

**Stp 2595 C / 2007 December, 19th.****Space Qualified Mini-OCXO** for Aero-Space**New interface drawing & lower Start-up temperature (from -55°C)**

Stp 2595 Provisional specification / 2006 October 29 / offer Npe 06-4411 B

Stp 2595 A 2007 February 06 / 12V power supply &amp; new frequency

Stp 2595 B 2007 April 20 / No EFC function

<b>1.</b>	<b>Main Parameters</b>		
1.1	Nominal output frequency	xxxxx MHz	Fo, with 50 ohms pure resistive load
1.2	Initial setting accuracy	+/-1 E-7	@ +25°C at shipment / atmospheric pressure
<b>2.</b>	<b>Temperature Range</b>		
2.1	Operational temp. range	-20°C to +65°C	Frequency stability specified
2.2	Functional temp. range	-35°C to +70°C	Frequency stability specified
<b>2.3</b>	<b>Operable low temperature</b>	<b>from -55°C</b>	<b>No frequency stability specified</b>
<b>3.</b>	<b>Power Supply</b>		
3.1	Input voltage	+12 V nom.	Vcc, +11.4V to +12.6V
3.2	Sensitivity	+/- 1 E-9	+/- 5% of Vcc
<b>4.</b>	<b>Power Consumption</b>		
4.1	Steady state power	2.5W max.	@ +25°C under vacuum
		3.5W max.	@ -20°C under vacuum
4.2	Steady state power	4.5W max.	@ +25°C at atmospheric pressure
		7.5W max.	@ -20°C at atmospheric pressure
4.3	Warm-up power	10 W nom.	@ -35°C (vacuum & atmospheric)
4.4	Warm-up times (measured at -35°C)	20 mn @ -35°C <b>30 mn @ -55°C</b>	within +/-1 E-08 of final frequency after 1 hour operation ( <b>not measured @ -55°C</b> )
<b>5.</b>	<b>Electrical Frequency Control Range – Not applicable</b>		
<b>6.</b>	<b>Output Signal Waveform</b>		
6.1	Waveform	Sine wave	Into 50 ohms pure resistive load
6.2	Output level	+6 dBm min.	Into 50 ohms pure resistive load
6.3	Harmonics distortion	-30 dBc min.	
6.4	Non-harmonics distortion	-120 dBc min.	from 10 Hz to 1.0 MHz
		- 80 dBc min.	from 1 MHz to 50 MHz
6.5	Load / VSWR	50 ohms nom.	+/- 5% / 1.25 : 1 max.
<b>7.</b>	<b>Frequency Stability</b>		
7.1	Frequency vs. temperature (+/- 3°C temp. Change max./mn)	+/-5 E-10 max. +/-2 E-9 max.	from -20°C up to +65°C from -35°C to +70°C
7.2	stability versus load change	+/-5 E-10 max.	50 ohms +/-5%
7.3	Frequency retrace	+/-3 E-9 max.	after 24 hours off & 1 hour on at @ +25°C
7.4	Acceleration sensitivity	+/- 5 E-10 typical	per 1 G acceleration
7.5	Frequency vs. pressure variation	+/- 1 E-8 max.	per Bar
7.6	Frequency vs. magnetic field	+/- 1 E-11	Per 1 Gauss change
<b>8.</b>	<b>Frequency Ageing after one month of continuous operation</b>		
8.1	Medium term stability	+/-5.0 E-11 max.	Over 1 day
8.2	Long term stability	+/-1.5 E-9 max.	Per month
8.3	Very Long term stability	+/-1.0 E-8 max.	Per year
8.4	Lifetime stability	+/-5.0 E-8 max.	Over 10 years lifetime

<b>9. Phase Noise</b>			
9.1	Offset frequency	SSB Phase Noise	Goal for SSB Phase Noise
	1Hz	-100 dBc/Hz min.	-110dBc/Hz min.
	10Hz	-130 dBc/Hz min.	-135dBc/Hz min.
	100Hz	-140 dBc/Hz min.	-145dBc/Hz min.
	1kHz	-150 dBc/Hz min.	
	10kHz & over	-155 dBc/Hz min.	
<b>10. Short Term Stability (Allan standard deviation)</b>			
	1 to 100 s	1.0 <sup>E</sup> -12 max.	
<b>11. Mechanical Requirements</b>			
11.1	Pressure	from atmospheric to vacuum	
11.2	Acceleration	20 G / 1 minute per orthogonal axis (Qualification Models)	
11.3	Mechanical Shocks	per each orthogonal axis / half sine / 625 G / 0.4 ms (Qualification Models)	
11.4	Sine Vibration	each orthogonal axis / Duration 2 oct./minute / 1 way	
	Frequency (Hz)	Level or double-amplitude (DA) / peak to peak amplitude	
		<u>Qualification level (QM)</u>	<u>Acceptance level of Flight Models (FM)</u>
	5 to 33.6	12.5 mm	5.5 mm
	33.6 to 100	25 G	12.5 G
11.5	Random Vibration	<u>Qualification level (QM)</u>	<u>Acceptance level of Flight Models (FM)</u>
	Frequency (Hz)	Power Spectrum Density (m <sup>2</sup> /s <sup>4</sup> /Hz)	
	20 to 70	+6dB/oct	+6dB/oct
	70 to 270	48.1 [0.5G <sup>2</sup> /Hz]	24.05 [0.25G <sup>2</sup> /Hz]
	270 to 400	-6dB/oct	-6dB/oct
	400 to 1000	22.1 [0.23G <sup>2</sup> /Hz]	11.05 [0.115G <sup>2</sup> /Hz]
	1000 to 2000	-8dB/oct	-8dB/oct
	Duration	270 s	60 s
	OVER ALL (m/s <sup>2</sup> rms)	193.06 [19.7Grms]	136.36 [13.9 Grms]

<b>12.</b>	<b>Package/ Pin Out</b>		
12.1	Outline Drawing	Refer to below drawing	
12.2	Connectors		
12.2.1	RF-Out	SMA-Female	
12.2.2	Power Supply & Vefc	Subminiature-D 9pin, male	
12.3	Mass / Weight	200 g max.	
<b>13.</b>	<b>Radiation</b>		
	Equipment exposed to external 100 k Rad max. cumulated over lifetime - shielding made of 2 mm thick aluminium sheet + OCXO package/structure - No Rad LAT required		
13.1	Radiation Level for specifying the components	30 k Rad min. required	Applicable to Flight Models
<b>14.</b>	<b>Reliability</b>		
14.1	Reliability specification	MIL-HDBK-217E	Level-S for Flight Model
14.2	General specification	MIL-PRF-55310	apply to Flight Model

### Outline Drawing

