

# FCC and ISEDC Test Report

Sepura Ltd

Portable TETRA Handset, Model: SC2124

In accordance with FCC 47 CFR Part 15C,  
ISEDC RSS-247 and ISEDC RSS-GEN

Prepared for: Sepura Ltd  
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Beach Drive, Waterbeach, Cambridge, CB25 9TL  
United Kingdom

FCC ID: XX6SC2124

IC: 8739A-SC2124



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## COMMERCIAL-IN-CONFIDENCE

Document 75944487-12 Issue 01

### SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Matthew Russell	RF Team Leader	Authorised Signatory	06 March 2020

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

### ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15C, ISEDC RSS-247 and ISEDC RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Mehadi Choudhury	06 March 2020	
Testing	Graeme Lawler	06 March 2020	

FCC Accreditation

90987 Octagon House, Fareham Test Laboratory

ISEDC Accreditation

12669A Octagon House, Fareham Test Laboratory

### EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15C: 2018, ISEDC RSS-247: Issue 2 (2017-02) and ISEDC RSS-GEN: Issue 5 (04-2018) + A1 (03-2019) for the tests detailed in section 1.3.



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## Contents

<b>1</b>	<b>Report Summary .....</b>	<b>2</b>
1.1	Report Modification Record.....	2
1.2	Introduction.....	2
1.3	Brief Summary of Results .....	3
1.4	Application Form .....	5
1.5	Product Information .....	7
1.6	Deviations from the Standard.....	7
1.7	EUT Modification Record .....	7
1.8	Test Location.....	8
<b>2</b>	<b>Test Details .....</b>	<b>9</b>
2.1	Maximum Conducted Output Power .....	9
2.2	Power Spectral Density .....	12
2.3	Emission Bandwidth.....	14
2.4	Authorised Band Edges .....	24
2.5	Restricted Band Edges .....	33
2.6	Spurious Radiated Emissions .....	47
<b>3</b>	<b>Measurement Uncertainty .....</b>	<b>110</b>



# 1 Report Summary

## 1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	06 March 2020

**Table 1**

## 1.2 Introduction

Applicant	Sepura Ltd
Manufacturer	Sepura Ltd
Model Number(s)	SC2124
Serial Number(s)	1PR001909GM18RZ and 1PR001909GM18R8
Hardware Version(s)	Production
Software Version(s)	1) 1754 006 07367 2) 2001 684 07367
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 15C: 2018 ISED RSS-247: Issue 2 (02-2017) ISED RSS-GEN: Issue 5 (04-2018) + A1 (03-2019)
Order Number	PLC-PO011393-1
Date	07-December-2018
Date of Receipt of EUT	15-August-2019
Start of Test	11-October-2019
Finish of Test	17-February-2020
Name of Engineer(s)	Mehadi Choudhury and Graeme Lawler
Related Document(s)	ANSI C63.10 (2013)



### 1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15C, ISEDC RSS-247 and ISEDC RSS-GEN is shown below.

Section	Specification Clause			Test Description	Result	Comments/Base Standard
	Part 15C	RSS-247	RSS-GEN			
Configuration and Mode: 2.4 GHz WLAN - 802.11b						
2.1	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	ANSI C63.10 (2013)
2.2	15.247 (e)	5.2	6.12	Power Spectral Density	Pass	ANSI C63.10 (2013)
2.3	15.247 (a)(2)	5.2	6.7	Emission Bandwidth	Pass	ANSI C63.10 (2013)
2.4	15.247 (d)	5.5	-	Authorised Band Edges	Pass	ANSI C63.10 (2013)
2.5	15.205	-	8.10	Restricted Band Edges	Pass	ANSI C63.10 (2013)
2.6	15.247 (d) and 15.205	5.5	6.13	Spurious Radiated Emissions	Pass	ANSI C63.10 (2013)
Configuration and Mode: 2.4 GHz WLAN - 802.11g						
2.1	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	ANSI C63.10 (2013)
2.2	15.247 (e)	5.2	6.12	Power Spectral Density	Pass	ANSI C63.10 (2013)
2.3	15.247 (a)(2)	5.2	6.7	Emission Bandwidth	Pass	ANSI C63.10 (2013)
2.4	15.247 (d)	5.5	-	Authorised Band Edges	Pass	ANSI C63.10 (2013)
2.5	15.205	-	8.10	Restricted Band Edges	Pass	ANSI C63.10 (2013)
2.6	15.247 (d) and 15.205	5.5	6.13	Spurious Radiated Emissions	Pass	ANSI C63.10 (2013)



Section	Specification Clause			Test Description	Result	Comments/Base Standard
	Part 15C	RSS-247	RSS-GEN			
Configuration and Mode: 2.4 GHz WLAN - 802.11n 20 MHz Bandwidth						
2.1	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	ANSI C63.10 (2013)
2.2	15.247 (e)	5.2	6.12	Power Spectral Density	Pass	ANSI C63.10 (2013)
2.4	15.247 (d)	5.5	-	Authorised Band Edges	Pass	ANSI C63.10 (2013)
2.5	15.205	-	8.10	Restricted Band Edges	Pass	ANSI C63.10 (2013)
2.3	15.247 (a)(2)	5.2	6.7	Emission Bandwidth	Pass	ANSI C63.10 (2013)
Configuration and Mode: 2.4 GHz WLAN - 802.11n 40 MHz Bandwidth						
2.1	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	ANSI C63.10 (2013)
2.2	15.247 (e)	5.2	6.12	Power Spectral Density	Pass	ANSI C63.10 (2013)
2.3	15.247 (a)(2)	5.2	6.7	Emission Bandwidth	Pass	ANSI C63.10 (2013)
2.5	15.205	-	8.10	Restricted Band Edges	Pass	ANSI C63.10 (2013)
2.4	15.247 (d)	5.5	-	Authorised Band Edges	Pass	ANSI C63.10 (2013)

**Table 2**



**1.4 Application Form**

EQUIPMENT DESCRIPTION	
Model Name/Number	SC2124
Part Number	N/A
Hardware Version	Production
Software Version	1) 1754 006 07367 2) 2001 684 07367
FCC ID (if applicable)	XX6SC2124
Industry Canada ID (if applicable)	8739A-SC2124
Technical Description (Please provide a brief description of the intended use of the equipment)	Portable TETRA Radio for use by the emergency services etc.

INTENTIONAL RADIATORS									
Technology	Frequency Band (MHz)	Conducted Declared Output Power (dBm)	Antenna Gain (dBi)	Supported Bandwidth(s) (MHz)	Modulation Scheme(s)	ITU Emission Designator	Test Channels (MHz)		
							Bottom	Middle	Top
TETRA	403-470	34	>-1	25 kHz	$\pi/4$ DQPS K	22K0DXW	403	436.5	470
TETRA	403-470	34	>-1	22 kHz	$\pi/4$ DQPS K	20K0DXW	403	436.5	470
Bluetooth (Low Energy)	2402-2480	7.382	2.5	1.0	GFSK	1M00F1D	2402	2441	2480
WLAN	2412-2462	20	2.5	20/40	DSSS OFDM	14M8WDX 17M8WDX 36M0WDX	2412	2437	2462

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	2480 MHz
Lowest frequency generated or used in the device or on which the device operates or tunes	32.768 kHz
Class A Digital Device (Use in commercial, industrial or business environment) <input checked="" type="checkbox"/>	
Class B Digital Device (Use in residential environment only) <input type="checkbox"/>	



Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
External DC	Nominal Voltage		Maximum Current
	7.4V DC		2A
Battery	Nominal Voltage		Battery Operating End Point Voltage
	7.4V DC		6.2V DC
Can EUT transmit whilst being charged?			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

EXTREME CONDITIONS			
Maximum temperature	65	°C	Minimum temperature
			-30 °C

Ancillaries
Please list all ancillaries which will be used with the device.
Remote speaker microphone, leather cases, pocket clips, earpieces

ANTENNA CHARACTERISTICS			
<input type="checkbox"/>	Antenna connector	State impedance	Ohm
<input checked="" type="checkbox"/>	Temporary antenna connector	State impedance	50 Ohm
<input checked="" type="checkbox"/>	Integral antenna	Type	Bluetooth
<input type="checkbox"/>	External antenna	Type	

I hereby declare that the information supplied is correct and complete.

