Global Product Certification
EMC-EMF-Safety Approvals

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SAR Test Report

Report Number: M140913_FCC_DWM-W095A_SAR_5.6

Test Sample:	Portable TABLET Computer
Host PC Model Number:	Q555
Radio Modules:	WLAN & Bluetooth MITSUMI DWM-W095A
FCC ID:	EW4DWMW095A
Date of Issue:	30th September 2014

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SAR TEST REPORT
Report Number: M140913_FCC_DWM-W095A_SAR_5.6
FCC ID: EW4DWMW095A,

1.0 GENERAL INFORMATION

Table 1

Test Sample:	Portable TABLET Computer
Model Name:	Q555
Radio Modules:	WLAN & Bluetooth DWM-W095A
Interface Type:	SDIO / UART
Device Category:	Portable Transmitter
Test Device:	Pre-Production Unit
FCC ID:	EW4DWMW095A

RF exposure Category: General Population/Uncontrolled

Manufacturer: Fujitsu Limited

Test Standard/s:

1. KDB 248227 D01 SAR meas for 802 11 a b g v01r02
   KDB 447498 D01 General RF Exposure Guidance v05r02
   KDB 616217 D04 SAR for laptop and tablets v01r01
   KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
   KDB 865664 D02 RF Exposure Reporting v01r01

2. **IEEE 1528: 2013**
   Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head Due to Wireless Communications Devices: Measurement Techniques.

Statement Of Compliance: The Fujitsu TABLET Computer Q555 with Wireless LAN and Bluetooth model DWM-W095A module complied with the FCC General public/uncontrolled RF exposure limits of 1.6mW/g per requirements of 47CFR2.1093(d).

Highest Reported SAR: 5 GHz WLAN Band – 1.25 mW/g

Test Dates: 11th to 24th September 2014

Test Officer:

Peter Jakubiec

Authorised Signature:

Chris Zombolas
Technical Director

SAR TEST REPORT
Portable TABLET Computer Model: Q555
Report Number: M140913_FCC_DWM-W095A_SAR_5.6

2.0 INTRODUCTION

Testing was performed on the Fujitsu TABLET PC, Model: Q555 with Mitsumi SDIO/UART integrated Wireless LAN & Bluetooth Module (802.11a/b/g/n), Model: DWM-W095A. The MITSUMI module is an OEM product. The WLAN was tested in the dedicated host – STYLISTIC Q SERIES, Model Q555. The system tested will be referred to as the DUT throughout this report.

The Wireless LAN Module incorporates Bluetooth Transmitter, which can only transmit via Antenna A (0), the Bluetooth maximum power was **9**dBm (including tune-up) therefore it did not require SAR testing as a stand-alone transmitter. This is in accordance with KDB 447498 section 4.3.1 exemption formula:

[(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR Result - [(**8mW**)/(**5**mm)] ·[√f(2.45GHz)]= **2.5**

For simultaneous transmission according to the section 4.3.2 the estimated SAR is given by formula:

(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(2.45GHz)/*x*] W/kg

Result - [(**8 mW**)/(**5**mm)] ·[√f(GHz)/7.5]=**0.33**W/kg.

The highest SAR for the antenna B (1) was 1.25 mW/g so the sum of the simultaneously transmitting Bluetooth and WLAN (Ant. B) was 1.58 mW/g which was below the SAR limit of 1.6mW/g.

The measurement test results mentioned hereon only apply to the 5GHz frequency band; an additional report titled “M140913_FCC_DWM-W095A_SAR_2.4” applies to the 2450MHz frequency range.

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3.0 TEST SAMPLE TECHNICAL INFORMATION

(Information supplied by the client)

3.1 DUT (WLAN) Details

Table 2

Transmitter:	WLAN / BT Combo Module
FCC ID:	EW4DWMW095A
Wireless Module:	Mitsumi WLAN (11a/b/g/n)
Model Number:	DMW-W095A
Manufacturer:	Mitsumi Electric Co., LTD.
Modulation Type:	DSSS for 802.11b OFDM for 802.11g OFDM for 802.11a OFDM for 802.11n
5GHz (802.11a/n)	BPSK, QPSK, 16QAM, 64QAM
2.4GHz (802.11b/g/n)	CCK, DQPSK, DBPSK, 16QAM, 64QAM
Maximum Data Rate:	802.11b = 11 Mbps, 802.11g and 802.11a = 54 Mbps 802.11n = 270 Mbps
Frequency Range:	2.412–2.462 GHz for 11b/g/n 5.18-5.32 GHz and 5.745-5.825 GHz for 11a/n
Number of Channels:	13 channels for 11b/g/n 23 channels for 11a/n with 20MHz Bandwidth 18 channels for 11n with 40MHz Bandwidth
Antenna Types:	Nissei Inverted F antenna BT: ANT 0
Power Supply:	3.3 VDC from mother baord

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Table 3 Channels and Output power setting

2.4 GHz (802.11b, 802.11g and 802.11n)

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tx BW (MHz)	Average Power Target (dBm)			Average Power Measured (dBm)	
					Ch A		Ch B	Tx A	Tx B
802.11b 2.4 GHz	1	2412	1	-	16.0		16.0	16.02	16.07
	6	2437						16.14	16.01
	11	2462						16.09	16.04
	13	2472						16.08	16.08
802.11g 2.4 GHz	1	2412	6	-	16.0		16.0	-	-
	2	2417						-	-
	6	2437						-	-
	10	2457						-	-
	11	2462						-	-
	13	2472						-	-
802.11n 2.4 GHz	1	2412	HT0	20	16.0		16.0	16.07	16.01
	2	2417						-	-
	6	2437						16.05	16.05
	10	2457						-	-
	11	2462						16.03	16.09
	13	2472							
	3F	2422	HT0	40	N/A		N/A	-	-
	4F	2427			N/A		N/A	-	-
	5F				N/A		N/A	-	-
	6F	2437			N/A		N/A	-	-
	7F				N/A		N/A	-	-
	8F	2447			N/A		N/A	-	-
	9F	2452			N/A		N/A	-	-
	10F	2457			N/A		N/A	-	-
	11F	2462			N/A		N/A	-	-

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5 GHz (802.11a)

