

Talaria TWO™ Module Datasheet

VERSION 3.1

INP1010

INP1011

INP1012

INP1013

Ultra-Low Power Wi-Fi 802.11 b/g/n

BLE 5.0 Plus Advanced Features & Long-Range

Arm Cortex-M3 MCU

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2 Overview

The INP1010/INP1011/INP1012/INP1013 Talaria TWO modules are complete solutions with integrated wireless connectivity plus microcontroller for edge-of-network IoT designs. They use InnoPhase's award-winning Talaria TWO™ Multi-Protocol System on Chip (SoC) with Wi-Fi and BLE5 for wireless data transfer, an embedded Arm Cortex-M3 for system control and user applications plus advanced security elements for device safeguards.

The Talaria TWO's unique digital polar radio architecture makes the modules the world's lowest power Wi-Fi solutions. It also provides BLE connectivity for Wi-Fi provisioning, diagnostics and other local communication. The integrated solution is ideally suited for battery-based, direct-to-cloud devices such as smart door locks, remote security cameras and connected sensors.

The Talaria TWO modules have either a printed PCB antenna (INP1010), a U.FL antenna connector (INP1011), an RF pin connector (INP1012), or a ceramic antenna (INP1013). The modules will include Wi-Fi Alliance, Bluetooth SIG, FCC, IC (Canada), and CE testing and certification (check with InnoPhase for status and additional certifications). Each module has an associated EVB-A evaluation board (INP3010/INP3011/INP3012/INP3013 respectively) – see the Talaria TWO EVB-A User Guide available at innophaseinc.com/talaria-two-modules for more information.

2.1 Module Images



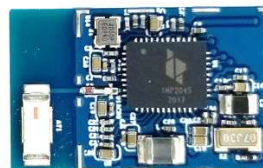
INP1010
(w/ PCB Antenna)



INP1011
(w/ U.FL Connector)

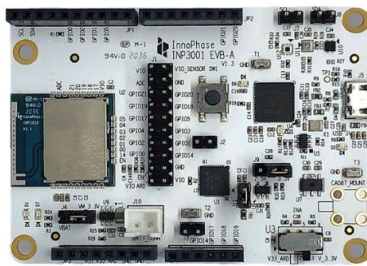


INP1012
(w/ RF Pad)



INP1013
(w/ Ceramic Antenna)

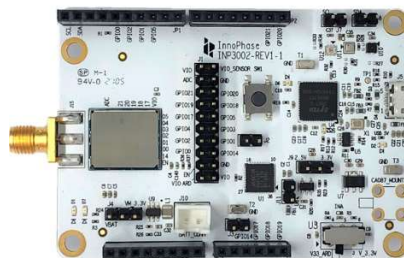
2.2 Evaluation Board Images



INP3010
(Includes INP1010 Module
w/ PCB Antenna)



INP3011
(Includes INP1011 Module
w/ U.FL Connector)



INP3012
(Includes INP1012 Module
w/ RF Pad)



INP3013
(Includes INP1013 Module
w/ Ceramic Chip Antenna)

3 Key Features

- Ultra-low power 2.4GHz 802.11 b/g/n Wi-Fi connectivity
- DTIM10 at 57uA enables Wi-Fi connected battery-based applications
- Full stack including MQTT, mbedTLS for supporting IoT Direct-to-Cloud for a variety of cloud services (AWS, Azure, Google Cloud, IBM Watson, etc.)
- BLE5.0 w/ Advanced Features LE Coding/FEC (Long-Range), 2M PHY, Extended Advertising
- Supports Wi-Fi Provisioning over BLE and local device management, plus BLE to Wi-Fi bridging
- Bluetooth GATT/GAP Profile support, and HCI interface option for host MCU-based BLE profile stacks
- Advanced security features including Secure Boot, PUF (Physically Unclonable Function) and hardware Crypto Engines
- Embedded 80MHz Arm Cortex-M3 w/ 512KB SRAM and 2MB Flash
- Host Interface over SPI or UART using InnoPhase HIO API (HAPI) C library or AT Commands
- Eleven (11) configurable GPIO plus Tx Console port (on GPIO17)
- Dedicated ADC Input pin
- Integrated clocks and power management – only a single 3.3V supply needed
- PCB antenna, U.FL antenna connector, RF Pin and ceramic antenna options

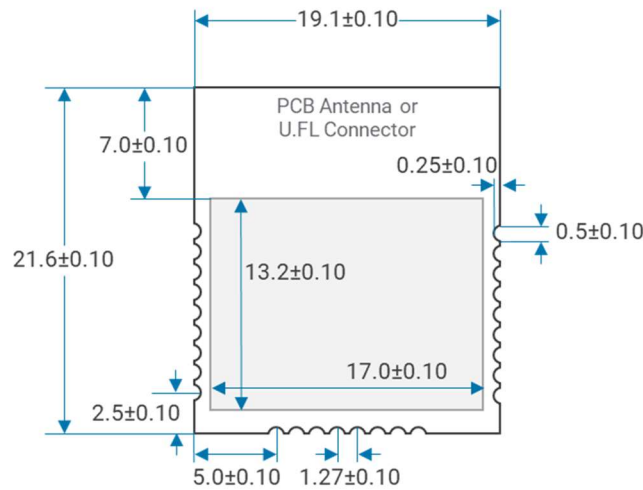
4 Part Numbers

Manufacturer Part Number	Ordering Part Number	Description
INP1010	INP1010-A1-ITP	Talaria TWO module, PCB Antenna, tray packing
INP1011	INP1011-A2-ITP	Talaria TWO module, U.FL Antenna Connector, tray packing
INP1012	INP1012-A1-ITP	Talaria TWO mini-module, RF Pin Antenna Connector, tray packing
INP1013	INP1013-A1-ITP	Talaria TWO mini-module, Ceramic Antenna, tray packing
INP3010	INP3010-A2	Evaluation Board (EVB-A) w/ INP1010 module, PCB Antenna (see separate User Guide for Talaria TWO EVB-A Evaluation Board for more information at innophaseinc.com/talaria-two-modules#doc)
INP3011	INP3011-A2	Evaluation Board (EVB-A) w/ INP1011 module, U.FL Antenna Connector (see separate User Guide for Talaria TWO EVB-A Evaluation Board for more information at innophaseinc.com/talaria-two-modules#doc)
INP3012	INP3012-A1	Evaluation Board (EVB-A) w/ INP1012 module, RF Pin Antenna Connector (see separate User Guide for Talaria TWO EVB-A Evaluation Board for more information at innophaseinc.com/talaria-two-modules#doc)
INP3013	INP3013-A1	Evaluation Board (EVB-A) w/ INP1013 module, Ceramic Antenna (see separate User Guide for Talaria TWO EVB-A Evaluation Board for more information at innophaseinc.com/talaria-two-modules#doc)

