

RF EXPOSURE REPORT



Applicant: Fukuda Denshi Co Ltd
3-39-4Hongo, Bunkyo-ku, Tokyo, 113-8483, Japan
Manufacturer: Fukuda Denshi Co Ltd
3-39-4Hongo, Bunkyo-ku, Tokyo, 113-8483, Japan
Product Name: DS-X Series ECG, Respiration and SpO2 Transmitter
Model No.: DS-X1F
Family Model No.: DS-X1M/DS-X1N
Model Difference: Difference is only SPO2(saturation of percutaneous oxygen) module.
FCC ID DV8DSX1N
Date of EUT Received: Aug. 15, 2025
Issue Date: Dec. 12, 2025

Approved By

John Yeh

We hereby certify that:

The above equipment was evaluated by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §2.1093, KDB 447498 D01 v06.

The results of this report relate only to the sample identified in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2508000625ES	00	Original	Oct. 03, 2025	Cindy Chou	
TESA2508000625ES	01	Add simultaneous transmission	Dec. 10, 2025	Cindy Chou	*
TESA2508000625ES	02	Modify comment	Dec. 12, 2025	Cindy Chou	*

Note:

- 1、The remark "*" indicates modification of the report upon requests from certification body.
- 2、Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received.
And are assessed as electrically identical in RF characteristics, therefore, no further assessment required for the variant(s).

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Product Name:	DS-X Series ECG, Respiration and SpO2 Transmitter
Model No.:	DS-X1F
Family Model No.:	DS-X1M/DS-X1N
Model Difference:	Difference is only SPO2(saturation of percutaneous oxygen) module.

Note: The EUT is a portable medical device with operation capability in the NFC and WLAN/BLE, via inclusion of certified module (FCC ID: DV8DSX1).

1.2 Evaluation site

Laboratory		Site Address	FCC Designation number/ Registration Number	ISED Company Number	CAB Identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	☐	No. 134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, 24803, Taiwan.	TW0027/ 891563	4620A	TW3702
	☐	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 333 Taiwan.	TW0028/ 200037	4620E	
	☒	1F, No. 8, Alley 15, Lane 120, Sec. 1, Nei Hu Road, Nei Hu District, Taipei City, 222 Taiwan.	TW0029/ 150169	23862	

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2 RF EXPOSURE EVALUATION FOR PORTABLE CONDITIONS

2.1 FCC Standard Applicable:

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

2.1.1 As per KDB 447498 D01 4.3.1,

Step a: For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g Head \& Body SAR and } \leq 7.5 \text{ for 10-g extremity Hand SAR, where}$$

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as numeric thresholds in **step b)** below

Step b: For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

- 1) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$ mW, for 100 MHz to 1500 MHz
- 2) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$ mW, for > 1500 MHz and ≤ 6 GHz

Step c: For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

- 1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$
- 2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$
- 3) SAR measurement procedures are not established below 100 MHz

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2.2 Measurement Result:

2.2.1 As per KDB447498D01v06 4.3.1 c)

SAR test exclusion threshold for NFC (13.56MHz) shall be evaluated as below,

- a) For test separation distances ≤ 50 mm, the power threshold determined by the equation in 4.3.1 c)
 - 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$
 - b) The power threshold at 50mm/100 MHz in 4.3.1 b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$ where f is 13.56MHz
 - c) The power threshold in 4.3.1 b) is $[\text{Power allowed at numeric threshold for 50 mm in 4.3.1 a)} + ((\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)) \text{ mW}]$, for 100 MHz to 1500 MHz where test separation distance is 50mm, frequency is 100MHz.
 - d) Power allowed at numeric threshold for 50 mm in 4.3.1 a) is $[3/\sqrt{f(\text{GHz})}] \cdot (\text{test separation distance})$
- Hence, SAR test exclusion threshold is calculated in reverse sequence:
- d) : $[3/\sqrt{0.1}] \cdot 50 = 474.3416\text{mW}$
 - c) : $474.3416 + (50-50) \cdot (100/150) = 474.3416\text{mW}$
 - b) : $474.3416 \cdot [1 + \log(100/13.56)] = 885.9469\text{mW}$
 - a) : $885.9469 \cdot 0.5 = 442.973\text{mW}$

