

Datasheet

Veda™ IF913

Version 0.7

Revision History

Version	Date	Notes	Contributors	Approver
0.1	13 May 2025	Preliminary release	Andrew Chen	Andy Ross
0.2	22 May 2025	Section 4: Update Storage humidity range to 5%~95%. Operating humidity range <85%. Section 6: Update the SDIO/gSPI pin details. Section 7.2: Correct the schematic drawing on SMIF connection (Chip select pin) with external NOR and PSRAM.	Andrew Chen	Andy Ross
0.3	20 June 2025	Correct the pin define on pin 82-83	Andrew Chen	Andy Ross
0.4	14 July 2025	Update RF performance	Andrew Chen	Andy Ross
0.5	16 Sept 2025	Updated to reflect that Bluetooth does not support BR/EDR.	Andrew Chen	Andy Ross
0.6	2025/10/09	Add Pin-108: DMIC_CLK	Andrew Chen	Andy Ross
0.7	2025/12/10	On section 6: Add the module pin out mapping to IFX main chip pin out	Andrew Chen	Andy Ross

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1 Scope

This document describes key hardware aspects of the Ezurio Veda™ IF913 series wireless modules which is a ultra-lower power, single chip connected MCUs with 1x1 Wi-Fi 6E, Bluetooth® Low Energy 5.4, Matter and IP networking. Integrated MCU, Radio, PMU, Flash and PSRAM in 11x7mm size that targeted at Internet-of- Things (IoT) applications for stand-alone operation or to offload a host-processor.

This document is intended to assist device manufacturers and related parties with the integration of this radio into their host devices. Data in this document is drawn from several sources and includes information found in the Infineon CYW55913 Reversion C 2024-10-30 data sheet, along with other documents provided by Infineon.

Note: The information in this document is subject to change. Please contact Ezurio to obtain the most recent version of this document.

2 Introduction

General Description

The Veda IF913 series wireless module is a highly integrated, small form factor Wi-Fi/Bluetooth module that is optimized for low-power mobile devices, featuring:

- **MCU:** 192 MHz Arm® Cortex®-CM33, runs the Wi-Fi and Networking Stacks.
- **Memory:**
 - On-Chip memory: 2048-KB ROM and 768-KB RAM. (No Embedded Memory variant)
 - Embedded external memory: 8M PSRAM, 8M Flash. (Embedded Memory, 8M PSRAM, 8M Flash variant)

Note: For other embedded memory size, please contact Ezurio.
- **Wi-Fi:**
 - 1X1, IEEE 802.11a/b/g/n/ac/ax compliant.
 - Tri-band (2.4/5-7 GHz), 20 MHz channels supporting PHY data rates up to 802.11ax (MCS11 1024-QAM 5/6).
 - Transmit (TX) power with internal PA and LNA.
 - Wi-Fi 6 release feature:
 - OFDMA uplink and downlink as STA
 - Downlink multi-user MIMO as STA
 - Individual target-wake-time (TWT)
- **Bluetooth®:**
 - Bluetooth® 5.4 (Bluetooth® Low Energy)
 - Advertising Coding Selection
 - Encrypted Advertising Data
 - LE Generic Attribute Profile (GATT) Security Levels Characteristic
 - Bluetooth® Low Energy 5.0/5.1/5.2/5.3 features
 - LE long range
 - LE 2 Mbps
 - LE mesh
 - Advertising extensions
- **Security:**
 - Arm® Trustzone Cryptocell 312
 - Life cycle management
 - Crypto key establishment and management Crypto offloads
 - Secure boot
 - Wi-Fi and Bluetooth® independent firmware authentication
 - Firmware encryption
 - Attestation
 - Anti-rollback prevention

The Veda IF913 integrated with all WLAN and Bluetooth functionality in a small package supports a low cost and simple implementation. The radio is pre-calibrated and integrates the complete transmit/receive RF paths including bandpass filter, diplexer, switches, reference crystal oscillator, and power management units (PMU). It is available in **7x11x1.4mm solder-down LGA form factors** with an RF trace pin out for both Wi-Fi and BT.

A reference certified embedded PCB antenna or the implementation of MHF4 connector for external antennas are available on Veda IF91x DVK, please contact Ezurio for detail information. A list of certified external antennas is shown in **錯誤! 找不到參照來源。**

Ordering information is listed in **Table 1**. Please contact Ezurio Sales/FAE for further information.

Table 1: Product ordering information

Part Number	Description
453-00400R	Module, Veda IF913, SIP, Tri Band, No Embedded Memory, RF Trace Pin, Tape and Reel
453-00400C	Module, Veda IF913, SIP, Tri Band, No Embedded Memory, RF Trace Pin, Cut Tape
453-00401R	Module, Veda IF913, SIP, Tri Band, Embedded Memory, 8M PSRAM, 8M Flash, RF Trace Pin, Tape and Reel
453-00401C	Module, Veda IF913, SIP, Tri Band, Embedded Memory, 8M PSRAM, 8M Flash, RF Trace Pin, Cut Tape
453-00400-K1	Development Kit, Module, Veda IF913, SIP, Tri Band, External Memory, RF Trace Pin

3 Veda IF913 Series Feature Summary

The Ezurio Veda IF913 series device features are described in Table 2.

Table 2: Veda IF913 series wireless module feature

Feature	Description																											
Radio Front End	- Integrates the complete transmit/receive RF paths including bandpass filter, diplexer, switches, reference crystal oscillator, and power manage unit (PMU) - Supports tri-band (2.4/5-7 GHz) - Supports 20MHz channel bandwidth - Supports 1x1 WLAN/Bluetooth antenna configuration																											
The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. Any use of such marks by Ezurio is under license. Other trademarks and trade names are those of their respective owners.																												
One buck regulator, multiple LDO regulators, and a power management unit (PMU) are integrated into the Veda IF913. All regulators are programmable via the PMU. These blocks simplify power supply design for Bluetooth and WLAN functions in embedded designs.																												
Pre-Calibration	RF system tested and calibrated in production																											
Sleep Clock	Internal low-power oscillator accuracy is only adequate for WLAN, and not for Bluetooth®, if low power for Bluetooth®Low-Energy required. External 32.768 KHz sleep clock is required for Bluetooth® Low Energy to support low power mode. The 32.768 kHz precision oscillator which meets the requirements listed following table must be used. <table><tr><th>Parameter</th><th>LPO Clock</th><th>Unit</th></tr><tr><td>Nominal input frequency</td><td>32.768</td><td>kHz</td></tr><tr><td>Frequency accuracy</td><td>±250</td><td>ppm</td></tr><tr><td>Duty cycle</td><td>30 – 70</td><td>%</td></tr><tr><td>Input signal amplitude</td><td>200 – 3300</td><td>mV, p-p</td></tr><tr><td>Signal type</td><td>Square-wave or sine-wave</td><td>-</td></tr><tr><td>Input impedance</td><td>> 100k</td><td>Ω</td></tr><tr><td></td><td>< 5</td><td>pF</td></tr><tr><td>Clock jitter (during initial startup)</td><td>< 10,000</td><td>ppm</td></tr></table>	Parameter	LPO Clock	Unit	Nominal input frequency	32.768	kHz	Frequency accuracy	±250	ppm	Duty cycle	30 – 70	%	Input signal amplitude	200 – 3300	mV, p-p	Signal type	Square-wave or sine-wave	-	Input impedance	> 100k	Ω		< 5	pF	Clock jitter (during initial startup)	< 10,000	ppm
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Input impedance	> 100k	Ω																										
	< 5	pF																										
Clock jitter (during initial startup)	< 10,000	ppm																										
Advanced WLAN	- IEEE 802.11a/b/g/n/ac/ax compliant, tri-band capable (2.4/5-7 GHz) 1x1 MIMO providing up to 143 Mbps PHY data rate for 2.4/5-7 GHz (1024-QAM modulation) - Supports 20 MHz bandwidth with optional SGI (1024-QAM modulation) - On-chip power amplifiers and low-noise amplifiers for both bands - Support wide variety of WLAN encryption: WPA2(Personal/Enterprise), WPA3 (Personal/Enterprise with 192 bit security).																											
Advanced Bluetooth	- Bluetooth® 5.4 (Bluetooth® Low Energy) - Advertising Coding Selection - Encrypted Advertising Data - LE Generic Attribute Profile (GATT) Security Levels Characteristic - Bluetooth® Low Energy 5.0/5.1/5.2/5.3 features - LE long range - LE 2 Mbps - LE mesh - Advertising extensions - Host controller interface (HCI) using a high speed UART and PCM/I2S for audio data - Low power consumption improves battery life of IoT and embedded devices																											

4 Specifications

Table 3: Specifications

Feature	Description
Physical size	11x7x1.4mm in 108-pin LGA package
Network communication interface	Secure Digital I/O 2.0 (1.8V only) /3.0; UART, gSPI, UART, SPI.
Main Chipset	Infineon AIROC™ CYW55913
Input Voltage Requirements	Typical DC 3.3 V, operating range from DC 3.13V to 4.8V
I/O Signalling Voltage	Typical DC 1.8 V ± 5%
Operating Temperature	-40° to +85°C (-40° to +185°F)
Operating Humidity	<85% (non-condensing)
Storage Temperature	-40° to +85°C (-40° to +185°F)
Storage Humidity	5 to 95% (non-condensing)
MSL (Moisture Sensitivity Level)	4
Maximum Electrostatic Discharge	Conductive 8KV; Air coupled 12KV (follows EN61000-4-2)
Weight – g (oz.)	TBD
Network Architecture Types	Infrastructure (client operation)
Wi-Fi Standards	IEEE 802.11ax, 11ac, 11ac, 11a/b/g/n, 11d/h, 11i, 11r, 11w, 11e, 11k, 11ai, 11v
Bluetooth Standards	Bluetooth BLE 5.0, 5.1, 5.2, 5.3, 5.4
Wi-Fi Data Rates Supported	Support 802.11 ax/ac/a/b/g/n 1x1 MU-MIMO. 802.11b (DSSS, CCK) 1, 2, 5.5, 11 Mbps 802.11a/g (OFDM) 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (OFDM, HT20, MCS0-7) 802.11ac (OFDM, VHT20, MCS0-8) 802.11ax (2.4 GHz / OFDM / HE20 / MCS0-11; 2.4 GHz / OFDMA / HE20 / MCS0-11) 802.11ax (5 GHz, 6 GHz / OFDM / HE20 / MCS0-11; 5 GHz, 6 GHz / OFDMA / HE20 / MCS0-11)

