PRODUCT SPECIFICATION
FOR
Low Power 2.4ghz RF Transceiver Module for Sensor Devices
- A16382J8NW

				PREPARED BY D. Hjortland		Johnson Controls
				Project Manager M. Shipshock		
				Product/Program Manager J. Pasquale		TITLE: Low Power 2.4GHz RF Transceiver Module for Sensor Devices
	ECN61165	A	2024-07-10	Systems Engineer N. Zimmerman		
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To view Instructions, if blue text on this page cannot be seen, click *Options* on the *Tools* menu, click the *View* tab, and then select the *Hidden text* check box under Nonprinting characters.

Revision History

(Present rev. -)

Remove all but the heading row for a new document – maintain revision history for each document, in the document.

Name	Date	Reason For Changes	Ver./Rev.
D. Hjortland	2024-06-17	Initial Document Release	-
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Approvals

See Windchill for Document Approvals

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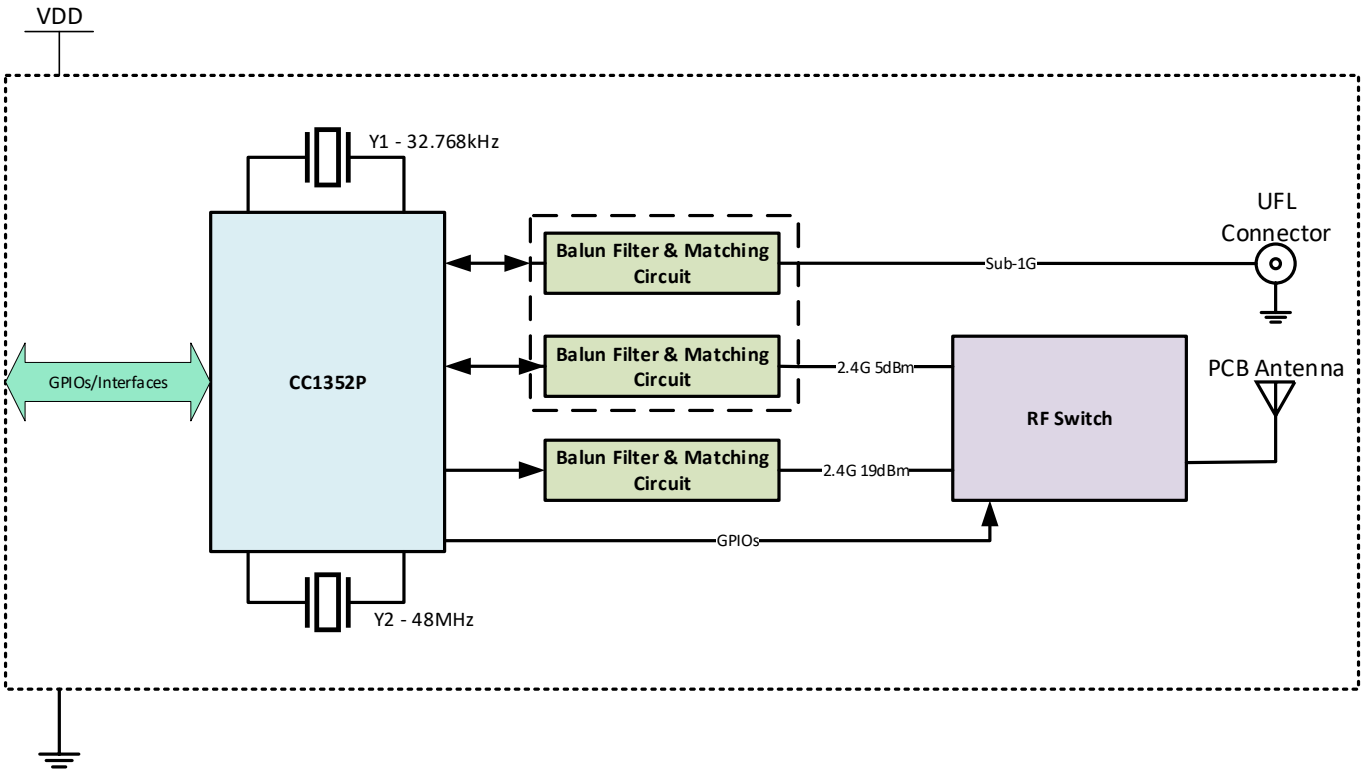
1. General Description

NSWRADIO is a radio supporting the 2.4GHz band supporting Zigbee based communications. The NSWRADIO has an integrated power amplifier enabling 19dBm[1] transmission power.