Name: Chris Beecham

Position held: Conformance Engineer Date: 03/03/2020



**1.5 Product Information**

**1.5.1 Technical Description**

Portable TETRA Radio for use by the emergency services etc.

**1.6 Deviations from the Standard**

No deviations from the applicable test standard were made during testing.

**1.7 EUT Modification Record**

The table below details modifications made to the EUT during the test programme.

The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Model: SC2124, Serial Number: 1PR001909GM18R8			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: SC2124, Serial Number: 1PR001909GM18RZ			
0	As supplied by the customer	Not Applicable	Not Applicable

**Table 3**





**1.8 Test Location**

TÜV SÜD conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: 2.4 GHz WLAN - 802.11b		
Maximum Conducted Output Power	Mehadi Choudhury	UKAS
Power Spectral Density	Mehadi Choudhury	UKAS
Emission Bandwidth	Mehadi Choudhury	UKAS
Authorised Band Edges	Graeme Lawler	UKAS
Restricted Band Edges	Graeme Lawler	UKAS
Spurious Radiated Emissions	Graeme Lawler	UKAS
Configuration and Mode: 2.4 GHz WLAN - 802.11g		
Maximum Conducted Output Power	Mehadi Choudhury	UKAS
Power Spectral Density	Mehadi Choudhury	UKAS
Emission Bandwidth	Mehadi Choudhury	UKAS
Authorised Band Edges	Graeme Lawler	UKAS
Restricted Band Edges	Graeme Lawler	UKAS
Spurious Radiated Emissions	Graeme Lawler	UKAS
Configuration and Mode: 2.4 GHz WLAN - 802.11n 20 MHz Bandwidth		
Maximum Conducted Output Power	Mehadi Choudhury	UKAS
Power Spectral Density	Mehadi Choudhury	UKAS
Authorised Band Edges	Graeme Lawler	UKAS
Restricted Band Edges	Graeme Lawler	UKAS
Emission Bandwidth	Mehadi Choudhury	UKAS
Configuration and Mode: 2.4 GHz WLAN - 802.11n 40 MHz Bandwidth		
Maximum Conducted Output Power	Mehadi Choudhury	UKAS
Power Spectral Density	Mehadi Choudhury	UKAS
Emission Bandwidth	Mehadi Choudhury	UKAS
Restricted Band Edges	Graeme Lawler	UKAS
Authorised Band Edges	Graeme Lawler	UKAS

**Table 4**

Office Address:

Octagon House  
 Concorde Way  
 Segensworth North  
 Fareham  
 Hampshire  
 PO15 5RL  
 United Kingdom



## 2 Test Details

### 2.1 Maximum Conducted Output Power

#### 2.1.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (b)  
ISED RSS-247, Clause 5.4  
ISED RSS-GEN, Clause 6.12

#### 2.1.2 Equipment Under Test and Modification State

SC2124, S/N: 1PR001909GM18RZ - Modification State 0

#### 2.1.3 Date of Test

11-October-2019 to 16-October-2019

#### 2.1.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 11.9.1.2.

#### 2.1.5 Environmental Conditions

Ambient Temperature 22.3 - 23.0 °C  
Relative Humidity 42.1 - 53.8 %

#### 2.1.6 Test Results

##### 2.4 GHz WLAN - 802.11b

Testing was performed on the Data Rate with the highest conducted output power. This Data Rate was 1 Mbps.

Port	Output Power (dBm)		
	2412 MHz	2437 MHz	2462 MHz
1	18.67	18.96	18.92

**Table 5**

##### 2.4 GHz WLAN - 802.11g

Testing was performed on the Data Rate with the highest conducted output power. This Data Rate was 6 Mbps.

Port	Output Power (dBm)		
	2412 MHz	2437 MHz	2462 MHz
1	23.63	23.97	24.22

**Table 6**



2.4 GHz WLAN - 802.11n 20 MHz Bandwidth

Testing was performed on the Data Rate with the highest conducted output power. This Data Rate was 6 Mbps.

Port	Output Power (dBm)		
	2412 MHz	2437 MHz	2462 MHz
1	23.19	22.97	23.12

**Table 7**

2.4 GHz WLAN - 802.11n 40 MHz Bandwidth

Testing was performed on the Data Rate with the highest conducted output power. This Data Rate was 36 Mbps.

Port	Output Power (dBm)		
	2422 MHz	2437 MHz	2452 MHz
1	19.75	19.35	19.29

**Table 8**

FCC 47 CFR Part 15, Limit Clause 15.247 (b)(3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

ISED RSS-247, Limit Clause 5.4 (b)

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e) of the specification.

ISED RSS-247, Limit Clause 5.4 (a)

For FHSs operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1.0 W, and the e.i.r.p. shall not exceed 4 W if the hopset uses 50 or more hopping channels; the maximum peak conducted output power shall not exceed 0.25 W and the e.i.r.p. shall not exceed 1 W if the hopset uses less than 50 hopping channels.



**2.1.7 Test Location and Test Equipment Used**

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB, 150W)	Narda	769-10	3368	12	17-Jul-2020
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	16-Apr-2020
EXA	Keysight Technologies	N9010B	4969	24	21-Dec-2019
Hygrometer	Rotronic	HP21	5004	12	02-Oct-2020
Network Analyser	Keysight Technologies	E5063A	5018	12	20-May-2020
Cable (18 GHz)	Rosenberger	LU7-071-2000	5108	12	06-Oct-2020
Electronic Calibration Module	Keysight Technologies	85093C	5188	12	21-May-2020

**Table 9**

TU - Traceability Unscheduled



**2.2 Power Spectral Density**

**2.2.1 Specification Reference**

FCC 47 CFR Part 15C, Clause 15.247 (e)  
 ISEDC RSS-247, Clause 5.2  
 ISEDC RSS-GEN, Clause 6.12

**2.2.2 Equipment Under Test and Modification State**

SC2124, S/N: 1PR001909GM18RZ - Modification State 0

**2.2.3 Date of Test**

14-October-2019 to 16-October-2019

**2.2.4 Test Method**

This test was performed in accordance with ANSI C63.10, clause 11.10.2.

**2.2.5 Environmental Conditions**

Ambient Temperature 22.3 - 23.2 °C  
 Relative Humidity 42.1 - 53.8 %

**2.2.6 Test Results**

2.4 GHz WLAN - 802.11b

Data Rate: 1 Mbps

Antenna Port	Power Spectral Density (dBm)		
	2412 MHz	2437 MHz	2462 MHz
1	6.32	5.29	6.11

**Table 10 - Power Spectral Density**

2.4 GHz WLAN - 802.11g

Data Rate: 6 Mbps

Antenna Port	Power Spectral Density (dBm)		
	2412 MHz	2437 MHz	2462 MHz
1	2.62	2.94	2.97

**Table 11 - Power Spectral Density**

2.4 GHz WLAN - 802.11n 20 MHz Bandwidth

Modulation Coding Scheme: MCS0

Antenna Port	Power Spectral Density (dBm)		
	2412 MHz	2437 MHz	2462 MHz
1	2.08	2.57	2.62

**Table 12 - Power Spectral Density**



2.4 GHz WLAN - 802.11n 40 MHz Bandwidth

Data Rate: 36 Mbps

Antenna Port	Power Spectral Density (dBm)		
	2422 MHz	2437 MHz	2452 MHz
1	-1.58	-1.88	-1.66

**Table 13 - Power Spectral Density**

FCC 47 CFR Part 15, Limit Clause 15.247 (e)

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

ISED RSS-247, Limit Clause 5.2(b)

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

**2.2.7 Test Location and Test Equipment Used**

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB/250W)	Weinschel	45-10-43	383	12	23-Oct-2019
Multimeter	Fluke	79 Series III	611	12	11-Sep-2020
Hygrometer	Rotronic	I-1000	3220	12	25-Sep-2020
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	17-Oct-2019
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	22-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	16-Apr-2020
EXA	Keysight Technologies	N9010B	4968	24	21-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5099	12	06-Oct-2020

**Table 14**



**2.3 Emission Bandwidth**

**2.3.1 Specification Reference**

FCC 47 CFR Part 15C, Clause 15.247 (a)(2),  
ISED RSS-247, Clause 5.2  
ISED RSS-GEN, Clause 6.7

**2.3.2 Equipment Under Test and Modification State**

SC2124, S/N: 1PR001909GM18RZ - Modification State 0

**2.3.3 Date of Test**

11-October-2019 to 16-October-2019

**2.3.4 Test Method**

This test was performed in accordance with ANSI C63.10, clause 11.8.1.

