

ZyXEL WEEE 3R REPORT ZyXEL WEEE program – Evaluation of Recyclability and Recoverability rate for ZyXEL Networked equipment EU Directive 2012/19/EU	
Company name.....	ZyXEL Communications Corporation
Address	No. 2, Gongye E. 9th Road, Hsinchu Science Park, Hsinchu, Taiwan, R.O.C.
Department.....	Quality Management Department
Report No.....	ZQ20130220005
Version.....	1.0
Issue date.....	2013-04-29
Reporting period.....	2013-03-29 to 2013-04-29
Product category.....	IT and Telecommunications equipment
Test Object	24-port FE L2 PoE Switch with GbE Uplink
Model name	ES3500-24HP
P/N no.	ES3500-24HP -EU0101F
Trademark.....	
Power supply (I/O)	Internal Power supply
Rating(s)	AC 100-240V, 50/60Hz, 2.16A max.
Standard	ZyXEL WEEE program is based on following: Directive 2012/19/EU (WEEE Recast) A guide to the marketing, product development and manufacturing actions you need to take (DTI & Defra)
Test Report Form No.	ZyXEL TRF52001_2013-02-06 / Ver. 1
Number of pages (Contents).....	12 pages
Number of pages (Attachments)..	3 pages
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1. Abbreviations used in the report

Abbr.	Full name
QMD	Quality Management Department
3R	Reused, Recycle, Recovery
MB	MotherBoard
PSU	Power supply unit
$M_{(i)}$	Mass of ith part (ref.: IEC/TR 62635:2012)
$RCR_{(i)}$	Recycling rate of the ith part in the corresponding end-of-life treatment scenario (ref.: IEC/TR 62635:2012)
$RVR_{(i)}$	Recovery rate of the ith part in the corresponding end-of-life treatment scenario (ref.: IEC/TR 62635:2012)
m_{EEE}	Total product mass (ref.: IEC/TR 62635:2012)
Recyclability	Ability of waste product to be recycled, based on actual practices
Recoverability	Ability of a waste product to be recovered, based on actual practices
EoL	End-of-life

2. General description of Product

Picture of Product:



Copy of Marking plate:

ZyXEL Communications Corporation 合勤科技股份有限公司	Made in China 中國製造
Model Number(機種) : ES3500-24HP 產品名稱: 乙太網路交換器	
Serial Number : <input type="text"/>	
Ethernet Address : <input type="text"/>	
Power Rating (額定電源): 100-240V~ 50/60Hz 2.16A max.	
Power Consumption : 236 Watt max.	
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	
Laite on liitettävä suojamaadoituskoettimilla varustettuun pistorasiaan. Apparaten skall anslutas till jordat uttag.	

Characteristic data:

Product total weight : 3620.5g
Product dimension : L:428mm * W:242mm * H:38mm
IP Level : IPX0

Normative reference:

Directive 2012/19/EU

IEC/TR 62635:2012, Ed.1

ISO 11469:2000 Plastics — Generic identification and marking of plastics products

ISO 1043 Plastics — Generic identification and marking of plastics products

Part 1: Basic polymers and their special characteristics

Part 2: Fillers and reinforcing materials

Part 3: Plasticizers

Part 4: Flame retardants

General Remarks:

"(see remark #) refers to a remark appended to the report.

" (see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

The test results presented in this report relate only to the object tested.

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3. Disassembling information

3.1 Disassembling object:

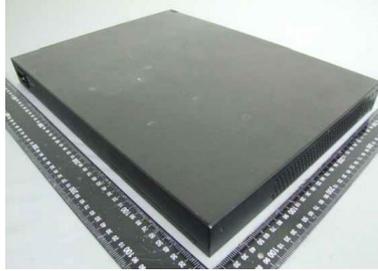
Device		
		
Accessories & Assemblies		
Power cord	Anchor assemblies	
		

3.2 Derivation tree of Product

- Device



- Enclosure



- Top case x 1
- Bottom Case x 1
- Decorate Plate x 1

- Enclosure assemblies

- Screw x 11
- Suspension loop x 2
- Pad x 4
- Stud x 6
- Mylar sheet x 1
- Wire clip x 1
- Cable tie x 4
- Power socket x 1
- Internal wire x 4

- Fan



- Fan plastic body x 1
- PCBA x 1
- Copper wire x 1
- Motor case x 1
- Axis x 1
- Cable x 4
- Screw x 4

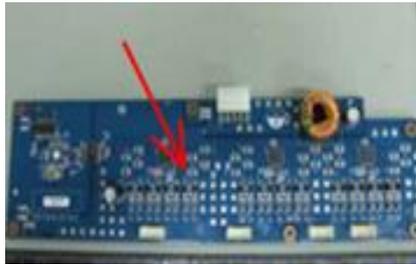
- PCBA (MB)

