

§24.135 Frequency Stability/Temperature Variation

To obtain actual radiated signal strength, a signal generator is adjusted in output until a reading identical to that obtained with the actual transmitter is obtained at the receiver. Signal strength is read directly from the generator and recorded on the attached table.

The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +60°C using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ± 0.0001 (± 1 ppm) of the center frequency.

Time Period and Procedure:

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature (25°C to 27°C to provide a reference).
2. The equipment is subjected to an overnight "soak" at -30°C without any power applied.
3. After the overnight "soak" at 30°C (usually 14 16 hours), the equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter and the individual oscillators is made within a three minute interval after applying power to the transmitter.
4. Frequency measurements are made at 10°C interval up to room temperature. At least a period of one and one half-hour is provided to allow stabilization of the equipment at each temperature level.
5. Again the transmitter carrier frequency and the individual oscillators is measured at room temperature to begin measurement of the upper temperature levels.
6. Frequency were made at 10 intervals starting at 30°C up to +50°C allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.

NOTE: The EUT is tested down to the battery endpoint.

Test Data

§ 24.135 FREQUENCY STABILITY (PCS)

OPERATING FREQUENCY: 1,880,000,010 Hz
CHANNEL: 600
REFERENCE VOLTAGE: 3.6 VDC
DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQ. (Hz)	Deviation (%)
100 %	3.60	+ 20 (Ref)	1,880,000,010	0.000000
100 %		- 30	1,880,000,687	-0.000036
100 %		- 20	1,880,000,593	-0.000031
100 %		- 10	1,879,999,690	0.000017
100 %		0	1,879,999,841	0.000009
100 %		+ 10	1,879,999,972	0.000002
100 %		+ 20	1,880,000,010	0.000000
100 %		+ 25	1,879,999,991	0.000001
100 %		+ 30	1,879,999,860	0.000008
100 %		+ 40	1,880,000,179	-0.000009
100 %		+ 50	1,880,000,405	-0.000021
100 %		+ 60	1,880,000,480	-0.000025
85 %	3.06	+ 20	1,880,000,010	0.000000
115 %	4.14	+ 20	1,880,000,010	0.000000
BATT. ENDPOINT	2.76	+ 20	1,880,000,010	0.000000

Test Data (Continued)

§ 24.135 FREQUENCY STABILITY (PCS)

