



NIGERIAN COMMUNICATIONS ACT, 2003

NIGERIAN COMMUNICATIONS INDUSTRY E-WASTE REGULATIONS, 2018

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NIGERIAN COMMUNICATIONS ACT 2003

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In exercise of the powers conferred upon it by section 70 of the Nigerian Communications Act, 2003 and all other powers enabling it in that behalf, the NIGERIAN COMMUNICATIONS COMMISSION makes the following Regulations:

PART I GENERAL PROVISIONS

1. Application

These Regulations shall without prejudice to the provisions of the National Environment (Electrical Electronics Sector) Regulations SI No. 23 of 2011, apply to all Type Approved EEE and to activities carried out by any person in relation thereto in accordance with the Standards set out by the Commission:

Provided that the manufacture and supply of EEE use for national defence, security and other similar strategic applications shall be excluded from provisions of these Regulations.

2. Objectives

The objectives of these Regulations are:

- (1) To provide regulatory framework for the management and control of E-waste in the Telecommunications Industry;
- (2) To promote reuse, recycling and other forms of recovery to reduce its disposal;
- (3) To improve the environmental management system of all operators involved in the life circle of all Type Approved EEE set out by the Commission in order to ensure the implementation of the ISO 14000 and any subsequent standards relevant to the Telecommunications Industry.
- (4) To reduce greenhouse emission, create green jobs and contribute towards sustainable development.

PART II RESPONSIBILITIES OF MANUFACTURER

- 3 (1) Every manufacturer of electrical and electronic equipment covered by the Type Approval Standards set out by the Commission shall be responsible for Implementing the Extended Producer Responsibility which comprises the following:

- (a) collection and channelling of E-waste generated from the ‘end-of-life’ of the products manufactured, imported or placed on the market by it in line with the target prescribed in the EPR Authorisation as contained in schedule I of these Regulations. ‘
- (b) the mechanism used for channelling of E-waste from ‘end-of-life’ products including those from its service centres to authorised recycler shall be in accordance with the EPR Authorisation. In cases of fluorescent and other mercury containing lamps, where recyclers are not available, channelling may be from collection facility to Treatment, Storage and Disposal Facility to immobilise the mercury and reduce the volume of waste to be disposed of.
- (c) Extended Producer Responsibility Authorisation shall comprise of general scheme for collection of waste electrical electronic equipment from the electrical and electronic equipment placed on the market earlier, such as through dealer, collection facility, Producer Responsibility Organisation, through buy-back arrangement, exchange scheme, deposit refund scheme, return to retail store, drop-off site, collection event, whether directly or through any authorised agency and channelling the items so collected to authorised recyclers.
- (d) Put in place measures to reduce the quantities of end-of-life EEE from private household eliminated with unsorted household waste by:
- i. setting up a collection system that will allow distributor or retailer to accept return of end-of-life EEE put on the market by it from final holders or private household free of charge;
 - ii. alternatively concluding contracts with collection facility agent or other third party for the collection and sorting of the end-of-life EEE from final holders or private household put on the market by it free of charge.
- (e) providing contact details such as address, e-mail address, toll-free telephone numbers or helpline numbers to consumer(s) or bulk consumer(s) through its website and product user documentation to facilitate return of end-of-life electrical and electronic equipment.
- (f) creating awareness through media, publications, advertisements, posters, or by any other means of communication and product user documentation accompanying the equipment, with regard to:
- (i) information on hazardous constituents as specified in schedule I of these regulations;
 - (ii) information on hazards of improper handling, disposal, accidental breakage, damage or improper recycling of E-waste;

- (iii) instructions for handling and disposal of the equipment after its use;
 - (iv) affixing a visible, legible and indelible symbol on the products or product user documentation to prevent E-waste from being dropped in garbage bins containing waste destined for disposal;
 - (v) means and mechanism available for its consumers to return E-waste for recycling including the details of deposit refund scheme, if applicable;
 - (vi) the producer may opt to implement Extended Producer Responsibility individually or collectively. In individual producer responsibility, producer may set up its own collection facility or implement take back system or both to meet the Extended Producer Responsibility. In collective system, producer may tie-up as a member with a Producer Responsibility Organisation or with E-waste exchange or both. It shall be mandatory upon the individual producer in every case to seek Extended Producer Responsibility Authorisation from the Commission in accordance with Form EEE1 and the procedure laid down in Regulation 10(1)
- (2) providing information on the implementation of Deposit Refund Scheme to ensure collection of end-of-life products and its channelling to authorised dismantler or recycler, if such scheme is included in the Extended Producer Responsibility Plan:

Provided that the producer shall refund the deposit amount that has been taken from the consumer or bulk consumer at the time of sale.

- (3) importing of electrical and electronic equipment shall be allowed only to producers having Extended Producer Responsibility Authorisation.
- (4) maintaining records in Form-EEE 5 of the E-waste handled and, whenever demanded make such records available for scrutiny by the Commission or the relevant agency as the case may be.
- (5) filing annual returns in Form-EEE 6, to the Commission on or before the 30th day of June following the financial year to which that return relates. In the case of producer with multiple offices in a State, one annual return combining information from all the offices shall be filed.

- (6) applying to the Commission for authorisation in Form-EEE 1, which may thereafter grant the Extended Producer Responsibility Authorisation in Form-EEE 3;
- (7) operation without Extended Producer Responsibility Authorisation by any producer, as defined in these Regulations, shall be considered as causing damage to the environment.
- (8) storing the E-waste collected for a period not exceeding six months and maintaining a record of collection, sale, transfer, storage of E-waste which shall be made available for inspection:
Provided that the Commission may extend the said period for up to one year in case the E-waste needs to be specifically stored for development of a process for its recycling or reuse.
- (9) affixing a visible permanent label identifying the manufacturer.
- (10) designing and producing equipment in such a manner to extend useful life, facilitate reuse, disassembly and repairs. At the end of the equipment life, prepare for reuse and recovery of waste electrical and electronic equipment to reduce its disposal.
- (11) ensuring that the equipment and its components, consumables, parts or spares it produce do not contain more than the tolerable concentration value of some restricted substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominateddiphenyl ethers on hazardous substances as provided in these Regulations.
- (12) ensuring that no damage is caused to human health an environment during storage and transportation of E-waste.
- (13) maintaining records in Form-EEE 5 of the E-waste generated, handled and disposed and make such records available for scrutiny by the Commission.
- (14) filing annual returns in Form-EEE 6, to the Commission on or before the 30th day of June following the financial year to which that return relates.

PART III
RESPONSIBILITIES OF COLLECTION AND DISPOSAL
FACILITY AGENT

4. Every collection and disposal facility agent shall:
 - (1) apply for authorization in Form EEE7 and employ environmentally sound management system in treatment, storage and disposal of E-waste
 - (2) where authorised, collect E-waste on behalf of manufacturer vendor, operator and recycler including those arising from orphaned products:

- (3) ensure that its facility operates in accordance with the standards in sub-paragraph (4) – (8) of this Regulation.
- (4) ensure that the E-waste it collects is stored in a secured manner not longer than 6 months save as authorized under Regulation 3 (8) of these Regulations.
- (5) ensure that no damage is caused to human health and environment during storage and transportation.
- (6) not dispose E-waste in trash receptacles or at a dump site or landfill.
- (7) not incinerate E-waste in a way that will adversely affect human health and environment.
- (8) maintain records in Form-EEE 5, of the E-waste handled and make such records available for scrutiny whenever demanded by the Commission.

