FCC SAR Test Report

Report No.	:	**OT-194-RWD-035**
AGR. No.	:	**A193A-447**
Applicant	:	**Sena Technologies,Inc.**
Address	:	**19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, South Korea**
DUT Type	:	**Bike-to-Bike communication module**
FCC ID	:	**S7A-SP68**
Brand	:	**Sena Technologies,Inc.**
Model No.	:	**SP68**
FCC Rule Part(s)	:	**CFR §2.1093**
Sample Received Date	:	**2019-03-22**
Date of Testing	:	**2019-04-05 ~ 2019-04-08**
Issue Date	:	**2019-04-16**

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Tested By :

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Approved By :

Jung Wook Kim / Technical Manager

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Revision history

Report No.	Reason for Change	Date Issued
OT-194-RWD-035	Initial release	2019-04-16

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TABLE OF CONTENTS

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1. Summary of Maximum SAR Value

Equipment Class	Band & Mode	Tx Frequency	SAR 1 g Body (W/kg)
DTS	Zigbee	2410 ~ 2475 MHz	0.647
DSS	Bluetooth Ant. Master	2402 ~ 2480 MHz	0.333
DSS	Bluetooth Ant. Slave	2402 ~ 2480 MHz	0.250
DTS	Bluetooth LE Ant. Master	2402 ~ 2480 MHz	0.125
DTS	Bluetooth LE Ant. Slave	2402 ~ 2480 MHz	0.125
Simultaneous SAR per KDB 690783 D01v01r03:			1.230

1. This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 8 of this report;
2. Per KDB Publication 447498, Maximum SAR values of Bluetooth Ant. Master, Ant. Slave and Bluetooth LE Ant. Master, Ant. Slave used estimated SAR results.

2. Device Under Test

2.1. DUT Information

DUT Type	Bike-to-Bike communication module
FCC ID	S7A-SP68
Brand Name	Sena Technologies,Inc.
Model Name	SP68
Additional Model Name(s)	-
Antenna Type	Fixed Internal Antenna
DUT Stage	Identical Prototype

2.2. Device Overview

Band & Mode	Operating Modes	Tx Frequency
Zigbee	Data	2410 ~ 2475 MHz
Bluetooth	Data	2402 ~ 2480 MHz
Bluetooth LE	Data	2402 ~ 2480 MHz

2.3. Power Reduction for SAR

There is no power reduction used for any band/mode implemented in the device for SAR purposes.

2.4. Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01 v06.

Maximum Zigbee Output Power

Mode / Band		Modulated Average (dBm)
Zigbee	Maximum	10.5
	Nominal	9.5

Maximum Bluetooth Output Power – Master Antenna

Mode / Band		Modulated Average (dBm)		
Channels		0	39	78
Bluetooth BDR	Maximum	8.0	9.0	9.0
	Nominal	7.0	8.0	8.0
Bluetooth EDR	Maximum	5.0	5.0	5.0
	Nominal	4.0	4.0	4.0

Mode / Band		Modulated Average (dBm)		
Channels		0	19	39
Bluetooth LE	Maximum	4.0	5.0	5.0
	Nominal	3.0	4.0	4.0

Maximum Bluetooth Output Power – Slave Antenna

Mode / Band		Modulated Average (dBm)		
Channels		0	39	78
Bluetooth BDR	Maximum	5.5	7.5	7.5
	Nominal	4.5	6.5	6.5
Bluetooth EDR	Maximum	3.5	4.5	4.5
	Nominal	2.5	3.5	3.5

Mode / Band		Modulated Average (dBm)		
Channels		0	19	39
Bluetooth LE	Maximum	2.0	4.0	4.0
	Nominal	1.0	3.0	3.0

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2.5. DUT Antenna Locations

This device is also operating at hand-held use near body. So, FCC KDB Publication 941225 D07 is apply to this condition. 1g SAR test is evaluated to some position (distance from to the edge/side is within 2.5 cm) at 0 mm. so 10g SAR is not required.

Table 2-1 Device Edges/Sides for SAR Testing

Mode	Top	Bottom	Front	Rear	Right	Left
Zigbee	Yes	Yes	Yes	Yes	No	Yes
Zigbee (Ant. Unfolded)	Yes	No	Yes	Yes	No	Yes

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D07 and October 2016 TCBC Workshop Note. The distances between the transmit antenna and the edges of the device are included in the filing.

2.6. Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the DUT are shown in Figure 2-1 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 5.3.2 procedures.

Path 1
Zigbee

Path 2
Bluetooth Master

Path 3
Bluetooth Slave

Figure 2-1 Simultaneous Transmission Paths

No.	Capable Transmit Configuration	Body	Notes
1	Zigbee + Bluetooth Master	Yes	
2	Zigbee + Bluetooth Slave	Yes	
3	Zigbee + Bluetooth Master + Bluetooth Slave	Yes	
4	Zigbee + Bluetooth LE Master	Yes	
5	Zigbee + Bluetooth LE Slave	Yes	
6	Zigbee + Bluetooth LE Master + Bluetooth LE Slave	Yes	

2.7. Miscellaneous SAR Test Considerations

(A) Zigbee

DUT's antenna can be unfold until an angle of 90 degrees from the fold condition. A diagram showing the location of the device antennas can be found in Appendix F. And/or Exact antenna dimensions and separation distances are shown in the Technical Descriptions in the FCC Filing.

(B) Bluetooth

The modulation type of this DUT is Bluetooth and modulation technique is FHSS. This EUT does support hopping mode. During the SAR test, hopping mode was disabled.

The Bluetooth chipset in this device is installed in two different modules. The electrically identical modules are manufactured with the identical mechanical structure to meet the same specification and functions. Two device antennas are referenced as Master and Slave in this report.

The master and Slave antenna operate simultaneously on each modules. See Section 2.6 in this report or operating description for detailed operating conditions.

Per FCC KDB 447498 D01v06, the 1g SAR exclusion threshold for distances < 50 mm is defined by the following equation:

$$\frac{Max\ Power\ of\ Channel\ (mW)}{Test\ Separation\ Dist\ (mm)} * \sqrt{Frequency(GHz)} \leq 3.0$$

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body Bluetooth SAR(Master Antenna) was not required; [(8/5) X SQRT(2.441)] = 2.5 ≤ 3.0. Per KDB Publication 447498 D01v06, the maximum power of the channel was rounded to the nearest mW before calculation.

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body Bluetooth SAR(Slave Antenna) was not required; [(6/5) X SQRT(2.441)] = 1.9 ≤ 3.0. Per KDB Publication 447498 D01v06, the maximum power of the channel was rounded to the nearest mW before calculation.

