

TABLE V
THE PARAMETER COMPARISON WITH EXISTING MODEMS

Parameter name	Proposed modem	SkyHopper PRO	SOL8SDR2x1W-P
Standard Frequency range	700 MHz to 2400 MHz	2.4 GHz (ISM) & 5.8 GHz (ISM)	1.14 to 1.5GHz, 1.67 to 2.35 GHz, 1.98 to 2.7 GHz, 4.4 to 5.0 GHz
Output power	2W	Not given	1 W
Distance	Up to 100 km	6 km	Not given
Mesh support	IP MESH	IP MESH	IP MESH
Modulation type	BPSK, QPSK, 8-QAM, 16-QAM	OFDM	COFDM
Maximum data rate	80 Mbps	6 Mbps	Not given
Temperature range	-40°C to +85°C	-20°C to +85°C	-10°C to +55°C
Encryption	AES256	AES128, AES256	AES128, AES256
Sensitivity	-105 dBm for 500 Kbps	-101 dBm	Up to -110dBm
Power Supply	7V to 18V DC	7.5V to 24V DC	8V to 17.5V DC
Cognitive functionality	Support	Not given or do not support	Not given or do not support

VII. CONCLUSION

In this paper, we present an adaptive radiocommunication system that provides real-time data processing, transmission and reception by means of the following developed modules: a transmitter and a receiver including signal formation, modulation–demodulation, and coding–decoding algorithms, each of which is developed as a separate block and has automated cognitive features.

The main applications for this system are cognitive radiocommunication systems and applications for which customized systems are needed, such as UAVs and airborne applications. As we have used the software-defined radio approach during development, it will be adaptable for future purposes and provide the possibility of onsite software updates for bug fixing or adding new features.

As a continuation of this work, we plan to add amelioration, and the operation range should be increased in the presence of jamming signals. COFDM and Spread Spectrum modulation schemes should be added to mitigate multipath problems for a non-LOS environment. Operation at frequency ranges from 2.7 GHz to 6 GHz should be evaluated and analyzed.

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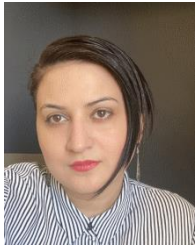
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