PART IV RESPONSIBILITIES OF VENDORS

5. Every vendor shall:

- (1) where authorised by the manufacturer, collect the E-waste by providing the consumer a collection box, bin or a demarcated area to deposit E-waste, or through take back system and send the E-waste so collected to collection facility, or recycler as designated by the manufacturer.
- (2) ensure that the E-waste generated is safely transported to authorised recyclers.
- (3) ensure that no damage is caused to human health and environment during storage and transportation of E-waste.

PART V RESPONSIBILITIES OF CONSUMER OR BULK CONSUMER

6. Every consumer or bulk consumer shall:

- 1) ensure that E-waste generated by bulk consumer is channelled through collection centre or dealer of authorised producer, or recycler, or through the designated take-back service provider of the producer to the authorised recycler:

Provided that bulk consumer shall maintain records of E-waste generated by it in Form-EEE5 and make such records available for scrutiny whenever demanded.

- 2) bulk consumer shall ensure that the end-of-life electrical and electronic equipment are not mixed-up with E-waste containing radioactive material as covered under the provisions of any relevant laws in Nigeria.
- 3) bulk consumer shall file annual returns in Form-EEE6, to the relevant agency on or before the 30th day of June following the financial year to which that return relates, and in case of the bulk consumer with multiple offices in a State, one annual return combining information from all the offices shall be filed.

PART VI
RESPONSIBILITIES OF RECYCLER

7. Every recycler shall:

- (1) ensure that it receives or collects E-waste from collection and disposal facility agent or other persons.
- (2) ensure that the E-waste received or collected are dismantled and recycled.
- (3) ensure that the facility and recycling processes are in accordance with the standards prescribed in sub-paragraph (5) – (11) of this Regulation.
- (4) obtain authorisation from the Commission in accordance with the procedure under Regulation 14.
- (5) ensure that no damage is caused to human health and environment during storage and transportation of E-waste.
- (6) ensure that the recycling processes do not have any adverse effect on human health and environment.
- (7) make all records available for scrutiny whenever demanded by the Commission.
- (8) ensure that the material or any fraction thereof not recycled in its facility are disposed off appropriately.
- (9) ensure that the residue generated during recycling process is disposed of in an authorised treatment, storage and disposal facility.
- (10) maintain record in Form-EEE 5 of E-waste collected, recycled and sent to authorised recycler, and make such record available for inspection whenever demanded.

- (11) file annual returns in Form-EEE 6, to the Commission on or before 30th day of June following the financial year to which that return relates.

PART VII RESPONSIBILITIES OF IMPORTER

8. Every importer shall:

- (1) register with the Commission and obtain license for importation of electrical and electronic equipment which shall be subject to periodic review as may be determined by the Commission:

Provided that no end-of-life, unusable or unserviceable electrical and electronic equipment shall be imported into Nigeria.

(2) ensure that all EEE imported:

- a. have been type-approved by the Commission;
- b. are of comparative models of equipment in use;
- c. are fit for the purpose originally designed for;
- d. are fully functional as originally intended;
- e. in outward/external appearance do not show any waste characteristics;
- f. are not scraps; and
- g. are properly packaged for protection during transportation, loading and unloading.

(3) submit copies of relevant shipment documents, along with completed Form EEE 5.

(4) obtain approval from the Commission for electrical and electronic equipment received as donation for any person.

(5) not transfer, sell lease or in any way assign the license to a third-party.

(6) Not import electrical and electronic equipment that contains anytoxic or hazardous substances.

(7) not import any electrical and electronic equipment containing Cathode Ray Tubes (CRT).

- (8) not import equipment containing more than the tolerable concentration value of some restricted substances as provided under these Regulations.
- (9) import only products in which the manufacturer uses materials that are non-toxic, non-harmful, easily degradable and convenient to be recycled in accordance with these Regulations.
- (10) maintain record in Form-EEE 5 of electrical and electronic equipment imported and make such record available for scrutiny whenever demanded.
- (11) file annual return in Form-EEE 6 to the Commission on or before 30th day of June following the financial year to which that return relates.

PART VIII RESPONSIBILITIES OF TRANSPORTER

9. Every transporter shall:
 - (1) employ environmentally sound management system in handling of E-waste.
 - (2) maintain signed copies of all E-waste manifest and/or receipt and copies shall be made available for review in the course of transportation or during inspection visit by the officers of the Commission.
 - (3) submit a copy of the E-waste manifest to the Commission within thirty days of waste removal.

PART IX PROCEDURE FOR OBTAINING EXTENDED PRODUCER RESPONSIBILITY AUTHORISATION

- 10.(1) Every producer shall make application in Form-EEE1 to the Commission for Extended Producer Responsibility Authorisation within

a period of three months from the date of the commencement of these Regulations.

- (2) The application shall include:
- (a) the targeted quantity of E-waste to be collected, recycled and disposed, during the year, which is to be determined on the basis of the quantity of electrical and electronic equipment placed in the market in the previous years and taking into consideration the average life of the electrical and electronic equipment;
 - (b) the estimated quantity of E-waste generated during the current year and the quantity expected to be collected; and
 - (c) the collection scheme proposed as contained in the Extended Producer Responsibility Plan in accordance with Schedule I;

(3) The Commission may within three months from the date of receipt of the application evaluate the Extended Producer Responsibility Plan and upon being satisfied that the producer has detailed out an effective system to manage it, grant the authorisation, in Form-EEE 3.

- (4) Authorisation shall be valid for a period of five years and shall show:
- (a) the approved targeted quantity of E-waste to be collected during the year;
 - (b) the quantity expected to be collected with the collection scheme proposed to be implemented by the producer;
 - (c) The fixed target in accordance with Schedule I of these regulations; and

(5) The Commission may refuse to grant the Extended Producer Responsibility Authorisation if the applicant fails to provide the required details, after affording the producer reasonable opportunity of being heard.

(6) In the event of refusal of Extended Producer Responsibility Authorisation, the producer will forfeit the right to put any electrical and electronic equipment in the market till such time the authorisation is granted.

(7) Application for renewal of the authorisation shall be in Form EEE-1 and be made at least four months before its expiration. The Commission may renew the authorisation for another five years.

(8) The Commission may conduct random check and if it ~~is~~ determines that, the holder of the Extended Producer Responsibility Authorisation has failed to comply with any of the conditions of the authorisation or with

any provisions of these Regulations revoke or suspend the authorisation for such period as it considers necessary.

- (9) The Commission should maintain an accessible online register of Extended Producer Responsibility Authorisation granted with all the conditions imposed pursuant to these Regulations.

