

MPE REPORT

案 號： 1602C038I

產 品 名 稱： SHIELD Android TV Game Console

型 號： P2897

申請廠商（名稱）： 香港商輝達香港控股有限公司台灣分公司

申請廠商（地址）： 114臺北市內湖區基湖路8號

According to : LP0002 第 5.20.2 節

報告簽署人：



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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:

For 2.4GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)
1	NVIDIA Corporation	N/A	Monopole	IPEX	2.70
2	NVIDIA Corporation	N/A	Monopole	N/A	2.80

Note:

This EUT supports MIMO 2X2, any transmit signals are correlated with each other, so Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi, that is Directional gain = 5.76 dBi.

Table for Antenna Configuration:

Operating Mode TX Mode	1TX	2TX
IEEE 802.11b	V (Ant. 1 / Ant. 2)	-
IEEE 802.11g	V (Ant. 1 / Ant. 2)	-
IEEE 802.11n (HT20)	-	V (Ant. 1 + Ant. 2)

For 5GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)	Note
1	NVIDIA Corporation	N/A	Monopole	IPEX	4.50	UNII-1
2	NVIDIA Corporation	N/A	Monopole	N/A	4.43	UNII-1

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)	Note
1	NVIDIA Corporation	N/A	Monopole	IPEX	4.31	UNII-2A
2	NVIDIA Corporation	N/A	Monopole	N/A	4.43	UNII-2A

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)	Note
1	NVIDIA Corporation	N/A	Monopole	IPEX	4.92	UNII-2C
2	NVIDIA Corporation	N/A	Monopole	N/A	6.57	UNII-2C

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)	Note
1	NVIDIA Corporation	N/A	Monopole	IPEX	5.23	UNII-3
2	NVIDIA Corporation	N/A	Monopole	N/A	6.75	UNII-3

Note:

This EUT supports MIMO 2X2, any transmit signals are correlated with each other. So,

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2/N]$, that are

UNII-1 Directional gain = $10 \log[(10^{4.50/20} + 10^{4.43/20})^2/2] = 7.49 \text{ dBi}$

UNII-2A Directional gain = $10 \log[(10^{4.31/20} + 10^{4.43/20})^2/2] = 7.39 \text{ dBi}$

UNII-2C Directional gain = $10 \log[(10^{4.92/20} + 10^{6.57/20})^2/2] = 8.80 \text{ dBi}$

UNII-3 Directional gain = $10 \log[(10^{5.23/20} + 10^{6.75/20})^2/2] = 9.05 \text{ dBi}$

The UNII-1 Output Power limit is $24 - (7.49 - 6) = 22.51 \text{ dBm}$

The UNII-2A Output Power limit is $24 - (7.39 - 6) = 22.61 \text{ dBm}$

The UNII-2C Output Power limit is $24 - (8.80 - 6) = 21.20 \text{ dBm}$

The UNII-3 Output Power limit is $30 - (9.05 - 6) = 26.95 \text{ dBm}$

The UNII-1 Power Spectral Density limit is $11 - (7.49 - 6) = 9.51 \text{ dBm/MHz}$

The UNII-2A Power Spectral Density limit is $11 - (7.39 - 6) = 9.61 \text{ dBm/MHz}$

The UNII-2C Power Spectral Density limit is $11 - (8.80 - 6) = 8.20 \text{ dBm/MHz}$

The UNII-3 Power Spectral Density limit is $(30 - 9.05 - 6) = 26.95 \text{ dBm/500kHz}$.

Table for Antenna Configuration:

Operating Mode TX Mode	1TX	2TX
IEEE 802.11a	V (Ant. 1 / Ant. 2)	-
IEEE 802.11n (HT20)	-	V (Ant. 1 + Ant. 2)
IEEE 802.11n (HT40)	-	V (Ant. 1 + Ant. 2)
IEEE 802.11ac (VHT20)	-	V (Ant. 1 + Ant. 2)
IEEE 802.11ac (VHT40)	-	V (Ant. 1 + Ant. 2)
IEEE 802.11ac (VHT80)	-	V (Ant. 1 + Ant. 2)

TEST RESULTS:

For 2.4GHz

測試頻道: IEEE 802.11n (HT20)

測試模式: 發射

檢測器: Peak

測試日期: 108/06/15

環境溫度: 23°C

環境濕度: 58%

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
5.76	3.7670	26.2	416.8694	0.31257		Complies

For 5GHz

測試頻道: IEEE 802.11ac (VHT40) / 5.2 GHz 頻帶

測試模式: 發射

檢測器: RMS

測試日期: 108/06/20

環境溫度: 23°C

環境濕度: 58%

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
7.49	5.6105	20.69	117.2195	0.13090	1	Complies

測試頻道: IEEE 802.11a / 5.3 GHz 頻帶

測試模式: 發射

檢測器: RMS

測試日期: 108/06/20

環境溫度: 23°C

環境濕度: 58%

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
4.31	2.6977	19.47	88.5116	0.04753	1	Complies

測試頻道：IEEE 802.11a / 5.6 GHz 頻帶
 檢測器：RMS
 環境溫度：23°C

測試模式：發射
 測試日期：108/06/20
 環境濕度：58%

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
4.92	3.1046	19.52	89.5365	0.05533	1	Complies

測試頻道：IEEE 802.11n (HT40) / 5.8 GHz 頻帶
 檢測器：RMS
 環境溫度：23°C

測試模式：發射
 測試日期：108/06/20
 環境濕度：58%

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
9.05	8.0353	21.91	155.2387	0.24828	1	Complies

Note: The evaluated distance is 20cm.

結束