TGN 20 SAR Testing and Assessment Guidance

REDCA Technical Guidance Note 20

SAR Testing and Assessment Guidance

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1. Introduction:

RF Exposure requirements apply to radio transmitting devices under Article 3.1(a) of the Radio Equipment Directive (RED), 2014/53/EU; as well as other forms of radiators under Article 2 of the Low Voltage Directive (LVD), 2014/35/EU. This is a REDCA TGN, for Directive 2014/53/EU.
The requirement applies to people and domestic animals.

EN standards do exist for an RF Exposure assessment of a radio transmitter which is intended to be used within close proximity to a person. In addition, there are generic and product specific standards which are invoked by EN standards which provide assessment methodologies for measurements. However, the present standards may not be able to cover assessment details for each type of device form factor and operational capabilities. Technology advancements and changes in product usage and application occur so rapidly that it is not always possible to include the latest information in the published standards.

This REDCA TGN has been generated to address the following goals:
- To provide guidance to manufacturers as to how their device could be assessed for SAR.
- To provide guidance to test labs on testing devices which require a SAR assessment.
- To provide guidance to RED Notified Bodies on how the SAR assessment should be made, or how the SAR standards may be applied to sufficiently meet the requirements of Article 3.1(a) of the RED and encourage a consistent level of assessment and requirements between RED Notified Bodies.

This guidance document is provided to assist people with compliance projects and is not intended to overrule or supersede any harmonised standards or any other product or generic standard.

Compliance is declared to the relevant EU legislation; in this case, the RED. It should take into account the exposure limits laid down in ICNIRP-based Council Recommendation (1999/519/EC). RF Exposure is a consideration for the general public and those at their place of employment.

Compliance with a harmonised standard listed on the RED OJEU provides a presumption of conformity with the RED. Manufacturers, other economic operators or conformity assessment bodies can use standards or other means to demonstrate that products comply with the relevant EU legislation.

The European concept distinguishes between product standards and generic standards. There is a product standard to demonstrate the compliance of wireless communication devices with the basic restrictions and exposure limit values related to human exposure to electromagnetic fields for devices used next to the ear[1] and for hand-held and body-mounted devices used in close proximity to the human body[2]. Both standards refer to generic standards EN 62209-1 and EN 62209-2

[1] EN 50360: 2017 - Product standard to demonstrate the compliance of wireless communication devices, with the basic restrictions and exposure limit values related to human exposure to electromagnetic fields in the frequency range from 300 MHz to 6 GHz: devices used next to the ear
[2] EN 50566: 2017 - Product standard to demonstrate the compliance of wireless communication devices with the basic restrictions and exposure limit values related to human exposure to electromagnetic fields in the frequency range from 30 MHz to 6 GHz: hand-held and body mounted devices in close proximity to the human body

respectively that provide the assessment methods. (It is expected that EN 62209-1 and EN 62209-2 are going to be combined and renamed to IEC/IEEE 62209-1528 in the future).

As a general reminder; if a type of technology or operation is not adequately covered in the test standard, it does not necessarily mean that the technology or operation should not be assessed for compliance. Technology and general practices are typically in advance of the standards and so the technology and operations must be assessed using alternate procedures, guidance and best engineering practise, to meet the essential requirements of the RED.

For this reason, the standards can rarely cover every possible scenario and technology innovation as they emerge. Interpretation of the standards and guidance may be necessary.

2. This document will address the following key topics:

- Applicable legislation and limits
- Test configuration
- Test considerations
- Output power
- Hand SAR
- Test distance
- Bystander SAR
- Multiple transmitters
- User Manual statements

3. Test Configuration

Intended Use Considerations

Most mobile phones, phablets, tablets or laptops support use in one or more of these configurations:

Devices located next to the ear when in use:

The device is held to the side of the head, in direct contact with the ear, or within 20 cm of the head; such as during a voice call (including VoIP).

Devices located on the body when in use:

The device is placed in a carry accessory, strapped to a limb or worn on the body trunk using a lanyard or holster, such as during a voice call (including VoIP); where the device is operated in conjunction with a wired or wireless personal hands-free kit device (i.e. Bluetooth head set), or where data is uploaded. This section includes a range of wearable devices.

This configuration does not include devices held in the hands, or worn on the wrist or ankle. Those would be considered hand held devices.

