SAR TEST REPORT

Test Report No. : 10048325H-A-R1

Applicant	:	**Toshiba Corporation**
Type of Equipment	:	**Wireless Network Adapter**
Model No.	:	**7260NGW**
FCC ID	:	**CJ6UPA5125WB**
Test regulation	:	**FCC47CFR 2.1093**
Test Result	:	**Complied**
Reported SAR(1g) Value		**FCC Part15.247(WLAN 11b/g/n(2.4GHz band), 11a/n/ac(5.8GHz band)** Body : 0.668W/kg **FCC Part15.407(WLAN 11a/n/ac(5.2GHz band, 5.3GHz band, 5.6GHz band)** Body : 0.787W/kg

The highest reported SAR(1g) Value for the device is 0.787 W/kg.
Simultaneous transmission test was excluded.
The highest sum of SAR(1g) for the simultaneous transmitting antennas Value for the device is 0.880 W/kg.

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This report is a revised version of 10048325H-A. 10048325H-A is replaced with this report.

Date of test: August 19 to August 26, 2013

Representative test engineer:

Hisayoshi Sato
Engineer of WiSE Japan,
UL Verification Service

Approved by :

Takahiro Hatakeda
Leader of WiSE Japan
UL Verification Service

NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address,
http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap

REVISION HISTORY

Original Test Report No.: 10048325H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10048325H-A	September 4, 2013	-	-
1	10048325H-A-R1	September 11, 2013	P. 10 to 12	Addition of Maximum tune-up tolerance limit (mW)
1	10048325H-A-R1	September 11, 2013	P. 28	Addition of *8) and following sentence; When Maximum tune-up limit < Calculation of threshold, standalone SAR measurement is excluded.

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SECTION 1: Customer information

Company Name	:	Toshiba Corporation
Address	:	Digital Products & Services Company, 2-9, Suehiro-cho, Ome-shi, Tokyo 198-8710, Japan
Telephone Number	:	+81-42-834-4540
Facsimile Number	:	+81-42-830-7331
Contact Person	:	Toshiyuki Echigo

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of EUT

Type of Equipment	Wireless LAN module
Model Number	7260NGW
Serial Number	MAC : 001500C6CD9D
Condition of EUT	7260NGW: Production model *. Used platform (Laptop PC: Production prototype (*. Not for sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample	August 07, 2013 (*. No modification by the Lab.)
Category Identified	The antenna portion of the EUT is located and used from a human body at a less than 20cm. *. Since the platform may contact and/or very close to a human body during Wi-Fi operation, the localized SAR (trunk) was evaluated.
Feature of EUT	The EUT is a Wireless LAN and Bluetooth module installed into the platform of laptop computer.
SAR accessary	none

2.2 Product Description

Radio Specification

Equipment type	Transceiver		
Power rating	DC 3.3V, *.The dc power is supplied from the constant voltage circuit of the main body of the EUT.		
Q'ty of Antenna	2 pcs. (Main antenna and Aux antenna)		
Operation specification	**Main antenna**	**Aux antenna**	
Operation mode	**Wi-Fi**	**WiFi**	**Bluetooth**
Frequency of operation	2412-2462MHz (11b,g,n(20MHz)) / 2422-2452MHz (11n(40MHz)); W52 band: 5180-5240MHz (11a,n(20MHz),ac(20MHz)) / 5190-5230MHz (11n(40MHz),ac(40MHz)) / 5210MHz (11ac(80MHz)); W53 band: 5260-5320MHz (11a,n(20MHz),ac(20MHz)) / 5270-5310MHz (11n(40MHz),ac(40MHz)) / 5290MHz (11ac(80MHz)); W56 band: 5500-5700MHz (11a,n(20MHz),ac(20MHz)) / 5510-5670MHz (11n(40MHz),ac(40MHz)) / 5530-5690MHz (11ac(80MHz)), in addition; 5720MHz (11ac(20MHz)), 5710MHz (11ac(40MHz)) W58 band: 5745-5825MHz (11a,n(20MHz),ac(20MHz)) / 5755-5795MHz (11n(40MHz),ac(40MHz)) / 5775MHz (11ac(80MHz)),		2402-2480MHz
Channel spacing	5MHz (2.45GHz band), 20MHz (W52, W53, W56, W58 band)		1MHz (BR, EDR), 2MHz (Low Energy)
Type of modulation	DSSS: DBPSK, DQPSK, CCK OFDM: BPSK, QPSK, 16QAM, 64QAM, (256QAM (*.11ac alone))		FHSS: GFSK, π/4-DQPSK, 8DPSK
Antenna specification	**Main antenna**	**Aux antenna**	
Antenna type	PIFA (Planar Inverted F Antenna)	PIFA (Planar Inverted F Antenna)	
Model name	Main Ant. (P/N: ATM6P-70100)	Aux Ant. (P/N: ATM6P-70200)	
Antenna connector type	RF module side: W.FL (Hirose) / Antenna side: soldered.	RF module side: W.FL (Hirose) / Antenna side: soldered.	
Cable type / length	OD 1.13 RF cable / 100mm	OD 1.13 RF cable / 100mm	
Antenna gain (Peak, with cable loss.)	-0.13 dBi (2400-2500MHz), 1.34 dBi (5150-5350MHz), 0.94 dBi (5470-5725MHz) 0.94 dBi (5725-5850MHz)	-0.23 dBi (2400-2500MHz), -1.68 dBi (5150-5350MHz), -0.63 dBi (5470-5725MHz) -1.50 dBi (5725-5850MHz)	
Transmit power	*. Refers to section 5 in this report.		

*.The EUT do not use the special transmitting technique such as "beam-forming" and "time-space code diversity."
***With the antenna Aux, the Wi-Fi operation and the Bluetooth operation can be transmitted simultaneously.**
*5600MHz-5650MHz is not used in Canada.

SECTION 3 : Test standard information

3.1 Test Specification

Title : **FCC47CFR 2.1093**
Radiofrequency radiation exposure evaluation: portable devices.

: **IEEE Std 1528-2003:**
IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques Supplement C

: **Published RF exposure KDB procedures, TCB workshop updates**

In additions;

☑ **KDB450824D01(v01r01)**	SAR Prob Cal and Ver Meas
☑ **KDB450824D02(v01r01)**	Dipole SAR Validation Verification
☑ **KDB447498D01(v05r01)**	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
☐ **KDB447498D02(v02)**	SAR Measurement Procedures for USB Dongle Transmitters
☐ **KDB648474D04(v01r01)**	SAR Evaluation Considerations for Wireless Handsets
☐ **KDB941225D01(v02)**	SAR Measurement Procedures for 3G Devices
☐ **KDB941225D02(v02v02)**	3GPP R6 HSPA and R7 HSPA+ SAR Guidance
☐ **KDB941225D03(v01)**	Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE
☐ **KDB941225D04(v01)**	Evaluating SAR for GSM/(E)GPRS Dual Transfer Mode
☐ **KDB941225D05(v02r02)**	SAR for LTE Devices
☐ **KDB941225D06(v01r01)**	SAR test procedures for devices incorporating SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities (Hot Spot SAR)
☐ **KDB941225D07(v01r01)**	SAR Evaluation Procedures for UMPC Mini-Tablet Devices
☑ **KDB 616217D04(v01r01)**	SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers
☑ **KDB865664D01(v01r01)**	SAR Measurement Requirements for 100MHz to 6 GHz
☑ **KDB248227D01(v01r02)**	SAR Measurement Procedures for 802.11a//b/g Transmitters

Reference

[1]ANSI, ANSI/IEEE C95.1-1992: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, The Institute of Electrical and Electronics Engineers, Inc., New York, NY 10017, 1992.
[2]SPEAG uncertainty document (AN 15-7/AN19-17) for DASY 5 System from SPEAG (Shimid & Partner Engineering AG).

3.2 Procedure

Transmitter	WLAN	Bluetooth
Test Procedure	Published RF exposure KDB procedures, TCB workshop updates	Exemption*
	SAR	
Category	FCC47CFR 2.1093	FCC47CFR 2.1093
Note: UL Japan, Inc. 's SAR Work Procedures 13-EM-W0429 and 13-EM-W0430		

* Since SAR exclusion threshold conditions are corresponded by KDB 447498 D01, an SAR test is not required. Refer to Section 6.

3.3 Exposure limit

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

Spatial Average (averaged over the whole body)	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.4	8.0	20.0

(B) Limits for General population/Uncontrolled Exposure (W/kg)

Spatial Average (averaged over the whole body	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.08	1.6	4.0

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).

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

NOTE:GENERAL POPULATION/UNCONTROLLED EXPOSURE
SPATIAL PEAK(averaged over any 1g of tissue) LIMIT
1.6 W/kg

3.4 Test Location

*Shielded room for SAR testings
UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

SECTION 4 : Test result

4.1 Stand-alone SAR result

Stand-alone SAR Procedure

No.	Capable Tx configurations		Head SAR	Body-worn SAR	Body SAR	Product specific (Hotspot)	Note
1	WLAN	WLAN 2.4GHz band	-	-	Yes	-	-
2		WLAN 5GHz band	-	-	Yes	-	-
3	Bluetooth	Bluetooth BDR/EDR/LE	Exemption*1				

Reported SAR

Measured SAR is scaled to the maximum tune-up tolerance limit by the following formulas.

Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW]・Measured SAR [W/kg]

1g Body SAR

Mode	Measured maximum power [mW]*2	Maximum tune-up tolerance limit [mW]	Measured SAR [W/kg]	Reported SAR [W/kg]
WLAN 2.4GHz band	76.74	80.17	0.208	0.217
WLAN 5.2GHz band	77.09	79.62	0.685	0.707
WLAN 5.3GHz band	36.81	38.46	0.551	0.576
WLAN 5.6GHz band	85.51	88.92	0.757	0.787
WLAN 5.8GHz band	40.18	43.25	0.621	0.668
Bluetooth	-*1			

Note

*1 Since SAR exclusion threshold conditions are corresponded by KDB 447498 D01, and SAR test is not required.
Refer to Section 6

*2 The sample used by the SAR test is within the tune-up tolerance but not more than 2 dB lower than the maximum tune-up tolerance limit. That is, measured maximum power is included the tune-up tolerance range.

4.2 Simultaneous transmission SAR result

<Simultaneous Procedure>

This EUT has the unlicensed transmitter such as WLAN (802.11a/b/g/n) & Bluetooth devices, and the following simultaneous transmission is possible.

No.	Capable Tx configrations	Head SAR	Body SAR	Note
4	WLAN 2.4GHz Main ant + Bluetooth ant(Shared WLAN Aux ant)	-	Yes	
5	WLAN 5GHz Main/Aux ant + Bluetooth ant(Shared WLAN Aux ant)	-	Yes	

Simultaneous transmission SAR

<WLAN + Bluetooth >

Simultaneous transmitter evaluation based on the KDB447498D01

Step1.	Standalone SAR test exclusion considerations. Refer to Section 6.
Step2.	Measured Stand-alone SAR for WLAN.
Step3.	No measured Stand-alone SAR for Bluetooth.
Step4.	Simultaneous transmission is possible (WLAN Main/Aux ant + Bluetooth) Simultaneous transmission SAR test exclusion considerations.
Step5	Estimated SAR for Bluetooth is calculated.
Step6.	1.6W/kg > ∑1g SAR (WLAN + Bluetooth) Body: 0.880 W/kg Refer to Section 10
Step7.	No simultaneous transmission SAR test.

SECTION 5 : Description of the operating mode

5.1 Output power operating modes

WLAN*1

Mode	Duty cycle	Frequency Band	Test Frequency	Modulation
IEEE802.11b	100%	2412-2462MHz	2412MHz (1ch) 2437MHz (6ch) 2462MHz (11ch)	DSSS (DBPSK.DQPSK.CCK)
IEEE802.11g	100%	2412-2462MHz	2412MHz (1ch) 2437MHz (6ch) 2462MHz (11ch)	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
IEEE802.11n20 (2.4G)	100%	2412-2462MHz	2412MHz (1ch) 2437MHz (6ch) 2462MHz (11ch)	
IEEE802.11n40 (2.4G)	100%	2422-2452MHz	2422MHz (3ch) 2437MHz (6ch) 2452MHz (9ch)	
IEEE802.11a	100%	5180-5240MHz	All channel	
	100%	5260-5320MHz	All channel	
	100%	5500-5700MHz	All channel	
	100%	5745-5825MHz	All channel	
IEEE802.11n20 (5G)	100%	5180-5240MHz	All channel	
	100%	5260-5320MHz	All channel	
	100%	5500-5700MHz	All channel	
	100%	5745-5825MHz	All channel	
IEEE802.11n40 (5G)	100%	5190-5230MHz	All channel	
	100%	5270-5310MHz	All channel	
	100%	5510-5670MHz	All channel	
	100%	5755-5795MHz	All channel	
IEEE802.11ac20 (5G)	100%	5720MHz	All channel	
IEEE802.11ac40 (5G)	100%	5710MHz	All channel	
IEEE802.11ac80 (5G)	100%	5210MHz 5290MHz 5530-5690MHz 5775MHz	All channel	

Setting

WLAN
*Power of the EUT was set by the software as follows;
Software: DRTU Version 1.6.4-726
Power settings: See clause 5.2.
*This setting of software is the worst case.
Any conditions under the normal use do not exceed the condition of setting.
In addition, end users cannot change the settings of the output power of the product.

WLAN Maximum tune-up tolerance limit

The below table is power data of the original report*. Refer to the power data indicated in the original report of EUT for this report.

* Refer to page 16 to 18 in the original report(Company Name: Intel Corporation, Test report Number: SAR.20130203).