- PCB x 1
- SFP cage x 2
- Heat sink x 4
- Stud x 11
- RJ45 port x 5



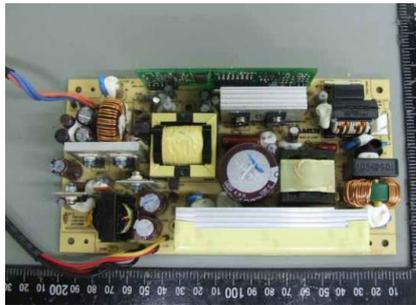
- RJ45 ATA Cable x 1
- RS-232 port x 1
- RS-232 ATA Cable x 1

- PCBA (PoE module)



- PCB x 1
- Screw x 6

PCBA (PSU)



- PCB x 1
- Heat sink x 2
- Capacitor x 1

Accessory

- AC Power cord

4. Calculation result

Basic information:

Brand name	ZyXEL	Recycling scenario	IT & telecommunication
Model name	ES3500-24HP	Product total weight	4590 g

Calculation information:

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Reusable parts	—	—	—	—	—	—
Parts for selective treatment	C.1	PCBA(PSU) (L:315.05mm * W:164.28mm)	223.7	PCBA	22.37	201.33
	D.1	PCBA(PSU) (L:190.85mm * W101.95mm)	462.5	PCBA	46.25	416.25
	D.6	Capacitor/ (L: 30mm,Φ: 30mm)	28	Capacitor (PCB)	14	25.2
	E.1	PCBA (PoE module) (L: 264.06mm * W:81.81mm)	114.8	PCBA	11.48	103.32
	B.2.2	PCBA	2	PCBA	0.2	1.8
	F.1	AC power cord/ 交流電電源線	190.14	Power Cable	47.535	171.126
Parts with single recyclable material	A.1	Uppder cover	1314.5	Stainless steel (Non- magnetic)	1248.775	1248.775
	A.2	Decorate plate	7.5	ABS (acrylonitrile butadiene styrene)	6.75	6.75
	A.3	Down cover	1566.5	Stainless steel (Non- magnetic)	1488.175	1488.175
	B.1.1	Screw (front)	0.6	Stainless steel (Non- magnetic)	0.57	0.57

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
	B.1.2	Screw (side)	0.8	Stainless steel (Non-magnetic)	0.76	0.76
	B.1.3	Screw (Back)	0.6	Stainless steel (Non-magnetic)	0.57	0.57
	B.1.4	Suspension loop	76	Steel	72.2	72.2
	B.1.6	Stud	21	Steel	19.95	19.95
	B.1.7	Mylar sheet - MB	24	PC	21.6	21.6
Parts with single recyclable material	B.1.8	Mylar sheet - PSU	25	PP (Polypropylene)	22.5	22.5
	B.1.12	Power socket metal pin	3	Copper	2.94	2.94
	B.1.19	Grounding wire screw	1.3	Stainless steel (Non-magnetic)	1.235	1.235
	B.1.20	Grounding wire stud	1.1	Stainless steel (Non-magnetic)	1.045	1.045
	C4	SFP CAGE	38	Stainless steel (Non-magnetic)	36.1	36.1
	C.5	Heat sink 1 (L: 38mm * W: 28mm)	10	Aluminum	9.5	9.5
	C.6	Heat sink 2 (L: 22mm * W: 22mm)	3.3	Aluminum	3.135	3.135
	C.7	Heat sink 3 (L: 24mm * W: 14mm)	3	Aluminum	2.85	2.85
	C.8	Heat sink 4 (L: 16mm * W: 14mm)	5.3	Aluminum	5.035	5.035

