

FCC - TEST REPORT

Report Number : **60.790.18.007.01R01** Date of Issue : March 29, 2018

Model : **SF543/BTS**

Product Type : **BT speaker**

Applicant : Homsquare International Limited

Address : 1308 Tower 2, Ever Gain Plaza, 88 Container Port Road, Kwai Chung, Hong Kong

Production Facility : SHENZHEN MUSOS ELECTRONIC CO., LTD

Address : Floor 5, No. 6, Puyuwei Road, Shangliao, Shajing Town, Baoan District, Shenzhen, China 518125

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including Appendices : 58

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1 Table of Contents

1 Table of Contents.....	2
2 Description of Equipment Under Test	3
3 Summary of Test Standards	4
4 Details about the Test Laboratory	5
4.1 Test Equipment Site List	6
4.2 Measurement System Uncertainty	7
5 Summary of Test Results.....	8
6 General Remarks	9
7 Emission Test Results	10
7.1 Conducted Emission	10
7.2 Spurious Radiated Emission	12
7.3 20dB & 99% Bandwidth	18
7.4 Peak Output Power	27
7.5 Spurious Emissions at Antenna Terminals.....	36
7.6 100kHz Bandwidth of band edges.....	40
7.7 Minimum. Number of Hopping Frequencies	44
7.8 Minimum Hopping Channel Carrier Frequency Separation	47
7.9 Average Channel Occupancy Time.....	50
7.10 Antenna Requirement.....	53
8 Appendix A - General Product Information	54

2 Description of Equipment Under Test

Description of the Equipment Under Test

Product:	BT speaker
Model no.:	SF543/BTS
FCC ID:	2APBH – SF543BTS
Rating:	1) 3.7VDC (1 x 3.7VDC Rechargeable battery) 2) 5.0VDC (USB port)
Frequency:	2402MHz-2480MHz
Antenna gain:	0 dBi
Number of operated channel:	79
Modulation:	GFSK, $\pi/4$ DQPS, 8DPSK

3 Summary of Test Standards

Test Standards
FCC Part 15 Subpart C 10-1-16 Edition Federal Communications Commission, PART 15 — Radio Frequency Devices, Subpart C — Unintentional Radiators

4 Details about the Test Laboratory

Site 1

Company name: TÜV SÜD Hong Kong Ltd.
3/F, West Wing, Lakeside 2,
10 Science Park West Avenue,
Science Park, Shatin, Hong Kong

Site 2

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13 Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2,
Shenzhen 518052, P.R.China
FCC Registration Number: 502708

Emission Tests	
Test Item	Test Site
FCC Part 15 Subpart C	
FCC Title 47 Part 15.207(a) AC Line Conducted Emission	Site 2
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	Site 2
FCC Title 47 Part 15.247(a)(1) 20dB & 99% Bandwidth	Site 2
FCC Title 47 Part 15.247(b) Peak Output Power	Site 2
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	Site 2
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	Site 2
FCC Title 47 Part 15.247(a)(1) Minimum Number of Hopping Frequencies	Site 2
FCC Title 47 Part 15.247(a)(1) Minimum Hopping Channel Carrier Frequency Separation	Site 2
FCC Title 47 Part 15.247(a)(1) Average Time of Occupancy	Site 2
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	Site 2

4.1 Test Equipment Site List

Conducted Emission Test – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	14-Jul-18
LISN	Rohde & Schwarz	ENV4200	100249	14-Jul-18
LISN	Rohde & Schwarz	ENV432	101318	14-Jul-18
LISN	Rohde & Schwarz	ENV216	100326	14-Jul-18
ISN	Rohde & Schwarz	ENY81	100177	14-Jul-18
ISN	Rohde & Schwarz	ENY81-CA6	101664	14-Jul-18
High Voltage Probe	Rohde & Schwarz	TK9420(VT9420)	9420-584	14-Jul-18
RF Current Probe	Rohde & Schwarz	EZ-17	100816	14-Jul-18
Attenuator	Shanghai Huaxiang	TS2-26-3	080928189	07-Jul-18
Test software	Rohde & Schwarz	EMC32	Version9.15.00	N/A

Radiated emission Test – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	14-July-18
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	14-July-18
Horn Antenna	Rohde & Schwarz	HF907	102294	14-July-18
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	14-July-18
3m Semi-anechoic chamber	TDK	9X6X6	----	14-July-20

20dB & 99% Bandwidth, Peak Output Power, Spurious Emissions at Antenna Terminals,
100kHz Bandwidth of band edges, Min. No. of Hopping Frequencies, Min. Hopping Channel Carrier
Frequency Separation and Average Time of Occupancy – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100A	108272	07-July-18
Signal Analyzer	Rohde & Schwarz	FSV40	101030	07-July-18
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	07-July-18
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	07-July-18

4.2 Measurement System Uncertainty

Measurement System Uncertainty Emissions

System Measurement Uncertainty	
Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.54dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.83dB; Vertical: 4.91dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-25000MHz	Horizontal: 4.89dB; Vertical: 4.88dB;
Uncertainty for Conducted RF test	2.04dB
Uncertainty for Conducted Emission 150kHz-30MHz	3.62dB

5 Summary of Test Results

Emission Tests				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
FCC Title 47 Part 15.207(a) AC Line Conducted Emission	10-11	☒	☐	☐
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	12-17	☒	☐	☐
FCC Title 47 Part 15.247(a)(1) 20dB & 99% Bandwidth	18-26	☒	☐	☐
FCC Title 47 Part 15.247(b) Peak Output Power	27-35	☒	☐	☐
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	36-38	☒	☐	☐
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	39-42	☒	☐	☐
FCC Title 47 Part 15.247(a)(1) Min. No. of Hopping Frequencies	43-45	☒	☐	☐
FCC Title 47 Part 15.247(a)(1) Min. of Hopping Channel Carrier Frequency Separation	46-48	☒	☐	☐
FCC Title 47 Part 15.247(a)(1) Average Time of Occupancy	49-51	☒	☐	☐
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	52	☒	☐	☐

6 General Remarks

Remarks

NIL

SUMMARY:

- All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

- The Equipment Under Test

■ - **Fulfills** the general approval requirements.

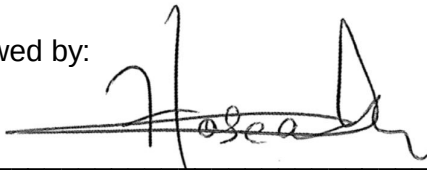
□ - **Does not** fulfill the general approval requirements.

Sample Received Date: December 15, 2017

Testing Start Date: March 5, 2018

Testing End Date: March 12, 2018

Reviewed by:



Hosea CHAN
EMC Project Engineer

Prepared by:



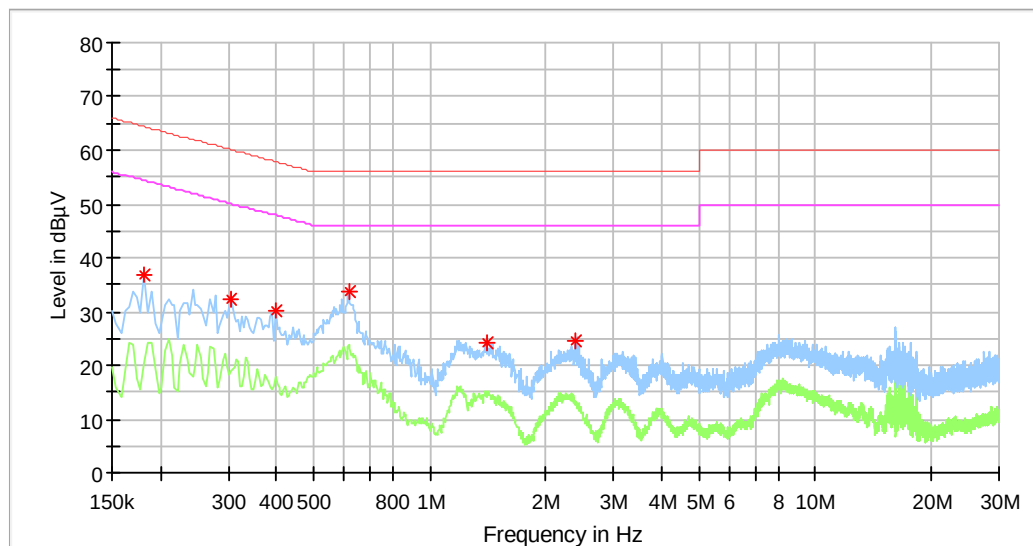
Eric LI
EMC Senior Project Engineer

7 Emission Test Results

7.1 Conducted Emission

EUT: SF543/BTS
 Op Condition: Operated, Charging Mode
 Test Specification: FCC15.207, AC Mains, L Line
 Comment: 120VAC, 60Hz

Test Result	
☒	Passed
☐	Not Passed



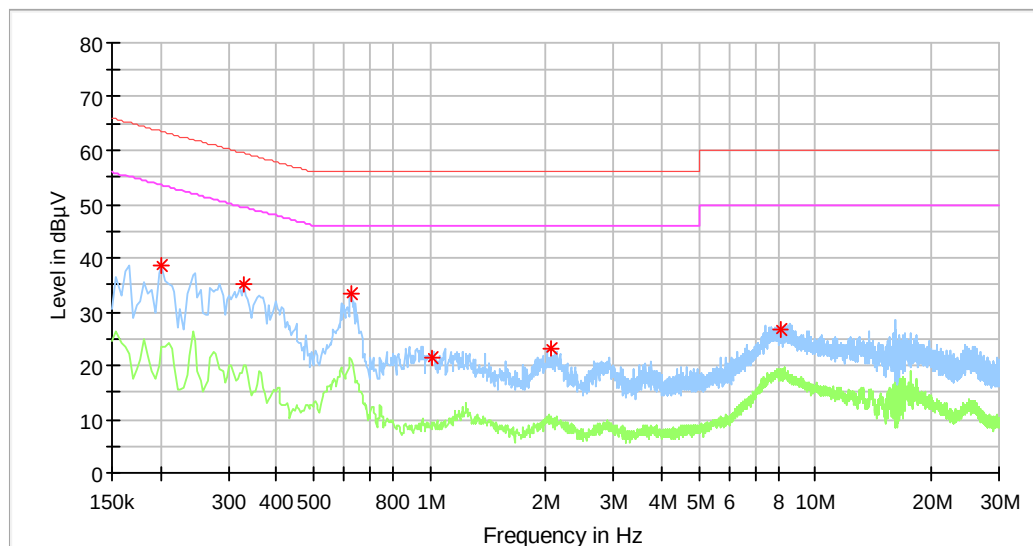
Frequency (MHz)	MaxPeak (dBμV)	Limit (dBμV)	Margin (dB)
0.182000	36.70	64.39	27.69
0.306000	32.25	60.08	27.83
0.398000	30.31	57.90	27.59
0.618000	33.68	56.00	22.32
1.406000	24.10	56.00	31.90
2.394000	24.56	56.00	31.44

Remark: Bluetooth function is disabled when charging.

Conducted Emission

EUT: SF543/BTS
 Op Condition: Operated, Charging Mode
 Test Specification: FCC15.207, AC Mains, L Line
 Comment: 120VAC, 60Hz

Test Result	
☒	Passed
☐	Not Passed



Frequency (MHz)	MaxPeak (dBμV)	Limit (dBμV)	Margin (dB)
0.202000	38.56	63.53	24.97
0.330000	35.15	59.45	24.30
0.626000	33.45	56.00	22.55
1.018000	21.40	56.00	34.60
2.066000	23.25	56.00	32.75
8.150000	26.73	60.00	33.27

Remark: Bluetooth function is disabled when charging.

7.2 Spurious Radiated Emission

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402MHz, GFSK
 (Worst case)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
58.722	13.65	40.0	-26.35	Peak
266.572	25.46	46.0	-20.54	Peak
439.124	26.74	46.0	-19.26	Peak
1032.000	34.78	54.0	-19.22	Peak
1600.000	28.71	54.0	-25.29	Peak
4804.000	37.40	54.0	-16.60	Peak
7622.000	39.19	54.0	-14.81	Peak

Spurious Radiated Emission

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402MHz, GFSK
 (Worst case)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
43.890	17.34	40.0	-22.66	Peak
276.489	29.42	46.0	-16.58	Peak
566.625	27.47	46.0	-18.53	Peak
1032.000	30.62	54.0	-23.38	Peak
1995.625	33.56	54.0	-20.44	Peak
4804.000	36.47	54.0	-17.53	Peak
8061.562	42.30	54.0	-11.70	Peak

Spurious Radiated Emission

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2441MHz, GFSK
 (Worst case)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
46.550	17.43	40.0	-22.57	Peak
266.543	25.91	46.0	-20.09	Peak
446.258	27.13	46.0	-18.87	Peak
1248.770	29.65	54.0	-24.35	Peak
2344.812	46.26	54.0	-7.74	Peak
4882.000	36.68	54.0	-17.32	Peak
9612.675	40.45	54.0	-13.55	Peak

Spurious Radiated Emission

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2441MHz, GFSK
 (Worst case)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
54.879	19.34	40.0	-20.66	Peak
276.658	31.48	46.0	-14.52	Peak
562.570	28.17	46.0	-17.83	Peak
1251.983	30.22	54.0	-23.78	Peak
2344.812	44.09	54.0	-9.91	Peak
4882.000	38.48	54.0	-15.52	Peak
8757.656	41.90	54.0	-12.10	Peak

Spurious Radiated Emission

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2480MHz, GFSK
 (Worst case)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
37.499	18.19	40.0	-21.81	Peak
265.434	24.87	46.0	-21.13	Peak
440.130	26.90	46.0	-19.10	Peak
1020.062	37.51	54.0	-16.49	Peak
1779.812	31.29	54.0	-22.71	Peak
4960.000	37.91	54.0	-16.09	Peak
7077.660	38.23	54.0	-15.77	Peak

Spurious Radiated Emission

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2480MHz, GFSK
 (Worst case)
 Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
 Comment: 3.7VDC
 Remark: 9kHz to 25GHz

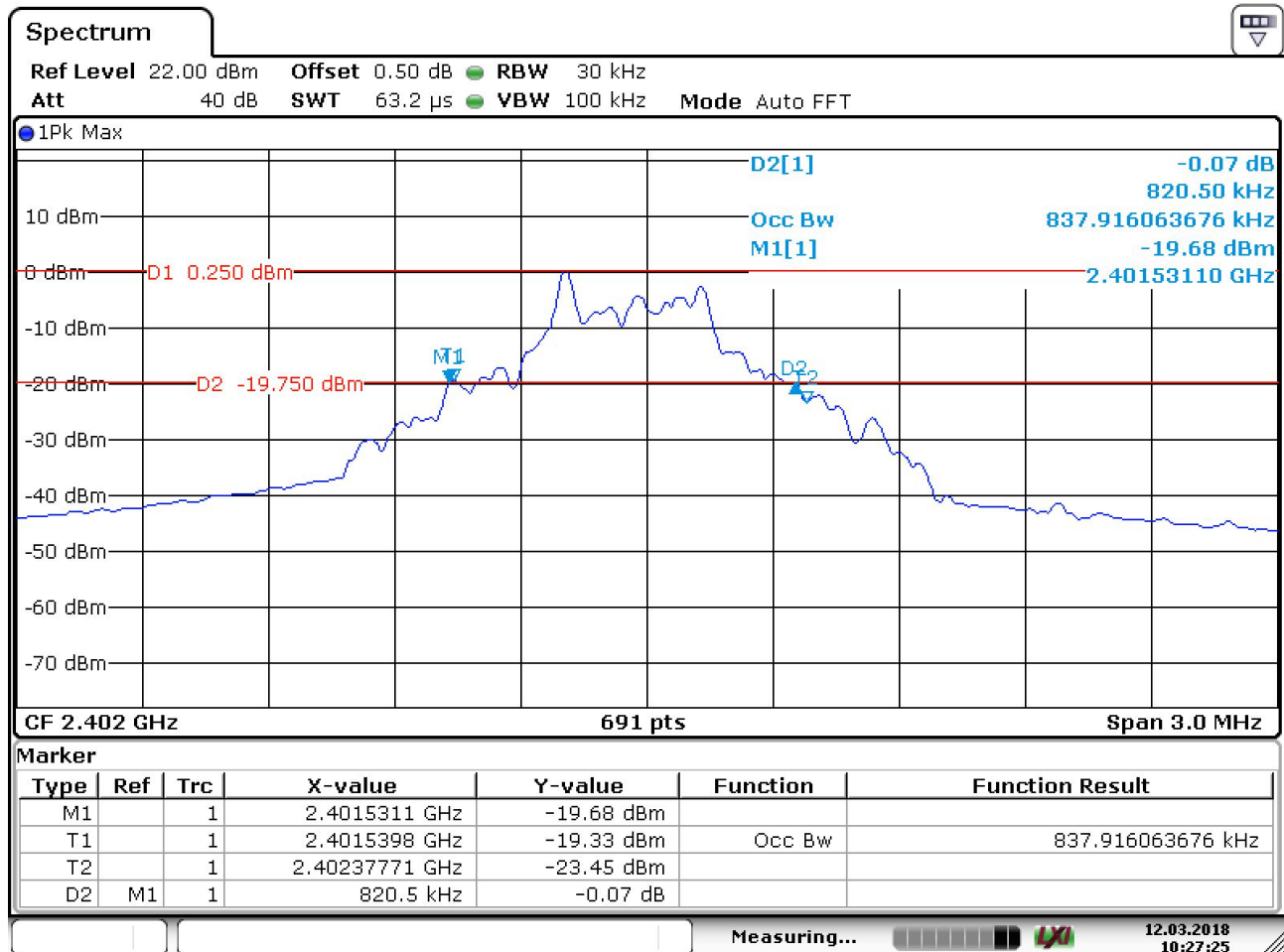
Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
46.213	17.88	40.0	-22.12	Peak
168.430	19.64	46.0	-26.36	Peak
885.279	29.69	46.0	-16.31	Peak
1032.000	32.02	54.0	-21.98	Peak
1970.500	38.49	54.0	-15.51	Peak
4960.000	38.68	54.0	-15.32	Peak
8224.218	42.08	54.0	-11.92	Peak

