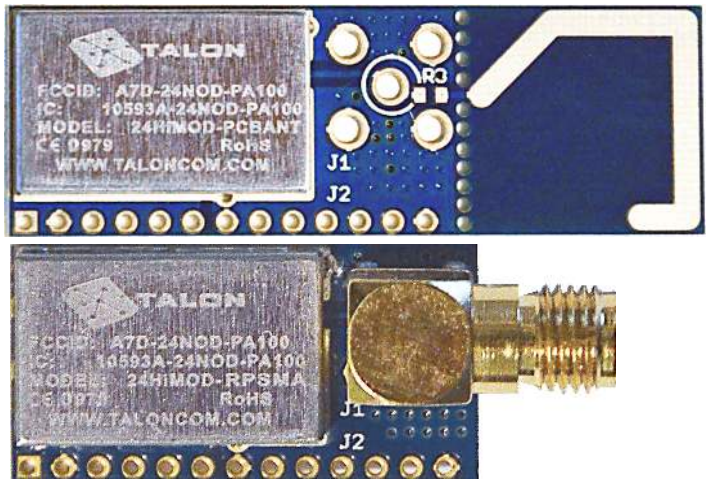
+20dBm 2Mbps Tango RADIO TRANSCEIVER

FEATURES

- +20dBm (100mW) Maximum Transmit Power
- Micro 27mm x 14mm x 10mm form factor (SMA)
- Long range 1Km LOS
- Worldwide 2.4GHz ISM band operation
- 250Kbps / 1Mbps / 2Mbps selectable data rate
- 79 Selectable RF channels
- Enhanced ShockBurst hardware accelerator
- Automatic Packet Handling
- Nordic Gazell Protocol Stack
- Low power modes (<2μA in sleep mode)
- SMA or trace antenna
- Nordic Radio plus PA/LNA
- SMT or right angle through-hole mounting
- -40C to +85C Operation
- 1.8v to 3.6v Operation
- RoHS Compliant
- FCC/IC/CE Certified

APPLICATIONS

- IoT
- JPEG
- M2M
- Long Range Monitoring
- Industrial Control
- Commercial Automation
- Lighting Control
- Asset Tracking



DESCRIPTION

Tango is a low power, high over the air data rate, worldwide FCC/IC/CE certified 2.4GHz RF Module with a 100mW PA/LNA for extended range operations. The micro form factor module includes either an SMA antenna connector or a built in trace antenna. Tango is based on the Nordic nRF24L01+ radio incorporating an Enhanced ShockBurst™ hardware protocol accelerator which offloads time critical protocol functions from the application microcontroller enabling the implementation of advanced and robust wireless connectivity with low cost 3rd-party microcontrollers.

Tango can be used with the nRFgo SDK for easy code development. The nRFgo SDK is a fully featured Software Development Kit for Nordic nRF24L Series 2.4GHz RF System-on-Chips (SoCs). Used in conjunction with the nRFgo Starter Kit and nRFgo Studio, it contains everything needed for code development and debugging, including integration with Keil μVision™ IDE, a comprehensive library of hardware abstraction layers (HAL), Nordic Gazell 2.4GHz RF protocol stack, USB stack, and example applications.

The module brings out all the functional pins of the nRF24L01+ and PA for maximum usability and flexibility including:

- SPI Bus
- Maskable Interrupt
- Power Amplifier (PA) TX and RX Enable for manual PA control
- Nordic radio PA select line for automatic PA control

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TANGO MODULE PINOUT and PA TRUTH TABLE

MODULE PIN #	nRF24L01+ PIN #	PIN NAME	TYPE	DESCRIPTION
P1	7,15,18,19	VDD	POWER	1.8 - 3.6V power supply 3.3v Typical
P2	8,14,17,20	GND	POWER	GROUND
P3	1	CE	DIGITAL INPUT	CHIP ENABLE ACTIVATES TX or RX, +5.0v Max.
P4	2	CSN	DIGITAL INPUT	SPI CHIP SELECT (ACTIVE LOW) , +5.0v Max.
P5	3	SCK	DIGITAL INPUT	SPI SERIAL DATA CLOCK, +5.0v Max.
P6	4	MOSI	DIGITAL INPUT	SPI SLAVE DATA INPUT, +5.0v Max.
P7	8,14,17,20	GND	POWER	GROUND
P8	6	IRQ	DIGITAL OUTPUT	MASKABLE INTERRUPT (ACTIVE LOW)
P9	5	MISO	DIGITAL OUTPUT	SPI SLAVE DATA OUTPUT (TRISTATE OPTION)
P10	11	VDD_PA	POWER	For "auto PA control" CONNECT P10 to P11 TXEN then add 10K pullup to P12 RXEN.
P11	N/A	TXEN	DIGITAL INPUT	POWER AMPLIFIER TRANSMIT ENABLE **+3.6v Max.** (See below for Truth Table or use auto PA control)
P12	N/A	RXEN	DIGITAL INPUT	POWER AMPLIFIER RECEIVE ENABLE **+3.6v Max.** (See below for Truth Table or use auto PA control)
P13	8,14,17,20	GND	POWER	GROUND