Feature	Description
Modulation Table	BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM

Modulation Type						OFDM (IEEE 802.11n/ac)		OFDM (IEEE 802.11ax)		
MCS Index			Spatial Stream	Modulation	Coding	20MHz		20MHz		
HT	VHT	HE				0.8us GI	0.4us GI	0.8us GI	1.6us GI	3.2us GI
0	0	0	1	BPSK	1/2	6.5	7.2	8.6	8.1	7.3
1	1	1	1	QPSK	1/2	13	14.4	17.2	16.3	14.6
2	2	2	1	QPSK	3/4	19.5	21.7	25.8	24.4	21.9
3	3	3	1	16-QAM	1/2	26	28.9	34.4	32.5	29.3
4	4	4	1	16-QAM	3/4	39	43.3	51.6	48.8	43.9
5	5	5	1	64-QAM	2/3	52	57.8	68.8	65	58.5
6	6	6	1	64-QAM	3/4	58.5	65	77.4	73.1	65.8
7	7	7	1	64-QAM	5/6	65	72.2	86	81.3	73.1
	8	8	1	256-QAM	3/4	78	86.7	103.2	97.5	87.8
	9	9	1	256-QAM	5/6	N/A	N/A	114.7	108.3	97.5
		10	1	1024-QAM	3/4			129	121.9	109.7
		11	1	1024-QAM	5/6			143.4	135.4	121.9

OFDMA (IEEE 802.11ax)															
MCS Index	Spatial Stream	Modulation	Coding	26-tone RU			52-tone RU			106-tone RU			242-tone RU		
HE				0.8us GI	1.6us GI	3.2us GI	0.8us GI	1.6us GI	3.2us GI	0.8us GI	1.6us GI	3.2us GI	0.8us GI	1.6us GI	3.2us GI
0	1	BPSK	1/2	0.9	0.8	0.8	1.8	1.7	1.5	3.8	3.5	3.2	8.6	8.1	7.3
1	1	QPSK	1/2	1.8	1.7	1.5	3.5	3.3	3	7.5	7.1	6.4	17.2	16.3	14.6
2	1	QPSK	3/4	2.6	2.5	2.3	5.3	5	4.5	11.3	10.6	9.6	25.8	24.4	21.9
3	1	16-QAM	1/2	3.5	3.3	3	7.1	6.7	6	15	14.2	12.8	34.4	32.5	29.3
4	1	16-QAM	3/4	5.3	5	4.5	10.6	10	9	22.5	21.3	19.1	51.6	48.8	43.9
5	1	64-QAM	2/3	7.1	6.7	6	14.1	13.3	12	30	8.3	25.5	68.8	65	58.5
6	1	64-QAM	3/4	7.9	7.5	6.8	15.9	15	13.5	33.8	31.9	28.7	77.4	73.1	65.8
7	1	64-QAM	5/6	8.8	8.3	7.5	17.6	16.7	15	37.5	35.4	31.9	86	81.3	73.1
8	1	256-QAM	3/4	10.6	10	9	21.2	20	18	45	42.5	38.3	103.2	97.5	87.8
9	1	256-QAM	5/6	11.8	11.1	10	3.5	22.2	20	50	47.2	42.5	114.7	108.3	97.5
10	1	1024-QAM	3/4	13.2	12.5	11.3	26.5	25	22.5	56.3	53.1	47.8	129	121.9	109.7
11	1	1024-QAM	5/6	14.7	13.9	12.5	29.4	27.8	25	62.5	59	53.1	143.4	135.4	121.9

802.11ax/ac/n Spatial Streams	1 (1x1 MU-MIMO)
Bluetooth Modulation	GFSK @ 1, 2 Mbps GFSK @ 125, 500 Kbps
Regulatory Certifications	United States (FCC) EU - Member countries of European Union (ETSI) Great Britain (UKCA) Canada (ISED) Australia/New Zealand (RCM) Japan (MIC)
2.4 GHz Frequency Bands	EU: 2.4 GHz to 2.483 GHz FCC/ISED: 2.4 GHz to 2.473 GHz UKCA: 2.4 GHz to 2.483 GHz MIC: 2.4 GHz to 2.483 GHz RCM: 2.4 GHz to 2.483 GHz
5 GHz Frequency Bands	EU 5.15 GHz to 5.35 GHz 5.47 GHz to 5.725 GHz 5.725 GHz to 5.85 GHz FCC 5.15 GHz to 5.35 GHz 5.47 GHz to 5.725 GHz

Feature	Description
	5.725 GHz to 5.85 GHz
	ISED
	5.15 GHz to 5.35 GHz
	5.47 GHz to 5.725 GHz
	5.725 GHz to 5.85 GHz
	UKCA
	5.15 GHz to 5.35 GHz
	5.47 GHz to 5.730 GHz
	5.725 GHz to 5.850 GHz
	MIC
	5.15 GHz to 5.35 GHz
	5.47 GHz to 5.725 GHz
	RCM
	5.15 GHz to 5.35 GHz
	5.47 GHz to 5.725 GHz
	5.725 GHz to 5.85 GHz
6 GHz Frequency Bands	FCC / ISED
	UNII-5, 5.925 GHz to 6.415 GHz
	UNII-6, 6.435 GHz to 6.515 GHz
	UNII-7, 6.535 GHz to 6.875 GHz
	UNII-8, 6.895 GHz to 7.115 GHz
	EU
	UNII-5, 5.945 GHz to 6.425 GHz
	UKCA
	UNII-5, 5.945 GHz to 6.425 GHz
	MIC
	UNII-5, 5.945 GHz to 6.425 GHz
	RCM
	UNII-5, 5.945 GHz to 6.425 GHz
Transmit Power	802.11a
	6 Mbps 17 dBm (50.11 mW)
<i>Note: Transmit power on each channel varies per individual country regulations. All values are nominal with +/-2 dBm tolerance at room temperature. Tolerance could be up to +/-2.5 dBm across operating temperature.</i>	54 Mbps 16.5 dBm (44.66 mW)
	802.11b
	1 Mbps 18 dBm (63.09 mW)
	11 Mbps 18 dBm (63.09 mW)
	802.11g
	6 Mbps 18 dBm (63.09 mW)
	54 Mbps 17 dBm (50.11 mW)
<i>Note: HT20/VHT20/HE20 – 20 MHz-wide channels</i>	802.11n (2.4 GHz)
	HT20; MCS0-4 18 dBm (63.09 mW)
	HT20; MCS5-7 16 dBm (39.81 mW)
	802.11ax (2.4 GHz)
	HE20; MCS0-4 18 dBm (63.09 mW)
	HE20; MCS5-7 16 dBm (39.81 mW)
	HE20; MCS8-9 14 dBm (25.11 mW)
	HE20; MCS13 10.5 dBm (19.95 mW)
	802.11n (5 GHz)
	HT20; MCS0-4 17 dBm (50.11 mW)
	HT20; MCS5-7 16.5 dBm (44.66 mW)

Feature	Description
	802.11ac (5 GHz) VHT20; MCS0-4 17 dBm (50.11 mW) VHT20; MCS5-7 16.5 dBm (44.66 mW) VHT20; MCS8 14 dBm (25.12 mW)
	802.11ax (5 GHz) HE20; MCS0-4 17 dBm (50.11 mW) HE20; MCS5-7 16.5 dBm (44.66 mW) HE20; MCS8-9 14 dBm (25.12 mW) HE20; MC10-11 13 dBm (19.95 mW)
	802.11ax (6 Hz, UNII-5 / 6) 11a; 6M-24M 15.5 dBm (35.48 mW) HE20; MCS0-4 15.5 dBm (35.48 mW) HE20; MCS5-7 15 dBm (31.62 mW) HE20; MCS8-9 13.5 dBm (22.38 mW) HE20; MCS10-11 12 dBm (15.85 mW)
	802.11ax (6 Hz, UNII-7 / 8) 11a; 6M-24M 15 dBm (31.62 mW) HE20; MCS0-4 15 dBm (31.62 mW) HE20; MCS5-7 13 dBm (19.95 mW) HE20; MCS8-9 12 dBm (15.85 mW) HE20; MCS10-11 10.5 dBm (11.22 mW)
	Bluetooth LE (1 Mbps, 2 Mbps) 7 dBm (5.01 mW) , Maximum LE-LR (S=2, S=8) 7 dBm (5.01 mW) , Maximum
Typical Receiver Sensitivity (PER <= 10%) Note: All values nominal, +/-2 dBm.	802.11a: 6 Mbps -92 dBm 54 Mbps -75 dBm 802.11b: 1 Mbps -97 dBm (PER < 8%) 11 Mbps -90 dBm (PER < 8%) 802.11g: 6 Mbps -94 dBm 54 Mbps -77 dBm 802.11n (2.4 GHz) 6.5 Mbps (MCS0; HT20) -94 dBm 65 Mbps (MCS7; HT20) -75 dBm 802.11ax (2.4 GHz) 7.3 Mbps (MCS0; HE20) -94 dBm 121.9 Mbps (MCS11; HE20) -64 dBm 7.3 Mbps (MCS0; HE20/RU242) -94 dBm 802.11n (5 GHz) 6.5 Mbps (MCS0; HT20) -92 dBm 65 Mbps (MCS7; HT20) -73 dBm 802.11ac (5 GHz) 6.5 Mbps (MCS0; VHT20) -92 dBm 78 Mbps (MCS8; VHT20) -70 dBm 802.11ax (5 GHz) 7.3 Mbps (MCS0; HE20) -92 dBm 121.9 Mbps (MCS11; HE20) -61 dBm 7.3 Mbps (MCS0; HE20/RU242) -92 dBm 802.11ax (6 GHz, UNII-5) 6 Mbps -90 dBm 24 Mbps -83 dBm 7.3 Mbps (MCS0; HE20) -90 dBm

