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RF EXPOSURE PART 0 TEST REPORT

Applicant Name:

Samsung Electronics Co., Ltd. 129, Samsung-ro, Maetan dong, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 11/06/2024 - 11/25/2024 Test Site/Locations: Element, Columbia, MD, USA Element, Suwon, Korea Document Serial No.: 1M2408260070-02.A3L

FCC ID: A3LSMS938JPN

APPLICANT: SAMSUNG ELECTRONICS CO., LTD.

Report Type: Part 0 SAR Characterization

DUT Type: Portable Handset

Model: SC-52F Additional Model(s): SCG32

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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APPENDIX A: PART 0 SAR TEST RESULTS FOR PLIMIT CALCULATIONS

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DEVICE UNDER TEST

1.1 Device Overview

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	
LTE Band 12	Voice/Data	699.7 - 715.3 MHz	
LTE Band 13	Voice/Data	779.5 - 784.5 MHz	
LTE Band 5	Voice/Data	824.7 - 848.3 MHz	
LTE Band 66	Voice/Data	1710.7 - 1779.3 MHz	
LTE Band 4	Voice/Data	1710.7 - 1754.3 MHz	
LTE Band 2	Voice/Data	1850.7 - 1909.3 MHz	
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz	
NR Band n5	Voice/Data	826.5 - 846.5 MHz	
NR Band n66	Voice/Data	1712.5 - 1777.5 MHz	
NR Band n41	Voice/Data	2501.01 - 2685 MHz	
2.4 GHz WIFI	Voice/Data	2412 - 2462 MHz	
5 GHz WIFI	Voice/Data	U-NII-1: 5180 - 5240 MHz U-NII-2A: 5260 - 5320 MHz U-NII-2C: 5500 - 5720 MHz U-NII-3: 5745 - 5825 MHz U-NII-4: 5845 - 5885 MHz	
6 GHz WIFI	Voice/Data	U-NII-5: 5935 - 6415 MHz U-NII-6: 6435 - 6515 MHz U-NII-7: 6535 - 6875 MHz U-NII-8: 6895 - 7115 MHz	
2.4 GHz Bluetooth	Data	2402 - 2480 MHz	
NFC	Data	13.56 MHz	
UWB	Data	6489.6 - 7987.2 MHz	

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1.2 Time-Averaging Algorithm for RF Exposure Compliance

The purpose of this report is to show SAR Characterization of WWAN sub-6/WLAN/BT (Part0) and to demonstrate that the EUT meets FCC SAR limits when transmitting in static transmission scenario at maximum allowable time-averaged power levels (Part1).

1.2.1 Nomenclature

Technology	Term	Description
MANANI Cub C	P _{limit}	Power level that corresponds to the exposure design target (SAR_design_target) after accounting for all device design related uncertainties
WWAN Sub-6	P _{max}	Maximum tune up output power
/WLAN/BT	SAR_design_target	Target SAR level < FCC SAR limit after accounting for all device design related uncertainties
	SAR Char	Table containing Plimit for all technologies and bands

1.2.2 Time-Averaged Algorithm

This Device is enabled with the Qualcomm® Smart Transmit Gen2 feature with antenna grouping. This feature performs time-averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time. Refer to Compliance Summary document for detailed description of Qualcomm® Smart Transmit feature (report SN could be found in Section 1.3– Bibliography).

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target below the predefined time-averaged power limit (i.e., P_{limit} for WWAN sub-6/WLAN/BT radio), for each characterized technology and band. Characterization is achieved by determining P_{limit} for WWAN sub-6/WLAN/BT 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 (see SAR Summary Section and Part 0 SAR Test Results for P_{limit} Calculations Appendix).

Smart Transmit allows the device to transmit at higher power instantaneously, as high as P_{max} , when needed, but enforces power limiting to maintain time-averaged transmit power to P_{limit} . Below table shows P_{limit} EFS settings and maximum tune up output power P_{max} configured for this EUT for various transmit conditions (Device State Index DSI). Note that the device uncertainty for WWAN sub-6/WLAN/BT is 1.0dB for this EUT.

The maximum time-averaged output power (dBm) for any WWAN sub-6/WLAN/BT technology, band, and DSI is the minimum of (" P_{limit} EFS" and "Maximum tune up output power P_{max} ") + 1dB device uncertainty. SAR values in this report were scaled to this maximum time-averaged output power to determine compliance per KDB Publication 447498 D01v06.

1.3 Bibliography

Report Type	Report Serial Number
RF Exposure Part 1 Test Report	1M2408260070-01.A3L
RF Exposure Part 2 Test Report	1M2408260070-04.A3L

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2 SAR AND POWER DENSITY MEASUREMENTS

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. and Health Canada RF Exposure Guidelines Safety Code 6 Error! Reference source not found. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave Error! Reference source not found. is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

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/m³)

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]

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PART 0 SAR CHARACTERIZATION 3

SAR Characterization 3.1

3.1.1 **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 2-1 represent different exposure scenarios.

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

Scenario	Description	SAR Test Cases
Head	 Device positioned next to head 	Head SAR per KDB Publication
(DSI = 1)	 Receiver Active 	648474 D04
Hotspot mode (DSI = 0)	 Device transmits in hotspot mode near body Hotspot Mode Active 	Hotspot SAR per KDB Publication 941225 D06
Phablet (DSI = 0)	Device is held with hand	Phablet SAR per KDB Publication 648474 D04 & KDB Publication 616217 D04
Body-worn (DSI = 0)	 Device being used with a body-worn accessory 	Body-worn SAR per KDB Publication 648474 D04

SAR_Design_Target 3.1.2

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 2-2).

> Table 3-2 SAR_design_target Calculations

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

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3.1.3 SAR Char

SAR test results corresponding to *Pmax/Plimit* for each antenna/technology/band/DSI can be found in SAR Summary Section and Part 0 SAR Test Results for Plimit Calculations Appendix.

Plimit is calculated by linearly scaling with the measured SAR at the Ppart0 to correspond to the SAR_design_target. When Plimit < Pmax, Ppart0 was used as Plimit in the Smart Transmit EFS. When Plimit > Pmax and Ppart0=Pmax, calculated Plimit was used in the Smart Transmit EFS. For some bands/modes, the manufacture selected a lower Plimit. All reported SAR obtained from the Ppart0 SAR tests was less than SAR_Design_target+ 1 dB Uncertainty. The final Plimit determination for each exposure scenario corresponding to SAR design target are shown in Table 2-3.

Table 3-3 PLimit Determination

Device State Index (DSI)	PLimit Determination Scenarios
0	The worst-case SAR exposure is determined as maximum SAR normalized to the limit (i.e. lowest P_{limit}) among: 1. Body Worn SAR 2. Extremity SAR measured at 0 mm for all surfaces. 3. Hotspot SAR at 10 mm
1	P _{limit} is calculated based on 1g Head SAR

Notes:

- When P_{max} < P_{limit} EFS, the DUT will operate at a power level up to P_{max}
- All P_{limit} EFS and maximum tune up output power P_{max} levels entered in above Table correspond to average power levels after accounting for duty cycle in the case of TDD, GMSK, or OFDM modulation schemes (e.g. GSM, LTE TDD and WLAN/BT).
- Maximum tune up output power P_{max} is used to configure EUT during RF tune up procedure. The maximum allowed output power is equal to maximum Tune up output power + 1dB device design uncertainty.
- All MIMO P_{max} and P_{limit} are defined per antenna chain.

Measurement Condition: All conducted power and SAR measurements in this report (Part 1 test) were performed by setting Reserve_power_margin (Smart Transmit EFS entry) to 0dB.

