

Radio Test Report

Test Report Reference: MDE_KROHN_2601_JRL_02_REV01

on

Level Probing Radar Optiwave 15xx series

according to:

Japanese Radio Law ARIB_STD-T66

Second Generation Low Power Data Communication System/Wireless LAN System -
Technical standard of the Japanese Radio Law regulated by Ministry of Internal Affairs and
Communications (MIC). Article 49 ff.

Characteristics test method

Ministry of Internal Affairs and Communications Notification No. 88 of 2004, Appendix 43

Test Laboratory:

7layers GmbH
Borsigstrasse 11
40880 Ratingen
Germany



Deutsche
Akkreditierungsstelle
D-PL-12140-01-00

Note:

The following test results relate only to the devices specified in this document. This report shall not be reproduced in parts without the written approval of the test laboratory.

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Contents

1	Result Overview	3
2	List of measurements	5
3	Revision History	8
4	Administrative Data:	9
4.1	Testing Laboratory	9
4.2	Project Data	9
4.3	Applicant Data	9
4.4	Manufacturer Data	9
5	Test object Data	10
5.1	General Description of Radio Device	10
5.2	Tested Radio Devices	11
5.3	Tested Ancillary Equipment	11
5.4	General description of auxiliary equipment	11
5.5	Used setups	11
6	Test Results	12
6.1	Antenna Power	12
6.2	Tolerance Antenna Power	15
6.3	Frequency Tolerance	17
6.4	Transmitter Spurious Emissions	20
6.5	Occupied Bandwidth	63
6.6	Secondary Radiated Emissions	74
6.7	Antenna Gain	80
6.8	Cabinet	81
7	Test Equipment used for tests	82
7.1	Test Equipment Hardware	82
8	Measurement Uncertainties	83

1 Result Overview

Bluetooth Low Energy

Antenna

Japanese Radio Law ARIB_STD-T66					Test Documentation
Test Case				Test Status	Final Result
No	Description	ARIB STD/ Clause No	Article Reference Clause No	Status	
1	Antenna Gain	T66/3.6 (2)	RE: 49-20	tested	Passed

Controller

Japanese Radio Law ARIB_STD-T66					Test Documentation
Test Case				Test Status	Final Result
No	Description	ARIB STD/ Clause No	Article Reference Clause No	Status	
2	Interference Prevention Function	T66/3.4.1 (1)	RE: 9-4	tested	N/P 1)
3	Carrier Sense	T66/3.4.1 (3)	RE: 49-20	tested	N/A

Others

Japanese Radio Law ARIB_STD-T66					Test Documentation
Test Case				Test Status	Final Result
No	Description	ARIB STD/ Clause No	Article Reference Clause No	Status	
4	Cabinet	T66/3.7 (1)	RE: 49-20 TR: Article 9	tested	Passed

RX

Japanese Radio Law ARIB_STD-T66					Test Documentation
Test Case				Test Status	Final Result
No	Description	ARIB STD/ Clause No	Article Reference Clause No	Status	
5	Secondary Radiated Emissions	T66/3.3 (1)	RE: 24	tested	Passed

TX

Japanese Radio Law ARIB_STD-T66					Test Documentation
Test Case				Test Status	Final Result
No	Description	ARIB STD/ Clause No	Article Reference Clause No	Status	
6	Modulation System			declared	-
7	Antenna Power	T66/3.2 (2)	RE: 49-20	tested	Passed
8	Tolerance Antenna Power	T66/3.2 (3)	RE: 14	tested	Passed
9	Frequency Tolerance	T66/3.2 (4)	RE: 5	tested	Passed
10	Transmission Rate			not regulated	-

11	Transmitter Spurious Emissions	T66/3.2 (6)	RE: 7	tested	Passed
12	Occupied Bandwidth	T66/3.2 (7)	RE: 6	tested	Passed
13	Spread Bandwidth	T66/3.2 (8)	RE: 49-20	tested	N/A
14	Process Gain	T66/3.2 (9)	RE: 49-20	tested	N/A
15	Number Of Carriers	T66/3.2 (10)	RE: 49-20	tested	N/A
16	Dwell Time	T66/3.2 (11)	RE: 49-20	tested	N/A

Key to columns:

Requirement:

No A unique identifier for one row of the table which may be used to identify a requirement.

Description A textual reference to the requirement.

**ARIB STD/
Clause No** Identification of clause(s) defining the requirement in the present document unless another document is referenced explicitly.

**Article Reference
Clause No** Identification of clause(s) defining the requirement in the present document unless another document is referenced explicitly.

RE: Ordinance Regulating Radio Equipment

N/A Test Case not applicable

N/P Test Case not performed

1) Test not performed since EUT was already certified for Bluetooth SIG.

2 List of measurements

Japanese Radio Law ARIB_STD-T66

Clause RE: 49-20

Antenna Power

OP-Mode

Technology Group, Radio Technology, Operating Frequency, Voltage

	Setup	Result
Bluetooth Low Energy, BT LE 1 Mbps, high channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, high channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, high channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, normal	S01_AN01	Passed

Japanese Radio Law ARIB_STD-T66

Clause RE: 14

Tolerance Antenna Power

OP-Mode

Technology Group, Radio Technology, Operating Frequency, Voltage

	Setup	Result
Bluetooth Low Energy, BT LE 1 Mbps, high channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, high channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, high channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, normal	S01_AN01	Passed

Japanese Radio Law ARIB_STD-T66
Clause RE: 5
Frequency Tolerance

OP-Mode	Setup	Result
Technology Group, Radio Technology, Operating Frequency, Voltage		
Bluetooth Low Energy, BT LE, high channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE, high channel, low	S01_AM01	Passed
Bluetooth Low Energy, BT LE, high channel, normal	S01_AM01	Passed
Bluetooth Low Energy, BT LE, low channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE, low channel, low	S01_AM01	Passed
Bluetooth Low Energy, BT LE, low channel, normal	S01_AM01	Passed
Bluetooth Low Energy, BT LE, mid channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE, mid channel, low	S01_AM01	Passed
Bluetooth Low Energy, BT LE, mid channel, normal	S01_AM01	Passed

Japanese Radio Law ARIB_STD-T66
Clause RE: 7
Transmitter Spurious Emissions

OP-Mode	Setup	Result
Technology Group, Radio Technology, Operating Frequency, Voltage		
Bluetooth Low Energy, BT LE 1 Mbps, high channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, high channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, high channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, high	S01_AN01	Passed

Japanese Radio Law ARIB_STD-T66
Clause RE: 6
Occupied Bandwidth

OP-Mode	Setup	Result
Technology Group, Radio Technology, Operating Frequency, Voltage		
Bluetooth Low Energy, BT LE 1 Mbps, high channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, high channel, low	S01_AM01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, high channel, normal	S01_AM01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, low channel, low	S01_AM01	Passed

Japanese Radio Law ARIB_STD-T66

Clause RE: 6

Occupied Bandwidth

OP-Mode	Setup	Result
Technology Group, Radio Technology, Operating Frequency, Voltage		
Bluetooth Low Energy, BT LE 1 Mbps, low channel, normal	S01_AM01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, low	S01_AM01	Passed
Bluetooth Low Energy, BT LE 1 Mbps, mid channel, normal	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, low	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, high channel, normal	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, low	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, low channel, normal	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, high	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, low	S01_AM01	Passed
Bluetooth Low Energy, BT LE 2 Mbps, mid channel, normal	S01_AM01	Passed

Japanese Radio Law ARIB_STD-T66

Clause RE: 24

Secondary Radiated Emissions

OP-Mode	Setup	Result
Technology Group, Radio Technology, Operating Frequency, Voltage		
Bluetooth Low Energy, BT LE, high channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE, low channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE, mid channel, normal	S01_AN01	Passed
Bluetooth Low Energy, BT LE, high channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE, low channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE, mid channel, low	S01_AN01	Passed
Bluetooth Low Energy, BT LE, high channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE, low channel, high	S01_AN01	Passed
Bluetooth Low Energy, BT LE, mid channel, high	S01_AN01	Passed

Japanese Radio Law ARIB_STD-T66

Clause RE: 49-20

Antenna Gain

OP-Mode	Setup	Result
Technology Group, Radio Technology		
Bluetooth Low Energy, BT LE 1 Mbps	S01_AN01	Passed
Bluetooth Low Energy, BT LE 2 Mbps	S01_AN01	Passed

Japanese Radio Law ARIB_STD-T66

Clause RE: 49-20 TR: Article 9

Cabinet

OP-Mode	Setup	Result
Technology Group		
none	S01_AN01	Passed

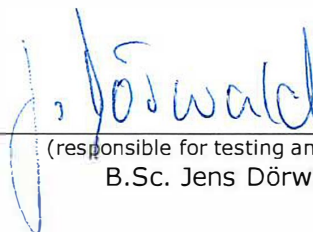
3 Revision History

Report version control			
Version	Release date	Change Description	Version validity
initial	2026-04-13	--	invalid
REV01	2026-04-27	- statement on cover page added - added all measurement plots for Occupied Bandwidth and Transmitter Spurious emissions at the rated voltage	valid

COMMENT: -



(responsible for accreditation scope)
Dipl.-Ing. Daniel Gall



(responsible for testing and report)
B.Sc. Jens Dörwald



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Phone +49 (0)2102 749 0

4 Administrative Data:

4.1 Testing Laboratory

Company Name: 7layers GmbH

Address: Borsigstr. 11
40880 Ratingen
Germany

Laboratory accreditation no: DAkkS D-PL-12140-01-00

Responsible for accreditation scope: Dipl.-Ing. Daniel Gall

Report Template Version: 2024-02-06

4.2 Project Data

Responsible for testing and report: B.Sc. Jens Dörwald

Date of Report: 2026-04-27

Testing Period: 2026-03-26 to 2026-04-08

4.3 Applicant Data

Company Name: KROHNE Messtechnik GmbH

Address: Ludwig-Krohne Str. 5
47058 Duisburg
Germany

Contact Person: Mr. Charalambos Ouzounis

4.4 Manufacturer Data

Company Name: KROHNE Messtechnik GmbH

Address: Am Schürmannshütt 19
47411 Moers
Germany

Contact Person: Mr. Charalambos Ouzounis

5 Test object Data

5.1 General Description of Radio Device

Kind of Device product description	Level Probing Radar with BLE
Product name	Optiwave 15xx series
Type	DN40
Declared EUT data by the supplier	
Voltage / Battery Type	DC
Voltage Level	24 V
Temperature normal	20 °C
Voltage high	36 V
Voltage low	12 V
Voltage normal	24 V
Antenna type / gain	internal / 1.5 dBi
Rated Output Power	3.2 mW
Number of TX / RX chains	1 / 1
RF power is adjustable	No
Modulation system	Other than spread spectrum
Operating Modes	GFSK, 1 Mbps / 2 Mbps
Test Frequencies	Lowest Frequency: 2402 [Channel: 0] Mid Frequency: 2440 MHz [Channel: 19] Highest Frequency: 2480 MHz [Channel: 39]

5.2 Tested Radio Devices

Sample Name	Sample Code	Description
EUT am01	DE1153004am01	conducted sample with SMA connector
Sample Parameter	Value	
HW Version	Converter: 4008475901j HMI: 4009669601a (optional)	
SW Version	Converter: V0.00.01P27 HMI: V0.00.01P31 (optional)	
Serial No.	-	
Comment	device with MMI	

Sample Name	Sample Code	Description
EUT an01	DE1153004an01	conducted sample with SMA connector
Sample Parameter	Value	
HW Version	Converter: 4008475901j	
SW Version	Converter: V0.00.01P27	
Serial No.	-	
Comment	IP68	

5.3 Tested Ancillary Equipment

Device	Details (Manufacturer, Type Model, OUT Code)	Reason for using
-	-	-

5.4 General description of auxiliary equipment

Device	Details (Manufacturer, Type Model, HW, SW, S/N)	Description
-	-	-

5.5 Used setups

Setup	Combination of EUTs, auxiliary and ancillary equipment	Description
S01_AM01	EUT am01	BT LE conducted Setup
S01_AN01	EUT an01	BT LE conducted Setup

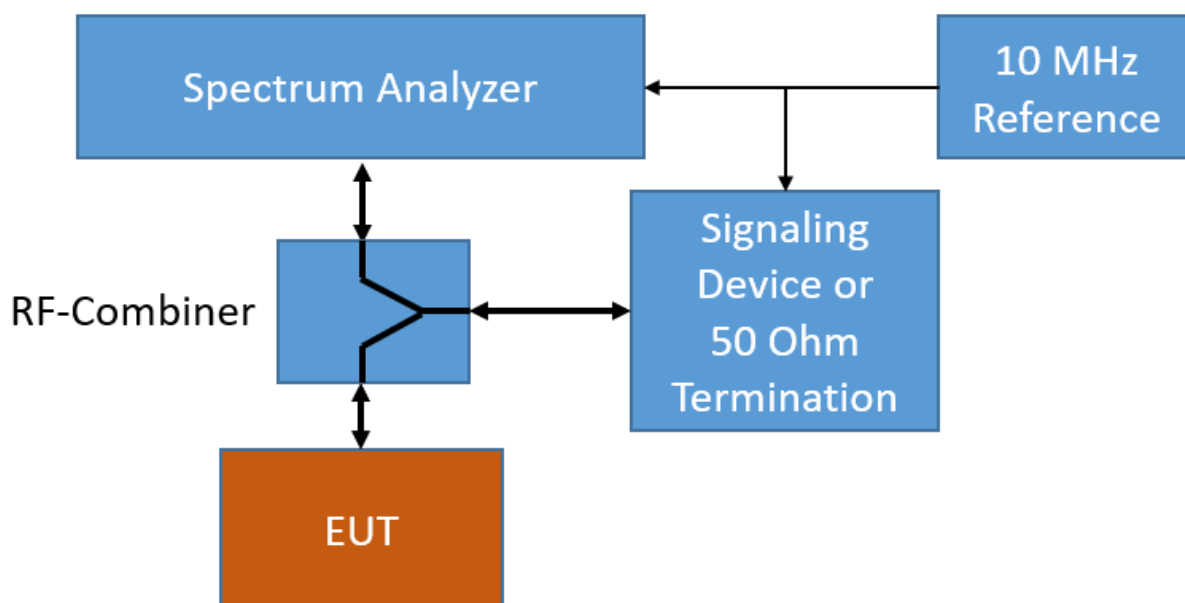
6 Test Results

6.1 Antenna Power

CLAUSE RE: 49-20

Test Setup:

The test was performed with the following setup:



Measurement settings:

- Trigger: Bluetooth Classic: Gated (external signal from signaling unit)
WLAN/BT LE: ~100% DC: Free Run, otherwise: Gated Trigger
- Center: acc. TX – frequency
- Span: 3 or 10 MHz (can also be higher if necessary, see plots)
- RBW: BT Classic/WLAN: 1 MHz, BT LE: 3 MHz
- VBW BT Classic/WLAN: 3 MHz, BT LE: 10 MHz
- Detector: RMS
- Sweep time: 1 s

6.1.1 Limits: T66/3.2 (2)

OT Article 49-20

State	Antenna Power
FH systems, hybrid, FH-OFDM Frequency range 2400 – 2483.5 MHz	$\leq 3 \text{ mW / MHz (+4.7 dBm / MHz) (RMS)}$
DS system, OFDM Frequency range 2400 – 2483.5 MHz	$\text{OBW} \leq 26 \text{ MHz} : \leq 10 \text{ mW / MHz (+10 dBm / MHz) (RMS)}$ $\text{OBW} \leq 38 \text{ MHz} : \leq 5 \text{ mW / MHz (+7 dBm / MHz) (RMS)}$
Other digital methods	$\leq 10 \text{ mW (+10 dBm) (RMS)}$

6.1.2 Test Case Details:

Ambient temperature: 22 °C
 Relative humidity: 45 %

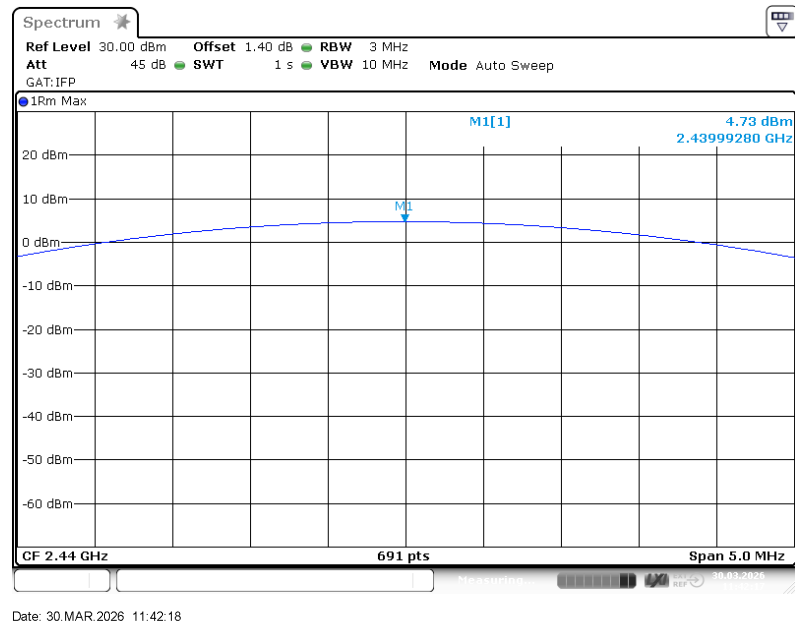
Radio Technology	Channel	Voltage	Measured RMS Conducted Output Power [dBm]	Resulting RMS Conducted Output Power [mW]	Margin to Limit [mW]	E.I.R.P output power [dBm]
BT LE 1 Mbps	Lowest	Low	4.5	2.805	7.195	6.0
BT LE 1 Mbps	Mid	Low	4.7	2.972	7.028	6.2
BT LE 1 Mbps	Highest	Low	4.5	2.805	7.195	6.0
BT LE 1 Mbps	Lowest	Normal	4.5	2.799	7.201	6.0
BT LE 1 Mbps	Mid	Normal	4.7	2.972	7.028	6.2
BT LE 1 Mbps	Highest	Normal	4.5	2.799	7.201	6.0
BT LE 1 Mbps	Lowest	High	4.6	2.911	7.089	6.1
BT LE 1 Mbps	Mid	High	4.6	2.911	7.089	6.1
BT LE 1 Mbps	Highest	High	4.5	2.805	7.195	6.0
BT LE 2 Mbps	Lowest	Low	4.4	2.723	7.277	5.9
BT LE 2 Mbps	Mid	Low	4.6	2.877	7.123	6.1
BT LE 2 Mbps	Highest	Low	4.3	2.710	7.290	5.8
BT LE 2 Mbps	Lowest	Normal	4.4	2.723	7.277	5.9
BT LE 2 Mbps	Mid	Normal	4.6	2.877	7.123	6.1
BT LE 2 Mbps	Highest	Normal	4.3	2.710	7.290	5.8
BT LE 2 Mbps	Lowest	High	4.5	2.812	7.188	6.0
BT LE 2 Mbps	Mid	High	4.5	2.818	7.182	6.0
BT LE 2 Mbps	Highest	High	4.3	2.716	7.284	5.8

Comments:

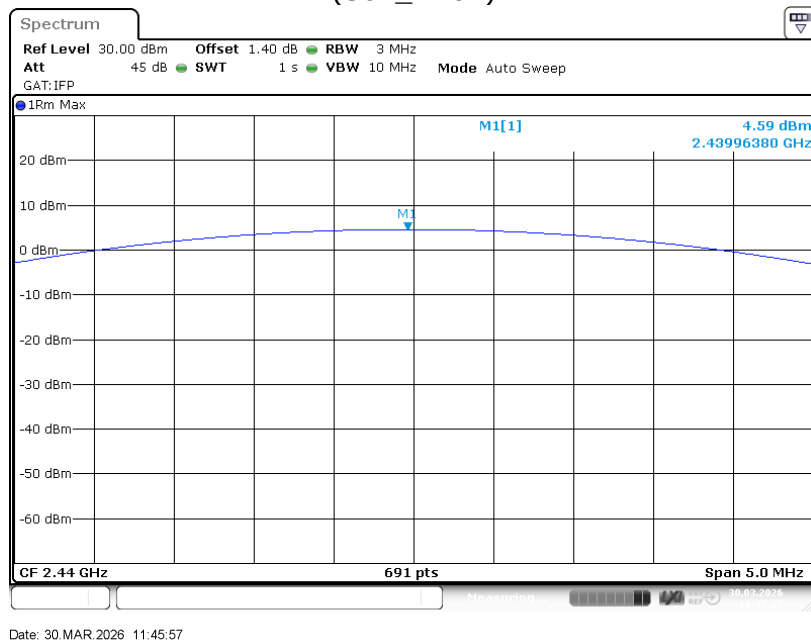
- All tests are performed under normal temperature conditions.
- The worst case measurement for each mode can be found in the chapter measurement plots.
- Detailed analyser settings can be found in the measurement plots.
- The measurement was performed conducted.

6.1.3 Measurement plots:

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = normal (S01_AN01)



Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = mid channel, Voltage = normal (S01_AN01)



TEST EQUIPMENT USED:

- Radio Lab

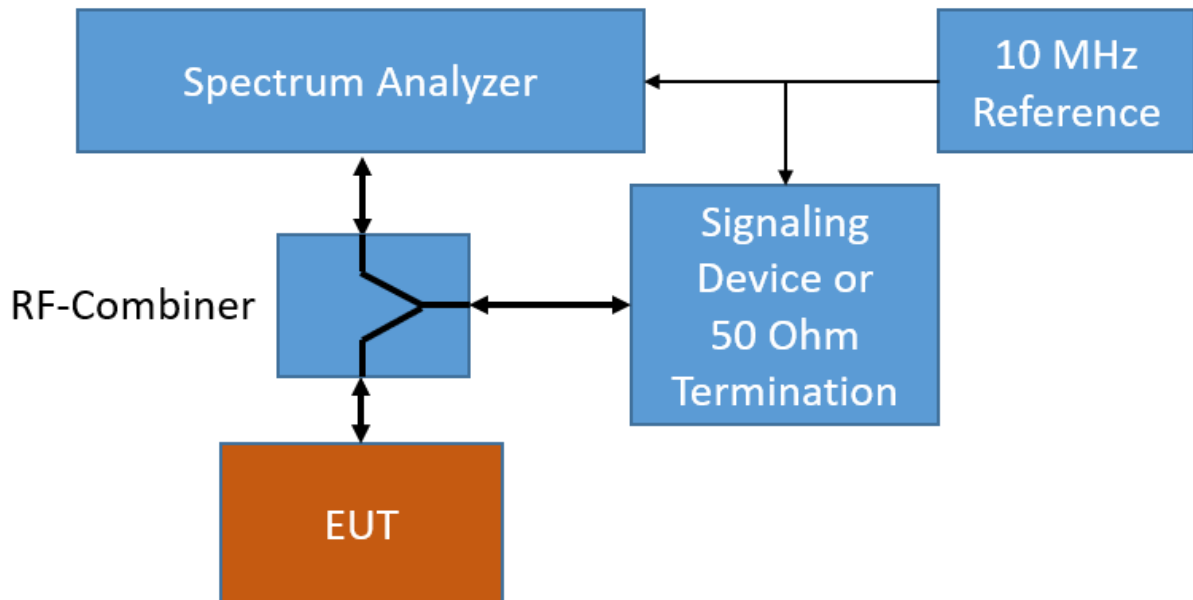
6.2 Tolerance Antenna Power

CLAUSE RE: 14

The test results of test case Antenna Power were used for this test case.

Test Setup:

The test was performed with the following setup:



Measurement settings:

- Trigger: Bluetooth Classic: Gated (external signal from signaling unit)
WLAN/BT LE: ~100% DC: Free Run, otherwise: Gated Trigger
- Center: acc. TX – frequency
- Span: 3 or 10 MHz (can also be higher if necessary, see plots)
- RBW: BT Classic/WLAN: 1 MHz, BT LE: 3 MHz
- VBW BT Classic/WLAN: 3 MHz, BT LE: 10 MHz
- Detector: RMS
- Sweptime: 1 s

6.2.1 Limits: T66/3.2 (3) OT Article 14 7

State	Tolerance for Antenna Power
All systems	$P_{ANT} \leq +20 \%$

6.2.2 Test Case Details:

Ambient temperature: 22 °C

Relative humidity: 45 %

Radio Technology	Channel	Voltage	Rated Output Power [mW]	Resulting RMS Conducted Output Power [mW]	Tolerance [%]	Margin to Limit [%]
BT LE 1 Mbps	Lowest	Low	3.200	2.805	-12.3	32.3
BT LE 1 Mbps	Mid	Low	3.200	2.972	-7.1	27.1
BT LE 1 Mbps	Highest	Low	3.200	2.805	-12.3	32.3
BT LE 1 Mbps	Lowest	Normal	3.200	2.799	-12.5	32.5
BT LE 1 Mbps	Mid	Normal	3.200	2.972	-7.1	27.1
BT LE 1 Mbps	Highest	Normal	3.200	2.799	-12.5	32.5
BT LE 1 Mbps	Lowest	High	3.200	2.911	-9.0	29.0
BT LE 1 Mbps	Mid	High	3.200	2.911	-9.0	29.0
BT LE 1 Mbps	Highest	High	3.200	2.805	-12.3	32.3
BT LE 2 Mbps	Lowest	Low	3.200	2.723	-14.9	34.9
BT LE 2 Mbps	Mid	Low	3.200	2.877	-10.1	30.1
BT LE 2 Mbps	Highest	Low	3.200	2.710	-15.3	35.3
BT LE 2 Mbps	Lowest	Normal	3.200	2.723	-14.9	34.9
BT LE 2 Mbps	Mid	Normal	3.200	2.877	-10.1	30.1
BT LE 2 Mbps	Highest	Normal	3.200	2.710	-15.3	35.3
BT LE 2 Mbps	Lowest	High	3.200	2.812	-12.1	32.1
BT LE 2 Mbps	Mid	High	3.200	2.818	-11.9	31.9
BT LE 2 Mbps	Highest	High	3.200	2.716	-15.1	35.1

Comments:

- All tests are performed under normal temperature conditions.
- Measurement results from the tests case "ANTENNA POWER" were used.

TEST EQUIPMENT USED:

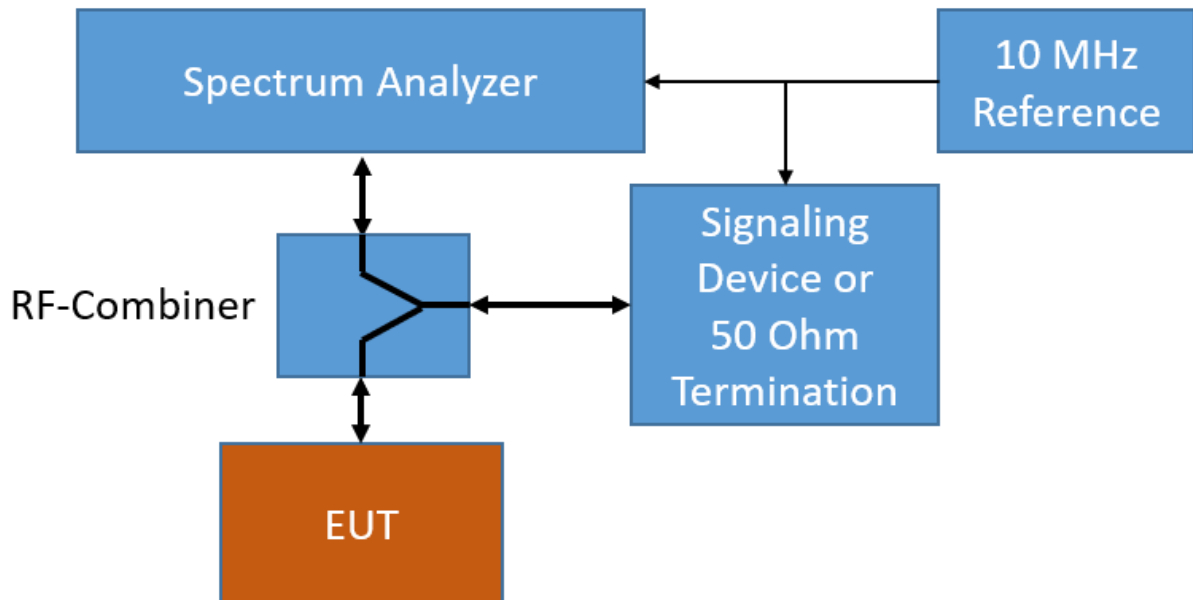
- Radio Lab

6.3 Frequency Tolerance

CLAUSE RE: 5

Test Setup:

The test was performed with the following setup:



Measurement settings:

Bluetooth devices:

Signaling Unit: CBT

Measurement Device: CBT (with external 10 MHz reference)

- Inquiry
- Connect test mode
- TX-settings

TX Frequency; single channel, Max Power, 1-DH1 packets

Measurement:

Bluetooth Power: Menu → Modulation → Frequency Accuracy → Average

WLAN and BT LE devices:

If CW mode is possible:

Local TX-Mode → CW carrier

Measurement:

- Center: acc. TX – frequency
- Span: 10 MHz
- RBW: 1 MHz
- VBW 3 MHz
- Detector: Peak
- Sweptime: coupled
- Marker manually to rising edge of the signal
- Marker → Frequency Counter on

If CW mode is not possible:

Local TX-Mode → Normal Modulation

Measurement:

- Center: acc. TX – frequency
- Span: slightly wider than the signal bandwidth (WLAN 20 MHz, BT LE 2 MHz)
- RBW: 100 kHz
- VBW 300 kHz
- Detector: Peak
- Sweptime: coupled
- Trace: Max Hold
- Marker to Max value of trace
- 20 dBc function of analyzer

The measured center frequency is the center of the two 20 dBc markers.

If 20 dBc is not practical other values may be used.

See Analyzer plots for details.

6.3.1 Limits: T66/3.2 (4) **OT Article 5, Annex 1 table 7-8**

State	Frequency tolerance
For all test conditions and system	± 50 ppm of stated frequency

6.3.2 Test Case Details:

Ambient temperature: 22 °C
 Relative humidity: 45 %

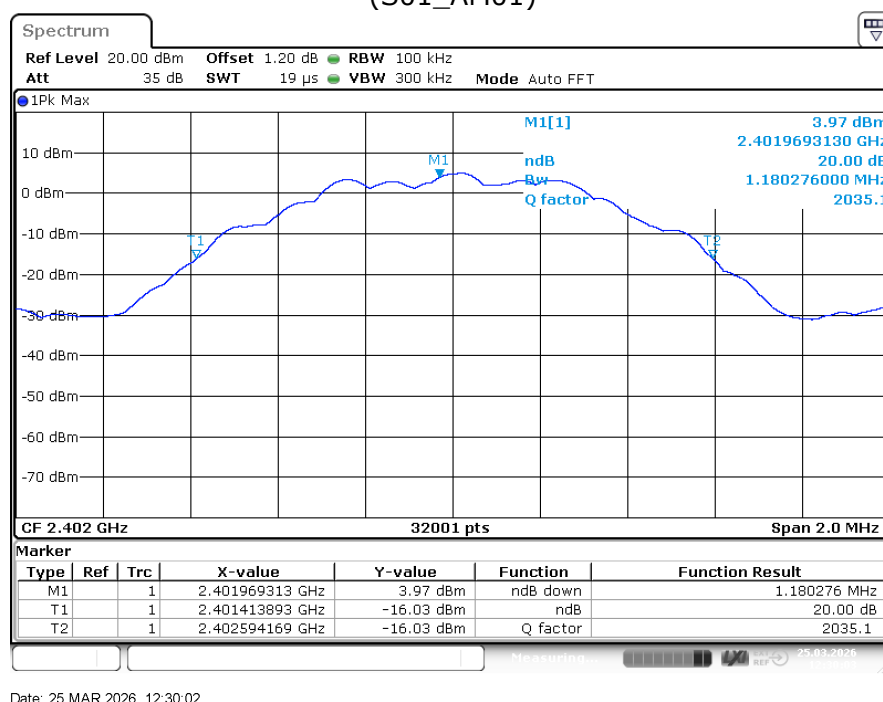
Radio Technology	Mode	Voltage	Channel Center Frequency [MHz]	Measured Center Frequency [MHz]	Deviation [kHz]	Deviation [ppm]	Margin to Limit [ppm]
BT LE	1 Mbps	Low	2402	2401.9718	-28.2	-11.74	38.26
BT LE	1 Mbps	Low	2440	2439.9697	-30.3	-12.42	37.58
BT LE	1 Mbps	Low	2480	2479.9701	-29.9	-12.06	37.94
BT LE	1 Mbps	Mid	2402	2401.9693	-30.7	-12.78	37.22
BT LE	1 Mbps	Mid	2440	2439.9703	-29.7	-12.17	37.83
BT LE	1 Mbps	Mid	2480	2479.9694	-30.6	-12.34	37.66
BT LE	1 Mbps	High	2402	2401.9726	-27.4	-11.41	38.59
BT LE	1 Mbps	High	2440	2439.9711	-28.9	-11.84	38.16
BT LE	1 Mbps	High	2480	2479.9698	-30.2	-12.18	37.82

Comments:

- All tests are performed under normal temperature conditions.

