



耕興股份有限公司電磁相容及無線通信實驗室

標準檢驗局指定實驗室認可編號: SL2-IN-E-0012

報告編號: TX1O1903-02

商品名稱 : Mobile Cellular Phone

申請人 : Motorola Mobility LLC
222 W, Merchandise Mart Plaza,
Chicago, IL60654 USA

型 式 : XT2201-1

廠 牌 : Motorola

依據標準 : CNS 13438 95 年 完整版 乙類

試驗結果 : 符合

試驗場地地址 : 桃園市龜山區華亞一路 52 號
新北市林口區頂福村 6 鄰 30-2 號

- 測試產品接收日期為 2021 年 11 月 9 日。
- 於 2021 年 12 月 11 日開始測試, 2022 年 1 月 18 日結束測試。
- 此份試驗報告, 僅針對保留於本實驗室的試驗樣品有效。
- 未獲本公司書面允許, 證書或報告不得節錄複製。

報告簽署人: _____

吳忠泰

報告發行日期: 2022 年 1 月 27 日



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報告履歷

報告編號	報告版本	說明	報告發行日期
TX1O1903-02	01	初版	2022 年 1 月 21 日
TX1O1903-02	02	修改隨貨周邊資訊及量測系統之描述	2022 年 1 月 27 日



測試結果總表

報告章節	法規章節	檢驗項目	結果判定	備註
3	5	傳導干擾電壓量測	符合	低於限制值8.96dB, 頻率1.327MHz
4	6	輻射干擾場強量測	符合	低於限制值3.02dB, 頻率49.870MHz for Quasi-Peak

符合性聲明:

上述報告所列測試結果判定, 不納入不確定度評估, 且依法規所列限制值或製造商宣告作為判定準則。

意見與解釋:

報告中 EUT 呈現的技術規格由製造商提供, 製造商承擔所有規格準確性的責任。

報告審查: 鄭文凱

報告製作: 羅聿珊



1. 待測物之一般敘述

1.1 製造廠商

Motorola Mobility LLC

222 W, Merchandise Mart Plaza, Chicago, IL60654 USA

1.2 待測物特性與規格

Product Feature		
Equipment	Mobile Cellular Phone	
Brand Name	Motorola	
Model Name	XT2201-1	
Sample 1	1st source (refer to the PED)	
Sample 2	2nd source (refer to the PED)	
IMEI Code	Sample 1	IMEI 1: 355871980021575 IMEI 2: 355871980021583
	Sample 2	IMEI 1: 355871980027671 IMEI 2: 355871980027689
Tx Frequency	GSM900 : 890 MHz ~ 915 MHz WCDMA Band I : 1920 MHz ~ 1980 MHz WCDMA Band VIII: 885 MHz ~ 915 MHz LTE 2.1G Band: 1920 MHz ~ 1980 MHz LTE 1.8G Band: 1710 MHz ~ 1785 MHz LTE 2.5G -2.6G Band: 2500 MHz ~ 2570 MHz LTE 900M Band: 885 MHz ~ 915 MHz LTE 700M Band: 703 MHz ~ 748 MHz LTE 2.5G -2.6G Band: 2570 MHz ~ 2620 MHz LTE 2.5G -2.6G Band: 2496MHz~2690MHz 5G NR 2100MHz Band: 1920 MHz ~ 1980 MHz 5G NR 1800MHz Band: 1710 MHz ~ 1785 MHz 5G NR 2500MHz-2600MHz Band: 2500 MHz ~ 2570 MHz 5G NR 900MHz Band: 885 MHz ~ 915 MHz 5G NR 700MHz Band: 703 MHz ~ 748 MHz 5G NR 2500MHz-2600MHz Band: 2570 MHz ~ 2620 MHz 5G NR 2500MHz-2600MHz Band: 2500 MHz ~ 2690 MHz 5G NR 3500MHz Band: 3300 MHz ~ 3570 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz WLAN 802.11b/g/n/ax: 2400 MHz ~ 2483.5 MHz WLAN 802.11a/n/ac/ax : 5150 MHz ~ 5250 MHz / 5250 MHz ~ 5350 MHz / 5470 MHz ~ 5725 MHz / 5725 MHz ~ 5850 MHz NFC : 13.56 MHz	

Product Feature	
Rx Frequency	GSM900 : 935 MHz ~ 960 MHz WCDMA Band I : 2110 MHz ~ 2170 MHz WCDMA Band VIII: 930 MHz ~ 960 MHz LTE 2.1G Band: 2110 MHz ~ 2170 MHz LTE 1.8G Band: 1805 MHz ~ 1880 MHz LTE 2.5G -2.6G Band: 2620 MHz ~ 2690 MHz LTE 900M Band: 930 MHz ~ 960 MHz LTE 700M Band: 758 MHz ~ 803 MHz LTE 2.5G -2.6G Band: 2570 MHz ~ 2620 MHz LTE 2.5G -2.6G Band: 2496MHz-2690MHz 5G NR 2100MHz Band: 2110 MHz ~ 2170 MHz 5G NR 1800MHz Band: 1805 MHz ~ 1880 MHz 5G NR 2500MHz-2600MHz Band: 2620 MHz ~ 2690 MHz 5G NR 900MHz Band: 930 MHz ~ 960 MHz 5G NR 700MHz Band: 758 MHz ~ 803 MHz 5G NR 2500MHz-2600MHz Band: 2570 MHz ~ 2620 MHz 5G NR 2500MHz-2600MHz Band: 2500 MHz ~ 2690 MHz 5G NR 3500MHz Band: 3300 MHz ~ 3570 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz WLAN 802.11b/g/n/ax: 2400 MHz ~ 2483.5 MHz WLAN 802.11a/n/ac/ax : 5150 MHz ~ 5250 MHz / 5250 MHz ~ 5350 MHz / 5470 MHz ~ 5725 MHz / 5725 MHz ~ 5850 MHz NFC : 13.56 MHz GPS/Glonass/Galileo/SBAS: 1559 MHz ~ 1610 MHz WPC: 110kHz ~ 205kHz
Type of Modulation	GSM/GPRS: GMSK EDGE(MCS 0-4): GMSK/(MCS 5-9): 8PSK WCDMA: QPSK HSDPA: 64QAM (Downlink) HSUPA: QPSK (Uplink) LTE: QPSK/16QAM/64QAM/256QAM 5G NR: PI/2 BPSK/QPSK/16QAM/64QAM/256QAM Bluetooth-LE: GFSK Bluetooth BR (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π /4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK 802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11ax: OFDMA (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM) NFC: ASK GPS/Glonass/Galileo/SBAS: BPSK WPC: ASK
HW Version	DVT2
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer.

<WWAN>

Antenna Information				
Antenna 0	Brand Name	Moto	Peak Gain	GSM900: -4.3 dBi WCDMA Band I: -0.3 dBi WCDMA Band VIII: -4.3 dBi LTE Band 1: -0.3 dBi LTE Band 3: -0.5 dBi LTE Band 7: 1.0 dBi LTE Band 8: -4.3 dBi LTE Band 28: -3.5 dBi LTE Band 38: 0.7 dBi LTE Band 41: 1.0 dBi 5G NR n1: -0.3 dBi 5G NR n3: -0.5 dBi 5G NR n7: 1.0 dBi 5G NR n8: -4.3 dBi 5G NR n28: -3.5 dBi 5G NR n38: 0.7 dBi 5G NR n41: 1.0 dBi
	Model Name	ANT0	Type	IFA Antenna
Antenna 1	Brand Name	Moto	Peak Gain	GSM900: -3.7 dBi WCDMA Band VIII: -3.7 dBi LTE Band 1: -2.0 dBi LTE Band 3: -1.5 dBi LTE Band 7: -0.9 dBi LTE Band 8: -3.7 dBi LTE Band 28: -4.8 dBi LTE Band 38: -0.9 dBi LTE Band 41: -0.3 dBi 5G NR n1: -2.0 dBi 5G NR n3: -1.5 dBi 5G NR n7: -0.9 dBi 5G NR n8: -3.7 dBi 5G NR n28: -4.8 dBi 5G NR n38: -0.9 dBi 5G NR n41: -0.3 dBi
	Model Name	ANT1	Type	IFA Antenna
Antenna 2	Brand Name	Moto	Peak Gain	5G NR n78: -0.3 dBi
	Model Name	ANT2	Type	IFA Antenna
Antenna 3	Brand Name	Moto	Peak Gain	5G NR n78: -3.0 dBi
	Model Name	ANT3	Type	Loop Antenna
Antenna 7	Brand Name	Moto	Peak Gain	5G NR n78: -0.2 dBi
	Model Name	ANT7	Type	PIFA Antenna
Antenna 8	Brand Name	Moto	Peak Gain	5G NR n78: -1.5 dBi
	Model Name	ANT8	Type	PIFA Antenna