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tx BW (MHz)	Average Power Target (dBm) Ch A		Ch B	Average Power Measured (dBm) Tx A	Tx B
802.11a	**5.2 GHz**		6	-					
	36	5180			**12.0**		**12.0**	12.09	12.01
	40	5200						-	-
	44	5220						-	-
	48	5240						12.20	12.03
	5.3 GHz								
	52	5260			**12.0**		**12.0**	12.21	12.05
	56	5280						-	-
	60	5300						-	-
	64	5320						12.09	12.06
	5.6 GHz								
	100	5500			**12.0**		**12.0**	12.12	12.06
	104	5520						12.13	12.17
	108	5540						-	-
	112	5560						-	-
	116	5580						12.20	12.05
	120	5600						12.05	12.11
	124	5620						-	-
	128	5640						-	-
	132	5660						-	-
	136	5680						12.10	12.29
	140	5700						12.12	12.02
	5.8 GHz								
	149	5745			**12.0**		**12.0**	12.04	12.10
	153	5765						-	-
	157	5785						12.04	12.00
	161	5805						-	-
	165	5825						12.20	12.00

5 GHz (802.11n)

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Tx BW (MHz)	Average Power Target (dBm)			Average Power Measured (dBm)	
					Ch A		Ch B	Tx A	Tx B
802.11n	**5.2 GHz**		HT0	20					
	36	5180			**12.0**		**12.0**	-	-
	40	5200						-	-
	44	5220						-	-
	48	5240						-	-
	5.3 GHz								
	52	5260			**12.0**		**12.0**	-	-
	56	5280						-	-
	60	5300						-	-
	64	5320						-	-
	5.6 GHz								
	100	5500			**12.0**		**12.0**	-	-
	104	5520						-	-
	108	5540						-	-
	112	5560						-	-
	116	5580						-	-
	120	5600						-	-
	124	5620						-	-
	128	5640						-	-
	132	5660						-	-
	136	5680						-	-
	140	5700						-	-
	5.8 GHz								
	149	5745			**12.0**		**12.0**	-	-
	153	5765						-	-
	157	5785						-	-
	161	5805						-	-
	165	5825						-	-
	5.2 GHz			40 Wide					
	38	5190			**12.0**		**12.0**	-	-
	46	5230						12.00	12.05
	5.3 GHz								
	54	5270			**12.0**		**12.0**	12.22	12.21
	62	5310						-	-
	5.6 GHz								
	102	5510			**12.0**		**12.0**	-	-
	110	5550						12.17	12.15
	118	5590						-	-
	126	5630						-	-
	134	5670						-	-
	5.8 GHz								
	151	5755			**12.0**		**12.0**	-	-
	159	5795						12.09	12.00

NOTE: For 2450 MHz SAR results refer to report titled “REP. NO._FCC_DWM-W095A_SAR_2.4”.

3.2 DUT (Bluetooth) Details

Table 4

Transmitter:	WLAN / BT Combo Module
Network Standard:	Bluetooth™ RF Test Specification
Modulation Type:	Frequency Hopping Spread Spectrum (FHSS)
Frequency Range:	2402 MHz to 2480 MHz
Number of Channels:	79
Carrier Spacing:	1.0 MHz
Antenna Types:	Nissei Inverted F antenna BT: ANT 0
Max. Output Power:	9 dBm
Reference Oscillator:	16 MHz (Built-in)
Power Supply:	3.3 VDC from host.

Table 5 Frequency allocation

Channel Number	Frequency (MHz)	Bluetooth Utility power setting
1	**2402**	9 dBm
2	2403	
-	-	
39	2440	
40	**2441**	
41	2442	
-	-	
78	2479	
79	**2480**	

3.3 DUT (Notebook PC) Details

Table 6

Host notebook :	STYLISTIC Q series
Model Name:	Q555
Serial Number:	Pre-production Sample
Manufacturer:	FUJITSU LIMITED
CPU Type and Speed:	Intel Atom Z3795 1.6GHz
LCD	10.1"WQXGA(2560x1600) : VVX10F046J0
Port Replicator Model:	Cradle: FPCPR291xx Charging only Cradle: FPCPR294

3.4 Test sample Accessories

3.4.1 Battery Types

One type of Fujitsu Lithium Ion battery is used to power the DUT.

Table 7 Battery Details

Model	FPCBP415
V/mAh	3.8V/9600mAh

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4.0 TEST SIGNAL, FREQUENCY AND OUTPUT POWER

Mitsumi test tool was used to configure the WLAN for testing. The DUT Wireless LAN had a total of 11 channels within the 2412 to 2462 MHz frequency band and 12 channels within the frequency range 5180 to 5825 MHz. In The frequency range 2412 MHz to 2462 MHz the DUT operates in 2 modes, OFDM and DSSS. Within the 5180 to 5825 MHz frequency range the DUT operates in OFDM mode only. For the SAR measurements the DUT was operating in continuous transmit mode using programming codes supplied by Fujitsu.

The Bluetooth module operates over 79 channels within the frequency range 2402 to 2480 MHz. It is possible for the Bluetooth module to operate simultaneously with the WLAN module (co-transmission). However, due to low output power of Bluetooth module (less than 8mW), standalone SAR measurement for Bluetooth module was not conducted (as per **KDB 616217**).

The test results mentioned in this report only apply to the 5.6 GHz frequency range. An additional report titled *"M140913_FCC_DWM-W095A_SAR_2.4"* is specific to the 2450MHz range.

The WLAN modules can be configured in a number of different data rates. It was found that the highest source based time averaged power was measured when using the lowest data rates available in each mode. This lowest data rate corresponds to 6Mbps in OFDM mode and 1Mbps in DSSS mode.

The frequency span of the 2450 MHz range and 5600MHz Bands was more than 10MHz consequently; the SAR levels of the test sample were measured for lowest, centre and highest channels in the applicable modes. There were no wires or other connections to the DUT during the SAR measurements.

At the beginning of the SAR tests, the conducted power of the DUT was measured after temporary modification of antenna connector inside the DUT's TX RX compartment. Measurements were performed with a calibrated Power Meter. The Transmitter power was set to be equal or higher than power specified by the manufacturer.

