Cover Sheet for Presentation to IEEE 802.16 Broadband Wireless Access Working Group (Rev. 0)

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Title:

LMDS Cell Planning using FDD

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Source:

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Original

Purpose:

This paper recommends cell planning approaches that maximizes network capacity using Frequency Division Multiplex systems

Notice:

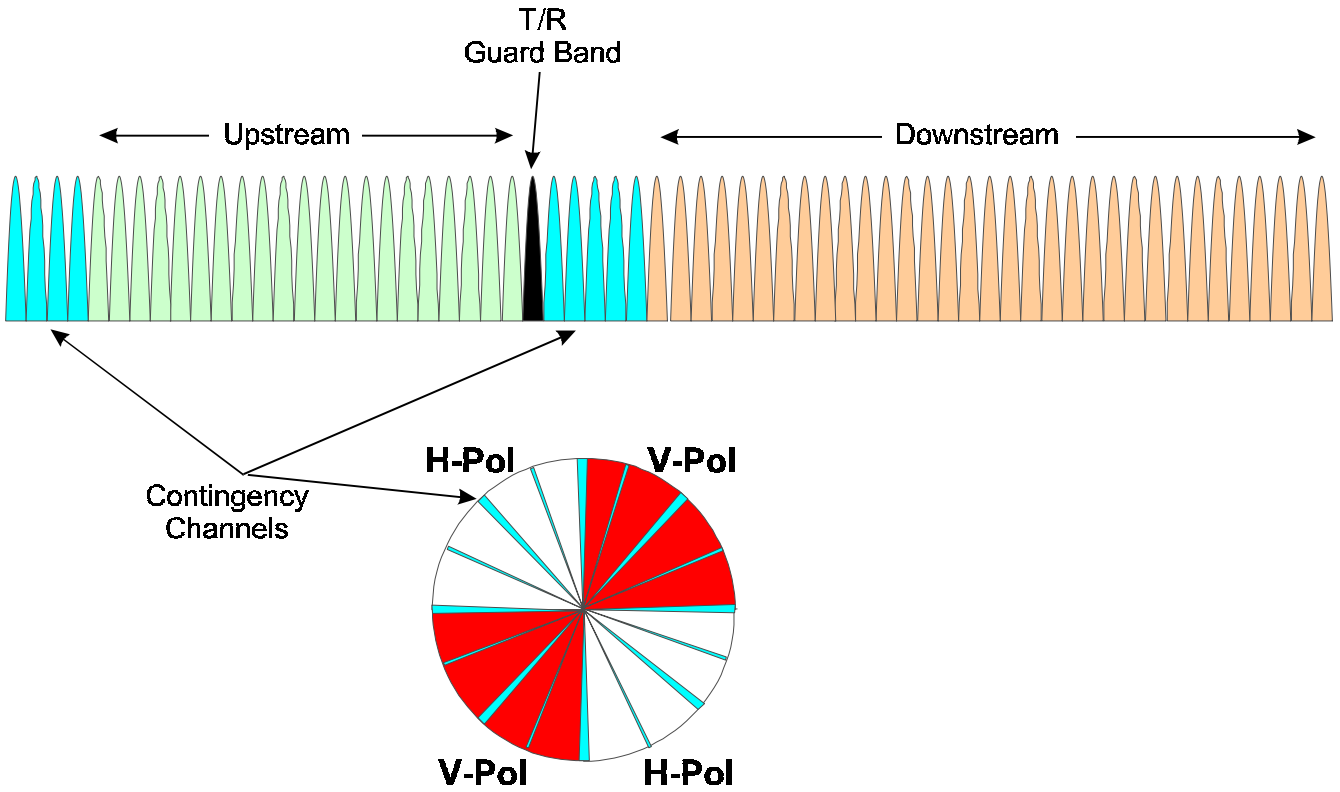
Release:

IEEE Patent Policy:

LMDS CELL PLANNING USING FDD

Joe Fournier
Keith Doucet

General Band Plan/Cell Layout

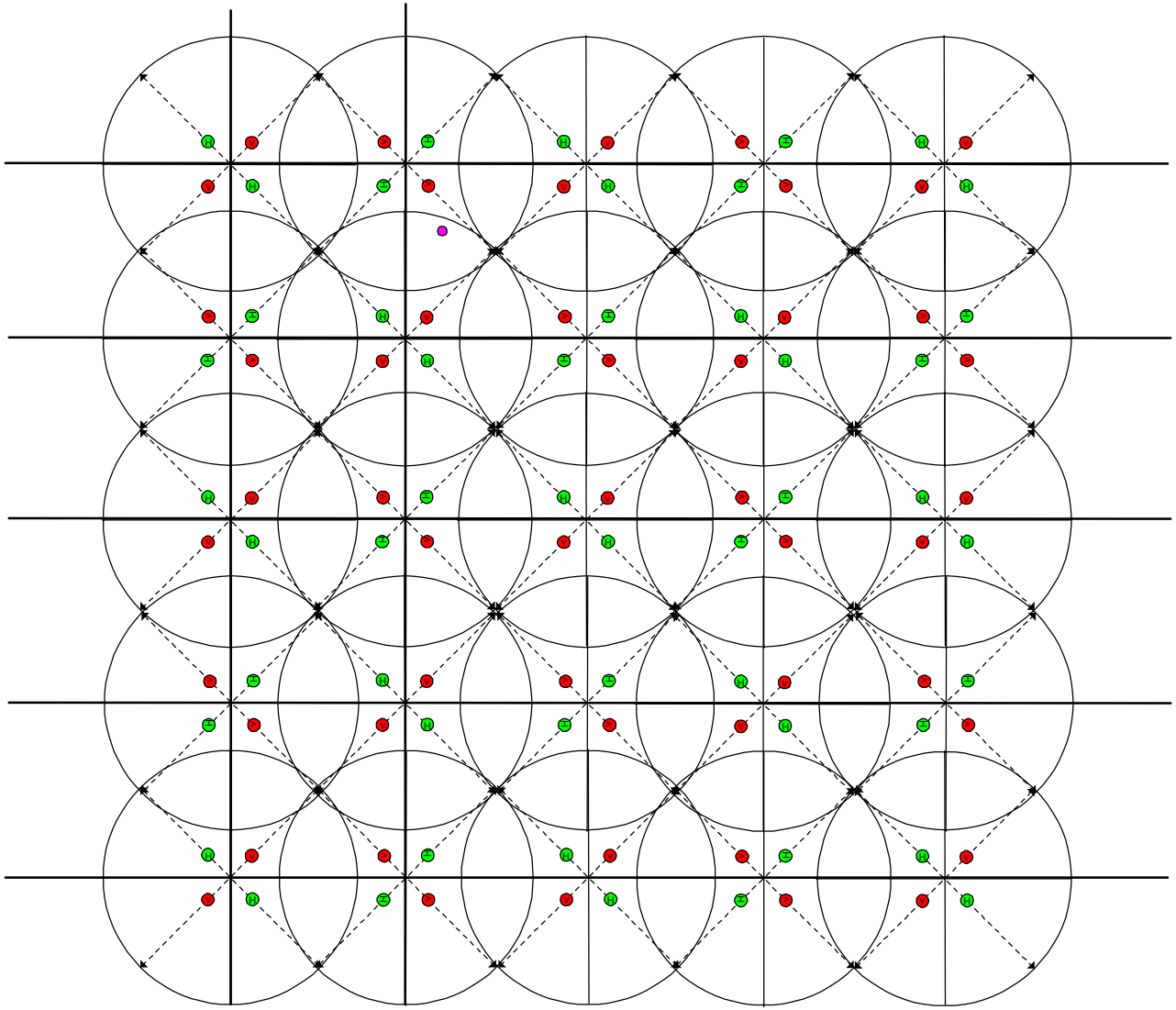


- Four 90 degree sector antennas at BTS
- X-pol between up/downstream, sector-sector
- Minimum T/R guard required due to X-pol/OMT