<WLAN>

Antenna Information				
Antenna 4	Brand Name	Moto	Peak Gain	Bluetooth: -2.88 dBi WLAN 2.4GHz: -2.88 dBi
	Model Name	ANT4	Type	IFA Antenna
Antenna 5	Brand Name	Moto	Peak Gain	WLAN 5GHz (Band 1): -3.2 dBi WLAN 5GHz (Band 2): -3.1 dBi WLAN 5GHz (Band 3): -3.0 dBi WLAN 5GHz (Band 4): -3.1 dBi
	Model Name	ANT5	Type	PIFA Antenna
Antenna 6	Brand Name	Moto	Peak Gain	Bluetooth: -3.76 dBi WLAN 2.4GHz: -3.76 dBi WLAN 5GHz (Band 1): -3.2 dBi WLAN 5GHz (Band 2): -3.1 dBi WLAN 5GHz (Band 3): -3.0 dBi WLAN 5GHz (Band 4): -3.1 dBi
	Model Name	ANT6	Type	PIFA Antenna

<GNSS>

Antenna Information				
Antenna 4 (GPS L1/Glonass/Galileo/SBAS)	Brand Name	Moto	Peak gain	N/A
	Model Name	ANT4	Type	IFA Antenna
Antenna 5 (GPS L5)	Brand Name	Moto	Peak gain	N/A
	Model Name	ANT5	Type	PIFA Antenna

<NFC>

Antenna Information				
Antenna 9	Brand Name	Moto	Peak gain	N/A
	Model Name	ANT9	Type	Loop Antenna

<WPC/WPT>

Antenna Information				
Antenna	Brand Name	Moto	Peak gain	N/A
	Model Name	wireless charging	Type	Coil Antenna

Remark:

- The detail internal, external and transmit antenna photo please refer to Sporton report no.: EP1O1903-02.
- The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

Specification of Accessory	
AC Adapter 1	Brand Name : Motorola
	Model Name : MC-681
	Manufacturer : Salom
AC Adapter 2	Brand Name : Motorola
	Model Name : MC-681
	Manufacturer : Chenyang
Battery	Brand Name : Motorola
	Model Name : NA50
Earphone 1	Brand Name : Motorola
	Model Name : MD211(SH38D20195)
Earphone 2	Brand Name : Motorola
	Model Name : MD211(SH38D39180)
USB Cable	Brand Name : Motorola
	Model Name : SC18D24968
OceanBlue	Brand Name : ThinkReality A3 AR Glasses
	Model Name : A3
OceanBlue Industrial Kit-Y Cable	Brand Name : ThinkReality A3 Industrial Kit-Y Cable
	Model Name : A3 Y Cable

1.3 Modification of EUT

No modifications are made to the EUT during all test items.



1.4 測試場地

耕興股份有限公司通過財團法人全國認證基金會 ISO 17025 認證 (TAF code : 1190) 及 FCC Mutual Recognition Agreement (MRA) 認證標準 FCC 2.948(e) (FCC designation No. TW1093/TW1095).

測試地點	耕興股份有限公司電磁相容及無線通信實驗室	
測試場地位置	桃園市龜山區華亞一路 52 號 電話 : +886-3-327-3456 傳真 : +886-3-328-4978	
測試場地編號	耕興場地編號	
	傳導測試場地	3m 半電波暗室
	CO05-HY	03CH06-HY

測試地點	耕興股份有限公司電磁相容及無線通信實驗室	
測試場地位置	新北市林口區頂福村 6 鄰 30-2 號 電話 : +886-2-2601-1640 傳真 : +886-2-2601-1695	
測試場地編號	耕興場地編號	
	10m 開放式場地	
	OS04-LK	

1.5 測試概述

根據製造商的規格，EUT 必須符合以下標準的要求：

- CNS 13438 95 年 6 月 1 日完整版 乙類

註：

1. 傳導干擾電壓量測：自 150 kHz 至 30 MHz
2. 輻射干擾場強量測：自 30 MHz 至 6000 MHz
3. 天線至待測設備之輻射干擾場強量測距離為 10 米和 3 米
4. 測試電壓：AC 110V / 60Hz

2. 待測物之測試設置

2.1 測試方法

待測物依據 CNS 13438 之規定，連接相關週邊產品執行量測，並調整其擺放相關位置以獲得最大干擾讀值。本申請案件之測試樣品，由現場主管於現場監測，以確認其測試方式與擺設位置為產生最大干擾讀值者，且於最差測試結果仍可符合干擾限制值。

測試項目	檢驗模式
傳導干擾 電壓量測	模式 1: GSM900 Link + Bluetooth Link + WLAN (2.4GHz) Link + Camera (Rear) + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 2: WCDMA Band I Link + Bluetooth Link + WLAN (5GHz) Link + Camera (Front) + USB Cable 1 (Charging from Adapter 2) + Battery + SIM 2 for Sample 1
	模式 3: LTE Band 3 Link + Bluetooth Link + WLAN (2.4GHz) Link + H -Paten + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 4: GSM900 Idle + Bluetooth Link + WLAN (5GHz) Link + NFC On + USB Cable 1 (Charging from Adapter 2) + Battery + SIM 1 for Sample 1
	模式 5: WCDMA Band VIII Idle + Bluetooth Link + WLAN (2.4GHz) Link + GPS Rx + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 6: LTE Band 28 Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + USB Cable 1 (Charging from Adapter 2) + Battery + SIM 1 for Sample 1
	模式 7: 5G NR Band n78 Link + Bluetooth Idle + WLAN (2.4GHz) Idle + MPEG4 + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 8: 5G NR Band n78 Idle + Bluetooth Idle + WLAN (5GHz) Idle + WPT + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 9: 5G NR Band n78 Idle + Bluetooth Idle + WLAN (5GHz) Idle + Camera (Rear) + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 2
	模式 10: LTE Band 28 Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + USB Cable 2 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 11: LTE Band 28 Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Y Cable (Charging from Adapter 1) + Battery + Y Cable With USB Cable 2 + VR Class + SIM 1 for Sample 1