Feature	Description																												
	121.9 Mbps (MCS11; HE20) -59 dBm																												
	7.3 Mbps (MCS0; HE20/RU242) -90 dBm																												
	802.11ax (6 GHz, UNII-6)																												
	6 Mbps -90 dBm																												
	24 Mbps -82 dBm																												
	7.3 Mbps (MCS0; HE20) -90 dBm																												
	121.9 Mbps (MCS11; HE20) -59 dBm																												
	7.3 Mbps (MCS0; HE20/RU242) -90 dBm																												
	802.11ax (6GHz, UNII-7)																												
	6 Mbps -89 dBm																												
	24 Mbps -81 dBm																												
	7.3 Mbps (MCS0; HE20) -89 dBm																												
	121.9 Mbps (MCS11; HE20) -58 dBm																												
	7.3 Mbps (MCS0; HE20/RU242) -89 dBm																												
	802.11ax (6 GHz, UNII-8)																												
	6 Mbps -88 dBm																												
	24 Mbps -80 dBm																												
	7.3 Mbps (MCS0; HE20) -88 dBm																												
	121.9 Mbps (MCS11; HE20) -56 dBm																												
	7.3 Mbps (MCS0; HE20/RU242) -88 dBm																												
	Bluetooth:																												
	LE-1 Mbps -96 dBm																												
	LE-2 Mbps -94 dBm																												
	LE-LR (S=2) -102 dBm																												
	LE-LR (S=8) -107 dBm																												
Operating Systems Supported	ThreadX RTOS NetX Secure TLS 1.3 NetX Duo (TCP/IP)																												
Security	WPA, WPA2 (Enterprise) and WPA3 (Enterprise) support for powerful encryption and authentication																												
Compliance	<table> <tr> <td>EU</td><td></td></tr> <tr> <td>EN 300 328</td><td>EN 62368-1:2014</td></tr> <tr> <td>EN 301 489-1</td><td>EN 300 440</td></tr> <tr> <td>EN 301 489-17</td><td>EN 303 687</td></tr> <tr> <td>EN 301 893</td><td>2011/65/EU (RoHS)</td></tr> <tr> <td>FCC</td><td>ISED Canada</td></tr> <tr> <td>47 CFR FCC Part 15.247</td><td>RSS-247</td></tr> <tr> <td>47 CFR FCC Part 15.407</td><td>RSS-248</td></tr> <tr> <td>47 CFR FCC Part 2.1091</td><td></td></tr> <tr> <td>AS/NZS</td><td>MIC</td></tr> <tr> <td>AS/NZS 4268:2017</td><td>ARIB STD-T66/RCR STD-33 (2.4 GHz)</td></tr> <tr> <td></td><td>ARIB STD-T71 (5 GHz)</td></tr> <tr> <td></td><td>Article 2 Paragraph 1 of Item 80 :</td></tr> <tr> <td></td><td>LPI (ZR), 6 GHz</td></tr> </table>	EU		EN 300 328	EN 62368-1:2014	EN 301 489-1	EN 300 440	EN 301 489-17	EN 303 687	EN 301 893	2011/65/EU (RoHS)	FCC	ISED Canada	47 CFR FCC Part 15.247	RSS-247	47 CFR FCC Part 15.407	RSS-248	47 CFR FCC Part 2.1091		AS/NZS	MIC	AS/NZS 4268:2017	ARIB STD-T66/RCR STD-33 (2.4 GHz)		ARIB STD-T71 (5 GHz)		Article 2 Paragraph 1 of Item 80 :		LPI (ZR), 6 GHz
EU																													
EN 300 328	EN 62368-1:2014																												
EN 301 489-1	EN 300 440																												
EN 301 489-17	EN 303 687																												
EN 301 893	2011/65/EU (RoHS)																												
FCC	ISED Canada																												
47 CFR FCC Part 15.247	RSS-247																												
47 CFR FCC Part 15.407	RSS-248																												
47 CFR FCC Part 2.1091																													
AS/NZS	MIC																												
AS/NZS 4268:2017	ARIB STD-T66/RCR STD-33 (2.4 GHz)																												
	ARIB STD-T71 (5 GHz)																												
	Article 2 Paragraph 1 of Item 80 :																												
	LPI (ZR), 6 GHz																												
Certifications	Bluetooth® SIG Qualification TBD 																												
Warranty	One Year Warranty																												
All specifications are subject to change without notice																													

5 Block Diagrams

Veda IF913 module Block Diagram

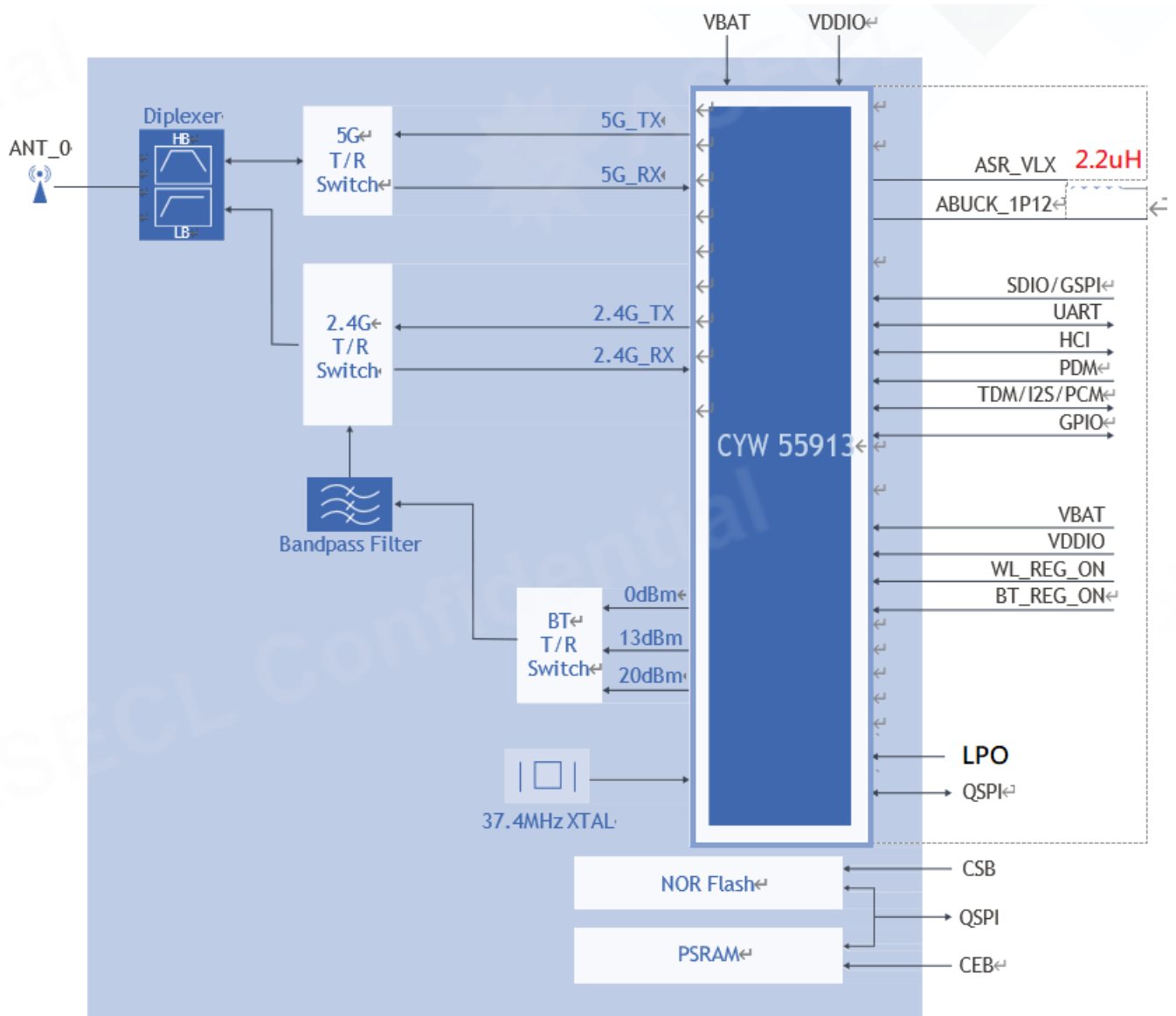


Figure 1: Veda IF913 SIP module block diagram

Note: For embedded memory variant, please connect the QSPI bus outside the SIP. See [Veda IF913 Implementation Details](#).