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body Bluetooth LE SAR(Master Antenna) was not required; [(3/5) X SQRT(2.440)] = 0.9 ≤ 3.0. Per KDB Publication 447498 D01v06, the maximum power of the channel was rounded to the nearest mW before calculation.

Based on the maximum conducted power of Bluetooth (rounded to the nearest mW) and the antenna to user separation distance, body Bluetooth LE SAR(Slave Antenna) was not required; [(3/5) X SQRT(2.440)] = 0.9 ≤ 3.0. Per KDB Publication 447498 D01v06, the maximum power of the channel was rounded to the nearest mW before calculation.

2.8. Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D07v01r02 (UMPC Mini Tablet)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 690783 D01v01r03 (SAR Listings on Grants)
- October 2016 TCBC Workshop Notes (SAR Testing for Non-Standard Form Factor Devices – SAR for Generic Device)

2.9. Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 11.

3. INTRODUCTION

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz and Health Canada RF Exposure Guidelines Safety Code 6. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1. SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density ( ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

$$SAR = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dV}\right)$$

Equation 3-1 SAR Mathematical Equation

SAR is expressed in units of watts per kilogram (W/kg).

$$SAR = \frac{\sigma \mid E \mid^2}{\rho}$$

where:

σ = conductivity of the tissue (S/m)
ρ = mass density of the tissue (kg/m^3)
E = rms electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

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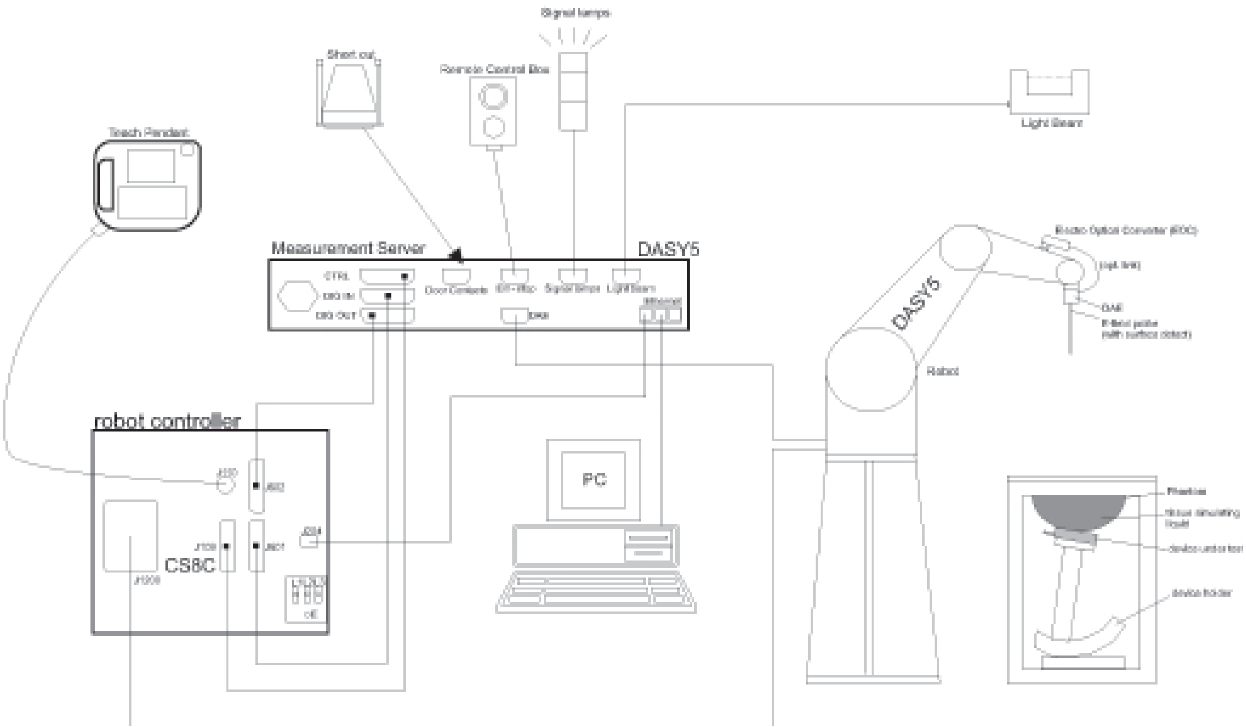
3.2. SAR Measurement Setup

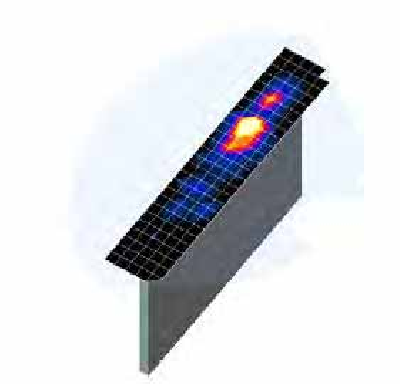
A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE). An isotropic Field probe optimized and calibrated for the targeted measurement. Data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts. The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning. A computer running WinXP, Win7 or Win10 and the DASY5 software. Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc. The phantom, the device holder and other accessories according to the targeted measurement.



4. DOSIMETRIC ASSESSMENT

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:



1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 5-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR point was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
   a) SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
   b) After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
   c) All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

Table 4-1 Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area}, Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom}, Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$*	$\Delta z_{zoom}(n>1)$*	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

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5. TEST CONFIGURATION POSITIONS

5.1. Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02.

5.2. Positioning for Testing

Based on FCC guidance and expected exposure conditions, the device was positioned with the outside of the device touching the flat phantom and such that the location of maximum SAR was captured during SAR testing. The SAR test setup photograph is included in Appendix F.

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6. RF EXPOSURE LIMITS

In order for users to be aware of the body-worn operating requirements for meeting RF exposure compliance, operating instructions and cautions statements are included in the user's manual.

6.1. Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

6.2. Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 8-1 SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIROMENT Professional Population (W/kg) or (mW/g)
SPATIAL PEAK SAR[1] Brain	1.60	8.00
SPATIAL AVERAGE SAR[2] Whole Body	0.08	0.40
SPATIAL PEAK SAR[3] Hands, Feet, Ankles, Wrists	4.00	20.00

[1] The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
[2] The Spatial Average value of the SAR averaged over the whole body.
[3] The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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7. FCC MEASUREMENT PROCEDURES

Power measurements for licensed transmitters are performed using a base station simulator under digital average power.