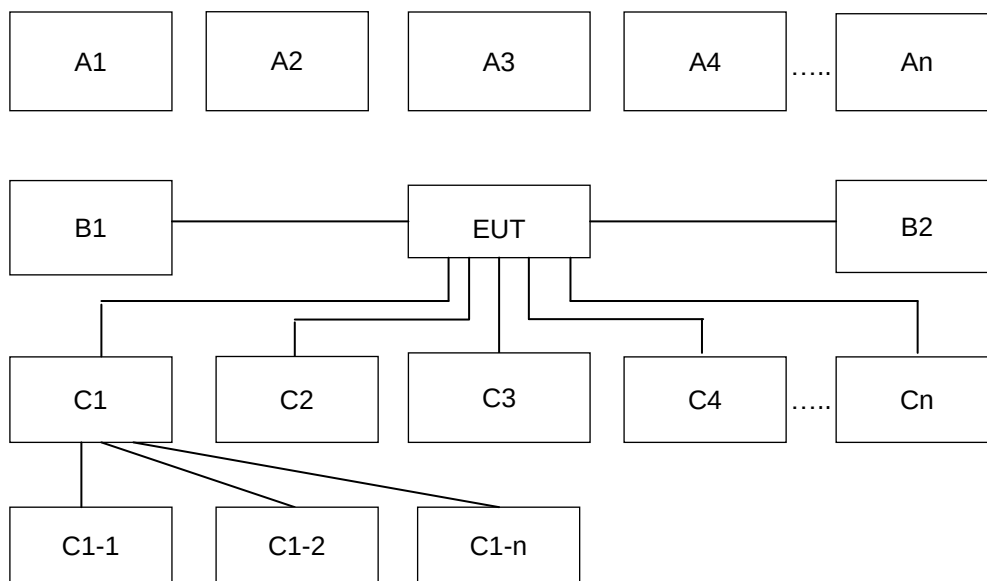
測試項目	檢驗模式
輻射干擾 場強量測	模式 1: GSM900 Link + Bluetooth Link + WLAN (2.4GHz) Link + Camera (Rear) + USB Cable 1 (Data Link with Notebook) (Read) + Battery + SIM 1 for Sample 1
	模式 2: WCDMA Band I Link + Bluetooth Link + WLAN (5GHz) Link + Camera (Front) + USB Cable 1 (Data Link with Notebook) (Write) + Battery + SIM 2 for Sample 1
	模式 3: LTE Band 3 Link + Bluetooth Link + WLAN (2.4GHz) Link + H -Paten + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 4: GSM900 Idle + Bluetooth Link + WLAN (5GHz) Link + NFC On + USB Cable 1 (Charging from Adapter 2) + Battery + SIM 1 for Sample 1
	模式 5: WCDMA Band VIII Idle + Bluetooth Link + WLAN (2.4GHz) Link + GPS Rx + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 6: LTE Band 28 Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + USB Cable 1 (Charging from Adapter 2) + Battery + SIM 1 for Sample 1
	模式 7: 5G NR Band n78 Link + Bluetooth Idle + WLAN (2.4GHz) Idle + WPT + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 8: 5G NR Band n78 Idle + Bluetooth Idle + WLAN (5GHz) Idle + MPEG4 + Earphone 1 + Battery + SIM 1 for Sample 1
	模式 9: 5G NR Band n78 Link + Bluetooth Idle + WLAN (2.4GHz) Idle + WPT + USB Cable 1 (Charging from Adapter 1) + Battery + SIM 1 for Sample 2
	模式 10: 5G NR Band n78 Link + Bluetooth Idle + WLAN (2.4GHz) Idle + MPEG4 + USB Cable 2 (Charging from Adapter 1) + Battery + SIM 1 for Sample 1
	模式 11: WCDMA Band I Link + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + USB Cable 2 (Data Link with Notebook) (Write) + Battery + SIM 2 for Sample 1
	模式 12: WCDMA Band I Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG 4 + Y Cable (Charging from Adapter 1) + Battery + Y Cable With USB Cable 2 + VR Class for Sample 1
	模式 13: 5G NR Band n78 Idle + Bluetooth Idle + WLAN (5GHz) Idle + MPEG4 + Earphone 2 + Battery + SIM 1 for Sample 1
註： 1. 傳導干擾電壓量測經檢驗模式 8 為最差的組態，報告只放模式 8 之測試資料。 2. 輻射干擾場強量測經檢驗模式 7 為最差的組態，報告只放模式 7 之測試資料。. 3. Data Link with Notebook means data application transferred mode between EUT and Notebook. 4. For 5G NR test combination is ENDC 5G NR B1+n78.	

2.2 量測系統之描述

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	5G Wireless Test Platform	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8m
2.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8m
3.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8m
4.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8m
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY700A2029	N/A	N/A
6.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8m
7.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
8.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0m	N/A
9.	Type C Cable	Motorola	338-0001-0052 1A	N/A	Unshielded,1m	N/A

註：申請人確保輔助設備不隨市場上的產品提供，輔助設備由實驗室或申請者提供用於測試。

2.3 待測物接線示意圖



Conduction Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			1	2	3	4	5	6	7
A1	BT Earphone	Bluetooth	X	X	X	X	X	X	X
A2	System Simulator	GSM/WCDMA/LTE/ 5G NR	X	X	X	X	X	X	X
A3	GPS Station	GPS	-	-	-	-	X	-	-
A4	AP router	WiFi	X	X	X	X	X	X	X
A5	Notebook	WiFi	X	X	X	X	X	X	-
A6	Phone	WPT	-	-	-	-	-	-	-
No.	Power Source	Connection Type	1	2	3	4	5	6	7
B1	AC : 110V/60Hz	USB Cable	X	X	X	X	X	X	X
No.	Setup Peripherals	Connection Type	1	2	3	4	5	6	7
C1	AR Glasses	USB Cable	-	-	-	-	-	-	-

Conduction Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			8	9	10	11	-	-	-
A1	BT Earphone	Bluetooth	X	X	X	X	-	-	-
A2	System Simulator	GSM/WCDMA/LTE/ 5G NR	X	X	X	X	-	-	-
A3	GPS Station	GPS	-	-	-	-	-	-	-
A4	AP router	WiFi	X	X	X	X	-	-	-
A5	Notebook	WiFi	-	-	X	X	-	-	-
A6	Phone	WPT	X	-	-	-	-	-	-
No.	Power Source	Connection Type	8	9	10	11	-	-	-
B1	AC : 110V/60Hz	USB Cable	X	X	X	X	-	-	-
No.	Setup Peripherals	Connection Type	8	9	10	11	-	-	-
C1	AR Glasses	USB Cable	-	-	-	X	-	-	-



Radiation Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			1	2	3	4	5	6	7
A1	BT Earphone	Bluetooth	X	X	X	X	X	X	X
A2	System Simulator	GSMWCDMA/LTE/ ENDC 5GNR	X	X	X	X	X	X	X
A3	GPS Station	GPS	-	-	-	-	X	-	-
A4	AP router	WiFi	X	X	X	X	X	X	X
A5	Notebook	WiFi	X	X	X	X	X	X	-
A6	WPT Phone	WPT	-	-	-	-	-	-	X
No.	Power Source	Connection Type	1	2	3	4	5	6	7
B1	AC : 110V/60Hz	AC Power Cable	-	-	X	X	X	X	X
B2	From System	USB Cable	X	X	-	-	-	-	-
No.	Setup Peripherals	Connection Type	1	2	3	4	5	6	7
C1	Notebook	USB Cable	X	X	-	-	-	-	-
C1-1	iPod	USB Cable to C1	X	X	-	-	-	-	-
C1-2	AP router	RJ-45 Cable to C1	X	X	-	-	-	-	-
C2	Earphone	Earphone jack	-	-	-	-	-	-	-

Radiation Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			8	9	10	11	12	13	
A1	BT Earphone	Bluetooth	X	X	X	X	X	X	
A2	System Simulator	GSMWCDMA/LTE/ ENDC 5GNR	X	X	X	X	X	X	
A3	GPS Station	GPS	-	-	-	-	-	-	
A4	AP router	WiFi	X	X	X	X	X	X	
A5	Notebook	WiFi	-	-	-	X	X	-	
A6	WPT Phone	WPT	-	X	-	-	-	-	
No.	Power Source	Connection Type	8	9	10	11	12	13	
B1	AC : 110V/60Hz	AC Power Cable	X	X	X	-	X	X	
B2	From System	USB Cable	-	-	-	X	-	-	
No.	Setup Peripherals	Connection Type	8	9	10	11	12	13	
C1	Notebook	USB Cable	-	-	-	X	-	-	
C1-1	iPod	USB Cable to C1	-	-	-	X	-	-	
C1-2	AP router	RJ-45 Cable to C1	-	-	-	X	-	-	
C2	Earphone	Earphone jack	X		-	-	-	x	

3. 傳導干擾電壓量測

傳導干擾電壓之量測係依據 CNS 13438 第八點之量測方法,量測儀器以 9kHz 之頻寬,從 150kHz 至 30MHz 之頻段量測待測物電壓,自電源線送出之干擾訊號。待測物被放置於離金屬地平面 80 cm 之非金屬性的木桌上,如章節 4.4。所有週邊及連接線之位置及擺設在合理及可能的應用情形下變換位置以獲得最大之傳導干擾電壓。

3.1 限制值

頻率 (MHz)	傳導限制值(dB μ V)	
	準峰值(Quasi-peak)	平均值(Average)
0.15-0.5	66 - 56(註)	56 - 46(註)
0.5-5	56	46
5-30	60	50

註: 隨頻率之對數遞減。

3.2 主要量測儀器

請參考第 5 章儀器設備一覽表。

3.3 測試程序

- 待測物被放置於離金屬牆 0.4 米且離任何接地之金屬面至少 80 公分以上。
- 將待測物之電源連接至 LISN 之電源輸出端。並將 LISN 之電源輸入端接至經過電源濾波器之電源。
- 量 LISN 提供 50ohm 耦合阻抗至量測儀器。
- 火線及中線皆被檢查及量測以獲得最大之傳導干擾電壓。
- 量測之頻率範圍自 150kHz 至 30MHz。
- 設定量測儀器至峰值偵測功能,且指定頻寬,再執行峰值保留模式開始量測。
- 選擇至少最高之 6 點,進行準峰值及平均值量測,並記錄於試驗報告中。

