

Test report No.: 4786001103S-A Page: 1 of 107

Issued date : February 25, 2013 Revised date : April 1, 2013 (-R01)

FCC ID : AZD400

SAR TEST REPORT

Test Report No.: 4786001103S-A

Applicant : Canon Inc.

Type of Equipment : Wireless Module

Model No. : RF400 (*. Installed into the RF400's platform (1))

FCC ID : AZD400

Test Standard : FCC 47CFR §2.1093,

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

Test Result : Complied

Highest reported SAR(1g) Value	Platform#	Platform type	Platform model	Remarks
0.79 W/kg (*. Power scaled)	Platform (1)	Digital Video Camcorder (1)	ID0025	(UNII) 5280MHz, IEEE 802.11a (6Mbps)

- *. Highest reported SAR (1g) across exposure conditions = 0.79 W/kg (*,power scaled) = grant listing.
- *. The highest reported SAR (1g) was ≤ 0.8W/kg for all configurations tested. In according to the KDB447498 D01(v05), EUT was approved for used in multi-platform.
- 1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
- 2. The results in this report apply only to the sample tested.
- 3. This sample tested is in compliance with the limits of the above standards.
- 4. The test results in this test report are traceable to the national or international standards.
- This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
- 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: <u>January 23, 25, 28 and 29, 2013</u>

Test engineer: 14. Paker.

Hiroshi Naka

Engineer of WiSE Japan, UL Verification Service

Approved by:

Toyokazu Imamura

Leader of WiSE Japan, UL Verification Service

lac-MRA



The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.

There is no testing item of "Non-accreditation".

 Test report No.
 : 4786001103S-A

 Page
 : 2 of 107

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 : February 25, 2013

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 : April 1, 2013 (-R01)

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 : AZD400

REVISION HISTORY

Revision	Test report No.	Date	Page revised	Contents
Original	4786001103S-A	February 25, 2013	-	-
-R01	4786001103S-A	April 1, 2013	p1,2,14,43,51	A written mistake is corrected.

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

REVISION HISTORY	CONTENTS		PAGE
SECTION 1: Customer information 3 SECTION 2: Equipment under test (EUT) 3 2.1 Identification of EUT. 3 2.2 Product Description 3 2.3 Tx output power specification (antenna port terminal conducted) 4 4. Maximum output power which may possible 4 SECTION 3: Test specification, procedures and results 5 3.1 Test specification, procedures and results 5 3.2 Exposure limit 5 3.3 Procedure and result 5 3.4 Test location 5 3.5 Confirmation before SAR testing 6 3.5 Confirmation after SAR testing 6 3.7 Test setup of EUT and SAR measurement procedure 7 SECTION 4: Operation of EUT during SAR testing 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: <	REVISION HISTO	RY	2
SECTION 2: Equipment under test (EUT) 3 2.1 Identification of EUT 3 2.2 Product Description 3 2.3 Tx output power specification (antenna port terminal conducted) 4 4. 4. Maximum output power which may possible 4 SECTION 3: Test specification, procedures and results 5 3.1 Test specification 5 3.2 Exposure limit 5 3.3 Procedure and result 5 3.4 Test location 5 3.5 Confirmation before SAR testing 6 3.6 Confirmation after SAR testing 6 3.7 Test setup of EUT and SAR measurement procedure 7 SECTION 4: Operation of EUT during SAR testing 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test			
SECTION 2: Equipment under test (EUT)	SECTION 1.	Customor information	2
2.1 Identification of EUT. 3 2.2 Product Description 3 3 2.3 Tx output power specification (antenna port terminal conducted) 4 4 Maximum output power which may possible 4 4 Maximum output power which may possible 5 5 5 5 5 5 5 5 5			
2.2 Product Description 3 2.3 Tx output power specification (antenna port terminal conducted) 4 2.4 Maximum output power which may possible 4 SECTION 3: Test specification, procedures and results 5 3.1 Test specification 5 3.2 Exposure limit 5 3.3 Procedure and result 5 3.4 Test location 5 3.5 Confirmation before SAR testing 6 3.6 Confirmation after SAR testing 6 3.7 Test setup of EUT and SAR measurement procedure 7 SECTION 4: Operation of EUT during SAR testing 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photograph of Platform (1) and an antenna position 15			
2,3		Identification of EUI	3
2.4 Maximum output power which may possible. 4 SECTION 3: Test specification, procedures and results. 5 3.1 Test specification. 5 3.2 Exposure limit 5 3.3 Procedure and result 5 3.4 Test location 5 3.5 Confirmation before SAR testing. 6 3.6 Confirmation after SAR testing. 6 3.7 Test setup of EUT and SAR measurement procedure. 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing. 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results. 12 Contents of appendixes 12 APPENDIX 1: Photographs of test setup. 15 Appendix 1-1 Photographs of test setup. 15 Appendix 1-2 PLT and support equipment. 16 Appendix 1-3 SAR test condition (with accessories). 17 Appendix 1-4 Photograph of test setup (5745-5		Product Description	
SECTION 3:		1x output power specification (antenna port terminal conducted)	4
3.1		Maximum output power which may possible	4
3.2 Exposure limit 5 3.3 Procedure and result 5 3.4 Test location 5 3.5 Confirmation before SAR testing 6 3.6 Confirmation after SAR testing 7 SECTION 4: Operation of EUT during SAR testing 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photographs of test setup 15 Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (5260-5320 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 <td< td=""><td></td><td></td><td></td></td<>			
3.3 Procedure and result 5 3.4 Test location 5 3.5 Confirmation before SAR testing 6 3.6 Confirmation after SAR testing 7 SECTION 4: Operation of EUT and SAR measurement procedure 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes 12 APPENDIX 1: Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of Platform (1) and an antenna position 15 Appendix 1-3 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 20 Appendix 1-5 Photograph of test setup (2412-2560-3320 MHz band) 22 Appendix 2-1 Weasurement data (241	• • • •	Test specification	5
3.4 Test location 5 3.5 Confirmation before SAR testing 6 3.6 Confirmation after SAR testing 7 SECTION 4: Operation of EUT during SAR testing 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photographs of test setup Appendix 1-1 Photographs of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5745-5805 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 <t< td=""><td></td><td></td><td></td></t<>			
3.5 Confirmation before SAR testing 6 3.6 Confirmation after SAR testing 6 3.7 Test setup of EUT and SAR measurement procedure 7 SECTION 4: Operation of EUT during SAR testing 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photographs of test setup 15 Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5745-5805 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data </td <td></td> <td></td> <td></td>			
3.6 Confirmation after SAR testing 6 3.7 Test setup of EUT and SAR measurement procedure 7 SECTION 4: Operation of EUT during SAR testing 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photographs of test setup Appendix 1-1 Photographs of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 20 Appendix 1-5 Photograph of test setup (2412-2462 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2			
3.7 Test setup of EUT and SAR measurement procedure 7			
SECTION 4: Operation of EUT during SAR testing 7 SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photographs of test setup Appendix 1-1 Photographs of test setup 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (52460-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Measurement data (2412-2562 MHz band) 25 Appendix 2-2 Measurement data (560-5320 MHz band) 30			
SECTION 5: Uncertainty assessment (SAR measurement) 8 SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photographs of test setup 15 Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Measurement data (2412-2562 MHz band) 25 Appendix 2-2 Measurement data (5745-5805 MHz band) 30 Appendix 3-3 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Te			
SECTION 6: Confirmation before testing 9 6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photographs of test setup Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 30 Appendix 2-3 Measurement data (560-5320 MHz band) 30 Appendix 3-1 Test instruments 48 Appendix 3-2 Configuration and peripherals. 49			
6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes EUT and support equipment 15 Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (5260-5320 MHz band) 30 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Ap	SECTION 5:	Uncertainty assessment (SAR measurement)	8
6.1 Assessment for the conducted power of EUT 9 SECTION 7: Measurement results 12 7.1 SAR test results 12 Contents of appendixes APPENDIX 1: Photographs of test setup Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (5260-5320 MHz band) 30 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 <	SECTION 6:	Confirmation before testing	9
SECTION 7: Measurement results 12 Contents of appendixes APPENDIX 1: Photographs of test setup 15 Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Measurement data (2412-2562 MHz band) 25 Appendix 2-2 Measurement data (5260-5320 MHz band) 30 Appendix 2-3 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification		Assessment for the conducted power of EUT	9
Contents of appendixes APPENDIX 1: Photographs of test setup Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check measure	SECTION 7:	Measurement results	12
APPENDIX 1: Photographs of test setup 15 Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-5 Daily check data 51 Appendix 3-6			
APPENDIX 1: Photographs of test setup 15 Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-5 Daily check data 51 Appendix 3-6	Contents of ap	pendixes	
Appendix 1-1 Photograph of Platform (1) and an antenna position 15 Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 25 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-4 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check measurement data 53 Appendix 3-7 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 56			15
Appendix 1-2 EUT and support equipment 16 Appendix 1-3 SAR test condition (with accessories) 17 Appendix 1-4 Photograph of test setup (2412-2462 MHz band) 18 Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9<		Photograph of Platform (1) and an antenna position	15
Appendix 1-3 SAR test condition (with accessories)		EUT and support equipment	16
Appendix 1-4 Appendix 1-5 Appendix 1-6 APPENDIX 2: Appendix 2-1 Appendix 2-2 Appendix 2-2 Appendix 2-3 Appendix 2-3 Appendix 2-4 Appendix 2-4 Appendix 2-4 Appendix 2-5 Appendix 2-5 Appendix 2-6 Appendix 2-7 Appendix 2-7 Appendix 2-7 Appendix 2-8 Appendix 2-9 Appendix 2-9 Appendix 2-9 Appendix 2-1 Appendix 2-1 Appendix 2-1 Appendix 2-1 Appendix 2-1 Appendix 2-2 Appendix 2-3 Appendix 2-4 Appendix 2-4 Appendix 3-1 Appendix 3-1 Appendix 3-1 Appendix 3-2 Appendix 3-2 Appendix 3-3 Appendix 3-3 Appendix 3-4 Appendix 3-5 Appendix 3-5 Appendix 3-5 Appendix 3-6 Appendix 3-7 Appendix 3-7 Daily check data Appendix 3-7 Appendix 3-8 Appendix 3-8 Appendix 3-8 Appendix 3-9 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2)		SAR test condition (with accessories)	17
Appendix 1-5 Photograph of test setup (5260-5320 MHz band) 20 Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Simulated tissues composition and parameter confirmation 50 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67	Appendix 1-4	Photograph of test setup (2412-2462 MHz band)	18
Appendix 1-6 Photograph of test setup (5745-5805 MHz band) 22 APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-7 Daily check uncertainty 52 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67	Appendix 1-5	Photograph of test setup (5260-5320 MHz band)	20
APPENDIX 2: SAR Measurement data 24 Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Simulated tissues composition and parameter confirmation 50 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67	Appendix 1-6	Photograph of test setup (5745-5805 MHz band)	22
Appendix 2-1 Evaluation procedure 24 Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-4 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67		SAR Measurement data	24
Appendix 2-2 Measurement data (2412-2562 MHz band) 25 Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-4 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67			
Appendix 2-3 Measurement data (5260-5320 MHz band) 30 Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-5 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67	Appendix 2-1	Measurement data (2/112-2562 MHz hand)	25
Appendix 2-4 Measurement data (5745-5805 MHz band) 39 APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-4 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67		Measurement data (5260-5320 MHz band)	30
APPENDIX 3: Test instruments 48 Appendix 3-1 Equipment used 48 Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-4 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67		Measurement data (5745-5805 MHz band)	30
Appendix 3-1 Equipment used			
Appendix 3-2 Configuration and peripherals 49 Appendix 3-3 Test system specification 50 Appendix 3-4 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67			
Appendix 3-3 Test system specification 50 Appendix 3-4 Simulated tissues composition and parameter confirmation 51 Appendix 3-5 Daily check data 51 Appendix 3-6 Daily check uncertainty 52 Appendix 3-7 Daily check measurement data 53 Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4) 56 Appendix 3-9 Calibration certificate: Dipole (D2450V2) 67		Configuration and paripharals	40
Appendix 3-4Simulated tissues composition and parameter confirmation51Appendix 3-5Daily check data51Appendix 3-6Daily check uncertainty52Appendix 3-7Daily check measurement data53Appendix 3-8Calibration certificate: E-Field Probe (EX3DV4)56Appendix 3-9Calibration certificate: Dipole (D2450V2)67		Test system anaifration	49
Appendix 3-5 Appendix 3-6 Appendix 3-7 Appendix 3-7 Appendix 3-8 Appendix 3-8 Appendix 3-9 Calibration certificate: E-Field Probe (EX3DV4) Calibration certificate: Dipole (D2450V2) 67		Simulated tissues composition and parameter confirmation	
Appendix 3-6Daily check uncertainty52Appendix 3-7Daily check measurement data53Appendix 3-8Calibration certificate: E-Field Probe (EX3DV4)56Appendix 3-9Calibration certificate: Dipole (D2450V2)67		Deily, sheely data	31 51
Appendix 3-7 Daily check measurement data		Daily cheek unta	
Appendix 3-8 Calibration certificate: E-Field Probe (EX3DV4)			
Appendix 3-9 Calibration certificate: Dipole (D2450V2)	Appendix 3-/	Calibration cartificate: E. Field Drobe (EV2DVA)	
	Appendix 3-8	Calibration cartificate: Dipole (D2450V2)	
Appendix 4-111 Calibration certificate: Dipole (150/HzV/)	Appendix 3-9 Appendix 3-10	Calibration certificate: Dipole (D2430 v2)	

