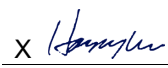



<b>Prüfbericht-Nr.:</b> Test report no.:	<b>CN23BV1T 002</b>	<b>Auftrags-Nr.:</b> Order no.:	168452191	<b>Page 1 of 22</b> Seite 1 von 22	
<b>Kunden-Referenz-Nr.:</b> Client reference no.:	N/A	<b>Auftragsdatum:</b> Order date:	2023-11-13		
<b>Auftraggeber:</b> Client:	Harman International Industries, Inc 8500 Balboa Blvd, Northridge, California, 91329, United States				
<b>Prüfgegenstand:</b> Test item:	Bluetooth Module				
<b>Bezeichnung / Typ-Nr.:</b> Identification / Type no.:	QCC5181 (Trademark: JBL)				
<b>Auftrags-Inhalt:</b> Order content:	Type test				
<b>Prüfgrundlage:</b> Test specification:	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209		RSS-247 Issue 3 August 2023 RSS-Gen Issue 5 March 2019		
<b>Wareneingangsdatum:</b> Date of sample receipt:	2023-11-13	Refer to photos document			
<b>Prüfmuster-Nr.:</b> Test sample no.:	A003599668				
<b>Prüfzeitraum:</b> Testing period:	2023-11-13 – 2023-11-24				
<b>Ort der Prüfung:</b> Place of testing:	TÜV Rheinland (Shenzhen) Co., Ltd.				
<b>Prüflaboratorium:</b> Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.				
<b>Prüfergebnis*:</b> Test result*:	Pass				
<b>geprüft von:</b> tested by:	 Signed by: Harry W. C. Wu		<b>genehmigt von:</b> authorized by:	 Signed by: Alex Lan	
<b>Datum:</b> Date:	2023-12-07		<b>Ausstellungsdatum:</b> Issue date:	2023-12-07	
<b>Stellung / Position:</b>	Project Manager		<b>Stellung / Position:</b>	Reviewer	
<b>Sonstiges /</b> <b>Other:</b>	FCC ID: API-QCC5181 IC: 6132A-QCC5181      HVIN: QCC5181				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged				
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)		N/A = nicht anwendbar      N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)		F(ail) = failed a.m. test specification(s)		N/A = not applicable      N/T = not tested
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.					

v05

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**Remarks**  
*Anmerkungen*

1	<p>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system.</p> <p>Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</p> <p><i>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</i></p> <p><i>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</i></p>
2	<p>As contractually agreed, this document has been signed digitally only. TÜV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TÜV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.</p> <p><i>Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.</i></p>
3	<p>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</p> <p><i>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</i></p>
4	<p>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</p> <p><i>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</i></p>

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## Test Summary

**5.1.1 ANTENNA REQUIREMENT***RESULT: Pass***5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER***RESULT: Pass***5.1.3 CONDUCTED POWER SPECTRAL DENSITY***RESULT: Pass***5.1.4 99%dB BANDWIDTH***RESULT: Pass***5.1.5 6dB BANDWIDTH***RESULT: Pass***5.1.6 FREQUENCY STABILITY***RESULT: Pass***5.1.7 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH***RESULT: Pass***5.1.8 RADIATED SPURIOUS EMISSION***RESULT: Pass*

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## 1 General Remarks

### 1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results.

## 2 Test Sites

### 2.1 Test Facilities

**TÜV Rheinland (Shenzhen) Co., Ltd.**

No.362, Huanguan Middle Road, Songyuansha Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China/518110

FCC Registration No.: 694916

IC Registration No.: 25069 and the CAB identifier is CN0078.

## 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

<b>Radio Spectrum Testing (TS8997)</b>				
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Cal. until</b>
Wireless Connectivity Tester	R&S	CMW270	101375	25.07.2024
Signal Analyzer	R&S	FSV 40	101441	25.07.2024
Vector Signal Generator	R&S	SMBV100A	263301	25.07.2024
Signal Generator	R&S	SMB100A	115186	25.07.2024
OSP	R&S	OSP 150	101017	13.11.2024
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A
Power Meter	R&S	NRP2	107105	13.11.2024
Power Sensor	R&S	NRP-Z81	105677	25.07.2024
Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	15.03.2024
Shielding Room 8#	Albatross	SR8	APC17151-SR8	22.06.2024
<b>Unwanted Emission Testing (TS9975)</b>				
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Cal. until</b>
EMI Test Receiver	R&S	ESR 7	102021	25.07.2024
Signal Analyzer	R&S	FSV 40	101439	25.07.2024
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	25.07.2024
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	25.07.2024
Amplifier	R&S	SCU-18F	180070	25.07.2024
Amplifier	R&S	SCU40A	100475	25.07.2024
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	06.08.2024
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	06.08.2024
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	27.08.2024
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	06.08.2024
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	22.06.2024

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## 2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty (k=2)
Occupied Channel Bandwidth	± 2.08 %
RF output power, conducted	± 0.99 dB
RF power density, conducted	± 0.99 dB
Unwanted Emissions, conducted	± 0.89 dB
All emissions, radiated	± 4.17 dB

## 2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

## 2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No.362, Huanguan Middle Road, Songyuansha Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China/518110 is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

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### 3 General Product Information

#### 3.1 Product Function and Intended Use

The EUT is Bluetooth Module, which supports Bluetooth dual mode technology.  
 For details refer to the User Manual and Circuit Diagram.

#### 3.2 Ratings and System Details

**Table 2: Technical Specification of EUT**

General Information of EUT	Value
Kind of Equipment	Bluetooth Module
Type Designation	QCC5181
Trademark	JBL
FCC ID	API-QCC5181
IC	6132A-QCC5181
HVIN	QCC5181
Extreme Temperature Range	-10°C to +85°C
Operating Voltage	DC 3.3-5.0V
<b>Technical Specification of Classical Bluetooth</b>	
Bluetooth Core Version	Bluetooth 5.4
Operating Frequency band	2402 ~ 2480 MHz
Channel Number	79 channels
Channel separation	1MHz
Modulation	GFSK, $\pi/4$ DQPSK, 8DPSK
Antenna Type	Dipole Antenna
Antenna Gain	1.24 dBi (Provided by the Client)
<b>Technical Specification of Bluetooth Low Energy</b>	
Bluetooth Core Version	Bluetooth 5.4
Operating Frequency band	2402 ~ 2480 MHz for 1Mbps 2404 ~ 2478 MHz for 2Mbps
Channel Number	40 channels for 1Mbps 38 channels for 2Mbps
Channel separation	2MHz
Data rate	1Mbps, 2Mbps
Modulation	GFSK
Antenna Type	Dipole Antenna
Antenna Gain	1.24 dBi (Provided by the Client)



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**Table 3: RF Channel and Frequency of Classic Bluetooth**

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
<b>00</b>	<b>2402.00</b>	20	2422.00	40	2442.00	60	2462.00
01	2403.00	21	2423.00	41	2443.00	61	2463.00
02	2404.00	22	2424.00	42	2444.00	62	2464.00
03	2405.00	23	2425.00	43	2445.00	63	2465.00
04	2406.00	24	2426.00	44	2446.00	64	2466.00
05	2407.00	25	2427.00	45	2447.00	65	2467.00
06	2408.00	26	2428.00	46	2448.00	66	2468.00
07	2409.00	27	2429.00	47	2449.00	67	2469.00
08	2410.00	28	2430.00	48	2450.00	68	2470.00
09	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	77	2479.00
18	2420.00	38	2440.00	58	2460.00	<b>78</b>	<b>2480.00</b>
19	2421.00	<b>39</b>	<b>2441.00</b>	59	2461.00	--	--

**Table 4: RF Channel and Frequency of Bluetooth Low Energy**

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
<b>00</b>	<b>2402.00</b>	10	2422.00	20	2442.00	30	2462.00
01	2404.00	11	2424.00	21	2444.00	31	2464.00
02	2406.00	12	2426.00	22	2446.00	32	2466.00
03	2408.00	13	2428.00	23	2448.00	33	2468.00
04	2410.00	14	2430.00	24	2450.00	34	2470.00
05	2412.00	15	2432.00	25	2452.00	35	2472.00
06	2414.00	16	2434.00	26	2454.00	36	2474.00
07	2416.00	17	2436.00	27	2456.00	37	2476.00
08	2418.00	18	2438.00	28	2458.00	38	2478.00
09	2420.00	<b>19</b>	<b>2440.00</b>	29	2460.00	<b>39</b>	<b>2480.00</b>

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### 3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth LE transmitting mode
  - 1. Low channel
  - 2. Middle channel
  - 3. High channel
- B. On, Bluetooth connecting mode
- C. Off

### 3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

### 3.5 Submitted Documents

- Application Form
- Block Diagram
- FCC/IC Label and Location Info
- Operation Description
- Photo Document
- Schematics
- User Manual

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## 4 Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

**Radio Spectrum:** The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

### 4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all test items were applied on model QCC5181.

### 4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Laptop	Lenovo	T480	PF-16A6N8

### 4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

## 4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 30MHz)

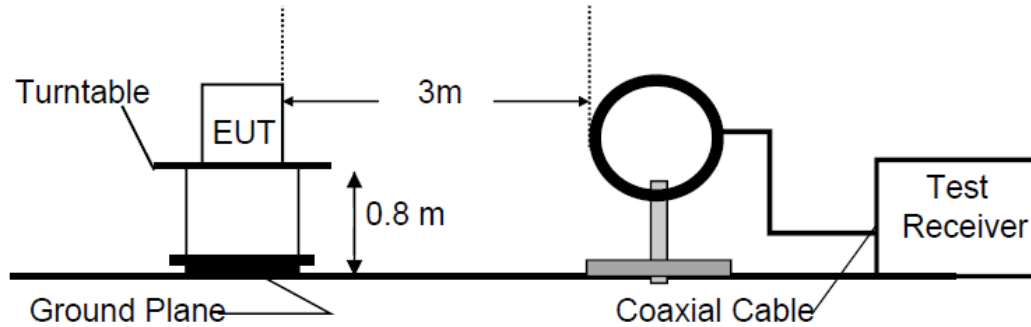


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

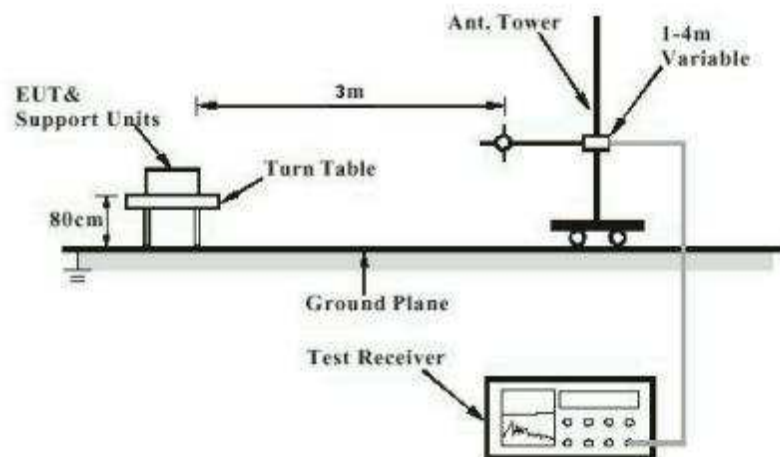
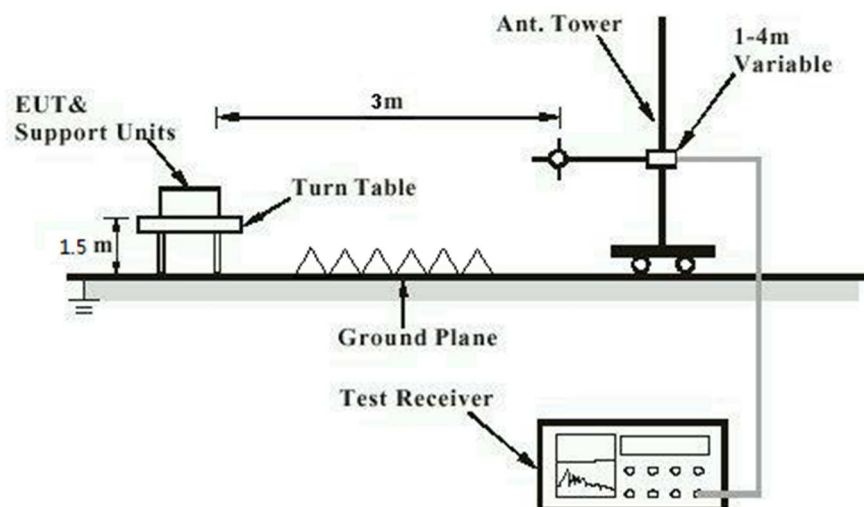
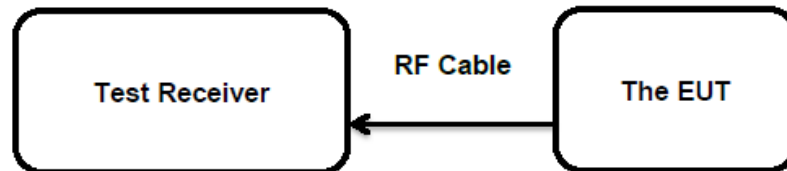


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)



**Diagram of Measurement Configuration for Conducted Transmitter Measurement**



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## 5 Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.247(b)(4) and Part 15.203
	:	RSS-Gen Clause 6.7
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has one Dipole Antenna, the directional gain of antenna is 1.24 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

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### 5.1.2 Maximum Peak Conducted Output Power

**RESULT: Pass**
**Test Specification**

Test standard : FCC Part 15.247(b)(3)  
                   : RSS-247 Clause 5.4(d)  
 Basic standard : ANSI C63.10: 2013  
 Limits : < 1 Watt (Maximum Conducted Peak Power)  
           : e.i.r.p. <4W  
 Kind of test site : Shielded Room

**Test Setup**

Date of testing : 2023-11-13 to 2023-11-24  
 Input voltage : DC 5.0V  
 Operation mode : A  
 Test channel : Low / Middle / High  
 Ambient temperature : 22.4 °C  
 Relative humidity : 53 %  
 Atmospheric pressure : 101 kPa

For details refer to following test result.

**Table 6: Test Result of Maximum Peak Conducted Output Power**

Test Mode	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(W)	
BLE 1Mbps	2402	8.3	0.0068	< 1.0
	2440	7.7	0.0059	
	2480	7.3	0.0054	
BLE 2Mbps	2404	8.3	0.0068	
	2440	7.7	0.0059	
	2478	7.2	0.0052	
<b>Maximum Measured Value</b>		8.3	0.0068	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 10.38 dBm less than 4W (36 dBm).

