SAR TEST REPORT

Test Report No.: 4786002570S-A

Applicant	:	**KONICA MINOLTA, INC.**
Type of Equipment	:	**AeroDR SYSTEM**
Model No.	:	**AeroDR P-31**
FCC ID	:	**YR7AERODRP32**
Test Standard	:	**FCC 47CFR §2.1093, Supplement C (Edition 01-01) to OET Bulletin 65**
Test Result	:	**Complied**

***. For devices where stand-alone transmission use conditions apply (UNII, DTS) –**
a) Highest reported SAR (1g) for near-body (UNII) = 1.22 W/kg (*.Measured: 0.84W/kg)
b) Highest reported SAR (1g) for near-head (UNII) = 1.55 W/kg (*.Measured: 1.06W/kg)
c) Highest reported SAR (1g) across exposure conditions = 1.55 W/kg = grant listing.

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3. This sample tested is in compliance with the limits of the above standards.
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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: April 1, 2, 3, 4 and 5, 2013

Test engineer: H. Naka

Hiroshi Naka
Engineer of WiSE Japan, UL Verification Service

Approved by: T. Imamura

Toyokazu Imamura
Leader of WiSE Japan, UL Verification Service

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

ilac-MRA LAB JAB Testing RTL02610

REVISION HISTORY

Revision	Test report No.	Date	Page revised	Contents
Original	4786002570S-A	April 15, 2013	-	-
1	4786002570S-A	June 27, 2013	P1,2,5	Clerical error correction.

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

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Contents of appendixes

SECTION 1: Customer information

Company Name	KONICA MINOLTA, INC.
Address	1 Sakura-Machi, Hino-Shi, Tokyo, 191-8511 Japan
Telephone Number	+81-42-589-8429
Facsimile Number	+81-42-589-8053
Contact Person	Masayoshi Inoue

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Type of Equipment	AeroDR SYSTEM
Model Number	AeroDR P-31
Serial Number	C1-35
Condition of EUT	Engineering prototype (Not for sale; This sample is equivalent to mass-production items)
Receipt Date of Sample	February 5, 2013 (*. EUT for the power measurement.) April 1, 2013 (*. EUT for the SAR test.) *. No modification by the Lab.
Category Identified	**Portable device** (*. Since EUT may contact and/or very close to a human body during Wi-Fi operation, the partial-body SAR (1g) shall be observed.)
SAR Accessary	Any body-worn accessory was not applied.
Feature of EUT, SAR tested consideration	Model: AeroDR P-31 (referred to as the EUT in this report) is a wireless digital radiography system used in the hospitality environment. Since this EUT is the medical device, the EUT is only used under the guidance of a doctor or a qualified person. The possibility of the maximum RF human exposure is only a body of the patient who comes in contact directly on the front surface side (patient side) of the EUT. Therefore, the SAR test was only applied to the front surface side (patient side) of the EUT.

2.2 Product Description

Equipment type	Transceiver
Frequency of operation	5180-5320MHz (W52/53 band), 5500-5700MHz (W56 band), 5745-5825MHz(W58 band)
Bandwidth / Channel spacing	18MHz / 20MHz
ITU code	D1D
Type of modulation	OFDM: BPSK, QPSK, 16QAM, 64QAM
Power rating	DC 3.3V, *.The dc power is supplied from the constant voltage circuit of the main body of the EUT.
Operation temperature range	+10 to +30 deg.C
Transmit power	11a (5180-5320MHz): 12dBm (typical) (*.13dBm maximum including a manufacturer's product tolerance.) 11a (5500-5700MHz): 11dBm (typical) (*.12dBm maximum including a manufacturer's product tolerance.) 11a (5745-5825MHz): 9dBm (typical) (*.10dBm maximum including a manufacturer's product tolerance.) *. The measured Tx output power (conducted) refers to section 6 in this report.
Q'ty of Antenna	2 pcs. (Main antenna and Aux antenna) ***. Switched diversity. Single transmission at a time. During test, the each antenna was tested independently that was the most conservative condition.**

Antenna specification	Main antenna	Sub antenna
Antenna type	PIFA (Planar Inverted F Antenna)	PIFA (Planar Inverted F Antenna)
Model name	WLAN Main Ant. (P/N: A5TD780100A)	WLAN Sub Ant. (P/N: A5TD780200A)
Antenna connector type	Hirose connector for 1.13 cable (P/N: U.FL-LP(P)-068) (*.antenna side: soldered)	Hirose connector for 1.13 cable (P/N: U.FL-LP(P)-068) (*.antenna side: soldered)
Cable type	OD 1.13 RF cable (P/N: RF113BR7)	OD 1.13 RF cable (P/N: RF113WR7)
Cable length	197mm	179mm
Antenna gain (Peak) (*. including cable loss)	2.69 dBi (5220MHz), 2.89 dBi (5300MHz), 2.58 dBi (5500MHz), 3.24 dBi (5600MHz), **3.78 dBi (5700MHz)**, 2.36 dBi (5785MHz)	2.69 dBi (5220MHz), 2.89 dBi (5300MHz), 2.58 dBi (5500MHz), 3.24 dBi (5600MHz), **3.78 dBi (5700MHz)**, 2.36 dBi (5785MHz)
Transmit power	*. Refers to section 6 in this report.	*. Refers to section 6 in this report.

*. The EUT do not use the special transmitting technique such as "beam-forming" and "time-space code diversity."
*. Maximum output power which may possible

11a																															
[MHz]	CH	Data Rate [Mbps]								[MHz]	CH	Data Rate [Mbps]								[MHz]	CH	Data Rate [Mbps]							
		6	9	12	18	24	36	48	54			6	9	12	18	24	36	48	54			6	9	12	18	24	36	48	54
5180	36	13	13	13	13	13	13	13	13	5500	100	12	12	12	12	12	12	12	12	5660	132	12	12	12	12	12	12	12	12
5200	40	13	13	13	13	13	13	13	13	5520	104	12	12	12	12	12	12	12	12	5680	136	12	12	12	12	12	12	12	12
5220	44	13	13	13	13	13	13	13	13	5540	108	12	12	12	12	12	12	12	12	5700	140	12	12	12	12	12	12	12	12
5240	48	13	13	13	13	13	13	13	13	5560	112	12	12	12	12	12	12	12	12	5745	149	10	10	10	10	10	10	10	10
5260	52	13	13	13	13	13	13	13	13	5580	116	12	12	12	12	12	12	12	12	5765	153	10	10	10	10	10	10	10	10
5280	56	13	13	13	13	13	13	13	13	5600	120	12	12	12	12	12	12	12	12	5785	157	10	10	10	10	10	10	10	10
5300	60	13	13	13	13	13	13	13	13	5620	124	12	12	12	12	12	12	12	12	5805	161	10	10	10	10	10	10	10	10
5320	64	13	13	13	13	13	13	13	13	5640	128	12	12	12	12	12	12	12	12	5825	165	10	10	10	10	10	10	10	10

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 (v05):** General RF exposure guidance
☒**KDB 865664 D01 (v01):** SAR measurement 100MHz to 6GHz
☒**KDB 248227 D01 (v01r02):** SAR measurement procedures for 802.11a/b/g transmitters

***.** In this report, IEC 62209-1:2005 and IEC 62209-2:2010-03 are also considered as reference. The comment is attached to the portion to which IEC 62209-1 and IEC 62209-2 were referred to specially.

3.2 Exposure limit

Environments of exposure limit	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)
(A) Limits for Occupational /Controlled Exposure (W/kg)	0.4	8.0	20.0
(B) Limits for General population /Uncontrolled Exposure (W/kg)	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

	Wi-Fi (UNII; 5180-5320MHz band)		Wi-Fi (UNII; 5500-5700MHz band)		Wi-Fi (DTS; 5745-5825MHz band)	
Test Procedure	FCC OET Bulletin 65, Supplement C SAR		FCC OET Bulletin 65, Supplement C SAR		FCC OET Bulletin 65, Supplement C SAR	
Category	FCC 47CFR §2.1093		FCC 47CFR §2.1093		FCC 47CFR §2.1093	
Results (SAR(1g))	Complied		Complied		Complied	
Antenna	Main	Sub	Main	Sub	Main	Sub
Liquid type	Body liquid					
Reported SAR value (*. Scaled)	1.15 W/kg	1.22 W/kg	0.81 W/kg	0.98 W/kg	0.44 W/kg	0.65 W.kg
Measured SAR value	1.05 W/kg	0.837 W/kg	0.776 W/kg	0.664 W/kg	0.404 W/kg	0.598 W/kg
Operation mode, channel	11a, 6Mbps, 5220MHz (44ch)	11a, 6Mbps, 5240MHz (48ch)	11a, 6Mbps, 5680MHz (136ch)	11a, 6Mbps, 5700MHz (140ch)	11a, 6Mbps, 5825MHz (165ch)	11a, 6Mbps, 5825MHz (165ch)
Output power (scaled factor)	12.63 dBm (×1.09)	11.36 dBm (×1.46)	11.04 dBm (×1.25)	10.86 dBm (×1.30)	9.64 dBm (×1.09)	9.65 dBm (×1.08)
Liquid type	Head liquid (by Flat phantom)					
Reported SAR value (*. Scaled)	1.11 W/kg	1.55 W/kg (*.Highest)	1.03 W/kg	1.10 W/kg	0.61 W/kg	0.76 W.kg
Measured SAR value	0.853 W/kg	1.064 W/kg	0.826 W/kg	0.843 W/kg	0.404 W/kg	0.563 W/kg
Operation mode, channel	11a, 6Mbps, 5180MHz (36ch)	11a, 6Mbps, 5240MHz (48ch)	11a, 6Mbps, 5680MHz (136ch)	11a, 6Mbps, 5700MHz (140ch)	11a, 6Mbps, 5745MHz (149ch)	11a, 6Mbps, 5745MHz (149ch)
Output power (scaled factor)	11.87 dBm (×1.30)	11.36 dBm (×1.46)	11.04 dBm (×1.25)	10.86 dBm (×1.30)	9.19 dBm (×1.12)	9.14 dBm (×1.22)

Note: UL Japan's SAR Work Procedures No.13-EM-W0429 and 13-EM-W0430. No addition, deviation nor exclusion has been made from standards

3.4 Test Location

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

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3.5 Confirmation before SAR testing

3.5.1 Average power for SAR test

It was checked that the antenna port power was correlated within the transmitter specification.
The power data of the EMC test was diverted as reference power of SAR test. Because, the EUT used for the EMC test and used for the SAR test was the same.