6.3.3 Measurement plots:

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE, Operating Frequency = low channel, Voltage = mid
 (S01_AM01)



TEST EQUIPMENT USED:

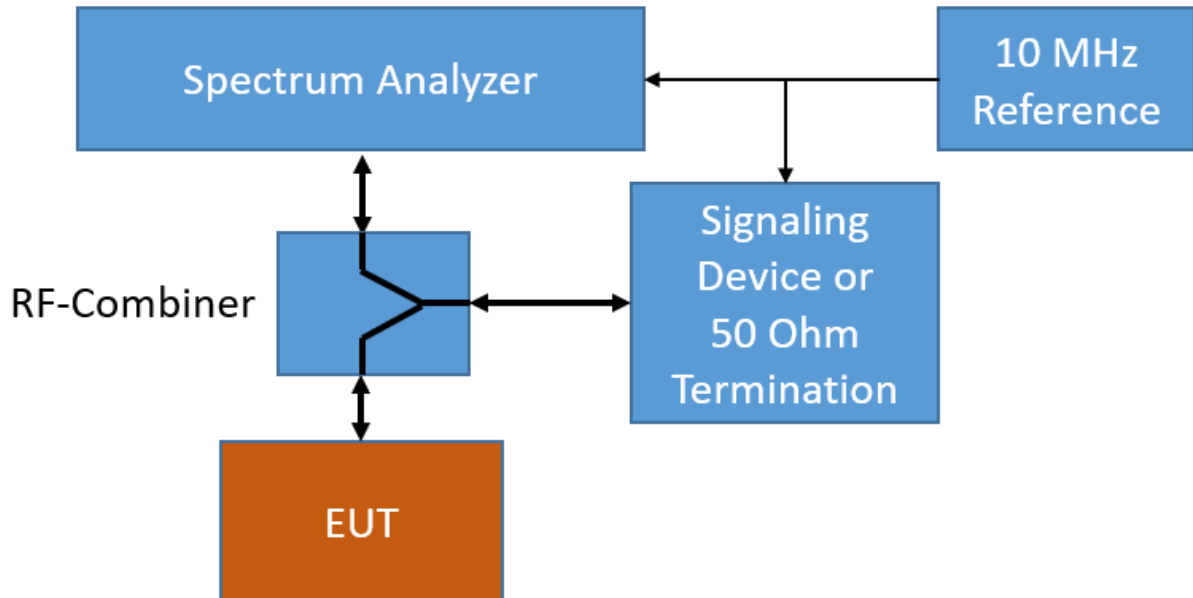
- Radio Lab

6.4 Transmitter Spurious Emissions

CLAUSE RE: 7

Test Setup:

The test was performed with the following setup:



Measurement settings:

- Measurement is split into four sweeps:
Sweep 1: 30 – 2387 MHz → Limit -26 dBm
Sweep 2: 2387 – 2400 MHz → Limit -16 dBm
Sweep 3: 2483.5 – 2496.5 MHz → Limit -16 dBm
Sweep 4: 2496.5 – 12750 MHz → Limit -26 dBm
- RBW: 1 MHz
- VBW: 3 MHz
- Detector: Max Peak
- Sweptime: coupled
- Trace: Maxhold
- Allow the trace to stabilize

6.4.1 Limits: T66/3.2 (6)

OT Article 7, Annex 3 26

State	Frequency range	Limit [dBm/MHz]
All- Systems Transmitter Operating	$30 \text{ MHz} \leq f \leq 2387 \text{ MHz}$ $2387 \text{ MHz} < f \leq 2400 \text{ MHz}$ $2483.5 \text{ MHz} < f \leq 2496.5 \text{ MHz}$ $2496.5 \text{ MHz} < f \leq 12.75 \text{ GHz}$	-26 dBm or 2,5 μW -16 dBm or 25 μW -16 dBm or 25 μW -26 dBm or 2,5 μW

6.4.2 Test Case Details:

Ambient temperature: 22 °C
Relative humidity: 45 %

Low Channel normal voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μW]	RBW [kHz]	Limit [μW]	Margin to Limit [μW]
2324.8	-48.9	0.01	1000	2.5	2.5
2325.2	-47.9	0.02	1000	2.5	2.5
2325.5	-49.4	0.01	1000	2.5	2.5
2363.2	-44.6	0.03	1000	2.5	2.5
2400.0	-27.5	1.79	1000	25.0	23.2
2488.8	-55.1	0.00	1000	25.0	25.0
4804.0	-33.0	0.50	1000	2.5	2.0
7206.1	-26.2	2.42	1000	2.5	0.1

Mid Channel normal voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μW]	RBW [kHz]	Limit [μW]	Margin to Limit [μW]
2248.4	-54.5	0.00	1000	2.5	2.5
2287.0	-53.3	0.00	1000	2.5	2.5
2324.5	-53.6	0.00	1000	2.5	2.5
2325.2	-52.0	0.01	1000	2.5	2.5
2392.0	-56.6	0.00	1000	25.0	25.0
2483.5	-53.4	0.00	1000	25.0	25.0
2555.3	-52.7	0.01	1000	2.5	2.5
4879.9	-28.9	1.29	1000	2.5	1.2
7320.8	-28.8	1.31	1000	2.5	1.2

High Channel normal voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μW]	RBW [kHz]	Limit [μW]	Margin to Limit [μW]
2250.0	-57.3	0.00	1000	2.5	2.5
2266.4	-57.3	0.00	1000	2.5	2.5
2288.3	-55.4	0.00	1000	2.5	2.5
2324.3	-57.1	0.00	1000	2.5	2.5
2396.8	-61.1	0.00	1000	25.0	25.0
2483.5	-38.6	0.14	1000	25.0	24.9
2499.2	-51.7	0.01	1000	2.5	2.5
2501.5	-51.1	0.01	1000	2.5	2.5
4959.7	-29.3	1.17	1000	2.5	1.3
7439.3	-30.5	0.89	1000	2.5	1.6

Low Channel low voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2363.9	-45.1	0.03	1000	2.5	2.5
2400.0	-28.6	1.39	1000	25.0	23.6
2484.5	-59.7	0.00	1000	25.0	25.0
4803.6	-32.8	0.52	1000	2.5	2.0
7206.1	-26.0	2.50	1000	2.5	0.0

Mid Channel low voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2325.1	-51.9	0.01	1000	2.5	2.5
2399.0	-57.1	0.00	1000	25.0	25.0
2493.3	-53.6	0.00	1000	25.0	25.0
4879.9	-29.0	1.26	1000	2.5	1.2
7320.8	-28.8	1.33	1000	2.5	1.2

High Channel low voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2364.9	-52.0	0.01	1000	2.5	2.5
2399.3	-60.4	0.00	1000	25.0	25.0
2483.5	-38.9	0.13	1000	25.0	24.9
4960.6	-29.2	1.20	1000	2.5	1.3
7440.9	-30.5	0.90	1000	2.5	1.6

Low Channel high voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2364.0	-45.4	0.03	1000	2.5	2.5
2400.0	-28.0	1.59	1000	25.0	23.4
2484.5	-63.7	0.00	1000	25.0	25.0
4804.6	-33.0	0.50	1000	2.5	2.0
7206.1	-26.0	2.49	1000	2.5	0.0

Mid Channel high voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2363.2	-49.0	0.01	1000	2.5	2.5
2400.0	-55.6	0.00	1000	25.0	25.0
2484.0	-58.9	0.00	1000	25.0	25.0
4879.9	-28.8	1.32	1000	2.5	1.2
7320.8	-28.7	1.35	1000	2.5	1.2

High Channel high voltage

Radio Technology: BT LE 1 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2364.7	-52.1	0.01	1000	2.5	2.5
2399.9	-64.2	0.00	1000	25.0	25.0
2483.5	-38.9	0.13	1000	25.0	24.9
4960.6	-29.2	1.19	1000	2.5	1.3
7439.3	-30.4	0.91	1000	2.5	1.6

Low Channel normal voltage

Radio Technology: BT LE 2 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2363.8	-44.0	0.04	1000	2.5	2.5
2400.0	-16.6	21.88	1000	25.0	3.1
2487.8	-56.6	0.00	1000	25.0	25.0
4804.0	-32.8	0.52	1000	2.5	2.0
7204.8	-26.1	2.44	1000	2.5	0.1

Mid Channel normal voltage

Radio Technology: BT LE 2 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2363.3	-47.7	0.02	1000	2.5	2.5
2400.0	-54.8	0.00	1000	25.0	25.0
2483.5	-55.7	0.00	1000	25.0	25.0
4881.2	-29.1	1.22	1000	2.5	1.3
7320.1	-29.0	1.26	1000	2.5	1.2

High Channel normal voltage

Radio Technology: BT LE 2 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2364.9	-52.1	0.01	1000	2.5	2.5
2387.6	-60.8	0.00	1000	25.0	25.0
2483.5	-34.6	0.35	1000	25.0	24.7
4961.3	-29.6	1.11	1000	2.5	1.4
7441.6	-30.7	0.84	1000	2.5	1.7

Low Channel low voltage

Radio Technology: BT LE 2 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2363.9	-45.0	0.03	1000	2.5	2.5
2400.0	-17.3	18.71	1000	25.0	6.3
2483.5	-61.9	0.00	1000	25.0	25.0
4803.3	-33.1	0.50	1000	2.5	2.0
7204.8	-26.0	2.50	1000	2.5	0.0

Mid Channel low voltage

Radio Technology: BT LE 2 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2363.5	-48.9	0.01	1000	2.5	2.5
2400.0	-56.3	0.00	1000	25.0	25.0
2493.1	-53.5	0.00	1000	25.0	25.0
4880.2	-29.2	1.20	1000	2.5	1.3
7321.7	-29.0	1.26	1000	2.5	1.2

High Channel low voltage

Radio Technology: BT LE 2 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2365.1	-52.3	0.01	1000	2.5	2.5
2400.0	-62.7	0.00	1000	25.0	25.0
2483.5	-35.3	0.29	1000	25.0	24.7
4961.0	-29.1	1.23	1000	2.5	1.3
7438.7	-30.8	0.84	1000	2.5	1.7

Low Channel high voltage

Radio Technology: BT LE 2 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2363.8	-44.9	0.03	1000	2.5	2.5
2400.0	-17.8	16.71	1000	25.0	8.3
2483.5	-63.8	0.00	1000	25.0	25.0
4804.0	-33.5	0.45	1000	2.5	2.1
7206.1	-26.1	2.44	1000	2.5	0.1

Mid Channel high voltage

Radio Technology: BT LE 2 Mbps

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2363.2	-48.8	0.01	1000	2.5	2.5
2400.0	-55.3	0.00	1000	25.0	25.0
2487.5	-54.2	0.00	1000	25.0	25.0
4880.2	-29.1	1.23	1000	2.5	1.3
7321.7	-29.0	1.26	1000	2.5	1.2

High Channel high voltage

Radio Technology: BT LE 2 Mbps

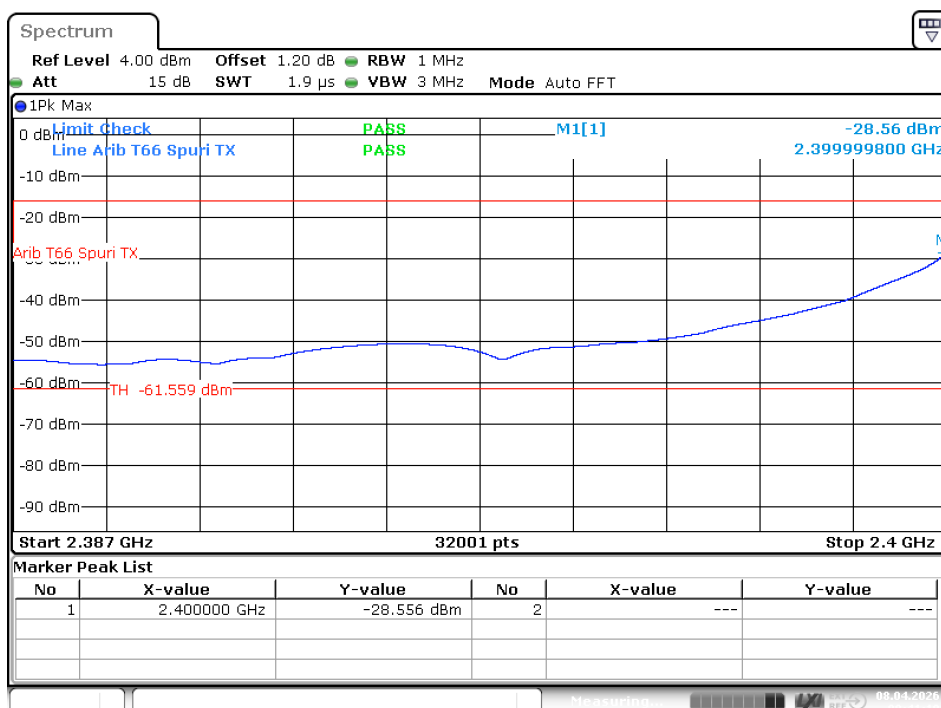
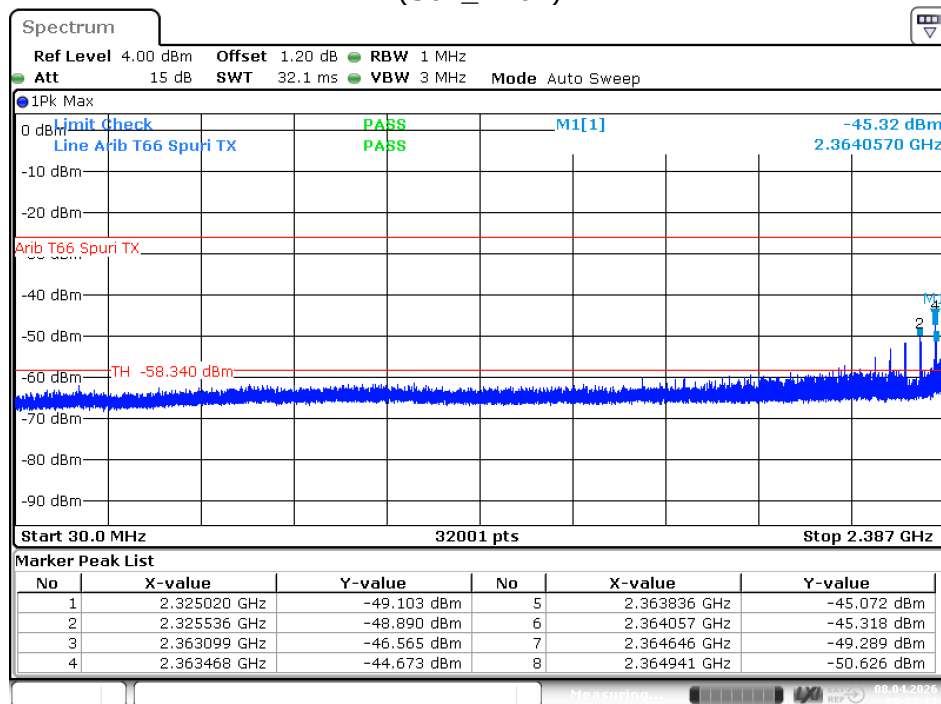
Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [μ W]	RBW [kHz]	Limit [μ W]	Margin to Limit [μ W]
2365.0	-51.3	0.01	1000	2.5	2.5
2387.2	-61.2	0.00	1000	25.0	25.0
2483.8	-35.2	0.30	1000	25.0	24.7
4961.3	-29.5	1.13	1000	2.5	1.4
7441.9	-30.8	0.84	1000	2.5	1.7

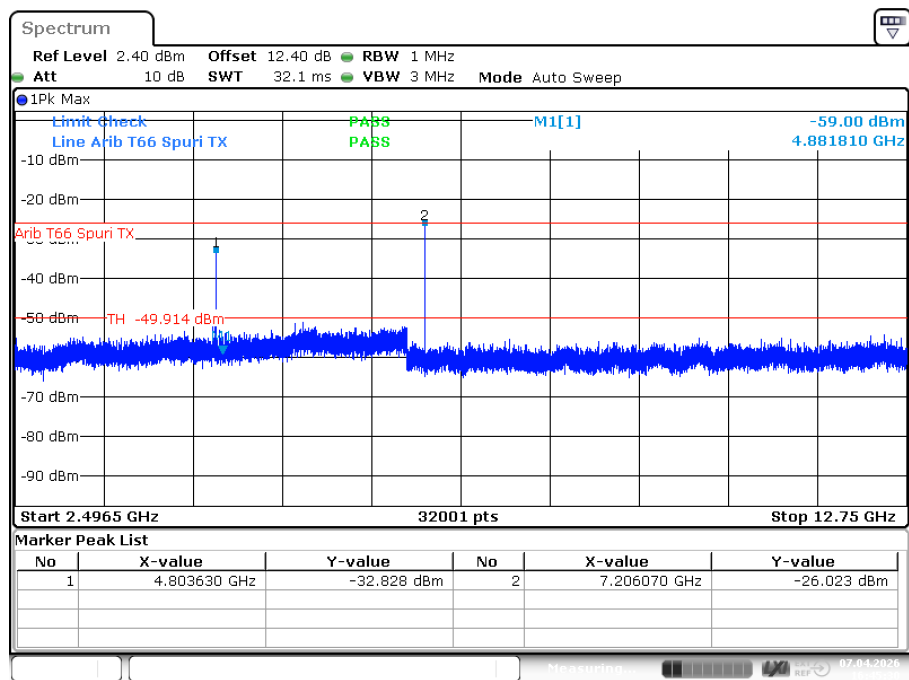
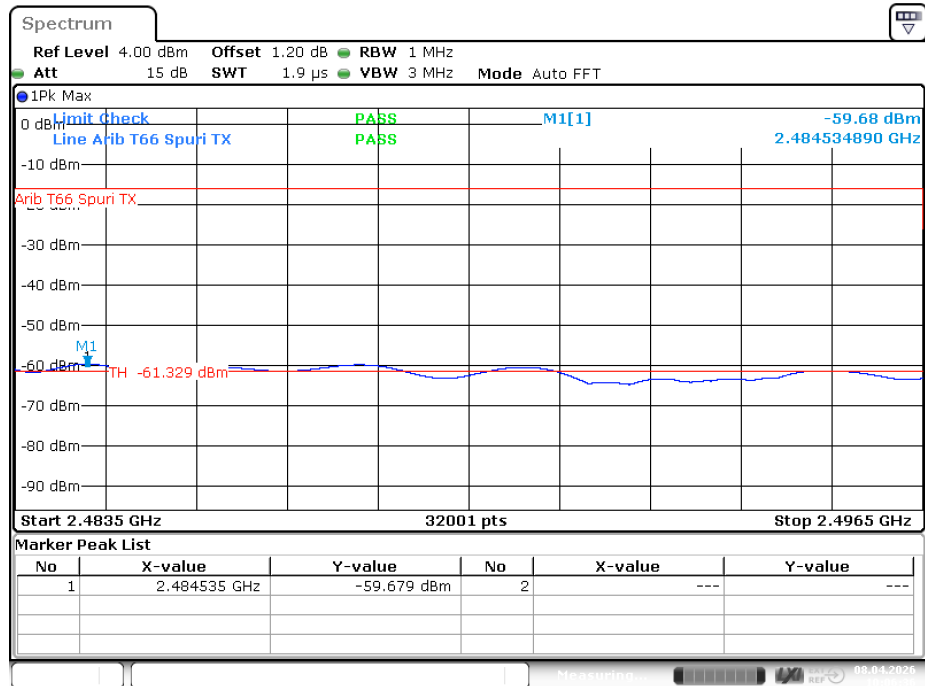
Comments:

- At least the highest value for each limit range is given in the tables above.

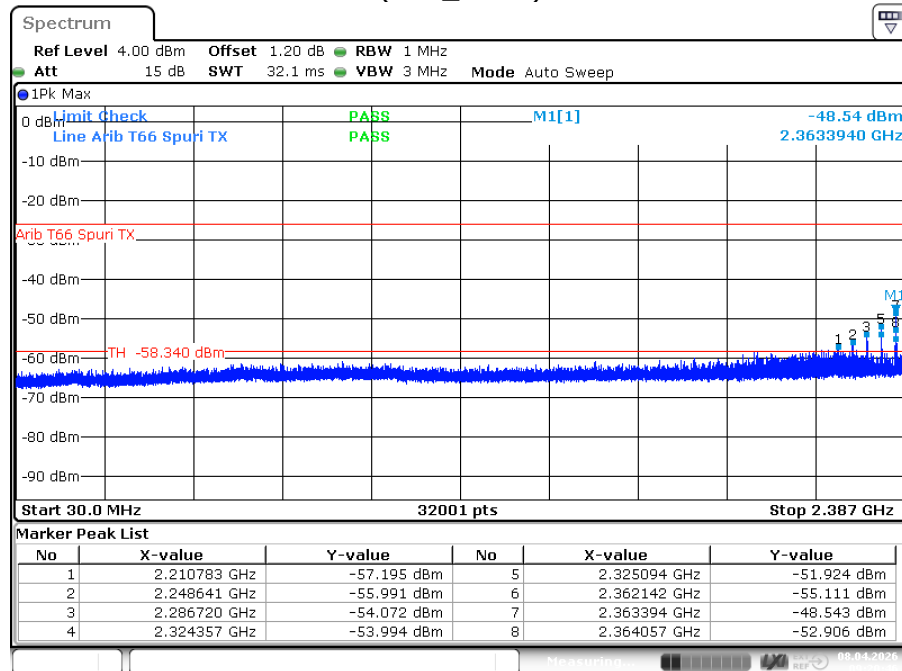
6.4.3 Measurement plots:

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = low channel, Voltage = low (S01_AN01)

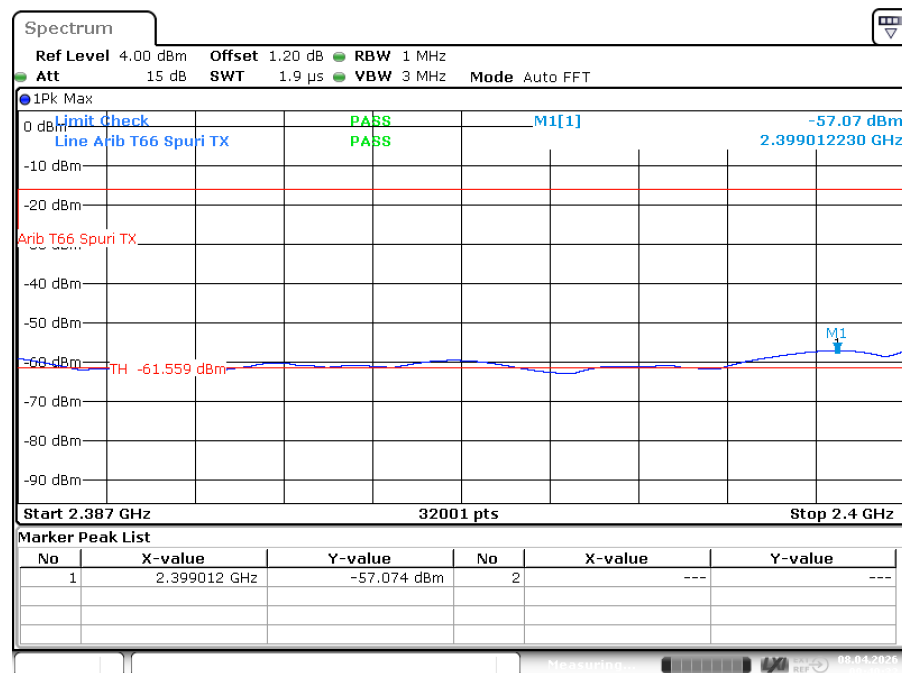




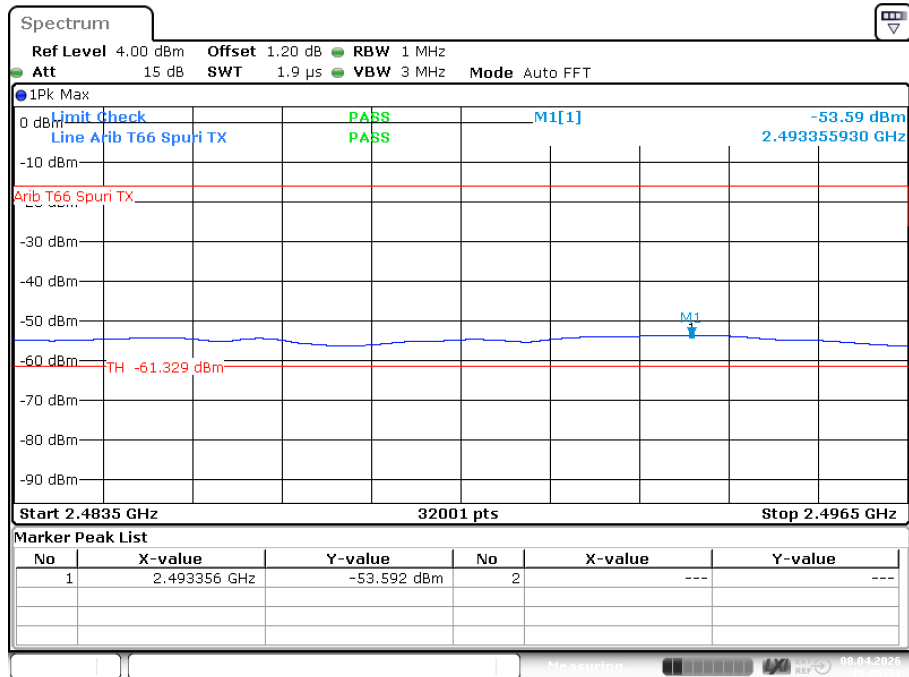
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = low (S01_AN01)



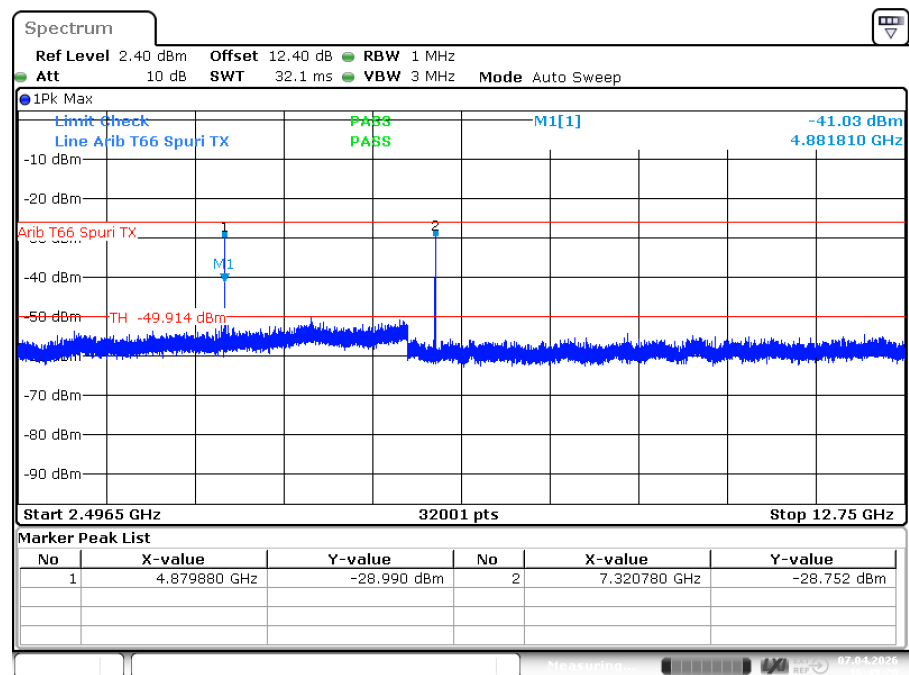
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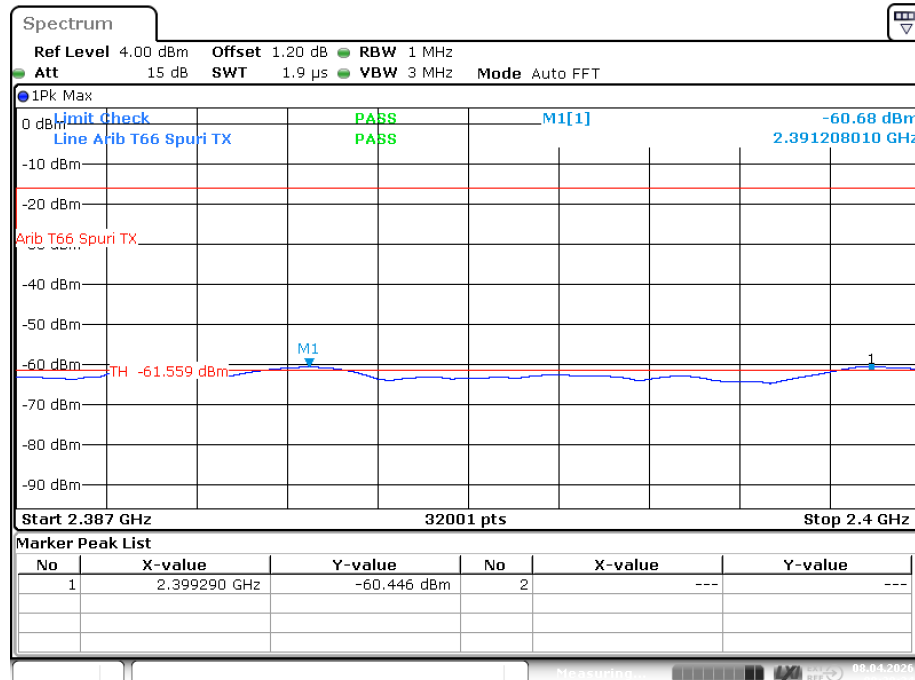
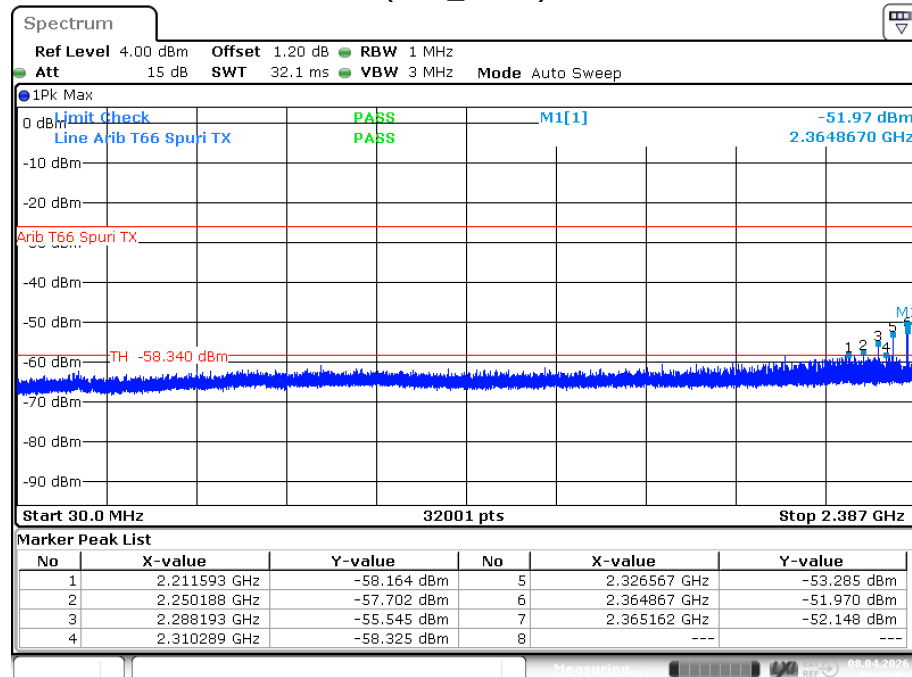