PART X
PROCEDURE FOR E-WASTE MANAGEMENT
AUTHORISATION

11. Every manufacturer generating E-waste shall:

- (1) obtain an authorisation from the Commission.
- (2) make an application in Form-EEE 2 for authorisation, within three months from the commencement of these Regulations, and on receipt of the application, the Commission should within three months make such enquiry as it considers necessary, and may grant authorisation in Form-EEE 3 upon being satisfied that the applicant possesses appropriate facilities, technical capabilities and equipment to handle E-waste in the authorised facility.
- (3) Application for renewal of the authorisation shall be in Form-EEE 1 and be made four months to its expiration, and the Commission may renew the authorisation for another five years after examining the case on merit, and the manufacturer shall take all steps to comply with the conditions specified in the authorisation.
- (4) At the expiration of the renewed authorization period of five years stated in sub-paragraph 3 of this regulation, the manufacturer shall be required to make fresh applications in accordance with the provisions of this regulation.
- (5) The Commission should maintain an accessible online register of authorisation granted with all the conditions imposed pursuant to these Regulations.

12. (1) Every transporter dealing in E-waste shall:

- (a) obtain authorisation from the Commission.
- (b) make an application, within three months from the date of the commencement of these Regulations, and the application shall be accompanied with copies of the following documents:
 - i evidence of ownership of vehicle for managing, handling and transporting E-waste;
 - ii certification for fit for purpose and road worthiness from the agency in charge of vehicle inspection.
 - iii valid vehicle and insurance papers.

- (2) The Commission, on receipt of the application and upon being satisfied that the applicant possesses adequate technical capabilities and equipment for managing, handling and transporting E-waste in compliance with Harmful Waste (Special Criminal Provisions etc) Act Cap H1 LFN 2004 and such regulations made pursuant thereto as well as these Regulations, may within two months from the receipt of the application grant the authorisation in accordance with Form EEE 4.
 - (3) The transporter shall maintain records of the E-waste transported in Form-EEE 5 and shall file annual returns of its activities of previous year in Form-EEE 6 to the Commission on or before 30th day of June of every year.
 - (4) The transporter shall always be moving along with e-waste manifest in Form-EEE 8.
13. (1) Every collection and disposal facility of E-waste shall:
- (a) obtain authorisation from the Commission.
 - (b) make an application in Form EEE 2, within two months from the commencement of these Regulations, to the Commission.
- (2) The Commission may, on receipt of the application and upon being satisfied that the applicant possesses adequate technical capabilities and equipment for managing, handling and transporting E-waste, within two months from the receipt of the application grant the authorisation in accordance with Form EEE 4.
- (3) The disposal facility shall maintain records of the E-waste stored, treated and disposed in Form-EEE 5 and shall file annual returns of its activities of previous year in Form-EEE 6 to the Commission on or before 30th day of June of every year.
- 14 (1) Every recycler of E-waste shall:
- (a) Obtain authorisation from the Commission.
 - (b) make application for grant of authorisation in Form-EEE 9, within three months from the commencement of these regulations, and such application shall be accompanied with copies of the following documents:
 - i consent to establish recycling facility granted by the Federal or State Environmental Protection and Waste Management Agencies for the time being;

- ii certificate of registration issued pursuant to the provisions of Companies and Allied Matters Act Cap C20 LFN 2004 and other relevant laws;
 - iii proof of installed capacity of plant and machinery; and
 - iv in case of renewal, a certificate of compliance with health and environmental standards, Federal or State Environmental Protection and Waste Management Agencies for the time being.
- (2) The Commission, on receipt of the application, and upon being satisfied that the applicant possesses adequate technical capabilities, requisite facilities and equipment to recycle and process E-waste in compliance with these regulations, may grant the authorisation stipulating therein necessary conditions for carrying out safe operations in the authorised facility.
- (3) The authorisation granted shall be valid for five years from the date of issue and shall be accompanied with a copy of a field inspection report signed by the Commission indicating the adequacy of facilities for recycling of E-waste and in compliance with these regulations.
- (4) Application for renewal of authorisation shall be made in Form – EEE 9 four months to its expiration and the Commission may renew the authorisation for another period of five years.
- (5) At the expiration of the renewed authorization period of five years stated in sub-paragraph 4 of this regulation, the recycler shall be required to make fresh applications in accordance with the provisions of this regulation.
- (6) The recycler shall maintain records of the E-waste purchased, processed in Form-EEE 5 and shall file annual returns of its activities of the previous year in Form-EEE 6 to the Commission on or before 30th day of June of every year.
- (7) The Commission may issue guidelines on standards of performance for dismantling and recycling processes from time to time.

PART XI

REVOCATION AND SUSPENSION OF AUTHORIZATION

- 15 The Commission may refuse, revoke or suspend an authorisation granted under these Regulations, if it has reasons to believe that the authorised transporter, collection and disposal facility agent or recycler has failed to comply with any of the conditions of authorisation, or any provisions of these Regulations.

Provided that such action shall not be taken until reasonable opportunity of being heard is given to the holder of the authorisation.

PART XII RESPONSIBILITIES OF THE COMMISSION

- 16 In addition to any other responsibility assigned to it in these regulations and any other written law, the Commission shall have the following responsibilities:

- (1) ensure earmarking or allocating space or shed for E-waste dismantling and recycling type-approved EEE in the existing and upcoming industrial park, estate and industrial clusters;
 - a. monitor the implementation of authorised Extended Producer Responsibility Plan and take cognizance of any non-compliance.
 - b. monitor compliance with Restriction of Hazardous Substances (ROHs) provisions.
- (2) Upon revocation or suspension of the authorisation, the Commission may give directions for the safe storage and management of the E-waste to the person whose authorisation has been revoked or suspended, and such person shall comply with such directions.
- (3) The Commission shall prepare a consolidated annual review report on management of E-waste before the 30th day of December every year.

PART XIII REDUCING THE USE OF HAZARDOUS SUBSTANCES

- 17 Every manufacturer of the Type Approved electrical and electronic equipment by the Commission and its components, consumables, parts or spares shall:
- (1) ensure that new electrical and electronic equipment and its components, consumables, parts or spares do not contain lead,

mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominateddiphenyl, Bis (2-Ethylhexyl) phthalate, Benzyl butyl phthalate, Dibutyl phthalate and Diisobutylphthalateethers beyond a maximum concentration value of 0.1% by weight in homogenous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls and polybrominateddiphenyl ethers and of 0.01% by weight in homogenous materials for cadmium.

- (2) Components, consumables, parts or spares required for the EEE placed on the market before the commencement of these regulations may be exempted if reduction of hazardous substances (RoHS) compliant parts and spares are not available.
- (3) Every manufacturer shall provide detailed information on the constituents of the equipment and its components, consumables, parts or spares along with a declaration of compliance with the reduction of hazardous substances (RoHS) provisions in the product user documentation.
- (4) Without prejudice to Regulation 3 of these Regulations, every applicant seeking Extended Producer Responsibility Authorisation shall provide information in terms of self-declaration on the compliance of the provisions of Regulations 17(1) of these Regulations.
- (5) The Commission may conduct random sampling of electrical and electronic equipment placed on the market to monitor and verify compliance with RoHS provisions and the cost for sample and testing shall be borne by the producer. The random sampling may be as per the guidelines on standards that may be issued by the Commission from time to time.
- (6) If the product does not comply with reduction of hazardous substances (RoHS) provisions, the producer shall take corrective measures to bring the product into compliance and withdraw or recall the product from the market, within a reasonable period as per the guidelines on standards that may be issued by the Commission from time to time.
- (7) The Commission shall publish the methods of sampling and analysis of hazardous substances listed in Regulation 17 (1) of these Regulations.

