SAR TEST REPORT

Test Report No.: 10028281S-A

Applicant	:	**FUJIFILM Corporation**
Type of Equipment	:	**Flat Panel Sensor**
Model No.	:	**DR-ID 911SE** ***. With wireless LAN module: 11a,11n(20HT),11n(40HT), MIMO 2×2**
FCC ID	:	**W2Z-01000005**
Test Standard	:	**FCC 47CFR §2.1093**
Test Result	:	**Complied**
Highest reported SAR(1g) Value	:	**0.37 W/kg** ((UNII) Antenna #0, IEEE 802.11a, 6Mbps(BPSK/OFDM), 5180MHz)
Highest reported SAR(1g) Value	:	**0.25 W/kg** ((UNII) Antenna #1, IEEE 802.11a, 6Mbps(BPSK/OFDM), 5180MHz)

*. **Highest reported SAR(1g) across exposure conditions = 0.37 W/kg = grant listing.**

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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: July 4 and 5, 2013

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

Approved by:
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".

JAB Testing RTL02610

REVISION HISTORY

Revision	Test report No.	Date	Page revised	Contents
Original	10028281S-A	August 21, 2013	-	-
1	10028281S-A	March 3, 2014	5	Correction of typo (3.3 Procedures and Results)

*. 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	FUJIFILM Corporation
Brand Name	FUJIFILM
Address	798 Miyanodai, Kaisei-machi, Ashigarakami-gun, Kanagawa-ken 258-8538, Japan
Telephone Number	81-465-85-4500
Facsimile Number	81-465-85-2043
Contact Person	Kouichi Okada

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Type of Equipment	Flat Panel Sensor *.The EUT is a Flat Panel Sensor with a wireless LAN (11a, 11n(20HT), 11n(40HT)) specification.
Model Number	DR-ID 911SE
Serial Number	H121014
Condition of EUT	Production model
Receipt Date of Sample	July 3, 2013 (*. No modification by the Lab.)
Country of Mass-production	Japan
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.
Rating	DC 24V operation. *. This dc power is supplied from either the battery or bus-power connected with the MP. As for EUT, priority was given to bus-power operation during the SAR test. It is because the software of MP supervised transmitting power of EUT at the time of bus-power operation. Furthermore, when it was battery operation, continuous transmission was stopped automatically for about 20 minutes. This operating time was too short for SAR evaluation.
Accessory of EUT	None.

2.2 Product Description (RF module, antenna)

RF module equipment type	Transceiver
RF module model number	SX-PCEAN(FF)
RF module serial number	4E3F15
Frequency of operation	(W52 band) 11a,11n(20HT): 5180-5240MHz, 11n(40HT):5190-5230MHz
Channel spacing	5MHz
Bandwidth	11a,11n(20HT): 20MHz, 11n(40HT): 40MHz
Type of modulation	OFDM(11a,n(20HT),n(40HT)): 64QAM, 16QAM, QPSK, BPSK
Antenna quantity	2 pcs. (*. The model number of two antennas is the same.) IEEE 802.11a: SISO, IEEE.802.11n: SISO (MCS0~MCS7) / MIMO (MCS8~MCS13)
Antenna model	ANTB026-023A0
Antenna type	Planer inverted F antenna
Antenna connector type	RF PCB side: U.FL, Antenna side: U.FL
Antenna gain (maximum)	2.14 dBi Cable loss: 2.3dB (5.15GHz)~2.5dB (5.25GHz) (for antenna #0) Cable loss: 2.3dB (5.15GHz)~2.5dB (5.25GHz) (for antenna #1)
Transmit average power and tolerance (Manufacture variation)	11a: 12.5dBm±2.5dBm, 11n(20HT): 11 dBm±2.5dBm (SISO) / 14dBm±2.5dBm (MIMO) 11n(40HT): 10dBm±2.5dBm (SISO, 5190MHz) / 13dBm±2.5dBm (MIMO, 5190MHz) 11n(40HT): 11dBm±2.5dBm (SISO, 5230MHz) / 14dBm±2.5dBm (MIMO, 5230MHz) *. Refer to clause 2.3 for more detail. *. The measured power refers to section 6 in this report.
Maximum output average power which may possible	11a: 15dBm, 11n(20HT), 11n(40HT): 13.5dBm (SISO) / 16.5dBm (MIMO) *. Refer to clause 2.4 for more detail.
Power supply	Power input: DC3.3V (*.with constant voltage circuit.)
Operation temperature range	+5 to +35 deg.C.