4. 輻射干擾場強量測

輻射干擾場強量測係依照 CNS 13438 第九點之測試方法量測,量測範圍自 30MHz 至 1000MHz 測試取樣頻寬為 120kHz, 1000MHz 以上測試取樣頻寬為 1MHz。待測物被置於一非金屬性木桌,桌面離金屬地平面 0.8 米 (場地配置圖請參考章節 5.3)。所有支援週邊及連接線位置均以合理且可能之應用情況,做任意擺設以獲得最大之輻射干擾場強。

4.1 主要量測儀器

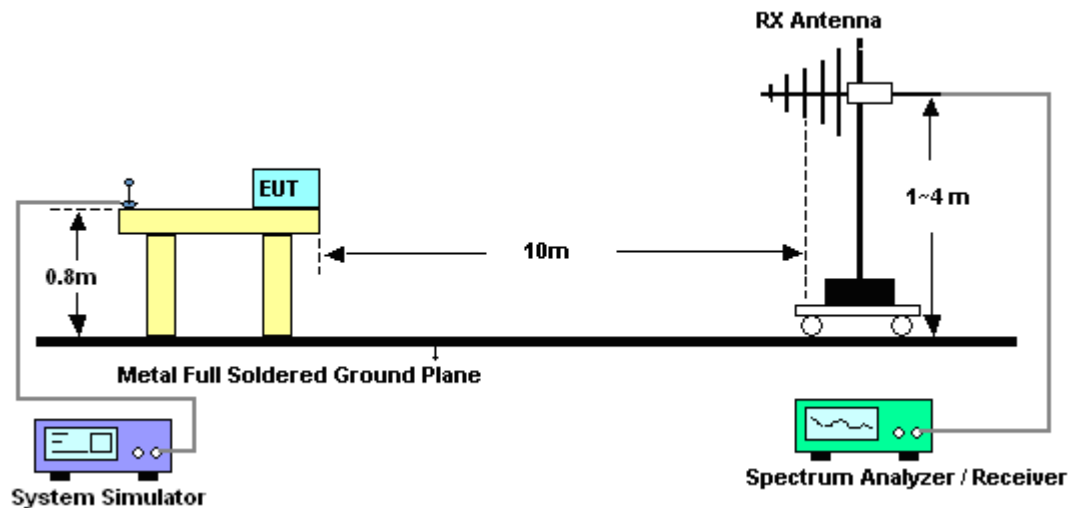
請參考第 5 章儀器設備一覽表。

4.2 測試程序

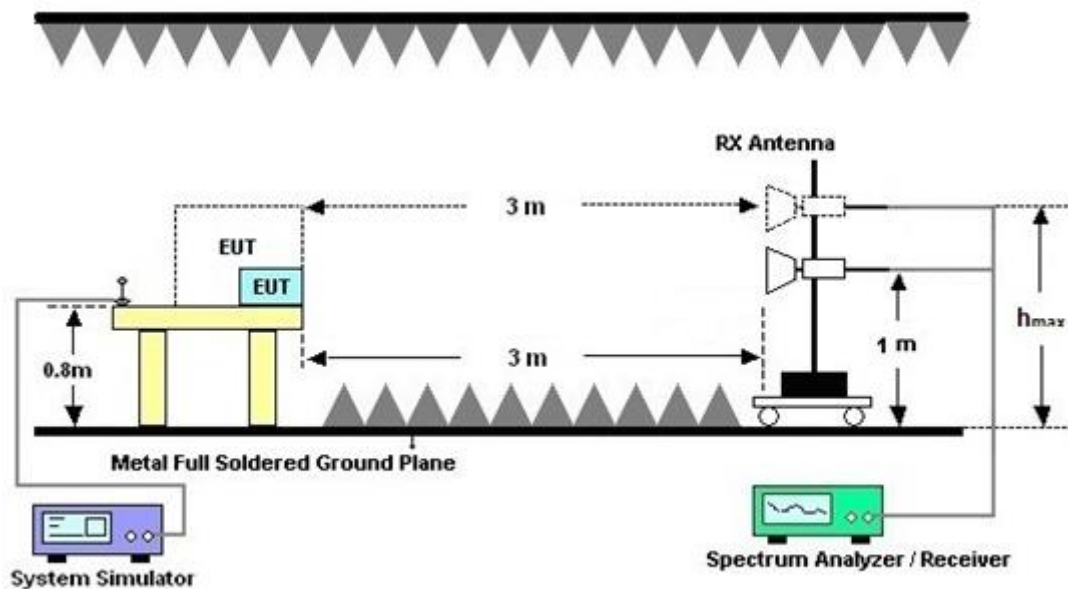
- a. 待測物放置於離金屬地平面 0.8 m, 且可旋轉之木桌上。
- b. 置天線於離待測物 10 m 和 3m 之處, 且將天線安裝於可升降改變高度及旋轉改變水平, 垂直之天線架上。
- c. 將所有支援週邊及待測設備樣品之電源開啟, 並執行適當的測試程式。
- d. 設定測試儀器至峰值偵測功能並且設定頻寬及峰值保留模式。
- e. 待測物放置於木桌上自 0 度旋轉至 360 度以獲得最大輻射干擾場強之角度位置。
- f. 天線以水平極性及垂直極性由離地 1 m 至 4 m 高度移動位置以獲得最大之輻射強度。
- g. 對於超過(L-20 dB) 以上的干擾(此處的 L 為對數所表示的限制值), 要記錄 6 個最高的干擾值。若待測物之輻射峰值低於限制值 3dB 以上, 則將終止測試, 並以峰值之讀值作為報告之紀錄; 反之, 若無 3dB 餘裕範圍之輻射訊號, 則每一訊號皆以準峰值之測試方法量測, 並記錄於報告之中。

