SAR TEST REPORT

Test Report No. : 31CE0052-HO-04-A-R01

Applicant	:	**CANON INC.**
Type of Equipment	:	**Wireless Module (Platform: Wireless File transmitter) /With Host device: Digital camera**
Model No.	:	**CH9-1214 (Platform: DS585862)**
Test Standard	:	**FCC 47CFR §2.1093, Supplement C (Edition 01-01) to OET Bulletin 65**
Test Result	:	**Complied**
Maximum SAR(1g) Value	:	**0.97 W/kg** (5270MHz, IEEE 802.11n(40HT), MCS0(BPSK/OFDM) (NII) **0.83 W/kg** (5765MHz, IEEE 802.11n(20HT), MCS0(BPSK/OFDM) (DTS)

*. Body-touch & Portable device. SAR limit was for general population/uncontrolled exposure, and considered on the single platform (SAR(1g) : <1.2 W/kg).

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3. This sample tested is in compliance with the limits of the above regulation.
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6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

Date of test: May 9, 10,11,12 and 16, 2011

Test engineer:
Hiroshi Naka
Engineer of WiSE Japan, UL Verification Service

Approved by:
Toyokazu Imamura
Leader of WiSE Japan, UL Verification Service

JAB Testing RTL02610

☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
☒ There is no testing item of "Non-accreditation".

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REVISION HISTORY

Revision	Test report No.	Date	Page revised	Contents
Original	31CE 0052-HO-04-A	August 12, 2011	-	-
1	31CE 0052-HO-04-A-R01	December 6, 2011	P1,2,3,30	(p3) Deleted unnecessary EUT information for SAR testing in clause 2.2. (p30) Corrected PDF conversion error.

***. By issue of new revision report, the report of an old revision becomes invalid.**

SECTION 1: Customer information

Company Name CA	NON INC.
Brand Name	Canon
Address	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501 Japan
Telephone Number	81-3-3757-6798
Facsimile Number	81-3-3757-8431
Contact Person	Kiyoshi Sahoyama

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

2.1 Identification of EUT

Type of Equipment	Wireless Module
Model Number	CH9-1214
Serial Number	06
Condition of EUT	Production prototype (Not for sale; This sample is equivalent to mass-production items) (*. Receipt date of sample: May 9, 2011 / *. No modification by the test lab.)
Category Identified	Portable device
Tested consideration	During SAR test, the dc power of the EUT was supplied via a digital camera that was operated by the full-charged battery. The SAR test applied without neck strap accessory because it was non-metal and it did not influence SAR.
Platform Information	The EUT is assembled into the Wireless File transmitter, model: DS58586x. (*1) DS58586x only has the case structure with which EUT is covered and has one port where the host device is connected with EUT electrically. DS58586x is connected with a limited digital camera via this special signal/dc power connector.
Type of Equipment:	Wireless File transmitter
Model Number / Serial:	DS585862 (*1) / serial number: 06
Manufacture:	Canon
Power rating:	DC3.3V (supplied from digital camera)
Size of EUT:	24.7(W) × 23.9(L) × 56.0(H) (mm)
Condition of EUT:	Engineering prototype

*1. The Wireless File transmitter of platform has variant models as DS585862 (tested sample), DS585861, DS585863, DS585864 and DS585865. These models are the same electrically and mechanically, but difference is only the country of the destination for export.

Model	DS585861 (*2)	DS585862	DS585863 (*2)	DS585864 (*2)	DS585865 (*2)
Frequency band	2412-2472MHz 5180-5320MHz 5500-5700Hz	2412-2462MHz 5180-5320MHz 5745-5825MHz	2412-2472MHz 5745-5805MHz	2412-2462MHz 5280-5320MHz 5500-5700MHz	2412-2472MHz 5180-5320MHz 5500-5825MHz

*2. These models are not exported to North America.

2.2 Product Description

Equipment type T	ransceiver	Transceiver	Transceiver	Transceiver
Frequency of operation	2412-2462MHz	2412-2462MHz	5180-5320MHz (5190-5310MHz:11n(40HT))	5745-5825MHz (5755-5795MHz:11n(40HT))
Channel spacing	5MHz		20MHz (11a, 11n(20HT)), 40MHz (11n(40HT))	
Bandwidth 20M	Hz 20M	Hz, 40MHz(11n(40HT))		
ITU code G1	D	D1D		
Type of modulation	DSSS	OFDM		
Q'ty of Antenna	1 pc.			
Antenna type/	PIFA (Planar Inverted F Antenna)			
Model name	Dual Band WLAN Antenna Cable Assembly 2011 (P/N; 2174096-1)			
Antenna connector type RF	module side: U.FL connector compatible/ antenna side: soldered			
Antenna gain (Peak)	1.95 dBi (at2500MHz / 2400-2450-2500MHz points)		-1.32 dBi (at 5340MHz / 5160-5250-5340MHz points), -0.43 dBi (at 5785MHz / 5725-5785-5845MHz points)	
Transmit power	*. Refers to section 6 in this report.			
Power rating	DC 3.3V, *.The dc power is supplied from the constant voltage circuit of the digital camera.			
Operation temperature range	-20 to +70 deg.C			

*. The EUT do not use the special transmitting technique such as "beam-forming" and "time-space code diversity."

SECTION 3: Test specification, procedures and results

3.1 Requirements for compliance testing defined by the FCC / Test specification

The US Federal Communications Commission has released the report and order "Guidelines for Evaluating the Environmental Effects of RF Radiation", ET Docket No. 93-62 in August 1996. The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g for an uncontrolled environment and 8.0 mW/g for an occupational/controlled environment as recommended by the ANSI/IEEE standard C95.1-1992. According to the Supplement C of OET Bulletin 65 "Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under "worst-case" conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

1. Specific Absorption Rate (SAR) is a measure of the rate of energy absorption due to exposure to an RF transmitting source (wireless portable device).
2. IEEE/ANSI Std. C95.1-1992 limits are used to determine compliance with FCC ET Docket 93-62.

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;
KDB 447498 D01(v04)(Nov.13, 2009): Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
KDB 248227 (rev.1.2)(May 29, 2007): SAR Measurement Procedures for 802.11a//b/g Transmitters

3.2 Exposure limit

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

Whole-Body (averaged over the entire body)	Partial-Body (averaged over any 1g of tissue)	Hands, Wrists, Feet and Ankles (averaged over any 10g of tissue)
0.4	8.0	20.0

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

Whole-Body (averaged over the entire body)	Partial-Body (averaged over any 1g of tissue)	Hands, Wrists, Feet and Ankles (averaged over any 10g of tissue)
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.

The limit applied in this test report is;

General population / Uncontrolled exposure, Partial-Body (averaged over any 1g of tissue) limit: 1.6 W/kg

3.3 Procedures and Results

Item	Test Procedure	Limit	Exclusion	Remarks	Result
Human exposure	FCC OET Bulletin 65, Supplement C	1.6 W/kg (FCC 47CFR §2.1093)	none	SAR measurement (in accordance with KDB447498, KDB248227)	**Complied** (*1)

Note: UL Japan's SAR Work Procedures No.13-EM-W0429 and 13-EM-W0430. Other than above, no addition, deviation nor exclusion has been made from standards
***1.** The maximum SAR(1g) of each frequency band was as follows;
0.36 W/kg (2437MHz, IEEE 802.11b, 1Mbps(DBPSK/DSSS) /2412-2462 MHz band) (DTS)
0.97 W/kg (5270MHz, IEEE 802.11n(40HT), MCS0(BPSK/OFDM) /5180-5240MHz band) (NII)
0.83 W/kg (5765MHz, IEEE 802.11n(20HT), MCS0(BPSK/OFDM) /5745-5825MHz band) (DTS)
The SAR(1g) was <1.2W/kg for all configuration. Therefore according to the KDB447498 D01, the EUT was approved for used in a single platform..

3.4 Test Location

No.7 shielded room (2.76(Width) × 3.76m(Depth) × 2.4m(Height)) for SAR testing.

UL Japan, Inc., Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN
Telephone number: +81 463 50 6400 / Facsimile number: +81 463 50 6401

3.5 Confirmation before SAR testing

3.5.1 Correlation of Output Power between EMC and SAR tests

It was checked that the antenna port power was correlated within 0~+5% (FCC requirements)
The result is shown in Section 6.

*. **Output power at SAR test:** SAR power was measured before SAR testing. (EUT serial number: 06)
For 2.4GHz band, the average and the peak power of 11b, 11g, 11n(20HT) and 11n(40HT) mode were measured at default channel
For 5GHz band, the average and the peak power of 11a, 11n(20HT) and 11n(40HT) mode were measured at all channel.

*. **Output power at EMC radio test:** EMC power was measured during EMC testing. (EUT serial number: 06)
For the SAR vs. EMC power reference, the average and the peak power of 11b, 11g, 11a, 11n(20HT) and 11n(40HT) mode were measured at the same channel of SAR measured.

3.5.2 Average power for SAR tests

Step.1 Data rate check

The data rate check was measurement on the middle channel for 802.11b/g/n (2.4GHz) and the middle (or near the middle) default channel of 802.11a/n (5GHz).

