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Data Sheet: MTF WiFi Systems

Description	DownLink	UpLink
Tx Power	22dBm/Beam	17dBm
Bit Rate	100Mbps/User	12.5Mbps/User
# of Users	16 Users/Beam	16 Users/Beam
Tx Antenna Gain	15dBi	9dBi
Tx Antenna Type	4X4 AESA, 2π lobe	2X2 PESA, 2π lobe
Rx Antenna Gain	9dBi	15dBi
Rx Antenna Type	2X2 PESA, 2π lobe	4X4 AESA, 2π lobe
Obstructions	20dB	20dB
Range	150m	150m
Modulation	MTFM™	MTF™
Coding Gain	0dB	0dB
Tx/Rx H/W	Apart	Integrated
Carrier Frequency	5.7GHz	5.7GHz
BW	10MHz	10MHz
Sampling Type	IF	IF
ADC	Dual: 1GHz @ 4bit/sample	Dual: 1GHz @ 8bit/sample
PAPR	0dB	11dB
MAC	MTFMA™ with Dynamic Channel Allocation	
Multiple Access	Point-to-Multipoint	Multipoint-to-Point

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Data Sheet: Existing WiFi Systems

Description	DownLink	UpLink
Tx Power	22dBm/Beam	17dBm
Bit Rate	100Mbps/User	5Mbps/User
# of Users	16 Users/Beam	16 Users/Beam
Tx Antenna Gain	15dBi	9dBi
Tx Antenna Type	4X4 AESA, 2π lobe	2X2 PESA, 2π lobe
Rx Antenna Gain	9dBi	15dBi
Rx Antenna Type	2X2 PESA, 2π lobe	4X4 AESA, 2π lobe
Obstructions	20dB	20dB
Range	68m	38m
Modulation	OFDM with 512QAM	OFDM with 512QAM
Coding Gain	9dB	9dB
Tx/Rx H/W	Apart	Integrated
Carrier Frequency	5.7GHz	5.7GHz
BW	225MHz	225MHz
Sampling Type	IF	IF
ADC	Dual: 250MHz @ 12bit/sample	Dual: 250MHz @ 12bit/sample
PAPR	16dB	16dB
MAC	TDD	
Multiple Access	Point-to-Multipoint	Multipoint-to-Point

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Comparison: MTF WiFi System Versus Existing WiFi System

For a fixed Tx power, bit rate, antenna gain and types, MTF WiFi systems offer 3 types of advantages compared to existing WiFi systems:

1. The bandwidth is reduced from for existing WiFi systems to for MTF WiFi systems.
2. The range is increased from for existing WiFi systems to for MTF WiFi systems.
3. The complexity for existing WiFi systems is substantially reduced for MTF WiFi systems as shown below:
    a. The # of Up-Converters/Down-Converters is reduced for MTF WiFi systems.
    b. Forward Error Correction (FEC) Encoders are not required for MTF WiFi systems.
    c. The resolution of the ADC is smaller for MTF WiFi systems.
    d. The PA in the WiFi AP for MTF WiFi systems is selected to be highly efficient.

Assumptions:

1. For a WiFi AP, Tx and Rx are separated such that Full Duplex communications is possible for both existing WiFi systems and MTF WiFi systems, while for a WiFi device, Tx and Rx and integrated.
2. The WiFi device is designed to be in a Non-LOS environment.
3. Each array element in both Tx and Rx antennas has a steradian lobe.