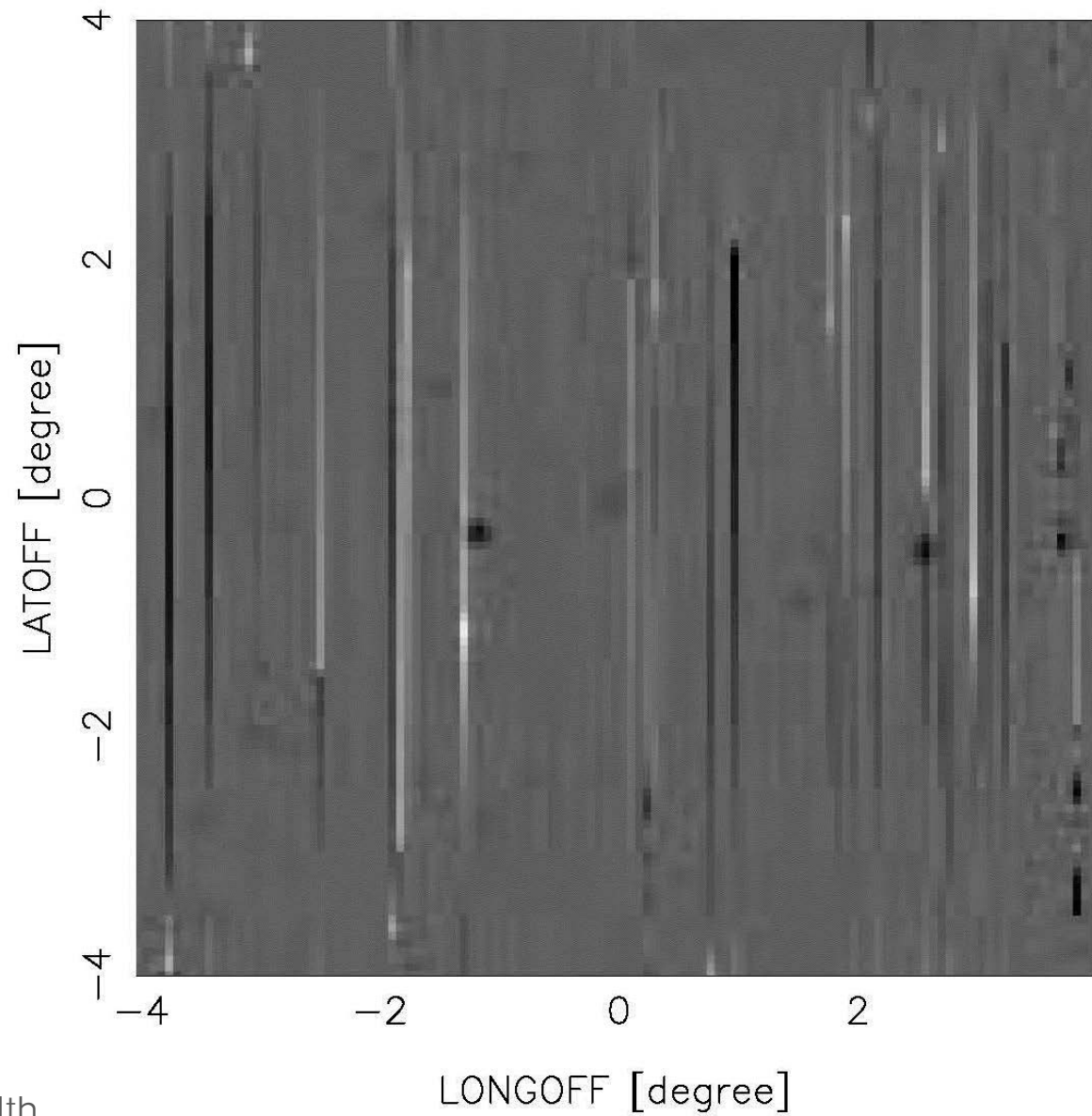
ERATec Goals

- ▣ Identify synergies
- ▣ Develop complementary capabilities at the observatories
- ▣ Determine how the pooling of resources might lead to common solutions for common problems
- ▣ Share best practice
- ▣ TOG: Progress Reports from EVN-stations, Correlators and other VLBI related institutes

