

RF Exposure Report

Project Number: 4643713

Proposal Number: 05192020NG-1.1

Report Number: 4643713EMC06

Report Revision: 1

Client: Mueller Systems, LLC.

Equipment Under Test: LTE and BLE apparatus for hydrants

Model: Smart Hydrant Gateway

FCC ID: 2AXKR-SH-GW-V1

Applicable Standards: 47 C.F.R. §§ 2.1091

FCC KDB 447498 D01 General RF Exposure Guidance v06

FCC OET Bulletin 65

Test Result: Compliant

Report Date: 27 October 2020

Tested by:


Brandon Osborn, Project Engineer

Reviewed by:


Stephen Whalen, SAR/EMC Manager

Remarks: This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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1 General Information

1.1 Client Information

Name: Mueller Systems, LLC.
Address: 1200 Abernathy Rd NE, Suite 1200
City, State, Zip, Country: Atlanta, GA 30328, USA

1.1 Test Laboratory

Name: SGS North America, Inc.
Address: 620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country: Suwanee, GA 30024, USA

Accrediting Body: A2LA
Type of lab: Testing Laboratory
Certificate Number: 3212.01

1.2 General Information of EUT

Type of Product: LTE and BLE apparatus for hydrants
FCC ID: 2AXKR-SH-GW-V1
Model Number: Smart Hydrant Gateway
Serial Number: SHG00000038

BLE Frequency Range: 2402 – 2480 MHz
LTE Frequency Range: 1850 – 1910 MHz (LTE Band 2)
1710 – 1755 MHz (LTE Band 4)
699 – 716 MHz (LTE Band 12)
777 – 787 MHz (LTE Band 13)
814 – 849 MHz (LTE Band 26)
BLE Modulation: Bluetooth Low Energy – GFSK (1Mbps, 2Mbps)
BLE Antenna: Potted Integrated trace on PCB / 4.3 dBi (max)
LTE Antenna: AVX Ethertronics P822601 FR4 Embedded / 2.6-4.4dBi

Sample Received Date: 30 June 2020
Dates of testing: 11-17 August 2020

1.3 Operating Modes and Conditions

Maximum power levels were utilized for all calculations. Simultaneous transmission is possible with one LTE band and BLE.

2 RF Exposure

2.1 Test Result

Test Description	Product Specific Standard	Test Result
RF Exposure	FCC Part 1.1310	Compliant

2.2 Test Method

Using the maximum power (including tune-up tolerances), the power density was calculated. Maximum antenna gain was assumed for this exercise.

2.3 Single transmission RF Exposure Levels (mW/cm²)

Band of Operation		Conducted Power w/tolerance dBm	Antenna Gain	Cable Loss	Average EIRP		Distance (R) cm	Power Density EIRP _{Avg} /(4πR ²) mW/cm ²	FCC mW/cm ²	% of Limit	Verdict
Type	MHz				dBm	mW					
LTE Band 2	1850-1910	25.0	4.4	0.1	29.3	851	20	0.169	1.00	17%	Pass
LTE Band 4	1710-1755	25.0	4.0	0.1	28.9	776	20	0.154	1.00	15%	Pass
LTE Band 12	699-716	25.0	2.6	0.1	27.6	569	20	0.113	0.47	24%	Pass
LTE Band 13	777-787	25.0	3.0	0.1	28.0	624	20	0.124	0.52	24%	Pass
LTE Band 26	814-849	25.0	3.3	0.1	28.3	668	20	0.133	0.55	24%	Pass
Bluetooth	2400-2483.5	2.4	4.3	0.1	6.6	5	20	0.001	1.00	0%	Pass

3 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	06 October 2020
1	Updated BLE output power to match 15.247 report.	27 October 2020