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Simultaneous Transmission

Test Report

Applicant	**SILICON LABORATORIES FINLAND OY**
Address	**SINIKALLIONTE 5A**
	ESPOO, FL-02630, FINLAND
FCC ID	**QOQWT12**
IC	**5123A-BGTWT12A**
Model Number	WT12
Product Description	BLUETOOTH MODULE
Date Sample Received	4/7/2016
Final Test Date	9/21/2016
Tested By	Tim Royer
Approved By	Cory Leverett

Report Number	Version Number	Description	Issue Date
1848UT16RF_EXP_Report_	Rev1	Initial Issue	9/27/2016

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.

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General Remarks

Summary

The device under test does:

☒ Fulfill the general approval requirements as identified in this test report
☐ Not fulfill the general approval requirements as identified in this test report

Attestations

We, TIMCO ENGINEERING, INC. would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1093 and meets the requirements.

This equipment has been evaluated in accordance with the standards identified in this report. To the best of my knowledge and belief, these evaluations were performed using the procedures described in this report.

I attest that the necessary evaluations were made at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669

Tested by: _____
Name and Title: Tim Royer, Project Manager/Testing Technician

Date: 9/21/2016

Reviewed and approved by:_____
Name and Title: Cory Leverett, Engineer

Date:9/27/2016

General information

Module Specifications Antenna 1	
FCC ID	**QOQWT12**
IC	**5123A-BGTWT12A**
Model	WT12
EUT Description	Bluetooth Module
Modulation Type	Bluetooth BR/EDR
Operating Frequency	2402 – 2480 MHz
Maximum Power Output	2.2 mW Conducted Power

Host Specifications Antenna 2			
FCC ID	**K95KNGP500**		
IC	**2116A-KNGP500**		
Model	KNG2-P500		
EUT Description	Portable FM UHF PTT Radio Transceiver		
Type of Equipment	☐ Fixed	☐ Mobile	☒ Portable
RF Exposure Category	☒ Controlled / Occupational	☐ Uncontrolled / General Population	
Modulation Type	FM Land Mobile Radio		
Operating Frequency	440 – 512 MHz		
Maximum Power Output	5.5 W Conducted Power		
Maximum Scaled 1- g SAR	5.23 (W/kg)		

Evaluation Information	
Regulatory Standards	CFR Title 47 Part 2.1093, 15.31(k) RSS-102 Issue 5
Measurement Standard	KDB 996369 D01 Module Equip Auth Guide v02 KDB 44798 D01 General RF Exposure Guidance v06
Method of Evaluation	Stand Alone SAR for module & Simultaneous SAR test exclusion for host integration into model listed above

Radiated Emissions

Rule Part No.: KDB 996369 D01 v02; sec VII, 15.31(k)

Requirement: A transmitter module capable of transmitting simultaneously with another transmitter can be granted as an original grant, or a Class II permissive change, by following the applicable simultaneous transmission test procedures. Additional tests for RF exposure and EMC are necessary for modules which have not been evaluated for such operation to demonstrate compliance with all the rules. The OEM integrator or the host manufacturer is responsible for the overall compliance of the host products.

If the individual devices in a composite system are subject to different technical standards, each such device must comply with its specific standards. In no event may the measured emissions of the composite system exceed the highest level permitted for an individual component.

Test data: **Simultaneous Emissions Attestation**

The EMC/radio-parameters of the host radio and radio module were evaluated and there are no additional emissions generated due to simultaneous-transmission operations compared to single transmitter operations testing, the result was insignificant and therefore it is not necessary to file the additional simultaneous transmission test data.

Result: **Meets Simultaneous Transmissions Emission Requirements**

RF Exposure

Rule Part No.: Part 2.1093, KDB 447498 D01 v06; sec 4.1(f), 4.3.2

Requirement: When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration

Test Data: **SAR Test Exclusion Calculation**

KDB 447498 D01 General RF Exposure Guidance v06			
4.3.1(a) Standalone SAR test exclusion standalone SAR Value			
SAR Test Exclusion for Portable Devices			
Max Power	**2**	**mW**	Formula 4.3.1 (a) seperation distance ≤ 50 mm (max power in mW)/(min test separation distance in mm) (√f in GHz) **W/kg**
Min Separation	**5**	**mm**	
Frequency	**2.48**	**GHz**	
			Power and Distance are rounded to the nearest mW and mm before calculation
Stand Alone SAR	**0.63**	**W/kg**	When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1(f) is applied to determine SAR test exclusion.
1-g SAR Limit	**≤ 3.0**	**W/kg**	
4.3.2 (b) Simultaneous transmissions Sum of SAR			
SAR Test Exclusion Portable Host Devices used in Occupational / Controlled Enviroments			
EST. 1-g SAR Antenna 1	**0.08**	**W/kg**	Formula 4.3.2 (b)(1) seperation distance ≤ 50 mm (max power in mW)/(min test separation distance in mm) (√f in GHz)/x) **W/kg**
Meas. 1-g SAR Antenna 2	**5.23**	**W/kg**	
1-g Sum of SAR	**5.31**	**W/kg**	where x = 7.5 for 1-g SAR
Part 2.1093 (d)(1) 1-g SAR Limit	**≤ 8.0**	**W/kg**	

Please also note the following: *[FCC KDB quote]* These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface. *[End quote]*

Results: **Meets Requirements for exclusion, the Sum of SAR is below Limit**