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Table 3-4 **SAR Characterizations**

SAR Characterizations									
Exposure Scenario			Maximum	Body-Worn, Hotspot, or Phablet	Head				
Averaging Volume			Tune-Up	1g/10g	1g				
Spacing			Output Power*	10mm, 0mm	0mm				
Configuration			rower.						
DSI				0	1				
Technology/Band	Antenna	Antenna Group	P _{max}	P _{limit}	P_{limit}				
GSM 850	А	AG0	25.3	29.5	34.4				
GSM 850	E	AG1	25.3	26.6	20.3				
GSM 1900	Α	AG0	22.1	18.8	34.8				
UMTS 850	Α	AG0	24.0	26.7	32.4				
UMTS 850	Е	AG1	24.0	26.5	20.5				
LTE Band 12	Α	AG0	24.0	26.9	32.1				
LTE Band 12	Е	AG1	24.0	26.1	21.5				
LTE Band 13	Α	AG0	24.0	28.6	31.7				
LTE Band 13	E	AG1	24.0	26.9	21.5				
LTE Band 5	Α	AG0	24.0	27.2	32.7				
LTE Band 5	E	AG1	24.0	26.5	21.0				
LTE Band 66/4	Α	AG0	23.5	19.0	31.8				
LTE Band 2	Α	AG0	23.5	18.0	32.4				
LTE Band 41	В	AG0	22.0	20.0	34.4				
LTE Band 41	F	AG1	22.0	19.5	16.0				
NR Band n5	Α	AG0	24.0	26.0	31.7				
NR Band n5	Е	AG1	24.0	25.9	21.0				
NR Band n66	Α	AG0	23.5	19.0	31.5				
NR Band n66	F	AG1	23.5	20.5	18.5				
NR Band n41 PC2 (Path1)	F	AG1	26.0	19.5	16.5				
NR Band n41 PC2 (Path 2)	В	AG0	26.0	20.0	21.0				
2.4 GHz WIFI	Н	AG1	19.0	19.5	16.0				
2.4 GHz WIFI	J	AG1	19.0	30.2	16.0				
2.4 GHz WIFI	MIMO	AG1	17.0	19.4	16.0				
5 GHz WIFI	н	AG1	17.0	15.0	15.0				
5 GHz WIFI	E	AG1	17.0	15.0	15.0				
5 GHz WIFI	MIMO	AG1	17.0	15.0	15.0				
6 GHz WIFI	н	AG1	16.0	8.0	18.5				
6 GHz WIFI	Е	AG1	16.0	8.0	22.9				
6 GHz WIFI	MIMO	AG1	16.0	8.0	18.5				
2.4 GHz Bluetooth	Н	AG1	17.4	20.0	18.4				
2.4 GHz Bluetooth	J	AG1	17.4	25.3	21.0				
2.4 GHz Bluetooth	MIMO	AG1	13.4	19.8	18.1				