*. The antenna terminal conducted output power was measured by the calibrated power sensor and power meter (65MHz measurement bandwidth).

Step.1 Data rate check

The data rate check was measurement on the specified channel of 802.11a mode.

11a			
Modulation	Data rate	Modulation	Data rate
BPSK/OFDM	6 Mbps	16QAM/OFDM	24 Mbps
BPSK/OFDM	9 Mbps	16QAM/OFDM	36 Mbps
QPSK/OFDM	12 Mbps	64QAM/OFDM	48 Mbps
QPSK/OFDM	18 Mbps	64QAM/OFDM	54 Mbps

Step.2 Decision of SAR test channel

The following channels were determined as the SAR test channels by the reference power measured. (Refer to Section 6.)

(default channels, KDB248227->)			default	SAR tested channel (*4)		
Mode	GHz	Channel	11a	Main antenna	Sub antenna	Remarks
802. 11a	5.18	36	√	# (*4)	# (*.higher power ch.) (*4)	√ = "default test channels of requested by KDB248227", * = Possible 802.11a channels with "maximum average output" > the "default test channels" n/a: SAR test was not considered, # = SAR test was considered. *4. Since the average power of higher data rate was less than 0.25dB higher than the lowest data rate, SAR test was only considered to apply lowest data rate. (KDB248227)
	5.20	40	*	n/a	n/a	
	5.22	44	*	# (*.higher power ch.) (*4)	n/a	
	5.24	48	√	n/a	# (*4)	
	5.26	52	√	n/a	# (*4)	
	5.28	56	*	# (*.higher power ch.) (*4)	n/a	
	5.30	60	*	n/a	n/a	
	5.32	64	√	# (*4)	# (*.higher power ch.) (*4)	
	5.50	100	*	# (*.higher power ch.) (*4)	n/a	
	5.52	104	√	n/a	# (*4)	
	5.54	108	*	n/a	n/a	
	5.56	112	*	n/a	n/a	
	5.58	116	√	# (*4)	# (*4)	
	5.60	120	*	n/a	n/a	
	5.62	124	√	# (*4)	# (*4)	
	5.64	128	*	n/a	n/a	
	5.66	132	*	n/a	n/a	
	5.68	136	√	# (*4)	n/a	
	5.70	140	*	n/a	# (*.higher power ch.) (*4)	
	5.745	149	√	# (*4)	# (*4)	
	5.765	153	*	n/a	n/a	
	5.785	157	√	# (*4)	# (*4)	
	5.805	161	*	n/a	n/a	
	5.825	165	√	# (*.higher power ch.) (*4)	# (*.higher power ch.) (*4)	

3.6 Confirmation after SAR testing R01

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 DASY5 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.

*. DASY5 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 DASY5 system must be the less than ±0.21dB.

3.7 Test setup of EUT and SAR measurement procedure

After considering the outline of EUT, the SAR test was carried out on the following setup conditions.
*. Refer to Appendix 1 for test setup photographs.

Setup	Explanation
Front-touch	The front surface (patient side) of EUT was touched to the flat phantom.
Rear surface	The SAR test was not applied. (*1)
Side surface	The SAR test was not applied. (*1)

*1. **The SAR test was only applied to the front surface (patient side) of EUT.**
Since this EUT is the medical device, the EUT is only used under the guidance of a doctor or a qualified person.
The possibility of the maximum RF human exposure is only a body of the patient who comes in contact directly on the front surface side (patient side) of the EUT. Therefore, the SAR test was only applied to the front surface side (patient side) of the EUT.

By the determined test setup shown above, the SAR test was applied in the following procedures.

Step 1	Change the channels. (at the front side of EUT, the Main-antenna or Sub-antenna is carried out independently.) Change the frequency band and repeat change the channels..
Step 2	Change the liquid and repeat step1.

*. During SAR test, the radiated power is always monitored by Spectrum Analyzer.

SECTION 4: Operation of EUT during SAR testing

4.1 Operation mode for SAR testing

This EUT has IEEE.802.11a continuous transmitting modes.
The frequency and the modulation used in the SAR testing are shown as a following.

Operation mode	**802.11a**					
Tx frequency band	5180-5320MHz (W52/53 band)		5500-5700MHz (W56 band)		5745-5825MHz (W58 band)	
	Main antenna	Sub antenna	Main antenna	Sub antenna	Main antenna	Sub antenna
Tested frequency	5180MHz, 5220MHz, 5280MHz, 5320MHz	5180MHz, 5240MHz, 5260MHz, 5320MHz	5500MHz, 5580MHz, 5620MHz, 5680MHz	5520MHz, 5580MHz, 5620MHz, 5700MHz	5745MHz, 5785MHz, 5825MHz	5745MHz, 5785MHz, 5825MHz
Modulation	BPSK/OFDM		BPSK/OFDM		BPSK/OFDM	
Data rate	6Mbps (*1)		6Mbps (*1)		6Mbps (*1)	
Crest factor	1.0 (100% duty cycle)		1.0 (100% duty cycle)		1.0 (100% duty cycle)	
Controlled software	ContinuousTransmit(modulated)2_0001 application. Before SAR test, the transmit condition was set by the AeroDR interface via remote control cable.					

*1. It was lowest data rate. Since the average power of higher data rate was less than 0.25dB higher than the lowest data rate, SAR test was only considered to apply lowest data rate. (KDB248227)

SECTION 5: Uncertainty Assessment (SAR measurement)

Uncertainty of SAR measurement (v06) (*. Body liquid, ε & σ tolerance: ≤ ± 5%, Tx: ≈100% duty cycle)	5~6GHz	
	1g SAR	10g SAR
Combined measurement uncertainty of the measurement system (k=1)	± 13.7%	± 13.5%
Expanded uncertainty (k=2)	± 27.4%	± 27.0%

	Error Description (5~6GHz) (v06)	Uncertainty Value	Probability distribution	Divisor	ci (1g)	ci (10g)	ui (1g)	ui (10g)	Vi, veff
A	**Measurement System** (DASY5)						(std. uncertainty)	(std. uncertainty)	
1	Probe Calibration Error (5.2,5.3,5.5,5.6,5.8GHz±100MHz)	±6.55 %	Normal	1	1	1	±6.55 %	±6.55 %	∞
2	Axial isotropy	±4.7 %	Rectangular	√3	0.7	0.7	±1.9 %	±1.9 %	∞
3	Hemispherical isotropy (<5deg, flat phantom)	±9.6 %	Rectangular	√3	0.7	0.7	±3.9 %	±3.9 %	∞
4	Boundary effects	±4.8 %	Rectangular	√3	1	1	±2.8 %	±2.8 %	∞
5	Probe linearity	±4.7 %	Rectangular	√3	1	1	±2.7 %	±2.7 %	∞
6	Probe modulation response (CW)	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0 %	∞
7	System detection limit	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	∞
8	Response Time Error (<5ms/100ms wait)	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0 %	∞
9	Integration Time Error r(100% duty cycle)	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0 %	∞
10	System readout electronics (DAE)	±0.3 %	Normal	1	1	1	±0.3 %	±0.3 %	∞
11	RF ambient conditions-noise	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
12	RF ambient conditions-reflections	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
13	Probe positioner mechanical tolerance	±3.3 %	Rectangular	√3	1	1	±1.9 %	±1.9 %	∞
14	Probe positioning with respect to phantom shell	±6.7 %	Rectangular	√3	1	1	±3.9 %	±3.9 %	∞
15	Errors: Extrapol., Interpol. & Integration Algorithms	±4.0 %	Rectangular	√3	1	1	±2.3 %	±2.3 %	∞
B	**Test Sample Related**								
16	Test Sample Positioning Error	±5.0 %	Normal	1	1	1	±5.0 %	±5.0 %	145
17	Device Holder or Positioner Tolerance	±3.6 %	Normal	1	1	1	±3.6 %	±3.6 %	5
18	Test Sample Output Power Drift Error	±5.0 %	Rectangular	√3	1	1	±2.9 %	±2.9 %	∞
C	**Phantom and Setup**								
19	Phantom uncertainty (shape, thickness tolerances)	±7.5 %	Rectangular	√3	1	1	±4.3 %	±4.3 %	∞
20	Target Liquid Conductivity Tolerance (≤5%)	±5.0 %	Rectangular	√3	0.64	0.43	±1.8 %	±1.2 %	∞
21	Measurement Liquid Conductivity Error	±3.0 %	Normal	1	0.64	0.43	±1.9 %	±1.3 %	6
22	Target Liquid Permittivity Tolerance (≤5%)	±5.0 %	Rectangular	√3	0.6	0.49	±1.7 %	±1.4 %	∞
23	Measurement Liquid Permittivity Error	±3.0 %	Normal	1	0.6	0.49	±1.8 %	±1.5 %	6
24	Liquid Conductivity-temp.uncertainty (≤2deg.C.)	±3.0 %	Rectangular	√3	0.78	0.71	±1.4 %	±1.2 %	∞
25	Liquid Permittivity-temp.uncertainty (≤2deg.C.)	±0.8 %	Rectangular	√3	0.23	0.26	±0.1 %	±0.1 %	∞
	Combined Standard Uncertainty						**±13.7** %	**±13.5** %	734
	Expanded Uncertainty (k=2)						**±27.4** %	**±27.0** %	

