



SAR TEST REPORT

Test Report No. : 30IE0003-HO-01-A-R1

Applicant : CANON INC.
Type of Equipment : Wireless LAN Module
Model No. : BM70432
FCC ID : AZDBM70432
Test regulation : FCC47CFR 2.1093
FCC OET BULLETIN 65, SUPPLEMENT C
(Edition 01-01)
Test Result : Complied

Max. SAR Value

IEEE802.11b/g/n : 0.025W/kg (11b, 2462MHz)

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
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5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This report is a revised version of 30IE0003-HO-01-A. 30IE0003-HO-01-A is replaced with this report.

Date of test:

May 17 to 18, 2010

Tested by:

Miyo Kishimoto
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Approved by :

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Manager of EMC Service



NVLAP LAB CODE: 200572-0

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<http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

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SECTION 1: Customer information

Company Name : CANON INC.
Address : 30-2, Shimomaruko 3-chome, Ohta-Ku, Tokyo, 146-8501 Japan
Telephone Number : +81-3-3757-8538
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Contact Person : HIDEKI HOSOYA

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

2.1 Identification of E.U.T.

Type of Equipment : Wireless LAN Module
Model No. : BM70432
Serial No. : 19
Rating : DC3.3V & DC2.85V
Country of Mass-production : Japan
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No modification by the test lab.
Receipt Date of Sample : May 14, 2010

2.2 Product Description

Model: BM70432 (referred to as the EUT in this report) is a Wireless LAN Module.

Equipment type : Transceiver
Frequency of operation : 11b, 11g, and 11n-20 : 2412-2462MHz
11n-40 : 2422-2452MHz
Clock frequency : 38.4MHz
Bandwidth & channel spacing : 11b, 11g, and 11n-20
Bandwidth : 20MHz
Channel spacing : 5MHz
11n-40
Bandwidth : 40MHz
Channel spacing : 5MHz
Type of modulation : 11b : DSSS
11g, 11n : OFDM
Antenna type : Planar Inverted F Antenna
Antenna gain with cable loss : 2.37dBi
Antenna connector type : U.FL
ITU code : D1D, G1D
Operation temperature range : 0 to +45 deg.C.

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SECTION 3 : Test standard information

3.1 Requirements for compliance testing defined by the FCC

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

1 Specific Absorption Rate (SAR) is a measure of the rate of energy absorption due to exposure to an RF transmitting source (wireless portable device).

2 IEEE/ANSI Std. C95.1-1992 limits are used to determine compliance with FCC ET Docket 93-62.

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

Supplement C (Edition 01-01) - Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions

OET Bulletin 65 (Edition 97-01) - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

IEEE Std 1528-2003:

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

In additions;

KDB 447498 D01(v04):

Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies

KDB 248227 (rev.1.2):

SAR Measurement Procedures for 802.11a/b/g Transmitters

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3.2 Procedure and result

TEST Outline

This EUT is a limited module approval according to section 15.212(b). The procedure of SAR was measured according to the KDB447498 D01(v04) 2).

No.	Item	Test Procedure	Limit	Remarks	Exclusion	Result
1	Human Exposure	FCC OET BULLETIN 65, SUPPLEMENT C	FCC47CFR 2.1093	SAR Measurement	N/A	Complied

Note: UL Japan, Inc. 's SAR Work Procedures QPM46 and QPM47

Result of Max. SAR value

Max. SAR Value:

IEEE802.11b/g/n : 0.025W/kg (11b,2462MHz)

The 1-g SAR was <0.4W/kg for all configurations.

Therefore according to the KDB447498 D01, the EUT can be used in portable exposure conditions with no restrictions on host platforms.

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3.3 Exposure limit

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

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

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

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

Occupational/Controlled Environments: are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

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

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

3.4 Test Location

*Shielded room for SAR testings
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3.5 Confirmation before SAR testing

3.5.1 Correlation of Output Power between EMC and SAR tests

It was checked that the antenna port power was correlated within 0~+5% (FCC requirements)
The result is shown in Section 6.1.

Output power at EMC test

- The EMC power was measured the peak output power in the FCC 15.247.
- The test configuration was performed in the standalone.

Output power at SAR test

- The SAR power was measured the peak output power before SAR testing
- The test configuration was performed in state of host device incorporate the EUT.

3.5.2 Average power for SAR testing

Step.1 Data rate check

The data rate check was measurement all data rate in the middle frequency of each frequency band.

