RF Exposure Report

FCC ID:2AKCR-22630

Client Information

Applicant:	Shenzhen Sunvell electronics Co ., Ltd
Address of applicant:	Floor 5th, Building F,Hongzhuyongqi Technology Park,Lezhujiao Village, Xixiang Town,Bao' an District, Shenzhen City,Guangdong Province,China
Manufacturer:	Shenzhen Sunvell electronics Co ., Ltd
Address of manufacturer:	Floor 5th, Building F,Hongzhuyongqi Technology Park,Lezhujiao Village, Xixiang Town,Bao' an District, Shenzhen City,Guangdong Province,China

General Description of EUT	
Product Name:	TV BOX
Trade Name:	Sunvell
Model No.:	T95S2
Adding Model(s):	X95A,T95R1,T95R2,T95S1PRO,T95S1PLUS, T95S2PRO,T95S2PLUS
Rated Voltage:	DC 5V from adapter
Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model T95S2*,but the circuit and the electronic construction do not change, declared by the manufacturer.*	

Technical Characteristics of EUT	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20),
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 72.2Mbps
Channel Separation:	5MHz
Type of Antenna:	FPC antenna
Antenna Gain:	2dBi

RF Exposure Measurement

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.
Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

RF Exposure Limit

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

F= Frequency in MHz

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

Friss Formula

Friss Transmission Formula: Pd = (Pout * G) / (4*pi*r²)

Where
Pd = power density in mW/cm²
Pout = output power to antenna in mW
G = gain of antenna in linear scale
Pi = 3.14
R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

EUT Operation condition

EUT was enabled to transmit and receive at lowest, middle and highest channels.

Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

2.4GHz WIFI

Gain of antenna in Logarithmic=2.0dBi
Gain of antenna in linear scale=1.58

2412-2462MHz:

Protocol	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Power Density (mW/cm²)	Limit (mW/cm²)
802.11b	2462	16.04	40.1791	0.012636	1.000
802.11g	2462	14.72	29.6483	0.009324	1.000
802.11n HT20	2462	14.66	29.2415	0.009196	1.000

Then SAR evaluation is not required