4.1 Battery Status

The DUT battery was fully charged prior to commencement of measurement. Each SAR test was completed within 30 minutes. The battery condition was monitored by measuring the RF field at a defined position inside the phantom before the commencement of each test and again after the completion of the test. It was not possible to perform conducted power measurements at the output of the DUT, at the beginning and end of each scan due to lack of a suitable antenna port. The uncertainty associated with the power drift was less than 5% and was assessed in the uncertainty budget.

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5.0 DETAILS OF TEST LABORATORY

5.1 Location

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5.2 Accreditations

EMC Technologies Pty. Ltd. is accredited by the National Association of Testing Authorities, Australia (NATA).
NATA Accredited Laboratory Number: 5292

EMC Technologies Pty Ltd is NATA accredited for the following standards:

Table 8

AS/NZS 2772.2 2011:	RF and microwave radiation hazard measurement
ACMA:	Radio communications (Electromagnetic Radiation - Human Exposure) Standard 2003 as amended
EN 50360: 2001	Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz)
EN 62209-1:2006	Human Exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models instrumentation and procedures. **Part 1:** Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (300 MHz to 3 GHz)
EN 62209-2:2010	Human Exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models instrumentation and procedures **Part 2**: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz
IEEE 1528: 2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head Due to Wireless Communications Devices: Measurement Techniques.

Refer to NATA website www.nata.asn.au for the full scope of accreditation.

5.3 Environmental Factors

The measurements were performed in a shielded room with no background RF signals. The temperature in the laboratory was controlled to within 20 ± 1°C, the humidity was in the range 43% to 44%. The liquid parameters are measured daily prior to the commencement of each test. Tests were performed to check that reflections within the environment did not influence the SAR measurements. The noise floor of the DASY5 SAR measurement system using the SN3563 probe was less than 5μV in both air and liquid mediums.

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6.0 DESCRIPTION OF SAR MEASUREMENT SYSTEM

Table 9

Applicable Head Configurations Applicable Body Configurations	: None : Lap Held Position : Edge On Position

6.1 Probe Positioning System

The measurements were performed with the state-of-the-art automated near-field scanning system **DASY5 Version 52** from Schmid & Partner Engineering AG (SPEAG). The DASY5 fully complies with the IEEE 1528 and EN62209-1 and EN62209-2 SAR measurement requirements.

6.2 E-Field Probe Type and Performance

The SAR measurements were conducted with SPEAG dosimetric probe EX3DV4 Serial: 3657. Please refer to appendix C for detailed information.

6.3 System verification

6.3.1 System verification Results @ 5GHz

The following table lists the dielectric properties of the tissue simulating liquid measured prior to SAR system verification. The results of the system verification are listed in columns 4 and 5. The forward power into the reference dipole for SAR system verification was adjusted to 100 mW.

Table 8 System verification Results (Dipole: SPEAG D5GHzV2 SN: 1008)

1. System Verification Date	2. Frequency (MHz)	3. ∈r (measured)	4. σ (mho/m) (measured)	5. Measured SAR 1g	6. Measured SAR 10g	7. Last Validation Date
18th Sept. 14	5200	49.2	5.34	7.59	2.13	29th Apr. 14
22nd Sept. 14	5500	48.3	5.79	8.27	2.31	29th Apr. 14
24th Sept. 14	5500	48.3	5.79	7.72	2.14	29th Apr. 14

6.3.2 Deviation from reference system verification values

Currently no IEEE Std 1528-2013 OR EN 62209-2 SAR reference values are available in 5.6 GHz band, as a consequence all system verification results were compared against the SPEAG calibration reference SAR values.

The SPEAG calibration reference SAR value is the SAR system verification result obtained in a specific dielectric liquid using the validation dipole (D5GHzV2) during calibration. The measured one-gram SAR should be within 10% of the expected target reference values shown in below.

Table 9 Deviation from reference system verification values in 5.6 GHz band

Frequency and Date	Measured SAR 1g (mW/g)	Measured SAR 1g (Normalized to 1W)	SPEAG Calibration reference SAR Value 1g (mW/g)	Deviation From SPEAG Reference 1g (%)
5200MHz 18th Sept. 2014	7.59	75.90	75.1	1.07
5500MHz 22nd Sept. 2014	8.27	82.70	82.2	0.61
5500MHz 24th Sept. 2014	7.72	77.20	82.2	-6.08

NOTE: All reference system verification values are referenced to 1W input power.

6.3.3 Liquid Depth 15cm

During the SAR measurement process the liquid level was maintained to a level of 15cm with a tolerance of 0.5cm.

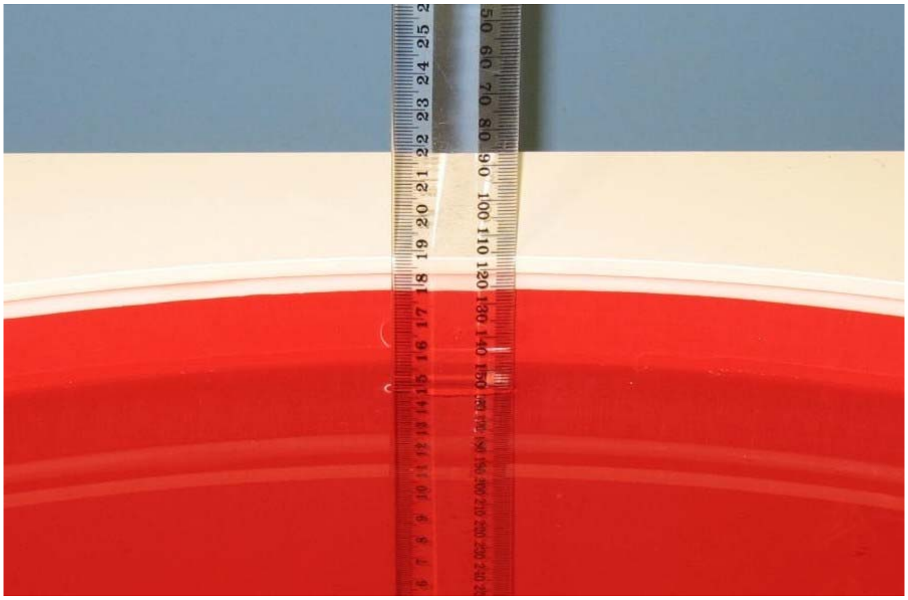

Photo of liquid Depth in Flat Phantom

6.4 Phantom Properties

The phantoms used during the testing comply with the, IEEE 1528 and EN62209-1 and EN62209-2 SAR measurement requirements.