Devices supported by the body when in use:

The device can be operated when supported on the lap, or resting on the body, or carried in a pocket or inside an article of clothing. The edges or sides of the device may be resting against the body. This position differs from a body-worn device in that the device is not attached to a user's body by means of a carry accessory. Devices used by the body may have any side or face against the user during normal operation.

Handheld:

The device operates in the user's hands during its intended use; maybe to access the Internet applications, or interactive systems such as playing games, writing documents, video applications etc.

Multiple Use Considerations

Note that devices may have multiple use cases. For example, a smartphone would likely be considered for operation held to the ear, and supported by the body, and hand held.

4. Test Considerations

Devices with multiple simultaneous transmissions:

Some devices are capable of simultaneous transmissions. For example, where WWAN and WLAN or other transmitters within the device are active simultaneously.

In such cases, an assessment may be needed to determine the combined effect of simultaneous transmitters.

For some devices, simultaneous transmission may not be a simple cumulative effect if the intended operation of the device prohibits both transmitters from transmitting fully, simultaneously. Other devices may allow full simultaneous transmission, such as during a VoIP call or in a wireless hotspot mode.

The modes and intended use of each device should be assessed on a case by case basis.

Accessories - Use with Hands-free (Headsets):

It is the responsibility of manufacturer to consider the compliance of their devices when used with or without accessories. This includes accessories supplied with the device, or accessories available and intended for after-market use.

If it is possible to use a physical plug in hands-free kit with a device, body-worn SAR testing may be considered with the headset stipulated in the user manual; or if the user manual does not stipulate a specific headset but a port is provided, a representative headset could be connected during the test and identified in the test report. In such a case, it is advised that the cable is placed perpendicular to the phantom. Annex G of EN 62209-2 provides rationale regarding hands-free kit testing, while clause 6.1.4.4 of the standard provides guidance that hands-free accessories which do not contain RF transmitters and have been proven to increase the peak SAR by less than 5 % do not need SAR tests separate from the SAR testing of the main device to which the accessory is attached.

Accessories – Use with Holsters/Carry-case/Belt Clips/Lanyards/Sleeves:

For body-mounted devices subject to the occupational exposure limits, if the user instructions provided by the manufacturer specify intended use with a defined carry accessory (belt-clip, holster, carry-case, sleeve, or similar), the device shall be placed as intended in that defined carry accessory and the defined carry accessory shall be placed in the intended orientation against the flat phantom when assessed for compliance by relevant standards.

For consumer products, if there is a defined accessory provided by the manufacturer for use with a device that is subject to body SAR evaluation, it is the responsibility of the manufacturer to ensure that the radio device fitted in the defined accessory complies with the essential requirements of the RED and the applicable exposure limits when assessed for compliance by relevant standards.
In the case of consumer products where an accessory is provided with the radio device, it may be possible and reasonably foreseen that the user could use the device with the accessory, or without the accessory. In such cases, both configurations should be assessed.

Manufacturers are reminded to consider third-party accessories when identifying the intended and reasonably foreseen environment of their radio equipment. If a third-party accessory does not contain radio equipment or high voltage electronics, then the accessory itself would not be within scope of the RED or the LVD and therefore would not have its own safety or SAR assessment. This includes accessories not provided directly by the radio equipment manufacturer. This is a topic which the radio equipment manufacturer would consider and detail in their risk assessment.

Evaluation for the appropriate exposure condition and configuration should be included in the SAR report and Technical Documentation. Consideration should be made for whether the accessory contains any metal which can influence the SAR as well as potential for electrical and mechanical characteristics of the accessories and the potential influence on the SAR pattern. This should ideally be contained in the manufacturer's "Risk Assessment" detailing reasonably foreseeable conditions of use, for example if it is possible to readily insert the device into the holster in a different orientation to that intended by the manufacturer.

Accessories – Memory / SIM cards:

If the radio equipment in its operating condition uses SIM cards or memory cards or both, it is recommended that these are inserted in the radio equipment during SAR evaluation. These accessories contain metallic elements which integrate with the device circuitry. The choice of configuration tested should be decided by the radio equipment manufacturer and documented in the SAR report. If not all configurations are tested, the radio equipment manufacturer will explain their reasons in their risk assessment.

Channels for Testing

This section addresses the test frequency selection contained in the EN standards as well as advanced guidance. Channel selection is explained in the standards and also provided here. Consideration may be needed for channel configurations not covered by the standard.

