

低功率射頻器材試驗報告



申請廠商 台灣愛普生科技股份有限公司
110臺北市信義區松仁路100號15樓
製造廠商 Seiko Epson Corporation
產品名稱 Intelligent Controller
廠牌 EPSON
型號 BO-IC400, BO-IC400N
型號差異 市場區隔
報告號碼 E2/2020/50104-01
試驗件收樣日期 此報告僅增加系列型號，故無試驗件收樣日期。
試驗受理日期 民國111年01月11日
試驗執行日期 此報告僅增加系列型號，故無試驗執行日期。
報告發行日期 民國111年02月21日

Approved By: _____

謝裕豐

謝裕豐

待測裝置已於台灣檢驗科技股份有限公司射頻實驗中心，依據國家通訊傳播委員會於中華民國一百零九年七月頒佈之低功率射頻器材技術規範 LP0002 測試。

台灣檢驗科技股份有限公司根據此條文規範項目測試，測試各項數據皆能符合此規範規定之限度值。

報告中所描述之測試結果和待測設備的架構組合，均根據實際量測情況作詳實的記錄，且本測試報告僅對上述待測樣品負責。

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
E2/2020/50104-01	00	增列型號(BO-IC400N)與相關聲明，並更新相關法規聲明	民國 111 年 01 月 26 日	張嘉芳	-
E2/2020/50104-01	01	修正產品描述呈現方式	民國 111 年 02 月 21 日	張嘉芳	*

Note:

- 1、標註「*」為報告尚未正式取證前，因認證機構意見修改之版本。
- 2、Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received and are assessed as identical in hardware and firmware to each other.
- 3、電源線傳導干擾及 Fully System 測試模式在各個無線功能全開下進行測試，經評估為最差模式。
- 4、測試報告 E2/2020/50103 之電源線傳導干擾及 Fully system 場強輻射測試數據，沿用於此報告中。
- 5、本測試報告完全沿用原測試報告 E2/2020/50104 之測試數據，此次系列申請除了新增系列型號 BO-IC400N，此變更不影響 RF 發射功能，因此評估不需進行輸出功率是否於 ± 2 dB 內之量測。其餘主要設計、技術規格與射頻性能均無變動，詳情請參閱系列差異說明書，特此說明。

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1 測試實驗室資料:

1.1 認可登錄資訊:

實驗室認可登錄： 中華民國實驗室認證體系

認可編號： TAF 3702

認證有效期間： 110年06月14日起至113年06月13日止

實驗室名稱： 台灣檢驗科技股份有限公司射頻實驗中心

實驗室地址： 新北市新北產業園區五工路134號

電話： 886-2-22993939

傳真： 886-2-22982698

1.2 實驗室場地資訊

測試場地	測試場地編號		
	SAC 1	SAC 3	Conduction 1
新北市新北產業園區五工路 134 號	Conducted 1	Conducted 2	Conducted 3
	Conducted 4	Conducted 5	Conducted 6
	SAC C	SAC D	SAC G
桃園市龜山區(華亞科技園區)科技一路 2 號	Conduction C	Conducted A	Conducted B
	Conducted C	Conducted D	Conducted E
	Conducted F	Conducted G	
註: 測試場地編號記錄於每項測試之儀器清單, 用以表示測試場地地址。			

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2 實驗室量測不確定度

量測項目	量測不確定度			
	(擴充不確定度)			
傳導干擾量測	電源線	0.15-30MHz	2.34	dB
輻射干擾量測 (3m 測距)	水平極化	9kHz - 30MHz	2.57	dB
		30-1000MHz	4.37	dB
		1-18GHz	4.45	dB
		18-40GHz	4.24	dB
	垂直極化	9kHz - 30MHz	2.57	dB
		30-1000MHz	4.85	dB
		1-18GHz	4.45	dB
		18-40GHz	4.24	dB
頻率誤差量測			1.53	Hz
輸出功率	傳導方式		1	dB
有效輻射功率 (輻射方式)	水平極化	30-1000MHz	2.03	dB
		1-40GHz	3	dB
	垂直極化	30-1000MHz	2.35	dB
		1-40GHz	3	dB
功率頻譜密度	傳導方式		1.62	dB
鄰頻道功率量測 (輻射方式)	水平極化	30-1000MHz	2.03	dB
	垂直極化	30-1000MHz	2.35	dB
Transmitter Spurious Emission		33GHz-50GHz	3.8	dB
		50GHz-60GHz	4.67	dB
		60GHz-90GHz	4.81	dB
		90GHz-140GHz	4.57	dB
		140GHz-200GHz	5.42	dB

附註: 1. K=2 即代表測試結果具有95%的量測可信度。

2. 本報告中的符合性判定僅依據試驗結果，不考慮其試驗結果的量測不確定度。

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3 一般資料

3.1 產品描述

產品名稱	Intelligent Controller	
產品型號	BO-IC400, BO-IC400N	
型號差異	市場區隔	
廠牌	EPSON	
Hardware Version	DVT	
Software Version	Android 9	
使用電源	3.85Vdc from Rechargeable Li-ion polymer Battery or 5V from AC/DC Adapter	
	Battery:	Model No.: EAR1B Supplier: ShenZhen KAYO Battery Co., Ltd.

3.2 射頻特性

Radio Technology:	BLE
Frequency Range:	2402 – 2480MHz
Channel number:	40 channels
Modulation type:	BT dual mode LE (GFSK)
Transmit Power:	BLE 1M: 6.40 dBm (Peak) BLE 2M: 6.73 dBm (Peak)

3.3 天線資訊

Antenna Type	Brand	Antenna Model No.	Freq. (MHz)	Peak Antenna Gain (dBi)
PIFA	Kuang Ho Technology CO., LTD	K1606-00028F1BS1	2402 – 2480	0.2

Note:

1. Antenna information is provided by the applicant.

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3.4 配件資訊

以下配件及電源供應方式經申請者切結，由實驗室或申請者提供併同檢驗。

是否附賣		實驗室 提供	申請者 提供	配件	廠牌	型號	備註
Yes	No						
☒	☐	☐	☒	USB Cable	HOTRON	D0017100R2AHR	N/A
☐	☒	☐	☒	Adapter	APD	WB-10E05R	5VDC
☐	☒	☒	☐	Headphone	ASUS	ZenEar	N/A
☐	☒	☒	☐	Micro SD Card	Transcend	8GB	N/A
☐	☒	☒	☐	USB Cable	I Max	USB-C1200	N/A

3.5 成套銷售

此裝置不適用 LP0002 3.9 成套銷售規範。

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4 測試結果

本測試報告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(LP0002, 109.7.1 版本)如無國家標準可適用者，得依美國 EIA、IEEE ANSI 檢驗法檢驗，及美國 FCC 47 CFR Part 2 有關檢驗規定及參考 ANSI C63.10:2013、FCC CFR 47 15.247 檢驗法。

測試項目		適用規範	測試結果
場強輻 射量測	TX	低功率射頻器材技術規範 3.5 & 3.6 節	符合
	RX		
	Fully System		
電源線傳導干擾		低功率射頻器材技術規範 3.3 節	符合
天線增益要求		低功率射頻器材技術規範 4.10.1.3 (1) 節	符合
發射頻寬		低功率射頻器材技術規範 4.10.1.6(2) (A) 節	符合
輸出峰值功率		低功率射頻器材技術規範 4.10.1.2(1) (C) 節	符合
開放頻帶邊緣發射		低功率射頻器材技術規範 4.10.1.5 節	符合
功率密度		低功率射頻器材技術規範 4.10.1.6(2) (B) 節	符合

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5 測試模式

RADIATED EMISSION TEST (BELOW 1 GHz)				
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
Bluetooth LE	0 to 39	20	GFSK	1
Bluetooth LE	0 to 39	20	GFSK	2
Fully System				
RADIATED EMISSION TEST (ABOVE 1 GHz)				
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
Bluetooth LE	0 to 39	0,20,39	GFSK	1
Bluetooth LE	0 to 39	0,20,39	GFSK	2

ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST				
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
Bluetooth LE	0 to 39	0,20,39	GFSK	1
Bluetooth LE	0 to 39	0,20,39	GFSK	2

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6 適用規範

禁用頻帶限制規定

依據NCC低功率射頻器材技術規範3.5節要求，任何低功率射頻器材主波皆不得使用下表所列各頻帶內頻率；低功率射頻器材落於下表所列頻帶內混附發射，其電場強度必須符合第3.6節的限制規定。

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

依據NCC低功率射頻器材技術規範3.9節要求，收、發信機為成套銷售者，收、發信機應一併送審或提供經型式認證合格對應收、發信機送審資料；送信機輻射電場強度不得超過第3.6節發射規定，且不得接收、解調第3.5節所列頻率。

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7 測試週邊

7.1 待測物與測試週邊配置圖

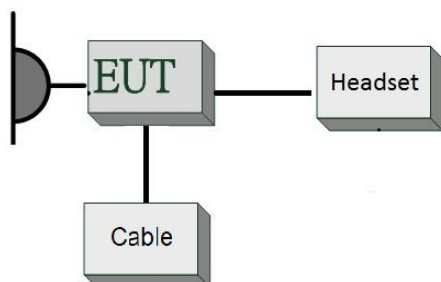
Radiated Emission



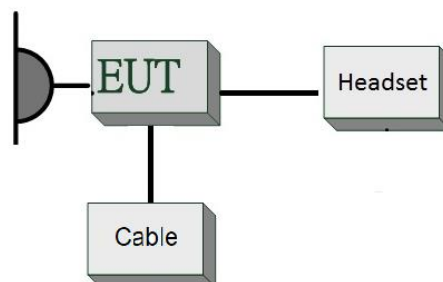
Conducted (Antenna Port)



Conduction (Fully System Mode 1 & 2)



Radiated Emission (Fully System)



7.2 測試週邊描述

編號	產品別	商標	型號	序號	信號線線長(米)	電源線長(米)
1	Bluetooth Test Software	N/A	N/A	N/A	N/A	N/A
2	Adapter	ADP	WB-10E05R	N/A	Un-shielding	Un-shielding
3	Headphone	ASUS	ZenEar	AHSU001	N/A	N/A
4	Notebook	Lenovo	L440	P0000367	Un-shielding	Un-shielding
5	USB Cable	I MAX	USB-C1200	USB to Type-c	N/A	N/A
6	Micro SD Card	Transcend	8GB	N/A	N/A	N/A

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8 量測儀器

8.1 電源線傳導量測

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
LISN	SCHWARZBECK Mess-Elektronik	NSLK8127	974	03/25/2020	03/24/2021
EMI Test Receiver	R&S	ESCI	101342	04/28/2020	04/27/2021

8.2 天線端傳導量測

SGS Conducted Room					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2496A	1326001	08/05/2019	08/04/2020
Power Sensor	Anritsu	MA2411B	1315048	08/05/2019	08/04/2020
Power Sensor	Anritsu	MA2411B	1315049	08/05/2019	08/04/2020
Spectrum Analyzer	KEYSIGHT	N9010B	MY59070196	03/22/2020	03/21/2021
DC Block	PASTERNAK	PE8210	RF256	11/20/2019	11/19/2020

8.3 輻射場強量測

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	Schwarzbeck	BBHA9170	185	08/07/2019	08/06/2020
Horn Antenna	Schwarzbeck	BBHA9120D	1187	01/10/2020	01/09/2021
EMI Test Receiver	R&S	ESU 40	100363	04/29/2020	04/28/2021
Pre-Amplifier	EMC Instruments	EMC0011830	980199	11/20/2019	11/19/2020
Pre-Amplifier	EMC Instruments	EMC184045B	980135	11/20/2019	11/19/2020
Attenuator	Woken	WATT-218FS-10	RF25	11/20/2019	11/19/2020
Highpass Filter	Micro Tronics	BRM50701-01	G008	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17388/4	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	11/20/2019	11/19/2020

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8.4 輻射場強量測 For Fully System

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Broadband Antenna	TESEQ	CBL 6112D	35240	09/09/2019	09/08/2020
EMI Test Receiver	R&S	ESU 40	100363	04/29/2020	04/28/2021
Pre-Amplifier	EMC Instruments	EMC330	980096	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17388/4	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	11/20/2019	11/19/2020

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9 電源線傳導干擾量測

9.1 適用標準

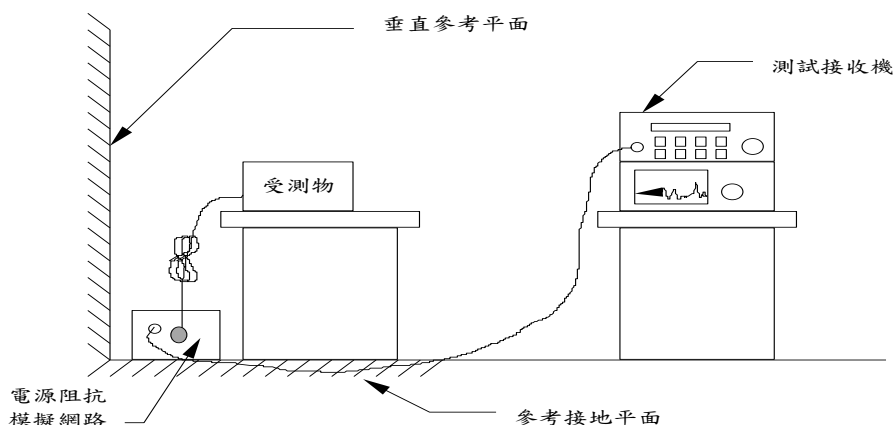
依據NCC低功率射頻器材技術規範3.3節，以市電為電源低功率射頻器材，其傳導回電源線上頻率自150 kHz~30 百萬赫(MHz) 射頻電壓(在電源端子每一電源線對接地點)應小於或等於下表所列限制值。測量時應經過50 微亨利(uH)及50 歐姆(Ω)電源線阻抗穩定網路。頻率重疊處，以較低限制值為準。

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

9.2 測試方法

將待測物置於0.8米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由 0.15MHz 至 30MHz 之間電源線傳導放射強度的峰值量側(Peak)並提供掃描圖，Mark 最大的六個頻率點進行準峰值量測(QP),如果準峰值QP結果值已低於AV限制值時將不再進行AV值的量測。

9.3 測試配置



9.4 干擾值計算

電源傳導干擾電壓計算公式 = 儀器讀值(QP/AV) + 校正因子 (饋線損失 + 電源阻抗模擬網路損失)

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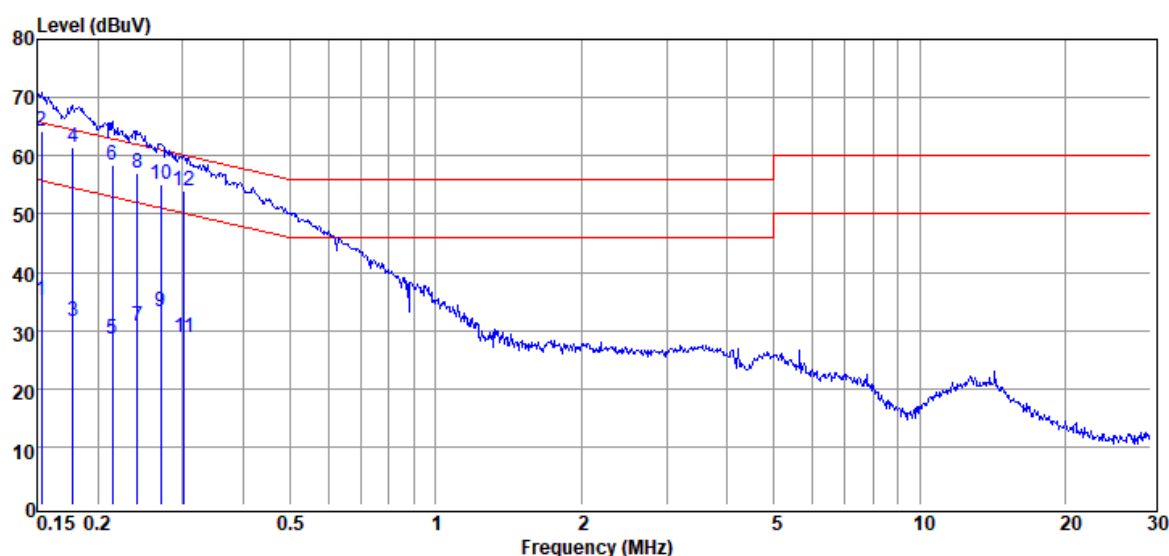
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9.5 傳導干擾量測結果:

電源線傳導干擾及 Fully System 測試模式在各個無線功能全開下進行測試，經評估為最差模式。

Report Number :E2/2020/50103 Test Site : Conduction Room C
Test Mode :System Test Date :2020-07-02
Power :110V/60Hz Temp./Humi. :23.6/67
Probe :L1 Engineer :Ashton
Note: : Mode 1 (底部USB Type-C 接頭充電)



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
0.15	Average	24.80	10.22	35.02	55.82	-20.80
0.15	QP	54.10	10.22	64.32	65.82	-1.50
0.18	Average	21.40	10.22	31.62	54.59	-22.97
0.18	QP	51.20	10.22	61.42	64.59	-3.17
0.22	Average	18.20	10.22	28.42	53.01	-24.59
0.22	QP	48.20	10.22	58.42	63.01	-4.59
0.24	Average	20.40	10.22	30.62	52.04	-21.42
0.24	QP	46.80	10.22	57.02	62.04	-5.02
0.27	Average	22.90	10.22	33.12	51.12	-18.00
0.27	QP	44.90	10.22	55.12	61.12	-6.00
0.30	Average	18.50	10.22	28.72	50.19	-21.47
0.30	QP	43.70	10.22	53.92	60.19	-6.27

