

FCC RF EXPOSURE REPORT

FCC ID: QISAP8130DN

Project No. : 1407C034B
Equipment : Outdoor Wireless LAN Access Point
Model : AP8130DN
Applicant : Huawei Technologies Co.,Ltd.
**Address : Administration Building, Huawei Base,
Bantian, Longgang District ,Shenzhen 518129,
P.R.China**
**According: : FCC Guidelines for Human Exposure IEEE
C95.1**

B T L I N C .

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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

Group 1 Antenna

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)	Note
A	Nippon Antenna	C15G14Z100BY	External Antenna	N-type	5.5	2.4G
A	Nippon Antenna	C15G14Z100BY	External Antenna	N-type	8	5G
B	Nippon Antenna	C15G14Z100BY	External Antenna	N-type	5.5	2.4G
B	Nippon Antenna	C15G14Z100BY	External Antenna	N-type	8	5G
C	Nippon Antenna	C15G14Z100BY	External Antenna	N-type	5.5	2.4G
C	Nippon Antenna	C15G14Z100BY	External Antenna	N-type	8	5G

Group 2 Antenna

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)	Note
A	pctel	MHODB24580407NM-LC	External Antenna	N-type	5.5	2.4G
A	pctel	MHODB24580407NM-LC	External Antenna	N-type	8	5G
B	pctel	MHODB24580407NM-LC	External Antenna	N-type	5.5	2.4G
B	pctel	MHODB24580407NM-LC	External Antenna	N-type	8	5G
C	pctel	MHODB24580407NM-LC	External Antenna	N-type	5.5	2.4G
C	pctel	MHODB24580407NM-LC	External Antenna	N-type	8	5G

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides three completed transmitters and receivers (3T3R).
2. ANT B for 1TX was found to be the worst case and recorded.

Operating Mode TX Mode	1TX	2TX	3TX
802.11b	V (ANT B)	V (ANT A+ANT B)	V (ANT+1 ANT B+ANT C)
802.11g	V (ANT B)	V (ANT A+ANT B)	V (ANT+1 ANT B+ANT C)
802.11n(20MHz)	V (ANT B)	V (ANT A+ANT B)	V (ANT+1 ANT B+ANT C)
802.11n(40MHz)	V (ANT B)	V (ANT A+ANT B)	V (ANT+1 ANT B+ANT C)

TEST RESULTS

2.4G

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature :	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX B MODE /CH01, CH06, CH11-Ant A+Ant B		

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
5.5	3.5481	26.55	451.8559	0.31911732	1	Complies
5.5	3.5481	29.24	839.4600	0.59285757	1	Complies
5.5	3.5481	26.44	440.5549	0.31113608	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature :	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX G MODE /CH01, CH06, CH11-Ant A+Ant B		

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
5.5	3.5481	21.40	138.0384	0.09748782	1	Complies
5.5	3.5481	29.83	961.6123	0.67912602	1	Complies
5.5	3.5481	21.26	133.6596	0.09439530	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-20M MODE /CH01, CH06, CH11-Ant A+Ant B		

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
5.5	3.5481	21.44	139.3157	0.09838987	1	Complies
5.5	3.5481	27.35	543.2503	0.38366340	1	Complies
5.5	3.5481	21.56	143.2188	0.10114639	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-40M MODE /CH03, CH06, CH09-Ant A+Ant B		

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
5.5	3.5481	19.98	99.5405	0.07029920	1	Complies
5.5	3.5481	24.23	264.8500	0.18704684	1	Complies
5.5	3.5481	19.72	93.7562	0.06621408	1	Complies

UNII-1

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX A MODE_ Total / CH36, CH40, CH48		

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
8	6.3096	21.86	153.4617	0.19273047	1	Complies
8	6.3096	21.81	151.7050	0.19052430	1	Complies
8	6.3096	21.99	158.1248	0.19858680	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-20M MODE_ Total / CH36, CH40, CH48		

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
8	6.3096	20.22	105.1962	0.13211446	1	Complies
8	6.3096	20.11	102.5652	0.12881023	1	Complies
8	6.3096	20.17	103.9920	0.13060216	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-40M MODE_ Total / CH38, CH46		

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
8	6.3096	18.58	72.1107	0.09056291	1	Complies
8	6.3096	20.04	100.9253	0.12675070	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-20M MODE_ Total / CH36, CH40, CH48		

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
8	6.3096	20.23	105.4387	0.13241902	1	Complies
8	6.3096	20.18	104.2317	0.13090323	1	Complies
8	6.3096	20.24	105.6818	0.13272428	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-40M MODE_ Total / CH38, CH46		