Test report No.: 4786001103S-A Page : 3 of 107

Issued date : February 25, 2013

FCC ID : AZD400

SECTION 1: Customer information

Company Name	Canon Inc.
Brand Name	Canon
Address	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501 Japan
Telephone Number	81-3-5482-8070
Facsimile Number	81-3-3757-8431
Contact Person	Yasushi Sasaki

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Toma of Emiliana	Wireless Module
Type of Equipment	
Model Number,	Wireless Module: RF400
Size of EUT	Size: 30mm×15mm×t=3mm
	Platform (1) - Digital Video Camcorder: ID0025
	Size: 90mm (W) ×150mm (D) × 75mm (H) (*. LCD is normal closed. Without handle unit.)
Serial Number	Wireless Module: 03
	Platform (1): 01
Condition of EUT	Wireless Module: Production model
	Platform(1): Engineering prototype (Not for sale; This sample is equivalent to mass-production items)
Receipt Date of Sample	December 20, 2012 (*. EUT for the power measurement.)
	January 18, 2013 (*. EUT for the SAR test. The EUT that had been measured the power of SAR test reference,
	was installed into the platform (1)-digital video camcorder (1) from the beginning. After power measurement, the
	EUT was returned to the customer, and installed into a Platform (1) which SAR tested, by the customer.)
	*. 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.
	* Since EUT is hand-held and hand-operated device with output power not more than 14dBm and in addition, the
	limit of hands SAR (10g) is much higher than the limit of the partial-body SAR (1g), the SAR test of hand SAR (10g) shall not be applied.
E (CELTE	
Feature of EUT	The EUT is a Wireless Module which installs into the multi-platform.
SAR Accessary	Grip belt (non metal), Handle unit (metal)
Tested consideration	During SAR test, the EUT was operated by the full-charged battery.
	The SAR test was applied two conditions, one was with metal accessory and other was without metal accessory.

2.2 Product Description (Wireless Module: RF400)

Equipment type		Transceiver	
Frequency of operation	2412-2462MHz (11b,g,n(20HT)) 2422-2452MHz (11n(40HT))	5260-5320MHz (11a,n(20HT)) 5270-5310MHz (11n(40HT))	5745-5805MHz (11a,n(20HT)) 5755-5795MHz (11n(40HT))
Channel spacing	5MHz	20MHz (11a, n(20HT)), 40MHz (11n(40HT)
Bandwidth	20MHz(11b,	g,n(20HT), 40MHz (11n(40HT))	
ITU code	G1D, D1D	D1	
Type of modulation	DSSS(11b), OFDM(11g,n(20HT),n(40HT))	OFDM(11a,n(2	0HT),n(40HT))
Q'ty of Antenna		1 pc.	
Antenna type / Model name	Mone	opole type chip antenna	
Antenna connector type		Printed on PCB	
Antenna gain (max.peak)	2.1 dBi (2.4GHz)	2.4 dBi	(5GHz)
Transmit power and tolerance (Manufacture variation)	11b: 12dBm±2dBm 11g: 12dBm±2dBm 11n(20HT): 12dBm±2dBm 11n(40HT): 12dBm±2dBm *. Refer to clause 2.3 for more detail.	11a: 12dBm ±2dBm 11n(20HT): 12dBm ±2dBm 11n(40HT): 12dBm ±2dBm *. Refer to clause 2.3 for more de	tail.
	*. The measured Tx output power (conducted) re	efers to section 6 in this report.	
Maximum output power which may possible	11b: 14dBm 11g: 14dBm 11n(20HT): 14dBm 11n(40HT): 14dBm *. Refer to clause 2.4 for more detail.	11a: 14dBm 11n(20HT): 14dBm 11n(40HT): 14dBm *. Refer to clause 2.4 for more de	tail.
Power supply	DC 3.3V (*. The power of DC3.3V is supplied from	n the platform via constant voltage ci	reuit.)
Operation temperature range	-20 to +80 deg.C		
Power supply Operation temperature range	11n(20HT): 14dBm 11n(40HT): 14dBm *. Refer to clause 2.4 for more detail. DC 3.3V (*. The power of DC3.3V is supplied from	11n(40HT): 14dBm *. Refer to clause 2.4 for more de n the platform via constant voltage ci	

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

Test report No.: 4786001103S-A Page: 4 of 107

Issued date : February 25, 2013

FCC ID : AZD400

2.3 Tx output power specification (antenna port terminal conducted)

														Tar	get Po	ower [dBm]	(aver	age)										
			11	lb					1	lg											11n(2	(TH0							
[MHz]	CH	1	2	5.5	11	6	9	12	18	24	36	48	54	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
2412	1	12	12 12 12 12 12 12 12 12									12	12	12	12	12	12	12	12	12	12					-			L . .
2417	2	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	i		-	-	[-			
2422	3	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	I]		l		
2427	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12								
2432	5	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12								
2437	6	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12								
2442	7	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	I]		l :]	
2447	8	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	i		-	-	[-	-		
2452	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	i		-	-	[-	-		
2457	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	[·]		l		
2462	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	-	-	-	-	-	-	-	

					11	la											11n(2	OHT)							
[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
5260	52	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12								-
5280	56	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12]				- 1
5300	60	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12]				- 1
5320	64	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	-	-		-		-		-
5745	149	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	-	-	-	-	-	-	-	-
5765	153	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	-			-		-	-	-
5785	157	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	-			-		-	-	-
5805	161	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	-			-		-	-	-

									11n(4	OHT)							
[MHz]	CH	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
2417	2	12	12	12	12	12	12	12	12	-							
2422	3	12	12	12	12	12	12	12	12					-			
2427	4	12	12	12	12	12	12	12	12					-			
2432	5	12	12	12	12	12	12	12	12	-		-		-		-	1
2437	6	12	12	12	12	12	12	12	12					- 1]	
2442	7	12	12	12	12	12	12	12	12					-			
2447	8	12	12	12	12	12	12	12	12					-			
2452	9	12	12	12	12	12	12	12	12	-				-		-	-
5270	54	12	12	12	12	12	12	12	12	-				-			
5310	62	12	12	12	12	12	12	12	12	-	-	-	-	-	-	-	-
5755	151	12	12	12	12	12	12	12	12	-				-			
5795	159	12	12	12	12	12	12	12	12	-	-	-	-	-	-	-	-

