Data Sheet & User Manual IPS-965_UK

Version 1.2 - 29.10.2024

PRODUCT FAMILY

Low Cost K-Band Transceiver

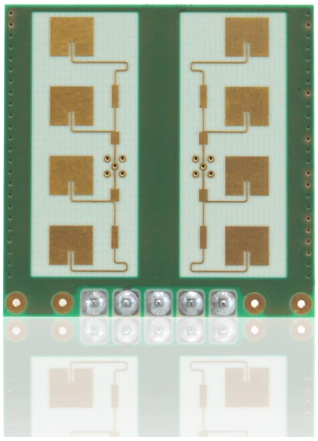
- Movement
- Velocity
- Direction
- Presence
- Distance
- Angle

APPLICATIONS

- Door Openers
- Security Applications
- Industrial Applications

FEATURES:

- Radar-based motion detector working in the 24 GHz - ISM - Band
- Advanced MMIC Technology with low current consumption
- Dual channel operation for direction of motion identification



DESCRIPTION

The IPS-965_UK is the stereo version of the IPM-165 and therefore the perfect choice for low cost applications where the detection of movement direction is necessary.

CERTIFICATES

InnoSenT GmbH has established and applies a quality system for: development, production and sales of radar sensors for industrial and automotive sensors. More information on our quality standards:

https://www.innosent.de/en/company/certifications/

ADDITIONAL INFORMATION

InnoSenT Standard Product. Changes will not be notified as long as there is no influence on form, fit and within this data sheet specified function of the product.

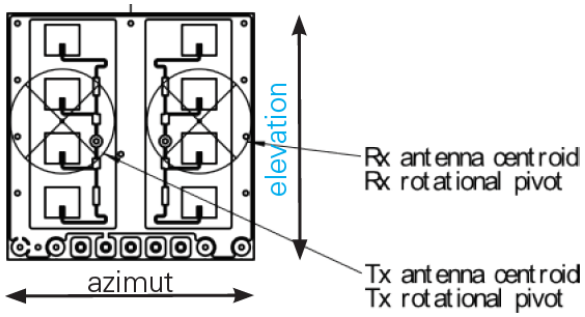
RoHS-INFO

This product is compliant to the restriction of hazardous substances (RoHS - European Union directive 2011/65/EU).

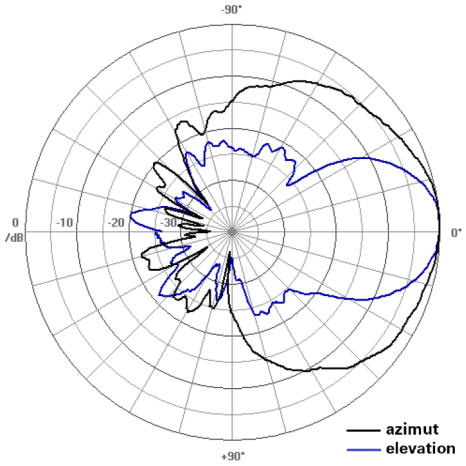
ELECTRICAL CHARACTERISTICS

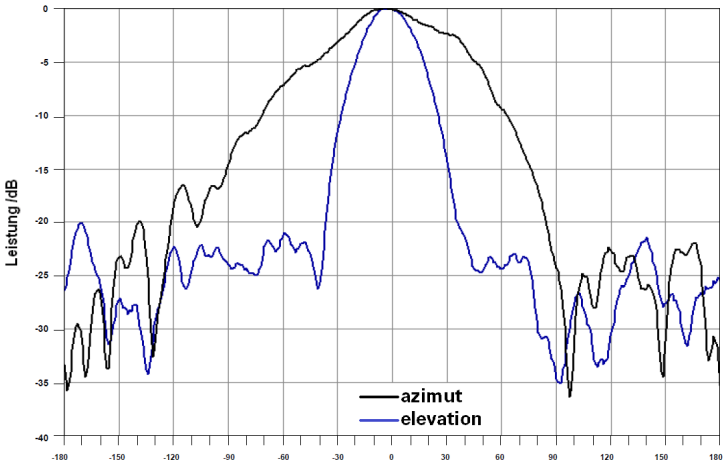
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Transmitter						
Transmit Frequency	@ 25°C	f_t	24.150		24.250	GHz
Frequency Drift vs. Temperature		Δf		-1		MHz/°C
Output Power (EIRP)		P_{out}		11	12.7	dBm
Receiver						
[I/Q] Balance		Amplitude			6	dB
		Phase	60	90	120	°
IF-Output Offset		Voltage Offset		1.6		V
Overall Gain (including Antenna)		G_{OA}		28		dB
Power supply						
Supply Voltage		V_{CC}	4.25	5	5.75	V
Supply Current		I_{CC}		50	60	mA
Environment						
Operating Temperature		T_{OP}	-20		+60	°C
Storage Temperature		T_{STG}	-20		+60	°C
Mechanical Outlines						
Outline Dimensions	compare to schematic on page 5	Height Length Width	25.0 25..0 7.0 (12.7)			mm

