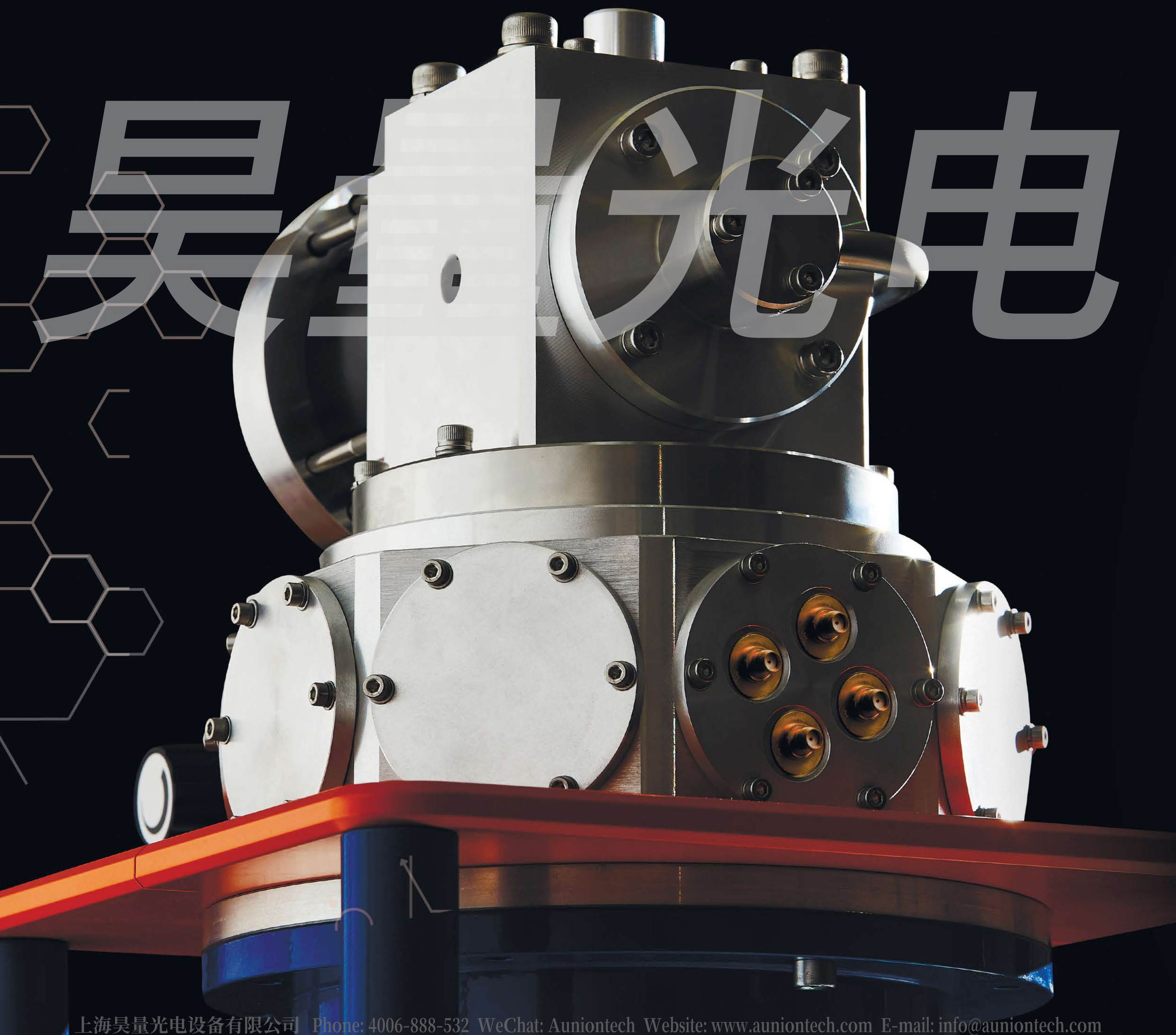
SCONTEL

SUPERCONDUCTING NANOTECHNOLOGY

DETECT EVERYTHING YOU WANT

ULTRA-SENSITIVE OPTICAL DETECTORS

FOR ANY EXPERIMENTAL DEMANDS



DETECT EVERYTHING YOU WANT

HOT-ELECTRON BOLOMETERS

High sensitivity, sub-nanosecond resolution, picosecond response

The THz frequency range is one of the most fascinating, attractive and yet underexploited ranges of the frequency spectrum. With the world-wide growing interest and drastically increased amount of the research activity in the THz