



財團法人電信技術中心
TELECOM TECHNOLOGY CENTER

測 試 報 告

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製 造 廠 商 : Nokia Solutions and Networks
產 品 名 稱 : 行動寬頻基地臺
廠 牌 : Nokia
型 號 : Airscale Micro RRH [射頻單體型號: AZRB]
序 號 : 1M181319994
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Testing Laboratory
1810

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1. 報告紀錄

1.1 報告修訂歷程

報告編號或版別	描述	發行日期
W-S-1808039-ABQ-1	首次發行	09-05-2018

1.2 報告總覽

報告總覽		
項次	項目	頁數
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2. 低功率射頻設備量測記錄表

2.1 待測物基本資料

產品名稱		行動寬頻基地臺
廠牌		Nokia
型號		Airscale Micro RRH [射頻單體型號: AZRB]
額定電壓及電流		-40.5 to -57 VDC
天線規格	廠牌	Nokia
	型號	AARC
	增益	6 dBi(Max)
調變方式及頻率		QAM,TDD B46A : 5180.1 to 5239.8 MHz B46D : 5745 to 5825.1 MHz
額定輸出功率		500 mW (27 dBm) / port ; 2 x 500mW (30dBm) (Total)

2.2 待測物裝置描述

輸入輸出埠	
Optical cable 1	X1
Optical cable 2	X1
DC power supply	X1

* 詳細規格請參照其規格說明書。

2.3 待測物裝置試驗說明

2.3.1 試驗項目簡述

本測試報告之所有項目皆依據國家通訊傳播委員會低功率射頻電機技術規範 (LP0002)，如無國家標準可適用者，得依美國 EIA、IEEE ANSI 檢驗法檢驗，及美國 FCC 47 CFR Part 2 有關檢驗之規定及參考 ANSI 63.4:2014、ANSI 63.10:2013、FCC CFR 47 Part15 之檢驗法。

2.3.2 試驗環境紀錄

試驗場地	日期	溫度(°C)	濕度(%)	大氣壓力(hPa)
Chamber 966	08-23-2018	22.5	72.1	N/A
Chamber 966	08-27-2018	22.2	61.2	N/A

Chamber 966	08-29-2018	24.0	67.5	N/A
RF Room	08-20-2018	22.3	54.2	N/A

2.3.3 試驗儀器軟體版本

試驗場地	廠牌	軟體名稱	版本
Chamber 966	AUDIX	e3	6.2009-7-30(ttc)
Conduction Room	AUDIX	e3	6.2009-7-30(ttc)

2.3.4 試驗不確定度評估

試驗場地	試驗方式	不確定度
Conduction Room	電源端傳導干擾	3.7 dB
Conduction Room	電信端傳導干擾	3.8 dB
Chamber 966 Room	輻射干擾(30MHz to 1GHz)@3 米	5.7 dB
Chamber 966 Room	輻射干擾(1GHz to 18GHz)@3 米	6.7 dB
Chamber 966 Room	輻射干擾(18GHz to 40GHz)@1 米	6.2 dB

試驗場地	試驗方式	不確定度
RF Room	頻率誤差	0.0013ppm
	對溫度之頻率穩度	
	對電壓之頻率穩定度	
	頻寬	
	調變發射頻率偏移量	
	載波頻率間隔	
	U-NII 佔用頻寬	
RF Room	頻道邊緣之 RF 傳導發射	2.2dB
	峰值功率頻譜密度	
	峰值輸出功率	
RF Room	傳導混附輻射發射	2.3dB
RF Room	PSD of U-NII	2.3dB
	Peak output power of U-NII	

2.4 試驗項目及結果

項次	試驗名稱	規範	結果判定
1	電源傳導干擾	低功率射頻電機技術規範 2.3 節	N/A
2	主波禁用頻帶	低功率射頻電機技術規範 2.7 節	合格
3	不必要之發射	低功率射頻電機技術規範 2.8 與 4.7.4 節	合格
4	功率限制	低功率射頻電機技術規範 4.7.3 節	合格
5	功率頻譜密度	低功率射頻電機技術規範 4.7.3 節	合格
6	天線增益限制	低功率射頻電機技術規範 4.7.3 節	合格
7	頻寬限制	低功率射頻電機技術規範 4.7.5 節	合格

量測輸出功率(AVE)		輸出功率(dBm)	MPE(mW/cm ²)
	B46A	28.08	0.509
	B46D	28.60	0.574

3. 試驗儀器與周邊

3.1 電源與電信端干擾試驗儀器

儀器名稱	廠牌	型號	序號	下次校正日期
EMI Receiver	Rohde&Schwarz	ESCI	100619	10-24-2018
Two-Line V-network	Rohde&Schwarz	ENV216	101197	09-26-2018
Telecom ISN	Teseq	ISN T800	39160	03-26-2019
Telecom ISN	Teseq	ISN T8-Cat6	38884	03-26-2019

3.2 輻射干擾試驗儀器

儀器名稱	廠牌	型號	序號	下次校正日期
Preamplifier	Teseq	LNA 6901	74004	10-24-2018
Microwave Preamplifier	CHAITEK	BZ-00101800	003511	03-22-2019
Microwave Preamplifier	CHAITEK	BZ-1840	003512	03-22-2019
Active Loop Antenna	ETS-LINDGREN	6507	66141	09-25-2019
Bi-Log Antenna	ETC	MCTD 2786B	BLB16M04009	09-17-2018
Horn antenna	SCHWARZBECK	BBHA 9120D	1437	03-27-2019
Horn antenna	SCHWARZBECK	BBHA 9170	353	09-18-2019
Horn antenna	A.H. Systems	SAS-573	188	03-29-2020
EMI Receiver	Rohde&Schwarz	ESCI	100890	11-06-2018
Spectrum	Agilent	E4446A	MY46180362	03-25-2019

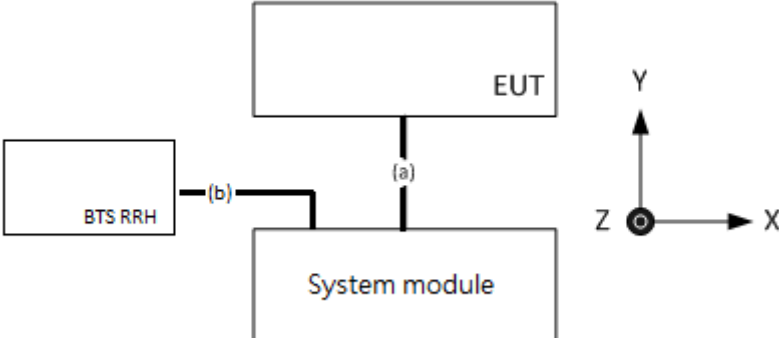
3.3 射頻性能試驗儀器

儀器名稱	廠牌	型號	序號	下次校正日期
Signal Analyzer	Rohde&Schwarz	FSV 30	100739	03-25-2019
Vector Signal Generator	Rohde&Schwarz	SMU200A	103751	02-22-2019
Spectrum Analyzer	Agilent	E4446A	MY46180362	03-25-2019
Power Sensor	Agilent	N1922A	MY45240474	09-24-2018

3.4 試驗周邊設備

儀器名稱	廠牌	型號	序號
Note Book	Lenovo	R400	R8-MW223 09/07
Baseband	Nokia	AMIA	RK164600765

3.5 待測物與試驗周邊之組合

組合架構圖	
	
線材類型	描述
a Fiber	2 m
b Fiber	2 m

3.6 待測物測試模式評估

依功能特性，待測物的可能組合試驗如下。(初測模式)			
主波發射			
Mode 1	B46A	Mode 2	B46D
輻射干擾			
Mode 1	B46A	Mode 2	B46D
依上列初測模式選擇出最差結果或列出必試驗項目為最終試驗方式			
主波發射			
Mode 1	B46A	Mode 2	B46D
輻射干擾			
Mode 1	B46A	Mode 2	B46D
Note :			

待測物試驗電源
-48 VDC

待測物頻道規劃：		測試頻道：
B46A	5180.1 MHz	Low Chaneel
	5199.9 MHz	Mid Channel
	5220.0 MHz	
	5239.8 MHz	High Channel
B46D	5745.0 MHz	Low Chaneel
	5765.1 MHz	
	5784.9 MHz	Mid Channel
	5805 MHz	
	5825.1 MHz	High Channel

待測物軟體版本：	
系統軟體名稱與版本	FL18
測試軟體名稱與版本	FL18

4. 電源傳導干擾

4.1 適用標準

依據NCC低功率射頻電機技術規範之2.3 節之要求：

以市電為電源之低功率射頻電機，其傳導回電源線上頻率自150千赫(kHz)至30兆赫(MHz)之射頻電壓(在電源端子每一電源線對接地點)不得超過下表所列之限值。測量時應經過50微亨利(μH)及50歐姆(Ω)之電源線阻抗模擬網路(LISN)。頻率重疊處，以較低限值為準。

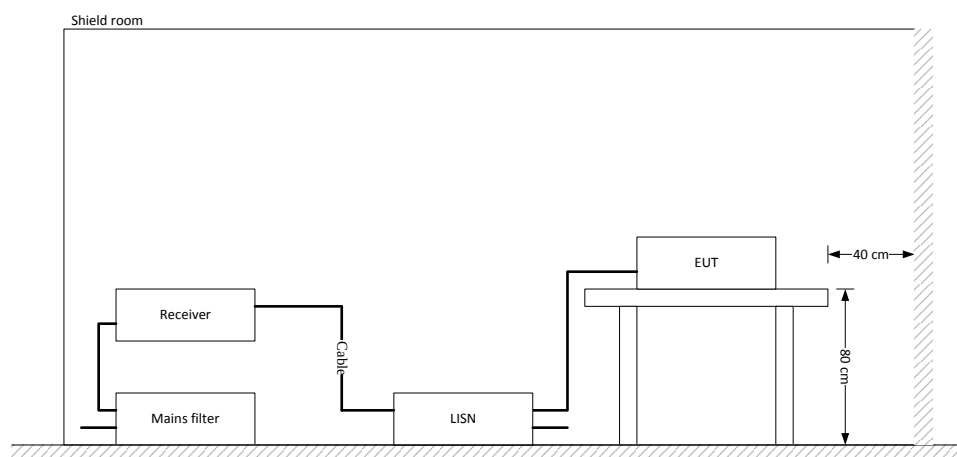
頻率(MHz)	傳導限制值(dBuV)	
	準峰值(Quasi-peak)	平均值(Average)
0.15-0.5	66 to 56(註)	56 to 46(註)
0.5-5	56	46
5-30	60	50

註：隨頻率之對數遞減。

4.2 測試方法

將待測物置於0.8米高的非金屬桌面，其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，由測試儀器掃描記錄頻率從0.15MHz至30MHz之間測試電源線傳導輻射強度。

4.3 電源傳導干擾測試接續圖



圖一：電源傳導干擾測試接續圖

4.4 電源傳導干擾測試數據

4.4.1 電源傳導干擾測試數據與掃描圖

此待測物為直流電源供電，故免測電源傳導測試。

5. 峰值傳導輸出功率

5.1 適用標準

依據 NCC 低功率射頻電機技術規範 4.7.3.1 節(1)之規定：

(A) 最大傳導輸出功率應小於或等於 1W。

(C) 使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率。

(D) 在水平面仰角超過 30 度時，其最大 EIRP 應小於或等於 21dBm。

依據 NCC 低功率射頻電機技術規範 4.7.3.3 節之規定：

(1) 最大傳導輸出功率應小於或等於 1W。

(2) 使用超過 6dBi 方向增益之發射天線時，應依超過 6dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率。

5.2 測試方法

將發射機之天線埠經適當衰減後連接至 Spectrum analyzer，並測量紀錄其最大功率。

5.3 峰值傳導輸出功率測試接續圖



圖二：峰值傳導輸出功率測試連接圖

5.4 峰值傳導輸出功率測試數據

5.4.1 測試數據

傳導輸出功率						
Mode	Channel	Freq.(MHz)	Power (dBm)			MPE
			Port A	Port B	SUM	
B46A	Low	5180.1	23.14	23.36	26.26	0.335
	Mid	5199.9	24.45	24.21	27.34	0.429
	High	5239.8	25.34	24.78	28.08	0.509
B46D	Low	5745.0	25.17	24.71	27.96	0.495
	Mid	5784.9	24.47	24.97	27.74	0.470
	High	5825.1	25.74	25.44	28.60	0.574

