

# 承 认 书

## SPECIFICATION FOR APPROVAL

客 户 名 称

CUSTOMER NAME:

产 品 名 称

PRODUCT NAME: 2.4G\5.8G-5dBi 剑形 SMA 公头母针黑色天线

客 户 料 号

CUSTOMER P/N:

公 司 料 号

COMPANY P/N:

REV: A

|              | MANUFACTURER<br>SIGNATURE | CUSTOMER<br>SIGNATURE |
|--------------|---------------------------|-----------------------|
| CHECKED BY:  |                           |                       |
| APPROVED BY: |                           |                       |
| DATE:        | 2015/11/14                |                       |

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# Contents

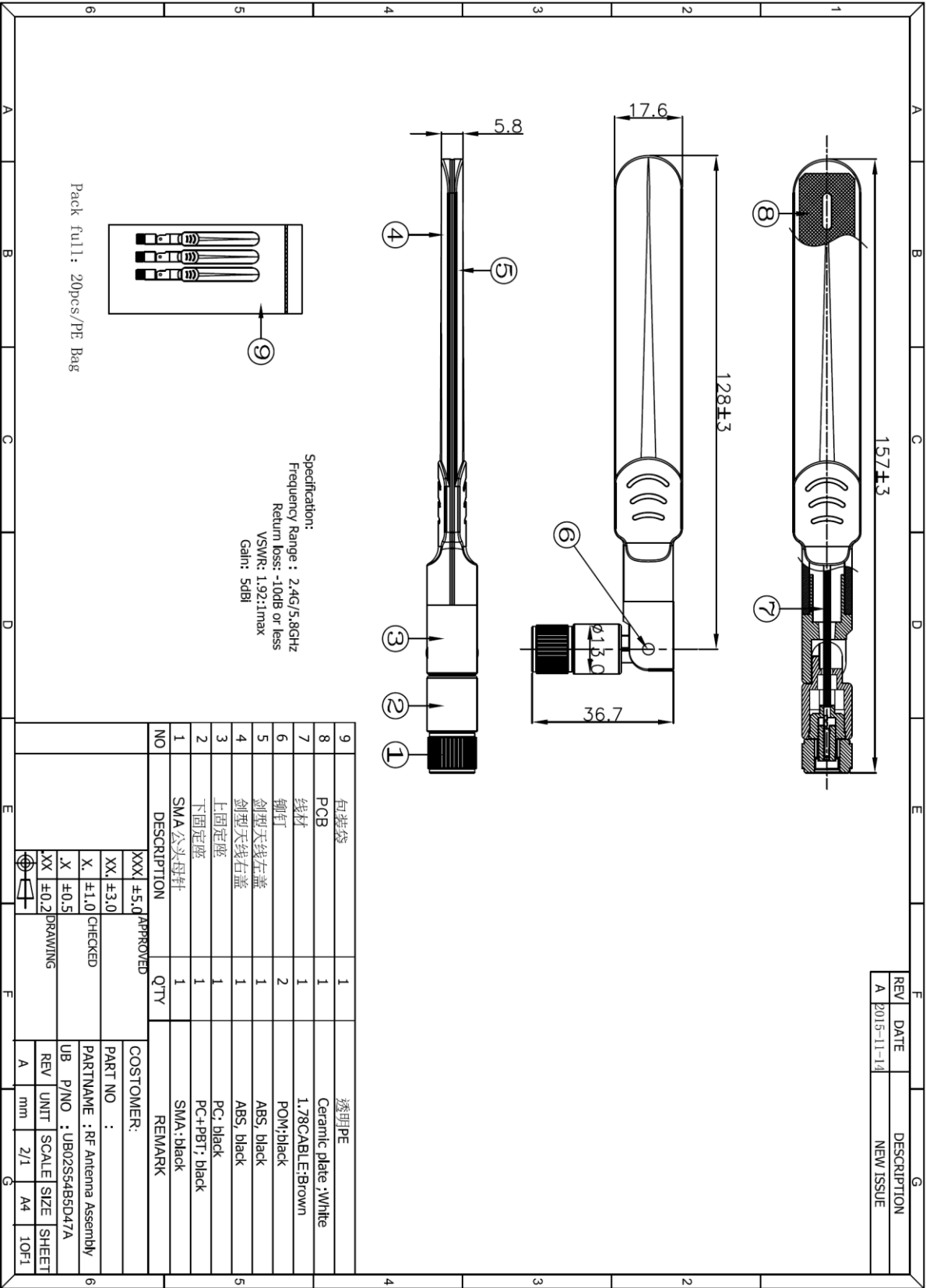
| <i>Item</i> | <i>Description</i> |
|-------------|--------------------|
| 1.          | 规格表                |
| 2.          | 成品图                |
| 3.          | 测试报告               |
| 4、          | SGS 报告             |

1. 规格表:

产品主要技术参数

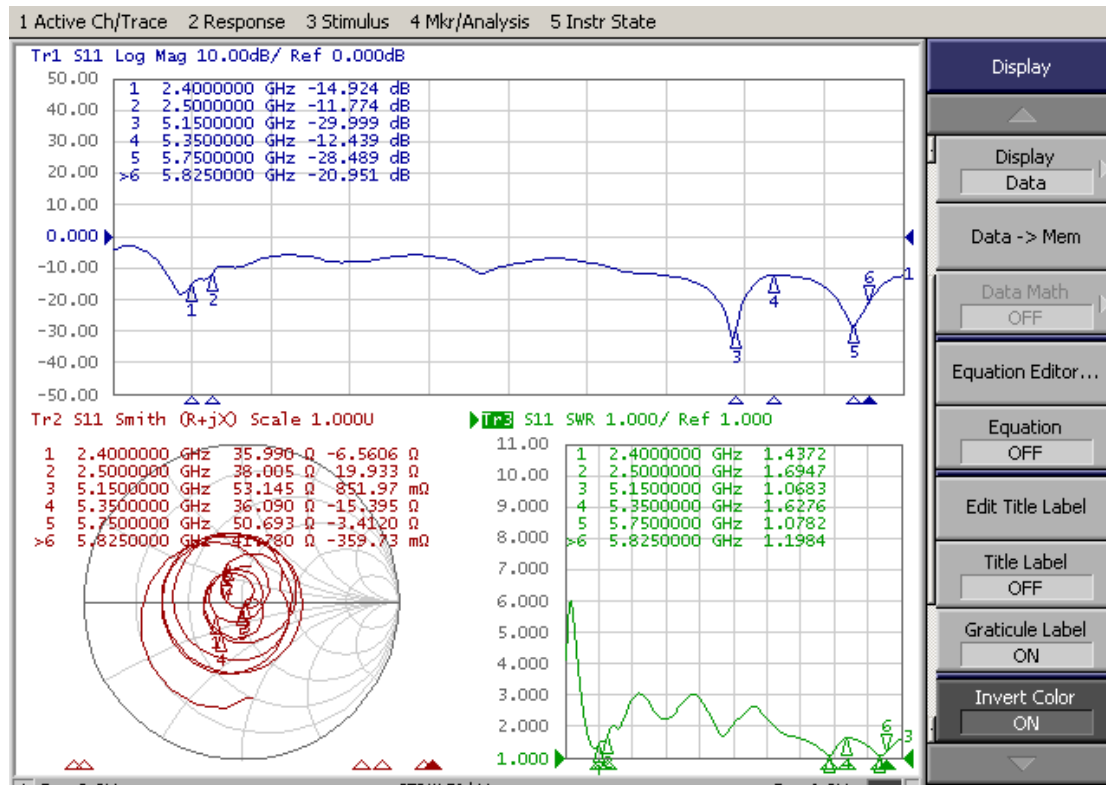
| 主要技术指标           |                                   | Main technical specifications |                                   |
|------------------|-----------------------------------|-------------------------------|-----------------------------------|
| 频率范围<br>(MHZ)    | 2400\5800                         | Frequency Range<br>(MHZ)      | 2400\5800                         |
| 特性阻抗( $\Omega$ ) | 50                                | Impedance( $\Omega$ )         | 50                                |
| 增益(dBi)          | 5 $\pm$ 0.5                       | Gain(dBi)                     | 5 $\pm$ 0.5                       |
| 输出电压<br>驻波比      | $\leq$ 1.92                       | VSWR                          | $\leq$ 1.92                       |
| 最大功率             | 10W                               | Admitted Power                | 10W                               |
| 极化方式             | 垂直极化                              | Polarization                  | Linear,Vertical                   |
| 连接方式             | SMA                               | Connector Type                | SMA                               |
| 物理性能             |                                   | Physical Properties           |                                   |
| 天线本体材料           | ABS                               | Antenna Base                  | ABS                               |
| 工作温度             | -20 $^{\circ}$ C~+65 $^{\circ}$ C | Operating Temp                | -20 $^{\circ}$ C~+65 $^{\circ}$ C |
| 保存温度             | -30 $^{\circ}$ C~+75 $^{\circ}$ C | Storage Temp                  | -30 $^{\circ}$ C~+75 $^{\circ}$ C |

2. 成品图:

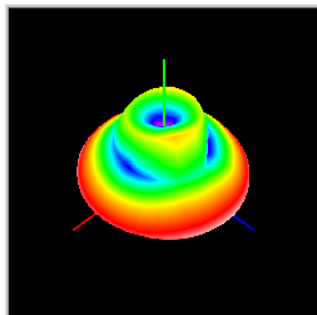


### 3. 测试报告

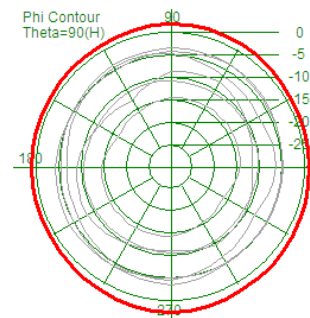
#### 3.1: 网络分析仪测试报告:



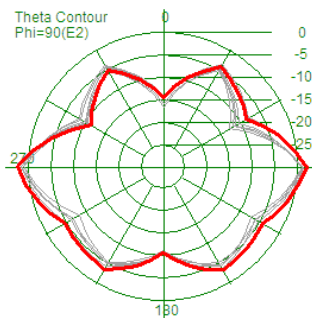
#### 3.2: 暗室 2D、3DRaditation Pattern



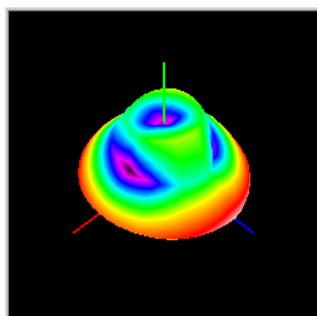
2.4GHz



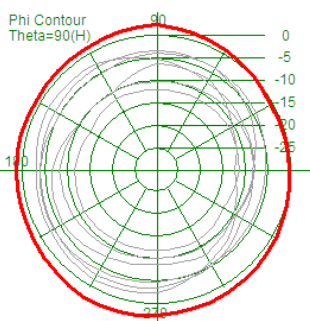
Gain: 4.83dBi



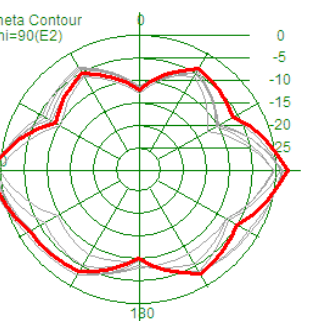
Efficiency: 71.38%



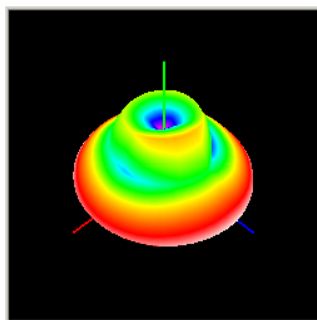
2.45GHz



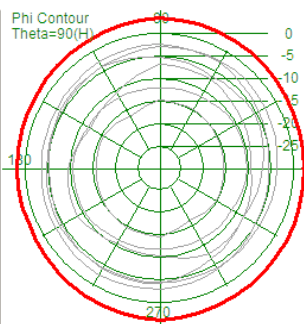
Gain: 4.85dBi



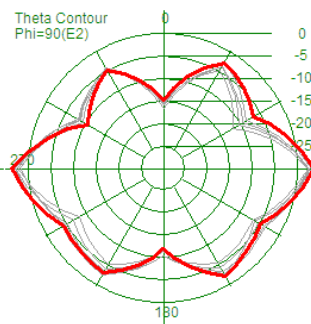
Efficiency: 71.56%



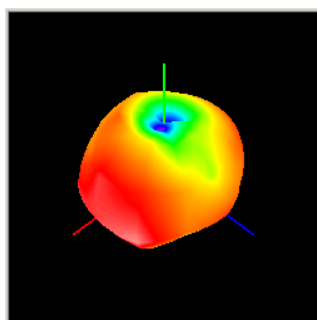
2.5GHz



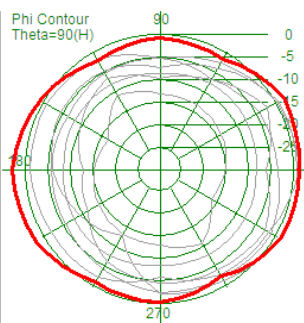
Gain: 4.92dBi



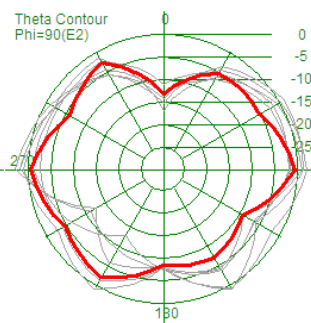
Efficiency: 72.19%



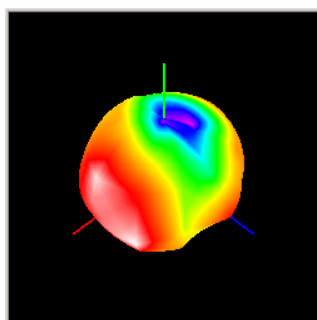
5.15GHz



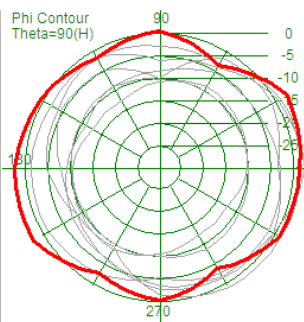
Gain: 5.06dBi



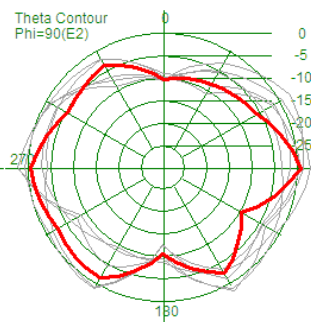
Efficiency: 73.34%



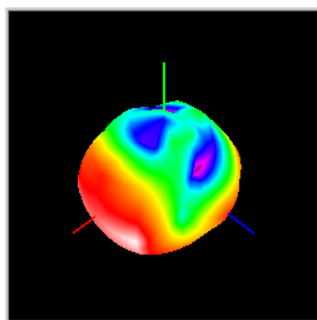
5.35GHz



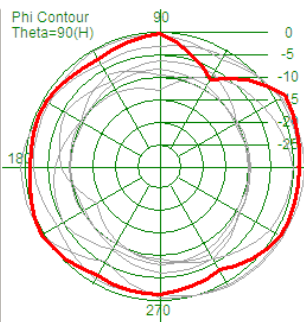
Gain: 5.17dBi



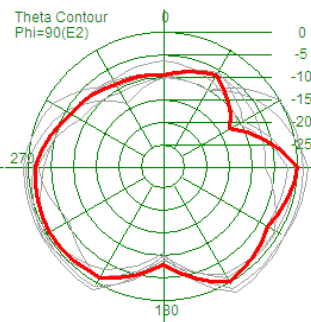
Efficiency: 73.23%



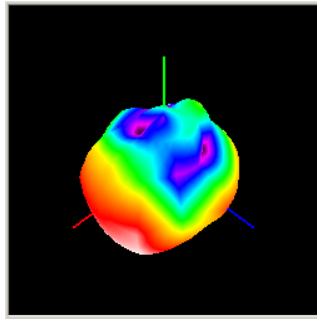
5.75GHz



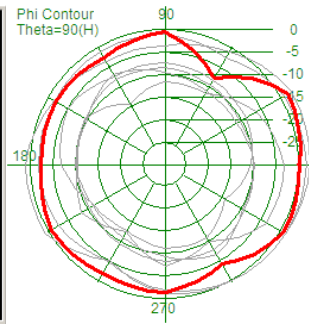
Gain: 5.21dBi



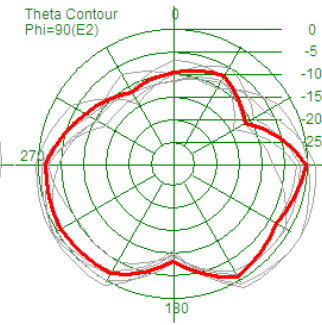
Efficiency: 74.18%



5.825GHz



Gain: 5.28dBi



Efficiency: 75.25%

| Frequency ID    | 1      | 2      | 3      | 4      | 5      | 6      | 7      |
|-----------------|--------|--------|--------|--------|--------|--------|--------|
| Frequency (MHz) | 2400.0 | 2450.0 | 2500.0 | 5150.0 | 5350.0 | 5750.0 | 5825.0 |
| Gain (dBi)      | 4.83   | 4.85   | 4.92   | 5.06   | 5.17   | 5.21   | 5.28   |
| Efficiency (%)  | 71.38  | 71.56  | 72.19  | 73.34  | 73.23  | 74.18  | 75.25  |

#### 4.SGS 报告:

# Verification Report

No. CANEC1216278501

Date: 07-Jan-2015

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Applicant : **DONGGUAN UB ELECTRONIC COMPANY LIMITED**  
 Address : **3-4 FLOOR,NUMBER 1 SOUTHWEST ROAD,SHEK KWU INDUSTRIAL ZONE TANGXIA**  
**TOWN,DONGGUAN CITY**  
**CHINA**

Sample Name : Transformer  
 SGS Job No. : CP12-056425 - SZ  
 Tested Basic Model No. UBXXXXXXXX  
 (P.O. No.) :

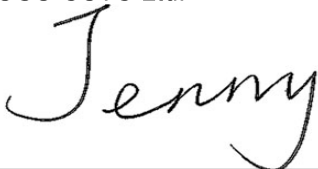
Date of Sample Received : 29 Nov 2014  
 Verification Period : 29 Nov 2014 -07 Jan 2015

Verification Requested : With reference to RoHS Directive 2011/65/EU, and its amendment directives  
 Verification Method : Please refer to next page(s).  
 Verification Result : Please refer to next page(s).

Verification Conclusion : Based on the review of previous reports and verification results of the submitted samples, the results of Cadmium, Lead, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive 2011/65/EU recasting 2002/95/EC.

Note : The test results are related only to the tested items. The report shall not be reproduced except in full without the written approval of the testing laboratory.

Signed for and on behalf of  
 SGS-CSTC Ltd.



JENNY LIAO

Approved Signatory

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## Verification Report

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Verification Method :

1. Review was performed for the samples disjoined from the submitted articles and the related test reports submitted by the Applicant
2. Tests were performed for the samples indicated by the photos in the report with test methods reference to IEC 62321:2008: Procedures for the Determination of Levels of Six Regulated Substances in Electrotechnical Products
  - (1) Screening by XRF Spectroscopy
  - (2) Wet Chemical Test Method
    - a. Determination of Lead & Cadmium by ICP-OES or AAS
    - b. Determination of Mercury by ICP-OES
    - c. Determination of Hexavalent Chromium by Spot test or Colorimetric Method
    - d. Determination of PBBs and PBDEs by GC-MS

