



FCC RF Test Report

APPLICANT : ASUSTeK COMPUTER INC.
EQUIPMENT : ASUS Phone(Mobile Phone)
BRAND NAME : ASUS
MODEL NAME : ASUS_AI2401_E
FCC ID : MSQAI2401
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System
TEST DATE(S) : Nov. 02, 2023 ~ Jan. 03, 2024

We, Sporton International Inc. (ShenZhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (ShenZhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (ShenZhen)

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION.....	5
1.1 Applicant.....	5
1.2 Manufacturer.....	5
1.3 Product Feature of Equipment Under Test.....	5
1.4 Product Specification of Equipment Under Test.....	6
1.5 Modification of EUT	7
1.6 Testing Location	7
1.7 Test Software.....	7
1.8 Applicable Standards.....	7
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST.....	8
2.1 Carrier Frequency Channel	8
2.2 Test Mode.....	9
2.3 Connection Diagram of Test System.....	10
2.4 Support Unit used in test configuration and system	11
2.5 EUT Operation Test Setup	11
2.6 Measurement Results Explanation Example.....	11
3 TEST RESULT	12
3.1 6dB and 99% Bandwidth Measurement	12
3.2 Output Power Measurement.....	31
3.3 Power Spectral Density Measurement	32
3.4 Conducted Band Edges and Spurious Emission Measurement	51
3.5 Radiated Band Edges and Spurious Emission Measurement	76
3.6 AC Conducted Emission Measurement.....	80
3.7 Antenna Requirements.....	82
4 LIST OF MEASURING EQUIPMENT.....	83
5 MEASUREMENT UNCERTAINTY.....	84
APPENDIX A. CONDUCTED TEST RESULTS	
APPENDIX B. AC CONDUCTED EMISSION TEST RESULT	
APPENDIX C. RADIATED SPURIOUS EMISSION	
APPENDIX D. DUTY CYCLE PLOTS	
APPENDIX E. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR391308B	Rev. 01	Initial issue of report	Jan. 18, 2024



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	99% Bandwidth	-	Report only	-
3.2	15.247(b)(3)	Peak Output Power	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	$\leq 20\text{dBc}$	Pass	-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 7.76 dB at 54.250 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 12.02 dB at 0.150 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

ASUSTeK COMPUTER INC.

1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan

1.2 Manufacturer

ASUSTeK COMPUTER INC.

1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	ASUS Phone(Mobile Phone)
Brand Name	ASUS
Model Name	ASUS_AI2401_E
FCC ID	MSQAI2401
IMEI Code	Conducted: 356313810100997/356313810101003 Conduction: 356313810100831/356313810100849 Radiation: 356313810100815/356313810100823 for Sample 1 350619900100671/350619900100689 for Sample 2
HW Version	R2.0
SW Version	Android 14
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are four SKUs of EUT for this project. The differences between them are summary below, According to the difference, we evaluate SKU1 to perform full test and SKU2 is verified worse case for RSE testing.

Sample list				
	SKU1	SKU2	SKU3	SKU4
Model name	ASUS_AI2401_E	ASUS_AI2401_E	ASUS_AI2401_E	ASUS_AI2401_E
Config.	US(Pro)	US(Enrty)	US(Pro)	US(Enrty)
RF module board	US(Pro)	US(Enrty)	US(Pro)	US(Enrty)
LCD+Touch front frame	AI2401 FRONT CASE ASSY	AI2401 FRONT CASE ASSY	AI2401 FRONT CASE ASSY	AI2401 FRONT CASE ASSY
DDR	16G(HYNIX) HYNIX / H58G76BK8HX095	16G(Micron) Micron / MT62F2G64D8ZA-023 WT:C	16G(HYNIX) HYNIX / H58G76BK8HX095	16G(Micron) Micron / MT62F2G64D8ZA-023 WT:C
UFS	1TB(Samsung) Samsung / KLUGGARHHD-B0G1	512G(HYNIX) (UFS4.0) HYNIX / HN8T274EJKX130	1TB(Samsung) Samsung / KLUGGARHHD-B0G1	512G(HYNIX) (UFS4.0) HYNIX / HN8T274EJKX130
MB	AI2401_MB	AI2401_MB	AI2401_MB	AI2401_MB
Back cover	WW Pro(Mini LED)	WW Entry(LGF)	WW Pro(Mini LED)	WW Entry(LGF)

Battery	SCUD / C21P2301	SCUD / C21P2301	SCUD / C21P2301	SCUD / C21P2301
Main 50+13M	SHINETECH / DDN03B	RAYPRUS / CASDJ-000A	RAYPRUS / CASDJ-000A	SHINETECH / DDN03B
Tele 32M	Kunshan Q-TECH / C3HS01	SHINETECH / DHG01B	SHINETECH / DHG01B	Kunshan Q-TECH / C3HS01
Front 32M	TSPRECISSION / TVHF3046	RAYPRUS / CASG-000A	RAYPRUS / CASG-000A	TSPRECISSION / TVHF3046
PCB	COMPEQ	COMPEQ	COMPEQ	COMPEQ
CPU	QUALCOMM SM-8650 MPSP1629	QUALCOMM SM-8650 MPSP1629	QUALCOMM SM-8650 MPSP1629	QUALCOMM SM-8650 MPSP1629
WPC antenna	ASAP	INPAQ	INPAQ	ASAP
NFC antenna	ASAP	INPAQ	INPAQ	ASAP
WWAN/WLAN /BT/GPS antenna	INPAQ	ASAP	ASAP	INPAQ

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	40
Carrier Frequency of Each Channel	40 Channel (37 hopping + 3 advertising channel)
Maximum Output Power to Antenna	<SISO Ant.5> BLE 125kbps: 8.81 dBm (0.0076 W) BLE 500kbps: 8.65 dBm (0.0073 W) BLE 1Mbps: 8.73 dBm (0.0075 W) BLE 2Mbps: 8.86 dBm (0.0077 W) <SISO Ant.4> BLE 125kbps: 7.72 dBm (0.0059 W) BLE 500kbps: 7.70 dBm (0.0059 W) BLE 1Mbps: 7.57 dBm (0.0057 W) BLE 2Mbps: 7.73 dBm (0.0059 W) <SISO Ant.6> BLE 125kbps: 5.68 dBm (0.0037 W) BLE 500kbps: 5.56 dBm (0.0036 W) BLE 1Mbps: 5.66 dBm (0.0037 W) BLE 2Mbps: 5.67 dBm (0.0037 W)
99% Occupied Bandwidth	<SISO Ant.5> BLE 125kbps: 1.047 MHz BLE 2Mbps: 2.034 MHz <SISO Ant.4> BLE 125kbps: 1.047 MHz BLE 2Mbps: 2.026 MHz <SISO Ant.6> BLE 125kbps: 1.047 MHz BLE 2Mbps: 2.026 MHz
Antenna Type / Gain	<Ant.4>: PIFA Antenna with gain -3.82 dBi <Ant.5>: PIFA Antenna with gain -3.60 dBi <Ant.6>: PIFA Antenna with gain -4.88 dBi
Type of Modulation	Bluetooth LE : GFSK

Note:

1. BLE 2Mbps does not support three primary advertising channels (CH00/CH12/CH39).
2. BLE does not support MIMO, and Ant.4/5/6 can't transmit simultaneously.
3. For BLE 125kbps / 500kbps / 1Mbps mode, the whole testing has assessed BLE 125kbps by referring to their maximum output power.



1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-SZ TH01-SZ	CN1256	421272

Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH04-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 15 Subpart C §15.247
- ♦ FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ♦ ANSI C63.10-2013

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.



2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	0	2402	21	2444
	1	2404	22	2446
	2	2406	23	2448
	3	2408	24	2450
	4	2410	25	2452
	5	2412	26	2454
	6	2414	27	2456
	7	2416	28	2458
	8	2418	29	2460
	9	2420	30	2462
	10	2422	31	2464
	11	2424	32	2466
	12	2426	33	2468
	13	2428	34	2470
	14	2430	35	2472
	15	2432	36	2474
	16	2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
	20	2442	-	-



2.2 Test Mode

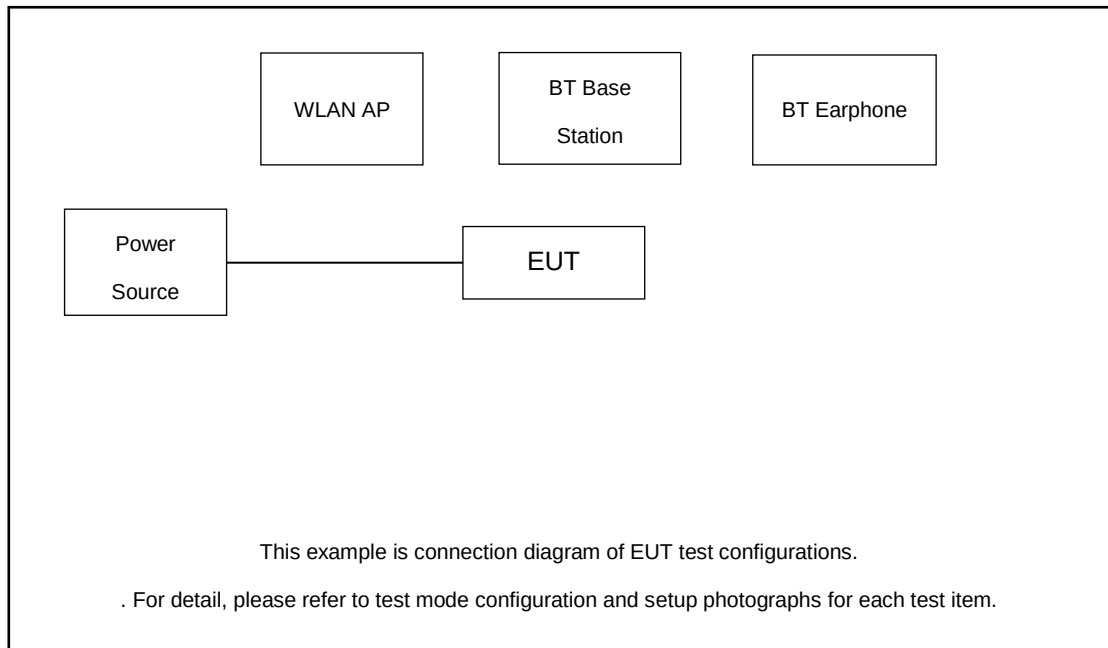
- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z, Y plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

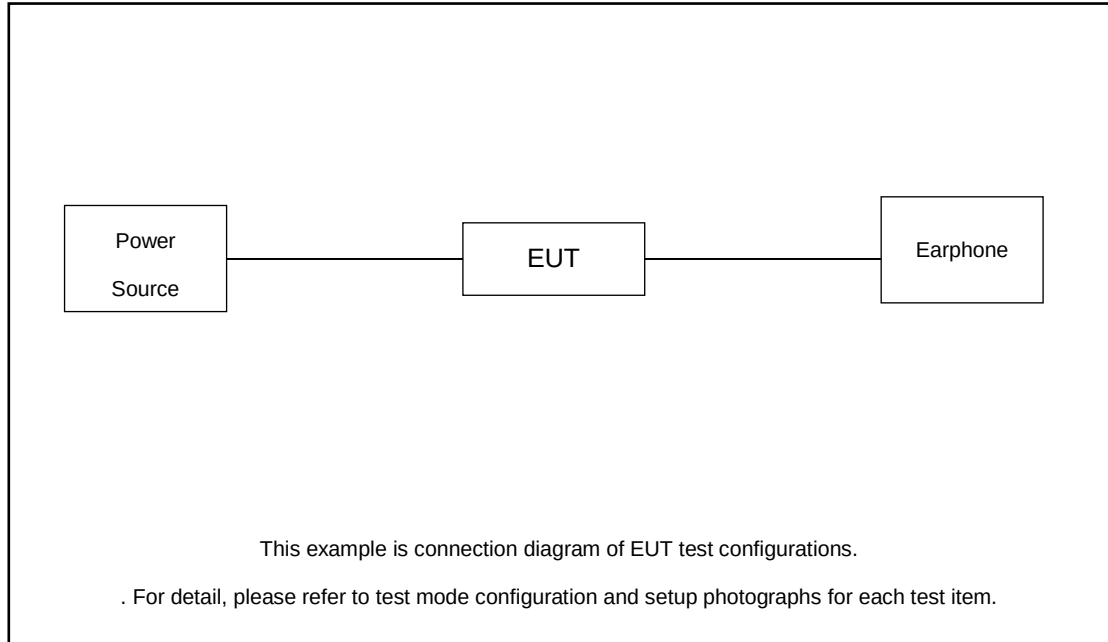
Summary table of Test Cases	
Test Item	Data Rate / Modulation
	Bluetooth LE / GFSK
Conducted TCs	Mode 1: Bluetooth Tx CH00_2402 MHz_BLE 125Kbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_BLE 125Kbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_BLE 125Kbps
	Mode 4: Bluetooth Tx CH01_2404 MHz_BLE 2Mbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_BLE 2Mbps
	Mode 6: Bluetooth Tx CH38_2478 MHz_BLE 2Mbps
Radiated TCs	Mode 1: Bluetooth Tx CH00_2402 MHz_BLE 125Kbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_BLE 125Kbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_BLE 125Kbps
	Mode 4: Bluetooth Tx CH01_2404 MHz_BLE 2Mbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_BLE 2Mbps
	Mode 6: Bluetooth Tx CH38_2478 MHz_BLE 2Mbps
AC Conducted Emission	Mode 1: GSM850 Idle + Bluetooth Link + WLAN Link (2.4G) + USB Cable 1(Charging from Adapter 1) + Battery
Remark: For Radiated Test Cases, The tests were performance with Adapter 1, Battery, Earphone and USB Cable 1.	

2.3 Connection Diagram of Test System

AC Conducted Emission:



Radiated Emission:



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Base Station(LTE)	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
2.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
3.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A

2.5 EUT Operation Test Setup

For BLE function, the engineering test program was provided and enabled to make EUT continuous transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 1.30 dB and 10dB attenuator.

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\
 &= 1.30 + 10 = 11.30 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

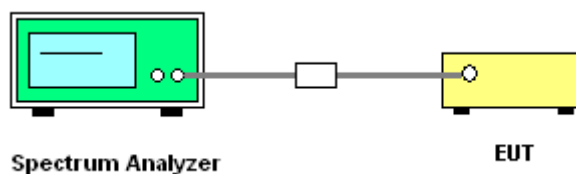
3.1.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.1.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 11.8
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1% to 5% of the 99% OBW and the VBW is set to 3 times of the RBW.
6. Measure and record the results in the test report.

3.1.4 Test Setup



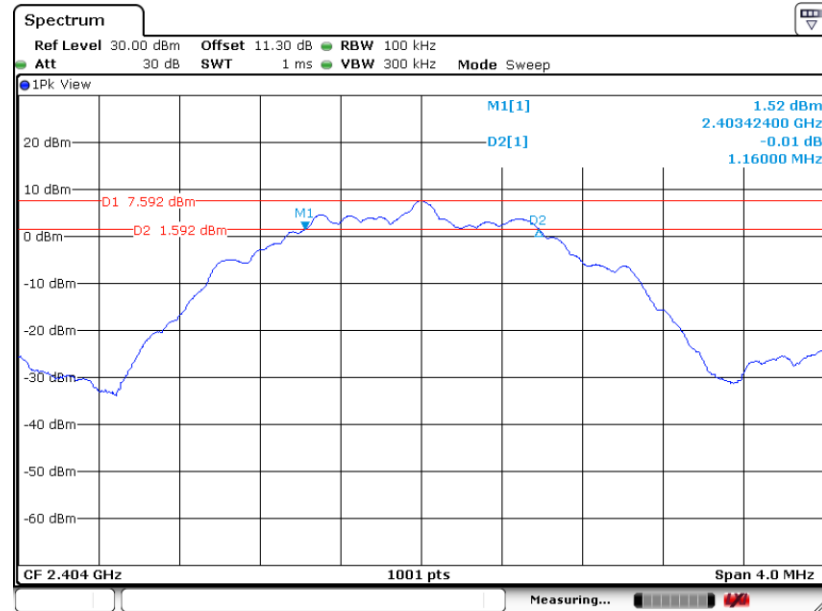


3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

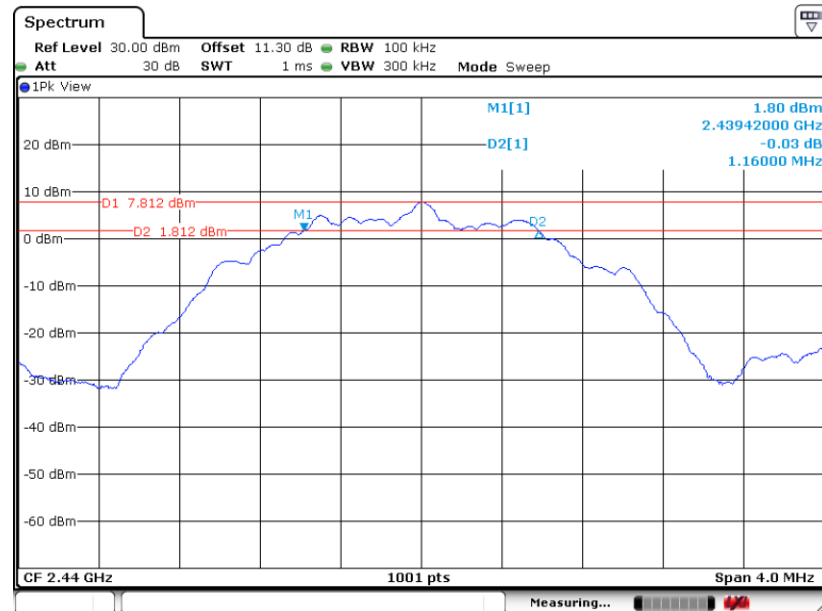
Bluetooth LE 2Mbps (Ant.5):

6 dB Bandwidth Plot on Channel 01



Date: 1.DEC.2023 10:49:36

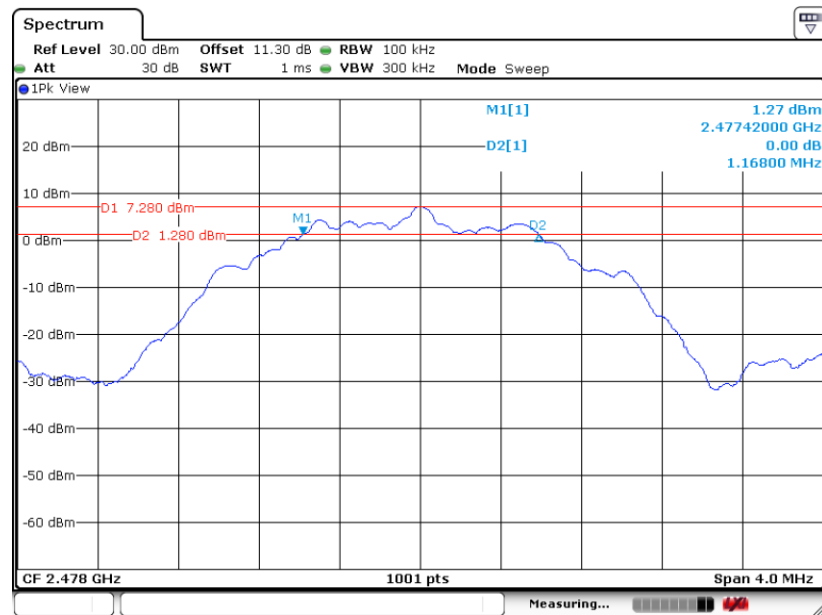
6 dB Bandwidth Plot on Channel 19



Date: 1.DEC.2023 10:55:44

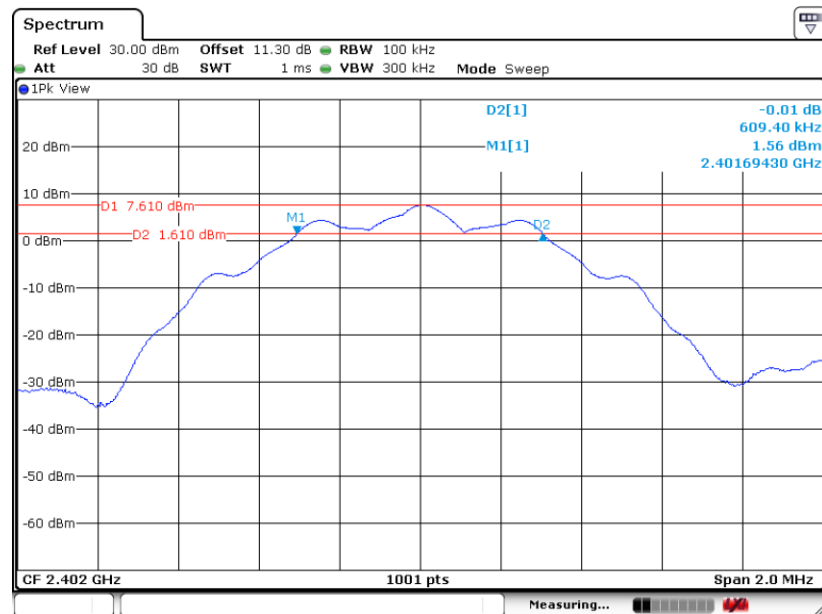


6 dB Bandwidth Plot on Channel 38



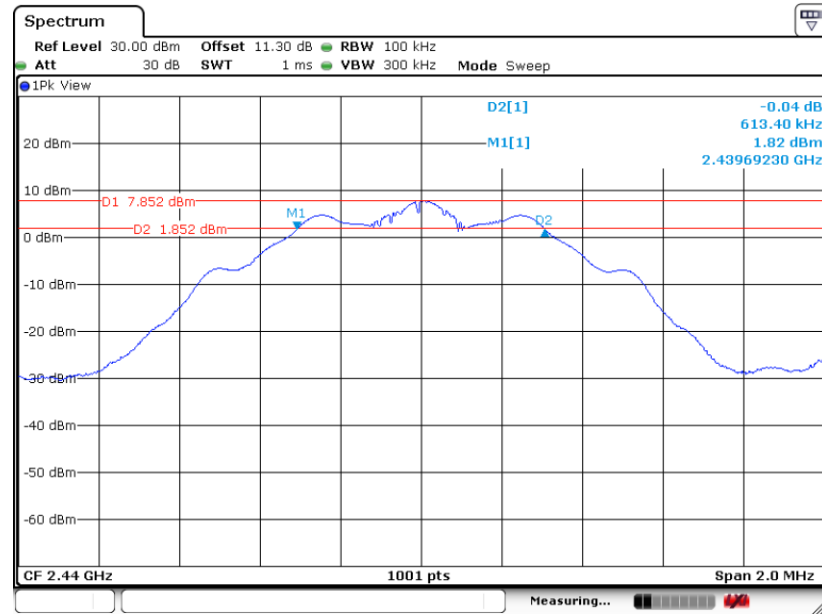
Bluetooth LE 125Kbps (Ant.5):

