

Prüfbericht-Nr.: <i>Test report no.:</i>	CN21MM6F 001	Auftrags-Nr.: <i>Order no.:</i>	168315612	Seite 1 von 51 Page 1 of 51	
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2021-05-06		
Auftraggeber: <i>Client:</i>	Jiangsu Konsung Bio-Medical Science And Technology Co.,Ltd. NO.8, Shengchang West Road, Danyang Development Zone, Jiangsu Province, 212300 P.R.China.				
Prüfgegenstand: <i>Test item:</i>	Fingertip Pulse Oximeter				
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	SONOSAT-K01LP, SONOSAT-K02LP, SONOSAT-K01LT, SONOSAT-K02LT (Trademark: konsung)				
Auftrags-Inhalt: <i>Order content:</i>	Test Report				
Prüfgrundlage: <i>Test specification:</i>	FCC CFR Title 47, Part 15, Subpart C, Section 15.247				
Wareneingangsdatum: <i>Date of sample receipt:</i>	2021-05-06	Please refer to Photo Document			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003040772-002~003				
Prüfzeitraum: <i>Testing period:</i>	2021-05-06 – 2021-06-02				
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von: <i>tested by:</i>	 <i>Chris Chen</i> Signed by: chenchriss@asia.tuv.com	genehmigt von: <i>authorized by:</i>	<i>Winnie Hou</i> Signed by: Winnie Hou		
Datum: <i>Date:</i>	2021-06-08	Ausstellungsdatum: <i>Issue date:</i>	2021-06-08		
Stellung / Position:	Senior Project Manager	Stellung / Position:	Technical Certifier		
Sonstiges / Other:	FCC ID: 2AZ8H-6120-K01LX				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>				
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet	5 = mangelhaft
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested	5 = poor
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

Test Summary

5.1.1 ANTENNA REQUIREMENT*RESULT: Pass***5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER***RESULT: Pass***5.1.3 CONDUCTED POWER SPECTRAL DENSITY***RESULT: Pass***5.1.4 6dB BANDWIDTH***RESULT: Pass***5.1.5 99% BANDWIDTH***RESULT: Pass***5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH***RESULT: Pass***5.1.7 RADIATED SPURIOUS EMISSION***RESULT: Pass*

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China

FCC Registration No.: 694916

ISED wireless device testing laboratory: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing (TS8997)				
Equipment	Manufacturer	Model	Serial No.	Cal. until
Signal Analyzer	R&S	FSV 40	101441	2021-08-10
OSP	R&S	OSP 150	101017	2021-12-10
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A
Power Meter	R&S	NRP2	107105	2021-12-10
Wideband Power Sensor	R&S	NRP-Z81	105677	2021-09-10
Shielding Room 8#	Albatross	SR8	APC17151-SR8	2021-07-23
Unwanted Emission Testing (TS9975)				
Equipment	Manufacturer	Model	Serial No.	Cal. until
EMI Test Receiver	R&S	ESR 7	102021	2021-08-11
Signal Analyzer	R&S	FSV 40	101439	2021-08-10
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2021-08-10
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2021-08-10
Amplifier	R&S	SCU-18F	180070	2021-08-10
Amplifier	R&S	SCU40A	100475	2021-09-10
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2022-08-08
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2022-08-08
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2022-08-08
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2022-09-13

Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18313	2021-09-02
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2021-07-06

Conducted Emission				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102428	2021-08-16
Artificial Mains Network	R&S	ENV216	102333	2021-08-16
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
RF Power (conducted)	± 2.5 dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	± 6 dB
Radiated Emission of Receiver, valid up to 26.5 GHz	± 6 dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	± 3.70 dB / ± 3.30 dB
Radiated Emission (3m SAC), 30MHz to 1000MHz	± 4.52 dB
Radiated Emission (3m SAC), above 1000MHz	± 4.37 dB
Temperature	± 1 °C
Humidity	± 5 %
Voltage (DC)	± 1 %
Voltage (AC, <10kHz)	± 2 %

2.6 Location of Original Data

The original copies of all test data taken during actual testing were showed in this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a Fingertip Pulse Oximeter, which supports Bluetooth low energy(version 4.2).
 The EUT have four model numbers as SONOSAT-K01LP, SONOSAT-K02LP, SONOSAT-K01LT, SONOSAT-K02LT, all of them same circuit diagram, PCB layout except with or without gravity sensor, we choose model SONOSAT-K01LP which has gravity sensor to testing.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment:	Fingertip Pulse Oximeter
Type Designation:	SONOSAT-K01LP, SONOSAT-K02LP, SONOSAT-K01LT, SONOSAT-K02LT
Trademark:	konsung
FCC ID:	2AZ8H-6120-K01LX
Operating Voltage:	DC 3V (2*1.5V AAA Batteries)
Technical Specification of Bluetooth LE	
Frequency Range:	2402 MHz to 2480 MHz
Type of Modulation:	GFSK
Channel Number:	40 channels
Data Rate:	1 Mbps
Channel Separation:	2 MHz
Antenna Type:	PCB Antenna
Antenna Gain:	0 dBi

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth LE transmitting mode
 - 1) Low Channel
 - 2) Middle Channel
 - 3) High Channel

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- ID Label and Location Info
- Instruction Manual
- Schematics
- Block Diagram
- Operation Description

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013.

Table 3: Test environments

Environment Parameter	Values During Tests		
	Temperature	Voltage (Battery operated)	Relative Humidity
NTNV	25°C±2°C	3.0Vdc	Ambient

Table 4: Test channel and frequency

Mode	Test Channels (MHz)	Remark
Transmitting	L/M/H: 2402MHz, 2440MHz, 2480MHz	--

4.3 Special Accessories and Auxiliary Equipment

Table 5: Auxiliary Equipment Used during Test

Description	Manufacturer	Model	S/N
Laptop	Lenovo	T480	PF-16A6N8
Laptop	Lenovo	T480	PF-180KTA 18/07