**2.3.5 Environmental Conditions**

Ambient Temperature 22.3 - 23.0 °C  
Relative Humidity 42.1 - 53.8 %

**2.3.6 Test Results**

2.4 GHz WLAN - 802.11b

Data Rate: 1 Mbps

Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
2412	10.11	14.56
2437	9.57	14.62
2462	10.07	14.73

**Table 15**

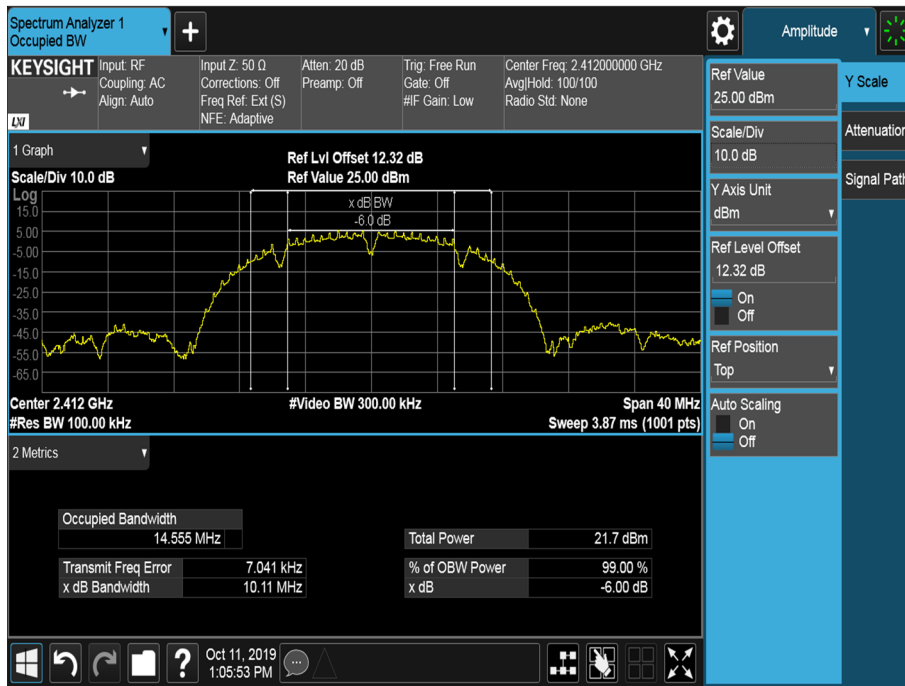


Figure 1 - 2412 MHz – 6 dB Bandwidth and 99 % Occupied Bandwidth



Figure 2 - 2437 MHz – 6 dB Bandwidth and 99 % Occupied Bandwidth





Figure 3 - 2462 MHz – 6 dB Bandwidth and 99 % Occupied Bandwidth



2.4 GHz WLAN - 802.11g

Data Rate: 6 Mbps

Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
2412	13.81	18.66
2437	13.82	17.67
2462	15.01	17.85

Table 16



Figure 4 - 2412 MHz – 6 dB Bandwidth and 99 % Occupied Bandwidth

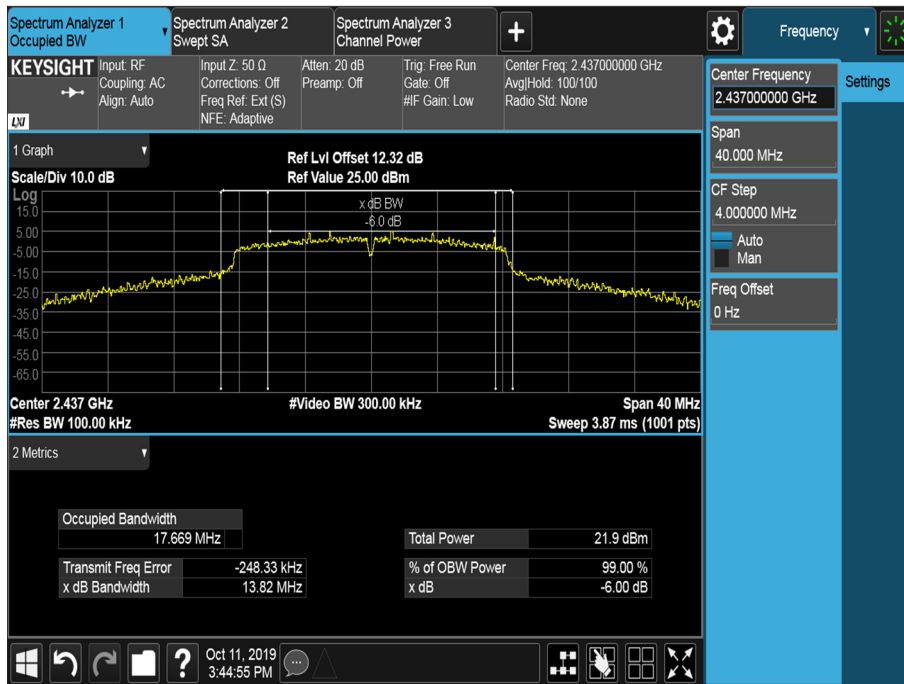


Figure 5 - 2437 MHz – 6 dB Bandwidth and 99 % Occupied Bandwidth



Figure 6 - 2462 MHz – 6 dB Bandwidth and 99 % Occupied Bandwidth



2.4 GHz WLAN - 802.11n 20 MHz Bandwidth

Modulation Coding Scheme: MCS0

Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
2412	15.13	17.88
2437	15.09	17.73
2462	15.17	17.81