The Urge of RFI Mitigation

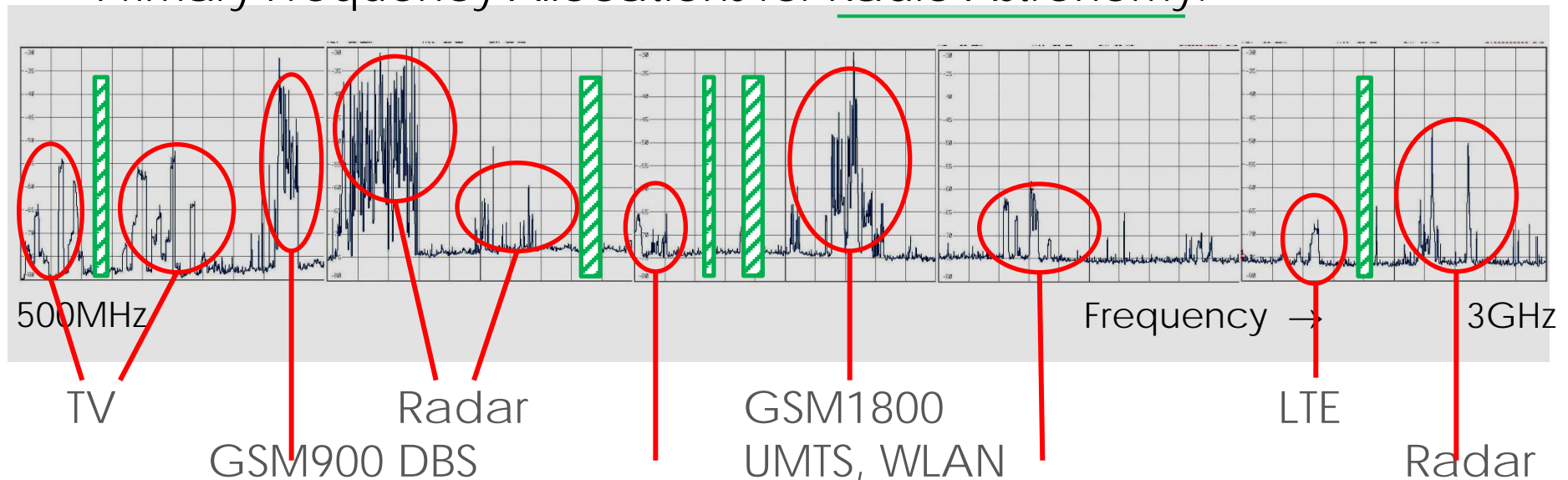


HI:



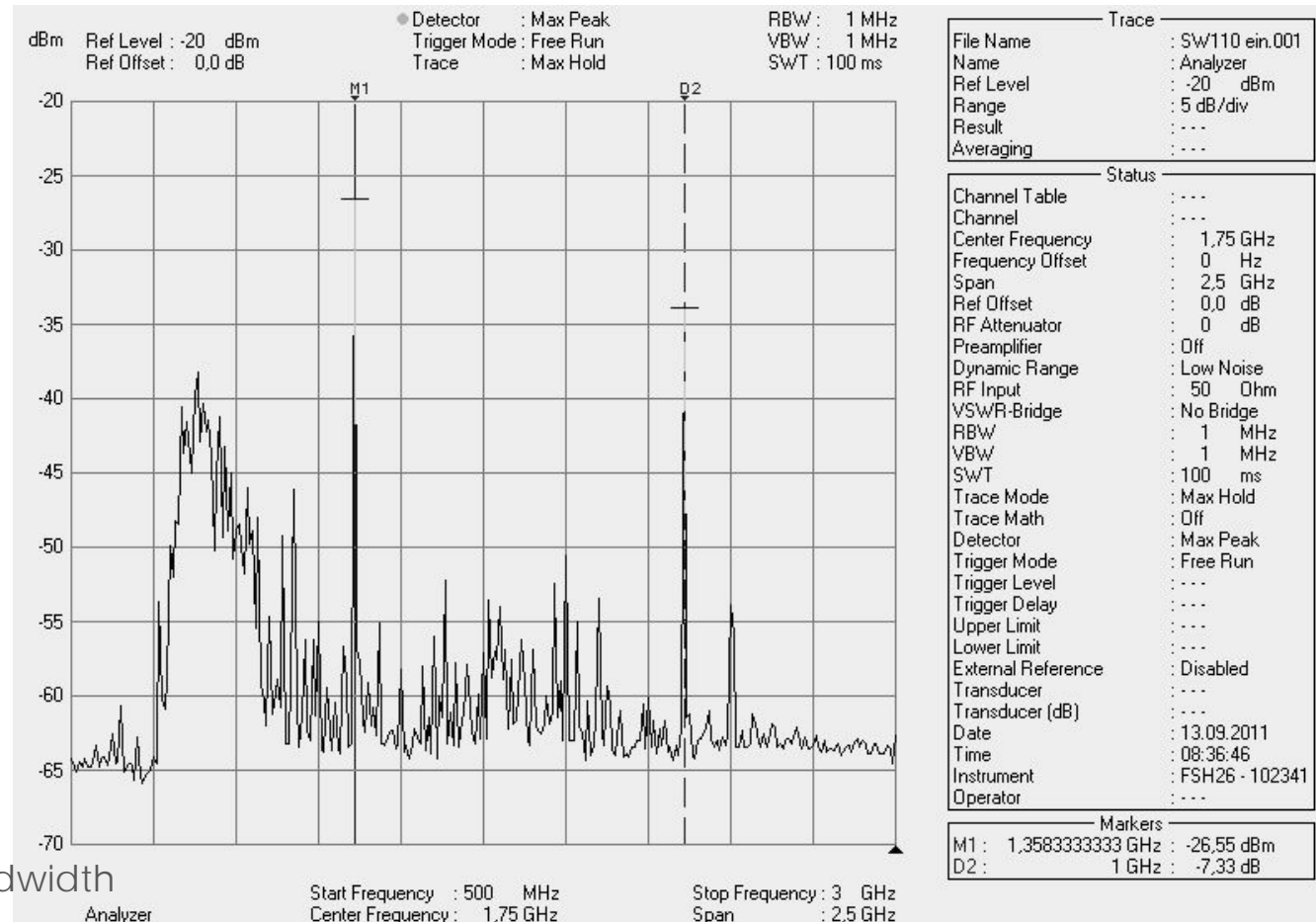
Frequency Band and RFI

- Frequency Spectrum measured at the 100m with Spectrum Analyser + Preamplifier (NF = 3dB ~ $T_{sys} = 300K$)
- Primary Frequency Allocations for Radio Astronomy:



Homemade RFI

■ Ethernet Switch 100MbE

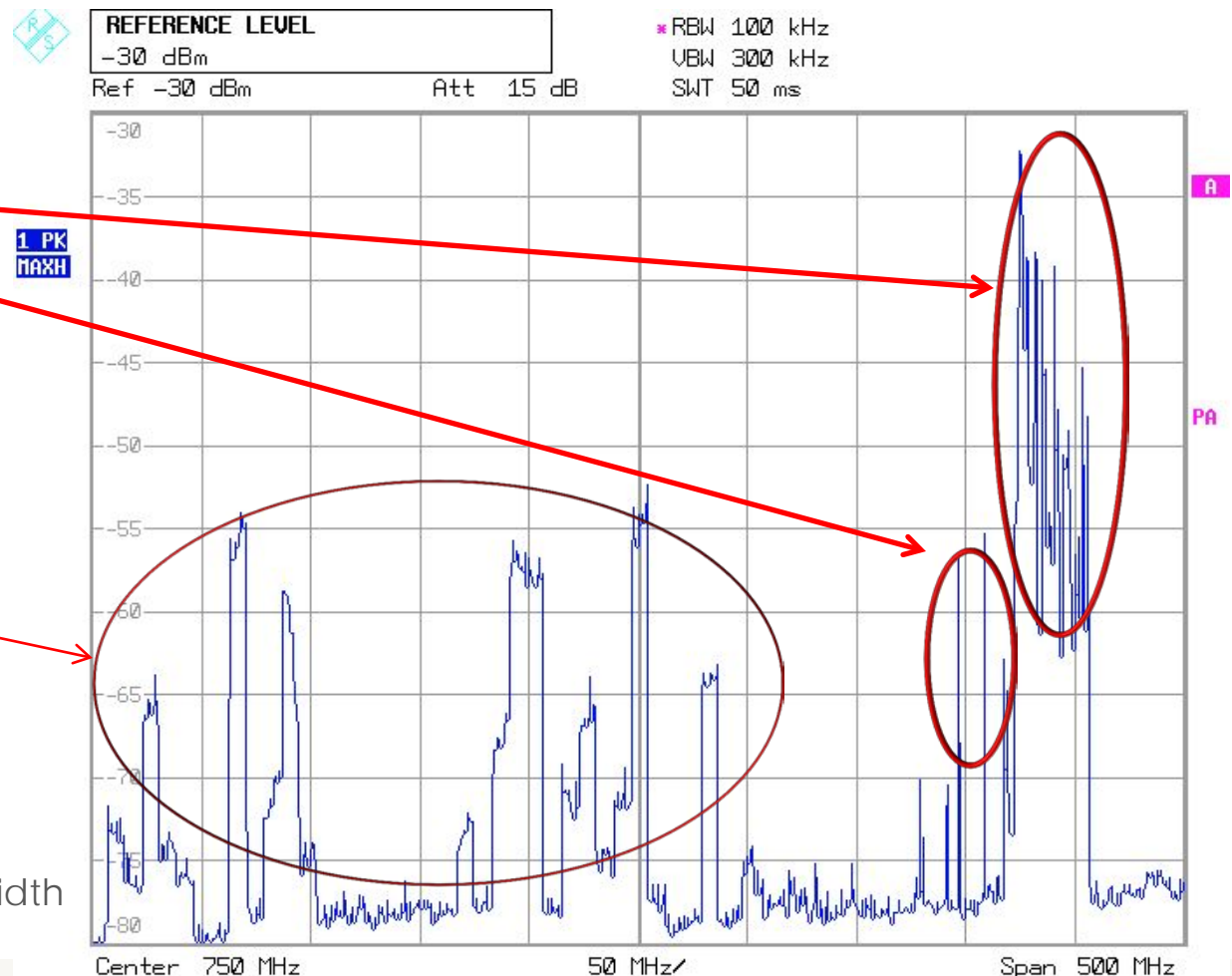


ERATec RFI @ large bandwidth
Bonn, 8.-12.4.2013

Mobile Communications

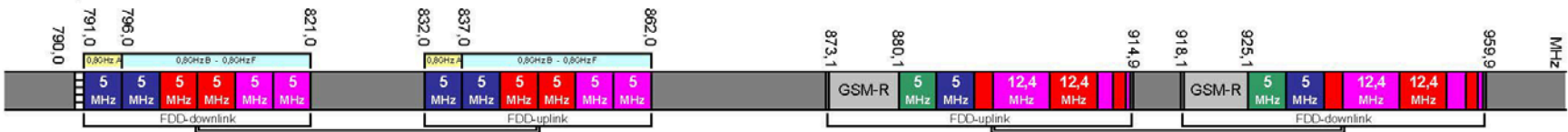
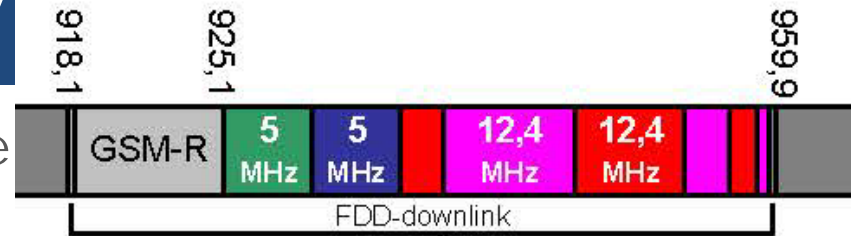
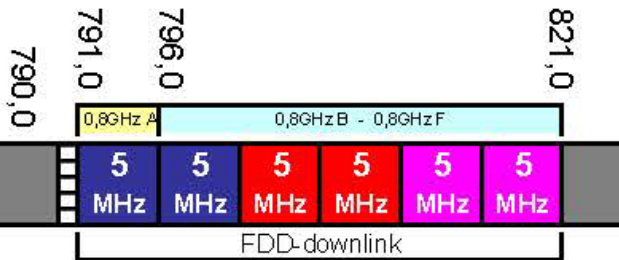
- GSM 900:
 - Downlink
 - Uplink

