

低功率射頻器材 檢驗報告

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受檢設備名稱	Cockpit Control Unit
廠牌	DENSO
型號	DNNS124
檢驗依據標準	國家通訊傳播委員會低功率射頻器材 技術規範 (LP0002)
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實驗室認可編號及範圍: 0371 (9 kHz to 325 GHz)

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測試報告記錄

申請廠商：台灣電綜股份有限公司
 製造廠商：DENSO CORPORATION
 廠牌：DENSO
 品名：Cockpit Control Unit
 型號：DNNS124
 檢驗依據標準：國家通訊傳播委員會低功率射頻器材技術規範(LP0002)
 規範修訂日期109年07月01日
 發射功率(電場強度)：24.73 dBm (發射功率)
 工作頻率及調變方式：2412 ~ 2462 MHz / DSSS + OFDM
 天線規格：內置固定式天線

備註：1. 本試驗報告中是描述本實驗室以最佳的知識和能力進行試驗，我們的責任僅限於合理與謹慎的試驗，並非確保賣方之法律和/或合同的義務。

2. 本符合性試驗係依據適當的標準及試驗樣品進行測試，其中量測不確定度可符合標準CISPR16-4-2 及 ETSI TR 100 028要求，則不列入測試結果考量。本試驗報告的結果僅與測試項目有關，且僅針對受試驗之樣品負責，無法確保產品生產過程中的品質與性能要求。

3. 非經本中心同意，檢驗報告不得摘錄複印使用。（全部複製除外）

項次	測試項目	適用規範	量測設備	測試結果	結果判定
1	電源線傳導干擾之要求	低功率射頻器材技術規範 3.3節	----	----	因使用直流電源故無需測試
2	天線增益之要求	低功率射頻器材技術規範 4.10.1.3	----	請參閱5.2節	----
3	發射頻寬之要求	低功率射頻器材技術規範 4.10.1.6節之(2)(A)	請參閱6.3節	請參閱6.4節	符合
4	峰值輸出功率之要求	低功率射頻器材技術規範 4.10.1.2節之(1)(C)	請參閱7.3節	請參閱7.4節	符合
5	功率密度之要求	低功率射頻器材技術規範 4.10.1.6節之(2)(B)	請參閱8.3節	請參閱8.4節	符合
6	混附波發射限制之要求	低功率射頻器材技術規範 4.10.1.5	請參閱9.3節	請參閱9.4節	符合
7	場強輻射之要求	低功率射頻器材技術規範 4.10.1.5	請參閱10.3節	請參閱10.5節	符合

報告簽署人：鄭景文
110.07.21

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110.07.21

量測員：郭世昌
110.07.21

1 一般資料

1.1 產品描述

- a) 產品型態 : Cockpit Control Unit
- b) 商 標 : DENSO
- c) 產品型號 : DNNS124
- d) 供應電源 : DC 12V

備註：本產品內含WLAN及Bluetooth無線技術，WLAN部份包含DTS與UNII頻帶。本報告僅記錄 DTS 部份，Bluetooth 部份請見ETC報告編號:21-05-MAW-008-01，UNII Band 1 (5180 MHz 至 5240 MHz)部份請見ETC報告編號:21-05-MAW-008-03，UNII Band 4 (5725至 5850 MHz) 部份請見ETC報告編號:21-05-MAW-008-04。

1.2 產品特性

此裝置為 Cockpit Control Unit，內含之WLAN其發射頻率落於 2412 至 2462 MHz頻段分為 11 個頻道，採用 IEEE 802.11b/g/n HT20 直接序列展頻調變技術，最高資料傳送速度為 135 Mbps，調變方式為 DSSS (IEEE 802.11b)：DBPSK，DQPSK，CCK 以及 OFDM (IEEE 802.11g/n HT20/40)：BPSK，QPSK，16QAM，64QAM。其應用為區域網路無線傳輸。主波發射功率為 24.73 dBm，即為 297.17 mW，其頻道對應頻率如下：

頻道	對應頻率(MHz)	頻道	對應頻率(MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437		

1.3 測試方法之依據

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器材技術規範以及參考IEEE ANSI、歐盟ETSI EN與美國EIA、FCC 47 CFR PART 2、KDB及ARIB STD-T67 等有關檢驗之規定。

試驗室介紹：財團法人台灣商品檢測驗證中心電磁相容試驗室通過下列評鑑、認可、登錄與相互認可協議：

- ❶ ISO/IEC 17025 : TAF(0371), NVLAP(Lab code: 200133-0), CBTL(TÜ V SÜ D)
- ❷ Recognized : BSMI, NCC, FCC(TW0371, TW1112), ISED(Industry Canada Site # 2949A-2)
- ❸ Filing : VCCI (C-13518, R-13177, G-10098, T-11682)
- ❹ MRA : Australia, New Zealand, Singapore

2 適用規範

2.1 規範要求

(1) 傳導之規定

依據國家通訊傳播委員會低功率射頻器材技術規範之3.3節，以市電為電源之低功率射頻器材，其傳導回電源線上頻率自150KHz~30MHz之射頻電壓(在電源端子每一電源線對接地點)應小於或等於下表所列之限制值。測量時應經過50微亨利及50歐姆之電源線阻抗穩定網路(Line Impedance Stabilization Network; LISN)。頻率重疊處，以較低限制值為準。

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

註:隨頻率之對數遞減

(2) 天線增益之要求

使用數位調變技術之低功率射頻器材，依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.3之規定，

(1)操作於2400 MHz~2483.5 MHz 頻段：

(A)進行固定式點對點操作時，其發射天線之方向性增益超過6 dBi，每超過3 dBi，最大傳導輸出功率限制值應降低1 dB。

(B)天線以多向波束發射方式(含同時發射或循序發射)將訊號導向多個接收機或接收機群組時，應符合下列規定：

(a)非同時發射多向波束者，所有載波或頻道傳輸至所有天線陣列或陣列群之總和傳導輸出功率應符合4.10.1.2 之功率限制值。如天線/天線陣列群之方向性增益超過6 dBi，每超過3 dBi，總和傳導輸出功率限制值應降低1 dB。方向性增益值應計算如下：

(i)方向性增益值= $10\log(\text{天線陣列之單元數目})$ +各單元中最高之方向性增益值。

(ii)天線陣列間之遮蔽效應或波束干涉損失能充分佐證時，方向性增益得低於(i)計算數值。

(b)同時發射多向波束於相同或不同頻道者，其每一波束功率應符合(a)之功率限制值。如發射波束有重疊現象，功率應降低，以確保總和傳導輸出功率符合(a)之限制值。同時發射的所有波束總和傳導輸出功率不大於(a)總和傳導輸出功率限制值加8 dB。方向性增益值計算同(a)。

(c)發射機之天線具備單向波束功能者，應符合(1)(A)及(3)後段之規定。

(3)除(1)及(2)外，使用超過6 dBi 方向增益之發射天線時，應依超過6 dBi天線方向增益的dBi 總量，等量減少最大傳導輸出功率限制值。

(3) 頻寬之要求

對使用數位調變技術之低功率發射機，依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.6節之(2)(A)規定，6dB頻寬至少應有500 kHz。

(4) 峰值傳導輸出功率之要求

依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.2節之(1)(C)規定，數位調變技術系統：1 W(含) 以下。且其所使用天線之增益不可大於6 dBi，若使用大於6dBi增益之天線，則其峰值傳導輸出功率相對需衰減天線增益所增加之量(單位為dB)。放寬之條件請參考天線增益之要求。

(5) 功率密度之要求

依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.6節之(2)(B)規定，對數位調變技術系統，在使用頻率範圍之任一3 kHz頻寬內，由發射機傳導至天線之功率頻譜密度在任意傳輸期間內，皆小於或等於8毫分貝(dBm)，且應依4.10.1.3之方式降低功率頻譜密度限制值。

(6) 帶外發射限制之要求

帶外發射限制：操作頻帶範圍外之任意100 kHz 內，發射機所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之100 kHz 內的射頻功率，其衰減值限制如下：

- (1)輸出功率以附件二之峰值輸出功率方式測量者，至少須衰減20 dB，可使用射頻傳導或輻射方式測量。
- (2)輸出功率以4.10.1.2(1)(C)之最大傳導輸出功率測量方式者，至少須衰減30 dB。

此外，落於3.5 禁用頻段之輻射發射，應符合3.6 之規定。

(7) 輻射之規定

依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.5之要求，落於3.5節禁用頻段之輻射發射，應符合3.6節之規定：

頻率(f) MHz	電場強度 (微伏特/公尺， μ V/m)	測距 (公尺)
$0.009 \leq f \leq 0.490$	$2400/f(\text{kHz})$	300
$0.490 < f \leq 1.705$	$24000/f(\text{kHz})$	30
$1.705 < f < 30$	30	30
$30 \leq f \leq 88$	100	3
$88 < f \leq 216$	150	3
$216 < f \leq 960$	200	3
$960 < f$	500	3

2.2 限制使用之頻帶

頻率(MHz)	頻率(MHz)
0.090~0.110	1660.0~1785.0
0.490~0.510	1805.0~1880.0
2.172~2.198	1885.0~1900.0
3.013~3.033	1905.0~1985.0
4.115~4.198	2010.0~2025.0
5.670~5.690	2110.0~2170.0
6.200~6.300	2200.0~2300.0
8.230~8.400	2310.0~2390.0
12.265~12.600	2483.5~2900.0
13.340~13.430	3260.0~3267.0
14.965~15.020	3332.0~3339.0
16.700~16.755	3345.8~3358.0
19.965~20.020	3500.0~4400.0
25.500~25.700	4500.0~5250.0
37.475~38.275	5350.0~5460.0
73.500~75.400	7250.0~7750.0
108.00~138.00	8025.0~8500.0
149.90~150.05	9000.0~9200.0
156.70~156.90	9300.0~9500.0
162.01~167.17	10600~12700
167.72~173.20	13250~13400
240.00~285.00	14470~14500
322.00~335.40	15350~16200
399.90~410.00	17700~21400
485.00~510.00	22010~23120
608.00~614.00	23600~24000
703.00~748.00	31200~31800
758.00~803.00	36430~36500
825.00~915.00	38600 以上
930.00~1240.0	
1300.0~1427.0	
1435.0~1626.5	

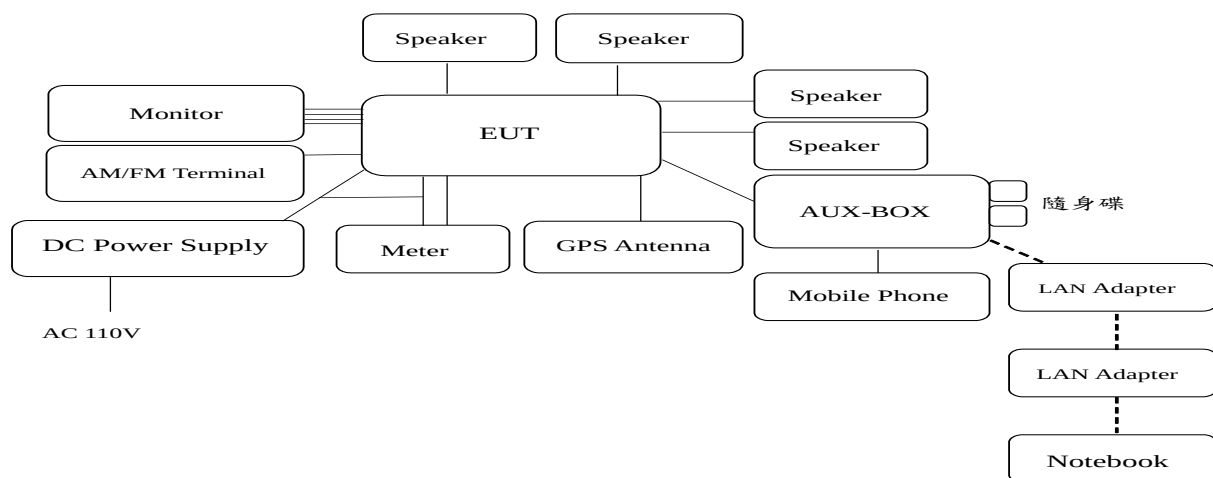
3 受測裝置之系統說明

3.1 受測裝置

裝置名稱	廠 牌	型 號	纜線說明
* Cockpit Control Unit	DENSO	DNNS124	----
Monitor	DENSO	86213XC60A	非隔離電源線 0.2m 1 隔離信號線 0.2m * 3
AM/FM Terminal	N/A	N/A	隔離信號線 2.0m * 1
AUX-BOX	SUBARU	86257AN00A	非隔離信號線 0.4m * 1 非隔離信號線 1.0m * 1
Meter	DENSO	85002AN02A	非隔離電源線 1.2m* 1 非隔離信號線 3.0m * 1 非隔離信號線 1.8m * 1
GPS Antenna	N/A	N/A	隔離信號線0.7m * 1
Speaker	N/A	N/A	非隔離信號線 1.8m * 1
Speaker	N/A	N/A	非隔離信號線 1.8m * 1
Speaker	N/A	N/A	非隔離信號線 1.8m * 1
Speaker	N/A	N/A	非隔離信號線 1.8m * 1
DC Power Supply	GW Instek	GPS-1850D	非隔離電源線 1.8m * 1 非隔離電源線 3.6m * 1
隨身碟	Transcend	N/A	---
隨身碟	Kingston	100G3	---
Mobile Phone	mI	M1806E7TH	非隔離信號線 1.2m * 1
LAN Adapter	BUFFALO	LUA3-U2-ATX	非隔離信號線 1.0m * 1(LAN)
LAN Adapter	BUFFALO	LUA3-U2-ATX	----
Notebook	ASUS	P45V	---

註: 1.標記“*”表欲申請之受測物及配件。

2.測試配置：



3. 測試模式:

3.1 IEEE 802.11b, g and IEEE 802.11n HT20 mode:

測試頻道如下:

Channel	Frequency (MHz)
Low = 1	2412
Middle = 6	2437
High = 11	2462

IEEE 802.11b mode: 5.5 Mbps data rate is the worse case for full testing.

IEEE 802.11g mode: 24 Mbps data rate is the worse case for full testing.

IEEE 802.11n HT20 mode: MCS6 data rate is the worse case for full testing.

4. 軟體設定:

Modulation	Test Channel	Power Setting
IEEE 802.11b	L	14
	M	14
	H	14
IEEE 802.11g	L	11
	M	11
	H	11
IEEE 802.11n HT20	L	11
	M	11
	H	11

3.2 測試模式說明

3.2.1 調變方式及模式

Test Mode	Modulation	Note
A	IEEE 802.11b	-
B	IEEE 802.11g	-
C	IEEE 802.11n HT20	-

Normal Mode:

Test Mode	Note
D	BT Link+AUX Playing
E	WiFi Link+USB Playing

Mode	IEEE 802.11b/g/n HT20
Test Channel	Frequency (MHz)
Channel Low (L)	2412
Channel Mid (M)	2437
Channel High (H)	2462

3.2.2 測試項目及模式

Item	測試項目	測試模式(註1)	測試頻道
1	電源線傳導干擾之量測	-	-
2	發射頻寬之量測	A, B, C	L, M, H
3	峰值輸出功率之量測	A, B, C	L, M, H
4	功率密度之量測	A, B, C	L, M, H
5	混附波發射限制之量測	A, B, C	L, M, H
6	場強輻射之量測(主諧波)	A, B, C	L, M, H
6.1	場強輻射之量測(1GHz以下)	C, D, E	M (Worse Case)
6.2	場強輻射之量測(1GHz以上)	C, D, E	L, M, H

- 註: 1. 各調變預掃時無差異，擇一作最終測試並記錄之。
2. 量測場強輻射時，若為手持式或穿戴式之裝置，應對其三個正交軸(X、Y、Z)的方位評估測試，並分別測試以找出最大輻射電場強度軸向，以最差軸模式測試，並記錄其值與軸向放置。
3. 本產品內含雙天線，802.11n 模式下有 MIMO 之功能，故對兩隻天線分別進行測試再加總並記錄之。802.11b/g 無 MIMO 之功能，在正常模式下僅使用 Antenna1，故僅針對 Antenna1 進行量測並記錄。
4. 依 NCC 74 次一致性會議：審驗時不具一般正常使用模式者，得不包括一般正常使用模式。

3.2.3 測試場地

項次	測 試 場 地
1	☒ RE02 — EMC B1 — N2 第一大樓地下二樓 3m 半電波暗室(N2)
2	☐ CE04 — 10M 2F 第三大樓二樓傳導測試室(10m 大樓)
3	☒ RF — Cond01 第一大樓地下一樓直量測試區
4	☐ RF — Cond02 第一大樓地下二樓直量測試區

File: 21-05-MAW-008_b_Ant1

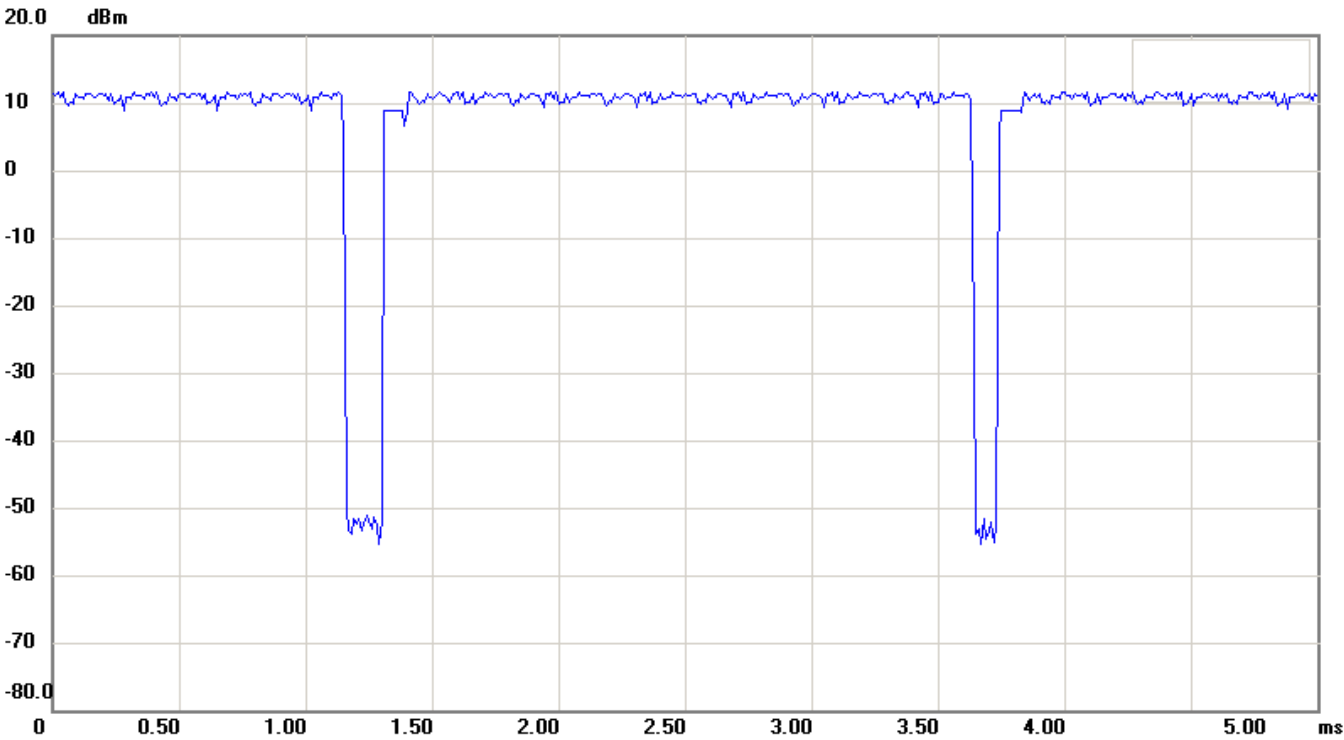
#13

Date: 2021/6/30

Temperature: 25 °C

Site: RF-Cond01

Humidity: 54 %



Condition:	RF Conducted	
EUT:	Cockpit Control Unit	Sweep Time: 5ms Att.: 20dB
Model:	DNNS124	RBW: 1000 KHz VBW: 1000 KHz
Test Mode:	DTS	Operator: Phillip
Note:	NCC_LP0002_802.11b Duty Cycle-2 (Duty = 95.5%)	

IEEE 802.11g

File: 21-05-MAW-008_g_Ant1

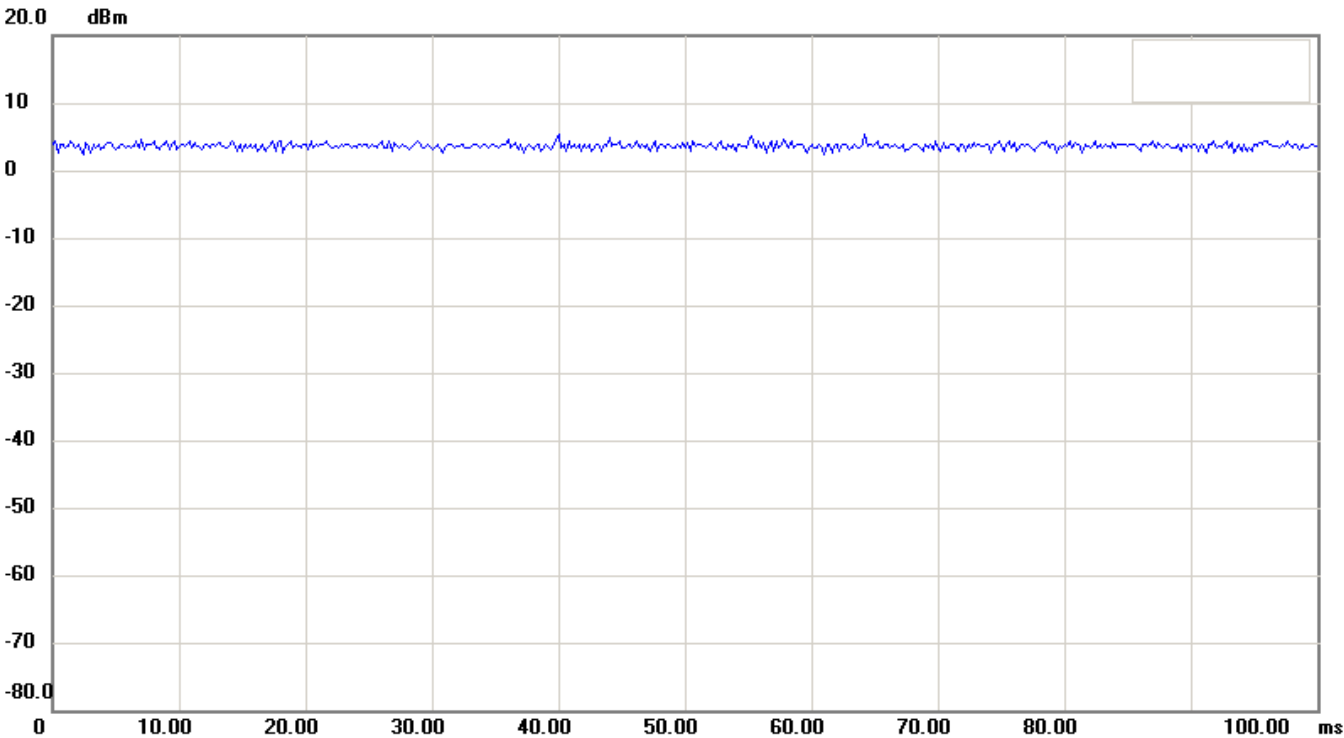
#12

Date: 2021/6/30

Temperature: 25 °C

Site: RF-Cond01

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11g Duty Cycle-1

RF Conducted

Sweep Time: 100ms

RBW: 1000 KHz

Operator:

Att.: 20dB

VBW: 1000 KHz

Phillip

File: 21-05-MAW-008_g_Ant1

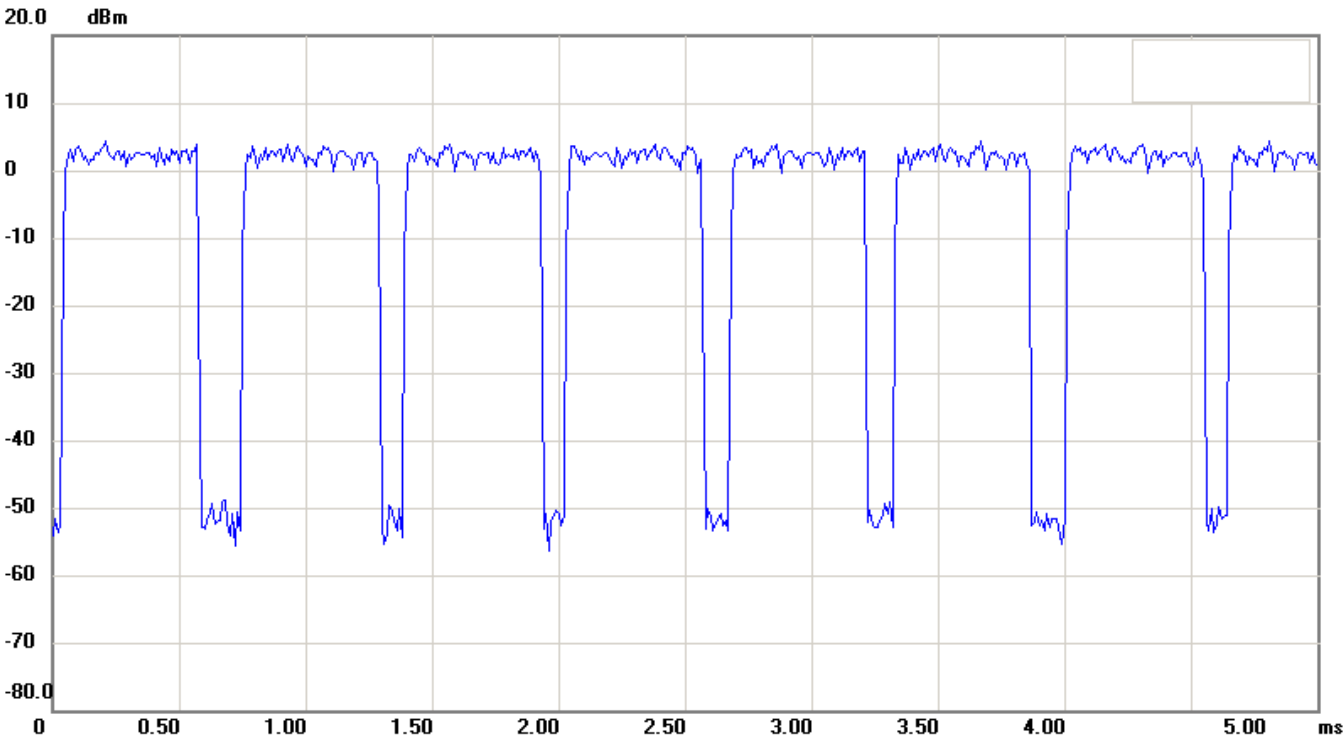
#13

Date: 2021/6/30

Temperature: 25 ℃

Site: RF-Cond01

Humidity: 54 %



Condition:	RF Conducted	
EUT:	Cockpit Control Unit	Sweep Time: 5ms Att.: 20dB
Model:	DNNS124	RBW: 1000 KHz VBW: 1000 KHz
Test Mode:	DTS	Operator: Phillip
Note:	NCC_LP0002_802.11g Duty Cycle-2 (Duty=83.1%)	

IEEE 802.11n HT20

File: 21-05-MAW-008_n20_Ant1

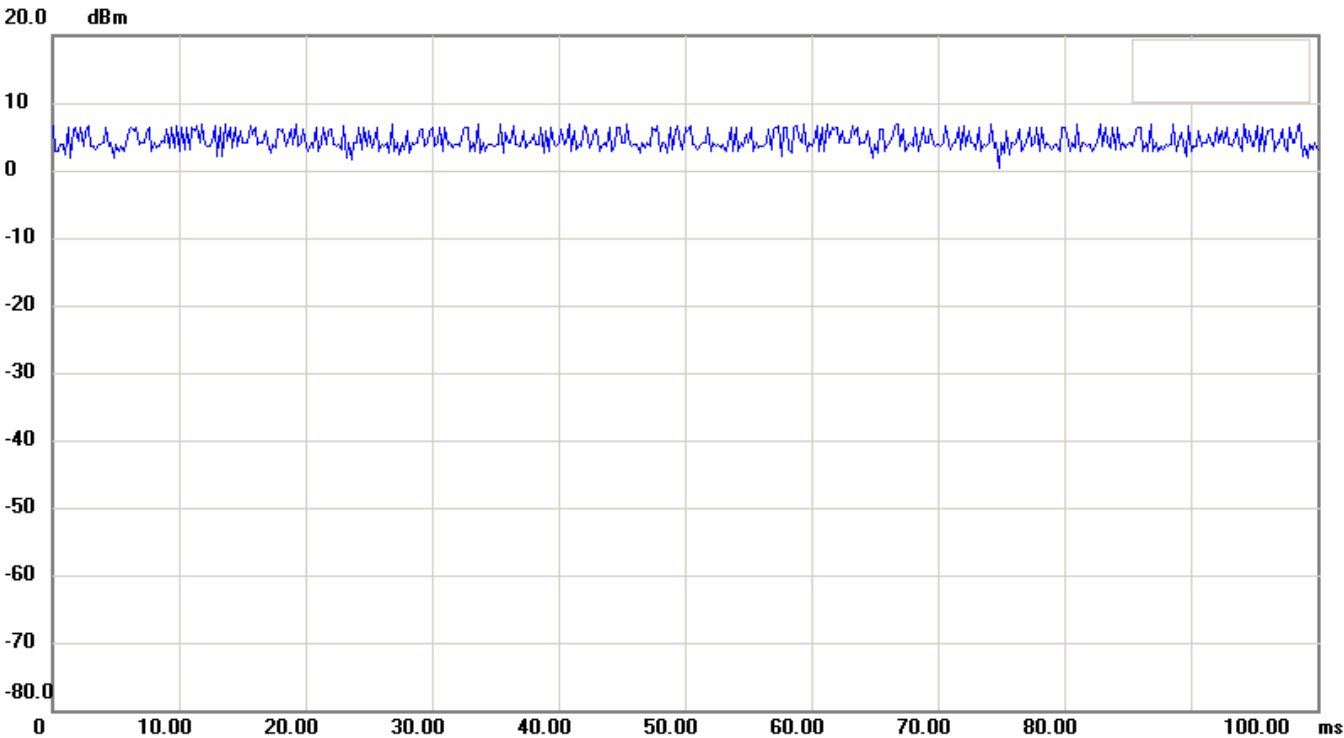
#12

Date: 2021/6/30

Temperature: 25 °C

Site: RF-Cond01

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n20 Duty Cycle-1

RF Conducted

Sweep Time: 100ms

RBW: 1000 KHz

Operator:

Att.: 20dB

VBW: 1000 KHz

Phillip

File: 21-05-MAW-008_n20_Ant1

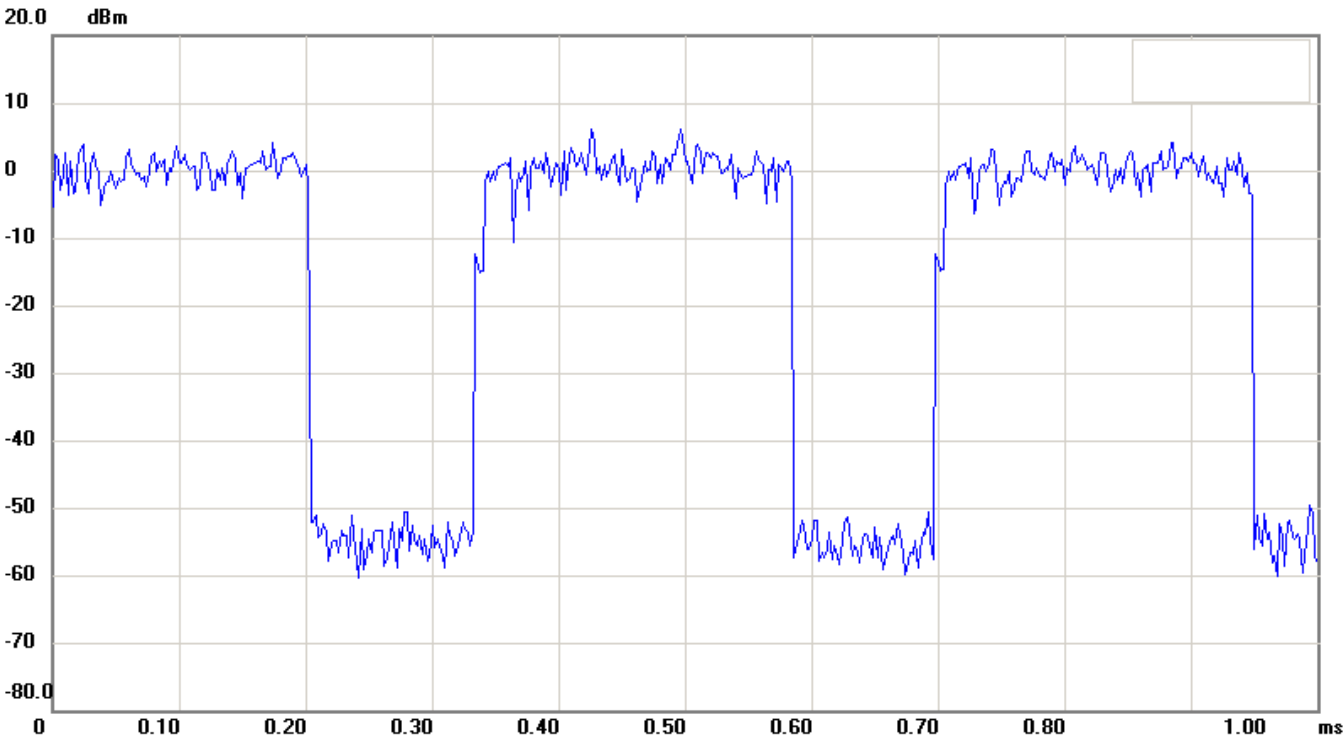
#14

Date: 2021/6/30

Temperature: 25 °C

Site: RF-Cond01

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n20 Duty Cycle-2 (Duty=68.7%)

RF Conducted

Sweep Time: 1ms

RBW: 1000 KHz

Operator:

Att.: 20dB

VBW: 1000 KHz

Phillip

4 電源線傳導干擾之量測

本產品僅使用電池供電，使用電源為直流電源，故無須對其電源傳導干擾部份進行測試。

5 天線增益之要求

5.1 適用標準

使用數位調變技術之低功率射頻器材，依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.3之規定，

(1)操作於2400 MHz~2483.5 MHz 頻段：

(A)進行固定式點對點操作時，其發射天線之方向性增益超過6 dBi，每超過3 dBi，最大傳導輸出功率限制值應降低1 dB。

(B)天線以多向波束發射方式(含同時發射或循序發射)將訊號導向多個接收機或接收機群組時，應符合下列規定：

(a)非同時發射多向波束者，所有載波或頻道傳輸至所有天線陣列或陣列群之總和傳導輸出功率應符合4.10.1.2 之功率限制值。如天線/天線陣列群之方向性增益超過6 dBi，每超過3 dBi，總和傳導輸出功率限制值應降低1 dB。方向性增益值應計算如下：

(i)方向性增益值= $10\log(\text{天線陣列之單元數目})$ +各單元中最高之方向性增益值。

(ii)天線陣列間之遮蔽效應或波束干涉損失能充分佐證時，方向性增益得低於(i)計算數值。

(b)同時發射多向波束於相同或不同頻道者，其每一波束功率應符合(a)之功率限制值。如發射波束有重疊現象，功率應降低，以確保總和傳導輸出功率符合(a)之限制值。同時發射的所有波束總和傳導輸出功率不大於(a) 總和傳導輸出功率限制值加8 dB。方向性增益值計算同(a)。

(c)發射機之天線具備單向波束功能者，應符合(1)(A)及(3)後段之規定。

(3)除(1)及(2)外，使用超過6 dBi 方向增益之發射天線時，應依超過6 dBi天線方向增益的dBi 總量，等量減少最大傳導輸出功率限制值。

5.2 天線增益

此裝置使用內接固定式天線連接於主體內 PCB 板上，Antenna 1天線增益 5.56 dBi，Antenna 2天線增益 -2.1 dBi。

操作於MIMO模式下，Antenna1(CHAIN 0)+Antenna2(CHAIN 1) = 5.56 dBi，天線之方向性增益低於 6 dBi。

5.3 結果判定

CHAIN 0 及 CHAIN 1 之方向性增益皆未超過 6 dBi，因此無需減少峰值輸出功率及功率密度之限制值。

操作在MIMO模式下，CHAIN 0 + CHAIN 1 之天線增益為 5.56 dBi 低於6dBi，因此無需減少峰值輸出功率及功率密度之限制值。

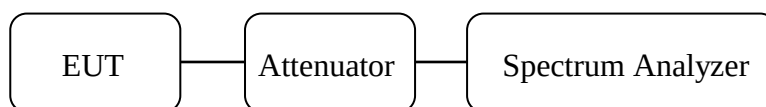
6 發射頻寬之要求

6.1 適用標準

對使用直接序列技術之低功率發射機，依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.6節之(2)(A)之規定，6dB頻寬至少應有500 kHz。

6.2 測試配置

圖 1：發射頻寬之測試配置



6.3 發射頻寬之量測儀器

儀器名稱	廠 牌	型 號
Spectrum Analyzer	KEYSIGHT	N9030B
Spectrum Analyzer	R&S	FSV40
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

6.4 量測結果

測試工程師: 羅世勇

6.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 30, 2021

環境溫度 : 25°C

環境濕度: 54%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	8	500	Page 23
M	8	500	Page 24
H	8.3	500	Page 25

註：繪圖資料請參考第 23-25 頁。

File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

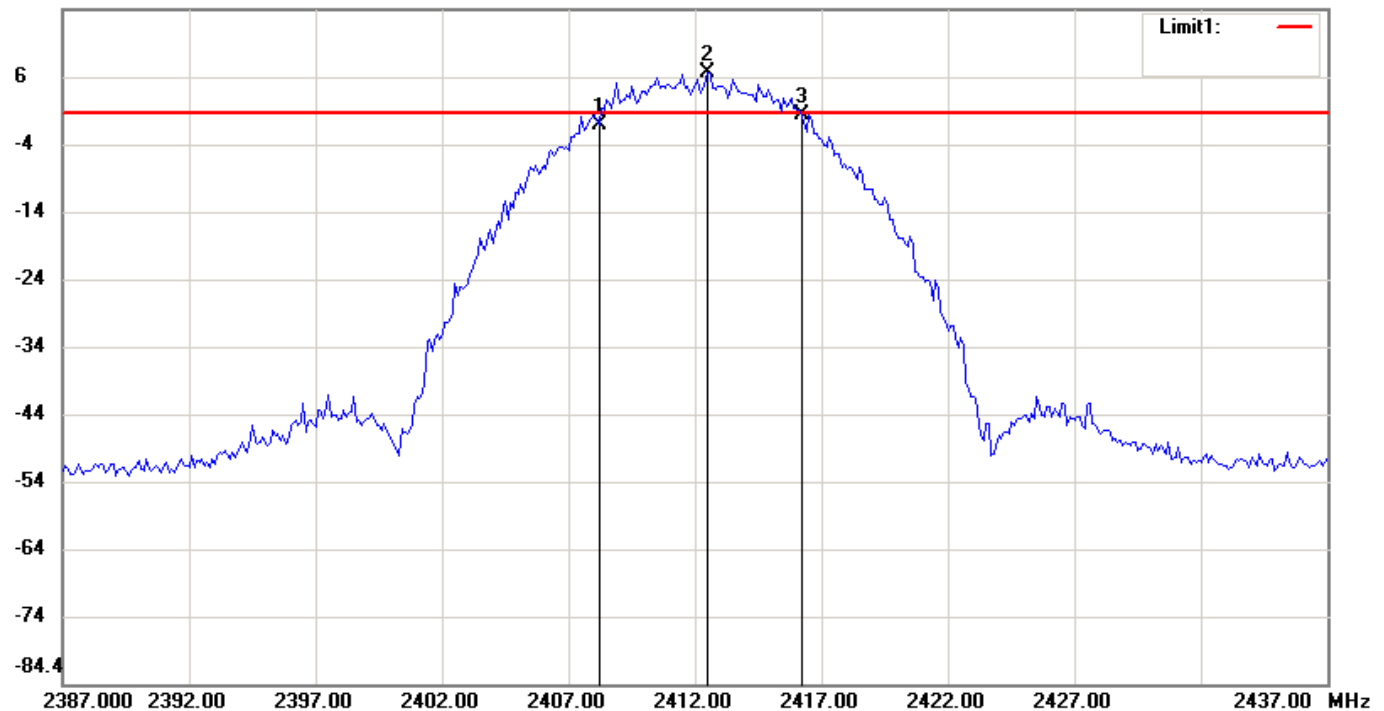
#1

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

15.6 dBm



Condition: 0.3dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 01-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2408.20000	-1.47
2	2412.50000	6.30
3	2416.20000	0.06

