

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.:	ZQ20170502001
Version.....:	1.0
Issue date.....:	2017-05-02
Reporting period.....:	2016-12-01 to 2017-05-02
Product category.....:	IT and Telecommunications equipment
Test Object.....:	AC2600 MU-MIMO Dual-Band Wireless Gigabit Router
Model name.....:	NBG6817
P/N no.:	NBG6817-EU0101F
Trademark.....:	ZYXEL
Power supply (I/O).....:	External Power Supply
Rating(s).....:	AC 100-240V, 50/60Hz, 0.9A 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 Made in China 中國製造

Product Name (產品名稱): ARMOR Z2 (AC2600 MU-MIMO無線雙頻GbE分享器)
Model Number (機種): NBG6817

Input Power (輸入電源): 12V  3A
Power Consumption (消耗功率): 25W Max

FCC ID: I88NBG6817
IC: 2468C-NBG6817
CAN ICES-3 (B)/NMB-3(B)

  
D41163

 

Web Login: <http://myrouter>
Password: 1234

2.4G Wi-Fi Name(SSID): ZyXEL123456
5G Wi-Fi Name(SSID): ZyXEL123456.speed
Wi-Fi Password: xxxxxxxxxxxx


MAC Address: A0E4CB43D256


Serial Number: S150Y1900001



Characteristic data:

Product total weight : 718.03g

Product dimension : L:250mm * W:168mm * H:51mm

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	/	/
	/	/
/	/	/
/	/	/

3.2 Derivation tree of Product

- Device



- Enclosure



- Cover case x 1
 - Bottom case x 1
 - Rubber foot x 4
 - Screw x 4
-

- Enclosure assemblies



- PCBA x 1
 - PCBA Screw x 1
 - Transformer x 3
 - Heat sink x 3
 - RJ45 x 4
-

- Accessory

- Adaptor



- Adaptor x 1
 - EU plug x 1
-

4. Calculation result

Basic information:

Brand name	Zyxel	Recycling scenario	IT & telecommunication
Model name	NBG6817	Product total weight	718.03g

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	Main PCBA	94.10	PCBA	9.41	84.69
	2.19	Capacitor-1	4.50	Capacitor (PCB)	2.25	4.05
	5.1	Adaptor PCBA	74.53	PCBA	7.45	67.08
	5.2	Adaptor PCBA capacitor	0.19	Capacitor (PCB)	0.10	0.17
Parts with single recyclable material	1.1	Upper enclosure	117.00	ABS (acrylonitrile butadiene styrene)	105.30	105.30
	1.2	Bottom enclosure	140.10	ABS (acrylonitrile butadiene styrene)	126.09	126.09
	1.7	Enclosure screw	2.24	Steel	2.13	2.13
	1.9	Fixed plastic for light pipe	1.67	ABS (acrylonitrile butadiene styrene)	1.50	1.50
	2.3	Power jack (Metal)	0.22	Copper	0.22	0.22
	2.4	Power jack (core Metal)	0.37	Copper	0.37	0.37

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Parts with single recyclable material	2.5	Power button	0.10	Steel	0.10	0.10
	2.6	Power button spring	0.05	Steel	0.04	0.04
	2.8	Wi-Fi button	1.42	Steel	1.34	1.34
	2.9	Wi-Fi button spring	0.02	Steel	0.02	0.02
	2.12	WPS button	1.25	Steel	1.19	1.19
	2.13	WPS button spring	0.08	Steel	0.08	0.08
	2.16	Reset button metal sheet	0.34	Steel	0.33	0.33
	2.22	Heat sink metal shield-1	10.00	Steel	9.50	9.50
	2.23	Heat sink metal shield-2	10.00	Steel	9.50	9.50
	2.27	RJ11 I/O (Metal shield)	1.52	Copper	1.49	1.49
	2.29	RJ11 I/O (Metal-pin)	0.23	Copper	0.22	0.22
	2.30	RJ45 I/O (4 ports-metal shield)	4.44	Copper	4.35	4.35
	2.32	RJ45 I/O (4 ports metal pin)	0.90	Copper	0.89	0.89
	2.34	Screw (Fix PCBA)	0.50	Steel	0.48	0.48
	2.35	Metal (Heat sink-3)	1.60	Steel	1.52	1.52
	2.37	2 pin (Metal)	0.32	Copper	0.31	0.31
	2.38	USB port-1 (Metal)	1.27	Stainless steel (non-magnetic)	1.20	1.20