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

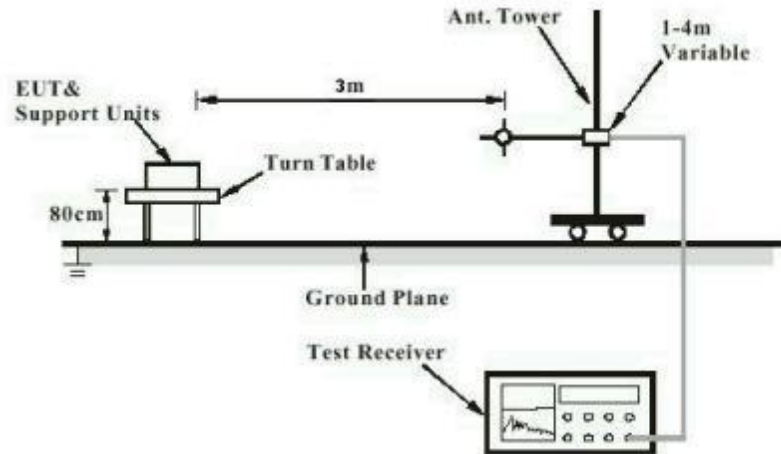


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

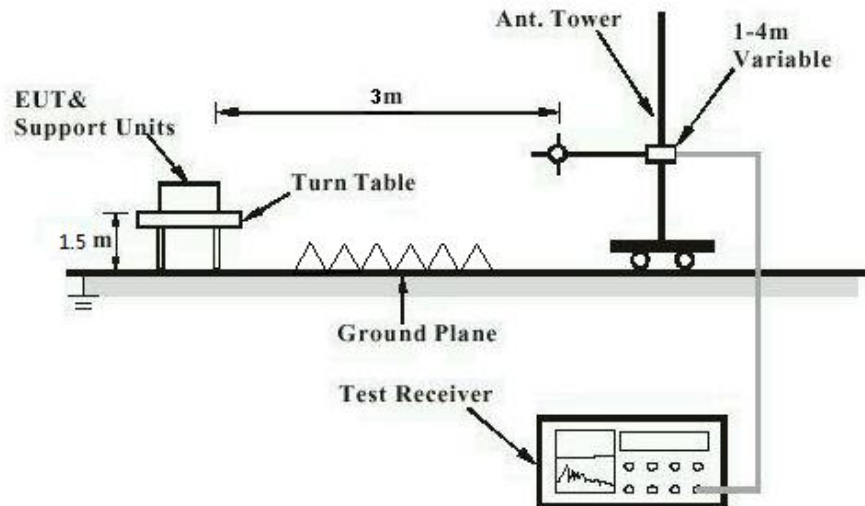
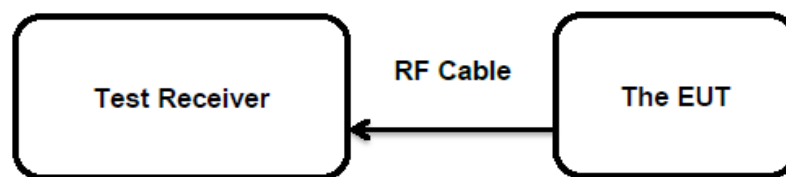


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203

According to the manufacturer declared, the EUT has a PCB antenna, the gain of antenna is 0 dBi, which that permanent attachment and no consideration of replacement.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

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5.1.2 Maximum Peak Conducted Output Power

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(b)(3)
 Basic standard : ANSI C63.10: 2013
 Limits : 1.0 Watts
 Kind of test site : Shielded Room

Test Setup

Date of testing : 2021-05-26
 Input voltage : DC 3V (2*1.5V AAA Batteries)
 Operation mode : A
 Test channel : Low / Middle / High
 Ambient temperature : 26.8 °C
 Relative humidity : 53 %
 Atmospheric pressure : 101 kPa

Table 6: Test Result of Maximum Peak Conducted Output Power, BLE

Test Mode	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(W)	
BLE	2402	-1.1	0.000776	< 1.0
	2440	-0.9	0.000813	
	2480	-1.7	0.000676	
Max. Measured Value		-0.9	0.000813	

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G): 0 dBi

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5.1.3 Conducted Power Spectral Density

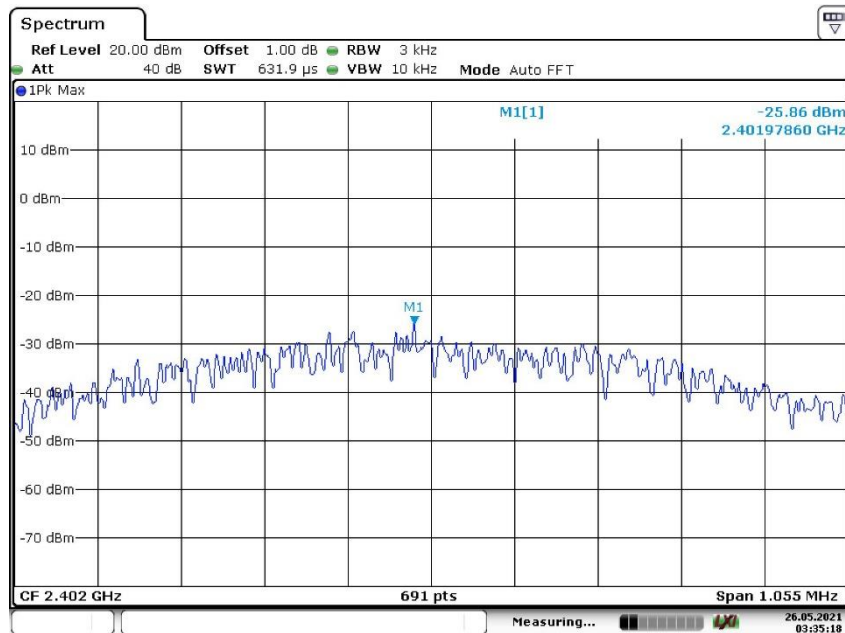
RESULT:

Pass**Test Specification**

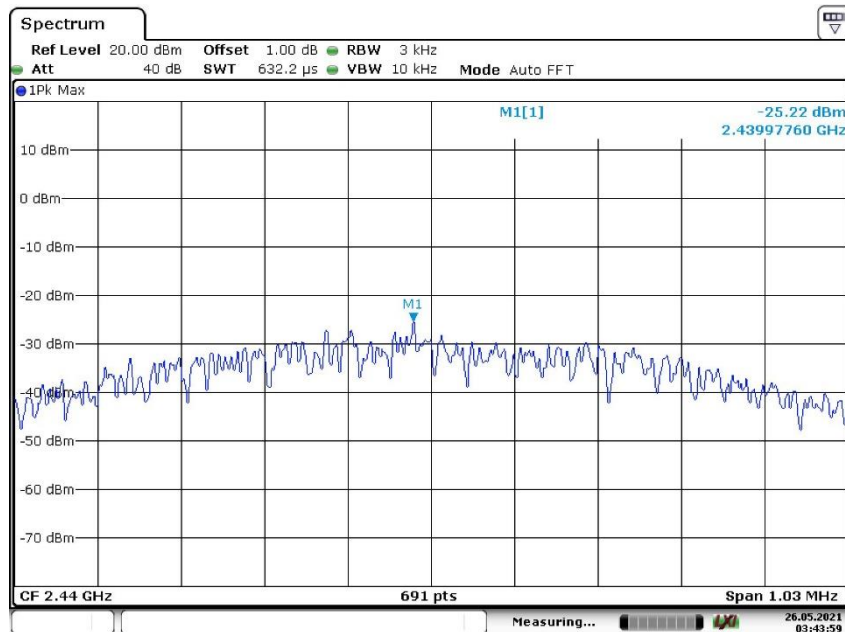
Test standard : FCC Part 15.247(e)
Basic standard : ANSI C63.10: 2013
Limits : < 8 dBm / 3kHz
Kind of test site : Shielded Room

Test Setup

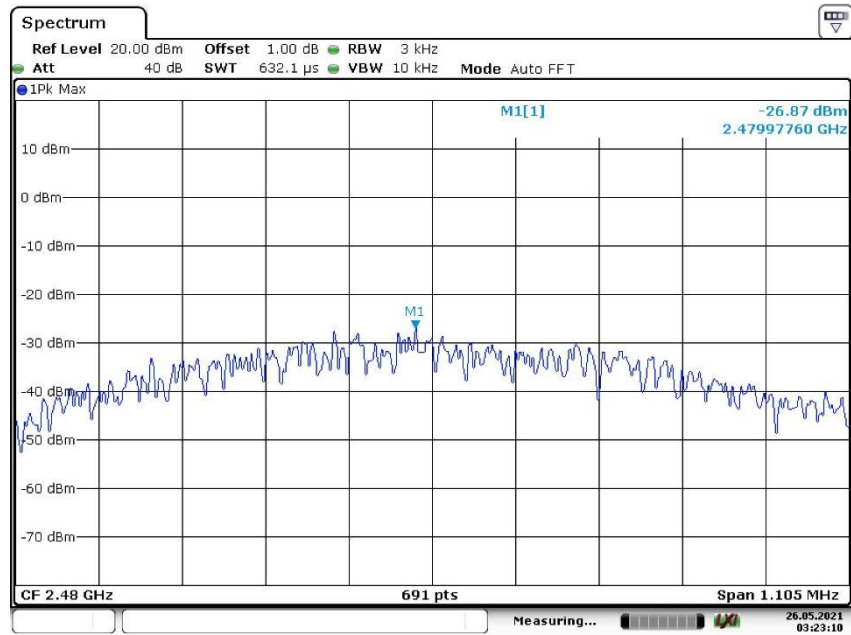
Date of testing : 2021-05-26
Input voltage : DC 3V (2*1.5V AAA Batteries)
Operation mode : A
Test channel : Low / Middle / High
Ambient temperature : 26.8 °C
Relative humidity : 53 %
Atmospheric pressure : 101 kPa