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Antenna	Maximum tune-up tolerance limit (dBm)	Maximum tune-up tolerance limit (mW)
2450MHz	802.11b	20	1	2412	Main	15.47	35.24
			6	2437		15.50	35.48
			11	2462		15.48	35.32
			1	2412	AUX	13.98	25.00
			6	2437		14.00	25.12
			11	2462		13.99	25.06
	802.11g	20	1	2412	Main	13.48	22.28
			6	2437		16.50	44.67
			11	2462		13.47	22.23
			1	2412	AUX	11.99	15.81
			6	2437		15.49	35.40
			11	2462		13.46	22.18
	802.11n	20	1	2412	Main	13.48	22.28
			6	2437		16.50	44.67
			11	2462		13.46	22.18
			1	2412	AUX	11.97	15.74
			6	2437		15.50	35.48
			11	2462		13.42	21.98
	802.11n	40	3	2422	Main	11.96	15.70
			6	2437		16.47	44.36
			9	2452		12.90	19.50
			3	2422	AUX	9.92	9.82
			6	2437		13.42	21.98
			9	2452		12.89	19.45
5.15–5.25GHz	802.11a	20	36	5180	Main	13.46	22.18
			40	5200		15.86	38.55
			44	5220		16.00	39.81
			48	5240		14.98	31.48
			36	5180	AUX	12.89	19.45
			40	5200		15.92	39.08
			44	5220		16.00	39.81
			48	5240		14.96	31.33
	802.11n	20	36	5180	Main	13.42	21.98
			40	5200		15.87	38.64
			44	5220		16.00	39.81
			48	5240		15.48	35.32
			36	5180	AUX	12.86	19.32
			40	5200		15.91	38.99
			44	5220		16.00	39.81
			48	5240		15.46	35.16
	802.11n	40	38	5190	Main	9.46	8.83
			46	5230		15.42	34.83
			38	5190	AUX	9.94	9.86
			46	5230		15.37	34.43
	802.11ac	80	42	5210	Main	8.46	7.01
					AUX	8.39	6.90
5.25–5.35GHz	802.11a	20	52	5260	Main	13.45	22.13
			56	5280		15.87	38.64
			60	5300		16.00	39.81
			64	5320		13.46	22.18
			52	5260	AUX	12.90	19.50
			56	5280		15.93	39.17
			60	5300		16.00	39.81
			64	5320		12.94	19.68
	802.11n	20	52	5260	Main	13.42	21.98
			56	5280		15.81	38.11
			60	5300		15.94	39.26
			64	5320		13.48	22.28
			52	5260	AUX	12.85	19.28
			56	5280		15.93	39.17
			60	5300		15.85	38.46
			64	5320		13.00	19.95
	802.11n	40	54	5270	Main	9.48	8.87
			62	5310		11.00	12.59
			54	5270	AUX	9.99	9.98
			62	5310		10.97	12.50
	802.11ac	80	58	5290	Main	10.47	11.14
					AUX	10.92	12.36

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Antenna	Maximum tune-up tolerance limit (dBm)	Maximum tune-up tolerance limit (mW)
5600MHz	802.11a	20	100	5500	Main	13.46	22.18
			104	5520		16.42	43.85
			108	5540		16.39	43.55
			112	5560		16.50	44.67
			116	5580		16.48	44.46
			120	5600		16.42	43.85
			124	5620		16.46	44.26
			128	5640		16.37	43.35
			132	5660		16.50	44.67
			136	5680		16.47	44.36
			140	5700		12.93	19.63
			100	5500	AUX	12.95	19.72
			104	5520		16.42	43.85
			108	5540		16.38	43.45
			112	5560		16.50	44.67
			116	5580		16.43	43.95
			120	5600		16.48	44.46
			124	5620		16.42	43.85
			128	5640		16.40	43.65
			132	5660		16.50	44.67
			136	5680		16.38	43.45
			140	5700		12.42	17.46
	802.11n	20	100	5500	Main	13.50	22.39
			104	5520		16.42	43.85
			108	5540		16.48	44.46
			112	5560		16.45	44.16
			116	5580		16.37	43.35
			120	5600		16.48	44.46
			124	5620		16.50	44.67
			128	5640		16.41	43.75
			132	5660		16.45	44.16
			136	5680		16.39	43.55
			140	5700		12.98	19.86
			100	5500	AUX	12.99	19.91
			104	5520		16.34	43.05
			108	5540		16.39	43.55
			112	5560		16.41	43.75
			116	5580		16.50	44.67
			120	5600		16.42	43.85
			124	5620		16.48	44.46
			128	5640		16.43	43.95
			132	5660		16.47	44.36
			136	5680		16.48	44.46
			140	5700		12.49	17.74
	802.11n	40	102	5510	Main	10.42	11.02
			110	5550		16.48	44.46
			118	5580		16.42	43.85
			126	5610		16.47	44.36
			134	5670		15.49	35.40
			102	5510	AUX	10.48	11.17
			110	5550		16.48	44.46
			118	5580		16.43	43.95
			126	5610		16.38	43.45
			134	5670		15.46	35.16
	802.11ac	20	144	5720	Main	16.48	44.46
					AUX	16.42	43.85
		40	142	5710	Main	16.43	43.95
					AUX	16.47	44.36
		80	106	5530	Main	8.97	7.89
			122	5610		13.95	24.83
			138	5690		13.92	24.66
			106	5530	AUX	8.91	7.78
			122	5610		13.97	24.95
			138	5690		13.99	25.06

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Antenna	Maximum tune-up tolerance limit (dBm)	Maximum tune-up tolerance limit (mW)
5800MHz	802.11a	20	149	5745	Main	16.48	44.46
			153	5765		16.47	44.36
			157	5785		16.50	44.67
			161	5805		16.43	43.95
			165	5825		16.38	43.45
			149	5745	AUX	16.42	43.85
			153	5765		16.45	44.16
			157	5785		16.50	44.67
			161	5805		16.47	44.36
			165	5825		16.49	44.57
	802.11n	20	149	5745	Main	16.42	43.85
			153	5765		16.45	44.16
			157	5785		16.48	44.46
			161	5805		16.43	43.95
			165	5825		16.41	43.75
			149	5745	AUX	16.40	43.65
			153	5765		16.48	44.46
			157	5785		16.39	43.55
			161	5805		16.47	44.36
			165	5825		16.45	44.16
	802.11n	40	151	5755	Main	16.43	43.95
			159	5795		16.37	43.35
			151	5755	AUX	16.36	43.25
			159	5795		16.42	43.85
	802.11ac	80	155	5775	Main	13.98	25.00
					AUX	14.00	25.12

Bluetooth Maximum tune-up tolerance limit
BR-EDR: 6dBm
LE: 5dBm

5.2 Confirmation before SAR testing (Output power measurement results)

Power measurement in the mode which performed SAR measurement original report, and the mode which performed SAR measurement by the addition this report was performed.

1) WLAN (11b/g/n(2.4G))

IEEE802.11b 1Mbps Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
6	2437	2.81	2.63	10.01	15.45	35.08	16.0

IEEE802.11b 1Mbps Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
6	2437	1.24	2.63	10.07	13.94	24.77	15.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11g 6Mbps Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
6	2437	3.44	2.63	10.01	16.08	40.55	16.5

IEEE802.11g 6Mbps Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
6	2437	2.51	2.63	10.07	15.21	33.19	16.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT4 Ant Main

Ch	Guard Interval	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
6	Long	2437	3.76	2.63	10.01	16.40	43.65	17.0

IEEE802.11n20 HT4 Ant Aux

Ch	Guard Interval	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
6	Long	2437	2.68	2.63	10.07	15.38	34.51	16.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT4 Ant Main

Ch	Guard Interval	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
6	Long	2437	3.50	2.63	10.01	16.14	41.11	19.00

IEEE802.11n40 HT4 Ant Aux

Ch	Guard Interval	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
6	Long	2437	0.66	2.63	10.07	13.36	21.68	14.00

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Gain Setting
6	2437	Main	3.28	2.63	10.01	15.92	18.85	25.5
		Aux	3.06	2.63	10.07	15.76		30.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
6	2437	Main	2.50	2.63	10.01	15.14	18.17	17.0
		Aux	2.47	2.63	10.07	15.17		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

2) WLAN (11a/n/ac(5180-5240MHz)):

IEEE802.11a 6Mbps Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
44	5220	1.82	3.96	10.02	15.80	38.02	17.5

IEEE802.11a 6Mbps Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
44	5220	1.71	3.96	10.13	15.80	38.02	17.0
40	5200	1.70	3.95	10.13	15.78	37.84	17.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT4 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
44	5220	2.02	3.93	10.02	15.97	39.54	16.5

IEEE802.11n20 HT4 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
44	5220	1.74	3.93	10.13	15.80	38.02	17.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT4 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
46	5230	1.17	3.96	10.02	15.15	32.73	16.0

IEEE802.11n40 HT4 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
46	5230	1.08	3.96	10.13	15.17	32.89	17.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac(80M) VHT6 Ant Main

Ch	Frequency [MHz]	S/A Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
42	5210	-5.52	3.95	10.02	8.45	7.00	9.5

IEEE802.11ac(80M) VHT6 Ant Aux

Ch	Frequency [MHz]	S/A Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
42	5210	-5.90	3.95	10.13	8.18	6.58	9.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Gain Setting
44	5220	Main	2.00	3.96	10.02	15.98	18.87	34.0
		Aux	1.64	3.96	10.13	15.73		34.0
40	5200	Main	1.79	3.95	10.02	15.76	18.87	33.5
		Aux	1.87	3.95	10.13	15.95		34.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
46	5230	Main	1.64	3.96	10.02	15.62	18.31	17.0
		Aux	0.87	3.96	10.13	14.96		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac80 VHT6 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
42	5210	Main	-6.05	3.96	10.02	7.93	11.43	10.5
		Aux	-5.24	3.96	10.14	8.86		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

3) WLAN (11a/n/ac(5260-5320MHz):

IEEE802.11a 6Mbps Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
60	5300	1.80	3.99	10.02	15.81	38.11	16.0

IEEE802.11a 6Mbps Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
60	5300	1.81	3.99	10.14	15.94	39.26	16.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT4 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
60	5300	1.63	3.99	10.02	15.64	36.64	16.0

IEEE802.11n20 HT4 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
56	5280	1.74	3.98	10.14	15.86	38.55	16.5
60	5300	1.51	4.01	10.14	15.66	36.81	17.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT4 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
62	5310	-3.18	3.99	10.02	10.83	12.11	11.00

IEEE802.11n40 HT4 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
62	5310	-3.23	3.99	10.14	10.90	12.30	11.50

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac(80M) VHT6 Ant Main

Ch	Frequency [MHz]	S/A Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
58	5290	-3.61	3.97	10.02	10.38	10.91	10.0

IEEE802.11ac(80M) VHT6 Ant Aux

Ch	Frequency [MHz]	S/A Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
58	5290	-3.43	3.97	10.14	10.68	11.69	11.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
56	5280	Main	1.70	3.99	10.02	15.71	18.61	17.0
		Aux	1.35	3.99	10.14	15.48		
60	5300	Main	1.82	3.99	10.02	15.83	18.78	17.5
		Aux	1.58	3.99	10.14	15.71		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
62	5310	Main	-3.06	3.99	10.02	10.95	13.84	12.0
		Aux	-3.43	3.99	10.14	10.70	-	

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac80 VHT6 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
58	5290	Main	-3.29	3.99	10.02	10.72	13.57	12
		Aux	-3.74	3.99	10.14	10.39		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

4) WLAN (11a/n(5500-5700MHz, 11ac(5500MHz-5720MHz)):

IEEE802.11a 6Mbps Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
112	5560	2.17	4.09	10.02	16.28	42.46	16.5

IEEE802.11a 6Mbps Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
132	5660	2.05	4.15	10.14	16.34	43.05	16.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT4 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
124	5620	2.20	4.12	10.02	16.34	43.05	17.5

IEEE802.11n20 HT4 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
116	5580	1.84	4.10	10.14	16.08	40.55	17.0
108	5540	2.00	4.06	10.14	16.20	41.69	17.0
124	5620	1.77	4.12	10.14	16.03	40.09	17.0
136	5680	1.94	4.15	10.14	16.23	41.98	17.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT4 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
110	5550	2.03	4.08	10.02	16.13	41.02	17.0

IEEE802.11n40 HT4 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
110	5550	1.98	4.08	10.14	16.20	41.69	17.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac(20MHz) VHT0 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
144	5720	2.20	4.17	10.02	16.39	43.55	16.0

IEEE802.11ac(20MHz) VHT0 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
144	5720	1.99	4.17	10.14	16.30	42.66	17.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac(40MHz) VHT0 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
142	5710	1.79	4.16	10.02	15.97	39.54	16.5

IEEE802.11ac(40MHz) VHT0 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
142	5710	1.99	4.16	10.14	16.29	42.56	18.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac(80M) VHT6 Ant Main

Ch	Frequency [MHz]	S/A Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
106	5530	-5.37	4.08	10.02	8.73	7.46	7.5
122	5610	-0.48	4.12	10.02	13.66	23.23	13.5
138	5690	-0.39	4.15	10.02	13.78	23.88	13.5

IEEE802.11ac(80M) VHT6 Ant Aux

Ch	Frequency [MHz]	S/A Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
106	5530	-5.69	4.08	10.14	8.53	7.13	7.5
122	5610	-0.38	4.12	10.14	13.88	24.43	14.0
138	5690	-0.35	4.15	10.14	13.94	24.77	14.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Gain Setting
108	5540	Main	2.41	4.06	10.02	16.49	19.43	35.0
		Aux	2.15	4.06	10.14	16.35		34.0
120	5600	Main	2.27	4.10	10.02	16.39	19.33	35.5
		Aux	2.00	4.10	10.14	16.24		34.5
124	5620	Main	2.19	4.12	10.02	16.33	19.31	35.5
		Aux	2.01	4.12	10.14	16.27		34.5
132	5660	Main	2.23	4.14	10.02	16.39	19.40	35.5
		Aux	2.10	4.14	10.14	16.38		35.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Gain Setting
110	5550	Main	2.28	4.09	10.02	16.39	19.32	35.0
		Aux	2.00	4.09	10.14	16.23		34.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac20 VHT0 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
144	5720	Main	1.88	4.16	10.02	16.06	19.22	19.0
		Aux	2.05	4.16	10.14	16.35		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac40 VHT0 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
142	5710	Main	2.06	4.15	10.03	16.24	19.37	19
		Aux	2.21	4.15	10.11	16.47	-	

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac80 VHT6 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	S/A Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
122	5610	Main	-0.34	4.12	10.02	13.80	16.82	16.0
		Aux	-0.45	4.12	10.14	13.81		
138	5690	Main	-0.86	4.15	10.02	13.31	16.61	15.5
		Aux	-0.42	4.15	10.14	13.87		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

5) WLAN (11a/n/ac(5745-5825MHz)):

IEEE802.11a 6Mbps Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
157	5785	2.23	4.20	10.02	16.45	44.16	16.5

IEEE802.11a 6Mbps Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
157	5785	1.76	4.20	10.14	16.10	40.74	16.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT4 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
157	5785	2.16	4.20	10.02	16.38	43.45	17.0

IEEE802.11n20 HT4 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
153	5765	1.77	4.20	10.14	16.11	40.83	17.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT4 Ant Main

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
151	5755	2.14	4.20	10.02	16.36	43.25	17.0

IEEE802.11n40 HT4 Ant Aux

Ch	Frequency [MHz]	P/M Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
159	5795	1.93	4.21	10.14	16.28	42.46	17.5
151	5755	1.70	4.20	10.14	16.04	40.18	17.0

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac(80M) VHT6 Ant Main

Ch	Frequency [MHz]	S/A Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
155	5775	-0.33	4.21	10.02	13.90	24.55	13.5

IEEE802.11ac(80M) VHT6 Ant Aux

Ch	Frequency [MHz]	S/A Reading AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG	Power Setting
155	5775	-0.52	4.21	10.14	13.83	24.15	14.5

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n20 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
153	5765	Main	1.93	4.2	10.02	16.15	19.27	19.0
		Aux	2.02	4.2	10.14	16.36		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11n40 HT8 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
151	5755	Main	1.67	4.2	10.02	15.89	19.13	19.0
		Aux	2.00	4.2	10.14	16.34	-	

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

IEEE802.11ac80 VHT6 Ant Main+Aux

Ch	Frequency [MHz]	Antenna	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result Total [dBm]	Power Setting
155	5775	Main	-0.50	4.21	10.02	13.73	16.57	15.5
		Aux	-0.96	4.21	10.14	13.39	-	

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

5.3 SAR testing operating modes

The operating mode for SAR testing was decided by the output power

1) SAR measurement for WLAN

Decision of SAR test channel

The operating mode for SAR testing was decided by the output power
The average output power for 802.11a was measured on all channels in each frequency band.

