NCC

行動通信電信終端設備技術規範試驗報告

產品名稱	: NCT 集抄集中器
型號	: NCT1.0.0.0
廠牌	: EMS
商標	: EMS
申請者	: 弓銓企業股份有限公司
申請者地址	: 台南市善化區大利三路 8 號
測試標準	: PLMN ALL (109 年版)
適用範圍	: 窄頻終端設備(PLMN11)_Cat-M1
測試結果	: 符合
接收日期	: 2021/9/7
測試日期	: 2021/9/7

測試工程師 : 陳駿豪
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報告審核人 :
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(柯承志)

本測試報告僅對實驗室所受測之樣品負責
本測試報告非經本公司同意不可局部複製使用

修訂紀錄

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1. 一般資訊

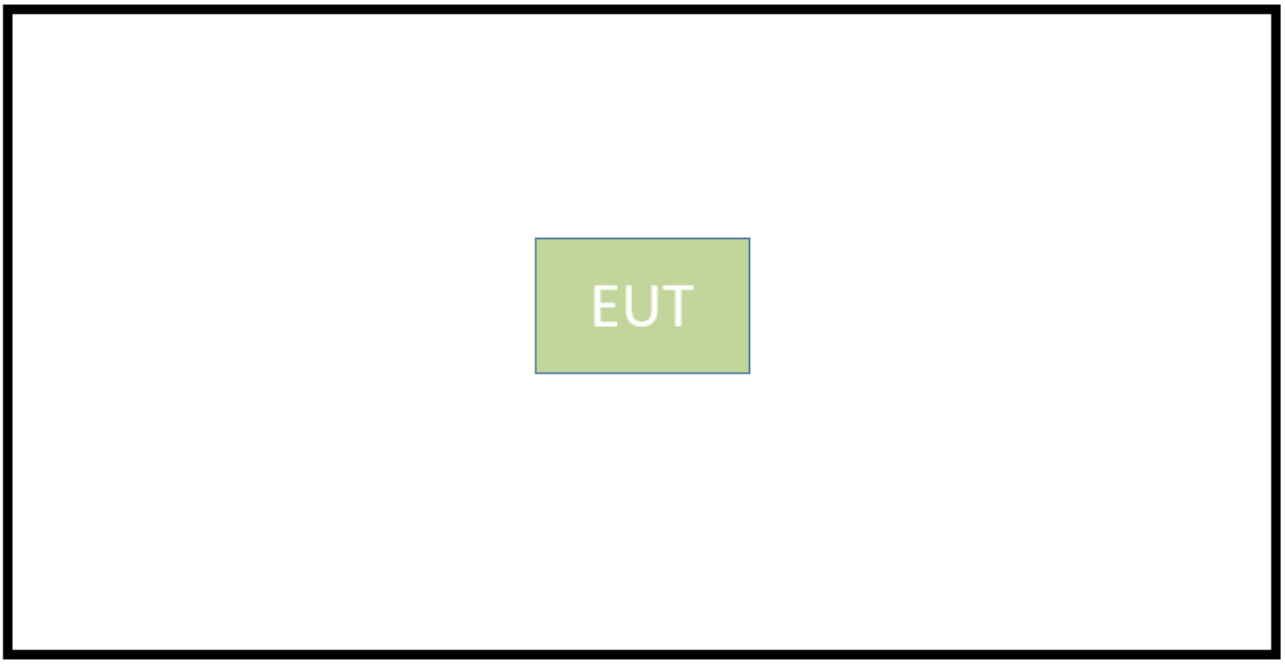
申請者	弓銓企業股份有限公司
申請者地址	台南市善化區大利三路 8 號
製造商	弓銓企業股份有限公司
製造商地址	台南市善化區大利三路 8 號
實驗室	台灣曼瑞檢測科技有限公司
實驗室地址	33377 台灣桃園市龜山區復興二路 38 號
實驗室資訊	**1.** MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Film. **2.** MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada. **3.** MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Taiwan, EU and TELEC Rules.
實驗室測試環境條件	溫度 (°C) : 20-35 / 濕度 (%RH) : 30-65

2. 產品描述

2.1 產品資訊

產品名稱	NCT 集抄集中器
產品型號	NCT1.0.0.0
廠牌	EMS
商標	EMS
支援規格	Cat-M1: Band3 NB-IoT: Band8,28
IMEI 碼	359205103748820
Cat-M1 功率限制定義	Class 3: 23dBm
天線樣式	PCB Antenna
天線規格	Brand: Taiwan Anjie Electronics Co.,Ltd M/N: AJLP2P-B0002 Gain: Band3: 2.486dBi
TX Frequency	Band3: 1710~1785MHz
Rx Frequency	Band3: 1805~1880MHz
是否有照相功能	□ 有（聲響：有□；無□） ■ 無
電池	Brand: FANSO Model No: ER34615H Rating: 3.6V

2.2 測試配置

待測物測試配置圖


3. 測試設備明細

輻射干擾 – AC1

儀器名稱	製造商	型號	財產編號	校正週期	有效日期
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2021/10/5
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2022/3/24
Acitve Loop Antenna	Schwarzbeck	FMZB 1519B	MRTTWA00002	1 year	2022/5/6
Broadband Horn antenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2022/4/21
Breitband Hornantenna	Schwarzbeck	BBHA 9170	MRTTWA00004	1 year	2022/4/28
Broadband Amplifier	Schwarzbeck	BBV 9721	MRTTWA00006	1 year	2022/4/26
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2022/4/21
Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2022/6/15

傳導測試 – AC1

儀器名稱	製造商	型號	財產編號	校正週期	有效日期
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2021/10/14
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2021/7/14
Wideband Radio Communication Taster	R&S	CMW 500	MRTTWA00084	1 year	2021/9/8
Temperature & Humidity Chamber	TEN BILLION	TTH-B3UP	MRTTWA00036	1 year	2022/6/14

EMI 測試軟體

軟體名稱	製造商	版本
e3	Audix	9.160520a
EMI	Quietek	V3

4. 量測不確定度

輻射干擾量測 (Radiated Spurious Emission)
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz~30MHz: ± 3.92dB 30MHz~1GHz: ± 4.25dB 1GHz~18GHz: ± 4.40dB 18GHz~40GHz: ± 4.45dB
頻率穩定度量測 (Frequency Error)
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ±78.4Hz
傳導功率量測 (Conducted Power)
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ± 0.84dB
傳導干擾量測 (Conducted Spurious Emission)
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ± 2.65 dB
佔用頻寬量測 (Occupied Bandwidth)
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 3.3%
溫度 / 濕度 (Temp. / Humidity)
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ±0.82°C/ ±3%
直流電源 (DC Voltage)
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): ±0.3%

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5. 測試結果

產品名稱　　NCT集抄集中器
型號　　NCT1.0.0.0

法規章節	量測項目	限制值	測試結果	測試數據
6.2.2.1	功率限制	有效輻射功率(Effective Radiated Power，ERP) 攜帶式終端設備限制為1W。 移動式終端臺設備限制為2W。 傳導輸出功率限制值 採Class 3者：23 dBm +2.7/-2.7 dB。 採Class 5者：20 dBm +2.7/-2.7 dB。	符合	第 5.1 章節
6.2.2.2	發射頻譜波罩	需符合行動通信電信終端設備技術規範附表 29	符合	第 5.2 章節
6.2.2.3	傳導帶外輻射發射	需符合行動通信電信終端設備技術規範附表 31	符合	第 5.3 章節
6.2.2.4	相鄰頻道洩漏功率比 (ACLR)	需符合行動通信電信終端設備技術規範附表 33	符合	第 5.4 章節
6.2.2.5	非資源區塊帶內發射	需符合行動通信電信終端設備技術規範附表 35	符合	第 5.5 章節
6.2.1.1	頻率穩定度	± 0.1PPM 以內	符合	第 5.6 章節
6.6.2	電波功率密度	適用於移動式終端設備 700 MHz 頻段為 0.35 毫瓦特/平方公分(mW/cm²)； 900 MHz 頻段為 0.45 mW/cm²； 1800 MHz 頻段為 0.9 mW/cm²； 2100MHz、2500 MHz 與 2600 MHz 頻段為 1.0 mW/cm²。	符合	第 5.7 章節

備註：符合性的判定是基於測試結果符合規範的限制值，測試結果的判定是不考慮測量不確定度的值。

5.1 功率限制

5.1.1 合格標準

(1) 等效幅射功率(Effective Radiated Power，ERP)
攜帶式終端設備限制為 1W；
移動式終端臺設備限制為 2W。

(2) 傳導輸出功率限制為
採 Class 3 者：23 dBm +2.7/-2.7 dB；
採 Class 5 者：20 dBm +2.7/-2.7 dB。

5.1.2 測試方法

量測發射功率時，必須使用均方根值等效電壓之儀器量測於任何連續傳輸時段，量測結果須依儀器之反應時間、解析頻寬能力及靈敏度等調整得出正確之發射功率。
依附下表進行檢測。

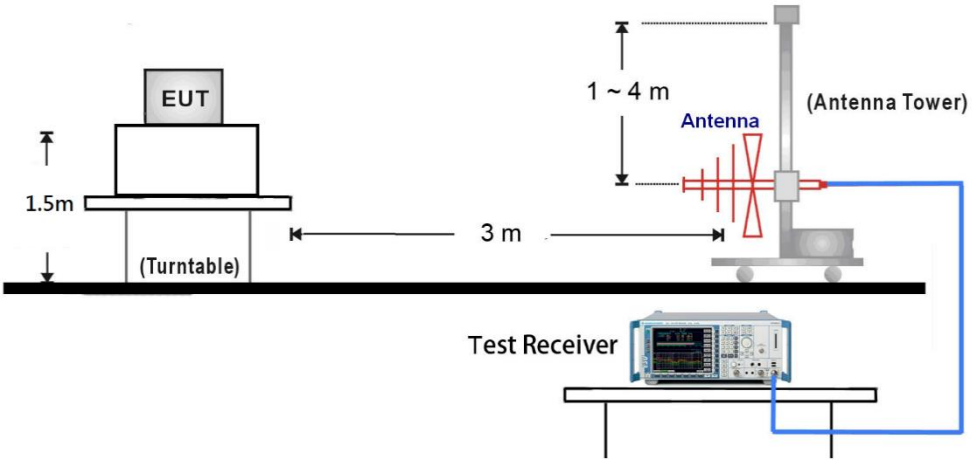
Cat-M1 終端設備發射功率之測試參數

<table>
<tr><td colspan="5">預設條件</td></tr>
<tr><td colspan="2">測試環境</td><td colspan="3">常態環境常態電壓</td></tr>
<tr><td colspan="2">測試頻道</td><td colspan="3">低、中、高</td></tr>
<tr><td colspan="2">測試頻道頻寬</td><td colspan="3">最高</td></tr>
<tr><td colspan="5">測試參數</td></tr>
<tr><td rowspan="3">頻道頻寬</td><td rowspan="3">下行結構</td><td colspan="3">上行結構</td></tr>
<tr><td rowspan="2">調變方式</td><td colspan="2">資源區塊分配</td></tr>
<tr><td>FDD 及 HD-FDD</td><td>TDD</td></tr>
<tr><td>5MHz</td><td rowspan="9">最大發射功率
測試不適用</td><td rowspan="9">QPSK</td><td>1</td><td>1</td></tr>
<tr><td>5MHz</td><td>(Class 5) 3</td><td>(Class 5) 3</td></tr>
<tr><td>10MHz</td><td>1</td><td>1</td></tr>
<tr><td>10MHz</td><td>(Class 3) 4
(Class 5) 5</td><td>(Class 3) 4
(Class 5) 5</td></tr>
<tr><td>15MHz</td><td>1</td><td>1</td></tr>
<tr><td>15MHz</td><td>6</td><td>6</td></tr>
<tr><td>20MHz</td><td>1</td><td>1</td></tr>
<tr><td>20MHz</td><td>6</td><td>6</td></tr>
</table>

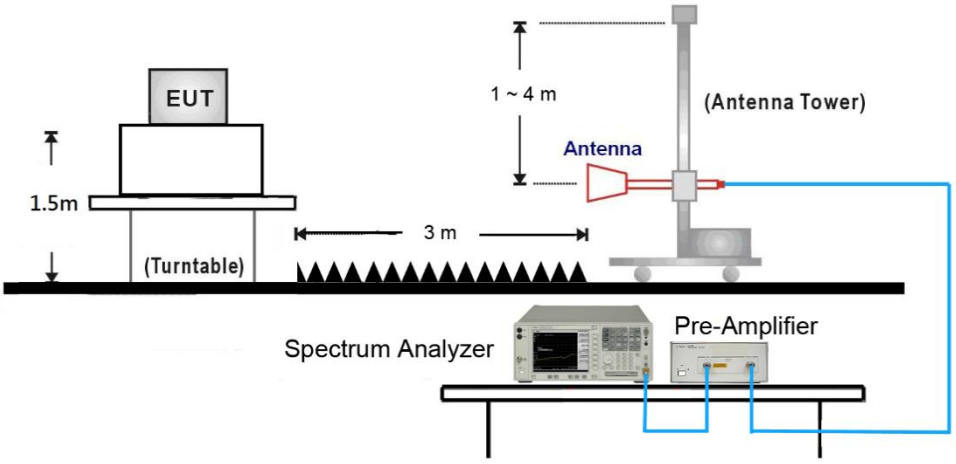
註：RB offset 設定值及應檢項目之測試方法，依 3GPP TS 36.521-1 技術標準規定。

5.1.3 實驗方法方塊圖

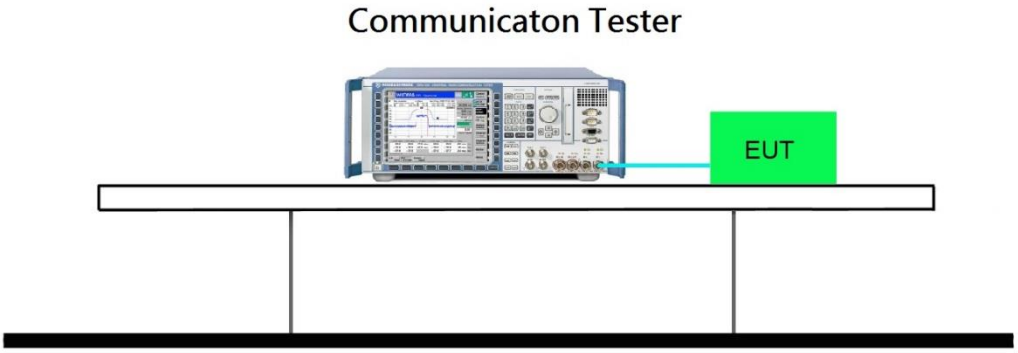
(1) 等效幅射功率 (1G 以下):



(2) 等效幅射功率 (1G 以上):



(3) 傳導輸出功率 :



5.1.4 實驗數據

Band 3 (1800MHz) FDD										
Bandwidth	Channel	Modulation	RB No.	RB Offset	Narrowband Index	Max Power (Conducted)	Limit (dBm)	Antenna Gain (dBi)	Max Power (ERP)	Limit (dBm)
20MHz	19300	QPSK	1	#2	0	24.42	19.8~25.7	2.486	24.76	30
			6	#2	0	23.83	19.8~25.7	2.486	24.17	30
	19575	QPSK	1	#2	0	24.24	19.8~25.7	2.486	24.58	30
			6	#2	0	23.77	19.8~25.7	2.486	24.11	30
	19850	QPSK	1	#97	15	24.10	19.8~25.7	2.486	24.44	30
			6	#92	15	23.82	19.8~25.7	2.486	24.16	30

註：

一、適用於支援上行多頻傳輸（multi-tone transmissions）的終端設備。

二、僅適用於低、中、高頻道及最大頻道寬度。

三、RB offset 設定值及應檢項目之測試方法，依 3GPP TS 36.521-1 技術標準規定。

四、ERP= Conducted Power + Antenna Gain(dBi) - 2.15。

QPSK 20MHz CH 19300 / 1RB#2 / Index 0

CMW 500 V 3.7.120 - LTE Measurement - V3.7.70 - TX Measurement

Multi Evaluation | PRACH | SRS

FDD Freq.:1720.0 MHz Ref. Level: 41.00 dBm BW:20.0 MHz CP:Normal Meas Subfr./Slot: 5 / All

TX Measurement

	Current		Average		Extreme		StdDev
EVM RMS [%] l/h	3.40	3.96	3.27	3.76	3.57	4.05	0.11	0.16
EVM Peak [%] l/h	11.60	14.85	11.42	14.87	12.05	15.70	0.27	0.42
EVM DMRS [%] l/h	3.56	4.34	3.58	3.57	3.82	4.55	0.10	0.95
MErr RMS [%] l/h	2.76	3.35	2.58	3.14	2.85	3.38	0.18	0.19
MErr Peak [%] l/h	−11.48	−14.29	11.37	14.54	−12.01	−15.57	0.26	0.61
MErr DMRS [%] l/h	2.32	3.45	2.45	2.78	2.63	3.48	0.07	0.73
PhErr RMS [°] l/h	1.15	1.23	1.16	1.21	1.29	1.32	0.04	0.03
PhErr Peak [°] l/h	3.28	−3.67	3.19	3.68	4.23	5.47	0.28	0.39
PhErr DMRS [°] l/h	1.54	1.51	1.49	1.28	1.67	1.74	0.08	0.35
IQ Offset [dBc]		−53.46		−52.15		−50.44		0.84
IQ Gain Imbalance [dB]		---		---		---		---
IQ Quadrature Error [°]		---		---		---		---
Freq Error [Hz]		−3.62		−4.71		−11.17		2.30
Timing Error [Ts]		1.04		1.25		2.52		0.74
OBW [MHz]		0.18		0.18		0.18		0.00
		Current		Average	Min	Max		StdDev
TX Power [dBm]		24.25		24.31	24.08	24.42		0.06
Peak Power [dBm]		28.94		28.92	28.67	29.01		0.04
RB Power [dBm]		24.32		24.34	24.14	24.42		0.04

Statistic Count 20 / 20 | Out of Tolerance 0.00 % | Detected Modulation QPSK | Detected Channel Type PUSCH | View Filter Throughput 100.0 %

PS: Attached
RRC State: Connected

QPSK 20MHz CH 19300 / 6RB#2 / Index 0

CMW 500 V 3.7.120 - LTE Measurement - V3.7.70 - TX Measurement

Multi Evaluation | PRACH | SRS

FDD Freq.:1720.0 MHz Ref. Level: 41.00 dBm BW:20.0 MHz CP:Normal Meas Subfr./Slot: 5 / All

TX Measurement

	Current		Average		Extreme		StdDev
EVM RMS [%] l/h	4.66	6.80	4.37	6.42	4.74	6.87	0.34	0.42
EVM Peak [%] l/h	39.55	56.31	35.76	52.87	39.70	56.31	3.58	3.13
EVM DMRS [%] l/h	7.21	4.57	5.92	3.96	7.28	4.63	1.51	0.61
MErr RMS [%] l/h	3.80	5.76	3.45	5.17	3.83	5.82	0.37	0.65
MErr Peak [%] l/h	−36.64	−53.29	33.74	49.91	−37.12	−53.50	2.69	3.34
MErr DMRS [%] l/h	5.38	3.28	4.38	2.89	5.44	3.39	1.14	0.42
PhErr RMS [°] l/h	1.63	2.33	1.60	2.39	1.71	2.48	0.07	0.06
PhErr Peak [°] l/h	−13.76	−18.61	13.99	19.48	14.86	21.60	0.36	1.10
PhErr DMRS [°] l/h	2.77	1.82	2.29	1.55	2.88	1.85	0.57	0.25
IQ Offset [dBc]		−50.50		−52.22		−49.26		3.36
IQ Gain Imbalance [dB]		---		---		---		---
IQ Quadrature Error [°]		---		---		---		---
Freq Error [Hz]		−0.20		−1.56		−6.08		2.29
Timing Error [Ts]		2.72		3.32		5.62		1.14
OBW [MHz]		1.05		1.05		1.05		0.00
		Current		Average	Min	Max		StdDev
TX Power [dBm]		23.75		23.79	23.75	23.83		0.03
Peak Power [dBm]		29.05		29.13	29.05	29.24		0.06
RB Power [dBm]		16.08		16.09	16.08	16.11		0.01

Statistic Count 20 / 20 | Out of Tolerance 0.00 % | Detected Modulation QPSK | Detected Channel Type PUSCH | View Filter Throughput 100.0 %

PS: Attached
RRC State: Connected

QPSK 20MHz CH 19575 / 1RB#2 / Index 0

CMW 500 V 3.7.120 - LTE Measurement - V3.7.70 - TX Measurement

Multi Evaluation | PRACH | SRS

FDD Freq.:1747.5 MHz Ref. Level: 41.00 dBm BW:20.0 MHz CP:Normal Meas Subfr./Slot: 5 / All

TX Measurement

	Current		Average		Extreme		StdDev
EVM RMS [%] l/h	3.18	3.60	3.29	3.77	3.49	4.02	0.11	0.16
EVM Peak [%] l/h	11.26	15.18	11.41	14.83	11.96	15.41	0.32	0.40
EVM DMRS [%] l/h	3.50	2.54	3.60	3.53	3.79	4.44	0.09	0.91
MErr RMS [%] l/h	2.43	2.93	2.58	3.13	2.80	3.35	0.17	0.19
MErr Peak [%] l/h	−11.22	−15.08	11.36	14.55	−11.90	−15.31	0.29	0.55
MErr DMRS [%] l/h	2.52	1.99	2.46	2.74	2.69	3.49	0.09	0.68
PhErr RMS [°] l/h	1.19	1.22	1.18	1.22	1.29	1.29	0.05	0.03
PhErr Peak [°] l/h	−3.25	−4.00	3.31	3.62	3.80	−4.07	0.32	0.31
PhErr DMRS [°] l/h	1.38	0.90	1.49	1.28	1.65	1.70	0.08	0.36
IQ Offset [dBc]		−52.76		−52.50		−51.26		0.87
IQ Gain Imbalance [dB]		---		---		---		---
IQ Quadrature Error [°]		---		---		---		---
Freq Error [Hz]		−10.04		−10.23		−17.14		2.86
Timing Error [Ts]		1.24		4.78		9.02		1.96
OBW [MHz]		0.18		0.18		0.18		0.00
		Current		Average	Min	Max		StdDev
TX Power [dBm]		24.24		24.07	23.93	24.24		0.10
Peak Power [dBm]		28.76		28.70	28.58	28.85		0.08
RB Power [dBm]		24.24		24.10	23.99	24.24		0.09

Statistic Count 20 / 20 | Out of Tolerance 0.00 % | Detected Modulation QPSK | Detected Channel Type PUSCH | View Filter Throughput 100.0 %

PS: Attached
RRC State: Connected

QPSK 20MHz CH 19575 / 6RB#2 / Index 0

CMW 500 V 3.7.120 - LTE Measurement - V3.7.70 - TX Measurement

Multi Evaluation | PRACH | SRS

FDD Freq.:1747.5 MHz Ref. Level: 41.00 dBm BW:20.0 MHz CP:Normal Meas Subfr./Slot: 5 / All

TX Measurement

	Current		Average		Extreme		StdDev
EVM RMS [%] l/h	4.02	5.93	4.35	6.39	4.73	6.89	0.34	0.42
EVM Peak [%] l/h	31.94	49.68	35.54	52.82	39.57	56.50	3.48	3.11
EVM DMRS [%] l/h	4.23	3.37	5.86	3.95	7.28	4.67	1.49	0.61
MErr RMS [%] l/h	3.06	4.47	3.43	5.14	3.82	5.84	0.36	0.65
MErr Peak [%] l/h	−30.88	−46.55	33.57	49.84	−36.74	−53.76	2.59	3.37
MErr DMRS [%] l/h	3.15	2.43	4.34	2.90	5.44	3.43	1.13	0.44
PhErr RMS [°] l/h	1.54	2.40	1.60	2.39	1.70	2.51	0.07	0.06
PhErr Peak [°] l/h	14.43	20.51	14.00	19.49	14.87	21.67	0.32	0.99
PhErr DMRS [°] l/h	1.62	1.34	2.27	1.54	2.85	1.84	0.57	0.24
IQ Offset [dBc]		−57.73		−53.10		−49.74		3.21
IQ Gain Imbalance [dB]		---		---		---		---
IQ Quadrature Error [°]		---		---		---		---
Freq Error [Hz]		−6.57		−7.61		−11.96		1.95
Timing Error [Ts]		0.27		−0.61		−2.88		1.28
OBW [MHz]		1.05		1.05		1.05		0.00
		Current		Average	Min	Max		StdDev
TX Power [dBm]		23.76		23.69	23.60	23.77		0.05
Peak Power [dBm]		29.21		29.13	28.98	29.23		0.07
RB Power [dBm]		16.04		16.00	15.92	16.05		0.04

