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## **Product Change Request**

**Product: NanEye camera modules**

**Change Number: 07**

**Title: Cable Supplier**


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## 1 Information

Product ID: *General NanEye camera modules*

Date of request: *01 of August 2017*

Category: Cat 1 (Major)       Cat 2 (Minor)

## 2 Description of change:

### 2.1 New Cable Supplier

*To reinforce the supply chain, ams decided to qualify a new cable supplier for the current NanEye Camera Modules. The second source strategy strengthens ams supply chain, assuring the supply of NanEye cameras in situations such as EOL (End Of Life) and material shortage in one of the suppliers.*

*ams does not intend to skip current cable supplier but keep all qualified sources running in parallel. This strategy will reinsure the continuous delivery of cable satisfying current client's demands.*

Type of change:

- Material change
- Process change
- Method change
- Other: New Cable Supplier

## 3 Motivation for change

- Yield enhancement
- Continuous improvement
- Quality / reliability
- Process stability
- Cost reduction
- Customer request

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other:

*The current Supply Chain is vulnerable towards a EOL situation. As part of ams continuous improvement programs, the SCM decided to impose a second source strategy in some of the most critical components such as the cable used for the NanEye camera modules.*

## **4 Risk assessment / Evaluation of Impact**

### **4.1 Cost of change**

*There will be no impact.*

### **4.2 Impact on product pricing**

*There will be no impact.*

### **4.3 Impact on schedule**

*There will be no impact.*

### **4.4 Impact on design**

*There will be no impact.*

### **4.5 Impact on product performance**

*There will be no impact.*

### **4.6 Impact on yield or process stability**

*There will be no impact.*

### **4.7 Impact on supply chain**

*Supply Chain will be reinforced with a new cable supplier.*

### **4.8 Impact on inventory**

*There will be no impact.*

### **4.9 Impact on tooling and equipment**


*There will be no impact.*

### **4.10 Impact on reliability/qualification status**

*The qualification report is attached (Section 8.1).*

### **4.11 Impact on packing & shipment**

*There will be no impact.*

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#### **4.12 Impact on other customers/existing applications**

*There will be no impact.*

### **5 Implementation of Change**

#### **5.1 Implementation date and schedule**

*The new cable supplier will be immediately introduce in the supply chain.*

#### **5.2 Verification strategy**

*Not applicable.*

#### **5.3 Traceability**

*The traceability of each cable supplier is being used in our products is assured by our current SAP system as well as in our Assy Subcon.*

#### **5.4 Marking**

*Not applicable.*

#### **5.5 Documents to be updated**


*Not applicable.*

### **6 Verification of implementation**

*Approval of the WI change by ams.*

### **7 Comments**

*Not applicable.*

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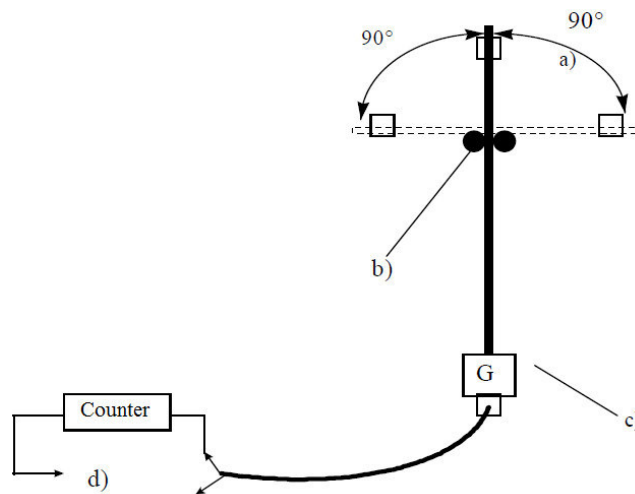
## 8 Attachments

### 8.1 Qualification Report: Frequent Flexion

*In order to qualify the new cable, a frequent flexion test was perform in order to determine cable robustness:*


#### 8.1.1 Test equipment:

- a) Swing angle
- b) Rotary Bearings
- c) Resilience
- d) Monitoring unit:
  - a. Termination criterion = conductor breakage



#### 8.1.2 Test conditions:

- Castors -  $\varnothing$ : 5 mm
- Distance between rollers: = cable  $\varnothing$  x 1.1
- Weight load: 0.25 N
- Speed: 37 cycles / min.
- Num. Of samples: 3
- Sample length: 900 mm

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Abort criterion is a ladder break.