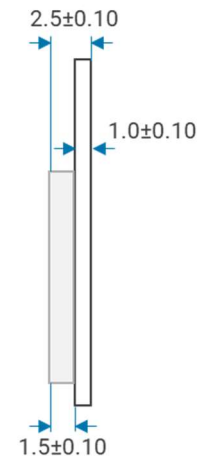
5 Module Dimensions

5.1 INP1010 and INP1011

Units in mm



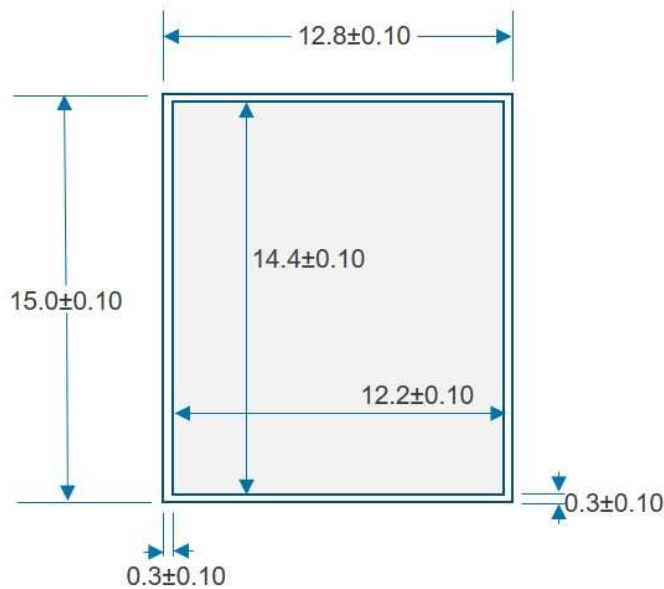
Top View



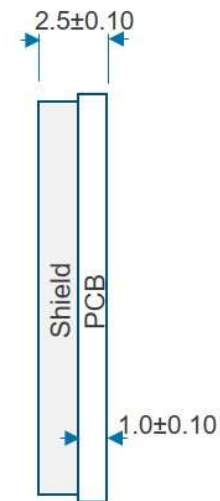
Side View

5.2 INP1012

Units in mm



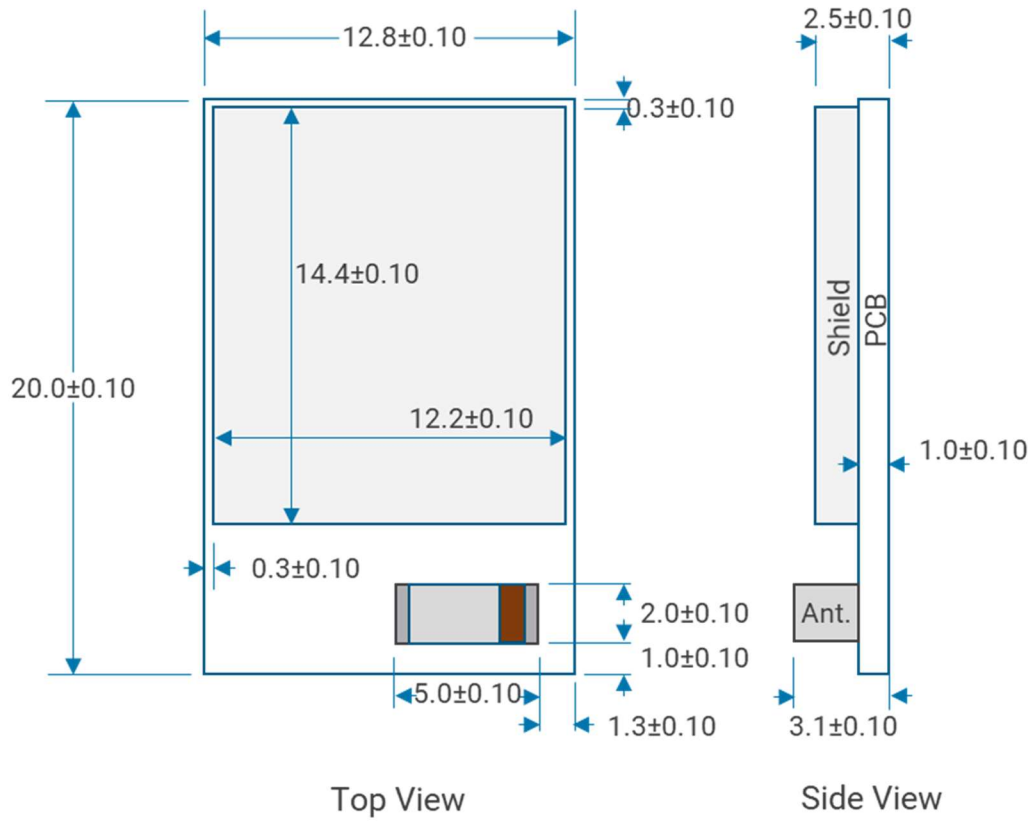
Top View



Side View

5.3 INP1013

Units in mm



6 Absolute Maximum Ratings

Parameter		Min.	Max.	Unit
Storage Temperature		-40	+125	°C
Supply Voltages	V_3.3V	-0.3	4.0	V
RF Signal Input (INP1011 Module Only)		--	+10	dBm

7 Storage Conditions

Product is applicable to MSL3 based on JEDEC Standard J-STD-020. Product should be used within 12 months after receipt. If used after 12 months the solderability should be confirmed. After the packing is opened, the product shall be stored at <30deg.C / <60%RH and the product shall be used within 168 hours, after this timeframe the product should be baked at 125°C for 24 hours. The products shall be baked on the heat-resistant tray as the shipment tray is not a heat-resistant, bakeable tray.

8 Operating Conditions

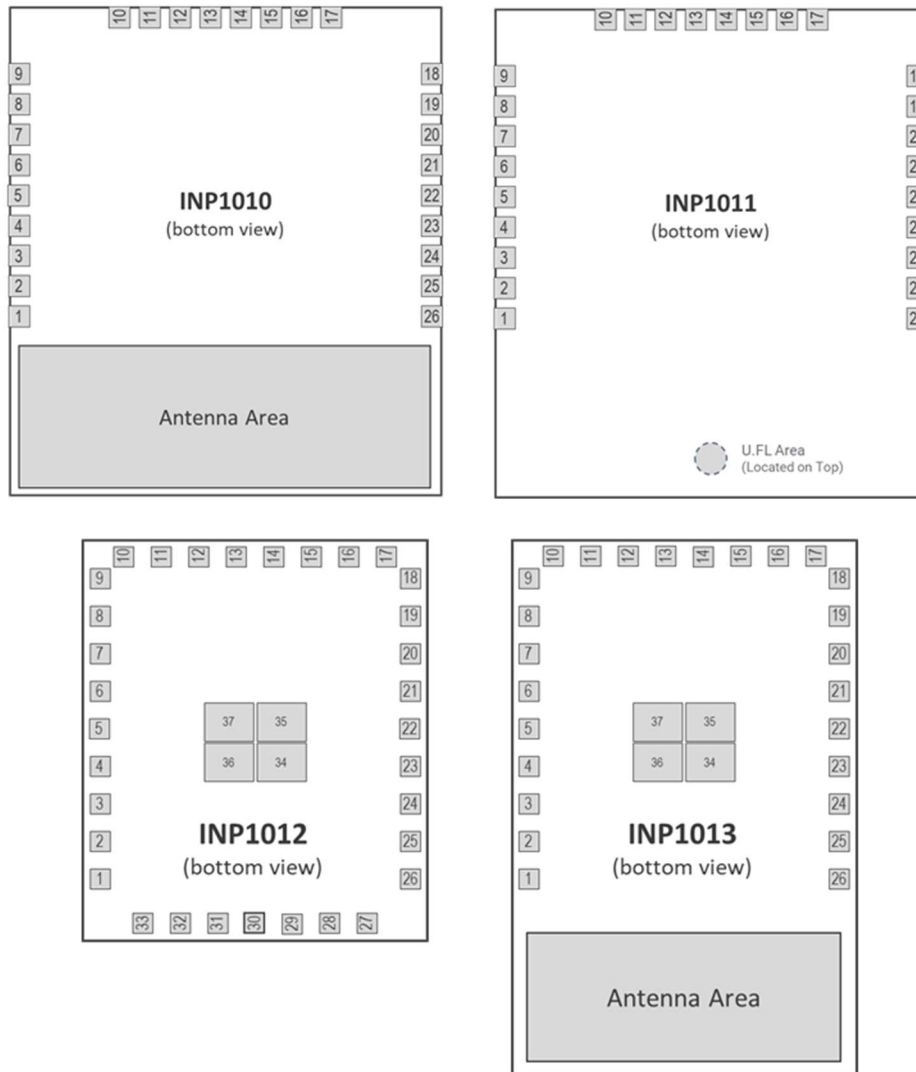
Parameter		Min.	Typical	Max.	Unit
Operating Temperature		-40	25	+85	°C
Input Supply Voltage Range	V_3.3V	2.6	--	3.6	V
Input Supply Specification Voltage Range ¹	V_3.3V _{op}	3.0		3.6	V
Input Supply Current (Tx Mode)	I _{V_3.3V}	--	190	300	mA
VDDIO Voltage ²	VDDIO	2.5	--	3.0 ³	V

Note 1: recommended operational voltage range

Note 2: reference voltage only, not to be used as a power supply for external devices, configurable to either 2.5V or 3.0V

Note 3: Input Supply Voltage (V_3.3V) level must be $\geq 3.15V$ to achieve maximum 3.0V VDDIO voltage

9 Module Pinouts



Note: Not to Scale

PIN TABLE	GND	GND (RF)	RFIO (Ant.)	V_3.3V	EN_CHIP	VDDIO	ADC_IN	GPIO14	GPIO0	GPIO1	GPIO2	GPIO3	GPIO4	GPIO5	GPIO17	GPIO18	GPIO19	GPIO20	GPIO21
INP1010	1,4,5,6,7,8,9,24,26	N/A	N/A	2,3	10	18	25	11	12	13	14	15	16	17	19	20	21	22	23
INP1011		N/A	N/A																
INP1012	1,4,5,6,7,8,9,24,26,34,35,36,37	27,28,29,31,32,33	30																
INP1013		N/A	N/A																

10 GPIO Specifications & Requirements

10.1 Digital I/O Specifications

Parameter	Symbol	Min.	Typical	Max.	Unit
Pull-Up Resistance (All GPIO except GPIO18)	R_{PU}	--	51	--	k Ω
Pull-Down Resistance (Only GPIO18, for JTAG TCK)	R_{PD}	--	51	--	k Ω
Pin Capacitance	C_{IN}		1.7		pF
$V_{3.3V} = 3.3V, V_{DDIO} = 2.5V, 25^{\circ}C$					
High Level Input Voltage	V_{IH}	2.0	--	3.6	V
Low Level Input Voltage	V_{IL}	-0.3	--	0.8	V
High Level Input Current	I_{IH}	--	2.0	--	nA
Low Level Input Current	I_{IL}	--	2.0	--	nA
High Level Output Voltage	V_{OH}	2.3	--	--	V
Low Level Output Voltage	V_{OL}	--	0.2	0.4	V
High Level Source Current	I_{OH}	--	8	--	mA
High Level Source Current, High Drive	I_{OH-HD}	--	10	--	mA
Low Level Sink Current	I_{OL}	--	7	--	mA
Low Level Sink Current, High Drive	I_{OL-HD}	--	9	--	mA

10.2 Peripheral Signal Mapping

Interface	Signal	GPIO0	GPIO1	GPIO2	GPIO3	GPIO4	GPIO5	GPIO14	GPIO17	GPIO18 ²	GPIO19	GPIO20	GPIO21
UART	RXD			●									
	TXD		●										
	CTS												
	RTS												
Console	TX								●				
SPI Slave	CLK	●											
	CS						●						
	MOSI		●										
	MISO			●									
SPI Master (Software)	CLK												
	CS												
	MOSI												
	MISO												
GPIO ¹	GPIO												
PWM	PWM_0												
	PWM_1												
	PWM_2												
	PWM_3												
JTAG / SWD	TCK / SWCLK									●			
	TMS / SWDIO										●		
	TDI											●	
	TDO / SWO												●
I2C	SCL												
	SDA												
I2S	SCK												
	WS												
	SD												

Notes:

● = Default Power-Up GPIO

■ = Function Supported on GPIO

■ = Required for factory production firmware loading in-situ. These should be connected to Host MCU or a header/connector to factory test/PC equipment. For UART with flow control also use GPIO0 and GPIO5. For higher speed factory programming the SPI connection is GPIO0, GPIO1, GPIO2, GPIO5

Note 1: any GPIO can be used for wakeup (interrupt) and can drive high current loads such as LEDs. GPIO must be set to LOW during sleep mode for lowest power consumption.

Note 2: requires external pull-up resistor (only an internal pull-down is available)

11 Peripheral Interface Specifications & Timing Diagrams

11.1 UART

The Talaria TWO modules include one (1) UART controller. All signals, RXD, TXD, CTS and RTS, can be individually programmed for use on any GPIO. The power-up default pins for TXD is GPIO1 and RXD is GPIO2.

UART Specification	Details
Maximum Baud Rate	2560000
Minimum Baud Rate	300
Default Baud Rate	921600

11.2 Console UART

Default pin is set to GPIO17, but it can be programmed to any GPIO. Unidirectional Tx only from Talaria TWO for debug purposes.

Console UART Specification	Details
Default Baud Rate	2457600

11.3 SPI Slave

The Talaria TWO modules include one (1) SPI Slave interface. All signals are fixed to specific pins where CLK is GPIO0, MOSI is GPIO1, MISO is GPIO2 and CS is GPIO5. It is not possible to reassign the signals to different GPIOs.

SPI Slave Specification	Details
Maximum Clock Frequency	25MHz
Clock Polarity and Phase Modes Supported	Mode 0 (CPOL=0, CPHA=0) Mode 3 (CPOL=1, CPHA=1)
Data In/Out Sequence	MSB First
Other Features	Dual SPI Mode Capable Read Status Reset

11.4 SPI Master (Software Implementation)

The Talaria TWO modules supports one (1) SPI Master interface in a software implementation. 4-wire implementation using CLK, MOSI, MISO, and CS. It is possible to assign the signals to any GPIOs (except for GPIO18).

SPI Master Specification	Details
Maximum Clock Frequency	8MHz
Clock Polarity and Phase Modes Supported	Mode 0 (CPOL=0, CPHA=0) -OR- Mode 3 (CPOL=1, CPHA=1)
Data In/Out Sequence	MSB or LSB First

11.5 I2C

The Talaria TWO modules include one (1) I2C bus interface that can serve as an I2C master or slave. The SCL and SDA lines can be individually programmed for use on any GPIO. Internal pull-up resistors are available for SCL/SDA on all GPIOs except for GPIO18 (GPIO18 only has internal pull-down resistors).

I2C Specification	Details
Data Rates	100Kbps, 400Kbps, 1Mbps
Address Modes	7-bit, 10-bit
Other Features	Send STOP at End NOSTART Before Msg IGNORE NAK From Slave

11.6 I2S

The Talaria TWO modules include one (1) I2S interface that can serve as an I2S master or slave. It is only capable of transmitting data – it cannot receive I2S data. The SCK, WS and SD lines can be individually programmed for use on any GPIO.

I2S Specification	Details
Audio Formats Support	Up to HD Audio, Dual Channel Stereo (2x 16-bit @ 48kHz)

11.7 PWM

The Talaria TWO modules include four (4) PWM timers which can be programmed for use on any GPIO.

PWM Specification	Details
Base Frequency	160MHz
Duty Rate Range	0% to 100%
Pulse Alignment	Left Aligned
Other	Audio Capable

11.8 JTAG/SWD

Compliant with ARM JTAG/SWD standards for debug purposes.

12 Analog to Digital Converter (ADC) Specifications

The Talaria TWO modules have a 10-bit effective SAR ADC for measuring the internal supply voltage and temperature levels in addition to measuring an external voltage level through a specified ADC port. The ADC has configuration settings for sampling rate and results averaging.

ADC Specification	Details	Unit
ADC Input Channels	VBAT, TEMP, EXT	--
Sampling Rates	5, 10, 20, 40	MSPS
Results Averaging	2, 4, 8, 16	# of Samples
External Voltage Input Range	0 to 1.0	V
Additional Delay for ADC Ready after Wakeup	5	μs

13 Wi-Fi Features

Wi-Fi Features	Details
Wi-Fi Standards Supported	802.11 b/g/n (2.4GHz Single-Band)
Wi-Fi Modes	Station Mode, AP Mode
Number of TCP/UDP Sockets	4-16 ¹
Number of Concurrent SSL Connections	2-4 ¹
Wi-Fi Security	WPA2, WPA3, WPA2 Enterprise
Application Security	TLS1.2

Note 1: depends on memory allocations/configurations

[In Planning/Development](#)

14 BLE Features

BLE Features	Details
BLE Standard Supported	BLE5.0
BLE Modes	Central, Peripheral
BLE Advanced Features Supported	LE Coding/FEC (Long-Range) 2Mbps PHY Extended Advertising
PHY Rates Supported	2Mbps, 1Mbps, 512kbps, 125kbps
Connection Roles	GAP Peripheral or Central
Generic Attribute Profile Roles	GATT Client or Server
Number of Concurrent Sessions	4/8 ¹
Command Interface	HCI over SPI/UART
Security	AES-128CCM

Note 1: depends on memory allocations/configurations

15 Advanced Security Elements

15.1 Hardware Crypto Engines

Category	Details
Block Modes	Counter, GF, OFB, ECB, CBC-MAC, CBC-ENC, CBC-DEC, XEX
Block Cores (encryption)	AES (128/256), DES, TDES, SMS4, GF
Stream Cores (Hashing)	RC4, Michael, CRC32, SHA-1/256

15.2 Additional Hardware Security Capabilities

Additional hardware security capabilities include:

- DMA: Linear, Circular and Descriptor based transfer options
- E-Fuse Disable JTAG
- PUF/Secure Vault – Key/certificate, pass phrase, and application data storage, based on SoC Fingerprint

15.3 Software Security Features

Category	Details
uECC APIs	<ul style="list-style-type: none"> • Supports ECDH and ECDSA • Key generation, sign and verify functions • Secure Boot and FOTA signed ELF
Cipher APIs	<ul style="list-style-type: none"> • Wrapper to Cipher Hardware • Tight integration with DMA for effortless encryption/decryption
DMA APIs	<ul style="list-style-type: none"> • Automatic encryption/decryption of data without CPU involvement • Comprehensive modes to support various application needs

16 DC & RF Characteristics

16.1 General DC Characteristics

Specification	Details	Unit	
Wi-Fi Idle Connected	DTIM = 1	414	μA
PS-Polling (3.3V, 802.11b, 1Mbps, Clean RF Environment)	DTIM = 3	151	μA
	DTIM = 5	97	μA
	DTIM = 10	57	μA
Sleep Current ¹	11-19 ²		μA
Shutdown Current (EN_CHIP Low)	<< 1		μA
EN_CHIP/RST Reset Voltage ³	0.6		V

Note 1: RTC operating, memory retained, 3.3V supply, GPIO must be set to LOW

Note 2: Depends on amount of SRAM memory retained

Note 3: EN_CHIP/RST must be held below 0.6V to reset device

16.2 DC & RF Characteristics Wi-Fi 802.11b 2.4GHz

Specification	IEEE802.11b			
Mode	DSSS / CCK			
Channel Frequency	2412 - 2472MHz			
Data Rates	1, 2, 5.5, 11Mbps			
<u>Conditions:</u> 25C, V_3.3V = 3.3V, VDDIO = 2.5V 1Mbps unless stated otherwise				
DC Characteristics	Min.	Typical	Max.	Unit
Tx Current (@ 17.5dBm)	--	178	--	mA
Rx Current	--	31	--	mA
Tx Characteristics	Min.	Typical	Max.	Unit
Output Power	--	17.5	--	dBm
Spectral Mask Margin				
First Side Lobe	0	2	--	dB
Second Side Lobe	0	2	--	dB
Error Vector Magnitude (EVM)	--	-22.4	--	dB
Out-of-Band Spurious Emissions				
30MHz – 1.00GHz (RBW = 100kHz)	--	--	-41	dBm/MHz
1.0GHz – 12.75GHz (RBW = 1MHz)	--	--	-41	dBm/MHz
Rx Characteristics	Min.	Typical	Max.	Unit
Rx Input Level Sensitivity				
DSSS, 1Mbps	--	-96	--	dBm
Adjacent Channel Rejection				
DSSS, 1Mbps	35	--	--	dB

16.3 DC & RF Characteristics Wi-Fi 802.11g 2.4GHz

Specification	IEEE802.11g			
Mode	OFDM			
Channel Frequency	2412 - 2472MHz			
Data Rates	6, 9, 12, 18, 24, 36, 48, 54Mbps			
Conditions: 25C, V _{3.3V} = 3.3V, VDDIO = 2.5V 6Mbps unless stated otherwise				
DC Characteristics	Min.	Typical	Max.	Unit
Tx Current (6Mbps @ 15.5dBm)	--	134	--	mA
Tx Current (54Mbps @ 15.5dBm)	--	100	--	mA
Rx Current (6Mbps)	--	34	--	mA
Rx Current (54Mbps)	--	35	--	mA
Tx Characteristics	Min.	Typical	Max.	Unit
Output Power	--	15.5	--	dBm
Spectral Mask Margin				
±9dB MHz Offset	0	5	--	dB
±11dB MHz Offset	0	5	--	dB
±20dB MHz Offset	0	5	--	dB
±30dB MHz Offset	0	5	--	dB
Error Vector Magnitude (EVM)	--	-25.7	--	dB
Out-of-Band Spurious Emissions				
30MHz – 1.00GHz (RBW = 100kHz)	--	--	-41	dBm/MHz
1.0GHz – 12.75GHz (RBW = 1MHz)	--	--	-41	dBm/MHz
Rx Characteristics	Min.	Typical	Max.	Unit
Rx Input Level Sensitivity				
OFDM, 6Mbps	--	-93	--	dBm
Adjacent Channel Rejection				
OFDM, 54Mbps	-1	--	--	dB

16.4 DC & RF Characteristics Wi-Fi 802.11n 2.4GHz

Specification	IEEE802.11n			
Mode	OFDM			
Channel Frequency	2412 - 2472MHz			
Data Rates	6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps			
<u>Conditions:</u> 25C, V _{3.3V} = 3.3V, VDDIO = 2.5V 6.5Mbps (MCS0) unless stated otherwise				
DC Characteristics	Min.	Typical	Max.	Unit
Tx Current (MCS0 @12.5dBm)	--	108	--	mA
Tx Current (MCS7 @ 12.5dBm)	--	81	--	mA
Rx Current (MCS0)	--	34	--	mA
RX Current (MCS7)	--	37	--	mA
Tx Characteristics	Min.	Typical	Max.	Unit
Output Power	--	12.5	--	dBm
Spectral Mask Margin				
±9dBr MHz Offset	0	8	--	dB
±11dBr MHz Offset	0	8	--	dB
±20dBr MHz Offset	0	8	--	dB
±30dBr MHz Offset	0	8	--	dB
Error Vector Magnitude (EVM)	--	-27.1	--	dB
Out-of-Band Spurious Emissions				
30MHz – 1.00GHz (RBW = 100kHz)	--	--	-41	dBm/MHz
1.0GHz – 12.75GHz (RBW = 1MHz)	--	--	-41	dBm/MHz
Rx Characteristics	Min.	Typical	Max.	Unit
Rx Input Level Sensitivity				
OFDM, 6.5Mbps	--	-92	--	dBm
OFDM, 65Mbps	--	-69	--	dBm
Adjacent Channel Rejection				
OFDM, 54Mbps	TBD	--	--	dB

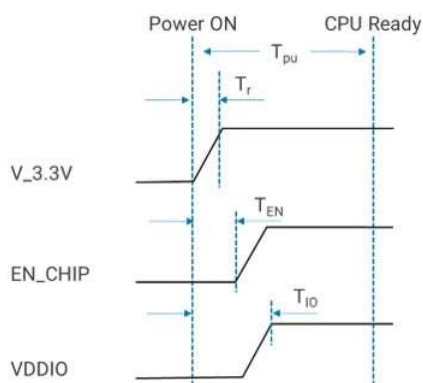
16.5 DC & RF Characteristics BLE

Specification (3.3V)	Details	Unit
BLE Receive Current @ 2Mb/s	30	mA
BLE Receive Current @ 1Mb/s	29	mA
BLE Receive Current @ 500Kb/s	30	mA
BLE Receive Current @ 125Kb/s	31	mA
BLE Transmit Current @ 0dBm 2Mb/s	27	mA
BLE Transmit Current @ 0dBm 1Mb/s	26	mA
BLE Transmit Current @ 0dBm 500Kb/s	39	mA
BLE Transmit Current @ 0dBm 125Kb/s	53	mA
BLE Transmit Current @ 10dBm 2Mb/s	38	mA
BLE Transmit Current @ 10dBm 1Mb/s	36	mA
BLE Transmit Current @ 10dBm 500Kb/s	59	mA
BLE Transmit Current @ 10dBm 125Kb/s	81	mA
BLE Advertising (300ms Interval, 3-Channels)	330	μA
BLE Advertising (300ms Interval, 2-Channels)	280	μA
BLE Advertising (300ms Interval, 1-Channel)	190	μA
BLE Traffic Current	8.9	mA

17 Power Schemes

17.1 Power-Up Timing Diagrams

Specification	Symbol	Min.	Typ.	Max.	Unit
V_3.3V Supply Rise Time from 10% to 90%	T_r	40	--	80	μs
Power ON to EN_CHIP Release	T_{EN}	100	--	--	μs
Power ON to VDDIO Ready	T_{IO}	--	--	--	μs
Power ON to CPU Ready	T_{pu}	--	--	630	μs



IMPORTANT NOTES (!):

All GPIOs must be low or undriven on Power-Up
 EN_CHIP must be held low until after T_{EN}
 VDDIO must be low or undriven on Power-Up

17.2 Wakeup Timing Diagrams

Wakeup from Sleep on Internal Timer

Details Pending – (Notes: 32kHz running, RTC power available, no external signals or wakeup - internal wakeup only)

Wakeup to CPU Ready – 550us

Wakeup to Transmit/Receive (Tx/Rx) – 1ms

Wakeup from Sleep using GPIO Wakeup Pin / UART Rx – 550us

Details Pending – (Notes: power applied, from wakeup to CPU & Peripherals Ready)

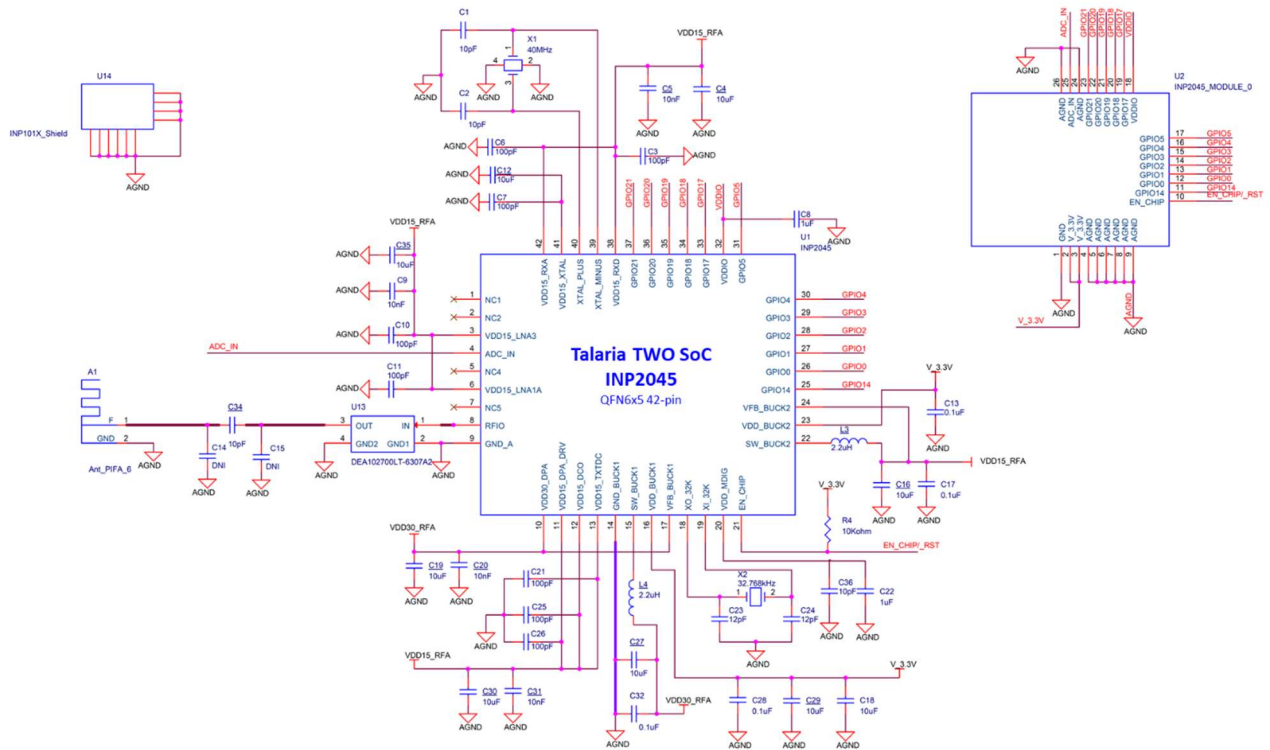
17.3 Reset Timing Diagrams

Specification	Symbol	Min.	Typ.	Max.	Unit
<i>Details Pending</i>					

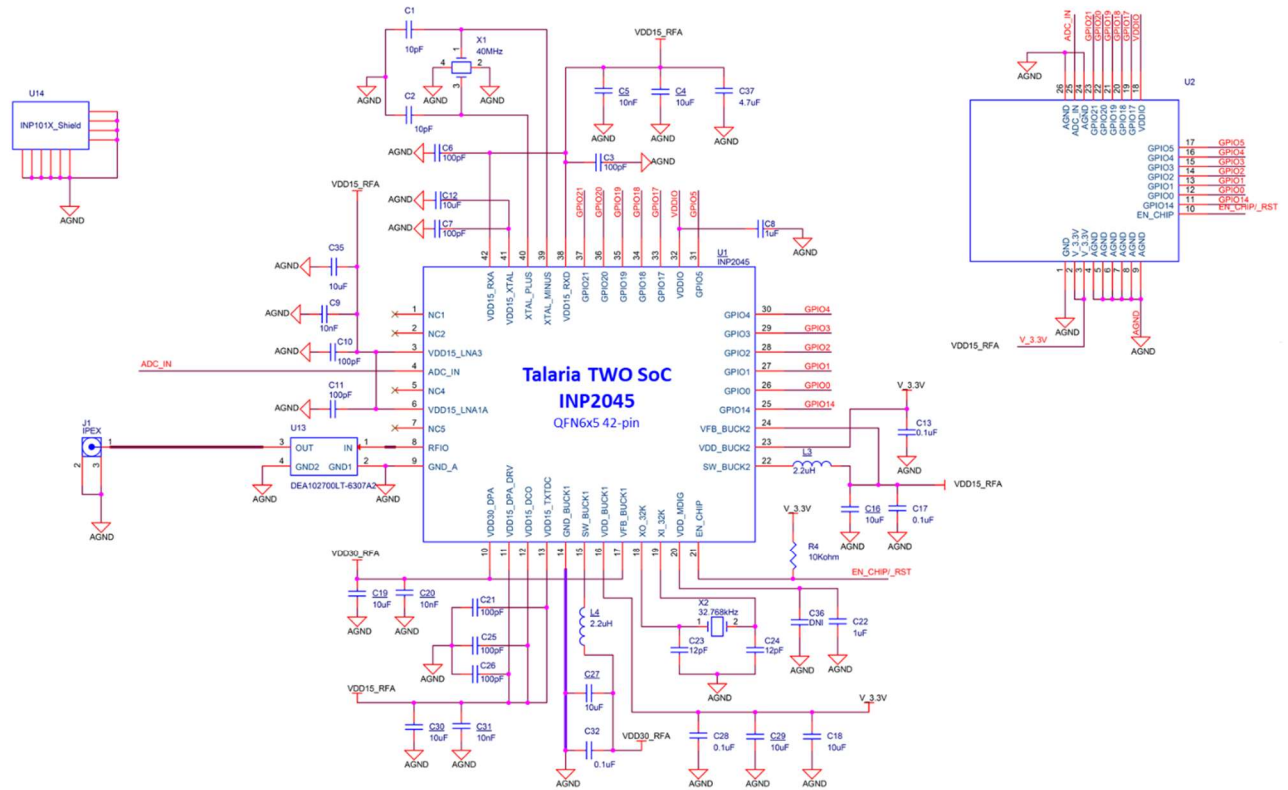
Diagrams Pending

18 Module Schematics

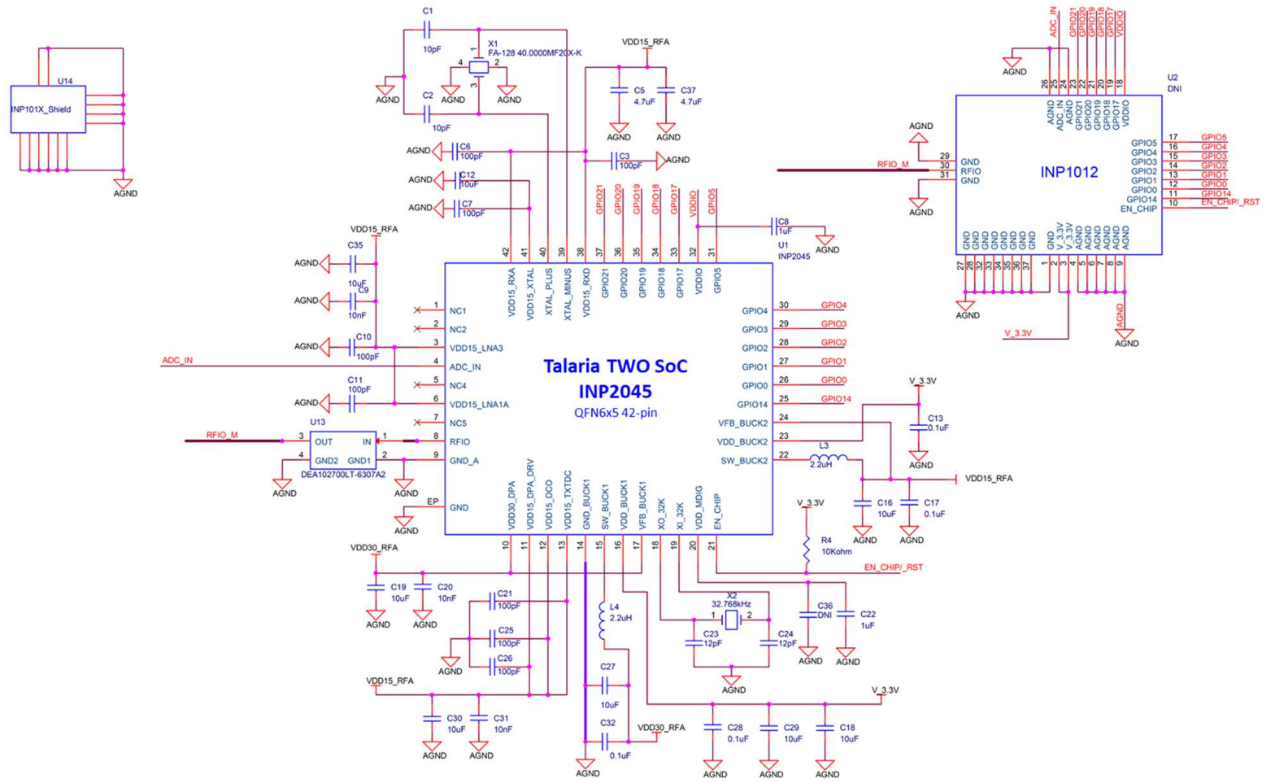
18.1 INP1010 Module Schematics



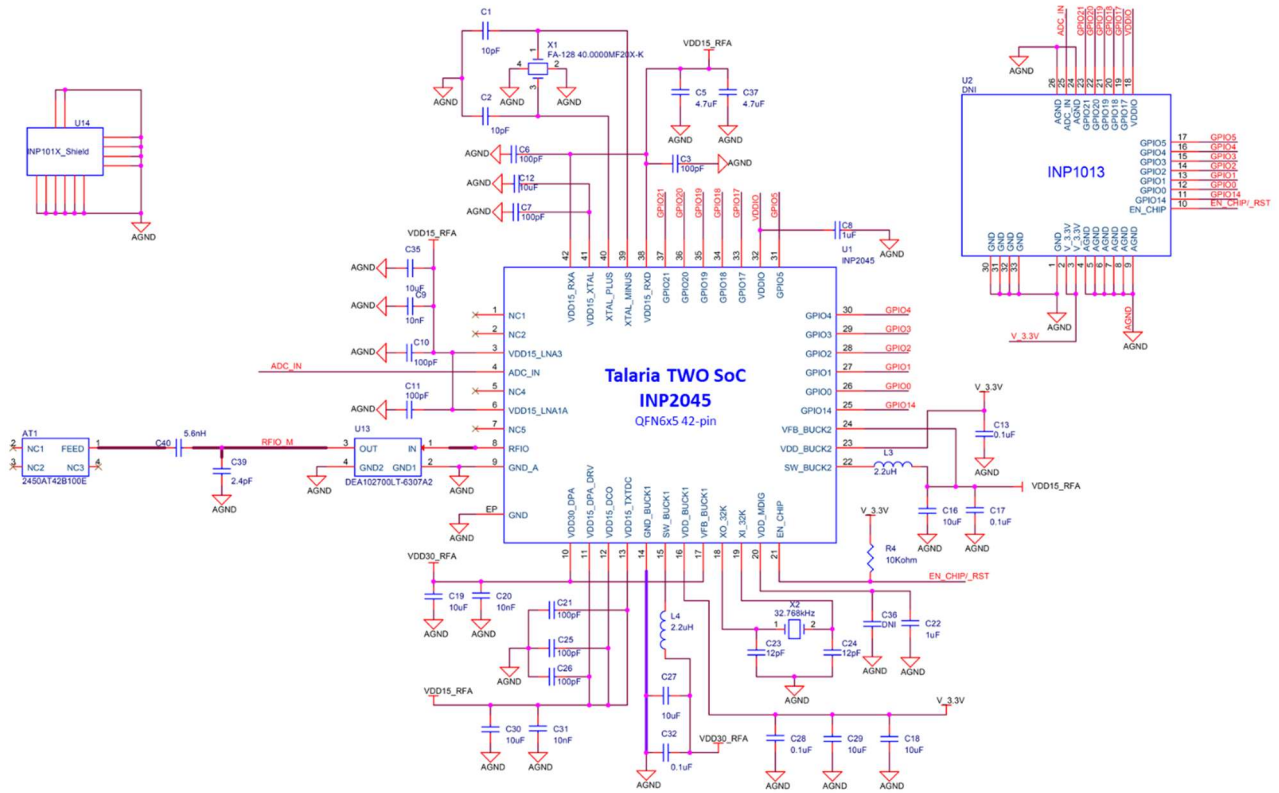
18.2 INP1011 Module Schematics



18.3 INP1012 Module Schematics

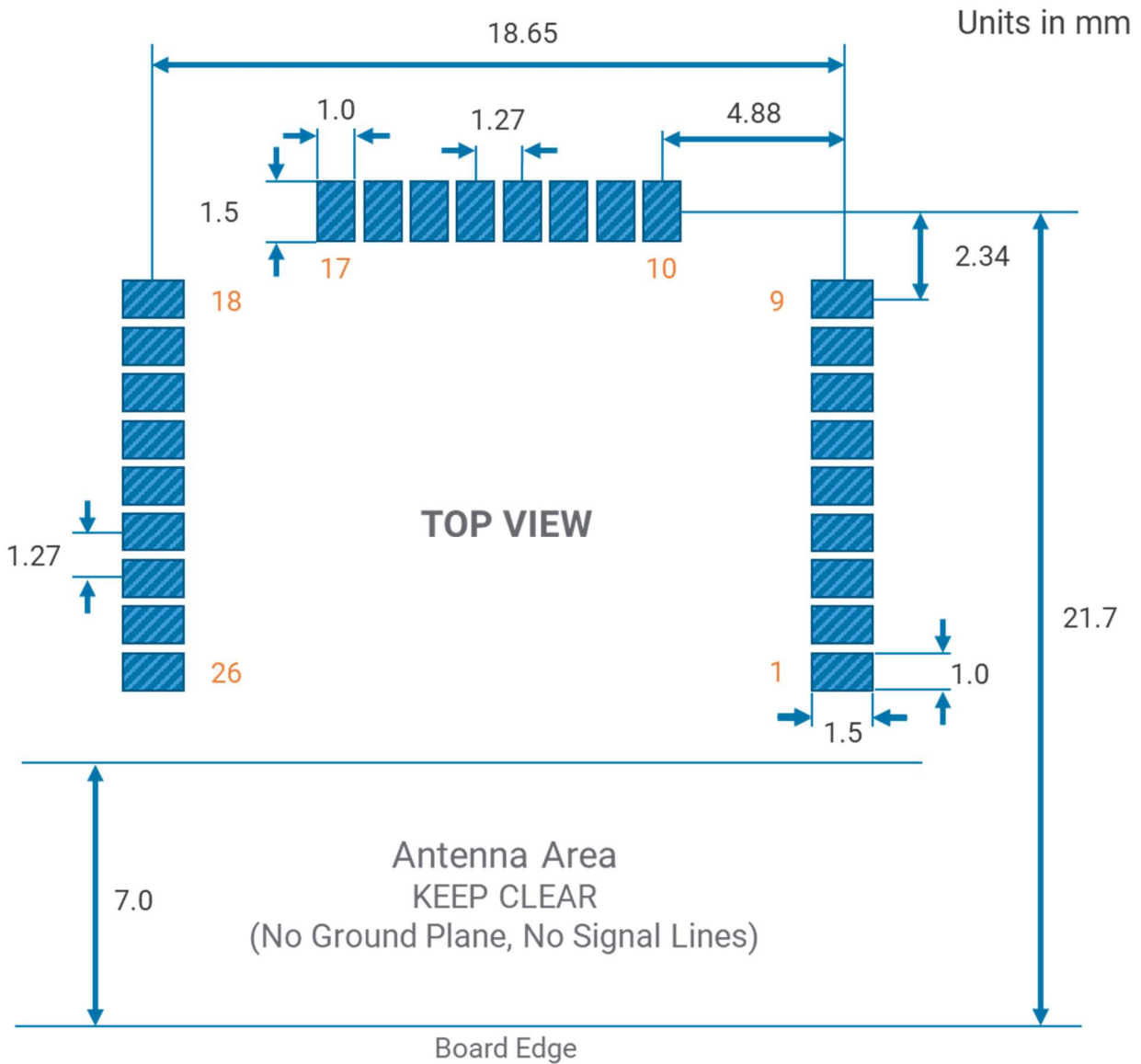


18.4 INP1013 Module Schematics

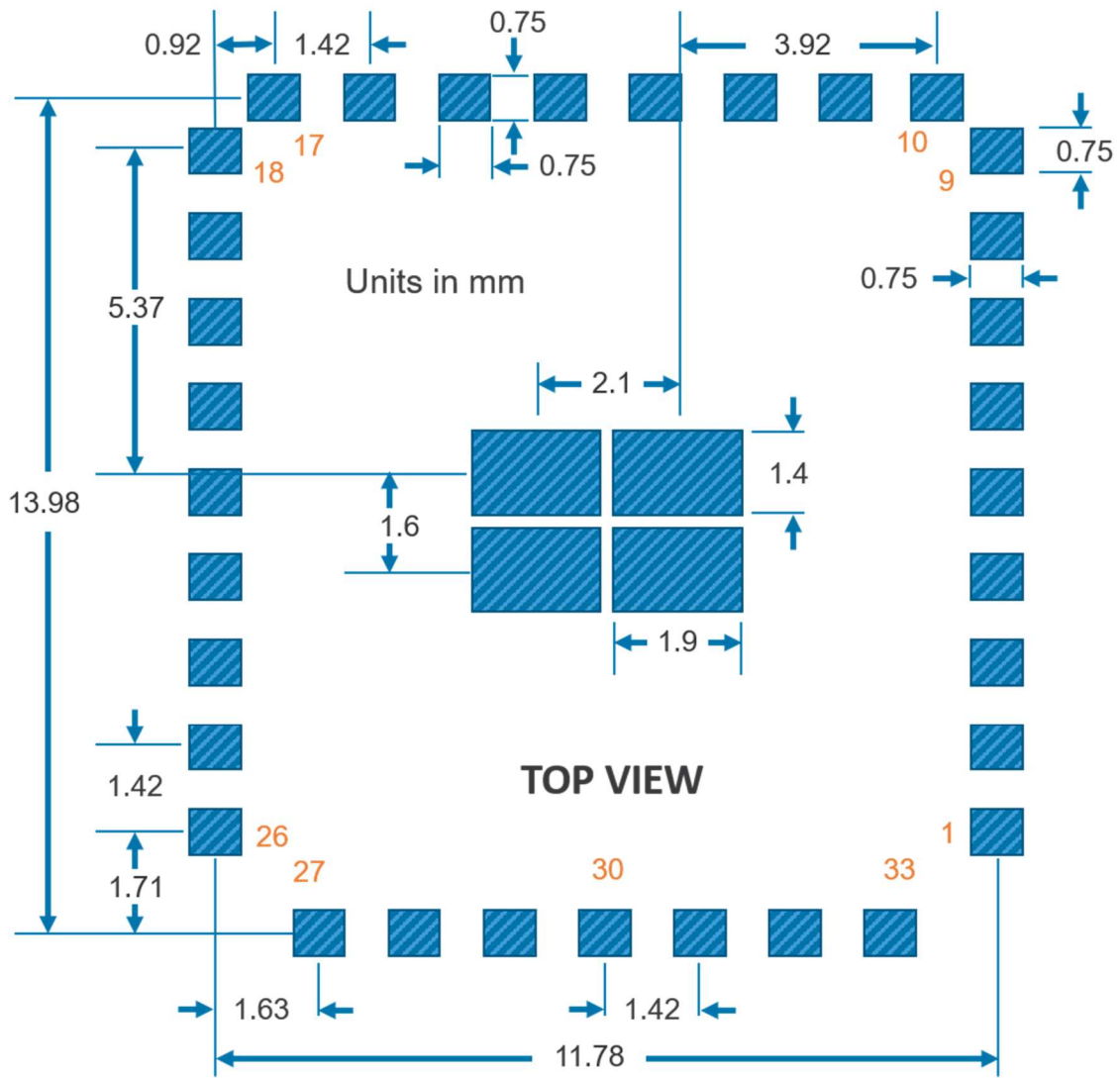


19 Recommended PCB Landing Pad Pattern

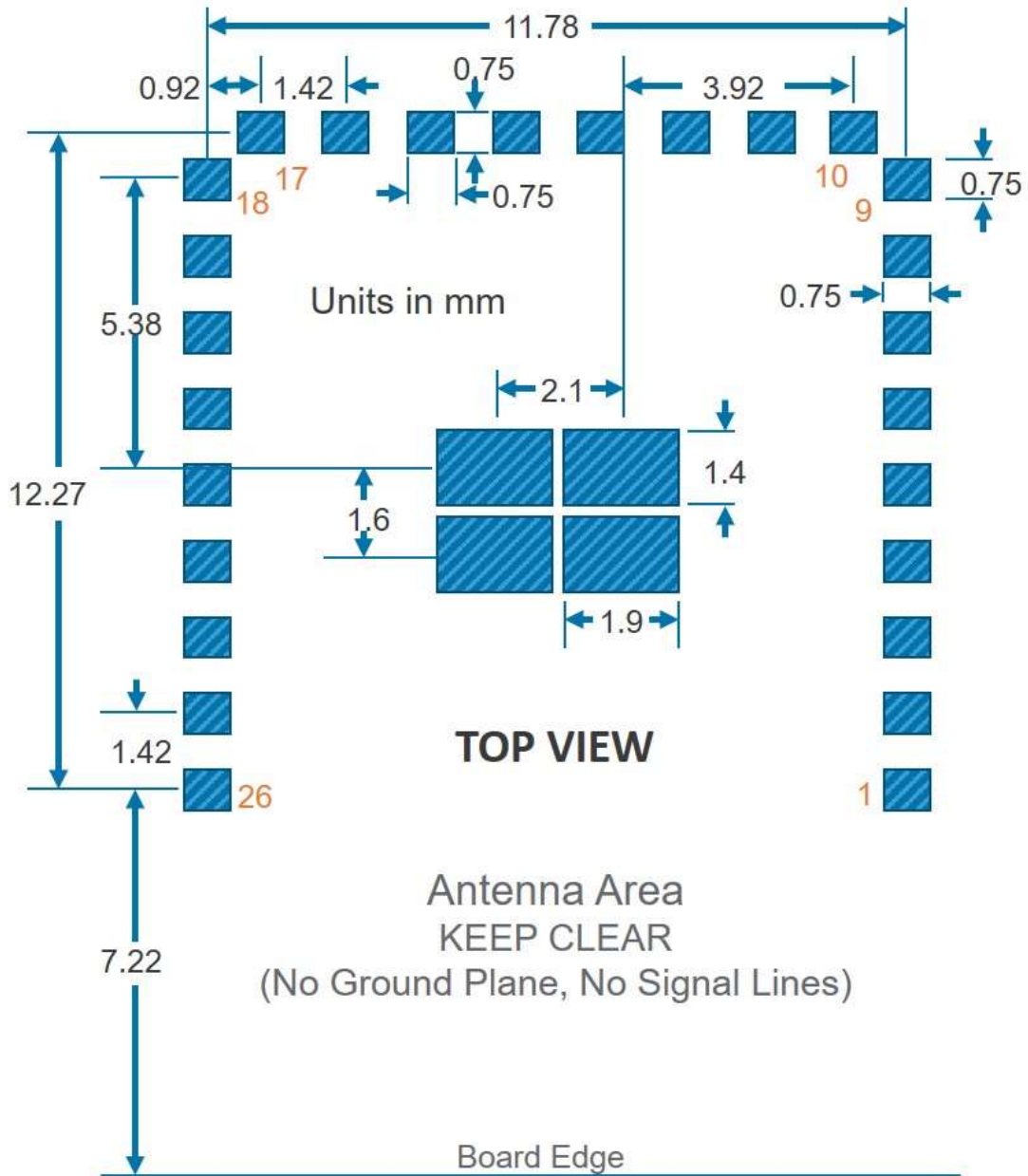
19.1 INP1010 and INP1011



19.2 INP1012

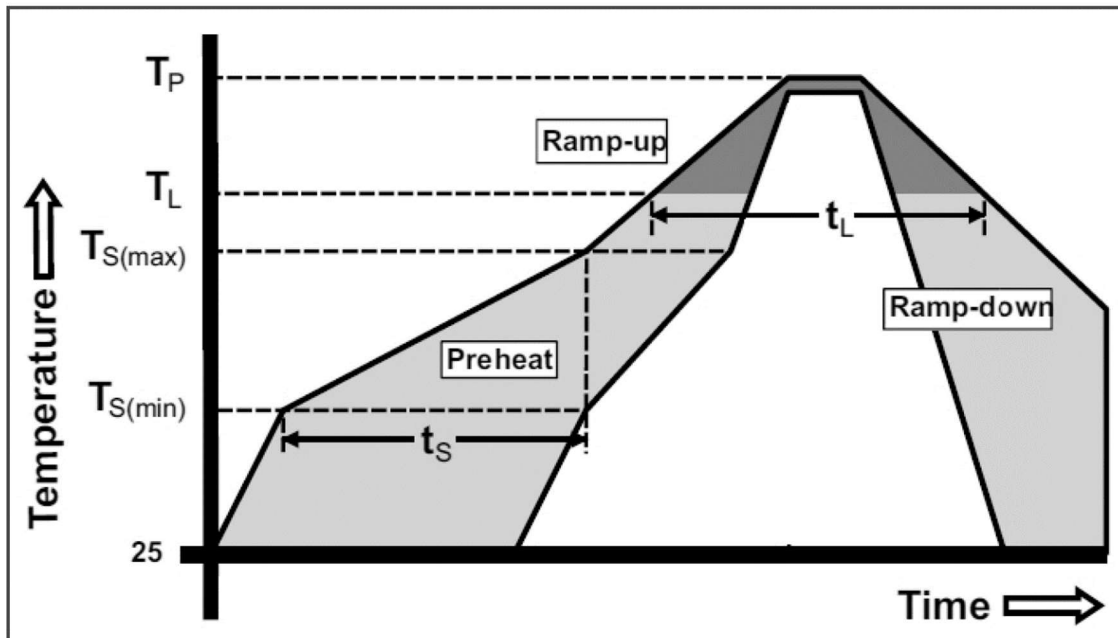


19.3 INP1013



20 Recommended Reflow Profile

Recommend Reflow Profile based on IPC/JEDEC J-STD 020



Reflow Condition	IPC/JEDEC J-STD 020	Pb-Free Assembly
Pre-Heat / Soak	Temperature Min ($T_{S(min)}$)	150°C
	Temperature Max ($T_{S(max)}$)	200°C
	Time (t_s) from $T_{S(min)}$ to $T_{S(max)}$	60 to 120 seconds
Ramp-up Rate from T_L to T_P		3°C/second max.
Reflow	Liquidous Temperature (T_L)	217°C
	Time (t_L) to maintain above T_L	60 to 150 seconds
