

# RF Exposure Evaluation Declaration

Product Name : ASUS SRT-AC1900 Wireless Smart Router  
Trade Name : ASUS  
Model No. : SRT-AC1900  
FCC ID. : MSQ-SRTAC1900

Applicant : ASUSTeK COMPUTER INC.

Address : 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt : Jun. 11, 2015  
Issued Date : Aug. 20, 2015  
Report No. : 1560358R-RF-US-Exp-D  
Report Version : V1.0



The declaration results relate only to the samples calculated.

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## 1. RF Exposure Evaluation

### 1.1. Limits

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

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

### 1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

**1.3. Test Result of RF Exposure Evaluation**

Product	ASUS SRT-AC1900 Wireless Smart Router
Test Mode	Mode 1: Tx- AUX Antenna (AD891M21)
Test Condition	RF Exposure Evaluation

**Antenna Gain**

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 5.10dBi or 3.24 in linear scale.

**Output Power into Antenna & RF Exposure Evaluation Distance:**

IEEE 802.11b (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2412	40.8319	0.02632
6	2437	41.6869	0.02687
11	2462	36.2243	0.02335

IEEE 802.11g (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2412	22.3357	0.01440
6	2437	42.4620	0.02737
11	2462	21.7771	0.01404

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

Product	ASUS SRT-AC1900 Wireless Smart Router
Test Mode	Mode 1: Tx- AUX Antenna (AD891M21)
Test Condition	RF Exposure Evaluation

**Antenna Gain**

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 5.1dBi or 3.24 in linear scale.

**Output Power into Antenna & RF Exposure Evaluation Distance:**

IEEE 802.11n (20MHz) (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2412	15.3109	0.00987
6	2437	41.4000	0.02669
11	2462	16.9044	0.01090

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

IEEE 802.11n (40MHz) (ANT 0)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
3	2422	7.5858	0.00489
6	2437	16.8267	0.01085
9	2452	8.0168	0.00517

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

Product	ASUS SRT-AC1900 Wireless Smart Router
Test Mode	Mode 1: Tx- AUX Antenna (AD891M21)
Test Condition	RF Exposure Evaluation

**Antenna Gain**

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 4.40dBi or 2.75 in linear scale.

**Output Power into Antenna & RF Exposure Evaluation Distance:**

IEEE 802.11a			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
36	5180	36.5595	0.02000
40	5220	41.6869	0.02281
44	5240	39.5367	0.02163

IEEE 802.11 n(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
36	5180	37.0681	0.02028
40	5220	40.5509	0.02219
44	5240	40.8319	0.02234

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

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Test Condition	RF Exposure Evaluation

**Antenna Gain**

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 4.40 dBi or 2.75 in linear scale.

**Output Power into Antenna & RF Exposure Evaluation Distance:**

IEEE 802.11 n(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
38	5190	23.1206	0.01265
46	5230	39.0841	0.02138

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
42	5210	17.0608	0.00933

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

Product	ASUS SRT-AC1900 Wireless Smart Router
Test Mode	Mode 1: Tx- AUX Antenna (AD891M21)
Test Condition	RF Exposure Evaluation

**Antenna Gain**

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 3.95dBi or 2.48 in linear scale.

**Output Power into Antenna & RF Exposure Evaluation Distance:**

IEEE 802.11a			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
149	5745	46.1318	0.02276
153	5785	56.8853	0.02807
165	5825	56.3638	0.02781

IEEE 802.11 n(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
149	5745	51.2861	0.02530
153	5785	56.7545	0.02800
165	5825	55.5904	0.02743

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

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Test Mode	Mode 1: Tx- AUX Antenna (AD891M21)
Test Condition	RF Exposure Evaluation

**Antenna Gain**

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 3.95dBi or 2.48 in linear scale.

**Output Power into Antenna & RF Exposure Evaluation Distance:**

IEEE 802.11 n(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
151	5755	31.1172	0.01535
159	5795	45.6037	0.02250

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
155	5775	26.4241	0.01304

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.