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

Uncertainty of SAR measurement (v05) (*. Head liquid, ε & σ tolerance: ≤ ± 5%, Tx: ≈100% duty cycle)	5~6GHz	
	1g SAR	10g SAR
Combined measurement uncertainty of the measurement system (k=1)	± 13.5%	± 13.4%
Expanded uncertainty (k=2)	± 27.0%	± 26.8%

	Error Description (5~6GHz) (v05)	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 Error (5.2,5.3,5.5,5.6,5.8GHz±100MHz)	±6.55 %	Normal	1	1	1	±6.55 %	±6.55 %	∞
2	Isotropy Error	±7.6 %	Rectangular	√3	1	1	±4.4 %	±4.4 %	∞
3	Linearity Error(dynamic range)	±4.7 %	Rectangular	√3	1	1	±2.7 %	±2.7 %	∞
4	Probe modulation response(CW)	±1.5 %	Rectangular	√3	1	1	±0.9 %	±0.9 %	∞
5	Detection limits(0.4-10W/kg)	±0.3 %	Rectangular	√3	1	1	±0.2 %	±0.2 %	∞
6	Boundary effects Error	±4.8 %	Rectangular	√3	1	1	±2.8 %	±2.8 %	∞
7	Readout Electronics Error(DAE)	±0.3 %	Normal	1	1	1	±0.3 %	±0.3 %	∞
8	Response Time Error (<5ms/100ms wait)	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0 %	∞
9	Integration Time Error(100% duty cycle)	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0 %	∞
10	RF ambient conditions-noise	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
11	RF ambient conditions-reflections	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
12	Probe positioner mech. restrictions	±3.3 %	Rectangular	√3	1	1	±1.9 %	±1.9 %	∞
13	Probe positioning with respect to phantom shell	±6.7 %	Rectangular	√3	1	1	±3.9 %	±3.9 %	∞
14	Post-processing	±4.0 %	Rectangular	√3	1	1	±2.3 %	±2.3 %	∞
B	**Test Sample Related**								
15	Device holder uncertainty	±3.6 %	Normal	1	1	1	±3.6 %	±3.6 %	5
16	Test Sample positioning	±5.0 %	Normal	1	1	1	±5.0 %	±5.0 %	145
17	Power scaling	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0 %	∞
18	Drift of output power (measured, <0.2dB)	±5.0 %	Rectangular	√3	1	1	±2.9 %	±2.9 %	∞
C	**Phantom and Setup**								
19	Phantom uncertainty(liq./ant. ≥5mm)	±7.5 %	Rectangular	√3	1	1	±4.3 %	±4.3 %	∞
20	Algorithm for correcting SAR (e',σ: ≤5%)	±1.2 %	Normal	1	1	0.84	±1.2 %	±1.0 %	∞
21	Liquid Conductivity Error (meas.)	±3.0 %	Normal	1	0.78	0.71	±2.3 %	±2.1 %	5
22	Liquid Permittivity Error (meas.)	±3.0 %	Normal	1	0.23	0.26	±0.7 %	±0.8 %	6
23	Liquid Conductivity-temp.uncertainty (≤2deg.C.)	±2.5 %	Rectangular	√3	0.78	0.71	±1.1 %	±1.0 %	∞
24	Liquid Permittivity-temp.uncertainty (≤2deg.C.)	±0.8 %	Rectangular	√3	0.23	0.26	±0.1 %	±0.1 %	∞
	Combined Standard Uncertainty						**±13.5** %	**±13.4** %	848
	Expanded Uncertainty (k=2)						**±27.0** %	**±26.8** %	

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

SECTION 6: Confirmation before testing

6.1 Assessment for the conducted power of EUT

6.1.1 5180-5320MHz, W52/53 band: Worst data rate / worst channel determination

Mode	Freq. [MHz]	CH	D/R [Mbps]	Cable Loss [dB]	Atten. [dB]	D/F [dB]	Average power			Power tolerance & correction				Apply SAR test? Y:yes	Remarks
							P/M Reading [dBm]	Result [dBm]	Result [mW]	Limit of max. output [dBm]	Deviation from max. [dB]	Scaled Factor [-]	≤2 dB? Y: yes		
[Main antenna]															
802. 11a	5260	52	6	2.58	10.04	0.00	-0.11	**12.51**	17.81	13.0	-0.49	×1.12	Y	-	Highest power D/R.
	5260	52	9	2.58	10.04	0.00	-0.17	12.45	17.56	13.0	-0.55	×1.14	Y	-	-
	5260	52	12	2.58	10.04	0.00	-0.16	12.46	17.60	13.0	-0.54	×1.13	Y	-	-
	5260	52	18	2.58	10.04	0.00	-0.14	12.48	17.69	13.0	-0.52	×1.13	Y	-	-
	5260	52	24	2.58	10.04	0.00	-0.15	12.47	17.64	13.0	-0.53	×1.13	Y	-	-
	5260	52	36	2.58	10.04	0.00	-0.16	12.46	17.60	13.0	-0.54	×1.13	Y	-	-
	5260	52	48	2.58	10.04	0.00	-0.13	12.49	17.73	13.0	-0.51	×1.12	Y	-	-
	5260	52	56	2.58	10.04	0.00	-0.16	12.46	17.60	13.0	-0.54	×1.13	Y	-	-
	5180	36	**6**	2.54	10.05	0.00	-0.72	11.87	15.40	13.0	-1.13	×1.30	Y	**Y**	-
	5200	40	**6**	2.58	10.05	0.00	-0.77	11.86	15.33	13.0	-1.14	×1.30	Y	-	-
	5220	44	**6**	2.55	10.04	0.00	0.04	**12.63**	18.34	13.0	-0.37	×1.09	Y	**Y**	Highest power CH (W52).
	5240	48	**6**	2.59	10.04	0.00	-0.12	12.51	17.84	13.0	-0.49	×1.12	Y	-	-
	5280	56	**6**	2.55	10.04	0.00	0.06	**12.65**	18.43	13.0	-0.35	×1.08	Y	**Y**	Highest power CH (W53).
	5300	60	**6**	2.57	10.03	0.00	-0.13	12.47	17.66	13.0	-0.53	×1.13	Y	-	-
	5320	64	**6**	2.50	10.03	0.00	-0.24	12.29	16.95	13.0	-0.71	×1.18	Y	**Y**	-
[Sub antenna]															
802. 11a	5260	52	6	2.58	10.04	0.00	-1.02	**11.60**	14.44	13.0	-1.40	×1.38	Y	**Y**(*1)	-
	5260	52	9	2.58	10.04	0.00	-0.97	**11.65**	14.61	13.0	-1.35	×1.36	Y	-(*1)	Highest power D/R (W53).
	5260	52	12	2.58	10.04	0.00	-1.03	11.59	14.41	13.0	-1.41	×1.38	Y	-	-
	5260	52	18	2.58	10.04	0.00	-1.02	11.60	14.44	13.0	-1.40	×1.38	Y	-	-
	5260	52	24	2.58	10.04	0.00	-1.12	11.50	14.11	13.0	-1.50	×1.41	Y	-	-
	5260	52	36	2.58	10.04	0.00	-1.07	11.55	14.28	13.0	-1.45	×1.40	Y	-	-
	5260	52	48	2.58	10.04	0.00	-1.05	11.57	14.34	13.0	-1.43	×1.39	Y	-	-
	5260	52	56	2.58	10.04	0.00	-1.03	11.59	14.41	13.0	-1.41	×1.38	Y	-	-
	5180	36	**6**	2.54	10.05	0.00	-1.34	11.25	13.35	13.0	-1.75	×1.50	Y	**Y**	-
	5200	40	**6**	2.58	10.05	0.00	-1.40	11.23	13.26	13.0	-1.77	×1.50	Y	-	-
	5220	44	**6**	2.55	10.04	0.00	-1.26	11.33	13.59	13.0	-1.67	×1.47	Y	-	-
	5240	48	**6**	2.59	10.04	0.00	-1.27	**11.36**	13.69	13.0	-1.64	×1.46	Y	**Y**	Highest power CH (W52).
	5280	56	**6**	2.55	10.04	0.00	-1.37	11.22	13.26	13.0	-1.78	×1.51	Y	-	-
	5300	60	**6**	2.57	10.03	0.00	-1.23	11.37	13.71	13.0	-1.63	×1.46	Y	-	-
	5320	64	**6**	2.50	10.03	0.00	-1.20	11.33	13.59	13.0	-1.67	×1.47	Y	**Y**	-

