

RF Exposure Evaluation Declaration

Product Name : Mimosa C5c
Trade Name : *mimosa*[™]
Model No. : C5c
FCC ID. : 2ABZJ-100-00018

Applicant : Mimosa Networks

Address : 469 El Camino Real, Suite 100 Santa Clara,
CA 95050, USA

Date of Receipt : Jan. 03, 2017
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Report No. : 1710110R-RF-US-Exp
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 ²)	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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

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

P_d is the limit of MPE, 1 mW/cm². 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	Mimosa C5c
Test Mode	Transmit_Dish antenna
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 30.25dBi or 1059.25 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180	1.8750	0.39512
44	5220	3.3729	0.71077
48	5240	1.8365	0.38701

IEEE 802.11 ac(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
38	5190	1.8707	0.39421
46	5230	2.1478	0.45261

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
42	5210	3.5075	0.73914

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/cm².

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IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
52	5260	0.3998	0.08425
60	5300	0.4112	0.08665
64	5320	0.3873	0.08162

IEEE 802.11 ac(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
54	5270	0.9005	0.18976
62	5310	0.8964	0.18890

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
48	5290	0.9249	0.19490

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IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
100	5500	0.3990	0.08408
116	5580	0.3622	0.07633
140	5700	0.5902	0.12437

IEEE 802.11 ac(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
102	5510	0.3917	0.08254
110	5550	0.3681	0.07757
134	5670	0.4285	0.09030

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
106	5530	0.3917	0.08254

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/cm².

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IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745	3.5563	0.74942
157	5785	3.5075	0.73914
165	5825	3.5481	0.74769

IEEE 802.11 ac(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
151	5755	3.4514	0.72732
159	5795	3.5645	0.75115

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
155	5775	3.4198	0.72066

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/cm².

Product	Mimosa C5c
Test Mode	Transmit_Dipole antenna
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 2.5dBi or 1.78 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180	138.9953	0.04922
44	5220	334.1950	0.11834
48	5240	330.3695	0.11699

IEEE 802.11 ac(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
38	5190	78.7046	0.02787
46	5230	310.4560	0.10994

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
42	5210	64.5654	0.02286

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/cm².

Product	Mimosa C5c
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Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 2.5dBi or 1.78 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
52	5260	147.6726	0.05229
60	5300	153.1440	0.05423
64	5320	154.8817	0.05485

IEEE 802.11 ac(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
54	5270	209.7974	0.07429
62	5310	140.3137	0.04969

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
48	5290	106.7087	0.03779

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/cm².

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IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
100	5500	122.4616	0.04337
116	5580	117.7606	0.04170
140	5700	119.9499	0.04248

IEEE 802.11 ac(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
102	5510	125.6030	0.04448
110	5550	177.4189	0.06283
134	5670	138.0384	0.04888

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
106	5530	112.2018	0.03973

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IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745	436.5158	0.15458
157	5785	472.0630	0.16717
165	5825	510.5050	0.18078

IEEE 802.11 ac(40MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
151	5755	383.7072	0.13588
159	5795	519.9960	0.18414

IEEE 802.11 ac(80MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
155	5775	160.3245	0.05677

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Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber are 26dBi or 398.11 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
190	4950	0.8110	0.06423
193	4965	0.8110	0.06423
196	4980	0.8395	0.06649

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/cm².

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IEEE 802.11 ac(20MHz)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
190	4950	71.7960	0.02542
193	4965	69.1831	0.02450
196	4980	67.7018	0.02397

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/cm².