Summary of White Space ruling in the USA

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For the actual rules change go to
http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0923/FCC-10-174A1.pdf

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Unlicensed Operation in the TV Broadcast Bands	)	ET Docket No. 04-186
	)	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band	)	ET Docket No. 02-380

SECOND MEMORANDUM OPINION AND ORDER

Adopted: September 23, 2010 **Released: September 23, 2010**

By the Commission: Chairman Genachowski; Commissioners Copps, McDowell, Clyburn and Baker issuing separate statements.

Wireless microphones

- The point made in paragraph 29:
  - We disagree with those who argue that more spectrum should be reserved for wireless microphones. We observe that wireless microphones generally have operated very inefficiently, perhaps in part due to the luxury of having access to a wealth of spectrum. While there may be users that believe they need access to more spectrum to accommodate more wireless microphones, we find that any such needs must be accommodated through improvements in spectrum efficiency.

Wireless microphones (2)

- Reserving two vacant UHF channels for wireless microphones and other low power auxiliary service devices in all areas of the country.
- Allowing operators of event and production/show venues that use large numbers of wireless microphones on an unlicensed basis that cannot be accommodated in the two reserved channels and any others available at that location to register the sites of those venues on TV bands databases to receive the same geographic spacing protections afforded licensed wireless microphones.
- Eliminating the requirement that TV bands devices that incorporate geo-location and database access must also listen (sense) to detect the signals of TV stations and low power auxiliary service stations (wireless microphones).

Frequencies for unlicensed Television Band Devices (TVBDs)

- 54-60 MHz (TV channel 2),
- 76-88 MHz (TV channels 5 and 6),
- 174-216 MHz (TV channels 7-13),
- 470-512 MHz (TV channels 14-20)
- 512-608 MHz (TV channels 21-36*) and
- 614-698 MHz (TV channels 38-51)

- *) channel 37 reserved for radio astronomy. Adjacent channels reserved for wireless microphones

Types of TVBDs

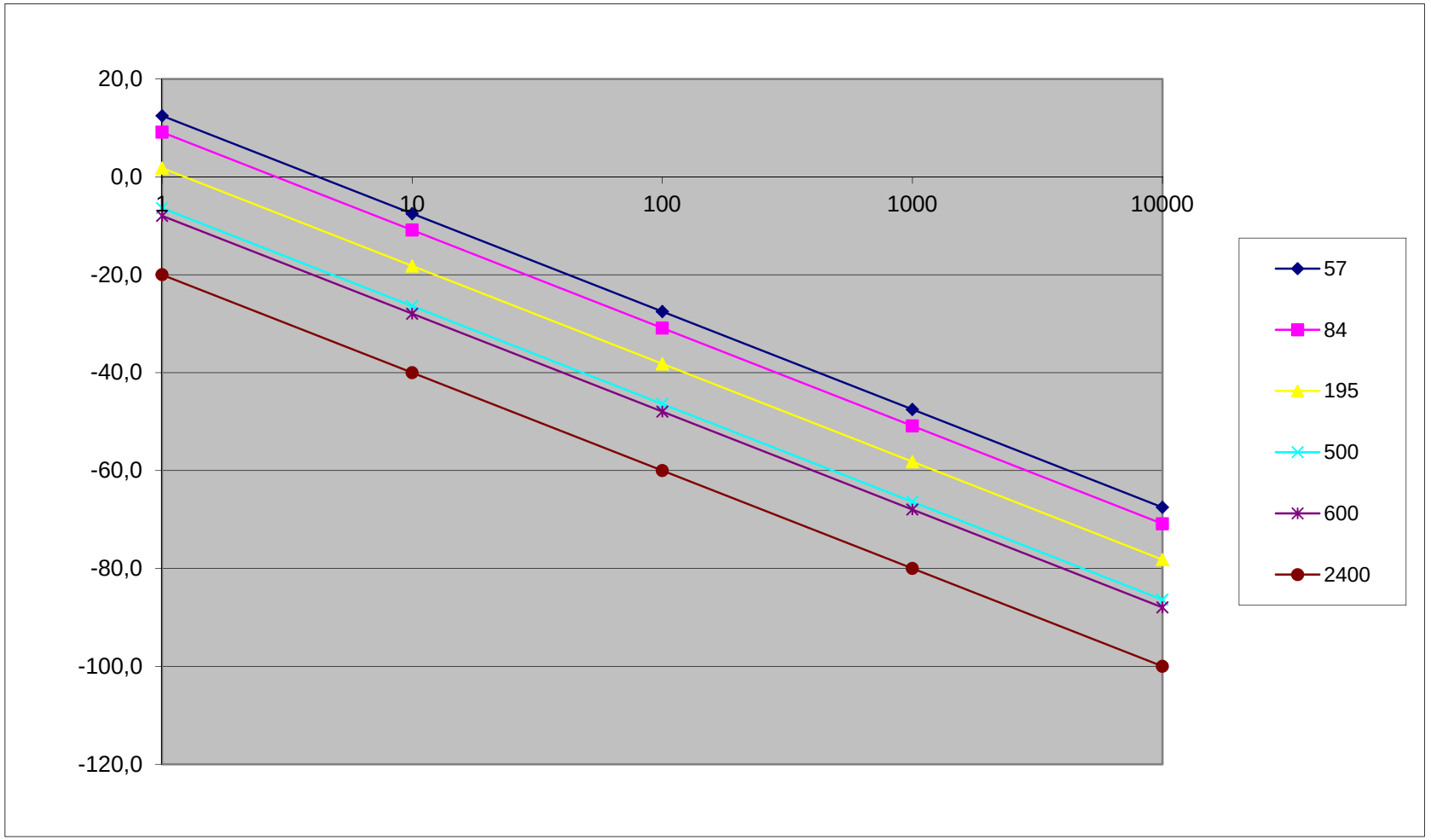
- Fixed devices
  - Select channels from a TV bands database
  - For operation with fixed and personal/ portable TVBDs
  - May transmit on channels above channel 20 not adjacent to occupied TV channels
- Personal/ Portable devices
  - Only operate on channels above channel 20