11b		11g		11a		11n(20HT)			11n(40HT)		
Modulation	Data rate [Mbps]	Modulation	Data rate [Mbps]	Modulation	Data rate [Mbps]	Modulation	MCS Index	Spatial Stream	Modulation	MCS Index	Spatial Stream
DBPSK/DSSS	1	BPSK/OFDM	6	BPSK/OFDM	6	BPSK/OFDM	MCS0	1	BPSK/OFDM	MCS0	1
DQPSK/DSSS	2	BPSK/OFDM	9	BPSK/OFDM	9	QPSK/OFDM	MCS1	1	QPSK/OFDM	MCS1	1
CCK/DSSS	5.5	QPSK/OFDM	12	QPSK/OFDM	12	QPSK/OFDM	MCS2	1	QPSK/OFDM	MCS2	1
CCK/DSSS	11	QPSK/OFDM	18	QPSK/OFDM	18	16QAM/OFDM	MCS3	1	16QAM/OFDM	MCS3	1
		16QAM/OFDM	24	16QAM/OFDM	24	16QAM/OFDM	MCS4	1	16QAM/OFDM	MCS4	1
		16QAM/OFDM	36	16QAM/OFDM	36	64QAM/OFDM	MCS5	1	64QAM/OFDM	MCS5	1
		64QAM/OFDM	48	64QAM/OFDM	48	64QAM/OFDM	MCS6	1	64QAM/OFDM	MCS6	1
		64QAM/OFDM	54	64QAM/OFDM	54	64QAM/OFDM	MCS7	1	64QAM/OFDM	MCS7	1

Step.2 Decision of SAR test channel

For the SAR test reference, the average and peak output powers were measured on default channels of 802.11b/g/n(20HT)/n(40HT) (for 2.4GHz band) and all channels of 802.11a/n(20HT)/n(40HT) (for W52 and W58 band) by the calibrated power sensor and power meter (65MHz measurement bandwidth).

Mode		GHz	Channel	"Default Test Channel"			
				FCC 15.247		UNII	
				802.11b	802.11g		
802.11 b/g		2.412	1	√	Δ		
		2.437	6	√	Δ		
		2.462	11	√	Δ		
802.11a	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			√	
	UNII or FCC 15.247	5.745	149	√		√	
		5.765	153		*		*
		5.785	157	√			*
		5.805	161		*	√	
	FCC 15.247	5.825	165	√			

√ = "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"

3.6 Confirmation after SAR testing

It was checked that the power drift [W] is within ±5% in the evaluation procedure of SAR testing. The verification of power drift during the SAR test is that DASY4 system calculates the power drift by measuring the e-filed at the same location at beginning and the end of the scan measurement for each test position.
The result is shown in APPENDIX 2.

*. DASY4 system calculation Power drift value[dB] =20log(Ea)/(Eb) (where, Before SAR testing: Eb[V/m] / After SAR testing: Ea[V/m])

Limit of power drift[W] = ±5%
Power drift limit (X) [dB] = 10log(P_drift)=10log(1.05/1)=10log(1.05)-10log(1)=0.21dB
from E-filed relations with power.
S=E×H=E^2/η=P/(4×π×r^2) (η: Space impedance) → P=(E^2×4×π×r^2)/η
Therefore, The correlation of power and the E-filed
Power drift limit (X) dB=10log(P_drift)=10log(E_drift)^2=20log(E_drift)
From the above mentioned, the calculated power drift of DASY4 system must be the less than ±0.21dB.

3.7 Measurement procedure

Operation mode: **IEEE 802.11b/g/a/n(20HT)/n(40HT)**

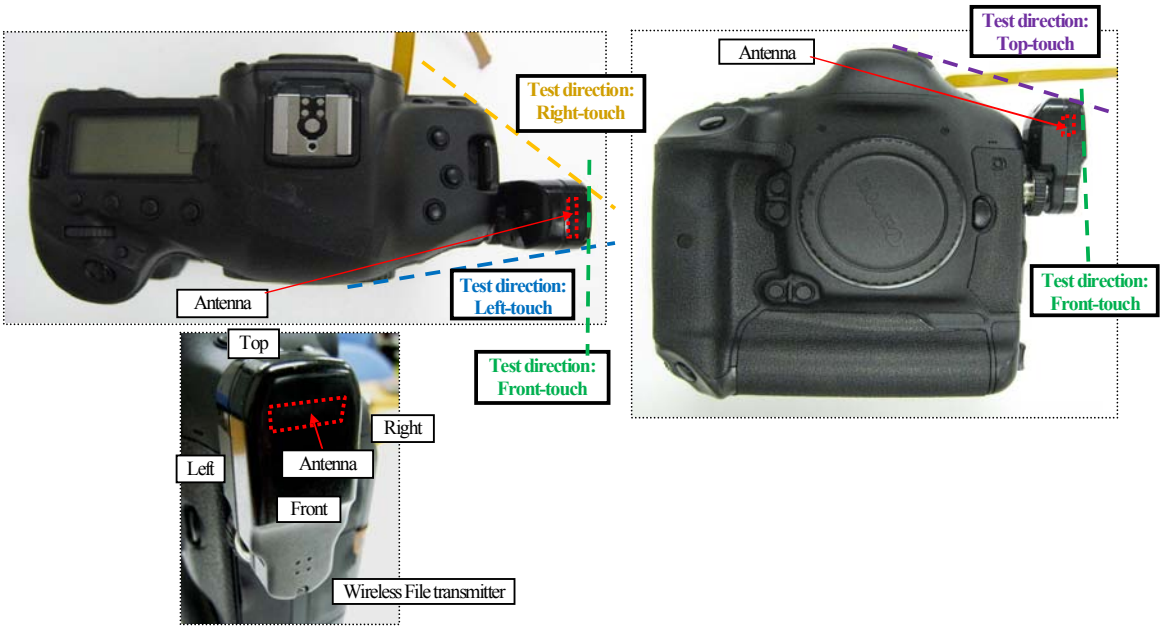
Step 1	Worst position search. (at lowest data rate, at the highest average power channel)
Step 2	Change the channel (at the worst SAR position)
Step 3	Change the operation mode
Step 4	Change the frequency band and repeat step1 to 3.

*. Radiated power is monitored by Spectrum Analyzer during SAR test.

3.8 Test setup of EUT

Setup	Explanation
Front-touch	The front surface of Wireless File transmitter touched to the middle section of flat phantom. (*1)
Top-touch	The top section of Wireless File transmitter touched to the middle section of flat phantom. (*1)
Left-touch	The left section of Wireless File transmitter touched to the middle section of flat phantom. (*1)
Right-touch	The right section of Wireless File transmitter touched to the middle section of flat phantom. (*1)

*1. For each test direction, the antenna section was closed to the phantom as much as possible. The test directions show the photographs in below.
*. The other than above test direction, the SAR test was not applied. Because the separation gap between the antenna section of Wireless File transmitter and the phantom bottom surface was larger in other test direction. The tested direction in above was a case where the antenna was closest to the phantom bottom surface in each Wireless File transmitter direction, therefore the worst SAR value was not shown in other than above tested direction.



SECTION 4: Operation of E.U.T. during testing

4.1 Operating modes for SAR testing

This EUT has IEEE.802.11b/g/a/11n(20HT)/11n(40HT) continuous transmitting modes.
The frequency and the modulation used in the SAR testing are shown as a following.

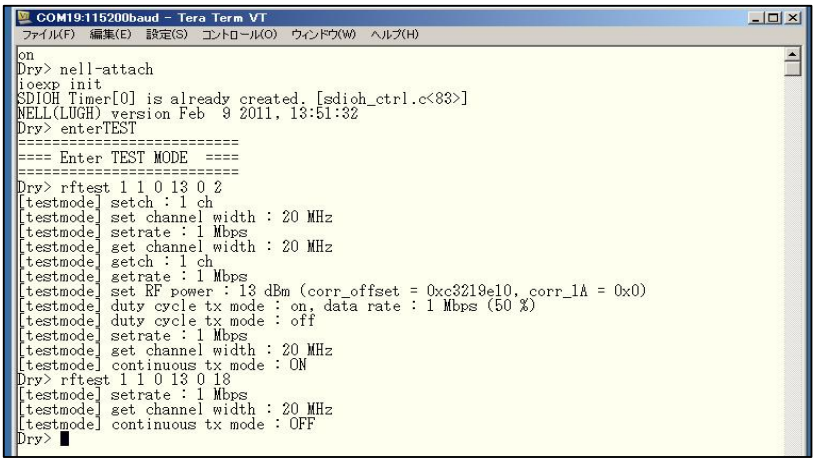
Operation mode	11b	11g	11n(20HT)	11n(40HT)	11a	11n(20HT)	11n(40HT)
Tx frequency band	2412-2462MHz			2422-2452MHz	5180-5320MHz 5745-5825MHz		5190-5310MHz 5755-5795MHz
Tested frequency	Refer to tested frequency list in below. (*2)				Refer to tested frequency list in below. (*2)		
Modulation	DBPSK/DSSS	BPSK/OFDM			BPSK/OFDM		
Data rate	1Mbps (*1)	6Mbps (*1)	MCS0 (*1)		6Mbps (*1)	MCS0 (*1)	
Crest factor	1.0 (100% duty cycle)				1.0 (100% duty cycle)		
Controlled software	Tera Term-rftest mode (*9) During SAR test, the EUT was connected with the host note PC via ribbon flat cable. The software installed in PC made the transmitting condition.						

*1. It was lowest data rate.
*2. Decision of SAR tested channels are described in the below the "SAR test applied channel list.".