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
8	6.3096	18.69	73.9605	0.09288602	1	Complies
8	6.3096	20.01	100.2305	0.12587816	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-80M MODE_ Total /CH42		

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
8	6.3096	14.56	28.5759	0.03588809	1	Complies

UNII-2A

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX A MODE_ Total / CH52, CH60, CH64		

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
8	6.3096	21.93	155.9553	0.19586208	1	Complies
8	6.3096	21.90	154.8817	0.19451378	1	Complies
8	6.3096	21.94	156.3148	0.19631359	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-20M MODE_ Total / CH52, CH60, CH64		

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
8	6.3096	20.17	103.9920	0.13060216	1	Complies
8	6.3096	20.13	103.0386	0.12940480	1	Complies
8	6.3096	20.22	105.1962	0.13211446	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-40M MODE_ Total / CH54, CH62		

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
8	6.3096	20.06	101.3911	0.12733576	1	Complies
8	6.3096	17.80	60.2560	0.07567464	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-20M MODE_Total / CH52, CH60, CH64		

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
8	6.3096	20.23	105.4387	0.13241902	1	Complies
8	6.3096	20.15	103.5142	0.13000210	1	Complies
8	6.3096	20.21	104.9542	0.13181061	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-40M MODE_Total / CH54, CH62		

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
8	6.3096	19.65	92.2571	0.11586449	1	Complies
8	6.3096	18.19	65.9174	0.08278476	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-80M MODE_Total / CH58		

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
8	6.3096	14.44	27.7971	0.03491004	1	Complies

UNII-2C

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX A MODE_ Total / CH100, CH116, CH140		

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
8	6.3096	22	158.4893	0.19904459	1	Complies
8	6.3096	21.82	152.0548	0.19096350	1	Complies
8	6.3096	21.84	152.7566	0.19184495	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-20M MODE_ Total / CH100, CH116, CH140		

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
8	6.3096	20.22	105.1962	0.13211446	1	Complies
8	6.3096	20.2	104.7129	0.13150745	1	Complies
8	6.3096	20.15	103.5142	0.13000210	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-40M MODE_ Total / CH102, CH110, CH134		

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
8	6.3096	20.15	103.5142	0.13000210	1	Complies
8	6.3096	20.08	101.8591	0.12792351	1	Complies
8	6.3096	20.17	103.9920	0.13060216	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-20M MODE_ Total / CH100, CH116, CH140		

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
8	6.3096	20.21	104.9542	0.13181061	1	Complies
8	6.3096	20.17	103.9920	0.13060216	1	Complies
8	6.3096	20.25	105.9254	0.13303024	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-40M MODE_ Total / CH102, CH110, CH134		

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
8	6.3096	19.83	96.1612	0.12076758	1	Complies
8	6.3096	19.68	92.8966	0.11666763	1	Complies
8	6.3096	19.82	95.9401	0.12048982	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-80M MODE_ Total / CH106, CH122		

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
8	6.3096	14.51	28.2488	0.03547728	1	Complies
8	6.3096	21.53	142.2329	0.17862834	1	Complies

UNII-3

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX A MODE_ Total / CH149, CH157, CH165		

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
8	6.3096	21.83	152.4053	0.19140372	1	Complies
8	6.3096	21.87	153.8155	0.19317475	1	Complies
8	6.3096	22.03	159.5879	0.20042430	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-20M MODE_ Total / CH149, CH157, CH165		

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
8	6.3096	20.23	105.4387	0.13241902	1	Complies
8	6.3096	20.12	102.8016	0.12910717	1	Complies
8	6.3096	20.18	104.2317	0.13090323	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-40M MODE_ Total / CH151, CH159		

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
8	6.3096	20.11	102.5652	0.12881023	1	Complies
8	6.3096	20.06	101.3911	0.12733576	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-20M MODE_Total / CH149, CH157, CH165		

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
8	6.3096	20.26	106.1696	0.13333690	1	Complies
8	6.3096	20.27	106.4143	0.13364428	1	Complies
8	6.3096	20.2	104.7129	0.13150745	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-40M MODE_Total / CH151, CH159		

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
8	6.3096	19.74	94.1890	0.11829064	1	Complies
8	6.3096	20.1	102.3293	0.12851398	1	Complies

EUT :	Outdoor Wireless LAN Access Point	Model Name :	AP8130DN
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX AC-80M MODE_Total / CH106, CH122		

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
8	6.3096	16.56	45.2898	0.05687879	1	Complies

For 2.4G+5G simultaneous transmission MPE:

$$0.2004/1+0.6791/1=0.8795$$

Note: the calculated distance is 20 cm.