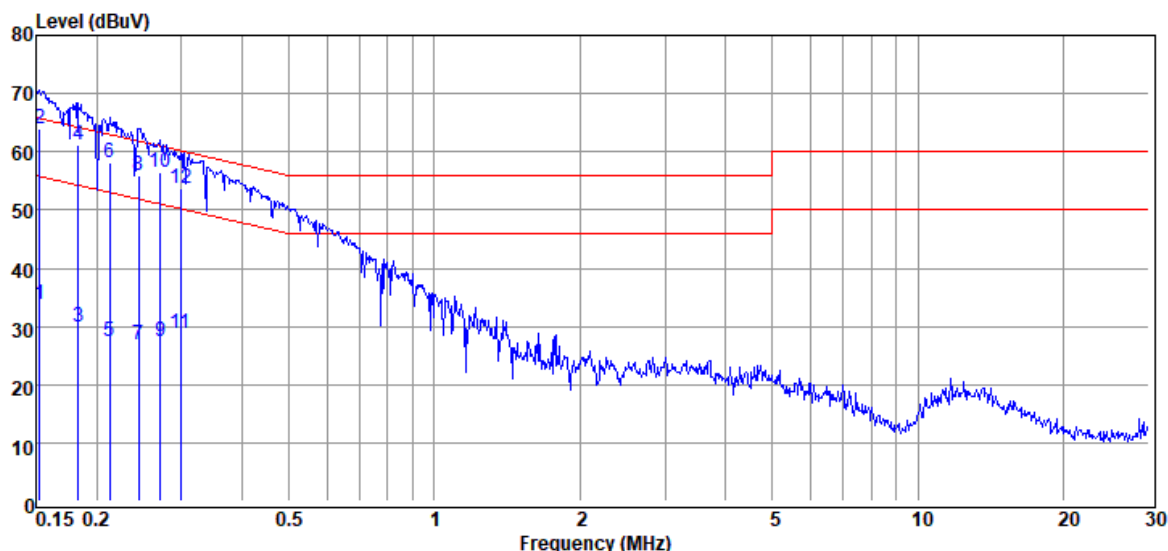
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Report Number : E2/2020/50103
Test Mode : System
Power : 110V/60Hz
Probe : N
Note: : Mode 1

Test Site : Conduction Room C
Test Date : 2020-07-02
Temp./Humi. : 23.6/67
Engineer : Ashton



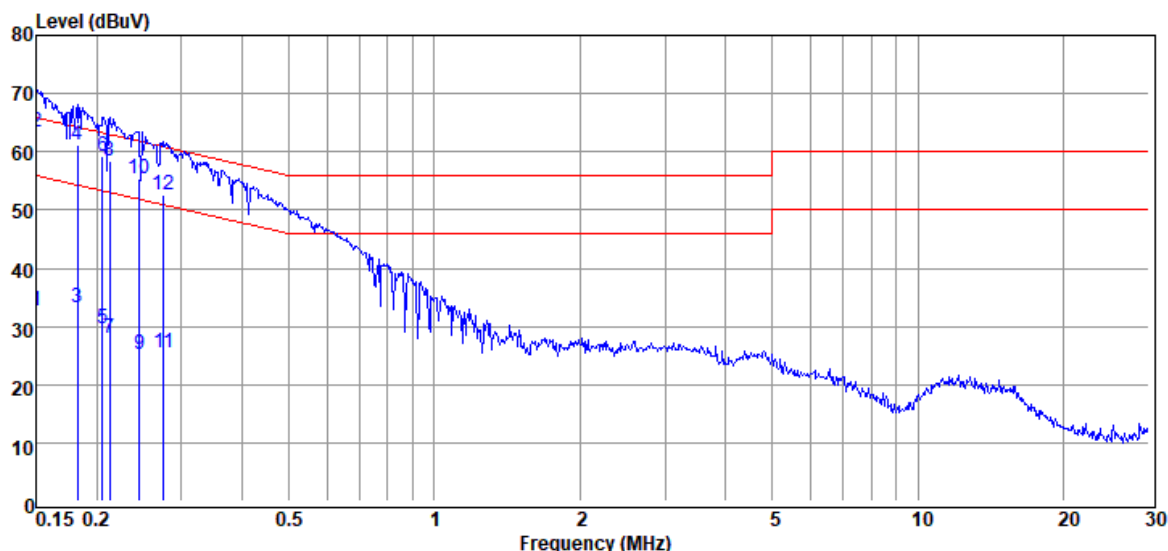
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
0.15	Average	23.50	10.21	33.71	55.87	-22.16
0.15	QP	53.80	10.21	64.01	65.87	-1.86
0.18	Average	19.80	10.21	30.01	54.33	-24.32
0.18	QP	50.90	10.21	61.11	64.33	-3.22
0.21	Average	17.30	10.21	27.51	53.10	-25.59
0.21	QP	47.80	10.21	58.01	63.10	-5.09
0.24	Average	16.60	10.21	26.81	51.95	-25.14
0.24	QP	45.60	10.21	55.81	61.95	-6.14
0.27	Average	17.20	10.21	27.41	51.07	-23.66
0.27	QP	46.30	10.21	56.51	61.07	-4.56
0.30	Average	18.60	10.22	28.82	50.28	-21.46
0.30	QP	43.40	10.22	53.62	60.28	-6.66

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Report Number : E2/2020/50103 Test Site : Conduction Room C
Test Mode : System Test Date : 2020-07-02
Power : 110V/60Hz Temp./Humi. : 24.0/66
Probe : L1 Engineer : Ashton
Note : Mode 2 (側面護蓋USB Type-C 接頭充電)



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
0.15	Average	22.40	10.22	32.62	56.00	-23.38
0.15	QP	53.30	10.22	63.52	66.00	-2.48
0.18	Average	22.90	10.22	33.12	54.37	-21.25
0.18	QP	51.00	10.22	61.22	64.37	-3.15
0.21	Average	19.50	10.22	29.72	53.36	-23.64
0.21	QP	48.90	10.22	59.12	63.36	-4.24
0.22	Average	17.70	10.22	27.92	53.10	-25.18
0.22	QP	48.10	10.22	58.32	63.10	-4.78
0.25	Average	14.90	10.22	25.12	51.91	-26.79
0.25	QP	45.10	10.22	55.32	61.91	-6.59
0.28	Average	15.20	10.22	25.42	50.94	-25.52
0.28	QP	42.50	10.22	52.72	60.94	-8.22

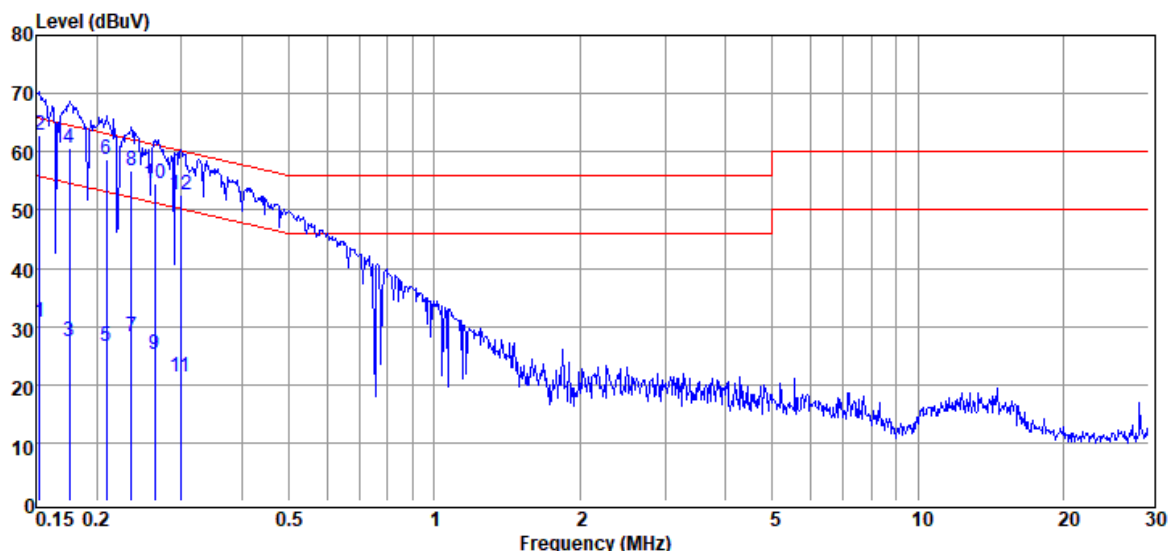
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Report Number :E2/2020/50103
Test Mode :System
Power :110V/60Hz
Probe :N
Note: : Mode 2

Test Site : Conduction Room C
Test Date :2020-07-02
Temp./Humi. :24.0/66
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
0.15	Average	20.60	10.21	30.81	55.87	-25.06
0.15	QP	52.70	10.21	62.91	65.87	-2.96
0.18	Average	17.30	10.21	27.51	54.68	-27.17
0.18	QP	50.30	10.21	60.51	64.68	-4.17
0.21	Average	16.40	10.21	26.61	53.23	-26.62
0.21	QP	48.40	10.21	58.61	63.23	-4.62
0.24	Average	17.90	10.21	28.11	52.22	-24.11
0.24	QP	46.40	10.21	56.61	62.22	-5.61
0.26	Average	14.90	10.21	25.11	51.29	-26.18
0.26	QP	44.30	10.21	54.51	61.29	-6.78
0.30	Average	11.10	10.22	21.32	50.28	-28.96
0.30	QP	42.30	10.22	52.52	60.28	-7.76

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10 輸出峰值功率量測

10.1 適用標準

依據 NCC 低功率射頻器材技術規範 4.10.1.2(1) (A)(C)之規定，操作於 2400-2483.5MHz 與 5725-5850MHz 之所有數位調變技術系統：1 Watt(含)以下。

依據NCC低功率射頻器材技術規範4.10.1.3之規定，用於非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，應符合下列情現之一：

依據NCC低功率射頻器材技術規範4.10.1.3 (1)之規定，操作於2400-2483.5MHz 者，僅用於固定式點對點操作，其發射天線之方向性增益超過 6dBi，每超過3dB應降低1dB之峰值輸出功率。

依據NCC低功率射頻器材技術規範4.10.1.3 (2)之規定，操作於5725-5850MHz 者，其發射天線之方向性增益超過 6dBi，無須降低峰值輸出功率。

依據NCC低功率射頻器材技術規範4.10.1.3 (3)之規定，用於點對多點操作時，如其發射天線之方向性增益超過 6dBi，應依所超過之dB數等量降低最大傳導輸出功率。

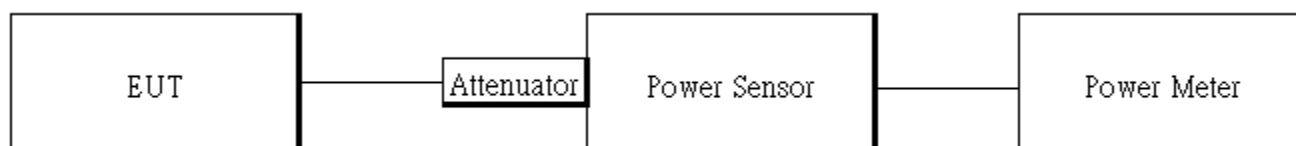
註：固定式點對點操作使用方式，並不包括使用點對多點之系統、全向性之應用以及發射相同資訊之共同安裝的多重發射機。展頻或數位調變之發射器需要專業安裝，該設備操作者或安裝者有責任確認該系統是限用於固定式、點對點之操作，隨機所附之使用手冊必須包含此訊息以告知使用者或安裝者須負之責任。

10.2 載波頻率工作週期量測

在進行功率測量前，應檢查每種模式的工作週期以補償工作週期校正因子 (Duty Factor)。

10.3 測試配置

10.3.1 輸出峰值量測

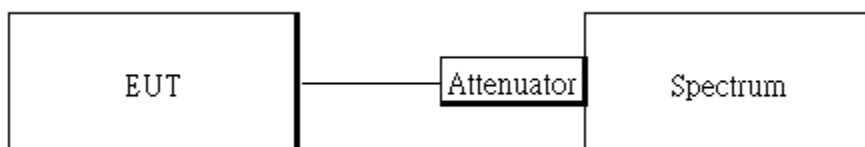


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10.3.2 載波頻率工作週期量測



10.4 量測方式

10.4.1 載波頻率工作週期儀器設定

Span = Zero, RBW = 8MHz, VBW = 8MHz, Detector = Peak

10.4.2 輸出功率量測

1. 將 EUT 置於發射模式。
2. 移除天線，使用 low loss cable 連接 EUT 的 antenna port 及 power meter。
3. 紀錄最大功率讀值。

10.5 量測結果

10.5.1 輸出功率

BLE (1M)

Frequency (MHz)	Reading Power (dBm)	Output Power (W)	Limit (W)
2402.00	5.74	0.00375	1
2442.00	5.81	0.00381	1
2480.00	6.40	0.00437	1
Cable loss	0.4 dB		

BLE (2M)

Frequency (MHz)	Reading Power (dBm)	Output Power (W)	Limit (W)
2402.00	6.73	0.00471	1
2442.00	6.07	0.00405	1
2480.00	6.02	0.00400	1
Cable loss	0.4 dB		

***Note:** 由 Power Meter 量測。

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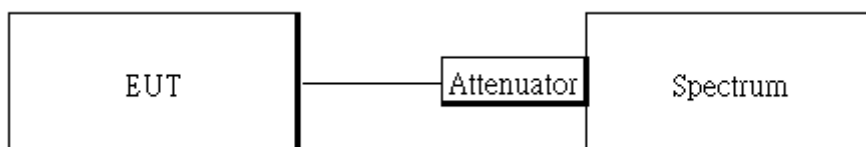
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11 發射頻寬要求

11.1 適用標準

對使用數位調變技術之低功率發射機，依據NCC低功率射頻器材技術規範4.10.1.6(2) (A)之規定，6dB之頻寬至少應有500kHz。

11.2 測試配置



11.3 測試方法

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set the spectrum analyzer as
RBW= 100 kHz ,
VBW = 3 X RBW,
Span= 2 to 5 times of the OBW,
Sweep=auto,
Detector = Peak, and Max hold for -6dB Bandwidth test.

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11.4 量測結果

BLE mode (1M)

頻率 (MHz)	頻寬讀值 (kHz)	限制值 (kHz)	結果
2402	681.6	> 500	PASS
2442	682.5	> 500	PASS
2480	681.8	> 500	PASS

BLE mode (2M)

頻率 (MHz)	頻寬讀值 (kHz)	限制值 (kHz)	結果
2402	1154	> 500	PASS
2442	1159	> 500	PASS
2480	1155	> 500	PASS

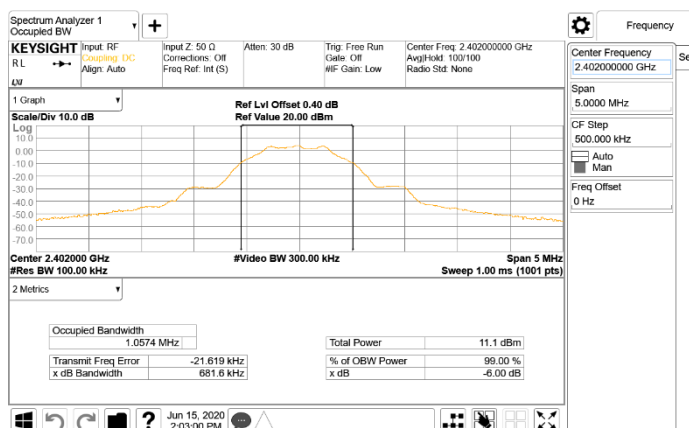
Refer next page for test plots

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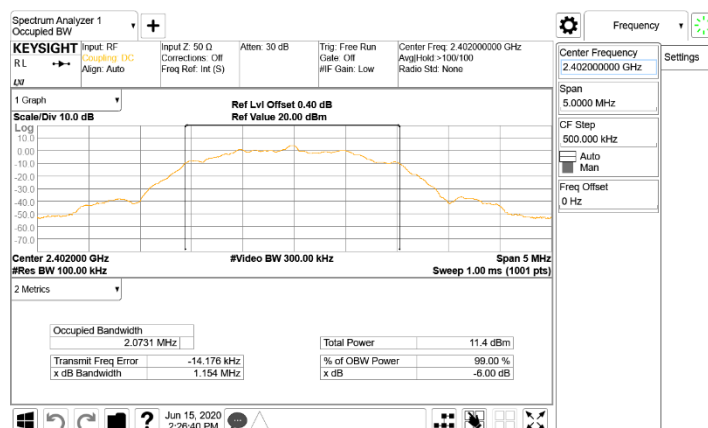
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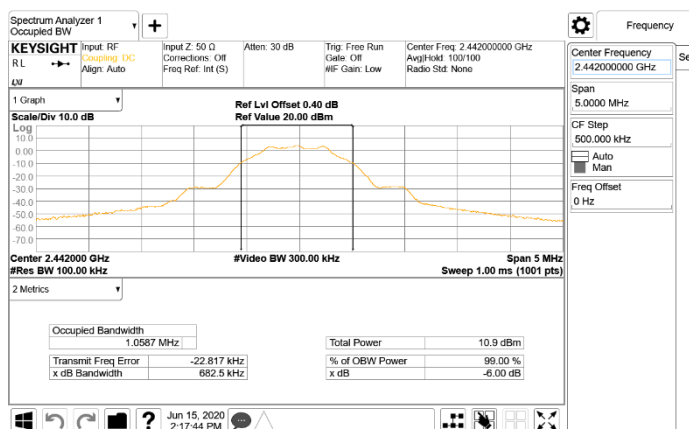
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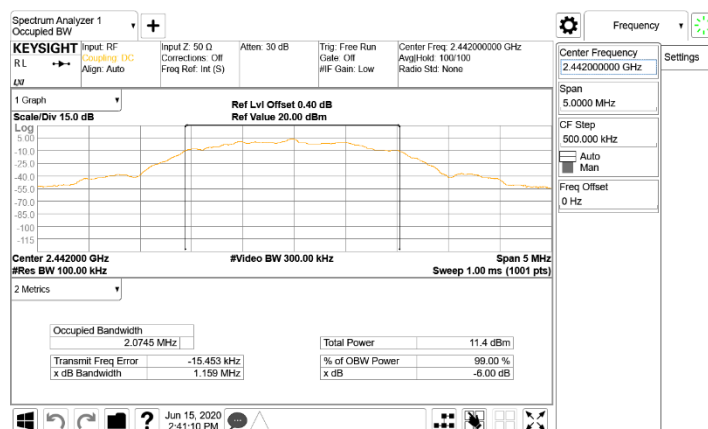
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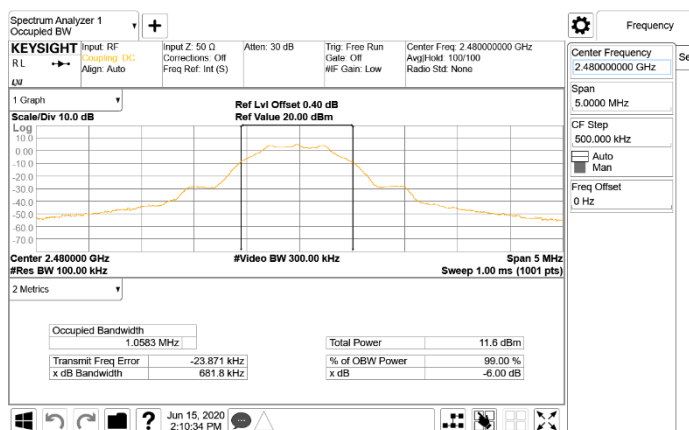
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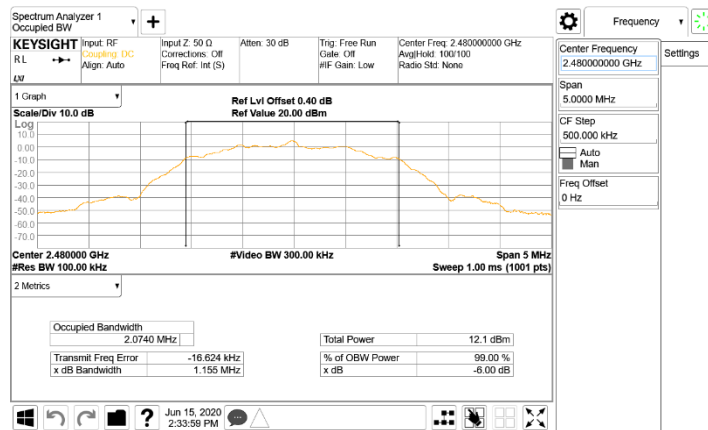
發射頻寬 6dB 之要求_BLE_2M_MidCH20-2442



發射頻寬 6dB 之要求_BLE_1M_HighCH39-2480



發射頻寬 6dB 之要求_BLE_2M_HighCH39-2480



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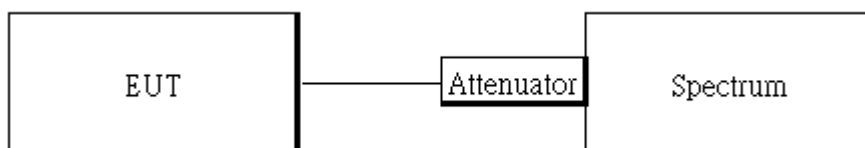
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12 帶外發射限制

12.1 適用標準

依據 NCC 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 100kHz 內，發射器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 100kHz 內的射頻功率，須衰減 20 分貝 (dB)，以射頻傳導或輻射方式測量。此外，落於第 3.5 節禁用頻段之輻射發射，應符合第 3.6 節之規定。

12.2 帶外發射測試配置



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12.3 量測方法

12.3.1 Reference Level of Emission Limit:

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 100kHz & VBW = 300 kHz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.

