

Verification Report No. 64.164.19.01993.01
Dated 2019-07-09

Client: Ningbo Longtu Network Technology Co., LTD

Address: NO 1,XiaoTuanPu East Road,GuanHaiWei East Industrial zone, cixi,
Zhejiang, 315314, China

Sample Description: Network Cabinet

Model No.: TN-002,TN-007

Brand Name : TNE, GIGANET

Sample Received Date: 2019-05-08,2019-07-01

Test Period: From 2019-05-08 to 2019-07-09

Purpose of examination: Based on randomly-sampled examination of the evaluated product. The results of Lead, Mercury, Cadmium, Chromium VI, Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), DEHP, BBP, DBP and DIBP in tested samples comply with the limits as set by RoHS (Restriction of Hazardous Substances) directive 2011/65/EU and its amendment (EU) 2015/863

Test Result: Refer to following page(s)

Remark: The result relates only to the items tested.

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Group

Prepared by:

Reviewed by:

Sam Luo



Ben Shao

Sam Luo
Project Handler

Ben Shao
Designated Reviewer

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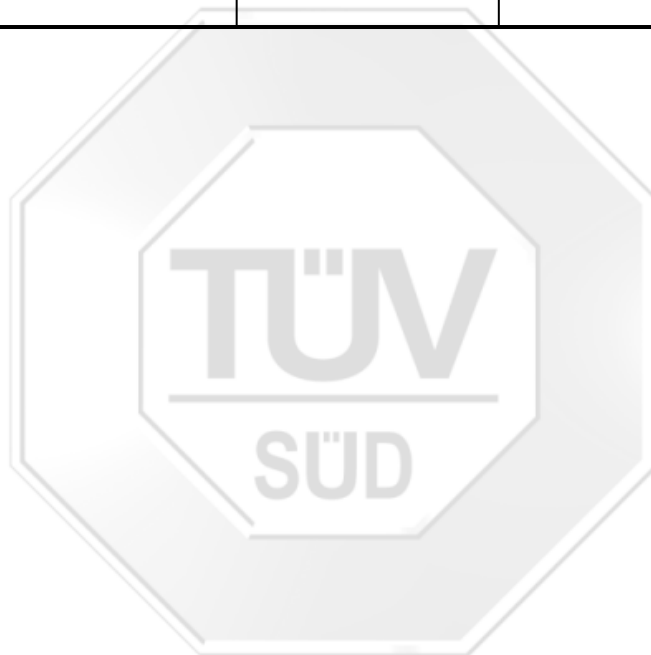
TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Group
5F, Communication Building, 163 Pingyun Rd, Huangpu West Ave.
Guangzhou 510656, P.R. China

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SUMMARY OF TEST RESULTS

No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	PASS	/
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	PASS	/
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	PASS	/