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	8	1.53

File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

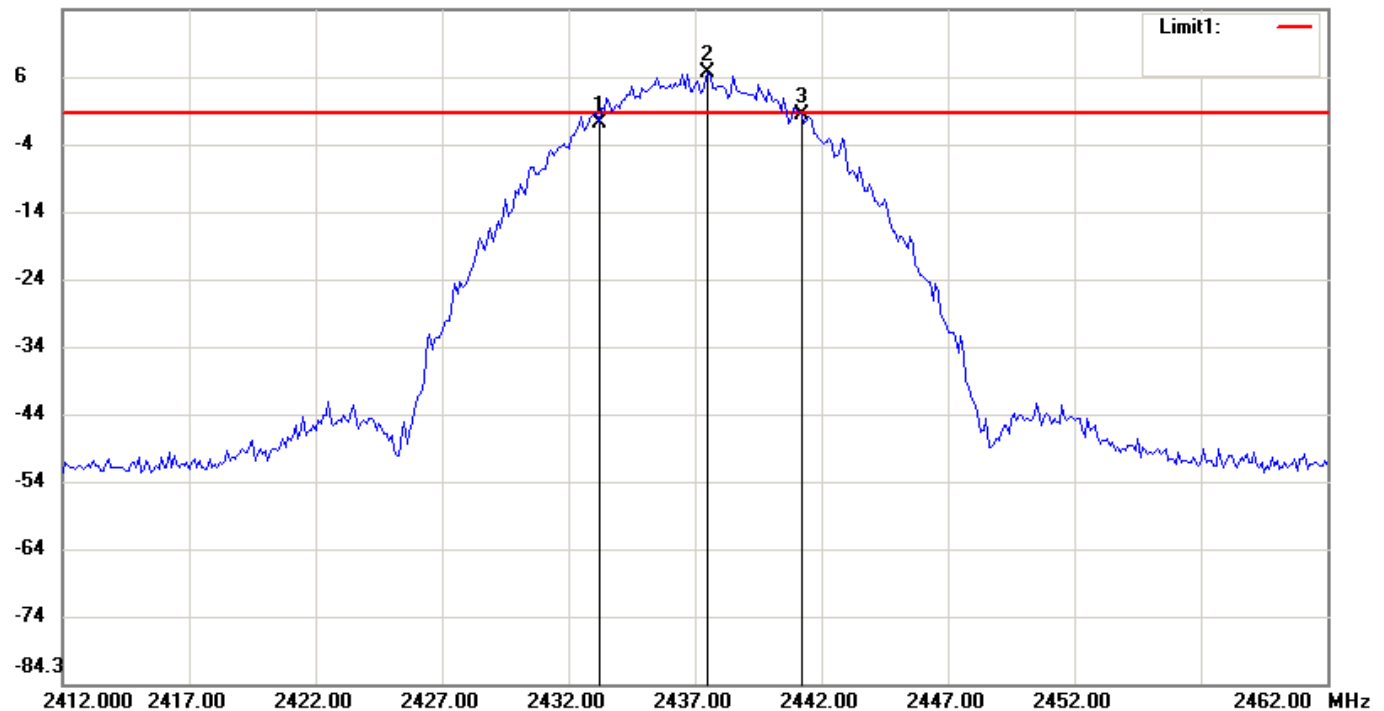
#5

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

15.7 dBm



Condition: 0.33dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 06-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2433.20000	-1.32
2	2437.50000	6.33
3	2441.20000	-0.01

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	8	1.31

File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

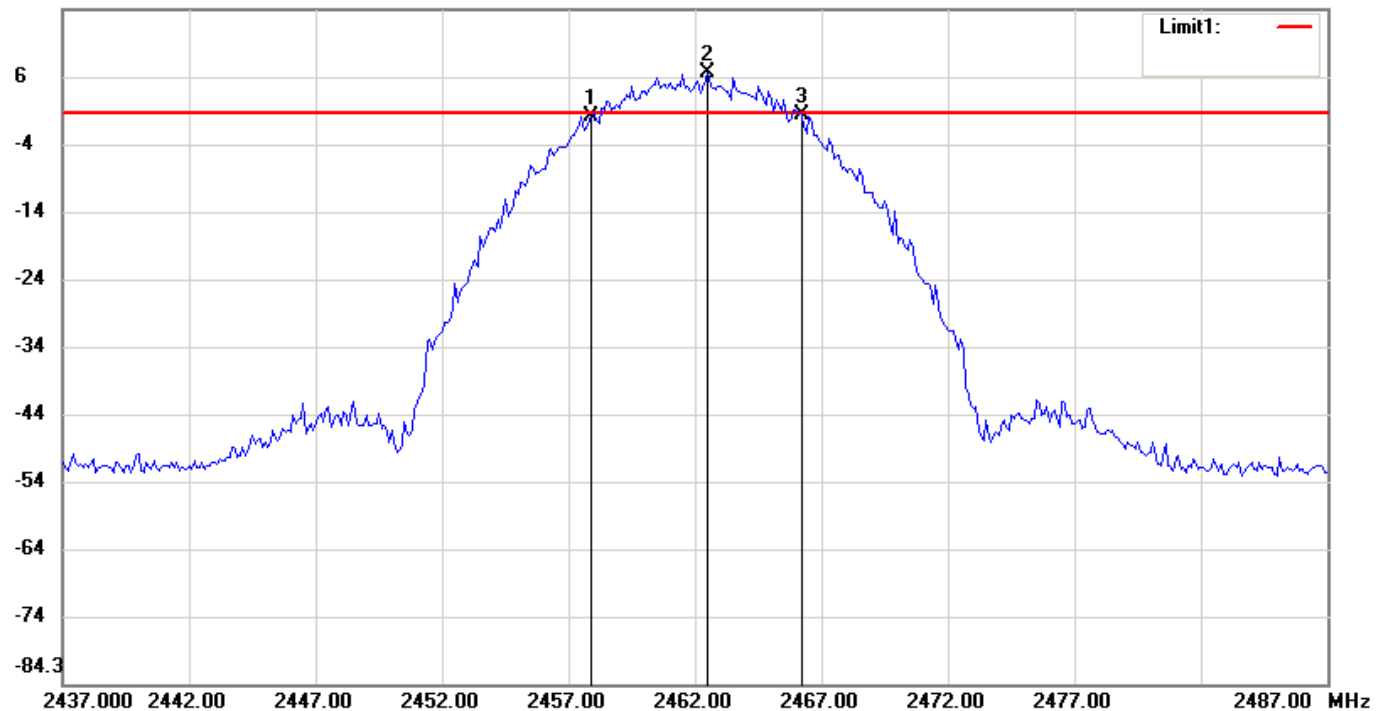
#8

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

15.7 dBm



Condition: 0.21dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 11-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2457.90000	-0.19
2	2462.50000	6.21
3	2466.20000	-0.02

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	8.3	0.17

6.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	16.6	500	Page 27
M	16.6	500	Page 28
H	16.6	500	Page 29

註：繪圖資料請參考第 27-29 頁。

File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

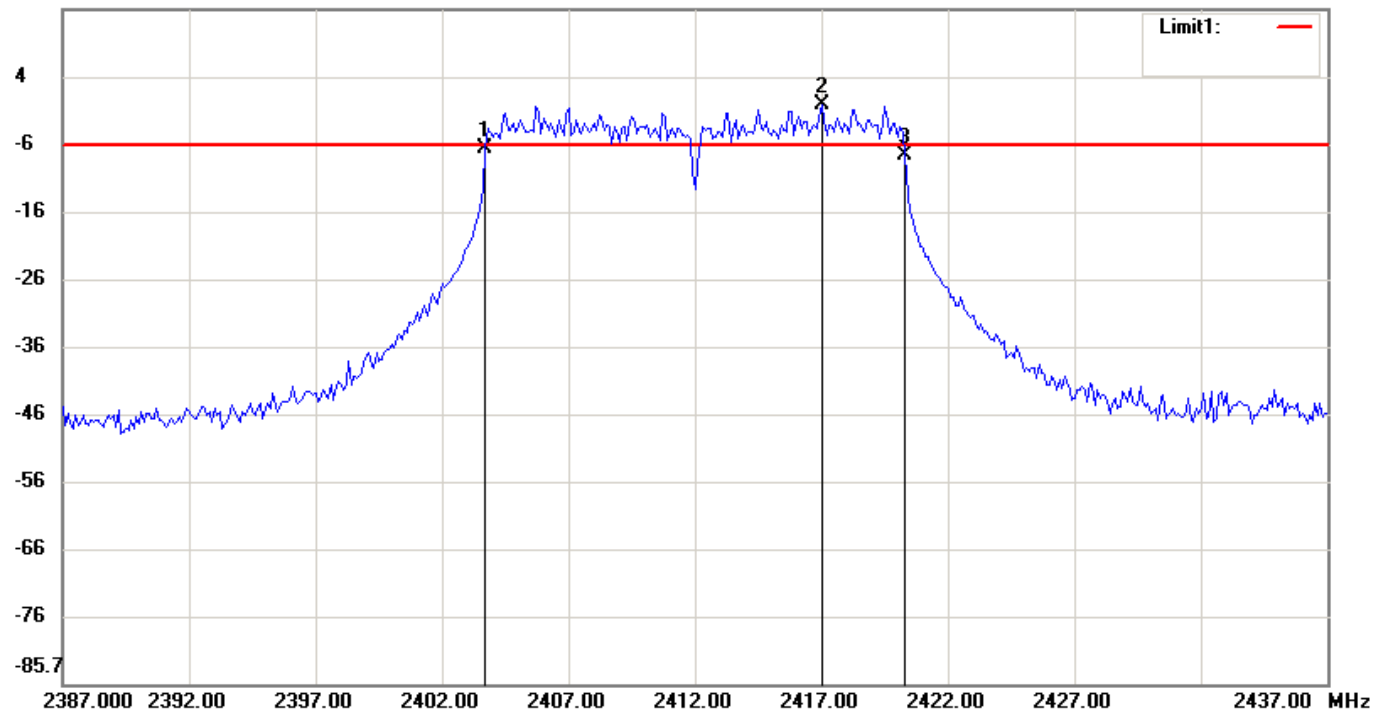
#1

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

14.3 dBm



Condition: -5.9dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 01-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2403.70000	-6.26
2	2417.00000	0.10
3	2420.30000	-7.28

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.6	-1.02

File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

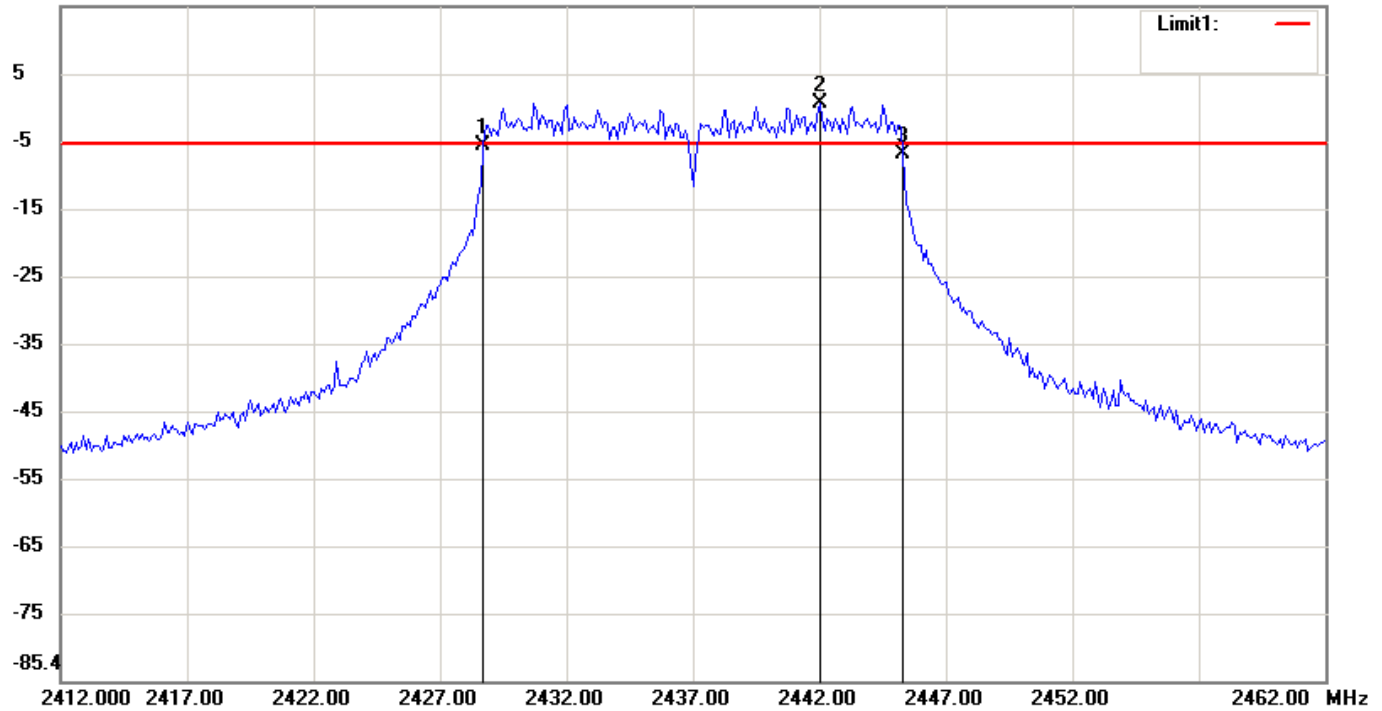
#5

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

14.6 dBm



Condition: -5.81dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 06-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2428.70000	-5.98
2	2442.00000	0.19
3	2445.30000	-7.26

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.6	-1.28

File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

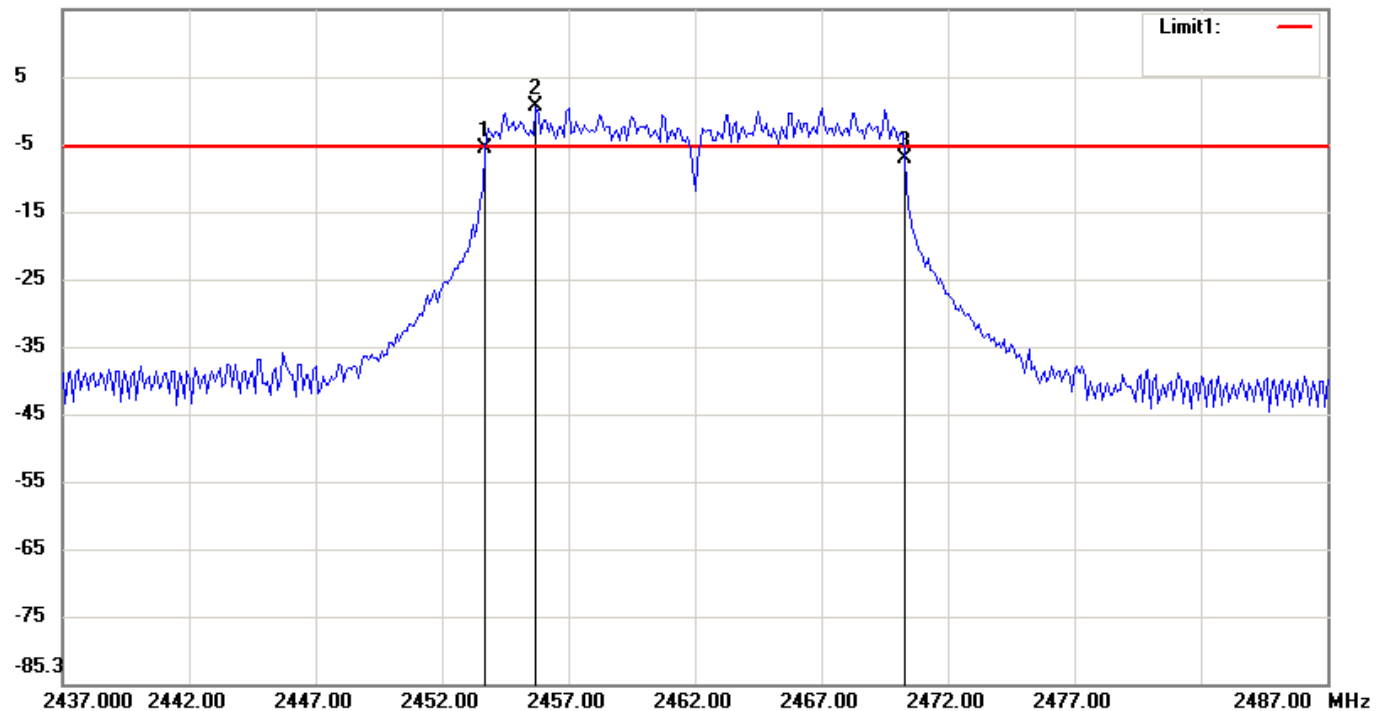
#8

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

14.7 dBm



Condition: -5.81dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 11-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2453.70000	-6.01
2	2455.70000	0.19
3	2470.30000	-7.37

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.6	-1.36

6.4.3 調變技術: IEEE 802.11n HT20

6.4.3.1 CHAIN 0

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	17.9	500	Page 31
M	17.9	500	Page 32
H	17.9	500	Page 33

註：繪圖資料請參考第 31-33 頁。

File: 21-05-MAW-008_n20_Ant1
Site: RF-Cond01

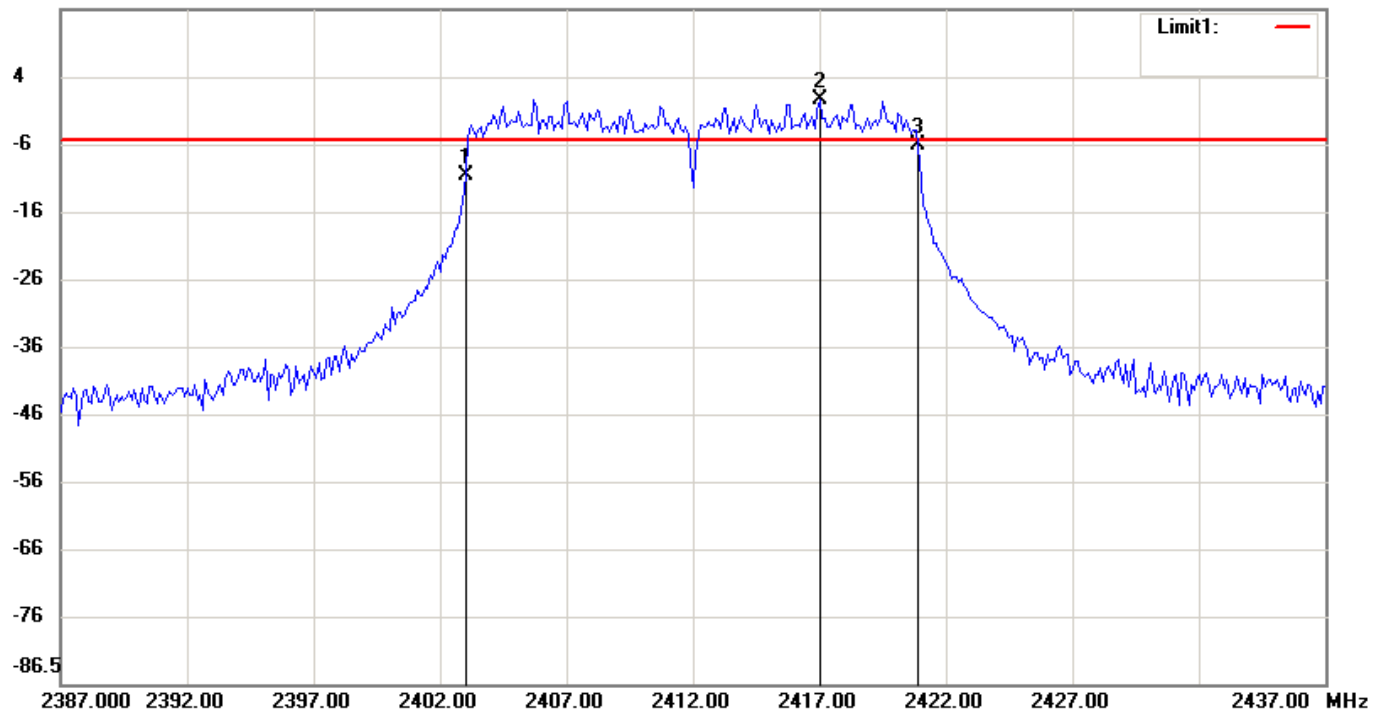
#1

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.5 dBm



Condition: -5.82dBm

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 01-6dB EBW

RF Conducted

Sweep Time: 500ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Phillip

No.	Frequency(MHz)	Level(dBm)
1	2403.00000	-11.19
2	2417.00000	0.18
3	2420.90000	-6.65

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.9	4.54

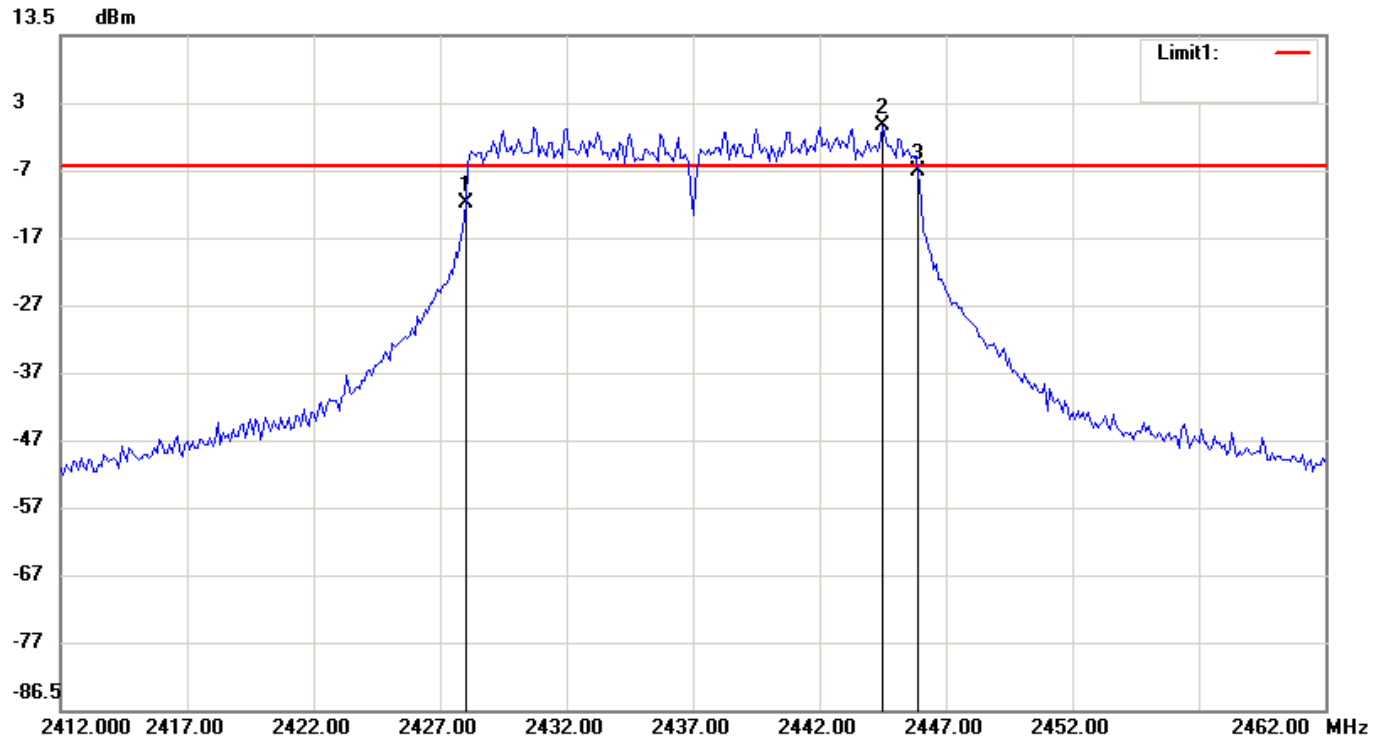
File: 21-05-MAW-008_n20_Ant1
Site: RF-Cond01

#5

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition: -5.92dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11n-HT20 Channel 06-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2428.00000	-11.28
2	2444.50000	0.08
3	2445.90000	-6.65

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.9	4.63

File: 21-05-MAW-008_n20_Ant1
Site: RF-Cond01

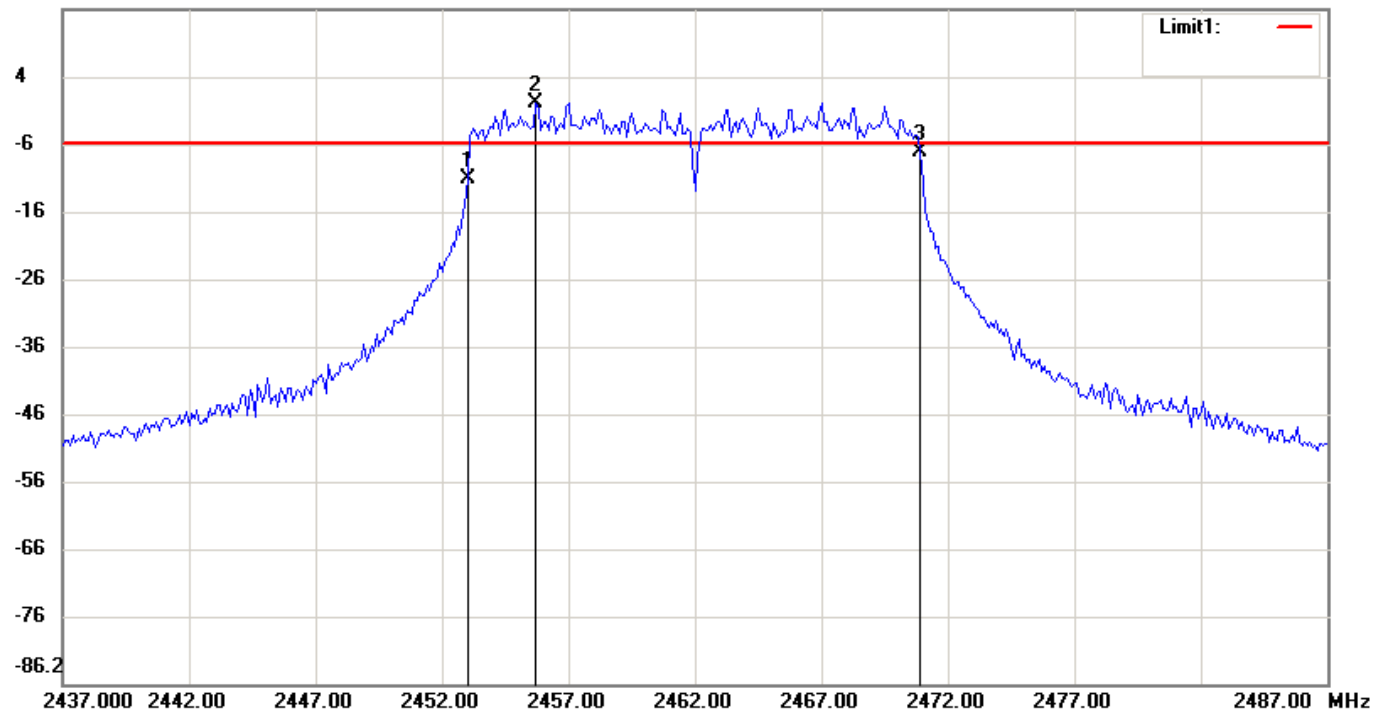
#8

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.8 dBm



Condition: -5.94dBm

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 11-6dB EBW

RF Conducted

Sweep Time: 500ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Phillip

No.	Frequency(MHz)	Level(dBm)
1	2453.00000	-11.35
2	2455.70000	0.06
3	2470.90000	-7.39

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.9	3.96

6.4.3.2 CHAIN 1

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	17.9	500	Page 35
M	17.9	500	Page 36
H	17.9	500	Page 37

註：繪圖資料請參考第 35-37 頁。

6.5 結果判定

高、中、低頻段的6dB頻寬皆大於500KHz。

File: 21-05-MAW-008_n20_Ant2
 Site: RF-Cond01

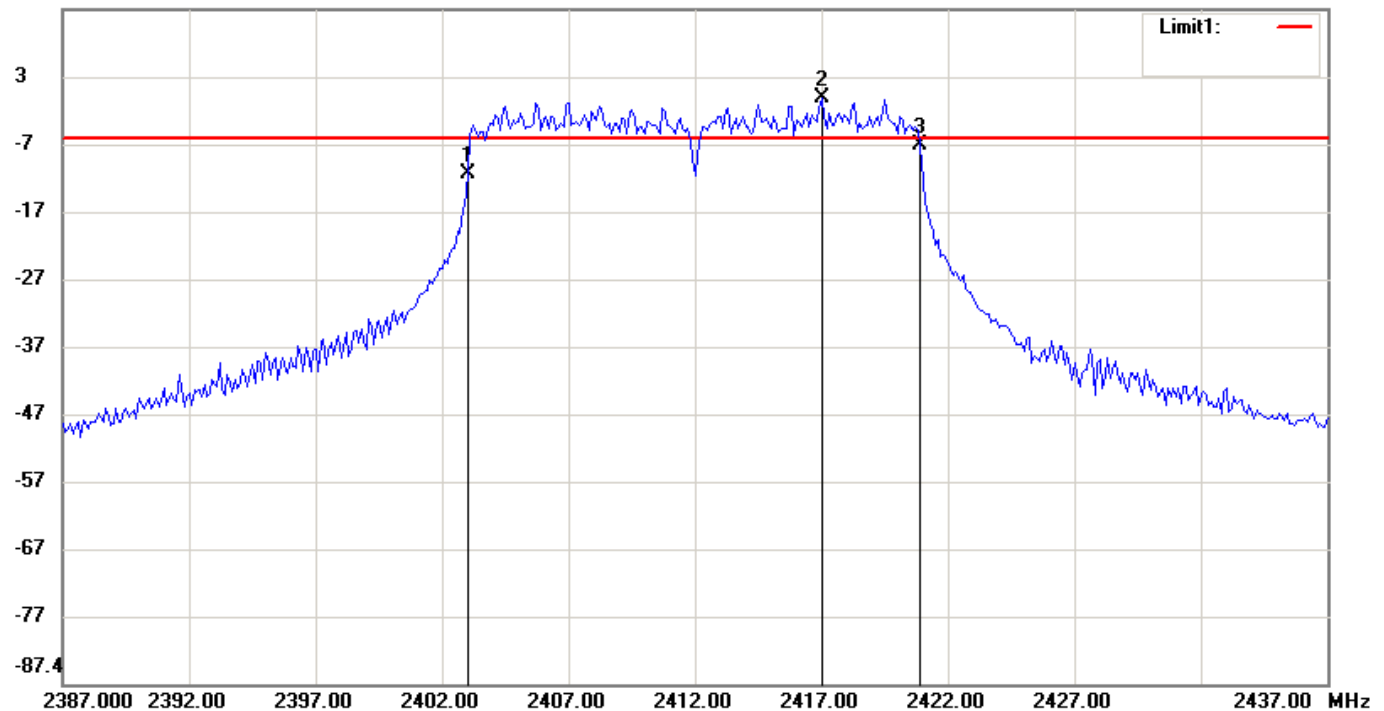
#1

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

12.6 dBm



Condition: -6.46dBm
 EUT: Cockpit Control Unit
 Model: DNNS124
 Test Mode: DTS
 Note: NCC_LP0002_802.11n-HT20 Channel 01-6dB EBW

RF Conducted
 Sweep Time: 500ms Att.: 20dB
 RBW: 100 KHz VBW: 300 KHz
 Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2403.00000	-11.85
2	2417.00000	-0.46
3	2420.90000	-7.48

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.9	4.37

File: 21-05-MAW-008_n20_Ant2
Site: RF-Cond01

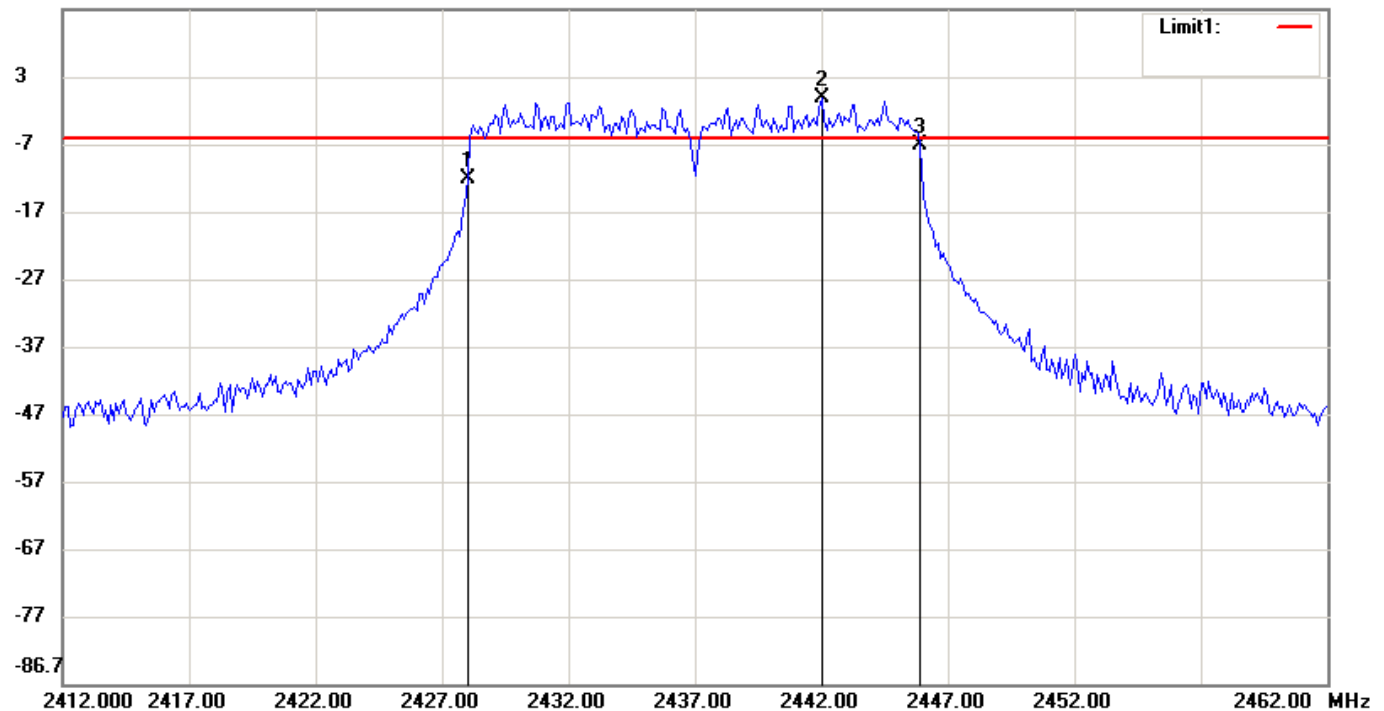
#5

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.3 dBm



Condition: -5.78dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11n-HT20 Channel 06-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2428.00000	-11.84
2	2442.00000	0.22
3	2445.90000	-6.86

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.9	4.98

File: 21-05-MAW-008_n20_Ant2
Site: RF-Cond01

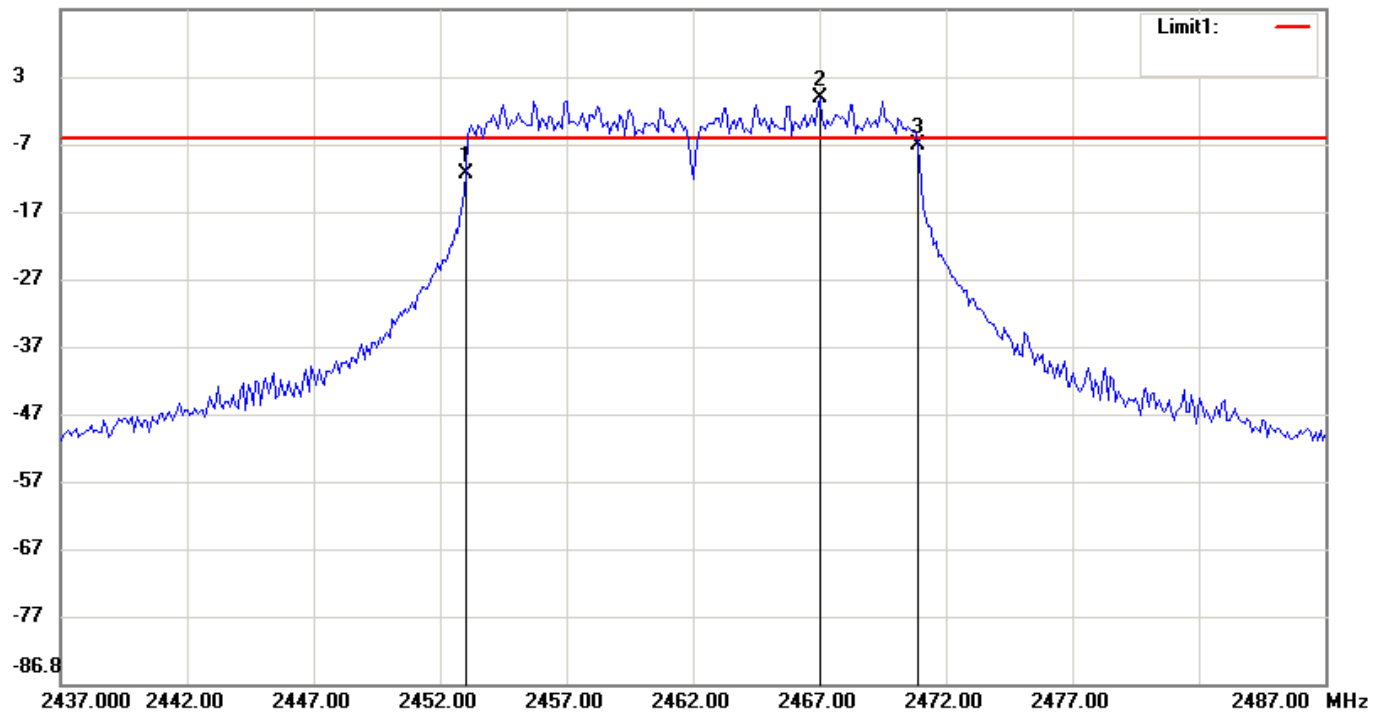
#8

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.2 dBm



Condition: -5.96dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11n-HT20 Channel 11-6dB EBW

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2453.00000	-11.18
2	2467.00000	0.04
3	2470.90000	-6.82

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.9	4.36

7 峰值傳導輸出功率之量測

7.1 峰值適用標準

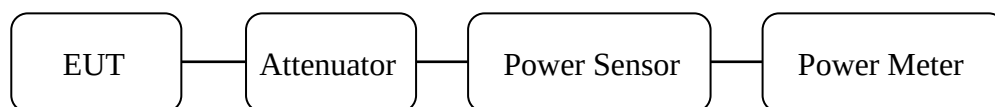
依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.2節之(1)(C)規定，操作於2400-2483.5兆赫(MHz)之所有數位調變技術系統:1瓦(W)(含)以下。

用於非於固定式點對點操作時，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。如用於固定式點對點操作時，應符合下列情形：

操作於2400-2483.5兆赫(MHz)者，其發射天線之方向性增益超過6dBi，每超過3dBi，最大傳導輸出功率限制值應降低1dB。

7.2 峰值輸出功率之測試配置

圖 2：峰值輸出功率之測試配置



7.3 峰值輸出功率之量測儀器

儀器名稱	廠 牌	型 號
Power Meter	Agilent	N1912A
Power Sensor	Agilent	N1922A
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

7.4 峰值輸出功率之量測結果

測試工程師: 羅世勇

7.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	17.34	30	-
M	17.42	30	-
H	17.45	30	-

註：

1. 最大峰值輸出功率 (Maximum Peak Output Power) 為經儀器校正補償過後的結果值。
2. If antenna gain $\leq$ 6dBi, NCC Limit = 30 dBm
3. If antenna gain $>$ 6dBi, NCC Limit = 30dBm – (highest antenna gain – 6 dBi)
4. NCC Limit (dBm)=10 log NCC Limit (mW)
5. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.4.2 調變技術: IEEE 802.11g

測試日期: May 12, 2017

環境溫度: 24°C

環境濕度: 60%

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	20.91	30	-
M	21.27	30	-
H	20.95	30	-

註：

1. 最大峰值輸出功率 (Maximum Peak Output Power) 為經儀器校正補償過後的結果值。
2. If antenna gain $\leq$ 6dBi, NCC Limit = 30 dBm
3. If antenna gain > 6dBi, NCC Limit = 30dBm – (highest antenna gain – 6 dBi)
4. NCC Limit (dBm)=10 log NCC Limit (mW)
5. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.4.3 調變技術: IEEE 802.11n HT20

7.4.3.1 CHAIN 0

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

天線增益最大值為 2.55 dBi, NCC Limit 如下表所示:

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	21.23	30	-
M	21.51	30	-
H	22.17	30	-

註:

1. 最大峰值輸出功率 (Maximum Peak Output Power) 為經儀器校正補償過後的結果值。
2. If antenna gain $\leq$ 6dBi, NCC Limit = 30 dBm
3. If antenna gain > 6dBi, NCC Limit = 30dBm – (highest antenna gain – 6 dBi)
4. NCC Limit (dBm)=10 log NCC Limit (mW)
5. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.4.3.2 CHAIN 1

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

天線增益最大值為 -2.1 dBi，NCC Limit 如下表所示：

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	21.18	30	-
M	21.13	30	-
H	21.22	30	-

註：

1. 最大峰值輸出功率 (Maximum Peak Output Power) 為經儀器校正補償過後的結果值。
2. If antenna gain $\leq$ 6dBi, NCC Limit = 30 dBm
3. If antenna gain > 6dBi, NCC Limit = 30dBm – (highest antenna gain – 6 dBi)
4. NCC Limit (dBm)=10 log NCC Limit (mW)
5. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.4.3.3 CHAIN 0 + CHAIN 1

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Ant 1 / Ant 2 combination 天線增益最大值為 5.56 dBi，NCC Limit 如下表所示：

Channel	CHAIN 0 Maximum Peak Output Power (dBm)	CHAIN 1 Maximum Peak Output Power (dBm)	TOTAL Power (dBm)	NCC Limit (dBm)
L	21.23	21.18	24.22	30
M	21.51	21.13	24.33	30
H	22.17	21.22	24.73	30

註:

1. 最大峰值輸出功率 (Maximum Peak Output Power) 為經儀器校正補償過後的結果值。
2. If antenna gain $\leq$ 6dBi, NCC Limit = 30 dBm
3. If antenna gain > 6dBi, NCC Limit = 30dBm – (highest antenna gain – 6 dBi)
4. NCC Limit (dBm)=10 log NCC Limit (mW)
5. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.5 結果判定

高、中、低頻段的峰值輸出功率皆低於限制值。

8 功率密度之量測

8.1 適用標準

依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.6節之(2)(B)規定，對數位調變技術系統，在使用頻率範圍之任一3 kHz頻寬內，由發射機傳導至天線之功率頻譜密度在任意傳輸期間內，皆小於或等於8毫分貝(dBm)，且應依4.10.1.3之方式降低功率頻譜密度限制值。