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4 EQUIPMENT LIST

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Ampellier Research	8T 43877 8T 43877 8T 43877 8T 43877 8T 43877 8T 43877 8T 43878 8T 43877 8T 43878 8T 14388 8T 1426 8T 14381 8T 1426 8T 14381 8T 1426 8T 14381 8T 1426 8T 15361 8T 1426 8T 15361 8T 14381 8T 1426 8T 15361 8T 1561	C8T	N/A	CBT	Amplifier Amplifier Amplifier Amplifier Amplifier Amplifier Amplifier I/O Adaptor Power Meter Power Meter Power Meter Public Power Sensor Public Power Sensor Public Power Sensor Public Power Sensor Richows Peak Power Sensor Richows Peak Power Sensor Radio Communication Analyser MT8821C Radio Communication Analyser MT8821C Radio Communication Lead Station LUSS Prower Sensor LUSS Prower Sensor LUSS Prower Sensor LUSS Prower Sensor LUSS Power Sensor Luss Rower Sensor Lung Sens Thermometer Long Sens Therm	155106 155106 1504100 15041001 15041001 15041001 15041001 1515166M3 MN81108 MN2296A MN2296A MN2296A MN22918 MN2296A MN22118 MN22418 MN22418 MN22418 MN224106 MN224106A	Amplifer Research Amplifer Research Amplifer Research Amplifer Research Anntisu Amplifer Research Antisu An
Ampillare Research 1501.00C	8T 43874 8T 40127 8T 50127 8T	G8T G8T G8T G1710/2025 G2T 7719/2025 G2T 778/2025 778/2025 778/2025 788/2025	N/A N/A N/A N/A Armal N/A Armal Bernal Bernal Bernal Bernal Bernal Bernal Bernal Armal	GST	Amplifier Amplifier Amplifier I/O Adaptor I/O Adaptor Power Meter Power Meter Public Power Sensor Public Power Sensor Microwace Peals Power Sensor Microwace Peals Power Sensor Microwace Peals Power Sensor Ada Communication Analyzer MT8821C Radio Communication Test Station USB Power Sensor	1551GB 1551GBM3 1551GBM3 1551GBM3 1551GBM3 100 1551GBM3 100 ML249BA ML249BA ML249BA MAZ411B MAZ449BA MR3231C MR3823C MR3822C MR3822C MR3822C MR3822C M	Amplifer Recenth Amplifer Recenth Amplifer Recenth Amplifer Recenth Amplifer Recenth Anritsu A
Ampillare Research 1501.00C	8T 350132 (2025 30832 30	C81 7/10/2025 C81 6/74/2025 C81 6/74/2025 7/8/2025	N/A Annual N/A Annual Biennial Biennial Biennial Biennial Biennial Biennial Annual	CST 7/19/2024 CST 674/2024 CST 674/2024 7/19/2024	Amplifier Amplifier Amplifier I/O Adaptor I/O Adaptor Power Meter Power Meter Public Power Sensor Public Power Sensor Microwace Peals Power Sensor Microwace Peals Power Sensor Microwace Peals Power Sensor Ada Communication Analyzer MT8821C Radio Communication Test Station USB Power Sensor	150A100C 1551G6M3 MN81108 MN81108 M12495A M12495A M12495A M242118 M242418 M242418 M242418 M242408 MT8821C MT8821C MT8821C MT8821C MT8000A MT8000A MT8000A M24105A M241	Amplifer Research Amplifer Research Amplifer Research Antisu Anti
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Aprelline	17025 39082 17025 17025 1840005 184005 1840005 1840005 1840005 1840005 1840005 1840005 1840005 1840005 1840005 1840005 1840005 1840005 184005 1840	7/19/2025 C8T C8T C8T C8T C9T C9T C9T C9T C9T C9T C9T C9T C9T C9	Annual N/A Annual Bennial Bennial Bennial Bennial Bennial Annual	7/19/2024 7/19/2024 CST CST CST 6/24/2024 7/19/2024 7/19/2024 10/21/2024 10/21/2024 10/21/2024 10/21/2024 10/21/2024 10/21/2024 10/21/2024 10/21/2024 11/21/2024	Ampfiller 1/O Adaptor 1/O Adaptor Power Meter Power Meter Power Meter Public Power Sensor Public Power Sensor Microwace Peak Power Sensor Microwace Peak Power Sensor Microwace Peak Power Sensor Microwace Peak Power Sensor Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Test Station USB Power Sensor	1551G6M3 MN81108 M1249GA M1249GA M1249GA M2429GA M242118 M2424118 M2424118 M2424118 M2424118 M2424118 M2424118 M2424118 M24240GA M78821C M7882	Amplifier Research Anotiss Ano
Annibus	8T 6251747881 6251747881 702025 14009025 70205 11039002 70205 11039002 70205 11039002 70205 11039002 70205 11039002 70205 11027503 70205 11027503 70205 120273 70205 130273 70205 120273 70205 120273 70205 120273 70205 120273 70205 120273 70	C81 6724/2025 778/2025 778/2025 778/2025 778/2025 778/2025 717/2025 75/2020 75/5/2025 75/2025	N/A Armal Bernial Bernial Bernial Bernial Bernial Armal	C8T 6F247024 7/R/0204 7/R/0204 7/R/0204 10/21/2024 4/R/0204 10/21/2024 4/R/0204 12/15/2023 5/5/5/2024 5/5/0204 5/5/0204 12/4/2023 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024	1/O Adaptor Power Meter Power Meter Power Meter Puter Power Sensor Puter Power Sensor Puter Power Sensor Microwace Peak Power Sensor Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Test Station Nadio Communication Test Station Nadio Communication Test Station Nadio Communication Test Station USB Power Sensor	MN81108 M12495A M12495A M12495A M124918 M242118 M242418 M242418 M242408 MT8821C MT8821C MT8821C MT8821C MT8000A MT8000A MT8000A MT8000A M24106A M24106	Anritsu Anrits
Anniss	1997 1997	674/2025 674/2025 7/8/2025 7/8/2025 7/8/2025 10/11/2025 10/11/2025 10/11/2025 11/11/2025	Annual Bennial Bennial Bennial Annual	6/24/2024 7/8/2024	Power Meter Power Meter Power Meter Public Power Sensor Public Power Sensor Microwace Peak Power Sensor Microwace Peak Power Sensor Microwace Peak Power Sensor Radio Communication Analyzer MT8921C Radio Communication Analyzer MT8921C Radio Communication Test Station USB Power Sensor	M124965 M124965 M124965 M02418 M02418 M02418 M02418 M02418 M02418 M78821C M788	Anritsu Anrits
Aprilists	70025 1039008 1039008 1039008 1039008 1039008 1037283 1039008 1037283 103905 1037283 10395	7/R/2025 7/R/2025 7/L/2025 1071/2075 1071/2075 1071/2075 12/15/2074 17/15/2075 12/15/2074 17/15/2075 12/15/207	Annual	7/8/2024 7/1/2024 7/1/2024 4/8/2024 4/8/2024 4/1/2024	Power Meter Pake Power Sensor Pake Power Sensor Pake Power Sensor Microwace Peak Power Sensor Microwace Peak Power Sensor Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Test Station Radio Communication Test Station USB Power Sensor USB Rower Sensor	MIL2495A MA2411B MA2411B MA2411B MA2412B MA24248A MT8821C MT8821C MT8821C MT8000A MT8000A MT8000A MA24106A MA24	Anritsu Control Corpany Control Company Control Company
Annitsu	70025 191105 70025 191105 70026 20020 11697 7002	7/I/2025 10/11/2025 10/11/2025 4/R/2025 4/R/2025 4/R/2025 5/R/2025 5/R/2025 5/R/2025 11/4/2024 4/R/2024 4/R/2026	Annual Bennial Bennial Bennial Bennial Bennial Bennial Annual Annual Annual Annual Annual Annual Annual Annual	7/1/2024 10/21/2024 4/8/2024 12/15/2023 12/15/2023 5/15/2024 12/15/2023 4/15/2024 7/9/2024 1/16/2024	Pulse Power Sensor Pulse Power Sensor Microwace Peak Power Sensor Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Test Station USB Power Sensor	MA24118 MA24118 MA2408A MT8821C MT8821C MT8821C MT8821C MT8821C MT8800A MT8900A MT8900A MT8900A MA24106A MA2410	Anritsu Control Company
Aprilss	1/2025 1027283 1027283 1025 11679 1025 11679 1025 6200011025 1027025 6202110047 10205 62021	10011/2025 4/8/2025 5/15/2024 5/15/2025 5/15/2025 5/15/2025 5/15/2025 5/15/2025 5/15/2025 5/15/2025 5/15/2025 5/15/2025 5/16/2025	Annual Biennial Biennial Biennial Biennial Biennial Annual	10/21/2024 4/8/2024 12/15/2023 5/15/2024 5/15/2024 5/10/2024 5/10/2024 12/4/2023 4/15/2024 1/10/2024	Pulse Power Sensor Microwace Peak Power Venoro Redio Communication Analyzer MT8821C Redio Communication Analyzer MT8821C Redio Communication Analyzer MT8821C Redio Communication Test Station Redio Communication Test Station USB Power Sensor USB Rower Sensor	MA2411B MA240BA MT8821C MT8821C MT8821C MT8821C MT8000A MT8000A MT8000A MA24106A MA24106A MA24106A MA24106A MA24106A PWR-4GHS 4052 4052 4052 4052 4052 4052 4052 4052	Anritsu Control Company Control Company Control Company Control Company