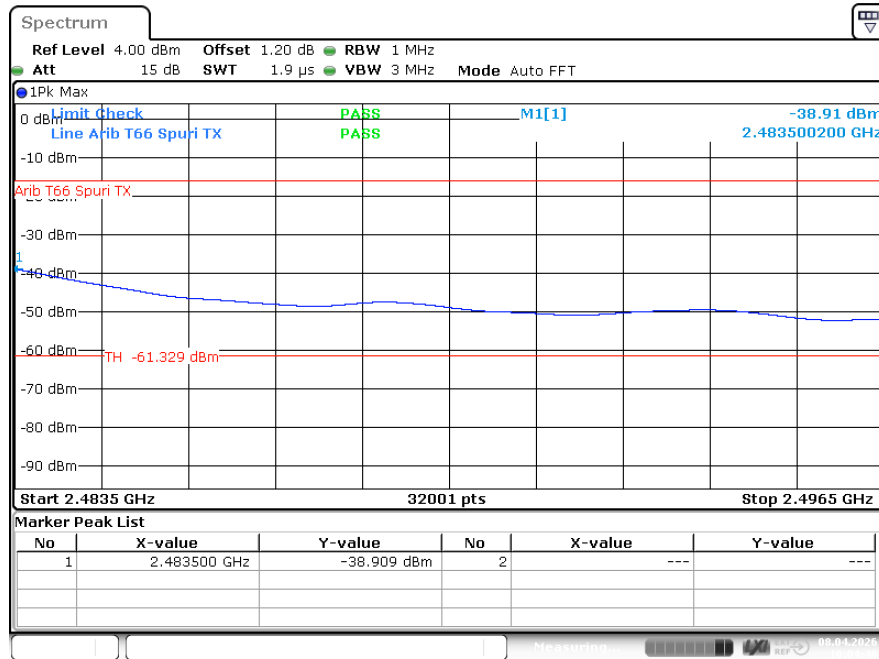
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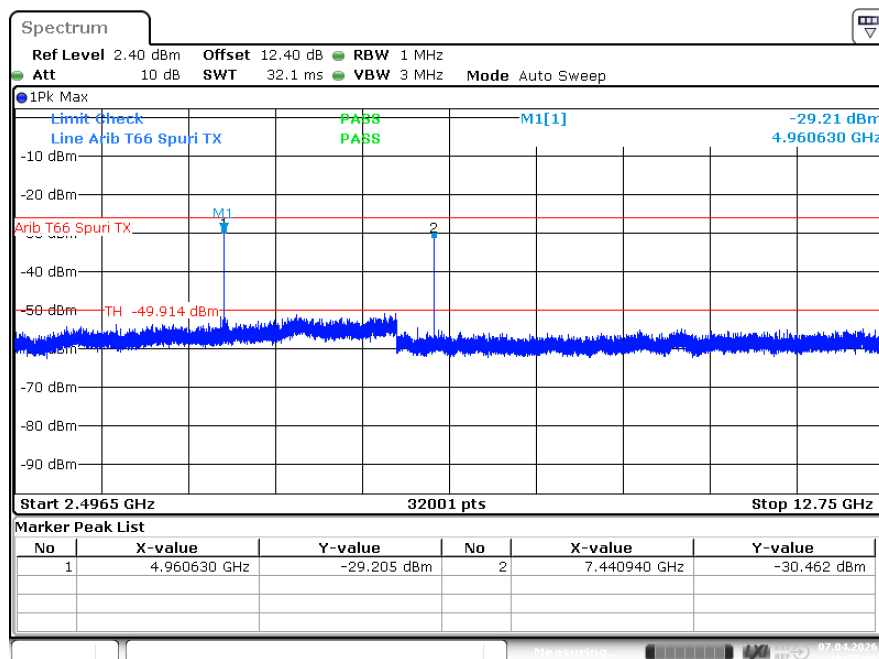
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Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = high channel, Voltage = low (S01_AN01)



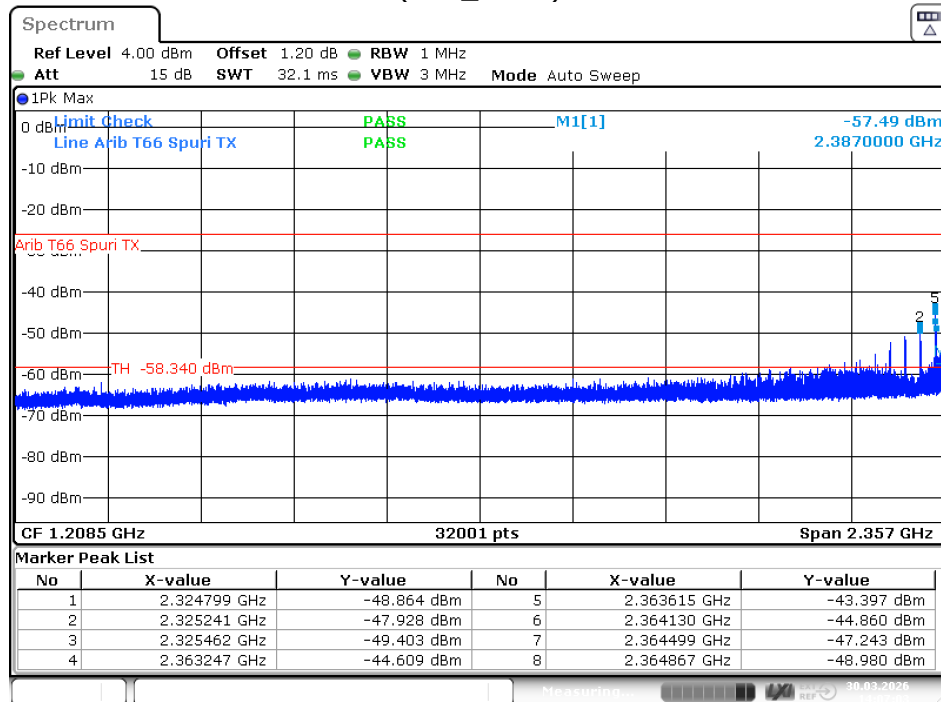


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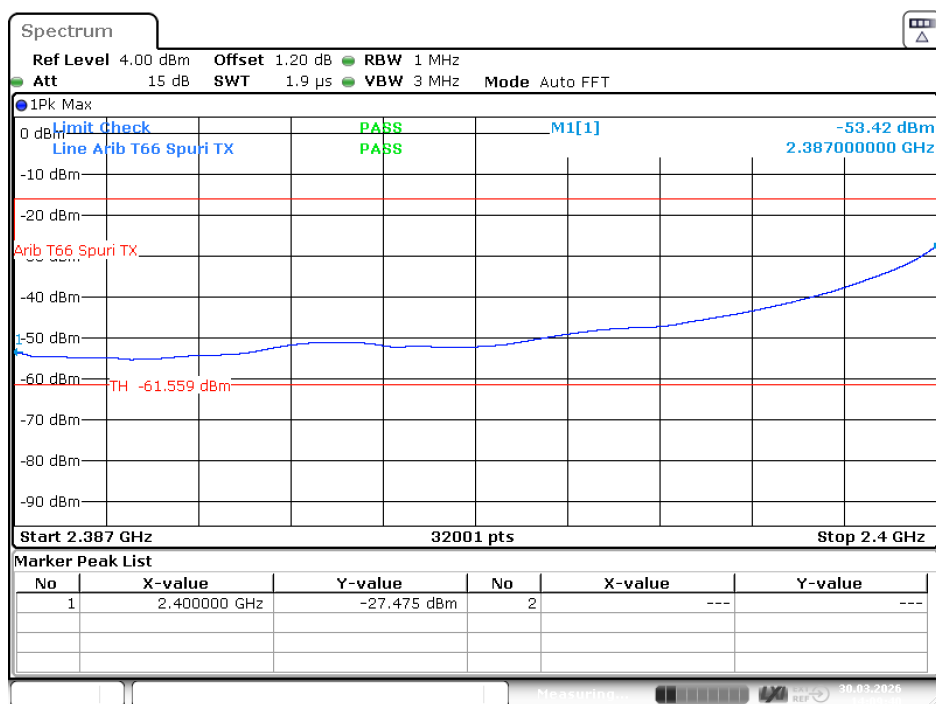


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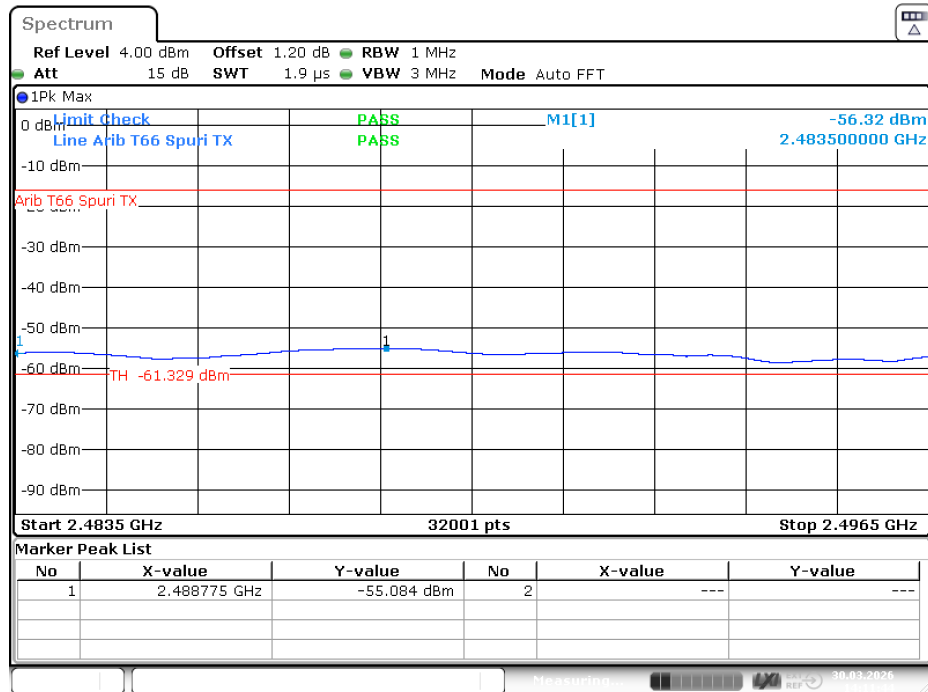
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = low channel, Voltage = normal
(S01_AN01)



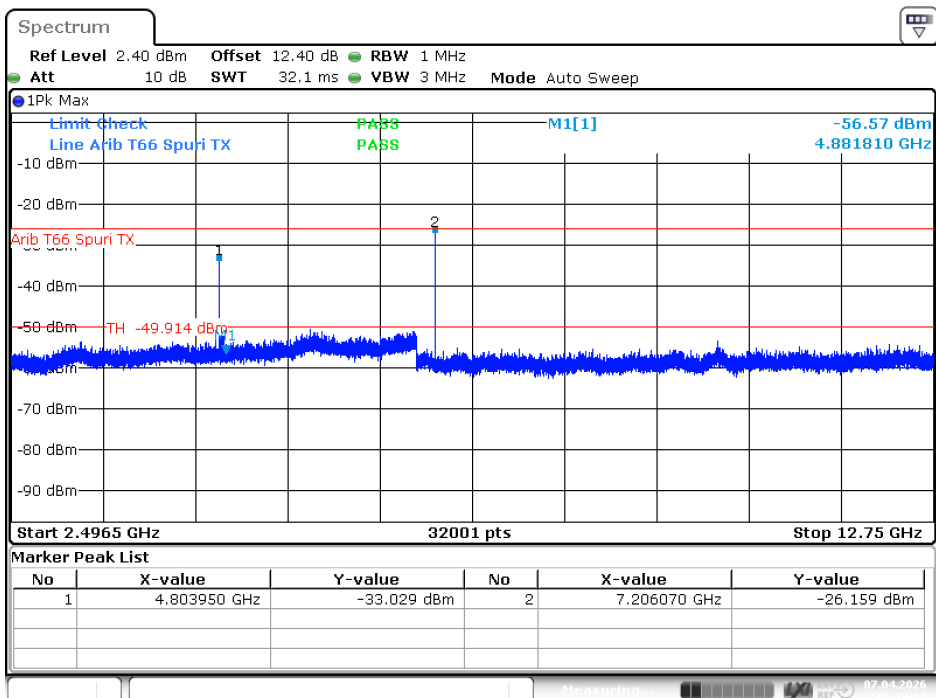
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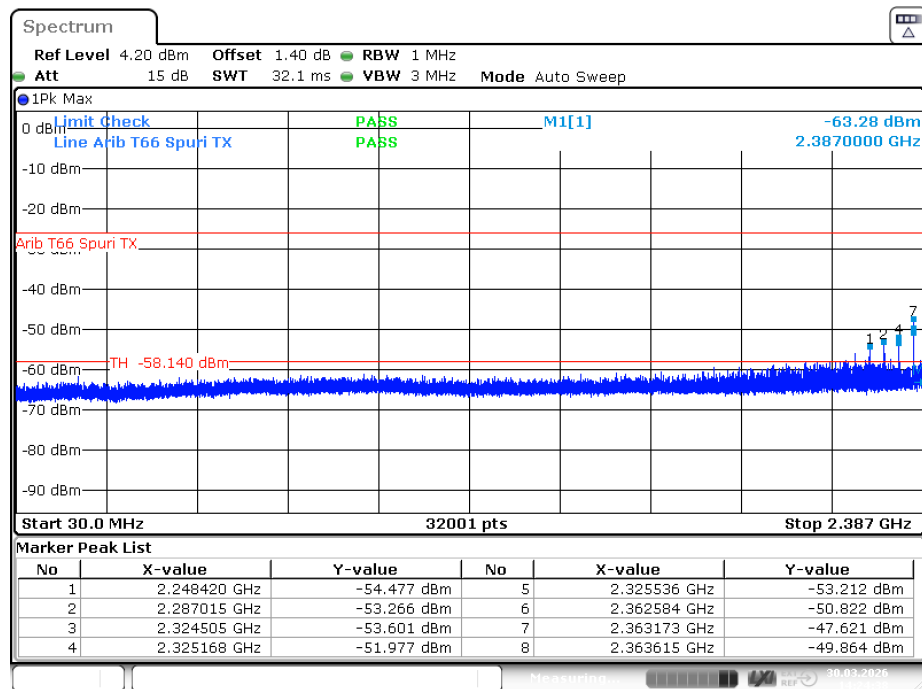


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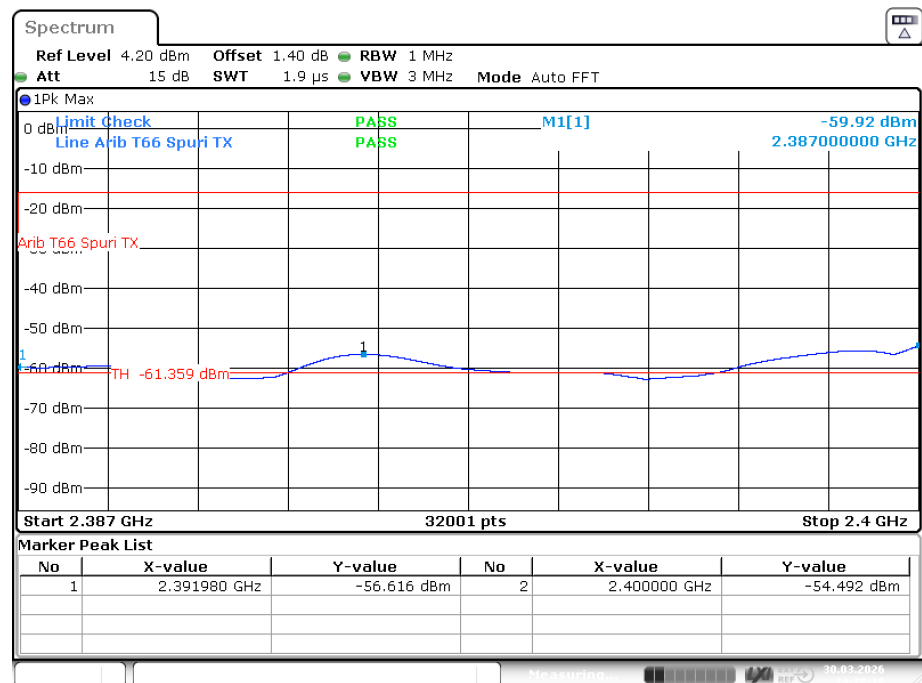


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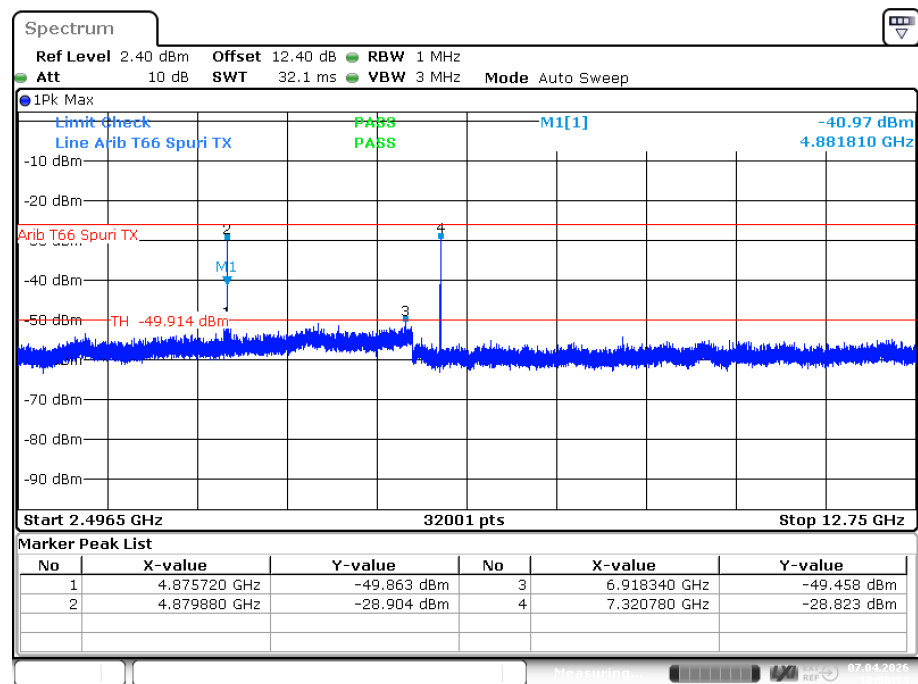
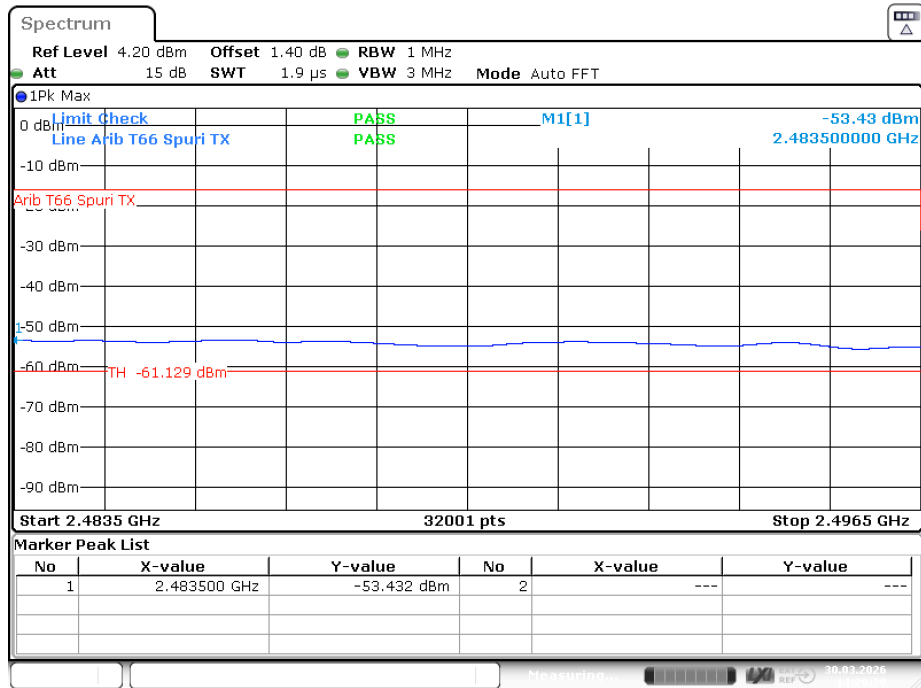
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = normal
(S01_AN01)



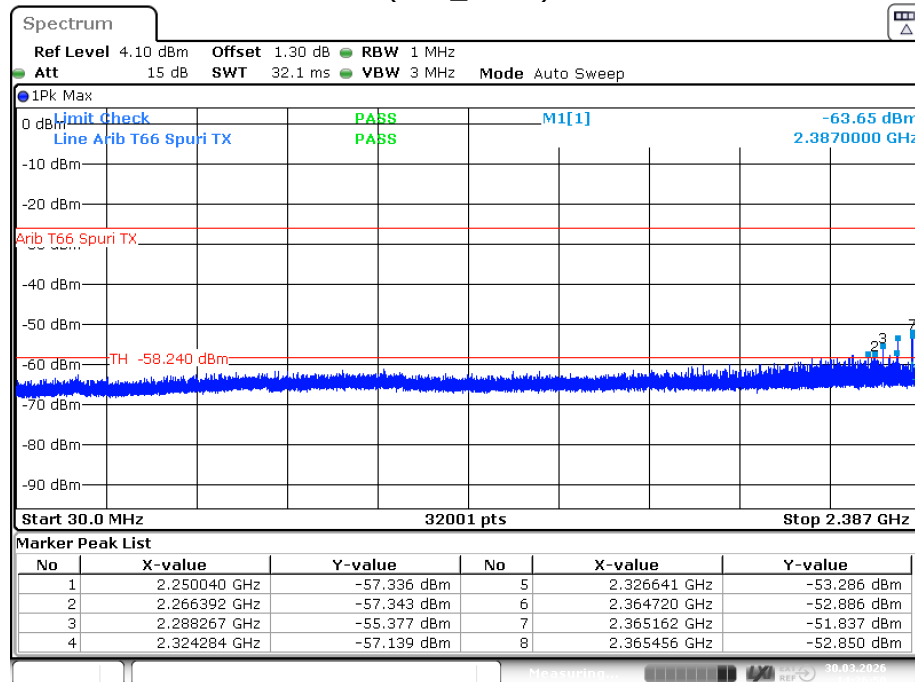
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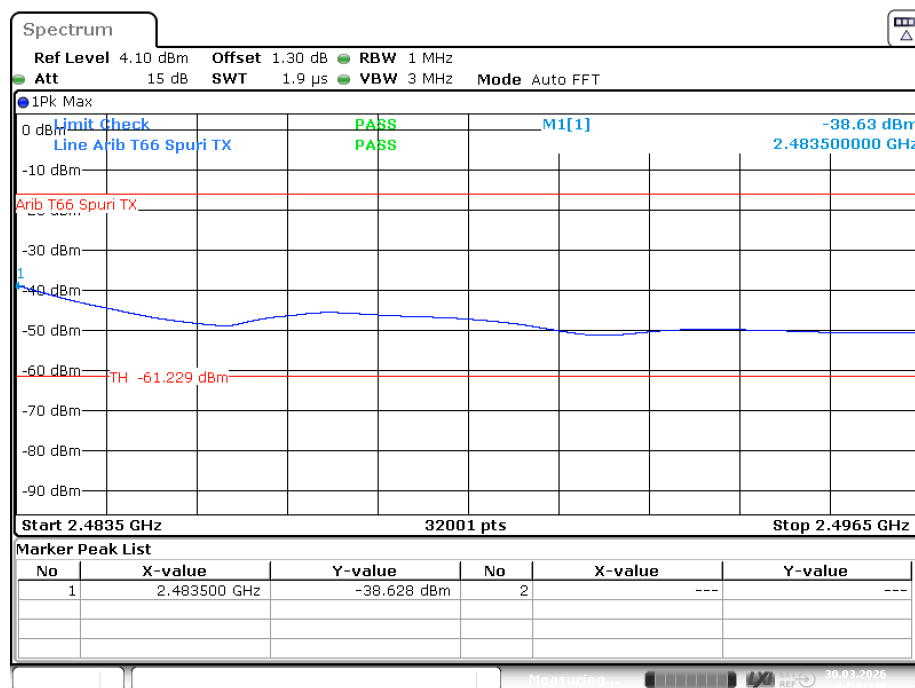
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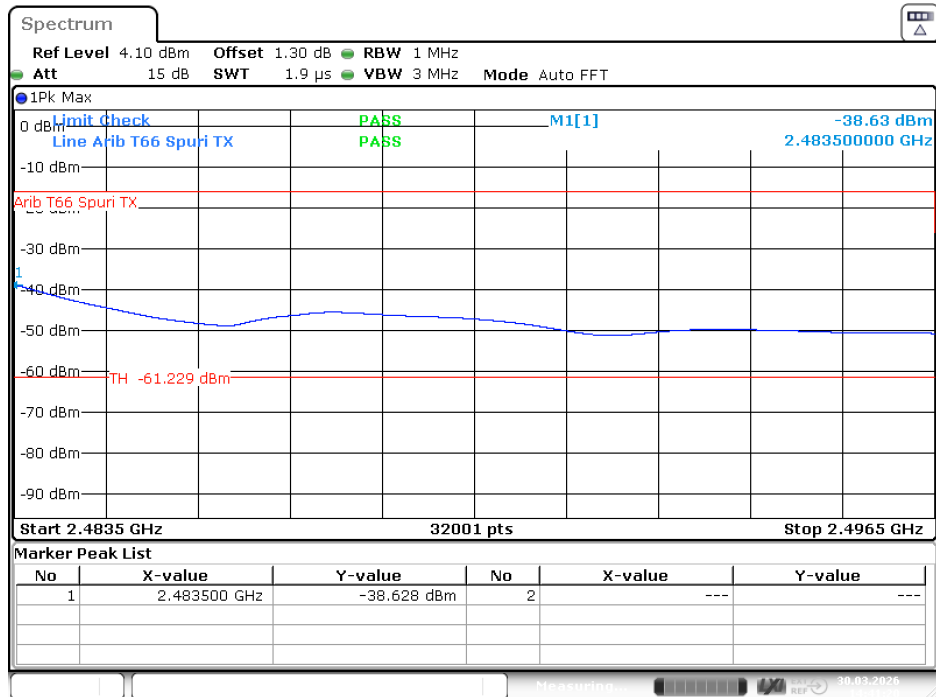
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(S01_AN01)



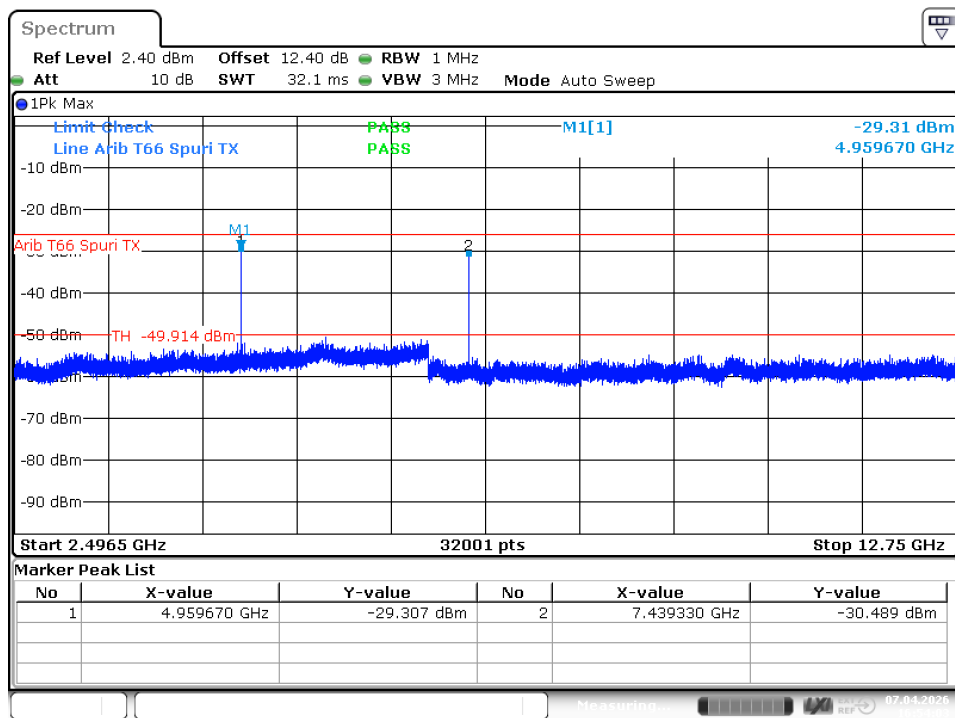
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Date: 30.MAR.2026 14:41:20

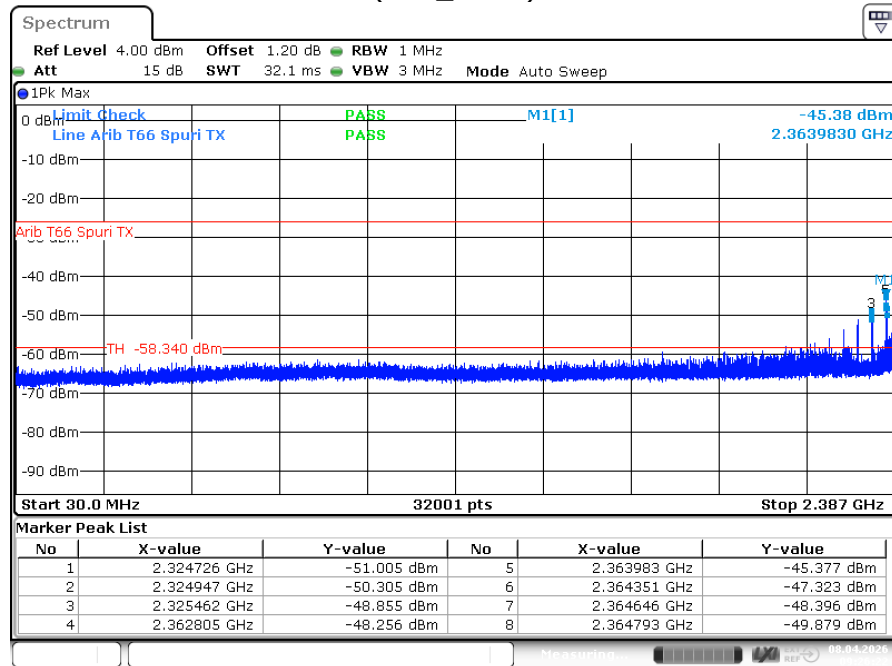


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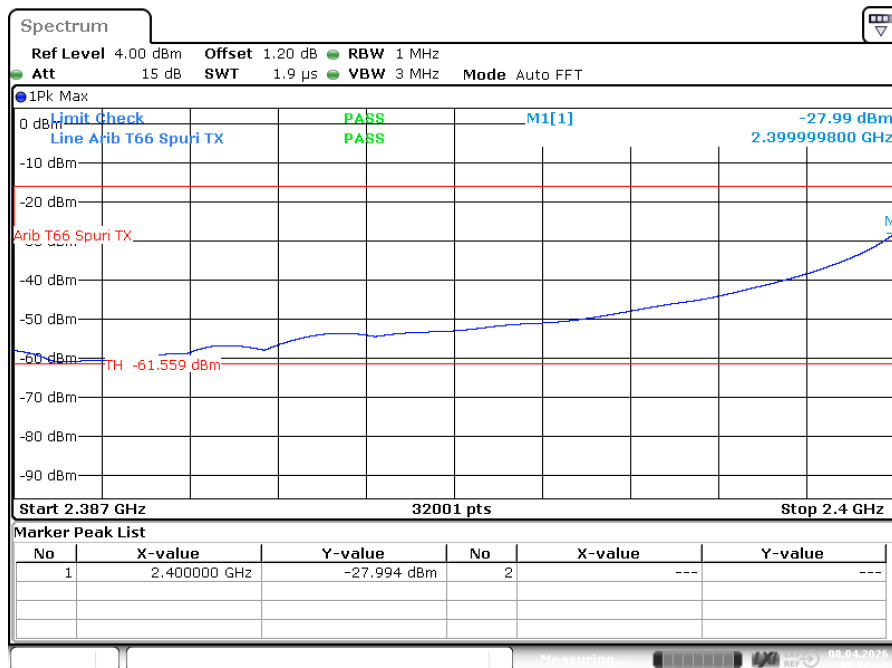