PART XIV
EXPOSURE CONTROL FROM ELECTROMAGNETIC FIELDS

- 18 Every operator in the communications industry whose operations involve the use of Electromagnetic fields (EMF) shall observe the following:
- (1) ensure adequate protection of employees and general public by:
 - (a) assessing the level of EMF exposure of employees and the public to ensure that such exposure is below the basic restrictions, reference levels and exposure limits values (ELVs) as stated in Tables 1,2,3 and 4 of these Regulations;
 - (b) devising and implementing an effective action plan to ensure compliance with the exposure limits;
 - (c) providing information and training to those particularly at risk of exposure; and
 - (d) providing frequent health surveillance or medical examination to determine and remedy exposures in excess of the ELV.
 - (e) Providing a sign post to notify the public of the presence of radiation
 - (2) Consider human health, aesthetic, environmental and public sensibilities in its operations and avoid nearness to kindergarten, schools, playgrounds, hospitals and other forms of gathering in need of special considerations.
 - (3) Transparency and open discussion with local authorities and population prior to and during the installation or establishment of facilities.
 - (4) Create a buffer zone around any radiation emitting facility to reduce visual impacts.
 - (5) Submit its Electromagnetic Fields Action Plan to the Commission within four months after the commencement of these Regulations.
 - (6) Indicate in its annual returns measures and actions taken to comply with the Electromagnetic fields requirements under these Regulations.
- 19(1) The basic restrictions for public and workers exposure and reference levels for both the public and trained workers in its occupational environment are as stipulated in Tables 1, 2, 3 and 4 of these Regulations.
- (2) Public areas where Electromagnetic fields exposures are at or below the reference levels set out in Table 2 shall be in compliance with these Regulations.
 - (3) The Commission shall undertake periodic monitoring to measure and evaluate the levels of compliance with Electromagnetic fields exposure limits by each operator, by using internationally recognized measurement and evaluation protocols.

- (4) The Commission shall determine the measures to be taken where exposure limits are exceeded or are not in compliance with these Regulations, and these measures may include extending the boundaries of areas where public reference levels in Table 2 may be exceeded, and restricting public access to those areas requiring the use of appropriate signs, warnings and public notices, engineering or administrative controls and other measures as may seem appropriate.
- 20 (1) Every service provider shall:
- (a) ensure that employees and members of the public are not exposed to Electromagnetic fields levels in excess of the prescribed exposure limits as contained in table 1,2,3 and 4 of these Regulations;
 - (b) assess the levels of electromagnetic fields to which its employees may be exposed;
 - (c) make and implement an action plan to reduce exposure levels; and
 - (d) assess the risks posed to employees by its exposure to Electromagnetic fields.
- (2) where a service provider is required to assess the risks of exposure to electromagnetic fields, it shall:
- (a) ensure that any risks identified in that assessment are eliminated or reduced to a minimum;
 - (b) provide information and training to employees likely to be subjected to the risks identified in that assessment;
 - (c) ensure that health surveillance and medical examinations are provided as appropriate; and
 - (d) finance research on and health effect from Electromagnetic fields
- 21 The electromagnetic fields Action Plan required to be adopted under this Regulation shall, in addition to such other information, show the following:
- (a) other working methods that entail lower exposure to electromagnetic fields;
 - (b) replacement equipment designed to reduce the level of exposure;
 - (c) technical measures to reduce the emission of Electromagnetic fields including, where necessary, the use of interlocks, screening or similar health protection mechanisms;
 - (d) demarcation and access control measures;
 - (e) maintenance programmes for work equipment, workplaces and workstation systems;
 - (f) the design and layout of workplaces and workstations;
 - (g) limitations on the duration and intensity of exposure; and
 - (h) the availability of suitable personal protective equipment.

PART XV
SANCTIONS FOR VIOLATION

- 22.(1) No manufacturer shall operate without obtaining Extended Producer Responsibility authorisation from the Commission. Any manufacturer who operates without such authorisation shall be liable to pay a fine of N500, 000. 00 (Five Hundred Thousand Naira) per day from the date of default until compliance.
- (2) (3) In addition to the sanction prescribed under Regulation 20 (1), the Commission may seize off any EEE to which the violation relates and shall dispose them accordingly.
- 23 (1) No importer, recycler or transporter of electrical and electronic equipment shall operate without authorisation from the Commission. A contravention this regulation shall attract a fine of ₦200, 000. 00 (Two Hundred Thousand Naira) per day from the date of default until compliance.
- (2) In addition to the sanction prescribed under Regulation 21 (1), the Commission may seize any EEE to which the violation relates and shall dispose of same accordingly.
24. Any manufacturer, importer, recycler and transporter who submits false information, record as evidence or deliberately misleads the Commission is liable to pay a fine of ₦10, 000,000.00 (Ten Million Naira).
- 25 (1) Any, manufacturer, importer, recycler and transporter who fails to meet its responsibilities pursuant to these Regulations is liable to pay a fine of ₦500,000.00 per day from the date of default until compliance.
- (2) In addition to the sanction prescribed by these Regulations without prejudice to any other lawful remedy, manufacturer, importer, recycler and transporter may be suspended or deregistered by the Commission.
- 26 Non-compliance with Electromagnetic fields requirements under these Regulations by any operator constitutes a violation and shall attracts a fine of not less than ₦10, 000,000. 00 (Ten Million Naira).
- 27 The sanctions provided in these Regulations shall be applied in addition to any other penalty imposed pursuant to any other law for the time being in force in

Nigeria, particularly the provisions of Nigerian Communications (Enforcement Processes, Etc.) Regulations, 2005.

PART XVI MISCELLANEOUS

28 Where an accident occurs at a facility processing E-waste or during transportation of E-waste, the manufacturer, transporter, or recycler, as the case may be, shall report such accident immediately in writing to the Commission about the accident.

29 Any person aggrieved by the decision of the Commission for refusing, revoking or suspending authorisation, may in the case of Extended Producer Responsibility Authorisation apply for a review of the decision as provided for under Sections 86 – 88 of the Act.