6 dB Bandwidth Plot on Channel 00



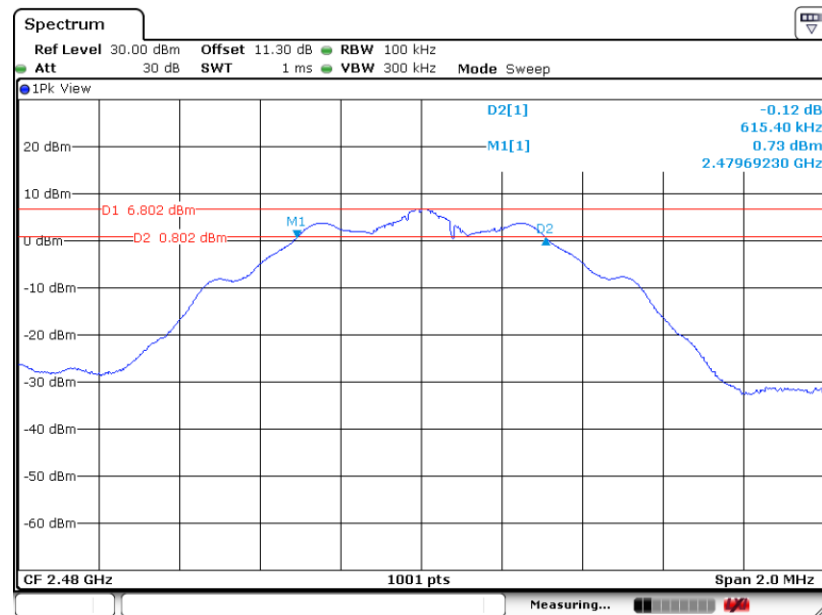


6 dB Bandwidth Plot on Channel 19



Date: 1.DEC.2023 10:43:47

6 dB Bandwidth Plot on Channel 39

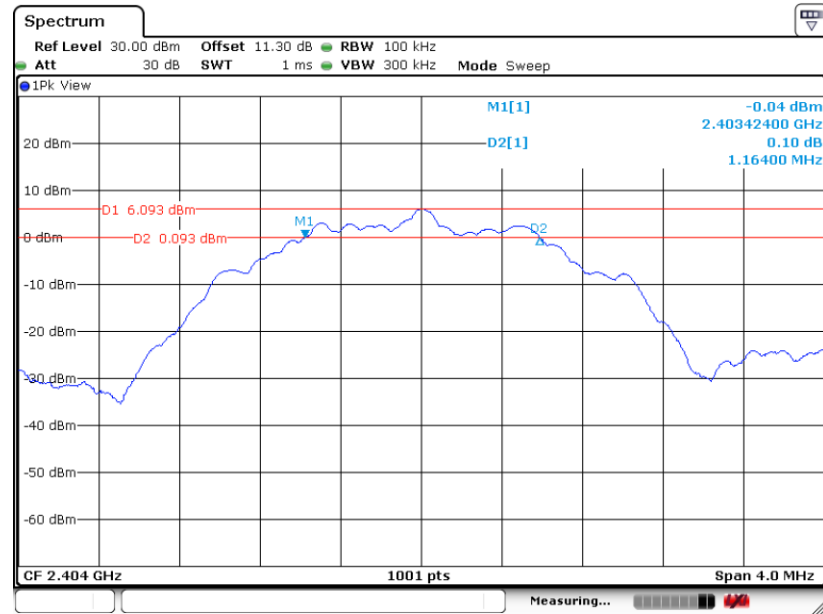


Date: 1.DEC.2023 10:46:09



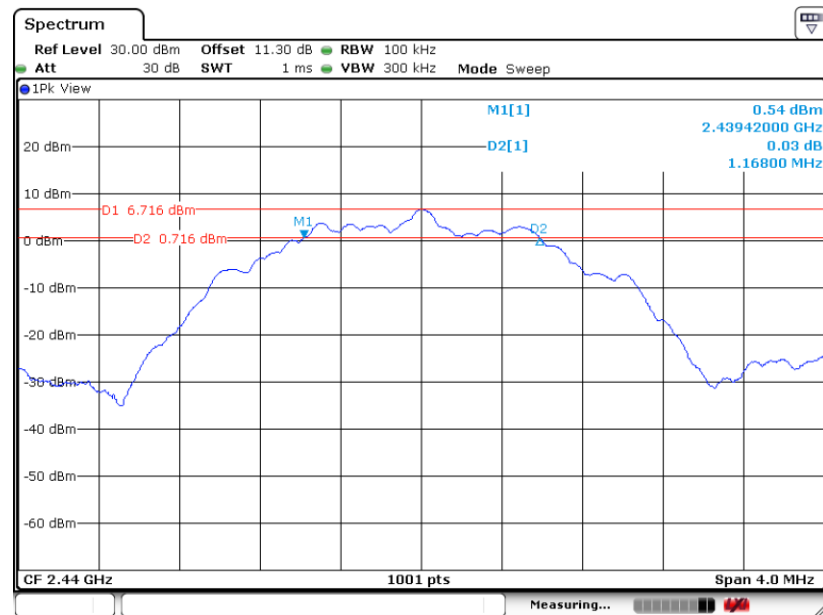
Bluetooth LE 2Mbps (Ant.4):

6 dB Bandwidth Plot on Channel 01



Date: 1.DEC.2023 11:03:19

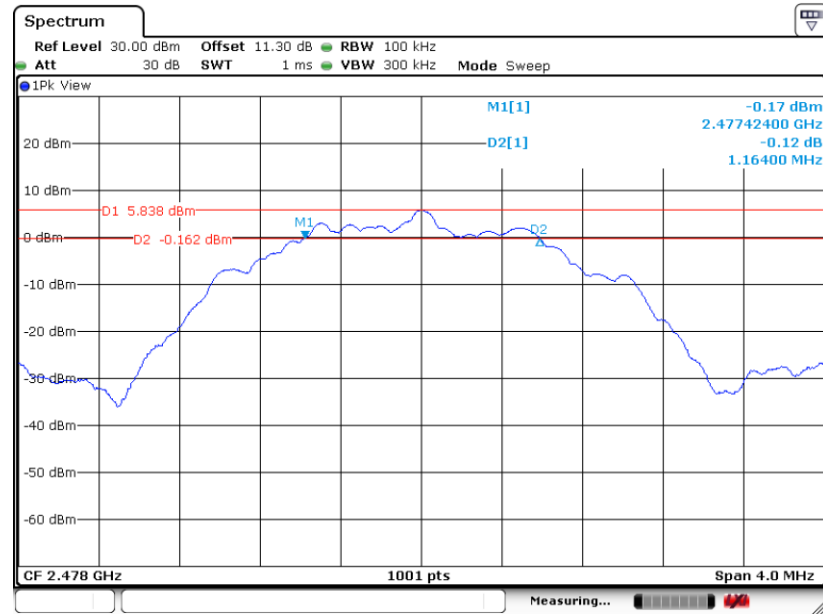
6 dB Bandwidth Plot on Channel 19



Date: 1.DEC.2023 11:07:04



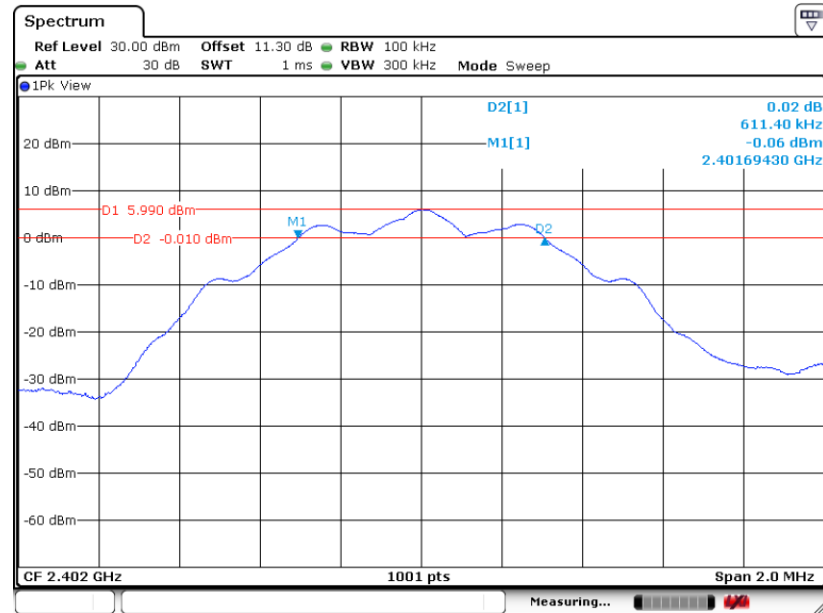
6 dB Bandwidth Plot on Channel 38



Date: 1.DEC.2023 11:09:32

Bluetooth LE 125Kbps (Ant.4):

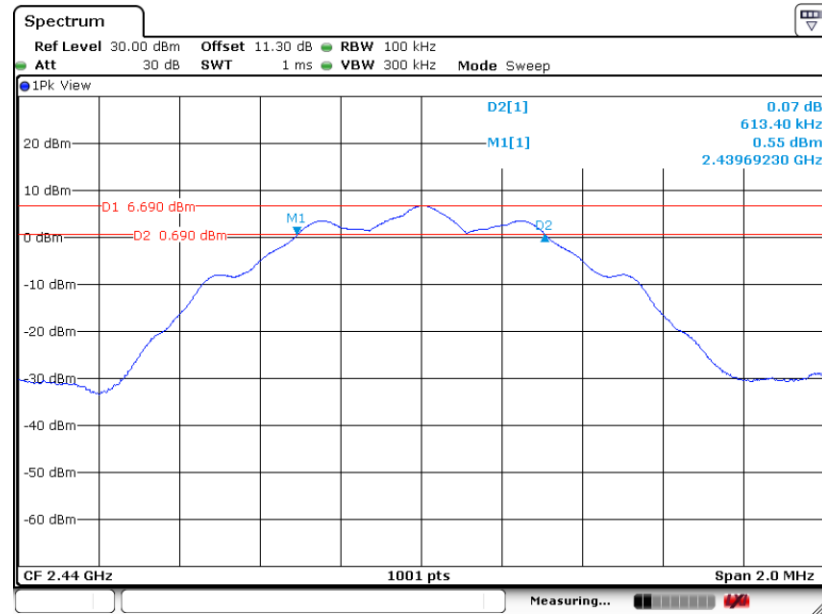
6 dB Bandwidth Plot on Channel 00



Date: 1.DEC.2023 11:21:28

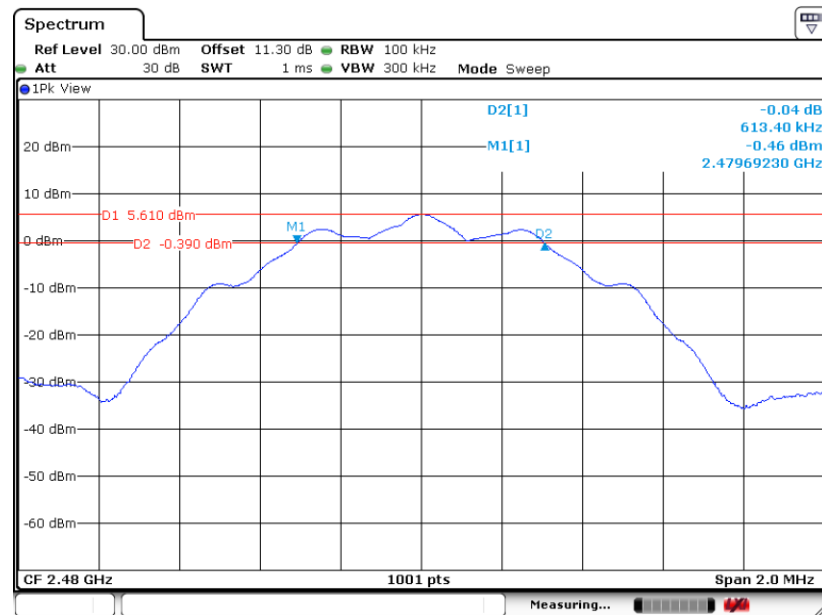


6 dB Bandwidth Plot on Channel 19



Date: 1.DEC.2023 11:25:01

6 dB Bandwidth Plot on Channel 39

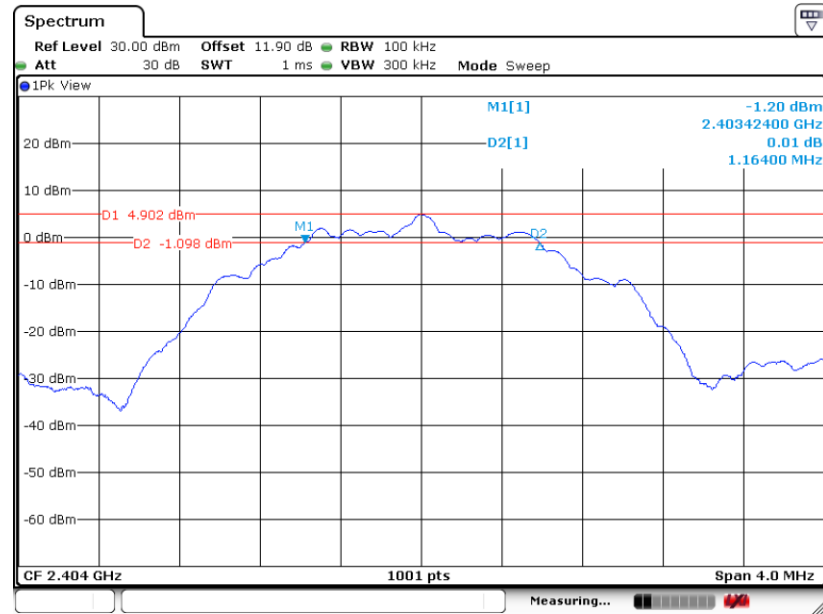


Date: 1.DEC.2023 11:27:43



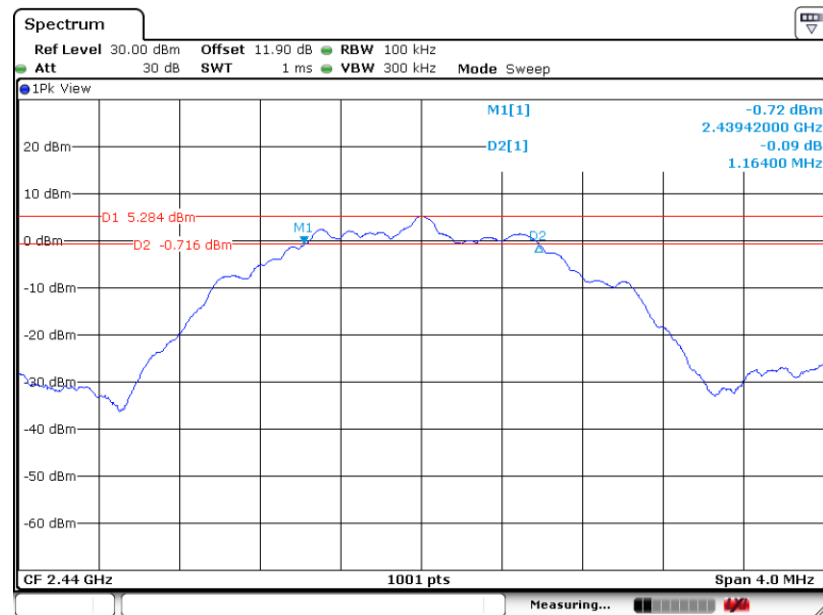
Bluetooth LE 2Mbps (Ant.6):

6 dB Bandwidth Plot on Channel 01



Date: 1.DEC.2023 12:08:33

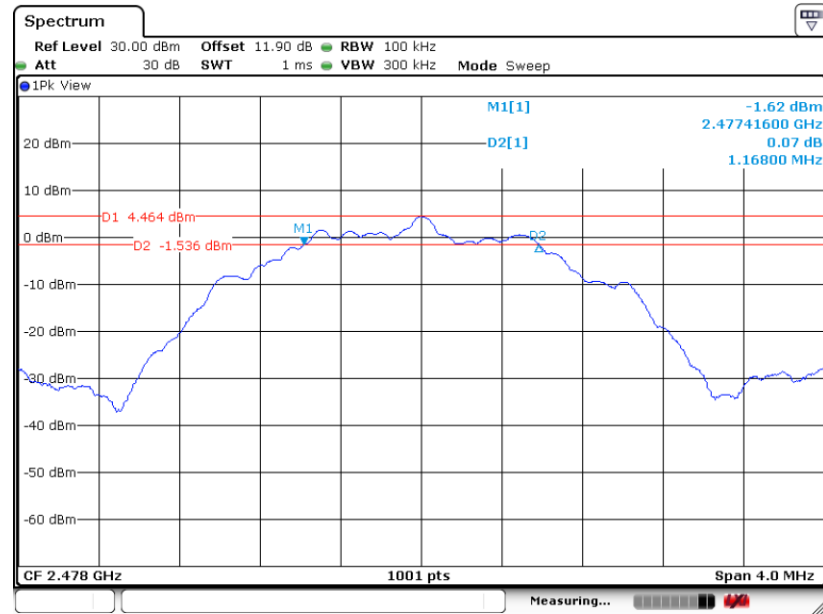
6 dB Bandwidth Plot on Channel 19



Date: 1.DEC.2023 12:16:58



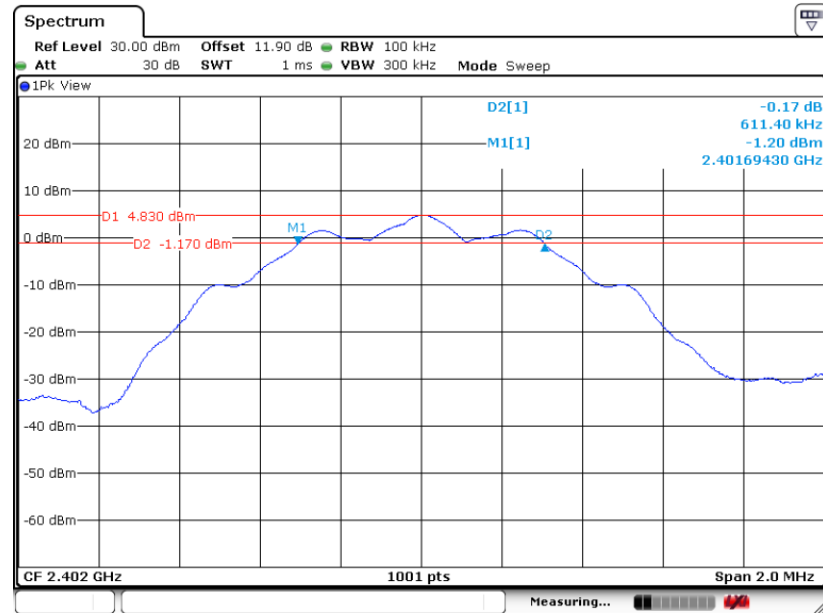
6 dB Bandwidth Plot on Channel 38



Date: 1.DEC.2023 12:18:35

Bluetooth LE 125Kbps (Ant.6):