2.4. Maximum output power which may possible

											Max	imu	m ou	tput p	ower	which	n may	possi	ble [dl	Bm] (a	averag	ge)							
			11	lb					1	lg											11n(2	OHT)							
[MHz]	CH	1	2	5.5	11	6	9	12	18	24	36	48	54	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
2412	1	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14					-			L
2417	2	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-] -]				[[:]
2422	3	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-] -]				[[:]
2427	4	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14]][-[[[:]]
2432	5	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-		-] -	-	-	-	
2437	6	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-		-] -	-	-	-	
2442	7	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-		-] -	-	-	-	í - 1
2447	8	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14] [-] [[-]			[[-]
2452	9	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14] [-] [[-]			[[:]]
2457	10	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14		-						[[:]
2462	11	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-	-	-	-	-	-	-	-

					11	la											11n(2	(THO							
[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
5260	52	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14				-		-	-	-
5280	56	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14				-		-		-
5300	60	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14				-		-		-
5320	64	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-	-		-	-	-	-	-
5745	149	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-	-	-	-	-	-	-	-
5765	153	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-		l	-	[-	-	- 1
5785	157	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-						-	
5805	161	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	-	-	-	-	[-	-	-	- 1

									11n(4	OHT)							
[MHz]	CH	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
2417	2	14	14	14	14	14	14	14	14					J	L_=		L_=_I
2422	3	14	14	14	14	14	14	14	14								
2427	4	14	14	14	14	14	14	14	14]	[-]
2432	5	14	14	14	14	14	14	14	14								
2437	6	14	14	14	14	14	14	14	14	-	-	-	-	-	-	-	
2442	7	14	14	14	14	14	14	14	14	-	-	-	-	-	-	-	
2447	8	14	14	14	14	14	14	14	14	-				-		-	1
2452	9	14	14	14	14	14	14	14	14	-				-		-	
5270	54	14	14	14	14	14	14	14	14		-	-		-	-	-	-
5310	62	14	14	14	14	14	14	14	14	-	-	-	-	-	-	-	-
5755	151	14	14	14	14	14	14	14	14	-	-		-			-	
5795	159	14	14	14	14	14	14	14	14	-	-	-	-	-	-	-	-

Test report No.: 4786001103S-A : 5 of 107 Page

Issued date : February 25, 2013

FCC ID : AZD400

Test specification, procedures and results **SECTION 3:**

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

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.

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

⊠KDB 447498 D01 (v05): In additions; KDB 865664 D01 (v01):KDR 248227 D01

General RF exposure guidance SAR measurement 100MHz to 6GHz

KDB 248227 D01 (v01r02): SAR measurement procedures for 802.11a/b/g transmitters

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).

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 / in Platform (1) (DTS; 2412-2462MHz band)	Wi-Fi/in Platform (1) (UNII; 5260-5320MHz band)	Wi-Fi / in Platform (1) (DTS; 5745-5805MHz band)
Test Procedure	FCC OET Bulletin 65, Supplement C	FCC OET Bulletin 65, Supplement C	FCC OET Bulletin 65, Supplement C
Test Procedure	SAR	SAR	SAR
Category	FCC 47CFR §2.1093	FCC 47CFR §2.1093	FCC 47CFR §2.1093
Results (SAR(1g))	Complied	Complied	Complied
Reported SAR value (*. Scaled)	< 0.10 W/kg	0.79 W/kg (Highest)	<mark>0.70 W/kg</mark>
Measured SAR value	0.032 W/kg	0.591 W/kg	0.492 W/kg
Operation mode	11n(40HT), MCS0, 2437 MHz (6ch)	11a, 6Mbps, 5280 MHz (56ch)	11a, 6Mbps, 5765 MHz (153ch)
Output power (scaled factor)	13.38 dBm (×1.15)	12.74 dBm (×1.34)	12.51 dBm (×1.41)

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

This EUT is a limited module approval according to section 15.212 (b). The procedure of SAR was measured according to the clause 5, KDB447498 D01 (v05). Consideration of the test results:

The highest reported SAR (1g) was ≤ 0.8W/kg. EUT was approved for used in multiple host platforms. (KDB447498 D01 (v05))

3.4 **Test Location**

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

UL Japan, Inc., Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN Telephone number: +81 463 50 6400 / Facsimile number: +81 463 50 6401

UL Japan, Inc. Shonan EMC Lab.

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.

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

Test report No.: 4786001103S-A Page: 6 of 107

Issued date : February 25, 2013

FCC ID : AZD400

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 SAR power was measured before SAR testing. The result is shown in Section 6.

*. 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 one of the channel for 802.11b/g/a/n(20HT)/n(40HT) at each frequency band.

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

Step.2 Decision of SAR test channel

The following operation mode, data rate and channels were determined by the SAR reference power measured. (Refer to Section 6.)

	(default: KDI	3248227->)	default		SAR teste	ed channel		
Mode	MHz	Channel	11b/g/n(20HT)	11b	11g	11n(20HT)	11n(40HT)	Remarks (KDB248227)
	2412	1	\checkmark	#(*2)	n/a (*1)	n/a (*1)		*1. Since the average power of 11g and 11n(20HT) were less
002.11	2422	3					#(*2)	than 0.25dB higher than the corresponded 11b power, SAR test
802.11 b/g/n	2437	6	$\sqrt{}$	#(*2)	n/a (*1)	n/a (*1)	#(*2)	was only considered to apply 11b mode. *2. Since the average power of higher data rate was less than
D/g/II	2452	9					#(*2)	0.25dB higher than the lowest data rate, SAR test was only
	2462	11	\checkmark	#(*2)	n/a (*1)	n/a (*1)		considered to apply lowest data rate.
Mode	MHz	Channel	11a/n(20HT)	11a	(*4)	11n(20HT)	11n(40HT)	Remarks (KDB248227)
	5260	52	\checkmark		-	n/a (*3)		
	5270	54					#(*4)	
	5280	56	*	# (*.max po	wer ch.) (*4)	n/a (*3)		
	5300	60	*		-	n/a (*3)		*3. Since the average power of 11n(20HT) was less than 0.25dB
	5310	62					#(*4)	higher than the corresponded 11a power, SAR test was only
802.11	5320	64	\checkmark	#(*4)	n/a (*3)		considered to apply 11a mode.
a/n	5745	149	\checkmark		-	n/a (*3)		*4. Since the average power of higher data rate was less than
	5755	151					#(*4)	0.25dB higher than the lowest data rate, SAR test was only
	5765	153	*	# (*.max po	wer ch.) (*4)	n/a (*3)		considered to apply lowest data rate.
	5785	157	*		-	n/a (*3)		
	5795	159					#(*4)	
	5805	161	$\sqrt{}$	#(*4)	n/a (*3)		

^{*.} Since target output power of all modes were same, SAR test was considered to apply to both 20MHz and 40MHz bandwidth operation.

3.6 Confirmation after SAR testing

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

The result is shown in APPENDIX 2.

*. DASY4 system calculation Power drift value[dB] =20log(Ea)/(Eb) (where, Before SAR testing: Eb[V/m] / After SAR testing: Ea[V/m]) Limit of power drift[W] = ±5%

Power drift limit (X) [dB] = $10\log(P_{drift}) = 10\log(1.05/1) = 10\log(1.05) - 10\log(1) = 0.21dB$

from E-filed relations with power.

S=E×H=E²/ η =P/(4× π ×r²) (η : Space impedance) \rightarrow P=(E²×4× π ×r²)/ η

Therefore, The correlation of power and the E-filed

Power drift limit (X) dB=10log(P_drift)=10log(E_drift)^2=20log(E_drift)

From the above mentioned, the calculated power drift of DASY4 system must be the less than $\pm 0.21 dB$.

 $[\]sqrt{\text{e}}$ "default test channels of requested by KDB248227", <u>n/a</u>: <u>SAR test was not considered</u>. <u>#=SAR test was considered</u>.

^{* =} Possible 802.11a channels with maximum average output > the "default test channels"

Test report No. : 4786001103S-A Page : 7 of 107

Issued date : February 25, 2013

FCC ID : AZD400

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 of EUT setup position	Antenna to user distance	Apply SAR test ?	SAR type
Top-left	The left section of top surface (near the antenna) of camcorder was touched to the Flat phantom. (LCD cover; normal closed, reverse closed, opened)	7mm	applied	
Top	The top surface of camcorder was touched to the Flat phantom.	15mm	applied	
Left	The left hand surface of camcorder was touched to the Flat phantom.	25mm	applied	Body
Right	The right section of camcorder was touched to the Flat phantom.	80mm	applied	(touch)
Rear	The rear section (finder, battery pack) of camcorder was touched to the Flat phantom.	65mm	applied	
Front	The front surface (lens) of camcorder was touched to the Flat phantom.	104mm	applied	
Bottom	The bottom surface of camcorder was touched to the Flat phantom.	68mm	applied	

^{*.} Size of EUT: 109 mm (width) \times 182 mm (depth) \times 84 mm (height)

(*.When the LCD cover is closed in the normal position, it is a size in the state where the grip belt, the handle unit, and the lens hood are not attached.)

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

Step 1	Changed the position, operation mode and channels. (*. LCD cover panel was opened or closed, when the observed SAR was higher value.)
Step 2	Check the influence of metal accessory at left position.
Step 3	Change the frequency band and repeated step1 and 2.

^{*.} 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.802.11b/g/a/11n(20HT)/11n(40HT) continuous transmitting modes. The frequency and the modulation used in the SAR testing are shown as a following.