8.2 量測功率密度之配置

如圖 1 所示。

8.3 量測功率密度之儀器

儀器名稱	廠 牌	型 號
Spectrum Analyzer	KEYSIGHT	N9030B
Spectrum Analyzer	R&S	FSV40
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

8.4 量測結果

測試工程師: 羅世勇

8.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	6.19	8	Page 46
M	7.88	8	Page 47
H	7.89	8	Page 48

註：1. 繪圖資料請參考第 46-48 頁。

2. If antenna gain $\leq$ 6dBi, NCC Limit = 8 dBm

3. If antenna gain $>$ 6dBi, NCC Limit = 8dBm – (highest antenna gain – 6 dBi)

4. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

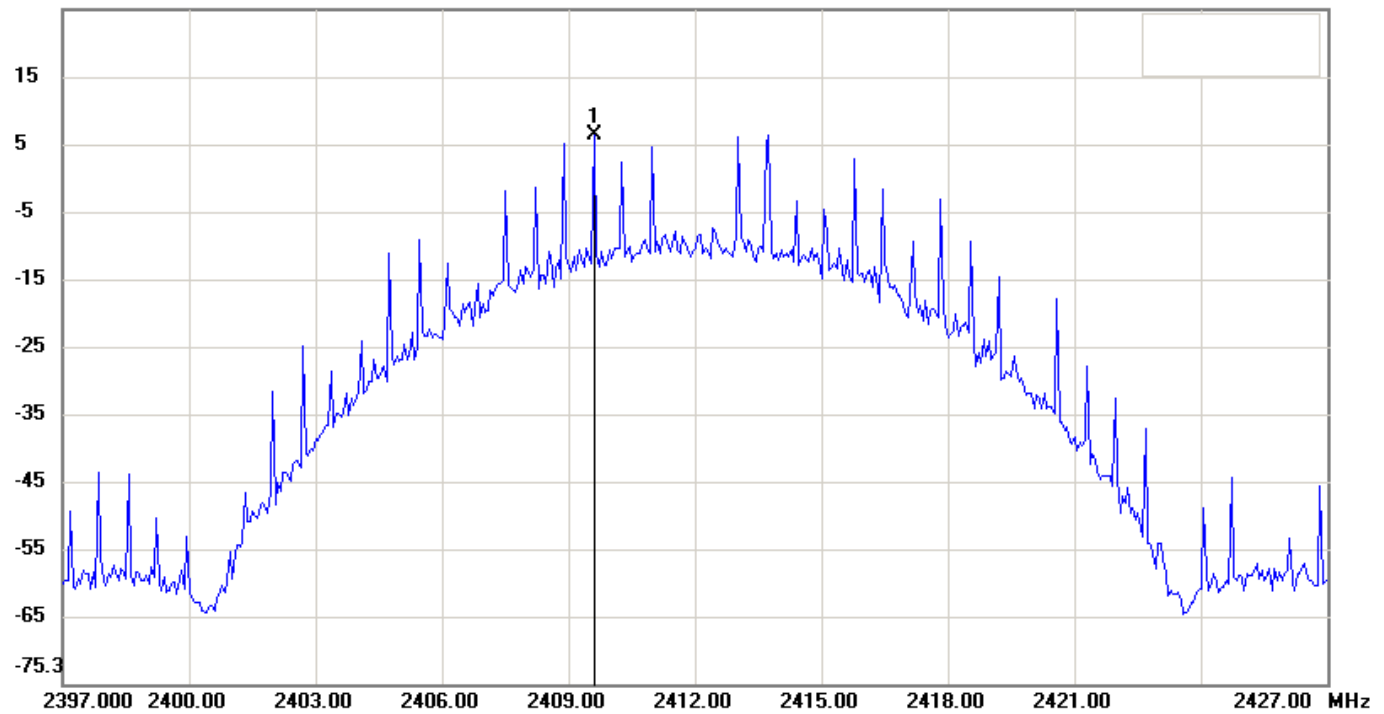
#3

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

24.7 dBm

**Condition:**

EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 01-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
RBW: 3 KHz VBW: 10 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2409.60000	6.19

File: 21-05-MAW-008_b_Ant1

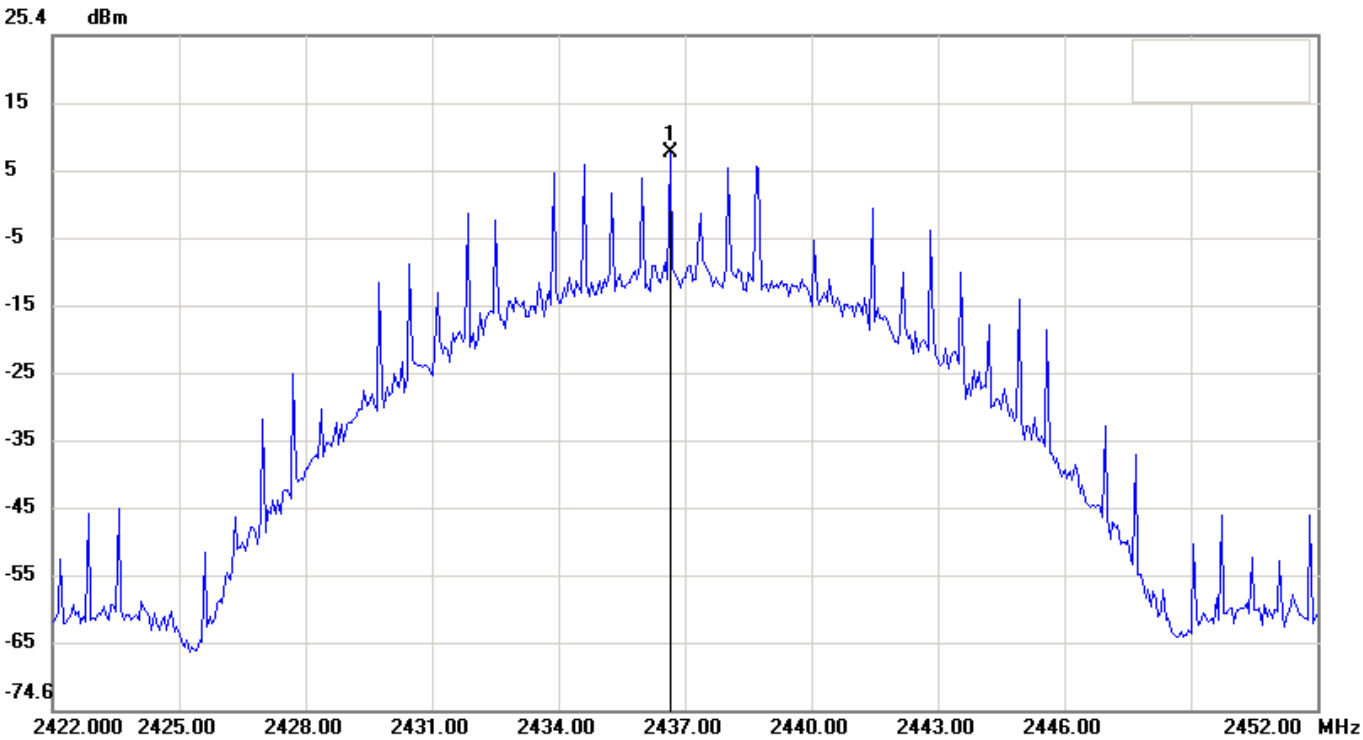
#7

Date: 2021/6/30

Temperature: 25 °C

Site: RF-Cond01

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11b Channel 06-Power Density (PK)

RF Conducted

Sweep Time: 334ms

RBW: 3 KHz

Operator:

Att.: 20dB

VBW: 10 KHz

Phillip

No.	Frequency(MHz)	Level(dBm)
1	2436.64000	7.88

File: 21-05-MAW-008_b_Ant1
 Site: RF-Cond01

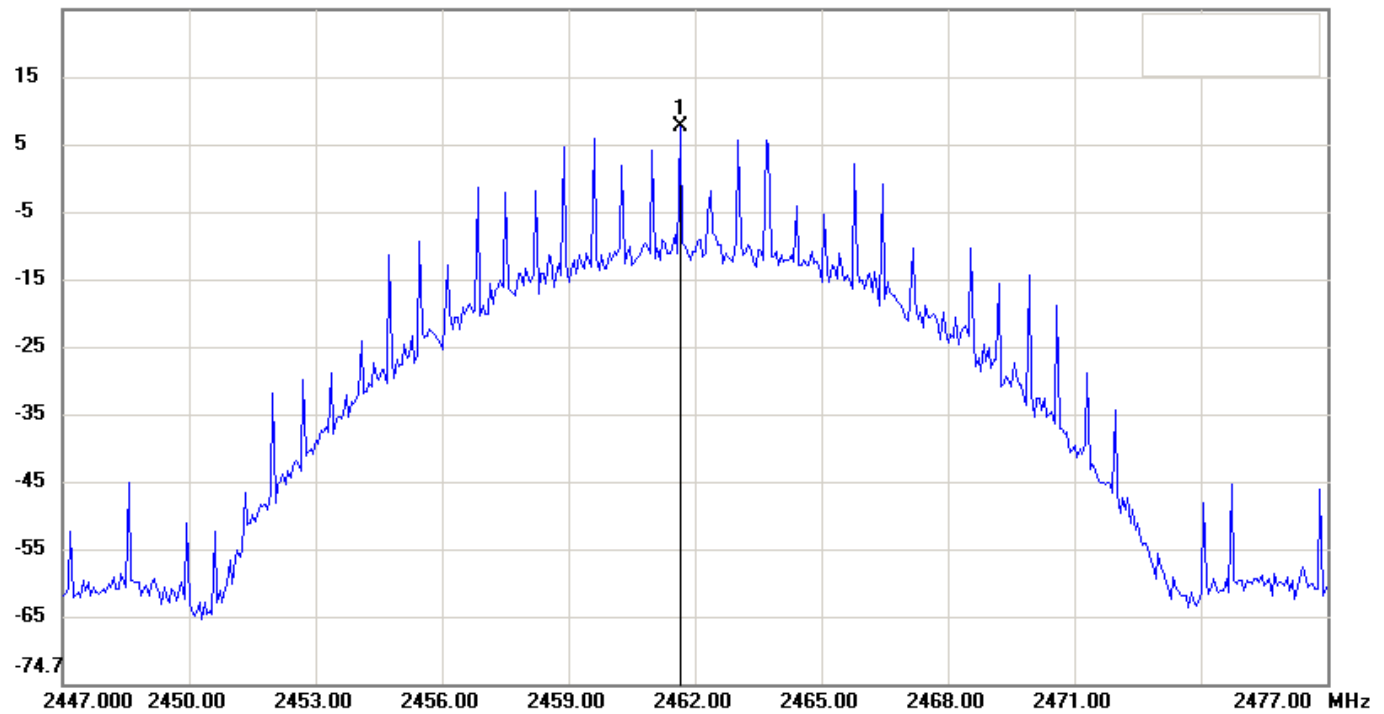
#10

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

25.3 dBm



Condition:

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11b Channel 11-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB

RBW: 3 KHz

VBW: 10 KHz

Operator:

Phillip

No.	Frequency(MHz)	Level(dBm)
1	2461.64000	7.89

8.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-13.99	8	Page 50
M	-13.35	8	Page 51
H	-13.61	8	Page 52

註：1. 繪圖資料請參考第 50-52 頁。

2. If antenna gain $\leq$ 6dBi, NCC Limit = 8 dBm

3. If antenna gain > 6dBi, NCC Limit = 8dBm – (highest antenna gain – 6 dBi)

4. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

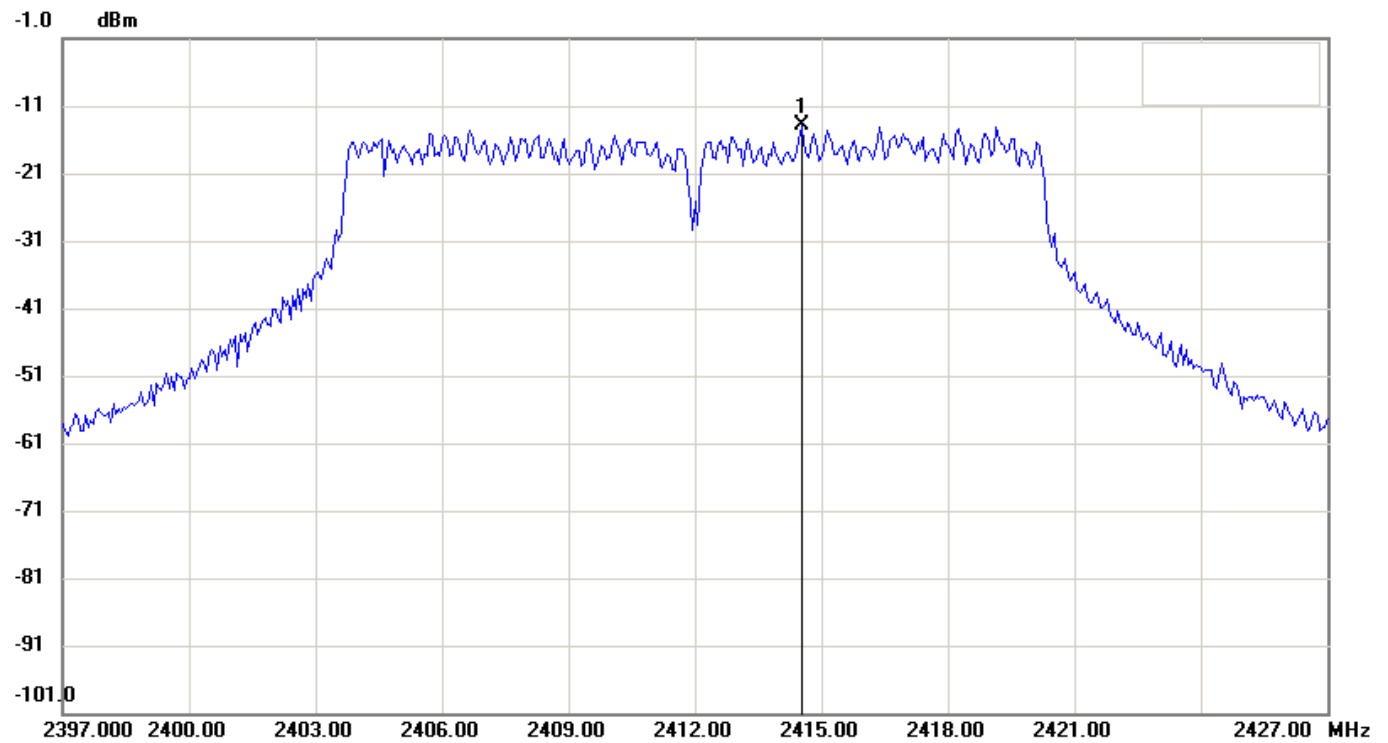
File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

#3

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

**Condition:**

EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 01-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
RBW: 3 KHz VBW: 10 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2414.52000	-13.99

File: 21-05-MAW-008_g_Ant1

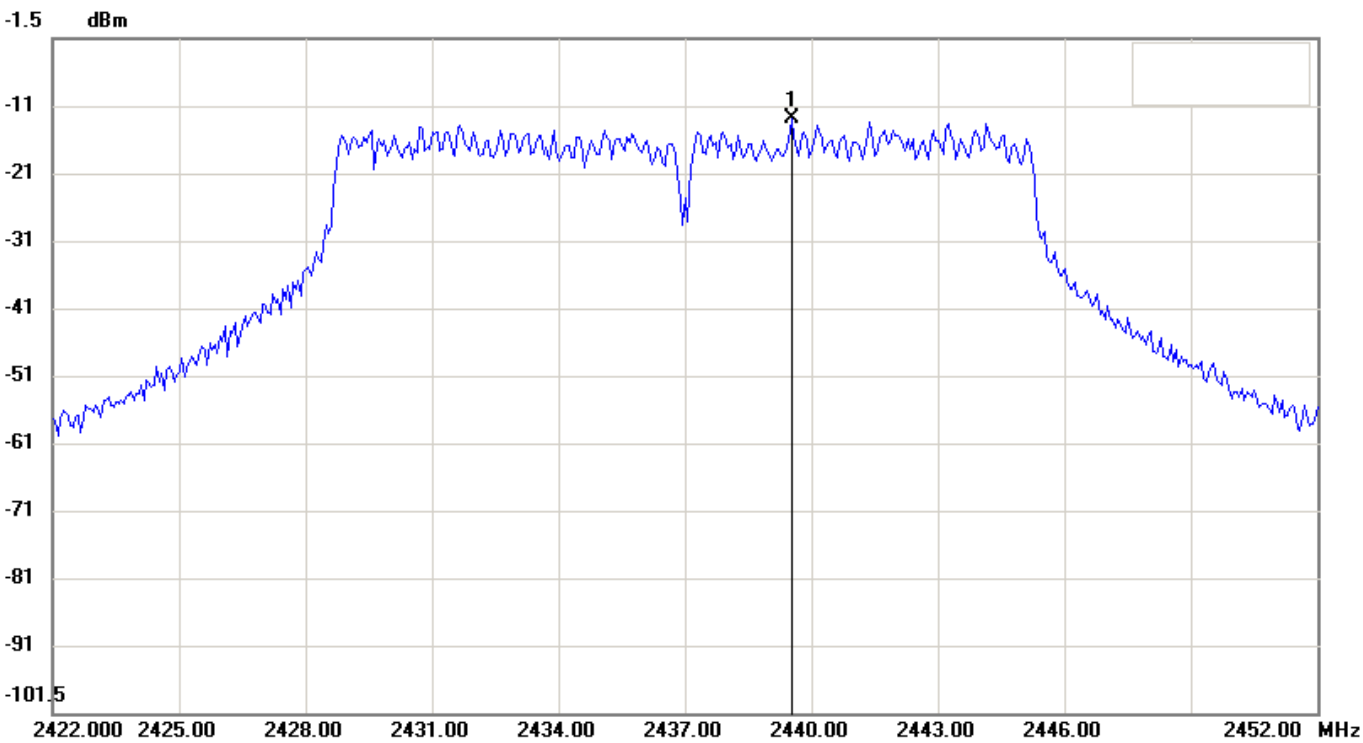
Site: RF-Cond01

#7

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11g Channel 06-Power Density (PK)

RF Conducted

Sweep Time: 334ms

RBW: 3 KHz

Operator:

Att.: 20dB

VBW: 10 KHz

Phillip

No.	Frequency(MHz)	Level(dBm)
1	2439.52000	-13.35

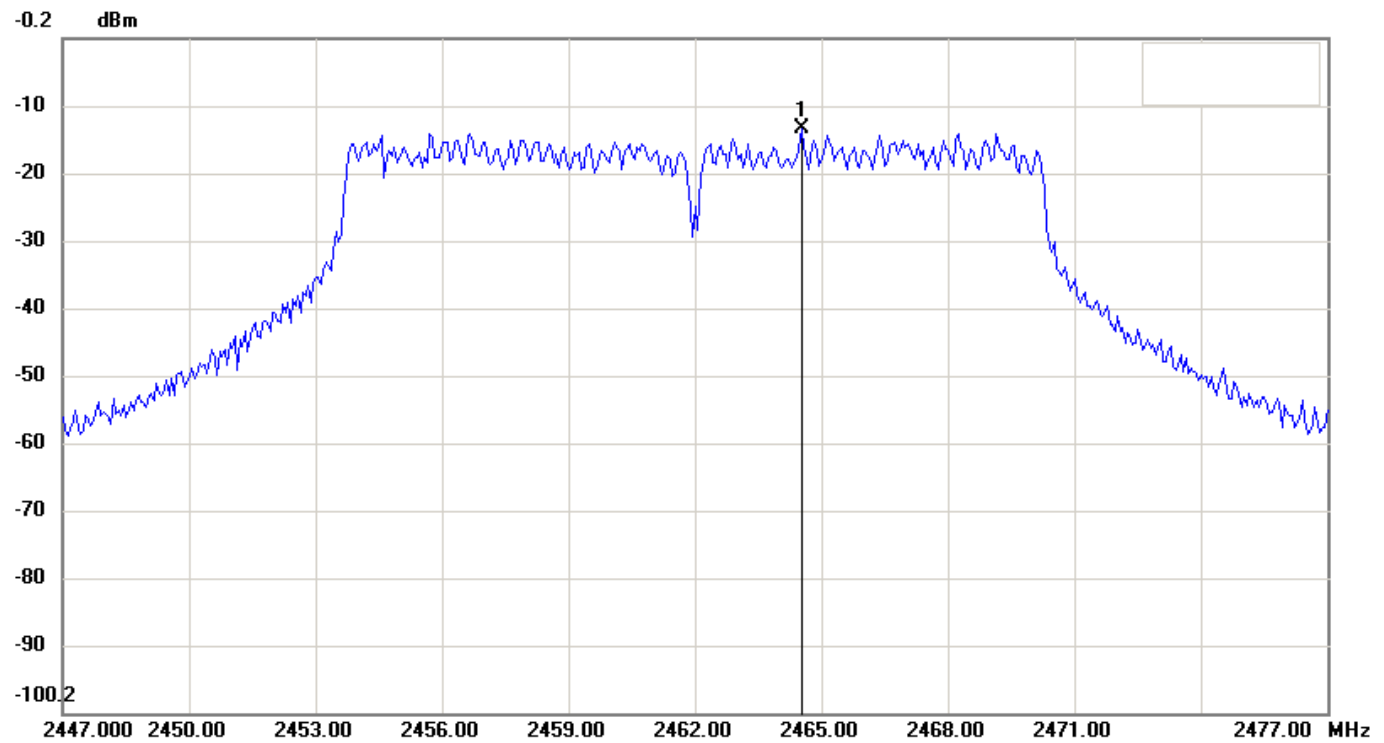
File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

#10

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 11-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
RBW: 3 KHz VBW: 10 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2464.52000	-13.61

8.4.3 調變技術: IEEE 802.11n HT20

8.4.3.1 CHAIN 0

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

天線增益最大值為 2.55 dBi, NCC Limit 如下表所示:

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-14.06	8	Page 54
M	-13.64	8	Page 55
H	-13.90	8	Page 56

註: 1. 繪圖資料請參考第 54-56 頁。

2. If antenna gain $\leq 6\text{dBi}$, NCC Limit = 8 dBm3. If antenna gain $> 6\text{dBi}$, NCC Limit = 8dBm – (highest antenna gain – 6 dBi)4. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

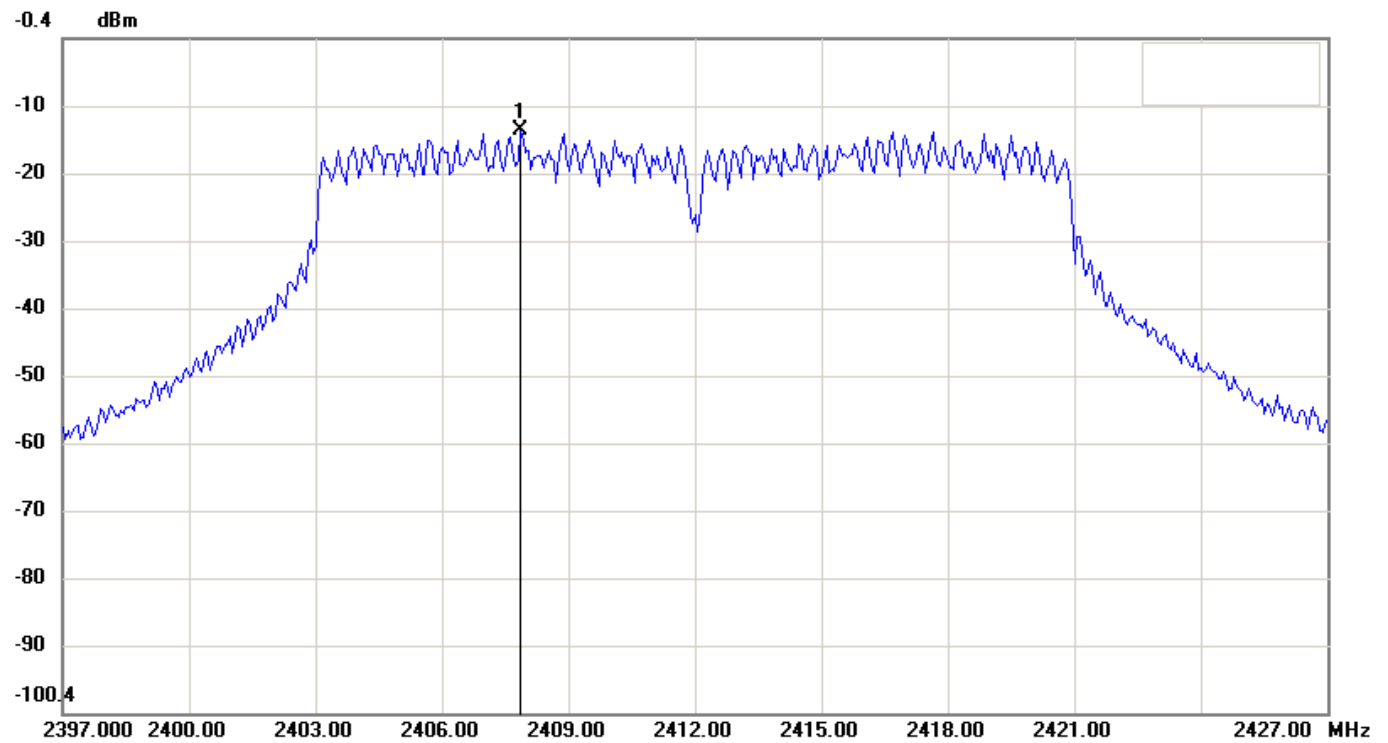
File: 21-05-MAW-008_n20_Ant1
 Site: RF-Cond01

#3

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit
 Model: DNNS124
 Test Mode: DTS
 Note: NCC_LP0002_802.11n-HT20 Channel 01-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
 RBW: 3 KHz VBW: 10 KHz
 Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2407.86000	-14.06

File: 21-05-MAW-008_n20_Ant1

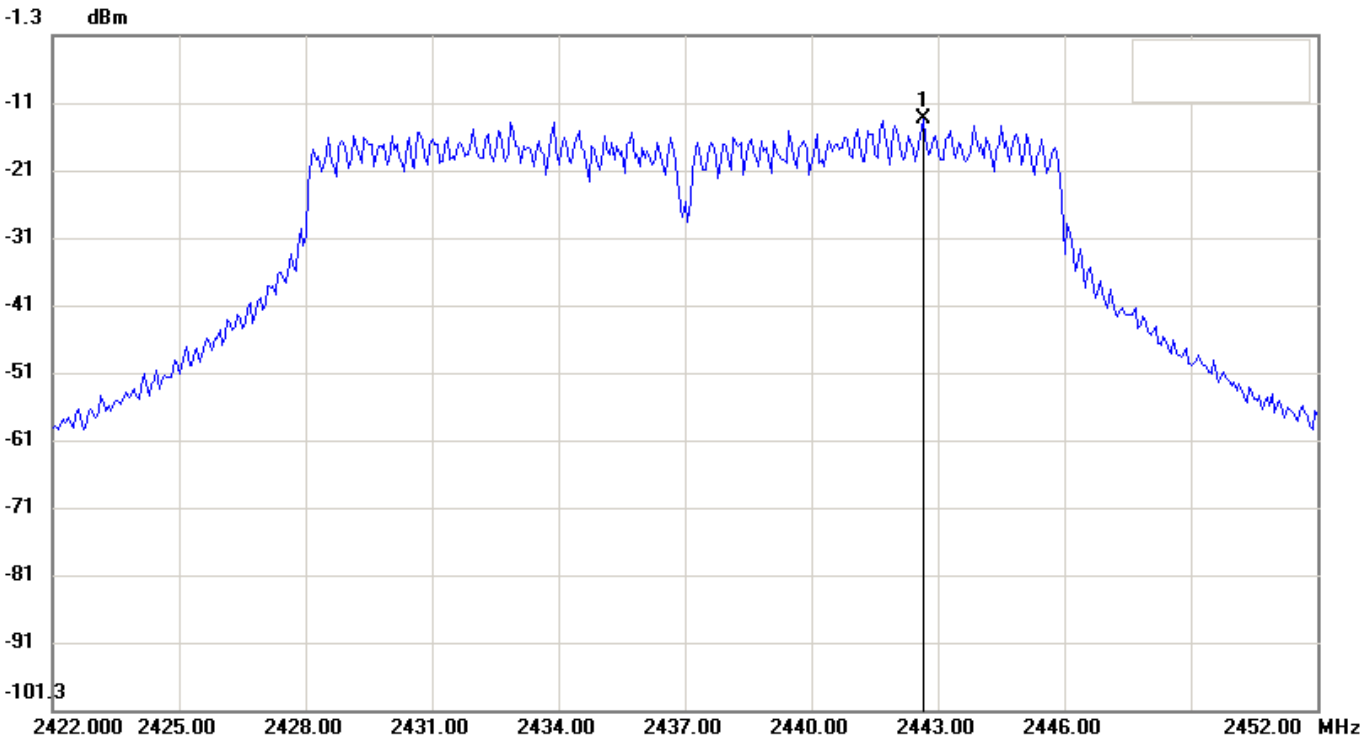
Site: RF-Cond01

#7

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 06-Power Density (PK)

RF Conducted

Sweep Time: 334ms

RBW: 3 KHz

Operator:

Att.: 20dB

VBW: 10 KHz

Phillip

No.	Frequency(MHz)	Level(dBm)
1	2442.64000	-13.64

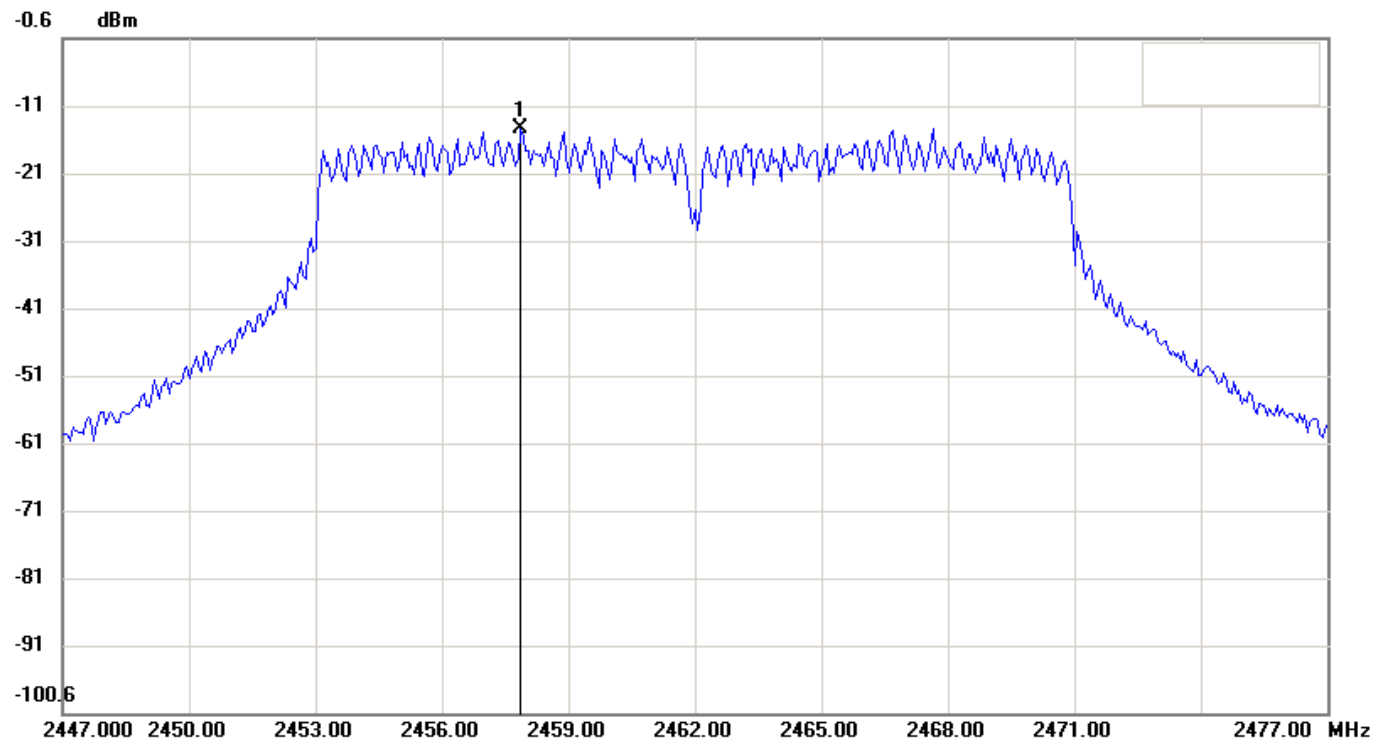
File: 21-05-MAW-008_n20_Ant1
 Site: RF-Cond01

#10

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit
 Model: DNNS124
 Test Mode: DTS
 Note: NCC_LP0002_802.11n-HT20 Channel 11-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
 RBW: 3 KHz VBW: 10 KHz
 Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2457.86000	-13.90

8.4.3.2 CHAIN 1

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

天線增益最大值為-2.1 dBi，NCC Limit 如下表所示：

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-14.61	8	Page 58
M	-13.38	8	Page 59
H	-13.53	8	Page 60

註：1. 繪圖資料請參考第 58-60 頁。

2. If antenna gain $\leq 6\text{dBi}$, NCC Limit = 8 dBm3. If antenna gain $> 6\text{dBi}$, NCC Limit = 8dBm – (highest antenna gain – 6 dBi)4. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

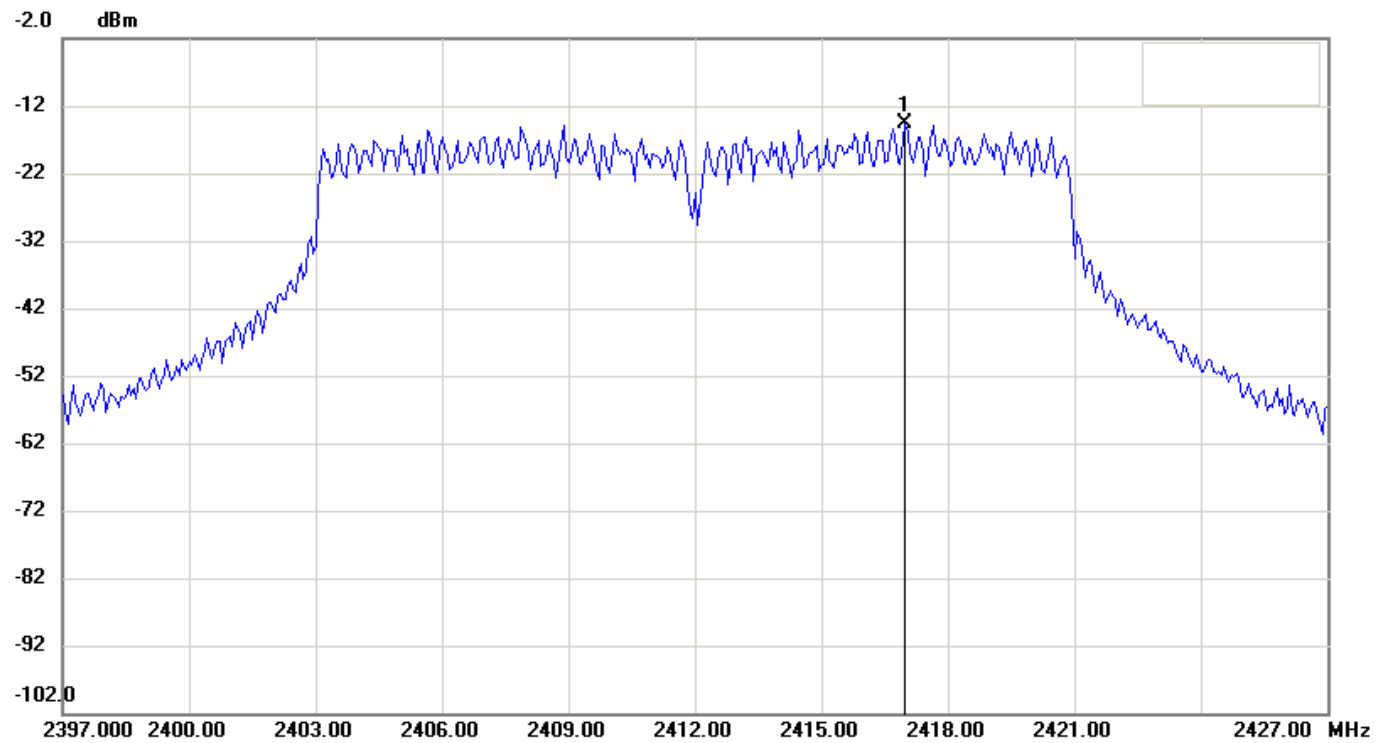
File: 21-05-MAW-008_n20_Ant2
 Site: RF-Cond01

#3

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit
 Model: DNNS124
 Test Mode: DTS
 Note: NCC_LP0002_802.11n-HT20 Channel 01-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
 RBW: 3 KHz VBW: 10 KHz
 Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2416.98000	-14.61

File: 21-05-MAW-008_n20_Ant2

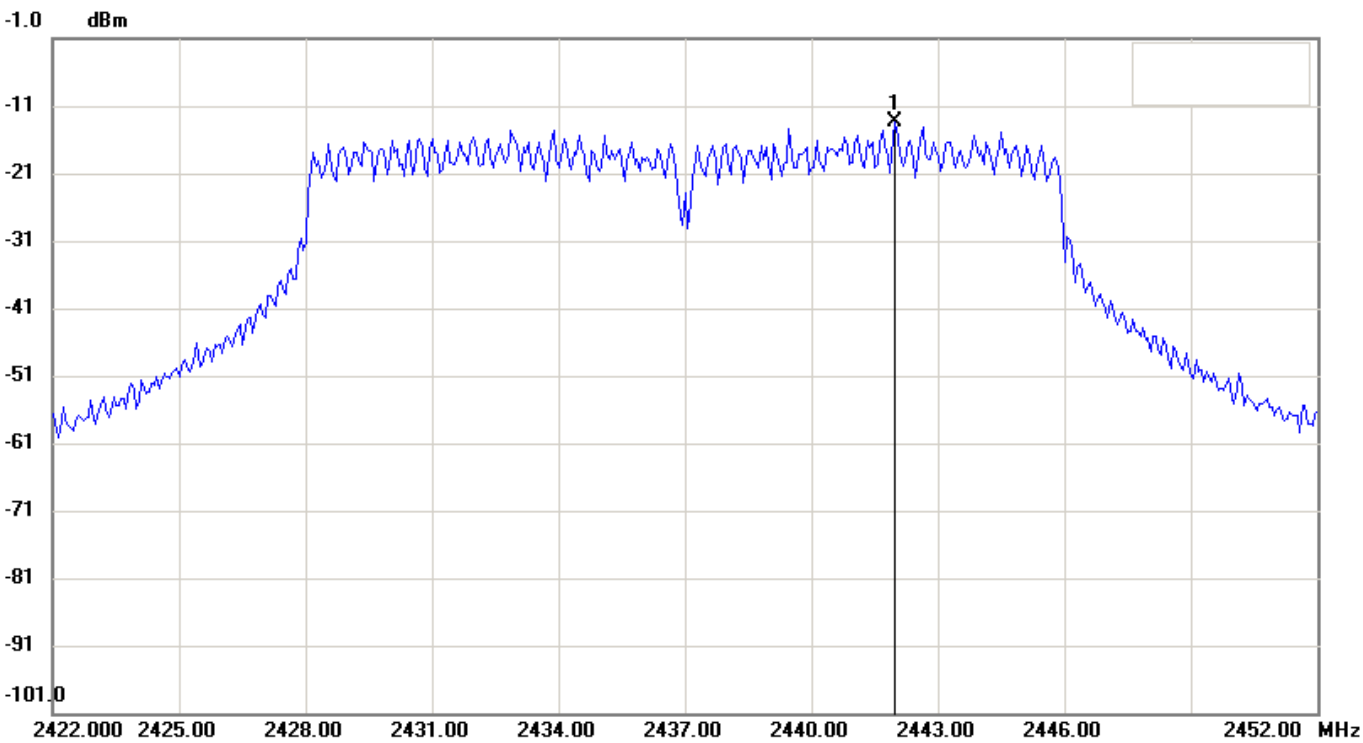
#7

Date: 2021/6/30

Temperature: 25 °C

Site: RF-Cond01

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 06-Power Density (PK)

RF Conducted

Sweep Time: 334ms

RBW: 3 KHz

Operator:

Att.: 20dB

VBW: 10 KHz

Phillip

No.	Frequency(MHz)	Level(dBm)
1	2441.98000	-13.38

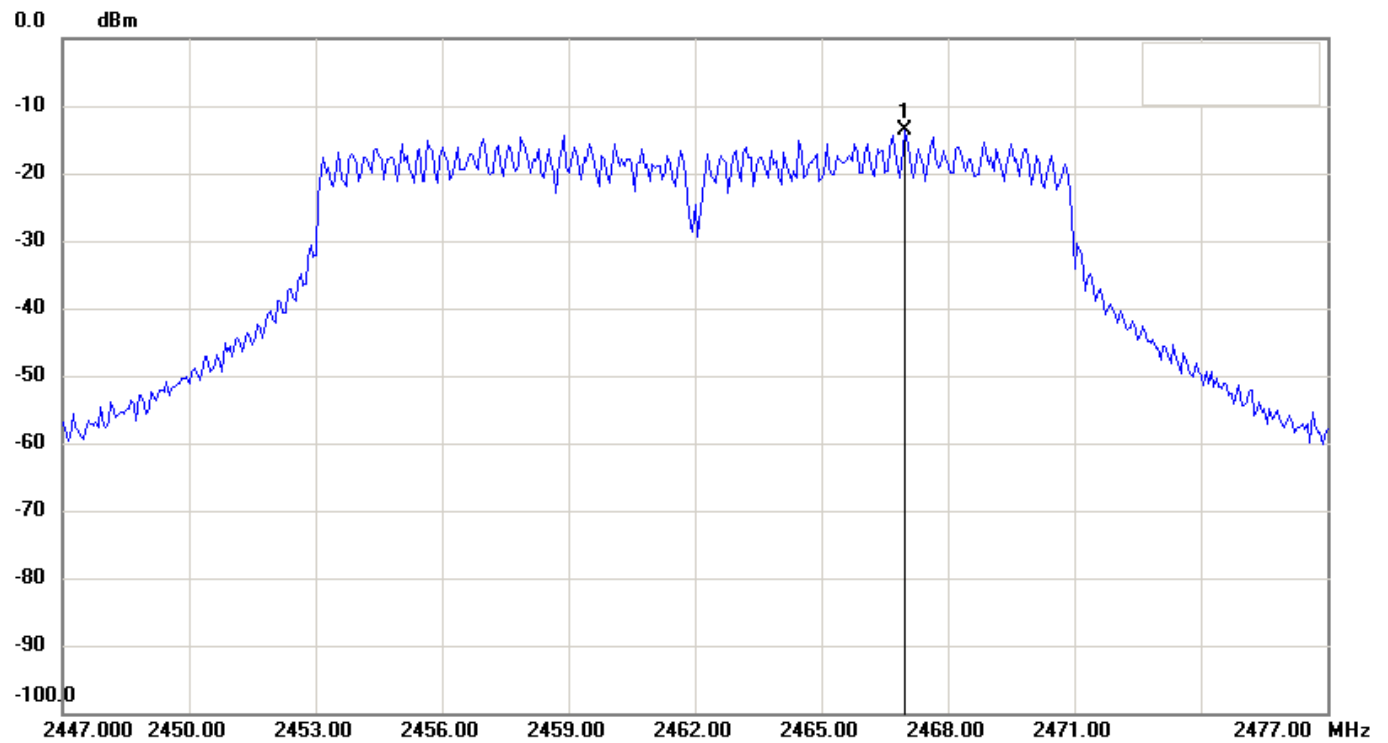
File: 21-05-MAW-008_n20_Ant2
 Site: RF-Cond01

#10

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition:

EUT: Cockpit Control Unit
 Model: DNNS124
 Test Mode: DTS
 Note: NCC_LP0002_802.11n-HT20 Channel 11-Power Density (PK)

RF Conducted

Sweep Time: 334ms Att.: 20dB
 RBW: 3 KHz VBW: 10 KHz
 Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2466.98000	-13.53

8.4.3.3 CHAIN 0 + CHAIN 1

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Total power density calculation formula:

$$10 \log (10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$$

天線增益最大值為 5.56 dBi，NCC Limit 如下表所示：

Channel	Peak Power Spectral Density (dBm)		Total Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
	Chain 0	Chain 1			
L	-14.06	-14.61	-11.32	8	-
M	-13.64	-13.38	-10.50	8	-
H	-13.90	-13.53	-10.70	8	-

註：1. If antenna gain $\leq$ 6dBi, NCC Limit = 8 dBm

2. If antenna gain > 6dBi, NCC Limit = 8dBm – (highest antenna gain – 6 dBi)

3. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

8.5 結果判定

高、中、低頻段的3kHz功率密度皆低於限制值，合乎標準規定。

9 混附波發射限制之量測

9.1 適用標準

依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.5之規定，操作頻帶範圍外之任意100 kHz內，發射機所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之100 kHz內的射頻功率，其衰減值限制如下：

- (1) 輸出功率以附件二之峰值輸出功率方式測量者，至少須衰減20 dB，可使用射頻傳導或輻射方式測量。
- (2) 輸出功率以4.10.1.2(1)(C)之最大傳導輸出功率測量方式者，至少須衰減30 dB。

此外，落於國家通訊傳播委員會低功率射頻器材技術規範第3.5節禁用頻段之輻射發射，應符合國家通訊傳播委員會低功率射頻器材技術規範第3.6節之規定。

9.2 混附波發射限制之測試配置

如圖1 所示。

9.3 量測混附波發射限制之儀器

儀器名稱	廠 牌	型 號
Spectrum Analyzer	KEYSIGHT	N9030B
Spectrum Analyzer	R&S	FSV40
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

9.4 混附波發射限制之量測結果 (傳導方式量測)

測試工程師: 羅世勇

9.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2398.450 MHz，比主波低 20dB以上，合乎標準規定。
- b. 上邊緣頻帶：距上頻帶邊緣40MHz內最大混附波產生於 2491.144 MHz，比主波低 20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 63-67 頁。

2. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

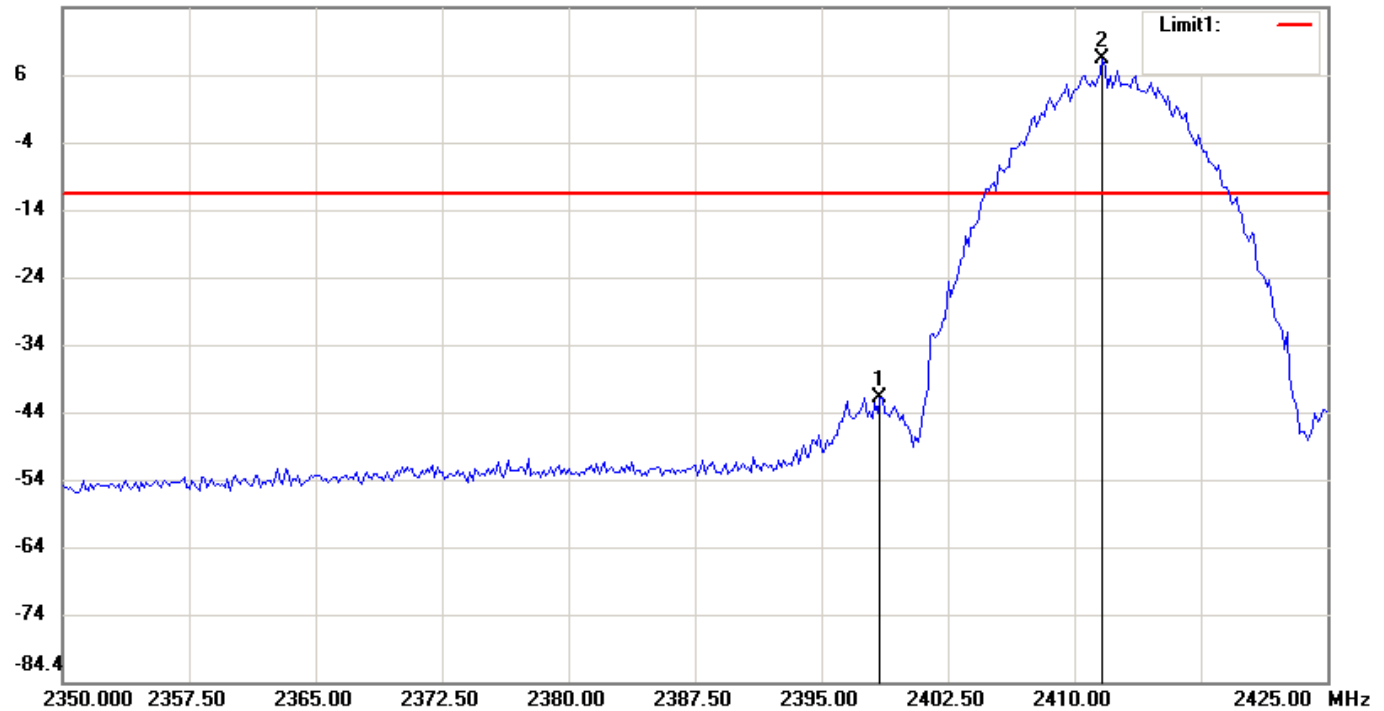
#4

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

15.6 dBm



Condition: -12.09dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 01-Bandedge

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2398.45000	-42.25
2	2411.65000	7.91

File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

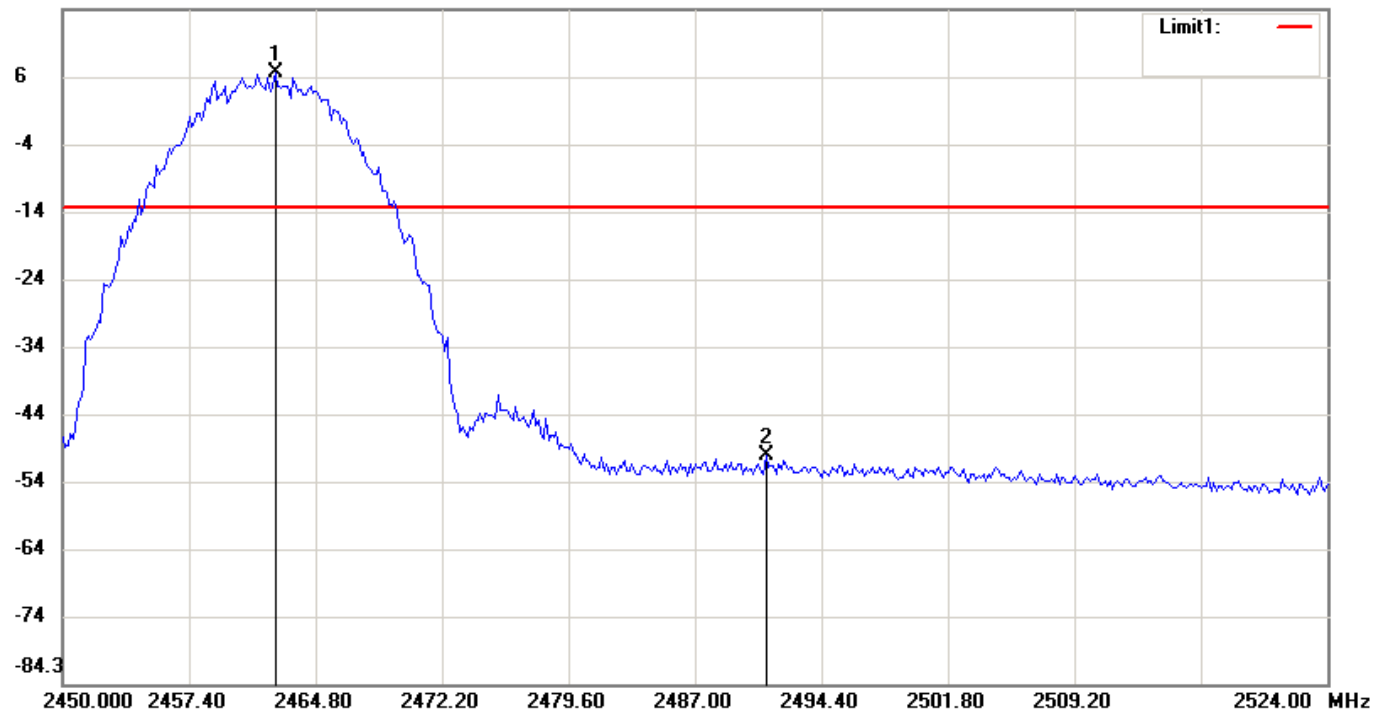
#11

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

15.7 dBm



Condition: -13.63dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 11-Bandedge

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2462.43200	6.37
2	2491.14400	-50.47

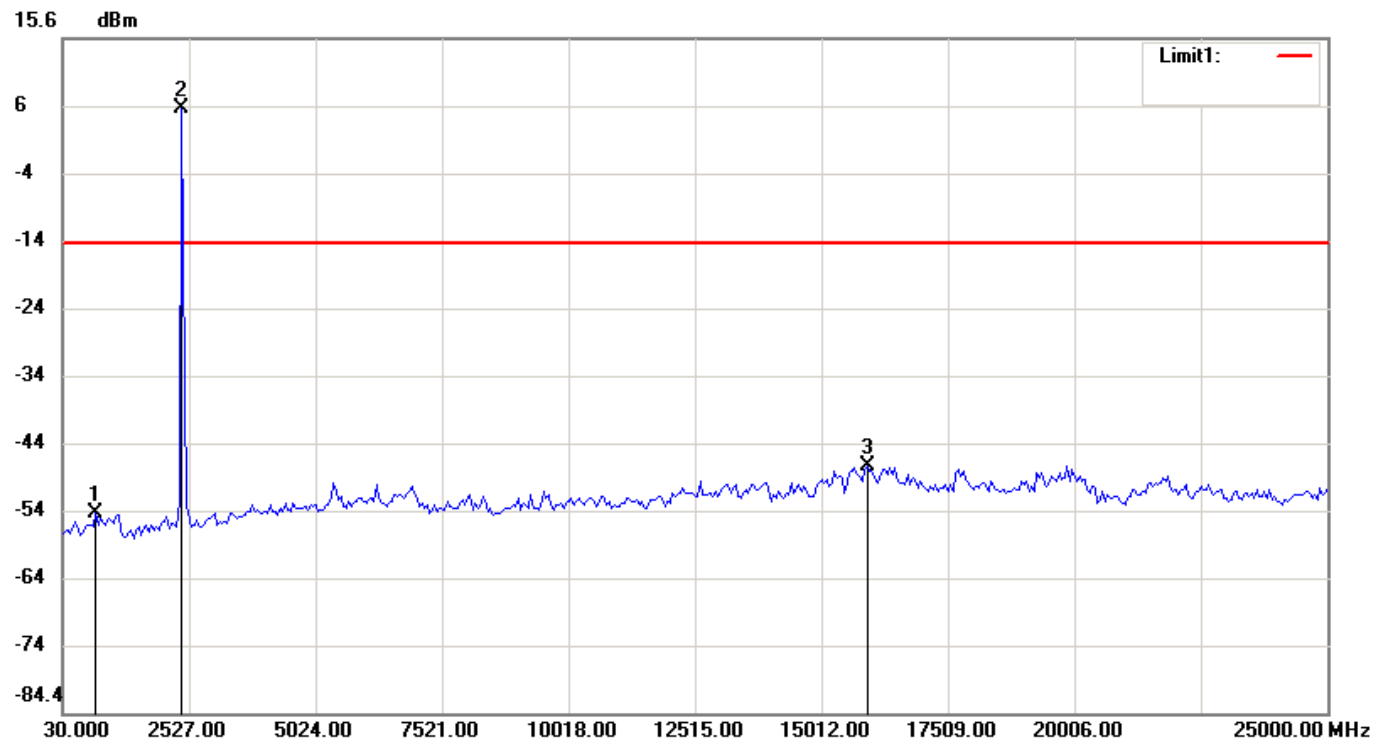
File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

#2

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition: -14.85dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 01-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	679.2200	-54.84
2	2377.18000	5.15
3	15910.92000	-47.69

File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

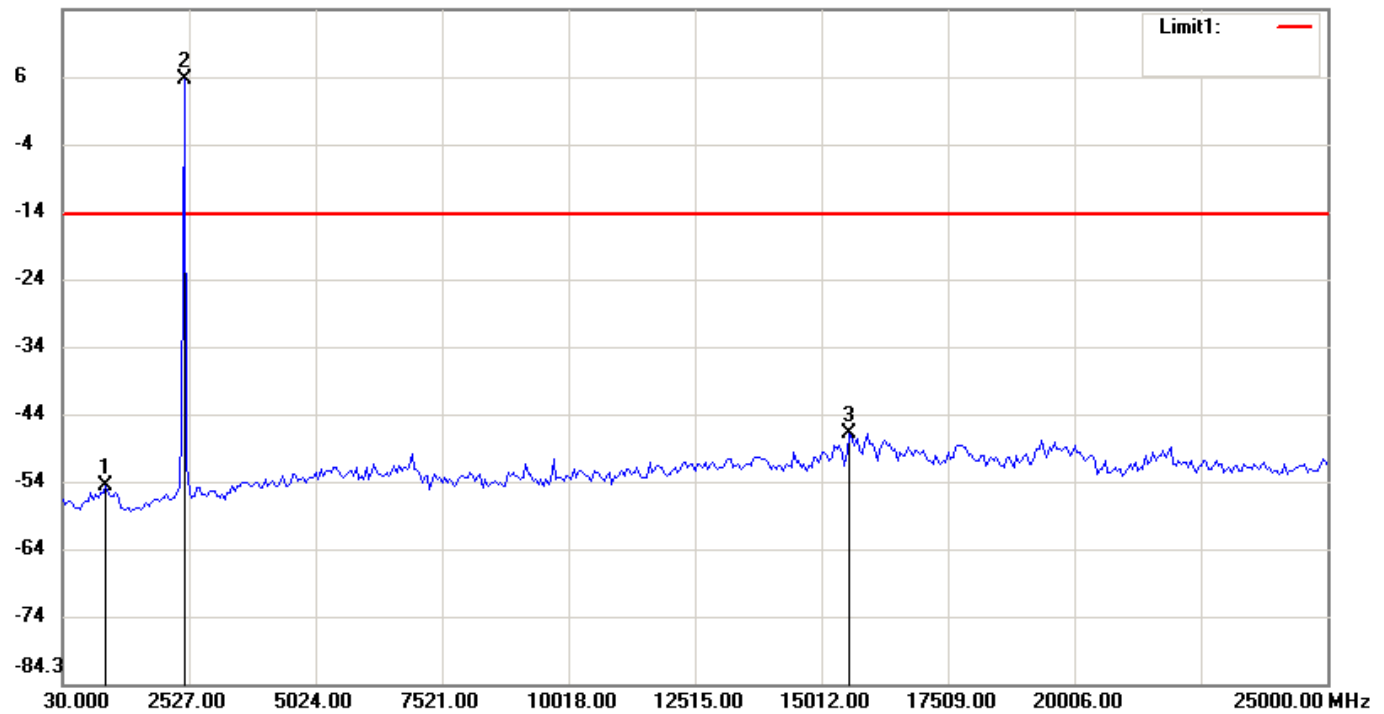
#6

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

15.7 dBm



Condition: -14.62dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 06-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	878.9800	-54.77
2	2427.12000	5.38
3	15561.34000	-47.08

File: 21-05-MAW-008_b_Ant1
Site: RF-Cond01

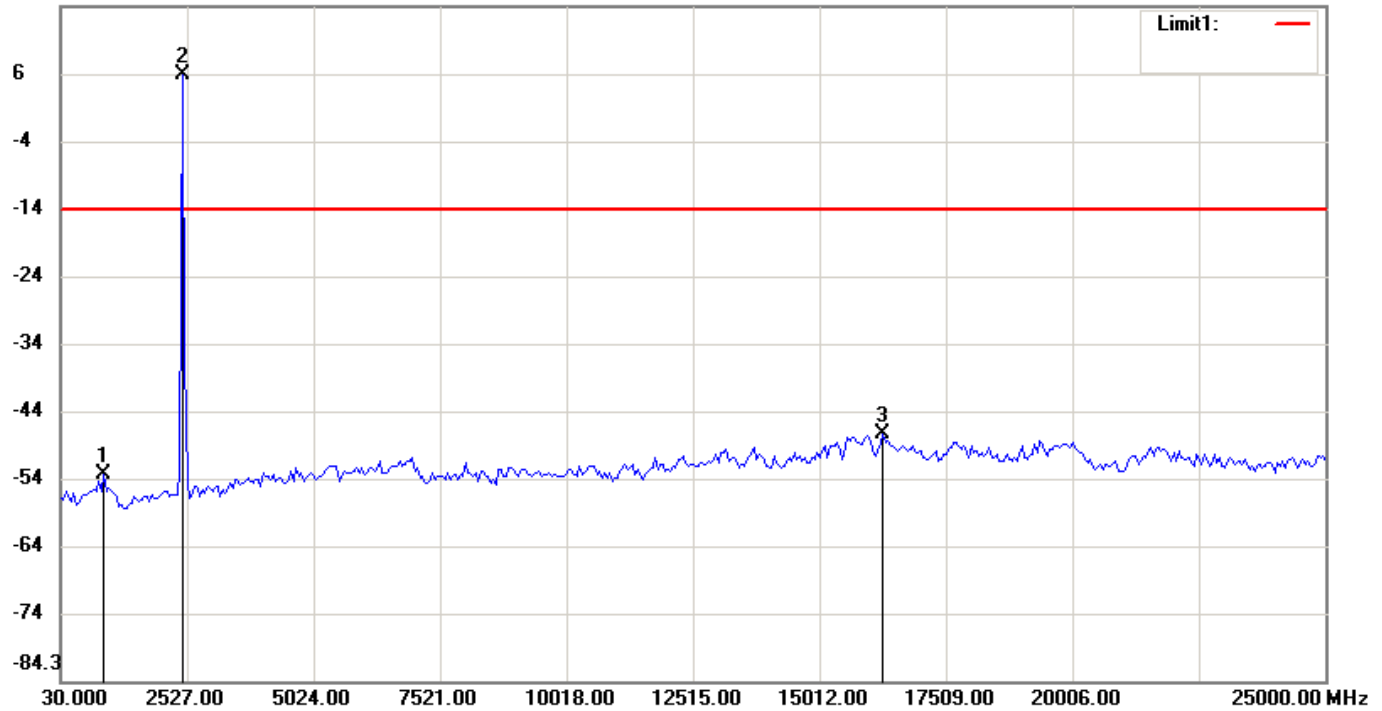
#9

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

15.7 dBm



Condition: -14.52dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11b Channel 11-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	878.9800	-53.79
2	2427.12000	5.48
3	16260.50000	-47.59

9.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2399.950 MHz，比主波低 20dB以上，合乎標準規定。
- b. 上邊緣頻帶：距上頻帶邊緣40MHz內最大混附波產生於 2485.668 MHz，比主波低 20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 69-73 頁。

2. 量測不準確度: $\pm 1.5\text{dB}(1\text{GHz} \leq f \leq 18\text{GHz})$

File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

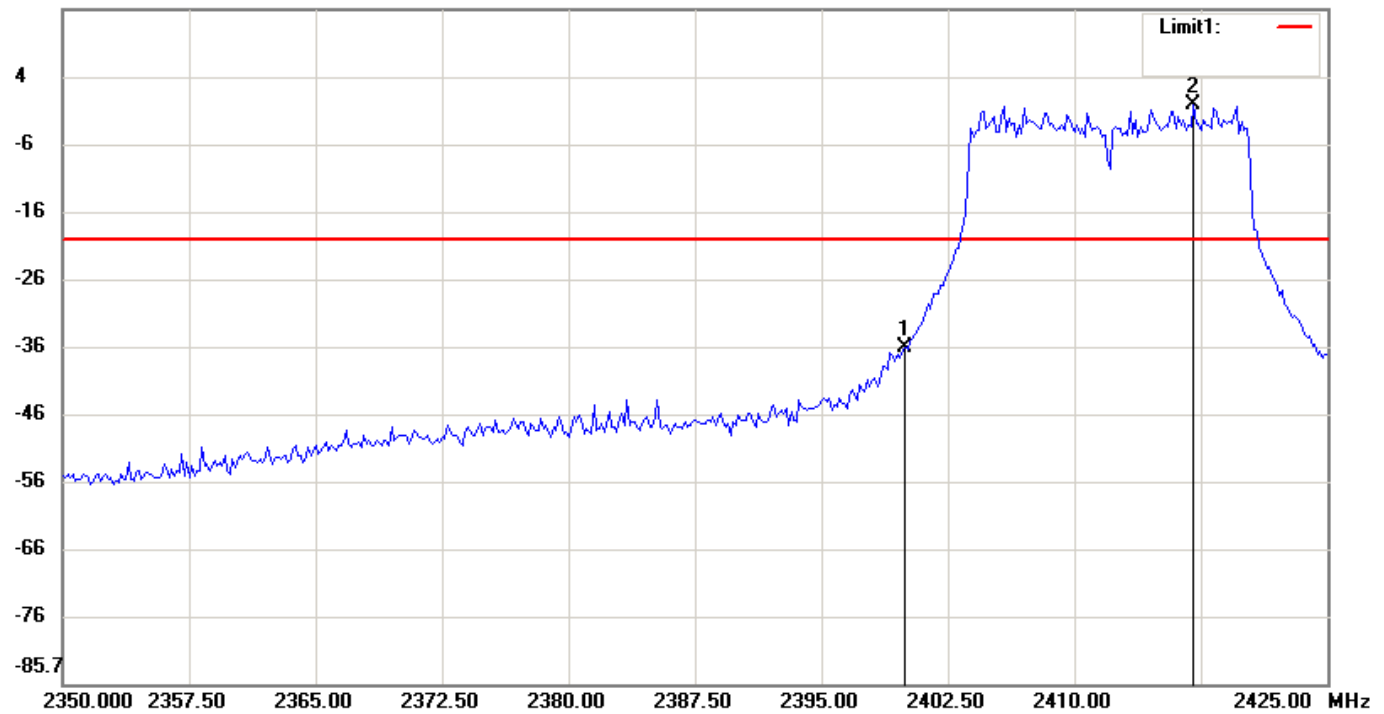
#4

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

14.3 dBm



Condition: -19.9dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 01-Bandedge

RF Conducted
Sweep Time: 500ms
RBW: 100 KHz
Operator:
Att.: 20dB
VBW: 300 KHz
Phillip

No.	Frequency(MHz)	Level(dBm)
1	2399.95000	-35.91
2	2417.05000	0.10

File: 21-05-MAW-008_g_Ant1
 Site: RF-Cond01

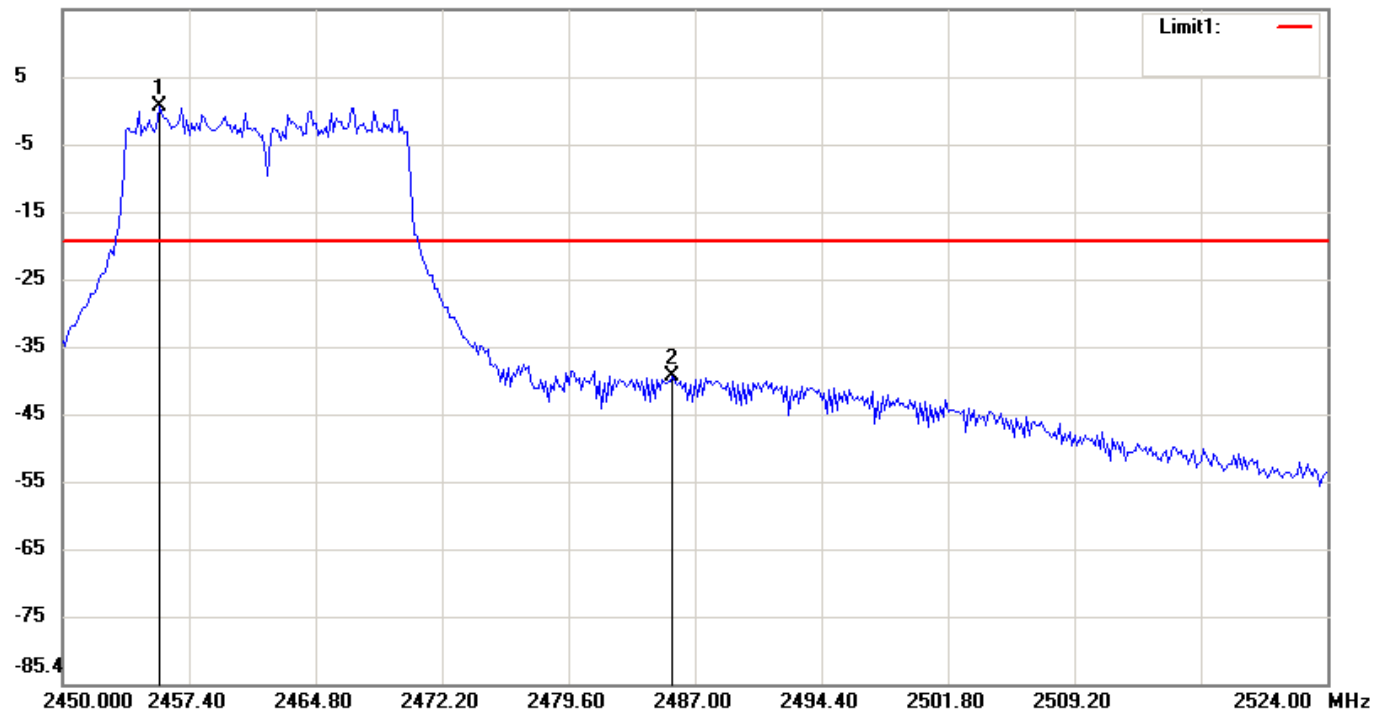
#11

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

14.6 dBm



Condition: -19.78dBm
 EUT: Cockpit Control Unit
 Model: DNNS124
 Test Mode: DTS
 Note: NCC_LP0002_802.11g Channel 11-Bandedge

RF Conducted
 Sweep Time: 500ms
 RBW: 100 KHz
 Operator: Phillip
 Att.: 20dB
 VBW: 300 KHz

No.	Frequency(MHz)	Level(dBm)
1	2455.62400	0.22
2	2485.66800	-39.73

File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

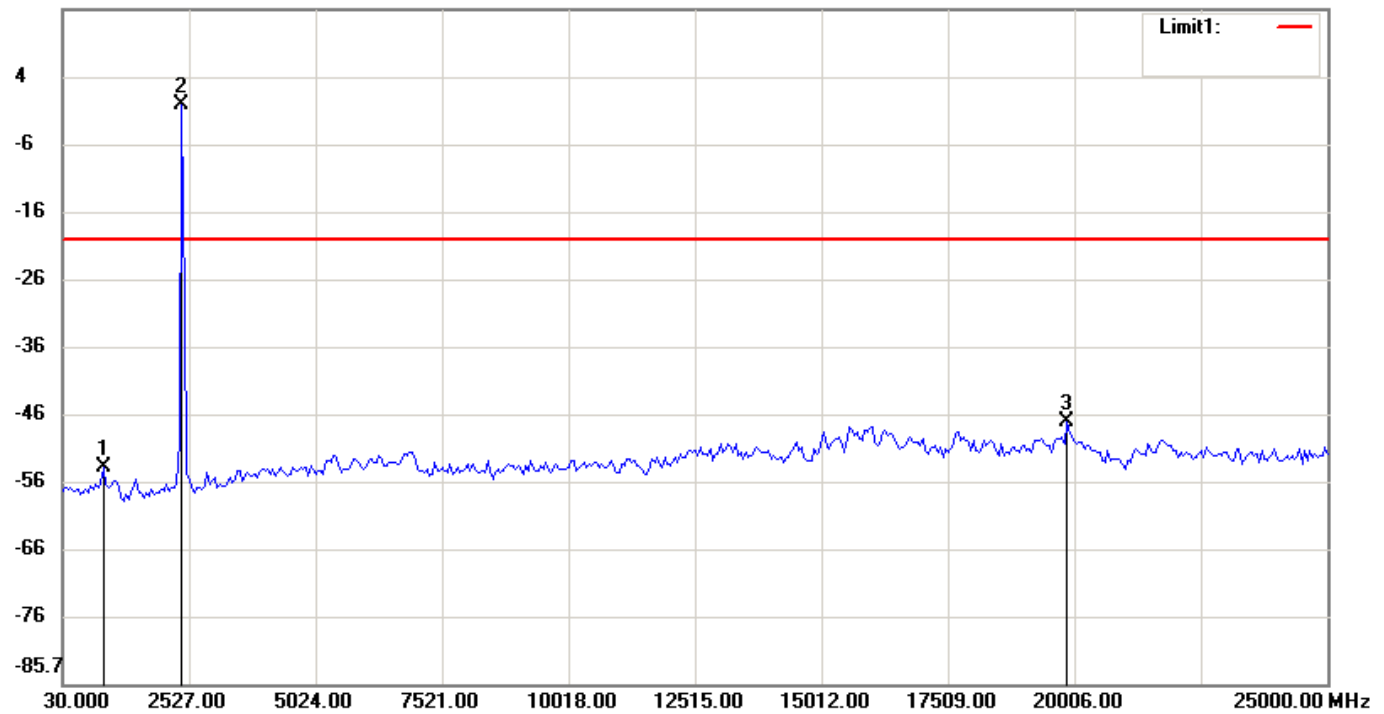
#2

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

14.3 dBm



Condition: -19.84dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 01-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	829.0400	-53.67
2	2377.18000	0.16
3	19856.18000	-46.73

File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

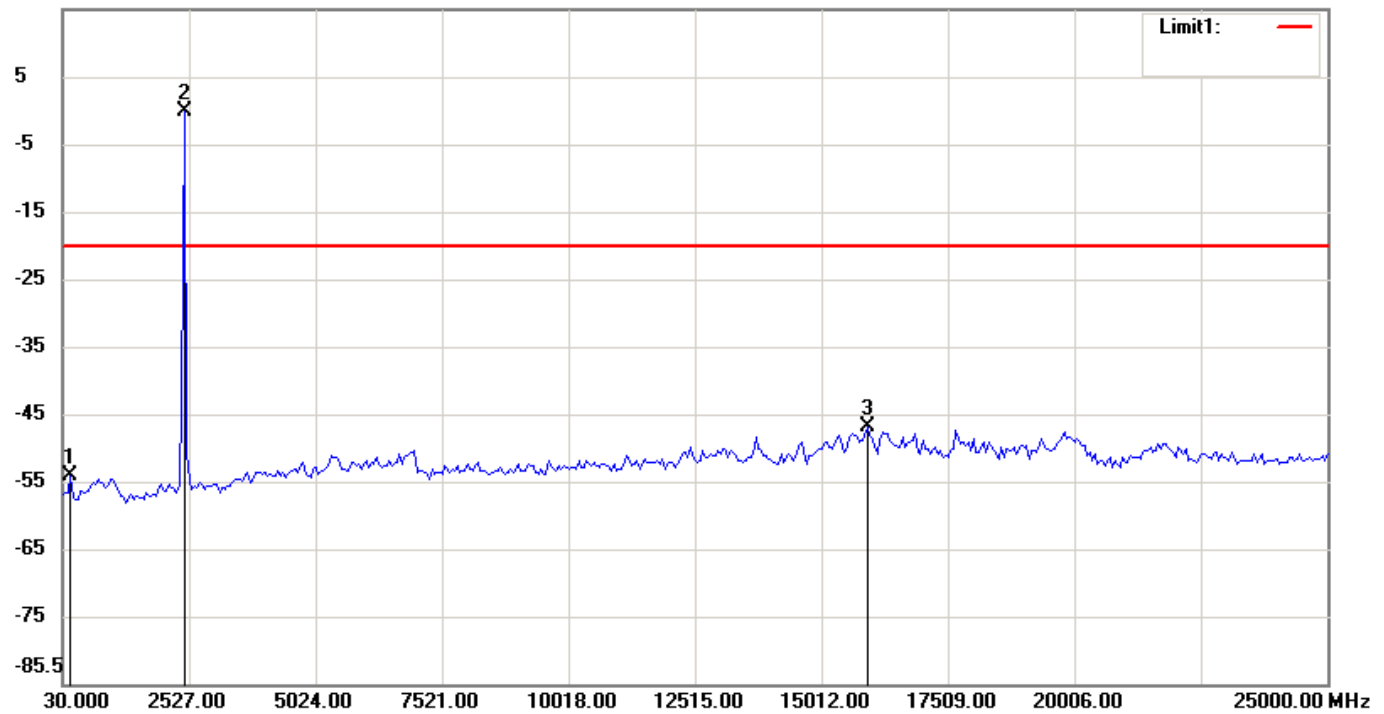
#6

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

14.5 dBm



Condition: -20.71dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 06-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	179.8200	-54.56
2	2427.12000	-0.71
3	15910.92000	-47.43

File: 21-05-MAW-008_g_Ant1
Site: RF-Cond01

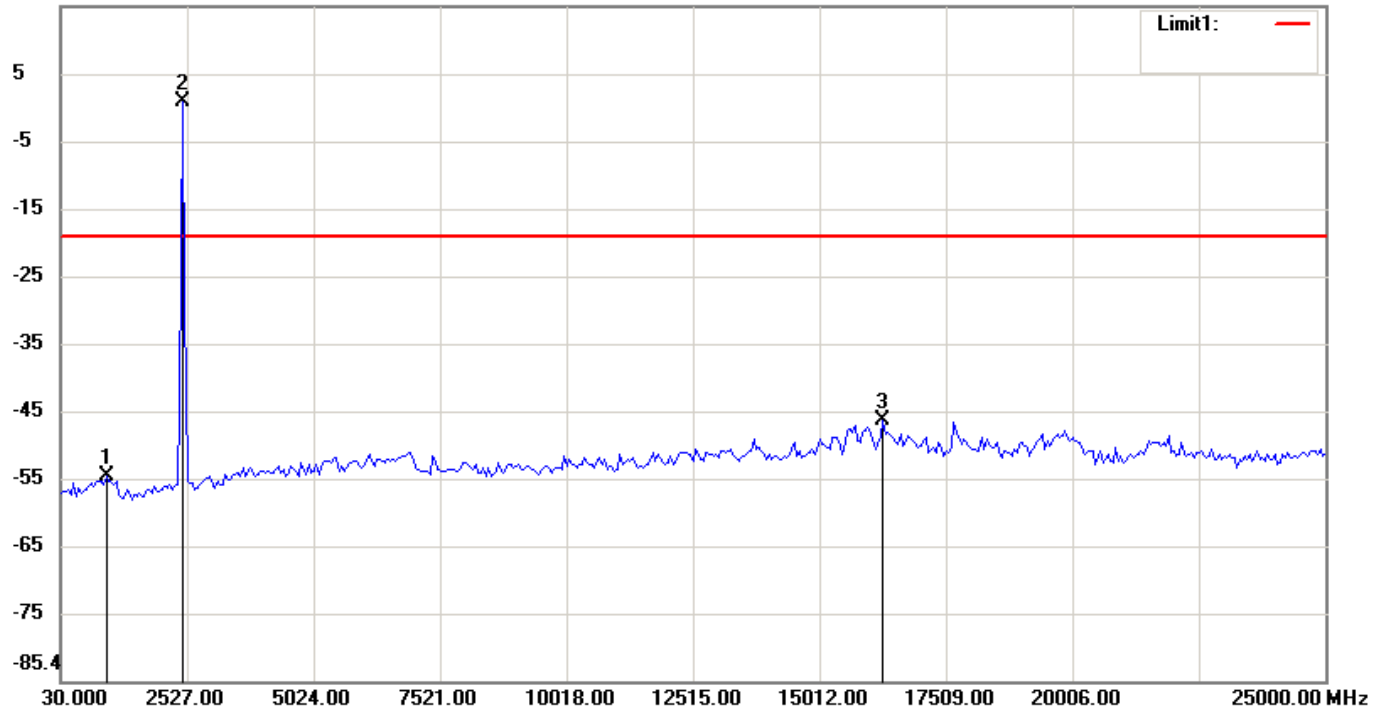
#9

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

14.6 dBm



Condition: -19.55dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11g Channel 11-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	928.9200	-55.02
2	2427.12000	0.45
3	16260.50000	-46.80

9.4.3 調變技術: IEEE 802.11n HT20

9.4.3.1 CHAIN 0

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2399.950 MHz，比主波低 20dB以上，合乎標準規定。
- b. 上邊緣頻帶：距上頻帶邊緣40MHz內最大混附波產生於 2483.596 MHz，比主波低 20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 75-79 頁。

2. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

File: 21-05-MAW-008_n20_Ant1
Site: RF-Cond01

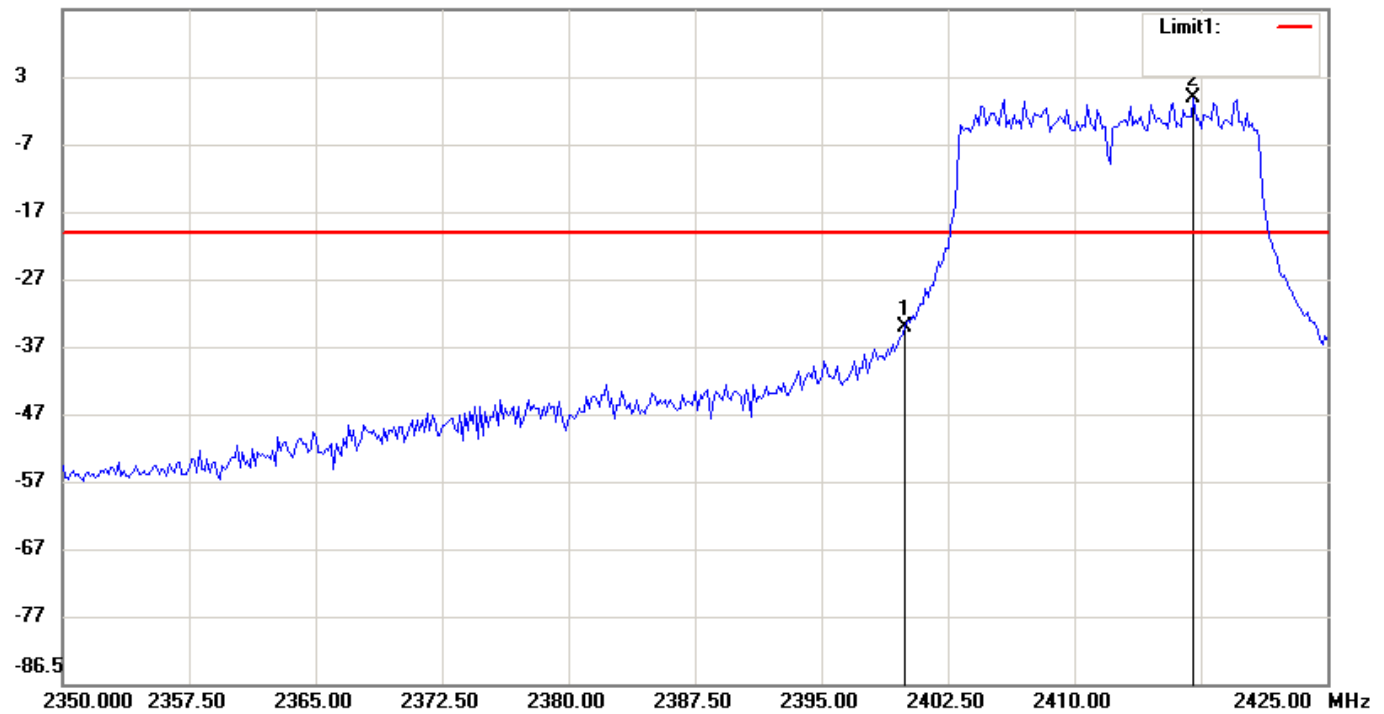
#4

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.5 dBm



Condition: -19.68dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11n-HT20 Channel 01-Bandedge