Aprilist	11679 1167	4/8/2025 12/15/2024 5/15/2025 5/16/2025	Annual Biennial Biennial Biennial Biennial Biennial Annual	4/8/2024 12/15/2023 5/15/2024 5/30/2024 4/10/2024 5/2/2024 12/4/2023 4/15/2024 1/10/2024 1/10/2024 2/27/2024 2/27/2024 2/27/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024	Microwace Peak Power Sensor Radio Communication Assiyee MT8321C Radio Communication Assiyee MT8321C Radio Communication Assiyee MT8321C Radio Communication Test Station Radio Communication Test Station USB Power Sensor	MAZ-4408A MT8821C MT8821C MT8821C MT8821C MT8000A MT8000A MT8000A MW2-4106A	Anritsu Control Company Control Company Control Company Control Company
Aprilitus	\$2,002.00.00.00.00.00.00.00.00.00.00.00.00.	12/15/2024 5/15/2025 5/15/2025 5/15/2025 5/15/2025 5/16/2025	Annual Biennial Biennial Biennial Biennial Biennial Biennial Annual	12/15/2023 5/15/2024 5/30/2024 4/10/2024 4/10/2024 4/15/2024 11/4/2023 4/15/2024 1/10/2024 2/27/2024 2/27/2024 2/27/2024 4/15/2024 2/16/2024 4/15/2024 4/15/2024 4/15/2024	Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Test Station Radio Communication Test Station Radio Communication Test Station USB Power Sensor USB Rower Sensor	MT8821C MT8821C MT8821C MT8821C MT8000A MT8000A MW24106A PWR-4GHS 4052 4052 4052 4052 4052 4052 4052	Anritsu Control Company Control Company Control Company Control Company
Annitsu	\$2,002.00.00.00.00.00.00.00.00.00.00.00.00.	12/15/2024 5/15/2025 5/15/2025 5/15/2025 5/15/2025 5/16/2025	Annual Biennial Biennial Biennial Biennial Biennial Annual	12/15/2023 5/15/2024 5/30/2024 4/10/2024 4/10/2024 4/15/2024 11/4/2023 4/15/2024 1/10/2024 2/27/2024 2/27/2024 2/27/2024 4/15/2024 2/16/2024 4/15/2024 4/15/2024 4/15/2024	Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Analyzer MT8821C Radio Communication Test Station Radio Communication Test Station Radio Communication Test Station USB Power Sensor USB Rower Sensor	MT8821C MT8821C MT8900A MT8900A MT8900A MT8900A MA24106A MA24106A MA24106A MA24106A PWR-4GHS 4052 4052 4052 4352	Anritsu Control Company Control Company Control Company Control Company
Annitsu MTBB21C	2025 62215004	\$15,7025 \$590,7025 \$190,7025 \$17,0025 \$12,0025 \$12,0025 \$12,0025 \$11,00205 \$10,00205 \$	Annual Biennial Biennial Biennial Biennial Biennial Annual Annual Annual Annual Annual Annual Annual Annual Annual	5/15/2024 5/30/2024 5/30/2024 4/10/2024 5/2/2024 1/19/2024 1/19/2024 2/27/2024 2/27/2024 2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024	Radio Communication Analyzer MT8921C Radio Communication Analyzer MT8921C Radio Communication Test Station Radio Communication Test Station USB Power Sensor	MT8821C MT8000A MT8000A MS000A MA24106A MA24106A MA24106A MA24106A PWR-46HS 4052 4052 4052 4352	Anritsu Anritsu Anritsu Anritsu Anritsu Anritsu Anritsu Mini-Circuits Control Company Control Company Control Company
Annitsu		4/10/2025 5/2/2025 5/2/2025 5/2/2025 4/15/2026 4/15/2025 1/10/2025 6/12/2025 1/27/2026 4/15/2025 4/15/2026 4/15/2025	Annual Biennial Biennial Biennial Biennial Biennial Annual Annual Annual Annual Annual Annual Annual Annual Annual	4/10/2024 5/2/2024 5/2/2023 4/15/2024 1/10/2024 1/10/2024 1/2/2024 2/27/2024 2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024	Radio Communication Test Station Radio Communication Test Station Radio Communication Test Station USB Power Sensor USB Rower Thermometer UITs Long Stem Thermometer UITs Long Stem Thermometer Thermof Loog Stem Thermometer Thermof Loog Stem Thermometer	MT8000A MT8000A MA24106A MA24106A MA24106A MA24106A PVW-4GHS 4052 4052 4052 4052 4052	Anritsu Anritsu Anritsu Anritsu Anritsu Anritsu Anritsu Mini-Circuits Control Company Control Company Control Company
Annisu	70205 6272337486 70204 15207020 70204 15207020 70205 1427728 70205 1427728 70205 1344557 70205 1247740 70205 12477	5/1/2025 12/4/2024 4/15/2025 7/9/2025 1/19/2025 6/12/2025 6/12/2026 2/27/2026 2/27/2026 1/15/2025 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 7/8/2025	Annual Annual Annual Annual Annual Annual Annual Biennial Biennial Biennial Biennial Annual Biennial Annual	5/2/2024 12/4/2023 4/15/2024 7/9/2024 1/10/2024 6/12/2024 2/27/2024 2/27/2024 2/27/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024	Radio Communication Test Station USB Power Sensor Usg Sens Thermometer Usg Stem Thermometer Usg Stem Thermometer Usg Stem Thermometer Usg Stem Thermometer Thermof Loog Hamidity Montor	MT8000A MA24106A MA24106A MA24106A MA24106A PWR-4GHS 4052 4052 4052 4352	Anritsu Anritsu Anritsu Anritsu Anritsu Anritsu Anritsu Control Company Control Company Control Company Control Company
Annisu	70205 6272337486 70204 15207020 70204 15207020 70205 1427728 70205 1427728 70205 1344557 70205 1247740 70205 12477	5/1/2025 12/4/2024 4/15/2025 7/9/2025 1/19/2025 6/12/2025 6/12/2026 2/27/2026 2/27/2026 1/15/2025 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 7/8/2025	Annual Annual Annual Annual Annual Annual Annual Biennial Biennial Biennial Biennial Annual Biennial Annual	5/2/2024 12/4/2023 4/15/2024 7/9/2024 1/10/2024 6/12/2024 2/27/2024 2/27/2024 2/27/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024 4/15/2024	Radio Communication Test Station USB Power Sensor Usg Sens Thermometer Usg Stem Thermometer Usg Stem Thermometer Usg Stem Thermometer Usg Stem Thermometer Thermof Loog Hamidity Montor	MT8000A MA24106A MA24106A MA24106A MA24106A PWR-4GHS 4052 4052 4052 4352	Anritsu Anritsu Anritsu Anritsu Anritsu Anritsu Anritsu Control Company Control Company Control Company Control Company
Anritsu	1200901 1200	12/4/2024 4/15/2025 7/9/2025 1/10/2025 6/12/2025 2/27/2026 2/27/2026 2/27/2026 2/27/2026 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 7/8/2025 7/8/2025	Annual Annual Annual Annual Annual Annual Annual Biennial Biennial Biennial Biennial Biennial Annual Biennial Annual Annual Annual Annual Annual Annual Annual	12/4/2023 4/15/2024 1/19/2024 1/19/2024 6/12/2024 2/27/2024 2/27/2024 2/27/2024 4/15/2024 4/15/2024 4/15/2024 4/11/2024	USB Power Sensor Log Scen Thermorneter Long Scen Thermorneter Usg Scen Thermorneter Uttra Long Scen Thermorneter Uttra Long Scen Thermorneter Thermorneter Uttra Long Scen Thermorneter	MA24106A MA24106A MA24106A MA24106A MA24106A PWR-4GHS 4052 4052 4052 4352	Anritsu Anritsu Anritsu Anritsu Anritsu Mini-Circuits Control Company Control Company Control Company
Aprilisis	122728 122728 122728 122728 122728 122728 1227205	4/15/2025 7/9/2025 1/10/2025 6/12/2025 6/12/2026 2/27/2026 2/27/2026 2/27/2026 4/15/2025 4/15/2026 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 7/8/2025	Annual Annual Annual Annual Annual Biennial Biennial Biennial Biennial Biennial Annual Biennial Annual Annual Annual Annual Annual Annual Annual	4/15/2024 7/9/2024 1/10/2024 6/12/2024 2/27/2024 2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 4/15/2024 4/11/2024	USB Power Sensor Long Stem Thermometer Long Stem Thermometer Long Stem Thermometer UITR Long Stem Thermometer UITR Long Stem Thermometer UITR Long Stem Thermometer	MA24106A MA24106A MA24106A PWR-4GHS 4052 4052 4052 4352	Anritsu Anritsu Anritsu Mini-Circuits Control Company Control Company