30 Interpretations. –

In these Regulations, unless the context otherwise requires: -

‘Act’ means the Nigerian Communications Act, 2003;

‘Commission’ means the Nigerian Communications Commission;

‘authorisation’ means permission granted to an operator in the electrical and electronic equipment business and E-waste management;

‘bulk consumer’ means bulk users of electrical and electronic equipment including public and private or corporate bodies that are registered under the Companies and Allied Matters Act Cap C20 LFN 2004;

‘channelling’ means directing the movement of E-waste from collection centre onwards to authorised recycler or treatment, storage and disposal facility;

‘collection facility agent’ means a centre established by a manufacturer individually or jointly in association with others to undertake collection operations of e-waste;

‘component’ means one of the parts of a sub-assembly or assembly of which a manufactured product is made up and into which it may be resolved and includes an accessory or attachment to another component;

‘consumables’ means items required for manufacturing process or for functioning of the electrical and electronic equipment that may or may not form part of end-product that is substantially or totally consumed during the manufacturing process;

‘consumer’ means any person using electrical and electronic equipment excluding the bulk consumer;

‘Deposit Refund Scheme’ means a scheme whereby the producer charges an additional amount as a deposit at the time of sale of the electrical and electronic equipment and returns it to the consumer when the end-of-life electrical and electronic equipment is returned;

‘disposal facility’ means a facility dealing with E-waste which does not lead to recycling, recovery or reuse and includes physico-chemical or biological treatment, incineration and disposal in secured landfill;

‘disposal’ means any operation which does not lead to recycling, recovery or reuse and includes physico-chemical or biological treatment, incineration and deposition in secured landfill;

‘distributor’ means any person in the supply chain who makes electrical and electronic equipment available on the market;

‘document’ in these Regulations has the meaning assigned to in Evidence Act, 2011;

‘electrical and electronic equipment (EEE)’ means any equipment that depends on electric current or electromagnetic field to be functional as are specifically covered by the Type Approval Standards set out by the Commission.

‘electromagnetic field (EMF)’ means a physical entity carrying or storing energy in empty space and manifesting itself by exerting forces on electric charges. For the purposes of these Regulations EMF includes static electric and magnetic field as well as time-varying electric, magnetic and electromagnetic fields with frequencies up to 300GHz;

‘end-of-life’ of the product means the time when the product is intended to be discarded by the user;

‘environmentally sound management of E-waste’ means taking all steps required to ensure that E-waste is managed in a manner that will not cause adverse effects on human health and environment;

‘e-retailer’ means an individual or firm that uses an electronic network such as internet, telephone, to sell its goods;

‘E-waste’ means electrical and electronic equipment, whole or in part discarded as waste by the consumer or bulk consumer as well as rejects from manufacturing, refurbishment and repair processes;

‘Extended Producer Responsibility (EPR)’ means responsibility of any producer of electrical or electronic equipment, for channelizing of E-waste to ensure environmentally sound management of such waste;

‘Extended Producer Responsibility Authorisation (EPR Authorisation)’ means a permission given by the Commission to a manufacturer for managing Extended Producer Responsibility;

‘Extended Producer Responsibility Plan (EPR Plan)’ means a plan submitted by a manufacturer to the Commission at the time of applying for Extended Producer Responsibility Authorisation detailing the E-waste channel system;

‘facility’ means any location wherein the process incidental to the collection, reception, storage, sorting, refurbishing, dismantling, recycling, treatment, disposal or any other related activity on E-waste are carried out;

‘importer’ means any person who imports new or used EEE into Nigeria;

‘introducing or placing on the market’ means the first availability of a product in the market within the territory of Nigeria;

‘making available in the market’ means any supply of a product for distribution, consumption or use in Nigeria, whether in return for payment or free of charge;

‘market’ means an environment that facilitates trading in Electrical and electronic equipment and e-waste;

‘operator’ means a person who builds, owns or operates a communication network in Nigeria;

‘orphaned products’ means any non-branded or assembled EEE specified in Schedule I or those produced by a company that is no longer in operations;

‘part’ means an element of a sub-assembly or assembly not normally useful by itself, and not amenable to further disassembly for maintenance purposes. A part may be a component, spare or an accessory;

‘Producer Responsibility Organisation’ means an organisation authorised or financed collectively or individually by producers, which can take the responsibility for collection and channelizing of E-waste generated from the ‘end-of-life’ of its products to ensure environmentally sound management of such E-waste;

‘manufacturer’ means any person who, irrespective of the selling technique used does any of the following:

- i) manufactures and offers to sell EEE and its components, consumables, parts or spares under its own brand; or
- ii) offers to sell imported EEE and its components, consumables, parts or spares; or
- iii) offers to sell under its own brand assembled EEE and its components or consumables or parts or spares produced by other manufacturers or suppliers.

For the purpose of these Regulations, manufacturer includes producer

‘recycler’ - means any person who is engaged in recycling and reprocessing of waste electrical and electronic equipment or its components;

‘spares’ means a part or a sub-assembly or assembly for substitution which is ready to replace an identical or similar part or sub-assembly or assembly including a component or an accessory;

‘target’ means the quantity of E-waste to be collected by the producer in fulfilment of Extended Producer Responsibility;

‘transporter’ means a person engaged in the off-site transportation of E-waste by air, rail, road or water;

‘Type Approval Standards’ means applicable standards set out by the Commission to be conformed with by all equipment manufacturers, vendors, operators, importer and consumers in the Telecommunications Industry in Nigeria.

‘used EEE’ means electrical electronic equipment that despite having been used are not considered as waste as the holder neither discards nor has the intention or obligation to discard it but intends to use them later.

‘Vendor’ means any individual or firm that buys, receives or distributes electrical and electronic equipment covered by the Type Approval Standards set out by the Commission of and its components, consumables, parts or spares from producers for sale, distribution or storage. For the purposes of these Regulations vendor includes, distributor, retailer and e-retailer;

31. Citation

These Regulations may be cited as Nigerian Communications Industry E-waste Regulations, 2018

Made at Abuja thisdayof2018.

Professor Umar Garba Dambatta
Executive Vice Chairman
Nigerian Communications Commission

NIGERIAN COMMUNICATIONS COMMISSION (NCC)

SCHEDULE I

Targets for Extended Producer Responsibility - Authorisation

Regulations 10 (2) (c) and (4) (c)

No.	Year	E-Waste Collection Target (Number/Weight)
------------	-------------	--

(i)	During first two years of implementation of Regulations	30% of the quantity of waste generation as indicated in Extended Producer Responsibility Plan.
(ii)	During third and fourth years of implementation of Regulations	40% of the quantity of waste generation as indicated in Extended Producer Responsibility Plan.
(iii)	During Fifth and Sixth years of implementation of Regulations	50% of the quantity of waste generation as indicated in Extended Producer Responsibility Plan.
(iv)	Seventh year onward of implementation of Regulations	70% of the quantity of waste generation as indicated in Extended Producer Responsibility Plan.

FORM- EEE 1
Regulations 10(1) & (8) and 11(3)

Producer’s Application for Extended Producer Responsibility – Authorization

The application form should contain the following information:

1. **Personal Information of Producer:**
 - a) Name:
 - b) Address:
 - c) Phone number:
 - d) e-mail:
 - e) other contact details:

2. **Personal Information of Producer Organisation:** :
 - a) Name:
 - b) Address:
 - c) Phone number:
 - d) e-mail:
 - e) other contact details:

3. Details of electrical and electronic equipment placed on the market as per the Type Approval set out by the Commission.

