SAR TEST REPORT

Test Report No.: 13458537S-A

Applicant : **Nintendo Co., Ltd.**

Type of EUT : **Game Console**

Model Number of EUT : **HEG-001**

FCC ID : **BKEHEG001**

Test Standard : **FCC 47CFR §2.1093**

Test Result : **Complied** (Refer to Section 3.5)

Highest Reported SAR [W/kg]					Remarks (DTS band)				Remarks (UNII band)			
DTS band	U-NII band	SAR type		Limit	Frequency [MHz]	Mode	Output power (average) [dBm]		Frequency [MHz]	Mode	Output power (average) [dBm]	
							Measured	Max.			Measured	Max
1.36 (Antenna 1)	- (lower power) (*. Refer to Section 4.3)	**Body-worn**	**1g**	**1.6**	2437	ac20(MCS0)	13.81	15	-	-	-	7.5

*. **Highest reported SAR values for body-touch RF exposure conditions are "1.36 W/kg (1g)".**
*. **The SAR value of simultaneous transmission is ≤ 0.04 of SPLSR** (Refer to Section 4.4) (*. Distance between antenna: 67.31 mm (design base))

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9. The information provided from the customer for this report is identified in SECTION 1.

Date of test: December 9 and 10, 2020

Test engineer: H. Naka
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Engineer, Consumer Technology Division

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Leader, Consumer Technology Division

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

CERTIFICATE 1266.03

REVISION HISTORY

Revision	Test report No.	Date	Page revised	Contents
Original	13458537S-A	April 5, 2021	-	-

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

Reference : Abbreviations (Including words undescribed in this report) (radio_r0v03_200214)

A2LA	The American Association for Laboratory Accreditation
AC	Alternating Current
AFH	Adaptive Frequency Hopping
AM	Amplitude Modulation
Amp, AMP	Amplifier
ANSI	American National Standards Institute
Ant, ANT	Antenna
AP	Access Point
ASK	Amplitude Shift Keying
Atten., ATT	Attenuator
AV	Average
BPSK	Binary Phase-Shift Keying
BR	Bluetooth Basic Rate
BT	Bluetooth
BT LE	Bluetooth Low Energy
BW	BandWidth
Cal Int	Calibration Interval
CCK	Complementary Code Keying
Ch., CH	Channel
CISPR	Comite International Special des Perturbations Radioelectriques
CW	Continuous Wave
DBPSK	Differential BPSK
DC	Direct Current
D-factor	Distance factor
DFS	Dynamic Frequency Selection
DQPSK	Differential QPSK
DSSS	Direct Sequence Spread Spectrum
DUT	Device Under Test
EDR	Enhanced Data Rate
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power
EMC	ElectroMagnetic Compatibility
EMI	ElectroMagnetic Interference
EN	European Norm
ERP, e.r.p.	Effective Radiated Power
EU	European Union
EUT	Equipment Under Test
Fac.	Factor
FCC	Federal Communications Commission
FHSS	Frequency Hopping Spread Spectrum
FM	Frequency Modulation
Freq.	Frequency
FSK	Frequency Shift Keying
GFSK	Gaussian Frequency-Shift Keying
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
Hori.	Horizontal
ICES	Interference-Causing Equipment Standard
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IF	Intermediate Frequency
ILAC	International Laboratory Accreditation Conference
ISED	Innovation, Science and Economic Development Canada
ISO	International Organization for Standardization
JAB	Japan Accreditation Board
LAN	Local Area Network
LIMS	Laboratory Information Management System
MCS	Modulation and Coding Scheme
MRA	Mutual Recognition Arrangement
N/A	Not Applicable
NIST	National Institute of Standards and Technology
NS	No signal detect.
NSA	Normalized Site Attenuation
NVLAP	National Voluntary Laboratory Accreditation Program
OBW	Occupied Band Width
OFDM	Orthogonal Frequency Division Multiplexing
P/M	Power meter
PCB	Printed Circuit Board
PER	Packet Error Rate
PHY	Physical Layer
PK	Peak
PN	Pseudo random Noise
PRBS	Pseudo-Random Bit Sequence
PSD	Power Spectral Density
QAM	Quadrature Amplitude Modulation
QP	Quasi-Peak
QPSK	Quadrature Phase Shift Keying
RBW	Resolution Band Width
RDS	Radio Data System
RE	Radio Equipment
RF	Radio Frequency
RMS	Root Mean Square
RSS	Radio Standards Specifications
Rx	Receiving
SA, S/A	Spectrum Analyzer
SAR	Specific Absorption Rate
SG	Signal Generator
SVSWR	Site-Voltage Standing Wave Ratio
TR	Test Receiver
Tx	Transmitting
VBW	Video BandWidth
Vert.	Vertical
WLAN	Wireless LAN

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SECTION 1: Customer information

Company Name	Nintendo Co., Ltd.
Address	11-1 Hokotate-cho, Kamitoba, Minami-ku, Kyoto 601-8501, Japan
Telephone Number	+81-75-662-9600
Contact Person	Yousuke Ishikawa

The information provided from the customer is as follows;
- Applicant, Type of EUT, Model Number of EUT, FCC IDon the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (EUT)
- SECTION 4: Operation of EUT during testing
- Appendix 1: The part of Antenna location information, Description of EUT and Support Equipment

*. The laboratory is exempted from liability of any test results affected from the above information in SECTION 2, SECTION 4 and Appendix 1.

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Type of Equipment	Game Console
Model Number	HEG-001
Serial Number	XTW01000011324
Condition of EUT	Engineering prototype (*. Not for sale: These samples are equivalent to mass-produced items.)
Receipt Date of Sample (*. Information from test lab.)	November 2, 2020 (*.EUT for power measurement. No modification by the Lab.) November 18, 2020 (*. EUT for SAR test. No modification by the Lab.) (*. After power measurement, the EUT was returned to a customer.)
Country of Mass-production	China, Vietnam
Category Identified	Portable device *. Since EUT may touch the human body during WLAN operation, the partial-body SAR (1g) shall be measured.
Rating	DC3.7 V (Battery, The battery is had built-in in the EUT, and the user can not remove the battery.) AC Adaptor (output: DC5.0V 1.5A / DC15.0V 2.6A; input: AC100V-240V 50Hz/60Hz 1A)
Feature of EUT	Model number: HEG-001 (referred to as the EUT in this report) is a Game Console which has WLAN and Bluetooth functions.
SAR Accessory	none

2.2 Product Description (Wireless LAN module, antenna)

Equipment type		Transceiver
Frequency of operation	Bluetooth	2.4GHz band: (2402~2480) MHz (BDR (Basic Data Rate), EDR (Enhanced Data Rate), LE (Low Energy mode))
	WLAN	2.4GHz band: (2412~2472) MHz (b, g, n20, n40, ac20, ac40); U-NII-1: (5180~5240) MHz (a, n20, ac20) / (5190, 5230) MHz (n40, ac40) / 5210 MHz (ac80); U-NII-2A: (5260~5320) MHz (a, n20, ac20) / (5270, 5310) MHz (n40, ac40) / 5290 MHz (ac80); U-NII-2C: (5500~5580, 5660~5700) MHz (a, n20, ac20) / (5510, 5550, 5670) MHz (n40), ac40) / 5530 MHz (ac80); U-NII-3: (5745~5825) MHz (a, n20, ac20) / (5755, 5795) MHz (n40, ac40) / 5775 MHz (ac80);
Channel spacing	Bluetooth	1MHz (BDR, EDR), 2MHz (LE)
	WLAN	5 MHz (2.4GHz band), 20 MHz (U-NII-1, U-NII- 2A, U-NII-2C, U-NII-3)
Bandwidth	Bluetooth	79MHz
	WLAN	20 MHz (b, g, a, n20, ac20), 40 MHz (n40, ac40), 80 MHz (ac80)
Type of modulation	Bluetooth	FHSS: GFSK (*. EDR: GFSK+ π/4-DQPSK, GFSK+ 8DPSK)
	WLAN	DSSS: DBPSK, DQPSK, CCK (b); OFDM: BPSK, QPSK, 16QAM, 64QAM, 256QAM (g, a, n20, ac20, n40, ac40, ac80) (*.256QAM is only for ac80)
Typical and maximum transmit power		*. The specification of typical and maximum transmit power (which may occur) refer to remarks in below. *. The measured output power (conducted) as SAR reference power refers to section 6 in this report.

Antenna	**Antenna 0 (Left-upper edge)**	**Antenna 1 (Top edge)**
Antenna quantity	2 pcs. (*. Separation distance between the antenna 0 and the antenna 1: 67.31 mm) Bluetooth: antenna 0, b/g/a: One selected Tx antenna operation, n(20/40HT)/ac(20/40/80VHT): Either one selected Tx antenna operation or two Tx antenna operation simultaneously.	
Antenna type / connector type	LDS antenna / PCB side: MHF2, Antenna side: soldered	LDS antenna / PCB side: MHF2, Antenna side: soldered
Antenna gain (max.power) (*.installed into the platform)	+0.30 dBi (2.4GHz band), +4.04 dBi (5GHz band) (*.including cable loss)	+0.19 dBi (2.4GHz band), +2.51 dBi (5GHz band) (*.including cable loss)

*. b: IEEE 802.11b, g: IEEE 802.11g, a: IEEE 802.11a, n20: IEEE 802.11n(20HT), n40: IEEE 802.11n(40HT), ac20: IEEE 802.11ac(20VHT), ac40: IEEE 802.11n (40VHT), ac80: IEEE 802.11ac(80VHT).

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

***. Maximum tune-up tolerance limit** (Maximum power, refer to power table in next page.)
Maximum tune-up tolerance limit is conducted burst average power and is defined by a customer as Duty cycle 100% (continuous transmitting).
The SAR test reference power measurement and the SAR test were applied to the lowest data rate (as higher time-based average power) on each operation mode.

[Power table] (*. Q1/936-Low power_21.0120)			**SISO power** (Conducted, Duty cycle 100%)						**MIMO** (Conducted, Duty cycle 100%)					
Band	Ch.	Frequency [MHz]	Mode	D/R or MCS#.	Typical [dBm]		Max.[dBm]		Mode	D/R or MCS#.	Typical [dBm]			Max. [dBm]
					Ant.0	Ant.1	Ant.0	Ant.1			Ant.0	Ant.1	Ant.0+1	Ant.0+1
2.4GHz Bluetooth	0~78	2402~2480	BDR	DH5	-	N/A	**2.0**	**N/A**	-	-	-	-	-	-
	0~78	2402~2480	EDR	2-DH5	-	N/A	**2.0**	**N/A**	-	-	-	-	-	-
	0~78	2402~2480	EDR	3-DH5	-	N/A	**2.0**	**N/A**	-	-	-	-	-	-
	0~39	2402~2480	LE	-	-	N/A	**2.0**	**N/A**	-	-	-	-	-	-
2.4GHz WLAN (DTS)	1~11	2412~2462	b	1~11 Mbps	13.5	13.5	**15.0**	**15.0**	-	-	-	-	-	-
	12	2467			8.5	8.5	**10.0**	**10.0**	-	-	-	-	-	-
	13	2472			3.5	3.5	**5.0**	**5.0**	-	-	-	-	-	-
	1~11	2412~2462	g	6~54 Mbps	13.5	13.5	**15.0**	**15.0**						
	12	2467			8.5	8.5	**10.0**	**10.0**	-	-	-	-	-	-
	13	2472			3.5	3.5	**5.0**	**5.0**	-	-	-	-	-	-
	1~11	2412~2462	n20	MCS0~7	13.5	13.5	**15.0**	**15.0**	n20	MCS8~15	12.0	12.0	15.0	**16.5**
	12	2467		MCS0~7	8.5	8.5	**10.0**	**10.0**			8.5	8.5	11.5	**13.0**
	13	2472		MCS0~7	3.5	3.5	**5.0**	**5.0**			3.5	3.5	6.5	**8.0**
	1~11	2412~2462	ac20	MCS0~7	13.5	13.5	**15.0**	**15.0**	ac20	MCS0~8	12.0	12.0	15.0	**16.5**
				MCS8	13.0	13.0	**14.5**	**14.5**						
	12	2467		MCS0~8	8.5	8.5	**10.0**	**10.0**			8.5	8.5	11.5	**13.0**
	13	2472		MCS0~8	3.5	3.5	**5.0**	**5.0**			3.5	3.5	6.5	**8.0**
	3~11	2422~2462	n40	MCS0~7	8.5	8.5	**10.0**	**10.0**	n40	MCS8~15	8.5	8.5	11.5	**13.0**
	3~11	2422~2462	ac40	MCS0~9	8.5	8.5	**10.0**	**10.0**	ac40	MCS0~9	8.5	8.5	11.5	**13.0**
U-NII-1	36~48	5180~5240	a	6~54 Mbps	6.0	6.0	**7.5**	**7.5**	-	-				
	36~48	5180~5240	n20	MCS0~7	6.0	6.0	**7.5**	**7.5**	n20	MCS8~15	6.0	6.0	9.0	**10.5**
	36~48	5180~5240	ac20	MCS0~8	6.0	6.0	**7.5**	**7.5**	ac20	MCS0~8	6.0	6.0	9.0	**10.5**
	38, 46	5190, 5230	n40	MCS0~7	6.0	6.0	**7.5**	**7.5**	n40	MCS8~15	6.0	6.0	9.0	**10.5**
	38, 46	5190, 5230	ac40	MCS0~9	6.0	6.0	**7.5**	**7.5**	ac40	MCS0~9	6.0	6.0	9.0	**10.5**
	42	5210	ac80	MCS0~9	6.0	6.0	**7.5**	**7.5**	ac80	MCS0~9	6.0	6.0	9.0	**10.5**
U-NII-2A	52~64	5260~5320	a	6~54 Mbps	6.0	6.0	**7.5**	**7.5**	-	-	-	-	-	-
	52~64	5260~5320	n20	MCS0~7	6.0	6.0	**7.5**	**7.5**	n20	MCS8~15	6.0	6.0	9.0	**10.5**
	52~64	5260~5320	ac20	MCS0~8	6.0	6.0	**7.5**	**7.5**	ac20	MCS0~8	6.0	6.0	9.0	**10.5**
	54, 62	5270, 5310	n40	MCS0~7	6.0	6.0	**7.5**	**7.5**	n40	MCS8~15	6.0	6.0	9.0	**10.5**
	54, 62	5270, 5310	ac40	MCS0~9	6.0	6.0	**7.5**	**7.5**	ac40	MCS0~9	6.0	6.0	9.0	**10.5**
	58	5290	ac80	MCS0~7	6.0	6.0	**7.5**	**7.5**	ac80	MCS0~9	6.0	6.0	9.0	**10.5**
U-NII-2C	100~116	5500~5580	a	6~54 Mbps	6.0	6.0	**7.5**	**7.5**	-	-	-	-	-	-
	132~140	5660~5700							-	-	-	-	-	-
	100~116	5500~5580	n20	MCS0~7	6.0	6.0	**7.5**	**7.5**	n20	MCS8~15	6.0	6.0	9.0	**10.5**
	132~140	5660~5700												
	100~116	5500~5580	ac20	MCS0~8	6.0	6.0	**7.5**	**7.5**	ac20	MCS0~8	6.0	6.0	9.0	**10.5**
	132~140	5660~5700		MCS0~8	6.0	6.0	**7.5**	**7.5**						
	120~128	5600~5640	a,n20,ac20	not use	N/A	N/A	N/A	N/A	n20,ac20	not use	N/A	N/A	N/A	N/A
	144	5720	a,n20,ac20	not use	N/A	N/A	N/A	N/A	n20,ac20	not use	N/A	N/A	N/A	N/A
	102,110,134	5510,5550,5670	n40	MCS0~7	6.0	6.0	**7.5**	**7.5**	n40	MCS8~15	6.0	6.0	9.0	**10.5**
	102,110,134	5510,5550,5670	ac40	MCS0~9	6.0	6.0	**7.5**	**7.5**	ac40	MCS0~9	6.0	6.0	9.0	**10.5**
	118,126	5590, 5630	n40,ac40	not use	N/A	N/A	N/A	N/A	n40,ac40	not use	N/A	N/A	N/A	N/A
	142	5710	n40,ac40	not use	N/A	N/A	N/A	N/A	n40,ac40	not use	N/A	N/A	N/A	N/A
	106	5530	ac80	MCS0~9	6.0	6.0	**7.5**	**7.5**	ac80	MCS0~9	6.0	6.0	9.0	**10.5**
	122	5610	ac80	not use	N/A	N/A	N/A	N/A	ac80	not use	N/A	N/A	N/A	N/A
	138	5690	ac80	not use	N/A	N/A	N/A	N/A	ac80	not use	N/A	N/A	N/A	N/A
U-NII-3	149~165	5745~5825	a	6~54 Mbps	6.0	6.0	**7.5**	**7.5**	-	-	-	-	-	-
	149~165	5745~5825	n20	MCS0~7	6.0	6.0	**7.5**	**7.5**	n20	MCS8~15	6.0	6.0	9.0	**10.5**
	149~165	5745~5825	ac20	MCS0~8	6.0	6.0	**7.5**	**7.5**	ac20	MCS0~8	6.0	6.0	9.0	**10.5**
	151, 159	5755, 5795	n40	MCS0~7	6.0	6.0	**7.5**	**7.5**	n40	MCS8~15	6.0	6.0	9.0	**10.5**
	151, 159	5755, 5795	ac40	MCS0~9	6.0	6.0	**7.5**	**7.5**	ac40	MCS0~9	6.0	6.0	9.0	**10.5**
	155	5775	ac80	MCS0~9	6.0	6.0	**7.5**	**7.5**	ac80	MCS0~9	6.0	6.0	9.0	**10.5**

*. Ch.: channel, D/R: data rate, MCS#: MCS index number, Ant.: antenna, Max. Maximum tune-up limit power, N/A: Not applicable; (Mode) a: IEEE 802.11a, n20: IEEE 802.11n(20HT), n40: IEEE 802.11n(40HT), ac20: IEEE 802.11ac(20VHT), ac40: IEEE 802.11ac(40VHT), ac80: IEEE 802.11ac(80VHT).