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

2.3 Tx output power specification (antenna port terminal conducted)

		Target Power (Tx output power specification) [dBm] (average)																								
		11a								11n(20HT)																
[MHz]	CH	6	9	12	18	24	36	48	54	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
5180	36	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	11	11	11	11	11	11	11	11	14	14	14	14	14	14	14	14
5200	40	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	11	11	11	11	11	11	11	11	14	14	14	14	14	14	14	14
5220	44	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	11	11	11	11	11	11	11	11	14	14	14	14	14	14	14	14
5240	48	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	11	11	11	11	11	11	11	11	14	14	14	14	14	14	14	14

		11n(40HT)														
[MHz]	CH	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
5190	38	10	10	10	10	10	10	10	10	13	13	13	13	13	13	13	13
5230	46	11	11	11	11	11	11	11	11	14	14	14	14	14	14	14	14

2.4. Maximum output power which may possible

		Maximum output power which may possible [dBm] (average)																								
		11a								11n(20HT)																
[MHz]	CH	6	9	12	18	24	36	48	54	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
5180	36	15	15	15	15	15	15	15	15	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
5200	40	15	15	15	15	15	15	15	15	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
5220	44	15	15	15	15	15	15	15	15	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
5240	48	15	15	15	15	15	15	15	15	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5

		11n(40HT)														
[MHz]	CH	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
5190	38	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
5230	46	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5

SECTION 3: Test specification, procedures and results

3.1 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. 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 in accordance with the following measurement procedures..

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.

KDB 447498 D01 (v05r01): General RF exposure guidance
KDB 248227 D01 (v01r02): SAR Measurement Procedures for 802.11a/b/g Transmitters
KDB 865664 D01 (v01r01): SAR measurement 100MHz to 6GHz
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

***.** 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)	
Test Procedure	SAR measurement: KDB 447498, KDB 248227, KDB 865664, IEC 62209-2, IEEE 1528	
Category	FCC 47CFR §2.1093 (Portable device)	
Results (SAR(1g))	**Complied**	
Antenna	**Antenna#0**	**Antenna#1**
Reported SAR value (*. Scaled)	**0.37 W/kg**	**0.25 W/kg**
Measured SAR value	0.295 W/kg	0.229 W/kg
Operation mode, channel	11a, 6Mbps,5180MHz (36ch)	11a, 6Mbps,5180MHz (36ch)
Power measured/max. (scaled factor)	14.02 dBm/14.25dBm (×1.25)	14.54 dBm/14.25dBm (×1.11)

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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Telephone number: +81 463 50 6400 / Facsimile number: +81 463 50 6401

3.5 Confirmation before SAR testing

3.5.1 Average power for SAR tests

Before SAR test, the RF wiring for the sample had been switched to the antenna conducted power measurement line from the antenna line and the average power was measured. The result is shown in Section 6.

*. By rated power setup, it checked that the power as rated came out. Then, output power was adjusted so that it might go into less than 2 dB of the maximum power. (KDB447498)

Step.1 Data rate check

The data rate check was measurement all modes in one of default frequency.

11a		11n(20HT)						11n (40HT)					
Modulation (OFDM)	Data rate	MCS Index	Spatial Stream	Modulation (OFDM)	MCS Index	Spatial Stream	Modulation (OFDM)	MCS Index	Spatial Stream	Modulation (OFDM)	MCS Index	Spatial Stream	Modulation (OFDM)
BPSK	6 Mbps	MCS0	1	BPSK	MCS8	2	BPSK	MCS0	1	BPSK	MCS8	2	BPSK
BPSK	9 Mbps	MCS1	1	QPSK	MCS9	2	QPSK	MCS1	1	QPSK	MCS9	2	QPSK
QPSK	12 Mbps	MCS2	1	QPSK	MCS10	2	QPSK	MCS2	1	QPSK	MCS10	2	QPSK
QPSK	18 Mbps	MCS3	1	16QAM	MCS11	2	16QAM	MCS3	1	16QAM	MCS11	2	16QAM
16QAM	24 Mbps	MCS4	1	16QAM	MCS12	2	16QAM	MCS4	1	16QAM	MCS12	2	16QAM
16QAM	36 Mbps	MCS5	1	64QAM	MCS13	2	64QAM	MCS5	1	64QAM	MCS13	2	64QAM
64QAM	48 Mbps	MCS6	1	64QAM	MCS14	2	64QAM	MCS6	1	64QAM	MCS14	2	64QAM
64QAM	54 Mbps	MCS7	1	64QAM	MCS15	2	64QAM	MCS7	1	64QAM	MCS15	2	64QAM

Step.2 Consideration of SAR test channel

The average output power for 802.11a, 11n(20HT), 11n(40Ht) were measured on all channels.

Table 1, KDB248227				SAR Tested/Reduced					Remarks
Mode	GHz	Channel	default 11a	11a	11n(20HT) (SISO)	11n(20HT) (MIMO)	11n(40HT) (SISO)	11n(40HT) (MIMO)	
802. 11a/n	5.18	36	√	Tested	Reduced(*2)	Reduced(*2)	-	-	SAR test was only applied at lowest data rate. (*1)
	5.19	38	-	-	-	-	Reduced(*3)	Reduced(*3)	
	5.20	40	*	-	-	-	-	-	
	5.22	44	*	-	-	-	-	-	
	5.23	46	-	-	-	-	Reduced(*3)	Tested	
	5.24	48	√	Tested	Reduced(*2)	Reduced(*2)	-	-	

√ = "default test channels of requested by KDB248227", * = Possible 802.11a channels with maximum average output > the "default test channels"

*1. Since the target average power of 11n(20HT) was 1.5dB lower than the corresponded 11a power, SAR test was not applied to the 11n(20HT) mode. (KDB248227)

*2. 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)

*3. Since the output of each antenna in SISO mode and MIMO mode was the same, only MIMO mode was SAR tested as a representative.