Statistic Count 20 / 20 | Out of Tolerance 0.00 % | Detected Modulation QPSK | Detected Channel Type PUSCH | View Filter Throughput 100.0 %

PS: Attached
RRC State: Connected

QPSK 20MHz CH 19850 / 1RB#97 / Index 15

CMW 500 V 3.7.120 - LTE Measurement - V3.7.70 - TX Measurement

Multi Evaluation | PRACH | SRS

FDD Freq.:1775.0 MHz Ref. Level: 41.00 dBm BW:20.0 MHz CP:Normal Meas Subfr./Slot: 5 / All

TX Measurement

	Current		Average		Extreme		StdDev
EVM RMS [%] l/h	3.03	3.48	3.11	3.80	3.33	4.19	0.12	0.33
EVM Peak [%] l/h	15.00	14.24	11.95	14.87	15.36	15.82	2.94	0.65
EVM DMRS [%] l/h	2.24	4.23	2.63	3.56	3.05	4.35	0.32	0.69
MErr RMS [%] l/h	2.22	2.22	2.23	2.86	2.29	3.42	0.03	0.59
MErr Peak [%] l/h	−13.12	−12.15	10.76	13.41	−13.24	−14.85	2.23	1.18
MErr DMRS [%] l/h	1.54	3.45	1.73	2.90	2.00	3.57	0.16	0.66
PhErr RMS [°] l/h	1.21	1.57	1.26	1.46	1.40	1.59	0.08	0.09
PhErr Peak [°] l/h	4.47	4.97	4.11	4.63	4.79	5.38	0.40	0.37
PhErr DMRS [°] l/h	0.93	1.41	1.13	1.19	1.35	1.44	0.17	0.16
IQ Offset [dBc]		−50.14		−49.54		−48.27		0.74
IQ Gain Imbalance [dB]		---		---		---		---
IQ Quadrature Error [°]		---		---		---		---
Freq Error [Hz]		2.88		4.59		9.01		2.36
Timing Error [Ts]		5.93		4.67		6.20		0.93
OBW [MHz]		0.18		0.19		0.19		0.01
		Current		Average	Min	Max		StdDev
TX Power [dBm]		24.01		24.05	24.01	24.10		0.04
Peak Power [dBm]		28.74		28.70	28.66	28.74		0.03
RB Power [dBm]		24.07		24.08	24.07	24.09		0.01

Statistic Count 20 / 20 | Out of Tolerance 0.00 % | Detected Modulation QPSK | Detected Channel Type PUSCH | View Filter Throughput 100.0 %

PS: Attached
RRC State: Connected

QPSK 20MHz CH 19850 / 6RB#92 / Index 15

CMW 500 V 3.7.120 - LTE Measurement - V3.7.70 - TX Measurement

Multi Evaluation | PRACH | SRS

FDD Freq.:1775.0 MHz Ref. Level: 41.00 dBm BW:20.0 MHz CP:Normal Meas Subfr./Slot: 5 / All

TX Measurement

	Current		Average		Extreme		StdDev
EVM RMS [%] l/h	4.68	5.02	4.06	5.49	4.69	5.93	0.64	0.43
EVM Peak [%] l/h	32.59	49.52	29.40	50.23	32.59	51.66	2.81	1.18
EVM DMRS [%] l/h	5.62	4.69	5.12	6.00	5.62	7.11	0.42	1.13
MErr RMS [%] l/h	4.01	4.39	3.30	4.78	4.01	5.14	0.77	0.35
MErr Peak [%] l/h	−32.58	−47.57	26.10	49.17	−32.58	−51.39	6.12	1.85
MErr DMRS [%] l/h	3.79	3.16	3.53	4.25	3.80	5.20	0.22	0.95
PhErr RMS [°] l/h	1.48	1.47	1.43	1.66	1.51	1.86	0.06	0.18
PhErr Peak [°] l/h	12.79	−10.91	12.63	15.49	13.62	−21.27	0.60	5.00
PhErr DMRS [°] l/h	2.38	1.99	2.13	2.43	2.44	2.85	0.22	0.38
IQ Offset [dBc]		−51.58		−49.37		−46.95		2.88
IQ Gain Imbalance [dB]		---		---		---		---
IQ Quadrature Error [°]		---		---		---		---
Freq Error [Hz]		3.15		3.39		8.27		2.79
Timing Error [Ts]		−0.02		1.08		2.28		0.64
OBW [MHz]		1.05		1.05		1.05		0.00
		Current		Average	Min	Max		StdDev
TX Power [dBm]		23.78		23.80	23.78	23.82		0.02
Peak Power [dBm]		29.03		28.99	28.93	29.06		0.04
RB Power [dBm]		16.08		16.09	16.08	16.10		0.01

Statistic Count 20 / 20 | Out of Tolerance 0.00 % | Detected Modulation QPSK | Detected Channel Type PUSCH | View Filter Throughput 100.0 %

PS: Attached
RRC State: Connected

5.2 發射頻譜波罩

5.2.1 合格標準

需符合下表之頻譜波罩規範值

Cat-M1 終端設備頻譜波罩規範值

Δf_OOB (MHz)	發射限制值(dB)/頻道頻寬						
	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	解析頻寬
±0 to 1	-8.5	-11.5	-13.5	-16.5	-18.5	-19.5	30kHz
±1 to 2.5	-8.5	-8.5	-8.5	-8.5	-8.5	-8.5	1MHz
±2.5 to 2.8	-23.5	-8.5	-8.5	-8.5	-8.5	-8.5	1MHz
±2.8 to 5		-8.5	-8.5	-8.5	-8.5	-8.5	1MHz
±5 to 6		-23.5	-11.5	-11.5	-11.5	-11.5	1MHz
±6 to 10			-23.5	-11.5	-11.5	-11.5	1MHz
±10 to 15				-23.5	-11.5	-11.5	1MHz
±15 to 20					-23.5	-11.5	1MHz
±20 to 25						-23.5	1MHz

註：Δf_OOB 是發射頻帶外的頻率偏移量 (ΔFrequency of Out-of-band emission)。

5.2.2 測試方法

Cat-M1 終端設備頻譜波罩之頻道頻寬測試參數

預設條件					
測試環境		常態環境常態電壓			
測試頻道		低、中、高			
測試頻道頻寬		最低、5MHz、10MHz、15MHz			
測試參數					
頻道頻寬	下行結構	上行結構			
		調變方式	資源區塊分配		
			FDD 及 HD-FDD	TDD	窄頻索引(註 1)
低頻道、中頻道					
1.4MHz	頻譜波罩測試不適用	QPSK	2	2	0
1.4MHz		QPSK	5	5	0
1.4MHz		QPSK	6	6	0
1.4MHz		16QAM	2	2	0
1.4MHz		16QAM	5	5	0
3MHz		QPSK	2	2	0
3MHz		QPSK	5	5	0
3MHz		QPSK	6	6	0
3MHz		16QAM	2	2	0
3MHz		16QAM	5	5	0
5MHz		QPSK	6	6	0
5MHz (註 3)		16QAM	1	1	0
5MHz		16QAM	3	3	0
5MHz		16QAM	5	5	0
10MHz (註 3)		QPSK	4	4	0
10MHz		QPSK	6	6	0
10MHz (註 3)		16QAM	3	3	0
10MHz		16QAM	5	5	0
15MHz		QPSK	6	6	0
15MHz		16QAM	5	5	0

高頻道					
1.4MHz	頻譜波罩測試不適用	QPSK	2	2	0
1.4MHz		QPSK	5	5	0
1.4MHz		QPSK	6	6	0
1.4MHz		16QAM	2	2	0
1.4MHz		16QAM	5	5	0
3MHz		QPSK	2	2	1
3MHz		QPSK	5	5	1
3MHz		QPSK	6	6	1
3MHz		16QAM	2	2	1
3MHz		16QAM	5	5	1
5MHz		QPSK	6	6	3
5MHz (註 3)		16QAM	1	1	3
5MHz		16QAM	3	3	3
5MHz		16QAM	5	5	3
10MHz (註 3)		QPSK	4	4	7
10MHz		QPSK	6	6	7
10MHz (註 3)		16QAM	3	3	7
10MHz		16QAM	5	5	7
15MHz		QPSK	6	6	11
15MHz		16QAM	5	5	11

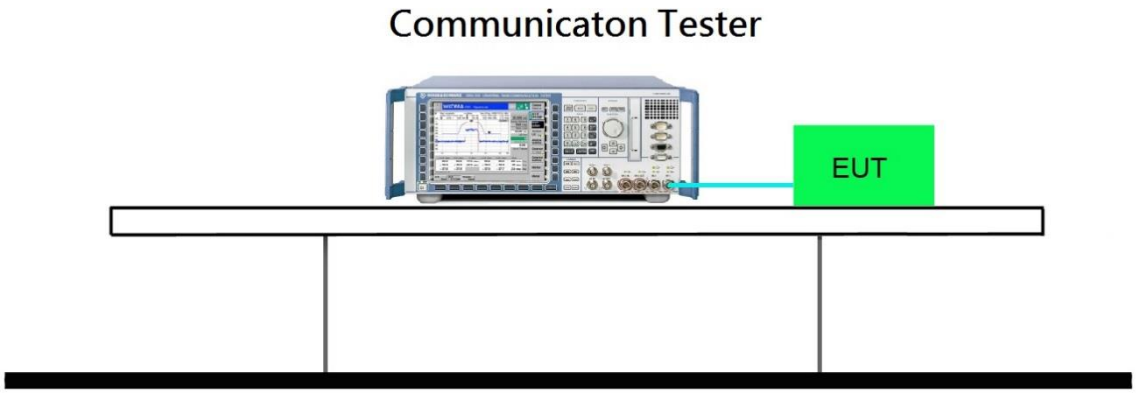
註:

1、窄頻索引(Narrowband Index)定義依 3GPP TS 36.211 5.2.4 規定。

2、RB offset 設定值及應檢項目之測試方法，依 3GPP TS 36.521-1 技術標準規定。

3、僅適用於 Power Class 3 之用戶設備。

5.2.3 實驗方法方塊圖

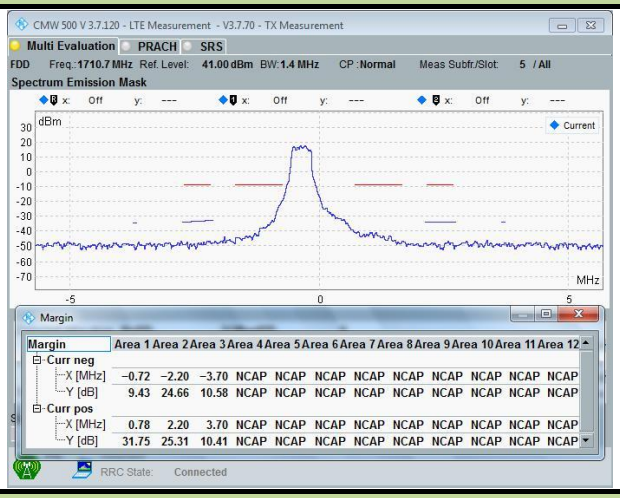


5.2.4 實驗數據

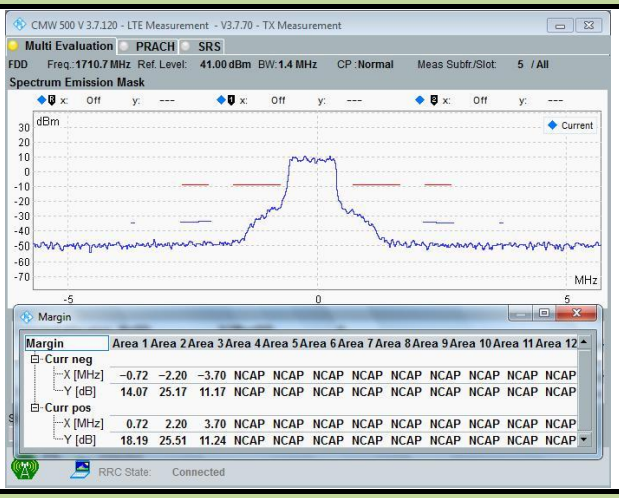
Band 3 (1800MHz)															
Modulation	Test CH	CH	BW (MHz)	RB No.	RB Offset	Narrowband Index	Margin(dB)								
							±0 to 1	±1 to 2.5	±2.5 to 2.8	±2.8 to 5	±5 to 6	±6 to 10	±10 to 15	±15 to 20	±20 to 25
QPSK	LOW	19207	1.4MHz	2	0	0	9.43	24.66	10.41	N/A	N/A	N/A	N/A	N/A	N/A
				5	0	0	14.07	25.17	11.17	N/A	N/A	N/A	N/A	N/A	N/A
				6	0	0	16.97	24.82	10.69	N/A	N/A	N/A	N/A	N/A	N/A
		19225	5MHz	6	0	0	12.01	25.11			22.87	10.50	N/A	N/A	N/A
		19250	10MHz	4	0	0	20.46	25.48			22.14		9.44	N/A	N/A
				6	1	0	16.09	25.57			22.49		9.97	N/A	N/A
		19275	15MHz	6	1	0	18.50	25.32			21.92			10.48	N/A
	MID	19575	1.4MHz	2	0	0	12.26	25.56	11.40	N/A	N/A	N/A	N/A	N/A	N/A
				5	0	0	14.41	25.95	12.02	N/A	N/A	N/A	N/A	N/A	N/A
				6	0	0	16.90	25.47	11.64	N/A	N/A	N/A	N/A	N/A	N/A
			5MHz	6	0	0	11.68	24.92			22.76	10.39	N/A	N/A	N/A
			10MHz	4	0	0	24.06	25.35			22.26		9.68	N/A	N/A
				6	1	0	16.09	25.50			22.36		9.80	N/A	N/A
			15MHz	6	1	0	19.05	25.87			21.96			10.14	N/A
	HIGH	19943	1.4MHz	2	4	0	14.99	24.92	11.02	N/A	N/A	N/A	N/A	N/A	N/A
				5	1	0	16.07	24.83	10.52	N/A	N/A	N/A	N/A	N/A	N/A
				6	0	0	16.62	24.98	10.78	N/A	N/A	N/A	N/A	N/A	N/A
		19925	5MHz	6	19	3	12.82	25.49			22.72	10.10	N/A	N/A	N/A
		19900	10MHz	4	0	7	22.07	25.28			22.04		10.00	N/A	N/A
				6	43	7	17.08	25.46			22.16		9.85	N/A	N/A
		19875	15MHz	6	68	11	19.38	24.94			21.65			10.77	N/A
16-QAM	LOW	19207	1.4MHz	2	0	0	11.75	24.49	11.24	N/A	N/A	N/A	N/A	N/A	N/A
				5	0	0	14.97	24.85	10.64	N/A	N/A	N/A	N/A	N/A	N/A
		19225	5MHz	1	0	0	21.00	25.25			23.00	10.56	N/A	N/A	N/A
				3	0	0	11.34	25.66			22.40	10.74	N/A	N/A	N/A
				5	0	0	14.41	25.70			23.12	10.44	N/A	N/A	N/A
		19250	10MHz	3	0	0	23.03	25.66			22.41		9.90	N/A	N/A
				5	1	0	15.14	25.86			22.32		10.08	N/A	N/A
		19275	15MHz	5	1	0	22.16	25.33			21.77			10.49	N/A
	MID	19575	1.4MHz	2	0	0	13.01	24.87	10.77	N/A	N/A	N/A	N/A	N/A	N/A

				5	0	0	14.53	25.12	10.67	N/A	N/A	N/A	N/A	N/A	N/A
			5MHz	1	0	0	15.93	24.88			22.71	10.52	N/A	N/A	N/A
				3	0	0	11.00	25.02			22.86	10.41	N/A	N/A	N/A
				5	0	0	12.35	25.64			23.12	10.36	N/A	N/A	N/A
			10MHz	3	0	0	24.79	25.41			22.30		10.09	N/A	N/A
				5	1	0	18.27	25.50			22.24		9.83	N/A	N/A
			15MHz	5	1	0	21.87	25.28			21.83			10.01	N/A
	HIGH	19943	1.4MHz	2	4	0	13.92	24.30	10.59	N/A	N/A	N/A	N/A	N/A	N/A
				5	1	0	17.70	25.11	10.55	N/A	N/A	N/A	N/A	N/A	N/A
		19925	5MHz	1	0	3	17.00	25.40			22.68	10.45	N/A	N/A	N/A
				3	22	3	13.32	24.79			22.59	10.55	N/A	N/A	N/A
				5	20	3	16.84	25.52			23.24	10.51	N/A	N/A	N/A
		19900	10MHz	3	0	7	23.26	25.42			22.35		9.83	N/A	N/A
				5	44	7	18.68	25.30			22.26		9.71	N/A	N/A
		19875	15MHz	5	69	11	24.84	25.55			22.31			10.36	N/A

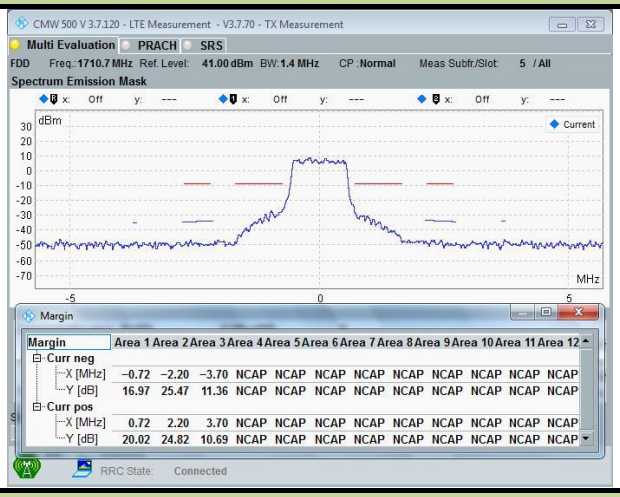
QPSK 1.4MHz CH 19207 / 2RB#0 / Index 0



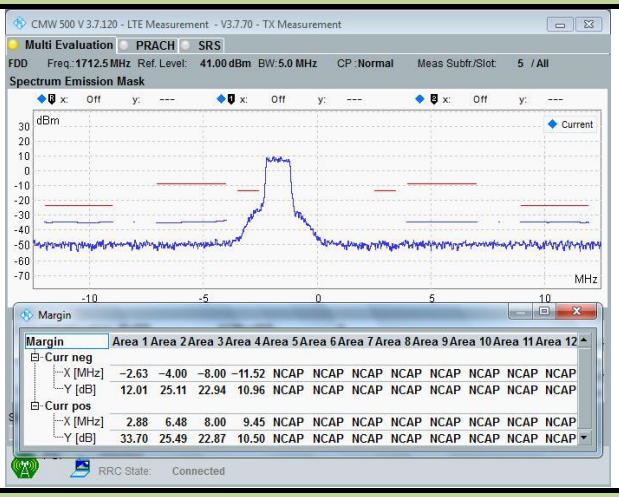
QPSK 1.4MHz CH 19207 / 5RB#0 / Index 0



QPSK 1.4MHz CH 19207 / 6RB#0 / Index 0



QPSK 5MHz CH 19225 / 6RB#0 / Index 0



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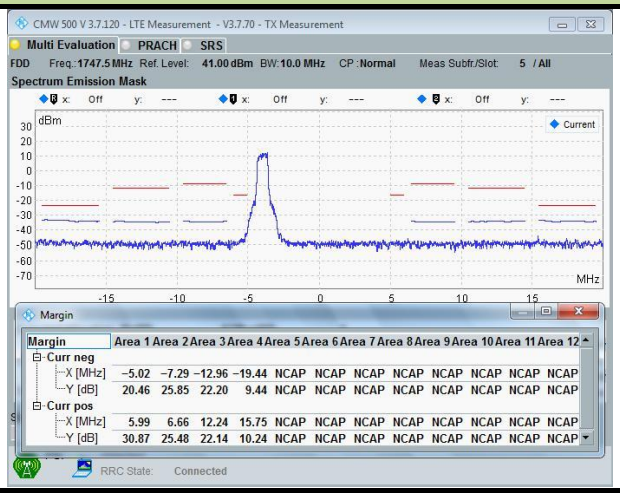
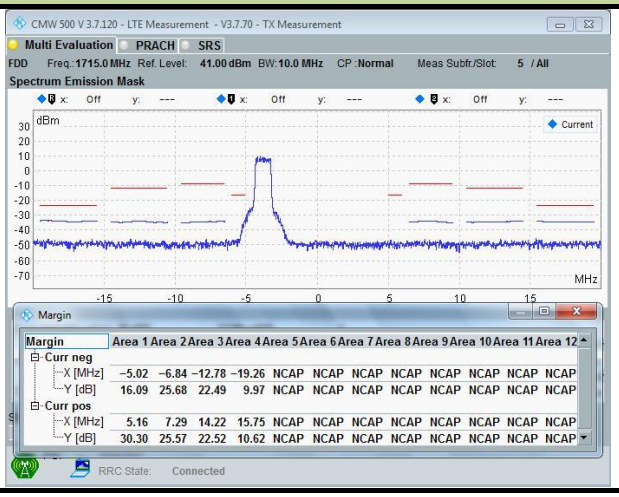
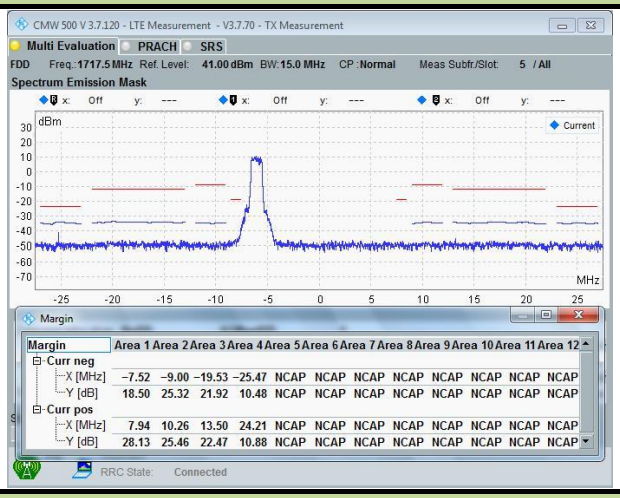