The EN 62209-1 standard provides instruction on test frequencies required to be assessed, based on whether:

– the width of the transmit frequency band is greater than 1% of its centre frequency, requiring the lowest and highest frequencies as well as the centre frequency to be tested
– the width of the transmit frequency band is greater than 10% of its centre frequency, requiring the following equation to be applied to determine the number of channels to be tested,
$Nc = 2 * roundup\ [10* (f_{high} – f_{low})/f_c] + 1$

The EN 62209-2 standard also references the use of the EN 62209-1 test frequency guidance as above.

The following is advanced guidance, taking into consideration that while a device should be compliant at all channels transmitted by the device, most modern devices have multiple operating modes, modulations, data rates etc. and testing for each mode and channel may be unnecessary given the known relationship between average output power and SAR.

EN 62209-1 and EN 62209-2[3] specify that SAR tests should initially be performed at the channel that is closest to the centre of each transmit frequency band and then further channels are tested dependent upon the transmit bandwidth and SAR levels obtained. The manufacturer is responsible

[3] EN 62209-1 and EN 62209-2 may become merged into IEC/IEEE 62209-1528 in 2019.

for testing the worst case SAR, and therefore if the manufacturer suspects that the centre channel does not have the highest output power, then an alternate suggested procedure is to begin with the highest average output power channel for SAR testing; and then test additional channels, dependent upon the transmit bandwidth and SAR levels obtained, as necessary. This is based on the known relationship between average operating power and SAR.
Note that testing based on the conducted output power would not take into consideration the influence of antenna matching and near field performance over the transmitter frequency band. Therefore, this test reduction technique would be applied for each band individually.

The rated output power should be documented in the SAR report to support the choice of channel to be SAR tested. If the rated output power levels are flat across all channels in a band, SAR testing can be performed on only one channel and we recommend the middle channel. If the measured SAR level at the middle channel is < 50% of the SAR limit and the remaining channels are shown to use the same or lower average output power than the measured channel, testing of more channels is not necessary. SAR is proportional to output power and therefore it is unlikely that the other channels would produce higher levels of SAR that would exceed the SAR limit, in this case.
The measured output power of the channel tested must be documented in the test report for the information of the manufacturer and for scaling up the SAR result, as explained in this TGN.

For devices with multiple channel bandwidths, such as LTE, each bandwidth and modulation must be considered as well as appropriate evaluation for the resource blocks. Any reductions in testing, for example based on output power criteria, must be clearly documented in the SAR report.

Modulation for Testing

SAR tests should be performed on the modulation type which provides the highest average output power. If the reported SAR is very close to the compliance limit with the tested modulation, it may be necessary to also test with other modulations having average power close to the highest.
The power coupled from the transmitter to its antenna can be effected by variations in matching due to different modulations and bandwidths; therefore output power alone is not the only factor.

Power measurements and investigations included in the SAR report can be used to show the modulation mode which provides the highest average power.

Modes of Operation and Configurations for Testing

The modes of operation which are supported by the radio transmitter need to be investigated to determine the extent of SAR testing required. For example, a device with GPRS/EGPRS may incorporate power reduction with the increase in the number of timeslots used. In such a case, the test lab should investigate the combination of number of timeslots and power levels which provide the highest average power, over time. Note that the average power of each timeslot may be reduced, however if the number of timeslots has been increased, then the average power over time

from the transmitter in GPRS/EGPRS mode may be found in the reduced power mode with the increased timeslots, or the maximum power mode with fewer timeslots, depending on how power reduction has been implemented.
Similarly, with technology types such as LTE, the highest average frame power needs to be considered when the device supports high power modes and may operate at a higher power but lower talk-to-listen ratios than in standard modes. Also, power reduction may be applied for different allocations of resource blocks. All of these things must be considered by the manufacturer and agreed with the test lab when choosing and documenting the modes of operation for SAR test.

Manufacturers should consider the typical use of the device by a user during the SAR assessment. GSM single timeslot mode is typically associated with a voice call; but manufacturers should note that it is possible to establish a voice call when a device is placed in the pocket, supported by the body, or worn in a holster against the body with a hands-free kit (e.g., wired headset or Bluetooth). Therefore, it is important to consider a single timeslot voice call in the body worn configuration.

In addition to testing the front and back of mobile phones for use by the body, testing the edges and sides is also necessary for body SAR. If the only configuration for use is in a holster or accessory where only the back or front can be in the direction of the user, then only those faces may be assessed; assuming the device is not also used outside the accessory.
Any reduced evaluations need to be properly justified and documented in the SAR report and manufacturer's risk assessment.

