

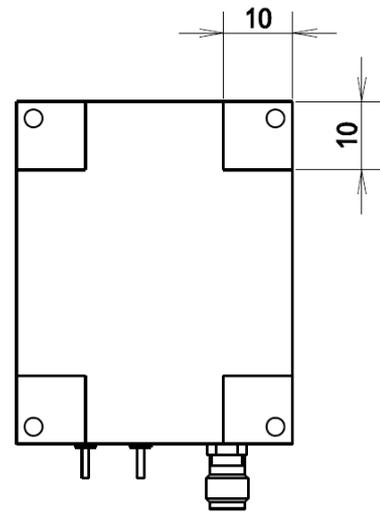
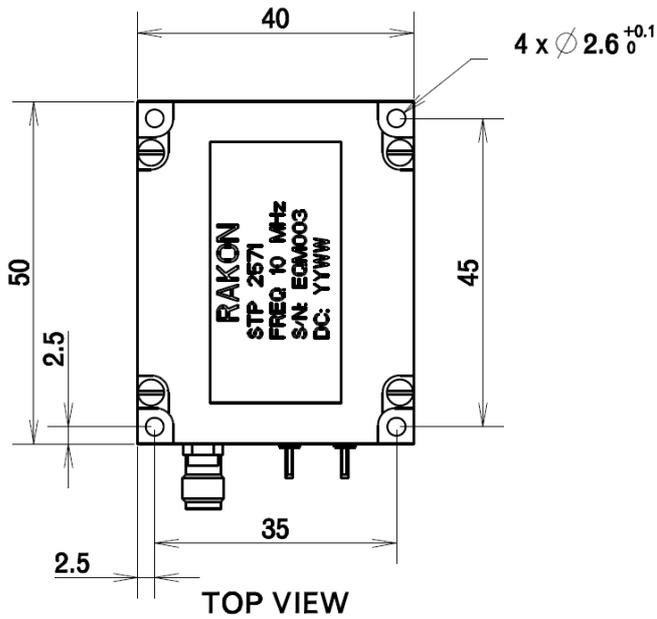
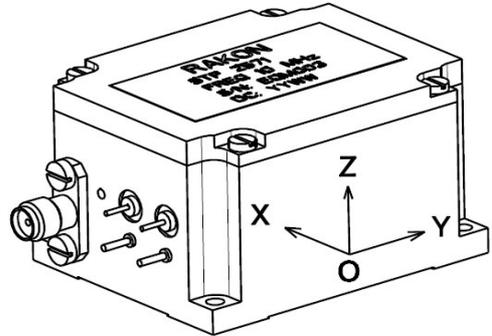
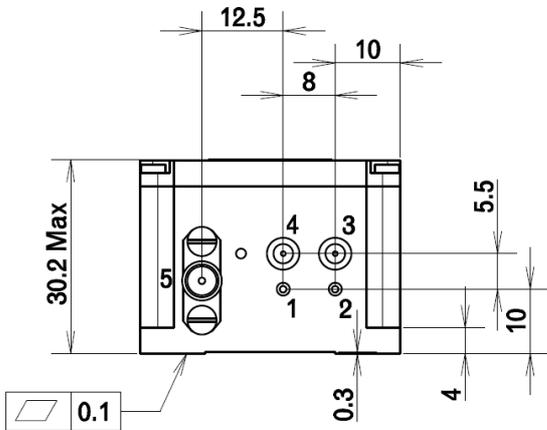
Specification for Space Mini-OCXO / 5E-7 accuracy all causes inclusive 15 years of operation

according to Space ESCC qualified PID for resonators & standard design & space processes for OCXOs

