

低功率射頻器材 檢驗報告

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製造廠商	DENSO CORPORATION
受檢設備名稱	Cockpit Control Unit (WIFI and Bluetooth)
廠牌	DENSO
型號	DNNS113
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)

實驗室認可證書有效期限：110年10月31日



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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 (WIFI and Bluetooth)
 型號：DNNS113
 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)：18.46 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，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	合格
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	合格
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	合格
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	合格
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	合格
8	電波暴露量之評估	低功率射頻器材技術規範 6.20	請參閱11節	請參閱11節	合格
	以下空白				

測量實驗室負責人：鄭敬 109.10.13 直接主管：董敬瑞 109.10.13 量測員：許志宏 109.10.13

1 一般資料

1.1 產品描述

- a) 產品型態 : Cockpit Control Unit (WIFI and Bluetooth)
 b) 商 標 : DENSO
 c) 產品型號 : DNNS113
 d) 供應電源 : DC 12V

備註：本產品內含WLAN、Bluetooth無線技術，WLAN部份包含DTS頻帶。本報告僅記錄DTS 部份，Bluetooth 部份請見ETC報告編號: 20-06-MAS-011-01。

1.2 產品特性

此裝置為 Cockpit Control Unit (WIFI and Bluetooth)，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)：BPSK，QPSK，16QAM，64QAM，其應用為區域網路無線傳輸。主波發射功率為 18.46 dBm，即為 70.15 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, $\mu\text{V/m}$)	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	

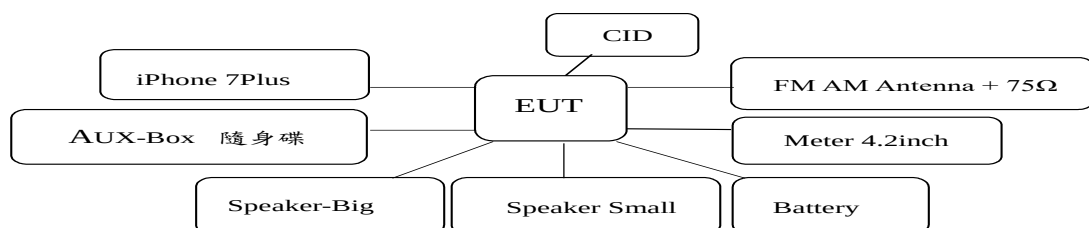
3 受測裝置之系統說明

3.1 受測裝置

裝置名稱	製造者/代理者	型 號	纜線說明
* Cockpit Control Unit (WIFI and Bluetooth)	DENSO CORPORATION	DNNS113	非隔離電源線 1.5m
iPhone 7Plus	Apple	MN4Q2TA/A	----
AUX-Box	HOSIDEN	86257AN00A	----
隨身碟*2	Kingston	100 G3 16GB	----
Speaker-Big*2	DENSO	SP2	----
Speaker-Small*2	DENSO	SP1	----
CID	DENSO	K3-MS2_Mid-LHD-093	----
FM AM Antenna + 75Ω terminators	HIROSE	BNC-P1.5C-2	非隔離 1.8m
Meter 4.2inch	DENSO	85002CC110	----
Battery	Yuasa	55B24l(S)-CMFII	----
Main-Cable	DENSO	CCU-MAIN	非隔離 1.8m
Meter Cable	DENSO	CCU-METER	非隔離 3.0m
POW-CABLE	DENSO	CID-POW	非隔離 0.2m
BT-CABLE	DENSO	CID-BT	非隔離 0.2m
WiFi-CABLE	DENSO	CID-WIFI	非隔離 0.2m
LVDS-CABLE	DENSO	GNIF-STP	非隔離 0.2m
USB-Cable (Green)	HOSIDEN	86257FL004	非隔離 1m
AUX-Cable	HP	HP030GBBLK1.5TW	非隔離 1.5m

註: 1.標記“*”表欲申請之受測物及配件。

2.測試配置：



3. 軟體設定:

軟體名稱:	Tera Term.exe
軟體設定:	Power: 802.11b ➔ Data rate 1 Mbps (經驗證為最差模式); Default
	802.11g ➔ Data rate 6 Mbps (經驗證為最差模式); Default
	802.11n HT20 MCS0 (經驗證為最差模式); Default

3.2 測試模式說明

3.2.1 調變方式及模式

Test Mode	Modulation	Worse Case	Test Channel	Frequency (MHz)
A	IEEE 802.11b	B (註1)	Channel Low	2412
B	IEEE 802.11g		Channel Mid	2437
C	IEEE 802.11n HT20		Channel High	2462

Normal Mode:

Test Mode	Note
D	USB Link
E	BT Link
F	WiFi Link
G	AUX

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)	B, D, E, F, G	M (Worse Case)
6.2	場強輻射之量測(1GHz以上)	B, D, E, F, G	L, M, H
7	電波暴露量之評估	B (註 3)	M (註 3)

註: 1. 各調變預掃時無差異，擇一作最終測試並記錄之。

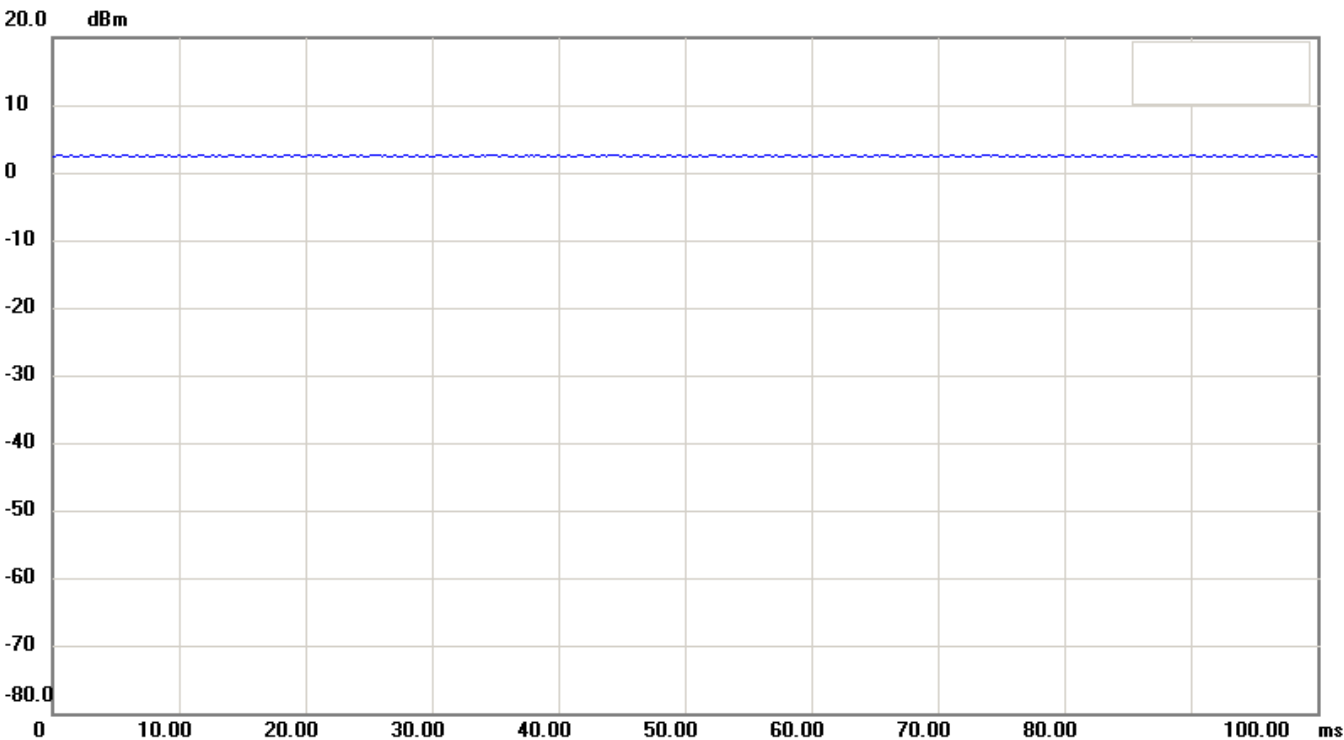
- 量測場強輻射時，若為手持式或穿戴式之裝置，應對其三個正交軸(X、Y、Z)的方位評估測試，並分別測試以找出最大輻射電場強度軸向，以最差軸模式測試，並記錄其值與軸向放置。
- 各調變及各頻道以峰值輸出功率最大者做為 Worse Case 並進行評估。
- 依 NCC 74 次一致性會議：審驗時不具一般正常使用模式者，得不包括一般正常使用模式。

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

3.2.4 Duty cycle
IEEE 802.11b

File:	20-06-MAS-011_B	#12	Date:	2020/6/8	Temperature:	22 °C
Site:	RF-Cond01				Humidity:	62 %

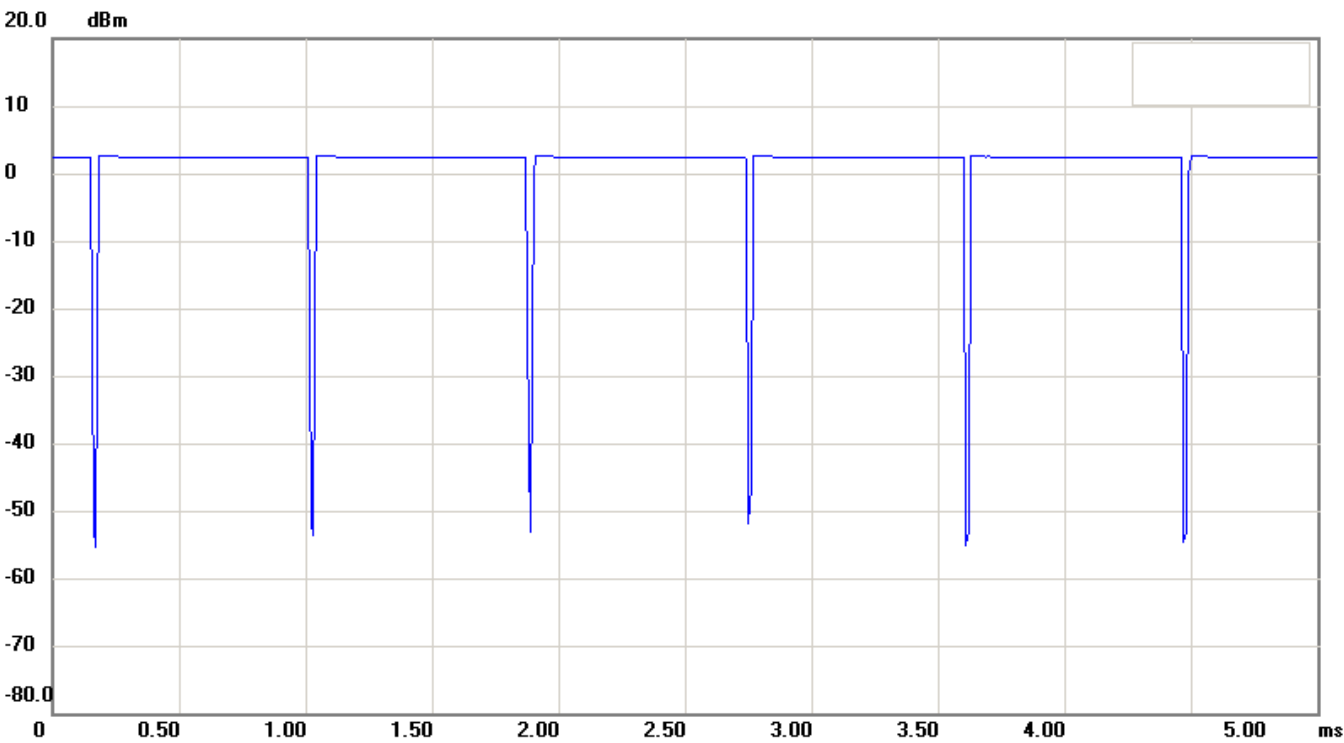


Condition:		RF Conducted	
EUT:	Cockpit Control Unit	Sweep Time: 100ms	Att.: 20dB
Model:	DNNS113	RBW: 1000 KHz	VBW: 1000 KHz
Test Mode:	WIFI-B	Operator:	Bruce
Note:	NCC_LP0002_802.11b Duty Cycle-1		

File: 20-06-MAS-011_B
Site: RF-Cond01

#13 Date: 2020/6/8

Temperature: 22 ℃
Humidity: 62 %



Condition:
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: 95.4%

RF Conducted
Sweep Time: 5ms Att.: 20dB
RBW: 1000 KHz VBW: 1000 KHz
Operator: Bruce

IEEE 802.11g

File: 20-06-MAS-011_G

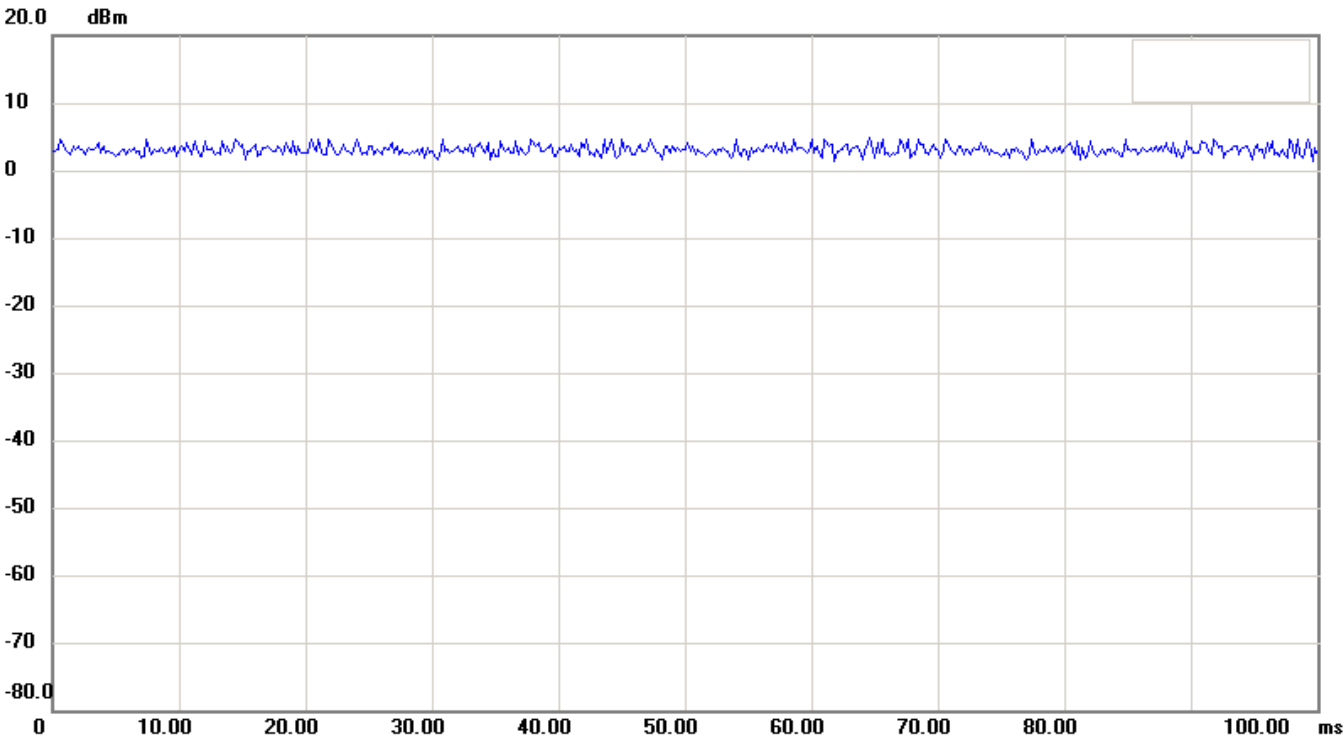
#12

Date: 2020/6/8

Temperature: 22 °C

Site: RF-Cond01

Humidity: 62 %



Condition:	RF Conducted	
EUT:	Cockpit Control Unit	Sweep Time: 100ms Att.: 20dB
Model:	DNNS113	RBW: 1000 KHz VBW: 1000 KHz
Test Mode:	WIFI-G	Operator: Bruce
Note:	NCC_LP0002_802.11g Duty Cycle-1	

File: 20-06-MAS-011_G

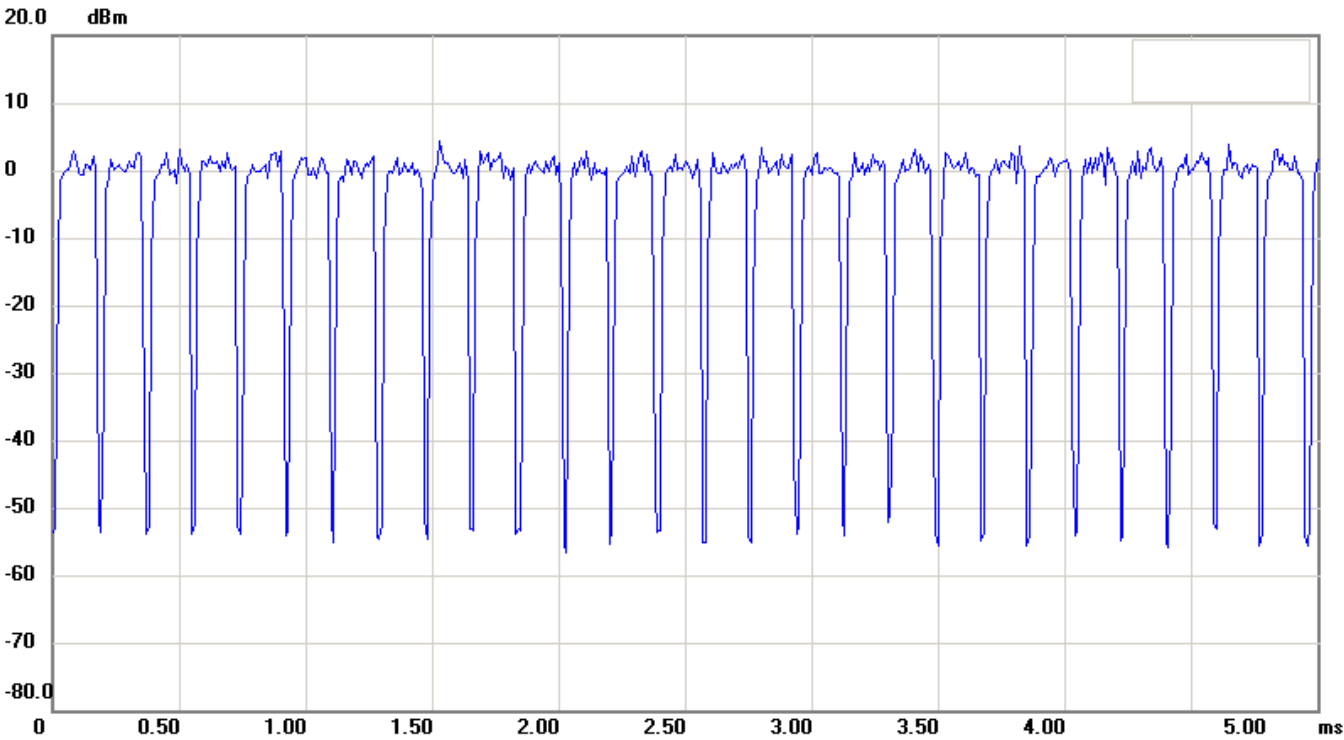
Site: RF-Cond01

#13

Date: 2020/6/8

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-G

Note: 84.3%

RF Conducted

Sweep Time: 5ms Att.: 20dB

RBW: 1000 KHz VBW: 1000 KHz

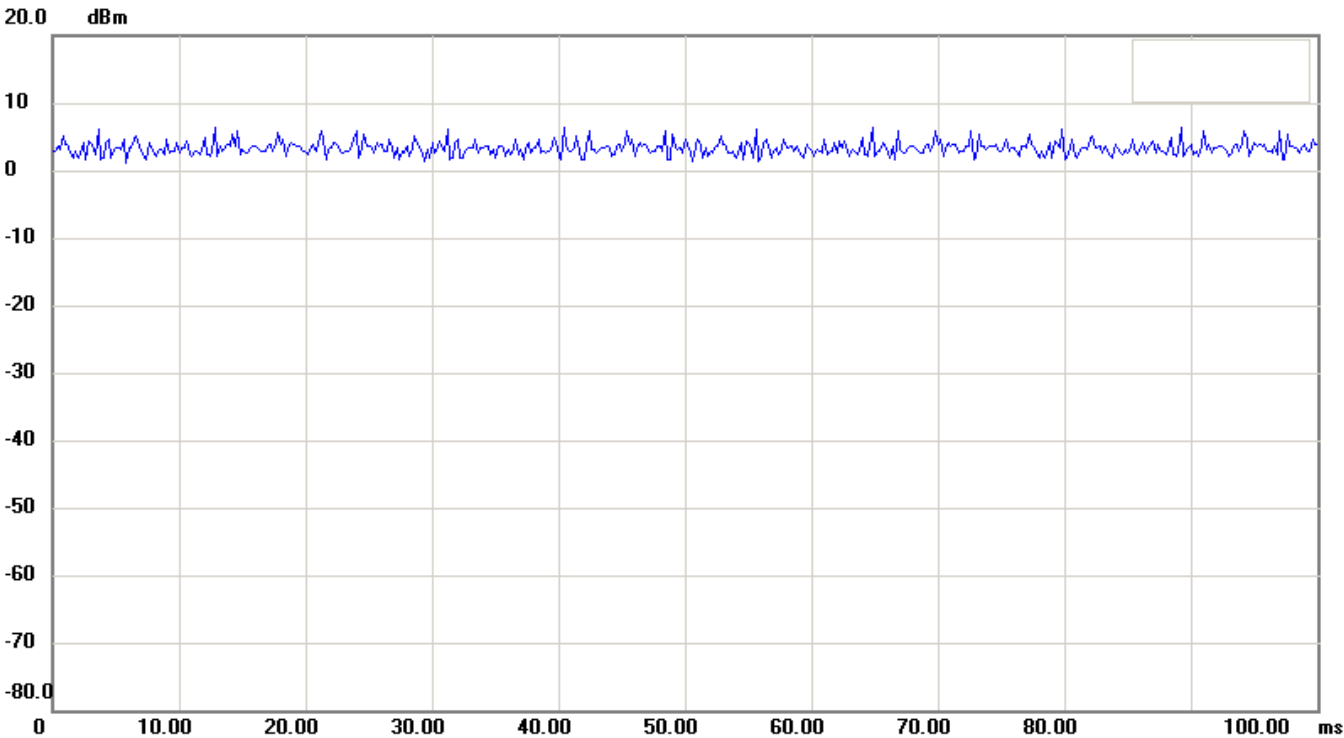
Operator: Bruce

IEEE 802.11n HT20

File: 20-06-MAS-011_N
Site: RF-Cond01

#12
Date: 2020/6/8

Temperature: 22 °C
Humidity: 62 %



Condition:
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n20 Duty Cycle-1

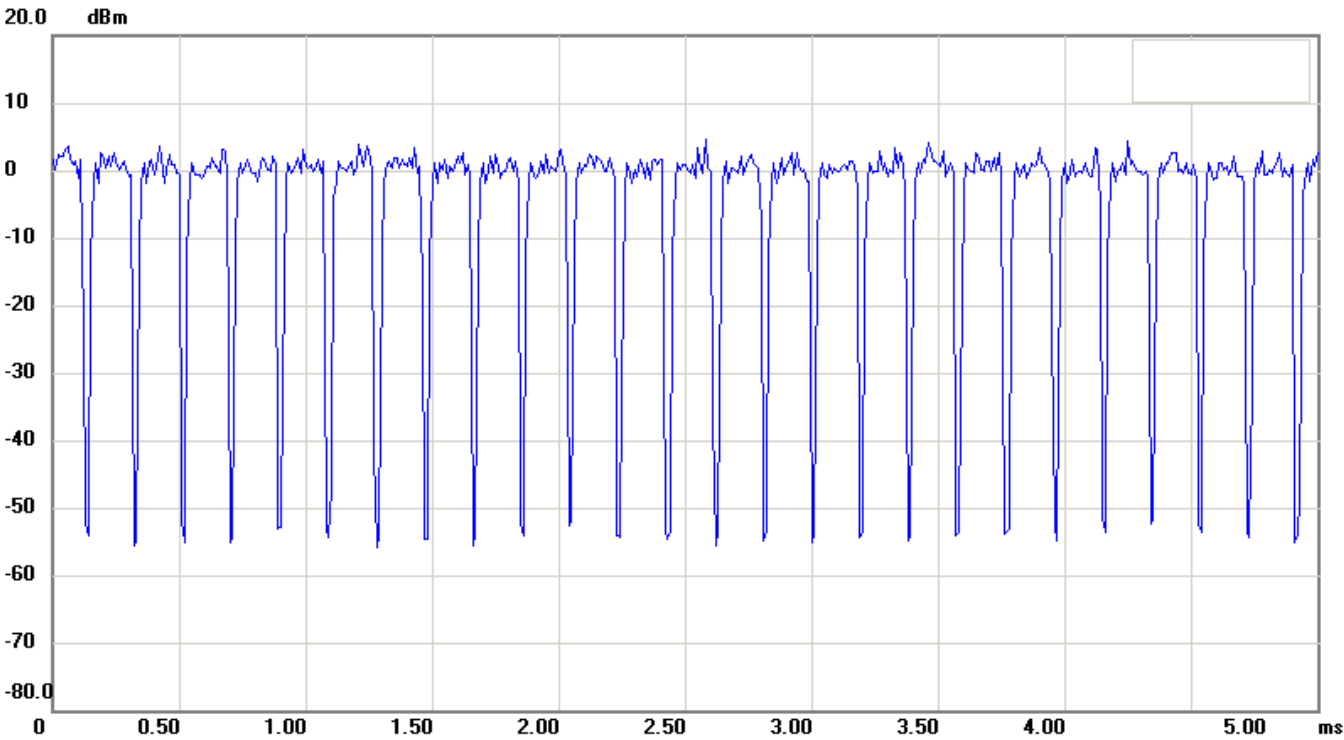
RF Conducted
Sweep Time: 100ms
RBW: 1000 KHz
Operator:

Att.: 20dB
VBW: 1000 KHz
Bruce

File: 20-06-MAS-011_N
Site: RF-Cond01

#13 Date: 2020/6/8

Temperature: 22 ℃
Humidity: 62 %



Condition:
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-N
Note: 84.9%

RF Conducted
Sweep Time: 5ms Att.: 20dB
RBW: 1000 KHz VBW: 1000 KHz
Operator: Bruce

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，天線增益 -6.4 dBi，未超過 6 dBi，不須降低峰值輸出功率。

5.3 結果判定

天線之方向性增益皆低於6dBi，因此無需減少峰值輸出功率及功率密度之限制值。

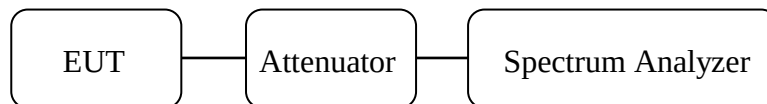
6 發射頻寬之要求

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	製造者	型 號
Spectrum Analyzer	R&S	FSV
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

6.4 量測結果

測試工程師: 許志宏

6.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 08, 2020

環境溫度 : 22°C

環境濕度 : 62%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	8.2	500	Page 21
M	8.7	500	Page 22
H	8.2	500	Page 23

註：繪圖資料請參考第 21-23 頁。

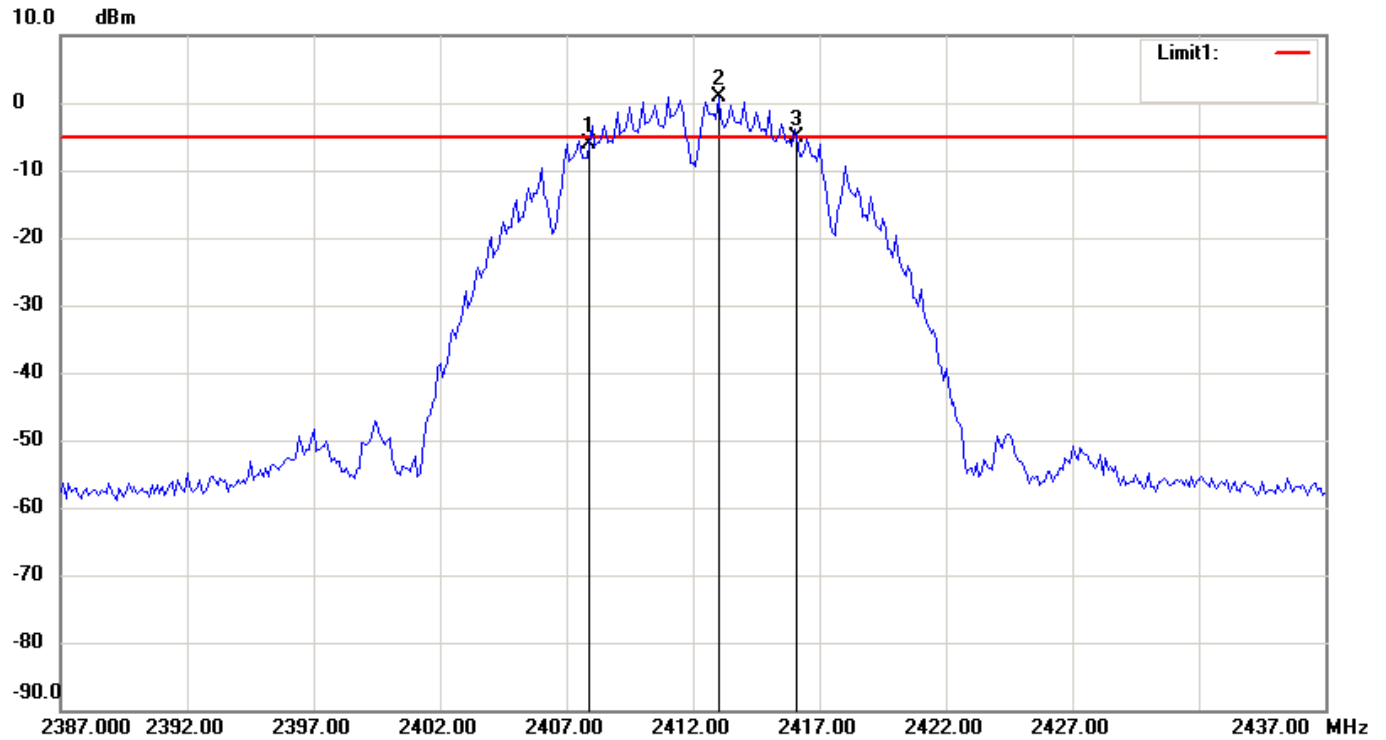
File: 20-06-MAS-011_B
Site: RF-Cond01

#1

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -5.1dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 01-6dB EBW

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

No.	Frequency(MHz)	Level(dBm)
1	2407.90000	-6.04
2	2413.00000	0.90
3	2416.10000	-5.23

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	8.2	0.81

File: 20-06-MAS-011_B
Site: RF-Cond01

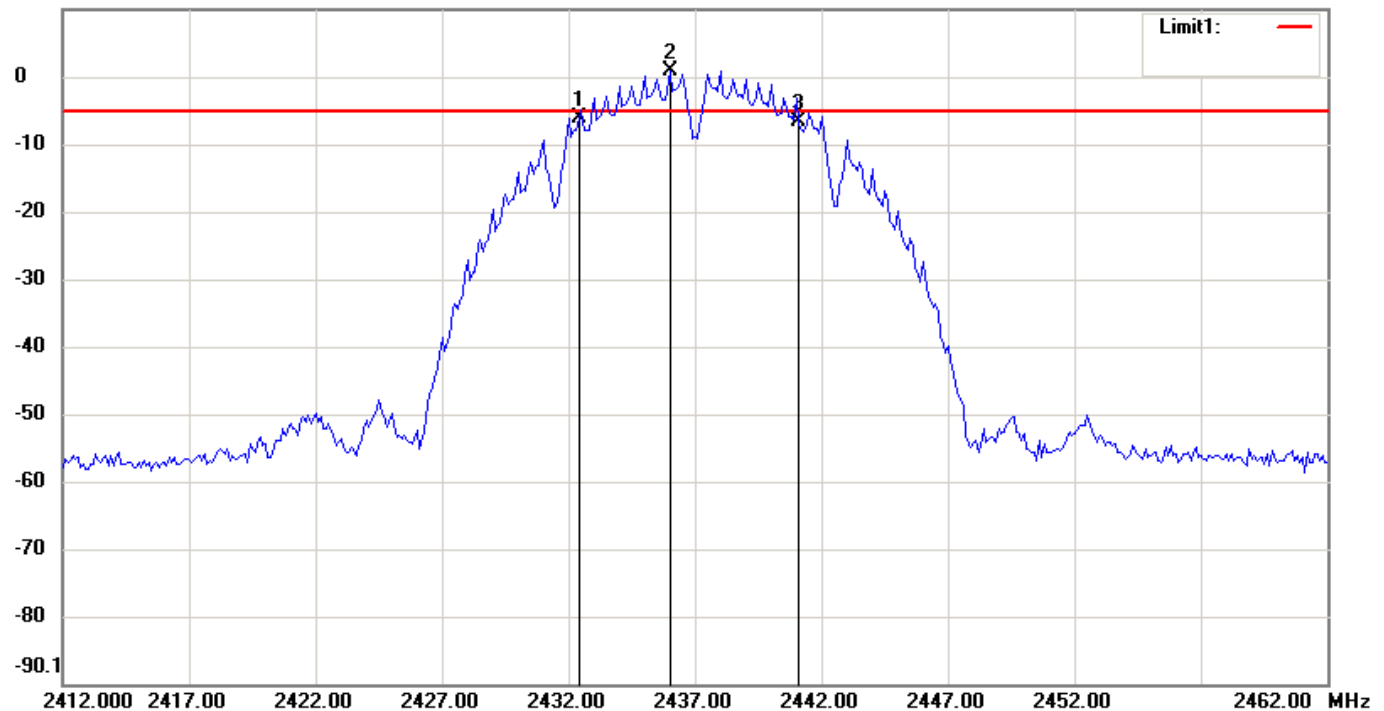
#5

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

9.9 dBm



Condition: -5.18dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 06-6dB EBW

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

No.	Frequency(MHz)	Level(dBm)
1	2432.40000	-6.34
2	2436.00000	0.82
3	2441.10000	-6.88

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	8.7	-0.54

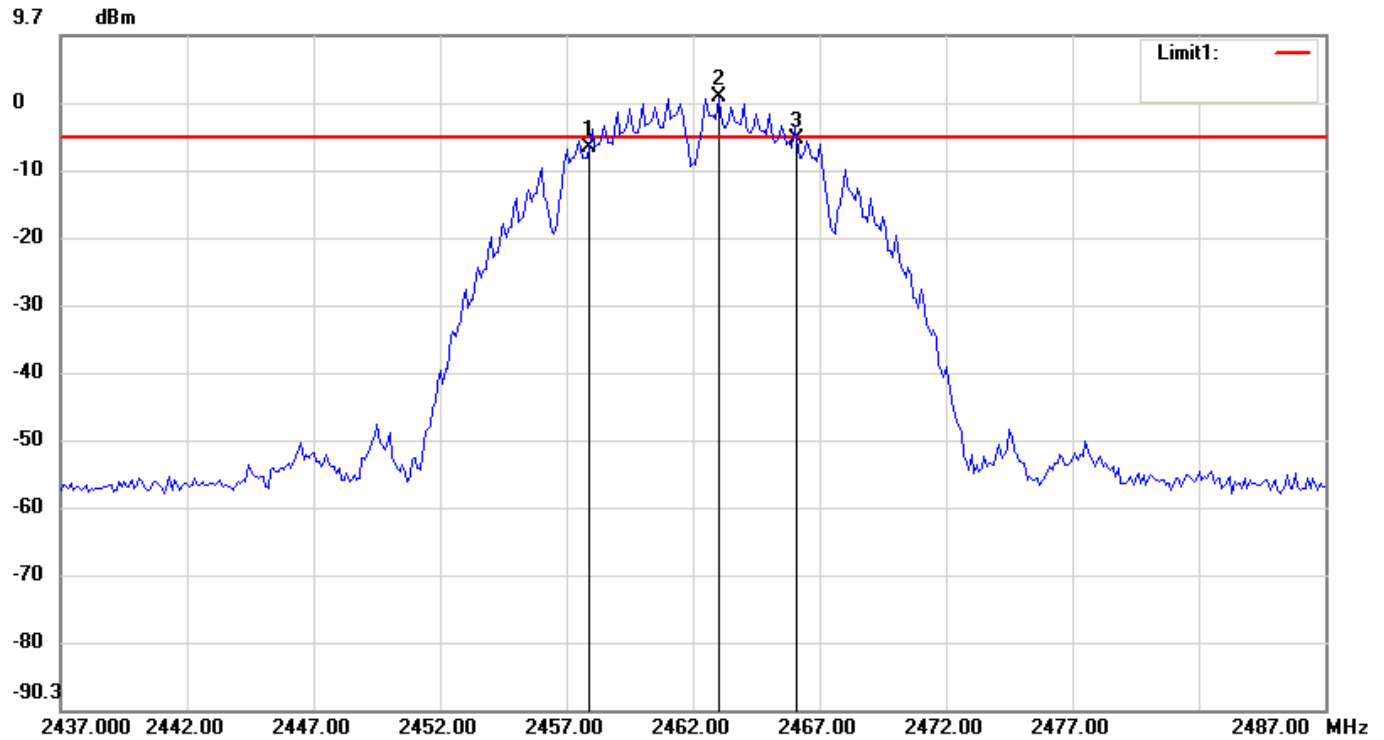
File: 20-06-MAS-011_B
Site: RF-Cond01

#8

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -5.52dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 11-6dB EBW