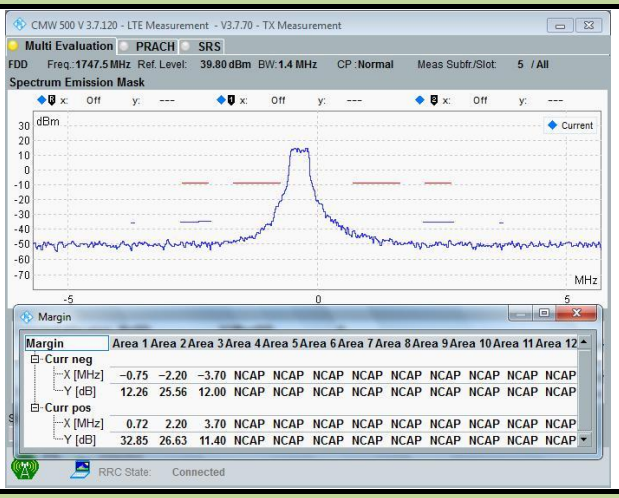
QPSK 10MHz CH 19250 / 6RB#1 / Index 0



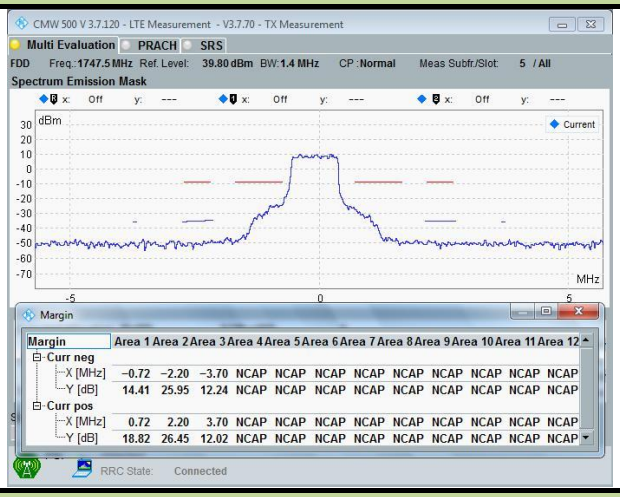
QPSK 15MHz CH 19275 / 6RB#1 / Index 0



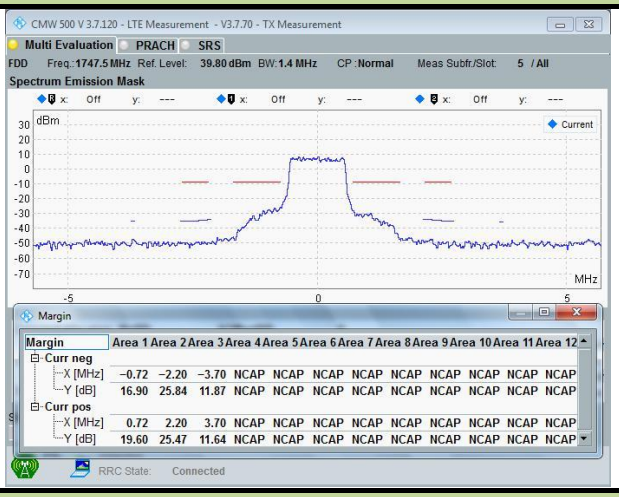
QPSK 1.4MHz CH 19575 / 2RB#0 / Index 0



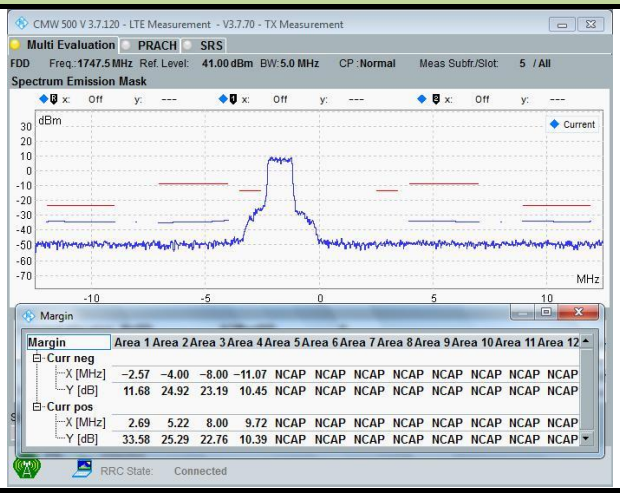
QPSK 1.4MHz CH 19575 / 5RB#0 / Index 0



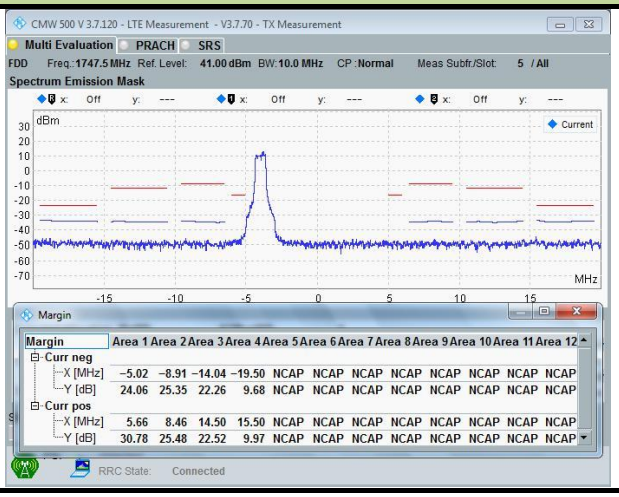
QPSK 1.4MHz CH 19575 / 6RB#0 / Index 0



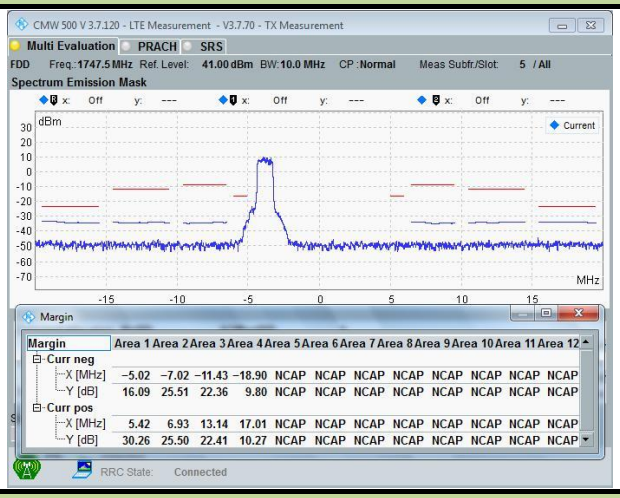
QPSK 5MHz CH 19575 / 6RB#0 / Index 0



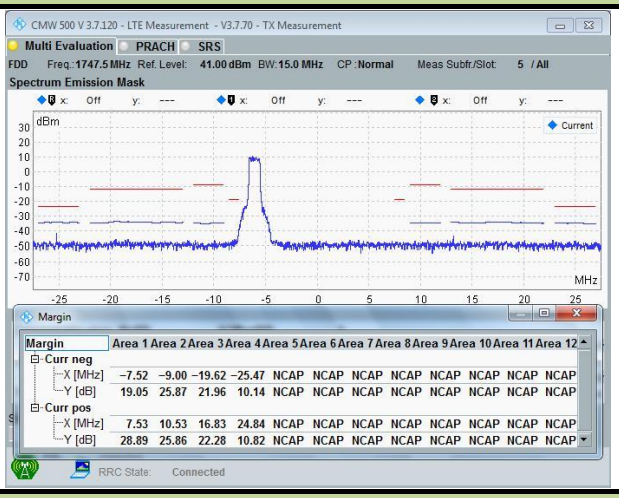
QPSK 10MHz CH 19575 / 4RB#0 / Index 0



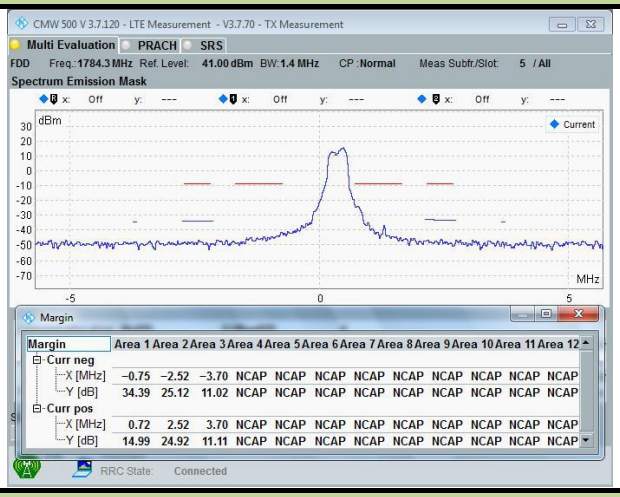
QPSK 10MHz CH 19575 / 6RB#1 / Index 0



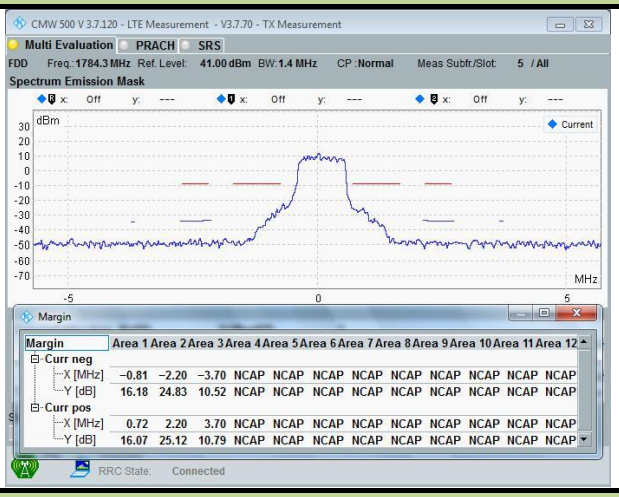
QPSK 15MHz CH 19575 / 6RB#1 / Index 0



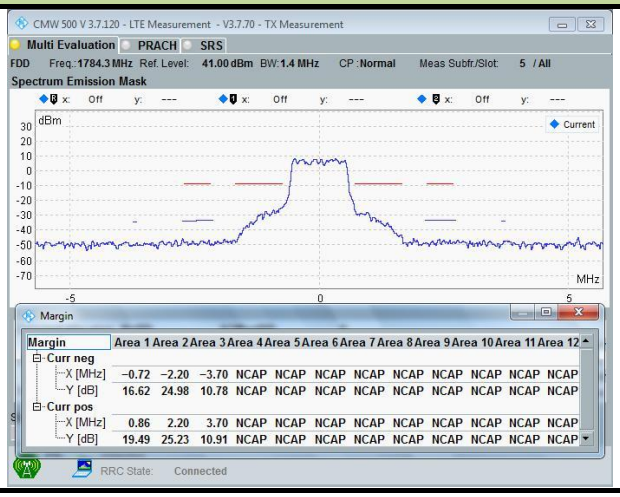
QPSK 1.4MHz CH 19943 / 2RB#4 / Index 0



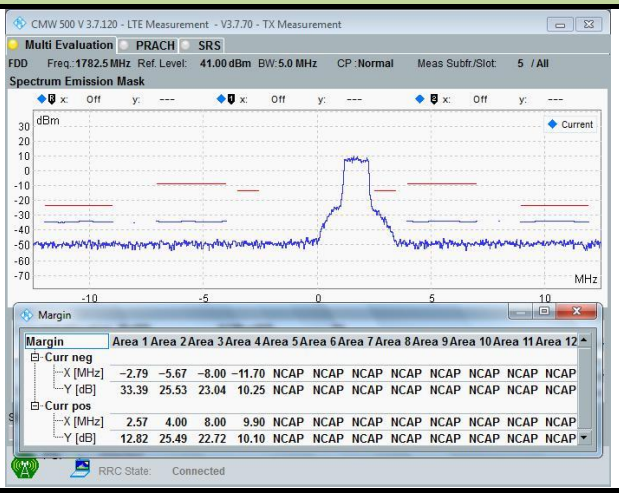
QPSK 1.4MHz CH 19943 / 5RB#1 / Index 0



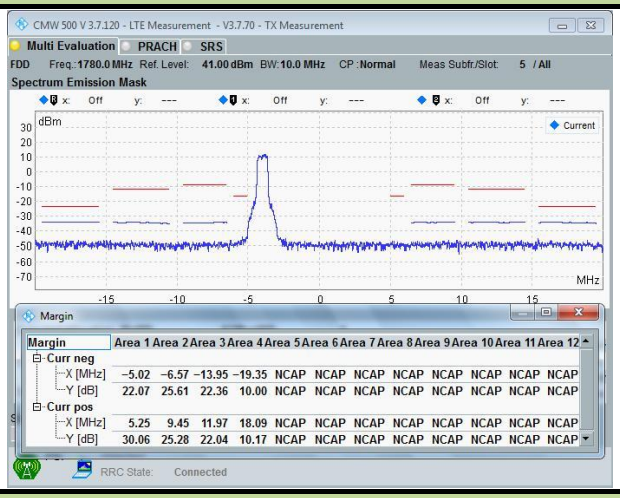
QPSK 1.4MHz CH 19943 / 6RB#0 / Index 0



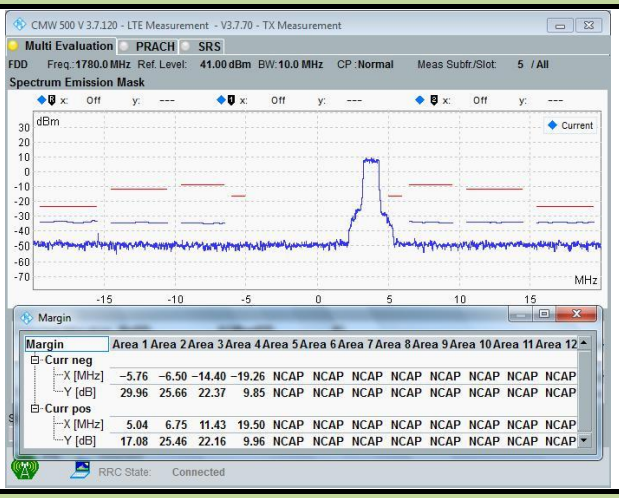
QPSK 5MHz CH 19925 / 6RB#19 / Index 3



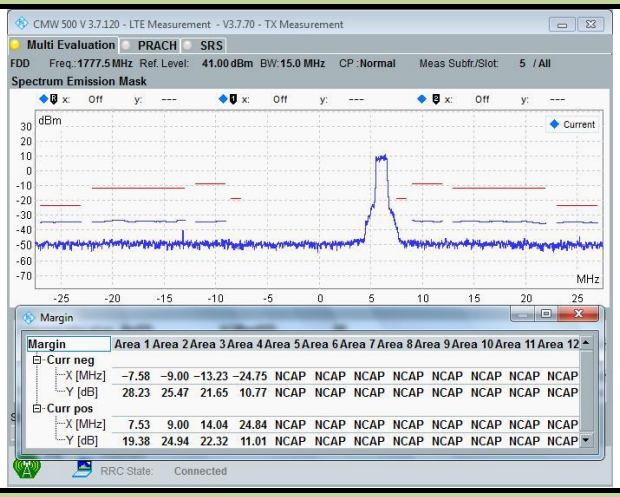
QPSK 10MHz CH 19900 / 4RB#0 / Index 7



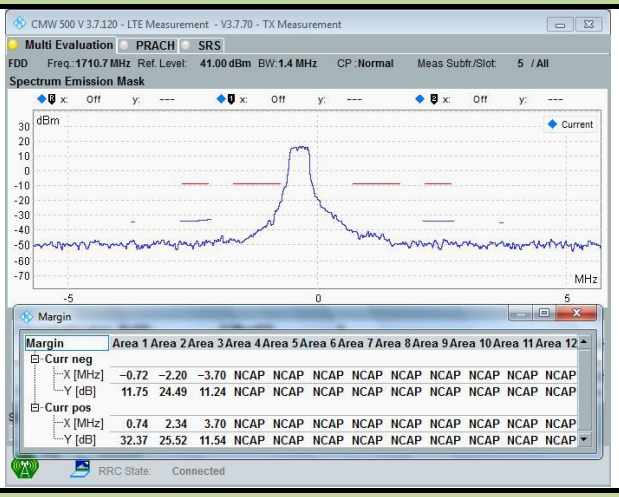
QPSK 10MHz CH 19900 / 6RB#43 / Index 7



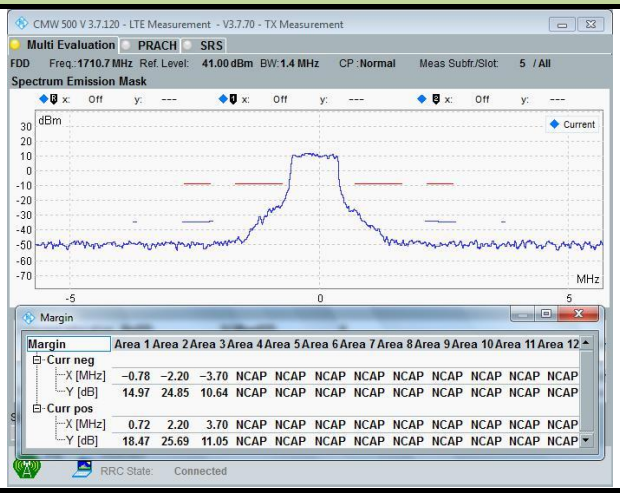
QPSK 15MHz CH 19875 / 6RB#68 / Index 11



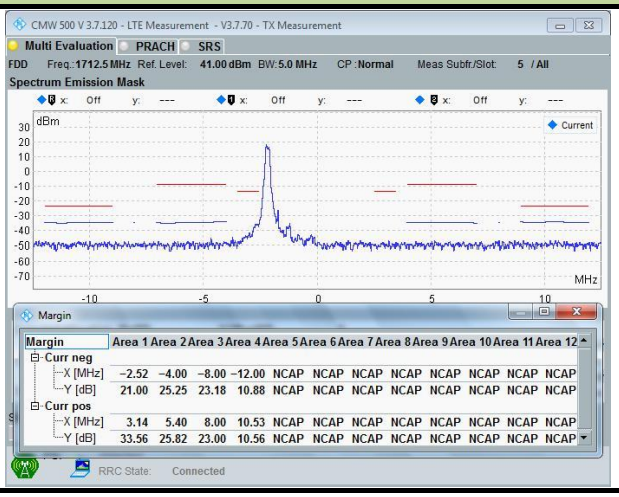
16QAM 1.4MHz CH 19207 / 2RB#0 / Index 0



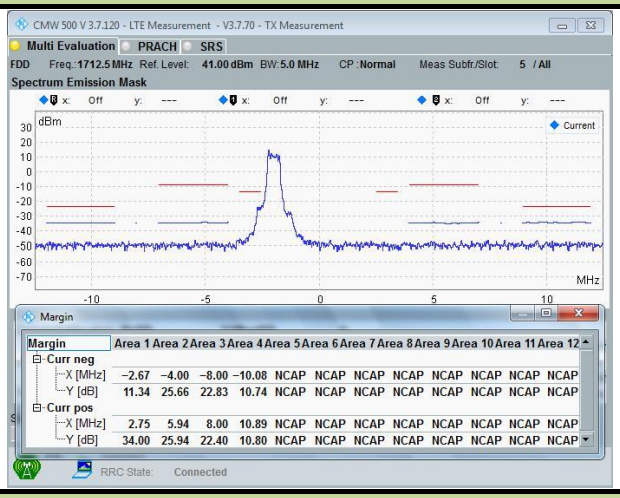
16QAM 1.4MHz CH 19207 / 5RB#0 / Index 0



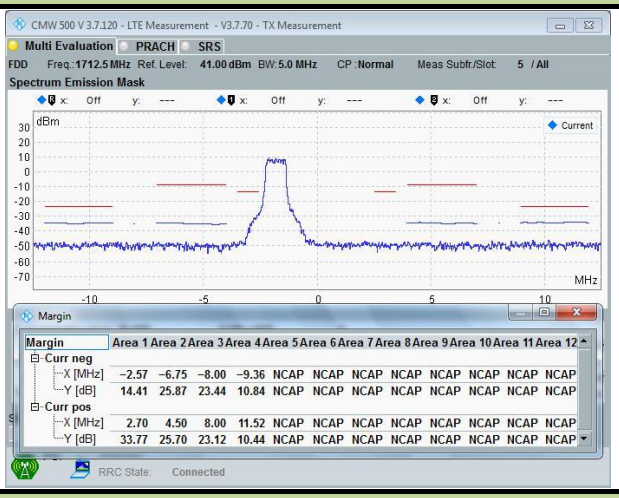
16QAM 5MHz CH 19225 / 1RB#0 / Index 0



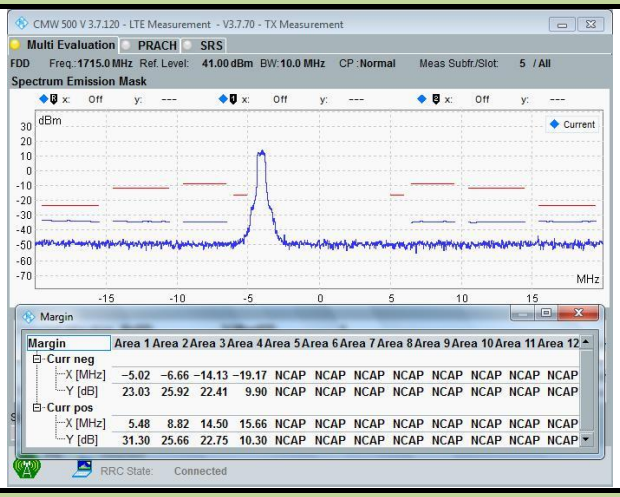
16QAM 5MHz CH 19225 / 3RB#0 / Index 0



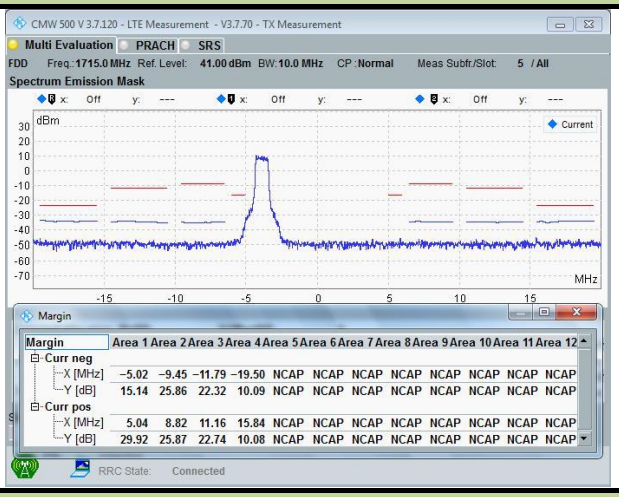
16QAM 5MHz CH 19225 / 5RB#0 / Index 0



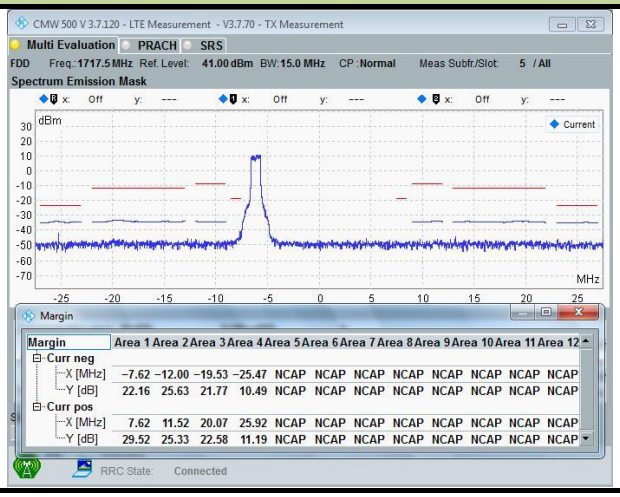
16QAM 10MHz CH 19250 / 3RB#0 / Index 0



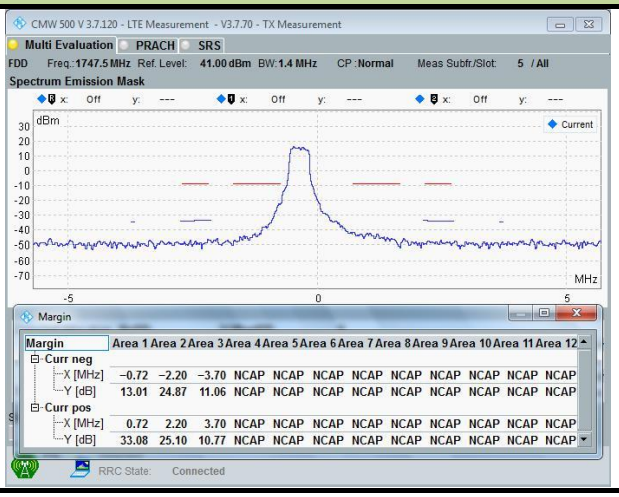
16QAM 10MHz CH 19250 / 5RB#1 / Index 0



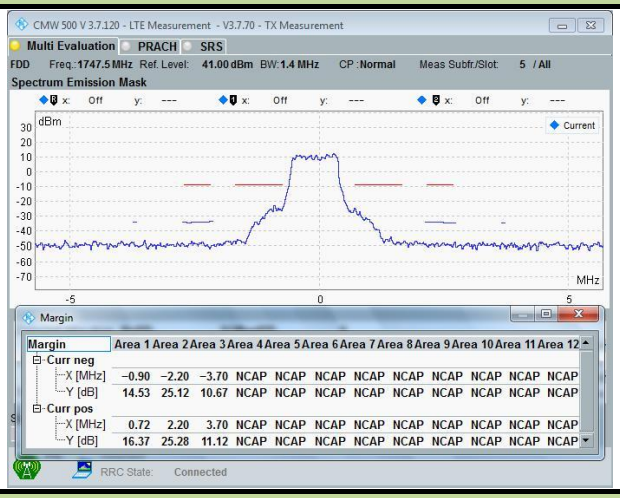
16QAM 15MHz CH 19275 / 5RB#1 / Index 0



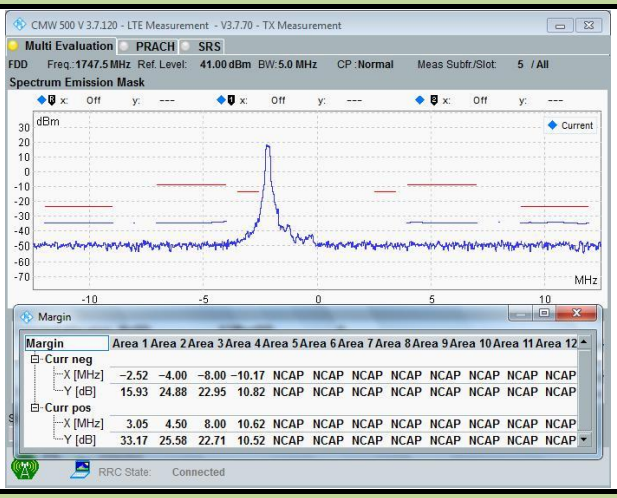
16QAM 1.4MHz CH 19575 / 2RB#0 / Index 0



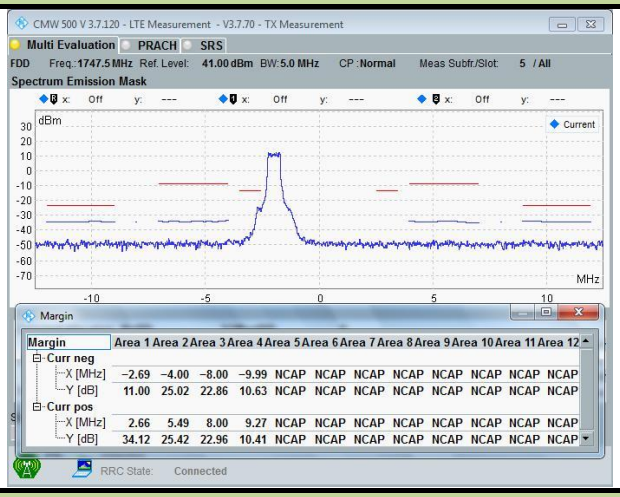
16QAM 1.4MHz CH 19575 / 5RB#0 / Index 0



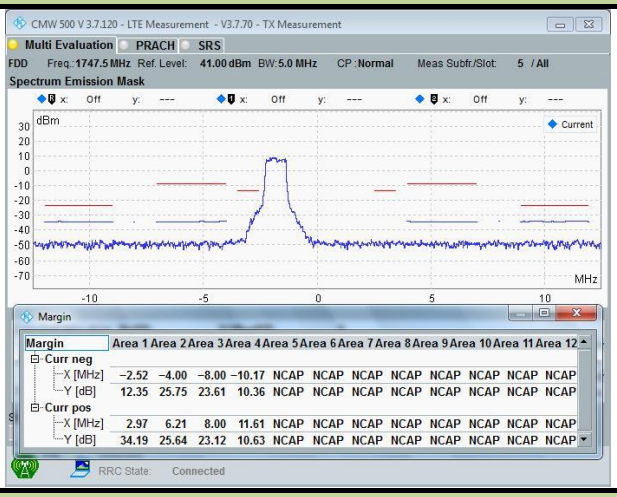
16QAM 5MHz CH 19575 / 1RB#0 / Index 0



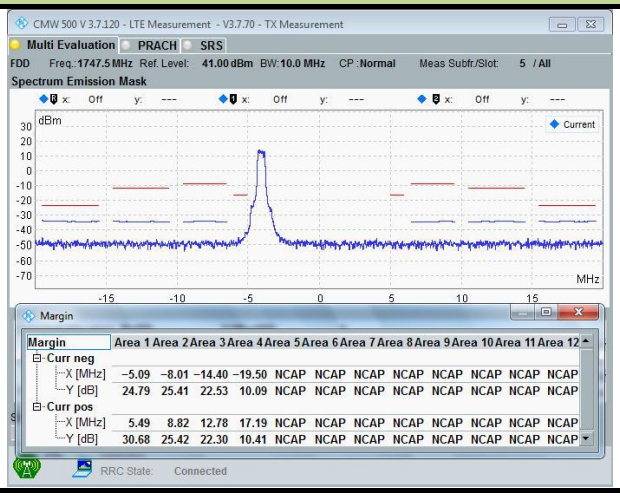
16QAM 5MHz CH 19575 / 3RB#0 / Index 0



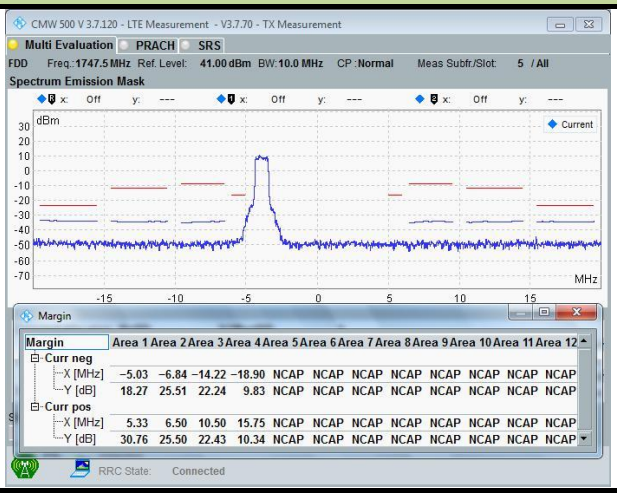
16QAM 5MHz CH 19575 / 5RB#0 / Index 0



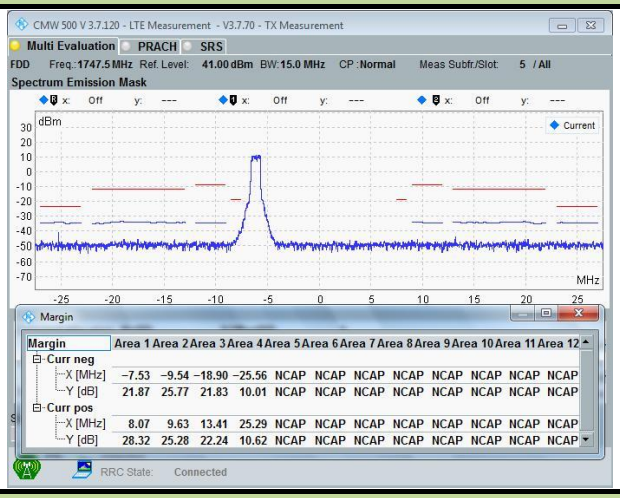
16QAM 10MHz CH 19575 / 3RB#0 / Index 0



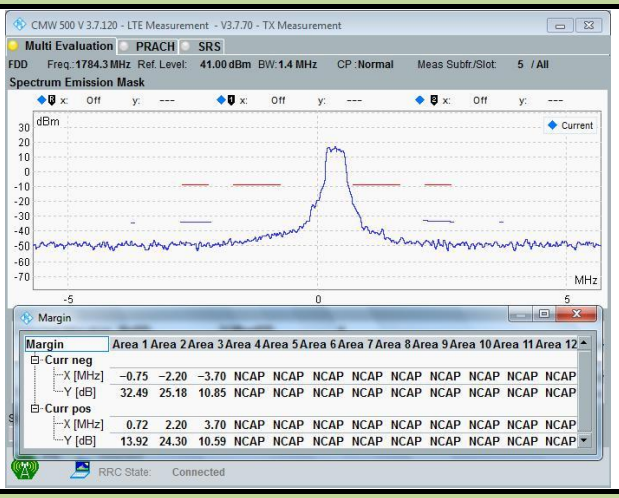
16QAM 10MHz CH 19575 / 5RB#1 / Index 0



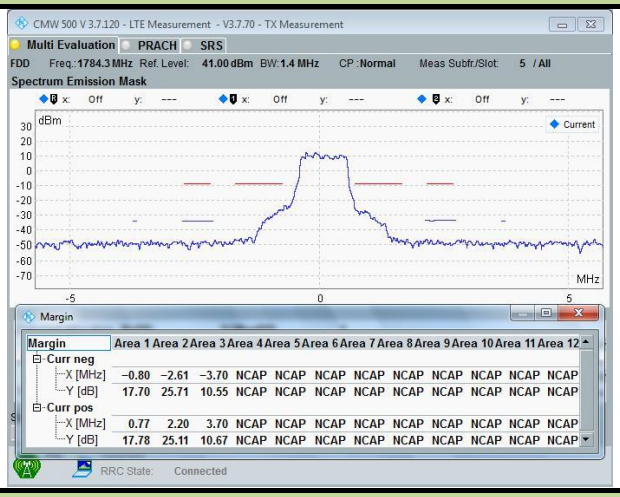
