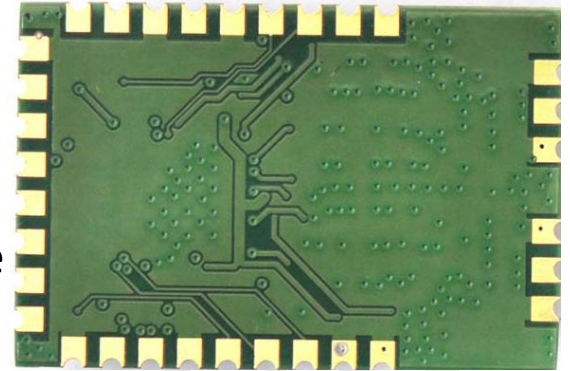


IGX-UACF1-9379b7-BT

»» 802.11ac Dual-Band 2Tx2R WiFi +
Bluetooth v4.2 USB Combo Module



This module is a highly integrated Wireless Local Area Network (WLAN) system-on-chip (SOC) for the 5GHz 802.11ac or 2.4/5GHz 802.11n WLAN applications. Support for the dual-stream spatial multiplexing up to 867Mbps data rate.

KEY FEATURES:

- IEEE Standards Support, 802.11a, 802.11b, 802.11g, 802.11n, and 802.11ac.
- Supports channel widths 20/40MHz at 2.4GHz and 20/40/80MHz at 5GHz.
- Supports USB interface for WLAN and BT.
- Supports BT version: 4.2+HS, BLE, ANT+
- Supports Class1 and Class 2 BT power level transmissions.
- Dual-stream IEEE 802.11n support for 20 and 40MHz channels provide the PHY layer rates up to 300Mbps.
- Dual-stream IEEE 802.11ac support for 80MHz channels provide the PHY layer rates up to 867Mbps.
- Supports Wi-Fi Direct for Linux and Android OS.
- Supports MU-MIMO.
- Fully compliance with the USB v2.0 specification.
- Supporting OS: **Windows 7/8/8.1/10, Linux, Android**

Datasheet

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Hardware Module - IGX-UACF1-9379b7-BT



SPECIFICATION:

1. General Specification:

Model Name	IGX-UACF1-9379b7-BT
Product Description	Support Wi-Fi/BT
Dimension (mm)	L x W : 27 x 18 (typical)
WiFi Interface	Support USB2.0
BT Interface	Support USB1.1
Operating temperature	0 to 70°C
Storage temperature	-55 to 150°C
Humidity	Operating Humidity 10 to 95% Non-Condensing

Voltage - Recommended Operating Rating

	Min.	Typ.	Max.	Unit
Operating Temperature	0	25	70	°C
VCC33	3.14	3.3	3.46	V
VDDIO	1.71	1.8 or 3.3	3.46	V

2. Software Specification

Standards	IEEE 802.11ac; 802.11a; 802.11b; 802.11g; 802.11n; 802.11h, WMM, DFS & TPC
Driver Support	Windows 7/8/8.1/10, Linux, Android
Security	64/128-bits WEP, WPA, WPA2, IEEE 802.1x, EAP-FAST, PEAPv1/EAP-GTC, PEAPv0/EAP-MSCHAPv2, PEAP-TLS, LEAP, EAP-TLS, EAP-TTLS

3. WiFi RF Specification:

❖ 2.4GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11a/b/g/n/ac WiFi compliant
Frequency Range	2.400 ~ 2.497GHz (2.4GHz ISM band)
Number of Channels	2.4GHz: Ch1 ~ Ch14
Output Power	802.11b /11Mbps: $16 \pm 1.5\text{dBm}$ @ $\text{EVM} \leq -9\text{dB}$
	802.11g /54Mbps: $15 \pm 1.5\text{dBm}$ @ $\text{EVM} \leq -25\text{dB}$
	802.11n /MCS7: $14 \pm 1.5\text{dBm}$ @ $\text{EVM} \leq -28\text{dB}$
	802.11ac/256-QAM (R=3/4): $13 \pm 1.5\text{dBm}$ @ $\text{EVM} \leq -30\text{dB}$
	802.11ac/256-QAM (R=5/6): $11 \pm 1.5\text{dBm}$ @ $\text{EVM} \leq -32\text{dB}$
SISO Receive Sensitivity (11b, 20MHz) @8% PER	1Mbps PER @ -92dBm, typical
	2Mbps PER @ -90dBm, typical
	5.5Mbps PER @ -87dBm, typical
	11Mbps PER @ -85dBm, typical
SISO Receive Sensitivity (11g, 20MHz) @10% PER	6Mbps PER @ -89dBm, typical
	9Mbps PER @ -88dBm, typical
	12Mbps PER @ -87dBm, typical
	18Mbps PER @ -84dBm, typical
	24Mbps PER @ -81dBm, typical
	36Mbps PER @ -78dBm, typical
	48Mbps PER @ -73dBm, typical
	54Mbps PER @ -71dBm, typical
MIMO Receive Sensitivity (11g, 20MHz) @10% PER	6Mbps PER @ -91dBm, typical
	9Mbps PER @ -90dBm, typical
	12Mbps PER @ -89dBm, typical
	18Mbps PER @ -87dBm, typical
	24Mbps PER @ -84dBm, typical
	36Mbps PER @ -81dBm, typical
	48Mbps PER @ -76dBm, typical
	54Mbps PER @ -74dBm, typical
SISO Receive Sensitivity (11n, 20MHz) @10% PER	MCS=0 PER @ -89dBm, typical
	MCS=1 PER @ -86dBm, typical
	MCS=2 PER @ -84dBm, typical