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

No.	Frequency(MHz)	Level(dBm)
1	2457.90000	-6.82
2	2463.00000	0.48
3	2466.10000	-5.71

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	8.2	1.11

6.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度 : 62%

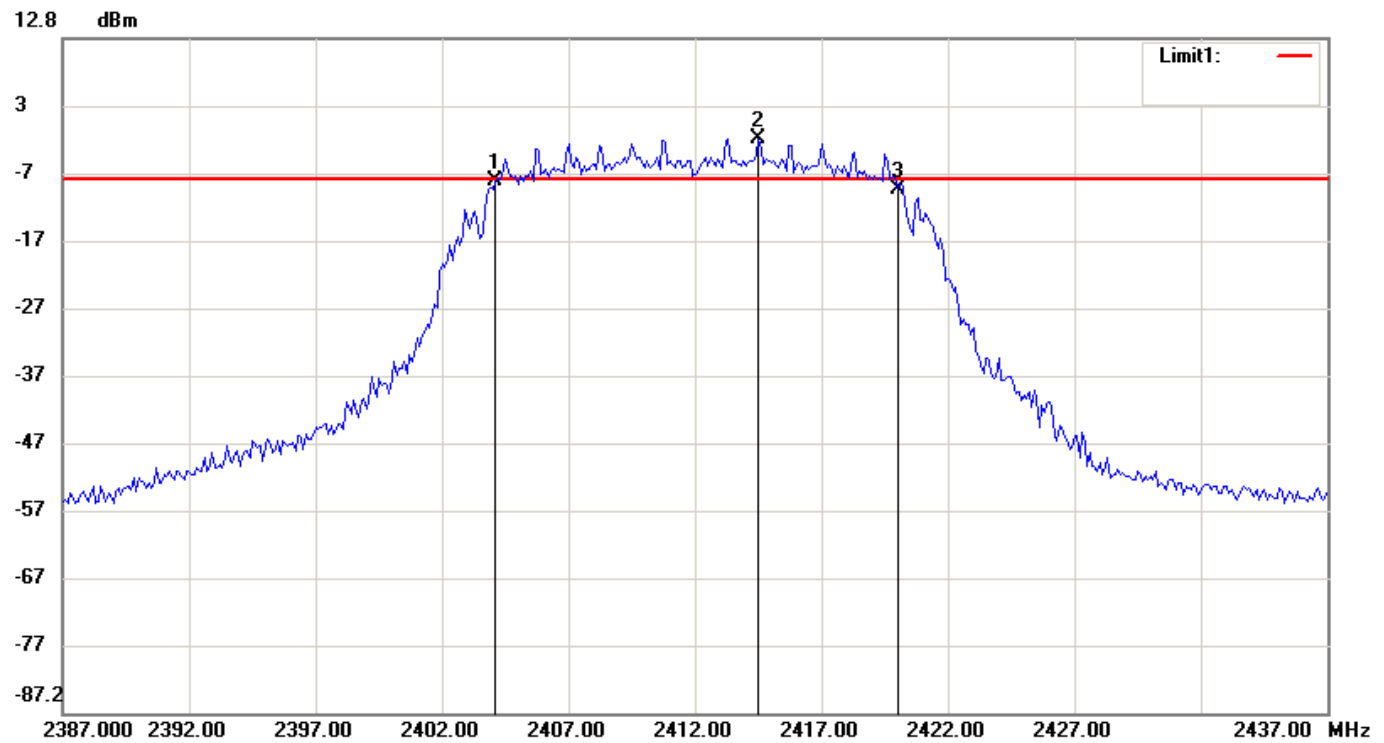
Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	15.9	500	Page 25
M	15.8	500	Page 26
H	15.5	500	Page 27

註：繪圖資料請參考第 25-27 頁。

File: 20-06-MAS-011_G
Site: RF-Cond01

#1 Date: 2020/6/8

Temperature: 22 °C
Humidity: 62 %



Condition: -8.09dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 01-6dB EBW

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

No.	Frequency(MHz)	Level(dBm)
1	2404.10000	-8.34
2	2414.50000	-2.09
3	2420.00000	-9.58

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	15.9	-1.24

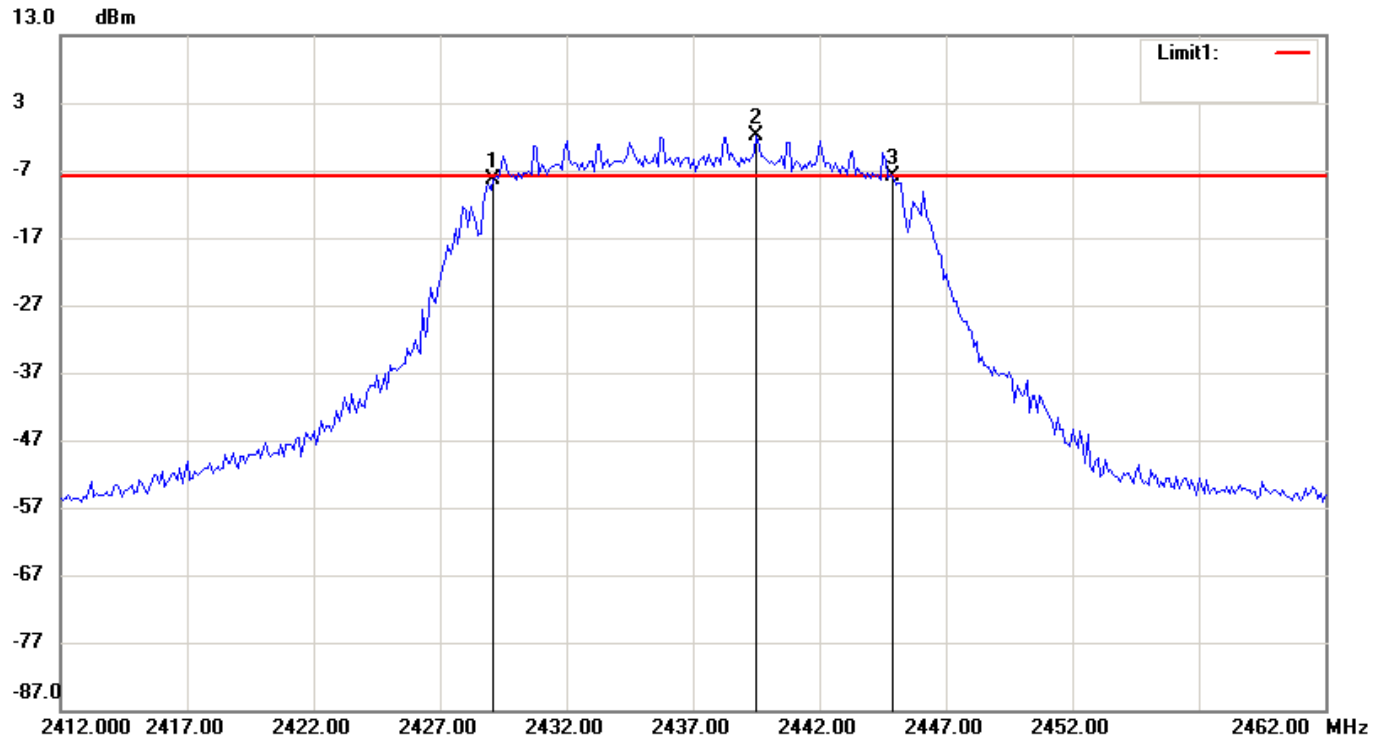
File: 20-06-MAS-011_G
Site: RF-Cond01

#5

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -7.9dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 06-6dB EBW

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

No.	Frequency(MHz)	Level(dBm)
1	2429.10000	-8.45
2	2439.50000	-1.90
3	2444.90000	-7.91

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	15.8	0.54

File: 20-06-MAS-011_G
Site: RF-Cond01

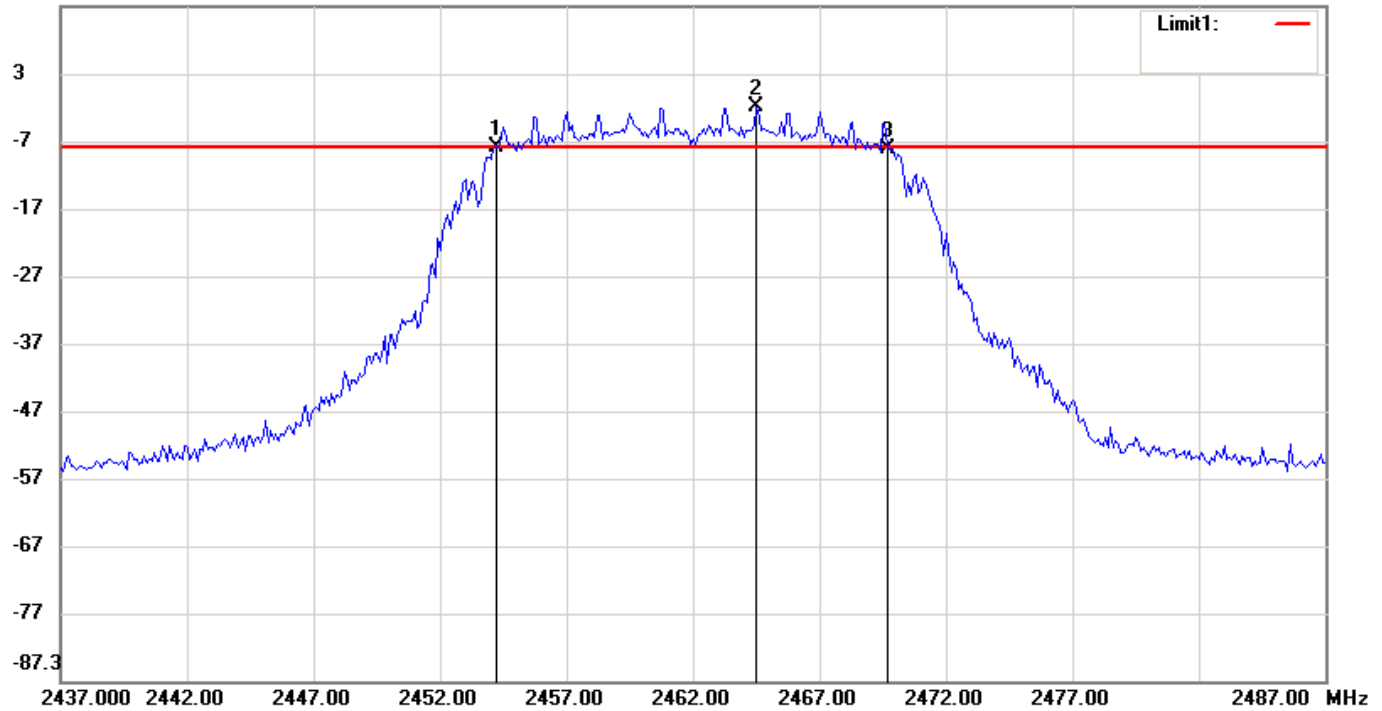
#8

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

12.7 dBm



Condition: -8.2dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 11-6dB EBW

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

No.	Frequency(MHz)	Level(dBm)
1	2454.20000	-8.22
2	2464.50000	-2.20
3	2469.70000	-8.27

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	15.5	-0.05

6.4.3 調變技術: IEEE 802.11n HT20

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度 : 62%

Channel	6dB Bandwidth (MHz)	NCC Limit (kHz)	Chart
L	15.4	500	Page 29
M	15.6	500	Page 30
H	15.6	500	Page 31

註：繪圖資料請參考第 29-31 頁。

6.5 結果判定

高、中、低頻段的6dB頻寬皆大於500KHz。

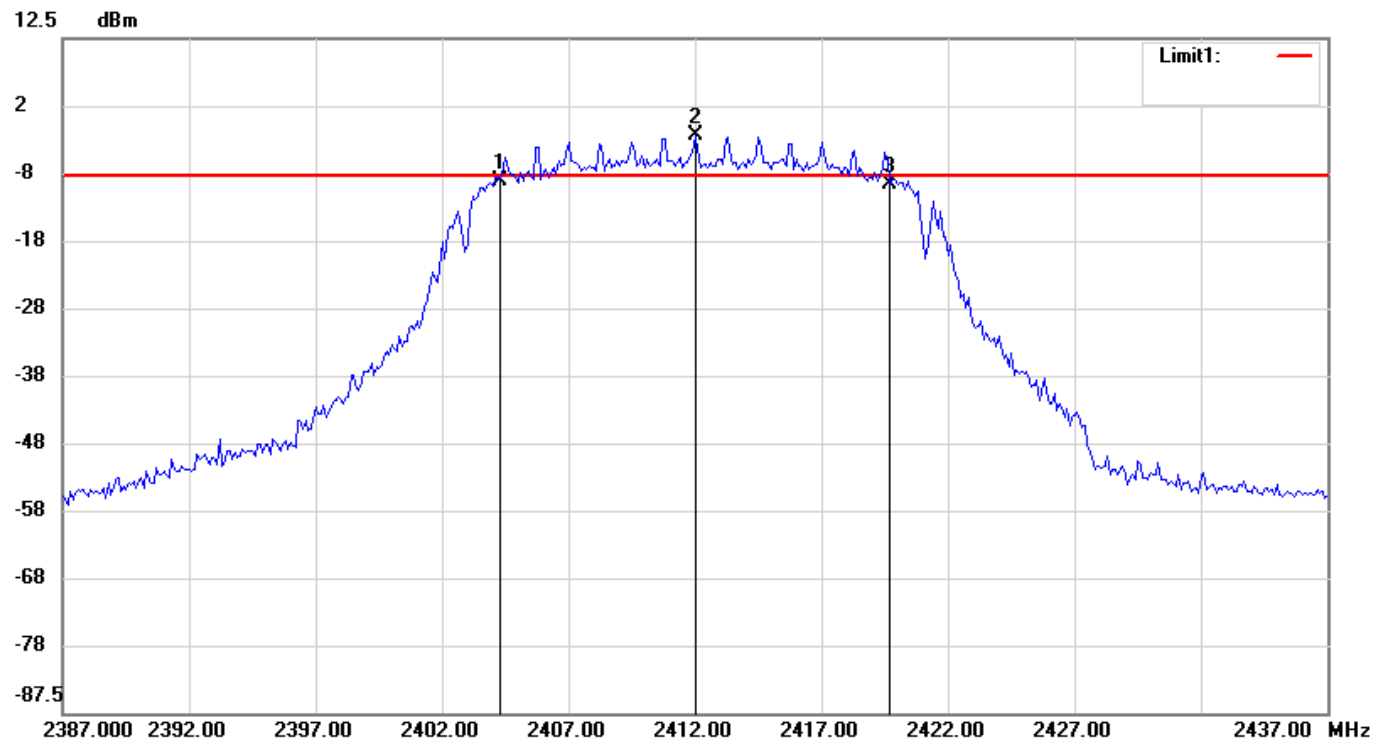
File: 20-06-MAS-011_N
Site: RF-Cond01

#1

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -7.81dBm

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-N

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

RF Conducted

Sweep Time: 500ms Att.: 20dB

RBW: 100 KHz VBW: 300 KHz

Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2404.30000	-8.56
2	2412.00000	-1.81
3	2419.70000	-9.12

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	15.4	-0.56

File: 20-06-MAS-011_N
Site: RF-Cond01

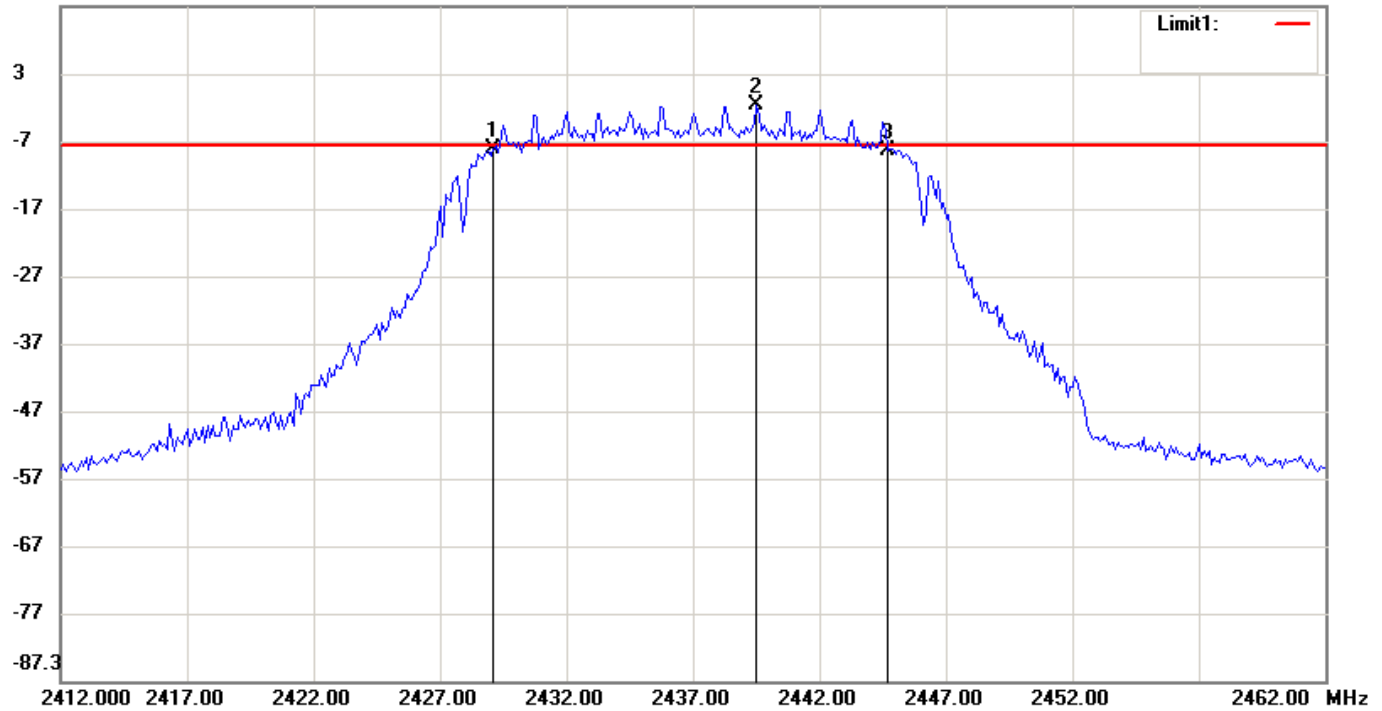
#5

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

12.7 dBm



Condition: -7.91dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 06-6dB EBW

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

No.	Frequency(MHz)	Level(dBm)
1	2429.10000	-8.40
2	2439.50000	-1.91
3	2444.70000	-8.67

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	15.6	-0.27

File: 20-06-MAS-011_N
Site: RF-Cond01

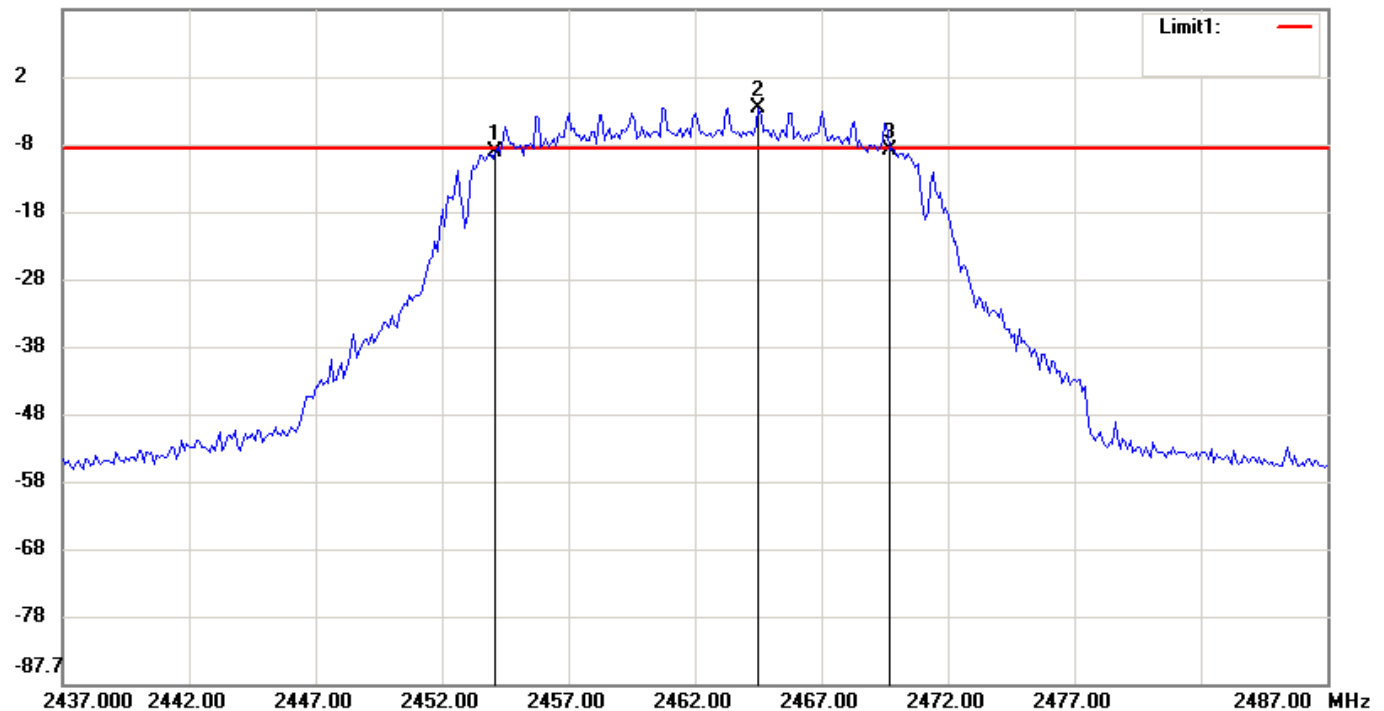
#8

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

12.3 dBm



Condition: -8.24dBm

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-N

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

RF Conducted

Sweep Time: 500ms Att.: 20dB

RBW: 100 KHz

VBW: 300 KHz

Operator:

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2454.10000	-8.81
2	2464.50000	-2.24
3	2469.70000	-8.72

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	15.6	0.09

7 峰值輸出功率之量測

7.1 峰值適用標準

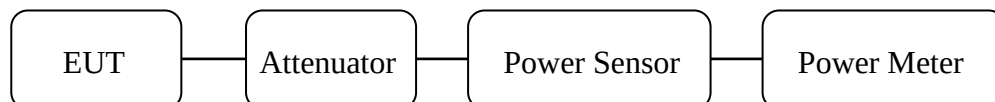
依據國家通訊傳播委員會低功率射頻器材技術規範4.10.1.2節之(1)(C)規定，操作於2400-2483.5兆赫(MHz)之所有數位調變技術系統:1瓦(W)(含)以下。

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3 dBi，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	製造者	型 號
Power Meter	Agilent	N1912A
Power Sensor	Agilent	N1922A
Attenuator	WEINSCHL	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: 許志宏

7.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	12.01	30	-
M	12.05	30	-
H	11.95	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: $\pm 1.5\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

7.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	18.21	30	-
M	18.21	30	-
H	18.46	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

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Maximum Peak Output Power (dBm)	NCC Limit (dBm)	Chart
L	18.22	30	-
M	18.38	30	-
H	18.20	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	製造者	型 號
Spectrum Analyzer	R&S	FSV
Attenuator	WEINSCHEL	56-10

測試軟體: LZ-RF (Ver. ETC-3A2)

8.4 量測結果

測試工程師: 許志宏

8.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-4.61	8	Page 38
M	-4.78	8	Page 39
H	-5.43	8	Page 40

註: 1. 繪圖資料請參考第 38-40 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: 20-06-MAS-011_B
 Site: RE02-EMC B1- N2

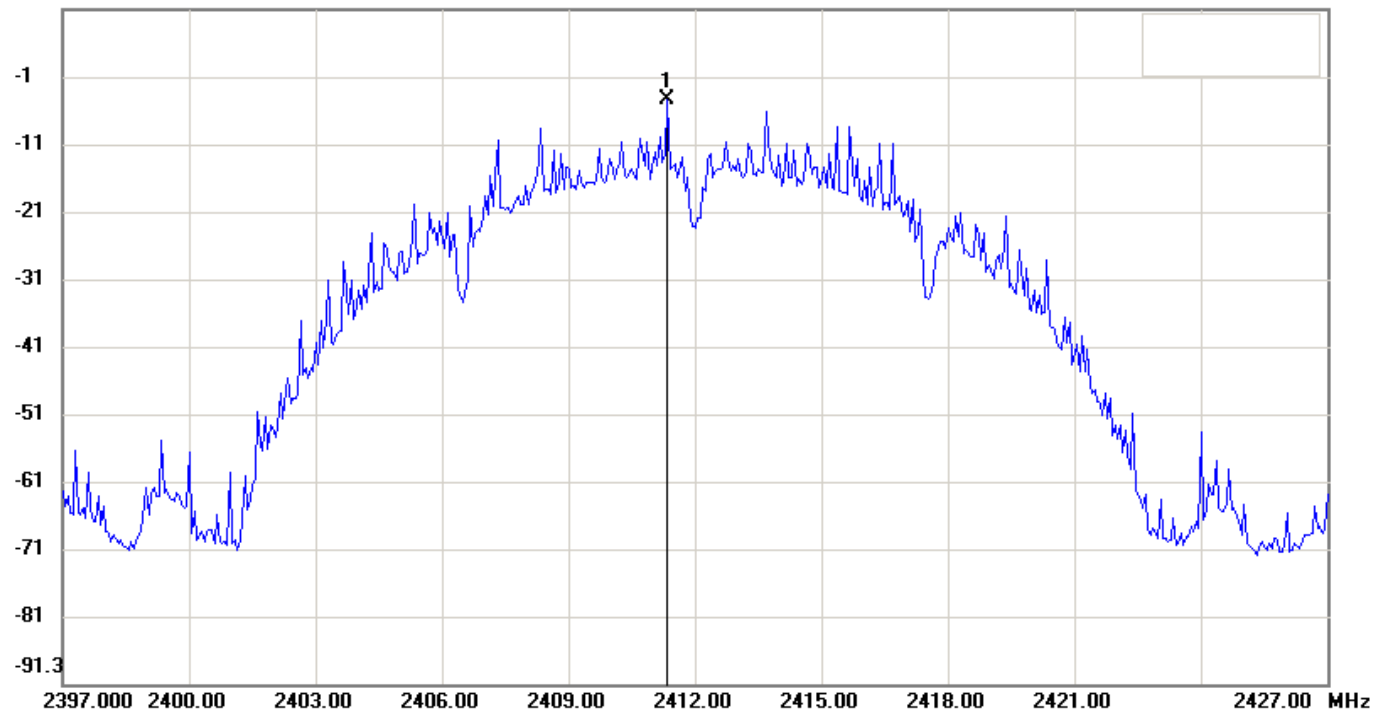
#3

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

8.7 dBm

**Condition:**

EUT: Cockpit Control Unit
 Model: DNNS113
 Test Mode: WIFI-B
 Note: NCC_LP0002_802.11b Channel 01-Power Density (PK)

RF Conducted

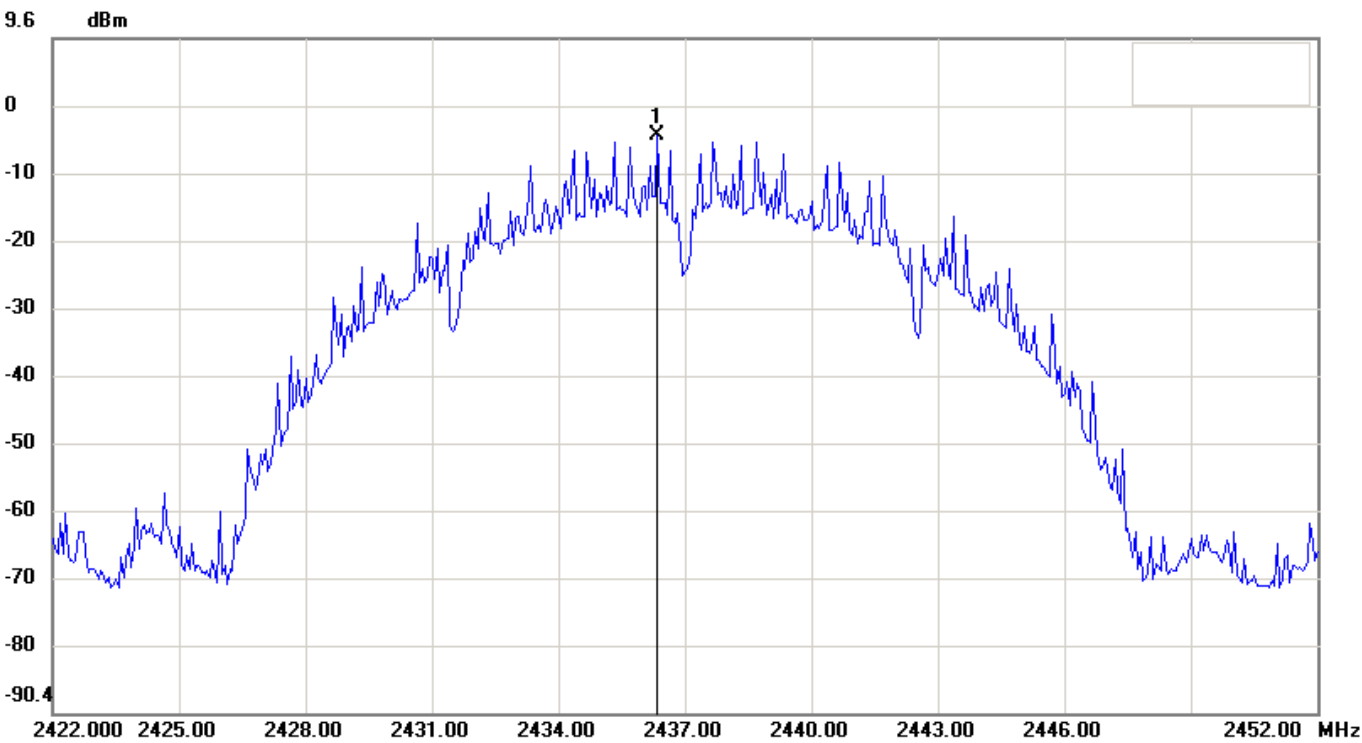
Sweep Time: 334ms Att.: 20dB
 RBW: 3 KHz VBW: 10 KHz
 Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2411.34000	-4.61

File: 20-06-MAS-011_B
Site: RE02-EMC B1- N2

#7 Date: 2020/6/8

Temperature: 22 ℃
Humidity: 62 %



Condition:

EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 06-Power Density (PK)

RF Conducted

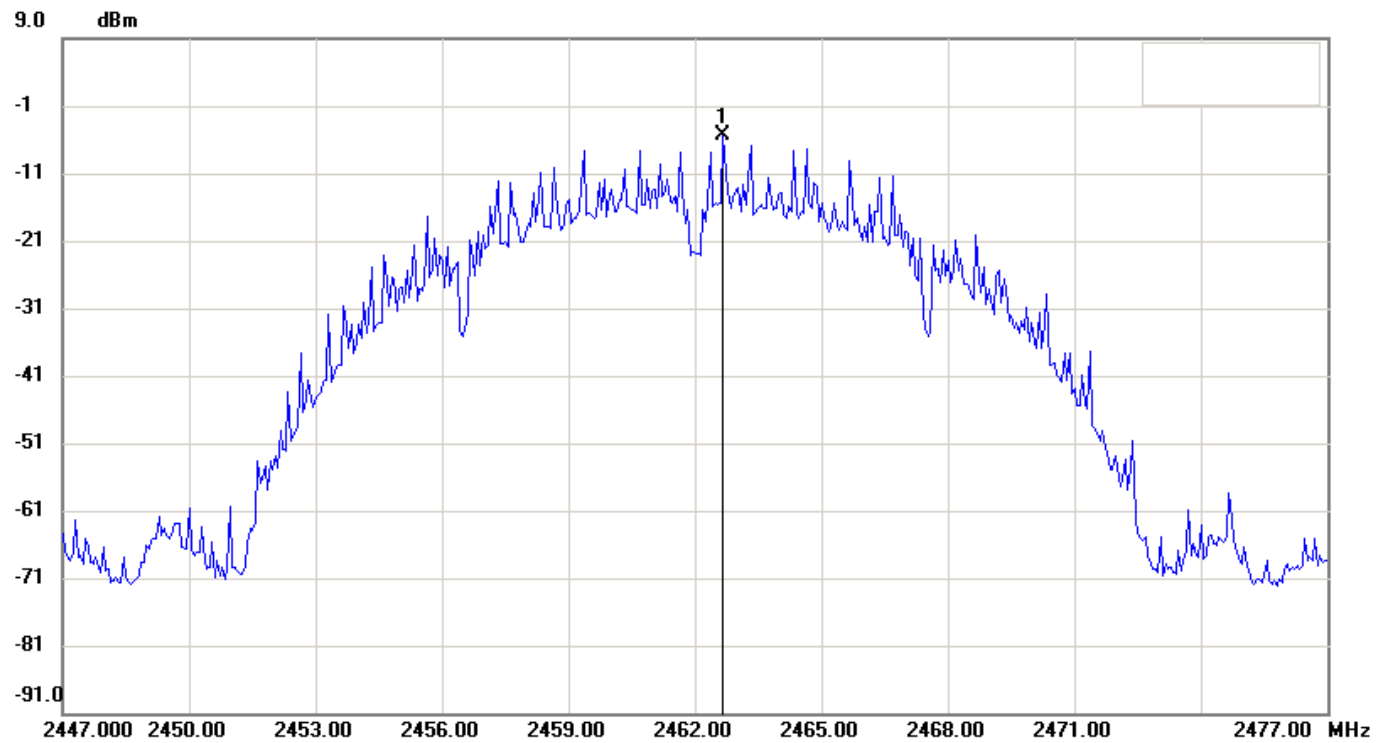
Sweep Time: 334ms Att.: 20dB
RBW: 3 KHz VBW: 10 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2436.34000	-4.78

File: 20-06-MAS-011_B
 Site: RE02-EMC B1- N2

#10 Date: 2020/6/8

Temperature: 22 °C
 Humidity: 62 %



Condition:

EUT: Cockpit Control Unit
 Model: DNNS113
 Test Mode: WIFI-B
 Note: NCC_LP0002_802.11b Channel 11-Power Density (PK)

RF Conducted

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

No.	Frequency(MHz)	Level(dBm)
1	2462.66000	-5.43

8.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%%

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-15.71	8	Page 42
M	-15.22	8	Page 43
H	-15.85	8	Page 44

註：1. 繪圖資料請參考第 42-44 頁。

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

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

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

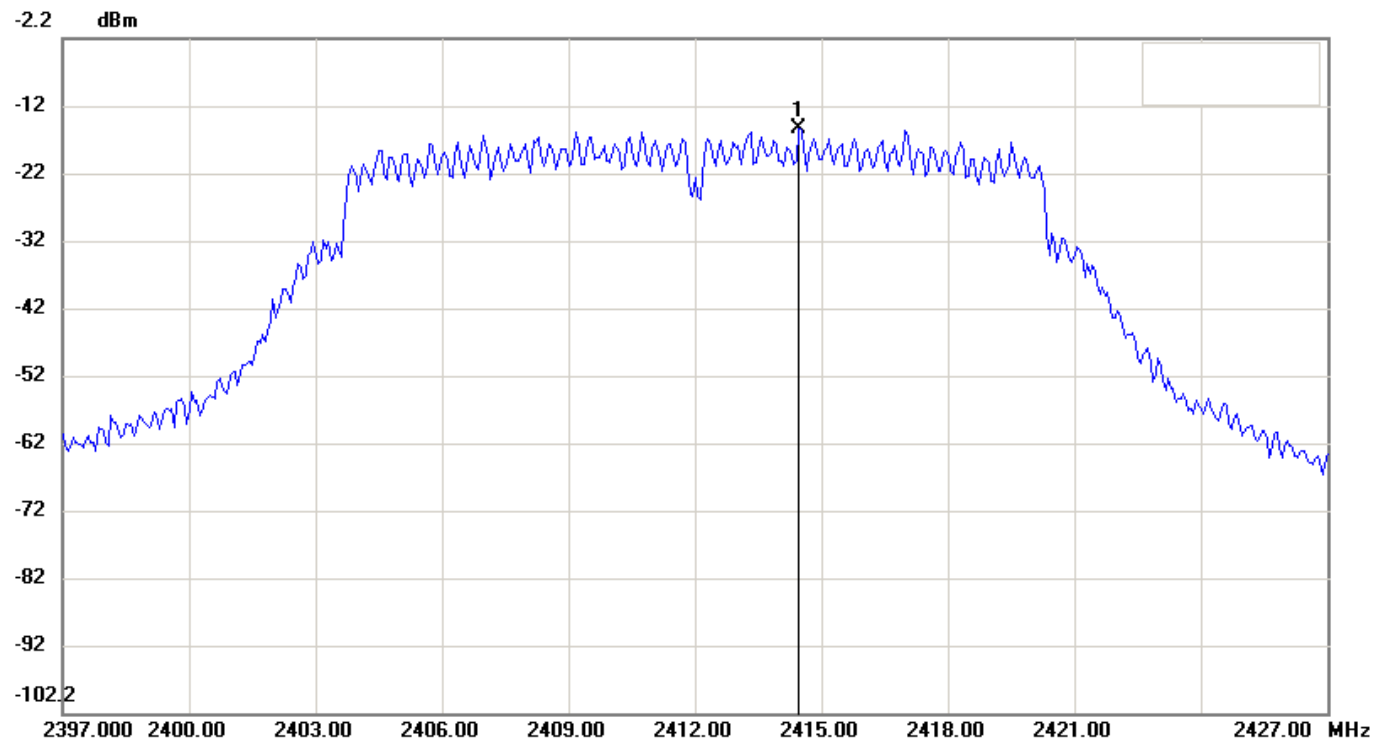
File: 20-06-MAS-011_G
Site: RF-Cond01

#3

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 01-Power Density (PK)

