

RF EXPOSURE REPORT

REPORT NO.: SA991207D25A

MODEL NO.: PCG-41211L, PCG-41212L

FCC ID: AK8PCG41211L

ACCORDING: FCC Guidelines for Human Exposure
IEEE C95.1

APPLICANT: SONY Corporation

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1. RF EXPOSURE LIMIT

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm ²)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

2. MPE CALCULATION FORMULA

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

3. CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

4. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

FOR WLAN:

MODULATION MODE	FREQUENCY BAND (MHz)	MAX CONDUCTED POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
802.11b	2412-2462	17.5	4.05	20	0.0284	1.00
802.11g	2412-2462	21.7	4.05	20	0.0748	1.00
802.11n (20MHz)	2412-2462	23.3	1.04	20	0.0540	1.00
802.11n (40MHz)	2422-2452	23.1	1.04	20	0.0516	1.00
802.1a	5180-5240	15.1	3.81	20	0.0101	1.00
802.11n (20MHz)	5180-5240	14.7	0.80	20	0.0071	1.00
802.11n (40MHz)	5190-5230	15.1	0.80	20	0.0077	1.00
802.1a	5260-5320	15.2	3.81	20	0.0104	1.00
802.11n (20MHz)	5260-5320	15.0	0.80	20	0.0076	1.00
802.11n (40MHz)	5270-5310	15.1	0.80	20	0.0077	1.00
802.1a	5500-5700	15.4	3.81	20	0.0109	1.00
802.11n (20MHz)	5500-5700	15.0	0.80	20	0.0076	1.00
802.11n (40MHz)	5510-5670	15.1	0.80	20	0.0077	1.00
802.1a	5745-5825	21.3	1.97	20	0.0645	1.00
802.11n (20MHz)	5745-5825	23.0	-1.04	20	0.0312	1.00
802.11n (40MHz)	5755-5795	23.2	-1.04	20	0.0327	1.00

FOR BLUETOOTH:

FREQUENCY BAND (MHz)	MAX POWER (dBm)	MAXIMUM ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
2402-2480	2.9	-1.59	20	0.0003	1.00

FOR WWAN:

MODE	MAX CONDUCTED POWER (dBm)	SOURCE-TIME AVERAGE POWER(dBm)	ANTENNA GAIN (dBi)	MPE (mW/cm ²)	LIMIT (mW/cm ²)
GPRS 850	32.3	26.3	0.23	0.0895	0.55
EGPRS 850	27.12	21.12	0.23	0.0271	0.55
GPRS 1900	29.2	23.2	1.76	0.0623	1.00
EGPRS 1900	25.54	19.54	1.76	0.0268	1.00

MODE	MAX CONDUCTED POWER (dBm)	ANTENNA GAIN (dBi)	MPE (mW/cm ²)	LIMIT (mW/cm ²)
CDMA 850	24.65	0.23	0.0612	0.55
CDMA 1900	24.42	1.76	0.0826	1.00
WCDMA 850	24.59	0.23	0.0604	0.55
WCDMA 1900	24.89	1.76	0.0920	1.00

CONCLUSION:

Both of the modules can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

1. WLAN (2.4G) + BLUETOOTH + GPRS 850 = $0.0748/1 + 0.0003/1 + 0.0895/0.55 = 0.2380$
2. WLAN (2.4G) + BLUETOOTH + EGPRS 850 = $0.0748/1 + 0.0003/1 + 0.0271/0.55 = 0.1245$
3. WLAN (2.4G) + BLUETOOTH + GPRS 1900 = $0.0748/1 + 0.0003/1 + 0.0623/1 = 0.1374$
4. WLAN (2.4G) + BLUETOOTH + EGPRS 1900 = $0.0748/1 + 0.0003/1 + 0.0268/1 = 0.1019$
5. WLAN (2.4G) + BLUETOOTH + CDMA 850 = $0.0748/1 + 0.0003/1 + 0.0612/0.55 = 0.1865$
6. WLAN (2.4G) + BLUETOOTH + CDMA 1900 = $0.0748/1 + 0.0003/1 + 0.0826/1 = 0.1581$
7. WLAN (2.4G) + BLUETOOTH + WCDMA 850 = $0.0748/1 + 0.0003/1 + 0.0604/0.55 = 0.1849$
8. WLAN (2.4G) + BLUETOOTH + WCDMA 1900 = $0.0748/1 + 0.0003/1 + 0.0920/1 = 0.1671$
9. WLAN (5.0G) + BLUETOOTH + GPRS 850 = $0.0422/1 + 0.0003/1 + 0.0895/0.55 = 0.2054$
10. WLAN (5.0G) + BLUETOOTH + EGPRS 850 = $0.0422/1 + 0.0003/1 + 0.0271/0.55 = 0.0919$
11. WLAN (5.0G) + BLUETOOTH + GPRS 1900 = $0.0422/1 + 0.0003/1 + 0.0623/1 = 0.1045$
12. WLAN (5.0G) + BLUETOOTH + EGPRS 1900 = $0.0422/1 + 0.0003/1 + 0.0268/1 = 0.0695$
13. WLAN (5.0G) + BLUETOOTH + CDMA 850 = $0.0422/1 + 0.0003/1 + 0.0612/0.55 = 0.1539$
14. WLAN (5.0G) + BLUETOOTH + CDMA 1900 = $0.0422/1 + 0.0003/1 + 0.0826/1 = 0.1255$
15. WLAN (5.0G) + BLUETOOTH + WCDMA 850 = $0.0422/1 + 0.0003/1 + 0.0604/0.55 = 0.1523$
16. WLAN (5.0G) + BLUETOOTH + WCDMA 1900 = $0.0422/1 + 0.0003/1 + 0.0920/1 = 0.1345$

Therefore, the maximum calculation of this situation is 0.2380, which is less than the "1" limit.