*. Freq.: Frequency, CH: Channel, D/R: Data Rate, Att.en: Attenuator loss, D/F: Duty Factor (0dB=100% duty cycle),

*. Calculating formula:
Results (Average power) = ["P/M Reading"]+[Cable loss]+[Atten.(Attenuator loss)]+[D/F (duty factor)]
Deviation form max.: Power deviation (Deviation [dB] = "Results power (average)" - "Max.-specification output power (average)")
Scaled Factor: Power scaled factor for obtained SAR value, Scaled Factor [-] = 1 / (10 ^ ("Deviation from max." / 10))

***. Since the same EUT (serial number: C1-35) was used for the EMC test and SAR test, the power data of the EMC test was diverted as reference power of SAR test.** (This average output power also described in the EMC test report of 4786002569S-A.)
(Date measured: February 21, 2013 / Measured by: Tatsuya Arai / Place: No. 1 shielded room. (22 deg.C. / 47 %RH))

*1. Since the average power of higher data rate was less than 0.25dB higher than the lowest data rate, SAR test was only applied to the lowest data rate. (KDB248227)

6.1.2 5500-5700MHz, W56 band: Worst data rate / worst channel determination

Mode	Freq. [MHz]	CH	D/R [Mbps]	Cable Loss [dB]	Atten. [dB]	D/F [dB]	Average power			Power tolerance & correction				Apply SAR test? Y:yes	Remarks
							P/M Reading	Result		Limit of max. output	Deviation from max..	Scaled Factor	≤2 dB? Y: yes		
							[dBm]	[dBm]	[mW]	[dBm]	[dB]	[-]			
[Main antenna]															
802. 11a	5580	116	6	2.55	10.01	0.00	-1.10	**11.46**	14.00	12.0	-0.54	×1.13	Y	**Y**	Highest power D/R.
	5580	116	9	2.55	10.01	0.00	-1.12	11.44	13.93	12.0	-0.56	×1.14	Y	-	-
	5580	116	12	2.55	10.01	0.00	-1.21	11.35	13.65	12.0	-0.65	×1.16	Y	-	-
	5580	116	18	2.55	10.01	0.00	-1.17	11.39	13.77	12.0	-0.61	×1.15	Y	-	-
	5580	116	24	2.55	10.01	0.00	-1.12	11.44	13.93	12.0	-0.56	×1.14	Y	-	-
	5580	116	36	2.55	10.01	0.00	-1.23	11.33	13.58	12.0	-0.67	×1.17	Y	-	-
	5580	116	48	2.55	10.01	0.00	-1.32	11.24	13.30	12.0	-0.76	×1.19	Y	-	-
	5580	116	56	2.55	10.01	0.00	-1.13	11.43	13.90	12.0	-0.57	×1.14	Y	-	-
	5500	100	**6**	2.65	10.01	0.00	-1.02	**11.64**	14.60	12.0	-0.36	×1.09	Y	**Y**	Highest power CH (W56).
	5520	104	**6**	2.62	10.01	0.00	-1.13	11.50	14.11	12.0	-0.50	×1.12	Y	-	-
	5540	108	**6**	2.62	10.01	0.00	-1.05	11.58	14.39	12.0	-0.42	×1.10	Y	-	-
	5560	112	**6**	2.62	10.01	0.00	-1.12	11.51	14.17	12.0	-0.49	×1.12	Y	-	-
	5600	120	**6**	2.54	10.01	0.00	-0.98	11.57	14.36	12.0	-0.43	×1.10	Y	-	-
	5620	124	**6**	2.63	10.01	0.00	-1.11	11.53	14.21	12.0	-0.47	×1.12	Y	**Y**	-
	5640	128	**6**	2.63	10.02	0.00	-1.20	11.45	13.96	12.0	-0.55	×1.13	Y	-	-
	5660	132	**6**	2.63	10.02	0.00	-1.56	11.09	12.87	12.0	-0.91	×1.23	Y	-	-
	5680	136	**6**	2.64	10.02	0.00	-1.62	11.04	12.70	12.0	-0.96	×1.25	Y	**Y**	-
	5700	140	**6**	2.62	10.02	0.00	-1.51	11.13	12.97	12.0	-0.87	×1.22	Y	-	-
[Sub antenna]															
802. 11a	5580	116	6	2.55	10.01	0.00	-2.18	**10.38**	10.91	12.0	-1.62	×1.45	Y	**Y**	Highest power D/R.
	5580	116	9	2.55	10.01	0.00	-2.20	10.36	10.86	12.0	-1.64	×1.46	Y	-	-
	5580	116	12	2.55	10.01	0.00	-2.24	10.32	10.76	12.0	-1.68	×1.47	Y	-	-
	5580	116	18	2.55	10.01	0.00	-2.19	10.37	10.89	12.0	-1.63	×1.46	Y	-	-
	5580	116	24	2.55	10.01	0.00	-2.23	10.33	10.79	12.0	-1.67	×1.47	Y	-	-
	5580	116	36	2.55	10.01	0.00	-2.19	10.37	10.89	12.0	-1.63	×1.46	Y	-	-
	5580	116	48	2.55	10.01	0.00	-2.24	10.32	10.76	12.0	-1.68	×1.47	Y	-	-
	5580	116	56	2.55	10.01	0.00	-2.25	10.31	10.74	12.0	-1.69	×1.48	Y	-	-
	5500	100	**6**	2.65	10.01	0.00	-2.02	10.64	11.59	12.0	-1.36	×1.37	Y	-	-
	5520	104	**6**	2.62	10.01	0.00	-2.23	10.40	10.95	12.0	-1.60	×1.45	Y	**Y**	-
	5540	108	**6**	2.62	10.01	0.00	-2.12	10.51	11.25	12.0	-1.49	×1.41	Y	-	-
	5560	112	**6**	2.62	10.01	0.00	-1.92	10.71	11.79	12.0	-1.29	×1.34	Y	-	-
	5600	120	**6**	2.54	10.01	0.00	-2.05	10.50	11.22	12.0	-1.50	×1.41	Y	-	-
	5620	124	**6**	2.63	10.01	0.00	-2.31	10.33	10.78	12.0	-1.67	×1.47	Y	**Y**	-
	5640	128	**6**	2.63	10.02	0.00	-2.26	10.39	10.94	12.0	-1.61	×1.45	Y	-	-
	5660	132	**6**	2.63	10.02	0.00	-2.43	10.22	10.53	12.0	-1.78	×1.51	Y	-	-
	5680	136	**6**	2.64	10.02	0.00	-2.56	10.10	10.23	12.0	-1.90	×1.55	Y	-	-
	5700	140	**6**	2.62	10.02	0.00	-1.78	**10.86**	12.18	12.0	-1.14	×1.30	Y	**Y**	Highest power CH (W56).

*. Freq.: Frequency, CH: Channel, D/R: Data Rate, Att.en: Attenuator loss, D/F: Duty Factor (0dB=100% duty cycle),
*. Calculating formula:
Results (Average power) = ["P/M Reading"]+[Cable loss]+[Atten.(Attenuator loss)]+[D/F (duty factor)]
Deviation form max.: Power deviation (Deviation [dB] = "Results power (average)" - "Max.-specification output power (average)")
Scaled Factor: Power scaled factor for obtained SAR value, Scaled Factor [-] = 1 / (10 ^ ("Deviation from max." / 10))

***. Since the same EUT (serial number: C1-35) was used for the EMC test and SAR test, the power data of the EMC test was diverted as reference power of SAR test.** (This average output power also described in the EMC test report of 4786002569S-A.)
(Date measured: February 21, 2013 / Measured by: Tatsuya Arai / Place: No. 1 shielded room. (22 deg.C. / 47 %RH))

*1. Since the average power of higher data rate was less than 0.25dB higher than the lowest data rate, SAR test was only applied to the lowest data rate. (KDB248227)