4. Estimated generation of E-waste item-wise and estimated collection target for the forthcoming year as in the table below:

Table: Estimated generation of Electrical and Electronic Equipment waste item-wise and estimated collection target for the forthcoming year

S/N	Item	Estimated waste electrical and electronic equipment generation Number and weight	Targeted collection Number and weight

5. Extended Producer Responsibility Plan:
- a) Please provide details of your overall scheme to fulfil Extended Producer Responsibility obligations including targets. This should comprise general scheme of collection of used or waste Electrical and Electronic Equipment from the Electrical and Electronic Equipment placed on the market earlier such as through dealers and collection centres, Producer Responsibility Organization, through buy-back arrangement, exchange scheme, Deposit Refund Scheme, etc. whether directly or through any authorized agency and channelizing the items so collected to authorized recyclers.
 - b) Provide the list with addresses along with copies of agreement with dealers, collection centres, recyclers, Treatment, Storage and Disposal Facility, etc. under your scheme.
6. Estimated budget for Extended Producer Responsibility and allied initiatives to create consumer awareness.
7. Details of proposed awareness programmes.
8. Details for Reduction of Hazardous Substances compliance (to be filled if applicable):
- a) Whether the Electrical and Electronic Equipment placed on market complies with the Regulation 15 (1) limits with respect to lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers;
 - b) Provide the technical documents (Supplier declarations, Materials declarations/Analytical reports) as evidence that the Reduction of Hazardous Substances (RoHS) provisions follow the product based on standard EN 50581 of EU;
 - c) Documents required:
 - i. Extended Producer Responsibility plan;
 - ii. Copy of the permission from the relevant Ministry/Department for selling its product;
 - iii. Copies of agreement with dealers, collection centre, recyclers, Treatment, Storage and Disposal Facility, etc.;
 - iv. Self-declaration regarding Reduction of Hazardous Substances provision;
 - v. Any other document as required.

(Authorised signature)

Place: _____

Date: _____

FORM-EEE 2
Regulations 11(2), 12(2) and 13(1)(b)

**APPLICATION FOR OBTAINING AUTHORISATION FOR GENERATION
STORAGE, TREATMENT OR DISPOSAL OF E-WASTE***

From:
.....

To
The Executive Vice Chairman,
Nigerian Communications Commission.....
.....

Sir,
I / We hereby apply for authorization/renewal of authorization under Regulation 11(2) & (3) and 13(1)(b) of the Nigerian Communications Commission Industry E-Waste Regulations, 2018 for collection/storage/ transportation/ treatment/ refurbishing/disposal of e-wastes.

For Office Use Only

Code No:
Whether the unit is situated in a critically polluted area as identified by Ministry of Environment (yes/no);

To be filled in by Applicant

1. Name and full address:
2. Contact Person with designation and contact details such as telephone Nos, Fax.
No. and E-mail:
3. Authorisation required for (Please tick mark appropriate activity/ies*)
 - i. Generation during manufacturing or refurbishing*
 - ii. Treatment, if any
 - iii. Collection, Transportation, Storage
4. E-waste details:
 - a) Total quantity e-waste generated
 - a) Quantity refurbished (applicable to refurbisher)
 - b) Quantity sent for recycling
 - c) Quantity sent for disposal
5. Details of Facilities for storage/handling/treatment:

6. In case of renewal of authorization previous authorization no. and date and details of annual returns:

Place: _____

Signature_____

(Name_____)

Date: _____

Designation: _____

Note:

Wherever necessary, use additional sheets to give requisite and necessary details.

FORM-EEE 3
Regulations 10(3) and 11(2)
FORMAT OF EXTENDED PRODUCER RESPONSIBILITY –
AUTHORISATION

Ref: Your application for Grant of Extended Producer Responsibility - Authorization for following Electrical & Electronic Equipment under the Nigerian Communications Industry E-waste Regulations, 2017~~8~~

Number of Authorization:

Date:

1. M/s. ----- is hereby granted Extended Producer Responsibility - Authorization based on:
 - (a) Overall Extended Producer Responsibility plan
 - (b) Proposed target for collection of e-waste
2. The Authorization shall be valid for a period of ___ years from date of issue on following conditions:
 - (i) you shall strictly follow the approved Extended Producer Responsibility plan, a copy of which is enclosed;
 - (ii) you shall ensure that collection mechanisms or centre are set up or designated as per the details given in the Extended Producer Responsibility plan;
 - (iii) you shall ensure that all the collected e-waste is channelled to authorised dismantler or recycler designated as per the details;
 - (iv) you shall maintain records, in Form-EEE 6 of these Regulations, of e-waste and make such records available for scrutiny by Commission;
 - (v) you shall file annual returns in Form-EEE 6 to the Commission on or before 30th day of June following the financial year to which that returns relates;
 - (vi) General Terms & Conditions of the Authorization:
 - a) The authorization shall comply with provisions of the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007 and the Regulations made there under;
 - b) The authorisation or its renewal shall be produced for inspection at the request of an officer authorised by the Commission
 - c) Any change in the approved Extended Producer Responsibility plan should be communicated to the Commission which shall act within two months;
 - d) It is the duty of the authorised person to take prior permission of the concerned State Environmental Agency and Commission to close down the facility;

- e) An application for the renewal of authorization shall be made as laid down in 11(2) & (3) and 13(1)(b) of the Nigerian Communications Commission Industry E-waste Regulations, 2018;
- f) The Commission reserves right to cancel, amend or revoke the authorization at any time as per its Policy.

Authorized signatory
(With designation)

NIGERIAN COMMUNICATIONS COMMISSION (NCC)

FORM-EEE 4
Regulations 12(2) and 13(2)
**FORMAT FOR GRANTING AUTHORISATION FOR GENERATION/
STORAGE/TREATMENT/DISPOSAL OF E-WASTE**

Ref: Your application for Grant of Authorization

1. Authorization no. and (b) date of issue
2.of.....is hereby granted an authorization for generation/storage/treatment/disposal of e-waste on the premises situated at..... for the following:
 - a) quantity of e-waste:
 - b) nature of e-waste:
3. The authorisation shall be valid from to
4. The e-waste mentioned above shall be treated/ disposed of in a manner at
5. The authorisation is subject to the conditions stated below and such conditions as may be specified in the Regulations for the time being in force under the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007

Signature -----

Designation -----

Date: -----

Terms and conditions of authorisation

1. The authorisation shall comply with the provisions of the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007 and the regulations made thereunder.
2. The authorisation or its renewal shall be produced for inspection at the request of an officer authorized by the concerned State Environmental Agency.
3. Any unauthorised change in personnel, equipment as working conditions as mentioned in the application by the person authorized shall constitute a breach of his authorisation.
4. It is the duty of the authorised person to obtain permission of the relevant agency to close the operations.
5. An application for the renewal of an authorisation shall be made as provided in 11(2) & (3) and 13(2) of Nigerian Communications Commission Industry Electrical and Electronic Equipment Regulations, 2017~~8~~.