12.3.2 Conducted Band Edge:

1. To connect Antenna Port of EUT to Spectrum.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
6. Set DL as the limit = reading on marker of reference level measurement – 20dBm
7. Mark the highest readings of the emissions outside of 2400MHz~2483.5MHz.
8. Repeat above procedures until all default test channel (low and high) was complete.

12.3.3 Conducted Spurious Emission:

1. To connect Antenna Port of EUT to Spectrum.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Set RBW = 100 kHz & VBW=300 kHz, Detector =Peak, Sweep = Auto
4. Allow trace to fully stabilize.
5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Repeat above procedures until all default test channel measured were complete.

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12.4 帶外發射量測結果

Band Edge Limit (1M)

Frequency (MHz)	RF Power Density (dBm)	Bandedge Limit = PSD - 20dB
2402	4.22	-15.78
2442	4.11	-15.89
2480	4.84	-15.16

NOTE: cable loss as 0.4dB that offsets in the spectrum

NOTE: Refer to next page for plots.

Band Edge Limit (2M)

Frequency (MHz)	RF Power Density (dBm)	Bandedge Limit = PSD - 20dB
2402	4.15	-15.85
2442	4.12	-15.88
2480	4.84	-15.16

NOTE: cable loss as 0.4dB that offsets in the spectrum

NOTE: Refer to next page for plots.

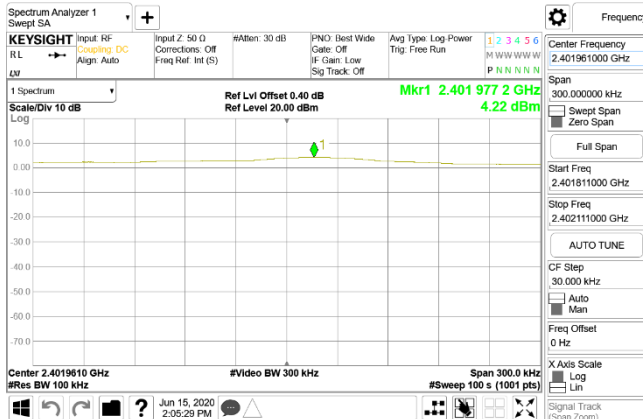
Refer next page for test plots

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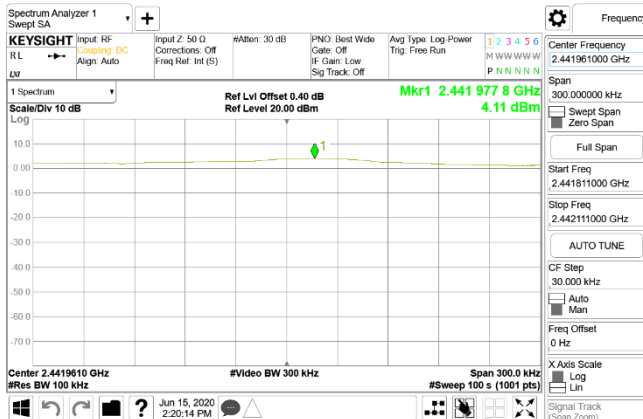
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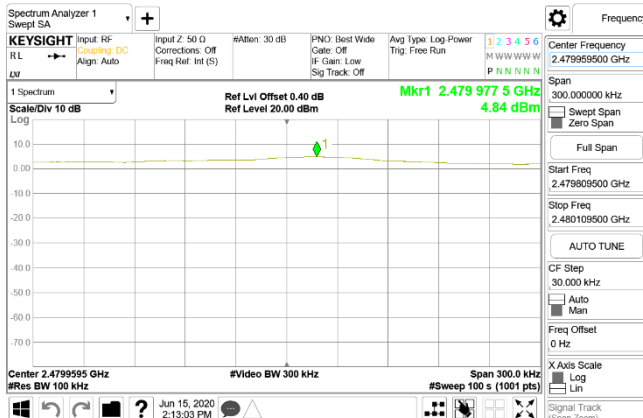
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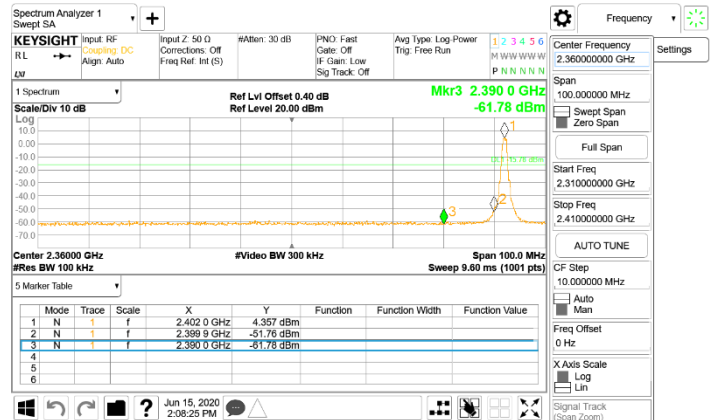
參考限制值_BLE_1M_MidCH20-2442



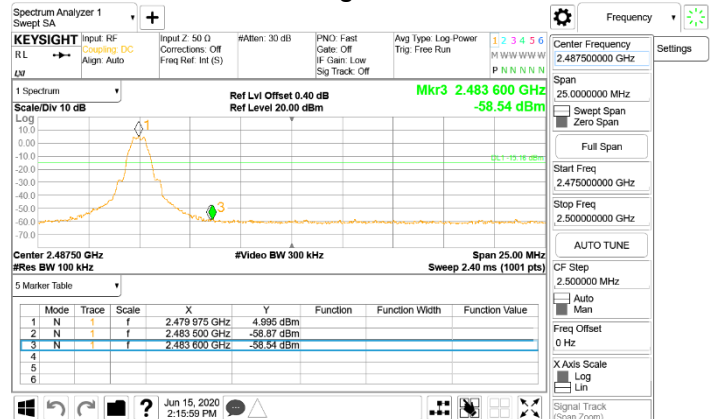
參考限制值_BLE_1M_HighCH39-2480



開放頻帶邊緣 100KHz 頻寬內之限制 _BLE_1M_LowCH00-2402



開放頻帶邊緣 100KHz 頻寬內之限制 _BLE_1M_HighCH39-2480

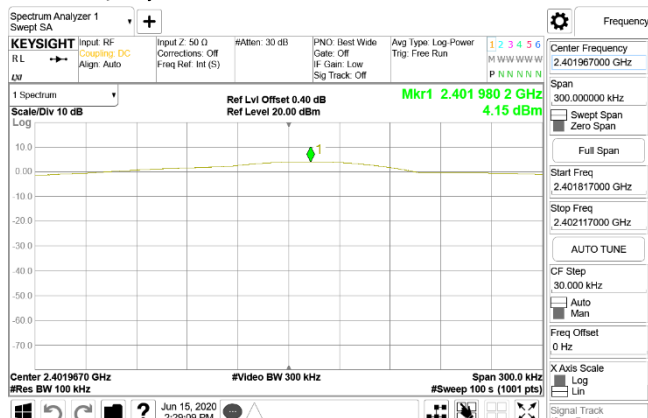


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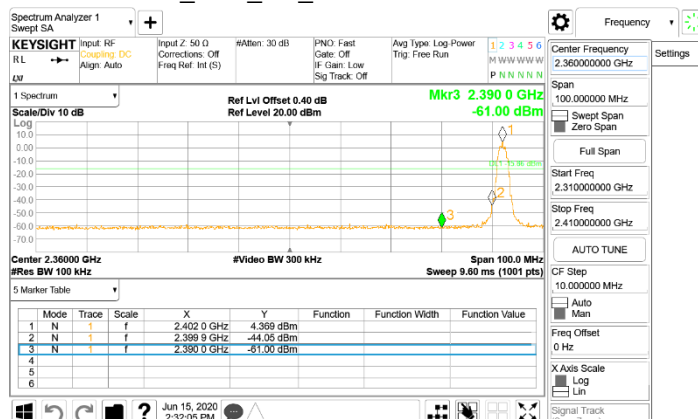
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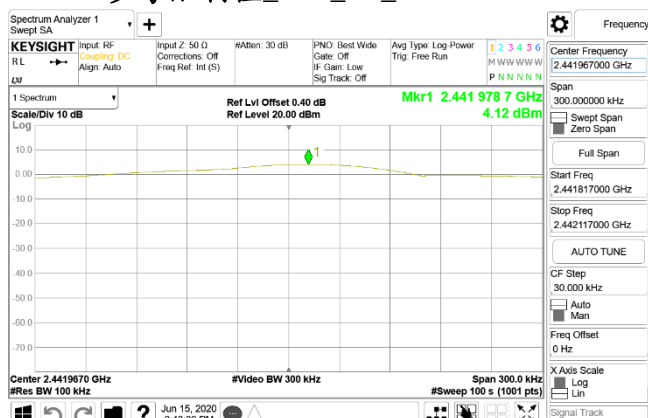
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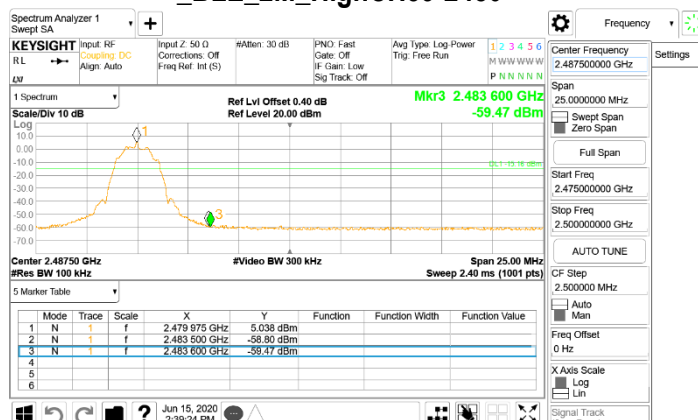
開放頻帶邊緣 100KHz 頻寬內之限制 _BLE_2M_LowCH00-2402



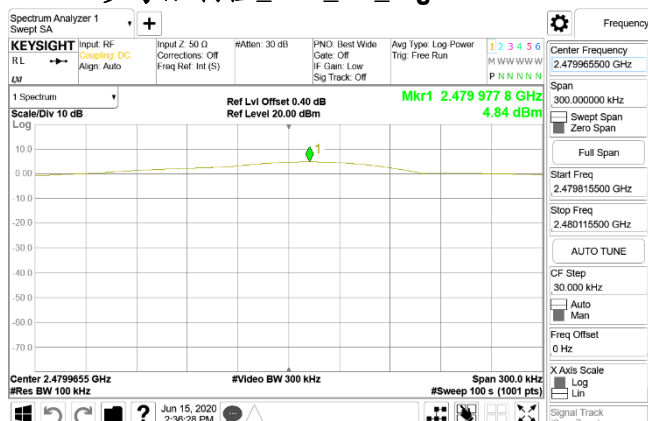
參考限制值_BLE_2M_MidCH20-2442



開放頻帶邊緣 100KHz 頻寬內之限制 _BLE_2M_HighCH39-2480



參考限制值_BLE_2M_HighCH39-2480



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13 場強輻射量測

13.1 適用標準

依據NCC低功率射頻器材技術規範3.6 之要求，低功率射頻器材其電場強度應小於或等於下表之限制值，且其不必要之發射皆不得大於主波發射強度，此外，落於3.5禁用頻段之輻射發射，應符合3.6之規定。

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

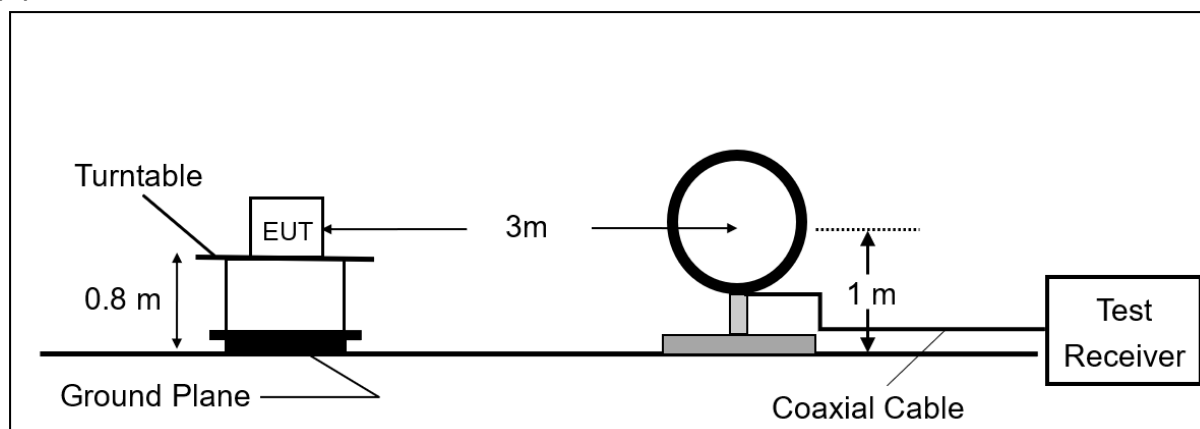
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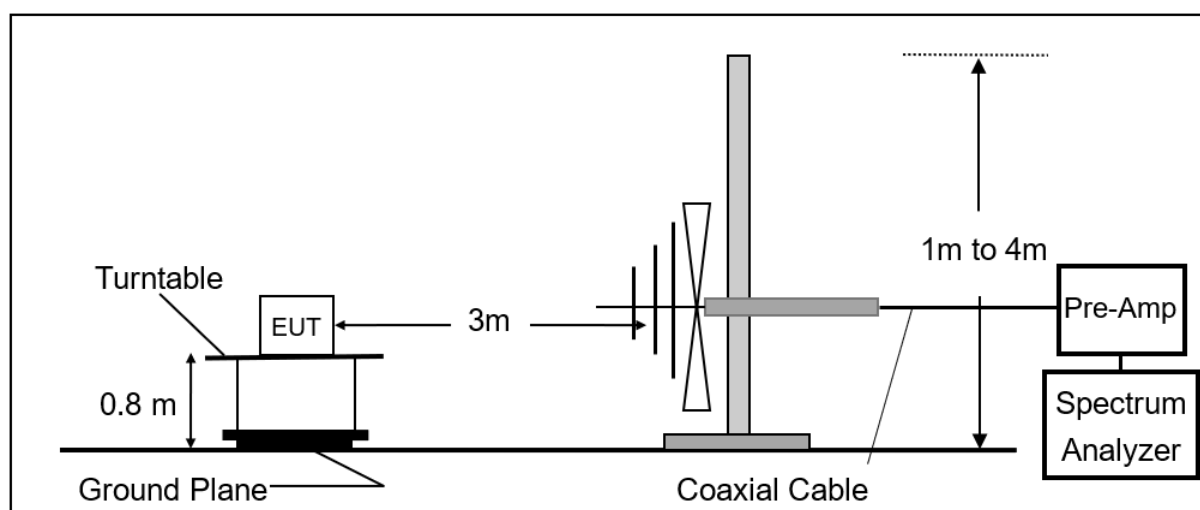
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13.2 輻射測試配置

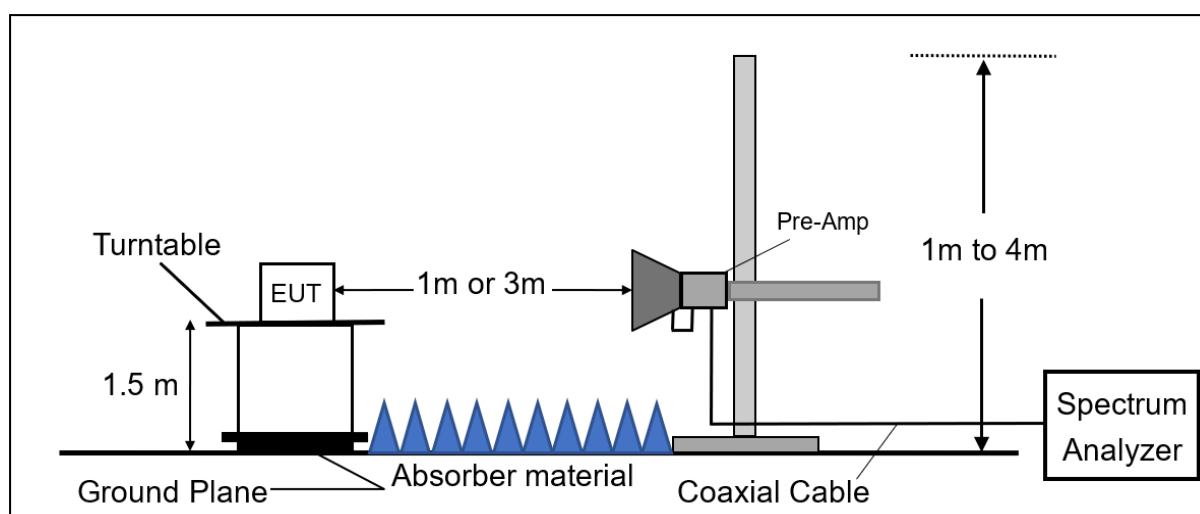
(A) 量測頻率低於 30MHz 以下測試配置



(B) 量測頻率 30MHz 至 1000MHz 測試配置



(C) 量測頻率 1000MHz 以上測試配置



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13.3 量測方法

將待測物置於非金屬桌面，測試頻率1GHz以下時，使用桌高0.8 米，1GHz以上時，使用桌高1.5米，使其在工作狀態，接收天線置於 3 米外相同的高度。待測物分別要垂直或水平放置，而且桌面要 360 度旋轉，另外接收天線也要從 1.0 米至 4.0 米升降變化，以找出最大的輻射電場強度，接收天線置於水平、垂直極向各執行測試一次。