NSWRADIO integrates radio, communications stacks, and applications into a SoC allowing for solutions to be developed without requiring the use of an external MCU. Flexible hardware inputs and outputs are provided to suit a wide range of applications.

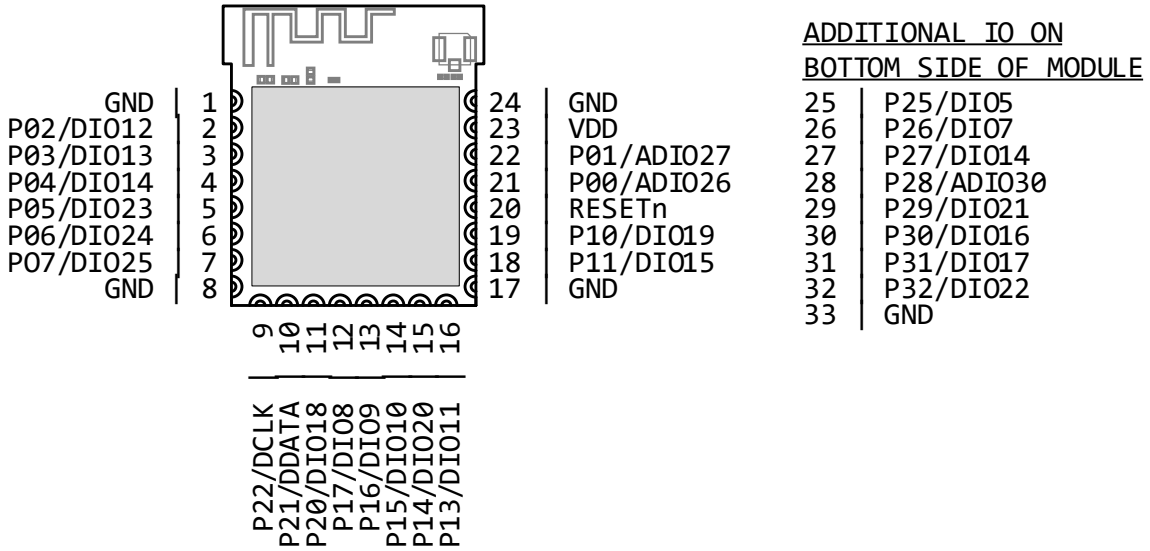
The design of the module has minimized the idle sleep power consumption making the module a suitable choice for solutions that are sensitive to power consumption e.g. battery powered devices.

2. Block Diagram



[1] Power amplifier is capable of +20dBm transmission power, but must be limited to +19dBm to meet emissions requirements.

3. Pin Assignment



3.1. Pin Functions

Pin Number	Pin Name	Definitions
1	GND	Power ground
2	P02/DIO12	GPIO
3	P03/DIO13	GPIO
4	P04/DIO14	GPIO
5	P05/DIO23	GPIO
6	P06/DIO24	GPIO
7	P07/DIO25	GPIO
8	GND	Power ground
9	P22/DCLK	GPIO / SWD Clock
10	P21/DDATA	GPIO / SWD Data
11	P20/DIO18	GPIO
12	P17/DIO8	GPIO
13	P16/DIO9	GPIO
14	P15/DIO10	GPIO
15	P14/DIO20	GPIO
16	P13/DIO11	GPIO
17	GND	Power ground
18	P11/DIO15	GPIO
19	P10/DIO19	GPIO
20	RESETn	Reset, active low
21	P00/ADIO26	GPIO, Analog capability
22	P01/ADIO27	GPIO, Analog capability
23	VDD	Supply power
24	GND	Power ground
25	P25/DIO5	GPIO
26	P25/DIO7	GPIO

Pin Number	Pin Name	Definitions
27	P27/DIO14	GPIO
28	P28/ADIO30	GPIO, Analog capability
29	P29/DIO21	GPIO
30	P30/DIO16	GPIO, JTAG TDO
31	P31/DIO17	GPIO, JTAG TDI
32	P32/DIO22	GPIO
33	GND	Power ground