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 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.

Setup	Explanation of EUT setup position (*. Refer to Appendix 1 for test setup photographs.)	Antenna #0 to user distance	SAR Tested /Reduced	Antenna #1 to user distance	SAR Tested /Reduced
Front	The front surface (patient side) of EUT was only touched to the Flat phantom. This section is the closest to an antenna #0 and antenna #1.	**3.634mm**	Tested	**3.634mm**	Tested
Top	The top surface of EUT was touched to the Flat phantom.	**14.05mm**	Tested	**14.05mm**	Tested
Rear	The rear surface (operator side) of EUT was only touched to the Flat phantom.	**12.75mm**	Tested	**12.75mm**	Tested
Right	The right surface of EUT was touched to the Flat phantom.	**100.35mm**	**Reduced(*1)**	**331.35mm**	**Reduced(*1)**
Bottom	The bottom surface of EUT was touched to the Flat phantom.	**≈498mm**	**Reduced(*1)**	**≈498mm**	**Reduced(*1)**
Left	The left surface of EUT was touched to the Flat phantom.	**331.35mm**	**Reduced(*1)**	**100.35mm**	**Reduced(*1)**

***. Size of EUT: 464.5 (width) × 516.7 (depth) × 18 (height) [mm]**

*1. SAR test reduction consideration
KDB 447498 D01 (v05r01) was taken into consideration as other approaches to reduce SAR test..
Parenthesis 1), Clause 4.3.1, KDB 447498 D01 (v05r01) gives the following formula to calculate the SAR(10g) test exclusion thresholds for 100MHz-6GHz at test separation distance ≤50mm.
[(max.power of channel, including tune-up tolerance, mW) / (min.test separation distance, mm)] × [√f(GHz)] ≤ 3.0 (for SAR(1g)) ·····(formula (1))
If power is calculated from the upper formula (1);
[SAR(1g) test exclusion thresholds, mW] = 3 × [test separation distance, mm] / [√f(GHz)] ·····(formula (2))
Parenthesis 2), Clause 4.3.1, KDB 447498 D01 (v05r01) gives the following formula to calculate the SAR(10g) test exclusion thresholds for 1.5-6GHz at test separation distance >50mm.
[Test exclusion thresholds, mW] = [(Power allowed at numeric threshold for 50mm in formula (1))] + [(test separation distance, mm) - (50mm)] × 10(formula (3))
According to this formula, the result of having calculated the value in 3.6, 12.7, 14, 35, 100, 330 and 498 mm of distance are shown in the following table.

SAR(1g) test exclusion thresholds [mW]							
Frequency [GHz]	Separation distance [mm]						
	3.6	12.7	14	35	100	330	498
5.18	**4.7** (6.7dBm)	**16.7** (12.2dBm)	**18.5** (12.6dBm)	**46.1** (16.6dBm)	**566** (27.5dBm)	**2866** (34.6dBm)	**4545** (36.5dBm)
5.24	**4.7** (6.7dBm)	**16.8** (12.2dBm)	**18.3** (12.6dBm)	**45.9** (16.6dBm)	**566** (27.5dBm)	**2866** (34.6dBm)	**4545** (36.5dBm)

*. The measured average power of EUT was shown in Section 6: Confirmation before SAR testing.

Since the maximum power (including tune-up tolerance) of EUT was 16.5dBm, SAR test was excluded with the test separation distance of 35 mm or more.

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

Step 1	Change the channels and operation mode at highest SAR position which was confirmed in previous test
Step 2	Change the positions.

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

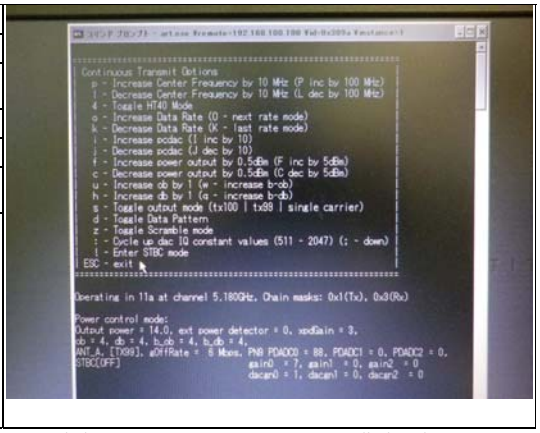
SECTION 4: Operation of EUT during testing