16QAM 15MHz CH 19575 / 5RB#1 / Index 0



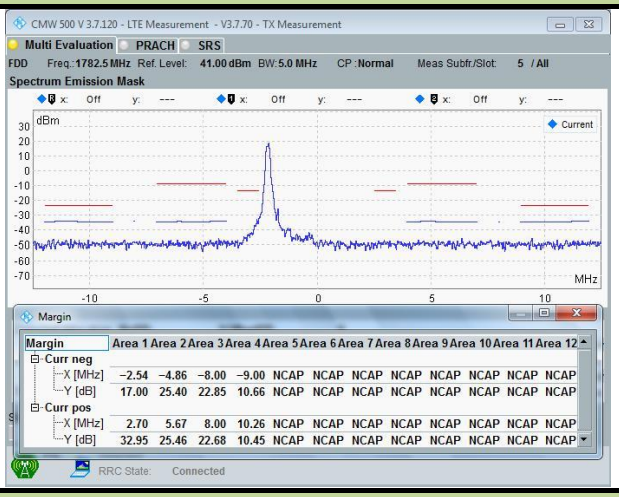
16QAM 1.4MHz CH 19943 / 2RB#4 / Index 0



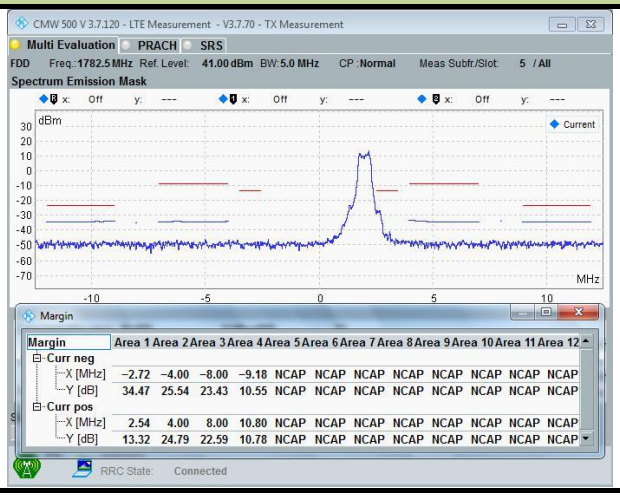
16QAM 1.4MHz CH 19943 / 5RB#1 / Index 0



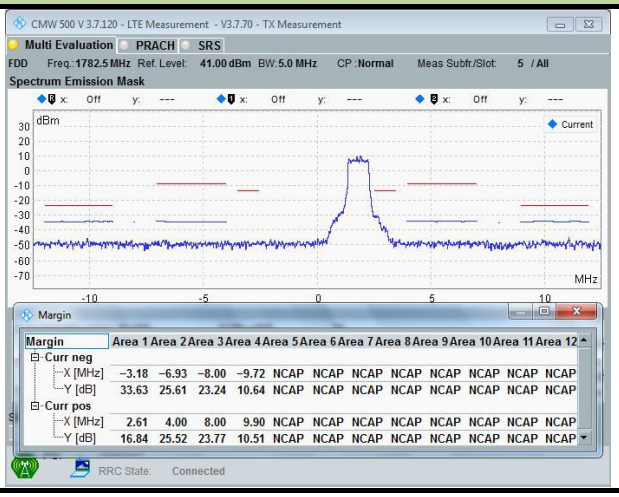
16QAM 5MHz CH 19925 / 1RB#0 / Index 3



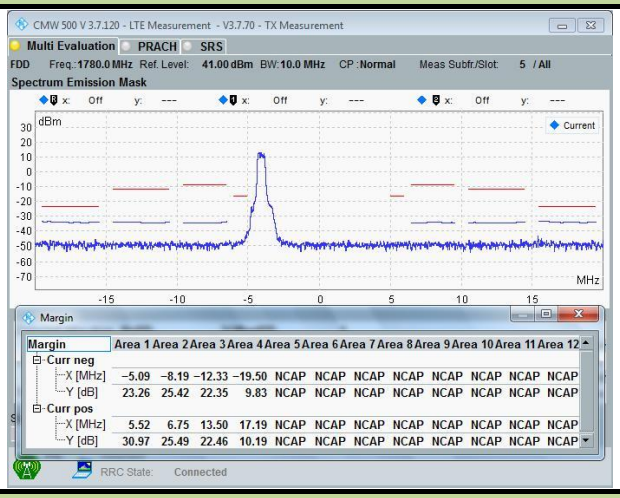
16QAM 5MHz CH 19925 / 3RB#22 / Index 3



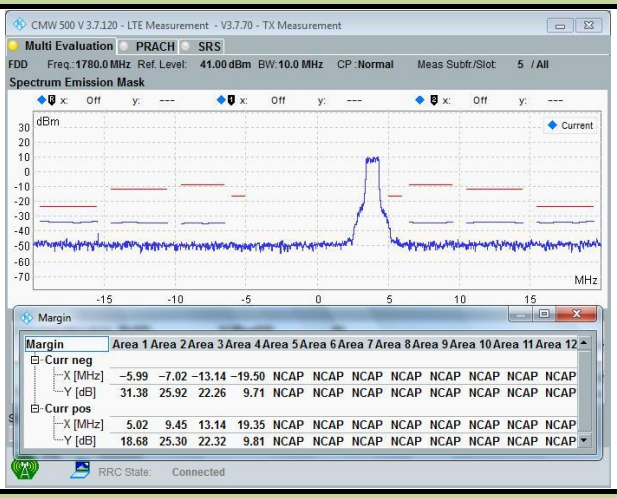
16QAM 5MHz CH 19925 / 5RB#20 / Index 3



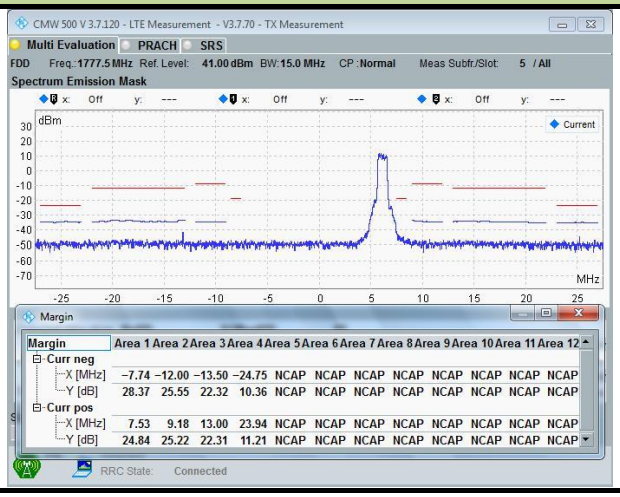
16QAM 10MHz CH 19900 / 3RB#20 / Index 7



16QAM 10MHz CH 19900 / 5RB#44 / Index 7



16QAM 15MHz CH 19875 / 5RB#69 / Index 11



5.3 傳導帶外輻射發射限制

5.3.1 合格標準

工作頻帶外輻射發射應符合下表之帶外輻射規範值。

頻率範圍	最大位準	解析頻寬
9kHz ≤ f < 150kHz	-36 dBm	1kHz
150kHz ≤ f < 30MHz	-36 dBm	10kHz
30MHz ≤ f < 1GHz	-36 dBm	100kHz
1GHz ≤ f < 12.75Hz	-30 dBm	1MHz

5.3.2 測試方法

Cat-M1 終端設備帶外輻射之頻道頻寬測試參數

<table>
<tr><td colspan="6">預設條件</td></tr>
<tr><td colspan="2">測試環境</td><td colspan="4">常態環境常態電壓</td></tr>
<tr><td colspan="2">測試頻道</td><td colspan="4">低、中、高</td></tr>
<tr><td colspan="2">測試頻道頻寬</td><td colspan="4">最低</td></tr>
<tr><td colspan="6">測試參數</td></tr>
<tr><td rowspan="3">頻道頻寬</td><td rowspan="3">下行結構</td><td colspan="4">上行結構</td></tr>
<tr><td rowspan="2">調變方式</td><td colspan="3">資源區塊分配</td></tr>
<tr><td>FDD 及
HD-FDD</td><td>TDD</td><td>窄頻索引(註)</td></tr>
<tr><td colspan="6">低頻道、中頻道</td></tr>
<tr><td>1.4MHz</td><td rowspan="6">帶外輻射
測試不適用</td><td rowspan="6">QPSK</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>1.4MHz</td><td>6</td><td>6</td><td>0</td></tr>
<tr><td>3MHz</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>3MHz</td><td>6</td><td>6</td><td>0</td></tr>
<tr><td>5MHz</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>5MHz</td><td>6</td><td>6</td><td>0</td></tr>
<tr><td colspan="6">高頻道</td></tr>
<tr><td>1.4MHz</td><td rowspan="6">帶外輻射
測試不適用</td><td rowspan="6">QPSK</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>1.4MHz</td><td>6</td><td>6</td><td>0</td></tr>
<tr><td>3MHz</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>3MHz</td><td>6</td><td>6</td><td>1</td></tr>
<tr><td>5MHz</td><td>1</td><td>1</td><td>3</td></tr>
<tr><td>5MHz</td><td>6</td><td>6</td><td>3</td></tr>
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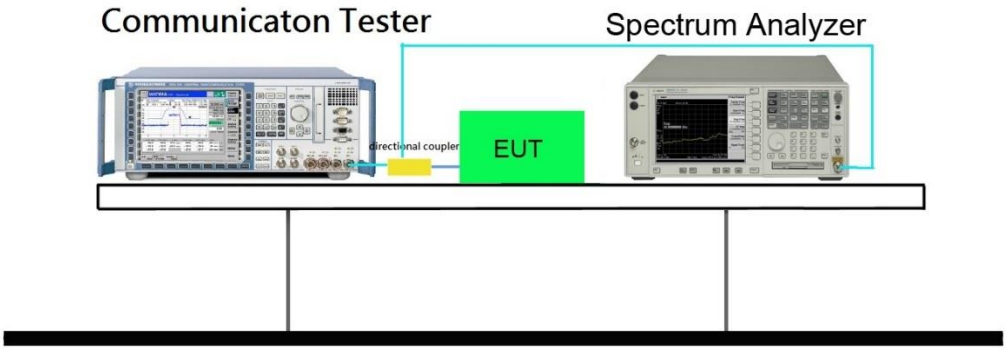
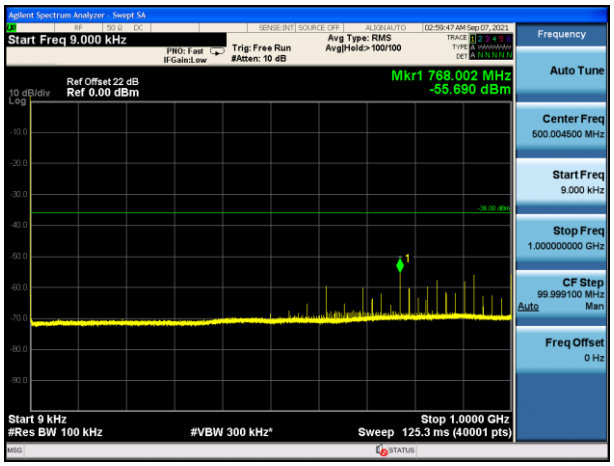
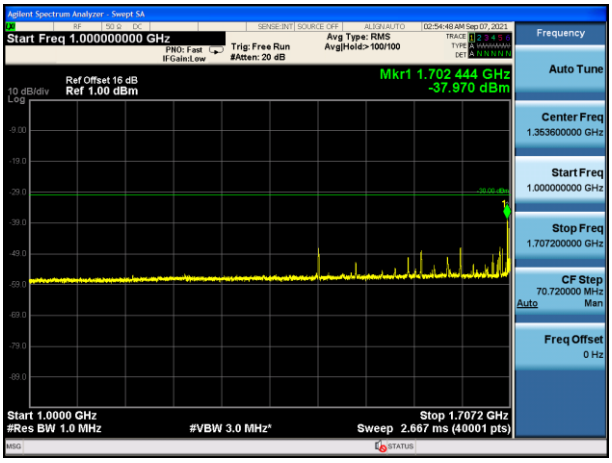
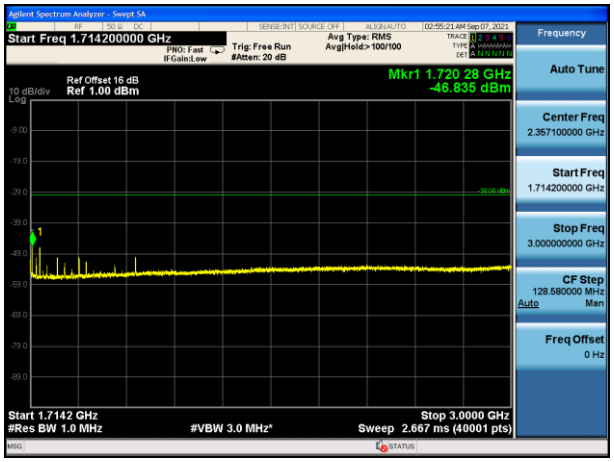
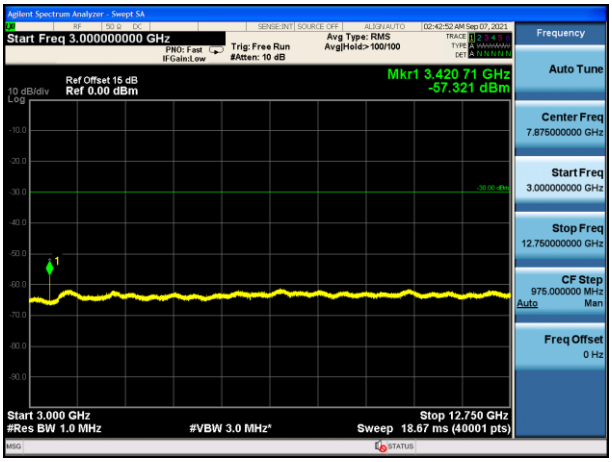
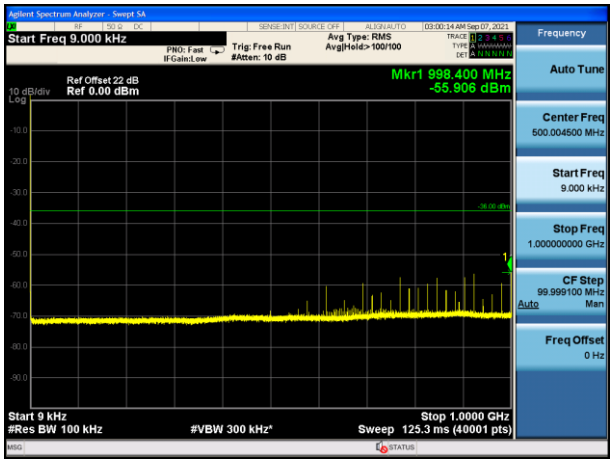
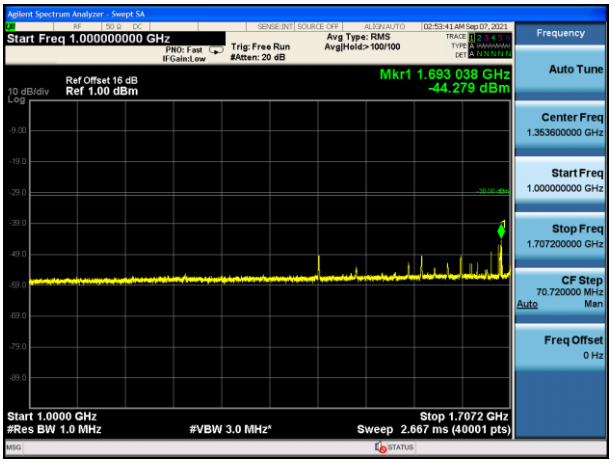
註：窄頻索引(Narrowband Index)定義依 3GPP TS 36.211 5.2.4 規定。