[SAR test applied channels list]

Mode	GHz	Channel	default		SAR tested channel					Remarks
			11bga 11n(20HT)	11n (40HT)	11b	11g	11a	11n (20HT)	11n (40HT)	
802.11 b/g/n	2.412	1	√	-	✓	✓ (*5,*6)	-	✓ (*5,*6)	-	default channel. *5. worst average power of 11g, 11n(20HT).
	2422	3	-	√	-	–	-	-	✓	worst average power of 11n(40HT).
	2.437	6	√	√	✓	n/a (*6)	-	n/a (*6)	n/a (*8)	default channel
	2452	9	-	√	-	–	-	-	n/a (*8)	-
	2.462	11	√	-	✓	n/a (*6)	-	n/a (*6)	-	default channel
802.11 a/n	5.18	36	√	-	-	-	-	-	-	Replaced test channel to 40 from 36.
	5.19	38	-	√	-	-	-	-	✓	low channel of 11n(40HT).
	5.20	40	*	-	-	-	✓ (*3)	✓ (*4) (*7)	-	*3. worst average power of 11a. *4. worst average power of 11n(20HT).
	5.22	44	*	-	-	-	-	-	-	-
	5.23	46	-	√	-	-	-	-	✓	middle channel of 11n(40HT).
	5.24	48	√	-	-	-	✓	n/a (*7)	-	default channel
	5.26	52	√	-	-	-	✓	n/a (*7)	-	default channel
	5.27	54	-	√	-	–	-	-	✓	middle channel of 11n(40HT).
	5.28	56	*	-	-	-	-	-	-	-
	5.30	60	*	-	-	-	-	-	-	-
	5.31	62	-	√	-	-	-	-	✓	high channel of 11n(40HT).
	5.32	64	√	-	-	-	✓	n/a (*7)	-	default channel
	5.745	149	√	-	-	-	-	-	-	Replaced test channel to 153 from 149.
	5.755	151	-	√	-	-	-	-	✓	low channel of 11n(40HT).
	5.765	153	*	-	-	–	✓ (*3)	✓ (*4) (*7)	-	*3. worst average power of 11a. *4. worst average power of 11n(20HT).
	5.785	157	√	-	-	-	✓	n/a (*7)	-	default channel.
	5.795	159	-	√			-	-	✓	high channel of 11n(40HT).
	5.805	161	*	-	-	-	-	-	-	-
	5.825	165	√	-	-	-	✓	n/a (*7)	-	default channel.

√ = "default test channels of requested by KDB248227"
* = Possible 802.11a channels with maximum average output > the "default test channels"
*6. For these operation mode, the average antenna terminal conducted power were not 0.25dB higher than 11b mode. (refer to section 6 in this report)
*7. For these operation mode, the average antenna terminal conducted power were not 0.25dB higher than 11a mode. (refer to section 6 in this report)
*8. The measured SAR(1g) was less than 0.8W/kg (1/2 of the SAR(1g) limit) in the default channel that had worst average antenna terminal conducted power. Therefore, the SAR tests for other default channels were omitted. (KDB648474)
*9. The screen sample of the software used. (command: [antenna number] [channel] [bandwidth(0:20MHz/1:40MHz)] [power(13dBm)] [data rate] [rf-on/off])



SECTION 5: Uncertainty Assessment (SAR measurement)

Uncertainty of SAR measurement system	Under 3GHz	
	1g SAR	10g SAR
combined measurement uncertainty of the measurement system (k=1)	± 11.7%	± 11.4%
expanded uncertainty (k=2)	± 23.3%	± 22.8%

	Error Description	Uncertainty Value	Probability distribution	Divisor	ci (1g)	ci (10g)	ui (1g)	ui (10g)	Vi, veff
A	**Measurement System**						(std.uncertainty)	(std.uncertainty)	
1	Probe calibration	±5.9 %	Normal	1	1	1	±5.9 %	±5.9 %	∞
2	Axial isotropy	±4.7 %	Rectangular	√3	0.7	0.7	±1.9 %	±1.9 %	∞
3	Hemispherical isotropy (*flat phantom, <5°)	±2.6 %	Rectangular	√3	0.7	0.7	±1.1 %	±1.1 %	∞
4	Boundary effects	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	∞
5	Probe linearity	±4.7 %	Rectangular	√3	1	1	±2.7 %	±2.7 %	∞
6	System detection limit	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	∞
7	System readout electronics	±0.3 %	Normal	1	1	1	±0.3 %	±0.3 %	∞
8	Response time	±0.8 %	Rectangular	√3	1	1	±0.5 %	±0.5 %	∞
9	Integration time	±2.6 %	Rectangular	√3	1	1	±1.5 %	±1.5 %	∞
10	RF ambient – noise	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
11	RF ambient – reflections	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
12	Probe positioner mechanical tolerance	±0.4 %	Rectangular	√3	1	1	±0.2 %	±0.2 %	∞
13	Probe positioning with respect to phantom shell	±2.9 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
14	Max.SAR evaluation	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	∞
B	**Test Sample Related**								
15	Device positioning	±5.0 %	Normal	1	1	1	±5.0 %	±5.0 %	5
16	Device holder uncertainty	±5.0 %	Normal	1	1	1	±5.0 %	±5.0 %	5
17	Power drift	±5.0 %	Rectangular	√3	1	1	±2.9 %	±2.9 %	∞
C	**Phantom and Setup**								
18	Phantom uncertainty	±4.0 %	Rectangular	√3	1	1	±2.3 %	±2.3 %	∞
19	Liquid conductivity (target)	±5.0 %	Rectangular	√3	0.64	0.43	±1.8 %	±1.2 %	∞
20	Liquid conductivity (meas.)	±2.9 %	Normal	1	0.64	0.43	±1.9 %	±1.2 %	3
21	Liquid permittivity (target)	±5.0 %	Rectangular	√3	0.6	0.49	±1.7 %	±1.4 %	∞
22	Liquid permittivity (meas.)	±2.9 %	Normal	1	0.6	0.49	±1.7 %	±1.4 %	3
	Combined Standard Uncertainty						**±11.7** %	**±11.4** %	59
	Expanded Uncertainty (k=2)						**±23.3** %	**±22.8** %	

*. This measurement uncertainty budget is suggested by IEEE 1528 and determined by Schmid & Partner Engineering AG (DASY4 Uncertainty Budget). [6]

Uncertainty of SAR measurement system	5~6 GHz	
	1g SAR	10g SAR
combined measurement uncertainty of the measurement system (k=1)	± 13.6%	± 13.3%
expanded uncertainty (k=2)	± 27.2%	± 26.7%

	Error Description	Uncertainty Value	Probability distribution	Divisor	ci (1g)	ci (10g)	ui (1g)	ui (10g)	vi, veff
A	**Measurement System**						(std.uncertainty)	(std.uncertainty)	
1	Probe calibration	±6.8 %	Normal	1	1	1	±6.8 %	±6.8 %	∞
2	Axial isotropy	±4.7 %	Rectangular	√3	0.7	0.7	±1.9 %	±1.9 %	∞
3	Hemispherical isotropy (*flat phantom, <5°)	±2.6 %	Rectangular	√3	0.7	0.7	±1.1 %	±1.1 %	∞
4	Boundary effects	±2.0 %	Rectangular	√3	1	1	±1.2 %	±1.2 %	∞
5	Probe linearity	±4.7 %	Rectangular	√3	1	1	±2.7 %	±2.7 %	∞
6	System detection limit	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	∞
7	System readout electronics	±0.3 %	Normal	1	1	1	±0.3 %	±0.3 %	∞
8	Response time	±0.8 %	Rectangular	√3	1	1	±0.5 %	±0.5 %	∞
9	Integration time	±2.6 %	Rectangular	√3	1	1	±1.5 %	±1.5 %	∞
10	RF ambient - noise	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
11	RF ambient - reflections	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
12	Probe positioner mechanical tolerance	±0.8 %	Rectangular	√3	1	1	±0.5 %	±0.5 %	∞
13	Probe positioning with respect to phantom shell	±9.9 %	Rectangular	√3	1	1	±5.7 %	±5.7 %	∞
14	Max.SAR evaluation	±4.0 %	Rectangular	√3	1	1	±2.3 %	±2.3 %	∞
B	**Test Sample Related**								
15	Device positioning	±5.0 %	Normal	1	1	1	±5.0 %	±5.0 %	∞
16	Device holder uncertainty	±5.0 %	Normal	1	1	1	±5.0 %	±5.0 %	∞
17	Power drift	±5.0 %	Rectangular	√3	1	1	±5.0 %	±2.9 %	∞
C	**Phantom and Setup**								
18	Phantom uncertainty	±4.0 %	Rectangular	√3	1	1	±2.3 %	±2.3 %	∞
19	Liquid conductivity (target)	±5.0 %	Rectangular	√3	0.64	0.43	±1.8 %	±1.2 %	∞
20	Liquid conductivity (meas.)	±3.0 %	Normal	1	0.64	0.43	±1.9 %	±1.3 %	∞
21	Liquid permittivity (target)	±5.0 %	Rectangular	√3	0.6	0.49	±1.7 %	±1.4 %	∞
22	Liquid permittivity (meas.)	±3.2 %	Normal	1	0.6	0.49	±1.9 %	±1.6 %	∞
	Combined Standard Uncertainty						**±13.6** %	**±13.3** %	∞
	Expanded Uncertainty (k=2)						**±27.2** %	**±26.7** %	