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MCS=3 PER @ -80dBm, typical
MCS=4 PER @ -77dBm, typical
MCS=5 PER @ -72dBm, typical
MCS=6 PER @ -71dBm, typical
MCS=7 PER @ -69dBm, typical
MCS=0 PER @ -90dBm, typical
MCS=1 PER @ -89dBm, typical
MCS=2 PER @ -87dBm, typical
MCS=3 PER @ -84dBm, typical
MCS=4 PER @ -80dBm, typical
MCS=5 PER @ -75dBm, typical
MCS=6 PER @ -73dBm, typical
MCS=7 PER @ -72dBm, typical
MCS=8 PER @ -87dBm, typical
MCS=15 PER @ -68dBm, typical
MCS=0, NSS1 PER @ -88dBm, typical
MCS=1, NSS1 PER @ -85dBm, typical
MCS=2, NSS1 PER @ -84dBm, typical
MCS=3, NSS1 PER @ -80dBm, typical
MCS=4, NSS1 PER @ -77dBm, typical
MCS=5, NSS1 PER @ -72dBm, typical
MCS=6, NSS1 PER @ -70dBm, typical
MCS=7, NSS1 PER @ -69dBm, typical
MCS=8, NSS1 PER @ -66dBm, typical
MCS=0, NSS1 PER @ -88dBm, typical
MCS=1, NSS1 PER @ -87dBm, typical
MCS=2, NSS1 PER @ -86dBm, typical
MCS=3, NSS1 PER @ -83dBm, typical
MCS=4, NSS1 PER @ -80dBm, typical
MCS=5, NSS1 PER @ -75dBm, typical
MCS=6, NSS1 PER @ -74dBm, typical

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	MCS=7, NSS1 PER @ -72dBm, typical
	MCS=8, NSS1 PER @ -68dBm, typical
	MCS=0, NSS2 PER @ -88dBm, typical
	MCS=8, NSS2 PER @ -64dBm, typical
	802.11b: -10dBm
	802.11g/n: -20dBm
	Small antennas with 0 ~ 2dBi peak gain

❖ 5GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11a/n/ac 2x2, WiFi compliant
Frequency Range	4.900 ~ 5.845GHz (5.0GHz ISM band)
Output Power	802.11a /54Mbps: $13 \pm 1.5\text{dBm}$ @ $\text{EVM} \leq -25\text{dBm}$
	802.11n /MCS7: $12 \pm 1.5\text{dBm}$ @ $\text{EVM} \leq -28\text{dBm}$
	802.11ac /MCS9: $10 \pm 1.5\text{dBm}$ @ $\text{EVM} \leq -32\text{dBm}$
SISO Receive Sensitivity (11a, 20MHz) @10% PER	6Mbps PER @ -88dBm, typical
	9Mbps PER @ -87dBm, typical
	12Mbps PER @ -86dBm, typical
	18Mbps PER @ -83dBm, typical
	24Mbps PER @ -80dBm, typical
	36Mbps PER @ -77dBm, typical
	48Mbps PER @ -72dBm, typical
	54Mbps PER @ -70dBm, typical
MIMO Receive Sensitivity (11a, 20MHz) @10% PER	6Mbps PER @ -90dBm, typical
	9Mbps PER @ -89dBm, typical
	12Mbps PER @ -88dBm, typical
	18Mbps PER @ -86dBm, typical
	24Mbps PER @ -83dBm, typical
	36Mbps PER @ -80dBm, typical
	48Mbps PER @ -75dBm, typical
	54Mbps PER @ -71dBm, typical
	MCS=0 PER @ -88dBm, typical
	MCS=1 PER @ -85dBm, typical

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Hardware Module - IGX-UACF1-9379b7-BT



