



REPORT No.: SZ26080474S01

TEST REPORT

APPLICANT : Skydroid Technology (Fujian) Co., Ltd.
PRODUCT NAME : Remote control
MODEL NAME : G12-H
BRAND NAME : SKYDROID
STANDARD(S) : EN 50663:2017
EN 50566:2017+A1:2023
EN IEC/IEEE 62209-1528:2021
RECEIPT DATE : 2026-08-21
TEST DATE : 2026-08-29
ISSUE DATE : 2026-09-01

Edited by: Pang Siyu
Pang Siyu (Rapporteur)
Approved by: Shen Junsheng
Shen Junsheng (Supervisor)

NOTE: This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.



Shenzhen Morlab Communications Technology Co., Ltd.
FL1-1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555

Fax: 86-755-36698525

Http://www.morlab.cn

E-mail: service@morlab.cn





DIRECTORY

1. Statement of Compliance	5
2. Technical Information	6
2.1. Applicant and Manufacturer Information	6
2.2. Equipment under Test (EUT) Description	6
2.3. Environment of Test Site/Conditions	7
2.4. Applied Reference Documents	8
3. Specific Absorption Rate (SAR)	9
3.1. Introduction	9
3.2. SAR Definition	9
4. RF Exposure Limits	10
5. SAR Measurement System	12
5.1. E-Field Probe	13
5.2. Data Acquisition Electronics (DAE)	14
5.3. Robot	14
5.4. Measurement Server	14
5.5. Light Beam Unit	15
5.6. Phantom	16
5.7. Device Holder	16
5.8. Data Storage and Evaluation	17
5.9. Test Equipment List	20
6. Tissue Simulating Liquids	21
7. SAR System Verification	24
7.1. SAR System Performance Check	24
8. EUT Testing Position	26
8.1. Body Worn Accessory Configurations	26
8.2. Generic Device Exposure Position Conditions	26



9. Measurement Procedures	28
9.1. Spatial Peak SAR Evaluation	29
9.2. Power Reference Measurement	29
9.3. Scanning Requirements	30
9.4. SAR Averaged Methods	32
9.5. Power Drift Monitoring	33
10. Maximum Conducted Power	33
11. Antenna Information	36
12. Block Diagram of the Tests to be Performed	37
12.1. Body	37
13. SAR Test Results Summary	38
14. Simultaneous Transmission Analysis	39
14.1. Simultaneous Transmission Evaluation	39
14.2. Simultaneous Transmission Exposure Evaluation	40
15. Measurement Uncertainty	41
15.1. Measurement Uncertainty for SAR	41
16. Measurement Conclusion	44
Annex A General Information	45
Annex B Test Setup Photos	46
Annex C Plots of System Performance Check	46
Annex D Plots of Maximum SAR Test Results	46
Annex E DASY Calibration Certificate	46



REPORT No.: SZ26080474S01

Change History		
Version	Date	Reason for Change
1.0	2026-09-01	First edition

Note: The latest revision of the report supersedes all previous version.



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during test as bellows:

<Highest SAR Summary>

Frequency Band		Highest SAR Summary
		Reported SAR
		Body (Separation 0 mm)
		10g SAR (W/kg)
2.4GHz	WLAN 2.4GHz	0.524
	SRD 2.4GHz	N/A
	Bluetooth	N/A
5.8GHz	5.8GHz WLAN	N/A
	SRD 5.8GHz	N/A

Highest Simultaneous Transmission with Multiple transmitters	Total Exposure Radio	Llimit
SAR & Power	0.868	1.0

Note:

This device is compliance with Specific Absorption Rate (SAR) for general population or uncontrolled exposure limits (2.0 W/kg for body) specified in Council Recommendation 1999/519/EC, and had been tested in accordance with the measurement methods and procedures specified in EN IEC/IEEE 62209-1528:2021.



2. Technical Information

Note: Provide by manufacturer.

2.1. Applicant and Manufacturer Information

Applicant:	Skydroid Technology (Fujian) Co., Ltd.
Applicant Address:	Building E, No. 249, Keji Road, Fengze District, Quanzhou City, Fujian, China
Manufacturer:	Skydroid Technology (Fujian) Co., Ltd.
Manufacturer Address:	Building E, No. 249, Keji Road, Fengze District, Quanzhou City, Fujian, China

2.2. Equipment under Test (EUT) Description

Product Name:	Remote control
Series Model:	G12-H Pro, G12-H/G12-H Pro, GR01
EUT No.:	1#
Hardware Version:	N/A
Software Version:	N/A
Frequency Bands:	WLAN 2.4GHz: 2412 MHz ~ 2462 MHz WLAN 5.8GHz: 5745 MHz ~ 5825 MHz SRD 2.4GHz: 2411 MHz ~ 2466 MHz SRD 5.8GHz: 5750 MHz ~ 5820 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Modulation Mode:	802.11b: DSSS 802.11a/g: OFDM 802.11n-HT20/40: OFDM 802.11ac-VHT20/40/80: OFDM BR+EDR: GFSK, $\pi/4$ -DQPSK, 8-DPSK BLE: GFSK (1Mbps, 2Mbps)
Antenna Type:	WLAN/BT: Internal Antenna Bluetooth: External Antenna

Note: For a more detailed description, please refer to specification or user manual supplied by the applicant and/or manufacturer.



2.3. Environment of Test Site/Conditions

Temperature:	18-25 °C
Humidity:	30-75 %

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the Factory. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.

The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.



2.4. Applied Reference Documents

Leading reference documents for testing:

Identity	Document Title	Remark
EN 50566:2017+A1:2023	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	/
EN 50663:2017	Assessment of the compliance of low-power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)	/
EN IEC/IEEE 62209-1528:2021	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz) (EN IEC/IEEE 62209-1528:2020)	/
Note: Any additions, deviation, or exclusions from the method shall be noted in the "Remark".		

3. Specific Absorption Rate (SAR)

3.1. Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational or controlled and general population or uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational or controlled exposure limits are Middle than the limits for general population or uncontrolled.

3.2. SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\text{SAR} = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dv} \right)$$

SAR is expressed in units of Watts per kilogram (W/kg).