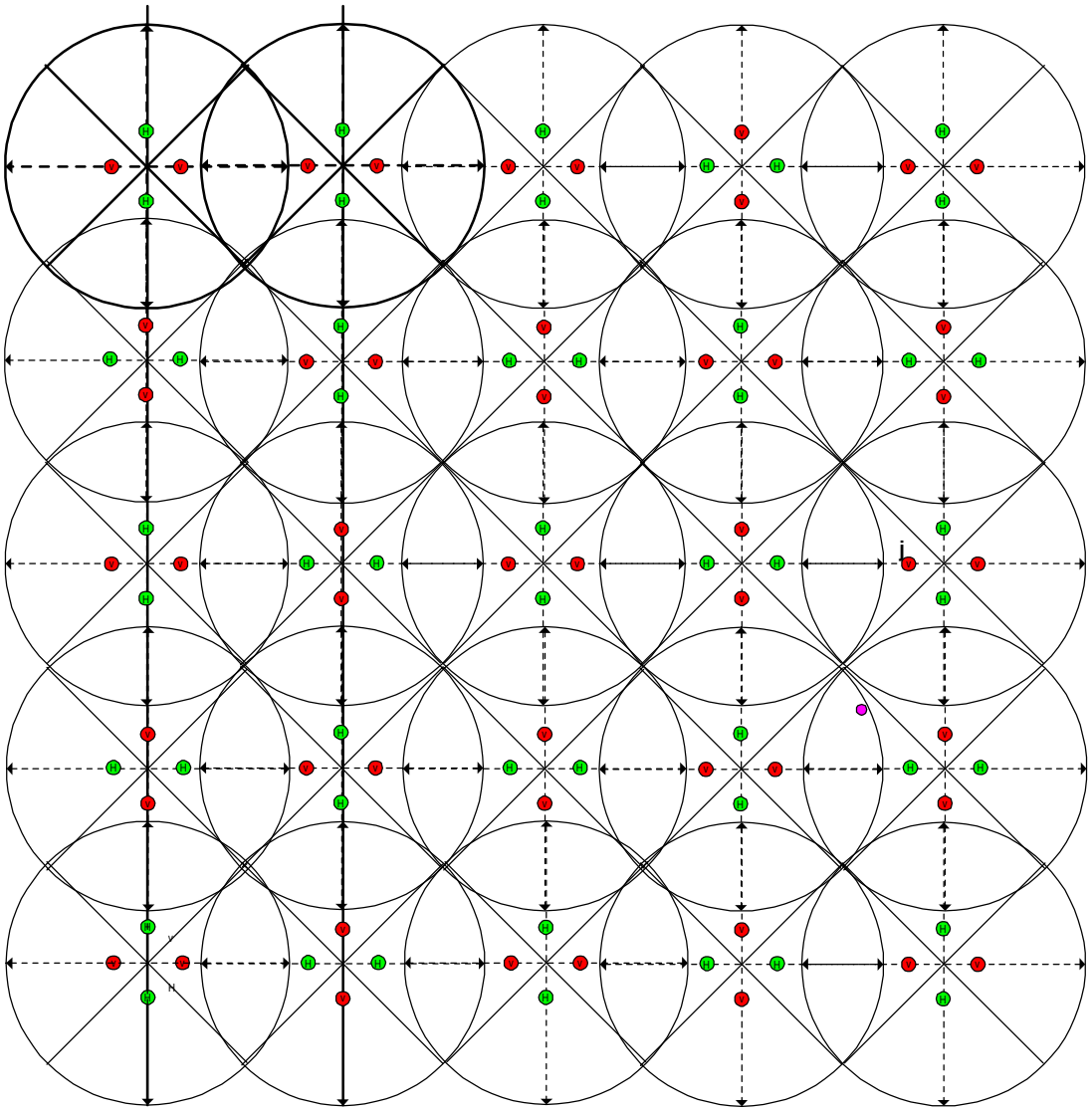
Grid Plans

- Three possible grid plans are available depending on many factors such as market size and interference
  - Square grid plan
  - Offset square grid plan
  - Hexagonal grid plan
- Each of these plans render similar frequency reuse