以下為頻譜儀的設定：

頻率	RBW	VBW	Detector
9kHz~150kHz	300Hz	300Hz	Quasi-Peak
150kHz~30MHz	10kHz	10kHz	Quasi-Peak
30MHz~1GHz	100kHz	300kHz	Peak
30MHz~1GHz	120kHz	360kHz	Quasi-Peak
1GHz以上 Maximum Emission Measurements	1MHz	3MHz	Peak
1GHz以上 Duty Cycle ≥ 98% Average Emission Measurements	1MHz	10Hz	Peak
1GHz以上 Duty Cycle < 98% Average Emission Measurements	1MHz	1/T	Peak

13.4 場強計算

- Distance extrapolation = $40 \cdot \log (\text{Required Distance(m)} / \text{Test Distance(m)})$
- Emission level (dBμV/m) = $20 \log \text{Emission level } (\mu\text{V/m})$
- Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)
Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note:

9 kHz ~ 30MHz 之輻射量測皆低於限制值 20dB 以上，依據LP0002 6.13規定混附發射毋需記錄。

輻射量測僅放最差模式（30MHz 以上）。

依裝置使用模式比較 H、E1 和 E2 PLANE 測試值，附上最差模式數據。

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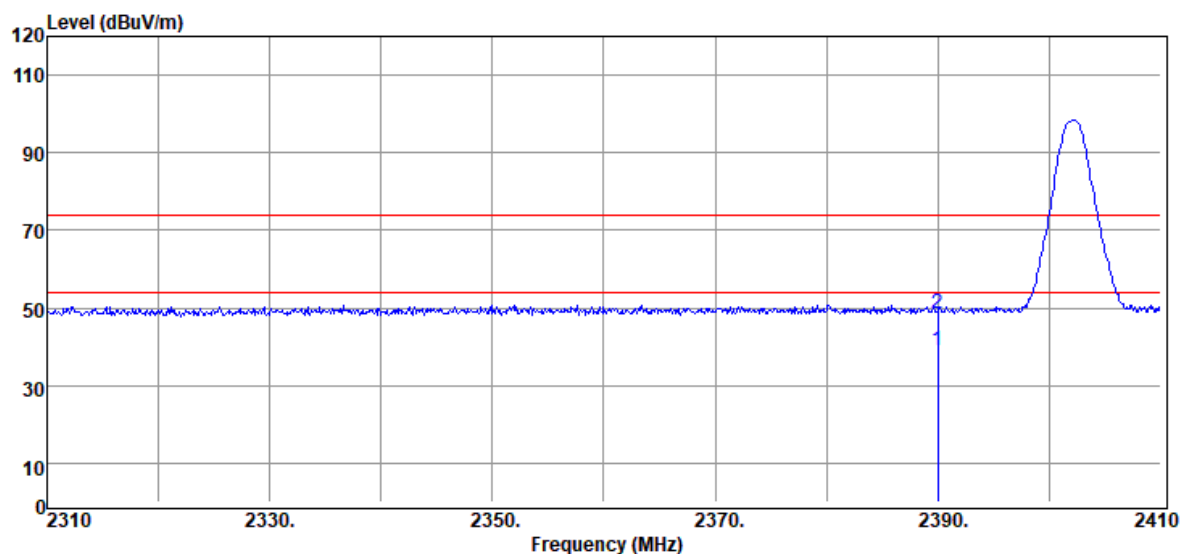
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13.5 禁用頻帶邊緣量測

BLE 1M

Report Number :E2/2020/50104
 Operation Mode :BLE 1M
 Test Frequency :2402 MHz
 Test Mode :BE CH LOW
 EUT Pol :E2 Plan

Test Date :2020-06-11
 Temp./Humi. :23.8/62
 Antenna Pol. :VERTICAL
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2390.00	Average	35.08	3.76	38.84	54.00	-15.16
2390.00	Peak	44.87	3.76	48.63	74.00	-25.37

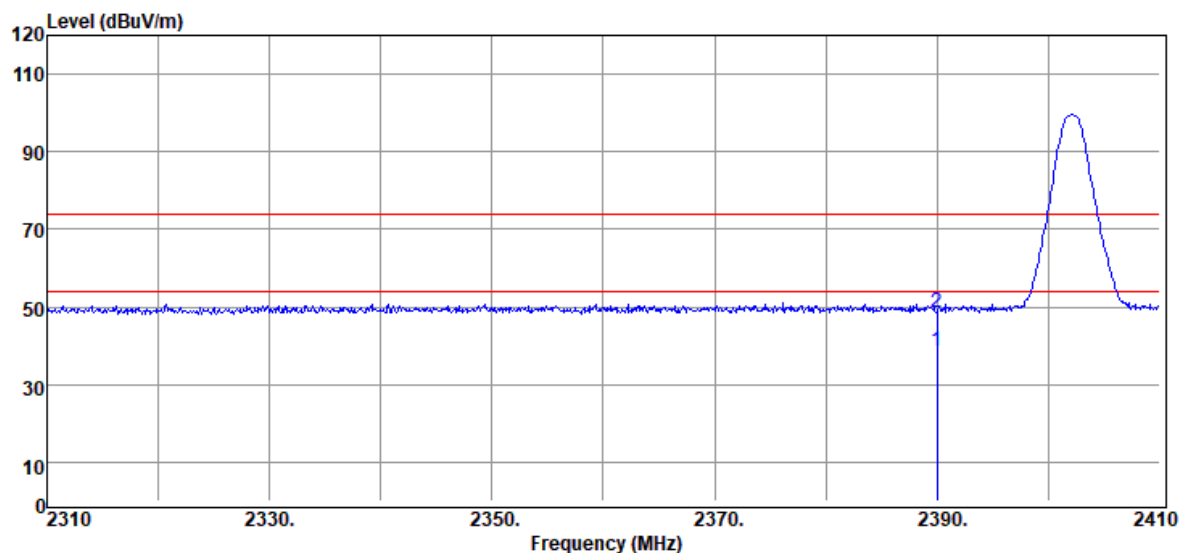
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2402 MHz
Test Mode :BE CH LOW
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2390.00	Average	35.02	3.76	38.78	54.00	-15.22
2390.00	Peak	44.96	3.76	48.72	74.00	-25.28

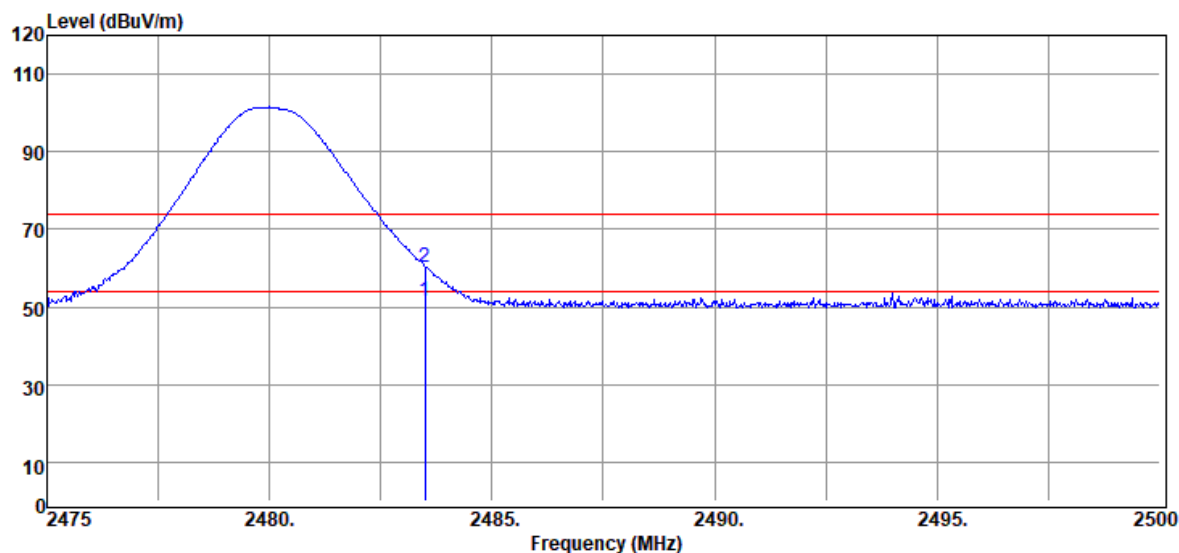
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2480 MHz
Test Mode :BE CH HIGH
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.50	Average	46.89	4.42	51.31	54.00	-2.69
2483.50	Peak	55.91	4.42	60.33	74.00	-13.67

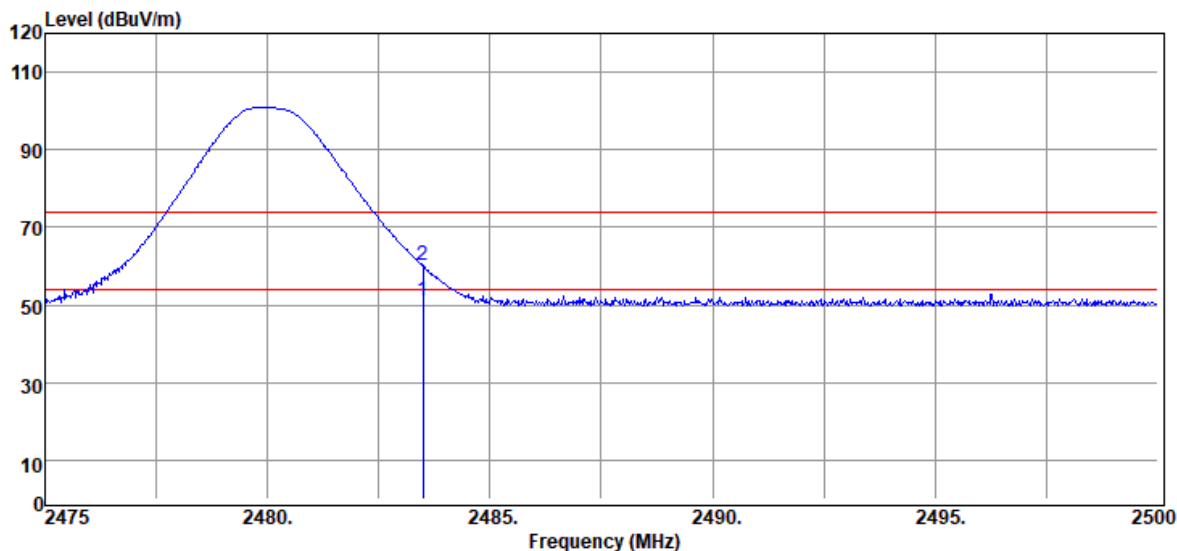
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2480 MHz
Test Mode :BE CH HIGH
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.50	Average	46.58	4.42	51.00	54.00	-3.00
2483.50	Peak	55.75	4.42	60.17	74.00	-13.83

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

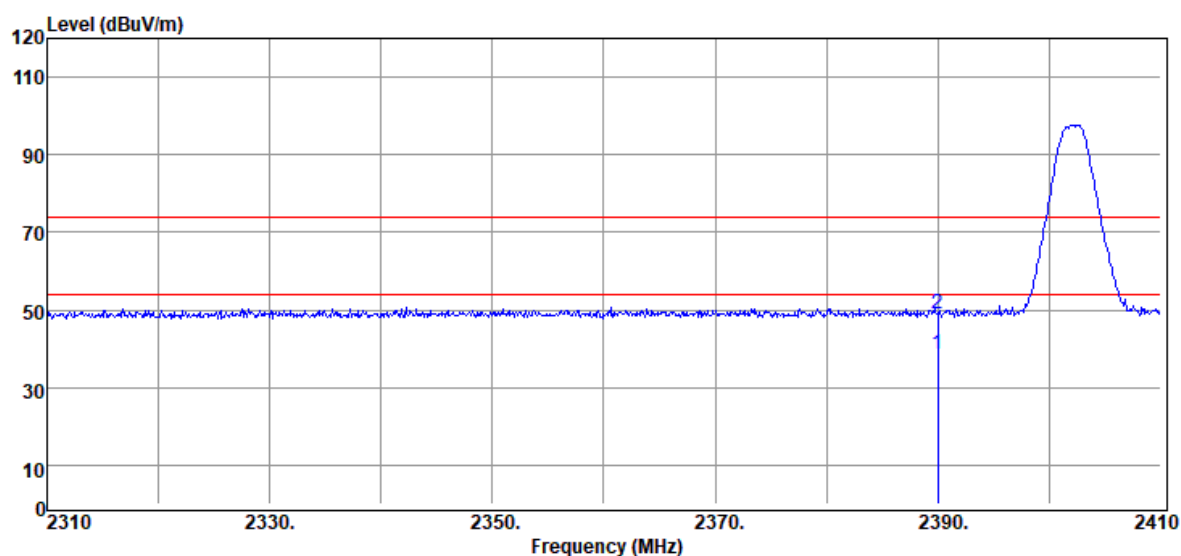
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BLE 2M

Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2402 MHz
Test Mode :BE CH LOW
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2390.00	Average	35.02	3.76	38.78	54.00	-15.22
2390.00	Peak	45.14	3.76	48.90	74.00	-25.10

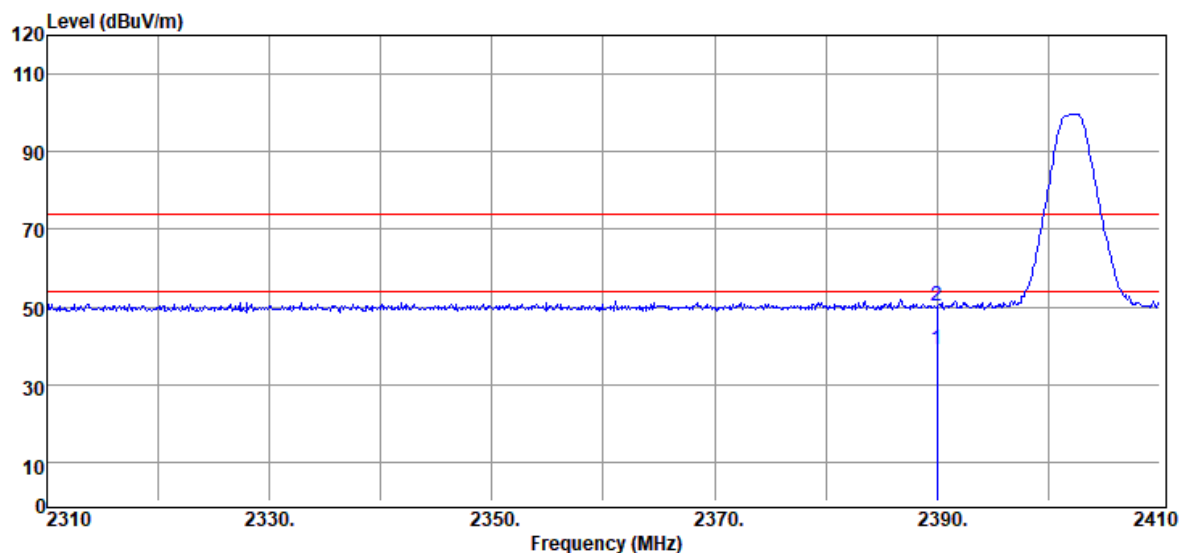
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2402 MHz
Test Mode :BE CH LOW
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2390.00	Average	35.07	3.76	38.83	54.00	-15.17
2390.00	Peak	46.62	3.76	50.38	74.00	-23.62

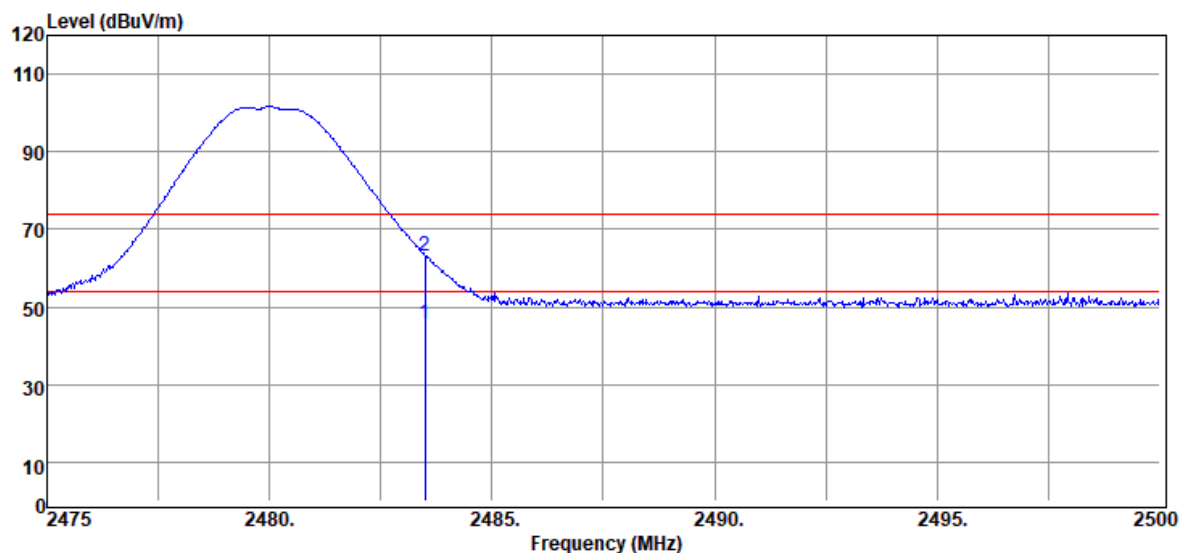
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2480 MHz
Test Mode :BE CH HIGH
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.50	Average	41.39	4.42	45.81	54.00	-8.19
2483.50	Peak	58.89	4.42	63.31	74.00	-10.69

