

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

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Title:

Co-existence of MP-MP and P-MP Systems

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http://grouper.ieee.org/groups/802/16/coexistence/contrib/80216cc-99_31.pdf >

Purpose:

Illustrates paper 80216cc-99 31.pdf on coexistence of different types of MP systems, contributed to session #4

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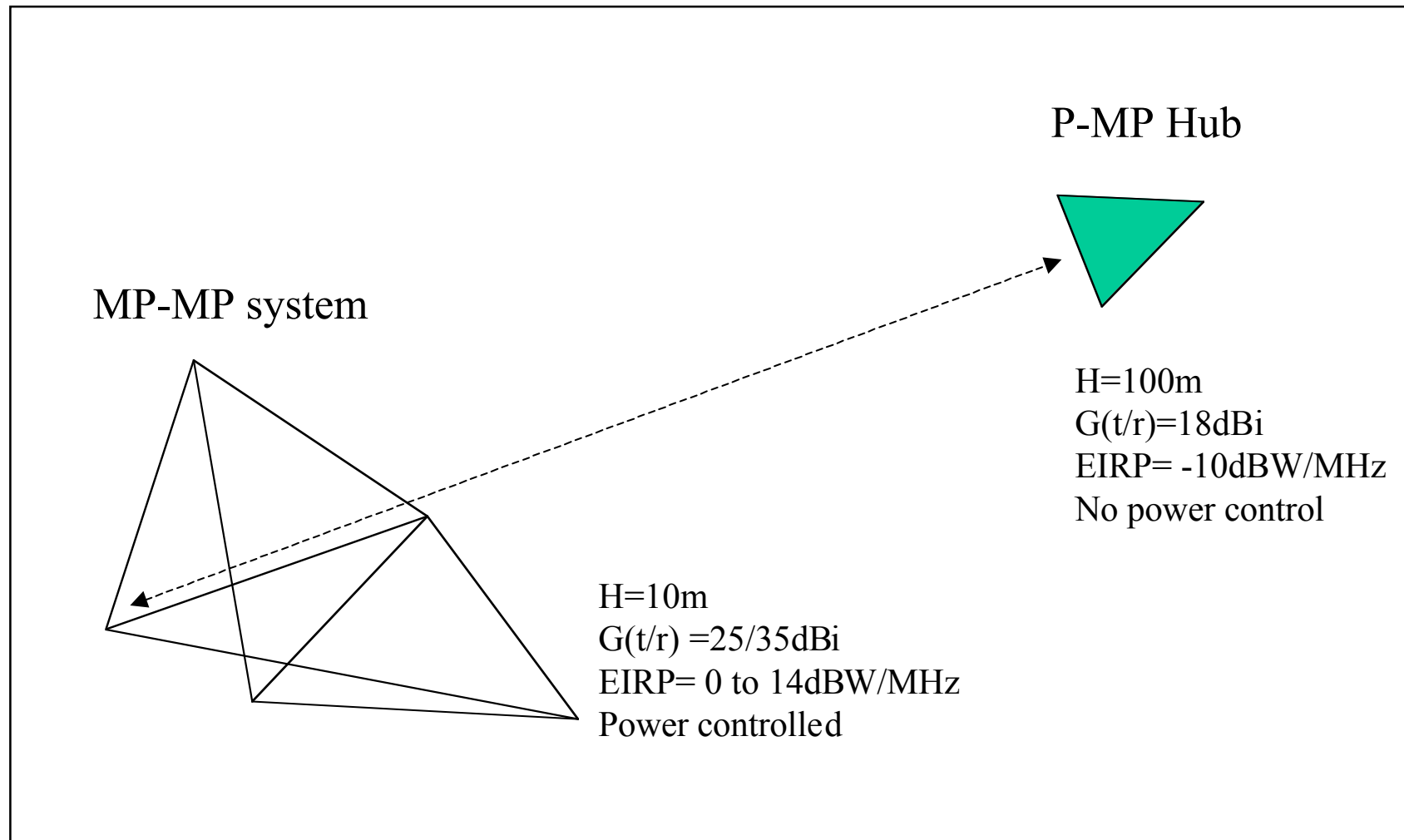
Rationale for MP-MP systems

- Excellent coverage at low levels of customer penetration (easy to exceed 90%)
- Very high spectral efficiency
- Low initial costs – improves operator payback time.
- Good interference characteristics (can co-exist well with other types of system)

MP – MP systems

- Most link paths are short range (<1km), with low antennas
- A few link paths may be longer (up to 5km)
- Frequency etiquette deployed to allow high level of frequency re-use
- Terrain clutter can be used to advantage, to improve frequency re-use, whilst still achieving high coverage (>90%)

Hub to/from MP-MP Interference



MP-MP System parameters

- Antenna Gain 25-35dBi
- Tx Power = 16-20dBm
- Typical antenna height = 10m
- Typical path length = 1km
- Channel bandwidth = 28MHz
- Power control in both directions
- Rx noise bandwidth 18MHz

Interference Mechanisms between MP-MP and P-MP Systems

| Interferer | Horizon distance (km) | Victim | Horizon distance (km) | Power Turn-down | Severity | Approximate Co-Channel Spacing (km) | Comment |
|----------------------------|-----------------------|-----------|-----------------------|-----------------|----------|-------------------------------------|---------------------|
| MP-MP sub. | 11 | P-MP hub | 36 | yes | high | horizon limited (50km) | low probability |
| P-MP hub | 36 | MP-MP sub | 11 | no | high | horizon limited (50km) | |
| hub | 36 | hub | 36 | | n/a | n/a | |
| MP-MP sub. | 11 | P-MP sub | 25 | yes | moderate | horizon limited (35km) | |
| Multiple MP-MP subs | 11 | P-MP hub | 36 | yes | moderate | horizon limited (20km) | |
| MP-MP sub (no etiquette) | 11 | MP-MP sub | 11 | yes | moderate | horizon limited (20km) | |
| MP-MP sub (with etiquette) | 11 | MP-MP sub | 11 | yes | low | <5km | possible 1ch system |

Conclusions

- Most co-existence scenarios are similar to those for P-MP systems
- Co-channel system spacings can be the same as or less than P-MP alone
- Co – channel spacing for multiple MP-MP systems can be greatly reduced.