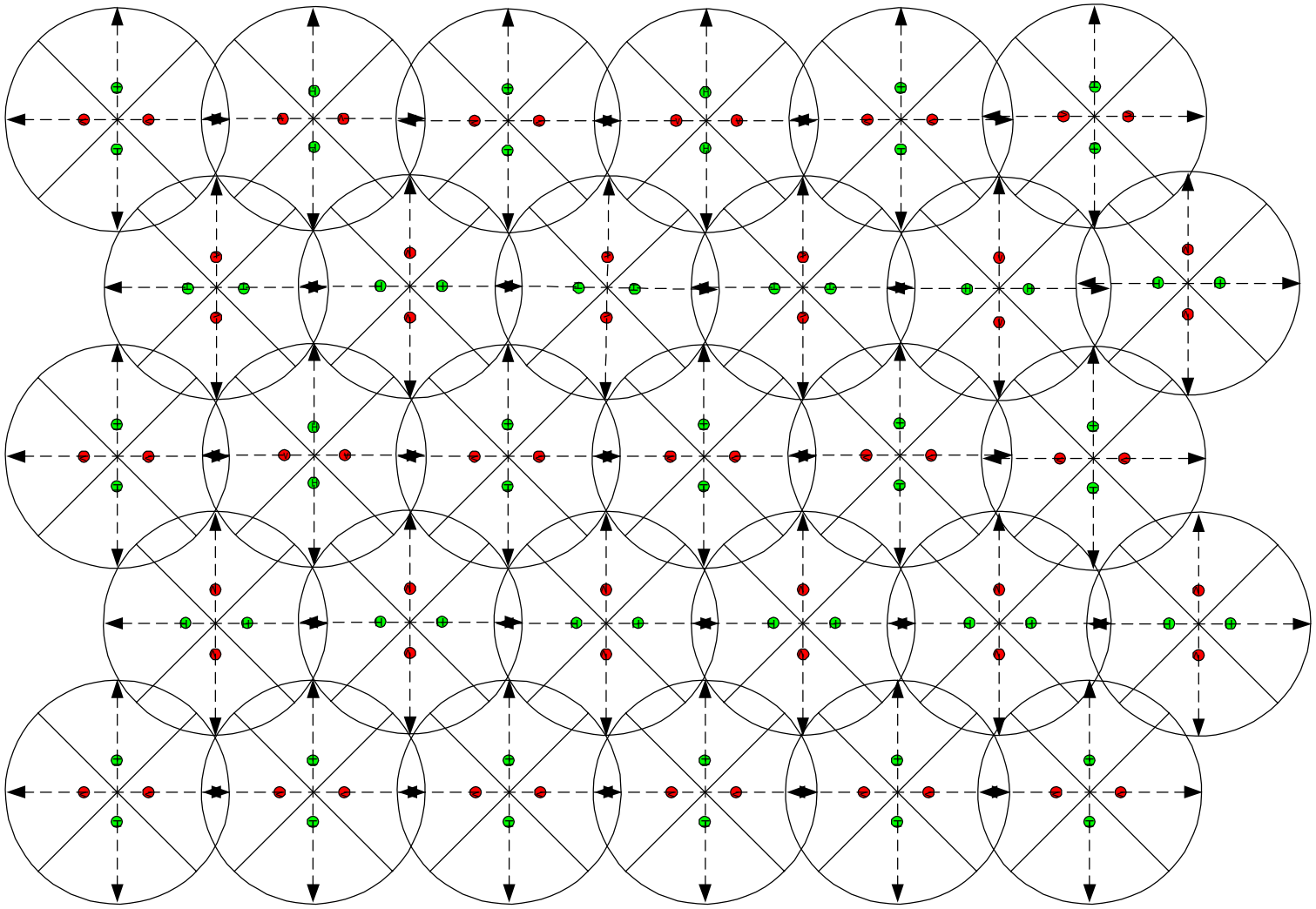
Square Grid Plan



Offset Square Grid Plan



Hexagonal Grid Plan



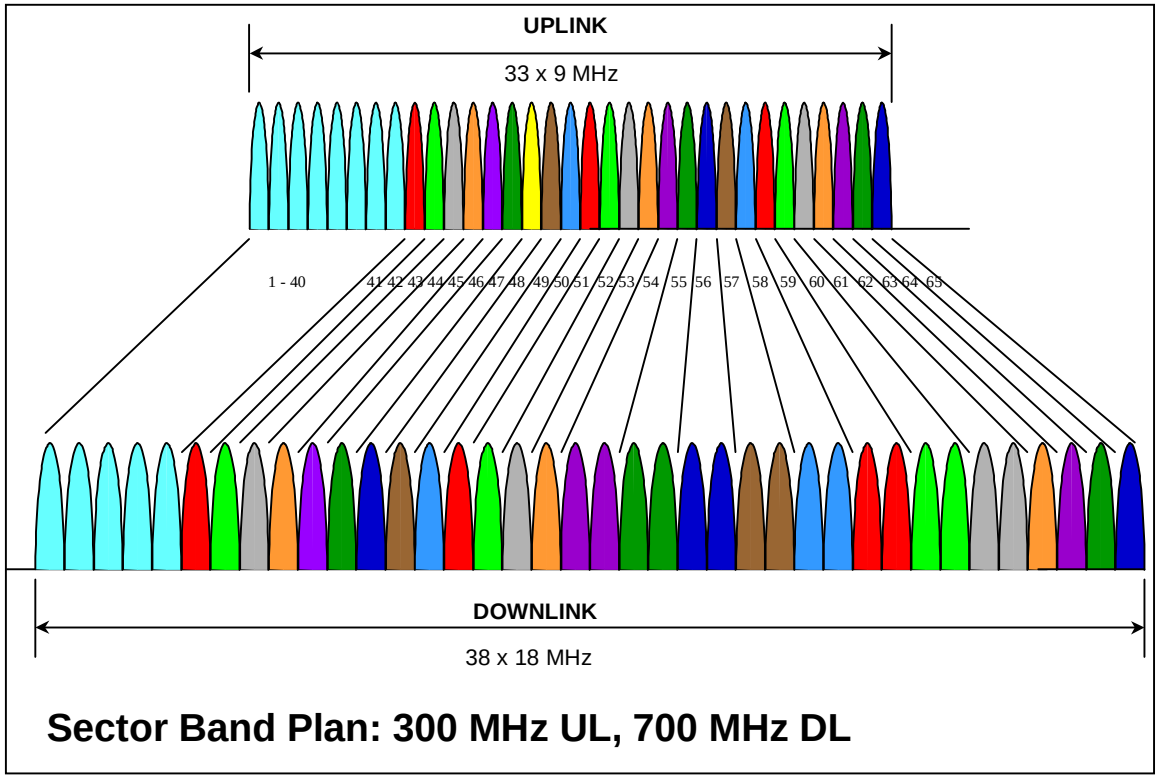
Sector 13-3

Square Grid Frequency Reuse

Interference Consideration	Uplink SNR = 14.34 dB			Downlink SNR = 9.25 dB		
Square Grid Plan	Frequency Reuse [%]	C/I Achieved [dB]	C/I MDS Degradation [dB] **	Frequency Reuse [%]	C/I Achieved [dB]	C/I MDS Degradation [dB] **
Up to Ninth Row	~79 (26/33)	19.1	-1.62	~79 (15/19)	14.85	-2.13
Up to Seventh Row	~87 (29/33)	16.9	-2.42	~79 (15/19)	16.9	-1.65
Up to Fifth Row	~87 (29/33)	19	-1.65	~95 (18/19)	14	-2.39
Up to Third Row	~97 (32/33)	>30	-0.16	~95 (18/19)	>30	-0.75
None (Single Base Station Market)	~100 (33/33)	>30	-0.16	~100 (19/19)	>30	-0.75
** These values are included in the link budgets						

