



PASSIVE IMAGING

[300GHz Imaging Front End](#)

[220GHz Imaging Front End](#)

[PMMW-10-0001 Imaging Front End](#)

[PMMW-05-0001 183GHz Imaging Front End](#)

Datasheet

Description

Passive mm-wave (PMMW) imaging provides the unique capability to create high resolution images in low visibility conditions (e.g. through clothing, clouds or fog) and therefore useful for such an applications as concealed weapon detection and airplane landing. Passive imagers operate by detecting naturally emitted thermal (black body) radiation from an object. Products available up to 325GHz.



Features

- High performance radiometric sensor at 220GHz

Applications

- Atmospheric research
- Meteorology
- Radio propagation studies
- Instrumentation
- Imaging

Specification	Unit	Min	Typ	Max
Operating Frequency	GHz		220	
RF Bandwidth	GHz		10 (± 5)	
LO Source Frequency	GHz		110	
Pre Detection Bandwidth	GHz		0.02 - 5 ($\pm 10\%$)	
Centre Frequency Accuracy	MHz		<1	
Radiometric Dynamic Range	K	3		350
Radiometric Sensitivity	K		<1.7	
Integration	ms		5	
System Noise Figure (DSB)	dB		10	
Conical Antenna Gain (dBi)	dB		2.5	
Voltage Output	V		0.1-10	
Detector Type			Square law	
Conical Antenna Flange			UG-387/UM	
Waveguide Flange			UG-387/UM	
Video Output Connector			SMA(f)	
Power Requirements			+15 V @ 1500 mA	
Weight	kg		3.5	
Dimensions	mm		300 x 200 x 70	

Note 1: Different centre frequency and IF bandwidth available.
Contact factory for information.