				Ü		U	
Operation mode	11b	11g	11n(20HT)	11n(40HT)	11a	11n(20HT)	11n(40HT)
Tx frequency band	2412	2-2462MHz		2422-2452MHz	5260-53201 5745-58051		5270-5310MHz 5755-5795MHz
Tested frequency	2437MHz (*4)	N/.	A(*1)	2437MHz (*4)	5280, 5320 MHz 5765, 5805MHz	N/A (*2)	5270, 5310 MHz 5755, 5795MHz
Modulation	DBPSK/DSSS	N/.	A (*1)	BPSK/OFDM	BPSK/OFDM	N/A (*2)	BPSK/OFDM
Data rate	1Mbps (*3)	N/.	A (*1)	MCS0 (*3)	6Mbps (*3)	N/A (*2)	MCS0 (*3)
Crest factor	1.0 (100% duty cycle)	N/	A(*1)	1.0 (100% duty cycle)	1.0 (100% duty cycle)	N/A (*2)	1.0 (100% duty cycle)
Controlled software	Tera Term-rftest me Before and during (test, the platform w PC via USB cable t	for several to as connected	with the host n	AR Copyright (C) Dry Dry Dry Dry Dry ELL (LUGH) w Dry Extra Copyright Extra Copyr	ersion Jan 27 2011, 10:06:23 ST MODE ==== 1 6 0 12 0 2		corr_lA = 0x0)

*. N/A: SAR test was not applied.

In accordance with KDB248227;

- *1. Since the average power of 11g and 11n(20HT) were less than 0.25dB higher than the corresponded 11b power, SAR test was only applied to 11b mode.
- *2. Since the average power of 11n(20HT) was less than 0.25dB higher than the corresponded 11a power, SAR test was only applied to 11a mode.
- *3. The average power of higher data rate was less than 0.25dB higher than the lowest data rate, SAR test was only applied to lowest data rate.
- *4. Since the observed SAR(1g) value was enough lower than 0.8W/kg, and extrapolated peak SAR value was also enough lower than 1.6W/kg, the SAR test was only applied to maximum output channel of this operation mode.

Test report No.: 4786001103S-A Page: 8 of 107

Issued date : February 25, 2013

FCC ID : AZD400

SECTION 5: Uncertainty Assessment (SAR measurement)

Uncertainty of SAR measurement(v06)	Under 3	3 GHz	5~60	GHz
(*. Body tissue, ε & σ tolerance: ≤±5%, Tx: ≈100% duty cycle)	1g SAR	10g SAR	1g SAR	10g SAR
Combined measurement uncertainty of the measurement system (k=1)	± 12.5%	± 12.2%	± 13.7%	± 13.5%
Expanded uncertainty (k=2)	± 25.0%	± 24.4%	± 27.4%	± 27.0%

	Error Description (Under 3GHz) (v06)	Uncertainty Value	Probability distribution	Divisor	ci (1g)	ci (10g)	ui (1g)	ui (10g)	Vi, veff
A	Measurement System (DASY5)				. 8/		(std. uncertainty)	(std. uncertainty)	
1	Probe Calibration Error	±6.0 %	Normal	1	1	1	±6.0 %	±6.0 %	00
2	Axial isotropy Error	±4.7 %	Rectangular	√3	0.7	0.7	±1.9 %	±1.9 %	oc
3	Hemispherical isotropy Error (<5deg, flat phantom)	±9.6 %	Rectangular	√3	0.7	0.7	±3.9 %	±3.9 %	× ×
4	Boundary effects Error	±1.4%	Rectangular	√3	1	1	±0.8 %	±0.8 %	∞
5	Linearity Error	±4.7 %	Rectangular	√3	1	1	±2.7 %	±2.7 %	oc
6	Probe modulation response (CW)	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0 %	00
7	Sensitivity Error (detection limit)	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	oc
8	Response Time Error (<5ms/100ms wait)	±0.0 %	Normal	1	1	1	±0.0 %	±0.0 %	œ
9	Integration Time Error (100% duty cycle)	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0 %	00
10	Readout Electronics Error(DAE)	±0.3 %	Rectangular	√3	1	1	±0.3 %	±0.3 %	œ
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 %	oc o
13	Probe positioner mechanical tolerance	±1.1 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	œ
14		±2.9 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	00
15	Errors: Extrapol., Interpol. & Integration Algorithms	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	oc
В	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 %	œ
\mathbf{C}	Phantom and Setup								
19	Phantom uncertainty (shape, thickness tolerances)	±7.5 %	Rectangular	√3	1	1	±4.3 %	±4.3 %	00
20	Target Liquid Conductivity Tolerance (≤5%)	±5.0%	Rectangular	√3	0.64	0.43	±1.8 %	±1.2 %	oxo
21	Measurement Liquid Conductivity Error	±2.9 %	Normal	1	0.64	0.43	±1.9 %	±1.2 %	3
22	Target Liquid Permittivity Tolerance (≤5%)	±5.0%	Rectangular	√3	0.6	0.49	±1.7 %	±1.4 %	00
23	Measurement Liquid Permittivity Error	±2.9 %	Normal	1	0.6	0.49	±1.7 %	±1.4 %	3
	Liquid Conductivity-temp.uncertainty (≤2deg.C.)	±5.2 %	Rectangular	√3	0.78	0.71	±2.3 %	±2.1 %	∞
25	Liquid Permittivity-temp.uncertainty (≤2deg.C.)	±0.8 %	Rectangular	√3	0.23	0.26	±0.1 %	±0.1 %	00
	Combined Standard Uncertainty						±12.5 %	±12.2 %	479
	Expanded Uncertainty (k=2)						±25.0 %	±24.4 %	

	Error Description (5~6GHz) (v06)	Uncertainty Value	Probability distribution	Divisor	ci (1g)	ci (10g)	ui (1g)	ui (10g)	Vi, veff
A	Measurement System (DASY5)	, muc	distribution		(15)	(105)	(std. uncertainty)	(std. uncertainty)	
1	Probe Calibration Error	±6.55 %	Normal	1	1	1	±6.55%	±6.55 %	œ
2	Axial isotropy	±4.7 %	Rectangular	√3	0.7	0.7	±1.9 %	±1.9 %	00
3	Hemispherical isotropy (<5deg, flat phantom)	±9.6%	Rectangular	√3	0.7	0.7	±3.9 %	±3.9 %	œ
4	Boundary effects	±4.8 %	Rectangular	√3	1	1	±2.8 %	±2.8 %	œ
5	Probe linearity	±4.7 %	Rectangular	√3	1	1	±2.7 %	±2.7%	œ
6	Probe modulation response (CW)	±0.0%	Rectangular	√3	1	1	±0.0 %	±0.0%	œ
7	System detection limit	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6%	œ
8	Response Time Error (<5ms/100ms wait)	±0.0%	Rectangular	√3	1	1	±0.0 %	±0.0%	00
9	Integration Time Erro r(100% duty cycle)	±0.0 %	Rectangular	√3	1	1	±0.0 %	±0.0%	8
10	System readout electronics (DAE)	±0.3 %	Normal	1	1	1	±0.3 %	±0.3 %	00
11	RF ambient conditions-noise	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7%	8
12	RF ambient conditions-reflections	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7%	8
13	Probe positioner mechanical tolerance	±3.3 %	Rectangular	√3	1	1	±1.9 %	±1.9 %	00
14	Probe positioning with respect to phantom shell	±6.7 %	Rectangular	√3	1	1	±3.9 %	±3.9 %	8
15	Errors: Extrapol., Interpol. & Integration Algorithms	±4.0 %	Rectangular	√3	1	1	±2.3 %	±2.3 %	∞
В	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 %	8
C	Phantom and Setup								
19	Phantom uncertainty (shape, thickness tolerances)	±7.5 %	Rectangular	√3	1	1	±4.3 %	±4.3 %	8
20	Target Liquid Conductivity Tolerance (≤5%)	±5.0 %	Rectangular	√3	0.64	0.43	±1.8 %	±1.2 %	00
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	$\sqrt{3}$	0.6	0.49	±1.7 %	±1.4%	œ
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 %	00
25	Liquid Permittivity-temp.uncertainty (≤2deg.C.)	±0.8 %	Rectangular	√3	0.23	0.26	±0.1 %	±0.1 %	œ
	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).

Test report No.: 4786001103S-A Page: 9 of 107

Issued date : February 25, 2013

FCC ID : AZD400

SECTION 6: Confirmation before testing

6.1 Assessment for the conducted power of EUT

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

Worst data rate / worst channel determination (WLAN module serial number: 03)

