

# Report for MiCAM03+N256CAM Safety Test

Temperature in normal working and single failure situation

Brainvision Inc. Tokyo, Japan

## Purpose

Compliance evaluation for IECT61010-1-3 standard

## EUT

Processor MiCAM03PRC, Camera N256CAM (2set), Cables,

## Measurement

Temperature measured by four thermo couples on exterior surface of EUT which is running as monitor mode continuously. Locations are shown on Fig.1.

## Single Failure

Case1. Block ventilation holes by plastic tape (Shown on Fig.2.)  
Case2. Stop a ventilation fan by stacking bar (Shown on Fig.3.)

## Setup

EUT is put on desktop as Fig.1 which is not in scale and cables are abbreviated.  
Distance between a processor and cameras are about 50cm  
Desktop is made from wood.

## Protocol

1. Measure temperature before turn on EUT
2. Turn on EUT main power and monitor mode begin
3. Measure temperature each 30min. until 120min
4. Set failure case1, and measure temperature each 30min, until 120min
5. Remove failure, and wait 30min for recover
6. Set failure case2, and measure temperature each 30min, until 120min
7. Remove failure, and wait 30min for recover

## Equipment

AD-5601A Thermometer (K). AND co. Ltd.  
HT-9815 Thermocouple Thermometers, Dongguan Xintai Instruments Co. Ltd.