1.	Main Items		
1.1	Nominal frequency output	10.0 MHz	Fo, with load of 50 ohms \pm 5%
1.2	Initial accuracy @ +25°C	Fo \pm 5.0E-8 max.	@ delivery
2.	Temperature Range		
2.1	Operating range	-10°C to +65°C	
2.2	Storage temp. range	-40°C to +85°C	
3.	Power Supply		
3.1	Input voltage	+ 12.0 V	\pm 5%
3.2	Sensitivity vs. supply	\pm 5.0E-10	Versus \pm 5% of Vcc
4.	Power Consumption		
4.1	Steady state power (in W) vacuum	\leq 2.0	@ -10°C
		\leq 1.5	@ +25°C
		\leq 0.5	@ +60°C
4.2	Steady state power (in W) atmospheric pressure	\leq 4.0	@ -10°C
		\leq 3.0	@ +25°C
		\leq 1.0	@ +60°C
4.3	Warm-up power (in W)	\leq 5.0	
4.4	Warm-up time	30 mn from -10°C	to \pm 7E-08 of nominal frequency
5.	No EFC function (pin-out connection 4 – for Rakon’s use only)		
6.	Output Signal Waveform into 50 ohms load (\pm 5%)		
6.1	Output level (dBm)	\geq 0 & \leq +3	
6.2	Harmonics distortion	\leq - 70 dBc	
6.3	Non-harmonics distortion	\leq - 120 dBc	
6.4	VSWR	\leq 1.35 : 1	Typical 1.25 : 1
7.	Frequency Stability versus operating conditions		
7.1	Frequency vs. temperature	\leq 2.0E-9 peak to peak	-10° C to +65° C Temp. Change Rate: 3°C/ max.
7.2	Load change stability	$\leq \pm$ 5.0E-10	50 ohms \pm 5%
7.3	Frequency retrace	$\leq \pm$ 1.0E-9	after stabilized frequency then up to 24 hours off & 1hour on at @ +25°C
7.4	G sensitivity	$\leq \pm$ 1.0E-9 per G	
7.5	Magnetic field	$\leq \pm$ 5.0E-13 / Gauss	

8.	Frequency stability versus time of continuous operation (@ 10 MHz)		
8.1	Ageing per day	$\leq \pm 1.0 \text{ E-10}$	
8.2	for 30 days	$\leq \pm 3.0 \text{ E-9}$	
8.3	for 1 year	$\leq \pm 2.0 \text{ E-8}$	
8.4	for 15 years	$\leq \pm 1.0 \text{ E-7}$	
9.	Phase Noise (in dBc/Hz)		
9.1	Offset frequency	SSB Phase Noise @ 10.0 MHz	
	1 Hz	$\leq - 105$	
	10 Hz	$\leq - 135$	
	100 Hz	$\leq - 145$	
	1 kHz	$\leq - 152$	
	10 kHz	$\leq - 155$	
10.	Mechanical Requirement		
10.1	Pressure	From atmospheric to vacuum : $\leq \pm 1 \text{ E-8}$	
10.2	Acceleration	100 Hz sine 20 G / 1 minute (EQMs only)	
10.3	Shocks (EQMs - qualification models only) 1 shock per direction / 5 directions		
	Half sine / 900 G / 0.5 ms – still within tolerances		
	Survival level : 1200 G / 0.1 ms – no damage – still operating		
10.4	Random Vibration	each orthogonal axis / devices under test not powered-on	
	Frequency (Hz)	<i>EQM</i>	<i>FM</i>
	20 to 100	+2 dB/oct	+2 dB/oct
	100 to 400	0.735 G ² /Hz	0.519 G ² /Hz
	400 to 2,000	-3 dB/oct	- 3 dB/oct
	Duration per axis	120 s	60 s
10.5	Weight	100 g max. / 85 g typical	
11.	Package/ Pin Out		
12.1	Outline	Refer to below outline drawing	
12.2	RF-Out	SMA-Female connector	
12.3	Other functions	Through-hole leads	
13.	Radiation (cumulated dose for lifetime 15 years – low dose rate)		
13.1	Radiation Level	40 k rad cumulated	apply to Flight Model
14.	Reliability		
14.1	Reliability specification	MIL-HDBK-217E	Level-S for Flight Model

Interface Drawing (general tolerance +/- 0.1 mm)



- 1= 0V EFC Ground
- 2=0V&mechanical ground
- 3=+Vcc (input supply)
- 4= not to connect
(for Rakon 's use only)
- 5= RF output