**Prüfbericht-Nr.:** **CN23BV1T 002**  
*Test report no.:*

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### 5.1.3 Conducted Power Spectral Density

**RESULT:**
**Pass**
**Test Specification**

Test standard	:	FCC Part 15.247(e) RSS-247 Clause 5.2(b)
Basic standard	:	ANSI C63.10: 2013
Limits	:	8 dBm / 3kHz
Kind of test site	:	Shielded Room

**Test Setup**

Date of testing	:	2023-11-13 to 2023-11-24
Input voltage	:	DC 5.0V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	22.4 °C
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

**Table 7: Test Result of Conducted Power Spectral Density**

Test Mode	Channel Frequency (MHz)	Conducted Power Spectral Density	Limit
		(dBm / 3kHz)	
BLE 1Mbps	2402	-6.80	8 dBm / 3kHz
	2440	-7.30	
	2480	-7.55	
BLE 2Mbps	2404	-10.32	8 dBm / 3kHz
	2440	-10.79	
	2478	-11.08	



**Prüfbericht-Nr.: CN23BV1T 002**  
*Test report no.:*

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### 5.1.4 99%dB Bandwidth

**RESULT:**
**Pass**
**Test Specification**

 Test standard : RSS-Gen clause 6.7  
 Basic standard : ANSI C63.10: 2013  
 Kind of test site : Shielded Room

**Test Setup**

 Date of testing : 2023-11-13 to 2023-11-24  
 Input voltage : DC 5.0V  
 Operation mode : A  
 Test channel : Low / Middle / High  
 Ambient temperature : 22.4 °C  
 Relative humidity : 53 %  
 Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix B.

**Table 8: Test Result of 99% Bandwidth**

Test Mode	Channel Frequency (MHz)	Measured 99% Bandwidth	Limit
		(MHz)	
BLE 1Mbps	2402	1.0400	/
	2440	1.0400	
	2480	1.0400	
BLE 2Mbps	2404	2.0500	/
	2440	2.0500	
	2478	2.0500	

Note: The fundamental emissions stay within the allocated band 2400-2483.5MHz

The setting of RBW is 30 KHz.

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*Test report no.:*

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### 5.1.5 6dB Bandwidth

**RESULT:**
**Pass**
**Test Specification**

Test standard : FCC Part 15.247(a)(2)  
                   : RSS-247 Clause 5.2(a)  
 Basic standard : ANSI C63.10: 2013  
 Kind of test site : Shielded Room

**Test Setup**

Date of testing : 2023-11-13 to 2023-11-24  
 Input voltage : DC 5.0V  
 Operation mode : A  
 Test channel : Low / Middle / High  
 Ambient temperature : 22.4 °C  
 Relative humidity : 53 %  
 Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix B.

**Table 9: Test Result of 6dB Bandwidth**

Test Mode	Channel Frequency (MHz)	Measured 6dB Bandwidth	Limit
		(MHz)	
BLE 1Mbps	2402	0.752476	>500kHz
	2440	0.752476	
	2480	0.752476	
BLE 2Mbps	2404	1.306930	>500kHz
	2440	1.346534	
	2478	1.306930	

Note: The setting of RBW is 100 KHz.

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### 5.1.6 Frequency stability

**RESULT:****Pass****Test Specification**

Test standard : RSS-247 Clause 8.11  
Basic standard : ANSI C63.10: 2013  
Limits : within at least the central 80% of its permitted operating frequency band (2400-2483.5MHz)  
Kind of test site : Shielded Room

**Test Setup**

Date of testing : 2023-11-13 to 2023-11-24  
Input voltage : DC 5.0V  
Operation mode : B  
Ambient temperature : 22.4 °C  
Relative humidity : 53 %  
Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix B

Prüfbericht-Nr.: **CN23BV1T 002**  
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## 5.1.7 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.247(d) RSS-247 Clause 5.5
Basic standard	:	ANSI C63.10: 2013
Limits	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	:	Shielded Room

**Test Setup**

Date of testing	:	2023-11-13 to 2023-11-24
Input voltage	:	DC 5.0V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	22.4 °C
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix B.

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## 5.1.8 Radiated Spurious Emission

**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3 & 5.5
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 4 & Table 5
Kind of test site	:	3m Semi-anechoic Chamber

**Test Setup**

Date of testing	:	2023-11-13 to 2023-11-24
Input voltage	:	DC 5.0V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	Refer to test result
Relative humidity	:	Refer to test result
Atmospheric pressure	:	101 kPa

**Remark:**

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix B.

## 6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

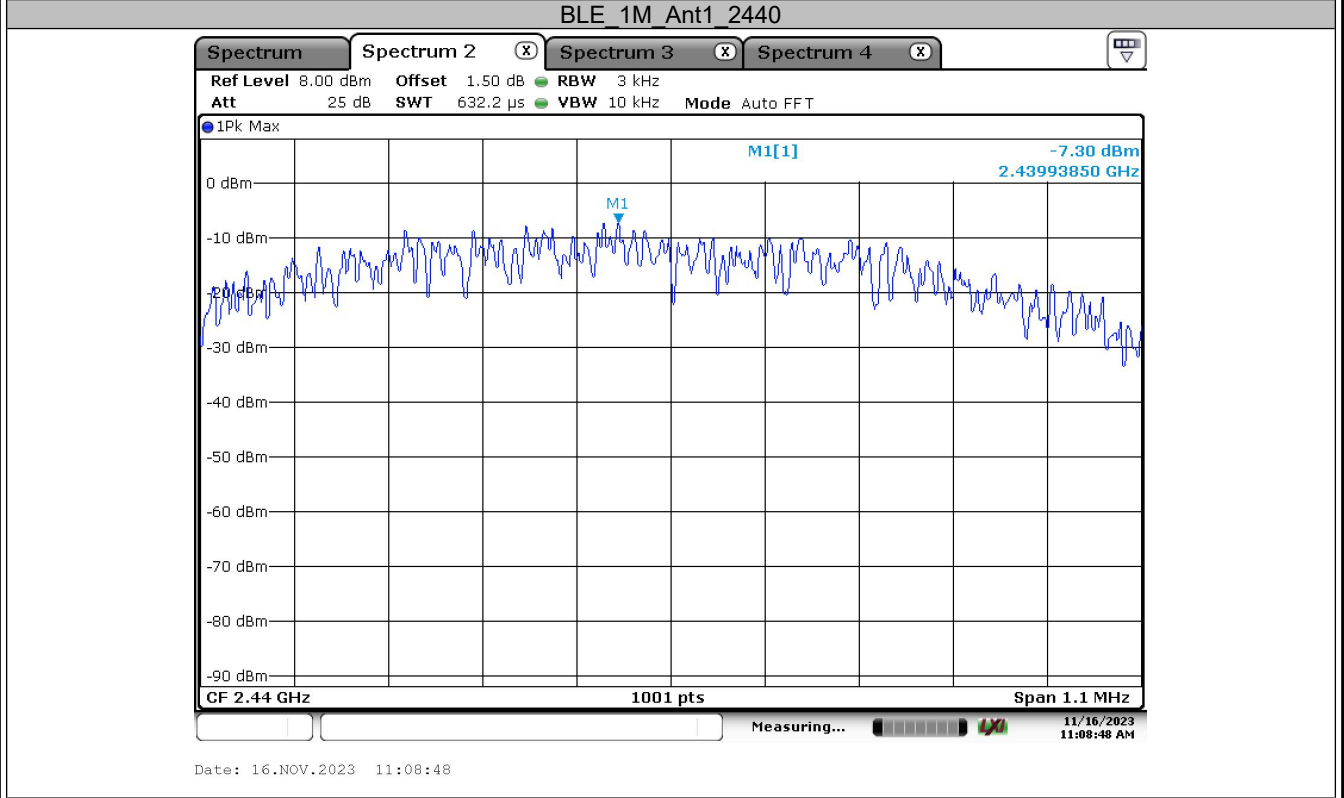
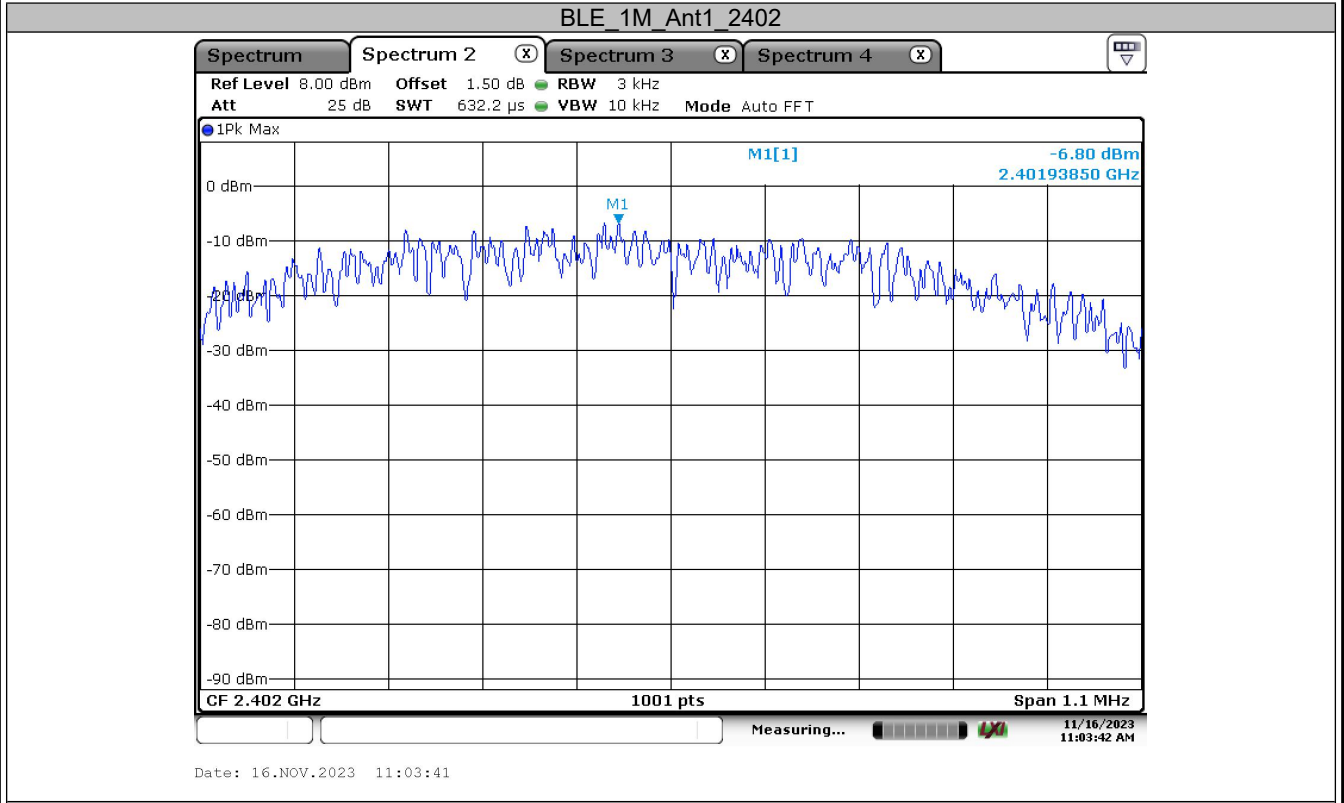
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## Appendix B: Test Results

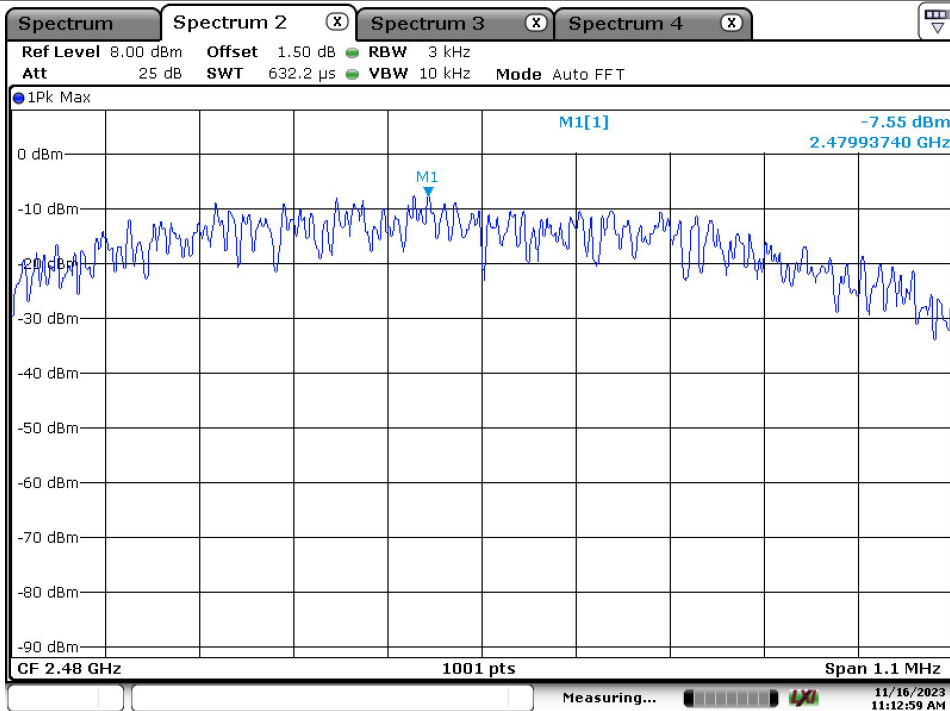
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### Appendix B.1: Test Results of Conducted Power Spectral Density