7.1. Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

Per KDB Publication 447498 D01v06, testing of other required channels within the operating mode of a frequency band is not required when the reported 1g or 10g SAR for the mid-band or highest output power channel is:

- ≤ 0.8 W/kg or 2.0 W/kg, for 1g or 10g respectively, when the transmission band is ≤ 100 MHz
- ≤ 0.6 W/kg or 1.5 W/kg, for 1g or 10g respectively, when the transmission band is between 100 MHz and 200 MHz
- ≤ 0.4 W/kg or 1.0 W/kg, for 1g or 10g respectively, when the transmission band is ≥ 200 MHz

7.2. Procedures Used to Establish RF Signal for SAR

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR. Devices under test are evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device is tested throughout the SAR test at maximum output power, the SAR measurement system measures a “point SAR” at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviates by more than 5%, the SAR test and drift measurements are repeated.

As required by §§ 2.1091(d)(2) and 2.1093(d)(5), RF exposure compliance must be determined at the maximum average power level according to source-based time-averaging requirements to determine compliance for general population exposure conditions. Unless it is specified differently in the *published RF exposure KDB procedures*, these requirements also apply to test reduction and test exclusion considerations. Time-averaged maximum conducted output power applies to SAR and, as required by § 2.1091(c), time-averaged effective radiated power applies to MPE. When an antenna port is not available on the device to support conducted power measurement, such as for FRS (Part 95) devices and certain Part 15 transmitters with built-in integral antennas, the maximum output power and tolerance allowed for production units should be used to determine RF exposure test exclusion and compliance.

8. RF CONDUCTED POWERS

8.1. Zigbee Conducted Powers

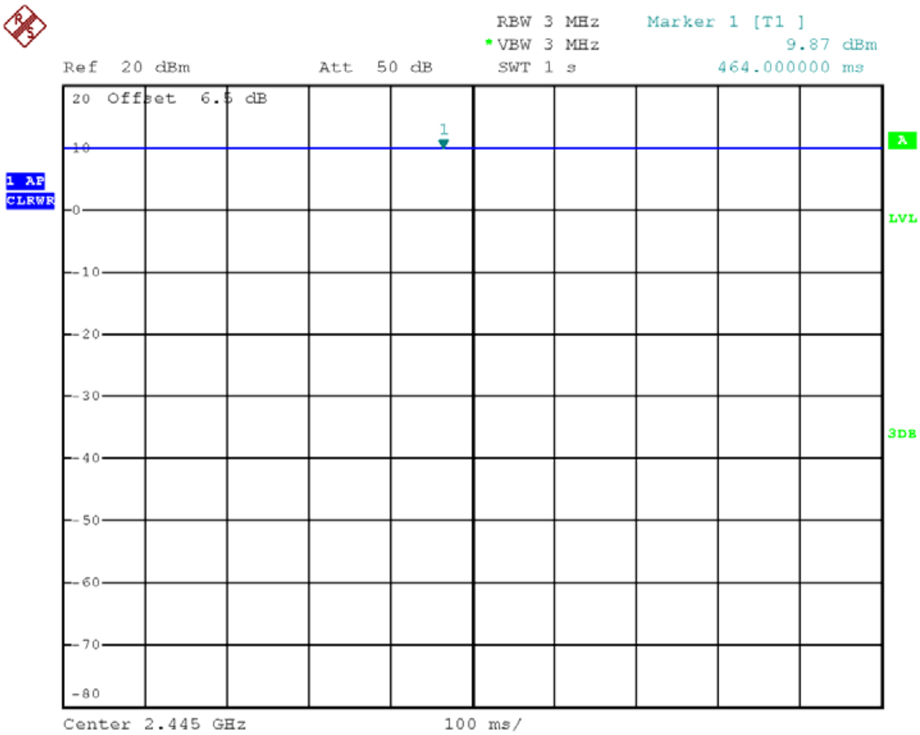
8.1.1. Zigbee

Table 8-1 Zigbee Conducted Powers

Frequency [MHz]	Modulation	Channel No.	Average Conducted Power	
			[dBm]	[mW]
2410	Zigbee	12	9.99	9.98
2445	Zigbee	19	**10.03**	**10.07**
2475	Zigbee	25	8.91	7.78

Note: The Bolded channel above were tested for SAR.

Figure 8-1 Zigbee Transmission Plot



Equation 8-1 Zigbee Duty Cycle Calculation

- DUTY cycle of this device is 100 %.
- DUTY Cycle [%] = (Pulse / Period) X 100 = (1/1) X 100 = 100 %

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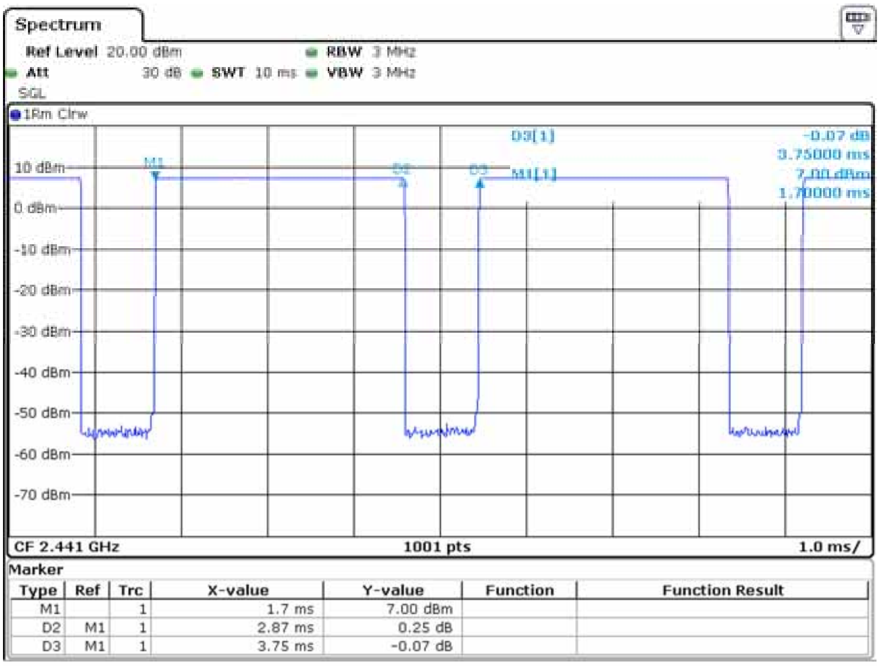
8.1.2. Bluetooth

Table 8-2 Bluetooth Conducted Powers – Master Antenna

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Average Conducted Power	
			[dBm]	[mW]
2402	1.0	0	6.62	4.59
2441	1.0	39	**8.44**	**6.98**
2480	1.0	78	7.65	5.82
2402	2.0	0	3.54	2.26
2441	2.0	39	4.49	2.81
2480	2.0	78	3.46	2.22
2402	3.0	0	3.74	2.37
2441	3.0	39	4.55	2.85
2480	3.0	78	3.67	2.33
2402	LE	0	2.73	1.87
2440	LE	19	4.39	2.75
2480	LE	39	3.57	2.28