41 # 4. Electrical Characteristics

42 ## *4.1. Absolute maximum rating*

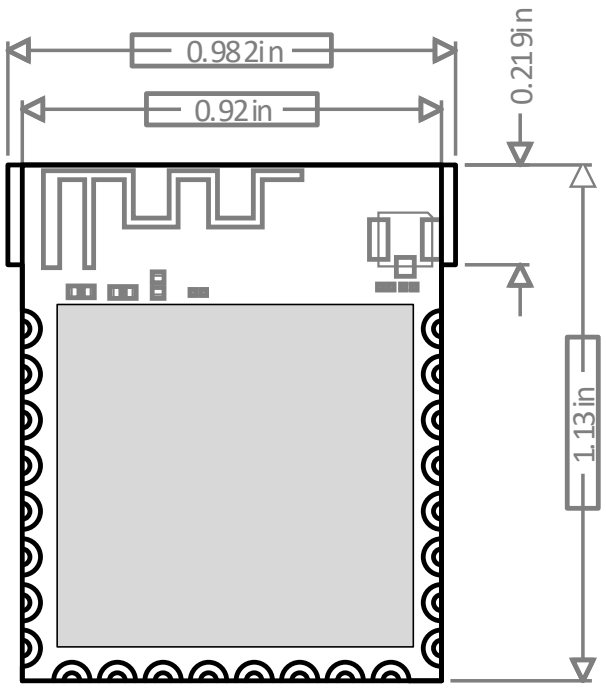
Rating	Min	Typ	Max	Unit	Notes
Storage Temperature	-40	-	85	°C	
VDD	-0.3	-	4.1	V	
GPIO	-0.3	-	VDD+0.3V	V	
ADC Inputs	-0.3		VDD	V	Voltage scaling enabled
	-0.3		1.49	V	Voltage scaling disabled, internal reference
	-0.3		VDD/2.9	V	Voltage scaling disabled, VDD as reference

43 ## *4.2. Recommended operating conditions*

Rating	Min	Typ	Max	Unit
Operating Temperature	-40	-	85	°C
VDD	2.1	3.3	3.8	V

5. Dimensions

Overall dimensions of the module are 0.92 x 1.13 x 0.258 inches (W x L x H)



6. FCC/ISED Statements

Caution:

This device complies with Part 15 of the FCC Rules / Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference. (2) this device must accept any interference received, including interference that may cause undesired operation.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. *L'appareil ne doit pas produire de brouillage;*
2. *L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be

determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

MPE Reminding

To satisfy FCC / IC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

L'antenne installée doit être située de facon à ce que la population ne puissey être exposée à une distance de moin de 20 cm. Installer l'antenne de facon à ce que le personnel ne puisse approcher à 20 cm ou moins de la position centrale de l' antenne.

La FCC des éltats-unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son functionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé 2 pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Information for the OEM Integrators

This device is intended for OEM integrators only. Please see the full grant of equipment document for restrictions.

Label Information to the End User by the OEM or Integrators

If the FCC ID of this module is not visible when it is installed inside another device, then the outside of the device into which the module is installed must be label with

"Contains FCC ID: OEJ-NSWRADIO and IC: 279A-NSWRADIO

The requirement for KDB 996369 D03:

1. List of applicable FCC rules:
   FCC Part 15. 247.
2. Summarize the specific operational use conditions:
   None
3. Limited module procedures:
   The module is a single module, so this requirement is not applicable to the product.
4. Trace antenna designs:
   The module uses the PCB antenna, so this requirement is not applicable to the product.

5. RF exposure considerations:
   The host device manufacturer should confirm that a separation distance of 20 cm or more should be maintained between the antenna of this host device and persons during the host device operation.
6. Antennas:
   PCB antenna
7. Label and compliance information:
   If this certified module is installed inside the host device, then the outside of the host must be labeled with “Contains FCC ID: OEJ-NSWRADIO and IC: 279A-NSWRADIO”.
8. Information on test modes and additional testing requirements:
   The host manufacturer can use the software of “Setup_SmartRF_Studio_7” to make the Zigbee transmit continuously.
9. Additional testing, Part 15 Subpart B disclaimer:
   The module only complies with the FCC Part 15.247. If the module is installed in the host device, the host manufacturer is responsible for the compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. For example, if the host manufacturer markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the host manufacturer shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.