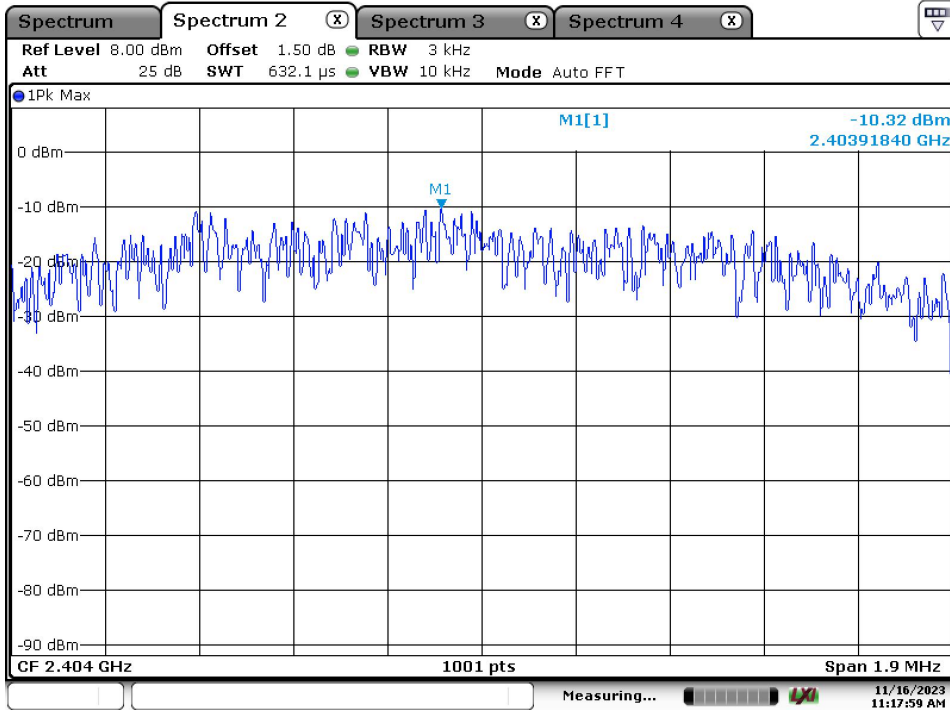


BLE\_1M\_Ant1\_2480



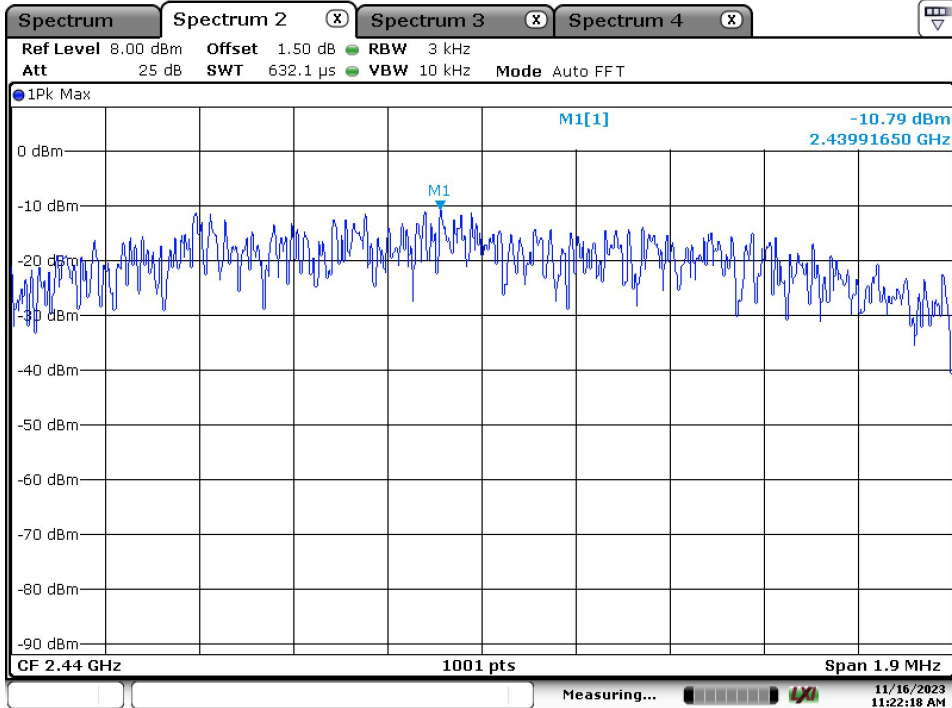
Date: 16.NOV.2023 11:12:59

BLE\_2M\_Ant1\_2404



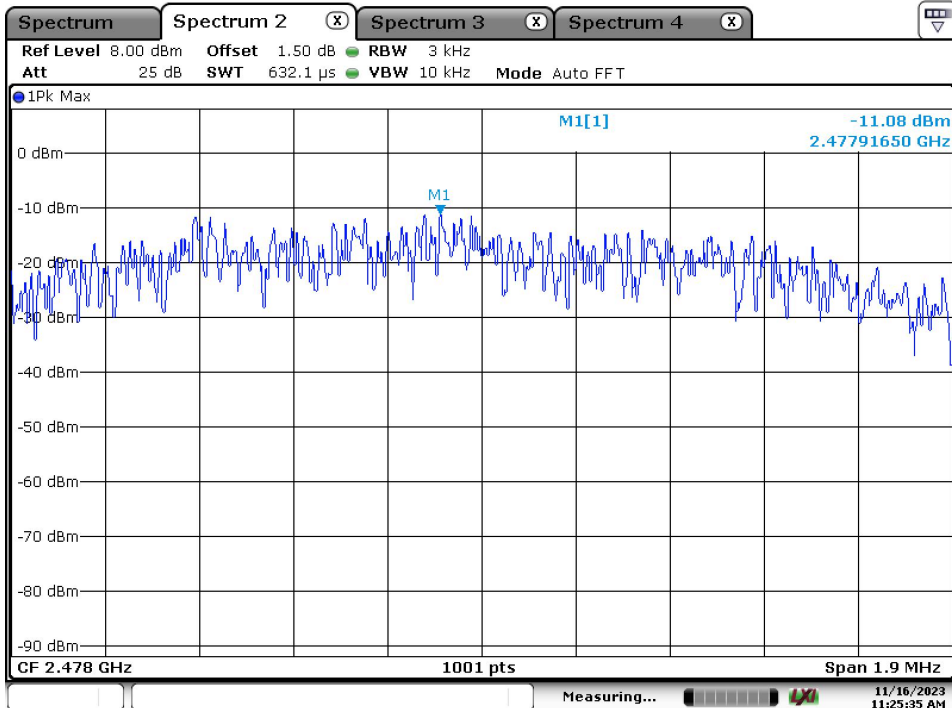
Date: 16.NOV.2023 11:17:59

BLE\_2M\_Ant1\_2440



Date: 16.NOV.2023 11:22:18

BLE 2M Ant1 2478

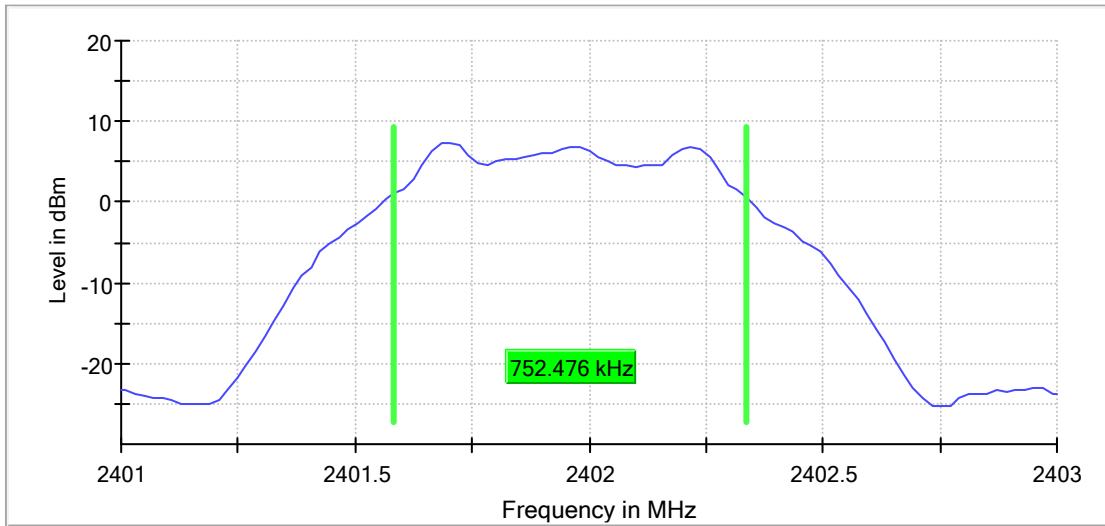


Date: 16.NOV.2023 11:25:35

### Appendix B.2: Test Results of 6dB Bandwidth

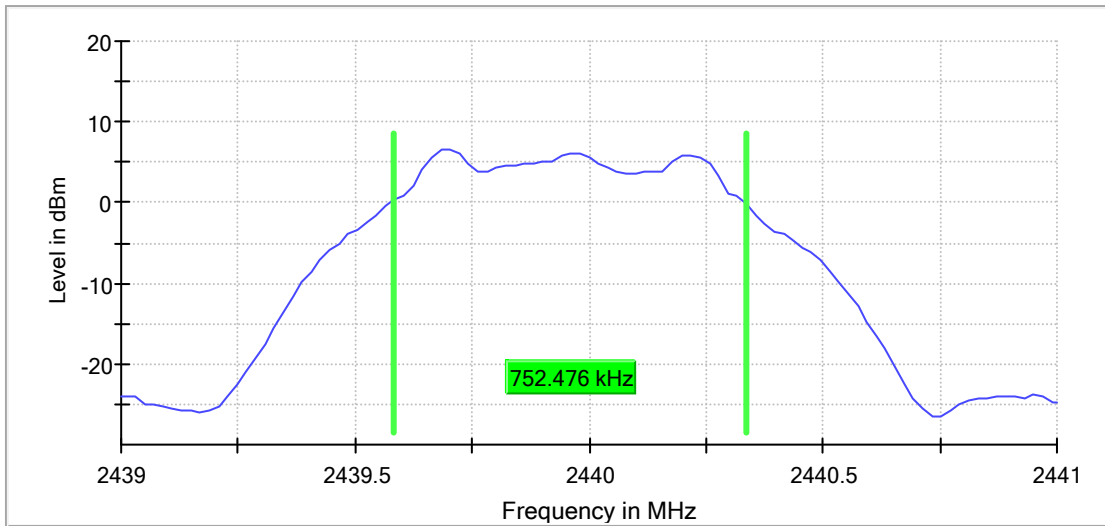
BLE\_1M\_Ant1\_2402

6 dB Bandwidth



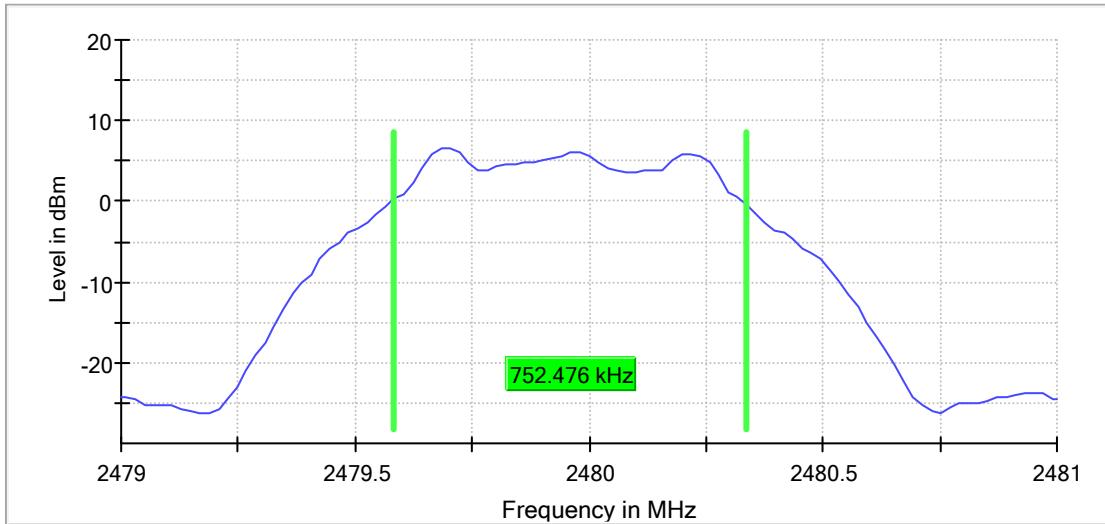
BLE\_1M\_Ant1\_2440

6 dB Bandwidth



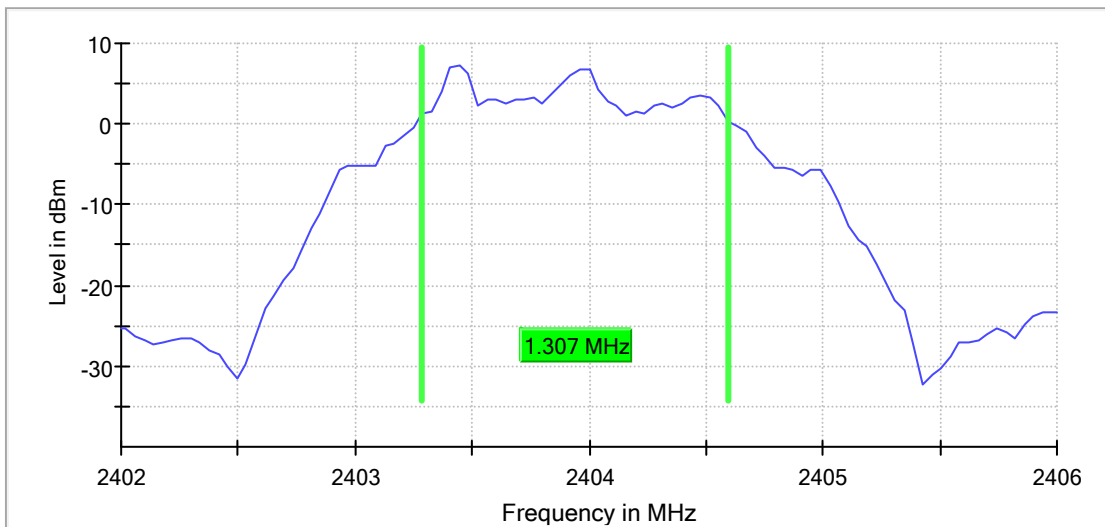
BLE\_1M\_Ant1\_2480

6 dB Bandwidth



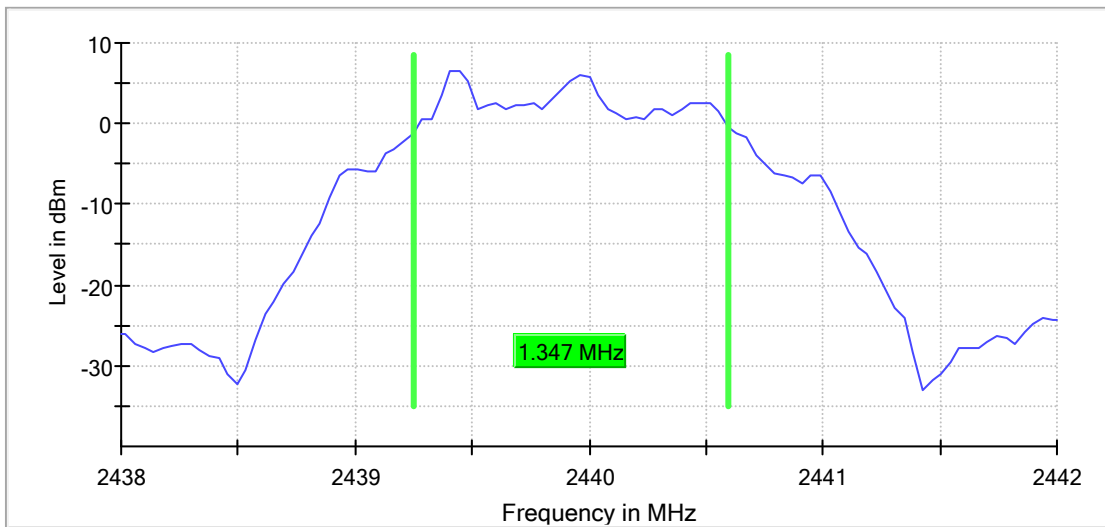
BLE\_2M\_Ant1\_2404

6 dB Bandwidth



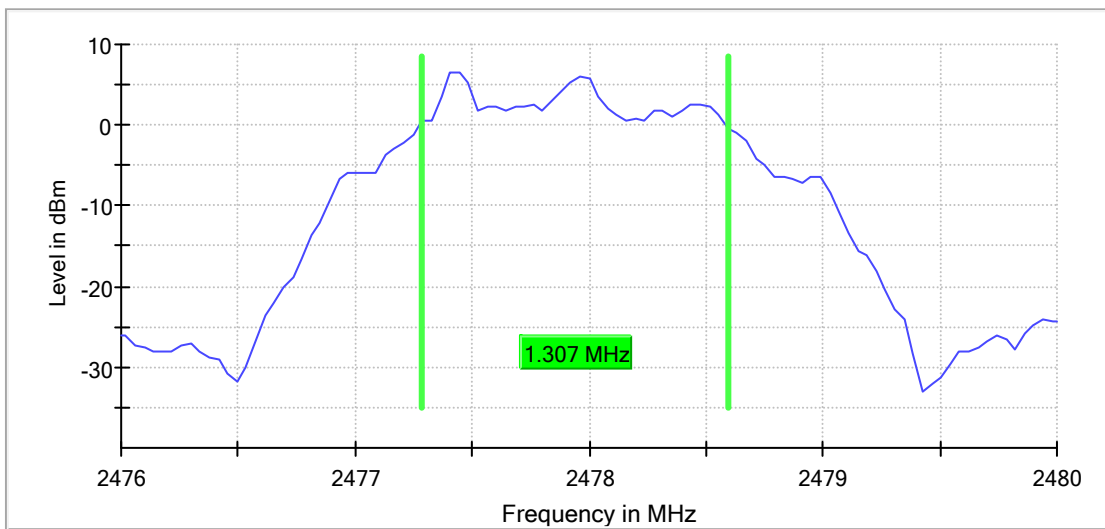
BLE\_2M\_Ant1\_2440

6 dB Bandwidth



BLE 2M Ant1 2478

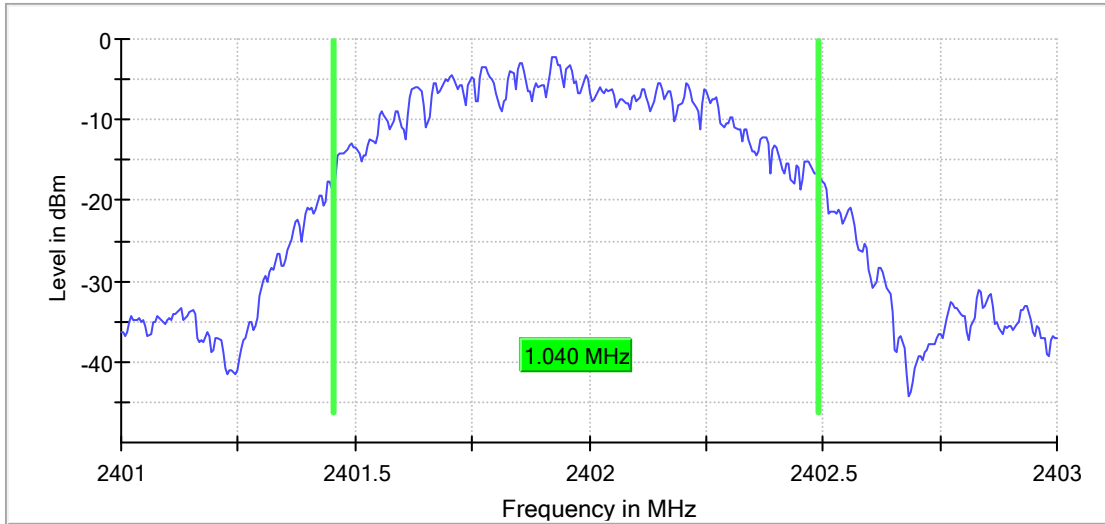
6 dB Bandwidth



### Appendix B.3: Test Results of 99% Bandwidth

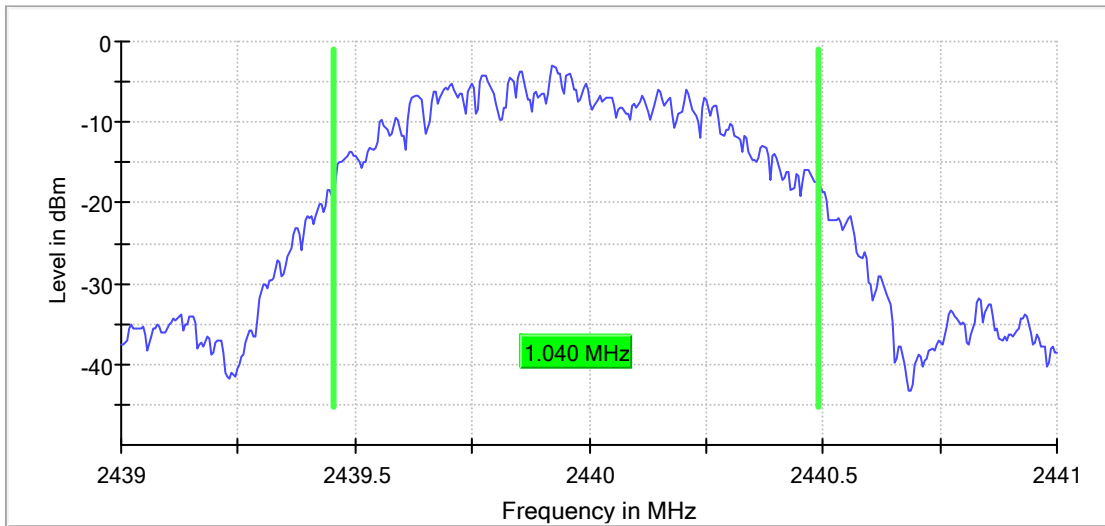
BLE\_1M\_Ant1\_2402

99 % Bandwidth



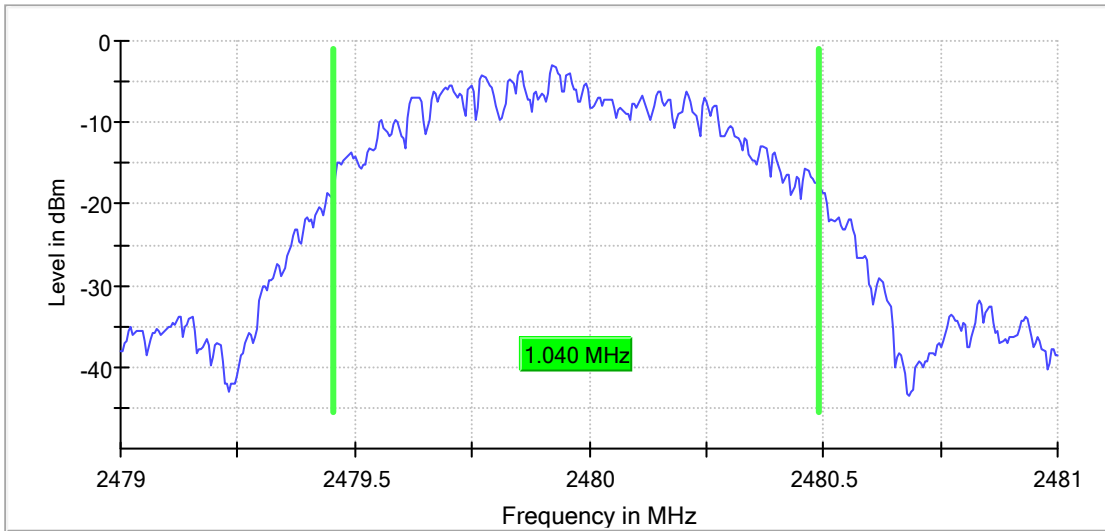
BLE\_1M\_Ant1\_2440

99 % Bandwidth



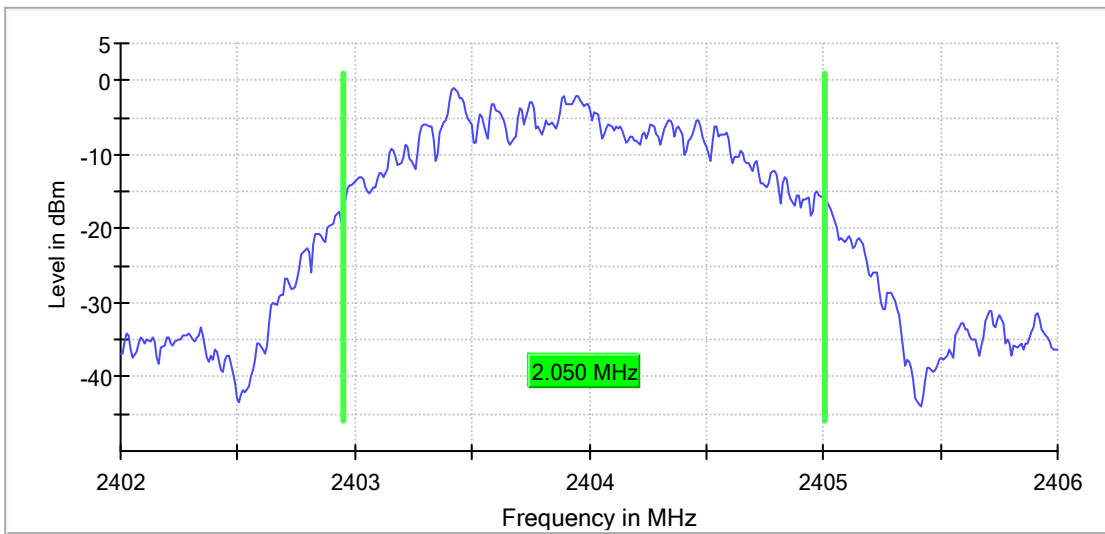
BLE\_1M\_Ant1\_2480

99 % Bandwidth



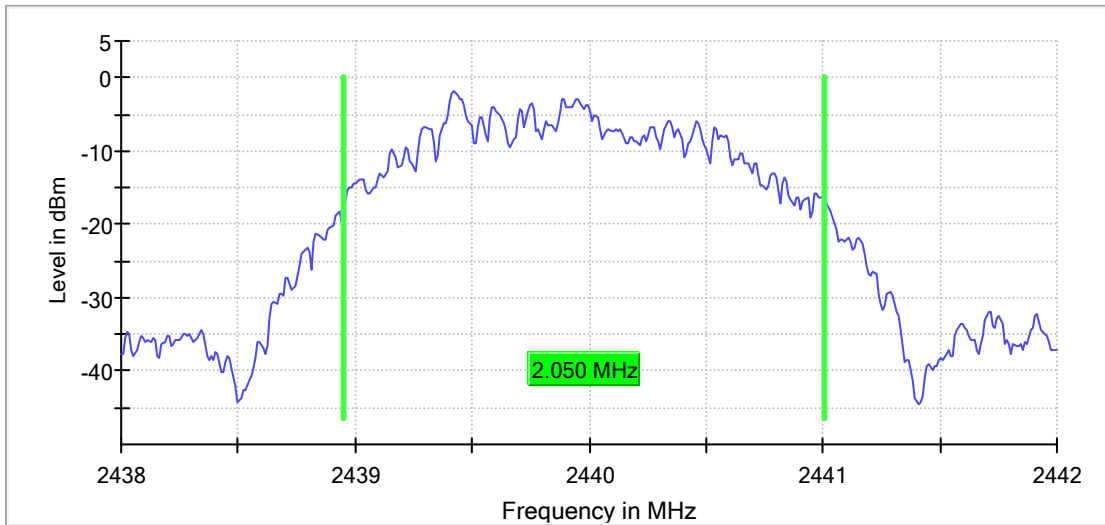
BLE\_2M\_Ant1\_2404

99 % Bandwidth



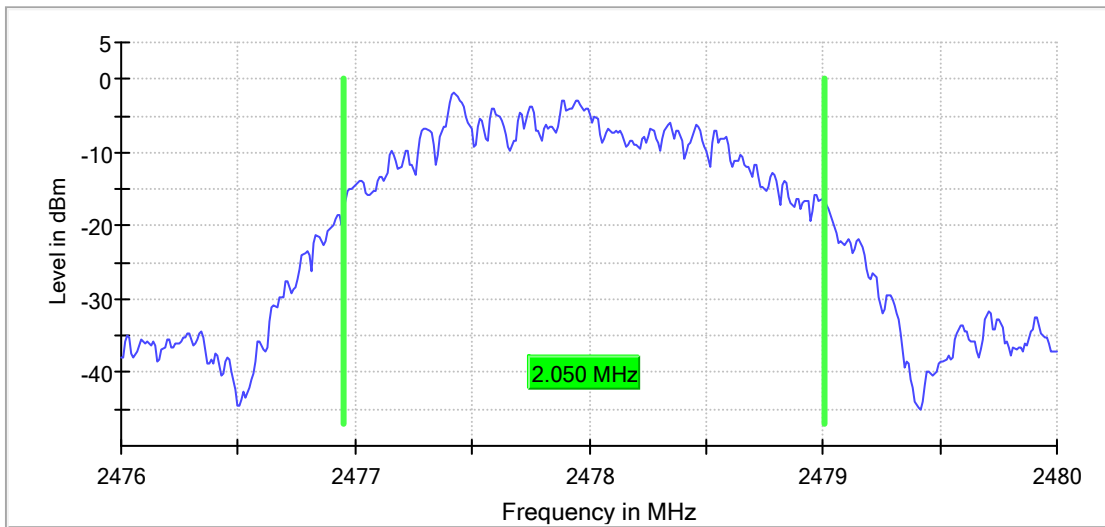
BLE\_2M\_Ant1\_2440

99 % Bandwidth



BLE 2M Ant1 2478

99 % Bandwidth