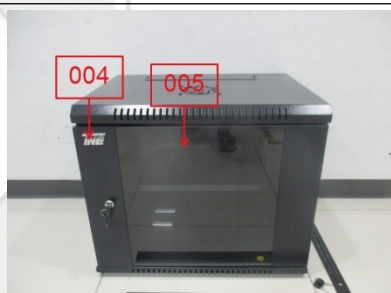
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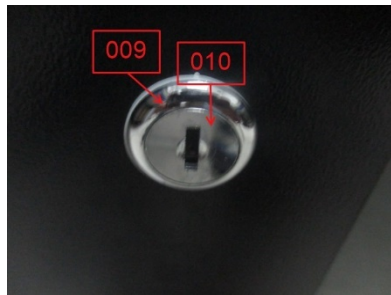
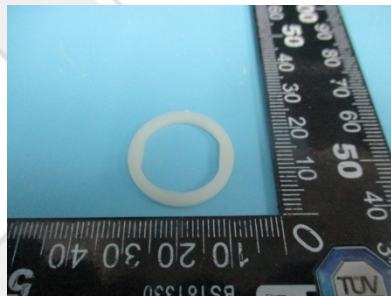
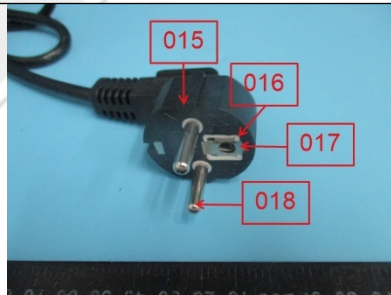
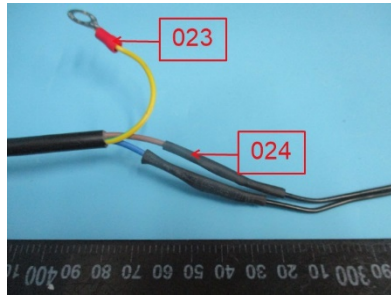
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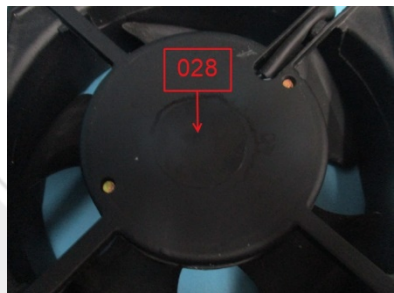
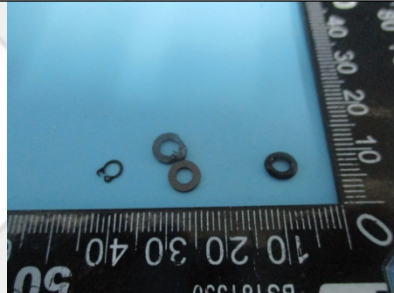
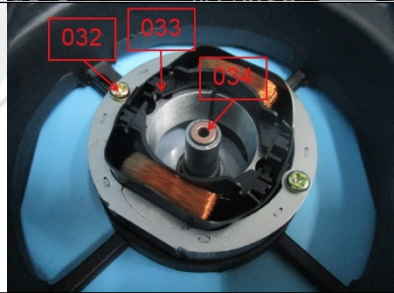
1. TESTED SUBJECT DESCRIPTION

Sample Number	Tested Material Description	Photo
*001	Black coating	
002	Silvery metal base	
*003	Black metal screw	
004	Beige plastic part	
005	Transparent glass sheet	
006	White adhesive tape	
*007	Black soft plastic part	
008	Black plastic part	

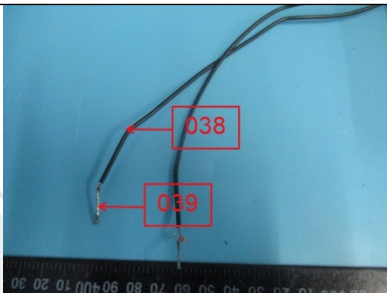
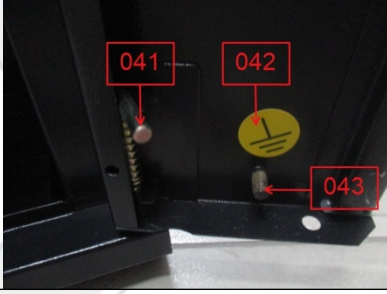
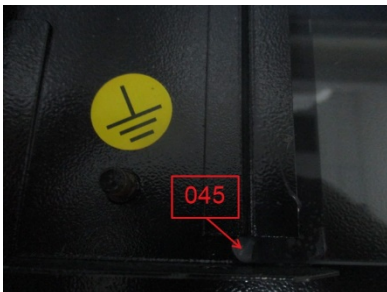
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Sample Number	Tested Material Description	Photo
009	Silvery metal holder	
010	Silvery metal part	
011	Silvery metal nut	
014	White plastic ring	
016	White plastic holder	
017	Silvery metal sheet	
018	Silvery metal pin	
023	Red plastic part	
*024	Black plastic heating shrinkable tube	

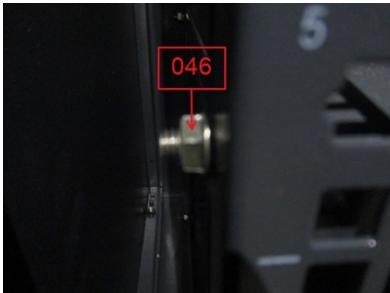
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Sample Number	Tested Material Description	Photo
*025	Black coating	
026	Silvery metal frame	
*027	Silvery adhesive label with black printing	
*028	Black adhesive tape	
029	Black metal part	
030	Black plastic ring	
033	Black plastic frame	
034	Copper-colored metal part	
035	White plastic sheet	