SISO Receive Sensitivity (11n, 20MHz) @10% PER	MCS=2 PER @ -83dBm, typical
	MCS=3 PER @ -80dBm, typical
	MCS=4PER @ -76dBm, typical
	MCS=5 PER @ -71dBm, typical
	MCS=6 PER @ -70dBm, typical
	MCS=7 PER @ -68dBm, typical
MIMO Receive Sensitivity (11n, 20MHz) @10% PER	MCS=0 PER @ -89dBm, typical
	MCS=1 PER @ -88dBm, typical
	MCS=2 PER @ -86dBm, typical
	MCS=3 PER @ -83dBm, typical
	MCS=4 PER @ -79dBm, typical
	MCS=5 PER @ -74dBm, typical
	MCS=6 PER @ -73dBm, typical
	MCS=7 PER @ -71dBm, typical
	MCS=8 PER @ -88dBm, typical
	MCS=15 PER @ -68dBm, typical
	MCS=0 PER @ -85dBm, typical
	MCS=1PER @ -82dBm, typical
	MCS=2 PER @ -80dBm, typical
	MCS=3PER @ -77dBm, typical
	MCS=4 PER @ -73dBm, typical
	MCS=5 PER @ -69dBm, typical
	MCS=6 PER @ -67dBm, typical
	MCS=7PER @ -66dBm, typical
	MCS=0 PER @ -87dBm, typical
	MCS=1 PER @ -85dBm, typical
	MCS=2 PER @ -83dBm, typical
	MCS=3 PER @ -80dBm, typical
	MCS=4 PER @ -76dBm, typical
	MCS=5 PER @ -72dBm, typical
	MCS=6 PER @ -70dBm, typical
	MCS=7 PER @ -69dBm, typical

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Hardware Module - IGX-UACF1-9379b7-BT



	MCS=8 PER @ -85dBm, typical
	MCS=15 PER @ -66dBm, typical
	MCS=0, NSS1 PER @ -86dBm, typical
	MCS=1, NSS1 PER @ -84dBm, typical
	MCS=2, NSS1 PER @ -82dBm, typical
	MCS=3, NSS1 PER @ -79dBm, typical
	MCS=4, NSS1 PER @ -75dBm, typical
	MCS=5, NSS1 PER @ -70dBm, typical
	MCS=6, NSS1PER @ -69dBm, typical
	MCS=7, NSS1 PER @ -68dBm, typical
	MCS=8, NSS1 PER @ -64dBm, typical
	MCS=0, NSS1 PER @ -88dBm, typical
	MCS=1, NSS1 PER @ -87dBm, typical
	MCS=2, NSS1 PER @ -85dBm, typical
	MCS=3, NSS1 PER @ -82dBm, typical
	MCS=4, NSS1 PER @ -78dBm, typical
	MCS=5, NSS1 PER @ -73dBm, typical
	MCS=6, NSS1 PER @ -72dBm, typical
	MCS=7, NSS1 PER @ -71dBm, typical
	MCS=8, NSS1 PER @ -67dBm, typical
	MCS=0, NSS2 PER @ -87dBm, typical
	MCS=8, NSS2 PER @ -63dBm, typical
	MCS=0, NSS1 PER @ -84dBm, typical
	MCS=1, NSS1 PER @ -81dBm, typical
	MCS=2, NSS1 PER @ -79dBm, typical
	MCS=3, NSS1 PER @ -76dBm, typical
	MCS=4, NSS1 PER @ -73dBm, typical
	MCS=5, NSS1 PER @ -68dBm, typical
	MCS=6, NSS1 PER @ -67dBm, typical
	MCS=7, NSS1 PER @ -66dBm, typical
	MCS=8, NSS1 PER @ -61dBm, typical

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Hardware Module - IGX-UACF1-9379b7-BT



MCS=9, NSS1 PER @ -60dBm, typical
MCS=0, NSS1 PER @ -86dBm, typical
MCS=1, NSS1 PER @ -84dBm, typical
MCS=2, NSS1 PER @ -82dBm, typical
MCS=3, NSS1 PER @ -79dBm, typical
MCS=4, NSS1 PER @ -76dBm, typical
MCS=5, NSS1 PER @ -71dBm, typical
MCS=6, NSS1 PER @ -70dBm, typical
MCS=7, NSS1 PER @ -69dBm, typical
MCS=8, NSS1 PER @ -64dBm, typical
MCS=9, NSS1 PER @ -63dBm, typical
MCS=0, NSS2 PER @ -84dBm, typical
MCS=9, NSS2 PER @ -60dBm, typical
MCS=0, NSS1 PER @ -81dBm, typical
MCS=1, NSS1 PER @ -78dBm, typical
MCS=2, NSS1 PER @ -76dBm, typical
MCS=3, NSS1 PER @ -72dBm, typical
MCS=4, NSS1 PER @ -69dBm, typical
MCS=5, NSS1 PER @ -66dBm, typical
MCS=6, NSS1 PER @ -64dBm, typical
MCS=7, NSS1 PER @ -62dBm, typical
MCS=8, NSS1 PER @ -58dBm, typical
MCS=9, NSS1 PER @ -56dBm, typical
MCS=0, NSS1 PER @ -82dBm, typical
MCS=1, NSS1 PER @ -81dBm, typical
MCS=2, NSS1 PER @ -79dBm, typical
MCS=3, NSS1 PER @ -75dBm, typical
MCS=4, NSS1 PER @ -72dBm, typical
MCS=5, NSS1 PER @ -69dBm, typical
MCS=6, NSS1 PER @ -67dBm, typical
MCS=7, NSS1 PER @ -65dBm, typical

