

Verification Report

No. CANEC2120564101

Date: 19 Nov 2021

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FLASHBAY ELECTRONICS

BUILDING2 ,JIXUN INDUSTRIAL PARK ,XINJIAO ,DONG`AO VILLAGE ,SHATIAN TOWN ,HUIYANG DISTRICT ,HUIZHOU CITY , GUANGDONG PROVINCE,P.R.CHINA

Sample Name : USB Flash Drives
SGS Job No. : CP21-058817 - SZ
Tested Basic Model No. (P.O.No) : Twister Go Wood (TGWC)
Date of Sample Received : 04 Nov 2021
Verification Period : 04 Nov 2021 - 19 Nov 2021
Verification Requested : With reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.
Verification Method : Please refer to next page(s).
Verification Result : Please refer to next page(s).
Verification Conclusion : Based on the verification results of the submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Violet Shi

Violet, Shi
Approved Signatory

scan to see the report



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SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory.

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Verification Method :

1. With reference to IEC 62321-2:2013, review was performed for the samples disjointed from the submitted articles.
2. With reference to IEC 62321-1:2013, tests were performed for the samples indicated by the photos in this report
 - (1) With reference to IEC 62321-3-1:2013, screening by EDXRF spectroscopy.
 - (2) Wet chemical test method: With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC 62321-7-1:2015, IEC 62321-7-2:2017, ISO 17075-1:2017, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES,UV-Vis and GC-MS.

In accordance with the result of material risk assessment, the following disjointed parts in the submitted sample have been verified.

Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
1	Brown wood	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	BL	---	---	Comply	
		PBDEs	BL	---	---	Comply	
		DBP	---	---	ND	Comply	
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
2	Brown wood	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	BL	---	---	Comply	
		PBDEs	BL	---	---	Comply	
		DBP	---	---	ND	Comply	
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
DIBP	---	---	ND	Comply			



Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
3	Silvery metal shell	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	IN	---	ND	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	
		BBP	---	---	---	---	
		DEHP	---	---	---	---	
		DIBP	---	---	---	---	
4	Silvery metal shell	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	
		BBP	---	---	---	---	
		DEHP	---	---	---	---	
		DIBP	---	---	---	---	
5	Silvery/golden metal pin	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	



Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
		BBP DEHP DIBP	--- --- ---	--- --- ---	--- --- ---	--- --- ---	
6	Black plastic part	Pb Cd Hg Cr(VI)▼ PBBs PBDEs DBP BBP DEHP DIBP	BL BL BL BL BL BL --- --- --- ---	--- --- --- --- --- --- --- --- --- ---	--- --- --- --- --- --- ND ND ND ND	Comply Comply Comply Comply Comply Comply Comply Comply Comply Comply	04 Nov 2021
7	Silvery magnet	Pb Cd Hg Cr(VI)▼ PBBs PBDEs DBP BBP DEHP DIBP	BL BL BL BL BL BL --- --- --- ---	--- --- --- --- --- --- --- --- --- ---	--- --- --- --- --- --- --- --- --- ---	Comply Comply Comply Comply Comply Comply --- --- --- ---	04 Nov 2021



Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
8	Silvery metal shell	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	IN	---	ND	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	
		BBP	---	---	---	---	
		DEHP	---	---	---	---	
9	Silvery/golden metal pin	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	
		BBP	---	---	---	---	
		DEHP	---	---	---	---	
10	Black plastic part	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	BL	---	---	Comply	
		PBDEs	BL	---	---	Comply	
		DBP	---	---	ND	Comply	



Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
		DIBP	---	---	ND	Comply	
11	Silvery metal part	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	IN	---	ND	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	
		BBP	---	---	---	---	
		DEHP	---	---	---	---	
		DIBP	---	---	---	---	
12	Silvery metal part	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	IN	---	ND	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	
		BBP	---	---	---	---	
		DEHP	---	---	---	---	
		DIBP	---	---	---	---	



Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
13	Black plastic part	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	BL	---	---	Comply	
		PBDEs	BL	---	---	Comply	
		DBP	---	---	ND	Comply	
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
DIBP	---	---	ND	Comply			
14	Black body	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	BL	---	---	Comply	
		PBDEs	BL	---	---	Comply	
		DBP	---	---	ND	Comply	
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
DIBP	---	---	ND	Comply			
15	Brown "FPC"	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	IN	---	ND	Comply	
		PBDEs	IN	---	ND	Comply	
		DBP	---	---	ND	Comply	



Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
		DIBP	---	---	ND	Comply	
16	Silvery metal solder	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	
		BBP	---	---	---	---	
		DEHP	---	---	---	---	
		DIBP	---	---	---	---	
17	Green "PCB"	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	IN	---	ND	Comply	
		PBDEs	IN	---	ND	Comply	
		DBP	---	---	ND	Comply	
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
		DIBP	---	---	ND	Comply	



Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
18	Beige wood	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	BL	---	---	Comply	
		PBDEs	BL	---	---	Comply	
		DBP	---	---	ND	Comply	
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
DIBP	---	---	ND	Comply			
19	Beige wood	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	BL	---	---	Comply	
		PBBs	BL	---	---	Comply	
		PBDEs	BL	---	---	Comply	
		DBP	---	---	ND	Comply	
		BBP	---	---	ND	Comply	
		DEHP	---	---	ND	Comply	
DIBP	---	---	ND	Comply			
20	Silvery metal shell	Pb	BL	---	---	Comply	04 Nov 2021
		Cd	BL	---	---	Comply	
		Hg	BL	---	---	Comply	
		Cr(VI)▼	IN	---	ND	Comply	
		PBBs	---	---	---	---	
		PBDEs	---	---	---	---	
		DBP	---	---	---	---	



Part No.	Part Description	Restricted Substances	Results of EDXRF ⁽¹⁾	Screening Result of PHTH ⁽²⁾	Result of Wet Chemical Testing ⁽³⁾ (mg/kg)	Conclusion	Sample Submitted / Resubmitted Date
		BBP	---	---	---	---	
		DEHP	---	---	---	---	
		DIBP	---	---	---	---	



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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 IEC62321-3-1:2013 (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	$BL \leq (300-3\sigma) < X$	Not Applicable	$BL \leq (250-3\sigma) < X$
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.

(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) Screening results of PHTH are for primary screening, and further chemical testing by GC-MS (for DBP, BBP, DEHP and DIBP) are recommended to be performed if the concentration exceeds the below warning value(unit: mg/kg).

Compound	Polymer
DBP	$BL \leq 600 < X$
BBP	$BL \leq 600 < X$
DEHP	$BL \leq 600 < X$
DIBP	$BL \leq 600 < X$

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

(b) Unit and MDL in wet chemical test

Test Item	Pb	Cd	Hg	DBP	BBP	DEHP	DIBP
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL	10	10	10	100	100	100	100

The MDL for single compound of PBBs and PBDEs is 100 mg/kg,

MDL of Cr(VI) for polymer, composite and leather sample is 10 mg/kg.

MDL of Cr(VI) for metal sample is 0.10µg/cm².



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(c) ▼ =Metal sample

a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm².

The sample coating is considered to contain Cr(VI)

b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm²).

The coating is considered a non- Cr(VI) based coating

c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive

- unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

(4) Restricted substances and maximum concentration values tolerated by weight in homogeneous materials under RoHS Directive: Cd: 0.01%, Pb/Hg/Cr(VI)/PBBs/PBDEs/DEHP/DBP/BBP/DIBP: 0.1%. The limit is quoted from RoHS Directive (EU) 2015/863.

