

ZyXEL WEEE 3R REPORT

ZyXEL WEEE program – Evaluation of Recyclability and Recoverability rate for ZyXEL Networked equipment EU Directive 2012/19/EU

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Department.....	: Quality Management Department
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Reporting period	: 2014-10-01 to 2014-10-31
Product category	: IT and Telecommunications equipment
Test Object.....	: 16-port Environmentally-Hardened VDSL2 Remote IP DSLAM
Model name	: VES-1616FE-55A
P/N no.	:
Trademark.....	: 
Power supply (I/O)	: Internal Power Supply
Rating(s).....	: AC 100-240V, 50/60Hz, 0.8A 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 IEC 62635
Test Report Form No.....	: ZyXEL TRF52001_2013-02-06 / Ver. 1
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INDEX

1. ABBREVIATIONS USED IN THE REPORT	3
2. GENERAL DESCRIPTION OF PRODUCT	4
3. DISASSEMBLING INFORMATION	6
4. CALCULATION RESULT	10

ATTACHMENT

ATTACHMENT A : PLASTIC MATERIALS MARKING	13
ATTACHMENT B : IDENTIFIED FOR SELECTIVE TREATMENT	14
ATTACHMENT C : REGISTRATION RESPONSIBILITY	15

1. Abbreviations used in the report

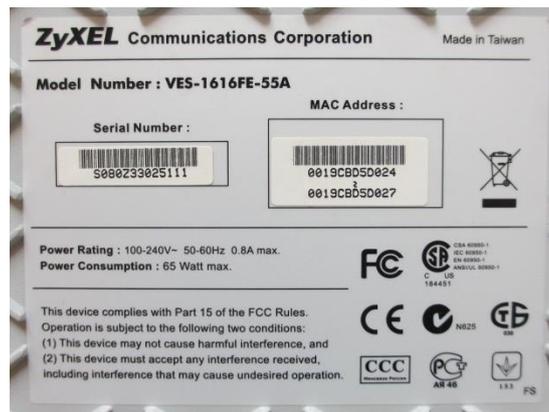
Abbr.	Full name
QMD	Quality Management Department
3R	Reused, Recycle, Recovery
MB	MotherBoard
PSU	Power supply unit
$M_{(i)}$	Mass of ith part (ref.: IEC/TR 62635:2012)
$RCR_{(i)}$	Recycling rate of the ith part in the corresponding end-of-life treatment scenario (ref.: IEC/TR 62635:2012)
$RVR_{(i)}$	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:



Characteristic data:

Product total weight : 7565.18g

Product dimension : L:380.50mm * W:104.00mm * H:390.00mm

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		
-	-	-
-	-	-
-	-	-
-	-	-

3.2 Derivation tree of Product

- Device

- Enclosure



- Top cover (metal) x 1
- Hinge x 2
- Hinge screw x 8
- Lock x 1
- Lockhole x 1
- Lock screw x 2
- Box (top cover) x 1
- Box screw (top cover) x 4
- Box (bottom cover) x 1
- Box screw (bottom cover) x 4
- Power screw x 2
- Housing (plastic) x 1
- Cable hole (plastic) x 1
- Cable hole screw x 5
- Bottom case x 1
- Waterproof sealant x 1
- Screw (bottom case) x 12

- 1st PCBA



- 1st PCBA x 1
- Transformer (core copper) x 32
- PCBA screw x 6

- 2nd PCBA



- 2nd PCBA x 1
- SFP(1X1) x 2
- 2nd PCBA shielding case x 1
- 2nd layer PCBA screw x 3

- 3rd PCBA



- 3rd PCBA x 1

- Internal PSU
(Transformer part)



- Internal PSU PCBA (Transformer part) x 1
- Capacitor x 1
- Internal PSU transformer (core copper) x 1
- Big L-type fixing piece x 2
- Small L-type fixing piece x 2
- Screw on internal PSU PCBA (big L-type fixing piece) x 4
- Screw on bottom case (big L-type fixing piece) x 4
- Screw on internal PSU PCBA (Small L-type fixing piece) x 4
- Screw on bottom case (small L-type fixing piece) x 2

- Internal PSU (power inlet part)



- Internal PSU PCBA (power inlet part) x 1
- Internal PSU metal (power inlet part) x 1
- 1st power socket, plastic part (bigger) x 1
- 2nd power socket, plastic part (smaller) x 1
- Internal PSU PCBA screw (power inlet part) x 4

- Main Board

- PCBA (main board) x 1



-
- Main Board shielding case (bigger) x 1
-
- Main Board shielding case (smaller) x 2
-
- Main Board RJ45 socket (plastic) x 4
-
- Console port x 1
-
- Bolt (longer) x 10
-
- Bolt (Shorter) x 3
-
- PCBA screw (main board) x 8
-

4. Calculation result

Basic information:

Brand name	ZyXEL	Recycling scenario	IT & telecommunication
Model name	VES-1616FE-55A	Product total weight	7565.18 g

Calculation information:

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Reusable parts	—	—	—	—	—	—
Parts for selective treatment	4.1	1st PCBA	331.65	PCBA	33.17	298.49
	5.1	2nd PCBA	11.20	PCBA	1.12	10.08
	6.1	3rd PCBA	5.90	PCBA	0.59	5.31
	7.1	Internal PSU PCBA (Transformer part)	63.70	PCBA	6.37	57.33
	7.2	Capacitor	22.00	Capacitor (PCB)	11.00	19.80
	8.1	Internal PSU PCBA (power inlet part)	48.77	PCBA	4.88	43.89
	9.1	PCBA (main board)	559.78	PCBA	55.98	503.80
Parts with single recyclable material	1.1	Top cover (metal)	1100.15	Aluminum	1045.14	1045.14
	1.2	Hinge	74.62	Stainless steel (magnetic)	70.89	70.89
	1.3	Hinge screw	5.36	Stainless steel (magnetic)	5.09	5.09
	1.4	Lock	70.28	Stainless steel (magnetic)	66.77	66.77
	1.5	Lockhole	87.65	Stainless steel (magnetic)	83.27	83.27
	1.6	Lock screw	3.30	Stainless steel (magnetic)	3.14	3.14
	2.1	Box (top cover)	49.50	PC	44.55	44.55
	2.2	Box screw (top cover)	2.52	Stainless steel (magnetic)	2.39	2.39
	2.3	Box (bottom cover)	52.84	PC	47.56	47.56
	2.4	Box screw (bottom cover)	6.84	Stainless steel (magnetic)	6.50	6.50
	2.5	Power screw	2.16	Stainless steel (magnetic)	2.05	2.05
	3.1	Housing (plastic)	1650.00	PC	1485.00	1485.00
	3.2	Cable hole (plastic)	107.16	PC	96.44	96.44

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Parts with single recyclable material	3.3	Cable hole screw	16.55	Stainless steel (magnetic)	15.72	15.72
	4.2	Transformer (core copper)	112.00	Copper	109.76	109.76
	4.3	PCBA screw	4.32	Stainless steel (magnetic)	4.10	4.10
	5.2	SFP(1X1)	17.80	Aluminum	16.91	16.91
	5.3	2nd PCBA shielding case	5.60	Aluminum	5.32	5.32
	5.4	2nd layer PCBA screw	2.10	Stainless steel (magnetic)	2.00	2.00
	7.3	Internal PSU transformer (core copper)	15.70	Copper	15.39	15.39
	7.4	Big L-type fixing piece	31.40	Stainless steel (magnetic)	29.83	29.83
	7.5	Small L-type fixing piece	2.64	Stainless steel (magnetic)	2.51	2.51
	7.6	Screw on internal PSU PCBA (big L-type fixing piece)	1.92	Stainless steel (magnetic)	1.82	1.82
	7.7	Screw on bottom case (big L-type fixing piece)	3.52	Stainless steel (magnetic)	3.34	3.34
	7.8	Screw on internal PSU PCBA (Small L-type fixing piece)	2.12	Stainless steel (magnetic)	2.01	2.01
	7.9	Screw on bottom case (small L-type fixing piece)	1.30	Stainless steel (magnetic)	1.24	1.24
	8.2	Internal PSU metal (power inlet part)	27.00	Aluminum	25.65	25.65
	8.5	Internal PSU PCBA screw (power inlet part)	2.84	Stainless steel (magnetic)	2.70	2.70
	9.2	Main Board shielding case (bigger)	9.58	Aluminum	9.10	9.10
	9.3	Main Board shielding case (smaller)	13.94	Aluminum	13.24	13.24
	9.5	Console port	7.87	Aluminum	7.48	7.48
9.6	Bolt (longer)	32.90	Stainless steel (magnetic)	31.26	31.26	

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Parts with single recyclable material	9.7	Bolt (Shorter)	6.63	Stainless steel (magnetic)	6.30	6.30
	9.8	PCBA screw (main board)	5.68	Stainless steel (magnetic)	5.40	5.40
	10.1	Bottom case	2880.00	Aluminum	2736.00	2736.00
	10.3	Screw (bottom case)	28.68	Stainless steel (magnetic)	27.25	27.25
Parts difficult to process	—	—	—	—	—	—
Separation Process	8.3	1st power socket, plastic part (bigger)	13.68	ABS	9.58	12.31
	8.4	2nd power socket, plastic part (smaller)	11.50	ABS	8.05	10.35
	9.4	Main Board RJ45 socket (plastic)	18.00	ABS	12.60	16.20
	10.2	Waterproof sealant	34.53	Rubber (General)	0.00	31.08
Sum					$\Sigma(m_{(i)} \times RCR_{(i)}) = 6176.43$	$\Sigma(m_{(i)} \times RVR_{(i)}) = 7041.74$
Recyclability rate			$\frac{\Sigma(m_{(i)} \times RCR_{(i)})}{m_{EEE}} \times 100\% = 81.6\%$			
Recoverability rate			$\frac{\Sigma(m_{(i)} \times RVR_{(i)})}{m_{EEE}} \times 100\% = 93.1\%$			

ATTACHMENT A
PLASTIC MATERIALS MARKING



The main material of enclosure is PC material.

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).
<p>Remark: These substances, mixtures and components shall be disposed of or recovered in compliance with Directive 2008/98/EC.</p>	

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