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2399.95000	-33.56
2	2417.05000	0.32

File: 21-05-MAW-008_n20_Ant1
Site: RF-Cond01

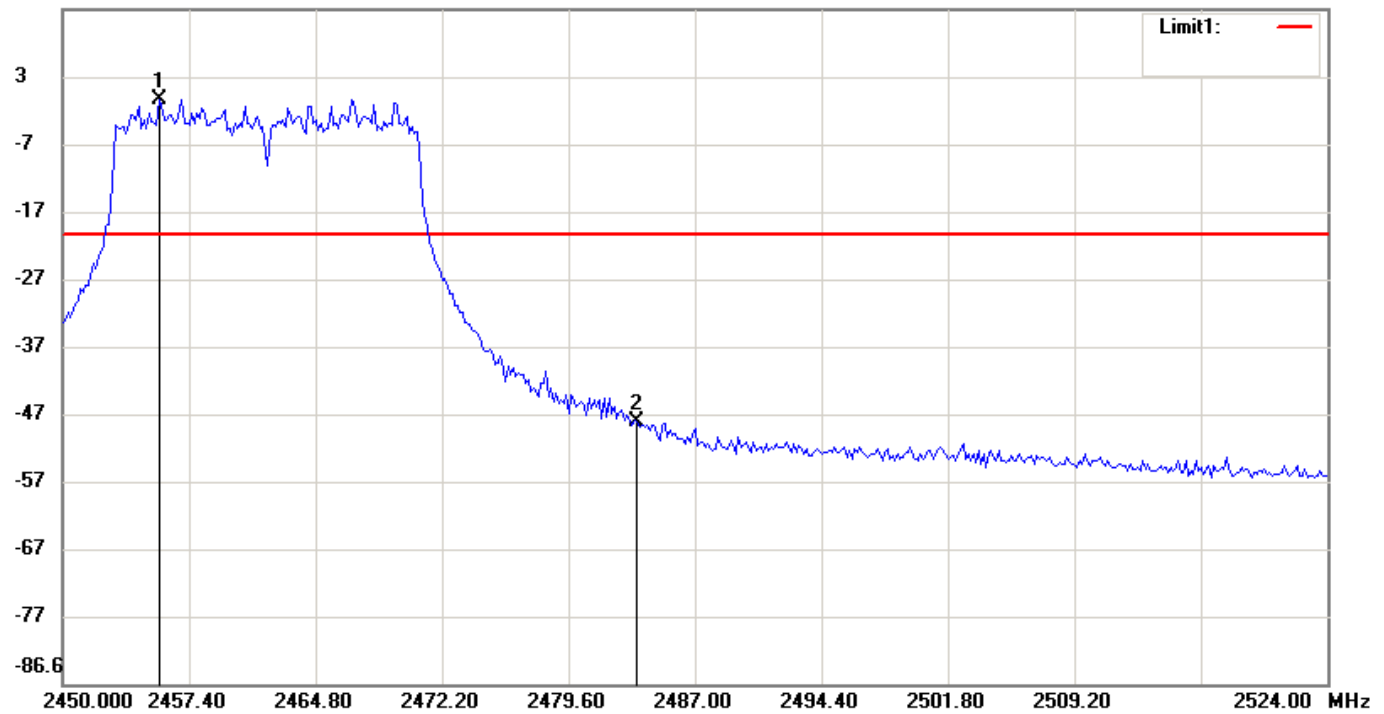
#11

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.4 dBm



Condition: -19.9dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11n-HT20 Channel 11-Bandedge

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2455.62400	0.10
2	2483.59600	-47.58

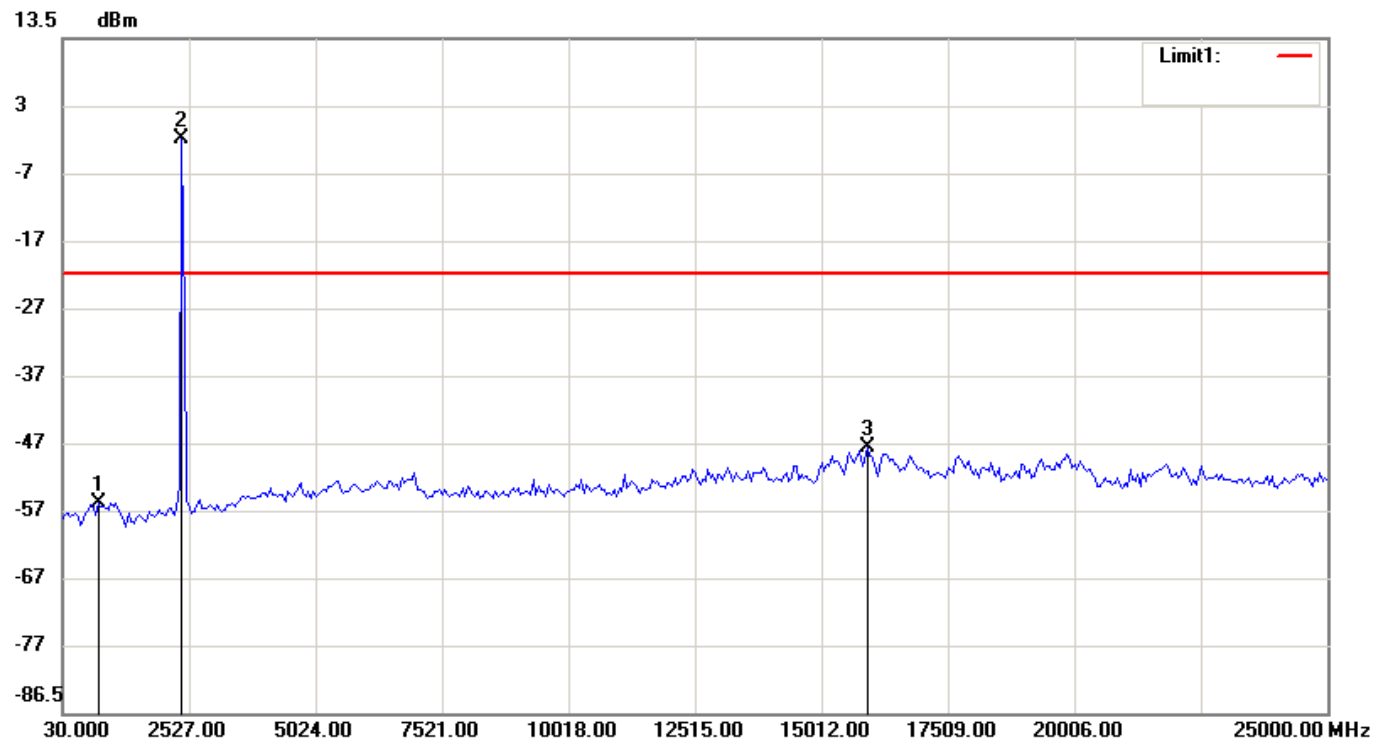
File: 21-05-MAW-008_n20_Ant1
Site: RF-Cond01

#2

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition: -21.38dBm

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 01-Conducted Spurious

RF Conducted

Sweep Time: 250ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Phillip

No.	Frequency(MHz)	Level(dBm)
1	729.1600	-55.32
2	2377.18000	-1.38
3	15910.92000	-47.10

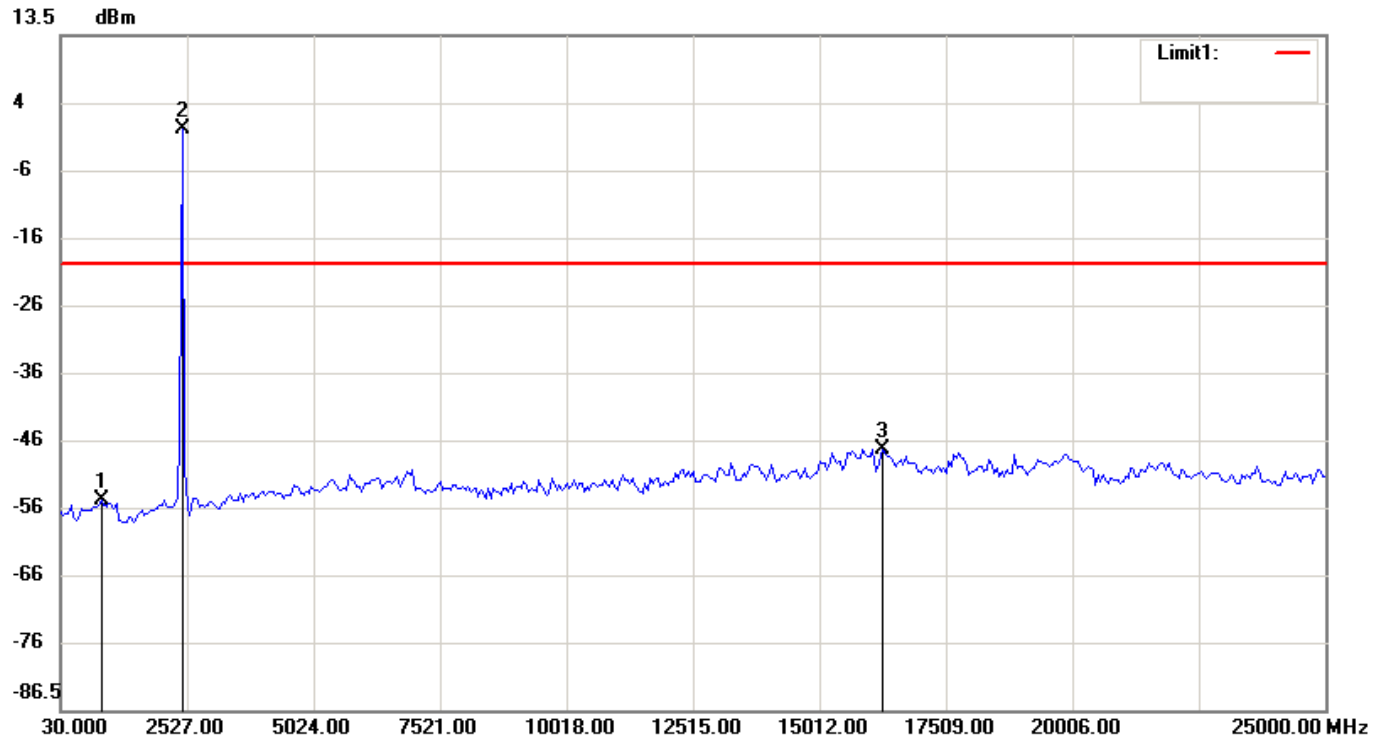
File: 21-05-MAW-008_n20_Ant1
Site: RF-Cond01

#6

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %



Condition: -20.44dBm

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 06-Conducted Spurious

RF Conducted

Sweep Time: 250ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Phillip

No.	Frequency(MHz)	Level(dBm)
1	829.0400	-55.49
2	2427.12000	-0.44
3	16260.50000	-47.87

File: 21-05-MAW-008_n20_Ant1
Site: RF-Cond01

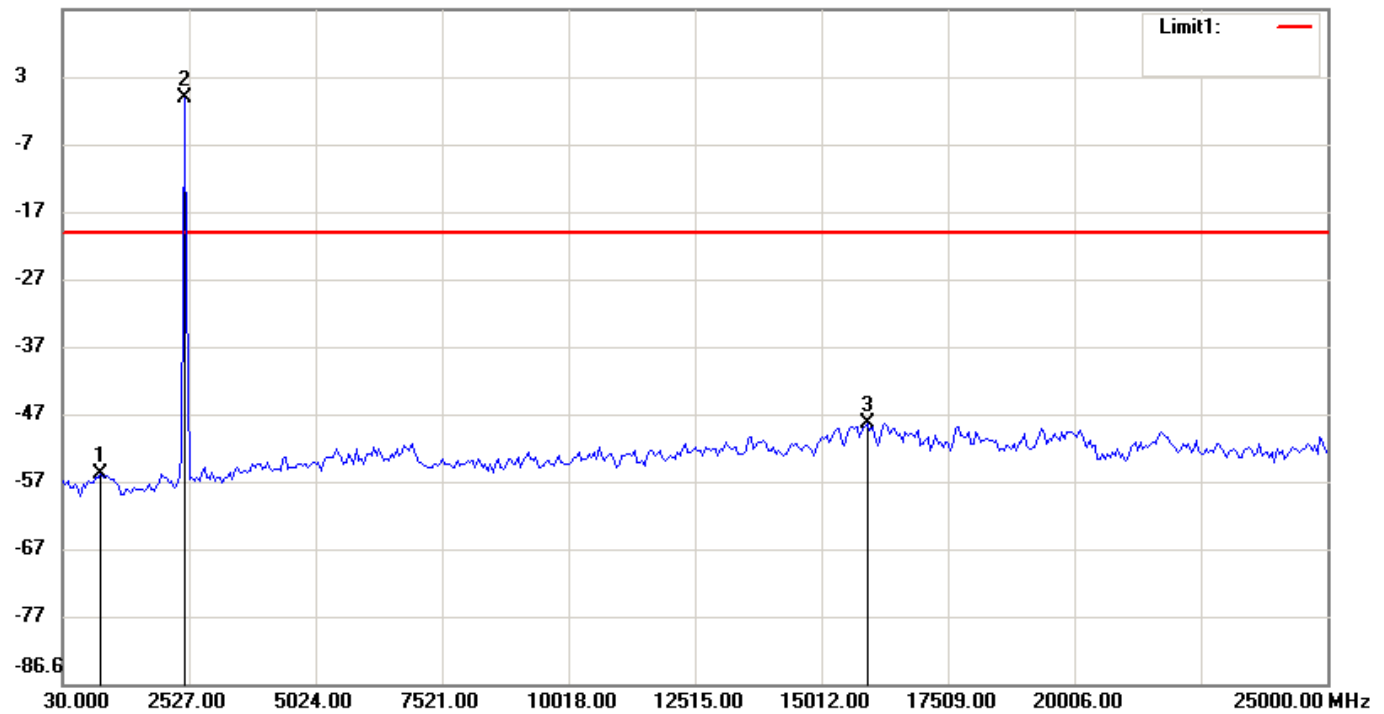
#9

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.4 dBm



Condition: -19.78dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11n-HT20 Channel 11-Conducted Spurious

RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	779.1000	-55.37
2	2427.12000	0.22
3	15910.92000	-47.88

9.4.3.2 CHAIN 1

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2399.200 MHz，比主波低 20dB以上，合乎標準規定。
- b. 上邊緣頻帶：距上頻帶邊緣40MHz內最大混附波產生於 2483.892 MHz，比主波低 20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 81-85 頁。

2. 量測不準確度: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

9.5 結果判定

混附波之發射皆低於使用頻帶內最高的射頻功率20dB以上，符合標準規定。

File: 21-05-MAW-008_n20_Ant2
Site: RF-Cond01

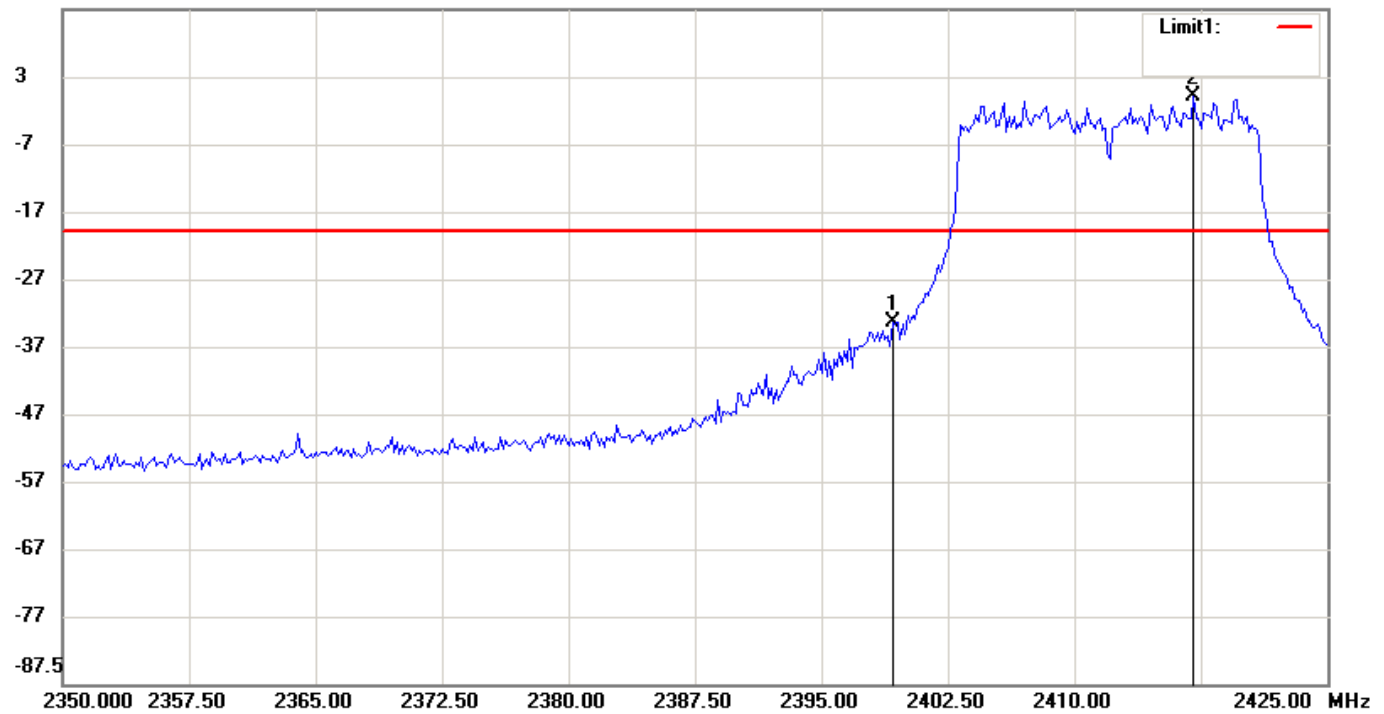
#4

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

12.5 dBm



Condition: -20.47dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11n-HT20 Channel 01-Bandedge

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2399.20000	-33.86
2	2417.05000	-0.47

File: 21-05-MAW-008_n20_Ant2
Site: RF-Cond01

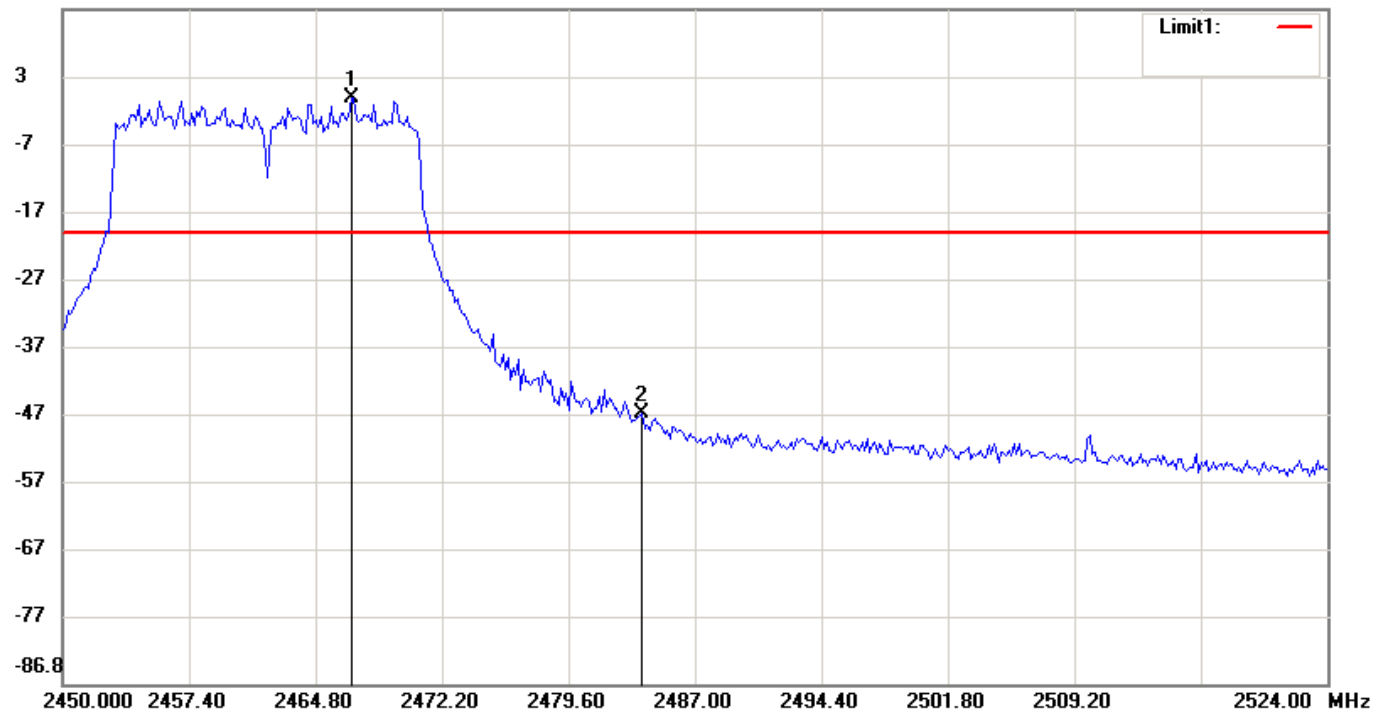
#11

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.2 dBm



Condition: -19.89dBm
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: NCC_LP0002_802.11n-HT20 Channel 11-Bandedge

RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	2466.87200	0.11
2	2483.89200	-46.67

File: 21-05-MAW-008_n20_Ant2
Site: RF-Cond01

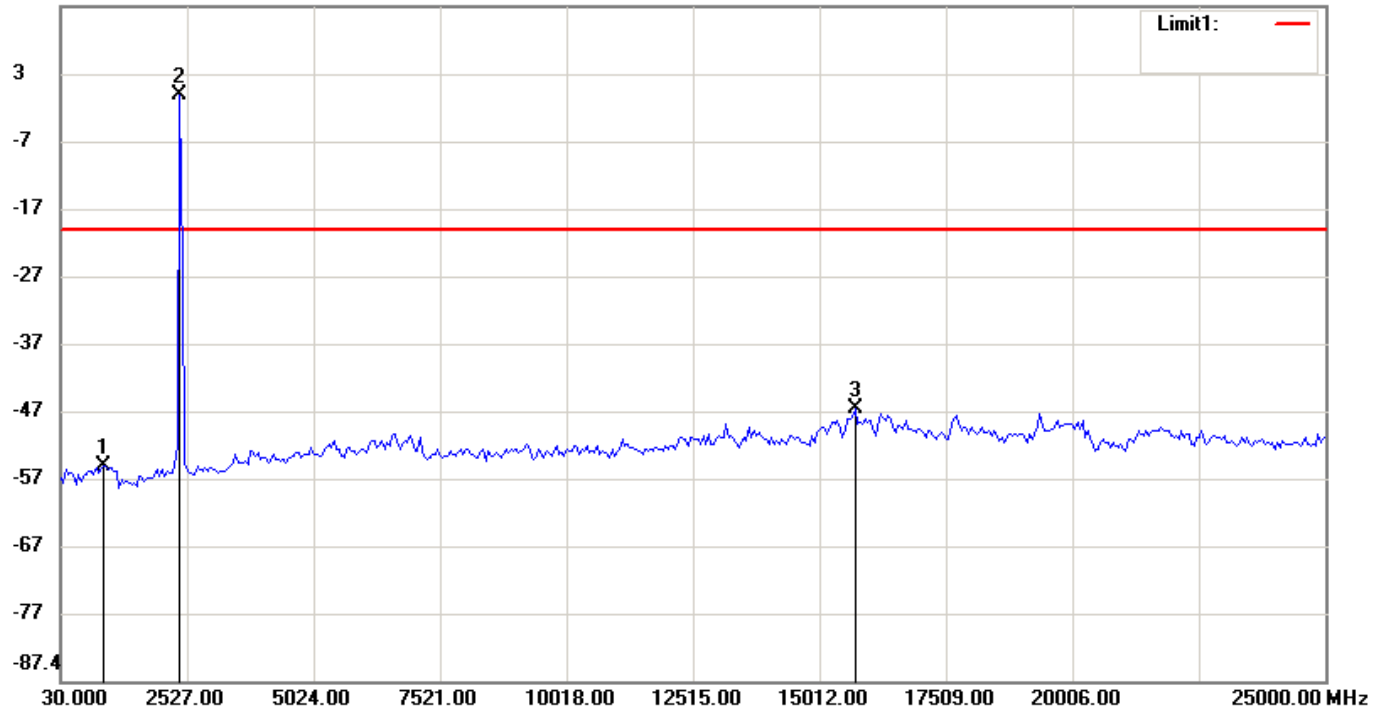
#2

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

12.6 dBm



Condition: -20.65dBm

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 01-Conducted Spurious

RF Conducted

Sweep Time: 250ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Phillip

No.	Frequency(MHz)	Level(dBm)
1	878.9800	-55.50
2	2377.18000	-0.65
3	15711.16000	-47.19

File: 21-05-MAW-008_n20_Ant2
 Site: RF-Cond01

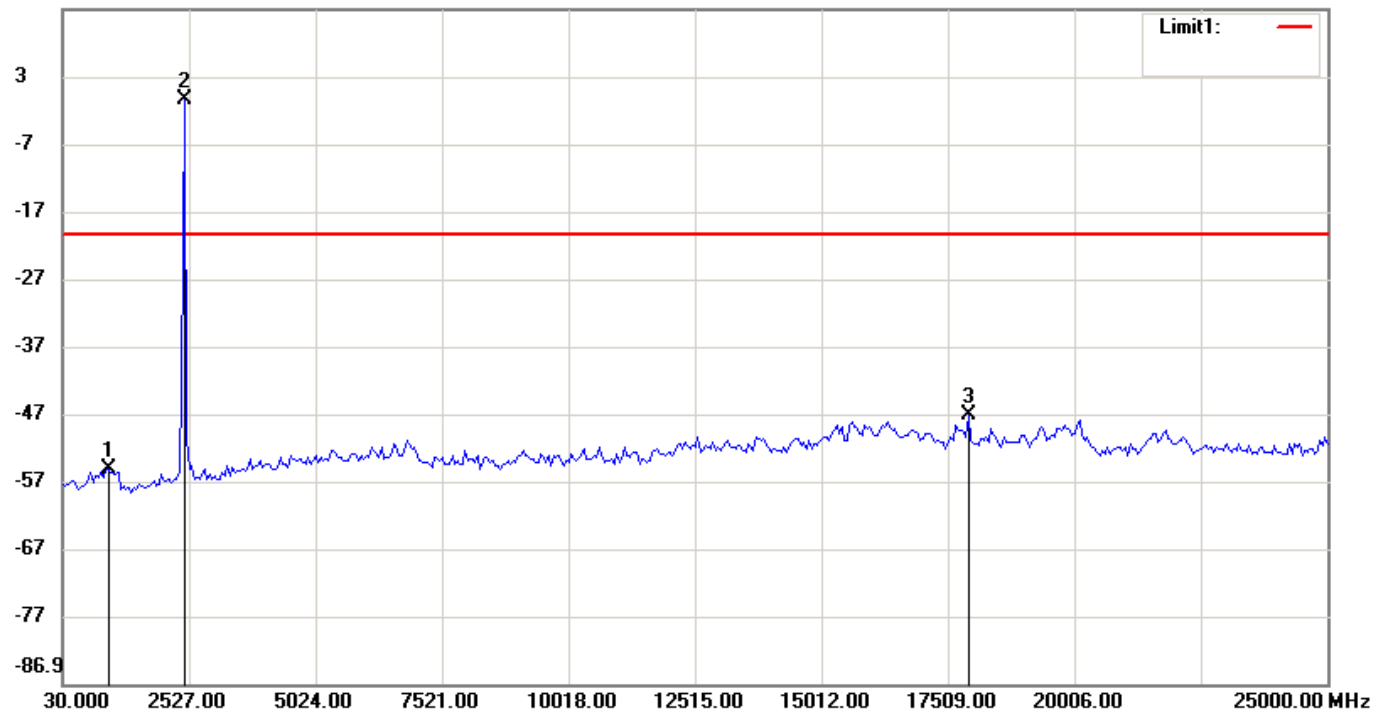
#6

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.1 dBm



Condition: -20.18dBm

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 06-Conducted Spurious

RF Conducted

Sweep Time: 250ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Phillip

No.	Frequency(MHz)	Level(dBm)
1	928.9200	-55.07
2	2427.12000	-0.18
3	17908.52000	-46.93

File: 21-05-MAW-008_n20_Ant2
Site: RF-Cond01

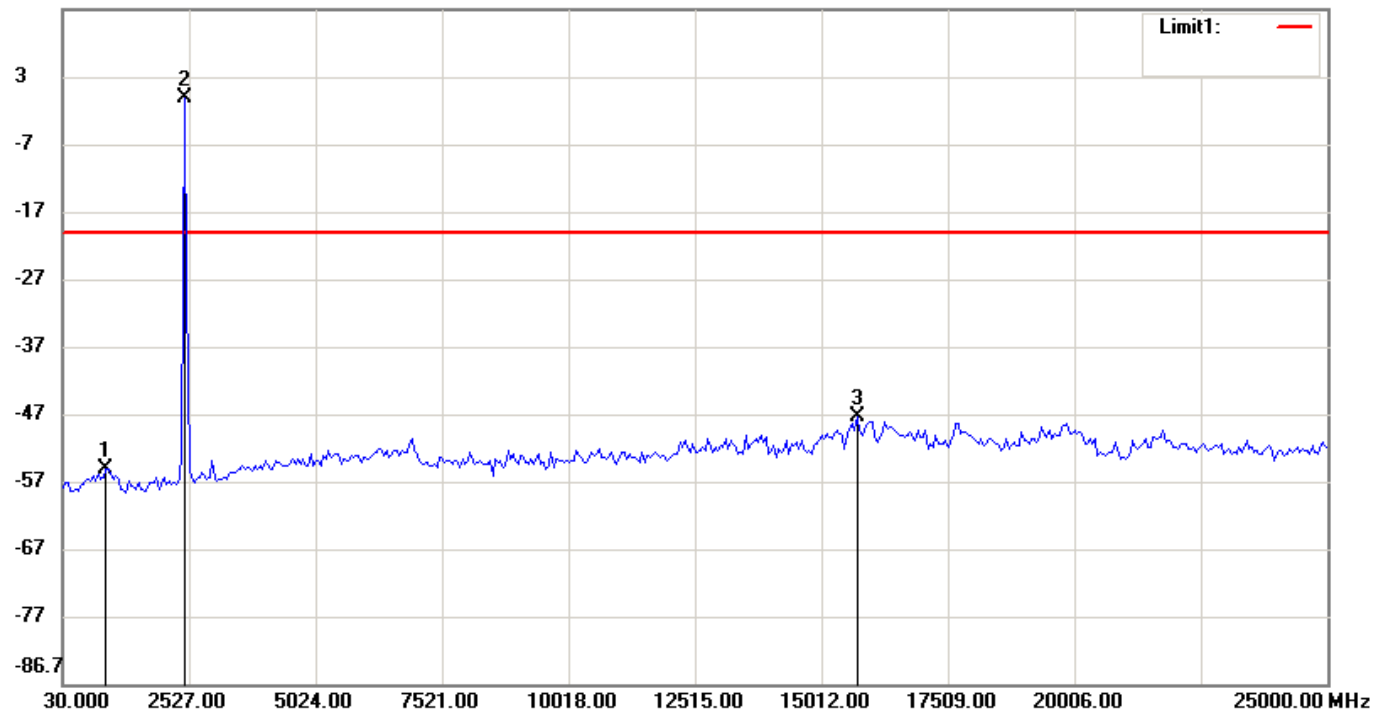
#9

Date: 2021/6/30

Temperature: 25 °C

Humidity: 54 %

13.3 dBm



Condition: -19.83dBm

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note: NCC_LP0002_802.11n-HT20 Channel 11-Conducted Spurious

RF Conducted

Sweep Time: 250ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Phillip

No.	Frequency(MHz)	Level(dBm)
1	878.9800	-54.77
2	2427.12000	0.17
3	15711.16000	-47.15

10 場強輻射之量測

10.1 適用標準

依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.5之要求，落於3.5節禁用頻段之輻射干擾需符合3.6節之一般限制要求。

10.2 量測方法

將待測物置於非金屬桌面，使其在測試模式狀態，且設定為高、中、低各頻道產生最高峰值輸出功率的傳輸速率，接收天線置於3米外，且桌面要360度旋轉，另外接收天線也要從1米至4米升降變化，接收天線置於水平、垂直極向各執行測試一次。待測物若為手持式則分別要以三軸相放置，並分別測試以找出最大輻射電場強度。

10.3 量測場強輻射之儀器

(1)量測儀器

儀器名稱	廠 牌	型 號
EMI Receiver	R&S	ESCI
Spectrum Analyzer	R&S	FSU46
Spectrum Analyzer	R&S	FSV40
Horn Antenna	EMCO	3117
Horn Antenna	EMCO	3116
PRE-Amplifier	Agilent	8449B
PRE-Amplifier	Agilent	8447D
BiLog Antenna	ETC	MCTD 2786
Trilog Broadband Antenna with 5dB Pad	SCHWARZBECK&EMCI	VULB 9168 & EMCI-N-6-05
Spectrum Analyzer	KEYSIGHT	N9030B

測試軟體: LZ-RF (Ver. ETC-3A2)

(2)儀器設定

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	300 kHz
	RF Test Receiver	Peak	120 kHz	300 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

10.4 場強度之計算

場強之計算公式如下

$$\text{結果值} = \text{讀值} + \text{校正因子}$$

其中校正因子為：

天線因子+ 饋線損失 + 濾波器損失（若有使用） - 放大器增益（若有使用）
量測結果請見下頁。

10.5 場強輻射之量測結果

測試工程師: 羅世勇

10.5.1 諧波發射

10.5.1.1 調變技術: IEEE 802.11b

a. Channel Low

操作模式 : 發射接收

基本波頻率 : 2412 MHz

測試日期: Jul. 02, 2021

環境溫度: 23°C

環境濕度: 65%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
4824.0000	H	---	---	1.06	---	---	74.0	54.0	---
4824.0000	V	---	---	1.06	---	---	74.0	54.0	---
7236.0000	H	---	---	3.64	---	---	74.0	54.0	---
7236.0000	V	---	---	3.64	---	---	74.0	54.0	---
9648.0000	H	---	---	4.70	---	---	74.0	54.0	---
9648.0000	V	---	---	4.70	---	---	74.0	54.0	---
12060.0000	H	---	---	8.06	---	---	74.0	54.0	---
12060.0000	V	---	---	8.06	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度:
 VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
 VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
 VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Jul. 02, 2021

環境溫度：23°C

環境濕度：65%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
4874.0000	H	---	---	1.17	---	---	74.0	54.0	---
4874.0000	V	---	---	1.17	---	---	74.0	54.0	---
7311.0000	H	---	---	3.66	---	---	74.0	54.0	---
7311.0000	V	---	---	3.66	---	---	74.0	54.0	---
9748.0000	H	---	---	4.82	---	---	74.0	54.0	---
9748.0000	V	---	---	4.82	---	---	74.0	54.0	---
12185.0000	H	---	---	8.29	---	---	74.0	54.0	---
12185.0000	V	---	---	8.29	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度：
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Jul. 02, 2021

環境溫度：23°C

環境濕度：65%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (dB) (worse)
		Peak	AVG		Peak	AVG	Peak	AVG	
4924.0000	H	---	---	1.28	---	---	74.0	54.0	---
4924.0000	V	---	---	1.28	---	---	74.0	54.0	---
7386.0000	H	---	---	3.68	---	---	74.0	54.0	---
7386.0000	V	---	---	3.68	---	---	74.0	54.0	---
9848.0000	H	---	---	4.94	---	---	74.0	54.0	---
9848.0000	V	---	---	4.94	---	---	74.0	54.0	---
14772.0000	H	---	---	10.74	---	---	74.0	54.0	---
14772.0000	V	---	---	10.74	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度：
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

10.5.1.2 調變技術: IEEE 802.11g

a. Channel Low

操作模式：發射接收

基本波頻率：2412 MHz

測試日期: Jul. 02, 2021

境溫度: 23°C

環境濕度: 65%

輻射 頻率	天線 極性	機器讀值 (dBuV/m)@3m		校正 因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
4824.0000	H	---	---	1.06	---	---	74.0	54.0	---
4824.0000	V	---	---	1.06	---	---	74.0	54.0	---
7236.0000	H	---	---	3.64	---	---	74.0	54.0	---
7236.0000	V	---	---	3.64	---	---	74.0	54.0	---
9648.0000	H	---	---	4.70	---	---	74.0	54.0	---
9648.0000	V	---	---	4.70	---	---	74.0	54.0	---
12060.0000	H	---	---	8.06	---	---	74.0	54.0	---
12060.0000	V	---	---	8.06	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度:
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Jul. 02, 2021

環境溫度：23°C

環境濕度：65%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (dB) (worse)
		Peak	AVG		Peak	AVG	Peak	AVG	
4874.0000	H	---	---	1.17	---	---	74.0	54.0	---
4874.0000	V	---	---	1.17	---	---	74.0	54.0	---
7311.0000	H	---	---	3.66	---	---	74.0	54.0	---
7311.0000	V	---	---	3.66	---	---	74.0	54.0	---
9748.0000	H	---	---	4.82	---	---	74.0	54.0	---
9748.0000	V	---	---	4.82	---	---	74.0	54.0	---
12185.0000	H	---	---	8.29	---	---	74.0	54.0	---
12185.0000	V	---	---	8.29	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度：
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Jul. 02, 2021

環境溫度：23°C

環境濕度：65%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
4924.0000	H	---	---	1.28	---	---	74.0	54.0	---
4924.0000	V	---	---	1.28	---	---	74.0	54.0	---
7386.0000	H	---	---	3.68	---	---	74.0	54.0	---
7386.0000	V	---	---	3.68	---	---	74.0	54.0	---
9848.0000	H	---	---	4.94	---	---	74.0	54.0	---
9848.0000	V	---	---	4.94	---	---	74.0	54.0	---
14772.0000	H	---	---	10.74	---	---	74.0	54.0	---
14772.0000	V	---	---	10.74	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度：
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

10.5.1.3 調變技術: IEEE 802.11n HT20

a. Channel Low

操作模式：發射接收

基本波頻率：2412 MHz

測試日期: Jul. 02, 2021

境溫度: 23°C

環境濕度: 65%

輻射 頻率	天線 極性	機器讀值 (dBuV/m)@3m		校正 因子	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse)
(MHz)	H/V	Peak	AVG	(dB)	Peak	AVG	Peak	AVG	(dB)
4824.0000	H	---	---	1.06	---	---	74.0	54.0	---
4824.0000	V	---	---	1.06	---	---	74.0	54.0	---
7236.0000	H	---	---	3.64	---	---	74.0	54.0	---
7236.0000	V	---	---	3.64	---	---	74.0	54.0	---
9648.0000	H	---	---	4.70	---	---	74.0	54.0	---
9648.0000	V	---	---	4.70	---	---	74.0	54.0	---
12060.0000	H	---	---	8.06	---	---	74.0	54.0	---
12060.0000	V	---	---	8.06	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度:
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Jul. 02, 2021

環境溫度：23°C

環境濕度：65%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
4874.0000	H	---	---	1.17	---	---	74.0	54.0	---
4874.0000	V	---	---	1.17	---	---	74.0	54.0	---
7311.0000	H	---	---	3.66	---	---	74.0	54.0	---
7311.0000	V	---	---	3.66	---	---	74.0	54.0	---
9748.0000	H	---	---	4.82	---	---	74.0	54.0	---
9748.0000	V	---	---	4.82	---	---	74.0	54.0	---
12185.0000	H	---	---	8.29	---	---	74.0	54.0	---
12185.0000	V	---	---	8.29	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度：
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Jul. 02, 2021

環境溫度：23°C

環境濕度：65%

輻射 頻率 (MHz)	天線 極性 H/V	機器讀值 (dBuV/m)@3m		校正 因子 (dB)	結果值 (dBuV/m)@3m		限制值 (dBuV/m)@3m		餘裕值 (worse) (dB)
		Peak	AVG		Peak	AVG	Peak	AVG	
4924.0000	H	---	---	1.28	---	---	74.0	54.0	---
4924.0000	V	---	---	1.28	---	---	74.0	54.0	---
7386.0000	H	---	---	3.68	---	---	74.0	54.0	---
7386.0000	V	---	---	3.68	---	---	74.0	54.0	---
9848.0000	H	---	---	4.94	---	---	74.0	54.0	---
9848.0000	V	---	---	4.94	---	---	74.0	54.0	---
14772.0000	H	---	---	10.74	---	---	74.0	54.0	---
14772.0000	V	---	---	10.74	---	---	74.0	54.0	---

註：

1. 標記“---”表發射之訊號太弱而儀器無法量測。
2. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
3. 量測不準確度：
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