6 Pin Definitions

Pin #	Name	Type	Voltage Ref.	Function	Main Chip Pin out	If Not Used
1	GND	-	-	Ground	-	GND
2	TDM1_MCK	I/O	VDDIO	TDM1 Interface Master Clock / I2S Master Clock / PCM interface	E2	NC
3	GND	-	-	Ground	-	GND
4	TDM1_SCK	I/O	VDDIO	TDM1 Interface Slave Clock / I2S Interface Clock / PCM interface	E3	NC
5	GND	-	-	Ground	-	GND
6	TDM1_WS	I/O	VDDIO	TDM1 Interface Word Select / I2S Interface Word Select / PCM interface	D3	NC
7	TDM1_DO	I/O	VDDIO	TDM1 Interface Data Out / I2S Interface Data Out / PCM interface	F3	NC
8	TDM1_DI	I/O	VDDIO	TDM1 Interface Data In / I2S Interface Data In / PCM interface	D4	NC
9	BT_DEV_WAKE	I	VDDIO	Bluetooth Device Wake-up	J3	NC
10	WL_DEV_WAKE	I	VDDIO	WLAN Device Wake-up / Programmable General purpose I/O	J2	NC
11	BT_HOST_WAKE	O	VDDIO	Host wake up	F2	NC
12	GND	-	-	Ground	-	GND
13	DIP_OUT	RF	-	WIFI+BT RF output port 0	-	50 ohm terminated
14	GND	-	-	Ground	-	GND
15	GND	-	-	Ground	-	GND
16	LHL_GPIO_8	I/O	VDDIO	Miscellaneous general purpose GPIO_8	G2	NC
17	LHL_GPIO_9	I/O	VDDIO	Miscellaneous general purpose GPIO_9	H1	NC
18	LHL_GPIO_3	I/O	VDDIO	Miscellaneous general purpose GPIO_3	H5	NC
19	LHL_GPIO_5	I/O	VDDIO	Miscellaneous general purpose GPIO_5	H3	NC
20	GND	-	-	Ground	-	GND
21	LPO_IN	I	VDDIO	External sleep clock input (32.768 KHz) Note: Needed for Bluetooth® Low Energy to support low power mode.	J5	-
22	GND	-	-	Ground	-	GND
23	WL_HOST_WAKE	O	VDDIO	WLAN HOST WAKE / Programmable General purpose I/O	G10	NC
24	BT_UART_TXD	O	VDDIO	UART Serial Output. Serial data output for the HCI UART interface.	F7	NC
25	GND	-	-	Ground	-	GND
26	ABUCK_1P12	PWR input	-	Normal 1.12V power input and 0.74V when in sleep mode. Please connect to the filtered ABUCK voltage. See pin-33 and pin-34.	B8	-
27	ABUCK_1P12	PWR input	-	See 錯誤! 找不到參照來源。.		-
28	GND	-	-	Ground	-	GND
29	TDM2_MCK	I/O	VDDIO	TDM2 Interface Master Clock / I2S Master Clock/ PCM interface	B1	NC
30	GND	-	-	Ground	-	GND
31	TDM2_SCK	I/O	VDDIO	TDM2 Interface Slave Clock / I2S Interface Clock / PCM interface	A1	NC
32	GND	-	-	Ground	-	GND
33	ASR_VLX	PWR	-		A10	-

		output		Analog Switching Regulator (ABUCK) power stage output.		
34	ASR_VLX	PWR output	-	Please connect to external L-C Filter (2.2uH+ 4.7uF) and connected to ABUCK_1P12 (pin-26; pin-27) See 錯誤! 找不到參照來源。		-
35	GND	-	-	Ground		GND
36	GND	-	-	Ground	-	GND
37	VBAT	PWR	3.3V	Main DC supply voltage for module. Operational: VBAT is 3.0V to 4.8V • VBAT and VDDIO should not rise 10%–90% faster than 40 microseconds. • VBAT should be up before or at the same time as VDDIO. VDDIO should NOT be present first or be held high before VBAT is high.	B10/C10/D10	-
38	VBAT	PWR	3.3V			-
39	GND	-	-	Ground	-	GND
40	SDIO_CLK	I	VDDIO	SDIO Clock Input / gSPI Clock Interface	A7	NC
41	GND	-	-	Ground	-	GND
42	SDIO_CMD	I/O	VDDIO	SDIO Command Line/ gSPI MOSI Interface	A6	NC
43	SDIO_DATA_0	I/O	VDDIO	SDIO Data line 0/ gSPI MISO Interface	B6	NC
44	SDIO_DATA_1	I/O	VDDIO	SDIO Data line 1/ gSPI interrupt Interface	B7	NC
				SDIO Data line 2/ gSPI Interface	C7	
45	SDIO_DATA_2	I/O	VDDIO	This pin is also used for strapping option for SDIO or gSPI. Default pull during strapping="H" for SDIO bus; pull it "L" during strapping for gSPI bus.		NC
46	SDIO_DATA_3	I/O	VDDIO	SDIO Data line 3/ gSPI CS Interface	C6	NC
47	GND	-	-	Ground	-	GND
48	SCLK	I/O	VDDIO	Serial Clock input for embedded memory. For No embedded memory variant, keep this pin NC.	-	NC
49	GND	-	-	Ground		GND
50	SI	I/O	VDDIO	Serial Data Input / Serial Data Input Output 0 for embedded memory. For No embedded memory variant, keep this pin NC.	-	NC
51	SIO2	I/O	VDDIO	Serial Data Input / Serial Data Input Output 2 for embedded memory. For No embedded memory variant, keep this pin NC.	-	NC
52	SIO1	I/O	VDDIO	Serial Data Input / Serial Data Input Output 1 for embedded memory. For No embedded memory variant, keep this pin NC.	-	NC
53	HOLDB	I/O	VDDIO	Hold Input/Serial Data Input Output 3 for embedded memory. For No embedded memory variant, keep this pin NC.	-	NC
54	CEB	I	VDDIO	Chip Select input, active low (CE pin for embedded PSRAM) For No embedded memory variant, keep this pin NC.	-	NC
55	CSB	I	VDDIO	Chip Select input, active low (CS pin for embedded NOR Flash) For No embedded memory variant, keep this pin NC.	-	NC
56	SMIF_SPHB_DQ0	I/O	VDDIO	SMIF data line 0. • Connect to external NOR Flash IO0 and external PSRAM SIO[0]. • Connect to SI (pin-50) for embedded Memory variant.	A4	NC
57	SMIF_SPHB_DQ1	I/O	VDDIO	SMIF data line 1. • Connect to external NOR Flash IO1 and external PSRAM SIO[1]. • Connect to SIO1 (pin-52) for embedded Memory variant.	B4	NC

58	GND	-	-	Ground	-	GND
59	VDDIO	PWR input	-	1.8 V IO supply for WLAN GPIOs VBAT and VDDIO should not rise 10%–90% faster than 40 microseconds.	D6	NC
60	BT_GPIO_0	I/O	VDDIO	Bluetooth® general purpose I/O	F1	NC
61	BT_GPIO_7	I/O	VDDIO	Bluetooth® general purpose I/O	A3	NC
62	BT_GPIO_16	I/O	VDDIO	Bluetooth® general purpose I/O	B3	NC
63	BT_GPIO_17	I/O	VDDIO	Bluetooth® general purpose I/O	C3	NC
64	BT_GPIO_5	I/O	VDDIO	Bluetooth® general purpose I/O	D7	NC
65	BT_GPIO_6	I/O	VDDIO	Bluetooth® general purpose I/O	E6	NC
66	BT_GPIO_3	I/O	VDDIO	Bluetooth® general purpose I/O	E5	NC
67	BT_GPIO_4	I/O	VDDIO	Bluetooth® general purpose I/O	F5	NC
68	BT_GPIO_2	I/O	VDDIO	Bluetooth® general purpose I/O	E4	NC
69	GND	-	-	Ground	-	GND
70	DMIC_DATA	I/O	VDDIO	Digital mic data	E1	NC
71	GND	-	-	Ground	-	GND
72	LHL_GPIO_4	I/O	VDDIO	Miscellaneous general purpose GPIO_4	H4	NC
73	LHL_GPIO_2	I/O	VDDIO	Miscellaneous general purpose GPIO_2	H6	NC
74	LHL_GPIO_6	I/O	VDDIO	Miscellaneous general purpose GPIO_6	G1	NC
75	GND	-	-	Ground	-	GND
76	GND	-	-	Ground	-	GND
77	MIC_P	I	VDDIO	ADC microphone positive input	E8	NC
78	GND	-	-	Ground	-	GND
79	BT_UART_RXD	I	VDDIO	UART Serial Input. Serial data input for the HCI UART interface.	G6	NC
80	BT_UART_RTS_N	O	VDDIO	UART request-to-send. Active-low request-to-send signal for the HCI UART interface. Bluetooth® LED control pin.	G7	NC
81	BT_UART_CTS_N	I	VDDIO	UART clear-to-send. Active-low clear-to-send signal for the HCI UART interface.	F6	NC
82	BT_REG_ON	I	VDDIO	Used by the PMU to power up or power down the internal regulators used by the Bluetooth® section. When deasserted, this pin holds the Bluetooth® section in reset. This pin has an internal 50 kΩ pull-down resistor by default. that is auto enabled/disabled by programming.	C8	-
83	WL_REG_ON	I	VDDIO	Not used for IF913/IF912. This should be tied to GND on board.	A8	GND
84~86	GND	-	-	Ground	-	GND
87	TDM2_DI	I/O	VDDIO	TDM2 Interface Data In / I2S Interface Data In / PCM interface	D2	NC
88	TDM2_DO	I/O	VDDIO	TDM2 Interface Data Out / I2S Interface Data Out / PCM interface	C1	NC
89	TDM2_WS	I/O	VDDIO	TDM2 Interface Word Select / I2S Interface Word Select / PCM interface	A2	NC
90	VCC	PWR	-	Memory 1.8V power supply	-	-
91	GND	-	-	Ground	-	GND
92	SMIF_SPHB_CLK	O	VDDIO	SMIF clock output	A5	GND

