



PART 0 SAR CHAR REPORT

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APPLICANT:

SAMSUNG ELECTRONICS CO., LTD

Report Type:

Part 0 SAR Characterization

DUT Type:

Portable Handset

Model(s):

SM-S918U, SM-S918U1

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Test results reported herein relate only to the item(s) tested.



RJ Ortanez
Executive Vice President



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1 DEVICE UNDER TEST

1.1 Device Overview

This device uses the Qualcomm® Gen2 Smart Transmit feature to control and manage transmitting power in real time and to ensure the time-averaged RF exposure is in compliance with the FCC requirement at all times for 2G/3G/4G/5G WWAN operations. Additionally, this device supports WLAN/BT/NFC/UWB technologies, but the output power of these modems is not controlled by the Smart Transmit algorithm.

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 71	Voice/Data	665.5 - 695.5 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 14	Voice/Data	790.5 - 795.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 30	Voice/Data	2307.5 - 2312.5 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
LTE Band 38	Voice/Data	2572.5 - 2617.5 MHz
LTE Band 48	Voice/Data	3552.5 - 3697.5 MHz
NR Band n71	Voice/Data	665.5 - 695.5 MHz
NR Band n12	Voice/Data	701.5 - 713.5 MHz
NR Band n26	Voice/Data	816.5 - 846.5 MHz
NR Band n5	Voice/Data	826.5 - 846.5 MHz
NR Band n66	Voice/Data	1712.5 - 1777.5 MHz
NR Band n25	Voice/Data	1852.5 - 1912.5 MHz
NR Band n2	Voice/Data	1852.5 - 1907.5 MHz
NR Band n30	Voice/Data	2307.5 - 2312.5 MHz
NR Band n7	Voice/Data	2502.5 - 2567.5 MHz
NR Band n41	Voice/Data	2501.01 - 2685 MHz
NR Band n38	Voice/Data	2575 - 2615 MHz
NR Band n48	Voice/Data	3555 - 3694.98 MHz
NR Band n77 DoD	Voice/Data	3455.01 - 3544.98 MHz
NR Band n77	Voice/Data	3705 - 3975 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2462 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
U-NII-4	Voice/Data	5845 - 5885 MHz
U-NII-5	Voice/Data	5935 - 6415 MHz
U-NII-6	Voice/Data	6435 - 6515 MHz
U-NII-7	Voice/Data	6535 - 6875 MHz
U-NII-8	Voice/Data	6895 - 7115 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
NR Band n258	Data	24250 - 24450 MHz; 24750 - 25250 MHz
NR Band n260	Data	37000 - 40000 MHz
NR Band n261	Data	27500 - 28350 MHz
UWB	Data	6489.6 - 7987.2 MHz

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1.2 Time-Averaging for SAR and Power Density

This device is enabled with Qualcomm® Gen2 Smart Transmit algorithm to control and manage transmitting power in real time and to ensure that the time-averaged RF exposure from 2G/3G/4G/5G Sub-6 NR WWAN is in compliance with FCC requirements. This Part 0 report shows SAR characterization of WWAN radios for 2G/3G/4G/5G Sub-6 NR. Characterization is achieved by determining P_{Limit} for 2G/3G/4G/5G Sub-6 NR that corresponds to the exposure design targets after accounting for all device design related uncertainties, i.e., SAR_design_target (< FCC SAR limit) for sub-6 radio. The SAR characterization is denoted as SAR Char in this report. Section 1.3 includes a nomenclature of the specific terms used in this report.

The compliance test under the static transmission scenario and simultaneous transmission analysis are reported in Part 1 report. The validation of the time-averaging algorithm and compliance under the dynamic (time-varying) transmission scenario for WWAN technologies are reported in Part 2 report (report SN could be found in Section 1.4 – Bibliography).

1.3 Nomenclature for Part 0 Report

Technology	Term	Description
2G/3G/4G/5G Sub-6 NR	P_{limit}	Power level that corresponds to the exposure design target (<i>SAR_design_target</i>) after accounting for all device design related uncertainties
	P_{max}	Maximum tune up output power
	<i>SAR_design_target</i>	Target SAR level < FCC SAR limit after accounting for all device design related uncertainties
	<i>SAR Char</i>	Table containing P_{limit} for all technologies and bands

1.4 Bibliography

Report Type	Report Serial Number
Near Field PD Report (Part 1)	1M2209010098-01.A3L
Near Field PD Part 0 Report	
RF Exposure Part 2 Test Report	1M2209010098-04.A3L
RF Exposure Compliance Summary Report	1M2209010098-05.A3L
RF Exposure Part 1 Test Report	1M2209010098-03.A3L
WIFI 6-8GHz RF exposure	1M2209010098-02.A3L

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2 SAR AND POWER DENSITY MEASUREMENTS

2.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 2-1).

