

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
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Department.....:	Quality Management Department
Report No.:	ZQ20181009001
Version.....:	1.0
Issue date.....:	2018-10-09
Reporting period.....:	2018-09-10 to 2018-10-09
Product category.....:	IT and Telecommunications equipment
Test Object.....:	VPN Firewall
Model name.....:	USG20W-VPN
P/N no.:	USG20W-VPN-EU0101F
Trademark.....:	ZYXEL
Power supply (I/O).....:	External Power Supply
Rating(s).....:	12V DC, 2.0 A 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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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		合勤設計. 中國製造. Designed by Zyxel in Taiwan. Assembled in China.
Model Number(機種): USG20W-VPN 產品名稱: VPN 防火牆	Power Rating(額定電源): 12V==2A Power Consumption: 18 Watt max. CAN ICES-3(B)/NMB-3(B)	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.
Contains FCC ID: I88USG20W-VPN Contains IC: 2468C-USG20WVPN 本產品內含射頻模組		
EU Importer: Zyxel Communications A/S, Generatorvej 8D, 2860 Søborg, Denmark US Importer: Zyxel Communications, Inc, 1130 North Miller Street Anaheim, CA 92806-2001		

Characteristic data:

Product total weight : 1050.2g

Product dimension : L:216mm * W:143mm * H:33mm

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		
Adaptor	Antenna	/
		/
/	/	/
/	/	/

3.2 Derivation tree of Product

- Device



- Enclosure



- Top case x 1
- Bottom Case x 1
- Nameplate x 1
- Shield(Small) x 1
- Shield(Large) x 1
- Rubber foot x 2
- Screw x 5
- Washer x 3
- Nut x 3

- PCBA



- PCBA x 1
- PCB Fix screw x 5
- Power jack x 1
- Switch button x 1
- SFP Cage x 1
- RJ45 I/O x 6
- Tact switch x 1
- LED x 9
- USB port x 1
- Shielding case x 2
- Battery holder x 1

- Accessory

- Adaptor



- Adaptor x 1
- EU Plug x 1

- Antenna



- Antenna x 3
-

4. Calculation result

Basic information:

Brand name	Zyxel	Recycling scenario	IT & telecommunication
Model name	USG20W-VPN	Product total weight	1050.2g

Calculation information:

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Reusable parts	—	—	—	—	—	—
Parts for selective treatment	2.1	PCBA	121.4	PCBA	21.74	195.62
	5.1	PCBA (Adaptor)	36.3	PCBA	6.61	59.53
	5.2	Capacitor	5.2	Electrolyte capacitors	0.00	0.00
Parts with single recyclable material	1.1	Top case	292.4	Steel	277.78	277.78
	1.2	Bottom Case	322.6	Steel	306.47	306.47
	1.4	Shield (Small)	1.8	ABS (acrylonitrile butadiene styrene)	1.62	1.62
	1.5	Shield (Large)	4.6	ABS (acrylonitrile butadiene styrene)	4.14	4.14
	1.6	Rubber foot	1.0	PP (Polypropylene)	0.90	0.90
	1.7	Screw	1.1	Steel	1.00	1.00
	1.8	Washer	0.6	Steel	0.60	0.60
	1.9	Nut	1.0	Steel	0.94	0.94
	2.2	PCB Fix screw	3.2	Steel	2.99	2.99
	2.4	Power jack (Metal)	0.5	Copper	0.50	0.50
	2.5	Switch Button	1.5	Steel	1.41	1.41