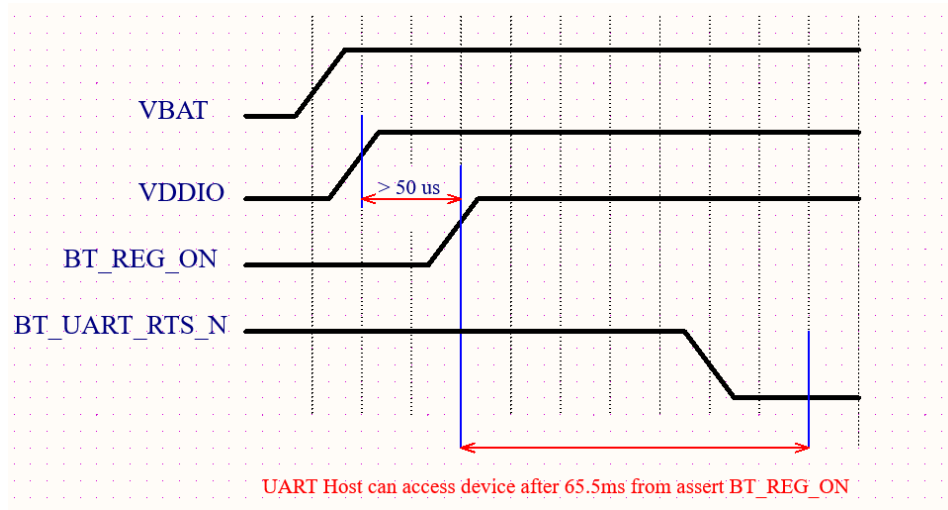
				- Connect to external NOR Flash SCK and external PSRAM SCK. - Connect to SCK (pin-48) for embedded Memory variant.		
93	GND	-	-	Ground	-	GND
94	SMIF_SPHB_DQ2	I/O	VDDIO	SMIF data line 2. - Connect to external NOR Flash IO2 and external PSRAM SIO[2]. - Connect to SIO2 (pin-51) for embedded Memory variant.	B5	-
95	SMIF_SPHB_DQ3	I/O	VDDIO	SMIF data line 3. - Connect to external NOR Flash IO3 and external PSRAM SIO[3]. - Connect to HOLD (pin-53) for embedded Memory variant.	C5	NC
96	SMIF_SPHB_CS0_N	O	VDDIO	SMIF chip select0 active-low output - Connect to external NOR Flash CS# pin. - Connect to CSB (pin-55) for embedded Memory variant.	C4	NC
97	SMIF_SPHB_CS1_N	O	VDDIO	SMIF chip select1 active-low output - Connect to external PSRAM CE# pin. - Connect to CEB (pin-54) for embedded Memory variant.	G3	NC
98~107	GND	-	-	Ground	-	GND
108	DMIC_CLK	I/O	VDDIO	Digital mic clock	D1	NC
E1~E4	GND	-	-	Ground		GND

7 Veda IF913 Implementation Details

Power up sequency timing

To maintain stable MCU and Bluetooth starting up, below power up sequency timing is required.

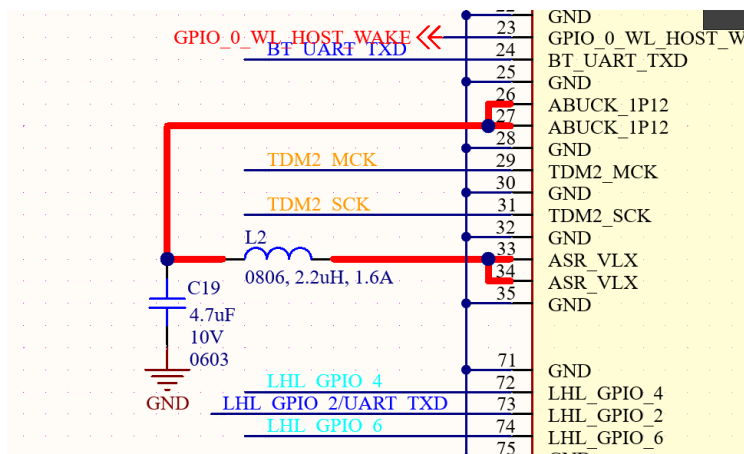
- VBAT and VDDIO should not rise 10%–90% faster than 40 microseconds.
- VBAT should be up before or at the same time as VDDIO. VDDIO should NOT be present first or be held high before VBAT is high.



L-C filter for Buck switching regulator

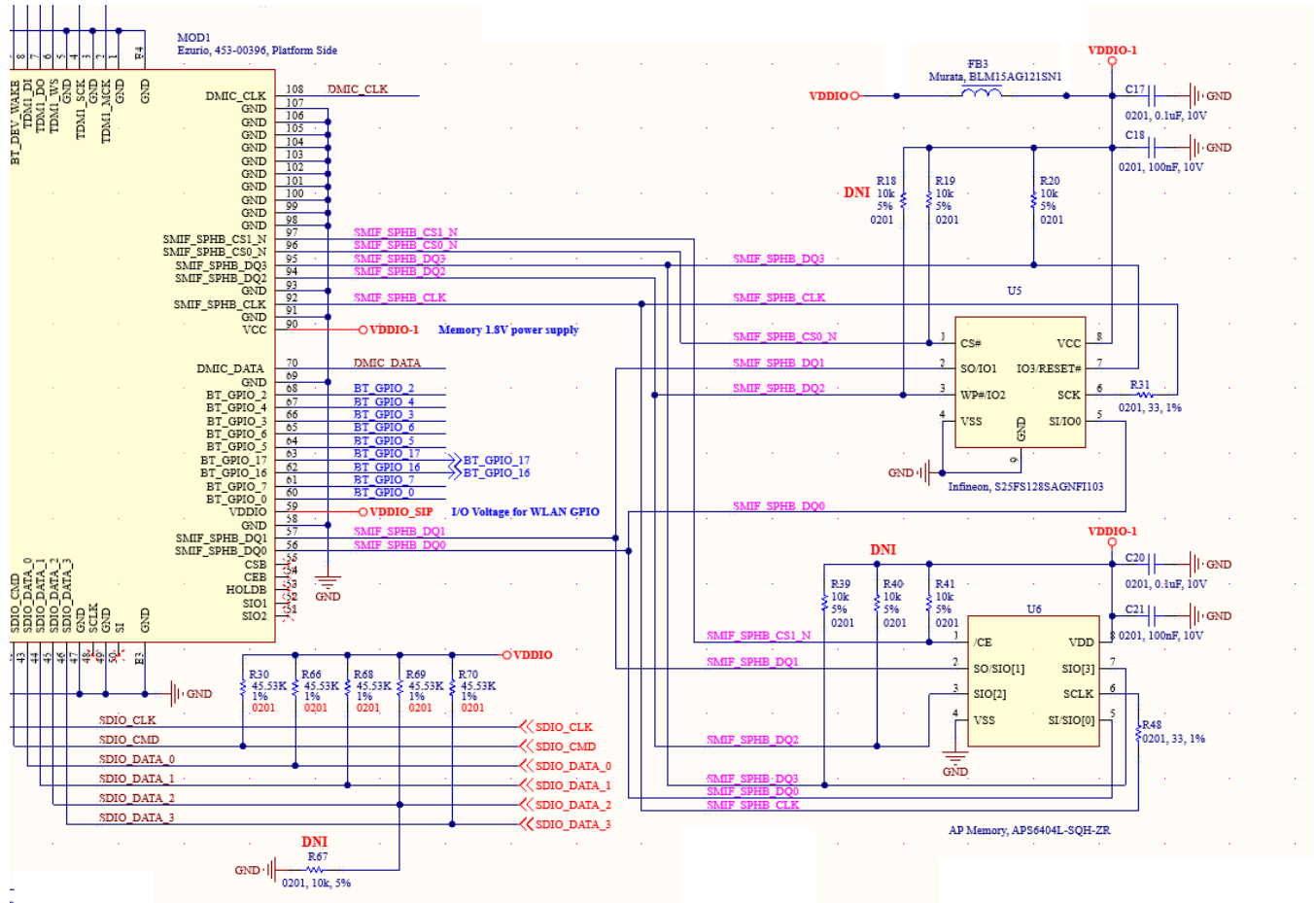
An Analog Switching Regulator (ASR or ABUCK) is built in the Veda IF913 module, the ABUCK output is brought out to pin-33 and pin-34. A L-C filter (2.2uH and 4.7uF) is required to filter out the switching noise before it feeds into ABUCK_1P12 (pin-26 and pin-27). Keep the 2.2uH and 4.7uF as close to Veda IF913 as possible to keep the current flow loop small as you can. Please refer to the Ezurio DVK for the detail placement and routing. Detail parts information is shown in below.

- 2.2uH: 74479276222C (Wurth Elektronik)
- 4.7uF: GRM188C71A475KE11# (Murata)



Serial Memory Interface (SMIF) Connection.

- For the Veda IF913 without embedded memory variant (453-00400R), user can add external memory (NOR Flash and PSRAM) to the SMIF. Example connections are shown below. **Note: VDDIO is limited to 1.8V.**



SDIO and gSPI strapping configuration

SDIO and gSPI in Veda IF913 are muxed together on the same pin out, please reference the pin definition table.

A strapping option pin **SDIO_DATA[2]** is used to configure between SDIO and gSPI. Default is in “H” state which is SDIO mode. Pull this pin to “L” will be set in gSPI mode.

7.1.1 SDIO mode

Veda IF913 provide support for SDIO V 3.0, including the new UHS-I modes:

- DS: Default speed (DS) up to 25 MHz, including 1 and 4-bit modes (**1.8 V signaling**)
- HS: High-speed up to 50 MHz (**1.8 V signaling**)
- SDR12: SDR up to 25 MHz (1.8 V signaling)
- SDR25: SDR up to 50 MHz (1.8 V signaling)
- SDR50: SDR up to 100 MHz (1.8 V signaling)
- DDR50: DDR up to 50 MHz (1.8 V signaling)

Notes: 1. The UHS-1 rate SDR104, that is part of the SDIO V 3.0 specification, is not supported.

2. Veda IF913 is backward compatible with SDIO V 2.0 host interfaces. Note however that it can only support 1.8 V signaling. It cannot support 3.3 V signaling during initialization post power cycle and in default/high speed SDIO V 2.0 modes. The host must use 1.8 V signaling.

According to the SDIO specification, pull-ups in the 10 kΩ to 100 kΩ range are required on the four DATA lines and the CMD line. This requirement must be met during all operating states either through the use of external pull-up resistors or through proper programming of the SDIO host's internal pull-ups.

7.1.2 gSPI mode

Veda IF913 has the option of using the simplified generic SPI (gSPI) interface/protocol.