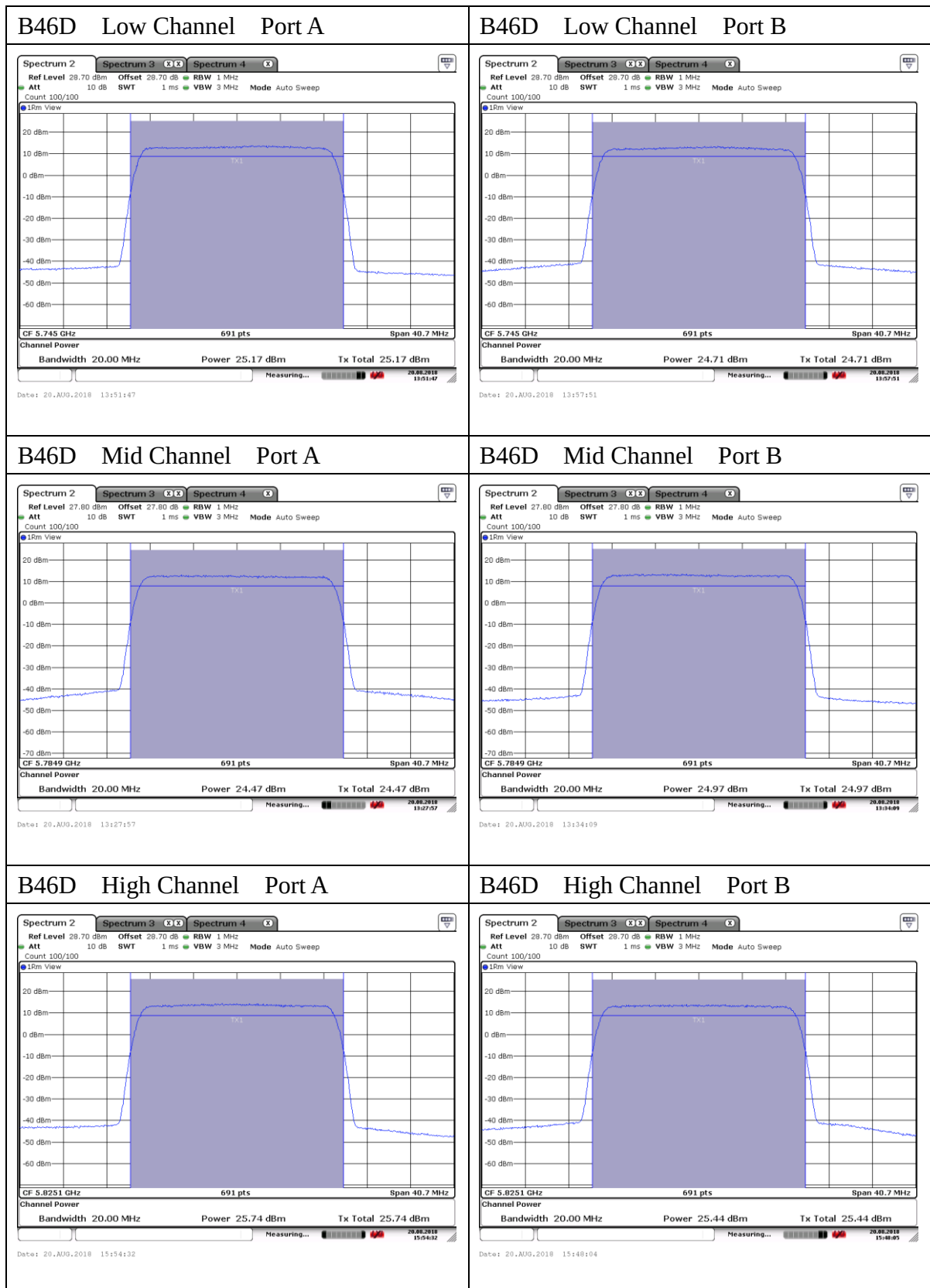
水平面仰角超過 30 度時之 EIRP						
Mode	Channel	Freq.(MHz)	電場強度 (dBuV/m)		EIRP(dBm)	
			V	H	V	H
B46A	Low	5180.1	112.72	110.23	17.42	14.93
	Mid	5199.9	112.79	110.89	17.49	15.59
	High	5239.8	112.53	111.82	17.23	16.52

註 1：此待測物搭配之最大天線增益為 6 dBi。

註 2：依 LP0002 第 5.20.2 節 20 公分距離評估電磁暴露量(MPE)限制值為 $1\text{mW}/\text{cm}^2$ 。

5.4.2 測試掃描圖





Mode 1	B46A	Pol.	Vertical
Channel	Low : 5180.1 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.3.1(D) 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46a) L: 5180.1MHz

Read	Limit	Over
Freq	Level	Line
MHz	dBuV	dB
1 @ 5185.90	122.40	-3.51 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Horizontal
Channel	Low : 5180.1 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.3.1(D) 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46a) L: 5180.1MHz

Read	Limit	Over
Level	Line	Limit
Factor		Remark
dB/m	dBuV/m	dB
1 @ 5178.30	120.60	-9.70 110.90 116.23 -5.33 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Vertical
Channel	Mid : 5199.9 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.3.1(D) 3m VERTICAL
ent : AZRB
mode : 20M
memo : (46a) M: 5199.9MHz

Read	Limit	Over				
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 @ 5205.30	122.40	-9.61	112.79	116.23	-3.44	Peak

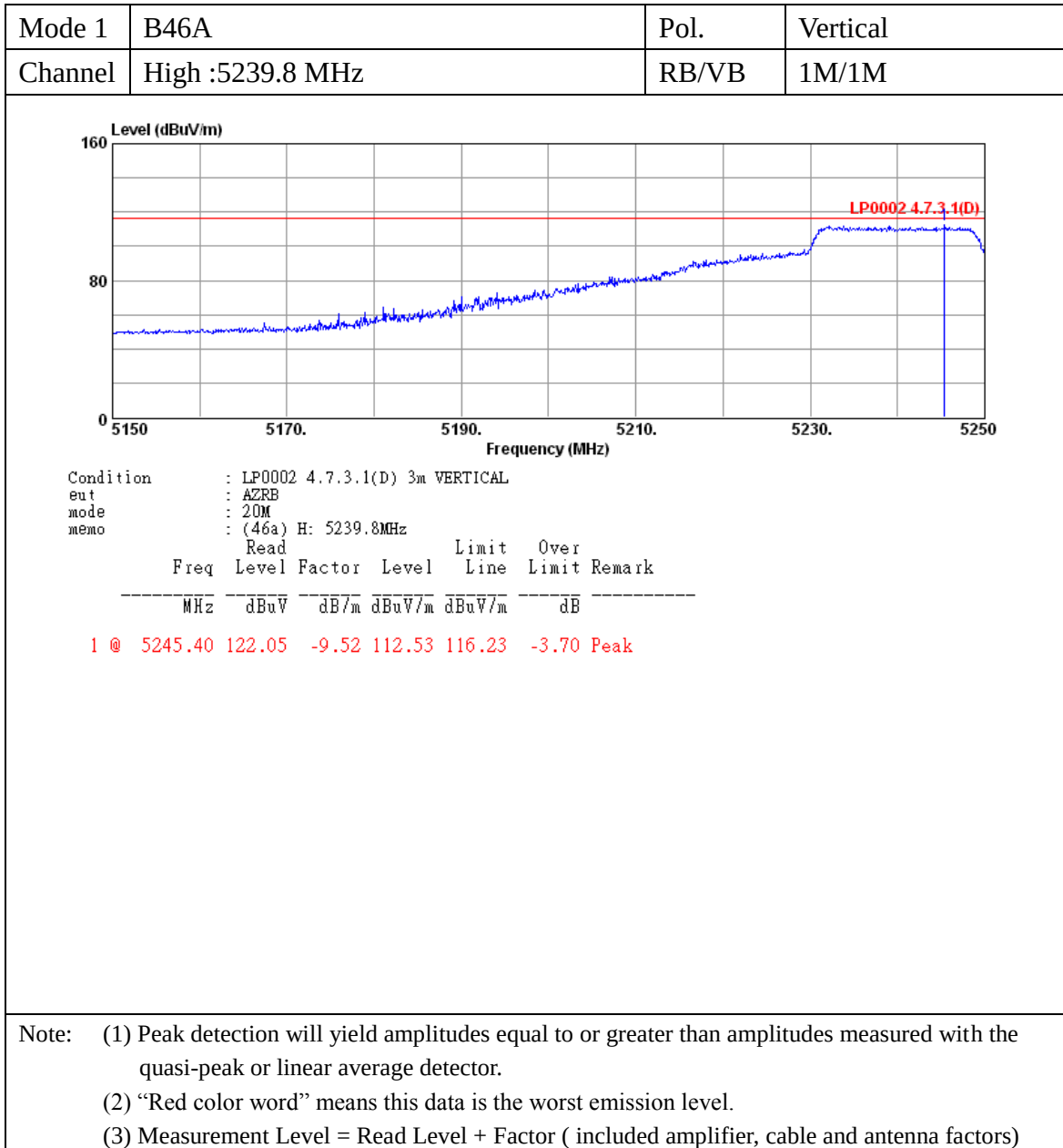
Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
(2) “Red color word” means this data is the worst emission level.
(3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

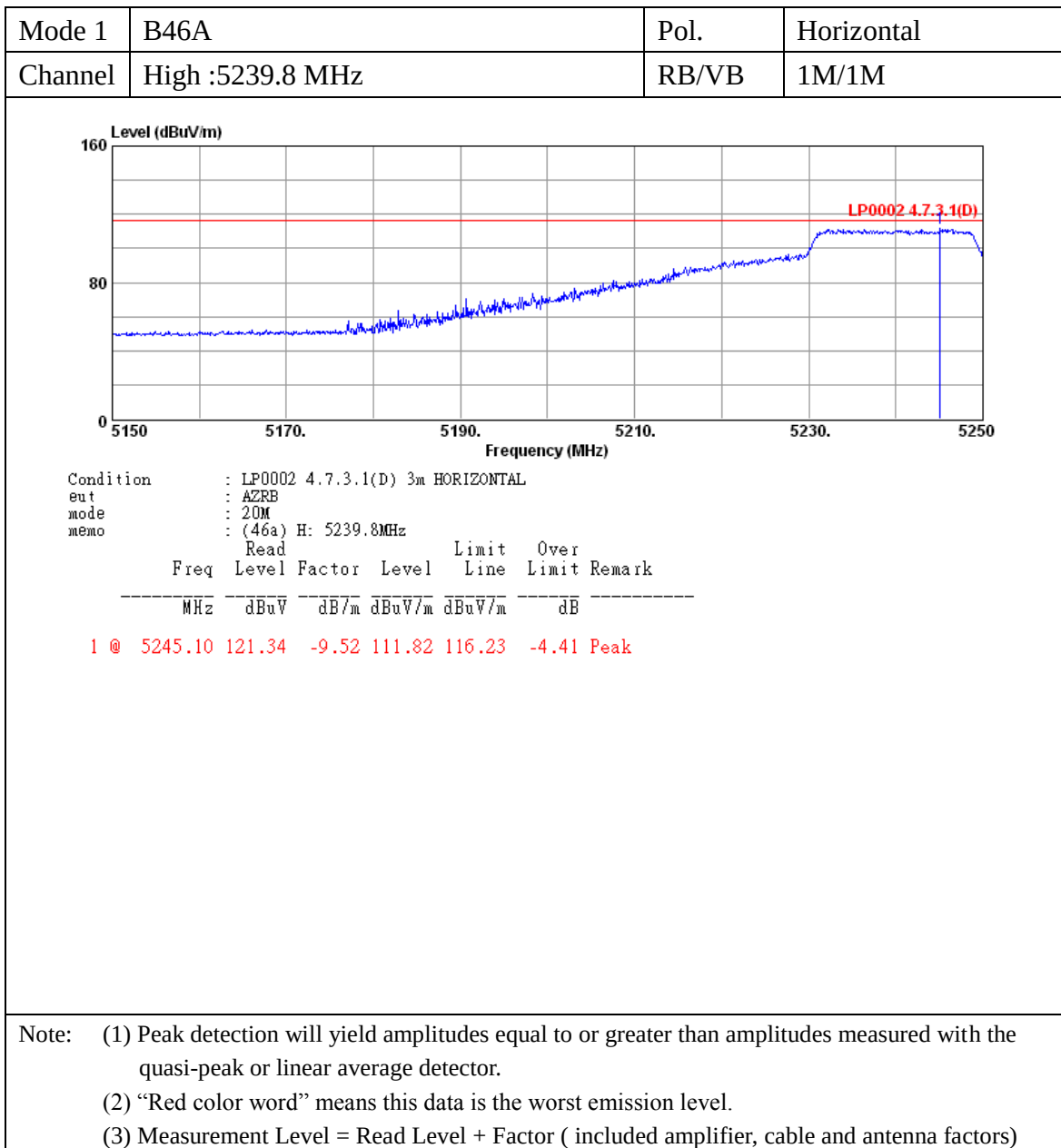
Mode 1	B46A	Pol.	Horizontal
Channel	Mid : 5199.9 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.3.1(D) 3m HORIZONTAL
out : AZRB
mode : 20M
memo : (46a) M: 5199.9MHz