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# Verification Report

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Date: 07-Jan-2015

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| Part No. | Part Description                       | BOM No. | Restricted Substances                     | Results of EDXRF (1)               | Result of Wet Chemical Testing(2) (mg/kg) | Conclusion on EU RoHS                                    | Sample Submitted/ Resubmitted Date |
|----------|----------------------------------------|---------|-------------------------------------------|------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------|
| 1        | White plastic shell                    |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 2        | White plastic part (connected w/ No.1) |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 3        | White plastic nut (connected w/ No.2)  |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 4        | Silvery metal nut (in No.3)            |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | OL<br>BL<br>BL<br>BL<br>---<br>--- | 29264▲<br>---<br>---<br>---<br>---<br>--- | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |

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# Verification Report

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| Part No. | Part Description                       | BOM No. | Restricted Substances                     | Results of EDXRF (1)               | Result of Wet Chemical Testing(2) (mg/kg) | Conclusion on EU RoHS                                    | Sample Submitted/ Resubmitted Date |
|----------|----------------------------------------|---------|-------------------------------------------|------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------|
| 5        | Silvery metal tube (connected w/ No.4) |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | OL<br>BL<br>BL<br>BL<br>---<br>--- | 34278▲<br>---<br>---<br>---<br>---<br>--- | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 6 -C     | Silvery metal ring (in No.4)           |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | OL<br>BL<br>BL<br>BL<br>---<br>--- | 28984▲<br>---<br>---<br>---<br>---<br>--- | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 7        | White plastic ring (in No.4)           |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 8        | Red rubber ring (in No.4)              |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |

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| Part No. | Part Description              | BOM No. | Restricted Substances                     | Results of EDXRF (1)               | Result of Wet Chemical Testing(2) (mg/kg) | Conclusion on EU RoHS                                    | Sample Submitted/ Resubmitted Date |
|----------|-------------------------------|---------|-------------------------------------------|------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------|
| 9        | White plastic tube (in No.5)  |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 10       | Golden metal tube (in No.9)   |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | OL<br>BL<br>BL<br>BL<br>---<br>--- | 24932▲<br>---<br>---<br>---<br>---<br>--- | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 11       | Silvery metal part (in No.2)  |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>---<br>--- | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 12       | Silvery metal tube (in No.11) |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | OL<br>BL<br>BL<br>BL<br>---<br>--- | 30455▲<br>---<br>---<br>---<br>---<br>--- | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |

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| Part No. | Part Description                                | BOM No. | Restricted Substances                     | Results of EDXRF (1)               | Result of Wet Chemical Testing(2) (mg/kg) | Conclusion on EU RoHS                                    | Sample Submitted/ Resubmitted Date |
|----------|-------------------------------------------------|---------|-------------------------------------------|------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------|
| 13       | Golden metal rod (in No.1)                      |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>---<br>--- | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 14       | Black foam ring (on No.13)                      |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 15       | Silvery metal rod (connected w/ No.13)          |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>---<br>--- | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 16       | Black plastic (heat shrinkable tube) (on No.15) |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |

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| Part No. | Part Description                                             | BOM No. | Restricted Substances                     | Results of EDXRF (1)               | Result of Wet Chemical Testing(2) (mg/kg) | Conclusion on EU RoHS                                    | Sample Submitted/ Resubmitted Date |
|----------|--------------------------------------------------------------|---------|-------------------------------------------|------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------|
| 17       | Golden metal tube (connected w/ No.16)                       |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | OL<br>BL<br>BL<br>BL<br>---<br>--- | 30411▲<br>---<br>---<br>---<br>---<br>--- | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 18       | White glue (connected w/ No.16)                              |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 19       | White plastic cover (connected w/ No.17)                     |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 20       | Pink transparent plastic (cable jacket) (connected w/ No.19) |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |

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| Part No. | Part Description                           | BOM No. | Restricted Substances                     | Results of EDXRF (1)               | Result of Wet Chemical Testing(2) (mg/kg) | Conclusion on EU RoHS                                    | Sample Submitted/ Resubmitted Date |
|----------|--------------------------------------------|---------|-------------------------------------------|------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------|
| 21       | Silvery metal wire (in No.20)              |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>---<br>--- | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 22       | White plastic (wire insulation) (in No.21) |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 23       | Black plastic shell                        |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 24       | Black plastic part (connected w/ No.23)    |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |

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| Part No. | Part Description                                 | BOM No. | Restricted Substances                     | Results of EDXRF (1)               | Result of Wet Chemical Testing(2) (mg/kg) | Conclusion on EU RoHS                                    | Sample Submitted/ Resubmitted Date |
|----------|--------------------------------------------------|---------|-------------------------------------------|------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------|
| 25       | Grey plastic (cable jacket) (connected w/ No.24) |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 26       | Transparent plastic (wire insulation) (in No.25) |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>BL<br>BL   | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>Comply<br>Comply | 29 Nov 2014                        |
| 27       | Golden metal rod (in No.23)                      |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>---<br>--- | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |
| 28       | Silvery metal rod (connected w/ No.27)           |         | Pb<br>Cd<br>Hg<br>Cr(VI)<br>PBBs<br>PBDEs | BL<br>BL<br>BL<br>BL<br>---<br>--- | ---<br>---<br>---<br>---<br>---<br>---    | Comply<br>Comply<br>Comply<br>Comply<br>---<br>---       | 29 Nov 2014                        |

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| Part No. | Part Description                       | BOM No. | Restricted Substances | Results of EDXRF (1) | Result of Wet Chemical Testing(2) (mg/kg) | Conclusion on EU RoHS | Sample Submitted/ Resubmitted Date |
|----------|----------------------------------------|---------|-----------------------|----------------------|-------------------------------------------|-----------------------|------------------------------------|
| 29       | Golden metal tube (connected w/ No.28) |         | Pb                    | OL                   | 31558▲                                    | Comply                | 29 Nov 2014                        |
|          |                                        |         | Cd                    | BL                   | ---                                       | Comply                |                                    |
|          |                                        |         | Hg                    | BL                   | ---                                       | Comply                |                                    |
|          |                                        |         | Cr(VI)                | BL                   | ---                                       | Comply                |                                    |
|          |                                        |         | PBBs                  | ---                  | ---                                       | ---                   |                                    |
|          |                                        |         | PBDEs                 | ---                  | ---                                       | ---                   |                                    |

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Remark :

(1) (a) There are the results on total Br while test items on restricted substances are PBBs and PBDEs. There is the result on total Cr while test item on restricted substances is Cr(VI).

(b) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC62321 (unit: mg/kg)

| Element | Polymer                                              | Metal                                                | Composite Materials                                  |
|---------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Cd      | $BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$   | $BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$   | $LOD < X < (150+3\sigma) \leq OL$                    |
| Pb      | $BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$ | $BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$ | $BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$ |
| Hg      | $BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$ | $BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$ | $BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$ |
| Br      | $BL \leq (300-3\sigma) < X$                          | --                                                   | $BL \leq (250-3\sigma) < X$                          |
| Cr      | $BL \leq (700-3\sigma) < X$                          | $BL \leq (700-3\sigma) < X$                          | $BL \leq (500-3\sigma) < X$                          |

(c) BL = Below Limit, OL = Over Limit, IN = Inconclusive, LOD = Limit of Detection, -- = Not regulated.

(d) The XRF screening test for RoHS elements - The reading may be different to the actual content in the sample be of non-uniformity composition.

(2) (a) mg/kg = 0.0001%, MDL = Method detection Limit, ND = Not Detected (<MDL), --- = Not conducted, - = Without BOM.