- (TV: DVB-T)

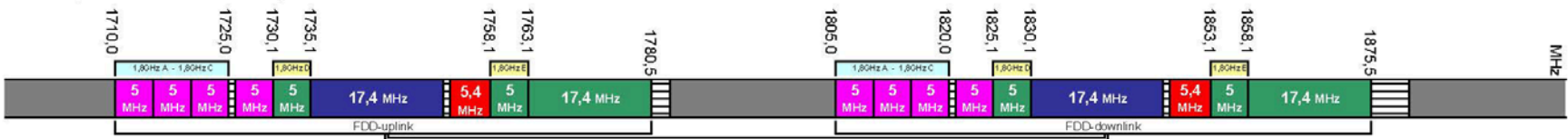


Term Evolution

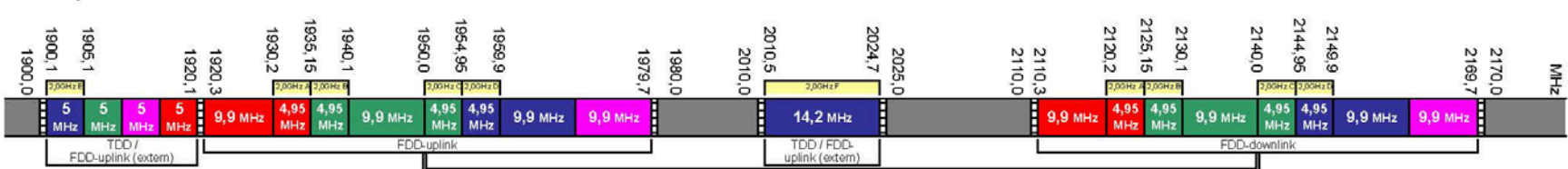
plan for future



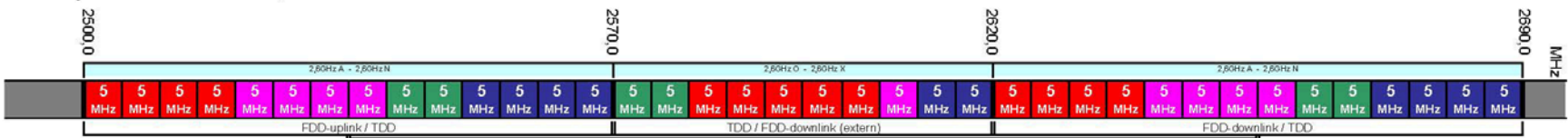
• Frequenzbereich bei 1,8 GHz



• Frequenzbereich bei 2 GHz



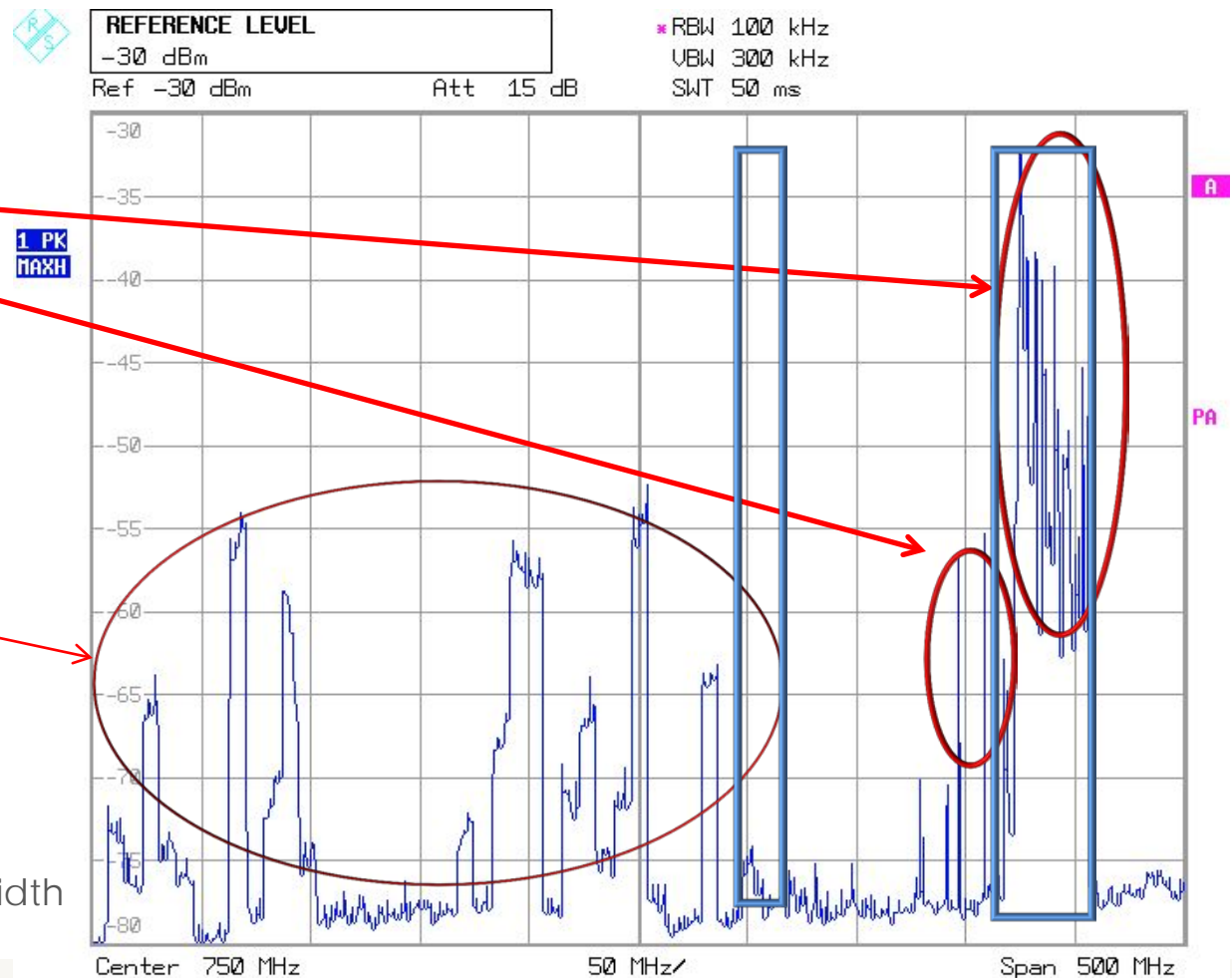
• Frequenzbereich bei 2,6 GHz



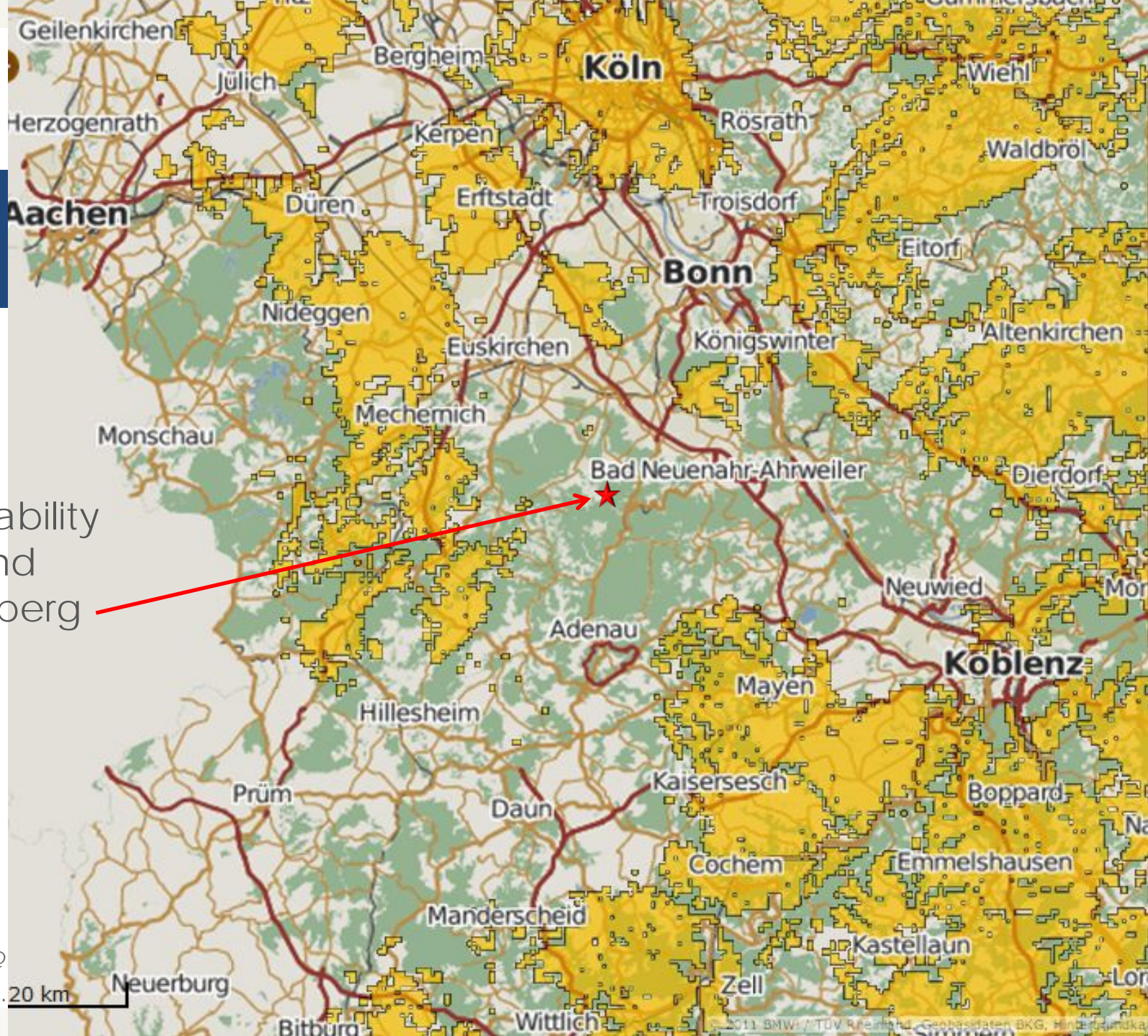
Mobile Communications

- GSM 900:
 - Downlink
 - Uplink

- (TV: DVB-T)



■ LTE
availability
around
Effelsberg



ERATec RFI @
Bonn, 8.-12.4.20 km



Science & Technology
Facilities Council



CSIRO



SKA AFRICA
SQUARE KILOMETRE ARRAY



LOFAR



UNIVERSITE D'ORLEANS



JOINT INSTITUTE FOR VLBI IN EUROPE



iram

Institut de
Radioastronomie
Millimétrique



Max-Planck-Institut
für Radioastronomie



BORDEAUX 1
Sciences Technologies

ASTRON

Netherlands Institute for Radio Astronomy



SRON

Netherlands Institute for Space Research



Delft
University of
Technology



Fraunhofer



IAF



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University of Turku



Korea Astronomy
and Space Science Institute



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