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Sample Number	Tested Material Description	Photo
036	Black plastic part	
037	Silvery metal axle	
*038	Black soft plastic wire jacket	
*042	Yellow adhesive label with black printing	
043	Silvery metal screw	
044	Black plastic part	
*045	Transparent glue	

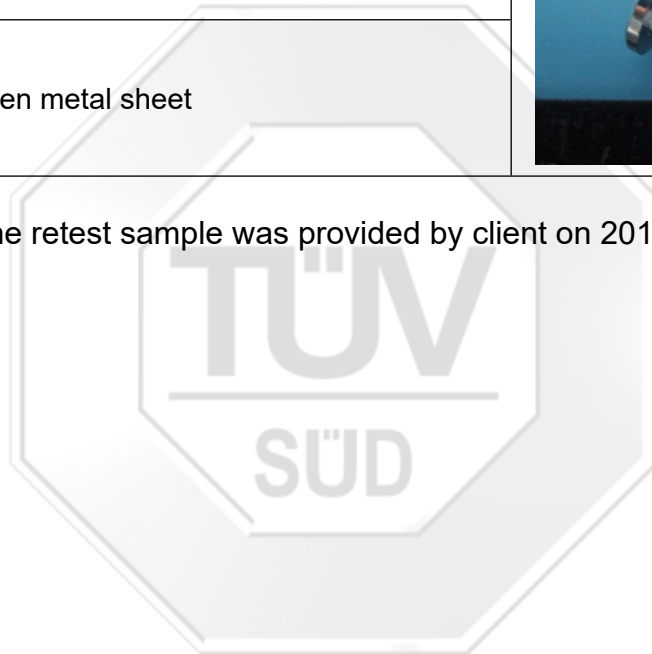
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Sample Number	Tested Material Description	Photo
046	Black metal nut	
047	Black plastic part	
048	Silvery metal part	
049	Black plastic part	
050	Silvery metal part	
051	Black metal part	
053	Silvery metal nut	
054	Silvery metal shell	
055	Silvery metal ring	
056	Silvery metal screw	

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Sample Number	Tested Material Description	Photo
057	Silvery metal part	
059	Silvery metal part	
060	Golden metal sheet	

Remark: * means the retest sample was provided by client on 2019-07-01



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2. TEST RESULTS

2.1. SCREENING TEST

Test method: With reference to EN 62321-1:2013, EN 62321-2:2014, EN 62321-3-1:2014 and EN 62321-8:2017. For Heavy Metals and Flame Retardants, analyzed by Energy Dispersive X-ray Fluorescence Spectrometers (XRF); for phthalates, analyzed by Gas Chromatography and Mass Spectrometry (GC-MS).

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
001 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
002	BL	BL	BL	BL	NA	NA	NA	NA	NA
003	BL	Inc. ^(a)	BL	Inc. ^(a)	NA	NA	NA	NA	NA
004	BL	Inc. ^(a)	BL	BL	BL	BL	BL	BL	BL
005	BL	BL	BL	BL	BL	BL	BL	BL	BL
006	BL	BL	BL	BL	BL	BL	BL	BL	BL
007 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
008	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
009	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
010	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
011	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
014	BL	BL	BL	BL	BL	BL	BL	BL	BL
016	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
017	BL	BL	BL	BL	NA	NA	NA	NA	NA
018	BL	BL	BL	OL ^(a)	NA	NA	NA	NA	NA
023	BL	BL	BL	BL	BL	BL	BL	BL	BL
024 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
025 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
026	BL	BL	BL	BL	NA	NA	NA	NA	NA
027 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
028 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
029	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
030	BL	BL	BL	BL	BL	BL	BL	BL	BL
033	BL	BL	BL	BL	BL	BL	BL	BL	BL
034	BL	BL	BL	BL	NA	NA	NA	NA	NA
035	BL	BL	BL	BL	BL	BL	BL	BL	BL
036	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL

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Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
037	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
038 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
042 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
043	BL	BL	BL	BL	NA	NA	NA	NA	NA
044	BL	BL	BL	BL	BL	BL	BL	BL	BL
045 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
046	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
047	BL	BL	BL	BL	Inc. ^(a)	BL	BL	BL	BL
048	BL	BL	BL	BL	NA	NA	NA	NA	NA
049	BL	BL	BL	BL	BL	BL	BL	BL	BL
050	BL	BL	BL	BL	NA	NA	NA	NA	NA
051	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
052 δ	BL	BL	BL	BL	BL	BL	BL	BL	BL
053	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
054	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
055	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
056	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
057	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
059	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
060	BL	BL	BL	BL	NA	NA	NA	NA	NA

Note:

- “BL” denotes below limit
- “OL” denotes over limit
- “Inc.” denotes inconclusive
- “NA” denotes not applicable
- “(a)” denotes further confirmation test was conducted, results are listed in 2.2, 2.3
- XRF screening limits in mg/kg for regulated elements in various matrices
- δ means the retest result

ELEMENT	POLYMER		
	BL	INCONCLUSIVE	OL
Cd	$X < (70 - 3\sigma)$	$(70 - 3\sigma) < X < (130 + 3\sigma)$	$X > (130 + 3\sigma)$
Pb	$X < (700 - 3\sigma)$	$(700 - 3\sigma) < X < (1300 + 3\sigma)$	$X > (1300 + 3\sigma)$
Hg	$X < (700 - 3\sigma)$	$(700 - 3\sigma) < X < (1300 + 3\sigma)$	$X > (1300 + 3\sigma)$
Br	$X < (300 - 3\sigma)$	$X > (300 - 3\sigma)$	NA
Cr	$X < (700 - 3\sigma)$	$X > (700 - 3\sigma)$	NA

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ELEMENT	METAL		
	BL	INCONCLUSIVE	OL
Cd	$X < (70-3\sigma)$	$(70-3\sigma) < X < (130+3\sigma)$	$X > (130+3\sigma)$
Pb	$X < (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X > (1300+3\sigma)$
Hg	$X < (700-3\sigma)$	$(700-3\sigma) < X < (1300+3\sigma)$	$X > (1300+3\sigma)$
Cr	$X < (700-3\sigma)$	$X > (700-3\sigma)$	NA

ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cd	$X < (50-3\sigma)$	$(50-3\sigma) < X < (150+3\sigma)$	$X > (150+3\sigma)$
Pb	$X < (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X > (1500+3\sigma)$
Hg	$X < (500-3\sigma)$	$(500-3\sigma) < X < (1500+3\sigma)$	$X > (1500+3\sigma)$
Br	$X < (250-3\sigma)$	$X > (250-3\sigma)$	NA
Cr	$X < (500-3\sigma)$	$X > (500-3\sigma)$	NA

— Screening limits in mg/kg for regulated phthalates in various matrices

PHthalates	BL	INCONCLUSIVE
DEHP	$X < 600$	$X \geq 600$
BBP	$X < 600$	$X \geq 600$
DBP	$X < 600$	$X \geq 600$
DIBP	$X < 600$	$X \geq 600$

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2.2. HEAVY METAL CONTENT

Test method: With reference to EN 62321-4:2017, EN 62321-5:2014, EN 62321-7-1:2015 and EN 62321-7-2:2017, analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and UV-Vis spectrophotometer. [Reporting Limit: 2 mg/kg for Cadmium; 10 mg/kg or 0.10 µg/cm² for Hexavalent Chromium, 10 mg/kg for Lead and Mercury.]