Test Results of Conducted Power Spectral Density


Date: 26.MAY.2021 03:35:18



Date: 26.MAY.2021 03:43:59



Date: 26.MAY.2021 03:23:10

5.1.4 6dB Bandwidth

RESULT:**Pass****Test Specification**

Test standard	:	FCC Part 15.247(a)(2)
Basic standard	:	ANSI C63.10: 2013
Limits	:	> 500 KHz
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-05-26
Input voltage	:	DC 3V (2*1.5V AAA Batteries)
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	26.8 °C
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

Test Results of 6dB Bandwidth
Minimum Emission Bandwidth 6 dB (2402 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

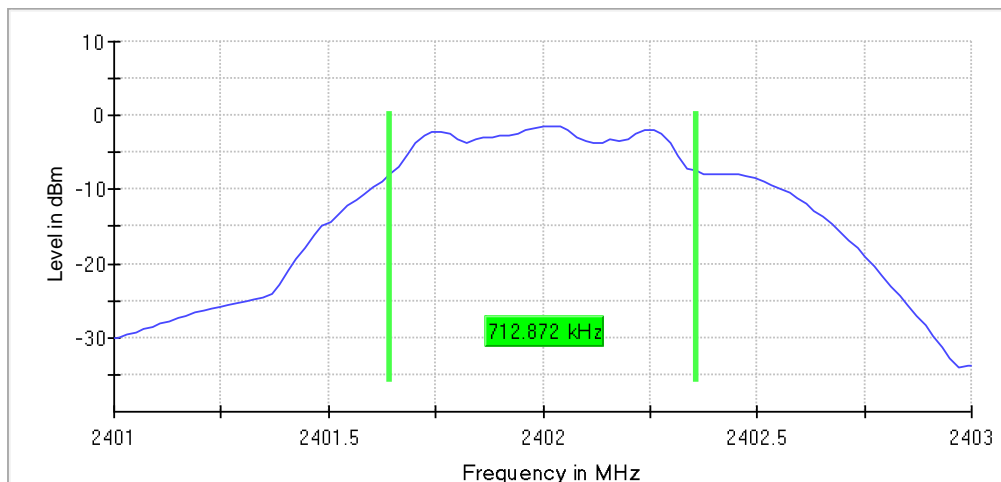
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.712872	0.500000	--	2401.643564	2402.356436

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	-1.4	PASS

6 dB Bandwidth


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
Sweeptime	18.938 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	10 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.28 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2440 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

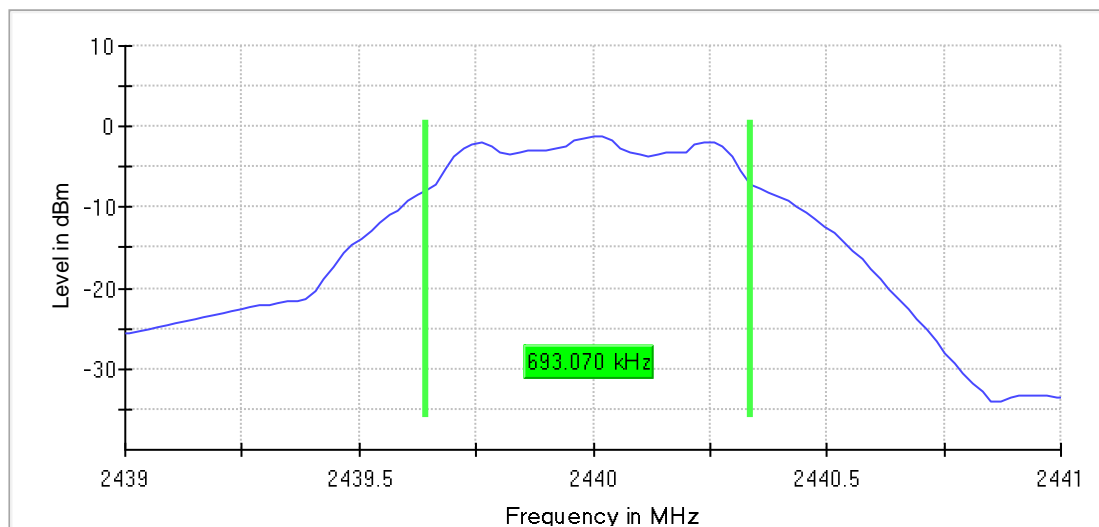
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	0.693070	0.500000	--	2439.643564	2440.336634

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	-1.2	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
SweepTime	18.938 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	10 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.12 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2480 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

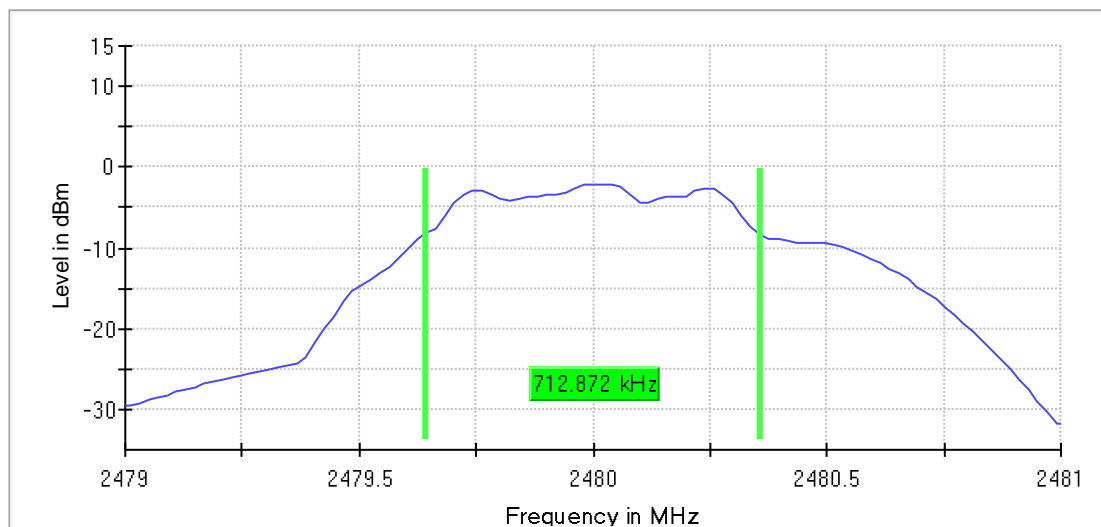
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.712872	0.500000	--	2479.643564	2480.356436

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	-2.1	PASS

6 dB Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
SweepTime	18.938 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	12 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.33 dB	0.50 dB

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5.1.5 99% Bandwidth

RESULT:**Pass****Test Specification**

Test standard : FCC Part 15.247(a)
Basic standard : ANSI C63.10: 2013
Kind of test site : Shielded Room

Test Setup

Date of testing : 2021-05-26
Input voltage : DC 3V (2*1.5V AAA Batteries)
Operation mode : A
Test channel : Low / Middle / High
Ambient temperature : 26.8 °C
Relative humidity : 53 %
Atmospheric pressure : 101 kPa

Test Results of 99% Bandwidth
Occupied Channel Bandwidth 99% (2402 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