(b) Unit and MDL in wet chemical test

| Test Item | Pb    | Cd    | Hg    |
|-----------|-------|-------|-------|
| Unit      | mg/kg | mg/kg | mg/kg |
| MDL       | 2     | 2     | 2     |

The MDL for single compound of PBBs and PBDEs is 5 mg/kg, MDL of Cr(VI) for polymer and composite sample is 2 mg/kg.

(c) According to IEC 62321:2008, result on Cr(VI) for metal sample is shown as Positive/Negative. Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) coating.

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(d)▲= According to the declaration from the client,

Lead (Pb) in No.4, No.5, No.6-C, No.10, No.12, No.17 & No.29 are exempted by EU RoHS Directive 2011/65/EU based on: Copper alloy containing up to 4 % lead by weight.

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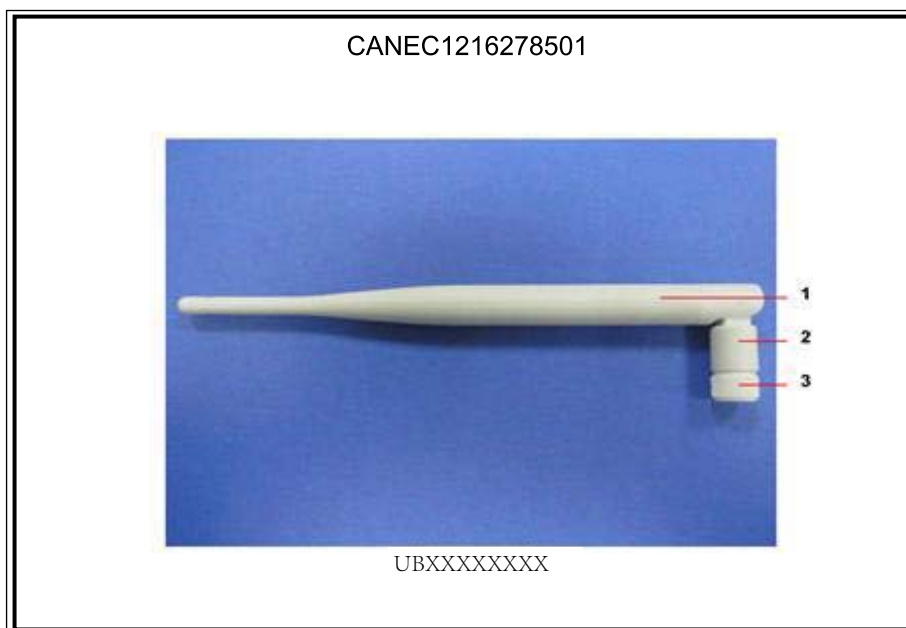
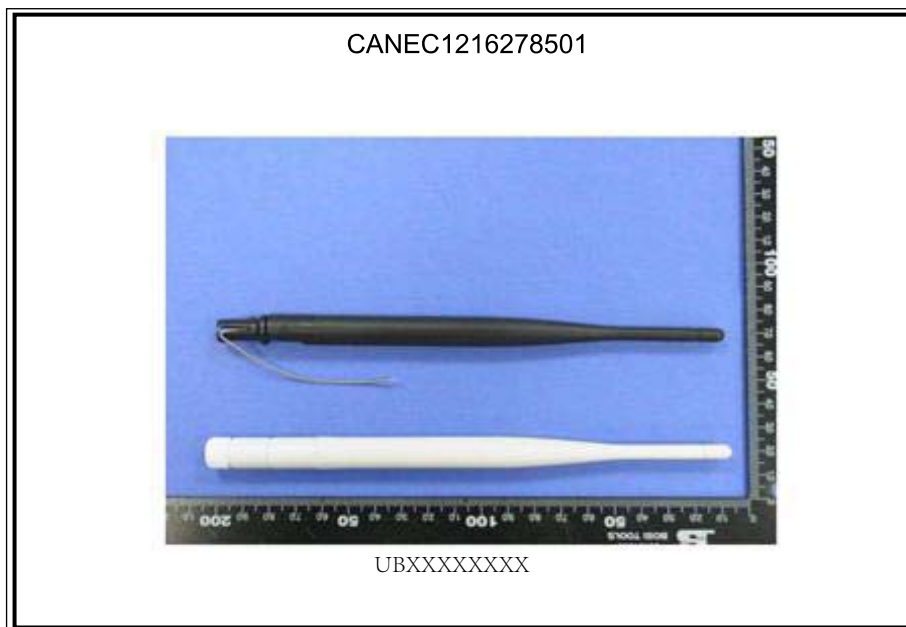
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Sample photo:



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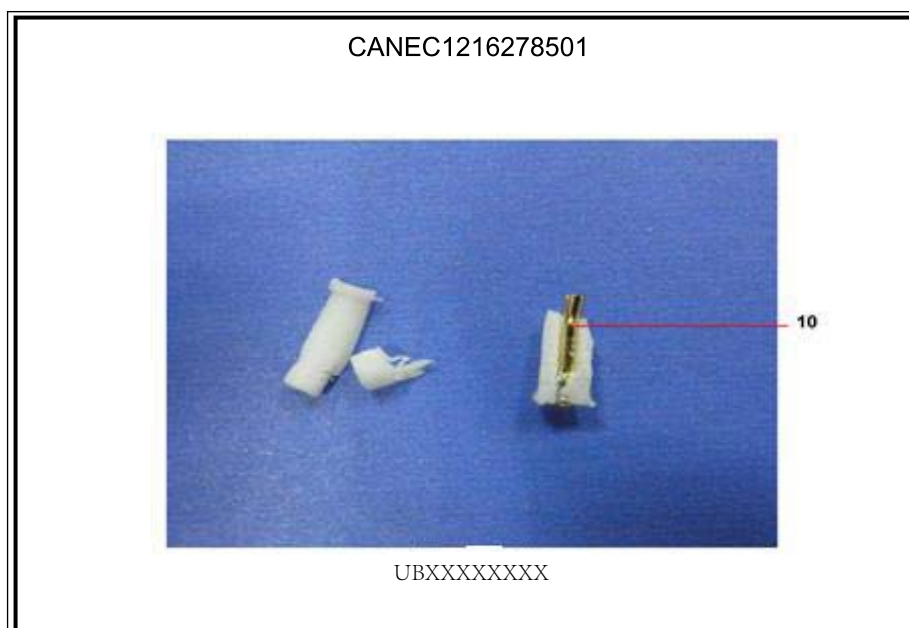
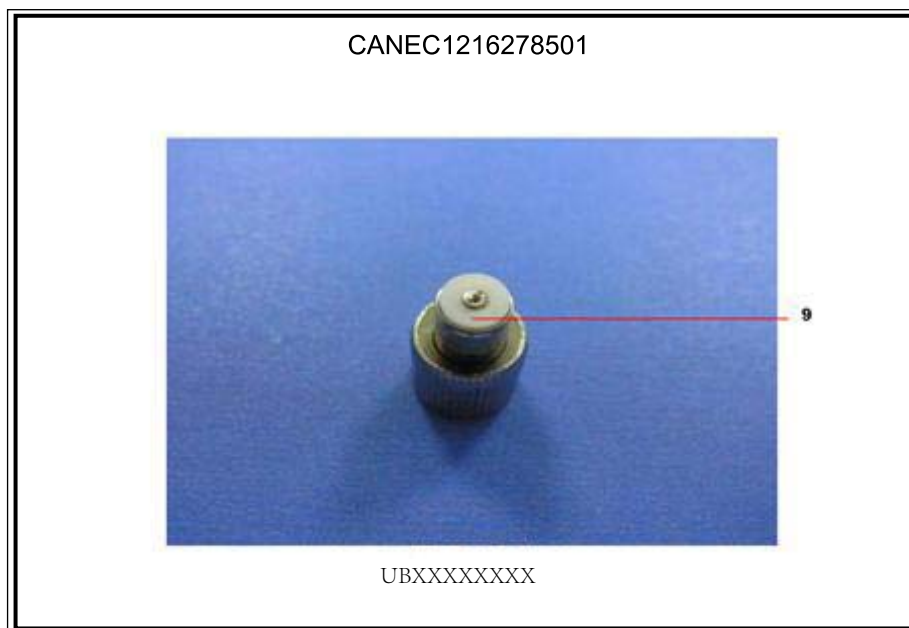
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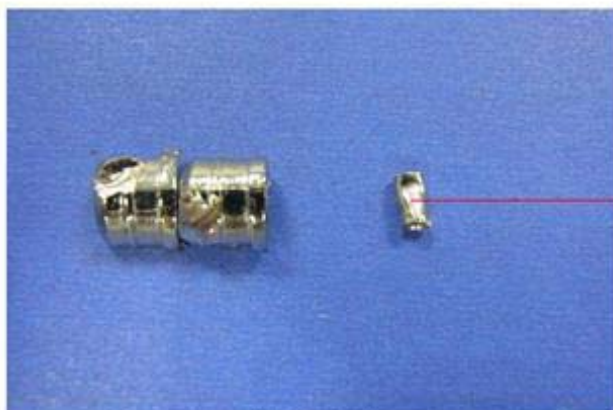
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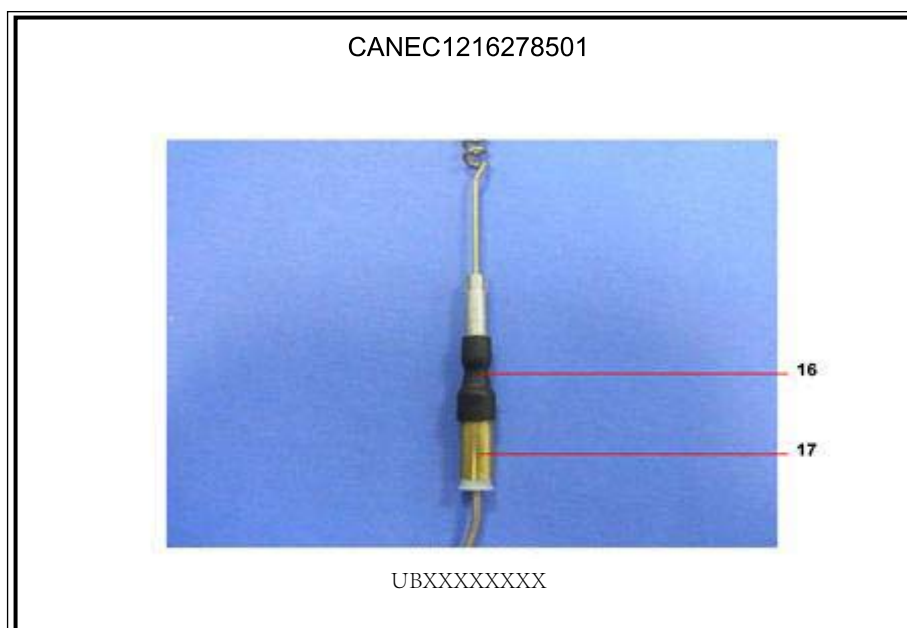
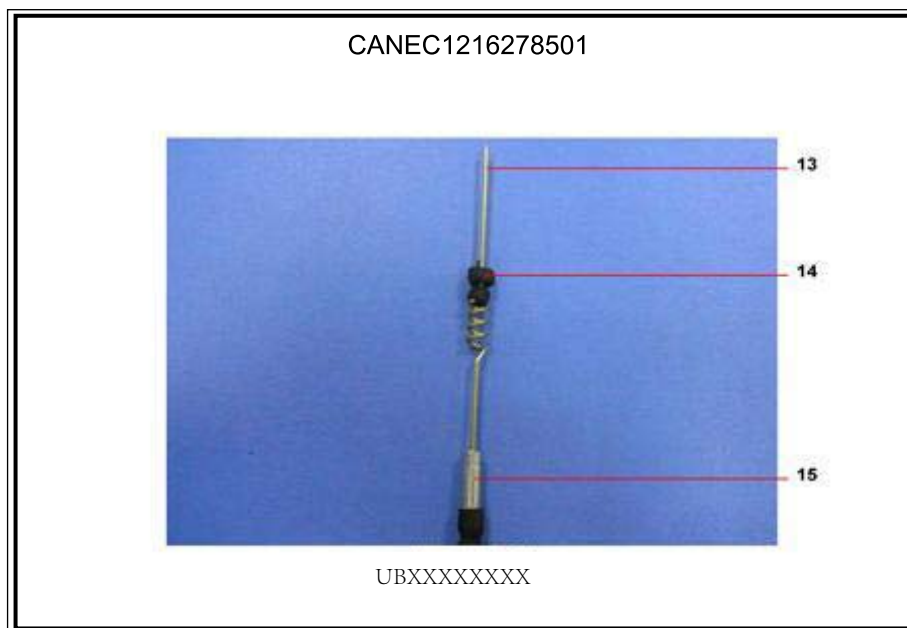