### Appendix B.4: Test Results of Frequency stability

Test Channel (MHz)	2402
--------------------	------

#### Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.3V	2401.998	2	0.83	10
DC 3.8V	2401.998	2	0.83	
DC 5.0V	2401.998	2	0.83	

#### Test result of frequency tolerance of temperature variation

Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2401.997	3	1.25	10
-20	2401.998	2	0.83	
-10	2401.997	3	1.25	
0	2401.997	2	0.83	
10	2401.998	2	0.83	
20	2401.998	2	0.83	
30	2401.998	2	0.83	
40	2401.998	2	0.83	
50	2401.998	2	0.83	
55	2401.998	2	0.83	

Test Channel (MHz)	2440
--------------------	------

#### Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.3V	2439.998	-2	-0.81967	10
DC 3.8V	2439.998	-2	-0.81967	
DC 5.0V	2439.998	-2	-0.81967	

#### Test result of frequency tolerance of temperature variation

Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2439.997	-3	-1.22951	10
-20	2439.997	-3	-1.22951	
-10	2439.997	-3	-1.22951	
0	2439.997	-3	-1.22951	
10	2439.998	-2	-0.81967	
20	2439.998	-2	-0.81967	
30	2439.999	-1	-0.40984	
40	2439.999	-1	-0.40984	
50	2439.999	-1	-0.40984	
55	2439.999	-1	-0.40984	

Test Channel (MHz)	2480
--------------------	------

**Test result of frequency tolerance of voltage variation**

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.3V	2479.999	-1	-0.40	10
DC 3.8V	2479.998	-2	-0.81	
DC 5.0V	2479.999	-1	-0.40	