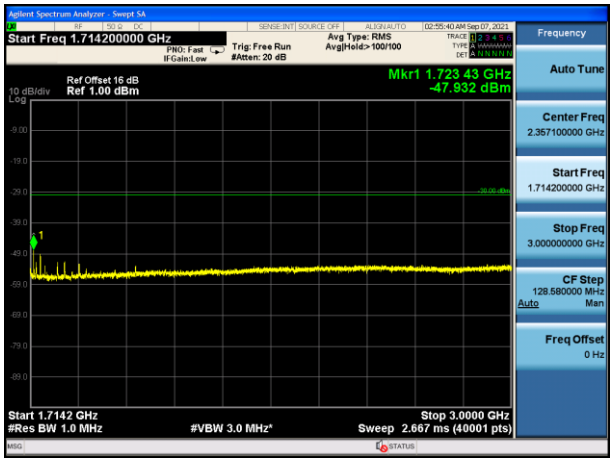
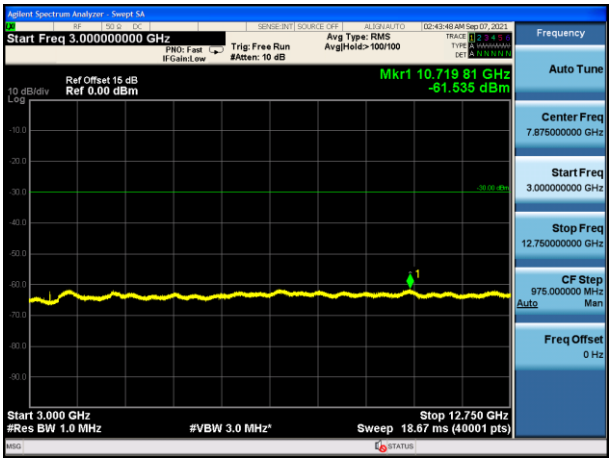
5.3.3 實驗方法方塊圖


Communicaton Tester
Spectrum Analyzer
directional coupler
EUT

5.3.4 實驗數據

Band 3 (1800MHz)							
Modulation	Test CH	CH	BW (MHz)	RB No.	RB Offset	Narrowband Index	Result
QPSK	LOW	19207	1.4MHz	1	0	0	Pass
				6	0	0	Pass
	MID	19575	1.4MHz	1	0	0	Pass
				6	0	0	Pass
	HIGH	19943	1.4MHz	1	5	0	Pass
				6	0	0	Pass

QPSK 1.4MHz CH 19207 / 1RB#0 / Index 0	QPSK 1.4MHz CH 19207 / 1RB#0 / Index 0
	
QPSK 1.4MHz CH 19207 / 1RB#0 / Index 0	**QPSK 1.4MHz CH 19207 / 1RB#0 / Index 0**
	
QPSK 1.4MHz CH 19207 / 6RB#0 / Index 0	**QPSK 1.4MHz CH 19207 / 6RB#0 / Index 0**
	

QPSK 1.4MHz CH 19207 / 6RB#0 / Index 0	QPSK 1.4MHz CH 19207 / 6RB#0 / Index 0
	
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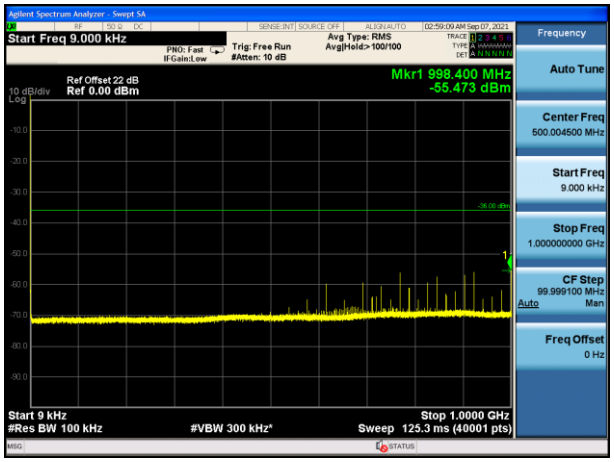	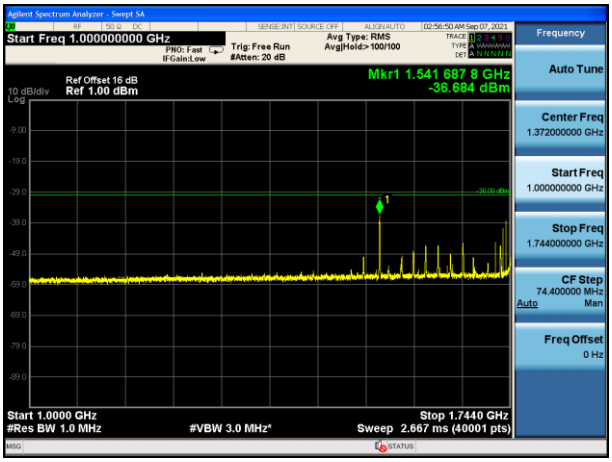
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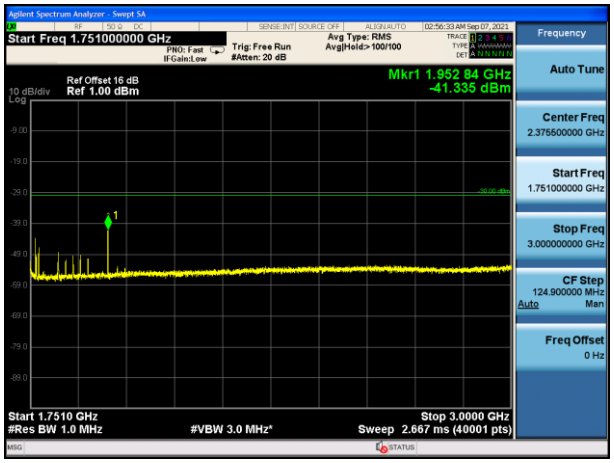	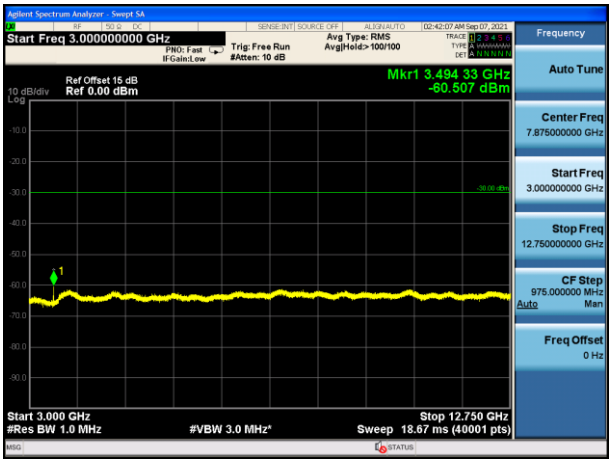

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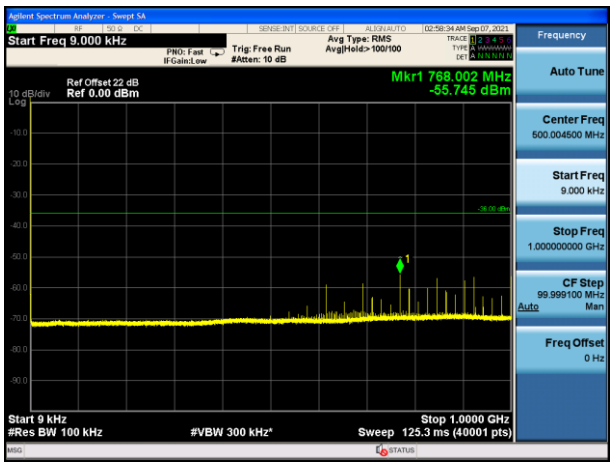	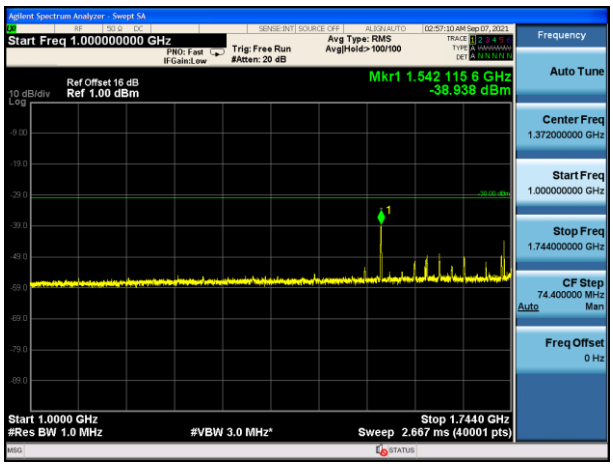
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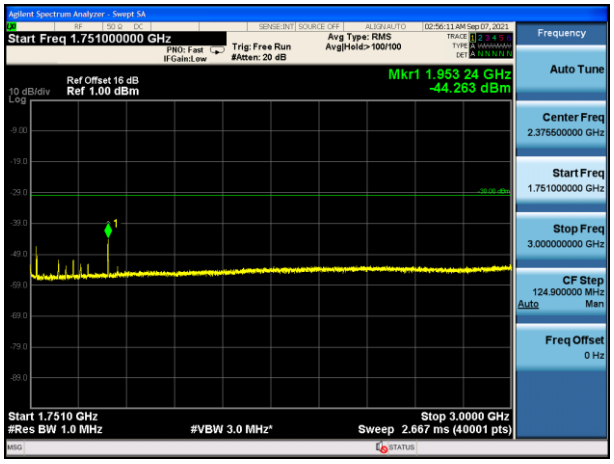	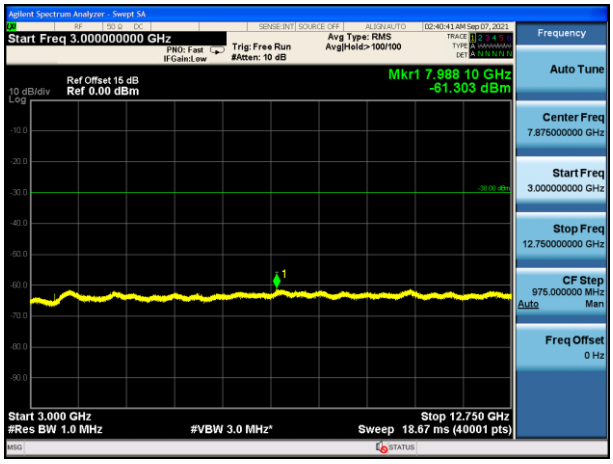
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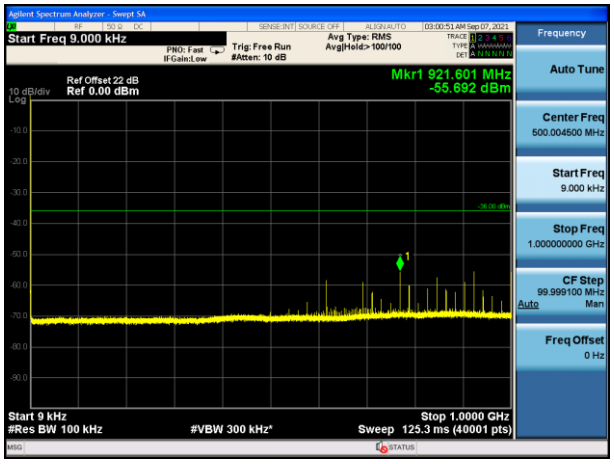	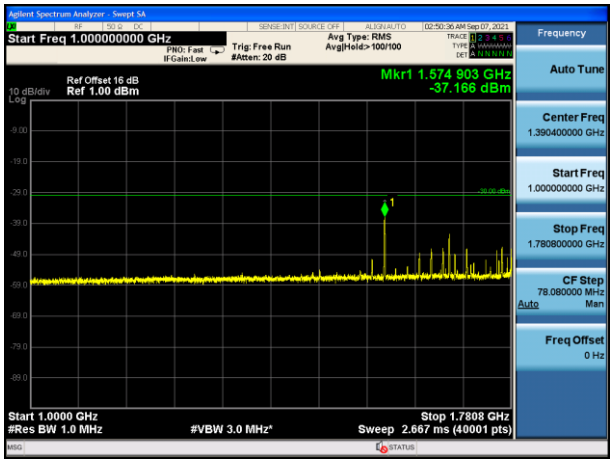

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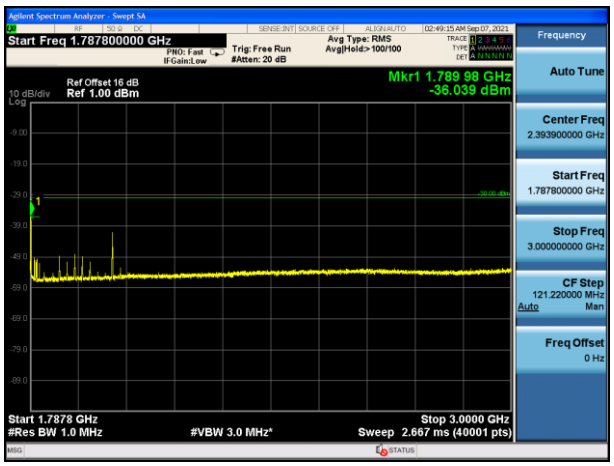	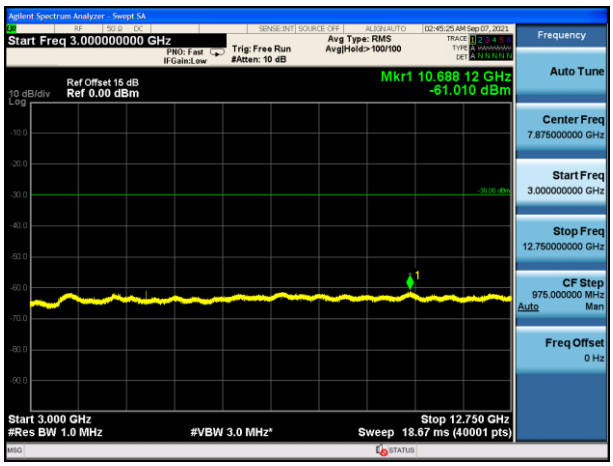
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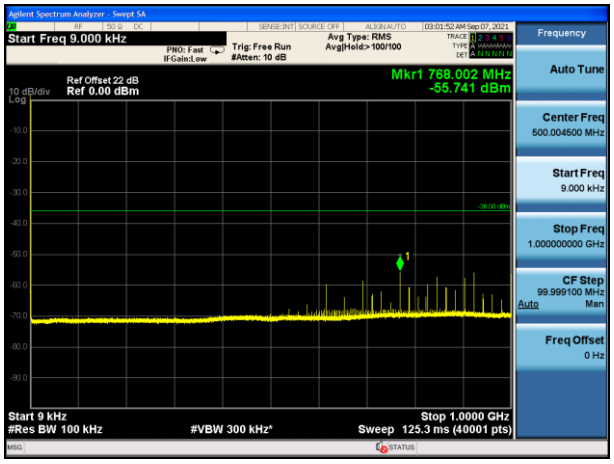	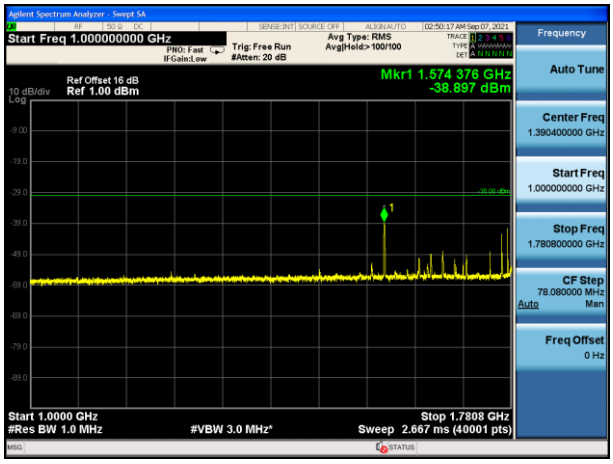
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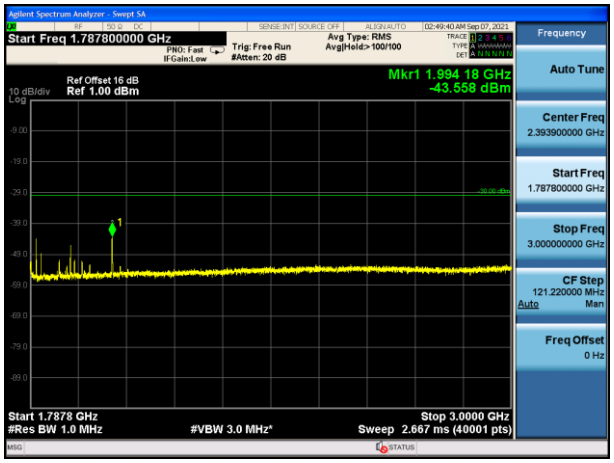
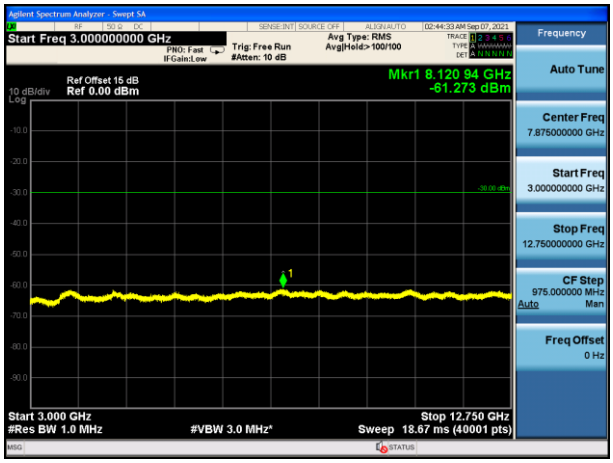
	

5.4 相鄰頻道洩漏功率比(ACLR)

5.4.1 合格標準

Cat-M1終端設備相鄰頻道洩漏功率比規範值

E-UTRA						
	頻道頻寬					
	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
E-UTRA 相鄰頻道洩漏功率限制值	29.2dB					
相鄰頻道偏移	±1.4MHz	±3MHz	±5MHz	±10MHz	±15MHz	±20MHz
E-UTRA 頻道量測頻寬	1.08 MHz	2.7 MHz	4.5 MHz	9.0 MHz	13.5 MHz	18 MHz

UTRA						
	頻道頻寬					
	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
UTRA 相鄰頻道洩漏功率限制值 1	32.2dB					
相鄰頻道中心頻率偏移 (MHz)	$0.7+BW_{UTRA}/2$ / $-0.7-BW_{UTRA}/2$	$1.5+BW_{UTRA}/2$ / $-1.5--BW_{UTRA}/2$	$2.5+BW_{UTRA}/2$ / $-2.5--BW_{UTRA}/2$	$5+BW_{UTRA}/2$ / $-5--BW_{UTRA}/2$	$7.5+BW_{UTRA}/2$ / $-7.5--BW_{UTRA}/2$	$10+BW_{UTRA}/2$ / $-10--BW_{UTRA}/2$
UTRA 相鄰頻道洩漏功率限制值 2	N/A		35.2dB			
相鄰頻道中心頻率偏移 (MHz)	N/A		$2.5+3*BW_{UTRA}/2$ / $-2.5-3*-BW_{UTRA}/2$	$5+3*BW_{UTRA}/2$ / $-5-3*-BW_{UTRA}/2$	$7.5+3*BW_{UTRA}/2$ / $-7.5-3*-BW_{UTRA}/2$	$10+3*BW_{UTRA}/2$ / $-10-3*-BW_{UTRA}/2$
E-UTRA 頻道量測頻寬	1.08 MHz	2.7 MHz	4.5 MHz	9.0 MHz	13.5 MHz	18 MHz
UTRA 5MHz 頻道量測頻寬 (註 1)	3.84MHz					
UTRA 1.6MHz 頻道量測頻寬 (註 2)	1.28MHz					

註:

1、適用於在配對頻譜中與 UTRA FDD 共存之 E-UTRA FDD。

2、適用於在非配對頻譜中與 UTRA TDD 共存之 E-UTRA TDD。

3、UTRA FDD 之 BWUTRA 為 5 MHz，UTRA TDD 之 BWUTRA 為 1.6 MHz。

5.4.2 測試方法

<table>
<tr><td colspan="6">預設條件</td></tr>
<tr><td colspan="2">測試環境</td><td colspan="4">常態環境常態電壓</td></tr>
<tr><td colspan="2">測試頻道</td><td colspan="4">低、中、高</td></tr>
<tr><td colspan="2">測試頻道頻寬</td><td colspan="4">最低、5MHz、10MHz 及最高</td></tr>
<tr><td colspan="6">測試參數</td></tr>
<tr><td rowspan="3">結構邊</td><td rowspan="3">頻道頻寬</td><td rowspan="3">下行結構</td><td colspan="3">上行結構</td></tr>
<tr><td rowspan="2">調變方式</td><td colspan="2">資源區塊分配</td></tr>
<tr><td>FDD 及
HD-FDD</td><td>窄頻索引(註 1)</td></tr>
<tr><td colspan="6">低頻道、中頻道</td></tr>
<tr><td>1</td><td>1.4MHz</td><td rowspan="21">ACLR
測試不適用</td><td>QPSK</td><td>2</td><td>0</td></tr>
<tr><td>2</td><td>1.4MHz</td><td>QPSK</td><td>5</td><td>0</td></tr>
<tr><td>3</td><td>1.4MHz</td><td>QPSK</td><td>6</td><td>0</td></tr>
<tr><td>4</td><td>1.4MHz</td><td>16QAM</td><td>2</td><td>0</td></tr>
<tr><td>5</td><td>1.4MHz</td><td>16QAM</td><td>5</td><td>0</td></tr>
<tr><td>6</td><td>3MHz</td><td>QPSK</td><td>2</td><td>0</td></tr>
<tr><td>7</td><td>3MHz</td><td>QPSK</td><td>5</td><td>0</td></tr>
<tr><td>8</td><td>3MHz</td><td>QPSK</td><td>6</td><td>0</td></tr>
<tr><td>9</td><td>3MHz</td><td>16QAM</td><td>2</td><td>0</td></tr>
<tr><td>10</td><td>3MHz</td><td>16QAM</td><td>5</td><td>0</td></tr>
<tr><td>11</td><td>5MHz</td><td>QPSK</td><td>6</td><td>0</td></tr>
<tr><td>12 (註 2)</td><td>5MHz</td><td>16QAM</td><td>1</td><td>0</td></tr>
<tr><td>13</td><td>5MHz</td><td>16QAM</td><td>3</td><td>0</td></tr>
<tr><td>14</td><td>5MHz</td><td>16QAM</td><td>5</td><td>0</td></tr>
<tr><td>15 (註 2)</td><td>10MHz</td><td>QPSK</td><td>4</td><td>0</td></tr>
<tr><td>16</td><td>10MHz</td><td>QPSK</td><td>6</td><td>0</td></tr>
<tr><td>17 (註 2)</td><td>10MHz</td><td>16QAM</td><td>3</td><td>0</td></tr>
<tr><td>18</td><td>10MHz</td><td>16QAM</td><td>5</td><td>0</td></tr>
<tr><td>19</td><td>15MHz</td><td>QPSK</td><td>6</td><td>0</td></tr>
<tr><td>20</td><td>15MHz</td><td>16QAM</td><td>5</td><td>0</td></tr>
<tr><td>21</td><td>20MHz</td><td>16QAM</td><td>5</td><td>0</td></tr>
</table>