Equation 2-1
SAR Mathematical Equation

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

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

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

where:

σ	=	conductivity of the tissue-simulating material (S/m)
ρ	=	mass density of the tissue-simulating material (kg/m ³)
E	=	Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

2.2 SAR Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 2-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 2-1) and IEEE 1528-2013. On the

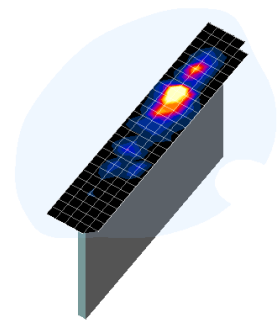


Figure 2-1
Sample SAR Area Scan

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basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

- a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 2-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

**Table 2-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04***

Frequency	Maximum Area Scan Resolution (mm) ($\Delta x_{area}, \Delta y_{area}$)	Maximum Zoom Scan Resolution (mm) ($\Delta x_{zoom}, \Delta y_{zoom}$)	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)^*$	$\Delta z_{zoom}(n>1)^*$	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5* $\Delta z_{zoom}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

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3 SAR CHARACTERIZATION

3.1 DSI and SAR Determination

This device uses different Device State Index (DSI) to configure different time averaged power levels based on certain exposure scenarios. Depending on the detection scheme implemented in the smartphone, the worst-case SAR was determined by measurements for the relevant exposure conditions for that DSI. Detailed descriptions of the detection mechanisms are included in the operational description.

When 1g SAR and 10g SAR exposure comparison is needed, the worst-case was determined from SAR normalized to 1g or 10g SAR limit.

The device state index (DSI) conditions used in Table 3-1 represent different exposure scenarios.

**Table 3-1
DSI and Corresponding Exposure Scenarios**

Scenario	Description	SAR Test Cases
Head (DSI = 2)	<ul style="list-style-type: none"> Device positioned next to head Receiver Active 	Head SAR per KDB Publication 648474 D04
Hotspot mode (DSI = 3)	<ul style="list-style-type: none"> Device transmits in hotspot mode near body Hotspot Mode Active 	Hotspot SAR per KDB Publication 941225 D06
Phablet Grip (DSI=1 or 4)	<ul style="list-style-type: none"> Device is held with hand and grip sensor is triggered Grip sensor triggered or earjack is active 	Phablet SAR per KDB Publication 648474 D04 & KDB Publication 616217 D04
Phablet (DSI = 0)	<ul style="list-style-type: none"> Device is held with hand and grip sensor is not triggered Distance grip sensor not triggered 	Phablet SAR per KDB Publication 648474 D04 & KDB Publication 616217 D04
Body-worn (DSI = 0)	<ul style="list-style-type: none"> Device being used with a body-worn accessory 	Body-worn SAR per KDB Publication 648474 D04

3.2 SAR Design Target

SAR_design_target is determined by ensuring that it is less than FCC SAR limit after accounting for total device designed related uncertainties specified by the manufacturer (see Table 3-2).

**Table 3-2
SAR_design_target Calculations**

<i>SAR_design_target</i>			
$SAR_design_target < SAR_regulatory_limit \times 10^{\frac{-Total\ Uncertainty}{10}}$			
1g SAR (W/kg)		10g SAR (W/kg)	
<i>Total Uncertainty</i>	1.0 dB	<i>Total Uncertainty</i>	1.0 dB
<i>SAR_regulatory_limit</i>	1.6 W/kg	<i>SAR_regulatory_limit</i>	4.0 W/kg
<i>SAR_design_target</i>	1.0 W/kg	<i>SAR_design_target</i>	2.5 W/kg

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3.3 SAR Char

SAR test results corresponding to P_{max} for each antenna/technology/band/DSI can be found in Appendix A.

P_{limit} is calculated by linearly scaling with the measured SAR at the P_{part0} to correspond to the SAR_{design_target} . When $P_{limit} < P_{max}$, P_{part0} was used as P_{limit} in the Smart Transmit EFS. When $P_{limit} > P_{max}$ and $P_{part0}=P_{max}$, calculated P_{limit} was used in the Smart Transmit EFS. All reported SAR obtained from the P_{part0} SAR tests was less than $SAR_{Design_target}+ 1$ dB Uncertainty. The final P_{limit} determination for each exposure scenario corresponding to SAR_{design_target} are shown in Table 3-3.