6.1.3 5745-5825MHz, W58 band: Worst data rate / worst channel determination

Mode	Freq. [MHz]	CH	D/R [Mbps]	Cable Loss [dB]	Atten. [dB]	D/F [dB]	Average power			Power tolerance & correction				Apply SAR test? Y:yes	Remarks
							P/M Reading	Result		Limit of max. output	Deviation from max..	Scaled Factor	≤2 dB? Y: yes		
							[dBm]	[dBm]	[mW]	[dBm]	[dB]	[-]			
[Main antenna]															
802. 11a	5785	157	6	2.69	10.02	0.00	-3.21	**9.50**	8.92	10.0	-0.50	×1.12	Y	**Y**	Highest power D/R.
	5785	157	9	2.69	10.02	0.00	-3.22	9.49	8.90	10.0	-0.51	×1.12	Y	-	-
	5785	157	12	2.69	10.02	0.00	-3.34	9.37	8.65	10.0	-0.63	×1.16	Y	-	-
	5785	157	18	2.69	10.02	0.00	-3.45	9.26	8.44	10.0	-0.74	×1.19	Y	-	-
	5785	157	24	2.69	10.02	0.00	-3.32	9.39	8.69	10.0	-0.61	×1.15	Y	-	-
	5785	157	36	2.69	10.02	0.00	-3.25	9.46	8.84	10.0	-0.54	×1.13	Y	-	-
	5785	157	48	2.69	10.02	0.00	-3.36	9.35	8.61	10.0	-0.65	×1.16	Y	-	-
	5785	157	56	2.69	10.02	0.00	-3.26	9.45	8.81	10.0	-0.55	×1.14	Y	-	-
	5745	149	**6**	2.68	10.02	0.00	-3.51	9.19	8.31	10.0	-0.81	×1.20	Y	**Y**	-
	5765	153	**6**	2.65	10.02	0.00	-3.35	9.32	8.54	10.0	-0.68	×1.17	Y	-	-
	5805	161	**6**	2.65	10.02	0.00	-3.25	9.42	8.76	10.0	-0.58	×1.14	Y	-	-
	5825	165	**6**	2.65	10.02	0.00	-3.02	**9.65**	9.23	10.0	-0.35	×1.08	Y	**Y**	Highest power CH (W58).
[Sub antenna]															
802. 11a	5785	157	6	2.69	10.02	0.00	-3.57	**9.14**	8.21	10.0	-0.86	×1.22	Y	**Y**	Highest power D/R.
	5785	157	9	2.69	10.02	0.00	-3.59	9.12	8.17	10.0	-0.88	×1.22	Y	-	-
	5785	157	12	2.69	10.02	0.00	-5.60	7.11	5.14	10.0	-2.89	×1.94	Y	-	-
	5785	157	18	2.69	10.02	0.00	-3.59	9.12	8.17	10.0	-0.88	×1.22	Y	-	-
	5785	157	24	2.69	10.02	0.00	-3.59	9.12	8.17	10.0	-0.88	×1.22	Y	-	-
	5785	157	36	2.69	10.02	0.00	-3.60	9.11	8.15	10.0	-0.89	×1.23	Y	-	-
	5785	157	48	2.69	10.02	0.00	-3.72	8.99	7.93	10.0	-1.01	×1.26	Y	-	-
	5785	157	56	2.69	10.02	0.00	-3.68	9.03	8.00	10.0	-0.97	×1.25	Y	-	-
	5745	149	**6**	2.68	10.02	0.00	-4.02	8.68	7.39	10.0	-1.32	×1.35	Y	**Y**	-
	5765	153	**6**	2.65	10.02	0.00	-3.88	8.79	7.56	10.0	-1.21	×1.32	Y	-	-
	5805	161	**6**	2.65	10.02	0.00	-3.47	9.20	8.33	10.0	-0.80	×1.20	Y	-	-
	5825	165	**6**	2.65	10.02	0.00	-3.03	**9.64**	9.21	10.0	-0.36	×1.09	Y	**Y**	Highest power CH (W58).

*. Freq.: Frequency, CH: Channel, D/R: Data Rate, Att.en: Attenuator loss, D/F: Duty Factor (0dB=100% duty cycle),
*. Calculating formula:
Results (Average power) = ["P/M Reading"]+[Cable loss]+[Atten.(Attenuator loss)]+[D/F (duty factor)]
Deviation form max.: Power deviation (Deviation [dB] = "Results power (average)" - "Max.-specification output power (average)")
Scaled Factor: Power scaled factor for obtained SAR value, Scaled Factor [-] = 1 / (10 ^ ("Deviation from max." / 10))

***. Since the same EUT (serial number: C1-35) was used for the EMC test and SAR test, the power data of the EMC test was diverted as reference power of SAR test.** (This average output power also described in the EMC test report of 4786002569S-B.)
(Date measured: February 21, 2013 / Measured by: Tatsuya Arai / Place: No. 1 shielded room. (22 deg.C. / 47 %RH))

*1. Since the average power of higher data rate was less than 0.25dB higher than the lowest data rate, SAR test was only applied to the lowest data rate. (KDB248227)

SECTION 7: Measurement results

7.1 SAR test results (Body liquid)

7.1.1 5180-5320MHz, W52/53 band

Measurement date: April 1, 2013 Measurement by: Hiroshi Naka

[Liquid measurement (Body simulated tissue)]

Target Frequency [MHz]	Liquid parameters						Temp. [deg.C.]	Depth [mm]	ΔSAR Coefficients (*1)		Remarks / Environment
	Permittivity (εr) [-]			Conductivity [S/m]					ΔSAR (1g) [%]	Correction required?	
	Target	Measured (Δεr)		Target	Measured (Δσ)						
5200	***49.01***	47.36	-3.4%	***5.299***	5.439	+2.7%	23.4	130	(+0.61) (*1)	none	April 1, 2013, before SAR test /ambient; 24.3 deg.C., 35%RH
5180	***49.04***	47.30	-3.6%	***5.276***	5.439	+3.1%			(+0.64) (*1)	none	
5220	***48.99***	47.41	-3.2%	***5.323***	5.458	+2.6%			(+0.58) (*1)	none	
5240	***48.96***	47.37	-3.3%	***5.346***	5.474	+2.4%			(+0.59) (*1)	none	
5260	***48.93***	47.22	-3.5%	***5.369***	5.553	+3.4%			(+0.60) (*1)	none	
5280	***48.91***	47.10	-3.7%	***5.393***	5.561	+3.1%			(+0.64) (*1)	none	
5320	***48.85***	47.23	-3.3%	***5.439***	5.616	+3.3%			(+0.56) (*1)	none	

*. 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 3000 to 5800 MHz were obtained using linear interpolation. (Refer to Appendix 3-4.)

*1. The number of ΔSAR(1g) of body simulated tissue was reference purpose only. ΔSAR correction was only applied to head simulated tissue. Furthermore, the coefficients are parameters defined in Annex F, IEC 62209-2:2010. In accordance with clause 6.1.1 of IEC 62209-2; "If the correction ΔSAR has a negative sign, the measured SAR results shall not be corrected", the calculated ΔSAR values of the tested liquid had shown negative correction. The measured SAR was not required ΔSAR correction.

ΔSAR(1g)= Cεr ×Δεr + Cσ ×Δσ, $C\varepsilon = -7.854E\text{-}4\times f^3 + 9.402E\text{-}3\times f^2 - 2.742E\text{-}2\times f - 0.2026$ / $C\sigma = 9.804E\text{-}3\times f^3 - 8.661E\text{-}2\times f^2 + 2.981E\text{-}2\times f + 0.7829$

[SAR measurement results (Partial-Body)]

SAR measurement results (Body liquid)														Reported		
Mode	[MHz] (CH)	Modulation /Data rate / Crest factor	EUT setup conditions: Antenna	Position	Gap	Liquid temp. [deg.C.]: Before	After	Power drift [dB]	SAR(1g) [W/kg] maximum value of multi-peak: Measured	ΔSAR [%]	ΔSAR corrected	Data# in Appendix 2-2	Scaled factor	Power-scaled SAR(1g) [W/kg]	Remarks
Step 0: Area scan on the whole surface of the front side of EUT (Reference purpose only)															
11a	5280 (56)	OFDM /6Mbps /1.0	**Main**	**Front** (Patient side)	0 mm (touch)	23.1	23.1	*. It checked RF radiation only from the antenna portion which carried out Tx power setup. Zoom scan was not proceeded.				Step 0a-1	-	**n/a**	-
	5260 (52)		**Sub**			23.1	23.1					Step 0a-2	-	**n/a**	-
Step 1a: Change the channels															
11a	5180 (36)	OFDM /6Mbps /1.0	**Main**	**Front** (Patient side)	0 mm (touch)	23.1	23.1	0.14	**0.797**	-	-	Step 1a-1	×1.30	**1.03**	-
	5220(44)					23.1	23.2	0.11	**1.06**	-	-	Step 1a-2	×1.09	**1.15**	->Highest.(W52/53,
	5280(56)					23.2	23.1	0	**0.880**	-	-	Step 1a-3	×1.08	**0.95**	-
	5320 (64)					23.2	23.3	0.02	**0.708**	-	-	Step 1a-4	×1.18	**0.83**	-
	5220 (44)					23.3	23.3	0.14	**1.05**	-	-	Step 1a-5	×1.09	**1.14**	Repeated.(-0.9%) (*2)
11a	5180 (36)	OFDM /6Mbps /1.0	**Sub**	**Front** (Patient side)	0 mm (touch)	23.1	23.2	0.03	**0.691**	-	-	Step 1a-6	×1.50	**1.03**	-
	5240 (48)					23.2	23.1	0.07	**0.837**	-	-	Step 1a-7	×1.46	**1.22**	**->Highest.**(W52/53,Sub)
	5260 (52)					23.0	23.1	0.01	**0.763**	-	-	Step 1a-8	×1.38	**1.04**	-
	5320 (64)					23.2	23.2	-0.01	**0.741**	-	-	Step 1a-9	×1.47	**1.09**	-
	5240 (48)					23.2	23.2	0.12	**0.831**	-	-	Step 1a-10	×1.46	**1.21**	Repeated.(-0.7%) (*2)

Notes:

*2. Since the measured highest SAR (1g) was larger than 0.8W/kg, the SAR measurement was repeated. Since the repeated measured SAR (1g) value was smaller than 20% validation of original, the repeat measurement was applied once. (Clause 2.8, KDB 865664 D01 (v01))

*. Gap: Separation distance between the outer surface of EUT and the bottom outer surface of phantom.