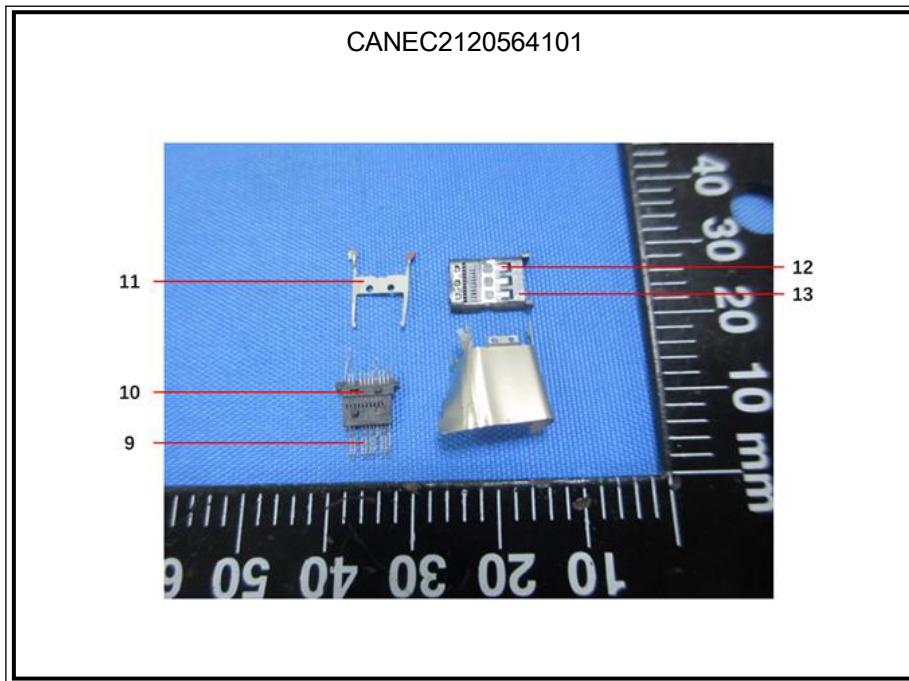
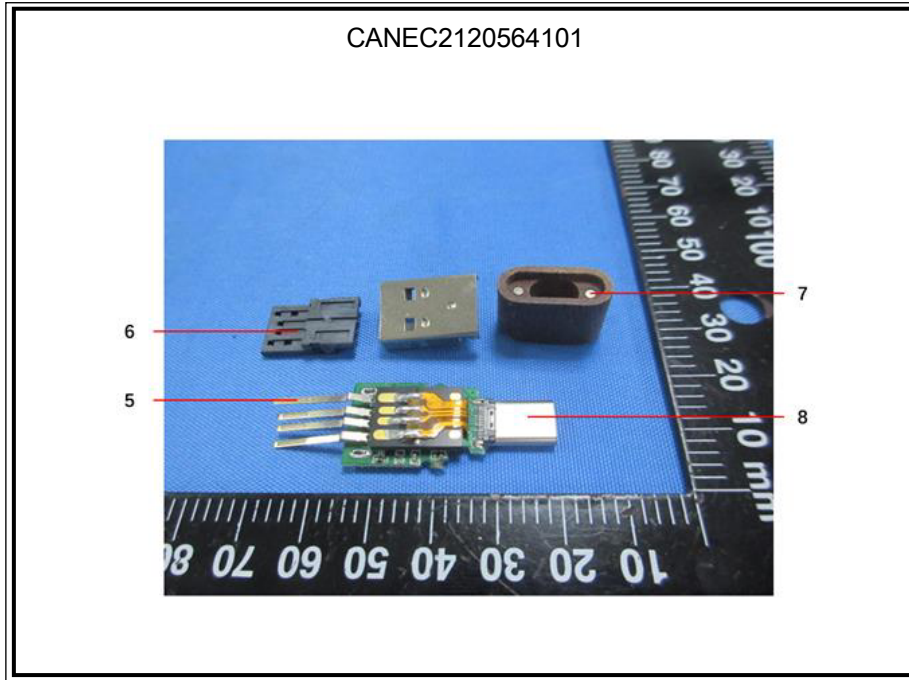
(5) IEC 62321 series is equivalent to EN 62321 series