Table 17

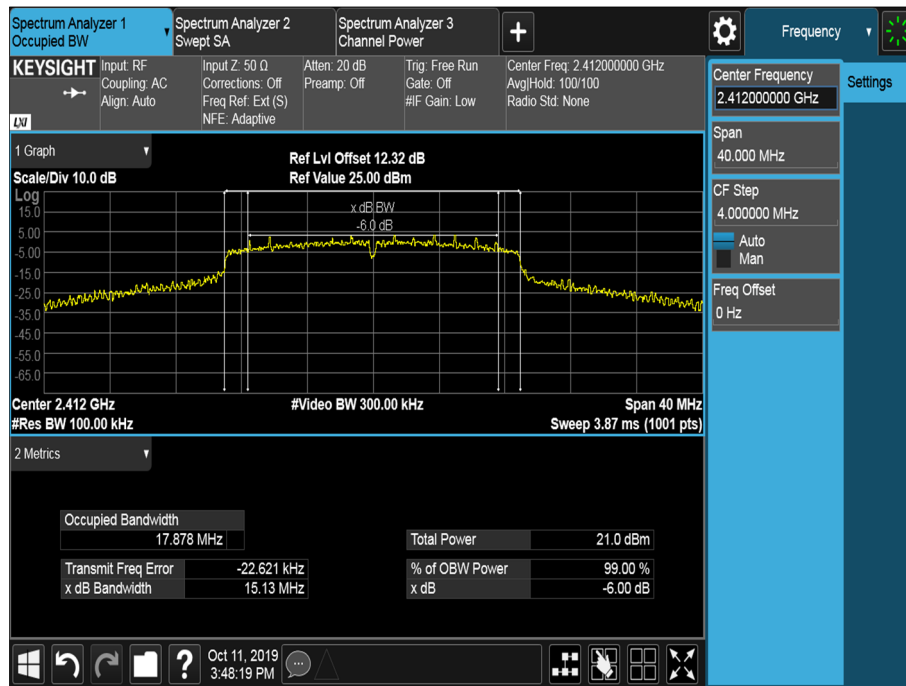


Figure 7 - 2412 MHz 6 dB Bandwidth and 99 % Occupied Bandwidth

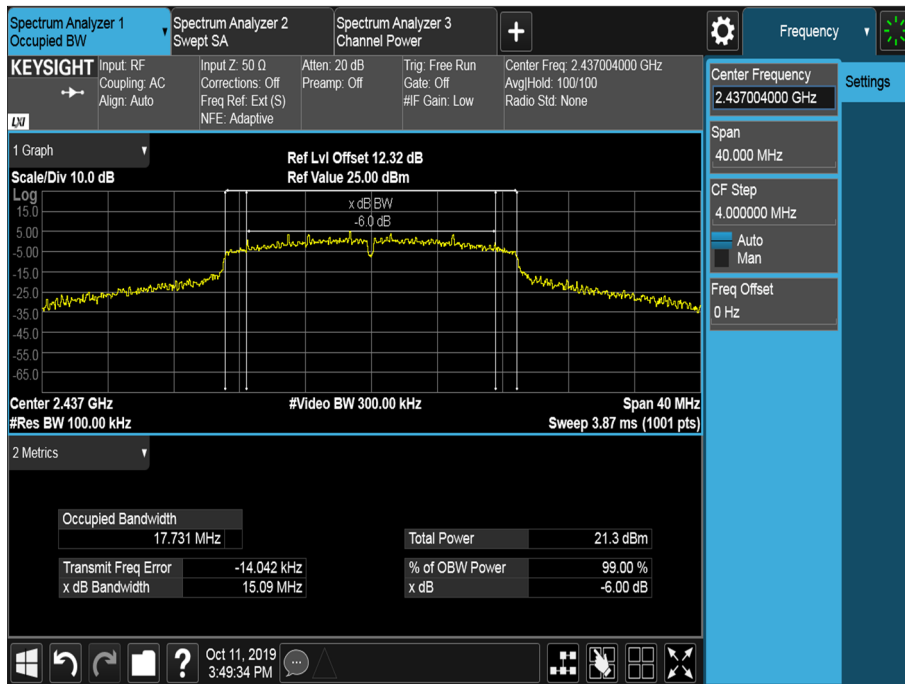


Figure 8 - 2437 MHz 6 dB Bandwidth and 99 % Occupied Bandwidth



Figure 9 - 2462 MHz 6 dB Bandwidth and 99 % Occupied Bandwidth



2.4 GHz WLAN - 802.11n 40 MHz Bandwidth

Data Rate: 36 Mbps

Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
2422	33.88	35.91
2437	30.15	35.79
2452	33.82	35.95

Table 18



Figure 10 - 2422 MHz 6 dB Bandwidth and 99 % Occupied Bandwidth

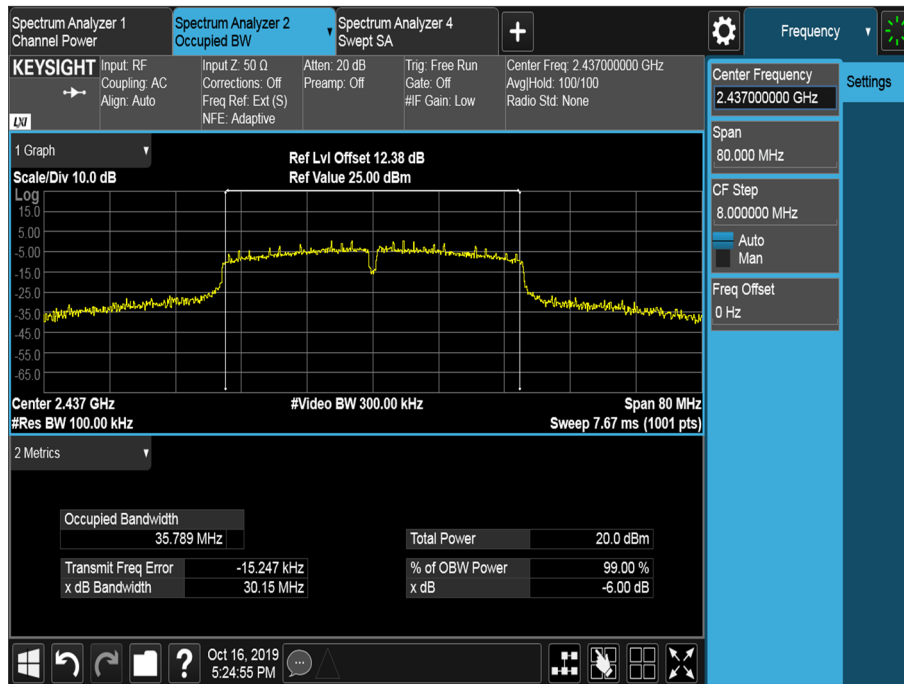


Figure 11 - 2437 MHz 6 dB Bandwidth and 99 % Occupied Bandwidth

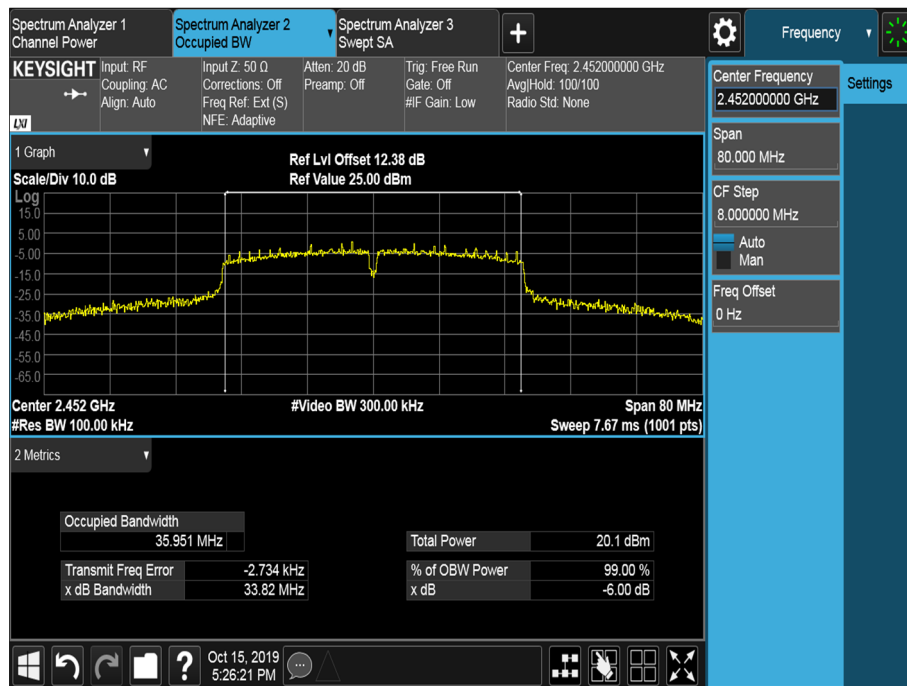


Figure 12 - 2452 MHz 6 dB Bandwidth and 99 % Occupied Bandwidth

FCC 47 CFR Part 15, Limit Clause 15.247(a)(2) and ISEDC RSS-247, Clause 5.2(a)

The minimum 6 dB Bandwidth shall be at least 500 kHz.



