



13 RF EXPOSURE COMPLIANCE

13.1 LIMIT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

NOTE: f = frequency in MHz; *Plane-wave equivalent power density.

13.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 06, 2012

NOTE: **N/A**: denotes No Model Name, No Serial No. or No Calibration specified.

13.3 MPE CALCULATION METHOD

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

- E** = Electric field (V/m)
- P** = Peak RF output power (W)
- G** = EUT Antenna numeric gain (numeric)
- d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained



13.4 TEST SETUP LAYOUT



13.5 DEVIATION FROM TEST STANDARD

No deviation

13.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 5.6 Unless otherwise a special operating condition is specified in the follows during the testing.



13.7 TEST RESULTS - 5150-5250 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11a/5180 MHz, 5200 MHz, 5240 MHz		

Frequency	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)	Result
5180 MHz	2.00	1.5849	16.1000	40.7380	0.012851	1	PASS
5200 MHz	2.00	1.5849	16.3700	43.3511	0.013676	1	PASS
5240 MHz	2.00	1.5849	16.5900	45.6037	0.014386	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1/5180 MHz, 5200 MHz, 5240 MHz		

Frequency	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)	Result
5180 MHz	2.00	1.5849	13.6100	22.9615	0.007244	1	PASS
5200 MHz	2.00	1.5849	13.4800	22.2844	0.007030	1	PASS
5240 MHz	2.00	1.5849	13.6100	22.9615	0.007244	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2/5180 MHz, 5200 MHz, 5240 MHz		

Frequency	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)	Result
5180 MHz	2.00	1.5849	13.9700	24.9459	0.007870	1	PASS
5200 MHz	2.00	1.5849	14.1600	26.0615	0.008221	1	PASS
5240 MHz	2.00	1.5849	13.6500	23.1739	0.007311	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.Total/5180 MHz, 5200 MHz, 5240 MHz		

Frequency	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)	Result
5180 MHz	4.00	2.5119	16.8040	47.9074	0.023953	1	PASS
5200 MHz	4.00	2.5119	16.8436	48.3459	0.024172	1	PASS
5240 MHz	4.00	2.5119	16.6403	46.1354	0.023067	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1/5190 MHz, 5230 MHz		

Frequency	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)	Result
5190 MHz	2.00	1.5849	11.9500	15.6675	0.004943	1	PASS
5230 MHz	2.00	1.5849	13.5500	22.6464	0.007144	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2/5190 MHz, 5230 MHz		

Frequency	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)	Result
5190 MHz	2.00	1.5849	11.6000	14.4544	0.004560	1	PASS
5230 MHz	2.00	1.5849	13.5900	22.8560	0.007210	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.Total/5190 MHz, 5230 MHz		

Frequency	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)	Result
5190 MHz	4.00	2.5119	14.7888	30.1219	0.015060	1	PASS
5230 MHz	4.00	2.5119	16.5803	45.5024	0.022750	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



13.8 TEST RESULTS - 5250-5230 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11a/5260 MHz, 5300 MHz, 5320 MHz		

Frequency	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)	Result
5260 MHz	2.00	1.5849	16.8700	48.6407	0.015344	1	PASS
5300 MHz	2.00	1.5849	17.1300	51.6416	0.016291	1	PASS
5320 MHz	2.00	1.5849	17.5900	57.4116	0.018111	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1/5260 MHz, 5300 MHz, 5320 MHz		

Frequency	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)	Result
5260 MHz	2.00	1.5849	14.3700	27.3527	0.008629	1	PASS
5300 MHz	2.00	1.5849	14.4300	27.7332	0.008749	1	PASS
5320 MHz	2.00	1.5849	14.9800	31.4775	0.009930	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2/5260 MHz, 5300 MHz, 5320 MHz		

Frequency	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)	Result
5260 MHz	2.00	1.5849	14.5800	28.7078	0.009056	1	PASS
5300 MHz	2.00	1.5849	15.4400	34.9945	0.011040	1	PASS
5320 MHz	2.00	1.5849	15.7800	37.8443	0.011939	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.Total/5260 MHz, 5300 MHz, 5320 MHz		

Frequency	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)	Result
5260 MHz	4.00	2.5119	17.4866	56.0605	0.028029	1	PASS
5300 MHz	4.00	2.5119	17.9746	62.7277	0.031362	1	PASS
5320 MHz	4.00	2.5119	18.4087	69.3217	0.034659	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1/5270 MHz, 5310 MHz		

Frequency	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)	Result
5270 MHz	2.00	1.5849	15.2600	33.5738	0.010591	1	PASS
5310 MHz	2.00	1.5849	11.2200	13.2434	0.004178	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2/5270 MHz, 5310 MHz		

Frequency	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)	Result
5270 MHz	2.00	1.5849	15.8400	38.3707	0.012105	1	PASS
5310 MHz	2.00	1.5849	10.5000	11.2202	0.003540	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.Total/5270 MHz, 5310 MHz		

Frequency	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)	Result
5270 MHz	4.00	2.5119	18.5700	71.9445	0.035971	1	PASS
5310 MHz	4.00	2.5119	13.8852	24.4636	0.012231	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



13.9 TEST RESULTS - 5470-5725 MHZ

E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11a/5500 MHz, 5580 MHz, 5700 MHz		

Frequency	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)	Result
5500 MHz	2.00	1.5849	17.4800	55.9758	0.017658	1	PASS
5580 MHz	2.00	1.5849	17.9100	61.8016	0.019496	1	PASS
5700 MHz	2.00	1.5849	16.9300	49.3174	0.015558	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.1/5500 MHz, 5580 MHz, 5700 MHz		

Frequency	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)	Result
5500 MHz	2.00	1.5849	15.7900	37.9315	0.011966	1	PASS
5580 MHz	2.00	1.5849	15.3100	33.9625	0.010714	1	PASS
5700 MHz	2.00	1.5849	14.8600	30.6196	0.009659	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.2/5500 MHz, 5580 MHz, 5700 MHz		

Frequency	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)	Result
5500 MHz	2.00	1.5849	16.0700	40.4576	0.012763	1	PASS
5580 MHz	2.00	1.5849	15.2800	33.7287	0.010640	1	PASS
5700 MHz	2.00	1.5849	14.8800	30.7610	0.009704	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (20 MHz)/ANT.Total/5500 MHz, 5580 MHz, 5700 MHz		

Frequency	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)	Result
5500 MHz	4.00	2.5119	18.9426	78.3891	0.039193	1	PASS
5580 MHz	4.00	2.5119	18.3053	67.6913	0.033844	1	PASS
5700 MHz	4.00	2.5119	17.8803	61.3806	0.030689	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.1/5510 MHz, 5550 MHz, 5670 MHz		

Frequency	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)	Result
5510 MHz	2.00	1.5849	15.7800	37.8443	0.011939	1	PASS
5550 MHz	2.00	1.5849	16.4800	44.4631	0.014027	1	PASS
5670 MHz	2.00	1.5849	15.5800	36.1410	0.011401	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.2/5510 MHz, 5550 MHz, 5670 MHz		

Frequency	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)	Result
5510 MHz	2.00	1.5849	15.6700	36.8978	0.011640	1	PASS
5550 MHz	2.00	1.5849	16.6400	46.1318	0.014553	1	PASS
5670 MHz	2.00	1.5849	15.3900	34.5939	0.010913	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.



E.U.T	MONDOCENTER	Model Name	INF-MCENTER
Temperature	26°C	Relative Humidity	60%
Test Voltage	AC 120V/60Hz		
Test Mode	IEEE 802.11n (40 MHz)/ANT.Total/5510 MHz, 5550 MHz, 5670 MHz		

Frequency	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)	Result
5510 MHz	4.00	2.5119	18.7356	74.7420	0.037369	1	PASS
5550 MHz	4.00	2.5119	19.5710	90.5949	0.045295	1	PASS
5670 MHz	4.00	2.5119	18.4963	70.7349	0.035366	1	PASS

NOTE: The MIMO test requirement, MPE shall measure by using the total sum power of each transmitter chain.