

FCC RF EXPOSURE REPORT

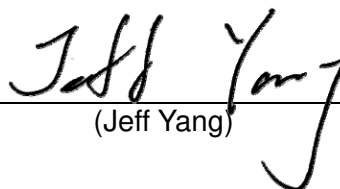
FCC ID: 2AJIF-MACH20001

Project No. : 1611100
Equipment : Industrial Gateway
Model Name : Mach2 Gateway
Applicant : Machfu, Inc.
Address : 20271 Goldenrod Ln., Germantown, MD 20876
USA

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

Technical Manager

:


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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

Bluetooth:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	taoglas	GW.05	monopole	Standard RP-SMA(M)	1.25	TX/RX

Bluetooth LE:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	taoglas	GW.05	monopole	Standard RP-SMA(M)	1.25	TX/RX

WLAN:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	taoglas	GW.05	monopole	Standard RP-SMA(M)	1.25	TX/RX

Calculation:

Bluetooth:

EUT:	Industrial Gateway	Model Name :	Mach2 Gateway
Temperature:	25°C	Relative Humidity:	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX Mode _1Mbps /CH01, CH19, CH39		

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
1.25	1.3335	3.73	2.3605	0.00062654	1	Complies
1.25	1.3335	6.80	4.7863	0.00127043	1	Complies
1.25	1.3335	11.20	13.1826	0.00349905	1	Complies

EUT:	Industrial Gateway	Model Name :	Mach2 Gateway
Temperature:	25°C	Relative Humidity:	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX Mode _3Mbps /CH01, CH19, CH39		

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
1.25	1.3335	2.24	1.6749	0.00044458	1	Complies
1.25	1.3335	4.49	2.8119	0.00074636	1	Complies
1.25	1.3335	8.39	6.9024	0.00183211	1	Complies

Bluetooth LE:

EUT:	Industrial Gateway	Model Name :	Mach2 Gateway
Temperature:	25°C	Relative Humidity:	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX Mode /CH01, CH19, CH39		

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
1.25	1.3335	7.70	5.8884	0.00156297	1	Complies
1.25	1.3335	7.17	5.2119	0.00138341	1	Complies
1.25	1.3335	6.71	4.6881	0.00124437	1	Complies

WLAN:

EUT:	Industrial Gateway	Model Name :	Mach2 Gateway
Temperature:	25°C	Relative Humidity:	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX B Mode /_ Total 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
1.25	1.3335	15.89	38.8150	0.01030268	1	Complies
1.25	1.3335	15.56	35.9749	0.00954883	1	Complies
1.25	1.3335	15.06	32.0627	0.00851041	1	Complies

EUT:	Industrial Gateway	Model Name :	Mach2 Gateway
Temperature:	25°C	Relative Humidity:	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX G Mode /_ Total 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
1.25	1.3335	17.57	57.1479	0.01516877	1	Complies
1.25	1.3335	17.68	58.6138	0.01555788	1	Complies
1.25	1.3335	16.63	46.0257	0.01221660	1	Complies

EUT:	Industrial Gateway	Model Name :	Mach2 Gateway
Temperature:	25°C	Relative Humidity:	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-20M Mode_ Total /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
1.25	1.3335	17.60	57.5440	0.01527391	1	Complies
1.25	1.3335	17.49	56.1048	0.01489191	1	Complies
1.25	1.3335	16.47	44.3609	0.01177471	1	Complies

EUT:	Industrial Gateway	Model Name :	Mach2 Gateway
Temperature:	25°C	Relative Humidity:	60%
Test Voltage :	AC 120V/60Hz		
Test Mode :	TX N-40M Mode_ Total /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
1.25	1.3335	15.54	35.8096	0.00950496	1	Complies
1.25	1.3335	16.8	47.8630	0.01270429	1	Complies
1.25	1.3335	14.96	31.3329	0.00831669	1	Complies

For Bluetooth+WLAN simultaneous transmission MPE:

$$0.0007/1+0.0351/1=0.0358<1$$

Note: the calculated distance is 20 cm.