*. During test, the EUT was operated without all signal interface cables and with the fully charged battery.

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

SAR test frequency	Probe calibration frequency	Validity	Used conversion factor	Uncertainty
5180 MHz	5200 MHz	-20 MHz, within ±50 MHz of calibration frequency	4.13	±13.1%
5220 MHz	5200 MHz	+20 MHz, within ±50 MHz of calibration frequency	4.13	±13.1%
5240 MHz	5200 MHz	+40 MHz, within ±50 MHz of calibration frequency	4.13	±13.1%
5260 MHz	5300 MHz	-40 MHz, within ±50 MHz of calibration frequency	3.98	±13.1%
5280 MHz	5300 MHz	-20 MHz, within ±50 MHz of calibration frequency	3.98	±13.1%
5320 MHz	5300 MHz	+20 MHz, within ±50 MHz of calibration frequency	3.98	±13.1%

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

7.1.2 5500-5700MHz, W56 band

Measurement date: April 1 and 2, 2013 Measurement by: Hiroshi Naka

[Liquid measurement (Body simulated tissue)]

Target Frequency [MHz]	Liquid parameters						Temp. [deg.C.]	Depth [mm]	ΔSAR Coefficients (*1)		Remarks / Environment
	Permittivity (εr) [-]			Conductivity [S/m]					ΔSAR (1g) [%]	Correction required?	
	Target	Measured (Δεr)		Target	Measured (Δσ)						
5500	***48.61***	46.86	-3.6%	***5.650***	5.870	+3.9%	23.4	130	(+0.61) (*1)	none	April 1, 2013, before SAR test /ambient; 24.3 deg.C., 35%RH
5580	***48.50***	46.72	-3.7%	***5.743***	5.961	+3.8%			(+0.64) (*1)	none	
5620	***48.44***	46.67	-3.7%	***5.790***	6.005	+3.7%			(+0.64) (*1)	none	
5680	***48.36***	46.43	-4.0%	***5.860***	6.072	+3.6%			(+0.56) (*1)	none	
5500	***48.61***	47.19	-2.9%	***5.650***	5.882	+4.1%	24.5	131	(+0.41) (*1)	none	April 2, 2013, before SAR test /ambient; 24.4 deg.C., 43%RH
5520	***48.58***	47.17	-2.9%	***5.673***	5.875	+3.6%			(+0.43) (*1)	none	
5580	***48.50***	47.00	-3.1%	***5.743***	5.960	+3.8%			(+0.45) (*1)	none	
5620	***48.44***	47.02	-2.9%	***5.790***	6.034	+4.2%			(+0.40) (*1)	none	
5700	***48.34***	46.88	-3.0%	***5.883***	6.095	+3.6%			(+0.43) (*1)	none	

*. 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 3000 to 5800 MHz were obtained using linear interpolation. (Refer to Appendix 3-4.)

*1. The number of ΔSAR(1g) of body simulated tissue was reference purpose only. ΔSAR correction was only applied to head simulated tissue. Furthermore, the coefficients are parameters defined in Annex F, IEC 62209-2:2010. In accordance with clause 6.1.1 of IEC 62209-2; "If the correction ΔSAR has a negative sign, the measured SAR results shall not be corrected", the calculated ΔSAR values of the tested liquid had shown negative correction. The measured SAR was not required ΔSAR correction.

ΔSAR(1g)= Cεr ×Δεr + Cσ ×Δσ, Cεr=-7.854E-4×f^3+9.402E-3×f^2-2.742E-2×f-0.2026 / Cσ =9.804E-3×f^3-8.661E-2×f^2+2.981E-2×f+0.7829

[SAR measurement results (Partial-Body)]

SAR measurement results (Body liquid)														Reported		
Mode	[MHz] (CH)	Modulation /Data rate / Crest factor	EUT setup conditions			Liquid temp. [deg.C.]		Power drift [dB]	SAR(1g) [W/kg] maximum value of multi-peak			Data# in Appendix 2-2	Scaled factor	Power-scaled SAR(1g) [W/kg]	Remarks
			Antenna	Position	Gap	Before	After		Measured	ΔSAR [%]	ΔSAR corrected				
Step 1b: Change the channels															
11a	5500 (100)	OFDM /6Mbps /1.0	**Main**	**Front** (Patient side)	0 mm (touch)	23.3	23.3	0.13	**0.542**	-	-	Step 1b-1	×1.13	**0.59**	-
	5580 (116)					23.3	23.3	0.14	**0.584**	-	-	Step 1b-2	×1.09	**0.66**	-
	5620 (124)					23.3	23.3	0.20	**0.730**	-	-	Step 1b-3	×1.12	**0.66**	-
	5680 (136)					23.3	23.3	0.06	**0.776**	-	-	Step 1b-4	×1.25	**0.81**	->Highest.(W56,Main)
11a	5520 (104)	OFDM /6Mbps /1.0	**Sub**	**Front** (Patient side)	0 mm (touch)	23.5	23.6	-0.05	**0.425**	-	-	Step 1b-5	×1.45	**0.62**	-
	5580 (116)					23.6	23.6	0.07	**0.611**	-	-	Step 1b-6	×1.45	**0.89**	-
	5620 (124)					23.6	23.7	-0.02	**0.664**	-	-	Step 1b-7	×1.47	**0.98**	**->Highest.**(W56,Sub)
	5700 (140)					23.6	23.5	-0.11	**0.513**	-	-	Step 1b-8	×1.30	**0.67**	-

Notes:

*. Gap: Separation distance between the outer surface of EUT and the bottom outer surface of phantom.

*. During test, the EUT was operated without all signal interface cables and with the fully charged battery.

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

SAR test frequency	Probe calibration frequency	Validity	Used conversion factor	Uncertainty
5500 MHz	5500 MHz	calibration frequency	3.70	±13.1%
5520 MHz	5500 MHz	+20 MHz, within ±50 MHz of calibration frequency	3.70	±13.1%
5580 MHz	5600 MHz	-20 MHz, within ±50 MHz of calibration frequency	3.61	±13.1%
5620 MHz	5600 MHz	+20 MHz, within ±50 MHz of calibration frequency	3.61	±13.1%
5680 MHz	5600 MHz	+80 MHz, within ±100 MHz of calibration frequency	3.61	±13.1%
5700 MHz	5800 MHz	-100 MHz, within ±100 MHz of calibration frequency	3.87	±13.1%

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

*. Since DASY52 version 8.2 (B969) was used, the frequency validation of ±100MHz was applied. (Refer to Appendix 3-8, EX3DV4 calibration data.)

7.1.3 5745-5825MHz, W58 band

Measurement date: April 2, 2013 Measurement by: Hiroshi Naka

[Liquid measurement (Body simulated tissue)]

Target Frequency [MHz]	Liquid parameters						Temp. [deg.C.]	Depth [mm]	ΔSAR Coefficients (*1)		Remarks / Environment
	Permittivity (εr) [-]			Conductivity [S/m]					ΔSAR (1g) [%]	Correction required?	
	Target	Measured (Δεr)		Target	Measured (Δσ)						
5800	48.2	46.71	-3.1%	6.00	6.256	+4.3%	24.5	131	(+0.42) (*1)	none	April 2, 2013, before SAR test /ambient; 24.4 deg.C., 43%RH
5745	48.27	46.92	-2.8%	5.936	6.187	+4.2%			(+0.37) (*1)	none	
5785	48.22	46.73	-3.1%	5.982	6.199	+3.6%			(+0.45) (*1)	none	
5825	48.17	46.60	-3.2%	6.029	6.300	+4.5%			(+0.44) (*1)	none	

*. 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 3000 to 5800 MHz were obtained using linear interpolation. Furthermore, dielectric parameters for the frequencies above 5800MHz were obtained using linear extrapolation. (Refer to Appendix 3-4.)

*1. The number of ΔSAR(1g) of body simulated tissue was reference purpose only. ΔSAR correction was only applied to head simulated tissue. Furthermore, the coefficients are parameters defined in Annex F, IEC 62209-2:2010. In accordance with clause 6.1.1 of IEC 62209-2; "If the correction ΔSAR has a negative sign, the measured SAR results shall not be corrected", the calculated ΔSAR values of the tested liquid had shown negative correction. The measured SAR was not required ΔSAR correction.

