FCC SAR TEST REPORT

Report No.: STS1811022H01

Issued for

Winmate Inc.

9F,No.111-6,shing-De Rd., San-Chung District, New Taipei City 241, Taiwan

Product Name:	Rugged Tablet PC
Brand Name:	Winmate
Model Name:	M101P
Series Model:	M101PXXXXXXXXX (where x can be A-Z,a-z,0-9,"-",Blank or Slash)
FCC ID:	PX9M101P
Test Standard:	ANSI/IEEE Std. C95.1
	FCC 47 CFR Part 2 (2.1093)
	IEEE 1528: 2013
Max. Report SAR (1g):	Body:1.432 W/kg

Shenzhen STS Test Services Co., Ltd.
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Fuyong Street, Bao'an District, Shenzhen, Guangdong,China
TEL: +86-755 3688 6288 FAX: +86-755 3688 6277 E-mail:sts@stsapp.com

Test Report Certification

Applicant's name ..... :	Winmate Inc.
Address ..... :	9F,No.111-6,shing-De Rd., San-Chung District, New Taipei City 241, Taiwan
Manufacture's Name ..... :	Winmate Inc.
Address ..... :	9F,No.111-6,shing-De Rd., San-Chung District, New Taipei City 241, Taiwan

Product description

Product name ..... :	Rugged Tablet PC
Brand name ..... :	Winmate
Model name ..... :	M101P
Series Model..... :	M101PXXXXXXXXXX (where x can be A-Z,a-z,0-9, "-" ,Blank or Slash)
Standards..... :	ANSI/IEEE Std. C95.1-1992 FCC 47 CFR Part 2 (2.1093) IEEE 1528: 2013

The device was tested by Shenzhen STS Test Services Co., Ltd. in accordance with the measurement methods and procedures specified in KDB 865664 The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Date of Test..... :	
Date (s) of performance of tests..... :	13 Nov. 2018~09 Dec. 2018
Date of Issue..... :	11 Dec. 2018
Test Result..... :	**Pass**

Testing Engineer **:** Aaron Bu

(Aaron Bu)

Technical Manager **:** Jason Lu

(Jason Lu)

Authorized Signatory **:** Vita Li

(Vita Li)

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	03 Dec. 2018	STS1811022H01	ALL	Initial Issue
Note: **Format version** of the report -V01				

1.General Information

Environmental evaluation measurements of specific absorption rate (SAR) distributions in emulated human head and body tissues exposed to radio frequency (RF) radiation from wireless portable devices for compliance with the rules and regulations of the U.S. Federal Communications Commission (FCC).

1.1 EUT Description

Product Name	Rugged Tablet PC		
Brand Name	Winmate		
Model Name	M101P		
Series Model	M101PXXXXXXXXX (where x can be A-Z,a-z,0-9, “-” ,Blank or Slash)		
FCC ID	PX9M101P		
Model Difference	Only for marketing purpose		
Adapter	Input: AC 100-240V,2000mA, 50-60 Hz Output: DC 19V,3420mA		
Battery	Rated Voltage: 7.4V; Charge Limit: 8.4V; Capacity: 5140mAh		
Device Category	Portable		
Product stage	Production unit		
RF Exposure Environment	General Population / Uncontrolled		
Hardware Version	M101P-300		
Software Version	M101P_M6E_50.1.17		
Frequency Range	WCDMA Band II:1852.4~1907.6MHz WCDMA Band IV:1712.4~1752.6 MHz WCDMA Band V:826.4~846.6MHz LTE Band 2:1850.7~1909.3MHz LTE Band 4:1710.7~1754.3MHz LTE Band 5:824.7~848.3MHz LTE Band 7:2502.5~2567.5MHz LTE Band 12:699.7~715.3MHz LTE LTE Band 13:779.5~784.5MHz LTE Band 25:1850.7~1914.3MHz	LTE Band 26:814.7~848.3MHz LTE Band 30:2307.5~2312.5MHz LTE Band 41:2498.5~2687.5MHz WLAN802.11b/g/n(HT20):2412~2462MHz WLAN 802.11a/n/ac(HT20/40/80): 5150~5250 MHz; Bluetooth:2402~ 2480MHz GPS: 1575.42MHz NFC: 13.56 MHz	
Max. Reported SAR(1g): (Limit:1.6W/kg)	Band	Mode	Body Worn and Hotspot(W/kg)
	PCB	WCDMA Band II	0.678
	PCB	WCDMA Band IV	0.578
	PCB	WCDMA Band V	0.041
	PCB	LTE Band 4	1.432
	PCB	LTE Band 7	0.474
	PCB	LTE Band 12	0.232
	PCB	LTE Band 13	0.139
	PCB	LTE Band 25	0.207
	PCB	LTE Band 26	0.024
	PCB	LTE Band 30	0.254
	PCB	LTE Band 41	1.086
	DTS	2.4G WLAN ANT A	0.278
	DTS	2.4G WLAN ANT B	0.062
	DTS	2.4G WLAN ANT A+B	0.295
	NII	5.2G WLAN ANT A	0.088
	NII	5.2G WLAN ANT B	0.193
	NII	5.2G WLAN ANT A+B	0.080
	DSS	Bluetooth	0.046
1-g Sum SAR			1.578

