

ETSI ES 205 200 Factsheet

How do I use this methodology? Ask for support!

	ETSI ES 205 200: Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Global KPIs; Operational infrastructures	
Name of Initiative/Methodology	Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Global KPIs; Operational infrastructures Part 1: General requirements Part 2: Specific requirements Sub-part 1: Data centres Sub-part 2: Fixed broadband access networks Sub-part 3: Mobile Access Networks Sub-part 4: Cable Access Networks Part 3: Global KPIs for ICT sites	
Link to the latest published version	ETSI ES 205 200-1 (03/2014): Version 1.2.1 http://www.etsi.org/deliver/etsi_es/205200_205299/20520001/01.02.01_60/es_20520001v010201p.pdf ETSI ES 205 200-2-1 (03/2014): Version 1.2.1 http://www.etsi.org/deliver/etsi_es/205200_205299/2052000201/01.02.01_60/es_2052000201v010201p.pdf ETSI ES 205 200-2-2 (05/2018): Version 1.1.1 https://www.etsi.org/deliver/etsi_es/205200_205299/2052000202/01.01.01_60/es_2052000202v010101p.pdf ETSI ES 205 200-2-4 (06/2015): Version 1.1.1 http://www.etsi.org/deliver/etsi_es/205200_205299/2052000204/01.01.01_60/es_2052000204v010101p.pdf ETSI ES 205 200-3 (01/2017): Version 1.0.0 (On Approval) http://www.etsi.org/deliver/etsi_es/205200_205299/20520003/01.00.00_50/es_20520003v010000m.pdf	
Developed by	The European Telecommunications Standards Institute (ETSI)	
History and Status	<ul style="list-style-type: none"> • Work started in 2013; still ongoing for Part 2 - Sub-part 3. • Published from March 2014 (general requirements) until May 2018 (specific requirements) 	
Involved companies / parties	<ul style="list-style-type: none"> • Orange • EADS • Thales • PSA Peugeot Citroen • SFR (Part 2 - Sub-part 2 only) • e-Ready Building Limited (Part 2 - Sub-part 2 only) • Cable Europe (Part 2 - Sub-part 4 only) • CableLabs (Part 2 - Sub-part 4 only) • RATEL (Part 2 - Sub-part 4 only) • Liberty Global B.V. (Part 2 - Sub-part 4 only) 	
Scope	<ul style="list-style-type: none"> ✔ Organisation env. accounting ✘ Scope 1 ✘ Scope 2 ✘ Scope 3 	<ul style="list-style-type: none"> ✘ Product env. assessment ✘ Life cycle approach ✘ Use phase only
	<ul style="list-style-type: none"> ✘ GWP ✔ Energy ✘ Other environmental impacts 	<ul style="list-style-type: none"> ✔ KPIs • Energy consumption • Task efficiency • Energy reuse • Renewable energy
System(s) covered by the methodology	<ul style="list-style-type: none"> • Infrastructures of broadband deployment, including: <ul style="list-style-type: none"> ◦ Data centres (DC) ◦ Fixed broadband access networks (FAN) • Integrated broadband cable telecommunication networks, including cable access networks 	
Goals	<ul style="list-style-type: none"> • Improving energy management of the operational infrastructures through a reduction in energy consumption, improvements in task efficiency, the re-use of energy and the contribution of renewable energy • Providing methodological framework for the definition and calculation of Global Key Performance Indicators (KPI) in relation to the objectives described above (one global indicator + 4 objective indicators) 	
Generic features	<ul style="list-style-type: none"> • The reduction in energy consumption and task efficiency are primary objectives • Conditions to applying the energy re-use indicator: <ul style="list-style-type: none"> ◦ "Non-use" is better than "re-use" and therefore the preference is for energy consumption reduction rather than energy re-use; ◦ Re-use of energy should give the preference to heat generated from by ITE/NTE rather than from poorly designed facilities and infrastructures. • Conditions to applying the renewable energy indicator: <ul style="list-style-type: none"> ◦ If all energy is renewable, the indicator shall encourage the application of other indicators • All indicators are based on measurements of energy consumption and shall be assessed over a defined period of time (typically 1 year). • All indicators shall clearly define strict criteria for inclusion/exclusion with the formula • Comparative costs and environmental impacts of different energy sources are outside the scope of the document. • Recommendations and best practices are not in the scope of the document (a list of references is provided in the documents related to specific requirements). 	