Auritius	70205 1244512 70205 13457 70205 1200170014 70206 20174014 70206 20174014 70206 20174014 70206 2017005 70206 201700	7/9/2025 1/10/2025 6/12/2025 2/27/2026 2/27/2026 2/27/2026 2/27/2026 1/15/2026 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 7/8/2025 7/8/2025	Annual Annual Annual Biennial Biennial Biennial Biennial Biennial Biennial Biennial Annual Annual Annual Annual Annual	7/9/2024 1/10/2024 6/12/2024 2/27/2024 2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 4/11/2024	USB Power Sensor USB Power Sensor USB Power Sensor Long Stem Thermometer ThermOclock/ Humidity Monitor	MA24106A MA24106A PWR-4GHS 4052 4052 4052 4352	Anritsu Anritsu Mini-Circuits Control Company Control Company Control Company
American	13445570 13445570 127025 13445570 127025 127027025 1	1/10/2025 6/12/2025 6/12/2025 2/27/2026 2/27/2026 1/15/2025 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 7/8/2025 7/8/2025	Annual Annual Biennial Biennial Biennial Biennial Biennial Biennial Biennial Biennial Annual Annual Annual	1/10/2024 6/12/2024 2/27/2024 2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 4/15/2024 4/11/2024	USB Power Sensor USB Power Sensor Long Stem Thermometer Long Stem Thermometer Long Stem Thermometer Ultra Long Stem Thermometer Ultra Long Stem Thermometer Therm/Clock/ Humidity Monitor	MA24106A PWR-4GHS 4052 4052 4052 4352	Anritsu Mini-Circuits Control Company Control Company Control Company
Monification Moni	(7025 120010700107001107001070011070011070011070011070011070011070011070011070011070011070001107	6/12/2025 2/27/2026 2/27/2026 2/27/2026 2/15/2026 4/15/2026 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 7/8/2025 7/8/2025	Annual Biennial Biennial Biennial Annual Biennial Biennial Biennial Annual Annual Annual	6/12/2024 2/27/2024 2/27/2024 2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 4/15/2024 4/11/2024	USB Power Sensor Long Stem Thermometer Long Stem Thermometer Long Stem Thermometer Ultra Long Stem Thermometer Therm./ Clock/ Humidity Monitor	PWR-4GHS 4052 4052 4052 4352	Mini-Circuits Control Company Control Company Control Company
Memis-Circuits Super-Residence Sit-270204 Annual Sit-2 Control Company 4652 Long Stem Thermometer 2/27/70024 Blenvial 2/27 Control Company 4652 Long Stem Thermometer 2/27/70024 Blenvial 2/27 Control Company 4652 Long Stem Thermometer 2/27/70024 Blenvial 2/27 Control Company 4652 Ultra Long Stem Thermometer 1/15/2024 Annual 1/15 Control Company 4652 Ultra Long Stem Thermometer 1/15/2024 Annual 1/15 Control Company 4650 Therm / Cock / Hamidity Monitor 4/15/2024 Blenvial 4/15 Control Company 4640 Therm / Cock / Hamidity Monitor 4/15/2024 Blenvial 4/15 Control Company 56679 Therm / Cock / Hamidity Monitor 4/15/2024 Blenvial 4/15 Control Company 56679 Therm / Cock / Hamidity Monitor 4/15/2024 Annual 4/15 Control Company 566799 Therm / Cock / Hamidity Monitor 4/15/2024 Annual 4/15 Control Company 566799 Therm / Cock / Hamidity Monitor 4/15/2024 Annual 4/15 Control Company 566799 Therm / Cock / Hamidity Monitor 4/15/2024 Annual 4/15 Control Company 566799 Therm / Cock / Hamidity Monitor 4/15/2024 Annual 4/15 Control Company 566799 Therm / Cock / Hamidity Monitor 4/15/2024 Annual 4/15 Cock Annual	240174346 240174346 240174346 240174346 240171039 2401	2/27/2026 2/27/2026 2/27/2026 1/15/2025 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 6/14/2025 7/8/2025 7/8/2025	Biennial Biennial Biennial Annual Biennial Biennial Biennial Biennial Annual Annual Annual	2/27/2024 2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 2/16/2024 4/11/2024	USB Power Sensor Long Stem Thermometer Long Stem Thermometer Long Stem Thermometer Ultra Long Stem Thermometer Therm./ Clock/ Humidity Monitor	4052 4052 4052 4352	Control Company Control Company Control Company
Control Company	240174346 240174346 240174346 240174346 240171039 2401	2/27/2026 2/27/2026 2/27/2026 1/15/2025 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 6/14/2025 7/8/2025 7/8/2025	Biennial Biennial Biennial Annual Biennial Biennial Biennial Biennial Annual Annual Annual	2/27/2024 2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 2/16/2024 4/11/2024	Long Stem Thermometer Long Stem Thermometer Long Stem Thermometer Ultra Long Stem Thermometer Therm./ Clock/ Humidity Monitor	4052 4052 4052 4352	Control Company Control Company Control Company
Control Company	240171096	2/27/2026 2/27/2026 1/15/2025 4/15/2026 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 6/14/2025 7/8/2025	Biennial Biennial Annual Biennial Biennial Biennial Annual Annual Annual	2/27/2024 2/27/2024 1/15/2024 4/15/2024 4/15/2024 2/16/2024 4/11/2024	Long Stem Thermometer Long Stem Thermometer Ultra Long Stem Thermometer Therm./ Clock/ Humidity Monitor	4052 4052 4352	Control Company Control Company
Control Company		2/27/2026 1/15/2025 4/15/2026 4/15/2026 4/15/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 6/14/2025 7/8/2025 7/9/2025	Biennial Annual Biennial Biennial Biennial Annual Annual Annual Annual	2/27/2024 1/15/2024 4/15/2024 4/15/2024 2/16/2024 4/11/2024	Long Stem Thermometer Ultra Long Stem Thermometer Therm./ Clock/ Humidity Monitor	4052 4352	Control Company
Control Company	7/2025 16058097 1 7/2025 240310282 2 7/2026 240310282 2 7/2026 240310282 2 7/2026 240310282 2 7/2026 240310282 2 7/2026 240310282 2 7/2025 83349971 7/2025 83349971 7/2025 4032497 7/2025	1/15/2025 4/15/2026 4/15/2026 4/15/2026 2/16/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 4/11/2025 7/8/2025 7/8/2025	Annual Biennial Biennial Biennial Annual Annual Annual	1/15/2024 4/15/2024 4/15/2024 2/16/2024 4/11/2024	Ultra Long Stem Thermometer Therm./ Clock/ Humidity Monitor	4352	control company
Control Company	240310280	4/15/2026 4/15/2026 2/16/2026 2/16/2026 4/11/2025 4/11/2025 2/16/2025 4/11/2025 4/11/2025 6/14/2025 7/8/2025 7/9/2025	Biennial Biennial Biennial Annual Annual	4/15/2024 4/15/2024 2/16/2024 4/11/2024	Therm./ Clock/ Humidity Monitor		Control Company
Control Company 56509 Therm./ Lock Humidity Monitor 4/15/2024 Blennial 4/15 Control Company 56579 Therm./ Lock Humidity Monitor 2/16/2024 Blennial 4/15 Testo 608-911 ALRAH-HYGIOMETER 4/11/2024 Annual 4/15 Annual 4/15 Testo 608-911 ALRAH-HYGIOMETER 4/11/2024 Annual 4/15 Annual	7/2026 240310282	4/15/2026 2/16/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 2/16/2025 4/11/2025 6/14/2025 7/8/2025 7/9/2025	Biennial Biennial Annual Annual Annual	4/15/2024 2/16/2024 4/11/2024			Control Company
Control Company	(2026 240140051) (2020 540140051) (2020	2/16/2026 4/11/2025 4/11/2025 4/11/2025 4/11/2025 2/16/2025 4/11/2025 6/14/2025 7/8/2025 7/9/2025	Biennial Annual Annual Annual	2/16/2024 4/11/2024	Therm./ Clock/ Humidity Monitor		Control Company
Testo		4/11/2025 4/11/2025 4/11/2025 2/16/2025 4/11/2025 6/14/2025 7/8/2025 7/9/2025	Annual Annual Annual	4/11/2024			
Testo		4/11/2025 4/11/2025 2/16/2025 4/11/2025 6/14/2025 7/8/2025 7/9/2025	Annual Annual				
Testo		4/11/2025 2/16/2025 4/11/2025 6/14/2025 7/8/2025 7/9/2025	Annual		ALARM-HYGROMETER		Testo
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Ministrope	\(\) \(\)	2/16/2025 4/11/2025 6/14/2025 7/8/2025 7/9/2025			ALARM-HYGROMETER	608-H1	Testo
Repsight Technologies	/2025 MY56470202 7025 MY48010233 7025 IS97 8T 1139 8T N/A /2025 31634 8T N/A 8T N/A /2025 UU13301538 8T N/A 8T N/A 8T N/A 8T N/A 8T 1226 8T 2050	6/14/2025 7/8/2025 7/9/2025	Triennial	2/16/2022	CD-6"ASX 6Inch Digital Caliper	500-196-30	Mitutovo
Agent	/2025 MY56470202 7025 MY48010233 7025 IS97 8T 1139 8T N/A /2025 31634 8T N/A 8T N/A /2025 UU13301538 8T N/A 8T N/A 8T N/A 8T N/A 8T 1226 8T 2050	6/14/2025 7/8/2025 7/9/2025	Annual	4/11/2024		N9020A	
Repting Technologies N9000A	2025 MY48010233 2025 1507 2025 1507 2025 1507 2025 2025 31634 2025 31634 2025 UU13301538 UU13301538 UU1320150 BT	7/8/2025 7/9/2025					
