



Test report No. : 10004953H-I-R2
Page : 1 of 228
FCC ID : AK8SVD132A14L
Issued date : May 10, 2013
Revised date : May 17, 2013

SAR TEST REPORT

Test Report No. : 10004953H-I-R2

Applicant : Sony Corporation
Type of Equipment : Personal Computer
Model No. : SVD132A14L
FCC ID : AK8SVD132A14L
Test regulation : FCC47CFR 2.1093
FCC OET Bulletin 65, Supplement C (Edition 01-01)
Test Result : Complied
Reported SAR(1g) Value : FCC Part15.247(WLAN 11b/g/n(2.4GHz band), 11a/n(5.8GHz band)
Body : 0.778W/kg
FCC Part15.407(WLAN 11a/n(5.2GHz band, 5.3GHz band, 5.6GHz band)
Body : 0.858W/kg

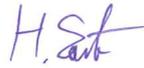
The highest reported SAR(1g) Value for the device is 0.858W/kg.

Simultaneous transmission test was excluded.

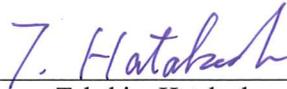
The highest sum of SAR(1g) for the simultaneous transmitting antennas Value for the device is 1.209 W/kg.

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
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 10004953H-I-R1. 10004953H-I-R1 is replaced with this report.

Date of test: April 22 to May 2, 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>

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SECTION 1: Customer information

Company Name : Sony Corporation.
Address : 1-7-1 Konan, Minato-ku, Tokyo, 399-8282 Japan
Telephone Number : +81-3-6748-2569
Facsimile Number : +81-3-6748-2574
Contact Person : Hirofumi Kojima

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

2.1 Identification of E.U.T.

Type of Equipment : Personal Computer
Model No. : SVD132A14L
Serial No. : XTS2-1 8
Rating : INPUT: 100-240V, 1.2A, 50/60Hz
OUTPUT: DC 10.5V, 3.8A, 39.9W
DC 5V, 1A, 5W
Li-ion Battery (Model No.: VGP-BPS36)
DC7.5V/ 6320mAh 48Wh

Option Battery : N/A
Body-worn accessory : N/A
Device category : Portable
Antenna to antenna separation distance : The shortest distance of WLAN Ant.1 antenna to Bluetooth antenna(WLAN Ant.0 shared) is 20 cm or more.
Simultaneous transmission : WLAN 5GHz(WLAN Ant.1) can transmit simultaneously with Bluetooth(WLAN Ant.0 shared).
WLAN 5GHz(WLAN Ant.0) can transmit simultaneously with Bluetooth(WLAN Ant.0 shared).
WLAN 2.4GHz(WLAN Ant.1) can't transmit simultaneously with Bluetooth(WLAN Ant.0 shared).

Size of EUT : H:210 mm * W:330 mm * D:24.5 mm
Receipt Date of Sample : February 27, 2013
Country of Mass-production : Japan
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product Description

General Specification

Feature of EUT	This model is co-located with Wireless LAN and Bluetooth module(IEEE802.11 a/b/g/n, Bluetooth) and NFC module. Each antenna is included in the Personal computer. This model can co-operate Wireless LAN(5GHz band) + Bluetooth + NFC.
Operation Clock	CPU: 1.0GHz

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Radio Specification

Bluetooth (BDR/EDR)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Type	PIFA
Antenna Gain	-0.56 dBi (peak) (Including Cable Loss)

Bluetooth (Low Energy)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	GFSK
Bandwidth & Channel spacing	1MHz & 2MHz
Antenna Type	PIFA
Antenna Gain	-0.56 dBi (peak) (Including Cable Loss)

WLAN (IEEE802.11a/b/g/n-20)

Equipment Type	Transceiver	
Frequency of Operation	2412-2462MHz	5180-5320MHz 5500-5700MHz * 5745-5825MHz
Type of Modulation	DSSS, OFDM	OFDM
Bandwidth & Channel spacing	20MHz & 5MHz	20MHz & 20MHz
Antenna Type	PIFA	
Antenna Gain	Ant 0: -0.56dBi (peak) Ant 1: -4.07dBi (peak) (Including Cable Loss)	Ant 0: 5150-5350MHz -0.46dBi (peak) 5470-5725MHz -1.25dBi (peak) 5825-5850MHz -2.63dBi (peak) Ant 1: 5150-5350MHz +1.32dBi (peak) 5470-5725MHz +1.20dBi (peak) 5825-5850MHz - 2.73dBi (peak) (Including Cable Loss)

*5600MHz-5640MHz is not used in Canada

WLAN (IEEE802.11n-40)

Equipment Type	Transceiver	
Frequency of Operation	2422-2452MHz	5190-5310MHz 5510-5670MHz * 5755-5795MHz
Type of Modulation	OFDM	OFDM
Bandwidth & Channel spacing	40MHz & 5MHz	40MHz & 40MHz
Antenna Type	PIFA	
Antenna Gain	Ant 0: -0.56dBi (peak) Ant 1: -4.07dBi (peak) (Including Cable Loss)	Ant 0: 5150-5350MHz -0.46dBi (peak) 5470-5725MHz -1.25dBi (peak) 5825-5850MHz -2.63dBi (peak) Ant 1: 5150-5350MHz +1.32dBi (peak) 5470-5725MHz +1.20dBi (peak) 5825-5850MHz - 2.73dBi (peak) (Including Cable Loss)

*5590MHz-5630MHz is not used in Canada.

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NFC (FCC ID: NKR-DFCN67H)

Equipment Type	Transceiver
Frequency of Operation	13.56MHz
Type of Modulation	ASK

*This test report applies for WLAN (IEEE802.11a/11b/11g/11n-20/11n-40[2412-2462MHz, 5745-5825MHz]) and Bluetooth (Low Energy).

*NFC module was operated by polling mode during the testing.

SECTION 3 : Test standard information

3.1 Test Specification

Title : **Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01):**

Supplement C (Edition 01-01) - Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions
OET Bulletin 65 (Edition 97-01) - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

: **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

In additions;

- | | |
|---|---|
| <input checked="" type="checkbox"/> KDB450824D01(v01r01) | SAR Prob Cal and Ver Meas |
| <input checked="" type="checkbox"/> KDB450824D02(v01r01) | Dipole SAR Validation Verification |
| <input checked="" type="checkbox"/> KDB447498D01(v05) | Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies |
| <input type="checkbox"/> KDB447498D02(v02) | SAR Measurement Procedures for USB Dongle Transmitters |
| <input type="checkbox"/> KDB648474D04(v01) | SAR Evaluation Considerations for Wireless Handsets |
| <input type="checkbox"/> KDB941225D01(v02) | SAR Measurement Procedures for 3G Devices |
| <input type="checkbox"/> KDB941225D02(v02v01) | 3GPP R6 HSPA and R7 HSPA+ SAR Guidance |
| <input type="checkbox"/> KDB941225D03(v01) | Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE |
| <input type="checkbox"/> KDB941225D04(v01) | Evaluating SAR for GSM/(E)GPRS Dual Transfer Mode |
| <input type="checkbox"/> KDB941225D05(v02) | SAR for LTE Devices |
| <input type="checkbox"/> KDB941225D06(v01) | SAR test procedures for devices incorporating SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities (Hot Spot SAR) |
| <input type="checkbox"/> KDB941225D07(v01) | SAR Evaluation Procedures for UMPC Mini-Tablet Devices |
| <input checked="" type="checkbox"/> KDB 616217D04(v01) | SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers |
| <input checked="" type="checkbox"/> KDB865664D01(v01) | SAR Measurement Requirements for 100MHz to 6 GHz |
| <input checked="" type="checkbox"/> 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).

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3.2 Procedure

Transmitter	WLAN	Bluetooth
Test Procedure	FCC OET BULLETIN 65, SUPPLEMENT C	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
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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	65.16	-*3	0.155	0.155
WLAN 5.2GHz band	43.35	-*3	0.216	0.216
WLAN 5.3GHz band	92.26	-*3	0.516	0.516
WLAN 5.6GHz band	97.05	-*3	0.858	0.858
WLAN 5.8GHz band	91.41	-*3	0.778	0.778
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.

*3 Measured maximum output power is the maximum tune-up tolerance limit. Therefore, compensation calculation was not done.

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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 configurations	Head SAR	Body SAR	Note
4	WLAN 5GHz band ant.0+Bluetooth	-	Yes	
5	WLAN 5GHz band ant.1+Bluetooth	-	Yes (Exemption*)	

*It is separated 20 cm or more between antennas.

Simultaneous transmission SAR

<WLAN 5GHz band+ Bluetooth >

Simultaneous transmitter evaluation based on the KDB447498D01 Refer to the clause 4.3.2..

Step1	Standalone SAR test exclusion considerations. Refer to Section 6.
Step2	Measured Stand-alone SAR for WLAN ant.0.
Step3	No measured Stand-alone SAR for Bluetooth.
Step4	Simultaneous transmission is possible (WLAN 5GHz band ant.0+ Bluetooth) Simultaneous transmission SAR test exclusion considerations.
Step5	Estimated SAR for Bluetooth is calculated.
Step6	1.6W/kg > \sum 1g SAR (WLAN 5GHz band + Bluetooth) Body: 1.209 W/kg Refer to Section 10
Step6	No simultaneous transmission.

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SECTION 5 : Description of the operating mode

5.1 Output power operating modes

WLAN

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)
IEEE802.11n20 (2.4G)	100%	2412-2462MHz	2412MHz (1ch) 2437MHz(6ch) 2462MHz(11ch)	
IEEE802.11n40 (2.4G)	100%	2422-2452MHz	2422MHz (3ch) 2437MHz(6ch) 2462MHz(11ch)	
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	

Setting

WLAN

*Power of the EUT was set by the software as follows;

Software: 43241_B4_mfg_tool_package, Version 1.3

Power settings: See below tables

*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.

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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.

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WLAN power settings

11b, 1Mbps

Ch	Freq.	Power set	
		Ant 0	
1	2412		54
6	2437		60
11	2462		50

11g, 6Mbps

Ch	Freq.	Power set	
		Ant 0	
1	2412		36
6	2437		81
11	2462		21

11n20(MISO), MCS0

Ch	Freq.	Power set	
		Ant 0	
1	2412		35
6	2437		87
11	2462		20

11n40(MISO), MCS0

Ch	Freq.	Power set	
		Ant 0	
3	2422		20
6	2437		32
9	2452		20

11n20(MIMO), MCS8

Ch	Freq.	Power set	
		Ant 0 & 1	
1	2412		18
6	2437		49
11	2462		20

11n40(MIMO), MCS8

Ch	Freq.	Power set	
		Ant 0 & 1	
3	2422		12
6	2437		27
9	2452		10

11a 6Mbps

	Ch	Freq.	Power set
			Ant 0
W52/53	36	5180	24
	40	5200	24
	44	5220	28
	48	5240	29
	52	5260	100
	56	5280	100
	60	5300	109
	64	5320	63
W56	100	5500	39
	104	5520	103
	108	5540	103
	112	5560	103
	116	5580	103
	120	5600	103
	124	5620	115
	128	5640	110
	132	5660	103
	136	5680	100
	140	5700	52
W58	149	5745	97
	153	5765	102
	157	5785	99
	161	5805	109
	165	5825	99

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11n20(MISO), MCS0

	Ch	Freq.	Power set
			Ant 0
W52/53	36	5180	27
	40	5200	27
	44	5220	29
	48	5240	27
	52	5260	95
	56	5280	95
	60	5300	102
	64	5320	63
W56	100	5500	41
	104	5520	100
	108	5540	102
	112	5560	104
	116	5580	104
	120	5600	110
	124	5620	110
	128	5640	110
	132	5660	95
	136	5680	100
140	5700	52	
W58	149	5745	92
	153	5765	93
	157	5785	93
	161	5805	107
	165	5825	98