Mode		GHz	Channel	"Default Test Channel"			
				FCC 15.247		UNII	
				802.11b	802.11g		
802.11 b/g/n20		2.412	1	√	Δ		
		2.437	6	√	Δ		
		2.462	11	√	Δ		
802.11a/n20	UNII	5.18	36			√	
		5.20	40				*
		5.22	44				*
		5.24	48			√	
		5.26	52			√	
		5.28	56				*
		5.30	60				*
		5.32	64			√	
		5.50	100				*
		5.52	104			√	
		5.54	108				*
		5.56	112				*
		5.58	116			√	
		5.60	120				*
		5.62	124			√	
		5.64	128				*
		5.66	132				*
		5.68	136			√	
		5.70	140				*
	UNII or FCC 15.247	5.745	149	√		√	
		5.765	153		*		*
		5.785	157	√			*
		5.805	161		*	√	
	FCC 15.247	5.825	165	√			
802.11n40	UNII	5.19	38			√	
		5.23	46			√	
		5.27	54			√	
		5.31	62			√	
		5.51	102			√	
		5.55	110			√	
		5.59	118				*
		5.63	126			√	
		5.67	134			√	
	UNII or FCC 15.247	5.755	151	√		√	
	FCC 15.247	5.795	159	√		√	

√ = "default test channels"
* = Possible 802.11a channels with maximum average output > the "default test channels"
Δ = Possible 802.11g channels with maximum average output ¼ dB ≥ the "default test channels"

SAR measurement was performed in the mode which performed SAR measurement original report
From this SAR result, measurement modes other than the original measurement mode are added.

WLAN

Mode	Test Frequency	Modulation	Crest factor	Note
IEEE802.11b	2437MHz(6ch)	DBPSK(1Mbps)	1	
IEEE802.11g	2437MHz(6ch)	BPSK(6Mbps)	1	
IEEE802.11n20 (2.4G)	2437MHz(6ch)	BPSK(HT4)	1	
IEEE802.11n40 (2.4G)	2437MHz(6ch)	BPSK(HT4)	1	
IEEE802.11a	5200MHz(40ch) 5220MHz(44ch) 5300MHz(60ch) 5560MHz(112ch) 5660MHz(132ch) 5785MHz(157ch)	BPSK(6Mbps)	1	
IEEE802.11n20 (5G)	5200MHz(40ch) 5220MHz(44ch) 5280MHz(56ch) 5300MHz(60ch) 5540MHz(108ch) 5580MHz(116ch) 5600MHz(120ch) 5620MHz(124ch) 5660MHz(132ch) 5680MHz(136ch) 5765MHz(153ch) 5785MHz(157ch)	16QAM(HT4) BPSK(HT8)	1	
IEEE802.11n40 (5G)	5230MHz(46ch) 5310MHz(62ch) 5550MHz(110ch) 5755MHz(151ch) 5795MHz(159ch)	16QAM(HT4) BPSK(HT8)	1	
IEEE802.11ac20 (5G)	5720MHz(144ch)	BPSK(VHT0)	1	
IEEE802.11ac40 (5G)	5710MHz(142ch)	BPSK(VHT0)	1	
IEEE802.11ac80 (5G)	5210MHz(42ch) 5290MHz(58ch) 5610MHz(122ch) 5690MHz(138ch) 5775MHz(155ch)	64QAM(VHT6)	1	
Setting				
WLAN *Power of the EUT was set by the software as follows; Software: DRTU Version 1.6.4-726 Power settings: See clause 5.2. *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.				

5.4 Confirmation after SAR testing

It was checked that the power drift [W] is within +/-5%.The verification of power drift during the SAR test is that DASY5 system calculates the power drift by measureing the e-filed at the same location at beginning and the end of the scan measurement for each test position.

DASY5 system calucation Power drift value[dB] =20log(Ea)/(Eb)
Before SAR testing : Eb[V/m]
After SAR testing : Ea[V/m]

Limit of power drift[W] =+/-5%
X[dB]=10log[P]=10log(1.05/1)=10log(1.05)-10log(1)=0.212dB

from E-filed relations with power.
p=E^2/η=E^2/
Therefore, The correlation of power and the E-filed
XdB=10log(P)=10log(E)^2=20log(E)

Therefore,
The calculated power drift of DASY5 System must be the less than +/-0.212dB.

SECTION 6 SAR test exclusion considerations

6.1 Standalone SAR test exclusion considerations

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm 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 for 10-g extremity SAR, where
f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation17
The result is rounded to one decimal place for comparison
The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Ant. Main and Aux WLAN 2.4GHz

Band	Standalone SAR tested	Positiom	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of exclusion *3
WLAN(2.4 GHz band)	☑	Bottom side	2462 [MHz] (11ch)	16.5 [dBm] 44.67 [mW]	9.0 [mm]	7.8
WLAN(2.4 GHz band)	☑	Rear	2462 [MHz] (11ch)	16.5 [dBm] 44.67 [mW]	7.0 [mm]	10.0

Ant. Main and Aux WLAN 5GHz

Band	Standalone SAR tested	Positiom	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of exclusion *3
WLAN (5GHz band)	☑	Bottom side	5825 [MHz] (165ch)	16.5 [dBm] 44.67 [mW]	9.0 [mm]	12.0
WLAN (5GHz band)	☑	Rear	5825 [MHz] (165ch)	16.5 [dBm] 44.67 [mW]	7.0 [mm]	15.4

Bluetooth

Band	Standalone SAR tested	Positiom	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of exclusion *3
Bluetooth	☐	Bottom side	2480 [MHz] (79ch)	6 [dBm] 3.98 [mW]	9.0 [mm]	0.7
Bluetooth	☐	Rear	2480 [MHz] (79ch)	6 [dBm] 3.98 [mW]	7.0 [mm]	0.9

2) At 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following.
a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

Ant. Main and Aux WLAN 2.4GHz

Band	Standalone SAR tested*8	Positiom	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of threshold*4
WLAN(2.4 GHz band)	□	Right side / Left side	2462 [MHz] (11ch)	16.5 [dBm] 44.67 [mW]	53 [mm]	125.6 [mW]

Ant. Main and Aux WLAN 5GHz

Band	Standalone SAR tested*8	Positiom	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of threshold*4
WLAN (5GHz band)	□	Right side / Left side	5825 [MHz] (165ch)	16.5 [dBm] 44.67 [mW]	53 [mm]	92.2 [mW]

Bluetooth

Band	Standalone SAR tested*8	Positiom	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of threshold*4
Bluetooth	□	Right side/ Left side	2480 [MHz] (79ch)	6 [dBm] 3.98 [mW]	53 [mm]	125.3 [mW]

*1 The upper frequency of the frequency band was used in order to calculate standalone SAR test exclusion considerations.
*2 When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. Refer to Appendix 4.
*3 [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 3.0
If it is Calculation of exclusion ≤ 3.0 standalone SAR test is excluded.
*4 $[(3\cdot 50)/(\sqrt{f_{(GHz)}})) + (\text{test separation distance} - 50\ \text{mm})\cdot 10]$ mW at > 1500 MHz and ≤ 6 GHz
If it is maximum tune-up tolerance limit < Threshold, standalone SAR test is excluded.
*5 Please refer to an attached sheet(tune –up procedure).
*6 The measured output power is the maximum tune-up tolerance limit on specification.
*7 Maximum tune-up tolerance limit is maximum power of test report of Bluetooth module (FCC ID: QDS-BRCM1073 Test report No.: FR330410AC).
*8 When Maximum tune-up tolerance limit < Calculation of threshold, standalone SAR measurement is excluded.

SECTION 7 : Description of the Body setup

7.1 Description of the Body setup

i)Procedure for SAR testing

-The tested procedure was performed according to the KDB 447498 D01 (Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies) and the KDB 616217 D04.

ii)Test mode

WLAN	**Data transmission mode (11a/b/g/n/ac)**

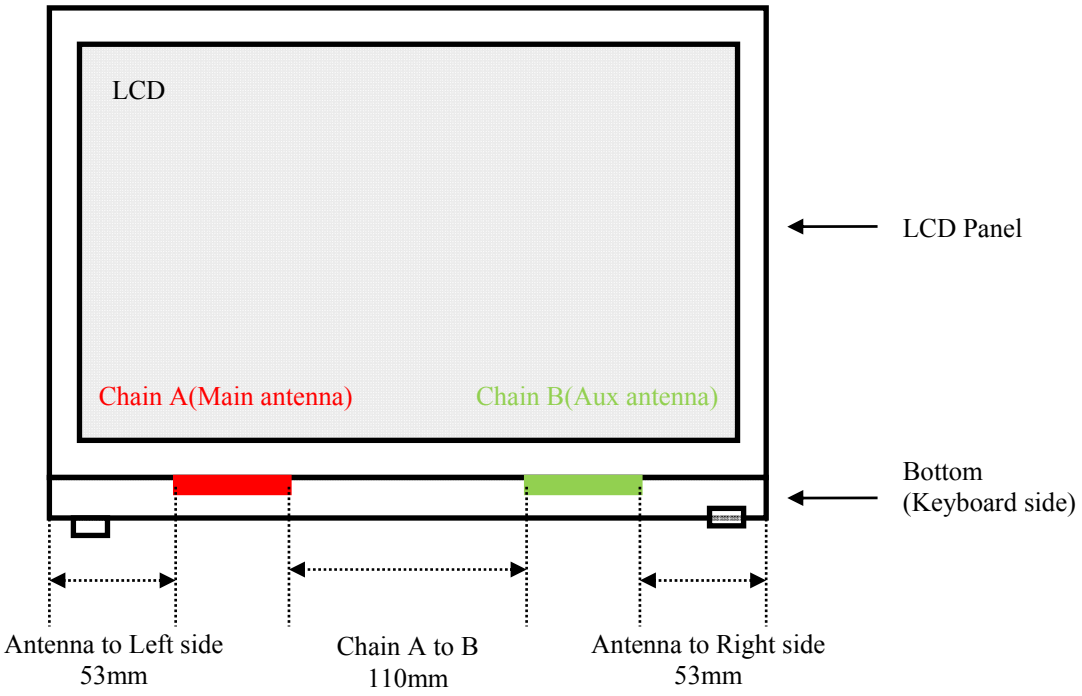
iii)Test position

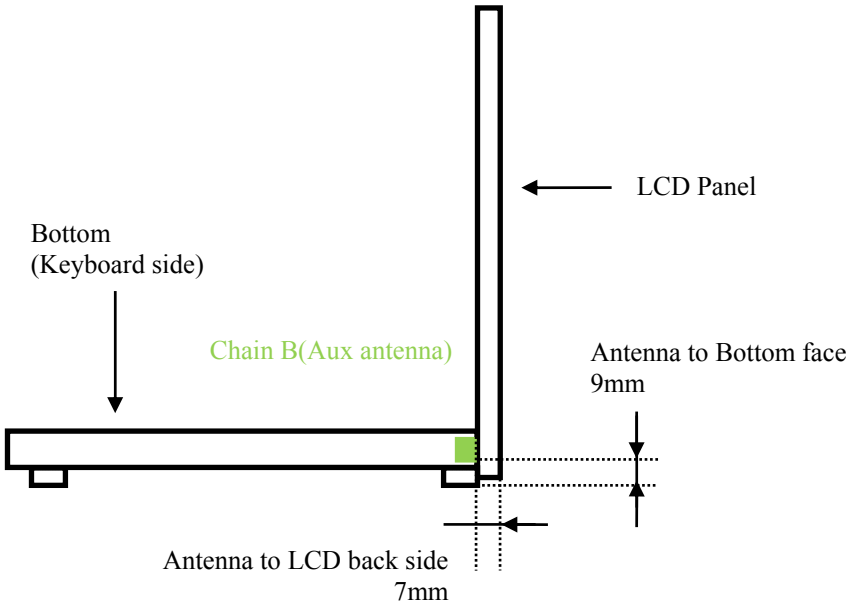
No.	Position*1	Test distance	WLAN(Main ant)		WLAN(Aux ant)	
			Tested	Antenna	Tested	Antenna
1	Bottom side	0mm	☑	Fixed	☑	Fixed
2	Rear side	0mm	☑	Fixed	☑	Fixed
3	Left side	0mm	☐	Fixed	☐	Fixed
4	Right side	0mm	☐	Fixed	☐	Fixed

*1 Refer to Section 6 and Appendix 4.

<Antenna position>

The antennas use for WLAN Main and WLAN Aux(Shared Bluetooth) are both separate in a single fixed position. The antennas are integral part of the device. Refer to Appendix 4





SECTION 8 : Test surrounding

8.1 Measurement uncertainty

The uncertainty budget has been determined for the DASY5 measurement system according to the SPEAG documents[2] and is given in the following Table. Table of uncertainties are listed for ISO/IEC 17025.