SAR measurement can be either related to the temperature elevation in tissue by

$$\text{SAR} = C \left(\frac{\delta T}{\delta t} \right)$$

Where: C is the specific heat capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

$$\text{SAR} = \frac{\sigma \cdot E^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength. However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

4. RF Exposure Limits

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (10g cube tissue for head and trunk)	2.0 W/kg
Spatial Peak SAR (10g cube tissue for limbs)	4.0 W/kg
Spatial Peak SAR (10g cube tissue for whole body)	0.08 W/kg

Table 2. Basic restrictions for electromagnetic field exposure from 100 kHz to 300 GHz, for averaging intervals ≥ 6 min.^a

Exposure scenario	Frequency range	Whole-body average SAR (W kg^{-1})	Local Head/Torso SAR (W kg^{-1})	Local Limb SAR (W kg^{-1})	Local S_{ab} (W m^{-2})
Occupational	100 kHz to 6 GHz	0.4	10	20	NA
	>6 to 300 GHz	0.4	NA	NA	100
General public	100 kHz to 6 GHz	0.08	2	4	NA
	>6 to 300 GHz	0.08	NA	NA	20

^aNote:

1. "NA" signifies "not applicable" and does not need to be taken into account when determining compliance.
2. Whole-body average SAR is to be averaged over 30 min.
3. Local SAR and S_{ab} exposures are to be averaged over 6 min.
4. Local SAR is to be averaged over a 10-g cubic mass.
5. Local S_{ab} is to be averaged over a square 4-cm² surface area of the body. Above 30 GHz, an additional constraint is imposed, such that exposure averaged over a square 1-cm² surface area of the body is restricted to two times that of the 4-cm² restriction.

Reference levels limits for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz)

Frequency Range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Power Density (S)(W/m ²)
0-1 Hz	-	3.2×10^4	4×10^4	-
1-8 Hz	10000	$3.2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25 Hz	10000	$4000 / f$	$5000 / f$	-
0.025-0.8 kHz	$250 / f$	$4 / f$	$5 / f$	-
0.8-3 kHz	$250 / f$	5	6.25	-
3-150 kHz	87	5	6.25	-
0.15-1 MHz	87	$0.73 / f$	$0.92 / f$	-
1-10 MHz	$87 / f^{1/2}$	$0.73 / f$	$0.92 / f$	-
10-400 MHz	28	0.073	0.095	2
400-2000 MHz	$1.375 f^{1/2}$	$0.0037 f^{1/2}$	$0.0046 f^{1/2}$	$f / 200$
2-300 GHz	61	0.16	0.2	10

Note:

1. This limit is according to recommendation 1999/519/EC, Annex II (Basic Restrictions).
2. Occupational/Uncontrolled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

5. SAR Measurement System

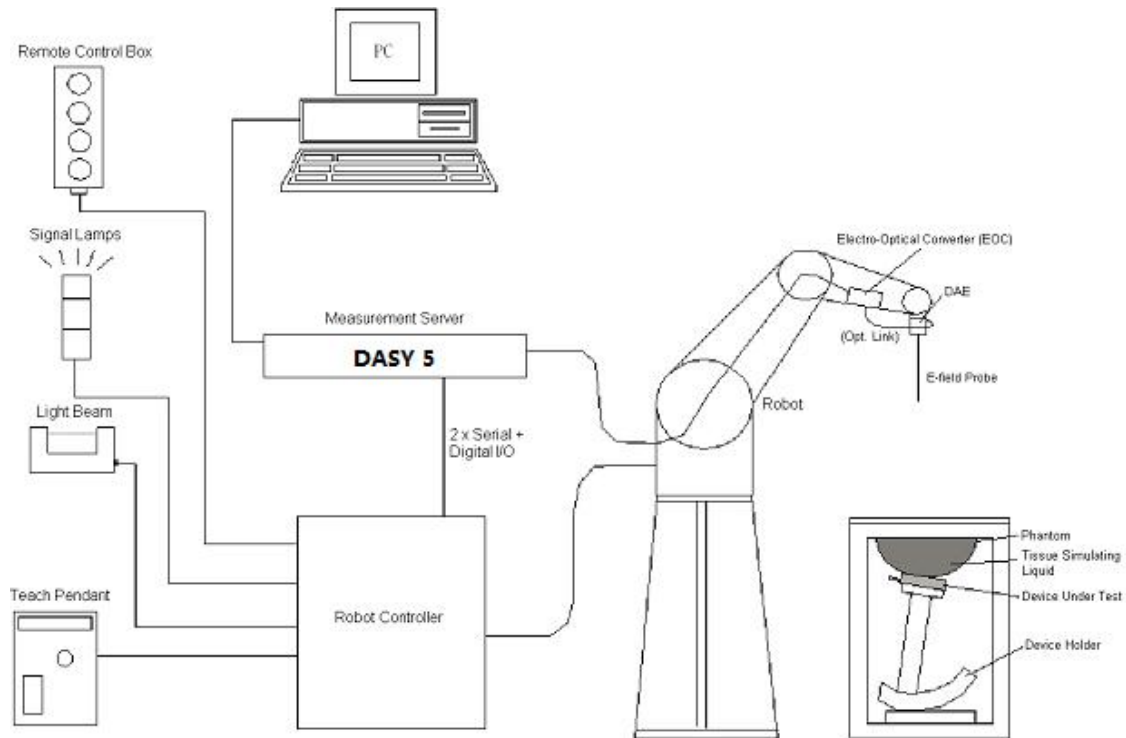


Fig.5.1 SPEAG DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software.
- A data acquisition electronic (DAE) attached to the robot arm extension.
- A dosimetric probe equipped with an optical surface detector system.
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals.
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning.
- A computer operating Windows XP.
- DASY software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom.
- A device holder.
- Tissue simulating liquid.
- Dipole for evaluating the proper functioning of the system.

Component details are described in the following sub-sections.

5.1. E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG). The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

➤ E-Field Probe Specification

<ES3DV3 Probe>

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 3 GHz; Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)	
Dynamic Range	5 μ W/g to 100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 330 mm (Tip: 16 mm) Tip diameter: 6.8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.7 mm	

Fig 5.2 Photo of ES3DV3

<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 μ W/g to 100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

Fig 5.3 Photo of EX3DV4

➤ E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than $\pm 10\%$. The spherical isotropy shall be evaluated and within ± 0.25 dB. The sensitivity parameters (Norm X, Norm Y and Norm Z), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to annex G of this report.

5.2. Data Acquisition Electronics (DAE)

The Data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



Fig. 5.5 Photo of DAE

5.3. Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX60XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)



Fig. 5.6 Photo of Robot

5.4. Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY5: 400MHz, Intel Celeron), chip-disk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical

detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.