RF Conducted

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

No.	Frequency(MHz)	Level(dBm)
1	2414.46000	-15.71

File: 20-06-MAS-011_G

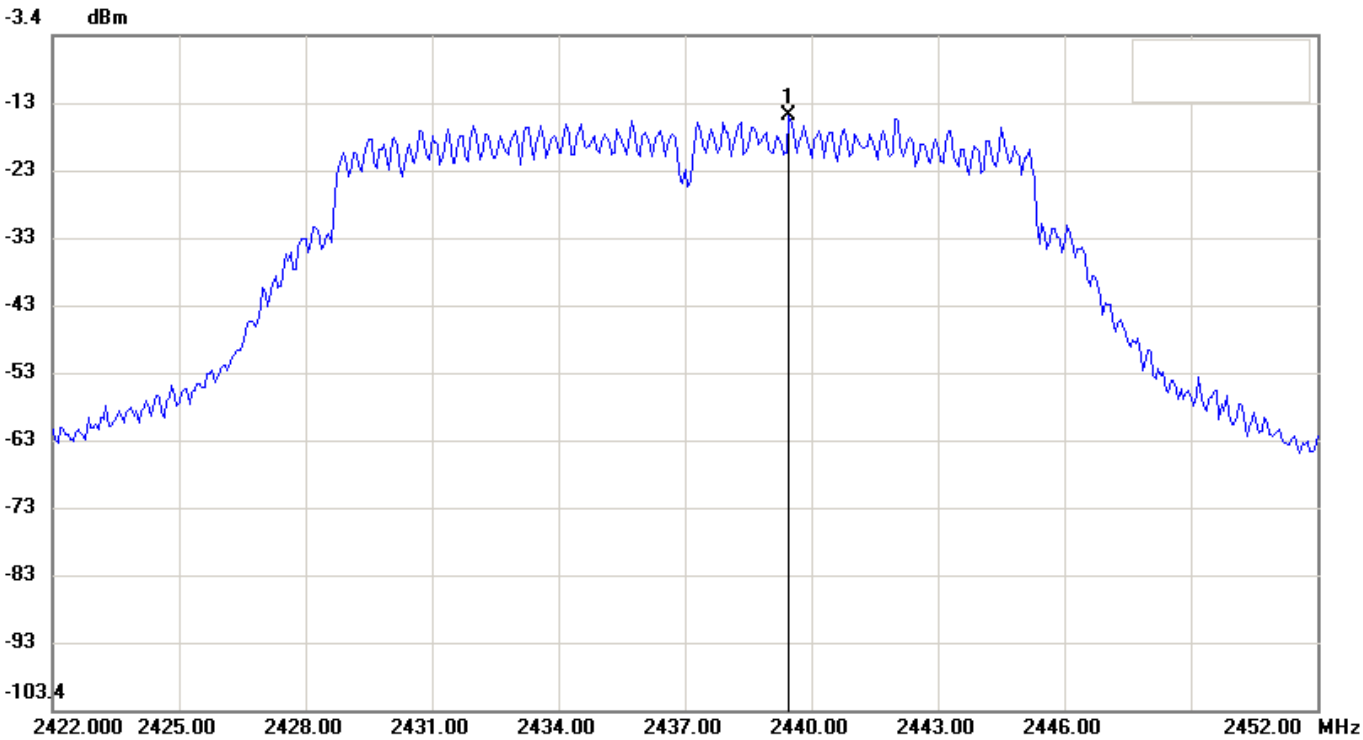
Site: RF-Cond01

#7

Date: 2020/6/8

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-G

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

RF Conducted

Sweep Time: 334ms

RBW: 3 KHz

Operator:

Att.: 20dB

VBW: 10 KHz

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2439.46000	-15.22

File: 20-06-MAS-011_G

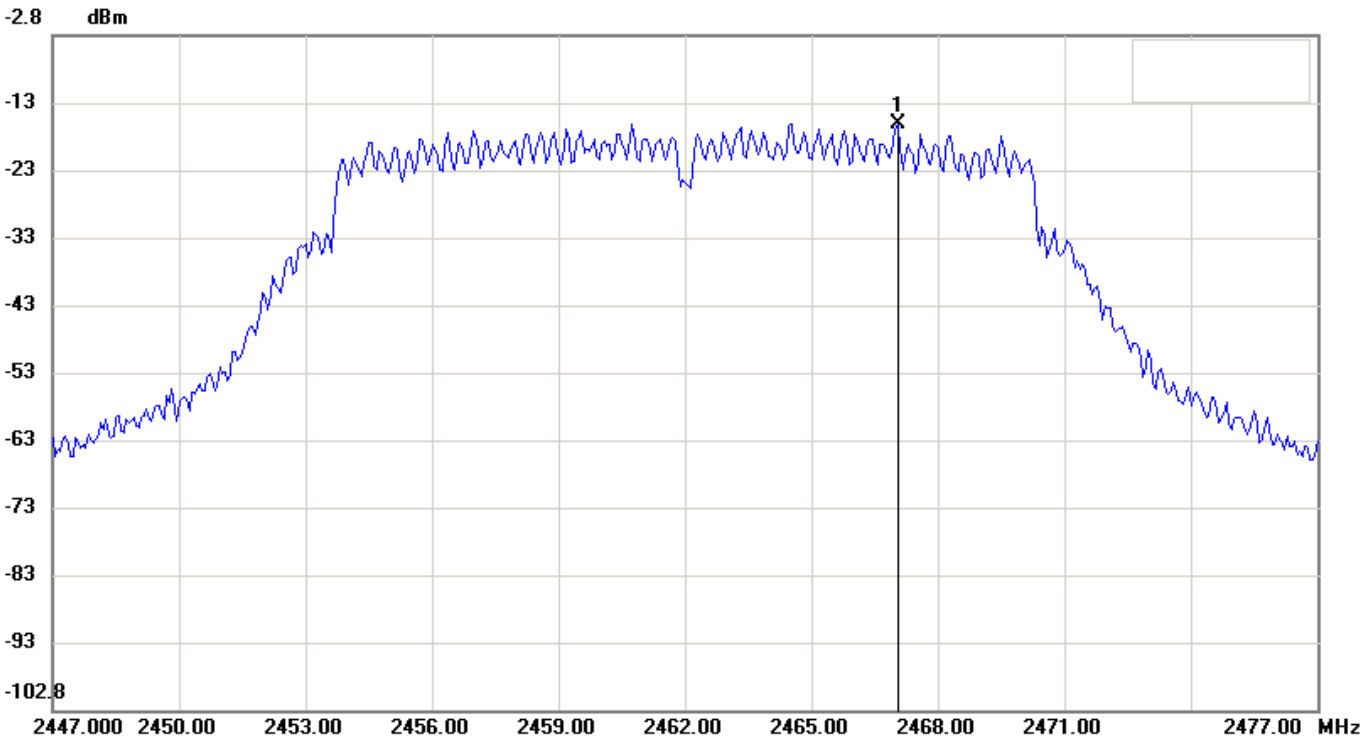
Site: RF-Cond01

#10

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-G

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

RF Conducted

Sweep Time: 334ms

RBW: 3 KHz

Operator: Bruce

Att.: 20dB

VBW: 10 KHz

No.	Frequency(MHz)	Level(dBm)
1	2467.04000	-15.85

8.4.3 調變技術: IEEE 802.11n HT20

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%

Channel	Peak Power Spectral Density (dBm)	NCC Limit (dBm)	Chart
L	-15.42	8	Page 46
M	-15.08	8	Page 47
H	-14.86	8	Page 48

註：1. 繪圖資料請參考第 46-48 頁。

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

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

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

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。

File: 20-06-MAS-011_N

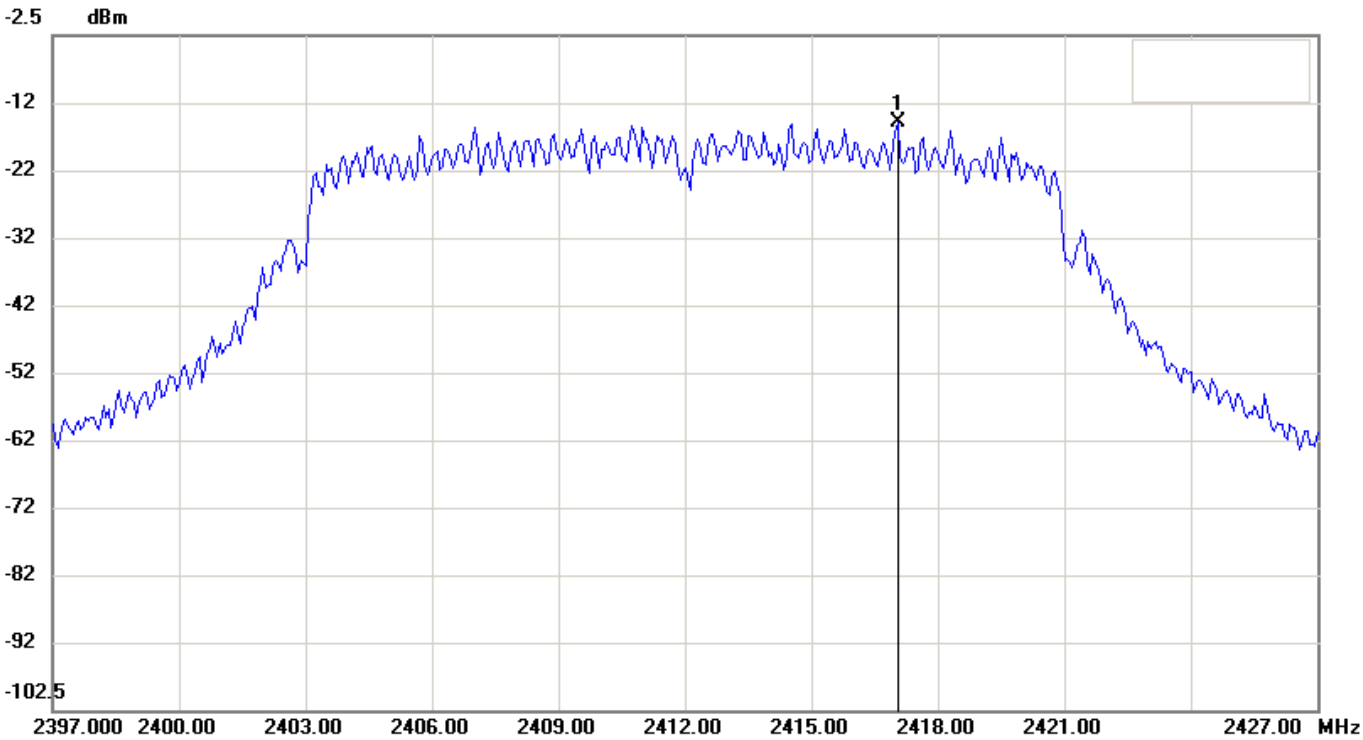
Site: RF-Cond01

#3

Date: 2020/6/8

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-N

Note: NCC_LP0002_802.11n-HT20 Channel 01-Power Density (PK)

RF Conducted

Sweep Time: 334ms

RBW: 3 KHz

Operator:

Att.: 20dB

VBW: 10 KHz

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2417.04000	-15.42

File: 20-06-MAS-011_N

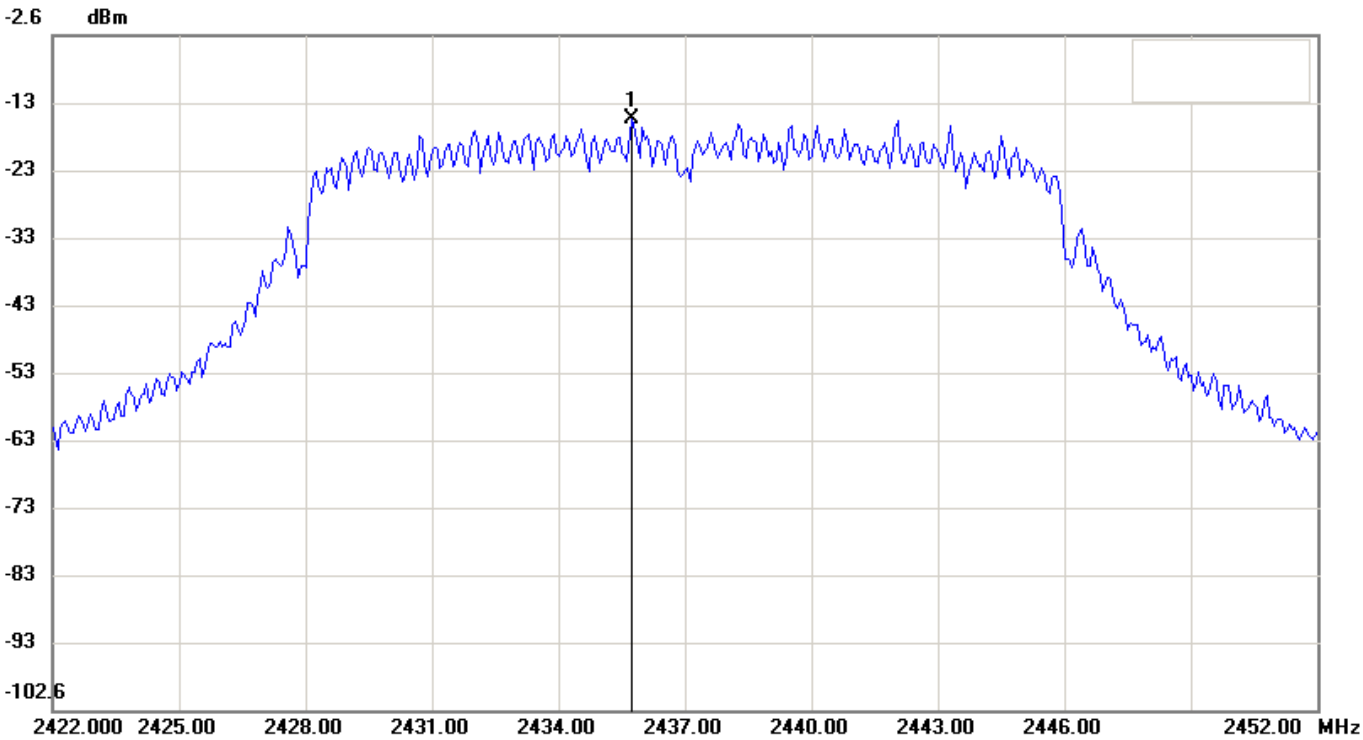
Site: RF-Cond01

#7

Date: 2020/6/8

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-N

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

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2435.74000	-15.08

File: 20-06-MAS-011_N

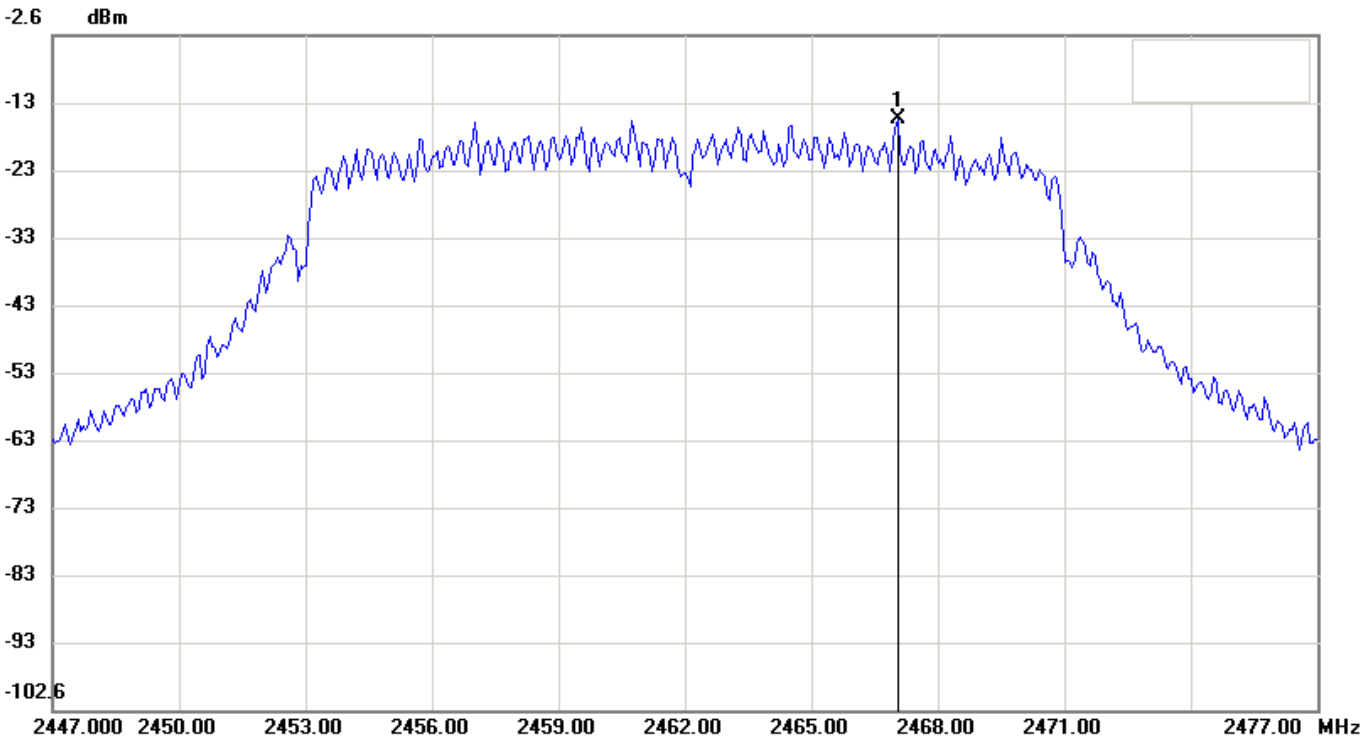
Site: RF-Cond01

#10

Date: 2020/6/8

Temperature: 22 ℃

Humidity: 62 %



Condition:

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-N

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

RF Conducted

Sweep Time: 334ms

RBW: 3 KHz

Operator:

Att.: 20dB

VBW: 10 KHz

Bruce

No.	Frequency(MHz)	Level(dBm)
1	2467.04000	-14.86

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	製造者	型 號
Spectrum Analyzer	R&S	FSV
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: 許志宏

9.4.1 調變技術: IEEE 802.11b

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2399.500 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 2498.692 MHz，比主波低20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 50-54 頁。

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

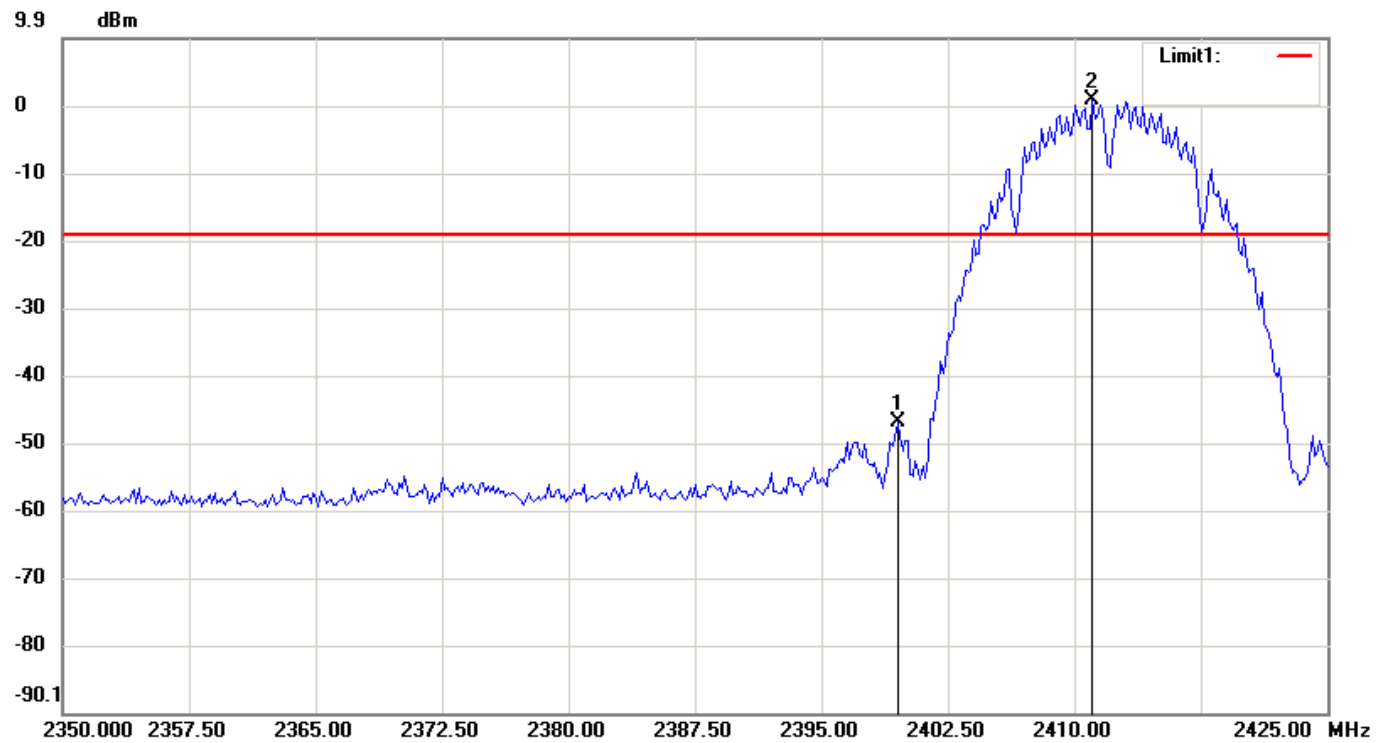
File: 20-06-MAS-011_B
Site: RF-Cond01

#4

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -19.11dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 01-Bandedge

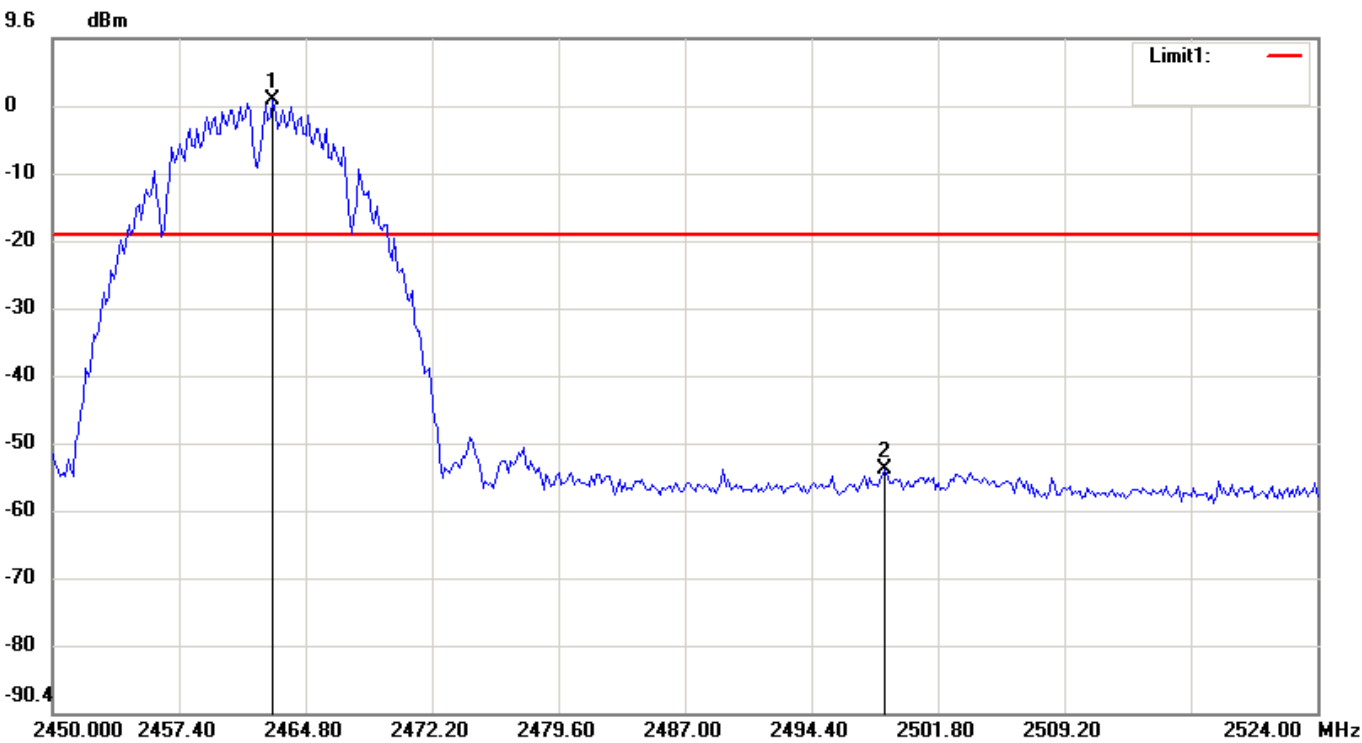
RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2399.50000	-47.07
2	2411.05000	0.89

File: 20-06-MAS-011_B
Site: RF-Cond01

#11 Date: 2020/6/8

Temperature: 22 °C
Humidity: 62 %



Condition: -19.59dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 11-Bandedge

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

No.	Frequency(MHz)	Level(dBm)
1	2462.87600	0.41
2	2498.69200	-54.31

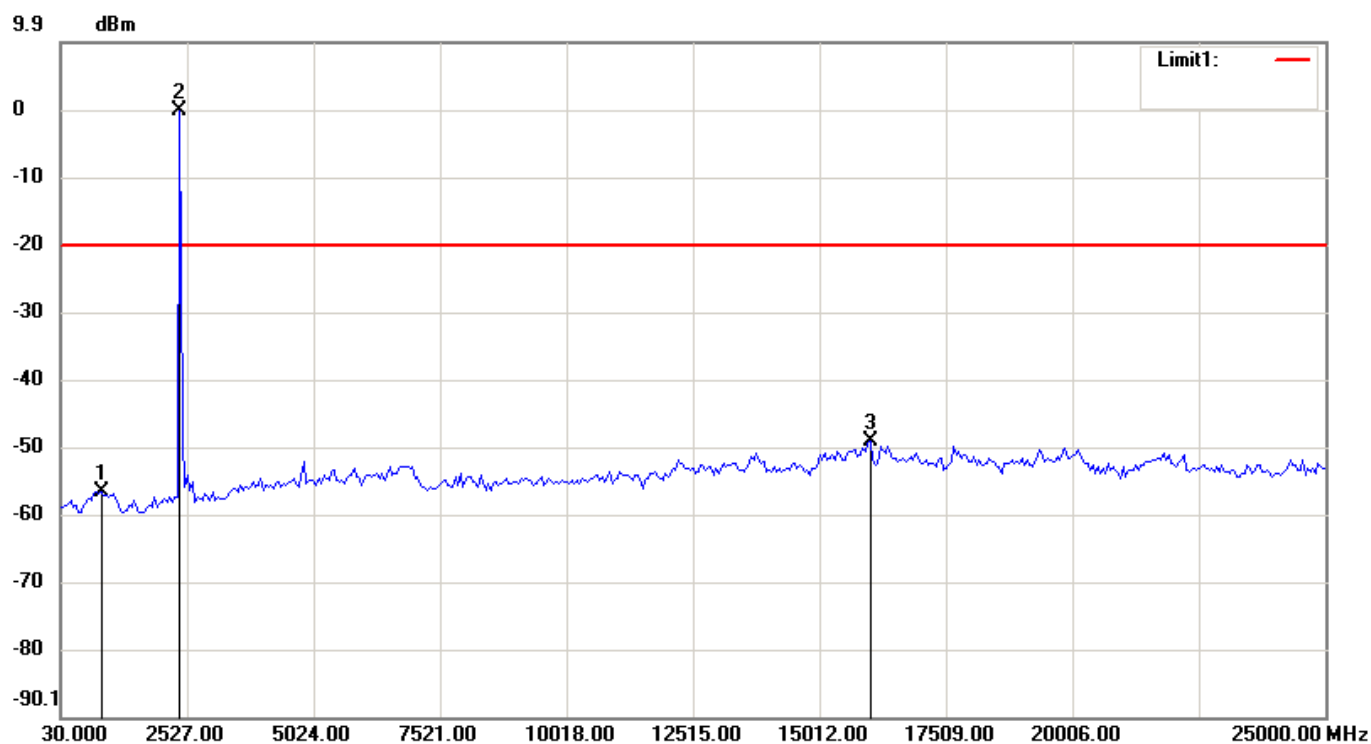
File: 20-06-MAS-011_B
Site: RF-Cond01

#2

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -20.31dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 01-Conducted Spurious

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

No.	Frequency(MHz)	Level(dBm)
1	829.0400	-56.79
2	2377.18000	-0.31
3	16010.80000	-49.29

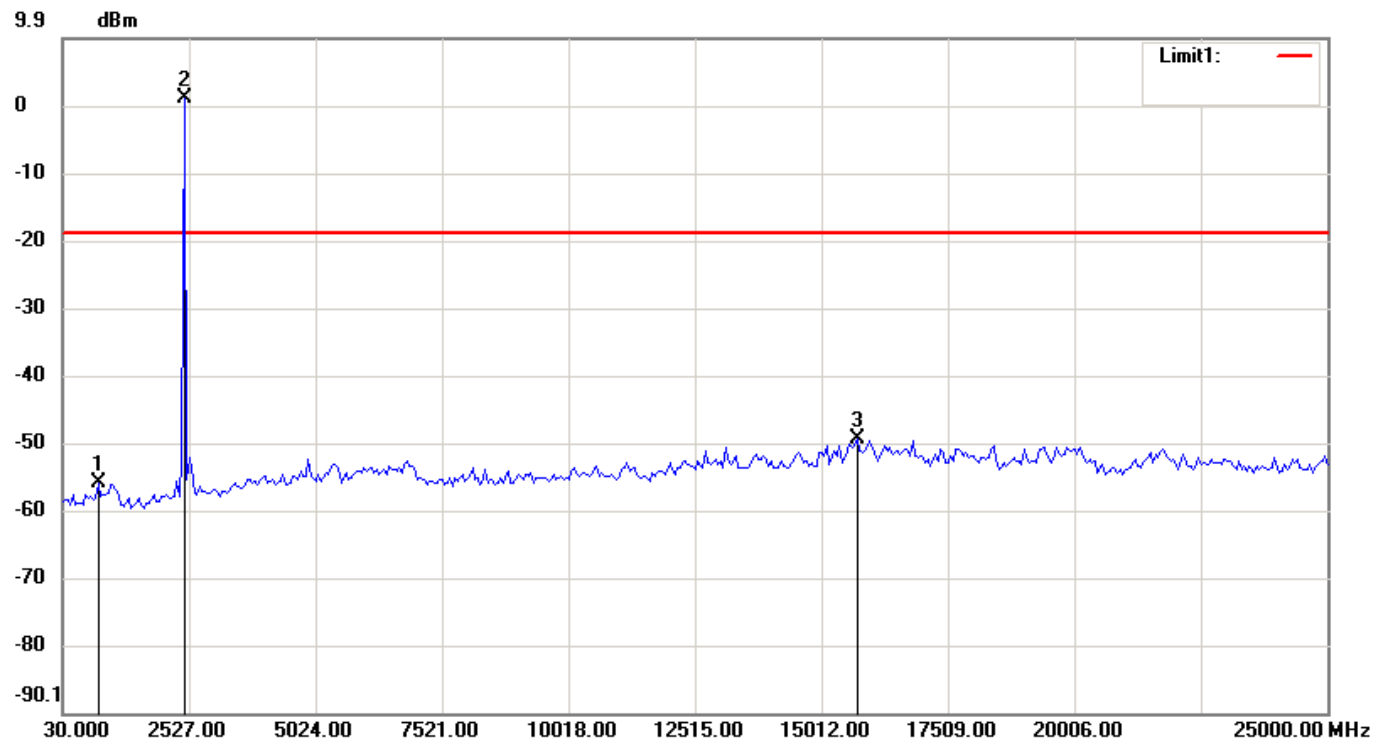
File: 20-06-MAS-011_B
Site: RF-Cond01

#6

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -19.09dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 06-Conducted Spurious

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

No.	Frequency(MHz)	Level(dBm)
1	729.1600	-56.03
2	2427.12000	0.91
3	15711.16000	-49.59

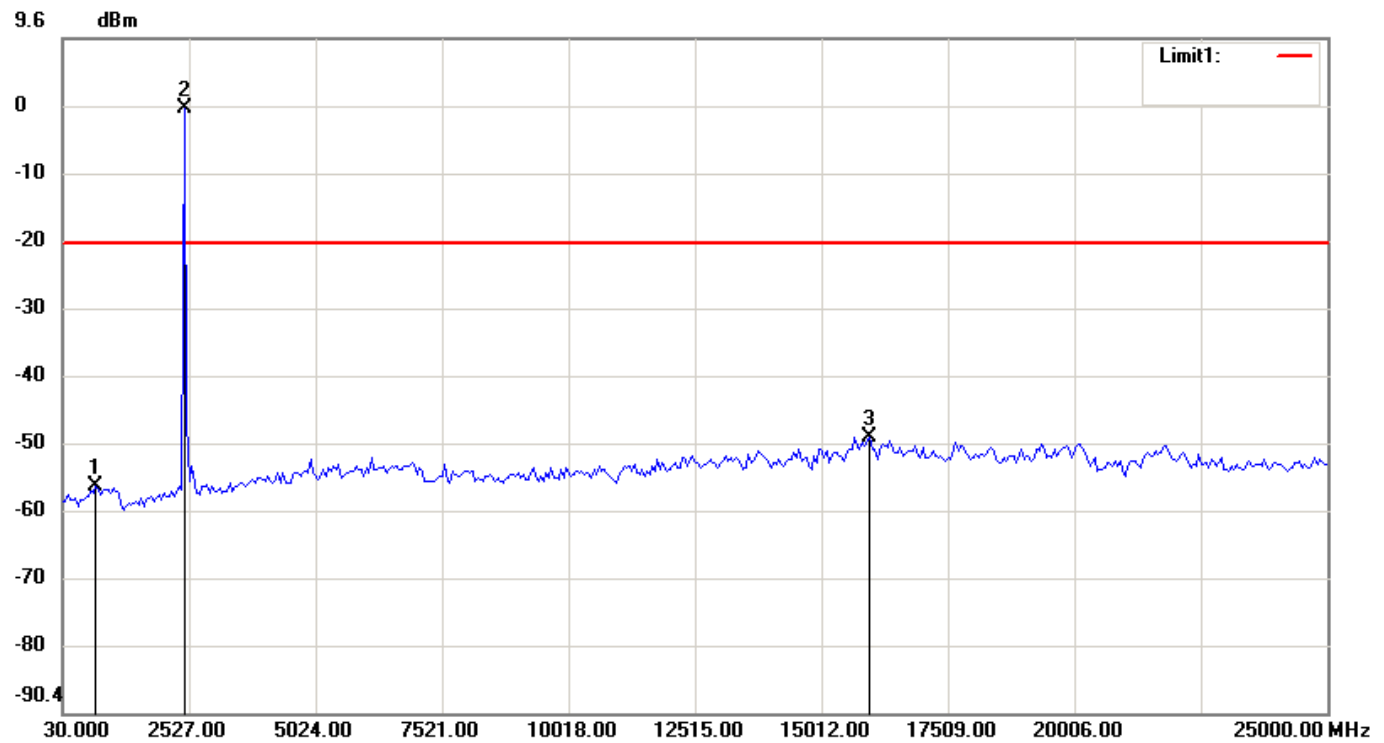
File: 20-06-MAS-011_B
Site: RF-Cond01

#9

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -20.74dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B
Note: NCC_LP0002_802.11b Channel 11-Conducted Spurious

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

No.	Frequency(MHz)	Level(dBm)
1	679.2200	-56.90
2	2427.12000	-0.74
3	15960.86000	-49.66

9.4.2 調變技術: IEEE 802.11g

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%

- a. 下邊緣頻帶：距下頻帶邊緣40MHz內最大混附波產生於 2399.800 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 2505.796 MHz，比主波低 20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 56-60 頁。