Figure 8-2 Bluetooth (Master Antenna) Transmission Plot



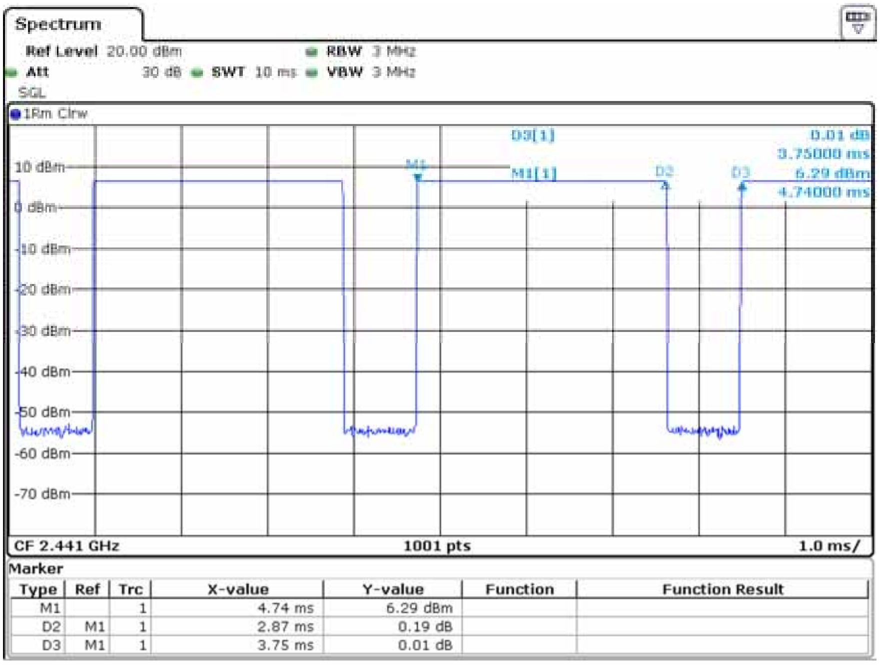
Equation 8-2 Bluetooth (Master Antenna) Duty Cycle Calculation

- DUTY cycle of this device is 76.5 %.
- DUTY Cycle [%] = (Pulse / Period) X 100 = (2.87/3.75) X 100 = 76.5 %

Table 8-3 Bluetooth Conducted Powers – Slave Antenna

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Average Conducted Power	
			[dBm]	[mW]
2402	1.0	0	4.42	2.77
2441	1.0	39	**6.74**	**4.72**
2480	1.0	78	6.7	4.68
2402	2.0	0	2.37	1.73
2441	2.0	39	3.79	2.39
2480	2.0	78	3.28	2.13
2402	3.0	0	2.42	1.75
2441	3.0	39	3.80	2.40
2480	3.0	78	3.39	2.18
2402	LE	0	0.91	1.23
2440	LE	19	3.11	2.05
2480	LE	39	3.05	2.02

Figure 8-2 Bluetooth (Slave Antenna) Transmission Plot



Equation 8-2 Bluetooth (Slave Antenna) Duty Cycle Calculation

- DUTY cycle of this device is 76.5 %.
- DUTY Cycle [%] = (Pulse / Period) X 100 = (2.87/3.75) X 100 = 76.5 %

Bluetooth Notes:

1. SAR Measurement is not required for the QPSK, 8PSK and BLE. When the secondary mode is ≤ 1/4 dB higher than the primary mode.

9. SYSTEM VERIFICATION

9.1. Tissue Verification

Table 10-1 Measured Body Tissue Properties

Tissue Type	Frequency (MHz)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
MSL2450	2450	21.9	2.000	51.243	1.95	52.7	2.56	-2.76	2019.04.05
	2410		1.954	51.389	1.90	52.8	2.84	-2.67	
	2445		1.994	51.261	1.94	52.7	2.78	-2.73	
	2475		2.030	51.157	1.98	52.7	2.53	-2.93	
MSL2450	2450	21.6	1.999	51.282	1.95	52.7	2.51	-2.69	2019.04.08
	2410		1.953	51.435	1.90	52.8	2.79	-2.59	
	2445		1.994	51.302	1.94	52.7	2.78	-2.65	
	2475		2.028	51.216	1.98	52.7	2.42	-2.82	

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

9.2. Test System Verification

Prior to SAR assessment, the system is verified to ±10% of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix E.

Table 10-2 System Verification Results – 1 g

SAR System #	Amb. Temp (℃)	Liquid Temp. (℃)	Test Date	Tissue Type	Frequency (MHz)	Input Power (mW)	1W Target SAR-1 g (W/kg)	Measured SAR-1 g (W/kg)	Normalized to 1W SAR-1 g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N
4	22.1	21.9	2019.04.05	Body	2450	100	50.90	5.22	52.20	2.55	716	3832
4	22.3	21.6	2019.04.08	Body	2450	100	50.90	5.23	52.30	2.75	716	3832

