

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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Version.....	: 1.0
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Product category.....	: IT and Telecommunications equipment
Test Object	: Wireless N HotSpot Gateway
Model name	: N4100
P/N no.	: N4100-EU0101F
Trademark.....	: 
Power supply (I/O)	: External power supply
Rating(s)	: DC 12V, 1.5A, 18W 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
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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	9

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

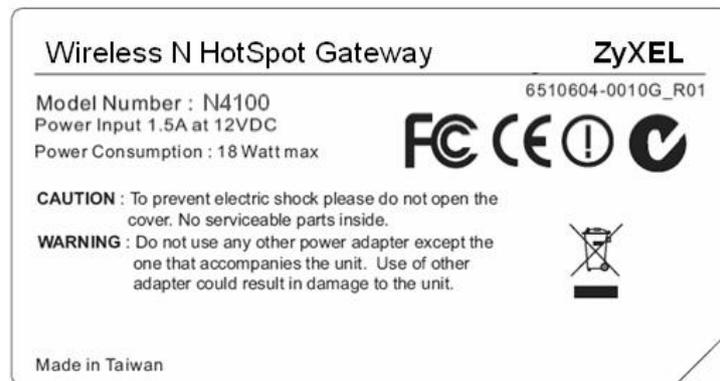
Abbr.	Full name
QMD	Quality Management Department
3R	Reused, Recycle, Recovery
MB	MotherBoard
PSU	Power supply unit
$M_{(i)}$	Mass of ith part (ref.: IEC/TR 62635:2012)
$RCR_{(i)}$	Recycling rate of the ith part in the corresponding end-of-life treatment scenario (ref.: IEC/TR 62635:2012)
$RVR_{(i)}$	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 : 765.6g
Product dimension : L:222mm * W:146mm * H:35mm
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		
RJ45 cable	Antenna	Adaptor
		

3.2 Derivation tree of Product

- Device



- Enclosure



- Top case x 1
- Bottom case x 1
- Decration panel x
- Screw x 2

- Enclosure assemblies

- Light pipe x 1
- Pad x 2
- Fix washer x 3
- Washer x 3
- Screw bolt x 3

- PCBA (MB)



- PCBA x 1
- Heat sink x 1
- Wire mount x 4
- RJ45 socket x 5
- Flexible antenna x 3
- Battery x 1

- PCBA
(Networked card)



- PCBA x 1
- Metal cove x 1

- Accessory

- Adaptor x 1



- Case x 1
- Wire x 1
- Plug x 1
- PCBA x 1
- Heat sink x 1
- Screw x 6
- Capacitor x 1

- RJ45 cable x 1



- Antenna x 3



4. Calculation result

Basic information:

Brand name	ZyXEL	Recycling scenario	IT & telecommunication
Model name	N4100	Product total weight	765.6 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 (L:20.5cm* W:13cm)	172.84	Capacitor (PCB)	86.42	155.556
	D.1	PCBA (L:6cm*W:4.5cm)	5.6	Capacitor (PCB)	2.8	5.04
	C.13	Battery	3.2	Batteries (internal)	0	0
	E.2	External power supply (Wire)	13.7	Power Cable	3.425	12.33
	E.3	PCBA (PSU)	54.2	Capacitor (PCB)	27.1	48.78
	F.1	Cable	35.7	Power Cable	8.925	32.13
Parts with single recyclable material	A.1	Upper enclosure	126.5	ABS (acrylonitrile butadiene styrene)	113.85	113.85
	A.2	Decoration panel	7.4	ABS (acrylonitrile butadiene styrene)	6.66	6.66
	A.3	Decoration panel	2.1	ABS (acrylonitrile butadiene styrene)	1.89	1.89
	A.4	Down enclosure	113.2	ABS (acrylonitrile butadiene styrene)	101.88	101.88
	A.5	Light pipt	5.8	PC	5.22	5.22
	A.7	Screw	1.7	Stainless steel (Non- magnetic)	1.615	1.615

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
	B.1	Fix washer	3	Stainless steel (Non-magnetic)	2.85	2.85
	B.2	Washer	0.6	Stainless steel (Non-magnetic)	0.57	0.57
	B.3	Screw bolt	0.9	Stainless steel (Non-magnetic)	0.855	0.855
	C.2	Heat sink	15.3	Stainless steel (Non-magnetic)	14.535	14.535
Parts with single recyclable material	C.3	Wire mount	0.16	PC	0.144	0.144
	C.4	RJ45(4PIN)-Metal	8.1	Stainless steel (Non-magnetic)	7.695	7.695
	C.5	RJ45(4PIN)-Plastic	14.2	PC	12.78	12.78
	C.6	RJ45(1PIN)- Metal	3.1	Stainless steel (Non-magnetic)	2.945	2.945
	C.7	RJ45(1PIN)-Plastic	3.9	PC	3.51	3.51
	C.8	Flexible antenna (Connection)	10.8	Stainless steel (Non-magnetic)	10.26	10.26
	C.9	Flexible antenna (Metal net)	1.2	Stainless steel (Non-magnetic)	1.14	1.14
	C.11	Flexible antenna (Megnetize)	1.8	Stainless steel (magnetic)	1.71	1.71

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
	C.12	Flexible antenna (Teflon)	1.8	Stainless steel (Non-magnetic)	1.71	1.71
	D.2	Metal cover	3.3	Stainless steel (Non-magnetic)	3.135	3.135
	E.1	External power supply (Plastic housing)	31.6	PC	28.44	28.44
	E.4	External power supply (Heat sink)	6.9	Stainless steel (Non-magnetic)	6.555	6.555
	E.5	External power supply (Screw)	1.4	Stainless steel (Non-magnetic)	1.33	1.33
	E.6	External power supply (Plastic connection)	23.2	PC	20.88	20.88
	E.7	External power supply (Metal connection)	22.1	Stainless steel (Non-magnetic)	20.995	20.995
	F.2	Antenna (Metal part)	36.9	Stainless steel (Non-magnetic)	35.055	35.055
	F.3	Antenna (Wire)	0.9	Stainless steel (Non-magnetic)	0.855	0.855
	F.4	Antenna (Plastic part)	26.4	PC	23.76	23.76

EoL info	No	Name of part	Mass (g)	Material	Recyclability mass (g)	Recoverability mass (g)
Parts difficult to process	—	—	—	—	—	—
Separation Process	A.6	Pad	4.6	Rubber (General)	0	4.14
	C.10	Flexible antenna (Heat-shrink tube)	1.5	Rubber (General)	0	1.35
Sum					$\Sigma(m_{(i)} \times RCR_{(i)}) = 561.494$	$\Sigma(m_{(i)} \times RVR_{(i)}) = 692.15$
Recyclability rate			$\frac{\Sigma(m_{(i)} \times RCR_{(i)})}{m_{EEE}} \times 100\% = 73.3\%$			
Recoverability rate			$\frac{\Sigma(m_{(i)} \times RVR_{(i)})}{m_{EEE}} \times 100\% = 90.4\%$			

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 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