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

File: 20-06-MAS-011_G
Site: RF-Cond01

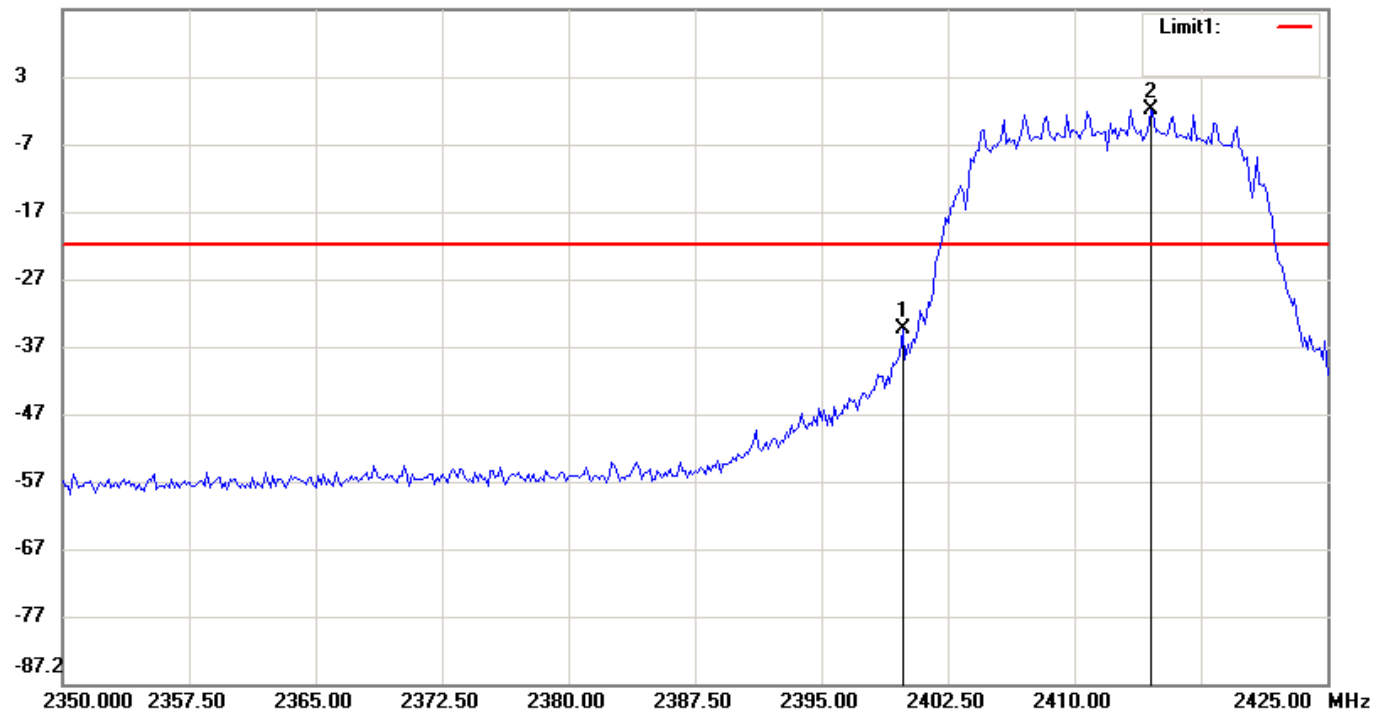
#4

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

12.8 dBm



Condition: -22.08dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 01-Bandedge

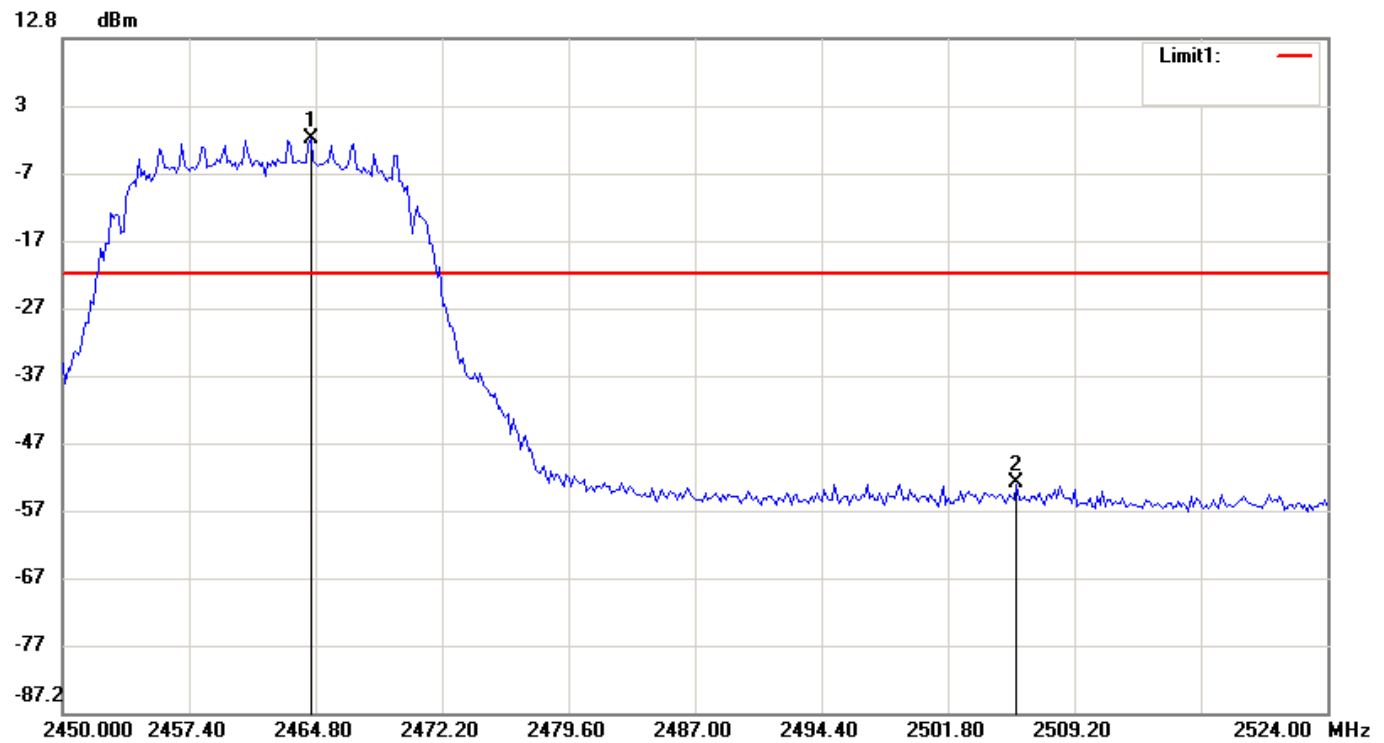
RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2399.80000	-34.61
2	2414.50000	-2.08

File: 20-06-MAS-011_G
Site: RF-Cond01

#11 Date: 2020/6/8

Temperature: 22 °C
Humidity: 62 %



Condition: -22.21dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 11-Bandedge

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

No.	Frequency(MHz)	Level(dBm)
1	2464.50400	-2.21
2	2505.79600	-53.23

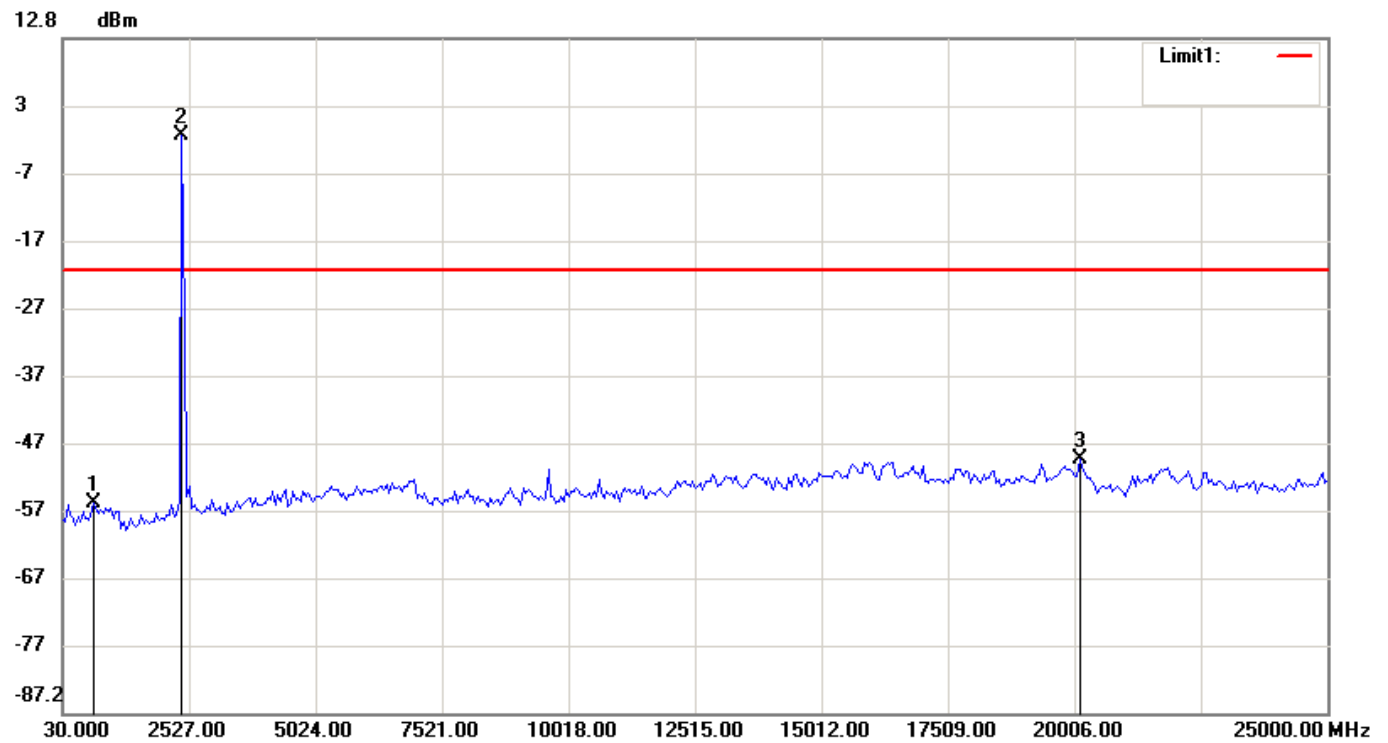
File: 20-06-MAS-011_G
Site: RF-Cond01

#2

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -21.71dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 01-Conducted Spurious

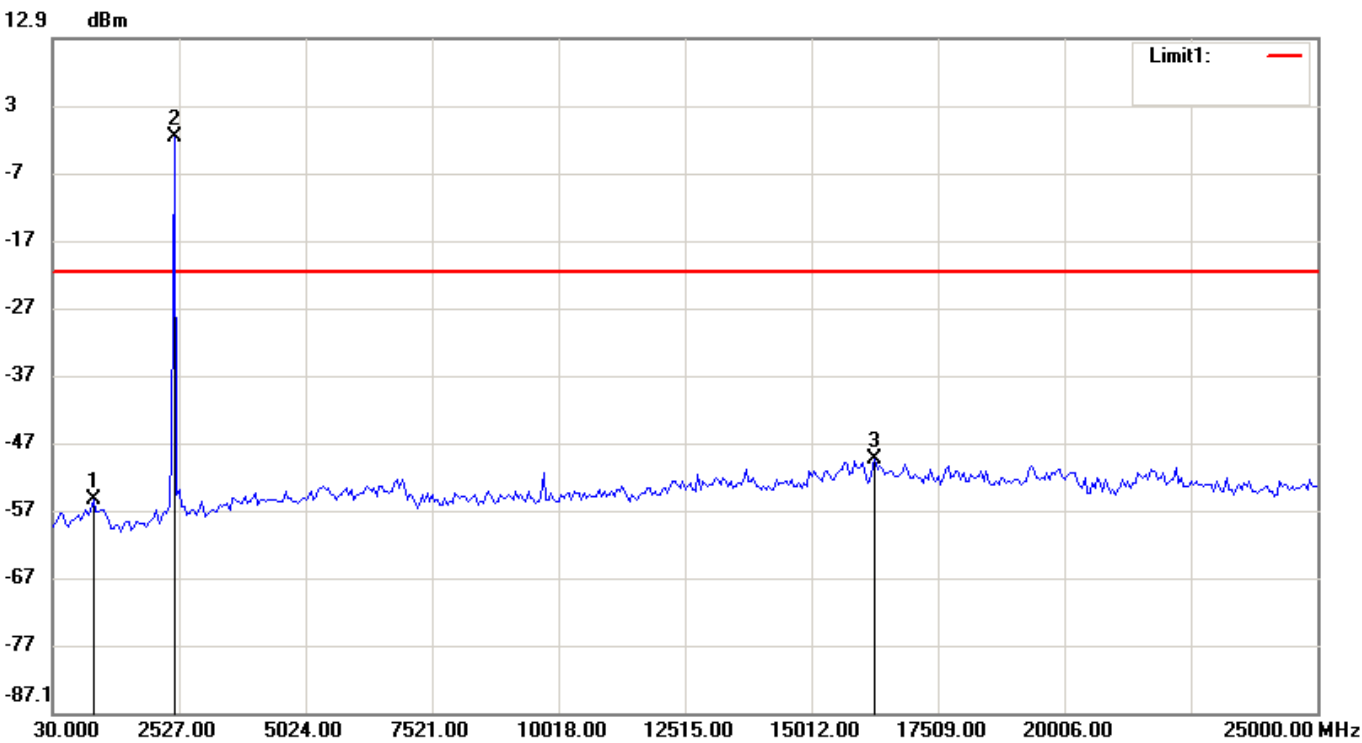
RF Conducted
Sweep Time: 250ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	629.2800	-56.13
2	2377.18000	-1.71
3	20105.88000	-49.69

File: 20-06-MAS-011_G
Site: RF-Cond01

#6 Date: 2020/6/8

Temperature: 22 ℃
Humidity: 62 %



Condition:	-21.59dBm	RF Conducted
EUT:	Cockpit Control Unit	Sweep Time: 250ms Att.: 20dB
Model:	DNNS113	RBW: 100 KHz VBW: 300 KHz
Test Mode:	WIFI-G	Operator: Bruce
Note:	NCC_LP0002_802.11g Channel 06-Conducted Spurious	

No.	Frequency(MHz)	Level(dBm)
1	829.0400	-55.56
2	2427.12000	-1.59
3	16260.50000	-49.47

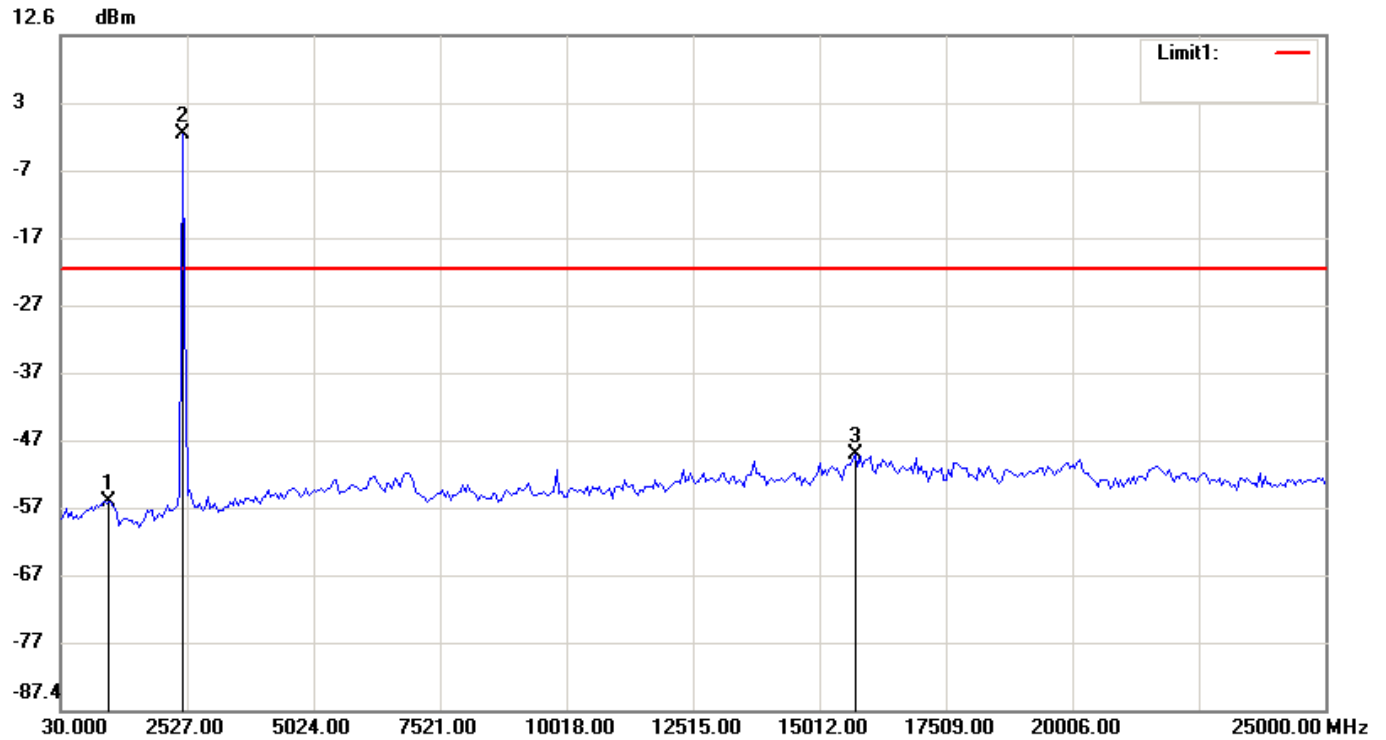
File: 20-06-MAS-011_G
Site: RF-Cond01

#9

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %



Condition: -21.98dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G
Note: NCC_LP0002_802.11g Channel 11-Conducted Spurious

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

No.	Frequency(MHz)	Level(dBm)
1	978.8600	-56.55
2	2427.12000	-1.98
3	15711.16000	-49.64

9.4.3 調變技術: IEEE 802.11n HT20

測試日期: Jun. 08, 2020

環境溫度: 22°C

環境濕度: 62%

- 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 2496.620 MHz，比主波低 20dB以上，合乎標準規定。

註：1. 繪圖資料請參考第 62-66 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: 20-06-MAS-011_N
Site: RF-Cond01

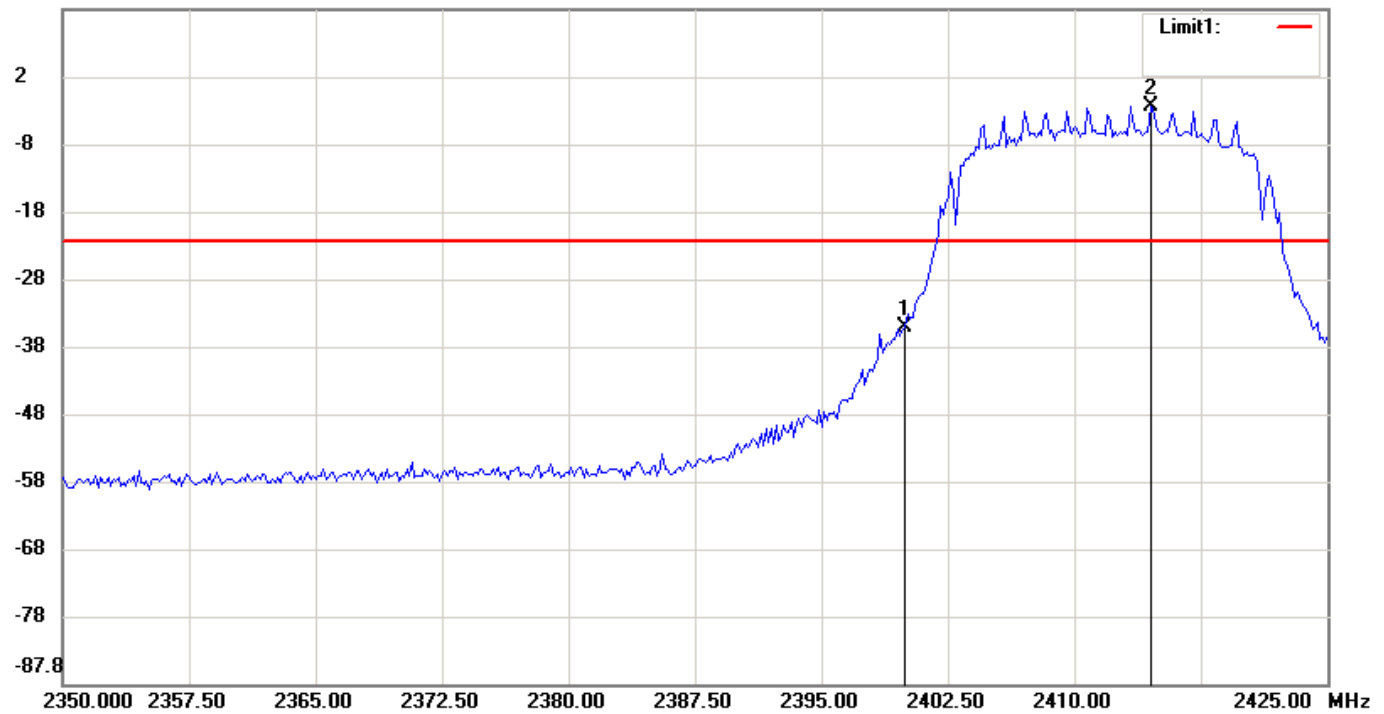
#4

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

12.2 dBm



Condition: -22.09dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 01-Bandedge

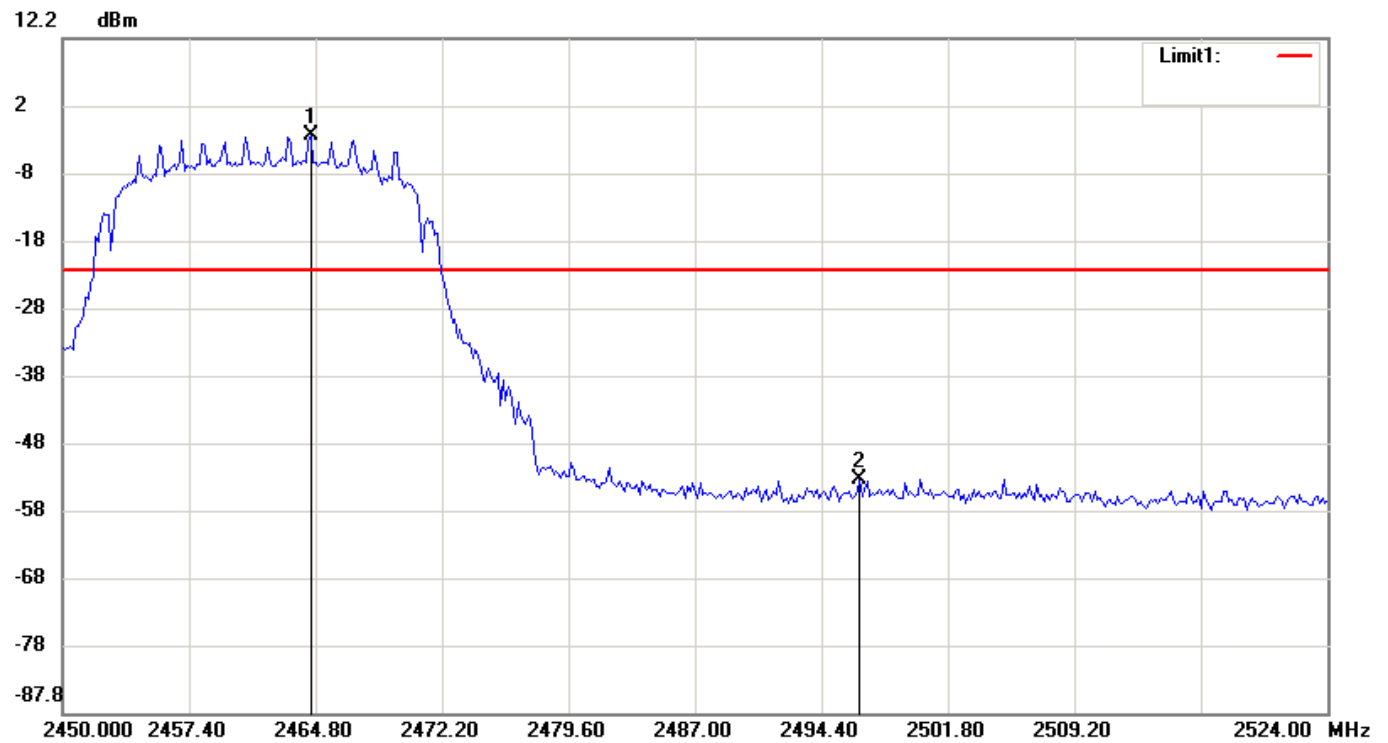
RF Conducted
Sweep Time: 500ms Att.: 20dB
RBW: 100 KHz VBW: 300 KHz
Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2399.95000	-34.97
2	2414.50000	-2.09

File: 20-06-MAS-011_N
Site: RF-Cond01

#11 Date: 2020/6/8

Temperature: 22 °C
Humidity: 62 %



Condition: -22.24dBm

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI-N

Note: NCC_LP0002_802.11n-HT20 Channel 11-Bandedge

RF Conducted

Sweep Time: 500ms Att.: 20dB

RBW: 100 KHz VBW: 300 KHz

Operator: Bruce

No.	Frequency(MHz)	Level(dBm)
1	2464.50400	-2.24
2	2496.62000	-53.16

File: 20-06-MAS-011_N
Site: RF-Cond01

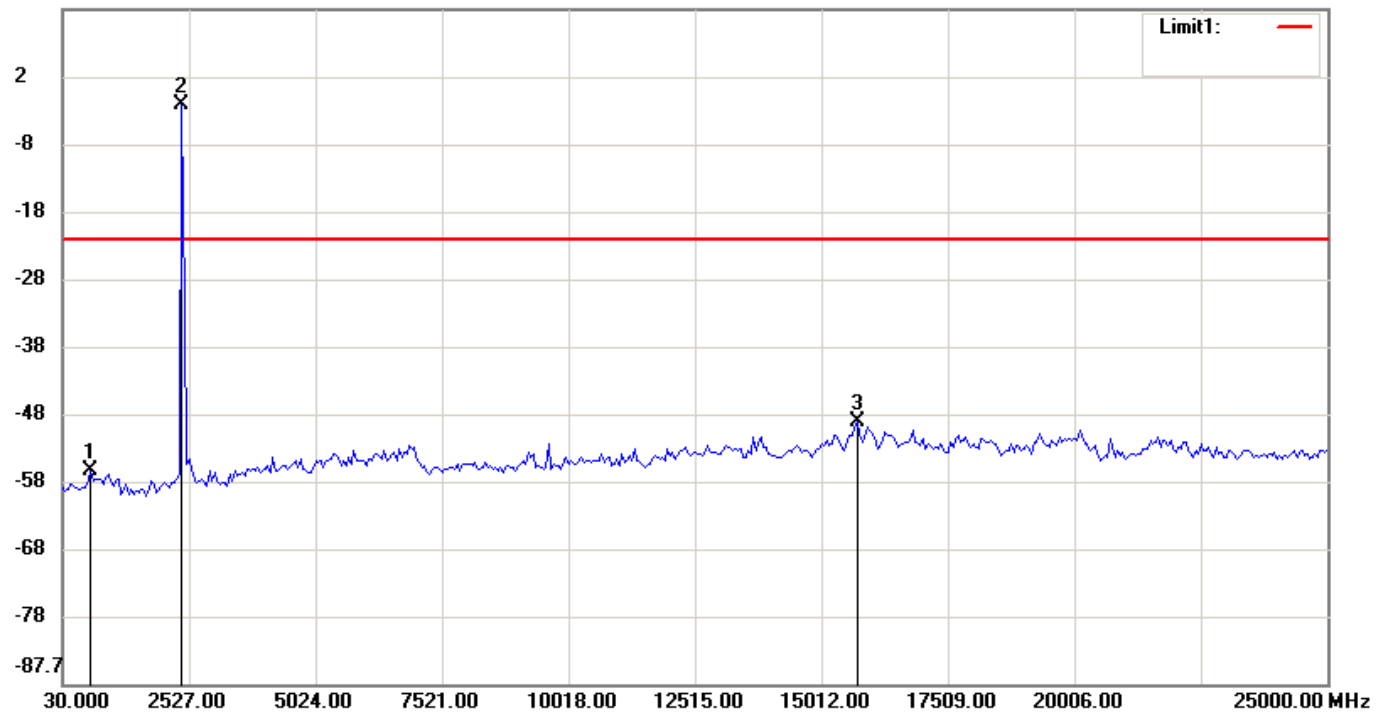
#2

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

12.3 dBm



Condition: -21.72dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 01-Conducted Spurious

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

No.	Frequency(MHz)	Level(dBm)
1	579.3400	-56.03
2	2377.18000	-1.72
3	15711.16000	-48.91

File: 20-06-MAS-011_N
Site: RF-Cond01

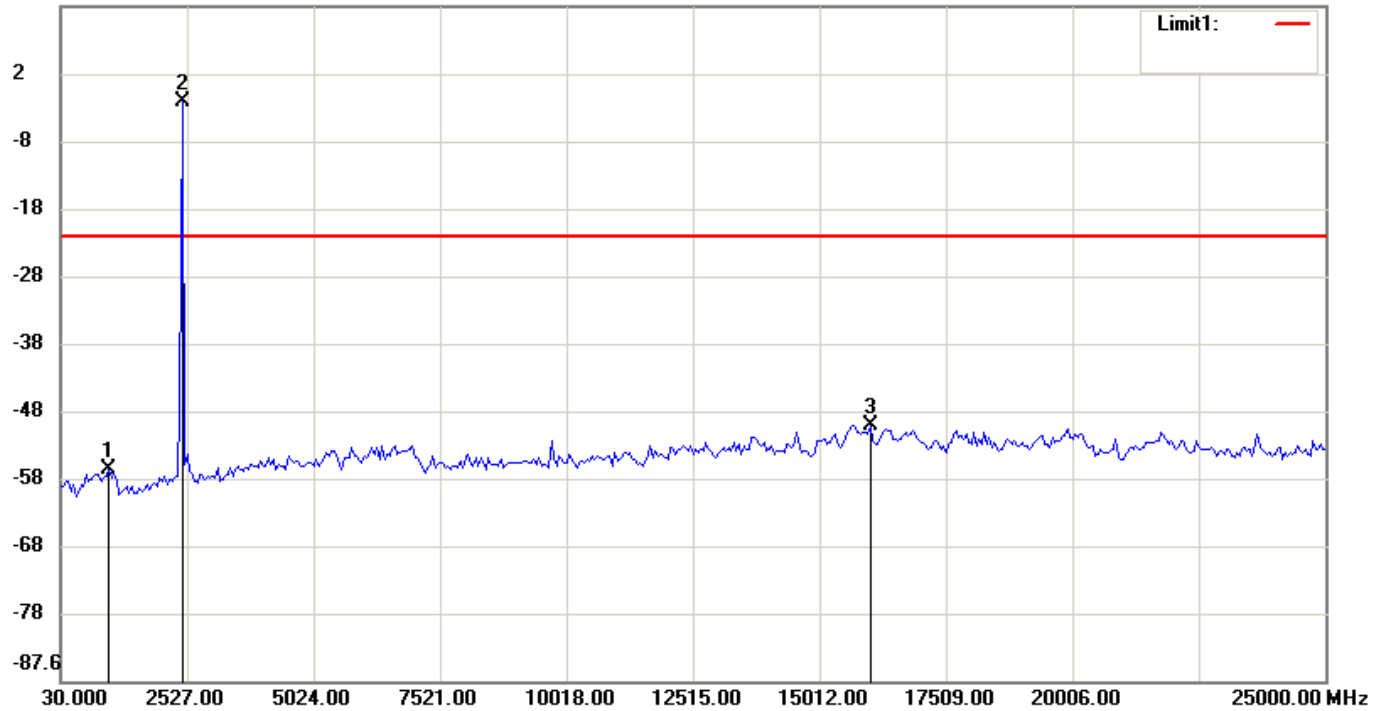
#6

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

12.4 dBm



Condition: -21.76dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 06-Conducted Spurious

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

No.	Frequency(MHz)	Level(dBm)
1	978.8600	-56.19
2	2427.12000	-1.76
3	16010.80000	-49.66

File: 20-06-MAS-011_N
Site: RF-Cond01

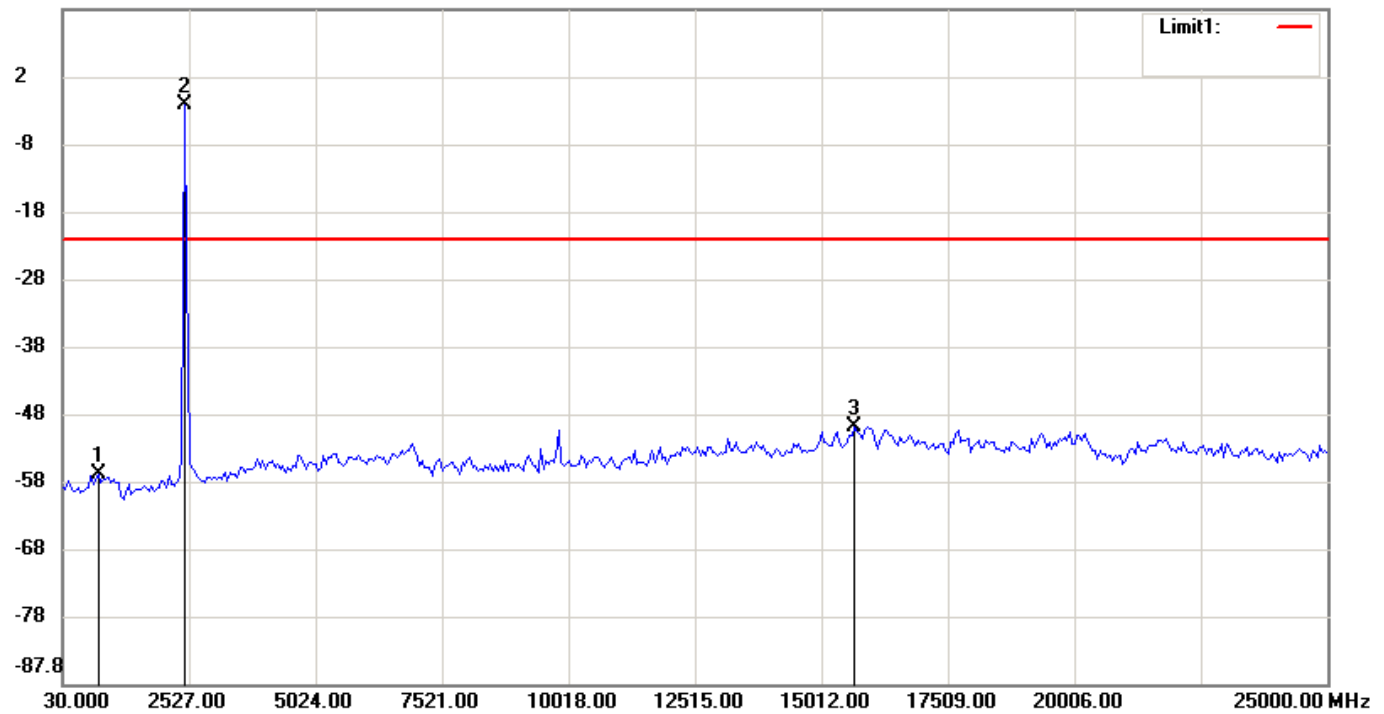
#9

Date: 2020/6/8

Temperature: 22 °C

Humidity: 62 %

12.2 dBm



Condition: -21.98dBm
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-N
Note: NCC_LP0002_802.11n-HT20 Channel 11-Conducted Spurious

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

No.	Frequency(MHz)	Level(dBm)
1	729.1600	-56.66
2	2427.12000	-1.98
3	15661.22000	-49.52

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	製造者	型號
EMI Receiver	R&S	ESCI
Spectrum Analyzer	R&S	FSU46
Horn Antenna	EMCO	3117
Hom Antenna	EMCO	3116
PRE-Amplifier	Agilent	8449B
PRE-Amplifier	Agilent	8447D
BiLog Antenna	ETC	MCTD 2786
Spectrum Analyzer	R&S	FSV

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: 許志宏

10.5.1 諧波發射量測值

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: Sep. 29, 2020

環境溫度: 21°C

環境濕度 : 60%

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: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Sep. 29, 2020

環境溫度：21°C

環境濕度：60%

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)
		Peak	AVG		Peak	AVG	Peak	AVG	
(MHz)	H/V			(dB)					(dB)
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： $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$ $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Sep. 29, 2020

環境溫度：21°C

環境濕度：60%

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： $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$) $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

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: Sep. 29, 2020

環境溫度: 21°C

環境濕度：60%

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Sep. 29, 2020

環境溫度：21°C

環境濕度：60%

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)
		Peak	AVG		Peak	AVG	Peak	AVG	
(MHz)	H/V			(dB)					(dB)
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： $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$ $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Sep. 29, 2020

環境溫度：21°C

環境濕度：60%

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)
		Peak	AVG		Peak	AVG	Peak	AVG	
(MHz)	H/V			(dB)					(dB)
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： $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

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: Sep. 29, 2020

環境溫度: 21°C

環境濕度：60%

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: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

測試日期：Sep. 29, 2020

環境溫度：21°C

環境濕度：60%

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)
		Peak	AVG		Peak	AVG	Peak	AVG	
(MHz)	H/V			(dB)					(dB)
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： $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

c. Channel High

操作模式：發射接收

基本波頻率：2462 MHz

測試日期：Sep. 29, 2020

環境溫度：21°C

環境濕度：60%

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)
		Peak	AVG		Peak	AVG	Peak	AVG	
(MHz)	H/V			(dB)					(dB)
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： $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