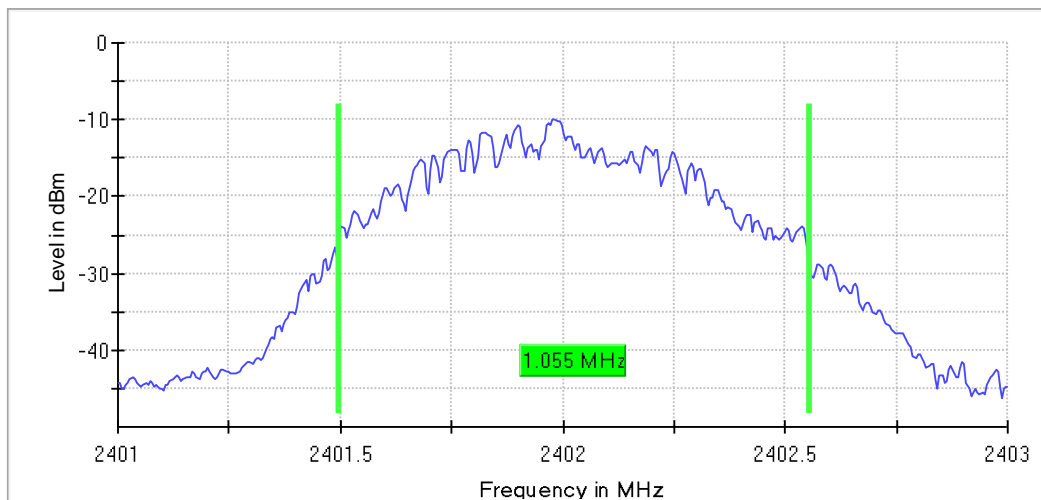
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.055000	--	--	2401.497500	2402.552500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS

99 % Bandwidth


Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	12 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.30 dB

Occupied Channel Bandwidth 99% (2440 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

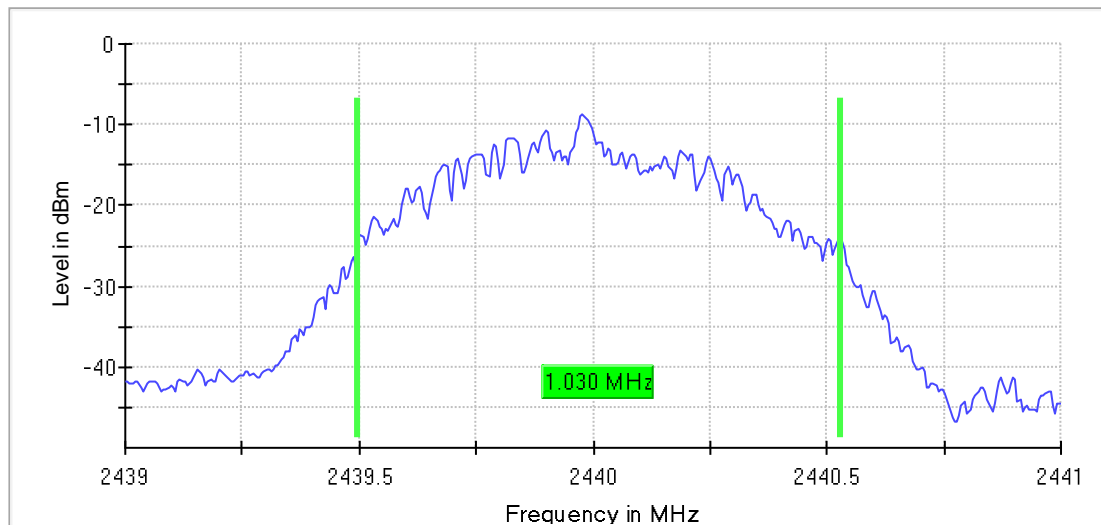
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.030000	--	--	2439.497500	2440.527500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2440.000000	PASS

99 % Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stable value	0.30 dB	0.30 dB
Run	17 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.14 dB	0.30 dB

Occupied Channel Bandwidth 99% (2480 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

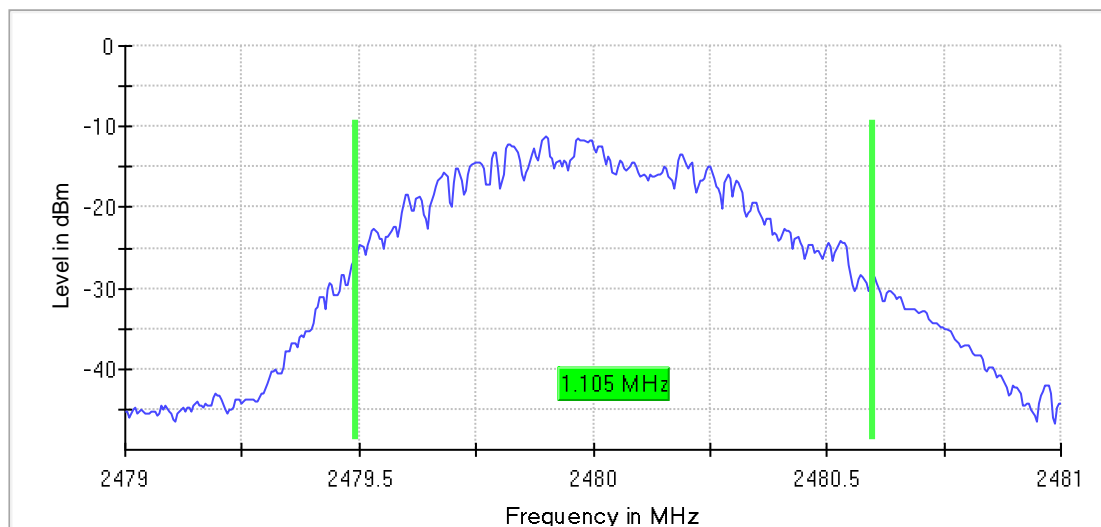
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.105000	--	--	2479.492500	2480.597500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS

99 % Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
Sweeptime	189.648 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	12 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.27 dB	0.30 dB

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5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT:

Pass

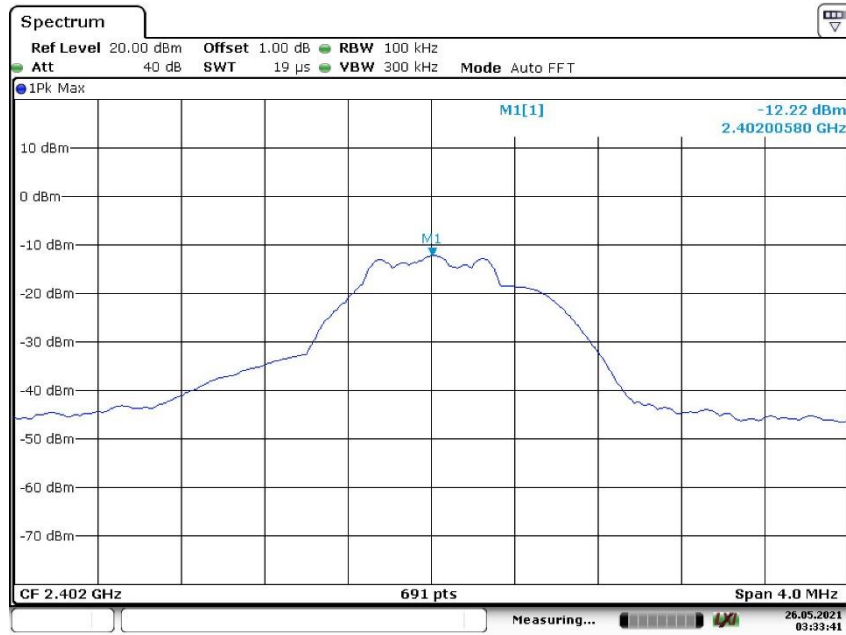
Test Specification

Test standard	: FCC Part 15.247(d)
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