4.1 Operating modes for the power measurement and the SAR testing

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

Operation mode	11a	11n(20HT)	11n(40HT)
Tx frequency band	5180-5240MHz		5190-5230MHz
Tested channel	5180MHz (36ch) 5240MHz (48ch)	Reduced (*2)	5230MHz (46ch)
Modulation	BPSK/OFDM	Reduced (*2)	BPSK/OFDM
Data rate	6Mbps	Reduced (*2)	MCS8
Crest factor	1.0 (100% duty cycle)	Reduced (*2)	1.0 (100% duty cycle)

Controlled software: ART09
Mode: Continuous transmit mode. / Toggle output mode: tx99.
Tx antenna chain: Ant#0=100, Ant#0=010, Ant#0+Ant#1(MIMO)=110.
Frequency: Selected the target frequency. / Data Rate: Selected the target data rate.
HT40: Selected when 11n(40HT) was tested.
Setting target power: 11a=12.5 (rated power)/14(SAR reference)
Setting target power: 11n(20HT)=11 (rated power)
Setting target power: 11n(40HT)=10 (rated power) (5190MHz)
Setting target power: 11n(40HT)=11 (rated power)/13(SAR reference) (5230MHz)
*. As for parameters other than the above, the initial value was used.



*2. Since the target average power of 11n(20HT) was 1.5dB lower than the corresponded 11a power, SAR test was not applied to the 11n(20HT) mode. (KDB248227)

*. During SAR test, the EUT was connected with the power supply unit via SE cable in order to set and to monitor the transmit condition.

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** %	

*. Table of uncertainties are listed for ISO/IEC 17025

*. This measurement uncertainty budget is suggested by IEEE 1528, IEC 62209-2 and determined by Schmid & Partner Engineering AG (DASY5 Uncertainty Budget). Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r01 Section 2.8.1., when the highest measured SAR(1g) within a frequency band is < 1.5W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2003 is not required in SAR reports submitted for equipment approval.

SECTION 6: Confirmation before testing

6.1 Assessment for the conducted power of EUT

6.1.1 Rated power measurement (Worst data rate & worst channel determination)

【Power(Rated)】 11a

Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Modulation	duty factor [dB]	Attenuator [dB]	Ant.#0(100) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	Ant.#1(010) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]
							Set.pwr 12.5	Max.pwr 15.0 dBm								Set.pwr 12.5	Max.pwr 15.0 dBm							
40	5200	6	0,1	BPSK OFDM	0.02	10.08	1.24	1.42	11.51	12.76	22.83	−0.20	10.09	−2.24		1.20	1.14	11.00	12.44	22.28	−0.43	9.86	−2.56	
44	5220	6	0,1	BPSK OFDM	0.02	10.08	1.24	1.23	11.26	12.57	22.58	−0.39	10.03	−2.43		1.20	1.10	11.03	12.40	22.31	−0.47	9.93	−2.60	
48	5240	6	0,1	BPSK OFDM	0.02	10.08	1.24	1.03	11.11	12.37	22.43	−0.59	10.08	−2.63		1.20	1.10	10.87	12.40	22.15	−0.47	9.77	−2.60	
36	5180	6	0,1	BPSK OFDM	0.02	10.08	1.24	1.62	11.65	**12.96**	22.97	ref	10.03	−2.04		1.20	1.57	11.24	**12.87**	22.52	ref	9.67	−2.13	
36	5180	9	0,1	BPSK OFDM	0.03	10.08	1.24	1.60	11.60	12.95	22.92	−0.01	10.00	−2.05		1.20	1.53	11.41	12.84	22.69	−0.03	9.88	−2.16	
36	5180	12	0,1	QPSK OFDM	0.04	10.08	1.24	1.59	11.68	12.95	23.00	−0.01	10.09	−2.05		1.20	1.53	11.22	12.85	22.50	−0.02	9.69	−2.15	
36	5180	18	0,1	QPSK OFDM	0.07	10.08	1.24	1.47	11.49	12.86	22.81	−0.10	10.02	−2.14		1.20	1.49	11.27	12.84	22.55	−0.03	9.78	−2.16	
36	5180	24	0,1	16QAM OFDM	0.08	10.08	1.24	1.44	11.67	12.84	22.99	−0.12	10.23	−2.16		1.20	1.46	11.04	12.82	22.32	−0.05	9.58	−2.18	
36	5180	36	0,1	16QAM OFDM	0.10	10.08	1.24	1.34	11.37	12.76	22.69	−0.20	10.03	−2.24		1.20	1.46	11.20	12.84	22.48	−0.03	9.74	−2.16	
36	5180	48	0,1	64QAM OFDM	0.14	10.08	1.24	1.39	11.40	12.85	22.72	−0.11	10.01	−2.15		1.20	1.42	10.75	12.84	22.03	−0.03	9.33	−2.16	
36	5180	54	0,1	64QAM OFDM	0.15	10.08	1.24	1.31	11.40	12.78	22.72	−0.18	10.09	−2.22		1.20	1.40	11.27	12.83	22.55	−0.04	9.87	−2.17	