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: 20-06-MAS-011_B

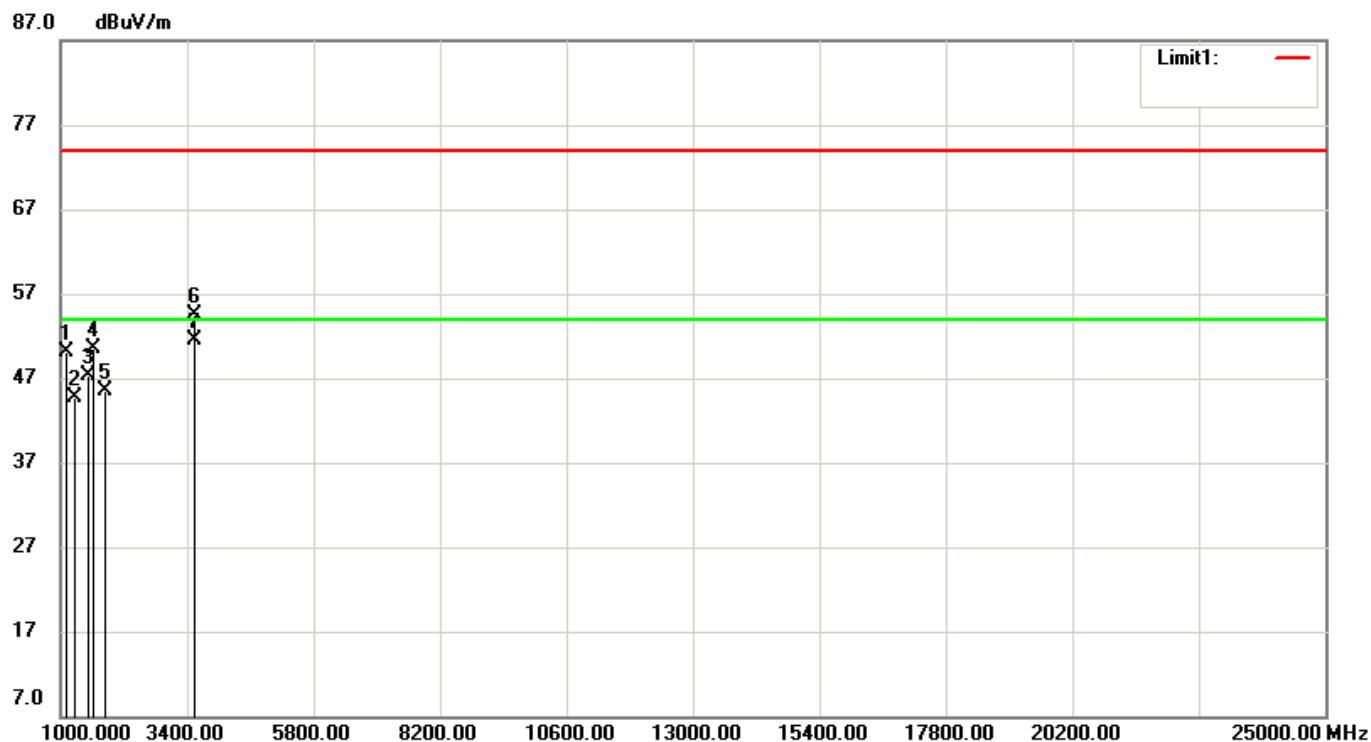
#47

Date: 2020/9/29

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B-LOW
Note:

Polarization: Horizontal
Distance: 3m
Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1091.98710	59.42	peak	-9.23	50.19	74.00	-23.81
2	1251.28200	53.60	peak	-8.82	44.78	74.00	-29.22
3	1507.05120	55.36	peak	-8.12	47.24	74.00	-26.76
4	1610.25630	57.71	peak	-7.19	50.52	74.00	-23.48
5	1834.61500	50.78	peak	-5.20	45.58	74.00	-28.42
6	3509.06730	55.60	peak	-1.15	54.45	74.00	-19.55
7	3509.06730	52.67	AVG	-1.15	51.52	54.00	-2.48

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。

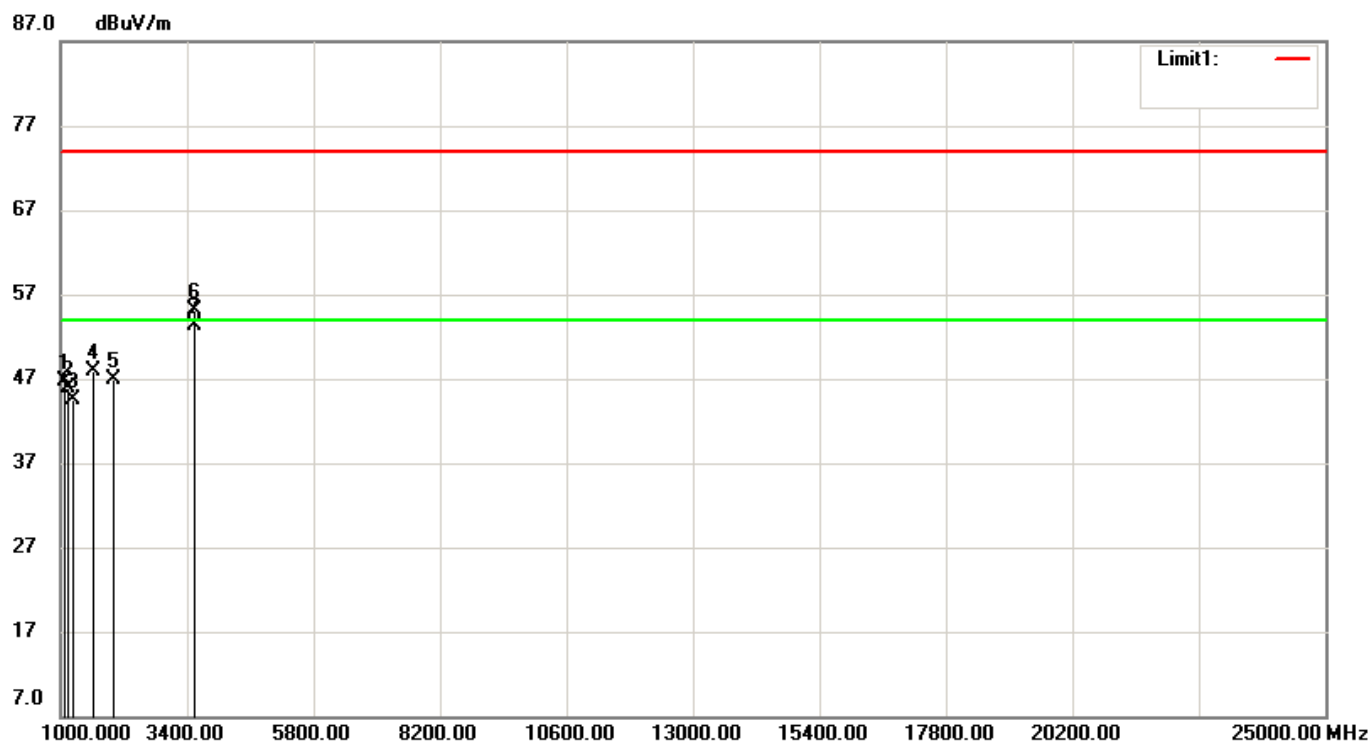
2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收
基本波頻率：2412 MHz

File: 20-06-MAS-011_B
Site: RE02-EMC B1- N2

#48 Date: 2020/9/29

Temperature: 21 °C
Humidity: 60 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B-LOW
Note:

Polarization: Vertical
Distance: 3m
Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1062.82050	56.07	peak	-9.31	46.76	74.00	-27.24
2	1145.83330	54.96	peak	-9.10	45.86	74.00	-28.14
3	1217.62820	53.33	peak	-8.91	44.42	74.00	-29.58
4	1581.08960	55.30	peak	-7.46	47.84	74.00	-26.16
5	1993.91020	50.73	peak	-3.79	46.94	74.00	-27.06
6	3509.07700	56.33	peak	-1.15	55.18	74.00	-18.82
7	3509.07700	54.44	AVG	-1.15	53.29	54.00	-0.71

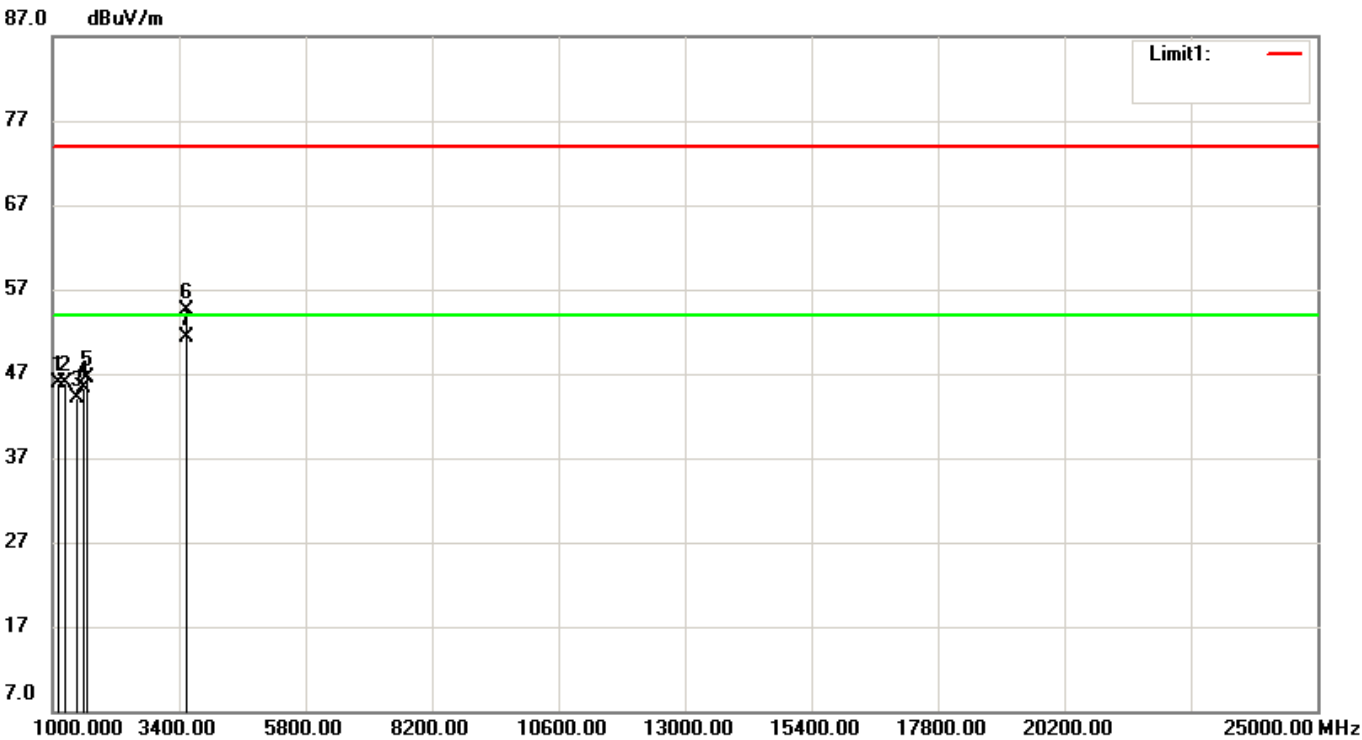
註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

b. Channel Mid

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-06-MAS-011_B #49 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



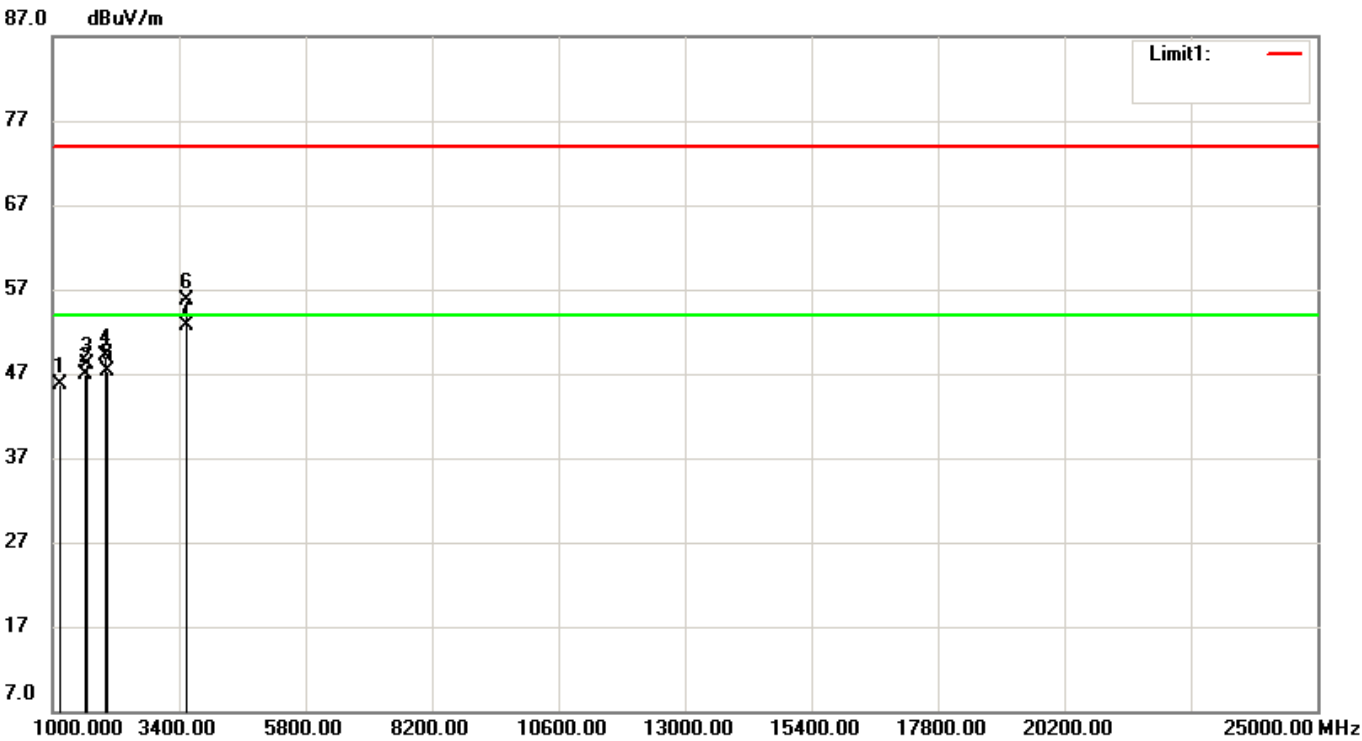
Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-B-MID Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1096.47430	55.16	peak	-9.22	45.94	74.00	-28.06
2	1215.38460	54.73	peak	-8.92	45.81	74.00	-28.19
3	1455.44870	52.38	peak	-8.30	44.08	74.00	-29.92
4	1549.67940	52.96	peak	-7.74	45.22	74.00	-28.78
5	1628.20500	53.53	peak	-7.03	46.50	74.00	-27.50
6	3509.06500	55.70	peak	-1.15	54.55	74.00	-19.45
7	3509.06500	52.49	AVG	-1.15	51.34	54.00	-2.66

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-06-MAS-011_B #50 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-B-MID Operator: Bruce
Note:

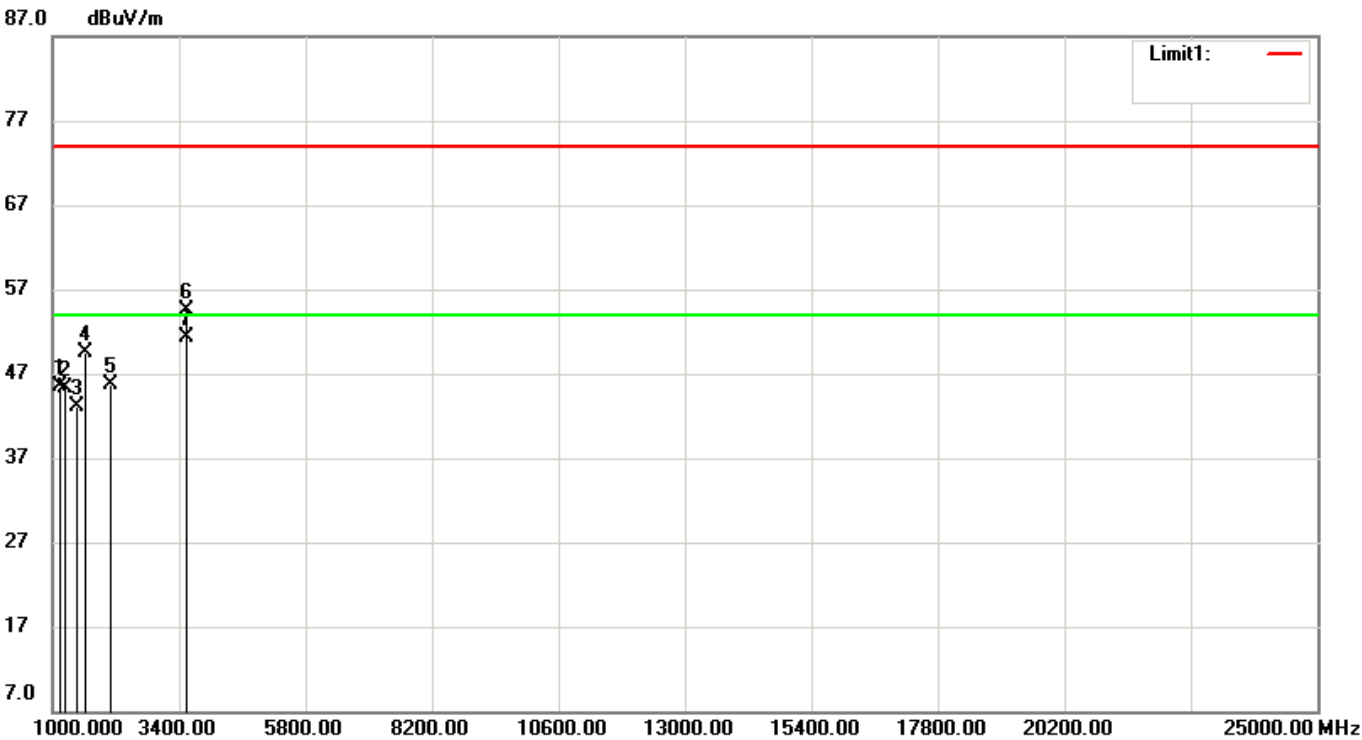
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1148.07700	54.84	peak	-9.09	45.75	74.00	-28.25
2	1578.84600	54.34	peak	-7.48	46.86	74.00	-27.14
3	1621.47430	55.30	peak	-7.10	48.20	74.00	-25.80
4	1993.91020	52.83	peak	-3.79	49.04	74.00	-24.96
5	2034.29480	50.87	peak	-3.64	47.23	74.00	-26.77
6	3509.06500	56.86	peak	-1.15	55.71	74.00	-18.29
7	3509.06500	53.94	AVG	-1.15	52.79	54.00	-1.21

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-06-MAS-011_B #51 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-B-HIGH Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1127.88460	54.65	peak	-9.14	45.51	74.00	-28.49
2	1215.38460	54.17	peak	-8.92	45.25	74.00	-28.75
3	1444.23070	51.51	peak	-8.33	43.18	74.00	-30.82
4	1603.52560	56.71	peak	-7.26	49.45	74.00	-24.55
5	2094.87170	49.19	peak	-3.48	45.71	74.00	-28.29
6	3509.05530	55.71	peak	-1.15	54.56	74.00	-19.44
7	3509.05530	52.44	AVG	-1.15	51.29	54.00	-2.71

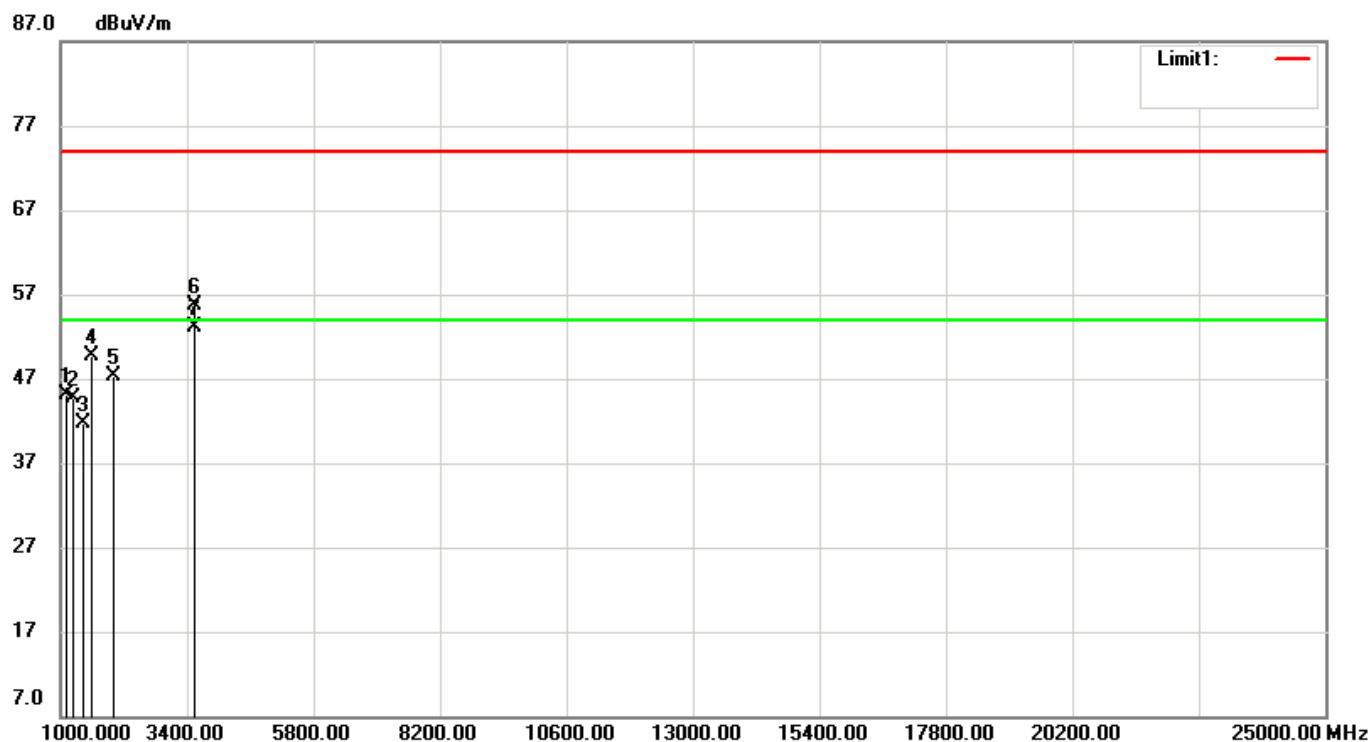
註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。
2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-06-MAS-011_B
Site: RE02-EMC B1- N2

#52 Date: 2020/9/29

Temperature: 21 °C
Humidity: 60 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-B-HIGH
Note:

Polarization: Vertical
Distance: 3m
Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1091.98710	54.31	peak	-9.23	45.08	74.00	-28.92
2	1224.35900	53.55	peak	-8.89	44.66	74.00	-29.34
3	1419.55120	50.16	peak	-8.39	41.77	74.00	-32.23
4	1572.11530	57.29	peak	-7.55	49.74	74.00	-24.26
5	1996.15380	51.13	peak	-3.76	47.37	74.00	-26.63
6	3509.03600	56.93	peak	-1.15	55.78	74.00	-18.22
7	3509.03600	54.25	AVG	-1.15	53.10	54.00	-0.90

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。

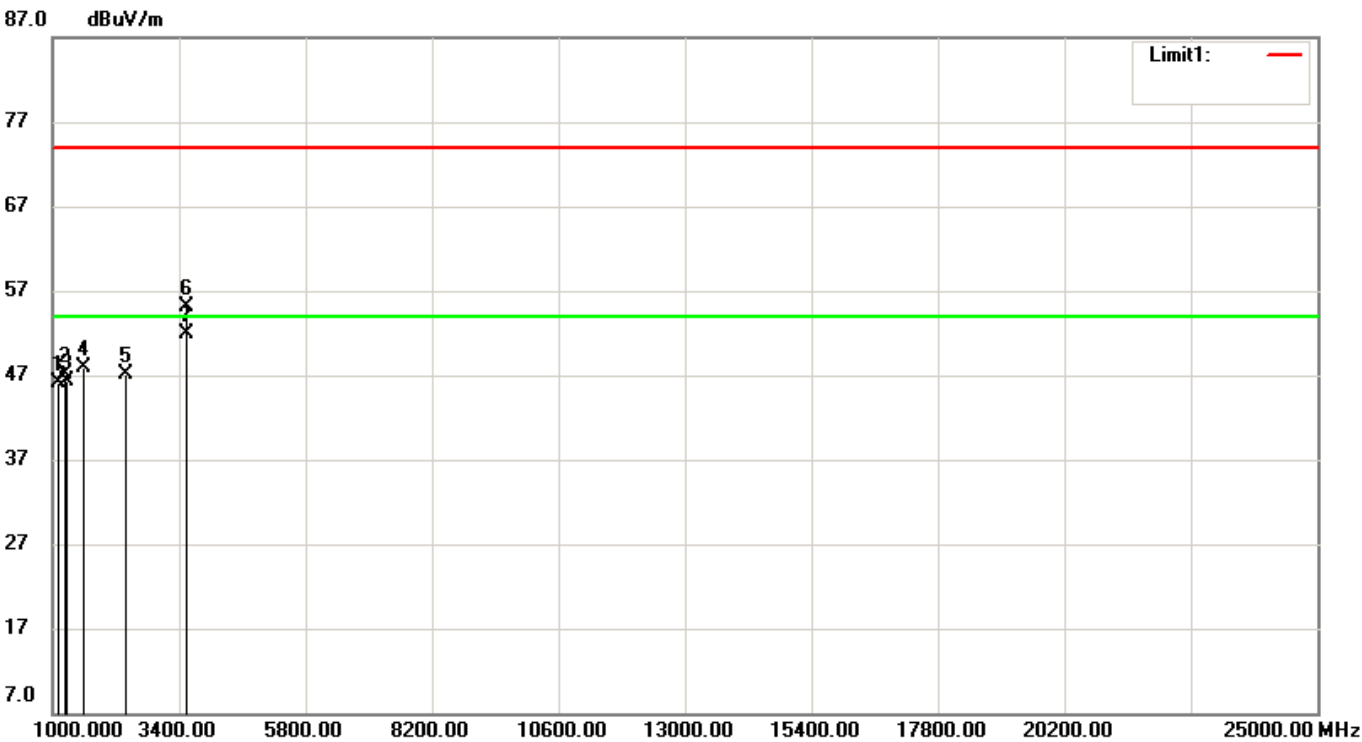
2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

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: 20-06-MAS-011_G #37 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



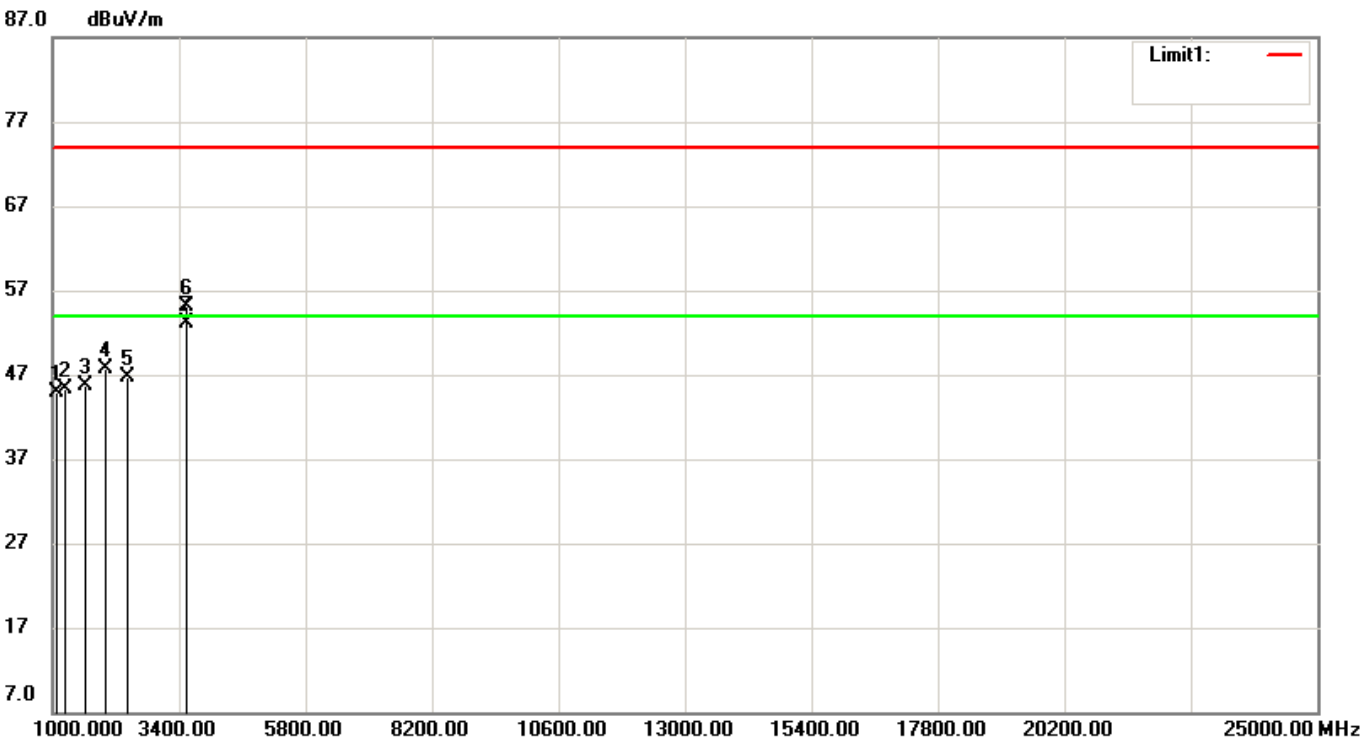
Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-G-LOW Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1087.50000	55.32	peak	-9.25	46.07	74.00	-27.93
2	1219.87170	55.98	peak	-8.91	47.07	74.00	-26.93
3	1264.74350	55.04	peak	-8.79	46.25	74.00	-27.75
4	1558.65380	55.65	peak	-7.66	47.99	74.00	-26.01
5	2352.88460	49.82	peak	-2.80	47.02	74.00	-26.98
6	3509.04570	56.24	peak	-1.15	55.09	74.00	-18.91
7	3509.04570	52.99	AVG	-1.15	51.84	54.00	-2.16

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2412 MHz

File: 20-06-MAS-011_G #38 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-G-LOW Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1062.82050	54.25	peak	-9.31	44.94	74.00	-29.06
2	1224.35900	54.22	peak	-8.89	45.33	74.00	-28.67
3	1608.01280	52.96	peak	-7.22	45.74	74.00	-28.26
4	1989.42300	51.50	peak	-3.83	47.67	74.00	-26.33
5	2395.51280	49.35	peak	-2.70	46.65	74.00	-27.35
6	3509.05480	56.26	peak	-1.15	55.11	74.00	-18.89
7	3509.05480	54.21	AVG	-1.15	53.06	54.00	-0.94

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

b. Channel Mid

操作模式：發射接收

基本波頻率：2437 MHz

File: 20-06-MAS-011_G

#39

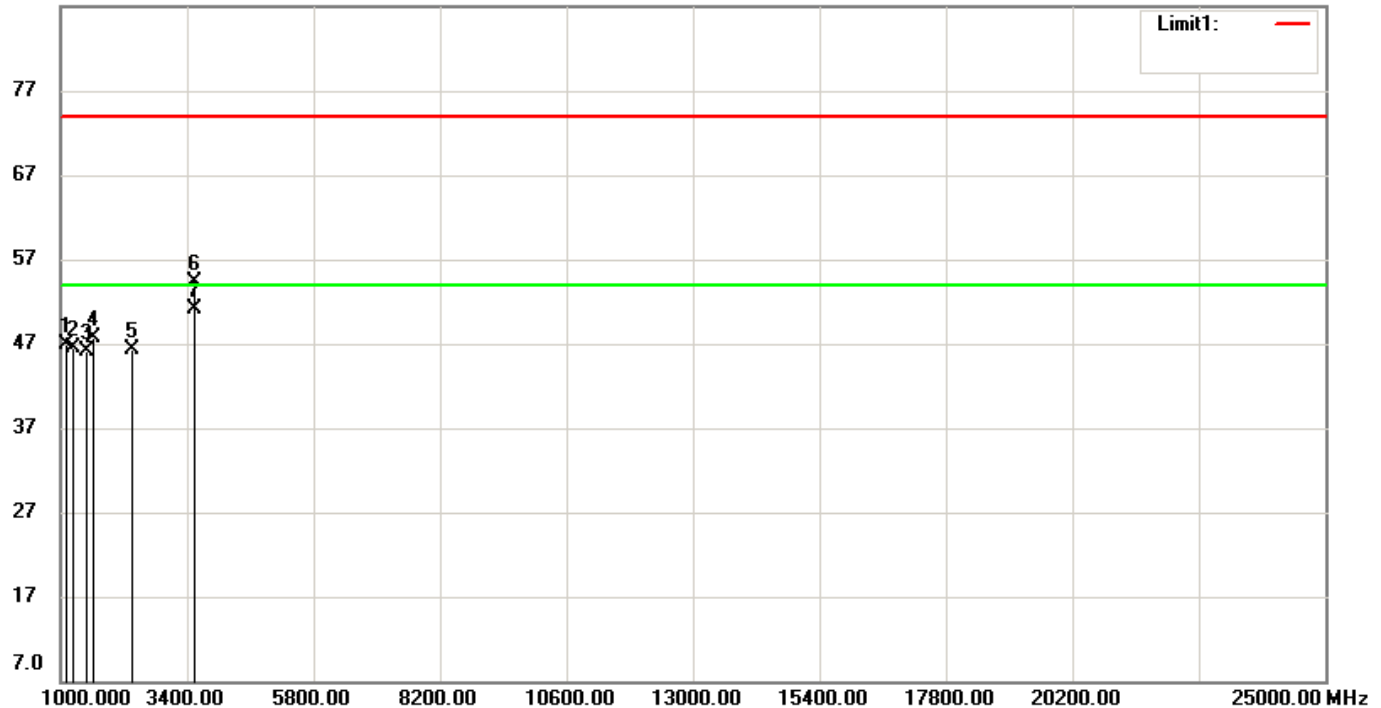
Date: 2020/9/29

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %

87.0 dBuV/m



Condition: NCC_Above1G_Pk
 EUT: Cockpit Control Unit
 Model: DNNS113
 Test Mode: WIFI-G-MID
 Note:

Polarization: Horizontal
 Distance: 3m
 Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1094.23070	56.13	peak	-9.23	46.90	74.00	-27.10
2	1219.87170	55.45	peak	-8.91	46.54	74.00	-27.46
3	1491.34610	54.34	peak	-8.21	46.13	74.00	-27.87
4	1605.76920	54.91	peak	-7.24	47.67	74.00	-26.33
5	2346.15380	49.08	peak	-2.83	46.25	74.00	-27.75
6	3509.04630	55.41	peak	-1.15	54.26	74.00	-19.74
7	3509.04630	52.21	AVG	-1.15	51.06	54.00	-2.94

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。

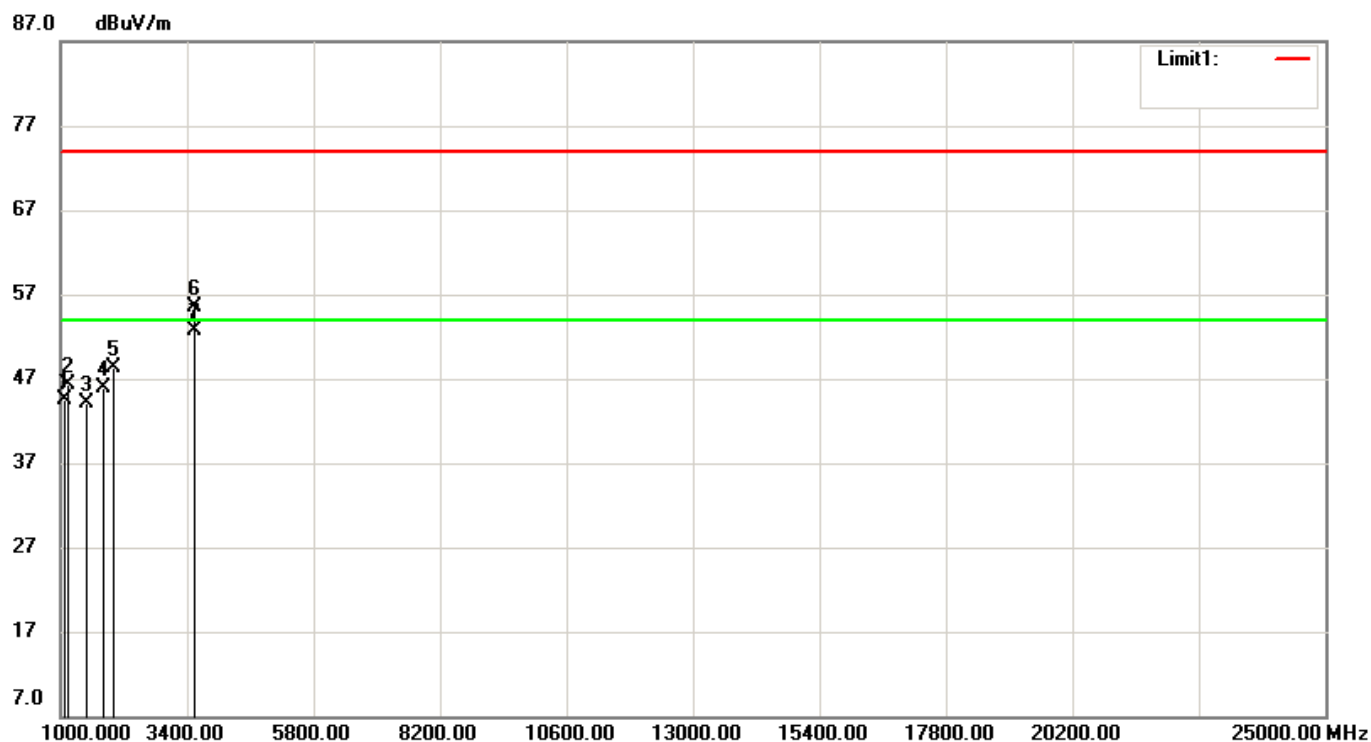
2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-06-MAS-011_G
Site: RE02-EMC B1- N2