			Cable			Av	erage pov	ver		Power	tolerance &	correction	ı	Apply	Remarks
Mode	Freq.	D/R	Loss	Att.	D/F	P/M	Re	sult	PAR	Target &	Deviation	Scaled	≤2	SAR	(*.Power reference (average
	[MHz]	[Mbps]	[dB]	[dB]	[dB]	Reading			F 1703	tolerance	from max	Factor	dB?	test? Y:yes	output power) of Radio test)
	2412		0.42	10.00	0.00	[dBm] 2.48	[dBm] 12.90	[mW]	[dB] 2.6	[dBm]	[dB] -1.10	[-]	37	_	(# P. 1: 12 00 ID)
	2412 2412	<u>1</u> 2	0.42	10.00	0.00	2.48	12.90	19.5 19.7	2.6	12.0±2.0 12.0±2.0	-1.10 -1.06	×1.29 ×1.28	Y	-(*2)	(*.Radio: 12.89 dBm)
	2412		0.42	10.00	0.00	2.52	13.00	20.0	1.9	12.0±2.0 12.0±2.0	-1.00	×1.26	Y	- (*1)	-
802.	2412	5.5 11	0.42	10.00	0.00	2.58	12.94	19.7	2.5	12.0±2.0 12.0±2.0	-1.06	×1.28	Y Y	-(*1) -	
11b													1	Y	
	2437	1	0.42	10.00	0.00	2.94	13.36	21.7	2.6	12.0 ±2.0	-0.64	<u>×1.16</u>	Y	(*1,*2)	Highest power CH (11b).
	2462	1	0.42	10.00	0.00	2.80	13.22	21.0	2.6	12.0 ±2.0	-0.78	×1.20	Y	-(*2)	-
	2412	6	0.42	10.00	0.00	2.47	12.89	19.5	10.2	12.0 ±2.0	-1.11	×1.29	Y		(*.Radio: 12.82 dBm)
	2412	9	0.42	10.00	0.00	2.52	12.94	19.7	9.4	12.0 ±2.0	-1.06	×1.28	Y		-
	2412	12	0.42	10.00	0.00	2.53	12.95	19.7	9.8	12.0 ±2.0	-1.05	×1.27	Y		-
802.	2412	18	0.42	10.00	0.00	2.60	13.02	20.0	9.1	12.0 ±2.0	-0.98	×1.25	Y	<u>-(*1)</u>	
11g	2412	24	0.42	10.00	0.00	2.47	12.89	19.5	10.3	12.0 ±2.0	-1.11	×1.29	Y		
(*1)	2412	36	0.42	10.00	0.00	2.43	12.85	19.3	9.3	12.0 ±2.0	-1.15	×1.30	Y		
(1)	2412	48	0.42	10.00	0.00	2.48	12.90	19.5	9.4	12.0 ±2.0	-1.10	×1.29	Y		-
	2412	56	0.42	10.00	0.00	2.39	12.81	19.1	9.6	12.0 ±2.0	-1.19	×1.32	Y	-	-
	2437	6	0.42	10.00	0.00	2.99	13.41	21.9	10.1	12.0 ±2.0	-0.59	×1.15	Y	-(*1)	Highest power CH (all).
	2462	6	0.42	10.00	0.00	2.84	13.26	21.2	10.1	12.0 ±2.0	-0.74	×1.19	Y	-	-
	2412	MCS0	0.42	10.00	0.00	2.54	12.96	19.8	8.9	12.0 ±2.0	-1.04	×1.27	Y		(*.Radio: 12.85 dBm)
	2412	MCS1	0.42	10.00	0.00	2.52	12.94	19.7	9.0	12.0 ±2.0	-1.06	×1.28	Y		
	2412	MCS2	0.42	10.00	0.00	2.53	12.95	19.7	8.8	12.0 ±2.0	-1.05	×1.27	Y		
802.	2412	MCS3	0.42	10.00	0.00	2.53	12.95	19.7	9.0	12.0 ±2.0	-1.05	×1.27	Y		
11n	2412	MCS4	0.42	10.00	0.00	2.51	12.93	19.6	9.0	12.0±2.0	-1.07	×1.28	Y		-
(20HT)	2412	MCS5	0.42	10.00	0.00	2.52	12.94	19.7	9.0	12.0±2.0	-1.06	×1.28	Y		-
(*1)	2412	MCS6	0.42	10.00	0.00	2.53	12.95	19.7	8.8	12.0±2.0	-1.05	×1.27	Y		-
	2412	MCS7	0.42	10.00	0.00	2.50	12.92	19.6	8.9	12.0±2.0	-1.08	×1.28	Y	-	-
	2437	MCS0	0.42	10.00	0.00	2.97	13.39	21.8	9.0	12.0±2.0	-0.61	×1.15	Y	-	-
	2462	MCS0	0.42	10.00	0.00	2.84	13.26	21.2	8.8	12.0±2.0	-0.74	×1.19	Y	-	-
	2422	MCS0	0.42	10.00	0.00	2.60	13.02	20.0	9.2	12.0±2.0	-0.98	×1.25	Y	-(*2)	(*.Radio: 12.91 dBm)
	2422	MCS1	0.42	10.00	0.00	2.58	13.00	20.0	9.3	12.0±2.0	-1.00	×1.26	Y		-
	2422	MCS2	0.42	10.00	0.00	2.56	12.98	19.9	9.3	12.0±2.0	-1.02	×1.26	Y		
802.	2422	MCS3	0.42	10.00	0.00	2.53	12.95	19.7	9.8	12.0±2.0	-1.05	×1.27	Y	- <i>-</i>	-
11n	2422	MCS4	0.42	10.00	0.00	2.57	12.99	19.9	9.8	12.0±2.0	-1.01	×1.26	Y		
(40HT)	2422	MCS5	0.42	10.00	0.00	2.51	12.93	19.6	10.1	12.0 ±2.0	-1.07	×1.28	Y		
(*1)	2422	MCS6	0.42	10.00	0.00	2.49	12.91	19.5	9.3	12.0±2.0	-1.09	×1.29	Y		
	2422	MCS7	0.42	10.00	0.00	2.56	12.98	19.9	9.2	12.0 ±2.0	-1.02	×1.26	Y	-	-
	2437	MCS0	0.42	10.00	0.00	2.96	13.38	21.8	9.2	12.0 ±2.0	-0.62	<u>×1.15</u>	Y	Y (*1,*2)	Highest power CH (11n(40HT)).
	2452	MCS0	0.42	10.00	0.00	2.90	13.32	21.5	9.2	12.0 ±2.0	-0.68	×1.17	Y	-(*2)	-

^{*.} Freq.: Frequency, D/R: Data Rate, Att.: Attenuator loss, D/F: Duty Factor (0dB=100% duty cycle), Deviation form max.: Power deviation (Deviation [dB] = "Max.-specification output power (average)" - "results power (average)") Scaled Factor: Power scaled factor for obtained SAR value, Scaled Factor [-] = 1 / (10 ^ ("Deviation from max." / 10))

*. Since measured output power of all modes were same, SAR test was applied to both 20MHz and 40MHz bandwidth operation.

- *1. (KDB248227) Since the average power of 11g and 11n(20HT) were less than 0.25dB higher than the corresponded 11b power, SAR test (for 20MHz bandwidth operation) was only applied to 11b mode. 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.
- *2. Since the observed SAR(1g) value was enough lower than 0.8W/kg, and extrapolated peak SAR value was also enough lower than 1.6W/kg, the SAR test was only applied to maximum output channel of this operation mode.
- *. EUT serial number: "03" for conducted power measurement (SAR test reference) and for SAR test.
- *. Calculating formula
 - Results (Average power) = ["P/M Reading"]+[Cable loss]+[Attenuator]+[duty factor] / (Peak power) = ["P/M Reading"]+[Cable loss]+[Attenuator]
- *. Uncertainty of antenna port conducted test; Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB
- *. Date measured: January 7, 2013 / Measured by: Hiroshi Naka / Place: preparation room of No. 7 shielded room. (23 deg.C. / 40 %RH)
- *. The average output power of Radio test refers to test report: 4786001102S-A. (EUT serial number used: 08)

Test report No.: 4786001103S-A Page: 10 of 107

Issued date : February 25, 2013

FCC ID : AZD400

6.1.2 5260-5320MHz, W53 band (802.11a/n(20HT)/n(40HT))

Worst data rate / worst channel determination (WLAN module serial number: 03)

			Cable			Av	erage pov	ver		Power	tolerance &	correction		Apply	Remarks
Mode	Freq. [MHz]	D/R [Mbps]	Loss [dB]	Att. [dB]	D/F [dB]	P/M Reading	Res	sult	PAR	Target & tolerance	Deviation from max	Scaled Factor	≤2 !D0	SAR test?	(*.Power reference (average output power) of Radio test)
			[dD]			[dBm]	[dBm]	[mW]	[dB]	[dBm]	[dB]	[-]	dB?	Y:yes	output power) of rutalio test)
	5260	6	0.76	10.04	0.00	1.79	12.59	18.2	9.2	12.0 ±2.0	-1.41	×1.38	Y		(*.Radio: 12.55 dBm)
	5260	9	0.76	10.04	0.00	1.80	12.60	18.2	8.6	12.0 ±2.0	-1.40	×1.38	Y		(*.Radio: 12.47 dBm)
	5260	12	0.76	10.04	0.00	1.77	12.57	18.1	9.0	12.0 ±2.0	-1.43	×1.39	Y		(*.Radio: 12.41 dBm)
	5260	18	0.76	10.04	0.00	1.86	12.66	18.5	8.4	12.0 ±2.0	-1.34	×1.36	Y	-(*1)	(*.Radio: 12.46 dBm)
802.	5260	24	0.76	10.04	0.00	1.80	12.60	18.2	9.2	12.0 ±2.0	-1.40	×1.38	Y		(*.Radio: 12.52 dBm)
11a	5260	36	0.76	10.04	0.00	1.71	12.51	17.8	9.1	12.0 ±2.0	-1.49	×1.41	Y		(*.Radio: 12.42 dBm)
(*1)	5260	48	0.76	10.04	0.00	1.76	12.56	18.0	8.7	12.0 ±2.0	-1.44	×1.39	Y		(*.Radio: 12.53 dBm)
(1)	5260	56	0.76	10.04	0.00	1.72	12.52	17.9	9.0	12.0 ± 2.0	-1.48	×1.41	Y	-	(*.Radio: 12.41 dBm)
	5280	6	0.76	10.04	0.00	1.94	12.74	18.8	9.0	12.0±2.0	-1.26	<u>×1.34</u>	Y	Y (*1)	Highest power CH (all). (*1) (*.Radio: 12.56 dBm)
	5300	6	0.76	10.04	0.00	1.55	12.35	17.2	9.2	12.0 ±2.0	-1.65	×1.46	Y	-	-
	5320	6	0.76	10.04	0.00	1.65	12.45	17.6	9.1	12.0 ±2.0	-1.55	×1.43	Y	Y(*1)	(*.Radio: 12.36 dBm)
	5260	MCS0	0.76	10.04	0.00	1.82	12.62	18.3	8.4	12.0 ±2.0	-1.38	×1.37	Y	-	(*.Radio: 12.52 dBm)
	5260	MCS1	0.76	10.04	0.00	1.79	12.59	18.2	8.4	12.0 ±2.0	-1.41	×1.38	Y		(*.Radio: 12.42 dBm)
	5260	MCS2	0.76	10.04	0.00	1.82	12.62	18.3	8.4	12.0 ±2.0	-1.38	×1.37	Y		(*.Radio: 12.42 dBm)
	5260	MCS3	0.76	10.04	0.00	1.82	12.62	18.3	8.4	12.0 ±2.0	-1.38	×1.37	Y		(*.Radio: 12.46 dBm)
802.	5260	MCS4	0.76	10.04	0.00	1.83	12.63	18.3	8.4	12.0 ±2.0	-1.37	×1.37	Y		(*.Radio: 12.51 dBm)
11n	5260	MCS5	0.76	10.04	0.00	1.85	12.65	18.4	8.5	12.0 ±2.0	-1.35	×1.36	Y	-(*1)	(*.Radio: 12.51 dBm)
(20HT)	5260	MCS6	0.76	10.04	0.00	1.83	12.63	18.3	8.4	12.0 ±2.0	-1.37	×1.37	Y		(*.Radio: 12.46 dBm)
(*1)	5260	MCS7	0.76	10.04	0.00	1.79	12.59	18.2	8.4	12.0 ±2.0	-1.41	×1.38	Y	-	(*.Radio: 12.45 dBm)
	5280	MCS0	0.76	10.04	0.00	1.92	12.72	18.7	8.4	12.0±2.0	-1.28	×1.34	Y	-(*1)	Highest power CH (11n(20HT)). (*.Radio: 12.55 dBm)
	5300	MCS0	0.76	10.04	0.00	1.55	12.35	17.2	8.5	12.0 ±2.0	-1.65	×1.46	Y	ı	
	5320	MCS0	0.76	10.04	0.00	1.65	12.45	17.6	8.5	12.0 ±2.0	-1.55	×1.43	Y	ı	(*.Radio: 12.37 dBm)
	5270	MCS0	0.76	10.04	0.00	1.94	12.74	18.8	8.3	12.0 ±2.0	-1.26	×1.34	Y	Y (*1)	(*1)(*.Radio: 12.54 dBm)
	5270	MCS1	0.76	10.04	0.00	1.96	12.76	18.9	8.1	12.0±2.0	-1.24	×1.33	Y	-(*1)	Highest power CH (11n(40HT)). (*.Radio: 12.56 dBm)
802.	5270	MCS2	0.76	10.04	0.00	1.92	12,72	18.7	8.6	12.0 ±2.0	-1.28	×1.34	Y		(*.Radio: 12.53 dBm)
11n	5270	MCS3	0.76	10.04	0.00	1.83	12.63	18.3	8.9	12.0 ±2.0	-1.37	×1.37	Y		(*.Radio: 12.44 dBm)
(40HT)	5270	MCS4	0.76	10.04	0.00	1.89	12.69	18.6	8.9	12.0 ±2.0	-1.31	×1.35	Y		(*.Radio: 12.58 dBm)
(*1)	5270	MCS5	0.76	10.04	0.00	1.85	12.65	18.4	8.8	12.0 ±2.0	-1.35	×1.36	Y		(*.Radio: 12.46 dBm)
	5270	MCS6	0.76	10.04	0.00	1.89	12.69	18.6	8.8	12.0 ±2.0	-1.31	×1.35	Y		(*.Radio: 12.51 dBm)
	5270	MCS7	0.76	10.04	0.00	1.87	12.67	18.5	8.5	12.0 ±2.0	-1.33	×1.36	Y		(*.Radio: 12.46 dBm)
	5310	MCS0	0.76	10.04	0.00	1.65	12.45	17.6	8.6	12.0 ±2.0	-1.55	×1.43	Y	Y (*1)	(*.Radio: 12.39 dBm)