Fig. 5.7 Photo of Server for DASY5

5.5. Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.

The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.



Fig. 5.8 Photo of Light Beam

5.6. Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%) Center ear point: 6 ± 0.2 mm
Filling Volume Dimensions	Approx. 25 liters Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Head, Right Head, Flat phantom



Fig. 5.9 Photo of SAM Phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

5.7. Device Holder

<Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ±0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP).

Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper

part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Fig 5.10 Device Holder



Fig 5.11 Laptop Extension Kit

5.8. Data Storage and Evaluation

➤ Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verifications of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-loss media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages

➤ Data Evaluation

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:



Probe Parameters:	- Sensitivity	Normi, ai0, ai1, ai2
	- Conversion	ConvFi
	- Diode compression point	dcp _i
Device Parameters:	- Frequency	f
	- Crest	cf
Media Parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

With V_i = compensated signal of channel i, (i = x, y, z)

U_i = input signal of channel i, (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated:

$$\text{E- Field Probes: } E_i = \sqrt{\frac{v_i}{\text{Norm}_i \cdot \text{ConvF}}}$$

$$\text{H-Field Probes: } H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1}f + a_{i2}f^2}{f}$$

With V_i = compensated signal of channel i, (i = x, y, z)

Norm_i = sensor sensitivity of channel i, (i = x, y, z), μV/ (V/m)²

ConvF = sensitivity enhancement in solution



a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency (GHz)

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{\text{tot}} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$\text{SAR} = E_{\text{tot}}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

With SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

σ = conductivity in (mho/m) or (Siemens/m)

ρ = equipment tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

5.9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial No./ SW Version	Calibration	
				Last Cal.	Due Date
SPEAG	2450MHz System Validation Kit	D2450V2	997	2026.06.26	2029.06.25
SPEAG	5000MHz System Validation Kit	D5GHzV2	1176	2024.10.22	2027.10.21
SPEAG	DOSIMETRIC ASSESSMENT SYSTEM Software	DASY52	52.10.4.1527	NCR	NCR
SPEAG	Dosimetric E-Field Probe	EX3DV4	7628	2026.07.06	2027.07.05
SPEAG	Data Acquisition Electronics	DAE4	913	2026.06.26	2027.06.25
SPEAG	Twin-SAM	QD 000 P41 Ax	2020	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Agilent	Network Analyzer	E5071B	MY42404762	2025.12.24	2026.12.23
SPEAG	Dielectric Assessment KIT	DAK-3.5	1279	2026.03.17	2027.03.16
mini-circuits	Amplifier	ZHL-42W+	608501717	NCR	NCR
mini-circuits	Amplifier	ZVE-8G+	754401735	NCR	NCR
Agilent	Signal Generator	N5182B	MY53050509	2025.09.02	2026.09.01
R&S	Power Sensor	NRP8S	103215	2025.12.24	2026.12.23
Agilent	Power Meter	E4416A	MY45102093	2025.09.02	2026.09.01
R&S	Power Sensor	NRP8S	103240	2025.12.24	2026.12.23
Anritsu	Power Meter	E4418B	GB43318055	2026.04.28	2027.04.27
Agilent	Dual Directional Coupler	778D	50422	NA	NA
MCL	Attenuation	351-218-010	N/A	NA	NA
R&S	Spectrum Analyzer	N9030A	MY54170556	2025.09.02	2026.09.01
KTJ	Thermo meter	TA298	N/A	2025.11.13	2026.11.12
N/A	Tissue Simulating Liquids	HBBL600-10000V6		24H	

Note:

1. The calibration certificate of DASY can be referred to annex E of this report.
2. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
3. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by SPEAG.
4. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1 W input power according to the ratio of 1 W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct

measurement; the power meter is critical and we do have calibration for it.

5. Attenuator insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.
6. N.C.R means No Calibration Requirement.

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1, for body SAR testing, the liquid height from the centre of the flat phantom to liquid top surface is larger than 15 cm, which is shown in Fig. 6.2.

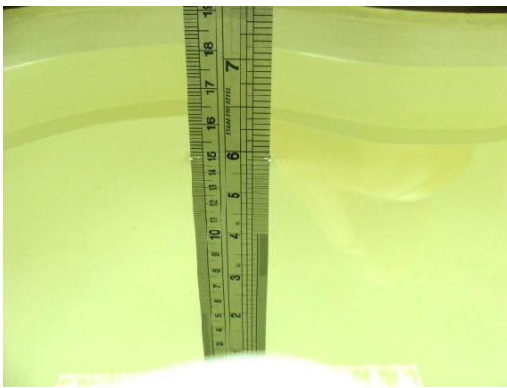


Fig 6.1 Photo of Liquid Height for Head SAR



Fig 6.2 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquids

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800,1900,2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Real part of the complex relative permittivity, ϵ_r	Conductivity, σ (S/m)
30	55.0	0.75
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800	40.0	1.40
1900	40.0	1.40
1950	40.0	1.40
2000	40.0	1.40
2100	39.8	1.49
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
4000	37.4	3.43
5000	36.2	4.45
5200	36.0	4.65
5400	35.8	4.86
5600	35.5	5.06
5800	35.4	5.27
6000	35.1	5.48

Note:

According to EN 62209-2:2010+AMD1:2019, the liquid parameters for head are the same as body requirements.

The dielectric parameters of liquids were verified prior to the SAR evaluation using a Speag Dielectric Probe Kit and an Agilent Network Analyzer.

The following table shows the measuring results for simulating liquid.