Mode II	Mode I	Sensing only device
– Internal geolocation – Access to a TV bands database through internet or fixed/other Mode II device	– No Internal geolocation – No Access to a TV bands database through internet , relies on fixed/Mode II device – May not initiate a network or provide list	– Use spectrum sensing to make list of available channels – Under special approval regime

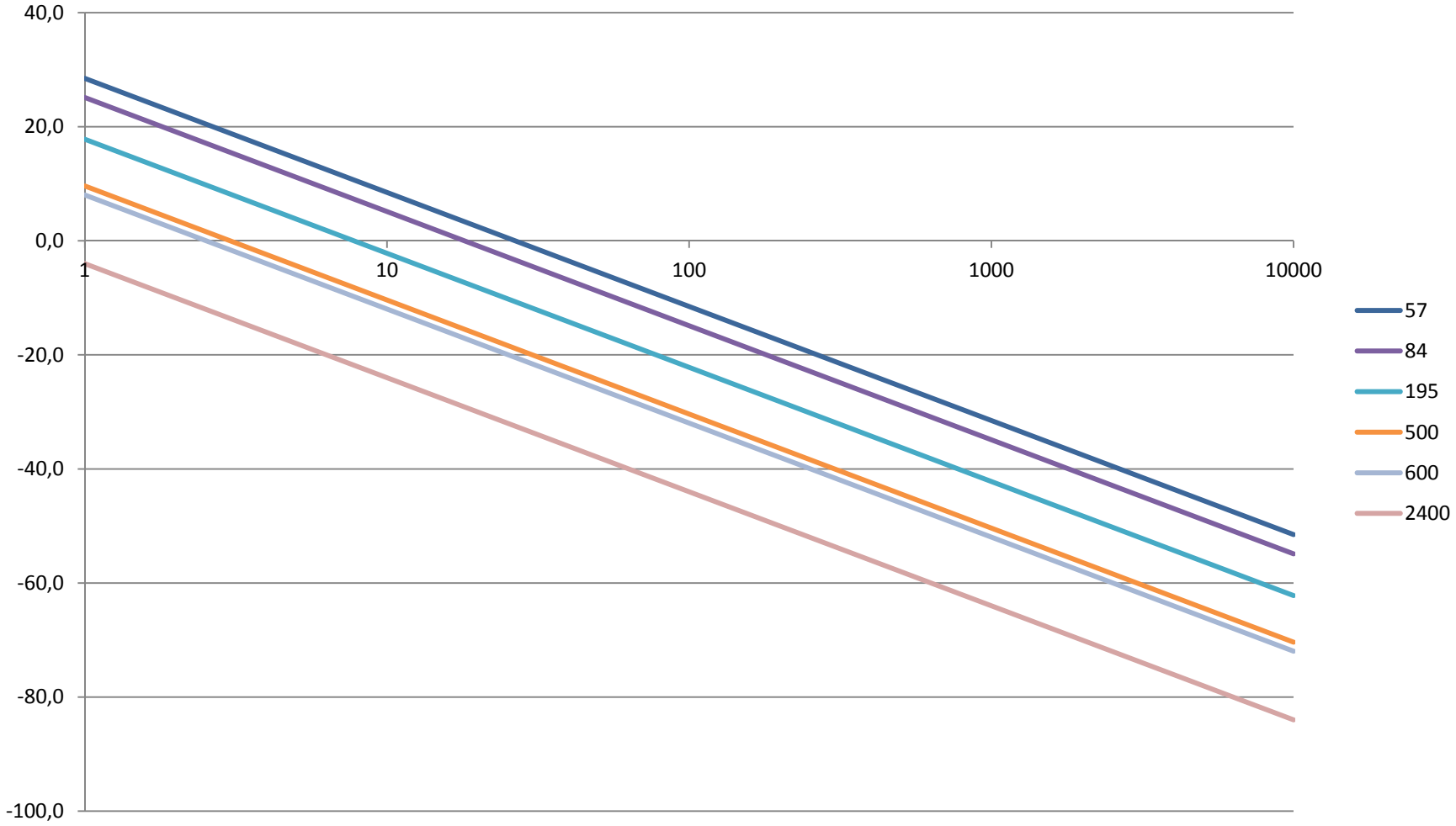
Power requirements for TVBDs

- Fixed devices
  - Max conducted power 1 W, max e.i.r.p. 4 W
  - Max spectral power density 12.2 dBm/100 kHz
- Personal/ Portable devices
  - Mode II
    - Max power 100 mW e.i.r.p. or 40 mW e.i.r.p. when not meeting adjacent channel requirements
    - Max power spectral density -1.8 dBm in adjacent channel, else 2.2 dBm/100 kHz
  - Mode I
    - Max Power Max power 100 mW e.i.r.p. or 40 mW e.i.r.p. when not meeting adjacent channel requirements
    - Max power spectral density -1.8 dBm in adjacent channel, else 2.2 dBm/100 kHz
  - Sensing only device
    - Max Power Max power (50) 100 mW e.i.r.p. or 40 mW e.i.r.p. when not meeting adjacent channel requirements
    - Max power spectral density -0.8 dBm

Coverage 100 mW e.i.r.p.



Coverage 4 W e.i.r.p.



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  - Sensing only device
    - Max Power Max power 50 mW e.i.r.p.
    - Max power spectral density -0.8 dBm

Antenna requirements

- All transmit and receive antenna(s) of personal/portable devices shall be permanently attached.
- The transmit antenna used with fixed devices may not be more than 30 meters above the ground. In addition, fixed devices may not be located at sites where the height above average terrain (HAAT) at ground level is more than 76 meters.

Emission limits

- In the television channels immediately adjacent to the channel in which a TVBD is operating, emissions from the TVBD shall be at least 72.8 dB below the highest average power in the TV channel in which the device is operating.

Detection thresholds for sensing only devices

- (i) The required detection thresholds are:
- (A) ATSC digital TV signals: -114 dBm, averaged over a 6 MHz bandwidth;
- (B) NTSC analog TV signals: -114 dBm, averaged over a 100 kHz bandwidth;
- (C) Low power auxiliary, including wireless microphone, signals: -107 dBm, averaged over a 200 kHz bandwidth.