Quantity	Target	Threshold	Unit	Driver / Remarks	Impact
Spectral					
ISRF FWHM	0,9	0,9	nm	Retrieval precision	Focal length, grating
Spectral oversampling	>3	> 2.7	-	Spectral characterisation & correction. Accuracy	Grating dispersion, pixel pitch
Spectral sampling interval	0.3 (ISRF/OS)	0.3 (ISRF/OS)	nm	derived from the spectral oversampling	Grating dispersion
Spectral range max	1690	1680	nm	CH4 absorption & InGaAs detection edge	Det. Temperature stability
Spectral range min	1580	1590	nm	driver is CO2 absorption bands	Detector pixels
N pixel rows/columns shall be reserved for dark current tracking on detector top, bottom, right and left edges	5	4	px	Should be ok with the 480 px x 533 px (act) detector	Detector pixels
Detector spectral pixels	480	>=380	px	Availability of detectors, BW & sampling interval	Spectral resolution, retrieval accuracy and precision
ACT pixels	533	>= 480	px		Swat width

Spectral pixel position accuracy	<10%	10%	%	CH4 precision	On ground calibration, mech. stability	
ISRF knowledge error	1%	2,50%	%	distribution width averaged over a single FoV position To be refined	On-ground calibration, mech. stability, stretch param inclusion in retrieval	
Max smile delta across 1580-1690 nm	0,3	0,5	px	ISRF stability, avoiding spectral mixing for non-uniform scenes	Optics design	
Smile	0,5	<2	px	Smile significantly less critical than graidient	Optics design	
Focal length	177	180	mm	Swath, GSD, SW		
Telescope F#	4	4	NA			
Aperture (round)	74	64	mm			
Slit width	35,4	<36	um			
Slit height	3,5	3,54	mm			
Grating shape	round	round				
Slit shape	curved	curved				
Grating constant	400			need <= 0.9 nm	ISRF FWHM	
Det pixel pitch	15	15	um			
AIT temperature		295	K			

operational temperature:		275	K			
operating range (+/-)		1	K			
Throughput: Spectrometer throughput shall be maintained down to a detection of minimum input flux of at nominal system Etendue	6,00E-06	6,00E-06	W/m2/sr/nm		or 5e13 ph/s/sr/nm/m^2, VZA 50°, albedo 0.05	
The dynamic range from dark to bright scenes should be maximised.	81	78	dB		based on simulated TOA. 20log (max_rad_bright/min_rad_dark) based on 50° SZA	
Imaging						
FoV ACT		20	5	km	Plume detection [RD5]	Detector pixels, telescope
The instantaneous-field of view		0,15	0,15		corresponding to 100 meters across track	
ACT pixel binning		2	2		SNR	Electronics
ACT PSF		50	50	m	Gaussian FWHM	
Across track GSD		100	100	m	Plume detection SNR	
Along track GSD		100	100	m	Plume detection, SNR	

Along track PSF	100	100	m	Plume detection	Pointing stability
ground time incremental without pointing	0,014	0,014	s	PSF and velocity at 32 degrees latitude	Platform agility
The integrated energy within a (	50%	50%	%		KTO:Cannot be met, but since aperture is now 64 mm can be relaxed to 50%
Keystone	0,1	<1	px	avoid smoothing out of plume information	
Radiometric performance					
SNR @ ref scenario albedo @1666.2 nm	457	329	-	XCH4 Precision	Integration time, pupil size, detector
Forward motion compensation	<=40	>= 7.6		increase in integration time, precision	Platform agility & stability
Detector saturation	>=500000	>= 200000	e/px	T_int	
integration time	dt*FMC<=0.5	dt*FMC>=0.1	s	SNR, Precision, check maximum to avoid saturation, adjustable	Pointing stability
Radiometric Accuracy					
Radiometric stability as defined	<1%	<1%			Change of ARA over time

	Zero-level offset	0,2	<0.3	%	corresp. To < 2e14 ph/s/sr/m2/nm @ alb 0.3 @ 1666 nm for < 5 ppb CH4 bias	
	Cloud Stray light after correction (max. per pixel)	<0.6	<3	%	XCH4 bias and precision	Baffling, band pass filters
	Multiplicative Radiometric accuracy	<=3	<=5	%	XCH4 bias. See [RD9] for physics - virtually 0 for proxy.	Is included in ARA
	Spectral channel stability over frame acquisition	ISRF/20	ISRF/10		retrieval accuracy	Mechanical stability
	Spectral channel stability scene	ISRF/20	ISRF/10		Defined by REQ-262	