*. Freq.: Frequency, D/R: Data Rate, Att.: Attenuator loss, D/F: Duty Factor (0dB=100% duty cycle),
Deviation form max.: Power deviation (Deviation [dB] = "Max.-specification output power (average)" - "results power (average)")
Scaled Factor: Power scaled factor for obtained SAR value, Scaled Factor [-] = 1/(10^("Deviation from max."/10))

*. Since measured output power of all modes were same, SAR test was applied to both 20MHz and 40MHz bandwidth operation.

- *1. (KDB248227) Since the average power of 11n(20HT) was less than 0.25dB higher than the corresponded 11b power, SAR test (for 20MHz bandwidth operation) was only applied to 11a mode. 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.
- *. <u>EUT serial number: "03" for conducted power measurement (SAR test reference) and for SAR test.</u>
- *. Calculating formula:
 - Results (Average power) = ["P/M Reading"]+[Cable loss]+[Attenuator]+[duty factor] / (Peak power) = ["P/M Reading"]+[Cable loss]+[Attenuator]
- *. Uncertainty of antenna port conducted test; Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB
- *. Date measured: January 7, 2013 / Measured by: Hiroshi Naka / Place: preparation room of No. 7 shielded room. (23 deg.C. / 40 %RH)
- *. The average output power of Radio test refers to test report: 4786001102S-B. (EUT serial number used: 08)

Test report No.: 4786001103S-A : 11 of 107 Page

Issued date : February 25, 2013

FCC ID : AZD400

6.1.3 5745-5805 MHz, W58 band (802.11a/n(20HT)/n(40HT))

Worst data rate / worst channel determination (WLAN module serial number: 03)

			Cable			Av	erage pov	ver		Power	tolerance &	correction	1	Apply	Remarks
Mode	Freq. [MHz]	D/R [Mbps]	Loss [dB]	Att. [dB]	D/F [dB]	P/M Reading	-	sult	PAR	Target & tolerance	Deviation from max	Scaled Factor	≤2 dB?	SAR test? Y:yes	(*.Power reference (average output power) of Radio test)
	5745	-	0.05	10.05	0.00	[dBm] 1.35	[dBm] 12,25	[mW] 16.8	[dB] 8.1	[dBm] 12.0±2.0	[dB]	1.50	37	- 1,7 42	(# D. I. 12.22 ID.)
		6	0.85	10.05						12.0±2.0 12.0±2.0	-1.75		Y		(*.Radio: 12.23 dBm)
	5745	9	0.85	10.05 10.05	0.00	1.34	12,24	16.7	8.0	12.0±2.0 12.0±2.0	-1.76	1.50	Y		(*.Radio: 12.13 dBm)
	5745	12	0.85	10.05	0.00	1.33	12.23	16.7	8.2	12.0 ±2.0 12.0 ±2.0	-1.77 -1.73	1.50	Y		(*.Radio: 12.18 dBm)
000	5745	18	0.85		0.00	1.37	12,27	16.9	8.2	12.0 ±2.0 12.0 ±2.0	-1./3	1.49	Y	<u>-(*1)</u>	(*.Radio: 12.24 dBm)
802.	5745	24 36	0.85	10.05	0.00	1.35	12,25	16.8	8.1	12.0±2.0 12.0±2.0	-1.75	1.50	Y		(*.Radio: 12.18 dBm)
11a	5745	48	0.85	10.05	0.00	1.28	12.18	16.5	8.2	12.0±2.0 12.0±2.0	-1.82	1.52	Y		(*.Radio: 12.05 dBm)
(*1)	5745		0.85	10.05	0.00	1.34	12,24	16.7	8.2		-1.76	1.50	Y		(*.Radio: 12.05 dBm)
	5745	56	0.85	10.05	0.00	1.34	12.24	16.7	8.2	12.0 ±2.0	-1.76	1.50	Y	- X Zotat	(*.Radio: 12.04 dBm)
	5765	6	0.85	10.05	0.00	1.61	12.51	17.8	8.1	12.0 ±2.0	-1.49	1.41	Y	Y (*1)	Highest power CH (all). (*1)
	5785	6	0.85	10.05	0.00	1.38	12.28	16.9	8.2	12.0 ±2.0	-1.72	1.49	Y	- X 7	-
	5805	6	0.85	10.05	0.00	1.19	12.09	16.2	8.3	12.0 ±2.0	-1.91	1.55	Y	Y (*1)	-
	5745	MCS0	0.85	10.05	0.00	1.36	12.26	16.8	8.9	12.0±2.0	-1.74	1.49	Y		(*.Radio: 12.11 dBm)
	5745	MCS1	0.85	10.05	0.00	1.30	12.20	16.6	8.4	12.0±2.0	-1.80	1.51	Y		(*.Radio: 12.08 dBm)
	5745	MCS2	0.85	10.05	0.00	1.29	12.19	16.6	8.7	12.0±2.0	-1.81	1.52	Y		(*.Radio: 12.13 dBm)
802.	5745	MCS3	0.85	10.05	0.00	1.40	12.30	17.0	8.2	12.0±2.0	-1.70	1.48	Y	-(*1)	(*.Radio: 12.09 dBm)
11n	5745	MCS4	0.85	10.05	0.00	1.30	12.20	16.6	8.9	12.0 ±2.0	-1.80	1.51	Y		(*.Radio: 12.10 dBm)
(20HT)	5745	MCS5	0.85	10.05	0.00	1.26	12.16	16.4	8.8	12.0 ±2.0	-1.84	1.53	Y		(*.Radio: 12.08 dBm)
(*1)	5745	MCS6	0.85	10.05	0.00	1.27	12.17	16.5	8.5	12.0 ±2.0	-1.83	1.52	Y		(*.Radio: 12.04 dBm)
(-)	5745	MCS7	0.85	10.05	0.00	1.26	12.16	16.4	8.8	12.0 ±2.0	-1.84	1.53	Y	-	(*.Radio: 12.10 dBm)
	5765	MCS0	0.85	10.05	0.00	1.61	12.51	17.8	8.7	12.0 ±2.0	-1.49	1.41	Y	-(*1)	Highest power CH (11n(20HT))
	5785	MCS0	0.85	10.05	0.00	1.33	12.23	16.7	8.9	12.0 ±2.0	-1.77	1.50	Y	-	-
	5805	MCS0	0.85	10.05	0.00	1.22	12.12	16.3	8.9	12.0 ±2.0	-1.88	1.54	Y	-	-
	5755	MCS0	0.85	10.05	0.00	1.32	12,22	16.7	8.3	12.0 ±2.0	-1.78	1.51	Y	Y (*1)	(*1)(*.Radio: 12.13 dBm)
	5755	MCS1	0.85	10.05	0.00	1.31	12.21	16.6	8.3	12.0 ±2.0	-1.79	1.51	Y		(*.Radio: 12.12 dBm)
802.	5755	MCS2	0.85	10.05	0.00	1.36	12.26	16.8	8.4	12.0 ±2.0	-1.74	1.49	Y	-(*1)	Highest power CH (11n(40HT)). (*.Radio: 12.08 dBm)
11n	5755	MCS3	0.85	10.05	0.00	1.30	12.20	16.6	8.9	12.0±2.0	-1.80	1.51	Y		(*.Radio: 12.02 dBm)
(40HT)	5755	MCS4	0.85	10.05	0.00	1.27	12.17	16.5	8.8	12.0±2.0	-1.83	1.52	Y		(*.Radio: 12.06 dBm)
(*1)	5755	MCS5	0.85	10.05	0.00	1.20	12.10	16.2	8.7	12.0±2.0	-1.90	1.55	Y		(*.Radio: 12.05 dBm)
(-)	5755	MCS6	0.85	10.05	0.00	1.33	12.23	16.7	8.4	12.0±2.0	-1.77	1.50	Ϋ́		(*.Radio: 12.08 dBm)
	5755	MCS7	0.85	10.05	0.00	1.33	12.23	16.7	8.3	12.0±2.0	-1.77	1.50	Y		(*.Radio: 12.07 dBm)
	5795	MCS0	0.85	10.05	0.00	1.32	12,22	16.7	8.3	12.0±2.0	-1.78	1.51	Y	Y(*1)	-

Freq.: Frequency, D/R: Data Rate, Att.: Attenuator loss, D/F: Duty Factor (0dB=100% duty cycle), Deviation from max.: Power deviation (Deviation [dB] = "Max.-specification output power (average)" - "results power (average)") Scaled Factor. Power scaled factor for obtained SAR value, Scaled Factor [-] = 1 / (10 ^ ("Deviation from max." / 10))

Since measured output power of all modes were same, SAR test was applied to both 20MHz and 40MHz bandwidth operation.