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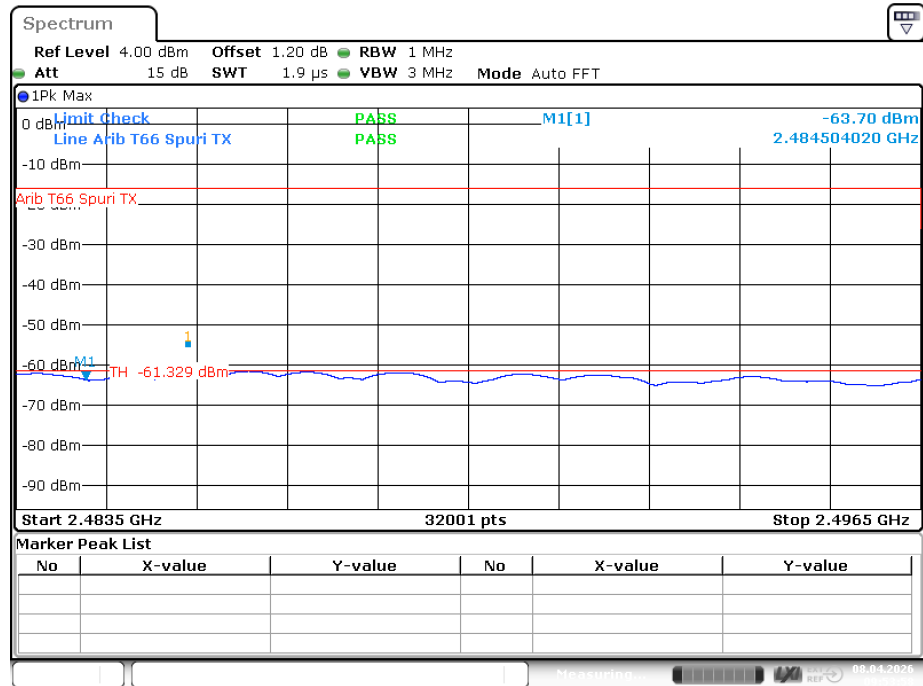
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = low channel, Voltage = high
(S01_AN01)



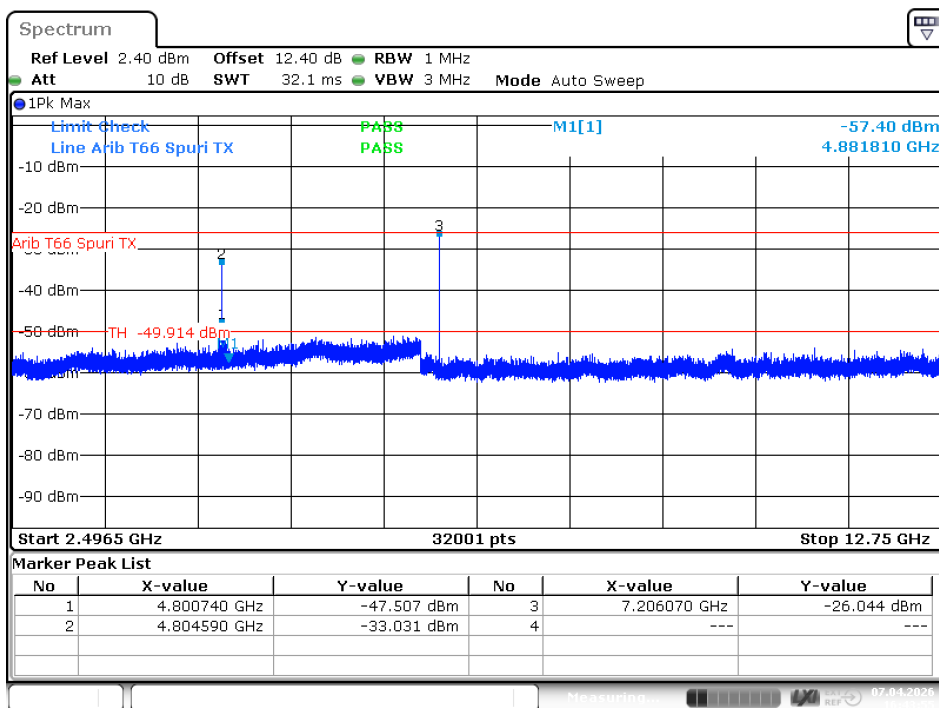
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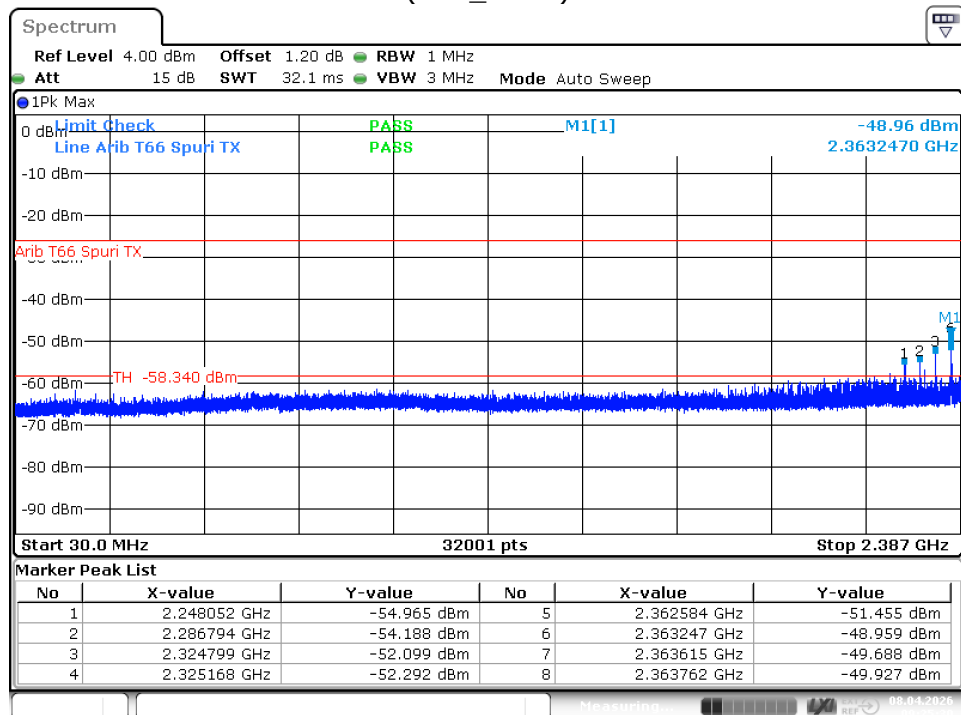


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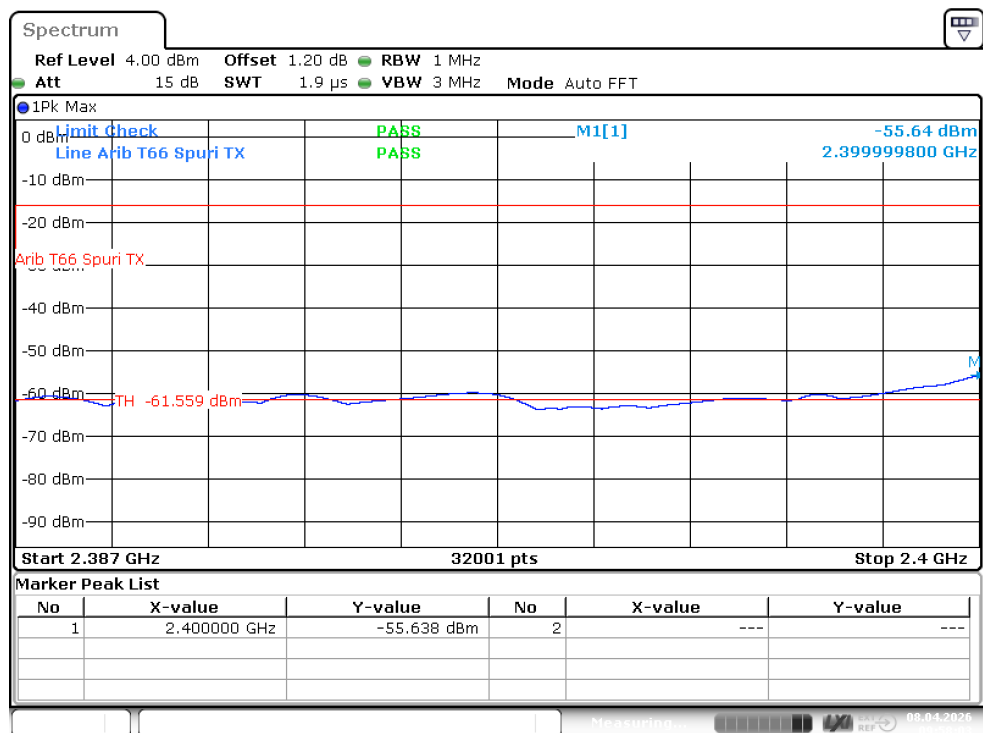


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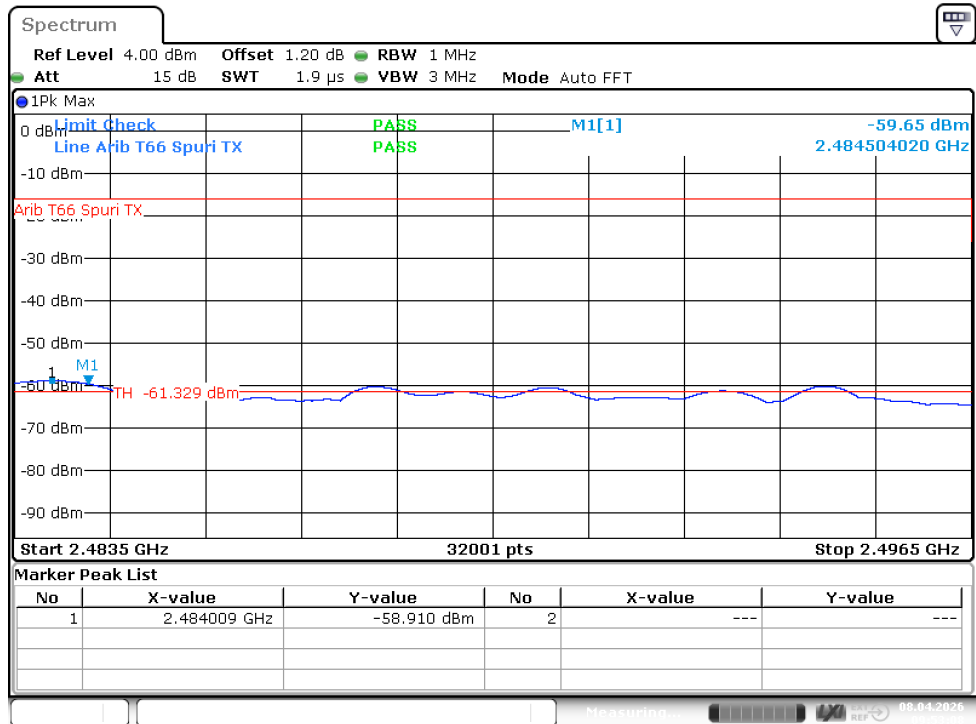
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = high
(S01_AN01)



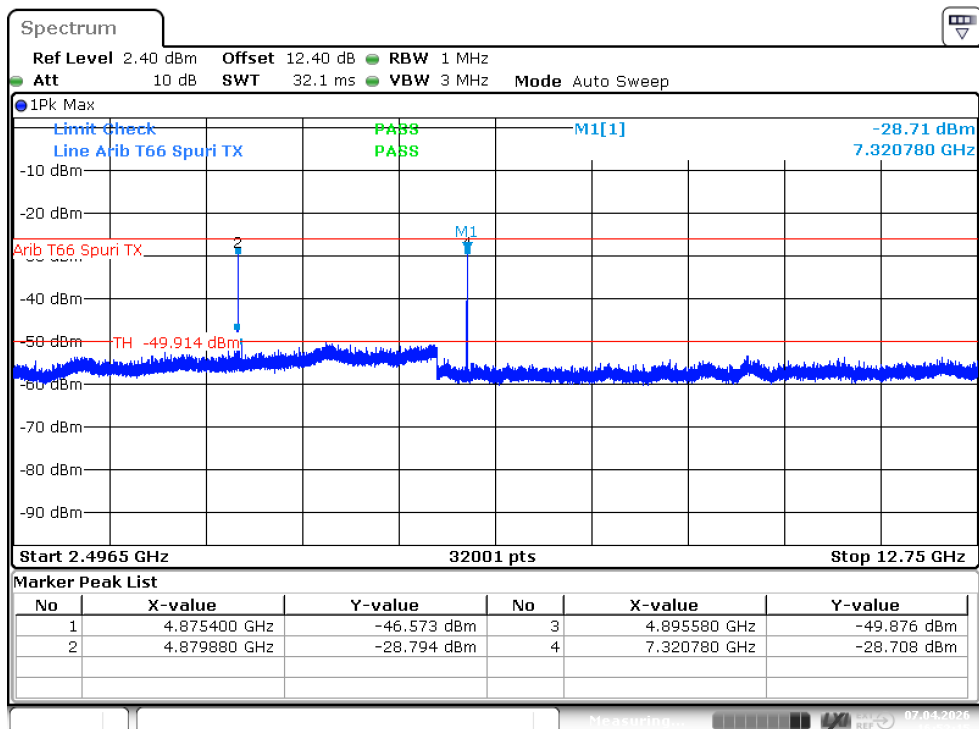
Date: 8.APR.2026 09:25:29



Date: 8.APR.2026 09:58:03

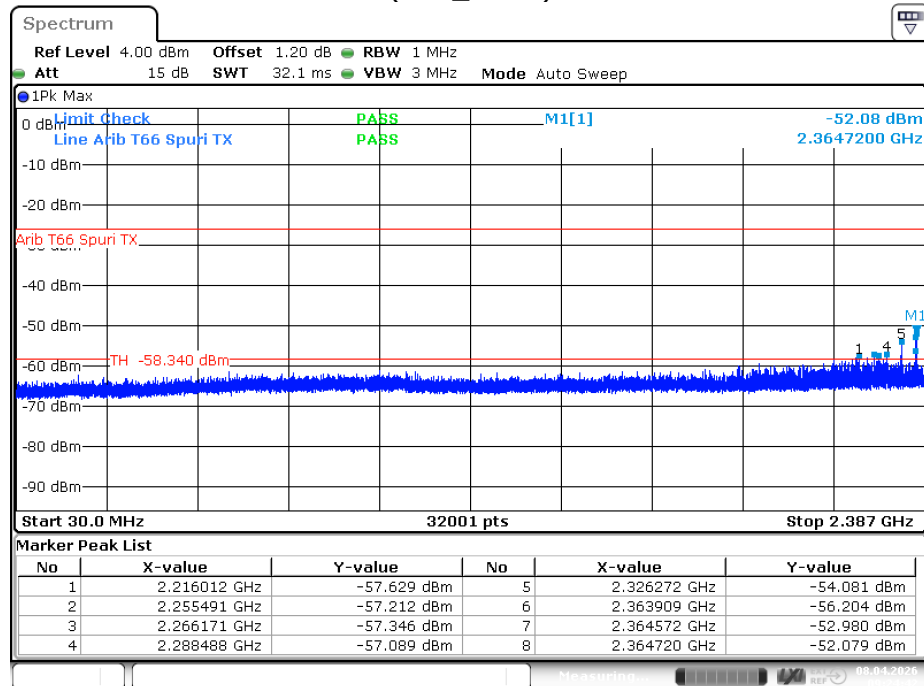


Date: 8.APR.2026 09:53:07

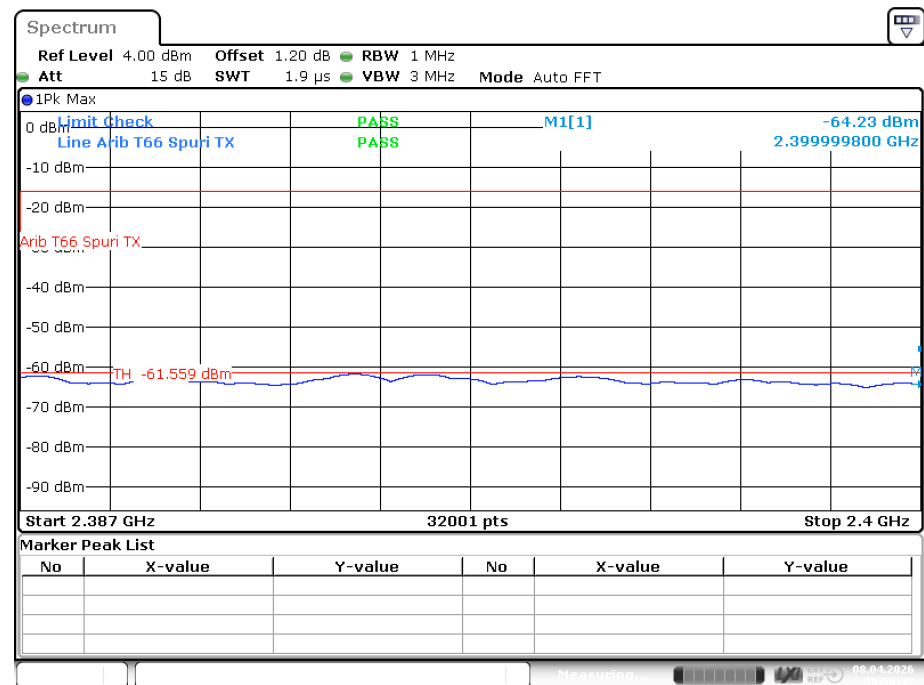


Date: 7.APR.2026 16:52:15

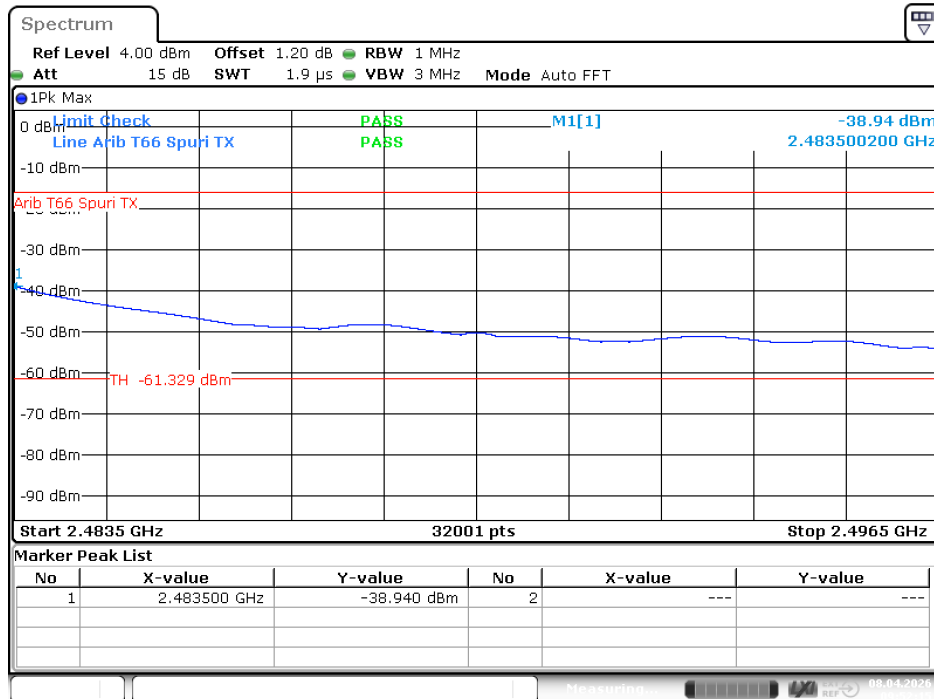
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = high channel, Voltage = high (S01_AN01)



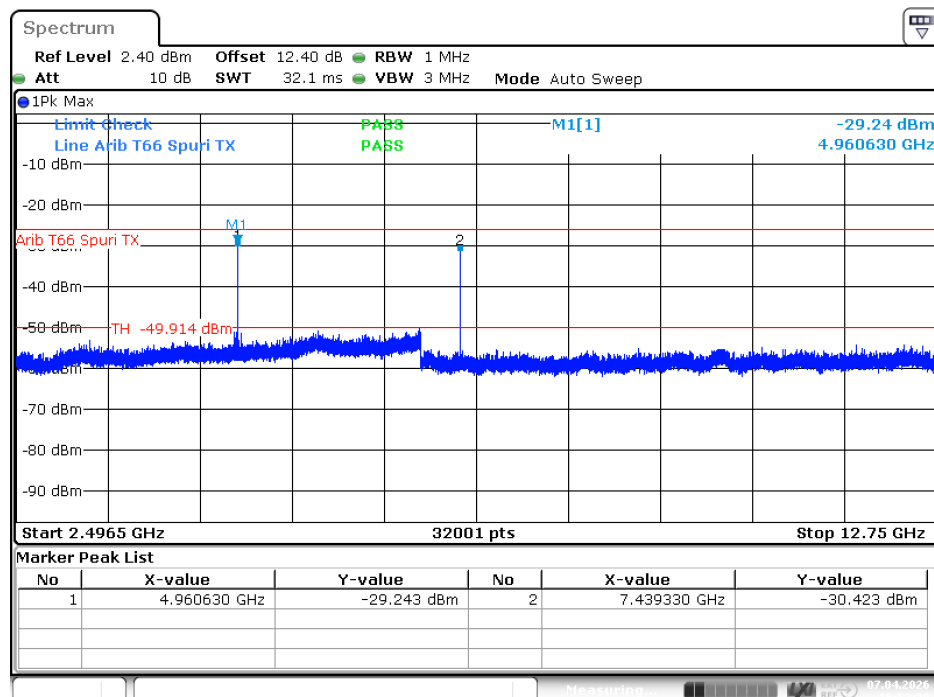
Date: 8.APR.2026 09:24:42



Date: 8.APR.2026 09:58:42

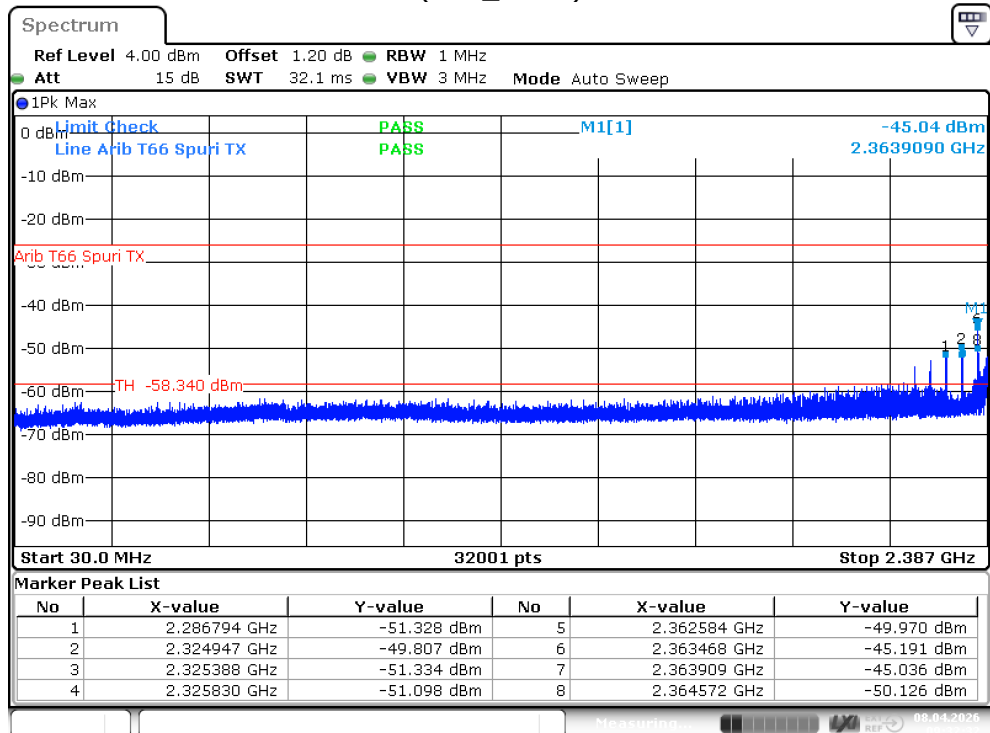


Date: 8.APR.2026 09:52:15

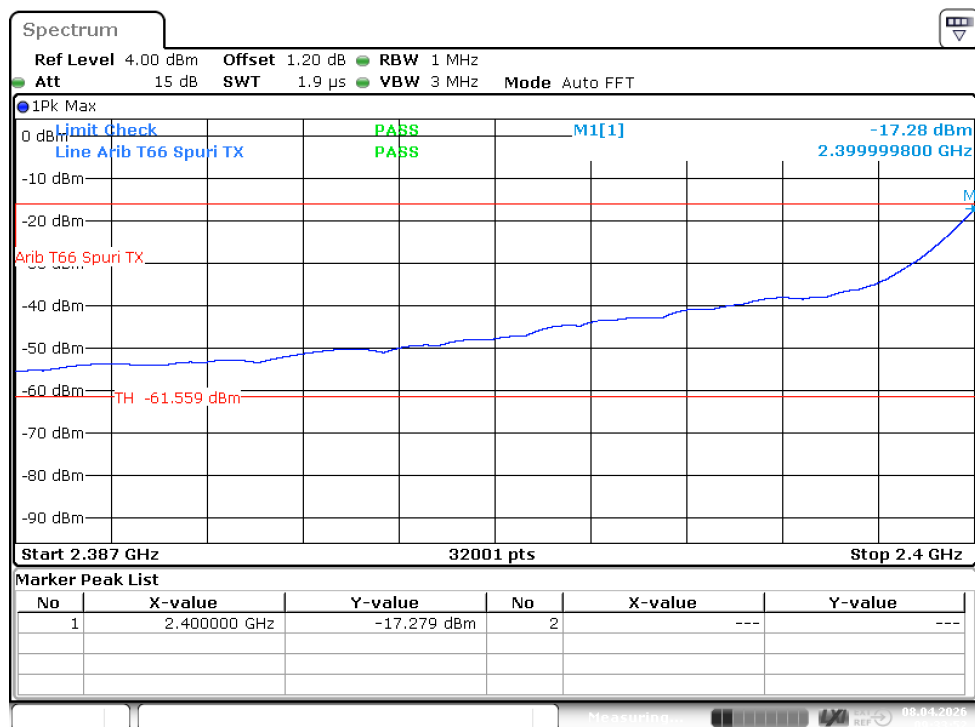


Date: 7.APR.2026 16:53:28

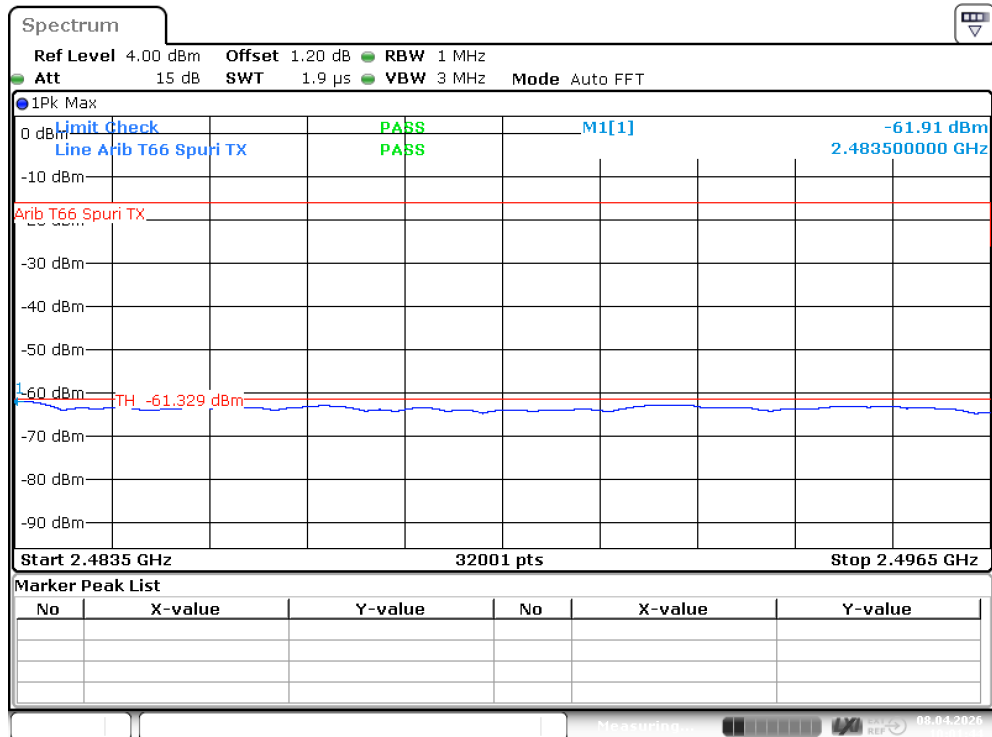
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = low channel, Voltage = low (S01_AN01)