4.3 輻射干擾場強量測之基本量測系統設置圖

<Radiated Emissions Frequency: 30 MHz to 1000 MHz>



<Radiated Emissions Frequency: 1000 MHz to 6000 MHz>



Remark: When EUT's height is over 172cm, h_{max} = top of EUT

4.4 輻射干擾場強量測之記錄結果及照片

參閱附錄 B 與 C。



5. 量測儀器一覽表

儀器名稱	廠牌	型號	序號	特性	校正日期	測試日期	再校期限	備註
Amplifier	SONOMA	310N	186713	9kHz~1GHz	Apr. 29, 2021	Dec. 11, 2021~ Jan. 18, 2022	Apr. 28, 2022	Radiation (03CH06-HY)
Bilog Antenna	Schaffner	CBL 6111C & N-6-06	2725 & AT-N0601	30MHz~1GHz	Nov. 11, 2021	Dec. 11, 2021~ Jan. 18, 2022	Nov. 10, 2022	Radiation (03CH06-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz~26.5GHz	Feb. 03, 2021	Dec. 11, 2021~ Jan. 18, 2022	Feb. 02, 2022	Radiation (03CH06-HY)
Horn Antenna	SCHWARZB ECK	BBHA 9120 D	9120D-1156	1GHz~18GHz	Sep. 27, 2021	Dec. 11, 2021~ Jan. 18, 2022	Sep. 26, 2022	Radiation (03CH06-HY)
Preamplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Apr. 23, 2021	Dec. 11, 2021~ Jan. 18, 2022	Apr. 22, 2022	Radiation (03CH06-HY)
RF Cable	HUBER + SUHNER	SF102_7000mm	532299/2	30MHz to 40GHz	Jul. 05, 2021	Dec. 11, 2021~ Jan. 18, 2022	Jul. 04, 2022	Radiation (03CH06-HY)
RF Cable	HUBER + SUHNER	SF102_3000mm	532422/2	30MHz to 40GHz	Jul. 05, 2021	Dec. 11, 2021~ Jan. 18, 2022	Jul. 04, 2022	Radiation (03CH06-HY)
RF Cable	HUBER + SUHNER	SF102_2000mm	532421/2	30MHz to 40GHz	Jul. 05, 2021	Dec. 11, 2021~ Jan. 18, 2022	Jul. 04, 2022	Radiation (03CH06-HY)
Controller	INN-CO	EM1000	060782	Control Turn table & Ant Mast	N/A	Dec. 11, 2021~ Jan. 18, 2022	N/A	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208212	1m~4m	N/A	Dec. 11, 2021~ Jan. 18, 2022	N/A	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0-360 degree	N/A	Dec. 11, 2021~ Jan. 18, 2022	N/A	Radiation (03CH06-HY)
Software	Audix	E3 6.2009-8-24(k5)	N/A	N/A	N/A	Dec. 11, 2021~ Jan. 18, 2022	N/A	Radiation (03CH06-HY)
Amplifier	Agilent	8447D	2944A07468	10 kHz ~ 1.3GHz	Nov. 30, 2021	Dec. 22, 2021	Nov. 29, 2022	Radiation (OS04-LK)
Spectrum Analyzer	R&S	FSP 7	838858/037	9 kHz ~ 7 GHz	May 26, 2021	Dec. 22, 2021	May 25, 2022	Radiation (OS04-LK)
Test Receiver	R&S	ESCS 30	838251/003	9 kHz ~ 2.75 GHz	Aug. 11, 2021	Dec. 22, 2021	Aug. 10, 2022	Radiation (OS04-LK)
Bilog Antenna with 5dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-05	35377 & AT-N0518	30 MHz ~ 2 GHz	Jul. 03, 2021	Dec. 22, 2021	Jul. 02, 2022	Radiation (OS04-LK)
Turn Table	EMCO	2080	9711-2021	0 ~ 360 degree	NCR	Dec. 22, 2021	NCR	Radiation (OS04-LK)
Antenna Mast	EMCO	2075	9711-2115	1 m ~ 4 m	NCR	Dec. 22, 2021	NCR	Radiation (OS04-LK)
RF Cable-R10m	Woken	CFD400NL-LW	CB011	30 MHz ~ 1 GHz	Dec. 08, 2021	Dec. 22, 2021	Dec. 07, 2022	Radiation (OS04-LK)
Software	Audix	E3	Version:4	-	NCR	Dec. 22, 2021	NCR	Radiation (OS04-LK)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Dec. 13, 2021; Jan. 14, 2021	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 01, 2021	Dec. 13, 2021; Jan. 14, 2021	Nov. 30, 2022	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Nov. 17, 2021	Dec. 13, 2021; Jan. 14, 2021	Nov. 16, 2022	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 03, 2021	Dec. 13, 2021; Jan. 14, 2021	Dec. 02, 2022	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Dec. 13, 2021; Jan. 14, 2021	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZB ECK	VTSD 9561-F N	00691	N/A	Jul. 28, 2021	Dec. 13, 2021; Jan. 14, 2021	Jul. 27, 2022	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 31, 2020	Dec. 13, 2021	Dec. 30, 2021	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	260260	N/A	Dec. 30, 2021	Jan. 14, 2022	Dec. 29, 2022	Conduction (CO05-HY)

6. 測試場地不確定度

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.1 dB
--	--------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.74 dB
--	---------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.4 dB
--	--------



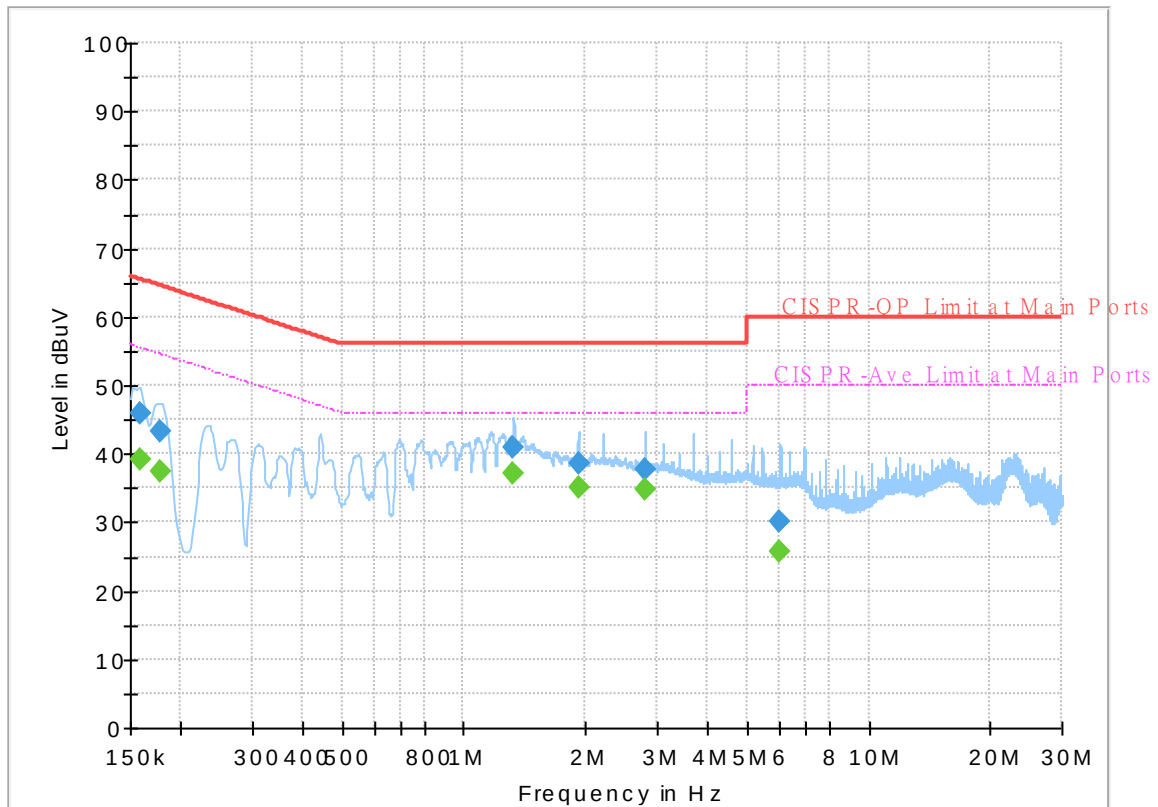
附錄 A. 傳導干擾電壓量測之記錄結果

測試工程師：	李哲宇和王名章	溫度：	23~26℃
		相對溼度：	45~55%

EUT Information

Report NO : 1O1903-02
 Test Mode : Mode 8
 Test Voltage : 110Vac/60Hz
 Phase : Line

Full Spectrum



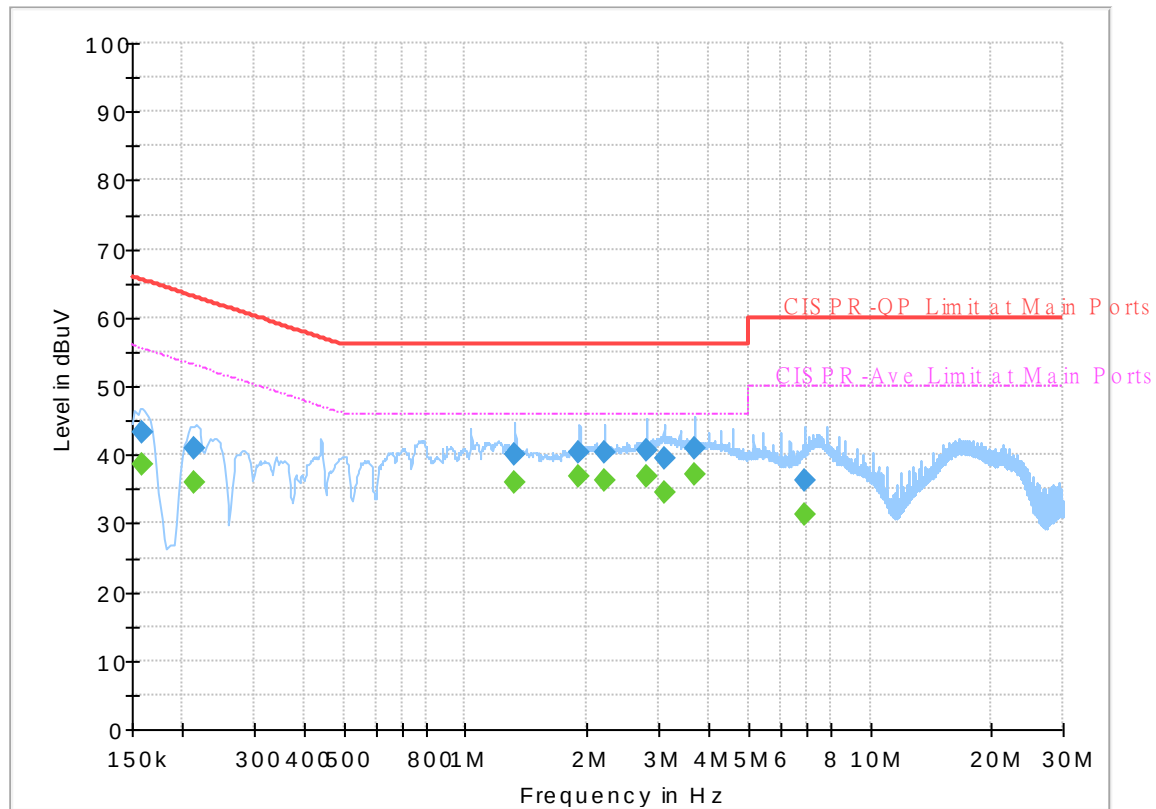
Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.159000	---	39.20	55.52	16.32	L1	OFF	19.6
0.159000	45.96	---	65.52	19.56	L1	OFF	19.6
0.177000	---	37.53	54.63	17.10	L1	OFF	19.6
0.177000	43.14	---	64.63	21.49	L1	OFF	19.6
1.326750	---	37.04	46.00	8.96	L1	OFF	20.2
1.326750	41.01	---	56.00	14.99	L1	OFF	20.2
1.918500	---	35.03	46.00	10.97	L1	OFF	20.2
1.918500	38.45	---	56.00	17.55	L1	OFF	20.2
2.802750	---	34.65	46.00	11.35	L1	OFF	20.1
2.802750	37.86	---	56.00	18.14	L1	OFF	20.1
6.049500	---	25.76	50.00	24.24	L1	OFF	20.0
6.049500	30.17	---	60.00	29.83	L1	OFF	20.0