#40 Date: 2020/9/29

Temperature: 21 °C
Humidity: 60 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-G-MID
Note:

Polarization: Vertical
Distance: 3m
Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1053.84610	53.92	peak	-9.33	44.59	74.00	-29.41
2	1141.34610	55.31	peak	-9.10	46.21	74.00	-27.79
3	1491.34610	52.32	peak	-8.21	44.11	74.00	-29.89
4	1800.96150	51.46	peak	-5.50	45.96	74.00	-28.04
5	1998.39740	52.01	peak	-3.74	48.27	74.00	-25.73
6	3509.02840	56.57	peak	-1.15	55.42	74.00	-18.58
7	3509.02840	53.82	AVG	-1.15	52.67	54.00	-1.33

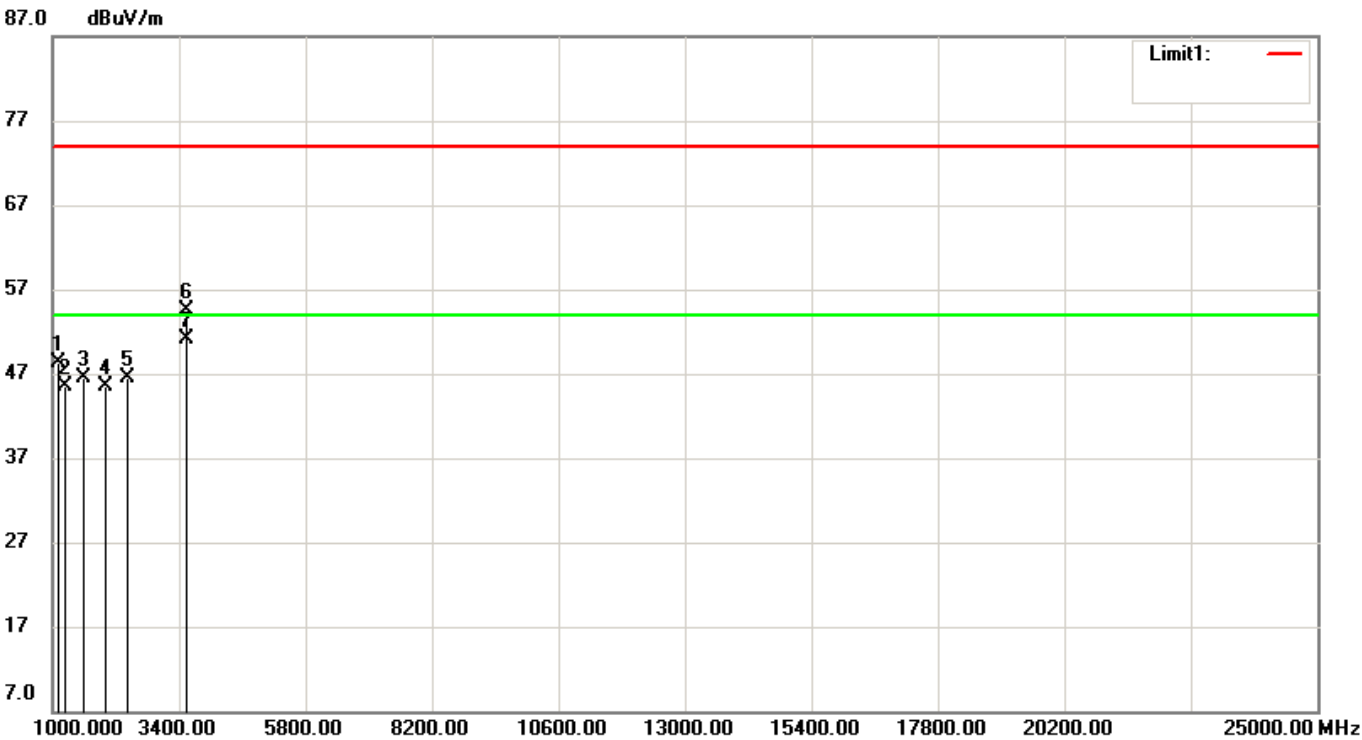
註: 1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

c. Channel High

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-06-MAS-011_G #41 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



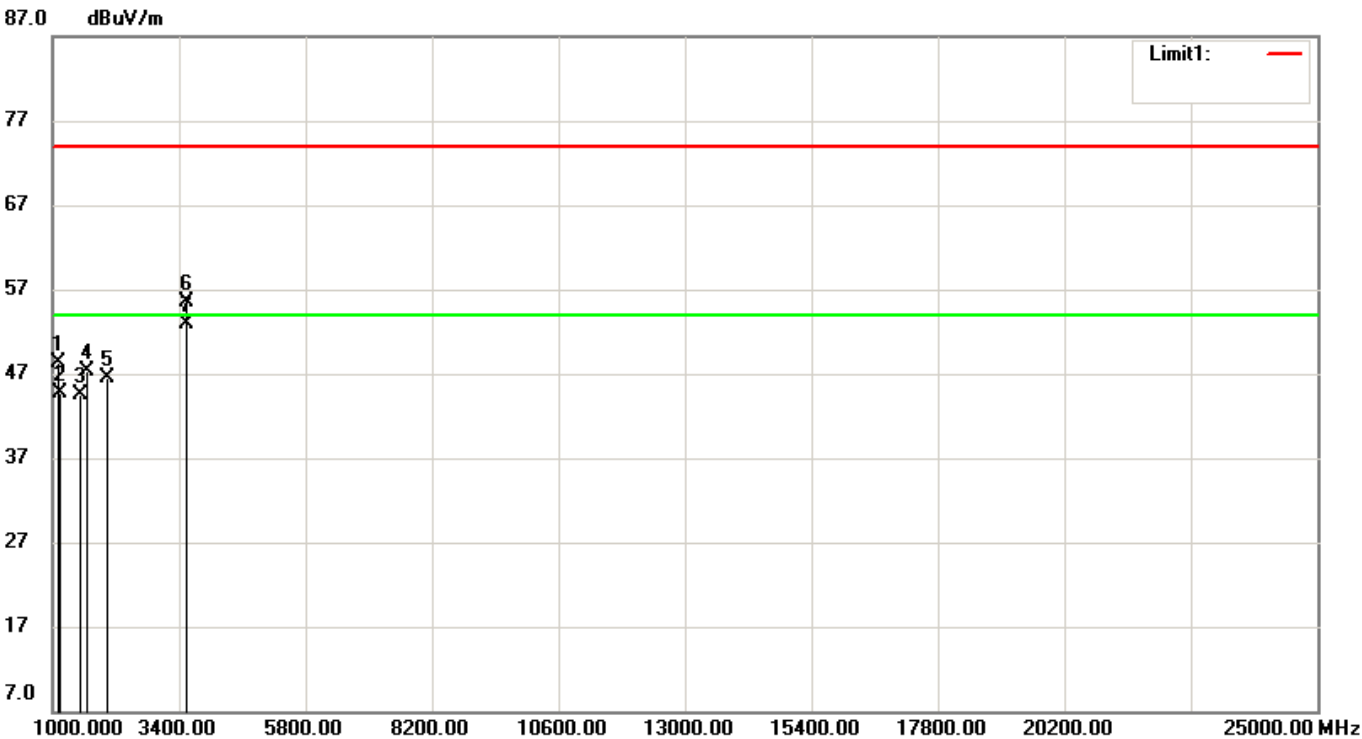
Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-G-HIGH Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1091.98710	57.47	peak	-9.23	48.24	74.00	-25.76
2	1222.11530	54.42	peak	-8.89	45.53	74.00	-28.47
3	1567.62820	54.09	peak	-7.58	46.51	74.00	-27.49
4	1966.98710	49.50	peak	-4.02	45.48	74.00	-28.52
5	2400.00000	49.12	peak	-2.68	46.44	74.00	-27.56
6	3509.04320	55.56	peak	-1.15	54.41	74.00	-19.59
7	3509.04320	52.21	AVG	-1.15	51.06	54.00	-2.94

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-06-MAS-011_G #42 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-G-HIGH Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1087.50000	57.49	peak	-9.25	48.24	74.00	-25.76
2	1145.83330	53.73	peak	-9.10	44.63	74.00	-29.37
3	1511.53840	52.66	peak	-8.07	44.59	74.00	-29.41
4	1616.98710	54.39	peak	-7.13	47.26	74.00	-26.74
5	2000.64100	50.30	peak	-3.73	46.57	74.00	-27.43
6	3509.17400	56.63	peak	-1.15	55.48	74.00	-18.52
7	3509.17400	54.07	AVG	-1.15	52.92	54.00	-1.08

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

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

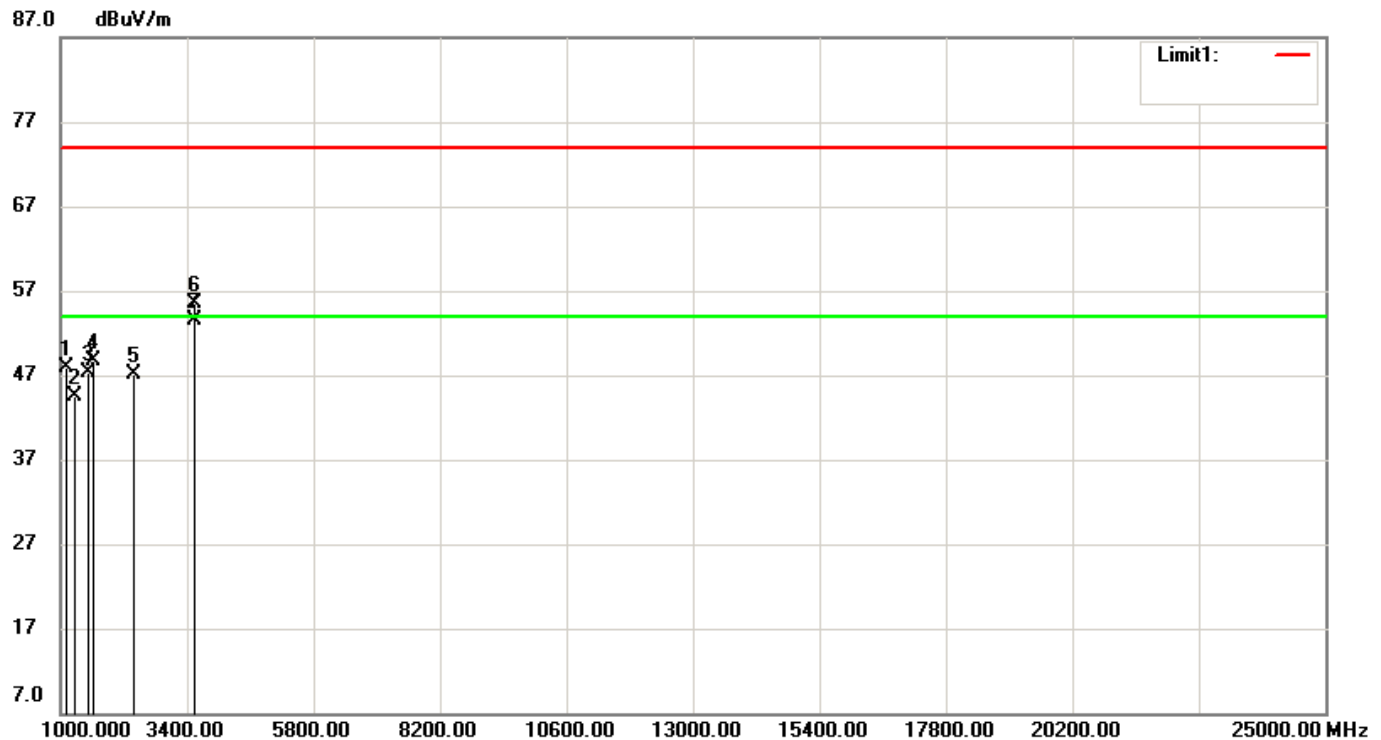
File: 20-06-MAS-011_N
Site: RE02-EMC B1- N2

#39

Date: 2020/9/29

Temperature: 21 °C

Humidity: 60 %



Condition: NCC_Above1G_Pk
EUT: Cockpit Control Unit
Model: DNNS113
Test Mode: WIFI-N-LOW
Note:

Polarization: Horizontal
Distance: 3m
Operator: Bruce

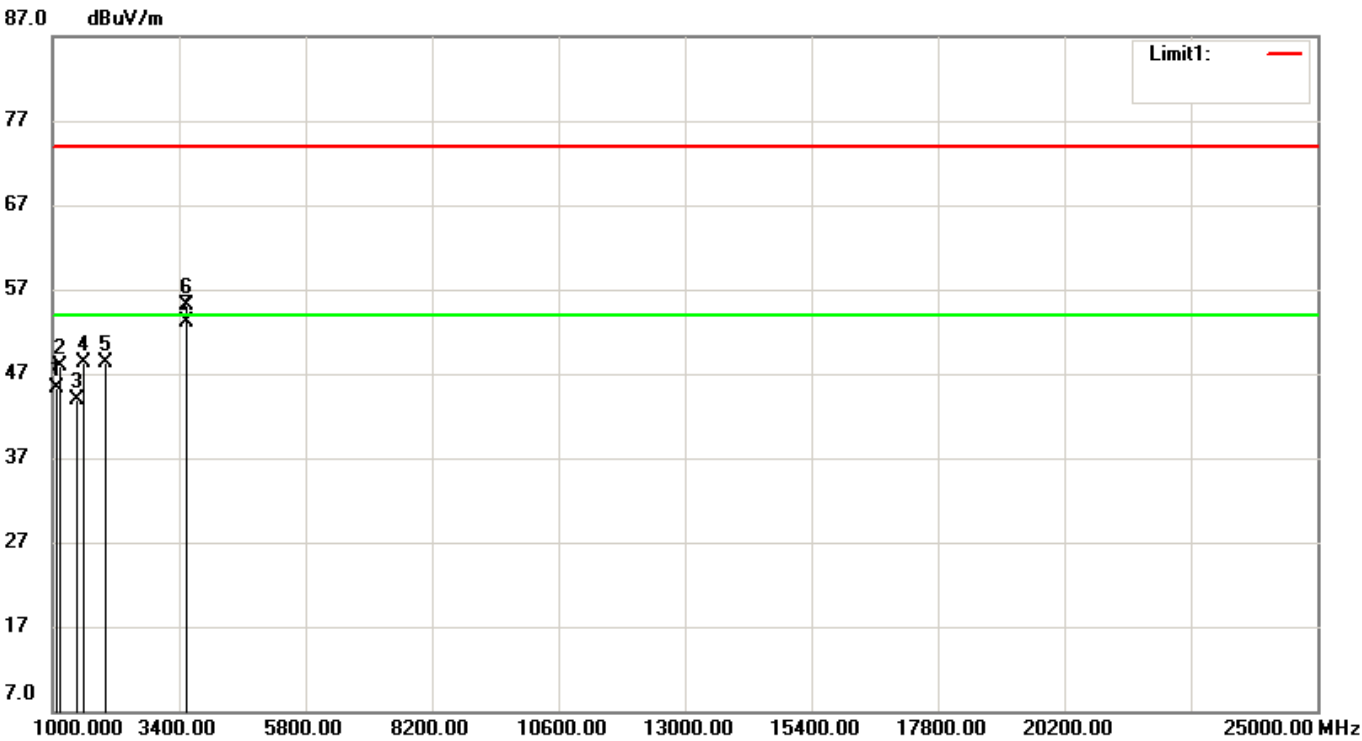
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1114.42300	56.99	peak	-9.17	47.82	74.00	-26.18
2	1249.03840	53.26	peak	-8.83	44.43	74.00	-29.57
3	1516.02560	55.35	peak	-8.04	47.31	74.00	-26.69
4	1603.52560	55.88	peak	-7.26	48.62	74.00	-25.38
5	2370.83330	49.95	peak	-2.75	47.20	74.00	-26.80
6	3509.07230	56.58	peak	-1.15	55.43	74.00	-18.57
7	3509.07230	54.56	AVG	-1.15	53.41	54.00	-0.59

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: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f < 18\text{GHz}$)
 $\pm 4.4\text{dB}$ ($18\text{GHz} \leq f \leq 40\text{GHz}$)

操作模式：發射接收
基本波頻率：2412 MHz

File: 20-06-MAS-011_N #40 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-N-LOW Operator: Bruce
Note:

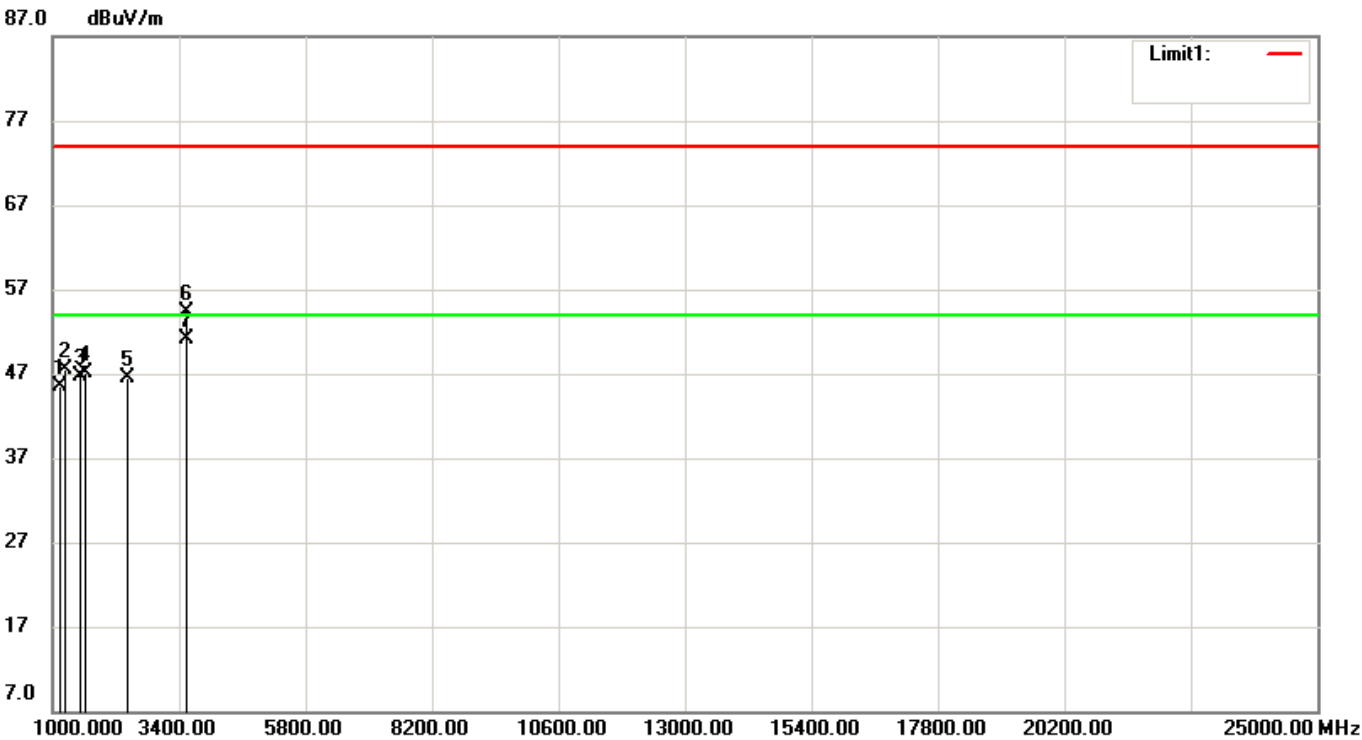
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1058.33330	54.57	peak	-9.32	45.25	74.00	-28.75
2	1148.07700	57.02	peak	-9.09	47.93	74.00	-26.07
3	1448.71800	52.14	peak	-8.31	43.83	74.00	-30.17
4	1558.65380	55.94	peak	-7.66	48.28	74.00	-25.72
5	1996.15380	52.15	peak	-3.76	48.39	74.00	-25.61
6	3509.04570	56.31	peak	-1.15	55.16	74.00	-18.84
7	3509.04570	54.19	AVG	-1.15	53.04	54.00	-0.96

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

b. Channel Mid

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-06-MAS-011_N #41 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



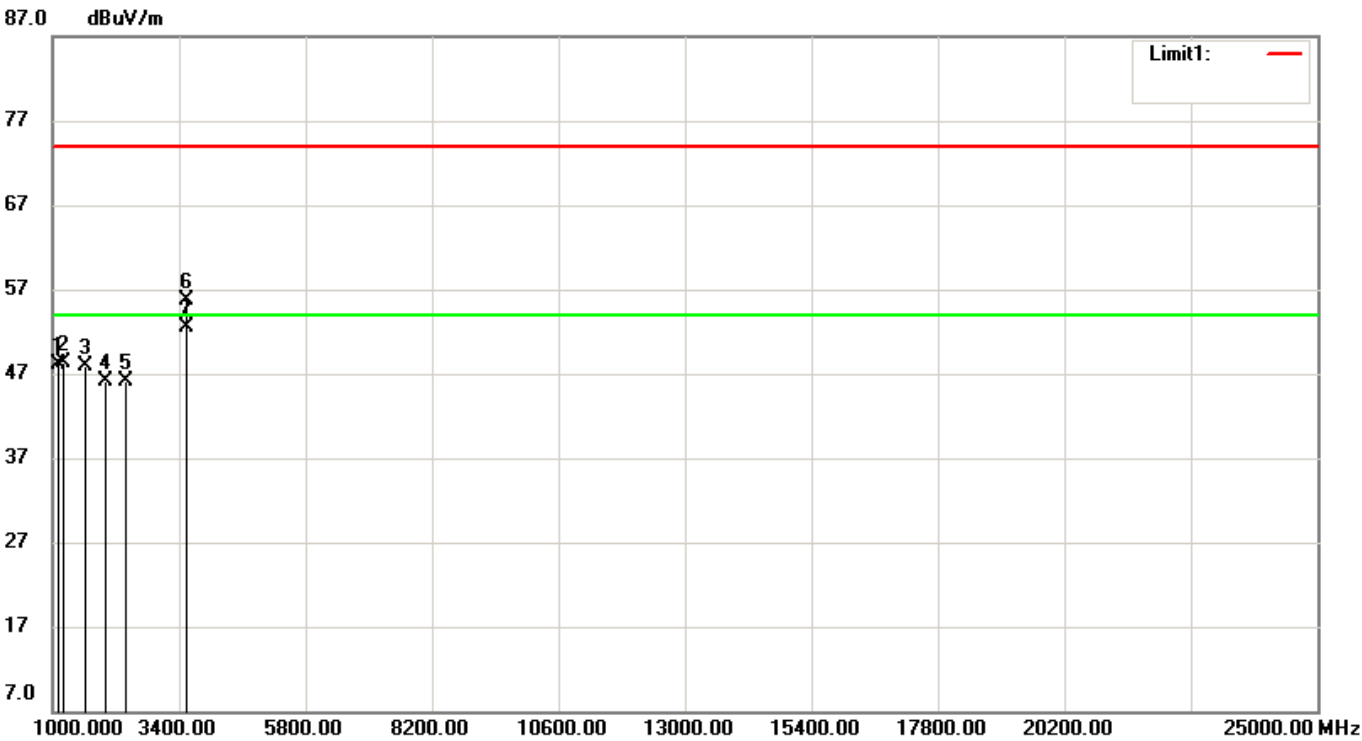
Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-N-MID Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1116.66660	54.62	peak	-9.17	45.45	74.00	-28.55
2	1222.11530	56.48	peak	-8.89	47.59	74.00	-26.41
3	1536.21800	54.52	peak	-7.86	46.66	74.00	-27.34
4	1581.08970	54.55	peak	-7.46	47.09	74.00	-26.91
5	2386.53840	49.22	peak	-2.71	46.51	74.00	-27.49
6	3509.01500	55.55	peak	-1.15	54.40	74.00	-19.60
7	3509.01500	52.31	AVG	-1.15	51.16	54.00	-2.84

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2437 MHz

File: 20-06-MAS-011_N #42 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-N-MID Operator: Bruce
Note:

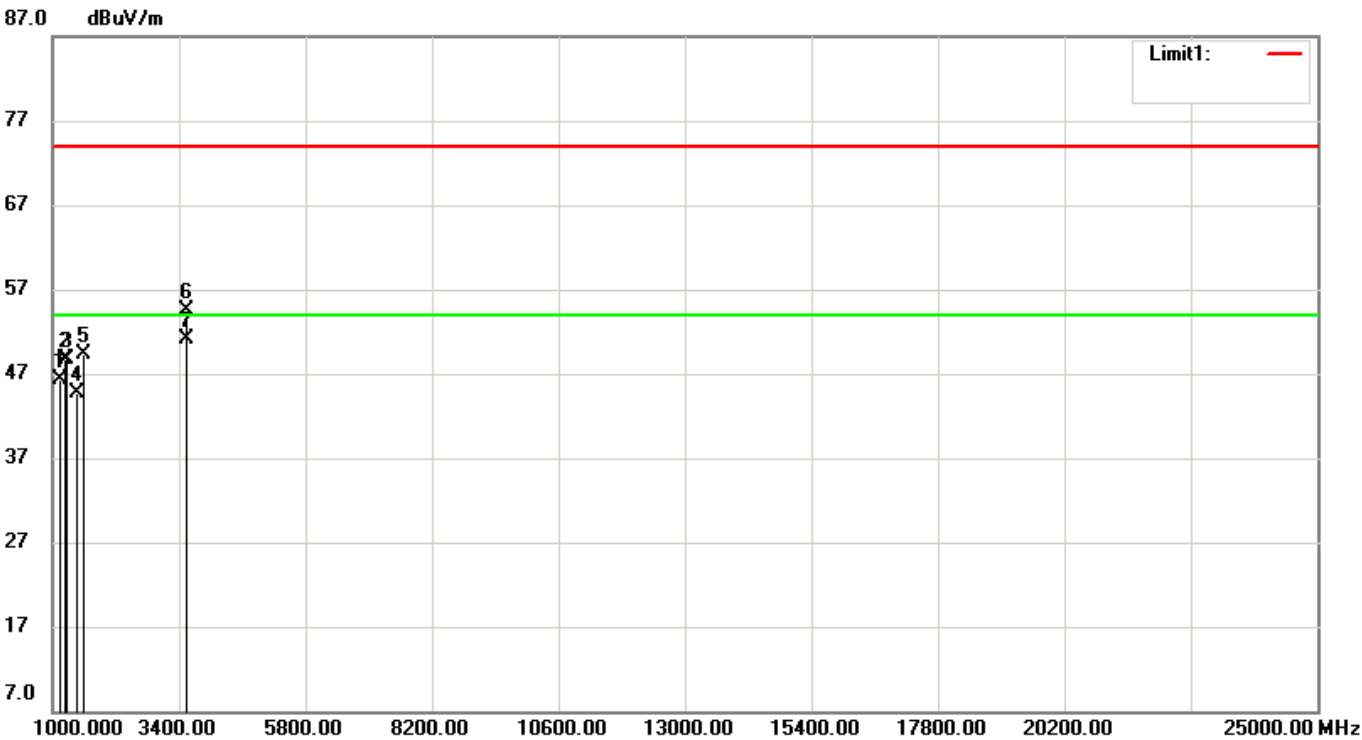
No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1091.98710	57.34	peak	-9.23	48.11	74.00	-25.89
2	1163.78200	57.35	peak	-9.05	48.30	74.00	-25.70
3	1583.33330	55.39	peak	-7.44	47.95	74.00	-26.05
4	1991.66660	49.86	peak	-3.81	46.05	74.00	-27.95
5	2370.83330	48.77	peak	-2.75	46.02	74.00	-27.98
6	3509.05900	56.78	peak	-1.15	55.63	74.00	-18.37
7	3509.05900	53.64	AVG	-1.15	52.49	54.00	-1.51

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

c. Channel High

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-06-MAS-011_N #43 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



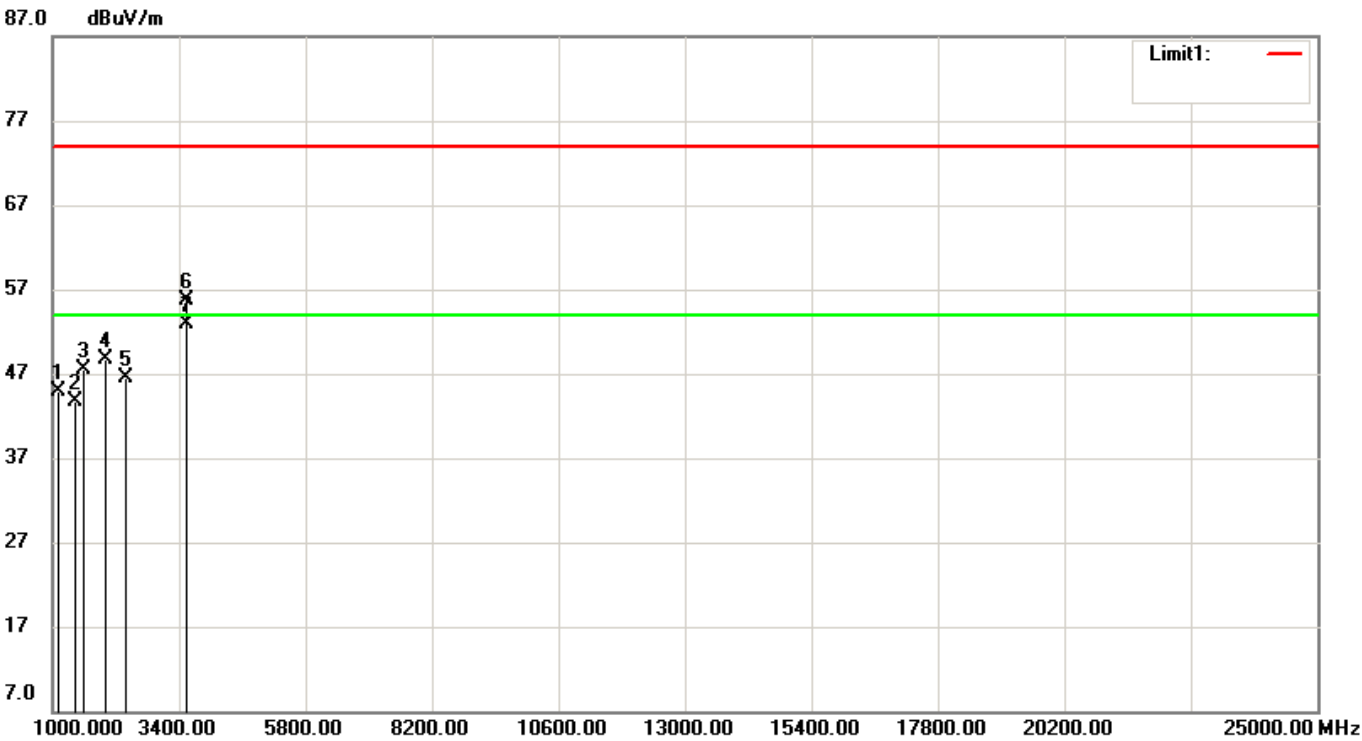
Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-N-HIGH Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1118.91020	55.40	peak	-9.16	46.24	74.00	-27.76
2	1215.38460	57.68	peak	-8.92	48.76	74.00	-25.24
3	1260.25640	57.58	peak	-8.80	48.78	74.00	-25.22
4	1448.71800	53.00	peak	-8.31	44.69	74.00	-29.31
5	1576.60250	56.80	peak	-7.49	49.31	74.00	-24.69
6	3509.05710	55.59	peak	-1.15	54.44	74.00	-19.56
7	3509.05710	52.33	AVG	-1.15	51.18	54.00	-2.82

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式：發射接收
基本波頻率：2462 MHz

File: 20-06-MAS-011_N #44 Date: 2020/9/29 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Vertical
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI-N-HIGH Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1089.74350	54.08	peak	-9.23	44.85	74.00	-29.15
2	1397.11530	52.07	peak	-8.45	43.62	74.00	-30.38
3	1572.11530	55.02	peak	-7.55	47.47	74.00	-26.53
4	1993.91020	52.59	peak	-3.79	48.80	74.00	-25.20
5	2352.88460	49.21	peak	-2.80	46.41	74.00	-27.59
6	3509.10200	56.78	peak	-1.15	55.63	74.00	-18.37
7	3509.10200	54.02	AVG	-1.15	52.87	54.00	-1.13

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

10.5.2.4 測試狀態: USB Link

操作模式: Mode D

File: 20-06-MAS-011_Normal

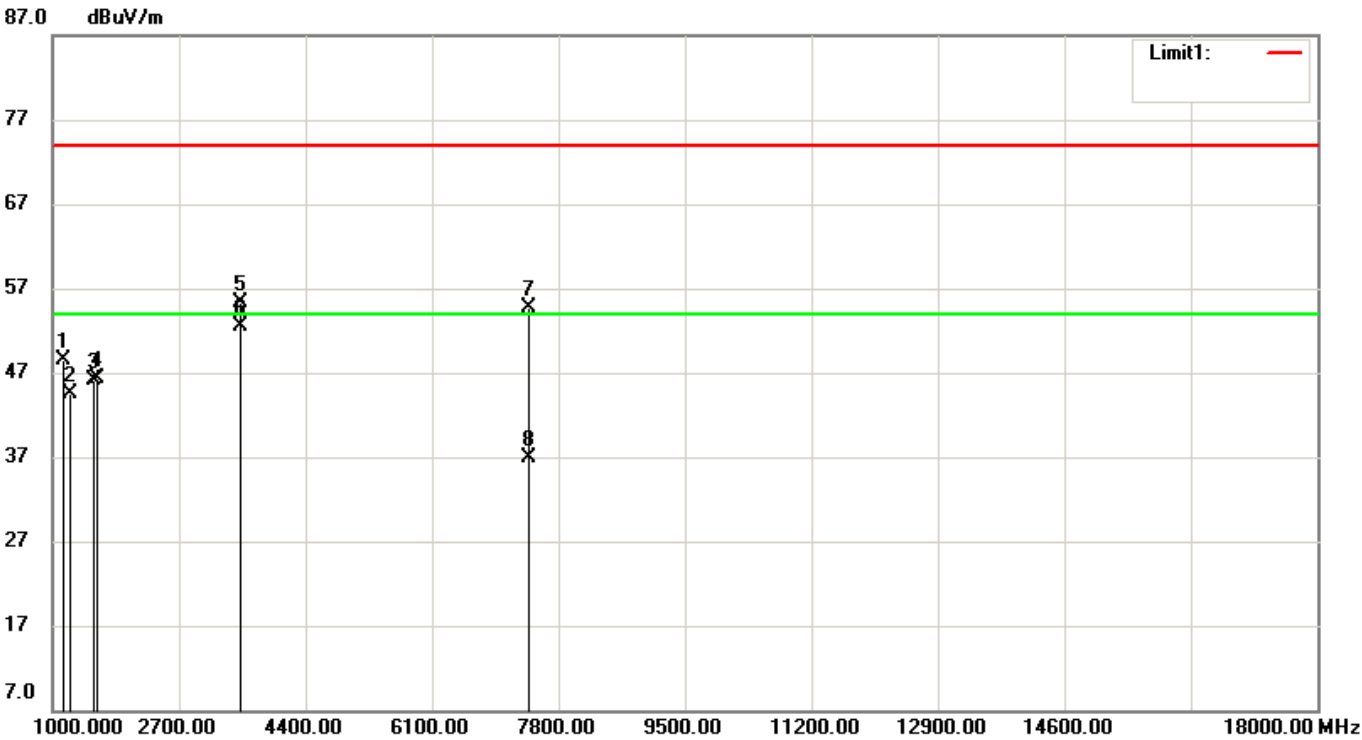
#29

Date: 2020/9/30

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: USB

Note:

Polarization: Horizontal

Distance: 3m

Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1118.91020	57.70	peak	-9.16	48.54	74.00	-25.46
2	1222.11530	53.45	peak	-8.89	44.56	74.00	-29.44
3	1518.26920	54.10	peak	-8.01	46.09	74.00	-27.91
4	1572.11530	53.88	peak	-7.55	46.33	74.00	-27.67
5	3509.05610	56.40	peak	-1.15	55.25	74.00	-18.75
6	3509.05610	53.67	AVG	-1.15	52.52	54.00	-1.48
7	7391.73230	51.24	peak	3.43	54.67	74.00	-19.33
8	7391.73230	33.43	AVG	3.43	36.86	54.00	-17.14

