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..... :	ZQ20151118002
Version.. ..... :	1.0
Issue date..... :	2015-11-18
Reporting period ..... :	2015-09-07 to 2015-11-18
Product category ..... :	IT and Telecommunications equipment
Test Object ..... :	Wireless N VDSL2 4-port Gateway with USB
Model name ..... :	VMG1312-B30B
P/N no. ..... :	VMG1312-B30B-CZ01V1F
Trademark ..... :	ZyXEL
Power supply (I/O) ..... :	External Power Supply
Rating(s)..... :	AC 100-240V, 50/60Hz, 0.5A 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
Number of pages (Contents) ..... :	9 pages
Number of pages (Attachments) .. :	3 pages

Reported by... : Lisa Chen Approved by . : Emma Bao

INDEX

ATTACHMENT

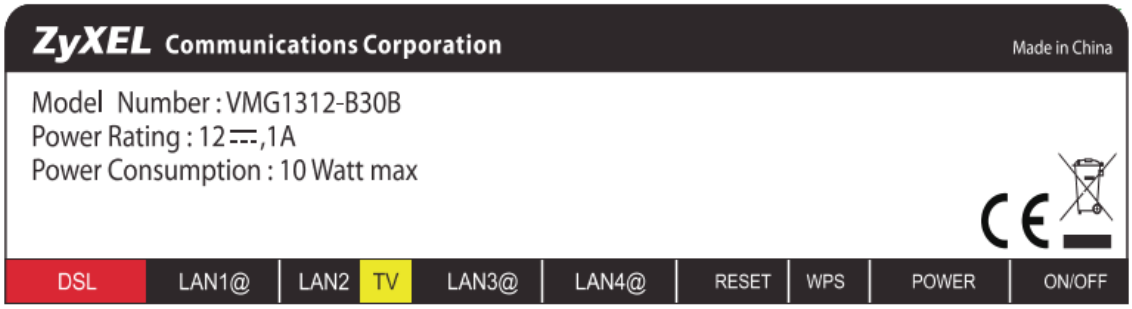
1. Abbreviations used in the report

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 : 349.38 g
Product dimension : L:186 mm * W:121 mm * H:39 mm

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.

3. Disassembling information

3.1 Disassembling object:

Device		
		
Accessaries & Assemblies		
Adaptor	/	/
	/	/
/	/	/
/	/	/

ATTACHMENT A
PLASTIC MATERIALS MARKING

3.2 Derivation tree of Product

- Device

- Enclosure

  - Upper case x 1
  - Bottom case x 1

- Enclosure assemblies
  - Screw x 4

- PCBA

  - PCBA x 1
  - Capacitance x 8
  - DDR2 SDRAM x 1
  - White Plastic x 1
  - VDSL Transformer x 1
  - Inductor x 4
  - 4 pin x 1
  - USB port x 1
  - Transformer x 4
  - RJ45 I/O x 1
  - RJ11 I/O x 1
  - Switch Button x 1
  - Power jack x 1
  - Tact switch x 2

- Accessory
- Adaptor x 1

ATTACHMENT A
PLASTIC MATERIALS MARKING

4. Calculation result

Basic information:

Brand name	ZyXEL	Recycling scenario	IT & telecommunication
Model name	VMG1312-B30B	Sample weight	349.38 g

Calculation information:

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Resuable parts	—	—	—	—	—	—
Parts for selective treatment	2.1	PCBA MB	58.73	PCBA	5.87	52.86
	2.2	Capacitance-1	2.62	Capacitor (PCB)	1.31	2.36
	2.3	Capacitance-2	5.50	Capacitor (PCB)	2.75	4.95
	2.4	Capacitance-3	3.96	Capacitor (PCB)	1.98	3.56
	2.5	Capacitance-4	0.96	Capacitor (PCB)	0.48	0.86
	2.6	Capacitance-5	0.96	Capacitor (PCB)	0.48	0.86
	2.7	Capacitance-6	0.96	Capacitor (PCB)	0.48	0.86
	2.8	Capacitance-7	0.63	Capacitor (PCB)	0.32	0.57
	4.1	PCBA Adaptor	13.88	PCBA	1.39	12.49
	4.2	Adaptor Capacitance	3.70	Capacitor (PCB)	1.85	3.33
Parts with single recyclable material	1.1	Cover case	75.00	ABS (acrylonitrile butadiene styrene)	67.50	67.50
	1.2	Bottom case	90.00	ABS (acrylonitrile butadiene styrene)	81.00	81.00
	1.3	Screw	2.00	Stainless steel (magnetic)	1.90	1.90
	2.13	Inductor-1	0.74	Copper	0.73	0.73
	2.14	Inductor-2	0.16	Copper	0.16	0.16
	2.15	Inductor-3	0.60	Copper	0.59	0.59
	2.16	Inductor-4	0.16	Copper	0.16	0.16
	2.17	4 pin (Metal)	0.50	Copper	0.49	0.49
	2.20	USB port (Plastic)	0.96	PC	0.86	0.86
	2.24	RJ45 I/O (4 ports-Metal)	0.60	Copper	0.59	0.59
	2.26	RJ11 I/O (Metal)	0.15	Copper	0.15	0.15
	2.31	Power jack (Metal)	0.11	Copper	0.11	0.11
	2.33	Power jack (Metal-bottom)	0.26	Copper	0.25	0.25
	2.35	Tact switch (Metal)	0.07	Alminum	0.07	0.07
	2.38	Tact switch-2 (Metal)	0.05	Alminum	0.05	0.05
	3.1	Upper and Bottom case (Adaptor)	34.70	PC	31.23	31.23

ATTACHMENT A
PLASTIC MATERIALS MARKING

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Parts with single recyclable material	3.3	Adaptor Plug	9.60	Copper	9.41	9.41
	3.4	Adaptor Connector	1.50	Copper	1.47	1.47
Parts difficult to process	2.11	VDSL Transformer	5.56	Transformer	5.00	5.00
	2.21	Transformer-2	5.64	Transformer	5.08	5.08
	2.22	Transformer-3	0.48	Transformer	0.43	0.43
	4.3	Adaptor Transformer	14.00	Transformer	12.60	12.60
Separation Process	2.10	White Plastic	0.04	PP (Polypropylene)	0.03	0.04
	2.18	4 pin (Plastic)	1.20	PA (Polyamide)	0.84	1.08
	2.19	USB port (Metal)	0.93	Aluminum	0.84	0.84
	2.25	RJ45 I/O (Plastic)	8.27	PA (Polyamide)	5.79	7.44
	2.27	RJ11 I/O (Plastic)	2.06	PA (Polyamide)	1.44	1.85
	2.28	Switch Button (White Plastic)	0.32	PA (Polyamide)	0.22	0.29
	2.29	Switch Button (Black Plastic)	0.51	PA (Polyamide)	0.36	0.46
	2.30	Switch Button (Gray Plastic)	0.20	PA (Polyamide)	0.14	0.18
	2.32	Power jack (Plastic)	0.69	PA (Polyamide)	0.48	0.62
	2.34	Tact switch (Brown Plastic)	0.16	PA (Polyamide)	0.11	0.14
	2.36	Tact switch (Black Plastic)	0.11	PA (Polyamide)	0.08	0.10
	2.37	Tact switch-2 (Black Plastic)	0.13	PA (Polyamide)	0.09	0.12
	2.39	Tact switch-2 (Black Plastic bottom)	0.02	PA (Polyamide)	0.01	0.02
Sum					$\sum(m_{(i)}xRCR_{(i)})$ = 247.15	$\sum(m_{(i)}xRVR_{(i)})$ = 315.70

Recyclability rate	$\frac{\sum(m_{(i)}xRCR_{(i)})}{m_{EEE}}$ x100% = 70.74%
Recoverability rate	$\frac{\sum(m_{(i)}xRVR_{(i)})}{m_{EEE}}$ x100% = 90.36%

ATTACHMENT A
PLASTIC MATERIALS MARKING

The main material of enclosure is ABS 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 specificly 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 finacing 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.

Acoording 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		