

# Preliminary Reliability Analysis Report

## Focused on MTBF calculation

---

*February 14, 2017*

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]

<b>MODEL</b>	<b>MTBF</b>	<b>Failure Rate</b>	<b>Product feature</b>	<b>Remark</b>
XND-6080	273,966	$3.65 \times 10^{-6}$	WN5 2M Network Dome Camera	