FCC Equipment Class	Licensed Portable Transmitter (PCE) Part 15 Spread Spectrum Transmitter (DSS) Digital Transmission System (DTS) Unlicensed National Information Infrastructure TX (NII)
Operating Mode:	WCDMA:RMC,HSDPA,HSUPA Release 6; LTE:QPSK,16QAM; WLAN: 802.11 b/g/n(HT20) WLAN: 802.11 n(HT20/40) /a/ac80/ac160 BLE NFC:ASK
Antenna Specification:	WCDMA,LTE: PIFA Antenna BT,WLAN: PIFA Antenna
SIM Card	Only single card
Hotspot Mode:	Support
DTM Mode:	Not Support

1.2 Test Environment

Ambient conditions in the SAR laboratory:

Items	Required
Temperature (℃)	18-25
Humidity (%RH)	30-70

1.3 Test Factory

Shenzhen STS Test Services Co., Ltd.
Add. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
CNAS Registration No.: L7649
FCC Registration No.: 625569
IC Registration No.: 12108A
A2LA Certificate No.: 4338.01

2.Test Standards

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
7	FCC KDB 941225 D01 v03r01	SAR Measurement Procedures for 3G Devices
8	FCC KDB 941225 D05 v02r05	SAR for LTE Devices
9	FCC KDB 941225 D06 v02r01	Hotspot Mode SAR
10	FCC KDB 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
11	FCC KDB 248227 D01 Wi-Fi SAR v02r02	SAR Considerations for 802.11 Devices
12	FCC KDB 616217 D04 v01r02	SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers

In addition to the above, the following information was used:

TCB workshop October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)

TCB workshop October, 2014; Page 37, LTE Considerations (LTE Band 41 Test Channels)

And Limits:

(A). Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

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

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

NOTE: Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments:
are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational/Controlled 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).

NOTE
GENERAL POPULATION/UNCONTROLLED EXPOSURE
PARTIAL BODY LIMIT
1.6 W/kg

3. SAR Measurement System

3.1 Definition Of Specific Absorption Rate (SAR)

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/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

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:

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

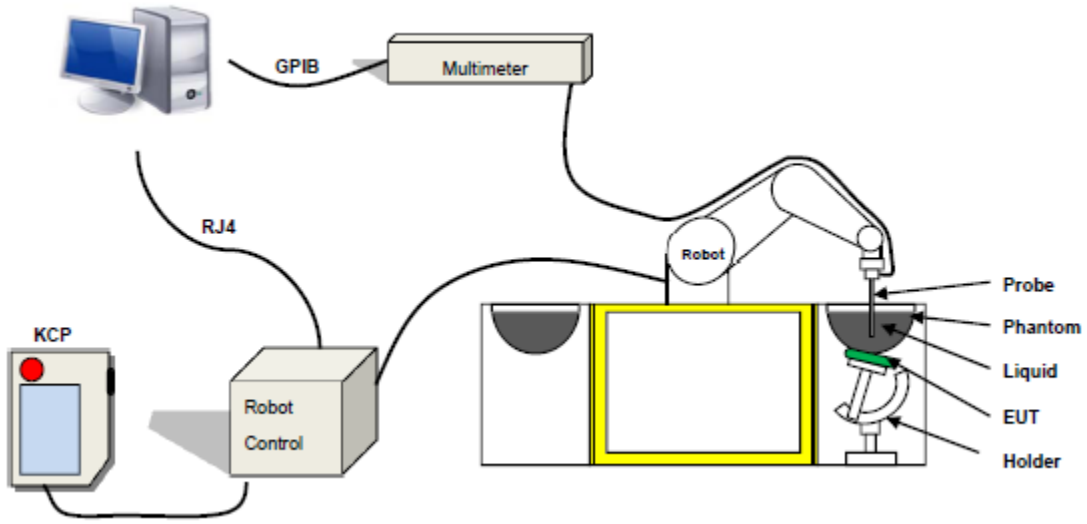
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue,
ρ is the mass density of the tissue and E is the RMS electrical field strength.