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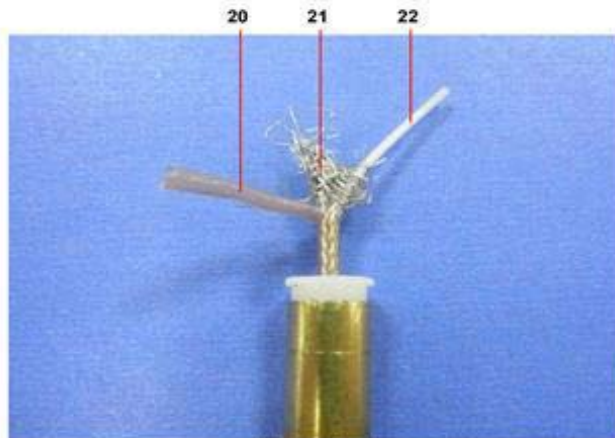
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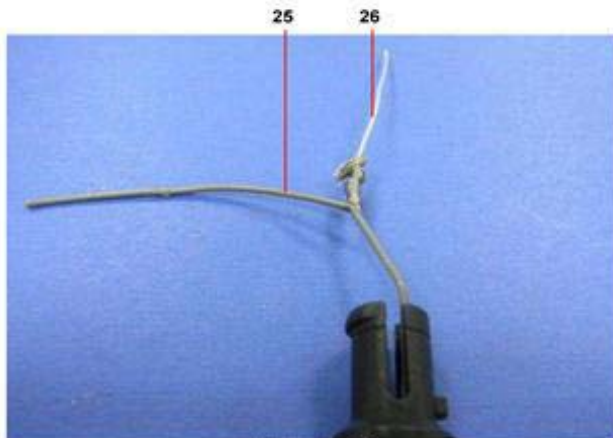
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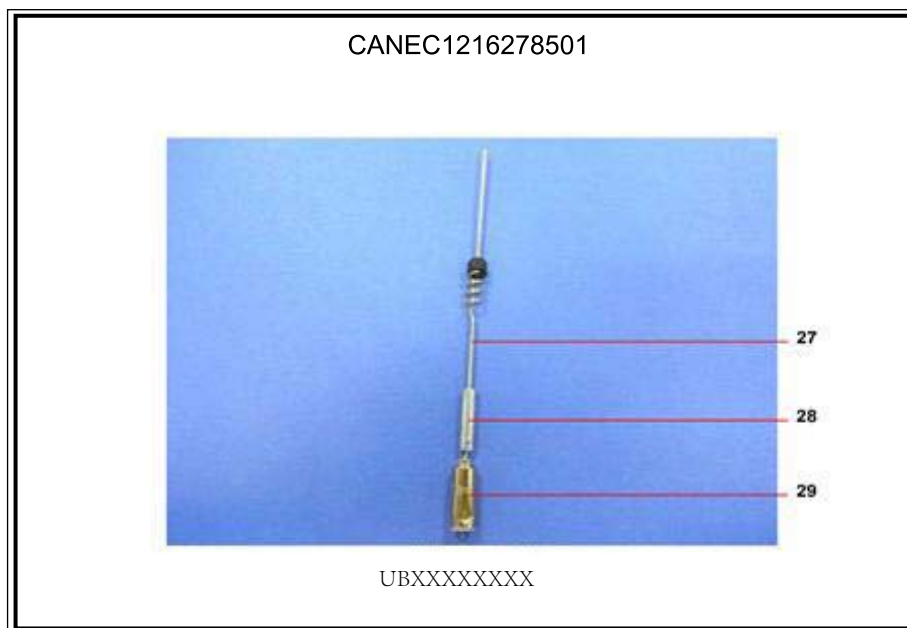
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