ANTENNA ORIENTATION



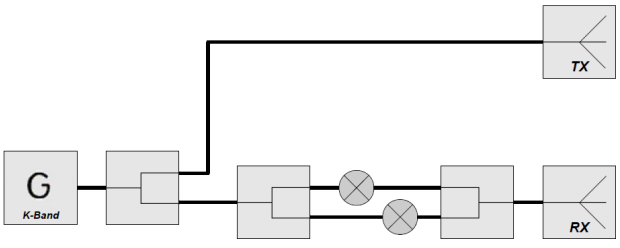
TX/RX-ANTENNA PATTERN





PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
TX-Antenna Pattern / RX-Antenna Pattern						
TX-Antenna Pattern (3dB width)	Horizontal	Azimuth		80		°
	Vertical	Elevation		35		°
Side-lobe Suppression	Horizontal	Azimuth		12		°
	Vertical	Elevation		13		°
Squinting Angle				0		°
Antenna Gain				9.5		dBi

BLOCK DIAGRAMM

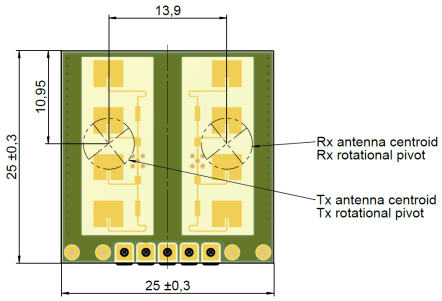


INTERFACE

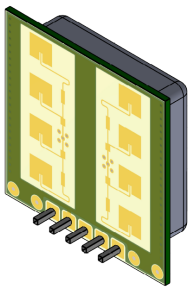
The sensor provides a 2.54 mm grid, single row pin header (square pin 0.635 mm)

PIN #	DESCRIPTION	IN / OUT	COMMENT
1	Enable	Input	HIGH = Sensor ON | LOW/GND = Sensor OFF
2	VCC	Input	Supply Voltage (5V)
3	IF1	Output	Signal 1
4	GND	Input	GND
5	IF2	Output	Signal 2

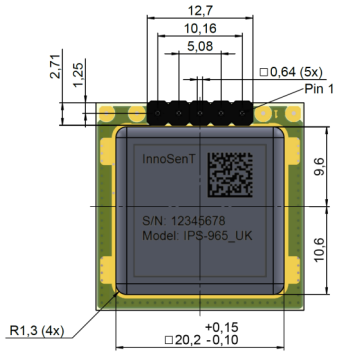
MECHANICAL DRAWING



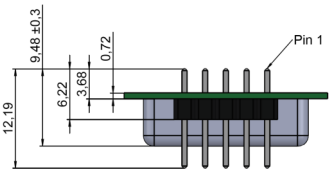
Top View



Isometric View



Bottom View



Side View

LABELING

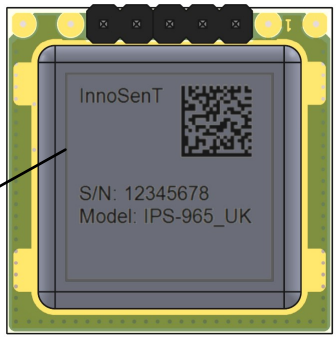
Label content:

InnoSenT

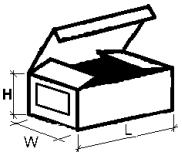
Data Matrix Code

S/N: 8-digit

Model: IPS-965_UK

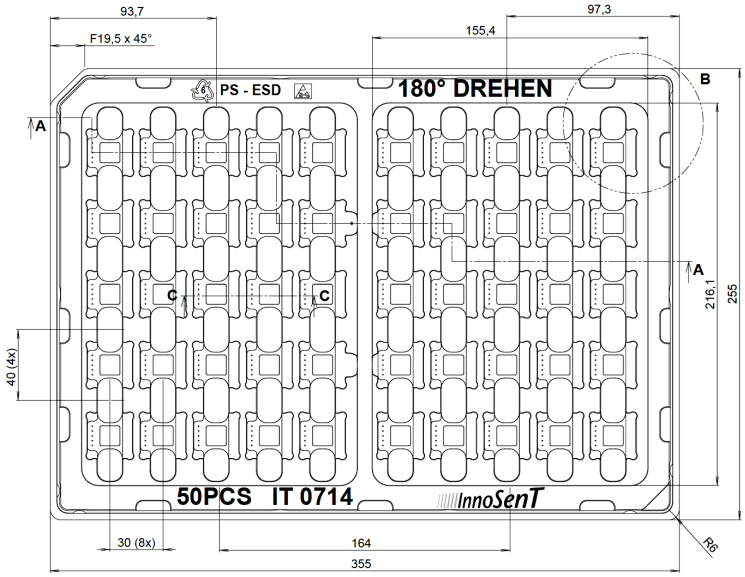


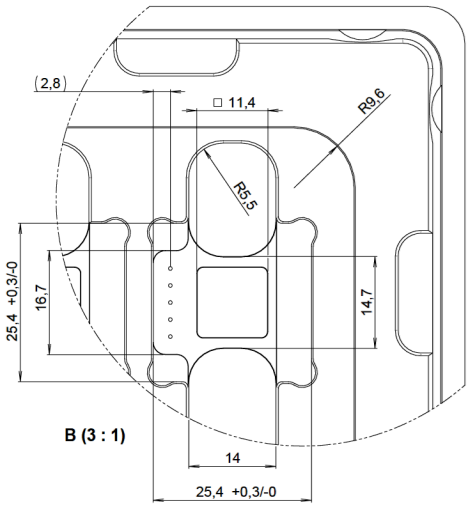
PACKAGING BOX

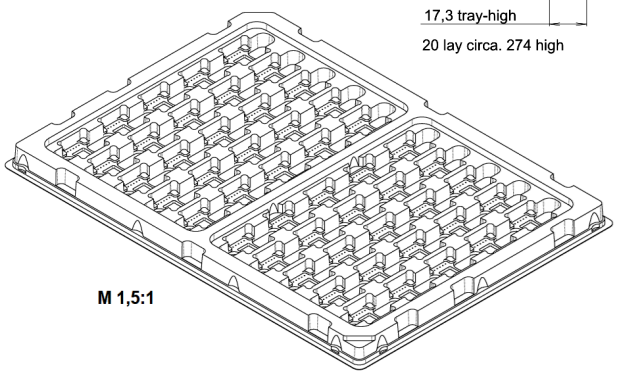
Outline dimensions	compare drawing	Length	360	mm	
		Width	260		
		Height	280		
Material	Material: 175M/175 Static shielding box with conductive coating inside				
Capacity	compare drawing	50		Units per tray	
		11		Trays per box	

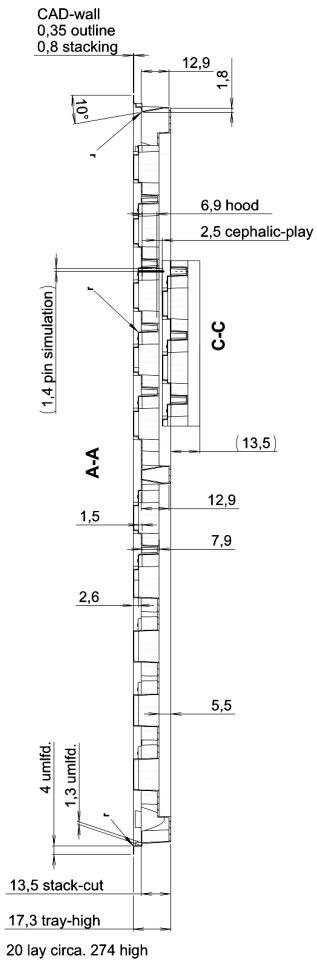
TABLETT / PACKAGING TRAY

TABLETT DIMENSIONS









FCC & ISED COMPLIANCE

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s) and complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation 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.

FCC §15.21

Changes or modifications made to this equipment not expressly approved by InnoSenT GmbH may void the FCC authorization to operate this equipment.

FCC §15.105

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.

RF Exposure

This equipment complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.
Ce transmetteur ne doit pas etre place au meme endroit ou utilise simultanement avec un autre transmetteur ou antenne.

ESD-INFORMATION

This InnoSenT sensor is sensitive to damage from ESD. Normal precautions as usually applied to CMOS devices are sufficient when handling the device. Touching the signal output pins has to be avoided at any time before soldering or plugging the device into a motherboard.

APPROVAL

This Data Sheet contains the technical specifications of the described product. Changes of the specification must be in written form. All previous versions of this Data Sheet are no longer valid.

VERSION	DATE	COMMENT
1.0	28.10.2022	initial release
1.1	16.12.2022	Change Illustrations
1.2	29.10.2024	Added FCC & ISED compliance

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