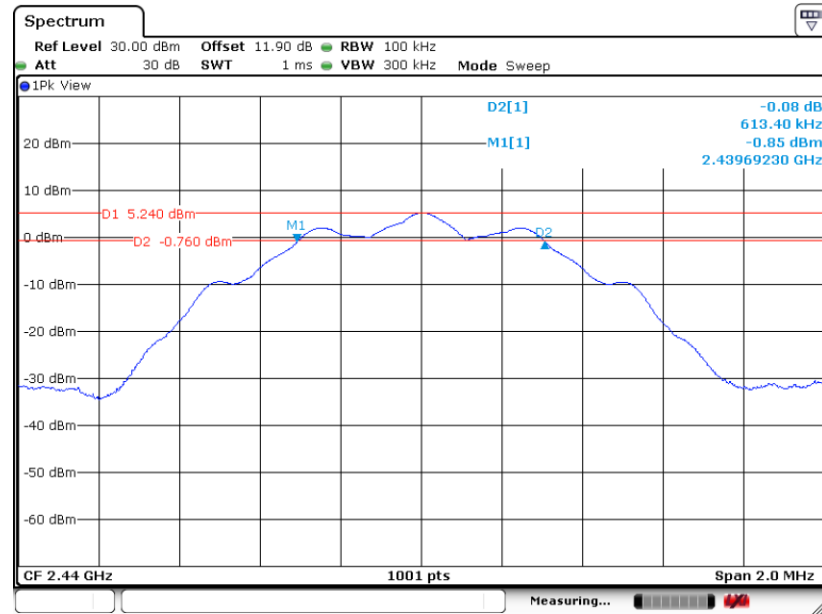
6 dB Bandwidth Plot on Channel 00



Date: 1.DEC.2023 11:54:51

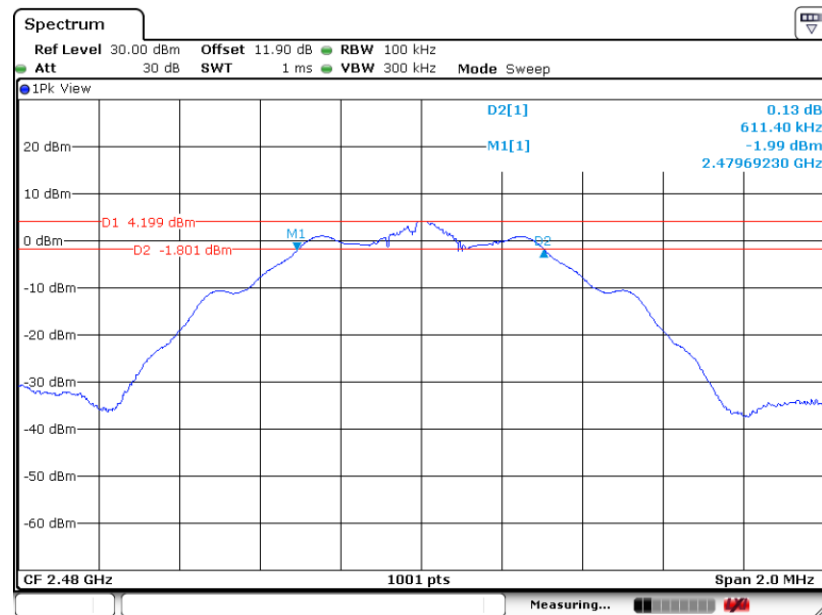


6 dB Bandwidth Plot on Channel 19



Date: 1.DEC.2023 11:58:51

6 dB Bandwidth Plot on Channel 39



Date: 1.DEC.2023 12:04:34

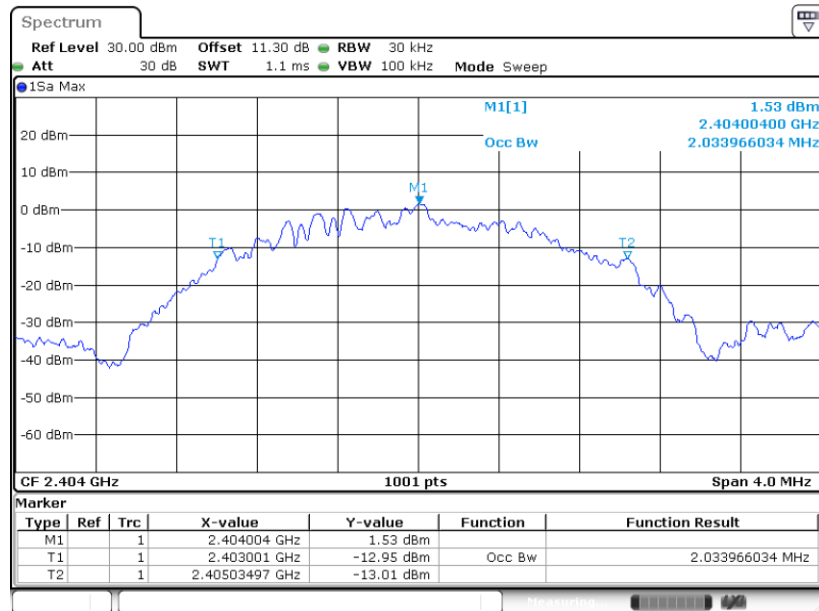


3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

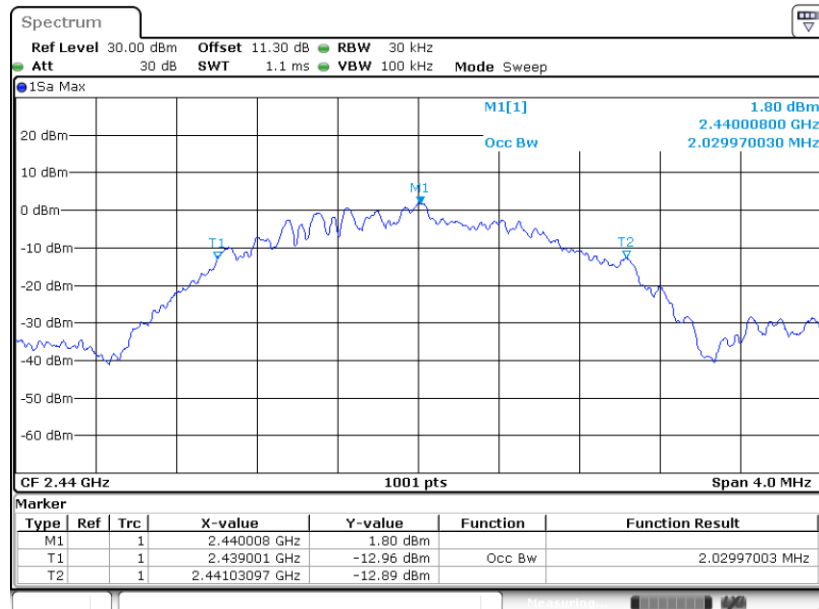
Bluetooth LE 2Mbps (Ant.5):

99% Occupied Bandwidth Plot on Channel 01



Date: 1.DEC.2023 10:48:42

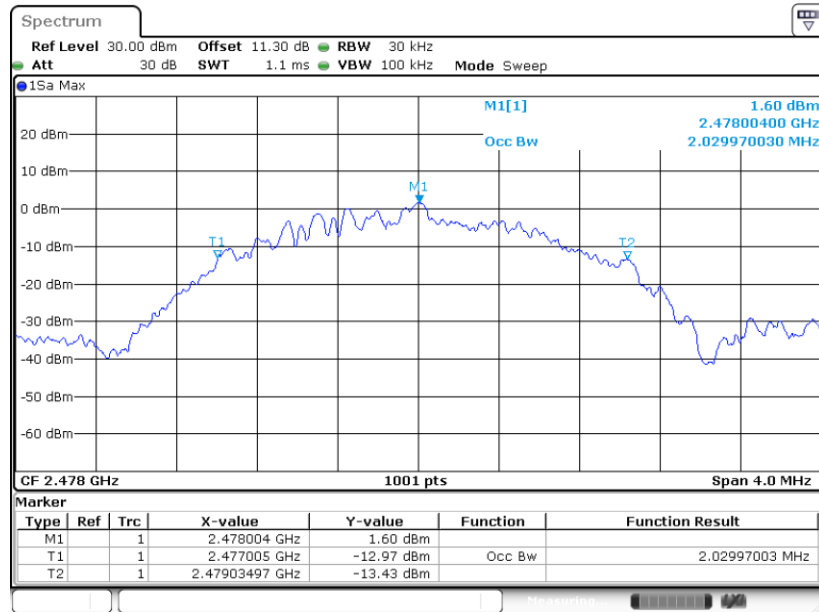
99% Occupied Bandwidth Plot on Channel 19



Date: 1.DEC.2023 10:55:29

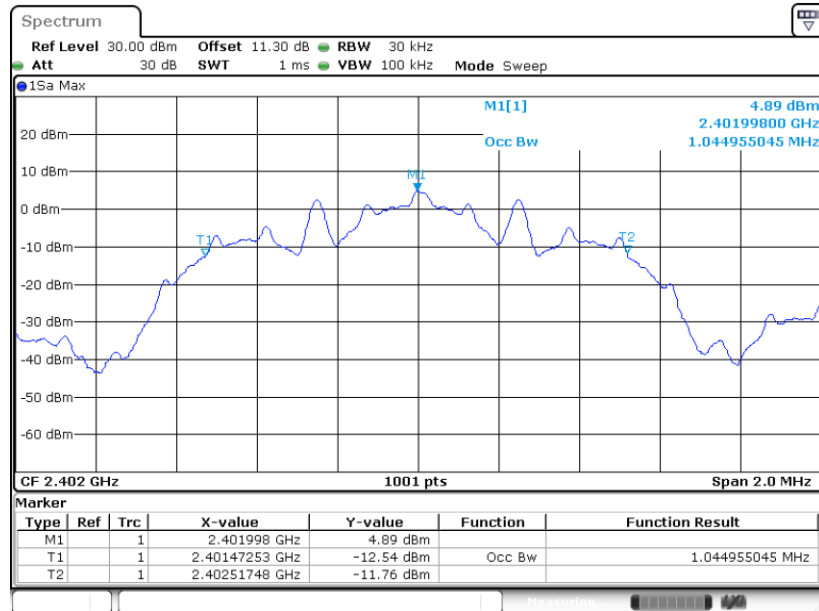


99% Occupied Bandwidth Plot on Channel 38



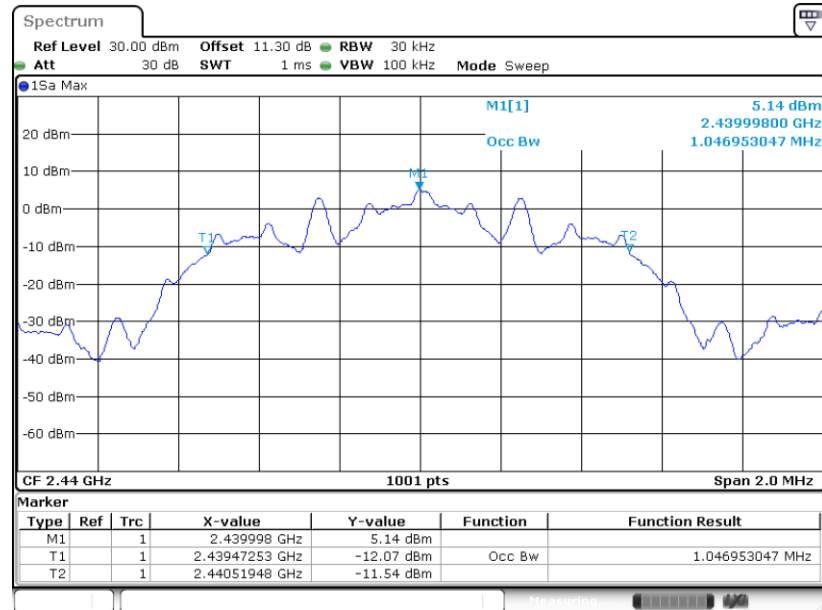
Bluetooth LE 125Kbps (Ant.5):

99% Occupied Bandwidth Plot on Channel 00



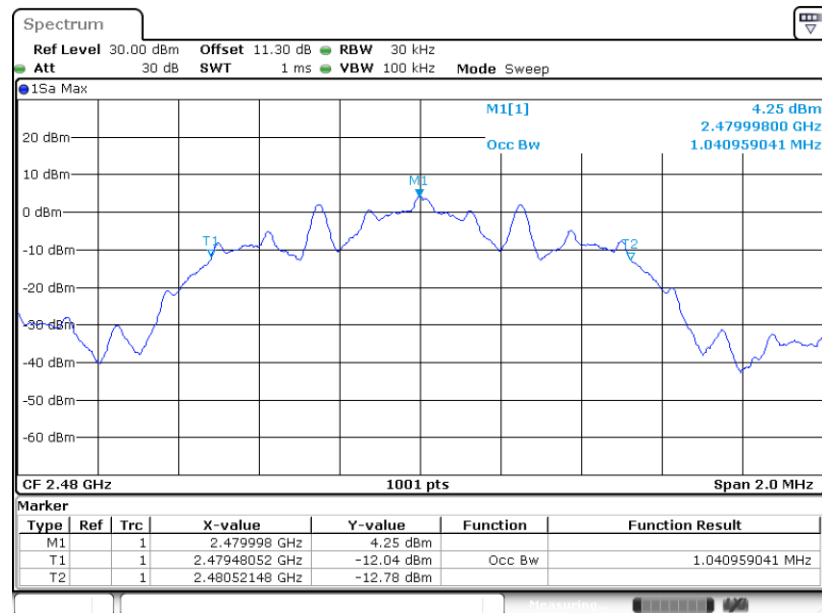


99% Occupied Bandwidth Plot on Channel 19



Date: 1.DEC.2023 10:43:02

99% Occupied Bandwidth Plot on Channel 39

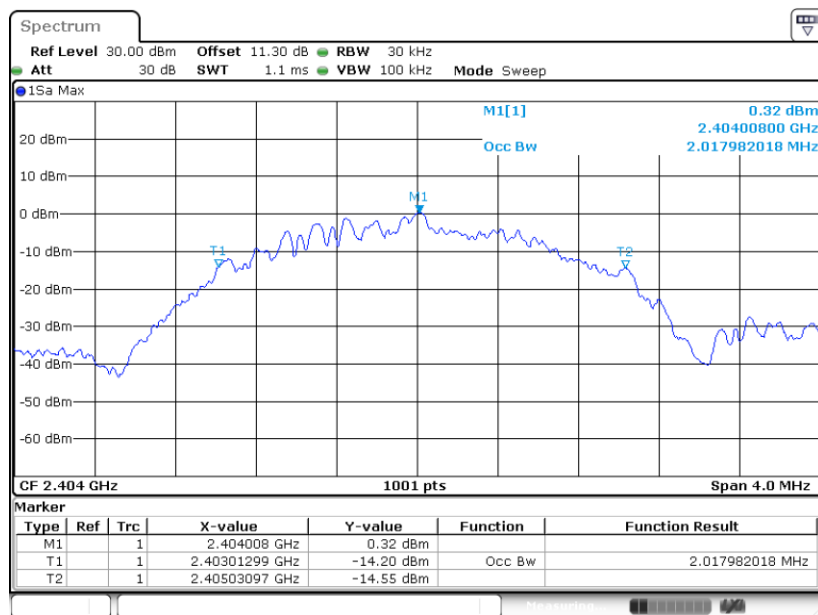


Date: 1.DEC.2023 10:45:19



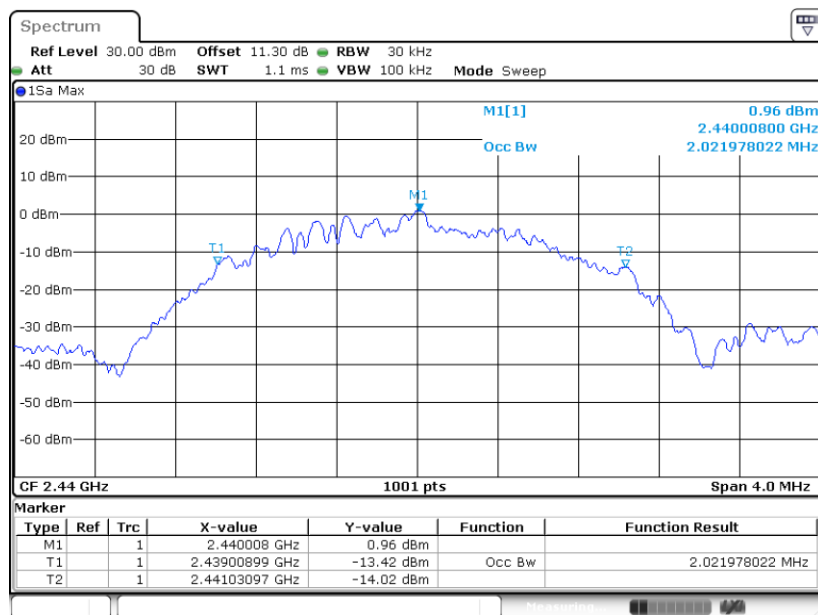
Bluetooth LE 2Mbps (Ant.4):

99% Occupied Bandwidth Plot on Channel 01



Date: 1.DEC.2023 11:03:06

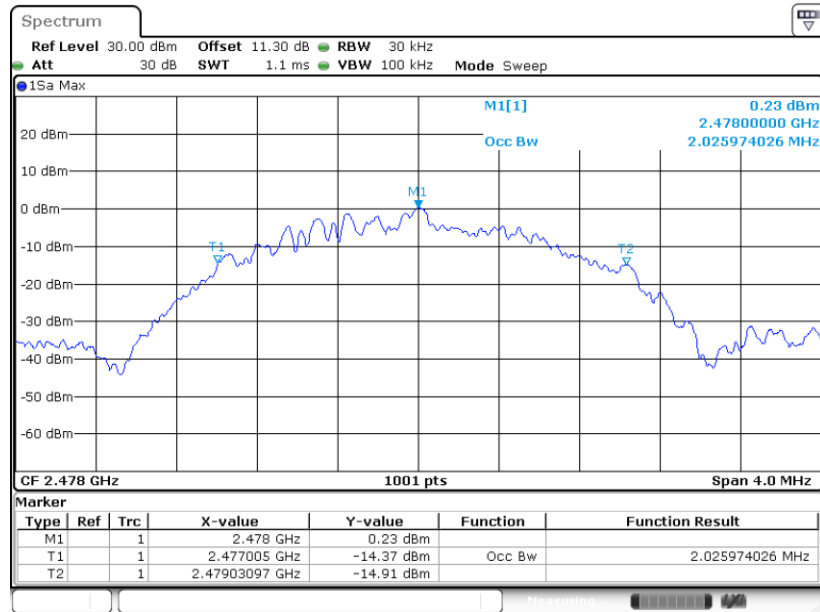
99% Occupied Bandwidth Plot on Channel 19



Date: 1.DEC.2023 11:06:51



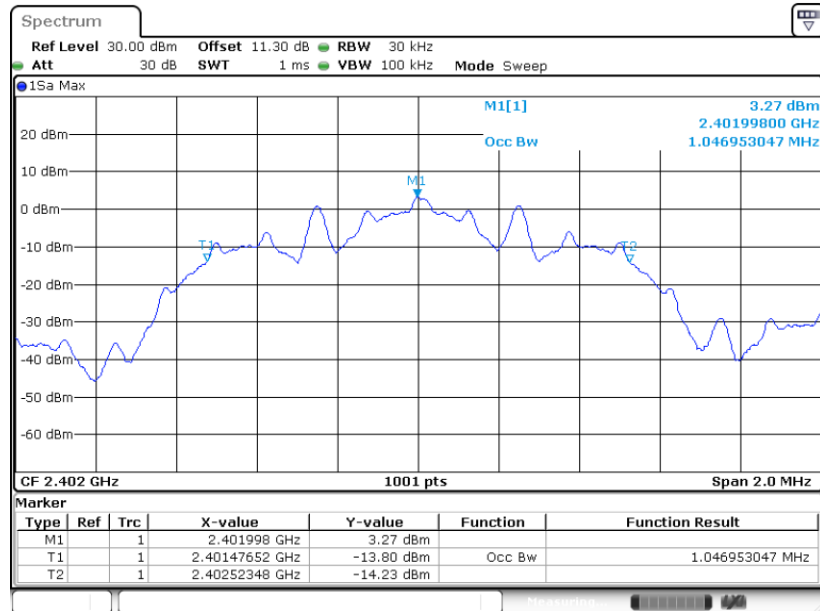
99% Occupied Bandwidth Plot on Channel 38



Date: 1.DEC.2023 11:09:15

Bluetooth LE 125Kbps (Ant.4):

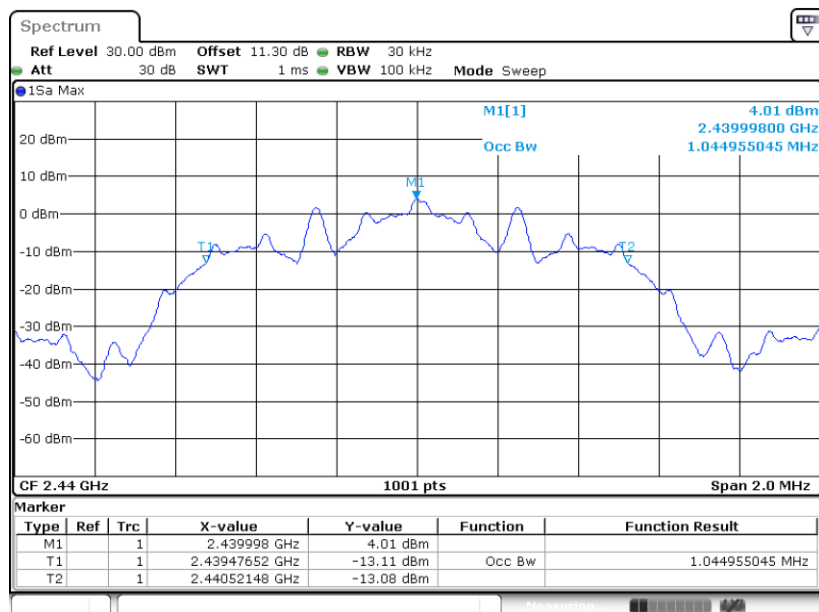
99% Occupied Bandwidth Plot on Channel 00