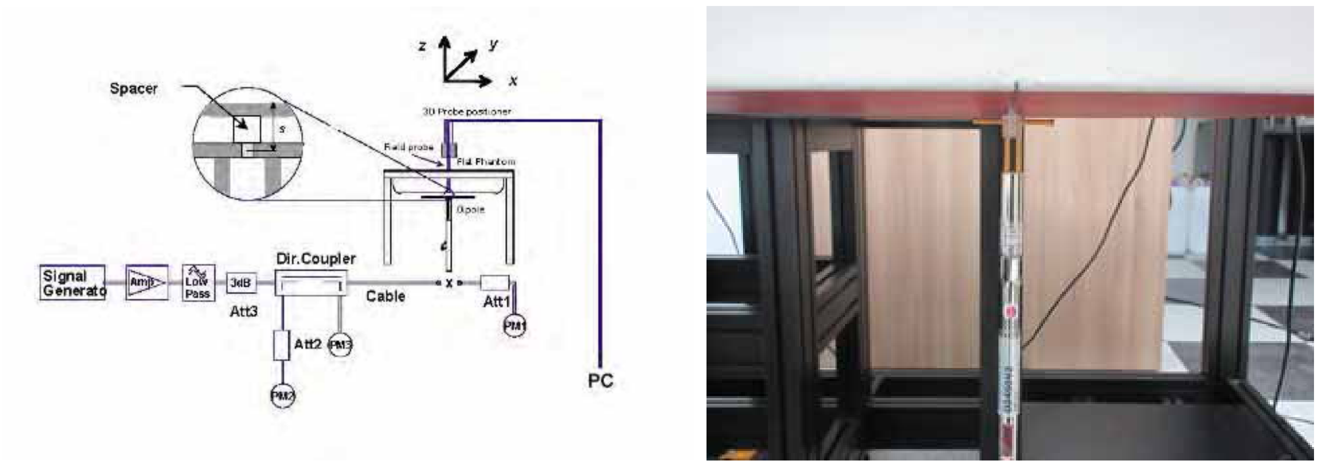


Figure 11-1 System Verification Setup Diagram and Photo

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10. SAR TEST DATA SUMMARY

10.1. Standalone Body SAR Data

Table 10-1 Zigbee Body SAR

Plot No.	Device Serial Number	Frequency		Band	Mode	Test Position	Separation Distance (cm)	Antenna Status	Maximum Allowed Power (dBm)	Measured Conducted Power (dBm)	Duty Cycle	Scaling Factor (Duty Cycle)	Scaling Factor (Power)	Power Drift (dB)	Measured SAR 1 g (W/kg)	Reported SAR 1 g (W/kg)
		MHz	Ch.													
	SAR#1	2445	19	2.4 GHz	Zigbee	Top	0	Folded	10.5	10.03	100%	1.000	1.114	0.050	0.00769	0.00857
	SAR#1	2445	19	2.4 GHz	Zigbee	Bottom	0	Folded	10.5	10.03	100%	1.000	1.114	0.090	0.00908	0.01012
	SAR#1	2445	19	2.4 GHz	Zigbee	Front	0	Folded	10.5	10.03	100%	1.000	1.114	0.030	0.042	0.047
	SAR#1	2445	19	2.4 GHz	Zigbee	Rear	0	Folded	10.5	10.03	100%	1.000	1.114	-0.130	0.141	0.157
5	**SAR#1**	**2445**	**19**	**2.4 GHz**	**Zigbee**	**Left**	**0**	**Folded**	**10.5**	**10.03**	**100%**	**1.000**	**1.114**	**-0.010**	**0.581**	**0.647**
	SAR#1	2445	19	2.4 GHz	Zigbee	Top	0	Unfolded	10.5	10.03	100%	1.000	1.114	-0.110	0.00444	0.00495
9	**SAR#1**	**2445**	**19**	**2.4 GHz**	**Zigbee**	**Front**	**0**	**Unfolded**	**10.5**	**10.03**	**100%**	**1.000**	**1.114**	**-0.070**	**0.184**	**0.205**
	SAR#1	2445	19	2.4 GHz	Zigbee	Rear	0	Unfolded	10.5	10.03	100%	1.000	1.114	-0.020	0.170	0.189
	SAR#1	2445	19	2.4 GHz	Zigbee	Left	0	Unfolded	10.5	10.03	100%	1.000	1.114	0.030	0.133	0.148
	SAR#1	2445	19	2.4 GHz	Zigbee	Front	0	Unfolded (90 degrees)	10.5	10.03	100%	1.000	1.114	-0.140	0.148	0.165
ANSI / IEEE C95.1 1992 – SAFETY LIMIT Spatial Peak Uncontrolled Exposure / General Population									**Body 1.6 W/kg (mW/g) Averaged over 1 gram**							

Note: Yellow entry was tested by 90 degree folded antenna status on the worst case.

10.2. SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body testing. A separation distance of 0 mm was considered because the manufacturer has determined that there will be body available in the marketplace for users to support this separation distance.
7. Per FCC KDB 865664 D01v01r04, variability SAR tests may be performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Since Measured SAR results of this device ≤ 0.8 W/kg, repeated SAR was not required.
8. The SAR test was performed under different conditions (Folded/Unfolded) of antenna. The testing condition under which the antenna was extended 90° was the worst case among the result of preconditions.

Zigbee Notes:

1. This device does support Zigbee for 2.4 GHz Band.
2. Duty cycle of this device is 100 %. So, It was tested by 100 % duty cycle. See Section 8.1.1 for the time domain plot and calculation for the duty factor of the device.

11. FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

11.1. Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to devices with builtin unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

11.2. Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

When standalone SAR is not required to be measured, per FCC KDB 447498 D0v05 4.3.2.2), the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving the transmitter.

$$\text{Estimated SAR} = \frac{\sqrt{f(GHz)}}{7.5} * \frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

Table 11-1 Estimated SAR Values

Mode	Frequency	Maximum Allowed Power	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[dBm]	[mm]	[W/kg]
Bluetooth Ant. Master	2441	9.0	5	0.333
Bluetooth Ant. Slave	2441	7.5	5	0.250
Bluetooth LE Ant. Master	2440	5.0	5	0.125
Bluetooth LE Ant. Slave	2440	4.0	5	0.125

Per FCC KDB Publication 447498 D01v05, the maximum power of the channel was rounded to the nearest mw before calculation. Per FCC KDB Publication 447498, when the test separation distance is < 5 mm, a distance of 5 mm is applied to determine estimated SAR.

When the test separation distance was > 50 mm, an estimated SAR of 0.4 W/kg was used to determine simultaneous transmission SAR exclusion, for configurations excluded per FCC KDB Publication 447498 D01v05.

Per FCC KDB Publication 941225 D07 and TCBC Workshop Note, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR (“-“).

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11.3. Body SAR Simultaneous Transmission Analysis

Table 11-1 Simultaneous Transmission Scenario with Bluetooth (Body at 0 cm)

Exposure Condition	Mode	Zigbee SAR (W/kg)	Bluetooth Ant. Master SAR (W/kg)	Bluetooth Ant. Slave SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body SAR	Zigbee	0.647	0.333	0.250	0.980	0.897	1.230

Table 11-1 Simultaneous Transmission Scenario with Bluetooth LE (Body at 0 cm)

Exposure Condition	Mode	Zigbee SAR (W/kg)	Bluetooth Ant. Master SAR (W/kg)	Bluetooth Ant. Slave SAR (W/kg)	Σ SAR (W/kg)		
		1	2	3	1+2	1+3	1+2+3
Body SAR	Zigbee	0.647	0.125	0.125	0.772	0.772	0.897

11.4. Simultaneous Transmission Conclusion

The above analysis for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit per FCC KDB Publication 447498 D01v06 and IEEE 1528-2013 Section 6.3.4.1.2.