10.5.2 諧波及其它不必要之訊號測試圖

10.5.2.1 調變技術: IEEE 802.11b

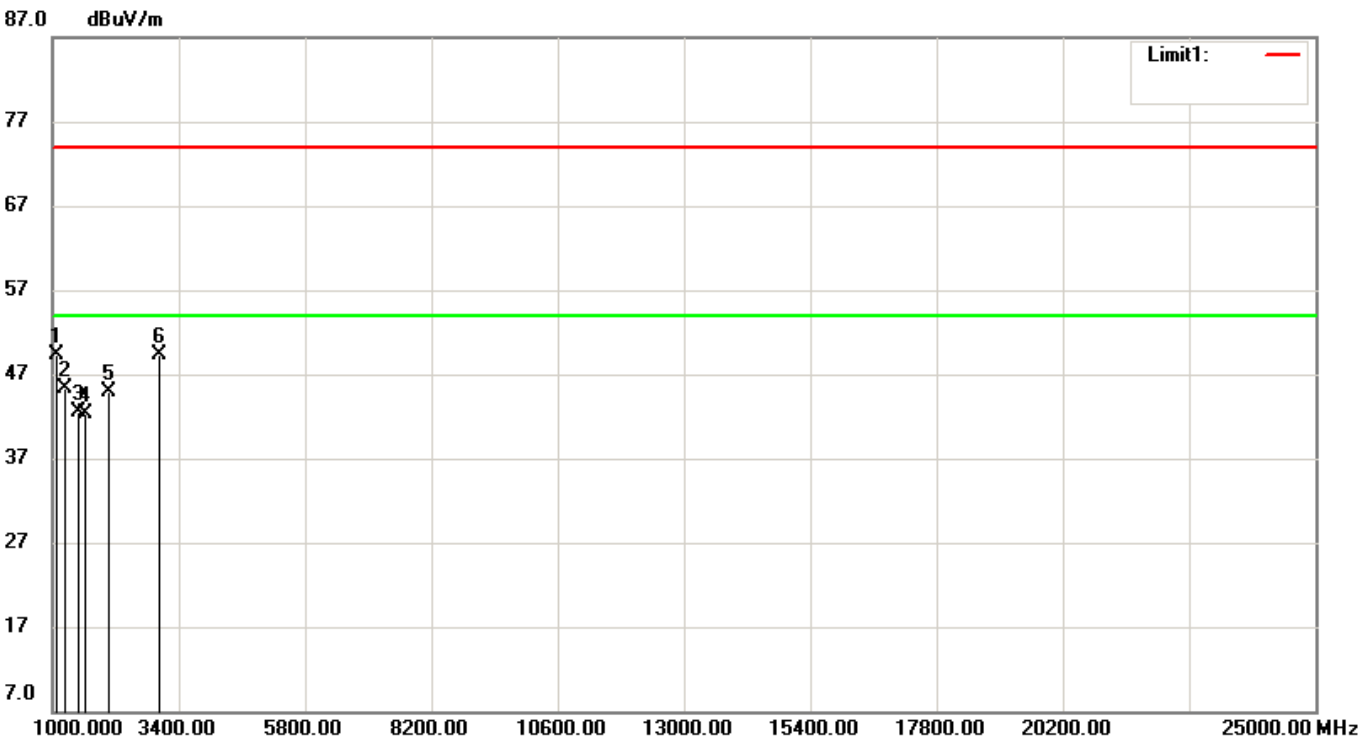
a. Channel Low

操作模式：發射接收

基本波頻率：2412 MHz

File: 21-05-MAW-#35Date: 2021/7/2Temperature: 23 °C

Site: RE02-EMCB1-N2Humidity: 65 %



Condition: NCC_Above1G_PkPolarization: Horizontal

EUT: Cockpit Control UnitDistance: 3m

Model: DNNS124

Test Mode: DTSOperator: Phillip

Note: CH LOW-1

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1042.62820	58.73	peak	-9.34	49.39	74.00	-24.61
2	1197.43580	54.07	peak	-8.85	45.22	74.00	-28.78
3	1471.15380	50.59	peak	-7.99	42.60	74.00	-31.40
4	1599.03840	49.38	peak	-7.11	42.27	74.00	-31.73
5	2056.73060	48.62	peak	-3.77	44.85	74.00	-29.15
6	3005.69000	51.27	peak	-2.01	49.26	74.00	-24.74

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度:

VER: ±5.32dB(1GHz≤f<6GHz) ;HOR: ±5.05dB(1GHz≤f<6GHz)

VER: ±4.71dB(6GHz≤f<18GHz) ;HOR: ±4.96dB(6GHz≤f<18GHz)

VER: ±5.37dB(18GHz≤f≤40GHz) ;HOR: ±5.61dB(18GHz≤f≤40GHz)

操作模式：發射接收

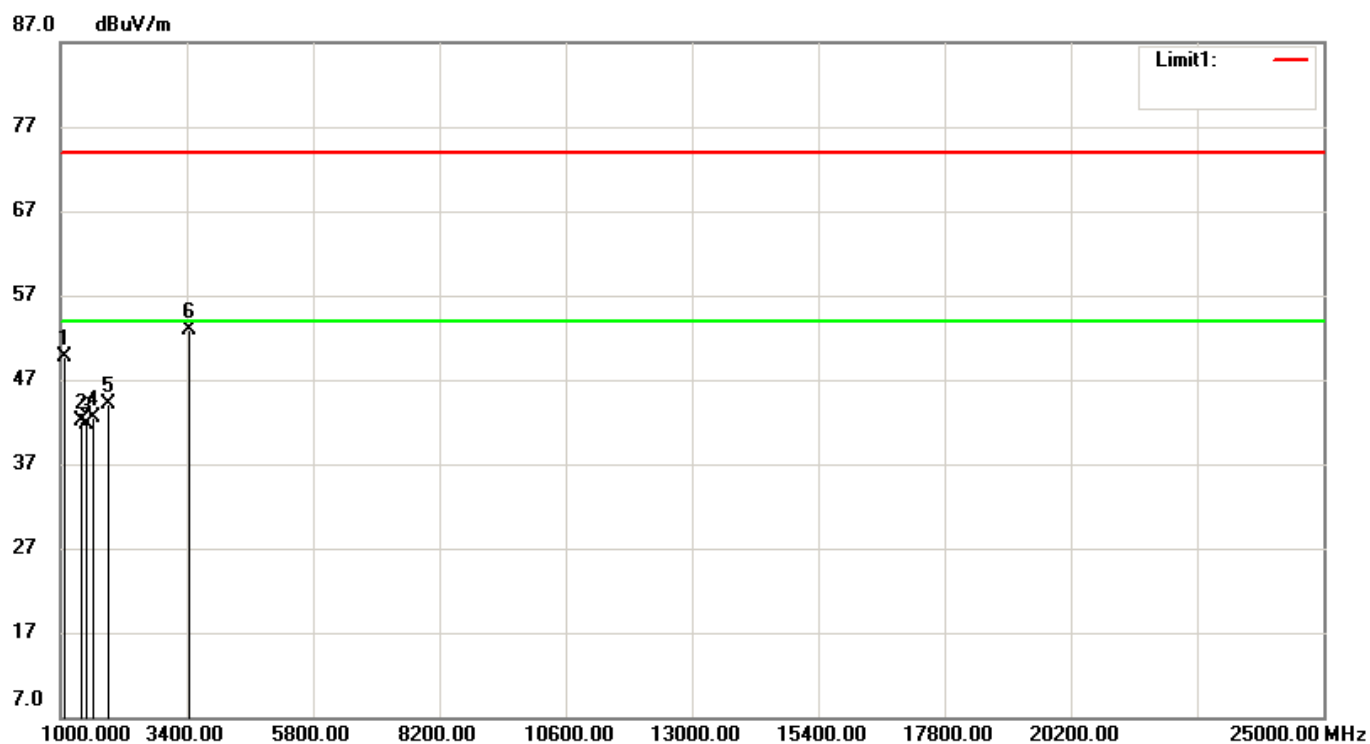
基本波頻率：2412 MHz

File: 21-05-MAW- #36
008_B
Site: RE02-EMC
B1-N2

Date: 2021/7/2

Temperature: 23 °C

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH LOW-1

Polarization: Vertical
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1053.84610	59.03	peak	-9.31	49.72	74.00	-24.28
2	1347.75640	50.44	peak	-8.37	42.07	74.00	-31.93
3	1471.15380	49.64	peak	-7.99	41.65	74.00	-32.35
4	1596.79470	49.63	peak	-7.12	42.51	74.00	-31.49
5	1910.89740	48.82	peak	-4.63	44.19	74.00	-29.81
6	3428.41500	54.50	peak	-1.50	53.00	74.00	-21.00

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度:

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$); HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$); HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$); HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

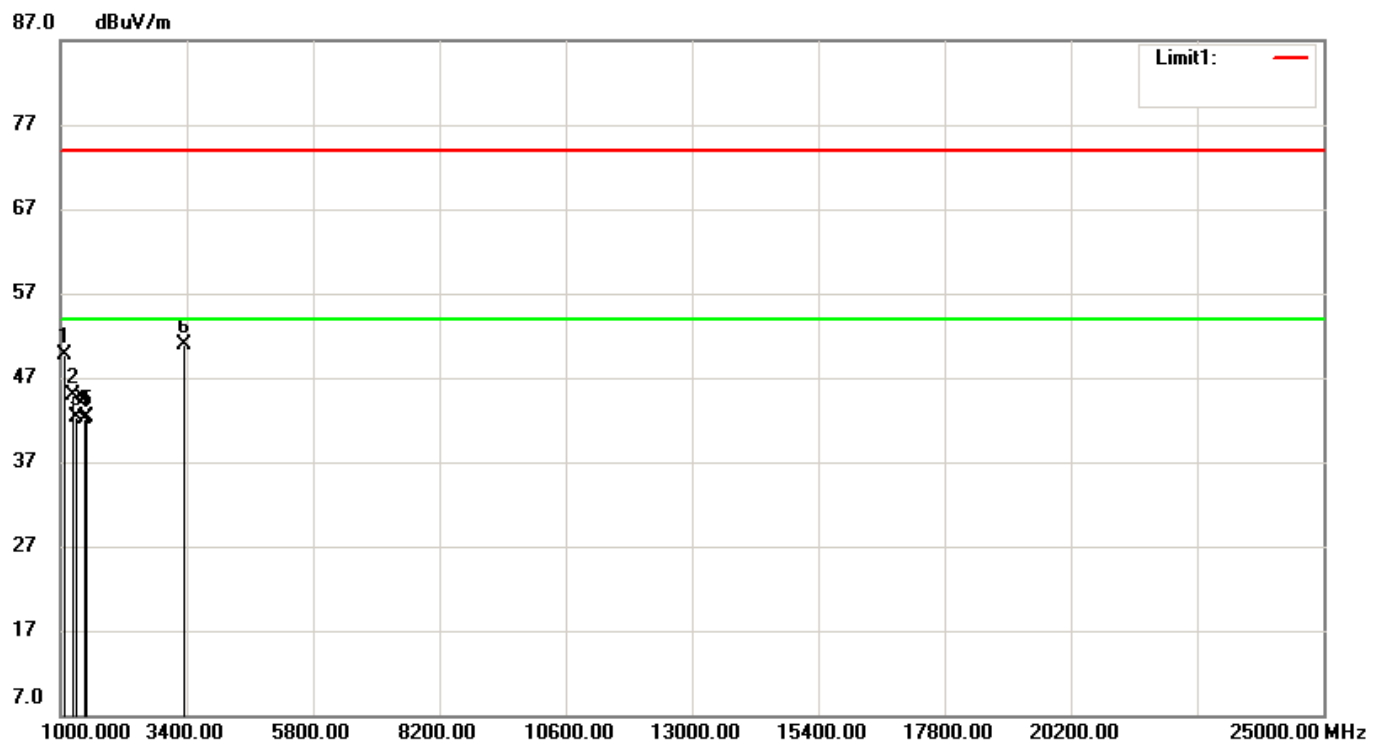
File: 21-05-MAW- #37

Date: 2021/7/2

Temperature: 23 °C

Site: RE02-EMC
B1-N2

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH MID-1

Polarization: Horizontal
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1042.62820	58.97	peak	-9.34	49.63	74.00	-24.37
2	1197.43580	53.78	peak	-8.85	44.93	74.00	-29.07
3	1293.91020	50.88	peak	-8.54	42.34	74.00	-31.66
4	1441.98710	50.22	peak	-8.08	42.14	74.00	-31.86
5	1471.15380	50.24	peak	-7.99	42.25	74.00	-31.75
6	3328.95030	52.51	peak	-1.62	50.89	74.00	-23.11

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：

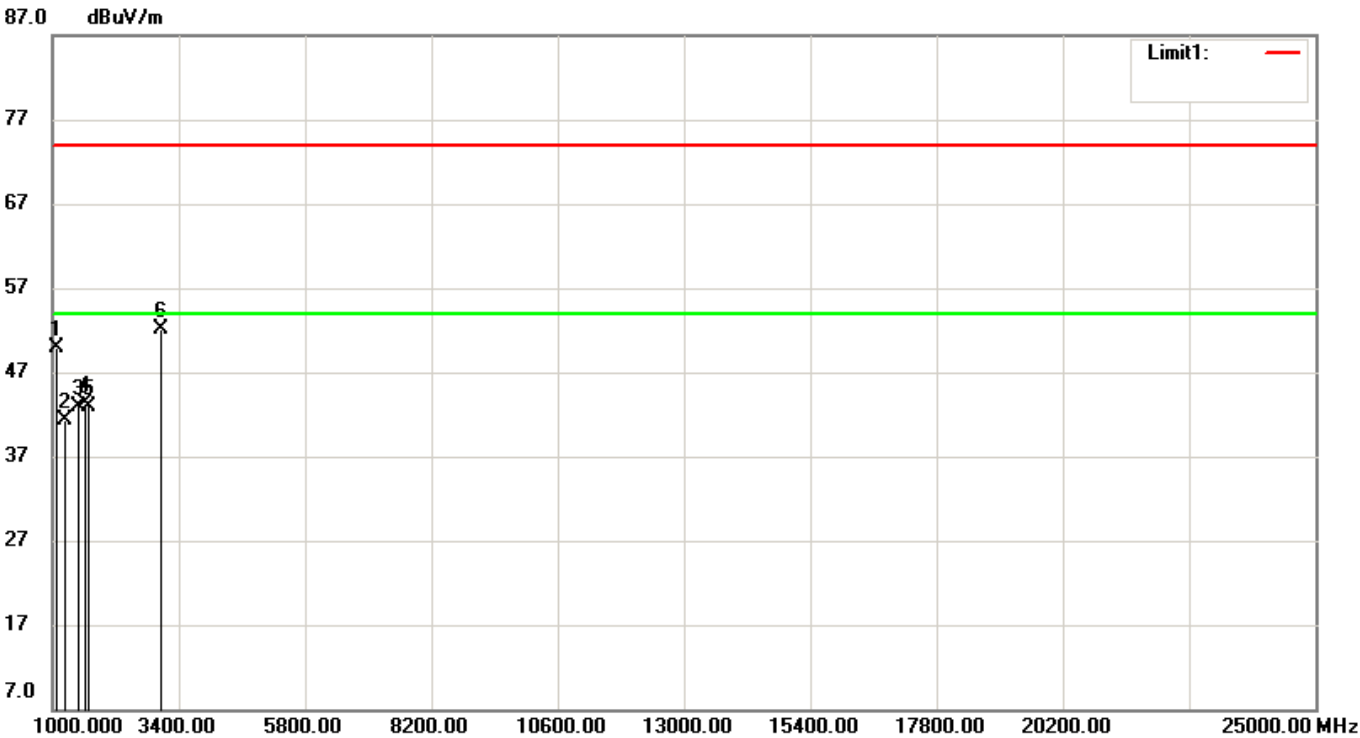
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收
基本波頻率：2437 MHz

File: 21-05-MAW- #38 Date: 2021/7/2 Temperature: 23 °C
Site: RE02-EMC B1-N2 Humidity: 65 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS124
Test Mode: DTS Operator: Phillip
Note: CH MID-1

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1040.38460	59.34	peak	-9.35	49.99	74.00	-24.01
2	1199.67940	50.07	peak	-8.84	41.23	74.00	-32.77
3	1495.83330	50.72	peak	-7.91	42.81	74.00	-31.19
4	1599.03840	50.34	peak	-7.11	43.23	74.00	-30.77
5	1661.85900	49.56	peak	-6.61	42.95	74.00	-31.05
6	3055.42210	54.06	peak	-1.94	52.12	74.00	-21.88

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：
VER: ±5.32dB(1GHz ≤ f < 6GHz) ;HOR: ±5.05dB(1GHz ≤ f < 6GHz)
VER: ±4.71dB(6GHz ≤ f < 18GHz) ;HOR: ±4.96dB(6GHz ≤ f < 18GHz)
VER: ±5.37dB(18GHz ≤ f ≤ 40GHz) ;HOR: ±5.61dB(18GHz ≤ f ≤ 40GHz)

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

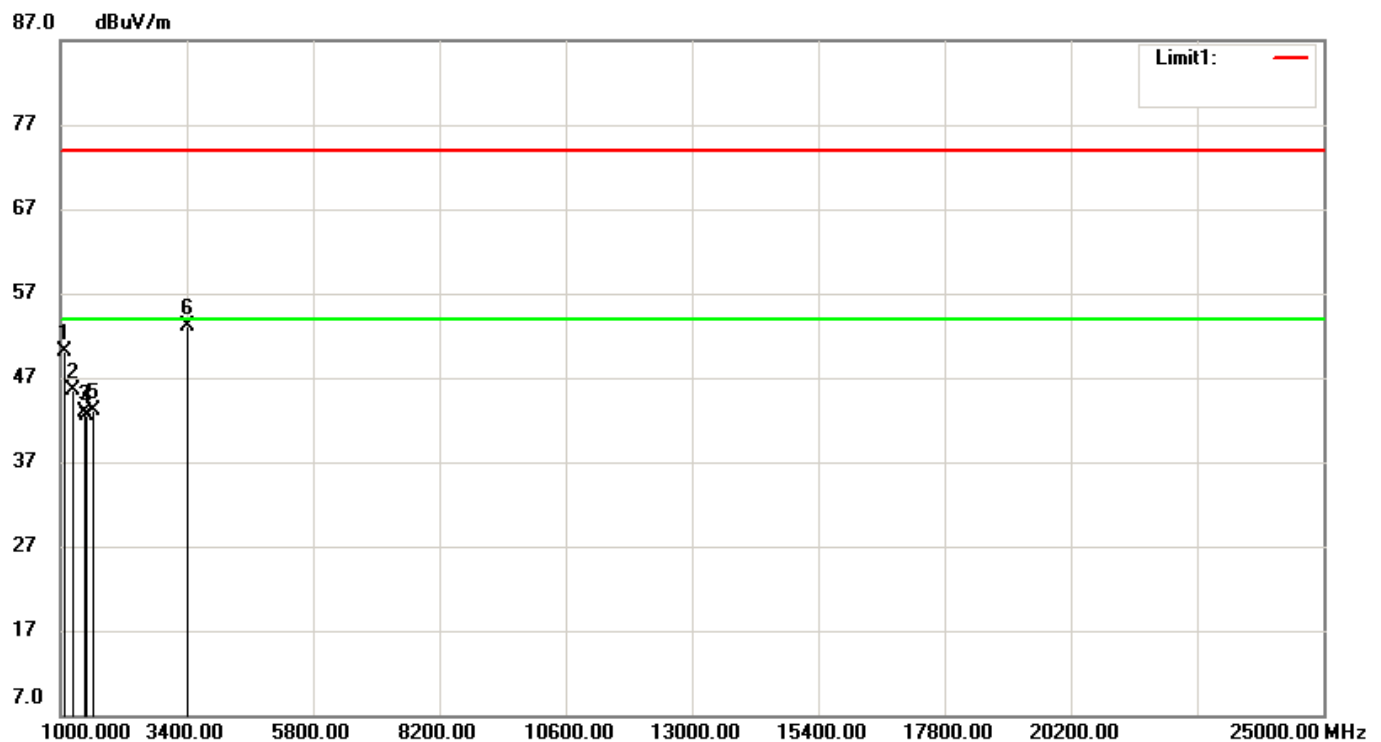
File: 21-05-MAW- #39

Date: 2021/7/2

Temperature: 23 °C

Site: RE02-EMC
B1-N2

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH HIGH-1

Polarization: Horizontal
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1042.62820	59.51	peak	-9.34	50.17	74.00	-23.83
2	1199.67940	54.30	peak	-8.84	45.46	74.00	-28.54
3	1439.74350	51.04	peak	-8.09	42.95	74.00	-31.05
4	1491.34610	50.53	peak	-7.94	42.59	74.00	-31.41
5	1599.03840	50.18	peak	-7.11	43.07	74.00	-30.93
6	3403.54880	54.57	peak	-1.53	53.04	74.00	-20.96

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

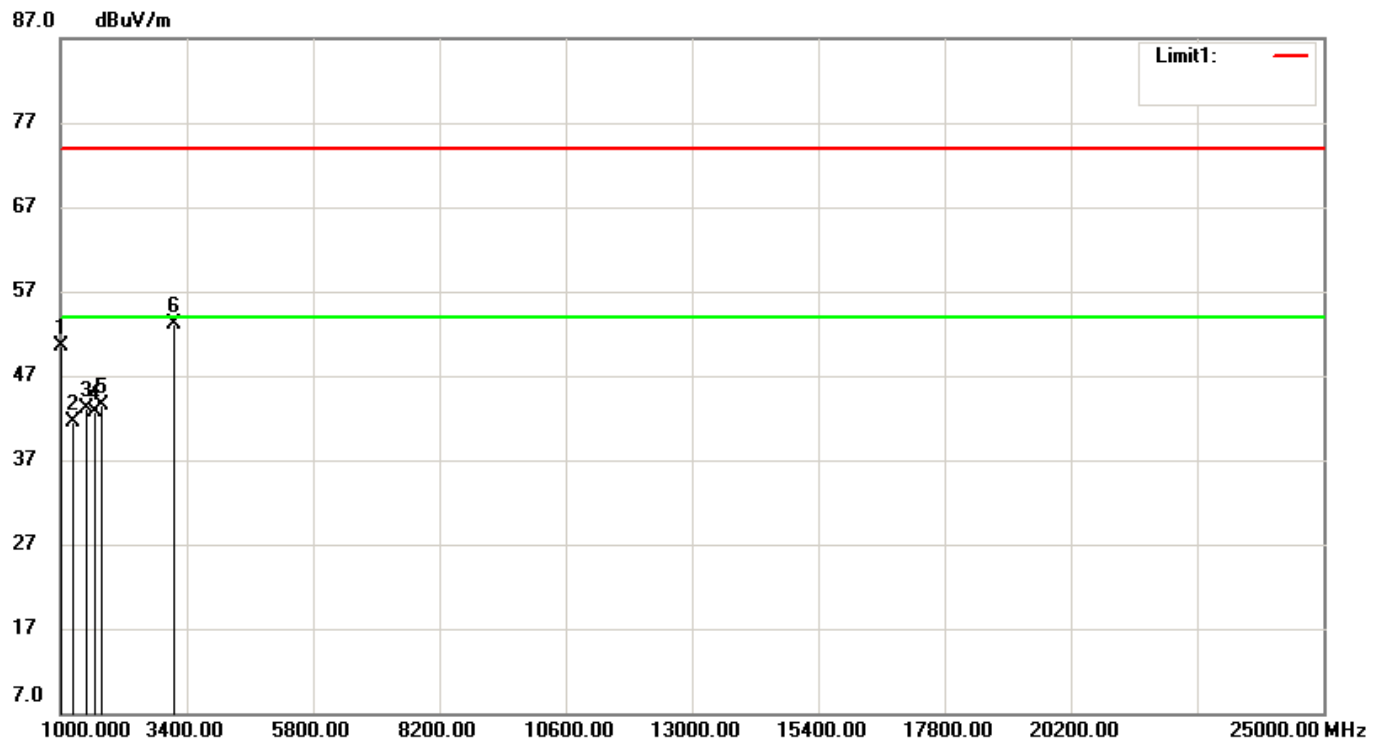
操作模式：發射接收
基本波頻率：2462 MHz

File: 21-05-MAW- #40
008_B
Site: RE02-EMC
B1-N2

Date: 2021/7/2

Temperature: 23 °C

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH HIGH-1

Polarization: Vertical
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1038.14100	59.93	peak	-9.35	50.58	74.00	-23.42
2	1199.67940	50.32	peak	-8.84	41.48	74.00	-32.52
3	1493.58970	50.96	peak	-7.92	43.04	74.00	-30.96
4	1639.42300	49.53	peak	-6.80	42.73	74.00	-31.27
5	1751.60250	49.45	peak	-5.90	43.55	74.00	-30.45
6	3130.02080	55.00	peak	-1.84	53.16	74.00	-20.84

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

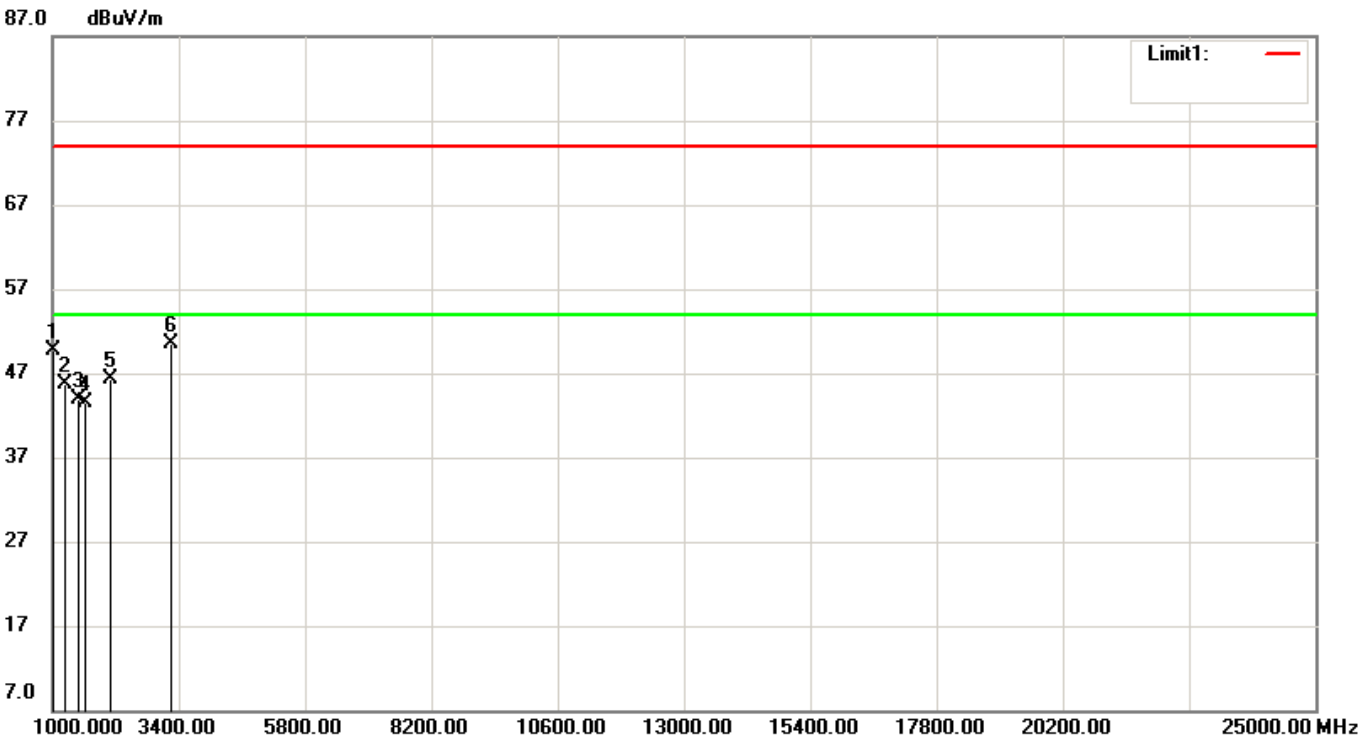
VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

10.5.2.2 調變技術: IEEE 802.11g

a. Channel Low

操作模式：發射接收
基本波頻率：2412 MHz

File: 21-05-MAW-008_G #35 Date: 2021/7/2 Temperature: 23 °C
Site: RE02-EMC B1-N2 Humidity: 65 %



Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS124
Test Mode: DTS Operator: Phillip
Note: CH LOW-1

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1038.14100	59.15	peak	-9.35	49.80	74.00	-24.20
2	1199.67940	54.46	peak	-8.84	45.62	74.00	-28.38
3	1475.64100	51.85	peak	-7.97	43.88	74.00	-30.12
4	1594.55120	50.67	peak	-7.15	43.52	74.00	-30.48
5	2106.08950	50.03	peak	-3.64	46.39	74.00	-27.61
6	3254.35160	52.29	peak	-1.70	50.59	74.00	-23.41

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度:
VER: ±5.32dB(1GHz≤f<6GHz) ;HOR: ±5.05dB(1GHz≤f<6GHz)
VER: ±4.71dB(6GHz≤f<18GHz) ;HOR: ±4.96dB(6GHz≤f<18GHz)
VER: ±5.37dB(18GHz≤f≤40GHz) ;HOR: ±5.61dB(18GHz≤f≤40GHz)

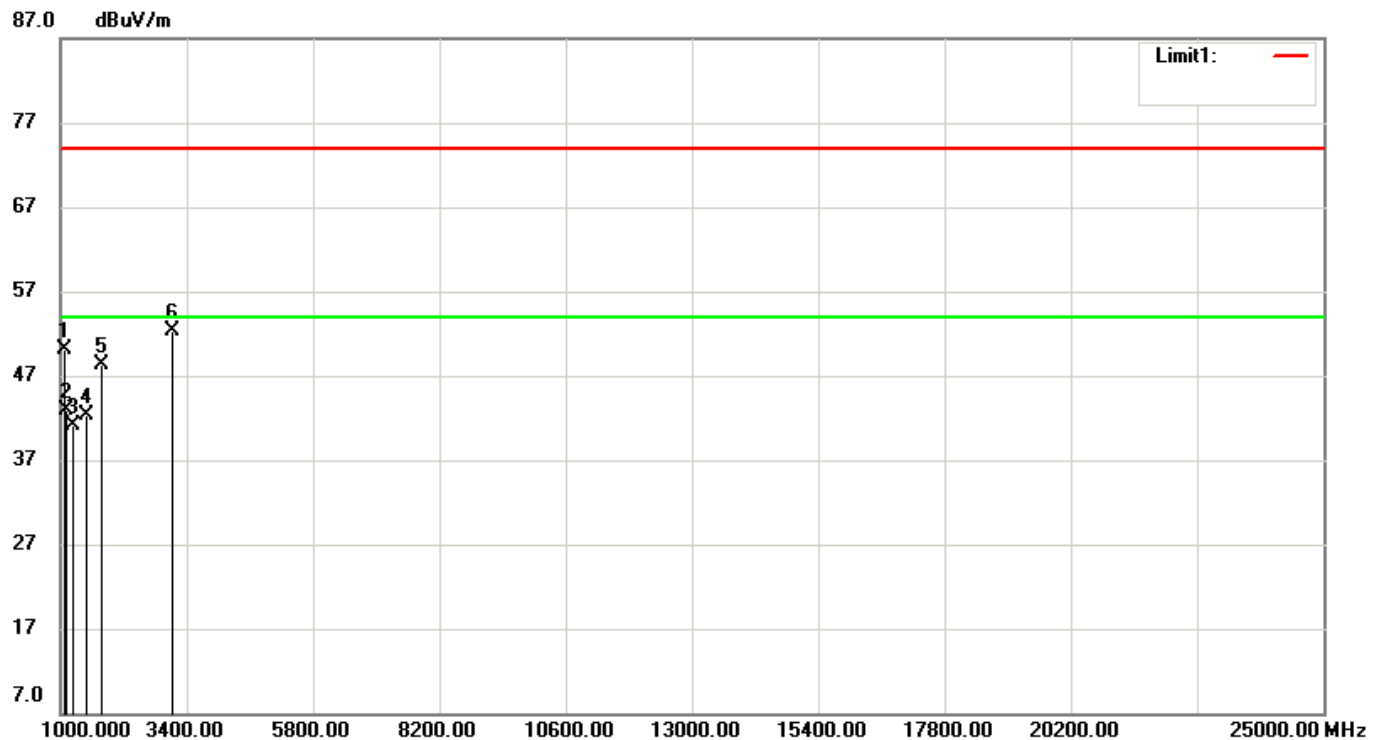
操作模式：發射接收
基本波頻率：2412 MHz

File: 21-05-MAW- #36
008_G
Site: RE02-EMC
B1-N2

Date: 2021/7/2

Temperature: 23 °C

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH LOW-1

Polarization: Vertical
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1053.84610	59.38	peak	-9.31	50.07	74.00	-23.93
2	1112.17940	51.92	peak	-9.11	42.81	74.00	-31.19
3	1201.92300	50.04	peak	-8.84	41.20	74.00	-32.80
4	1475.64100	50.27	peak	-7.97	42.30	74.00	-31.70
5	1762.82050	54.12	peak	-5.81	48.31	74.00	-25.69
6	3080.28840	54.18	peak	-1.91	52.27	74.00	-21.73

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

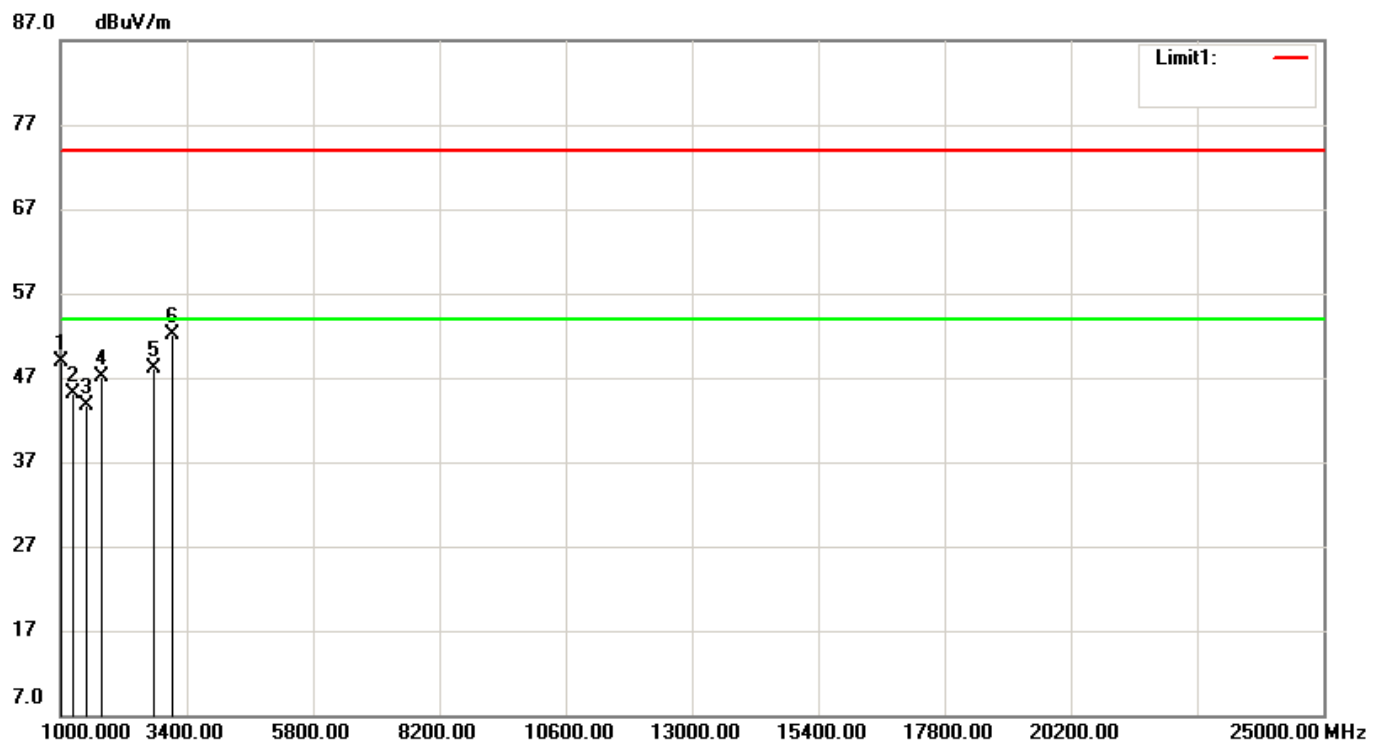
File: 21-05-MAW- #37

Date: 2021/7/2

Temperature: 23 °C

Site: RE02-EMC
B1-N2

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH MID-1

Polarization: Horizontal
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1033.65380	58.26	peak	-9.36	48.90	74.00	-25.10
2	1199.67940	53.99	peak	-8.84	45.15	74.00	-28.85
3	1498.07700	51.69	peak	-7.90	43.79	74.00	-30.21
4	1762.82050	52.99	peak	-5.81	47.18	74.00	-26.82
5	2757.02800	50.50	peak	-2.31	48.19	74.00	-25.81
6	3105.15460	54.00	peak	-1.89	52.11	74.00	-21.89

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收

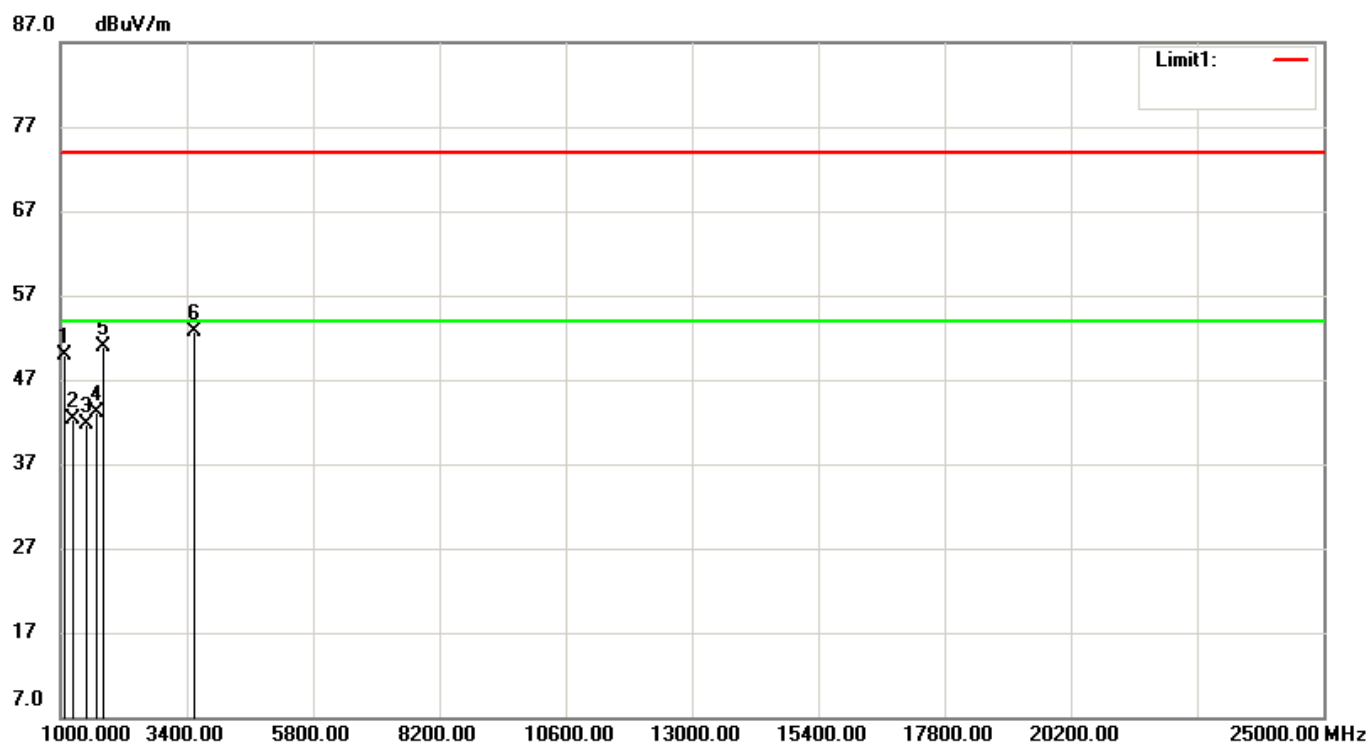
基本波頻率：2437 MHz

File: 21-05-MAW- #38
008_G
Site: RE02-EMC
B1-N2

Date: 2021/7/2

Temperature: 23 °C

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH MID-1

Polarization: Vertical
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1049.35900	59.29	peak	-9.31	49.98	74.00	-24.02
2	1199.67940	51.24	peak	-8.84	42.40	74.00	-31.60
3	1493.58970	49.72	peak	-7.92	41.80	74.00	-32.20
4	1664.10220	49.80	peak	-6.60	43.20	74.00	-30.80
5	1769.55120	56.74	peak	-5.75	50.99	74.00	-23.01
6	3527.87980	54.12	peak	-1.34	52.78	74.00	-21.22

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

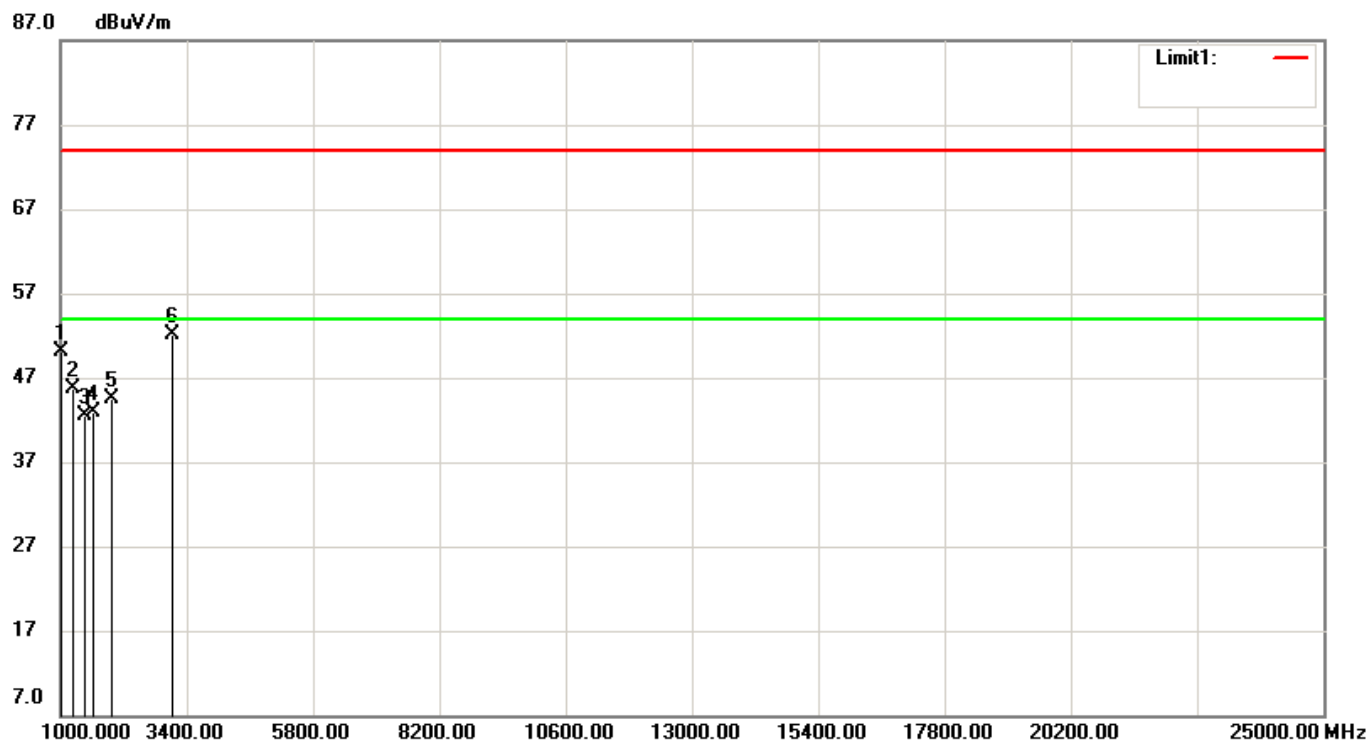
File: 21-05-MAW- #39

Date: 2021/7/2

Temperature: 23 °C

Site: RE02-EMC
B1-N2

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH HIGH-1

Polarization: Horizontal
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1038.14100	59.39	peak	-9.35	50.04	74.00	-23.96
2	1197.43580	54.64	peak	-8.85	45.79	74.00	-28.21
3	1441.98710	50.66	peak	-8.08	42.58	74.00	-31.42
4	1596.79470	50.01	peak	-7.12	42.89	74.00	-31.11
5	1926.60240	48.92	peak	-4.50	44.42	74.00	-29.58
6	3080.28840	53.98	peak	-1.91	52.07	74.00	-21.93