*. This measurement uncertainty budget is suggested by Schmid & Partner Engineering AG. [6]

SECTION 6: Confirmation before testing

6.1 Assessment for the conducted power of EUT / Correction of the power at EMC test and at SAR test

6.1.1 2412-2462MHz band (802.11b/g/n(20HT)/n(40HT))

Worst data rate / worst channel determination (with full charged battery#1) / vs. power at EMC test (EUT serial number: 06)

⊿(sar−emc): 0< x <0.21dB

【Output power】	Tx mode:	11b												*.PAR=Peak(dB)−Ave(dB)[dB]		Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	worst: o default: x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Power Reading Results Ave[mW]	Power Reading Results Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar−emc)	Pk [dB]	⊿(sar−emc)
1	2412	1	single	x	DBPSK	DSSS	2.58	5.21	0.60	10.02	13.20	15.83	20.89	38.28	−0.13	2.63	13.20	0.00	15.83	0.00
6	2437	1	single	xo	DBPSK	DSSS	2.71	5.26	0.60	10.02	13.33	15.88	21.53	38.73	0.00	2.55	13.27	0.06	15.87	0.01
11	2462	1	single	x	DBPSK	DSSS	2.58	5.09	0.60	10.02	13.20	15.71	20.89	37.24	−0.13	2.51	13.13	0.07	15.71	0.00
6	2437	1	(Battery:#2)				2.71	5.25	0.60	10.02	13.33	15.87	21.53	38.64	−	2.54	13.27	0.06	15.87	0.00
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
6	2437	1	single	o	DBPSK	DSSS	2.71	5.26	0.60	10.02	13.33	15.88	21.53	38.73	0.00	2.55	13.27	0.06	15.87	0.01
6	2437	2	single		DQPSK	DSSS	2.61	5.23	0.60	10.02	13.23	15.85	21.04	38.46	−0.10	2.62	13.23	0.00	15.84	0.01
6	2437	5.5	single		CCK/PBCC	DSSS	2.63	4.82	0.60	10.02	13.25	15.44	21.13	34.99	−0.08	2.19	13.25	0.00	15.42	0.02
6	2437	11	single		CCK/PBCC	DSSS	2.70	5.25	0.60	10.02	13.32	15.87	21.48	38.64	−0.01	2.55	13.20	0.12	15.75	0.12

*. The average antenna terminal conducted power of lowest data rate was worst. Therefore, each channel was measured at lowest data rate.
*. **The output power did not depend on the battery condition.**

【Output power】	Tx mode:	11g												*.PAR=Peak(dB)−Ave(dB)[dB]		Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Worst:o default:x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Power Reading Results Ave[mW]	Power Reading Results Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar−emc)	Pk [dB]	⊿(sar−emc)
1	2412	6	single	xo	DBPSK	DSSS	2.60	11.45	0.60	10.02	13.22	22.07	20.99	161.06	0.00	8.85	13.22	0.00	21.87	0.20
6	2437	6	single	x	DBPSK	DSSS	2.30	11.37	0.60	10.02	12.92	21.99	19.59	158.12	−0.30	9.07	12.86	0.06	21.89	0.10
11	2462	6	single	x	DBPSK	DSSS	2.25	11.35	0.60	10.02	12.87	21.97	19.36	157.40	−0.35	9.10	12.82	0.05	21.79	0.18
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
6	2437	6	single	o	BPSK	OFDM	2.30	11.37	0.60	10.02	12.92	21.99	19.59	158.12	0.00	9.07	12.86	0.06	21.89	0.10
6	2437	9	single		BPSK	OFDM	2.26	11.09	0.60	10.02	12.88	21.71	19.41	148.25	−0.04	8.83	12.82	0.06	21.62	0.09
6	2437	12	single		QPSK	OFDM	2.24	11.18	0.60	10.02	12.86	21.80	19.32	151.36	−0.06	8.94	12.83	0.03	21.60	0.20
6	2437	18	single		QPSK	OFDM	2.26	11.12	0.60	10.02	12.88	21.74	19.41	149.28	−0.04	8.86	12.81	0.07	21.57	0.17
6	2437	24	single		16QAM	OFDM	2.22	11.32	0.60	10.02	12.84	21.94	19.23	156.31	−0.08	9.10	12.85	−0.01	21.88	0.06
6	2437	36	single		16QAM	OFDM	2.11	11.10	0.60	10.02	12.73	21.72	18.75	148.59	−0.19	8.99	12.84	−0.11	21.68	0.04
6	2437	48	single		64QAM	OFDM	2.23	11.35	0.60	10.02	12.85	21.97	19.28	157.40	−0.07	9.12	12.85	0.00	21.78	0.19
6	2437	54	single		64QAM	OFDM	2.23	11.18	0.60	10.02	12.85	21.80	19.28	151.36	−0.07	8.95	12.84	0.01	21.79	0.01

*. The average antenna terminal conducted power of lowest data rate was worst. Therefore, each channel was measured at lowest data rate.

【Output power】	Tx mode:	11n(20HT)												*.PAR=Peak(dB)−Ave(dB)[dB]		Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Worst:o default:x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Power Reading Results Ave[mW]	Power Reading Results Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar−emc)	Pk [dB]	⊿(sar−emc)
1	2412	MCS0	single	xo	DBPSK	DSSS	2.58	11.09	0.60	10.02	13.20	21.71	20.89	148.25	0.00	8.51	13.19	0.01	21.51	0.20
6	2437	MCS0	single	x	DBPSK	DSSS	2.25	10.98	0.60	10.02	12.87	21.60	19.36	144.54	−0.33	8.73	12.79	0.08	21.44	0.16
11	2462	MCS0	single	x	DBPSK	DSSS	2.21	10.84	0.60	10.02	12.83	21.46	19.19	139.96	−0.37	8.63	12.70	0.13	21.27	0.19
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
6	2437	MCS0	single		BPSK	OFDM	2.25	10.98	0.60	10.02	12.87	21.60	19.36	144.54	0.00	8.73	12.78	0.09	21.44	0.16
6	2437	MCS1	single		QPSK	OFDM	2.25	10.78	0.60	10.02	12.87	21.40	19.36	138.04	0.00	8.53	12.72	0.15	21.39	0.01
6	2437	MCS2	single		QPSK	OFDM	2.24	10.79	0.60	10.02	12.86	21.41	19.32	138.36	−0.01	8.55	12.74	0.12	21.36	0.05
6	2437	MCS3	single		16QAM	OFDM	2.21	10.60	0.60	10.02	12.83	21.22	19.19	132.43	−0.04	8.39	12.75	0.08	21.22	0.00
6	2437	MCS4	single		16QAM	OFDM	2.35	10.75	0.60	10.02	12.97	21.37	19.82	137.09	0.10	8.40	12.74	0.23	21.26	0.11
6	2437	MCS5	single	o	64QAM	OFDM	2.38	10.85	0.60	10.02	13.00	21.47	19.95	140.28	0.13	8.47	12.71	0.29	21.39	0.08
6	2437	MCS6	single	o	64QAM	OFDM	2.38	10.73	0.60	10.02	13.00	21.35	19.95	136.46	0.13	8.35	12.79	0.21	21.29	0.06
6	2437	MCS7	single		64QAM	OFDM	2.35	10.80	0.60	10.02	12.97	21.42	19.82	138.68	0.10	8.45	12.77	0.20	21.37	0.05

*. The average power of higher data rate was less than 0.25dB higher than the lowest data rate. Therefore, each channel was measured at lowest data rate.

【Output power】	Tx mode:	11n(40HT)												*.PAR=Peak(dB)−Ave(dB)[dB]		Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Worst:o default:x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Power Reading Results Ave[mW]	Power Reading Results Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar−emc)	Pk [dB]	⊿(sar−emc)
3	2422	MCS0	single	xo	BPSK	OFDM	2.32	11.62	0.60	10.02	12.94	22.24	19.68	167.49	0.00	9.30	−	−	−	−
6	2437	MCS0	single	x	BPSK	OFDM	2.28	11.31	0.60	10.02	12.90	21.93	19.50	155.96	−0.04	9.03	12.90	0.00	21.87	0.06
9	2452	MCS0	single	x	BPSK	OFDM	1.90	11.26	0.60	10.02	12.52	21.88	17.86	154.17	−0.42	9.36	−	−	−	−
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
6	2437	MCS0	single		BPSK	OFDM	2.28	11.31	0.60	10.02	12.90	21.93	19.50	155.96	0.00	9.03	12.90	0.00	21.87	0.06
6	2437	MCS1	single	o	QPSK	OFDM	2.33	10.96	0.60	10.02	12.95	21.58	19.72	143.88	0.05	8.63	12.95	0.00	21.38	0.20
6	2437	MCS2	single		QPSK	OFDM	2.29	10.98	0.60	10.02	12.91	21.60	19.54	144.54	0.01	8.69	12.91	0.00	21.42	0.18
6	2437	MCS3	single		16QAM	OFDM	2.30	11.18	0.60	10.02	12.92	21.80	19.59	151.36	0.02	8.88	12.92	0.00	21.79	0.01
6	2437	MCS4	single		16QAM	OFDM	2.32	11.20	0.60	10.02	12.94	21.82	19.68	152.05	0.04	8.88	12.93	0.01	21.73	0.09
6	2437	MCS5	single		64QAM	OFDM	2.28	11.38	0.60	10.02	12.90	22.00	19.50	158.49	0.00	9.10	12.88	0.02	21.90	0.10
6	2437	MCS6	single		64QAM	OFDM	2.32	11.31	0.60	10.02	12.94	21.93	19.68	155.96	0.04	8.99	12.94	0.00	21.73	0.20
6	2437	MCS7	single		64QAM	OFDM	2.28	11.12	0.60	10.02	12.90	21.74	19.50	149.28	0.00	8.84	12.89	0.01	21.56	0.18

*. The average power of higher data rate was less than 0.25dB higher than the lowest data rate. Therefore, each channel was measured at lowest data rate.

