In-depth evaluation of Wi-Fi HaLow technology in real life networks - HaLow -

GOALS

Objectives of the Methods2Business experiment were:

- Evaluate performance (throughput and frame latency) of Wi-Fi HaLow networks under various conditions
- Evaluate effects of new features introduced by IEEE802.11ah (like NDP frames, PV1 frames, TWT, …) on overall performance of Wi-Fi HaLow network
- Validate Methods2Business algorithms for network optimization
- Validate Methods2Business automated protocol checker on real life sniffer traces

All objectives of the experiment are met.

BACKGROUND AND MOTIVATION

- Methods2Business (M2B) is a European semiconductor company on the leading edge of developing the world's first Wi-Fi HaLow chips which will bring another level of connectivity and automation to the Internet of Things (IoT).
- The company is a key contributor to the Wi-Fi CERTIFIED® HaLow™ program of Wi-Fi Alliance, expected to be launched in 2021
- Wi-Fi HaLow operates in Sub-GHz ISM bands (750-950 MHz) targeting low power, long range (Industrial) IoT applications.
- Methods2Business plans to use results collected in this experiment as a reference to a further fields tests with their devices

DEMO SETUP

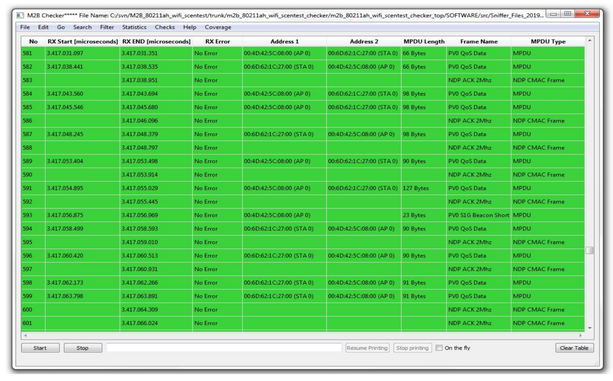
Experiment consists of:

- Methods2Business Wi-Fi HaLow Station and Access Point IP solutions mapped on two Xilinx ZC706 Evaluation Kit - Zynq® 7000 SoC + AD FMCOMM radio frontend SDR Hardware platform

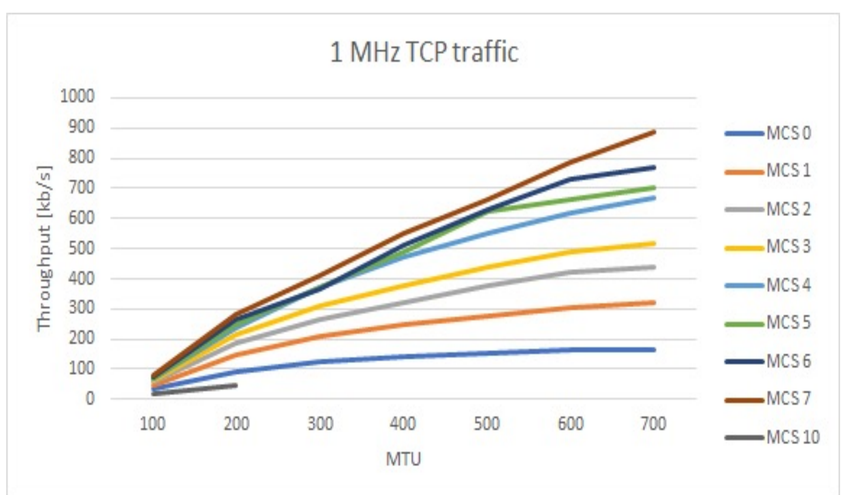
RESULTS

M2B Wi-Fi HaLow protocol checker validated on as system deployed in a Fed4FIRE test lab

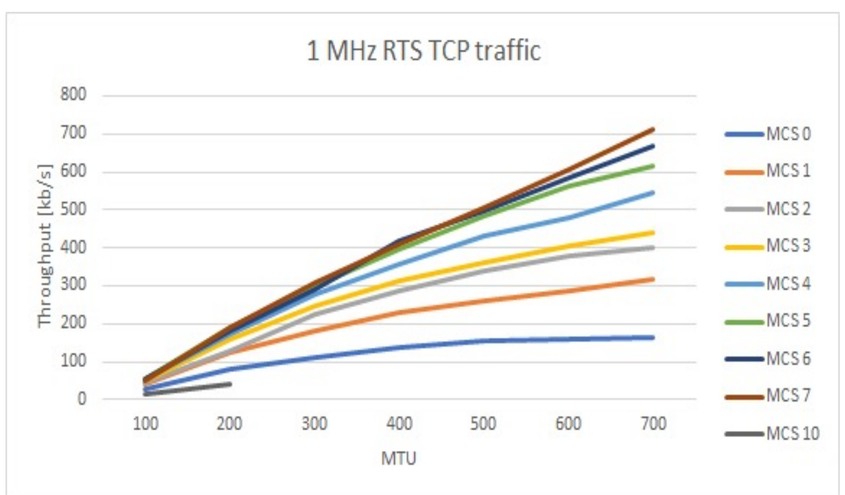
- More than 20 Wi-Fi scenarios executed while running more than 3000 automated checks on PC in background
- In depth performance analysis of executed Wi-Fi scenarios (PER, data rate, time between transmissions)



MORE RESULTS



Maximum achievable throughput



Performance when using RTS protection mechanism

CONCLUSIONS

- All objectives of the experiments are met
- Experiments provided in depth insight of Wi-Fi HaLow technology performance and Methods2Business IP implementation in real life networks.
- Results of the experiment confirmed expected performance of Methods2Business IP which is valuable to be shared with Methods2Business customers.
- Examination of the results of the experiments has led to new ideas for further improvement of the performance of Methods2Business solution.

POST MORTEM

- Results obtained from Fed4FIRE+ experiment are used as a reference for future field tests executed with Methods2Business own device.
- Methods2Business considers using Fed4FIRE+ facilities for enabling customers to remotely test Wi-Fi HaLow technology using Method2Business devices in heterogenous wireless environment