7.3 20dB & 99% Bandwidth

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402MHz, DH5
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



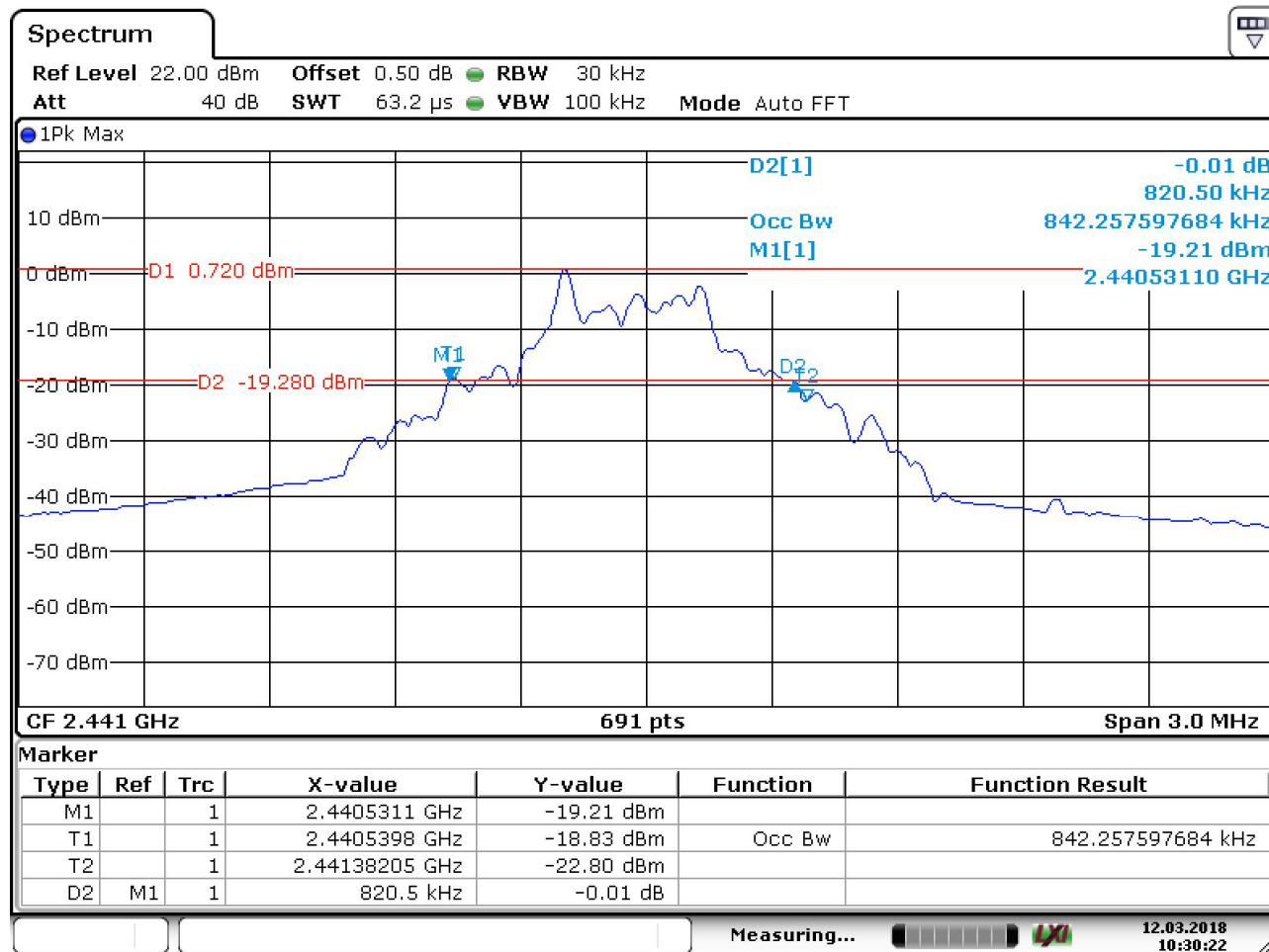
Date: 12.MAR.2018 10:27:25

20dB bandwidth	99% bandwidth
820.5 kHz	837.9 kHz

20dB & 99% Bandwidth

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2441MHz, DH5
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



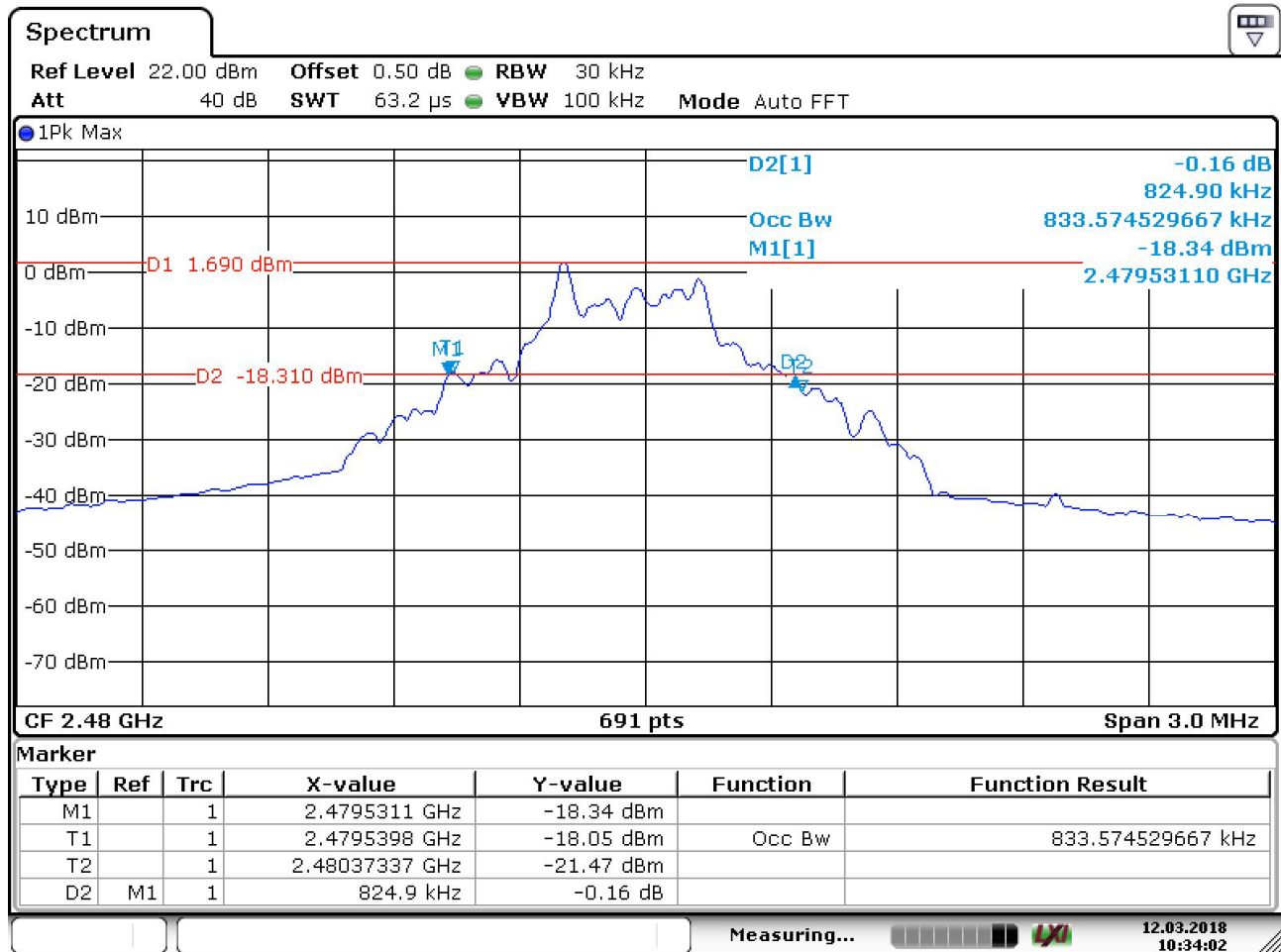
Date: 12.MAR.2018 10:30:23

20dB bandwidth	99% bandwidth
820.5 kHz	842.3 kHz

20dB & 99% Bandwidth

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2480MHz, DH5
Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



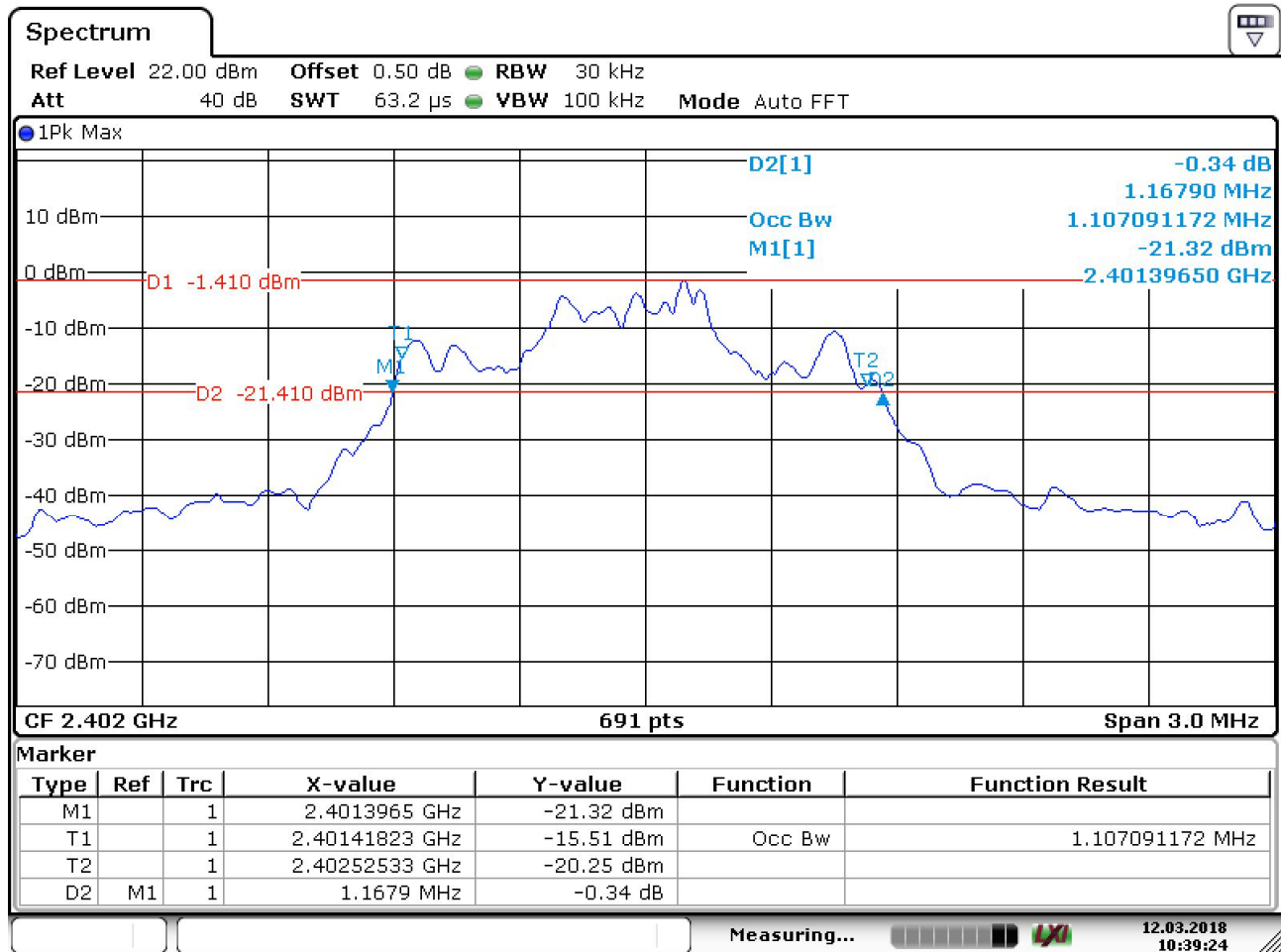
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20dB bandwidth	99% bandwidth
824.9 kHz	833.6 kHz

20dB & 99% Bandwidth

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402MHz, 2DH5
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



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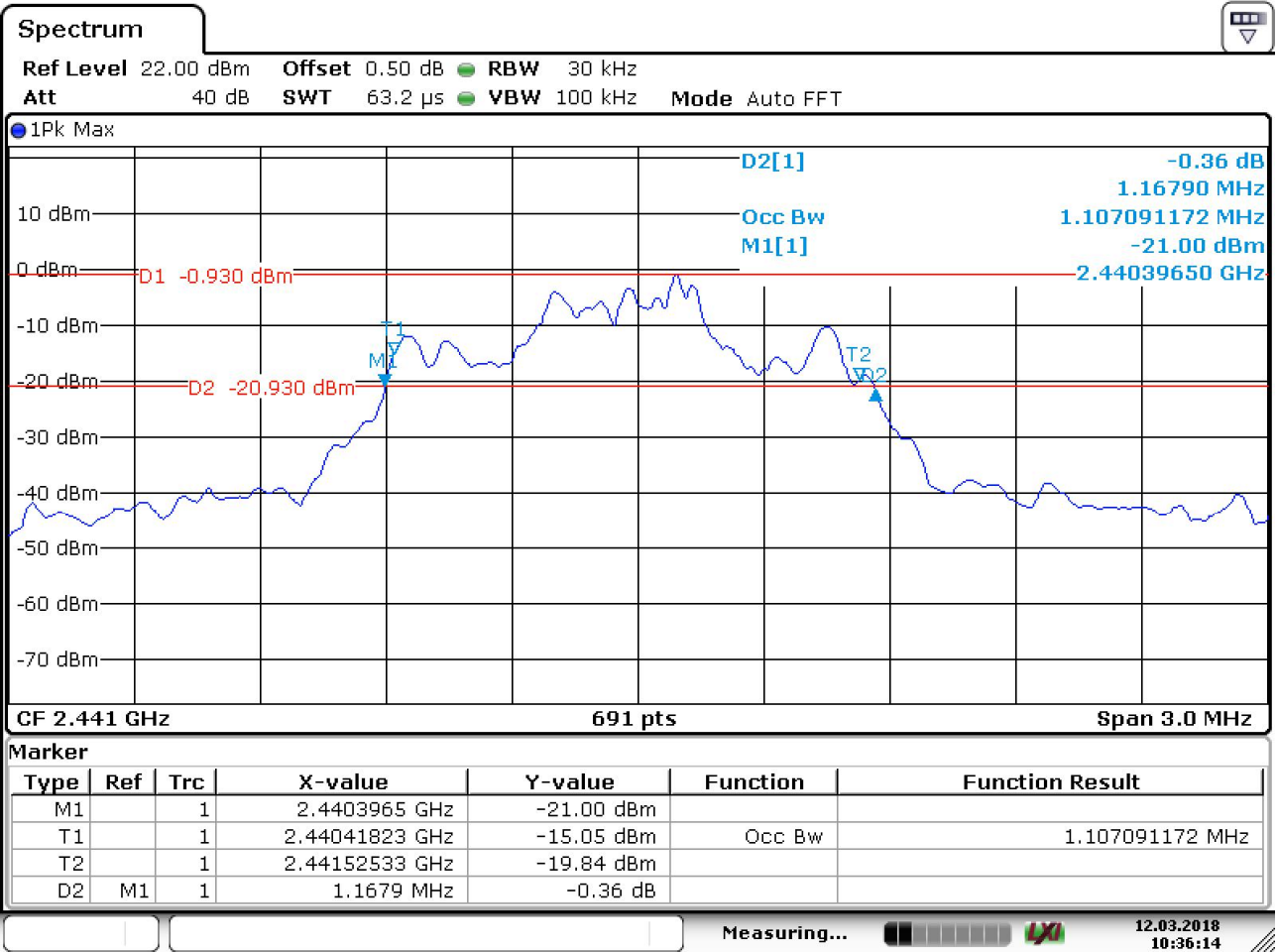
20dB bandwidth	99% bandwidth
1167.9 kHz	1107.1 kHz



20dB & 99% Bandwidth

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2441MHz, 2DH5
Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
Comment: 3.7VDC