- *. Since measured output power of all modes were same, SAK test was applied to both 2011 and 1011 and operation) was only applied to 11a mode. 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.
- EUT serial number: "03" for conducted power measurement (SAR test reference) and for SAR test.
- Calculating formula:
 - Results (Average power) = ["P/M Reading"]+[Cable loss]+[Attenuator]+[duty factor] / (Peak power) = ["P/M Reading"]+[Cable loss]+[Attenuator]
- Uncertainty of antenna port conducted test; Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB
- Date measured: January 7, 2013 / Measured by: Hiroshi Naka / Place: preparation room of No. 7 shielded room. (23 deg.C. / 40 %RH)
- The average output power of Radio test refers to test report: 4786001102S-A. (EUT serial number used: 08)

Test report No.: 4786001103S-A : 12 of 107 Page

Issued date : February 25, 2013

FCC ID : AZD400

SECTION 7: Measurement results

7.1 SAR test results - platform (1): Digital video camcorder (1) (model: ID0025)

7.1.1 2412-2462MHz band

January 23, 2013 Measurement date: Measurement by: Hiroshi Naka

[Liquid measurement (Body simulated tissue)]

Target			Liquid p	parameters		ASAR Co	pefficients (*1)	Dd.		
Frequency Permittivity (gr) [-]			Cone	ductivity [S/m]	Temp.	Depth	ΔSAR	Correction	Remarks /Environment	
[MHz]	Target	Measured (Δεr)	Target	Measured (Δσ)	[deg.C.]	[mm]	(1g) [%]	required?	/ Environment	
2450	52.7	50.63 (-3.9%)	1.95	2.020 (+3.6%)	22.0	156	(+2.61)(*1)	morroquirea.	January 23, 2013, before SAR test	
2437	52.72	50.61 (4.0%)	1.938	1.993 (+2.9%)	22.0	130	(+2.29)(*1)	not required.	/ambient; 23.8 deg.C., 40%RH	

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 2450MHz. As an intermediate solution, dielectric parameters for the frequencies between 2000 to 2450 MHz were obtained using linear interpolation. (Refer to Appendix 3-4)

ΔSAR(1g)= Cer ×Δer + Cσ ×Δσ, Cer=-7.854E-4×f³+9.402E-3×f²-2.742E-2×f·0.2026 / Cσ =9.804E-3×f³-8.661E-2×f²+2.981E-2×f+0.7829

[SAR measurement results (Partial-Body)]

				SA	R mea	surement	results	;						Reported		
		Modulation	EU	T setup cor	nditions	3	Liquid	l temp.	Power		(1g) [W		Data#	SAR	g) [W/kg]	
Mode	[MHz]	/Data rate		LCD	Gap	Battery	[deg	g.C.]	drift	maximum v			in		s/[**/Ksj	Remarks
	(CH)	/ Crest factor	Position	(*1)	[mm]	ID	Before	After	[dB]	Observed	ASAR [%]	ΔSAR corrected	Appendix 2-2	Scaled factor	tune-up SAR	
Step 1a	: Change th	e position, o	peration mo	de and char	nnels				•	•						
				Close (R)	0	43	21.5	21.6	0.17	0.031	-	-	Step 1a-1	×1.16	0.036	_
11b	2437 (6)	DSSS /1Mbps	Top-left	Close (N)	0	44	21.6	21.7	-0.20	0.032	Ξ	-	Step 1a-2	×1.16	11.11.5 /	->Highest (2.4GHz)
	(-)	/1.0		Open	0	48	21.7	21.8	0.20	0.031			Step 1a-3	×1.16	0.036	-
		,	Тор	Close (R)	0	49	21.8	21.9	0.20	0.025	-	-	Step 1a-4	×1.16	0.029	-
11n (40HT)	2437 (6)	OFDM /MCS0 /1.0	Top-left	Close (N)	0	50	21.8	21.8	0.07	0.032	Ξ	-	Step 1a-5	×1.15	0.037	->Highest (2.4GHz)
		, 210	Rear	Close (R)	0	43	22.0	22.0					-	×1.16	-	
		DSSS	Front	Close (R)	0	43	22.0	22.0		n scan was no			-	×1.16	-	
11b	2437 (6)	/1Mbps	Bottom	Close (R)	0	44	22.0	22.0		kimum SAR v sult was small			-	×1.16	-	_
		/1.0	Right	Close (R)	0	44	22.0	22.1		d, a zoom scar			-	×1.16	-	_
			Left	Open	0	48	22.1	22.1					-	×1.16	-	_
Step 2a	: Check the	influence of	metal acces	sory at left p	osition											
11b	2437 (6)	DSSS /1Mbps /1.0	Left with handle unit	Open	0	48	22.1	22.2	the man	n scan was no ximum SAR v sult was small d, a zoom scar	value of a enough	an area or not	-	×1.16	-	-

Notes:

- *1. Refer to Appendix 1 for LCD open/close position. "Open": LCD open, "Close(N)": LCD normal close, "Close(R)": LCD reverse close.
- Gap: Separation distance between the nearest position of EUT outer surface and the bottom outer surface of phantom.
- Refer to Appendix 1 for battery type. Battery ID number of 43, 44, 48, 49 and 50 were all same models.
- Since measured output power of all modes were same, SAR test was applied to both 20MHz and 40MHz bandwidth operation.
- (KDB248227) Since the average power of 11g and 11n(20HT) were less than 0.25dB higher than the corresponded 11b power, SAR test (for 20MHz bandwidth operation) was only applied to 11b mode. 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.
- Since the observed SAR(1g) value was enough lower than 0.8W/kg, and extrapolated peak SAR value was also enough lower than 1.6W/kg, the SAR test was only applied to maximum output channel of this operation mode.
- During test, the EUT was operated without all signal interface cables and with a full-charged battery.

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

canoration frequency of the 52	are measurement prooce (and asea conver	sion actors)		
SAR test frequency[MHz]	Probe calibration frequency [MHz]	Validity [MHz]	Used conversion factor	Uncertainty
2437	2450	-13MHz, within ±50 of cal.frequency	6.77	±12.0%

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

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

Test report No.: 4786001103S-A Page: 13 of 107

Issued date : February 25, 2013

FCC ID : AZD400

7.1.2 5260-5320MHz, W53 band

Measurement date: January 25, 28 and 29, 2013 Measurement by: Hiroshi Naka

[Liquid measurement (Body simulated tissue)]

Target			pefficients (*1)	D					
Frequency	Pern	nittivity (ɛr) [-]	Conc	ductivity [S/m]	Temp.	Depth	ΔSAR	Correction	Remarks / Environment
[MHz]	Target	Measured (Δεr)	Target	Measured ($\Delta \sigma$)	[deg.C.]	[mm]	(1g) [%]	required?	/ Environment
5200	49.01	47.07 (-4.0%)	5.299	5.391 (+1.7%)			(+0.75)(*1)	not required.	January 25, 2012, hafara CAD toot
5280	48.91	47.06 (-3.8%)	5.393	5.563 (+3.2%)	24.3	130	(+0.66)(*1)	not required.	January 25, 2013, before SAR test /ambient; 24.9 deg.C., 37%RH
5320	48.85	46.90 (-4.0%)	5.439	5.540 (+1.9%)			(+0.74)(*1)	not required.	variotein, 24.9 deg.C., 377 ord 1
5200	49.01	47.29 (-3.5%)	5.299	5.315 (+0.3%)		132	(+0.70)(*1)	not required.	
5270	48.92	47.22 (-3.5%)	5.381	5.442 (+1.1%)	24.5		(+0.69)(*1)	not required.	January 28, 2013, before SAR test /ambient; 24.5 deg.C., 32%RH
5280	48.91	46.99 (-3.9%)	5.393	5.442 (+0.9%)	24.3	132	(+0.66)(*1)	not required.	varnotent, 24.3 deg.C., 3276KH
5310	48.87	46.96 (-3.9%)	5.428	5.522 (+1.9%)			(+0.76)(*1)	not required.	
5200	49.01	47.60 (-2.9%)	5.299	5.432 (+2.5%)	24.5	121	(+0.52)(*1)	not required.	January 29, 2013, before SAR test
5280	48.91	47.19 (-3.5%)	5.393	5.504 (+2.1%)	24.5	131	(+0.58)(*1)	not required.	/ambient, 24.4 deg.C., 34%RH

^{*.} 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 in this report)

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

 $\Delta SAR(1g) = Cer \times \Delta er + C\sigma \times \Delta \sigma, Cer = -7.854E + 2xf^3 + 9.402E + 3xf^2 - 2.742E + 2xf - 0.2026 / C\sigma = 9.804E + 3xf^3 - 8.661E + 2xf^2 + 2.981E + 2xf + 0.7829$