## Date

5/12/2018

## Examiner

Michinori Ichikawa and Takanori Tanite

Fig1. Location of Thermo Couple

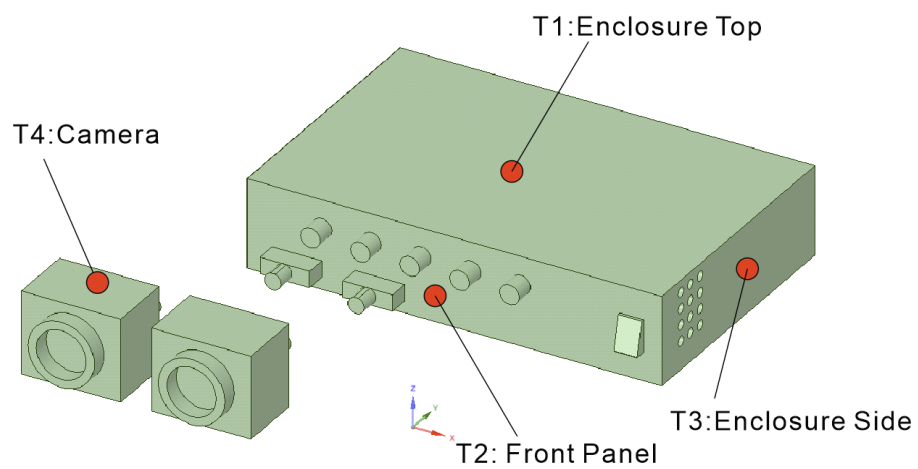


Fig2. Single Failure Case1: Block ventilation holes

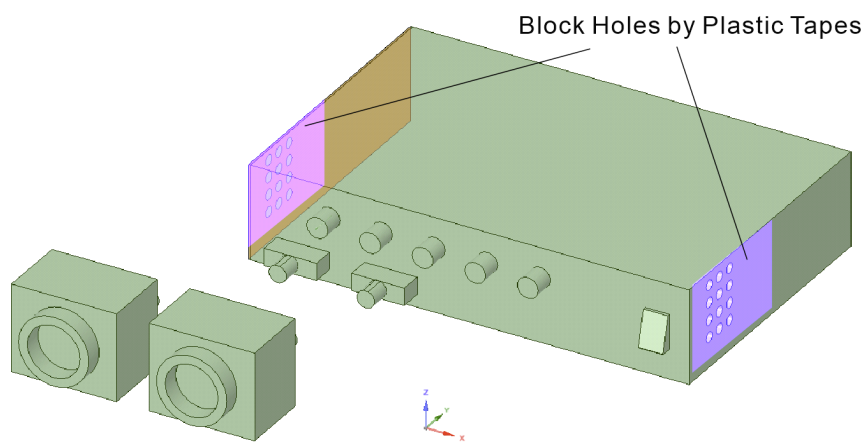
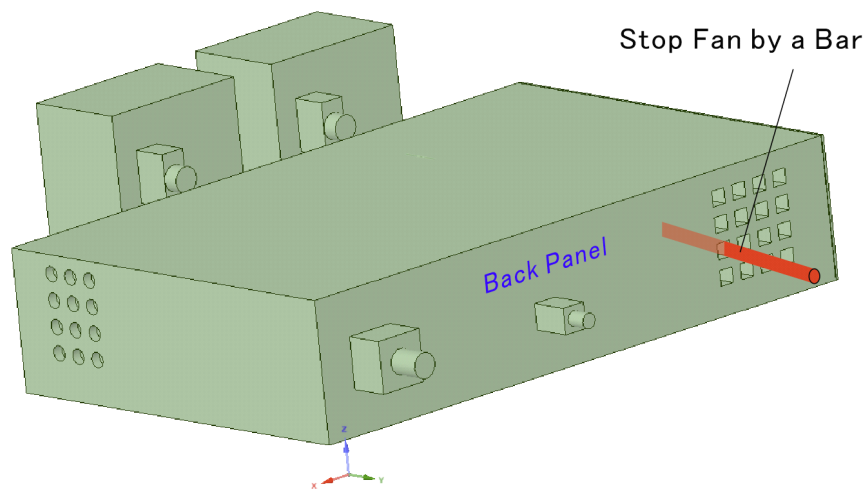


Fig3. Single Failure Case2: Stop FAN by stacking bar



## Results

Table 1. Nomal condition

	0min	30min	60min	90min	120min	
T1: enclodure top	25.2	26.2	26.3	26.3	<b>26.4</b>	
T2: front panel	25.5	25.4	26.2	26.3	<b>26.4</b>	
T3: enclosure side	25.5	26.1	26.5	27.1	<b>27.2</b>	
T4: camera side	25.6	30.2	31.5	31.7	<b>31.8</b>	

Table 2. Single Falure Case 2(Block Holes)

	0min	30min	60min	90min	120min	Recover
T1: enclodure top	26.4	30.4	30.5	30.5	<b>30.5</b>	26.4
T2: front panel	26.3	28.9	29.7	30	<b>29.9</b>	26.4
T3: enclosure side	26.7	31.9	32.1	31.8	<b>31.8</b>	26.5
T4: camera side	31.8	33	33.7	34.7	<b>34.7</b>	32.4

Table 3. Single Falure Case 1(FAN stoped)

	0min	30min	60min	90min	120min	Recover
T1: enclodure top	26.4	30.7	31.3	32.1	<b>33.4</b>	26.4
T2: front panel	26.4	28.8	29.6	31.3	<b>31.9</b>	26.5
T3: enclosure side	26.5	30.5	31.2	31.9	<b>33.6</b>	27.7
T4: camera side	32.4	33.9	34.2	34.8	<b>35.5</b>	33.4

