

FCC RF Exposure

Applicant : Telink Semiconductor (Shanghai) Co., Ltd.
Address : 11F, Building 1, 61 Shengxia Road, Pudong District,
Shanghai 201203
Product Name : TLSR9118A Development Board
Brand Mark : Telink
Model : TL9118A-EVK40D
Series model : N/A
FCC ID : OEOTL9118A-EVK40D
Report Number : BLA-EMC-202501-A5303
Date of Receipt : Jan. 13, 2025
Date of Test : Jan. 13, 2025 to Feb. 05, 2025
47 CFR Part 15, Part 1.1307
Test Standard : 47 CFR Part 15, Part 2.1093
KDB447498D04 General RF Exposure Guidance v01
Test Result : Pass

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Review by: Sweels

Approved by: Blue Zheng

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Revise Record

Version No.	Date	Description
01	Feb. 11, 2025	Original

1 General information

1.1 General information

Applicant	Telink Semiconductor (Shanghai) Co., Ltd.
Address	11F, Building 1,61 shengxia Road, Pudong District, Shanghai 201203
Manufacturer	Telink Semiconductor (Shanghai) Co., Ltd.
Address	11F, Building 1,61 shengxia Road, Pudong District, Shanghai 201203
Factory	N/A
Address	N/A

1.2 General description of EUT

Product name	TLSR9118A Development Board
Model no.	TL9118A-EVK40D
Operation Frequency:	BLE:2402MHz-2480MHz IEEE 802.11b/g/n(HT20)/ax(HE20): 2412MHz to 2472MHz IEEE 802.11n(HT40): 2422MHz to 2462MHz
Modulation Type:	BLE:GFSK 802.11b: DSSS(CCK/QPSK/BPSK) 802.11g: OFDM(BPSK/QPSK/16QAM/64QAM) 802.11n (HT20 and HT40): OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11ax(HE20):OFDMA(1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	BLE:40 802.11b/g: 13 Channels 802.11n (HT20)/ax(HE20): 13 Channels 802.11n (HT40): 9 Channels
Antenna Type:	Dipole antenna
Antenna Gain:	1.40dBi (Provided by customer)
Power supply:	DC 5V from PC
Hardware Version	N/A
Software Version	N/A

2 RF Exposure Compliance Requirement

2.1 Standard Requirement

According to 447498 D04 Interim General RF Exposure Guidance v01

Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

2.2 Limits

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B. 2})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).

Example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B. 1})$$

2.3 Result

$$\text{EIRP} = \text{pt} \times \text{gt} = (\text{E} \times \text{d})^{2/30}$$

Where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m,

d = measurement distance in meters (m)

$$\text{Spot} = (\text{E} \times \text{d})^{2/30} \times \text{gt}$$

Separation distance= 20cm

Ant gain = 1.40dBi

For BLE 2M(Worst):

Max Output power =5.998dBm @ 2402MHz

$$\text{EIRP} = 5.998\text{dBm} + 1.40\text{dBi} = 7.398\text{dBm}$$

$$\text{So, ERP} = 7.398 - 2.15 = 5.248\text{dBm} = 3.348\text{mW} < 3060 \text{ mW}$$

For 2.4GWIFI 802.11b(Worst):

Max Output power =15.824dBm @ 2412MHz

$$\text{EIRP} = 15.824\text{dBm} + 1.40\text{dBi} = 17.224\text{dBm}$$

$$\text{So, ERP} = 17.224 - 2.15 = 15.074\text{dBm} = 32.166\text{mW} < 3060 \text{ mW}$$

Comply with RF exposure exemption limit.

----END OF REPORT----

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