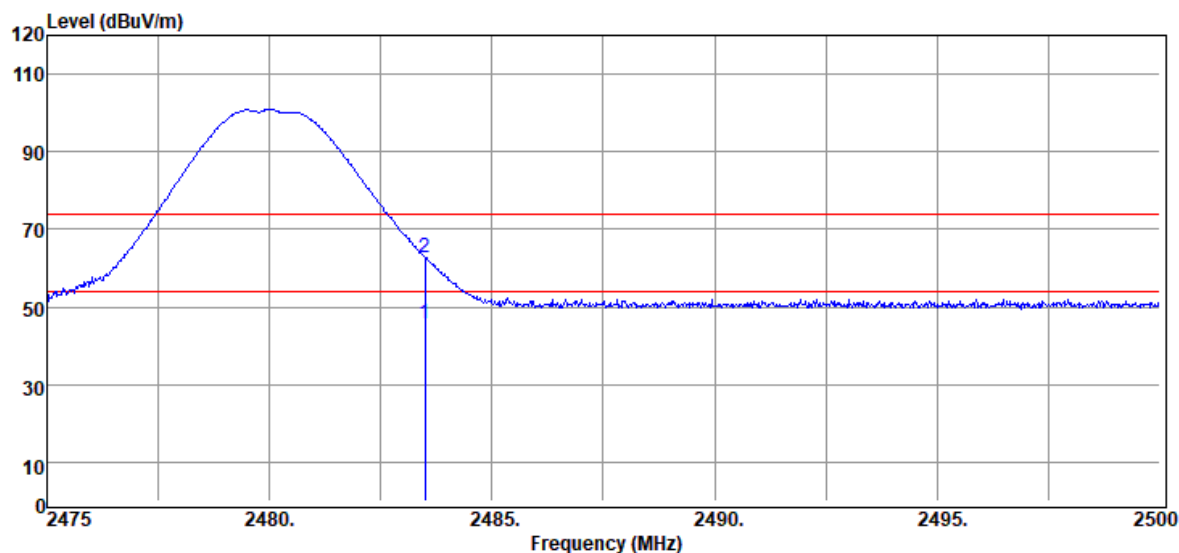
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2480 MHz
Test Mode :BE CH HIGH
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.50	Average	41.07	4.42	45.49	54.00	-8.51
2483.50	Peak	58.35	4.42	62.77	74.00	-11.23

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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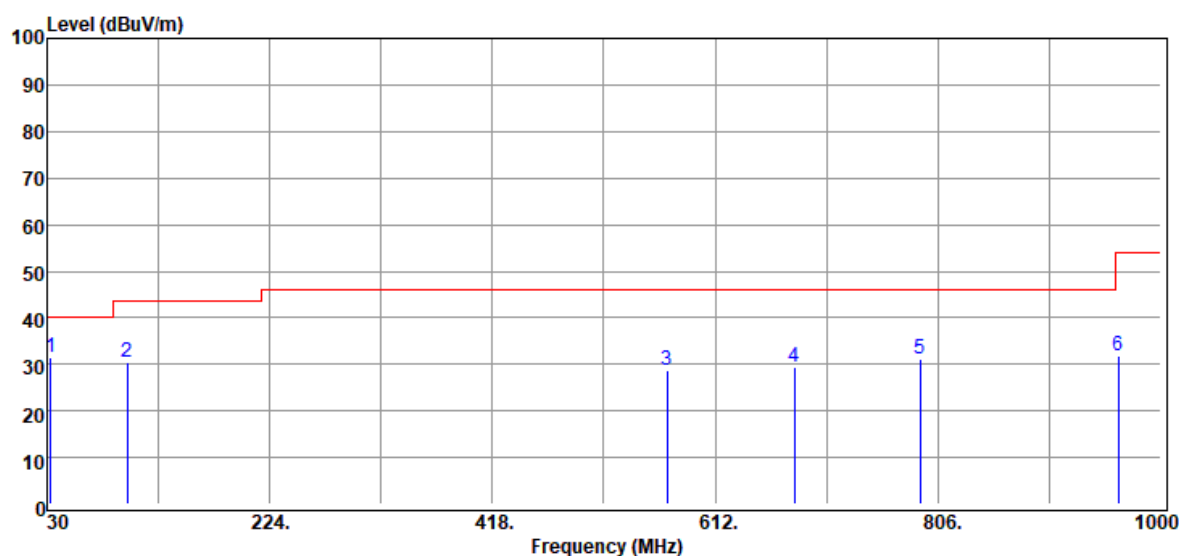
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13.6 禁用頻帶內輻射量測

BLE 1M

Report Number :E2/2020/50104
 Operation Mode :BLE 1M
 Test Frequency :2442 MHz
 Test Mode :TX CH MID
 EUT Pol :E2 Plan

Test Date :2020-06-06
 Temp./Humi. :23.6/54
 Antenna Pol. :VERTICAL
 Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
32.91	Peak	36.44	-4.98	31.46	40.00	-8.54
99.84	Peak	46.04	-15.66	30.38	43.50	-13.12
570.29	Peak	31.70	-3.13	28.57	46.00	-17.43
680.87	Peak	31.28	-1.96	29.32	46.00	-16.68
790.48	Peak	30.96	0.24	31.20	46.00	-14.80
963.14	Peak	30.35	1.35	31.70	54.00	-22.30

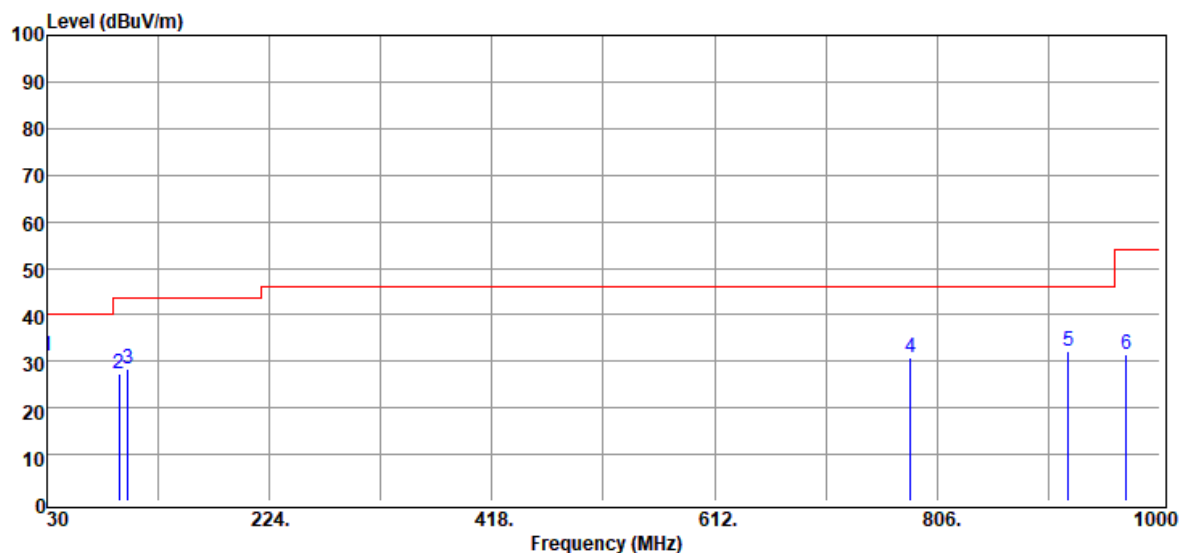
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2442 MHz
Test Mode :TX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-06
Temp./Humi. :23.6/54
Antenna Pol. :HORIZONTAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.00	Peak	34.38	-3.33	31.05	40.00	-8.95
93.05	Peak	44.03	-16.79	27.24	43.50	-16.26
100.81	Peak	44.01	-15.47	28.54	43.50	-14.96
782.72	Peak	30.50	0.17	30.67	46.00	-15.33
920.46	Peak	30.96	1.27	32.23	46.00	-13.77
970.90	Peak	30.09	1.38	31.47	54.00	-22.53

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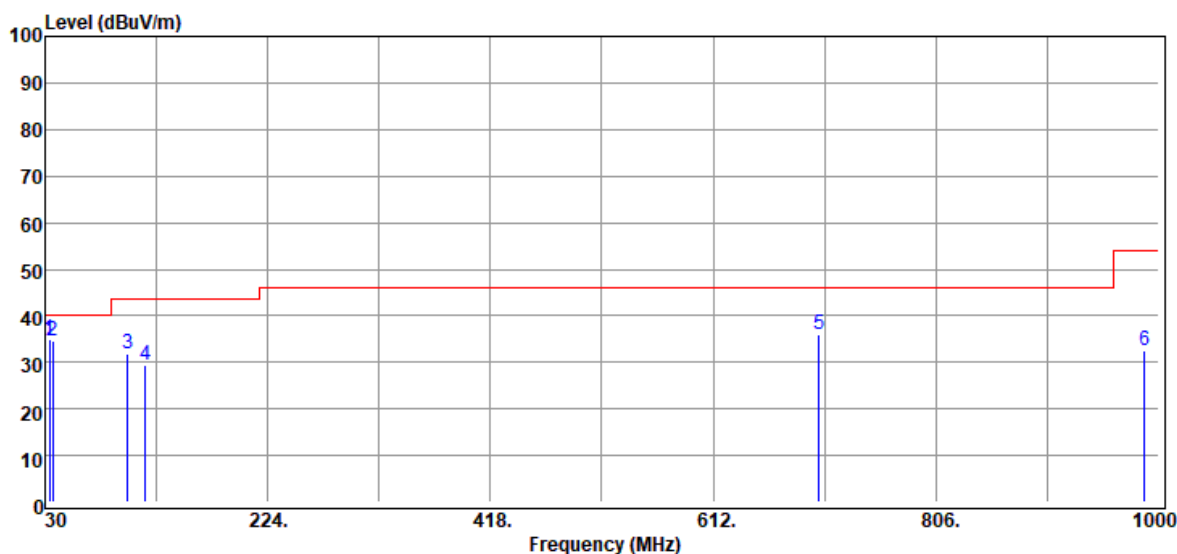
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BLE 2M

Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2442 MHz
Test Mode :TX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-08
Temp./Humi. :22.9/60
Antenna Pol. :VERTICAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
33.88	Peak	40.04	-5.12	34.92	40.00	-5.08
36.79	Peak	41.25	-6.73	34.52	40.00	-5.48
101.78	Peak	47.18	-15.21	31.97	43.50	-11.53
117.30	Peak	42.59	-13.17	29.42	43.50	-14.08
704.15	Peak	38.65	-2.75	35.90	46.00	-10.10
987.39	Peak	30.65	1.76	32.41	54.00	-21.59

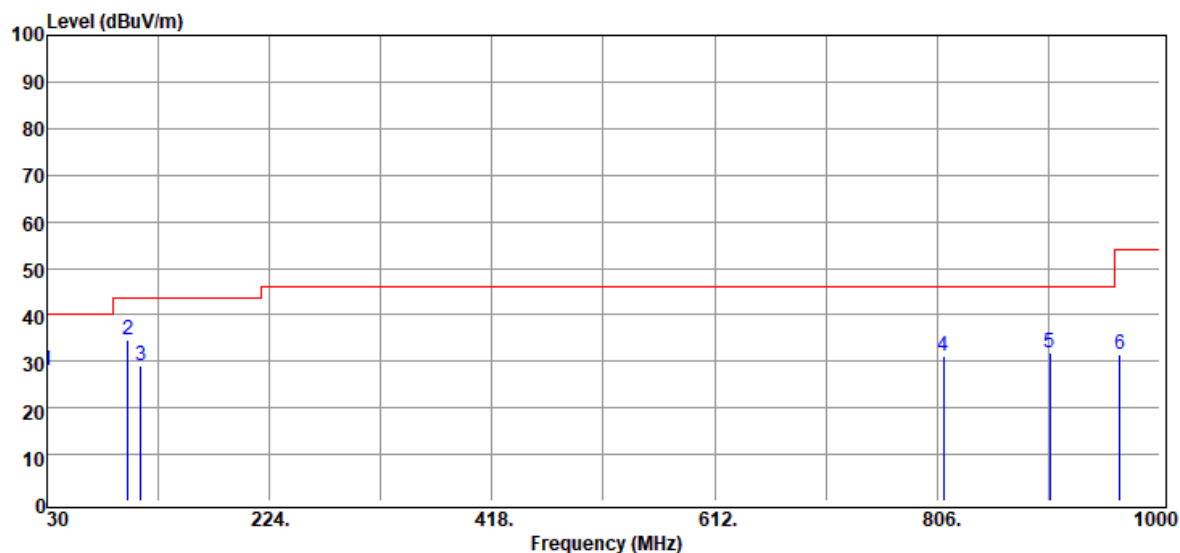
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2442 MHz
Test Mode :TX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-08
Temp./Humi. :22.9/60
Antenna Pol. :HORIZONTAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.00	Peak	31.26	-3.33	27.93	40.00	-12.07
100.81	Peak	50.12	-15.47	34.65	43.50	-8.85
111.48	Peak	42.95	-13.93	29.02	43.50	-14.48
811.82	Peak	30.92	0.10	31.02	46.00	-14.98
903.97	Peak	31.25	0.71	31.96	46.00	-14.04
965.08	Peak	30.20	1.26	31.46	54.00	-22.54

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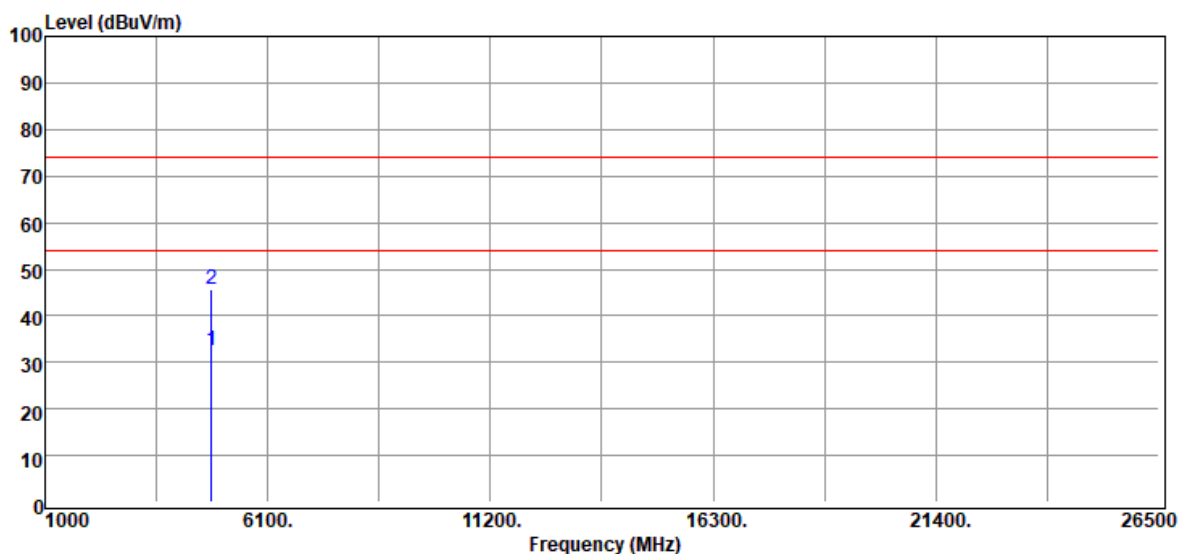
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BLE 1M

Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2402 MHz
Test Mode :TX CH LOW
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4804.00	Average	18.58	14.07	32.65	54.00	-21.35
4804.00	Peak	31.63	14.07	45.70	74.00	-28.30

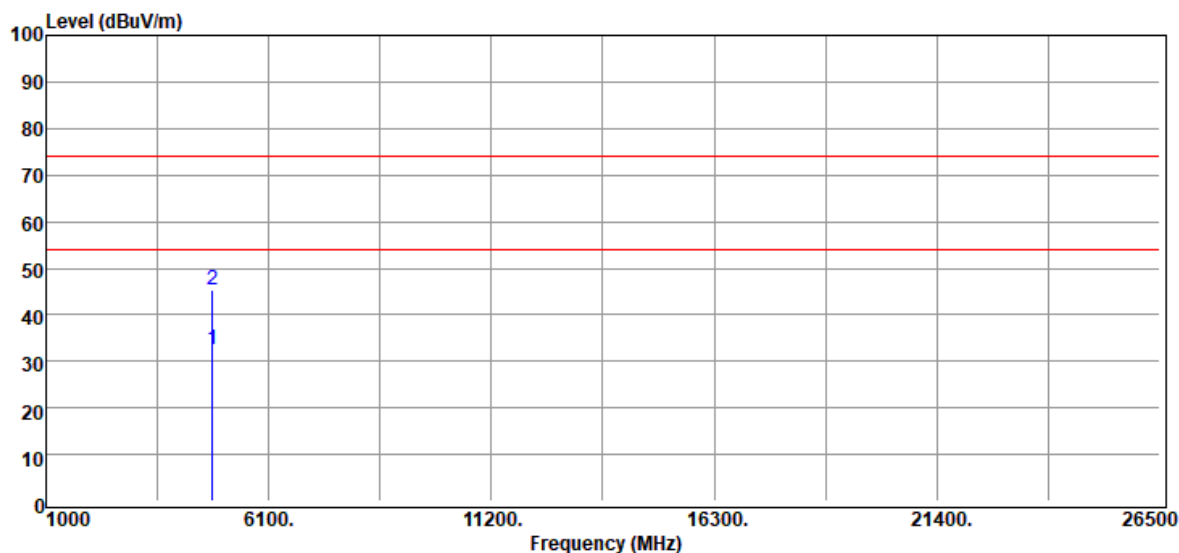
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2402 MHz
Test Mode :TX CH LOW
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4804.00	Average	18.39	14.07	32.46	54.00	-21.54
4804.00	Peak	31.18	14.07	45.25	74.00	-28.75