12. EQUIPMENT LIST

Manufacturer	Model	Description	Cal. Date	Cal. Interval	CaL.Due	Serial No.
SY Corp.	SAR ROOM #4	SAR Shield Room	N/A	N/A	N/A	N/A
STAUBLI	TX90XL	DASY6 Robot	N/A	N/A	N/A	F17/59RBA1/A/01
STAUBLI	CS8C Speag TX90	DASY6 Controller	N/A	N/A	N/A	F17/59RBA1/C/01
Speag	SE UMS 028 BB	DASY6 Measurement Server	N/A	N/A	N/A	1544
STAUBLI	SP1	Robot Remote Control	N/A	N/A	N/A	D 211 426 06B
Speag	SE UKS 030 AA	LightBeam SAR #4	N/A	N/A	N/A	1040
Speag	QD OVA 004 AA	ELI4 Phantom V8.0	N/A	N/A	N/A	TP-2056
Speag	MD4HHTV5	Mounting Device	N/A	N/A	N/A	N/A
Speag	EX3DV4	SAR Probe	2019-02-27	Annual	2020-02-27	3832
Speag	DAE4	Data Acquisition Electronics	2019-02-28	Annual	2020-02-28	557
Speag	D2450V2	Dipole Antenna	2018-06-25	Biennial	2020-06-25	716
HP	8665B	RF Signal Generator	2018-08-28	Annual	2019-08-28	3744A01349
EMPOWER	BBS3Q7ECK-2001	RF Power Amplifier	2018-08-28	Annual	2019-08-28	1045D/C0536
Agilent	E4419B	Power Meter	2018-08-27	Annual	2019-08-27	MY45100284
Agilent	E4419B	Power Meter	2018-08-27	Annual	2019-08-27	MY45100286
HP	8481H	Power Sensor	2018-08-27	Annual	2019-08-27	3318A17600
HP	8481A	Power Sensor	2018-08-27	Annual	2019-08-27	US37290447
HP	8481A	Power Sensor	2018-08-27	Annual	2019-08-27	3318A89373
HP	11692D	Dual Directional Coupler	2018-08-27	Annual	2019-08-27	1212A05057
Bird	50-6A-MFN-30	Attenuator	2018-08-27	Annual	2019-08-27	N/A
HP	8491A	Attenuator	2018-08-28	Annual	2019-08-28	63272
WAINWRIGHT	WLJS3000-6EF	Low Pass Filter	2018-08-28	Annual	2019-08-28	1
Speag	DAK-3.5	Dielectric Assessment Kit	2018-11-20	Annual	2019-11-20	1140
Agilent	E8357A	Network Analyzer	2018-08-27	Annual	2019-08-27	US41070399
ROHDE & SCHWARZ	FSP	Spectrum Analyzer	2018-08-23	Annual	2019-08-23	100017
ROHDE & SCHWARZ	FSV30	SIGNAL ANALYZER	2018-08-23	Annual	2019-08-23	101372
LKM Electronic GmbH	DTM3000-Spezial	Hand-Held Thermometers	2018-08-28	Annual	2019-08-28	3247
CAS	TE-201	Temperature hygrometer	2018-08-28	Annual	2019-08-28	14011777-1
KIKUSHI	PAS40-9	DC POWER SUPPLY	2019-04-06	Annual	2020-04-06	QK000851

Notes:

1. CBT (Calibration Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.
2. All equipment was used solely within its calibration period.

13. MEASUREMENT UNCERTAINTIES

Table 15-1 Uncertainty of SAR equipment for measurement Body 0.3 GHz to 3 GHz

No.		Error Description	Uncertainty Value (1 g) (%)	Uncertainty Value (10 g) (%)	Probe Dist.	Div.	C_i (1 g)	C_i (10 g)	$U_i(y)$ (1 g)	$U_i(y)$ (10 g)	V_i or V_{eff}
1	$U(PR_C)$	Probe Calibration	6.30	6.30	N	1.00	1.00	1.00	6.30	6.30	∞
2	$U(PR_I)$	Isotropy	1.87	1.87	R	$\sqrt{3}$	1.00	1.00	1.08	1.08	∞
3	$U(L)$	Linearity	0.60	0.60	R	$\sqrt{3}$	1.00	1.00	0.35	0.35	∞
4	$U(PR_{MR})$	Probe modulation response	2.40	2.40	R	$\sqrt{3}$	1.00	1.00	1.39	1.39	∞
6	$U(DL)$	Detection Limits	1.00	1.00	R	$\sqrt{3}$	1.00	1.00	0.58	0.58	∞
5	$U(BE)$	Boundary effect	1.00	1.00	R	$\sqrt{3}$	1.00	1.00	0.58	0.58	∞
7	$U(RE)$	Readout Electronics	0.30	0.30	N	1.00	1.00	1.00	0.30	0.30	∞
8	$U(T_{RT})$	Response Time	0.80	0.80	R	$\sqrt{3}$	1.00	1.00	0.46	0.46	∞
9	$U(T_{IT})$	Integration Time	2.60	2.60	R	$\sqrt{3}$	1.00	1.00	1.50	1.50	∞
10	$U(A_{NO})$	RF ambient conditions–noise	3.00	3.00	R	$\sqrt{3}$	1.00	1.00	1.73	1.73	∞
11	$U(A_{RF})$	RF ambient conditions–reflections	3.00	3.00	R	$\sqrt{3}$	1.00	1.00	1.73	1.73	∞
12	$U(PR_{PT})$	Probe positioner mech. Restrictions	0.40	0.40	R	$\sqrt{3}$	1.00	1.00	0.23	0.23	∞
13	$U(PR_{PP})$	Probe positioning with respect to phantom shell	2.90	2.90	R	$\sqrt{3}$	1.00	1.00	1.67	1.67	∞
14	$U(PP_{MSE})$	Post-processing(for max. SAR evaluation)	2.00	2.00	R	$\sqrt{3}$	1.00	1.00	1.15	1.15	∞
15	$U(DU)$	Device Holder Uncertainty	3.60	3.60	N	1.00	1.00	1.00	3.60	3.60	5.00
16	$U(PO_{EUT})$	Test sample positioning	0.92	0.94	N	1.00	1.00	1.00	0.92	0.94	9.00
17	$U(PS)$	Power scaling	0.00	0.00	R	$\sqrt{3}$	1.00	1.00	0.00	0.00	∞
18	$U(PD)$	Drift of output power(measured SAR drift)	5.00	5.00	R	$\sqrt{3}$	1.00	1.00	2.89	2.89	∞
19	$U(PU)$	Phantom Uncertainty	6.10	6.10	R	$\sqrt{3}$	1.00	1.00	3.52	3.52	∞
20	$U(CS_{DPC})$	Algorithm for correcting SAR for deviations in permittivity and conductivity	1.90	1.90	N	1.00	1.00	0.84	1.90	1.60	∞
21	$U(LC_M)$	Liquid Conductivity (meas.)	1.39	1.26	N	1.00	0.78	0.71	1.08	0.89	5.00
22	$U(LP_M)$	Liquid Permittivity (meas.)	0.34	0.38	N	1.00	0.23	0.26	0.08	0.10	5.00
23	$U(LC_{TU})$	Liquid conductivity(temperature uncertainty)	1.87	1.71	R	$\sqrt{3}$	0.78	0.71	0.84	0.70	∞
24	$U(LP_{TU})$	Liquid permittivity(temperature uncertainty)	0.11	0.13	R	$\sqrt{3}$	0.23	0.26	0.01	0.02	∞
		Uc(sar) **Combined standard uncertainty (%)**							9.82	9.73	275
		Extended uncertainty *U*(%)							19.63	19.47	