FORM-EEE 5
Regulations 3(4), 4(7), 6(1), 7(8), 8(3) & (5), 12(3) and 13(4)

**FORM FOR MAINTAINING RECORDS OF E-WASTE HANDLED OR
GENERATED**

Generated Quantity in Metric Tonnes (MT) per year

1	Name & Address: Producer/ Manufacturer/ Recycler or Bulk Consumer*		
2	Date of Issue of Extended Producer Responsibility Authorisation*/ Authorisation*		
3	Validity of Extended Producer Responsibility Authorisation*/ Authorisation*		
4	Types & Quantity of e-waste handled or generated**	Category	Quantity
		Item Description	
5	Types & Quantity of e-waste stored	Category	Quantity
		Item Description	
6	Types & Quantity of e-waste sent to collection centre authorised by producer/ /recycler or **	Category	Quantity
		Item Description	
7	Types & Quantity of e-waste transported*	Category	Quantity
		Item Description	
	Name, address and contact details of the destination		
10	Types & Quantity of e-waste recycled*	Category	Quantity
	Types & Quantity of materials recovered	Item Description	
		Quantity	

	Name, address and contact details of the destination		
13	Types & Quantity of e-waste treated & disposed	Category	Quantity
	Name, address and contact details of the destination		

Note:-

- 1) Strike off whichever is not applicable
- 2) Provide any other information as stipulated in the conditions of the grant
- 3) ** For producers, this information is to be provided state-wise where applicable

FORM-EEE 6

Regulations 3(5) & (14), 6(3), 7(10), 8(11), 12(3) and 13(4)

FORM FOR FILING ANNUAL RETURNS

[To be submitted by manufacturer/ or recycler by 30th day of June following the financial year to which that return relates]

Quantity in Metric Tonnes (MT) and numbers

1	Name and address of the manufacturer or recycler			
2	Name of the authorised person and complete address with telephone and fax numbers and e-mail address			
3	Total quantity of e-waste collected or channel to recyclers or dismantlers for processing during the year for each category of electrical and electronic equipment listed in the Schedule I			
	Details of the above	TYPE	QUANTITY	NO.
3(A)*	BULK CONSUMERS: Quantity of e-waste			
3(B)*	RECYCLERS: i. Quantity of e-waste processed (Code wise); ii. Details of materials recovered and sold in the market; iii. Details of residue sent to Treatment, Storage and Disposal Facility.			
4	Name and full address of the destination with respect to 3(A)-3(B) above			
5	Type and quantity of materials segregated or recovered from e-waste of different codes as applicable to 3(A)-3(B) Type Quantity	TYPE	QUANTITY	

✓ Enclose the list of recyclers to whom e-waste have been sent for recycling.

Place _____

Date _____

Signature of the authorised person

Note:

1. Strike off whichever is not applicable
2. Provide any other information as stipulated in the conditions of the grant
3. In case of filing on behalf of multiple state offices, Bulk Consumers and Producers need to add extra sheet to 1 and 3(A) with respect to each office.

NIGERIAN COMMUNICATIONS COMMISSION (NCC)

FORM-EEE 7
Regulations 4(1)
APPLICATION FORM FOR AUTHORISATION FOR FACILITIES
POSSESSING ENVIRONMENTALLY SOUND MANAGEMENT PRACTICE
FOR RECYCLING OF E-WASTE
(To be submitted in triplicate)

	Name and Address of the facility		
	Contact person with designation, Tel./Fax		
	Date of Commencing Business		
	No.of workers		
	Validity of current authorisation if any		
	Recycling Process		
	Please attach complete details		
	Installed capacity in Metric Ton per year	Products	Installed capacity
E-waste processed during last three years	Year	Product	Quantity
	Waste Management:		
	a. Waste generation in processing e-waste	Please provide details	
	b. Provide details of disposal of residue.	Please provide details	
	c. Name of Treatment Storage and Disposal Facility utilized		
	Details of e-waste proposed to be procured for re-processing	Please provide details	
	Occupational safety and health aspects	Please provide details	

	Details of Facilities for recycling both manual as well as mechanised:	
	Copy of agreement with Collection Centre	
	Copy of agreement with Producer	
	Details of storage for dismantled e-waste	
	Copy of agreement with Recycler	
	Details of Facilities for Recycling	
	Copy of agreement with Collection Centre	
	Copy of agreement with Producer	
	Details of storage for raw materials and recovered materials	

II. In case of renewal of authorisation, previous registration or authorisation No. and date.

I hereby declare that the above statements or information are true and correct to the best of my knowledge and belief.

Signature:

Name: _____

Place: _____

Date: _____

Designation: _____

Form-EEE 8
Regulation 12(4)
E-WASTE MANIFEST

	Sender's name and mailing address including Phone No.):																					
	Sender's authorization No, if applicable.:																					
	Manifest Document No.																					
	Transporter's name and address (including Phone No.):																					
	Type of vehicle:																					
	Transporter/s registration No.:																					
	Vehicle registration No.:																					
	Receiver's name & address:																					
	Receiver's authorisation No, if applicable.																					
	Description of E-Waste (Item, Weight/ Numbers																					
	Name and stamp of Sender*:																					
	Signature: Month Day Year	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>																				
	Transporter's acknowledgement of receipt of E-Wastes																					
	Name and stamp:																					
	Signature: Month Day Year	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>																				
	Receiver's* certification of receipt of E-waste																					
	Name and Stamp: Signature: Month Day Year																					
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> </tr> </table>																				

* As applicable

Note:

Copy number with colour code (1)	Purpose (2)
Copy 1 (Yellow)	To be retained by the sender after taking signature on it from the transporter and other three copies will be carried by transporter.
Copy 2 (Pink)	To be retained by the receiver after signature of the transporter.
Copy 3 (Orange)	To be retained by the transporter after taking signature of the receiver.
Copy 4 (Green)	To be returned by the receiver with his/her signature to the sender

FORM-EEE 9
Regulations 7(4) and 14
APPLICATION FORM FOR AUTHORISATION FOR FACILITIES
POSSESSING ENVIRONMENTALLY SOUND MANAGEMENT PRACTICE
FOR RECYCLER OF EWASTE
(To be submitted in triplicate)

	Name and Address of the facility			
	Contact person with designation, Tel./Fax			
	Date of Commencing Business			
	No.of workers			
	Validity of current authorisation if any			
	Recycling Process	Please attach complete details		
	Installed capacity in Metric Ton per year	Products	Installed capacity	
	E-waste processed during last three years	Year	Product	Quantity
	Waste Management:			
	d. Waste generation in processing e-waste	Please provide details		
	e. Provide details of disposal of residue.	Please provide details		
	f. Name of Treatment Storage and Disposal Facility utilized			
	Details of e-waste proposed to be procured for re-processing	Please provide details		
	Occupational safety and health aspects	Please provide details		

	Details of Facilities for recycling both manual as well as mechanised:	
	Copy of agreement with Collection Centre	
	Copy of agreement with Producer	
	Details of storage for dismantled e-waste	
	Copy of agreement with Recycler	
	Details of Facilities for Recycling	
	Copy of agreement with Collection Centre	
	Copy of agreement with Producer	
	Details of storage for raw materials and recovered materials	

II. In case of renewal of authorisation, previous registration or authorisation No. and date.

I hereby declare that the above statements or information are true and correct to the best of my knowledge and belief.