ΔSAR(1g)= Cεr ×Δεr + Cσ ×Δσ, $C\varepsilon r = -7.854E\text{-}4 \times f^3 + 9.402E\text{-}3 \times f^2 - 2.742E\text{-}2 \times f - 0.2026$ / $C\sigma = 9.804E\text{-}3 \times f^3 - 8.661E\text{-}2 \times f^2 + 2.981E\text{-}2 \times f + 0.7829$

[SAR measurement results (Partial-Body)]

SAR measurement results (Body liquid)														Reported		
Mode	[MHz] (CH)	Modulation /Data rate / Crest factor	EUT setup conditions			Liquid temp. [deg.C.]		Power drift [dB]	SAR(1g) [W/kg] maximum value of multi-peak			Data# in Appendix 2-2	Scaled factor	Power-scaled SAR(1g) [W/kg]	Remarks
			Antenna	Position	Gap	Before	After		Measured	ΔSAR [%]	ΔSAR corrected				
Step 1c: Change the channels															
11a	5745 (149)	OFDM /6Mbps /1.0	**Main**	**Front** (Patient side)	0 mm (touch)	23.8	23.7	-0.03	**0.357**	-	-	Step 1c-1	×1.20	**0.43**	-
	5785 (157)					23.7	23.8	0.09	**0.380**	-	-	Step 1c-2	×1.12	**0.43**	-
	5825 (165)					23.8	23.8	-0.20	**0.404**	-	-	Step 1c-3	×1.08	**0.44**	->**Highest**.(W58,Main)
11a	5745 (149)	OFDM /6Mbps /1.0	**Sub**	**Front** (Patient side)	0 mm (touch)	23.7	23.7	0.06	**0.419**	-	-	Step 1c-4	×1.35	**0.57**	-
	5785 (157)					23.7	23.8	0.07	**0.501**	-	-	Step 1c-5	×1.22	**0.61**	-
	5825 (165)					23.7	23.7	0.13	**0.598**	-	-	Step 1c-6	×1.09	**0.65**	->Highest.(W58,Sub)

Notes:

*. Gap: Separation distance between the outer surface of EUT and the bottom outer surface of phantom.

*. During test, the EUT was operated without all signal interface cables and with the fully charged battery.

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

SAR test frequency	Probe calibration frequency	Validity	Used conversion factor	Uncertainty
5745 MHz	5800 MHz	-55 MHz, within ±100 MHz of calibration frequency	3.87	±13.1%
5785 MHz	5800 MHz	-25 MHz, within ±50 MHz of calibration frequency	3.87	±13.1%
5825 MHz	5800 MHz	+25 MHz, within ±50 MHz of calibration frequency	3.87	±13.1%

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

*. Since DASY52 version 8.2 (B969) was used, the frequency validation of ±100MHz was applied. (Refer to Appendix 3-8, EX3DV4 calibration data.)

7.2 SAR test results (Head liquid)

7.2.1 5180-5320MHz, W52/53 band

Measurement date: April 3, 2013 Measurement by: Hiroshi Naka

[Liquid measurement (Head simulated tissue)]

Target Frequency [MHz]	Liquid parameters						Temp. [deg.C.]	Depth [mm]	ΔSAR Coefficients (*1)		Remarks / Environment
	Permittivity (εr) [-]			Conductivity [S/m]					ΔSAR (1g) [%]	Correction required?	
	Target	Measured (Δεr)		Target	Measured (Δσ)						
5200	***35.99***	36.24	+0.7%	***4.655***	4.683	+0.6%	24.7	145	**-0.15** (*1)	Applied	April 3, 2013, before SAR test /ambient; 24.9 deg.C., 50%RH
5180	***36.01***	36.06	+0.1%	***4.635***	4.745	+2.4%			**-0.08** (*1)	Applied	
5220	***35.96***	36.33	+1.0%	***4.676***	4.685	+0.2%			**-0.21** (*1)	Applied	
5240	***35.94***	36.50	+1.6%	***4.696***	4.744	+1.0%			**-0.34** (*1)	Applied	
5260	***35.92***	36.37	+1.3%	***4.717***	4.834	+2.5%			**-0.33** (*1)	Applied	
5280	***35.89***	36.01	+0.3%	***4.737***	4.835	+2.1%			**-0.13** (*1)	Applied	
5320	***35.85***	35.94	+0.2%	***4.778***	4.856	+1.6%			**-0.11** (*1)	Applied	

*. 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 3000 to 5800 MHz were obtained using linear interpolation. (Refer to Appendix 3-4.)

*1. The coefficients are parameters defined in Annex F, IEC 62209-2:2010. In accordance with clause 6.1.1 of IEC 62209-2; "If the correction ΔSAR has a negative sign, the measured SAR results shall not be corrected", the calculated ΔSAR values of the tested liquid had shown positive correction. Therefore the measured SAR was applied the ΔSAR correction sequence.

ΔSAR(1g)= Cεr ×Δεr + Cσ ×Δσ, Cεr=-7.854E-4×f^3+9.402E-3×f^2-2.742E-2×f-0.2026 / Cσ =9.804E-3×f^3-8.661E-2×f^2+2.981E-2×f+0.7829

[SAR measurement results (near head/partial body)]

SAR measurement results (Head liquid)														Reported		
Mode	[MHz] (CH)	Modulation /Data rate / Crest factor	EUT setup conditions: Antenna	Position	Gap	Liquid temp. [deg.C.]: Before	After	Power drift [dB]	SAR(1g) [W/kg] maximum value of multi-peak: Measured	ΔSAR [%]	ΔSAR corrected	Data# in Appendix 2-2	Scaled factor	Power-scaled SAR(1g) [W/kg]	Remarks
Step 2a: Change the channels																
11a	5180 (36)	OFDM /6Mbps /1.0	**Main**	**Front** (Patient side)	0 mm (touch)	24.5	24.4	0.06	**0.852**	-0.08	**0.853**	Step 2a-1	×1.30	**1.11**	->Highest.(W52/53,
	5220(44)					24.3	24.3	0.16	**0.989**	-0.21	**0.991**	Step 2a-2	×1.08	**1.08**	-
	5280(56)					24.4	24.4	0.11	**0.824**	-0.13	**0.825**	Step 2a-3	×1.09	**0.89**	-
	5320 (64)					24.4	24.3	0.04	**0.730**	-0.11	**0.731**	Step 2a-4	×1.18	**0.86**	-
	5220 (44)					24.3	24.3	0.18	**0.982**	-0.21	**0.984**	Step 2a-5	×1.09	**1.07**	Repeated.(-0.7%)(*2)
11a	5180 (36)	OFDM /6Mbps /1.0	**Sub**	**Front** (Patient side)	0 mm (touch)	24.3	24.3	-0.03	**0.816**	-0.08	**0.817**	Step 2a-6	×1.50	**1.22**	-
	5240 (48)					24.2	24.1	-0.05	**1.05**	-0.34	**1.054**	Step 2a-7	×1.46	**1.54**	-
	5260 (52)					24.4	24.3	0	**1.03**	-0.33	**1.033**	Step 2a-8	×1.38	**1.41**	-
	5320 (64)					24.1	24.1	0.09	**0.667**	-0.11	**0.668**	Step 2a-9	×1.47	**1.09**	-
	5240 (48)					24.0	23.9	0.01	**1.06**	-0.34	**1.064**	Step 2a-10	×1.46	**1.55**	Repeated.(+1.0%)(*2) ->**Highest.**(W52/53,Sub)

Notes:

*2. Since the measured highest SAR (1g) was larger than 0.8W/kg, the SAR measurement was repeated. Since the repeated measured SAR (1g) value was smaller than 20% validation of original, the repeat measurement was applied once. (Clause 2.8, KDB 865664 D01 (v01))

*. Gap: Separation distance between the outer surface of EUT and the bottom outer surface of phantom.

*. During test, the EUT was operated without all signal interface cables and with the fully charged battery.

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

SAR test frequency	Probe calibration frequency	Validity	Used conversion factor	Uncertainty
5180 MHz	5200 MHz	-20 MHz, within ±50 MHz of calibration frequency	4.66	±13.1%
5220 MHz	5200 MHz	+20 MHz, within ±50 MHz of calibration frequency	4.66	±13.1%
5240 MHz	5200 MHz	+40 MHz, within ±50 MHz of calibration frequency	4.66	±13.1%
5260 MHz	5300 MHz	-40 MHz, within ±50 MHz of calibration frequency	4.63	±13.1%
5280 MHz	5300 MHz	-20 MHz, within ±50 MHz of calibration frequency	4.63	±13.1%
5320 MHz	5300 MHz	+20 MHz, within ±50 MHz of calibration frequency	4.63	±13.1%

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

7.2.2 5500-5700MHz, W56 band

Measurement date: April 4, 2013 Measurement by: Hiroshi Naka

[Liquid measurement (Head simulated tissue)]

Target Frequency [MHz]	Liquid parameters						Temp. [deg.C.]	Depth [mm]	ΔSAR Coefficients (*1)		Remarks / Environment
	Permittivity (εr) [-]			Conductivity [S/m]							
	Target	Measured (Δεr)		Target	Measured (Δσ)				ΔSAR (1g) [%]	Correction required?	
5500	***35.64***	35.80	+0.4%	***4.963***	5.031	+1.4%	23.4	144	**-0.14** (*1)	Applied	April 4, 2013, before SAR test /ambient; 24.3 deg.C., 44%RH
5520	***35.62***	35.90	+0.8%	***4.983***	5.068	+1.7%			**-0.23** (*1)	Applied	
5580	***35.55***	35.66	+0.3%	***5.045***	5.135	+1.8%			**-0.14** (*1)	Applied	
5620	***35.51***	35.63	+0.4%	***5.086***	5.196	+2.2%			**-0.17** (*1)	Applied	
5680	***35.44***	35.53	+0.3%	***5.147***	5.237	+1.8%			**-0.13** (*1)	Applied	
5700	***35.41***	35.48	+0.2%	***5.168***	5.289	+2.4%			**-0.14** (*1)	Applied	

*. 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 3000 to 5800 MHz were obtained using linear interpolation. (Refer to Appendix 3-4.)