MCL BW-NEWS+ 1088 Attenuator 779/2024 Annual 778 MCL BW-NEWS+ 668 Attenuator CET N/A Mini-Circuits VLF-6000+ Low Pass Filter DC to 6000 MHz CET N/A Mini-Circuits VLF-6000+ Low Pass Filter DC to 6000 MHz 7/10/2024 Annual 778 Mini-Circuits NUF-1000+ Low Pass Filter DC to 6000 MHz CET N/A	12025 1507	7/9/2025					
Misc	BT 1139 BT N/A //2025 31634 BT N/A BT N/A BT N/A //2025 UU139101507 BT N/A BT N/A BT N/A //2025 UU19201507 BT N/A BT 1226 BT 2050						
Mini-Circuits	BT N/A //2025 31634 BT N/A BT N/A //2025 UU13301538 //2025 UU19201507 BT N/A BT 1226 BT 2050	CBT					
Mini-Circuits	/2025 31634 BT N/A BT N/A (2025 UU13301538 (2025 UU19201507 BT N/A BT 1226 BT 2050						
Mini-Circuits NW-1200+	BT N/A BT N/A V/2025 UU13301538 V/2025 UU19201507 BT N/A BT 1226 BT 2050	CBT	N/A	CBT	Low Pass Filter DC to 6000 MHz	VLF-6000+	Mini-Circuits
Mini-Circuits	BT N/A 1/2025 UU13301538 1/2025 UU19201507 BT N/A BT 1226 BT 2050	7/10/2025	Annual	7/10/2024	Low Pass Filter DC to 6000 MHz	VLF-6000+	Mini-Circuits
Mini-Circuits	BT N/A 1/2025 UU13301538 1/2025 UU19201507 BT N/A BT 1226 BT 2050	CBT	N/A	CBT	DC to 18 GHz Precision Fixed 20 dB Attenuator	BW-N20W5+	Mini-Circuits
Mini-Circuits NILP-1200+	/2025 UU13301538 /2025 UU19201507 IBT N/A IBT 1226 IBT 2050	CBT					
Mini-Circuits NIP-2950+	//2025 UU19201507 BT N/A BT 1226 BT 2050	7/10/2025					Mini-Circuits
Mini-Circuits	BT N/A BT 1226 BT 2050				Low Para Filter DC to 2000 Mile		
Mini-Circuits SW-N20W5 Power Alternator CBT N/A CM	BT 1226 BT 2050						
Mini-Circuis ZUDCID-81-5+ Directional Coupler CBT N/A C	BT 2050						
Mini-Circuits		CBT					
Narda		CBT					
Narida		7/9/2025			Directional Coupler		
MCI		CBT					
Keryight Technologies 8710-1765 Torque Wirench 427,0004 Biennial 427,0004 Sekolon NC-100 Torque Wirench 427,0004 Biennial 427,0004 Rodiné & Schwarz CMV500 Wideband Radio Communication Tester 147,0004 Annual 1,11,8004 Rodiné & Schwarz CMV500 Wideband Radio Communication Tester 178,0004 Annual 1,11,8004 Rodiné & Schwarz CMV500 Wideband Radio Communication Tester 178,10024 Annual 1,11,8004 Rodiné & Schwarz CMV500 Wideband Radio Communication Tester 178,10024 Annual 1,11,8004 SPEAG DAX-3.5 Forsahe Chierci Assessment RI 178,12003 Annual 1,11,8002 SPEAG DAM-3.5 Forsahe Chierci Assessment RI 178,12003 Annual 11,11,8003 SPEAG MAMA Modulation and Audio Interference Analyzer N/A N/A N/A SPEAG MAMA Modulation and Audio Interference Analyzer N/A N/A N/A SPEAG DAM-12 Modulation and	BT 120	CBT	N/A	CBT	Attenuator (3dB)	BW-S3W2	Narda
Seekonk NC-100 Torque Wrench 47/2004 Bleminal 4/2 Robids & Kuhwarz CMW0500 Wideband Radio Communication Tester 1/10/20024 Annual 3/11 Robids & Kuhwarz CMW0500 Wideband Radio Communication Tester 7/8/2004 Annual 3/11 Robids & Kuhwarz CMW0500 Wideband Radio Communication Tester 1/10/2004 Annual 3/11 Robids & Kuhwarz CMW0500 Wideband Radio Communication Tester 1/10/2004 Annual 3/11 Robids & Kuhwarz CMW0500 Wideband Radio Communication Tester 1/10/2004 Annual 3/11 SPEAG DAS-1.5 Deletertic Assessment XI 1/11/2004 Annual 3/11 SPEAG DAS-3.5 Portable Deletertic Assessment XI 7/8/2004 Annual 3/11 SPEAG DAS-3.5 Portable Deletertic Assessment XI 7/8/2004 Annual 3/11 SPEAG DAS-3.5 Portable Deletertic Assessment XI 7/8/2004 Annual 3/11 SPEAG DAS-3.5 Deletertic Musication and Acido Interference Analyser N/A N/A N/A N/A SPEAG DAS-3.5 Deletertic Musication and Acido Interference Analyser N/A N/A N/A N/A SPEAG DAS-3.5 Deletertic Musication and Acido Interference Analyser N/A	2025 1608	7/9/2025	Annual	7/9/2024	Attenuator (3dB)	BW-N3W5+	MCL
Seekonk NC-100 Torque Wrench 47/2004 Bleminal 4/2 Robote & Khowarz CMW500 Wideband Rabio Communication Tester 1/10/2004 Annual 3/11 Robote & Khowarz CMW500 Wideband Rabio Communication Tester 7/8/2004 Annual 3/11 Robote & Khowarz CMW500 Wideband Rabio Communication Tester 3/19/2004 Annual 3/18 Robote & Khowarz CMW500 Wideband Rabio Communication Tester 3/19/2004 Annual 3/18 Robote & Khowarz CMW500 Wideband Rabio Communication Tester 3/19/2004 Annual 3/11 SPEAG DAK-5 Deleteric Kosessment KI 3/17/2004 Annual 3/11 SPEAG DAK-5 Portable Deleteric Resessment KI 7/8/2004 Annual 3/11 SPEAG DAK-5 Portable Deleteric Resessment KI 7/8/2004 Annual 3/18 SPEAG DAK-5 DELeteric Resessment KI 3/18/2003 Annual 3/18 SPEAG DAK-5 DELeteric Resessment KI 3/18/2003 Annual 3/18 SPEAG DAK-5 DELeteric Resessment KI 3/18/2003 Annual 3/18 SPEAG DESSV2 SES MIS SAB Dipole 4/18/2004 Annual 3/18 SPEAG DISSV2 SES MIS SAB Dipole 3/18/2004 Triennial 3/18 SPEAG DISSV2 3/19/2004 3/19/20	2026 821000633	4/2/2026	Riennial	4/2/2024	Torque Wrench	8710-1765	Keysight Technologies
Robels & Schwarz CMW500 Wideband Rabio Communication Tester 11/10/2024 Annual 1/10 Robels & Schwarz CMW500 Wideband Rabio Communication Tester 1/10/2024 Annual 1/12 Robels & Schwarz CMW500 Wideband Rabio Communication Tester 1/10/2024 Annual 1/12 SPEAG DAX-15 Diesetric Assessment RR 1/11/20/203 Annual 1/12 SPEAG DAX-15 Diesetric Assessment RR 1/17/20/203 Annual 1/17 SPEAG DAX-15 Diesetric Assessment RR 1/17/20/203 Annual 1/17 SPEAG MAIA Modulation and Audio Interference Analyser N/A N/A N/A SPEAG MAIA Modulation and Audio Interference Analyser N/A N/A N/A SPEAG DAX-12 Diesetric Assessment RE (MM*: -30/12) 1/17/20/20 Annual 1/17 SPEAG DAX-12 Diesetric Assessment RE (MM*: -30/12) 1/17/20/20 Annual 1/17 SPEAG DAX-12 Diesetric Assessment RE (MM*: -30/12) 1		4/2/2026			Torque Wrench		Seekonk
Robbe & Schwarz CMW500 Wideband Rabio Communication Tester 78/2024 Annual 3/8 Robbe & Schwarz CMW500 Wideband Rabio Communication Tester 1/12/2024 Annual 3/11 Robbe & Schwarz CMW500 Wideband Rabio Communication Tester 1/11/2024 Annual 3/11 SPEAG DAS 3.5 Delestertic Resessment RE 1/11/2024 Annual 3/11 SPEAG DAS 3.5 Portable Dielectric Resessment RE 7/8/2024 Annual 3/18 SPEAG MAMA Modulation and Audio Interference Analyser N/A <		1/10/2025					
Robie & Schwarz CMW500 Wideband Rabio Communication Tester 11/10/2024 Annual 11/17 SPEAG DAX-5.5 Dielectric Assessment RI 11/13/20023 Annual 11/17 SPEAG DAX-5.5 Dielectric Assessment RI 11/13/20023 Annual 11/17 SPEAG DAX-5.5 Dielectric Assessment RI 1/17/13/20023 Annual 11/17 SPEAG MMA Modulation and Audio Interference Analyzer N/A N/A N/A SPEAG MMA Modulation and Audio Interference Analyzer N/A N/A N/A SPEAG MAIA Modulation and Audio Interference Analyzer N/A N/A N/A SPEAG DAX-12 Dielectric Assessment RIE (AMR*: 3-2012) 3/11/2023 Annual 1/15 SPEAG DTSOV3 TSO Mel's SAR Diople 4/17/2023 Annual 1/15 SPEAG DTSOV3 TSO Mel's SAR Diople 1/17/2003 Annual 1/16 SPEAG DTSOV2 1750 Mel's SAR Diople 1/17/2004 Trievnial 1/18	2025 166818	7/8/2025				CMW300	
Robbe 8 Schwarz CAW/S00 Wideband Rabio Communication Tester 1/1/1/024 Annual 1/1/1/024 SPEAG DAK-5.5 Dielectric Assessment KI 1/1/1/1/024 Annual 1/1/1/024 SPEAG DAKS-3.5 Portable Dielectric Assessment KI 7/R/0044 Annual 1/1/1/024 SPEAG MAMA Modulation and Audio Interference Analyser N/A N/A N/A SPEAG MAMA Modulation and Audio Interference Analyser N/A N/A<		1/10/2025					Konde & Scriwarz
SPEAG							
SPEAG		1/11/2025					
SPEAG		11/13/2024					
SPEAG MAIA Modulation and Audio Interference Analyzer N/A N/A <td></td> <td>7/8/2025</td> <td></td> <td></td> <td></td> <td></td> <td></td>		7/8/2025					
SPEAG MAIA Modulation and Audio Interference Analyzer N/A N/A <td></td> <td>N/A</td> <td></td> <td></td> <td>Modulation and Audio Interference Analyzer</td> <td></td> <td>SPEAG</td>		N/A			Modulation and Audio Interference Analyzer		SPEAG