Sample No.	Result [mg/kg]				
	Total Cadmium	Hexavalent Chromium	Hexavalent Chromium	Total Mercury	Total Lead
003	--	--	Negative	--	<10
004	--	<10	--	--	--
009	--	--	Negative	--	--
010	--	--	Negative	--	--
011	--	--	Negative	--	--
018	--	--	--	--	29900 ^(c)
029	--	--	Negative	--	--
037	--	--	Negative	--	--
046	--	--	Negative	--	--
051	--	--	Negative	--	--
053	--	--	Negative	--	--
054	--	--	Negative	--	--
055	--	--	Negative	--	--
056	--	--	Negative	--	--
057	--	--	Negative	--	--
059	--	--	Negative	--	--
Unit	mg/kg	mg/kg	µg/cm ²	mg/kg	mg/kg
RoHS Requirement	100	1000	Negative [#]	1000	1000

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Note:

- “mg/kg” denotes milligram per kilogram
- “<” denotes less than
- “µg/cm²” denotes micrograms per square centimeter
- “Negative” denotes the absorbance value of sample is less than the absorbance value of the 0.10 µg/cm² equivalent comparison standard solution, the sample is considered to be negative for Hexavalent Chromium.
- “#” According to DIRECTIVE 2011/65/EU Article 4(1) and Annex II. While, positive means the presence of CrVI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1) and Annex II.
- “--” denotes tested by XRF, result is listed in 2.1
- “(c)” denotes the exempt item according to DIRECTIVE 2011/65/EU Annex III item 6(c) *“Copper alloy containing up to 4 % lead by weight”*.



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2.3. POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs) CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by toluene and analyzed by Gas Chromatography and Mass Spectrometry (GC-MS). [Reporting Limit: 5 mg/kg]

Test Item		Result [mg/kg]		RoHS Requirement [mg/kg]
		Sample 008+016	Sample 036+047	
PBBs	Monobromobiphenyl	< 5	< 5	Sum of PBBs 1000
	Dibromobiphenyl	< 5	< 5	
	Tribromobiphenyl	< 5	< 5	
	Tetrabromobiphenyl	< 5	< 5	
	Pentabromobiphenyl	< 5	< 5	
	Hexabromobiphenyl	< 5	< 5	
	Heptabromobiphenyl	< 5	< 5	
	Octabromobiphenyl	< 5	< 5	
	Nonabromobiphenyl	< 5	< 5	
	Decabromobiphenyl	< 5	< 5	
	Sum of PBBs	< 5	< 5	
PBDEs	Monobromodiphenyl Ether	< 5	< 5	Sum of PBDEs 1000
	Dibromodiphenyl Ether	< 5	< 5	
	Tribromodiphenyl Ether	< 5	< 5	
	Tetrabromodiphenyl Ether	< 5	< 5	
	Pentabromodiphenyl Ether	< 5	< 5	
	Hexabromodiphenyl Ether	< 5	< 5	
	Heptabromodiphenyl Ether	< 5	< 5	
	Octabromodiphenyl Ether	< 5	19	
	Nonabromodiphenyl Ether	< 5	81	
	Decabromodiphenyl Ether	< 5	318	
	Sum of PBDEs	< 5	418	

Note:

- “mg/kg” denotes miligram per kilogram
- “<” denotes less than

3. REMARK

The chemical testing was performed in TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Chemical lab and the test results were reviewed at TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch.



APPENDIX I:

Photos of submitted products



APPENDIX II:

Model list of submitted products provided by client:

Network Cabinet TN-002,TN-002B,TN-004,TN-005

The front doors of the four models are glass door.

Network Cabinet TN-001,TN-001B,TN-003,TN-801,TN-802,TN-803

The front doors of the four models are metal with mesh door.

WALL MOUNT CABINET TN-007,TN-007B

TN-007B is same as TN-007 except model name and packing.

TN-007 Assembled packing. TN-007B is Flat packing.

TN-008,TN-009, The front doors of the two models are glass door.

TN-006,TN-006B TN-006B is same as TN-006 except model name and packing.

TN-006 Assembled packing. TN-006B is Flat packing

TN-010 is charging Cabinets.

Open Rack TN-201,TN-202 (201 two poles,202 four poles)

GN-002, GN-002B, GN-001, GN-001B, GN-003, GN-004, GN-005, GN- 801, GN-802, GN-803, GN-006, GN-006B, GN-007, GN-007B, GN- 008, GN-009,GN-010,GN-201, GN-202

Width:100mm-1500mm

Depth:100mm-1500mm

Height: 1U-50U (1U=44.45mm)