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Conductivity Target (σ)	Delta (σ) (%)	Limit (%)	Date
2450	HSL	22.2	1.841	1.80	2.28	±5	2026/8/29

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Permittivity (ϵ_r)	Permittivity Target (ϵ_r)	Delta (ϵ_r) (%)	Limit (%)	Date
2450	HSL	22.2	39.283	39.20	0.21	±5	2026/8/29



REPORT No.: SZ26080474S01

7. SAR System Verification

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

7.1. SAR System Performance Check

➤ Purpose of System Performance Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

➤ System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:



Fig 7.1 Photo of Dipole Setup

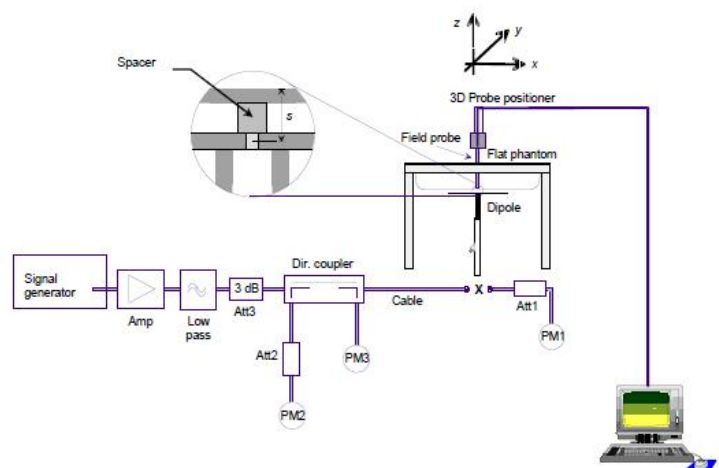


Fig 7.2 System Setup for System Evaluation

**➤ System Verification Results**

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10%. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table as below indicates the system performance check can meet the variation criterion and the plots can be referred to annex C of this report.

Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N
2450	100	D2450V2-997	7628	913

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2026/8/29	2450	HSL	5.40	52.80	54	2.27

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2026/8/29	2450	HSL	2.50	24.50	25	2.04

Note: System checks the specific test data please see annex C.

8. EUT Testing Position

This EUT was tested in five different positions. They are Bottom Face/Edge 1/Edge 2/Edge 3/Edge 4 of the EUT with phantom 0 mm gap, as illustrated below, please refer to annex B for the test setup photos.

8.1. Body Worn Accessory Configurations

- To position the device parallel to the phantom surface with either keypad up or down.
- To adjust the device parallel to the flat phantom.
- To adjust the distance between the device surface and the flat phantom to 5 mm or holster surface and the flat phantom to 0 mm.

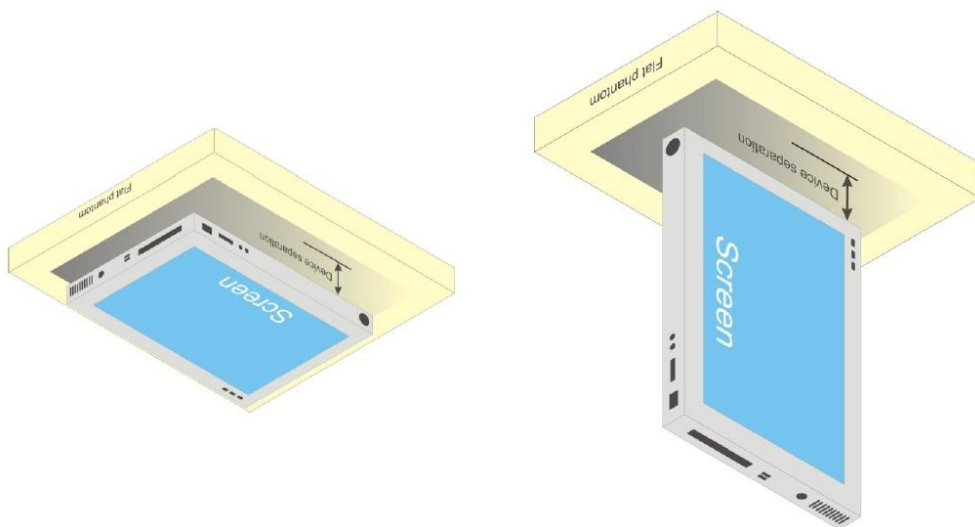


Fig.8.1 Illustration for Body Worn Position

8.2. Generic Device Exposure Position Conditions

For a device that cannot be categorized as any of the other specific device types in 6.1.4.1 of EN 62209-2, it shall be considered to be a generic device; i.e. represented by a closed box incorporating at least one internal RF transmitter and antenna.

The SAR evaluation shall be performed for all surfaces of the DUT that are accessible during intended use, as indicated in Figure 8.6. The separation distance in testing shall correspond to the intended use distance as specified in the user instructions provided by the manufacturer.

If the intended use is not specified, all surfaces of the DUT shall be tested directly against the flat phantom.

The surface of the generic device (or the surface of the carry accessory holding the DUT) pointing towards the flat phantom shall be parallel to the surface of the phantom.

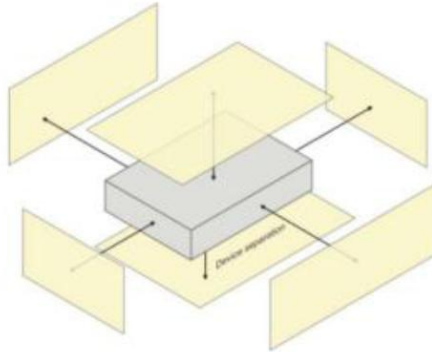


Fig 8.2 Illustration for Generic Device Position

9. Measurement Procedures

The measurement procedures are as bellows:

<Conducted power measurement>

- For WWAN power measurement, use base station simulator to configure EUT WWAN transition in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- Read the WWAN RF power level from the base station simulator.
- For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band.
- Connect EUT RF port through RF cable to the power meter or spectrum analyzer, and measure WLAN/BT output power.

<Conducted power measurement>

- Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- Place the EUT in positions as annex B demonstrates.
- Set scan area, grid size and other setting on the DASY software.
- Measure SAR results for the highest power channel on each testing position.
- Find out the largest SAR result on these testing positions of each band.
- Measure SAR results for other channels in worst SAR testing position if the Reported SAR or highest power channel is larger than 1.0 W/kg.

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- Power reference measurement.
- Area scan.
- Zoom scan.
- Power drift measurement.

9.1. Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a “cube” measurement. The measured volume must include the 1g and 10 g cubes with the highest averaged SAR values. For that purpose, the centre of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- Extraction of the measured data (grid and values) from the Zoom Scan.
- Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
- Generation of a high-resolution mesh within the measured volume.
- Interpolation of all measured values from the measurement grid to the high-resolution grid.
- Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface.
- Calculation of the averaged SAR within masses of 1g and 10g.

9.2. Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.3. Scanning Requirements

➤ Area Scan Parameters

Measure the two-dimensional SAR distribution within the phantom (i.e. the area scan). Table 1 provides the measurement parameters required for the area scan.