<0.3 – 3GHz range>

Error Description	Uncertai value ±	Probability distribution	divisor	(ci) 1g	Standard (1g)	vi or veff
Measurement System						
Probe calibration	± 6.00	Normal	1	1	± 6.00	∞
Axial isotropy of the probe	± 4.7	Rectangular	√3	0.7	± 1.9	∞
Spherical isotropy of the probe	± 9.6	Rectangular	√3	0.7	± 3.9	∞
Boundary effects	± 1.0	Rectangular	√3	1	± 0.6	∞
Probe linearity	± 4.7	Rectangular	√3	1	± 2.7	∞
Detection limit	± 1.0	Rectangular	√3	1	± 0.6	∞
Modulation response	± 2.4	Rectangular	√3	1	± 1.4	∞
Readout electronics	± 0.3	Normal	1	1	± 0.3	∞
Response time	± 0.8	Rectangular	√3	1	± 0.5	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5	∞
RF ambient Noise	± 3.0	Rectangular	√3	1	± 1.7	∞
RF ambient Reflections	± 3.0	Rectangular	√3	1	± 1.7	∞
Probe Positioner	± 0.4	Rectangular	√3	1	± 0.2	∞
Probe positioning	± 2.9	Rectangular	√3	1	± 1.7	∞
Max.SAR Eval.	± 1.0	Rectangular	√3	1	± 0.6	∞
Test Sample Related						
Device positioning	± 2.9	Normal	1	1	± 2.9	11
Device holder uncertainty	± 3.6	Normal	1	1	± 3.6	1
Power drift	± 5.0	Rectangular	√3	1	± 2.9	∞
Power Scaling	+ 0.0	Rectangular	√3	1	± 0.0	∞
Phantom and Setup						
Phantom uncertainty	± 4.0	Rectangular	√3	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	Rectangular	√3	0.64	± 1.8	∞
Liquid conductivity (meas.)	- 0.9	Rectangular	1	0.64	- 0.6	∞
Liquid permittivity (target)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (meas.)	- 3.8	Rectangular	1	0.6	- 2.3	∞
Liquid conductivity - temp.unc (below 2deg.C.)	± 1.7	Rectangular	√3	0.78	± 0.8	∞
Liquid permittivity - temp.unc (below 2deg.C.)	± 0.3	Rectangular	√3	0.23	± 0.0	∞
Combined Standard Uncertainty					± **11.052**	
Expanded Uncertainty (k=2)					± **22.1**	

<3 – 6GHz range>

Error Description	Uncertai value ±	Probability distribution	divisor	(ci) 1g	Standard (1g)	vi or veff
Measurement System						
Probe calibration	± 6.55	Normal	1	1	± 6.55	∞
Axial isotropy of the probe	± 4.7	Rectangular	√3	0.7	± 1.9	∞
Spherical isotropy of the probe	± 9.6	Rectangular	√3	0.7	± 3.9	∞
Boundary effects	± 2.0	Rectangular	√3	1	± 1.2	∞
Probe linearity	± 4.7	Rectangular	√3	1	± 2.7	∞
Detection limit	± 1.0	Rectangular	√3	1	± 0.6	∞
Modulation response	± 2.4	Rectangular	√3	1	± 1.4	∞
Readout electronics	± 0.3	Normal	1	1	± 0.3	∞
Response time	± 0.8	Rectangular	√3	1	± 0.5	∞
Integration time	± 2.6	Rectangular	√3	1	± 1.5	∞
RF ambient Noise	± 3.0	Rectangular	√3	1	± 1.7	∞
RF ambient Reflections	± 3.0	Rectangular	√3	1	± 1.7	∞
Probe Positioner	± 0.8	Rectangular	√3	1	± 0.5	∞
Probe positioning	± 6.7	Rectangular	√3	1	± 3.9	∞
Max.SAR Eval.	± 4.0	Rectangular	√3	1	± 2.3	∞
Test Sample Related						
Device positioning	± 2.9	Normal	1	1	± 2.9	70
Device holder uncertainty	± 3.6	Normal	1	1	± 3.6	1
Power drift	± 5.0	Rectangular	√3	1	± 2.9	∞
Power Scaling	+ 0.0	Rectangular	√3	1	± 0.0	∞
Phantom and Setup						
Phantom uncertainty	± 4.0	Rectangular	√3	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	Rectangular	√3	0.64	± 1.8	∞
Liquid conductivity (meas.)	+ 3.9	Rectangular	1	0.64	+ 2.5	∞
Liquid permittivity (target)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (meas.)	- 4.9	Rectangular	1	0.6	- 2.9	∞
Liquid conductivity - temp.unc (below 2deg.C.)	± 1.7	Rectangular	√3	0.78	± 0.8	∞
Liquid permittivity - temp.unc (below 2deg.C.)	± 0.3	Rectangular	√3	0.23	± 0.0	∞
Combined Standard Uncertainty					± **12.520**	
Expanded Uncertainty (k=2)					± **25.0**	

SECTION 9 : Measurement results

9.1 WLAN Body SAR (2.4G)

(1)Method of measurement

Step.1 The searching for the worst position
The test was performed in mode of the maximum average output power
Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
Step.3 11n MIMO mode
The 11n MIMO mode was performed at the worst position of Step.1.

Note:
1)The other channel was not required since maximum average output power channel SAR value(1g average) is < 0.80 W/kg.
2)The other channel was not required since peak SAR value is < 1.6 W/kg. Only the Maximum peak SAR mode is measured..
3)Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg.

(2)Simulated Tissue Liquid Parameter confirmation

The dielectric parameters were checked prior to assessment using the HP85070D dielectric probe kit.
The dielectric parameters measurement is reported in each correspondent section.

DIELECTRIC PARAMETERS MEASUREMENT RESULTS										
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value*1	Measured	Deviation [%]	Limit [%]
27-Aug	24	51	MSL 2450	23.5	2437	εr	52.7	50.7	-3.8	+/-5
						σ [mho/m]	1.94	1.92	-0.9	+/-5

εr: Relative Permittivity / σ : Coductivity
*1 The Target value is a parameter defined in KDB865664.

(3)Result of Body SAR

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
6	2437	11n20 HT4	16.40	43.65	16.50	44.67	Flat	Main	Bottom side	0	**0.086**	**0.088**
6	2437	11n20 HT4	16.40	43.65	16.50	44.67	Flat	Main	Rear side	0	**0.028**	**0.029**
Step.2 Mode change												
6	2437	11b 1Mbps	15.45	35.08	15.50	35.48	Flat	Main	Bottom side	0	**0.081**	**0.082**
6	2437	11g 6Mbps	16.08	40.55	16.50	44.67	Flat	Main	Bottom side	0	**0.105**	**0.116**
6	2437	11n40 HT4	16.14	41.11	16.47	44.36	Flat	Main	Bottom side	0	**0.121**	**0.131**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
6	2437	11n20 HT4	15.38	34.51	15.50	35.48	Flat	Aux	Bottom side	0	**0.153**	**0.157**
6	2437	11n20 HT4	15.38	34.51	15.50	35.48	Flat	Aux	Rear side	0	**0.028**	**0.029**
Step.2 Mode change												
6	2437	11b 1Mbps	13.94	24.77	14.00	25.12	Flat	Aux	Bottom side	0	**0.054**	**0.055**
6	2437	11g 6Mbps	15.21	33.19	15.49	35.40	Flat	Aux	Bottom side	0	**0.133**	**0.142**
6	2437	11n40 HT4	13.36	21.68	13.42	21.98	Flat	Aux	Bottom side	0	**0.098**	**0.099**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.3 11n MIMO mode												
6	2437	11n 20 HT8	18.85	76.74	19.04	80.17	Flat	Main + Aux	Bottom side	0	**0.208**	**0.217**
6	2437	11n 40 HT8	18.17	65.61	18.22	66.37	Flat	Main + Aux	Bottom side	0	**0.143**	**0.145**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

9.2 WLAN Body SAR (5G)

(1)Method of measurement

5.2GHz band

Step.1 The searching for the worst position
The test was performed in mode of the maximum average output power
Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
Step.3 The changing to the channels
The test was performed at the worst condition of Step1 to Step2.
Step.4 11n MIMO mode measured
The other mode was performed at the worst position of Step.1.
Step.5 The changing to the channels(11n MIMO mode)
The test was performed at the worst condition of Step1.

5.3GHz band

Step.1 The searching for the worst position
The test was performed in mode of the maximum average output power
Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
Step.3 The changing to the channels
The test was performed at the worst condition of Step1 to Step2.
Step.4 11n MIMO mode measured
The other mode was performed at the worst position of Step.1

5.6GHz band

Step.1 The searching for the worst position
The test was performed in mode of the maximum average output power
Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
Step.3 The changing to the channels
The test was performed at the worst condition of Step1 to Step2.
Step.4 11n MIMO mode measured
The other mode was performed at the worst position of Step.1.
Step.5 The changing to the channels(11n MIMO mode)
The test was performed at the worst condition of Step1.

5.8GHz band

Step.1 The searching for the worst position
The test was performed in mode of the maximum average output power
Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
Step.3 The changing to the channels
The test was performed at the worst condition of Step1 to Step2.
Step.4 11n MIMO mode measured
The other mode was performed at the worst position of Step.1

Note:
1)For 5500-5700MHz band, the other channel was not required since maximum average output power channel SAR value(1g average) is < 0.40 W/kg.
2) For 5180-5240MHz band, 5260-5320MHz and 5745-5825MHz band, the other channel was not required since maximum average output power channel SAR value(1g average) is < 0.80 W/kg.
3)The other channel was not required since peak SAR value is < 1.6 W/kg. Only the Maximum peak SAR mode is measured..
4) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg.

(2)Simulated Tissue Liquid Parameter confirmation

The dielectric parameters were checked prior to assessment using the HP85070D dielectric probe kit.
The dielectric parameters measurement is reported in each correspondent section.

DIELECTRIC PARAMETERS MEASUREMENT RESULTS										
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value*1	Measured	Deviation [%]	Limit [%]
19-Aug	24.0	55	MSL 3-6GHz	23.5	5290	εr	48.9	46.9	-4.1	+/-5
						σ [mho/m]	5.41	5.52	2.0	+/-5
19-Aug	24.0	55	MSL 3-6GHz	23.5	5300	εr	48.9	46.9	-4.1	+/-5
						σ [mho/m]	5.42	5.53	2.0	+/-5
19-Aug	24.0	55	MSL 3-6GHz	23.5	5310	εr	48.8	46.9	-4.0	+/-5
						σ [mho/m]	5.43	5.54	2.1	+/-5
20-Aug	24.0	44	MSL 3-6GHz	23.5	5210	εr	49.0	47.1	-3.8	+/-5
						σ [mho/m]	5.31	5.48	3.1	+/-5
20-Aug	24.0	44	MSL 3-6GHz	23.5	5220	εr	49.0	47.1	-3.9	+/-5
						σ [mho/m]	5.32	5.50	3.2	+/-5
20-Aug	24.0	44	MSL 3-6GHz	23.5	5230	εr	49.0	47.1	-3.8	+/-5
						σ [mho/m]	5.34	5.51	3.2	+/-5
20-Aug	24.0	44	MSL 3-6GHz	23.5	5280	εr	48.9	47.0	-3.8	+/-5
						σ [mho/m]	5.40	5.57	3.2	+/-5
20-Aug	24.0	44	MSL 3-6GHz	23.5	5290	εr	48.9	47.0	-3.9	+/-5
						σ [mho/m]	5.41	5.59	3.3	+/-5
20-Aug	24.0	44	MSL 3-6GHz	23.5	5300	εr	48.9	47.0	-3.9	+/-5
						σ [mho/m]	5.42	5.60	3.3	+/-5
20-Aug	24.0	44	MSL 3-6GHz	23.5	5310	εr	48.8	47.0	-3.8	+/-5
						σ [mho/m]	5.43	5.61	3.3	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5210	εr	49.0	47.0	-4.1	+/-5
						σ [mho/m]	5.31	5.44	2.3	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5220	εr	49.0	47.0	-4.1	+/-5
						σ [mho/m]	5.32	5.44	2.2	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5230	εr	49.0	47.0	-4.1	+/-5
						σ [mho/m]	5.34	5.46	2.3	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5550	εr	48.6	46.4	-4.4	+/-5
						σ [mho/m]	5.71	5.90	3.3	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5560	εr	48.5	46.4	-4.4	+/-5
						σ [mho/m]	5.72	5.91	3.3	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5610	εr	48.5	46.3	-4.4	+/-5
						σ [mho/m]	5.78	5.98	3.5	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5620	εr	48.5	46.3	-4.4	+/-5
						σ [mho/m]	5.79	6.00	3.6	+/-5

DIELECTRIC PARAMETERS MEASUREMENT RESULTS										
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value*1	Measured	Deviation [%]	Limit [%]
21-Aug	24.0	48	MSL 3-6GHz	23.5	5690	εr	48.4	46.6	-3.7	+/-5
						σ [mho/m]	5.87	5.98	1.8	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5710	εr	48.3	46.1	-4.5	+/-5
						σ [mho/m]	5.90	6.13	3.9	+/-5
21-Aug	24.0	48	MSL 3-6GHz	23.5	5720	εr	48.3	46.1	-4.5	+/-5
						σ [mho/m]	5.91	6.14	3.9	+/-5
22-Aug	24.0	47	MSL 3-6GHz	23.5	5550	εr	48.6	46.8	-3.5	+/-5
						σ [mho/m]	5.71	5.79	1.4	+/-5
22-Aug	24.0	47	MSL 3-6GHz	23.5	5580	εr	48.5	46.8	-3.6	+/-5
						σ [mho/m]	5.75	5.83	1.4	+/-5
22-Aug	24.0	47	MSL 3-6GHz	23.5	5610	εr	48.5	46.7	-3.7	+/-5
						σ [mho/m]	5.78	5.86	1.4	+/-5
22-Aug	24.0	47	MSL 3-6GHz	23.5	5620	εr	48.5	46.7	-3.6	+/-5
						σ [mho/m]	5.79	5.88	1.4	+/-5
22-Aug	24.0	47	MSL 3-6GHz	23.5	5660	εr	48.4	46.6	-3.7	+/-5
						σ [mho/m]	5.84	5.94	1.7	+/-5
22-Aug	24.0	47	MSL 3-6GHz	23.5	5690	εr	48.4	46.6	-3.7	+/-5
						σ [mho/m]	5.87	5.98	1.8	+/-5
22-Aug	24.0	47	MSL 3-6GHz	23.5	5710	εr	48.3	46.5	-3.7	+/-5
						σ [mho/m]	5.90	6.00	1.7	+/-5
22-Aug	24.0	47	MSL 3-6GHz	23.5	5720	εr	48.3	46.5	-3.7	+/-5
						σ [mho/m]	5.91	6.01	1.8	+/-5
23-Aug	24.0	55	MSL 3-6GHz	23.5	5755	εr	48.3	46.0	-4.7	+/-5
						σ [mho/m]	5.95	6.12	2.9	+/-5
23-Aug	24.0	55	MSL 3-6GHz	23.5	5765	εr	48.3	46.0	-4.7	+/-5
						σ [mho/m]	5.96	6.14	2.9	+/-5
23-Aug	24.0	55	MSL 3-6GHz	23.5	5775	εr	48.2	46.0	-4.6	+/-5
						σ [mho/m]	5.97	6.15	3.0	+/-5
23-Aug	24.0	55	MSL 3-6GHz	23.5	5785	εr	48.2	46.0	-4.6	+/-5
						σ [mho/m]	5.98	6.17	3.1	+/-5
23-Aug	24.0	55	MSL 3-6GHz	23.5	5795	εr	48.2	46.0	-4.6	+/-5
						σ [mho/m]	5.99	6.18	3.2	+/-5
26-Aug	24.0	58	MSL 3-6GHz	23.5	5200	εr	49.0	46.9	-4.2	+/-5
						σ [mho/m]	5.30	5.40	2.0	+/-5
26-Aug	24.0	58	MSL 3-6GHz	23.5	5300	εr	48.9	46.8	-4.4	+/-5
						σ [mho/m]	5.42	5.53	2.1	+/-5

DIELECTRIC PARAMETERS MEASUREMENT RESULTS										
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value*1	Measured	Deviation [%]	Limit [%]
26-Aug	24.0	58	MSL 3-6GHz	23.5	5540	εr	48.6	46.3	-4.7	+/-5
						σ [mho/m]	5.70	5.83	2.3	+/-5
26-Aug	24.0	58	MSL 3-6GHz	23.5	5600	εr	48.5	46.3	-4.6	+/-5
						σ [mho/m]	5.77	5.90	2.3	+/-5
26-Aug	24.0	58	MSL 3-6GHz	23.5	5620	εr	48.5	46.2	-4.7	+/-5
						σ [mho/m]	5.79	5.92	2.1	+/-5
26-Aug	24.0	58	MSL 3-6GHz	23.5	5660	εr	48.4	46.1	-4.9	+/-5
						σ [mho/m]	5.84	5.98	2.4	+/-5
26-Aug	24.0	58	MSL 3-6GHz	23.5	5680	εr	48.4	46.1	-4.7	+/-5
						σ [mho/m]	5.86	6.02	2.7	+/-5
26-Aug	24.0	58	MSL 3-6GHz	23.5	5755	εr	48.3	45.9	-4.9	+/-5
						σ [mho/m]	5.95	6.09	2.4	+/-5

εr: Relative Permittivity / σ : Coductivity
*1 The Target value is a parameter defined in KDB865664.