TXEN	RXEN	Operating Conditions
1	X	TX Active
0	1	RX Active
0	0	Chip is Shut-down

Note: "1" denotes high voltage state (> 1.2V)
"0" denotes low voltage stage (<0.3V) at Control Pins
"X" denotes do not care: either "1" or "0" can be applied

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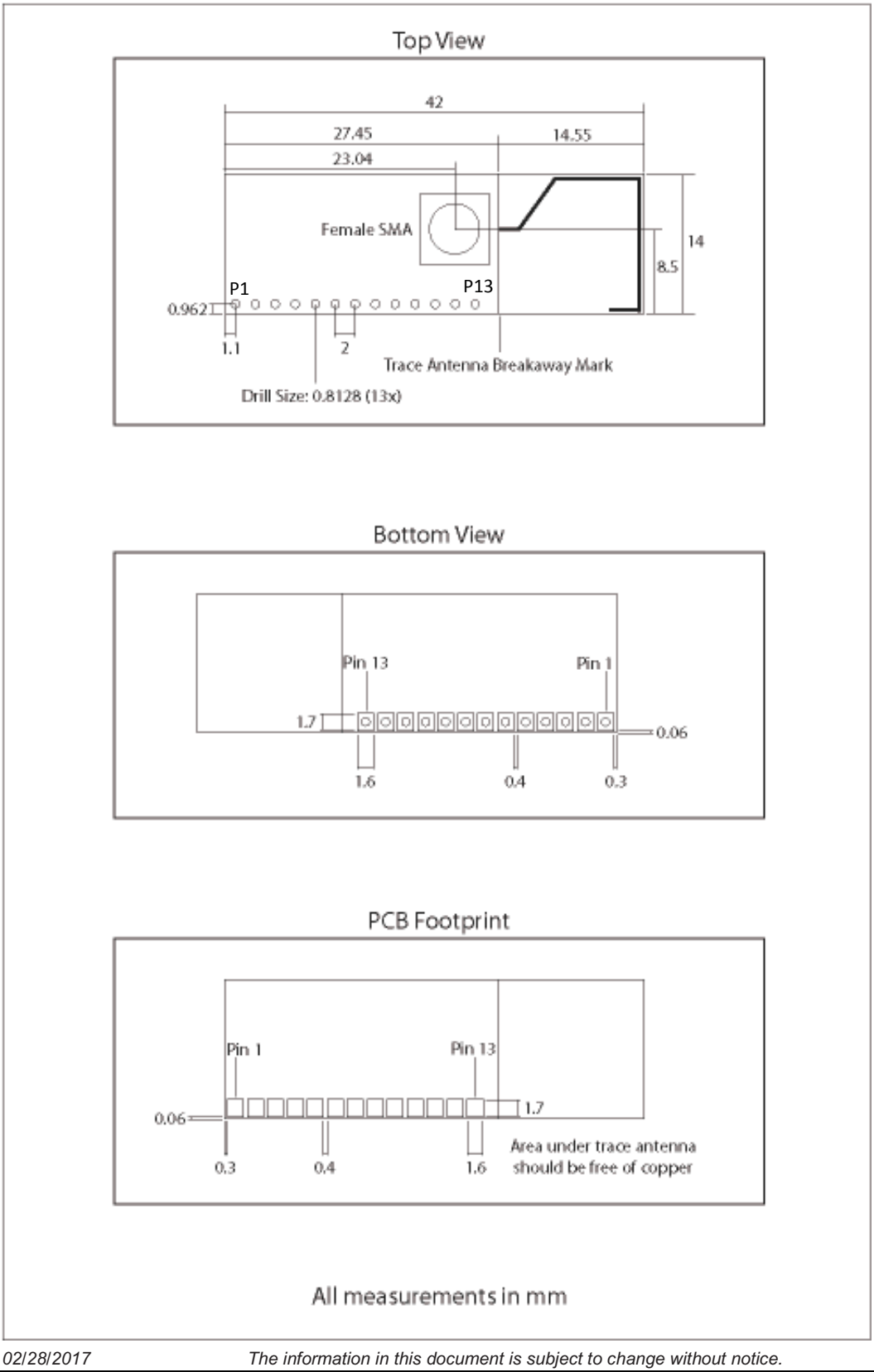
TANGO MODULE DIMENSIONS / PADS



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TANGO ORDERING INFORMATION

MODULE	RF CONNECTOR
TANGO-24PA-RPSMA	RP-SMA
TANGO-24PA-PCBANT	N/A - Trace Antenna

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FCC OPERATING NOTES

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

NOTE: 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.**

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.

Industry Canada OPERATING NOTES

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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European OPERATING NOTES

CE0979

"Hereby, Talon Communications, Inc., declares that this radio module is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Restricted Use

Talon Communications, Inc. (TCI) does not assume any responsibility for the use of the described radio module ("the Module(s)"). TCI makes no representation with respect to the adequacy of the module in low-power wireless data communications applications or systems. Any Products using the Module must be designed so that a loss of communications due to radio interference or otherwise will not endanger either people or property, and will not cause the loss of valuable data. TCI assumes no liability for the performance of products which are designed or created using the Modules.

The Modules are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Module could create a situation where personal injury or death may occur. If you use the Modules for such unintended and unauthorized applications, you do so at your own risk and you shall indemnify and hold TCI and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that TCI was negligent regarding the design or manufacture of the Product.

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