Date: 1.DEC.2023 11:13:11

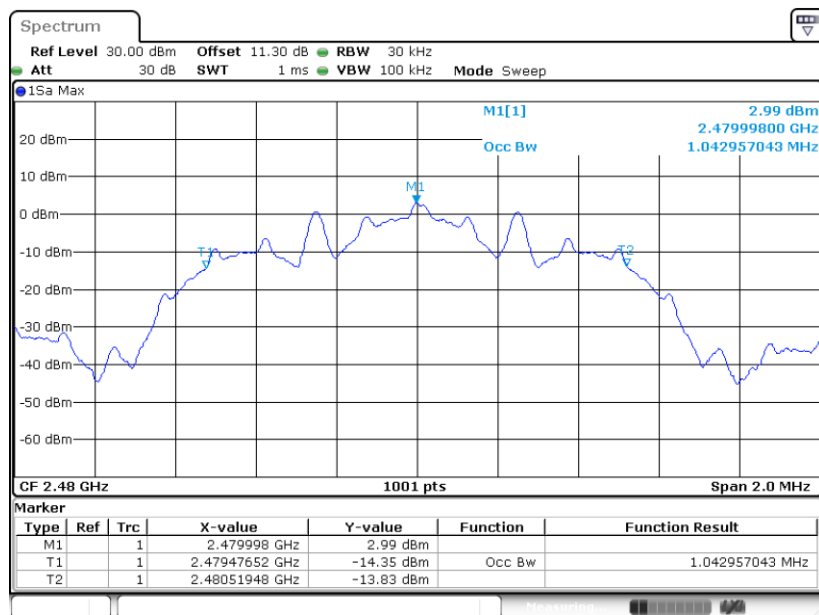


99% Occupied Bandwidth Plot on Channel 19



Date: 1.DEC.2023 11:23:42

99% Occupied Bandwidth Plot on Channel 39

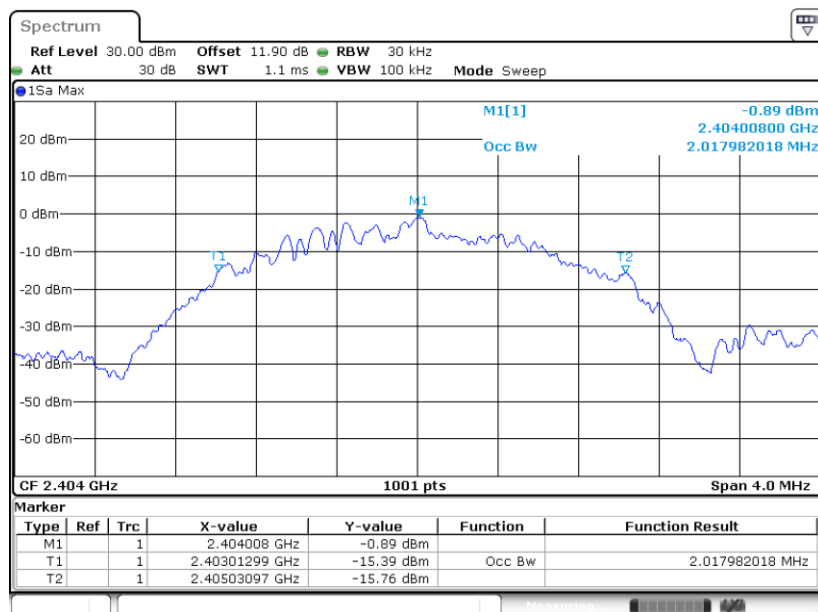


Date: 1.DEC.2023 11:26:39



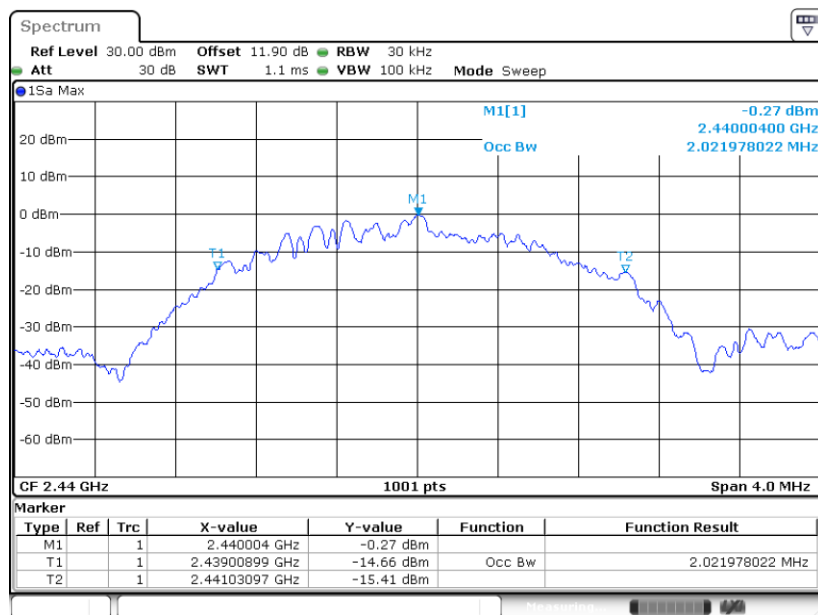
Bluetooth LE 2Mbps (Ant.6):

99% Occupied Bandwidth Plot on Channel 01



Date: 1.DEC.2023 12:08:22

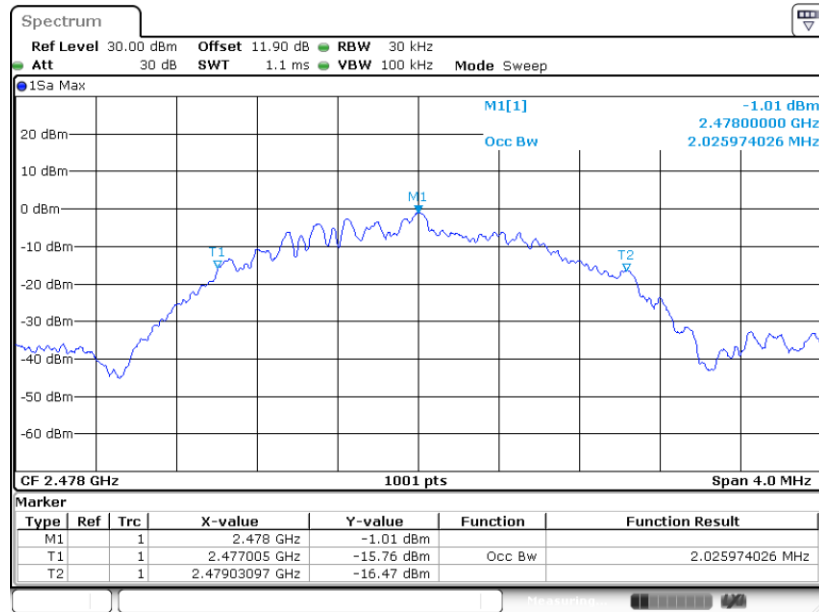
99% Occupied Bandwidth Plot on Channel 19



Date: 1.DEC.2023 12:16:49



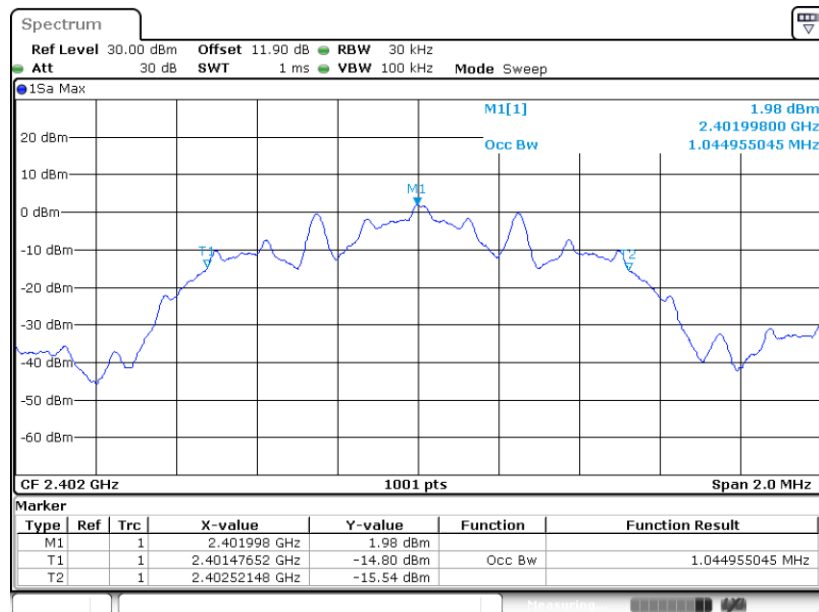
99% Occupied Bandwidth Plot on Channel 38



Date: 1.DEC.2023 12:18:25

Bluetooth LE 125Kbps (Ant.6):

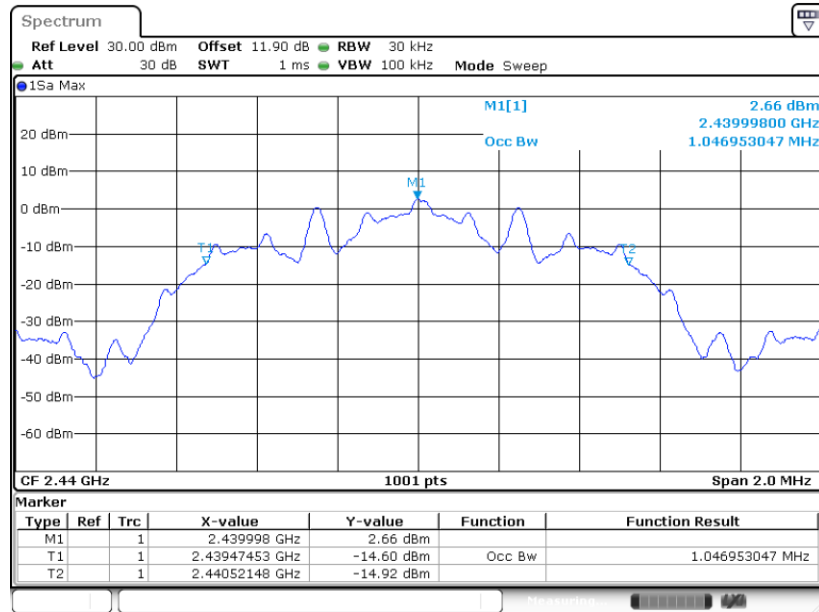
99% Occupied Bandwidth Plot on Channel 00



Date: 1.DEC.2023 11:52:35

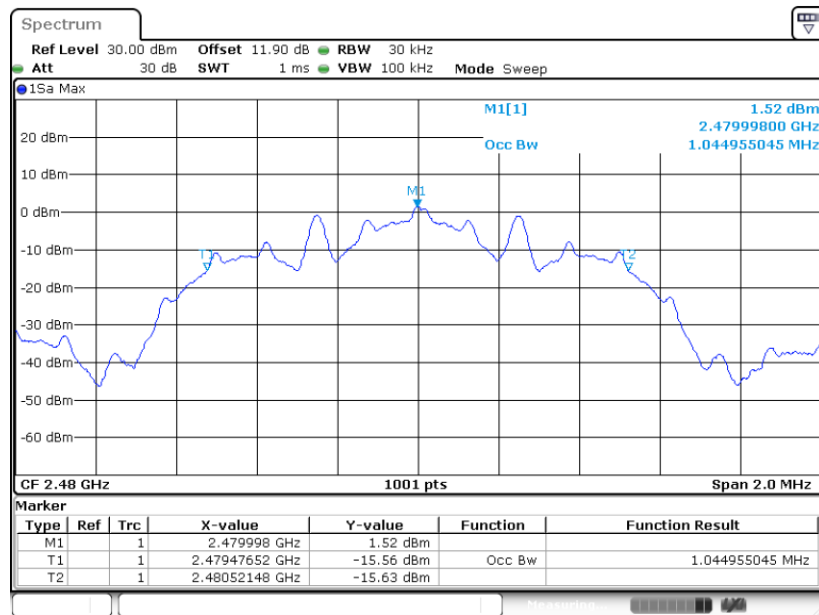


99% Occupied Bandwidth Plot on Channel 19



Date: 1.DEC.2023 11:57:35

99% Occupied Bandwidth Plot on Channel 39



Date: 1.DEC.2023 12:03:55

Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

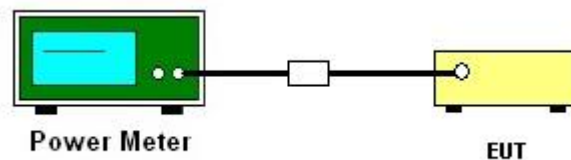
3.2.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of ANSI C63.10-2013 clause 11.9.1.3 PKPM1 Peak power meter or ANSI C63.10-2013 clause 11.9.2.3.1 Method AVGPM method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

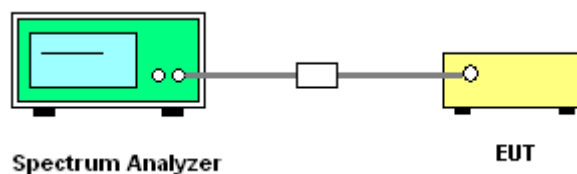
3.3.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure of ANSI C63.10-2013 clause 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

3.3.4 Test Setup



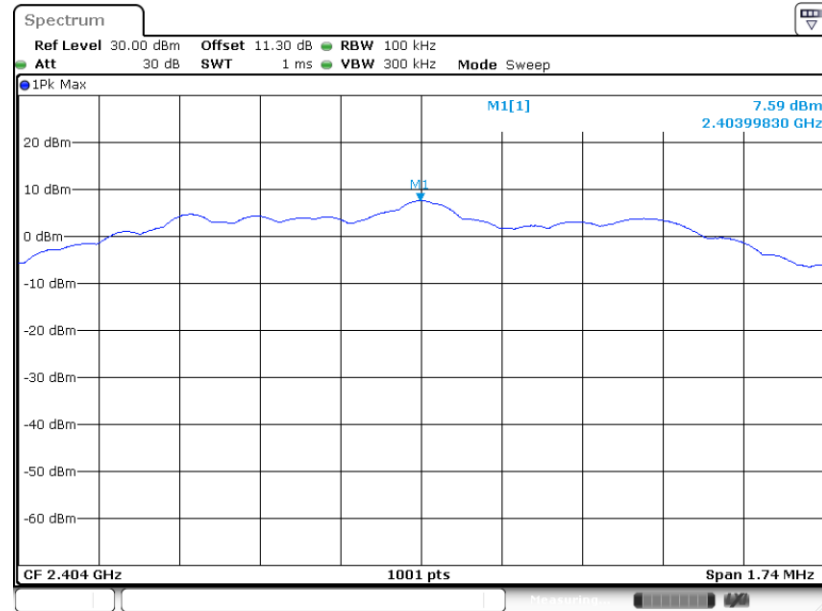
3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.3.6 Test Result of Power Spectral Density Plots (100kHz)

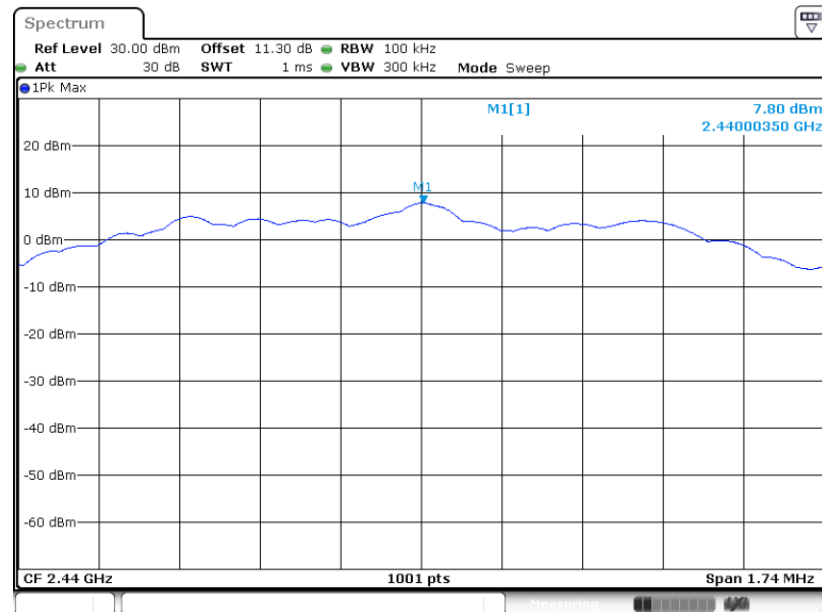
Bluetooth LE 2Mbps (Ant.5):

PSD 100kHz Plot on Channel 01



Date: 1.DEC.2023 10:50:38

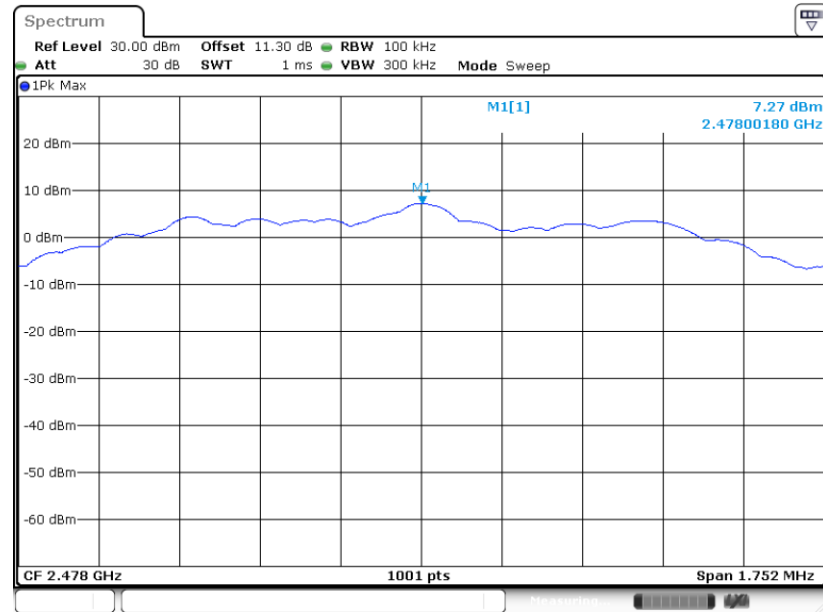
PSD 100kHz Plot on Channel 19



Date: 1.DEC.2023 10:56:15



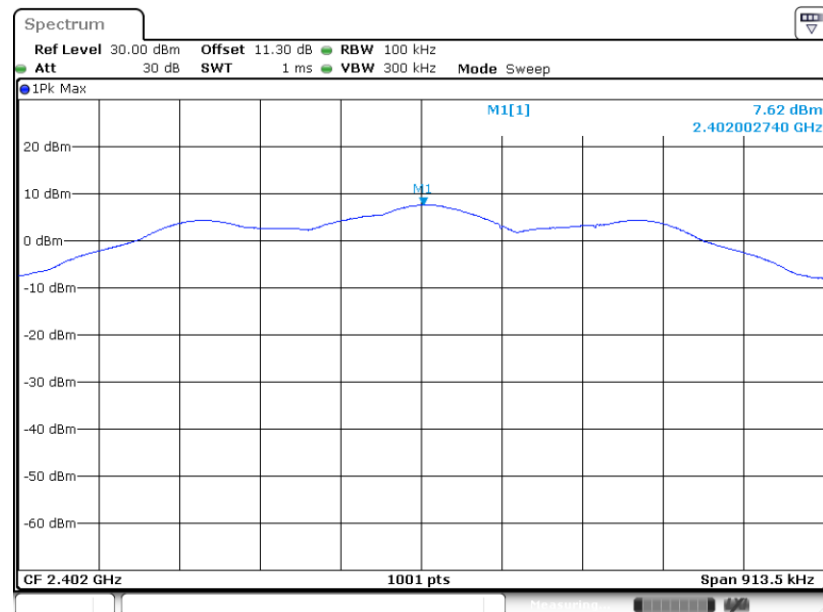
PSD 100kHz Plot on Channel 38



Date: 1.DEC.2023 10:58:36

Bluetooth LE 125Kbps (Ant.5):