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
	C.9	Stud	7.7	Stainless steel (Non-magnetic)	7.315	7.315
	C.10	RJ45 port metal cover (24Port)	31.5	Copper	30.87	30.87
	C.12	RJ45 port metal cover (plus 4 port)	10	Copper	9.8	9.8
	C.15	RS-232 port metal part	6	Steel	5.7	5.7
	D.2	Heat sink 1	16	Aluminum	15.2	15.2
	D.3	Heat sink 1 Screw	1	Steel	0.95	0.95
	D.4	Heat sink 2	50	Aluminum	47.5	47.5
	D.5	Heat sink 2 Screw	1	Steel	0.95	0.95
	E.2	PCBA (PoE module) Screw	4.2	Stainless steel (Non-magnetic)	3.99	3.99
	B.2.3	Copper wire	1.4	Copper	1.372	1.372
	B.2.4	Motor case	4	Steel	3.8	3.8
	B.2.5	Axis	2	Steel	1.9	1.9
	B.2.7	Screw	3.2	Steel	3.04	3.04
	F.2	AC terminal	19.72	Copper	19.3256	19.3256
Parts difficult to process	—	—	—	—	—	—
Separation Process	B.1.5	Pad	14	Rubber (General)	0	12.6
	B.1.9	Wire clip	1	PA (Polyamide)	0.7	0.9
	B.1.10	Cable tie	4	PA (Polyamide)	2.8	3.6
	B.1.11	Power socket plastic part	5	PA (Polyamide)	3.5	4.5
	B.1.13	wire1	15	PVC	0	13.5
EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
	B.1.13	wire1 plastic head	6	PA (Polyamide)	4.2	5.4
	B.1.14	wire2	4	PVC	0	3.6

	B.1.15	wire3	32.5	PVC	0	29.25
	B.1.16	wire3 plastic head	5	PA (Polyamide)	3.5	4.5
	B.1.17	Grouding wire	1.5	PVC	0	1.35
	B.1.18	Connection wire	33	PVC	0	29.7
	C.2	Connection wire plastic head	2.5	PA (Polyamide)	1.75	2.25
	C.3	RJ45 port plastic cover (24Port)	96.6	PA (Polyamide)	67.62	86.94
	C.11	RJ45 port plastic part (plus 4 port)	20	PBT	14	18
	C.13	RJ45 ATA Cable	5	PVC	0	4.5
	C.14	RS-232 port plastic part	1	PBT	0.7	0.9
	C.16	RS-232 ATA Cable	3.8	PVC	0	3.42
	B.2.1	Fan plastic body	53.6	PBT	37.52	48.24
	B.2.6	Cable	6	PVC	0	5.4
Sum					$\Sigma(m_{(i)} \times RCR_{(i)}) = 3373.5276$	$\Sigma(m_{(i)} \times RVR_{(i)}) = 4292.9786$
Recyclability rate		$\frac{\Sigma(m_{(i)} \times RCR_{(i)})}{m_{EEE}} \times 100\% = 73.5\%$				
Recoverability rate		$\frac{\Sigma(m_{(i)} \times RVR_{(i)})}{m_{EEE}} \times 100\% = 93.5\%$				

ATTACHMENT A
PLASTIC MATERIALS MARKING

The equipment of ES3500-24HP enclosure is made by metal which is outside of scope of ISO 11469 as well as ISO 1043 part 1 to part 4 on the requirement of the weight of plastic material equal and/or more than 25g shall be marked.

ATTACHMENT B IDENTIFIED FOR SELECTIVE TREATMENT

In the light of Annex VII on the Directive 2012/19/EU (so called as WEEE recast), selective treatment for materials and components have been defined for further specifically treatment during the end-of-life electrical and electronic equipment, which are:

No	details
1	polychlorinated biphenyls (PCB) containing capacitors in accordance with Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) (1),
2	mercury containing components, such as switches or backlighting lamps,
3	batteries,
4	printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres,
5	toner cartridges, liquid and paste, as well as colour toner,
6	plastic containing brominated flame retardants,
7	asbestos waste and components which contain asbestos,
8	cathode ray tubes,
9	chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC),
10	gas discharge lamps,
11	liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimetres and all those back-lighted with gas discharge lamps,
12	external electric cables,
13	components containing refractory ceramic fibres as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress for the 23rd time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (2),
14	components containing radioactive substances with the exception of components that are below the exemption thresholds set in Article 3 of and Annex I to Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation (3),
15	electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume).
Remark: These substances, mixtures and components shall be disposed of or recovered in compliance with Directive 2008/98/EC.	

ATTACHMENT C REGISTRATION RESPONSIBILITY

According to Art. 12 & Art. 13 on the financing in respect of WEEE from private households and non-private households. Recycling fees cover costs of collection, transportation, handling, maintenance of recycling ZyXEL network and equipment as well as solvency required in the Decree.

According to Art. 16 of Directive 2012/19/EU “*Registration, information and reporting*”. ZyXEL has completed and fulfilled EU registration responsibility requirement which shall be registered through their authorised representatives, for detail, please refer to the table below.

Coutry	Registration No.	Approved compliance scheme
UK	WEE/CC0067TX (CD01/00100)	Comply Direct Ltd.
DE	71587309	EAR
DK	21229237	DPA-System
...

For other countries registry information, please feel free to contact with ZyXEL Communications Corporation. email to: ZyXEL_Certification@zyxel.com.tw