(3)Result of Body SAR
5.2GHz band

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum value of multi-peak	Maximum value of multi-peak
Step.1 Position searching												
44	5220	11a 6Mbps	15.80	38.02	16.00	39.81	Flat	Main	Bottom side	0	**0.276**	**0.289**
44	5220	11a 6Mbps	15.80	38.02	16.00	39.81	Flat	Main	Rear	0	**0.106**	**0.111**
Step.2 Mode change												
44	5220	11n20 HT4	15.97	39.54	16.00	39.81	Flat	Main	Bottom side	0	**0.269**	**0.271**
46	5230	11n40 HT4	15.15	32.73	15.42	34.83	Flat	Main	Bottom side	0	**0.252**	**0.268**
42	5210	11ac80 VHT6	8.450	6.998	8.460	7.015	Flat	Main	Bottom side	0	**0.099**	**0.099**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
44	5220	11a 6Mbps	15.80	38.02	16.00	39.81	Flat	Aux	Bottom side	0	**0.587**	**0.615**
44	5220	11a 6Mbps	15.80	38.02	16.00	39.81	Flat	Aux	Rear	0	**0.240**	**0.251**
Step.2 Mode change												
44	5220	11n20 HT4	15.80	38.02	16.00	39.81	Flat	Aux	Bottom side	0	**0.557**	**0.583**
46	5230	11n40 HT4	15.17	32.89	15.37	34.43	Flat	Aux	Bottom side	0	**0.516**	**0.540**
42	5210	11ac80 VHT6	8.180	6.577	8.390	6.902	Flat	Aux	Bottom side	0	**0.107**	**0.112**
Step.3 Channel change (Max peak SAR in Step.1 and Step.2 > 1.6 w/kg)												
40	5200	11a 6Mbps	15.78	37.84	15.92	39.08	Flat	Aux	Bottom side	0	**0.460**	**0.475**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.4 11n MIMO mode												
44	5220	11n20 HT8	18.87	77.09	19.01	79.62	Flat	Main+Aux	Bottom side	0	**0.685**	**0.707**
46	5230	11n40 HT8	18.31	67.76	18.41	69.34	Flat	Main+Aux	Bottom side	0	**0.321**	**0.328**
42	5210	11ac80 VHT6	11.43	13.90	11.44	13.93	Flat	Main+Aux	Bottom side	0	**0.169**	**0.169**
Step.5 Channel change (Max SAR(1g) in Step.4 > 0.8 w/kg or Max peak SAR in Step.4 > 1.6 w/kg)												
40	5200	11n20 HT8	18.87	77.09	18.9	77.62	Flat	Main+Aux	Bottom side	0	**0.688**	**0.693**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

5.3GHz band

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
60	5300	11a 6Mbps	15.81	38.11	16.00	39.81	Flat	Main	Bottom side	0	**0.171**	**0.179**
60	5300	11a 6Mbps	15.81	38.11	16.00	39.81	Flat	Main	Rear	0	**0.091**	**0.095**
Step.2 Mode change												
60	5300	11n20 HT4	15.64	36.64	15.94	39.26	Flat	Main	Bottom side	0	**0.142**	**0.152**
62	5310	11n40 HT4	10.83	12.11	11.00	12.59	Flat	Main	Bottom side	0	**0.055**	**0.057**
58	5290	11ac80 VHT6	10.38	10.91	10.47	11.14	Flat	Main	Bottom side	0	**0.082**	**0.084**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
60	5300	11a 6Mbps	15.94	39.26	16.00	39.81	Flat	Aux	Bottom side	0	**0.342**	**0.347**
60	5300	11a 6Mbps	15.94	39.26	16.00	39.81	Flat	Aux	Rear	0	**0.063**	**0.064**
Step.2 Mode change												
56	5280	11n20 HT4	15.86	38.55	15.93	39.17	Flat	Aux	Bottom side	0	**0.493**	**0.501**
62	5310	11n40 HT4	10.90	12.30	10.97	12.50	Flat	Aux	Bottom side	0	**0.121**	**0.123**
58	5290	11ac80 VHT6	10.68	11.69	10.92	12.36	Flat	Aux	Bottom side	0	**0.149**	**0.157**
Step.3 Channel change (Max peak SAR in Step.1 and Step.2 > 1.6 w/kg)												
60	5300	11n20 HT4	15.66	36.81	15.85	38.46	Flat	Aux	Bottom side	0	**0.551**	**0.576**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.4 11n MIMO mode												
60	5300	11n20 HT8	18.78	75.51	18.91	77.80	Flat	Main+Aux	Bottom side	0	**0.255**	**0.263**
62	5310	11n40 HT8	13.84	24.21	14.00	25.12	Flat	Main+Aux	Bottom side	0	**0.041**	**0.043**
58	5290	11ac80 VHT6	13.57	22.75	13.71	23.50	Flat	Main+Aux	Bottom side	0	**0.160**	**0.165**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

5.6GHz band

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
112	5560	11a 6Mbps	16.28	42.46	16.50	44.67	Flat	Main	Bottom side	0	**0.234**	**0.246**
112	5560	11a 6Mbps	16.28	42.46	16.50	44.67	Flat	Main	Rear	0	**0.094**	**0.099**
Step.2 Mode change (Bottom position)												
124	5620	11n20 HT4	16.34	43.05	16.50	44.67	Flat	Main	Bottom side	0	**0.247**	**0.256**
110	5550	11n40 HT4	16.13	41.02	16.48	44.46	Flat	Main	Bottom side	0	**0.234**	**0.254**
144	5720	11ac20 VHT0	16.39	43.55	16.48	44.46	Flat	Main	Bottom side	0	**0.299**	**0.305**
142	5710	11ac40 VHT0	15.97	39.54	16.43	43.95	Flat	Main	Bottom side	0	**0.310**	**0.345**
122	5610	11ac80 VHT6	13.66	23.23	13.95	24.83	Flat	Main	Bottom side	0	**0.046**	**0.049**
138	5690	11ac80 VHT6	13.78	23.88	13.92	24.66	Flat	Main	Bottom side	0	**0.208**	**0.215**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
132	5660	11a 6Mbps	16.34	43.05	16.50	44.67	Flat	Aux	Bottom side	0	**0.455**	**0.472**
132	5660	11a 6Mbps	16.34	43.05	16.50	44.67	Flat	Aux	Rear	0	**0.187**	**0.194**
Step.2 Mode change(Bottom position)												
116	5580	11n20 HT4	16.08	40.55	16.50	44.67	Flat	Aux	Bottom side	0	**0.478**	**0.527**
110	5550	11n40 HT4	16.20	41.69	16.48	44.46	Flat	Aux	Bottom side	0	**0.460**	**0.491**
144	5720	11ac20 VHT0	16.30	42.66	16.42	43.85	Flat	Aux	Bottom side	0	**0.486**	**0.500**
142	5710	11ac40 VHT0	16.29	42.56	16.47	44.36	Flat	Aux	Bottom side	0	**0.452**	**0.471**
122	5610	11ac80 VHT6	13.88	24.43	13.97	24.95	Flat	Aux	Bottom side	0	**0.324**	**0.331**
138	5690	11ac80 VHT6	13.94	24.77	13.99	25.06	Flat	Aux	Bottom side	0	**0.304**	**0.308**
Step.3 Channel change (Max SAR(1g) in Step.1 and Step.2 > 0.4 w/kg and Max peak SAR in Step.1 and Step.2 > 1.6 w/kg)												
108	5540	11n20 HT4	16.20	41.69	16.39	43.55	Flat	Aux	Bottom side	0	**0.480**	**0.501**
124	5620	11n20 HT4	16.03	40.09	16.48	44.46	Flat	Aux	Bottom side	0	**0.642**	**0.712**
136	5680	11n20 HT4	16.23	41.98	16.48	44.46	Flat	Aux	Bottom side	0	**0.601**	**0.637**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.4 11n MIMO mode												
124	5620	11n20 HT8	19.31	85.31	19.5	89.13	Flat	Main+Aux	Bottom side	0	**0.632**	**0.660**
110	5550	11n40 HT8	19.32	85.51	19.49	88.92	Flat	Main+Aux	Bottom side	0	**0.757**	**0.787**
144	5720	11ac20 VHT0	19.22	83.56	19.46	88.31	Flat	Main+Aux	Bottom side	0	**0.478**	**0.505**
142	5710	11ac40 VHT0	19.37	86.50	19.46	88.31	Flat	Main+Aux	Bottom side	0	**0.426**	**0.435**
122	5610	11ac80 VHT6	16.82	48.08	16.97	49.77	Flat	Main+Aux	Bottom side	0	**0.148**	**0.153**
138	5690	11ac80 VHT6	16.61	45.81	16.97	49.77	Flat	Main+Aux	Bottom side	0	**0.325**	**0.353**
Step.5 Channel change (Max peak SAR in Step.4 > 1.6 w/kg)												
108	5540	11n20 HT8	19.43	87.70	19.45	88.10	Flat	Main+Aux	Bottom side	0	**0.558**	**0.561**
120	5600	11n20 HT8	19.33	85.70	19.46	88.31	Flat	Main+Aux	Bottom side	0	**0.638**	**0.657**
132	5660	11n20 HT8	19.40	87.10	19.47	88.51	Flat	Main+Aux	Bottom side	0	**0.749**	**0.761**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

5.8GHz band

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
157	5785	11a 6Mbps	16.45	44.16	16.50	44.67	Flat	Main	Bottom side	0	**0.309**	**0.313**
157	5785	11a 6Mbps	16.45	44.16	16.50	44.67	Flat	Main	Rear	0	**0.162**	**0.164**
Step.2 Mode change												
157	5785	11n20 HT4	16.38	43.45	16.48	44.46	Flat	Main	Bottom side	0	**0.367**	**0.376**
151	5755	11n40 HT4	16.36	43.25	16.43	43.95	Flat	Main	Bottom side	0	**0.380**	**0.386**
155	5775	11ac80 VHT6	13.90	24.55	14.00	25.12	Flat	Main	Bottom side	0	**0.203**	**0.208**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
157	5785	11a 6Mbps	16.10	40.74	16.50	44.67	Flat	Aux	Bottom side	0	**0.352**	**0.386**
157	5785	11a 6Mbps	16.10	40.74	16.50	44.67	Flat	Aux	Rear side	0	**0.094**	**0.103**
Step.2 Mode change												
153	5765	11n20 HT4	16.4	43.65	16.48	44.46	Flat	Aux	Bottom side	0	**0.370**	**0.377**
159	5795	11n40 HT4	16.36	43.25	16.42	43.85	Flat	Aux	Bottom side	0	**0.366**	**0.371**
155	5775	11ac80 VHT6	13.76	23.77	13.75	23.71	Flat	Aux	Bottom side	0	**0.267**	**0.266**
Step.3 Channel change (Max peak SAR in Step.1 and Step.2 > 1.6 w/kg)												
151	5755	11n40 HT4	16.04	40.18	16.36	43.25	Flat	Aux	Bottom side	0	**0.621**	**0.668**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Maximum tune-up tolerance limit		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Reported SAR(1g) *1 [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.4 11n MIMO mode												
153	5765	11n20 HT8	19.48	88.72	19.42	87.50	Flat	Main+Aux	Bottom side	0	**0.350**	**0.355**
151	5755	11n40 HT8	19.41	87.30	19.38	86.70	Flat	Main+Aux	Bottom side	0	**0.346**	**0.348**
155	5775	11ac80 VHT6	17.00	50.12	16.55	45.19	Flat	Main+Aux	Bottom side	0	**0.231**	**0.256**

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]

SECTION 10 : Simultaneous transmission SAR test exclusion considerations

10.1 Estimated SAR is calculated about Bluetooth

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;

where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.

0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

Test separation distances ≤ 50 mm

Positiom	Upper frequency of band *1	Maximum tune-up tolerance limit	Min distance *2	Calculation of Estimated SAR*3
Bottom side	2480 [MHz] (79 ch)	6 [dBm] 3.98 [mW]	9 [mm]	0.093 [W/kg]
Rear	2480 [MHz] (79 ch)	6 [dBm] 3.98 [mW]	7 [mm]	0.119 [W/kg]

*1 The upper frequency of the frequency band of Bluetooth was used in order to calculate the maximum estimated SAR.
*2 Refer to Appendix 4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied.
*3 (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/x] W/kg
*4 Fixed value 0.4 W/kg for 1-g SAR

10.2 Result of SUM∑SAR1g of Body

If less than 1.6W/kg of sum total values become about the SAR value of two antennas, the SAR test of simultaneous transmission will be excepted.

WLAN 2.4GHz(Main ant) + Bluetooth*3

SUM ΣSAR1g (Bluetooth + WLAN(Main ant))			
Position	Stand alone SAR(1g) [W/kg]		SUM SAR(1g)[W/kg]
	Bluetooth*2	WLAN 2.4G *1	Bluetooth + WLAN 2.4G
Bottom side	0.093	0.131	0.224
Rear side	0.119	0.029	0.148

WLAN 5GHz(Main/Aux ant)*4 + Bluetooth*3

SUM ΣSAR1g (Bluetooth + WLAN(Main ant))			
Position	Stand alone SAR(1g) [W/kg]		SUM SAR(1g)[W/kg]
	Bluetooth*2	WLAN 5G *1	Bluetooth + WLAN 5G
Bottom side	0.093	0.787	0.880
Rear side	0.119	0.251	0.370

*1 Use the measured SAR to determine simultaneous transmission SAR test exclusion.
*2 Use the estimated SAR to determine simultaneous transmission SAR test exclusion.
*3 Bluetooth can transmit simultaneously with WLAN (shared WLAN Aux ant).
*4 WLAN 5GHz Aux ant can transmit simultaneously with Bluetooth (shared WLAN Aux ant).