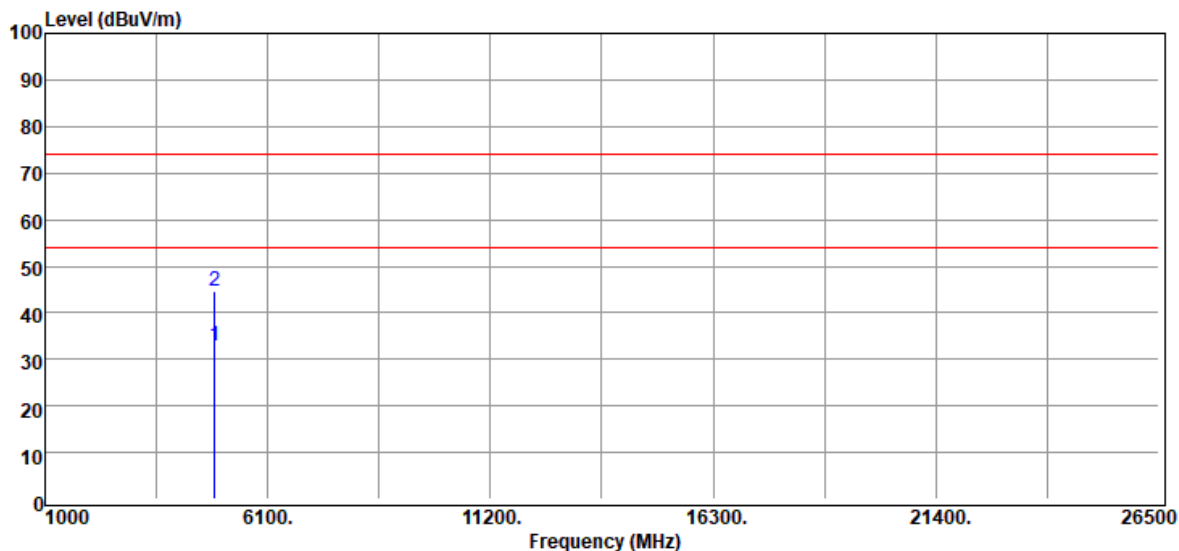
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2442 MHz
Test Mode :TX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4884.00	Average	18.53	14.21	32.74	54.00	-21.26
4884.00	Peak	30.30	14.21	44.51	74.00	-29.49

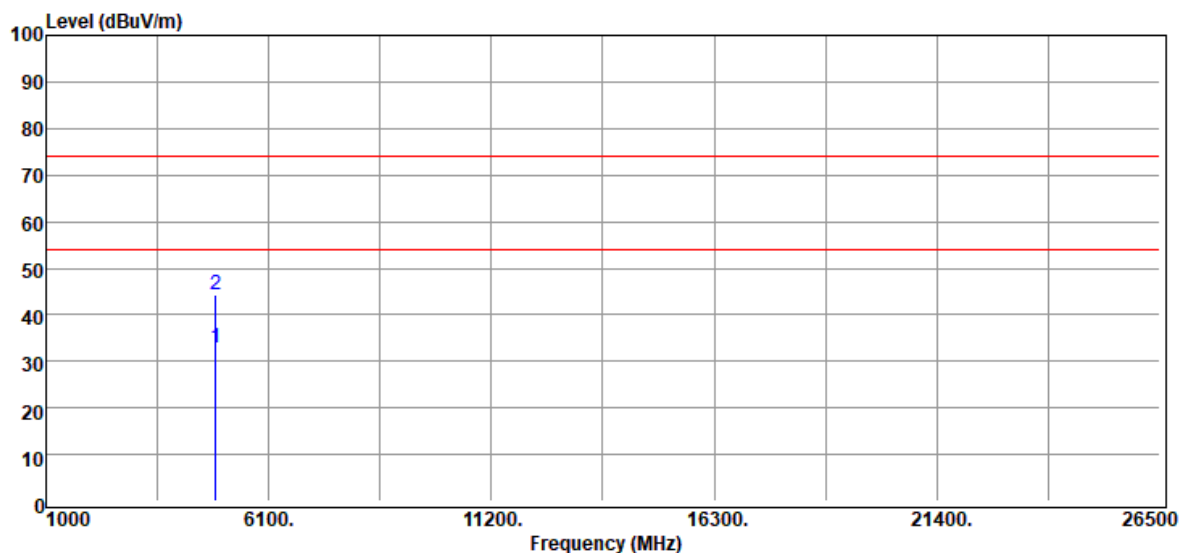
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2442 MHz
Test Mode :TX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4884.00	Average	18.71	14.21	32.92	54.00	-21.08
4884.00	Peak	30.01	14.21	44.22	74.00	-29.78

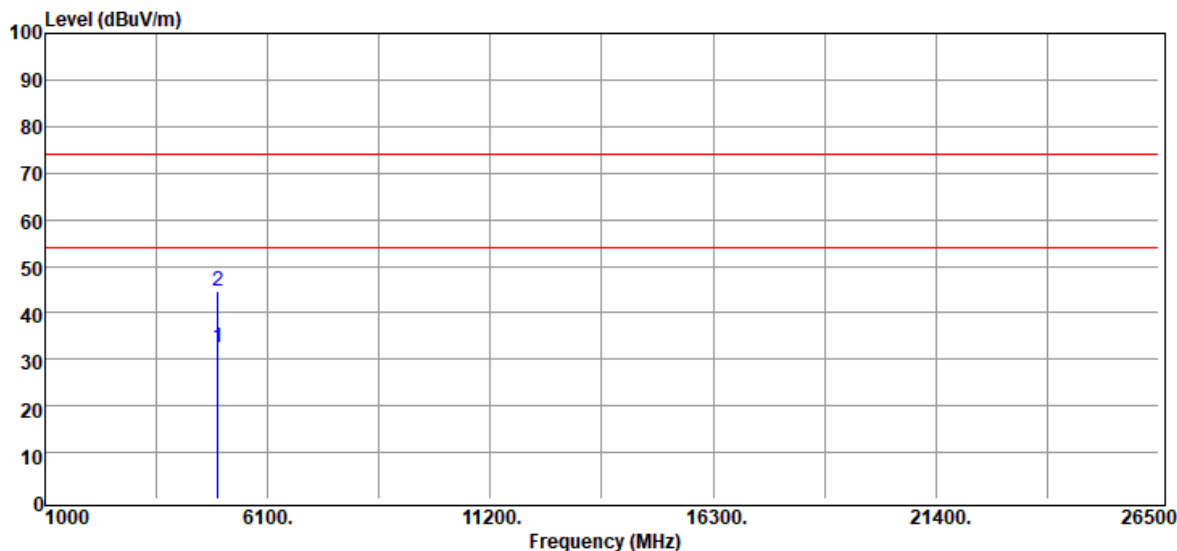
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2480 MHz
Test Mode :TX CH HIGH
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4960.00	Average	18.37	14.13	32.50	54.00	-21.50
4960.00	Peak	30.44	14.13	44.57	74.00	-29.43

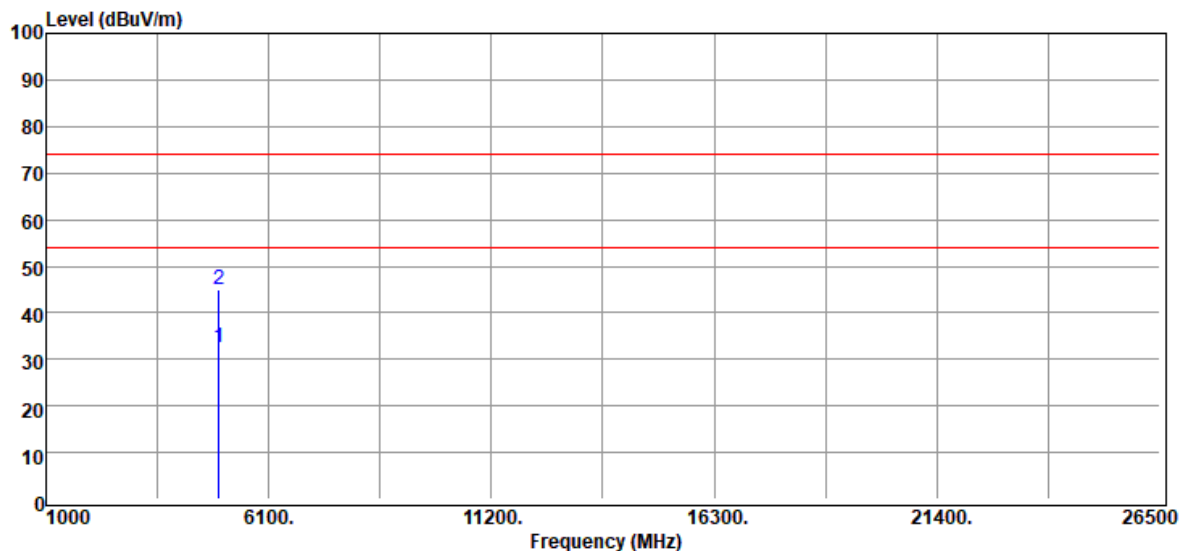
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2480 MHz
Test Mode :TX CH HIGH
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4960.00	Average	18.31	14.13	32.44	54.00	-21.56
4960.00	Peak	30.86	14.13	44.99	74.00	-29.01

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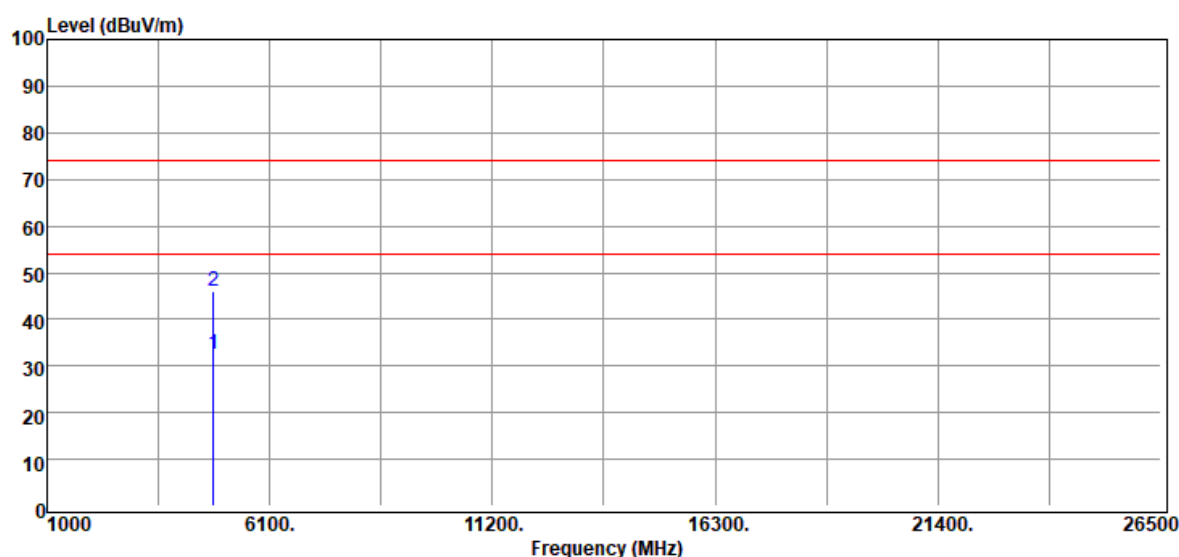
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BLE 2M

Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2402 MHz
Test Mode :TX CH LOW
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4804.00	Average	18.42	14.07	32.49	54.00	-21.51
4804.00	Peak	31.80	14.07	45.87	74.00	-28.13

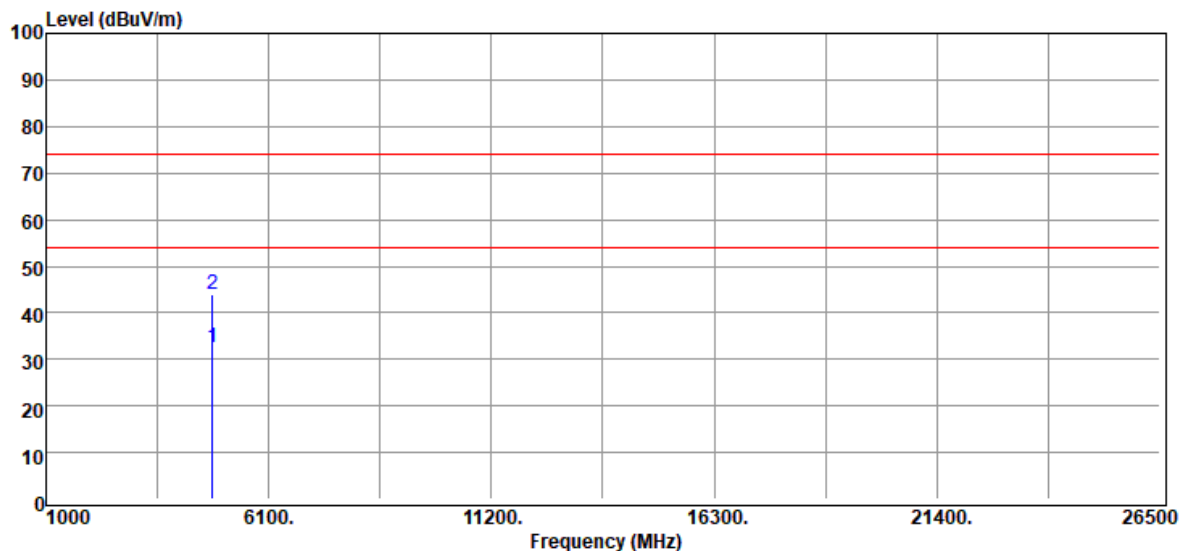
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2402 MHz
Test Mode :TX CH LOW
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4804.00	Average	18.37	14.07	32.44	54.00	-21.56
4804.00	Peak	29.84	14.07	43.91	74.00	-30.09

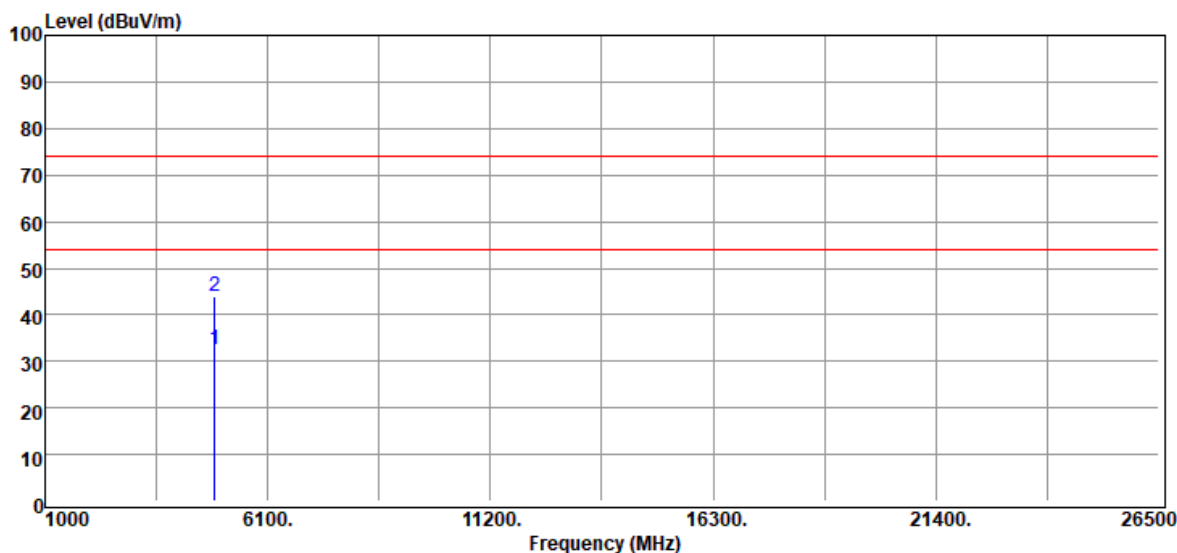
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2442 MHz
Test Mode :TX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4884.00	Average	18.31	14.21	32.52	54.00	-21.48
4884.00	Peak	29.57	14.21	43.78	74.00	-30.22

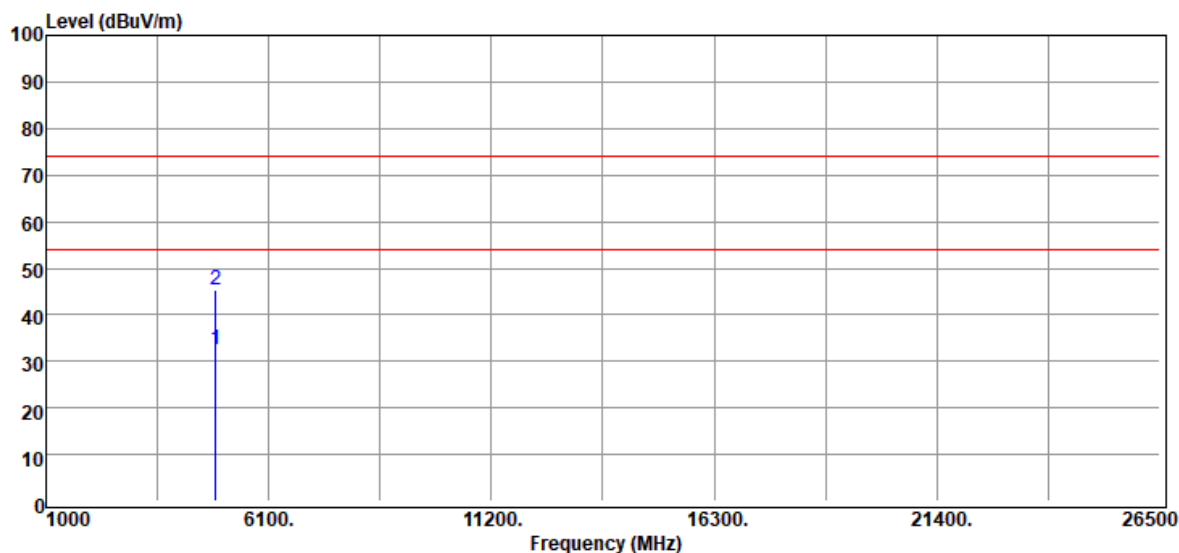
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2442 MHz
Test Mode :TX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4884.00	Average	18.45	14.21	32.66	54.00	-21.34
4884.00	Peak	31.02	14.21	45.23	74.00	-28.77