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：

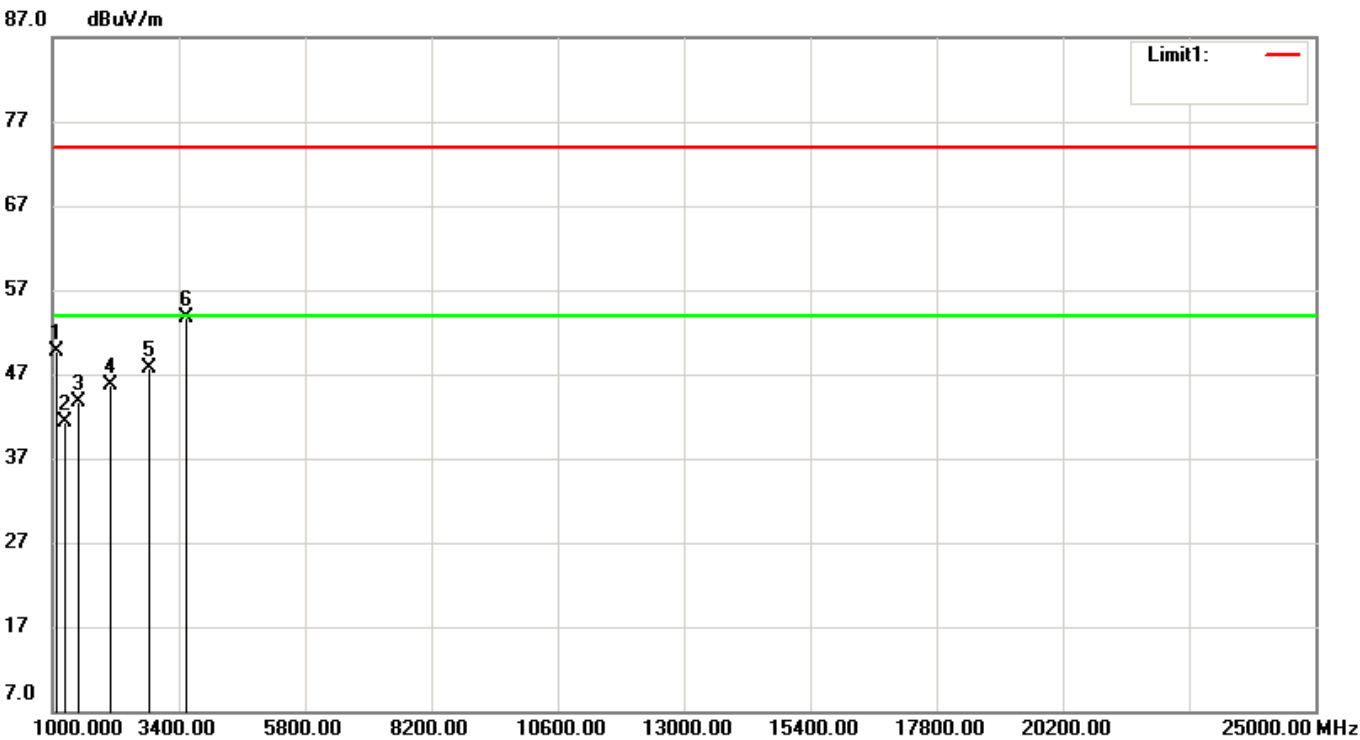
VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收
基本波頻率：2462 MHz

File: 21-05-MAW-#40 Date: 2021/7/2 Temperature: 23 °C
Site: RE02-EMC B1-N2 Humidity: 65 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS124
Test Mode: DTS Operator: Phillip
Note: CH HIGH-1

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1047.11530	59.12	peak	-9.32	49.80	74.00	-24.20
2	1199.67940	50.07	peak	-8.84	41.23	74.00	-32.77
3	1498.07700	51.54	peak	-7.90	43.64	74.00	-30.36
4	2108.33330	49.31	peak	-3.64	45.67	74.00	-28.33
5	2831.62660	49.95	peak	-2.21	47.74	74.00	-26.26
6	3503.01360	55.16	peak	-1.41	53.75	74.00	-20.25

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

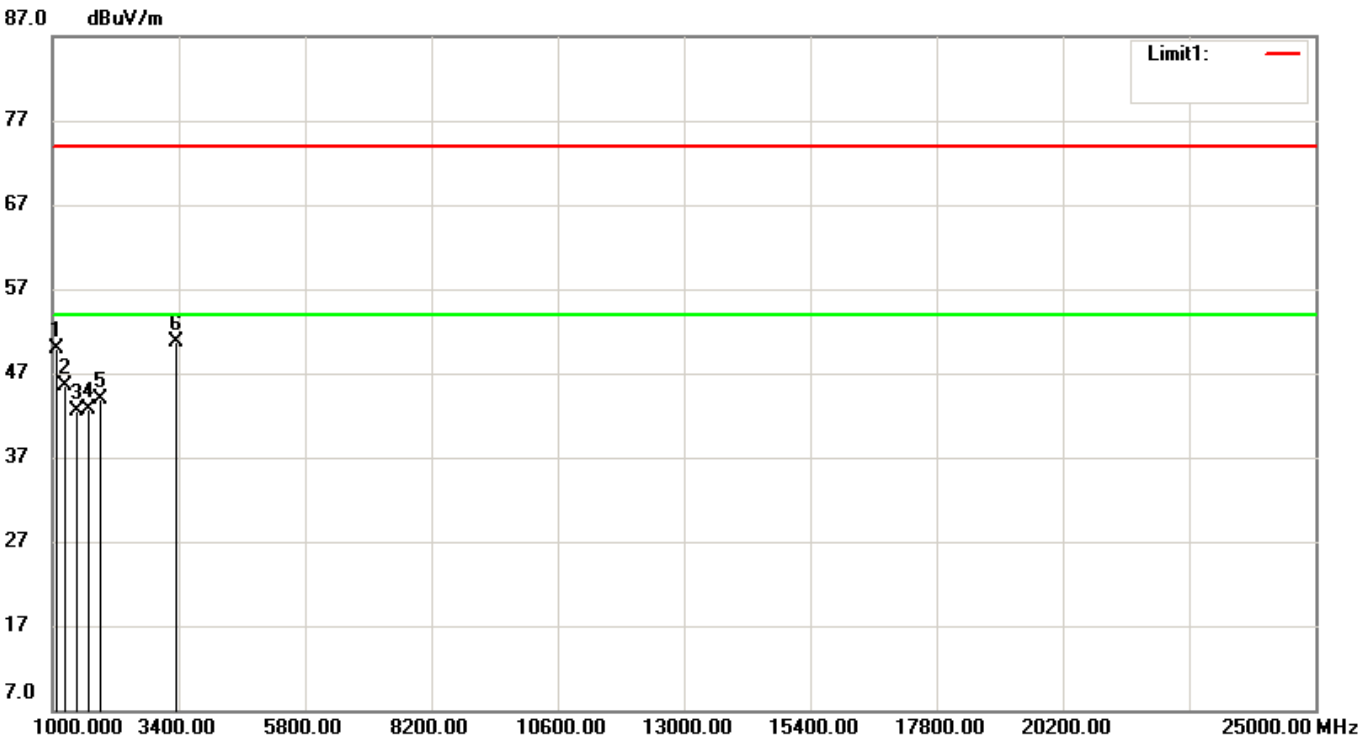
2. 量測不準確度：
VER: ±5.32dB(1GHz ≤ f < 6GHz) ;HOR: ±5.05dB(1GHz ≤ f < 6GHz)
VER: ±4.71dB(6GHz ≤ f < 18GHz) ;HOR: ±4.96dB(6GHz ≤ f < 18GHz)
VER: ±5.37dB(18GHz ≤ f ≤ 40GHz) ;HOR: ±5.61dB(18GHz ≤ f ≤ 40GHz)

10.5.2.3 調變技術: IEEE 802.11n HT20

a. Channel Low

操作模式：發射接收
基本波頻率：2412 MHz

File: 21-05-MAW-008_n20 #36 Date: 2021/7/2 Temperature: 23 °C
Site: RE02-EMC B1-N2 Humidity: 65 %



Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS124
Test Mode: DTS Operator: Phillip
Note: CH LOW-1

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1053.84610	59.16	peak	-9.31	49.85	74.00	-24.15
2	1199.67940	54.31	peak	-8.84	45.47	74.00	-28.53
3	1441.98710	50.60	peak	-8.08	42.52	74.00	-31.48
4	1661.85900	49.40	peak	-6.61	42.79	74.00	-31.21
5	1919.87170	48.39	peak	-4.55	43.84	74.00	-30.16
6	3328.95030	52.35	peak	-1.62	50.73	74.00	-23.27

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度:
VER: ±5.32dB(1GHz≤f<6GHz) ;HOR: ±5.05dB(1GHz≤f<6GHz)
VER: ±4.71dB(6GHz≤f<18GHz) ;HOR: ±4.96dB(6GHz≤f<18GHz)
VER: ±5.37dB(18GHz≤f≤40GHz) ;HOR: ±5.61dB(18GHz≤f≤40GHz)

操作模式：發射接收

基本波頻率：2412 MHz

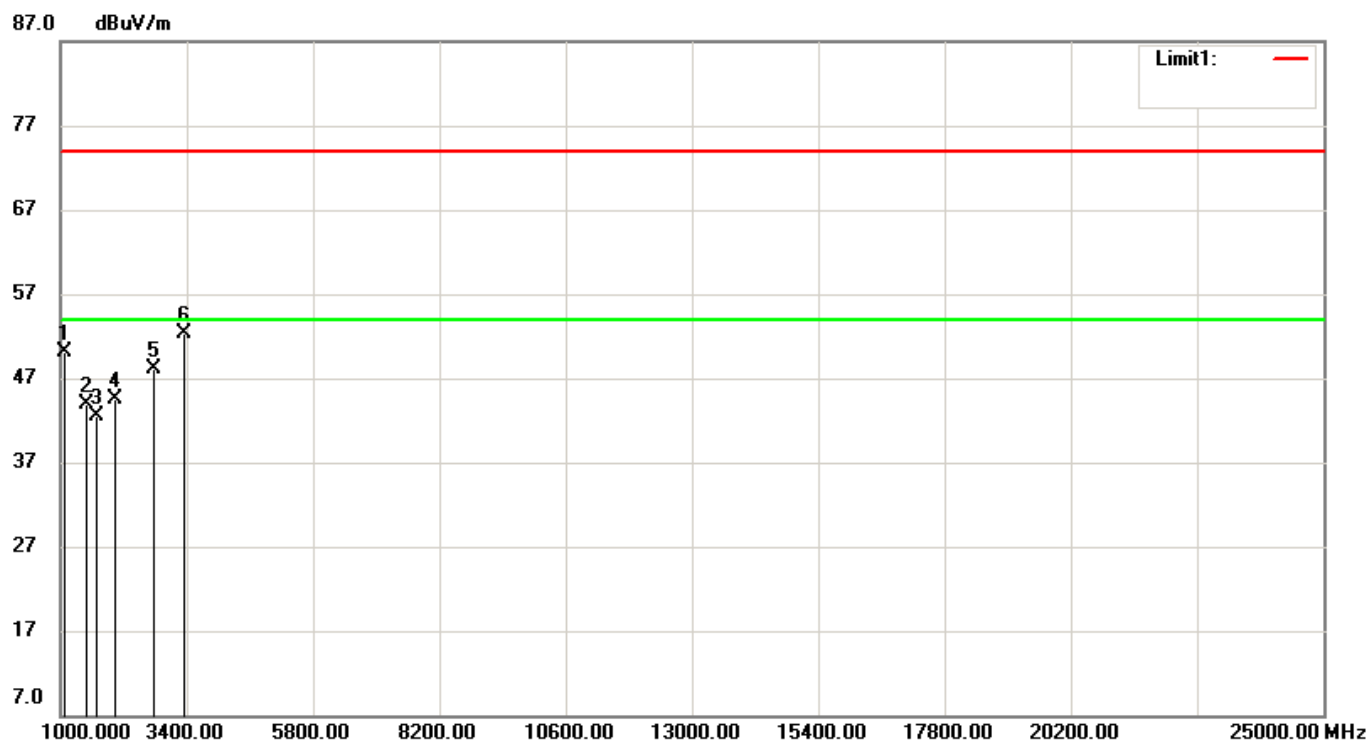
File: 21-05-MAW- #37

Date: 2021/7/2

Temperature: 23 °C

Site: RE02-EMC
B1-N2

Humidity: 65 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note: CH LOW-1

Polarization: Vertical
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1051.60250	59.51	peak	-9.31	50.20	74.00	-23.80
2	1493.58970	51.78	peak	-7.92	43.86	74.00	-30.14
3	1668.58970	49.03	peak	-6.56	42.47	74.00	-31.53
4	2020.83330	48.44	peak	-3.87	44.57	74.00	-29.43
5	2732.16170	50.52	peak	-2.34	48.18	74.00	-25.82
6	3328.95030	53.95	peak	-1.62	52.33	74.00	-21.67

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$) ; HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

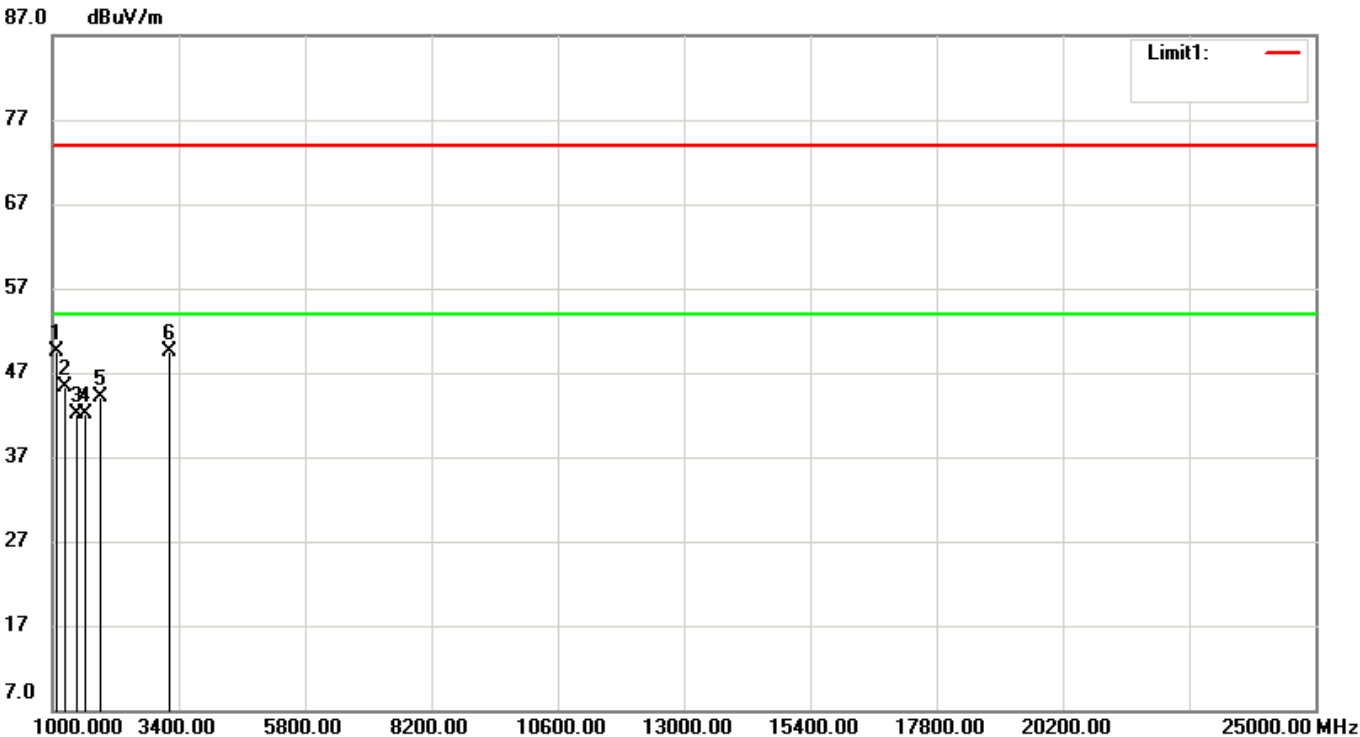
VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$) ; HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$) ; HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收
基本波頻率：2437 MHz

File: 21-05-MAW-#38 Date: 2021/7/2 Temperature: 23 °C
Site: RE02-EMC Humidity: 65 %
B1-N2



Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS124
Test Mode: DTS Operator: Phillip
Note: CH MID-1

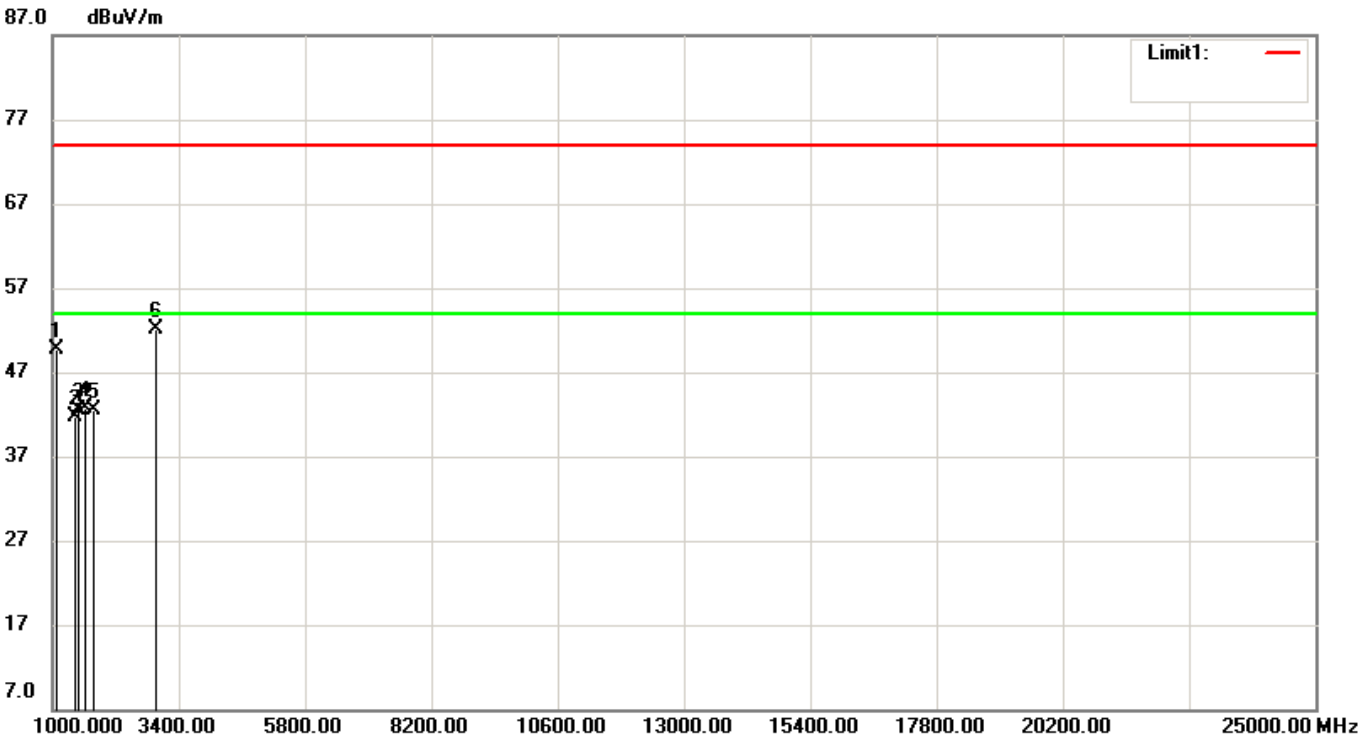
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1042.62820	58.84	peak	-9.34	49.50	74.00	-24.50
2	1197.43580	54.18	peak	-8.85	45.33	74.00	-28.67
3	1437.50000	50.18	peak	-8.10	42.08	74.00	-31.92
4	1599.03840	49.21	peak	-7.11	42.10	74.00	-31.90
5	1906.41020	48.82	peak	-4.66	44.16	74.00	-29.84
6	3229.48550	51.26	peak	-1.74	49.52	74.00	-24.48

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：
VER: ±5.32dB(1GHz ≤ f < 6GHz) ;HOR: ±5.05dB(1GHz ≤ f < 6GHz)
VER: ±4.71dB(6GHz ≤ f < 18GHz) ;HOR: ±4.96dB(6GHz ≤ f < 18GHz)
VER: ±5.37dB(18GHz ≤ f ≤ 40GHz) ;HOR: ±5.61dB(18GHz ≤ f ≤ 40GHz)

操作模式：發射接收
基本波頻率：2437 MHz

File: 21-05-MAW- #39 Date: 2021/7/2 Temperature: 23 °C
Site: RE02-EMC B1-N2 Humidity: 65 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS124
Test Mode: DTS Operator: Phillip
Note: CH MID-1

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1044.87170	59.08	peak	-9.32	49.76	74.00	-24.24
2	1415.06410	49.79	peak	-8.17	41.62	74.00	-32.38
3	1493.58970	50.40	peak	-7.92	42.48	74.00	-31.52
4	1596.79470	49.89	peak	-7.12	42.77	74.00	-31.23
5	1753.84610	48.47	peak	-5.89	42.58	74.00	-31.42
6	2955.95750	54.18	peak	-2.06	52.12	74.00	-21.88

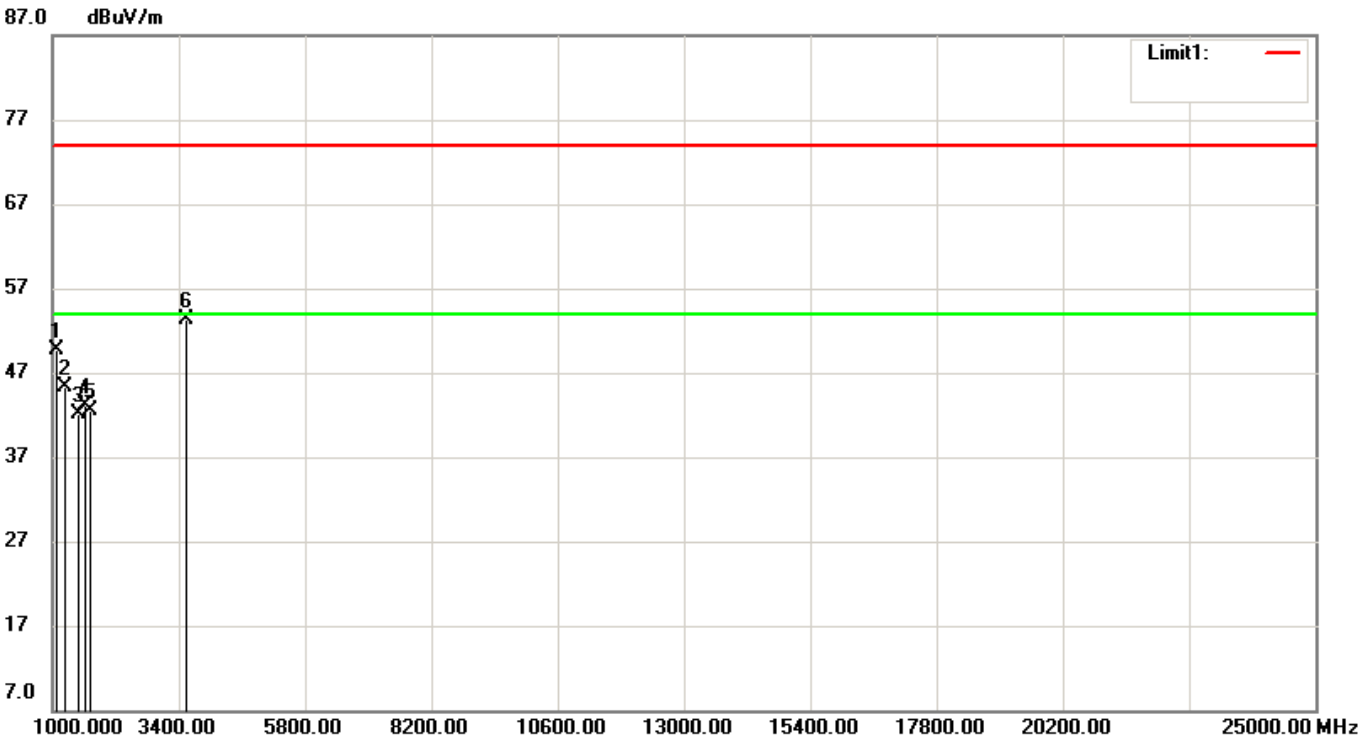
註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：
VER: ±5.32dB(1GHz ≤ f < 6GHz) ; HOR: ±5.05dB(1GHz ≤ f < 6GHz)
VER: ±4.71dB(6GHz ≤ f < 18GHz) ; HOR: ±4.96dB(6GHz ≤ f < 18GHz)
VER: ±5.37dB(18GHz ≤ f ≤ 40GHz) ; HOR: ±5.61dB(18GHz ≤ f ≤ 40GHz)

c. Channel High

操作模式：發射接收
基本波頻率：2462 MHz

File: 21-05-MAW-#40 Date: 2021/7/2 Temperature: 23 °C
Site: RE02-EMC Humidity: 65 %
B1-N2



Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS124
Test Mode: DTS Operator: Phillip
Note: CH HIGH-1

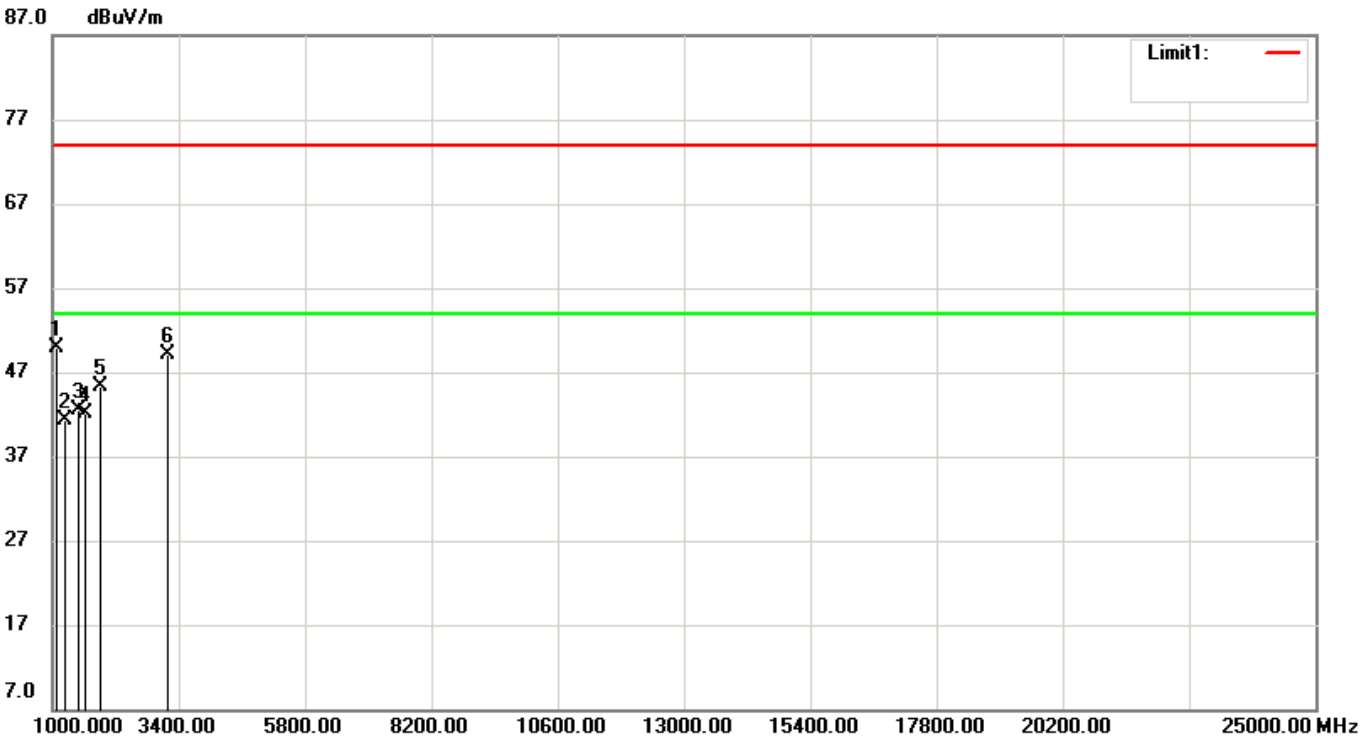
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1051.60250	59.11	peak	-9.31	49.80	74.00	-24.20
2	1199.67940	54.16	peak	-8.84	45.32	74.00	-28.68
3	1466.66660	50.07	peak	-8.01	42.06	74.00	-31.94
4	1599.03840	50.19	peak	-7.11	43.08	74.00	-30.92
5	1729.16660	48.65	peak	-6.07	42.58	74.00	-31.42
6	3527.87980	54.63	peak	-1.34	53.29	74.00	-20.71

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：
VER: ±5.32dB(1GHz ≤ f < 6GHz) ;HOR: ±5.05dB(1GHz ≤ f < 6GHz)
VER: ±4.71dB(6GHz ≤ f < 18GHz) ;HOR: ±4.96dB(6GHz ≤ f < 18GHz)
VER: ±5.37dB(18GHz ≤ f ≤ 40GHz) ;HOR: ±5.61dB(18GHz ≤ f ≤ 40GHz)

操作模式：發射接收
基本波頻率：2462 MHz

File: 21-05-MAW-#41 Date: 2021/7/2 Temperature: 23 °C
Site: RE02-EMC Humidity: 65 %
B1-N2



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS124
Test Mode: DTS Operator: Phillip
Note: CH HIGH-1

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1047.11530	59.26	peak	-9.32	49.94	74.00	-24.06
2	1199.67940	50.15	peak	-8.84	41.31	74.00	-32.69
3	1491.34610	50.46	peak	-7.94	42.52	74.00	-31.48
4	1594.55120	49.23	peak	-7.15	42.08	74.00	-31.92
5	1906.41020	49.93	peak	-4.66	45.27	74.00	-28.73
6	3179.75320	50.98	peak	-1.79	49.19	74.00	-24.81

註：1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度：
VER: ±5.32dB(1GHz ≤ f < 6GHz) ; HOR: ±5.05dB(1GHz ≤ f < 6GHz)
VER: ±4.71dB(6GHz ≤ f < 18GHz) ; HOR: ±4.96dB(6GHz ≤ f < 18GHz)
VER: ±5.37dB(18GHz ≤ f ≤ 40GHz) ; HOR: ±5.61dB(18GHz ≤ f ≤ 40GHz)

10.5.2.4 測試狀態: BT Link+AUX Playing

操作模式: Mode D

File: 21-05-MAW-008_Normal

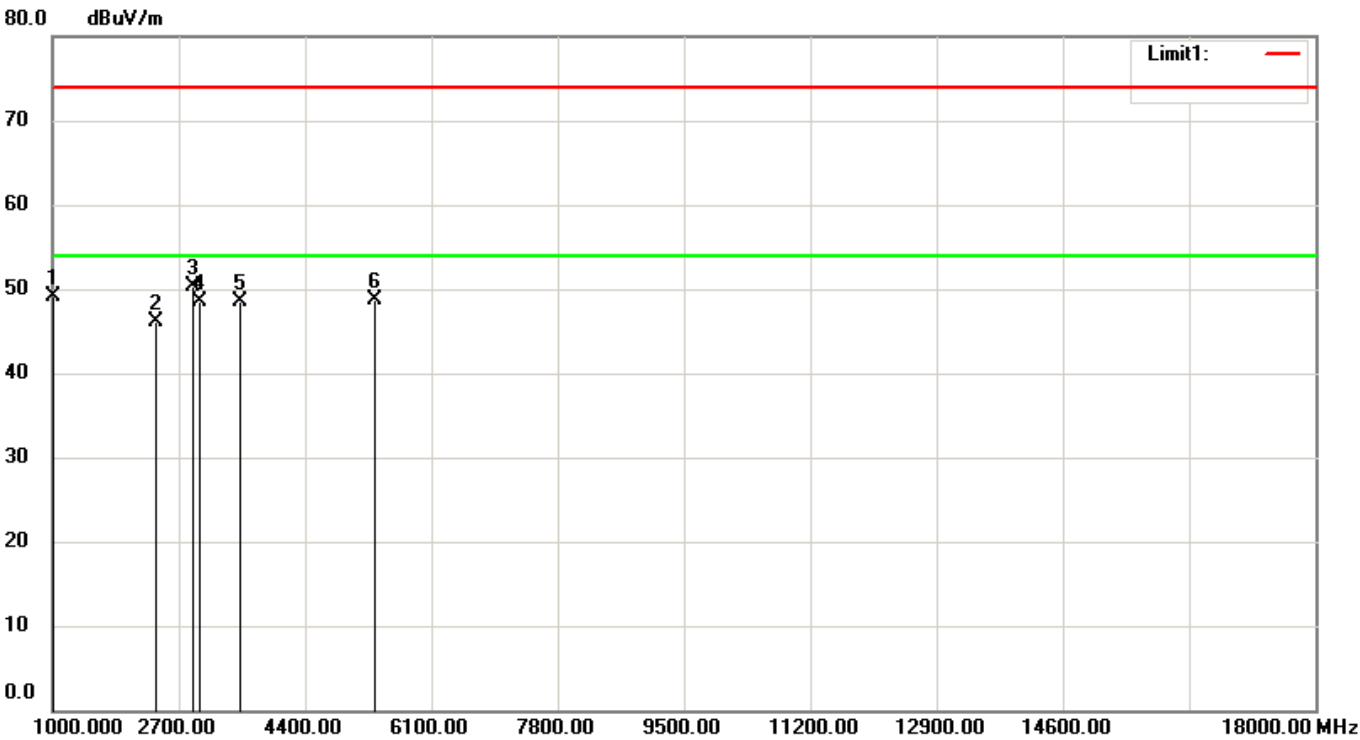
Site: RE02-EMC B1-N2

#7

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %



Condition: NCC_Above1G_Pk

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: Normal 1

Note: BT Link+AUX Playing

Polarization: Horizontal

Distance: 3m

Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1027.24360	58.45	peak	-9.38	49.07	74.00	-24.93
2	2389.42310	48.96	peak	-2.91	46.05	74.00	-27.95
3	2879.80770	52.45	peak	-2.16	50.29	74.00	-23.71
4	2988.78210	50.55	peak	-2.03	48.52	74.00	-25.48
5	3533.65380	49.76	peak	-1.32	48.44	74.00	-25.56
6	5331.73080	46.68	peak	2.04	48.72	74.00	-25.28

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度:
VER: ±5.32dB(1GHz ≤ f < 6GHz) ;HOR: ±5.05dB(1GHz ≤ f < 6GHz)
VER: ±4.71dB(6GHz ≤ f < 18GHz) ;HOR: ±4.96dB(6GHz ≤ f < 18GHz)
VER: ±5.37dB(18GHz ≤ f ≤ 40GHz) ;HOR: ±5.61dB(18GHz ≤ f ≤ 40GHz)

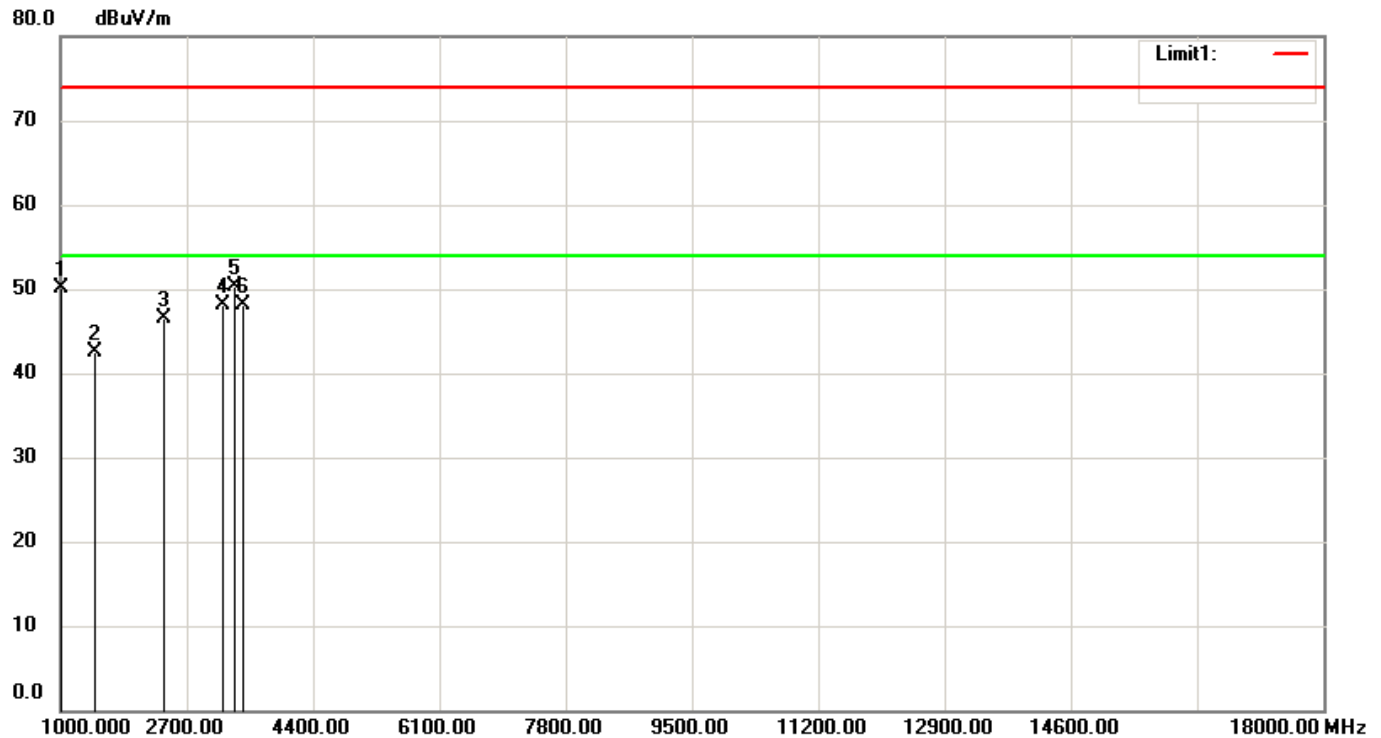
操作模式: Mode D

File: 21-05-MAW- #8
008_Normal
Site: RE02-EMC
B1-N2

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: Normal 1
Note: BT Link+AUX Playing

Polarization: Vertical
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1027.24360	59.43	peak	-9.38	50.05	74.00	-23.95
2	1463.14100	50.52	peak	-8.01	42.51	74.00	-31.49
3	2389.42310	49.37	peak	-2.91	46.46	74.00	-27.54
4	3179.48720	49.98	peak	-1.79	48.19	74.00	-25.81
5	3342.94870	51.85	peak	-1.60	50.25	74.00	-23.75
6	3451.92310	49.51	peak	-1.46	48.05	74.00	-25.95

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度:

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$); HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$); HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$); HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