3.2 SAR System

MVG SAR System Diagram:



Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

3.2.1 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 45/15 EPGO281 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter: 2.5 mm
- Length of Individual Dipoles: 2 mm
- Maximum external diameter: 8 mm
- Distance between dipole/probe extremity: 8 mm (repeatability better than +/- 1mm)
- Probe linearity: 0±2.60%(0.11dB)
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.25 dB
- Calibration range: 450 MHz to 6 GHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than 30°

Figure 1 – *MVG COMOSAR Dosimetric E field Dipole*

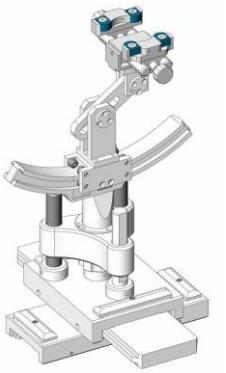
3.2.2 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

SN 32/14 SAM115

SN 32/14 SAM116

3.2.3 Device Holder



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.4. Tissue Simulating Liquids

4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Head Tissue

Frequency (MHz)	cellulose	DGBE	HEC	NaCl	Preventol	Sugar	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	%	σ	εr
750	0.2	/	/	1.4	0.2	57.0	/	41.1	0.89	41.9
835	0.2	/	/	1.4	0.2	57.9	/	40.3	0.90	41.5
900	0.2	/	/	1.4	0.2	57.9	/	40.3	0.97	41.5
1800	/	44.5	/	0.3	/	/	30.45	55.2	1.4	40.0
1900	/	44.5	/	0.3	/	/	30.45	55.2	1.4	40.0
2000	/	44.5	/	0.3	/	/	/	55.2	1.4	40.0
2450	/	44.9	/	0.1	/	/	/	55.0	1.80	39.2
2600	/	45.0	/	0.1	/	/	/	54.9	1.96	39.0

Body Tissue

Frequency (MHz)	cellulose	DGBE	HEC	NaCl	Preventol	Sugar	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	%	σ	εr
750	0.2	/	/	0.9	0.1	47.2	/	51.7	0.96	55.5
835	0.2	/	/	0.9	0.1	48.2	/	50.8	0.97	55.2
900	0.2	/	/	0.9	0.1	48.2	/	50.8	1.05	55.0
1800	/	29.4	/	0.4	/	/	30.45	70.2	1.52	53.3
1900	/	29.4	/	0.4	/	/	30.45	70.2	1.52	53.3
2000	/	29.4	/	0.4	/	/	/	70.2	1.52	53.3
2450	/	31.3	/	0.1	/	/	/	68.6	1.95	52.7
2600	/	31.7	/	0.1	/	/	/	68.2	2.16	52.3

Tissue dielectric parameters for head and body phantoms				
Frequency	εr		σ S/m	
	Head	Body	Head	Body
300	45.3	58.2	0.87	0.92
450	43.5	56.7	0.87	0.94
900	41.5	55.0	0.97	1.05
1450	40.5	54.0	1.20	1.30
1800	40.0	53.3	1.40	1.52
2450	39.2	52.7	1.80	1.95
3000	38.5	52.0	2.40	2.73
5800	35.3	48.2	5.27	6.00