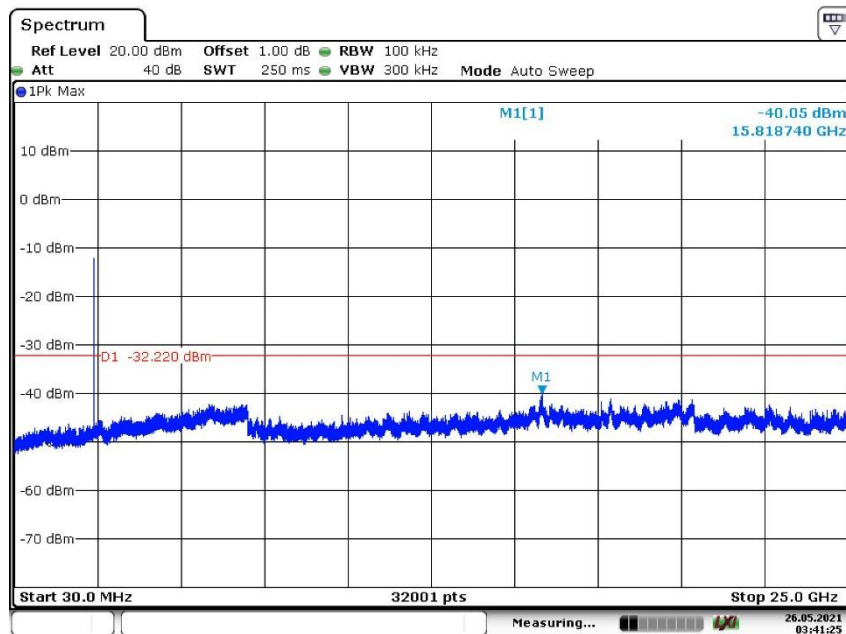
Test Setup

Date of testing	: 2021-05-26
Input voltage	: DC 3V (2*1.5V AAA Batteries)
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 26.8 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101 kPa

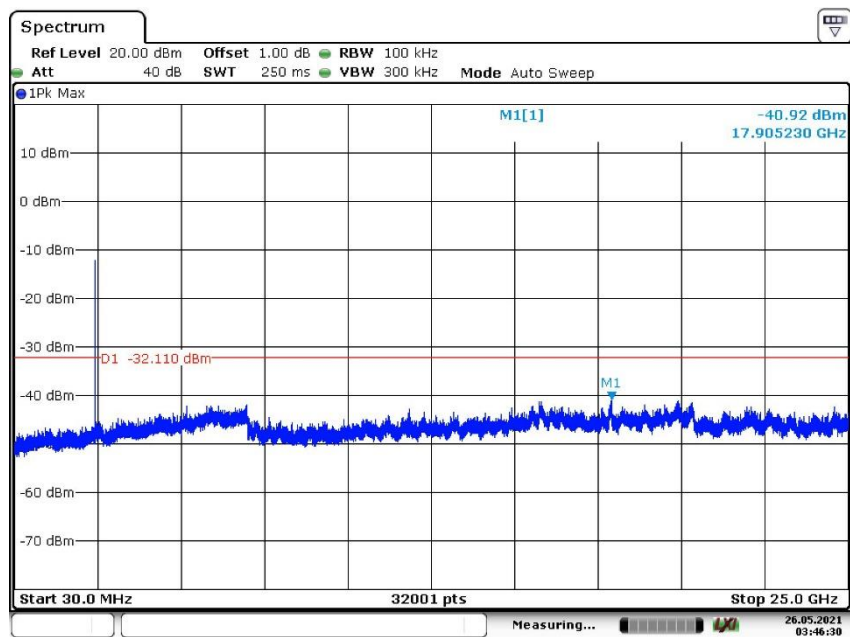
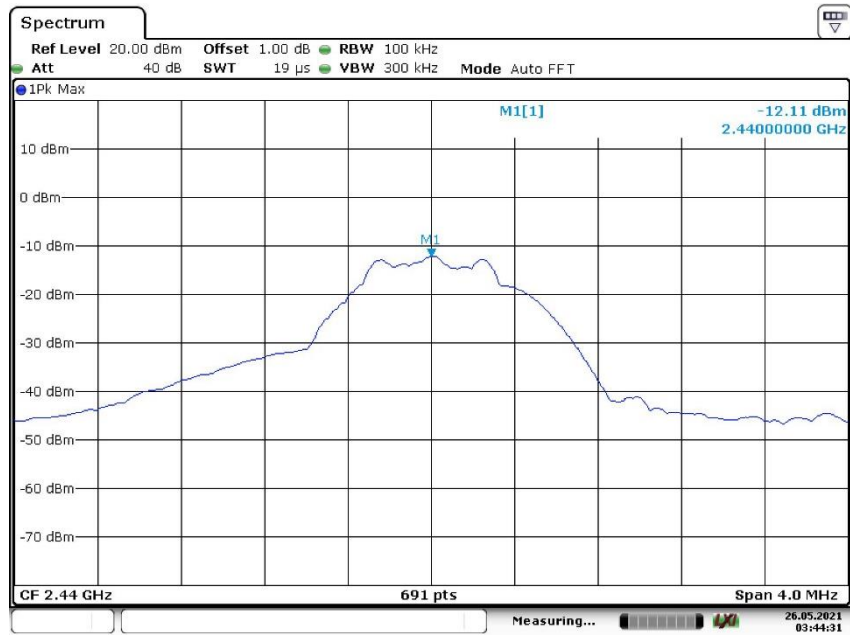
Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

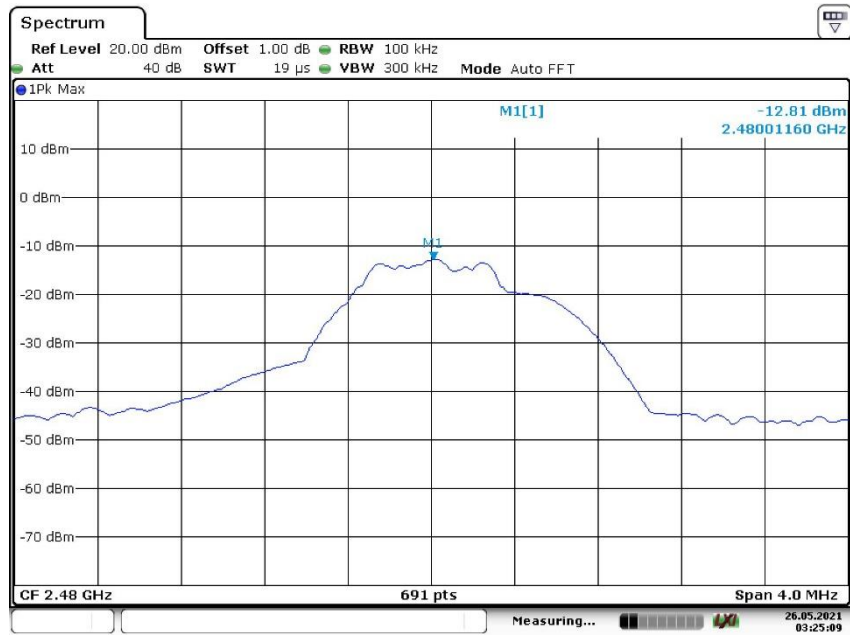
Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth


Date: 26.MAY.2021 03:33:41

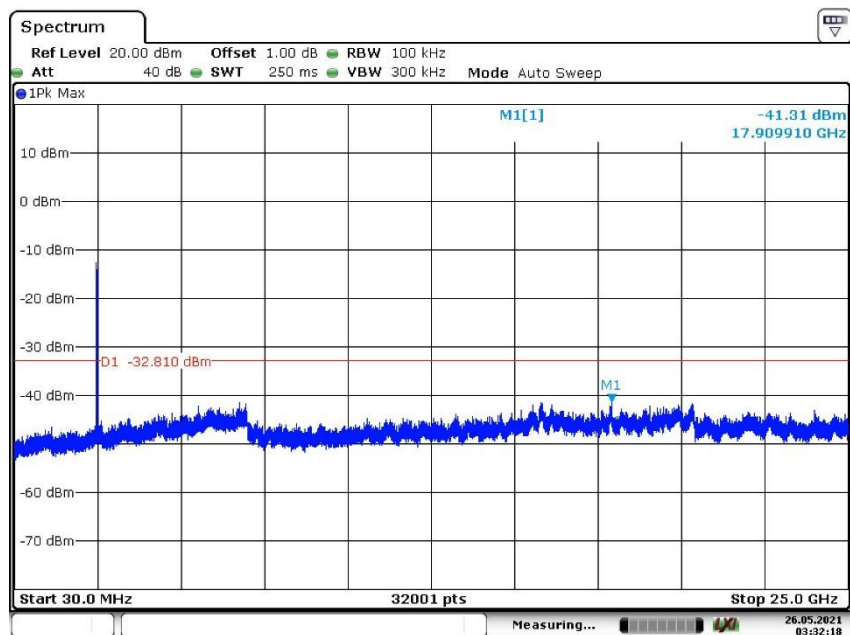


Date: 26.MAY.2021 03:41:25

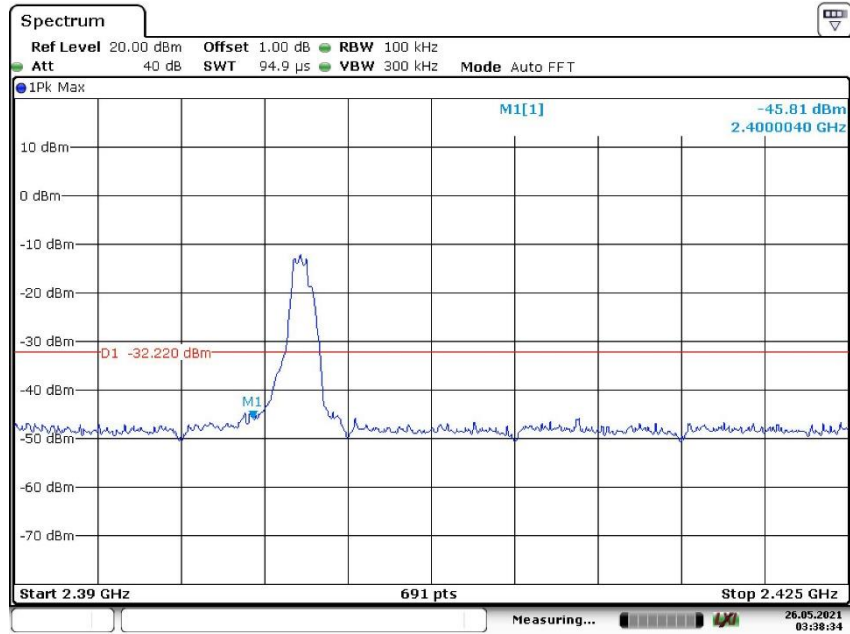




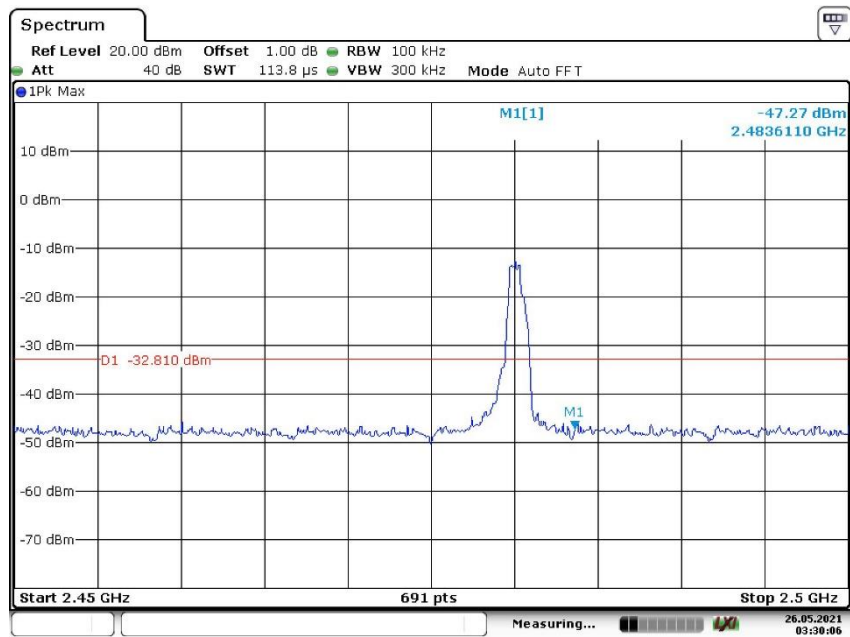
Date: 26.MAY.2021 03:25:09



Date: 26.MAY.2021 03:32:18

Band Edge


Date: 26.MAY.2021 03:38:34



Date: 26.MAY.2021 03:38:06

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5.1.7 Radiated Spurious Emission

RESULT:

Pass

Test Specification

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	2021-05-26~ 2021-06-02
Input voltage	:	DC 3V (2*1.5V AAA Batteries)
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	Refer to test result
Relative humidity	:	Refer to test result
Atmospheric pressure	:	101 kPa

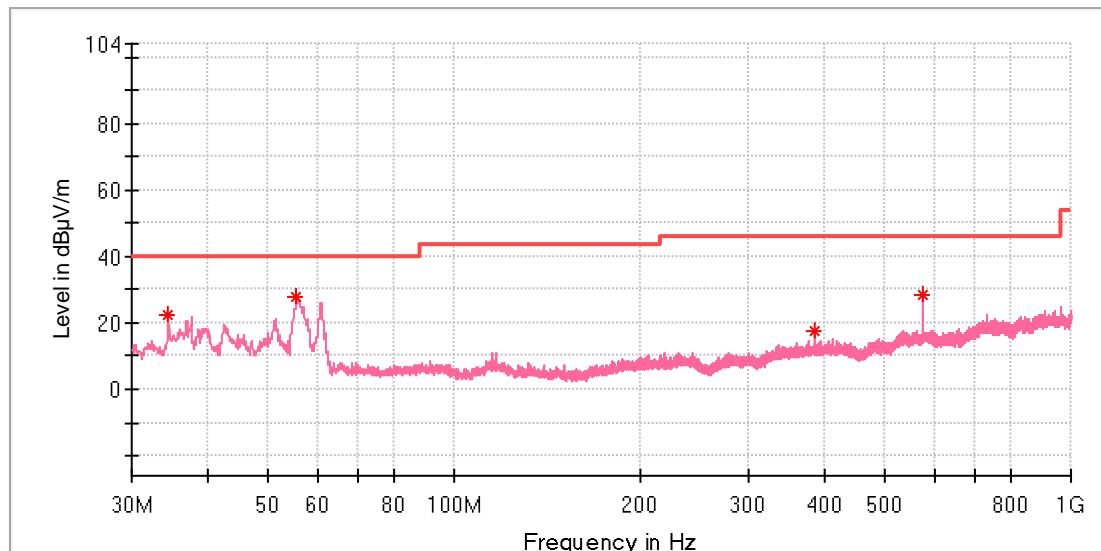
Remark:

- 1) This testing was carried out on different modulations, but only the worst case was presented in this report.
- 2) Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Test Report