Table 10 Phantom Properties

Phantom Properties	
Depth of Phantom	19 cm
Width of flat section	40 cm
Length of flat section	60 cm
Thickness of flat section	2.0mm +/-0.2mm (flat section)
Dielectric Constant	<5.0
Loss Tangent	<0.05

6.5 Tissue Material Properties

The dielectric parameters of the brain simulating liquid were measured prior to SAR assessment using the HP85070A dielectric probe kit and HP8753ES Network Analyser. The actual dielectric parameters are shown in the following table.

Table 11 Target Body Simulating Liquid Dielectric Values for 5200MHz range

Frequency Band	∈r (target)	σ (target)	ρ kg/m^3
5180 MHz Body	49.0 ±5%	5.3 ±5%	1000
5240 MHz Body	48.9 ±5%	5.4 ±5%	1000
5260 MHz Body	48.9 ±5%	5.4 ±5%	1000
5320 MHz Body	48.8 ±5%	5.4 ±5%	1000

Table 12 Target Body Simulating Liquid Dielectric Values for 5600MHz range

Frequency Band	∈r (target)	σ (target)	ρ kg/m^3
5520 MHz Body	48.6 ±5%	5.6 ±5%	1000
5580 MHz Body	48.5 ±5%	5.77 ±5%	1000
5680 MHz Body	48.4 ±5%	5.9 ±5%	1000

Table 13 Target Body Simulating Liquid Dielectric Values for 5800MHz range

Frequency Band	∈r (target)	σ (target)	ρ kg/m^3
5745 MHz Body	48.3 ±5%	5.9 ±5%	1000
5785 MHz Body	48.2 ±5%	6.0 ±5%	1000
5825 MHz Body	48.2 ±5%	6.0 ±5%	1000

NOTE: The muscle liquid parameters were within the required tolerances of ±5% for σ for ∈r

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6.5.1 Liquid Temperature and Humidity

The humidity and dielectric/ambient temperatures were recorded during the assessment of the tissue material dielectric parameters. The difference between the ambient temperature of the liquid during the dielectric measurement and the temperature during tests was less than |2|°C.

Table 14 Temperature and Humidity recorded for each day

Date	Ambient Temperature (°C)	Liquid Temperature (°C)	Humidity (%)
18th Sept. 2014	20.5	20.1	43
22nd Sept. 2014	20.4	20.1	44
24th Sept. 2014	20.3	20.0	43

6.6 Simulated Tissue Composition Used for SAR Test

The tissue simulating liquids are created prior to the SAR evaluation and often require slight modification each day to obtain the correct dielectric parameters.

Table 15 Tissue Type: Muscle @ 5600MHz

EMCT Liquid, Volume of Liquid: 60 Litres

Approximate Composition	% By Weight
Distilled Water	77.5
Salt	0.3
Triton X-100	22.2

6.7 Device Holder for Laptops and ELI 4.0 Phantom

A low loss clamp was used to position the DUT underneath the phantom surface.
Refer to Appendix A for photographs of device positioning

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7.0 SAR MEASUREMENT PROCEDURE USING DASY5

The SAR evaluation was performed with the SPEAG DASY5 system. A summary of the procedure follows:

a) A measurement of the SAR value at a fixed location is used as a reference value for assessing the power drop of the DUT. The SAR at this point is measured at the start of the test, and then again at the end of the test.

b) The SAR distribution at the exposed flat section of the flat phantom is measured at a distance of 2.0 mm from the inner surface of the shell. The area covers the entire dimension of the DUT and the horizontal grid spacing is 10 mm x 10 mm. The actual Area Scan has dimensions of 70mm x 60mm surrounding the test device. Based on this data, the area of the maximum absorption is determined by Spline interpolation.

c) Around this point, a volume of 28 mm x 28 mm x 22 mm is assessed by measuring 8 x 8 x 13 points. On the basis of this data set, the spatial peak SAR value is evaluated with the following procedure:

(i) The data at the surface are extrapolated, since the centre of the dipoles is 1.0 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 2.0 mm. The extrapolation is based on a least square algorithm. A polynomial of the fourth order is calculated through the points in z-axes. This polynomial is then used to evaluate the points between the surface and the probe tip.

(ii) The maximum interpolated value is searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g and 10 g) are computed using the 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-direction). The volume is integrated with the trapezoidal – algorithm. One thousand points (10 x 10 x 10) are interpolated to calculate the averages.

(iii) All neighbouring volumes are evaluated until no neighbouring volume with a higher average value is found.

(iv) The SAR value at the same location as in Step (a) is again measured to evaluate the actual power drift.

8.0 MEASUREMENT UNCERTAINTY

The uncertainty analysis is based on the template listed in the IEEE Std 1528-2013 for both device SAR tests and Validation uncertainty. The measurement uncertainty of a specific device is evaluated independently.

Table 16 Uncertainty Budget for DASY5 Version 52 – DUT SAR test 5GHz

Error Description	Uncert. Value	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g u_i	10g u_i	v_i
Measurement System								
Probe Calibration	6.55	N	1.00	1	1	6.55	6.55	∞
Axial Isotropy	4.7	R	1.73	0.7	0.7	1.90	1.90	∞
Hemispherical Isotropy	9.6	R	1.73	0.7	0.7	3.88	3.88	∞
Boundary Effects	2	R	1.73	1	1	1.15	1.15	∞
Linearity	4.7	R	1.73	1	1	2.71	2.71	∞
System Detection Limits	1	R	1.73	1	1	0.58	0.58	∞
Modulation response	2.4	R	1.73	1	1	1.39	1.39	∞
Readout Electronics	0.3	N	1.00	1	1	0.30	0.30	∞
Response Time	0.8	R	1.73	1	1	0.46	0.46	∞
Integration Time	2.6	R	1.73	1	1	1.50	1.50	∞
RF Ambient Noise	3	R	1.73	1	1	1.73	1.73	∞
RF Ambient Reflections	3	R	1.73	1	1	1.73	1.73	∞
Probe Positioner	0.8	R	1.73	1	1	0.46	0.46	∞
Probe Positioning	6.7	R	1.73	1	1	3.87	3.87	∞
Post Processing	4	R	1.73	1	1	2.31	2.31	∞
Test Sample Related								
Power Scaling	0	R	1.73	1	1	0.00	0.00	∞
Test Sample Positioning	2.9	N	1.00	1	1	2.90	2.90	145
Device Holder Uncertainty	3.6	N	1.00	1	1	3.60	3.60	5
Output Power Variation – SAR Drift Measurement	4.72	R	1.73	1	1	2.73	2.73	∞
Phantom and Setup								
Phantom Uncertainty	7.6	R	1.73	1	1	4.39	4.39	∞
SAR Correction	1.9	R	1.73	1	0.84	1.10	0.92	∞
Liquid Conductivity – Measurement uncertainty	2.5	N	1.00	0.64	0.71	1.60	1.78	∞
Liquid Permittivity – Measurement uncertainty	2.5	N	1.00	0.6	0.26	1.50	0.65	∞
Temp.unc. - Conductivity	3.4	R	1.73	0.78	0.71	0.77	0.70	∞
Temp. unc. - Permittivity	0.4	R	1.73	0.23	0.26	0.04	0.05	∞
Combined standard Uncertainty (u_c)						12.5	12.46	
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=	2		25.0	24.9	