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式: Mode D

File: 20-06-MAS-011_Normal

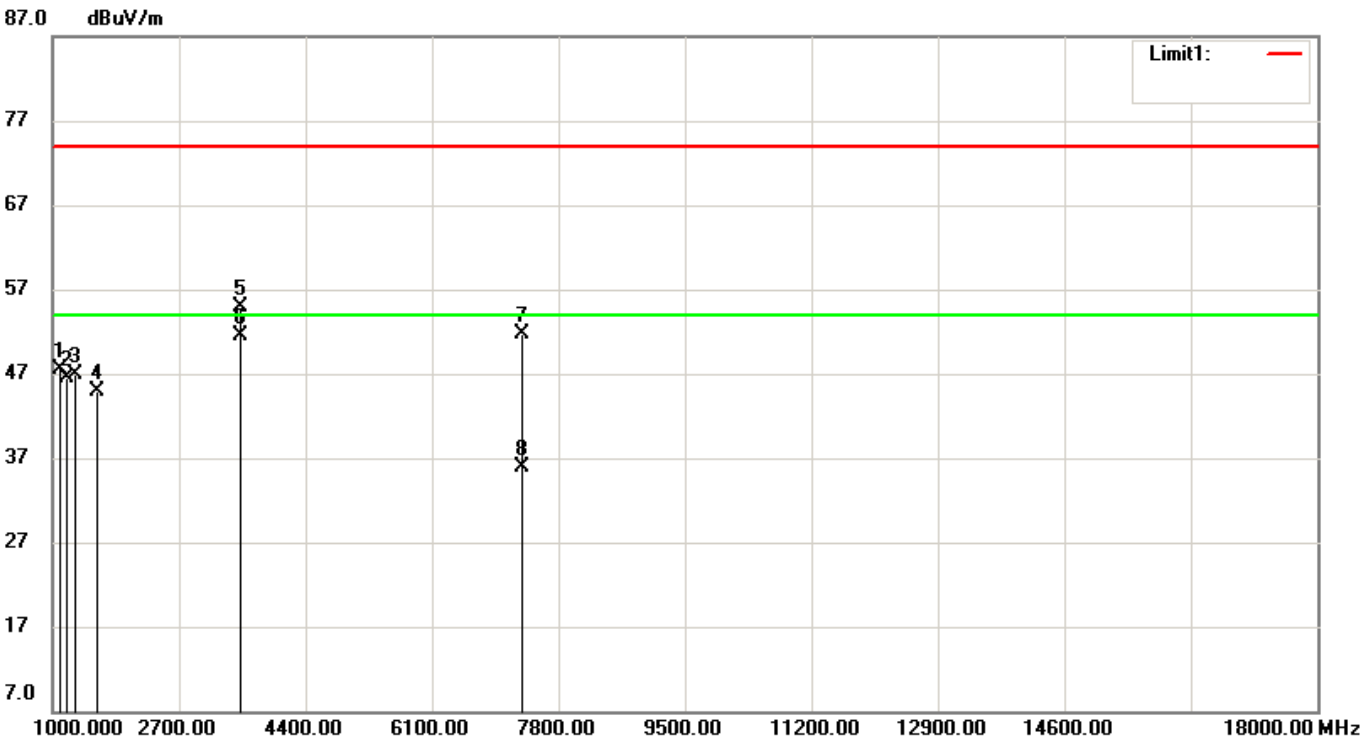
#30

Date: 2020/9/30

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

Polarization: Vertical

EUT: Cockpit Control Unit

Distance: 3m

Model: DNNS113

Operator: Bruce

Test Mode: USB

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1094.23070	56.64	peak	-9.23	47.41	74.00	-26.59
2	1166.02560	55.63	peak	-9.04	46.59	74.00	-27.41
3	1278.20500	55.75	peak	-8.76	46.99	74.00	-27.01
4	1578.84610	52.45	peak	-7.48	44.97	74.00	-29.03
5	3509.05610	56.03	peak	-1.15	54.88	74.00	-19.12
6	3509.05610	52.67	AVG	-1.15	51.52	54.00	-2.48
7	7311.57770	48.26	peak	3.43	51.69	74.00	-22.31
8	7311.57770	32.57	AVG	3.43	36.00	54.00	-18.00

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

10.5.2.5 測試狀態: BT Link

操作模式: Mode E

File: 20-06-MAS-011_Normal

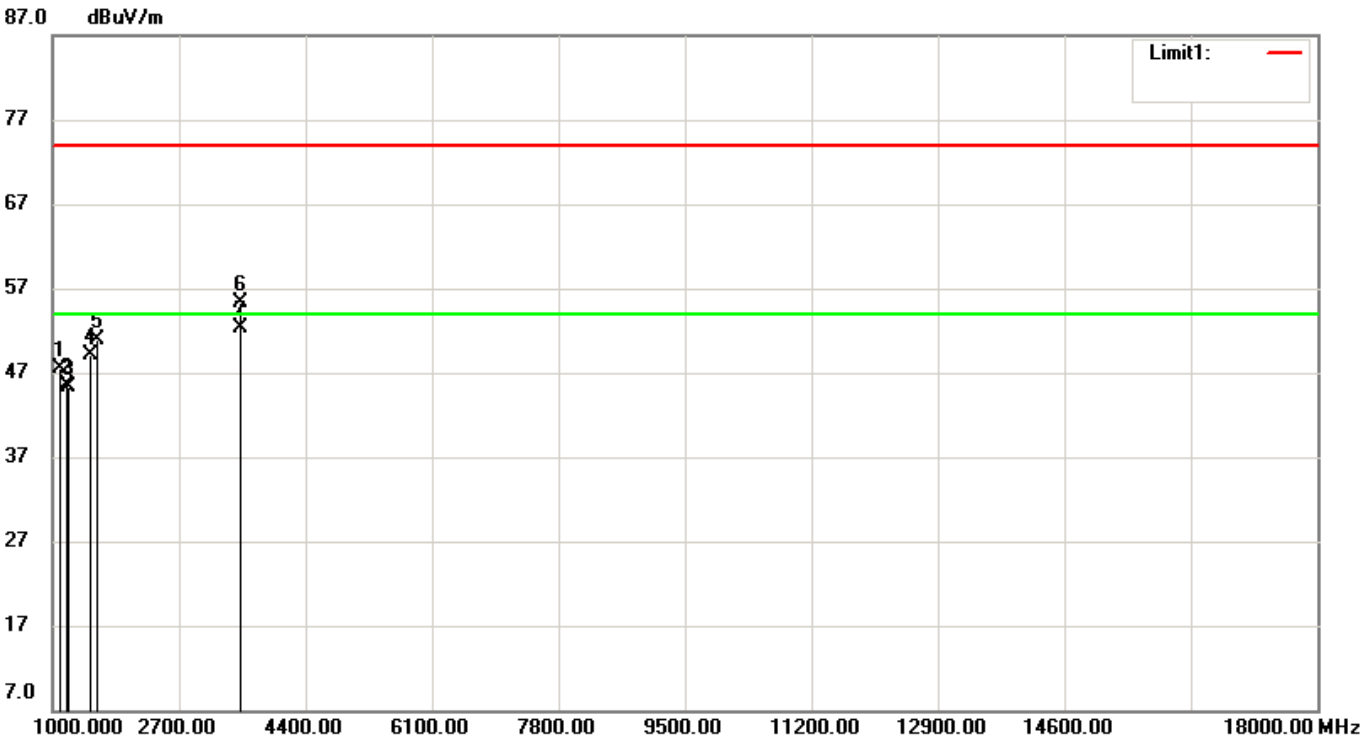
#33

Date: 2020/9/30

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

Polarization: Horizontal

EUT: Cockpit Control Unit

Distance: 3m

Model: DNNS113

Test Mode: BT(Normal)

Operator: Bruce

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1091.98710	56.76	peak	-9.23	47.53	74.00	-26.47
2	1166.02560	54.56	peak	-9.04	45.52	74.00	-28.48
3	1213.14100	54.18	peak	-8.92	45.26	74.00	-28.74
4	1509.29470	57.10	peak	-8.09	49.01	74.00	-24.99
5	1578.84610	58.44	peak	-7.48	50.96	74.00	-23.04
6	3509.04120	56.48	peak	-1.15	55.33	74.00	-18.67
7	3509.04120	53.39	AVG	-1.15	52.24	54.00	-1.76

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式: Mode E

File: 20-06-MAS-011_Normal

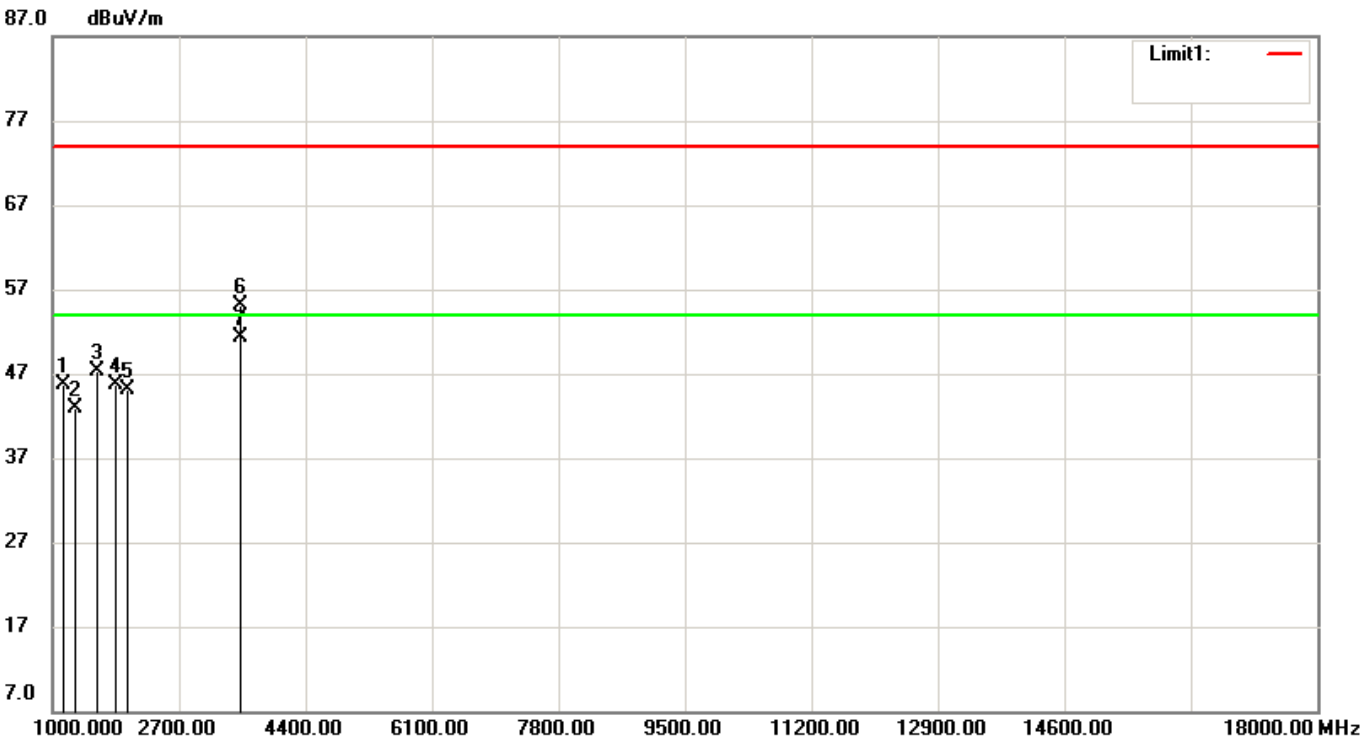
#34

Date: 2020/9/30

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

Polarization: Vertical

EUT: Cockpit Control Unit

Distance: 3m

Model: DNNS113

Test Mode: BT(Normal)

Operator: Bruce

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1127.88460	54.77	peak	-9.14	45.63	74.00	-28.37
2	1289.42300	51.65	peak	-8.73	42.92	74.00	-31.08
3	1587.82050	54.76	peak	-7.40	47.36	74.00	-26.64
4	1830.12820	50.97	peak	-5.24	45.73	74.00	-28.27
5	1991.66660	48.84	peak	-3.81	45.03	74.00	-28.97
6	3509.04280	56.33	peak	-1.15	55.18	74.00	-18.82
7	3509.04280	52.51	AVG	-1.15	51.36	54.00	-2.64

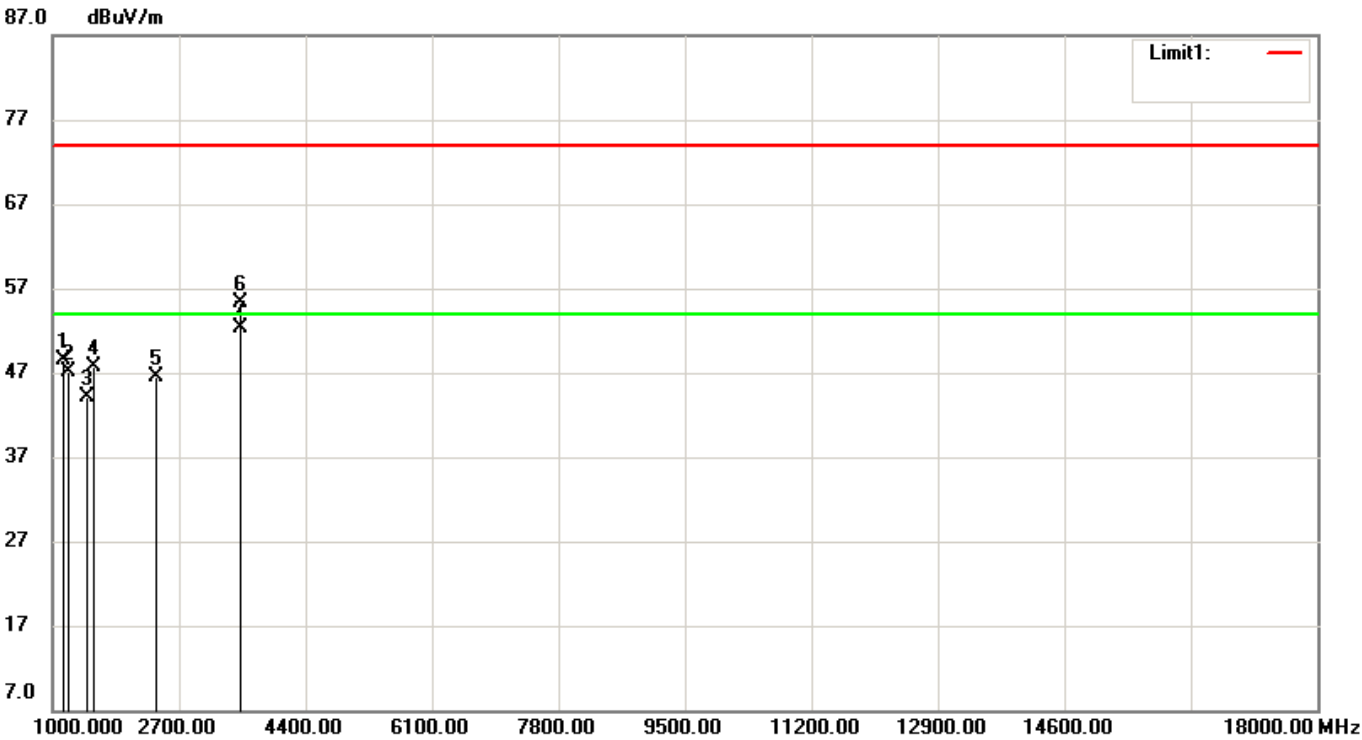
註:1. 若以峰值檢測功能測量之值符合平均值限制值，則可視同以平均值功能測量之值亦符合平均值限制值。

2. 量測不準確度: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

10.5.2.6 測試狀態: WiFi Link

操作模式: Mode F

File: 20-06-MAS-011_Normal #35 Date: 2020/9/30 Temperature: 21 °C
Site: RE02-EMC B1- N2 Humidity: 60 %



Condition: NCC_Above1G_Pk Polarization: Horizontal
EUT: Cockpit Control Unit Distance: 3m
Model: DNNS113
Test Mode: WIFI(Normal) Operator: Bruce
Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1121.15380	57.72	peak	-9.16	48.56	74.00	-25.44
2	1217.62820	56.09	peak	-8.91	47.18	74.00	-26.82
3	1450.96150	52.40	peak	-8.31	44.09	74.00	-29.91
4	1538.46150	55.57	peak	-7.85	47.72	74.00	-26.28
5	2373.07700	49.25	peak	-2.75	46.50	74.00	-27.50
6	3509.03580	56.55	peak	-1.15	55.40	74.00	-18.60
7	3509.03580	53.48	AVG	-1.15	52.33	54.00	-1.67

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式: Mode F

File: 20-06-MAS-011_Normal

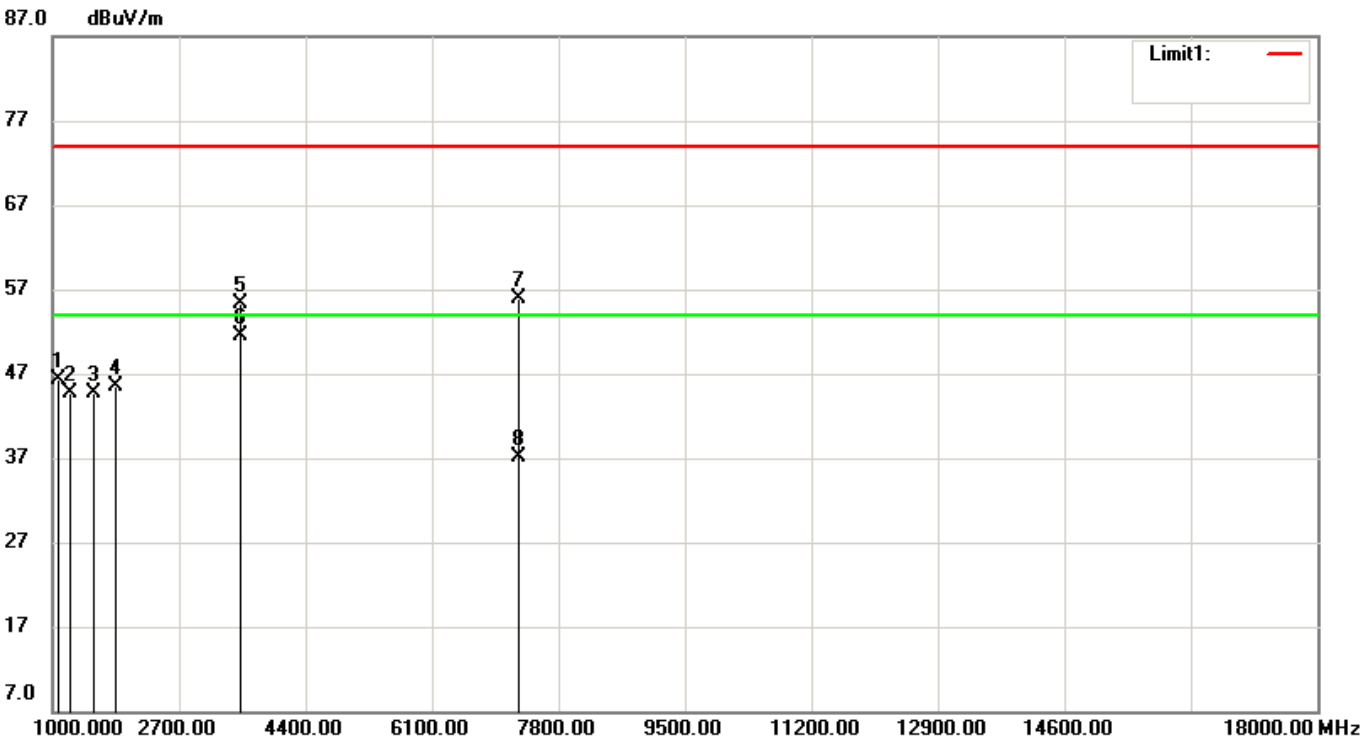
#36

Date: 2020/9/30

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

Polarization: Vertical

EUT: Cockpit Control Unit

Distance: 3m

Model: DNNS113

Test Mode: WIFI(Normal)

Operator: Bruce

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1065.06410	55.62	peak	-9.31	46.31	74.00	-27.69
2	1224.35900	53.56	peak	-8.89	44.67	74.00	-29.33
3	1540.70500	52.57	peak	-7.82	44.75	74.00	-29.25
4	1841.34610	50.64	peak	-5.14	45.50	74.00	-28.50
5	3509.03580	56.37	peak	-1.15	55.22	74.00	-18.78
6	3509.03580	52.69	AVG	-1.15	51.54	54.00	-2.46
7	7248.67300	52.47	peak	3.42	55.89	74.00	-18.11
8	7248.67300	33.75	AVG	3.42	37.17	54.00	-16.83

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

10.5.2.7 測試狀態: AUX

操作模式: Mode G

File: 20-06-MAS-011_Normal

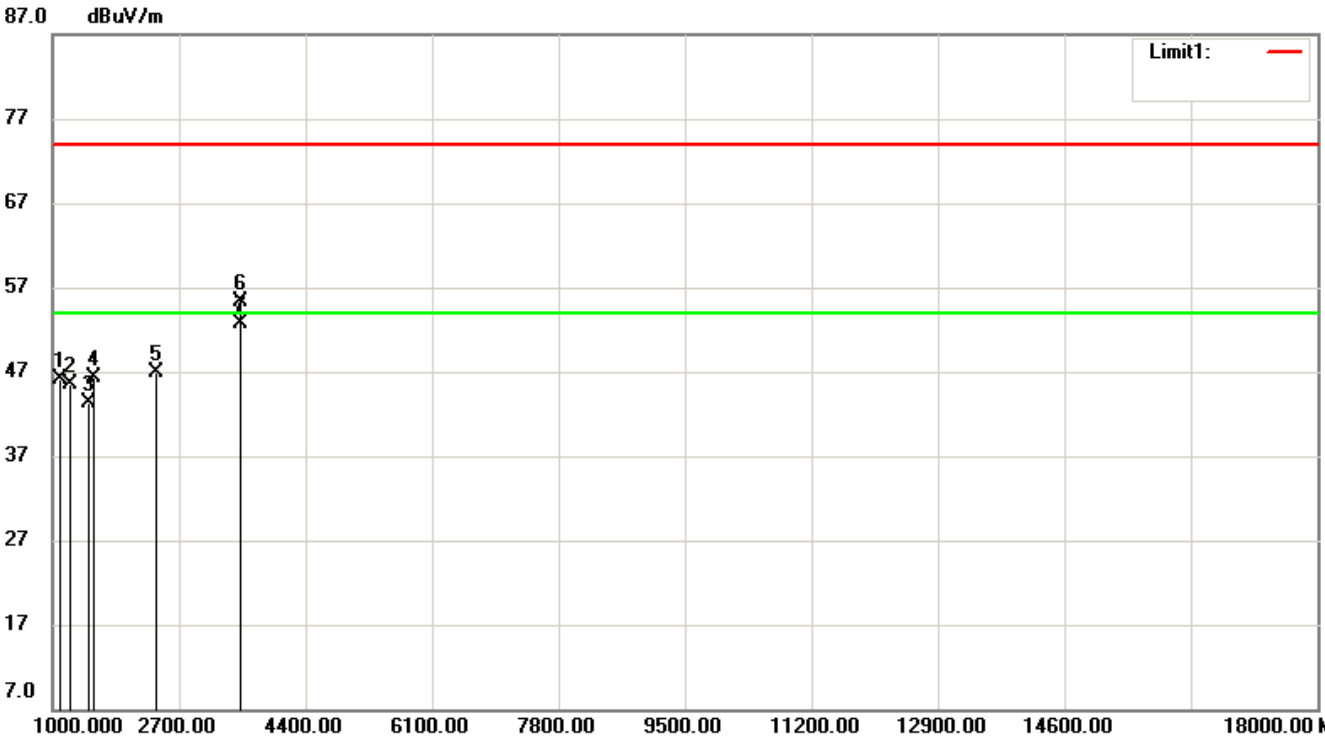
#31

Date: 2020/9/30

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

Polarization: Horizontal

EUT: Cockpit Control Unit

Distance: 3m

Model: DNNS113

Test Mode: AUX

Operator: Bruce

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1089.74350	55.40	peak	-9.23	46.17	74.00	-27.83
2	1219.87170	54.44	peak	-8.91	45.53	74.00	-28.47
3	1484.61520	51.50	peak	-8.22	43.28	74.00	-30.72
4	1538.46140	54.09	peak	-7.85	46.24	74.00	-27.76
5	2386.53830	49.71	peak	-2.71	47.00	74.00	-27.00
6	3509.03560	56.51	peak	-1.15	55.36	74.00	-18.64
7	3509.03560	53.82	AVG	-1.15	52.67	54.00	-1.33

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

操作模式: Mode G

File: 20-06-MAS-011_Normal

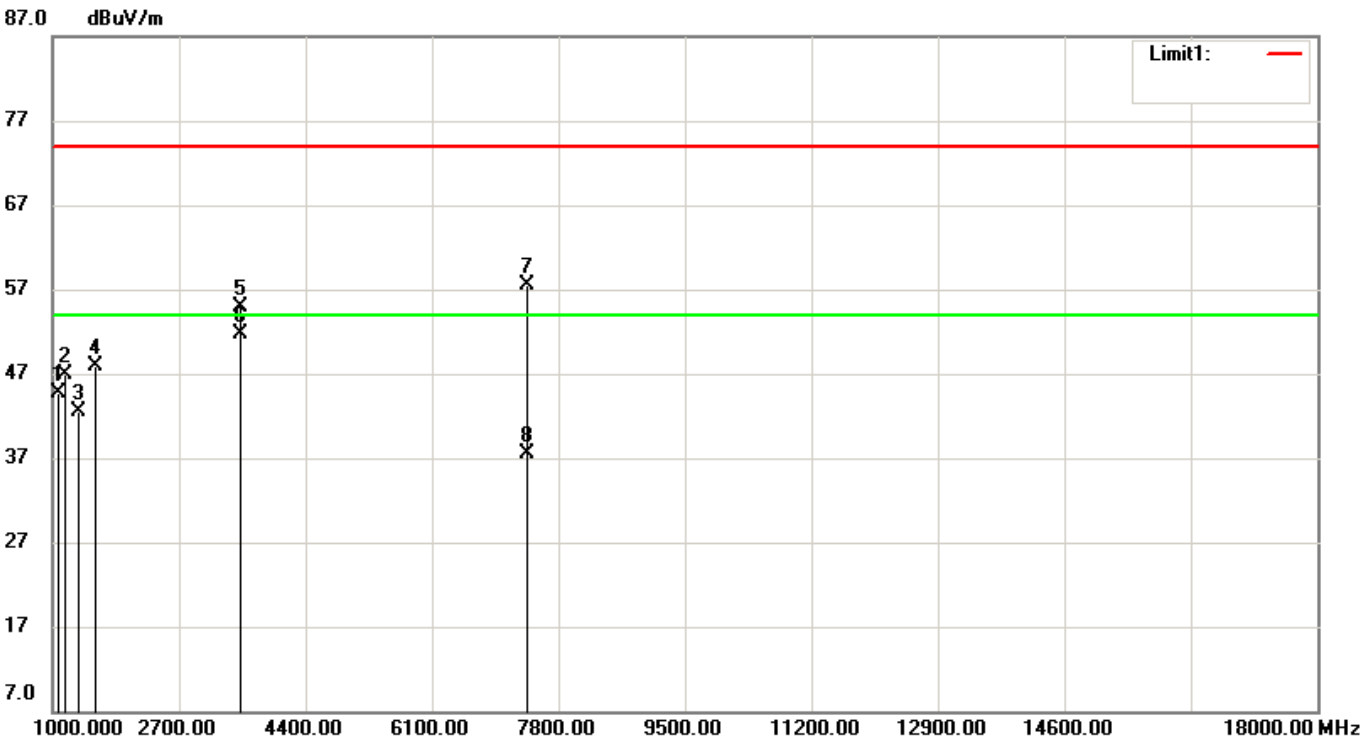
#32

Date: 2020/9/30

Temperature: 21 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_Above1G_Pk

Polarization: Vertical

EUT: Cockpit Control Unit

Distance: 3m

Model: DNNS113

Test Mode: AUX

Operator: Bruce

Note:

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	1067.30760	54.07	peak	-9.29	44.78	74.00	-29.22
2	1157.05120	56.06	peak	-9.07	46.99	74.00	-27.01
3	1345.51280	51.01	peak	-8.58	42.43	74.00	-31.57
4	1545.19230	55.64	peak	-7.78	47.86	74.00	-26.14
5	3509.01280	56.09	peak	-1.15	54.94	74.00	-19.06
6	3509.01280	52.88	AVG	-1.15	51.73	54.00	-2.27
7	7374.58010	54.08	peak	3.43	57.51	74.00	-16.49
8	7374.58010	34.10	AVG	3.43	37.53	54.00	-16.47

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: $\pm 4.1\text{dB}(1\text{GHz} \leq f < 18\text{GHz})$
 $\pm 4.4\text{dB}(18\text{GHz} \leq f \leq 40\text{GHz})$

10.5.2.4 其它不必要之訊號1GHz以下

10.5.2.4.1 測試狀態：IEEE 802.11g

File: 20-06-MAS-011

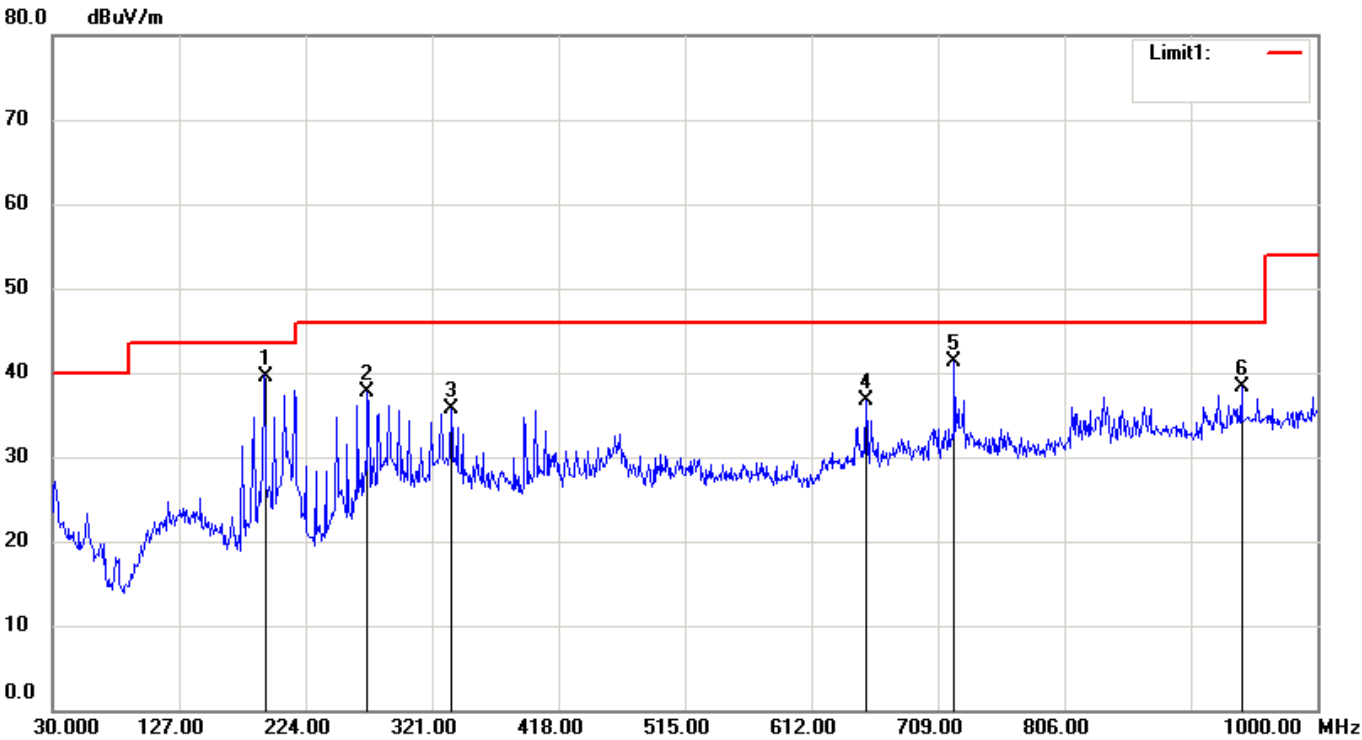
Site: RE02-EMC B1- N2

#27

Date: 2020/9/28

Temperature: 22 °C

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI

Note:

Polarization: Horizontal

Distance: 3m

Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	192.0040	49.07	QP	-9.52	39.55	43.50	-3.95
2	271.5300	43.07	QP	-5.41	37.66	46.00	-8.34
3	335.5500	39.47	QP	-3.86	35.61	46.00	-10.39
4	653.7100	34.25	QP	2.48	36.73	46.00	-9.27
5	721.6100	38.11	QP	3.17	41.28	46.00	-4.72
6	941.8000	30.85	QP	7.52	38.37	46.00	-7.63

File: 20-06-MAS-011

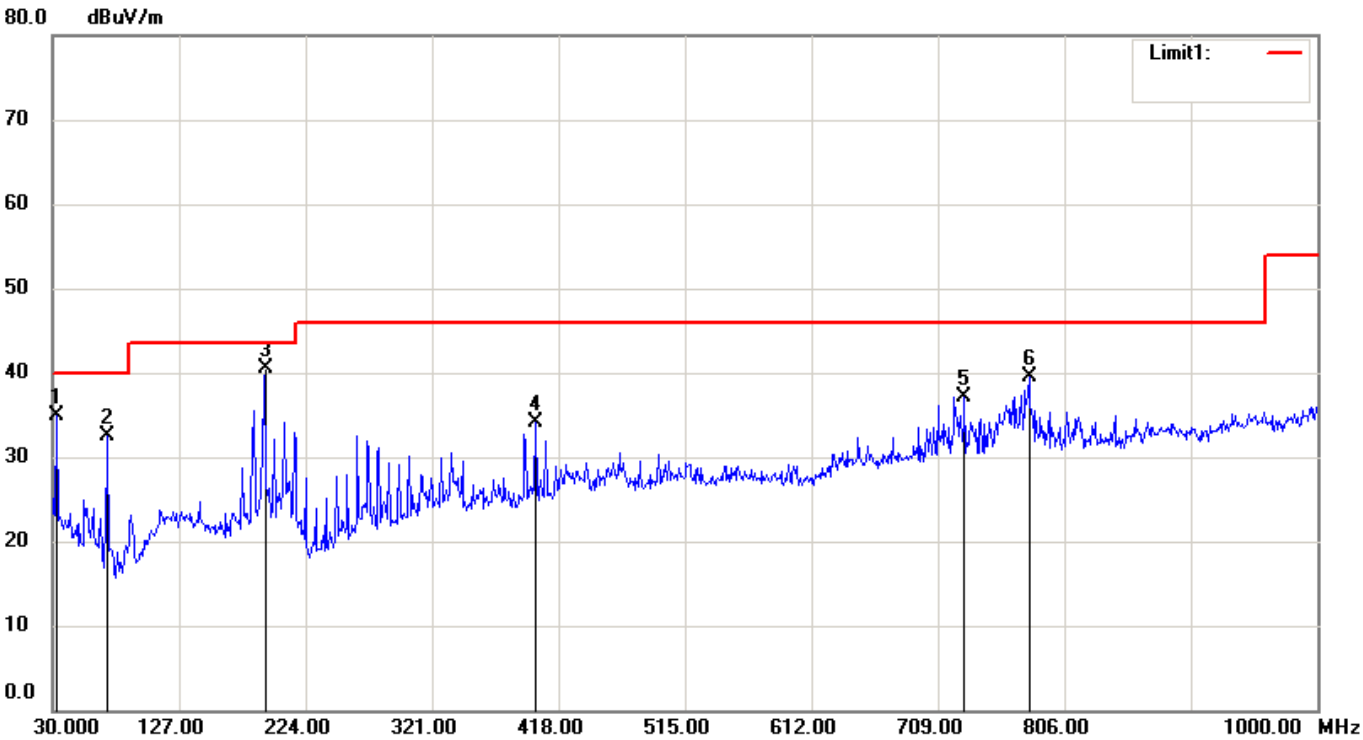
Site: RE02-EMC B1- N2

#28

Date: 2020/9/28

Temperature: 22 °C

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI

Note:

Polarization: Vertical

Distance: 3m

Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	32.9100	39.18	QP	-4.28	34.90	40.00	-5.10
2	71.7100	45.06	QP	-12.64	32.42	40.00	-7.58
3	192.0000	50.07	QP	-9.52	40.55	43.50	-2.95
4	400.5400	35.90	QP	-1.78	34.12	46.00	-11.88
5	729.3700	33.88	QP	3.26	37.14	46.00	-8.86
6	778.8400	35.69	QP	3.88	39.57	46.00	-6.43

- 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: +4.20dB/ -4.24 dB (30MHz≤f<1GHz)