10.5.2.5 測試狀態: WiFi Link+USB Playing

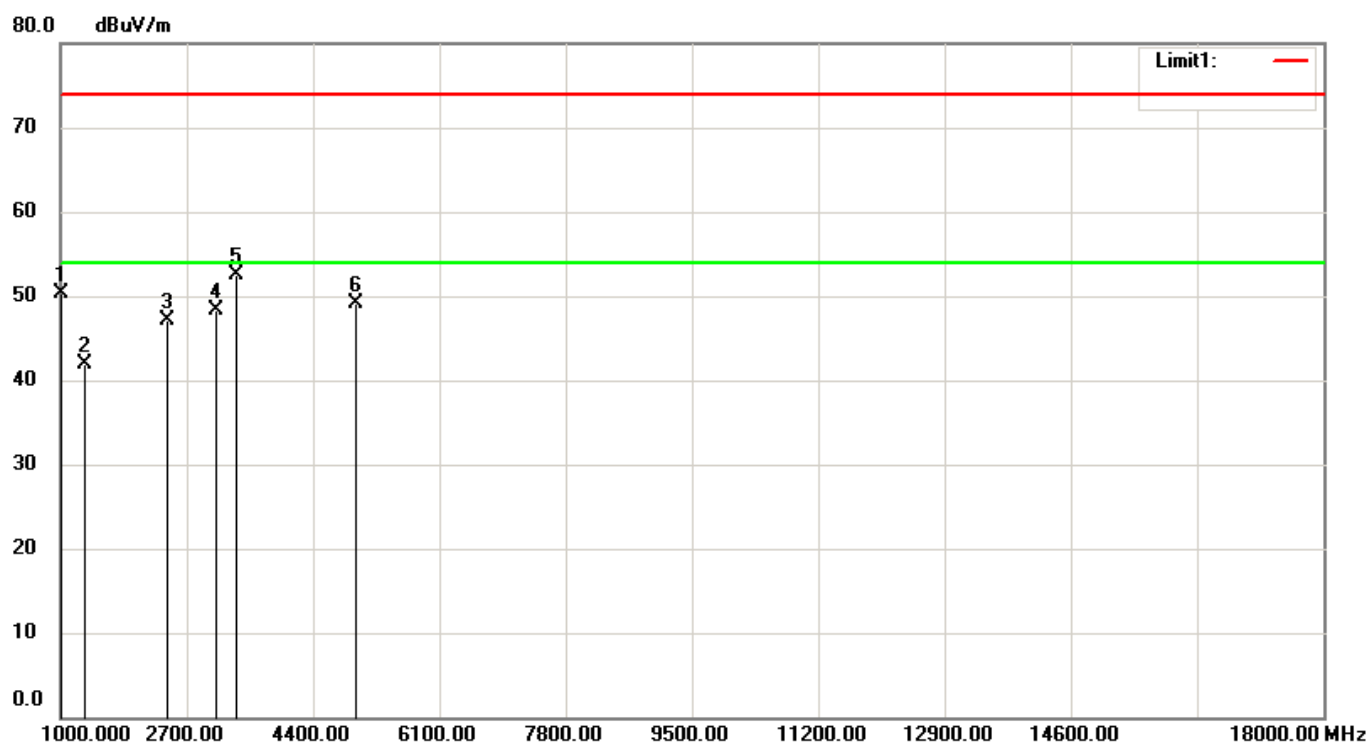
操作模式: Mode E

File: 21-05-MAW- #6
008_Normal
Site: RE02-EMC
B1-N2

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: Normal 2
Note: WiFi Link+USB Playing

Polarization: Horizontal
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1027.24360	59.62	peak	-9.38	50.24	74.00	-23.76
2	1326.92310	50.30	peak	-8.44	41.86	74.00	-32.14
3	2443.91030	49.86	peak	-2.76	47.10	74.00	-26.90
4	3097.75640	50.29	peak	-1.89	48.40	74.00	-25.60
5	3370.19230	53.97	peak	-1.56	52.41	74.00	-21.59
6	4977.56410	47.46	peak	1.69	49.15	74.00	-24.85

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度:

VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$); HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

VER: $\pm 4.71\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$); HOR: $\pm 4.96\text{dB}$ ($6\text{GHz} \leq f < 18\text{GHz}$)

VER: $\pm 5.37\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$); HOR: $\pm 5.61\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式: Mode E

File: 21-05-MAW-008_Normal

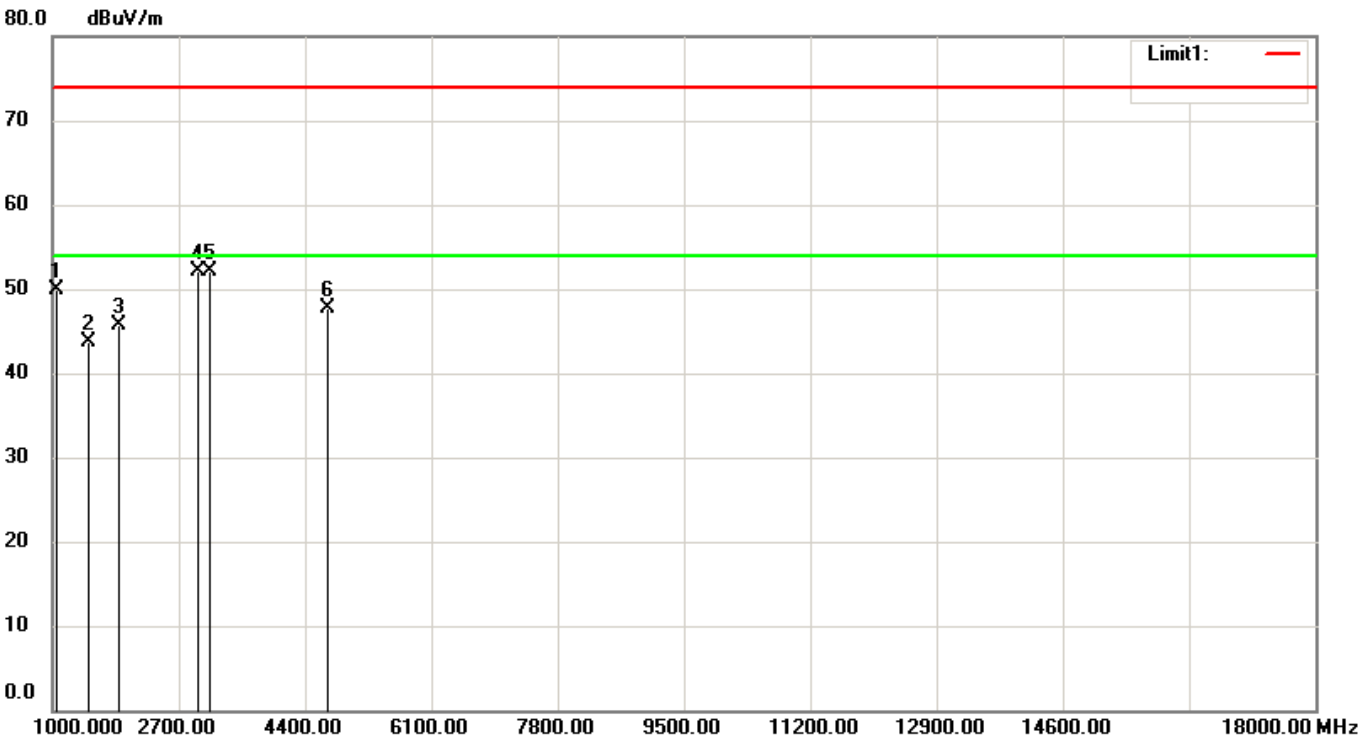
Site: RE02-EMC B1-N2

#5

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %



Condition: NCC_Above1G_Pk

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: Normal 2

Note: WiFi Link+USB Playing

Polarization: Vertical

Distance: 3m

Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1054.48720	59.22	peak	-9.31	49.91	74.00	-24.09
2	1490.38460	51.74	peak	-7.94	43.80	74.00	-30.20
3	1899.03850	50.49	peak	-4.73	45.76	74.00	-28.24
4	2961.53850	54.11	peak	-2.06	52.05	74.00	-21.95
5	3125.00000	53.95	peak	-1.86	52.09	74.00	-21.91
6	4705.12820	46.92	peak	0.74	47.66	74.00	-26.34

註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度:
VER: ±5.32dB(1GHz≤f<6GHz) ;HOR: ±5.05dB(1GHz≤f<6GHz)
VER: ±4.71dB(6GHz≤f<18GHz) ;HOR: ±4.96dB(6GHz≤f<18GHz)
VER: ±5.37dB(18GHz≤f≤40GHz) ;HOR: ±5.61dB(18GHz≤f≤40GHz)

10.5.3 其它不必要之訊號

10.5.3.1 測試狀態：IEEE 802.11n HT20

File: 21-05-MAW-008_Below 1G

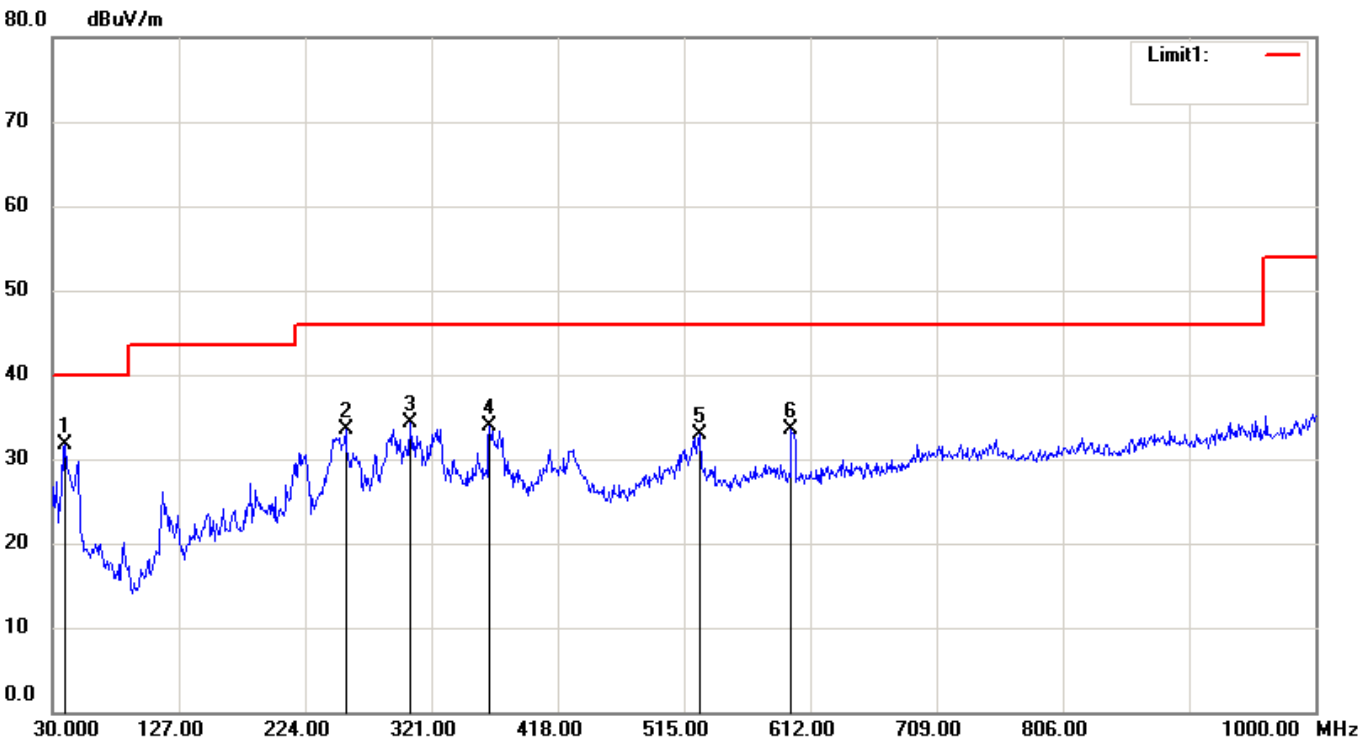
Site: RE02-EMC B1-N2

#3

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: DTS

Note:

Polarization: Horizontal

Distance: 3m

Operator: Phillip

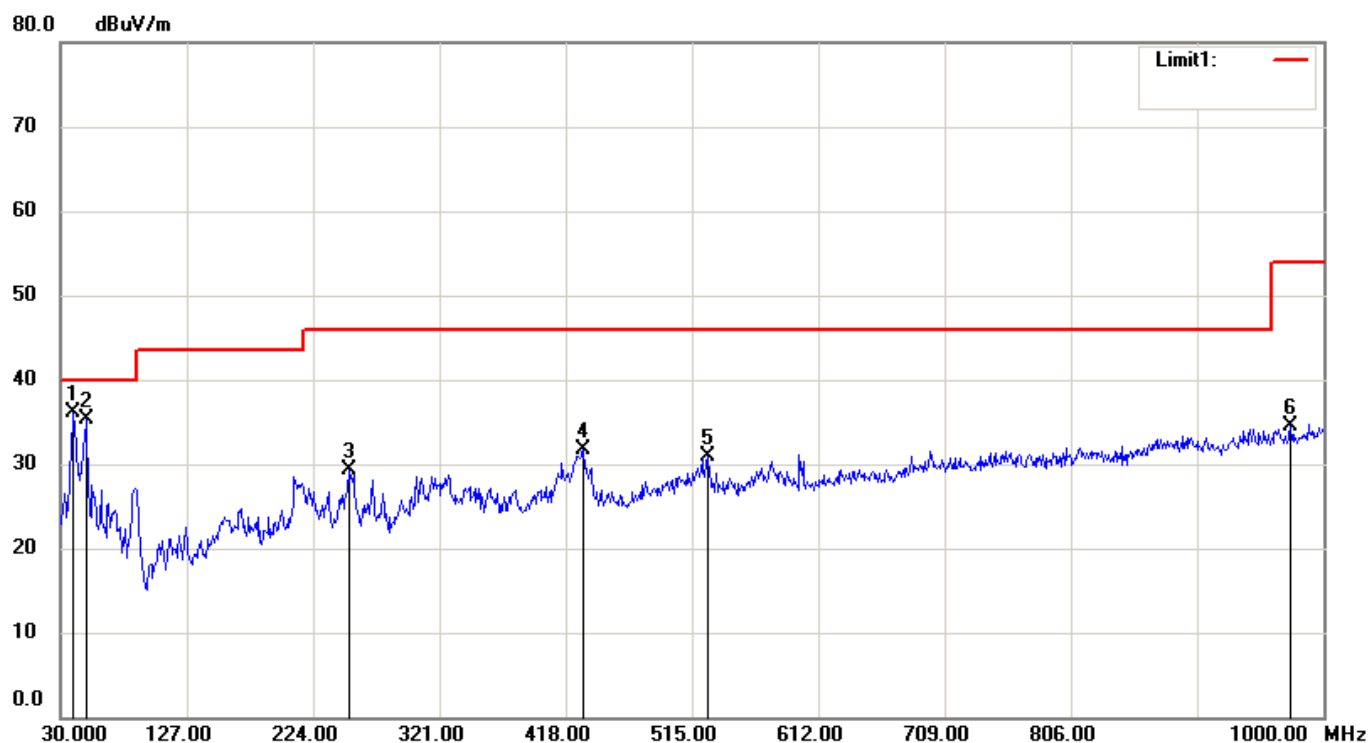
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	39.7000	39.88	QP	-8.18	31.70	40.00	-8.30
2	255.0400	40.66	QP	-7.14	33.52	46.00	-12.48
3	304.5100	39.75	QP	-5.35	34.40	46.00	-11.60
4	365.6200	37.97	QP	-4.06	33.91	46.00	-12.09
5	527.6100	34.06	QP	-1.09	32.97	46.00	-13.03
6	597.4500	33.00	QP	0.57	33.57	46.00	-12.43

File: 21-05-MAW- #4
008_Below 1G
Site: RE02-EMC
B1-N2

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %



Condition: NCC_LP0002_30-1000MHz
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: DTS
Note:

Polarization: Vertical
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	39.7000	44.27	QP	-8.18	36.09	40.00	-3.91
2	49.4000	42.89	QP	-7.59	35.30	40.00	-4.70
3	251.1600	36.49	QP	-7.21	29.28	46.00	-16.72
4	431.5800	34.52	QP	-2.76	31.76	46.00	-14.24
5	526.6400	31.92	QP	-1.11	30.81	46.00	-15.19
6	974.7800	27.18	QP	7.32	34.50	54.00	-19.50

註：1. 若以峰值檢測功能測量之值符合準峰值限制值，則可視同以準峰值功能測量之值亦符合準峰值限制值。

2. 量測不準確度：

VER: $\pm 6.23\text{dB}$ ($30\text{MHz} \leq f < 200\text{MHz}$) ; HOR: $\pm 4.55\text{dB}$ ($30\text{MHz} \leq f < 200\text{MHz}$)

VER: $\pm 5.94\text{dB}$ ($2000\text{MHz} \leq f < 1\text{GHz}$) ; HOR: $\pm 4.34\text{dB}$ ($200\text{MHz} \leq f < 1\text{GHz}$)

10.5.3.2 測試狀態: BT Link+AUX Playing

File: 21-05-MAW-
008_Below 1G
Site: RE02-EMC
B1-N2

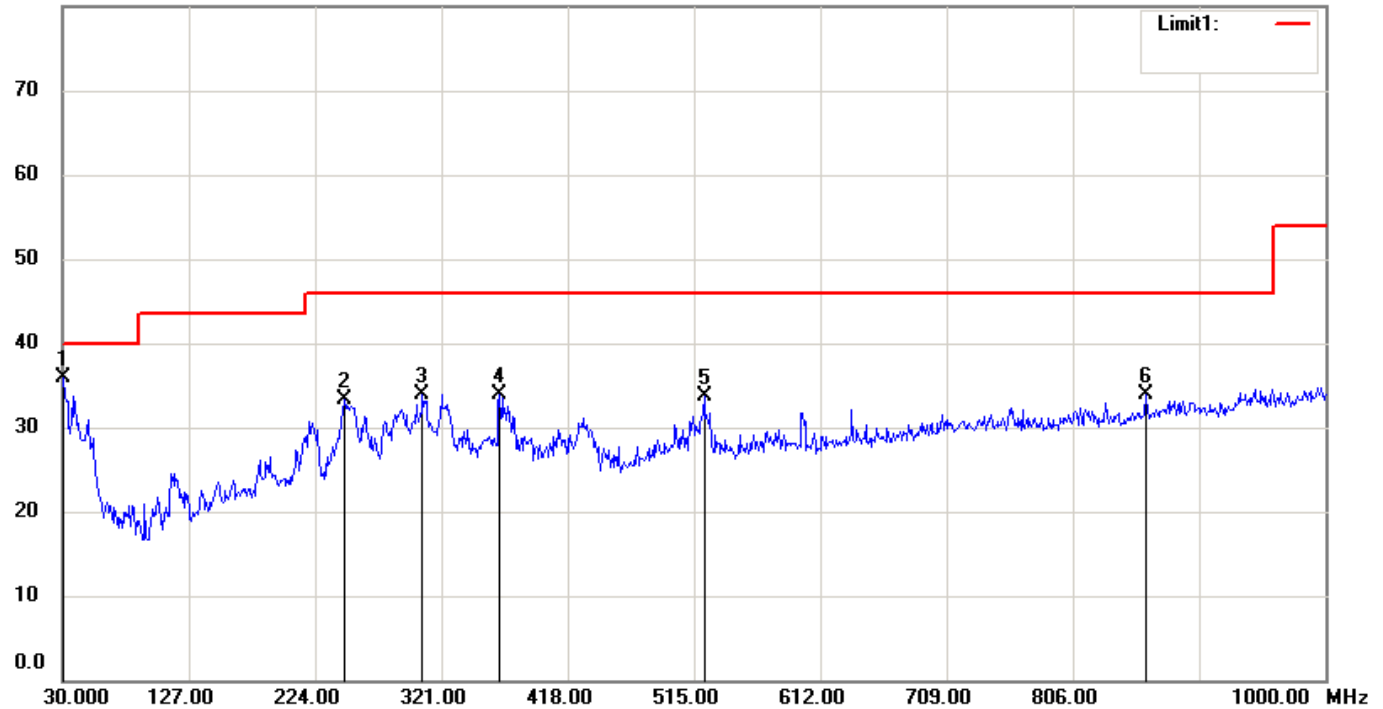
#9

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %

80.0 dBuV/m



Condition: NCC_LP0002_30-1000MHz
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: Normal 1
Note: BT Link+AUX Playing

Polarization: Horizontal
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.9700	45.06	QP	-9.12	35.94	40.00	-4.06
2	246.3100	40.58	QP	-7.33	33.25	46.00	-12.75
3	306.4500	39.22	QP	-5.31	33.91	46.00	-12.09
4	365.6200	37.88	QP	-4.06	33.82	46.00	-12.18
5	522.7600	34.87	QP	-1.22	33.65	46.00	-12.35
6	862.2600	28.64	QP	5.21	33.85	46.00	-12.15

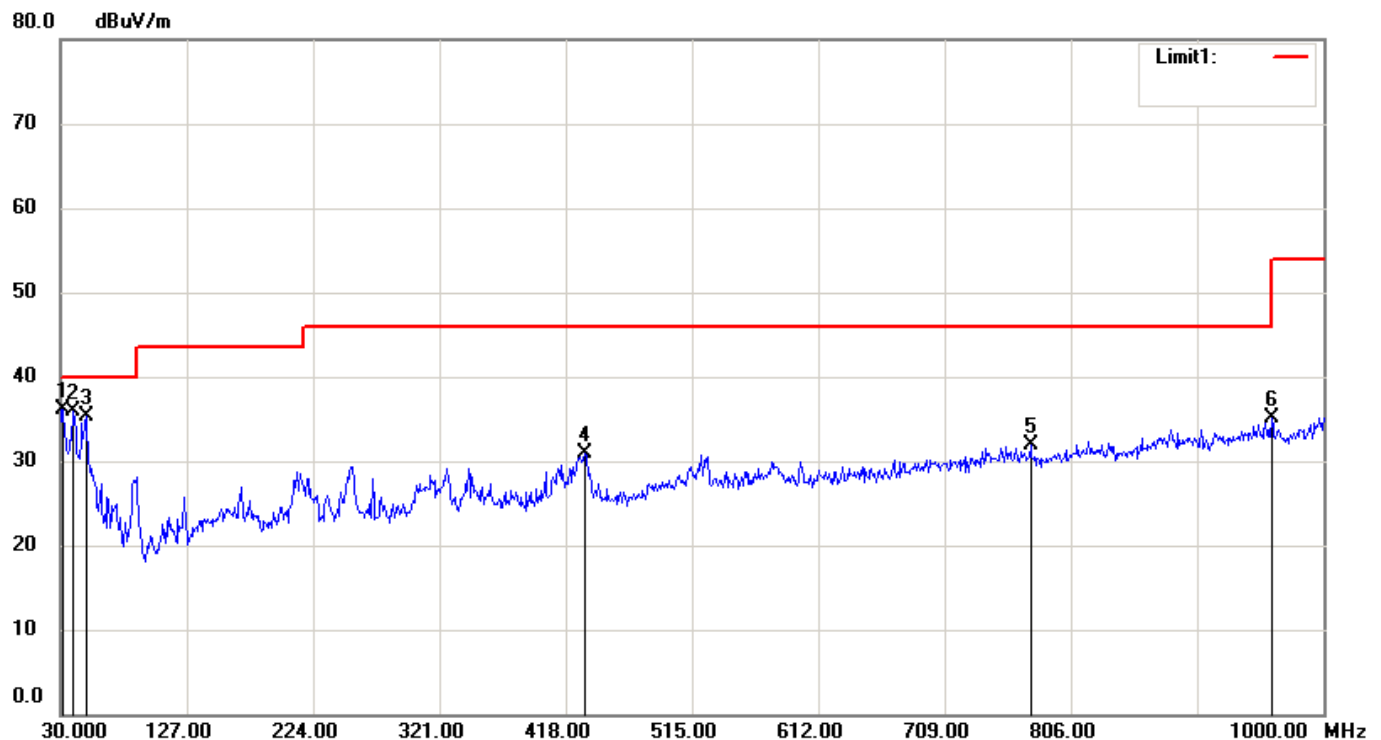
File: 21-05-MAW-008_Below 1G
Site: RE02-EMC B1-N2

#10

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %



Condition: NCC_LP0002_30-1000MHz
EUT: Cockpit Control Unit
Model: DNNS124
Test Mode: Normal 1
Note: BT Link+AUX Playing

Polarization: Vertical
Distance: 3m
Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	31.9400	45.18	QP	-9.04	36.14	40.00	-3.86
2	39.7000	44.08	QP	-8.18	35.90	40.00	-4.10
3	49.4000	42.86	QP	-7.59	35.27	40.00	-4.73
4	432.5500	33.64	QP	-2.73	30.91	46.00	-15.09
5	774.9600	28.17	QP	3.68	31.85	46.00	-14.15
6	960.2300	28.12	QP	7.05	35.17	54.00	-18.83

註：1. 若以峰值檢測功能測量之值符合準峰值限制值，則可視同以準峰值功能測量之值亦符合準峰值限制值。

2. 量測不準確度：

VER: $\pm 6.23\text{dB}$ ($30\text{MHz} \leq f < 200\text{MHz}$) ; HOR: $\pm 4.55\text{dB}$ ($30\text{MHz} \leq f < 200\text{MHz}$)

VER: $\pm 5.94\text{dB}$ ($2000\text{MHz} \leq f < 1\text{GHz}$) ; HOR: $\pm 4.34\text{dB}$ ($200\text{MHz} \leq f < 1\text{GHz}$)

10.5.3.3 測試狀態: WiFi Link+USB Playing

File: 21-05-MAW-008_Below 1G
 Site: RE02-EMC B1-N2

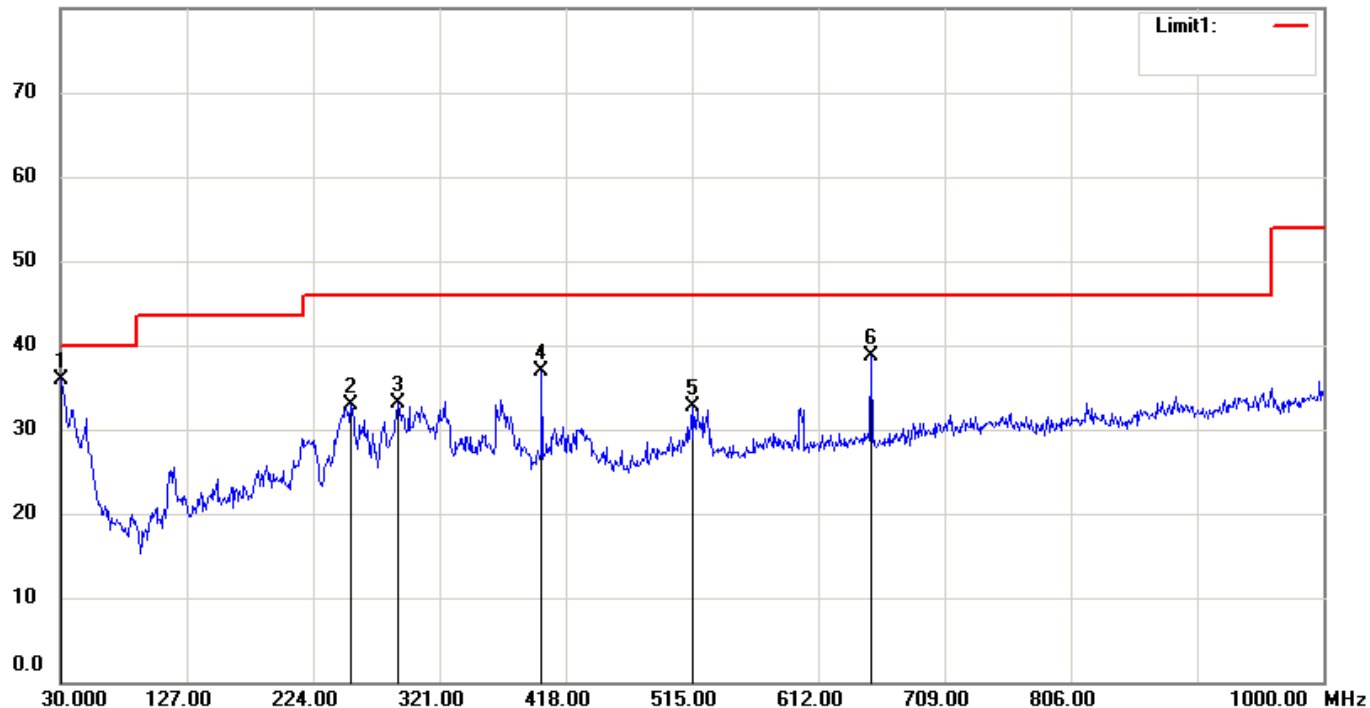
#11

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %

80.0 dBuV/m



Condition: NCC_LP0002_30-1000MHz
 EUT: Cockpit Control Unit
 Model: DNNS124
 Test Mode: Normal 2
 Note: WiFi Link+USB Playing

Polarization: Horizontal
 Distance: 3m
 Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.0000	45.10	QP	-9.19	35.91	40.00	-4.09
2	253.1000	39.98	QP	-7.17	32.81	46.00	-13.19
3	288.9900	38.66	QP	-5.65	33.01	46.00	-12.99
4	399.5700	40.24	QP	-3.32	36.92	46.00	-9.08
5	515.0000	34.13	QP	-1.41	32.72	46.00	-13.28
6	652.7400	37.44	QP	1.24	38.68	46.00	-7.32

File: 21-05-MAW-008_Below 1G

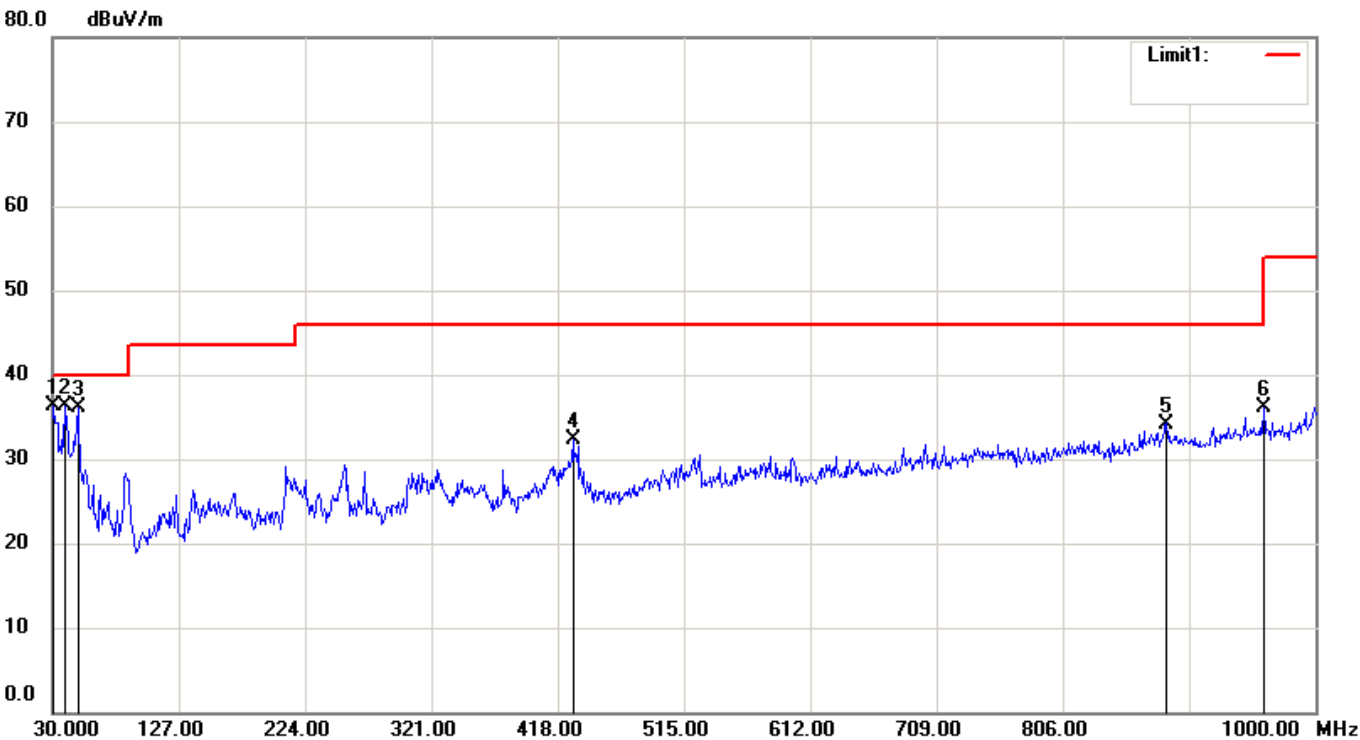
Site: RE02-EMC B1-N2

#12

Date: 2021/7/1

Temperature: 22 °C

Humidity: 66 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS124

Test Mode: Normal 2

Note: WiFi Link+USB Playing

Polarization: Vertical

Distance: 3m

Operator: Phillip

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.9700	45.47	QP	-9.12	36.35	40.00	-3.65
2	39.7000	44.41	QP	-8.18	36.23	40.00	-3.77
3	49.4000	43.67	QP	-7.59	36.08	40.00	-3.92
4	429.6400	35.06	QP	-2.78	32.28	46.00	-13.72
5	885.5400	28.52	QP	5.68	34.20	46.00	-11.80
6	960.2300	29.12	QP	7.05	36.17	54.00	-17.83

註：1. 若以峰值檢測功能測量之值符合準峰值限制值，則可視同以準峰值功能測量之值亦符合準峰值限制值。

2. 量測不準確度:
VER: ±6.23dB(30MHz≤f<200MHz) ;HOR: ±4.55dB(30MHz≤f<200MHz)
VER: ±5.94dB(2000MHz≤f<1GHz) ;HOR: ±4.34dB(200MHz≤f<1GHz)

10.6 禁用頻段邊緣輻射場強之量測結果

操作模式: 發射接收

測試日期: Jul. 02, 2021

環境溫度: 23°C

環境濕度: 65%

10.6.1 調變技術: IEEE 802.11b

主波 頻道	輻射 頻率	儀器讀值@3m (dBuV/m)				校正 因子	結果值		限制值@3m		餘裕值 (worse)	
		水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
	(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
CH Low	2390.000	26.46	12.52	25.70	12.23	34.44	60.90	46.96	74.00	54.00	-13.10	-7.04
CH High	2483.500	26.41	12.51	26.50	12.31	34.66	61.16	47.17	74.00	54.00	-12.84	-6.83

10.6.2 調變技術: IEEE 802.11g

主波 頻道	輻射 頻率	儀器讀值@3m (dBuV/m)				校正 因子	結果值		限制值@3m		餘裕值 (worse)	
		水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
	(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
CH Low	2390.000	26.08	12.93	26.50	12.40	34.44	60.94	47.37	74.00	54.00	-13.06	-6.63
CH High	2483.500	31.76	12.86	28.30	12.49	34.66	66.42	47.52	74.00	54.00	-7.58	-6.48

10.6.3 調變技術: IEEE 802.11n HT20

主波 頻道	輻射 頻率	儀器讀值@3m (dBuV/m)				校正 因子	結果值		限制值@3m		餘裕值 (worse)	
		水平		垂直			(dBuV/m)		(dBuV/m)		(dB)	
	(MHz)	峰值	平均值	峰值	平均值	(dB)	峰值	平均值	峰值	平均值	峰值	平均值
CH Low	2390.000	31.15	13.35	29.28	12.39	34.44	65.59	47.79	74.00	54.00	-8.41	-6.21
CH High	2483.500	27.07	12.93	26.92	12.57	34.66	61.73	47.59	74.00	54.00	-12.27	-6.41

註:1. 量測不準確度: VER: $\pm 5.32\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$); HOR: $\pm 5.05\text{dB}$ ($1\text{GHz} \leq f < 6\text{GHz}$)

2. 量測頻率範圍為 2310 ~ 2390 MHz 及 2483.5 ~ 2900 MHz, 並記錄兩頻率範圍中之最大讀值。

10.7 結果判定

以上之場強輻射測試結果皆低於限制值, 合乎標準規定。

10.8 輻射之測試配置

圖 3: 量測頻率低於1GHz之測試配置

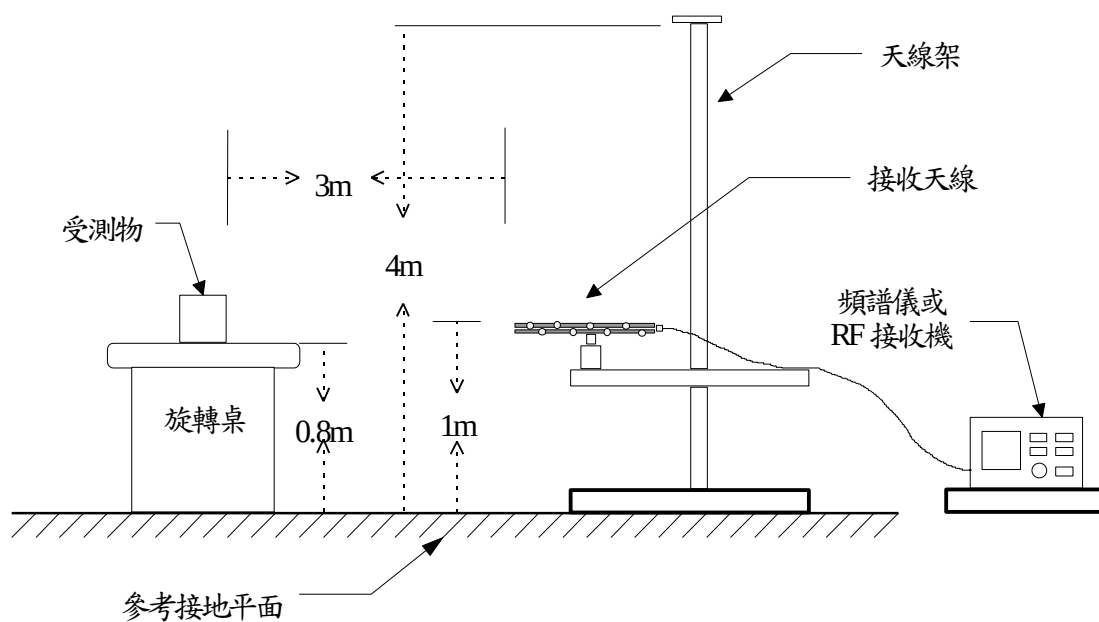
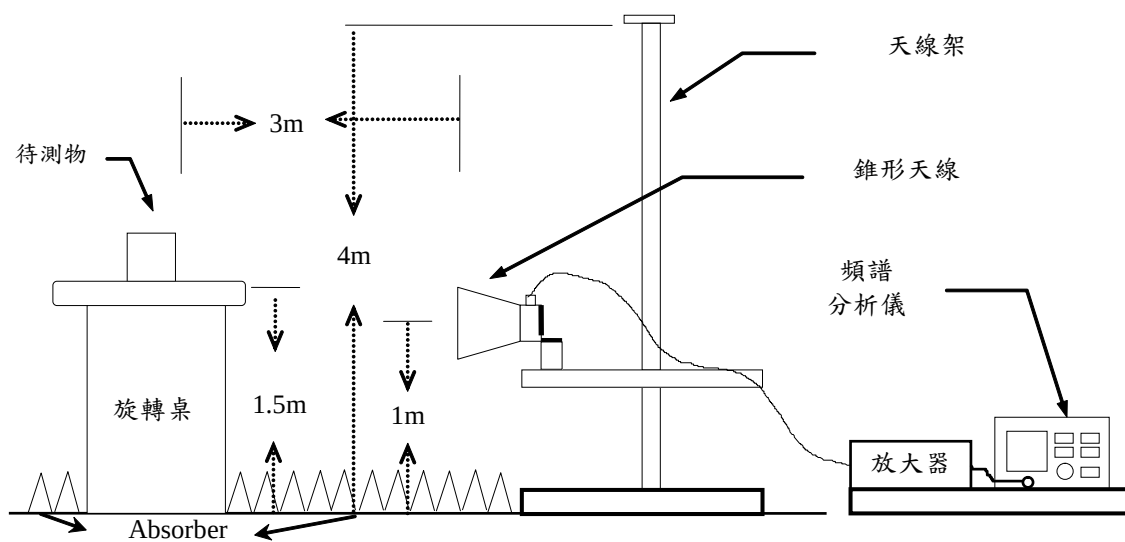


圖 4: 量測頻率高於1GHz之測試配置



10.9 輻射量測之配置照片

請參考產品照片

11 MAXIMUM PERMISSIBLE EXPOSURE

Standard Applicable

According to FCC Part1.1310: Radiofrequency radiation exposure limits. The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency radiation as specified in 1.1307(b) LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range	Electric field strength	Magnetic field strength	Power density	Averaging time
(MHz)	(V/m)	(A/m)	(mW/cm ²)	(minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1	30

F = Frequency in MHz

Calculations

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

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

The limit of P_d is 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the P_d at 20 cm is meet the limit of MPE.

Result (Worse case mode)

測試日期: Jun. 30, 2021

環境溫度: 25°C

環境濕度: 54%

Radio Technology	Operation Frequency (MHz)	Distance (cm)	Maximu Output Power with Antenna Gain (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2.4 GHz	2462	20	1069.05	0.2127	1

The **P_d** at 20 cm distance calculated from the Friis transmission formula is much smaller than the limit requirement 1 mW/cm² or 10W/m².

The **Installation Manual** instructs the user to install the device such that it has a separation of at least 20 cm from persons to comply with the FCC's requirements. This separation of 20 cm more than meets the FCC's and Industry Canada RF exposure requirements.

Simultaneous Evaluation:

All MPE evaluations are less than 1, which confirm the device comply the MPE limit.

12 量測之儀器

儀器名稱	廠 牌	型 號	財產編號/序號	校驗日期	下次校驗日期
Spectrum Analyzer	KEYSIGHT	N9030B	MY60070506	09/23/2020	09/24/2021
Spectrum Analyzer	R&S	FSV40	13052017-001	05/27/2021	05/26/2022
Attenuator	WEINSCHEL	56-10	58772	05/03/2021	05/02/2022
Power Meter	Agilent	N1912A	13050625-001	10/14/2020	10/13/2021
Power Sensor	Agilent	N1922A	13053523-001	10/14/2020	10/13/2021
EMI Receiver	R&S	ESCI	13054423-001	12/15/2020	12/14/2021
Spectrum Analyzer	R&S	FSU46	13040904-001	05/13/2021	05/12/2022
Horn Antenna	EMCO	3117	13059211-004	04/09/2021	04/08/2022
Horn Antenna	EMCO	3116	13059202-001	11/06/2020	11/05/2021
PRE-Amplifier	Agilent	8449B	13040709-001	12/21/2020	12/20/2021
PRE-Amplifier	Agilent	8447D	13040715-002	05/03/2021	05/02/2022
BiLog Antenna	ETC	MCTD 2786	BL19J04024	03/11/2021	03/10/2022
Trilog Broadband Antenna with 5dB Pad	SCHWARZB ECK&EMCI	VULB 9168 & EMCI-N-6-05	1211&AT-N0569	05/10/2021	05/09/2022