SECTION 3: Test specification, procedures and results

3.1 Test specification

FCC47CFR §2.1093: Radiofrequency radiation exposure evaluation: portable devices.

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

The tests documented in this report were performed in accordance with FCC 47 CFR Parts 2, IEEE Std.1528-2013 (latest), the following FCC Published RF exposure KDB procedures, and TCB workshop updates.

KDB 447498 D01 (v06):	General RF exposure guidance
KDB 248227 D01 (v02r02):	SAR Guidance for IEEE 802.11 (Wi-Fi) transmitters
KDB 865664 D01 (v01r04):	SAR measurement 100MHz to 6GHz
IEEE Std. 1528-2013:	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.

3.2 Exposure limit

Environments of exposure limit	Whole-Body (averaged over the entire body)	Partial-Body (averaged over any 1g of tissue)	Hands, Wrists, Feet and Ankles (averaged over any 10g of tissue)
(A) Limits for Occupational /Controlled Exposure (W/kg)	0.4	8.0	20.0
(B) Limits for General population /Uncontrolled Exposure (W/kg)	0.08	1.6	4.0

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

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

The limit applied in this test report is;

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

3.3 Addition, deviation and exclusion to the test procedure

No addition, exclusion nor deviation has been made from the test procedure.

3.4 Test Location

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
*. A2LA Certificate Number: 1266.03 (FCC Test Firm Registration Number: 626366, ISED Lab Company Number: 2973D / CAB identifier: JP0001)

Used?	Place	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☐	No.1 Semi-anechoic chamber	20.6 × 11.3 × 7.65	20.6 × 11.3	10 m
☐	No.2 Semi-anechoic chamber	20.6 × 11.3 × 7.65	20.6 × 11.3	10 m
☐	No.3 Semi-anechoic chamber	12.7 × 7.7 × 5.35	12.7 × 7.7	5 m
☐	No.4 Semi-anechoic chamber	8.1 × 5.1 × 3.55	8.1 × 5.1	-
☐	No.1 Shielded room	6.8 × 4.1 × 2.7	6.8 × 4.1	-
☐	No.2 Shielded room	6.8 × 4.1 × 2.7	6.8 × 4.1	-
☐	No.3 Shielded room	6.3 × 4.7 × 2.7	6.3 × 4.7	-
☐	No.4 Shielded room	4.4 × 4.7 × 2.7	4.4 × 4.7	-
☐	No.5 Shielded room	7.8 × 6.4 × 2.7	7.8 × 6.4	-
☐	No.6 Shielded room	7.8 × 6.4 × 2.7	7.8 × 6.4	-
☒	**No.7 Shielded room**	**2.76 × 3.76 × 2.4**	**2.76 × 3.76**	-
☐	No.8 Shielded room	3.45 × 5.5 × 2.4	3.45 × 5.5	-
☐	No.1 Measurement room	2.55 × 4.1 × 2.5	2.55 × 4.1	-

3.5 Procedures and Results

Test Procedure	SAR measurement: KDB 447498 D01, KDB 248227 D01, KDB 865664 D01, KDB 914225 D07, IEC Std. 1528											
Category	FCC 47CFR §2.1093 (Portable device)							**SAR type**		Body-touch		
	Bluetooth	**WLAN (DTS)**		**WLAN (U-NII-1)**		**WLAN (U-NII-2A)**		**WLAN (U-NII-2C)**		**WLAN (U-NII-3)**		Simultaneous transmission
Frequency [MHz]	**2402~2480**	**2412~2472**		**5180~5240**		**5260~5320**		**5500~5700** (excluding 5600~5650)		**5745~5825**		
Results (SAR(1g))	**Complied** (Refer to Section 4.3)	**Complied** (Refer to Section 7.2)		**Complied** (Refer to Section 4.3)		**Complied** (Refer to Section 4.3)		**Complied** (Refer to Section 4.3)		**Complied** (Refer to Section 4.3)		**Complied** (Refer to Section 4.4)
Antenna#	Ant.0	Ant.0	Ant.1	Ant.0	Ant.1	Ant.0	Ant.1	Ant.0	Ant.1	Ant.0	Ant.1	Ant.0+Ant.1
SAR [W/kg] Type	1g	1g	1g	1g	1g	1g	1g	1g	1g	1g	1g	1g
SAR [W/kg] Limit	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
SAR [W/kg] Reported	*. Lower power, SAR test was exempted.	**1.13**	**1.36**	*. Lower power, SAR test was exempted.	*. Lower power, SAR test was exempted.	*. Lower power, SAR test was exempted.	*. Lower power, SAR test was exempted.	*. Lower power, SAR test was exempted.	*. Lower power, SAR test was exempted.	*. Lower power, SAR test was exempted.	*. Lower power, SAR test was exempted.	The operation of "BT (Ant.0) + WLAN (Ant.1)" and Co-location (MIMO) were smaller than limit or ≤ 0.04 of SPLSR.
SAR [W/kg] Measured		0.781	0.982									
SAR [W/kg] Liquid type	-	Head	Head	-	-	-	-	-	-	-	-	
Operation mode	n/a	11b	ac20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Frequency[MHz]	n/a	2462	2437	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Output power Burst Ave. [dBm]	n/a	13.45	13.81	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Output power Tune-up limit [dBm]	2	15	15	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	
Output power Tune-up limit [mW]	2	32	32	6	6	6	6	6	6	6	6	
Output power Tune-up factor	n/a	1.43	1.32	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Duty cycle [%]	n/a	99.0	93.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Duty scaled factor	n/a	1.01	1.07	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

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

***.** Since Bluetooth and Wii-Fi (2.4GHz and 5GHz) are used a same antenna 0, Bluetooth and WLAN do not transmit simultaneously on antenna 0.

*. (Calculating formula) Corrected SAR to max.power (W/kg) = (Measured SAR (W/kg)) × (Duty scaled) × (Tune-up factor)
where; Tune-up factor [-] = 1 / (10 ^ ("Δmax (tune-up limit power - burst average power), dB" / 10)), Duty scaled factor [-] = 100(%) / (duty cycle, %)

*. Ave.: Average; n/a: Not applicable; (mode) b: IEEE 802.11b, ac20: IEEE 802.11ac(20VHT),

*. "yellow marker" in the table; The highest reported SAR(1g) of each band (DTS, U-NII) is shaded with yellow marker.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for partial body) specified in FCC 47 CFR part 2 (2.1093) and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

3.6 SAR measurement procedure

3.6.1 Normal SAR measurement procedure

Step 1: Confirmation before SAR testing

Before SAR test, the RF wiring for the sample had been switched to the antenna conducted power measurement line from the antenna line and the average power was measured. The SAR test reference power measurement and the SAR test were proceeded with the lowest data rate (which has the higher time-based average power typically) on each operation mode. Therefore, the average output power was measured on the lower, middle (or near middle), upper and specified channels with the lowest data rate of each operation mode. The power of other data rate was also measured to confirm the time-base average power and when if it's required. The power measurement result is shown in Section 6.

*. The EUT transmission power was verified that it was within 2dB lower than the maximum tune-up tolerance limit when it was set the rated power. (Clause 4.1, KDB447498 D01 (v06))

Step 2: Power reference measurement

Measurement of the E-field at a fixed location above the central position of flat phantom (or/and furthermore an interpolated peak SAR location of area scan in step 2) was used as a reference value for assessing the power drop.

Step 3: Area Scan (Area scan parameters: KDB 865664 D01 (v01r04).)

The SAR distribution at the exposed side of head or body position was measured at a distance of each device from the inner surface of the shell. The area covered the entire dimension of the antenna of EUT and suitable horizontal grid spacing of EUT. Based on these data, the area of the maximum absorption was determined by splines interpolation.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 4: Zoom Scan and post-processing (Zoom scan parameters: KDB 865664 D01 (v01r04).)

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure.

A volume of 30 mm (X) × 30 mm (Y) × 30 mm (Z) (or more) was assessed by measuring 7×7×7 points (or more), ≤ 3GHz.

A volume of 28 mm (X) × 28 mm (Y) × 24mm (Z) (or more) was assessed by measuring 8×8×7 points (or more) (by "Ratio step" method (*1)), > 3 GHz.

When the SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are proceeded for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR. If the zoom scan measured as defined above complies with both of the following criteria. or if the peak spatial-average SAR is below 0.1 W/kg, no additional measurements are needed.

*. The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak shall be larger than the horizontal grid steps in both x and y directions and recorded.

*. The ratio of the SAR at the second measured point to the SAR at the closest measured point at the x-y location of the measured maximum SAR value shall be at least 30 % and recorded.

				f ≤ 3 GHz	3 GHz < f ≤ 6 GHz
1	Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
2	Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
3		graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
4			$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5 ·$\Delta z_{Zoom}(n-1)$ mm	
5	Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
	* The asterisk table-footnote is per KDB Pub. 865664 D01 v01r04. NOTE For uniformity purposes the integer frequency increments of rows 1 to 3 and 5 apply, rather than the corresponding variable and fixed parameters given in IEC 62209-1:2016 and IEC 62209-2:2010/AMD1:2019.				

Step 5: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 2. It was checked that the power drift is within ±5% in the evaluation procedure of SAR testing. The verification of power drift during the SAR test is that DASY 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 SAR plot data of APPENDIX 2.

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

Step 6: Z-Scan

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

*. The all SAR tests were conservatively performed with test separation distance 0 mm. The phantom bottom thickness is approx. 2mm. Typical distance from probe tip to dipole centers is 1mm. The distance between the SAR probe tip to the surface of test device which is touched the bottom surface of the phantom is approx. 3 mm for 2.4GHz band and 2.4 mm for 5GHz band.

*1. "Ratio step" method parameters used; the first measurement point: "1.4mm" from the phantom surface, the initial z grid separation: "1.4mm", subsequent graded grid ratio: "1.4". These parameters comply with the requirement of KDB 865664 D01and recommended by Schmid & Partner Engineering AG (DASY5 manual).

SECTION 4: Operation of EUT during testing

4.1 Operating modes for SAR testing

This EUT has Bluetooth (BDR, EDR, BLE) and WLAN: IEEE 802.11b, IEEE 802.11g, IEEE 802.11a, IEEE 802.11n(HT20), IEEE 802.11n(HT40), IEEE 802.11ac(VHT20), IEEE 802.11ac(VTH40), IEEE 802.11ac(VHT80) continuous transmitting modes. The frequency and the modulation used in the SAR testing are shown as a following.

Operation mode		b		g		n(HT20)			ac(VHT20)			n(HT40)			ac(VHT40)			BDR	EDR		BLE
band		DTS (2.4GHz band)																			
Tx band [MHz]		2412~2472										2422~2462						2402~2480			
Antenna#		0	1	0	1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1	0	0	0	0
Tune-up limit [dBm]		15	15	15	15	15	15	13.5+13.5	15	15	13.5+13.5	10	10	10+10	10	10	10+10	2	2	2	2
(*1) SAR test considered? ("*" initial test setup)	Back	○*	○*	○	○	○	○	×	○	○	×	×	×	×	×	×	×	×	×	×	×
	Top	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Left	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Front	○	○	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Right	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Bottom	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Frequency tested		(*2)	(*2)	(*2)	(*2)	(*2)	(*2)	n/a	(*2)	(*2)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Data rate [Mbps]		1	1	6	6	MCS0	MCS0	MCS0	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS0	1	2	3	1

Operation mode		a		n(HT20)			ac(VHT20)			n(HT40)			ac(VHT40)			ac(VHT80)		
band		U-NII-1 (*3)																
Tx band [MHz]		5180~5240								5190,5230						5210		
Antenna#		0	1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1
Tune-up limit [dBm]		7.5	7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5
(*1) SAR test considered? ("*" initial test setup)	Back	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Top	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Left	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Front	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Right	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Bottom	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Frequency tested		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Data rate [Mbps]		6	6	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS0

Operation mode		a		n(HT20)			ac(VHT20)			n(HT40)			ac(VHT40)			ac(VHT80)		
band		U-NII-2A																
Tx band [MHz]		5260~5320								5270,5310						5290		
Antenna#		0	1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1
Tune-up limit [dBm]		7.5	7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5
(*1) SAR test considered? ("*" initial test setup)	Back	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Top	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Left	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Front	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Right	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Bottom	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Frequency tested		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Data rate [Mbps]		6	6	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS0

Operation mode		a		n(HT20)			ac(VHT20)			n(HT40)			ac(VHT40)			ac(VHT80)		
band		U-NII-2C																
Tx band [MHz]		5500~5580, 5660~5700								5510, 5550, 5670						5530		
Antenna#		0	1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1
Tune-up limit [dBm]		7.5	7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5
(*1) SAR test considered? ("*" initial test setup)	Back	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Top	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Left	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Front	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Right	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Bottom	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Frequency tested		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Data rate [Mbps]		6	6	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS0

Operation mode		a		n(HT20)			ac(VHT20)			n(HT40)			ac(VHT40)			ac(VHT80)		
band		U-NII-3																
Tx band [MHz]		5745~5825								5755, 5795						5775		
Antenna#		0	1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1	0	1	0+1
Tune-up limit [dBm]		7.5	7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5	7.5	7.5	7.5+7.5
(*1) SAR test considered? ("*" initial test setup)	Back	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Top	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Left	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Front	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Right	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
	Bottom	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Frequency tested		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Data rate [Mbps]		6	6	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS8	MCS0	MCS0	MCS0	MCS0	MCS0	MCS0

Controlled software	Test name	Software name	Version	Date	Storage location / Remarks
	Power measurement, SAR	HEG-001 WLAN&BT Radio test control	Ver.01	2020/11/4	EUT memory

*1. "○": SAR test was applied. "×": SAR test can be reduced (refer to clause 4.3).
*2. The tested frequencies refer to SAR test results in Section 7.
*. b: IEEE 802.11b, g: IEEE 802.11g, a: IEEE 802.11a, n20: IEEE 802.11n(20HT), n40: IEEE 802.11n(40HT), ac20: IEEE 802.11ac(20VHT), ac40: IEEE 802.11n (40VHT), ac80: IEEE 802.11ac(80VHT). n/a: not applied.

4.2 RF exposure conditions

Antenna separation distances in each test setup plan are shown as follows.