10.5.2.4.2 測試狀態: USB Link

File: 20-06-MAS-011

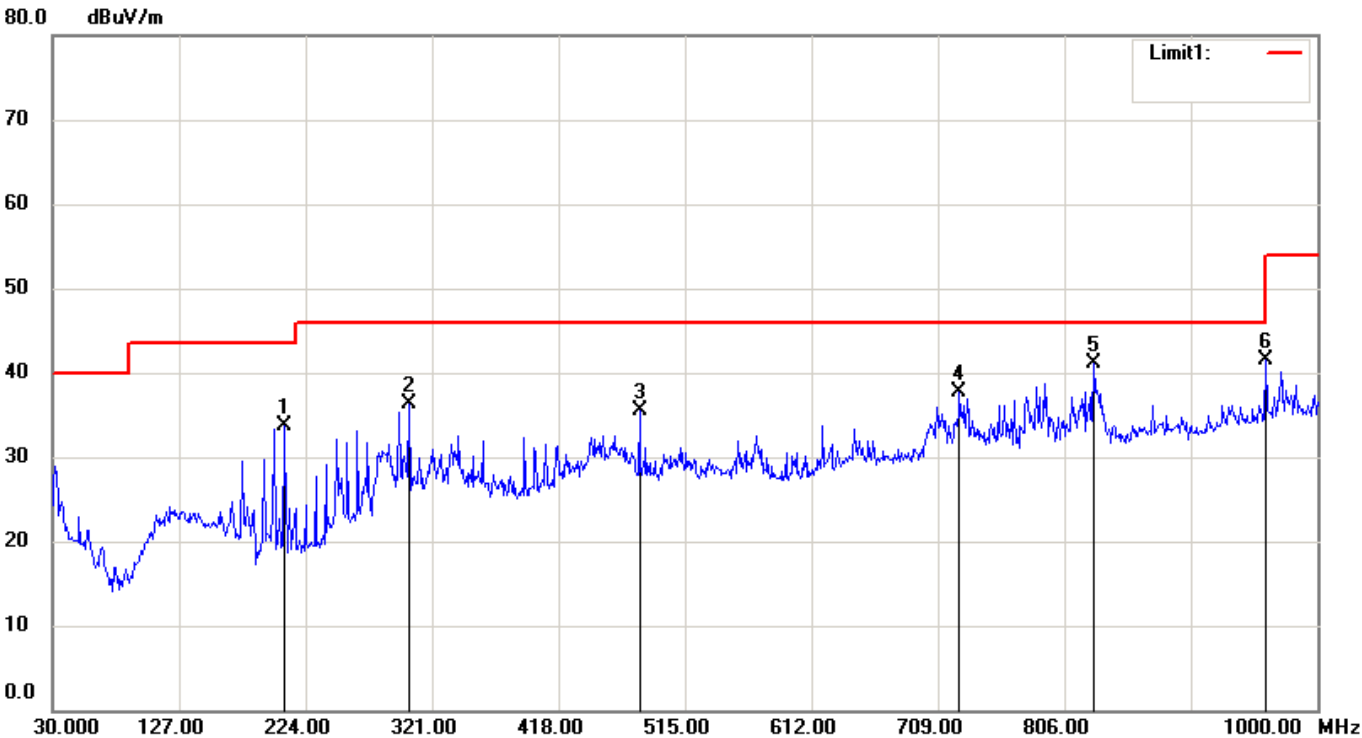
Site: RE02-EMC B1- N2

#31

Date: 2020/9/28

Temperature: 22 °C

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: USB

Note:

Polarization: Horizontal

Distance: 3m

Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	207.5100	43.00	QP	-9.28	33.72	43.50	-9.78
2	303.5400	40.76	QP	-4.39	36.37	46.00	-9.63
3	480.0800	36.50	QP	-1.06	35.44	46.00	-10.56
4	725.4900	34.52	QP	3.21	37.73	46.00	-8.27
5	828.3100	36.09	QP	5.08	41.17	46.00	-4.83
6	960.2300	33.63	QP	7.94	41.57	54.00	-12.43

File: 20-06-MAS-011

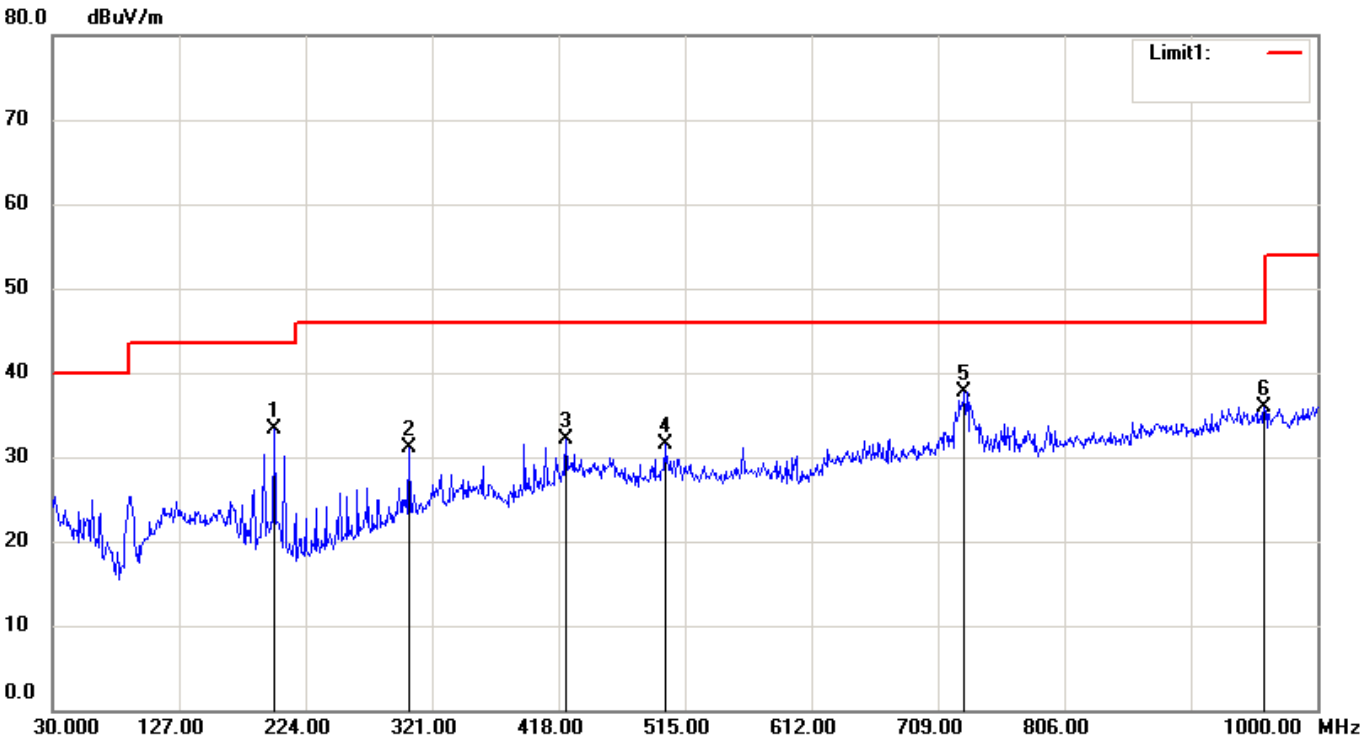
Site: RE02-EMC B1- N2

#32

Date: 2020/9/28

Temperature: 22 °C

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: USB

Note:

Polarization: Vertical

Distance: 3m

Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	199.7500	42.64	QP	-9.26	33.38	43.50	-10.12
2	303.5400	35.48	QP	-4.39	31.09	46.00	-14.91
3	423.8200	33.72	QP	-1.63	32.09	46.00	-13.91
4	499.4800	32.38	QP	-0.80	31.58	46.00	-14.42
5	729.3700	34.40	QP	3.26	37.66	46.00	-8.34
6	959.2600	27.90	QP	7.93	35.83	46.00	-10.17

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: +4.20dB/ -4.24 dB (30MHz≤f<1GHz)

10.5.2.4.3 測試狀態: BT Link

File: 20-06-MAS-011

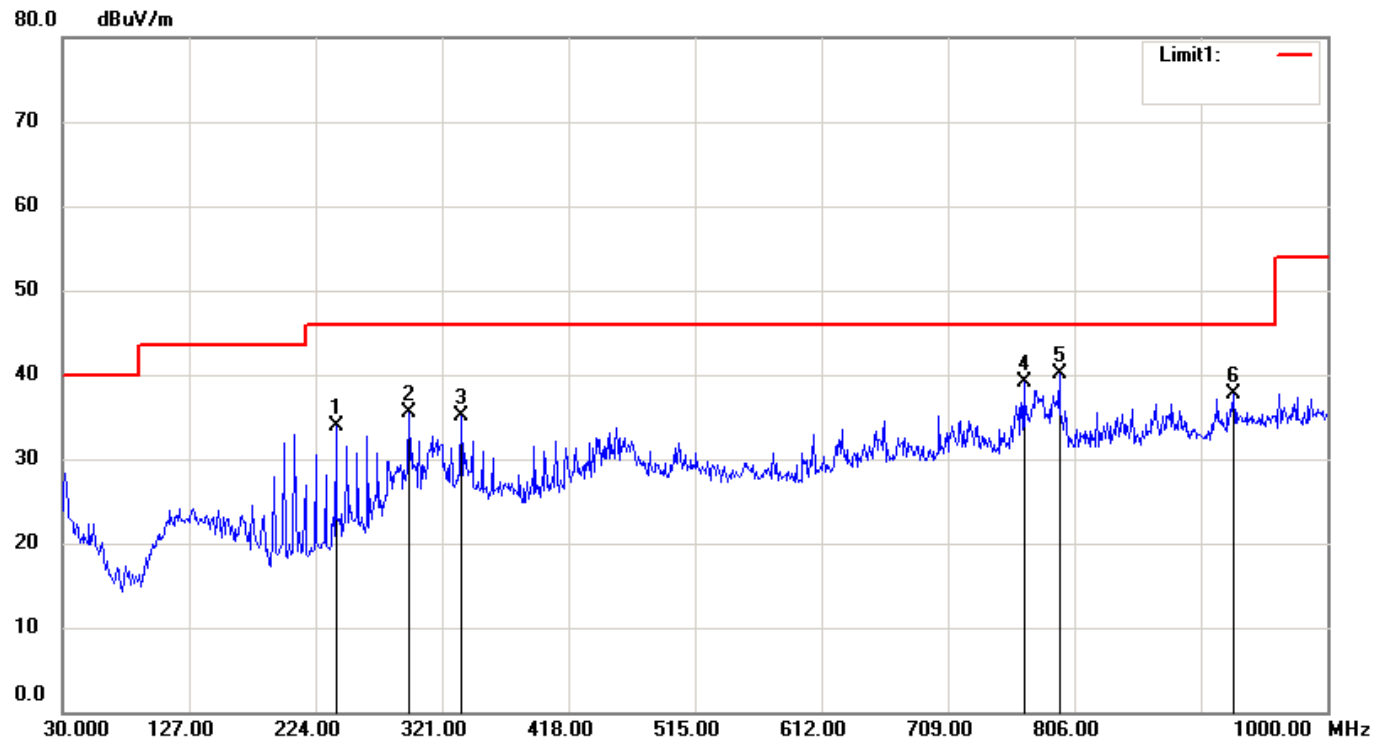
#35

Date: 2020/9/28

Temperature: 22 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz
 EUT: Cockpit Control Unit
 Model: DNNS113
 Test Mode: BT(Normal)
 Note:

Polarization: Horizontal
 Distance: 3m
 Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	239.5200	41.12	QP	-7.24	33.88	46.00	-12.12
2	295.7800	40.03	QP	-4.52	35.51	46.00	-10.49
3	335.5500	38.95	QP	-3.86	35.09	46.00	-10.91
4	767.2000	35.39	QP	3.72	39.11	46.00	-6.89
5	794.3600	35.96	QP	4.10	40.06	46.00	-5.94
6	928.2200	30.59	QP	7.15	37.74	46.00	-8.26

File: 20-06-MAS-011

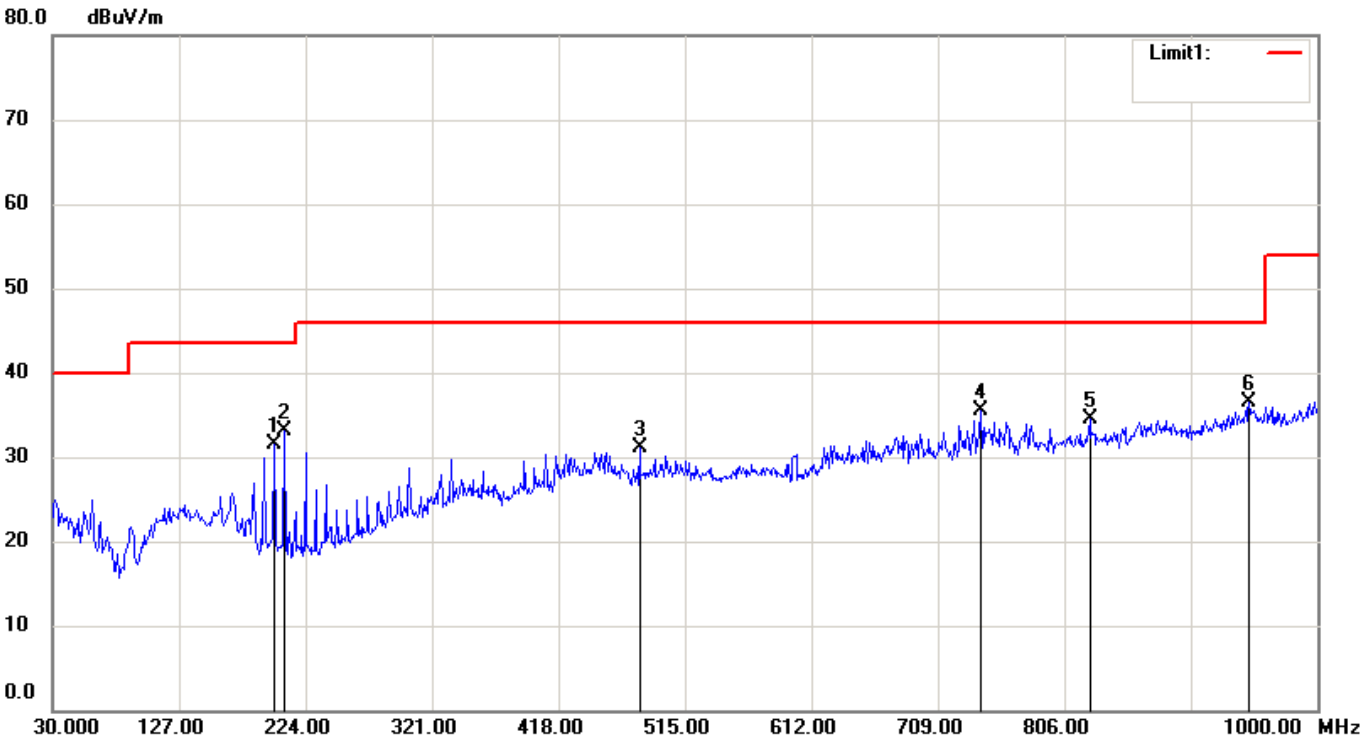
Site: RE02-EMC B1- N2

#36

Date: 2020/9/28

Temperature: 22 °C

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: BT(Normal)

Note:

Polarization: Vertical

Distance: 3m

Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	199.7500	40.76	QP	-9.26	31.50	43.50	-12.00
2	207.5100	42.32	QP	-9.28	33.04	43.50	-10.46
3	480.0800	32.11	QP	-1.06	31.05	46.00	-14.95
4	741.9800	32.02	QP	3.40	35.42	46.00	-10.58
5	825.4000	29.45	QP	4.99	34.44	46.00	-11.56
6	947.6200	28.83	QP	7.67	36.50	46.00	-9.50

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: +4.20dB/ -4.24 dB (30MHz≤f<1GHz)

10.5.2.4.4 測試狀態: WiFi Link

File: 20-06-MAS-011

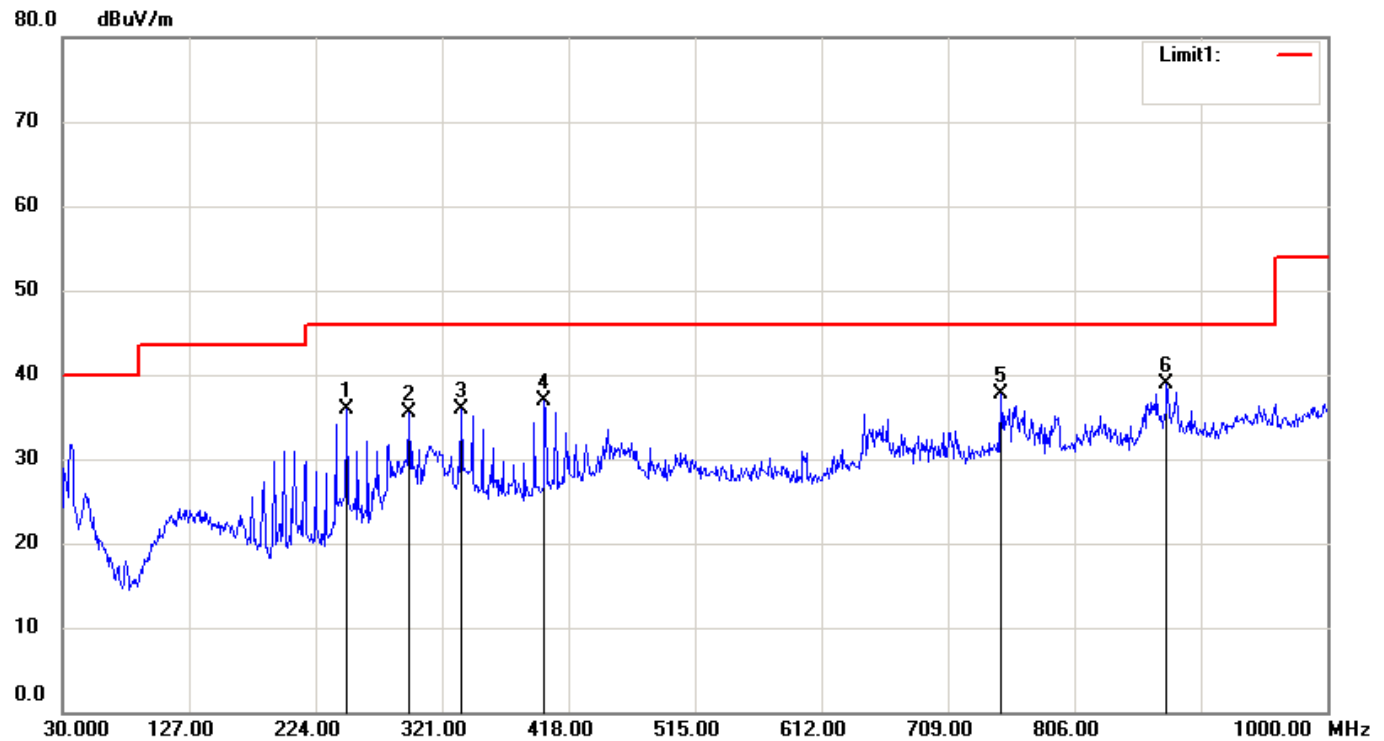
#37

Date: 2020/9/28

Temperature: 22 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz
 EUT: Cockpit Control Unit
 Model: DNNS113
 Test Mode: WIFI(Normal)
 Note:

Polarization: Horizontal
 Distance: 3m
 Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	248.2500	42.48	QP	-6.67	35.81	46.00	-10.19
2	295.7800	39.98	QP	-4.52	35.46	46.00	-10.54
3	335.5500	39.82	QP	-3.86	35.96	46.00	-10.04
4	399.5700	38.68	QP	-1.79	36.89	46.00	-9.11
5	749.7400	34.26	QP	3.48	37.74	46.00	-8.26
6	876.8100	32.82	QP	6.11	38.93	46.00	-7.07

File: 20-06-MAS-011

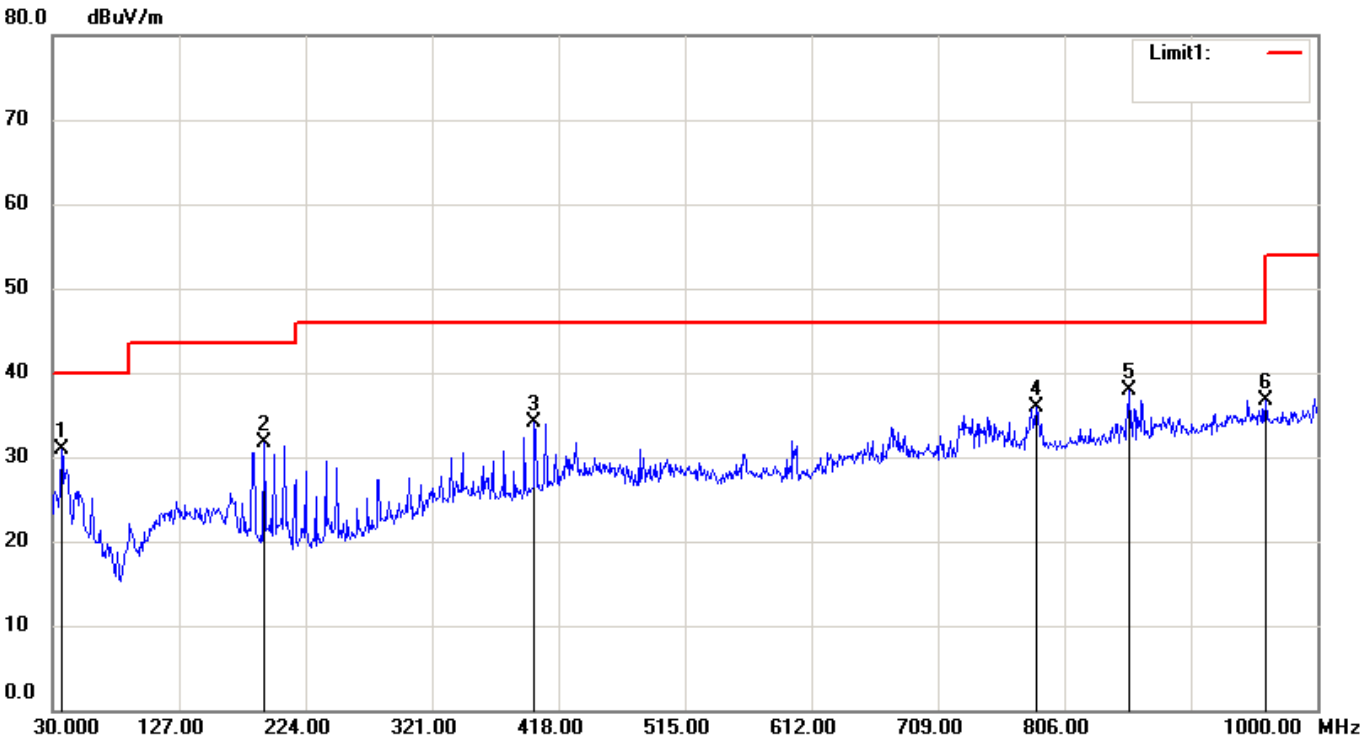
Site: RE02-EMC B1- N2

#38

Date: 2020/9/28

Temperature: 22 °C

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: WIFI(Normal)

Note:

Polarization: Vertical

Distance: 3m

Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	36.7900	35.84	QP	-4.99	30.85	40.00	-9.15
2	191.9900	41.17	QP	-9.52	31.65	43.50	-11.85
3	399.5700	35.96	QP	-1.79	34.17	46.00	-11.83
4	784.6600	31.93	QP	3.96	35.89	46.00	-10.11
5	855.4700	32.04	QP	5.84	37.88	46.00	-8.12
6	960.2300	28.77	QP	7.94	36.71	54.00	-17.29

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: +4.20dB/ -4.24 dB (30MHz≤f<1GHz)

10.5.2.4.5 測試狀態: AUX

File: 20-06-MAS-011

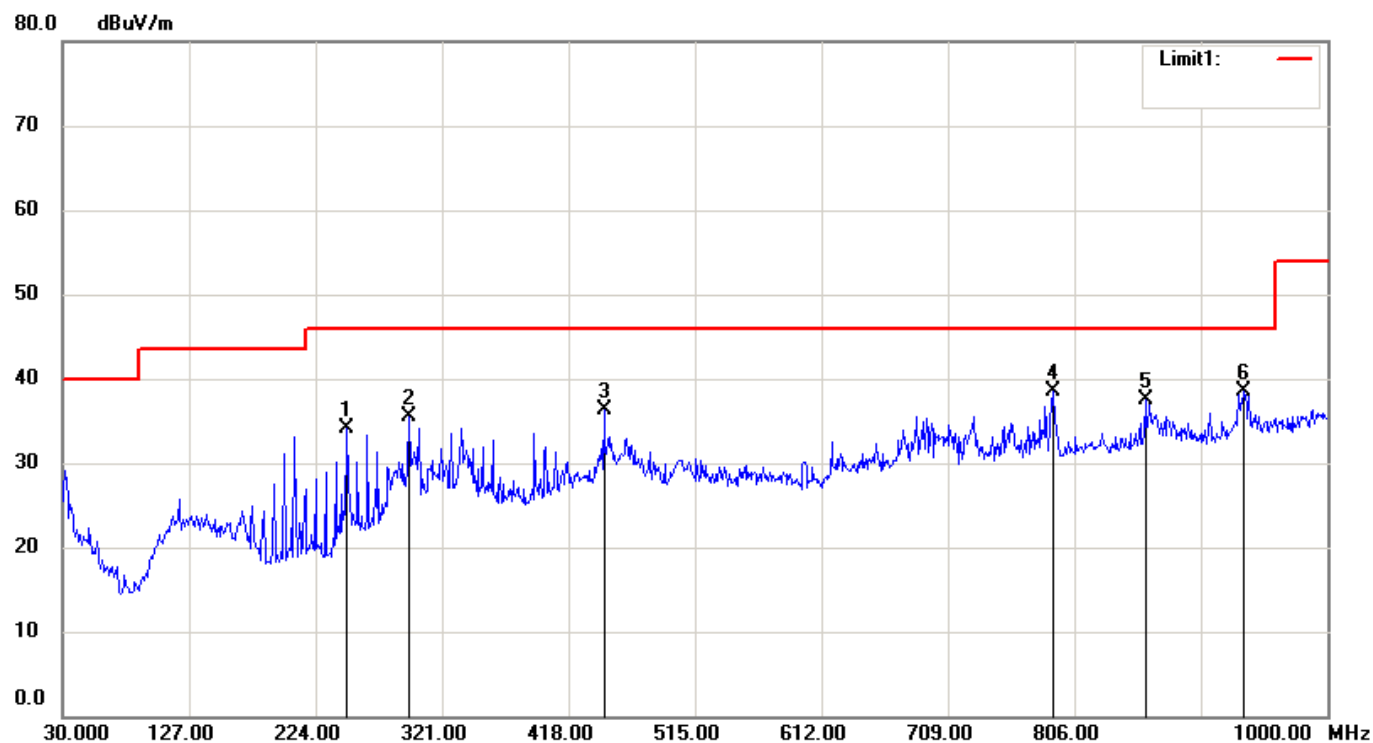
#33

Date: 2020/9/28

Temperature: 22 °C

Site: RE02-EMC B1- N2

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz
 EUT: Cockpit Control Unit
 Model: DNNS113
 Test Mode: AUX
 Note:

Polarization: Horizontal
 Distance: 3m
 Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	248.2500	40.68	QP	-6.67	34.01	46.00	-11.99
2	295.7800	40.10	QP	-4.52	35.58	46.00	-10.42
3	445.1600	37.77	QP	-1.49	36.28	46.00	-9.72
4	789.5100	34.38	QP	4.03	38.41	46.00	-7.59
5	860.3200	31.55	QP	5.91	37.46	46.00	-8.54
6	935.9800	31.06	QP	7.36	38.42	46.00	-7.58

File: 20-06-MAS-011

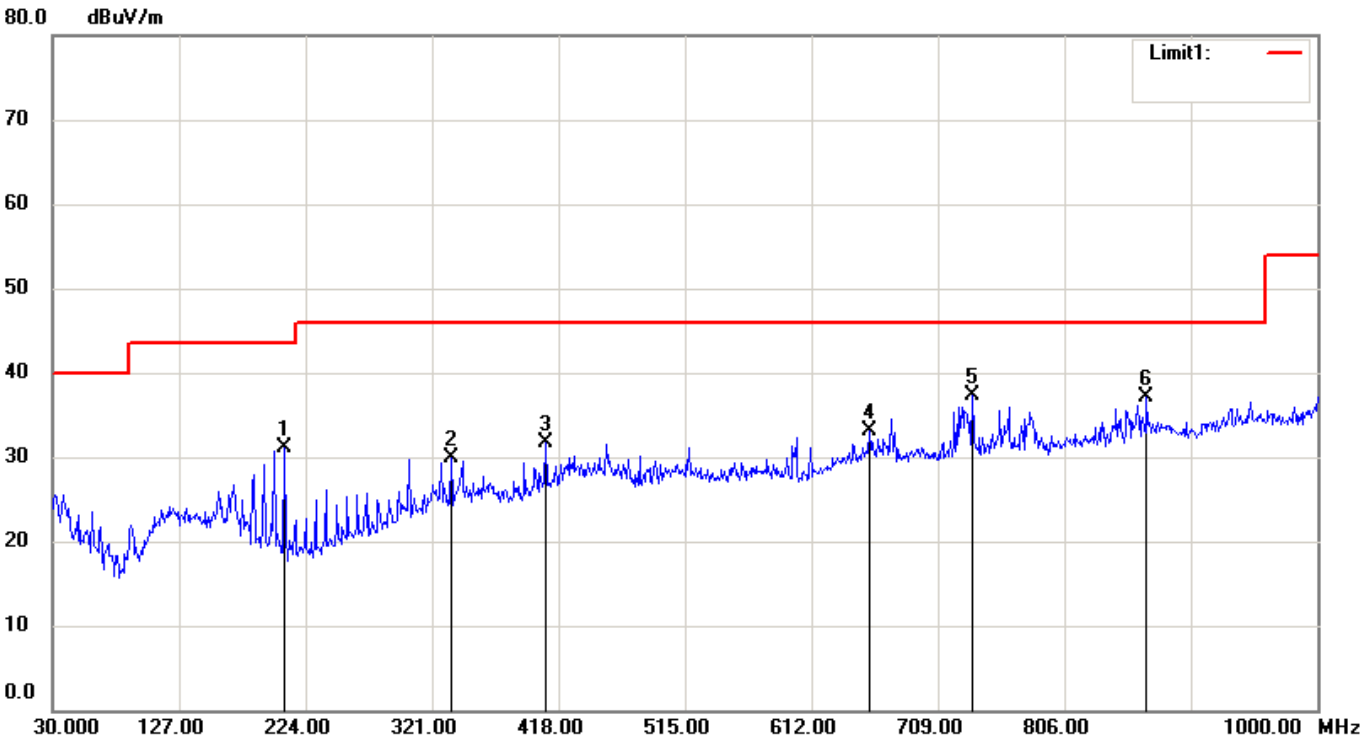
Site: RE02-EMC B1- N2

#34

Date: 2020/9/28

Temperature: 22 °C

Humidity: 60 %



Condition: NCC_LP0002_30-1000MHz

EUT: Cockpit Control Unit

Model: DNNS113

Test Mode: AUX

Note:

Polarization: Vertical

Distance: 3m

Operator: Bruce

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	207.5100	40.37	QP	-9.28	31.09	43.50	-12.41
2	335.5500	33.77	QP	-3.86	29.91	46.00	-16.09
3	408.3000	33.38	QP	-1.72	31.66	46.00	-14.34
4	656.6200	30.61	QP	2.53	33.14	46.00	-12.86
5	735.1900	34.02	QP	3.32	37.34	46.00	-8.66
6	869.0500	31.14	QP	6.01	37.15	46.00	-8.85

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: +4.20dB/ -4.24 dB (30MHz≤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: Sep. 29, 2020

環境溫度: 21°C

環境濕度: 60%

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	2373.846	27.53	13.98	27.88	13.99	34.58	62.46	48.57	74.00	54.00	-11.54	-5.43
CH High	2499.921	28.31	14.19	27.75	14.10	34.88	63.19	49.07	74.00	54.00	-10.81	-4.93

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	2389.487	27.46	14.04	27.49	14.05	34.62	62.11	48.67	74.00	54.00	-11.89	-5.33
CH High	2483.526	28.25	14.25	27.99	14.17	34.84	63.09	49.09	74.00	54.00	-10.91	-4.91

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	2389.487	27.22	14.09	27.89	14.12	34.62	62.51	48.74	74.00	54.00	-11.49	-5.26
CH High	2499.868	28.67	14.30	28.43	14.22	34.88	63.55	49.18	74.00	54.00	-10.45	-4.82

註:1. 量測不準確度: $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$)

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

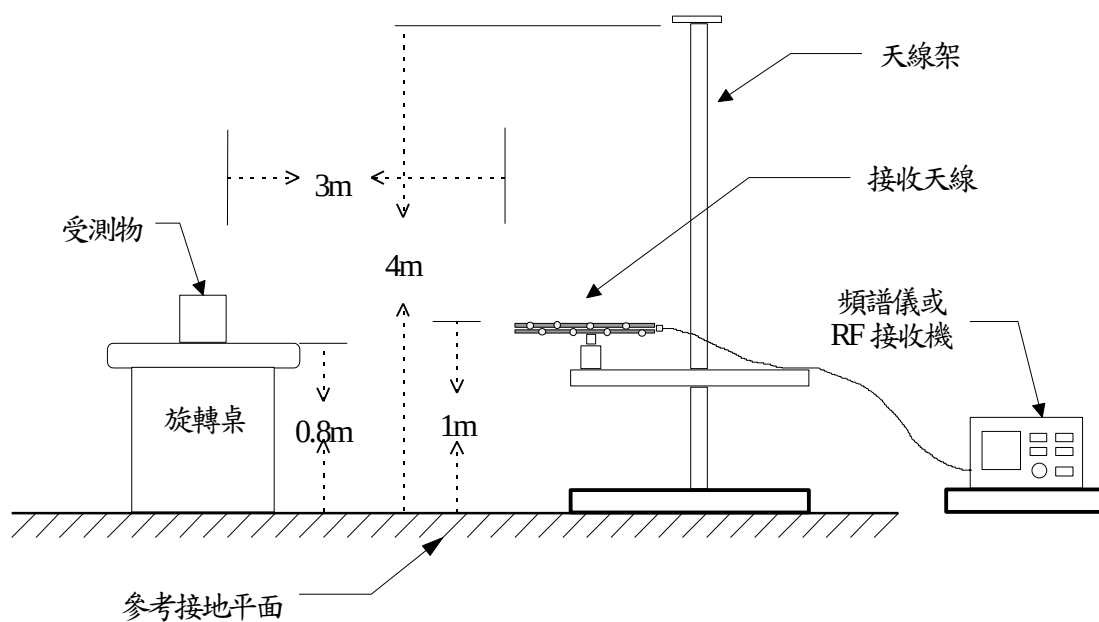
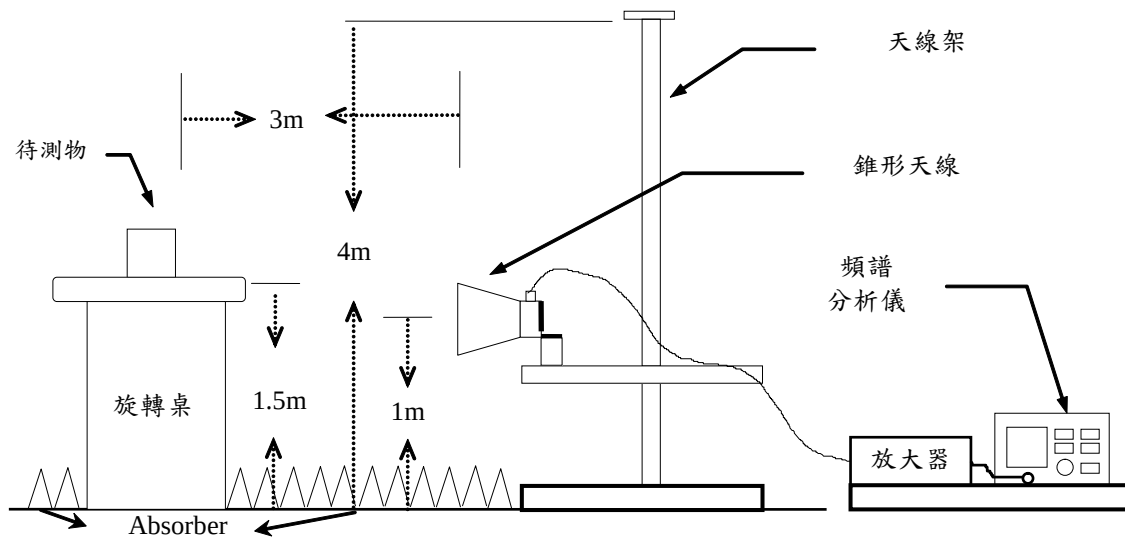


圖 4: 量測頻率高於1GHz之測試配置



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. 08, 2020

環境溫度: 22°C

環境濕度: 62%

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	16.07	0.0032	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	製造者	型號	財產編號/序號	校驗日期	下次校驗日期
Spectrum Analyzer	R&S	FSV	13052017-001	06/12/2020	06/11/2021
Attenuator	WEINSCHEL	56-10	58772	04/24/2020	04/23/2021
Power Meter	Agilent	N1912A	13050625-001	10/08/2019	10/07/2020
Power Sensor	Agilent	N1922A	13053523-001	10/08/2019	10/07/2020
EMI Receiver	R&S	ESCI	13054423-001	12/24/2019	12/25/2020
Spectrum Analyzer	R&S	FSU46	13040904-001	05/28/2020	05/27/2021
Horn Antenna	EMCO	3117	13059211-004	04/21/2020	04/20/2021
Horn Antenna	EMCO	3116	13059202-001	11/15/2019	11/14/2020
PRE-Amplifier	Agilent	8449B	13040709-001	12/31/2019	12/30/2020
PRE-Amplifier	Agilent	8447D	13040715-002	04/22/2020	04/21/2021
BiLog Antenna	ETC	MCTD 2786	BL19J04024	01/14/2020	01/13/2021