Should: record cycles

### 8.1.3 Test Results

| Sample Nr.   | Cycles | Test result |
|--------------|--------|-------------|
| 1. (R0,18mm) | 3470   | broken wire |
| 2. (R0,18mm) | 4090   | broken wire |
| 3. (R0,18mm) | 5290   | broken wire |

### 8.1.4 Comparison test


*In order to compare the cables being supplied by the current supplier and the one being qualified a new test was performed to test the elongation spec. of the cables from both suppliers.*

Test Conditions: Same as 8.1.1 and 8.1.2

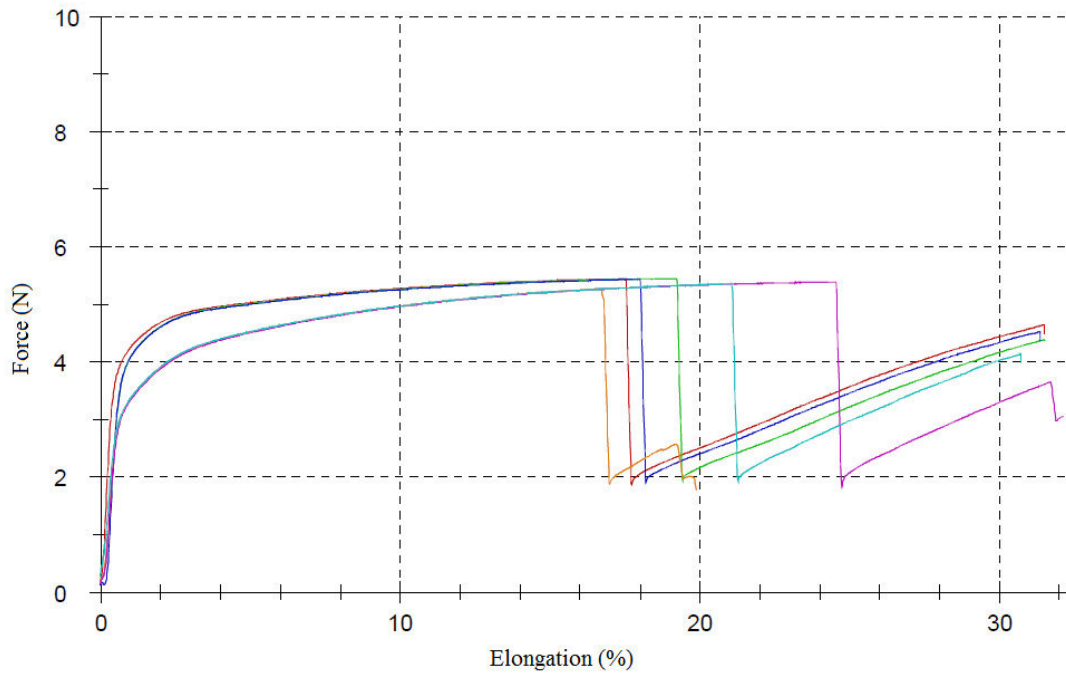
Parameter table: Stretching speed: 100 mm/min

| Sample number | Sample no. | Description<br>Sub - series 1 | F <sub>max</sub> (N) | dL by F <sub>max</sub><br>(mm) | F <sub>Brunch</sub> (N) | dl by Brunch<br>(mm) |
|---------------|------------|-------------------------------|----------------------|--------------------------------|-------------------------|----------------------|
| 1.1           | 1          | New<br>Supplier               | 5,44                 | 17,4                           | 4,47                    | 31,5                 |
| 1.2           | 2          |                               | 5,44                 | 19,1                           | 4,36                    | 31,5                 |
| 1.3           | 3          |                               | 5,42                 | 18                             | 4,35                    | 31,4                 |
| 2.1           | 4          | Current<br>Supplier           | 5,26                 | 16,7                           | 1,77                    | 19,9                 |
| 2.2           | 5          |                               | 5,38                 | 24,4                           | 3,04                    | 32,1                 |
| 2.3           | 6          |                               | 5,35                 | 21                             | 3,98                    | 30,7                 |



|                                   |   |               |
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### 8.1.5 Trend graphic





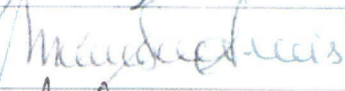
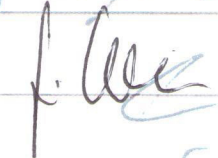
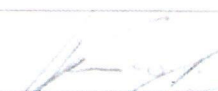

### 8.1.6 Conclusion

If we observed the general results obtained during the qualification of the new cable supplier, it is clear that the new cable presents a better performance when compared with the old cable. Therefore, and by comparing the two results, we considered it to be qualify and ready to be used into the ams supply chain.

|                                   |                         |                |
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## 9 Approvals

### CMOSIS:

| Dept   | Name            | Date       | Signature   |
|--|-----------------|------------|---|
| Product Engineering                              | Xavier Salmon   | 19.09.2017 |    |
| <del>Sales/Marketing/Product</del><br>Management | Antonio Gomes   | 01.09.2017 |    |
| <del>Operations/Planning</del>                   | Hónica Dinis    | 01.09.2017 |    |
| Project Management                               | Stephan Voltz   | 19.09.2017 |   |
| Quality  | Uc Freytag      | 14.9.17    |  |
| Assembly Engineering                             | Francisco Dinis | 07.08.2017 |  |

### Customer:

| Dept | Name | Date | Signature |
|------|------|------|-----------|
|      |      |      |           |
|      |      |      |           |
|      |      |      |           |
|      |      |      |           |