11n40(MISO), MCS0

	Ch	Freq.	Power set
			Ant 0
W52/53	38	5190	26
	46	5230	54
	54	5270	82
	62	5310	30
W56	102	5510	20
	110	5550	44
	118	5590	54
	126	5630	54
	134	5670	46
W58	151	5755	100
	159	5795	98

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11n20(MIMO), MCS8

	Ch	Freq.	Power set
			Ant 0 & 1
W52/53	36	5180	14
	40	5200	14
	44	5220	15
	48	5240	15
	52	5260	57
	56	5280	54
	60	5300	48
	64	5320	30
W56	100	5500	28
	104	5520	82
	108	5540	81
	112	5560	85
	116	5580	86
	120	5600	86
	124	5620	86
	128	5640	86
	132	5660	53
	136	5680	79
140	5700	21	
W58	149	5745	82
	153	5765	88
	157	5785	91
	161	5805	91
	165	5825	86

11n40(MIMO), MCS8

	Ch	Freq.	Power set
			Ant 0 & 1
W52/53	38	5190	18
	46	5230	21
	54	5270	48
	62	5310	20
W56	102	5510	16
	110	5550	38
	118	5590	40
	126	5630	43
	134	5670	25
W58	151	5755	73
	159	5795	73

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5.2 Confirmation before SAR testing (Output power measurement results)

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

[IEEE802.11b] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		[dBm]				[mW]			
		PK	AVG			PK	AVG		
1.0	2437	8.55	5.50	1.78	10.07	20.40	17.35	109.65	54.33
2.0	2437	8.85	5.45	1.78	10.07	20.70	17.30	117.49	53.70
5.5	2437	8.77	5.32	1.78	10.07	20.62	17.17	115.35	52.12
11.0	2437	8.84	5.27	1.78	10.07	20.69	17.12	117.22	51.52

:Worst data rate

IEEE802.11b 1Mbps

Ch	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		[dBm]				[mW]			
		PK	AVG			PK	AVG		
1	2412	7.78	4.06	1.76	10.07	19.61	15.89	91.41	38.82
6	2437	8.67	5.50	1.78	10.07	20.52	17.35	112.72	54.33
11	2462	7.84	5.05	1.75	10.07	19.66	16.87	92.47	48.64

:SAR test channel

[IEEE802.11g] Rate Check

Rate [Mbps]	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		[dBm]				[mW]			
		PK	AVG			PK	AVG		
6.0	2437	11.76	6.29	1.78	10.07	23.61	18.14	229.61	65.16
9.0	2437	12.03	6.17	1.78	10.07	23.88	18.02	244.34	63.39
12.0	2437	11.98	6.02	1.78	10.07	23.83	17.87	241.55	61.24
18.0	2437	12.00	5.81	1.78	10.07	23.85	17.66	242.66	58.34
24.0	2437	12.06	5.58	1.78	10.07	23.91	17.43	246.04	55.34
36.0	2437	12.05	5.19	1.78	10.07	23.90	17.04	245.47	50.58
48.0	2437	12.08	4.84	1.78	10.07	23.93	16.69	247.17	46.67
54.0	2437	12.02	4.61	1.78	10.07	23.87	16.46	243.78	44.26

:Worst data rate

IEEE802.11g 6Mbps

Ch	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		[dBm]				[mW]			
		PK	AVG			PK	AVG		
1	2412	9.87	2.14	1.76	10.07	21.70	13.97	147.91	24.95
6	2437	11.86	6.29	1.78	10.07	23.71	18.14	234.96	65.16
11	2462	10.31	1.12	1.75	10.07	22.13	12.94	163.31	19.68

:SAR test channel

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

[IEEE802.11n-20 MISO] Rate Check

Rate	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
MCS0	2437	11.73	6.49	1.78	10.07	23.58	18.34	228.03	68.23
MCS1	2437	11.83	6.12	1.78	10.07	23.68	17.97	233.35	62.66
MCS2	2437	11.88	5.88	1.78	10.07	23.73	17.73	236.05	59.29
MCS3	2437	11.88	5.65	1.78	10.07	23.73	17.50	236.05	56.23
MCS4	2437	11.99	5.22	1.78	10.07	23.84	17.07	242.10	50.93
MCS5	2437	11.98	4.94	1.78	10.07	23.83	16.79	241.55	47.75
MCS6	2437	11.97	4.72	1.78	10.07	23.82	16.57	240.99	45.39
MCS7	2437	12.01	4.54	1.78	10.07	23.86	16.39	243.22	43.55

:Worst data rate

IEEE802.11n-20 MISO, MCS0

Ch	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
1	2412	9.84	2.12	1.76	10.07	21.67	13.95	146.89	24.83
6	2437	12.00	6.49	1.78	10.07	23.85	18.34	242.66	68.23
11	2462	10.18	0.96	1.75	10.07	22.00	12.78	158.49	18.97

:SAR test channel

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

[IEEE802.11n-40 MISO] Rate Check

Rate	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
MCS0	2437	10.51	2.42	1.78	10.07	22.36	14.27	172.19	26.73
MCS1	2437	10.54	1.90	1.78	10.07	22.39	13.75	173.38	23.71
MCS2	2437	10.60	1.47	1.78	10.07	22.45	13.32	175.79	21.48
MCS3	2437	10.72	1.14	1.78	10.07	22.57	12.99	180.72	19.91
MCS4	2437	10.74	0.53	1.78	10.07	22.59	12.38	181.55	17.30
MCS5	2437	10.85	0.27	1.78	10.07	22.70	12.12	186.21	16.29
MCS6	2437	10.81	0.00	1.78	10.07	22.66	11.85	184.50	15.31
MCS7	2437	10.86	-0.14	1.78	10.07	22.71	11.71	186.64	14.83

:Worst data rate

IEEE802.11n-40 MISO, MCS0

Ch	Frequency [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
3	2422	9.06	-0.07	1.77	10.07	20.90	11.77	123.03	15.03
6	2437	10.59	2.42	1.78	10.07	22.44	14.27	175.39	26.73
9	2452	9.91	0.67	1.77	10.07	21.75	12.51	149.62	17.82

:SAR test channel

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

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AVG, [IEEE802.11n-20 MIMO, 2437MHz] Rate Check

MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
					[dBm]	[dBm]	
8	Ant0	4.00	1.78	10.07	15.85	18.58	*
	Ant1	3.47	1.78	10.03	15.28		
9	Ant0	3.40	1.78	10.07	15.25	18.06	
	Ant1	3.02	1.78	10.03	14.83		
10	Ant0	2.98	1.78	10.07	14.83	17.69	
	Ant1	2.72	1.78	10.03	14.53		
11	Ant0	2.75	1.78	10.07	14.60	17.33	
	Ant1	2.21	1.78	10.03	14.02		
12	Ant0	2.33	1.78	10.07	14.18	16.92	
	Ant1	1.81	1.78	10.03	13.62		
13	Ant0	1.89	1.78	10.07	13.74	16.48	
	Ant1	1.38	1.78	10.03	13.19		
14	Ant0	1.61	1.78	10.07	13.46	16.17	
	Ant1	1.02	1.78	10.03	12.83		
15	Ant0	1.49	1.78	10.07	13.34	16.04	
	Ant1	0.88	1.78	10.03	12.69		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-20 MIMO, MCS8

Freq. [MHz]	Antenna 0	Antenna 1	Result	
	Result [mW]	Result [mW]	[dBm]	[mW]
2412	11.97	10.67	13.55	22.63
2437	38.46	33.73	18.58	72.19
2462	17.82	15.74	15.26	33.56

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
2412	-1.05	1.76	10.07	10.78	11.97
2437	4.00	1.78	10.07	15.85	38.46
2462	0.69	1.75	10.07	12.51	17.82

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
2412	-1.51	1.76	10.03	10.28	10.67
2437	3.47	1.78	10.03	15.28	33.73
2462	0.19	1.75	10.03	11.97	15.74

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

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AVG, [IEEE802.11n-40 MIMO, 2437MHz] Rate Check

MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
					[dBm]	[dBm]	
8	Ant0	1.35	1.78	10.07	13.20	15.82	*
	Ant1	0.58	1.78	10.03	12.39		
9	Ant0	0.74	1.78	10.07	12.59	15.04	
	Ant1	-0.43	1.78	10.03	11.38		
10	Ant0	0.17	1.78	10.07	12.02	14.49	
	Ant1	-0.95	1.78	10.03	10.86		
11	Ant0	-0.54	1.78	10.07	11.31	13.95	
	Ant1	-1.28	1.78	10.03	10.53		
12	Ant0	-1.07	1.78	10.07	10.78	13.52	
	Ant1	-1.58	1.78	10.03	10.23		
13	Ant0	-1.57	1.78	10.07	10.28	13.02	
	Ant1	-2.08	1.78	10.03	9.73		
14	Ant0	-1.85	1.78	10.07	10.00	12.75	
	Ant1	-2.35	1.78	10.03	9.46		
15	Ant0	-2.01	1.78	10.07	9.84	12.54	
	Ant1	-2.61	1.78	10.03	9.20		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-40 MIMO, MCS8

Freq. [MHz]	Antenna 0	Antenna 1	Result	
	Result [mW]	Result [mW]	[dBm]	[mW]
2422	7.73	7.18	11.73	14.90
2437	20.89	17.34	15.82	38.23
2452	7.41	6.41	11.41	13.83

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
2422	-2.95	1.76	10.07	8.88	7.73
2437	1.35	1.78	10.07	13.20	20.89
2452	-3.12	1.75	10.07	8.70	7.41

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
2422	-3.23	1.76	10.03	8.56	7.18
2437	0.58	1.78	10.03	12.39	17.34
2452	-3.71	1.75	10.03	8.07	6.41

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

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

[IEEE802.11a 5180-5240MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
6.0	5240	1.65	2.76	10.13	14.54	28.44
9.0	5240	1.55	2.76	10.13	14.44	27.80
12.0	5240	1.41	2.76	10.13	14.30	26.92
18.0	5240	1.34	2.76	10.13	14.23	26.49
24.0	5240	0.86	2.76	10.13	13.75	23.71
36.0	5240	0.63	2.76	10.13	13.52	22.49
48.0	5240	0.19	2.76	10.13	13.08	20.32
54.0	5240	0.06	2.76	10.13	12.95	19.72

6.0 : Worst data rate

IEEE802.11a 5180-5240MHz band 6Mbps

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
36	5180	0.84	2.89	10.13	13.86	24.32
40	5200	0.99	2.81	10.13	13.93	24.72
44	5220	1.60	2.76	10.13	14.49	28.12
48	5240	1.65	2.76	10.13	14.54	28.44

Sample Calculation: Result = Reading + Cable Loss + Attenuator

48 : SAR test channel

[IEEE802.11n-20 5180-5240MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
MCS0	5240	1.35	2.76	10.13	14.24	26.55
MCS1	5240	1.21	2.76	10.13	14.10	25.70
MCS2	5240	0.76	2.76	10.13	13.65	23.17
MCS3	5240	0.56	2.76	10.13	13.45	22.13
MCS4	5240	0.05	2.76	10.13	12.94	19.68
MCS5	5240	-0.27	2.76	10.13	12.62	18.28
MCS6	5240	-0.49	2.76	10.13	12.40	17.38
MCS7	5240	-0.69	2.76	10.13	12.20	16.60