Hand SAR assessments also must consider all sides and edges of the device.

5. Output Power for Testing

A device should be tested for intended use, typical use and reasonably foreseen use. However, some devices do have a range of output powers and it is important for the manufacturer to assure the compliance of their device by testing in a conservative way. For this reason, radio equipment SAR testing is generally performed at the maximum possible output power levels.

Consideration must be given to any power reduction modes where a SAR assessment is performed at the reduced power level. The maximum power of the transmitters may not be enabled at the closest separation distances and the assessment will need to determine the worst case combination of power and distance.

The following section provides suggestions for ensuring conservative testing:

The device should be set to maximum output power within the supplied power tune-up range during the SAR tests.

Output power shall be measured by the SAR lab at the time of SAR testing. If the channel used for SAR evaluation has a measured output power which is less than the maximum rated power including the upper tolerance (maximum possible power), it is required that the final SAR test result is

mathematically scaled up to report a SAR level which would be representative of the highest output power condition (maximum SAR level).
For example, if a SAR test is performed on a mobile phone transmitting at 32 dBm but the manufacturer's tolerance shows that the phone has a possibility to transmit at up to 32 dBm with an additional tolerance of +/-1 dBm (therefore a total maximum possible of 33 dBm); the final SAR measurement should be scaled up by 1 dB to show the maximum possible SAR value at full power.
To avoid introducing scaling errors due to system linearity, it is recommended to test a device with a high output power and try to avoid scaling by large amounts. It is recommended to test a device that has a measured output power within 2 dB of the maximum rated power.
Scaling up to the highest possible SAR based on maximum rated output power may not be so simple for devices with WLAN functionality because the upper power tolerance is rarely stated so clearly. Therefore, any scaling up, or no scaling, should be documented in manufacturer's risk assessment.
Note that Annex L of EN 62209-2 provides examples of scaling procedures in relation to scaling to a different modulation, when a test signal is used, which is a different use of the "scaling" terminology that is used for this output power consideration.

Regarding output power; we refer to maximum average output power of the actual transmission.

See also the section below on power reduction and detectors.

Output Power Reduction due to sensors and detectors

It is common for a radio device to incorporate power reduction, often for the purpose of compliance with SAR tests. As examples:
A proximity sensor, to reduce the output power of the transmitter when a person approaches or touches the device.
A movement sensor, to reduce the output power of the transmitter when the device is in motion.
A firmware instruction to reduce the power during simultaneous transmission mode, like when a phone is used as a wireless hotspot router.
Any combination of the above may be used in a device; plus other solutions not included here.

Some things to consider regarding power reduction:

A device may incorporate a power reduction mechanism based on a proximity sensor, to detect proximity with the device. The device might transmit with reduced power at 0 mm distance from the person, but with maximum power at X mm distance from the person. Therefore, the manufacturer and test lab will need to perform measurements to ascertain if the highest value of SAR is found at 0 mm and low power, or X mm and full power, or somewhere in between.

A device may incorporate a power reduction mechanism based on a proximity sensor, to detect proximity with a face or side of the device. For example, during body worn operation where the flat face of the device is facing the phantom, the output power may be reduced. However, the proximity sensors may not be triggered by a person near to other edges of the device, or if the device is held in

the hands. Therefore, it may be appropriate to test body SAR at the reduced power level on the faces, but with maximum power at the edges, or some edges, and in the hands.

Time-Averaging

The SAR limit is based on an average value over any 6 minute period.

Some radio equipment may incorporate power reduction features to

6. Hand SAR

With regard to exposure of the hands when a device is used in the hands, away from the body: Typically, if a device passes the body SAR test requirements on all sides and edges of the device, at a separation distance of 0 mm between the device and the phantom, and at the maximum rated output power; then hand SAR testing (in addition to body SAR) is not carried out.
Standards organisations are working on the development of hand SAR test methods.

Devices which have not been tested for body SAR compliance, but which may be located in the hands when in use, would require an assessment for use in the hands.

Devices tested with a body SAR test distance which is larger than that associated with use in the hands (such as > 0 mm), or not tested on all sides and faces, or tested at reduced output power settings, should consider modes of use which could give greater exposure when used in the hands; and a hand SAR assessment becomes necessary. It should be noted that typically the hands would require a test distance of 0 mm, on all edges, and may not trigger proximity sensors.

For example, testing a phone or tablet at 5 mm distance body SAR would not guarantee compliance when used in the hands at 0 mm, even when considering the difference in SAR limits. However, body SAR testing a phone or tablet at 0 mm on all faces and sides would be considered appropriate for also demonstrating compliance when used in the hands.