area, we are pleased to offer fast (response time down to 50 ps) and sensitive (NEP 10^{-14} W/Hz$^{1/2}$), low-noise superconducting Hot Electron Bolometers for the THz frequencies from 0.1 up to 100 THz. The receivers can be operated in direct or heterodyne modes.

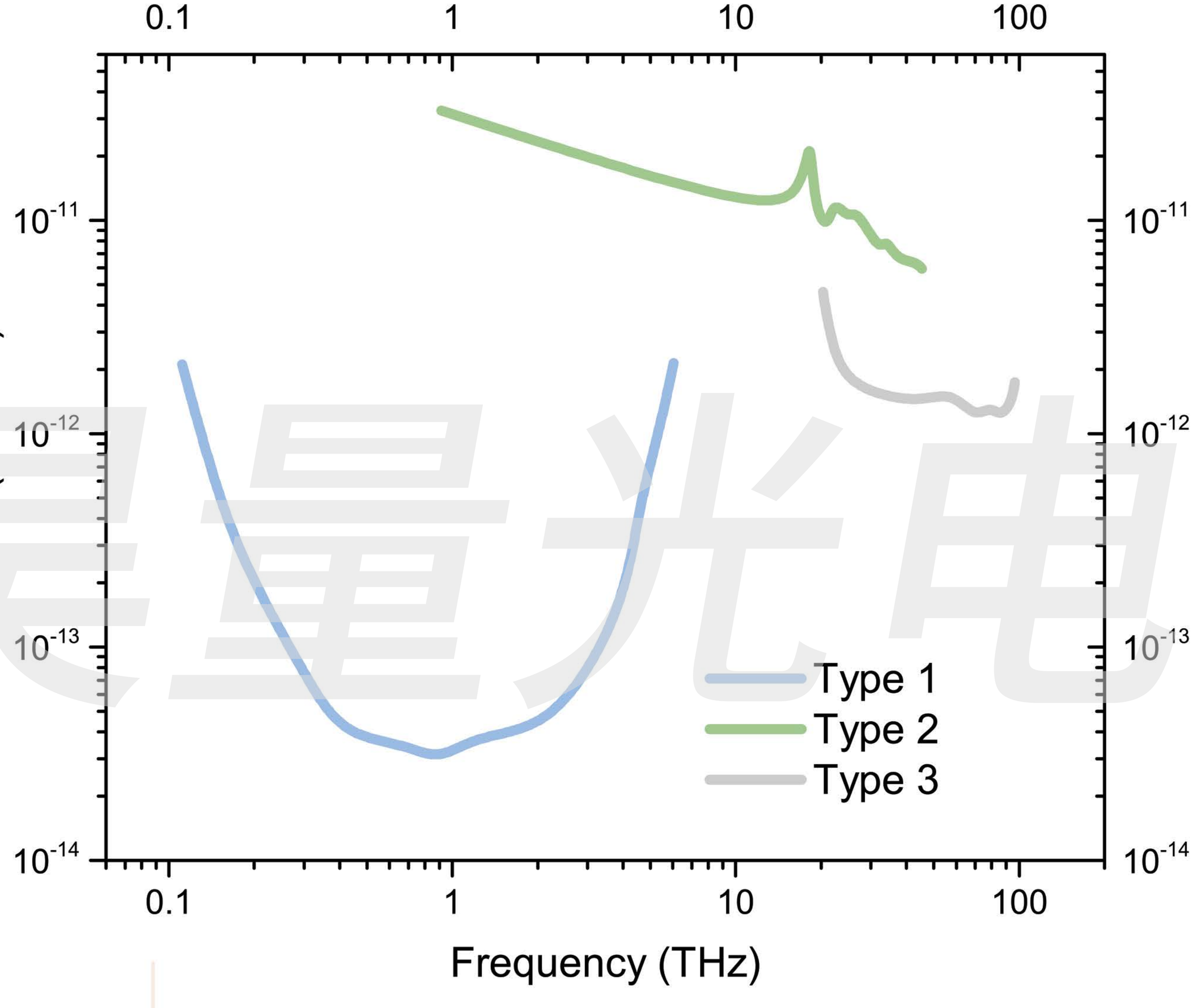
Closed-cycle cryostats are refrigerators based on the Gifford-McMahon cycle. Simple and stable long-term operation. Up to two detector channels. Operation range and response time are to be customized upon a request.