Signature: _____

Place: _____

Name: _____

Date: _____

Designation: _____

Table 1

Basic restrictions for time varying electric and magnetic fields for 10MHz to 10GHz

Exposure characteristics	Frequency range	Current density for head and trunk (mA m ⁻²) (rms)	Whole-body average SAR (W kg ⁻¹)	Localized SAR (head and trunk) (W kg ⁻¹)	Localized SAR (limbs) (W kg ⁻¹)
Occupational exposure	up to 1 Hz	40	-	-	-
	1–4 Hz	40/ <i>f</i>	-	-	-
	4 Hz–1 kHz	10	-	-	-
	1–100 kHz	40/ <i>f</i>	-	-	-
	100 kHz–10 MHz	40/ <i>f</i>	0.4	10	20
	10 MHz–10 GHz	-	0.4	10	20
General public exposure	up to 1 Hz	8	-		
	1–4 Hz	8/<i>f</i>	-		
	4 Hz–1 kHz	2	-		
	1–100 kHz	<i>f</i>/1500	-		
	100 kHz–10 MHz	<i>f</i>/1500	0.08	2	4
	10 MHz–10 GHz	-	0.08	2	4

Note:

1. *f* is the frequency in Hertz.
2. Because of electrical inhomogeneity of the body, current densities should be averaged over a cross-section of 1 cm² perpendicular to the current direction.
3. For frequencies up to 100 kHz, peak current density values can be obtained by multiplying the rms value by $\sqrt{2}$ (1.414). For pulses of duration t_p the equivalent frequency to apply in the basic restrictions should be calculated as $f = 1/(2t_p)$.
4. For frequencies up to 100 kHz and for pulsed magnetic fields, the maximum current density associated with the pulses can be calculated from the rise/fall times and the maximum rate of change of magnetic flux density. The induced current density can then be compared with the appropriate basic restriction.
5. All SAR values are to be averaged over any 6-min period.
6. Localized SAR averaging mass is any 10 g of contiguous tissue; the maximum SAR so obtained should be the value used for the estimation of exposure.
7. For pulses of duration t_p the equivalent frequency to apply in the basic restrictions should be calculated as $f = 1/(2t_p)$. Additionally, for pulsed exposures in the frequency range 0.3 to 10 GHz and for localized exposure of the head, in order to limit or avoid auditory effects caused by thermoelastic expansion, an additional basic restriction is recommended. This is that the SA should not exceed 10 mJ kg⁻¹ for workers and 5 mJ kg⁻¹ for the general public, averaged over 10 g tissue.

Table 2
Reference levels for general public exposure to time-varying electric and magnetic fields (unperturbed rms values).^a

Frequency range	E-field strength (V m ⁻¹)	H-field strength (A m ⁻¹)	B-field (μT)	Equivalent plane wave power density S_{eq} (W m ⁻²)
up to 1 Hz	-	1.63×10^5	2×10^5	-
1 – 8Hz	20,000	$1.63 \times 10^5/f$	$2 \times 10^5/f^2$	-
8 – 25Hz	20,000	$2 \times 10^4/f$	$2 \times 10^4/f$	-
0.025 – 0.82Khz	$500/f$	$20/f$	$25/f$	-
0.82 – 65kHz	610	24.4	30.7	-
0.065 – 1 MHz	610	$1.6/f$	$2.0f$	-
1 – 10MHz	$610f$	$1.6/f$	$2.0f$	-
1 – 400 MHz	61	0.16	0.2	2
400 – 2,000 MHz	$3f^{1/2}$	$0.008f^{1/2}$	$0.01f^{1/2}$	$f/200$
2 – 300 GHz	137	0.36	0.45	10

Note:

1. f as indicated in the frequency range column.
2. Provided that basic restrictions are met and adverse indirect effects can be excluded, field strength values can be exceeded.
3. For frequencies between 100 kHz and 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any 6-min period.
4. For peak values at frequencies up to 100 kHz see Table 4, note 3.
5. For peak values at frequencies exceeding 100 kHz see Figs. 1 and 2. Between 100 kHz and 10 MHz, peak values for the field strengths are obtained by interpolation from the 1.5-fold peak at 100 kHz to the 32-fold peak at 10 MHz. For frequencies exceeding 10 MHz it is suggested that the peak equivalent plane wave power density, as averaged over the pulse width, does not exceed 1,000 times the S_{eq} restrictions, or that the field strength does not exceed 32 times the field strength exposure levels given in the table.
6. For frequencies exceeding 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any $68/f^{1.05}$ -min period (f in GHz).
7. No E-field value is provided for frequencies <1 Hz, which are effectively static electric fields. Perception of surface electric charges will not occur at field strengths less than 25 kVm⁻¹. Spark discharges causing stress or annoyance should be avoided.

Table 3
Reference levels for occupational exposure to time-varying electric and magnetic fields (unperturbed rms values).^a

Frequency range	E-field strength (V m ⁻¹)	H-field strength (A m ⁻¹)	B-field (μT)	Equivalent plane wave power density S_{eq} (W m ⁻²)
up to 1 Hz	-	1.63×10^5	2×10^5	-
1 – 8Hz	20,000	$1.63 \times 10^5/f$	$2 \times 10^5/f^2$	-
8 – 25Hz	20,000	$2 \times 10^4/f$	$2 \times 10^4/f$	-
0.025 – 0.82KHz	$500/f$	$20/f$	$25/f$	-
0.82 – 65kHz	610	24.4	30.7	-
0.065 – 1 MHz	610	$1.6/f$	$2.0f$	-
1 – 10MHz	$610f$	$1.6/f$	$2.0f$	-
1 – 400 MHz	61	0.16	0.2	10
400 – 2,000 MHz	$3f^{1/2}$	$0.008f^{1/2}$	$0.01f^{1/2}$	$f/40$
2 – 300 GHz	137	0.36	0.45	50

^a **Note:**

1. f as indicated in the frequency range column.
2. Provided that basic restrictions are met and adverse indirect effects can be excluded, field strength values can be exceeded.
3. For frequencies between 100 kHz and 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any 6-min period.
4. For peak values at frequencies up to 100 kHz see Table 4.
5. For peak values at frequencies exceeding 100 kHz see Figs. 1 and 2. Between 100 kHz and 10 MHz, peak values for the field strengths are obtained by interpolation from the 1.5-fold peak at 100 kHz to the 32-fold peak at 10 MHz. For frequencies exceeding 10 MHz it is suggested that the peak equivalent plane wave power density, as averaged over the pulse width, does not exceed 1,000 times the S_{eq} restrictions, or that the field strength does not exceed 32 times the field strength exposure levels given in the table.
6. For frequencies exceeding 10 GHz, S_{eq} , E^2 , H^2 , and B^2 are to be averaged over any $68/f^{1.05}$ -min period (f in GHz).
7. No E-field value is provided for frequencies <1 Hz, which are effectively static electric fields. Electric shock from low impedance sources is prevented by established electrical safety procedures for such equipment.

Table 4

Basic restrictions for power density for frequencies between 10 and 300 GHz.^a

Exposure characteristics	Power density (W m ⁻²)
Occupational exposure 50	50
General public 10	10

Note:

1. Power densities are to be averaged over any 20 cm² of exposed area and any $68/f^{1.05-\text{min}}$ period (where f is in GHz) to compensate for progressively shorter penetration depth as the frequency increases.
2. Spatial maximum power densities, averaged over 1 cm², should not exceed 20 times the values above.