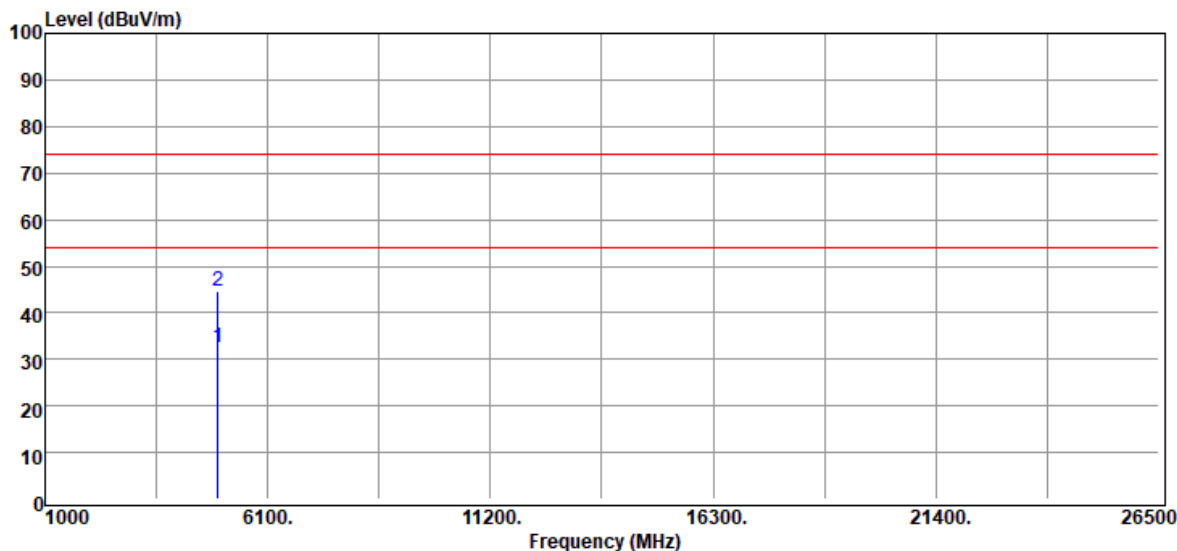
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2480 MHz
Test Mode :TX CH HIGH
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4960.00	Average	18.32	14.13	32.45	54.00	-21.55
4960.00	Peak	30.35	14.13	44.48	74.00	-29.52

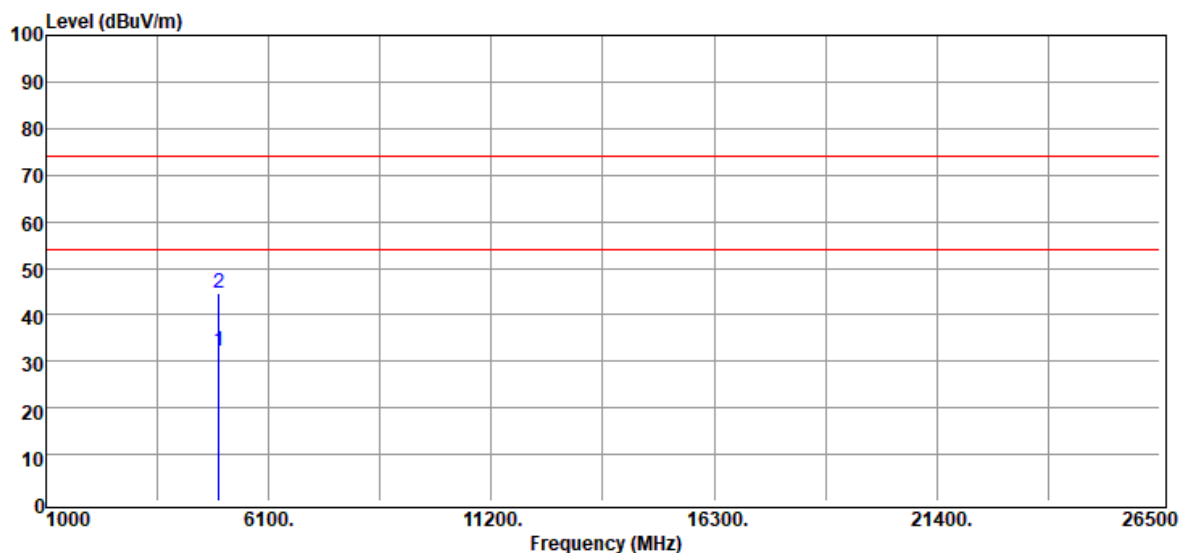
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2480 MHz
Test Mode :TX CH HIGH
EUT Pol :E2 Plan

Test Date :2020-06-11
Temp./Humi. :23.8/62
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4960.00	Average	18.22	14.13	32.35	54.00	-21.65
4960.00	Peak	30.48	14.13	44.61	74.00	-29.39

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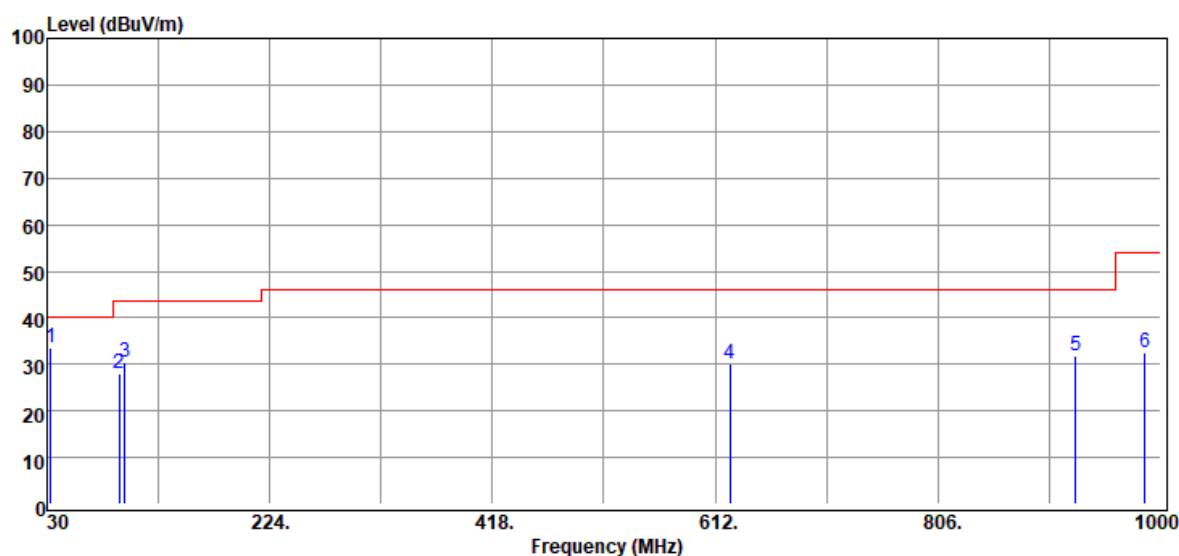
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13.7 接收機場強輻射量測

BLE 1M

Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2442 MHz
Test Mode :RX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-08
Temp./Humi. :22.9/60
Antenna Pol. :VERTICAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
32.91	Peak	38.71	-4.98	33.73	40.00	-6.27
93.05	Peak	44.95	-16.79	28.16	43.50	-15.34
97.90	Peak	46.44	-15.99	30.45	43.50	-13.05
624.61	Peak	32.23	-2.12	30.11	46.00	-15.89
926.28	Peak	30.59	1.25	31.84	46.00	-14.16
986.42	Peak	30.64	1.76	32.40	54.00	-21.60

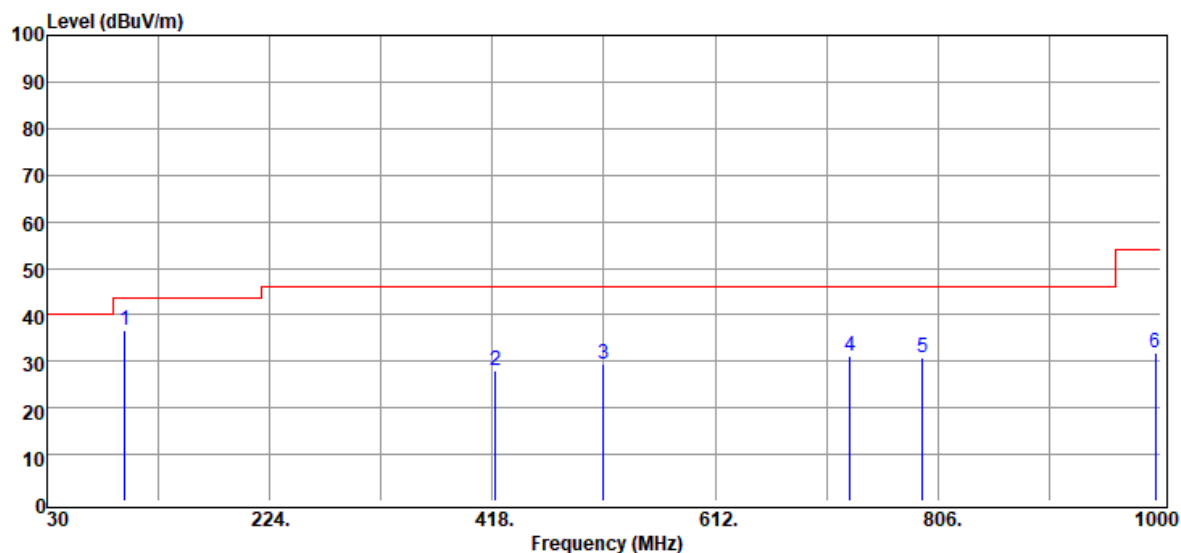
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2442 MHz
Test Mode :RX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-08
Temp./Humi. :22.9/60
Antenna Pol. :HORIZONTAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
97.90	Peak	52.50	-15.99	36.51	43.50	-6.99
420.91	Peak	34.39	-6.29	28.10	46.00	-17.90
515.00	Peak	34.54	-5.05	29.49	46.00	-16.51
729.37	Peak	33.25	-2.08	31.17	46.00	-14.83
792.42	Peak	30.59	0.24	30.83	46.00	-15.17
995.15	Peak	30.32	1.68	32.00	54.00	-22.00

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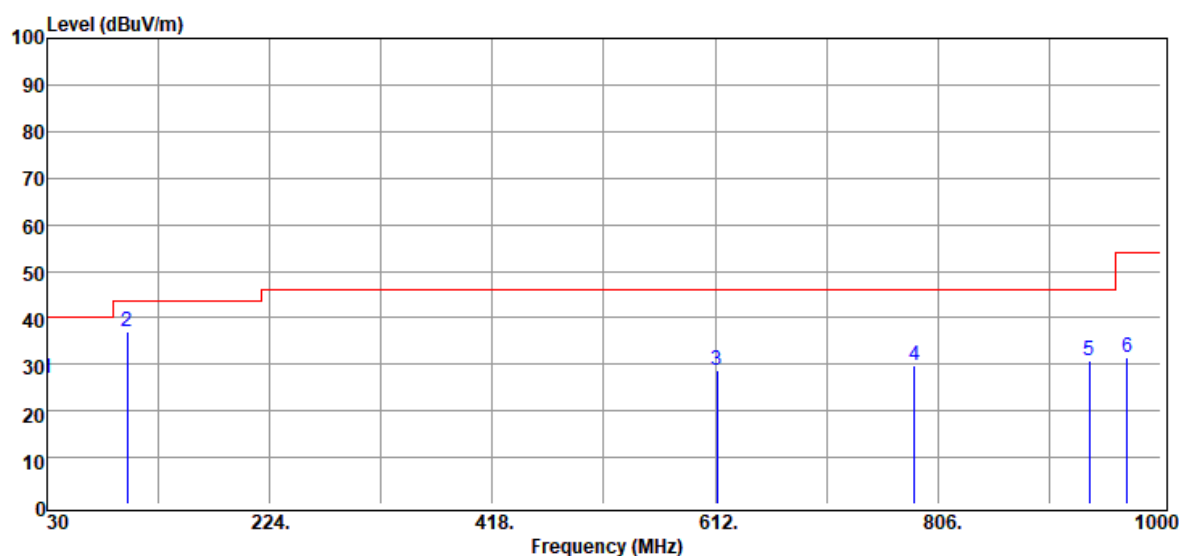
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BLE 2M

Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2442 MHz
Test Mode :RX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-08
Temp./Humi. :23.2/59
Antenna Pol. :VERTICAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.00	Peak	30.23	-3.33	26.90	40.00	-13.10
99.84	Peak	52.74	-15.66	37.08	43.50	-6.42
613.94	Peak	31.57	-2.80	28.77	46.00	-17.23
785.63	Peak	29.39	0.23	29.62	46.00	-16.38
937.92	Peak	29.54	1.36	30.90	46.00	-15.10
970.90	Peak	30.24	1.38	31.62	54.00	-22.38

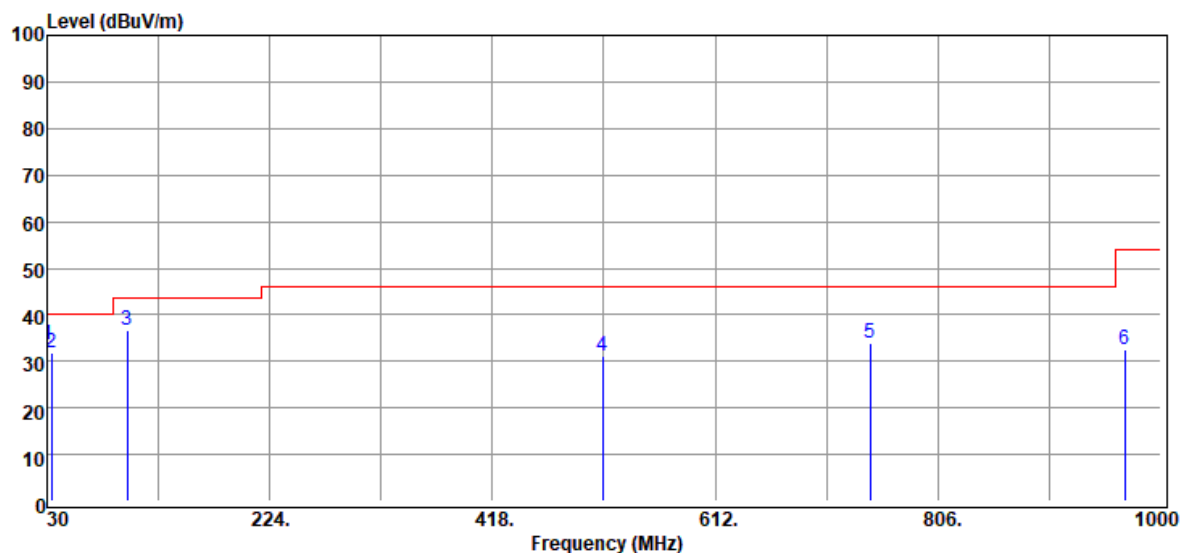
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2442 MHz
Test Mode :RX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-08
Temp./Humi. :23.2/59
Antenna Pol. :HORIZONTAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.00	Peak	36.81	-3.33	33.48	40.00	-6.52
33.88	Peak	36.99	-5.12	31.87	40.00	-8.13
99.84	Peak	52.51	-15.66	36.85	43.50	-6.65
514.03	Peak	36.15	-5.02	31.13	46.00	-14.87
746.83	Peak	35.57	-1.66	33.91	46.00	-12.09
968.96	Peak	31.25	1.31	32.56	54.00	-21.44

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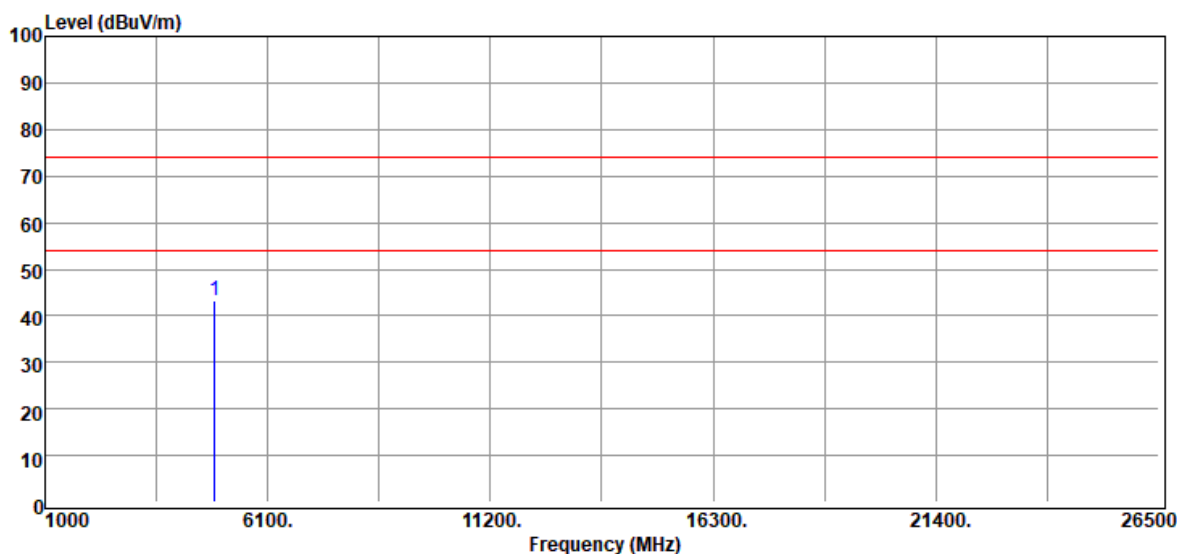
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BLE 1M

Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2442 MHz
Test Mode :RX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-05
Temp./Humi. :22.5/67
Antenna Pol. :VERTICAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4884.00	Peak	29.04	14.21	43.25	74.00	-30.75

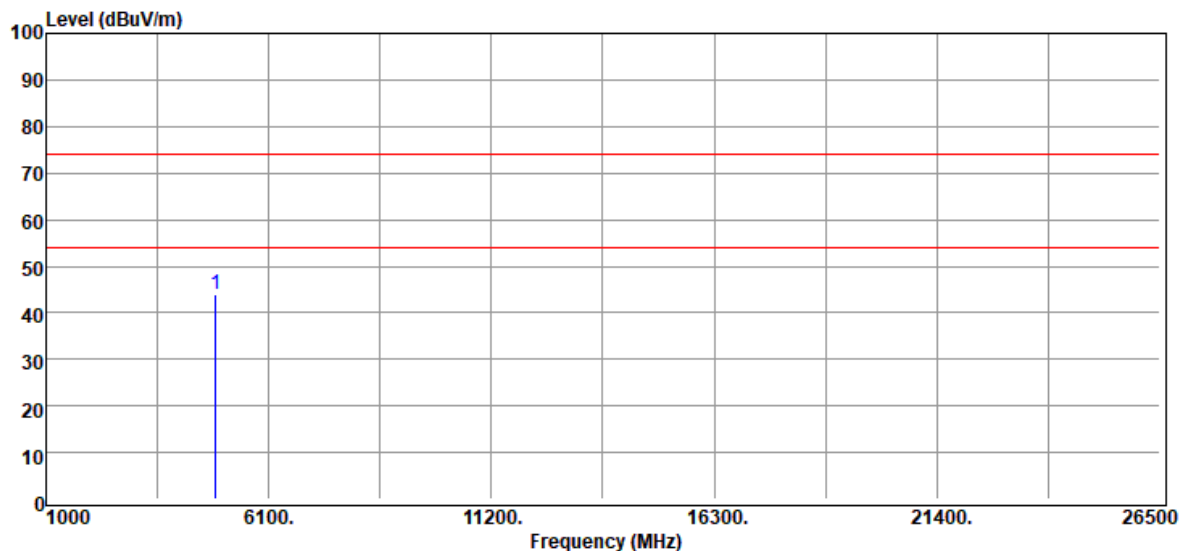
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Report Number :E2/2020/50104
Operation Mode :BLE 1M
Test Frequency :2442 MHz
Test Mode :RX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-05
Temp./Humi. :22.5/67
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4884.00	Peak	29.83	14.21	44.04	74.00	-29.96