Parts with single recyclable material		(Metal)				
	2.6	Switch Button (Metal spring)	0.1	Steel	0.10	0.10
	2.7	Switch Button (Blue Plastic)	0.4	ABS (acrylonitrile butadiene styrene)	0.38	0.38
	2.8	Switch Button (Black Plastic)	0.4	ABS (acrylonitrile butadiene styrene)	0.33	0.33
	2.9	SFP Cage	5.1	Copper	5.00	5.00
	2.11	RJ45 I/O (Metal-Pin)	0.5	Copper	0.47	0.47
	2.12	RJ45 I/O (5 ports-Metal)	6.0	Copper	5.88	5.88
	2.13	RJ45 I/O (5 ports-Metal-Pin)	2.5	Copper	2.45	2.45
	2.15	I-PEX	0.6	Copper	0.59	0.59
	2.16	SMA	7.5	Copper	7.35	7.35
	2.17	Cable	4.5	FEP	4.05	4.05
	2.20	Tact switch (Metal)	0.3	Steel	0.28	0.28
	2.22	LED Light-1 (white)	0.2	EP(Epoxy resin)	0.00	0.22
	2.24	LED Light-2 (green)	0.1	EP(Epoxy resin)	0.00	0.12
	2.26	LED Light-3 (white)	0.8	EP(Epoxy resin)	0.00	0.70
	2.27	USB port (metal)	1.8	Steel	1.71	1.71
	2.29	Shielding case-1	7.8	Steel	7.41	7.41
	2.30	Shielding case-2	3.7	Steel	3.52	3.52
	2.31	Battery holder (metal)	0.4	Copper	0.39	0.39
	3.1	Antenna-Metal	39.0	Copper	38.22	38.22
4.1	Upper and Bottom case	30.0	PC	27.00	27.00	

Parts with single recyclable material		(Adaptor)				
	4.2	Terminal (Adaptor)	1.0	Copper	0.98	0.98
	4.4	Adaptor Connector	1.0	Zinc Die Casting	0.95	0.95
	4.5	Plug - Metal	6.0	Zinc Die Casting	5.70	5.70
	4.6	Plug - Plastic	7.0	PC	6.30	6.30
	5.3	Transformer (metal)	21.8	Copper	21.33	21.33
Separation Process	1.3	Nameplate	17.9	PC/ABS	12.54	16.13
	2.3	Power jack (Plastic)	1.0	PBT	0.67	0.86
	2.10	RJ45 I/O (Plastic)	2.1	PA (Polyamide)	1.48	1.91
	2.14	RJ45 I/O (5 ports-Black Plastic)	39.5	PA (Polyamide)	27.65	35.55
	2.18	Tact switch (Black plastic)	0.1	PA (Polyamide)	0.10	0.13
	2.19	Tact switch (Brown plastic)	0.4	PA (Polyamide)	0.25	0.32
	2.21	LED Case-1	0.5	PA (Polyamide)	0.38	0.49
	2.23	LED Case-2	0.3	PA (Polyamide)	0.20	0.25
	2.25	LED Case-3	1.8	PA (Polyamide)	1.26	1.62
	2.28	USB port (blue plastic)	1.4	PBT	1.00	1.28
	2.32	Battery holder (plastic)	1.3	PA (Polyamide)	0.91	1.17
	3.2	Antenna-Plastic	19.5	PC/PBT	13.65	17.55
	4.3	Wire	20.0	PVC	0.00	18.00
	5.4	Transformer (plastic)	2.9	PET (Polyethylene Terephalate)	2.02	2.60

Sum		$\Sigma (m_{(i)} \times RCR_{(i)}) =$ 799.23	$\Sigma (m_{(i)} \times RVR_{(i)}) =$ 1003.02
Recyclability rate	$\frac{\Sigma (m_{(i)} \times RCR_{(i)})}{m_{EEE}} \times 100\% = 76.1\%$		
Recoverability rate	$\frac{\Sigma (m_{(i)} \times RVR_{(i)})}{m_{EEE}} \times 100\% = 95.5\%$		

ATTACHMENT A
PLASTIC MATERIALS MARKING

The equipment of "USG20W-VPN" 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 PLASTIC MATERIALS MARKING

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

ATTACHMENT B
PLASTIC MATERIALS MARKING

	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 PLASTIC MATERIALS MARKING

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		