Read	Limit	Over				
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 @ 5198.00	120.53	-9.64	110.89	116.23	-5.34	Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
(2) “Red color word” means this data is the worst emission level.
(3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)





6. 發射頻寬之量測

6.1 適用標準

依據 NCC 低功率射頻電機技術規範 4.7.3.4 節(2)之要求：

待測物之 26dB 發射頻寬作為量測功率頻譜密度時解析頻寬之設定依據。

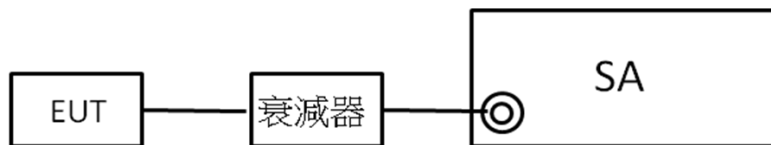
依據 NCC 低功率射頻電機技術規範 4.7.5 節之要求：

在 5.725 to 5.850 GHz 頻段操作之設備，其 6dB 之頻寬至少應有 500kHz

6.2 測試方法

將頻譜分析儀設定適當之解析頻寬，視訊頻寬不小於解析頻寬。為求得精確測量，頻率掃描範圍（Span）遠大於解析頻寬，利用頻譜分析儀的 X dB bandwidth mode求得頻寬。

6.3 發射頻寬測試接續圖



圖四：發射頻寬測試接續圖

6.4 發射頻寬之測試數據

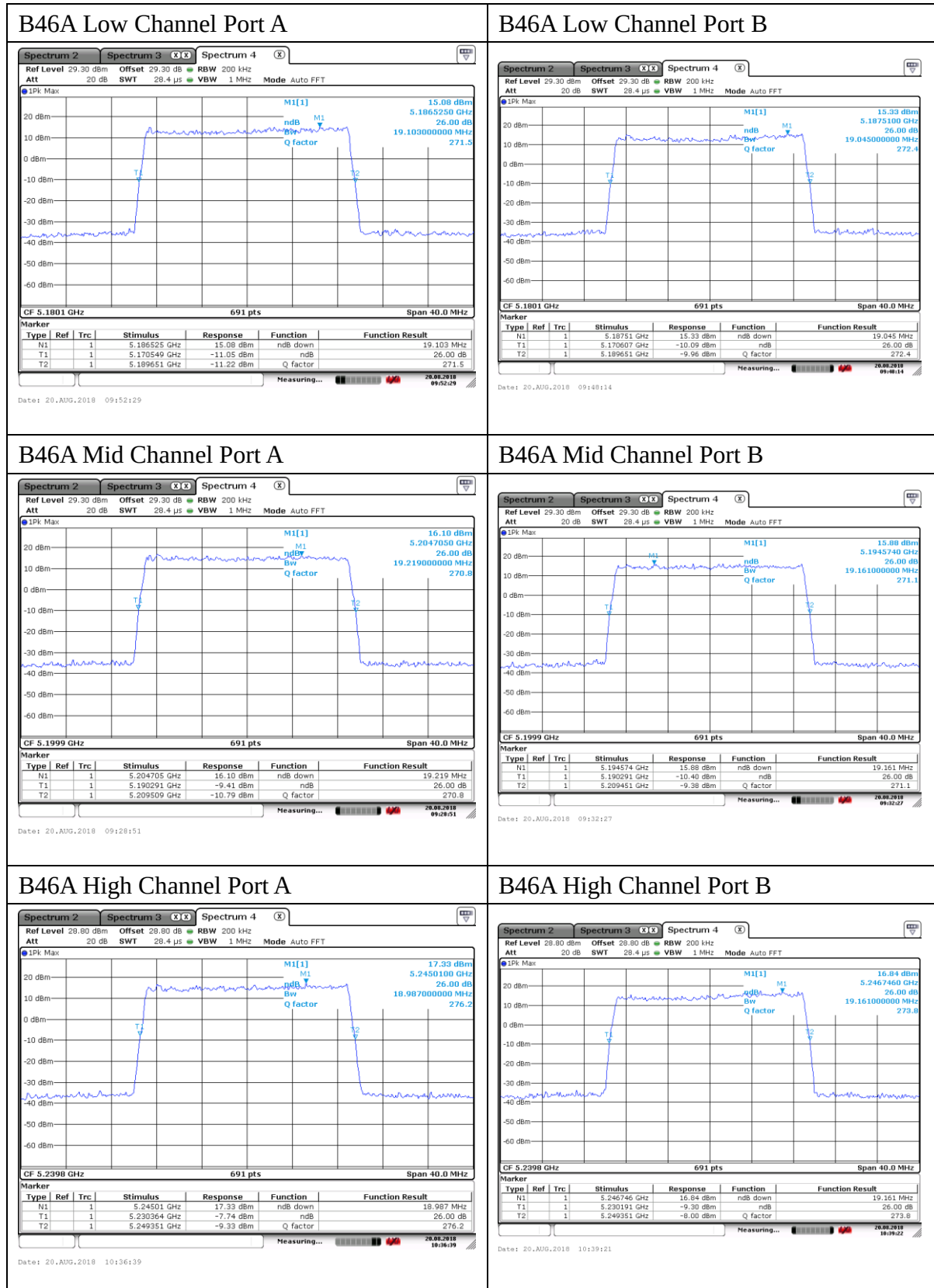
6.4.1 測試數據

發射頻寬				
Mode	Channel	Freq. (MHz)	26dB BW (MHz)	
			Port A	Port B
B46A	Low	5180.1	19.103	19.045
	Mid	5199.9	19.219	19.161
	High	5239.8	18.987	19.161
B46D	Low	5745.0	19.045	19.161
	Mid	5784.9	19.103	19.045
	High	5825.1	19.045	19.103

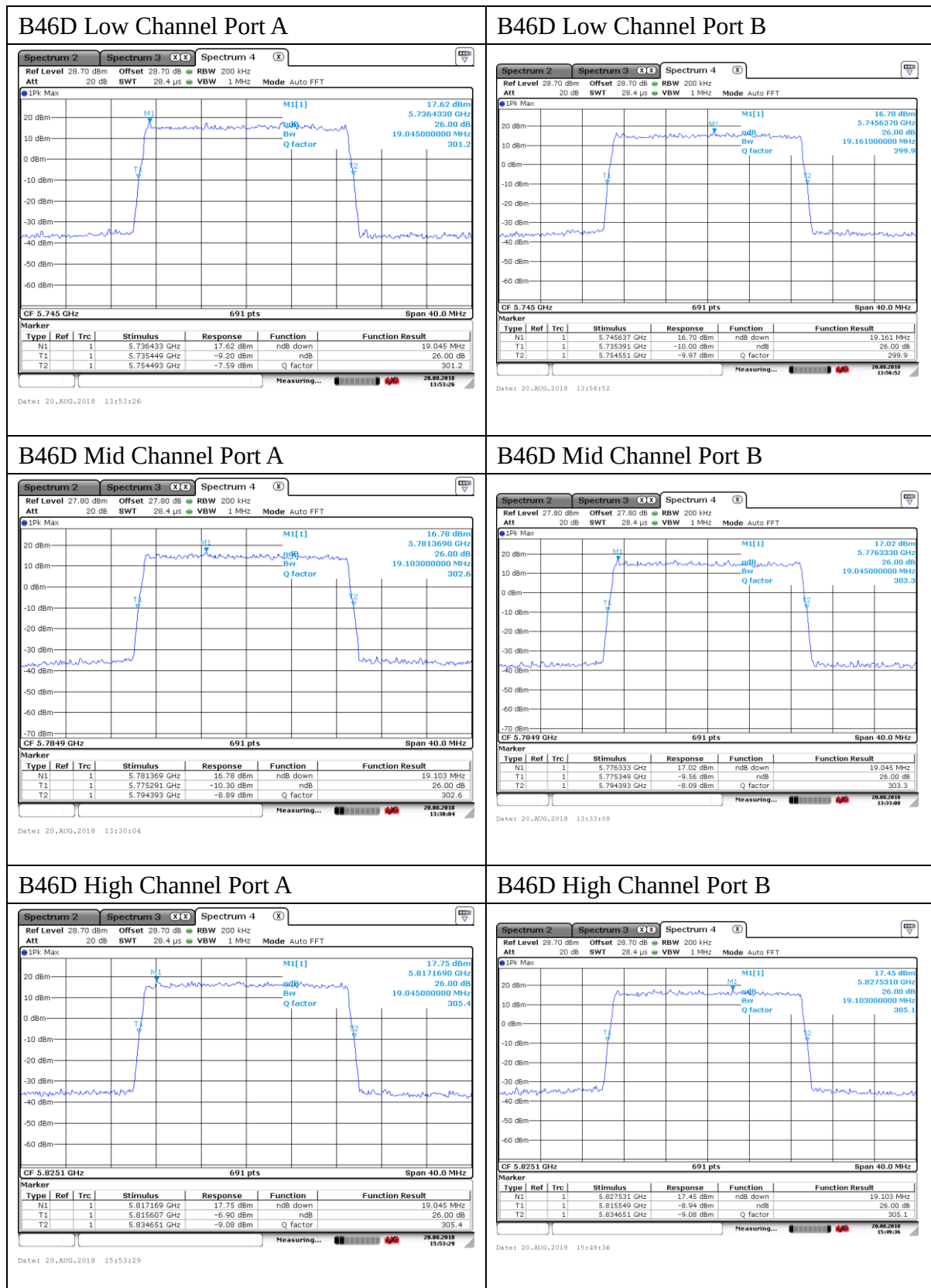
發射頻寬				
Mode	Channel	Freq. (MHz)	6dB BW (KHz)	
			Port A	Port B
B46D	Low	5745.0	17.945	18.003
	Mid	5784.9	18.003	18.061
	High	5825.1	18.061	18.061

6.4.2 測試掃描圖

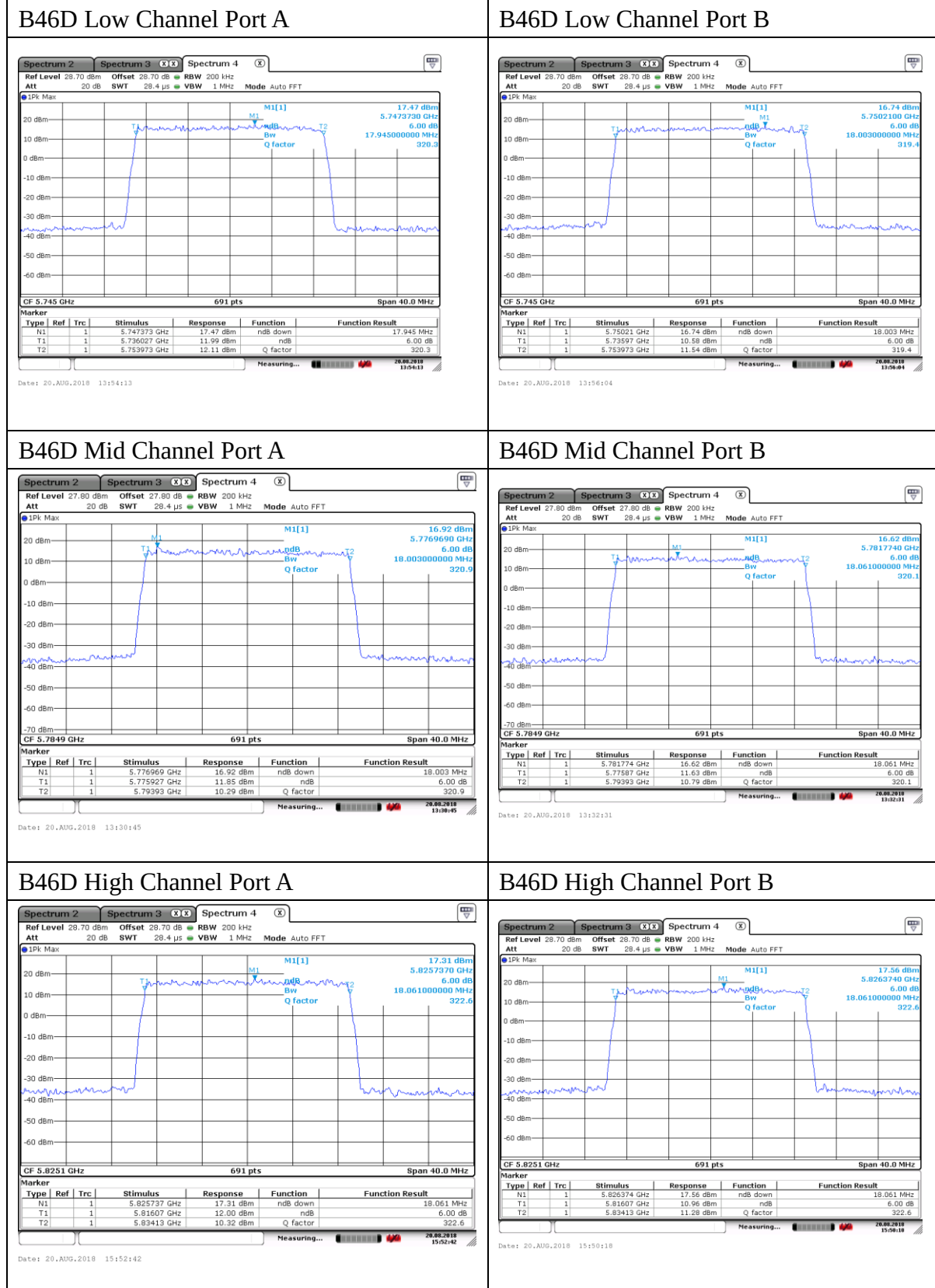
26dB BW



26dB BW



6dB BW



7. 天線型式之要求

7.1 適用標準

依據NCC低功率射頻電機技術規範之規定，操作於5150-5250MHz & 5725-5850MHz者，其發射天線之方向性增益超過 6dBi，不須降低最大傳導輸出功率。其餘，若其發射天線之方向性增益超過6dBi，應依所超過之dB數等量降低峰值輸出功率。