Test Result	
☒	Passed
☐	Not Passed

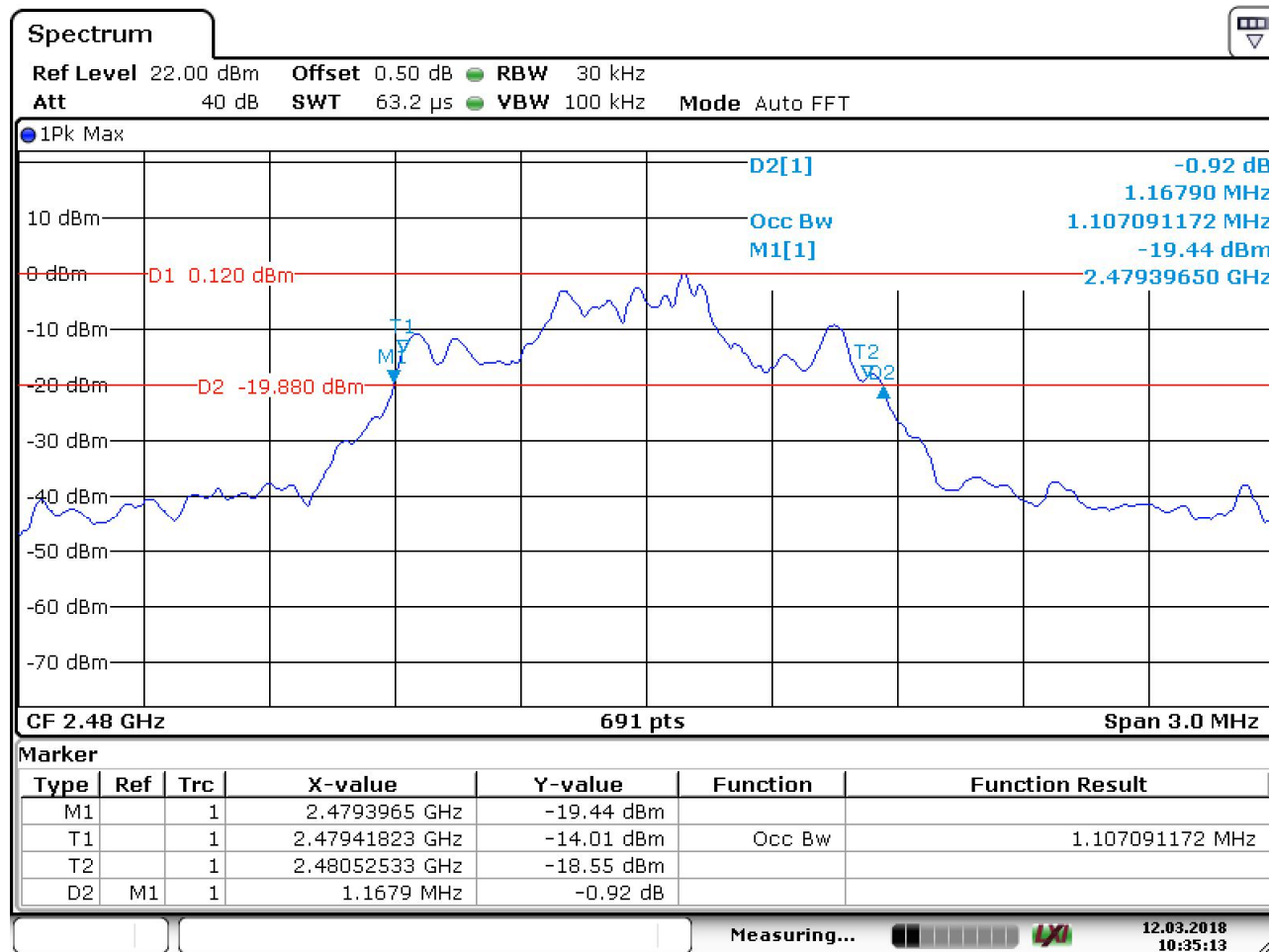


Date: 12.MAR.2018 10:36:14

20dB bandwidth	99% bandwidth
1167.9 kHz	1107.1 kHz

EUT:	SF543/BTS
Op Condition:	Operated, TX Mode, 2480MHz, 2DH5
Test Specification:	FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
Comment:	3.7VDC

Test Result
☒ Passed
☐ Not Passed

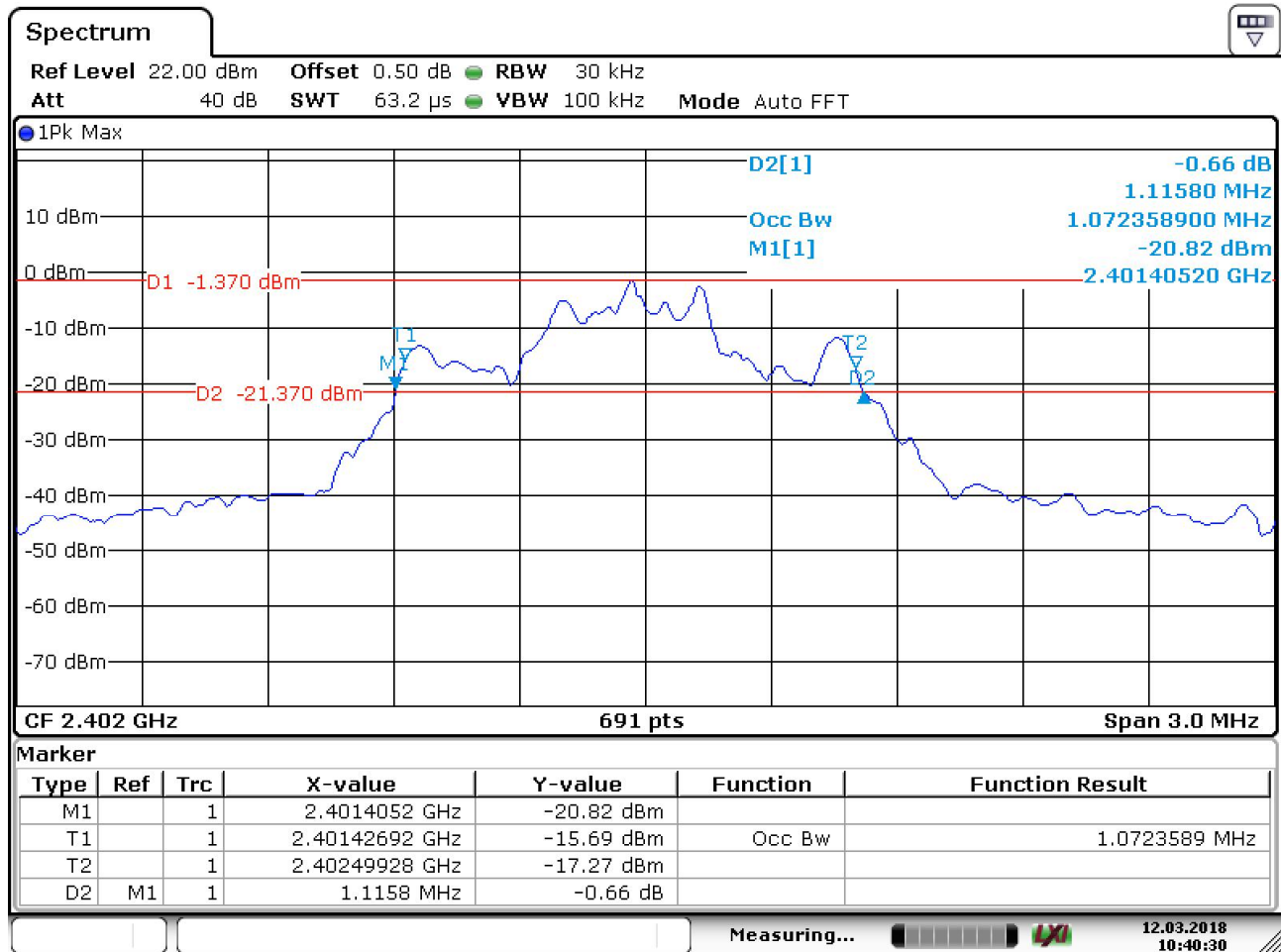


20dB bandwidth	99% bandwidth
1167.9 kHz	1107.1 kHz

20dB & 99% Bandwidth

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402MHz, 3DH5
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



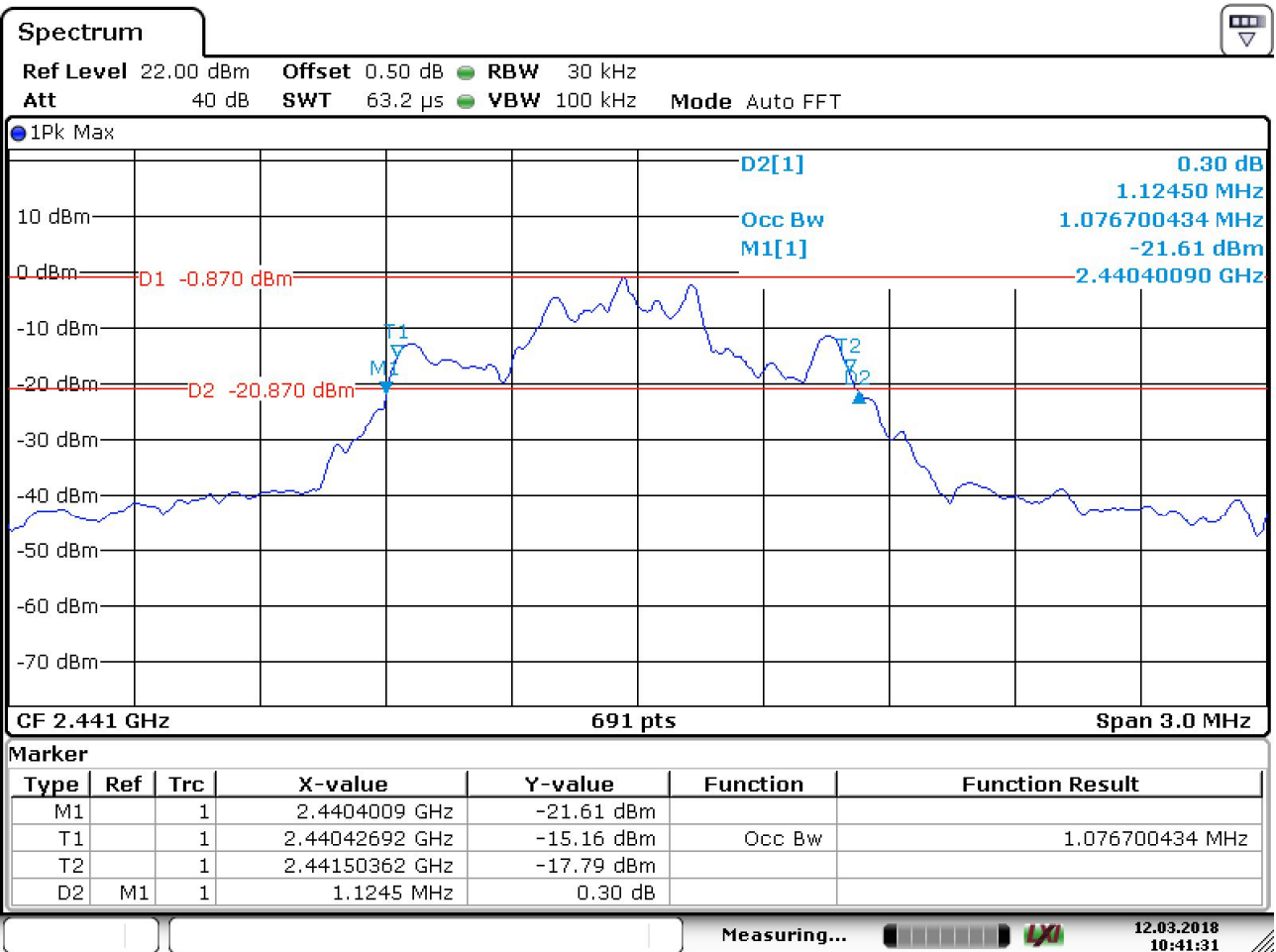
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20dB bandwidth	99% bandwidth
1115.8 kHz	1072.4 kHz

20dB & 99% Bandwidth

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2441MHz, 3DH5
Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



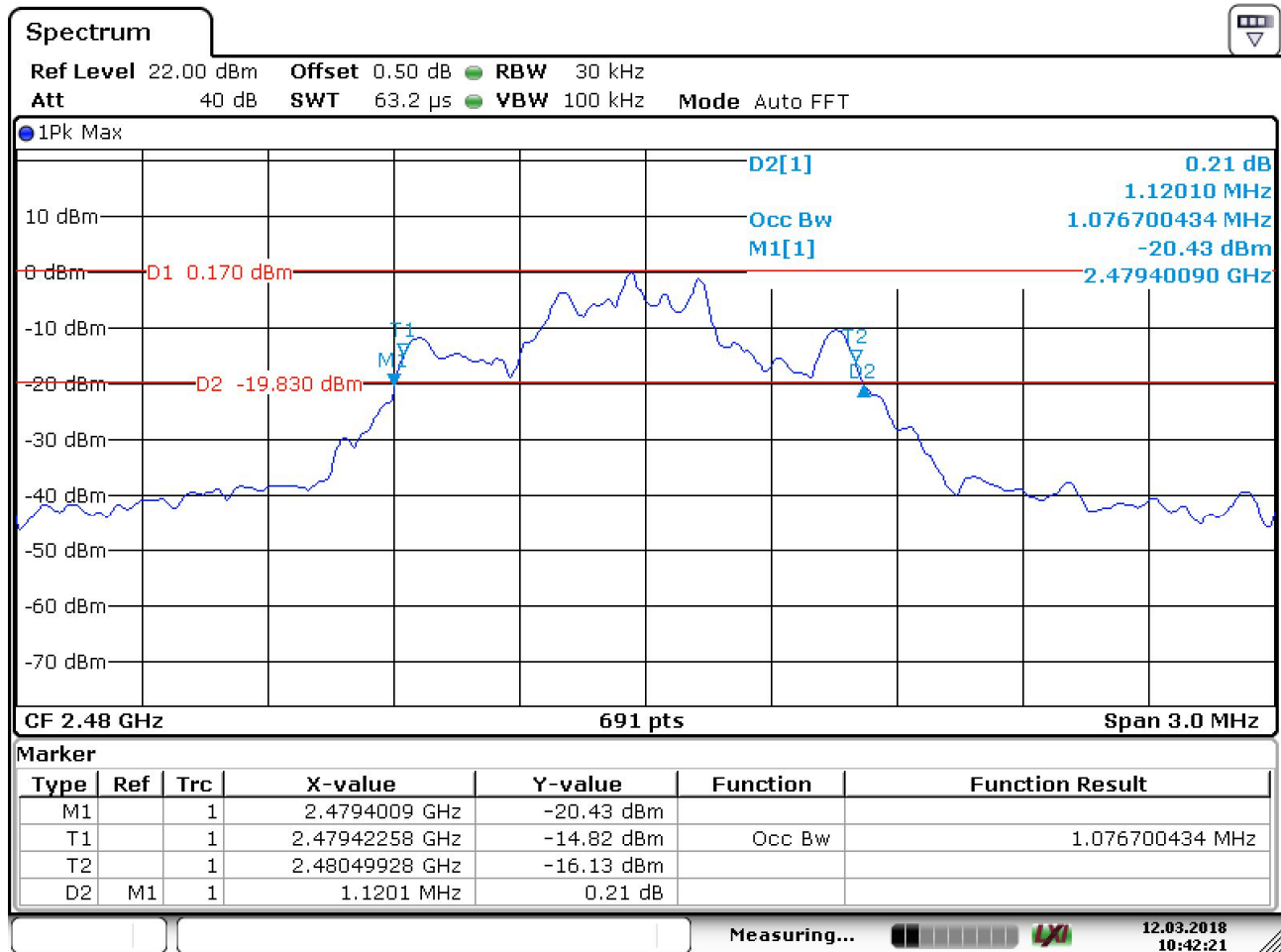
Date: 12.MAR.2018 10:41:30

20dB bandwidth	99% bandwidth
1124.5 kHz	1076.7 kHz

20dB & 99% Bandwidth

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2480MHz, 3DH5
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



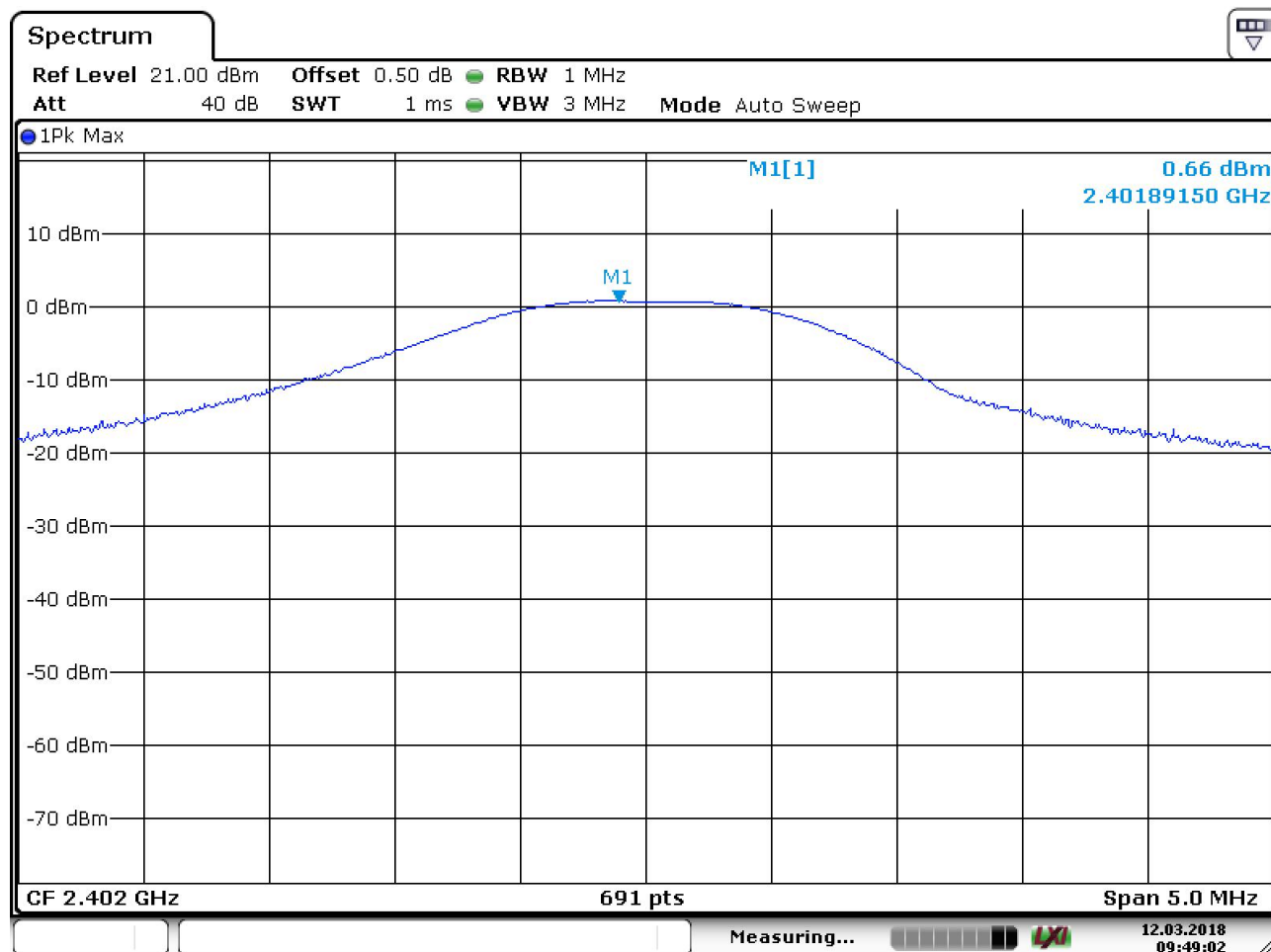
Date: 12.MAR.2018 10:42:21

20dB bandwidth	99% bandwidth
1120.1 kHz	1076.7 kHz

7.4 Peak Output Power

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402MHz, DH5
 Test Specification: FCC15.247(b)
 Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