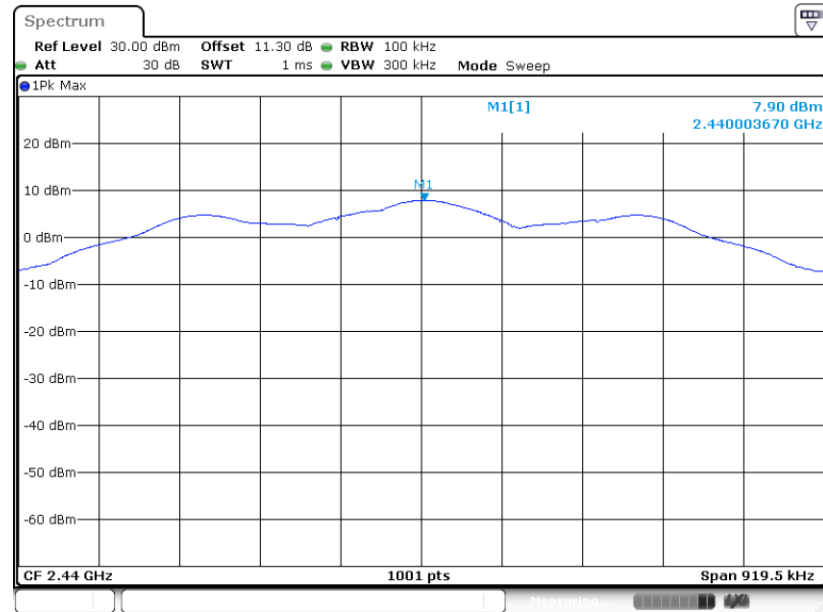
PSD 100kHz Plot on Channel 00



Date: 1.DEC.2023 10:40:59

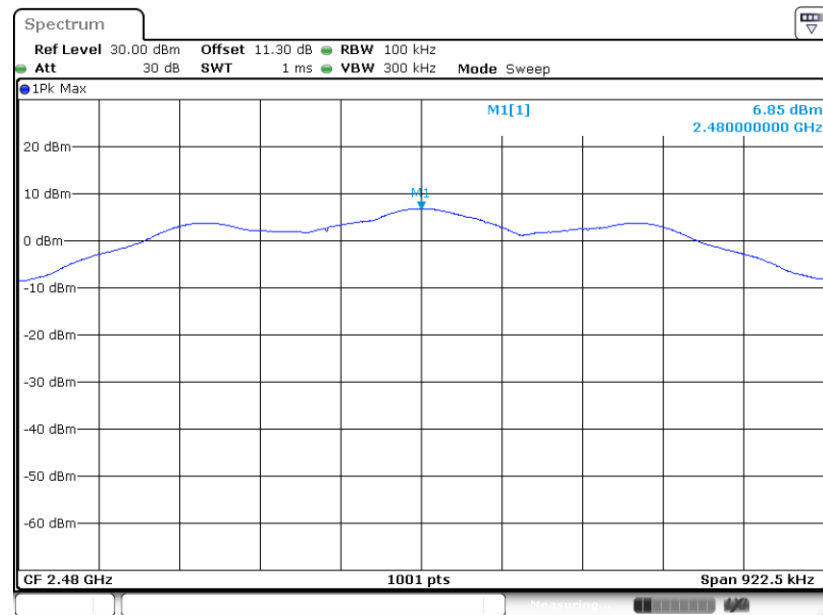


PSD 100kHz Plot on Channel 19



Date: 1.DEC.2023 10:44:20

PSD 100kHz Plot on Channel 39

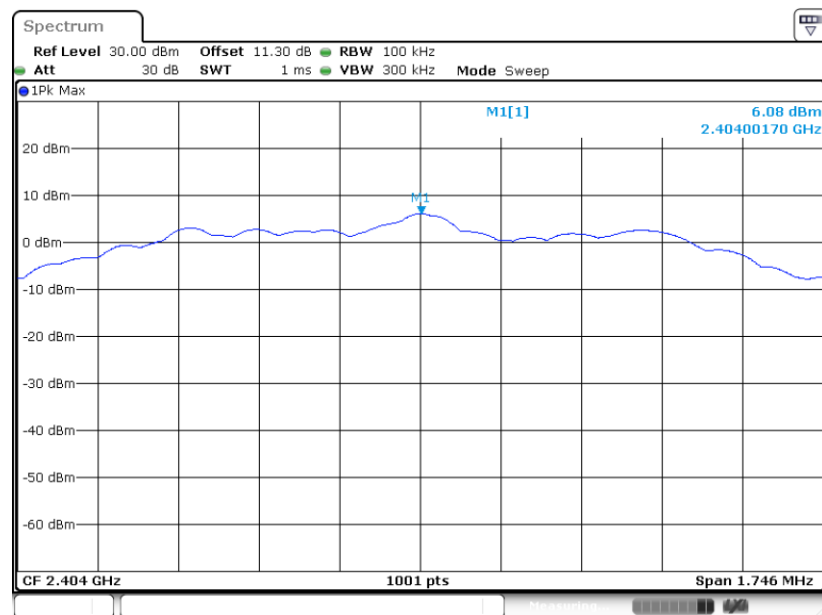


Date: 1.DEC.2023 10:46:36



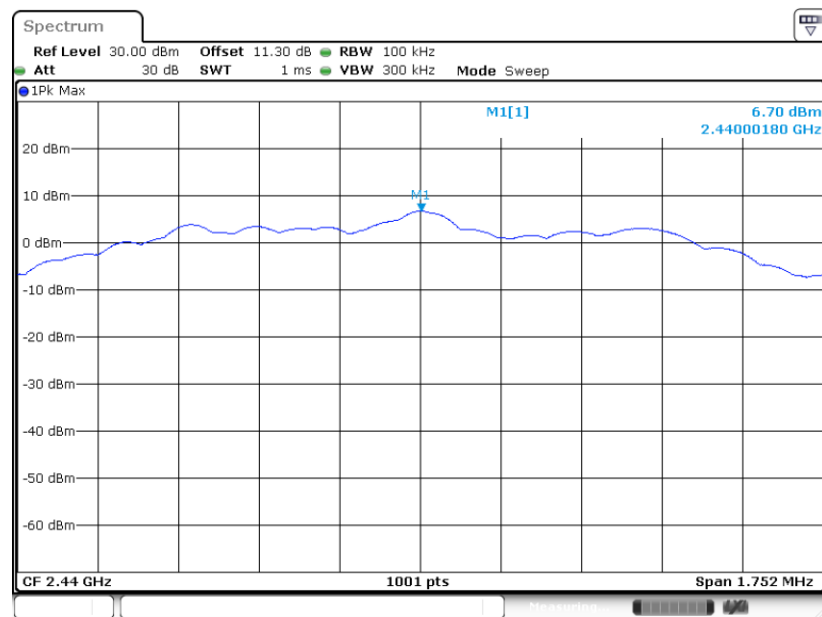
Bluetooth LE 2Mbps (Ant.4):

PSD 100kHz Plot on Channel 01



Date: 1.DEC.2023 11:04:03

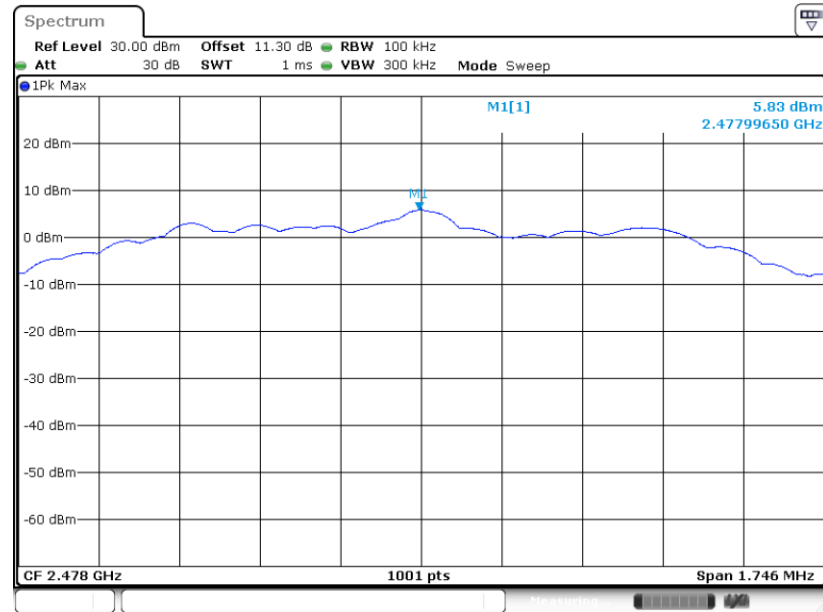
PSD 100kHz Plot on Channel 19



Date: 1.DEC.2023 11:07:59



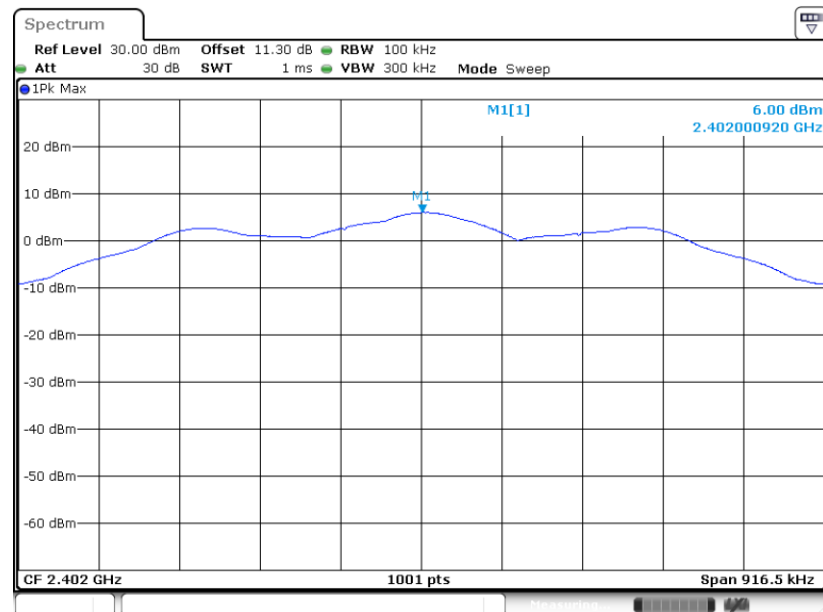
PSD 100kHz Plot on Channel 38



Date: 1.DEC.2023 11:10:03

Bluetooth LE 125Kbps (Ant.4):

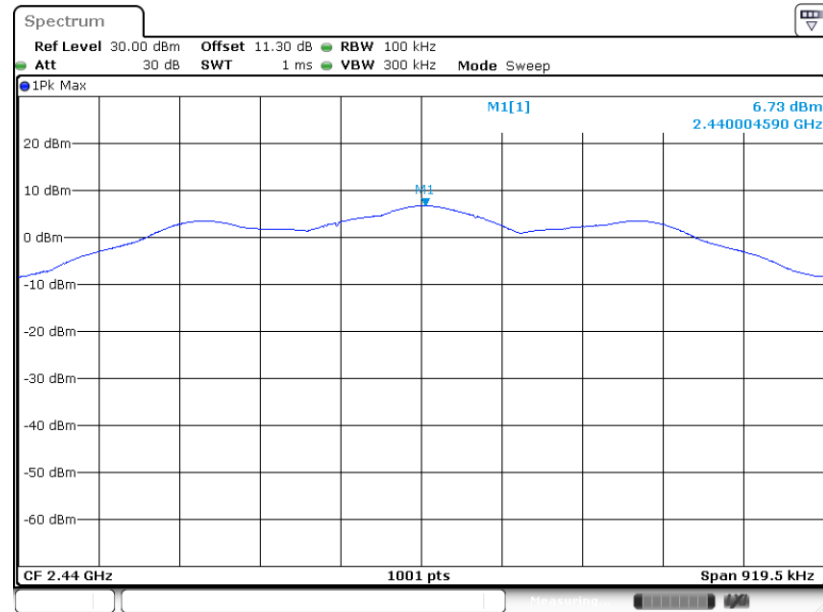
PSD 100kHz Plot on Channel 00



Date: 1.DEC.2023 11:21:58

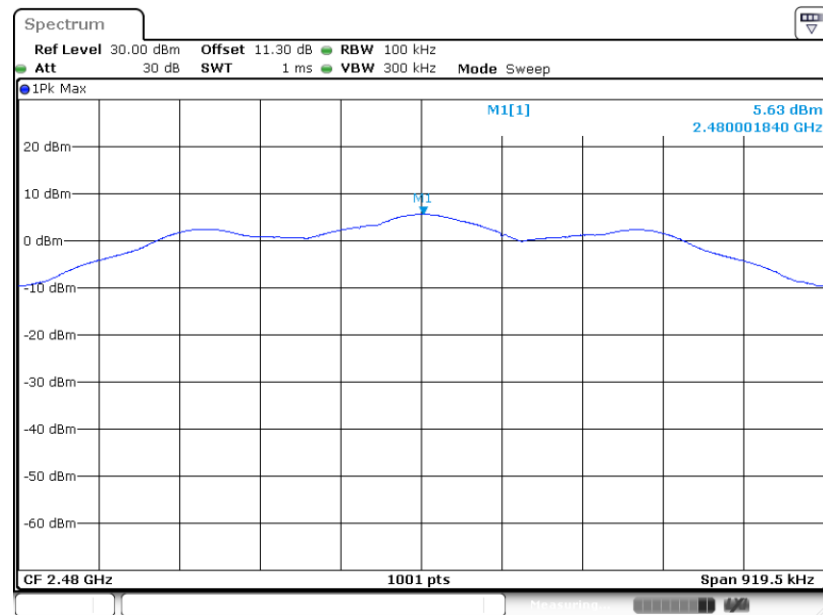


PSD 100kHz Plot on Channel 19



Date: 1.DEC.2023 11:25:29

PSD 100kHz Plot on Channel 39

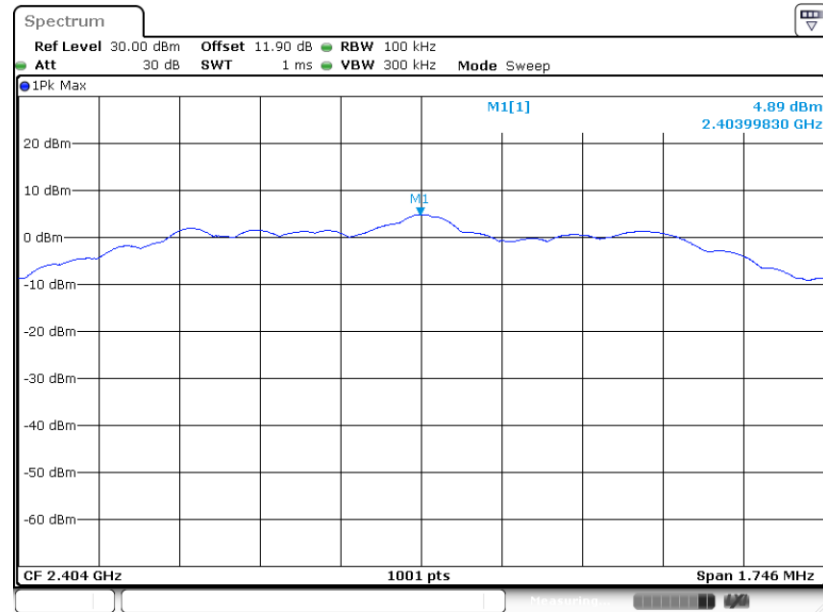


Date: 1.DEC.2023 11:28:15



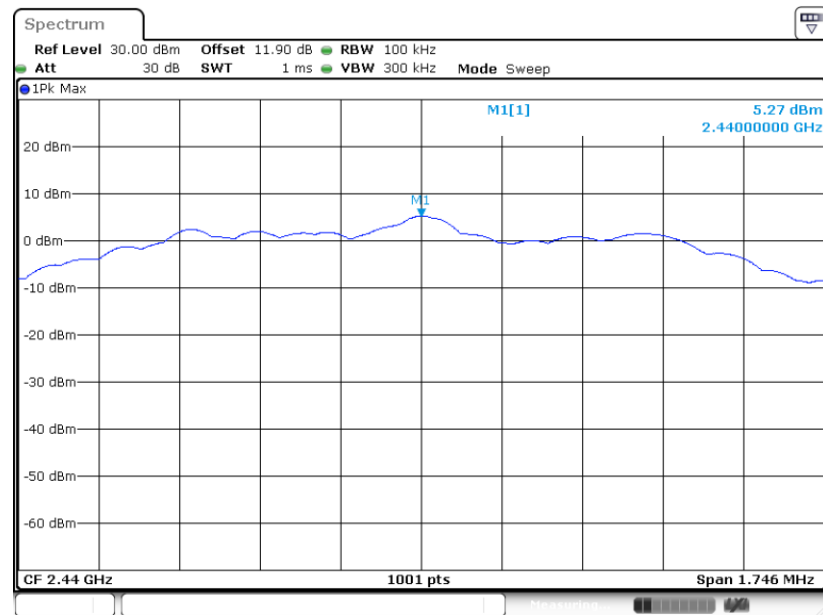
Bluetooth LE 2Mbps (Ant.6):

PSD 100kHz Plot on Channel 01



Date: 1.DEC.2023 12:09:28

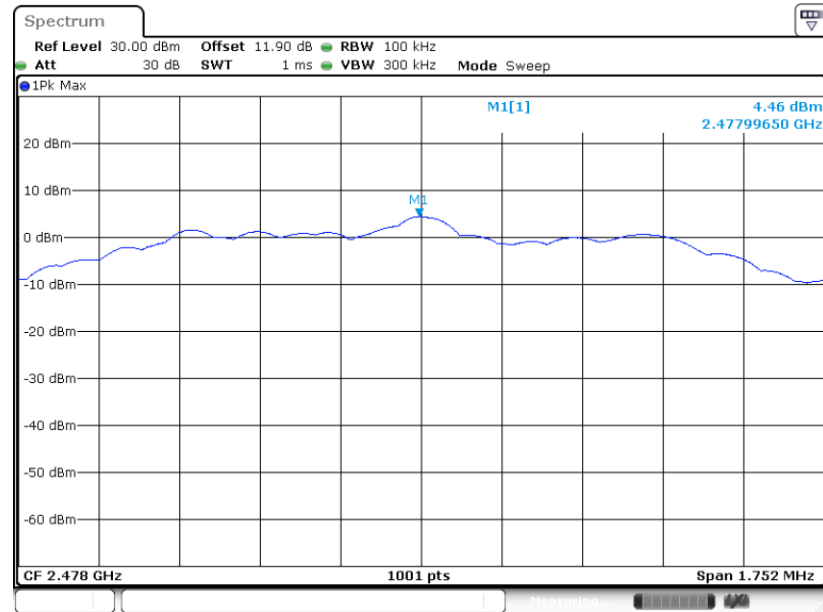
PSD 100kHz Plot on Channel 19



Date: 1.DEC.2023 12:17:30



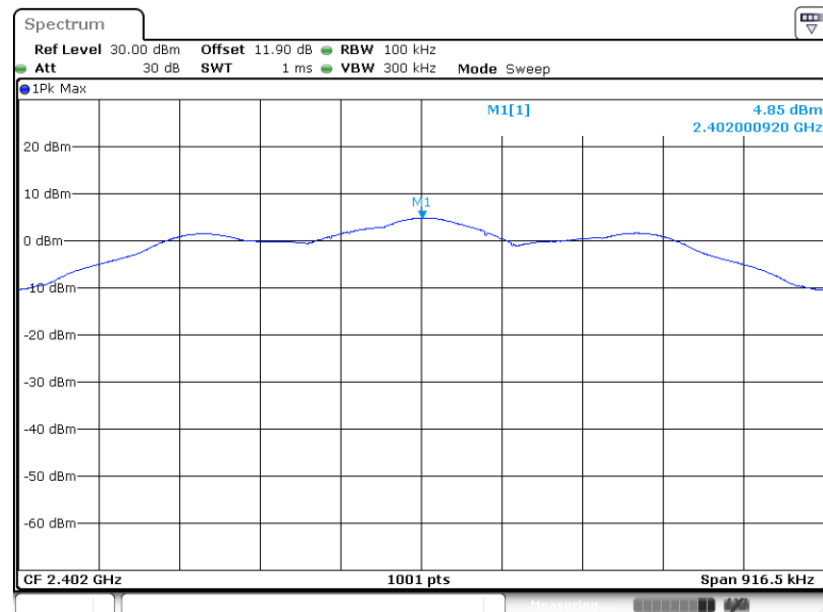
PSD 100kHz Plot on Channel 38



Date: 1.DEC.2023 12:19:00

Bluetooth LE 125Kbps (Ant.6):