LIQUID MEASUREMENT RESULTS

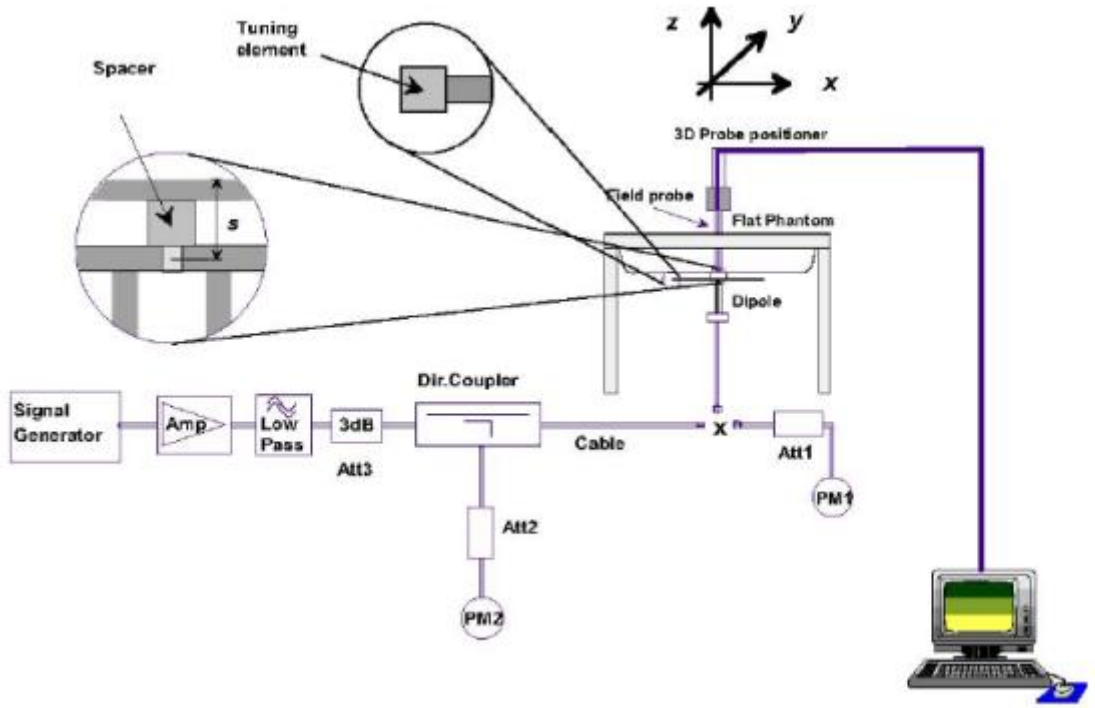
Date	Ambient condition		Body Simulating Liquid		Parameters	Target	Measured	Deviation [%]	Limited [%]
	Temp. [°C]	Humidity [%]	Frequency	Temp. [°C]					
2018-11-30	23.1	51	750 MHz	22.7	Permittivity:	55.5	55.13	-0.67	±5
					Conductivity:	0.96	0.96	0.06	±5
2018-11-13	22.7	48	835 MHz	22.4	Permittivity:	55.2	55.95	1.35	±5
					Conductivity:	0.97	0.95	-2.11	±5
2018-12-01	22.6	49	835 MHz	22.3	Permittivity:	55.2	54.50	-1.28	±5
					Conductivity:	0.97	0.95	-2.35	±5
2018-11-15	22.9	50	1800 MHz	22.6	Permittivity:	53.3	53.96	1.24	±5
					Conductivity:	1.52	1.52	-0.03	±5
2018-12-02	22.8	50	1800 MHz	22.4	Permittivity:	53.3	53.22	-0.15	±5
					Conductivity:	1.52	1.52	0.02	±5
2018-11-17	22.3	47	1900 MHz	22.0	Permittivity:	53.3	53.76	0.86	±5
					Conductivity:	1.52	1.50	-1.40	±5
2018-12-04	22.6	48	1900 MHz	22.4	Permittivity:	53.3	53.05	-0.47	±5
					Conductivity:	1.52	1.53	0.91	±5
2018-12-06	22.8	45	2450 MHz	22.5	Permittivity:	52.7	51.57	-2.15	±5
					Conductivity:	1.95	1.92	-1.44	±5
2018-12-08	23.0	48	2600 MHz	22.7	Permittivity:	52.5	51.69	-1.54	±5
					Conductivity:	2.16	2.15	-0.42	±5
2018-12-09	23.2	50	5200 MH	22.8	Permittivity:	49.0	48.61	-0.80	±5
					Conductivity	5.30	5.27	-0.57	±5

5. SAR System Validation

5.1 Validation System

Each MVG system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the MVG software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system validation setup is shown as below.



5.2 Validation Result

Comparing to the original SAR value provided by MVG, the validation data should be within its specification of 10 %.

