

RF EXPOSURE REPORT

Applicant	Sangean Electronics Inc
Address	No 18, Lane 7, Li-De Street, Chung Ho District, New Taipei City, Taiwan

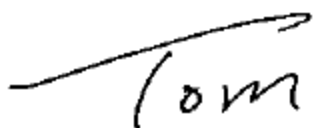
Manufacturer or Supplier	SANGEAN ELECTRONICS (DONGGUAN) LIMITED
Address	No.1 Riverside street, Shishuikou section, Lianhu Road, Qiaotou town, Dongguan city, Guangdong province P.R.C
Product	INTERNET RADIO/INTERNET DAB/AUX/ BLUETOOTH/SPOTIFY CONNECT/CLOUD MUSIC/AIRMUSIC APP DIGITAL WOODEN RADIO
Brand Name	SANGEAN
Model	WFR-32
Additional Model & Model Difference	N/A
Date of tests	Sep. 29, 2020 ~ Feb. 04, 2021

☒ FCC Part 2 (Section 2.1091)

☒ KDB 447498 D01

☒ IEEE C95.1

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Tom Chen Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	

Date: Jul. 22, 2021

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FM2009WDG0226	Original release	Jul. 22, 2021

1. CERTIFICATION

FCC ID:	BYG-WFR32
PRODUCT:	INTERNET RADIO/INTERNET DAB/AUX/ BLUETOOTH/SPOTIFY CONNECT/CLOUD MUSIC/AIRMUSIC APP DIGITAL WOODEN RADIO
BRAND NAME:	N/A
MODEL NO.:	WFR-32
ADDITIONAL NO.:	N/A
TEST SAMPLE:	Engineering Sample
APPLICANT:	SANGEAN ELECTRONICS (DONGGUAN) LIMITED
STANDARDS:	FCC Part 2 (Section 2.1091)
	KDB 447498 D01
	IEEE C95.1

2. RF EXPOSURE LIMIT

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

3. MPE CALCULATION FORMULA

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

4. 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**.

5. ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

Mode	Peak Gain (dBi)	Antenna Type
BT	0	PCB
WIFI	2.55	Integral

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

The tuned conducted Average Power (declared by client)

Mode	Frequency (MHz)	Target Power (dBm)	Tolerance (dBm)	Lower Tolerance (dBm)	Upper Tolerance (dBm)
BT (GFSK)	2402-2480MHz	2	+/-1	1	3
BT (8DPSK)	2402-2480MHz	2	+/-1	1	3
802.11b	2412-2462MHz	15	+/-1	14	16
802.11g	2412-2462MHz	11	+/-1	10	12
802.11n HT20	2412-2462MHz	11	+/-1	10	12
802.11n HT40	2422-2452MHz	11	+/-1	10	12

The measured conducted Average Power

Mode	Frequency (MHz)	Averaged Power (dBm)
BT (GFSK)	2402	2.58
BT (8DPSK)	2402	2.45
802.11b	2412	15.11
802.11g	2437	11.10
802.11n HT20	2437	11.06
802.11n HT40	2422	10.98

FREQUENCY BAND (MHz)	MAX AVERAGE POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
BT 2402-2480	3	0	20	0.0004	1.0
WiFi 2412-2462	16	2.55	20	0.01425	1.0

CONCLUSION:

The BT and WLAN can transmit simultaneously, the formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

$$(0.0004/1)+(0.01425/1) = 0.01465 < 1, \text{ which is less than the "1" limit.}$$

--- END ---