*1. The coefficients are parameters defined in Annex F, IEC 62209-2:2010. In accordance with clause 6.1.1 of IEC 62209-2; "If the correction ΔSAR has a negative sign, the measured SAR results shall not be corrected", the calculated ΔSAR values of the tested liquid had shown positive correction. Therefore the measured SAR was applied the ΔSAR correction sequence.

ΔSAR(1g)= Cεr ×Δεr + Cσ ×Δσ, $C\varepsilon r = -7.854E\text{-}4\times f^3 + 9.402E\text{-}3\times f^2 - 2.742E\text{-}2\times f - 0.2026$ / $C\sigma = 9.804E\text{-}3\times f^3 - 8.661E\text{-}2\times f^2 + 2.981E\text{-}2\times f + 0.7829$

[SAR measurement results (near head/partial body)]

SAR measurement results (Head liquid)														Reported		
Mode	[MHz] (CH)	Modulation /Data rate / Crest factor	EUT setup conditions			Liquid temp. [deg.C.]		Power drift [dB]	SAR(1g) [W/kg]			Data# in Appendix 2-2	Scaled factor	Power-scaled SAR(1g) [W/kg]	Remarks
			Antenna	Position	Gap	Before	After		maximum value of multi-peak						
									Measured	ΔSAR [%]	ΔSAR corrected				
Step 2b: Change the channels															
11a	5500 (100)	OFDM /6Mbps /1.0	**Main**	**Front** (Patient side)	0 mm (touch)	23.4	23.4	0.01	**0.679**	-0.14	**0.680**	Step 2b-1	×1.13	**0.74**	-
	5580 (116)					23.4	23.4	0.05	**0.661**	-0.14	**0.662**	Step 2b-2	×1.09	**0.75**	-
	5620 (124)					23.5	23.5	0.17	**0.880**	-0.17	**0.881**	Step 2b-3	×1.12	**0.98**	-
	5680 (136)					23.5	23.5	0.14	**0.825**	-0.13	**0.826**	Step 2b-4	×1.25	**1.03**	>Highest.(W56,Main)
	5620 (124)					23.6	23.6	0.15	**0.808**	-0.17	**0.809**	Step 2b-5	×1.12	**0.90**	Repeated.(-8.2%)(*2)
11a	5520 (104)	OFDM /6Mbps /1.0	**Sub**	**Front** (Patient side)	0 mm (touch)	23.6	23.6	0.06	**0.492**	-0.23	**0.493**	Step 2b-6	×1.45	**0.71**	-
	5580 (116)					23.6	23.6	0.07	**0.672**	-0.14	**0.673**	Step 2b-7	×1.45	**0.98**	-
	5620 (124)					23.6	23.7	0.11	**0.734**	-0.13	**0.735**	Step 2b-8	×1.47	**1.08**	-
	5700 (140)					23.6	23.6	0.04	**0.842**	-0.14	**0.843**	Step 2b-9	×1.30	**1.10**	>**Highest.**(W56,Sub)
	5700 (140)					23.7	23.8	0.09	**0.841**	-0.14	**0.842**	Step 2b-10	×1.30	**1.10**	Repeated.(-0.1%)(*2)

Notes:

*. Gap: Separation distance between the outer surface of EUT and the bottom outer surface of phantom.

*. During test, the EUT was operated without all signal interface cables and with the fully charged battery.

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

SAR test frequency	Probe calibration frequency	Validity	Used conversion factor	Uncertainty
5500 MHz	5500 MHz	calibration frequency	4.30	±13.1%
5520 MHz	5500 MHz	+20 MHz, within ±50 MHz of calibration frequency	4.30	±13.1%
5580 MHz	5600 MHz	-20 MHz, within ±50 MHz of calibration frequency	4.04	±13.1%
5620 MHz	5600 MHz	+20 MHz, within ±50 MHz of calibration frequency	4.04	±13.1%
5680 MHz	5600 MHz	+80 MHz, within ±100 MHz of calibration frequency	4.04	±13.1%
5700 MHz	5600 MHz	+100 MHz, within ±100 MHz of calibration frequency	4.04	±13.1%

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

*. Since DASY52 version 8.2 (B969) was used, the frequency validation of ±100MHz was applied. (Refer to Appendix 3-8, EX3DV4 calibration data.)

7.2.3 5745-5825MHz, W58 band

Measurement date: April 5, 2013 Measurement by: Hiroshi Naka

[Liquid measurement (Head simulated tissue)]

Target Frequency [MHz]	Liquid parameters						Temp. [deg.C.]	Depth [mm]	ΔSAR Coefficients (*1)		Remarks / Environment
	Permittivity (εr) [-]			Conductivity [S/m]					ΔSAR (1g) [%]	Correction required?	
	Target	Measured (Δεr)		Target	Measured (Δσ)						
5800	**35.3**	34.00	-3.7%	**5.27**	5.367	1.9%	23.7	143	**+0.65** (*1)	none	April 5, 2013, before SAR test /ambient; 24.3 deg.C., 50%RH
5745	***35.36***	34.14	-3.5%	***5.214***	5.341	2.5%			**+0.58** (*1)	none	
5785	***35.32***	33.97	-3.8%	***5.255***	5.380	2.4%			**+0.65** (*1)	none	
5825	***35.27***	33.81	-4.1%	***5.296***	5.421	2.4%			**+0.72** (*1)	none	

*. 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 3000 to 5800 MHz were obtained using linear interpolation. Furthermore, dielectric parameters for the frequencies above 5800MHz were obtained using linear extrapolation. (Refer to Appendix 3-4.)

*1. The coefficients are parameters defined in Annex F, IEC 62209-2:2010. In accordance with clause 6.1.1 of IEC 62209-2; "If the correction ΔSAR has a negative sign, the measured SAR results shall not be corrected", the calculated ΔSAR values of the tested liquid had shown negative correction. Therefore the measured SAR was not required ΔSAR correction.

ΔSAR(1g)= Cεr ×Δεr + Cσ ×Δσ, Cεr=-7.854E-4×f^3+9.402E-3×f^2-2.742E-2×f-0.2026 / Cσ =9.804E-3×f^3-8.661E-2×f^2+2.981E-2×f+0.7829

[SAR measurement results (near head/partial body)]

SAR measurement results (Head liquid)														Reported		
Mode	[MHz] (CH)	Modulation /Data rate / Crest factor	EUT setup conditions			Liquid temp. [deg.C.]		Power drift [dB]	SAR(1g) [W/kg] maximum value of multi-peak			Data# in Appendix 2-2	Scaled factor	Power-scaled SAR(1g) [W/kg]	Remarks
			Antenna	Position	Gap	Before	After		Measured	ΔSAR [%]	ΔSAR corrected				
Step 2c: Change the channels															
11a	5745 (149)	OFDM /6Mbps /1.0	**Main**	**Front** (Patient side)	0 mm (touch)	23.9	23.9	0.02	**0.504**	+0.58	n/a	Step 2c-1	×1.20	**0.61**	>**Highest.**(W58,Main)
	5785 (157)					23.8	23.9	0.04	**0.375**	+0.65	n/a	Step 2c-2	×1.12	**0.42**	-
	5825 (165)					23.8	23.8	-0.03	**0.469**	+0.72	n/a	Step 2c-3	×1.08	**0.51**	-
11a	5745 (149)	OFDM /6Mbps /1.0	**Sub**	**Front** (Patient side)	0 mm (touch)	23.7	23.8	-0.02	**0.563**	+0.58	n/a	Step 2c-4	×1.35	**0.76**	>Highest.(W58,Sub)
	5785 (157)					23.6	23.7	-0.01	**0.504**	+0.65	n/a	Step 2c-6	×1.22	**0.61**	-
	5825 (165)					23.8	23.8	0.01	**0.505**	+0.72	n/a	Step 2c-5	×1.09	**0.55**	-

Notes:

*. Gap: Separation distance between the outer surface of EUT and the bottom outer surface of phantom., n/a: not applied.

*. During test, the EUT was operated without all signal interface cables and with the fully charged battery.

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

SAR test frequency	Probe calibration frequency	Validity	Used conversion factor	Uncertainty
5745 MHz	5800 MHz	-55 MHz, within ±100 MHz of calibration frequency	4.19	±13.1%
5785 MHz	5800 MHz	-25 MHz, within ±50 MHz of calibration frequency	4.19	±13.1%
5825 MHz	5800 MHz	+25 MHz, within ±50 MHz of calibration frequency	4.19	±13.1%

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

*. Since DASY52 version 8.2 (B969) was used, the frequency validation of ±100MHz was applied. (Refer to Appendix 3-8, EX3DV4 calibration data.)