Freq.(MHz)	Power(mW)	Tested Value (W/Kg)	Normalized SAR (W/kg/W)	Target (W/Kg/W)	Tolerance(%)	Date
750 Body	100	0.868	8.68	8.49	2.27	2018-11-30
835 Body	100	1.011	10.11	9.56	4.77	2018-11-13
835 Body	100	0.962	9.62	9.56	0.59	2018-12-01
1800 Body	100	3.922	39.22	38.4	2.14	2018-11-15
1800 Body	100	3.825	38.25	38.4	-0.38	2018-12-02
1900 Body	100	3.758	37.58	39.7	-3.35	2018-11-17
1900 Body	100	4.111	41.11	39.7	3.55	2018-12-04
2450 Body	100	5.321	53.21	52.4	1.55	2018-12-06
2600 Body	100	5.988	59.88	55.3	1.29	2018-12-08
5200 Body	100	15.849	158.49	159	-0.32	2018-12-09

Note: The tolerance limit of System validation ±10%.

6. SAR Evaluation Procedures

The procedure for assessing the average SAR value consists of the following steps:
The following steps are used for each test position

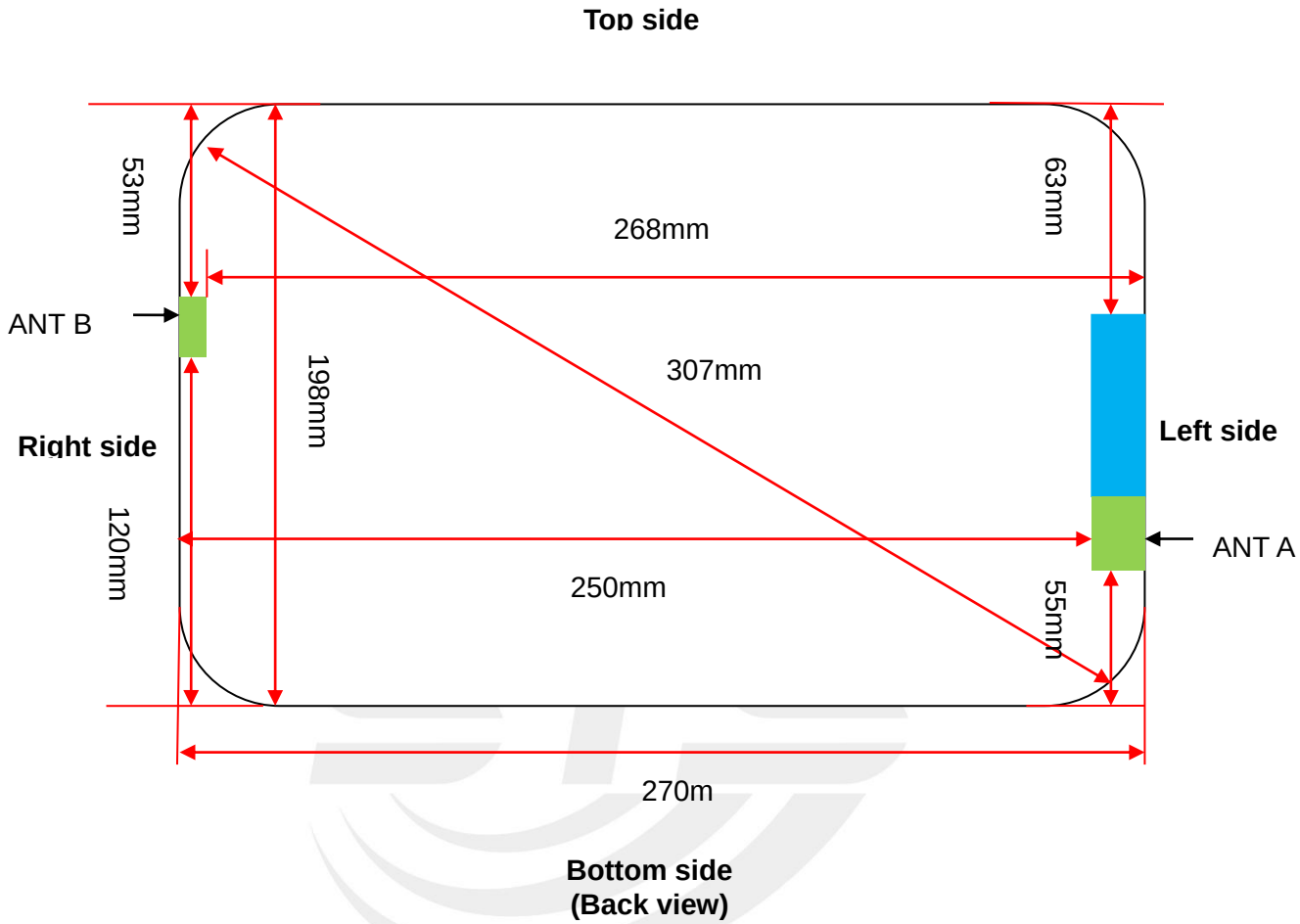
- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

➢ Area Scan& Zoom Scan

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01 quoted below.
When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

7. EUT Antenna Location Sketch

It is a Rugged Tablet PC, support GSM/WCDMA/LTE mode.



