MTFComm

Data Sheet: MTF Fixed Wireless (FW) Systems

Description	DownLink	UpLink
Tx Power	52dBm	52dBm
Bit Rate	12.8Gbps	12.8Gbps
# of Users	1 Ground Station	1 Ground Station
Tx Antenna Gain	15dBi	15dBi
Tx Antenna Type	4X4 PESA, 2π lobe	4X4 PESA, 2π lobe
Rx Antenna Gain	15dBi	15dBi
Rx Antenna Type	4X4 PESA, 2π lobe	4X4 PESA, 2π lobe
Rooftop Loss	0dB	0dB
Range	84Km	84Km
Modulation	MTFM™	MTFM™
Coding Gain	0dB	0dB
Tx/Rx H/W	Apart	Apart
Carrier Frequency	3.5GHz	3.5GHz
BW	10MHz	10MHz
Sampling Type	RF	RF
ADC	Dual: 7GHz @ 4bit/sample	Dual: 7GHz @ 4bit/sample
PAPR	0dB	0dB
MAC	MTFMA™ with Dynamic Channel Allocation	
Multiple Access	Point-to-Point	Point-to-Point

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Data Sheet: Existing FW Systems

Description	DownLink	UpLink
Tx Power	52dBm	52dBm
Bit Rate	12.8Gbps	12.8Gbps
# of Users	1 Ground Station	1 Ground Station
Tx Antenna Gain	15dBi	15dBi
Tx Antenna Type	4X4 PESA, 2π lobe	4X4 PESA, 2π lobe
Rx Antenna Gain	15dBi	15dBi
Rx Antenna Type	4X4 PESA, 2π lobe	4X4 PESA, 2π lobe
Rooftop Loss	0dB	0dB
Range	14.2Km	14.2Km
Modulation	OFDM with 16QAM	OFDM with 16QAM
Coding Gain	9dB	9dB
Tx/Rx H/W	Apart	Apart
Carrier Frequency	26GHz	26GHz
BW	3.5GHz	3.5GHz
Sampling Type	IF	IF
ADC	Dual: 3.5GHz @ 12bit/sample	Dual: 3.5GHz @ 12bit/sample
PAPR	16dB	16dB
MAC	TDD	
Multiple Access	Point-to-Point	Point-to-Point

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Comparison: MTF FW Systems Versus Existing FW Systems

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

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

Assumptions:

1. For all transceivers, Tx and Rx are separated such that Full Duplex communications is possible for both current FW systems and MTF FW systems.
2. All FW transceivers are in a LOS environment.
3. Each array element in both Tx and Rx antennas has a steradian lobe.