



# Monitoring supporting the introduction of DVB-T and enforcement of FM-BC emissions

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## Outline

- Monitoring principle
- Introduction of DVB-T
- Monitoring of FM Broadcasting
  - Baseband
  - Deviation via Recommendation ITU-R SM.1268
- Monitoring supporting Inspection
- Monitoring as management tool

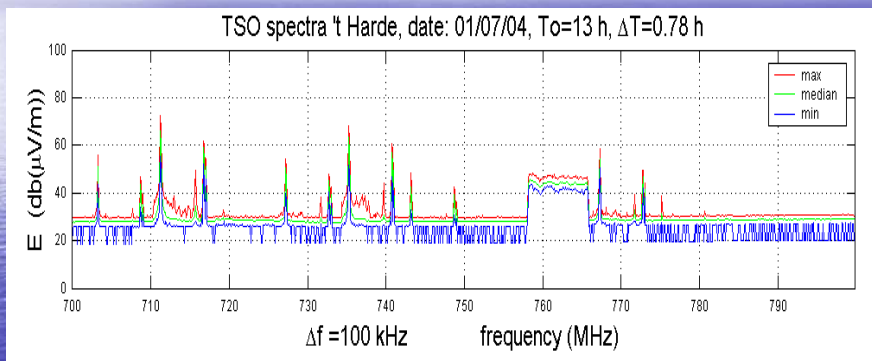
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# Introduction of DVB-T

- Actual use is analogue television
- Transperiod used by DVB-T and analogue TV
- Test transmissions of DVB-T
- DVB-T replacing analogue TV

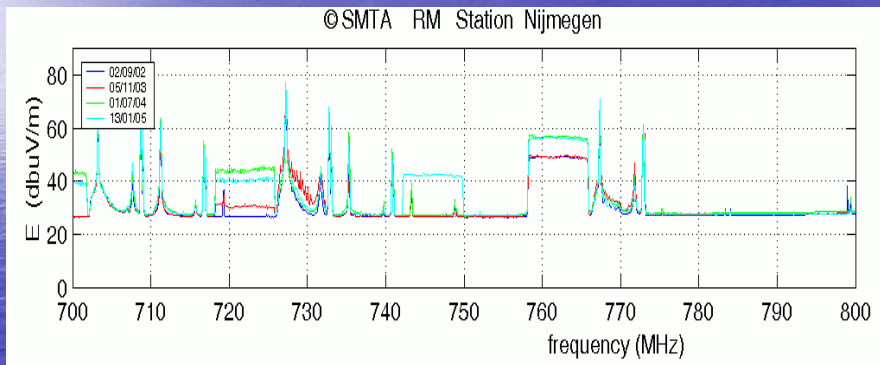
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## Spectrum registration representing both DVB-T and analogue TV



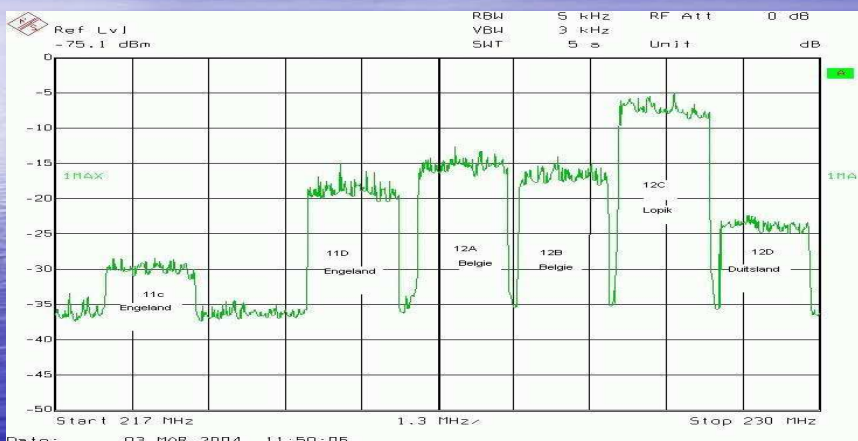
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## Test transmissions DVB-T



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## Spectrum plot DVB-T transmissions



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## FM BC Baseband signal

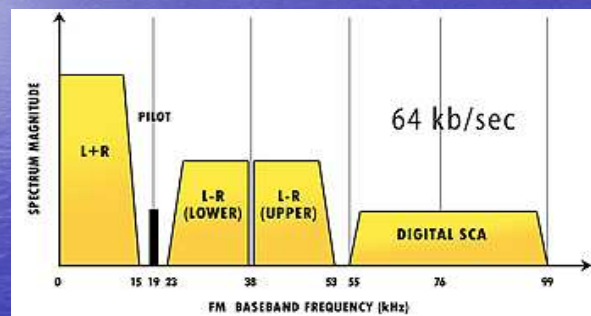
### Additional signals in FM

- RDS at (3x19=) 57 kHz
- HSDS (Seiko) at 66.5 kHz
- DARC at 78 kHz
- CSI at abt 92 kHz
- FM-extra 80 kHz OFDM
- HD radio (USA) OFDM