### 2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB/250W)	Weinschel	45-10-43	383	12	23-Oct-2019
Multimeter	Fluke	79 Series III	611	12	11-Sep-2020
Hygrometer	Rotronic	I-1000	3220	12	25-Sep-2020
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	17-Oct-2019
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	22-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	15-Oct-2019
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	16-Apr-2020
EXA	Keysight Technologies	N9010B	4968	24	21-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5099	12	06-Oct-2020

**Table 19**





## 2.4 Authorised Band Edges

### 2.4.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (d)  
ISED RSS-247, Clause 5.5

### 2.4.2 Equipment Under Test and Modification State

SC2124, S/N: 1PR001909GM18R8 - Modification State 0

### 2.4.3 Date of Test

11-February-2020

### 2.4.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.10.4.

Note: The power setting of the DUT that this test was performed at differs from those used in section 2.1 of the present document. The manufacturer and test laboratory hold these values on record.

### 2.4.5 Environmental Conditions

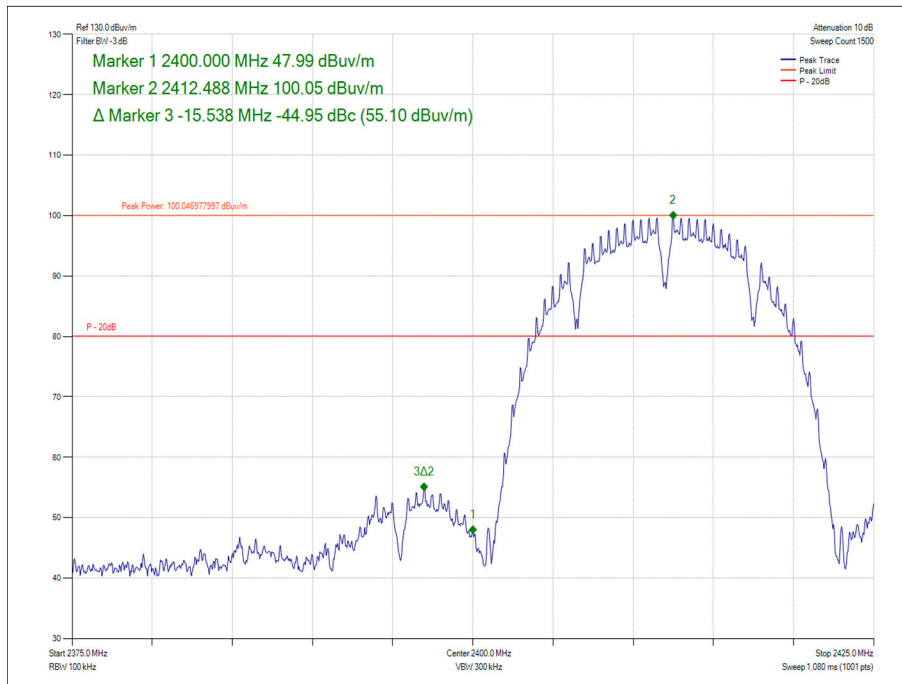
Ambient Temperature 18.3 °C  
Relative Humidity 30.1 %

### 2.4.6 Test Results

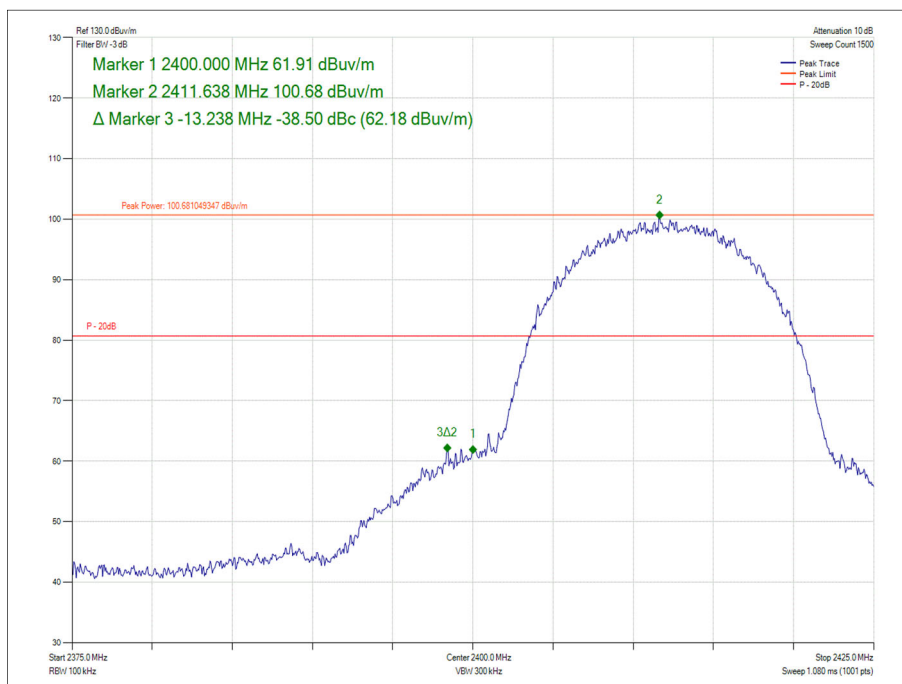
#### 2.4 GHz WLAN - 802.11b

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Data Rate/MCS with the Highest Power	1 Mbps	2412	2400	-44.95
Data Rate/MCS with the Widest Bandwidth	5.5 Mbps	2412	2400	-38.50

**Table 20 - Authorised Band Edge Results**



**Figure 13 - Data Rate/MCS with the Highest Power - 1 Mbps  
2412 MHz - Band Edge Frequency 2400 MHz**



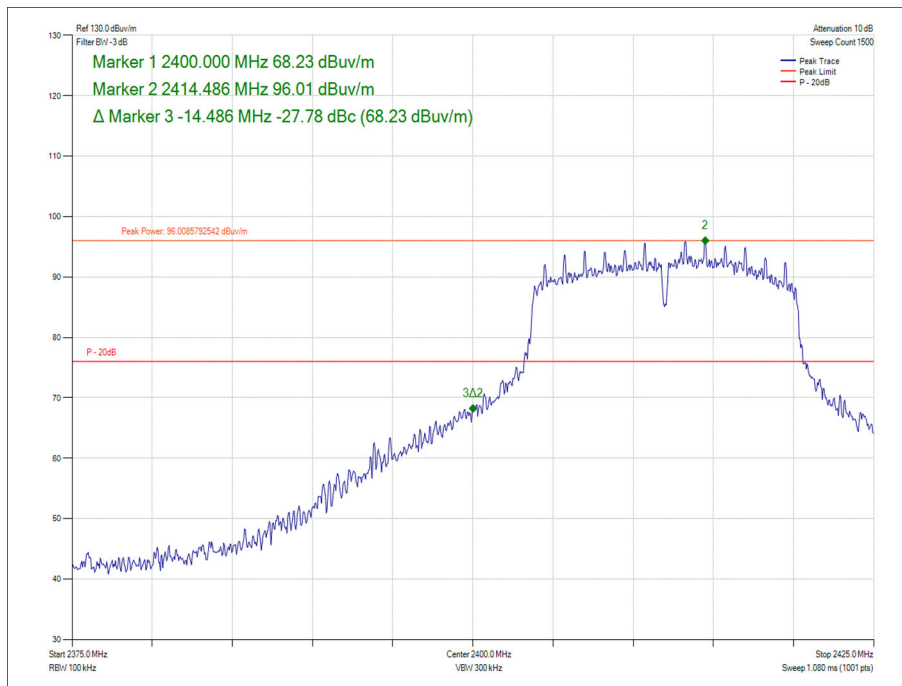
**Figure 14 - Data Rate/MCS with the Widest Bandwidth - 5.5 Mbps  
2412 MHz - Band Edge Frequency 2400 MHz**