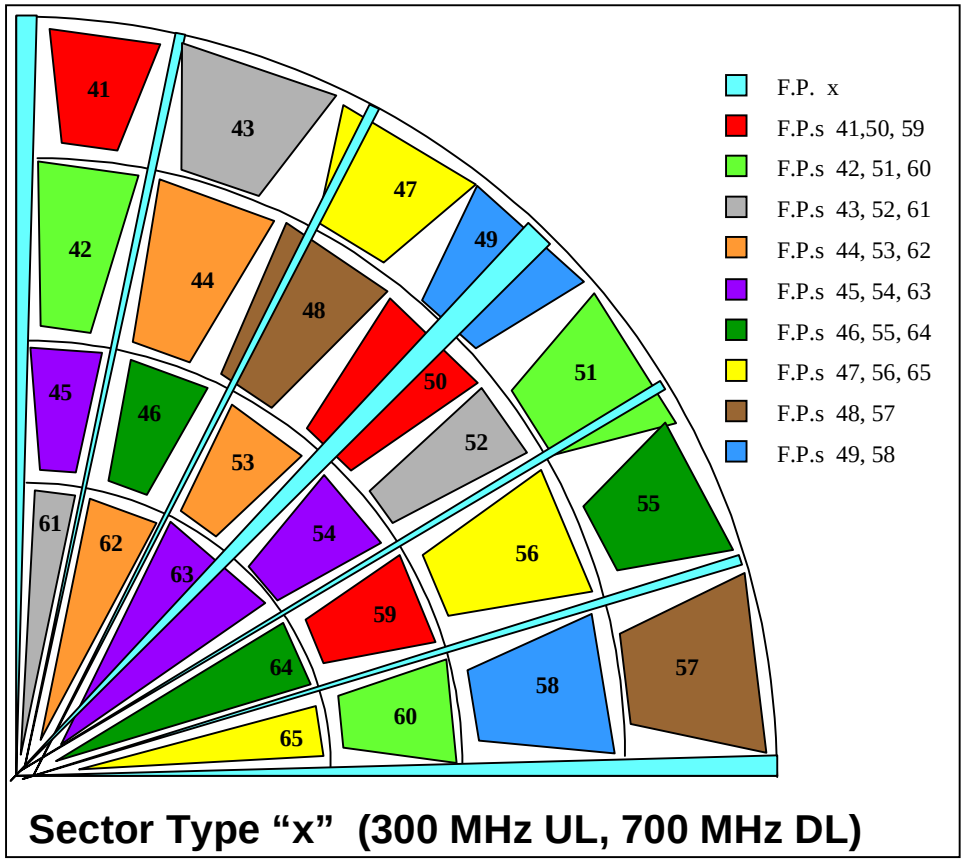
Based on 1000 MHz of spectrum

Band Plans



- The light blue carriers represent the carriers reserved for frequency reuse considerations where necessary