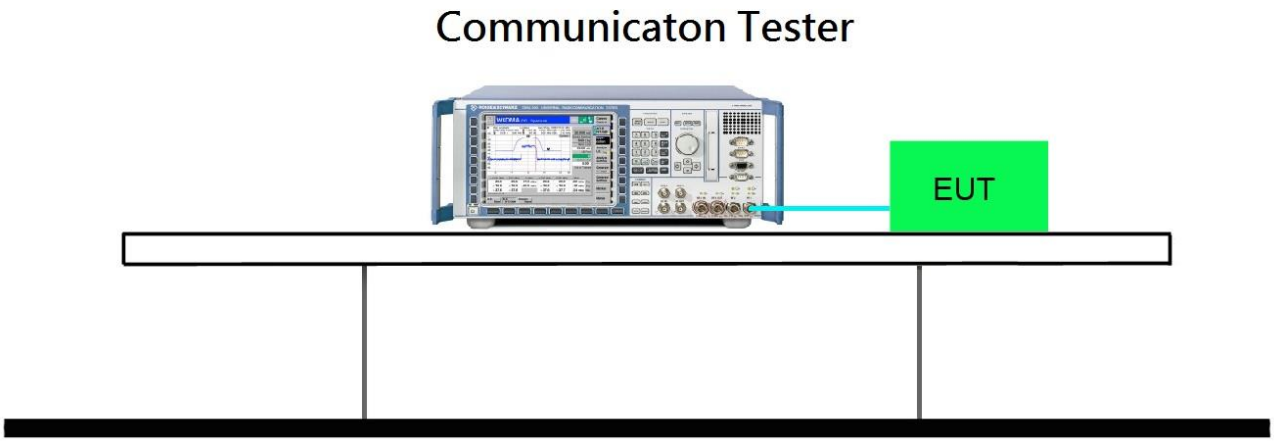
高頻道					
1	1.4MHz	ACLR 測試不適用	QPSK	2	0
2	1.4MHz		QPSK	5	0
3	1.4MHz		QPSK	6	0
4	1.4MHz		16QAM	2	0
5	1.4MHz		16QAM	5	0
6	3MHz		QPSK	2	1
7	3MHz		QPSK	5	1
8	3MHz		QPSK	6	1
9	3MHz		16QAM	2	1
10	3MHz		16QAM	5	1
11	5MHz		QPSK	6	3
12 (註 2)	5MHz		16QAM	1	3
13	5MHz		16QAM	3	3
14	5MHz		16QAM	5	3
15 (註 2)	10MHz		QPSK	4	7
16	10MHz		QPSK	6	7
17 (註 2)	10MHz		16QAM	3	7
18	10MHz		16QAM	5	7
19	15MHz		QPSK	6	11
20	15MHz		16QAM	5	11
21	20MHz		16QAM	5	15

註:

1、窄頻索引(Narrowband Index)定義依 3GPP TS 36.211 5.2.4 規定。

2、僅適用於 Power Class 3 之用戶設備。

5.4.3 實驗方法方塊圖

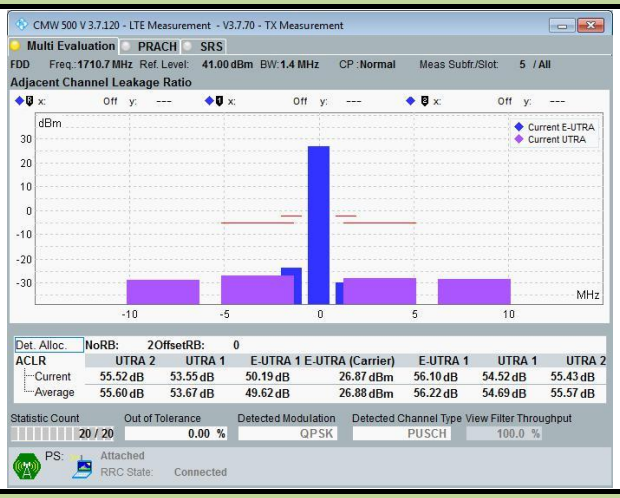


5.4.4 實驗數據

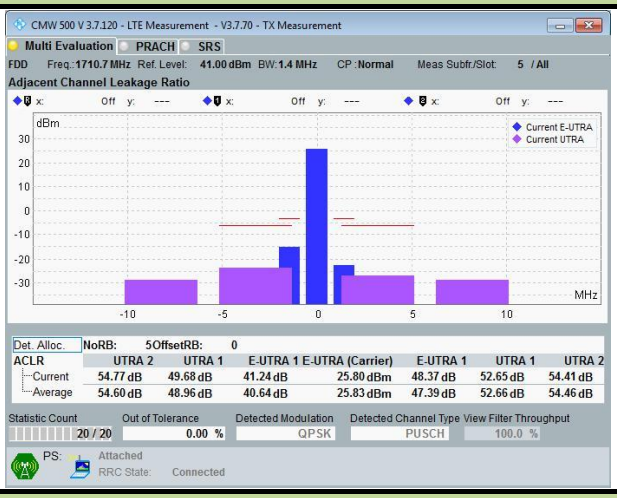
Band 3 (1800MHz)									
Modulation	Test CH	CH	BW (MHz)	RB No.	RB Offset	Narrowband Index	E-UTRA (dB)	UTRA 1 (dB)	UTRA 2 (dB)
QPSK	LOW	19207	1.4MHz	2	0	0	49.62	53.67	55.57
				5	0	0	40.64	48.96	54.46
				6	0	0	41.13	47.37	53.36
		19225	5MHz	6	0	0	42.92	48.67	54.38
		19250	10MHz	4	0	0	51.49	54.99	55.28
				6	1	0	50.47	53.84	54.34
		19300	20MHz	6	2	0	48.49	55.03	54.92
	MID	19575	1.4MHz	2	0	0	49.84	53.71	55.39
				5	0	0	39.50	48.16	54.45
				6	0	0	40.39	46.81	53.12
			5MHz	6	0	0	42.32	48.25	54.26
			10MHz	4	0	0	51.41	54.90	55.27
				6	1	0	50.38	53.72	54.25
			20MHz	6	2	0	48.39	54.93	54.83
	HIGH	19943	1.4MHz	2	4	0	50.02	52.96	54.95
				5	1	0	41.74	49.57	54.22
				6	0	0	39.74	46.10	53.01
		19925	5MHz	6	19	3	44.46	49.43	54.06
		19900	10MHz	4	0	7	51.30	54.76	55.14
				6	43	7	50.21	53.65	54.09
		19850	20MHz	6	92	11	48.32	54.81	54.88
16-QAM	LOW	19207	1.4MHz	2	0	0	49.79	52.91	54.29
				5	0	0	41.80	49.33	53.46
		19225	5MHz	1	0	0	51.94	53.93	55.53
				3	0	0	50.81	53.52	54.64
				5	0	0	44.70	50.38	53.84
		19250	10MHz	3	0	0	51.80	55.28	55.72
				5	1	0	50.50	54.01	54.36
		19300	20MHz	5	2	0	48.89	55.45	55.33
	MID	19575	1.4MHz	2	0	0	49.96	52.92	54.17

				5	0	0	40.35	48.35	53.39
			5MHz	1	0	0	52.00	54.10	55.97
				3	0	0	49.42	53.15	54.62
				5	0	0	45.18	50.29	53.33
			10MHz	3	0	0	51.89	55.32	55.87
				5	1	0	50.65	54.06	54.53
			20MHz	5	2	0	48.57	55.19	55.04
	HIGH	19943	1.4MHz	2	4	0	50.24	52.30	53.95
				5	1	0	41.87	48.97	52.74
		19925	5MHz	1	0	3	52.03	54.01	55.39
				3	22	3	50.52	52.80	53.97
				5	20	3	45.84	50.47	52.97
		19900	10MHz	3	0	7	51.53	55.03	55.35
				5	44	7	50.51	54.03	54.44
		19850	20MHz	5	93	11	48.59	55.03	55.15