Setup plan	Explanation of SAR test setup plan (*. Refer to Appendix 1 for the antenna location and the test setup photographs which had been tested.)	D: Separation distance [mm]			SAR type
		Antenna 0		Antenna 1	
		WLAN	Bluetooth	WLAN	
Back	The back surface of EUT was touched to the bottom of the flat phantom.	**1.3**	**1.3**	**1.3**	Body-touch
Top	The top edge of EUT was touched to the bottom of the flat phantom.	**3.49**	**3.49**	**1.93**	
Left	The left edge of EUT was touched to the bottom of the flat phantom.	**7.8**	**7.8**	**84.6**	
Front	The front surface (LCD, touch screen) of EUT was touched to the bottom of the flat phantom.	**8.64**	**8.64**	**10.5**	
Right	The right edge of EUT was touched to the bottom of the flat phantom.	**158.11**	**158.11**	**37.2**	
Bottom	The bottom edge of EUT was touched to the bottom of the flat phantom.	**73.6**	**73.6**	**84.18**	

*. **D:** Antenna separation distance. It is the distance from an antenna to the outer surface of the host device which an operator may touch.
. Size of EUT: 175.4 mm (width) × 100.78 mm (height) × 13.94 mm (depth, thickness) (. The convex portions are not contained in size.)

4.3 SAR test exclusion considerations accordance to KDB 447498 D01

The following is based on KDB447498D01.

Step 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max.power of channel, including tune-up tolerance, mW) / (min.test separation distance, mm)] × [√f (GHz)] ≤ 3.0 (for SAR(1g)), 7.5(for SAR(10g)) ····formula (1)
If power is calculated from the upper formula (1);
[SAR(1g) test exclusion thresholds, mW] = 3 × [test separation distance, mm] / [√f (GHz)] ····formula (2)
1. The upper frequency of the frequency band was used in order to calculate standalone SAR test exclusion considerations.
2. Power and distance are rounded to the nearest mW and mm before calculation
3. The result is rounded to one decimal place for comparison
4. The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

When the calculated threshold value by a numerical formula above-mentioned in the following table is 3.0 or less, SAR test can be excluded.

Step 2) At 1500 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following,
[test exclusion thresholds, mW] = [(Power allowed at numeric threshold for 50mm in formula (1))] + [(test separation distance, mm) - (50mm)] × 10 ··formula (3)
1. The upper frequency of the frequency band was used in order to calculate standalone SAR test exclusion considerations.
2. Power and distance are rounded to the nearest mW and mm before calculation

When output power is less than the calculated threshold value by a numerical formula above-mentioned in the following table, SAR test is excluded.

[SAR exclusion calculations for step 1) antenna ≤50mm from the user, and for step 2) antenna > 50mm from the user.]

				Calculated threshold value											
Antenna #:				Antenna 0				Antenna 1				Antenna 0		Antenna 1	
Setup:				**Back**	**Top**	**Left**	**Front**	**Back**	**Top**	**Front**	**Right**	**Right**	**Bottom**	**Left**	**Bottom**
Antenna separation distance [mm]:				≤5	≤5	8	9	≤5	≤5	11	37	158	74	85	84
SAR type				SAR1g	SAR1g	SAR1g	SAR1g	SAR1g	SAR1g	SAR1g	SAR1g	SAR1g	SAR1g	SAR1g	SAR1g
Mode	Upper Freq. [MHz]	Tune-up limit (conducted)		Step 1) SAR exclusion calculations for antenna ≤50mm from the user. Judge: "Exempt" when ≤ 3.0 (SAR (1g)); "Test" (SAR test required) when >3.0 (SAR(1g)).								Step 2) > 50mm from the user Judge: "Exempt" when Tue-up limit power.is less than calculated threshold power value.			
		[dBm]	[mW]												
Bluetooth	2480	2.0	**2**	0.6, Exempt	0.6, Exempt	0.4, Exempt	0.3, Exempt	0.6, Exempt	0.6, Exempt	0.3, Exempt	0.1, Exempt	1.2 W, Exempt	335 mW, Exempt	445 mW, Exempt	435 mW, Exempt
b	2462	15.0	**32**	**10.0, Test**	**10.0, Test**	**6.3, Test**	**5.6, Test**	**10.0, Test**	**10.0, Test**	**4.6, Test**	1.4, Exempt	1.2 W, Exempt	336 mW, Exempt	446 mW, Exempt	436 mW, Exempt
g,n20,ac20															
n40,ac40	2462	10.0	**10**	**3.1, Test**	**3.1, Test**	2.0, Exempt	1.7, Exempt	**3.1, Test**	**3.1, Test**	1.4, Exempt	0.4, Exempt				
a,n20,ac20	5240	7.5	**6**	2.7, Exempt	2.7, Exempt	1.7, Exempt	1.5, Exempt	2.7, Exempt	2.7, Exempt	1.2, Exempt	0.4, Exempt	1.1 W, Exempt	307 mW, Exempt	416 mW, Exempt	407 mW, Exempt
n40,ac40	5230	7.5	**6**	2.7, Exempt	2.7, Exempt	1.7, Exempt	1.5, Exempt	2.7, Exempt	2.7, Exempt	1.2, Exempt	0.4, Exempt				
ac80	5210	7.5	**6**	2.7, Exempt	2.7, Exempt	1.7, Exempt	1.5, Exempt	2.7, Exempt	2.7, Exempt	1.2, Exempt	0.4, Exempt				
a,n20,ac20	5320	7.5	**6**	2.8, Exempt	2.8, Exempt	1.7, Exempt	1.5, Exempt	2.8, Exempt	2.8, Exempt	1.3, Exempt	0.4, Exempt	1.1 W, Exempt	305 mW, Exempt	415 mW, Exempt	406 mW, Exempt
n40,ac40	5310	7.5	**6**	2.8, Exempt	2.8, Exempt	1.7, Exempt	1.5, Exempt	2.8, Exempt	2.8, Exempt	1.3, Exempt	0.4, Exempt				
ac80	5290	7.5	**6**	2.8, Exempt	2.8, Exempt	1.7, Exempt	1.5, Exempt	2.8, Exempt	2.8, Exempt	1.3, Exempt	0.4, Exempt				
a,n20,ac20	5700	7.5	**6**	2.9, Exempt	2.9, Exempt	1.8, Exempt	1.6, Exempt	2.9, Exempt	2.9, Exempt	1.3, Exempt	0.4, Exempt	1.1 W, Exempt	303 mW, Exempt	413 mW, Exempt	403 mW, Exempt
n40,ac40	5670	7.5	**6**	2.9, Exempt	2.9, Exempt	1.8, Exempt	1.6, Exempt	2.9, Exempt	2.9, Exempt	1.3, Exempt	0.4, Exempt				
ac80	5530	7.5	**6**	2.8, Exempt	2.8, Exempt	1.8, Exempt	1.6, Exempt	2.8, Exempt	2.8, Exempt	1.3, Exempt	0.4, Exempt				
a,n20,ac20	5825	7.5	**6**	2.9, Exempt	2.9, Exempt	1.8, Exempt	1.6, Exempt	2.9, Exempt	2.9, Exempt	1.3, Exempt	0.4, Exempt	1.1 W, Exempt	302 mW, Exempt	412 mW, Exempt	402 mW, Exempt
n40,ac40	5795	7.5	**6**	2.9, Exempt	2.9, Exempt	1.8, Exempt	1.6, Exempt	2.9, Exempt	2.9, Exempt	1.3, Exempt	0.4, Exempt				
ac80	5775	7.5	**6**	2.9, Exempt	2.9, Exempt	1.8, Exempt	1.6, Exempt	2.9, Exempt	2.9, Exempt	1.3, Exempt	0.4, Exempt				

*. The table shows the upper frequency which has the maximum power (as "Tune-up limit") in each operation band, in mode and on the single antenna transmission.
*. Freq.: Frequency, Mode; b: IEEE 802.11b, g: IEEE 802.11g, a: IEEE 802.11a, n20: IEEE 802.11n(20HT), n40: IEEE 802.11n(40HT), ac20: IEEE 802.11ac(20VHT), ac40: IEEE 802.11n(40VHT), ac80: IEEE 802.11ac(80VHT).
Notes: 1. Power and distance are rounded to the nearest mW and mm before calculation.

4.4 Estimated SAR for simultaneous transmission SAR analysis according to KDB447498 D01

The following is based on KDB447498D01.
When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

[(max. power of channel, including tune-up tolerance, mW) / (minimum test separation distance, mm)]·[√f(GHz)/x] W/kg

*. for test separation distances ≤ 50 mm; where x = 7.5 for 1-g SAR and x = 18.75 for 10g SAR

*. 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10g SAR, when the test separation distances is > 50 mm.

*. When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.

[SAR 1g]

SISO/ MIMO	Mode (*2)	Upper Freq.[GHz]			Max.P [mW]			Estimated SAR 1g value [W/kg]															
		Ant.0		Ant.1	Ant.0		Ant.1	BT-Ant.0 (*1)						WLAN-Ant.0						WLAN-Ant.1					
		BT	WLAN	WLAN	BT	WLAN	WLAN	Back	Top	Front	Left	Right	Bottom	Back	Top	Front	Left	Right	Bottom	Back	Top	Front	Left	Right	Bottom
SISO	BT(ant.0)+b(ant.1)	2.48	-	2.462	2	-	32	0.08	0.08	0.05	0.05	0.4	0.4	-	-	-	-	-	-	1.34	1.34	0.61	0.4	0.18	0.4
MIMO	n20(ant.0+ant.1)	-	2.462	2.462	-	22	22	-	-	-	-	-	-	0.92	0.92	0.51	0.58	0.4	0.4	0.92	0.92	0.42	0.4	0.12	0.4
SISO	BT(ant.0)+a(ant.1)	2.48	-	5.24	2	-	6	0.08	0.08	0.05	0.05	0.4	0.4	-	-	-	-	-	-	0.37	0.37	0.17	0.4	0.05	0.4
MIMO	n20(ant.0+ant.1)	-	5.24	5.24	-	6	6	-	-	-	-	-	-	0.37	0.37	0.2	0.23	0.4	0.4	0.37	0.37	0.17	0.4	0.05	0.4
SISO	BT(ant.0)+a(ant.1)	2.48	-	5.32	2	-	6	0.08	0.08	0.05	0.05	0.4	0.4	-	-	-	-	-	-	0.37	0.37	0.17	0.4	0.05	0.4
MIMO	n20(ant.0+ant.1)	-	5.32	5.32	-	6	6	-	-	-	-	-	-	0.37	0.37	0.21	0.23	0.4	0.4	0.37	0.37	0.17	0.4	0.05	0.4
SISO	BT(ant.0)+a(ant.1)	2.48	-	5.7	2	-	6	0.08	0.08	0.05	0.05	0.4	0.4	-	-	-	-	-	-	0.38	0.38	0.17	0.4	0.05	0.4
MIMO	n20(ant.0+ant.1)	-	5.7	5.7	-	6	6	-	-	-	-	-	-	0.38	0.38	0.21	0.24	0.4	0.4	0.38	0.38	0.17	0.4	0.05	0.4
SISO	BT(ant.0)+a(ant.1)	2.48	-	5.825	2	-	6	0.08	0.08	0.05	0.05	0.4	0.4	-	-	-	-	-	-	0.39	0.39	0.18	0.4	0.05	0.4
MIMO	n20(ant.0+ant.1)	-	5.825	5.825	-	6	6	-	-	-	-	-	-	0.39	0.39	0.21	0.24	0.4	0.4	0.39	0.39	0.18	0.4	0.05	0.4
Antenna separation distance [mm]								≤5	≤5	9	8	≥50	≥50	≤5	≤5	9	8	≥50	≥50	≤5	≤5	11	≥50	37	≥50

SISO/ MIMO	Mode (*2)	Upper Freq.[GHz]			Max.P [mW]			Estimated Σ SAR 1g value [W/kg] (≤ 1.6 W/kg)						The distance between antenna [mm] (*1)						Simulated SPLSR value					
		Ant.0		Ant.1	Ant.0		Ant.1																		
		BT	WLAN	WLAN	BT	WLAN	WLAN	Back	Top	Front	Left	Right	Bottom	Back	Top	Front	Left	Right	Bottom	Back	Top	Front	Left	Right	Bottom
SISO	BT(ant.0)+b(ant.1)	2.48	-	2.462	2	-	79	1.42	1.42	0.66	0.45	0.58	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a
MIMO	n20(ant.0+ant.1)	-	2.462	2.462	-	22	22	**1.84**	**1.84**	0.93	0.98	0.52	0.8	67.31	67.31	67.31	1	1	67.31	**0.04**	**0.04**	n/a	n/a	n/a	n/a
SISO	BT(ant.0)+a(ant.1)	2.48	-	5.24	2	-	32	0.45	0.45	0.22	0.45	0.45	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a
MIMO	n20(ant.0+ant.1)	-	5.24	5.24	-	16	16	0.74	0.74	0.37	0.63	0.45	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a
SISO	BT(ant.0)+a(ant.1)	2.48	-	5.32	2	-	32	0.45	0.45	0.22	0.45	0.45	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a
MIMO	n20(ant.0+ant.1)	-	5.32	5.32	-	16	16	0.74	0.74	0.38	0.63	0.45	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a
SISO	BT(ant.0)+a(ant.1)	2.48	-	5.7	2	-	32	0.46	0.46	0.22	0.45	0.45	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a
MIMO	n20(ant.0+ant.1)	-	5.7	5.7	-	16	16	0.76	0.76	0.38	0.64	0.45	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a
SISO	BT(ant.0)+a(ant.1)	2.48	-	5.825	2	-	25	0.47	0.47	0.23	0.45	0.45	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a
MIMO	n20(ant.0+ant.1)	-	5.825	5.825	-	15	15	0.78	0.78	0.39	0.64	0.45	0.8	67.31	67.31	67.31	1	1	67.31	n/a	n/a	n/a	n/a	n/a	n/a

*. Ant.0: Antenna 0, Ant1: Antenna 1, Freq.: Frequency, Max.P: Maximum power, n/a: not applied, (mode) BT: Bluetooth, b: IEEE 802.11b, a: IEEE 802.11a, n20: IEEE 802.11n(20HT).

*. RF transmitter will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition, therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.

1. The distance between antenna 0 and antenna 1 is 67.31 mm on the back/front/top/bottom surface of EUT. (. This number is minimum physical distance on the drawing.) The distance between antenna 0 and antenna 1 is 1 mm on the left/right of EUT, because there are overlapped in these direction.

*2. This mode was selected which had the highest operation frequency and highest tuned-up limit power in each band to produce the maximum estimated SAR.

Notes: 1. Power and distance are rounded to the nearest mW and mm before calculation.
2. The upper frequency of the frequency band had maximum output power and was used in order to calculate standalone SAR test exclusion considerations.
3. The estimated Σ SAR 1g value is calculated based on the same configuration and the same test position.
4. The estimated results (SAR value, SPLSR value) are rounded to two decimal place for comparison.
5. (Calculating formula) Per KDB447498 D01(v06), SPLSR = (SAR1 + SAR2)^1.5 / (minimum antenna separation distance, mm)
where; the minimum antenna separation distance is determined by the closest physical separation of the antennas, according to geometric center of the antennas.

SECTION 5: Uncertainty Assessment (SAR measurement/Daily check)

*. Although this standard determines only the limit value of uncertainty, there is no applicable rule of uncertainty in this. Therefore, the following results are derived depending on whether or not laboratory uncertainty is applied.

