Description of power test standards

1. IEC Long-term test

The long-term test is designed to measure the maximum output a sound source (amplifier) can produce without damaging the loudspeaker permanently.

The signal used must be a noise signal simulating "normal speech and music" (normal program material) with a crest factor approximately 2. This signal is switched on in a sequence of 1 minute, followed by a 1 minute pause. This sequence must be repeated 10 times at the same power level.

The test simulates an extreme load, thermally as well as mechanically, which the speaker can experience for short periods.

If the speaker has not suffered permanently damage mechanically, electrically or acoustically after this test, the unit is supplied with an IEC long-term rating at this power level.

Power test					
Power test	On - time	OFF - time	Repetition	Effect	Remark
IEC Long-term	1 min.	2 min.	10	Constant	

2. PEERLESS Long-term test

As it is often hard to determine the maximum power level of a speaker by the above method, PEERLESS used an internal method for determining this parameter. This method is called the "PEERLESS Long-term test", which is actually a modified IEC Long Term test.

The test starts at a relatively low load level, which the speaker can tolerate with certainty. A complete IEC Long-term test of 20 minutes is initiated with the effect observed. If the speaker is not harmed in this test, the power is increased immediately by a pre-determined factor and the test is repeated until the speaker obtains a significant change in the electric, acoustic or mechanic qualities. These changes are detected by measuring the sound pressure level (SPL) produced during the test. If the SPL suddenly differs considerably, the test is stopped and an inspection of the unit is initiated. If it appears that the speaker is damaged because of overheating or mechanical exhaustion, it is verified that it is damaged due to a natural reaction to the load in question and not due to a weakness in the system. The experiment is then repeated on another unit to confirm that the unit representative. In this way the breakdown level of the speaker is determined.

A new speaker is then tested by a true IEC long test at a little lower level to reveal the maximum tolerable power level. So is the IEC long term test rating being found.

Power test					
Power test	On - time	OFF - time	Repetition	Effect	Remark
PEERLESS Long-Term	1 min.	2 min.	10	Constant per sequence	Sequence of 20 min. is repeated at a higher power level

3. IEC Rated power test

The Rated power test is designed to measure the maximum power a speaker can stand during a period of 100 hours without causing damage to the loudspeaker. As with the other tests, the signal simulates "normal speech and music". After the test, the speaker must rest for 24 hours before it is measured for changes in the electric, mechanic or acoustic qualities.

This test is an accelerated lifetime test, which reveals failures from materials, extreme overheating and other changes in the parameters over long-term usage.

Power test					
Power test	On - time	OFF - time	Repetition	Effect	Remark
IEC Rated power	100 hours	24 hours	0	Constant	

4. EIA Power test

The EIA power test is an accelerated test measuring the loudspeaker´s ability to provide long service at rated power. The signal which is applied to the speaker for an uninterrupted period of 8 hours simulates "normal speech and music". After the test, the speaker must rest for at least 1 hour or until the temperature of the magnet has returned below 35°C - after which it is measured for changes in the electric, mechanic or acoustic qualities.

Power test					
Power test	On - time	OFF - time	Repetition	Effect	Remark
EIA	8 hours	1 hour minimum or until the magnet is below 35°C	0	Constant	

5. Standards

International Standard

IEC 268-5 by International Electrotechnical Commission

American National Standard

EIA RS-426-a by Electronic Industries Association (Engineering department)

Survey of power tests						
	Power test	ON - time	OFF - time	Repetition	Effect	Remark
1	IEC Long-term	1 min.	2 min.	10	Constant	
2	PEERLESS Long-Term	1 min.	2 min.	10	Constant	Sequence of 20 min. is repeated at a higher power level
3	IEC Rated power	100 hours	24 hours	0	Constant per sequence	
4	EIA	8 hours	1 hour minimum or until the magnet is below 35°C	0	Constant	