Worst data rate

IEEE802.11n-20 5180-5240MHz band MCS0

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
36	5180	1.06	2.89	10.13	14.08	25.59
40	5200	1.17	2.81	10.13	14.11	25.76
44	5220	1.40	2.76	10.13	14.29	26.85
48	5240	1.35	2.76	10.13	14.24	26.55

SAR test channel

[IEEE802.11n-40 5190-5230MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
MCS0	5230	3.49	2.75	10.13	16.37	43.35
MCS1	5230	2.93	2.75	10.13	15.81	38.11
MCS2	5230	2.53	2.75	10.13	15.41	34.75
MCS3	5230	2.16	2.75	10.13	15.04	31.92
MCS4	5230	1.55	2.75	10.13	14.43	27.73
MCS5	5230	1.20	2.75	10.13	14.08	25.59
MCS6	5230	0.98	2.75	10.13	13.86	24.32
MCS7	5230	0.86	2.75	10.13	13.74	23.66

Worst data rate

IEEE802.11n-40 5190-5230MHz band MCS0

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
38	5190	0.49	2.84	10.13	13.46	22.18
46	5230	3.49	2.75	10.13	16.37	43.35

SAR test channel

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AVG, [IEEE802.11n-20 MIMO, 5180-5240MHz band] Rate Check

Freq. [MHz]	MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
						[dBm]	Total [dBm]	
5240	8	Ant0	-1.37	2.76	10.13	11.52	13.94	*
		Ant1	-2.61	2.76	10.09	10.24		
5240	9	Ant0	-1.81	2.76	10.13	11.08	13.42	
		Ant1	-3.23	2.76	10.09	9.62		
5240	10	Ant0	-2.30	2.76	10.13	10.59	12.96	
		Ant1	-3.66	2.76	10.09	9.19		
5240	11	Ant0	-2.61	2.76	10.13	10.28	12.71	
		Ant1	-3.81	2.76	10.09	9.04		
5240	12	Ant0	-3.14	2.76	10.13	9.75	12.13	
		Ant1	-4.46	2.76	10.09	8.39		
5240	13	Ant0	-3.69	2.76	10.13	9.20	11.67	
		Ant1	-4.81	2.76	10.09	8.04		
5240	14	Ant0	-3.75	2.76	10.13	9.14	11.60	
		Ant1	-4.90	2.76	10.09	7.95		
5240	15	Ant0	-3.89	2.76	10.13	9.00	11.49	
		Ant1	-4.97	2.76	10.09	7.88		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-20 MIMO, MCS8

Freq. [MHz]	Antenna 0 Result [mW]	Antenna 1 Result [mW]	Result	
			[dBm]	[mW]
5180	13.27	10.69	13.80	23.96
5200	13.24	10.59	13.77	23.84
5220	13.74	10.57	13.86	24.31
5240	14.19	10.57	13.94	24.76

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5180	-1.79	2.89	10.13	11.23	13.27
5200	-1.72	2.81	10.13	11.22	13.24
5220	-1.51	2.76	10.13	11.38	13.74
5240	-1.37	2.76	10.13	11.52	14.19

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5180	-2.69	2.89	10.09	10.29	10.69
5200	-2.65	2.81	10.09	10.25	10.59
5220	-2.61	2.76	10.09	10.24	10.57
5240	-2.61	2.76	10.09	10.24	10.57

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AVG, [IEEE802.11n-40 MIMO, 5190-5230MHz band] Rate Check

Freq. [MHz]	MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
						[dBm]	Total [dBm]	
5230	8	Ant0	-1.50	2.84	10.13	11.47	14.02	*
		Ant1	-2.44	2.84	10.09	10.49		
5230	9	Ant0	-2.35	2.84	10.13	10.62	13.19	
		Ant1	-3.23	2.84	10.09	9.70		
5230	10	Ant0	-2.90	2.84	10.13	10.07	12.60	
		Ant1	-3.88	2.84	10.09	9.05		
5230	11	Ant0	-3.48	2.84	10.13	9.49	12.10	
		Ant1	-4.28	2.84	10.09	8.65		
5230	12	Ant0	-4.15	2.84	10.13	8.82	11.43	
		Ant1	-4.95	2.84	10.09	7.98		
5230	13	Ant0	-4.60	2.84	10.13	8.37	11.05	
		Ant1	-5.25	2.84	10.09	7.68		
5230	14	Ant0	-4.51	2.84	10.13	8.46	11.03	
		Ant1	-5.41	2.84	10.09	7.52		
5230	15	Ant0	-4.74	2.84	10.13	8.23	10.90	
		Ant1	-5.41	2.84	10.09	7.52		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-40 MIMO, MCS8

Freq. [MHz]	Antenna 0	Antenna 1	Result	
	Result [mW]	Result [mW]	[dBm]	[mW]
5190	14.03	11.19	14.02	25.22
5230	16.67	12.97	14.72	29.64

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5190	-1.50	2.84	10.13	11.47	14.03
5230	-0.66	2.75	10.13	12.22	16.67

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5190	-2.44	2.84	10.09	10.49	11.19
5230	-1.71	2.75	10.09	11.13	12.97

Sample Calculation:

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

[IEEE802.11a 5260-5320MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
6.0	5280	6.41	3.06	10.13	19.60	91.20
9.0	5280	6.38	3.06	10.13	19.57	90.57
12.0	5280	6.25	3.06	10.13	19.44	87.90
18.0	5280	6.02	3.06	10.13	19.21	83.37
24.0	5280	5.84	3.06	10.13	19.03	79.98
36.0	5280	5.44	3.06	10.13	18.63	72.95
48.0	5280	5.06	3.06	10.13	18.25	66.83
54.0	5280	4.87	3.06	10.13	18.06	63.97

: Worst data rate

IEEE802.11a 5260-5320MHz band 6Mbps

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
52	5260	6.41	2.87	10.13	19.41	87.30
56	5280	6.41	3.06	10.13	19.60	91.20
60	5300	6.35	3.17	10.13	19.65	92.26
64	5320	4.60	3.05	10.13	17.78	59.98

Sample Calculation: Result = Reading + Cable Loss + Attenuator

: SAR test channel

[IEEE802.11n-20 5260-5320MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
MCS0	5280	6.02	3.06	10.13	19.21	83.37
MCS1	5280	5.81	3.06	10.13	19.00	79.43
MCS2	5280	5.48	3.06	10.13	18.67	73.62
MCS3	5280	5.29	3.06	10.13	18.48	70.47
MCS4	5280	4.86	3.06	10.13	18.05	63.83
MCS5	5280	4.50	3.06	10.13	17.69	58.75
MCS6	5280	4.38	3.06	10.13	17.57	57.15
MCS7	5280	4.22	3.06	10.13	17.41	55.08

Worst data rate

IEEE802.11n-20 5260-5320MHz band MCS0

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
52	5260	6.08	2.87	10.13	19.08	80.91
56	5280	6.02	3.06	10.13	19.21	83.37
60	5300	6.27	3.17	10.13	19.57	90.57
64	5320	4.53	3.05	10.13	17.71	59.02

t = Reading + Cable Loss + Attenuator

Channel of SAR testing

[IEEE802.11n-40 5270-5310MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
MCS0	5270	5.68	2.97	10.13	18.78	75.51
MCS1	5270	5.07	2.97	10.13	18.17	65.61
MCS2	5270	4.70	2.97	10.13	17.80	60.26
MCS3	5270	4.29	2.97	10.13	17.39	54.83
MCS4	5270	3.75	2.97	10.13	16.85	48.42
MCS5	5270	3.31	2.97	10.13	16.41	43.75
MCS6	5270	3.06	2.97	10.13	16.16	41.30
MCS7	5270	3.02	2.97	10.13	16.12	40.93

Worst data rate

IEEE802.11n-40 5270-5310MHz band MCS0

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
54	5270	5.68	2.97	10.13	18.78	75.51
62	5310	1.37	3.14	10.13	14.64	29.11

Sample Calculation: Result = Reading + Cable Loss + Attenuator

Channel of SAR testing

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AVG, [IEEE802.11n-20 MIMO, 5260-5320MHz band] Rate Check

Freq. [MHz]	MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
						[dBm]	Total [dBm]	
5280	8	Ant0	3.78	2.87	10.13	16.78	19.25	*
		Ant1	2.66	2.87	10.09	15.62		
5280	9	Ant0	3.30	2.87	10.13	16.30	18.74	
		Ant1	2.12	2.87	10.09	15.08		
5280	10	Ant0	2.91	2.87	10.13	15.91	18.34	
		Ant1	1.69	2.87	10.09	14.65		
5280	11	Ant0	2.52	2.87	10.13	15.52	17.97	
		Ant1	1.35	2.87	10.09	14.31		
5280	12	Ant0	1.98	2.87	10.13	14.98	17.51	
		Ant1	0.99	2.87	10.09	13.95		
5280	13	Ant0	1.53	2.87	10.13	14.53	17.06	
		Ant1	0.54	2.87	10.09	13.50		
5280	14	Ant0	1.35	2.87	10.13	14.35	16.92	
		Ant1	0.47	2.87	10.09	13.43		
5280	15	Ant0	1.21	2.87	10.13	14.21	16.67	
		Ant1	0.07	2.87	10.09	13.03		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-20 MIMO, MCS8

Freq. [MHz]	Antenna 0 Result [mW]	Antenna 1 Result [mW]	Result	
			[dBm]	[mW]
5260	48.31	38.28	19.37	86.59
5280	47.64	36.48	19.25	84.12
5300	43.95	32.81	18.85	76.76
5320	29.99	21.43	17.11	51.42

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5260	3.95	2.76	10.13	16.84	48.31
5280	3.78	2.87	10.13	16.78	47.64
5300	3.24	3.06	10.13	16.43	43.95
5320	1.47	3.17	10.13	14.77	29.99

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5260	2.98	2.76	10.09	15.83	38.28
5280	2.66	2.87	10.09	15.62	36.48
5300	2.01	3.06	10.09	15.16	32.81
5320	0.05	3.17	10.09	13.31	21.43

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AVG, [IEEE802.11n-40 MIMO, 5270-5310MHz band] Rate Check

Freq. [MHz]	MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
						[dBm]	Total [dBm]	
5270	8	Ant0	2.76	2.75	10.13	15.64	18.07	*
		Ant1	1.56	2.75	10.09	14.40		
5270	9	Ant0	2.60	2.75	10.13	15.48	17.53	
		Ant1	0.44	2.75	10.09	13.28		
5270	10	Ant0	1.35	2.75	10.13	14.23	16.74	
		Ant1	0.33	2.75	10.09	13.17		
5270	11	Ant0	0.98	2.75	10.13	13.86	16.29	
		Ant1	-0.23	2.75	10.09	12.61		
5270	12	Ant0	0.21	2.75	10.13	13.09	15.59	
		Ant1	-0.84	2.75	10.09	12.00		
5270	13	Ant0	-0.15	2.75	10.13	12.73	15.19	
		Ant1	-1.29	2.75	10.09	11.55		
5270	14	Ant0	-0.27	2.75	10.13	12.61	15.06	
		Ant1	-1.43	2.75	10.09	11.41		
5270	15	Ant0	-0.42	2.75	10.13	12.46	14.94	
		Ant1	-1.52	2.75	10.09	11.32		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-40 MIMO, MCS8

Freq. [MHz]	Antenna 0	Antenna 1	Result	
	Result [mW]	Result [mW]	[dBm]	[mW]
5270	36.64	27.54	18.07	64.19
5310	16.79	11.51	14.52	28.30

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5270	2.76	2.75	10.13	15.64	36.64
5310	-0.85	2.97	10.13	12.25	16.79

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5270	1.56	2.75	10.09	14.40	27.54
5310	-2.45	2.97	10.09	10.61	11.51