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	MCS=8, NSS1 PER @ -61dBm, typical
	MCS=9, NSS1 PER @ -60dBm, typical
	MCS=0, NSS2 PER @ -80dBm, typical
	MCS=9, NSS2 PER @ -56dBm, typical
	802.11a/n: -30dBm
	Small antennas with 0~2dBi peak gain

4. BT Specification:

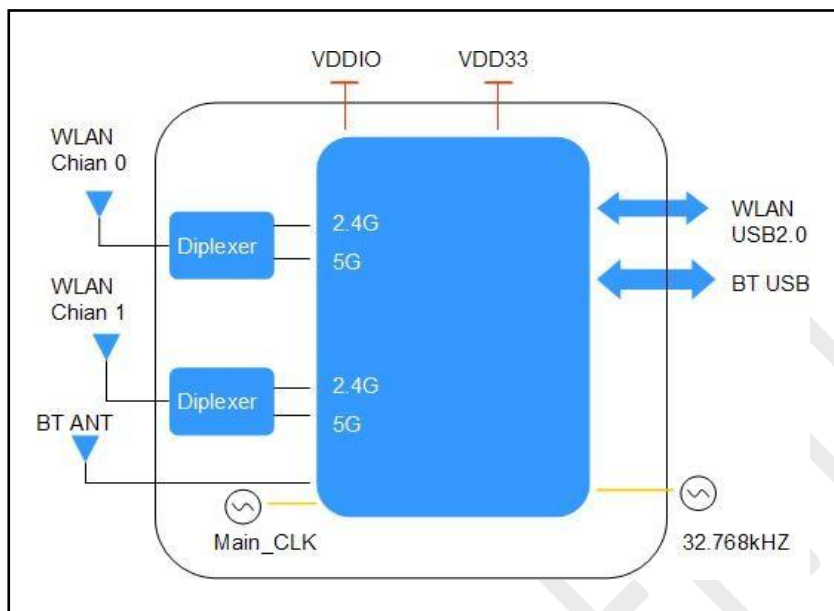
Feature	Description		
General Specification			
Bluetooth Standard	BT v4.2 of 1, 2 and 3Mbps.		
Host Interface	USB1.1		
Antenna Reference	Small antennas with 0 ~ 2dBi peak gain		
Frequency Band	2402 ~ 2480MHz		
Number of Channels	79 channels		
Modulation	FHSS, GFSK, DPSK, DQPSK		
RF Specification			
	Min.	Typical	Max.
Output Power (Class 1.5)		9dBm	
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-92dBm	
Sensitivity @ BER=0.01% for $\pi/4$ -DQPSK (2Mbps)		-92dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-85dBm	
Maximum Input Level	GFSK (1Mbps): -20dBm		
	$\pi/4$ -DQPSK (2Mbps): -20dBm		
	8DPSK (3Mbps): -20dBm		

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Block Diagram:



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PIN DEFINITION

NO.	Name	Type	Description
1~4	NC	—	No connection
5	GND	—	Ground connections
6	WL_USB_DP	I/O	WLAN USB data+ (USB2.0)
7	WL_USB_DM	I/O	WLAN USB data- (USB2.0)
8	GND	—	Ground connections
9	BT_USB_DM	I/O	BT USB data-
10	BT_USB_DP	I/O	BT USB data+
11	GND	—	Ground connections
12	BT_ANT2	I/O	BT RF port
13	GND	—	Ground connections
14	BT_WAKE_HOST	O	BT wake up HOST
15	HOST_WAKE_BT	I	HOST Wake up BT
16	32.768k	I	External sleep clock input(32.768kHz)
17	3D_FRAME_SYNC	I	3D glasses frame sync signal
18	GND	—	Ground connections
19	WL_RF0	I/O	WIFI RF port0
20	GND	—	Ground connections
21	GND	—	Ground connections
22	WL_RF1	I/O	WIFI RF port1
23	GND	—	Ground connections
24	GND	—	Ground connections
25	GND	—	Ground connections
26	WL_WAKE_HOST		WLAN wake up HOST
27	BT_REG_ON	I	GPIO Control BT device enabled
28	WL_REG_ON	I	GPIO Control WIFI device enabled
29	GND	—	Ground connections
30	VDD33	P	3.3V input
31	VDDIO	P	I/O voltage supply input
32	GND	—	Ground connections