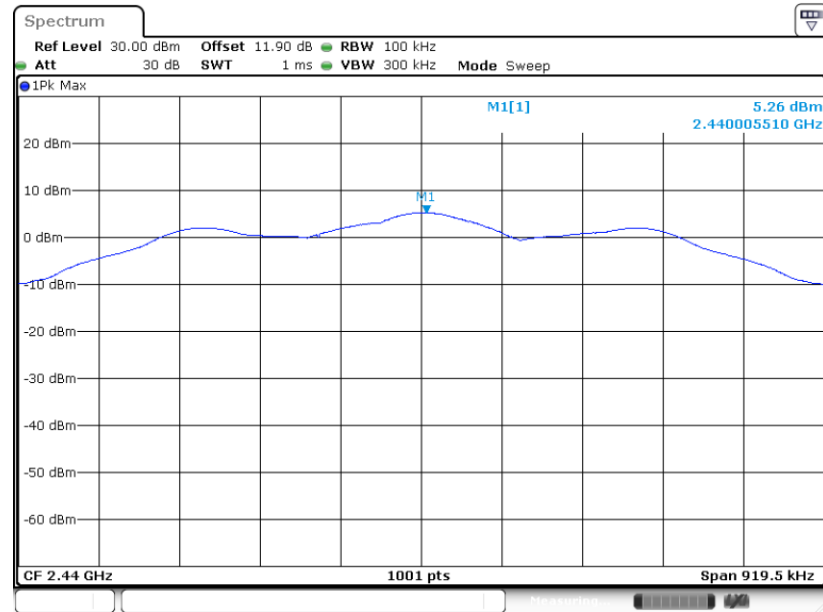
PSD 100kHz Plot on Channel 00



Date: 1.DEC.2023 11:55:18

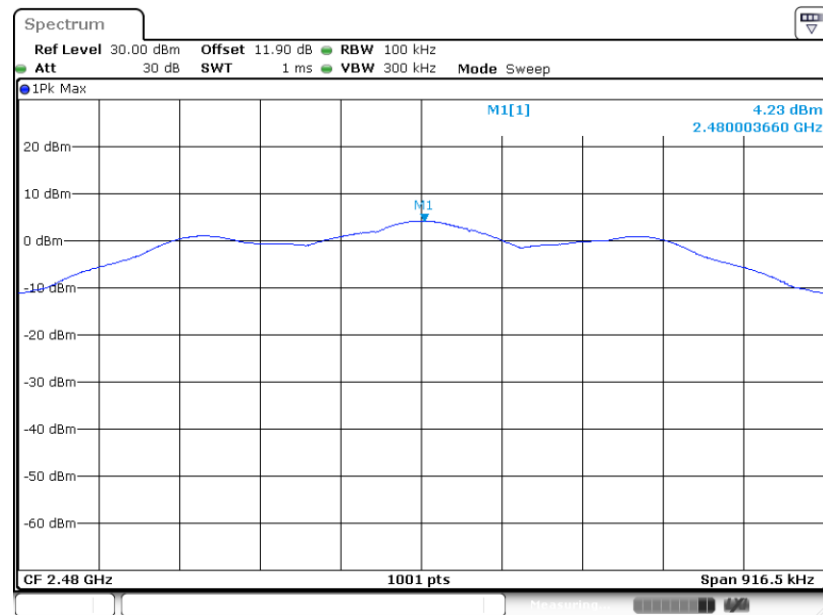


PSD 100kHz Plot on Channel 19



Date: 1.DEC.2023 11:59:22

PSD 100kHz Plot on Channel 39



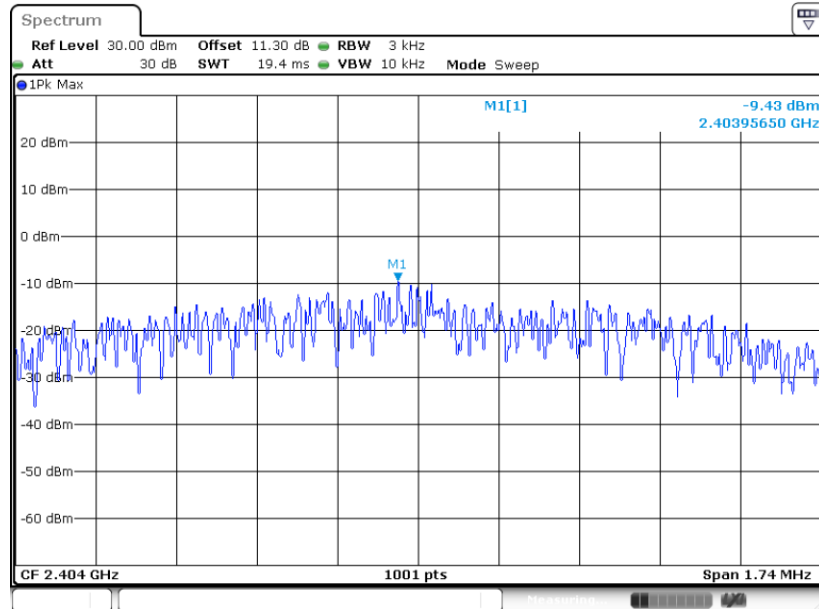
Date: 1.DEC.2023 12:05:32



3.3.7 Test Result of Power Spectral Density Plots (3kHz)

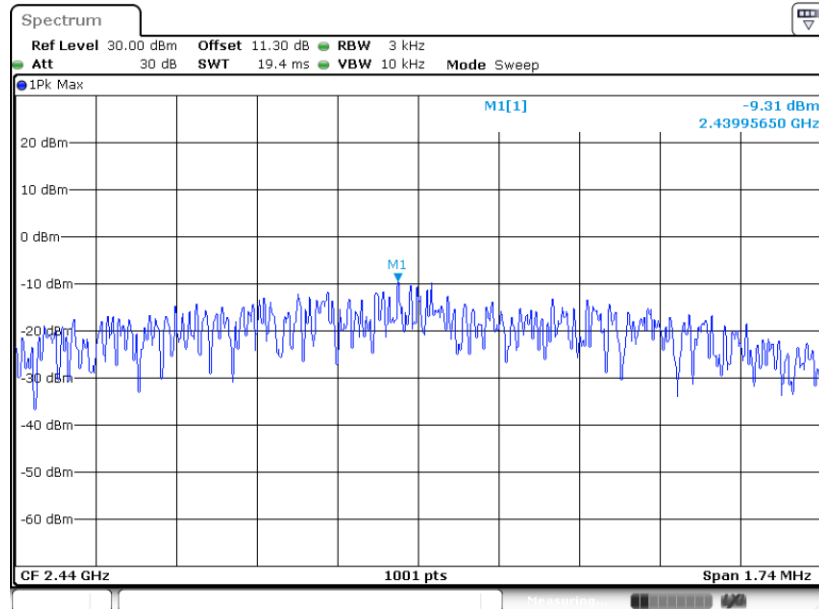
Bluetooth LE 2Mbps (Ant.5):

PSD 3kHz Plot on Channel 01



Date: 1.DEC.2023 10:50:22

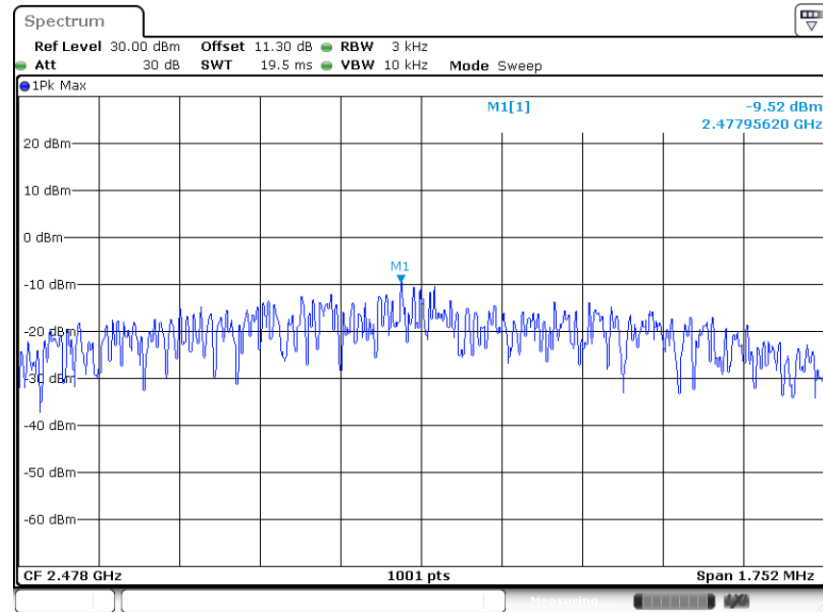
PSD 3kHz Plot on Channel 19



Date: 1.DEC.2023 10:55:55



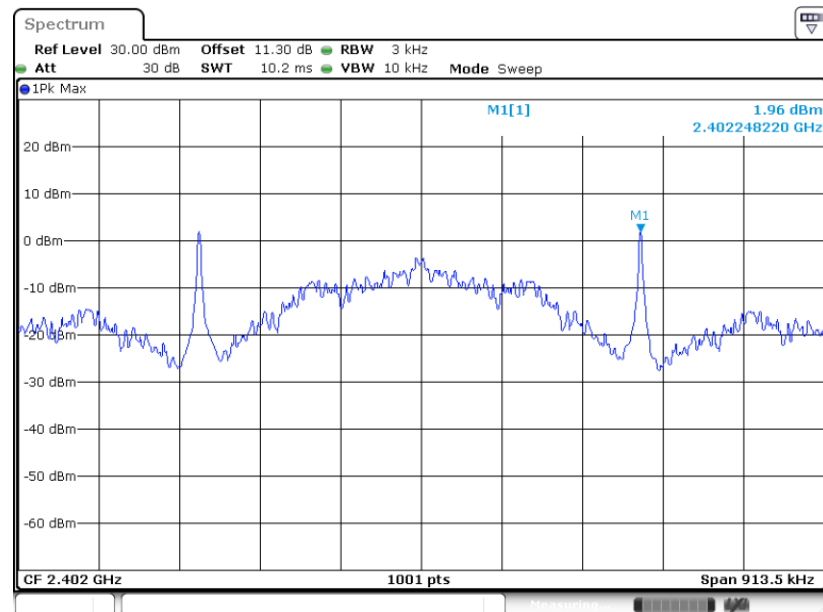
PSD 3kHz Plot on Channel 38



Date: 1.DEC.2023 10:58:19

Bluetooth LE 125Kbps (Ant.5):

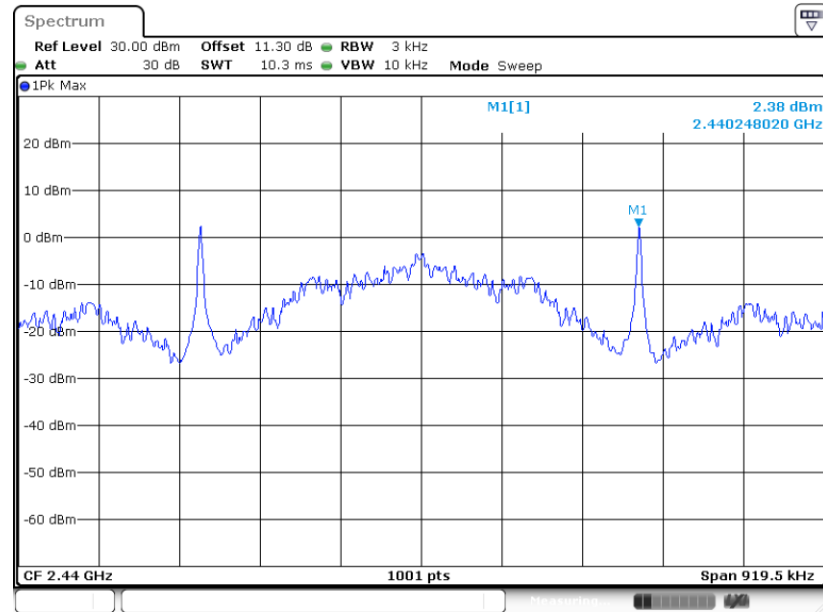
PSD 3kHz Plot on Channel 00



Date: 1.DEC.2023 10:40:41

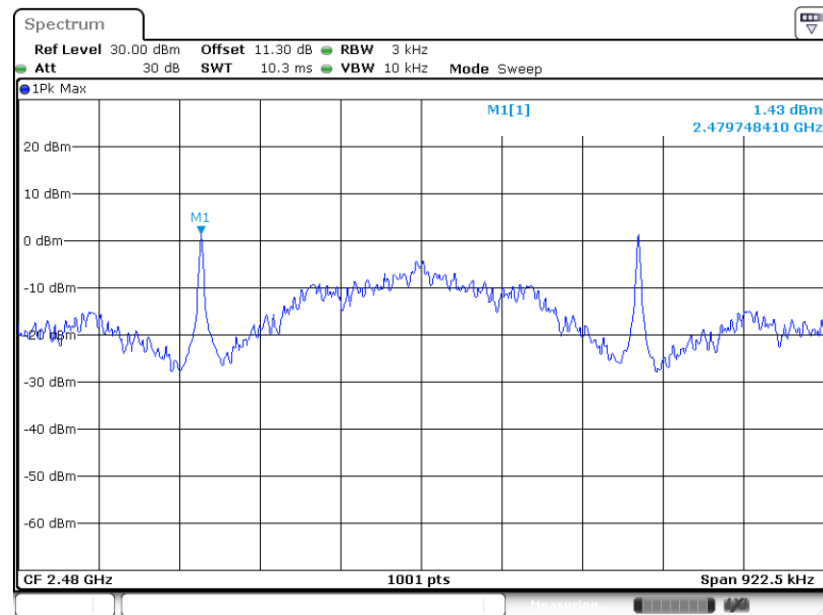


PSD 3kHz Plot on Channel 19



Date: 1.DEC.2023 10:44:01

PSD 3kHz Plot on Channel 39

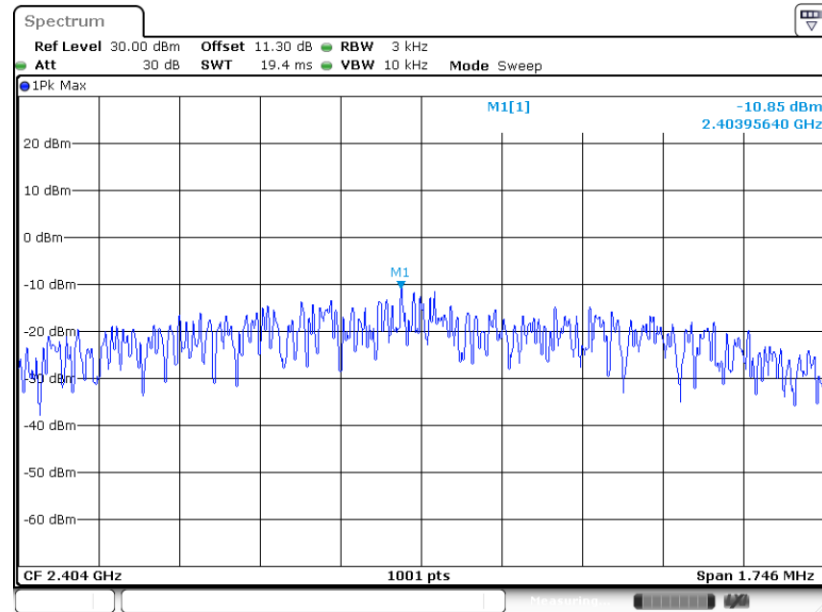


Date: 1.DEC.2023 10:46:21



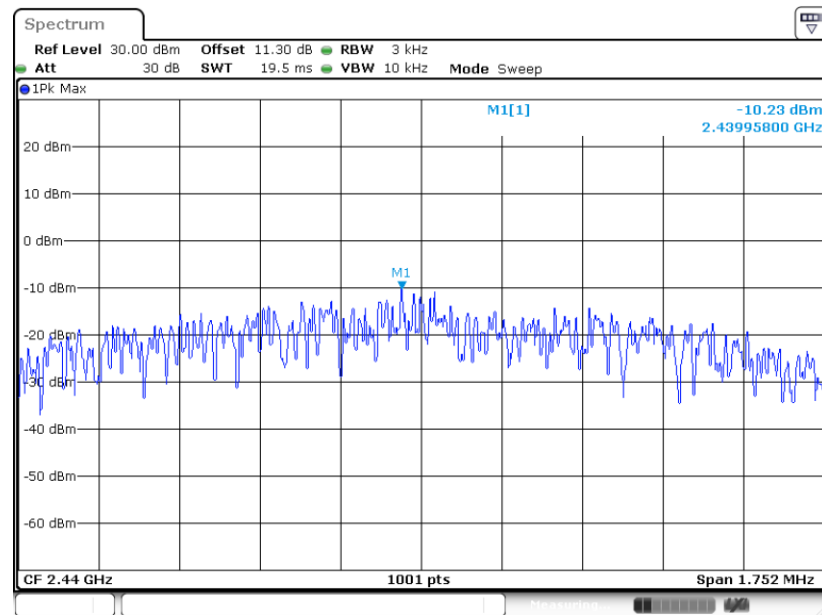
Bluetooth LE 2Mbps (Ant.4):

PSD 3kHz Plot on Channel 01



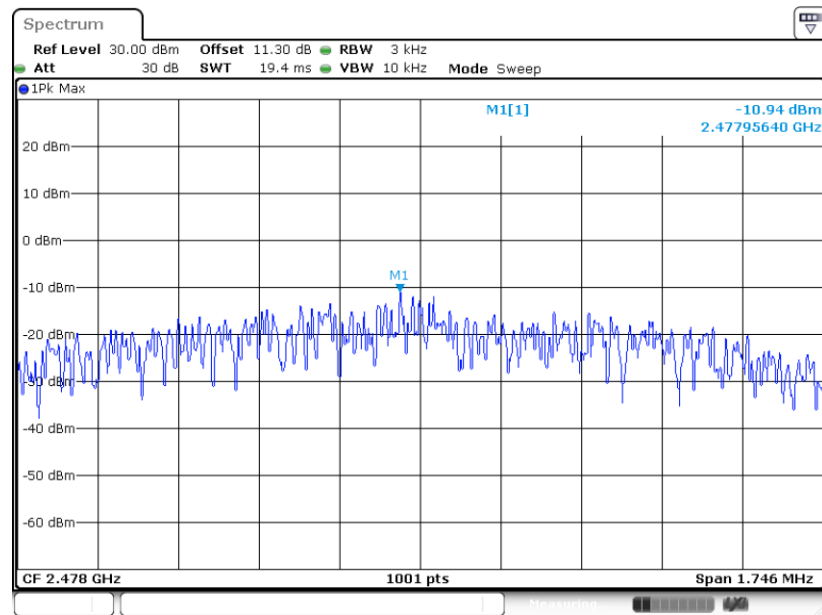
Date: 1.DEC.2023 11:03:32

PSD 3kHz Plot on Channel 19



Date: 1.DEC.2023 11:07:23

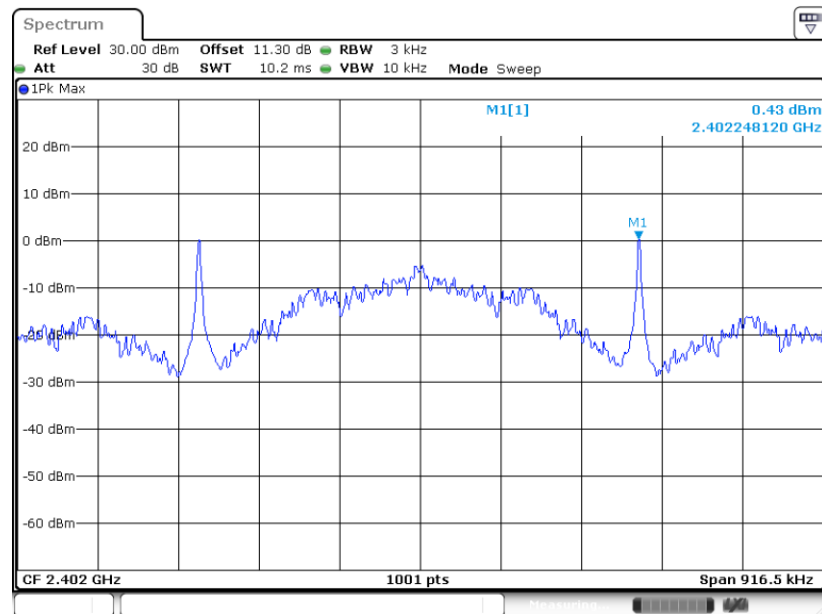
PSD 3kHz Plot on Channel 38



Date: 1.DEC.2023 11:09:45

Bluetooth LE 125Kbps (Ant.4):