7.2 天線型式

此裝置使用天線規格如下

1)

廠牌：Nokia

型號：AARC

增益：6 dBi(Max)

型態：X-polarized directional antenna

8. 功率密度之要求

8.1 適用標準

使用於5.15 GHz ~ 5.25 GHz頻段者

依據NCC低功率射頻電機技術規範4.7.3.1節(1)(B)之要求：

在任何1 MHz頻帶中最大功率頻譜密度應小於或等於17 dBm。

使用於5.725 GHz ~ 5.850 GHz頻段者

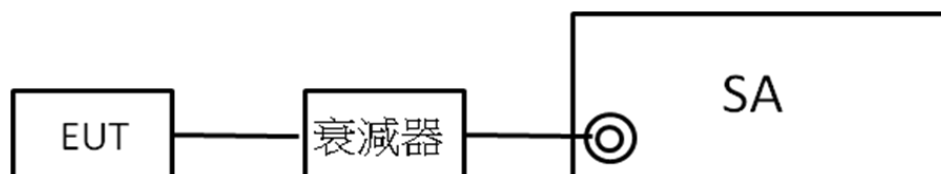
依據NCC低功率射頻電機技術規範4.7.3.3節(2)之要求：

在任何500 KHz頻帶中最大功率頻譜密度應小於或等於30 dBm。

8.2 測試方法

Spectrum Analyzer 先行熱機，以確定功能正常。將發射機之天線埠經由適當之衰減器連接至頻譜分析儀，其頻譜分析儀依規範設定解析頻寬(RBW)，視訊頻寬(VBW)大於3倍解析頻寬(RBW)。利用頻譜分析儀 Marker to peak 決定其載波功率密度。

8.3 功率密度測試接續圖



圖五：功率密度測試連接圖

8.4 功率密度測試之測試數據

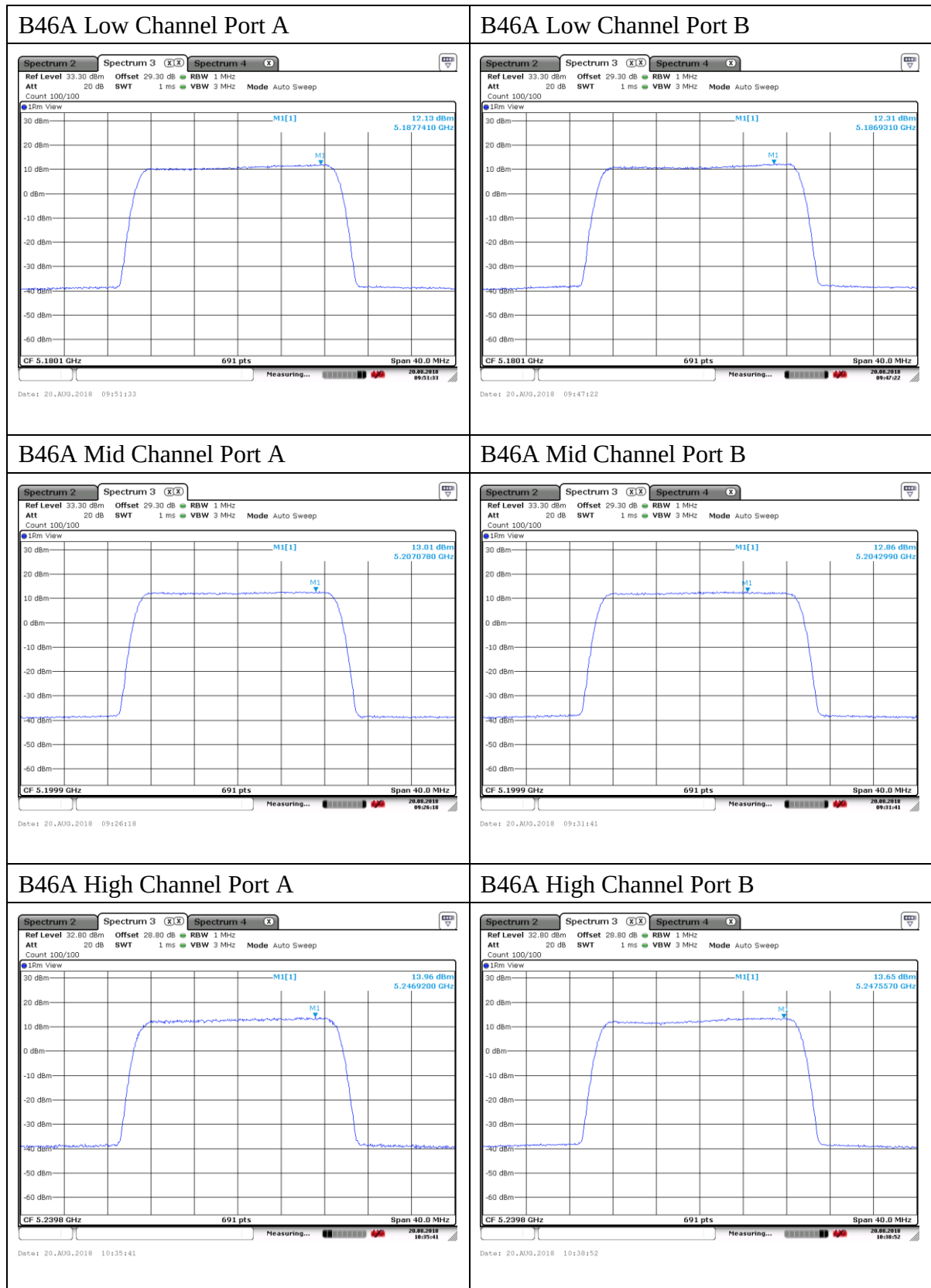
8.4.1 測試數據

功率密度				
Mode/Antenna	Channel	Frequency (MHz)	功率密度讀值 (dBm)	
			Port A	Port B
B46A	Low	5180.1	12.13	12.31
	Mid	5199.9	13.01	12.86
	High	5239.8	13.96	13.65
B46D	Low	5745.0	10.76	10.34
	Mid	5784.9	9.51	10.03
	High	5825.1	11.12	10.02

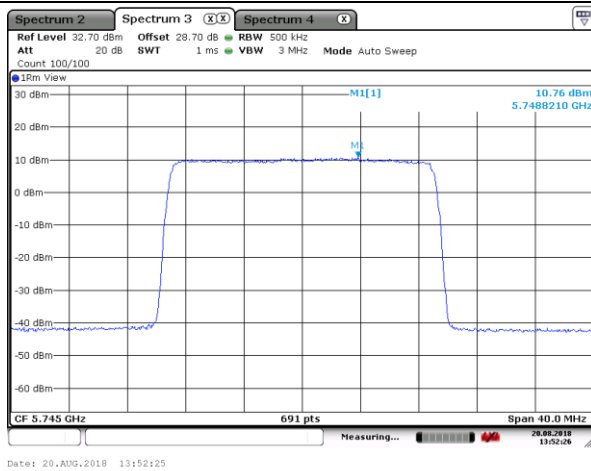
註 1:B46A 之功率頻譜密度限制值原為 17dBm，2x2 MIMO，故單根天線限制值為 14 dBm。