WWAN Antenna

WLAN/BT Antenna

7.1 SAR test exclusion consider table

According with FCC KDB 447498 D01, appendix A, <SAR test exclusion thresholds for 100MHz ~6GHz and≤50mm＞table, this device SAR test configurations consider as following:

Band	Mode	Max. Peak Power		Test Position Configurations				
		dBm	mW	Back Side	Left Edge	Right Edge	Top Edge	Bottom Edge
WCDMA Band II	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2158	268	208
	QPSK	23.52	224.91	Yes	Yes	No	No	Yes
WCDMA Band IV	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2158	268	208
	QPSK	23.45	221.31	Yes	Yes	No	No	Yes
WCDMA Band V	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	1364	242	194
	QPSK	23.51	224.39	Yes	Yes	No	No	Yes
LTE Band 4	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2158	268	208
	QPSK	23.97	249.46	Yes	Yes	No	No	Yes
LTE Band 7	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2096	226	146
	QPSK	22.93	196.34	Yes	Yes	No	No	Yes
LTE Band 12	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	1364	242	194
	QPSK	23.99	250.6	Yes	Yes	No	Yes	Yes
LTE Band 13	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	1364	242	194
	QPSK	23.93	250.78	Yes	Yes	No	Yes	Yes
LTE Band 25	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2158	268	208
	QPSK	23.99	250.6	Yes	Yes	No	No	Yes
LTE Band 26	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	1364	242	194
	QPSK	23.98	250.03	Yes	Yes	No	Yes	Yes
LTE Band 30	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2096	226	146
	QPSK	22.95	197.24	Yes	Yes	No	No	Yes
LTE Band 41	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2096	226	146
	QPSK	21.53	142.23	Yes	Yes	No	No	No

WLAN 2.4 G ANT A	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2096	226	146
	802.11b	21.06	127.64	Yes	Yes	No	No	No
WLAN 2.4 G ANT B	Distance to User			<5mm	268mm	<5mm	53m	120m
	exclusion threshold			3	2276	3	126	796
	802.11b	21.15	130.32	Yes	No	Yes	Yes	No
WLAN 2.4 G ANT A	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2096	226	146
	802.11n	20.67	116.68	Yes	Yes	No	No	No
WLAN 2.4 G ANT B	Distance to User			<5mm	268mm	<5mm	53m	120m
	exclusion threshold			3	2276	3	126	796
	802.11n	21.10	128.82	Yes	No	Yes	Yes	No
WLAN 5.2 G ANT A	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2066	176	116
	802.11a	21.06	127.64	Yes	Yes	No	No	Yes
WLAN 5.2 G ANT B	Distance to User			<5mm	268mm	<5mm	53m	120m
	exclusion threshold			3	2246	3	96	766
	802.11a	21.23	132.74	Yes	No	Yes	Yes	No
WLAN 5.2 G ANT A	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2066	176	116
	802.11n	21.18	131.22	Yes	Yes	No	No	Yes
WLAN 5.2 G ANT B	Distance to User			<5mm	268mm	<5mm	53m	120m
	exclusion threshold			3	2246	3	96	766
	802.11n	21.05	127.35	Yes	No	Yes	Yes	No
Bluetooth	Distance to User			<5mm	<5mm	250mm	63m	55m
	exclusion threshold			3	3	2096	226	146
	GFSK	9.95	9.89	Yes	Yes	No	No	No