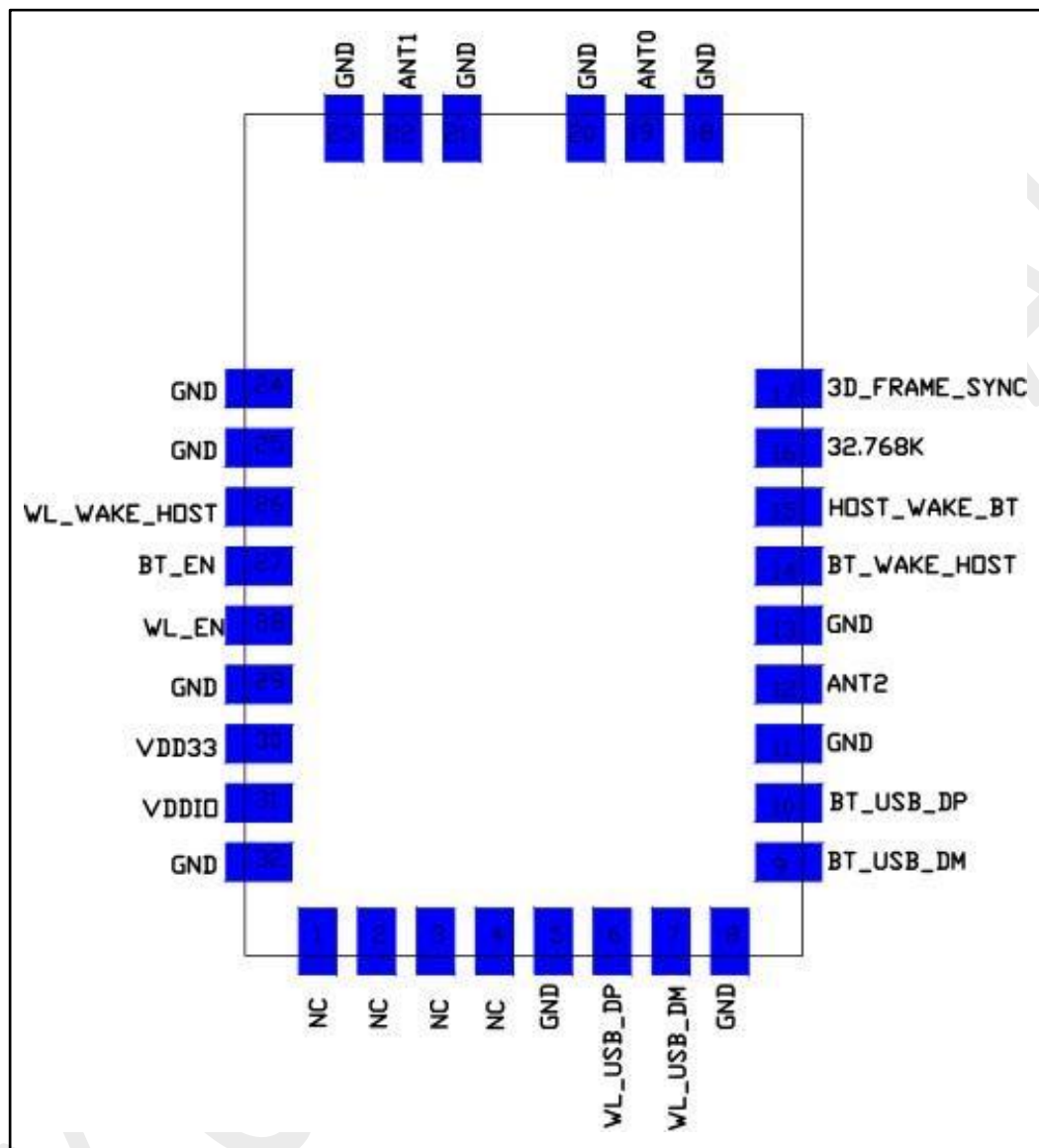
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Hardware Module - IGX-UACF1-9379b7-BT



Pin Assignments:



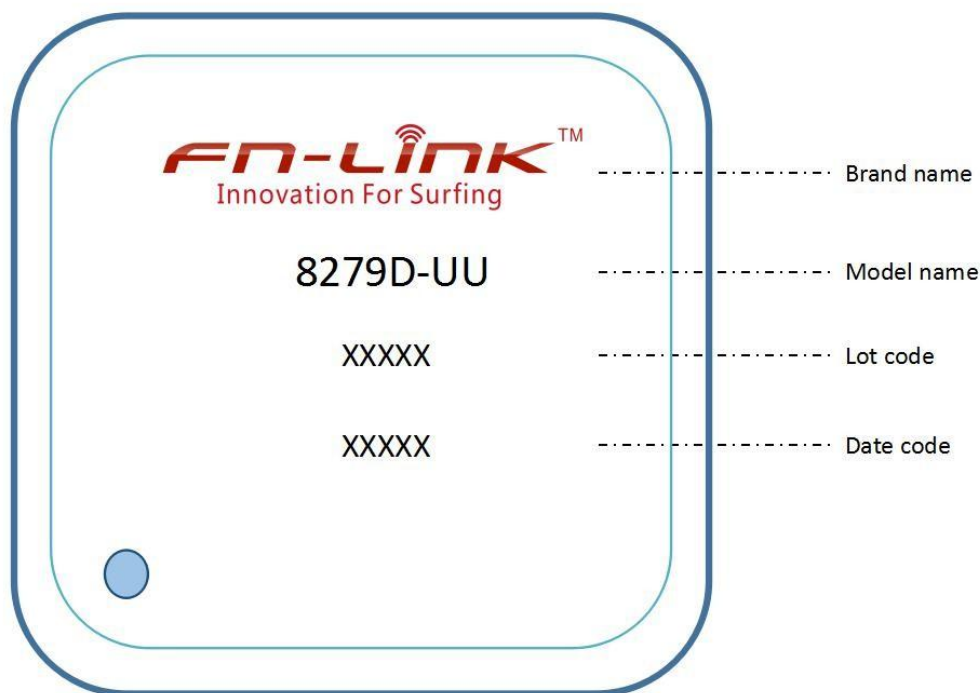
Pin Outline

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Marking Description:



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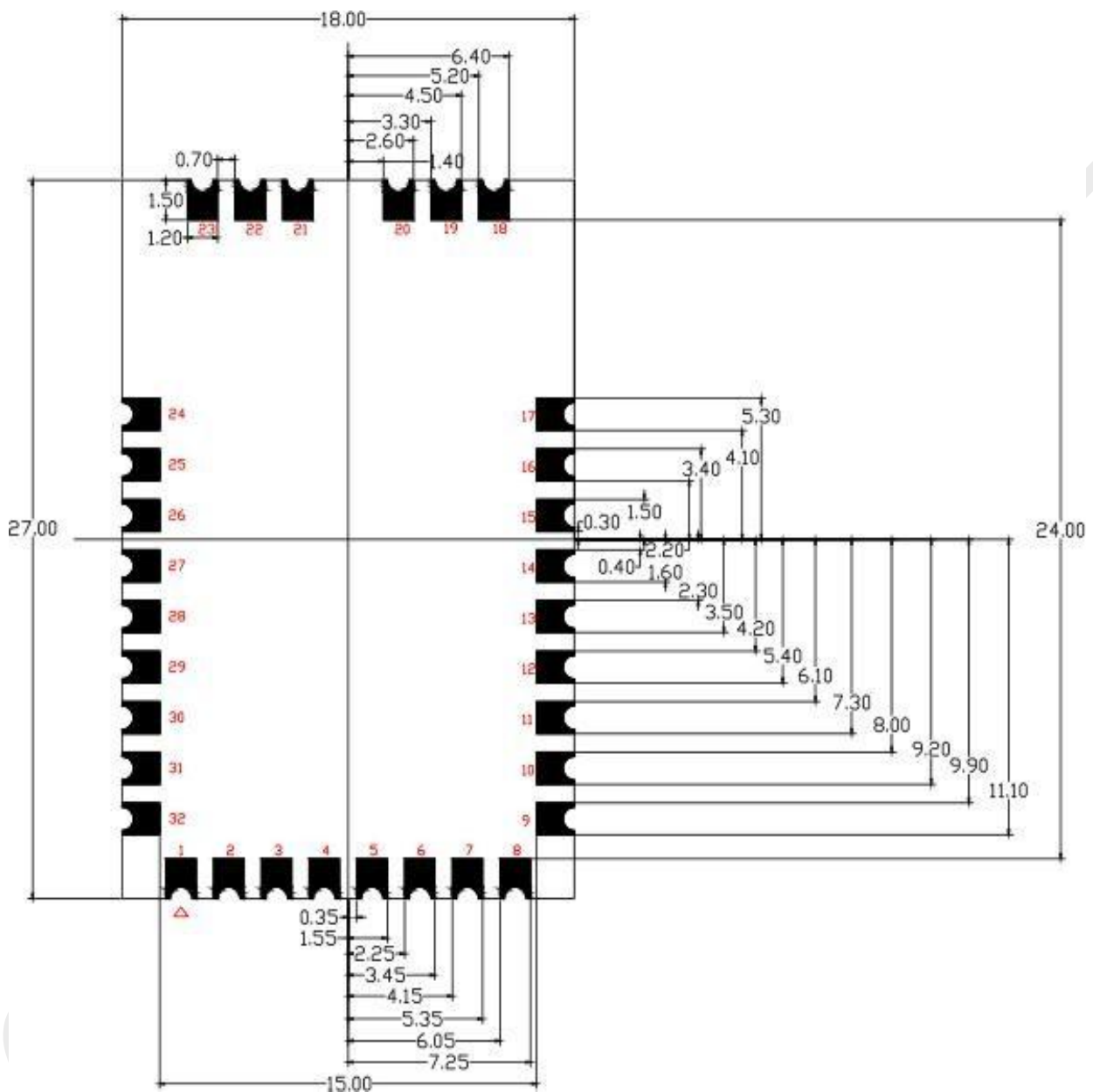
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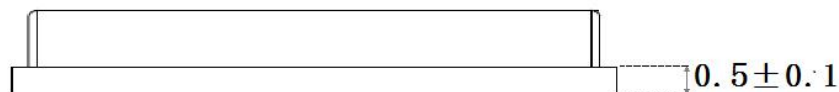