註 2:B46D 之功率頻譜密度限制值原為 30dBm，2x2 MIMO，故單根天線限制值為 27 dBm。

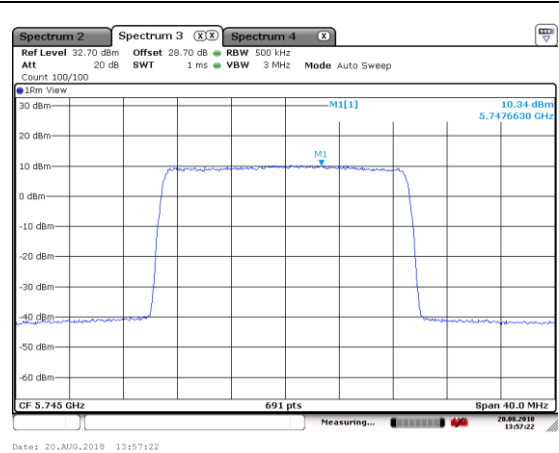
8.4.2 測試掃描圖



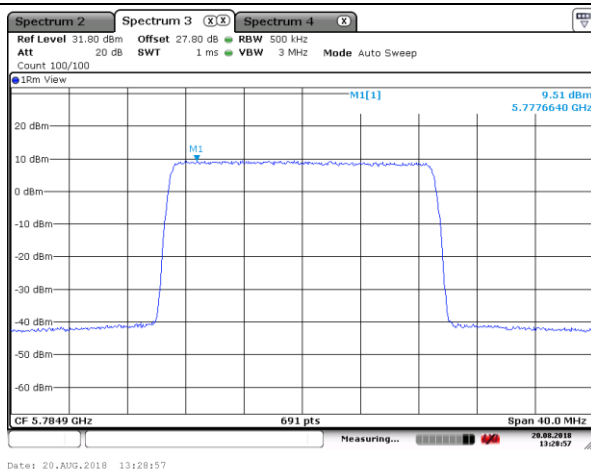
B46D Low Channel Port A



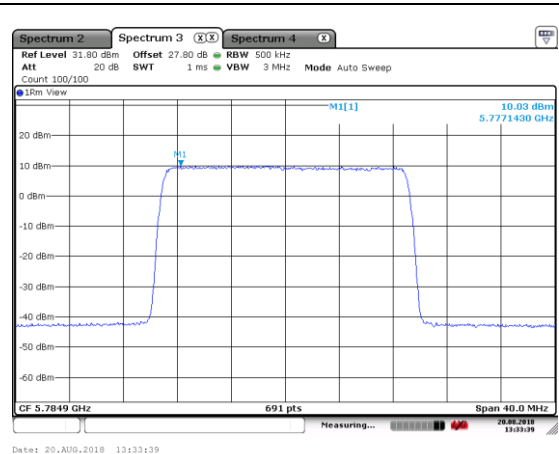
B46D Low Channel Port B



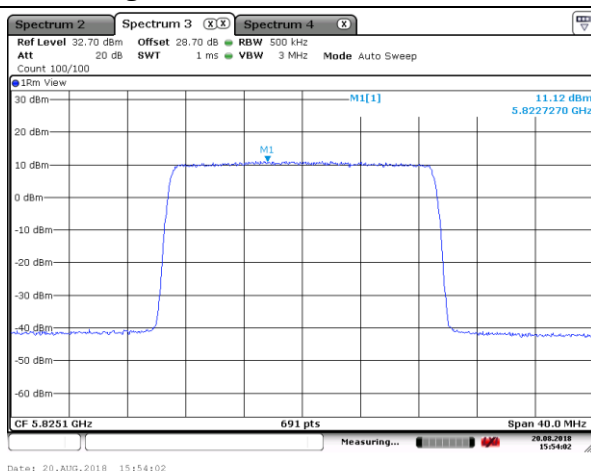
B46D Mid Channel Port A



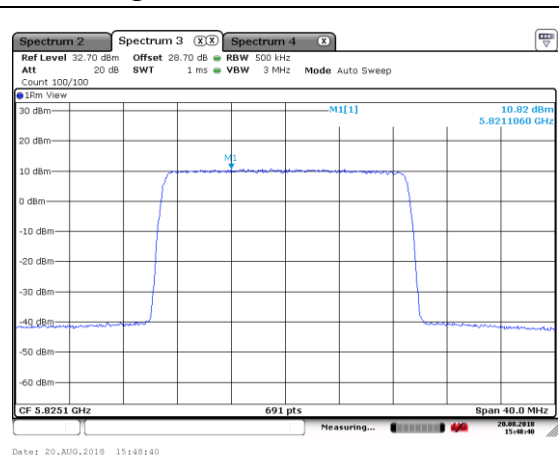
B46D Mid Channel Port B



B46D High Channel Port A



B46D High Channel Port B



9. 場強輻射之量測

9.1 適用標準

依據低功率射頻電機技術規範 3.10.1.5 節之要求：

其他開放頻帶外不必要之輻射干擾需符合 2.8 節之一般限制要求

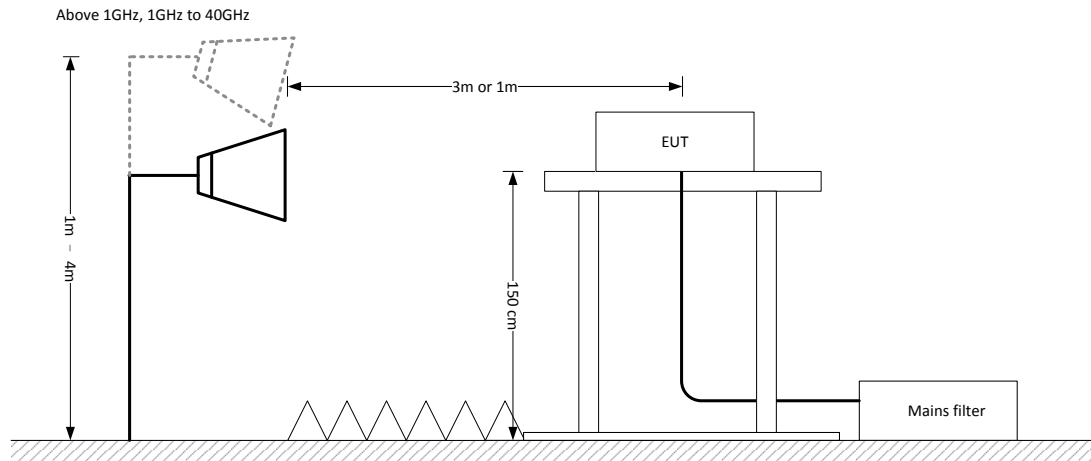
頻率 (MHz)	測試距離 (m)	干擾限制 (μ V/m)	干擾限制 (dB μ V/m)
0.009 to 0.490 (含)	300	2,400/頻率(千赫)	(註 1)
0.490 (不含) to 1.705 (含)	30	24,000 / 頻率 (千赫)	(註 1)
1.705 (不含) to 30 (不含)	30	30	29.5
30 (含) to 88 (含)	3	100	40.0
88 (不含) to 216 (含)	3	150	43.5
216 (不含) to 960 (含)	3	200	46.0
960 (不含)以上	3	500	54.0

註1:其干擾限制值= $20 \cdot \text{LOG}(2400/F) + 40 \cdot \text{LOG}(300/\text{量測距離})$

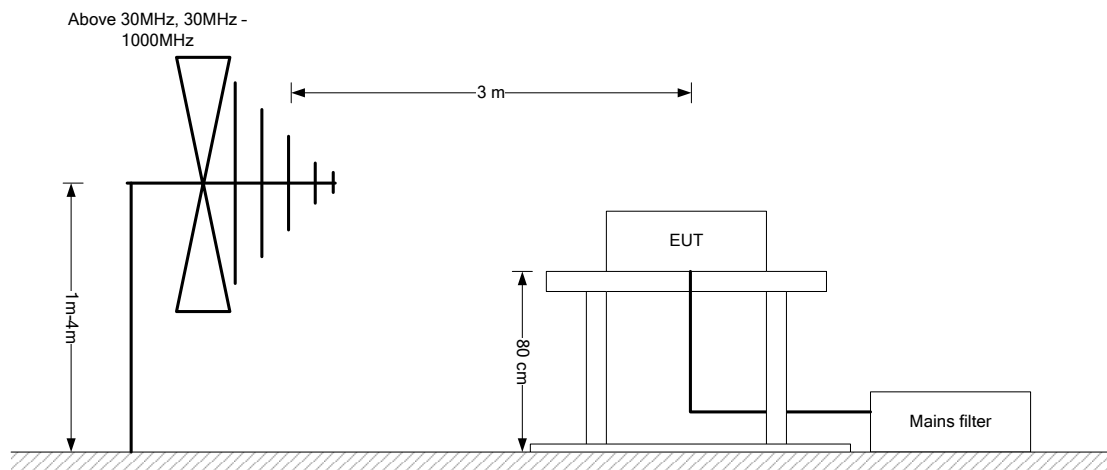
9.2 量測方法

將待測物置於 0.8 米高的非金屬桌面，使其在工作狀態，接收天線置於 3 米外相同的高度。待測物分別要垂直或水平放置，而且桌面要 360 度旋轉，另外接收天線也要從 1.0 米至 4.0 米升降變化，以找出最大的輻射電場強度，接收天線置於水平、垂直極化各執行測試。

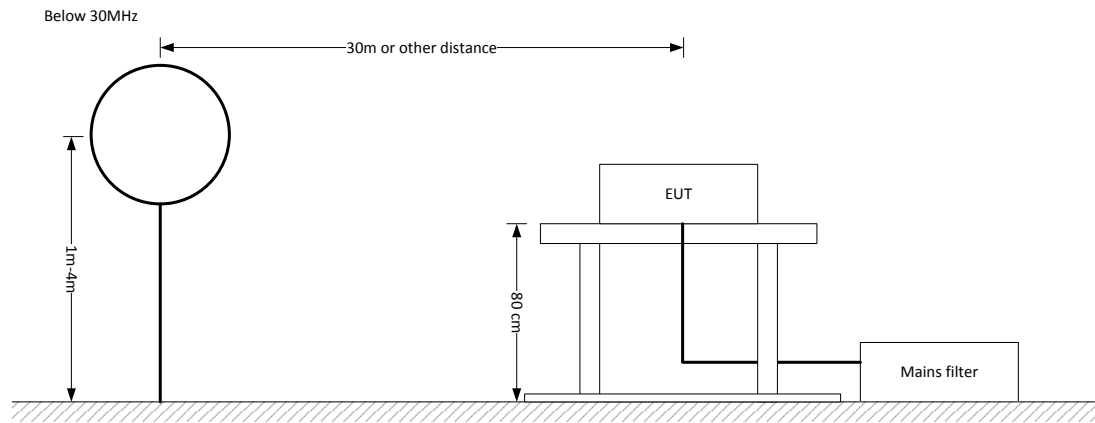
9.3 場強輻射之測試配置



圖六：量測主頻場強、量測頻率高於 1GHz 以上之測試架構



圖七：量測頻率低於 1GHz 以下之測試架構

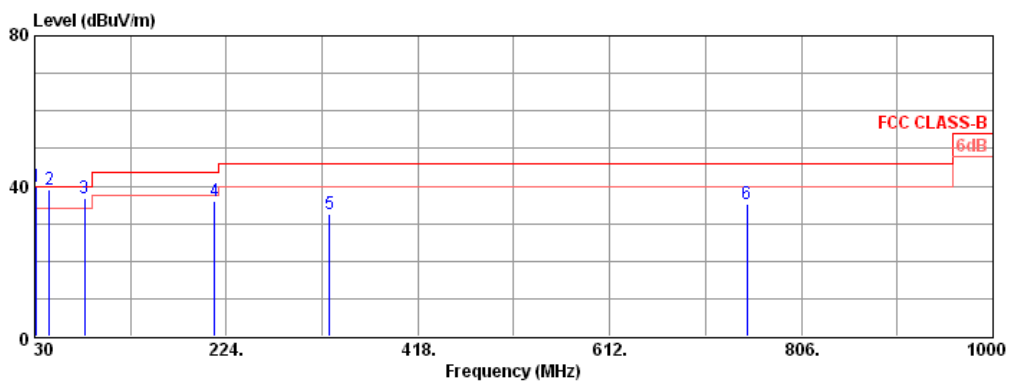


圖八：量測頻率低於 30MHz 以下之測試架構

9.4 場強輻射之量測結果

合格，試驗詳細結果如下。

Mode 1	B46A	Pol.	Vertical
Channel	Low : 5180.1 MHz	RB	120k

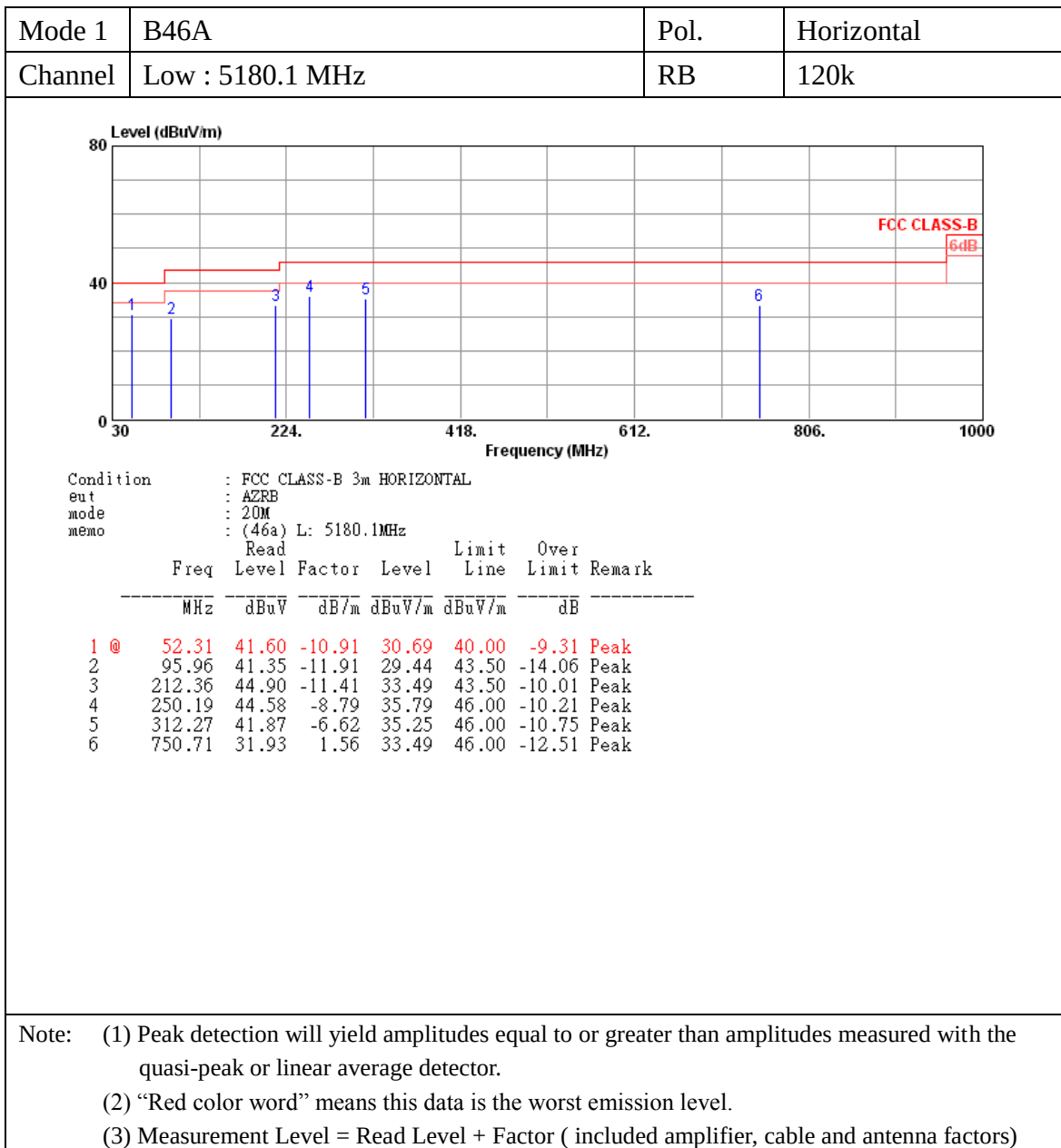


Condition : FCC CLASS-B 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46a) L: 5180.1MHz

	Read	Limit	Over	
Freq	Level	Factor	Level	Line
MHz	dBuV	dB/m	dBuV/m	dBuV/m
1 @	31.62	48.13	-8.26	39.87
2 !	45.22	48.93	-9.98	38.95
3 !	80.44	51.96	-15.37	36.59
4	212.36	47.44	-11.41	36.03
5	328.76	38.74	-6.19	32.55
6	750.71	33.67	1.56	35.23

Limit Line: 40.00
 Over Limit: -0.13 QP
 Peak: -1.05 QP
 Peak: -3.41 Peak
 Peak: -7.47 Peak
 Peak: -13.45 Peak
 Peak: -10.77 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)



Mode 1	B46A	Pol.	Vertical
Channel	Low : 5180.1 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.1 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46a) L: 5180.1MHz

	Read	Limit	Over
Freq	Level	Factor	Level
	Line		
MHz	dBuV	dB/m	dBuV/m
1 4685.35	59.81	-10.24	49.57
2 5587.20	64.59	-8.97	55.62
3 @ 10350.22	56.07	3.47	59.54