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

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

[IEEE802.11a 5500-5700MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
6.0	5580	6.80	2.93	10.14	19.87	97.05
9.0	5580	6.66	2.93	10.14	19.73	93.97
12.0	5580	6.54	2.93	10.14	19.61	91.41
18.0	5580	6.31	2.93	10.14	19.38	86.70
24.0	5580	6.11	2.93	10.14	19.18	82.79
36.0	5580	5.75	2.93	10.14	18.82	76.21
48.0	5580	5.40	2.93	10.14	18.47	70.31
54.0	5580	5.26	2.93	10.14	18.33	68.08

: Worst data rate

[IEEE802.11a 5500-5700MHz band] band 6Mbps

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
100	5500	3.19	2.99	10.14	16.32	42.85
104	5520	6.67	3.05	10.14	19.86	96.83
108	5540	6.71	3.03	10.14	19.88	97.27
112	5560	6.74	2.99	10.14	19.87	97.05
116	5580	6.80	2.93	10.14	19.87	97.05
120	5600	6.70	2.93	10.14	19.77	94.84
124	5620	6.87	2.79	10.14	19.80	95.50
128	5640	6.79	2.93	10.14	19.86	96.83
132	5660	6.55	3.18	10.14	19.87	97.05
136	5680	6.37	3.35	10.14	19.86	96.83
140	5700	3.98	3.27	10.14	17.39	54.83

Sample Calculation: Result = Reading + Cable Loss + Attenuator

: SAR test channel

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[IEEE802.11n-20 5500-5700MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
MCS0	5580	6.64	2.93	10.14	19.71	93.54
MCS1	5580	6.36	2.93	10.14	19.43	87.70
MCS2	5580	6.06	2.93	10.14	19.13	81.85
MCS3	5580	5.86	2.93	10.14	18.93	78.16
MCS4	5580	5.45	2.93	10.14	18.52	71.12
MCS5	5580	5.15	2.93	10.14	18.22	66.37
MCS6	5580	5.01	2.93	10.14	18.08	64.27
MCS7	5580	4.84	2.93	10.14	17.91	61.80

Worst data rate

[IEEE802.11n-20 5500-5700MHz band] band MCS0

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
100	5500	3.25	2.99	10.14	16.38	43.45
104	5520	6.57	3.05	10.14	19.76	94.62
108	5540	6.53	3.03	10.14	19.70	93.33
112	5560	6.69	2.99	10.14	19.82	95.94
116	5580	6.64	2.93	10.14	19.71	93.54
120	5600	6.76	2.83	10.14	19.73	93.97
124	5620	6.90	2.79	10.14	19.83	96.16
128	5640	6.70	2.93	10.14	19.77	94.84
132	5660	6.05	3.18	10.14	19.37	86.50
136	5680	6.35	3.35	10.14	19.84	96.38
140	5700	3.86	3.27	10.14	17.27	53.33

Sample Calculation: Result = Reading + Cable Loss + Attenuator

SAR test channel * : This channel was tested instead of an adjacent "default test channel".

[IEEE802.11n-40 5510-5670MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
MCS0	5590	3.85	2.88	10.14	16.87	48.64
MCS1	5590	3.41	2.88	10.14	16.43	43.95
MCS2	5590	3.00	2.88	10.14	16.02	39.99
MCS3	5590	2.53	2.88	10.14	15.55	35.89
MCS4	5590	2.07	2.88	10.14	15.09	32.28
MCS5	5590	1.62	2.88	10.14	14.64	29.11
MCS6	5590	1.33	2.88	10.14	14.35	27.23
MCS7	5590	1.16	2.88	10.14	14.18	26.18

: Worst data rate

[IEEE802.11n-40 5500-5700MHz band] band MCS0

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
102	5510	-0.04	3.04	10.14	13.14	20.61
110	5550	3.26	3.02	10.14	16.42	43.85
118	5590	3.85	2.88	10.14	16.87	48.64
126	5630	3.73	2.83	10.14	16.70	46.77
134	5670	3.25	3.29	10.14	16.68	46.56

Sample Calculation: Result = Reading + Cable Loss + Attenuator

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AVG, [IEEE802.11n-20 MIMO, 5500-5700MHz band] Rate Check

Freq. [MHz]	MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
						[dBm]	Total [dBm]	
5580	8	Ant0	5.47	2.93	10.14	18.54	21.11	*
		Ant1	4.59	2.93	10.10	17.62		
5580	9	Ant0	4.91	2.93	10.14	17.98	20.55	
		Ant1	4.03	2.93	10.10	17.06		
5580	10	Ant0	4.47	2.93	10.14	17.54	20.15	
		Ant1	3.66	2.93	10.10	16.69		
5580	11	Ant0	4.17	2.93	10.14	17.24	19.81	
		Ant1	3.28	2.93	10.10	16.31		
5580	12	Ant0	3.62	2.93	10.14	16.69	19.27	
		Ant1	2.75	2.93	10.10	15.78		
5580	13	Ant0	3.19	2.93	10.14	16.26	18.82	
		Ant1	2.28	2.93	10.10	15.31		
5580	14	Ant0	3.04	2.93	10.14	16.11	18.67	
		Ant1	2.13	2.93	10.10	15.16		
5580	15	Ant0	2.84	2.93	10.14	15.91	18.49	
		Ant1	1.98	2.93	10.10	15.01		

*: Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-20 MIMO, MCS8

Freq. [MHz]	Antenna 0 Result [mW]	Antenna 1 Result [mW]	Result	
			[dBm]	[mW]
5500	29.31	21.83	17.09	51.14
5520	71.12	58.61	21.13	129.74
5540	69.98	57.68	21.06	127.66
5560	71.78	58.34	21.14	130.12
5580	71.45	57.81	21.11	129.26
5600	68.39	56.89	20.98	125.28
5620	66.53	56.10	20.89	122.63
5640	68.39	58.48	21.03	126.87
5660	49.32	41.98	19.60	91.29
5680	68.87	59.43	21.08	128.29
5700	22.91	19.05	16.23	41.96

:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5500	1.54	2.99	10.14	14.67	29.31
5520	5.33	3.05	10.14	18.52	71.12
5540	5.28	3.03	10.14	18.45	69.98
5560	5.43	2.99	10.14	18.56	71.78
5580	5.47	2.93	10.14	18.54	71.45
5600	5.38	2.83	10.14	18.35	68.39
5620	5.30	2.79	10.14	18.23	66.53
5640	5.28	2.93	10.14	18.35	68.39
5660	3.61	3.18	10.14	16.93	49.32
5680	4.89	3.35	10.14	18.38	68.87
5700	0.19	3.27	10.14	13.60	22.91

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5500	0.30	2.99	10.10	13.39	21.83
5520	4.53	3.05	10.10	17.68	58.61
5540	4.48	3.03	10.10	17.61	57.68
5560	4.57	2.99	10.10	17.66	58.34
5580	4.59	2.93	10.10	17.62	57.81
5600	4.62	2.83	10.10	17.55	56.89
5620	4.60	2.79	10.10	17.49	56.10
5640	4.64	2.93	10.10	17.67	58.48
5660	2.95	3.18	10.10	16.23	41.98
5680	4.29	3.35	10.10	17.74	59.43
5700	-0.57	3.27	10.10	12.80	19.05

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

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AVG, [IEEE802.11n-40 MIMO, 5510-5670MHz band] Rate Check

Freq. [MHz]	MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
						[dBm]	[dBm]	
5590	8	Ant0	2.31	2.88	10.14	15.33	17.81	*
		Ant1	1.21	2.88	10.10	14.19		
5590	9	Ant0	1.61	2.88	10.14	14.63	17.15	
		Ant1	0.61	2.88	10.10	13.59		
5590	10	Ant0	1.04	2.88	10.14	14.06	16.57	
		Ant1	0.01	2.88	10.10	12.99		
5590	11	Ant0	0.70	2.88	10.14	13.72	16.18	
		Ant1	-0.43	2.88	10.10	12.55		
5590	12	Ant0	-0.07	2.88	10.14	12.95	15.47	
		Ant1	-1.08	2.88	10.10	11.90		
5590	13	Ant0	-0.43	2.88	10.14	12.59	15.10	
		Ant1	-1.46	2.88	10.10	11.52		
5590	14	Ant0	-0.53	2.88	10.14	12.49	14.95	
		Ant1	-1.66	2.88	10.10	11.32		
5590	15	Ant0	-0.81	2.88	10.14	12.21	14.73	
		Ant1	-1.82	2.88	10.10	11.16		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-40 MIMO, MCS8

Freq. [MHz]	Antenna 0 Result [mW]	Antenna 1 Result [mW]	Result	
			[dBm]	[mW]
5510	14.72	10.54	14.03	25.27
5550	33.57	25.47	17.71	59.04
5590	34.12	26.24	17.81	60.36
5630	34.28	27.29	17.89	61.57
5670	23.33	18.54	16.22	41.87

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5510	-1.50	3.04	10.14	11.68	14.72
5550	2.10	3.02	10.14	15.26	33.57
5590	2.31	2.88	10.14	15.33	34.12
5630	2.38	2.83	10.14	15.35	34.28
5670	0.25	3.29	10.14	13.68	23.33

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5510	-2.91	3.04	10.10	10.23	10.54
5550	0.94	3.02	10.10	14.06	25.47
5590	1.21	2.88	10.10	14.19	26.24
5630	1.43	2.83	10.10	14.36	27.29
5670	-0.71	3.29	10.10	12.68	18.54

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

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

[IEEE802.11a 5745-5825MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
6.0	5785.0	6.13	3.34	10.14	19.61	91.41
9.0	5785.0	6.03	3.34	10.14	19.51	89.33
12.0	5785.0	5.84	3.34	10.14	19.32	85.51
18.0	5785.0	5.61	3.34	10.14	19.09	81.10
24.0	5785.0	5.46	3.34	10.14	18.94	78.34
36.0	5785.0	5.01	3.34	10.14	18.49	70.63
48.0	5785.0	4.70	3.34	10.14	18.18	65.77
54.0	5785.0	4.56	3.34	10.14	18.04	63.68

6.0 : Worst data rate

IEEE802.11a 5745-5825MHz band 6Mbps

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
149	5745.0	6.03	3.10	10.14	19.27	84.53
153	5765.0	6.24	3.27	10.14	19.65	92.26
157	5785.0	6.13	3.34	10.14	19.61	91.41
161	5805.0	6.31	3.22	10.14	19.67	92.68
165	5825.0	6.13	3.04	10.14	19.31	85.31

Sample Calculation: Result = Reading + Cable Loss + Attenuator

161 : SAR test channel

[IEEE802.11n-20 5745-5825MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
MCS0	5785.0	6.07	3.34	10.14	19.55	90.16
MCS1	5785.0	5.78	3.34	10.14	19.26	84.33
MCS2	5785.0	5.43	3.34	10.14	18.91	77.80
MCS3	5785.0	5.26	3.34	10.14	18.74	74.82
MCS4	5785.0	4.89	3.34	10.14	18.37	68.71
MCS5	5785.0	4.56	3.34	10.14	18.04	63.68
MCS6	5785.0	4.47	3.34	10.14	17.95	62.37
MCS7	5785.0	4.24	3.34	10.14	17.72	59.16

: Worst data rate

IEEE802.11n-20 5745-5825MHz band MCS0

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
149	5745.0	6.01	3.10	10.14	19.25	84.14
153	5765.0	6.21	3.27	10.14	19.62	91.62
157	5785.0	6.07	3.34	10.14	19.55	90.16
161	5805.0	6.33	3.22	10.14	19.69	93.11
165	5825.0	6.03	3.04	10.14	19.21	83.37

Sample Calculation: Result = Reading + Cable Loss + Attenuator

[IEEE802.11n-40 5755-5795MHz band] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
MCS0	5755.0	6.18	3.19	10.14	19.51	89.33
MCS1	5755.0	5.66	3.19	10.14	18.99	79.25
MCS2	5755.0	5.19	3.19	10.14	18.52	71.12
MCS3	5755.0	4.95	3.19	10.14	18.28	67.30
MCS4	5755.0	4.24	3.19	10.14	17.57	57.15
MCS5	5755.0	3.93	3.19	10.14	17.26	53.21
MCS6	5755.0	3.72	3.19	10.14	17.05	50.70
MCS7	5755.0	3.62	3.19	10.14	16.95	49.55

MCS0 : Worst data rate

IEEE802.11n-40 5755-5795MHz band MCS0

Ch	Freq. [MHz]	P/M Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm] AVG	[mW] AVG
151	5755.0	6.18	3.19	10.14	19.51	89.33
159	5795.0	6.11	3.30	10.14	19.55	90.16

Sample Calculation: Result = Reading + Cable Loss + Attenuator

AVG, [IEEE802.11n-20 MIMO, 5745-5825MHz band] Rate Check

Freq. [MHz]	MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
						[dBm]	Total [dBm]	
5785	8	Ant0	5.24	3.34	10.14	18.72	21.42	*
		Ant1	4.62	3.34	10.11	18.07		
5785	9	Ant0	4.91	3.34	10.14	18.39	21.04	
		Ant1	4.19	3.34	10.11	17.64		
5785	10	Ant0	4.46	3.34	10.14	17.94	20.57	
		Ant1	3.70	3.34	10.11	17.15		
5785	11	Ant0	4.13	3.34	10.14	17.61	20.29	
		Ant1	3.48	3.34	10.11	16.93		
5785	12	Ant0	3.63	3.34	10.14	17.11	19.75	
		Ant1	2.88	3.34	10.11	16.33		
5785	13	Ant0	3.10	3.34	10.14	16.58	19.30	
		Ant1	2.53	3.34	10.11	15.98		
5785	14	Ant0	2.97	3.34	10.14	16.45	19.13	
		Ant1	2.31	3.34	10.11	15.76		
5785	15	Ant0	2.79	3.34	10.14	16.27	18.93	
		Ant1	2.09	3.34	10.11	15.54		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-20 MIMO, MCS8

Freq. [MHz]	Antenna 0 Result [mW]	Antenna 1 Result [mW]	Result	
			[dBm]	[mW]
5745	68.39	59.84	21.08	128.23
5765	74.30	64.27	21.42	138.57
5785	74.47	64.12	21.42	138.59
5805	72.78	63.24	21.34	136.02
5825	66.99	58.21	20.98	125.20

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5745	5.11	3.10	10.14	18.35	68.39
5765	5.30	3.27	10.14	18.71	74.30
5785	5.24	3.34	10.14	18.72	74.47
5805	5.26	3.22	10.14	18.62	72.78
5825	5.08	3.04	10.14	18.26	66.99

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5745	4.56	3.10	10.11	17.77	59.84
5765	4.70	3.27	10.11	18.08	64.27
5785	4.62	3.34	10.11	18.07	64.12
5805	4.68	3.22	10.11	18.01	63.24
5825	4.50	3.04	10.11	17.65	58.21

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

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AVG, [IEEE802.11n-40 MIMO, 5755-5795MHz band] Rate Check

Freq. [MHz]	MCS Number	Ant	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Remark
						[dBm]	Total [dBm]	
5755	8	Ant0	4.39	3.19	10.14	17.72	20.46	*
		Ant1	3.86	3.19	10.11	17.16		
5755	9	Ant0	3.56	3.19	10.14	16.89	19.66	
		Ant1	3.09	3.19	10.11	16.39		
5755	10	Ant0	3.03	3.19	10.14	16.36	19.13	
		Ant1	2.57	3.19	10.11	15.87		
5755	11	Ant0	2.59	3.19	10.14	15.92	18.70	
		Ant1	2.15	3.19	10.11	15.45		
5755	12	Ant0	1.91	3.19	10.14	15.24	17.99	
		Ant1	1.40	3.19	10.11	14.70		
5755	13	Ant0	1.52	3.19	10.14	14.85	17.63	
		Ant1	1.08	3.19	10.11	14.38		
5755	14	Ant0	1.41	3.19	10.14	14.74	17.51	
		Ant1	0.95	3.19	10.11	14.25		
5755	15	Ant0	1.28	3.19	10.14	14.61	17.38	
		Ant1	0.82	3.19	10.11	14.12		

*:Worst data rate

All comparison were carried out on same frequency and measurement factors.

AVG, IEEE802.11n-40 MIMO, MCS8

Freq. [MHz]	Antenna 0	Antenna 1	Result	
	Result [mW]	Result [mW]	[dBm]	[mW]
5755	59.16	52.00	20.46	111.16
5795	61.66	53.09	20.60	114.75

*:SAR test channel

Sample Calculation:

Result = Antenna 0 + 1

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5755	4.39	3.19	10.14	17.72	59.16
5795	4.46	3.30	10.14	17.90	61.66

Antenna 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
				[dBm]	[mW]
5755	3.86	3.19	10.11	17.16	52.00
5795	3.84	3.30	10.11	17.25	53.09

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

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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"		UNII		
			FCC 15.247				
			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	√		√		

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√ = “default test channels”

* = Possible 802.11a channels with maximum average output > the “default test channels”

Δ = Possible 802.11g channels with maximum average output $\frac{1}{4}$ dB \geq the “default test channels”

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(MCS0) BPSK(MCS8)	1	
IEEE802.11n40 (2.4G)	2437MHz(6ch)	BPSK(MCS0) BPSK(MCS8)	1	
IEEE802.11a	5240MHz(48ch) 5280MHz(56ch) 5300MHz(60ch) 5540MHz(108ch) 5580MHz(116ch) 5640MHz(128ch) 5745MHz(149ch) 5785MHz(157ch) 5805MHz(161ch)	BPSK(6Mbps)	1	
IEEE802.11n20 (5G)	5240MHz(48ch) 5260MHz(52ch) 5300MHz(60ch) 5520MHz(104ch) 5560MHz(112ch) 5640MHz(128ch) 5680MHz(136ch) 5765MHz(153ch) 5785MHz(157ch) 5805MHz(161ch)	BPSK(MCS0) BPSK(MCS8)	1	
IEEE802.11n40 (5G)	5230MHz(46ch) 5270MHz(54ch) 5590MHz(118ch) 5630MHz(126ch) 5755MHz(151ch) 5795MHz(159ch)	BPSK(MCS0) BPSK(MCS8)	1	

Setting

WLAN

*Power of the EUT was set by the software as follows;

Software: 43241_B4_mfg_tool_package, Version 1.3

Power settings: Refer to clause 5.1 WLAN setting

*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.

*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.

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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 measuring the e-field at the same location at beginning and the end of the scan measurement for each test position.

DASY5 system calculation Power drift value[dB] = $20\log(E_a)/(E_b)$
Before SAR testing : E_b [V/m]
After SAR testing : E_a [V/m]

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

from E-field relations with power.

$$p = E^2/\eta = E^2/$$

Therefore, The correlation of power and the E-field

$$X_{\text{dB}} = 10\log(P) = 10\log(E)^2 = 20\log(E)$$

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:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$
for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where
 $f(\text{GHz})$ 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.0 WLAN 2.4GHz

Band	Standalone SAR tested	Position	Mode	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of exclusion *3
WLAN(2.4 GHz band)	<input checked="" type="checkbox"/>	Right side	11n 20M BPSK(MCS0)	2462 [MHz] (11ch)	18.62 [dBm] 72.78 [mW]	6 [mm]	19.0
WLAN(2.4 GHz band)	<input checked="" type="checkbox"/>	Rear	11n 20M BPSK(MCS0)	2462 [MHz] (11ch)	18.62 [dBm] 72.78 [mW]	13.0 [mm]	8.8

Ant.0 WLAN 5GHz

Band	Standalone SAR tested	Position	Mode	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of exclusion *3
WLAN(5G Hz band)	<input checked="" type="checkbox"/>	Right side	11a BPSK(6Mbps)	5825 [MHz] (165ch)	20.16 [dBm] 103.75 [mW]	6 [mm]	41.7
WLAN(5G Hz band)	<input checked="" type="checkbox"/>	Rear	11a BPSK(6Mbps)	5825 [MHz] (165ch)	20.16 [dBm] 103.75 [mW]	13.0 [mm]	19.3

Ant.1 WLAN 2.4GHz

Band	Standalone SAR tested	Position	Mode	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of exclusion *3
WLAN(2.4 GHz band)	<input checked="" type="checkbox"/>	Right side	11n 20M BPSK(MCS8)	2462 [MHz] (11ch)	19.13 [dBm] 81.85 [mW]	5 [mm]	25.7
WLAN(2.4 GHz band)	<input checked="" type="checkbox"/>	Rear	11n 20M BPSK(MCS8)	2462 [MHz] (11ch)	19.13 [dBm] 81.85 [mW]	11.0 [mm]	11.7
WLAN(2.4 GHz band)	<input checked="" type="checkbox"/>	Bottom side	11n 20M BPSK(MCS8)	2462 [MHz] (11ch)	19.13 [dBm] 81.85 [mW]	20.0 [mm]	6.4
WLAN(2.4 GHz band)	<input checked="" type="checkbox"/>	Bottom(Laptop)	11n 20M BPSK(MCS8)	2462 [MHz] (11ch)	19.13 [dBm] 81.85 [mW]	30 [mm]	4.3

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Ant.1 WLAN 5GHz

Band	Standalone SAR tested	Positiom	Mode	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of exclusion *3
WLAN(5G Hz band)	<input checked="" type="checkbox"/>	Right side	11n 20M BPSK(MCS8)	5825 [MHz] (165ch)	21.96 [dBm] 157.04 [mW]	5 [mm]	75.8
WLAN(5G Hz band)	<input checked="" type="checkbox"/>	Rear	11n 20M BPSK(MCS8)	5825 [MHz] (165ch)	21.96 [dBm] 157.04 [mW]	11.0 [mm]	34.5
WLAN(5G Hz band)	<input checked="" type="checkbox"/>	Bottom side	11n 20M BPSK(MCS8)	5825 [MHz] (165ch)	21.96 [dBm] 157.04 [mW]	20.0 [mm]	19.0
WLAN(5G Hz band)	<input checked="" type="checkbox"/>	Bottom(Laptop)	11n 20M BPSK(MCS8)	5825 [MHz] (165ch)	21.96 [dBm] 157.04 [mW]	30 [mm]	12.6

Bluetooth

Standalone SAR tested	Positiom	Upper frequency of band *1	Maximum tune-up tolerance limit *7	Min distance *2	Calculation of exclusion *3
<input type="checkbox"/>	Right side	2480 [MHz] (79ch)	10.01 [dBm] 10.02 [mW]	6 [mm]	2.6
<input type="checkbox"/>	Rear	2480 [MHz] (79ch)	10.01 [dBm] 10.02 [mW]	13.0 [mm]	1.2

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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.0 WLAN 2.4GHz

Band	Standalone SAR tested	Position	Mode	Upper frequency of band *1	Maximum tune-up tolerance limit *5	Min distance *2	Calculation of threshold*4
WLAN(2.4 GHz band)	<input type="checkbox"/>	Top side	11n 20M BPSK(MCS0)	2462 [MHz] (11ch)	18.62 [dBm] 72.78 [mW]	115 [mm]	745.6 [mW]
WLAN(2.4 GHz band)	<input type="checkbox"/>	Bottom side	11b DBPSK(1Mbps)	2462 [MHz] (11ch)	17.5 [dBm] 56.23 [mW]	62 [mm]	215.6 [mW]
WLAN(2.4 GHz band)	<input type="checkbox"/>	Bottom(Laptop)	11b DBPSK(1Mbps)	2462 [MHz] (11ch)	17.91 [dBm] 61.80 [mW]	65 [mm]	245.6 [mW]

Ant.0 WLAN 5GHz

Band	Standalone SAR tested	Position	Mode	Upper frequency of band *1	Maximum tune-up tolerance limit *5	Min distance *2	Calculation of threshold*4
WLAN(5G Hz band)	<input type="checkbox"/>	Top side	11a BPSK(6Mbps)	5825 [MHz] (165ch)	20.16 [dBm] 103.75 [mW]	115 [mm]	712.2 [mW]
WLAN(5G Hz band)	<input type="checkbox"/>	Bottom side	11a BPSK(6Mbps)	5825 [MHz] (165ch)	20.16 [dBm] 103.75 [mW]	62 [mm]	182.2 [mW]
WLAN(5G Hz band)	<input type="checkbox"/>	Bottom(Laptop)	11a BPSK(6Mbps)	5825 [MHz] (165ch)	20.16 [dBm] 103.75 [mW]	65 [mm]	212.2 [mW]

Ant.1 WLAN 2.4GHz

Band	Standalone SAR tested	Position	Mode	Upper frequency of band *1	Maximum tune-up tolerance limit *5	Min distance *2	Calculation of threshold*4
WLAN(2.4 GHz band)	<input type="checkbox"/>	Top side	11n 20M BPSK(MCS8)	2462 [MHz] (11ch)	19.13 [dBm] 81.85 [mW]	160 [mm]	1195.6 [mW]

Ant.1 WLAN 5GHz

Band	Standalone SAR tested	Position	Mode	Upper frequency of band *1	Maximum tune-up tolerance limit *5	Min distance *2	Calculation of threshold*4
WLAN(5GHz band)	<input type="checkbox"/>	Top side	11n 20M BPSK(MCS8)	5825 [MHz] (165ch)	21.96 [dBm] 157.04 [mW]	160 [mm]	1162.2 [mW]

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Bluetooth

Standalone SAR tested	Position	Upper frequency of band *1	Maximum tune-up tolerance limit *6	Min distance *2	Calculation of threshold*4
<input type="checkbox"/>	Top side	2480 [MHz] (79ch)	10.01 [dBm] 10.02 [mW]	115 [mm]	745.3 [mW]
<input type="checkbox"/>	Bottom side	2480 [MHz] (79ch)	10.01 [dBm] 10.02 [mW]	62 [mm]	215.3 [mW]
<input type="checkbox"/>	Bottom(Laptop)	2480 [MHz] (79ch)	10.01 [dBm] 10.02 [mW]	65 [mm]	245.3 [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 $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$
If it is Calculation of exclusion ≤ 3.0 standalone SAR test is excluded.

*4 $[(3 \cdot 50) / (\sqrt{f(\text{GHz})})] + (\text{test separation distance} - 50 \text{ mm}) \cdot 10 \text{ mW}$ at > 1500 MHz and $\leq 6 \text{ GHz}$
If it is maximum tune-up tolerance limit < Threshold, standalone SAR test is excluded.

*5 The measured output power is the maximum tune-up tolerance limit on specification.

*6 Maximum tune-up tolerance limit is maximum power of test report of Bluetooth module (FCC ID: QDS-BRCM1073 Test report No.: FR330410AC).

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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)
-------------	---

iii) Test position

No.	Position*1	Test distance	WLAN(ant.0)		WLAN(ant.1)	
			Tested	Antenna	Tested	Antenna
1	Front	0mm	<input type="checkbox"/>	Fixed	<input type="checkbox"/>	Fixed
2	Top side	0mm	<input type="checkbox"/>	Fixed	<input type="checkbox"/>	Fixed
3	Right side	0mm	<input checked="" type="checkbox"/>	Fixed	<input type="checkbox"/>	Fixed
4	Left side	0mm	<input type="checkbox"/>	Fixed	<input checked="" type="checkbox"/>	Fixed
5	Rear	0mm	<input checked="" type="checkbox"/>	Fixed	<input checked="" type="checkbox"/>	Fixed
6	Bottom(Laptop)	0mm	<input checked="" type="checkbox"/>	Fixed	<input checked="" type="checkbox"/>	Fixed
7	Bottom side	0mm	<input checked="" type="checkbox"/>	Fixed	<input checked="" type="checkbox"/>	Fixed

*1 Refer to Section 6 and Appendix 4.

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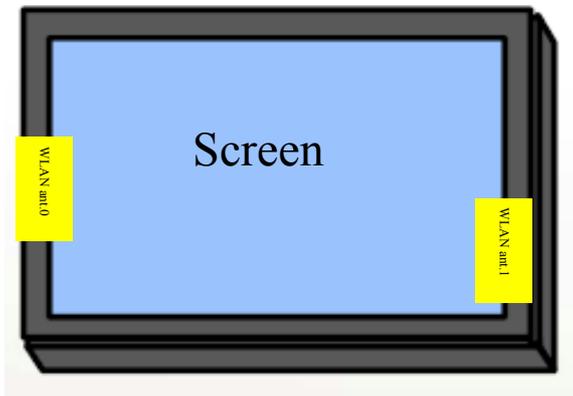
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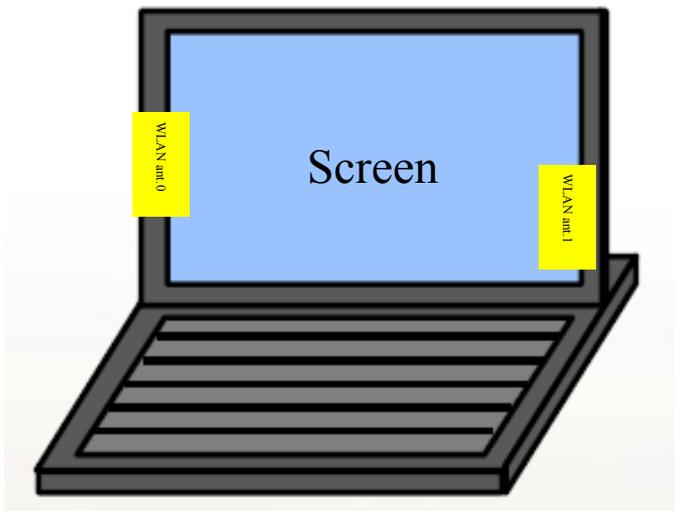
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<Antenna position>

The antennas use for WLAN are both separate in a single fixed position. The antennas are integral part of the device. Refer to Appendix 4.



Tablet style



Laptop style

SECTION 8 : Test surrounding

8.1 Measurement uncertainty

Uncertainty Assessment (SAR measurement)

Uncertainty of SAR measurement(v06) (*: Body tissue, ϵ & σ tolerance: $\leq \pm 5\%$, Tx: $\approx 100\%$ duty cycle)		Under 3 GHz		5~6GHz					
		1g SAR	10g SAR	1g SAR	10g SAR				
Combined measurement uncertainty of the measurement system (k=1)		$\pm 12.5\%$	$\pm 12.2\%$	$\pm 13.7\%$	$\pm 13.5\%$				
Expanded uncertainty (k=2)		$\pm 25.0\%$	$\pm 24.4\%$	$\pm 27.4\%$	$\pm 27.0\%$				
A	Error Description (Under 3GHz) (v06)	Uncertainty Value	Probability distribution	Divisor	ci (1g)	ci (10g)	ui (1g)	ui (10g)	Vi, veff
							(std. uncertainty)	(std. uncertainty)	
1	Probe Calibration Error	$\pm 6.0\%$	Normal	1	1	1	$\pm 6.0\%$	$\pm 6.0\%$	∞
2	Axial isotropy Error	$\pm 4.7\%$	Rectangular	$\sqrt{3}$	0.7	0.7	$\pm 1.9\%$	$\pm 1.9\%$	∞
3	Hemispherical isotropy Error (<5deg, flat phantom)	$\pm 9.6\%$	Rectangular	$\sqrt{3}$	0.7	0.7	$\pm 3.9\%$	$\pm 3.9\%$	∞
4	Boundary effects Error	$\pm 1.4\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.8\%$	$\pm 0.8\%$	∞
5	Linearity Error	$\pm 4.7\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 2.7\%$	$\pm 2.7\%$	∞
6	Probe modulation response (CW)	$\pm 0.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
7	Sensitivity Error (detection limit)	$\pm 1.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.6\%$	$\pm 0.6\%$	∞
8	Response Time Error (<5ms/100ms wait)	$\pm 0.0\%$	Normal	1	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
9	Integration Time Error (100% duty cycle)	$\pm 0.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.0\%$	$\pm 0.0\%$	∞
10	Readout Electronics Error(DAE)	$\pm 0.3\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
11	RF ambient conditions-noise	$\pm 3.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
12	RF ambient conditions-reflections	$\pm 3.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
13	Probe positioner mechanical tolerance	$\pm 1.1\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.6\%$	$\pm 0.6\%$	∞
14	Probe Positioning with respect to phantom shell	$\pm 2.9\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
15	Errors: Extrapol., Interpol. & Integration Algorithms	$\pm 1.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.6\%$	$\pm 0.6\%$	∞
B Test Sample Related									
16	Test Sample Positioning Error	$\pm 5.0\%$	Normal	1	1	1	$\pm 5.0\%$	$\pm 5.0\%$	74
17	Device Holder or Positioner Tolerance	$\pm 3.6\%$	Normal	1	1	1	$\pm 3.6\%$	$\pm 3.6\%$	4
18	Test Sample Output Power Drift Error	$\pm 5.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9\%$	$\pm 2.9\%$	∞
C Phantom and Setup									
19	Phantom uncertainty (shape, thickness tolerances)	$\pm 7.5\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 4.3\%$	$\pm 4.3\%$	∞
20	Target Liquid Conductivity Tolerance ($\leq 5\%$)	$\pm 5.0\%$	Rectangular	$\sqrt{3}$	0.64	0.43	$\pm 1.8\%$	$\pm 1.2\%$	∞
21	Measurement Liquid Conductivity Error	$\pm 2.9\%$	Normal	1	0.64	0.43	$\pm 1.9\%$	$\pm 1.2\%$	3
22	Target Liquid Permittivity Tolerance ($\leq 5\%$)	$\pm 5.0\%$	Rectangular	$\sqrt{3}$	0.6	0.49	$\pm 1.7\%$	$\pm 1.4\%$	∞
23	Measurement Liquid Permittivity Error	$\pm 2.9\%$	Normal	1	0.6	0.49	$\pm 1.7\%$	$\pm 1.4\%$	3
24	Liquid Conductivity-temp.uncertainty ($\leq 2\text{deg.C.}$)	$\pm 5.2\%$	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 2.3\%$	$\pm 2.1\%$	∞
25	Liquid Permittivity-temp.uncertainty ($\leq 2\text{deg.C.}$)	$\pm 0.8\%$	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.1\%$	$\pm 0.1\%$	∞
Combined Standard Uncertainty							$\pm 12.5\%$	$\pm 12.2\%$	479
Expanded Uncertainty (k=2)							$\pm 25.0\%$	$\pm 24.4\%$	

*. This measurement uncertainty budget is suggested by IEEE 1528, IEC 62209-2 and determined by Schmid & Partner Engineering AG (DASY5 Uncertainty Budget).

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SECTION 9 : Measurement results

9.1 WLAN Body SAR (2.4G)

(1)Method of measurement

- Step.1 The searching for the worst position(WLAN ant.0)
The test was performed in mode of WLAN 11n 20MHz MIMO.
- Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
- Step.3 The searching for the worst position(WLAN ant.1)
The test was performed in mode of WLAN 11n 20MHz MIMO.
- Step.4 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.3.

Note:

- 1)The other channel was not required since maximum average output power channel SAR value is less than 0.8W/kg.
2) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg.
When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
3)The BODY SAR is not required for 11n 20MHz mode because the maximum average output power for 11n 20MHz mode is less than 1/4dB higher than that measured 11g mode.

(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 [%]
2-May	24.0	45	MSL 2450	23.5	2450	ϵ_r	52.7	51.0	-3.2	+/-5
						σ [mho/m]	1.95	1.97	0.9	+/-5

ϵ_r : Relative Permittivity / σ : Conductivity

*1 The Target value is a parameter defined in FCC OET65.

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(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 Positon seaching (WLAN ant.0 11n 20MHz MIMO mode)												
6	2437	11n 20 MCS8	18.58	72.11	-	-	Flat	Ant.0+1	Right side(Tablet)	0	0.111	-
6	2437	11n 20 MCS8	18.58	72.11	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.00901 (Polynomial Version)*2	-
6	2437	11n 20 MCS8	18.58	72.11	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.00727 (Polynomial Version)*2	-
6	2437	11n 20 MCS8	18.58	72.11	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.050 (Polynomial Version)*2	-
Step.2 Worst mode seaching(WLAN ant.0)												
6	2437	11b 1Mbps	17.35	54.33	-	-	Flat	Ant.0	Right side(Tablet)	0	0.143	-
6	2437	11g 6Mbps	18.14	65.16	-	-	Flat	Ant.0	Right side(Tablet)	0	0.155	-
6	2437	11n40 MCS0	14.27	26.73	-	-	Flat	Ant.0	Right side(Tablet)	0	0.077	-
6	2437	11n 40 MCS8	15.82	38.19	-	-	Flat	Ant.0+1	Right side(Tablet)	0	0.063	-
Step.3 Positon seaching (WLAN ant.1 11n 20MHz MIMO mode)												
6	2437	11n 20 MCS8	18.58	72.11	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.131	-
6	2437	11n 20 MCS8	18.58	72.11	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.00901 (Polynomial Version)*2*3	-
6	2437	11n 20 MCS8	18.58	72.11	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.00727 (Polynomial Version)*2*3	-
6	2437	11n 20 MCS8	18.58	72.11	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.050 (Polynomial Version)*2*3	-
Step.4 Worst mode seaching(WLAN ant.1)												
6	2437	11n 40 MCS8	15.82	38.19	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.072	-

*1 Reported SAR= Maximum tune-up tolerance limit [mW] / Measured maximum power [mW] · Measured SAR [W/kg]
*2 It is based on KDB447498 D01 v05 clause 4.3.4 Area scan based 1-g SAR estimation.
*3 Since the Scan area at the time of SAR measurement includes both of antennas, it is the same result as Step.1.

9.2 WLAN Body SAR (5GHz)

(1)Method of measurement

5.2GHz band

- Step.1 The searching for the worst position(WLAN ant.0)
The test was performed in mode of WLAN 11n 40MHz MIMO.
- Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
- Step.3 The searching for the worst position(WLAN ant.1)
The test was performed in mode of WLAN 11n 40MHz MIMO.
- Step.4 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.3.

5.3GHz band

- Step.1 The searching for the worst position(WLAN ant.0)
The test was performed in mode of WLAN 11n 20MHz MIMO.
- Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
- Step.3 The searching for the worst position(WLAN ant.1)
The test was performed in mode of WLAN 11n 20MHz MIMO.
- Step.4 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.3.
- Step.5 The changing to the channels
The test was performed at the worst condition of Step1 to Step4.

5.6GHz band

- Step.1 The searching for the worst position(WLAN ant.0)
The test was performed in mode of WLAN 11n 20MHz MIMO.
- Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
- Step.3 The searching for the worst position(WLAN ant.1)
The test was performed in mode of WLAN 11n 20MHz MIMO.
- Step.4 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.3.
- Step.5 The changing to the channels
The test was performed at the mode of Reported SAR(1g) over 0.4W/kg or peak SAR over 1.6W/kg.
- Step6. The repeated measurement.
The test was performed at the worst condition of Step1 to Step5.

5.8GHz band

- Step.1 The searching for the worst position(WLAN ant.0)
The test was performed in mode of WLAN 11n 20MHz MIMO.
- Step.2 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.1.
- Step.3 The searching for the worst position(WLAN ant.1)
The test was performed in mode of WLAN 11n 20MHz MIMO.
- Step.4 The searching for the worst transmitter mode.
The other mode was performed at the worst position of Step.3.
- Step.5 The changing to the channels
The test was performed at the mode of Reported SAR(1g) over 0.8W/kg or peak SAR over 1.6W/kg.

Note:

1)For 5500-5700MHz band, the other channel was not required since maximum average output power channel SAR value is less than 0.4W/kg.

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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 is less than 0.8W/kg.

3) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg.

When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4)The BODY SAR is not required for 11n 20MHz mode because the maximum average output power for 11n 20MHz mode is less than 1/4dB higher than that measured 11a mode.

(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 [%]
24-Apr	24.9	38	MSL 3-6GHz	24.2	5200	ϵ_r	49.0	47.1	-3.8	+/-5
						σ [mho/m]	5.30	5.42	2.2	+/-5
26-Apr	24.9	51	MSL 3-6GHz	24.4	5200	ϵ_r	49.0	47.0	-4.1	+/-5
						σ [mho/m]	5.30	5.46	3.0	+/-5
26-Apr	24.9	51	MSL 3-6GHz	24.4	5300	ϵ_r	48.9	46.9	-4.2	+/-5
						σ [mho/m]	5.42	5.60	3.3	+/-5
27-Apr	24	45	MSL 3-6GHz	23.5	5300	ϵ_r	48.9	47.5	-2.8	+/-5
						σ [mho/m]	5.42	5.56	2.6	+/-5
1-May	24	45	MSL 3-6GHz	23.5	5300	ϵ_r	48.9	47.4	-3.0	+/-5
						σ [mho/m]	5.42	5.60	3.2	+/-5
27-Apr	24	45	MSL 3-6GHz	23.5	5500	ϵ_r	48.6	47.5	-2.3	+/-5
						σ [mho/m]	5.65	5.83	3.1	+/-5
27-Apr	24	45	MSL 3-6GHz	23.5	5600	ϵ_r	48.5	47.3	-2.4	+/-5
						σ [mho/m]	5.77	5.96	3.3	+/-5
30-Apr	24	45	MSL 3-6GHz	23.5	5500	ϵ_r	48.6	47.5	-2.3	+/-5
						σ [mho/m]	5.65	5.77	2.1	+/-5
30-Apr	24	45	MSL 3-6GHz	23.5	5600	ϵ_r	48.5	47.4	-2.3	+/-5
						σ [mho/m]	5.77	5.96	3.3	+/-5
1-May	24	45	MSL 3-6GHz	23.5	5500	ϵ_r	48.6	47.1	-3.0	+/-5
						σ [mho/m]	5.65	5.84	3.4	+/-5
1-May	24	45	MSL 3-6GHz	23.5	5600	ϵ_r	48.5	46.9	-3.3	+/-5
						σ [mho/m]	5.77	5.96	3.2	+/-5
22-Apr	24	45	MSL 3-6GHz	23.5	5800	ϵ_r	48.2	46.1	-4.4	+/-5
						σ [mho/m]	6.00	6.23	3.8	+/-5
23-Apr	24.9	33	MSL 3-6GHz	23.9	5800	ϵ_r	48.2	46.3	-4.0	+/-5
						σ [mho/m]	6.00	6.19	3.2	+/-5

ϵ_r : Relative Permittivity / σ : Conductivity

*1 The Target value is a parameter defined in FCC OET65.

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(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 of multi-peak	Maximum of multi-peak
Step.1 Position seaching (WLAN ant.0 11n 40MHz MIMO mode)												
46	5230	11n40 MCS8	14.72	29.65	-	-	Flat	Ant.0+1	Right side(Tablet)	0	0.085	-
46	5230	11n40 MCS8	14.72	29.65	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.012 (Polynomial Version)*2	-
46	5230	11n40 MCS8	14.72	29.65	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.018 (Polynomial Version)*2	-
46	5230	11n40 MCS8	14.72	29.65	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.036 (Polynomial Version)*2	-
Step.2 Worst mode seaching(WLAN ant.0)												
48	5240	11a 6Mbps	14.54	28.44	-	-	Flat	Ant.0	Right side(Tablet)	0	0.156	-
46	5230	11n40 MCS0	16.37	43.35	-	-	Flat	Ant.0	Right side(Tablet)	0	0.216	-
48	5240	11n 20 MCS8	13.94	24.77	-	-	Flat	Ant.0+1	Right side(Tablet)	0	0.080	-
Step.3 Position seaching (WLAN ant.1 11n 20MHz MIMO mode)												
46	5230	11n40 MCS8	14.72	29.65	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.148	-
46	5230	11n40 MCS8	14.72	29.65	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.012 (Polynomial Version)*2*3	-
46	5230	11n40 MCS8	14.72	29.65	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.018 (Polynomial Version)*2*3	-
46	5230	11n40 MCS8	14.72	29.65	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.036 (Polynomial Version)*2*3	-
Step.4 Worst mode seaching(WLAN ant.1)												
48	5240	11n 20 MCS8	13.94	24.77	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.129	-

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

*2 It is based on KDB447498 D01 v05 clause 4.3.4 Area scan based 1-g SAR estimation.

*3 Since the Scan area at the time of SAR measurement includes both of antennas, it is the same result as Step.1.

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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)	Reported SAR(1g) *1
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Positon seaching (WLAN ant.0 11n 40MHz MIMO mode)												
52	5260	11n20 MCS8	19.37	86.50	-	-	Flat	Ant.0+1	Right side(Tablet)	0	0.243	-
52	5260	11n20 MCS8	19.37	86.50	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.021 (Polynomial Version)*2	-
52	5260	11n20 MCS8	19.37	86.50	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.017 (Polynomial Version)*2	-
52	5260	11n20 MCS8	19.37	86.50	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.081 (Polynomial Version)*2	-
Step.2 Worst mode seaching(WLAN ant.0)												
60	5300	11a 6Mbps	19.65	92.26	-	-	Flat	Ant.0	Right side(Tablet)	0	0.516	-
54	5270	11n40 MCS0	18.78	75.51	-	-	Flat	Ant.0	Right side(Tablet)	0	0.342	-
54	5270	11n 40 MCS8	18.07	64.12	-	-	Flat	Ant.0+1	Righ side(Tablet)	0	0.199 (Polynomial Version)*2	-
Step.3 Positon seaching (WLAN ant.1 11n 20MHz MIMO mode)												
52	5260	11n20 MCS8	19.37	86.50	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.351	-
52	5260	11n20 MCS8	19.37	86.50	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.021 (Polynomial Version)*2*3	-
52	5260	11n20 MCS8	19.37	86.50	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.017 (Polynomial Version)*2*3	-
52	5260	11n20 MCS8	19.37	86.50	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.081 (Polynomial Version)*2*3	-
Step.4 Worst mode seaching(WLAN ant.1)												
54	5270	11n 40 MCS8	18.07	64.12	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.354	-
Step.5 Channel change												
56	5280	11a 6Mbps	19.60	91.20	-	-	Flat	Ant.0	Right side(Tablet)	0	0.429	-
60	5300	11n20 MCS8	18.85	76.74	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.334	-

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

*2 It is based on KDB447498 D01 v05 clause 4.3.4 Area scan based 1-g SAR estimation.

*3 Since the Scan area at the time of SAR measurement includes both of antennas, it is the same result as Step.1.

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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)	Reported SAR(1g) *1	
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak	
Step.1 Positon seaching (WLAN ant.0 11n 20MHz MIMO mode)													
112	5560	11n20 MCS8	21.14	130.02	-	-	Flat	Ant.0+1	Right side(Tablet)	0	0.388	-	
112	5560	11n20 MCS8	21.14	130.02	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.017 (Polynomial Version)*2	-	
112	5560	11n20 MCS8	21.14	130.02	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.017 (Polynomial Version)*2	-	
112	5560	11n20 MCS8	21.14	130.02	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.083 (Polynomial Version)*2	-	
Step.2 Worst mode seaching(WLAN ant.0)													
108	5540	11a 6Mbps	19.88	97.27	-	-	Flat	Ant.0	Right side(Tablet)	0	0.450	-	
118	5590	11n40 MCS0	16.87	48.64	-	-	Flat	Ant.0	Right side(Tablet)	0	0.269	-	
126	5630	11n 40 MCS8	17.89	61.52	-	-	Flat	Ant.0+1	Righ side(Tablet)	0	0.276	-	
Step.3 Positon seaching (WLAN ant.1 11n 20MHz MIMO mode)													
112	5560	11n20 MCS8	21.14	130.02	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.491	-	
112	5560	11n20 MCS8	21.14	130.02	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.017 (Polynomial Version)*2*3	-	
112	5560	11n20 MCS8	21.14	130.02	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.017 (Polynomial Version)*2*3	-	
112	5560	11n20 MCS8	21.14	130.02	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.083 (Polynomial Version)*2*3	-	
Step.4 Worst mode seaching(WLAN ant.1)													
126	5630	11n 40 MCS8	17.89	61.52	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.344	-	
Step.5 Channel change													
116	5580	11a 6Mbps	19.87	97.05	-	-	Flat	Ant.0	Right side(Tablet)	0	0.659	-	
128	5640	11a 6Mbps	19.86	96.83	-	-	Flat	Ant.0	Right side(Tablet)	0	0.839	-	
132	5660	11a 6Mbps	19.87	97.05	-	-	Flat	Ant.0	Right side(Tablet)	0	0.858	-	
104	5520	11n20 MCS8	17.68	58.61	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.460	-	
128	5640	11n20 MCS8	17.67	58.48	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.687	-	
136	5680	11n20 MCS8	17.74	59.43	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.698	-	
Step.3 Repeat of worst mode (SAR level in Step.1 to Step.2 > 0.8 w/kg)													
132	5660	11a 6Mbps*3	19.87	97.05	-	-	Flat	Ant.0	Right side(Tablet)	0	0.853	-	

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

*2 It is based on KDB447498 D01 v05 clause 4.3.4 Area scan based 1-g SAR estimation.

*3 Since the Scan area at the time of SAR measurement includes both of antennas, it is the same result as Step.1.

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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)	Reported SAR(1g) *1
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Positon seaching (WLAN ant.0 11n 20MHz MIMO mode)												
157	5785	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Right side(Tablet)	0	0.576	-
157	5785	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.030 (Polynomial Version)*2	-
157	5785	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.038 (Polynomial Version)*2	-
157	5785	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.127 (Polynomial Version)*2	-
Step.2 Worst mode seaching(WLAN ant.0)												
161	5805	11a 6Mbps	19.67	92.68	-	-	Flat	Ant.0	Right side(Tablet)	0	0.725	-
159	5795	11n40 MCS0	19.55	90.16	-	-	Flat	Ant.0	Right side(Tablet)	0	0.733	-
159	5795	11n 40 MCS8	20.6	114.82	-	-	Flat	Ant.0+1	Right side(Tablet)	0	0.510	-
Step.3 Positon seaching (WLAN ant.1 11n 20MHz MIMO mode)												
157	5785	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.589	-
157	5785	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Rear(Tablet)	0	0.030 (Polynomial Version)*2*3	-
157	5785	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Bottom (Laptop)	0	0.038 (Polynomial Version)*2*3	-
157	5785	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Bottom side(Tablet)	0	0.127 (Polynomial Version)*2*3	-
Step.4 Worst mode seaching(WLAN ant.1)												
159	5795	11n 40 MCS8	20.60	114.82	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.512	-
Step.5 Channel change												
149	5745	11a 6Mbps	19.27	84.53	-	-	Flat	Ant.0	Right side(Tablet)	0	0.713	-
157	5785	11a 6Mbps	19.61	91.41	-	-	Flat	Ant.0	Right side(Tablet)	0	0.778	-
151	5755	11n40 MCS0	19.51	89.33	-	-	Flat	Ant.0	Right side(Tablet)	0	0.716	-
153	5765	11n20 MCS8	21.42	138.68	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.595	-
161	5805	11n20 MCS8	21.34	136.14	-	-	Flat	Ant.0+1	Left side(Tablet)	0	0.607	-

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

*2 It is based on KDB447498 D01 v05 clause 4.3.4 Area scan based 1-g SAR estimation.

*3 Since the Scan area at the time of SAR measurement includes both of antennas, it is the same result as Step.1.

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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:

- $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$;

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 $> 50 \text{ mm}$.

Position	Upper frequency of band *1	Maximum tune-up tolerance limit	Min distance *2	Calculation of Estimated SAR*3
Right side	2480 [MHz] (79 ch)	10.01 [dBm] 10.02 [mW]	6 [mm]	0.351 [W/kg]
Rear	2480 [MHz] (79 ch)	10.01 [dBm] 10.02 [mW]	13 [mm]	0.162 [W/kg]
Bottom(Laptop)	2480 [MHz] (79 ch)	10.01 [dBm] 10.02 [mW]	65 [mm]	0.032 [W/kg]
Bottom side	2480 [MHz] (79 ch)	10.01 [dBm] 10.02 [mW]	62 [mm]	0.034 [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 $< 5 \text{ mm}$, a distance of 5 mm is applied.

*3 $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$

10.2 Result of SUM Σ SAR1g of Body

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

In the case of two, the SAR test of simultaneous transmission is not considered below.

- Antenna of one of the two is separated from the human body 20 cm or more.
- Between two antennas is separated 20 cm or more.

Bluetooth + WLAN ant.0*3

SUM Σ SAR1g (Bluetooth + WLAN 5GHz band)			
Position	Stand alone SAR(1g) [W/kg]		SUM SAR(1g)[W/kg]
	Bluetooth*2	WLAN 5G *1	Bluetooth + WLAN(5G)
Right side	0.351	0.858	1.209
Rear	0.162	0.030	0.192
Bottom(Laptop)	0.032	0.038	0.070
Bottom side(Tablet)	0.034	0.127	0.161

*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 WLAN 5GHz(WLAN Ant.0) can transmit simultaneously with Bluetooth(WLAN Ant.0 shared).

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SECTION 11 Test instruments

Test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
COTS-SSAR-02	DASY52	Schmid&Partner Engineering AG	DASY52 V8.2 B969	-	SAR	-
COTS-KSEP-01	Dielectric measurement	Agilent	85070	1	SAR	-
SSAR-02	SAR measurement system	Schmid&Partner Engineering AG	DASY5	1324	SAR	Pre Check
SSRBT-02	SAR robot	Schmid&Partner Engineering AG	TX60 Lspeag	F12/5L2QA1/A/ 01	SAR	2012/09/24 * 12
KDAE-01	Data Acquisition Electronics	Schmid&Partner Engineering AG	DAE4	626	SAR	2013/03/11 * 12
KDAE-R01	Data Acquisition Electronics	Schmid&Partner Engineering AG	DAE4	518	SAR	2012/10/18 * 12
KPB-01	Dosimetric E-Field Probe	Schmid&Partner Engineering AG	EX3DV4	3679	SAR	2012/06/21 * 12
KSDA-01	Dipole Antenna	Schmid&Partner Engineering AG	D2450V2	822	SAR(daily)	2013/01/08 * 12
KSDA-02	Dipole Antenna	Schmid&Partner Engineering AG	D5GHzV2	1070	SAR(daily)	2013/03/14 * 12
KPSAM-01	SAM phantom	Schmid&Partner Engineering AG	SAM Twin Phantom V4.0	QD000P40CA	SAR	2012/10/31 * 12
KPFL-01	Flat Phantom	Schmid&Partner Engineering AG	Oval flat phantom ELI 4.0	1059	SAR	2012/10/31 * 12
SSNA-01	Network Analyzer	Agilent	8753ES	US39171777	SAR	2012/12/29 * 12
KEPP-01	Dielectric probe	Agilent	85070E/8710- 2036	2540	SAR	2013/03/05 * 12
KSG-08	Signal Generator	Rohde & Schwarz	SMT06	100763	SAR(daily)	2012/06/26 * 12
KPA-12	RF Power Amplifier	MILMEGA	AS2560-50	1018582	SAR(daily)	Pre Check
KCPL-07	Directional Coupler	Pulsar Microwave Corp.	CCS30-B26	0621	SAR(daily)	Pre Check
KPM-06	Power Meter	Rohde & Schwarz	NRVD	101599	SAR(daily)	2012/09/13 * 12
KIU-08	Power sensor	Rohde & Schwarz	NRV-Z4	100372	SAR(daily)	2012/09/13 * 12
KIU-09	Power sensor	Rohde & Schwarz	NRV-Z4	100371	SAR(daily)	2012/09/13 * 12
KAT10-P1	Attenuator	Weinschel	24-10-34	BY5927	SAR(daily)	2013/02/27 * 12
KAT20-P1	Attenuator	TME	SFA-01AXPJ-20	-	SAR(daily)	2013/02/19 * 12
KPM-05	Power meter	Agilent	E4417A	GB41290718	SAR(daily)	2013/04/18 * 12
KPSS-01	Power sensor	Agilent	E9327A	US40440544	SAR(daily)	2013/04/18 * 12
KAT10-CS1	Attenuator	HUBER+SUHNER	6810.17.A	768898-1	SAR(daily)	2013/02/19 * 12
KAT10-CS2	Attenuator	HUBER+SUHNER	6810.17.A	768898-2	SAR(daily)	2013/02/19 * 12
KRU-01	Ruler(300mm)	Shinwa	13134	-	SAR	2013/03/25 * 12
KRU-02	Ruler(150mm,L)	Shinwa	12103	-	SAR	2013/03/25 * 12
KRU-05	Ruler(100x50mm,L)	Shinwa	12101	-	SAR	2012/05/29 * 12
KOS-13	Digital thermometer	HANNA	Checktemp-2	KOS-13	SAR	2013/01/31 * 12
KOS-14	Thermo-Hygrometer data logger	SATO KEIRYOKI	SK- L200THIIα/SK- LTHIIα-2	015246/08169	SAR	2013/01/31 * 12
SOS-11	Humidity Indicator	A&D	AD-5681	4063424	SAR	2013/02/27 * 12
SSA-04	Spectrum Analyzer	Advantest	R3272	101100994	SAR(moni.)	2012/12/17 * 12
SWTR-03	DI water	MonotaRo	34557433	-	SAR	Pre Check

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Test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
KSLM245-01	Tissue simulation liquid (2450MHz,body)	Schmid&Partner Engineering AG	SL AAM 245	-	SAR	Pre Check
KSLM580-02	Tissue simulation liquid (5800MHz,body)	Schmid&Partner Engineering AG	SL AAM 501 AB	110520-3	SAR	Pre Check
MSL2450					Daily check	Target value \pm 5%
MSL 5GHz(BR)					Daily check	Target value \pm 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.

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