DIMENSIONS

NOTE: All physical dimensions are in “mm” Units.



Bottom View



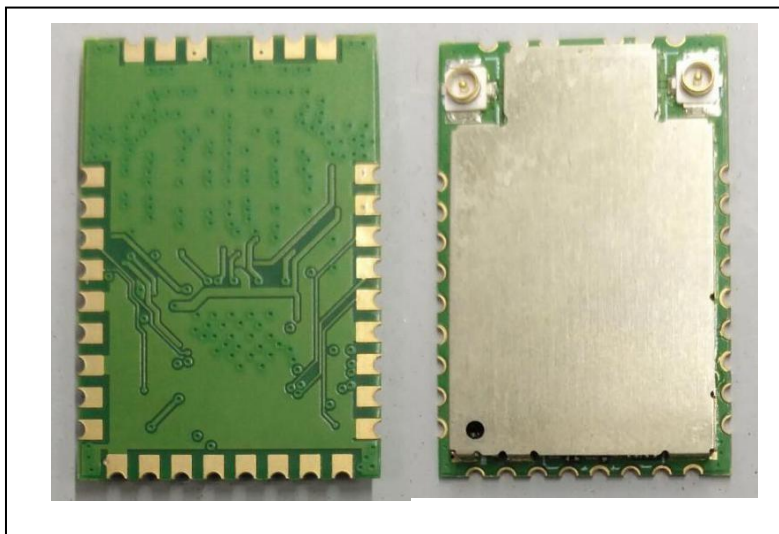
Side View

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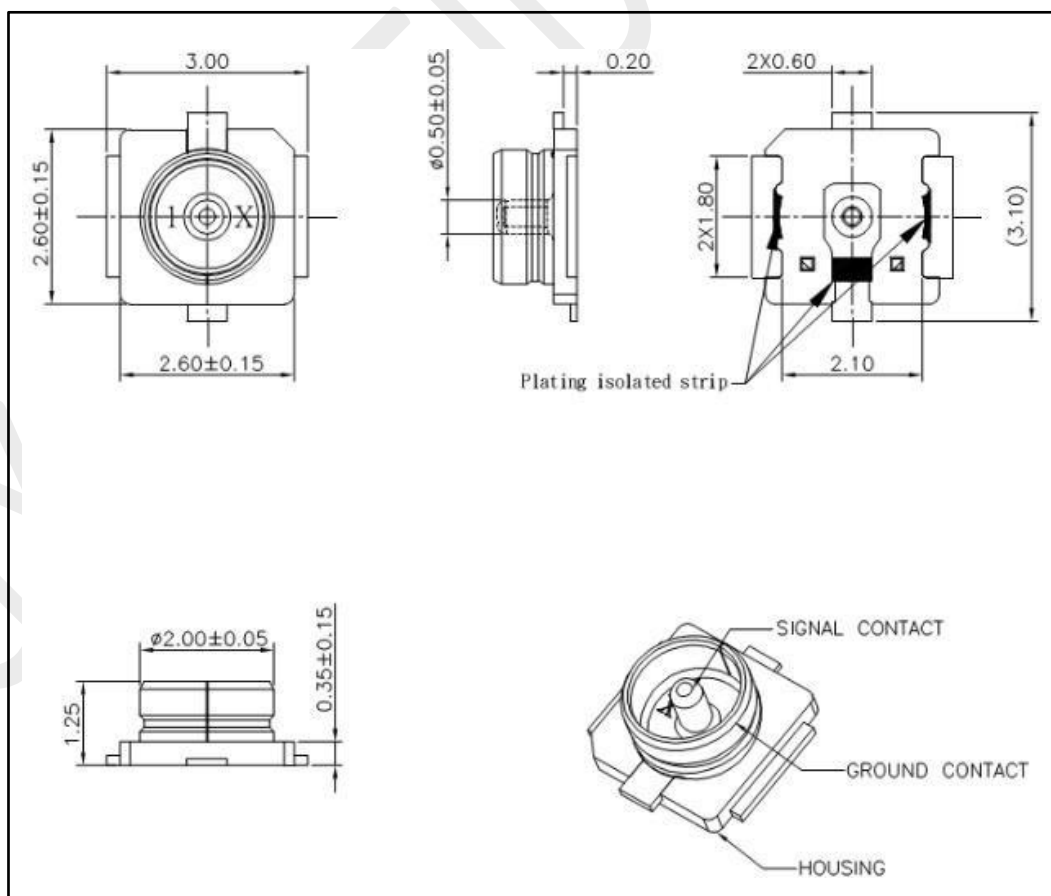
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Module practicality picture:



Antenna pedestal size:



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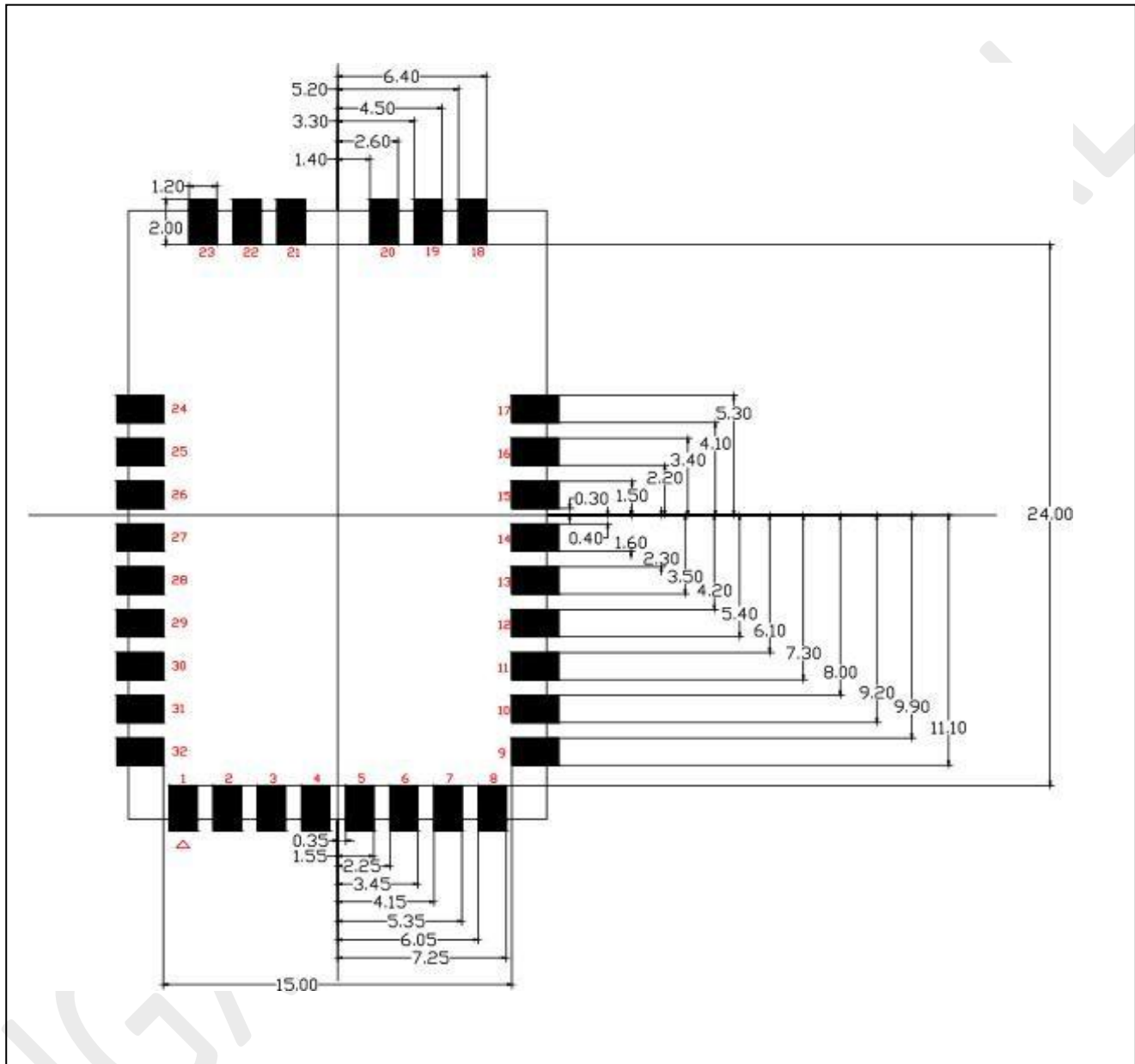
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Layout Recommendation:

NOTE: All physical dimensions are in “mm” Units.



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Reference Design:

