



11 RF EXPOSURE COMPLIANCE

11.1 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.

11.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|--------------------|--------------|----------|------------|------------------|
| 1 | Power Meter | Anritsu | ML2495A | 1128008 | Jul. 22, 2013 |
| 2 | Power Meter Sensor | Anritsu | MA2411B | 1126001 | Jul. 22, 2013 |

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

11.3 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)

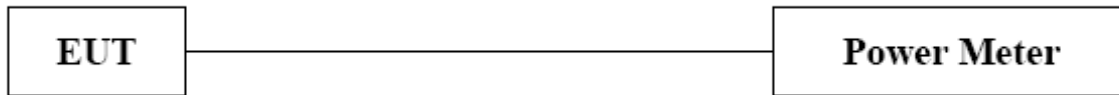
The formula can be changed to

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

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



11.4 TEST SETUP LAYOUT



11.5 DEVIATION FROM TEST STANDARD

No deviation

11.6 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.



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11.7 TEST RESULTS - 2412-2462 MHZ

| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11b/2412 MHz, 2437 MHz, 2462 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 2412 MHz | 2.26 | 1.6827 | 16.6400 | 46.1318 | 0.015451 | 1 | PASS |
| 2437 MHz | 2.26 | 1.6827 | 16.2200 | 41.8794 | 0.014027 | 1 | PASS |
| 2462 MHz | 2.26 | 1.6827 | 16.0400 | 40.1791 | 0.013457 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11g/2412 MHz, 2437 MHz, 2462 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 2412 MHz | 2.26 | 1.6827 | 21.3500 | 136.4583 | 0.045704 | 1 | PASS |
| 2437 MHz | 2.26 | 1.6827 | 21.2300 | 132.7394 | 0.044458 | 1 | PASS |
| 2462 MHz | 2.26 | 1.6827 | 20.9800 | 125.3141 | 0.041971 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (20 MHz)/ANT.0/2412 MHz, 2437 MHz, 2462 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 2412 MHz | 2.26 | 1.6827 | 20.0200 | 100.4616 | 0.033647 | 1 | PASS |
| 2437 MHz | 2.26 | 1.6827 | 19.2600 | 84.3335 | 0.028246 | 1 | PASS |
| 2462 MHz | 2.26 | 1.6827 | 19.4500 | 88.1049 | 0.029509 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (20 MHz)/ANT.1/2412 MHz, 2437 MHz, 2462 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 2412 MHz | 1.70 | 1.4791 | 20.0500 | 101.1579 | 0.029782 | 1 | PASS |
| 2437 MHz | 1.70 | 1.4791 | 19.3700 | 86.4968 | 0.025465 | 1 | PASS |
| 2462 MHz | 1.70 | 1.4791 | 19.0700 | 80.7235 | 0.023766 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (20 MHz)/ANT.Total/2412 MHz, 2437 MHz, 2462 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 2412 MHz | 3.96 | 2.4889 | 23.0453 | 201.6195 | 0.099881 | 1 | PASS |
| 2437 MHz | 3.96 | 2.4889 | 22.3256 | 170.8303 | 0.084628 | 1 | PASS |
| 2462 MHz | 3.96 | 2.4889 | 22.2745 | 168.8284 | 0.083636 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (40 MHz)/ANT.0/2422 MHz, 2437 MHz, 2452 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 2422 MHz | 2.26 | 1.6827 | 16.7900 | 47.7529 | 0.015994 | 1 | PASS |
| 2437 MHz | 2.26 | 1.6827 | 16.3200 | 42.8549 | 0.014353 | 1 | PASS |
| 2452 MHz | 2.26 | 1.6827 | 16.4000 | 43.6516 | 0.014620 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (40 MHz)/ANT.1/2422 MHz, 2437 MHz, 2452 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 2422 MHz | 1.70 | 1.4791 | 17.1600 | 51.9996 | 0.015309 | 1 | PASS |
| 2437 MHz | 1.70 | 1.4791 | 16.5200 | 44.8745 | 0.013211 | 1 | PASS |
| 2452 MHz | 1.70 | 1.4791 | 16.4700 | 44.3609 | 0.013060 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (40 MHz)/ANT.Total/2422 MHz, 2437 MHz, 2452 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 2422 MHz | 3.96 | 2.4889 | 19.9892 | 99.7525 | 0.049417 | 1 | PASS |
| 2437 MHz | 3.96 | 2.4889 | 19.4315 | 87.7294 | 0.043461 | 1 | PASS |
| 2452 MHz | 3.96 | 2.4889 | 19.4454 | 88.0124 | 0.043601 | 1 | PASS |