*. Calculating formula: Results = ["P/M Reading"] +["Cbl.loss"(Cable loss)] + ["Att.loss"(Attenuator)]
*. At the same sample, the difference between the SAR reference power and the power of EMC test was not less than 0dB and not higher than 0.21dB.
SAR reference; Measured date: May 9, 2011 / Measured by: Hiroshi Naka / Place: preparation room of No. 7 shielded room. (25 deg.C / 44 %RH)
EMC test; Measured date: May 18 and 19, 2011 / Measured by: Tetsuya Arai/ This reference is described in the test report of 31CE0052-HO-01-B and -C.
*. The maximum average power of 11g and 11a(20HT) were less than 0.25dB higher than the corresponding 11b. However, the SAR test was applied the maximum average power channel of 11g and 11n(20HT).
*. A red-letter figure shows the maximum power of SAR reference (in data rate, in channel) and of EMC test .
*. **The duty cycle of each mode and on each data rate were 100% (no off time) in the software used.**

6.1.2 5180-5320MHz band (W52/53 band) (802.11a/n(20HT)/n(40HT))

Worst data rate / worst channel determination (with full charged battery#1) / vs. power at EMC test (EUT serial number: 06)

⊿(sar−emc): 0< x <0.21dB

【Output power】			Tx mode:		11a(W52/53)		5180−5320MHz				*PAR=Peak(dB)−Ave(dB)(dB)				Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	worst: o default: x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Ave[mW]	Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar−emc)	Pk [dB]	⊿(sar−emc)
36	5180	6	single	x ↓	BPSK	OFDM	2.70	12.10	0.90	10.06	13.66	23.06	23.23	202.30	−0.20	9.40	13.63	0.03	23.02	0.04
40	5200	6	single	o	BPSK	OFDM	2.90	12.25	0.90	10.06	13.86	23.21	24.32	209.41	0.00	9.35	13.84	0.02	23.18	0.03
44	5220	6	single		BPSK	OFDM	2.55	12.05	0.90	10.06	13.51	23.01	22.44	199.99	−0.35	9.50				
48	5240	6	single	x	BPSK	OFDM	2.55	12.05	0.90	10.06	13.51	23.01	22.44	199.99	−0.35	9.50	13.47	0.04	22.90	0.11
52	5260	6	single	x	BPSK	OFDM	2.51	11.90	0.90	10.06	13.47	22.86	22.23	193.20	−0.39	9.39	13.45	0.02	22.84	0.02
56	5280	6	single		BPSK	OFDM	2.51	11.86	0.90	10.06	13.47	22.82	22.23	191.43	−0.39	9.35	13.47	0.00	22.82	0.00
60	5300	6	single		BPSK	OFDM	2.34	12.02	0.90	10.06	13.30	22.98	21.38	198.61	−0.56	9.68				
64	5320	6	single	x	BPSK	OFDM	2.23	11.68	0.90	10.06	13.19	22.64	20.84	183.65	−0.67	9.45	13.17	0.02	22.64	0.00
40	5200	6	(Battery:#2)				2.90	12.26	0.90	10.06	13.86	23.22	24.32	209.89	0.00	9.36	13.84	0.02	23.18	0.04
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
52	5260	6	single	o	BPSK	OFDM	2.51	11.90	0.90	10.06	13.47	22.86	22.23	193.20	0.00	9.39	13.45	0.02	22.84	0.02
52	5260	9	single		BPSK	OFDM	2.48	11.74	0.90	10.06	13.44	22.70	22.08	186.21	−0.03	9.26	13.41	0.03	22.54	0.16
52	5260	12	single		QPSK	OFDM	2.46	11.89	0.90	10.06	13.42	22.85	21.98	192.75	−0.05	9.43	13.42	0.00	22.72	0.13
52	5260	18	single		QPSK	OFDM	2.49	11.45	0.90	10.06	13.45	22.41	22.13	174.18	−0.02	8.96	13.44	0.01	22.21	0.20
52	5260	24	single		16QAM	OFDM	2.48	12.16	0.90	10.06	13.44	23.12	22.08	205.12	−0.03	9.68	13.41	0.03	22.97	0.15
52	5260	36	single		16QAM	OFDM	2.39	11.98	0.90	10.06	13.35	22.94	21.63	196.79	−0.12	9.59	13.35	0.00	22.74	0.20
52	5260	48	single		64QAM	OFDM	2.46	11.72	0.90	10.06	13.42	22.68	21.98	185.35	−0.05	9.26	13.37	0.05	22.50	0.18
52	5260	54	single		64QAM	OFDM	2.38	11.88	0.90	10.06	13.34	22.84	21.58	192.31	−0.13	9.50	13.34	0.00	22.70	0.14

*. The average antenna terminal conducted power of lowest data rate was worst. Therefore, each channel was measured at lowest data rate.
*. **The output power did not depend on the battery condition.**

【Output power】			Tx mode:		11n(20HT)(W52/53)		5180−5320MHz				*PAR=Peak(dB)−Ave(dB)(dB)				Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	worst: o default: x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Ave[mW]	Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar−emc)	Pk [dB]	⊿(sar−emc)
36	5180	MCS0	single	x ↓	BPSK	OFDM	2.85	11.59	0.90	10.06	13.81	22.55	24.04	179.89	−0.07	8.74	13.67	0.14	22.36	0.19
40	5200	MCS0	single	o	BPSK	OFDM	2.92	11.65	0.90	10.06	13.88	22.61	24.43	182.39	0.00	8.73	13.88	0.00	22.60	0.01
44	5220	MCS0	single		BPSK	OFDM	2.48	11.15	0.90	10.06	13.44	22.11	22.08	162.55	−0.44	8.67				
48	5240	MCS0	single	x	BPSK	OFDM	2.51	11.30	0.90	10.06	13.47	22.26	22.23	168.27	−0.41	8.79	13.43	0.04	22.11	0.15
52	5260	MCS0	single	x	BPSK	OFDM	2.51	11.36	0.90	10.06	13.47	22.32	22.23	170.61	−0.41	8.85	13.45	0.02	22.23	0.09
56	5280	MCS0	single		BPSK	OFDM	2.49	11.30	0.90	10.06	13.45	22.26	22.13	168.27	−0.43	8.81	13.45	0.00	22.26	0.00
60	5300	MCS0	single		BPSK	OFDM	2.35	11.18	0.90	10.06	13.31	22.14	21.43	163.68	−0.57	8.83				
64	5320	MCS0	single	x	BPSK	OFDM	2.25	11.10	0.90	10.06	13.21	22.06	20.94	160.69	−0.67	8.85	13.20	0.01	21.98	0.08
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
52	5260	MCS0	single	o	BPSK	OFDM	2.51	11.36	0.90	10.06	13.47	22.32	22.23	170.61	0.00	8.85	13.45	0.02	22.23	0.09
52	5260	MCS1	single		QPSK	OFDM	2.48	11.30	0.90	10.06	13.44	22.26	22.08	168.27	−0.03	8.82	13.44	0.00	22.18	0.08
52	5260	MCS2	single	o	QPSK	OFDM	2.51	11.29	0.90	10.06	13.47	22.25	22.23	167.88	0.00	8.78	13.47	0.00	22.14	0.11
52	5260	MCS3	single		16QAM	OFDM	2.48	11.41	0.90	10.06	13.44	22.37	22.08	172.58	−0.03	8.93	13.44	0.00	22.24	0.13
52	5260	MCS4	single		16QAM	OFDM	2.50	11.46	0.90	10.06	13.46	22.42	22.18	174.58	−0.01	8.96	13.46	0.00	22.24	0.18
52	5260	MCS5	single		64QAM	OFDM	2.49	11.22	0.90	10.06	13.45	22.18	22.13	165.20	−0.02	8.73	13.45	0.00	22.12	0.06
52	5260	MCS6	single		64QAM	OFDM	2.49	11.46	0.90	10.06	13.45	22.42	22.13	174.58	−0.02	8.97	13.44	0.01	22.25	0.17
52	5260	MCS7	single		64QAM	OFDM	2.48	11.43	0.90	10.06	13.44	22.39	22.08	173.38	−0.03	8.95	13.43	0.01	22.27	0.12

*. The average antenna terminal conducted power of lowest data rate was worst. Therefore, each channel was measured at lowest data rate.

【Output power】			Tx mode:		11n(40HT)(W52/53)		5190−5310MHz				*PAR=Peak(dB)−Ave(dB)(dB)				Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	worst: o default: x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Ave[mW]	Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar−emc)	Pk [dB]	⊿(sar−emc)
38	5190	MCS0	single	xo	BPSK	OFDM	2.94	11.62	0.90	10.06	13.90	22.58	24.55	181.13	0.00	8.68	13.82	0.08	22.41	0.17
46	5230	MCS0	single	x	BPSK	OFDM	2.64	11.42	0.90	10.06	13.60	22.38	22.91	172.98	−0.30	8.78	13.60	0.00	22.37	0.01
54	5270	MCS0	single	x	BPSK	OFDM	2.53	11.47	0.90	10.06	13.49	22.43	22.34	174.98	−0.41	8.94	13.49	0.00	22.27	0.16
62	5310	MCS0	single	x	BPSK	OFDM	2.37	11.26	0.90	10.06	13.33	22.22	21.53	166.72	−0.57	8.89	13.33	0.00	22.02	0.20
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
54	5270	MCS0	single		BPSK	OFDM	2.53	11.47	0.90	10.06	13.49	22.43	22.34	174.98	0.00	8.94	13.49	0.00	22.27	0.16
54	5270	MCS1	single		QPSK	OFDM	2.53	11.34	0.90	10.06	13.49	22.30	22.34	169.82	0.00	8.81	13.49	0.00	22.29	0.01
54	5270	MCS2	single	o	QPSK	OFDM	2.57	11.47	0.90	10.06	13.53	22.43	22.54	174.98	0.04	8.90	13.50	0.03	22.23	0.20
54	5270	MCS3	single		16QAM	OFDM	2.53	12.12	0.90	10.06	13.49	23.08	22.34	203.24	0.00	9.59	13.46	0.03	22.90	0.18
54	5270	MCS4	single		16QAM	OFDM	2.55	11.70	0.90	10.06	13.51	22.66	22.44	184.50	0.02	9.15	13.49	0.02	22.65	0.01
54	5270	MCS5	single		64QAM	OFDM	2.53	11.92	0.90	10.06	13.49	22.88	22.34	194.09	0.00	9.39	13.48	0.01	22.87	0.01
54	5270	MCS6	single		64QAM	OFDM	2.55	11.65	0.90	10.06	13.51	22.61	22.44	182.39	0.02	9.10	13.49	0.02	22.60	0.01
54	5270	MCS7	single		64QAM	OFDM	2.53	11.35	0.90	10.06	13.49	22.31	22.34	170.22	0.00	8.82	13.45	0.04	22.25	0.06

*. The average power of higher data rate was less than 0.25dB higher than the lowest data rate. Therefore, each channel was measured at lowest data rate.

*. Calculating formula: Results = ["P/M Reading"] +["Cbl.loss"(Cable loss)] + ["Att.loss"(Attenuator)]
*. At the same sample, the difference between the SAR reference power and the power of EMC test was not less than 0dB and not higher than 0.21dB.
SAR reference; Measured date: May 9, 2011 / Measured by: Hiroshi Naka / Place: preparation room of No. 7 shielded room. (25 deg.C / 44 %RH)
EMC test; Measured date: May 18 and 19, 2011 / Measured by: Tetsuya Arai/ This reference is described in the test report of 31CE0052-HO-01-B and -C.
*. The maximum average power of 11a(20HT) was less than 0.25dB higher than the corresponding 11a. However, the SAR test was applied the maximum average power channel of 11n(20HT).
*. A red-letter figure shows the maximum power of SAR reference (in data rate, in channel) and of EMC test .
*. **The duty cycle of each mode and on each data rate were 100% (no off time) in the software used.**

6.1.3 5745-5825MHz band (W58 band) (802.11a/n(20HT)/n(40HT))

Worst data rate / worst channel determination (with full charged battery#1) / vs. power at EMC test (EUT serial number: 06)

⊿(sar-radio): 0< x <0.21dB

【Output power】			Tx mode:		11a(W58)		5745-5825MHz				*PAR=Peak(dB)-Ave(dB)[dB]				Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	worst: o default: x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Ave[mW]	Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar-emc)	Pk [dB]	⊿(sar-emc)
149	5745	6	single	x ↓	BPSK	OFDM	1.64	11.03	0.90	10.06	12.60	21.99	18.20	158.12	-0.36	9.39				
153	5765	6	single	o	BPSK	OFDM	2.00	11.12	0.90	10.06	12.96	22.08	19.77	161.44	0.00	9.12				
157	5785	6	single	x	BPSK	OFDM	1.90	10.66	0.90	10.06	12.86	21.62	19.32	145.21	-0.10	8.76	12.86	0.00	21.57	0.05
161	5805	6	single		BPSK	OFDM	1.86	10.53	0.90	10.06	12.82	21.49	19.14	140.93	-0.14	8.67				
165	5825	6	single	x	BPSK	OFDM	1.59	10.39	0.90	10.06	12.55	21.35	17.99	136.46	-0.41	8.80				
153	5765	6	(Battery:#2)				2.00	11.14	0.90	10.06	12.96	22.10	19.77	162.18	0.00	9.14				
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
157	5785	6	single		BPSK	OFDM	1.90	10.66	0.90	10.06	12.86	21.62	19.32	145.21	0.00	8.76	12.86	0.00	21.57	0.05
157	5785	9	single		BPSK	OFDM	1.93	10.56	0.90	10.06	12.89	21.52	19.45	141.91	0.03	8.63	12.88	0.01	21.34	0.18
157	5785	12	single		QPSK	OFDM	1.93	10.70	0.90	10.06	12.89	21.66	19.45	146.55	0.03	8.77	12.87	0.02	21.59	0.07
157	5785	18	single	o	QPSK	OFDM	1.99	10.28	0.90	10.06	12.95	21.24	19.72	133.05	0.09	8.29	12.94	0.01	21.17	0.07
157	5785	24	single		16QAM	OFDM	1.92	10.86	0.90	10.06	12.88	21.82	19.41	152.05	0.02	8.94	12.79	0.09	21.74	0.08
157	5785	36	single		16QAM	OFDM	1.85	10.79	0.90	10.06	12.81	21.75	19.10	149.62	-0.05	8.94	12.73	0.08	21.57	0.18
157	5785	48	single		64QAM	OFDM	1.92	10.41	0.90	10.06	12.88	21.37	19.41	137.09	0.02	8.49	12.76	0.12	21.25	0.12
157	5785	54	single		64QAM	OFDM	1.84	10.61	0.90	10.06	12.80	21.57	19.05	143.55	-0.06	8.77	12.75	0.05	21.53	0.04

*. The average power of higher data rate was less than 0.25dB higher than the lowest data rate. Therefore, each channel was measured at lowest data rate.
*. **The output power did not depend on the battery condition.**

【Output power】			Tx mode:		11n(20HT)(W58)		5745-5825MHz				*PAR=Peak(dB)-Ave(dB)[dB]				Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	worst: o default: x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Ave[mW]	Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar-emc)	Pk [dB]	⊿(sar-emc)
149	5745	MCS0	single	x ↓	BPSK	OFDM	1.83	10.23	0.90	10.06	12.79	21.19	19.01	131.52	-0.19	8.40				
153	5765	MCS0	single	o	BPSK	OFDM	2.02	10.36	0.90	10.06	12.98	21.32	19.86	135.52	0.00	8.34				
157	5785	MCS0	single	x	BPSK	OFDM	1.91	10.32	0.90	10.06	12.87	21.28	19.36	134.28	-0.11	8.41	12.82	0.05	21.08	0.20
161	5805	MCS0	single		BPSK	OFDM	1.77	10.31	0.90	10.06	12.73	21.27	18.75	133.97	-0.25	8.54				
165	5825	MCS0	single	x	BPSK	OFDM	1.56	10.26	0.90	10.06	12.52	21.22	17.86	132.43	-0.46	8.70				
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
157	5785	MCS0	single		BPSK	OFDM	1.91	10.32	0.90	10.06	12.87	21.28	19.36	134.28	0.00	8.41	12.82	0.05	21.08	0.20
157	5785	MCS1	single		QPSK	OFDM	1.92	10.27	0.90	10.06	12.88	21.23	19.41	132.74	0.01	8.35	12.84	0.04	21.12	0.11
157	5785	MCS2	single		QPSK	OFDM	1.96	10.42	0.90	10.06	12.92	21.38	19.59	137.40	0.05	8.46	12.85	0.07	21.19	0.19
157	5785	MCS3	single	o	16QAM	OFDM	1.98	10.40	0.90	10.06	12.94	21.36	19.68	136.77	0.07	8.42	12.94	0.00	21.18	0.18
157	5785	MCS4	single		16QAM	OFDM	1.94	10.30	0.90	10.06	12.90	21.26	19.50	133.66	0.03	8.36	12.90	0.00	21.10	0.16
157	5785	MCS5	single		64QAM	OFDM	1.96	10.25	0.90	10.06	12.92	21.21	19.59	132.13	0.05	8.29	12.88	0.04	21.01	0.20
157	5785	MCS6	single		64QAM	OFDM	1.94	10.27	0.90	10.06	12.90	21.23	19.50	132.74	0.03	8.33	12.89	0.01	21.05	0.18
157	5785	MCS7	single		64QAM	OFDM	1.93	10.27	0.90	10.06	12.89	21.23	19.45	132.74	0.02	8.34	12.84	0.05	21.12	0.11

*. The average power of higher data rate was less than 0.25dB higher than the lowest data rate. Therefore, each channel was measured at lowest data rate.

【Output power】			Tx mode:		11n(40HT)(W58)		5755-5795MHz				*PAR=Peak(dB)-Ave(dB)[dB]				Power at EMC test			
Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	worst: o default: x	Modulation		P/M Reading Ave.[dBm]	P/M Reading Pk[dB]	Cbl.Loss [dB]	Att.loss [dB]	Power Reading Results Ave[dBm]	Power Reading Results Pk[dBm]	Ave[mW]	Pk[mW]	⊿worst ave.[dB]	PAR [dB]	Ave. [dB]	⊿(sar-emc)	Pk [dB]	⊿(sar-emc)
151	5755	MCS0	single		BPSK	OFDM	1.73	10.20	0.90	10.06	12.69	21.16	18.58	130.62	-0.18	8.47				
159	5795	MCS0	single	o	BPSK	OFDM	1.91	10.18	0.90	10.06	12.87	21.14	19.36	130.02	0.00	8.27	12.82	0.05	21.14	0.00
[Data Rate change]															⊿low rate		Ave	⊿ave	pk	⊿pk
159	5795	MCS0	single		BPSK	OFDM	1.91	10.18	0.90	10.06	12.87	21.14	19.36	130.02	0.00	8.27	12.82	0.05	21.14	0.00
159	5795	MCS1	single	o	QPSK	OFDM	1.94	10.21	0.90	10.06	12.90	21.17	19.50	130.92	0.03	8.27	12.90	0.00	21.17	0.00
159	5795	MCS2	single		QPSK	OFDM	1.92	10.32	0.90	10.06	12.88	21.28	19.41	134.28	0.01	8.40	12.84	0.04	21.08	0.20
159	5795	MCS3	single		16QAM	OFDM	1.89	10.85	0.90	10.06	12.85	21.81	19.28	151.71	-0.02	8.96	12.82	0.03	21.63	0.18
159	5795	MCS4	single		16QAM	OFDM	1.89	10.48	0.90	10.06	12.85	21.44	19.28	139.32	-0.02	8.59	12.85	0.00	21.26	0.18
159	5795	MCS5	single		64QAM	OFDM	1.87	10.89	0.90	10.06	12.83	21.85	19.19	153.11	-0.04	9.02	12.83	0.00	21.67	0.18
159	5795	MCS6	single		64QAM	OFDM	1.93	10.45	0.90	10.06	12.89	21.41	19.45	138.36	0.02	8.52	12.87	0.02	21.40	0.01
159	5795	MCS7	single		64QAM	OFDM	1.92	10.23	0.90	10.06	12.88	21.19	19.41	131.52	0.01	8.31	12.88	0.00	21.18	0.01

*. The average power of higher data rate was less than 0.25dB higher than the lowest data rate. Therefore, each channel was measured at lowest data rate.

*. Calculating formula: Results = ["P/M Reading"] +["Cbl.loss"(Cable loss)] + ["Att.loss"(Attenuator)] /
*. At the same sample, the difference between the SAR reference power and the power of EMC test was not less than 0dB and not higher than 0.21dB.
SAR reference; Measured date: May 9, 2011 / Measured by: Hiroshi Naka / Place: preparation room of No. 7 shielded room. (25 deg.C / 44 %RH)
EMC test; Measured date: May 18 and 19, 2011 / Measured by: Tetsuya Arai/ This reference is described in the test report of 31CE0052-HO-01-B and -C.
*. The maximum average power of 11a(20HT) was less than 0.25dB higher than the corresponding 11a. However, the SAR test was applied the maximum average power channel of 11n(20HT).
*. A red-letter figure shows the maximum power of SAR reference (in data rate, in channel) and of EMC test .
*. **The duty cycle of each mode and on each data rate were 100% (no off time) in the software used.**

SECTION 7: Measurement results

7.1 SAR results (Body)

7.1.1 2412-2462MHz band

Measurement date : May 11 and 12, 2011
Measurement by : Hiroshi Naka

[Liquid measurement (Body liquid)]

Used Target Frequency [MHz]	Target Body Tissue		Measured Body Tissue				Environment		Measured Date
	Permittivity [-]	Conductivity [S/m]	Permittivity (εr) [-]	Conductivity (σ) [S/m]	Temperature [deg.C.]	Depth [mm]	Temperature [deg.C.]	Humidity [%]	
2450	**52.7**	**1.95**	50.41 (-4.4%)	1.909 (-2.1%)	24.4	159	24.1	50	May 11, 2011
2450	**52.7**	**1.95**	50.23 (-4.7%)	1.919 (-1.6%)	23.8	159	23.0	54	May 12, 2011

*. The target value is a parameter defined in OET65 Supplement C.

[SAR measurement results (Body liquid)]

SAR measurement results												
Op. mode	Frequency		Modulation &Data rate [Mbps] / crest factor	EUT setup conditions				Liquid temp. [deg.C]		Power drift [dB]	SAR(1g) [W/kg]	Remarks
	ch	[MHz]		Position	Gap [mm]	Battery No.	Acce-ssory?	Before	After		maximum value of multi-peak	
11b	**Step 1a: Worst position search**											
	6	2437	DBPSK&DSSS / 1Mbps / 1.0	Front-touch	0	1	n/a	24.6	24.4	-0.158	**0.22**	-
	6	2437	DBPSK&DSSS / 1Mbps / 1.0	Top-touch	0	2	n/a	23.6	23.4	-0.193	**< 0.10**	-
	6	2437	DBPSK&DSSS / 1Mbps / 1.0	Right-touch	0	1	n/a	24.2	24.1	-0.200	**0.17**	-
	6	2437	DBPSK&DSSS / 1Mbps / 1.0	Left-touch	0	2	n/a	23.8	23.7	-0.073	**0.36**	->Worst direction **->Worst SAR of 2.4GHz band**
	Step 2a: Change the channel											
	1	2412	DBPSK&DSSS / 1Mbps / 1.0	Left-touch	0	2	n/a	23.7	23.7	0.002	**0.35**	-
	11	2462	DBPSK&DSSS / 1Mbps / 1.0	Left-touch	0	1	n/a	23.7	23.6	0.040	**0.32**	-
-	**Step 3a: Change the operation mode**											
11g	1	2412	BPSK&OFDM / 6Mbps / 1.0	Left-touch	0	1	n/a	23.4	23.4	0.087	**0.35**	(*1)(*2)
11n (20HT)	1	2412	BPSK&OFDM / MCS0 / 1.0	Left-touch	0	2	n/a	23.4	23.4	-0.059	**0.34**	(*1)(*2)
11n (40HT)	3	2422	BPSK&OFDM / MCS0 / 1.0	Left-touch	0	1	n/a	23.4	23.4	0.200	**0.33**	(*2)

Notes:

*1. For these operation mode, the average antenna terminal conducted power were less than or not more than 0.25dB of 11b mode. (refer to section 6 in this report)

*2. The measured SAR(1g) was less than 0.8W/kg (1/2 of the SAR(1g) limit) in the default channel that had worst average antenna terminal conducted power. Therefore, the SAR tests for other default channels were omitted.
(KDB248227; "When the extrapolated maximum SAR for the maximum output channel is ≤ 1.6W/kg and the 1g averaged SAR is ≤ 0.8W/kg testing of other channels in the "default test channels" or "required test channels" configuration is optional.
KDB648474 D01; "**If the SAR measured on the highest output channel is <50% of the SAR limit, SAR evaluation for the other require channels is unnecessary.**")

*. Battery was fully charged before starting the SAR measurement.

*. The other than above test direction, the SAR test was not applied. Because the separation gap between the antenna section of Wireless File transmitter and the phantom bottom surface was larger in other test direction. The tested direction in above was a case where the antenna was closest to the phantom bottom surface in each Wireless File transmitter direction, therefore the worst SAR value was not shown in other than above tested direction.

*. Calibration frequency of the SAR measurement probe (and used conversion factors)

SAR test frequency[MHz]	Probe calibration frequency [MHz]	Validity [MHz]	Used conversion factor	Uncertainty
2412	2450	-38MHz, within ±50 of cal.frequency	8.05	±11.0%
2422	2450	-28MHz, within ±50 of cal.frequency	8.05	±11.0%
2437	2450	-13MHz, within ±50 of cal.frequency	8.05	±11.0%
2462	2450	+12MHz, within ±50 of cal.frequency	8.05	±11.0%

*. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

7.1.2 5180-5320MHz band (W52/53 band)

Measurement date : May 10 and 16, 2011
Measurement by : Hiroshi Naka

[Liquid measurement (Body liquid)]

Used Target Frequency [MHz]	Target Body Tissue		Measured Body Tissue				Environment		Measured Date
	Permittivity [-]	Conductivity [S/m]	Permittivity (εr) [-]	Conductivity (σ) [S/m]	Temperature [deg.C.]	Depth [mm]	Temperature [deg.C.]	Humidity [%]	
5200	**49.01**	**5.299**	49.07 (+0.1%)	5.416 (+2.2%)	24.2	142	24.3	52	May 10, 2011
5240	**48.96**	**5.346**	49.07 (+0.2%)	5.444 (+1.8%)					
5260	**48.93**	**5.369**	48.81 (+0.2%)	5.499 (+2.4%)					
5320	**48.85**	**5.439**	48.71 (-0.3%)	5.583 (+2.6%)					
5190	**49.30**	**5.288**	49.18 (+0.3%)	5.318 (+0.6%)	24.3	139	24.8	35	May 16, 2011
5200	**49.01**	**5.299**	49.06 (+0.1%)	5.292 (+0.1%)					
5230	**48.97**	**5.334**	48.89 (-0.2%)	5.329 (-0.1%)					
5270	**48.92**	**5.381**	48.82 (-0.2%)	5.433 (+1.0%)					
5310	**48.87**	**5.428**	48.78 (-0.2%)	5.497 (+1.3%)					

*. The target value is a parameter defined in OET65 Supplement C. In the current standards (e.g., IEEE 1528, OET 65 Supplement C), the dielectric parameters suggested for head and body tissue simulating liquid are given at 3000MHz and 5800MHz. As an intermediate solution, dielectric parameters for the frequencies between 5000 to 5800 MHz were obtained using linear interpolation. Furthermore, dielectric parameters for the frequencies above 5800MHz were obtained using linear extrapolation. (refer to Appendix 3-7 in this report)

[SAR measurement results (Body liquid)]

SAR measurement results												
Op. mode	Frequency		Modulation &Data rate [Mbps] / crest factor	EUT setup conditions				Liquid temp. [deg.C]		Power drift [dB]	SAR(1g) [W/kg]	Remarks
	ch	[MHz]		Position	Gap [mm]	Battery No.	Acce-ssory?	Before	After		maximum value of multi-peak	
11a	**Step 1b: Worst position search**											
	40	5200	BPSK&OFDM / 6Mbps / 1.0	Front-touch	0	1	n/a	23.7	23.7	-0.130	**0.94**	->Worst direction
	40	5200	BPSK&OFDM / 6Mbps / 1.0	Top-touch	0	2	n/a	23.7	23.7	0.123	**0.74**	-
	40	5200	BPSK&OFDM / 6Mbps / 1.0	Right-touch	0	2	n/a	23.7	23.7	0.018	**0.67**	-
	40	5200	BPSK&OFDM / 6Mbps / 1.0	Left-touch	0	1	n/a	23.7	23.7	-0.150	**0.42**	-
	Step 2b: Change the channel											
	48	5240	BPSK&OFDM / 6Mbps / 1.0	Front-touch	0	2	n/a	23.8	23.7	-0.096	**0.89**	-
	52	5260	BPSK&OFDM / 6Mbps / 1.0	Front-touch	0	1	n/a	23.7	23.8	-0.077	**0.92**	-
	64	5320	BPSK&OFDM / 6Mbps / 1.0	Front-touch	0	2	n/a	23.8	23.7	-0.114	**0.84**	-
-	**Step 3b: Change the operation mode**											
11n (20HT)	40	5200	BPSK&OFDM / MCS0 / 1.0	Front-touch	0	1	n/a	23.9	23.8	-0.199	**0.923**	(*1)
11n (40HT)	38	5190	BPSK&OFDM / MCS0 / 1.0	Front-touch	0	2	n/a	23.8	23.8	-0.178	**0.97** (0.971)	-
	46	5230	BPSK&OFDM / MCS0 / 1.0	Front-touch	0	1	n/a	23.8	23.9	-0.190	**0.94**	-
	54	5270	BPSK&OFDM / MCS0 / 1.0	Front-touch	0	2	n/a	24.0	24.1	-0.071	**0.97** (0.973)	->Worst SAR of W52/53 band.
	62	5310	BPSK&OFDM / MCS0 / 1.0	Front-touch	0	1	n/a	24.1	24.1	-0.116	**0.93**	-

Notes:

*1. For these operation mode, the average antenna terminal conducted power were less than or not more than 0.25dB of 11a mode. (refer to section 6 in this report)

*. Battery was fully charged before starting the SAR measurement.

*. The other than above test direction, the SAR test was not applied. Because the separation gap between the antenna section of Wireless File transmitter and the phantom bottom surface was larger in other test direction. The tested direction in above was a case where the antenna was closest to the phantom bottom surface in each Wireless File transmitter direction, therefore the worst SAR value was not shown in other than above tested direction.

*. Calibration frequency of the SAR measurement probe (and used conversion factors)

SAR test frequency[MHz]	Probe calibration frequency [MHz]	Validity [MHz]	Used conversion factor	Uncertainty
5190	5200	-10MHz, within ±50 of cal.frequency	4.16	±13.1%
5200	5200	0MHz, within ±50 of cal.frequency	4.16	±13.1%
5230	5200	+30MHz, within ±50 of cal.frequency	4.16	±13.1%
5240	5200	+40MHz, within ±50 of cal.frequency	4.16	±13.1%
5260	5300	-40MHz, within ±50 of cal.frequency	3.80	±13.1%
5270	5300	-30MHz, within ±50 of cal.frequency	3.80	±13.1%
5310	5300	+10MHz, within ±50 of cal.frequency	3.80	±13.1%
5320	5300	+20MHz, within ±50 of cal.frequency	3.80	±13.1%

7.1.3 5745-5825MHz band (W58 band)

Measurement date : May 10, 11 and 16, 2011
Measurement by : Hiroshi Naka

[Liquid measurement (Body liquid)]

Used Target Frequency [MHz]	Target Body Tissue		Measured Body Tissue				Environment		Measured Date
	Permittivity [-]	Conductivity [S/m]	Permittivity (εr) [-]	Conductivity (σ) [S/m]	Temperature [deg.C.]	Depth [mm]	Temperature [deg.C.]	Humidity [%]	
5765	**48.25**	**5.959**	47.92 (-0.7%)	6.182 (+3.7%)	24.2	142	24.3	52	May 10, 2011
5785	**48.22**	**5.982**	47.90 (-0.7%)	6.230 (+4.1%)					
5825	**48.17**	**6.029**	47.69 (-1.0%)	6.262 (+3.8%)					
5765	**48.25**	**5.959**	47.96 (-0.6%)	6.228 (+4.5%)	24.4	142	24.1	50	May 11, 2011
5755	**48.26**	**5.947**	48.08 (-04%)	6.120 (+2.9%)	24.3	139	24.8	35	May 16, 2011
5765	**48.25**	**5.959**	48.09 (-0.3%)	6.119 (+2.7%)					
5795	**48.21**	**5.994**	48.07 (-0.3%)	6.139 (+2.4%)					

*. The target value is a parameter defined in OET65 Supplement C. In the current standards (e.g., IEEE 1528, OET 65 Supplement C), the dielectric parameters suggested for head and body tissue simulating liquid are given at 3000MHz and 5800MHz. As an intermediate solution, dielectric parameters for the frequencies between 5000 to 5800 MHz were obtained using linear interpolation. Furthermore, dielectric parameters for the frequencies above 5800MHz were obtained using linear extrapolation. (refer to Appendix 3-7 in this report)

[SAR measurement results (Body liquid)]

SAR measurement results												
Op. mode	Frequency		Modulation &Data rate [Mbps] / crest factor	EUT setup conditions				Liquid temp. [deg.C]		Power drift [dB]	SAR(1g) [W/kg]	Remarks
	ch	[MHz]		Position	Gap [mm]	Battery No.	Acce-ssory?	Before	After		maximum value of multi-peak	
11a	**Step 1c: Worst position search**											
	153	5765	BPSK&OFDM / 6Mbps / 1.0	Front-touch	0	1	n/a	24.2	24.2	0.190	**0.82**	->Worst direction
	153	5765	BPSK&OFDM / 6Mbps / 1.0	Top-touch	0	1	n/a	24.0	24.0	-0.201	**0.49**	-
	153	5765	BPSK&OFDM / 6Mbps / 1.0	Right-touch	0	2	n/a	24.0	24.0	-0.183	**0.58**	-
	153	5765	BPSK&OFDM / 6Mbps / 1.0	Left-touch	0	1	n/a	24.0	24.0	-0.050	**0.40**	-
	Step 2c: Change the channel											
	157	5785	BPSK&OFDM / 6Mbps / 1.0	Front-touch	0	1	n/a	23.7	23.8	0.038	**0.67**	-
	165	5825	BPSK&OFDM / 6Mbps / 1.0	Front-touch	0	2	n/a	23.8	23.8	0.130	**0.57**	-
-	**Step 3c: Change the operation mode**											
11n (20HT)	153	5765	BPSK&OFDM / MCS0 / 1.0	Front-touch	0	1	n/a	24.3	24.3	0.200	**0.83**	**->Worst SAR of W58 band.** (*1)
11n (40HT)	151	5755	BPSK&OFDM / MCS0 / 1.0	Front-touch	0	1	n/a	24.3	24.2	0.081	**0.77**	-
	159	5795	BPSK&OFDM / MCS0 / 1.0	Front-touch	0	1	n/a	24.3	24.2	0.028	**0.74**	-

Notes:

*1. For these operation mode, the average antenna terminal conducted power were less than or not more than 0.25dB of 11a mode. (refer to section 6 in this report)

*. Battery was fully charged before starting the SAR measurement.

*. The other than above test direction, the SAR test was not applied. Because the separation gap between the antenna section of Wireless File transmitter and the phantom bottom surface was larger in other test direction. The tested direction in above was a case where the antenna was closest to the phantom bottom surface in each Wireless File transmitter direction, therefore the worst SAR value was not shown in other than above tested direction.

*. Calibration frequency of the SAR measurement probe (and used conversion factors)

SAR test frequency[MHz]	Probe calibration frequency [MHz]	Validity [MHz]	Used conversion factor	Uncertainty
5755	5800	-45MHz, within ±50 of cal.frequency	3.50	±13.1%
5765	5800	-35MHz, within ±50 of cal.frequency	3.50	±13.1%
5785	5800	-15MHz, within ±50 of cal.frequency	3.50	±13.1%
5795	5800	-5MHz, within ±50 of cal.frequency	3.50	±13.1%
5825	5800	+25MHz, within ±50 of cal.frequency	3.50	±13.1%