TACLink 5GHz – Military Backhaul

High Power IEEE 802.11AC Radio Systems

The hefraTEC TACLink 5GHz MIMO systems are designed for military Point to Point and Point to Multipoint backhaul application, to allow COTS to be applied in tactical operations. The TACLink delivers high capacity due to the MIMO configurations, with two RX/TX chains for 802.11ac spatial diversity multiplexing, that also improve the non-line of sight (NLOS) OFDM capability.

All the TACLink units are manufactured with ruggedized die-cast aluminum enclosure, aluminum antenna plates and UV-stable ABS radome. To achieve maximum radio performance, the antenna patches are made from state of the art Teflon-based FR4 dielectric materials.

The units come various color schemes as well as winter white camo. All bolts and details are made from A4 stainless steel, and mounting kit from high rugged die-cast aluminum.

All the TACLinks can be powered with standard military vehicles 24 or 12V, as well as industry standard IEEE802.3AF/AT with power over Ethernet and military specification connectors. TACLink have strong built in security features and encryption.

System Configuration	
Architecture	ODU: Outdoor Unit with Integrated antenna IDU: POE injector/Switch as indoor unit.

IDU to ODU interfacing: Outdoor rated CAT5e cable for up to 100 m

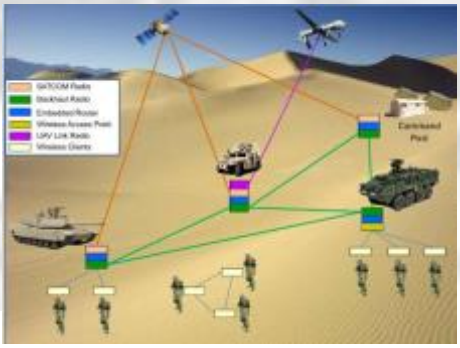
General System specifications	
Ethernet Interface	10/100/1000 BaseT with Auto-Negotiation (IEEE 802.3u), MDI-X
Temperature	Operating:-20ºC to 70ºC, Storage: -40ºC to 90ºC
Humidity	Operating: 5% to 95% (non-condensing) , Storage: Max.90% (non-condensing)
RF System specifications - with 15KeV ESD protection	
Capacity	Up to 866 Mbps link rate with up to 650 Mbps throughput.
System Range	Up to 50 km, configuration and antenna depended
Spectrum range	4.9 – 6.1 GHz
Channel Bandwidth	User selectable; 5, 10, 20, 40 & 80 MHz
RF Modulation	2x2 MIMO-OFDM - BPSK/QPSK/16QAM/64QAM/256QAM - (3/4 and 5/6 Code Rate)
Channel Selection	Dynamic (DFS), by user defined Scan-List and manual frequency
RF TX Power	Standard: User selectable, 1 – 23 dBm pr chain, total 26 dBm
Radio Regulation	FCC, IC (Canada), ETSI, WPC (India), China

RF specification - Typical

MIMO RF Interface TX specifications (pr chain) - Typical					
	Data Rate	**TX power**		**Data Rate**	**TX power**
5 GHz HT40	MCS 0	23 dBm	5 GHz HT80	MCS 0	23 dBm
	MCS 1	23 dBm		MCS 1	23 dBm
	MCS 2	23 dBm		MCS 2	23 dBm
	MCS 3	23 dBm		MCS 3	23 dBm
	MCS 4	23 dBm		MCS 4	23 dBm
	MCS 5	22 dBm		MCS 5	22 dBm
	MCS 6	21 dBm		MCS 6	21 dBm
	MCS 7	19 dBm		MCS 7	19 dBm
	MCS 8	17 dBm		MCS 8	17 dBm
	MCS 9	15 dBm		MCS 9	15 dBm
MIMO RF Interface RX specifications - Typical					
	Data Rate	**System Sensitivity**		**Data Rate**	**System Sensitivity**
5 GHz HT40	MCS 0	-93 dBm	5 GHz HT80	MCS 0	-89 dBm
	MCS 1	-91 dBm		MCS 1	-88 dBm
	MCS 2	-90 dBm		MCS 2	-85 dBm
	MCS 3	-85 dBm		MCS 3	-81 dBm
	MCS 4	-82 dBm		MCS 4	-79 dBm
	MCS 5	-78 dBm		MCS 5	-75 dBm
	MCS 6	-77 dBm		MCS 6	-74 dBm
	MCS 7	-75 dBm		MCS 7	-72 dBm
	MCS 8	-73 dBm		MCS 8	-70 dBm
	MCS 9	-71 dBm		MCS 9	-68 dBm