[SAR measurement results (Partial-Body)]

				SA	AR mea	surement	results							Rei	orted			
		Modulation	EU	T setup cor	nditions	S	Liquid	temp.	Power	SAR(1g) [W	/kg]	Data#	Powe	er scaled			
Mode	[MHz]	/Data rate		LCD	Gap	Battery	[deg	;.C.]	drift	maximum value of multi-peak			in	SAR(1	g) [W/kg]	Remarks		
	(CH)	/ Crest factor	Position	(*1)	[mm]	ID ID	Before	After	[dB]	Observed	ΔSAR [%]	ΔSAR corrected	Appendix 2-2	Scaled factor	Scaled SAR(1g)			
Step 1b	: Change th	e position, o	peration mo	de and char	nnels													
				Close (N)	0	43	23.1	23.2	-0.16	0.532	-	-	Step 1b-1	×1.34	0.71			
	5280(56)		Top-left	Close (R)	0	44	23.2	23.2	-0.01	0.575	-	-	Step 1b-2	×1.34	0.77	-		
				Open	0	48	23.3	23.3	-0.06	0.591	-	-	Step 1b-3	×1.34	0.79	>Highest (W53)		
	5320 (64)	OFDM		- 1	0	49	23.3	23.3	0.05	0.519	-	-	Step 1b-4	×1.43	0.74			
11a		/6Mbps /1.0	Тор	Close (R)	0	50	23.3	23.4	-0.13	0.552	-	-	Step 1b-5	×1.34	0.74	_		
			Left	Open	0	43	23.6	23.6	-0.20	0.072	-	-	Step 1b-6	×1.34	0.10			
	5280(56)		Bottom	Open	0	44	23.4	23.5	*. Zoom scan was not proceeded. Since the maximum SAR value of an area			-	×1.34	-	_			
	3200(30)		Rear	Open	0	44	23.5	23.5					-	×1.34	-	-		
			Right	Close (R)	0	48	23.6	23.6		sult was small			-	×1.34	-	_		
			Front	Open	0	48	23.6	23.6	detected	d, a zoom scar	1 was ex	cluded.	-	×1.34	-			
11n	5270 (54)	OFDM	/MCS0	/MCS0	1	Open	0	49	23.7	23.6	-0.20		-	ı	Step 1b-7	×1.34	0.73	->Higher 11n(40HT)
(40HT)	5310 (62)	/1.0			0	50	23.6	23.6	-0.11	0.525	-	-	Step 1b-8	×1.43	0.75	-		
Step 2b: Check the influence of metal accessory at left position																		
11a	5280(56)	OFDM /6Mbps /1.0	Left with handle unit	Open	0	43	23.6	23.6	-0.20	0.081	-	-	Step 2b-1	×1.34	0.11	-		

Notes:

- *1. Refer to Appendix 1 for LCD open/close position. "Open": LCD open, "Close(N)": LCD normal close, "Close(R)": LCD reverse close.
- *. Gap: Separation distance between the nearest position of EUT outer surface and the bottom outer surface of phantom.
- Refer to Appendix 1 for battery type. Battery ID number of 43, 44, 48, 49 and 50 were all same models.
 Since measured output power of all modes were same, SAR test was applied to both 20MHz and 40MHz bandwidth operation.
- * (KDB248227) Since the average power of 11n(20HT) was less than 0.25dB higher than the corresponded 11a power, SAR test (for 20MHz bandwidth operation) was only applied to 11a mode. 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.
- *. During test, the EUT was operated without all signal interface cables and with a full-charged battery.
- *. Calibration frequency of the SAR measurement probe (and used conversion factors)

Cultoration need delite of the or	are interesting proce (und used conver	iorer meters)		
SAR test frequency[MHz]	Probe calibration frequency [MHz]	Validity [MHz]	Used conversion factor	Uncertainty
5270	5300	-30 MHz, within ±50 MHz of cal.frequency	3.98	±13.1%
5280	5300	-20 MHz, within ±50 MHz of cal.frequency	3.98	±13.1%
5310	5300	+10 MHz, within ±50 MHz of cal.frequency	3.98	±13.1%
5320	5300	+20 MHz, within ±50 MHz of cal.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.

Test report No.: 4786001103S-A Page: 14 of 107

Issued date : February 25, 2013 Revised date : April 1, 2013 (-R01)

FCC ID : AZD400

7.1.3 5745-5805MHz, W58 band

Measurement date: January 28 and 29, 2013 Measurement by: Hiroshi Naka

[Liquid measurement (Body simulated tissue)]

Target			Liquid p	parameters			ASAR Co	pefficients (*1)	ъ		
Frequency	Pern	nittivity (ɛr) [-]	Cone	ductivity [S/m]	Temp.	Depth	ΔSAR	Correction	Remarks / Environment		
[MHz]	Target	Measured (Δεr)	Target	Measured (Δσ)	[deg.C.]	[mm]	(1g) [%]	required?	/ Environment		
5800	48.2	46.17 (-4.2%)	6.00	6.198 (+3.3%)			(+0.69)(*1)	not required.			
5755	48.26	46.35 (-4.0%)	5.947	6.101 (+2.6%)			(+0.67)(*1)	not required.			
5765	48.25	46.30 (-4.0%)	5.959	6.126 (+2.8%)	24.5	122	132 (+0.68)(*1) not required. (+0.74)(*1) not required.	January 28, 2013, before SAR test /ambient; 24.5 deg.C., 32%RH			
5785	48.22	46.18 (-4.2%)	5.982	6.110 (+2.1%)	24.3	132		not required.	varnoient, 24.3 deg.C., 32%RH		
5795	48.21	46.15 (-4.3%)	5.994	6.158 (+2.7%)			(+0.72)(*1)	not required.			
5805	48.19	46.21 (-4.1%)	6.006	6.198 (+3.2%)			(+0.68)(*1)	not required.			
5800	48.2	46.44 (-3.7%)	6.00	6.190 (+3.2%)	24.5	121	(+0.58)(*1)	not required.	January 29, 2013, before SAR test		
5765	48.25	46.59 (-3.4%)	5.959	6.163 (+3.4%)	24.5	131	(+0.53)(*1)	not required.	/ambient; 24.4 deg.C., 34%RH		

^{*.} 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 in this report)

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

 $\Delta SAR(1g) = Cer \times \Delta er + C\sigma \times \Delta \sigma, Cer = -7.854E + 2xf^3 + 9.402E - 3xf^2 - 2.742E - 2xf + 0.2026 / C\sigma = 9.804E - 3xf^3 - 8.661E - 2xf^2 + 2.981E - 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 + 2xf + 0.7829 / (2xf + 0.7829 + 2xf + 0.$

[SAR measurement results (Partial-Body)] FR01

	SAR measurement results													Rep	orted	
		Modulation	EU	JT setup cor	ditions	1	Liquid	temp.	Power	SAR(1g) [W	/kg]	Data#		er scaled	
Mode	[MHz]	/Data rate		LCD	Gap	Battery	[deg	;.C.]	drift	maximum v					g) [W/kg]	Remarks
	(CH)	/ Crest factor	Position	(*1)	[mm]	ID	Before	After	[dB]	Observed	ΔSAR [%]	ΔSAR corrected	Appendix 2-2	Scaled factor	Scaled SAR(1g)	
Step 1c	: Change th	e position, o	peration mo	de and char	nels											
				Open	0	45	23.6	23.6	-0.11	0.492	-	-	Step 1c-1	×1.41	0.70	>Highest (W58)
	5765(153)		Top-left	Close (R)	0	48	23.6	23.5	-0.18	0.487	-	-	Step 1c-2	×1.41	0.69	-
				Close (N)	0	49	23.5	23.5	-0.20	0.491	-	-	Step 1c-3	×1.41	0.69	-
	5805 (161)	OFDM		Open	0	50	23.5	23.4	-0.20	0.416	-	-	Step 1c-4	×1.55	0.65	_
11a		/6Mbps	Тор	Close (R)	0	49	23.6	23.6	-0.20	0.402	-	-	Step 1c-5	×1.41	0.57	_
		/1.0	Left	Open	0	44	23.6	23.6	-0.05	0.076	-	-	Step 1c-6	×1.41	0.11	-
	5765(153)		Bottom	Open	0	48	23.6	23.6	*. Zoom scan was not proceeded. Since the maximum SAR value of an area				-	×1.41	-	_
	3703(133)		Rear	Open	0	48	23.6	23.6					1	×1.41	-	_
			Right	Close (R)	0	49	23.6	23.6		ult was small			-	×1.41	-	-
			Front	Open	0	50	23.6	23.6	detected	l, a zoom scar	ı was ex	cluded.	-	×1.41	-	-
11n	5755 (151)	OFDM /MCS0	OFDM		0	48	23.4	23.4	-0.12	0.432	-	-	Step 1c-7	×1.51	0.65	->Higher 11n(40HT)
(40HT)	5795 (159)	/1.0		•	0	49	23.4	23.5	-0.11	0.426	-	-	Step 1c-8	×1.51	0.64	-
Step 2c	tep 2c: Check the influence of metal accessory at left position															
11a	5765(153)	OFDM /6Mbps /1.0	Left with handle unit	Open	0	48	23.6	23.6	-0.14	0.157	-	-	Step 2c-1	×1.41	0.22	-

Notes:

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- *. During test, the EUT was operated without all signal interface cables and with a full-charged battery.
- *. Calibration frequency of the SAR measurement probe (and used conversion factors)

SAR test frequency[MHz]	Probe calibration frequency [MHz]	Validity [MHz]	Used conversion factor	Uncertainty
5755	5800	-45 MHz, within ±50 MHz of cal.frequency	3.87	±13.1%
5765	5800	-35 MHz, within ±50 MHz of cal.frequency	3.87	±13.1%
5795	5800	-5 MHz, within ±50 MHz of cal.frequency	3.87	±13.1%
5805	5800	+5 MHz, within ±50 MHz of cal.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.