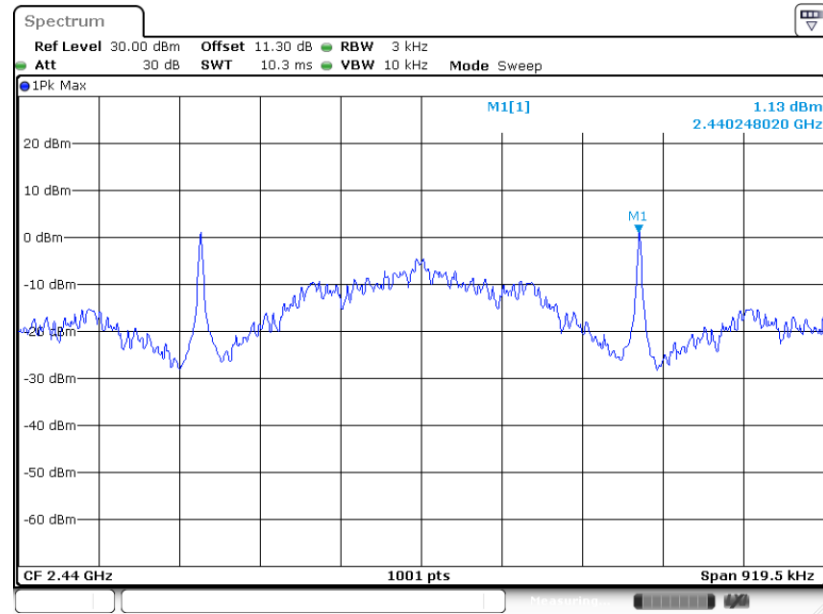
PSD 3kHz Plot on Channel 00



Date: 1.DEC.2023 11:21:40

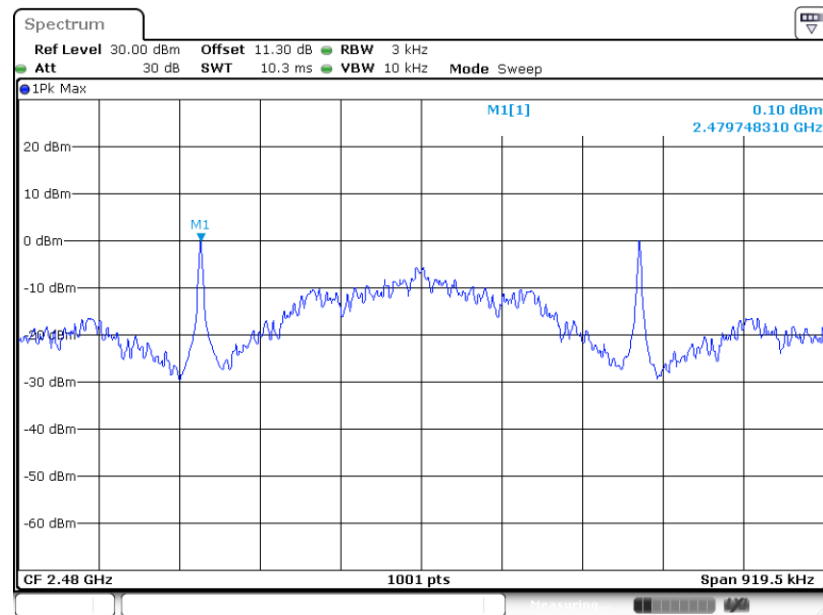


PSD 3kHz Plot on Channel 19



Date: 1.DEC.2023 11:25:13

PSD 3kHz Plot on Channel 39

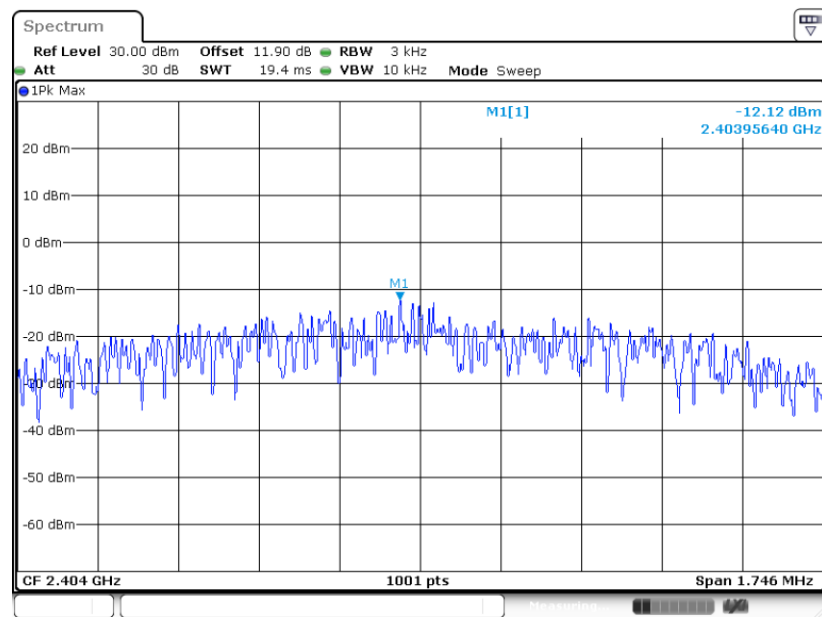


Date: 1.DEC.2023 11:27:56



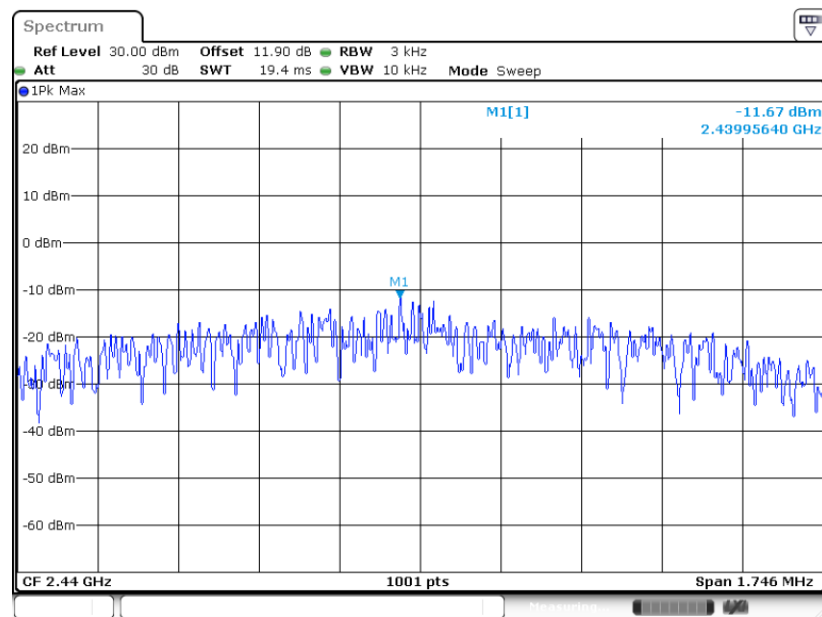
Bluetooth LE 2Mbps (Ant.6):

PSD 3kHz Plot on Channel 01



Date: 1.DEC.2023 12:09:12

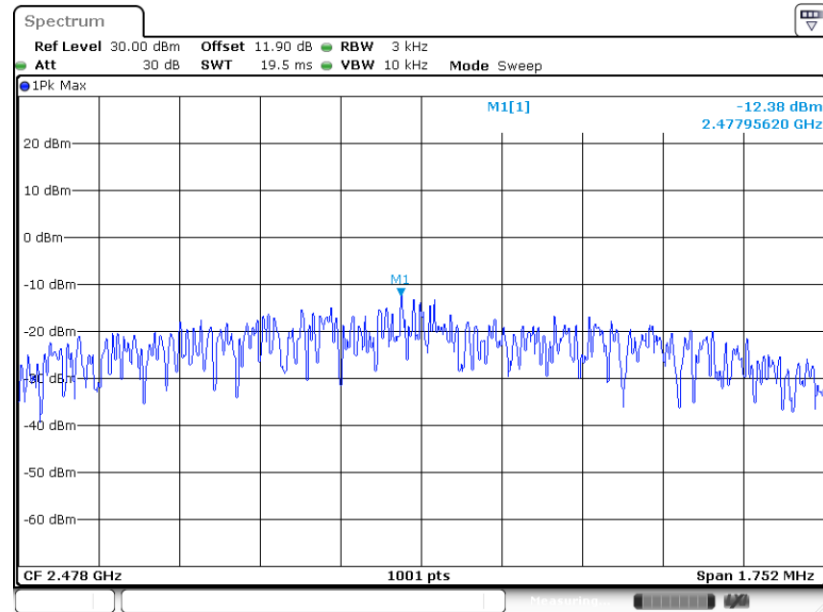
PSD 3kHz Plot on Channel 19



Date: 1.DEC.2023 12:17:14



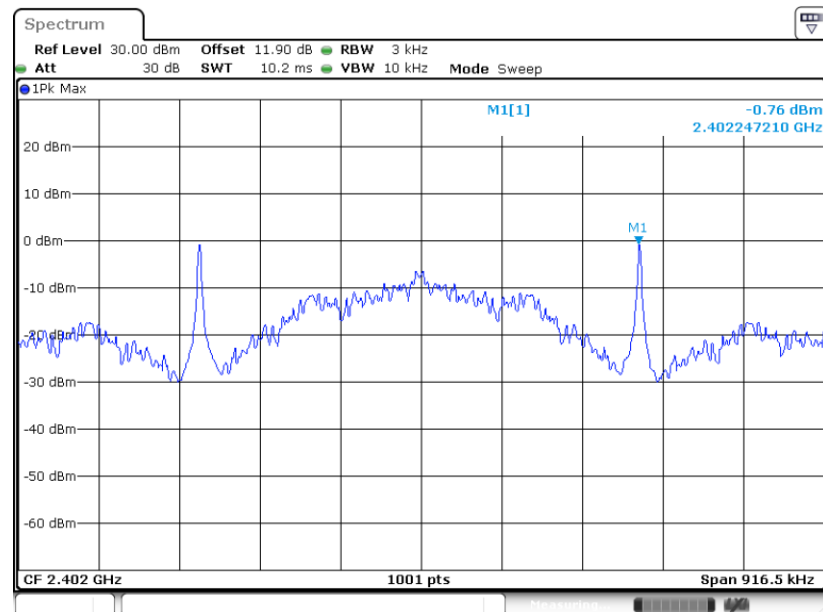
PSD 3kHz Plot on Channel 38



Date: 1.DEC.2023 12:18:45

Bluetooth LE 125Kbps (Ant.6):

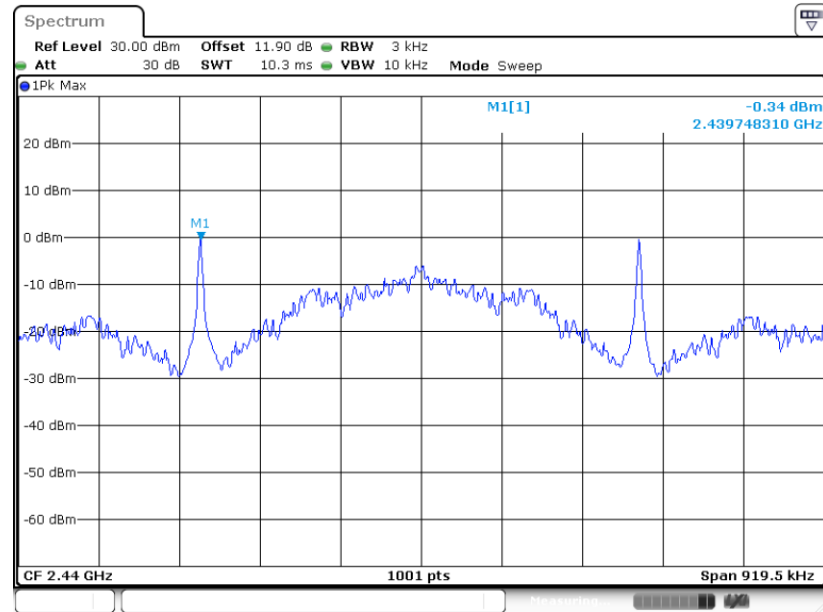
PSD 3kHz Plot on Channel 00



Date: 1.DEC.2023 11:55:02

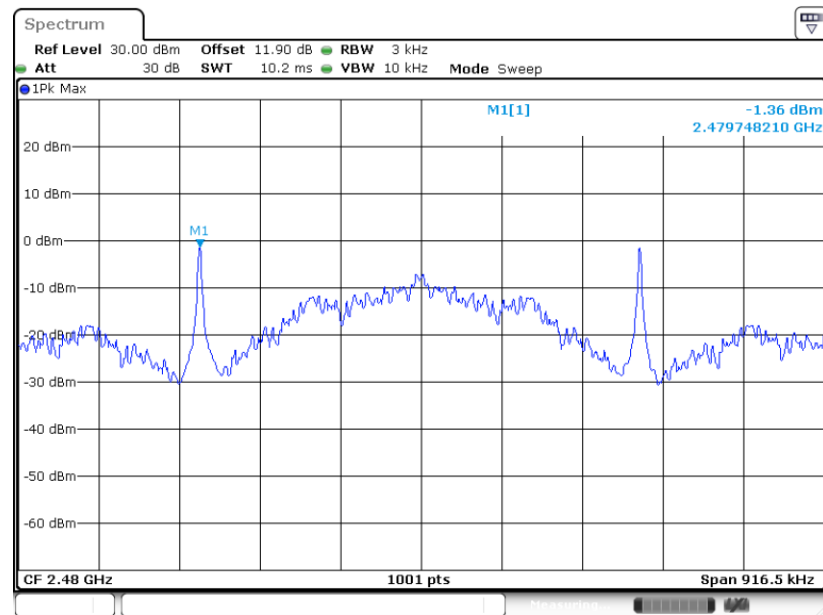


PSD 3kHz Plot on Channel 19



Date: 1.DEC.2023 11:59:03

PSD 3kHz Plot on Channel 39



Date: 1.DEC.2023 12:04:56

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

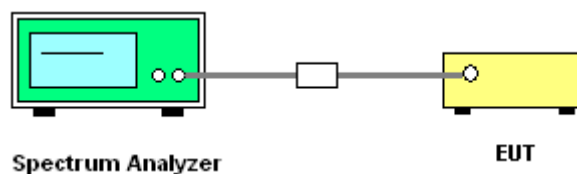
3.4.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

3.4.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 11.13
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup

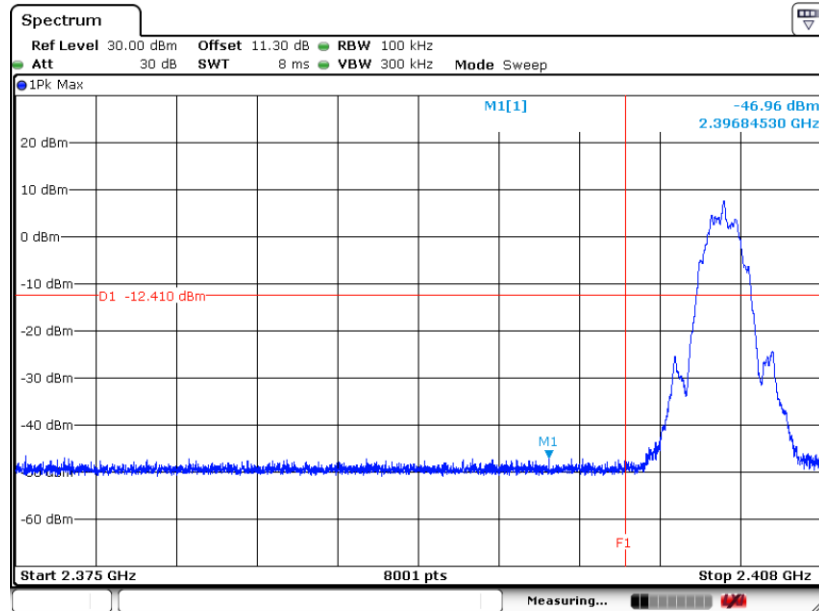




3.4.5 Test Result of Conducted Band Edges Plots

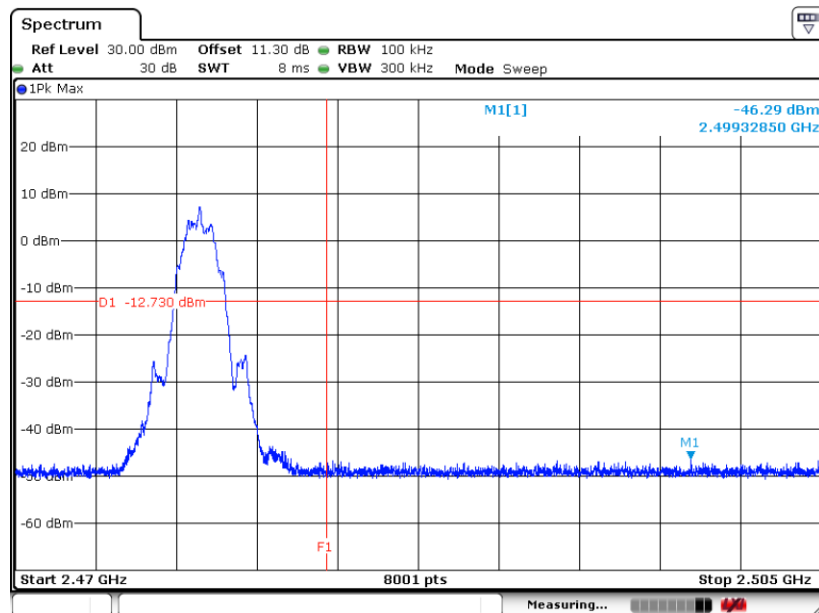
Bluetooth LE 2Mbps (Ant.5):

Low Band Edge Plot on Channel 01



Date: 1.DEC.2023 10:54:59

High Band Edge Plot on Channel 38

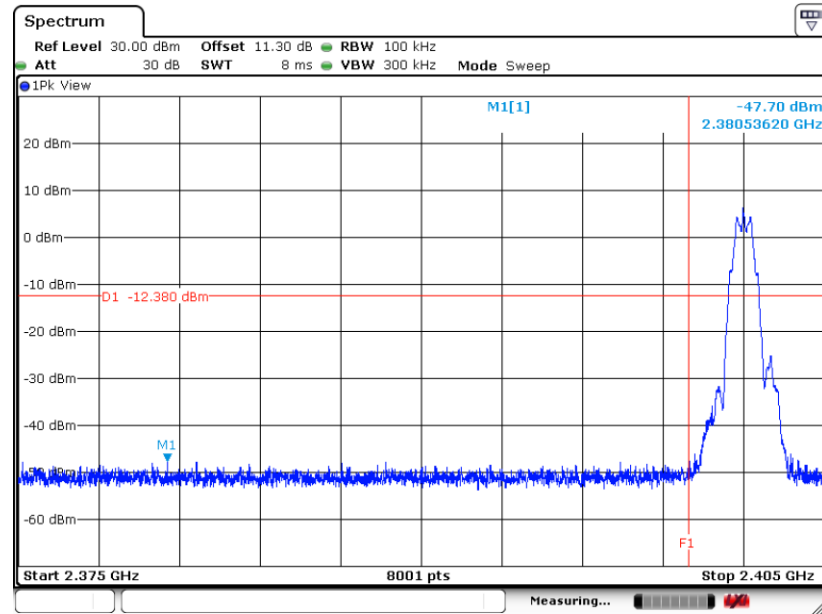


Date: 1.DEC.2023 11:01:00



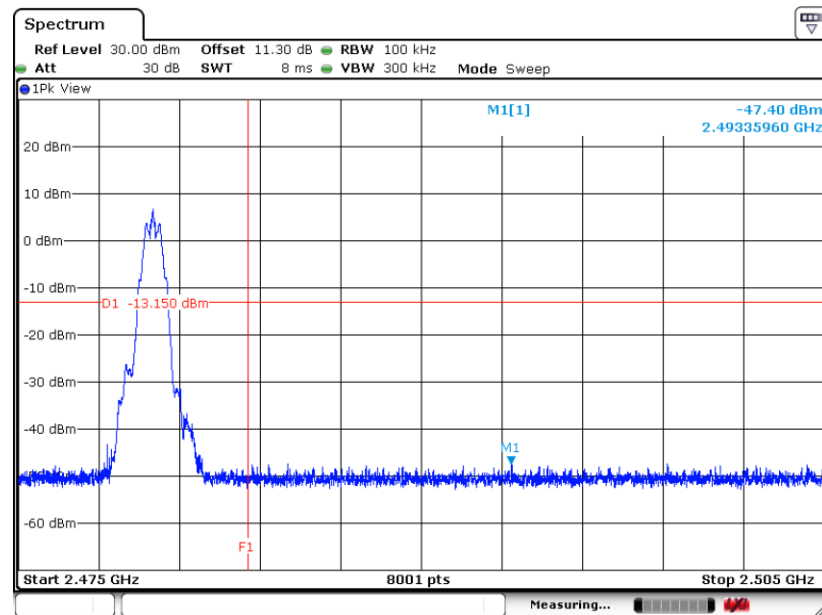
Bluetooth LE 125Kbps (Ant.5):

Low Band Edge Plot on Channel 00



Date: 1.DEC.2023 10:42:20

High Band Edge Plot on Channel 39

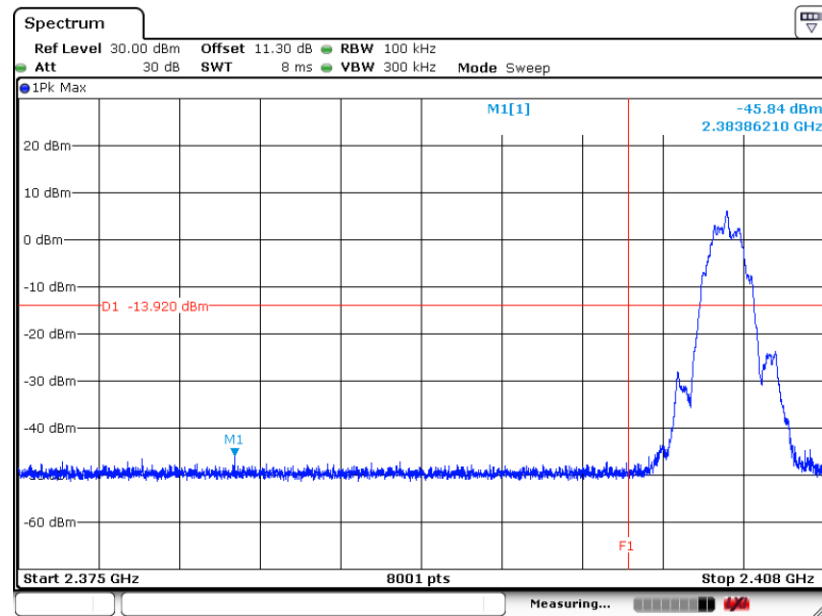


Date: 1.DEC.2023 10:48:02

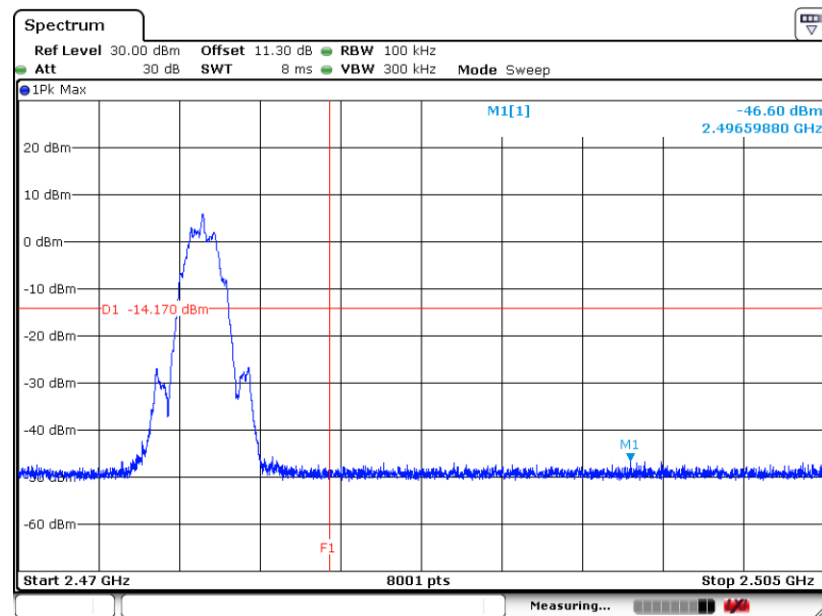


Bluetooth LE 2Mbps (Ant.4):

