



NPSTC

National Public Safety Telecommunications Council

Celebrating
10
YEARS
1997-2007

Ten Years of Progress | 1997-2007

470 – 512 MHz Working Group

Revision of Part 90, Subpart L LMR to TV spacing rules

NPSTC Spectrum Management Cmte
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NPSTC is a federation of organizations whose mission is to improve public safety communications and interoperability through collaborative leadership.

Objectives

- Update to Part 90, Subpart L, TV/LMR spacing rules for digital television
 - Draft petition to FCC
- Devise guidelines/rules to allow LMR base stations to be located outside 50 mile radius of metro center:
 - without waivers
 - with minimal interference to incumbent and future DTV stations

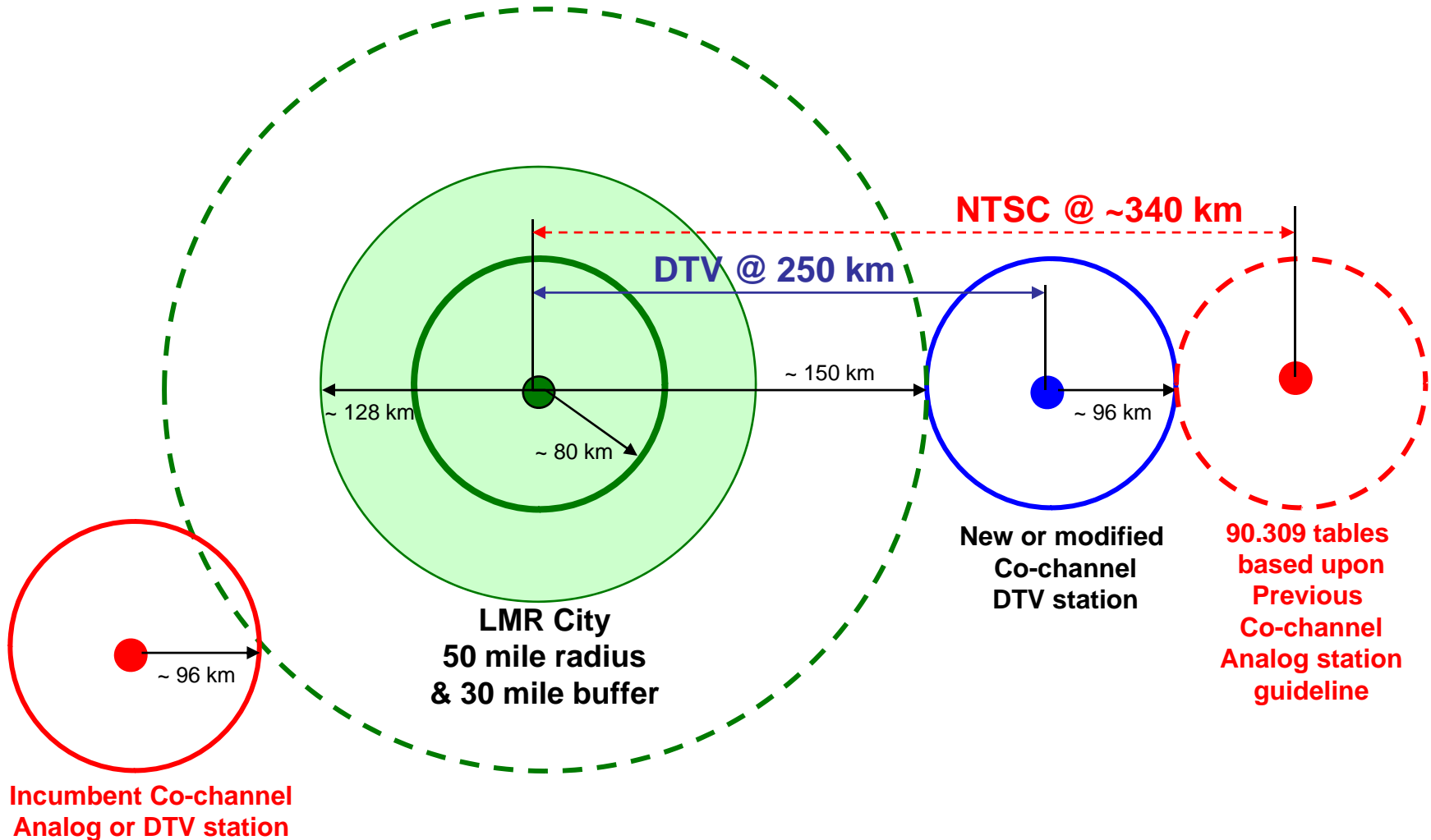


Update Subpart L for Digital Television

- Part 73.623 reduced new digital TV station to LMR city center spacing
 - 250 km (~155 mi) co-channel - analog had been ~341 km (212 mi)
 - 176 km (~110 mi) adj-channel - analog had been ~225 km (140 mi)
 - see Dkt 87-268, 2nd FNPRM, para 46-48, 08/14/1992
 - Based upon digital receivers requiring less protection than analog receivers (~ 15 dB S/N vs ~28 dB S/N) and lower power output of digital TV stations
- > 60 mile reduction in TV/LMR spacing
 - use of current 50 dB D/U tables in 90.309 AND > 60 mile reduction in DTV to LMR spacing severely limits new LMR ERP/HAAT
 - Propose to eliminate 50 dB D/U tables
 - Acknowledged as being 10 dB conservative for past 20+ years
 - Use 40 dB D/U tables
 - Used in NY metro area for almost 20 years
 - Similar to 40 dB D/U TV/LMR spacing rules used in 700 MHz band
 - Convert references from analog Grade B to DTV 41 dBu f(50,90) contour