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14. CONCLUSION

14.1. Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test.
These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

14.2. Information on the Testing Laboratories

We, Onetech Corp. Laboratory were founded in 1989 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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APPENDIX A: SYSTEM VERIFICATION

System Verification for 2450 MHz

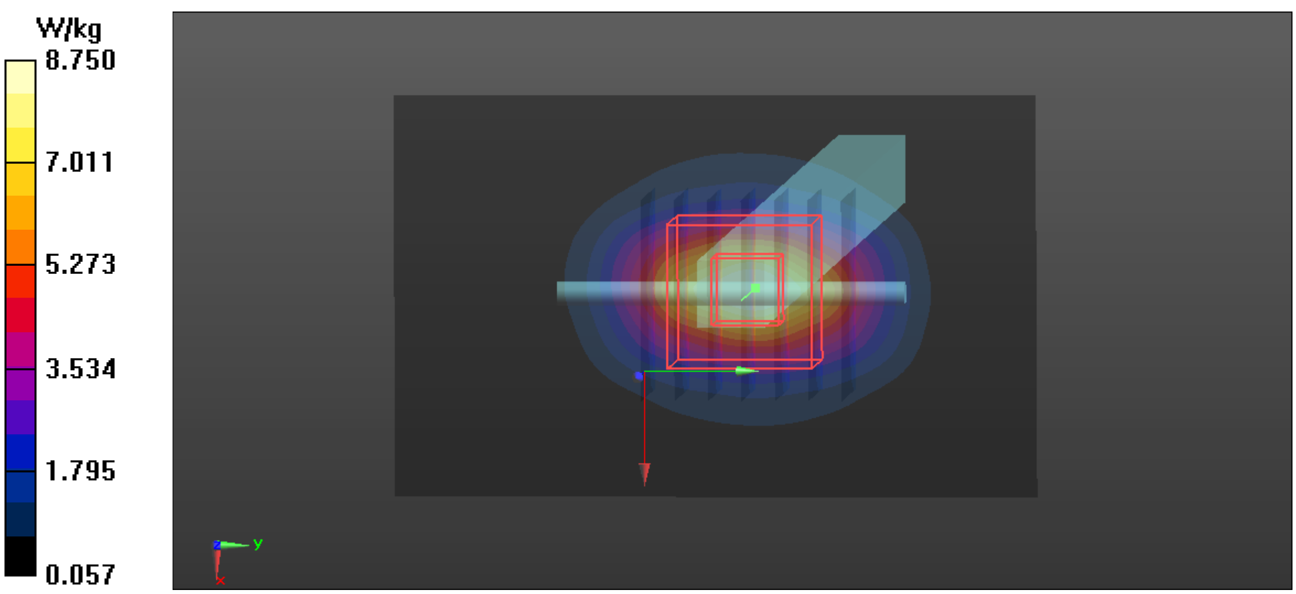
DUT: D2450V2 - SN:716

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL2450 Medium parameters used: f = 2450 MHz; σ = 2 S/m; ε_r = 51.243; ρ = 1000 kg/m^3
Ambient Temperature : 22.1 °C; Liquid Temperature : 21.9 °C

DASY5 Configuration:
- Probe: EX3DV4 - SN3832; ConvF(7.19, 7.19, 7.19); Calibrated: 2/27/2019;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn557; Calibrated: 2/28/2019
- Phantom: ELI V8.0_20170913; Type: QD OVA 004 AA; Serial: 2056
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Pin=100mW/Area Scan (51x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 9.15 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 68.10 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 10.8 W/kg
SAR(1 g) = 5.22 W/kg; SAR(10 g) = 2.43 W/kg
Maximum value of SAR (measured) = 8.75 W/kg



Test Laboratory: ONETECH CO., LTD. Lab Date: 4/8/2019

System Verification for 2450 MHz

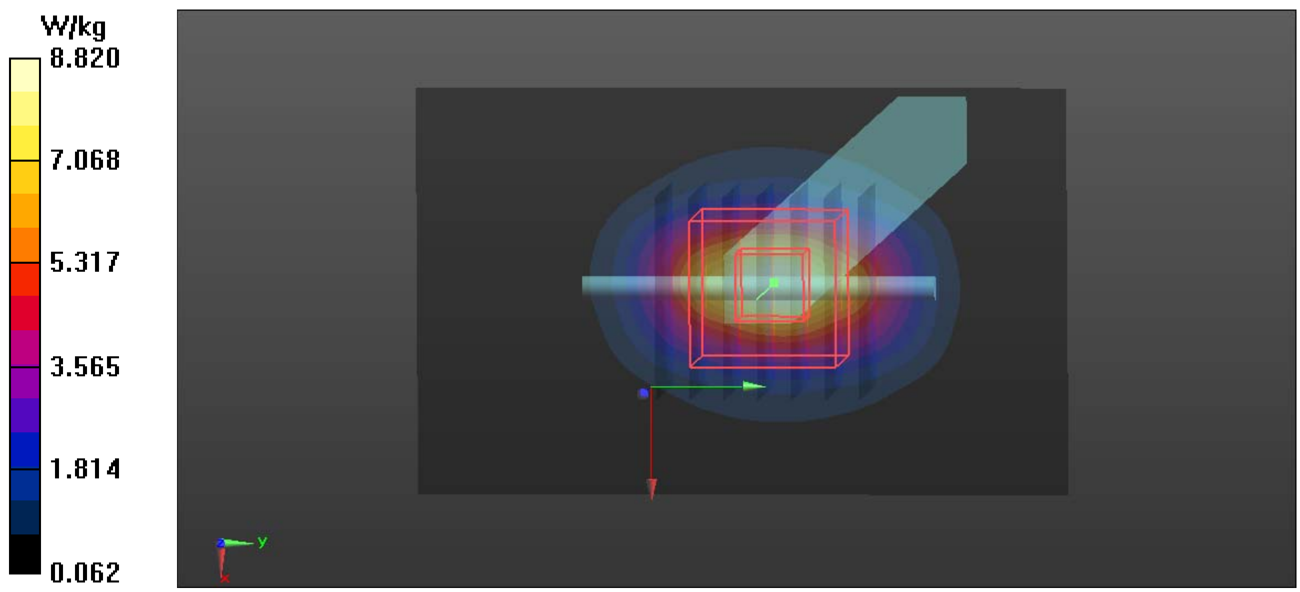
DUT: D2450V2 - SN:716

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL2450 Medium parameters used: f = 2450 MHz; σ = 1.999 S/m; ε_r = 51.282; ρ = 1000 kg/m^3
Ambient Temperature : 22.3 °C; Liquid Temperature : 21.6 °C