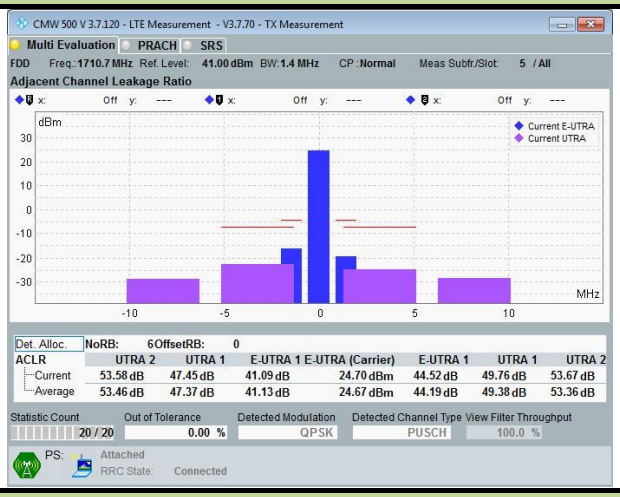
QPSK 1.4MHz CH 19207 / 2RB#0 / Index 0



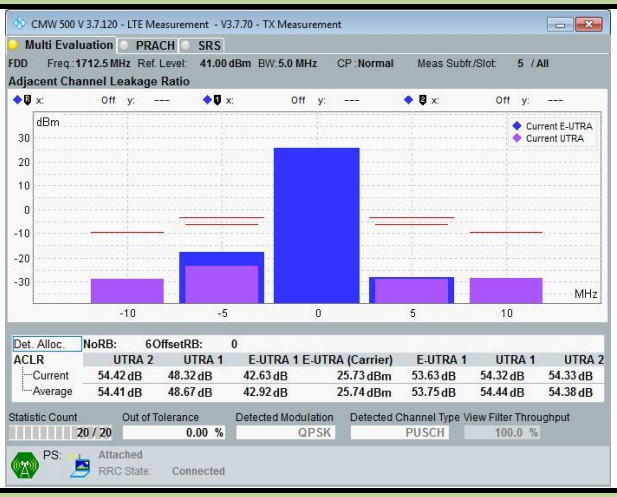
QPSK 1.4MHz CH 19207 / 5RB#0 / Index 0



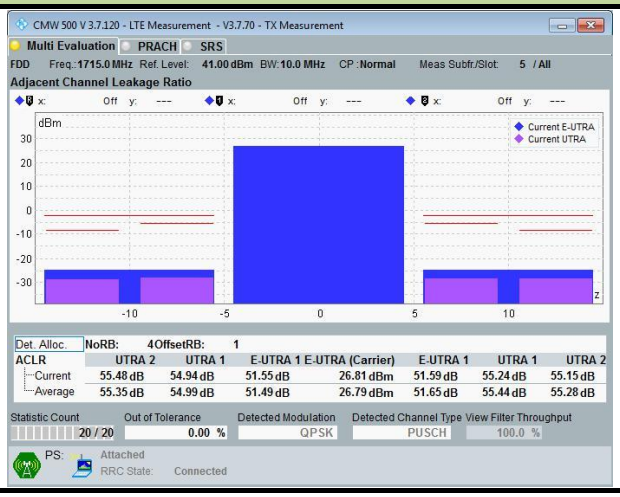
QPSK 1.4MHz CH 19207 / 6RB#0 / Index 0



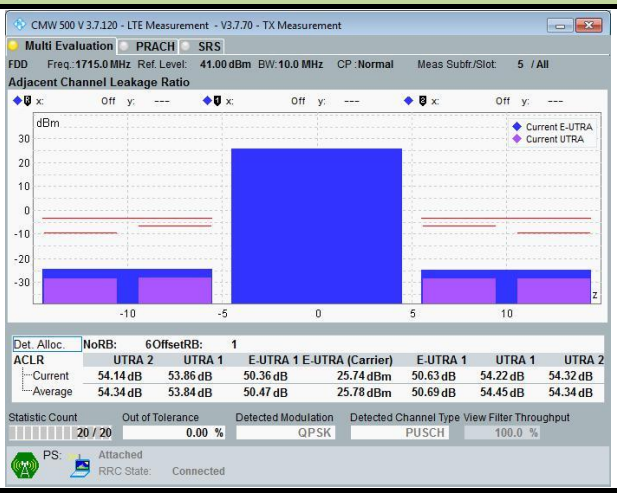
QPSK 5MHz CH 19225 / 6RB#0 / Index 0



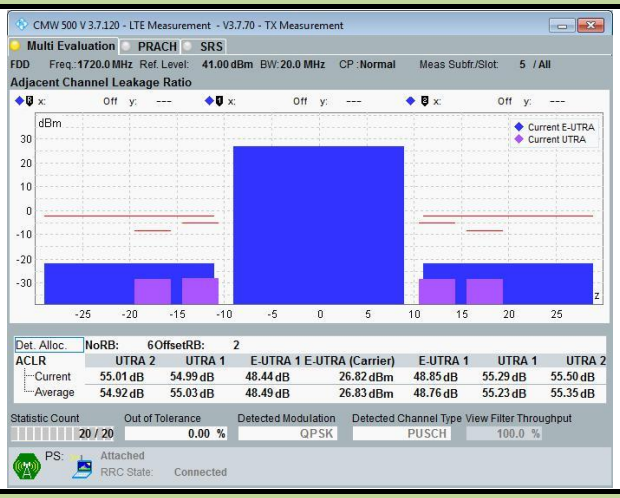
QPSK 10MHz CH 19250 / 4RB#0 / Index 0



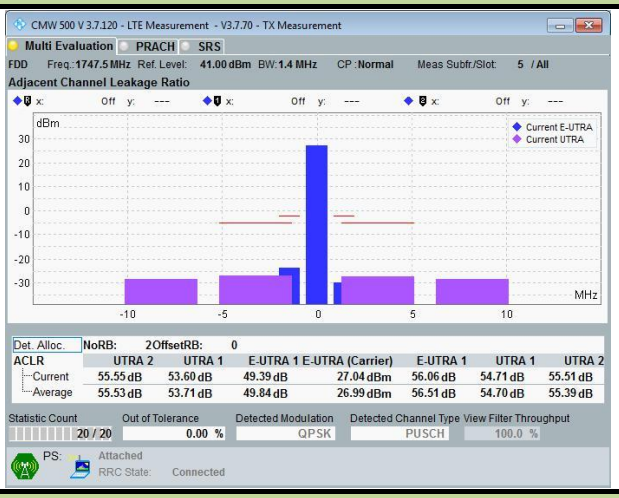
QPSK 10MHz CH 19250 / 6RB#1 / Index 0



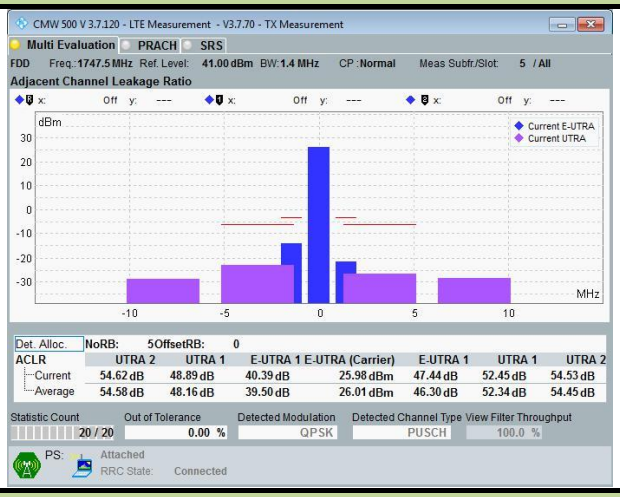
QPSK 20MHz CH 19300 / 6RB#2 / Index 0



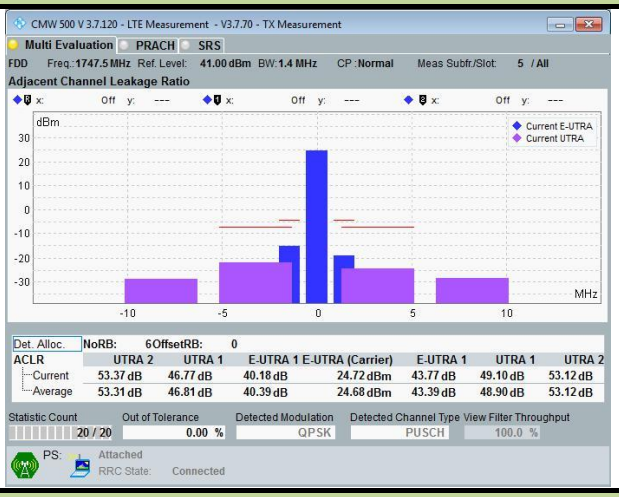
QPSK 1.4MHz CH 19575 / 2RB#0 / Index 0



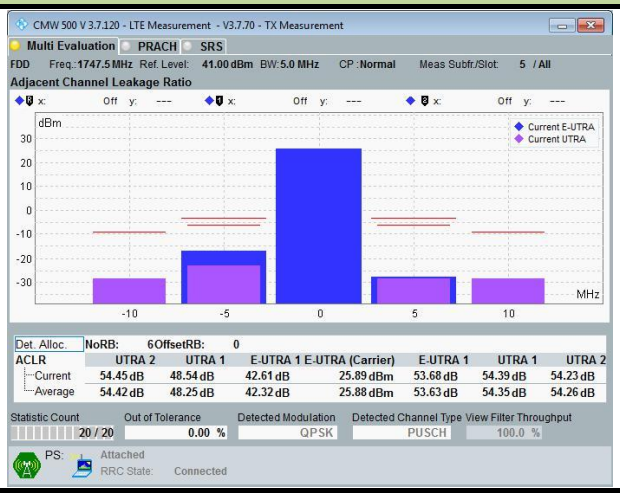
QPSK 1.4MHz CH 19575 / 5RB#0 / Index 0



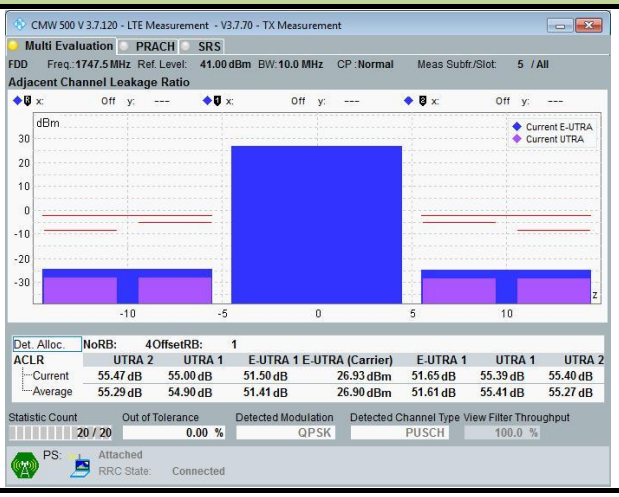
QPSK 1.4MHz CH 19575 / 6RB#0 / Index 0



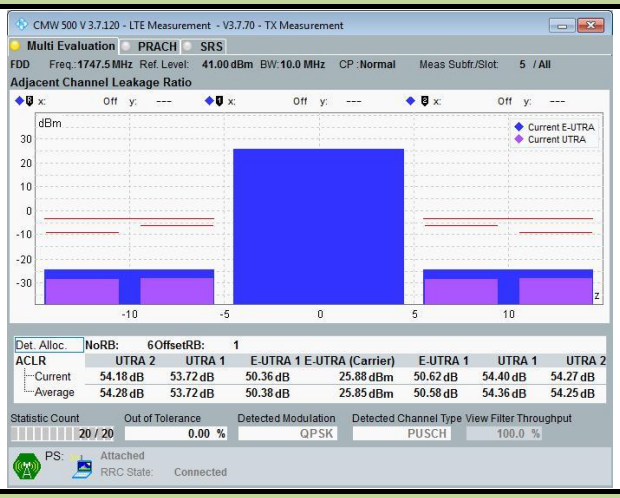
QPSK 5MHz CH 19575 / 6RB#0 / Index 0



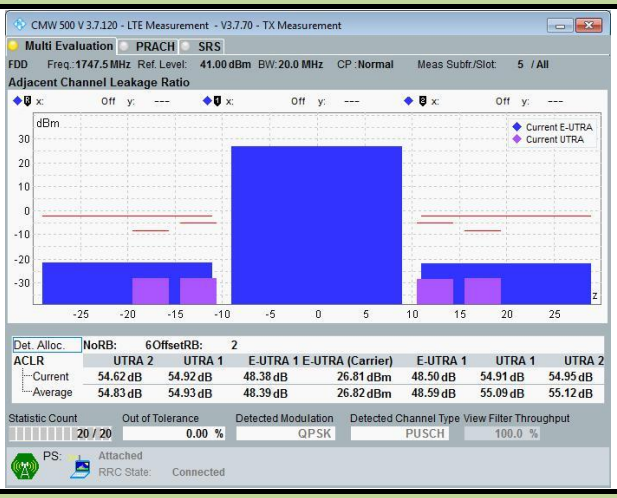
QPSK 10MHz CH 19575 / 4RB#0 / Index 0



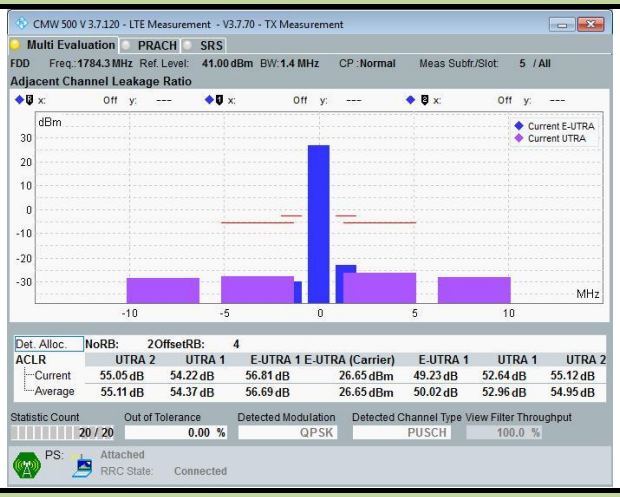
QPSK 10MHz CH 19575 / 6RB#1 / Index 0



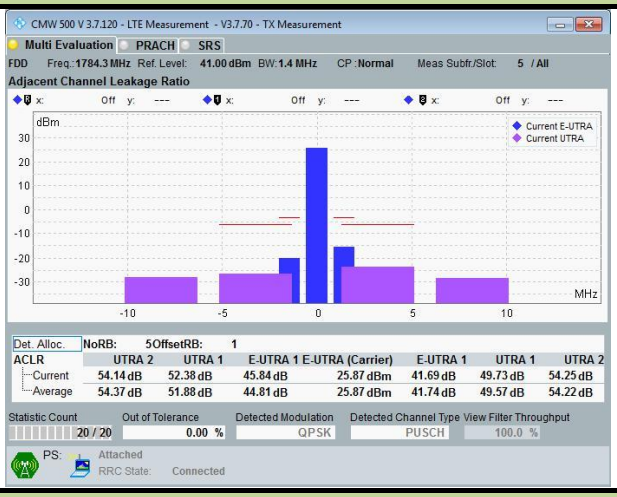
QPSK 20MHz CH 19575 / 6RB#2 / Index 0



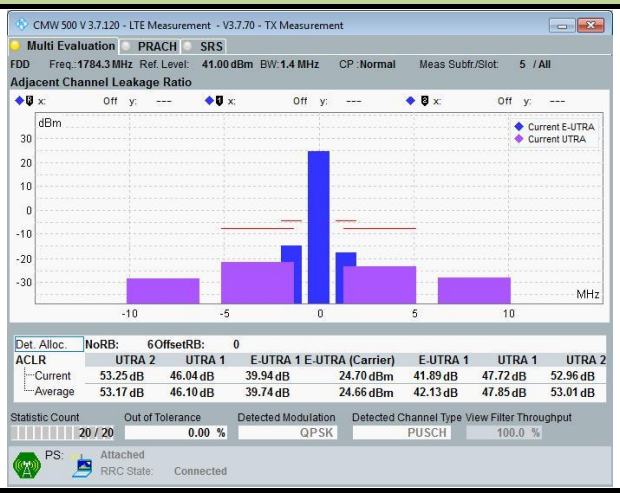
QPSK 1.4MHz CH 19943 / 2RB#4 / Index 0



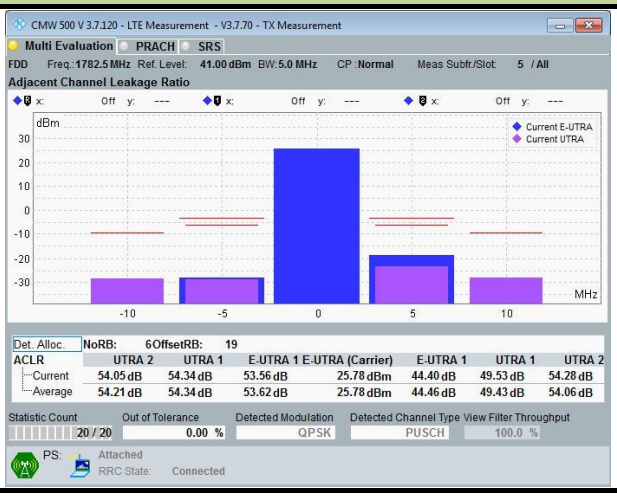
QPSK 1.4MHz CH 19943 / 5RB#1 / Index 0



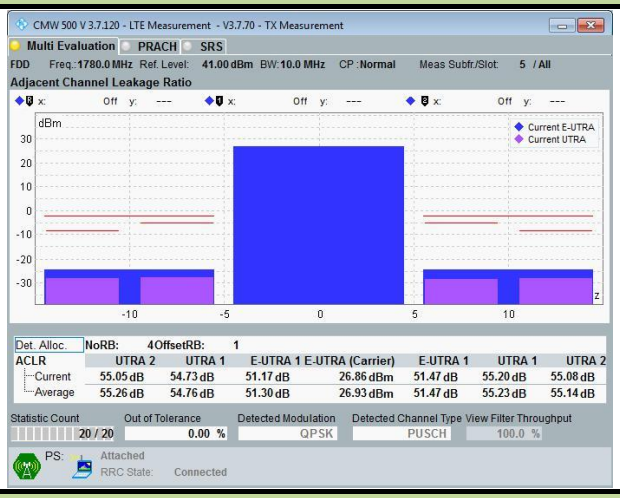
QPSK 1.4MHz CH 19943 / 6RB#0 / Index 0



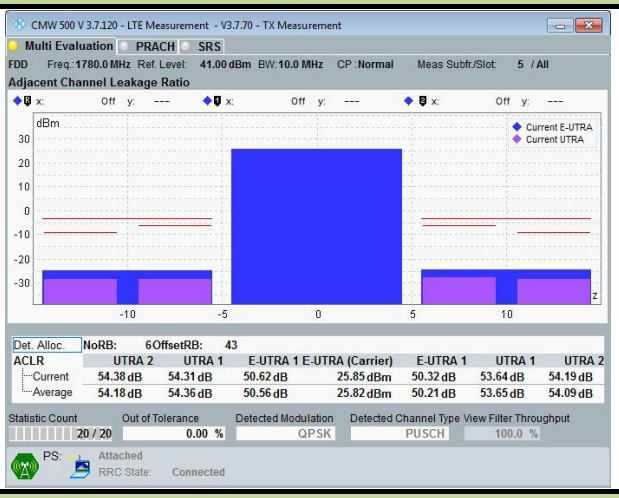
QPSK 5MHz CH 19925 / 6RB#19 / Index 3



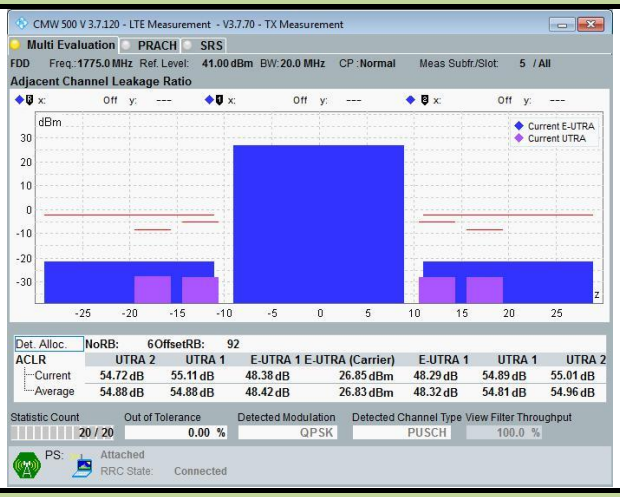
QPSK 10MHz CH 19900 / 4RB#0 / Index 7



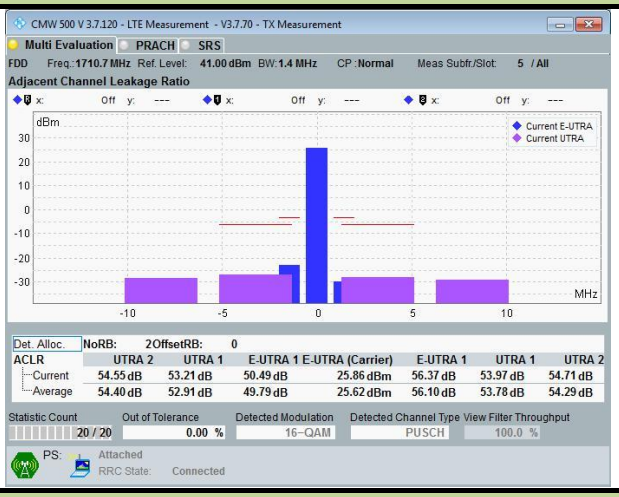
QPSK 10MHz CH 19900 / 6RB#43 / Index 7



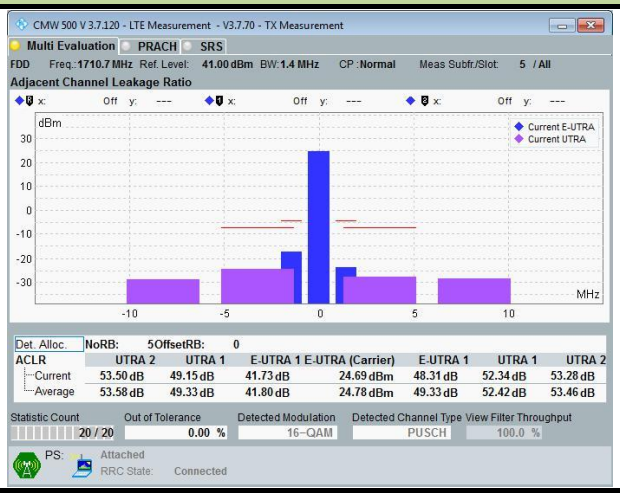
QPSK 20MHz CH 19850 / 6RB#92 / Index 11



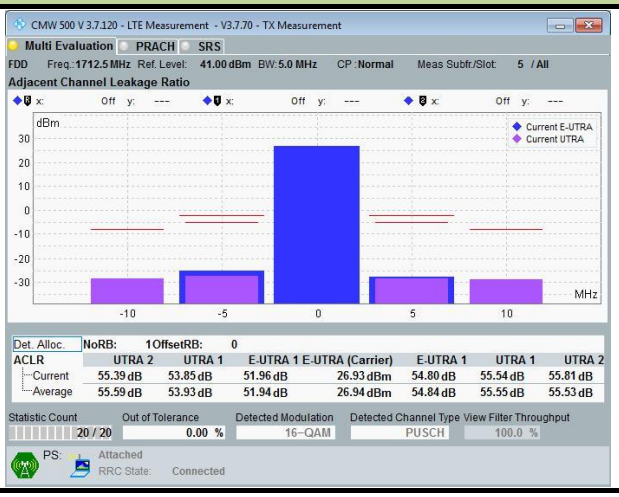
16QAM 1.4MHz CH 19207 / 2RB#0 / Index 0



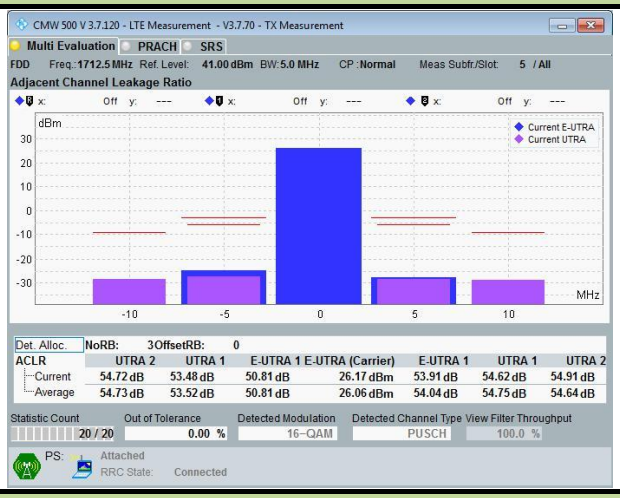
16QAM 1.4MHz CH 19207 / 5RB#0 / Index 0



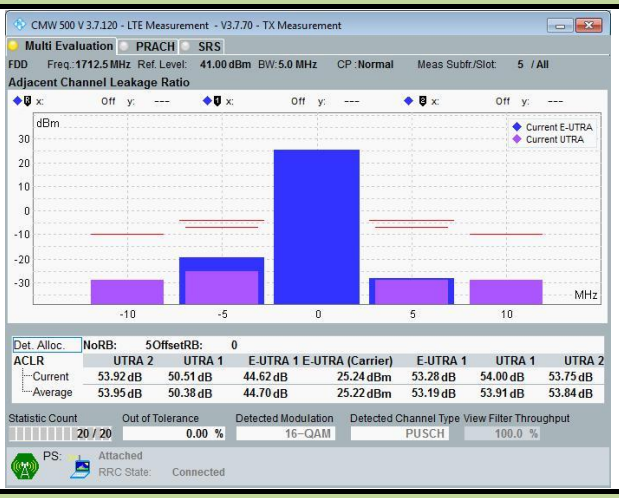
16QAM 5MHz CH 19225 / 1RB#0 / Index 0



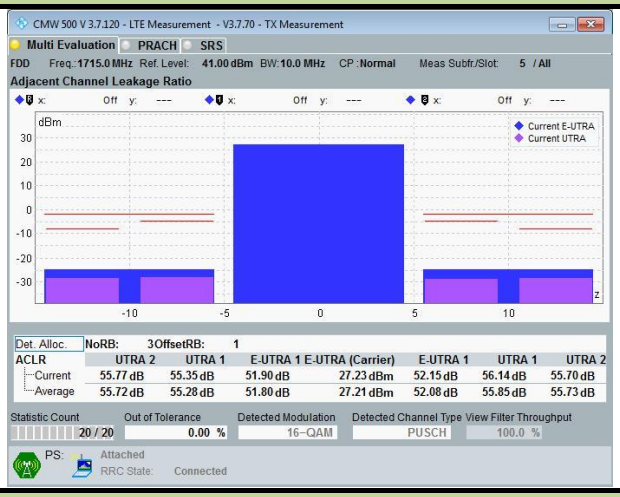
16QAM 5MHz CH 19225 / 3RB#0 / Index 0



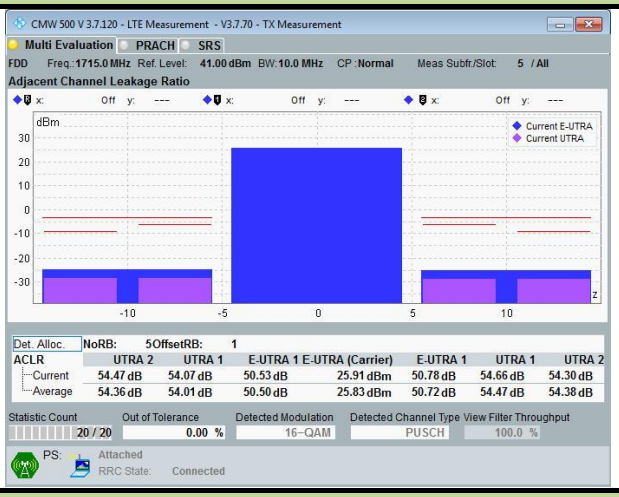
16QAM 5MHz CH 19225 / 5RB#0 / Index 0



16QAM 10MHz CH 19250 / 3RB#0 / Index 0



16QAM 10MHz CH 19250 / 5RB#1 / Index 0



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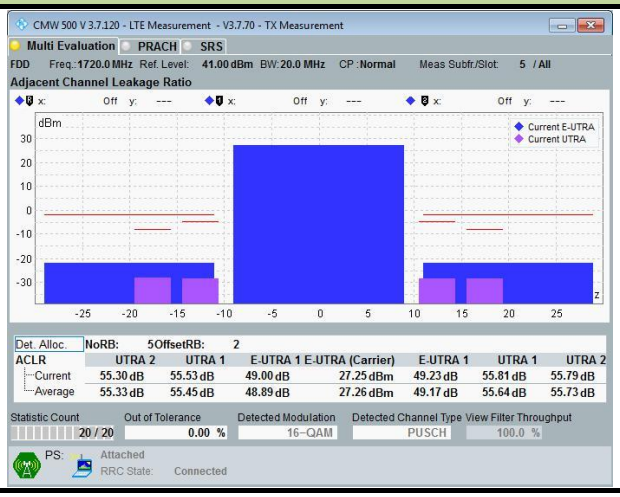
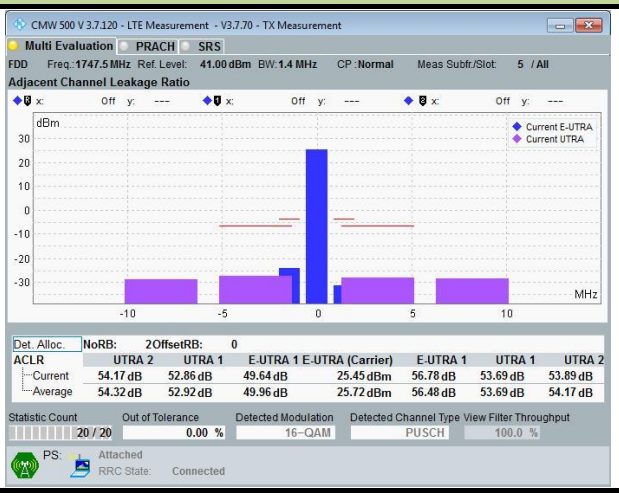
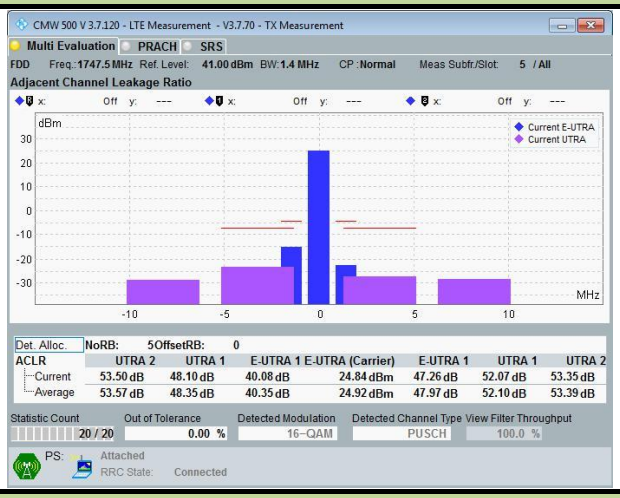