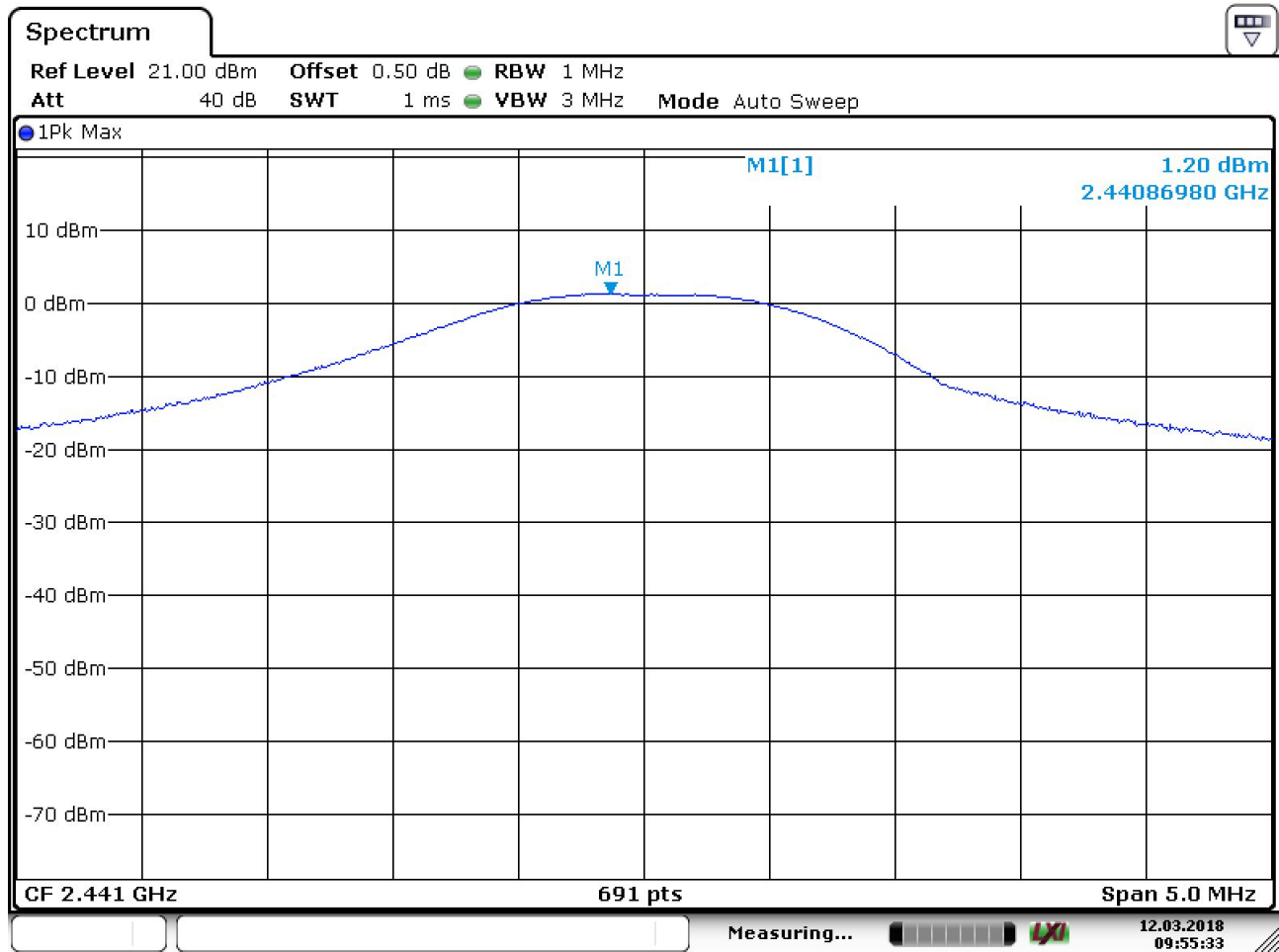
Date: 12.MAR.2018 09:49:02

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
0.66	1.164	125.0

Peak Output Power

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2441MHz, DH5
 Test Specification: FCC15.247(b)
 Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result	
☒	Passed
☐	Not Passed



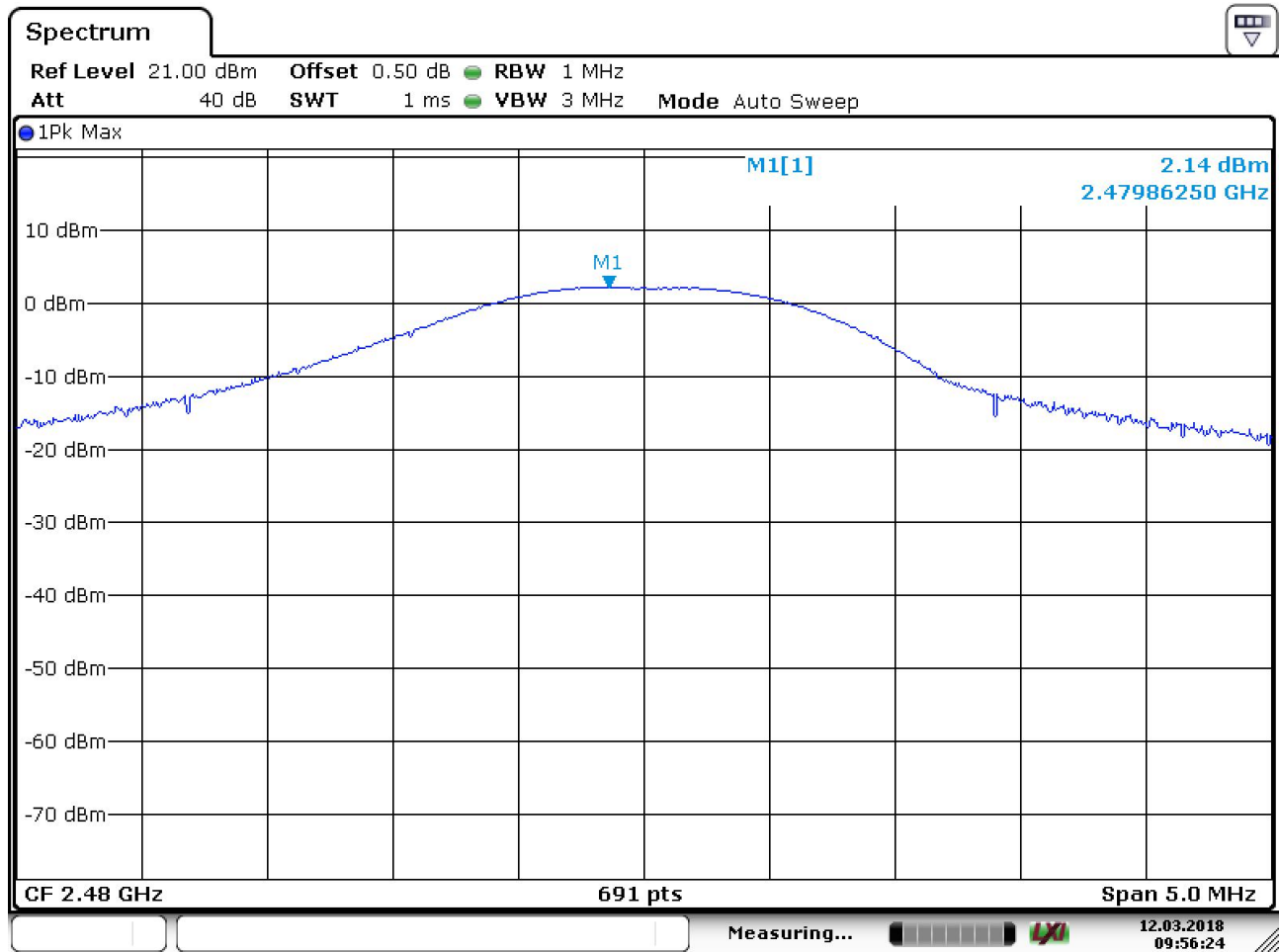
Date: 12.MAR.2018 09:55:33

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
1.20	1.318	125.0

Peak Output Power

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2480MHz, DH5
 Test Specification: FCC15.247(b)
 Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



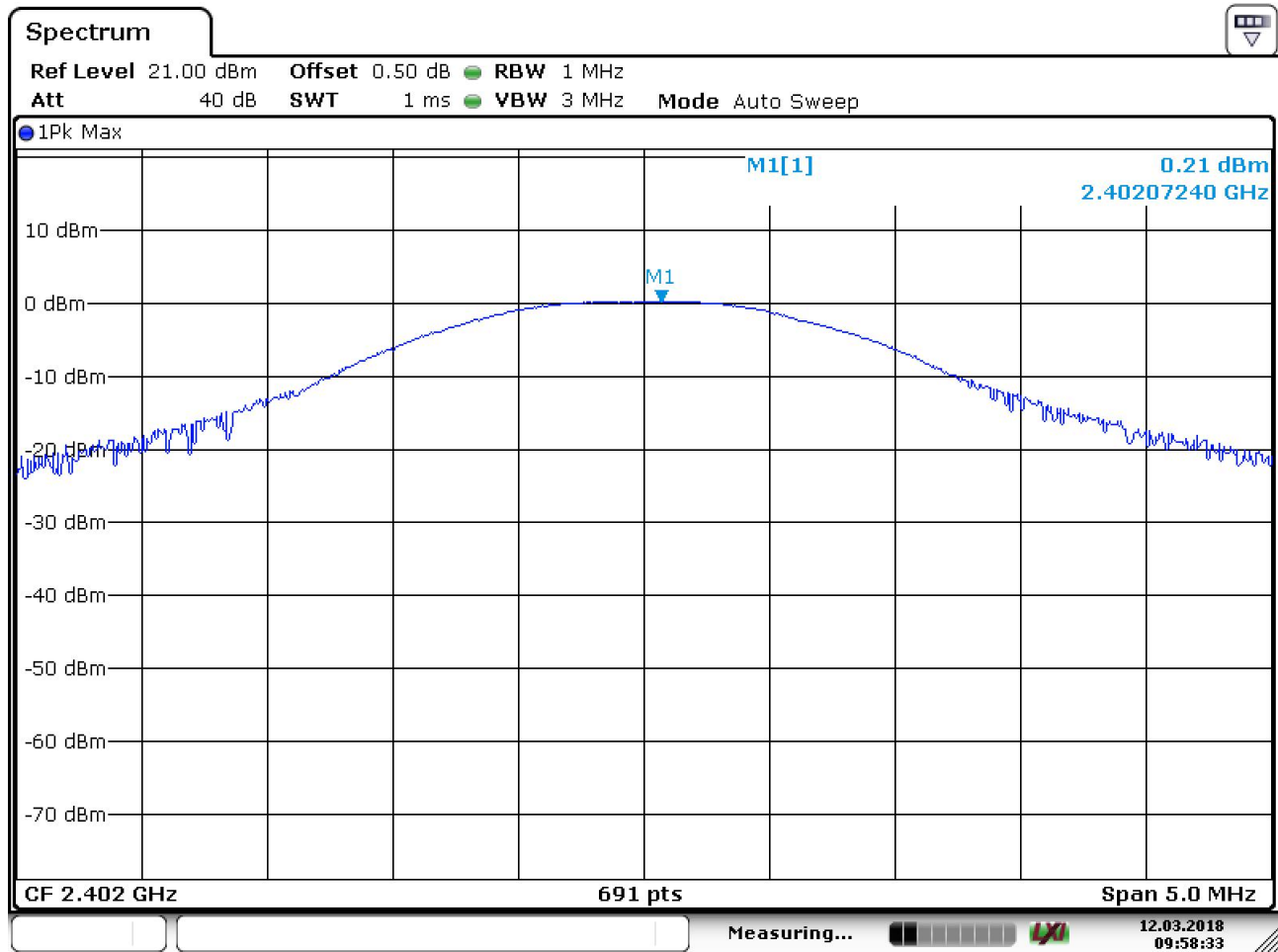
Date: 12.MAR.2018 09:56:25

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
2.14	1.637	125.0

Peak Output Power

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2402MHz, 2DH5
Test Specification: FCC15.247(b)
Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



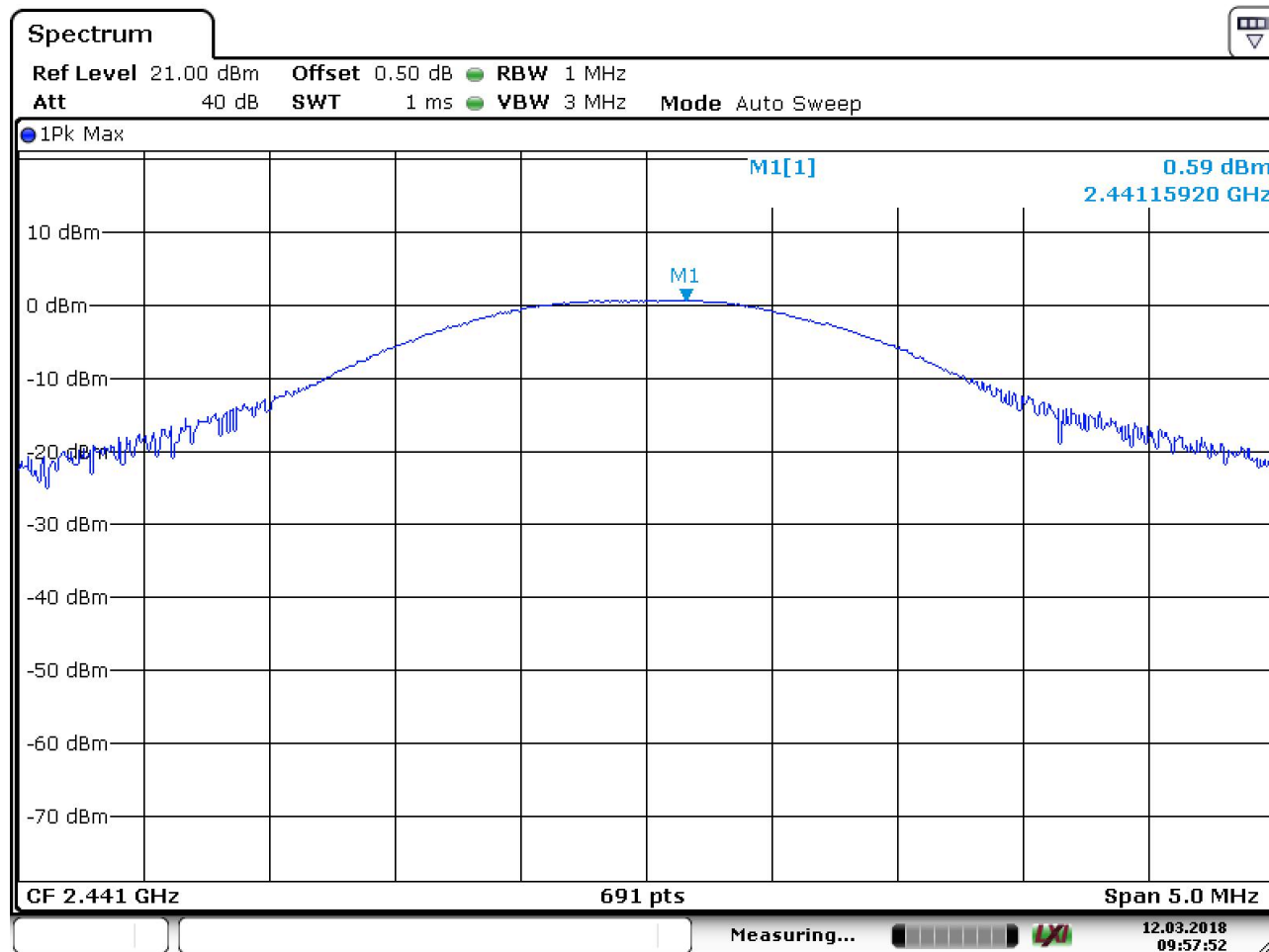
Date: 12.MAR.2018 09:58:34

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
0.21	1.050	125.0

Peak Output Power

EUT: SF543/BTS (Right)
Op Condition: Operated, TX Mode, 2441MHz, 2DH5
Test Specification: FCC15.247(b)
Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



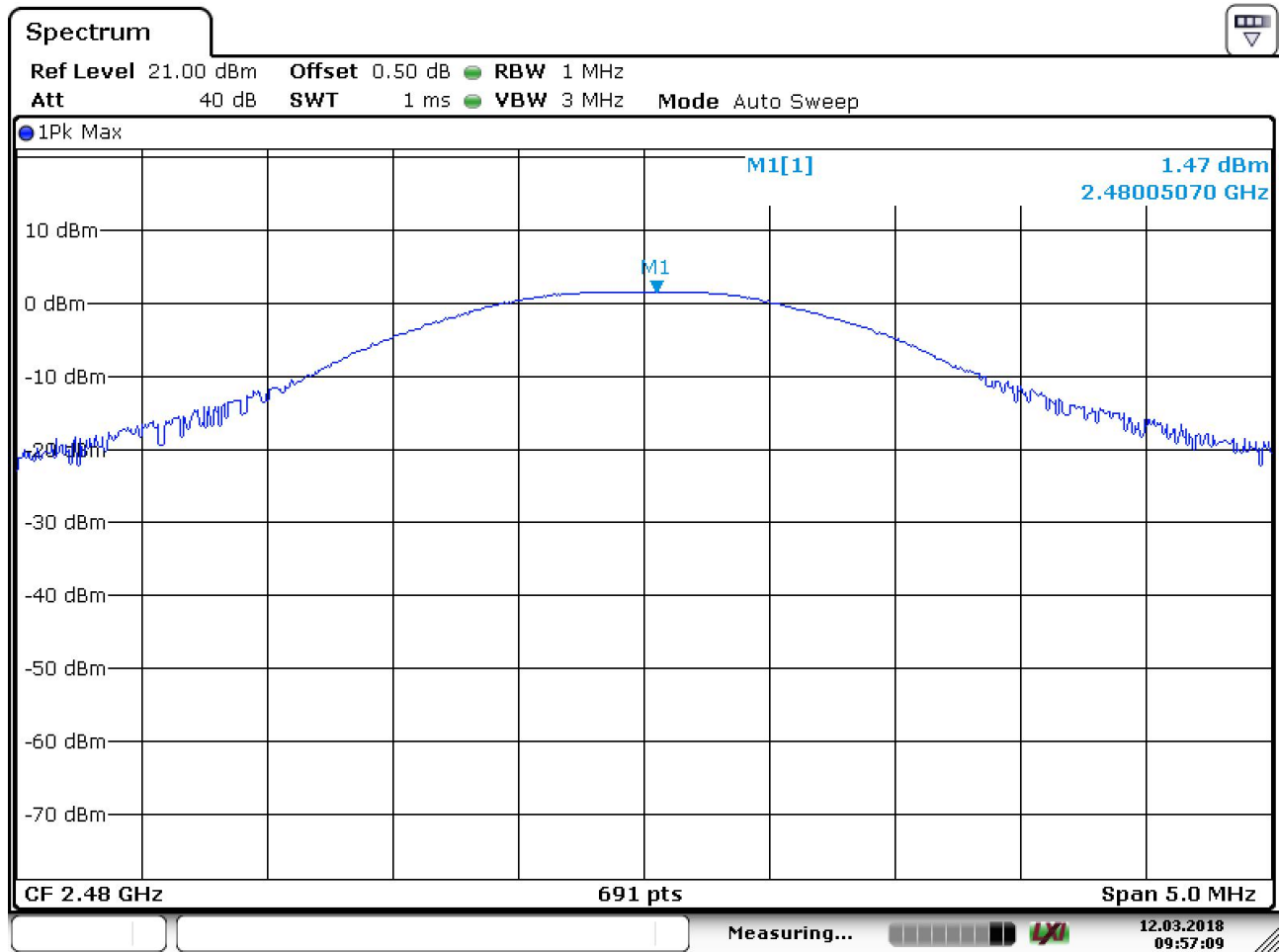
Date: 12.MAR.2018 09:57:51

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
0.59	1.146	125.0

Peak Output Power

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2480MHz, 2DH5
Test Specification: FCC15.247(b)
Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



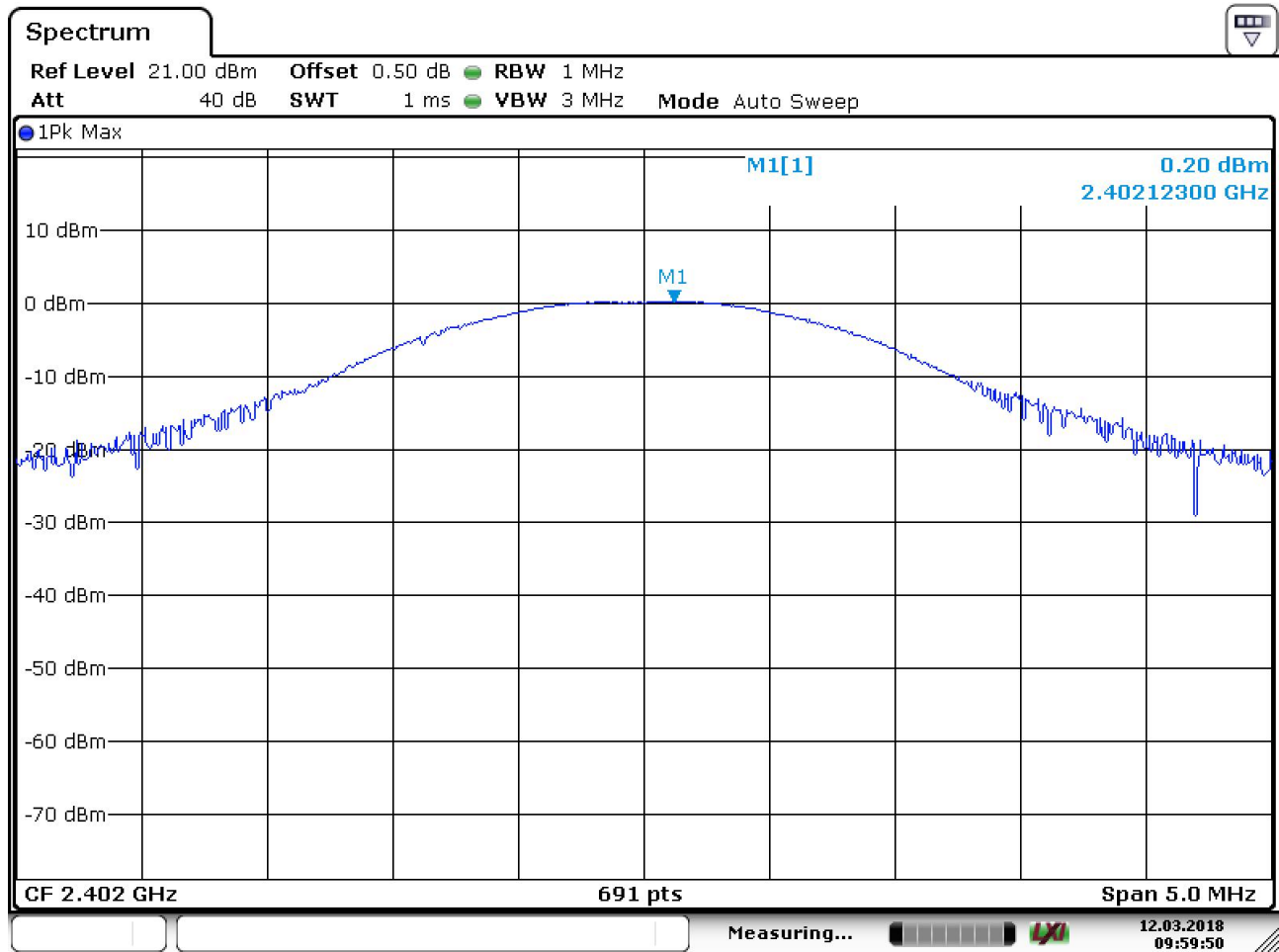
Date: 12.MAR.2018 09:57:09

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
1.47	1.403	125.0

Peak Output Power

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2402MHz, 3DH5
Test Specification: FCC15.247(b)
Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



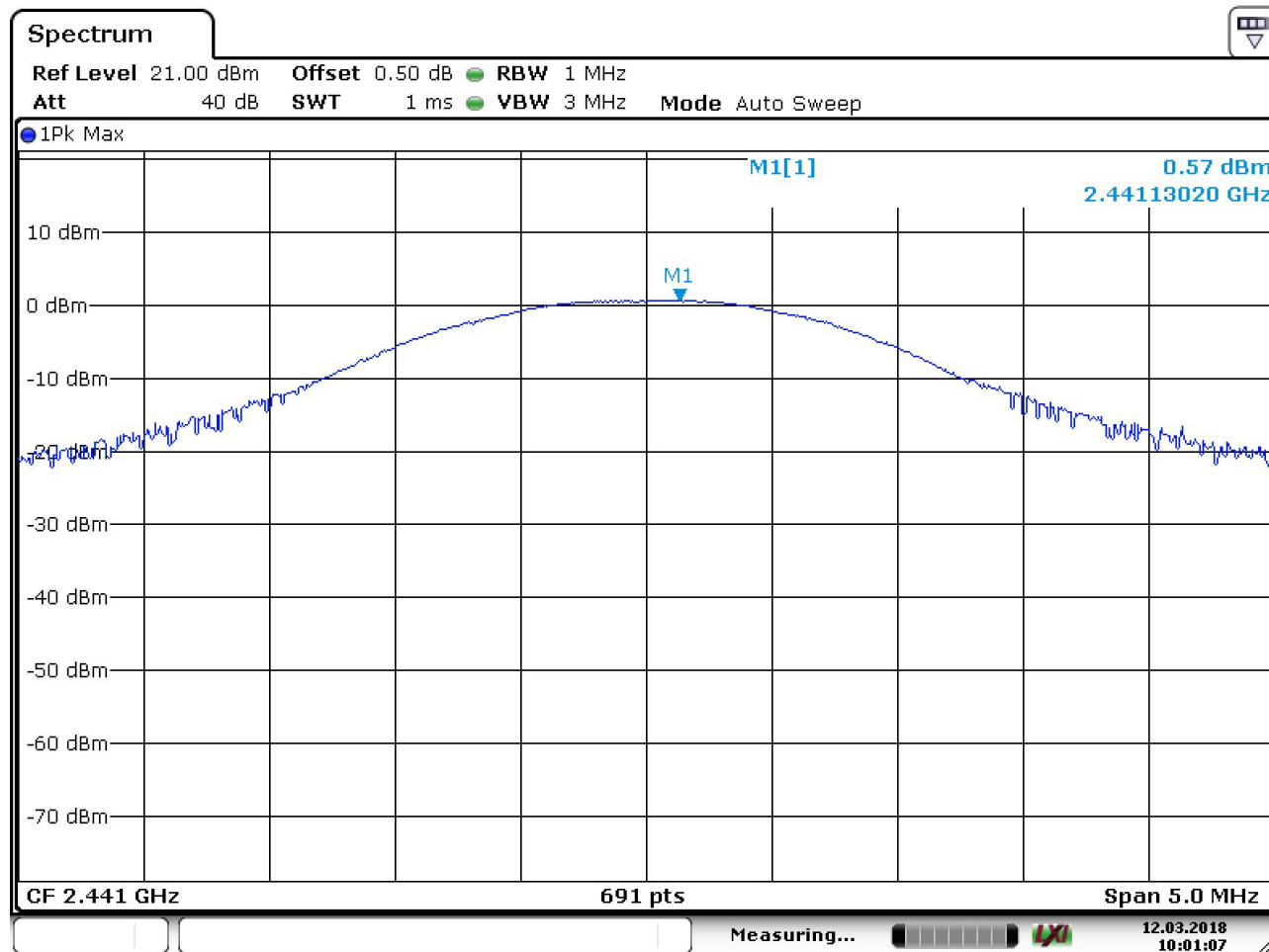
Date: 12.MAR.2018 09:59:50

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
0.20	1.047	125.0

Peak Output Power

EUT: SF543/BTS (Right)
Op Condition: Operated, TX Mode, 2441MHz, 3DH5
Test Specification: FCC15.247(b)
Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



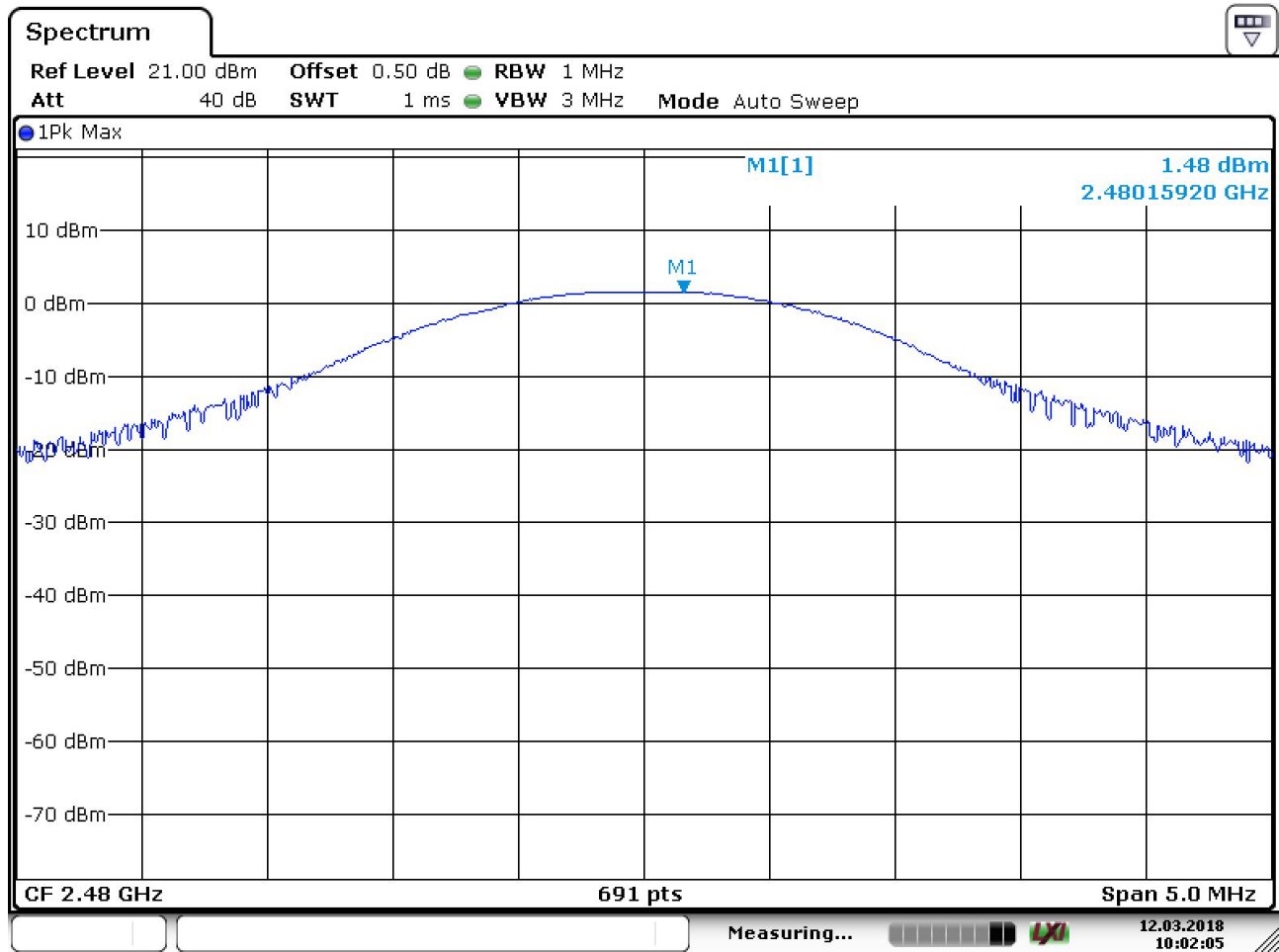
Date: 12.MAR.2018 10:01:08

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
0.57	1.140	125.0

Peak Output Power

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2480MHz, 3DH5
 Test Specification: FCC15.247(b)
 Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



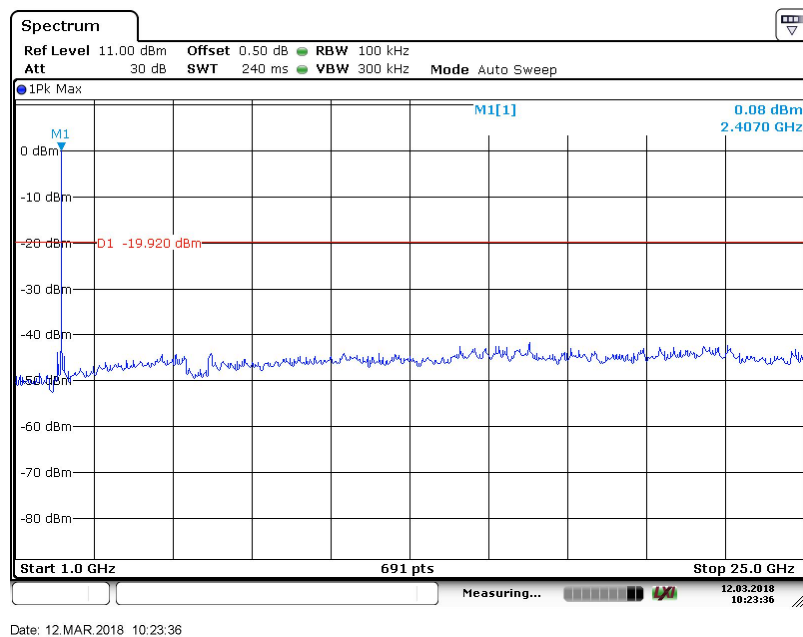
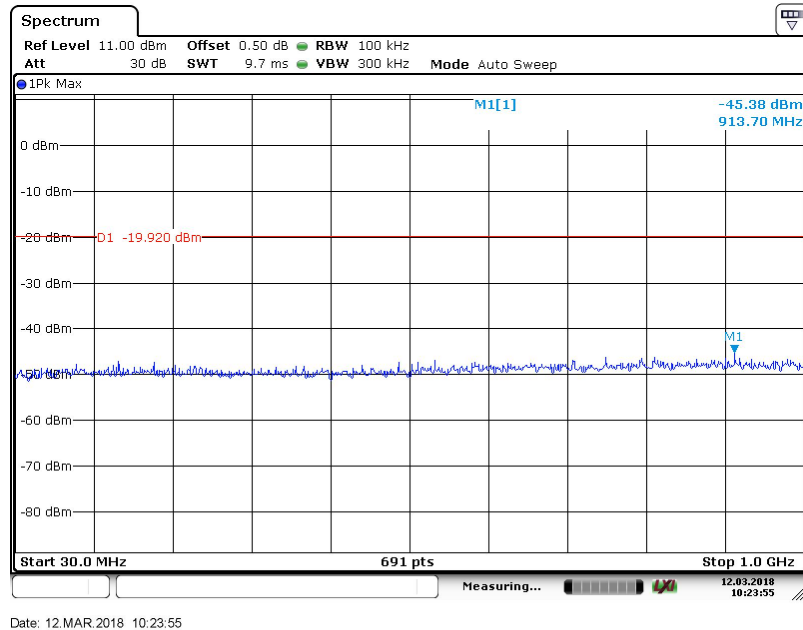
Date: 12.MAR.2018 10:02:05

Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
1.48	1.406	125.0

7.5 Spurious Emissions at Antenna Terminals

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2402MHz, DH5
(Worst case)
Test Specification: FCC2.1051 & 15.247(d)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed

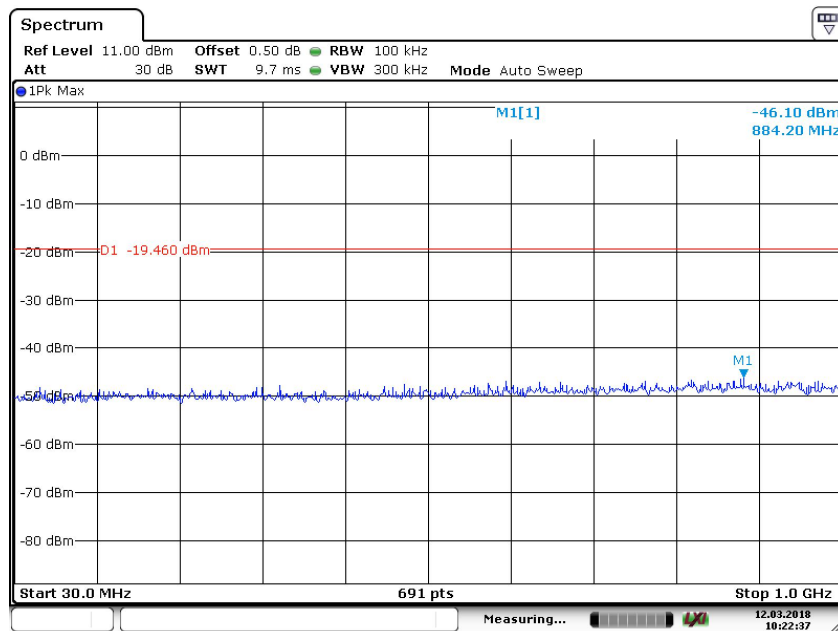


Limit: 20dB below the highest level of the desired power in the passband

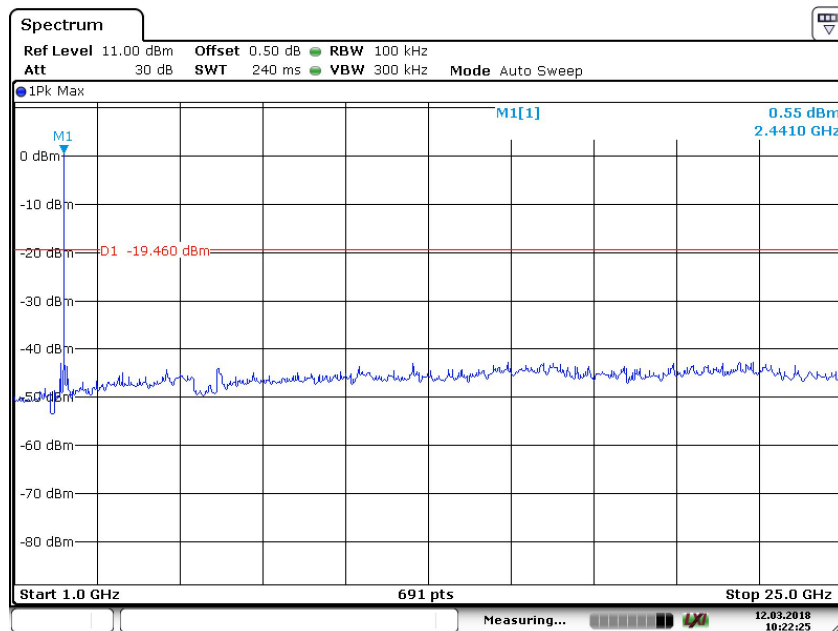
Spurious Emissions at Antenna Terminals

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2441MHz, DH5
(Worst case)
Test Specification: FCC2.1051 & 15.247(d)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12.MAR.2018 10:22:37



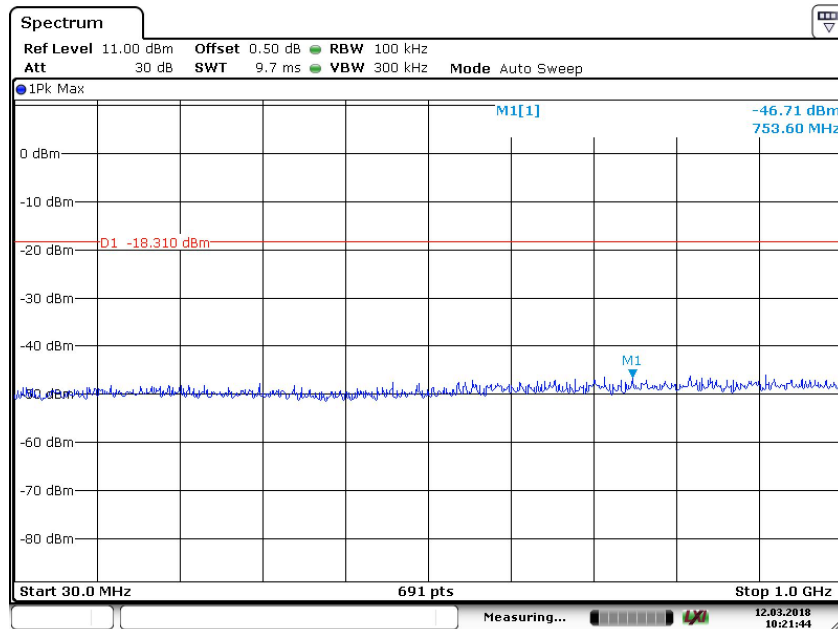
Date: 12.MAR.2018 10:22:25

Limit: 20dB below the highest level of the desired power in the passband

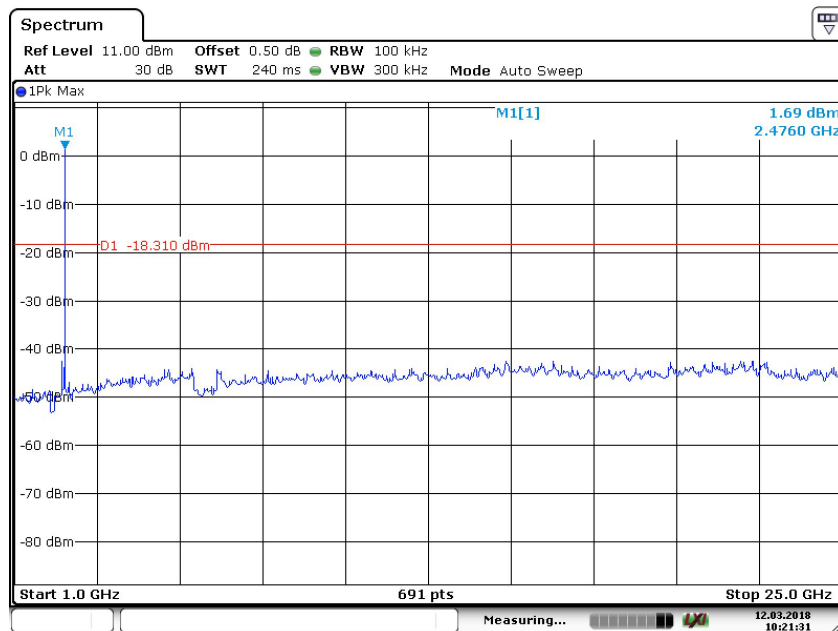
Spurious Emissions at Antenna Terminals

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2480MHz, DH5
(Worst case)
Test Specification: FCC2.1051 & 15.247(d)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12.MAR.2018 10:21:44



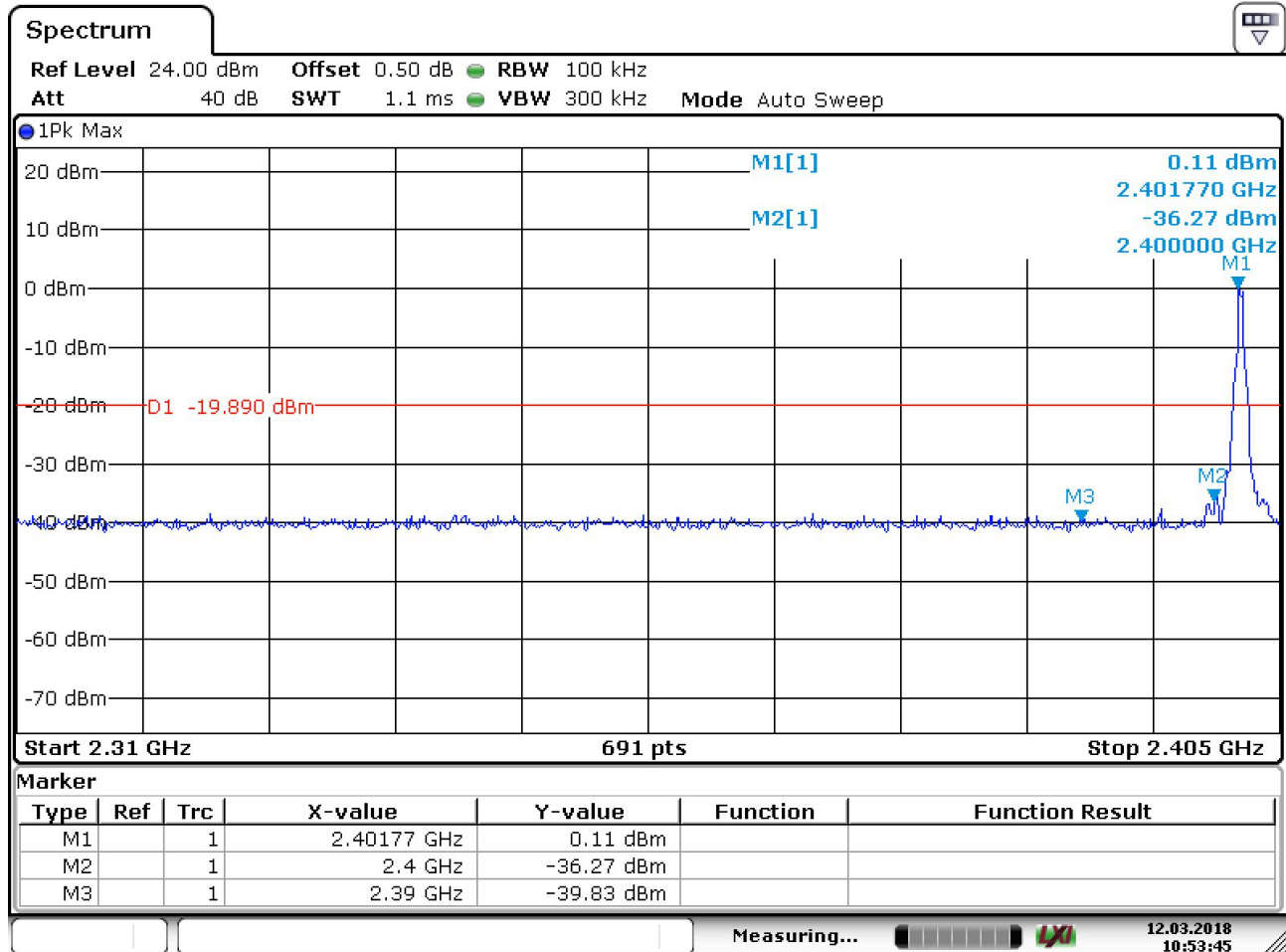
Date: 12.MAR.2018 10:21:31

Limit: 20dB below the highest level of the desired power in the passband

7.6 100kHz Bandwidth of band edges

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402MHz, DH5
 (Worst case)
 Test Specification: FCC15.247(d), Conducted
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12.MAR.2018 10:53:44

Band edges	Limit
36.38 dB	> 20dB

100kHz Bandwidth of band edges

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2402MHz, DH5
(Worst case)
Test Specification: FCC15.247(d), Radiated
Comment: 3.7VDC

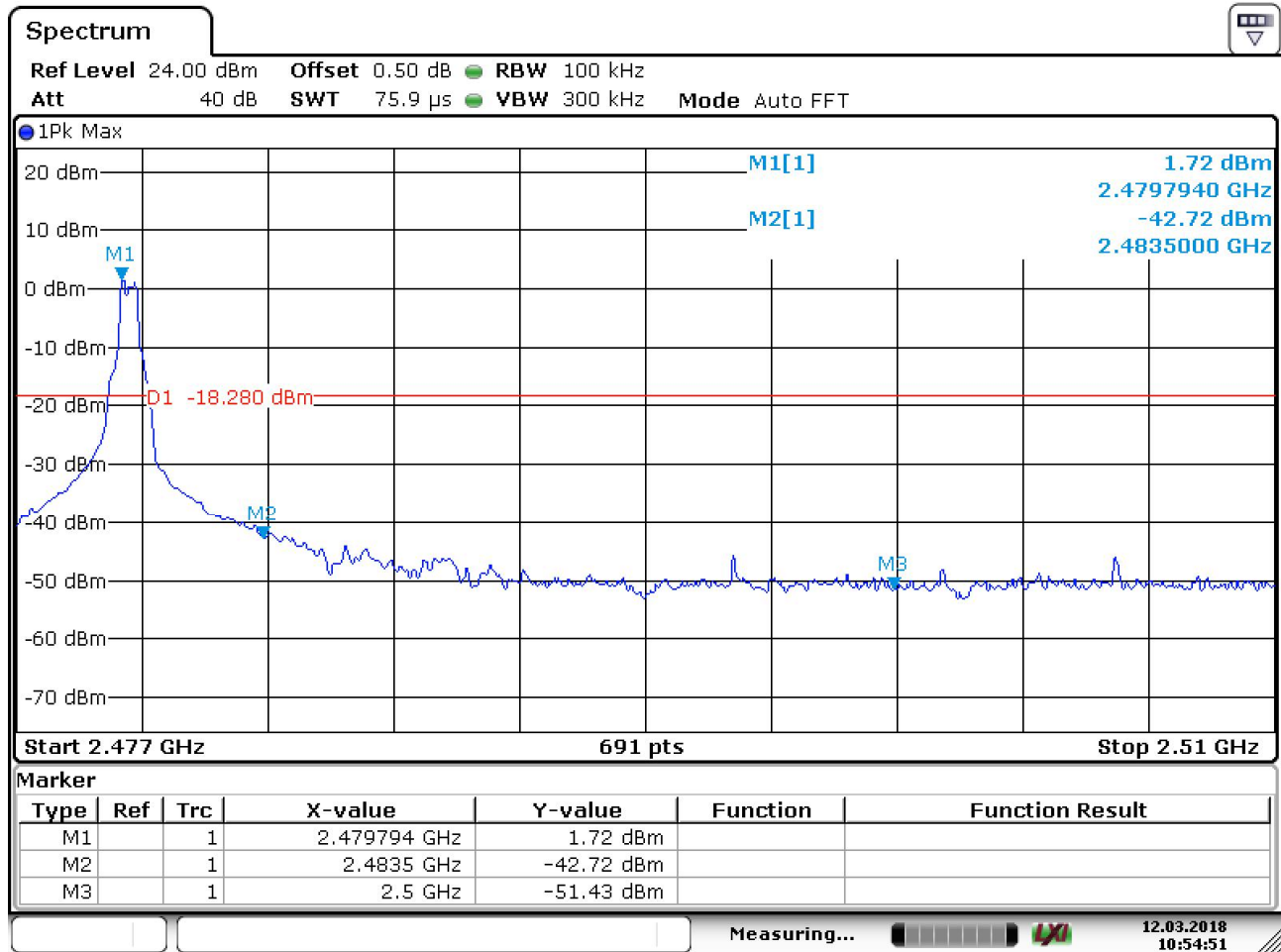
Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
2390.000	41.22	74	-32.78	Peak
2390.000	29.53	54	-14.47	Average

100kHz Bandwidth of band edges

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2480MHz, DH5
 (Worst case)
 Test Specification: FCC15.247(d), Conducted
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12.MAR.2018 10:54:51

Band edges	Limit
44.44 dB	> 20dB

100kHz Bandwidth of band edges

EUT: SF543/BTS
Op Condition: Operated, TX Mode, 2480MHz, DH5
(Worst case)
Test Specification: FCC15.247(d), Radiated
Comment: 3.7VDC