Table 1 Area scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the measured points (geometric centre of the sensors) and the inner phantom surface (z_{M1} in Figure 20 in mm)	5 ± 1	$\delta \ln(2)/2 \pm 0,5^a$
Maximum spacing between adjacent measured points in mm (see O.8.3.1) ^b	20, or half of the corresponding zoom scan length, whichever is smaller	$60/f$, or half of the corresponding zoom scan length, whichever is smaller
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20) ^c	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Tolerance in the probe angle	1°	1°
^a δ is the penetration depth for a plane-wave incident normally on a planar half-space. ^b See Clause O.8 on how Δx and Δy may be selected for individual area scan requirements. ^c The probe angle relative to the phantom surface normal is restricted due to the degradation in the measurement accuracy in fields with steep spatial gradients. The measurement accuracy decreases with increasing probe angle and increasing frequency. This is the reason for the tighter probe angle restriction at frequencies above 3 GHz.		

1. The area over which the SAR measurement is performed shall cover at least an area larger than the projection of the DUT, including its antenna. For some DUTs, the area projected onto the phantom can be relatively large, such that the probe might not reach all points. In this case, rotated phantoms may be used, and the area may be assessed by multiple overlapping area scans. The measurement resolution and spatial resolution for interpolation shall be selected to allow identification of the local peak locations to within one-half of the linear dimension of the corresponding side of the zoom-scan volume.
2. For the flat phantom, the boundary of the measurement area shall not be closer than 20 mm from the phantom side walls.

➤ Zoom Scan Parameters

Measure the three-dimensional SAR distribution at each of the local maxima locations identified in step c) (i.e. the zoom scan).

Table 2 Zoom scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the closest measured points and the phantom surface (z_{M1} in Figure 20 and Table 3, in mm)	5	$\delta \ln(2)/2^a$
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20)	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Maximum spacing between measured points in the x- and y-directions (Δx and Δy , in mm)	8	$24/f^b$
For uniform grids: Maximum spacing between measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	5	$10/(f - 1)$
For graded grids: Maximum spacing between the two closest measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	4	$12/f$
For graded grids: Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell ($R_z = \Delta z_2/\Delta z_1$ in Figure 20)	1,5	1,5
Minimum edge length of the zoom scan volume in the x- and y-directions (L_z in O.8.3.2, in mm)	30	22
Minimum edge length of the zoom scan volume in the direction normal to the phantom shell (L_n in O.8.3.2 in mm)	30	22
Tolerance in the probe angle	1°	1°
^a δ is the penetration depth for a plane-wave incident normally on a planar half-space.		
^b This is the maximum spacing allowed, which might not work for all circumstances.		

- For frequencies at or below 3 GHz, the following procedure shall be applied (see Table 2).
 - The minimum size of the zoom scan volume shall be 30 mm by 30 mm by 30 mm.
 - The horizontal grid step shall be 8 mm or less.
 - The grid step in the vertical direction shall be 5 mm, or less if uniform spacing is used.
 - If variable spacing is used in the vertical direction, the maximum spacing between the two closest measured points to the phantom shell (M1 and M2, see Figure 20 of IEC/IEEE 62209-1528 section 7.4.2) shall be 4 mm or less, and the spacing between the farther points shall increase by a factor of 1.5 or less.
 - For other parameters, see Table 4.
- For frequencies above 3 GHz, the following procedure shall be applied.

- 1) The minimum size of the zoom scan volume may be reduced to 22 mm by 22 mm by 22 mm.
 - 2) The horizontal grid step shall be $(24 / f \text{ [GHz]})$ mm or less.
 - 3) If uniform spacing in the vertical direction is used, the grid step in the vertical direction shall be $(10 / (f \text{ [GHz]} - 1))$ mm or less.
 - 4) If variable spacing is used in the vertical direction, the maximum spacing between the two measured points closest to the phantom shell shall be $(12 / f \text{ [GHz]})$ mm or less, and the spacing between farther points shall increase by a factor of 1.5 or less.
3. If the highest SAR 1 g or 10 g cube is touching the boundary of a zoom-scan volume, the entire zoom scan shall be repeated with the new centre located at the maximum psSAR location indicated by the preceding zoom scan measurement. It is also acceptable to expand the zoom scan during measurement until the 1 g or 10 g cube is no longer touching the boundary of the zoom-scan volume.
4. If the zoom scan measured as specified in the preceding paragraphs complies with both i) and ii), or if the psSAR is below 0.1 W/kg, no additional measurements are needed.
1. The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak shall be larger than the horizontal grid steps in both x- and y-directions (Δx , Δy). This shall be checked for the measured zoom scan plane conformal to the phantom at the distance zM1. The minimum distance shall be recorded in the SAR test report.
 2. ii) The ratio of the SAR at the second measured point (M2) to the SAR at the closest measured point (M1) at the x-y location of the measured maximum SAR value shall be at least 30 % (Figure 20). This ratio (in %) shall be recorded in the SAR test report.

9.4. SAR Averaged Methods

In DASy, the interpolation and extrapolation are both based on the modified Quadratic Sheppard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1g and 10g cubes, the extrapolation distance should not be larger than 5 mm.



9.5. Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

10. Maximum Conducted Power

WLAN 2.4GHz					
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %
802.11b	CH 1	2412	14.96	15.5	98.09
	CH 7	2437	14.37	15.0	98.74
	CH 13	2462	14.46	15.0	98.77
802.11g	CH 1	2412	12.9	13.5	98.46
	CH 7	2437	12.14	13.0	98.46
	CH 13	2462	11.99	12.5	98.43
802.11n-HT20	CH 1	2412	13.57	14.0	88.2
	CH 7	2437	12.99	13.5	88.07
	CH 13	2462	12.61	13.0	88.03
802.11n-HT40	CH 3	2422	12.69	13.0	74.3
	CH 6	2437	13.17	14.0	74.29
	CH 9	2452	12.86	13.5	73.91

SRD 2.4GHz					
Bandwidth	Antenna	Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %
10M	ANT1	2411	11.93	12.5	30.85
		2433	9.27	10.0	28.94
		2466	9.71	10.5	30.21
	ANT2	2411	10.8	11.5	29.84



20M		2433	9.74	10.5	30.84
		2466	11.03	11.5	29.84
	ANT1	2411	11.33	12.0	30.85
		2433	9.15	9.5	30.85
		2466	10.07	10.5	29.92
	ANT2	2411	10.07	10.5	30.84
		2433	9.6	10.0	28.39
		2466	11.39	12.0	28.37