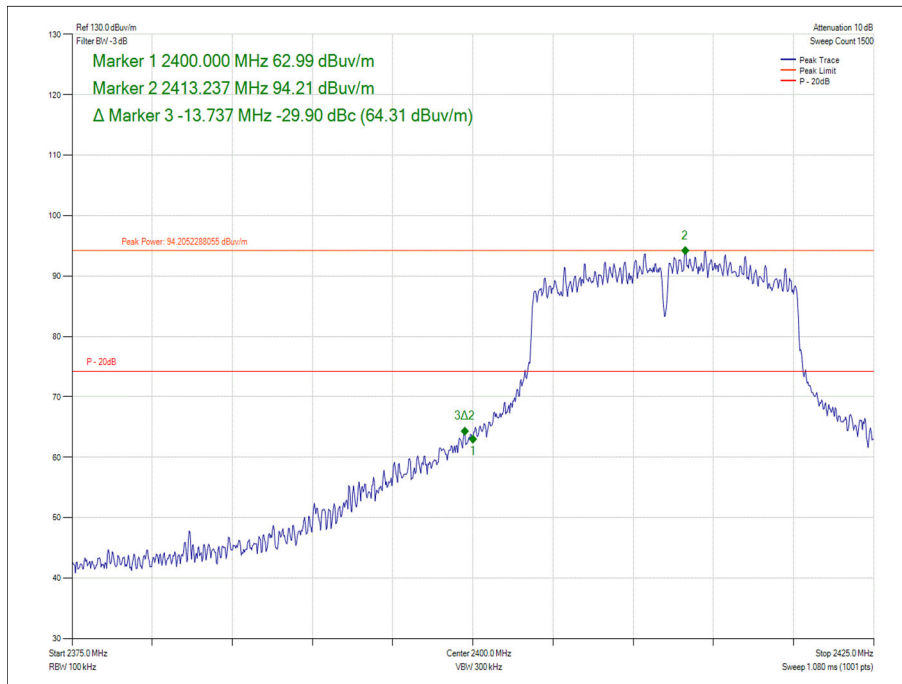
2.4 GHz WLAN - 802.11g

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Data Rate/MCS with the Highest Power	6 Mbps	2412	2400	-27.78
Data Rate/MCS with the Widest Bandwidth	54 Mbps	2412	2400	-29.90

**Table 21 - Authorised Band Edge Results**



**Figure 15 - Data Rate/MCS with the Highest Power - 6 Mbps  
 2412 MHz - Band Edge Frequency 2400 MHz**



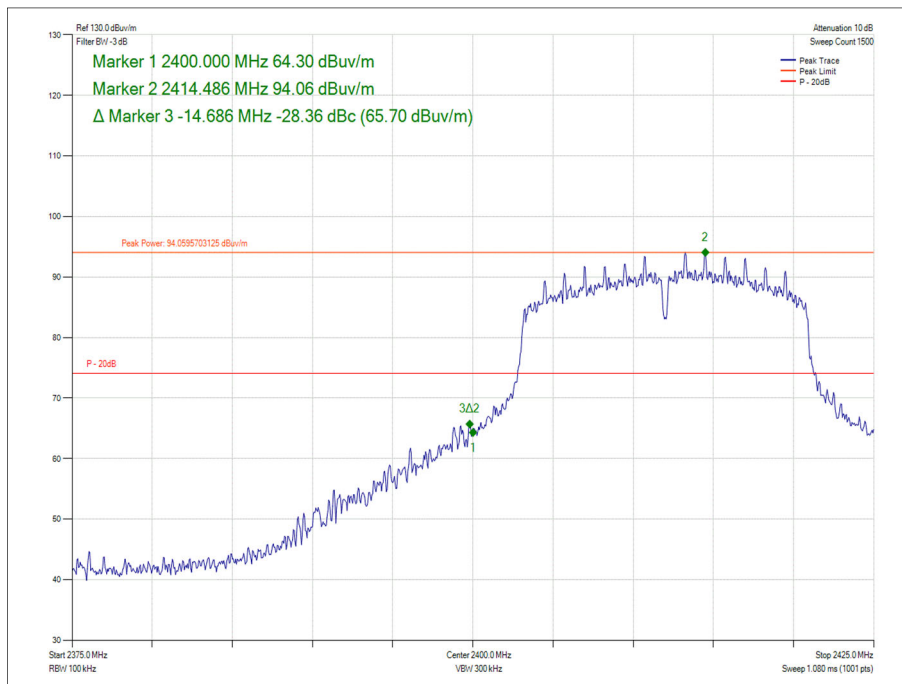
**Figure 16 - Data Rate/MCS with the Widest Bandwidth - 54 Mbps  
2412 MHz - Band Edge Frequency 2400 MHz**



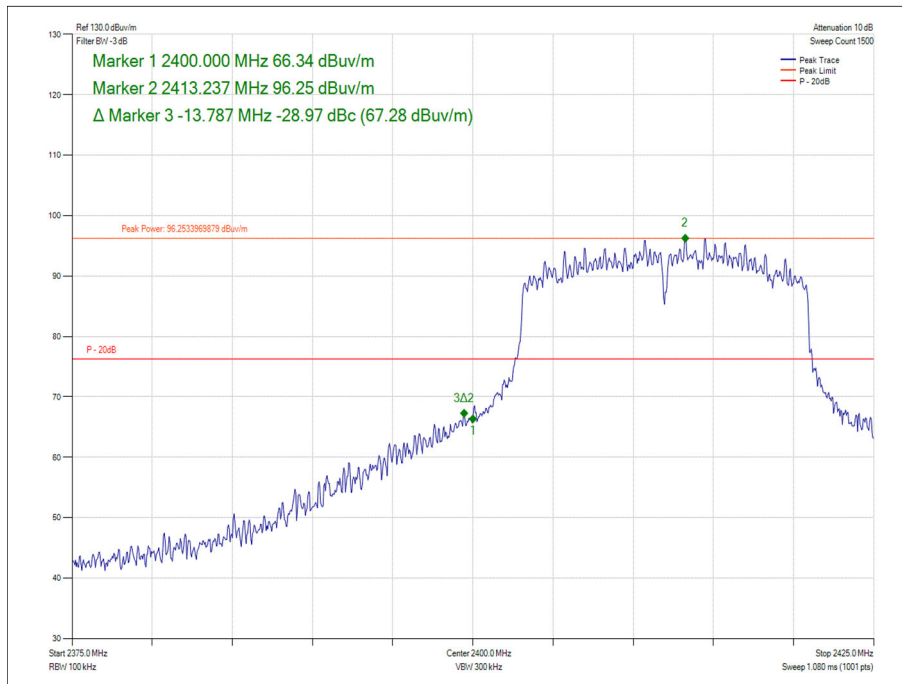
2.4 GHz WLAN - 802.11n 20 MHz Bandwidth

Mode	MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Data Rate/MCS with the Highest Power	MCS0	2412	2400	-28.36
Data Rate/MCS with the Widest Bandwidth	MCS6	2412	2400	-28.97

**Table 22 - Authorised Band Edge Results**



**Figure 17 - Data Rate/MCS with the Highest Power - MCS0  
 2412 MHz - Band Edge Frequency 2400 MHz**



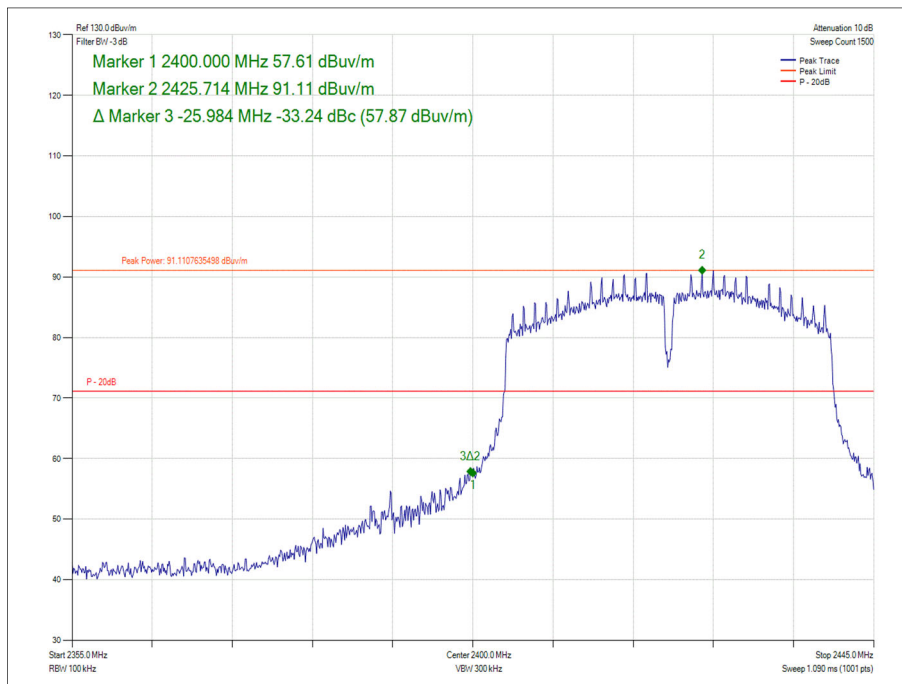
**Figure 18 - Data Rate/MCS with the Widest Bandwidth  
MCS6 - 2412 MHz - Band Edge Frequency 2400 MHz**



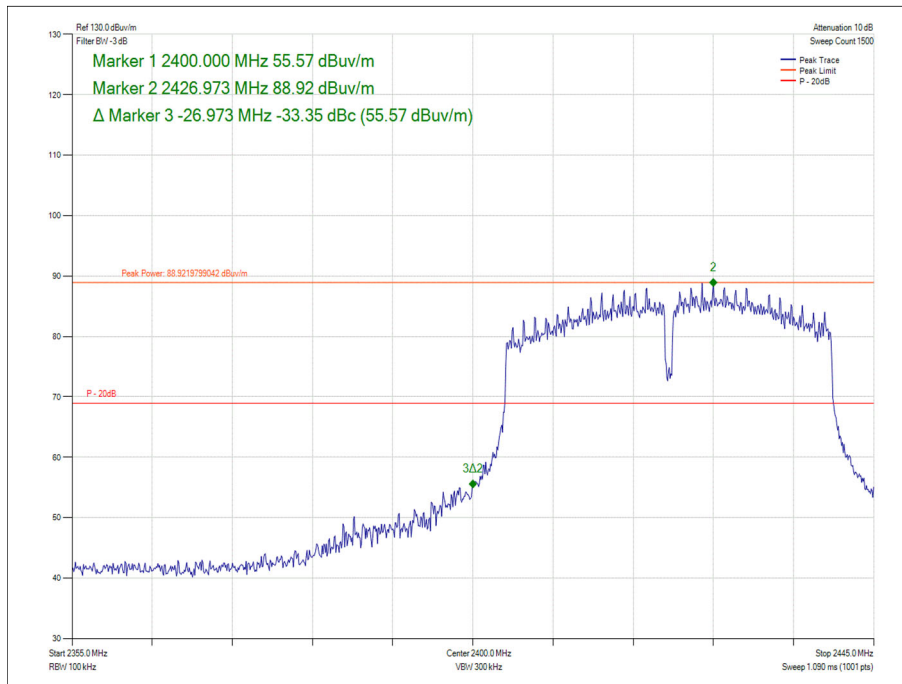
2.4 GHz WLAN - 802.11n 40 MHz Bandwidth

Mode	MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Data Rate/MCS with the Highest Power	MCS0	2422	2400	-33.24
Data Rate/MCS with the Widest Bandwidth	MCS4	2422	2400	-33.35

**Table 23 - Authorised Band Edge Results**



**Figure 19 - Data Rate/MCS with the Highest Power - MCS0  
 2422 MHz - Band Edge Frequency 2400 MHz**



**Figure 20 - Data Rate/MCS with the Widest Bandwidth - MCS4  
2422 MHz - Band Edge Frequency 2400 MHz**

FCC 47 CFR Part 15, Limit Clause 15.247 (d)

20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitter complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB below the fundamental instead of 20 dB.

ISED RSS-247, Limit Clause 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.





**2.4.7 Test Location and Test Equipment Used**

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygromer	Rotronic	A1	2677	12	20-Feb-2020
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	09-Jun-2020
Mast Controller	Maturo GmbH	NCD	4810	-	TU
Tilt Antenna Mast	Maturo GmbH	TAM 4.0-P	4811	-	TU
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	11-Mar-2020
Hygrometer	Rotronic	HP21	4989	12	02-May-2020
EmX Emissions Software	TUV SUD	EmX	5125	-	Software
8 Meter Cable	Teledyne	PR90-088-8MTR	5212	12	30-Aug-2020
EMI Test Receiver	Rohde & Schwarz	ESW44	5382	12	08-Oct-2020

**Table 24**

TU - Traceability Unscheduled



## **2.5 Restricted Band Edges**

### **2.5.1 Specification Reference**

FCC 47 CFR Part 15C, Clause 15.205  
ISED RSS-GEN, Clause 8.10

### **2.5.2 Equipment Under Test and Modification State**

SC2124, S/N: 1PR001909GM18R8 - Modification State 0

### **2.5.3 Date of Test**

11-February-2020 to 12-February-2020

### **2.5.4 Test Method**

This test was performed in accordance with ANSI C63.10, clause 6.10.5.

Peak measurements were performed in accordance with ANSI C63.10, clause 11.12.2.4.

Plots for average measurements were taken in accordance with ANSI C63.10, clause 4.1.4.2.5. These are shown for information purposes and were used to determine the worst case measurement point. Final average measurements were then taken in accordance with ANSI C63.10 clause 11.12.2.5.2 to obtain the measurement result recorded in the test results tables.

The measured duty cycle was found to be less than 98 %, so a duty cycle correction factor was added to the average measurements.

The following conversion can be applied to convert from dB $\mu$ V/m to  $\mu$ V/m:  
 $10^{(\text{Field Strength in dB}\mu\text{V/m}/20)}$ .

Note: The power setting of the DUT that this test was performed at differs from those used in section 2.1 of the present document. The manufacturer and test laboratory hold these values on record.