Reference of modulation table

11b		11g	
Modulation	Data rate [Mbps]	Modulation	Data rate [Mbps]
DBPSK	1	BPSK	6
DQPSK	2	BPSK	9
CCK	5.5	QPSK	12
CCK	11	QPSK	18
-	-	16QAM	24
-	-	16QAM	36
-	-	64QAM	48
-	-	64QAM	54

*Reference of MCS index

MCS	Modulation	Data rate[Mbps] 20Mband (HT20)	Data rate[Mbps] 40Mband (HT40)
0	BPSK	6.5	13.5
1	QPSK	13	27
2	QPSK	19.5	40.5
3	16QAM	26	54
4	16QAM	39	81
5	64QAM	52	108
6	64QAM	58.5	121.5
7	64QAM	65	135

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3.6 Confirmation after SAR testing

It was checked that the power drift [W] is within $\pm 5\%$. The verification of power drift during the SAR test is that DASY4 system calculates the power drift by measuring the E-field at the same location at beginning and the end of the scan measurement for each test position.

DASY4 system calculation Power drift value[dB] = $20\log(E_a)/(E_b)$

Before SAR testing : E_b [V/m]

After SAR testing : E_a [V/m]

Limit of power drift[W] = $\pm 5\%$

$X[\text{dB}] = 10\log[P] = 10\log(1.05/1) = 10\log(1.05) - 10\log(1) = 0.212\text{dB}$

from E-field relations with power.

$S = E \cdot H = E^2 / \eta = P / 4 \pi r^2$ (η : Space impedance)

$P = E^2 \cdot 4 \pi r^2 / \eta$

Therefore, The correlation of power and the E-field

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

From the above mentioned,

The calculated power drift of DASY4 System must be the less than $\pm 0.212\text{dB}$.

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3.7 Measurement procedure

Step1. Change to the Low, Mid and High channels in the IEEE802.11b mode

The tested data rate was performed on the CCK(11Mbps) of maximum average power.

Step2. Change to the data rate in the IEEE802.11b mode

The tested data rate was performed on the DBPSK(1Mbps) of lowest data rate and worst channel of Step1

Step3. Without accessories in the IEEE802.11b mode

The tested data rate was performed on the worst condition of step1 to Step2.

Step4. Change to the mode

- IEEE802.11g mode

The tested data rate was performed on the highest average output power in the 11g mode.

This data is reference data since SAR is not required for 802.11g channels when the maximum average output power is less than 1/4dB higher than that measured on the corresponding 802.11b channels.

- IEEE802.11n HT20 / HT40

The tested mode was performed on the highest average output power of each mode (HT20/HT40).

As a result, when the 1g SAR is less than 0.8W/kg, testing for the other channels is not required.

Step5. Change to the separation

The device is moved away from the phantom in 5mm increments from the touching.

A single-point SAR is measured until the SAR is less than 50% of that measured at the touching position.

3.8 Test setup of EUT

This EUT is incorporated to the medical device as a host device.

This medical device is used under the guidance of a doctor or a qualified person and RF exposure configuration is for only patient's body. In addition only the front surface of device is touched to the patient's body.

Please refer to "APPENDIX 1" for more details.

(1) Front:

The test was performed in touch with front surface of the device with accessories to the flat phantom.

(2) Front without accessories:

The test was performed in touch with front surface of the device without accessories to the flat phantom.

(3) Front (5mm) :

The measurement opened 5mm distance between the device with accessories and flat phantom.

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

4.1 Operating modes for SAR testing

4.1.1 Setting of EUT

This EUT has IEEE.802.11b/g/n continuous transmitting modes.

The frequency band and the modulation used in the testing of IEEE.802.11b/g/n are shown as a following.

1. IEEE 802.11b mode

Tx frequency band : 2412-2462MHz
Channel : 1ch(2412MHz),6ch(2437MHz),11ch(2462MHz)
Modulation : DSSS (DBPSK 1Mbps/CCK 11Mbps)
Crest factor : 1 (Duty 100%)

2. IEEE 802.11g mode

Tx frequency band : 2412-2462MHz
Channel : 11ch(2462MHz)
Modulation : OFDM(BPSK 6Mbps)
Crest factor : 1 (Duty 100%)

3. IEEE 802.11n 20Mband (HT20) mode

Tx frequency band : 2412-2462MHz
Channel : 11ch(2462MHz)
Modulation : OFDM(BPSK MCS0)
Crest factor : 1 (Duty 100%)

4. IEEE 802.11n 40Mband (HT40) mode

Tx frequency band : 2422-2452MHz
Channel : 3ch(2422MHz)
Modulation : OFDM(BPSK MCS0)
Crest factor : 1 (Duty 100%)

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SECTION 5 : Test surrounding

5.1 Measurement uncertainty

The uncertainty budget has been determined for the DASY4 measurement system according to the SPEAG documents[6][7] and is given in the following Table.