Step c:

Frequency (MHz)	E-FIELD dBuV/m	Test Distance (m)	EIRP (dBm)	EIRP (mW)	Threshold (mW)
13.56	12.74	3	-82.41757	0.00000001	442.973

Note:

Distance Factor = $40\log(\text{Test Distance (m)} / \text{Separation Distance (m)})$

E-FIELD (dBuV/m) = E-FIELD (dBuV/m) + Distance Factor(dB)

EIRP (dBm) = (E-FIELD(dBuV/m)+ 20log(d(m)))-104.7

EIRP(W) = $(10^{(EIRP(\text{dBm})/10)})/1000$

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3 SIMULTANEOUS TRANSMISSION ANALYSIS

3.1 Simultaneous Transmission Scenarios:

Simultaneous Transmission configurations
WLAN 2.4GHz Ant 1+ BT Ant 2 + NFC
WLAN 5GHz Ant 1+ BT Ant 2 + NFC

Body

Exposure Position		Reported SAR				Scenario 1	Scenario 2
		1	2	3	4	1+3+4	2+3+4
		2.4GHz WLAN Ant 1	5GHz WLAN Ant 1	Bluetooth Ant 2	NFC	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Front Surface	0	0.240	0.751	0.015	0.000000000178	0.255	0.766
Back Surface	0	0.109	0.164	0.002	0.000000000178	0.111	0.166
Top Edge	0	0.021	0.077	0.002	0.000000000178	0.023	0.079
Bottom Edge	0	0.001	0.002	0.001	0.000000000178	0.002	0.003
Right Edge	0	0.030	0.071	0.002	0.000000000178	0.032	0.073
Left Edge	0	0.613	1.024	0.052	0.000000000178	0.665	1.076

Limb

Exposure Position		Reported SAR				Scenario 1	Scenario 2
		1	2	3	4	1+3+4	2+3+4
		2.4GHz WLAN Ant 1	5GHz WLAN Ant 1	Bluetooth Ant 2	NFC	Summed	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
Front Surface	0	0.109	0.270	0.001	0.000000000071	0.110	0.271
Back Surface	0	0.089	0.069	0.001	0.000000000071	0.090	0.070
Top Edge	0	0.010	0.032	0.001	0.000000000071	0.011	0.033
Bottom Edge	0	0.001	0.002	0.001	0.000000000071	0.002	0.003
Right Edge	0	0.015	0.031	0.001	0.000000000071	0.016	0.032
Left Edge	0	0.256	0.330	0.018	0.000000000071	0.274	0.348

Based on KDB 447498D01v06, the simultaneous transmission is compliant when the SAR sum of all transmitters is less than the limit. The SAR values of WLAN 2.4G/5G and BT are referenced from report TESA2508000624ES for FCC ID: DV8DSX1 .

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• NFC estimated SAR: Based on KDB447498D01v06 4.3.2 b), when an antenna qualifies for the standalone SAR test exclusion of 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to the following to determine the simultaneous transmission SAR test exclusion criteria:

1) $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$, for test separation distances $\leq 50 \text{ mm}$, where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

Using the most conservative test separation distance 5mm, so the estimated 1g-SAR for NFC would be 0.00000000017796767 W/Kg.

Using the most conservative test separation distance 5mm, so the estimated 10g-SAR for NFC would be 0.000000000071187067 W/Kg.

$[0.0000000573116/5] \cdot [\sqrt{0.01356/7.5}] = 0.00000000017796767 \text{ W/Kg}$

$[0.0000000573116/5] \cdot [\sqrt{0.01356/18.75}] = 0.000000000071187067 \text{ W/Kg}$

~ End of Report ~

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