Estimated total measurement uncertainty for the DASY5 measurement system was ±12.5%. The extended uncertainty (K = 2) was assessed to be ±25.0% based on 95% confidence level. The uncertainty is not added to the measurement result.

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Table 17 Uncertainty Budget for DASY5 Version 52 – System verification 5GHz

Error Description	Uncert. Value	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g u_i	10g u_i	v_i
Measurement System								
Probe Calibration	6.55	N	1.00	1	1	6.55	6.55	∞
Axial Isotropy	4.7	R	1.73	1	1	2.71	2.71	∞
Hemispherical Isotropy	9.6	R	1.73	0	0	0.00	0.00	∞
Boundary Effects	1	R	1.73	1	1	0.58	0.58	∞
Linearity	4.7	R	1.73	1	1	2.71	2.71	∞
System Detection Limits	1	R	1.73	1	1	0.58	0.58	∞
Modulation response	0	R	1.73	1	1	0.00	0.00	∞
Readout Electronics	0.3	N	1.00	1	1	0.30	0.30	∞
Response Time	0	R	1.73	1	1	0.00	0.00	∞
Integration Time	0	R	1.73	1	1	0.00	0.00	∞
RF Ambient Noise	1	R	1.73	1	1	0.58	0.58	∞
RF Ambient Reflections	1	R	1.73	1	1	0.58	0.58	∞
Probe Positioner	0.8	R	1.73	1	1	0.46	0.46	∞
Probe Positioning	6.7	R	1.73	1	1	3.87	3.87	∞
Post Processing	2	R	1.73	1	1	1.15	1.15	∞
Dipole Related								
Deviation of exp. dipole	5.5	R	1.73	1	1	3.18	3.18	##
Dipole Axis to Liquid Dist.	2	R	1.73	1	1	1.15	1.15	##
Input power & SAR drift	3.40	R	1.73	1	1	1.96	1.96	∞
Phantom and Setup								
Phantom Uncertainty	4	R	1.73	1	1	2.31	2.31	∞
Liquid Conductivity – Deviation from target values	5	R	1.73	0.64	0.43	1.85	1.24	∞
Liquid Permittivity – Deviation from target values	5	R	1.73	0.6	0.49	1.73	1.41	∞
Liquid Conductivity – Measurement uncertainty	2.5	N	1.00	0.78	0.71	1.95	1.78	∞
Liquid Permittivity – Measurement uncertainty	2.5	N	1.00	0.26	0.26	0.65	0.65	∞
Temp.unc. - Conductivity	3.4	R	1.73	0.78	0.71	0.77	0.70	∞
Temp. unc. - Permittivity	0.4	R	1.73	0.23	0.26	0.04	0.05	∞
Combined standard Uncertainty (u_c)						10.36	10.19	
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=	2		20.7	20.4	

Estimated total measurement uncertainty for the DASY5 measurement system was ±10.4%. The extended uncertainty (K = 2) was assessed to be ±20.7% based on 95% confidence level. The uncertainty is not added to the measurement result.