Uncertainty of SAR measurement (2.4GHz~6GHz) (*.ε&σ: ≤±5%, DAK3.5, Tx: ≈100% duty cycle) (v09r01)	**1g SAR**	**10g SAR**
Combined measurement uncertainty of the measurement system (k=1)	**± 13.0 %**	**± 12.9 %**
Expanded uncertainty (k=2)	**± 26.0 %**	**± 25.8 %**

	Error Description (2.4-6GHz)	Uncertainty Value	Probability distribution	Divisor	ci (1g)	ci (10g)	ui (1g)	ui (10g)	Vi, veff
A	**Measurement System** (DASY5)						(std. uncertainty)	(std. uncertainty)	
1	Probe Calibration Error	±6.55 %	Normal	1	1	1	±6.55 %	±6.55 %	∞
2	Axial isotropy Error	±4.7 %	Rectangular	√3	0.71	0.71	±1.9 %	±1.9 %	∞
3	Hemispherical isotropy Error	±9.6 %	Rectangular	√3	0.71	0.71	±3.9 %	±3.9 %	∞
4	Linearity Error	±4.7 %	Rectangular	√3	1	1	±2.7 %	±2.7 %	∞
5	Probe modulation response (v09)	±5.5 %	Rectangular	√3	1	1	±3.2 %	±3.2 %	∞
6	Sensitivity Error (detection limit)	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	∞
7	Boundary effects Error	±4.3%	Rectangular	√3	1	1	±2.5 %	±2.5 %	∞
8	Readout Electronics Error(DAE)	±0.3 %	Rectangular	√3	1	1	±0.3 %	±0.3 %	∞
9	Response Time Error	±0.8 %	Normal	1	1	1	±0.5 %	±0.5 %	∞
10	Integration Time Error (≈100% duty cycle)	±0 %	Rectangular	√3	1	1	0 %	0 %	∞
11	RF ambient conditions-noise (v09)	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	∞
12	RF ambient conditions-reflections	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
13	Probe positioner mechanical tolerance	±3.3 %	Rectangular	√3	1	1	±1.9 %	±1.9 %	∞
14	Probe Positioning with respect to phantom shell	±6.7 %	Rectangular	√3	1	1	±3.9 %	±3.9 %	∞
15	Max. SAR evaluation (Post-processing)	±4.0 %	Rectangular	√3	1	1	±2.3 %	±2.3 %	∞
B	**Test Sample Related**								
16	Device Holder or Positioner Tolerance (v09)	±3.2 %	Normal	1	1	1	±3.2 %	±3.2 %	5
17	Test Sample Positioning Error (v09)	±2.1 %	Normal	1	1	1	±2.1 %	±2.1 %	10
18	Power scaling	±0 %	Rectangular	√3	1	1	±0 %	±0 %	∞
19	Drift of output power (measured, <0.2dB)	±5.0 %	Rectangular	√3	1	1	±2.9 %	±2.9 %	∞
C	**Phantom and Setup**								
20	Phantom uncertainty (shape, thickness tolerances)	±7.5 %	Rectangular	√3	1	1	±4.3 %	±4.3 %	∞
21	Algorithm for correcting SAR (e',σ: ≤5%)	±1.2 %	Normal	1	1	0.84	±1.2 %	±0.97 %	∞
22	Measurement Liquid Conductivity Error (DAK3.5)	±3.0 %	Normal	1	0.78	0.71	±2.3 %	±2.1 %	7
23	Measurement Liquid Permittivity Error (DAK3.5)	±3.1 %	Normal	1	0.23	0.26	±0.7 %	±0.8 %	7
24	Liquid Conductivity-temp.uncertainty (≤2deg.C.)	±5.3 %	Rectangular	√3	0.78	0.71	±2.4 %	±2.2 %	∞
25	Liquid Permittivity-temp.uncertainty (≤2deg.C.)	±0.9 %	Rectangular	√3	0.23	0.26	±0.1 %	±0.1 %	∞
	Combined Standard Uncertainty (v09r01)						**± 13.0** %	**± 12.9** %	945
	Expanded Uncertainty (k=2) (v09r01)						**± 26.0 %**	**± 25.8 %**	

*. This measurement uncertainty budget is suggested by IEEE Std.1528(2013) and determined by Schmid & Partner Engineering AG (DASY5 Uncertainty Budget). Per KDB 865664 D01 (v01r04) SAR Measurement 100 MHz to 6 GHz, Section 2.8.1., when the highest measured SAR(1g) within a frequency band is < 1.5W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std.1528 (2013) is not required in SAR reports submitted for equipment approval.

Uncertainty of daily check (2.4~6GHz) (*.ε&σ tolerance: ≤±5%, DAK3.5, CW) (v09r00)	**1g SAR**	**10g SAR**
Combined measurement uncertainty of the measurement system (k=1)	**± 10.6 %**	**± 10.5 %**
Expanded uncertainty (k=2)	**± 21.2 %**	**± 21.0 %**

	Error Description (v08r00)	Uncertainty Value	Probability distribution	Divisor	ci (1g)	ci (10g)	ui (1g)	ui (10g)	Vi, veff
A	**Measurement System** (DASY5)						(std. uncertainty)	(std. uncertainty)	
1	Probe Calibration Error	±6.55 %	Normal	1	1	1	±6.55 %	±6.55 %	∞
2	Axial isotropy error	±4.7 %	Rectangular	√3	0.71	0.71	±1.9 %	±1.9 %	∞
3	Hemispherical isotropy error	±9.6 %	Rectangular	√3	0	0	0 %	0 %	∞
4	Probe linearity	±4.7 %	Rectangular	√3	1	1	±2.7 %	±2.7 %	∞
5	Probe modulation response (CW)	±0.0 %	Rectangular	√3	1	1	0 %	0 %	∞
6	System detection limit	±1.0 %	Rectangular	√3	1	1	±0.6 %	±0.6 %	∞
7	Boundary effects	±4.3 %	Rectangular	√3	1	1	±2.5 %	±2.5 %	∞
8	System readout electronics (DAE)	±0.3 %	Normal	1	1	1	±0.3 %	±0.3 %	∞
9	Response Time Error (<5ms/100ms wait)	±0.0 %	Rectangular	√3	1	1	0 %	0 %	∞
10	Integration Time Error (CW)	±0.0 %	Rectangular	√3	1	1	0 %	0 %	∞
11	RF ambient conditions-noise	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
12	RF ambient conditions-reflections	±3.0 %	Rectangular	√3	1	1	±1.7 %	±1.7 %	∞
13	Probe positioner mechanical tolerance	±3.3 %	Rectangular	√3	1	1	±1.9 %	±1.9 %	∞
14	Probe positioning with respect to phantom shell	±6.7 %	Rectangular	√3	1	1	±3.9 %	±3.9 %	∞
15	Max. SAR evaluation (Post-processing)	±4.0 %	Rectangular	√3	1	1	±2.3 %	±2.3 %	∞
B	**Test Sample Related**								
16	Deviation of the experimental source	±1.9 %	Normal	1	1	1	±1.9 %	±1.9 %	∞
17	Dipole to liquid distance (10mm±0.2mm,<2deg.)	±2.0 %	Rectangular	√3	1	1	±1.2 %	±1.2 %	∞
18	Drift of output power (measured, <0.1dB)	±2.3 %	Rectangular	√3	1	1	±1.3 %	±1.3 %	∞
C	**Phantom and Setup**								
19	Phantom uncertainty	±2.0 %	Rectangular	√3	1	1	±1.2 %	±1.2%	∞
20	Algorithm for correcting SAR (e',σ: ≤5%)	±1.2 %	Normal	1	1	0.84	±1.2 %	±0.97 %	∞
21	Liquid conductivity (meas.) (DAK3.5)	±3.0 %	Normal	1	0.78	0.71	±2.3 %	±2.1 %	∞
22	Liquid permittivity (meas.) (DAK3.5)	±3.1 %	Normal	1	0.23	0.26	±0.7 %	±0.8 %	∞
23	Liquid Conductivity-temp.uncertainty (≤2deg.C.)	±5.3 %	Rectangular	√3	0.78	0.71	±2.4 %	±2.2 %	∞
24	Liquid Permittivity-temp.uncertainty (≤2deg.C.)	±0.9 %	Rectangular	√3	0.23	0.26	±0.1 %	±0.1 %	∞
	Combined Standard Uncertainty (v09r00)						**±10.6** %	**±10.5** %	
	Expanded Uncertainty (k=2) (v09r00)						**±21.2** %	**±21.0** %	

*. This measurement uncertainty budget is suggested by IEEE Std. 1528(2013) and determined by Schmid & Partner Engineering AG (DASY5 Uncertainty Budget).

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

SECTION 6: Confirmation before testing

6.1 SAR reference power measurement (antenna terminal conducted average power of EUT)

(2.4GHz band)

Mode	Frequency		Data rate	Power spec.		Duty cycle		Antenna 0 power (WLAN , Bluetooth)					Antenna 1 power (WLAN)					MIMO Ant.0+1 power				
				Typical	Max.	duty cycle	scaled factor	Set pwr.	Burst Ave.	Δ Max.	Tune-up factor	Time Ave.	Set pwr.	Burst Ave.	Δ Max.	Tune-up factor	Time Ave.	MIMO target	MIMO max.	SUM Burst Ave.	Δ Max.	SUM Time Ave.
	[MHz]	CH	[Mbps]	[dBm]	[dBm]	[%]	[-]	[-]	[dBm]	[dB]	[-]	[dBm]	[-]	[dBm]	[dB]	[-]	[dBm]	[dBm]	[dBm]	[dBm]	[dB]	[dBm]
BLE	-	-	1	0	2.0	-	-	-	n/a	-	-	n/a										
BDR	-	-	DH5	0	2.0	-	-	-	n/a	-	-	n/a										
EDR	-	-	2DH5	0	2.0	-	-	-	n/a	-	-	n/a										
	-	-	3DH5	0	2.0	-	-	-	n/a	-	-	n/a										
b	2412	1	1	13.5	**15.0**	99.0	1.01	60(*1)	**13.77**	-1.23	1.33	13.73	60(*1)	**14.19**	-0.81	1.21	**14.15**					
	2437	6	1	13.5	**15.0**	99.0	1.01	60(*1)	**13.90**	-1.10	1.29	**13.86**	60(*1)	**14.09**	-0.91	1.23	14.05					
	2462	11	1	13.5	**15.0**	99.0	1.01	60(*1)	**13.45**	-1.55	1.43	13.41	60(*1)	**14.10**	-0.90	1.23	14.06					
	2467	12	1	8.5	**10.0**	99.0	1.01	40(*1)	**8.61**	-1.39	1.38	8.57	40(*1)	**9.81**	-0.19	1.04	9.77					
	2472	13	1	3.5	**5.0**	99.0	1.01	20(*1)	**3.21**	-1.79	1.51	3.17	20(*1)	**4.61**	-0.39	1.09	4.57					
g (*2)	2412	1	6	13.5	**15.0**	93.7	1.07	60(*1)	**13.81**	-1.19	1.32	13.53	60(*1)	**14.13**	-0.87	1.22	13.85					
	2437	6	6	13.5	**15.0**	93.7	1.07	60(*1)	**13.65**	-1.35	1.36	13.37	60(*1)	**14.06**	-0.94	1.24	13.78					
	2462	11	6	13.5	**15.0**	93.7	1.07	60(*1)	**13.53**	-1.47	1.40	13.25	60(*1)	**14.07**	-0.93	1.24	13.79					
	2467	12	6	8.5	**10.0**	93.7	1.07	40(*1)	**8.42**	-1.58	1.44	8.14	40(*1)	**9.91**	-0.09	1.02	9.63					
	2472	13	6	3.5	**5.0**	93.7	1.07	20(*1)	**3.32**	-1.68	1.47	3.04	20(*1)	**4.70**	-0.30	1.07	4.42					
n20 SISO (*2)	2412	1	MCS0	13.5	**15.0**	93.4	1.07	60(*1)	**13.72**	-1.28	1.34	13.42	60(*1)	**13.83**	-1.17	1.31	13.53					
	2437	6	MCS0	13.5	**15.0**	93.4	1.07	60(*1)	**13.82**	-1.18	1.31	13.52	60(*1)	**13.82**	-1.18	1.31	13.52					
	2462	11	MCS0	13.5	**15.0**	93.4	1.07	60(*1)	**13.51**	-1.49	1.41	13.21	60(*1)	**13.97**	-1.03	1.27	13.67					
	2467	12	MCS0	8.5	**10.0**	93.4	1.07	40(*1)	**8.47**	-1.53	1.42	8.17	40(*1)	**9.76**	-0.24	1.06	9.46					
	2472	13	MCS0	3.5	**5.0**	93.4	1.07	20(*1)	**3.19**	-1.81	1.52	2.89	20(*1)	**4.72**	-0.28	1.07	4.42					
ac20 SISO (*2)	2412	1	MCS0	13.5	**15.0**	93.3	1.07	60(*1)	**13.74**	-1.26	1.34	13.44	60(*1)	**13.98**	-1.02	1.26	13.68					
	2437	6	MCS0	13.5	**15.0**	93.3	1.07	60(*1)	**13.75**	-1.25	1.33	13.45	60(*1)	**13.81**	-1.19	1.32	13.51					
	2462	11	MCS0	13.5	**15.0**	93.3	1.07	60(*1)	**13.40**	-1.60	1.45	13.10	60(*1)	**13.84**	-1.16	1.31	13.54					
	2467	12	MCS0	8.5	**10.0**	93.3	1.07	40(*1)	**8.49**	-1.51	1.42	8.19	40(*1)	**9.72**	-0.28	1.07	9.42					
	2472	13	MCS0	3.5	**5.0**	93.3	1.07	20(*1)	**3.22**	-1.78	1.51	2.92	20(*1)	**4.72**	-0.28	1.07	4.42					
n40 SISO (*2)	2422	2	MCS0	8.5	**10.0**	87.5	1.14	36(*1)	**8.57**	-1.43	1.39	7.99	36(*1)	**9.58**	-0.42	1.10	9.00					
	2437	6	MCS0	8.5	**10.0**	87.5	1.14	36(*1)	**8.57**	-1.43	1.39	7.99	36(*1)	**9.53**	-0.47	1.11	8.95					
	2462	11	MCS0	8.5	**10.0**	87.5	1.14	36(*1)	**8.50**	-1.50	1.41	7.92	36(*1)	**9.55**	-0.45	1.11	8.97					
ac40 SISO (*2)	2422	2	MCS0	8.5	**10.0**	87.4	1.14	36(*1)	**8.67**	-1.33	1.36	8.09	36(*1)	**9.61**	-0.39	1.09	9.03					
	2437	6	MCS0	8.5	**10.0**	87.4	1.14	36(*1)	**8.50**	-1.50	1.41	7.92	36(*1)	**9.58**	-0.42	1.10	9.00					
	2462	11	MCS0	8.5	**10.0**	87.4	1.14	36(*1)	**8.28**	-1.72	1.49	7.70	36(*1)	**9.57**	-0.43	1.10	8.99					
n20 MIMO (*3)	2412	1	MCS8	12.0	**13.5**	87.9	1.14	54(*1)	**12.48**	-1.02	1.26	11.92		**12.69**	-0.81	1.21	12.13	15.0	**16.5**	**15.60**	-0.90	15.04
	2437	6	MCS8	12.0	**13.5**	87.9	1.14	54(*1)	**12.36**	-1.14	1.30	11.80		**12.61**	-0.89	1.23	12.05	15.0	**16.5**	**15.50**	-1.00	14.94
	2462	11	MCS8	12.0	**13.5**	87.9	1.14	54(*1)	**12.00**	-1.50	1.41	11.44		**12.46**	-1.04	1.27	11.90	15.0	**16.5**	**15.25**	-1.25	14.69
	2467	12	MCS8	8.5(*4)	**10.0**	87.9	1.14	-	n/a (*4)	-	-	-		n/a (*4)	-	-	n/a	11.5	**13.0**	n/a	-	-
	2472	13	MCS8	3.5(*4)	**5.0**	87.9	1.14	-	n/a (*4)	-	-	-		n/a (*4)	-	-	n/a	6.5	**8.0**	n/a	-	-
ac20 MIMO (*3)	2412	1	MCS0	12.0	**13.5**	88.1	1.14	54(*1)	**12.43**	-1.07	1.28	11.88		**12.60**	-0.90	1.23	12.05	15.0	**16.5**	**15.53**	-0.97	14.98
	2437	6	MCS0	12.0	**13.5**	88.1	1.14	54(*1)	**12.17**	-1.33	1.36	11.62		**12.65**	-0.85	1.22	12.10	15.0	**16.5**	**15.43**	-1.07	14.88
	2462	11	MCS0	12.0	**13.5**	88.1	1.14	54(*1)	**12.12**	-1.38	1.37	11.57		**12.48**	-1.02	1.26	11.93	15.0	**16.5**	**15.31**	-1.19	14.76
	2467	12	MCS0	8.5(*4)	**10.0**	88.1	1.14	-	n/a (*4)	-	-	-		n/a (*4)	-	-	-	11.5	**13.0**	n/a (*4)	-	-
	2472	13	MCS0	3.5(*4)	**5.0**	88.1	1.14	-	n/a (*4)	-	-	-		n/a (*4)	-	-	-	6.5	**8.0**	n/a (*4)	-	-
n40 MIMO (*3)	2422	2	MCS8	8.5(*4)	**10.0**	79.0	1.27	34(*1)	**8.13**	-1.87	1.54	7.11		**8.85**	-1.15	1.16	7.83	11.5	**13.0**	**11.51**	-1.49	10.50
	2437	6	MCS8	8.5(*4)	**10.0**	79.0	1.27	34(*1)	**7.89**	-2.11	1.63	6.87		**8.82**	-1.18	1.17	7.80	11.5	**13.0**	**11.39**	-1.61	10.37
	2457	10	MCS8	8.5(*4)	**10.0**	79.0	1.27	34(*1)	**7.72**	-2.28	1.69	6.70		**9.01**	-0.99	1.12	7.99	11.5	**13.0**	**11.42**	-1.58	10.41
	2462	11	MCS8	8.5(*4)	**10.0**	79.0	1.27	-	n/a (*4)	-	-	-		n/a (*4)	-	-	-	11.5	**13.0**	n/a (*4)	-	-
ac40 MIMO (*3)	2422	2	MCS0	8.5(*4)	**10.0**	79.0	1.27	34(*1)	**8.08**	-1.92	1.56	7.06		**9.08**	-0.92	1.1	8.06	11.5	**13.0**	**11.62**	-1.38	10.60
	2437	6	MCS0	8.5(*4)	**10.0**	79.0	1.27	34(*1)	**7.92**	-2.08	1.61	6.90		**8.90**	-1.1	1.15	7.88	11.5	**13.0**	**11.45**	-1.55	10.43
	2457	10	MCS0	8.5(*4)	**10.0**	79.0	1.27	34(*1)	**7.80**	-2.20	1.66	6.78		**8.98**	-1.02	1.13	7.96	11.5	**13.0**	**11.44**	-1.56	10.42
	2462	11	MCS0	8.5(*4)	**10.0**	79.0	1.27	-	n/a (*4)	-	-	-		n/a (*4)	-	-	-	11.5	**13.0**	n/a (*4)	-	-

*. Remarks: Since the Bluetooth power was enough lower to exempt the SAR test, the power measurement was reduced for the Bluetooth operation.