Error Description	Uncertainty value $\pm$ %	Probability distribution	divisor	(ci) lg	Standard Uncertainty (1g)	vi or veff
Measurement System						
Probe calibration	± 6.8	Normal	1	1	± 6.8	∞
Axial isotropy of the probe	± 4.7	Rectangular	$\sqrt{3}$	$(1-cp)^{1/2}$	± 1.9	∞
Spherical isotropy of the probe	± 9.6	Rectangular	$\sqrt{3}$	$(cp)^{1/2}$	± 3.9	∞
Boundary effects	± 2.0	Rectangular	$\sqrt{3}$	1	± 1.2	∞
Probe linearity	± 4.7	Rectangular	$\sqrt{3}$	1	± 2.7	∞
Detection limit	± 1.0	Rectangular	$\sqrt{3}$	1	± 0.6	∞
Readout electronics	± 0.3	Normal	1	1	± 0.3	∞
Response time	± 0.8	Rectangular	$\sqrt{3}$	1	± 0.5	∞
Integration time	± 2.6	Rectangular	$\sqrt{3}$	1	± 1.5	∞
RF ambient Noise	± 3.0	Rectangular	$\sqrt{3}$	1	± 1.7	∞
RF ambient Reflections	± 3.0	Rectangular	$\sqrt{3}$	1	± 1.7	∞
Probe Positioner	± 0.8	Rectangular	$\sqrt{3}$	1	± 0.5	∞
Probe positioning	± 9.9	Rectangular	$\sqrt{3}$	1	± 5.7	∞
Max.SAR Eval.	± 4.0	Rectangular	$\sqrt{3}$	1	± 2.3	∞
Test Sample Related						
Device positioning	± 2.9	Normal	1	1	± 2.9	8
Device holder uncertainty	± 3.6	Normal	1	1	± 3.6	2
Power drift	± 5.0	Rectangular	$\sqrt{3}$	1	± 2.9	∞
Phantom and Setup						
Phantom uncertainty	± 4.0	Rectangular	$\sqrt{3}$	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	Rectangular	$\sqrt{3}$	0.64	± 1.8	∞
Liquid conductivity (meas.)	± 5.0	Rectangular	1	0.64	± 3.2	∞
Liquid permittivity (target)	± 5.0	Rectangular	$\sqrt{3}$	0.6	± 1.7	∞
Liquid permittivity (meas.)	± 5.0	Rectangular	1	0.6	± 3.0	∞
Combined Standard Uncertainty					± 13.453	
Expanded Uncertainty (k=2)					± 26.9	

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SECTION 6 : Confirmation before testing

6.1 Correlation of Output Power between EMC and SAR tests

6.1.1 EMC power

This data is reference data of EMC test. (Report No. 30IE0003-SH-03-A).

Date of test: April 27, 2010

[IEEE802.11b 11Mbps]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
1	2412.0	4.25	0.77	9.95	14.97	31.39
6	2437.0	4.14	0.74	9.95	14.83	30.42
11	2462.0	4.24	0.73	9.95	14.92	31.07

[IEEE802.11g 24Mbps]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
1	2412.0	11.81	0.77	9.95	22.53	178.97
6	2437.0	11.61	0.74	9.95	22.30	169.89
11	2462.0	11.83	0.73	9.95	22.51	178.40

[IEEE802.11n HT20 MCS2]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
1	2412.0	10.57	0.77	9.95	21.29	134.52
6	2437.0	10.62	0.74	9.95	21.31	135.26
11	2462.0	10.25	0.73	9.95	20.93	123.99

[IEEE802.11n HT40 MCS3]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
3	2422.0	10.85	0.77	9.95	21.57	143.48
6	2437.0	10.59	0.74	9.95	21.28	134.33
9	2452.0	10.40	0.73	9.95	21.08	128.35

Sample Calculation:

Result = Reading + Cable Loss + Atten.Loss

:Maximum power in EMP power

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6.1.2 SAR power

Date of test: May 17, 2010

[IEEE802.11b 11Mbps]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Δ(SAR-EMC)
					[dBm]	[mW]	[dB]
1	2412.0	4.18	0.83	10.08	15.09	32.28	0.12
6	2437.0	4.02	0.83	10.08	14.93	31.12	0.10
11	2462.0	4.11	0.84	10.08	15.03	31.84	0.11