9.0 EQUIPMENT LIST AND CALIBRATION DETAILS

Table 18 SPEAG DASY5 Version 52

Equipment Type	Manufacturer	Model Number	Serial Number	Calibration Due	Used For this Test?
Robot - Six Axes	Staubli	RX90BL	N/A	Not applicable	✓
Robot Remote Control	SPEAG	CS7MB	RX90B	Not applicable	✓
SAM Phantom	SPEAG	N/A	1260	Not applicable	
SAM Phantom	SPEAG	N/A	1060	Not applicable	
Flat Phantom	AndreT	10.1	P 10.1	Not Applicable	
Flat Phantom	AndreT	9.1	P 9.1	Not Applicable	
Flat Phantom	SPEAG	ELI 4.0	1101	Not Applicable	✓
Data Acquisition Electronics	SPEAG	DAE3 V1	359	06-June-2015	
Data Acquisition Electronics	SPEAG	DAE3 V1	442	10-Dec-2014	✓
Probe E-Field - Dummy	SPEAG	DP1	N/A	Not applicable	
Probe E-Field	SPEAG	ET3DV6	1380	13-Dec-2014	
Probe E-Field	SPEAG	ET3DV6	1377	10-June-2015	
Probe E-Field	SPEAG	ES3DV6	3029	Not Used	
Probe E-Field	SPEAG	EX3DV4	3956	13-June-2015	
Probe E-Field	SPEAG	EX3DV4	3657	17-Dec-2014	✓
Validation Source 150 MHz	SPEAG	CLA150	4003	3-Dec-2016	
Antenna Dipole 300 MHz	SPEAG	D300V3	1012	11-Dec-2015	
Antenna Dipole 450 MHz	SPEAG	D450V3	1074	11-Dec-2015	
Antenna Dipole 750 MHz	SPEAG	D750V2	1051	13-Dec-2016	
Antenna Dipole 900 MHz	SPEAG	D900V2	047	22-June-2015	
Antenna Dipole 1640 MHz	SPEAG	D1640V2	314	20-June-2015	
Antenna Dipole 1800 MHz	SPEAG	D1800V2	242	20-June-2015	
Antenna Dipole 1950 MHz	SPEAG	D1950V3	1113	6-Dec -2015	
Antenna Dipole 2300 MHz	SPEAG	D2300V2	1032	22-Aug-2016	
Antenna Dipole 2450 MHz	SPEAG	D2450V2	724	04-Dec-2015	
Antenna Dipole 2600 MHz	SPEAG	D2600V2	1044	13-Dec-2016	
Antenna Dipole 3500 MHz	SPEAG	D3500V2	1002	13-July-2013	
Antenna Dipole 5600 MHz	SPEAG	D5GHzV2	1008	16-Dec-2014	✓
RF Amplifier	EIN	603L	N/A	*In test	
RF Amplifier	Mini-Circuits	ZHL-42	N/A	*In test	
RF Amplifier	Mini-Circuits	ZVE-8G	N/A	*In test	✓
Synthesized signal generator	Hewlett Packard	ESG-D3000A	GB37420238	*In test	
RF Power Meter	Hewlett Packard	437B	3125012786	28-Aug-2014	✓
RF Power Sensor 0.01 - 18 GHz	Hewlett Packard	8481H	1545A01634	29-Aug-2014	✓
RF Power Meter	Rohde & Schwarz	NRP	101415	18-Sept-2014	
RF Power Sensor	Rohde & Schwarz	NRP - Z81	100174	18-Sept-2014	
RF Power Meter Dual	Hewlett Packard	435A	1733A05847	*In test	✓
RF Power Sensor	Hewlett Packard	8482A	2349A10114	*In test	✓
Network Analyser	Hewlett Packard	8714B	GB3510035	25-Sept-2014	
Network Analyser	Hewlett Packard	8753ES	JP39240130	6-Nov-2014	✓
Dual Directional Coupler	Hewlett Packard	778D	1144 04700	*In test	
Dual Directional Coupler	NARDA	3022	75453	*In test	✓
Radio Communication Test Set	Rohde & Schwarz	CMU200	101573	Not Applicable	
Radio Communication Test Set	Anritsu	MT8820A	6200240559	Not Applicable	
Radio Communication Test Set	Agilent	PXT E6621A	MY51100168	Not Applicable	

* Calibrated during the test for the relevant parameters.

10.0 TEST METHODOLOGY

Tablets should be evaluated in normal use positions, typical for lap-held bottom-face only. However the number of positions will depend on the number of configurations the tablet can be operated in. The "Q555" PC can be used on the lap (see Appendix A) or hand held as a Tablet PC. One WLAN antenna location in the "Q555" is closest to the bottom of the tablet and the other antenna location is closest to the top of the tablet.

10.1 Position

10.1.1 "Lap Held" Position Definition (0mm spacing)

The DUT was tested in the 2.00 mm flat section of the ELI4 Flat phantom for the "Lap Held" position. The Transceiver was placed at the bottom of the phantom and suspended in such way that the back of the DUT was touching the phantom. This device orientation simulates the PC's normal use – being held on the lap of the user. A spacing of 0mm ensures that the SAR results are conservative and represent a worst-case position.

10.1.2 "Edge On" Position (Portrait or Landscape)

The DUT was tested in the (2.00 mm) flat section of the ELI4 Flat phantom for the "Edge On" position. The Antenna edge of the Transceiver was placed underneath the flat section of the phantom and suspended until the edge touched the phantom. *Refer to Appendix A for photos of measurement positions.*

10.2 List of All Test Cases (Antenna In/Out, Test Frequencies, User Modes)

The DUT has fixed antennas. Depending on the measured SAR level up to three test channels with the test sample operating at maximum power were recorded. The following table represents the matrix used to determine what testing was required. All relevant provisions of KDB 447498 are applied for SAR measurements of the host system.

Table 19 Testing configurations

Phantom Configuration	*Device Mode	Antenna	Test Configurations		
			Channel (Low)	Channel (Middle)	Channel (High)
Lap Held	OFDM 5GHz All Bands	A		X	
		B		X	
Edge On	OFDM 5GHz All Bands	A		X	
		B		X	

Legend

X (blue)	Testing Required in this configuration
(green)	Testing required in this configuration only if SAR of middle channel is more than 3dB below the SAR limit or it is the worst case.

NOTE: Throughout this report, Antenna A, B refer to Tx0, Tx1 in the host respectively.

11.0 SAR MEASUREMENT RESULTS

The SAR values averaged over 1g tissue masses were determined for the sample DUT for all test configurations listed in section 10.2.