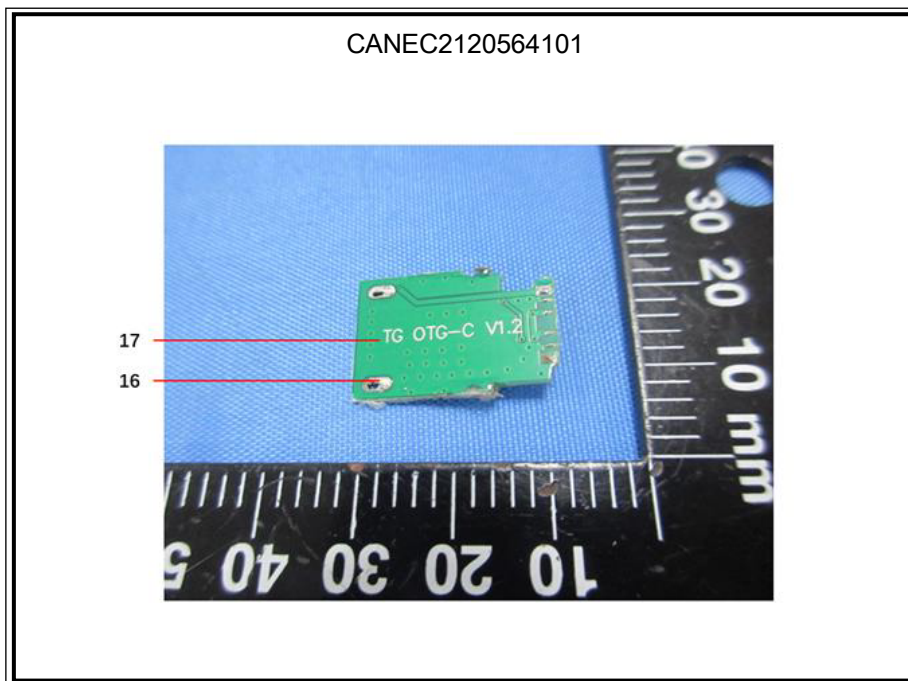
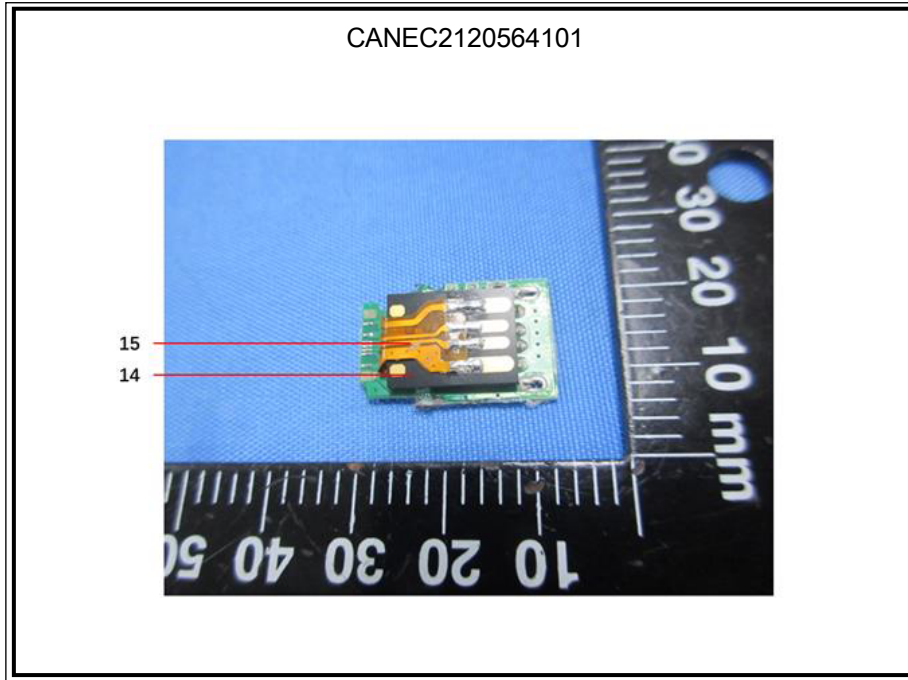
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

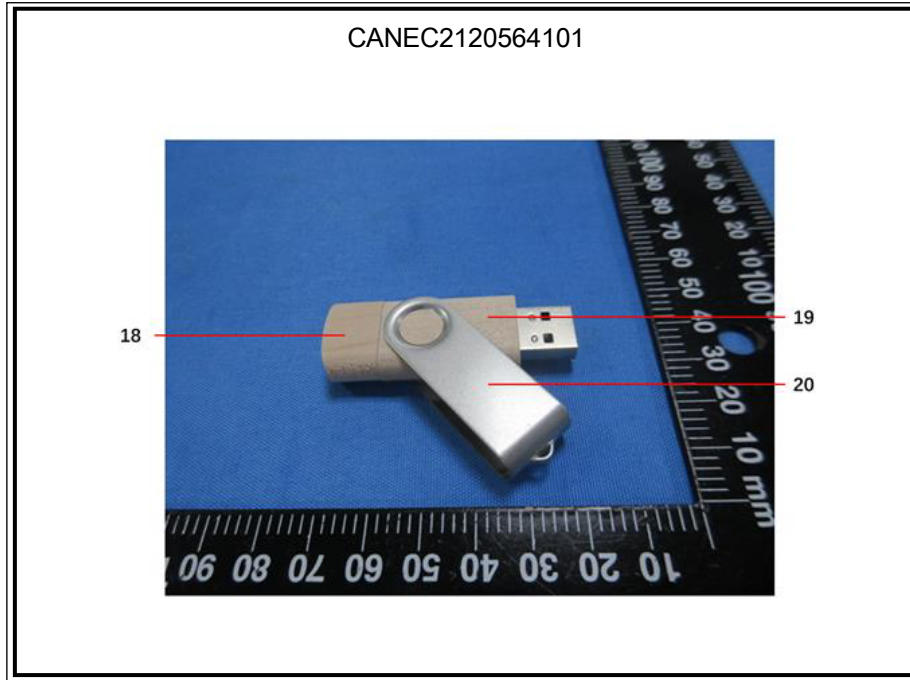


Sample photo:









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