	Limit	Over
	Line	Limit
	dB	dB
1	68.20	-18.63
2	68.20	-12.58
3	68.20	-8.66

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Horizontal
Channel	Low : 5180.1 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.1 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46a) L: 5180.1MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4113.43	60.37	-12.48	47.89	68.20	-20.31 Peak
2	5532.37	63.89	-9.07	54.82	68.20	-13.38 Peak
3 @	10350.54	56.51	3.47	59.98	68.20	-8.22 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Vertical
Channel	Mid : 5199.9 MHz	RB	120k

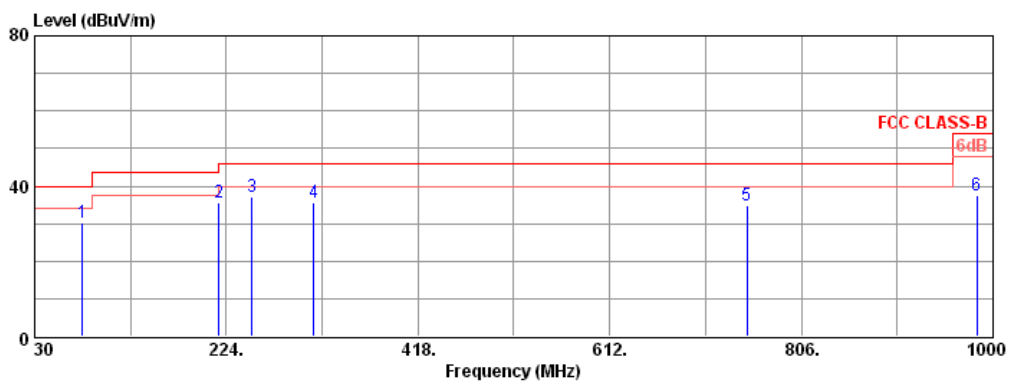
Condition : FCC CLASS-B 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46a) M: 5199.9MHz

	Read	Limit	Over	
Freq	Level	Factor	Level	Line
MHz	dBuV	dB/m	dBuV/m	dBuV/m
1 @	31.65	48.14	-8.26	39.88
2 !	53.45	48.57	-11.10	37.47
3 !	77.53	52.01	-15.30	36.71
4	210.42	45.60	-11.53	34.07
5	312.27	37.41	-6.62	30.79
6	750.71	33.45	1.56	35.01

Limit Line: 40.00
 Over Limit: -0.12 QP
 -2.53 QP
 -3.29 Peak
 -9.43 Peak
 -15.21 Peak
 -10.99 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Horizontal
Channel	Mid : 5199.9 MHz	RB	120k



Condition : FCC CLASS-B 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46a) M: 5199.9MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	78.50	45.66	-15.36	30.30	40.00	-9.70 Peak
2	216.24	46.60	-11.16	35.44	46.00	-10.56 Peak
3 @	250.19	45.80	-8.79	37.01	46.00	-8.99 Peak
4	312.27	42.10	-6.62	35.48	46.00	-10.52 Peak
5	750.71	33.33	1.56	34.89	46.00	-11.11 Peak
6	983.51	31.51	6.01	37.52	54.00	-16.48 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Vertical
Channel	Mid : 5199.9 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.1 3m VERTICAL
ent : AZRB
mode : 20M
memo : (46a) M: 5199.9MHz

	Read	Limit	Over
Freq	Level	Factor	Level
MHz	dBuV	dB/m	dBuV/m
1 4553.42	60.15	-10.72	49.43
2 5620.34	63.11	-8.89	54.22
3 @ 10405.23	55.78	3.73	59.51

	Limit	Over
Line	Limit	Remark
dBuV/m	dB	
68.20	-18.77	Peak
68.20	-13.98	Peak
68.20	-8.69	Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
(2) "Red color word" means this data is the worst emission level.
(3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

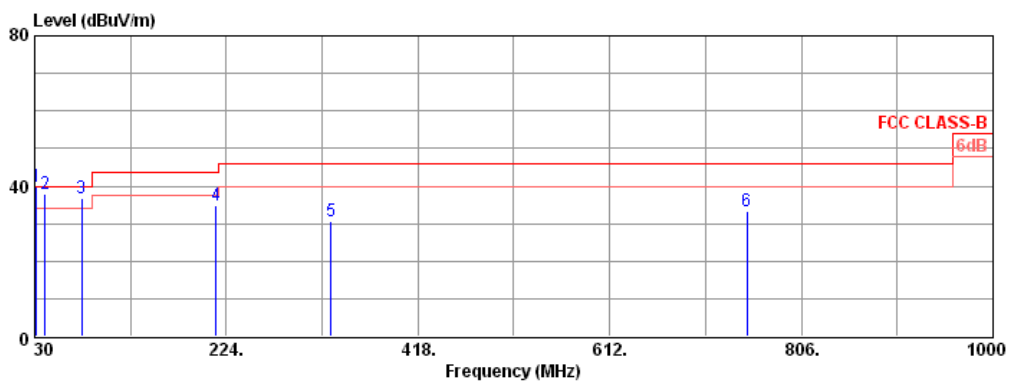
Mode 1	B46A	Pol.	Horizontal
Channel	Mid : 5199.9 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.1 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46a) M: 5199.9MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	dBuV/m	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4883.69	60.85	-9.98	50.87	68.20	-17.33 Peak
2	5642.85	63.11	-8.91	54.20	68.20	-14.00 Peak
3 @	10405.66	55.12	3.73	58.85	68.20	-9.35 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Vertical
Channel	High :5239.8 MHz	RB	120k



Condition : FCC CLASS-B 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46a) H: 5239.8MHz

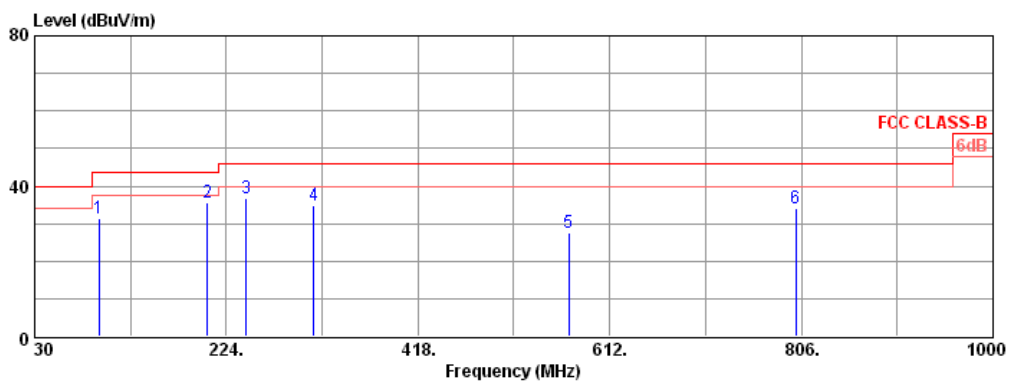
	Read	Limit	Over
Freq	Level	Factor	Level
MHz	dBuV	dB/m	dBuV/m
1 @	31.58	48.18	-8.25
2 !	40.27	47.48	-9.54
3 !	77.53	52.21	-15.30
4	213.33	46.24	-11.34
5	329.73	36.94	-6.16
6	750.71	31.81	1.56

	Level	Line	Over
	dBuV/m	dBuV/m	Limit
	39.93	40.00	-0.07
	37.94	40.00	-2.06
	36.91	40.00	-3.09
	34.90	43.50	-8.60
	30.78	46.00	-15.22
	33.37	46.00	-12.63

Remark

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Horizontal
Channel	High :5239.8 MHz	RB	120k



Condition : FCC CLASS-B 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46a) H: 5239.8MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	94.99	43.55	-12.23	31.32	43.50	-12.18 Peak
2 @	204.60	46.99	-11.57	35.42	43.50	-8.08 Peak
3	244.37	45.96	-9.11	36.85	46.00	-9.15 Peak
4	312.27	41.31	-6.62	34.69	46.00	-11.31 Peak
5	570.29	29.21	-1.47	27.74	46.00	-18.26 Peak
6	800.18	31.94	2.21	34.15	46.00	-11.85 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 1	B46A	Pol.	Vertical
Channel	High :5239.8 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.1 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46a) H: 5239.8MHz

	Read	Limit	Over
Freq	Level	Factor	Level
MHz	dBuV	dB/m	dBuV/m
1 3937.22	63.00	-13.05	49.95
2 5653.58	63.76	-8.88	54.88
3 @ 10482.19	55.92	3.93	59.85

Limit Line: 68.20
 Over Limit: -18.25 Peak
 -13.32 Peak
 -8.35 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

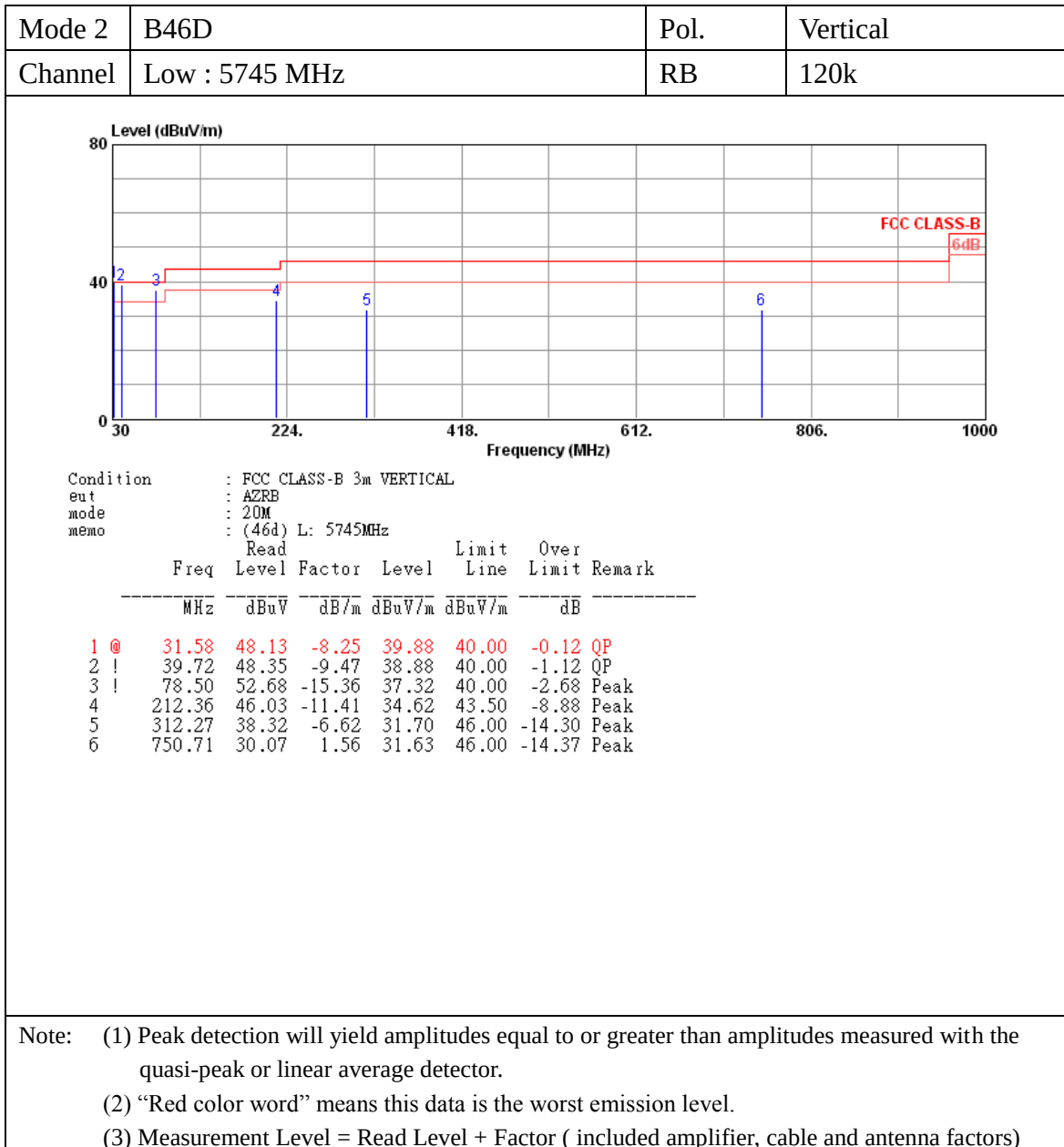
Mode 1	B46A	Pol.	Horizontal
Channel	High :5239.8 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.1 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46a) H: 5239.8MHz