WLAN 5.8GHz					
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %
802.11a	CH 149	5745	8.81	9.5	N/A
	CH 157	5785	8.34	9.0	N/A
	CH 165	5825	8.4	9.0	N/A
802.11n-HT20	CH 149	5745	9.51	10.0	N/A
	CH 157	5785	9.25	10.0	N/A
	CH 165	5825	9.15	10.0	N/A
802.11n-HT40	CH 151	5755	9.56	10.0	N/A
	CH 159	5795	8.16	9.0	N/A
802.11ac-VHT20	CH 149	5745	8.85	9.5	N/A
	CH 157	5785	8.29	9.0	N/A
	CH 165	5825	8.35	9.0	N/A
802.11ac-VHT40	CH 151	5755	9.6	10.0	N/A
	CH 159	5795	9.0	9.5	N/A
802.11ac-VHT80	CH 155	5775	9.18	10.5	N/A



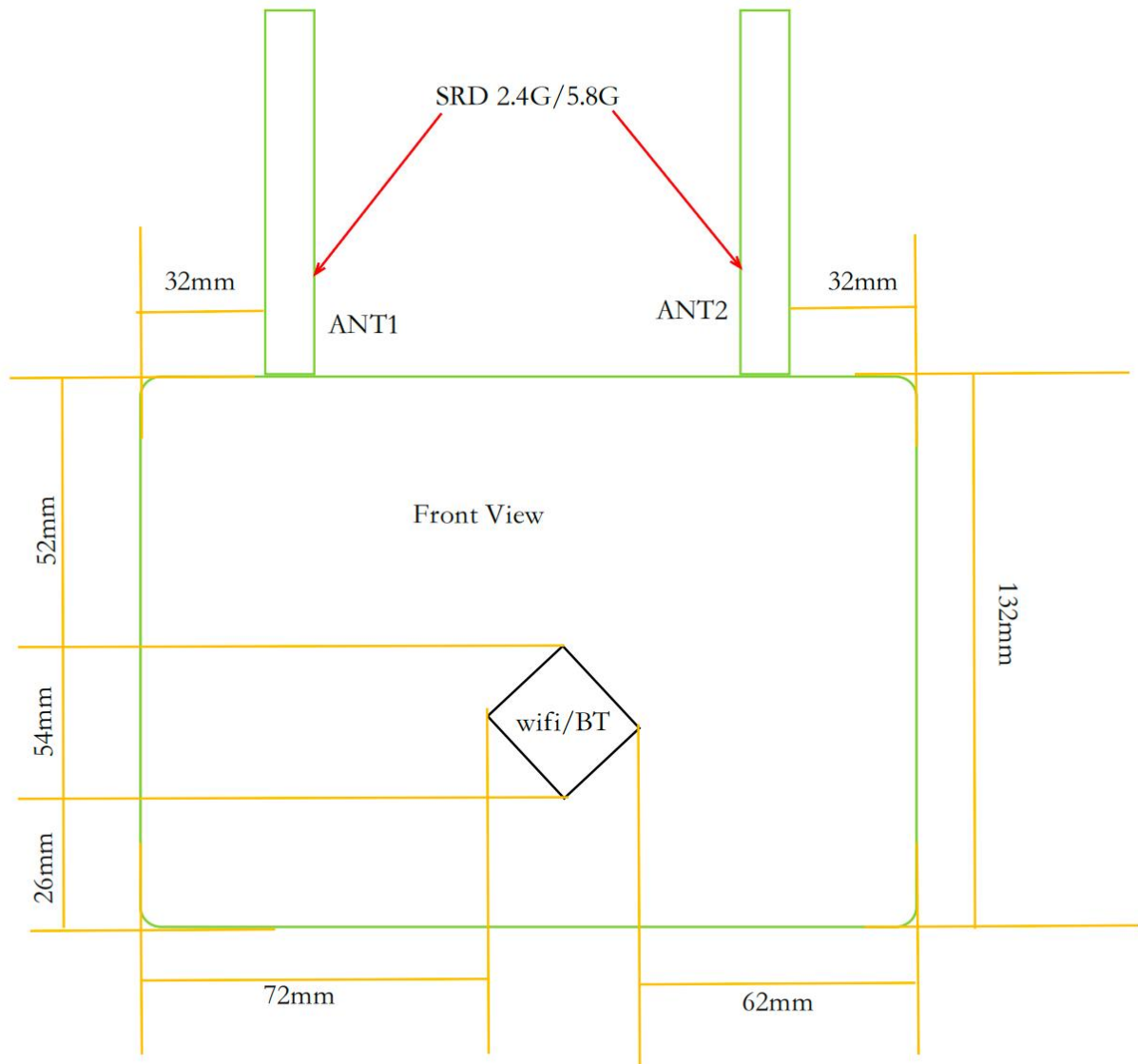
SRD 5.8GHz					
Bandwidth	Antenna	Frequency (MHz)	Average power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %
10M	ANT1	5750	7.49	8.0	N/A
		5780	8.12	8.5	N/A
		5820	7.94	8.5	N/A
	ANT2	5750	7.5	8.0	N/A
		5780	8.28	8.5	N/A
		5820	7.95	8.5	N/A
20M	ANT1	5750	6.82	7.5	N/A
		5780	8.47	9.0	N/A
		5820	7.1	7.5	N/A
	ANT2	5750	7.07	7.5	N/A
		5780	8.0	8.5	N/A
		5820	7.69	8.0	N/A

Bluetooth (BR+EDR)					
Mode	Channel	Frequency (MHz)	Maximum power (dBm)	Tune-Up Limit	Duty Cycle %
1DH5	Hopping		5.92	6.5	77.57
2DH5	Hopping		4.11	4.5	77.61
3DH5	Hopping		3.84	4.5	77.67

Bluetooth (BR+EDR)					
Mode	Channel	Frequency (MHz)	Maximum power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %
1M	CH 0	2402	-6.39	-6.0	62.4
	CH 19	2442	-2.48	-4.5	62.72
	CH 39	2480	2.67	3.0	63.04
2M	CH 0	2402	-6.42	-6.0	32.96
	CH 19	2442	-2.55	-2.0	33.12
	CH 39	2480	2.68	3.0	33.44