LHe cryostats are a convenient option if you work with liquid helium. Light and portable, they can easily fit into an experimental setup. Up to two detector channels. Operation range and response time are to be customized upon a request.

上海昊量光电设备有限公司 Phone: 4006-888-532 WeChat: Auniontech Website: www.auniontech.com E-mail: info@auniontech.com

HEB CONFIGURATIONS

The following data represents available HEB configurations and its parameters



If none of the configurations met your requirements we propose fabrication services for special HEB devices that could employ different superconducting materials or unique antenna layout.

Type	1	1a	1b
Frequency range (THz)	0.3-3 – optimal frequency range (3 dB flatness) 0.1-6 – full frequency range		
Upper level of dynamic range (μW at 3dB compression point)	$0.1 \cdot 10^{-13}$	$0.1 \cdot 10^{-13}$	$0.1 \cdot 10^{-13}$
Noise equivalent power (NEP), W/Hz	$5\text{-}7 \cdot 10^{-14}$	$3\text{-}5 \cdot 10^{-13}$	$5\text{-}8 \cdot 10^{-13}$
Responsivity of the bolometer, (V/W) *intrinsic characteristic of the HEB*	~10,000	~ 3,000	~ 2,000
Response time (ns)	~1	~0.1	~0.05
Sensitive material	MoRe	NbN	
Bandwidth of HEMT amplifier (MHz)	0.01-200	1-3500	1-8000
Maximum power handling capacity	50 μW		
Lens configuration	Hybrid antenna (Ø12 mm silicon hyperhemispherical lens and logarithmic periodic spiral antenna)		
Input beam Max diameter (mm)	10		
Beam pattern	F/3 to F/∞ (collimated)		

Type	2	2a
Frequency range (THz)	1-12 (40)	
Upper level of dynamic range (μW at 3dB compression point)	$50 \cdot 10^{-11}$	$50 \cdot 10^{-11}$
Noise equivalent power (NEP), W/Hz	$1\text{-}2 \cdot 10^{-10}$	$6\text{-}8 \cdot 10^{-10}$
Responsivity of the bolometer, (V/W) *intrinsic characteristic of the HEB*	~300	~ 100
Response time (ns)	~1	~0.1
Sensitive material	MoRe	NbN
Bandwidth of HEMT amplifier (MHz)	0.01-200	1-3500
Maximum power handling capacity	10 mW	
Lens configuration	Silicon lens (Ø12mm or Ø4mm silicon hyperhemispherical)	
Input beam Max diameter (mm)	10 (3)	
Beam pattern	F/3 to F/∞ (collimated)	

Type	3	3a
Frequency range (THz)	25-100	
Upper level of dynamic range (μW at 3dB compression point)	$2 \cdot 10^{-12}$	$2 \cdot 10^{-12}$
Noise equivalent power (NEP), W/Hz	$1\text{-}2 \cdot 10^{-10}$	$4\text{-}5 \cdot 10^{-10}$
Responsivity of the bolometer, (V/W) *intrinsic characteristic of the HEB*	~2,000	~ 500
Response time (ns)	~1	~0.1
Sensitive material	MoRe	NbN
Bandwidth of HEMT amplifier (MHz)	0.01-200	1-3500
Maximum power handling capacity	1 mW	
Lens configuration	Germanium or zinc selenide lens (Ø12 mm germanium hyperhemispherical)	
Input beam Max diameter (mm)	10	
Beam pattern	F/3 to F/∞ (collimated)	