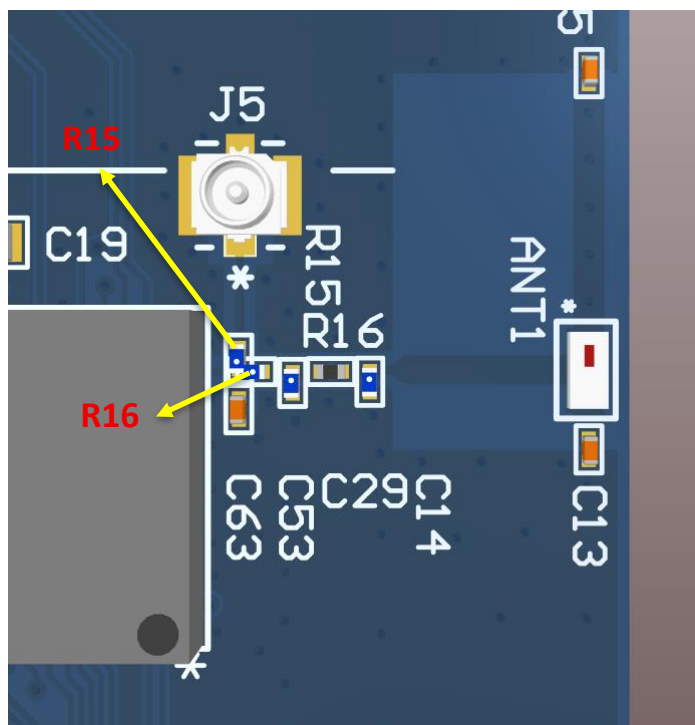
Characteristics of the gSPI mode include:

- Up to 50-MHz operation
- Fixed delays for responses and data from the device
- Alignment to host gSPI frames (16 or 32 bits)
- Up to 2-KB frame size per transfer
- Little-endian and big-endian configurations
- A configurable active edge for shifting
- Packet transfer for CCM/CP Traffic/Data Exchange

Note: gSPI mode is enabled using the strapping option pins

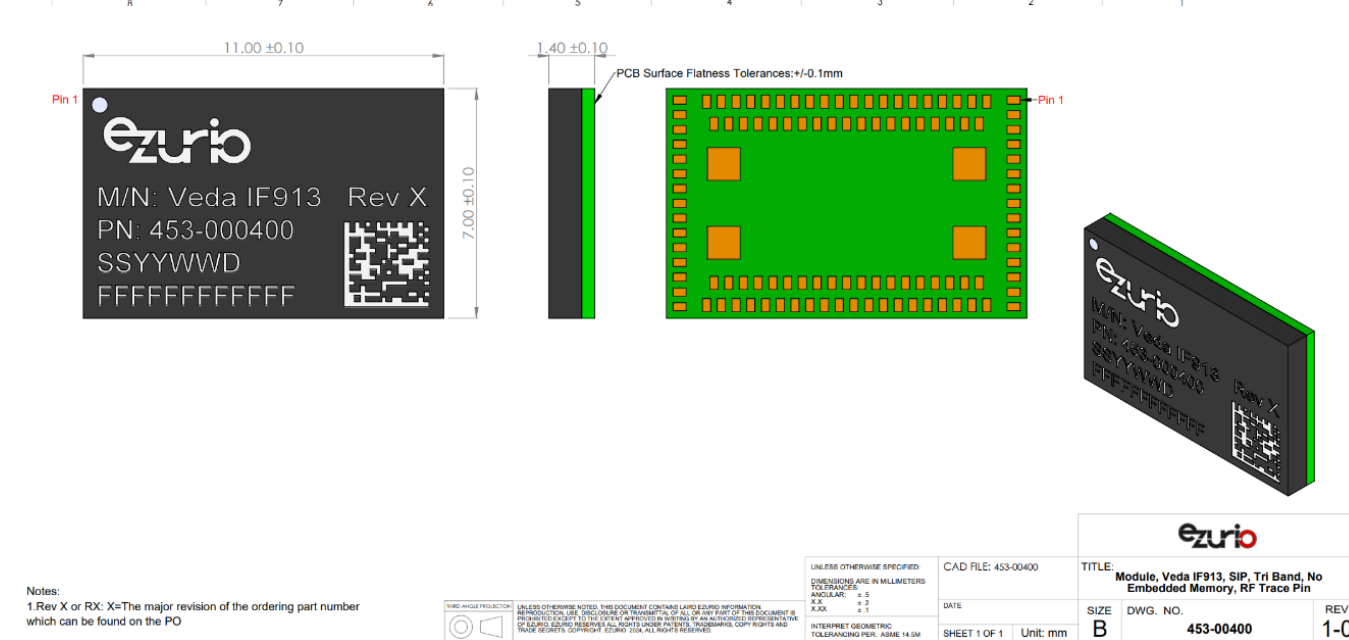
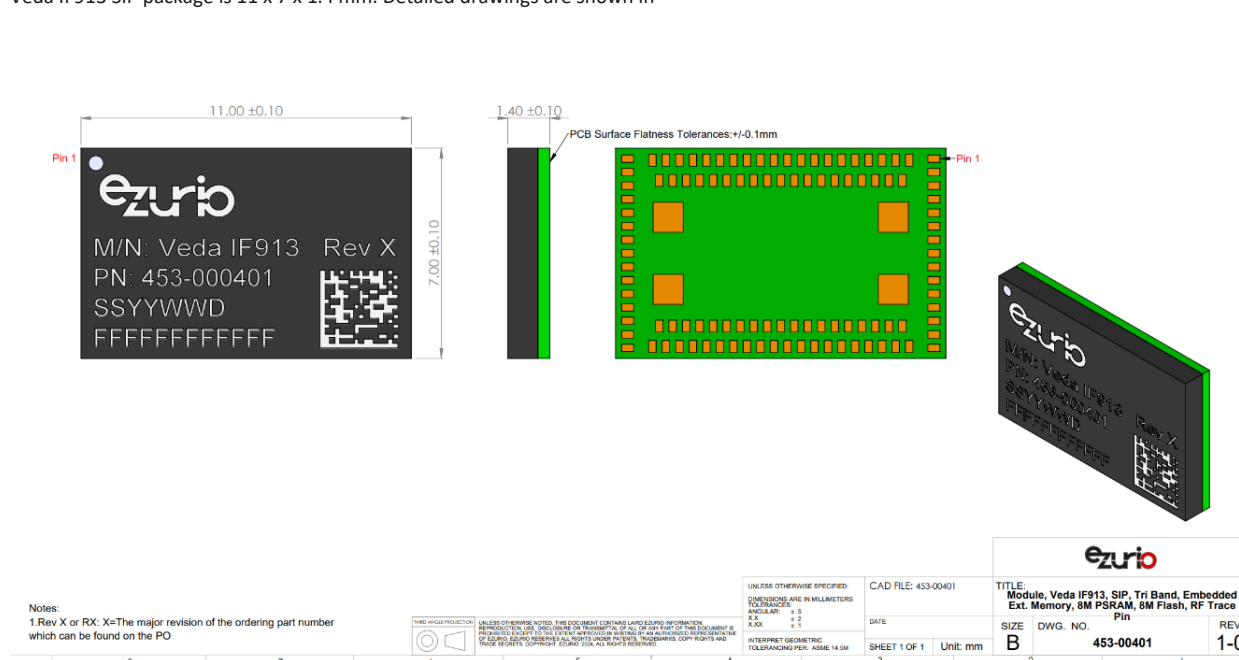
The Veda IF913 DVK design has two antenna connection options which are MHF4 and embedded PCB antenna. Pop on R15, users can get the RF signal out at MHF4 connector for external antenna. Pop on R16 will allow users to use the embedded PCB antenna.

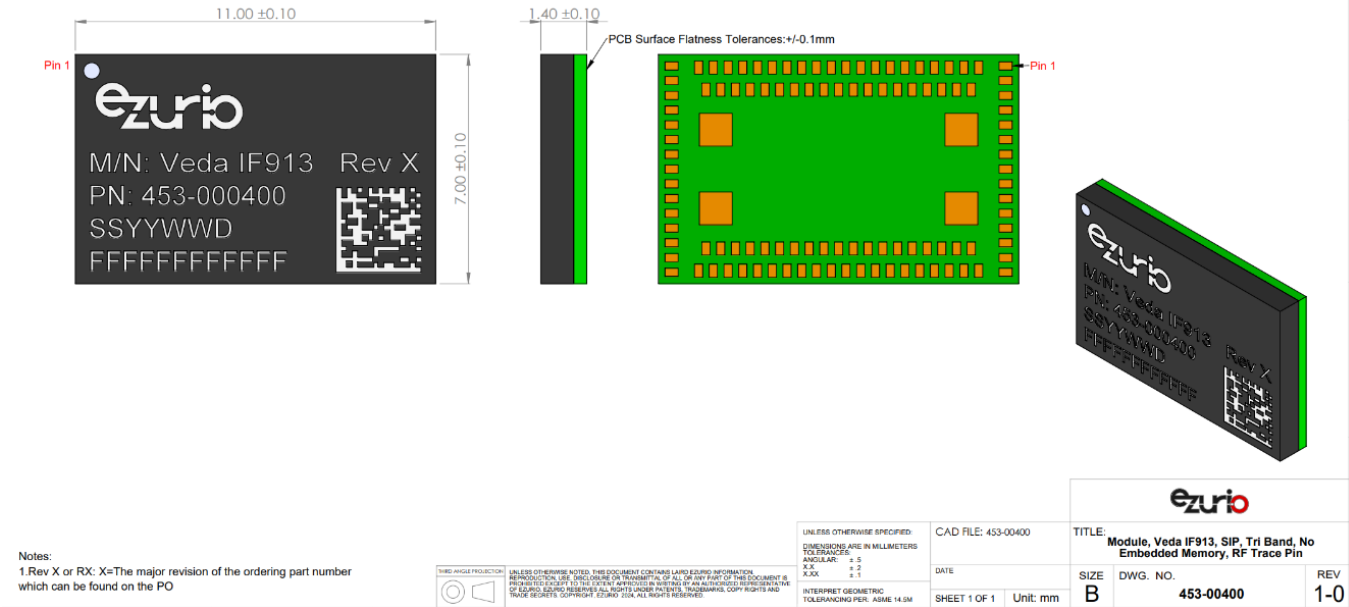
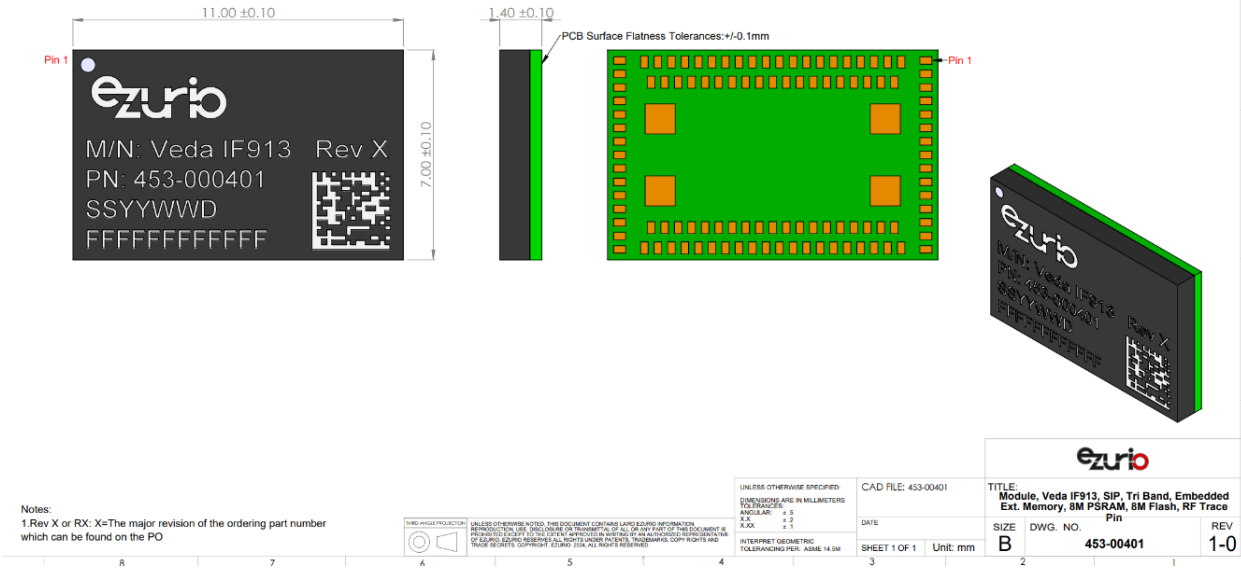
Please copy the components' location for the RF trace from the DVK to maintain the RF performance and adopt Ezurio certification grant.