11. Antenna Information

➤ EUT Antenna Locations



12. Block Diagram of the Tests to be Performed

12.1. Body

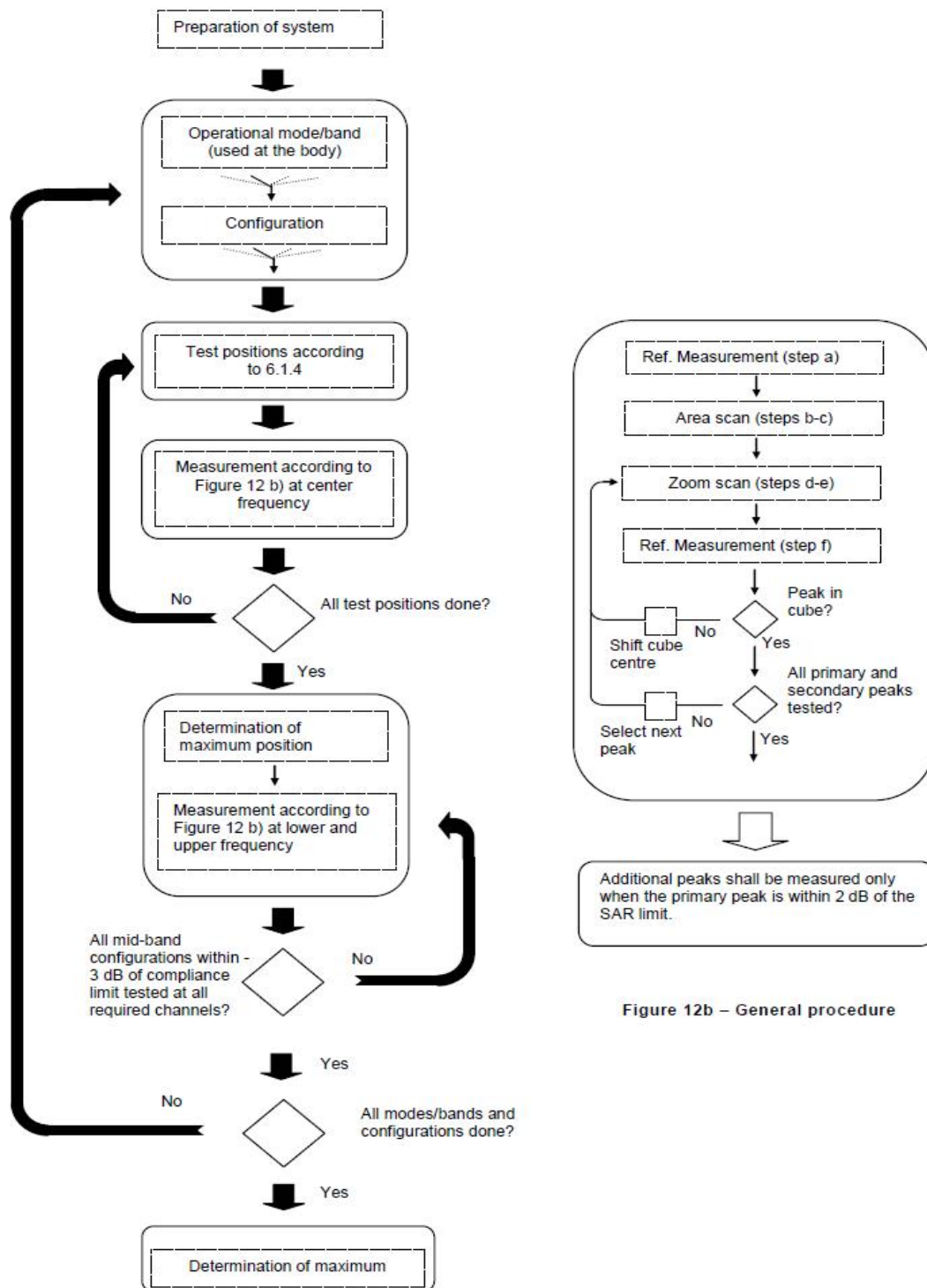


Figure 12b – General procedure

13. SAR Test Results Summary

➤ Test Guidance

1. The reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1 / (duty cycle)".
 - c. For WWAN: Reported SAR (W/kg) = Measured SAR (W/kg) * Tune-up Scaling Factor.
 - d. For WLAN/Bluetooth: Reported SAR (W/kg) = Measured SAR (W/kg) * Duty Cycle scaling factor * Tune-up scaling factor.
2. The SAR testing shall be performed at the middle frequency channels of each operating mode as the primary test channel. If the SAR measured at the middle channel for each test configuration is at least 3.0dB lower than the SAR limit, testing at the high and low channels is optional. And the High and Low frequency channels must be tested at a worst exposure position, and if the primary test channel reported SAR is ≥ 1.0 W/kg at the test exposure position, the High and Low frequency channels are also must be required.

➤ Test Results Summary

Plot No.	Band/Mode	Test Position	CH. Fre.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR _{10g} (W/kg)	Reported SAR _{10g} (W/kg)
	WLAN 2.4GHz/802.11b	Bottom Face	7	14.37	15.0	1.156	0.352	0.407
	WLAN 2.4GHz/802.11b	Edge 1	7	14.37	15.0	1.156	0.013	0.015
	WLAN 2.4GHz/802.11b	Edge 2	7	14.37	15.0	1.156	0.084	0.097
	WLAN 2.4GHz/802.11b	Edge 3	7	14.37	15.0	1.156	0.403	0.466
	WLAN 2.4GHz/802.11b	Edge 4	7	14.37	15.0	1.156	0.047	0.054
1#	WLAN 2.4GHz/802.11b	Edge 3	1	14.96	15.5	1.132	0.463	0.524
	WLAN 2.4GHz/802.11b	Edge 3	13	14.46	15.0	1.132	0.421	0.477

Note:

1. Body SAR testing was performed at 0 mm separation, and this distance is determined by the handset manufacturer that there will be body accessories that users may acquire at the time of equipment certification, to enable users to purchase aftermarket body accessories with the required minimum separation.
2. Determination of the worst-case configuration and all configurations with less than 3 dB of applicable limits.
3. When $10g\ SAR \leq 1.0$ W/kg, testing for low and high channel is optional.
4. The drift should be kept within $\pm 5\%$, the units of Power Drift Value measured are V/m, converting to dB should be kept in ± 0.20 dB.