Note：

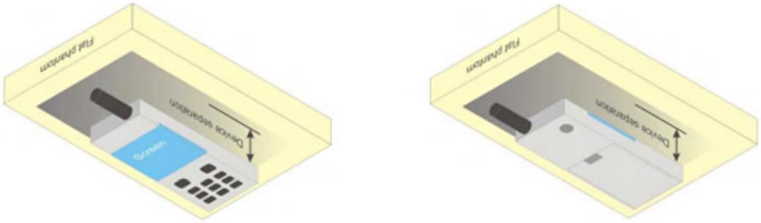
1. maximum power is the source-based time-average power and represents the maximum RF output power among production units.
2. per KDB 447498 D01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. per KDB 447498 D01, standalone SAR test exclusion threshold is applied; if the distance of the antenna to the user is <5mm, 5mm is user to determine SAR exclusion threshold
4. per KDB 447498 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distance ≤50mm are determined by:
   [(max.power of channel, including tune-up tolerance, Mw)/(min. test separation distance, mm)]*[√f(GHZ)]≤3.0 for 1-g SAR and≤7.5 for10-g extremity SAR ,f(GHz) is the RF channel transmit frequency in GHz.Power and distance are rounded to the nearest mW and mm before calculation.The result is rounded to one decimal place for comparison
   For <50mm distance, we just calculate mW of the exclusion threshold value(3.0)to do compare
5. per KDB 447498 D01, at 100 MHz to 6GHz and for test separation distances >50mm, the SAR test exclusion threshold is determined according to the following
   a)[threshold at 50mm in step 1]+(test separation distance -50mm)*(f (MHz)/150)]Mw, at 100 MHz to 1500 MHz
   b) [threshold at 50mm in step1]+(test separation distance -50mm) *10]mW at＞ 1500MHz and≤6GHz
6. Per KDB 447498 D02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/ HSUPA/DC-HSDPA output power is<0.25db higher than RMC 12.2Kbps,or reported SAR with RMC 12.2kbps setting is ≤1.2W/Kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.
7. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine futher SAR exclusion 8.for each frequency band ,testing at higher data rates and higher order modulations is not required when the maximum average output power for each of each of these configurations is less than 1/4db higher than those measured at the lower data rate than 11b mode ,thus the SAR can be excluded.
8. Per KDB 616217 D04 Exposures from antennas through the front (top) surface of the display section of a full-size tablet, away from the edges, are generally limited to the user's hands. Exposures to hands for typical consumer transmitters used in tablets are not expected to exceed the extremity SAR limit; therefore, SAR evaluation for the front surface of tablet display screens are generally not necessary.

8. EUT Test Position

This EUT was tested in Front Face and Rear Face.

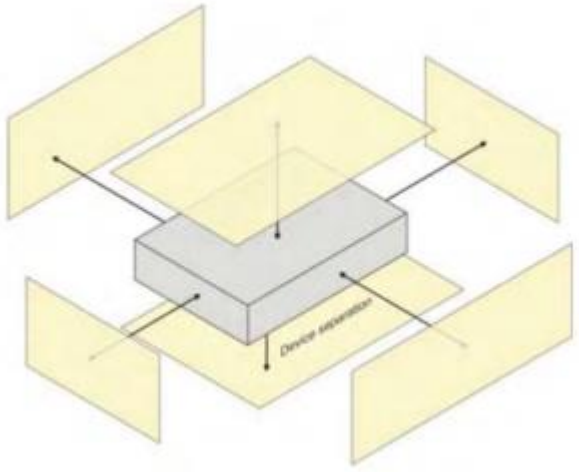
8.1 Define Two Imaginary Lines On The Handset

Body-worn Position Conditions:
Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative *test separation distance* configuration may be used to support both SAR conditions. When the *reported* SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest *reported* SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.



8.2 Hotspot mode exposure position condition

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing function, the relevant hand and body exposure condition are tested according to the hotspot SAR procedures in KDB 941225. A test separation distance of 10 mm is required between the phantom and all surface and edges with a transmitting antenna located within 25 mm form that surface or edge. When form factor of a handset is smaller than 9cm x 5cm, a test separation distance of 5mm (instead of 10mm)is required for testing hotspot mode. When the separate distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration(surface).