DASY5 Configuration:
- Probe: EX3DV4 - SN3832; ConvF(7.19, 7.19, 7.19); Calibrated: 2/27/2019;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn557; Calibrated: 2/28/2019
- Phantom: ELI V8.0_20170913; Type: QD OVA 004 AA; Serial: 2056
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Pin=100mW/Area Scan (51x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 9.10 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 68.62 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 10.9 W/kg
SAR(1 g) = 5.23 W/kg; SAR(10 g) = 2.43 W/kg
Maximum value of SAR (measured) = 8.82 W/kg



APPENDIX B: SAR TEST DATA

P05_2.4 GHz Band_Zigbee_Left_0 cm_Ch.19_Ant. Folded

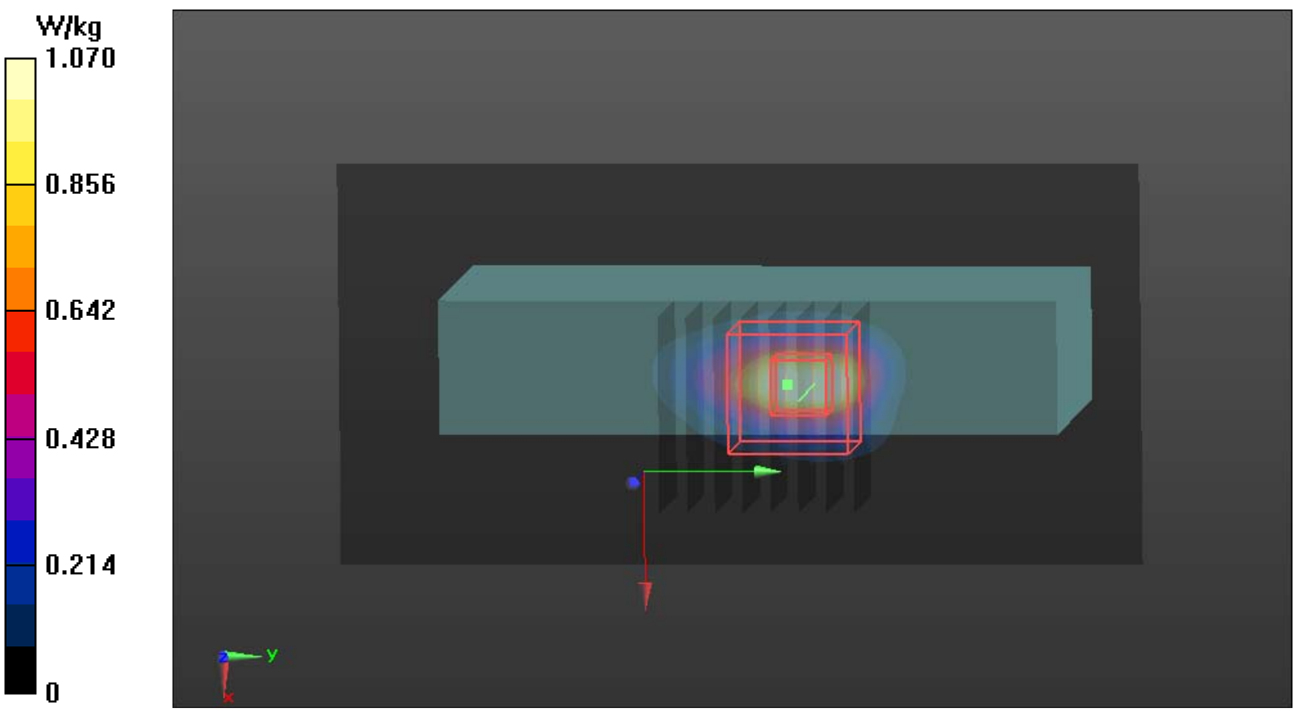
DUT: SP68

Communication System: Zigbee; Frequency: 2445 MHz;Duty Cycle: 1:1
Medium: MSL2450 Medium parameters used: f = 2445 MHz; σ = 1.994 S/m; ε_r = 51.261; ρ = 1000 kg/m^3
Ambient Temperature : 22.1 °C; Liquid Temperature : 21.9 °C

DASY5 Configuration:
- Probe: EX3DV4 - SN3832; ConvF(7.19, 7.19, 7.19); Calibrated: 2/27/2019;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn557; Calibrated: 2/28/2019
- Phantom: ELI V8.0_20170913; Type: QD OVA 004 AA; Serial: 2056
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

- Area Scan (61x121x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.19 W/kg

- Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.65 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.581 W/kg; SAR(10 g) = 0.229 W/kg
Maximum value of SAR (measured) = 1.07 W/kg



Test Laboratory: ONETECH CO., LTD. Lab   Date: 4/8/2019

P09_2.4 GHz Band_Zigbee_Front_0 cm_Ch.19_Ant. Unfolded

DUT: SP68

Communication System: Zigbee; Frequency: 2445 MHz;Duty Cycle: 1:1
Medium: MSL2450 Medium parameters used: f = 2445 MHz; σ = 1.994 S/m; ε_r = 51.302; ρ = 1000 kg/m^3
Ambient Temperature : 22.3 °C; Liquid Temperature : 21.6 °C

DASY5 Configuration:
- Probe: EX3DV4 - SN3832; ConvF(7.19, 7.19, 7.19); Calibrated: 2/27/2019;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn557; Calibrated: 2/28/2019
- Phantom: ELI V8.0_20170913; Type: QD OVA 004 AA; Serial: 2056
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

- Area Scan (81x181x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.310 W/kg

- Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.666 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.382 W/kg
SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.088 W/kg
Maximum value of SAR (measured) = 0.306 W/kg