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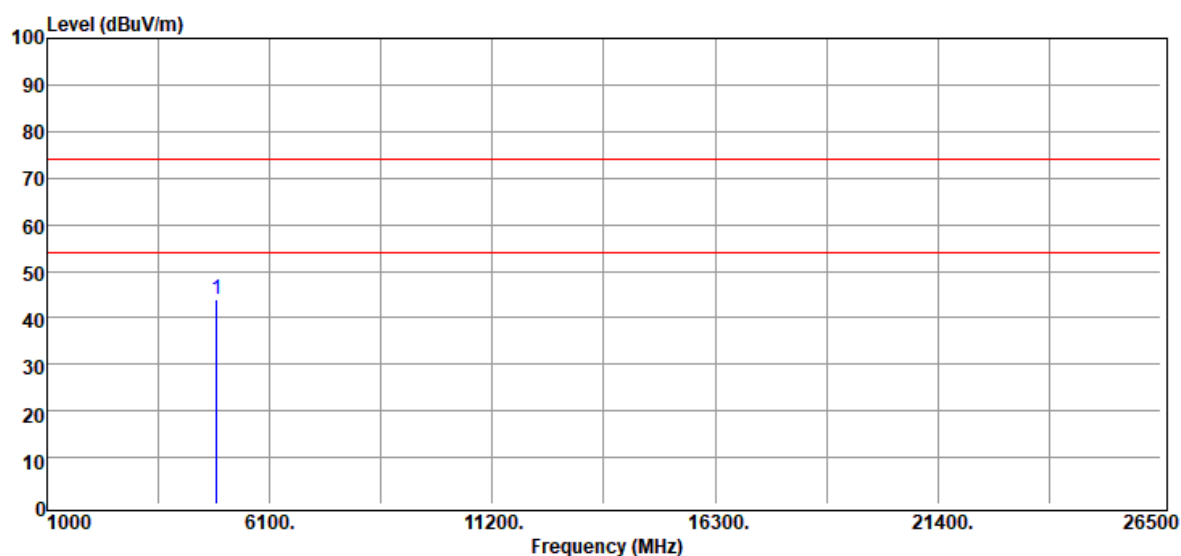
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BLE 2M

Report Number :E2/2020/50104
 Operation Mode :BLE 2M
 Test Frequency :2442 MHz
 Test Mode :RX CH MID
 EUT Pol :E2 Plan

Test Date :2020-06-05
 Temp./Humi. :22.5/67
 Antenna Pol. :VERTICAL
 Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4884.00	Peak	29.78	14.21	43.99	74.00	-30.01

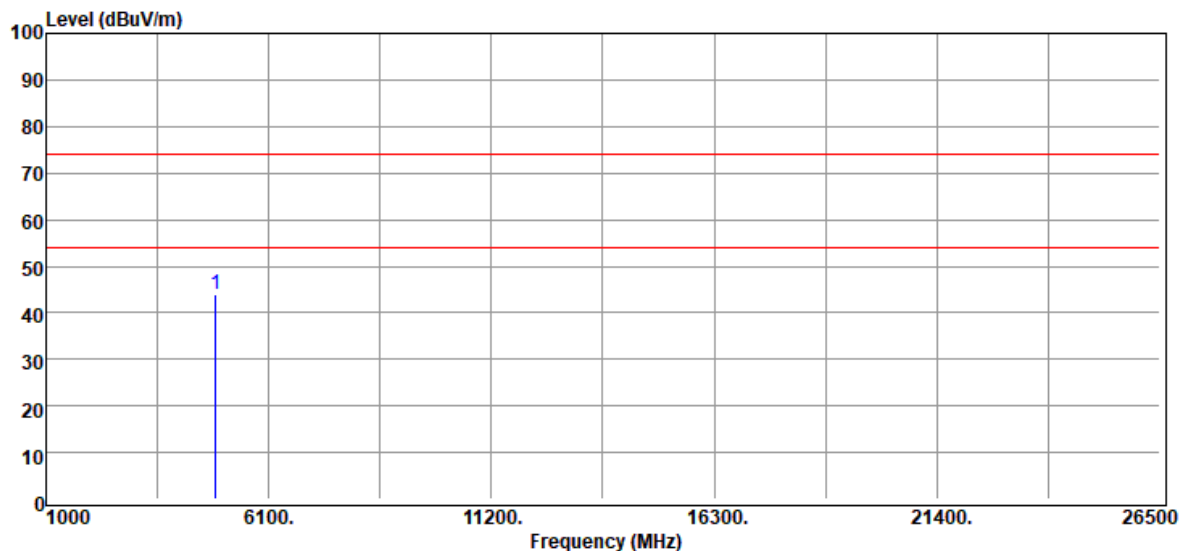
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Report Number :E2/2020/50104
Operation Mode :BLE 2M
Test Frequency :2442 MHz
Test Mode :RX CH MID
EUT Pol :E2 Plan

Test Date :2020-06-05
Temp./Humi. :22.5/67
Antenna Pol. :HORIZONTAL
Engineer :Enzo



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4884.00	Peak	29.84	14.21	44.05	74.00	-29.95

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

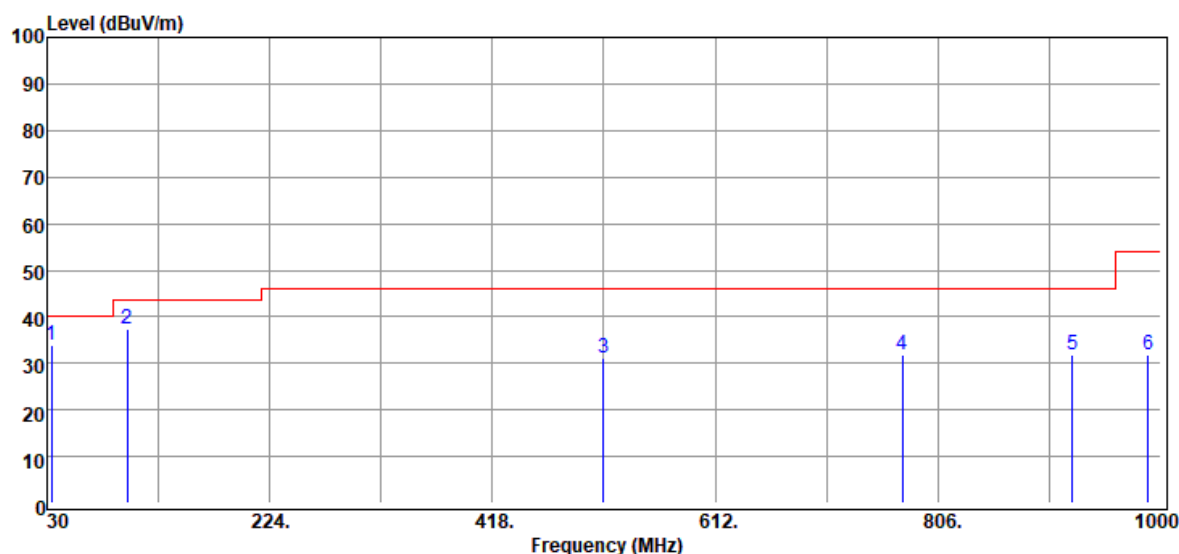
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13.8 Fully System

Report Number :E2/2020/50103
Operation Mode :System
Test Frequency :System
Test Mode :System
EUT Pol :E2 Plan

Test Date :2020-06-08
Temp./Humi. :22.6/64
Antenna Pol. :VERTICAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
33.88	Peak	39.06	-5.12	33.94	40.00	-6.06
99.84	Peak	53.05	-15.66	37.39	43.50	-6.11
515.00	Peak	36.24	-5.05	31.19	46.00	-14.81
774.96	Peak	31.78	-0.02	31.76	46.00	-14.24
923.37	Peak	30.67	1.27	31.94	46.00	-14.06
989.33	Peak	30.14	1.75	31.89	54.00	-22.11

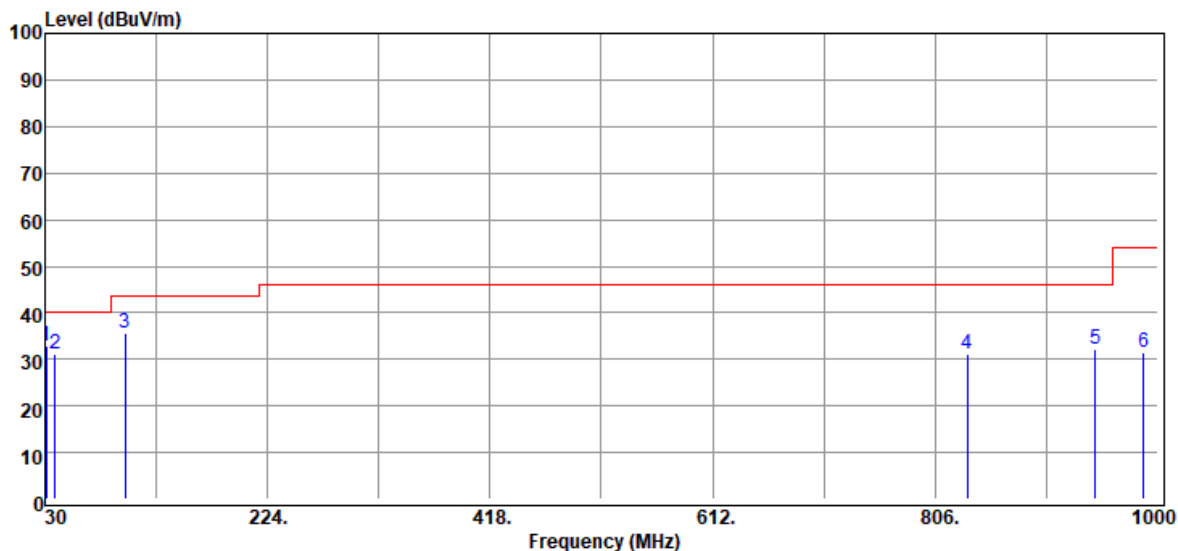
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Report Number :E2/2020/50103
Operation Mode :System
Test Frequency :System
Test Mode :System
EUT Pol :E2 Plan

Test Date :2020-06-08
Temp./Humi. :22.6/64
Antenna Pol. :HORIZONTAL
Engineer :Ashton



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
30.97	Peak	36.79	-3.89	32.90	40.00	-7.10
38.73	Peak	39.23	-7.95	31.28	40.00	-8.72
99.84	Peak	51.38	-15.66	35.72	43.50	-7.78
834.13	Peak	30.96	0.11	31.07	46.00	-14.93
945.68	Peak	30.68	1.43	32.11	46.00	-13.89
987.39	Peak	29.66	1.76	31.42	54.00	-22.58

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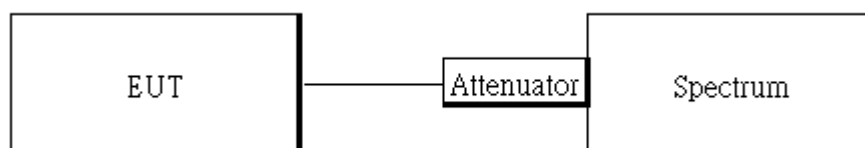
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14 功率密度量測

14.1 適用標準

依據 NCC 低功率射頻器材技術規範 4.10.1.6(2) (B)規定，對數位調變之展頻系統，在使用頻率範圍之任意 3kHz 頻寬內，由發射機傳導至天線之峰值發射電功率密度在任意期間內，皆不得大於 8dBm。

14.2 功率密度測試配置



14.3 量測方法

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 3 kHz. & the VBW = 10 kHz
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.

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14.4 功率密度量測結果

BLE mode (1M)

Frequency (MHz)	RF Power Density (dBm)	Maximum Limit (dBm)
2402	-10.53	8
2442	-10.67	8
2480	-9.96	8

* offset 0.4 dB

BLE mode (2M)

Frequency (MHz)	RF Power Density (dBm)	Maximum Limit (dBm)
2402	-14.25	8
2442	-14.27	8
2480	-13.59	8

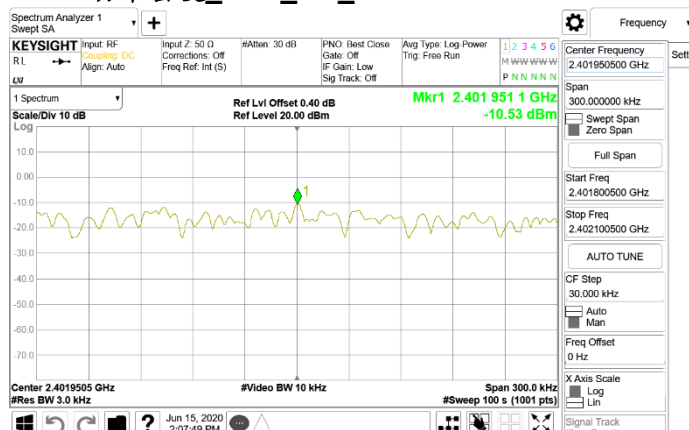
* offset 0.4 dB

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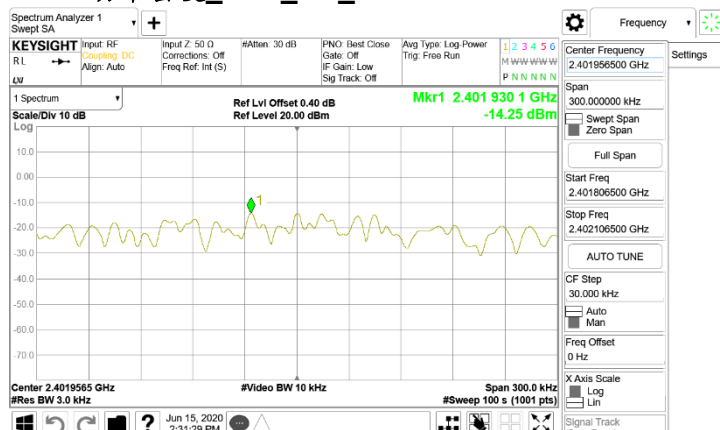
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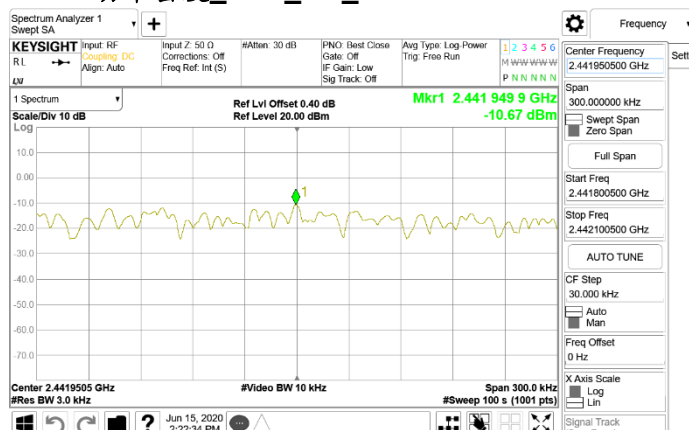
功率密度_BLE_1M_LowCH00-2402



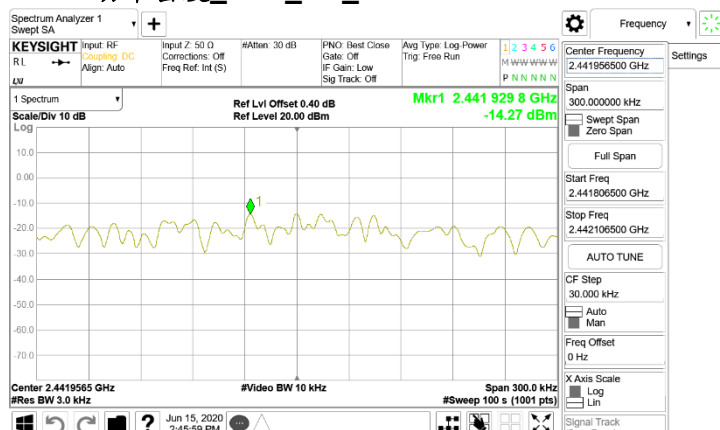
功率密度_BLE_2M_LowCH00-2402



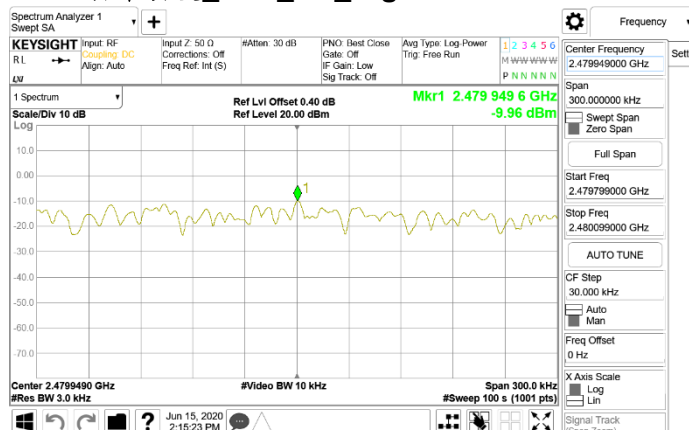
功率密度_BLE_1M_MidCH20-2442



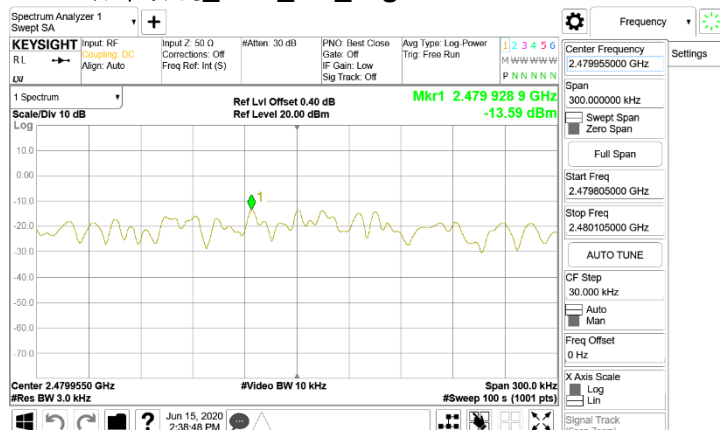
功率密度_BLE_2M_MidCH20-2442



功率密度_BLE_1M_HighCH39-2480



功率密度_BLE_2M_HighCH39-2480



~ End of Report ~

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