*. Initial SAR test channel was shown with yellow marker. This mode has highest time-based average power, highest tune-up limit power, highest duty cycle (and lowest modulation).

*. CH: Channel; Power spec.: Power specification; Max.: Maximum; Set pwr.: Setting power; Burst Ave.: Measured burst average power; SUM Ave.: Sum of antenna 0 power and antenna 1 power; n/a: Not applied, Not applicable; Mode; b: IEEE 802.11b, g: IEEE 802.11g, n20: IEEE 802.11n(20HT), n40: IEEE 802.11n(40HT), ac20: IEEE 802.11ac(20VHT), ac40: IEEE 802.11n(40VHT).

*1. The power setting was adjusted so that measured average power was not more than 2 dB lower than the maximum tune-up tolerance limit.

*2. According to KDB248227 D01, SAR is required for g, n20, ac20, n40 and ac40 channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR(1g) is > 1.2 W/kg.

*3. The standalone (SISO) SAR results were considered acceptable for the MIMO simultaneous transmission analysis as the MIMO power does not exceed the SISO power. The antenna separation distance will not be less than 50mm.

*4. The output power specification of these channel which have lower power were changed after SAR evaluation period. The power measurement after this power change of specifications was not performed because this power change did not influence obtained highest reported SAR(1g).

(5GHz band)

Mode	Frequency		Data rate	Power spec.		Duty cycle		Antenna 0 power (WLAN , Bluetooth)					Antenna 1 power (WLAN)					MIMO Ant.0+1 power				
				Typical	Max.	duty cycle	scaled factor	Set pwr.	Burst Ave.	Δ Max.	Tune-up factor	Time Ave.	Set pwr.	Burst Ave.	Δ Max.	Tune-up factor	Time Ave.	MIMO target	MIMO max.	SUM Burst Ave.	Δ Max.	SUM Time Ave.
	[MHz]	CH	[Mbps]	[dBm]	[dBm]	[%]	[-]	[-]	[dBm]	[dB]	[-]	[dBm]	[-]	[dBm]	[dB]	[-]	[dBm]	[dBm]	[dBm]	[dBm]	[dB]	[dBm]
a (*2)	5180	36	6	6.0	**7.5**	93.7	1.07	30(*1)	**6.44**	-1.06	1.28	6.16	30(*1)	**6.71**	-0.79	1.20	6.43					
	5200	40	6	6.0	**7.5**	93.7	1.07	30(*1)	**6.63**	-0.87	1.22	6.35	30(*1)	**6.61**	-0.89	1.23	6.33					
	5220	44	6	6.0	**7.5**	93.7	1.07	30(*1)	**6.90**	-0.60	1.15	6.62	30(*1)	**6.81**	-0.69	1.17	6.53					
	5240	48	6	6.0	**7.5**	93.7	1.07	30(*1)	**6.90**	-0.60	1.15	6.62	30(*1)	**6.86**	-0.64	1.16	6.58					
	5260	52	6	6.0	**7.5**	93.7	1.07	28(*1)	**6.77**	-0.73	1.18	6.49	28(*1)	**6.70**	-0.80	1.20	6.42					
	5280	56	6	6.0	**7.5**	93.7	1.07	28(*1)	**6.70**	-0.80	1.20	6.42	28(*1)	**6.89**	-0.61	1.15	6.61					
	5300	60	6	6.0	**7.5**	93.7	1.07	28(*1)	**6.71**	-0.79	1.20	6.43	28(*1)	**7.00**	-0.50	1.12	6.72					
	5320	64	6	6.0	**7.5**	93.7	1.07	28(*1)	**6.80**	-0.70	1.17	6.52	28(*1)	**7.16**	-0.34	1.08	6.88					
	5500	100	6	6.0	**7.5**	93.7	1.07	26(*1)	**5.80**	-1.70	1.48	5.52	26(*1)	**6.31**	-1.19	1.32	6.03					
	5580	116	6	6.0	**7.5**	93.7	1.07	26(*1)	**5.73**	-1.77	1.50	5.45	26(*1)	**6.28**	-1.22	1.32	6.00					
	5700	140	6	6.0	**7.5**	93.7	1.07	26(*1)	**5.81**	-1.69	1.48	5.53	26(*1)	**6.76**	-0.74	1.19	6.48					
	5745	149	6	6.0	**7.5**	93.7	1.07	28(*1)	**6.30**	-1.20	1.32	6.02	28(*1)	**7.06**	-0.44	1.11	6.78					
	5785	157	6	6.0	**7.5**	93.7	1.07	28(*1)	**6.03**	-1.47	1.40	5.75	28(*1)	**7.13**	-0.37	1.09	6.85					
	5825	165	6	6.0	**7.5**	93.7	1.07	28(*1)	**5.78**	-1.72	1.49	5.50	28(*1)	**6.98**	-0.52	1.13	6.70					
n20 SISO (*2)	5180	36	MCS0	6.0	**7.5**	93.3	1.07	30(*1)	**6.43**	-1.07	1.28	6.13	30(*1)	**6.57**	-0.93	1.24	6.27					
	5200	40	MCS0	6.0	**7.5**	93.3	1.07	30(*1)	**6.66**	-0.84	1.21	6.36	30(*1)	**6.65**	-0.85	1.22	6.35					
	5220	44	MCS0	6.0	**7.5**	93.3	1.07	30(*1)	**6.68**	-0.82	1.21	6.38	30(*1)	**6.81**	-0.69	1.17	6.51					
	5240	48	MCS0	6.0	**7.5**	93.3	1.07	30(*1)	**6.70**	-0.80	1.20	6.40	30(*1)	**7.00**	-0.50	1.12	6.70					
	5260	52	MCS0	6.0	**7.5**	93.3	1.07	28(*1)	**6.51**	-0.99	1.26	6.21	28(*1)	**6.72**	-0.78	1.20	6.42					
	5280	56	MCS0	6.0	**7.5**	93.3	1.07	28(*1)	**6.77**	-0.73	1.18	6.47	28(*1)	**6.89**	-0.61	1.15	6.59					
	5300	60	MCS0	6.0	**7.5**	93.3	1.07	28(*1)	**6.77**	-0.73	1.18	6.47	28(*1)	**6.86**	-0.64	1.16	6.56					
	5320	64	MCS0	6.0	**7.5**	93.3	1.07	28(*1)	**6.58**	-0.92	1.24	6.28	28(*1)	**7.04**	-0.46	1.11	6.74					
	5500	100	MCS0	6.0	**7.5**	93.3	1.07	26(*1)	**5.75**	-1.75	1.50	5.45	26(*1)	**6.14**	-1.36	1.37	5.84					
	5580	116	MCS0	6.0	**7.5**	93.3	1.07	26(*1)	**5.80**	-1.70	1.48	5.50	26(*1)	**6.39**	-1.11	1.29	6.09					
	5700	140	MCS0	6.0	**7.5**	93.3	1.07	26(*1)	**5.79**	-1.71	1.48	5.49	26(*1)	**6.79**	-0.71	1.18	6.49					
	5745	149	MCS0	6.0	**7.5**	93.3	1.07	28(*1)	**5.98**	-1.52	1.42	5.68	28(*1)	**7.07**	-0.43	1.10	6.77					
	5785	157	MCS0	6.0	**7.5**	93.3	1.07	28(*1)	**5.85**	-1.65	1.46	5.55	28(*1)	**6.91**	-0.59	1.15	6.61					
	5825	165	MCS0	6.0	**7.5**	93.3	1.07	28(*1)	**5.86**	-1.64	1.46	5.56	28(*1)	**6.69**	-0.81	1.21	6.39					
ac20 SISO (*2)	5180	36	MCS0	6.0	**7.5**	93.4	1.07	30(*1)	**6.59**	-0.91	1.23	6.29	30(*1)	**6.51**	-0.99	1.26	6.21					
	5200	40	MCS0	6.0	**7.5**	93.4	1.07	30(*1)	**6.64**	-0.86	1.22	6.34	30(*1)	**6.67**	-0.83	1.21	6.37					
	5220	44	MCS0	6.0	**7.5**	93.4	1.07	30(*1)	**6.76**	-0.74	1.19	6.46	30(*1)	**6.79**	-0.71	1.18	6.49					
	5240	48	MCS0	6.0	**7.5**	93.4	1.07	30(*1)	**6.72**	-0.78	1.20	6.42	30(*1)	**6.95**	-0.55	1.14	6.65					
	5260	52	MCS0	6.0	**7.5**	93.4	1.07	28(*1)	**6.57**	-0.93	1.24	6.27	28(*1)	**6.88**	-0.62	1.15	6.58					
	5280	56	MCS0	6.0	**7.5**	93.4	1.07	28(*1)	**6.78**	-0.72	1.18	6.48	28(*1)	**6.85**	-0.65	1.16	6.55					
	5300	60	MCS0	6.0	**7.5**	93.4	1.07	28(*1)	**6.86**	-0.64	1.16	6.56	28(*1)	**6.93**	-0.57	1.14	6.63					
	5320	64	MCS0	6.0	**7.5**	93.4	1.07	28(*1)	**6.92**	-0.58	1.14	6.62	28(*1)	**7.04**	-0.46	1.11	6.74					
	5500	100	MCS0	6.0	**7.5**	93.4	1.07	26(*1)	**5.76**	-1.74	1.49	5.46	26(*1)	**6.30**	-1.20	1.32	6.00					
	5580	116	MCS0	6.0	**7.5**	93.4	1.07	26(*1)	**5.89**	-1.61	1.45	5.59	26(*1)	**6.35**	-1.15	1.30	6.05					
	5700	140	MCS0	6.0	**7.5**	93.4	1.07	26(*1)	**5.77**	-1.73	1.49	5.47	26(*1)	**6.56**	-0.94	1.24	6.26					
	5745	149	MCS0	6.0	**7.5**	93.4	1.07	28(*1)	**5.95**	-1.55	1.43	5.65	28(*1)	**7.05**	-0.45	1.11	6.75					
	5785	157	MCS0	6.0	**7.5**	93.4	1.07	28(*1)	**5.93**	-1.57	1.44	5.63	28(*1)	**6.87**	-0.63	1.16	6.57					
	5825	165	MCS0	6.0	**7.5**	93.4	1.07	28(*1)	**5.89**	-1.61	1.45	5.59	28(*1)	**6.74**	-0.76	1.19	6.44					
n40 SISO (*2)	5190	38	MCS0	6.0	**7.5**	87.4	1.14	30(*1)	**6.53**	-0.97	1.25	5.95	30(*1)	**6.37**	-1.13	1.30	5.79					
	5230	46	MCS0	6.0	**7.5**	87.4	1.14	30(*1)	**6.70**	-0.80	1.20	6.12	30(*1)	**6.67**	-0.83	1.21	6.09					
	5270	54	MCS0	6.0	**7.5**	87.4	1.14	30(*1)	**6.90**	-0.60	1.15	6.32	30(*1)	**7.13**	-0.37	1.09	6.55					
	5310	62	MCS0	6.0	**7.5**	87.4	1.14	30(*1)	**6.90**	-0.60	1.15	6.32	30(*1)	**7.31**	-0.19	1.04	6.73					
	5510	102	MCS0	6.0	**7.5**	87.4	1.14	28(*1)	**6.10**	-1.40	1.38	5.52	28(*1)	**6.78**	-0.72	1.18	6.20					
	5550	110	MCS0	6.0	**7.5**	87.4	1.14	28(*1)	**6.08**	-1.42	1.39	5.50	28(*1)	**6.94**	-0.56	1.14	6.36					
	5670	134	MCS0	6.0	**7.5**	87.4	1.14	28(*1)	**6.19**	-1.31	1.35	5.61	28(*1)	**7.15**	-0.35	1.08	6.57					
	5755	151	MCS0	6.0	**7.5**	87.4	1.14	28(*1)	**5.85**	-1.65	1.46	5.27	28(*1)	**6.94**	-0.56	1.14	6.36					
	5795	159	MCS0	6.0	**7.5**	87.4	1.14	28(*1)	**5.66**	-1.84	1.53	5.08	28(*1)	**6.89**	-0.61	1.15	6.31					
ac40 SISO (*2)	5190	38	MCS0	6.0	**7.5**	87.6	1.14	30(*1)	**6.49**	-1.01	1.26	5.92	30(*1)	**6.30**	-1.20	1.32	5.73					
	5230	46	MCS0	6.0	**7.5**	87.6	1.14	30(*1)	**6.63**	-0.87	1.22	6.06	30(*1)	**6.60**	-0.90	1.23	6.03					
	5270	54	MCS0	6.0	**7.5**	87.6	1.14	30(*1)	**6.89**	-0.61	1.15	6.32	30(*1)	**7.10**	-0.40	1.10	6.53					
	5310	62	MCS0	6.0	**7.5**	87.6	1.14	30(*1)	**6.90**	-0.60	1.15	6.33	30(*1)	**7.29**	-0.21	1.05	6.72					
	5510	102	MCS0	6.0	**7.5**	87.6	1.14	28(*1)	**6.07**	-1.43	1.39	5.50	28(*1)	**6.82**	-0.68	1.17	6.25					
	5550	110	MCS0	6.0	**7.5**	87.6	1.14	28(*1)	**6.06**	-1.44	1.39	5.49	28(*1)	**7.01**	-0.49	1.12	6.44					
	5670	134	MCS0	6.0	**7.5**	87.6	1.14	28(*1)	**6.10**	-1.40	1.38	5.53	28(*1)	**7.29**	-0.21	1.05	6.72					
	5755	151	MCS0	6.0	**7.5**	87.6	1.14	28(*1)	**5.90**	-1.60	1.45	5.33	28(*1)	**7.00**	-0.50	1.12	6.43					
	5795	159	MCS0	6.0	**7.5**	87.6	1.14	28(*1)	**5.65**	-1.85	1.53	5.08	28(*1)	**6.91**	-0.59	1.15	6.34					
ac80 SISO (*2)	5210	42	MCS0	6.0	**7.5**	77.9	1.28	30(*1)	**6.25**	-1.25	1.33	5.17	30(*1)	**6.28**	-1.22	1.32	5.20					
	5290	58	MCS0	6.0	**7.5**	77.9	1.28	30(*1)	**6.67**	-0.83	1.21	5.59	30(*1)	**6.81**	-0.69	1.17	5.73					
	5530	106	MCS0	6.0	**7.5**	77.9	1.28	28(*1)	**5.94**	-1.56	1.43	4.86	28(*1)	**6.68**	-0.82	1.21	5.60					
	5775	155	MCS0	6.0	**7.5**	77.9	1.28	28(*1)	**5.91**	-1.59	1.44	4.83	28(*1)	**6.77**	-0.73	1.18	5.69					

*. Initial SAR test channel was shown with yellow marker. This mode has highest time-based average power, highest tune-up limit power, highest duty cycle (and lowest modulation).

*1. The power setting was adjusted so that measured average power was not more than 2 dB lower than the maximum tune-up tolerance limit.

*2. When the same transmission mode configurations have the same maximum output power on the same channel for the a/n/ac modes, the channel with the largest bandwidth and lowest data rate is selected.