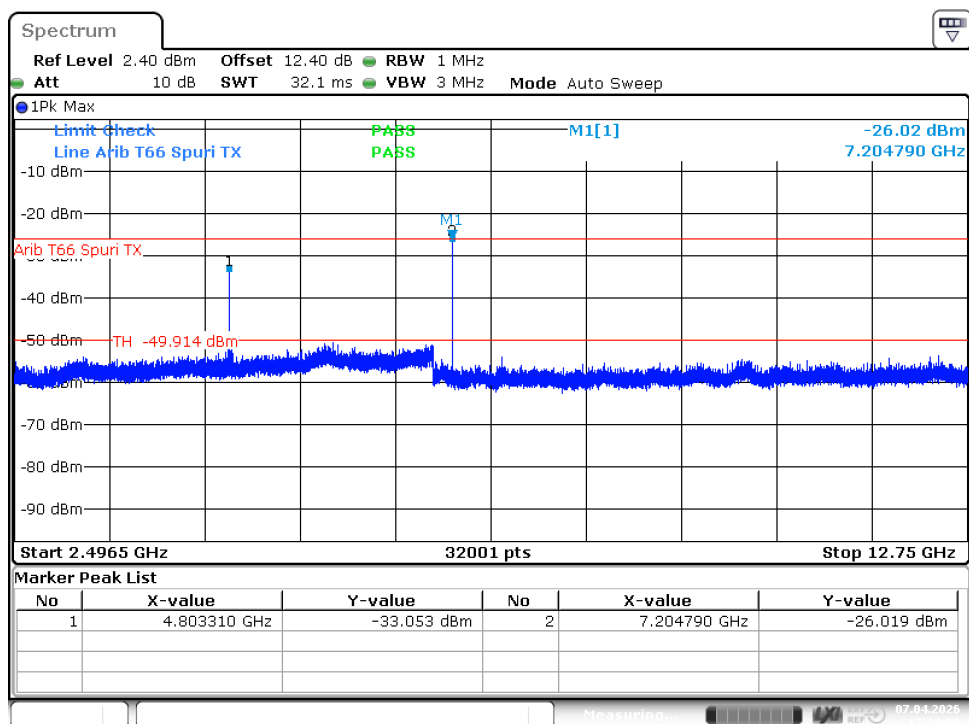
Date: 8.APR.2026 09:32:31



Date: 8.APR.2026 09:33:51

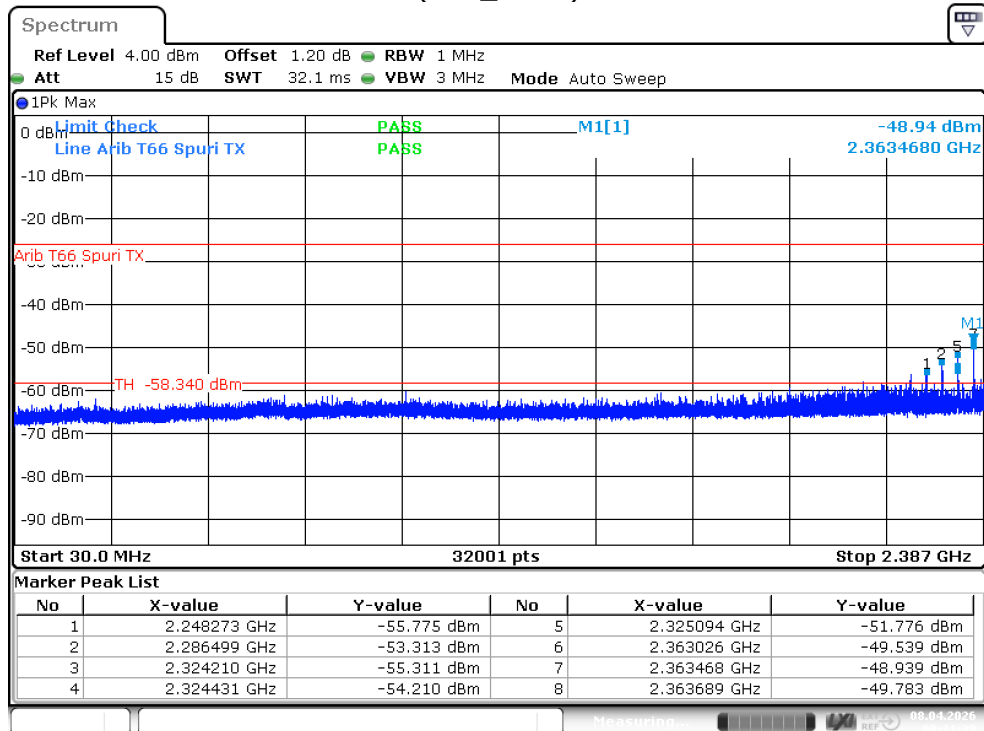


Date: 8.APR.2026 10:01:44

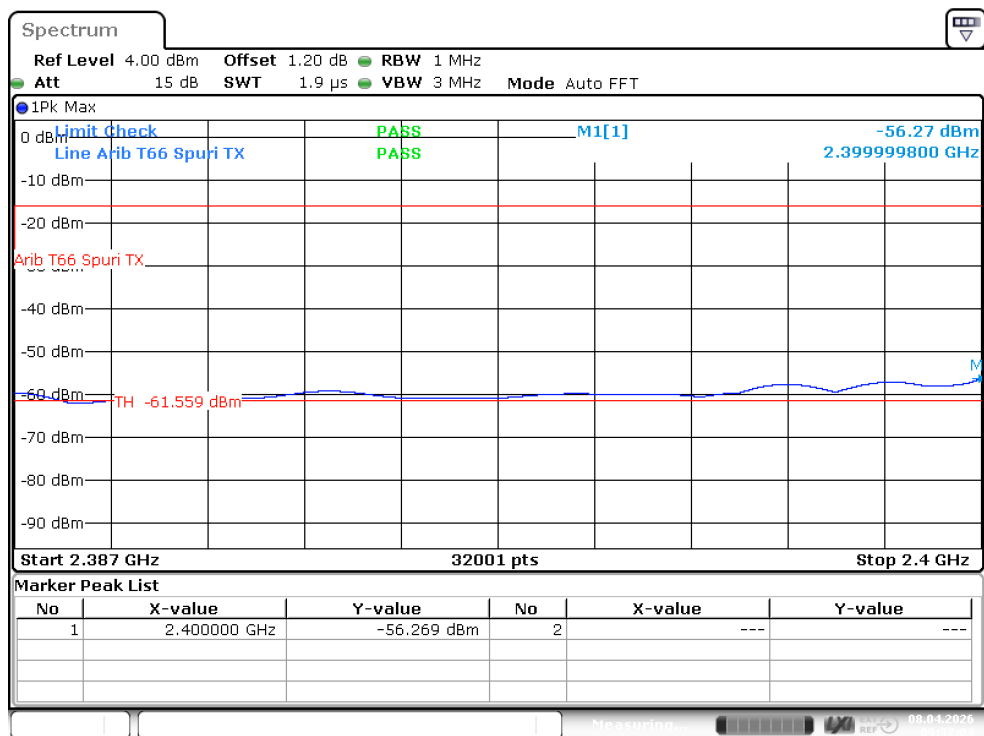


Date: 7.APR.2026 17:24:56

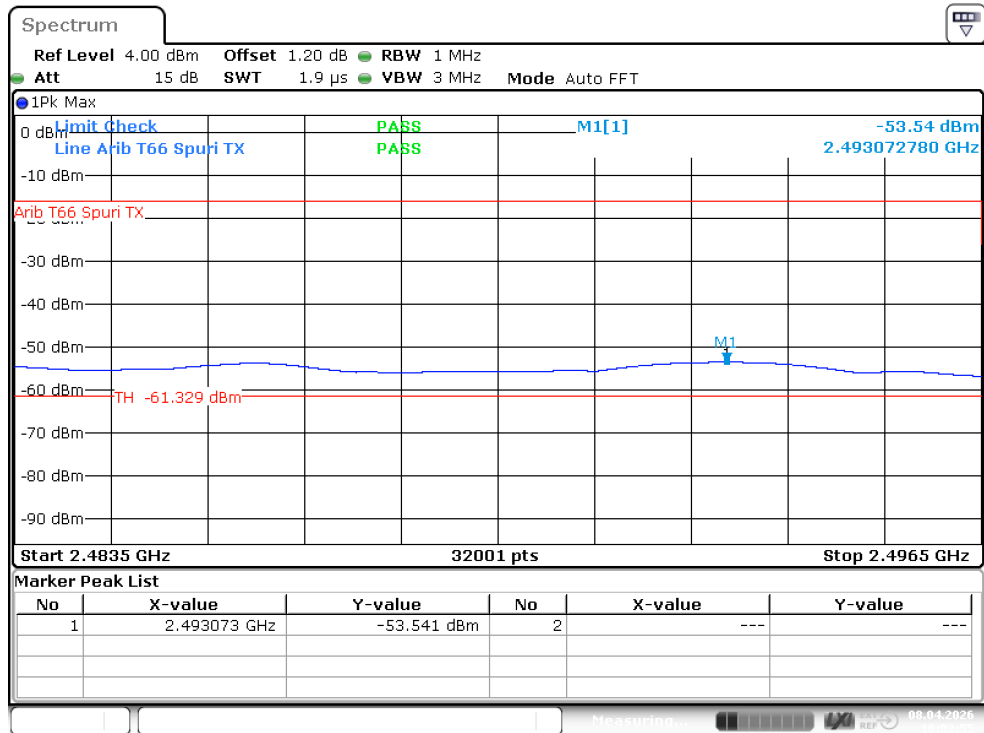
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = mid channel, Voltage = low
(S01_AN01)



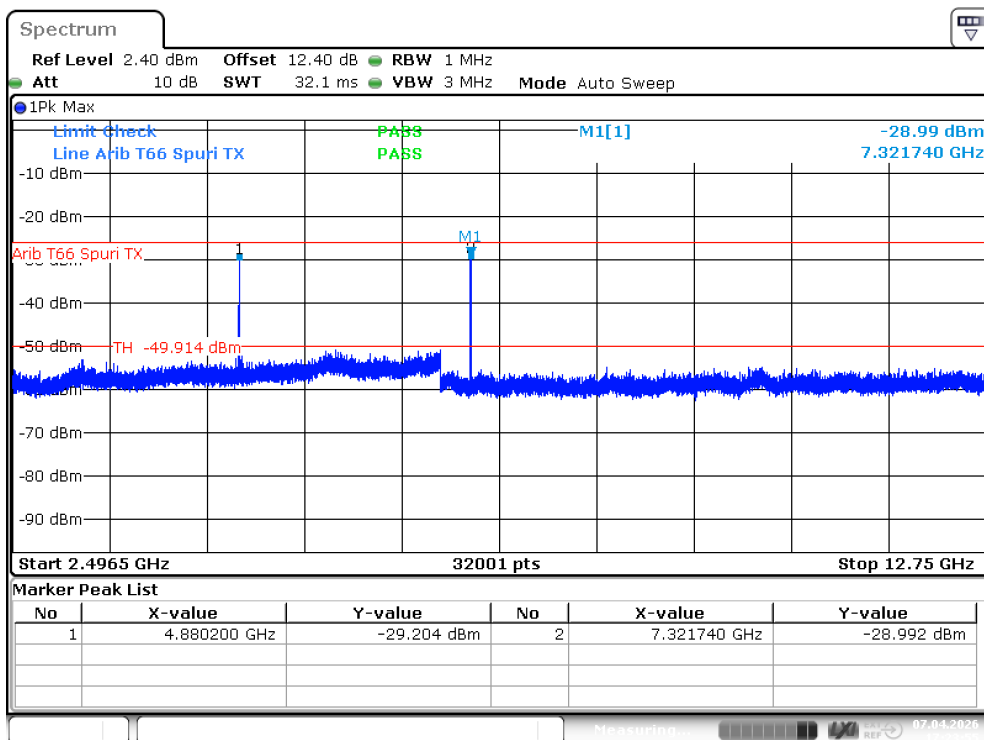
Date: 8.APR.2026 09:31:38



Date: 8.APR.2026 09:37:04

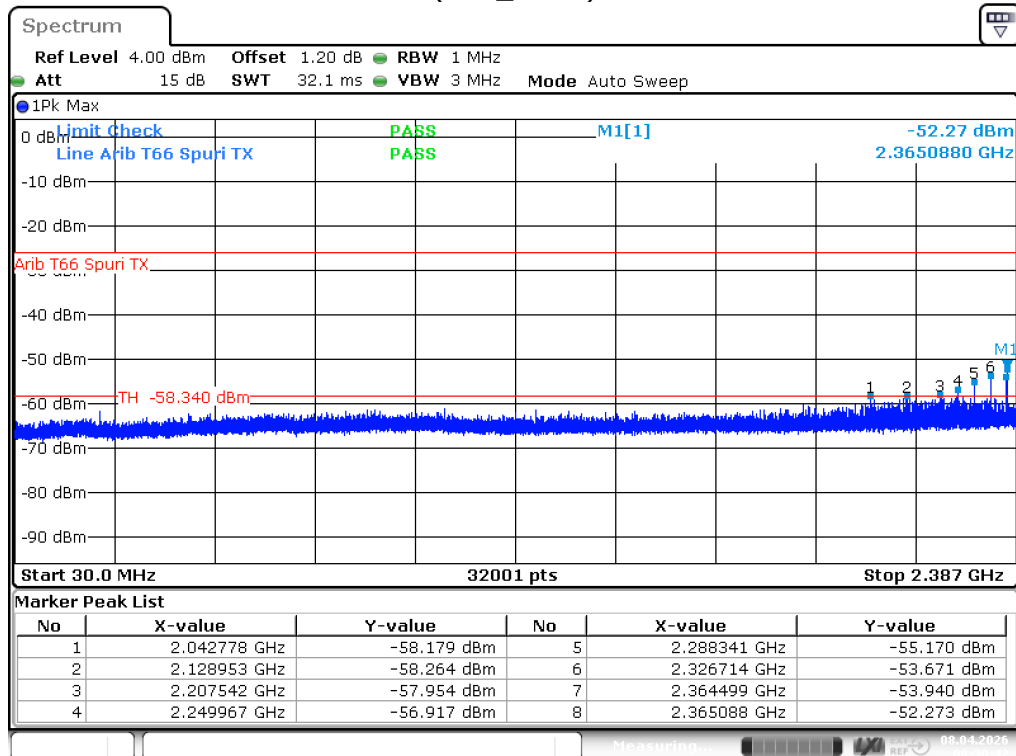


Date: 8.APR.2026 10:02:55

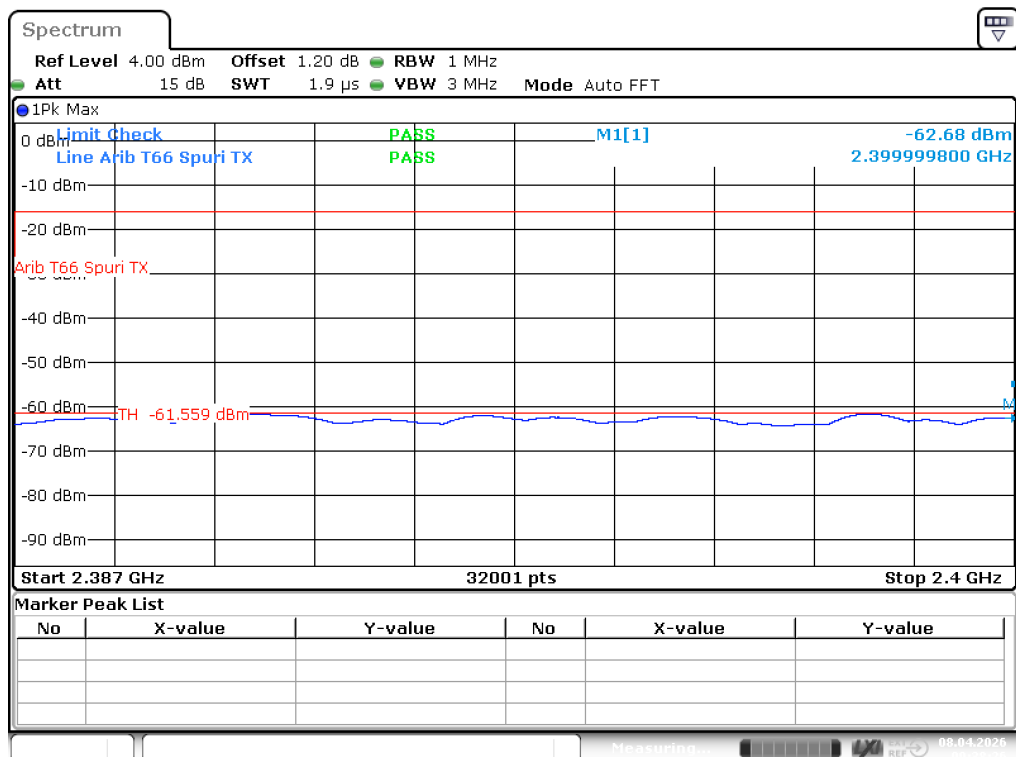


Date: 7.APR.2026 17:23:55

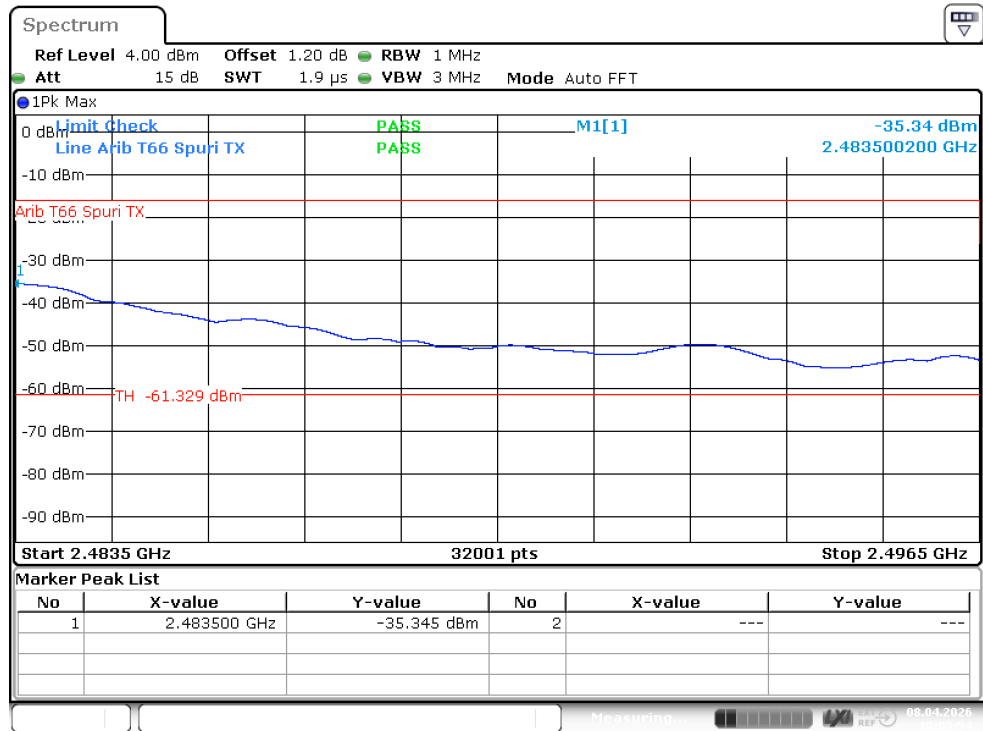
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = high channel, Voltage = low (S01_AN01)



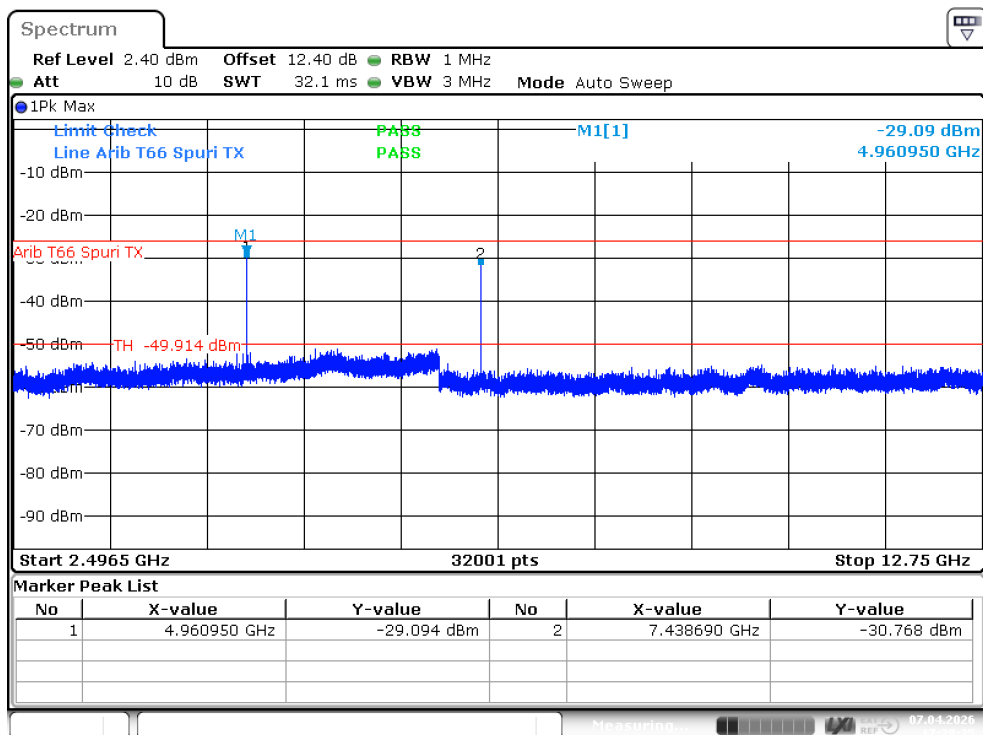
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Date: 8.APR.2026 09:38:25

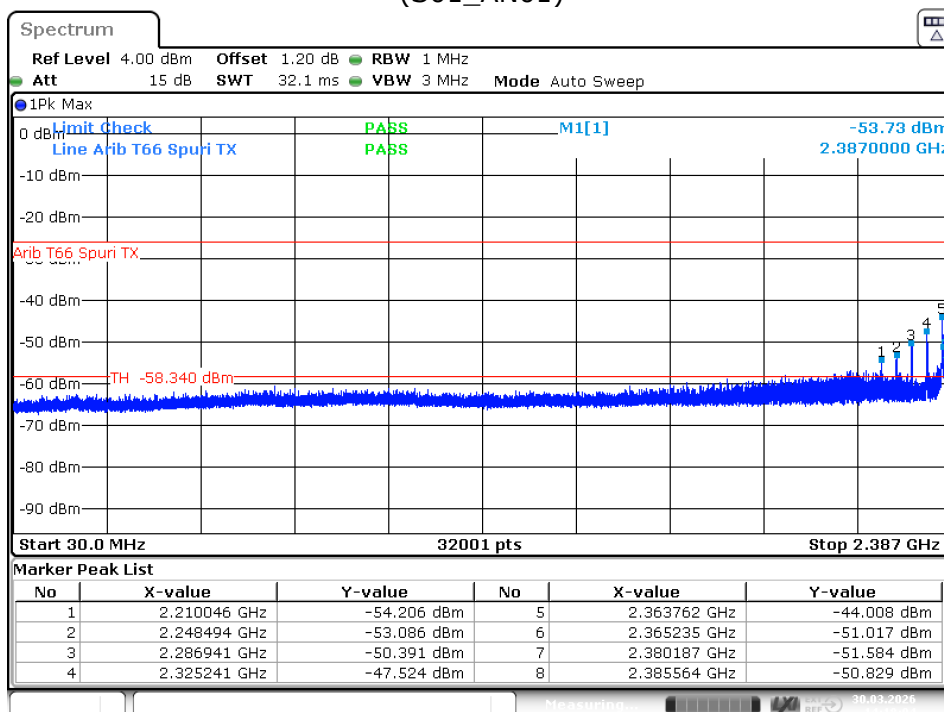


Date: 8.APR.2026 10:03:54

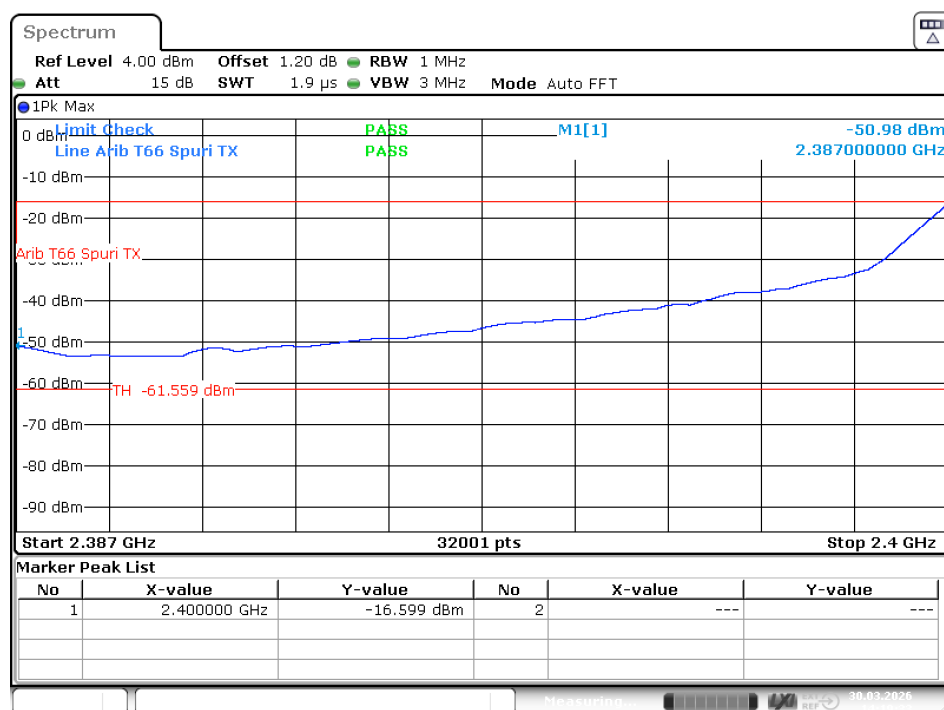


Date: 7.APR.2026 17:28:25

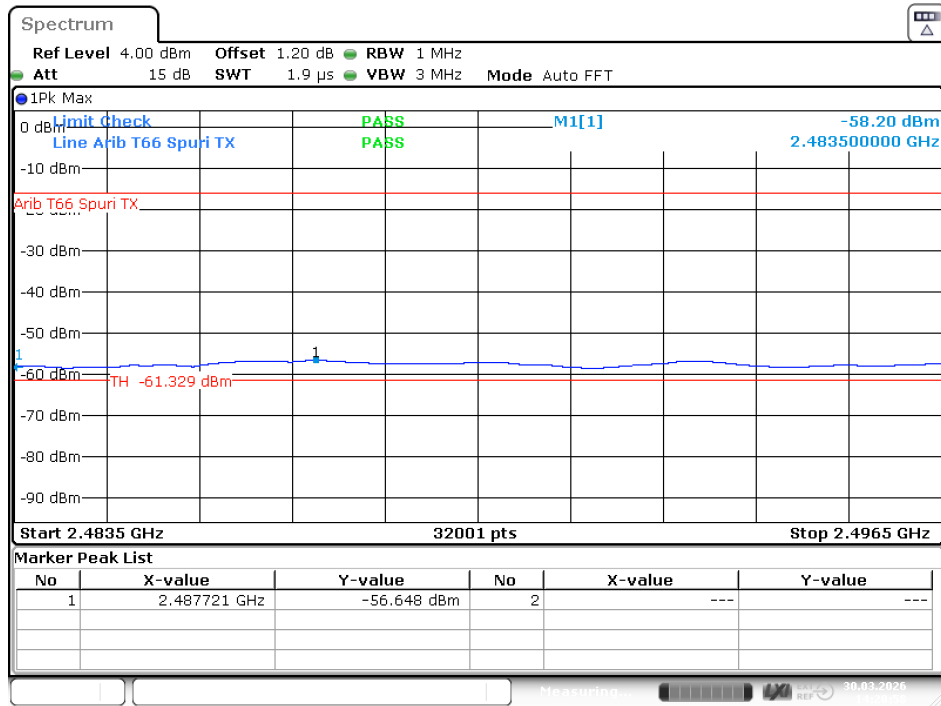
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = low channel, Voltage = normal (S01_AN01)



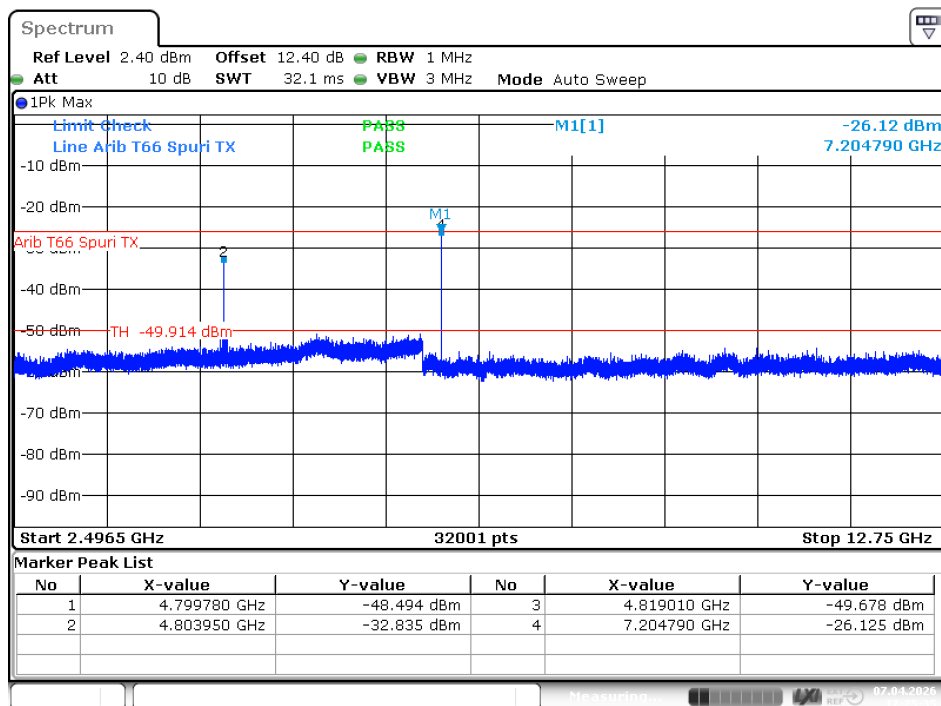
Date: 30.MAR.2026 14:18:05



Date: 30.MAR.2026 14:19:33

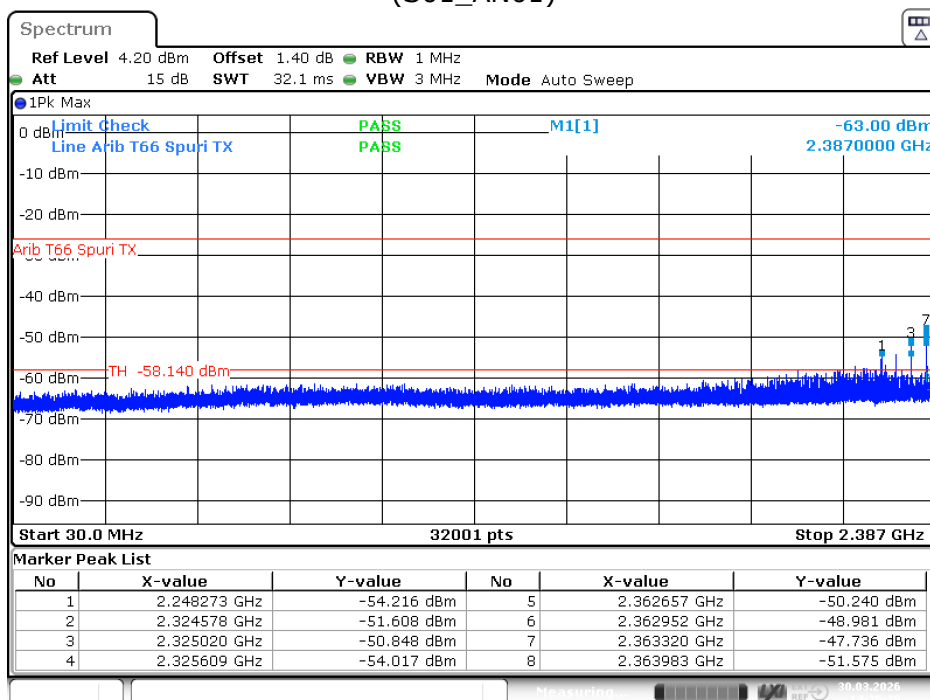


Date: 30.MAR.2026 14:20:57

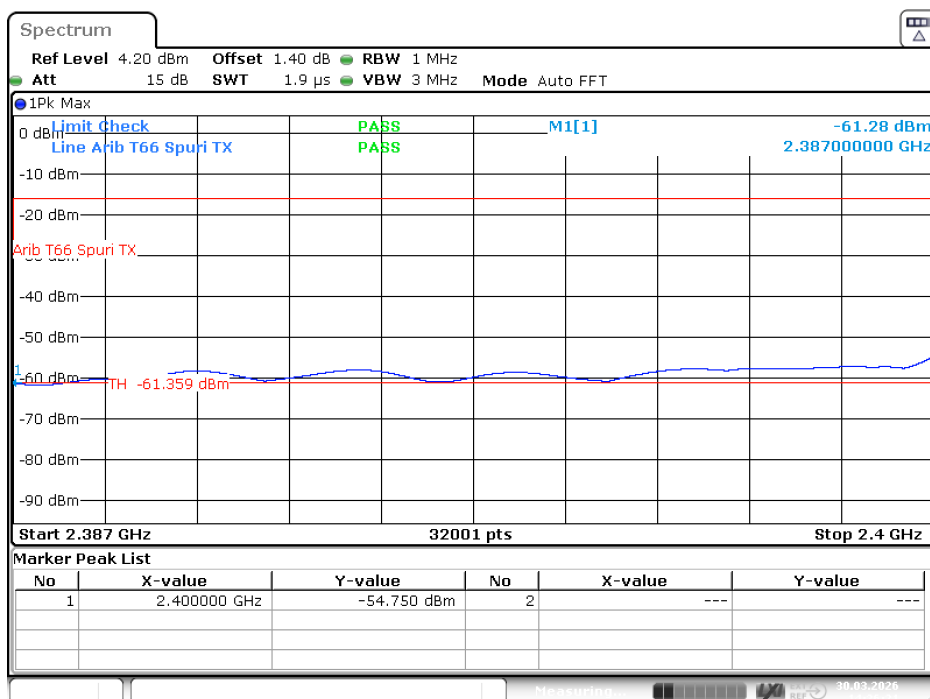


Date: 7.APR.2026 17:25:35

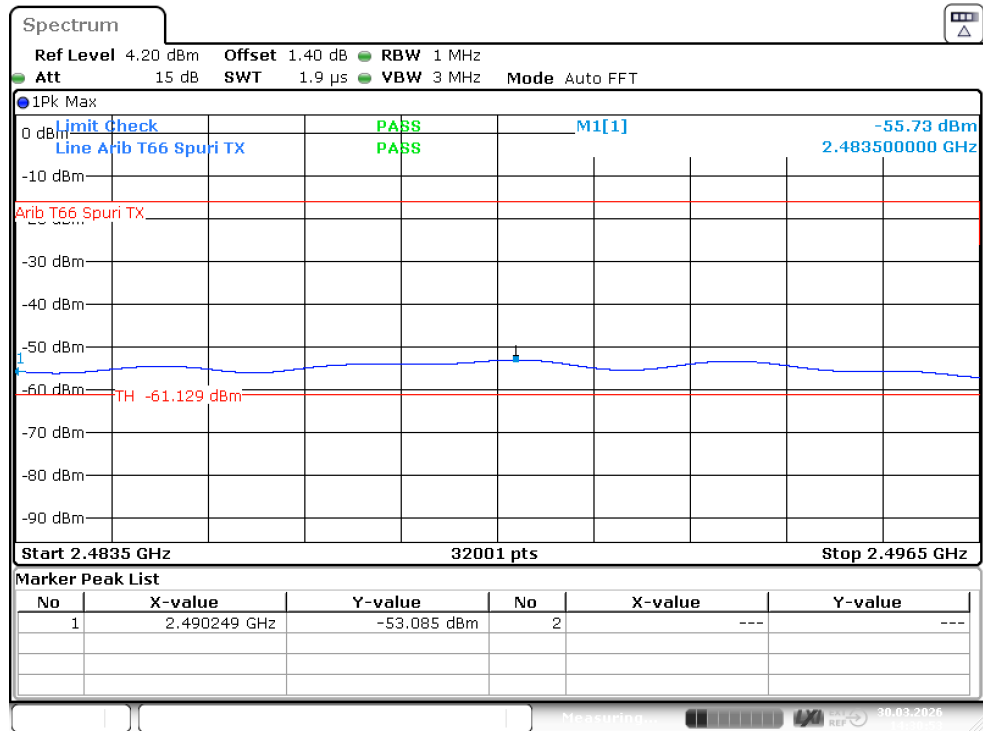
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = mid channel, Voltage = normal
(S01_AN01)