Low Band Edge Plot on Channel 01



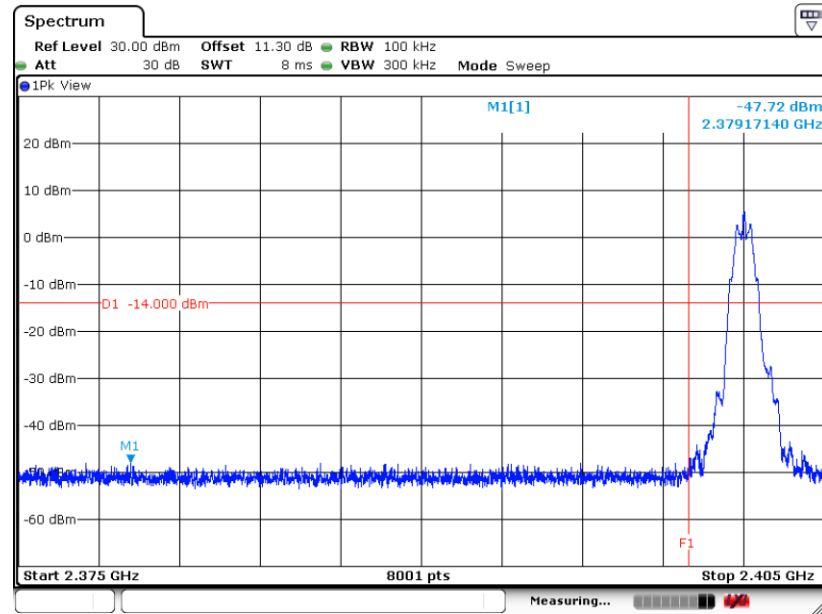
High Band Edge Plot on Channel 38





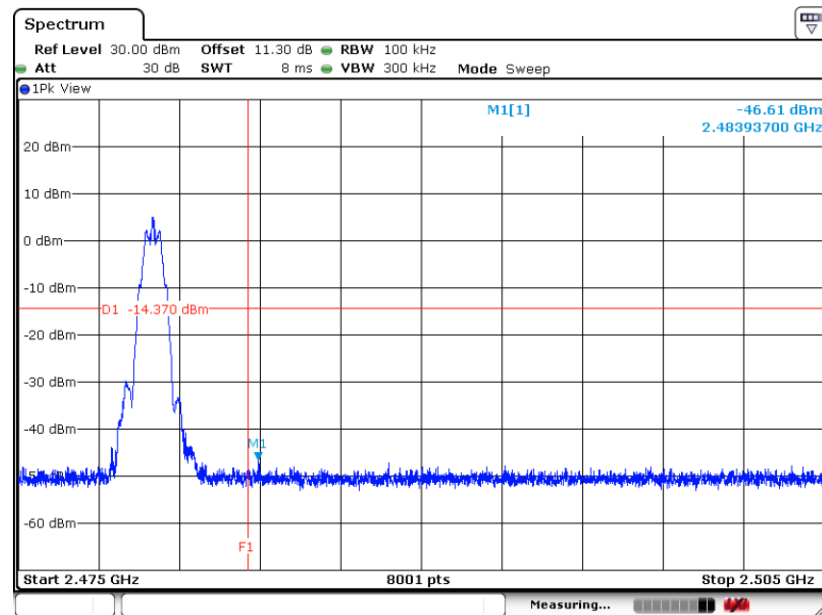
Bluetooth LE 125Kbps (Ant.4):

Low Band Edge Plot on Channel 00



Date: 1.DEC.2023 11:22:57

High Band Edge Plot on Channel 39

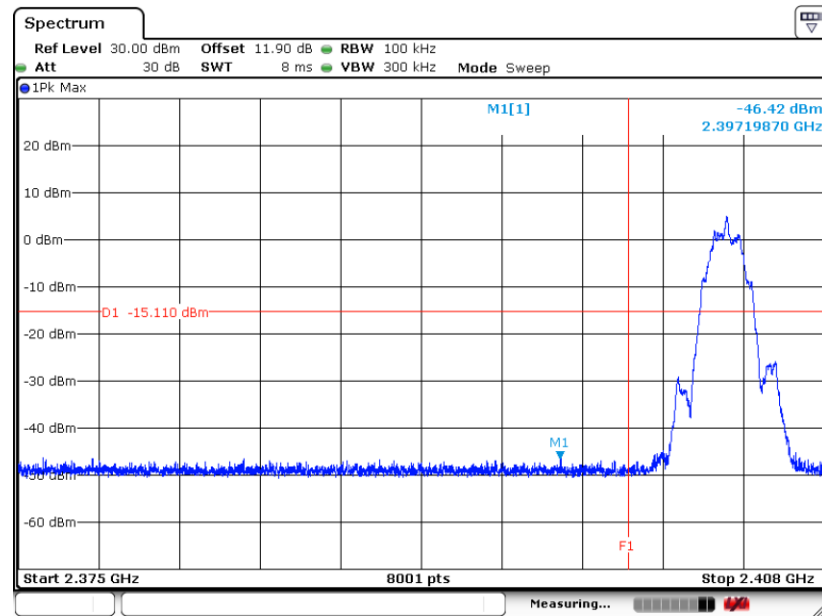


Date: 1.DEC.2023 11:29:03



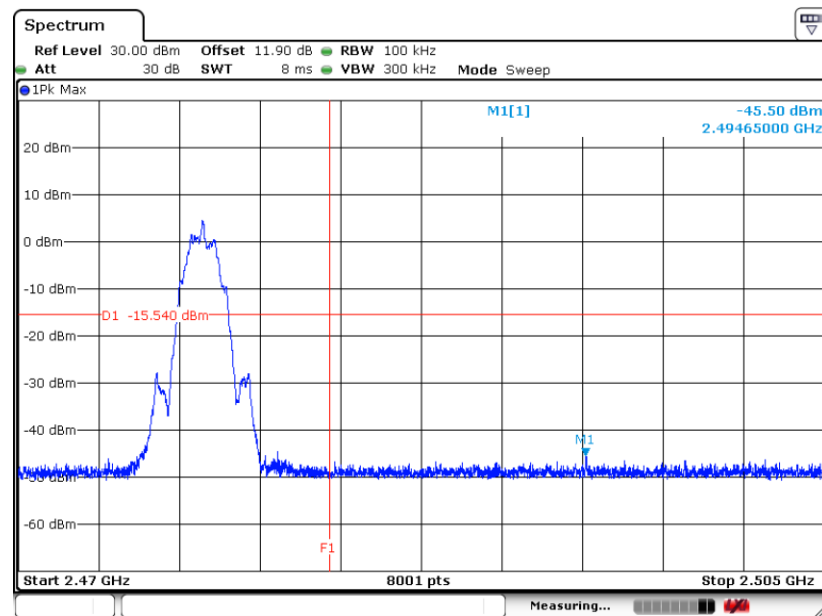
Bluetooth LE 2Mbps (Ant.6):

Low Band Edge Plot on Channel 01



Date: 1.DEC.2023 12:16:22

High Band Edge Plot on Channel 38

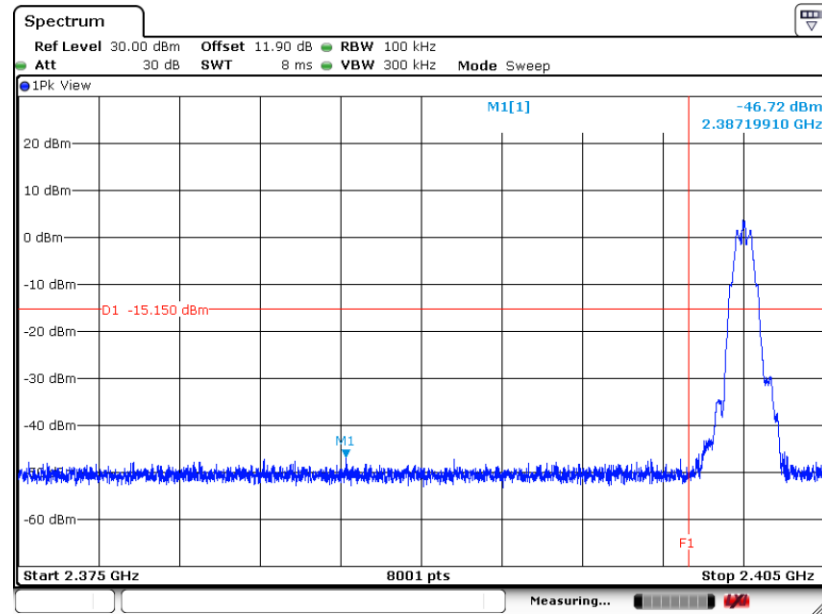


Date: 1.DEC.2023 12:20:30



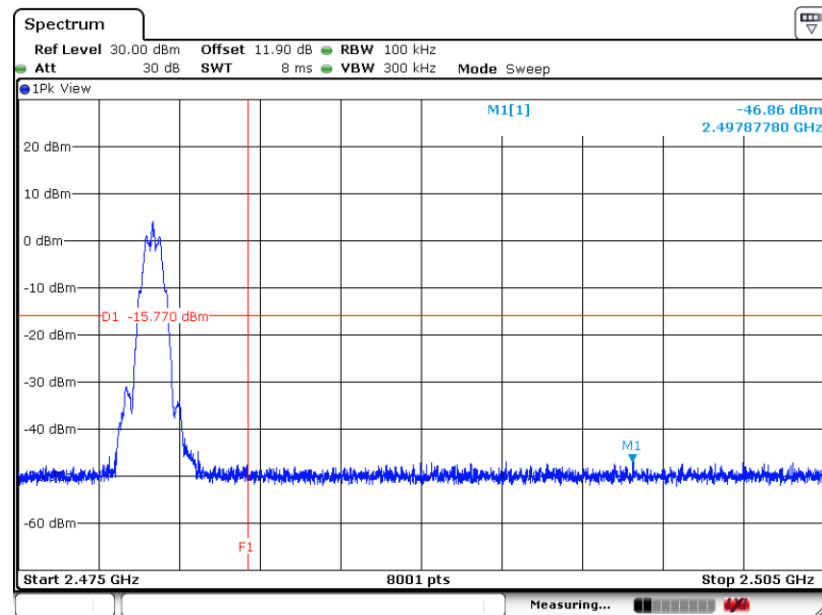
Bluetooth LE 125Kbps (Ant.6):

Low Band Edge Plot on Channel 00



Date: 1.DEC.2023 11:56:59

High Band Edge Plot on Channel 39



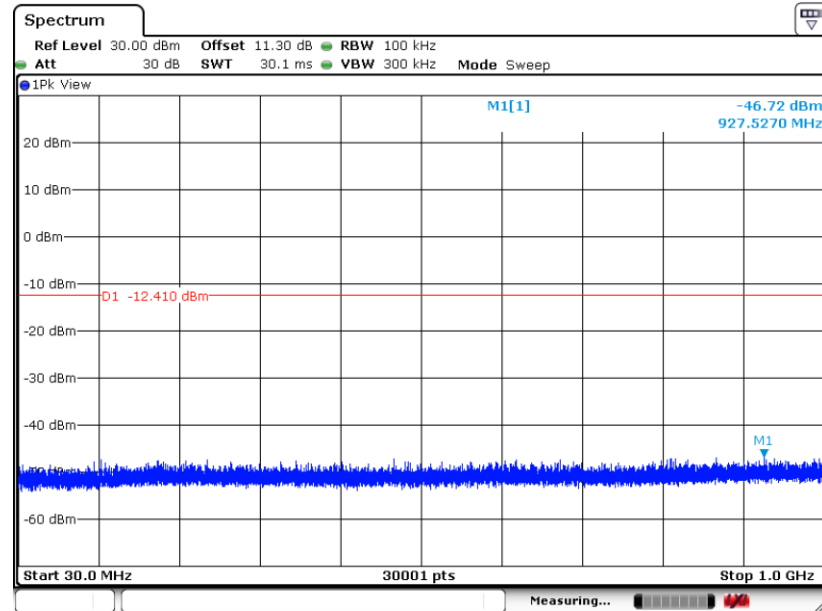
Date: 1.DEC.2023 12:07:23



3.4.6 Test Result of Conducted Spurious Emission Plots

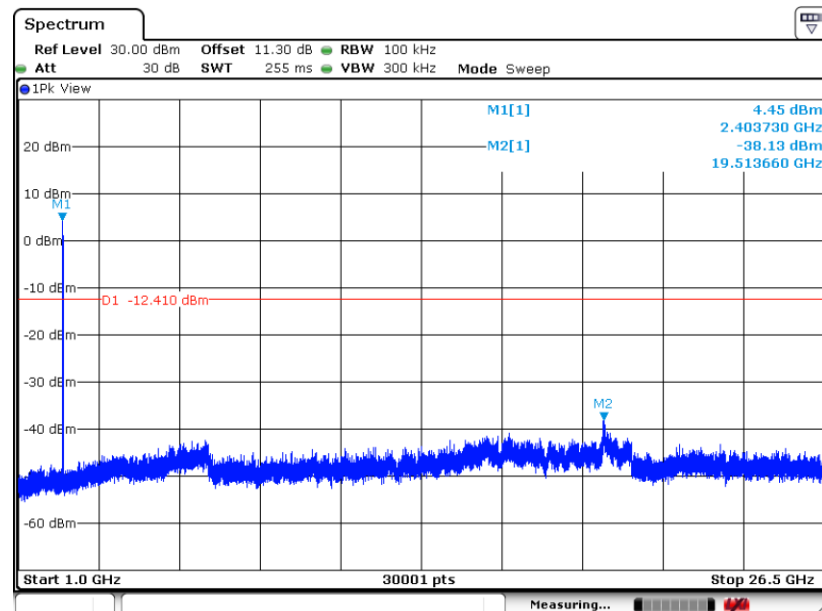
Bluetooth LE 2Mbps (Ant.5):

Conducted Spurious Emission Plot on Channel 01



Date: 1.DEC.2023 10:50:55

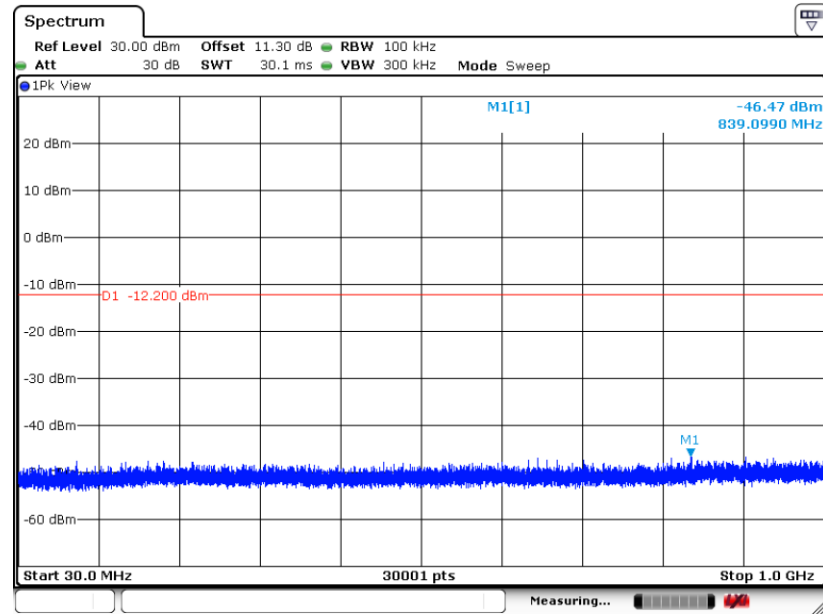
Conducted Spurious Emission Plot on Channel 01



Date: 1.DEC.2023 10:51:13

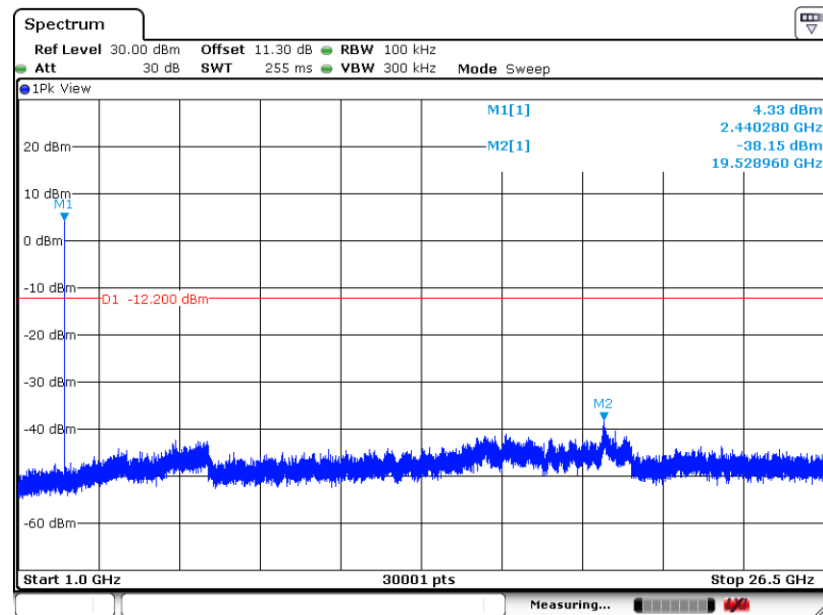


Conducted Spurious Emission Plot on Channel 19



Date: 1.DEC.2023 10:56:58

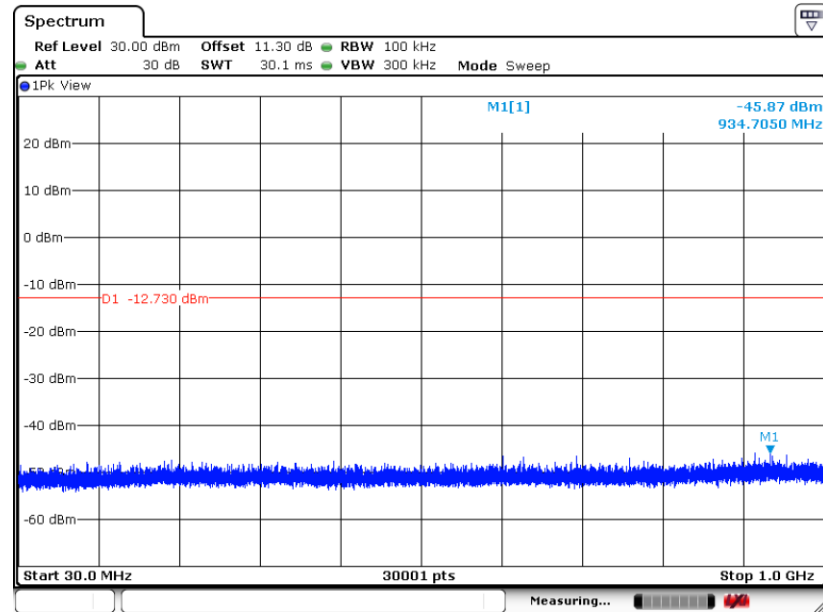
Conducted Spurious Emission Plot on Channel 19



Date: 1.DEC.2023 10:57:26

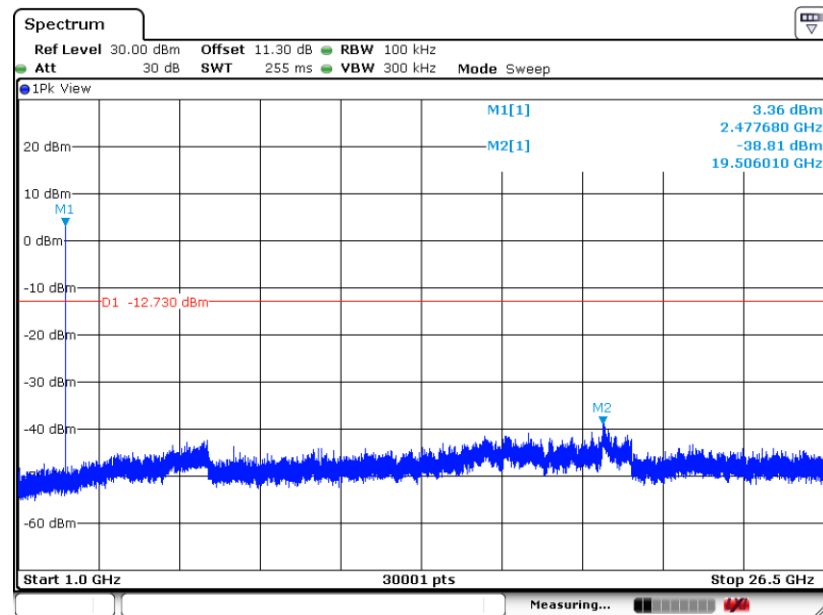


Conducted Spurious Emission Plot on Channel 38



Date: 1.DEC.2023 10:58:54

Conducted Spurious Emission Plot on Channel 38



Date: 1.DEC.2023 10:59:11