(cont'd)

(cont'd)(5GHz band)(*5)

Mode	Frequency		Data rate	Power spec.		Duty cycle		Antenna 0 power (WLAN , Bluetooth)					Antenna 1 power (WLAN)					MIMO Ant.0+1 power				
				Typical	Max.	duty cycle	scaled factor	Set pwr.	Burst Ave.	Δ Max.	Tune-up factor	Time Ave.	Set pwr.	Burst Ave.	Δ Max.	Tune-up factor	Time Ave.	MIMO target	MIMO max.	SUM Burst Ave.	Δ Max.	SUM Time Ave.
	[MHz]	CH	[Mbps]	[dBm]	[dBm]	[%]	[-]	[-]	[dBm]	[dB]	[-]	[dBm]	[-]	[dBm]	[dB]	[-]	[dBm]	[dBm]	[dBm]	[dBm]	[dB]	[dBm]
n20 MIMO (*2)	5180	36	MCS8	6.0	**7.5**	87.6	1.14	30(*1)	**6.34**	-1.16	1.31	5.77		**6.51**	-0.99	1.26	5.94	9.0	**10.5**	**9.44**	-1.06	8.87
	5200	40	MCS8	6.0	**7.5**	87.6	1.14	30(*1)	**6.64**	-0.86	1.22	6.07		**6.61**	-0.89	1.23	6.04	9.0	**10.5**	**9.63**	-0.87	9.07
	5220	44	MCS8	6.0	**7.5**	87.6	1.14	30(*1)	**6.73**	-0.77	1.19	6.16		**6.64**	-0.86	1.22	6.07	9.0	**10.5**	**9.69**	-0.81	9.13
	5240	48	MCS8	6.0	**7.5**	87.6	1.14	30(*1)	**6.81**	-0.69	1.17	6.24		**6.90**	-0.60	1.15	6.33	9.0	**10.5**	**9.87**	-0.63	9.30
	5260	52	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**6.49**	-1.01	1.26	5.92		**6.71**	-0.79	1.20	6.14	9.0	**10.5**	**9.61**	-0.89	9.04
	5280	56	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**6.58**	-0.92	1.24	6.01		**6.83**	-0.67	1.17	6.26	9.0	**10.5**	**9.72**	-0.78	9.15
	5300	60	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**6.54**	-0.96	1.25	5.97		**7.03**	-0.47	1.11	6.46	9.0	**10.5**	**9.80**	-0.70	9.23
	5320	64	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**6.69**	-0.81	1.21	6.12		**7.03**	-0.47	1.11	6.46	9.0	**10.5**	**9.88**	-0.62	9.30
	5500	100	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**6.08**	-1.42	1.39	5.51		**6.68**	-0.82	1.21	6.11	9.0	**10.5**	**9.41**	-1.09	8.83
	5580	116	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**6.15**	-1.35	1.36	5.58		**6.84**	-0.66	1.16	6.27	9.0	**10.5**	**9.52**	-0.98	8.95
	5700	140	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**6.12**	-1.38	1.37	5.55		**7.03**	-0.47	1.11	6.46	9.0	**10.5**	**9.61**	-0.89	9.04
	5745	149	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**5.94**	-1.56	1.43	5.37		**7.05**	-0.45	1.11	6.48	9.0	**10.5**	**9.54**	-0.96	8.97
	5785	157	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**5.81**	-1.69	1.48	5.24		**6.81**	-0.69	1.17	6.24	9.0	**10.5**	**9.35**	-1.15	8.78
	5825	165	MCS8	6.0	**7.5**	87.6	1.14	28(*1)	**5.87**	-1.63	1.46	5.30		**6.72**	-0.78	1.20	6.15	9.0	**10.5**	**9.32**	-1.18	8.76
ac20 MIMO (*2)	5180	36	MCS0	6.0	**7.5**	88.0	1.14	30(*1)	**6.36**	-1.14	1.30	5.80		**6.64**	-0.86	1.22	6.08	9.0	**10.5**	**9.51**	-0.99	8.95
	5200	40	MCS0	6.0	**7.5**	88.0	1.14	30(*1)	**6.60**	-0.90	1.23	6.04		**6.68**	-0.82	1.21	6.12	9.0	**10.5**	**9.65**	-0.85	9.09
	5220	44	MCS0	6.0	**7.5**	88.0	1.14	30(*1)	**6.78**	-0.72	1.18	6.22		**6.81**	-0.69	1.17	6.25	9.0	**10.5**	**9.80**	-0.70	9.25
	5240	48	MCS0	6.0	**7.5**	88.0	1.14	30(*1)	**6.79**	-0.71	1.18	6.23		**6.84**	-0.66	1.16	6.28	9.0	**10.5**	**9.83**	-0.67	9.27
	5260	52	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**6.52**	-0.98	1.25	5.96		**6.59**	-0.91	1.23	6.03	9.0	**10.5**	**9.57**	-0.93	9.00
	5280	56	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**6.62**	-0.88	1.22	6.06		**6.80**	-0.70	1.17	6.24	9.0	**10.5**	**9.72**	-0.78	9.16
	5300	60	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**6.57**	-0.93	1.24	6.01		**6.95**	-0.55	1.14	6.39	9.0	**10.5**	**9.77**	-0.73	9.22
	5320	64	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**6.66**	-0.84	1.21	6.10		**6.91**	-0.59	1.15	6.35	9.0	**10.5**	**9.80**	-0.70	9.24
	5500	100	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**6.10**	-1.40	1.38	5.54		**6.81**	-0.69	1.17	6.25	9.0	**10.5**	**9.48**	-1.02	8.92
	5580	116	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**6.06**	-1.44	1.39	5.50		**6.85**	-0.65	1.16	6.29	9.0	**10.5**	**9.48**	-1.02	8.93
	5700	140	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**6.12**	-1.38	1.37	5.56		**7.05**	-0.45	1.11	6.49	9.0	**10.5**	**9.62**	-0.88	9.06
	5745	149	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**5.92**	-1.58	1.44	5.36		**7.09**	-0.41	1.10	6.53	9.0	**10.5**	**9.56**	-0.94	9.00
	5785	157	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**5.72**	-1.78	1.51	5.16		**6.88**	-0.62	1.15	6.32	9.0	**10.5**	**9.35**	-1.15	8.79
	5825	165	MCS0	6.0	**7.5**	88.0	1.14	28(*1)	**5.65**	-1.85	1.53	5.09		**6.75**	-0.75	1.19	6.19	9.0	**10.5**	**9.24**	-1.26	8.69
n40 MIMO (*2)	5190	38	MCS8	6.0	**7.5**	78.7	1.27	30(*1)	**6.27**	-1.23	1.33	5.23		**6.33**	-1.17	1.31	5.29	9.0	**10.5**	**9.31**	-1.19	8.27
	5230	46	MCS8	6.0	**7.5**	78.7	1.27	30(*1)	**6.57**	-0.93	1.24	5.53		**6.59**	-0.91	1.23	5.55	9.0	**10.5**	**9.59**	-0.91	8.55
	5270	54	MCS8	6.0	**7.5**	78.7	1.27	28(*1)	**6.43**	-1.07	1.28	5.39		**6.59**	-0.91	1.23	5.55	9.0	**10.5**	**9.52**	-0.98	8.48
	5310	62	MCS8	6.0	**7.5**	78.7	1.27	28(*1)	**6.44**	-1.06	1.28	5.40		**6.86**	-0.64	1.16	5.82	9.0	**10.5**	**9.67**	-0.83	8.63
	5510	102	MCS8	6.0	**7.5**	78.7	1.27	28(*1)	**5.98**	-1.52	1.42	4.94		**6.83**	-0.67	1.17	5.79	9.0	**10.5**	**9.43**	-1.07	8.39
	5550	110	MCS8	6.0	**7.5**	78.7	1.27	28(*1)	**6.03**	-1.47	1.40	4.99		**6.83**	-0.67	1.17	5.79	9.0	**10.5**	**9.46**	-1.04	8.42
	5670	134	MCS8	6.0	**7.5**	78.7	1.27	28(*1)	**6.03**	-1.47	1.40	4.99		**7.23**	-0.27	1.06	6.19	9.0	**10.5**	**9.68**	-0.82	8.65
	5755	151	MCS8	6.0	**7.5**	78.7	1.27	28(*1)	**5.80**	-1.70	1.48	4.76		**7.07**	-0.43	1.10	6.03	9.0	**10.5**	**9.49**	-1.01	8.45
	5795	159	MCS8	6.0	**7.5**	78.7	1.27	28(*1)	**5.64**	-1.86	1.53	4.60		**6.94**	-0.56	1.14	5.90	9.0	**10.5**	**9.34**	-1.16	8.31
ac40 MIMO (*2)	5190	38	MCS0	6.0	**7.5**	79.0	1.27	30(*1)	**6.19**	-1.31	1.35	5.17		**6.39**	-1.11	1.29	5.37	9.0	**10.5**	**9.30**	-1.20	8.28
	5230	46	MCS0	6.0	**7.5**	79.0	1.27	30(*1)	**6.54**	-0.96	1.25	5.52		**6.63**	-0.87	1.22	5.61	9.0	**10.5**	**9.60**	-0.90	8.57
	5270	54	MCS0	6.0	**7.5**	79.0	1.27	28(*1)	**6.44**	-1.06	1.28	5.42		**6.62**	-0.88	1.22	5.60	9.0	**10.5**	**9.54**	-0.96	8.52
	5310	62	MCS0	6.0	**7.5**	79.0	1.27	28(*1)	**6.44**	-1.06	1.28	5.42		**6.90**	-0.60	1.15	5.88	9.0	**10.5**	**9.69**	-0.81	8.66
	5510	102	MCS0	6.0	**7.5**	79.0	1.27	28(*1)	**5.93**	-1.57	1.44	4.91		**6.87**	-0.63	1.16	5.85	9.0	**10.5**	**9.43**	-1.07	8.42
	5550	110	MCS0	6.0	**7.5**	79.0	1.27	28(*1)	**6.02**	-1.48	1.41	5.00		**6.87**	-0.63	1.16	5.85	9.0	**10.5**	**9.47**	-1.03	8.46
	5670	134	MCS0	6.0	**7.5**	79.0	1.27	28(*1)	**6.03**	-1.47	1.40	5.01		**7.26**	-0.24	1.06	6.24	9.0	**10.5**	**9.70**	-0.80	8.68
	5755	151	MCS0	6.0	**7.5**	79.0	1.27	28(*1)	**5.81**	-1.69	1.48	4.79		**7.05**	-0.45	1.11	6.03	9.0	**10.5**	**9.48**	-1.02	8.46
	5795	159	MCS0	6.0	**7.5**	79.0	1.27	28(*1)	**5.69**	-1.81	1.52	4.67		**6.99**	-0.51	1.12	5.97	9.0	**10.5**	**9.40**	-1.10	8.38
ac80 MIMO (*2)	5210	42	MCS0	6.0	**7.5**	67.0	1.49	28(*1)	**5.71**	-1.79	1.51	3.97		**5.75**	-1.75	1.50	4.01	9.0	**10.5**	**8.74**	-1.76	7.00
	5290	58	MCS0	6.0	**7.5**	67.0	1.49	28(*1)	**6.29**	-1.21	1.32	4.55		**6.36**	-1.14	1.30	4.62	9.0	**10.5**	**9.34**	-1.16	7.60
	5530	106	MCS0	6.0	**7.5**	67.0	1.49	28(*1)	**5.94**	-1.56	1.43	4.20		**6.86**	-0.64	1.16	5.12	9.0	**10.5**	**9.43**	-1.07	7.69
	5775	155	MCS0	6.0	**7.5**	67.0	1.49	28(*1)	**5.92**	-1.58	1.44	4.18		**7.03**	-0.47	1.11	5.29	9.0	**10.5**	**9.52**	-0.98	7.78

*. Initial SAR test channel was shown with yellow marker. This mode has highest time-based average power, highest tune-up limit power, highest duty cycle (and lowest modulation).

*. CH: Channel; Power spec.: Power specification; Max.: Maximum; Set pwr.: Setting power; Burst Ave.: Measured burst average power; SUM Ave.: Sum of antenna 0 power and antenna 1 power; Mode; n20: IEEE 802.11n(20HT), n40: IEEE 802.11n(40HT), ac20: IEEE 802.11ac(20VHT), ac40: IEEE 802.11n(40VHT), ac80: IEEE 802.11ac(80VHT).

*1. The power setting was adjusted so that measured average power was not more than 2 dB lower than the maximum tune-up tolerance limit.

*2. When the same transmission mode configurations have the same maximum output power on the same channel for the a/n/ac modes, the channel with the largest bandwidth and lowest data rate is selected.

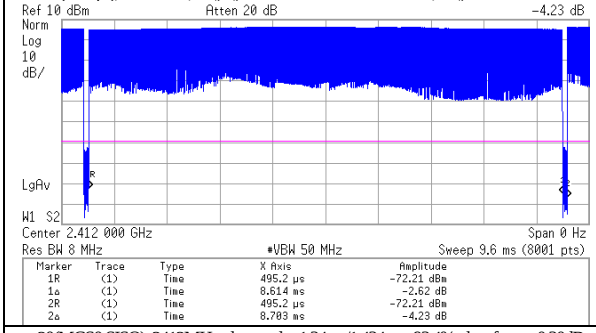
*. Calculating formula: Burst power (dBm) = (P/M Reading, dBm)+(Cable loss, dB)+(Attenuator, dB)+(duty factor, dB)
Duty cycle: (duty cycle, %) = (Tx on time, ms) / (1 cycle time, ms) × 100, where Duty factor (dBm) = 10 × log (100/(duty cycle, %))
Duty cycle scaled factor: Duty cycle correction factor for obtained SAR value, Duty scaled factor [-] = 100(%) / (duty cycle, %)
ΔMax. (Deviation form maximum power, dB) = (Burst power measured (average, dBm)) - (Max.tune-up limit power (average, dBm))
Tune-up factor: Power tune-up factor for obtained SAR value, Tune-up factor [-] = 1 / (10 ^ ("Deviation from max., dB" / 10))

*. Date measured: November 4~12, 2020 / Measured by: H. Naka / Place: preparation room of No. 7 shielded room. (25 ±1 deg.C./50 ±10 %RH)

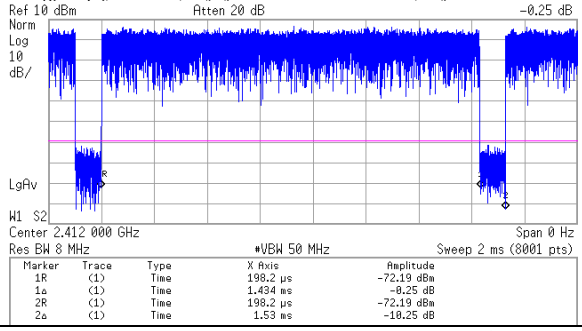
*. Uncertainty of antenna port conducted test; (±) 0.91 dB (Average power), (±) 0.27 % (duty cycle).

*. Duty cycle conformation.