<p>ICT-specific features</p>	<ul style="list-style-type: none"> All systems covered by the methodology are not intended to/able to operate within a common limits for the KPIs (e.g.: infrastructures required to deliver high reliability) Part 2: Specific requirements - Sub-part 1: Data centres <ul style="list-style-type: none"> The KPIs may be applied to a single DC or a group of DC under common governance. All energy input to a DC is converted into heat. The energy provided to DC comes from utility (grid) or local sources (non-renewable or renewable). A DC is unlikely to meet all of its energy needs from local renewable sources on a continuous basis. The maximum time difference in the periods of assessment shall be 7 days Detailed formula, measurement points and procedures, and criteria are provided for each of the considered indicators. Part 2: Specific requirements - Sub-part 2: Fixed broadband access networks <ul style="list-style-type: none"> The OS may contain a single fixed broadband access node or a group of FAN in a same site, and can be indoor or outdoor In general, fixed access network sites are geographically scattered (limited possibility for merging any heat generated at each site); however local renewable energy sources may produce more energy than that required by a fixed access network site, allowing its reuse for other purposes. The energy provided to FAN comes from utility (grid) or local sources (non-renewable or renewable). FAN may meet their energy needs from local, renewable sources on a continuous basis. The scope of the KPI for renewable energy only takes local renewable energy into account. The maximum time difference in the periods of assessment shall be 7 days Detailed formula, measurement points and procedures, and criteria are provided for each of the considered indicators. Part 2: Specific requirements - Sub-part 4: Cable Access Networks <ul style="list-style-type: none"> The data volume transferred across the network is registered between the cable modem (in-home) and the headend equipment. The KPI for energy consumption involves all the main energy consuming equipment of the broadband access network concerned in the transmission of data between the cable modem and the headend equipment Energy re-use is considered to be the recovery of portions of the total energy consumption, that would be dissipated into the environment otherwise (e.g. heat) The scope of the KPI for renewable energy use only takes locally generated renewable energy into account. This does not take into consideration any proportion of utility supplies certified as "green" by nationally recognised schemes nor the carbon footprint of the energy source Sub-part 3: Global KPIs for ICT sites <ul style="list-style-type: none"> Energy consumption: $KPI_{EC} = EC_{REN} + EC_{FEN}$; where: <ul style="list-style-type: none"> EC_{REN}: Yearly energy consumption by ICT site from local renewable energy sources minus the energy required to extract such energy (if applicable) EC_{FEN}: Yearly energy consumption by ICT site from other power sources Task efficiency: is the ratio of energy consumption by equipment that manage data for calculation, storage or transport purposes inside the ICT site. Thus, $KPI_{TE} = KPI_{EC} / EC_{HE}$; where: <ul style="list-style-type: none"> EC_{HE}: is the yearly energy consumption by equipment that manage data for calculation, storage and transport purposes, expressed in MWh Thus, $KPI_{TE} \geq 1$ and $KPI_{TE} = 1$ is an ideal value Energy reuse: is the ratio of reused energy for external uses to total ICT site energy. Thus, $KPI_{REUSE} = EC_{REUSE} / KPI_{EC}$; where : <ul style="list-style-type: none"> EC_{REUSE}: Yearly energy reused outside the ICT site Use of renewable energy: is the ratio of energy consumption from renewable sources over the total ICT site energy consumption. Thus, $KPI_{REN} = EC_{REN} / KPI_{EC}$ Energy use management: determines the performance of energy use management by a single ICT site or a group of ICT sites. It is composed of two values: <ul style="list-style-type: none"> DC_{CC}: is the energy consumption by a single or a group of ICT sites, expressed in MWh over a year and equals KPI_{EC} DC_{CLASS}: corresponds to the energy use management performance DC_{CC} of a single ICT site or a group of ICT sites, expressed as a letter within the range A to G (see the default classes table below) <ul style="list-style-type: none"> FOR A SINGLE ICT SITE: $DC_{CC} = KPI_{TE} \times (1 - W_{REUSE} \times KPI_{REUSE}) \times (1 - W_{REN} \times KPI_{REN})$; where: <ul style="list-style-type: none"> W_{REUSE}: Mitigation factor for KPI_{REUSE} (the value may vary depending on the gauge (ffs) within the range 0 to 1, the default value is 0,8), the value used is at the hand of the EC depending on the policy it choose to promote. W_{REN}: Mitigation factor for KPI_{REN} (the value may vary depending on the gauge (ffs) within the range 0 to 1, the default value is 0,8), the value used is at the hand of the EC depending on the policy it choose to promote. FOR A GROUP OF ICT SITES: $DC_{CC} = \dots$; class letters are translated to their rank, i.e. A=1, B=2... and DC_{CLASS} is expressed as a letter; and $DC_{CC} = \sum_{i=1}^{N} KPI_{EC}(i)$ DEFAULT CLASSES TABLE : <table border="1" data-bbox="352 1111 742 1209"> <thead> <tr> <th>DC_{CLASS}</th> <th>>=</th> <th><</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1,00</td> <td>1,00</td> </tr> <tr> <td>B</td> <td>1,00</td> <td>1,40</td> </tr> <tr> <td>C</td> <td>1,40</td> <td>1,70</td> </tr> <tr> <td>D</td> <td>1,70</td> <td>1,90</td> </tr> <tr> <td>E</td> <td>1,90</td> <td>2,10</td> </tr> <tr> <td>F</td> <td>2,10</td> <td>2,30</td> </tr> <tr> <td>G</td> <td>2,30</td> <td></td> </tr> </tbody> </table> 	DC _{CLASS}	>=	<	A	1,00	1,00	B	1,00	1,40	C	1,40	1,70	D	1,70	1,90	E	1,90	2,10	F	2,10	2,30	G	2,30	
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<p>Examples of implementation / experience feedback</p>	<p>None identified</p>																								
<p>Interaction with other methodologies</p>	<ul style="list-style-type: none"> [EC Mandate M/462] Standardisation mandate addressed to CEN, CENELEC and ETSI to enable efficient energy use of ICT networks EC DG JRC Code of Conduct for Data Centre Energy Efficiency EC DG JRC Code of Conduct on Energy Consumption of Broadband Equipment [ISO Guide 82] Guide for addressing sustainability in standards [ETSI TS 105 174] Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment - Energy Efficiency and Key Performance Indicators [ETSI TR 102 881] Access, Terminals, Transmission and Multiplexing (ATTM); Cable Network Handbook And many others for Sub-part 4 [EN 50600] Series: "Information technology - Data centre facilities and infrastructures" [EN 1434] Series: "Heat meters" 																								

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