



Neutron Engineering Inc.

FCC RF EXPOSURE REPORT

FCC ID: QIS-WS331C

Project No. : 1312C183
Equipment : 300Mbps Wireless Range Extender
Model : WS331c; WS333c
Applicant : Huawei Technologies Co., Ltd.
Address : Administration Building, Headquarters of Huawei, Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, China

According: : **FCC Guidelines for Human Exposure IEEE C95.1**

Neutron Engineering Inc.

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MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi^2} = \frac{EIRP}{4\pi^2}$$

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	159_ANT	Monopole	N/A	0.94
2	N/A	159_ANT	Monopole	N/A	0.94

The EUT incorporates a MIMO function. Physically, the EUT provides two completed two transmitters and two receivers (2T2R).

Operating Mode TX Mode	1TX	2TX
802.11b	V (ANT 1 or ANT 2)	-
802.11g	V (ANT 1 or ANT 2)	-
802.11n(20MHz)	-	V (ANT 1 + ANT 2)
802.11n(40MHz)	-	V (ANT 1 + ANT 2)



TEST RESULTS

EUT:	300Mbps Wireless Range Extender	Model Name :	WS331c
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX B MODE /CH01, CH06, CH11		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
0.94	1.2417	18.89	77.4462	0.01914037	1	Complies
0.94	1.2417	18.74	74.8170	0.01849057	1	Complies
0.94	1.2417	18.71	74.3019	0.01836328	1	Complies

EUT:	300Mbps Wireless Range Extender	Model Name :	WS331c
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX G MODE /CH01, CH06, CH11		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
0.94	1.2417	24.12	258.2260	0.06381906	1	Complies
0.94	1.2417	24.2	263.0268	0.06500554	1	Complies
0.94	1.2417	24.77	299.9163	0.07412255	1	Complies

EUT:	300Mbps Wireless Range Extender	Model Name :	WS331c
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N-20M MODE /CH01, CH06, CH11 ANT1		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
0.94	1.2417	23.35	216.2719	0.05345033	1	Complies
0.94	1.2417	23.82	240.9905	0.05955941	1	Complies
0.94	1.2417	24.14	259.4179	0.06411363	1	Complies



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EUT:	300Mbps Wireless Range Extender	Model Name :	WS331c
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N-20M MODE /CH01, CH06, CH11 ANT2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
0.94	1.2417	23.27	212.3244	0.05247475	1	Complies
0.94	1.2417	23.73	236.0478	0.05833784	1	Complies
0.94	1.2417	23.98	250.0345	0.06179458	1	Complies

EUT:	300Mbps Wireless Range Extender	Model Name :	WS331c
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N-20M MODE /CH01, CH06, CH11 ANT1+ANT2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
0.94	1.2417	26.32	428.5485	0.10591327	1	Complies
0.94	1.2417	26.79	477.5293	0.11801858	1	Complies
0.94	1.2417	27.07	509.3309	0.12587816	1	Complies

EUT:	300Mbps Wireless Range Extender	Model Name :	WS331c
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N-40M MODE /CH03, CH06, CH09 ANT1		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
0.94	1.2417	23.28	212.8139	0.05259572	1	Complies
0.94	1.2417	23.25	211.3489	0.05223365	1	Complies
0.94	1.2417	23.83	241.5461	0.05969671	1	Complies



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EUT:	300Mbps Wireless Range Extender	Model Name :	WS331c
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N-40M MODE /CH03, CH06, CH09 ANT2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
0.94	1.2417	23.23	210.3778	0.05199366	1	Complies
0.94	1.2417	23.19	208.4491	0.05151698	1	Complies
0.94	1.2417	23.71	234.9633	0.05806981	1	Complies

EUT:	300Mbps Wireless Range Extender	Model Name :	WS331c
Temperature:	24 °C	Relative Humidity:	60 %
Pressure:	1016 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX N-40M MODE /CH03, CH06, CH09 ANT1+ANT2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
0.94	1.2417	26.27	423.6430	0.10470089	1	Complies
0.94	1.2417	26.23	419.7590	0.10374099	1	Complies
0.94	1.2417	26.78	476.4310	0.11774714	1	Complies

The calculated distance is 20 cm