

Theory of Operation/Technical Description –

This should be a Short description how the device operates

For the first 3 items , please refer also to the elements shown in the block diagram

It is necessary that the Operation/Technical Description is submitted as a separate PDF document.

It must be on Company Letterhead and it must either show the Model Number as on the label, or preferably the FCC ID/IC ID.

(It may be held confidential if included in Confidentiality Request.)

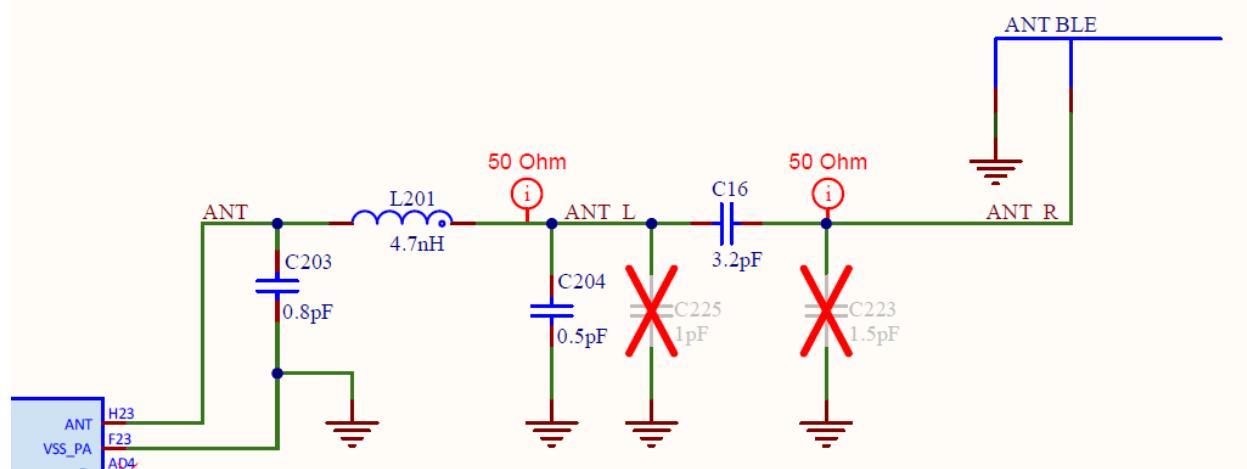
Theory of Operation/Technical Description – FCC ID: AQQ-SU6S , IC ID: 10138A-SU6S

- RF circuit function:

 atmel-8351-mcu_wir nRF52840_PS_v1.1.pdf
 eless-at86rf233_datasheet.pdf

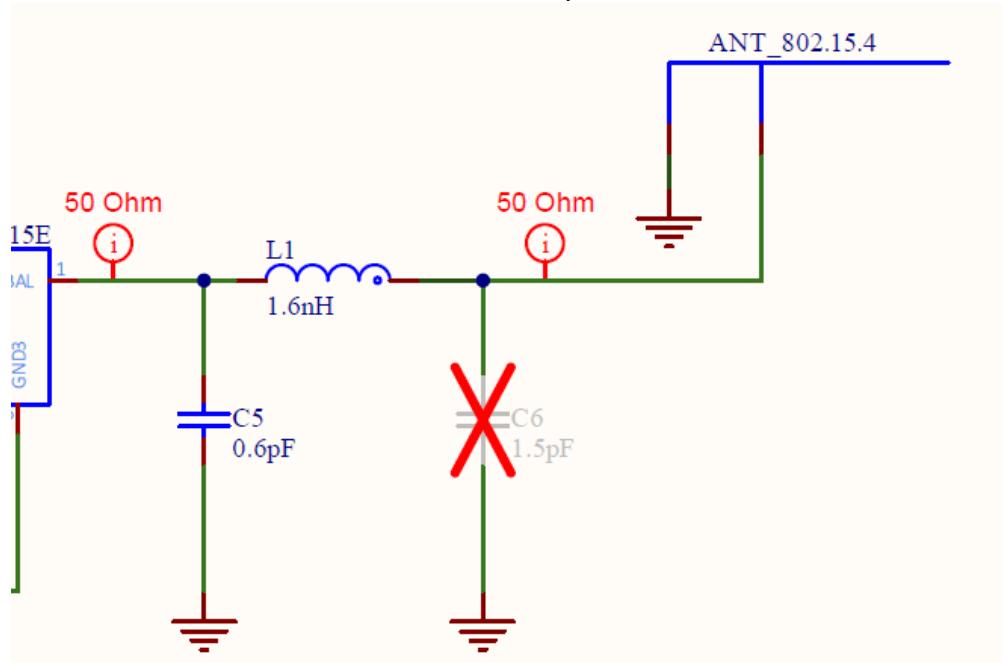
- RF signal flow:

BLE Antenna directly connected to NRF52840 chip



802.15.4

AT86RF233 connected to balun followed by Antenna



- Description of Antenna system (Baluns, Multiplexers)

-NA-

- Show compliance with 15.203 antenna requirements:

Standard explanation

④ **§ 15.203 Antenna requirement.**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

- Description of all modulation schemes used in the product:

Modulation type	BLE: GFSK ; IEEE 802.15.4 : OQPSK
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Technical Specification of the EUT

Product Function and Intended Use

Sensor SU-6S family consists of the High Bay and Ruggedized Sensors 8 wire and 2 wire interfaces. Both 8-wire and 2-wire, is a complete sensing and lighting control node powered from its attached light fixture. Sensor information combined with a configurable behaviour profile makes the High Bay sensor an integral component of an intelligent lighting control and sensing solution. With integrated wireless communications for data transmission and remote configuration as well as autonomous fixture-level control, this sensor brings advanced lighting automation to a whole new level.

Ratings and System Details of Equipment under Test

Table 1: Ratings and System Details as declared by Client*

Radio Protocol		IEEE 802.15.4	BLE
Operating Frequency Range		2405 MHz – 2480 MHz	2402MHz to 2480MHz
No. of Channels		16 (Refer Table 4)	40 (Refer Table 5)
Channel Spacing		5MHz	2MHz
Maximum Measured Power (e.i.r.p)		4.49dBm @ 2405MHz	3.23dBm @2402MHz
Modulation		IEEE 802.15.4: OQPSK	BLE:GFSK
Number of antennas		1	1
Antenna Gain & Type		0dBi & Wire antenna (internal)	
Supply Voltage to Product		9.5 to 22.5 VDC [SU-6S-2W] & 12 to 30 VDC [SU-6S-8W]	
Environmental conditions	Ruggedized Storage	0° to 60° C	
	Ruggedized Operating	-31° to 185° F/ -35° to 85° C	
	High Bay Storage	0° to 60° C	
	High Bay Operating	32° to 122° F / 0° to 50° C	
EUT Dimension	Ruggedized	90.0 mm (Diameter) * 29.5 mm (Height)	
	High Bay	90.0 mm (Length) * 90.0 mm(Width)	

***Disclaimer:** The information/data is supplied by the client and the same is considered to arrive at the final value. Any changes made apart from the specified specification, can directly impact on the tests results. Refer the products user manual for more details.