Definitions of Test Conditions for Jauch OCXOs and VCOCXOs

Frequency Tolerance / Frequency Accuracy:

*1a: Measured frequency after 15 minutes of operation, observed with T_A=+25°C, at nominal V_{DC}, the nominal load and nominal center V_C (if applicable) and within 30 days after ex-factory. The measured frequency is referenced to the specified nominal frequency.

*1b: Measured frequency after 15 minutes of warm up time, observed with T_A=+25°C, at nominal V_{DC}, the nominal load and nominal center V_C (if applicable) within 90 days after shipment and before reflow. Measurement referenced to nominal frequency.

*1c: Measured frequency after 5 minutes of warm up time, referenced to final frequency measured after 2 hours and 5 minutes warm up time. Measurement to be taken within 90 days and after reflow.

Frequency Stability vs. Temperature:

*2a: T_A varied in the specified operating temperature range. The frequency variation is normalized to $f_{ref} = (f_{max} + f_{min})/2$, at nominal V_{DC} and nominal center V_C (if applicable), and at nominal output load, temperature variable speed less than 2°C per minute.

*2b: T_A varied in the specified operating temperature range. The frequency variation is referenced to the frequency observed at T_A=+25°C, nominal V_{DC} and nominal center V_C (if applicable), and at nominal output load, temperature variable speed less than 2°C per minute.

*2c: T_A varied in the specified operating temperature range. The frequency variation is calculated by the following formula: $(f_{max}-f_{min})/f_0$, where f_0 is the nominal frequency. The frequency variation is observed at nominal V_{DC} and nominal center V_C (if applicable), and at nominal output load, temperature variable speed less than 2°C per minute.

Frequency Stability vs. Supply Voltage Variation:

*3: Frequency variation if V_{DC} is varied by ± 5% of nominal V_{DC}, frequency variation is normalized to frequency observed at nominal V_{DC}, nominal center V_C (if applicable), T_A=+25 °C and nominal load.

Frequency Stability vs. Load Change:

*4: Frequency variation if the load is varied by ± 5% of nominal load, frequency variation is normalized to frequency observed at nominal V_{DC}, nominal center V_C (if applicable), T_A=+25 °C and nominal load.

Frequency Stability due to Double Reflow (only applicable to SMD components):

*5: At specified reflow soldering profile, tested with T_A=+25 °C and nominal output load, nominal V_{DC} and nominal center V_C (if applicable). At least 24 hours of static placement at room temperature is necessary after completion of 2 times reflow.

Frequency Drift vs. Time (Aging):

*6: Long-term maximum frequency deviation at T_A=+25°C over the specified time, referred to the ex-factory status at constant T_A, nominal V_{DC} and nominal V_C (if applicable). The frequency reference is determined at T_A=+25 °C, at nominal V_{DC}, nominal center V_C (if applicable), nominal load and 30 days of operation. Normally, the largest frequency deviation occurs within the 1st year.

Frequency Drift at Constant Temperature:

*7: Maximum frequency deviation within 24 hours in a steady state. The initial status acquired at T_A=+25 °C, at nominal V_{DC}, nominal center V_C (if applicable), nominal load and after 30 days of continuous operation.

Holdover Stability (at temperature variation or constant temperature):

*8a: Maximum frequency deviation within 24 hours including temperature variation. The reference frequency is determined at T_A=+25°C, at nominal V_{DC}, nominal center V_C (if applicable), nominal load and after 30 days of continuous operation.

*8b: Maximum frequency deviation within 24 hours in still air, at a maximum temperature variation less than +/-1°C. The reference frequency is determined at T_A=+25°C, at nominal V_{DC}, nominal center V_C (if applicable), nominal load and after 30 days of continuous operation.

Free Run Frequency Stability:

*9: Maximum frequency deviation including stability vs. temperature, tolerance ex. factory, aging over 20 years, supply and load variation, referenced to nominal frequency.

Frequency Slope over Temperature:

*10: Frequency slope (dF/dT_A) at a maximum T_A change of +/-1°C/min with any temperature window over the specified operating temperature range. The frequency slope (dF/dT_A) also includes hysteresis effects. The frequency is acquired at nominal V_{DC}, nominal center V_C (if applicable), nominal load and after 1h of continuous operation.

Micro Jump:

*11a: Frequency deviation of adjacent two-samples. Test duration is 48 hours. Sampling rate is 1 sample per hour. Tested after 30 days of continuous power on. The environment guarantees T_A fluctuation is less than 3°C.

*11b: Frequency deviation of adjacent two-samples. Test duration is 48 hours. Sampling rate is 1 sample per 10 seconds. Tested after 30 days of continuous power on. The environment guarantees T_A fluctuation is less than 3°C.

Retrace:

*12a: Frequency at 15 min after 2nd power on minus frequency at the last reading before power off. Power off time is 24 hours. The initial status before power off is acquired at T_A=+25 °C, at nominal V_{DC}, nominal center V_C (if applicable), nominal load and after 1h of continuous operation.

*12b: Frequency at 45 sec after 2nd power on minus frequency at the last reading before power off. The 1st power on time is 1 hour. Power off time is 15 min. T_A can be varied in the specified temperature range.

Hysteresis over Temperature:

*13: Frequency hysteresis over the specified temperature range, at a maximum temperature variation of 0.5°C per minute to ensure that the package has completely adapted to the environmental temperature. The frequency hysteresis refers to the maximum frequency difference between the temperature ramping-up and the temperature ramping down cycle.

Warm Up Time:

*14: Time until the maximum frequency deviation is less than the specified value, referred to the final frequency. This final frequency is acquired after 1h of continuous operation at T_A=+25°C, at nominal V_{DC}, nominal center V_C (if applicable) and nominal load.