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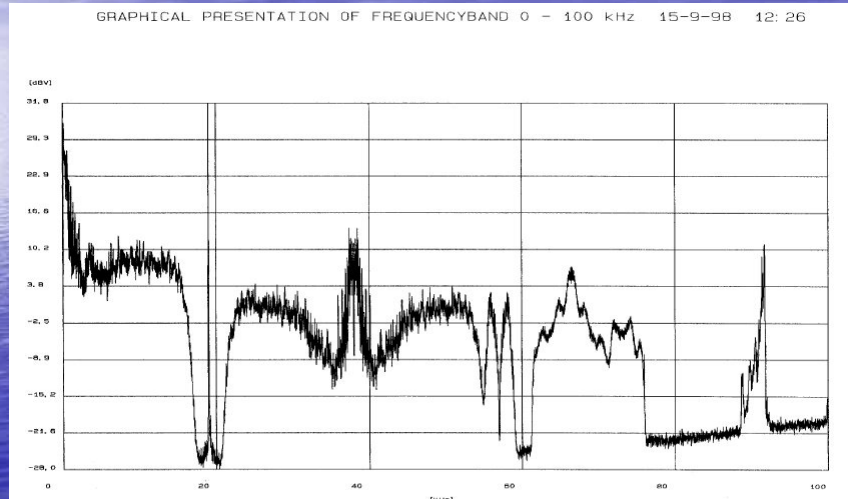


## FM BC Baseband signal FM-extra (OFDM)



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# FM BC Baseband signal RDS+HSDS+CSI



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# FM BC Baseband signal RDS+FM-extra (OFDM)

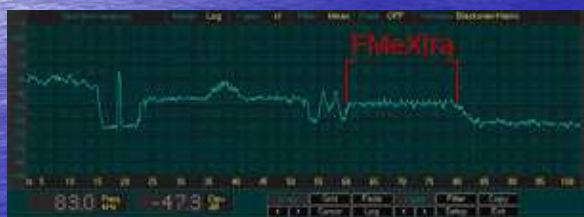


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# FM BC Baseband signal RDS+FM-extra (OFDM)



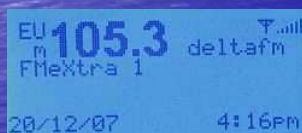
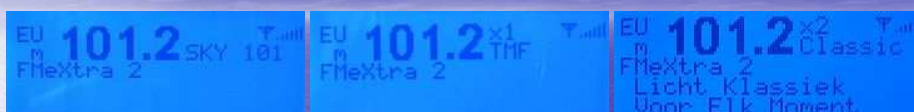
Normal mode  
2 additional programs



Narrow mode  
1 additional program

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# FM BC FM-extra (OFDM)



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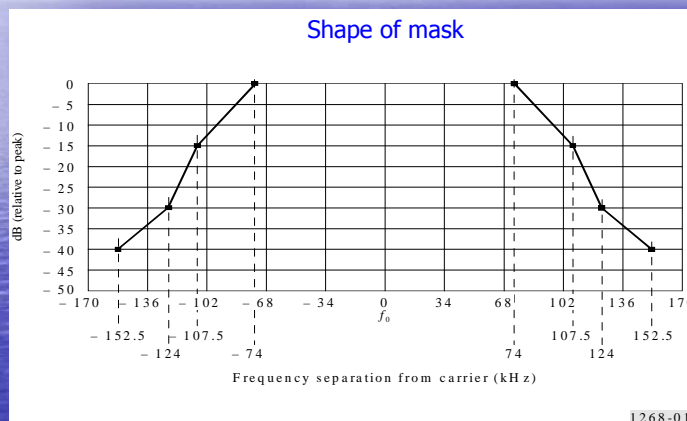
# ITU-R SM.1268 FM BC Spectrum Mask

This recommendation describes 3 different methods to measure FM BC:

1. Spectrum mask method
2. Deviation measurements
3. Modulation power

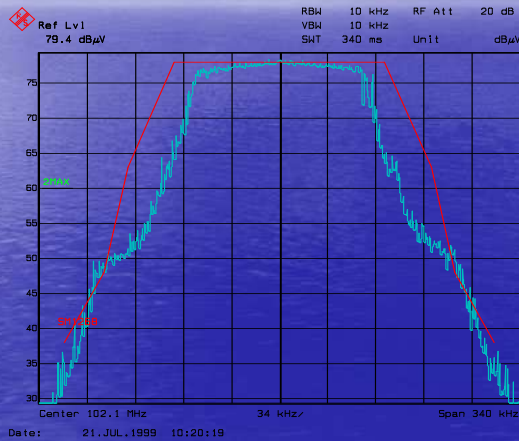
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# ITU-R SM.1268 FM BC Spectrum Mask



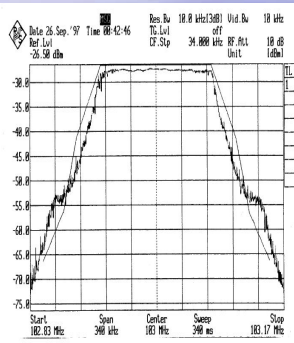
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# Spectrum mask measurement

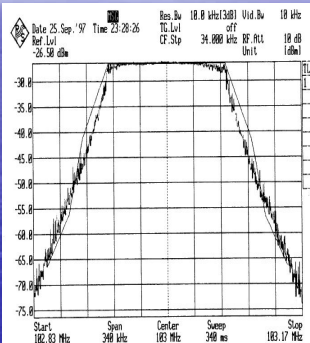


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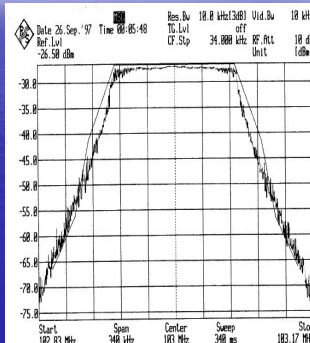
# ITU-R SM.1268 Spectrum Mask (same channel)



stereo+RDS+HSDS



stereo+RDS



stereo only

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QUESTIONS????



Thank you for your attention

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