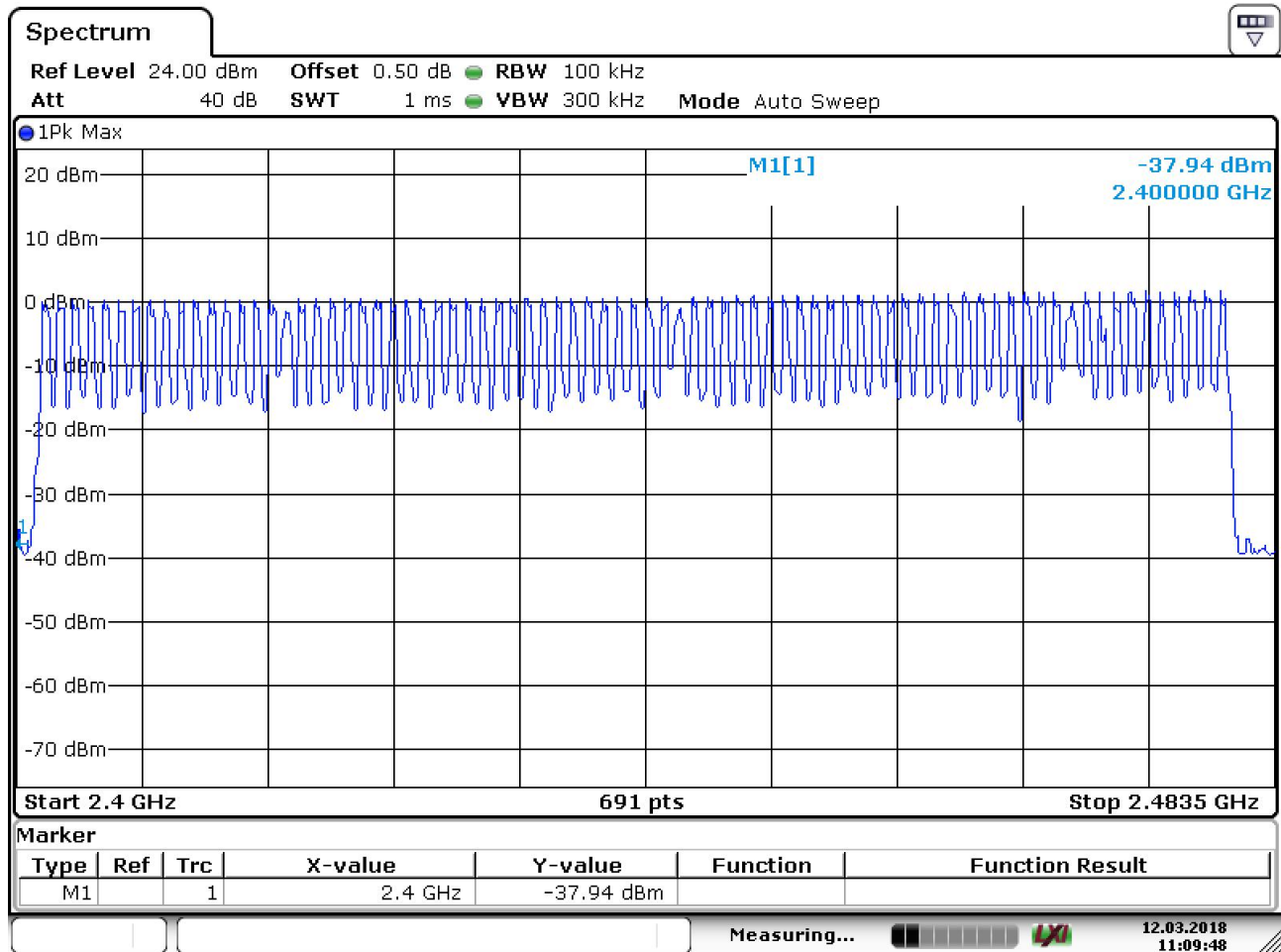
Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector
2483.500	50.72	74	-23.28	Peak
2483.500	37.65	54	-16.35	Average

7.7 Minimum. Number of Hopping Frequencies

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402-2480MHz, DH5
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



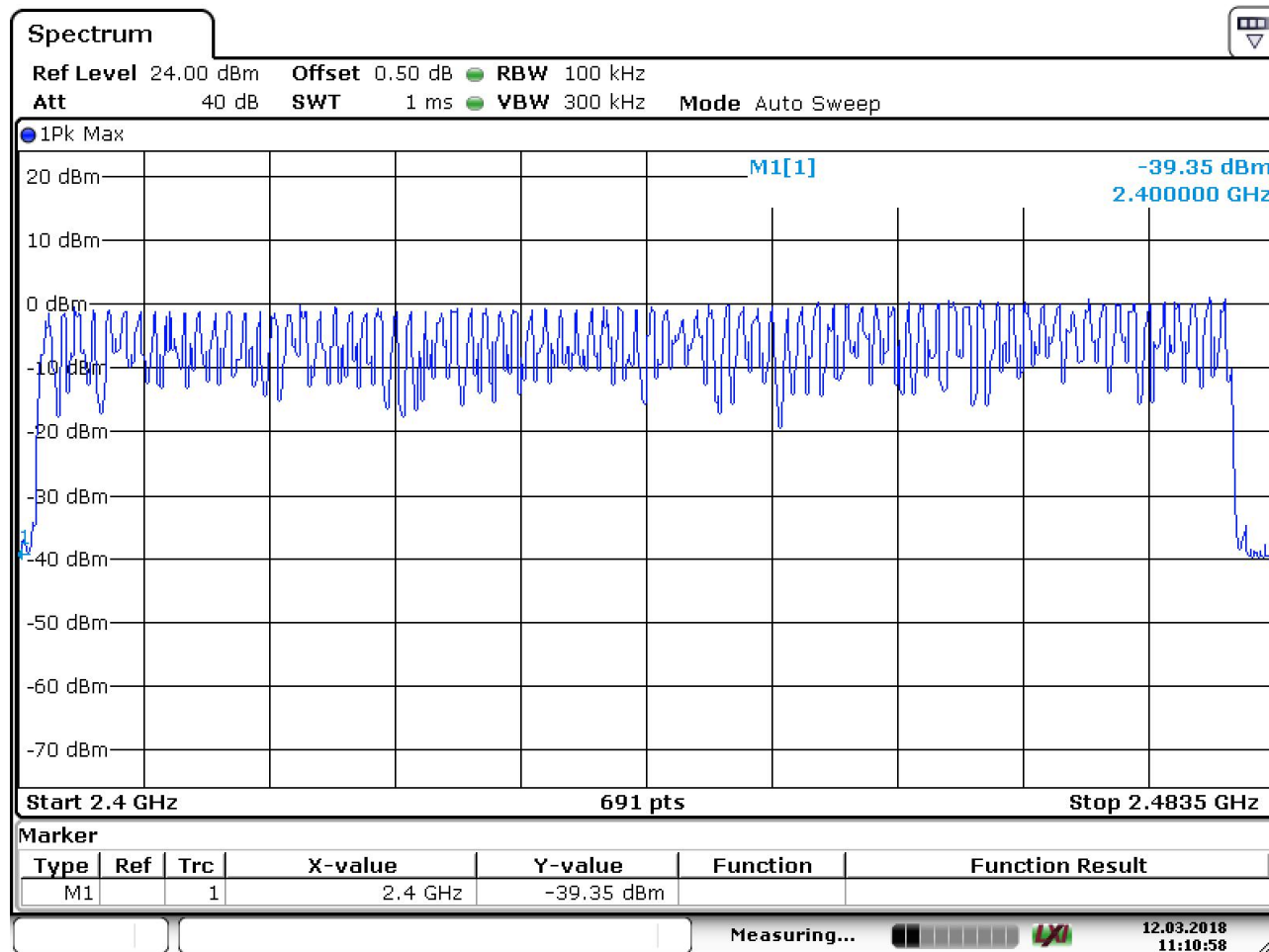
Date: 12.MAR.2018 11:09:48

Hopping Channels	Limit
79	≥ 15

Minimum. Number of Hopping Frequencies

EUT: SF543/BTS (Right)
 Op Condition: Operated, TX Mode, 2402-2480MHz, 2DH5
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



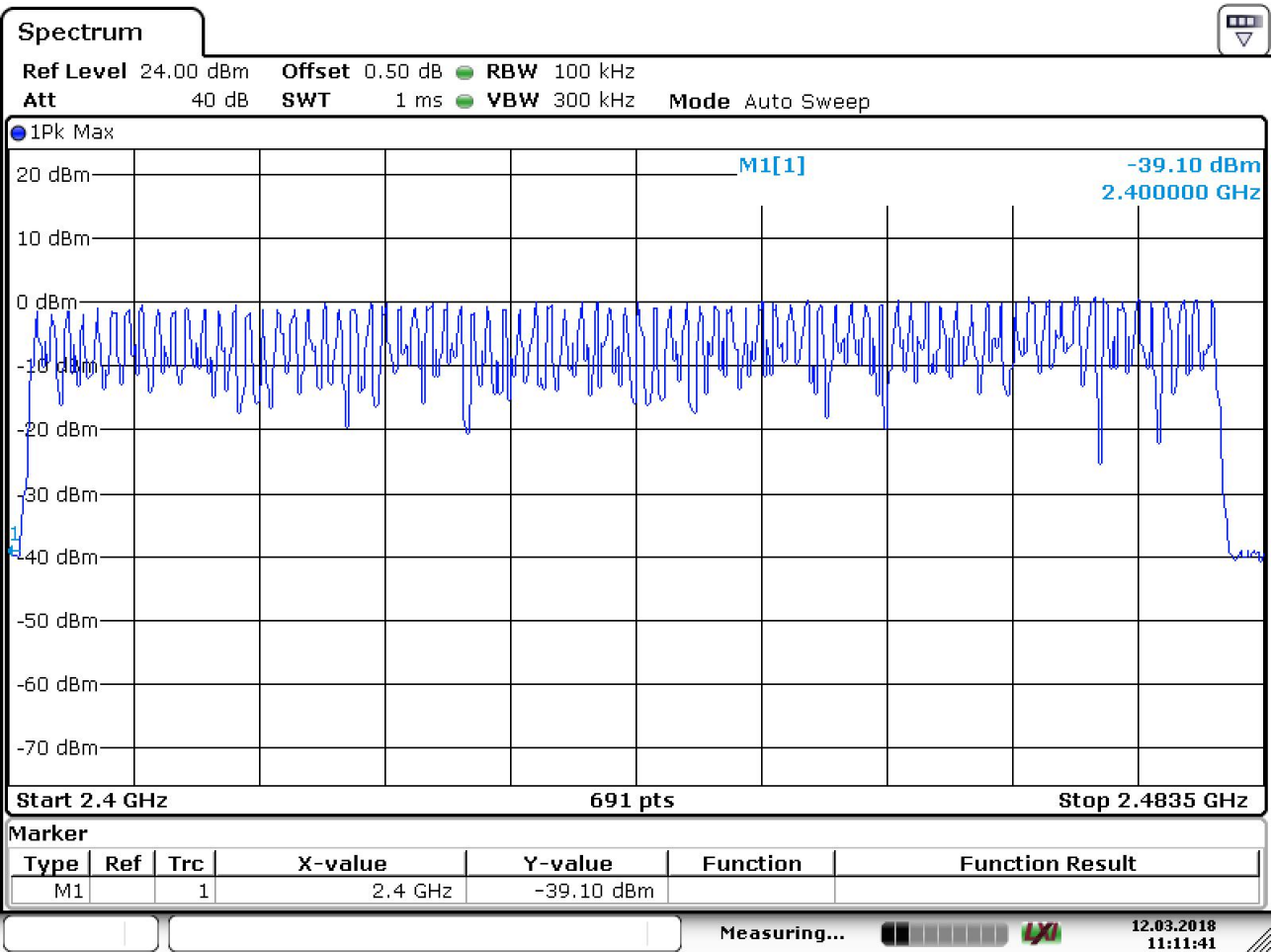
Date: 12.MAR.2018 11:10:58

Hopping Channels	Limit
79	≥ 15

Minimum. Number of Hopping Frequencies

EUT: SF543/BTS (Right)
Op Condition: Operated, TX Mode, 2402-2480MHz, 3DH5
Test Specification: FCC15.247(a)(1)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



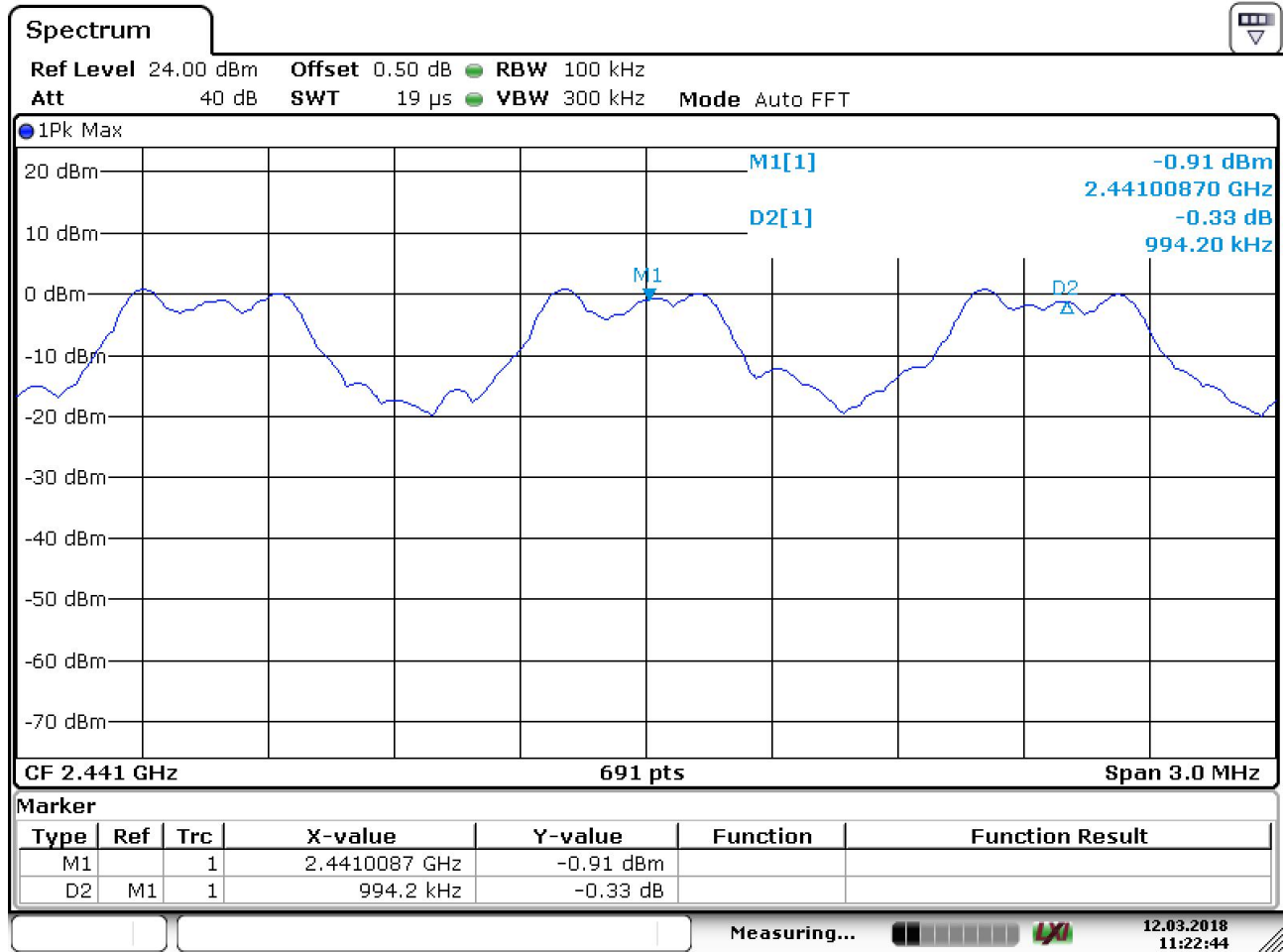
Date: 12.MAR.2018 11:11:41

Hopping Channels	Limit
79	≥ 15

7.8 Minimum Hopping Channel Carrier Frequency Separation

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402-2480MHz, DH5
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12.MAR.2018 11:22:44

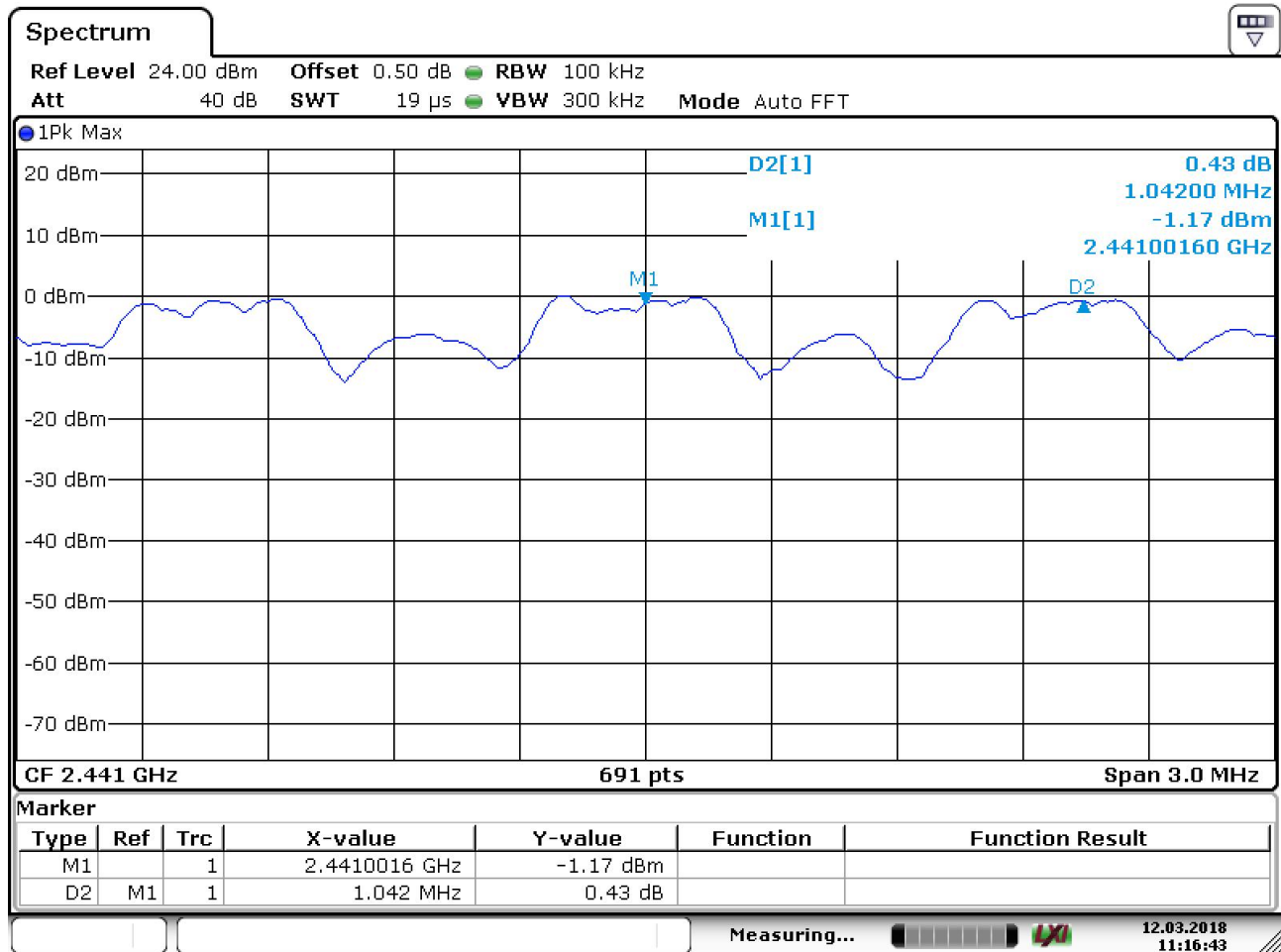
Chanel Separation	Limit
994.2 kHz	547.0 kHz