EUT Information

EUT Name:	Fingertip Pulse Oximeter
Model:	SONOSAT-K01LP
Test Mode:	BLE_Low channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
34.365000	22.52	40.00	17.48	100.0	V	328.0	-22.5
55.365500	28.11	40.00	11.89	100.0	V	319.0	-18.8
384.001500	17.42	46.00	28.58	100.0	V	39.0	-14.5
575.964500	28.58	46.00	17.42	100.0	V	39.0	-10.7

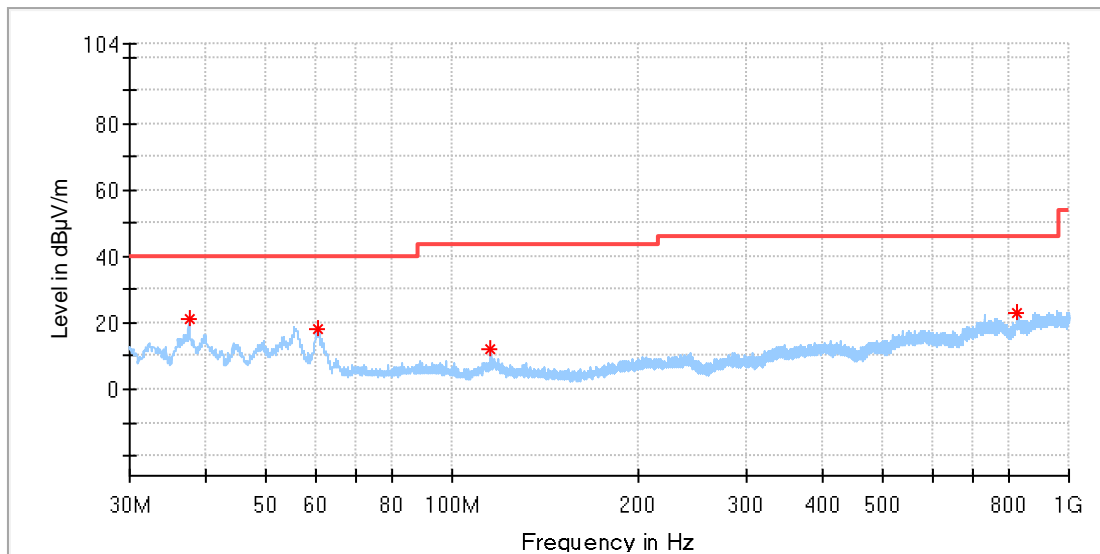
Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
--	--	--	--	--	--		--	--

Test Report

EUT Information

EUT Name:	Fingertip Pulse Oximeter
Model:	SONOSAT-K01LP
Test Mode:	BLE_High channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.469000	21.30	40.00	18.70	100.0	H	203.0	-21.3
60.458000	18.35	40.00	21.65	100.0	H	337.0	-19.4
115.602500	11.99	43.50	31.51	100.0	H	26.0	-20.2
825.739500	23.05	46.00	22.95	100.0	H	222.0	-6.3

Final Result

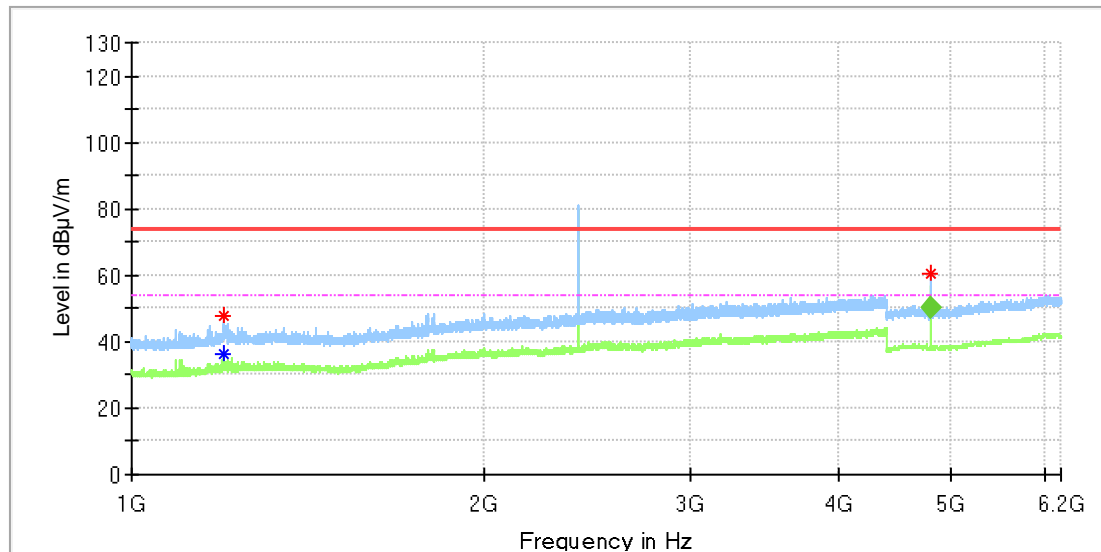
Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
--	--	--	--	--	--		--	--

Above 1GHz

Test Report

EUT Information

EUT Name:	Fingertip Pulse Oximeter
Model:	SONOSAT-K01LP
Test Mode:	BLE_Low channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.350000	---	36.49	54.00	17.51	100.0	H	232.0	1.1
1198.475000	47.91	---	74.00	26.09	100.0	H	180.0	1.1
4803.877778	---	50.16	54.00	3.84	100.0	H	152.0	11.8
4804.572222	60.36	---	74.00	13.64	100.0	H	153.0	11.8

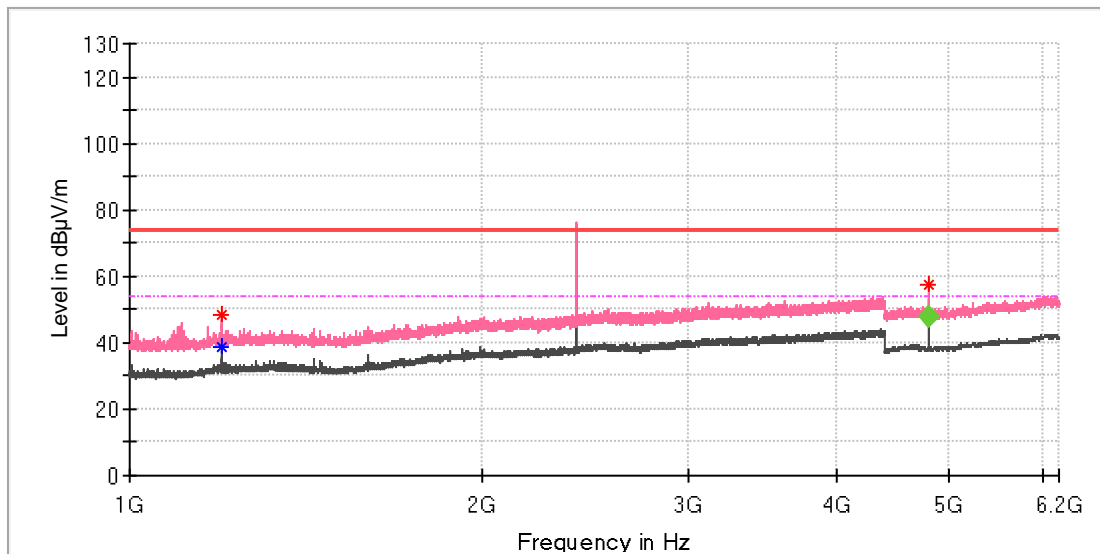
Final Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.877778	50.17	54.00	3.83	100.0	H	152.0	11.8

Test Report

EUT Information

EUT Name:	Fingertip Pulse Oximeter
Model:	SONOSAT-K01LP
Test Mode:	BLE_Low channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.775000	---	38.57	54.00	15.43	100.0	V	321.0	1.1
1197.625000	48.44	---	74.00	25.56	100.0	V	2.0	1.1
4803.722222	---	47.63	54.00	6.37	100.0	V	130.0	11.8
4804.636111	57.74	---	74.00	16.26	100.0	V	130.0	11.8