Datasheet

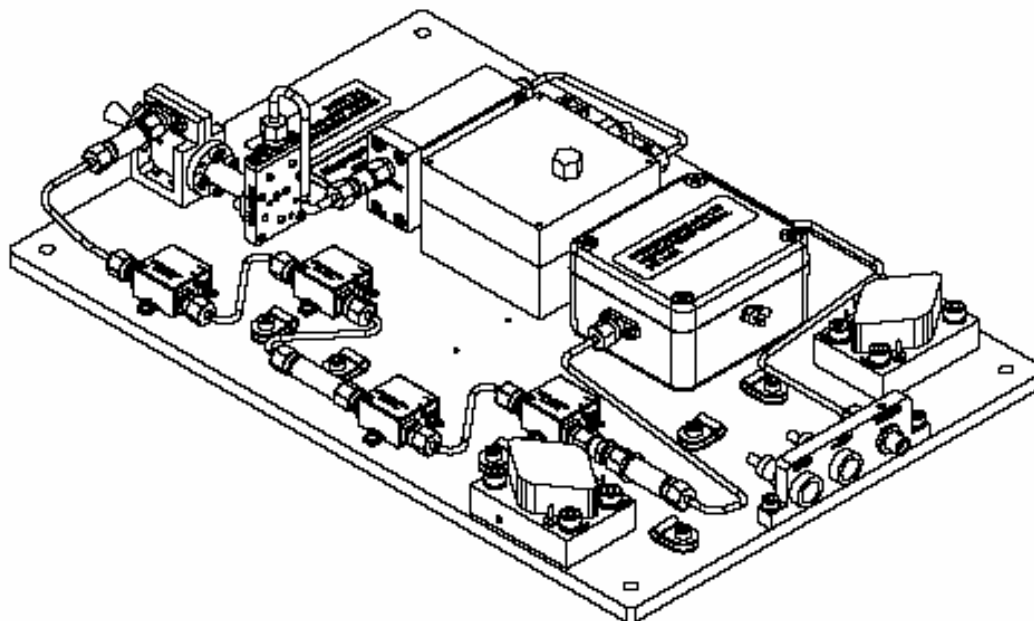


Figure 1 220GHz-RAD - 0001 angle view

Datasheet

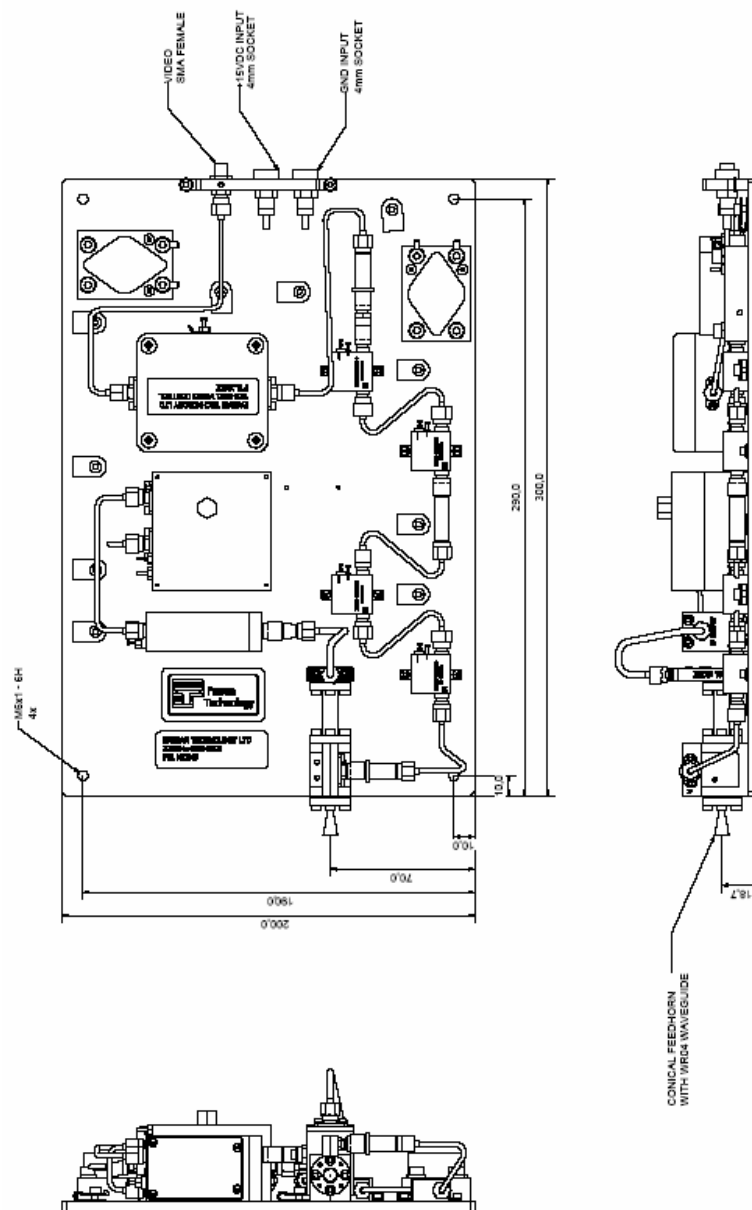


Figure 2. 220GHz - RAD - 0001 top and side view

Note 2:

Farran Technology reserves the right to change, without notice, the characteristic data and other specifications applied to this product. The product may be subject to Irish export restrictions.

Datasheet**Description**

Passive mm-wave (PMMW) imaging provides the unique capability to create high resolution images in low visibility conditions (e.g. through clothing, clouds or fog) and therefore useful for such an applications as concealed weapon detection and airplane landing. A low attenuation atmospheric window from 80-110GHz (W Band) makes this band an ideal candidate for PMMW systems. Passive imagers operate by detecting naturally emitted thermal (black body) radiation from an object. Products available up to 325GHz

**Features**

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Applications

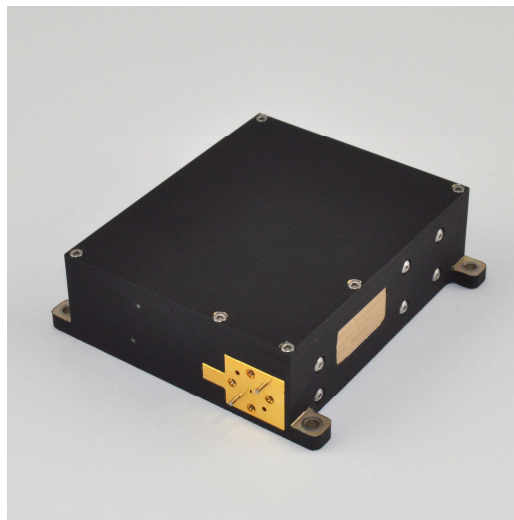
- Airport security screening
- Material composition
- Remote sensing
- Medical
- Metrology
- Metal detection in food