14. Simultaneous Transmission Analysis

14.1. Simultaneous Transmission Evaluation

No.	Simultaneous transmission Condition	Body
1	SRD 2.4G/5.8G + WLAN 2.4GHz	Yes
2	SRD 2.4G/5.8G + WLAN 5.8GHz	Yes
3	SRD 2.4G/5.8G + Bluetooth	Yes

Note:

- According to EN 62209-2 Annex K, the threshold power level available to the secondary transmitter ($P_{\text{available}}$) is to calculate it from the measured peak spatial-average SAR of the primary transmitter (SAR_1) according to the equation:

$$P_{\text{available}} = P_{\text{th,m}} \times (SAR_{\text{lim}} - SAR_1) / SAR_{\text{lim}}, P_{\text{max}} = 32 \text{ mW}$$

Where

$P_{\text{max,m}}$ is the maximum threshold exclusion power level, which is calculated by $SAR_{\text{lim}} \times m$, and m is an averaging mass;

$P_{\text{available}}$ is the threshold valued needed to be tested;

SAR_{lim} is the SAR limit;

SAR_1 is the maximum SAR value of the first transmitter mode result.

- When the output power of the secondary transmitter is less than $P_{\text{available}}$, SAR measurement for the secondary transmitter is not necessary.

Wireless Mode	Antenna	Frequency (MHz)	Tune-Up Limit (dBm)	Tune-Up Limit (mW)	$P_{\text{available}}$ (mW)
SRD 2.4GHz	ANT1	2411	12.5	17.78	23.616
	ANT2	2466	12.0	15.85	23.616
SRD 5.8GHz	ANT1	5780	8.5	7.08	23.616
	ANT2	5780	9.0	7.94	23.616
WLAN 5.8GHz	-	5755	10.0	10.0	23.616
Bluetooth	-	-	6.5	4.47	23.616

- The worst-case summation for simultaneous transmission of will be evaluated using the formula:

$$\text{Total Exposure Ratio} = \frac{P_{\text{max}}}{P_{\text{avi}}} + \frac{SAR}{SAR_{\text{Limit}}} \leq 1$$

14.2. Simultaneous Transmission Exposure Evaluation

➤ Body Simultaneous Transmission for WLAN 2.4GHz+WLAN 5GHz

Wireless Bands	1	2	3	4	1+2	1+3	1+4
	SRD Band (mW)	WLAN2.4GHz (W/kg)	WLAN5.8GHz (mW)	Bluetooth (mW)	Total Exposure Ratio (SAR/2.0 & P/32) (TER < 1.0)		
SRD 2.4GHz (ANT1)	17.78	0.524	10.0	4.47	0.818	0.868	0.695
SRD 2.4GHz (ANT2)	15.85	0.524	10.0	4.47	0.757	0.808	0.635
SRD 5.8GHz (ANT1)	7.08	0.524	10.0	4.47	0.483	0.534	0.361
SRD 5.8GHz (ANT2)	7.94	0.524	10.0	4.47	0.510	0.561	0.388

Note: The above numerical summed SAR results for all the case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required.

15. Measurement Uncertainty

15.1. Measurement Uncertainty for SAR

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A Type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in below Table.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor	$1/k(b)$	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a



coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASy uncertainty Budget is shown in the following tables.

DASy Uncertainty Budget According to EN IEC/IEEE 62209-1528:2021 (4 MHz - 10 GHz range)							
Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System errors							
Probe Calibration	18.6	N	2	1	1	9.3	9.3
Probe calibration drift	1.7	R	1.732	1	1	1.0	1.0
Probe linearity and detection limit	4.7	R	1.732	1	1	2.7	2.7
Broadband signal	2.8	R	1.732	1	1	1.6	1.6
Probe isotropy	7.6	R	1.732	1	1	4.4	4.4
Other probe and data acquisition errors	2.4	N	1	1	1	2.4	2.4
RF ambient and noise	1.8	N	1	1	1	1.8	1.8
Probe positioning errors	0.006	N	1	0.5	0.5	0.0	0.0
Data processing errors	4	N	1	1	1	4.0	4.0
Phantom and device errors							
Measurement of phantom conductivity(σ)	2.5	N	1	0.78	0.71	2.0	1.8
Temperature effects (medium)	5.4	R	1.732	0.78	0.71	2.4	2.2
Shell permittivity	14	R	1.732	0.5	0.5	4.0	4.0
Distance between the radiating element of the DUT and the phantom medium	2	N	1	2	2	4.0	4.0
Repeatability of positioning the DUT or source against the phantom	1	N	1	1	1	1.0	1.0
Device holder effects	3.6	N	1	1	1	3.6	3.6
Effect of operating mode on probe sensitivity	2.4	R	1.732	1	1	1.4	1.4
Time-average SAR	1.7	R	1.732	1	1	1.0	1.0
Variation in SAR due to drift in output of DUT	2.5	N	1	1	1	2.5	2.5
Validation antenna uncertainty (validation measurement)	0	N	1	1	1	0.0	0.0
Uncertainty in accepted power (validation measurement only)	0	N	1	1	1	0.0	0.0
Phantom and Setup							



Phantom deviation from target (ϵ', σ)	1.9	N	1	1	0.84	1.9	1.6
SAR scaling	0	R	1.732	1	1	0.0	0.0
Combined Std. Uncertainty						14.5%	14.4%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						29.0%	28.8%

DASY6/8 Uncertainty Budget for psSAR / psAPD Assessment								
(Frequency Range: 6 GHz ~ 10 GHz)								
Symbol	Error Description	Uncert. Value ($\pm\%$)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	Standard Uncertainty (1g) ($\pm\%$)	Standard Uncertainty (10g) ($\pm\%$)
psSAR	Module SAR V16.0 (Table 6.3.3)	14.2/13.9	N	1	1	1	14.2	13.9
PDC	Power Density Conversion	13.5	R	$\sqrt{3}$	1	1	7.8	7.8
u(Δ SAR)	Combined Standard Uncertainty						16.2	15.9
U	Expanded Standard Uncertainty in dB						32.4 $\pm 1.2\text{dB}$	31.9 $\pm 1.2\text{dB}$



16. Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of CE, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested. Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.



Annex A General Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China



Annex B Test Setup Photos

The annex B will be submitted separately.

Annex C Plots of System Performance Check

The annex C will be submitted separately.

Annex D Plots of Maximum SAR Test Results

The annex D will be submitted separately.

Annex E DASY Calibration Certificate

The annex E will be submitted separately.

***** END OF MAIN REPORT *****