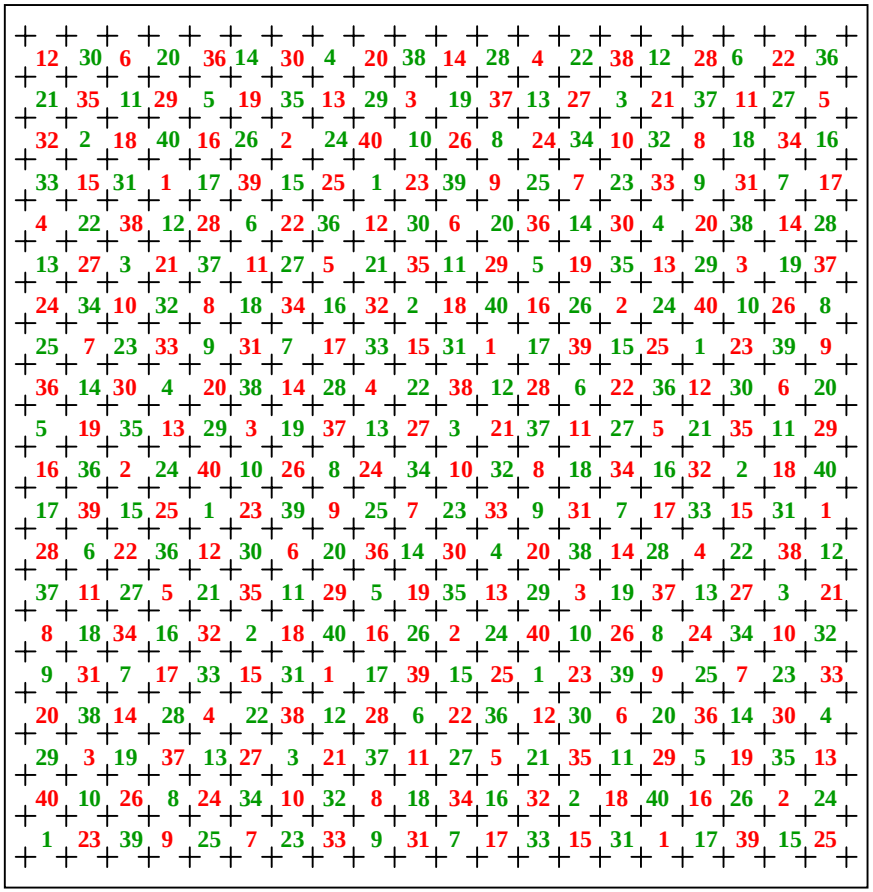
Frequency Pair Layout Plans



Sector Type "x" (300 MHz UL, 700 MHz DL)

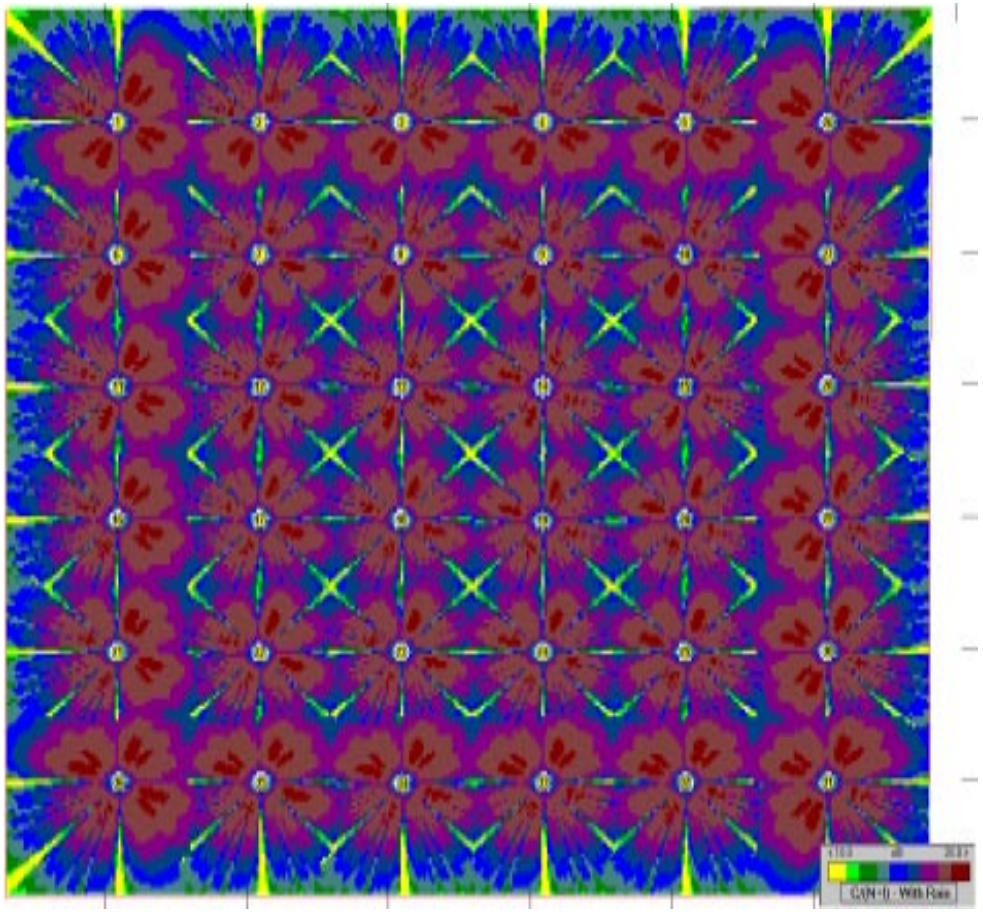
- If interference prone areas exist, the corresponding "light blue" frequency pair services these areas within a given sector x
- Sector types are determined from the overall frequency plan for a given market
- Pattern repeated sector to sector

Sector Layout Plans



- The above corresponding numbers indicate the sector type in a broad cell layout plan

Winplan Validation of Generic Plans



Actual Winplan RF Planning