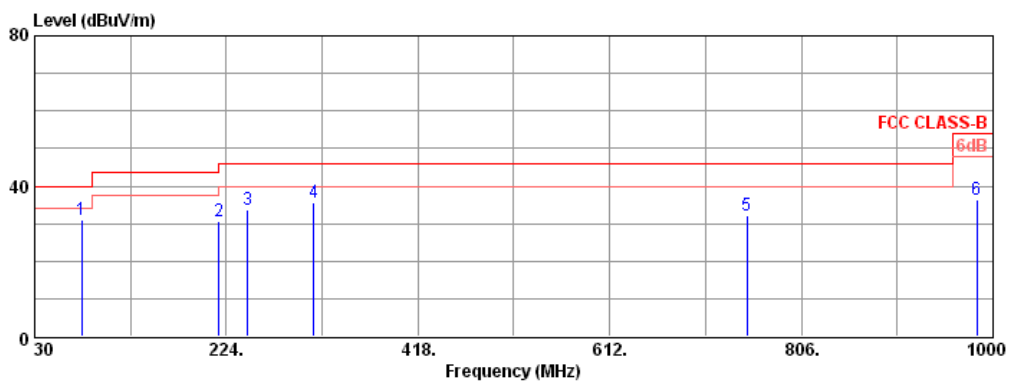
	Read	Limit	Over
Freq	Level	Factor	Level
MHz	dBuV	dB/m	dBuV/m
1 4377.84	60.63	-11.70	48.93
2 5653.62	63.02	-8.88	54.14
3 @ 10482.76	56.42	3.93	60.35

	Limit	Over
Line	Limit	Remark
dBuV/m	dB	
68.20	-19.27	Peak
68.20	-14.06	Peak
68.20	-7.85	Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)



Mode 2	B46D	Pol.	Horizontal
Channel	Low : 5745 MHz	RB	120k



Condition : FCC CLASS-B 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46d) L: 5745MHz

	Read	Limit	Over	
Freq	Level	Factor	Level	Line
MHz	dBuV	dB/m	dBuV/m	dBuV/m
1 @ 77.53	46.23	-15.30	30.93	40.00
2 216.24	41.86	-11.16	30.70	46.00
3 245.34	42.61	-9.05	33.56	46.00
4 312.27	42.35	-6.62	35.73	46.00
5 750.71	30.68	1.56	32.24	46.00
6 983.51	30.29	6.01	36.30	54.00

-----dB-----

1 @ 77.53 46.23 -15.30 30.93 40.00 -9.07 Peak
 2 216.24 41.86 -11.16 30.70 46.00 -15.30 Peak
 3 245.34 42.61 -9.05 33.56 46.00 -12.44 Peak
 4 312.27 42.35 -6.62 35.73 46.00 -10.27 Peak
 5 750.71 30.68 1.56 32.24 46.00 -13.76 Peak
 6 983.51 30.29 6.01 36.30 54.00 -17.70 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Vertical
Channel	Low : 5745 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.2 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46d) L: 5745MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	dBuV/m	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	3940.09	61.68	-13.04	48.64	68.20	-19.56 Peak
2	7790.19	63.07	-2.70	60.37	68.20	-7.83 Peak
3 @	11500.38	55.59	5.85	61.44	68.20	-6.76 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Horizontal
Channel	Low : 5745 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.2 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46d) L: 5745MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	dBuV/m	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	3940.67	63.73	-13.04	50.69	68.20	-17.51 Peak
2	7300.43	62.54	-3.86	58.68	68.20	-9.52 Peak
3 @	11500.51	56.44	5.85	62.29	68.20	-5.91 Peak

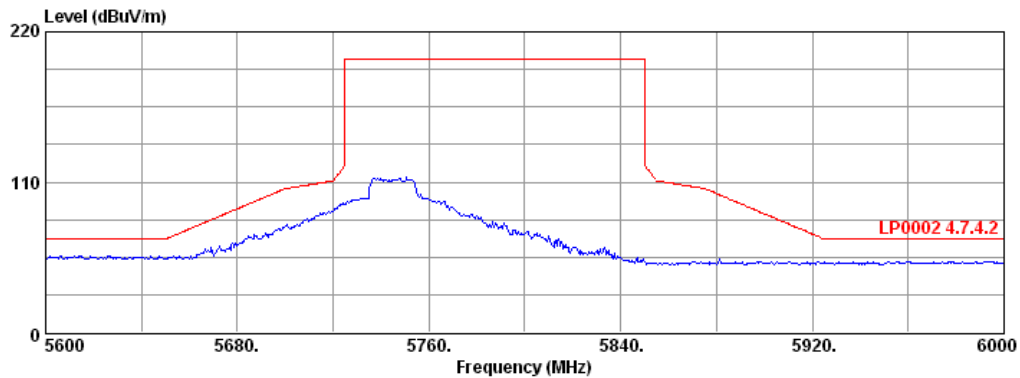
Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Vertical
Channel	Low : 5745 MHz Bandedge	RB/VB	1M/1M

Condition : LP0002 4.7.4.2 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46d) L: 5745MHz

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) “Red color word” means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Horizontal
Channel	Low : 5745 MHz Bandedge	RB/VB	1M/1M



Condition : LP0002 4.7.4.2 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46d) L: 5745MHz

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Vertical
Channel	Mid : 5784.9 MHz	RB	120k

Condition : FCC CLASS-B 3m VERTICAL
ent : AZRB
mode : 20M
memo : (46d) M: 5784.9MHz

	Read	Level	Limit	Over	
Freq	Level	Factor	Line	Limit	Remark
-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1 @	31.64	47.45	-8.26	39.19	40.00 -0.81 QP
2 !	40.33	46.98	-9.54	37.44	40.00 -2.56 QP
3 !	76.56	52.08	-15.25	36.83	40.00 -3.17 Peak
4	212.36	44.81	-11.41	33.40	43.50 -10.10 Peak
5	250.19	43.24	-8.79	34.45	46.00 -11.55 Peak
6	329.73	36.66	-6.16	30.50	46.00 -15.50 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
(2) "Red color word" means this data is the worst emission level.
(3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Horizontal
Channel	Mid : 5784.9 MHz	RB	120k

Condition : FCC CLASS-B 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46d) M: 5784.9MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	dB/m	dBuV/m	dBuV/m
1	76.56	45.16	-15.25	29.91	40.00	-10.09 Peak
2 @	205.57	45.60	-11.57	34.03	43.50	-9.47 Peak
3	246.31	45.01	-9.00	36.01	46.00	-9.99 Peak
4	312.27	40.10	-6.62	33.48	46.00	-12.52 Peak
5	750.71	31.05	1.56	32.61	46.00	-13.39 Peak
6	983.51	30.41	6.01	36.42	54.00	-17.58 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Vertical
Channel	Mid : 5784.9 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.2 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46d) M: 5784.9MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	dBuV/m	Line	Limit Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	4808.33	59.62	-10.09	49.53	68.20	-18.67 Peak
2	8028.57	62.65	-2.17	60.48	68.20	-7.72 Peak
3 @	11570.22	55.42	5.76	61.18	68.20	-7.02 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

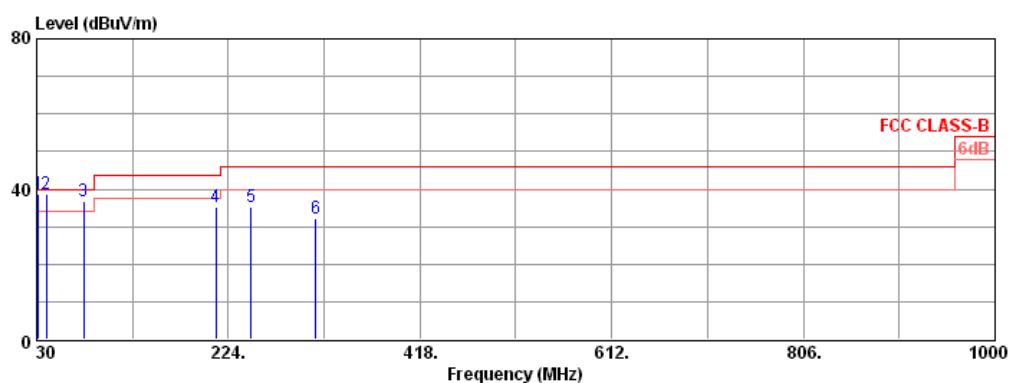
Mode 2	B46D	Pol.	Horizontal
Channel	Mid : 5784.9 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.2 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46d) M: 5784.9MHz

	Freq	Read	Level	Limit	Over	
	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	3940.42	63.56	-13.04	50.52	68.20	-17.68 Peak
2	7552.95	63.16	-3.58	59.58	68.20	-8.62 Peak
3 @	11570.85	55.82	5.76	61.58	68.20	-6.62 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Vertical
Channel	High :5825.1 MHz	RB	120k



Condition : FCC CLASS-B 3m VERTICAL
out : AZRB
mode : 20M
memo : (46d) H: 5825.1MHz

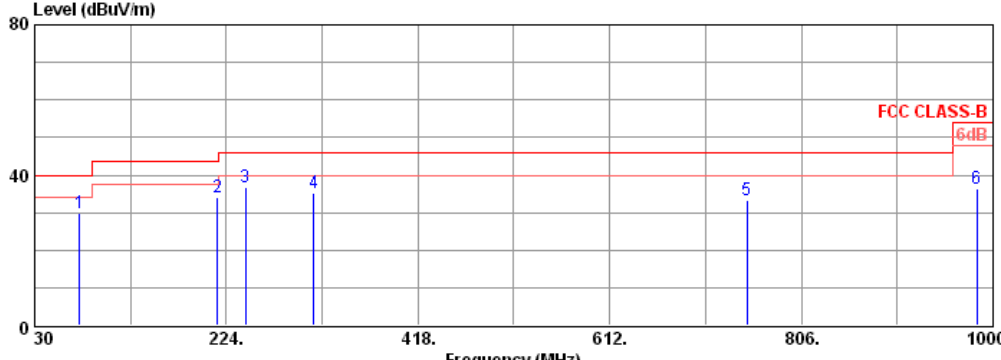
	Read	Limit	Over			
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 !	31.65	46.82	-8.26	38.56	40.00	-1.44 QP
2 @	39.74	48.22	-9.47	38.75	40.00	-1.25 QP
3 !	77.53	52.13	-15.30	36.83	40.00	-3.17 Peak
4	211.39	46.72	-11.47	35.25	43.50	-8.25 Peak
5	247.28	44.23	-8.95	35.28	46.00	-10.72 Peak
6	312.27	38.88	-6.62	32.26	46.00	-13.74 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.

(2) “Red color word” means this data is the worst emission level.

(3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Horizontal
Channel	High :5825.1 MHz	RB	120k



Condition : FCC CLASS-B 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46d) H: 5825.1MHz

	Freq	Read	Level	Limit	Over	
	MHz	Level	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	75.59	45.22	-15.21	30.01	40.00	-9.99 Peak
2	215.27	45.25	-11.21	34.04	43.50	-9.46 Peak
3 @	243.40	46.05	-9.16	36.89	46.00	-9.11 Peak
4	312.27	41.83	-6.62	35.21	46.00	-10.79 Peak
5	750.71	31.60	1.56	33.16	46.00	-12.84 Peak
6	983.51	30.54	6.01	36.55	54.00	-17.45 Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Vertical
Channel	High :5825.1 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.2 3m VERTICAL
 out : AZRB
 mode : 20M
 memo : (46d) H: 5825.1MHz

	Read	Limit	Over
Freq	Level	Factor	Level
	Line		Limit
-----	-----	-----	-----
MHz	dBuV	dB/m	dBuV/m
1 5480.28	64.00	-9.13	54.87
2 9148.17	61.55	-0.24	61.31
3 @ 11668.42	55.95	5.65	61.60

	Limit	Over	Remark
	Line	Limit	
-----	-----	-----	-----
	dB	dB	
1	68.20	-13.33	Peak
2	68.20	-6.89	Peak
3	68.20	-6.60	Peak

Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Horizontal
Channel	High :5825.1 MHz	RB/VB	1M/1M

Condition : LP0002 4.7.4.2 3m HORIZONTAL
 out : AZRB
 mode : 20M
 memo : (46d) H: 5825.1MHz

	Freq	Read	Level	Limit	Over	
	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB
1	3940.49	63.24	-13.04	50.20	68.20	-18.00 Peak
2 @	9050.63	62.94	-0.56	62.38	68.20	-5.82 Peak
3	11640.54	55.13	5.65	60.78	68.20	-7.42 Peak