Room Temperature is 25.1C

unit: deg C

## Conclusion

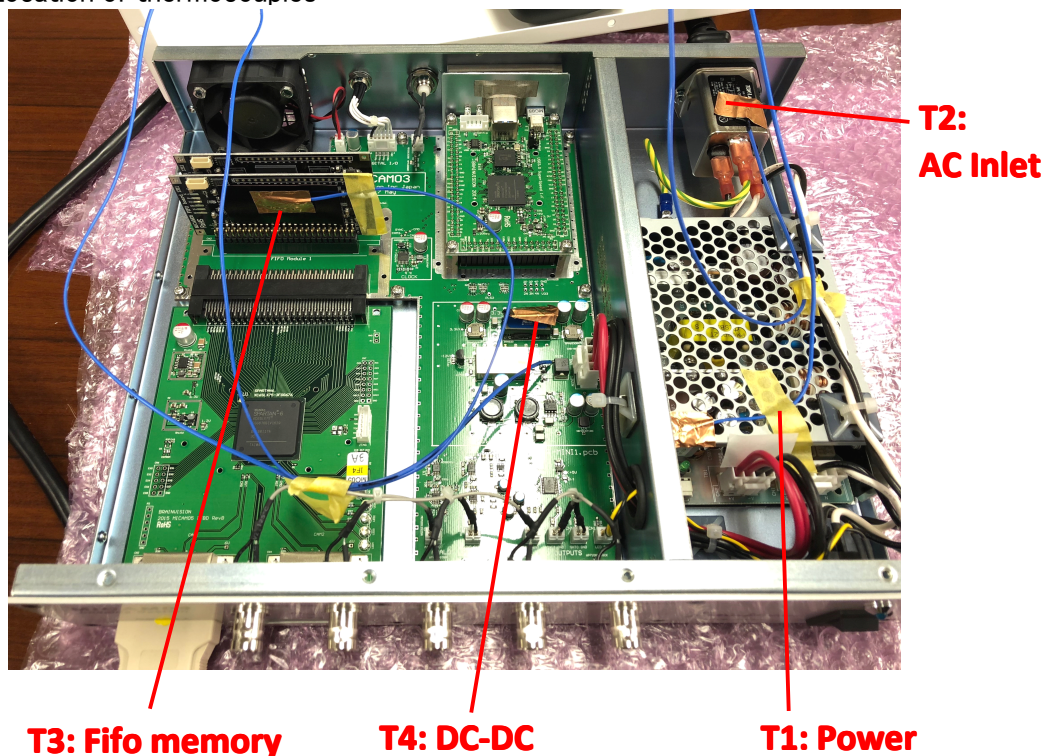
EUT is safe for single falure on themal risk and harmful  
EUT's working temperature is compliance of IECT61010-1-3

## Appendix

### Observation report for temperature of internal components in MiCAM03 processor

Purpose	Reliability and safety analyses for product
EUT	MiCAM03-PRC and MC-N256CAM(2sets)
Measurment	Temperature measured by four thermo couples on devices of EUT which is running as monitor mode continuously. Locations are shown on Picture1
Single Falure	Stop a ventilation fun by a stacking bar (Shown on Picture2)
Setup	Coverd up after placing themo couples as shown on Picture1
Protocol	<ol style="list-style-type: none"><li>1. Measure temperature befor turn on EUT</li><li>2. Turn on EUT main power and monitor mode begin</li><li>3. Measure temperature each 30min. until 60min</li><li>4. Set falure case1, and measure temperature each 30min, until 120min</li><li>5. Remove falure, and wait 60min for recover</li></ol>
Equipment	AD-5601A Thermometer (K). AND co. ltd. HT-9815 Thermocouple Thermomaters, Dongguan Xintai Instruments Co. Ltd.
Date	31/10/2018
Examiner	Takanori Tanite

Picture1 Location of thermocouples





Picture2 Single Falure Condition (FAN Stopped by a stacking bar)



## Results

**Table A1. Measurement was performed with the fan operating normally.**

Time	T1	T2	T3	T4	Comments
0	26.9	26.9	27.8	27.1	Power trun off
1min	28	27	40.9	38.7	Power trun on
27min	28.4	27.4	40.5	38.8	
72min	28.7	27.5	39.4	38.9	saturated

(deg C)

**Table A2. Measurement was performed with the fan abnormally stopped.**

Time	T1	T2	T3	T4	Comments
0	30.1	27.8	42.6	41.8	
40min	42.9	32.3	56.8	60.9	
66min	44.3	33.6	57.8	62.2	
96min	44.9	34.2	58.2	62.7	
126min	45.3	34.6	58.5	63.3	
156min	45	34.2	58	62.9	saturated

(deg C)

**Table A3. Recovery**

Time	T1	T2	T3	T4	Comments
0	45	34.2	58	62.9	
60min	28	27.6	38.5	38.3	almost recover

(deg C)

Room Temperature is 26.5C

In all time during test, camera function is normal.

## Conclusion

No risks for fire and fatal falure are caused by loss of FAN rotation.