Specification	Unit	Min	Typ	Max
Centre Frequency	GHz		300	
Bandwidth	GHz		8	
Conversion Loss	dB		<7	
IF Bandwidth	GHz	10		18
RX Conversion Gain	dB		11	
Power Consumption	W		<10	

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Features

- High performance radiometric sensor at 183GHz

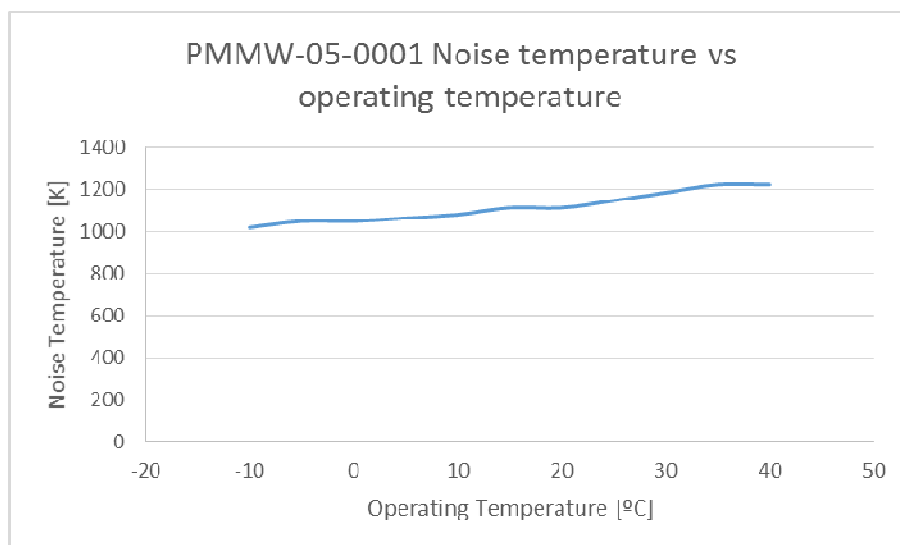
Applications

- Atmospheric research
- Meteorology
- Radio propagation studies
- Instrumentation
- Imaging

Specification	Unit	Value
Operating Frequency	GHz	183.3
RF Bandwidth	GHz	16 (± 8)
LO Source Frequency	GHz	91.65
Noise Temperature	K	< 1200 @ +25°C
System Gain	dB	30
Gain Flatness	dB/GHz	1.5
LO Leakage	dBc	< - 50
DRO Frequency Accuracy @ 25°C	MHz	± 0.5
DRO Frequency Stability	$\pm \text{ppm}/^\circ\text{C}$	2
RF Port	-	WR-05, UG-387/UM
IF Port	-	SMA Female
Power Requirements	-	+12 V @ 170 mA, +5 V @ 700 mA
Weight	kg	<0.6
Dimensions	mm	110 x 90 x 35
Coating Emissivity	-	0.9
Coating Solar Absorption	-	>95

Datasheet

Note 1: Different centre frequency and IF bandwidth available.
Contact factory for information.



NOTES:
1. THE RECEIVER ENCLOSURE IS MANUFACTURED FROM ALUMINIUM ALLOY.
2. THE ENCLOSURE FINISH IS ALOCHROME 1200 / AEROGLAZE MATT BLACK.
3. RADIOMETER MASS < 0.6KG.

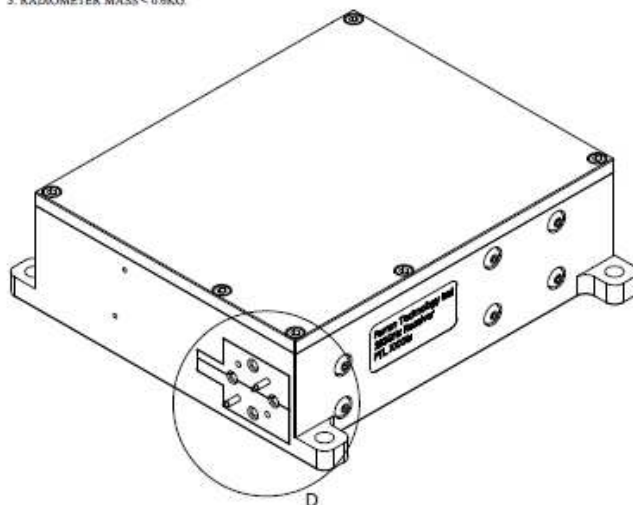


Figure 1. PMMW-05-0001 angle view.