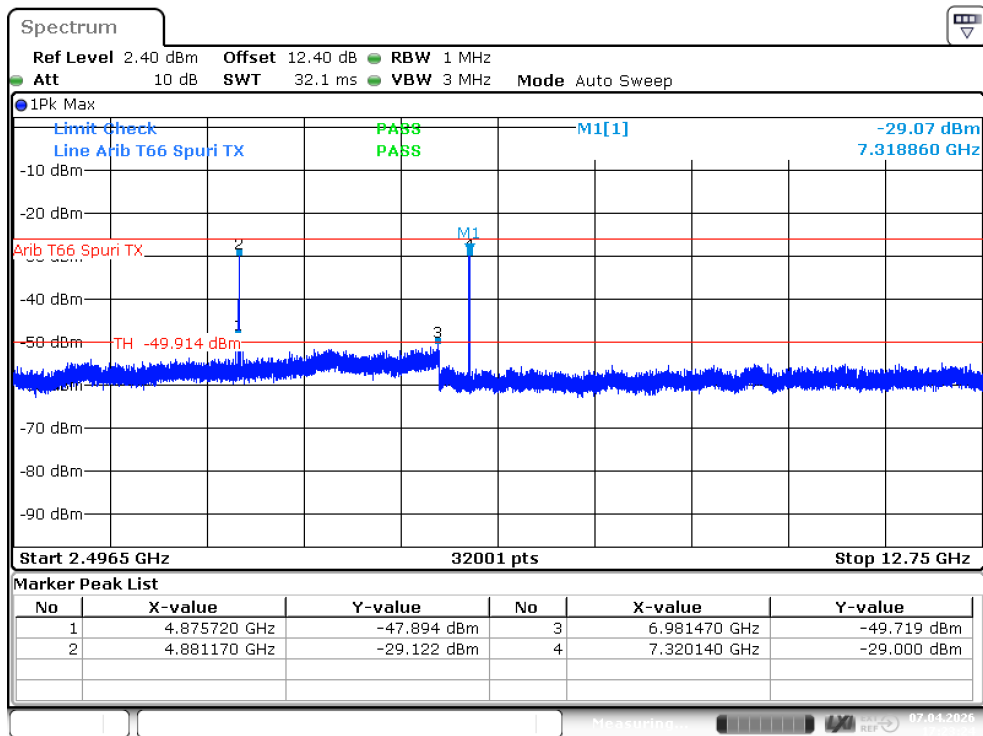
Date: 30.MAR.2026 14:25:29



Date: 30.MAR.2026 14:26:21

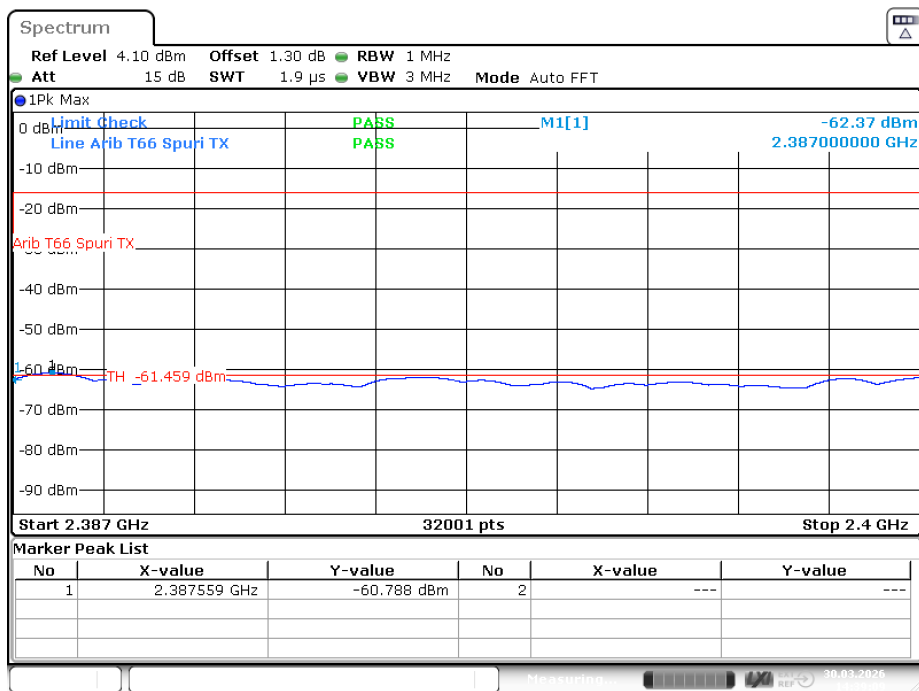
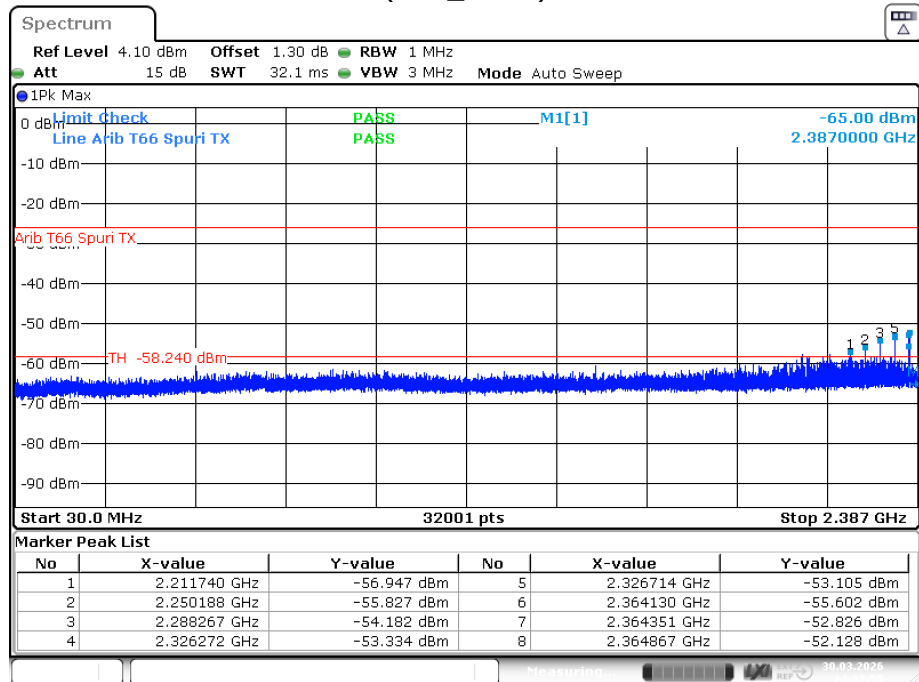


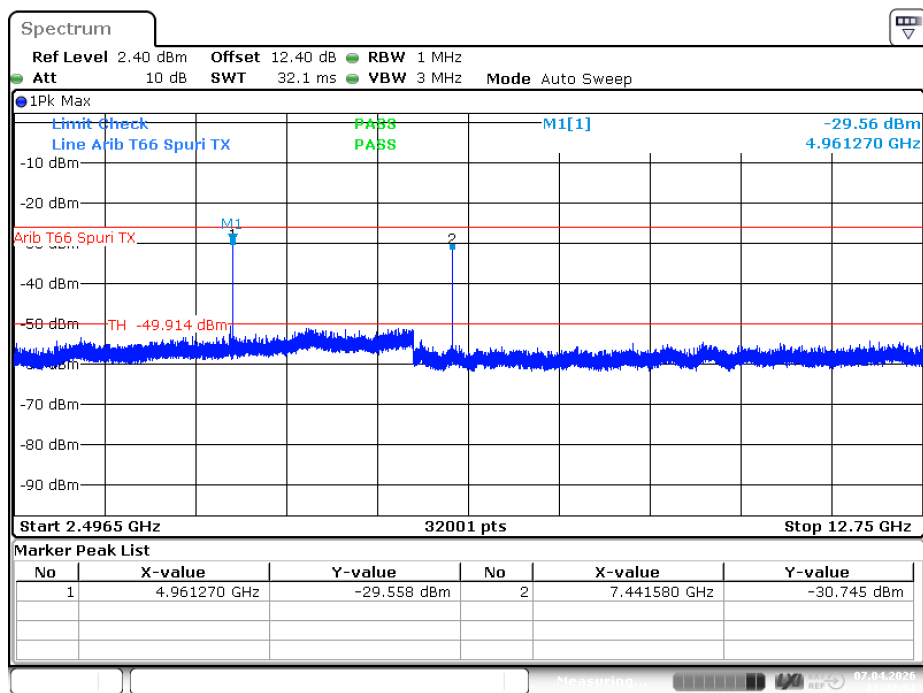
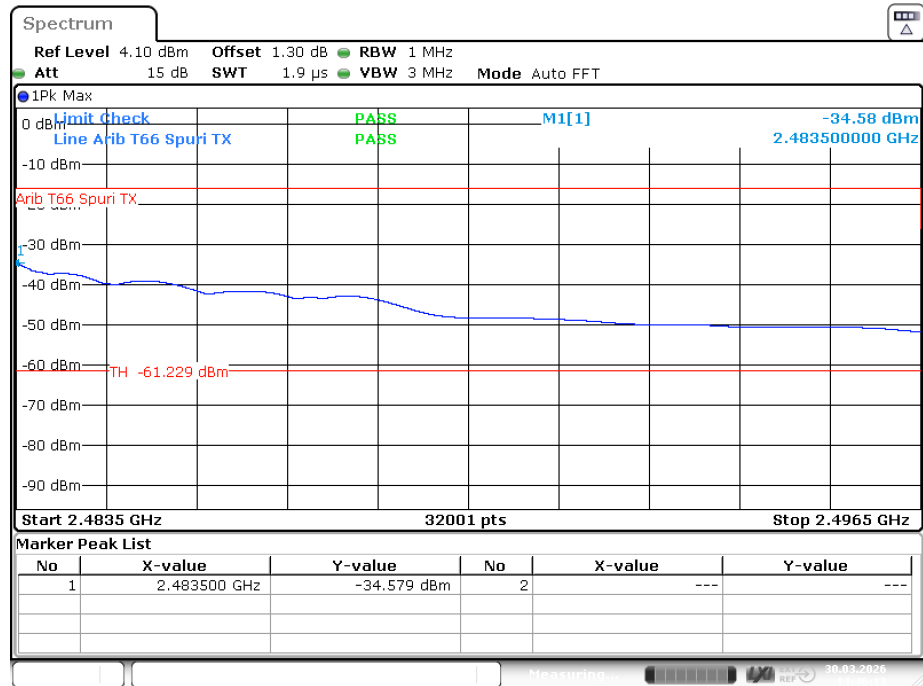
Date: 30.MAR.2026 14:30:53



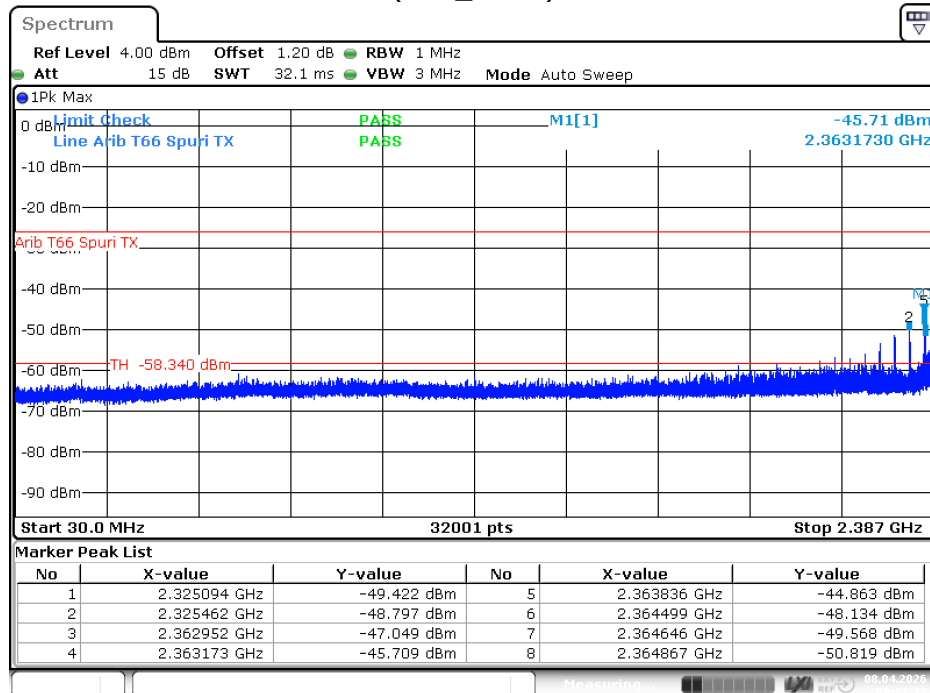
Date: 7.APR.2026 17:23:24

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = high channel, Voltage = normal
(S01_AN01)

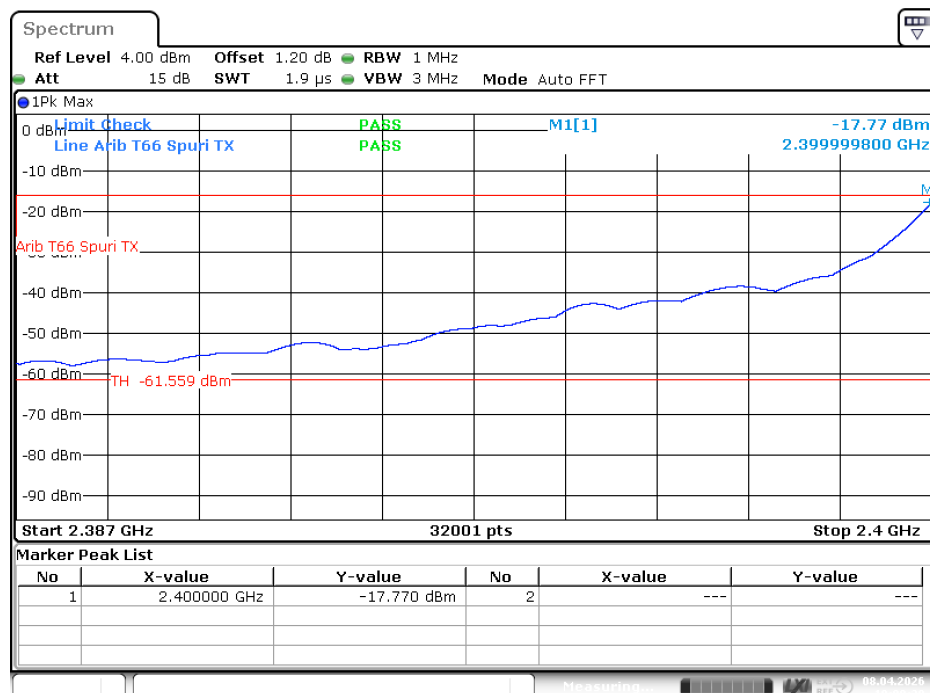




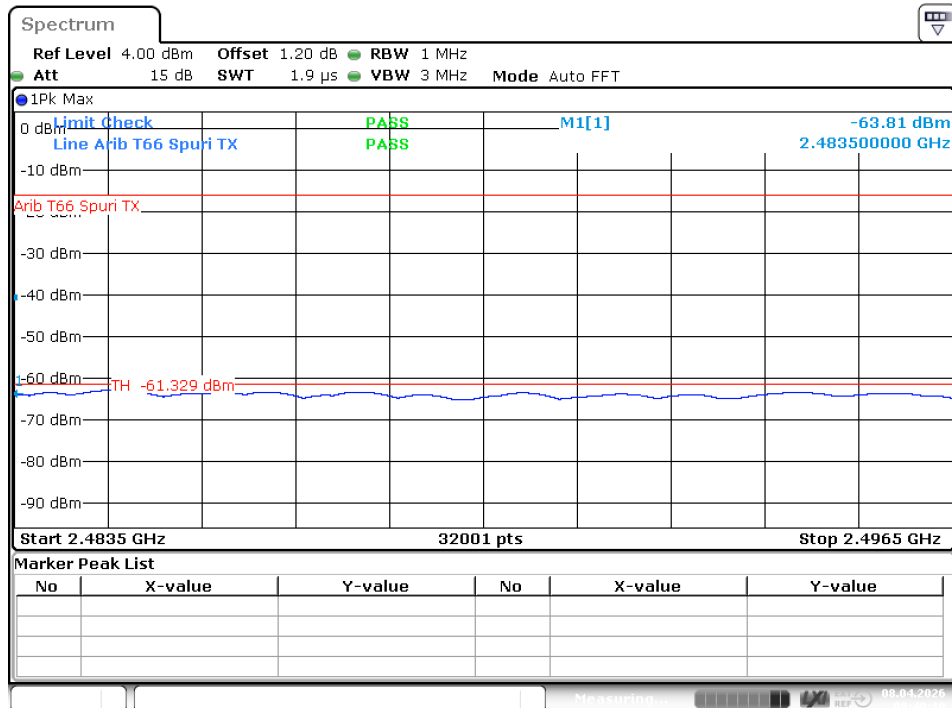
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = low channel, Voltage = high (S01_AN01)



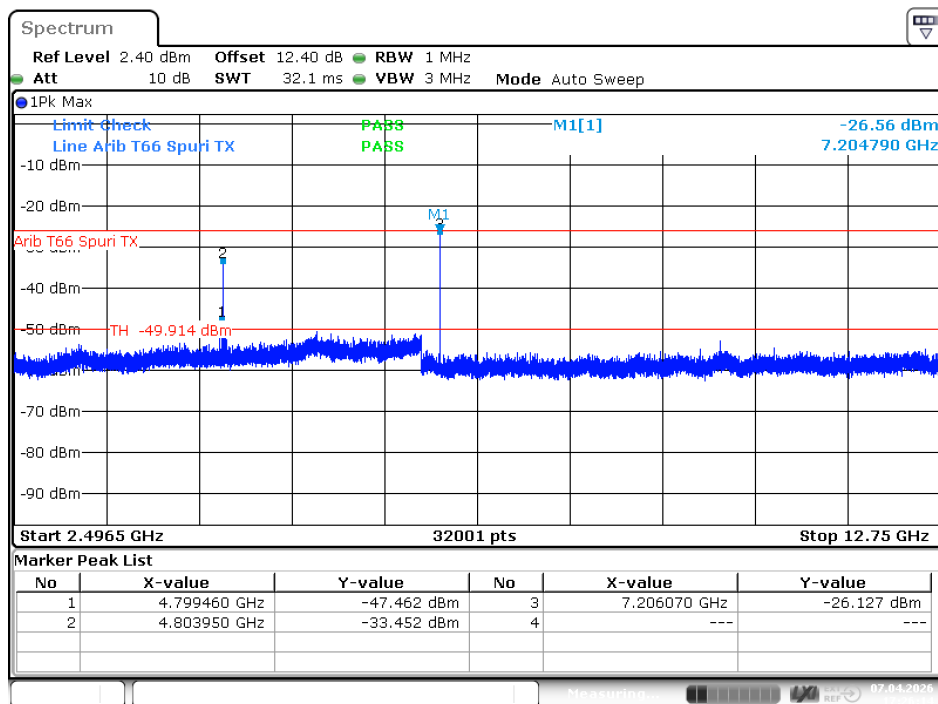
Date: 8.APR.2026 09:27:33



Date: 8.APR.2026 10:00:20

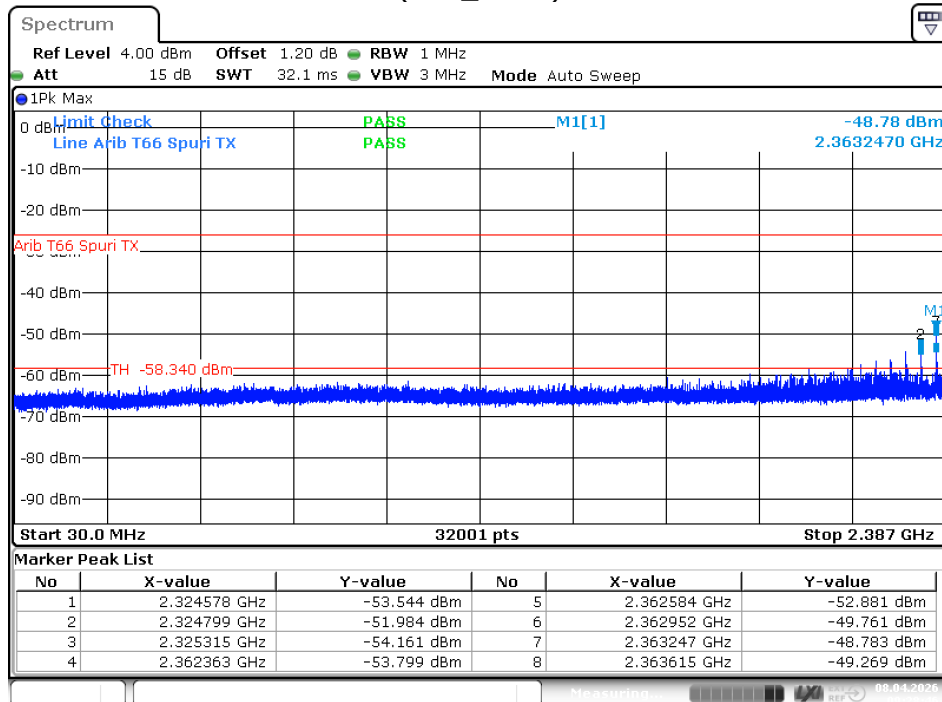


Date: 8.APR.2026 09:49:19

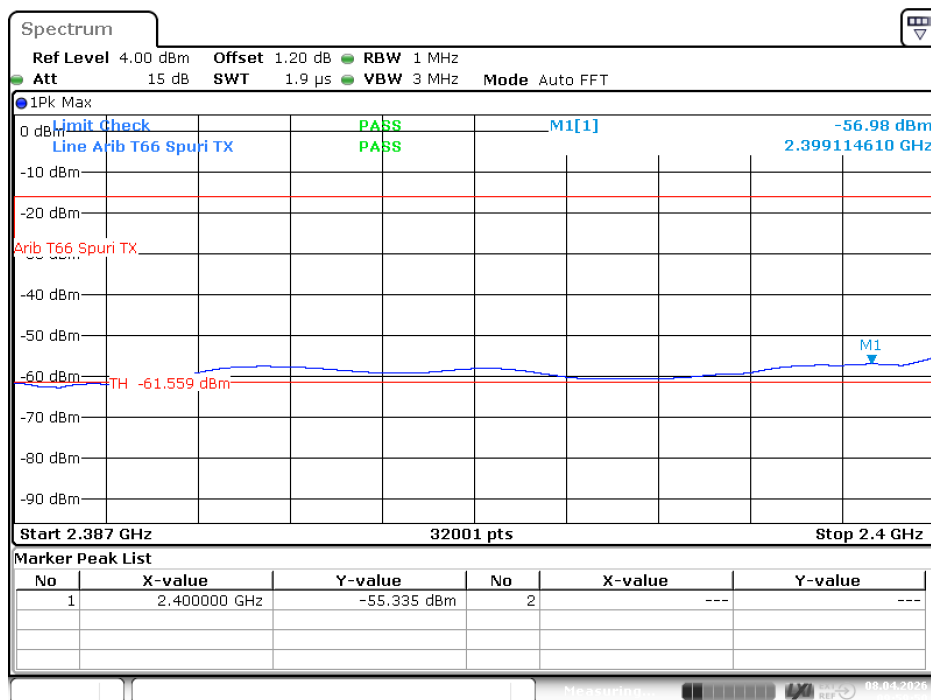


Date: 7.APR.2026 17:26:14

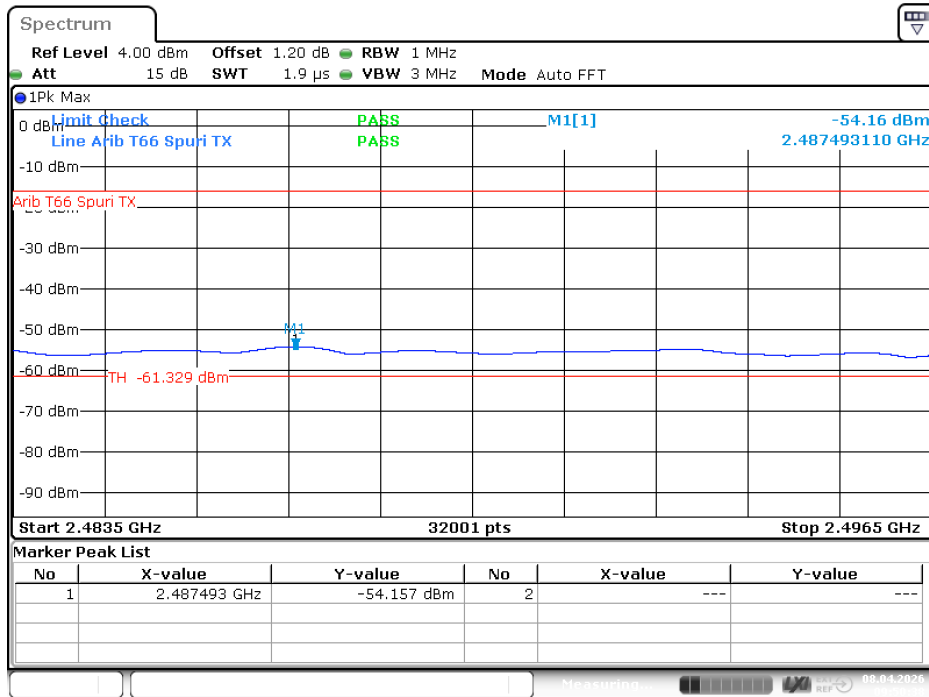
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = mid channel, Voltage = high
(S01_AN01)