11.1 5GHz Band SAR Results

Table 20 SAR MEASUREMENT RESULTS Lower Band – OFDM Mode 11a

Test Position	Plot No.	Test Mode	Test Ch.	Test Freq. (MHz)	SAR (1g) mW/g	Drift (dB)	∈r (target 49.0 ±5% 46.55 to 51.45)	σ (target 5.3 ±5% 5.04 to 5.57)	Tune Up SAR (mW/g)
Body Worn Lap Held Antenna 1 (OFDM) 18-09-14	1.	OFDM 5 GHz 6 Mbs	36	5180	0.884	-0.06	49.23	5.306	0.884
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.9 ±5% (46.46 to 51.35)**	**σ (target 5.4 ±5% (5.13 to 5.67)**	
Body Worn Lap Held Antenna 1 (OFDM) 18-09-14	2.	OFDM 5 GHz 6 Mbs	48	5240	0.908	-0.11	49.09	5.402	0.908
Body Worn Lap Held Antenna 1 (OFDM) 18-09-14	3.	OFDM 5 GHz 6 Mbs	52	5260	0.964	-0.16	49.01	5.447	0.964
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.8 ±5% 46.36 to 51.24)**	**σ (target 5.4 ±5% 5.13 to 5.67)**	
Body Worn Lap Held Antenna 1 (OFDM) 18-09-14	4.	OFDM 5 GHz 6 Mbs	64	5320	1.16	0.06	48.85	5.548	1.16
Body Worn Lap Held Antenna 1 (OFDM) 18-09-14	5.	OFDM 5 GHz 6 Mbs	64	5320	1.25	-0.02	48.85	5.548	1.25
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 49.0 ±5% 46.55 to 51.45)**	**σ (target 5.3 ±5% 5.04 to 5.57)**	
Body Worn Lap Held Antenna 0 (OFDM) 18-09-14	6.	OFDM 5 GHz 6 Mbs	36	5180	0.443	-0.19	49.23	5.306	0.443
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.9 ±5% (46.46 to 51.35)**	**σ (target 5.4 ±5% (5.13 to 5.67)**	
Body Worn Lap Held Antenna 0 (OFDM) 18-09-14	7.	OFDM 5 GHz 6 Mbs	48	5240	0.576	-0.21	49.09	5.402	0.576
Body Worn Lap Held Antenna 0 (OFDM) 18-09-14	8.	OFDM 5 GHz 6 Mbs	52	5260	0.559	0.04	49.01	5.447	0.559
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.8 ±5% 46.36 to 51.24)**	**σ (target 5.4 ±5% 5.13 to 5.67)**	
Body Worn Lap Held Antenna 0 (OFDM) 18-09-14	9.	OFDM 5 GHz 6 Mbs	64	5320	0.819	0.12	48.85	5.548	0.819
Body Worn Lap Held Antenna 0 (OFDM) 18-09-14	10.	OFDM 5 GHz 6 Mbs	64	5320	0.804	-0.19	48.85	5.548	0.804
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.9 ±5% 46.46 to 51.35)**	**σ (target 5.4 ±5% 5.13 to 5.67)**	
Body Worn Secondary Landscape Antenna 0 (OFDM) 18-09-14	11.	OFDM 5 GHz 6 Mbs	52	5260	0.0994	-0.16	49.01	5.447	0.099
Body Worn Primary Landscape Antenna 1 (OFDM) 18-09-14	-	OFDM 5 GHz 6 Mbs	52	5260	Noise Floor	N/A	49.01	5.447	Noise Floor
Body Worn Secondary Portrait Antenna 0 (OFDM) 18-09-14	12.	OFDM 5 GHz 6 Mbs	52	5260	0.253	-0.05	49.01	5.447	0.253
Body Worn Primary Portrait Antenna 1 (OFDM) 18-09-14	13.	OFDM 5 GHz 6 Mbs	52	5260	0.507	-0.09	49.01	5.447	0.507
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 49.0 ±5% 46.55 to 51.45)**	**σ (target 5.3 ±5% 5.04 to 5.57)**	
System Performance Check with D5GHzV2 Dipole (uniform grid) 18-09-14	14.	CW	0	5200	7.59	-0.07	49.21	5.343	-

NOTE: The measurement uncertainty of 25.0% for 5GHz testing is not added to the result.

The highest Measured SAR level in the 5.2 GHz band was 1.25 mW/g as evaluated in a 1g cube of averaging mass. The manufacturer's tune up power is stated to be 12 dBm. Scaling the SAR value was not required because the RF power during testing was 12.0 dBm or higher. This value was obtained in Body Worn Lap Held in OFDM mode, utilizing channel 64 (5320 MHz) and antenna 1.

Table 21 SAR MEASUREMENT RESULTS Middle Band – OFDM Mode 11a

Test Position	Plot No.	Test Mode	Test Ch.	Test Freq. (MHz)	SAR (1g) mW/g	Drift (dB)	∈r (target 48.6 ±5% 46.17 to 51.03)	σ (target 5.6 ±5% 5.32 to 5.88)	Tune Up SAR (mW/g)
Body Worn Lap Held Antenna 1 (OFDM) 22-09-14	15.	OFDM 5 GHz 6 Mbs	104	5520	0.559	-0.1	48.27	5.829	0.559
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.5 ±5% 46.08 to 50.93)**	**σ (target 5.77 ±5% 5.48 to 6.06)**	
Body Worn Lap Held Antenna 1 (OFDM) 22-09-14	16.	OFDM 5 GHz 6 Mbs	116	5580	0.562	-0.16	48.12	5.919	0.562
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.4 ±5% 45.98 to 50.82)**	**σ (target 5.9 ±5% 5.61 to 6.20)**	
Body Worn Lap Held Antenna 1 (OFDM) 22-09-14	17.	OFDM 5 GHz 6 Mbs	136	5680	0.813	-0.15	47.78	6.097	0.813
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.6 ±5% 46.17 to 51.03)**	**σ (target 5.6 ±5% 5.32 to 5.88)**	
Body Worn Lap Held Antenna 0 (OFDM) 22-09-14	18.	OFDM 5 GHz 6 Mbs	104	5520	0.648	-0.05	48.27	5.829	0.648
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.5 ±5% 46.08 to 50.93)**	**σ (target 5.77 ±5% 5.48 to 6.06)**	
Body Worn Lap Held Antenna 0 (OFDM) 22-09-14	19.	OFDM 5 GHz 6 Mbs	116	5580	0.824	-0.1	48.12	5.919	0.824
Body Worn Lap Held Antenna 0 (OFDM) 22-09-14	20.	OFDM 5 GHz 6 Mbs	116	5580	0.722	-0.1	48.12	5.919	0.722
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.4 ±5% 45.98 to 50.82)**	**σ (target 5.9 ±5% 5.61 to 6.20)**	
Body Worn Lap Held Antenna 0 (OFDM) 22-09-14	21.	OFDM 5 GHz 6 Mbs	136	5680	0.589	-0.08	47.78	6.097	0.589
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.5 ±5% 46.08 to 50.93)**	**σ (target 5.77 ±5% 5.48 to 6.06)**	
Body Worn Secondary Landscape Antenna 0 (OFDM) 22-09-14	22.	OFDM 5 GHz 6 Mbs	116	5580	0.155	-0.2	48.12	5.919	0.155
Body Worn Primary Landscape Antenna 1 (OFDM) 22-09-14	23.	OFDM 5 GHz 6 Mbs	116	5580	0.21	-0.2	48.12	5.919	0.21
Body Worn Secondary Portrait Antenna 0 (OFDM) 22-09-14	24.	OFDM 5 GHz 6 Mbs	116	5580	0.389	0.01	48.12	5.919	0.389
Body Worn Primary Portrait Antenna 1 (OFDM) 22-09-14	25.	OFDM 5 GHz 6 Mbs	116	5580	0.338	-0.17	48.12	5.919	0.338
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.6 ±5% 46.17 to 51.03)**	**σ (target 5.6 ±5% 5.32 to 5.88)**	
System Performance Check with D5GHzV2 Dipole (uniform grid) 22-09-14	26.	CW	1	5500	8.27	-0.06	48.34	5.787	-

NOTE: The measurement uncertainty of 25.0% for 5GHz testing is not added to the result.