[IEEE802.11g 24Mbps]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Δ(SAR-EMC)
					[dBm]	[mW]	[dBm]
1	2412.0	11.63	0.83	10.08	22.54	179.47	0.01
6	2437.0	11.59	0.83	10.08	22.50	177.83	0.20
11	2462.0	11.67	0.84	10.08	22.59	181.55	0.08

[IEEE802.11n HT20 MCS2]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Δ(SAR-EMC)
					[dBm]	[mW]	[dBm]
1	2412.0	10.41	0.83	10.08	21.32	135.52	0.03
6	2437.0	10.55	0.83	10.08	21.46	139.96	0.15
11	2462.0	10.21	0.84	10.08	21.13	129.72	0.20

[IEEE802.11n HT40 MCS3]

Ch	Freq. [MHz]	P/M Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Δ(SAR-EMC)
					[dBm]	[mW]	[dBm]
3	2422.0	10.67	0.83	10.08	21.58	143.88	0.01
6	2437.0	10.43	0.83	10.08	21.34	136.14	0.06
9	2452.0	10.27	0.84	10.08	21.19	131.52	0.11

Sample Calculation:

Result = Reading + Cable Loss + Atten.Loss

:Maximum Power in SAR power

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6.2 Average power for SAR testing

Date of test: May 17, 2010

[IEEE802.11b] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
1.0	2437	-0.16	-2.72	0.83	10.08	10.75	8.19	11.89	6.59
2.0	2437	-0.11	-2.74	0.83	10.08	10.80	8.17	12.02	6.56
5.5	2437	3.34	1.39	0.83	10.08	14.25	12.30	26.61	16.98
11.0	2437	4.02	1.41	0.83	10.08	14.93	12.32	31.12	17.06

IEEE802.11b 11Mbps

Ch	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
1	2412	4.18	1.60	0.83	10.08	15.09	12.51	32.28	17.82
6	2437	4.02	1.43	0.83	10.08	14.93	12.34	31.12	17.14
11	2462	4.11	1.57	0.84	10.08	15.03	12.49	31.84	17.74

IEEE802.11b 1Mbps

11	2462	-0.04	-2.63	0.84	10.08	10.88	8.29	12.25	6.75
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[IEEE802.11g] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
6.0	2437	10.54	1.05	0.83	10.08	21.67	11.96	146.89	15.70
9.0	2437	10.15	0.98	0.83	10.08	21.21	11.89	132.13	15.45
12.0	2437	11.21	0.98	0.83	10.08	22.27	11.89	168.66	15.45
18.0	2437	9.92	1.01	0.83	10.08	21.01	11.92	126.18	15.56
24.0	2437	11.59	0.98	0.83	10.08	22.65	11.89	184.08	15.45
36.0	2437	10.41	0.91	0.83	10.08	21.40	11.82	138.04	15.21
48.0	2437	11.46	0.96	0.83	10.08	22.50	11.87	177.83	15.38
54.0	2437	10.59	0.94	0.83	10.08	21.61	11.85	144.88	15.31

IEEE802.11g 6Mbps

Ch	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
1	2412	10.62	1.14	0.83	10.08	21.53	12.05	142.23	16.03
6	2437	10.91	1.15	0.83	10.08	21.82	12.06	152.05	16.07
11	2462	10.83	1.31	0.84	10.08	21.75	12.23	149.62	16.71

**: SAR is not required for 802.11g channels when the maximum average output power is less than 1/4dB higher than

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

: The highest AV output power in data rate

: The highest output power of each mode

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[IEEE802.11n 20Mband] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
MCS0	2437	10.00	0.86	0.83	10.08	20.94	11.77	124.17	15.03
MCS1	2437	10.52	0.75	0.83	10.08	21.35	11.66	136.46	14.66
MCS2	2437	10.55	0.74	0.83	10.08	21.37	11.65	137.09	14.62
MCS3	2437	9.98	0.75	0.83	10.08	20.81	11.66	120.50	14.66
MCS4	2437	10.51	0.67	0.83	10.08	21.26	11.58	133.66	14.39
MCS5	2437	10.53	0.71	0.83	10.08	21.32	11.62	135.52	14.52
MCS6	2437	10.53	0.74	0.83	10.08	21.35	11.65	136.46	14.62
MCS7	2437	10.55	0.76	0.83	10.08	21.39	11.67	137.72	14.69