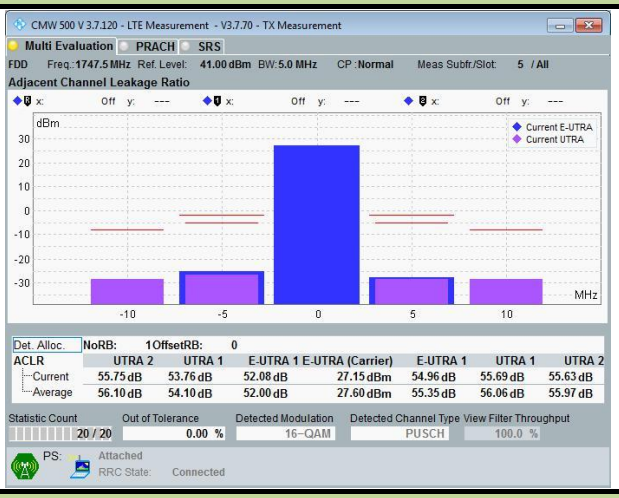
16QAM 1.4MHz CH 19575 / 2RB#0 / Index 0



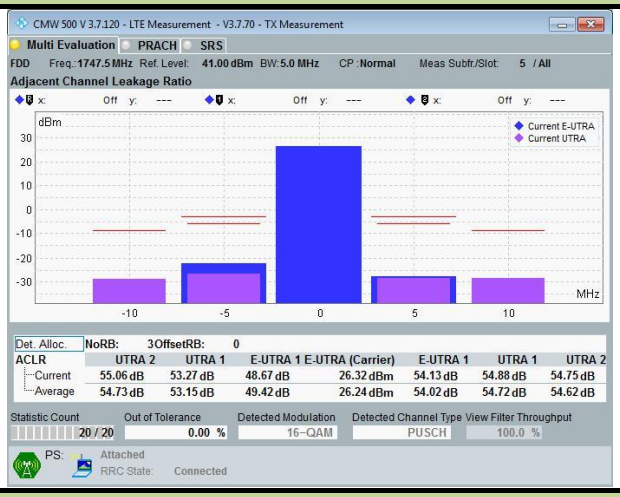
16QAM 1.4MHz CH 19575 / 5RB#0 / Index 0



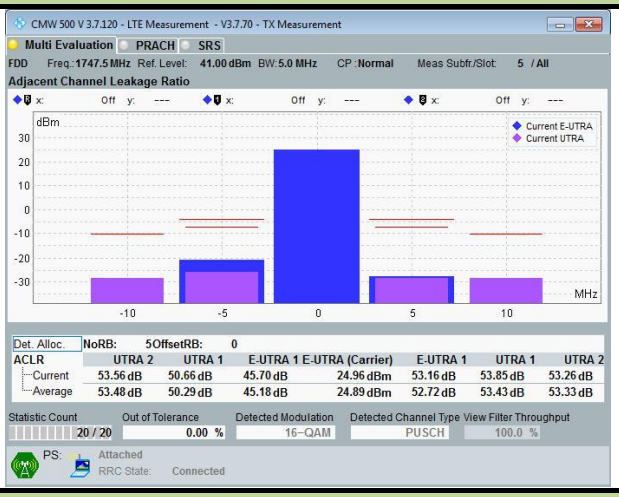
16QAM 5MHz CH 19575 / 1RB#0 / Index 0



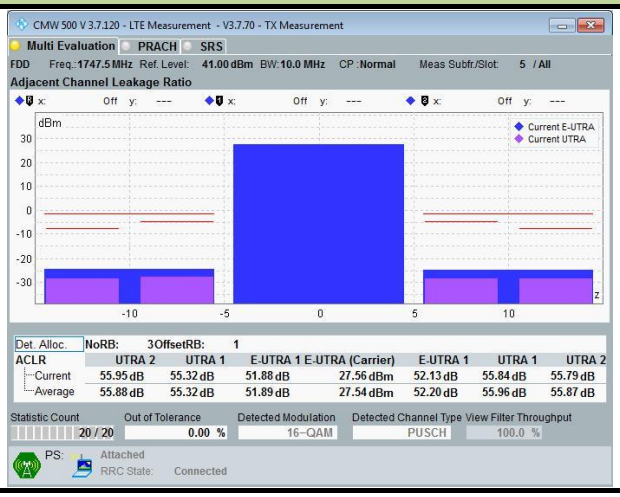
16QAM 5MHz CH 19575 / 3RB#0 / Index 0



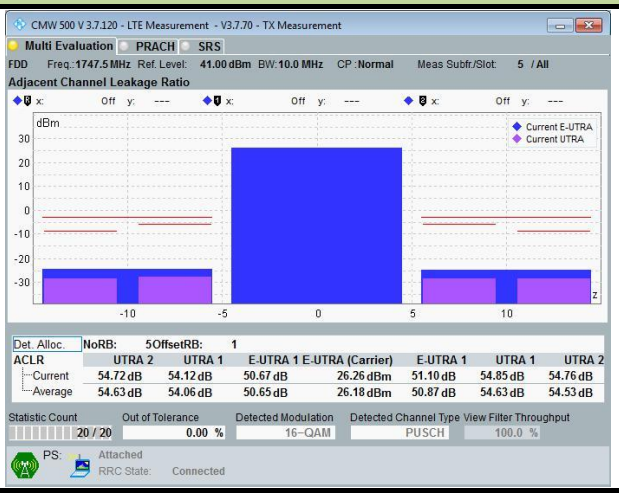
16QAM 5MHz CH 19575 / 5RB#0 / Index 0



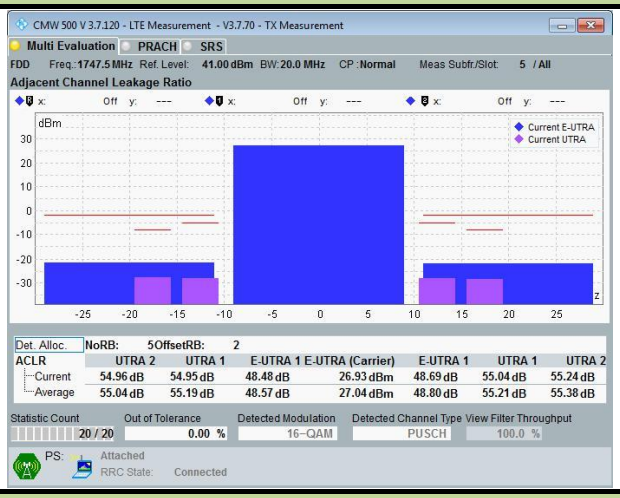
16QAM 10MHz CH 19575 / 3RB#0 / Index 0



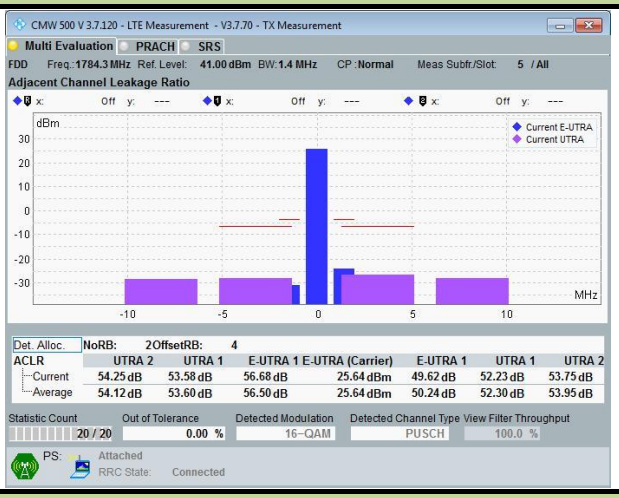
16QAM 10MHz CH 19575 / 5RB#1 / Index 0



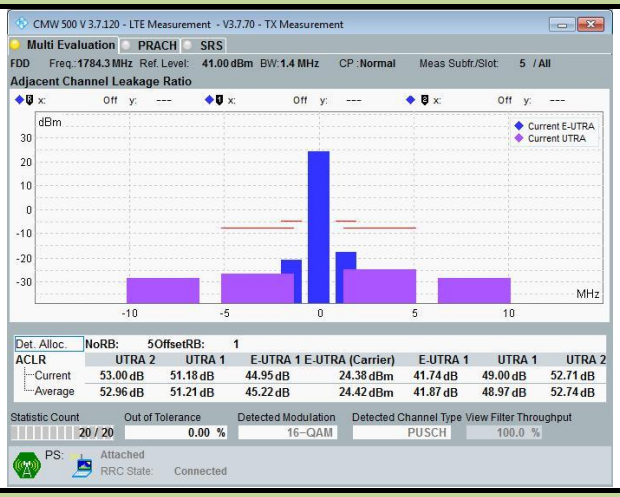
16QAM 20MHz CH 19575 / 5RB#2 / Index 0



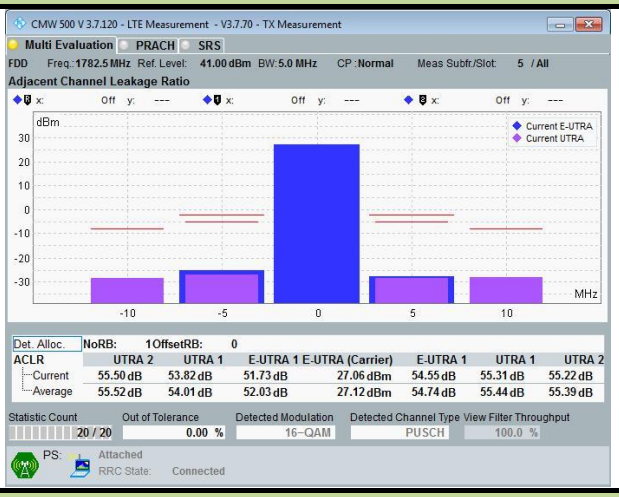
16QAM 1.4MHz CH 19943 / 2RB#4 / Index 0



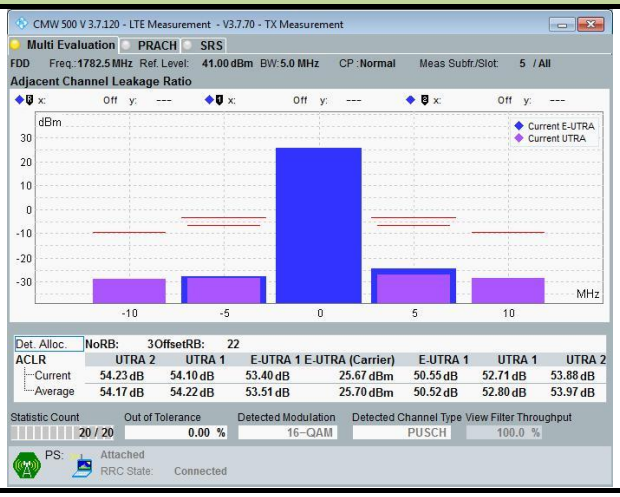
16QAM 1.4MHz CH 19943 / 5RB#1 / Index 0



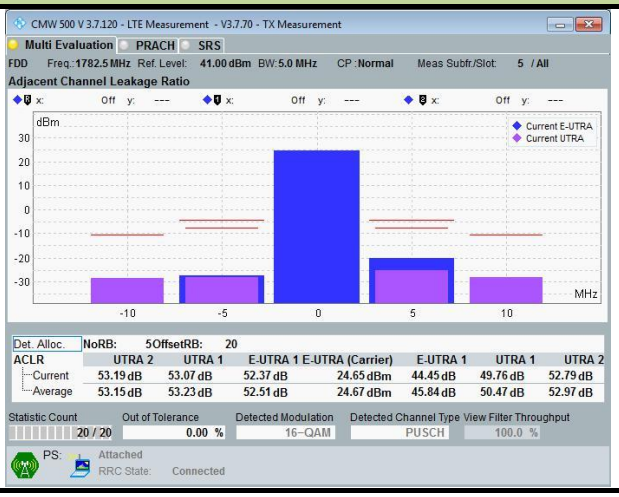
16QAM 5MHz CH 19925 / 1RB#0 / Index 3

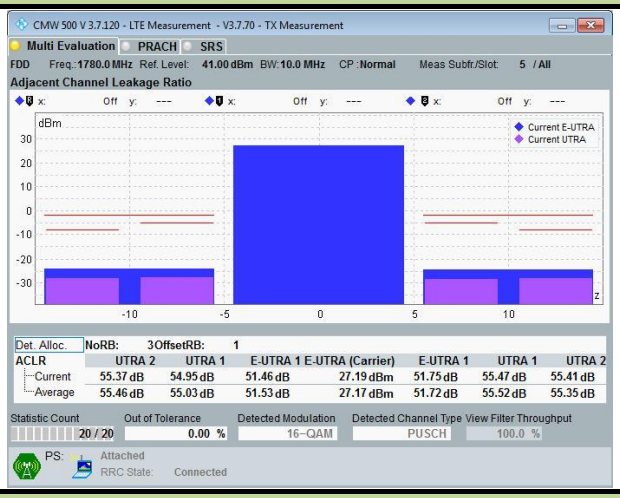
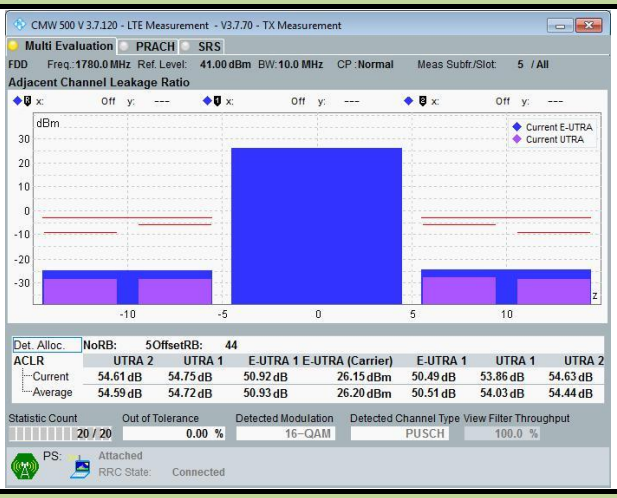
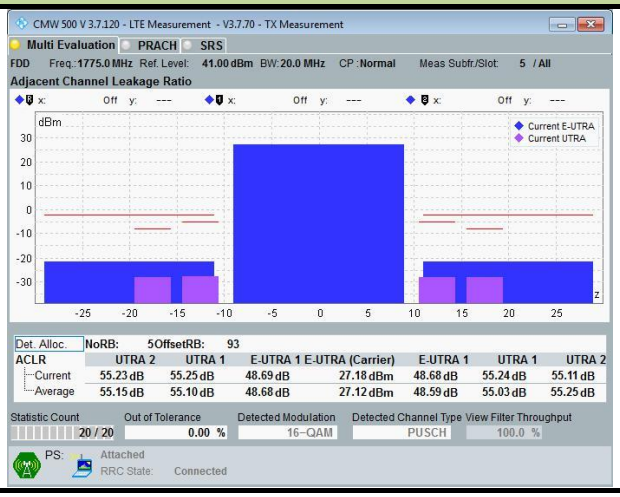


16QAM 5MHz CH 19925 / 3RB#22 / Index 3



16QAM 5MHz CH 19925 / 5RB#20 / Index 3



16QAM 10MHz CH 19900 / 3RB#0 / Index 7	16QAM 10MHz CH 19900 / 5RB#44 / Index 7
	
16QAM 20MHz CH 19850 / 5RB#93 / Index 11	
	

5.5 非資源區塊帶內發射

5.5.1 合格標準

應符合下表非資源區塊帶內發射規範值。

Cat-M1 終端設備未分配資源區塊帶內幅射規範值

參數描述	單位	未分配資源區塊帶內幅射規範值		適用頻率
一般	dB	max{－15－10・$\log_{10}$（N_{tone}/L_{Ctone}）， －18－5・（｜Δ_{tone}｜－1）/ L_{Ctone}，　　＋0.8 -57dBm/（3.75kHz or 15 kHz）-P_{tone}}		所有未分配的頻率
IQ 鏡像	dB	-27.2	鏡像頻率當載波中心頻率＜1GHz 且輸出功率＞10dBm	鏡像頻率
		-24.2	鏡像頻率當載波中心頻率＜1GHz 且輸出功率≦10dBm	
		-24.2	鏡像頻率當載波中心頻率≧1GHz	
載波洩漏	dBc	-27.2	輸出功率＞10dBm 且載波中心頻率＜1GHz	載波頻率
		-24.2	輸出功率＞10dBm 且載波中心頻率≧1GHz	
		-24.2	0dBm≦輸出功率≦10dBm	
		-19.2	-30dBm≦輸出功率≦0dBm	
		-9.2	-40dBm≦輸出功率＜-30dBm	

註：

1、RB offset 設定值及應檢項目之測試方法，依 3GPP TS 36.521-1 技術標準規定。

2、本附表參數定義依 3GPP TS 36.521-1 Table 6.5.2.3EA.5-1。

5.5.2 測試方法

Cat-M1 終端設備未分配資源區塊帶內幅射之頻道頻寬測試參數

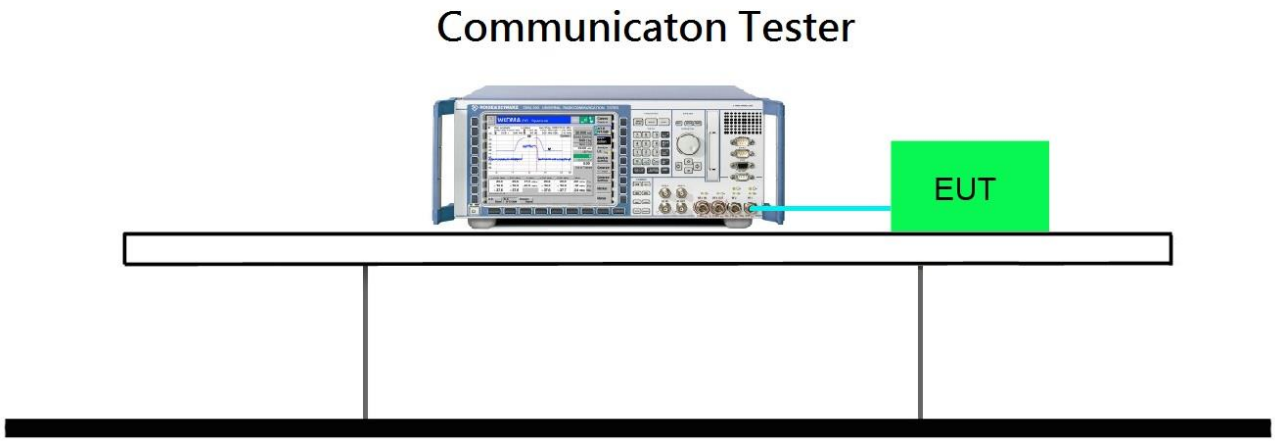
<table>
<tr><th colspan="3">下行結構</th><th colspan="4">上行結構</th></tr>
<tr><td colspan="7">PUSCH</td></tr>
<tr><td rowspan="2">頻道
寬度</td><td colspan="2" rowspan="2">未分配資源區塊帶內幅射不適用</td><td rowspan="2">調變
方式</td><td colspan="3">資源區塊分配</td></tr>
<tr><td>FDD 及
HD-FDD</td><td>TDD</td><td>窄頻索
引(註)</td></tr>
<tr><td>5MHz</td><td colspan="2"></td><td>QPSK</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td colspan="7">PUCCH</td></tr>
<tr><td rowspan="2">頻道
寬度</td><td rowspan="2">調變
方式</td><td colspan="3">資源區塊分配</td><td colspan="3" rowspan="3">FDD：PUCCH format=Format 1a
TDD：PUCCH format=Format 1a/1b</td></tr>
<tr><td>FDD 及
HD-FDD</td><td>TDD</td><td>窄頻索
引(註)</td></tr>
<tr><td>5MHz</td><td>QPSK</td><td>4@0</td><td>4@0</td><td>0</td></tr>
</table>

註:

1、RB offset 設定值及應檢項目之測試方法，依 3GPP TS 36.521-1 技術標準規定。

2、本附表參數定義依 3GPP TS 36.521-1 Table 6.5.2.3EA.5-1。

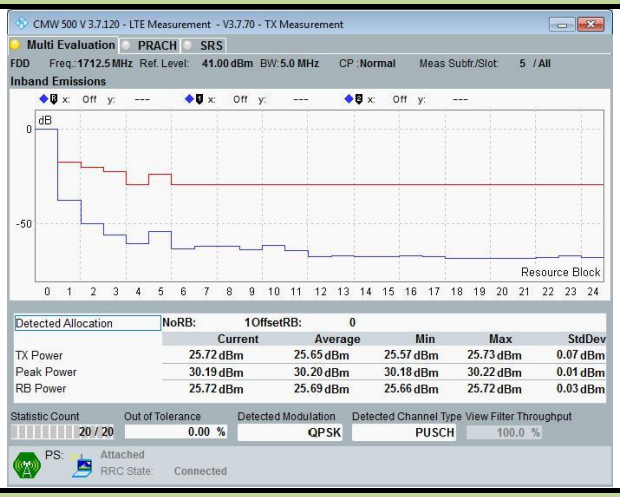
5.5.3 實驗方法方塊圖



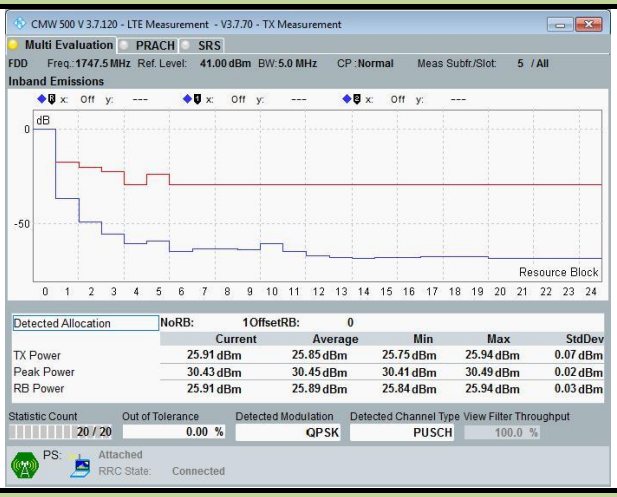
5.5.4 實驗數據

Band 3 (1800MHz)							
Modulation	Test CH	CH	BW (MHz)	RB No.	RB Offset	Narrowband Index	Result
QPSK	LOW	19225	5MHz	1	0	0	Pass
	MID	19575	5MHz	1	0	0	Pass
	HIGH	19925	5MHz	1	0	0	Pass

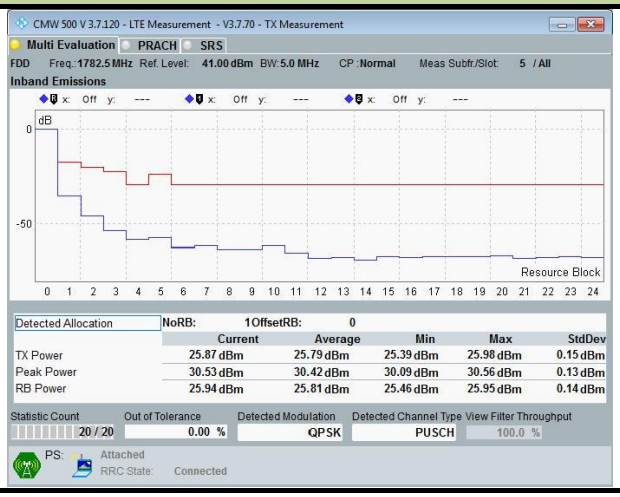
QPSK 5MHz CH 19225 / 1RB#0 / Index 0



QPSK 5MHz CH 19575 / 1RB#0 / Index 0



QPSK 5MHz CH 19925 / 1RB#0 / Index 0



5.6 頻率穩定度

5.6.1 合格標準

a) 依測試環境條件，終端設備於常態環境常態電壓、低極端溫度低極端電壓、低極端溫度高極端電壓、高極端溫度低極端電壓、高極端溫度高極端電壓等五種測試環境下，分別進行頻率量測，經0/2/5/10 分鐘量測結果，頻率應維持在頻道之主波頻率0.1ppm 以內。

常態環境溫度範圍為+15℃至+35℃，濕度範圍為25%至75%。
極端環境溫度範圍為-10℃至+55℃，其他規定應符合IEC 60068-2-1 與IEC 60068-2-2。
在極端環境溫度，終端設備若可通電開機，則不得無效使用第3 點規定之頻段。

電壓條件：
終端設備之電源電壓應於低極端電壓與高極端電壓之間。終端設備審驗申請者應宣告其標稱電壓(nominal)、低極端電壓、高極端電壓與關機電壓。若終端設備可操作在一種或多種電源，其低極端電壓不得高於下表限制值，高極端電壓不得低於下表限制值。

電源	低極端電壓	高極端電壓	常態電壓
交流電源	0.9 * Nominal	1.1 * Nominal	Nominal
調節式鉛酸電池	0.9 * Nominal	1.3 * Nominal	1.1 * Nominal
非調節式電池:			
勒克朗社電池	0.85 * Nominal	Nominal	Nominal
鋰電池	0.95 * Nominal	1.1 * Nominal	1.1 * Nominal
水銀電池/鎳鎘電池	0.9 * Nominal	1.1 * Nominal	Nominal

電源電壓低於上表之低極端電壓或高於上表之高極端電壓，終端設備若可通電開機時，不得無效使用第3 點規定之頻段。

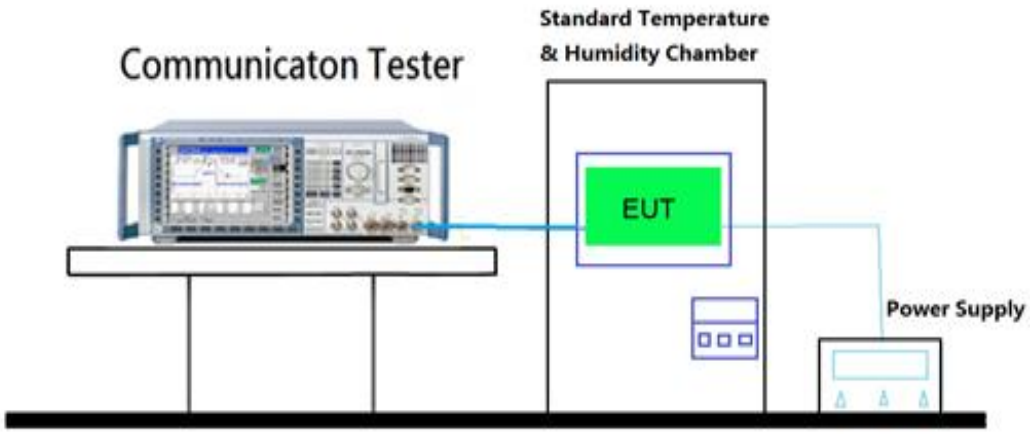
b) 檢測終端設備之電源電壓低於關機電壓時，終端設備不得發射。

5.6.2 測試方法

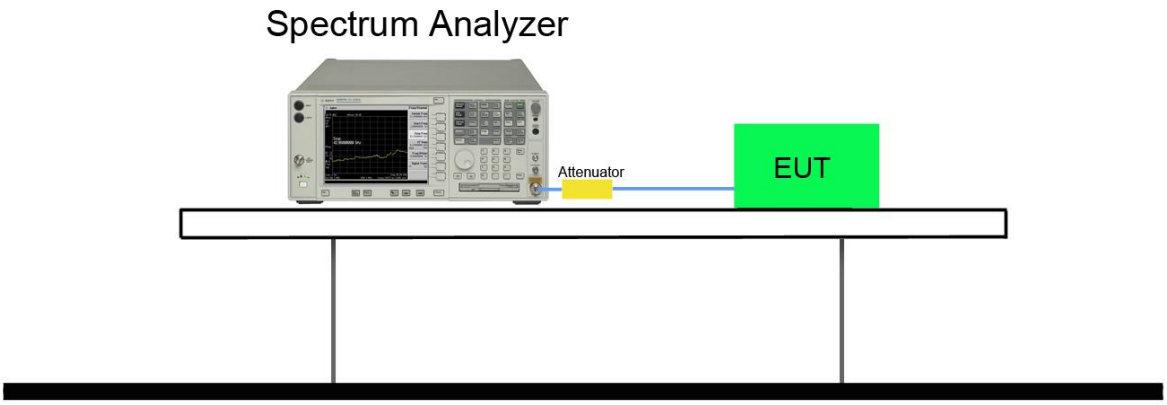
頻率穩定度的測量藉由環境溫櫃控制至指定溫度並將模擬基地台調諧頻率至測量頻率並量測.

5.6.3 實驗方法方塊圖

a)



b)

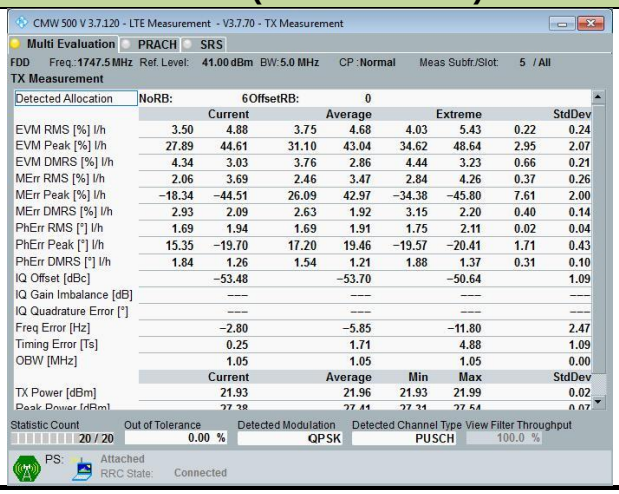


5.6.4 實驗數據

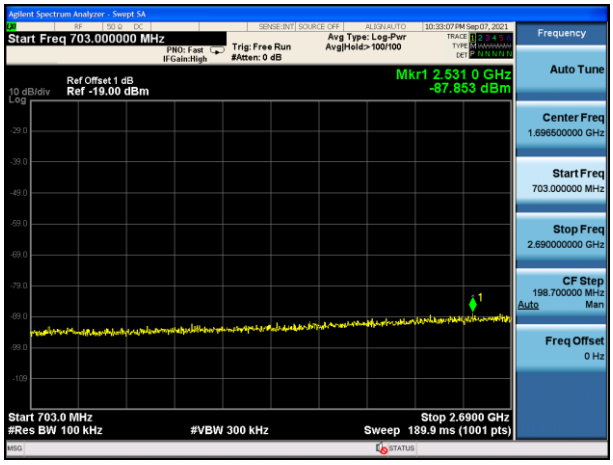
a)

Band 3 (1800MHz)											
測試電壓		溫度	測試結果(Hz)				測試結果(ppm)				合格標準
			0min	2min	5min	10min	0min	2min	5min	10min	
正常電壓	DC 3.96V	25℃	-10.56	-11.70	-10.16	-10.79	0.006	0.007	0.006	0.006	0.1ppm (174.75Hz)
低壓	DC 3.42V	-10℃	-9.20	-10.04	-9.56	-10.84	0.005	0.006	0.005	0.006	
高壓	DC 3.96V		-11.24	-9.66	-8.18	-9.37	0.006	0.006	0.005	0.005	
低壓	DC 3.42V	55℃	-11.80	-7.15	-9.50	-7.17	0.007	0.004	0.005	0.004	
高壓	DC 3.96V		-10.40	-9.61	-10.10	-9.60	0.006	0.005	0.006	0.005	

Band 3 (FDD 1800MHz)



b) 電源電壓低於關機電壓(DC 2.4V)時，終端設備無發射之結果



5.7 電波功率密度

5.7.1 合格標準

電波功率密度最大值(本項測試適用於移動式行動臺設備)：

700MHz 頻段為 0.35mW/cm²；

900MHz 頻段為 0.45mW/cm²；

1800MHz 頻段為 0.9mW/cm²。

5.7.2 計算方式

$$Pd = (Pout \times G)/(4 \times \pi \times r^2)$$

Pd = 功率密度 (mW/cm²)
Pout = 輸出功率 (mW)
G = 天線增益 (linear)
Π = 3.1416
r = 量測距離20公分，或以設備廠商宣告設備天線與附近人體可活動範圍之距離。

5.7.3 計算結果

Frequency (MHz)	EIRP (dBm)	Level (mW/cm²)	Limit (mW/cm²)
1800	26.91	0.0977	0.90

The End