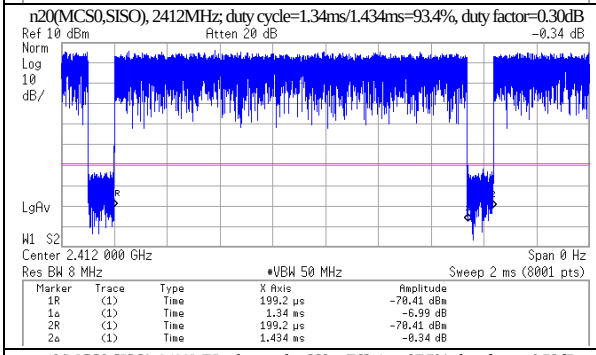
b(1Mbps), 2412MHz; duty cycle=8.614ms/8.703ms=99.0%, duty factor=0.04dB



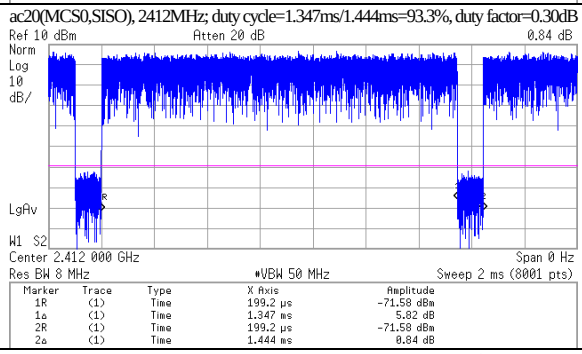
g(6Mbps), 2412MHz; duty cycle=1.434ms/1.53ms=93.7%, duty factor=0.30dB



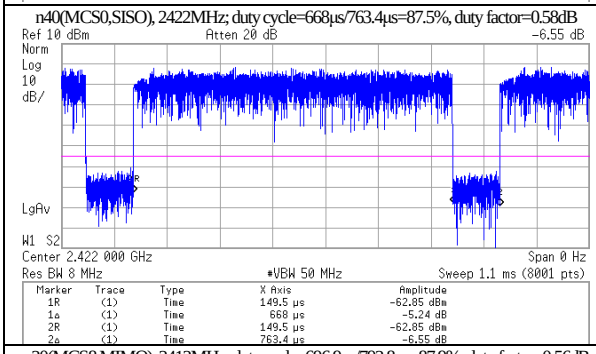
n20(MCS0,SISO), 2412MHz; duty cycle=1.34ms/1.434ms=93.4%, duty factor=0.30dB



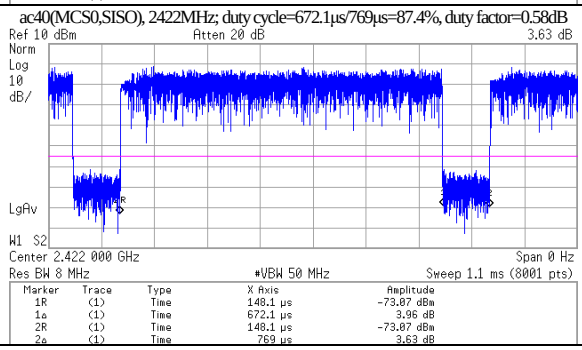
ac20(MCS0,SISO), 2412MHz; duty cycle=1.347ms/1.444ms=93.3%, duty factor=0.30dB



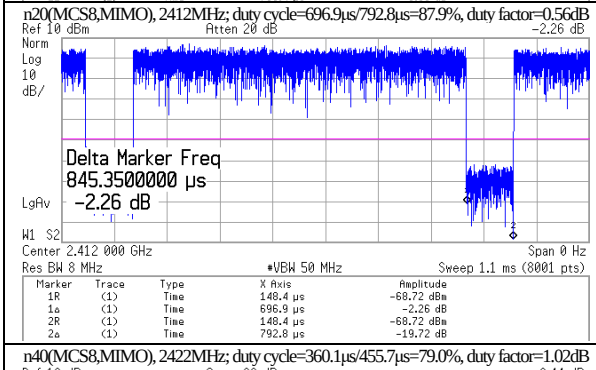
n40(MCS0,SISO), 2422MHz; duty cycle=668µs/763.4µs=87.5%, duty factor=0.58dB



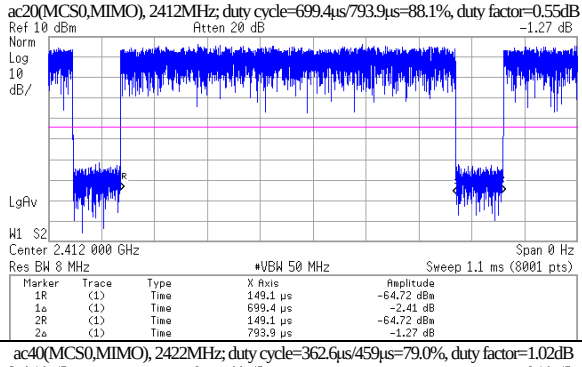
ac40(MCS0,SISO), 2422MHz; duty cycle=672.1µs/769µs=87.4%, duty factor=0.58dB



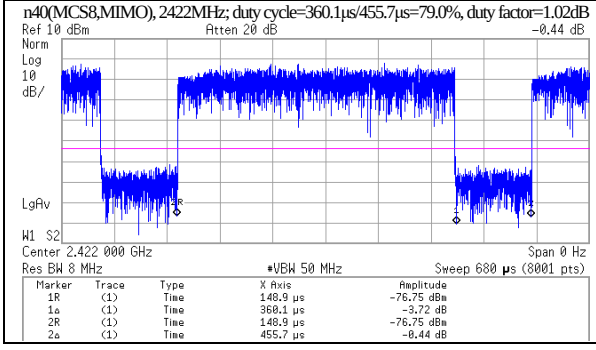
n20(MCS8,MIMO), 2412MHz; duty cycle=696.9µs/792.8µs=87.9%, duty factor=0.56dB



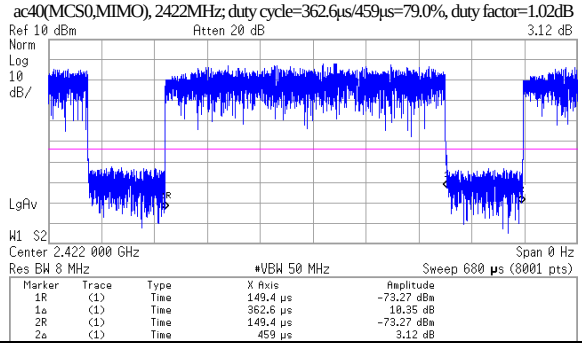
ac20(MCS0,MIMO), 2412MHz; duty cycle=699.4µs/793.9µs=88.1%, duty factor=0.55dB



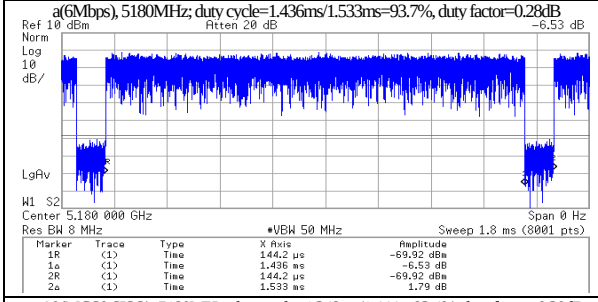
n40(MCS8,MIMO), 2422MHz; duty cycle=360.1µs/455.7µs=79.0%, duty factor=1.02dB



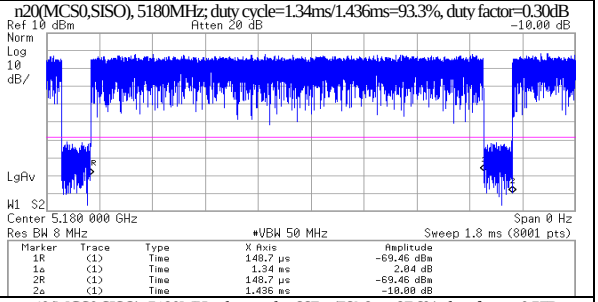
ac40(MCS0,MIMO), 2422MHz; duty cycle=362.6µs/459µs=79.0%, duty factor=1.02dB



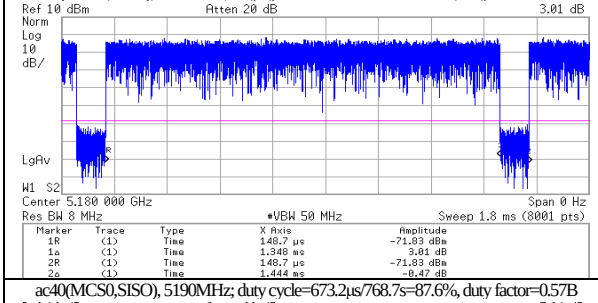
a(6Mbps), 5180MHz; duty cycle=1.436ms/1.533ms=93.7%, duty factor=0.28dB



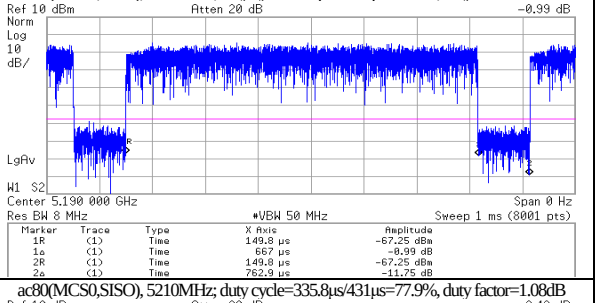
n20(MCS0,SISO), 5180MHz; duty cycle=1.34ms/1.436ms=93.3%, duty factor=0.30dB



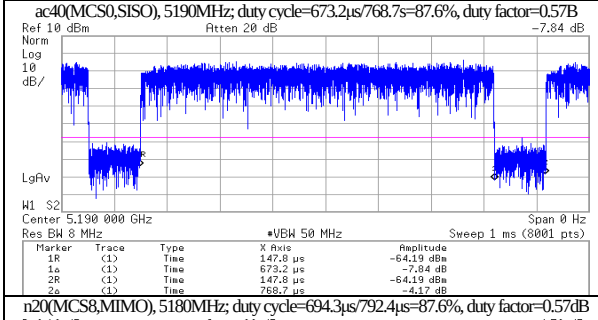
ac20(MCS0,SISO), 5180MHz; duty cycle=1.348ms/1.444s=93.4%, duty factor=0.30dB



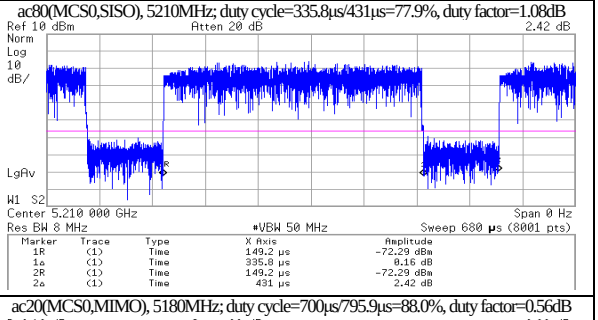
n40(MCS0,SISO), 5190MHz; duty cycle=667µs/762.9µs=87.6%, duty factor=0.57B



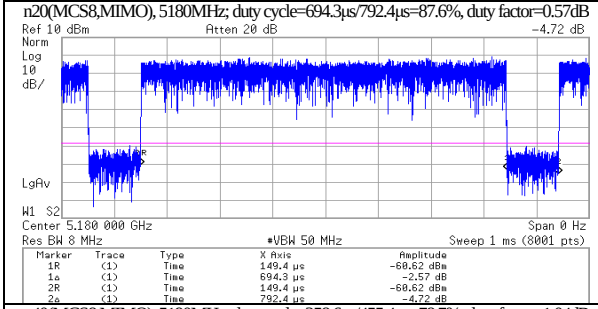
ac40(MCS0,SISO), 5190MHz; duty cycle=673.2µs/768.7s=87.6%, duty factor=0.57B



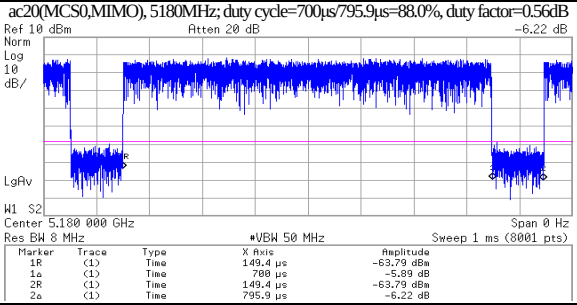
ac80(MCS0,SISO), 5210MHz; duty cycle=335.8µs/431µs=77.9%, duty factor=1.08dB



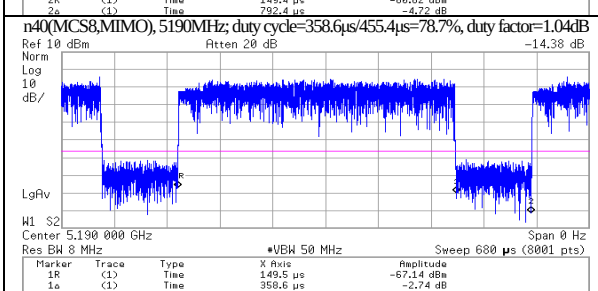
n20(MCS8,MIMO), 5180MHz; duty cycle=694.3µs/792.4µs=87.6%, duty factor=0.57dB



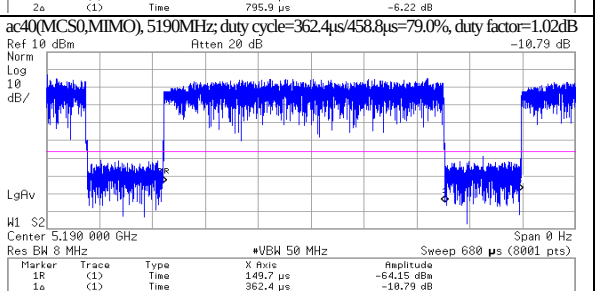
ac20(MCS0,MIMO), 5180MHz; duty cycle=700µs/795.9µs=88.0%, duty factor=0.56dB



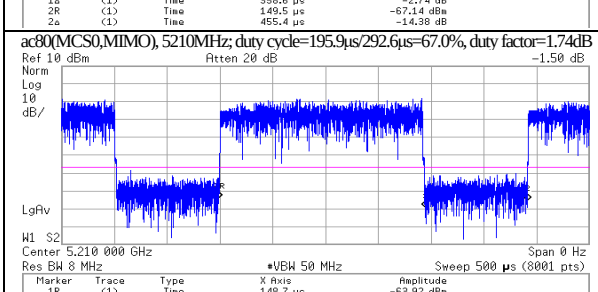
n40(MCS8,MIMO), 5190MHz; duty cycle=358.6µs/455.4µs=78.7%, duty factor=1.04dB



ac40(MCS0,MIMO), 5190MHz; duty cycle=362.4µs/458.8µs=79.0%, duty factor=1.02dB



ac80(MCS0,MIMO), 5210MHz; duty cycle=195.9µs/292.6µs=67.0%, duty factor=1.74dB



SECTION 7: SAR Measurement results

The following is the summary of SAR test results.

Test Setup	Antenna 0					Antenna 1				
	DTS	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3	DTS	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
Back	Comply (Refer to Section 7.1)	*. SAR test was exempted, refer to Section 4.3				Comply (Refer to Section 7.1)	*. SAR test was exempted, refer to Section 4.3			
Top	Comply (Refer to Section 7.1)	*. SAR test was exempted, refer to Section 4.3				Comply (Refer to Section 7.1)	*. SAR test was exempted, refer to Section 4.3			
Front	Comply (Refer to Section 7.1)	*. SAR test was exempted, refer to Section 4.3				Comply (Refer to Section 7.1)	*. SAR test was exempted, refer to Section 4.3			
Left	Comply (Refer to Section 7.1)	*. SAR test was exempted, refer to Section 4.3				*. SAR test was exempted, refer to Section 4.3	*. SAR test was exempted, refer to Section 4.3			
Right	*. SAR test was exempted, refer to Section 4.3	*. SAR test was exempted, refer to Section 4.3				*. SAR test was exempted, refer to Section 4.3	*. SAR test was exempted, refer to Section 4.3			
Bottom	*. SAR test was exempted, refer to Section 4.3	*. SAR test was exempted, refer to Section 4.3				*. SAR test was exempted, refer to Section 4.3	*. SAR test was exempted, refer to Section 4.3			

7.1 SAR results: 2.4 GHz band

Measurement date: December 9 and 10, 2020 Measurement by: Hiroshi Naka

[Liquid measurement]

Target Frequency [MHz]	Liquid type	Liquid parameters (*a)								ΔSAR Coefficients (*c)		Date measured
		Permittivity (εr) [-]				Conductivity [S/m]						
		Target	Measured		Limit (*b)	Target	Measured		Limit (*b)	ΔSAR [%] (1g)	Correction required?	
			Meas.	Δεr [%]			Meas.	Δσ [%]				
2412	Head	***39.27***	38.19	-2.7	±5%	***1.766***	1.828	+3.5	±5%	+2.32	not required.	December 9 (~10), 2020, before SAR test (*1)
2437		***39.22***	38.09	-2.9		***1.788***	1.856	+3.8		+2.48	not required.	
2462		***39.18***	37.93	-3.2		***1.813***	1.888	+4.2		+2.70	not required.	

Liquid Temp. [deg.C.]	Liquid Depth [mm]
24.0	150

*1. On December 10, it was within 24 hours from measurement on December 9 and same liquid temperature, so parameters of December 9 were used continuously.