Model types for Point to Point and Multipoint applications

	TACL-5G-25	TACL-5G-23	TACL-5G-18	TACL-5G-90/120
RF Mode	2x2 MIMO 802.11AC	2x2 MIMO 802.11AC	2x2 MIMO 802.11AC	2x2 MIMO AC
Max Linkrate	866 Mbps	866 Mbps	866 Mbps	866 Mbps
RF Tx power (total)	26 dBm	26 dBm	26 dBm	26 dBm
Antenna/gain	2x25 dBi integrated	2x23 dBi integrated	2x18 dBi integrated	90 or 120 deg, 17dBi
Port isolations	45 dBm	35 dBm	35 dBm	35 dBm
Polarization	Horizontal & Vertical	Horizontal & Vertical	Horizontal & Vertical	Horizontal & Vertical
Antenna Frequency	5150-5850MHz	5150-5850MHz	5150-5850MHz	5150-5850MHz
Dimensions	40x40x85	37x37x85	22x22x82	22x45x82
Weight	5000g	4700g	3500g	4500g
Power	AF/AT & 24-48V passive	AF/AT & 24-48V passive	AF/AT & 24-48V passive	AF/AT & 24-48V passive
				



TACLink - MIMO Link Rates and modulation/coding rates (table in Mbps)

20 MHz Channels:

			20 MHz channels 800 ns GI			20 MHz channels 400 ns GI		
MCS index	Modulation type	Coding rate	SISO 1x1	MIMO 2x2	MIMO 3x3	SISO 1x1	MIMO 2x2	MIMO 3x3
0	BPSK	1/2	6,5	13	19,5	7,2	14,4	21,6
1	QPSK	1/2	13	26	39	14,4	28,8	43,2
2	QPSK	3/4	19,5	39	58,5	21,7	43,4	65,1
3	16-QAM	1/2	26	52	78	28,9	57,8	86,7
4	16-QAM	3/4	39	78	117	43,3	86,6	129,9
5	64-QAM	2/3	52	104	156	57,8	115,6	173,4
6	64-QAM	3/4	58,5	117	175,5	65	130	195
7	64-QAM	5/6	65	130	195	72,2	144,4	216,6
8	256-QAM	3/4	78	156	234	86,7	173,4	260,1
9	256-QAM	5/6	N/A	N/A	N/A	N/A	N/A	N/A

40 MHz Channels:

			40 MHz & 800 ns GI			40 MHz & 400 ns GI		
MCS index	Modulation type	Coding rate	SISO 1x1	MIMO 2x2	MIMO 3x3	SISO 1x1	MIMO 2x2	MIMO 3x3
0	BPSK	1/2	13,5	27	40,5	15	30	45
1	QPSK	1/2	27	54	81	30	60	90
2	QPSK	3/4	40,5	81	121,5	45	90	135
3	16-QAM	1/2	54	108	162	60	120	180
4	16-QAM	3/4	81	162	243	90	180	270
5	64-QAM	2/3	108	216	324	120	240	360
6	64-QAM	3/4	121,5	243	364,5	135	270	405
7	64-QAM	5/6	135	270	405	150	300	450
8	256-QAM	3/4	162	324	486	180	360	540
9	256-QAM	5/6	180	360	540	200	400	600

80 MHz Channels:

			80 MHz & 800 ns GI			80 MHz & 400 ns GI		
MCS index	Modulation type	Coding rate	SISO 1x1	MIMO 2x2	MIMO 3x3	SISO 1x1	MIMO 2x2	MIMO 3x3
0	BPSK	1/2	29,3	58,6	87,9	32,5	65	97,5
1	QPSK	1/2	58,5	117	175,5	65	130	195
2	QPSK	3/4	87,8	175,6	263,4	97,5	195	292,5
3	16-QAM	1/2	117	234	351	130	260	390
4	16-QAM	3/4	175,5	351	526,5	195	390	585
5	64-QAM	2/3	234	468	702	260	520	780
6	64-QAM	3/4	263,3	526,6	789,9	292,5	585	877,5
7	64-QAM	5/6	292,5	585	877,5	325	650	975
8	256-QAM	3/4	351	702	1053	390	780	1170
9	256-QAM	5/6	390	780	1170	433,3	866,6	1299,9