**Table 3-3
 P_{Limit} Determination**

Device State Index (DSI)	P_{Limit} Determination Scenarios
0	The worst-case SAR exposure is determined as maximum SAR normalized to the limit (i.e. lowest P_{limit}) among: <ol style="list-style-type: none"> 1. Body Worn SAR 2. For modes in AG0, extremity SAR measured at 8, 6 and 12 mm spacing for back, front, bottom respectively 3. For modes in AG0, extremity SAR measured at 0 mm for left and right surfaces. For modes in AG1, extremity SAR measured at 0 mm for all surfaces
1 or 4	P_{limit} is calculated based on 10g Extremity SAR at 0 mm for all surfaces
2	P_{limit} is calculated based on 1g Head SAR
3	P_{limit} is calculated based on 1g Hotspot SAR at 10 mm

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**Table 3-4
SAR Characterizations**

Exposure Scenario			Body-Worn	Phablet Max	Phablet Reduced	Head	Hotspot	Earjack	Maximum Tune-Up Output Power*
Averaging Volume			1g	10g	10g	1g	1g	10g	
Spacing			15 mm	8 mm, 6 mm, 12 mm, 0 mm	0 mm	0 mm	10 mm	0 mm	
DSI			0	0	1	2	3	4	
Technology/Band	Antenna	Antenna Group							Pmax
GSM 850	A	AG0	28.5		28.5	31.4	25.6	28.5	25.3
GSM 1900	A	AG0	24.6		20.0	33.2	18.0	20.0	22.1
UMTS 850	A	AG0	29.1		27.4	31.3	26.2	27.4	24.0
UMTS 1750	A	AG0	25.3		19.0	31.8	19.0	19.0	23.0
UMTS 1900	A	AG0	25.5		19.5	32.2	17.5	19.5	23.0
LTE Band 71	A	AG0	27.8		27.8	34.3	27.8	27.8	24.5
LTE Band 12	A	AG0	29.0		27.5	33.4	27.5	27.5	24.5
LTE Band 13	A	AG0	29.4		28.6	31.9	27.6	28.6	24.5
LTE Band 14	A	AG0	28.3		27.9	31.7	27.9	27.9	24.5
LTE Band 26 (Cell)	A	AG0	29.1		27.6	31.1	26.7	27.6	24.5
LTE Band 5 (Cell)	A	AG0	29.3		27.8	30.9	26.6	27.8	24.5
LTE Band 66/4 (AWS)	A	AG0	26.0		20.0	31.4	19.5	20.0	23.5
LTE Band 66/4 (AWS)	F	AG1	20.0		20.0	18.0	20.0	20.0	23.5
LTE Band 25/2 (PCS)	A	AG0	26.0		20.0	33.9	17.5	20.0	23.5
LTE Band 25/2 (PCS)	F	AG1	18.0		18.0	17.0	18.0	18.0	23.5
LTE Band 30	A	AG0	26.7		21.5	33.2	19.0	21.5	22.5
LTE Band 30	F	AG1	20.0		20.0	17.0	20.0	20.0	22.5
LTE Band 7	B	AG0	26.1		20.0	37.7	20.0	20.0	23.0
LTE Band 7	F	AG1	18.5		18.5	16.0	18.5	18.5	23.0
LTE Band 48	G	AG1	18.0		18.0	16.0	18.0	18.0	20.5
LTE Band 41/38 (PC3)	B	AG0	22.0		20.0	22.0	20.0	20.0	22.0
LTE Band 41 (PC2)	B	AG0	22.0		20.0	22.0	20.0	20.0	22.1
LTE Band 41/38 (PC3)	F	AG1	19.0		19.0	17.0	19.0	19.0	22.0
LTE Band 41 (PC2)	F	AG1	19.0		19.0	17.0	19.0	19.0	22.1
NR Band n71	A	AG0	27.3		27.3	33.7	27.3	27.3	24.5
NR Band n12	A	AG0	28.6		27.0	32.8	27.0	27.0	24.5
NR Band n26/n5	A	AG0	29.0		27.4	31.6	25.8	27.4	24.5
NR Band n66	A	AG0	25.6		20.0	32.3	19.5	20.0	23.5
NR Band n66	F	AG1	20.0		20.0	18.0	20.0	20.0	23.5
NR Band n25/n2 (PCS)	A	AG0	24.6		20.0	33.6	17.5	20.0	23.5
NR Band n25/n2 (PCS)	F	AG1	20.0		20.0	17.0	20.0	20.0	23.5
NR Band n30	A	AG0	26.9		21.5	35.4	19.0	21.5	22.5
NR Band n30	F	AG1	20.0		20.0	17.0	20.0	20.0	22.5
NR Band n7	B	AG0	25.8		20.0	36.7	20.0	20.0	23.0
NR Band n7	F	AG1	18.5		18.5	16.0	18.5	18.5	23.0
NR Band n41 Path 1 (PC2)	F	AG1	19.0		19.0	17.0	19.0	19.0	26.0
NR Band n41 Path 1 (PC2)	B	AG0	17.0		17.0	15.0	17.0	17.0	22.0
NR Band n41 Path 1 (PC2)	E	AG1	15.0		15.0	13.0	15.0	15.0	20.0
NR Band n41 Path 1 (PC2)	D	AG0	16.5		16.5	15.5	16.5	16.5	21.0
NR Band n41 Path 2 (PC2)	B	AG0	19.0		19.0	17.0	19.0	19.0	26.0
NR Band n41 Path 2 (PC2)	F	AG1	17.0		17.0	16.0	17.0	17.0	22.0
NR Band n41 Path 2 (PC2)	D	AG0	16.0		16.0	14.5	16.0	16.0	19.0
NR Band n41 Path 2 (PC2)	E	AG1	14.0		14.0	12.5	14.0	14.0	20.0
NR Band n38	F	AG1	19.0		19.0	17.0	19.0	19.0	24.0
NR Band n38	B	AG0	19.0		19.0	17.0	19.0	19.0	24.0
NR Band n48	G	AG1	18.0		18.0	16.0	18.0	18.0	22.5
NR Band n48	C	AG0	13.5		13.5	11.5	13.5	13.5	18.5
NR Band n48	I	AG1	15.5		15.5	13.5	15.5	15.5	21.0
NR Band n48	D	AG0	13.5		13.5	11.5	13.5	13.5	19.0
NR Band n77 DoD (PC2)	G	AG1	18.0		18.0	18.0	18.0	18.0	26.0
NR Band n77 DoD (PC2)	C	AG0	14.0		14.0	14.0	14.0	14.0	20.5
NR Band n77 DoD (PC2)	I	AG1	17.0		17.0	17.0	17.0	17.0	23.0
NR Band n77 DoD (PC2)	D	AG0	14.5		14.5	14.5	14.5	14.5	21.0
NR Band n77 (PC2)	G	AG1	18.0		18.0	18.0	18.0	18.0	26.0
NR Band n77 (PC2)	C	AG0	14.0		14.0	14.0	14.0	14.0	20.5
NR Band n77 (PC2)	I	AG1	17.0		17.0	17.0	17.0	17.0	23.0
NR Band n77 (PC2)	D	AG0	14.5		14.5	14.5	14.5	14.5	21.0