EUT Information

Report NO : 1O1903-02
 Test Mode : Mode 8
 Test Voltage : 110Vac/60Hz
 Phase : Neutral

Full Spectrum

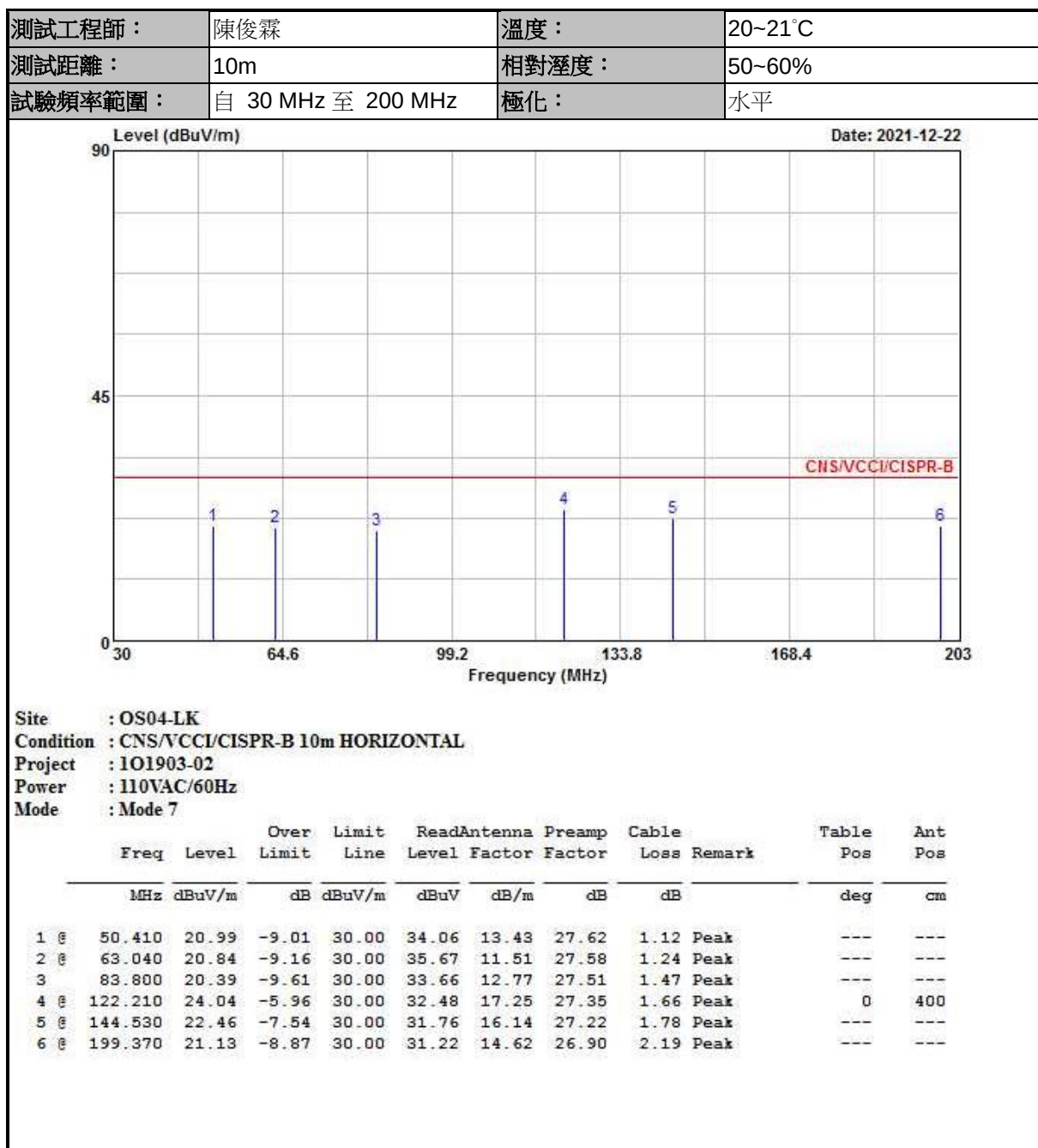


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.159000	---	38.68	55.52	16.84	N	OFF	19.6
0.159000	43.16	---	65.52	22.36	N	OFF	19.6
0.213000	---	36.00	53.09	17.09	N	OFF	19.6
0.213000	40.83	---	63.09	22.26	N	OFF	19.6
1.326750	---	36.06	46.00	9.94	N	OFF	20.2
1.326750	40.11	---	56.00	15.89	N	OFF	20.2
1.914000	---	36.86	46.00	9.14	N	OFF	20.1
1.914000	40.32	---	56.00	15.68	N	OFF	20.1
2.208750	---	36.37	46.00	9.63	N	OFF	20.1
2.208750	40.27	---	56.00	15.73	N	OFF	20.1
2.798250	---	36.76	46.00	9.24	N	OFF	20.1
2.798250	40.76	---	56.00	15.24	N	OFF	20.1
3.093000	---	34.53	46.00	11.47	N	OFF	20.0
3.093000	39.44	---	56.00	16.56	N	OFF	20.0
3.682500	---	37.00	46.00	9.00	N	OFF	20.0
3.682500	40.93	---	56.00	15.07	N	OFF	20.0
6.922500	---	31.42	50.00	18.58	N	OFF	20.0
6.922500	36.38	---	60.00	23.62	N	OFF	20.0