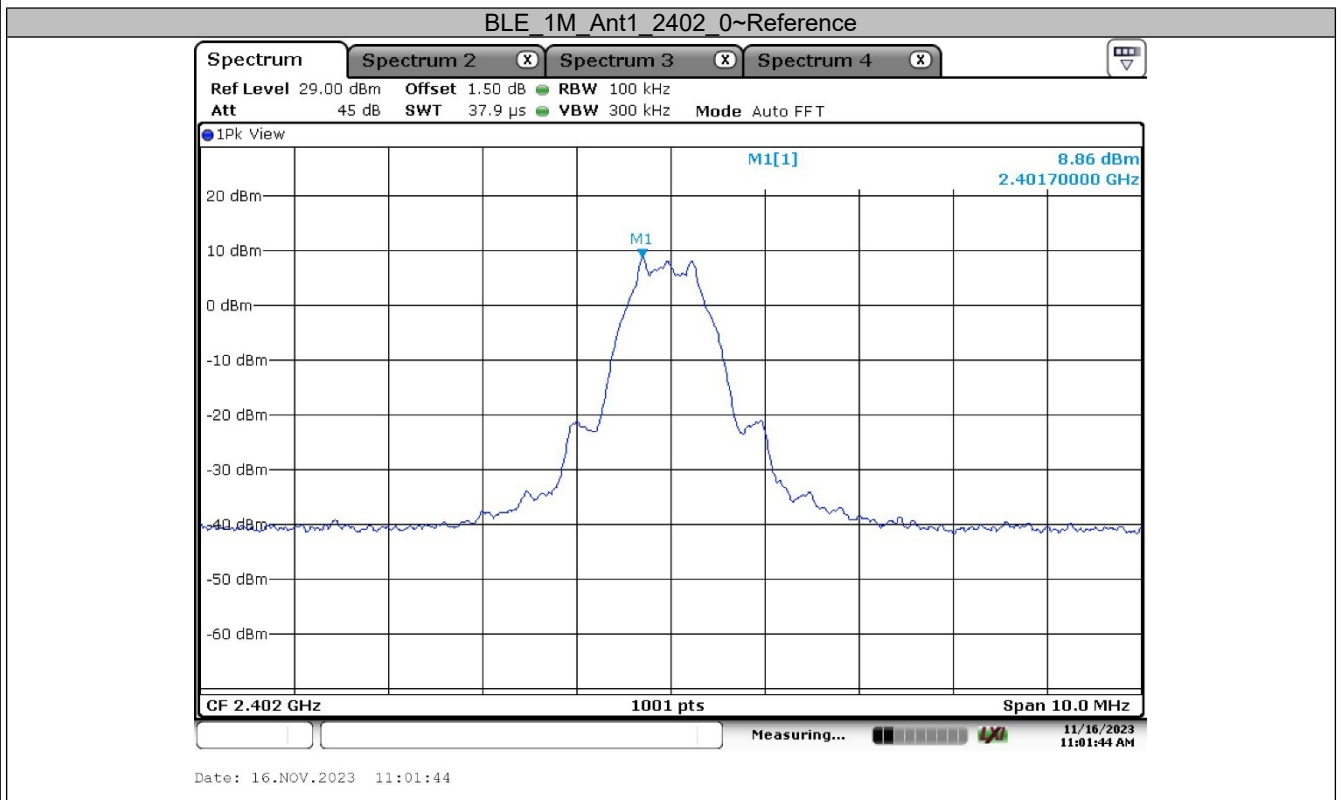
**Test result of frequency tolerance of temperature variation**

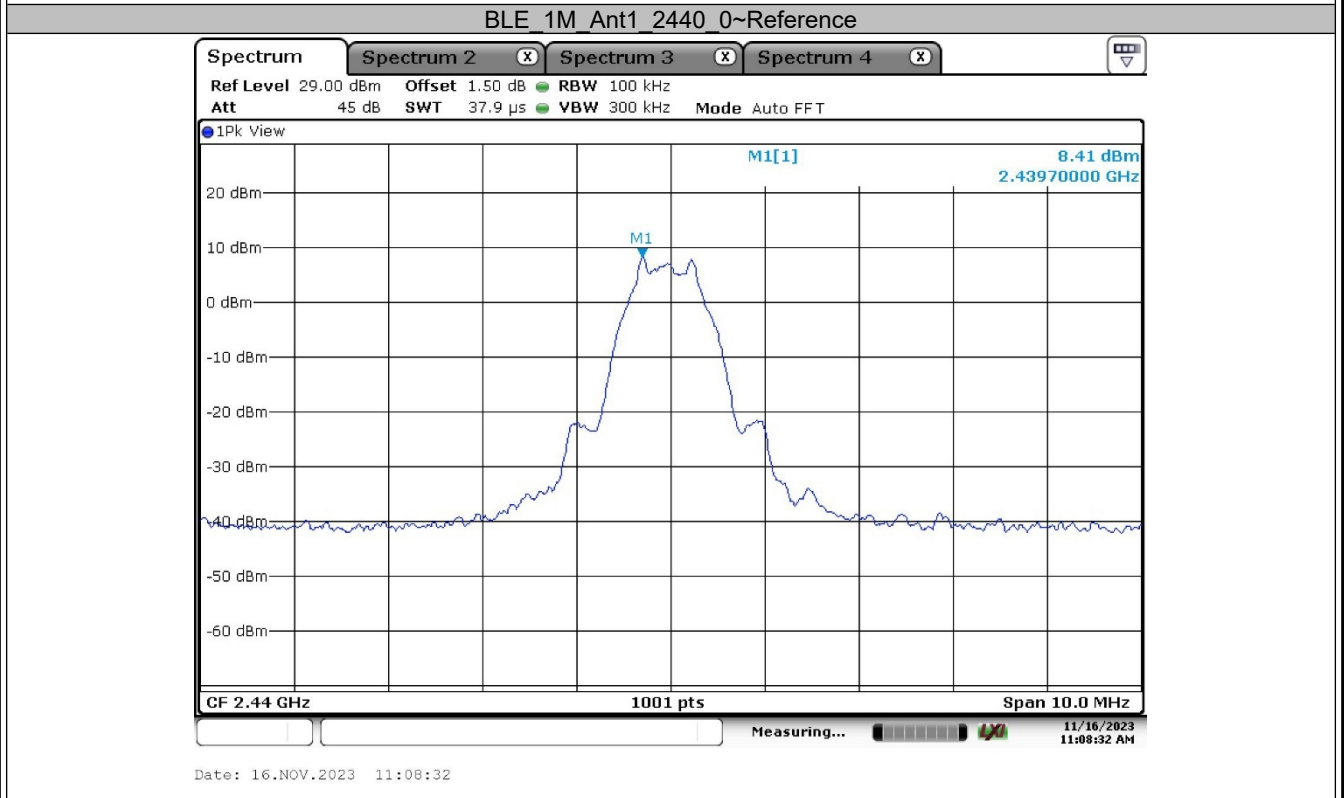
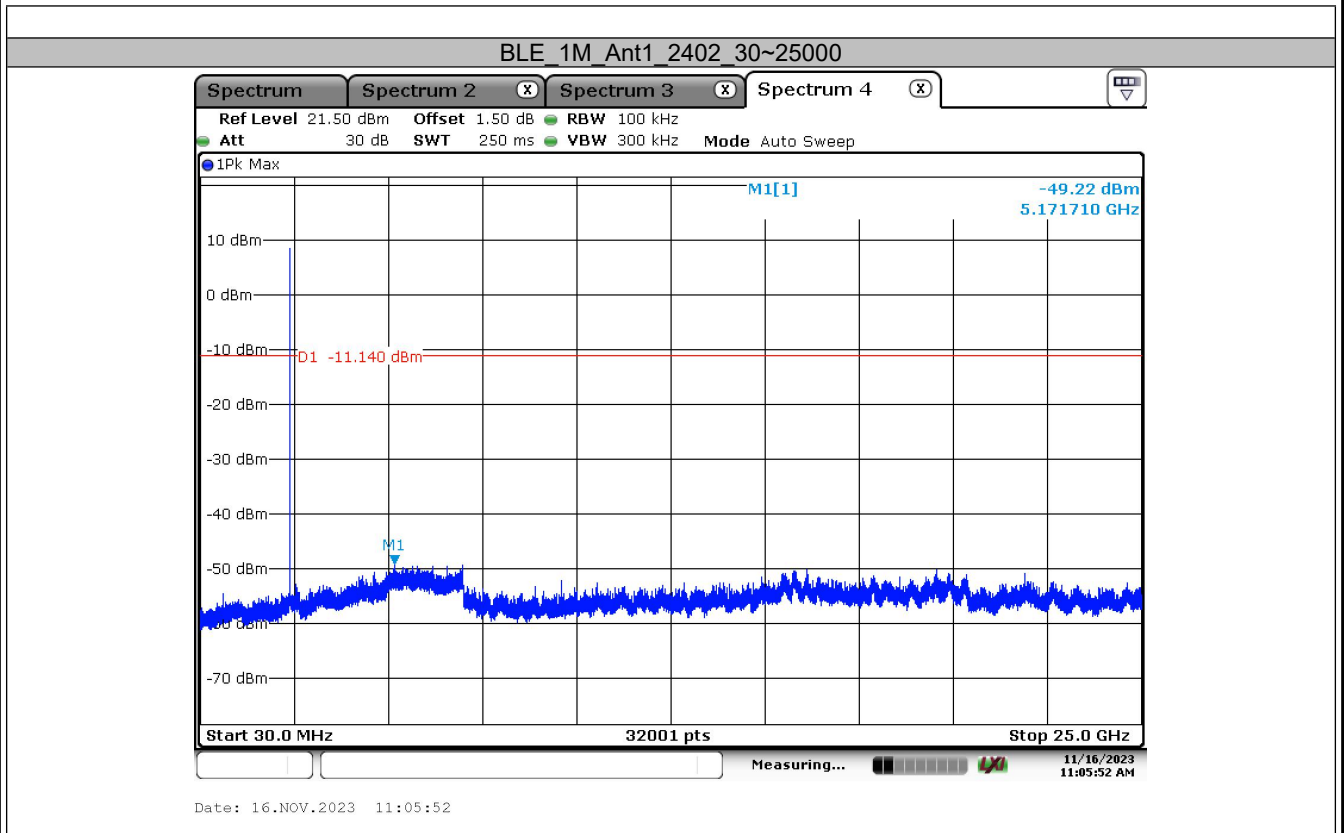
Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2479.998	-2	-0.81	10
-20	2479.998	-2	-0.81	
-10	2479.998	-2	-0.81	
0	2479.999	-1	-0.40	
10	2479.999	-1	-0.40	
20	2479.999	-1	-0.40	
30	2479.998	-2	-0.81	
40	2479.999	-1	-0.40	
50	2479.999	-1	-0.40	
55	2479.999	-1	-0.40	

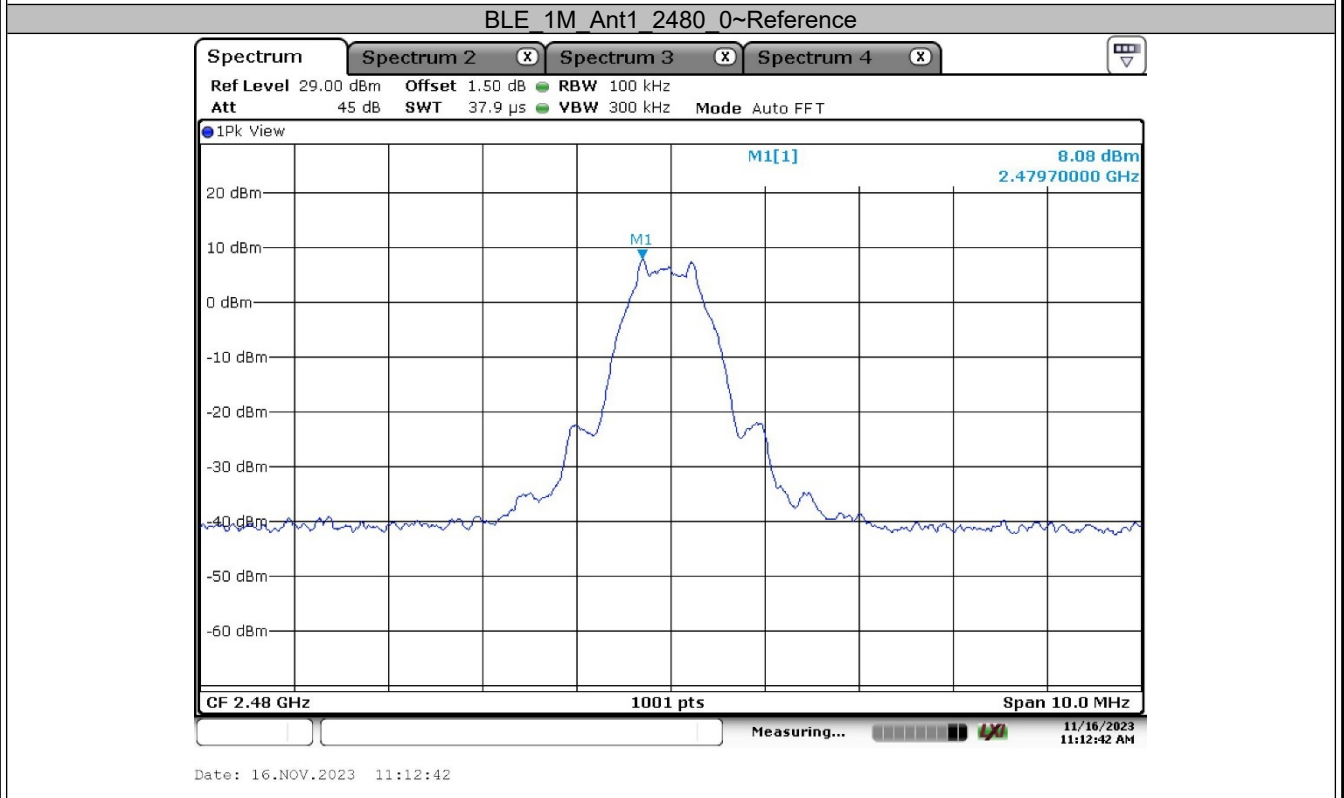
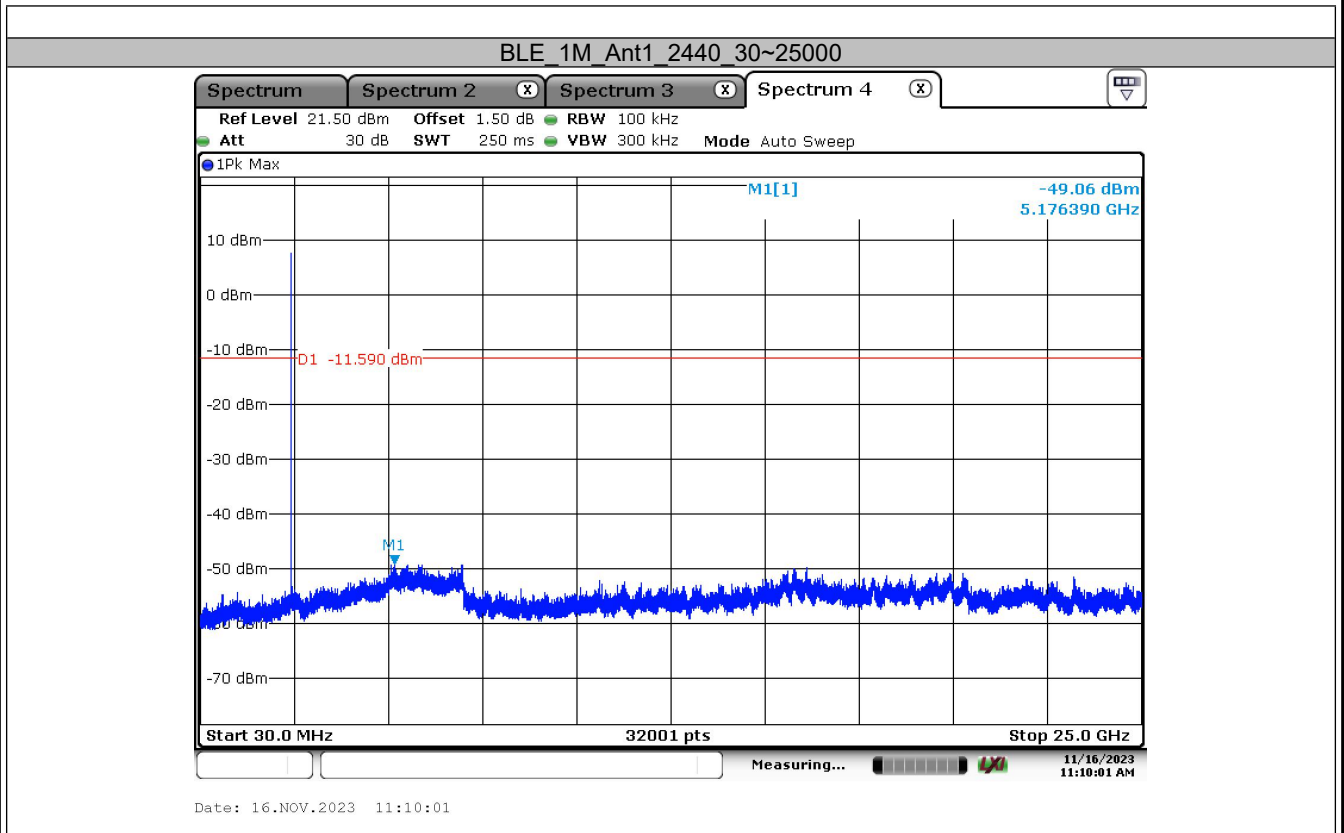
### Appendix B.5: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