This will be part of the manufacturer's assessment of the device's intended use and risk assessment.

7. Test Distance Considerations

The test separation distance for head SAR, limb SAR and SAR in known accessories is typically understood to be 0 mm or 'contact'. But in the case of devices supported in normal use by the body, the guidance is based on the regulatory requirements, and a good understanding of the use of the products, and also input from market surveillance based on real case use.

The topic is also discussed in the product standards and EN 50566 states: “for body worn, body supported or garment integrated devices a separation distance of 5 mm or less shall be used”. For devices supported on the body, or body-worn devices without any accessory, the separation distance therefore must be 5 mm or less. In all other cases, and if there is no clear requirement in the applicable standard, the final decision on SAR test distances should be made by the manufacturer, based on the intended and reasonably foreseen use of their device.

If distances of more than 5 mm are used for the SAR assessment of radio equipment which are not a typical body worn device, details of how the safe distance is maintained during use is expected to be documented in the manufacturer’s risk assessment and technical documentation.

As explained in EN 62209-1, SAR for devices used next to the ear should be evaluated in direct contact with the head phantom.

For devices with non-standard form factors, tests should be performed with the device in contact with the appropriate section on the head or body part of the SAM phantom. If this configuration cannot be achieved, the flat section of the SAM phantom may be used.

If an accessory such as a sleeve or case is used in conjunction with such devices and the sleeve/case is marketed to be used with that specific device, a further SAR evaluation may be necessary if the sleeve/case introduces a configuration that is different from the original test. This is especially important in cases where the sleeve/case includes metallic parts or electronic circuits.

As a reminder, if a large test distance is used for the body-worn SAR test of a device which could also be used in the hands, an additional SAR test at a smaller distance may be required to demonstrate compliance for limb or hand SAR exposure. Please see also the section for Hand-SAR above.

8. Bystander SAR

It is important to consider the safety of all persons and domestic animals exposed to electromagnetic fields associated with the product, not only the user. Safety is an integral part of the Radio Equipment Directive.

SAR testing to ensure safety of bystanders or people other than the user is not specifically covered in the harmonised standards but it is a consideration for declaration of compliance to the Directive.

The manufacturer should ensure that the RF exposure and SAR assessments do cover the safety of all persons, during the normal intended use of the device. For example, this may apply to a device where normal intended use could locate the transmitting antenna at a safe distance from the user but a closer distance to other persons located or standing nearby.
For example, the top or back of the laptop may be tested to allow for affects to any bystander.

9. Time Averaging

Existing RF exposure limits are typically based on thermal rise in the body tissue, and heave led to limits based on time averaged measurements. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) states that all SAR values be averaged over any 6-minute period. For example, for frequencies between 100 KHz and 10 GHz, the device shall be demonstrated to have a SAR value not exceeding the respective limit value, over any rolling 6-minute period. Using any rolling period shorter than 6-minutes inherently ensures compliance with this requirement. For convenience, and speed of test, shorter averaging periods are typically used, and the power is then assumed to remain constant during the 6 minute averaging period. Transmitter conducted power is checked to ensure that the power is stable during the test period.

Some modern chipsets allow for a deliberate and dynamic modification of transmitter power to allow an improvement in device performance within a live network, without compromising the time-averaged SAR compliance. This dynamic monitoring and adjustment of the transmit power may mean that typical instantaneous SAR measurements are overly conservative, when compared to a realistic assessment, averaged over a 6 minute period. Devices incorporating such features may utilise new test methods to show compliance.

Measurement procedures for time-averaged SAR can be found in IEC/IEEE 62209-1528: 2019, section 7.6 'Time-period averaged SAR considerations'. As a practical matter for measurement, the exposure level may be typically measured at a fixed power level to show compliance for the relevant test conditions. In addition, the SAR, or preferentially a linearly-related surrogate for exposure such as conducted transmit power, may be recorded under varying network-driven operating conditions such as change of channel, handover, interruption in transmission, commencement of multiple transmissions, etc., to demonstrate that the reported exposure level does not exceed the applicable limit during dynamic operation. A combination of SAR exposure measuring peak values, and conducted measurements validating the control algorithm can effectively be combined to ensure compliance measurements.