SPEAG MAIA Modulation and Audio Interference Analyser IV/A N/A N/A PA SPEAG DM-12 Dieselectric Assessment E(AMH*: 3601) 3/11/2023 Annual 3/11/2023 Annual 3/11/2023 Annual 11/5 SPEAG CLA-13 Confired Loop Anterwa 11/9/2023 Annual 11/5 SPEAG D550V2 RSS Met SAR Dipobe 4/7/2024 Annual 4/8 SPEAG D1759V2 1750 Met SAR Dipobe 1/9/2024 Annual 4/8 SPEAG D1759V2 1750 Met SAR Dipobe 1/9/2024 Triennial 1/8 SPEAG D1590V2 1500 Met SAR Dipobe 1/2/1/2024 Triennial 1/8 SPEAG D1900V2 1500 Met SAR Dipobe 8/9/2022 Triennial 5/8 SPEAG D1900V2 1500 Met SAR Dipobe 4/12/2024 Annual 5/8 SPEAG D1900V2 2500 Met SAR Dipobe 2/8/2024 Annual 2/8 SPEAG D250V2 2600 Met SAR Dipobe 2/8/2024 <		N/A	N/A	N/A	Modulation and Audio Interference Analyzer	MAIA	SPEAG
SPEAG DAK-12 Dielectric Assessment RE (MMR - 36Hz) 3/1/2024 Annual 3/1/2024 SPEAG CLA-13 Confined Loop Anterwa 11/9/2023 Annual 11/5 SPEAG D750V3 750 MHz SAR Dipole 2/7/2024 Annual 12/7 SPEAG D1350V2 B13 MHz SAR Dipole 1/9/2023 Annual 4/4/2023 SPEAG D1750V2 1750 MHz SAR Dipole 10/2/2021 Triennial 10/2 SPEAG D1500V2 1750 MHz SAR Dipole 2/21/2022 Triennial 10/2 SPEAG D1500V2 1000 MHz SAR Dipole 2/21/2022 Triennial 2/2 SPEAG D1500V2 1000 MHz SAR Dipole 4/12/2024 Triennial 4/1 SPEAG D1500V2 1000 MHz SAR Dipole 4/12/2024 Triennial 4/1 SPEAG D350V2 2500 MHz SAR Dipole 2/1/2024 Annual 4/1 SPEAG D350V2 2500 MHz SAR Dipole 2/1/2024 Annual 2/8 SPEAG D350V2 250		N/A			Modulation and Audio Interference Analyzer	MAIA	
SPEAG CLA-13 Confined Loop Antenna 113/2023 Annual 11/7 SPEAG D750791 750 MHz SAR Dispole 17/70204 Annual 17/7 SPEAG D835V2 B15 MHz SAR Dispole 48/2024 Annual 4/8 SPEAG D1750V2 1175 MHz SAR Dispole 16/27/2021 Triennial 10/2 SPEAG D1950V2 1750 MHz SAR Dispole 1/2/1/2022 Triennial 1/8 SPEAG D1950V2 1900 MHz SAR Dispole 8/8/2022 Triennial 1/8 SPEAG D1950V2 1900 MHz SAR Dispole 8/8/2022 Triennial 8/8 SPEAG D1950V2 1900 MHz SAR Dispole 8/8/2022 Triennial 1/8 SPEAG D1950V2 1900 MHz SAR Dispole 8/8/2024 Annual 2/8 SPEAG D260V2 2600 MHz SAR Dispole 7/8/2024 Annual 2/8 SPEAG D260V2 2600 MHz SAR Dispole 6/4/2024 Annual 4/4 SPEAG D260V2 2600 MHz SAR Dispole <td>/2025 1102</td> <td>3/11/2025</td> <td></td> <td>3/11/2024</td> <td>Dielectric Assessment Kit (4MHz - 3GHz)</td> <td>DAK-12</td> <td>SPEAG</td>	/2025 1102	3/11/2025		3/11/2024	Dielectric Assessment Kit (4MHz - 3GHz)	DAK-12	SPEAG
SPEAG		11/9/2024					
SPEAG D835V2 B15 Mer SAR Dipole 4/R/D024 Annual 4/R SPEAG D175V92 1750 Mer SAR Dipole 10/22/2001 Triennial 10/22/2001 Triennial 10/25/2001 1750 Mer SAR Dipole 1/R/D024 Triennial 1/R/D025 1750 Mer SAR Dipole 1/R/D024 Triennial 1/R/D025 Triennial 1/R/D025 Triennial 1/R/D025 Triennial 1/R/D025 Triennial 5/R/D025 Triennial 5/R/D025 Annual 4/R/D026 Annual 4/R/D026 Annual 2/R/D026 Annual 2/R/D026 Annual 2/R/D026 Annual 2/R/D026 Annual 2/R/D026 Annual 4/R/D026 Annual 4/R/D026 Annual 4/R/D026 Annual 6/R 5/R/D026 Annual 6/R 5/R 5/R 6/R 5/R Annual 6/R 6/R Annual 6/R Annu		2/7/2025					
SPEAG D1750V2 1750 Met SAR Dipole 1072/2021 Triennial 107. SPEAG D1750V2 1750 Met SAR Dipole 1/8/2024 Triennial 1/8 SPEAG D1900V2 1900 Met SAR Dipole 2/12/1002 Triennial 2/21 SPEAG D1900V2 1900 Met SAR Dipole 8/8/2022 Triennial 2/21 SPEAG D1500V2 1900 Met SAR Dipole 4/12/2024 Annual 4/11 SPEAG D1500V2 2450 Met SAR Dipole 2/8/2024 Annual 4/1 SPEAG D2500V2 2600 Met SAR Dipole 8/7/2024 Annual 4/1 SPEAG D3500V2 2600 Met SAR Dipole 6/14/2024 Annual 4/1 SPEAG D350V2 2600 Met SAR Dipole 6/14/2024 Annual 4/1 SPEAG D350V2 2600 Met SAR Dipole 6/14/2024 Annual 4/1 SPEAG D350V2 2600 Met SAR Dipole 6/14/2024 Annual 4/1 SPEAG D56/01V2 5/14/204 Ann		4/8/2025			835 MHz SAR Dinole		
SPEAG D175/02 1750 Met SAR Dipole 1/8/0204 Triennial 1/8 SPEAG D1900/V2 1900 Met SAR Dipole 1/21/2022 Triennial 2/21/2022 SPEAG D1900/V2 1900 Met SAR Dipole 8/8/0022 Triennial 8/8 SPEAG D1900/V2 1900 Met SAR Dipole 4/12/0204 Annual 4/12/2024 SPEAG D2509/V2 2450 Met SAR Dipole 7/8/0204 Annual 2/8 SPEAG D2509/V2 2600 Met SAR Dipole 8/7/10204 Annual 4/2 SPEAG D2509/V2 2600 Met SAR Dipole 6/14/2024 Annual 6/14 SPEAG D5609/V2 5/6 W AR Dipole 6/14/2024 Annual 6/14 SPEAG D5609/V2 5/6 W AR Dipole 6/14/2024 Annual 6/14		10/22/2024			1750 MHz SAR Dinole	D1750V2	
SPEAG D1900V2 1900 MHz SAR Dipole 2/12/10022 Triennial 2/21 SPEAG D1900V2 1900 MHz SAR Dipole 8/8/2002 Triennial 2/21 SPEAG D1900V2 1900 MHz SAR Dipole 4/12/2004 Acnual 4/12 SPEAG D1900V2 2850 MHz SAR Dipole 2/8/2004 Acnual 2/8 SPEAG D3500V2 2600 MHz SAR Dipole 8/7/2004 Acnual 4/1 SPEAG D3500V2 2600 MHz SAR Dipole 6/14/2004 Acnual 4/1 SPEAG D350V2 2600 MHz SAR Dipole 6/14/2004 Acnual 4/1 SPEAG D56/V2 5/6/15/AR Dipole 6/14/2004 Acnual 4/1		1/8/2025					
SPEAG 1300/072 1900 MHz SAB Dipole 8/R/2022 Trerenia 8/R SPEAG 1350/072 1900 MHz SAB Dipole 4/12/2022 Tremail 4/12/2024 SPEAG 0.255/072 2450 MHz SAB Dipole 7/R/2024 Annual 2/R SPEAG 0.255/072 2450 MHz SAB Dipole 7/R/2024 Annual 2/R SPEAG 0.255/072 2600 MHz SAB Dipole 8/R/2024 Annual 4/R SPEAG 0.255/072 2500 MHz SAB Dipole 6/14/2024 Annual 4/R SPEAG 0.556/072 5 GHz SAB Dipole 6/14/2024 Annual 4/R		2/21/2025					
SPEAG D1900V2 1900 Netr SAR Dipote 4172/2024 Annual 4/12 SPEAG D2650V2 2450 Metr SAR Dipote 2/8/2024 Annual 4/1 SPEAG D3650V2 2600 Metr SAR Dipote 8/7/2024 Annual 4/1 SPEAG D3650V2 2600 Metr SAR Dipote 6/14/2024 Annual 6/1 SPEAG D360V2 2600 Metr SAR Dipote 6/14/2024 Annual 6/1 SPEAG D56/V2 5 6/15/48 RD Dipote 4/8/2024 Annual 4/1			HICHHIII				
SPEAG D.355/02 2450 Met SAB Dipole 1/8/0204 Annual 2/8 SPEAG D.3500/02 2600 Met SAB Dipole 8/17/0204 Annual 3/7 SPEAG D.3500/02 2600 Met SAB Dipole 6/14/0204 Annual 6/14 SPEAG D.5500/02 2600 Met SAB Dipole 6/14/0204 Annual 6/14 SPEAG DSG01/02 5 GH SAB Dipole 4/9/0204 Annual 4/9		8/8/2025					
SPEAG D2600V2 2600 MHz SAR Dipole 8/7/2024 Annual 8/7 SPEAG D2600V2 2600 MHz SAR Dipole 6/14/2024 Annual 6/11 SPEAG D560HzV2 5 GHz SAR Dipole 4/9/2024 Annual 4/9		4/12/2025					
SPEAG D2600V2 2600 MHz SAR Dipole 6/14/2024 Annual 6/14 SPEAG D5GHzV2 5 GHz SAR Dipole 4/9/2024 Annual 4/9		2/8/2025					
SPEAG DSGHzV2 5 GHz SAR Dipole 4/9/2024 Annual 4/9		8/7/2025			2600 MHz SAR Dipole		
SPEAG DSGHzV2 5 GHz SAR Dipole 4/9/2024 Annual 4/9		6/14/2025	Ailliadi		2600 MHz SAR Dipole		
		4/9/2025	Annual		5 GHz SAR Dipole		SPEAG
SPEAG D6.5GHzV2 6.5 GHz SAR Dipole 2/22/2024 Annual 2/22	/2025 1111	2/22/2025	Annual	2/22/2024	6.5 GHz SAR Dipole	D6.5GHzV2	SPEAG
	2025 1007	3/4/2025	Annual	3/4/2024		D8GHzV2	SPEAG
SPEAG DAE4 Dasy Data Acquisition Electronics 9/10/2024 Annual 9/10	/2025 1364	9/10/2025	Annual	9/10/2024	Dasy Data Acquisition Electronics	DAE4	SPEAG
SPEAG DAE4 Dasy Data Acquisition Electronics 1/16/2024 Annual 1/16	/2025 1466	1/16/2025			Dasy Data Acquisition Electronics		
		4/18/2025			Dasy Data Acquisition Electronics		
		2/9/2025			Dasy Data Acquisition Electronics		
		5/8/2025					
		3/12/2025					
		3/12/2025	Annual				
			Annual				
SPEAG DAE4 Dasy Data Acquisition Electronics 5/8/2024 Annual 5/8	2025 728	5/8/2025			Dasy Data Acquisition Electronics		
SPEAG DAE4 Dasy Data Acquisition Electronics 1/16/2024 Annual 1/16	/2025 1530	1/16/2025					
		9/11/2025					
		1/16/2025	Annual	1/16/2024			
SPEAG EX3DV4 SAR Probe 2/9/2024 Annual 2/9	2025 7640	2/9/2025	Annual	2/9/2024	SAR Probe	EX3DV4	SPEAG
		5/10/2025					
		5/10/2025 3/8/2025					
	77075 7719	3/8/2025		4/17/2024		EXSDVA	
		3/8/2025 4/17/2025		4/1//2024		EX3DV4	SPEAG
	/2025 7659	3/8/2025	Annual	E/40/2024		EX3DV4	SPEAG SPEAG