SECTION 11 Test instruments

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	Power	2013/02/26 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	Power	2012/10/08 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	Power	2012/10/08 * 12
MAT-20	Attenuator(10dB)(above1 GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	Power	2013/01/09 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	Power	2012/10/08 * 12
MAT-25	Attenuator(10dB)(above1 GHz)	Agilent	8493C	71642	Power	2013/06/20 * 12
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	Power	2012/10/08 * 12
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	Power	2013/06/14 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	Power	2013/04/03 * 12
MDAE-03	Data Acquisition Electronics	Schmid&Partner Engineering AG	DAE4	1372	SAR	2013/06/03 * 12
MPB-09	Dosimetric E-Field Probe	Schmid&Partner Engineering AG	EX3DV4	3922	SAR	2013/06/04 * 12
MPSAM-03	SAM Phantom	Schmid&Partner Engineering AG	SAM Twin Phantom V4.0 and V5.0	1764	SAR	2013/06/11 * 12
MPF-03	Oval Flat Phantom ERI 5.0	Schmid&Partner Engineering AG	QD OVA 002 A (ELI5.0)	1203	SAR	2013/06/11 * 12
MDH-03	Device holder	Schmid&Partner Engineering AG	Mounting device for transmitter	-	SAR	Pre Check
MOS-31	Thermo-Hygrometer	Custom	CTH-201		SAR	2013/07/29 * 12
MOS-36	Digital thermometer	HANNA	Checktemp 4	-	SAR	2013/07/29 * 12
COTS-MSAR-03	Dasy5	Schmid&Partner Engineering AG	DASY5	-	SAR	-
MNA-01	Network Analyzer	Agilent/HP	E8358A	US41080381	SAR	2012/09/14 * 12
MOS-37	Digital thermometer	LKM electronic	DTM3000		SAR	2013/07/29 * 12
MNCK-01	Type N Calibration Kit	Agilent	85032F	MY41495257	SAR	2012/09/18 * 12
MRENT-70	Vector Signal Analyzer	Agilent/HP	HP89441A/AX4,AYA,UFG	(Main) 3416A02277 / (RF SECTION) 3509A01094	SAR	2013/08/22 * 12
MPM-14	Power meter	Virginia Diodes, Inc.	PM4	137V	SAR	2012/09/25 * 12
MPSE-19	Power sensor	Agilent	N8487A	MY50280052	SAR	2012/08/08 * 12
MPSE-20	Power sensor	Agilent	N8482H	MY53050001	SAR	2013/06/05 * 12
MHDC-21	Dual Directional Coupler	Agilent	778D	MY52180243	SAR(0.1-2GHz)	Pre Check
MHDC-22	Directional Coupler	Agilent	87300B	14893A	SAR(2-18GHz)	Pre Check
MRFA-24	Pre Amplifier	R&K	R&K CGA020M602-2633R	B30550	SAR	2013/06/06 * 12
MSG-13	Signal Genelator	Rohde & Schwarz	SMA 100A	103764	SAR	2013/06/05 * 12
MRENT-110	Dipole Antenna	Schmid&Partner Engineering AG	D2450V2	765	SAR(D2450)	2013/08/22 * 12
MDA-08	Dipole Antenna	Schmid&Partner Engineering AG	D5GHzV2	1020	SAR(D5G)	2013/01/11 * 12
COTS-MSAR-02	S-Parameter Network Analyzer	Agilent	―	―	SAR	-

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MSL2450					Daily check Target value ± 5%	
MSL 5GHz(BR)					Daily check Target value ± 5%	
SAR room					Daily check Ambient Noise<0.012W/kg	

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.
As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

APPENDIX 1 : SAR Measurement data

1. Evaluation procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the E-field at a fixed location above the ear point or central position of flat phantom was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of head or body position was measured at a distance of each device from the inner surface of the shell. The area covered the entire dimension of the antenna of EUT and the horizontal grid spacing was 15 mm x 15 mm, 12 mm x 12 mm or 10mm x 10mm. Based on these data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Around this point found in the Step 2 (area scan), a volume of 30mm x 30mm x 30mm or more was assessed by measuring 7 x 7 x 7 points at least for below 3GHz and a volume of 28 mm x 28mm x 22.5mm or more was assessed by measuring 8 x 8 x 6(ratio step method (*1)) points at least for 5GHz band.

And for any secondary peaks found in the Step2 which are within 2dB of maximum peak and not with this Step3 (Zoom scan) is repeated. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

(1). The data at the surface were extrapolated, since the center of the dipoles is 1mm(EX3DV4) away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm [4]. A polynomial of the fourth order was calculated through the points in z-axes.
This polynomial was then used to evaluate the points between the surface and the probe tip.

(2). The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by 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-directions) [4], [5]. The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

(3). All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the E-field at the same location as in Step 1.

***1. Ratio step method parameters used;**
The first measurement point: 2mm from the phantom surface, the initial grid separation: 2mm, subsequent graded grid ratio: 1.5
These parameters comply with the requirement of the KDB 865664.
In the section of SAR Scan Procedures-Zoom Scan, in KDB 865664 D02v01: SAR Measurement Requirements for 100MHz to 6GHz, the graded grids requirement is as follows;
“When graded grids are used (z), the first measurement point should be within 3mm of the phantom surface for measurements below 4.5GHz and within 2mm at or above 4.5GHz. The initial grid separation, closest to the phantom, should be 2.0mm. A subsequent graded ration of 1.5 is recommended and less than 2.0 is required. “

2. Measurement data

i) WLAN 2.4GHz

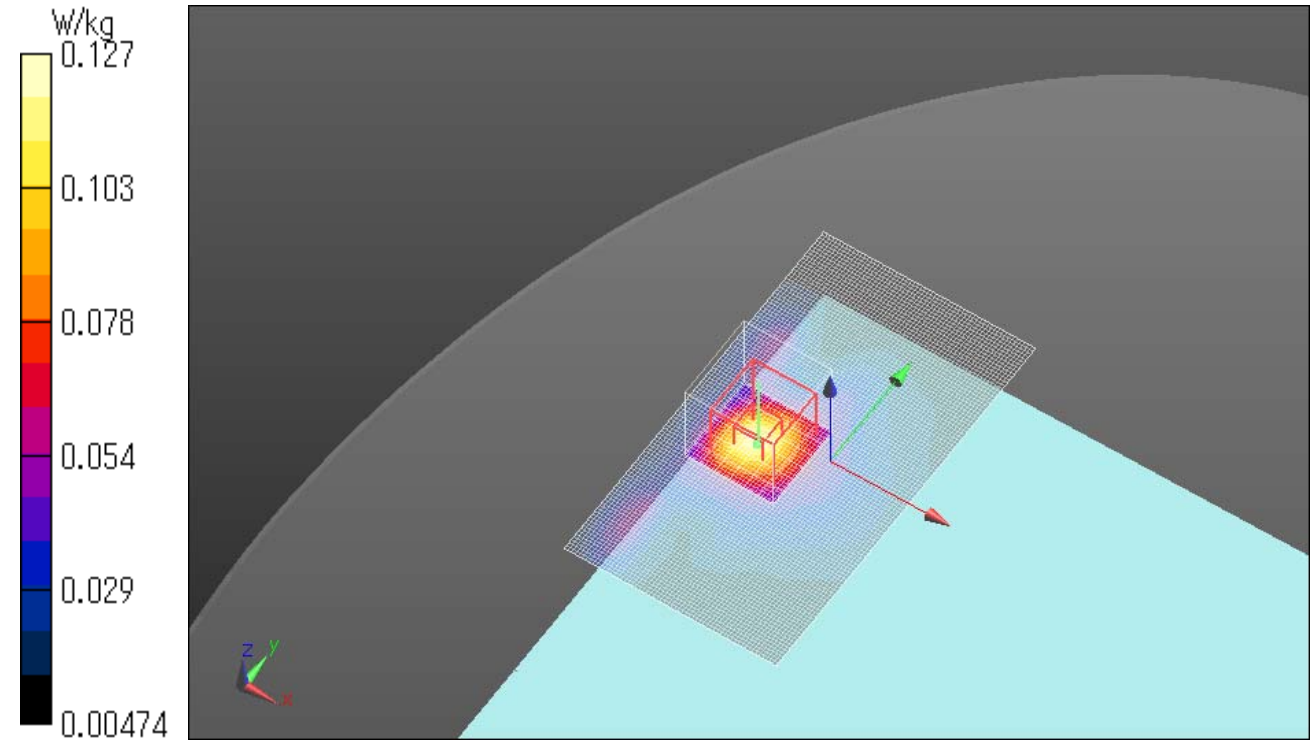
WLAN 11n20 HT4 2437MHz bottom Ant.Main
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.120 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.965 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.178 W/kg
SAR(1 g) = 0.086 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.127 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



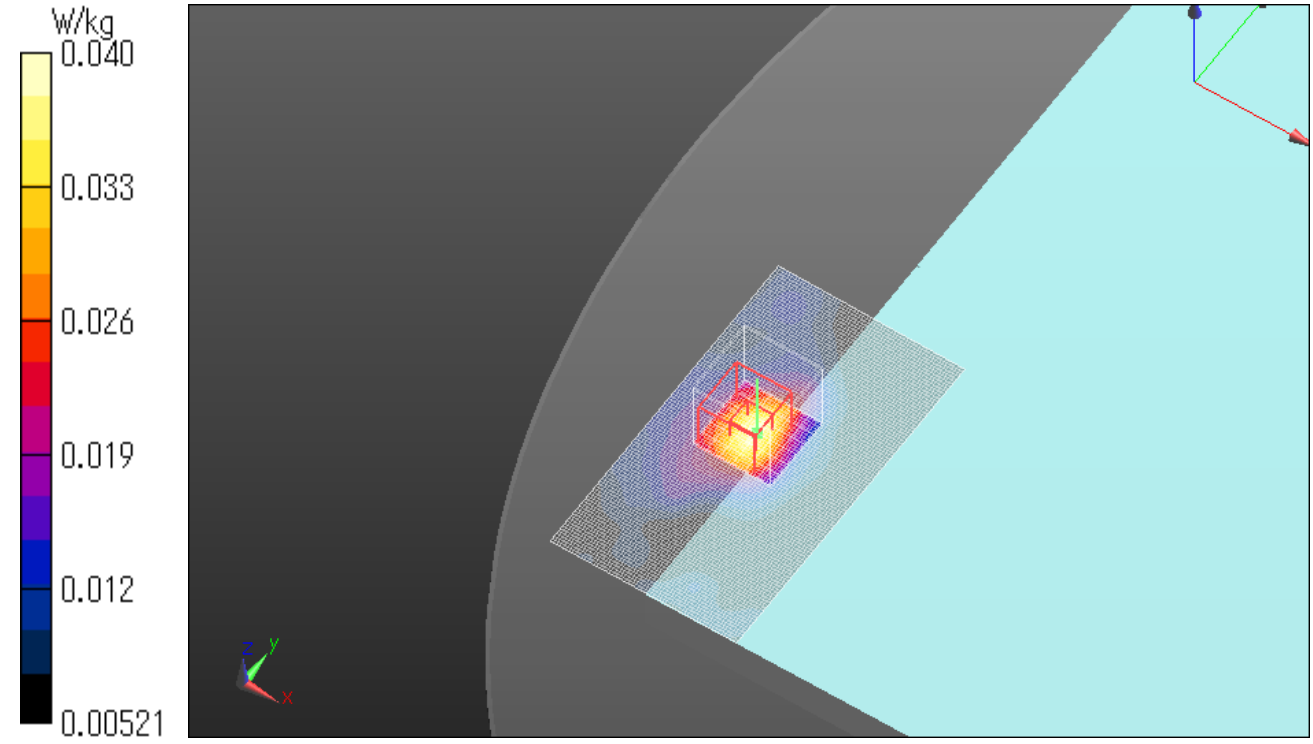
WLAN 11n20 HT4 2437MHz rear Ant.Main
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.0356 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.445 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.0580 W/kg
SAR(1 g) = 0.028 W/kg; SAR(10 g) = 0.018 W/kg

Maximum value of SAR (measured) = 0.0395 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



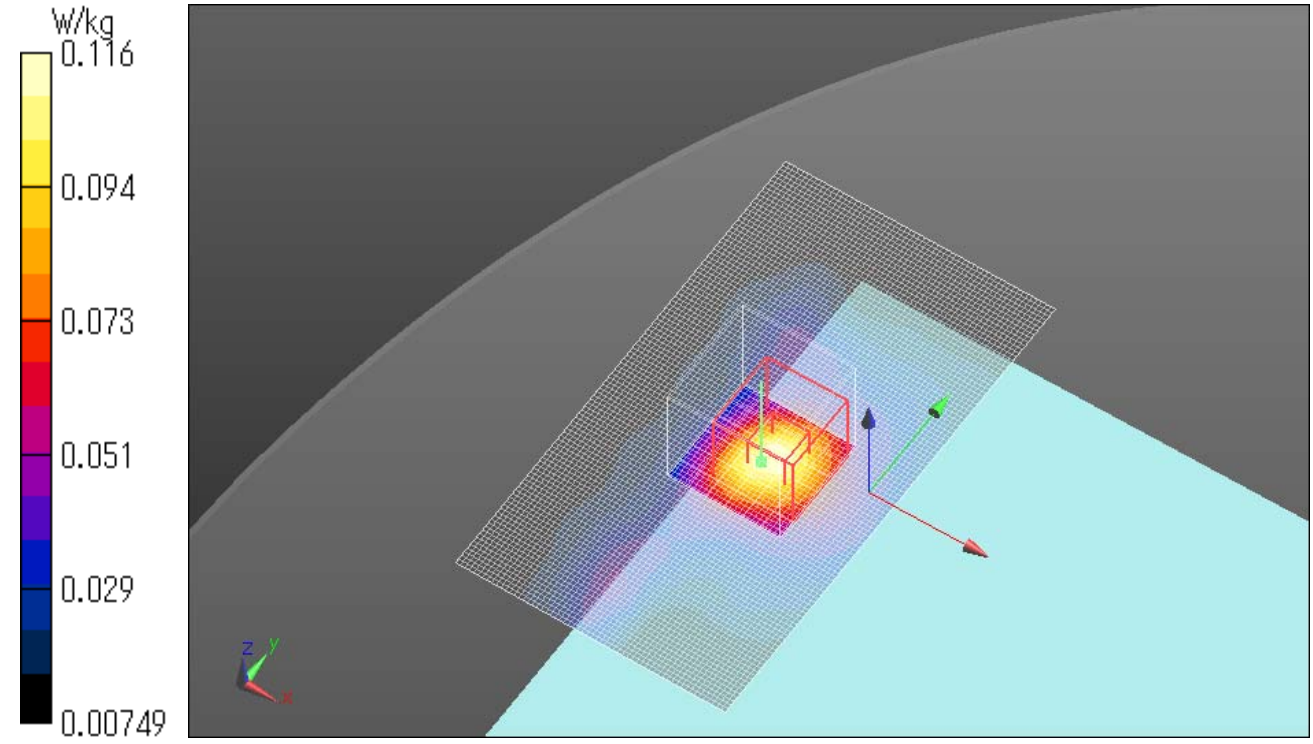
WLAN 11b 1Mbps 2437MHz bottom Ant.Main
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.122 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.834 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.165 W/kg
SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.044 W/kg

Maximum value of SAR (measured) = 0.116 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



