



Preliminary Reliability Analysis Report

Focused on MTBF calculation

October 12, 2016

Prepared by Kwon Woong Bee
Engineer

Confirm by Jeong Young Nam
Senior Manager

Approved by An Shin Hu 
Senior Manager

R&D Quality Assurance Group
Quality Assurance Team
Security Solution Business

HANWHA TECHWIN Co., LTD



Description:

Preliminary reliability prediction (MTBF Calculation) methodologies leveled from devices to system by using Telcordia Issue 1 called SR-332.

- 1) Device: There several methods to predict and electronic device in Telcordia Issue 1 (SR-332) but this document is based on Case-3 of Method-I Part Count when device specification is available.
And the other case, this document uses generic reliability data such as EPRD97 or NPRD95
- 2) Assembly: Assembly steady-state failure rate prediction is computed as the sum of the device failure rate prediction for all devices in the assembly and multiplied by the assembly environmental factor.
- 3) System: With the specified reliability parameters, failure criteria, equipment configuration, and operating conditions, the total system failure rate can be calculated as the sum of the assembly failure rates.

Unit of The Parameters

- 1) Failure rate = (failure frequencies / 10^6 hour)
- 2) MTBF (Mean Time Between Failure): In fact, this system is assumed that all devices and assembly is not repairable. Normal usage of MTBF has a meaning to cover every specific case.

MTBF = 1 / failure rate.

Preliminary reliability Prediction Result

Environment : GF, GU – Ground Fixed, Uncontrolled
Temperature : 25 °C

**Network Camera :**

MTBF [hours]

MODEL	MTBF	Failure Rate	Product feature	Remark
PNF-9010RVM	226,450	4.42×10^{-6}	4K IR Fisheye Network Camera	