Peak package body temperature (T_P)		245°C
Ramp-down rate (T_P to T_L)		6°C/second max.

21 RoHS and REACH Compliance

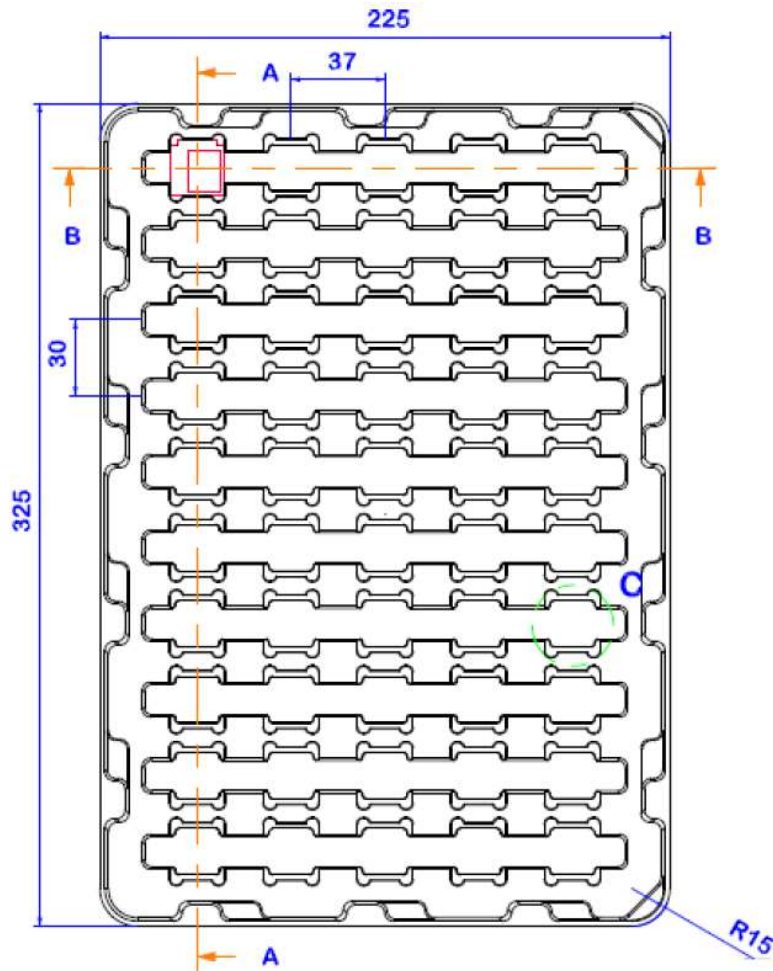
This module meets the requirements set forth by the RoHS and REACH directives.

Further detail is available by contacting InnoPhase Sales at sales@innophaseinc.com

22 Packing Details

22.1 INP1010 and INP1011 Packing

ESD foam tray used for shipping (units in mm):



Tray Size = 225mm x 325mm

Packing Details:

1 Tray = 50 Units

1 Inner Box = 10 Trays + 1 Empty Tray

1 Outer Box = 4 Inner Boxes

Packed and sealed in Moisture Barrier Bag (MBB) with Desiccant and Humidity Indicator Card (HIC) after being baked at 125°C for 8 hours.

22.2 INP1012 and INP1013 Packing

TBD

23 Revision History

Revision	Revision Date	Notes
V01.0	15-May-2020	Internal Draft
V02.0	30-June-2020	Initial Publication
V02.1	10-July-2020	Section 7 – Storage Conditions. Storage period changed to 12 months from 6 month.
V02.2	29-July-2020	Section 15.3 – 802.11g Output Power changed to 15.5dBm from 15.0dBm Section 15.4 – 802.11n Output Power changed to 12.5dBm from 13.0dBm
V02.3	11-August-2020	Section 16 currents updated with 3-lot data
V02.4	1-September-2020	Inserted Section 15 – Advanced Security Elements Updated WiFi EVM and Rx Sensitivity in Section 16 Updated INP1010 & INP1011 Ordering Part Numbers in Section 4
V03.0	15-January-2021	Updates to add INP1012 and INP1013 mini-modules. Included SPI Master details. Updated Peripheral Signal Mapping table.
V03.1	20-February-2021	Added INP1012 Schematic Added antenna dimensions on INP1013 dimensions GPIO LOW for lowest power Sleep Mode in Note 1, Section 10.2 & Section 16.1

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