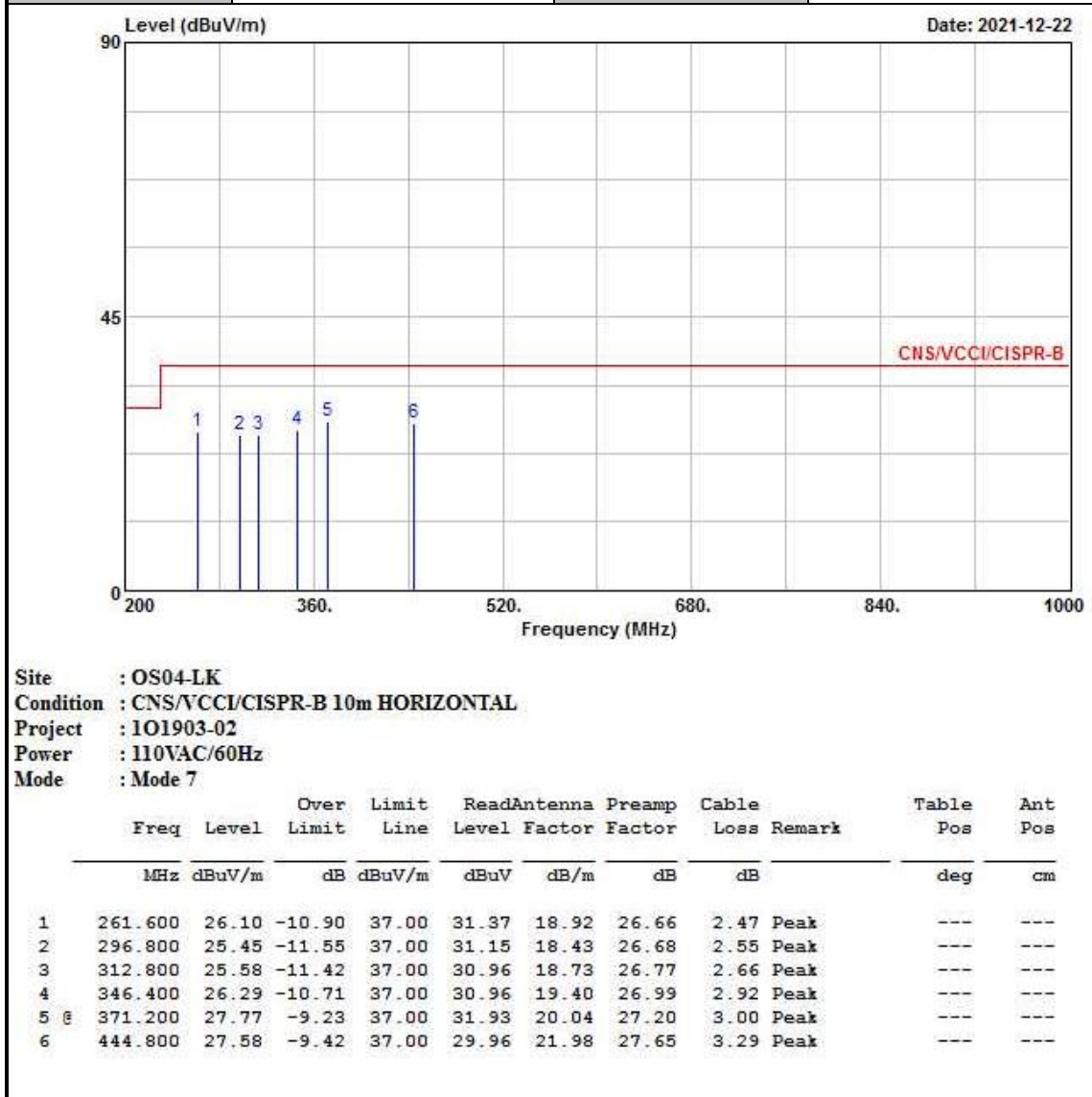


附錄 B. 輻射干擾場強量測之記錄結果



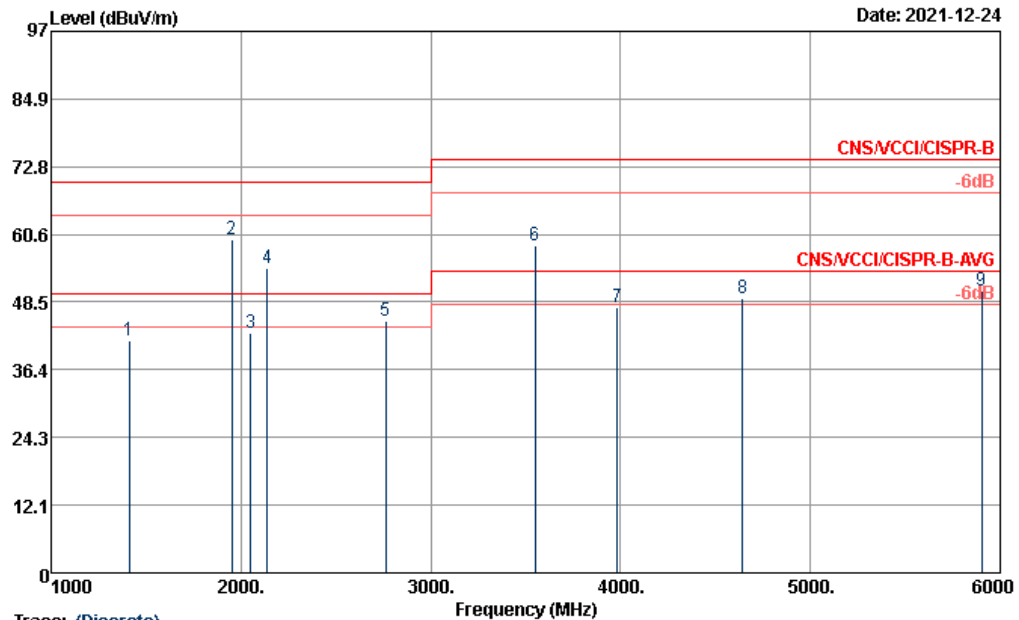


測試工程師:	陳俊霖	溫度:	20~21°C
測試距離:	10m	相對溼度:	50~60%
試驗頻率範圍:	自 200 MHz 至 1000 MHz	極化:	水平





測試工程師:	陳宥銓和黃俊豪	溫度:	24~26°C
測試距離:	3m	相對溼度:	43~53%
試驗頻率範圍:	自 1000 MHz 至 6000 MHz	極化:	水平
Remark:	#6 is system simulator signal which can be ignored.		



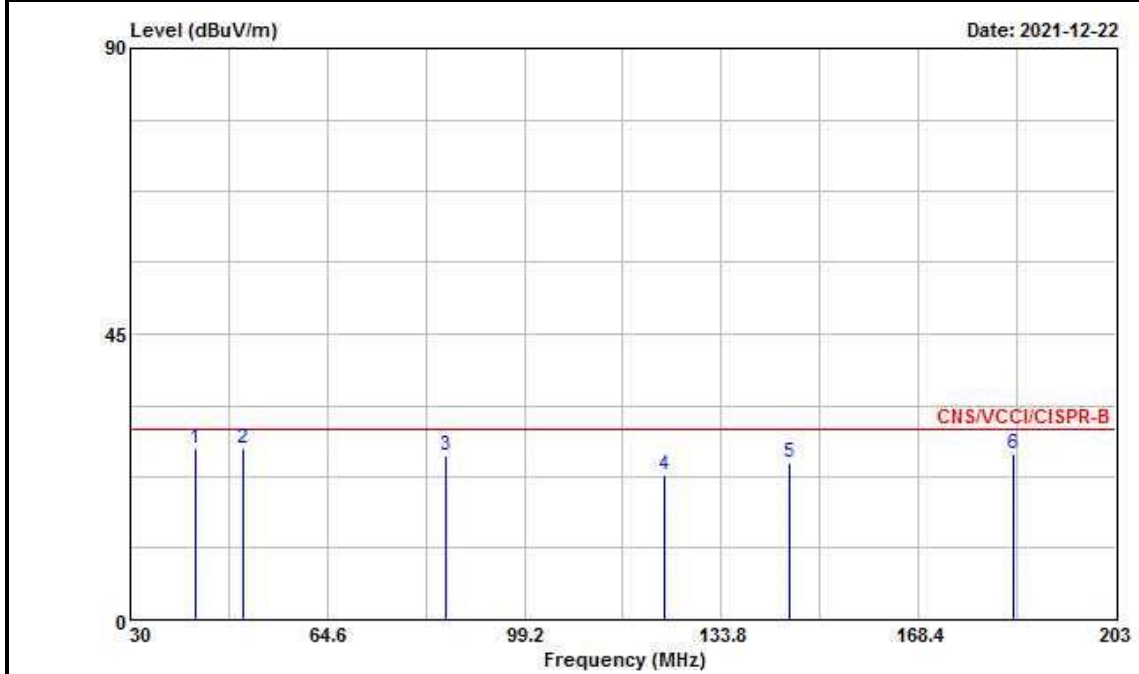
Trace: (Discrete)

Site : 03CH06-HY
Condition : CNS/VCCI/CISPR-B 3m 9120B_1156 HORIZONTAL
Project : 101903-02
Power : 110Vac/60Hz
Memo : Mode 7

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	cm	deg	
1	1410.00	41.55	-28.45	70.00	44.53	-2.98	---	---	Peak
2	1950.00	59.60	-10.40	70.00	61.17	-1.57	---	---	Peak
3	2052.00	42.86	-27.14	70.00	43.34	-0.48	---	---	Peak
4	2140.00	54.61	-15.39	70.00	54.04	0.57	---	---	Peak
5	2764.00	45.16	-24.84	70.00	43.06	2.10	---	---	Peak
6	3550.00	58.63			54.41	4.22	---	---	Peak
7	3981.00	47.64	-26.36	74.00	41.36	6.28	---	---	Peak
8	4641.00	49.18	-24.82	74.00	41.11	8.07	---	---	Peak
9	5904.00	50.53	-23.47	74.00	39.86	10.67	---	---	Peak