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

Note: All equipment was used solely within its respective calibration period.

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MEASUREMENT UNCERTAINTIES

Applicable for SAR measurements < 6GHz:

e for SAR measurements < 6GHZ:									
а	b	С	d	e=	f	g	h =	i =	k
				f(d,k)			c x f/e	c x g/e	
	IEEE	Tol.	Prob.		Ci	Ci	1gm	10gms	
Uncertainty Component	1528 Sec.	(± %)	Dist.	Div.	1gm	10 gms	u _i	u _i	v _i
	000.	, ,					(± %)	(± %)	
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	Ν	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E2.3	2	R	1.73	1	1	1.2	1.2	∞
Linearity	E.2.4	0.3	Ν	1	1	1	0.3	0.3	∞
System Detection Limits	E.2.4	0.25	R	1.73	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.73	1	1	2.8	2.8	∞
Readout Bectronics	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E.2.7	8.0	R	1.73	1	1	0.5	0.5	∞
Integration Time	E2.8	2.6	R	1.73	1	1	1.5	1.5	8
RF Ambient Conditions - Noise	E6.1	3	R	1.73	1	1	1.7	1.7	8
RF Ambient Conditions - Reflections	E6.1	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	0.8	R	1.73	1	1	0.5	0.5	8
Probe Positioning w/ respect to Phantom	E6.3	6.7	R	1.73	1	1	3.9	3.9	8
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.73	1	1	2.3	2.3	8
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.73	1	1	2.9	2.9	∞
SAR Scaling	E6.5	0	R	1.73	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E3.4	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E3.4	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)	1		RSS	I .	1	ı	12.2	12.0	191
Expanded Uncertainty			k=2				24.4	24.0	
(95% CONFIDENCE LEVEL)									

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

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Applicable for SAR measurements > 6GHz:

Applicable for SAR measurements > 6GHz:								,	
а	b	С	d	e=	f	g	h =	i =	k
				f(d,k)			c x f/e	c x g/e	
	IEEE	Tol.	Prob.		Ci	Ci	1gm	10gms	
Uncertainty Component	1528 Sec.	(± %)	Dist.	Div.	1gm	10 gms	u _i	u _i	v _i
							(± %)	(± %)	
Measurement System									
Probe Calibration	E.2.1	9.3	N	1	1	1	9.3	9.3	∞
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	1.73	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	1.73	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.73	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	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.73	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.73	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.73	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	1.73	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.73	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Snape & Thickness tolerances)	E3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E3.4	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E3.4	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E3.2	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)	1		RSS	l .	1		13.8	13.6	191
Expanded Uncertainty			k=2				27.6	27.1	
(95% CONFIDENCE LEVEL)									
								•	

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

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Applicable for Power Density Measurements:

а	b	С	d	е	f =	g
					c x f/e	
	Unc.	Prob.			u _i	
Uncertainty Component	(± dB)	Dist.	Div.	c _i	(± dB)	V _i
Measurement System						
Calibration	0.49	N	1	1	0.49	∞
Probe Correction	0.00	R	1.73	1	0.00	∞
Frequency Response	0.20	R	1.73	1	0.12	∞
Sensor Cross Coupling	0.00	R	1.73	1	0.00	∞
Isotropy	0.50	R	1.73	1	0.29	∞
Linearity	0.20	R	1.73	1	0.12	∞
Probe Scattering	0.00	R	1.73	1	0.00	∞
Probe Positioning offset	0.30	R	1.73	1	0.17	∞
Probe Positioning Repeatability	0.04	R	1.73	1	0.02	∞
Sensor Mechanical Offset	0.00	R	1.73	1	0.00	∞
Probe Spatial Resolution	0.00	R	1.73	1	0.00	∞
Field Impedence Dependance	0.00	R	1.73	1	0.00	∞
Amplitude and Phase Drift	0.00	R	1.73	1	0.00	∞
Amplitude and Phase Noise	0.04	R	1.73	1	0.02	∞
Measurement Area Truncation	0.00	R	1.73	1	0.00	∞
Data Acquisition	0.03	N	1	1	0.03	∞
Sampling	0.00	R	1.73	1	0.00	∞
Field Reconstruction	2.00	R	1.73	1	1.15	∞
Forward Transformation	0.00	R	1.73	1	0.00	∞
Power Density Scaling	0.00	R	1.73	1	0.00	∞
Spatial Averaging	0.10	R	1.73	1	0.06	8
System Detection Limit	0.04	R	1.73	1	0.02	8
Test Sample Related						
Probe Coupling with DUT	0.00	R	1.73	1	0.00	∞
Modulation Response	0.40	R	1.73	1	0.23	8
Integration Time	0.00	R	1.73	1	0.00	8
Response Time	0.00	R	1.73	1	0.00	8
Device Holder Influence	0.10	R	1.73	1	0.06	8
DUT alignment	0.00	R	1.73	1	0.00	8
RF Ambient Conditions	0.04	R	1.73	1	0.02	8
Ambient Reflections	0.04	R	1.73	1	0.02	8
Immunity/Secondary Reception	0.00	R	1.73	1	0.00	∞
Drift of DUT	0.21	R	1.73	1	0.12	8
Combined Standard Uncertainty (k=1)		RSS			1.34	∞
Expanded Uncertainty		k=2			2.68	
(95% CONFIDENCE LEVEL)						

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