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11.8 TEST RESULTS - 5745-5825 MHZ

| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11a/5745 MHz, 5785 MHz, 5825 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 5745 MHz | 4.95 | 3.1261 | 21.0900 | 128.5287 | 0.079974 | 1 | PASS |
| 5785 MHz | 4.95 | 3.1261 | 20.7600 | 119.1242 | 0.074123 | 1 | PASS |
| 5825 MHz | 4.95 | 3.1261 | 20.6500 | 116.1449 | 0.072269 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (20 MHz)/ANT.0/5745 MHz, 5785 MHz, 5825 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 5745 MHz | 4.29 | 2.6853 | 20.9100 | 123.3105 | 0.065910 | 1 | PASS |
| 5785 MHz | 4.29 | 2.6853 | 20.9800 | 125.3141 | 0.066981 | 1 | PASS |
| 5825 MHz | 4.29 | 2.6853 | 20.7000 | 117.4898 | 0.062799 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (20 MHz)/ANT.1/5745 MHz, 5785 MHz, 5825 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 5745 MHz | 4.95 | 3.1261 | 21.3300 | 135.8313 | 0.084518 | 1 | PASS |
| 5785 MHz | 4.95 | 3.1261 | 20.6500 | 116.1449 | 0.072269 | 1 | PASS |
| 5825 MHz | 4.95 | 3.1261 | 20.9500 | 124.4515 | 0.077437 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (20 MHz)/ANT.Total/5745 MHz, 5785 MHz, 5825 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 5745 MHz | 9.24 | 8.3946 | 24.1354 | 259.1418 | 0.433000 | 1 | PASS |
| 5785 MHz | 9.24 | 8.3946 | 23.8284 | 241.4590 | 0.403454 | 1 | PASS |
| 5825 MHz | 9.24 | 8.3946 | 23.8371 | 241.9412 | 0.404259 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (40 MHz)/ANT.0/5755 MHz, 5795 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 5755 MHz | 4.29 | 2.6853 | 20.6600 | 116.4126 | 0.062223 | 1 | PASS |
| 5795 MHz | 4.29 | 2.6853 | 20.4800 | 111.6863 | 0.059697 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (40 MHz)/ANT.1/5755 MHz, 5795 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 5755 MHz | 4.95 | 3.1261 | 20.7600 | 119.1242 | 0.074123 | 1 | PASS |
| 5795 MHz | 4.95 | 3.1261 | 20.2200 | 105.1962 | 0.065456 | 1 | PASS |



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| | | | |
|--------------|--|-------------------|----------|
| E.U.T | IEEE 802.11a/b/g/n 2x2 Wireless LAN USB Client | Model Name | AP-3001g |
| Temperature | 26°C | Relative Humidity | 60% |
| Test Voltage | AC 120V/60Hz (System) | | |
| Test Mode | IEEE 802.11n (40 MHz)/ANT.Total/5755 MHz, 5795 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 |
|-----------|--------------------|------------------------|-------------------------|------------------------|---|--|--------|
| 5755 MHz | 9.24 | 8.3946 | 23.7206 | 235.5368 | 0.393558 | 1 | PASS |
| 5795 MHz | 9.24 | 8.3946 | 23.3622 | 216.8825 | 0.362389 | 1 | PASS |