Notes:

- For all modes/bands, when Hotspot Mode (DSI=3) and Extremity sensor (DSI=1) are triggered at the same time, DSI=3 takes priority, thus the P_{limit} for DSI=3 is set to be less or equal to P_{limit} for DSI=1.
- When $P_{max} < P_{limit}$, the DUT will operate at a power level up to P_{max} .
- P_{limit} for DSI=1 and DSI =4 are the same.
- For all bands on AG1 when RCV is active, DSI=2 takes priority over all levels.

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5 MEASUREMENT UNCERTAINTIES

For SAR Measurements

a	b	c	d	e= f(d,k)	f	g	h= c x f/e	i= c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	ToL (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System									
Probe Calibration	E.2.1	7	N	1	1	1	7.0	7.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.732	1	1	1.2	1.2	∞
Linearity	E.2.4	0.3	N	1	1	1	0.3	0.3	∞
System Detection Limits	E.2.4	0.25	R	1.732	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.732	1	1	2.8	2.8	∞
Readout Electronics	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	R	1.732	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.732	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.732	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.732	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E.4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.732	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.732	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E.3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E.3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E.3.4	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Uncertainty	E.3.4	0.6	R	1.732	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)	RSS						12.2	12.0	191
Expanded Uncertainty (95% CONFIDENCE LEVEL)	k=2						24.4	24.0	

The above measurement uncertainties are according to IEEE Std. 1528-2013

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