【Power(Rated)】 n(20HT)(SISO)

Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Modulation	duty factor [dB]	Attenuator [dB]	Ant.#0(100) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	Ant.#1(010) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	SUM Ave [dBm]
							set.pwr 11.0	max.pwr 13.5 dBm								set.pwr 11.0	max.pwr 13.5 dBm								
40	5200	MCS0	0,1	BPSK OFDM	0.03	10.08	1.24	0.07	10.99	11.42	22.31	−0.12	10.92	−2.08		1.20	−0.11	10.51	11.20	21.79	−0.19	10.62	−2.30		
44	5220	MCS0	0,1	BPSK OFDM	0.03	10.08	1.24	0.01	10.89	11.36	22.21	−0.18	10.88	−2.14		1.20	−0.10	10.41	11.21	21.69	−0.18	10.51	−2.29		
48	5240	MCS0	0,1	BPSK OFDM	0.03	10.08	1.24	−0.27	10.62	11.08	21.94	−0.46	10.89	−2.42		1.20	−0.12	10.72	11.19	22.00	−0.20	10.84	−2.31		
36	5180	MCS0	0,1	BPSK OFDM	0.03	10.08	1.24	0.19	11.04	**11.54**	22.36	ref	10.85	−1.96		1.20	0.08	10.77	**11.39**	22.05	ref	10.69	−2.11		
36	5180	MCS1	0,1	QPSK OFDM	0.04	10.08	1.24	0.20	10.52	11.56	21.84	0.02	10.32	−1.94		1.20	−0.03	10.51	11.29	21.79	−0.10	10.54	−2.21		
36	5180	MCS2	0,1	QPSK OFDM	0.08	10.08	1.24	0.16	10.64	11.56	21.96	0.02	10.48	−1.94		1.20	−0.02	10.70	11.34	21.98	−0.05	10.72	−2.16		
36	5180	MCS3	0,1	16QAM OFDM	0.08	10.08	1.24	0.15	10.54	11.55	21.86	0.01	10.39	−1.95		1.20	−0.08	10.32	11.28	21.60	−0.11	10.40	−2.22		
36	5180	MCS4	0,1	16QAM OFDM	0.12	10.08	1.24	0.08	10.59	11.52	21.91	−0.02	10.51	−1.98		1.20	−0.03	10.38	11.37	21.66	−0.02	10.41	−2.13		
36	5180	MCS5	0,1	64QAM OFDM	0.14	10.08	1.24	0.09	10.45	11.55	21.77	0.01	10.36	−1.95		1.20	−0.09	10.08	11.33	21.36	−0.06	10.17	−2.17		
36	5180	MCS6	0,1	64QAM OFDM	0.16	10.08	1.24	0.06	10.51	11.54	21.83	0.00	10.45	−1.96		1.20	−0.10	10.19	11.34	21.47	−0.05	10.29	−2.16		
36	5180	MCS7	0,1	64QAM OFDM	0.17	10.08	1.24	−0.25	10.18	11.24	21.50	−0.30	10.43	−2.26		1.20	−0.37	9.59	11.08	20.87	−0.31	9.96	−2.42		

n(20HT)(MIMO)

Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Modulation	duty factor [dB]	Attenuator [dB]	Ant.#0(100) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	Ant.#1(010) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	SUM Ave [dBm]
							set.pwr 11.0	max.pwr 13.5 dBm								set.pwr 11.0	max.pwr 13.5 dBm								
40	5200	MCS0	0+1	BPSK OFDM	0.04	10.08	1.24	0.01	10.23	11.37	21.55	−0.19	10.22	−2.13		1.20	−0.44	9.86	10.88	21.14	−0.39	10.30	−2.62		14.14
44	5220	MCS0	0+1	BPSK OFDM	0.04	10.08	1.24	0.09	10.69	11.45	22.01	−0.11	10.60	−2.05		1.20	−0.22	9.97	11.10	21.25	−0.17	10.19	−2.40		14.29
48	5240	MCS0	0+1	BPSK OFDM	0.04	10.08	1.24	−0.03	10.38	11.33	21.70	−0.23	10.41	−2.17		1.20	−0.31	9.91	11.01	21.19	−0.26	10.22	−2.49		14.18
36	5180	MCS8	0+1	BPSK OFDM	0.04	10.08	1.24	0.20	10.86	**11.56**	22.18	ref	10.66	−1.94		1.20	−0.05	10.36	**11.27**	21.64	ref	10.41	−2.23		**14.43**
36	5180	MCS9	0+1	QPSK OFDM	0.08	10.08	1.24	0.10	10.20	11.50	21.52	−0.06	10.10	−2.00		1.20	−0.10	9.80	11.26	21.08	−0.01	9.90	−2.24		14.39
36	5180	MCS10	0+1	QPSK OFDM	0.13	10.08	1.24	0.09	10.55	11.54	21.87	−0.02	10.46	−1.96		1.20	−0.14	9.69	11.27	20.97	0.00	9.83	−2.23		14.42
36	5180	MCS11	0+1	16QAM OFDM	0.15	10.08	1.24	0.08	10.79	11.55	22.11	−0.01	10.71	−1.95		1.20	−0.20	9.76	11.23	21.04	−0.04	9.96	−2.27		14.40
36	5180	MCS12	0+1	16QAM OFDM	0.20	10.08	1.24	−0.04	10.40	11.48	21.72	−0.08	10.44	−2.02		1.20	−0.21	9.85	11.27	21.13	0.00	10.06	−2.23		14.39
36	5180	MCS13	0+1	64QAM OFDM	0.25	10.08	1.24	−0.07	10.52	11.50	21.84	−0.06	10.59	−2.00		1.20	−0.25	9.75	11.28	21.03	0.01	10.00	−2.22		14.40
36	5180	MCS14	0+1	64QAM OFDM	0.28	10.08	1.24	−0.15	10.20	11.45	21.52	−0.11	10.35	−2.05		1.20	−0.25	9.76	11.31	21.04	0.04	10.01	−2.19		14.39
36	5180	MCS15	0+1	64QAM OFDM	0.29	10.08	1.24	−0.15	10.15	11.46	21.47	−0.10	10.30	−2.04		1.20	−0.38	9.66	11.19	20.94	−0.08	10.04	−2.31		14.34