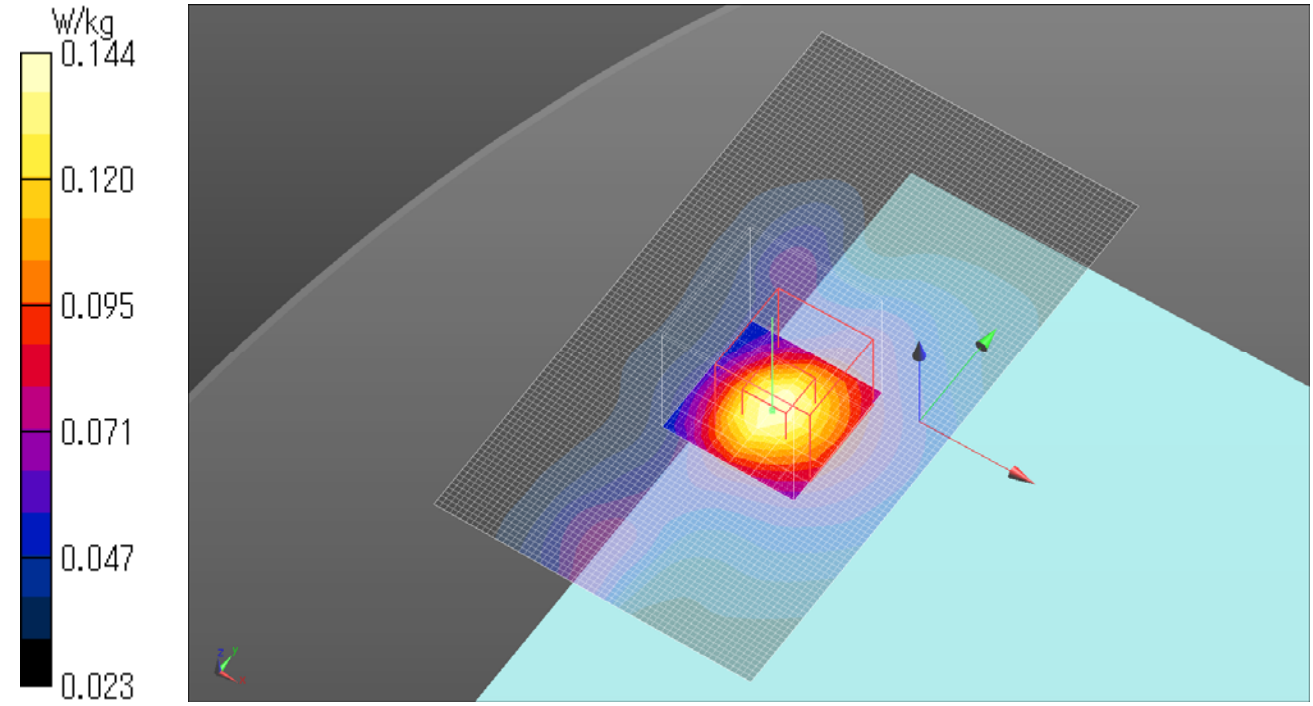
WLAN 11g 6Mbps 2437MHz bottom Ant.Main
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.160 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.784 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.199 W/kg
SAR(1 g) = 0.105 W/kg; SAR(10 g) = 0.064 W/kg

Maximum value of SAR (measured) = 0.144 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



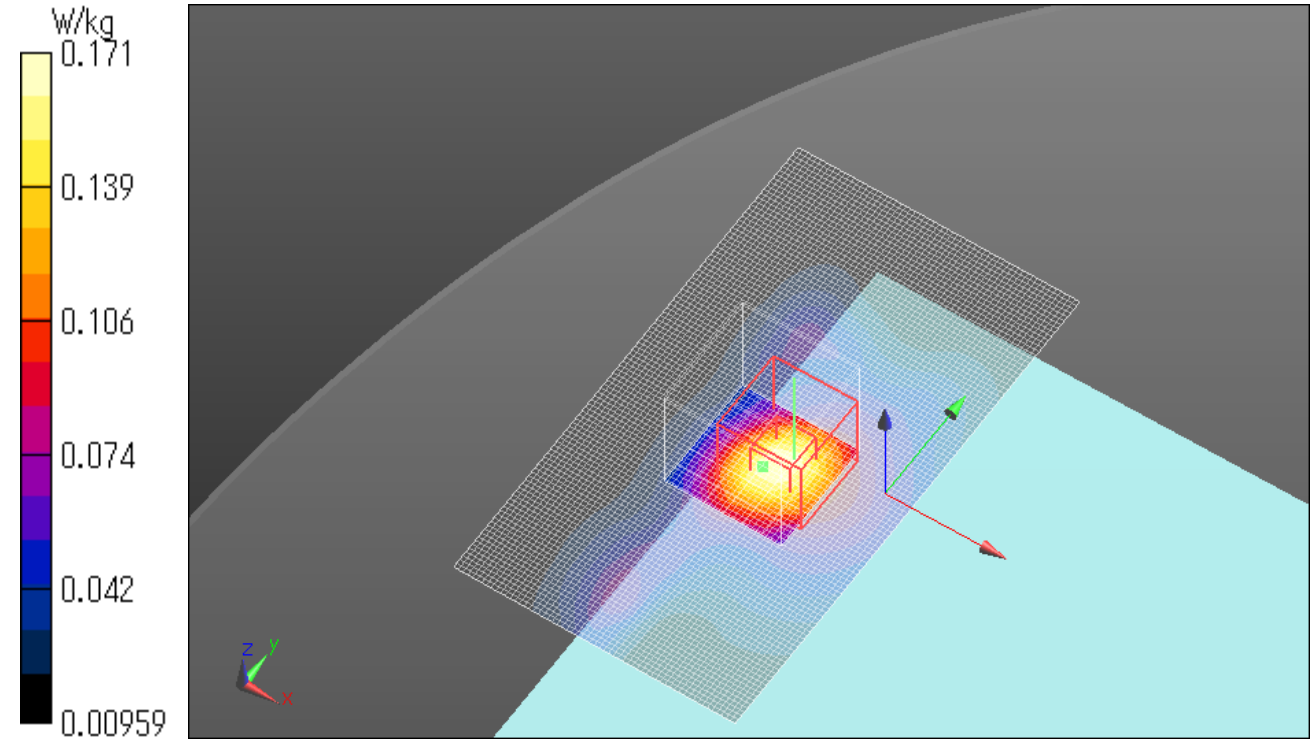
WLAN 11n40 HT4 2437MHz bottom Ant.Main
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.156 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.062 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.246 W/kg
SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.064 W/kg

Maximum value of SAR (measured) = 0.171 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



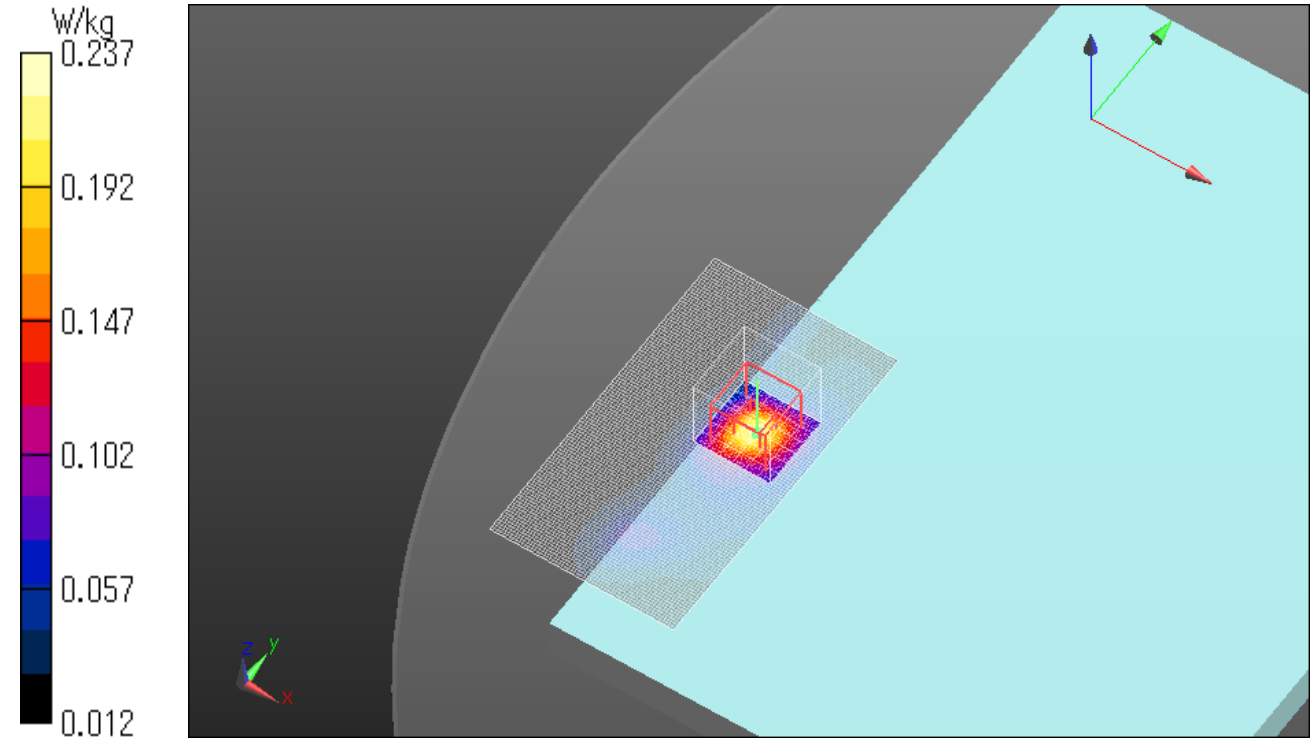
WLAN 11n20 HT4 2437MHz bottom Ant.Aux
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.246 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.198 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.350 W/kg
SAR(1 g) = 0.153 W/kg; SAR(10 g) = 0.075 W/kg

Maximum value of SAR (measured) = 0.237 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



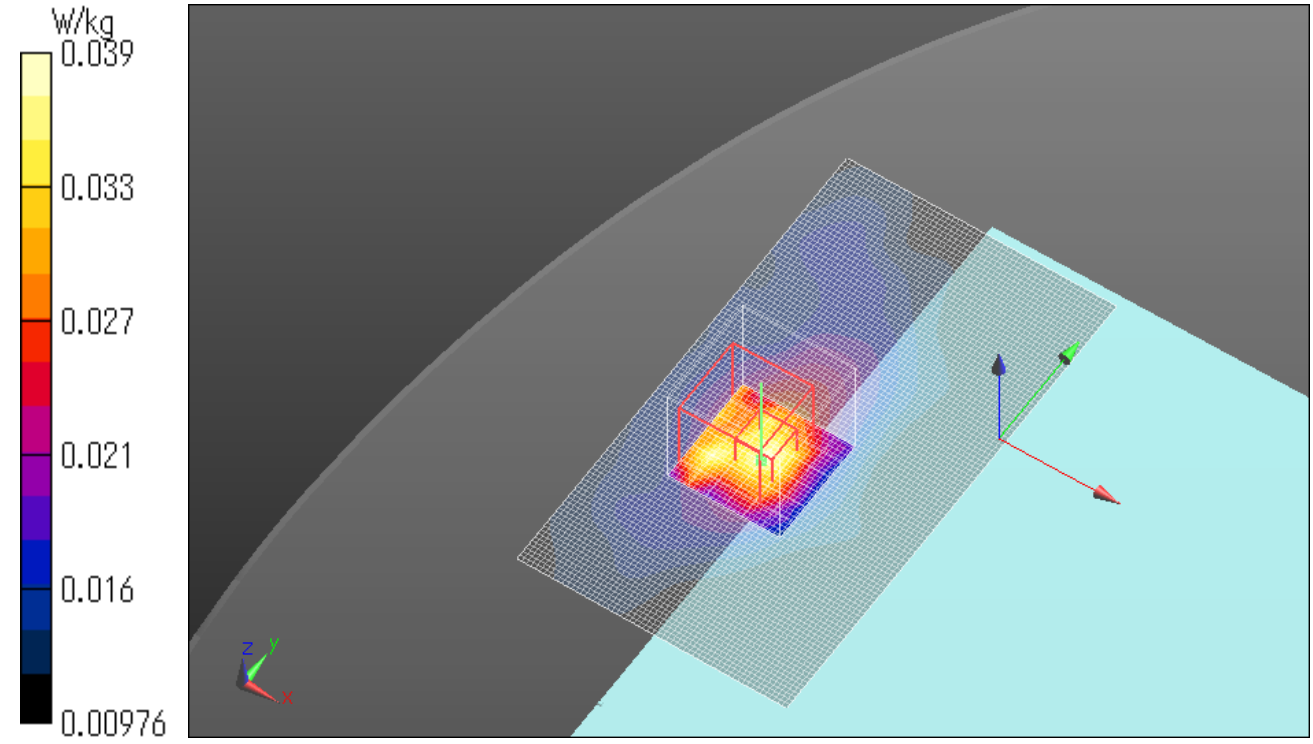
WLAN 11n20 HT4 2437MHz rear Ant.Aux
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.0382 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.596 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.0580 W/kg
SAR(1 g) = 0.028 W/kg; SAR(10 g) = 0.020 W/kg

Maximum value of SAR (measured) = 0.0388 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



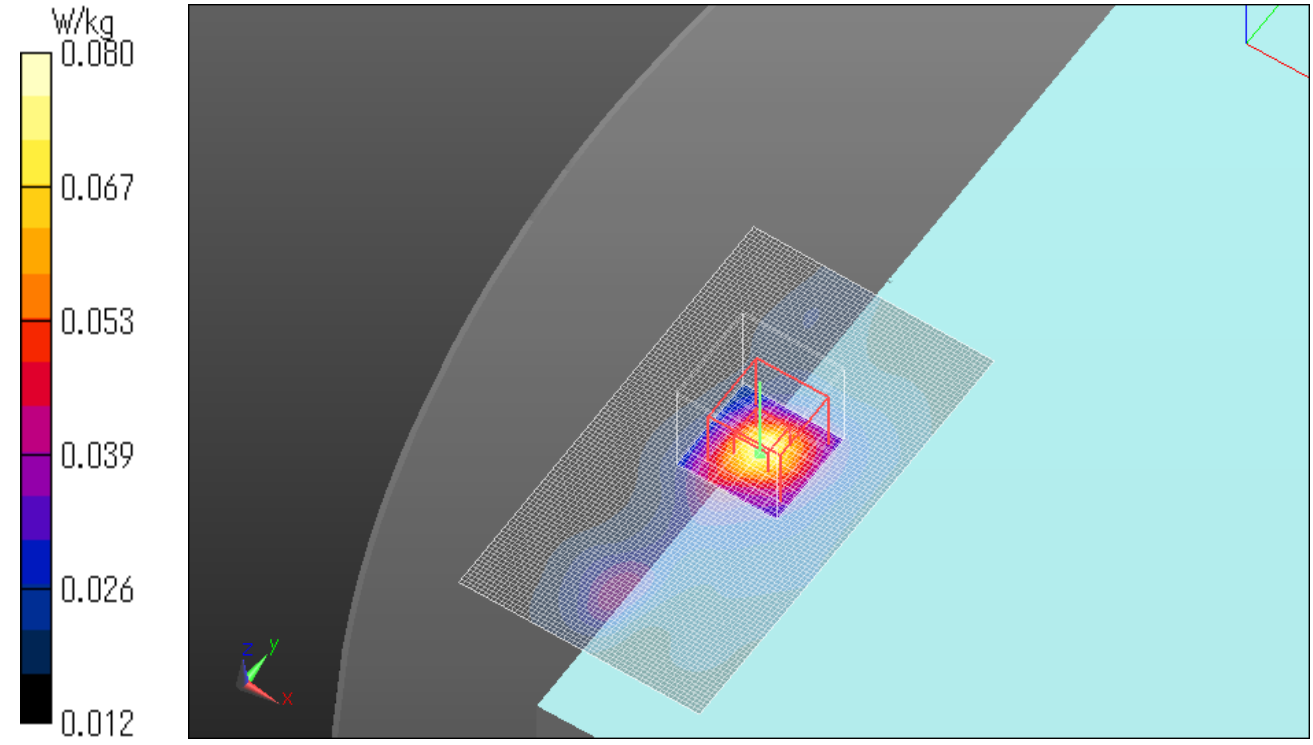
WLAN 11b 1Mbps 2437MHz bottom Ant.Aux
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.0776 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.237 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.117 W/kg
SAR(1 g) = 0.054 W/kg; SAR(10 g) = 0.031 W/kg