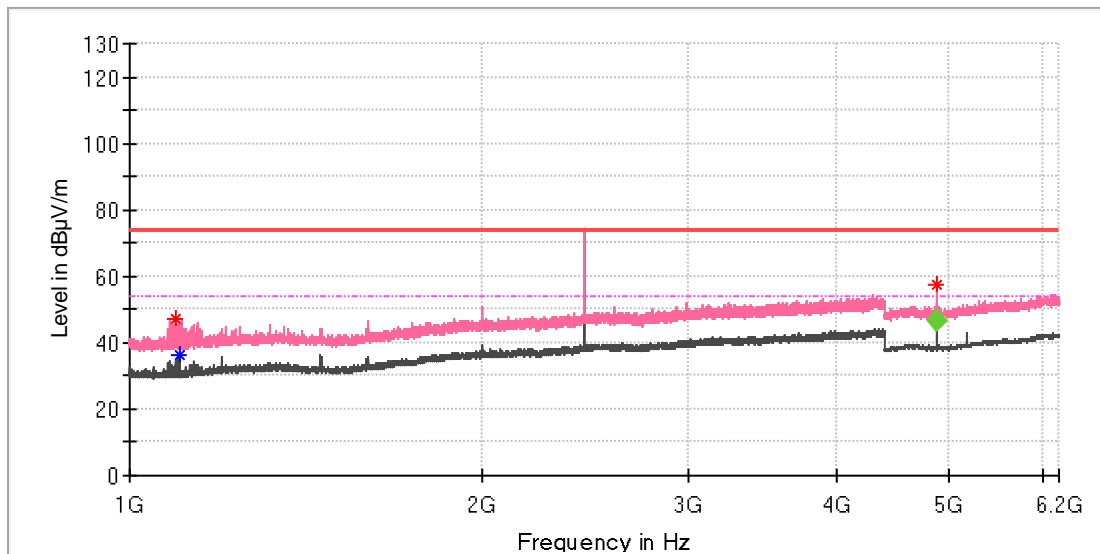
Final Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.722222	47.61	54.00	6.40	100.0	V	130.0	11.8

Test Report

EUT Information

EUT Name:	Fingertip Pulse Oximeter
Model:	SONOSAT-K01LP
Test Mode:	BLE_Mid channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1093.075000	47.29	---	74.00	26.71	100.0	V	92.0	-0.2
1104.975000	---	36.21	54.00	17.79	100.0	V	92.0	-0.1
4879.519444	57.15	---	74.00	16.85	100.0	V	329.0	11.8

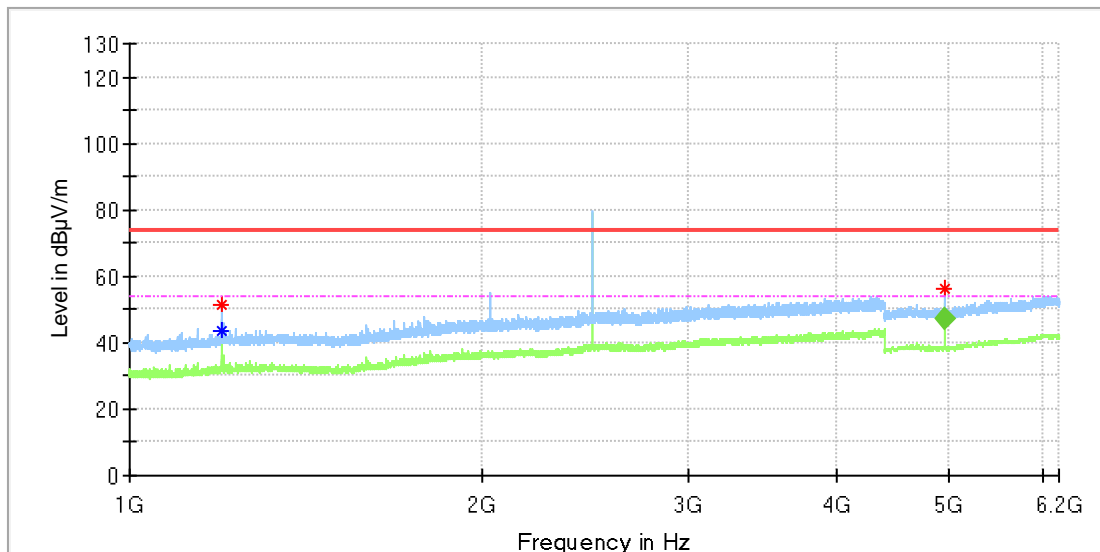
Final Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.827778	46.79	54.00	7.21	100.0	V	325.0	11.8

Test Report

EUT Information

EUT Name:	Fingertip Pulse Oximeter
Model:	SONOSAT-K01LP
Test Mode:	BLE_High channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1198.900000	---	43.64	54.00	10.36	100.0	H	155.0	1.1
1198.900000	51.50	---	74.00	22.50	100.0	H	155.0	1.1
4960.072222	56.40	---	74.00	17.60	100.0	H	341.0	11.8

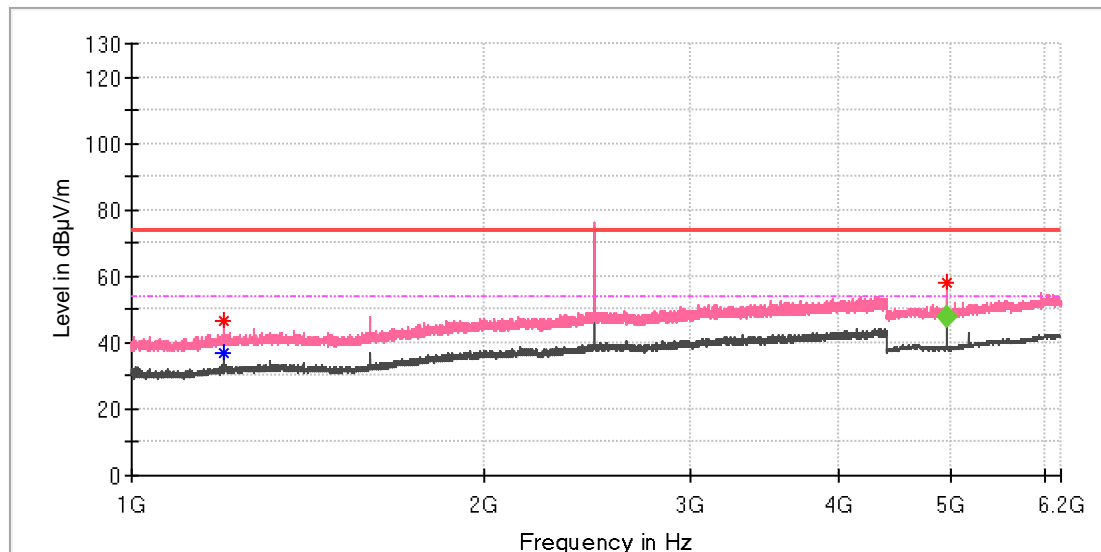
Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.816667	47.14	54.00	6.86	100.0	H	339.0	11.8

Test Report

EUT Information

EUT Name:	Fingertip Pulse Oximeter
Model:	SONOSAT-K01LP
Test Mode:	BLE_High channel
Test Voltage::	Battery
Remark:	Temp 23 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.112500	---	36.83	54.00	17.17	100.0	V	210.0	1.1
1199.112500	46.55	---	74.00	27.45	100.0	V	210.0	1.1
4960.000000	57.75	---	74.00	16.25	100.0	V	323.0	11.8

Final Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.775000	47.55	54.00	6.45	100.0	V	320.0	11.8

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.