#### Conducted measurements

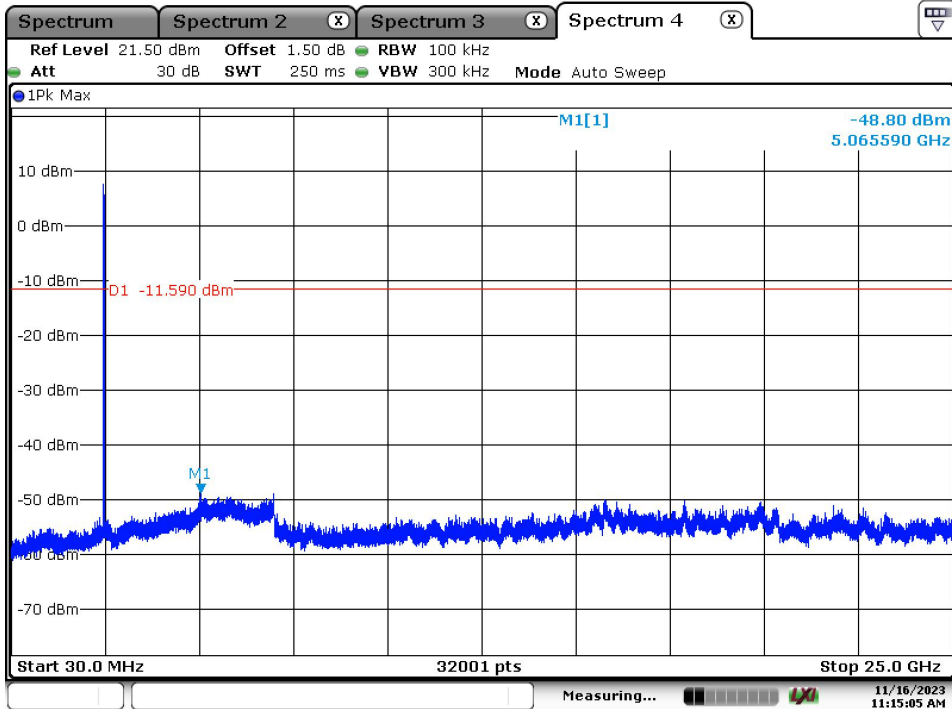
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	8.86	8.86	---	PASS
			30~25000	8.86	-49.22	≤-11.14	PASS
		2440	Reference	8.41	8.41	---	PASS
			30~25000	8.41	-49.06	≤-11.59	PASS
		2480	Reference	8.08	8.08	---	PASS
			30~25000	8.08	-48.80	≤-11.59	PASS
BLE_2M	Ant1	2404	Reference	8.79	8.79	---	PASS
			30~25000	8.79	-49.59	≤-11.21	PASS
		2440	Reference	8.34	8.34	---	PASS
			30~25000	8.34	-48.40	≤-11.66	PASS
		2478	Reference	8.02	8.02	---	PASS
			30~25000	8.02	-49.74	≤-11.66	PASS





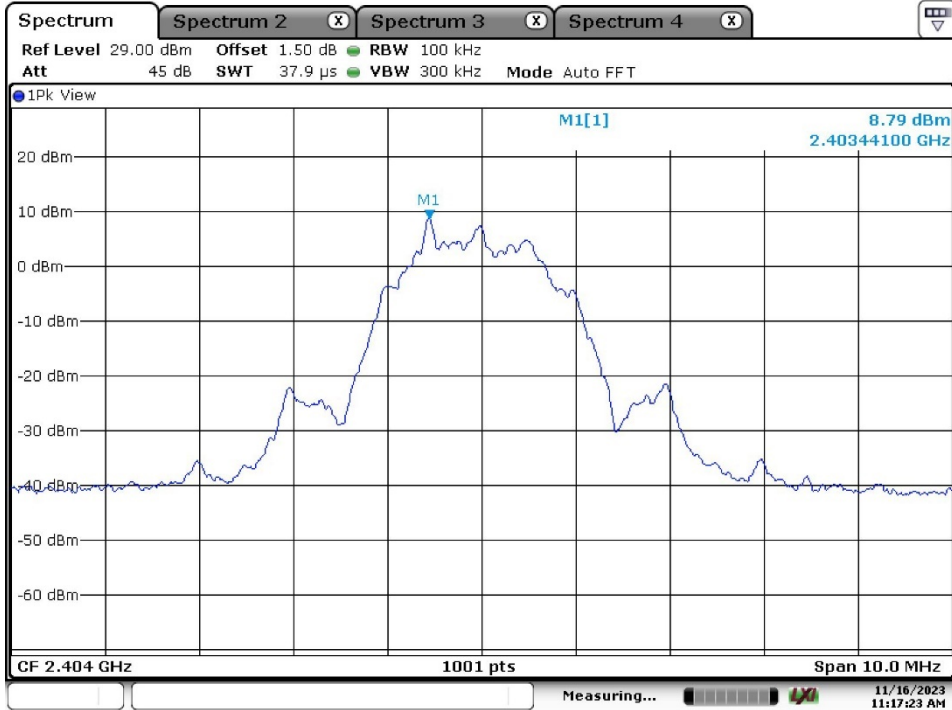


BLE 1M Ant1 2480 30~25000



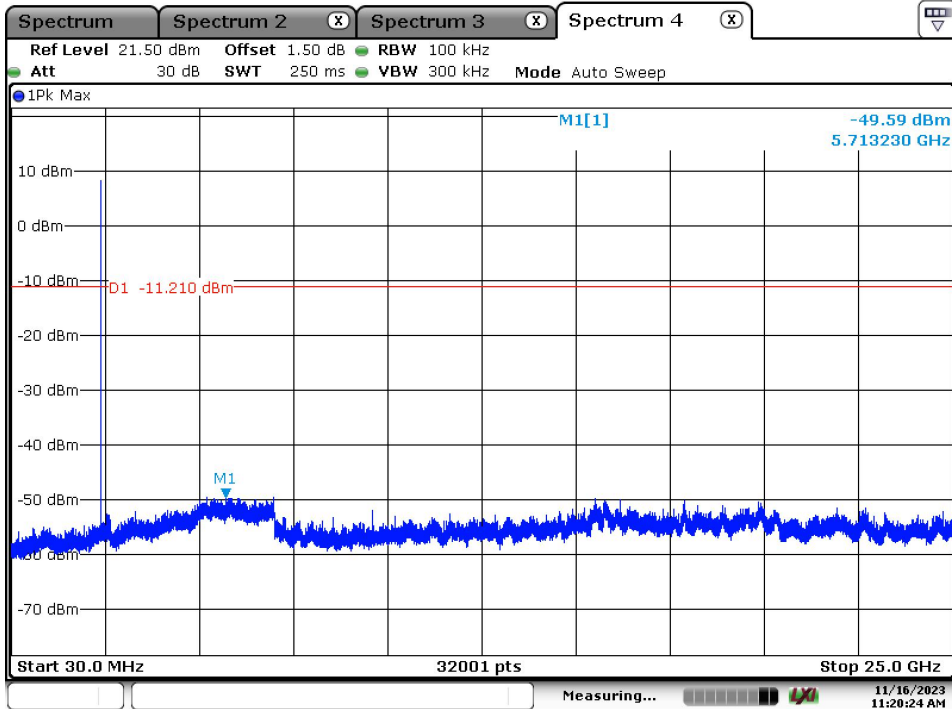
Date: 16.NOV.2023 11:15:05

BLE 2M Ant1 2404 0~Reference



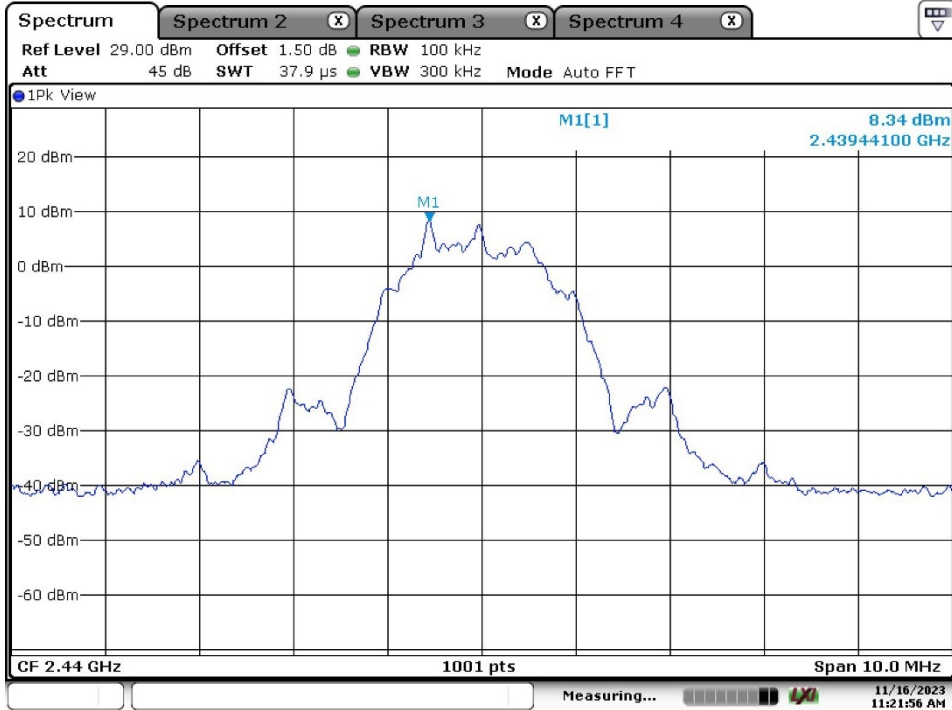
Date: 16.NOV.2023 11:17:23

BLE 2M Ant1 2404 30~25000



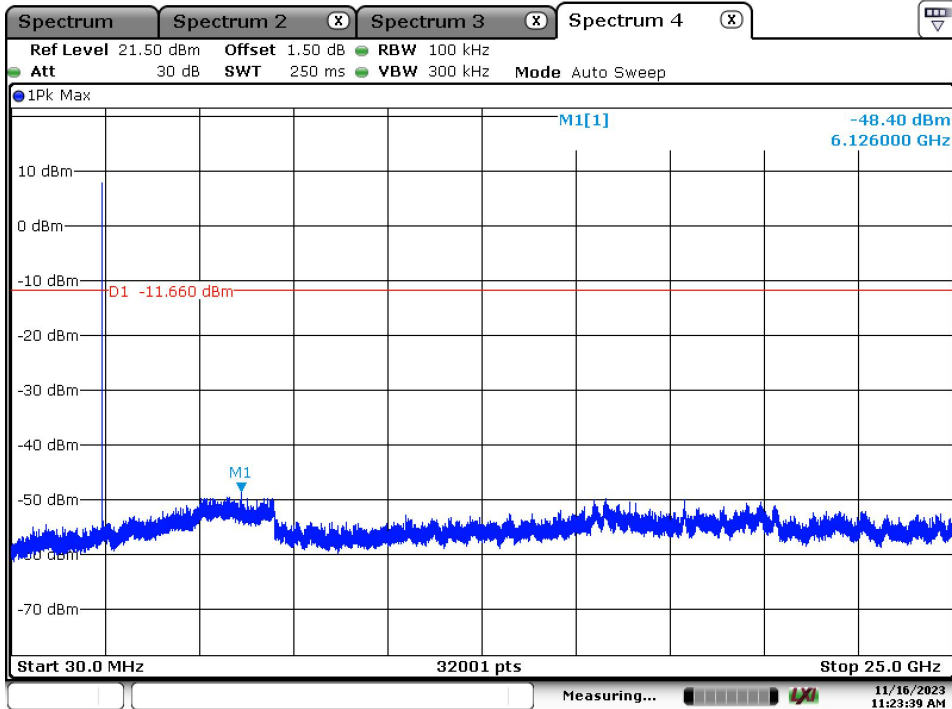
Date: 16.NOV.2023 11:20:24

BLE 2M Ant1 2440 0~Reference



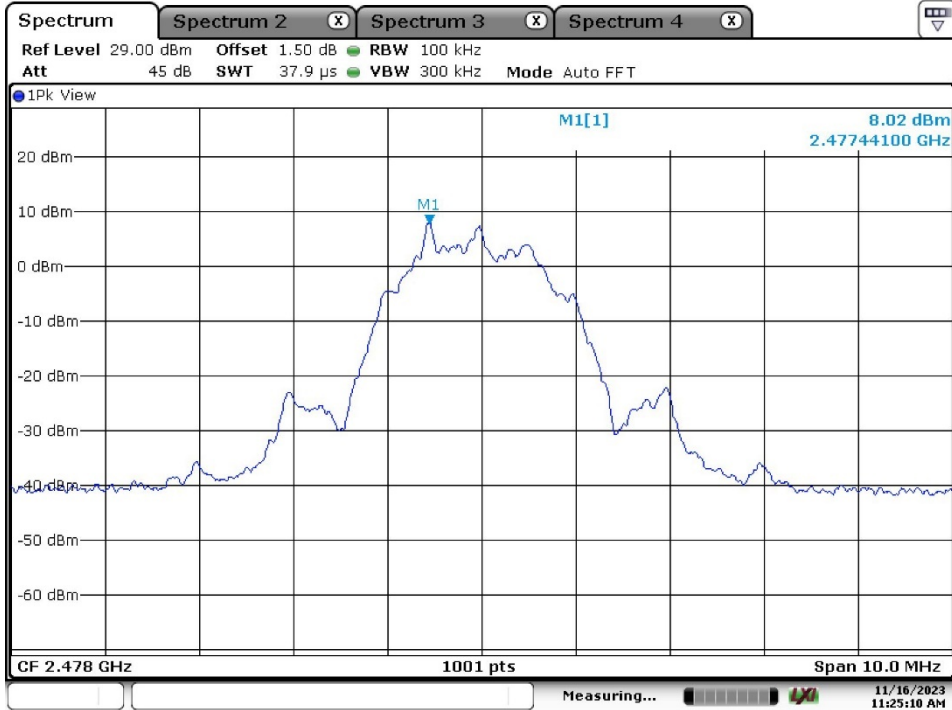
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BLE 2M Ant1 2440 30~25000