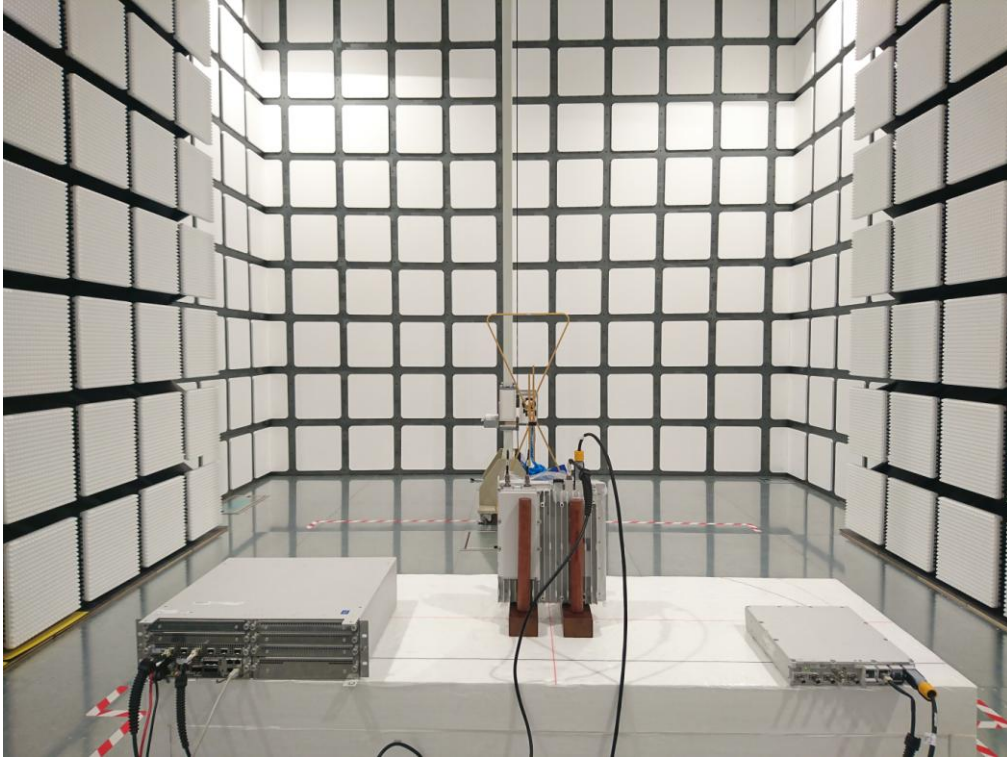
Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector.
 (2) "Red color word" means this data is the worst emission level.
 (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)

Mode 2	B46D	Pol.	Vertical
Channel	High :5825.1 MHz Bandedge	RB/VB	1M/1M
Condition : LP0002 4.7.4.2 3m VERTICAL eut : AZRB mode : 20M memo : (46d) H: 5825.1MHz			
Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector. (2) “Red color word” means this data is the worst emission level. (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)			

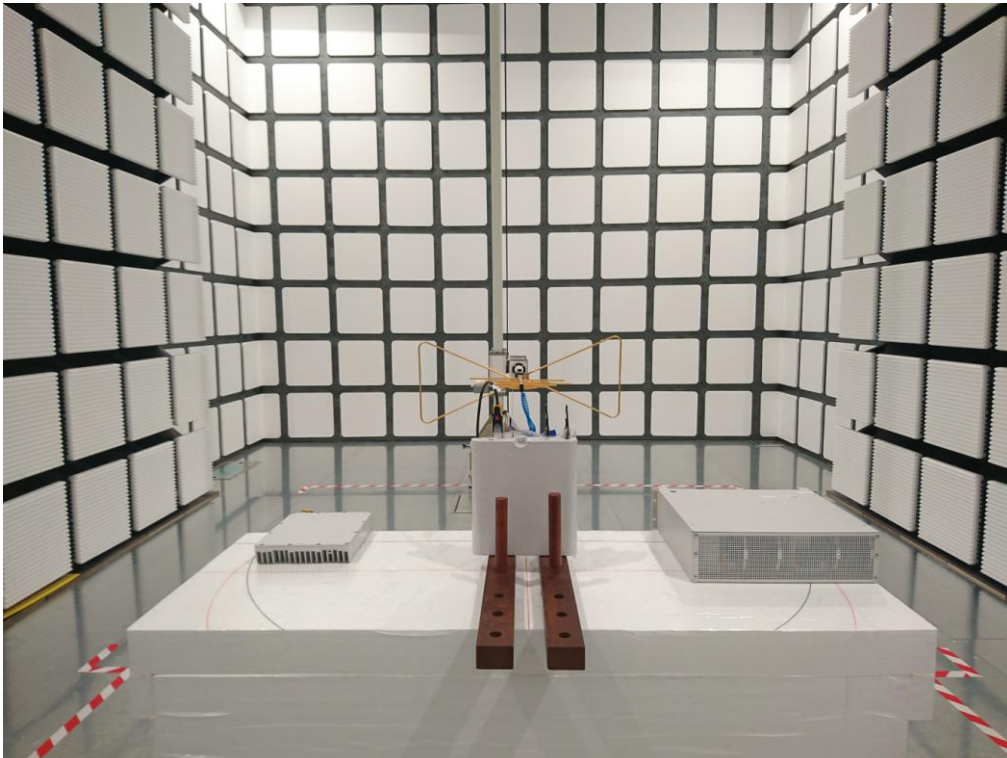
Mode 2	B46D	Pol.	Horizontal
Channel	High :5825.1 MHz Bandedge	RB/VB	1M/1M
Condition : LP0002 4.7.4.2 3m HORIZONTAL eut : AZRB mode : 20M memo : (46d) H: 5825.1MHz			
Note: (1) Peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak or linear average detector. (2) “Red color word” means this data is the worst emission level. (3) Measurement Level = Read Level + Factor (included amplifier, cable and antenna factors)			

附件：測試照片

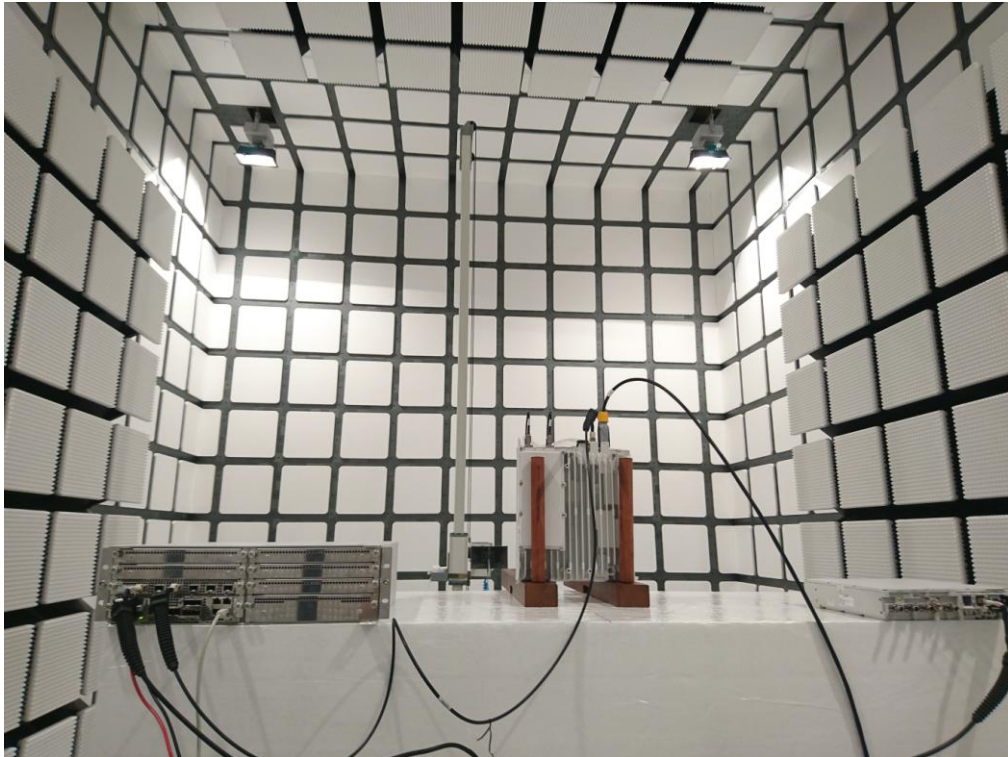
圖一. 帶外測試(正面)



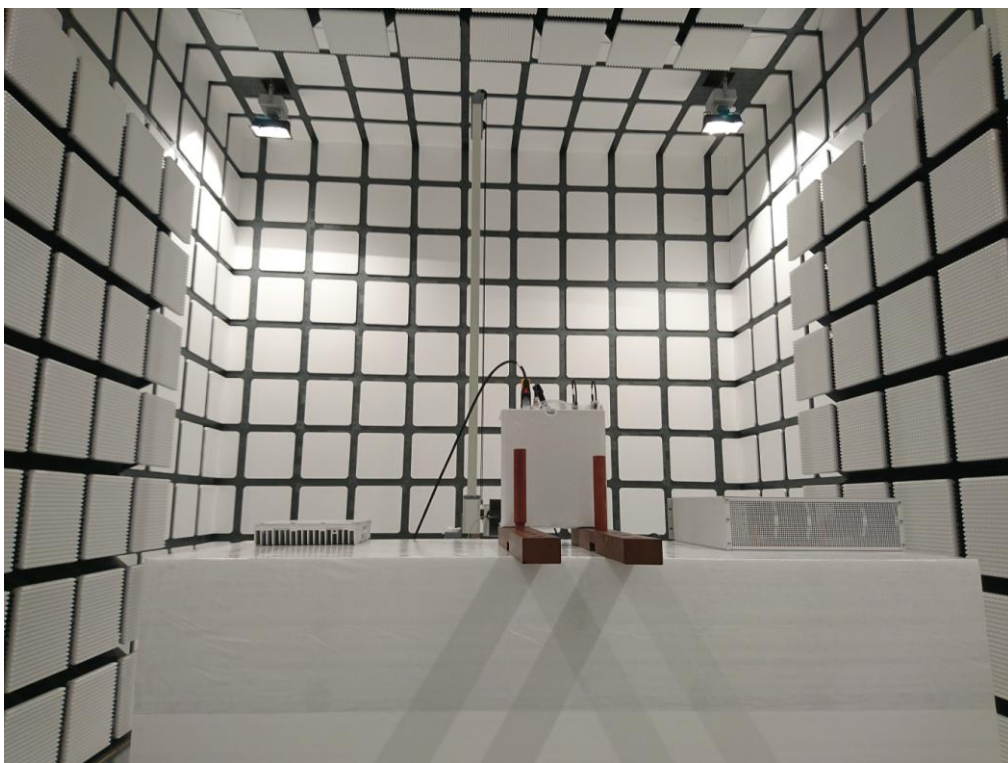
圖二. 帶外測試(背面)



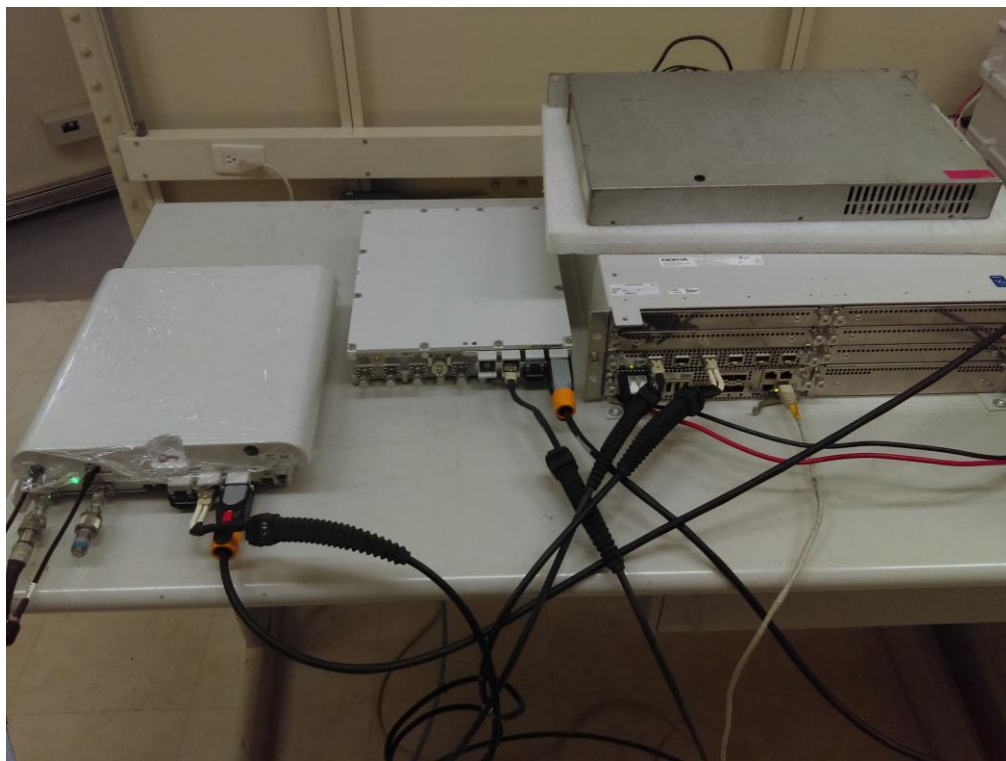
圖三. 帶外測試(正面)



圖四. 帶外測試(背面)



圖五. RF 傳導性測試



圖六.