9 Mechanical Specifications

Veda IF913 SIP package is 11 x 7 x 1.4 mm. Detailed drawings are shown in





10 Material handling information

Required Storage Conditions

10.1.1 Prior to Opening the Dry Packing

The following are required storage conditions **prior to opening the dry packing**:

- Normal temperature: 5~40°C
- Normal humidity: 80% (Relative humidity) or less
- Storage period: One year or less

Note: Humidity means relative humidity.

10.1.2 After Opening the Dry Packing

The following are required storage conditions **after opening the dry packing** (to prevent moisture absorption):

- Storage conditions for one-time soldering:
 - Temperature: 5-25°C
 - Humidity: 60% or less
 - Period: 72 hours or less after opening
- Storage conditions for two-time soldering
 - Storage conditions following opening and prior to performing the 1st reflow:
 - Temperature: 5-25°C
 - Humidity: 60% or less
 - Period: A hours or less after opening
 - Storage conditions following completion of the 1st reflow and prior to performing the 2nd reflow
 - Temperature: 5-25°C
 - Humidity: 60% or less
 - Period: B hours or less after completion of the 1st reflow

Note: Should keep A+B within 72 hours.

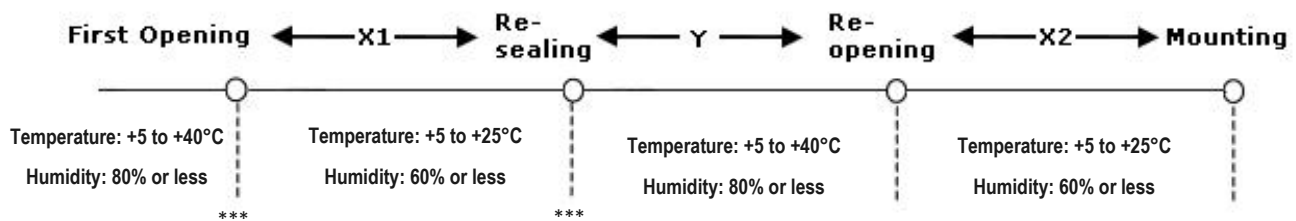
10.1.3 Temporary Storage Requirements after Opening

The following are temporary storage requirements after opening:

- Only re-store the devices once prior to soldering.
- Use a dry box or place desiccant (with a blue humidity indicator) with the devices and perform dry packing again using vacuumed heat-sealing.

The following indicate the required storage period, temperature, and humidity for this temporary storage:

- Storage temperature and humidity:



- Storage period:
 - X1+X2 – Refer to [Material handling information](#)
 - Required Storage Conditions. Keep is X1+X2 within 72 hours.
 - Y – Keep within two weeks or less.

Baking Conditions

Baking conditions and processes for the module follow the J-STD-033 standard which includes the following:

- The calculated shelf life in a sealed bag is 12 months at <40°C and <80% relative humidity.
- Once the packaging is opened, the SiP must be mounted (per **MSL4/Moisture Sensitivity Level 4**) within 72 hours at <30°C and <60% relative humidity.

If the SiP is not mounted within 72 hours or if, when the dry pack is opened, the humidity indicator card displays >10% humidity, then the product must be baked for 48 hours at 125 °C (±5 °C).

11 Surface Mount Conditions

The following soldering conditions are recommended to ensure device quality.

Recommended Stencil Aperture

TBD

Figure 2: Veda IF913 SIP stencil aperture

Note: The stencil thickness is 0.12mm.

Soldering profile

Note: When soldering, the stencil thickness should be 0.12 mm.

Convection reflow or IR/Convection reflow (one-time soldering or two-time soldering in air or nitrogen environment)

Measuring point – IC package surface

Temperature profile:

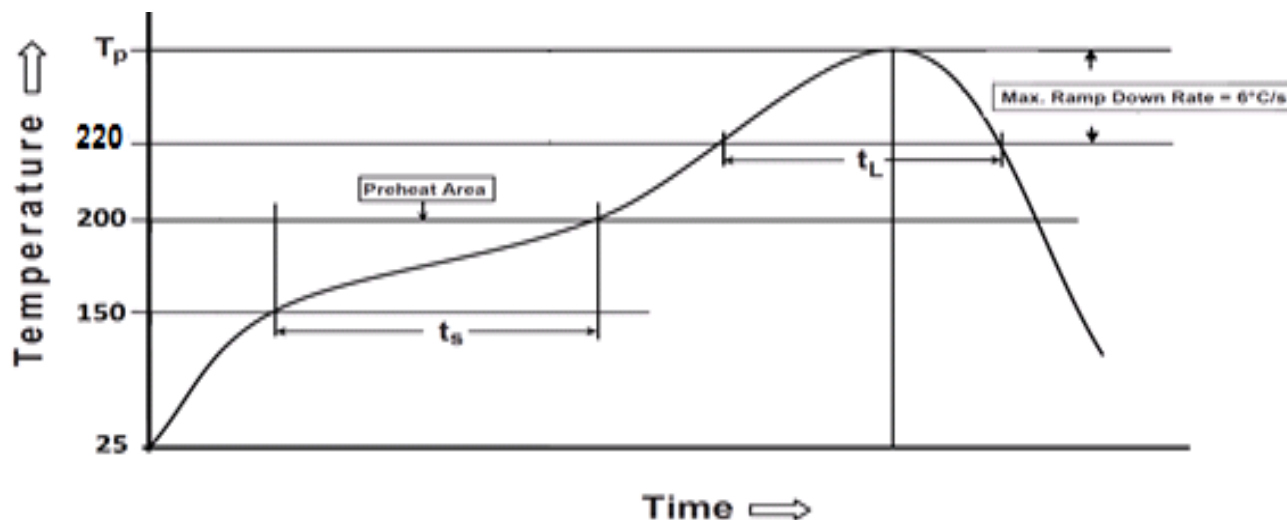


Figure 3: Temperature profile

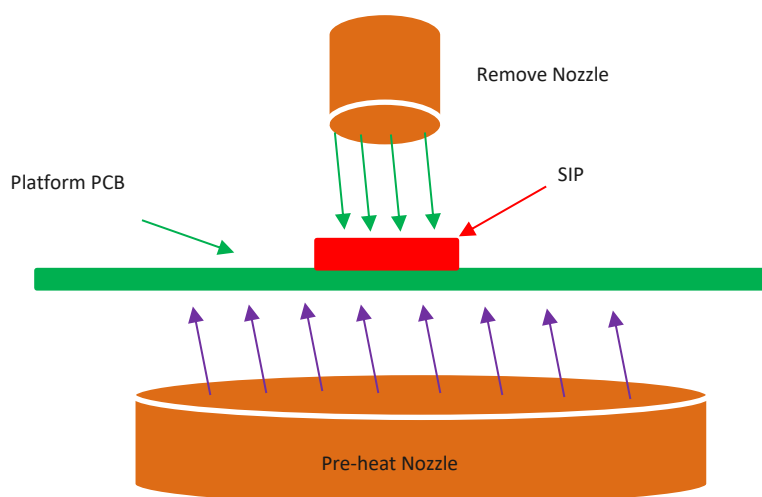
- Solder paste alloy: SAC305(Sn96.5 / Ag3.0 / Cu 0.5)
- Pre-heat temperature: 150°C ~ 200°C; Soak time: 60 second ~ 120 second
- Peak temperature: 235°C ~ 250°C
- Time above 220°C: 40 second ~ 90 second
- Optimal cooling rate < 3°C/second
- The oxygen concentration < 2000 ppm

12 Cautions When Removing the SIP from the Platform for RMA

- Bake the platform PCBA before removing the Veda IF913 module from the platform..
- Remove the Sona IF513 module by using a hot air gun. This process should be carried out by a skilled technician.

Recommended conditions:

- One-side component platform:
 - Set the hot plate at 280°C.
 - Put the platform on the hot plate for 8~10 seconds.
 - Remove the device from platform.
- Two-side components platform:
 - Use two hot air guns.
 - On the bottom, use a pre-heated nozzle (temp setting of 200~250°C) at a suitable distance from the platform PCB.
 - On the top, apply a remove nozzle (temp setting of 330°C). Heat until device can be removed from platform PCB.

