RF Exposure Report

Report No.: MFBEOP-WTW-P22030407

FCC ID: NKR-LS04

Test Model: S501R0-01

Received Date: 2022/3/26

Test Date: 2022/5/18 ~ 2022/6/24

Issued Date: 2022/7/8

Applicant: Wistron NeWeb Corporation

Address: 20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C.

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location (1): No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

FCC Registration / Designation Number: 788550 / TW0003

Test Location (2): No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

FCC Registration / Designation Number: 281270 / TW0032

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Release Control Record

Issue No.	Description	Date Issued
MFBEOP-WTW-P22030407	Original release	2022/7/8

1   Certificate of Conformity

Product: home security gateway

Brand: ADT

Test Model: S501R0-01

Sample Status: Engineering sample

Applicant: Wistron NeWeb Corporation

Test Date: 2022/5/18 ~ 2022/6/24

FCC Rule Part: FCC Part 2 (Section 2.1091)

Standards: KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : _Celine Chou_ , **Date:** 2022/7/8

Celine Chou / Senior Specialist

Approved by : _Jeremy. Lin_ , **Date:** 2022/7/8

Jeremy Lin / Project Engineer

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$Pd = (Pout*G) / (4*pi*r^2)$
where
Pd = power density in mW/cm^2
Pout = output power to antenna in mW
G = gain of antenna in linear scale
pi = 3.1416
r = distance between observation point and center of the radiator in cm

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result of Maximum Conducted Power

WLAN, BT, Zigbee and Z-wave (15.247)

Function	Frequency Band (MHz)	Max AV Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN	2412-2462	22.82	5.19	20	0.126	1.00
	5180-5240	23.84	5.56	20	0.173	1.00
	5260-5320	23.29	5.36	20	0.146	1.00
	5500-5720	23.87	5.54	20	0.174	1.00
	5745-5825	25.47	5.52	20	0.250	1.00
BT LE	2402-2480	13.84	4.26	20	0.013	1.00
Zigbee	2405-2480	17.41	3.94	20	0.027	1.00
Z-wave	912-920	12.91	3.04	20	0.008	0.60

Note:
1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

Z-wave (15.249)

Function	Frequency Band (MHz)	Radiated Electric field (dBuV/m) @3m	Radiated Electric field (dBuV/m) @0.2m	EIRP Power (dBm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
Z-wave	908.40-916.00	92.90	116.42	-2.331	0.00012	0.60

Note:
1. $92.90 + 20\log(3/0.2) = 116.42$ dBuV/m
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. Due to radiated measurements are made and the antenna gain is already accounted for this device, so provide an antenna datasheet and/or antenna measurement report is not required. The antenna dimensions and pictures (include antenna wire length if have) are stated in EUT photo exhibit.

DECT

Function	Frequency Band (MHz)	Max AV Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
DECT	1921.536-1928.448	18.49	5.05	20	0.045	1.00

Note:
1. The DECT antenna information for this EUT is listed as below.

Antenna No.	Brand	Model	Frequency Range	Antenna Type	Connector Type	Antenna Gain (dBi)
DECT1	WNC	LS04	1920-1930MHz	Dipole	ipex(MHF)	4.34
DECT2	WNC	LS04	1920-1930MHz	Dipole	ipex(MHF)	5.05

2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

WWAN (The EUT contains certified LTE module (Brand: Telit, Model: LE910C4-WWX, FCC ID: RI7LE910CXWWX))

Function	Band	Conducted Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WWAN	LTE B2	24.00	3.21	20	0.105	1.00
	LTE B4	24.00	2.61	20	0.091	1.00
	LTE B5	24.00	1.32	20	0.068	0.55
	LTE B12	24.00	-0.02	20	0.050	0.46
	LTE B13	24.00	1.32	20	0.068	0.52
	LTE B14	24.00	1.32	20	0.068	0.52

Note:
1. The WWAN antenna information for this EUT is listed as below.

Antenna No.	Brand	Model	Type	Connector	Gain (dBi)					
					B2	B4	B5	B12	B13	B14
LTE Main	WNC	LS04	Monopole	ipex(MHF)	3.21	2.35	1.13	-0.02	1.13	1.13
LTE Aux	WNC	LS04	Dipole	ipex(MHF)	1.75	2.61	1.32	-0.05	1.32	1.32

2. Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.
3. This EUT only enable LTE B2, B4, B5, B12, B13, B14 functon through proprietary firmware.
4. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Simultaneously transmission condition.

Condition	Technology
1	WLAN 2.4G + BLE + Zigbee + DECT + WWAN = 0.126 / 1 + 0.013 / 1 + 0.027 / 1 + 0.045 / 1 + 0.068 / 0.52 = 0.342
2	WLAN 2.4G + BLE + Z-wave + DECT + WWAN = 0.126 / 1 + 0.013 / 1 + 0.008 / 0.60 + 0.045 / 1 + 0.068 / 0.52 = 0.328
3	WLAN 5G + BLE + Zigbee + DECT + WWAN = 0.250 / 1 + 0.013 / 1 + 0.027 / 1 + 0.045 / 1 + 0.068 / 0.52 = 0.466
4	WLAN 5G + BLE + Z-wave + DECT + WWAN = 0.250 / 1 + 0.013 / 1 + 0.008 / 0.60 + 0.045 / 1 + 0.068 / 0.52 = 0.452

Therefore the maximum calculations of above situations are less than the "1" limit.

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