### **2.5.5 Environmental Conditions**

Ambient Temperature	18.3 °C
Relative Humidity	30.1 %

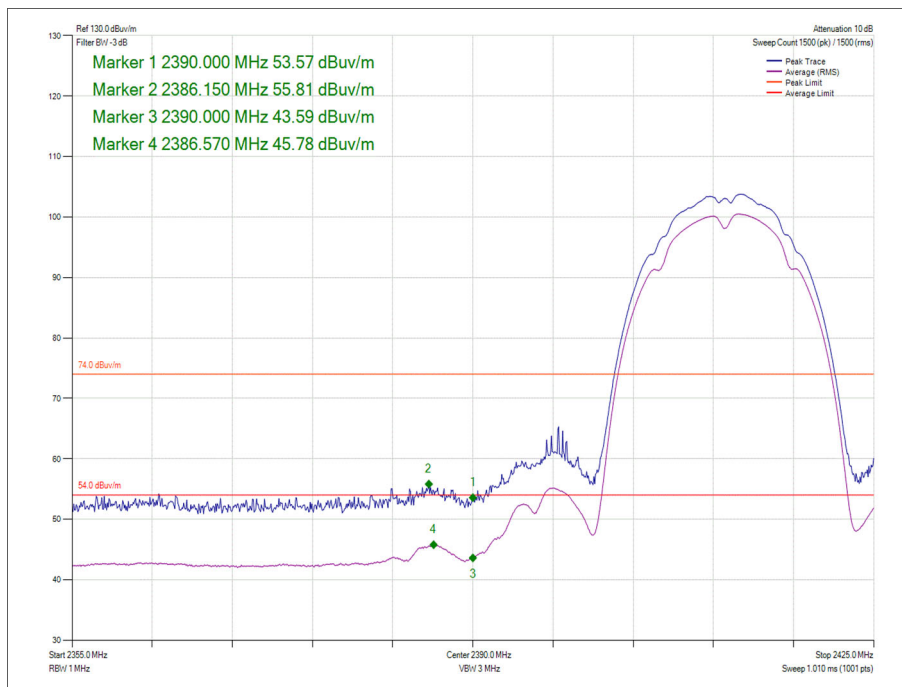


**2.5.6 Test Results**

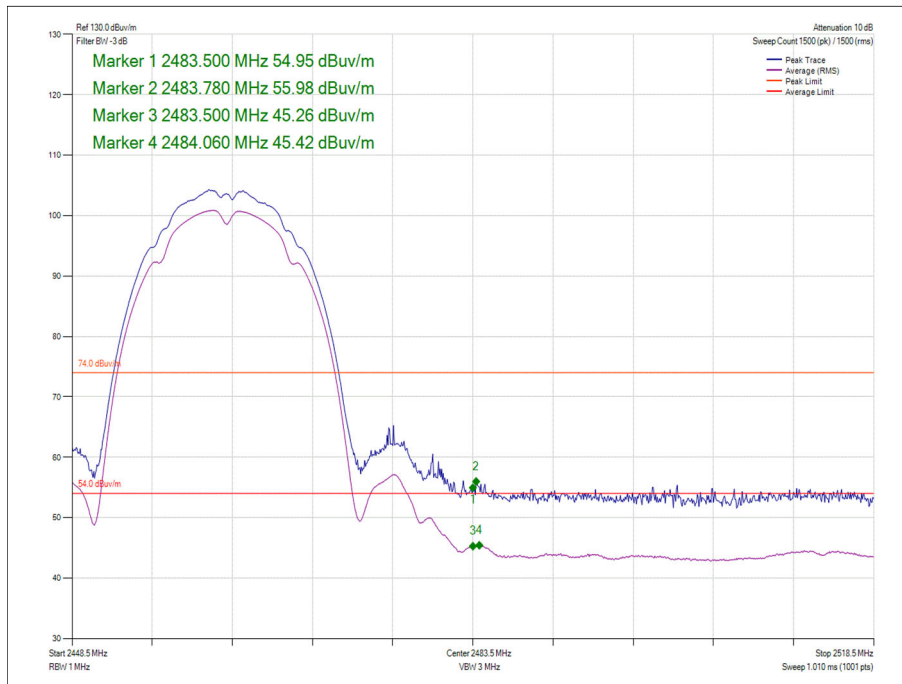
2.4 GHz WLAN - 802.11b

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Data Rate/MCS with the Highest Power	1 Mbps	2412	2390	55.81	45.89
Data Rate/MCS with the Highest Power	1 Mbps	2462	2483.5	55.98	45.53
Data Rate/MCS with the Widest Bandwidth	5.5 Mbps	2412	2390	55.75	45.60
Data Rate/MCS with the Widest Bandwidth	5.5 Mbps	2462	2483.5	56.16	45.75

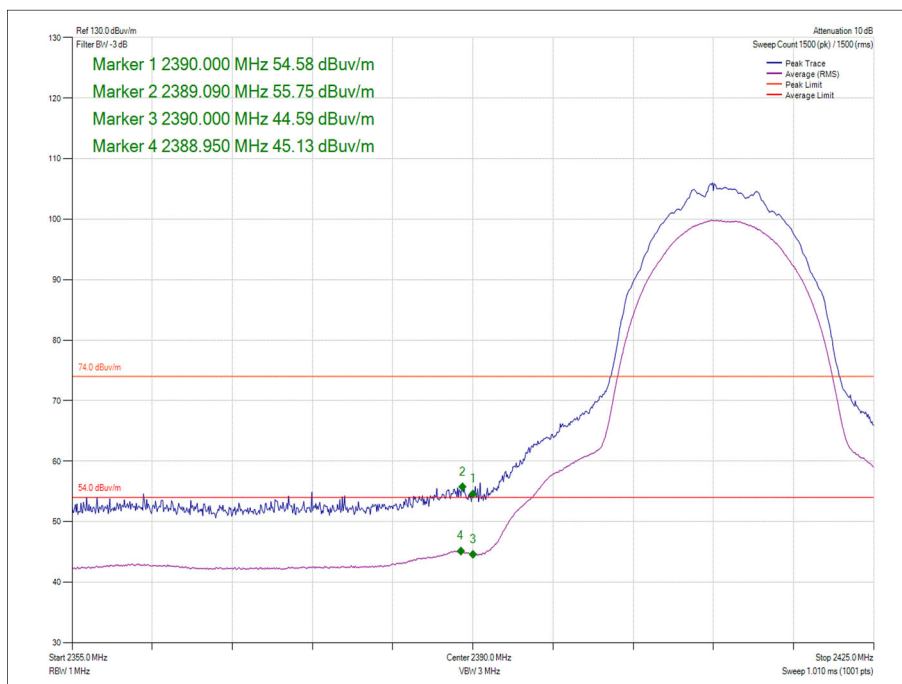
**Table 25 - Restricted Band Edge Results**



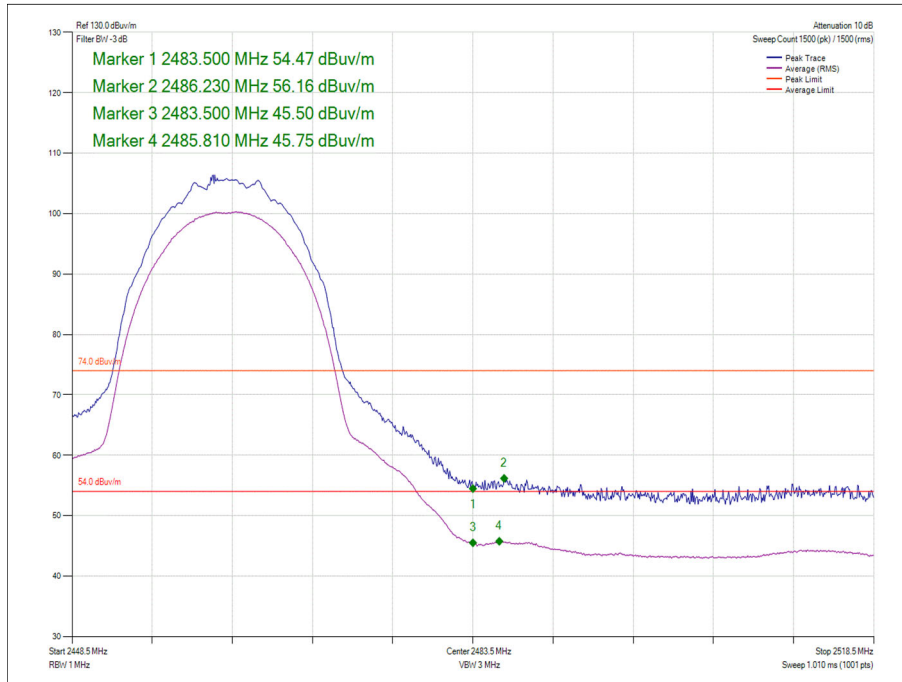
**Figure 21 - Data Rate/MCS with the Highest Power - 1 Mbps  
 2412 MHz - Band Edge Frequency 2390 MHz**



**Figure 22 - Data Rate/MCS with the Highest Power - 1 Mbps  
 2462 MHz - Band Edge Frequency 2483.5 MHz**



**Figure 23 - Data Rate/MCS with the Widest Bandwidth - 5.5 Mbps  
 2412 MHz - Band Edge Frequency 2390 MHz**



**Figure 24 - Data Rate/MCS with the Widest Bandwidth - 5.5 Mbps  
2462 MHz - Band Edge Frequency 2483.5 MHz**