[SAR results: 2.4 GHz band]

Test setup				Mode	Frequency		Duty cycle		Power correction			SAR results [W/kg] (Max.value of multi-peak)				SAR plot # in Appendix 2-2	SAR type	SAR Limit [W/kg]	Remarks
ANT #	Test position	Gap [mm]	Source power		[MHz]	CH	Duty [%]	Duty scaled factor	Tune-up limit [dBm]	Meas. [dBm]	Tune-up factor	Meas.	ΔSAR [%]	ΔSAR corrected	Reported (*b)				
0	Back	0	USB	b (1Mbps)	2437	6	99.0	1.01	15.0	13.90	1.29	**0.694**	Positive	n/a (*c)	**0.90**	1a-2	1g	1.6	-
0	Back	0	USB	b (1Mbps)	2412	1	99.0	1.01	15.0	13.77	1.33	**0.627**	Positive	n/a (*c)	**0.84**	1a-3	1g	1.6	-
0	Back	0	USB	b (1Mbps)	2462	11	99.0	1.01	15.0	13.45	1.43	**0.781**	Positive	n/a (*c)	**1.13**	1a-1	1g	1.6	(< 1.2W/kg, DSSS)
0	Back	0	USB	g (6Mbps)	2462	11	93.7	1.07	15.0	13.53	1.40	**0.749**	Positive	n/a (*c)	**1.12**	1a-4	1g	1.6	(< 1.2W/kg, OFDM)
0	Back	0	USB	g (6Mbps)	2437	6	93.7	1.07	15.0	13.65	1.36	**0.651**	Positive	n/a (*c)	**0.95**	1a-5	1g	1.6	-
0	Back	0	USB	g (6Mbps)	2412	1	93.7	1.07	15.0	13.81	1.32	**0.630**	Positive	n/a (*c)	**0.89**	1a-6	1g	1.6	-
0	Top	0	USB	b (1Mbps)	2437	6	99.0	1.01	15.0	13.90	1.29	**0.675**	Positive	n/a (*c)	**0.88**	1a-7	1g	1.6	-
0	Top	0	USB	b (1Mbps)	2412	1	99.0	1.01	15.0	13.77	1.33	**0.697**	Positive	n/a (*c)	**0.94**	1a-8	1g	1.6	-
0	Top	0	USB	b (1Mbps)	2462	11	99.0	1.01	15.0	13.45	1.43	**0.569**	Positive	n/a (*c)	**0.82**	1a-9	1g	1.6	-
0	Left	0	USB	b (1Mbps)	2437	6	99.0	1.01	15.0	13.90	1.29	**0.358**	Positive	n/a (*c)	**0.47**	1a-10	1g	1.6	(< 0.8W/kg)
0	Front	0	USB	b (1Mbps)	2437	6	99.0	1.01	15.0	13.90	1.29	**0.097**	Positive	n/a (*c)	**0.13**	1a-11	1g	1.6	(< 0.8W/kg)
1	Back	0	USB	b (1Mbps)	2412	1	99.0	1.01	15.0	14.19	1.21	**0.967**	Positive	n/a (*c)	**1.18**	1b-3	1g	1.6	-
1	Back	0	USB	b (1Mbps)	2462	11	99.0	1.01	15.0	14.10	1.23	**1.07**	Positive	n/a (*c)	**1.33**	1b-4	1g	1.6	*.Highest measured.
1	Back	0	USB	b (1Mbps)	2437	6	99.0	1.01	15.0	14.09	1.23	**1.04**	Positive	n/a (*c)	**1.29**	1b-5	1g	1.6	-
1	Back	0	USB	g (6Mbps)	2462	11	93.7	1.07	15.0	14.07	1.24	**0.991**	Positive	n/a (*c)	**1.31**	1b-6	1g	1.6	-
1	Back	0	USB	g (6Mbps)	2437	6	93.7	1.07	15.0	14.06	1.24	**1**	Positive	n/a (*c)	**1.33**	1b-7	1g	1.6	-
1	Back	0	USB	g (6Mbps)	2412	1	93.7	1.07	15.0	14.13	1.22	**0.985**	Positive	n/a (*c)	**1.29**	1b-8	1g	1.6	-
1	Back	0	USB	n20 (MCS0)	2462	11	93.4	1.07	15.0	13.97	1.27	**0.967**	Positive	n/a (*c)	**1.31**	1b-9	1g	1.6	-
1	Back	0	USB	n20 (MCS0)	2437	6	93.4	1.07	15.0	13.82	1.31	**0.971**	Positive	n/a (*c)	**1.361**	1b-10	1g	1.6	-
1	Back	0	USB	n20 (MCS0)	2412	1	93.4	1.07	15.0	13.83	1.31	**0.897**	Positive	n/a (*c)	**1.26**	1b-11	1g	1.6	-
1	Back	0	USB	ac20 (MCS0)	2462	11	93.3	1.07	15.0	13.84	1.31	**0.969**	Positive	n/a (*c)	**1.358**	1b-12	1g	1.6	-
1	Back	0	USB	ac20 (MCS0)	2437	6	93.3	1.07	15.0	13.81	1.32	**0.965**	Positive	n/a (*c)	**1.363**	1b-1	1g	1.6	*.Highest reported.
1	Back	0	Battery	ac20 (MCS0)	2437	6	93.3	1.07	15.0	13.81	1.32	**0.965**	Positive	n/a (*c)	**1.363**	1b-2	1g	1.6	*. Battery operation
1	Back	0	USB	ac20 (MCS0)	2412	1	93.3	1.07	15.0	13.98	1.26	**0.902**	Positive	n/a (*c)	**1.22**	1b-13	1g	1.6	-
1	Top	0	USB	b (1Mbps)	2412	1	99.0	1.01	15.0	14.19	1.21	**0.300**	Positive	n/a (*c)	**0.37**	1b-14	1g	1.6	(< 0.8W/kg)
1	Front	0	USB	b (1Mbps)	2437	1	99.0	1.01	15.0	14.09	1.23	**0.00939**	Positive	n/a (*c)	**0.01**	1b-15	1g	1.6	(< 0.8W/kg)
0	Back (*1)	0	USB	n20 (MCS8)	2437	6	87.5	1.14	13.5	12.36	1.30	**0.438**	Positive	n/a (*c)	**0.65**	1c-1	1g	1.6	Ant0+1=1.55 W/kg, < 1.6 W/kg (limit), SPLSR=0.01.
1									13.5	12.61	1.23	**0.641**	Positive	n/a (*c)	**0.90**		1g	1.6	
0	Top (*1)	0	USB	n20 (MCS8)	2437	6	87.5	1.14	13.5	12.36	1.30	**0.415**	Positive	n/a (*c)	**0.62**	1c-2	1g	1.6	Ant0+1=0.66 W/kg, < 1.6 W/kg (limit).
1									13.5	12.61	1.23	**0.172**	Positive	n/a (*c)	**0.24**		1g	1.6	
0	Front (*1)	0	USB	n20 (MCS8)	2437	6	87.5	1.14	13.5	12.36	1.30	**0.058**	Positive	n/a (*c)	**0.09**	1c-3	1g	1.6	Ant0+1=0.10 W/kg, < 1.6 W/kg (limit).
1									13.5	12.61	1.23	**0.007**	Positive	n/a (*c)	**0.01**		1g	1.6	

*a. The target values of (2000, 2450 and 3000) MHz are parameters defined in Appendix A of KDB 865664 D01. For other frequencies, the target nominal dielectric values shall be obtained by linear interpolation between the higher and lower tabulated figures.

*b. Calculating formula: $\Delta SAR(1g) = C\varepsilon r \times \Delta\varepsilon r + C\sigma \times \Delta\sigma$, $C\varepsilon = -7.854E\text{-}4 \times f^3 + 9.402E\text{-}3 \times f^2 - 2.742E\text{-}2 \times f - 0.2026$ / $C\sigma = 9.804E\text{-}3 \times f^3 - 8.661E\text{-}2 \times f^2 + 2.981E\text{-}2 \times f + 0.7829$

*c. Since the calculated ΔSAR values of the tested liquid had shown positive correction, the measured SAR was not converted by ΔSAR correction.
Calculating formula: ΔSAR corrected SAR (W/kg) = (Meas. SAR (W/kg)) × (100 - (ΔSAR(%)) / 100

*. Calculating formula: Reported SAR (W/kg) = (Measured SAR (W/kg)) × (Duty scaled) × (Tune-up factor)
Duty scaled = Duty scaled factor: Duty cycle correction factor for obtained SAR value, Duty scaled factor [-] = 100(%) / (duty cycle, %)
Tune-up factor: Power tune-up factor for obtained SAR value, Tune-up factor [-] = 1 / (10 ^ ("Deviation from max., dB" / 10))

Notes:

***1. The SAR distribution of antenna 0 and antenna 1 wasn't overlapped in these setup condition because the distance between the antenna 0 and antenna 1 was away sufficiently. Therefore SAR from an antenna (either antenna 0 or antenna 1) was the result which indicates the highest SAR value.**

*. "yellow marker" in the table; The highest reported SAR(1g) of each antenna in tested operation band in above is shaded with yellow marker.

*. Highest measured output power channel was tested initially according to KDB 248227 D01.

*. Since the power of 2467 MHz (CH12) and 2472 MHz (CH13) are more than 5 dB lower than other SAR tested frequencies, the SAR test was omitted.

*. **2.4GHz SAR test reduction procedures, in KDB248227 D01 (v02r02)**

(DSSS mode) **When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg (for SAR (1g)), no further SAR testing is required for 802.11b DSSS in that exposure configuration.**

(OFDM mode) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg (for SAR(1g)).

*. Gap: It is the separation distance between the outer surface of product and the bottom outer surface of phantom; CH: Channel; Meas.: Measured value; n/a: not applied; Max.: Maximum; ANT.#: Antenna ID number 0 or 1; Mode; b: IEEE 802.11b, g: IEEE 802.11g, n20: IEEE 802.11n(20HT), n40: IEEE 802.11n(40HT), ac20: IEEE 802.11ac(20VHT), ac40: IEEE 802.11ac(40VHT).

*. During test, the EUT was operated by build-in rechargeable Li-ion battery with connecting USB cable (charging and setting Tx parameters).

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

Liquid	SAR test frequency	Probe calibration frequency	Validity	Conversion factor	Uncertainty
Head	(2412, 2437, 2462) MHz	2450 MHz	within ±50MHz of calibration frequency	7.26	±12.0%

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

7.2 SAR Measurement Variability (Repeated measurement requirement)

In accordance with published RF Exposure KDB procedure 865664 D01 (v01r04) SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR(1g) is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

EUT setup			Mode	Band	Frequency [MHz] (Channel)	Measured SAR [W/kg]			Largest to Smallest SAR Ratio	SAR plot # in Appendix 2-2	
Transmit antenna	Position	Gap [mm]				Type	Original	Repeated		Original	Repeated
Antenna 1	**Back**	0	b (1Mbps)	DTS	2462 (11)	1g	**1.07** (*. Highest measured, DTS band)	**1.04** <1.45)	**1.03** (≤1.20)	Plot 1b-4	Plot 1d-1

*. Calculating formula: Largest to Smallest SAR Ratio (%) = (Largest SAR (W/kg)) / Smallest SAR (W/kg)
*. Mode; b: IEEE 802.11b.

7.3 Device holder perturbation verification

When the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification (by Urethane form alone) is required by using the highest SAR configuration among all applicable frequency bands.
*. During SAR measurement the EUT was not placed on the device holder directly. The EUT was mounted in the device holder using 70 mm thickness Urethane form (low-permittivity and low-loss foam) to avoid changes of EUT performance by the holder material (Refer to Appendix 1-3, photographs of test setup). However, the "Device holder perturbation" was confirmed by the setup for which device holder was not used in highest SAR configuration.

EUT setup			Mode	Frequency [MHz] (Channel)	Measured SAR [W/kg]			Device holder perturbation SAR Ratio	Remarks
Transmit antenna	Position	Gap [mm]			SAR type	Device holder			
						Exist	None		
Antenna 1	**Back**	0	ac20 (MCS0/1Tx)	2437 (6)	1g	**0.965** (Reported: 1.36)	**0.943**	**-2.3 %**	*.It was smaller than 5% of uncertainty of the setup, so influence of a device holder was judged to be no problem.
					SAR plot #	Plot 1b-1	Plot 1e-1		

*. Calculating formula: Device holder perturbation SAR Ratio (%) = {{((Measured SAR-none (W/kg)) / Measured SAR-exist (W/kg))} - 1}*100
*. SAR plot is shown in Appendix 2-2. (Mode) ac20: IEEE 802.11ac(20VHT).

7.4 Simultaneous transmission and Co-location (MIMO) evaluation

Refer to Section 4.4. The following is additional information with actual measured SAR value.

Simultaneous transmission scenario									Σ SAR [W/kg] (1g: ≤1.6)	SPLSR Check? (Yes / No)	Distance between antenna, design base [mm]	SPLSR (≤ 0.04)	Volume Scan? (Yes/No)	SAR plot # in Appendix 2-2	Final judge (Worst SAR 1g value) (*3) [W/kg]
Test position	Tx type (mode)	U-NII band	SAR type	Highest Reported SAR (Standalone base) [W/kg]											
				Antenna 1		Antenna 0									
				WLAN (*4) DTS Band	WLAN (*4) UNII band	WLAN (*4) DTS Band	WLAN (*4) UNII band	Bluetooth							
Back	SISO	-	1g	1.36 (ac20)				0.08 (*1)	1.44 (*1)	< 1.6, No	67.31	-	-	-	-
	SISO	U-NII-1&2A	1g		0.37 (*1)			0.08 (*1)	0.45 (*1)	< 1.6, No	67.31	-	-	-	-
		U-NII-2C	1g		0.38 (*1)			0.08 (*1)	0.46 (*1)	< 1.6, No	67.31	-	-	-	-
		U-NII-3	1g		0.39 (*1)			0.08 (*1)	0.47 (*1)	< 1.6, No	67.31	-	-	-	-
	MIMO	-	1g	0.90 (n20)		0.65 (n20)			1.55	< 1.6, No	111.03 (*2)	0.02	-	Plot 1c-1	-
	MIMO	U-NII-1&2A	1g		0.37 (*1)		0.37 (*1)		0.74 (*1)	< 1.6, No	67.31	-	-	-	-
		U-NII-2C	1g		0.38 (*1)		0.38 (*1)		0.76 (*1)	< 1.6, No	67.31	-	-	-	-
		U-NII-3	1g		0.39 (*1)		0.39 (*1)		0.78 (*1)	< 1.6, No	67.31	-	-	-	-
Top	SISO	-	1g	0.82 (b)				0.08 (*1)	0.90 (*1)	< 1.6, No	67.31	-	-	-	-
	SISO	U-NII-1&2A	1g		0.37 (*1)			0.08 (*1)	0.45 (*1)	< 1.6, No	67.31	-	-	-	-
		U-NII-2C	1g		0.38 (*1)			0.08 (*1)	0.46 (*1)	< 1.6, No	67.31	-	-	-	-
		U-NII-3	1g		0.39 (*1)			0.08 (*1)	0.47 (*1)	< 1.6, No	67.31	-	-	-	-
	MIMO	-	1g	0.62 (n20)		0.24 (n20)			0.86	< 1.6, No	67.31	-	-	-	-
	MIMO	U-NII-1&2A	1g		0.37 (*1)		0.37 (*1)		0.74 (*1)	< 1.6, No	67.31	-	-	-	-
		U-NII-2C	1g		0.38 (*1)		0.38 (*1)		0.76 (*1)	< 1.6, No	67.31	-	-	-	-
		U-NII-3	1g		0.39 (*1)		0.39 (*1)		0.78 (*1)	< 1.6, No	67.31	-	-	-	-

*1. These values are estimated SAR. Refer to Section 4.4.
*2. This number is the distance between the zoom scan's SAR peak of antenna 0 and antenna 1. Refer to SAR plot.
***3. The SAR distribution of antenna 0 and antenna 1 wasn't overlapped in these setup condition because the distance between the antenna 0 and antenna 1 was away sufficiently. Therefore SAR from an antenna (either antenna 0 or antenna 1) was the result which indicates the highest SAR value.**
*4. ( ) shows the operation mode. b: IEEE 802.11b; n20: IEEE 802.11n(20HT), ac20: IEEE 802.11ac(20VHT).
*. This Wireless module supports both WLAN and Bluetooth on an antenna 0. An antenna 1 is only supported WLAN.
*. WLAN and Bluetooth cannot transmit simultaneously on an antenna 0.
*. Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the SAR(1g) is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.
*. Calculating formula: SPLSR = (SAR1 + SAR2)^1.5 / (minimum antenna separation distance, mm)