It is the manufacturer's responsibility to explain how this averaging operation demonstrates compliance in a worst-case situation and that the network-driven scenario demonstrated during testing could not be exceeded. It is the responsibiliy of the Notified Body to check for evidence that the reported conditions represent the worst-case and that the radio equipment does not have the capability to exceed these values.

10. Multiple Transmitters

Regarding devices which have the capability to transmit with more than one signal simultaneously; if the SAR system being used can only measure at one frequency at a time; then the most commonly applied solution is to perform separate SAR tests on each transmitter independently and then sum the maximum SAR results together to account for simultaneous transmission. It may be an overly conservative approach but compliance can easily be demonstrated in this way.

EN 62209-2 provides four different ways to assess combined SAR:

1) Evaluation by summation of SAR values

2) Evaluation by selection of highest assessed maximum SAR values for non-overlapping SAR distributions

3) Evaluation by calculated volumetric SAR data

4) Evaluation by volumetric scanning

Note that for RF exposure assessments, simultaneous transmission consideration only applies to transmitters which transmit simultaneously. Transmitters which are timed to transmit alternately are not considered simultaneous transmission with regard to RF exposure. Similarly, simultaneous transmission issues do not apply to handover functions, such as a phone which uses cellular features when WLAN access is unavailable and then hands over to WLAN when the user is within range of an Access Point. If such a handover lasts for less than one minute, the simultaneous transmitter contribution is considered to be negligible.

Simultaneous transmission considerations are included in the Council Recommendation 1999/519/EC, International Commission on Non-Ionising Radiation Protection (ICNIRP) recommendation, as well as in the EN 62311, EN 50383, EN 62209-1 and EN 62209-2 standards.

Devices such as smartphones, phablets or tablets that support wireless routing capabilities (known as hot-spot) are operating in a multiple transmitter mode. For example, typically WLAN and WWAN simultaneously for the purpose of accessing the internet. The relevant assessments for use by the body or in the hands shall be considered on all surfaces and edges, as with other use cases.

11. RF Exposure Evaluation (intended use > 20 cm)

This document has focused on the SAR assessments, typically associated with devices where the transmitter antenna is located within 20 cm of a person during intended use.

For devices where the transmitter antenna is located at more than 20 cm from a person during intended use, the most typical approach is to perform a calculation or measurement of the power density. This is referred to as an RF exposure evaluation, or sometimes as a maximum permissible exposure (MPE) assessment.

An RF exposure calculation can be electric field, magnetic field or power density with regards to free space. The use of average power and antenna gain are typically used for this calculation and scaling to the upper tolerance of possible output power should be included in the assessment.

RF exposure may be subject to the actual RF exposure measurement using a near field free space probe that scans the spherical peak radiation location. Consideration should be given to the near field effect, transition field and far field. RF Exposure assessment can be applied from DC up to approximately 300 GHz.

SAR measurements at less than 20 cm may be a viable conservative option to show compliance even if intended use distance is more than 20 cm.

12. SAR Values in User Manuals

The RED does not specifically state that a product's SAR values must appear in the user manual for that product. Therefore, it is not mandatory to list the SAR value in the user manual.

For a typical device like a mobile phone or tablet which has been assessed for the most conservative use condition, it should not be necessary to tell the user what the SAR value is. It is not forbidden to inform the user; but it should not be mandatory. It does not affect compliance, after all.

If reporting the SAR value becomes an important factor to the compliance; then reporting that high value would become important. This should not be the case for most devices.

Some EU countries require the manufacturer or importer to display SAR values in user manuals, for example France. Some manufacturers' associations, for example MWF, create a voluntary commitment for their members.

Therefore, although there is no EU regulatory requirement to state the SAR values in the user manual, the manufacturer may find National Administrations that prefer to see it, some EU Member States do require it and some customers, be they network operators or end users, may want to see such information. A lot will depend on the type of product also.
In these limited cases, it might be good practice that SAR information is supplied in the user manual or on the manufacturer's website.

Follow-up Actions:

- Automatic check and revision every 18 months.
- Review and revise anytime a new SAR standard is published or listed on the RED OJEU.
- Review as 5G and higher frequency devices join the market.
- Review as triggered by feedback from ADCO RED.

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Disclaimer: This REDCA Technical Guidance Note does not replace the text of the RED – 2014/53/EU - and is for guidance only. In legal disputes the text of the RED, or its implementation in National legislation, takes precedence.

Annex A – TGN 17

A requirement for a TGN 17 for the RED (based on the RTTECA TGN17) will be considered by the REDCA after this TGN 20 is published.