【Power(Rated)】 n(40HT)(SISO)

Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Modulation	duty factor [dB]	Attenuator [dB]	Ant.#0(100) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	Ant.#1(010) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	SUM Ave [dBm]
							set.pwr 10.0	max.pwr 12.5 dBm								set.pwr 10.0	max.pwr 12.5 dBm								
							set.pwr 11.0	max.pwr 13.5 dBm						(38ch) (46ch)		set.pwr 11.0	max.pwr 13.5 dBm						(38ch) (46ch)		
38	5190	MCS0	0,1	BPSK OFDM	0.04	10.08	1.24	−0.83	10.29	10.53	21.61	−0.94	11.12	−1.97		1.20	−1.09	9.56	10.23	20.84	−0.88	10.65	−2.27		
46	5230	MCS0	0,1	BPSK OFDM	0.04	10.08	1.24	0.11	11.00	**11.47**	22.32	ref	10.89	−2.03		1.20	−0.21	10.37	**11.11**	21.65	ref	10.58	−2.39		
46	5230	MCS1	0,1	QPSK OFDM	0.08	10.08	1.24	0.09	10.63	11.49	21.95	0.02	10.54	−2.01		1.20	−0.29	10.11	11.07	21.39	−0.04	10.40	−2.43		
46	5230	MCS2	0,1	QPSK OFDM	0.11	10.08	1.24	0.07	10.60	11.50	21.92	0.03	10.53	−2.00		1.20	−0.35	10.02	11.04	21.30	−0.07	10.37	−2.46		
46	5230	MCS3	0,1	16QAM OFDM	0.15	10.08	1.24	0.08	10.31	11.55	21.63	0.08	10.23	−1.95		1.20	−0.21	10.06	11.22	21.34	0.11	10.27	−2.28		
46	5230	MCS4	0,1	16QAM OFDM	0.20	10.08	1.24	−0.16	10.28	11.36	21.60	−0.11	10.44	−2.14		1.20	−0.33	10.07	11.15	21.35	0.04	10.40	−2.35		
46	5230	MCS5	0,1	64QAM OFDM	0.26	10.08	1.24	−0.16	10.21	11.42	21.53	−0.05	10.37	−2.08		1.20	−0.38	9.91	11.16	21.19	0.05	10.29	−2.34		
46	5230	MCS6	0,1	64QAM OFDM	0.27	10.08	1.24	−0.14	10.38	11.45	21.70	−0.02	10.52	−2.05		1.20	−0.41	10.00	11.14	21.28	0.03	10.41	−2.36		
46	5230	MCS7	0,1	64QAM OFDM	0.31	10.08	1.24	−0.14	10.41	11.49	21.73	0.02	10.55	−2.01		1.20	−0.80	9.65	10.79	20.93	−0.32	10.45	−2.71		

n(40HT)(MIMO)

Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Modulation	duty factor [dB]	Attenuator [dB]	Ant.#0(100) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	Ant.#1(010) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	SUM Ave [dBm]
							set.pwr 10.0	max.pwr 12.5 dBm						(38ch)		set.pwr 10.0	max.pwr 12.5 dBm						(38ch)		
							set.pwr 11.0	max.pwr 13.5 dBm						(46ch)		set.pwr 11.0	max.pwr 13.5 dBm						(46ch)		
38	5190	MCS8	0+1	BPSK OFDM	0.08	10.08	1.24	−0.98	9.52	10.42	20.84	−1.20	10.50	−2.08		1.20	−1.21	8.93	10.15	20.21	−1.13	10.14	−2.35		13.30
46	5230	MCS8	0+1	BPSK OFDM	0.08	10.08	1.24	0.22	10.48	**11.62**	21.80	ref	10.26	−1.88		1.20	−0.08	9.99	**11.28**	21.27	ref	10.07	−2.22		**14.46**
46	5230	MCS9	0+1	QPSK OFDM	0.15	10.08	1.24	0.05	10.65	11.52	21.97	−0.10	10.60	−1.98		1.20	−0.32	9.57	11.11	20.85	−0.17	9.89	−2.39		14.33
46	5230	MCS10	0+1	QPSK OFDM	0.21	10.08	1.24	−0.02	10.17	11.51	21.49	−0.11	10.19	−1.99		1.20	−0.30	9.72	11.19	21.00	−0.09	10.02	−2.31		14.36
46	5230	MCS11	0+1	16QAM OFDM	0.26	10.08	1.24	−0.03	10.03	11.55	21.35	−0.07	10.06	−1.95		1.20	−0.35	9.53	11.19	20.81	−0.09	9.88	−2.31		14.38
46	5230	MCS12	0+1	16QAM OFDM	0.34	10.08	1.24	−0.13	9.99	11.53	21.31	−0.09	10.12	−1.97		1.20	−0.33	9.72	11.29	21.00	0.01	10.05	−2.21		14.42
46	5230	MCS13	0+1	64QAM OFDM	0.42	10.08	1.24	−0.15	9.68	11.59	21.00	−0.03	9.83	−1.91		1.20	−0.42	9.67	11.28	20.95	0.00	10.09	−2.22		14.45
46	5230	MCS14	0+1	64QAM OFDM	0.44	10.08	1.24	−0.19	9.80	11.57	21.12	−0.05	9.99	−1.93		1.20	−0.42	9.41	11.30	20.69	0.02	9.83	−2.20		14.45
46	5230	MCS15	0+1	64QAM OFDM	0.47	10.08	1.24	−0.20	9.88	11.59	21.20	−0.03	10.08	−1.91		1.20	−0.50	9.52	11.25	20.80	−0.03	10.02	−2.25		14.43

6.1.2 SAR test reference power

【Power(SAR Ref)】 11a

Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Modulation	duty factor [dB]	Attenuator [dB]	Ant.#0(100) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	Ant.#1(010) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]
							Set.pwr 14.0	Max.pwr 15.0 dBm								Set.pwr 14.0	Max.pwr 15.0 dBm							
40	5200	6	0,1	BPSK OFDM	0.02	10.08	1.24	2.62	12.58	13.96	23.90	−0.06	9.96	−1.04	1.27	1.20	2.72	11.47	14.02	22.75	−0.52	8.75	−0.98	1.25
44	5220	6	0,1	BPSK OFDM	0.02	10.08	1.24	2.65	12.22	13.99	23.54	−0.03	9.57	−1.01	1.26	1.20	2.78	11.57	14.08	22.85	−0.46	8.79	−0.92	1.24
48	5240	6	0,1	BPSK OFDM	0.02	10.08	1.24	2.67	12.37	14.01	23.69	−0.01	9.70	−0.99	1.26	1.20	2.79	11.57	14.09	22.85	−0.45	8.78	−0.91	1.23
36	5180	6	0,1	BPSK OFDM	0.02	10.08	1.24	2.68	12.42	14.02	23.74	ref	9.74	−0.98	1.25	1.20	3.24	11.87	14.54	23.15	ref	8.63	−0.46	1.11

【Power(SAR Ref)】 n(40HT)(MIMO)

Ch.	Freq. [MHz]	D/R [Mbps]	Ant. No.	Modulation	duty factor [dB]	Attenuator [dB]	Ant.#0(100) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	Ant.#1(010) Cable Loss [dB]	P/M [dBm] Ave	P/M [dBm] Pk	Results [dBm] Ave	Results [dBm] Pk	Δworst ave.[dB]	PAR [dB]	Δmax [dB]	Scaled F[-]	SUM Ave [dBm]
							set.pwr 13.0	max.pwr 13.5 dBm						(46ch)		set.pwr 13.0	max.pwr 13.5 dBm						(46ch)		
46	5230	MCS0	0,1	BPSK OFDM	0.04	10.08	1.24	1.65	11.98	**13.01**	23.30	ref	10.33	−0.49	1.12	1.20	1.51	11.10	**12.83**	22.38	ref	9.59	−0.67	1.17	
46	5230	MCS8	0+1	BPSK OFDM	0.08	10.08	1.24	1.66	12.20	**13.06**	23.52	ref	10.54	−0.44	1.11	1.20	1.55	10.97	**12.91**	22.25	ref	9.42	−0.59	1.15	16.00

*. Ch.: Channel, Freq.: Frequency, D/R: Data Rate, Ant.:Antenna, P/M: Power meter reading power, Ave.: Average power, Pk.: Peak power, duty factor: 0dB=100% duty cycle, Sett pwr.: setting value of the software, Max.pwr.: Maximum output power including the manufacture's tolerance.