73.623 DTV/LMR spacing Rules

Co-Channel DTV > 250 km from metro center



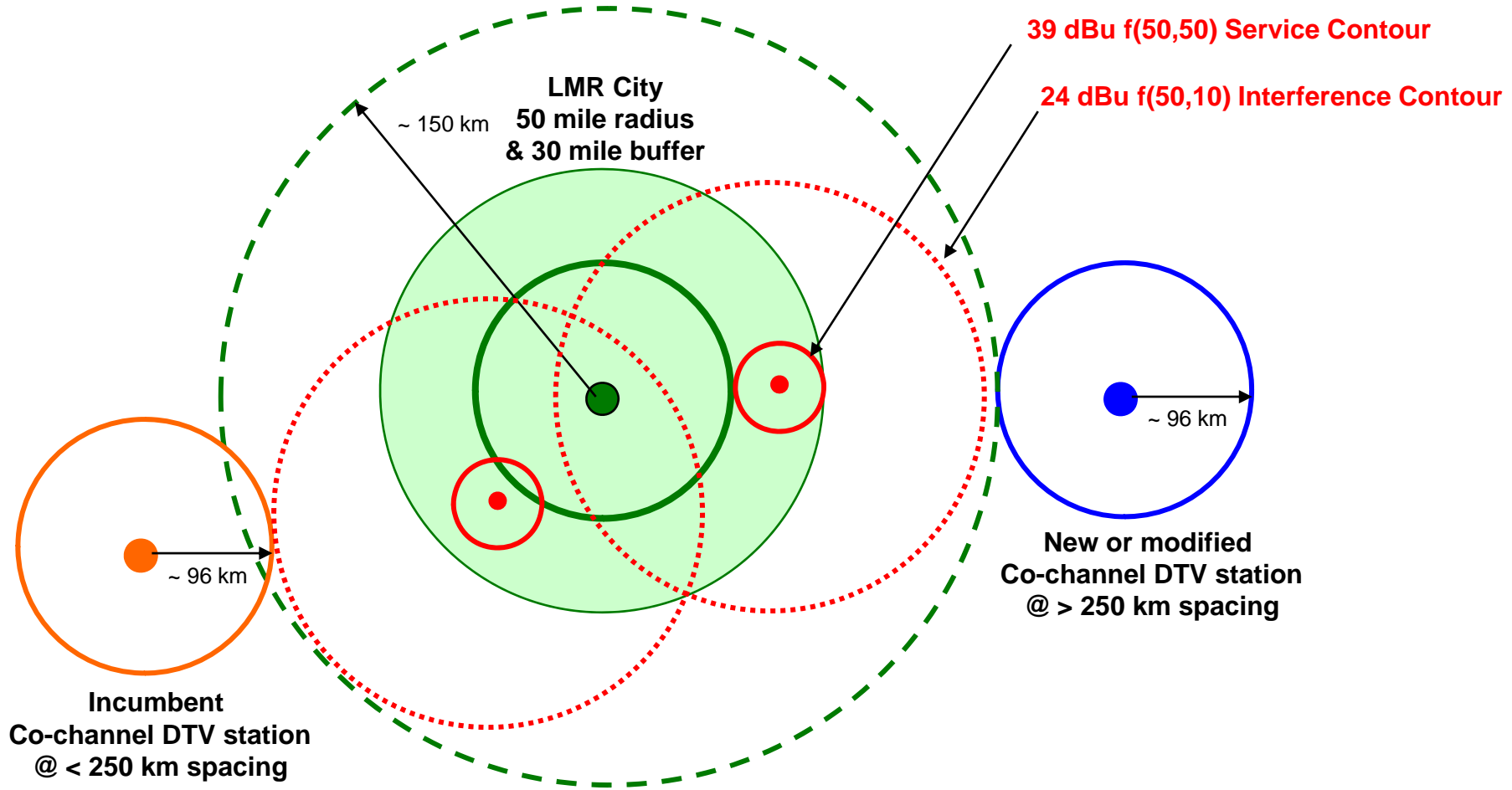


Expand Area of LMR Base operations

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- Allow LMR base stations to operate outside the 50 mile radius w/o waivers
 - Use ERP/HAAT limits from 40 dB D/U TV protection tables inside 50 mile radius from metro center
 - Outside 50 mile radius – allow Freq Coord using normal methods
 - Propose LMR stations 39 dBu f(50,50) service contour can not extend more than 128 km (~80 mi) from metro center
 - LMR might receive increased interference from DTV (higher noise floor)
 - Use 700 MHz digital TV protection criteria outside 50 mile radius
 - Co-channel = lesser of,
 - 24 dBu f(50,10) LMR interference contour can not overlap incumbent DTV station's 41 dBu f(50,90) service contour
 - 24 dBu f(50,10) LMR interference contour can not extend more than ~150 km (95 mi) from metro center
 - Adj-channel = lesser of,
 - 64 dBu f(50,10) LMR interference contour can not overlap DTV station's 23 dBu f(50,90) service contour
 - Modify or eliminate minimum 90 mile co-channel rule

LMR Base outside 50 mile radius



Use current UHF or T-Band LMR to LMR coordination procedures



Expand Area of LMR Base operations

- Allow LMR base stations in 470-512 MHz band to operate without waivers:
 - Licensees of stations must select one of four methods to meet the DTV protection requirements, subject to Commission approval:
 - (i) if inside 50 mile radius, utilize the geographic separation specified in revised 90.309 tables;
 - (ii) Submit an engineering study showing that 39 dBu LMR service contour does not extend beyond 128 km from metro center AND 24 dBu interference contour does not extend beyond 150 km from metro center or intersect 41 dBu service contour of co-channel DTV station;
 - (iii) Submit a terrain based, engineering study justifying the proposed separations; or,
 - (iv) obtain written concurrence from the applicable TV/DTV station(s).

LMR to DTV Interference

Co-Channel Base Transmit & Subscriber

**Limiting Factor = Base Transmitter:
LMR Base
24 dB μ Interference Contour
= ~ 45 mile radius**

**LMR Mobile
at edge of LMR Service Area
24 dBu Interference Contour
@ <20 ft AGL
= < 25 mile radius**

**LMR Base
39 dB μ Service Area Contour
@ <250 watts ERP / <250 ft HAAT
= < 25 mile radius**

**Limiting Factor = LMR Control Station
at edge of LMR Service Area
24 dB μ Interference Contour**

**May need to limit Control Station ERP / HAAT
for < 20 mile radius**

**DTV Station @ max facilities
41 dB μ Service Area Contour
= ~ 60 mile radius @ 470 MHz**