The highest Measured SAR level in the 5.6 GHz band was 0.824 mW/g as evaluated in a 1g cube of averaging mass. The manufacturer's tune up power is stated to be 12 dBm. Scaling the SAR value was not required because the RF power during testing was 12.0 dBm or higher. This value was obtained in Body Worn Lap Held position in OFDM mode, utilizing channel 116 (5580 MHz) and antenna 0.

Table 22 SAR MEASUREMENT RESULTS High Band – OFDM Mode 11a

Test Position	Plot No.	Test Mode	Test Ch.	Test Freq. (MHz)	SAR (1g) mW/g	Drift (dB)	∈r (target 48.3 ±5% 45.89 to 50.72)	σ (target 5.9 ±5% 5.61 to 6.20)	Tune Up SAR (mW/g)
Body Worn Lap Held Antenna 1 (OFDM) 25-09-14	27.	OFDM 5 GHz 6 Mbs	149	5745	0.58	-0.18	47.14	6.149	0.58
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.2 ±5% 45.79 to 50.61)**	**σ (target 6.0 ±5% 5.7 to 6.3)**	
Body Worn Lap Held Antenna 1 (OFDM) 25-09-14	28.	OFDM 5 GHz 6 Mbs	157	5785	0.608	0.14	47.04	6.222	0.608
Body Worn Lap Held Antenna 1 (OFDM) 25-09-14	29.	OFDM 5 GHz 6 Mbs	165	5825	0.509	0.04	46.96	6.278	0.509
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.3 ±5% 45.89 to 50.72)**	**σ (target 5.9 ±5% 5.61 to 6.20)**	
Body Worn Lap Held Antenna 0 (OFDM) 25-09-14	30.	OFDM 5 GHz 6 Mbs	149	5745	0.601	-0.08	47.14	6.149	0.601
Test Position	**Plot No.**	**Test Mode**	**Test Ch.**	**Test Freq. (MHz)**	**SAR (1g) mW/g**	**Drift (dB)**	**∈r (target 48.2 ±5% 45.79 to 50.61)**	**σ (target 6.0 ±5% 5.7 to 6.3)**	
Body Worn Lap Held Antenna 0 (OFDM) 25-09-14	31.	OFDM 5 GHz 6 Mbs	157	5785	0.541	-0.16	47.04	6.222	0.541
Body Worn Lap Held Antenna 0 (OFDM) 25-09-14	32.	OFDM 5 GHz 6 Mbs	165	5825	0.615	0.08	46.96	6.278	0.615
Body Worn Secondary Landscape Antenna 0 (OFDM) 25-09-14	33.	OFDM 5 GHz 6 Mbs	157	5785	0.14	-0.02	47.04	6.222	0.14
Body Worn Secondary Portrait Antenna 0 (OFDM) 25-09-14	34.	OFDM 5 GHz 6 Mbs	157	5785	0.403	-0.09	47.04	6.222	0.403
Body Worn Primary Portrait Antenna 1 (OFDM) 25-09-14	35.	OFDM 5 GHz 6 Mbs	157	5785	0.298	0.07	47.04	6.222	0.298
System Performance Check with D5GHzV2 Dipole (uniform grid) 25-09-14	36.	CW	2	5800	8.29	0	47	6.246	-

NOTE: The measurement uncertainty of 25.0% for 5GHz testing is not added to the result.

The highest Measured SAR level in the 5.8 GHz band was 0.608 mW/g as evaluated in a 1g cube of averaging mass. The manufacturer's tune up power is stated to be 12 dBm. Scaling the SAR value was not required because the RF power during testing was 12.0 dBm or higher. This value was obtained in Body Worn Lap Held position in OFDM mode, utilizing channel 157 (5785 MHz) and antenna 1.

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12.0 COMPLIANCE STATEMENT

The Fujitsu TABLET PC, Model: Q555 with MITSUMI Wireless LAN & Bluetooth Module (802.11a/b/g/n), Model: DWM-W095A was found to comply with the FCC SAR requirements.

The highest Reported SAR level was 1.25 mW/g for a 1g cube. The manufacturer's tune up power is stated to be 12 dBm. Scaling the SAR value was not required because the RF power during testing was 12.0 dBm or higher. This value was measured at 5320 MHz (channel 64) in the "Body Worn Lap Held" position in OFDM modulation mode at the antenna 1. This was below the limit of 1.6 mW/g for uncontrolled exposure, but was within the band of measurement uncertainty around the limit.

The SAR test Variability checks were conducted and the repeated results are included in the SAR results tables.

13.0 MULTIBAND EVALUATION CONSIDERATIONS

According to the FCC SAR evaluation procedures mentioned in KDB447498, when the sum of SAR results (simultaneously transmitting antennas WLAN and WWAN) is > 1.6mW/g, and “the aggregate 1-g SAR is scaled by the sum of the differences between maximum tune-up and tested power of each transmitter - [(SAR1 +SAR2) * (Pdiff1 + Pdiff2)]”, or the ratio of above sum raised to the power of 1.5 to the distance between peak SAR locations is ≥ 0.04, $(SAR1 + SAR2)^{1.5}/Ri$ (rounded to two decimal digits), simultaneous transmission SAR evaluation is required.

The shortest distance between the BT antenna (Antenna 0) and the user is 5mm. The closest distance between WLAN 0 and WLAN1 antennas was 235mm.

In regards to the simultaneous transmission: according to the section 4.3.2 of the KDB 447498 the estimated SAR of the simultaneously transmitting Bluetooth is given by formula:
(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(2.45GHz)/*x*] W/kg
Result - [(**8 mW**)/(**5**mm)] ·[√f(GHz)/7.5]=**0.33**W/kg.

The highest SAR for the antenna B (1) was 1.25 mW/g the highest SAR for antenna A(0) was 0.824 mW/g the ratio of above sum raised to the power of 1.5 to the distance between peak SAR locations is

As $(1.52 + 0.824)^{1.5}/235=0.015 < 0.04$ so simultaneous transmission is not required

Diagram Showing Antenna Positions