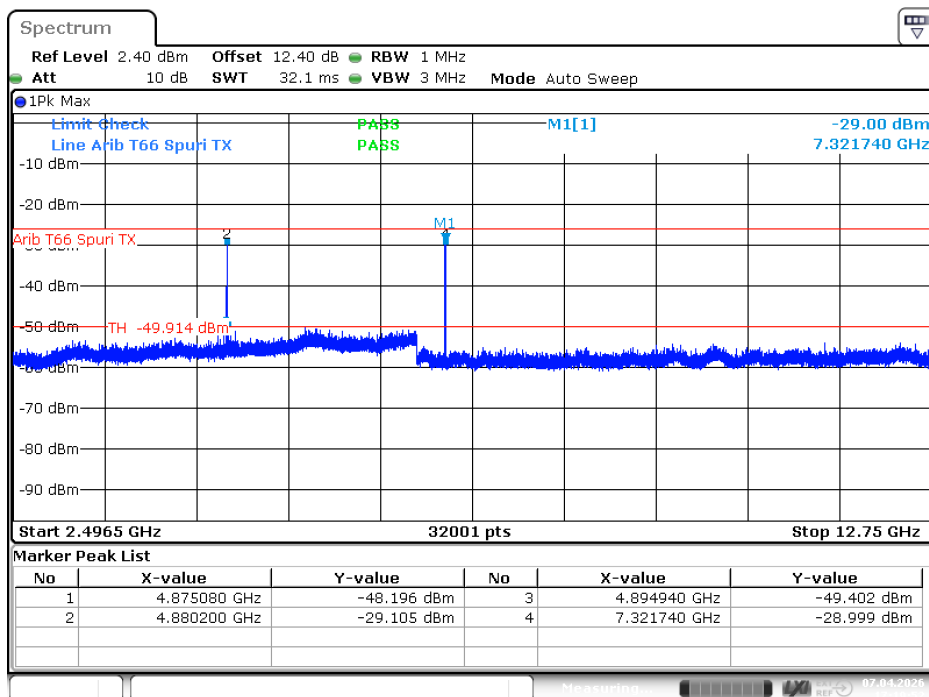
Date: 8.APR.2026 09:28:46



Date: 8.APR.2026 09:59:50

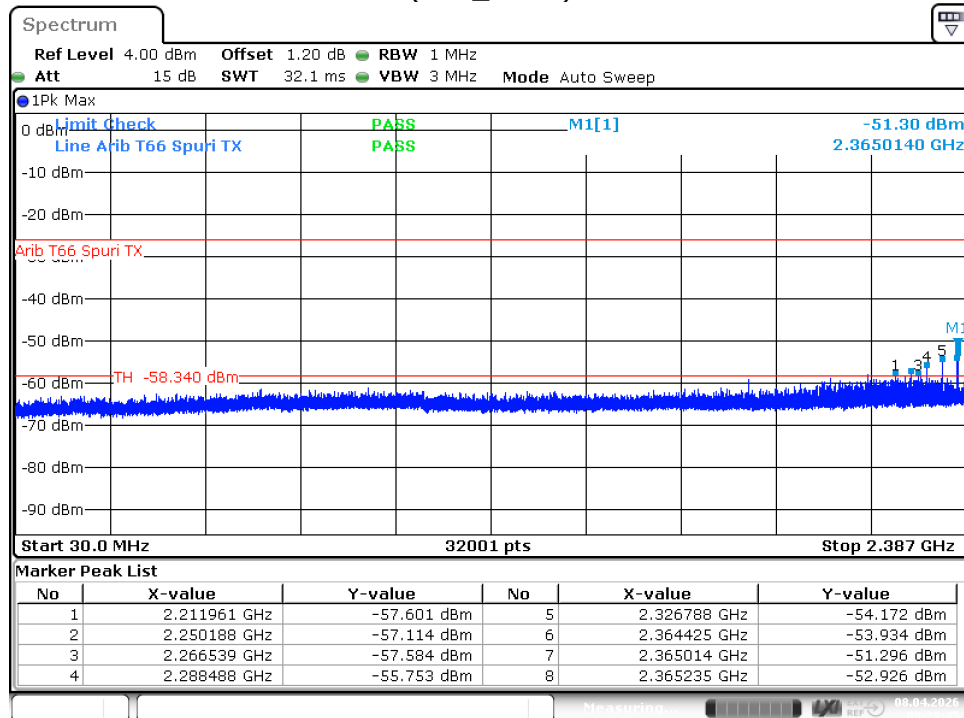


Date: 8.APR.2026 09:50:38

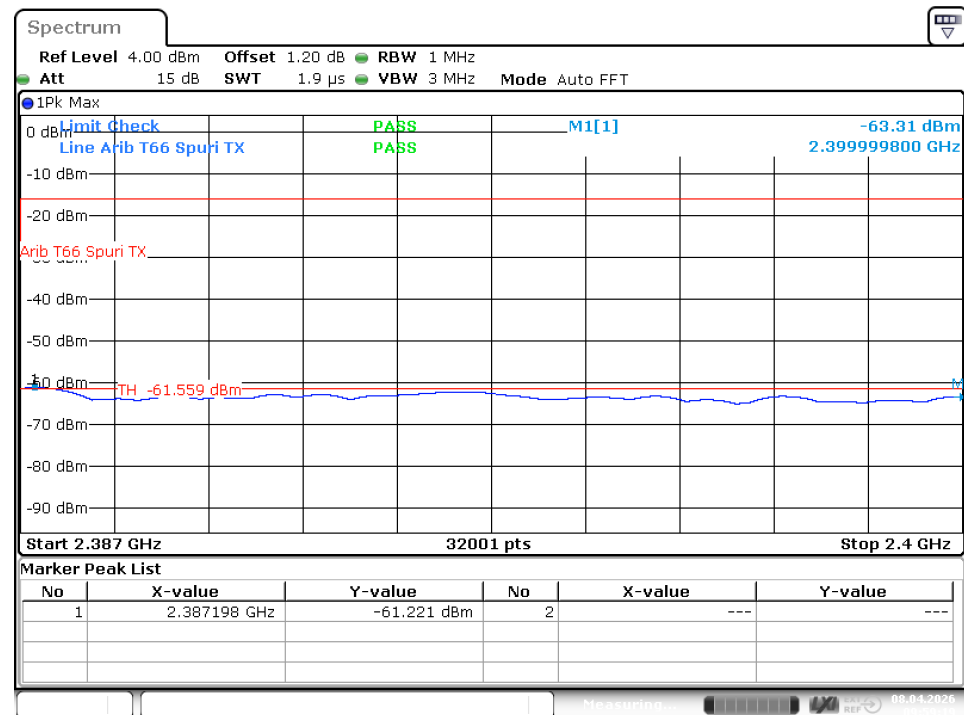


Date: 7.APR.2026 17:19:52

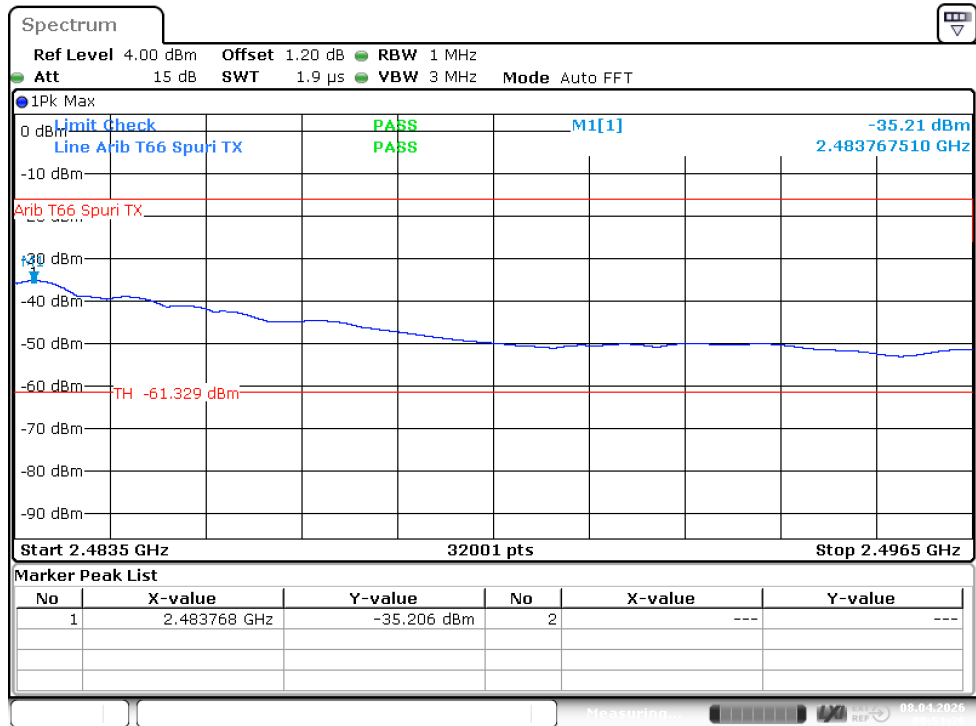
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = high channel, Voltage = high (S01_AN01)



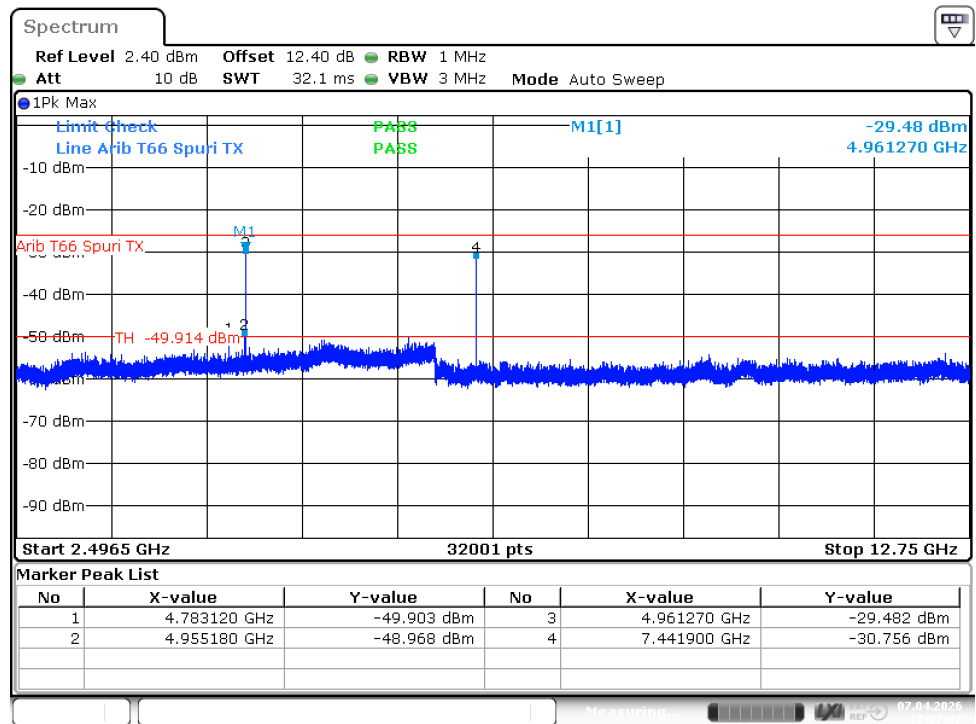
Date: 8.APR.2026 09:29:45



Date: 8.APR.2026 09:59:19



Date: 8.APR.2026 09:51:26



Date: 7.APR.2026 17:27:06

TEST EQUIPMENT USED:

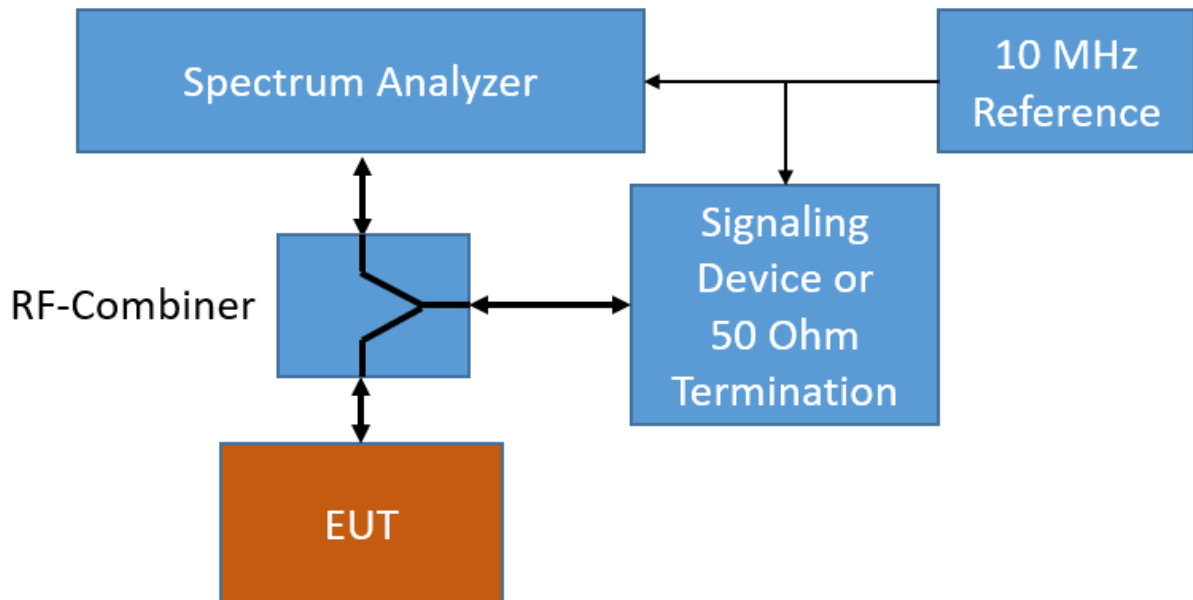
- Radio Lab

6.5 Occupied Bandwidth

CLAUSE RE: 6

Test Setup:

The test was performed with the following setup:



Measurement settings:

Bluetooth Classic max. number of channels / WLAN devices:

- Start Frequency: 2399 MHz
- Stop Frequency: 2484.5 MHz
- RBW: 100 kHz
- VBW: 100 kHz
- Detector: Max Peak
- Swepttime: coupled
- Trace: Maxhold
- Allow the trace to stabilize
- 99% BW: Marker → Menu "←" → OCCUPIED PWR BANDW
- POWER MEAS SETTING: → % POWER BANDWIDTH → 99 %

Bluetooth Classic Single Channel / Bluetooth Low Energy:

- Center: acc. TX – frequency
- Span: 3 MHz
- RBW: 10 kHz
- VBW: 10 kHz
- Detector: Max Peak
- Sweeptime: coupled
- Trace: Maxhold
- Allow the trace to stabilize
- 99% BW: Marker → Menu “←” → OCCUPIED PWR BANDW
- POWER MEAS SETTING: → % POWER BANDWIDTH → 99 %

6.5.1 Limits: T66/3.2 (7)

OT Article Annex 2 30

State	Occupied Bandwidth
FH systems	≤ 83.5 MHz
DS system, OFDM	≤ 26 MHz ≤ 38 MHz
Other systems	≤ 26 MHz

6.5.2 Test Case Details:

Ambient temperature: 22 °C

Relative humidity: 45 %

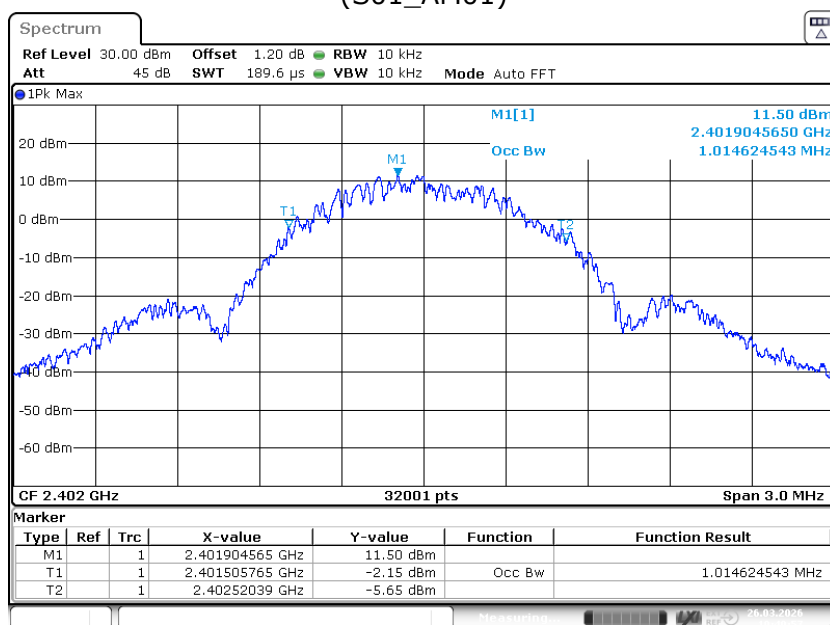
Radio Technology	Channel	Voltage	Occupied Channel Bandwidth [MHz]	Margin to Limit [MHz]
BT LE 1 Mbps	Lowest	Low	1.0	25.0
BT LE 1 Mbps	Mid	Low	1.0	25.0
BT LE 1 Mbps	Highest	Low	1.0	25.0
BT LE 1 Mbps	Lowest	Normal	1.0	25.0
BT LE 1 Mbps	Mid	Normal	1.0	25.0
BT LE 1 Mbps	Highest	Normal	1.0	25.0
BT LE 1 Mbps	Lowest	High	1.0	25.0
BT LE 1 Mbps	Mid	High	1.0	25.0
BT LE 1 Mbps	Highest	High	1.1	24.9
BT LE 2 Mbps	Lowest	Low	2.1	23.9
BT LE 2 Mbps	Mid	Low	2.0	24.0
BT LE 2 Mbps	Highest	Low	2.1	23.9
BT LE 2 Mbps	Lowest	Normal	2.1	23.9
BT LE 2 Mbps	Mid	Normal	2.1	23.9
BT LE 2 Mbps	Highest	Normal	2.0	24.0
BT LE 2 Mbps	Lowest	High	2.0	24.0
BT LE 2 Mbps	Mid	High	2.0	24.0
BT LE 2 Mbps	Highest	High	2.1	23.9

Comments:

- All tests are performed under normal temperature conditions.

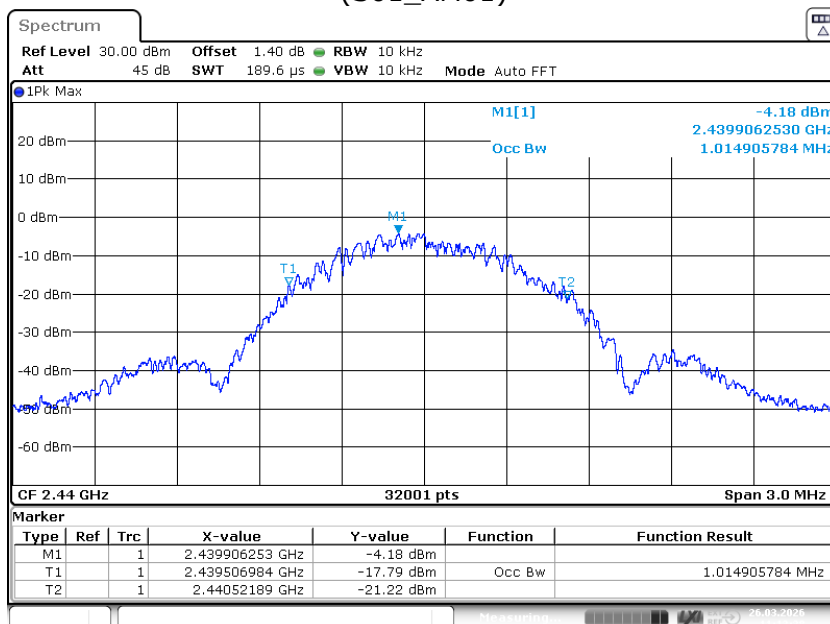
6.5.3 Measurement plots:

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = low channel, Voltage = low (S01_AM01)



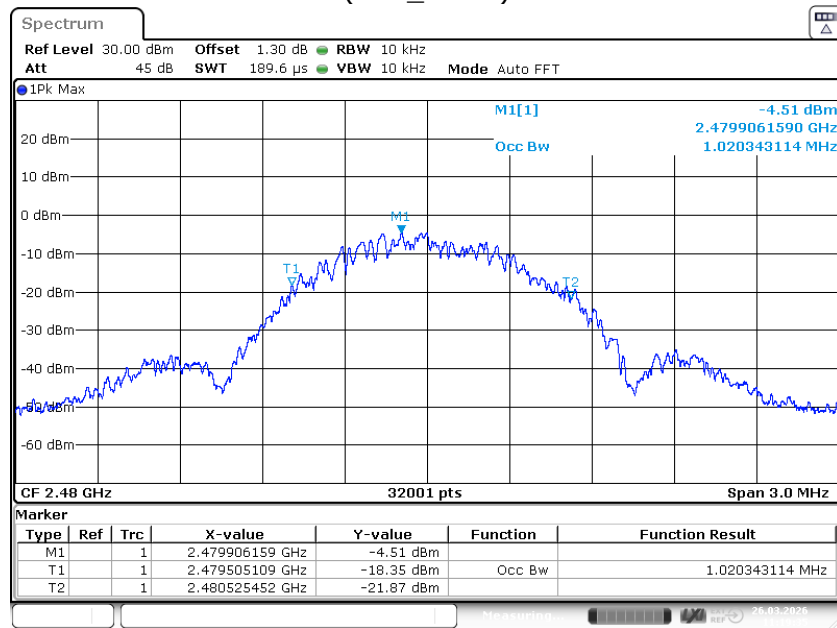
Date: 26.MAR.2026 10:40:57

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = low (S01_AM01)

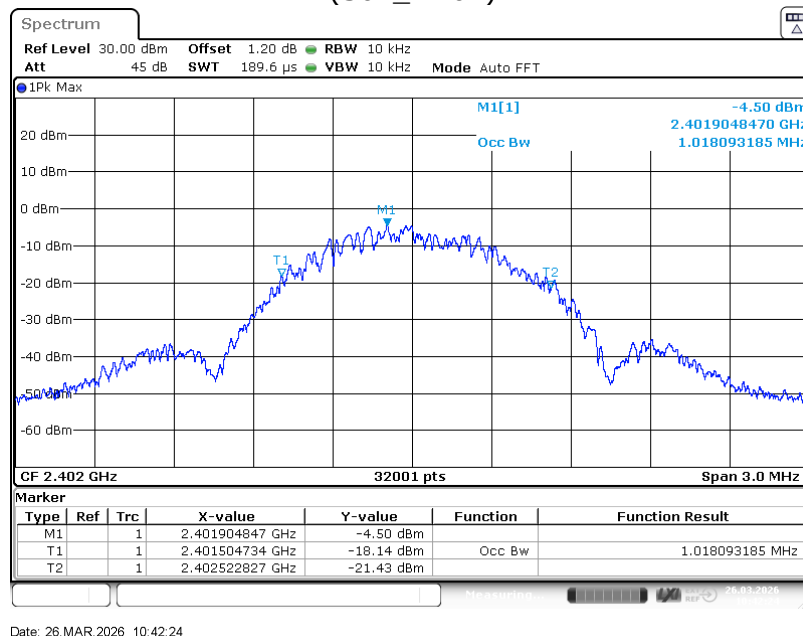


Date: 26.MAR.2026 11:13:37

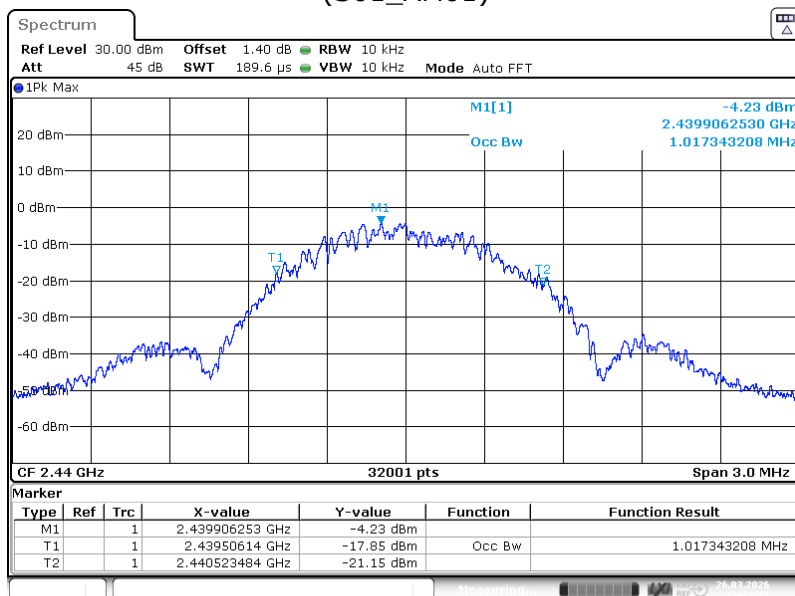
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = high channel, Voltage = low
(S01_AM01)



Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = low channel, Voltage = normal
(S01_AM01)

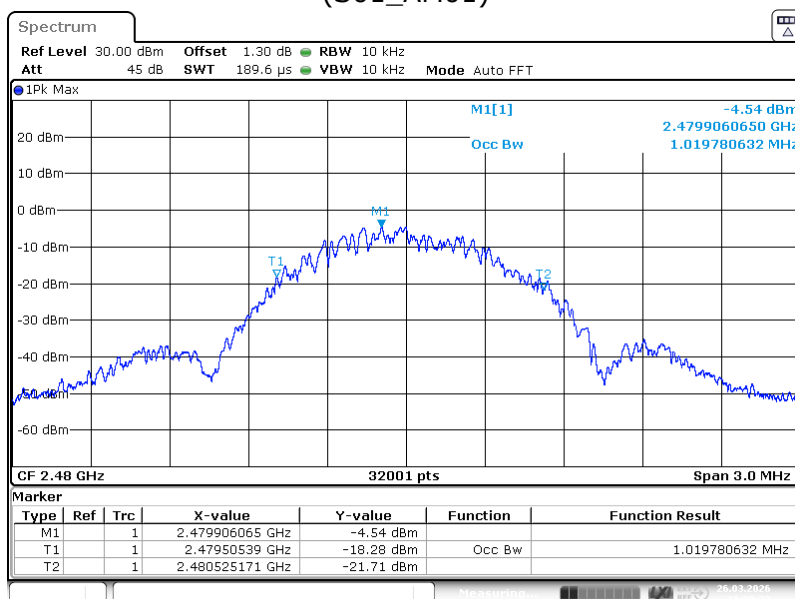


Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = normal
(S01_AM01)



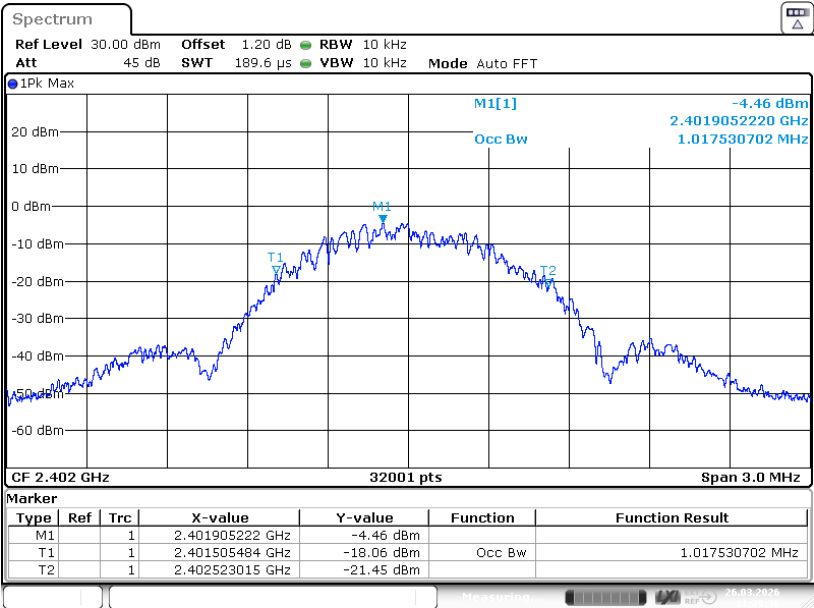
Date: 26.MAR.2026 11:14:33

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = high channel, Voltage = normal
(S01_AM01)

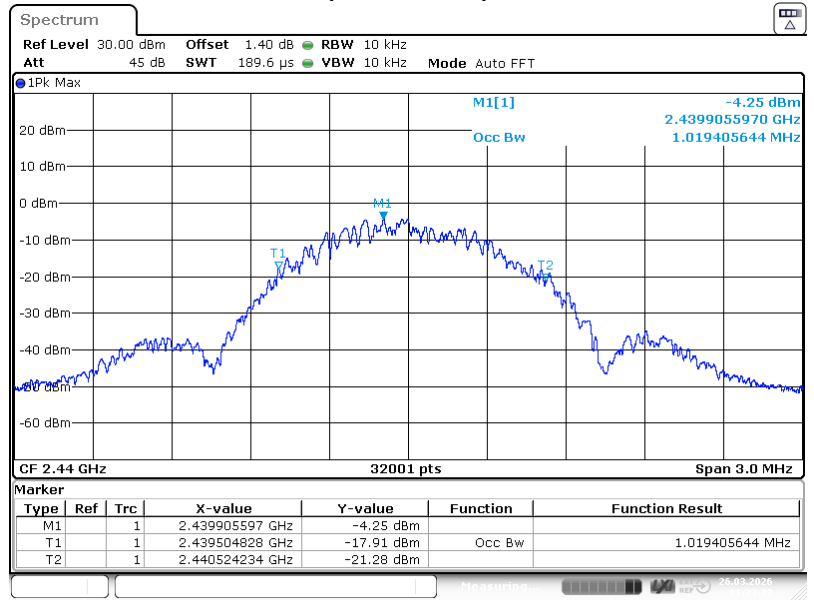


Date: 26.MAR.2026 11:20:23

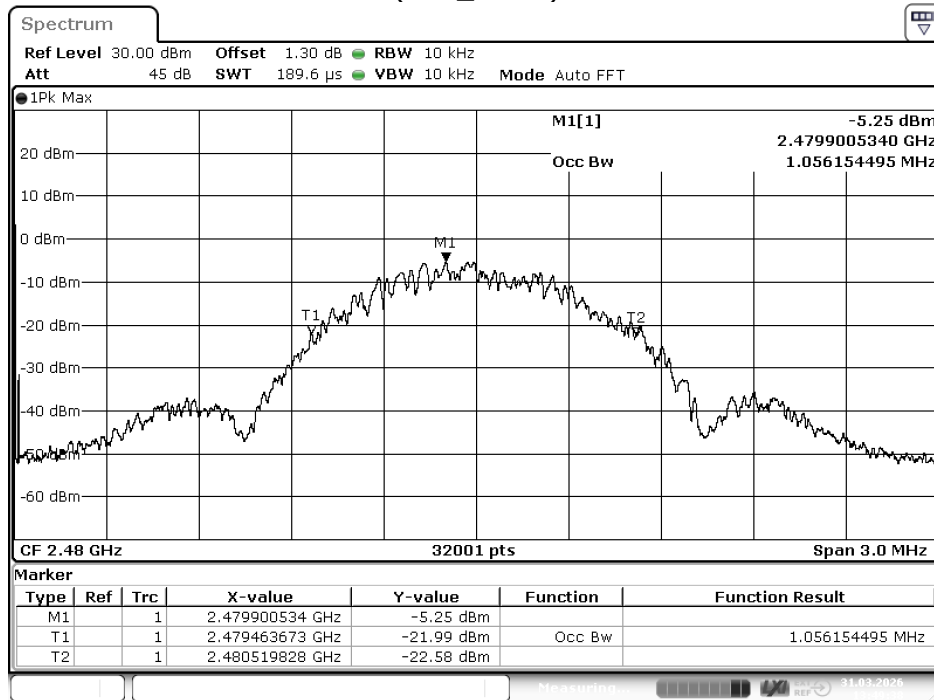
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = low channel, Voltage = high (S01_AM01)



Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = high (S01_AM01)

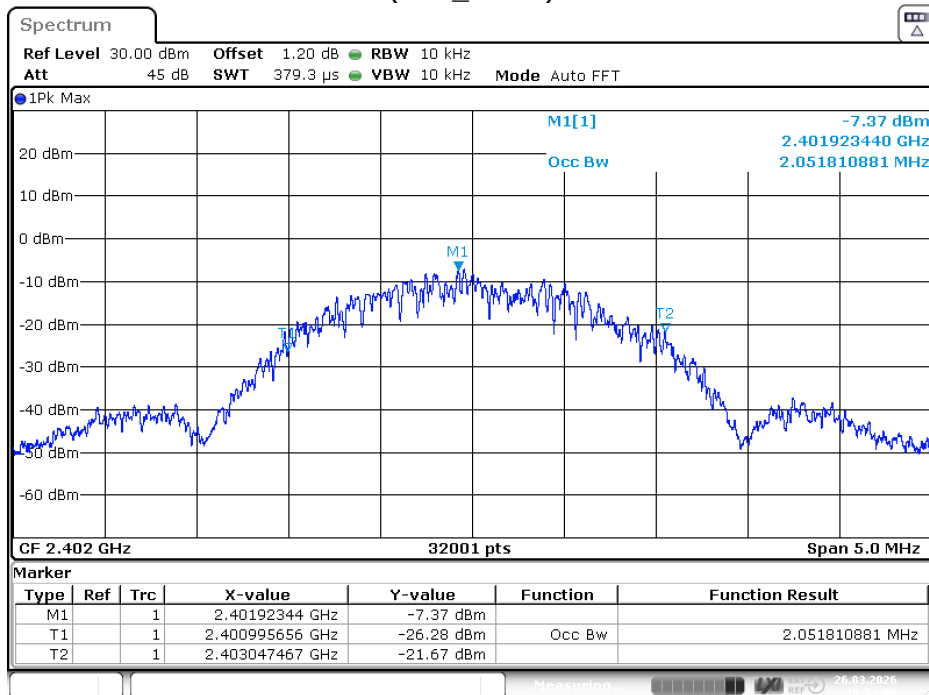


Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = high channel, Voltage = high
(S01_AM01)



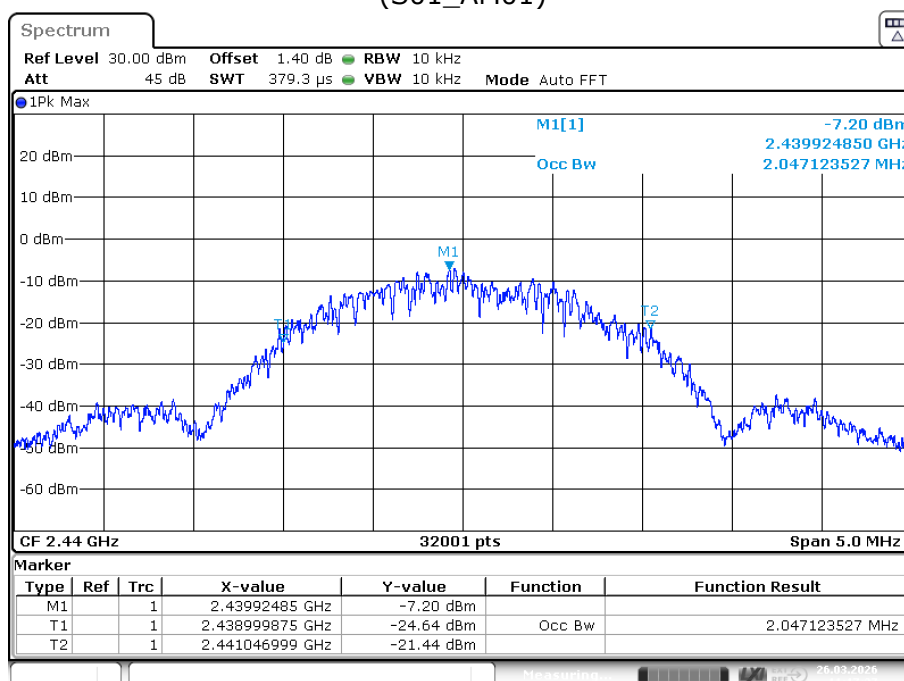
Date: 31.MAR.2026 13:49:39

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = low channel, Voltage = low
(S01_AM01)