測試工程師:	陳俊霖	溫度:	20~21°C
測試距離:	10m	相對溼度:	50~60%
試驗頻率範圍:	自 30 MHz 至 200 MHz	極化:	垂直

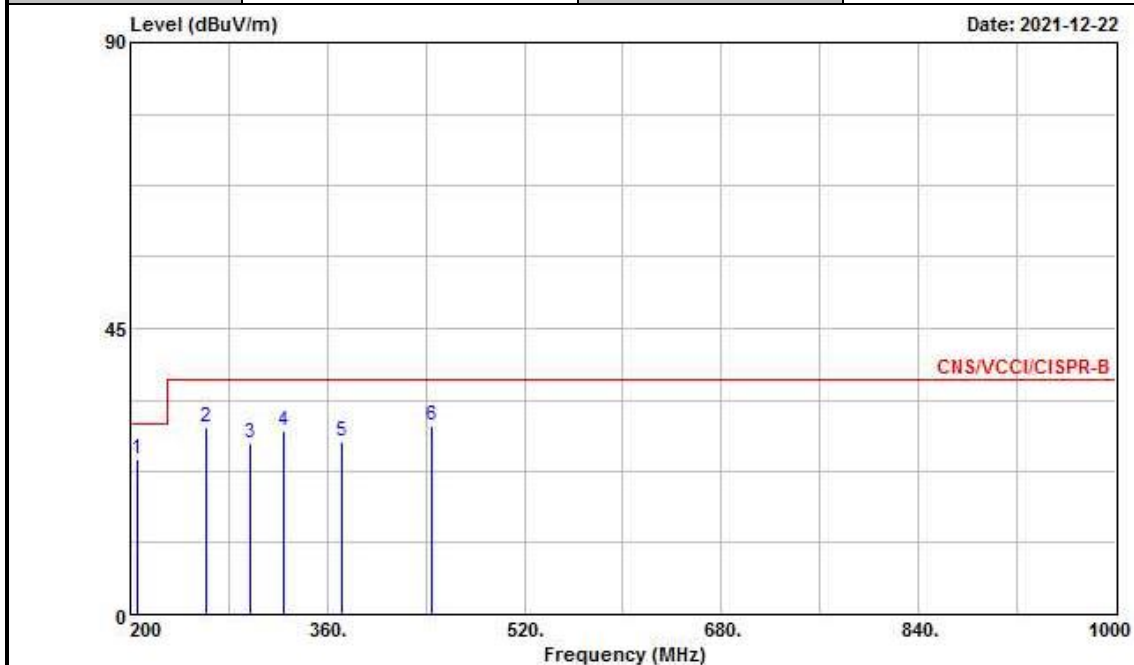


Site : OS04-LK
Condition : CNS/VCCI/CISPR-B 10m VERTICAL
Project : 101903-02
Power : 110VAC/60Hz
Mode : Mode 7

	Freq	Level	Over	Limit	ReadAntenna	Preampl	Cable		Table	Ant
	MHz	dBuV/m	Limit	Line	Level	Factor	Factor	Loss	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm
1	41.460	26.97	-3.03	30.00	36.40	17.17	27.64	1.04	QP	287 100
2	49.870	26.98	-3.02	30.00	39.70	13.79	27.62	1.11	QP	203 100
3	85.320	25.82	-4.18	30.00	38.60	13.23	27.50	1.49	QP	116 100
4	123.630	22.83	-7.17	30.00	31.30	17.20	27.34	1.67	QP	316 100
5	145.668	24.83	-5.17	30.00	34.20	16.07	27.22	1.78	QP	177 100
6	185.190	25.98	-4.02	30.00	36.60	14.28	26.99	2.09	QP	76 100



測試工程師:	陳俊霖	溫度:	20~21°C
測試距離:	10m	相對溼度:	50~60%
試驗頻率範圍:	自 200 MHz 至 1000 MHz	極化:	垂直

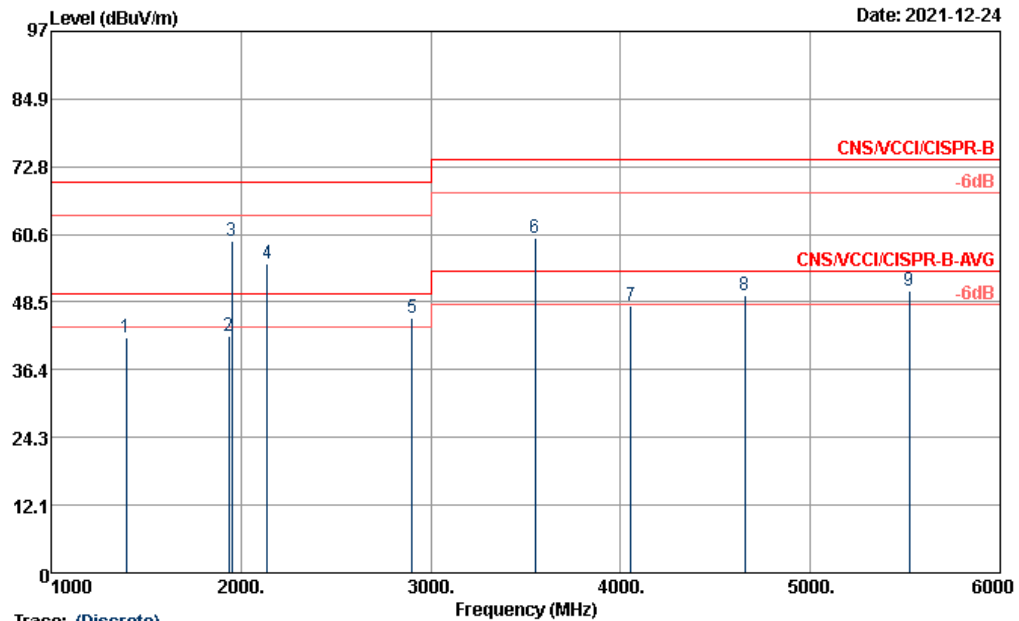


Site : OS04-LK
Condition : CNS/VCCI/CISPR-B 10m VERTICAL
Project : 101903-02
Power : 110VAC/60Hz
Mode : Mode 7

	Freq	Level	Over	Limit	ReadAntenna	Preampl	Cable		Table	Ant
	MHz	dBuV/m	Limit	Line	Level	Factor	Factor	Loss	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	deg	cm
1	205.480	24.31	-5.69	30.00	34.30	14.66	26.87	2.22	QP	238
2	261.600	29.38	-7.62	37.00	34.65	18.92	26.66	2.47	Peak	---
3	296.800	27.08	-9.92	37.00	32.78	18.43	26.68	2.55	Peak	---
4	324.800	28.77	-8.23	37.00	33.94	18.92	26.85	2.76	Peak	---
5	371.200	27.25	-9.75	37.00	31.41	20.04	27.20	3.00	Peak	---
6	444.800	29.77	-7.23	37.00	32.15	21.98	27.65	3.29	Peak	---



測試工程師:	陳宥銓和黃俊豪	溫度:	24~26°C
測試距離:	3m	相對溼度:	43~53%
試驗頻率範圍:	自 1000 MHz 至 6000 MHz	極化:	垂直
Remark:	#6 is system simulator signal which can be ignored.		



Trace: (Discrete)

Site : 03CH06-HY
Condition : CNS/VCCI/CISPR-B 3m 9120D_1156 VERTICAL
Project : 101903-02
Power : 110Vac/60Hz
Memo : Mode 7

	Freq	Level	Over Limit	Limit Line	Read Level	Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	cm	deg	
1	1396.00	42.10	-27.90	70.00	45.05	-2.95	---	---	Peak
2	1936.00	42.47	-27.53	70.00	44.15	-1.68	---	---	Peak
3	1950.00	59.39	-10.61	70.00	60.96	-1.57	---	---	Peak
4	2140.00	55.35	-14.65	70.00	54.78	0.57	---	---	Peak
5	2900.00	45.56	-24.44	70.00	42.91	2.65	---	---	Peak
6	3550.00	59.85			55.63	4.22	---	---	Peak
7	4056.00	47.87	-26.13	74.00	41.41	6.46	---	---	Peak
8	4656.00	49.60	-24.40	74.00	41.49	8.11	---	---	Peak
9	5523.00	50.59	-23.41	74.00	40.55	10.04	---	---	Peak

完