Limit: 2/3 of 20dB bandwidth of hopping channel

Minimum Hopping Channel Carrier Frequency Separation

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402-2480MHz, 2DH5
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12.MAR.2018 11:16:43

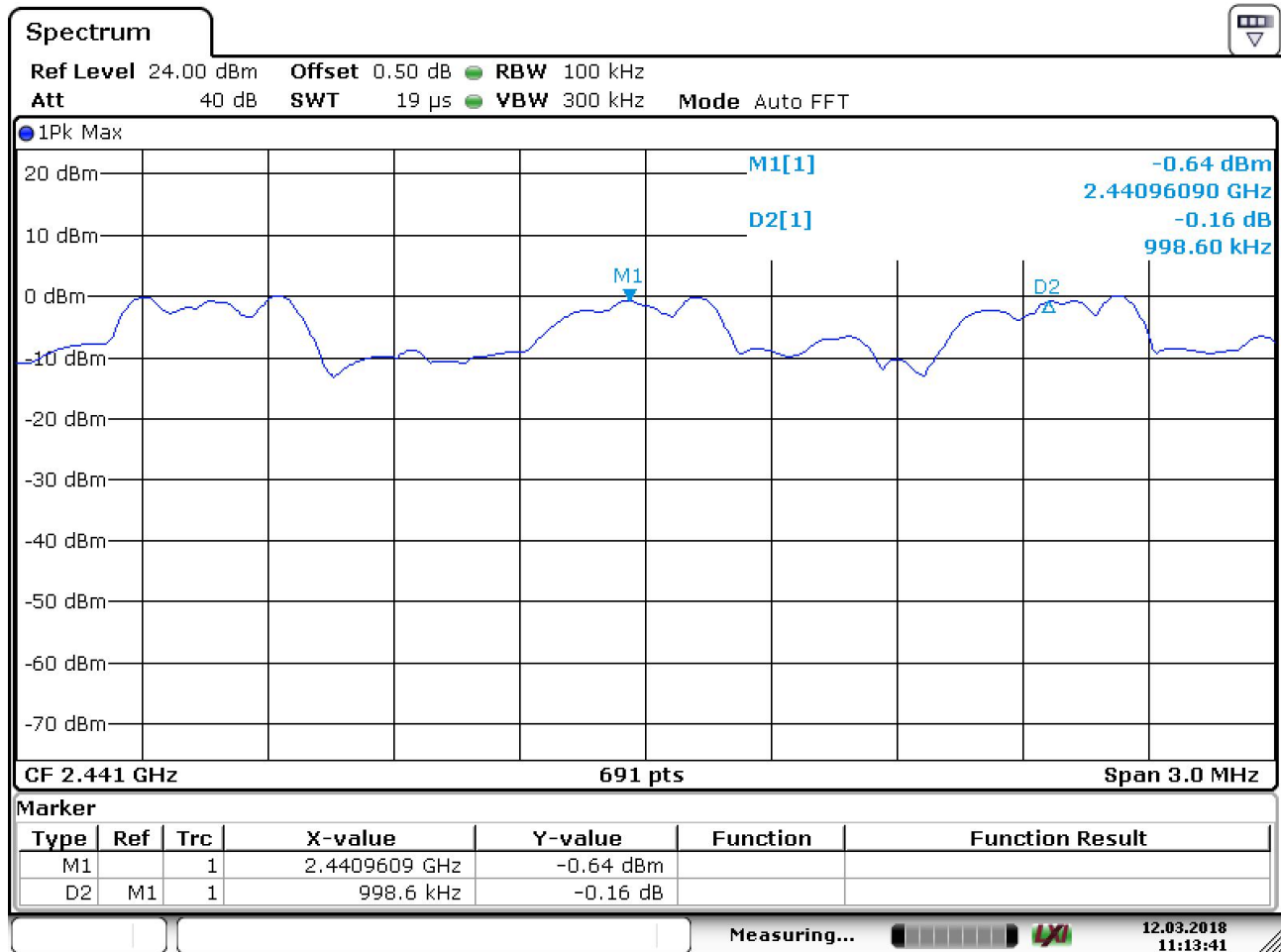
Chanel Separation	Limit
1042.000	778.6 kHz

Limit: 2/3 of 20dB bandwidth of hopping channel

Minimum Hopping Channel Carrier Frequency Separation

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2402-2480MHz, 3DH5
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12.MAR.2018 11:13:41

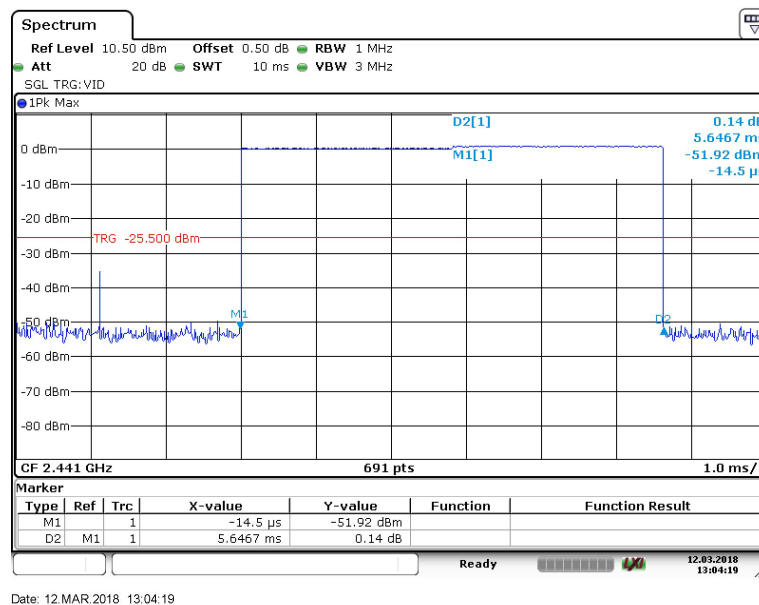
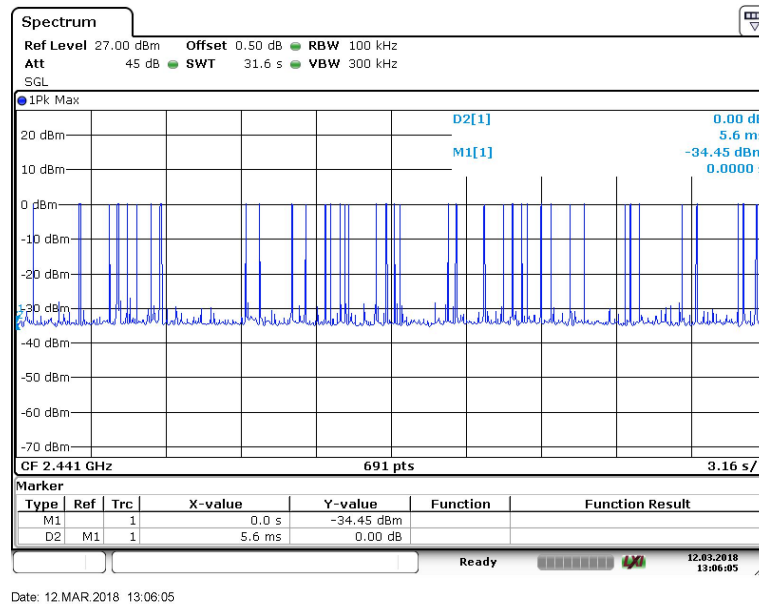
Chanel Separation	Limit
998.600	749.7 kHz

Limit: 2/3 of 20dB bandwidth of hopping channel

7.9 Average Channel Occupancy Time

EUT: SF543/BTS
 Op Condition: Operated, TX Mode, 2441MHz, DH5
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed

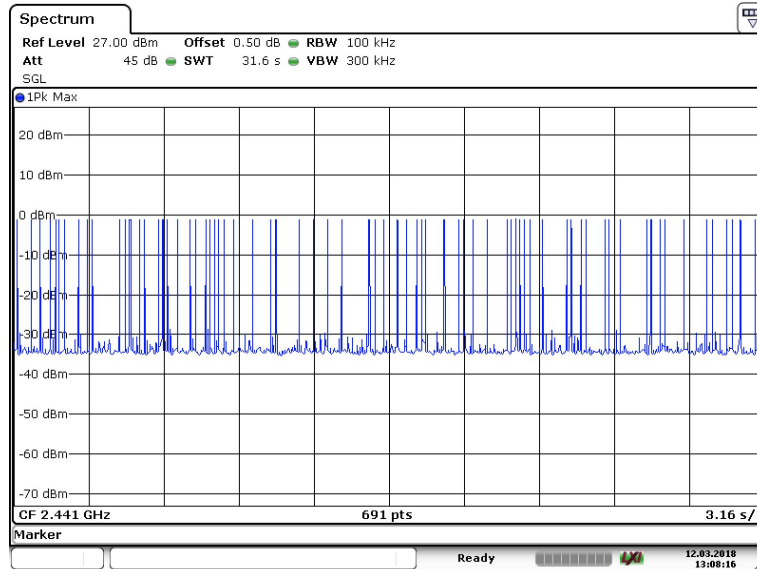


Average time of occupancy	Limit
Period: 0.4 x 79 Ch. = 31.6 sec. Total number number of hops in 31.6 sec.: 43 Time of single pulse: 5.6467 ms Average time of occupancy: 5.6467 ms x 43 = 0.2428 sec.	0.4 Seconds

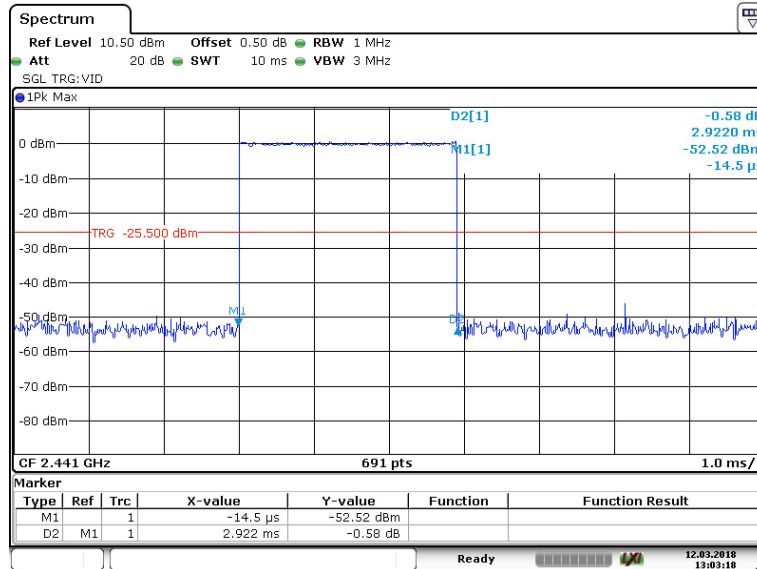
Average Channel Occupancy Time

EUT: SF543/BTS (Right)
 Op Condition: Operated, TX Mode, 2441MHz, 2DH5
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12 MAR 2018 13:08:17



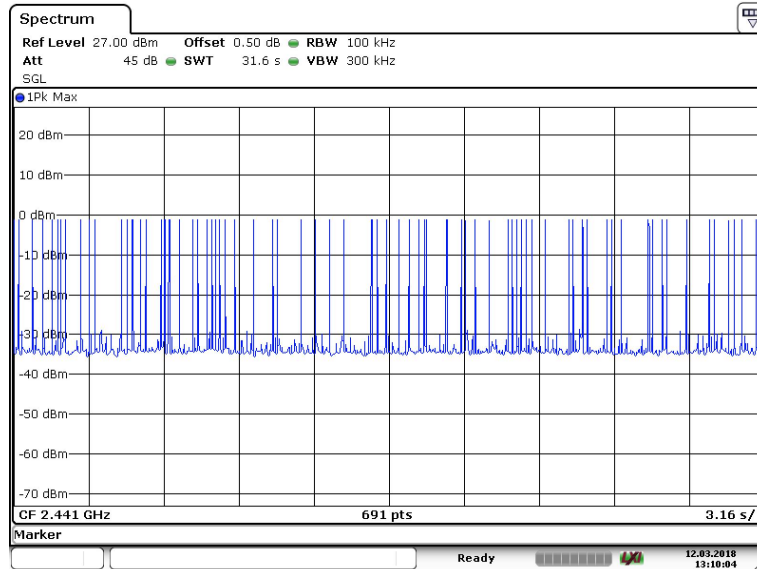
Date: 12 MAR 2018 13:03:18

Average time of occupancy	Limit
Period: $0.4 \times 79 \text{ Ch.} = 31.6 \text{ sec.}$ Total number of hops in 31.6 sec.: 74 Time of single pulse: 2.922 ms Average time of occupancy: $2.922 \text{ ms} \times 74 = 0.2162 \text{ sec.}$	0.4 Seconds

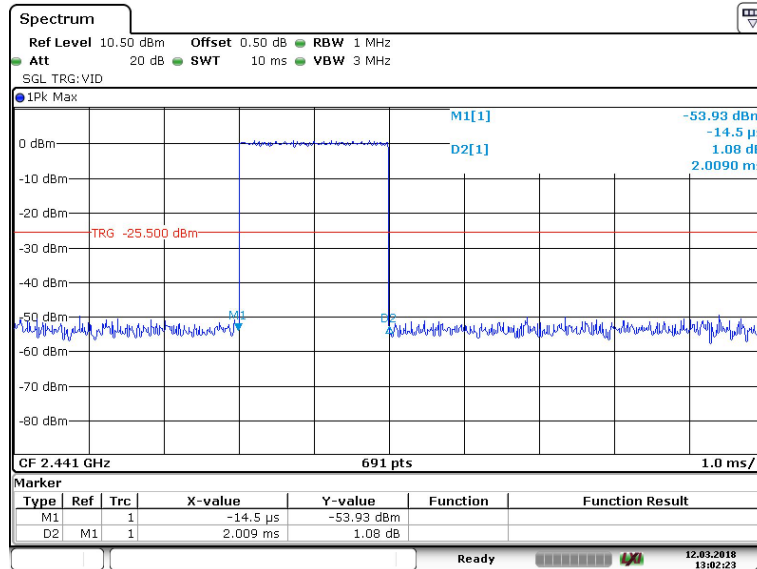
Average Channel Occupancy Time

EUT: SF543/BTS (Right)
 Op Condition: Operated, TX Mode, 2441MHz, 3DH5
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Date: 12 MAR 2018 13:10:04



Date: 12 MAR 2018 13:02:23

Average time of occupancy	Limit
Period: 0.4 x 79 Ch. = 31.6 sec. Total number of hops in 31.6 sec.: 75 Time of single pulse: 2.0090 ms Average time of occupancy: 2.0090 ms x 74 = 0.1487 sec.	0.4 Seconds

7.10 Antenna Requirement

EUT: SF543/BTS
Op Condition: Operated, TX Mode
Test Specification: FCC15.203 & 15.247(b)
Comment: 3.7VDC

Test Result	
☒	Passed
☐	Not Passed

Limit

For intentional device, according to FCC Title 47 Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC Title 47 Part 15.247(b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The antenna used in this product is PCB antenna, and the maximum gain of this antenna is 0.0 dBi.

8 Appendix A - General Product Information

Radiofrequency radiation exposure evaluation

According to KDB 447498 D01v06 section 4.3.1, For frequencies between 100 MHz to 6GHz and test separation distances ≤ 50 mm, the Numeric threshold is determined as

Step a)

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR

>> The fundamental frequency of the EUT is 2402-2480MHz,
the test separation distance is ≤ 50 mm.
(Manufacturer specified the separation distance is: 5mm)

Step a)

>> Numeric threshold (2402MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.402\text{GHz}} \leq 3.0$
Numeric threshold (2402MHz) $\leq 9.678\text{mW}$

>> Numeric threshold (2440MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.441\text{GHz}} \leq 3.0$
Numeric threshold (2440MHz) $\leq 9.601\text{mW}$

>> Numeric threshold (2480MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.480\text{GHz}} \leq 3.0$
Numeric threshold (2480MHz) $\leq 9.525\text{mW}$

>> The power of EUT measured (2402MHz) is: $0.66\text{dBm} = 1.164\text{mW}$
The power of EUT measured (2441MHz) is: $1.20\text{dBm} = 1.318\text{mW}$
The power of EUT measured (2480MHz) is: $2.14\text{dBm} = 1.637\text{mW}$

Which is smaller than the Numeric threshold.

Therefore, the device is exempt from stand-alone SAR test requirements.