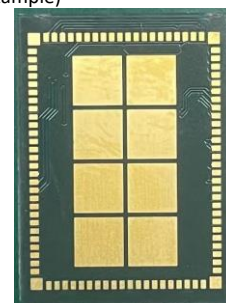


- Remove the residue solder under the bottom side of device. (Note: Alternate module pictured as an example)



(Not accepted for RMA)

Figure 4: Example module with residue solder on the bottom



(Accepted for RMA analysis)

Figure 5: module without residue solder

- Remove and clean the residue flux as needed.

12.1.1 Precautions for Use

- Opening/handling/removing must be done on an anti-ESD treated workbench. All workers must also have undergone anti-ESD treatment.
- The devices should be mounted within one year of the date of delivery.
- The Veda IF913 modules are MSL level 4 rated.

13 Certified Antennas

The Veda IF913 module was tested with antennas listed in the following table. The OEM can choose a different manufacturer's antenna but must make sure it is of same type and that the gain is less than or equal to the antenna that is approved for use.

Manufacturer	Model	Ezurio Part Number	Type	Connector	Peak Gain (dBi)		
					2.4GHz	5GHz	6GHz
Ezurio (formerly Laird Connectivity)	FlexMIMO 6E	EFD2471A3S-10MH4L	PIFA	MHF4L	2.2	3.8	3.3
Ezurio (formerly Laird Connectivity)	FlexPIFA 6E	EFB2471A3S-10MH4L	PIFA	MHF4L	2.2	3.9	3.8
Ezurio (formerly Laird Connectivity)	Mini NanoBlade Flex 6 GHz	EMF2471A3S-10MH4L	PCB Dipole	MHF4L	2.4	4.4	5.2
Joymax Electronics	Dipole 6E	TWX-100BRSAX-2001 / TWX-100BRS3B	Dipole	RP-SMA	2.0	4.0	4.0
Ezurio (formerly Laird Connectivity)	FlexPIFA Dual Band	001-0021	PIFA	IPEX MHF4L	2.5	3.0	3.0
Ezurio (formerly Laird Connectivity)	FlexPIFA Dual Band	EFB2455A3S-15MH4L	PIFA	MHF1	2.5	3.0	3.0
Yageo (Pulse)	ANT1608LL14R2460A		Chip Antenna		2.3	2.7	3.3

14 Regulatory

14.1 Federal Communication Commission Interference Statement

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the

following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to the US/CANADA.

Operation of this device is restricted to indoor use only

Transmitters in the 5.925-7.125 GHz band are prohibited from operating to control or communicate with unmanned aircraft systems.

Integration instructions for host product manufacturers

Applicable FCC rules to module

FCC Part 15.247

Summarize the specific operational use conditions

This device is intended only for OEM integrators under the following conditions:

- 1) The transmitter module may not be co-located with any other transmitter or antenna

As long as 1 condition above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization. The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Limited module procedures

Not applicable

Trace antenna designs

Not applicable

RF exposure considerations

20 cm separation distance and co-located issue shall be met as mentioned in "Summarize the specific operational use conditions".

Product manufacturer shall provide below text in end-product manual

"FCC Radiation Exposure Statement:

"This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body."

Antennas

Manufacture / Part Number	Type	Connector	2.4GHz	5GHz	6GH
Ezurio / FlexMIMO 6E	PIFA	MHF4L	2.2	3.8	3.3
Ezurio / FlexPIFA 6E	PIFA	MHF4L	2.2	3.9	3.8
Ezurio / Mini NanoBlade Flex 6GHz	PCB Dipole	MHF4L	2.4	4.4	5.2
Joymax Electronics / Dipole 6E	Dipole	RP-SMA	2	4	4
Ezurio / FlexPIFA Dual Band	PIFA	IPEX MHF4L	2.5	3	
Ezurio / FlexPIFA Dual Band	PIFA	MHF1	2.5	3	
Yageo / Chip Antenna	Chip	NA	2.3	0.1	2.7

Label and Compliance Information

Product manufacturers need to provide a physical or e-label stating

“Contains FCC ID: **SQG-VEDAIF913**” with finished product

Information on Test Modes and Additional Testing Requirements

Wi-Fi Test tool: **GNOME Terminal**, Version: **3.52.0** / BT Test tool: **AIROC**, Version: **1.2.0.2890** shall be used to set the module to transmit continuously.

Additional Testing, Part 15 Subpart B Disclaimer

The module is only FCC authorized for the specific rule parts listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed

14.2 Industry Canada statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with 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 interference
- (2) This device must accept any interference, including interference that may cause undesired operation of the device

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.

Radiation Exposure Statement:

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

Devices shall not be used for control of or communications with unmanned aircraft systems.

Devices shall not be used on oil platforms.

Devices shall not be used on aircraft, except for the low-power indoor access points, indoor subordinate devices, low-power client devices, and very low-power devices operating in the 5925-6425 MHz band, that may be used on large aircraft as defined in the Canadian Aviation Regulations, while flying above 3,048 meters (10,000 feet).

Devices shall not be used on automobiles.

Devices shall not be used on trains.

Devices shall not be used on maritime vessels.

Les dispositifs ne doivent pas être utilisés pour commander des systèmes d'aéronef sans pilote ni pour communiquer avec de tels systèmes;

Les dispositifs ne doivent pas être utilisés sur les plateformes de forage pétrolier;

Les dispositifs ne doivent pas être utilisés dans les aéronefs, à l'exception des points d'accès intérieurs de faible puissance, des dispositifs subordonnés intérieurs, des dispositifs clients de faible puissance et des dispositifs de très faible puissance fonctionnant dans la bande de 5 925 à 6 425 MHz, qui peuvent être utilisés dans les gros aéronefs tel qu'il est défini dans le Règlement de l'aviation canadien, et ce, lorsqu'ils volent à une altitude supérieure à 3 048 mètres (10 000 pieds).

Les dispositifs ne doivent pas être utilisés dans les automobiles;

Les dispositifs ne doivent pas être utilisés dans les trains;

Les dispositifs ne doivent pas être utilisés sur les navires maritimes.

This device is intended only for OEM integrators under the following conditions:

1) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 1 condition above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes:

1) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les 1 condition ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

IMPORTANT NOTE:

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

NOTE IMPORTANTE:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

End Product Labeling

The final end product must be labeled in a visible area with the following: "Contains IC:3147A-VEDAIF913".

Plaque signalétique du produit final

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 3147A-VEDAIF913".

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

This radio transmitter [IC: 3147A-VEDAIF913 has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Le présent émetteur radio [IC: 3147A-VEDAIF913] a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

Antennas

Manufacture / Part Number	Type	Connector	2.4GHz	5GHz	6GH
Ezurio / FlexMIMO 6E	PIFA	MHF4L	2.2	3.8	3.3
Ezurio / FlexPIFA 6E	PIFA	MHF4L	2.2	3.9	3.8
Ezurio / Mini NanoBlade Flex 6GHz	PCB Dipole	MHF4L	2.4	4.4	5.2
Joymax Electronics / Dipole 6E	Dipole	RP-SMA	2	4	4
Ezurio / FlexPIFA Dual Band	PIFA	IPEX MHF4L	2.5	3	
Ezurio / FlexPIFA Dual Band	PIFA	MHF1	2.5	3	
Yageo / Chip Antenna	Chip	NA	2.3	0.1	2.7

14.3 EU & UKCA Declaration of Conformity

This device complies with the essential requirements of the Radio Equipment directive: 2014 / 53 / EU and Radio Equipment Regulations 2017 (SI 2017/1206). The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the Radio Equipment directive: 2014 / 53 / EU and the Radio Equipment Regulations 2017(SI 2017/1206):

Radio Equipment directive: 2014 / 53 / EU	Radio Equipment Regulations 2017(SI 2017/1206)
EN 300 328 v2.2.2	EN 300 328 v2.2.2
EN 301 893 V2.2.1	EN 301 893 V2.2.1
ETSI EN 303 687 V1.1.1	ETSI EN 303 687 V1.1.1
EN IEC 62311:2020	BS EN IEC 62311:2020
EN 50385: 2017	BS EN 50385: 2017
EN 50665: 2017	BS EN 50665: 2017
EN 301 489-1 V2.2.3	EN 301 489-1 V2.2.3
EN 301 489-17 V3.3.1	EN 301 489-17 V3.3.1
EN IEC 62368-1:2020+A11:2020+AC:2020-05	BS EN IEC 62368-1:2020+A11:2020

Wi-Fi Power

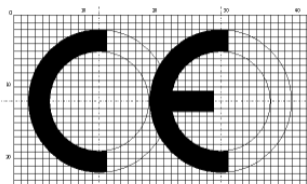
Freq. range	Power
BT	10 dBm
2400MHz ~ 2483.5MHz	20 dBm
5150MHz ~ 5250MHz	22 dBm
5250MHz ~ 5350MHz	22 dBm
5470MHz ~ 5725MHz	22 dBm
5725 MHz ~5850MHz	21 dBm
5925MHz ~ 6425MHz	21 dBm

SW version: 6.12.72

RF exposure statement

The minimum distance between the user and/or any bystander and the radiating structure of the transmitter is 20cm.

5150 ~ 5350 MHz is limited to indoor used in below countries.



Option1

		
BE	BG	CZ
DK	DE	EE
IE	EL	ES
FR	HR	IT
CY	LV	LT
LU	HU	MT
NL	AT	PL
PT	RO	SI
SK	FI	SE
UK(NI)	LI	IS
NO	TR	CH

Option 2

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR
	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT
	RO	SI	SK	FI	SE	UK(NI)	LI	IS	NO	TR	CH

UK
CA


UK

15 Additional Information

Please contact your local sales representative or our support team for further assistance:

Headquarters	Ezurio 50 S. Main St. Suite 1100 Akron, OH 44308 USA
Website	www.ezurio.com/
Technical Support	www.ezurio.com/resources/support
Sales Contact	www.ezurio.com/contact

Note: Information contained in this document is subject to change.

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