IEEE802.11n 20Mband MCS0

Ch	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
1	2412	9.76	0.86	0.83	10.08	20.67	11.77	116.68	15.03
6	2437	10.00	0.86	0.83	10.08	20.91	11.77	123.31	15.03
11	2462	10.26	1.03	0.84	10.08	21.18	11.95	131.22	15.67

[IEEE802.11n 40Mband] Rate Check

Rate [Mbps]	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
MCS0	2437	9.61	-0.06	0.83	10.08	19.63	10.85	91.83	12.16
MCS1	2437	9.63	-0.39	0.83	10.08	19.32	10.52	85.51	11.27
MCS2	2437	8.77	-0.40	0.83	10.08	18.45	10.51	69.98	11.25
MCS3	2437	10.43	-0.40	0.83	10.08	20.11	10.51	102.57	11.25
MCS4	2437	10.12	-0.39	0.83	10.08	19.81	10.52	95.72	11.27
MCS5	2437	8.81	-0.39	0.83	10.08	18.50	10.52	70.79	11.27
MCS6	2437	9.64	-0.40	0.83	10.08	19.32	10.51	85.51	11.25
MCS7	2437	9.64	-0.39	0.83	10.08	19.33	10.52	85.70	11.27

IEEE802.11n 40Mband MCS0

Ch	Freq. [MHz]	P/M Reading [dBm]		Cable Loss [dB]	Atten. [dB]	Result			
		PK	AVG			[dBm]		[mW]	
						PK	AVG	PK	AVG
3	2422	9.46	0.14	0.83	10.08	20.37	11.05	108.89	12.74
6	2437	9.61	-0.06	0.83	10.08	20.52	10.85	112.72	12.16
9	2452	9.41	-0.23	0.84	10.08	20.33	10.69	107.89	11.72

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

: The highest AV output power in data rate

: The highest output power of each mode

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SECTION 7 : Measurement results

7.1 BODY SAR 2450MHz

Model : BM70432
Serial No. : 19
Modulation : DSSS/OFDM
Measured By : Miyo Kishimoto

Date : May 17, 2010 May 18, 2010
Liquid Depth (cm) : 15.0 15.0
Parameters : $\epsilon_r = 50.2, \sigma = 2.02$ $\epsilon_r = 50.1, \sigma = 2.01$
Ambient Temperature[deg.c.] : 24.0 24.0
Relative Humidity (%) : 43 51

SAR MEASUREMENT RESULT											
Frequency			Modulation	Phantom Section	EUT Set-up Conditions			Liquid Temp.[deg.c]		SAR(1g) [W/kg]	Note
Band	Channel	[MHz]			Antenna	Position	Separation [mm]	Before	After	Maximum value of multi-peak	
Step 1. Change to the channels											
11b	1	2412	CCK(11Mbps)	Flat	Fixed	Front	0	23.0	23.0	0.017	
	6	2437	CCK(11Mbps)	Flat	Fixed	Front	0	23.0	23.0	0.018	
	11	2462	CCK(11Mbps)	Flat	Fixed	Front	0	23.0	23.0	0.025	
Step 2. Change to the Data rate (1Mbps)											
11b	11	2462	DBPSK(1Mbps)	Flat	Fixed	Front	0	23.0	23.0	0.011	
Step 3. Without accessories											
11b	11	2462	CCK(11Mbps)	Flat	Fixed	Front	0	23.0	23.0	0.00533	
Step 4. Change to the mode											
11g	11	2462	BPSK(6Mbps)	Flat	Fixed	Front	0	23.0	23.0	0.016	*1
11n HT20	11	2462	MCS0 (MCS0)	Flat	Fixed	Front	0	23.0	23.1	0.016	*2
11n HT40	3	2422	MCS0 (MCS0)	Flat	Fixed	Front	0	23.1	23.1	0.011	*2
Step 5. Change to the separation											
11b	11	2462	CCK(11Mbps)	Flat	Fixed	Front	5	23.1	23.1	0.00938	*3

*1- IEEE802.11g mode

The tested data rate was performed on the highest average output power in the 11g mode.

This data is reference data since SAR is not required for 802.11g channels when the maximum average output power is less than 1/4dB higher than that measured on the corresponding 802.11b channels.

*2- IEEE802.11n HT20 / HT40

The tested mode was performed on the highest average output power of each mode (HT20/HT40).

As a result, when the 1g SAR is less than 0.8W/kg, testing for the other channels is not required.

*3 The device is moved away from the phantom in 5mm increments from the touching.

A single-point SAR is measured until the SAR is less than 50% of that measured at the touching position.

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