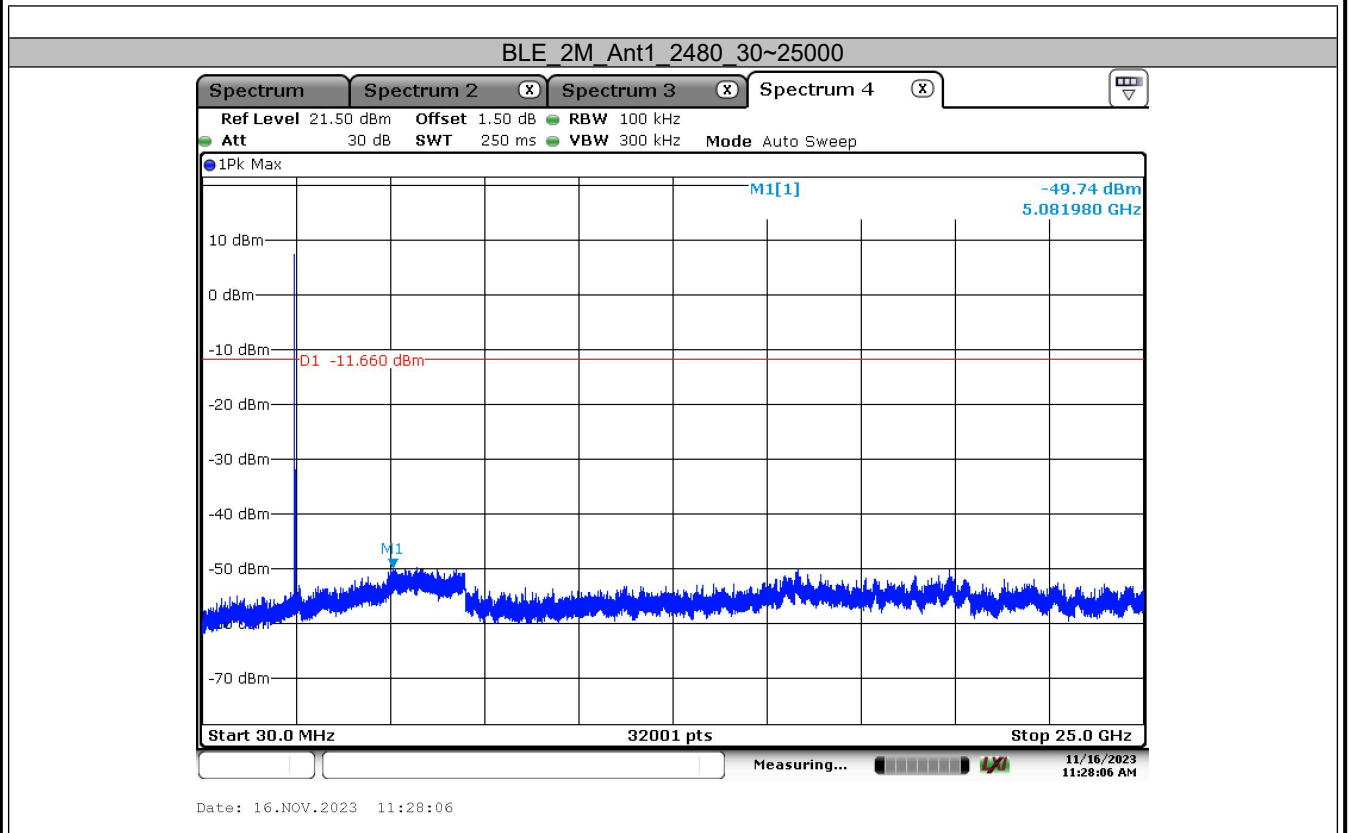
Date: 16.NOV.2023 11:23:39

BLE 2M Ant1 2478 0~Reference



Date: 16.NOV.2023 11:25:10

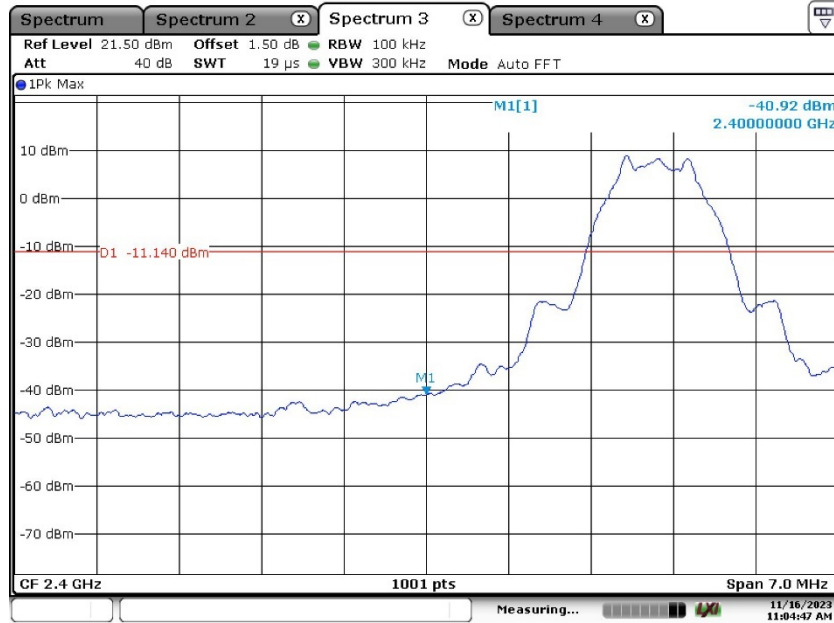




**Band edge measurements**

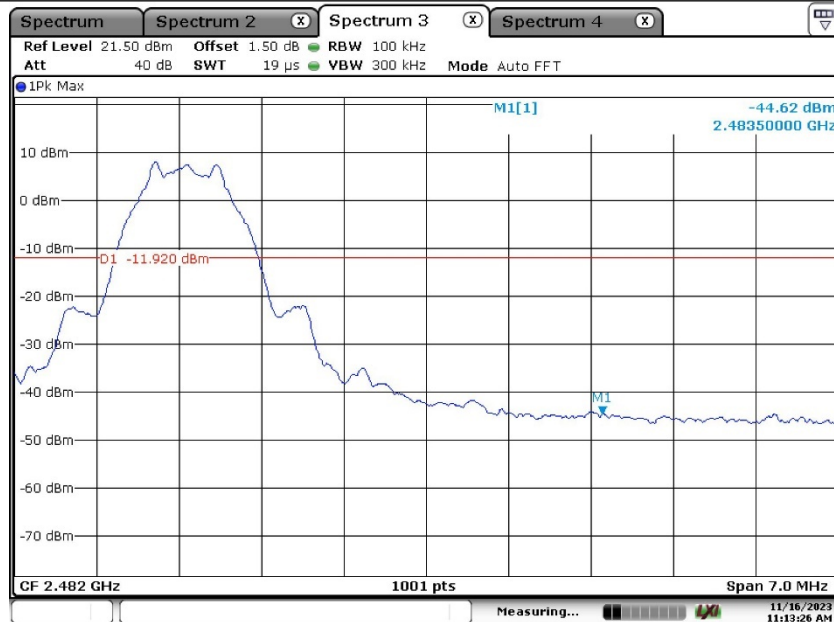
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	8.86	-40.92	≤-11.14	PASS
		High	2480	8.08	-44.62	≤-11.92	PASS
BLE_2M	Ant1	Low	2402	8.79	-47.68	≤-11.21	PASS
		High	2480	8.02	-46.26	≤-11.98	PASS

BLE 1M Ant1 Low 2402



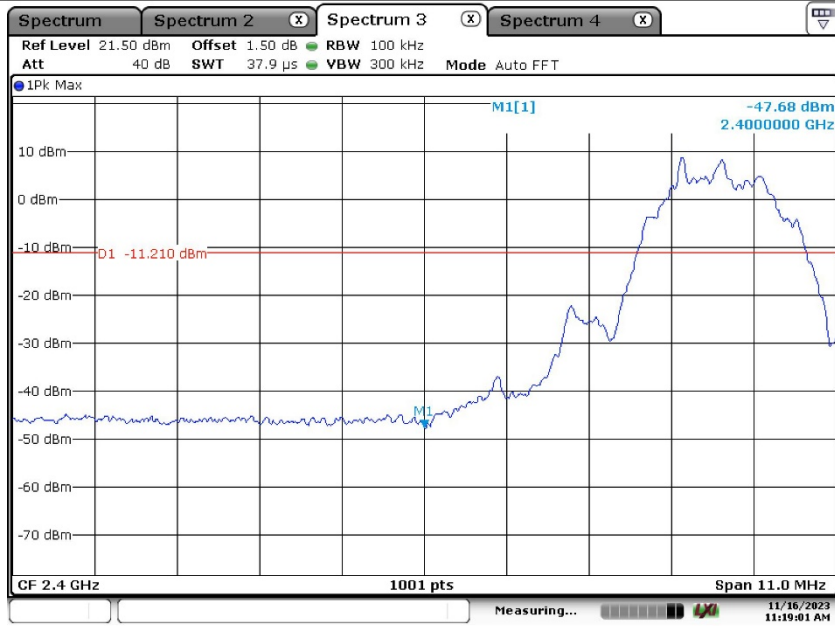
Date: 16.NOV.2023 11:04:47

BLE 1M Ant1 High 2480



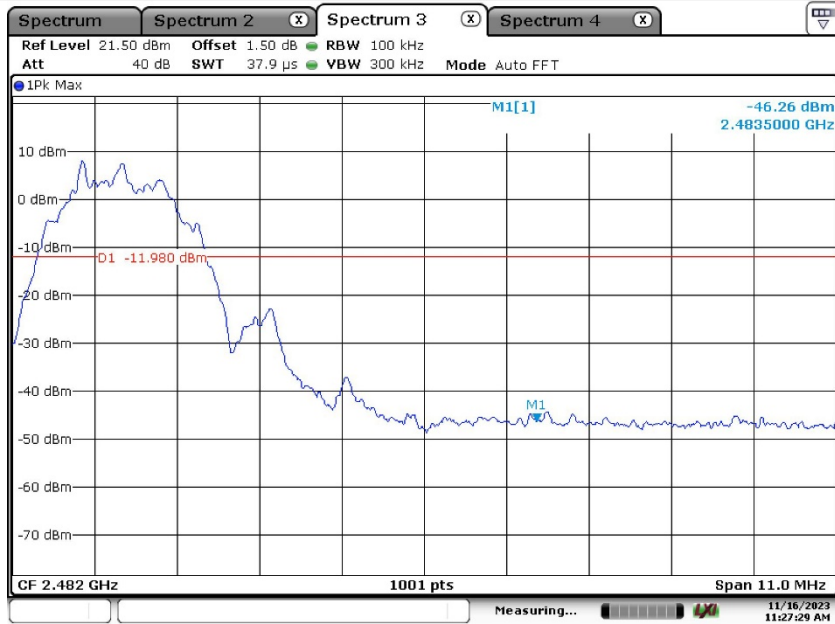
Date: 16.NOV.2023 11:13:26

BLE 2M Ant1 Low 2404



Date: 16.NOV.2023 11:19:01

BLE 2M Ant1 High 2478



Date: 16.NOV.2023 11:27:29

## Appendix B.6: Test Results of Radiated Spurious Emissions

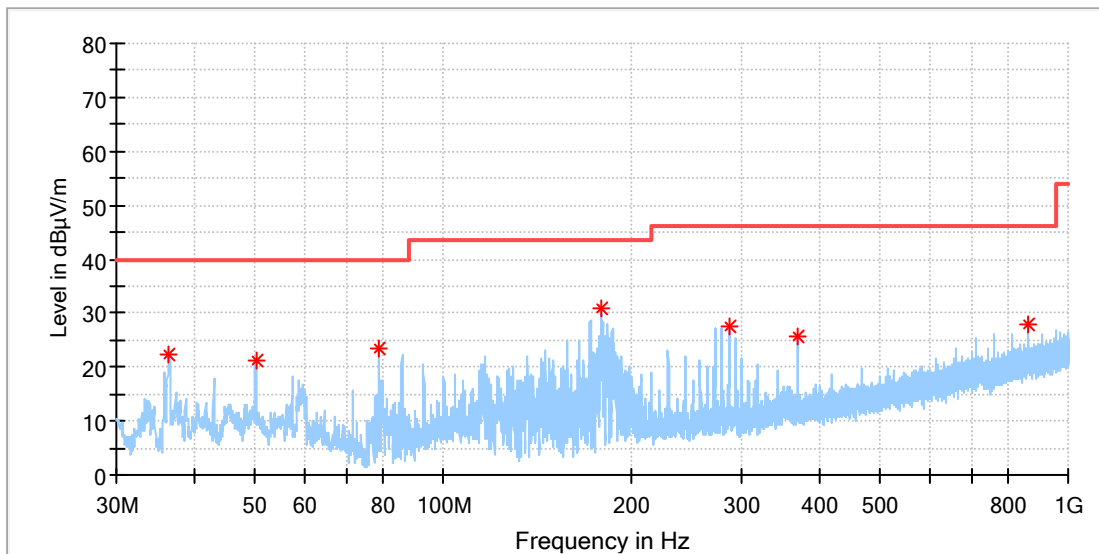
Note:

- 1) This testing was carried out on different modulations, but only the worst case was presented in this report.
- 2) Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

30 MHz - 1GHz

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

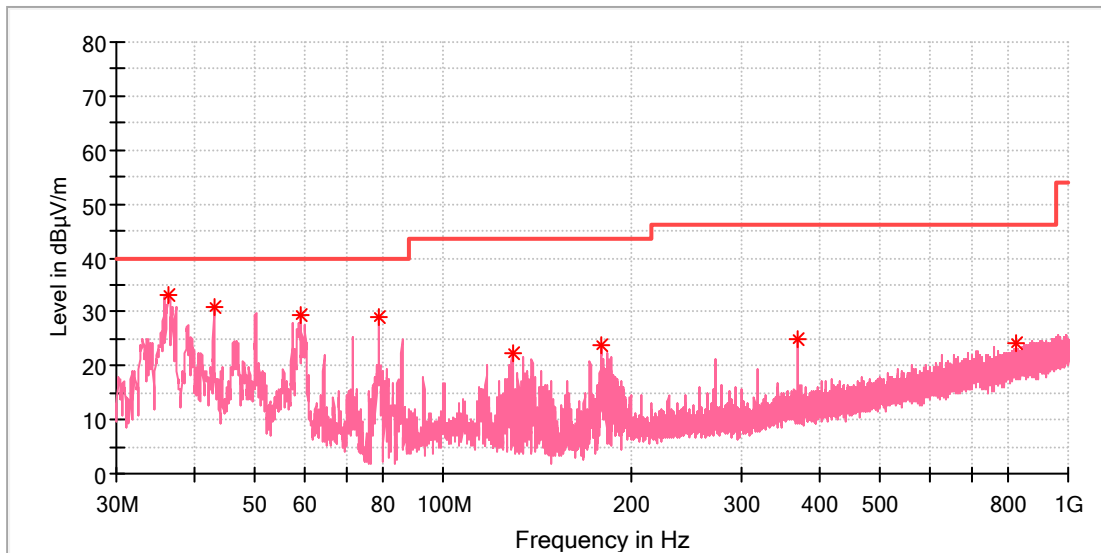


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.416923	22.38	40.00	17.62	100.0	H	199.0	-21.7
50.146154	21.04	40.00	18.96	100.0	H	208.0	-18.6
78.761154	23.52	40.00	16.48	100.0	H	232.0	-23.7
179.006923	30.93	43.50	12.57	100.0	H	332.0	-20.9
286.490385	27.58	46.00	18.42	100.0	H	53.0	-16.9
368.641923	25.52	46.00	20.48	100.0	H	257.0	-14.8
860.170769	27.85	46.00	18.15	100.0	H	323.0	-5.8

