TEKTELIC COMMUNICATIONS INC.

KONA HOME SENSOR TUNE-UP PROCEDURE

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1 Introduction

1.1 Scope

This document concerns the tune-up procedure of the Kona Home Sensor family developed by TEKTELIC Communications Inc.

The modules in the family covered by this document have been shown in Table 1-1.

Part Number			Description		
Level 1	Level 2	Level 3	Description		
T0004893			Kona Home Sensor Module, NA Base		
T0004885			Kona Home Sensor Module, NA PIR		
T0004886 T0004895			Kona Home Sensor Module, NA External Connector		
			Kona Home Sensor Module, EU Base		
T0004896			Kona Home Sensor Module, EU PIR		
T0004897			Kona Home Sensor Module, EU External Connector		
	T0004898		Kona Home Sensor PCBA, NA Base		
	T0004899		Kona Home Sensor PCBA, NA PIR		
	T0004900		Kona Home Sensor PCBA, NA External Connector		
	T0004901		Kona Home Sensor PCBA, EU Base		
	T0004902		Kona Home Sensor PCBA, EU PIR		
	T0004903		Kona Home Sensor PCBA, EU External Connector		
T0004492		T0004492	Kona Home Sensor PCB		

Table 1-1: Kona Home Sensor Family

2 Tune-up Matter

There is no tune-up procedure implemented in the design. The actual output transmit power and frequency come from the Semtech LoRa TRx transceiver SX1272. The LoRa transceiver receives the frequency and power setpoints directly from the microprocessor. The sensor is an open-loop system, and there is no amplification stage after the LoRa transceiver. Based on the SX1272 datasheet, 20 dBm is the absolute maximum power the chip is capable of handling [1]. It is also noteworthy that the module is only operated by a CR2450 coin-cell battery.

2.1 Corroborating Test Results

In the SW lineup used for the EMC testing in accordance to FCC and IC at the Electronics Test Centre, MPB Technologies Inc., the LoRa transceiver was set to transmit with its maximum power (i.e. 20 dBm). The Max Output Power test results show that in all cases, the output power was below 20 dBm [2, 3] (which, in the case of FCC and IC, means a large margin of at least 10 dB from the maximum allowed output power).

In another set of measurements performed locally at TEKTELIC in accordance to ETSI EN 300 220-2 v3.1.1, the Kona Home Sensor Module, EU Base was found to be fully compliant to the Tx Effective Radiated Power (ERP) and Maximum ERP Spectral Density requirements in all cases. Figure 2-1 shows a screenshot for the Tx ERP test at room temperature.

Keysight Spectrum Analyzer - Channel Pow	/er				
RF 50 Ω AC	MHz C	SENSE:INT	ALIGN AUTO	04:07:04 AM May 15, 2018 Radio Std: None	Recall State
		rig: Free Run	Avg Hold:>100/100	Padia Device: BTS	
	IFGain:Low #	Atten. 12 dB	Ext Gain14.30 dB	Radio Device. B13	From File
10 JEZZE Dof 20.00 dBn					
10.0		-			Edit Register
0.00		-/			Names
-10.0					
-20.0					Register 1
-30.0					Last: 10/27/2016
-40.0					0.10.40 AW
-50.0					Register 2
-60.0	more and the second sec				Last: 2/10/2017
-70.0				and the second second	9:05:43 AM
Center 866.5 MHz				Span 12 MHz	
#Res BW 300 kHz		VBW 3 MHz		Sweep 1 ms	Register 3
	(empty)				
Channel Power		Power	Spectral Dens	sity	
					Register 4
13.63 dBm / 10 мнz -56.37 dBm /нz				Last: 11/23/2017	
					5.51.57 AW
					More
					1 of 3
MSG UFile < Radiated_power_hon	ne_sensor_25c_866	op5.png> saved	STATU	s	

Figure 2-1: A Tx ERP measurement example.

3 References

- [1] "https://www.semtech.com/uploads/documents/sx1272.pdf," [Online]. Available: https://www.semtech.com/.
- [2] Electronics Test Centre, "EMC testing of the Tektelic Communication Inc. Kona Home Sensor in accordance with FCC Part 15.247, ANSI C63.4: 2014 and ANSI C63.10: 2013 as referenced by FCC OET KDB 558074 D01 DTS Measurement Guidance v04," Report # t29e18a126-FCC DRAFT1, Airdrie, Alberta, Canada, 2018.
- [3] Electronics Test Centre, "EMC testing of the Tektelic Communications Inc. Kona Home Sensor LoRa Wireless device in accordance with RSS-247 Issue 2, RSS-Gen Issue 4, ANSI C63.4-2014, ANSI C63.10-2013," Report #: t29e18a126-IC DRAFT1, Airdrie, Alberta, Canada, 2018.