9. Uncertainty

9.1 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in IEEE 1528: 2013.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

NO	Source	Tol(%)	Prob. Dist.	Div. k	ci (1g)	ci (10g)	1gUi	10gUi	Veff
Measurement System									
1	Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
2	Axial isotropy	3.5	R	√3	$(1\text{-cp})^{1/2}$	$(1\text{-cp})^{1/2}$	1.43	1.43	∞
3	Hemispherical isotropy	5.9	R	√3	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
4	Boundary effect	1.0	R	√3	1	1	0.58	0.58	∞
5	Linearity	4.7	R	√3	1	1	2.71	2.71	∞
6	System Detection limits	1.0	R	√3	1	1	0.58	0.58	∞
7	Readout electronics	0.5	N	1	1	1	0.50	0.50	∞
8	Response time	0	R	√3	1	1	0	0	∞
9	Integration time	1.4	R	√3	1	1	0.81	0.81	∞
10	Ambient noise	3.0	R	√3	1	1	1.73	1.73	∞
11	Ambient reflections	3.0	R	√3	1	1	1.73	1.73	∞
12	Probe positioner mech. restrictions	1.4	R	√3	1	1	0.81	0.81	∞
13	Probe positioning with respect to phantom shell	1.4	R	√3	1	1	0.81	0.81	∞
14	Max.SAR evaluation	1.0	R	√3	1	1	0.6	0.6	∞
Test sample related									

15	Device positioning	2.6	N	1	1	1	2.6	2.6	11
16	Device holder	3	N	1	1	1	3.0	3.0	7
17	Drift of output power	5.0	R	√3	1	1	2.89	2.89	∞
Phantom and set-up									
18	Phantom uncertainty	4.0	R	√3	1	1	2.31	2.31	∞
19	Liquid conductivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	5
20	Liquid conductivity (meas)	4	N	1	0.23	0.26	0.92	1.04	5
21	Liquid Permittivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	∞
22	Liquid Permittivity (meas)	5.0	N	1	0.23	0.26	1.15	1.30	∞
Combined standard			RSS	$U_C = \sqrt{\sum_{i=1}^{n} C_i^2 U_i^2}$			10.63%	10.54%	
Expanded uncertainty (P=95%)		$U = k\, U_C$,k=2					21.26%	21.08%	

9.2 System validation Uncertainty

NO	Source	Tol(%)	Prob. Dist.	Div. k	ci (1g)	ci (10g)	1gUi	10gUi	Veff
Measurement System									
1	Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
2	Axial isotropy	3.5	R	√3	$(1\text{-cp})^{1/2}$	$(1\text{-cp})^{1/2}$	1.43	1.43	∞
3	Hemispherical isotropy	5.9	R	√3	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
4	Boundary effect	1.0	R	√3	1	1	0.58	0.58	∞
5	Linearity	4.7	R	√3	1	1	2.71	2.71	∞
6	System Detection limits	1.0	R	√3	1	1	0.58	0.58	∞
7	Modulation response	0	N	1	1	1	0	0	∞
8	Readout electronics	0.5	N	1	1	1	0.50	0.50	∞
9	Response time	0	R	√3	1	1	0	0	∞
10	Integration time	1.4	R	√3	1	1	0.81	0.81	∞
11	Ambient noise	3.0	R	√3	1	1	1.73	1.73	∞
12	Ambient reflections	3.0	R	√3	1	1	1.73	1.73	∞
13	Probe positioner mech. restrictions	1.4	R	√3	1	1	0.81	0.81	∞
14	Probe positioning with respect to phantom shell	1.4	R	√3	1	1	0.81	0.81	∞
15	Max.SAR evaluation	1.0	R	√3	1	1	0.6	0.6	∞
Dipole									
16	Deviation of experimental source from	4	N	1	1	1	4.00	4.00	∞

17	Input power and SAR drit measurement	5	R	√3	1	1	2.89	2.89	∞
18	Dipole Axis to liquid Distance	2	R	√3	1	1			∞
Phantom and set-up									
19	Phantom uncertainty	4.0	R	√3	1	1	2.31	2.31	∞
20	Uncertainty in SAR correction for deviation(in permittivity and conductivity)	2.0	N	1	1	0.84	2	1.68	∞
21	Liquid conductivity (target)	2	N	1	1	0.84	2.00	1.68	∞
22	Liquid conductivity (temperature uncertainty)	2.5	N	1	0.78	0.71	1.95	1.78	5
23	Liquid conductivity (meas)	4	N	1	0.23	0.26	0.92	1.04	5
24	Liquid Permittivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	∞
25	Liquid Permittivity (temperature uncertainty)	2.5	N	1	0.78	0.71	1.95	1.78	5
26	Liquid Permittivity (meas)	5.0	N	1	0.23	0.26	1.15	1.30	∞
Combined standard			RSS	$U_C = \sqrt{\sum_{i=1}^{n} C_i^2 U_i^2}$			10.15%	10.05%	
Expanded uncertainty (P=95%)		$U = k\ U_C$,k=2					20.29%	20.10%	