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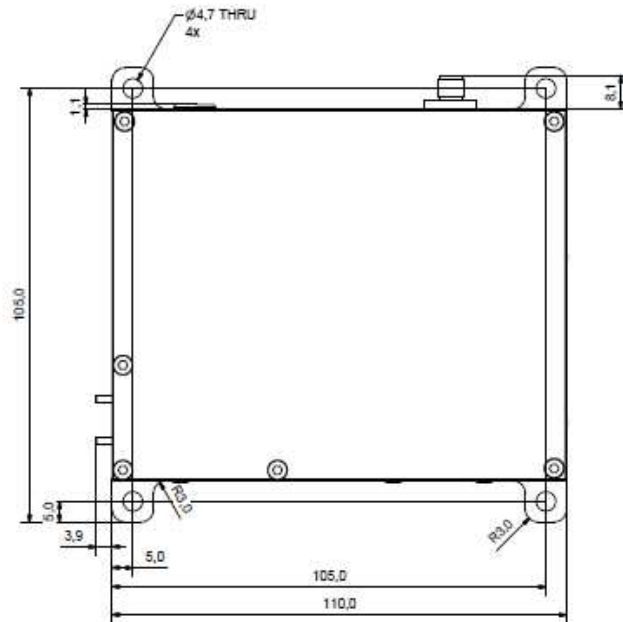


Figure 2. PMMW-05-0001 top view.

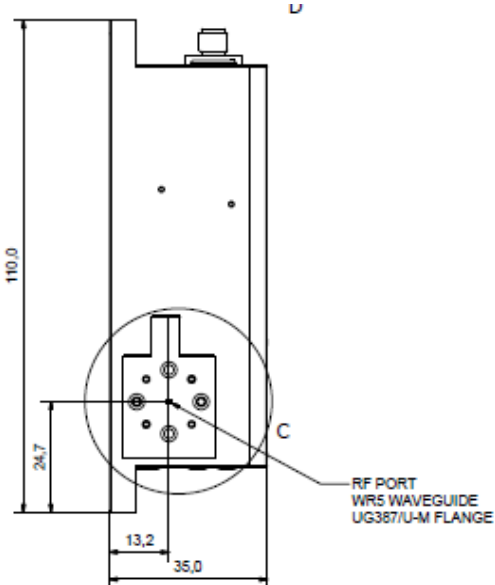


Figure 3. PMMW-05-0001 front view.

Note 2:

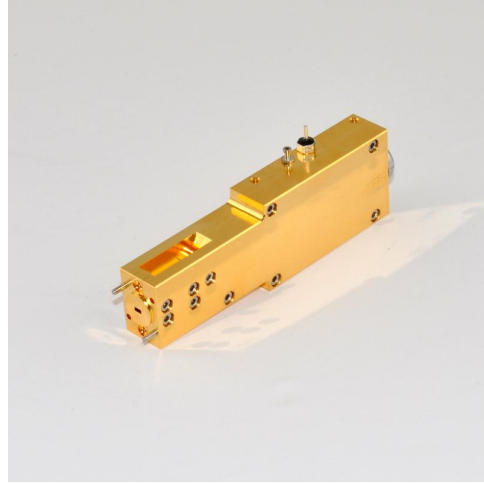
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Features

- ~ Direct detection . no LO signals present
- ~ Low noise figure for high sensitivity
- ~ Integrated video amplification

Applications

- ~ Airport security screening
- ~ Material composition
- ~ Remote sensing
- ~ Medical
- ~ Metrology
- ~ Metal detection in food

Specification	Unit	Min	Typ	Max
Frequency	GHz	75		110
Noise Figure	dB		4	4.5
Gain	dB		25	
Sensitivity @ +25°C ^{NOTE 1}	K		4.0	4.4
Video output @ +25°C ^{NOTE 2} Load	mV	1,000		1,200
Physical Size		90 x 28 x 13mm		
Mass		85g		
Power Consumption	W	0.25 (5V @ 50mA)		

Notes:

1. Sensitivity calculated from $\Delta T = \frac{T_A + T_N}{\sqrt{\beta\tau}}$. Where $T_A=295K$, $\beta=35GHz$, $\tau=1$ s
2. Differential output . can be customer defined as FTL can adjust the video gain to give required output voltage