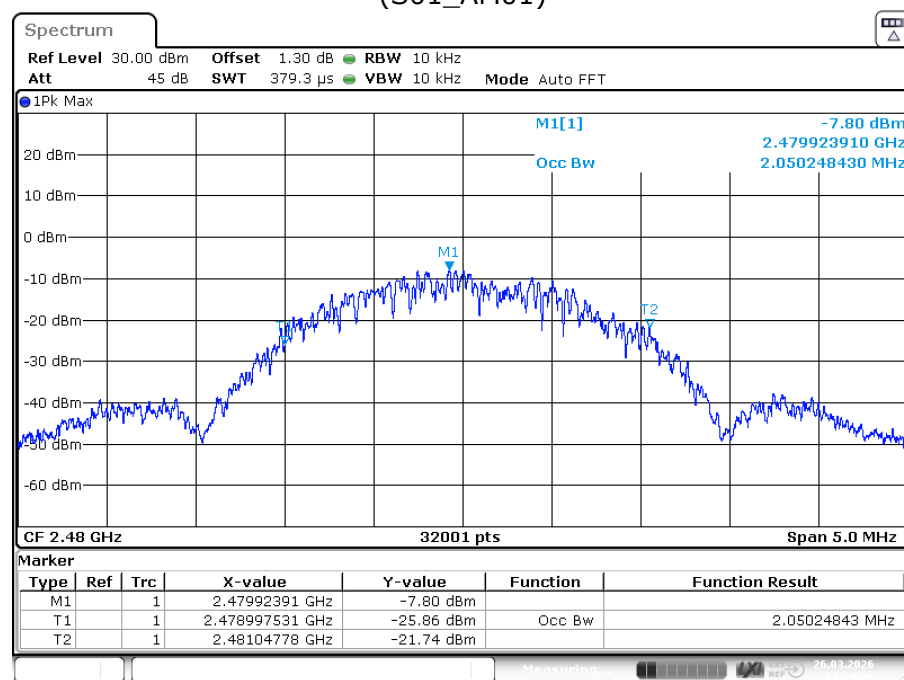
Date: 26.MAR.2026 10:53:05

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = low
(S01_AM01)



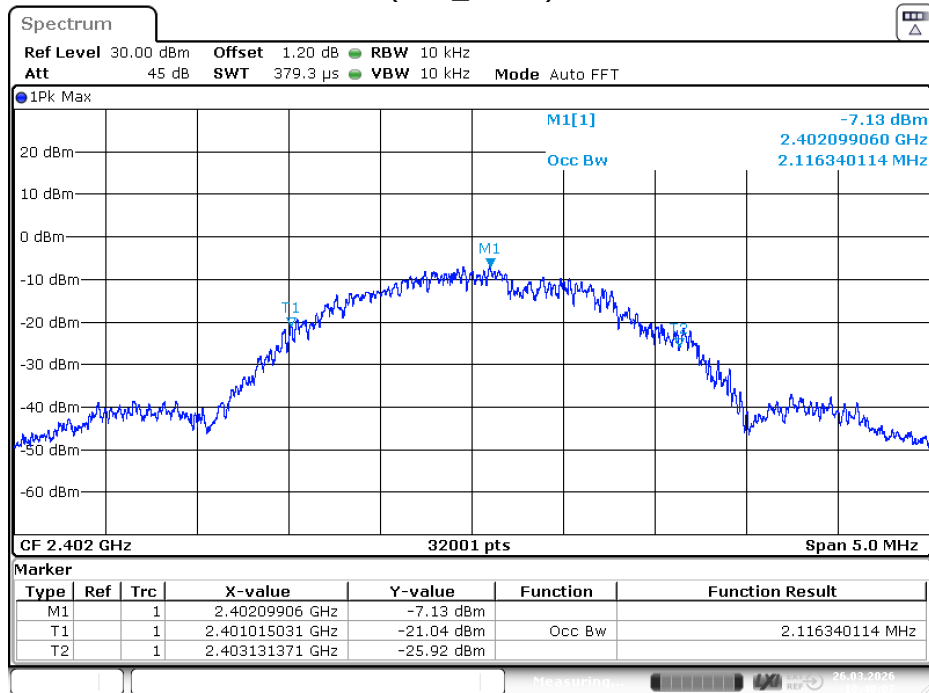
Date: 26.MAR.2026 11:17:27

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = high channel, Voltage = low
(S01_AM01)



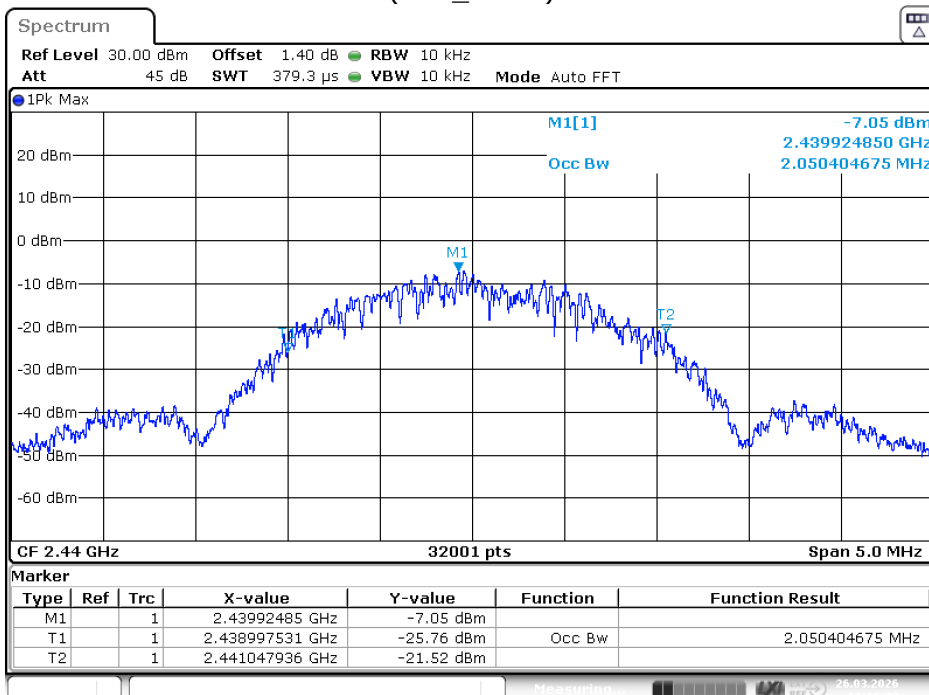
Date: 26.MAR.2026 11:24:25

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = low channel, Voltage = normal
(S01_AM01)



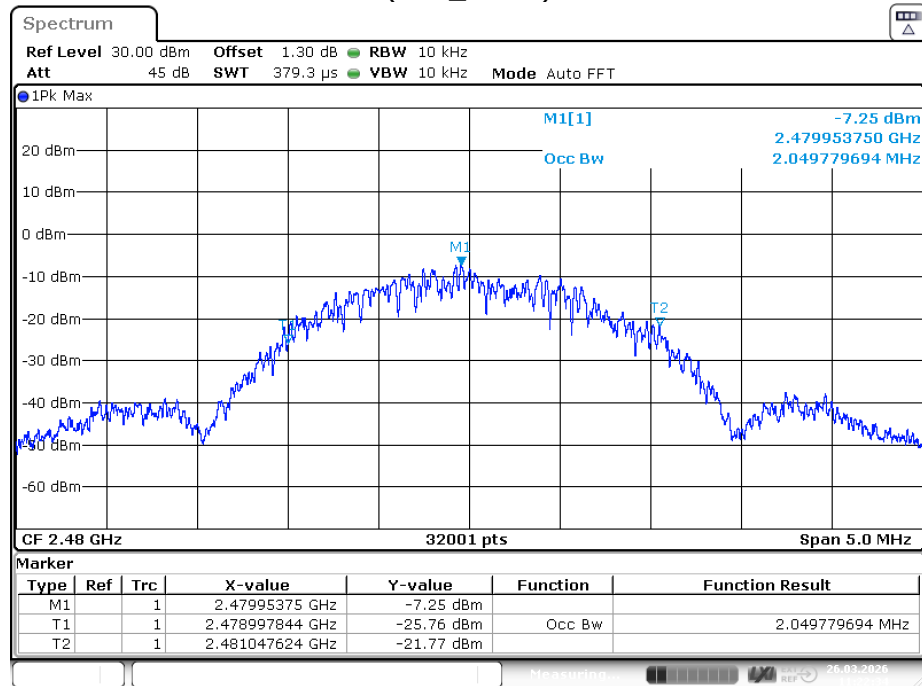
Date: 26.MAR.2026 10:48:06

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 1 Mbps, Operating Frequency = mid channel, Voltage = normal
(S01_AM01)

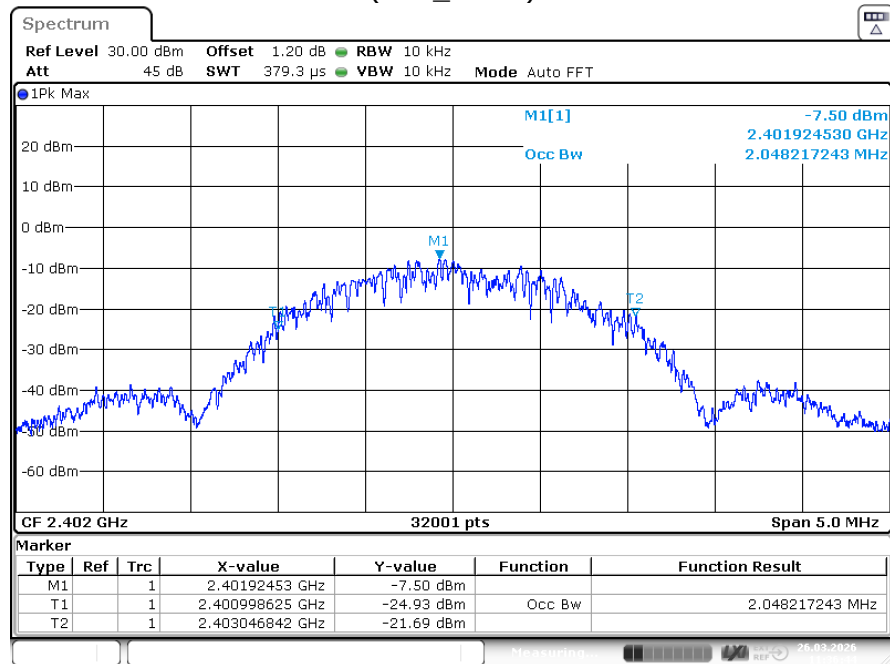


Date: 26.MAR.2026 11:16:23

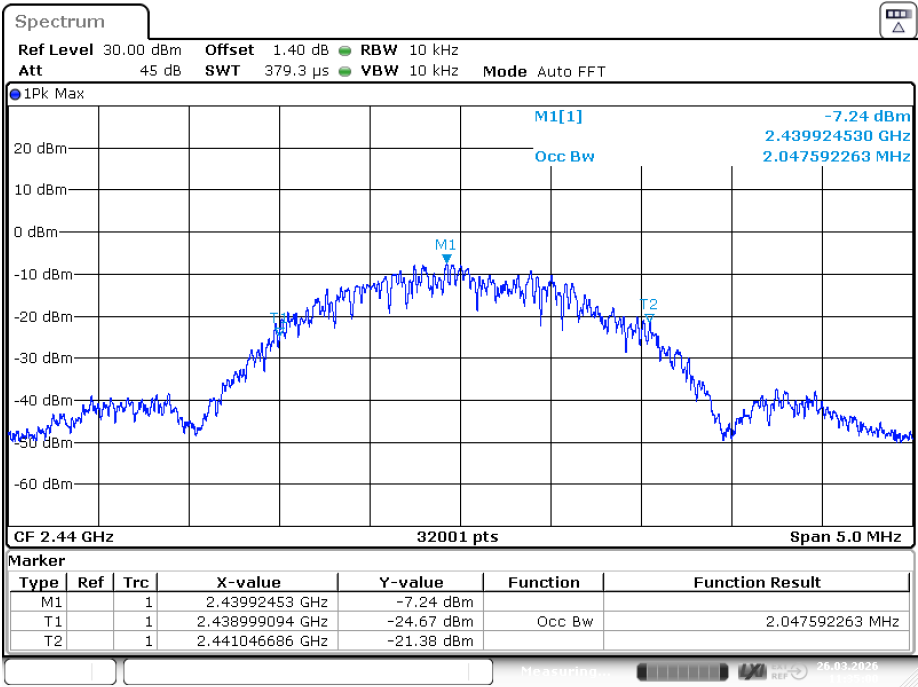
Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = high channel, Voltage = normal
(S01_AM01)



Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = low channel, Voltage = high
(S01_AM01)

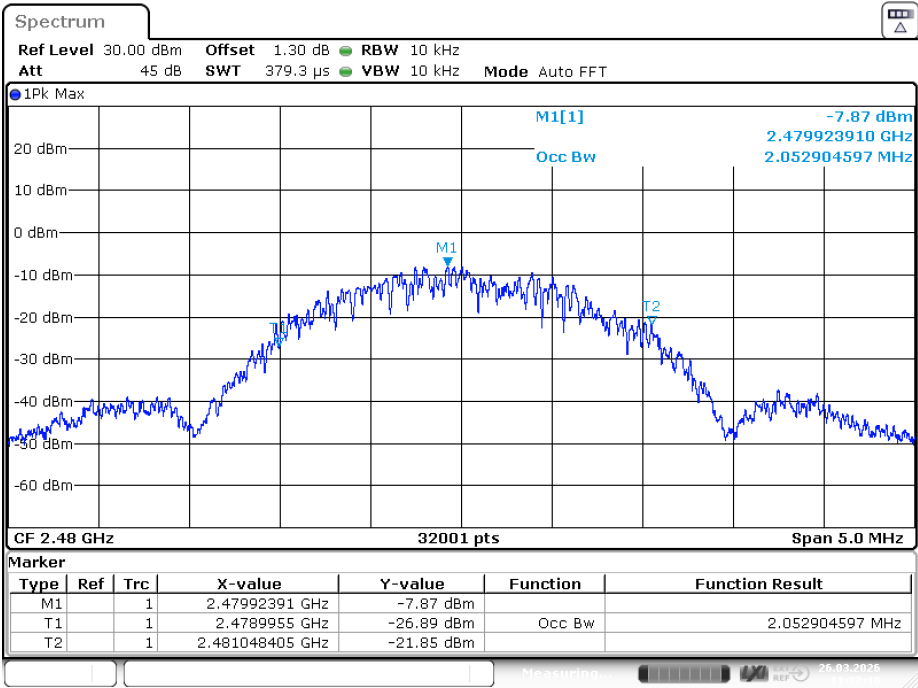


Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = mid channel, Voltage = high
(S01_AM01)



Date: 26.MAR.2026 11:35:00

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE 2 Mbps, Operating Frequency = high channel, Voltage = high
(S01_AM01)



Date: 26.MAR.2026 11:27:10

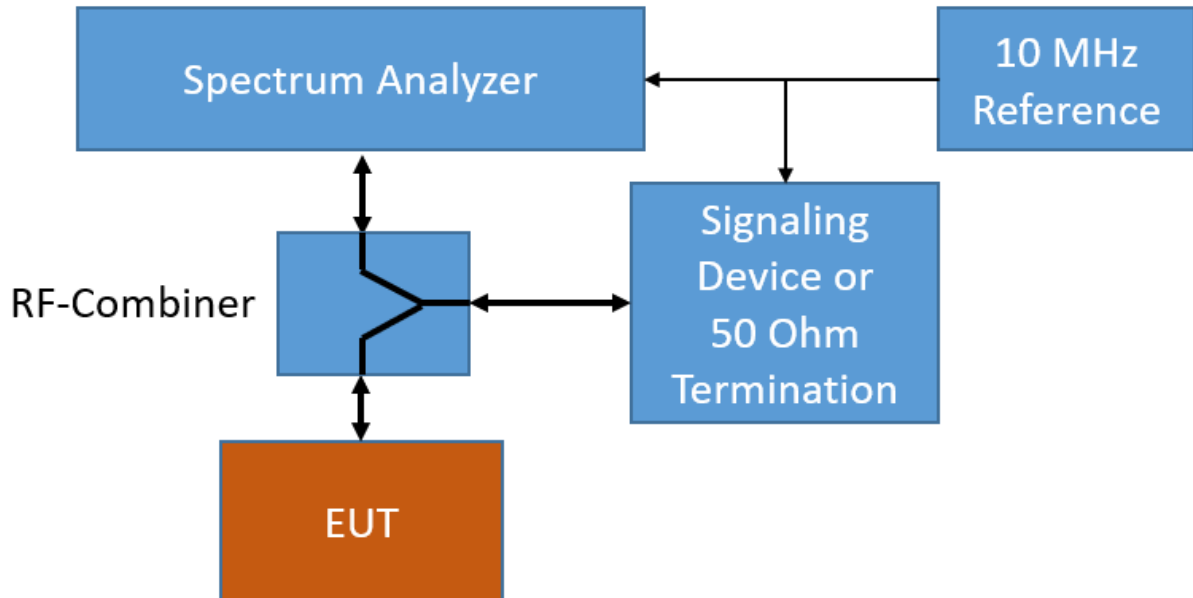
TEST EQUIPMENT USED:
- Radio Lab

6.6 Secondary Radiated Emissions

CLAUSE RE: 24

Test Setup:

The test was performed with the following setup:



Measurement settings:

- Measurement is performed in one sweep
Sweep: 30 – 12750 MHz → Limit -26 dBm
- RBW: 1 MHz
- VBW: 3 MHz
- Detector: Max Peak
- Sweeptime: coupled
- Trace: Maxhold
- Allow the trace to stabilize
- Set markers to peak values

6.6.1 Limits: T66/3.3 (1)

OT Article 24 2

State	Frequency range	Limit [dBm/MHz]
All systems - Receiver Operating	30 MHz ≤ f ≤ 1000 MHz 1000 MHz < f ≤ 12.75 GHz	-54 dBm or 4 nW -47 dBm or 20 nW

6.6.2 Test Case Details:

Ambient temperature: 24 °C

Relative humidity: 45 %

Low Channel

Normal Voltage

Radio Technology: BT LE

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4805.6	-50.1	9.8	1000	20.0	10.2

Mid Channel

Normal Voltage

Radio Technology: BT LE

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4881.5	-50.6	8.7	1000	20.0	11.3

High Channel

Normal Voltage

Radio Technology: BT LE

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4961.4	-51.4	7.3	1000	20.0	12.7

Low Channel
 Low Voltage
 Radio Technology: BT LE

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4805.6	-50.2	9.5	1000	20.0	10.5

Mid Channel
 Low Voltage
 Radio Technology: BT LE

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4881.5	-50.6	8.6	1000	20.0	11.4

High Channel
 Low Voltage
 Radio Technology: BT LE

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4961.4	-51.4	7.3	1000	20.0	12.7

Low Channel
 High Voltage
 Radio Technology: BT LE

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4805.6	-50.0	9.9	1000	20.0	10.1

Mid Channel
 High Voltage
 Radio Technology: BT LE

Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4881.5	-50.6	8.7	1000	20.0	11.3

High Channel
 High Voltage
 Radio Technology: BT LE

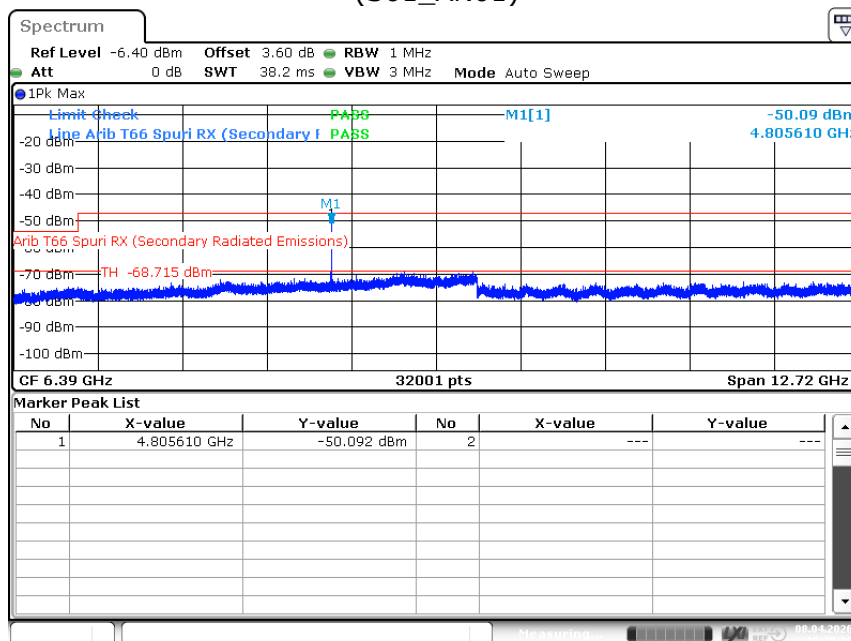
Frequency [MHz]	Spurious Level Peak Detector [dBm]	Spurious Level Peak Detector [nW]	RBW [kHz]	Limit [nW]	Margin to Limit [nW]
4961.8	-51.4	7.2	1000	20.0	12.8

Comments:

- At least the highest value for each limit range is given in the tables above.

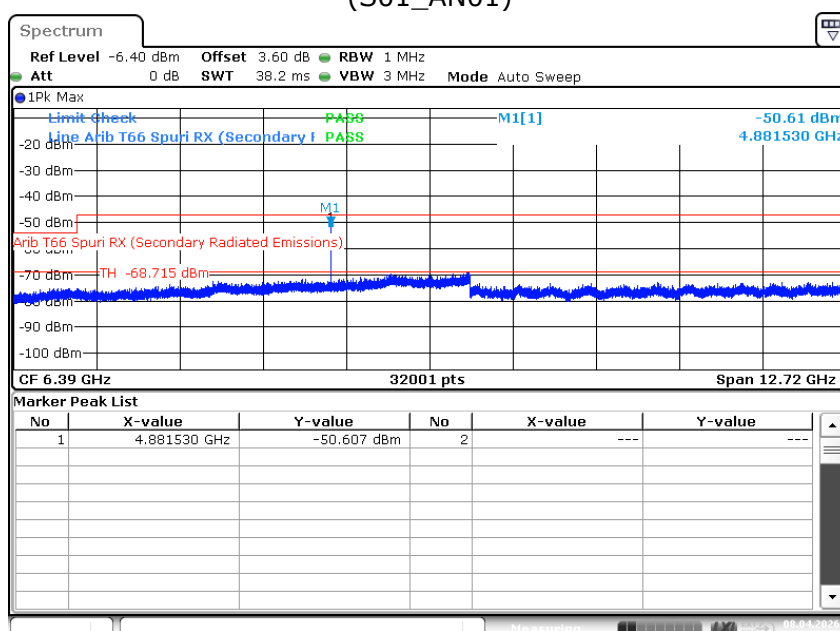
6.6.3 Measurement plots:

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE, Operating Frequency = low channel, Voltage = normal
(S01_AN01)



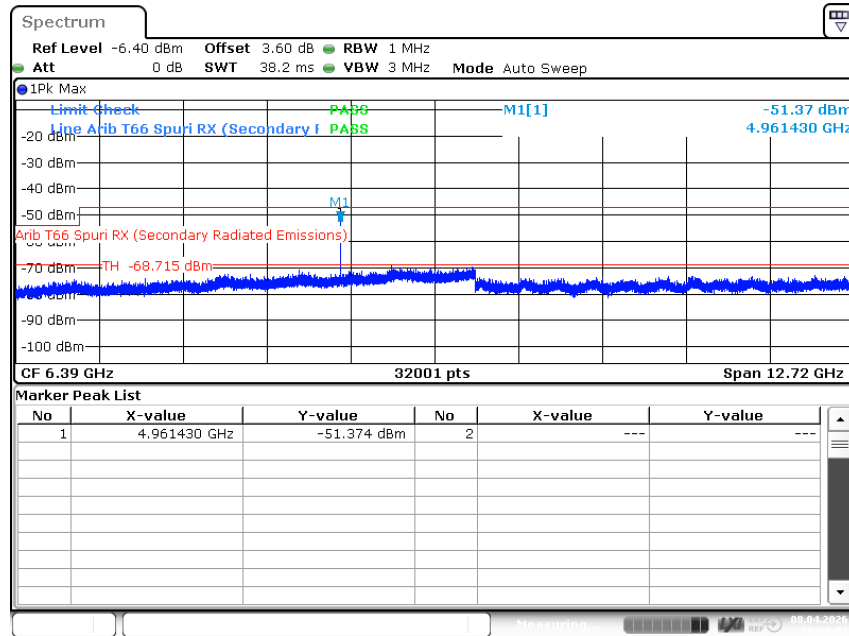
Date: 8.APR.2026 10:28:18

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE, Operating Frequency = mid channel, Voltage = normal
(S01_AN01)



Date: 8.APR.2026 10:29:25

Technology Group = Bluetooth Low Energy, Radio Technology = BT LE, Operating Frequency = high channel, Voltage = normal
(S01_AN01)



Date: 8.APR.2026 10:30:51

TEST EQUIPMENT USED:
- Radio Lab

6.7 Antenna Gain

CLAUSE RE: 49-20

Test Setup:

The results of test case Antenna Power are used together with the provided antenna pattern to calculate the combined power value. See test case Antenna Power for details.

6.7.1 Limits: T66/3.6 (2) OT Article 49-20

State	Antenna Gain at max. permitted antenna power (dBi)	Max. E.I.R.P output power	
For omnidirectional antennas	< 2.14	FH systems, hybrid, FH-OFDM Frequency range 2400 – 2483.5 MHz	$\leq +6.91$ dBm / MHz (RMS)
		DS system, OFDM Frequency range 2400 – 2483.5 MHz	OBW ≤ 26 MHz : $\leq +12.14$ dBm / MHz (RMS) OBW ≤ 38 MHz: $\leq +9.13$ dBm / MHz (RMS)
		Other digital methods	$\leq +12.14$ dBm (RMS)
For directional antennas	>2.14 - 12.14 depending on beam angle	Values of omnidirectional antenna plus 0 – 10 dBm depending on beam angle	

6.7.2 Test Case Details:

Radio Technology	Highest E.I.R.P. Antenna Power over all Modes [dBm / MHz] or for BT LE [dBm]	Maximum allowed Power incl. antenna gain [dBm / MHz] or for BT LE [dBm]	Margin to Limit [dB]
BT LE 1 Mbps	6.2	12.1	5.9
BT LE 2 Mbps	6.1	12.1	6.0

Comments:

- Antenna gain and Pattern were provided by the applicant.

TEST EQUIPMENT USED:

- Radio Lab

6.8 Cabinet

CLAUSE RE: 49-20 TR:
Article 9

Test Setup:

Visual inspection of cabinet by the operator and / or declaration by applicant.

6.8.1 Limits: T66/3.7 (1) OT Article 49-20

State	
For all systems	The radio equipment used shall be housed in a single cabinet that cannot be readily opened. Note, however, that radio equipment meeting the followings need not be housed in a single cabinet: a. Radio equipment meeting the following requirements i) Radio frequency and modulation sections other than antenna system are difficult to open. ii) Identification unit resists removal. b. Radio equipment devices listed below i) Power supply unit, microphone, and earphone ii) Receive-only antenna iii) Control unit, indicators, volume controller, and their equivalents

6.8.2 Test Case Details:

Description of Protection against being opened easily
EUT has soldered shielding

Comments:

- None.

TEST EQUIPMENT USED:

- Radio Lab

7 Test Equipment used for tests

7.1 Test Equipment Hardware

Testing Period 2026-03-26 to 2026-03-30

1 Radio Lab

Conducted Radio Test Lab

Ref. No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
1.1	FSV30	Signal Analyzer 10 Hz - 30 GHz	Rohde & Schwarz	103005	2025-09 (Rohde & Schwarz Messgerätebau GmbH)	2027-09

The calibration interval is the time interval between "Last Calibration" and "Calibration Due"

All listed calibrations in the table below were performed in an ISO 17025 accredited laboratory – accredited by a local accreditation organisation – which is an ILAC member. Therefore, it is a type (c) calibration according to MIC 2003 Radio Law, Article 24-2 (4) 2:

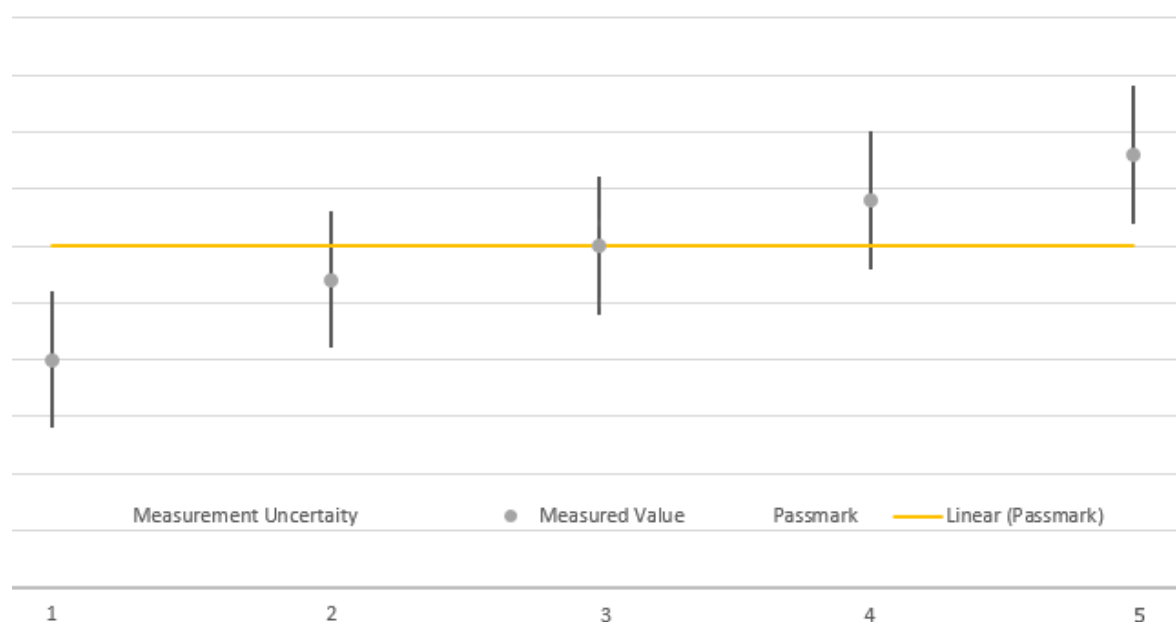
c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).

8 Measurement Uncertainties

Measurement Uncertainties

Parameter	Uncertainty
Antenna Power, Antenna Power Tolerance	± 1.2 dB
Frequency Tolerance	± 5.0 Hz
Transmitter Spurious Emissions, Limit on secondary radiated emissions	± 2.5 dB
Occupied bandwidth, Spread Bandwidth	± 825 kHz
Dwell time	± 30.0 μ s
Temperature	± 0.3 $^{\circ}$ C
Humidity	$\pm 3\%$
DC and low frequency voltages	$\pm 1.5\%$ + 2 digits
Time	$\pm 5\%$
Antenna Gain and Pattern	± 1.8 dB

The measurement uncertainties for all parameters are calculated with an expansion factor (coverage factor) $k = 1.96$. This means, that the true value is in the corresponding interval with a probability of 95 %.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	on pass mark	within pass mark	Passed
4	above pass mark	within pass mark	Failed
5	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

*****END OF TEST REPORT*****