Maximum value of SAR (measured) = 0.0801 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



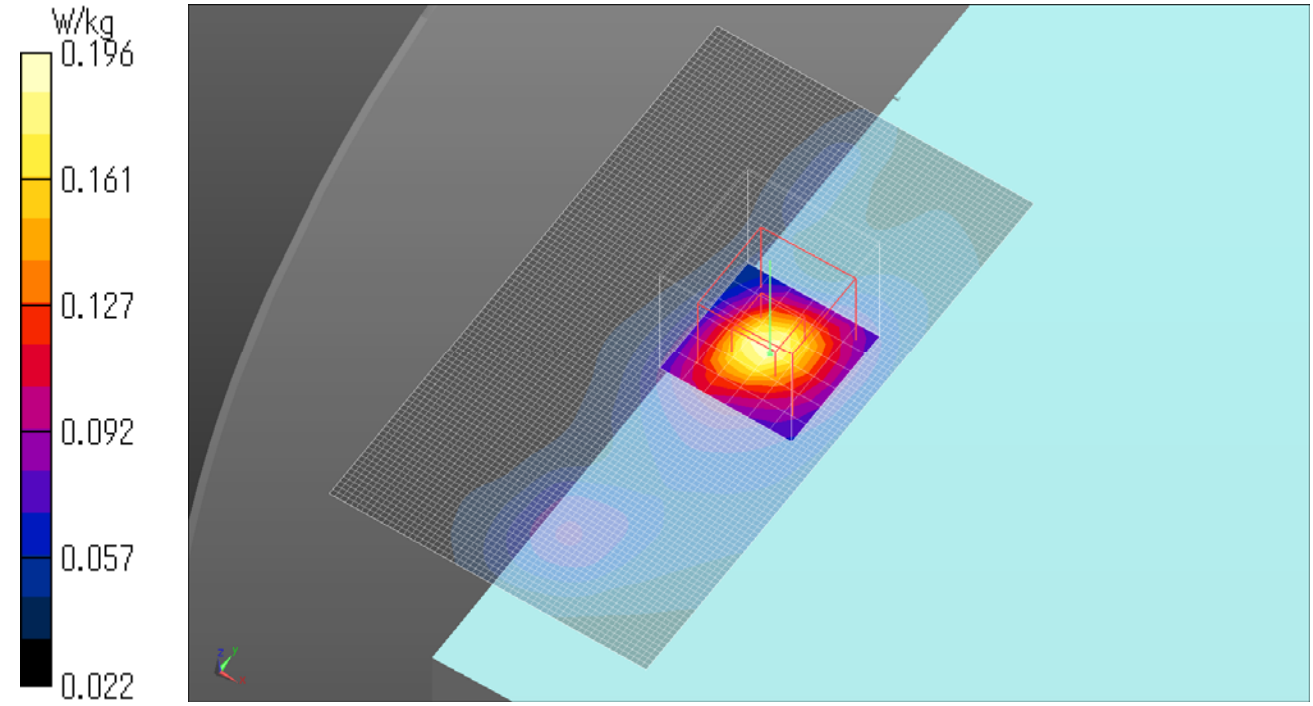
WLAN 11g 6Mbps 2437MHz bottom Ant.Aux
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan 2 (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.199 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.248 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.285 W/kg
SAR(1 g) = 0.133 W/kg; SAR(10 g) = 0.072 W/kg

Maximum value of SAR (measured) = 0.196 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



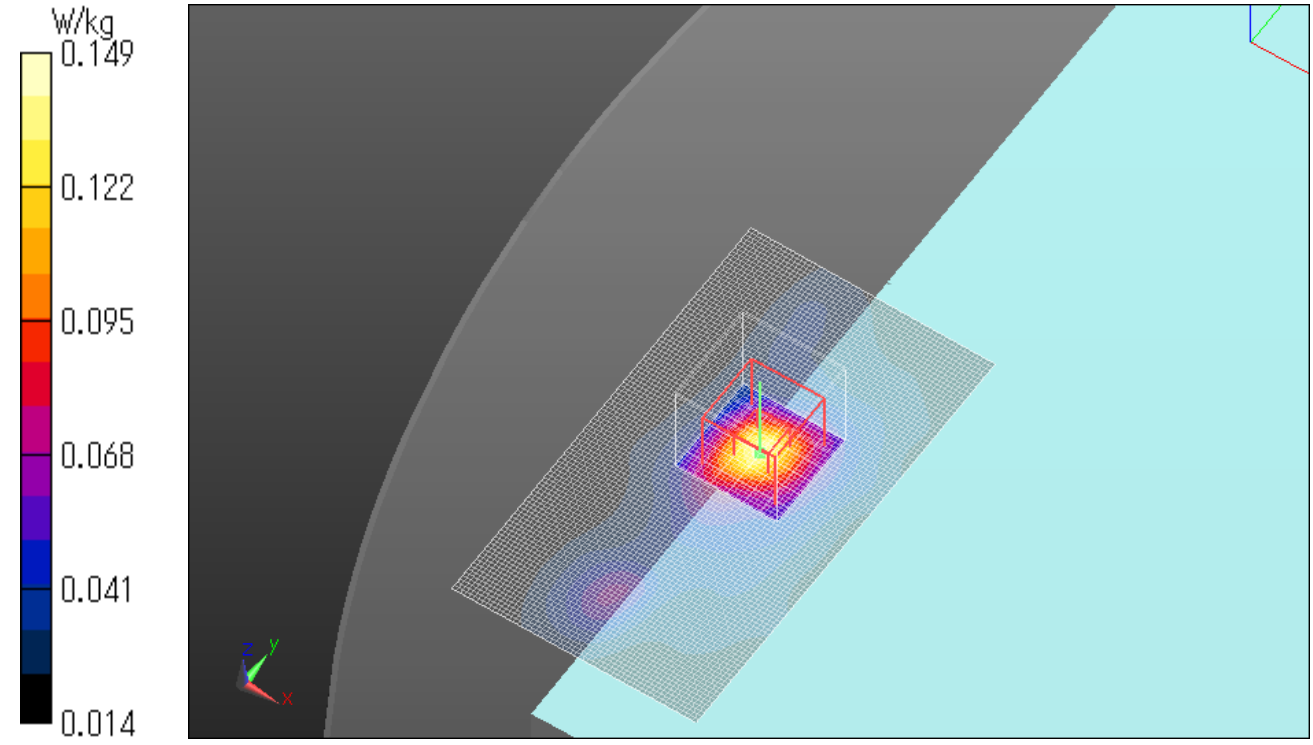
WLAN 11n40 HT4 2437MHz bottom Ant.Aux
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.148 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.570 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.214 W/kg
SAR(1 g) = 0.098 W/kg; SAR(10 g) = 0.051 W/kg

Maximum value of SAR (measured) = 0.149 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



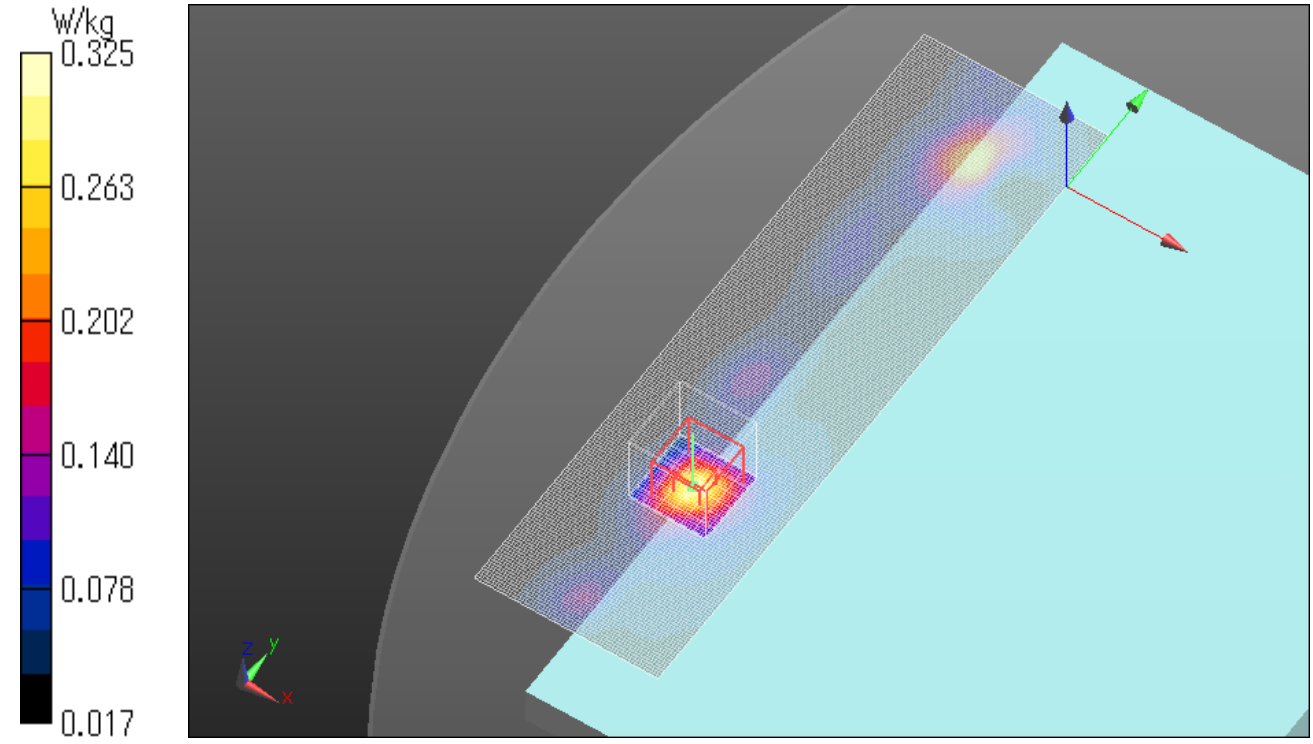
WLAN 11n20 HT8 2437MHz bottom Ant.Main+Aux
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x221x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.338 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.252 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.470 W/kg
SAR(1 g) = 0.208 W/kg; SAR(10 g) = 0.102 W/kg

Maximum value of SAR (measured) = 0.325 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.

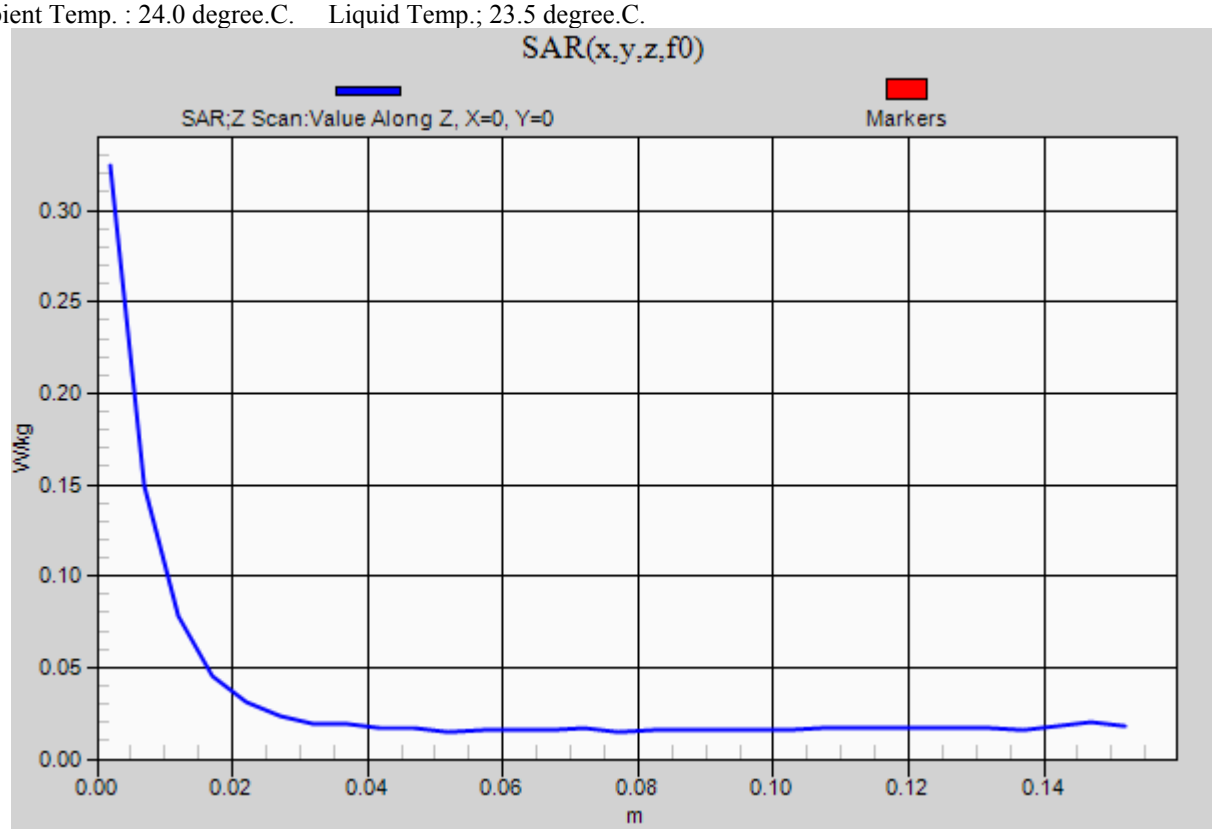


Z scan at Maximum Body SAR position in WLAN 2.4GHz band

WLAN 11n20 HT8 2437MHz Bottom Ant.Main+Aux
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.324 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



WLAN 11n40 HT8 2437MHz bottom Ant.Main+Aux
Communication System: UID 0, WLAN 2.4G 11b/g/n (0); Communication System Band: WLAN 2.4G 11b/g/n;
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.92 S/m; ε_r = 50.706; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration
Probe: EX3DV4 - SN3922; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/06/04;
Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1372; Calibrated: 2013/06/03
Phantom: ELI v5.0 TP1207; Type: QDOVA001BB;
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x221x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.224 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.676 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.312 W/kg
SAR(1 g) = 0.143 W/kg; SAR(10 g) = 0.074 W/kg

Maximum value of SAR (measured) = 0.219 W/kg
Date: 2013/08/27
Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.