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Parts with single recyclable material	2.40	USB port-2 (Metal shield)	5.00	Steel	4.75	4.75
	2.41	USB port-2 (Metal)	1.65	Steel	1.57	1.57
	2.44	4 pin (Metal)	0.05	Copper	0.05	0.05
	2.45	RF internal cable-1 (Blue wire metal)	0.41	Copper	0.40	0.40
	2.46	RF internal cable-2 (Gray wire metal)	0.28	Copper	0.27	0.27
	2.47	RF internal cable-3 (White wire metal)	0.54	Copper	0.53	0.53
	2.48	RF internal cable-4 (Black wire metal)	0.54	Copper	0.53	0.53
	2.49	Wire(Golden metal)	0.06	Copper	0.06	0.06
	3.1	Antenna (Metal)	23.08	Copper	22.62	22.62
	3.2	Antenna (Plastic)	33.92	ABS (acrylonitrile butadiene styrene)	30.53	30.53
	4.1	Adaptor upper and bottom case	36.20	HIPS	32.58	32.58
	4.3	Ferrite core	4.90	Stainless steel (magnetic)	4.66	4.66
	4.4	Adaptor connector	0.31	Copper	0.30	0.30

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Parts with single recyclable material	4.5	Adaptor cover	3.45	ABS (acrylonitrile butadiene styrene)	3.11	3.11
	4.6	EU plug (Plastic)	8.50	HIPS	7.65	7.65
	4.7	EU plug (Metal)	6.30	Copper	6.17	6.17
	5.5	Screw-1 (Adaptor)	0.65	Steel	0.62	0.62
	5.6	Screw-2 (Adaptor)	0.65	Steel	0.62	0.62
	5.7	Screw-3 (Adaptor)	0.73	Steel	0.69	0.69
	5.8	Metal sheet-1	1.86	Steel	1.77	1.77
	5.9	Metal sheet-2	1.86	Steel	1.77	1.77
	5.10	Metal sheet-3	2.60	Aluminum	2.47	2.47
	5.11	Metal sheet-4	3.50	Aluminum	3.33	3.33
Parts difficult to process	2.24	Transformer-1	2.89	Transformer	2.60	2.60
	2.25	Transformer-2	5.43	Transformer	4.89	4.89
	2.26	Transformer-3	5.43	Transformer	4.89	4.89
	5.3	Transformer (Metal)	26.78	Transformer	24.10	24.10
	5.4	Transformer (Plastic)	2.27	Transformer	2.04	2.04
Separation Process	1.3	Golden ornament (Upper case)	2.00	PC (Polycarbonate)	1.40	1.80
	1.4	Golden ornament (Bottom case)	2.00	PC (Polycarbonate)	1.40	1.80
	1.5	Rubber foot (Upper)	5.00	Rubber (General)	0.00	4.50
	1.6	Rubber foot (Bottom)	3.36	Rubber (General)	0.00	3.02

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Separation Process	1.8	Light pipe (Whole)	4.00	PA (Polyamide)	2.80	3.60
	2.2	Power jack (Plastic)	1.22	PBT	0.85	1.10
	2.7	Power button plastic	0.10	PA (Polyamide)	0.07	0.09
	2.10	Wi-Fi button plastic-1 (Blue color)	0.22	PBT	0.15	0.20
	2.11	Wi-Fi button plastic-2	0.28	PBT	0.20	0.25
	2.14	WPS button plastic-1 (White color)	0.17	PA (Polyamide)	0.12	0.15
	2.15	WPS button plastic-2 (Black color)	0.12	PA (Polyamide)	0.08	0.11
	2.17	Reset button plastic-1 (Black color)	0.02	PA (Polyamide)	0.01	0.02
	2.18	Reset button plastic-2 (Red color)	0.02	PA (Polyamide)	0.02	0.02
	2.20	Heat sink-1	25.70	Aluminum	23.13	23.13
	2.21	Heat sink-2	25.70	Aluminum	23.13	23.13
	2.28	RJ11 I/O (Blue plastic)	2.31	PBT	1.61	2.08
	2.31	RJ45 I/O (4 ports-yellow plastic)	9.35	PBT	6.55	8.42
	2.33	Plastic clip (Fix wire)	0.22	PA (Polyamide)	0.15	0.19
	2.36	2 pin (Plastic)	0.12	PA (Polyamide)	0.08	0.11

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Separation Process	2.39	USB port-1 (Black plastic)	0.58	PBT	0.41	0.53
	2.42	USB port-2 (Blue plastic)	0.7.	PA (Polyamide)	0.49	0.63
	2.43	4 pin (Plastic)	0.18	PA (Polyamide)	0.13	0.16
	5.12	Black plastic	1.60	PA (Polyamide)	1.12	1.44
Sum					$\Sigma (m_{(i)} \times RCR_{(i)}) = 515.69$	$\Sigma (m_{(i)} \times RVR_{(i)}) = 664.71$
Recyclability rate			$\frac{\Sigma (m_{(i)} \times RCR_{(i)})}{m_{EEE}} \times 100\% = 71.80\%$			
Recoverability rate			$\frac{\Sigma (m_{(i)} \times RVR_{(i)})}{m_{EEE}} \times 100\% = 92.60\%$			

ATTACHMENT A
PLASTIC MATERIALS MARKING



The main material of enclosure is "PC" material

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 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