



SPARKWAVE

digital microwave radio

SparkWave SDR GE2 is a multipurpose cost effective point to point microwave radio. This easy-to-use, split mount, microwave link is designed for high capacity Gigabit Ethernet applications.

Up to 3 independent copper **GEth** channels and two **SFP** slots for additional port extension.

Operating frequency ranges from 5 to 42 GHz. 17 and 24 GHz no licensed bands. Modulation up to **QAM256** and bandwidth up to **56 MHz** can assure effective, flexible and scalable connections even for very long distances and/or for very high capacities.

ACM (Adaptive Coding & Modulation) in combination with QoS (Quality of Service) guarantees transmission of real-time critical services without latency variation, even in case of bad weather conditions.

Aggregation possibility of native Ethernet guarantees both redundancy and higher capacity in 2+0 mode, reaching 730 Mbit/s full duplex.

Optionally additional **native E1** or **ASI** can be configured. Up to 4x16E1 can be carried out using external termination box.

Applications:

- Backbone networks for packet/TDM service providers
- Cellular/CDMA/LTE/WiMAX backhaul networks
- Fixed wireless networks
- Enterprise/corporate campus/business park LAN extension
- Replace carrier leased lines, eliminate expensive recurring costs
- Wireless IP/Ethernet Video Streaming/Surveillance
- Access networks for Enterprises
- Multi-service private wireless networks for energy, traffic, utilities operators
- Extension of the ISP access network area (i.e. for the triple-play)
- Temporary broadband connection for major outdoor events or in case of natural disasters

Features:

- Split-mount or optional all-indoor architecture.
- Licensed frequency bands: 5-42 GHz
- Non licensed frequency bands: 17 and 24 GHz
- Modulation hitless adaptive or fixed up to QAM256
- Bandwidth up to 56MHz
- Spectral analyzer function
- Ethernet aggregation
- Bitrates up to 730 Mb/s (2+0)
- up to 4096 VLANs
- MAC table - up to 8192 addresses
- Maximum Frame Size - 10K
- Protective configurations 1+0, 2+0, 1+1 (FD/SD/HSB)
- Synchronization IEEE 1588
- Data encryption AES-128
- Latency below 200µs
- QoS: Source Port, 802.1p, IPv4 TOS/DSCP, IPv6 TC, VLAN ID
- SFP for GE interface optical/electrical
- Up to 4x16E1 interfaces using external 16E1 box
- Indoor unit 1U high and ½ U width
- WEB based EMS

SparkWave SDR GE2

Technical data									
Frequency Bands		5 GHz	6 GHz	6 GHz	7 GHz	8 GHz	11 GHz		
	Op. Freq. Range (GHz)	4.4-5.0	5.9-6.4	6.4-7.1	7.1-7.9	7.7-8.5	10.7-11.7		
	RF Ch. Spacing (MHz)	28.40	29.65/59.3	40	7/14/28/56	7/14/28/56; 29.65/59.3	40		
Frequency Bands		13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	38 GHz		
	Op. Freq. Range (GHz)	12.7-13.3	14.4-15.35	17.7-19.7	21.2-23.6	24.25-26.5	37-39.5		
	RF Ch. Spacing (MHz)	7/14/28/56	7/14/28/56	13.75/27.5/55	7/14/28/56	7/14/28/56	7/14/28/56		
RF Parameters		Frequency (GHz)							Power (dBm)
		5-8	11	13-15	18-23	26	38	42	
	QAM4	30	28	26	25	25	23	20	
	16QAM	24	25	24	23	22	20	17	
	32QAM	24	25	24	23	22	20	17	
	64QAM	23	22	20	19	19	17	14	
	128QAM	23	22	20	19	19	17	14	
	256QAM	21	20	18	17	17	15	12	
			Frequency (GHz)				RX Sensitivity (dBm)		
			5-11	13-15	18-26	38			
	QAM4/7 MHz	-94	-93	-92	-91				
	QAM4/14 MHz	-93	-92	-91	-90				
	QAM4/28 MHz	-88	-87	-86	-85				
	QAM4/56 MHz	-86	-85	-84	-83				
	QAM16/7 MHz	-86	-85	-84	-83				
	QAM16/14 MHz	-86	-85	-84	-83				
	QAM16/28 MHz	-81	-80	-79	-78				
	QAM16/56 MHz	-78	-77	-76	-75				
	QAM32/7MHz	-83	-82	-81	-80				
	QAM32/14 MHz	-83	-82	-81	-80				
	QAM32/28 MHz	-77	-76	-75	-74				
	QAM32/40 MHz	-75							
	QAM32/56MHz	-76	-75	-74	-73				
	QAM64/40 MHz	-72							
	QAM128/14 MHz	-77	-76	-75	-74				
	QAM128/28 MHz	-71	-70	-69	-68				
	QAM128/40 MHz	-69							
QAM128/56 MHz	-68	-67	-66	-65					
QAM256/28 MHz	-67	-66	-65	-64					
QAM256/56 MHz	-66	-65	-64	-63					
PDH	External E1 termination box	16E1 per box, max. 4x16E1							
Ethernet	Interfaces	3 x 10/100/1000Base-T (RJ45)							
		1 x SFP (1000Base-SX/LX)							
	Frame length	10 Kbit/s (Jumbo frames)							
	QoS	Source Port, 802.1p, IPv4 TOS/DSCP, IPv6 TC							
		VLAN ID							
Throughput	Bitrate	10 to 365 Mbit/s (up to 730 in 2+0 mode)							
Latency	64 bytes frame	130 s							
Management	SNMP	SNMP v1, SNMP v2, SNMP v3							
	Web based	VLAN ID							
	Interfaces	RJ45, USB							
Environmental	Operation climatic conditions	IDU: -5°C ... +50°C /8%-95% ETSI EN 300 019 class 3.1 E							
		ODU: -33°C ... +50°C /5%-100% ETSI EN 300 019 class 4.1							
		ODU: -50°C ... +50°C optional							
	Storage/transport conditions	ETSI EN 300 019 Class 1.1/ class 2.3							
	EMC compatibility	ETSI 301 489-4							
Power	Power supply	-40 V to -58 V							
	Power consumption	IDU: <25 W; ODU: 40 W							
Mechanical	Dimensions (HxWxD)	IDU: 45x442x240 mm							
		ODU: DIA 300x95							
	Weight	IDU: <2 kg; ODU: <4 kg							