*. Calculating formula: Results (Ave.) = ["P/M(Ave)"]+["Cable loss"]+["Attenuator"]+["duty factor"], Results (Pk) = ["P/M(Pk)"]+["Cable loss"]+["Attenuator"] Duty factor = 10 × log (100 / (duty cycle(%)), Δmax.: Power 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))

*. Date measured: July 4, 2013 / measured by: Hiroshi Naka / Place: preparation room of No. 7 shielded room , 24deg.C. & 50%RH

SECTION 7: Measurement results

7.1 SAR measurement results (Body touch)

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

[Liquid measurement (Body simulated tissue)]

Target Frequency [MHz] (CH)	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)					
5180 (36)	*49.04*	47.37 : -3.4%	*5.276*	5.455 : +3.4%	24.2	129	(+0.69)	not required.	July 5, 2013, before SAR test /ambient; 24.3 deg.C., 57%RH
5230 (46)	*48.97*	47.33 : -3.4%	*5.334*	5.501 : +3.1%			(+0.66)	not required.	
5240 (48)	*48.96*	47.35 : -3.3%	*5.346*	5.530 : +3.5%			(+0.70)	not required.	

*. The target value is a parameter defined in Appendix A of KDB865664 D01 (v01r01), the dielectric parameters suggested for head and body tissue simulating liquid are given at 3000 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)

[SAR measurement results (Partial-Body)]

SAR measurement results (Body simulated tissue)														Reported SAR		
Mode	[MHz] (CH)	Modulation /Data rate / Crest factor	Host device setup conditions: Antenna	Position	Gap [mm]	Battery #	Liquid temp. [deg.C.]: Before	After	Power drift [dB]	SAR (1g) [W/kg] maximum value of multi-peak: Observed	ΔSAR [%]	ΔSAR corrected	Data# in Appendix 2-2	SAR (1g) [W/kg]: Scaled factor	tune-up SAR	Remarks
Step 1: Changed channels and operation mode																
11a	5180(36)	BPSK&OFDM /6Mbps /1.0	#0	Front (Patient side)	0	01(*2)	23.9	23.8	-0.20	**0.295**	(*1)	(*1)	Step 1-1	×1.25	**0.37**	->Highest SAR.
			#1			01(*2)	23.8	23.8	0.20	**0.229**	(*1)	(*1)	Step 1-2	×1.11	**0.25**	-
	5240(48)		#0			02(*2)	23.8	23.8	0.05	**0.252**	(*1)	(*1)	Step 1-3	×1.26	**0.32**	-
			#1			02(*2)	23.8	23.8	-0.19	**0.109**	(*1)	(*1)	Step 1-4	×1.23	**0.13**	-
11n (40HT)	5230(46)	BPSK&OFDM /MCS8 /1.0	#0,#1 (MIMO)			01(*2)	23.8	23.8	-0.08	**0.199**	(*1)	(*1)	Step 1-5	×1.11	**0.22**	Antenna #0 (*4)
Step 2: Changed the position																
11a	5180(36)	BPSK&OFDM /6Mbps /1.0	#0	Rear	0	02(*2)	23.8	23.8	-	*. This field was covered with metal, and since fast-SAR(1g) of the area scan was small enough, zoom-scan did not carry out.			(*5)	×1.25	-	-
			#1			02(*2)	23.8	23.8	-				(*5)	×1.11	-	-
	5180(36)		#0	Top (Handle)		03(*3)	23.8	23.8	-				(*5)	×1.25	-	-
			#1			03(*3)	23.8	23.8	-				(*5)	×1.11	-	-

Notes:

*. Gap: It is the separation distance between the EUT outer surface and the bottom outer surface of phantom.

*1. The number of ΔSAR(1g) of body simulated tissue was reference purpose only. ΔSAR coefficients are parameters defined in Annex F, IEC 62209-2:2010 (head tissue). In accordance with clause 6.1.1 of IEC62209-2; "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

*2. During test, SE cable was connected.

*3. During test, SE cable was disconnected.

*4. For Co-location of the multi antenna transmitting simultaneously (MIMO), the measured SAR(1g) values of each antenna were not summed, because the antenna separation of each antenna was 200mm.

*5. Since zoom scan was not carried out, SAR plot data was not attached to this report (Appendix 2-2).

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

SAR test frequency	Probe calibration frequency	Validity [MHz]	Used conversion factor	Uncertainty
5180 MHz	5200 MHz	-20MHz, within ±50 of calibration frequency	4.16	±13.1%
5230 MHz	5200 MHz	+30MHz, within ±50 of calibration frequency	4.16	±13.1%
5240 MHz	5200 MHz	+40MHz, within ±50 of calibration frequency	4.16	±13.1%

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

***. The head SAR by using the head simulated liquid was not applied, because the measured body SAR was enough small to the limit. Furthermore, since human head is smaller enough than EUT size, about the separation distance of an antenna and a human body, the direction of the head becomes larger than the setup to the body.**