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

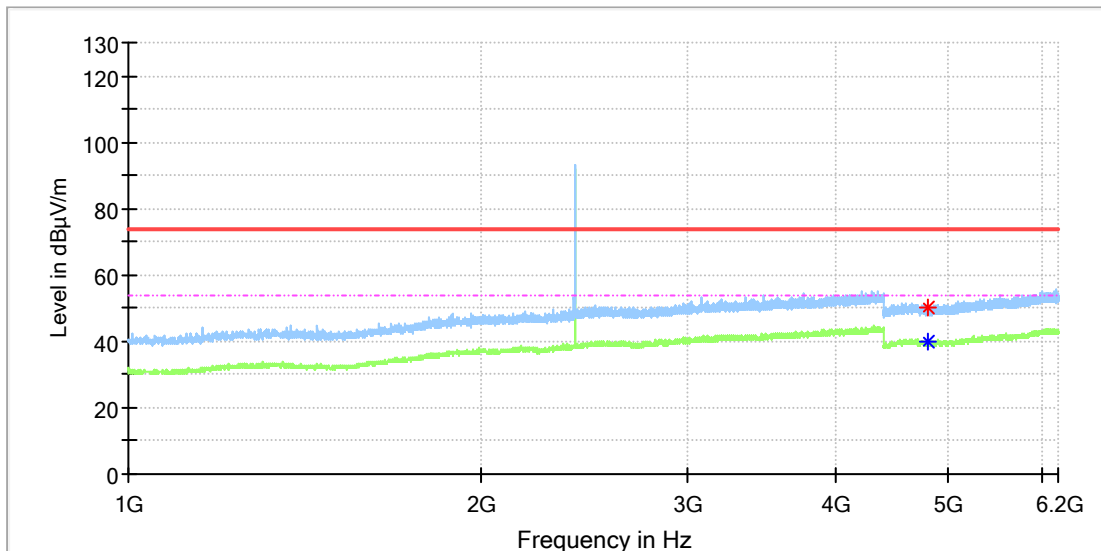
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.416923	33.24	40.00	6.76	100.0	V	0.0	-21.7
42.983077	31.00	40.00	9.00	100.0	V	118.0	-19.6
59.249231	29.25	40.00	10.75	100.0	V	240.0	-19.2
78.798462	28.85	40.00	11.15	100.0	V	249.0	-23.7
128.977308	22.25	43.50	21.25	100.0	V	258.0	-22.1
179.044231	23.74	43.50	19.76	100.0	V	328.0	-20.9
368.679231	24.88	46.00	21.12	100.0	V	153.0	-14.8
827.563846	24.23	46.00	21.77	100.0	V	8.0	-6.2

1GHz - 18GHz

Note: The highest waveform in the figure is Bluetooth Fundamental.

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

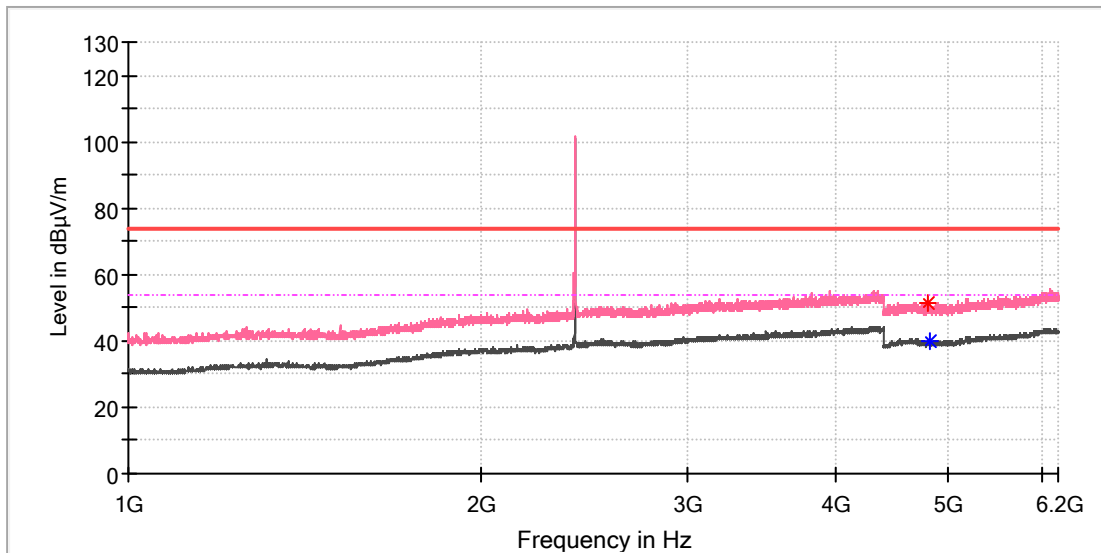


### Critical\_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	---	39.91	54.00	14.09	150.0	H	152.0	11.8
4809.000000	50.29	---	74.00	23.71	150.0	H	59.0	11.8

### EUT Information

EUT Name: Bluetooth Module  
 Model: QCC5181  
 Test Mode: BLE 1M\_Low channel  
 Order No/Sample No: A003599668  
 Test Voltage:: DC 5V  
 Remark: Temp 23 Humi:56%  
 Test Standard: FCC 15.247  
 Tested By: Kei Zhang  
 Reviewed By: Terry Yin

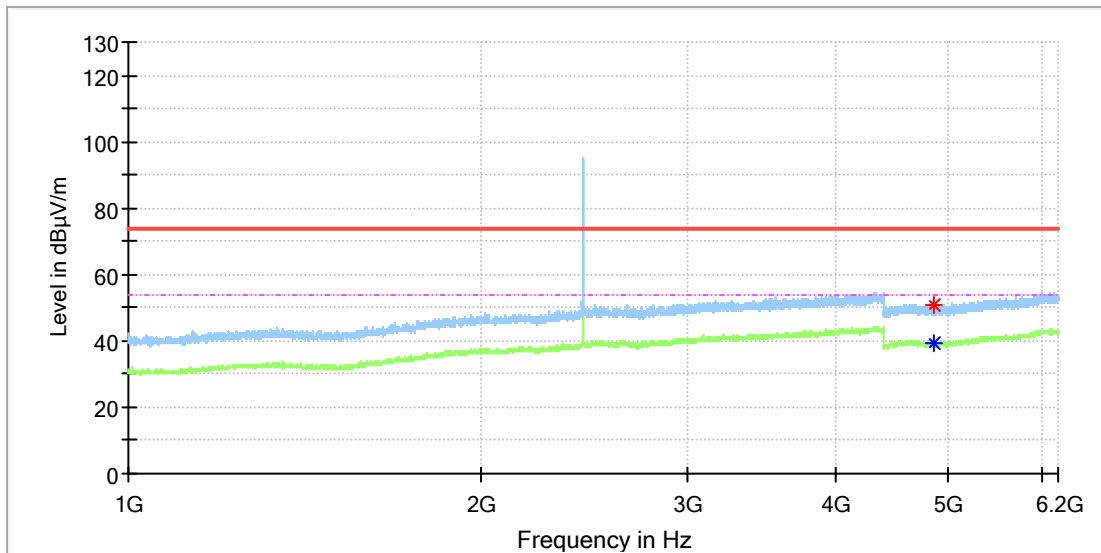


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4807.000000	51.50	---	74.00	22.50	150.0	V	17.0	11.8
4813.000000	---	39.73	54.00	14.27	150.0	V	176.0	11.8

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



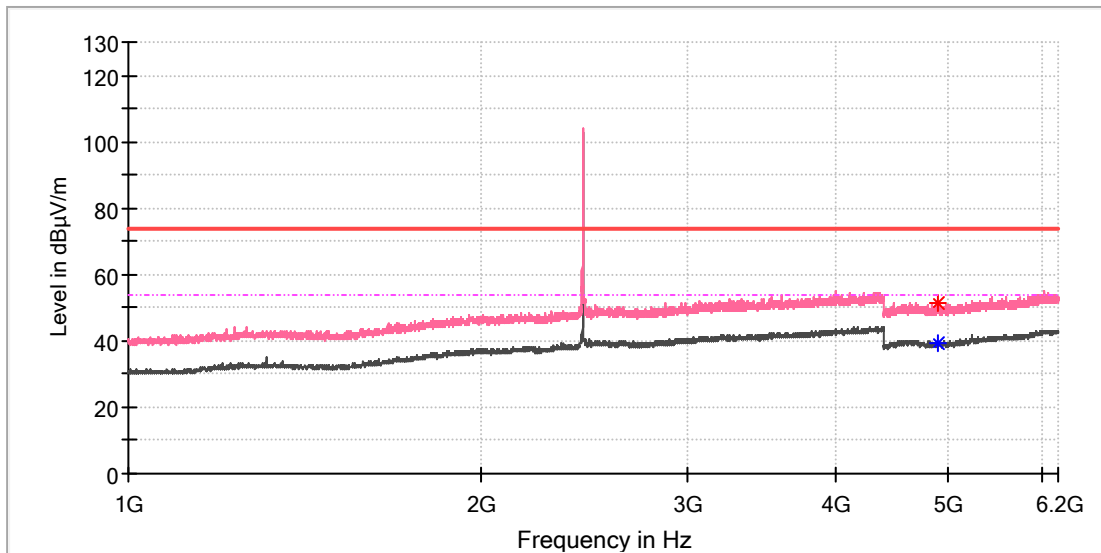
### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4854.000000	51.04	---	74.00	22.96	150.0	H	155.0	11.8
4862.500000	---	39.52	54.00	14.48	150.0	H	138.0	11.8



### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

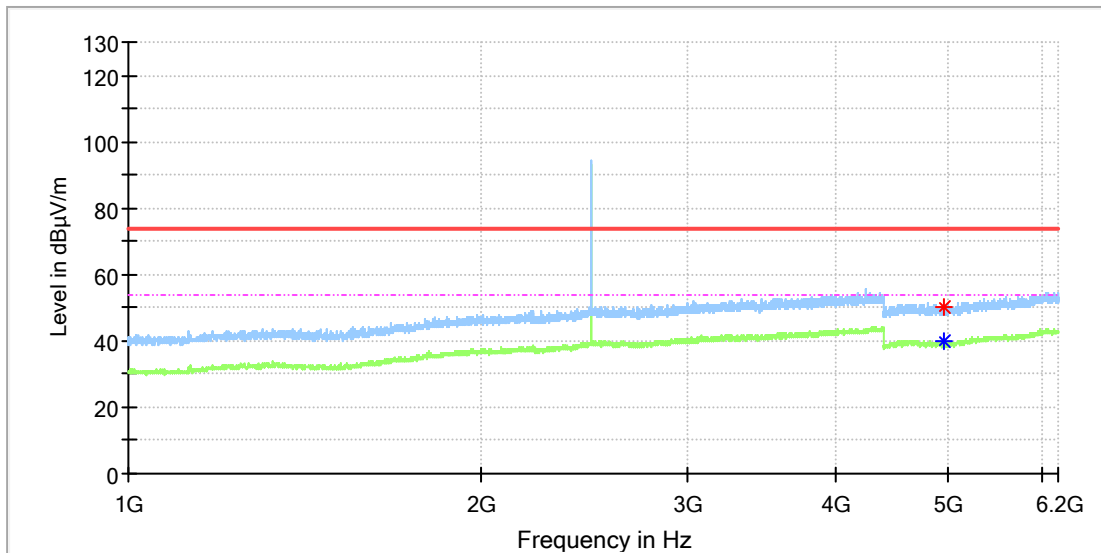


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4892.500000	51.20	---	74.00	22.80	150.0	V	263.0	11.8
4906.500000	---	39.41	54.00	14.59	150.0	V	65.0	11.8

### EUT Information

EUT Name: Bluetooth Module  
 Model: QCC5181  
 Test Mode: BLE 1M\_High channel  
 Order No/Sample No: A003599668  
 Test Voltage:: DC 5V  
 Remark: Temp 23 Humi:56%  
 Test Standard: FCC 15.247  
 Tested By: Kei Zhang  
 Reviewed By: Terry Yin

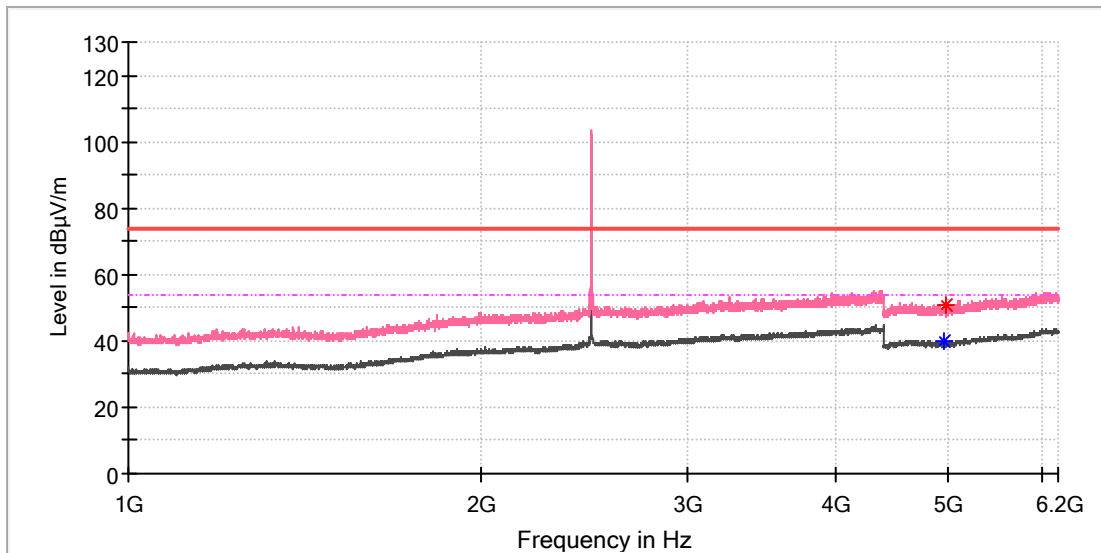


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4949.500000	50.30	---	74.00	23.70	150.0	H	19.0	11.8
4956.500000	---	39.66	54.00	14.34	150.0	H	50.0	11.8

### EUT Information

EUT Name: Bluetooth Module  
 Model: QCC5181  
 Test Mode: BLE 1M\_High channel  
 Order No/Sample No: A003599668  
 Test Voltage:: DC 5V  
 Remark: Temp 23 Humi:56%  
 Test Standard: FCC 15.247  
 Tested By: Kei Zhang  
 Reviewed By: Terry Yin

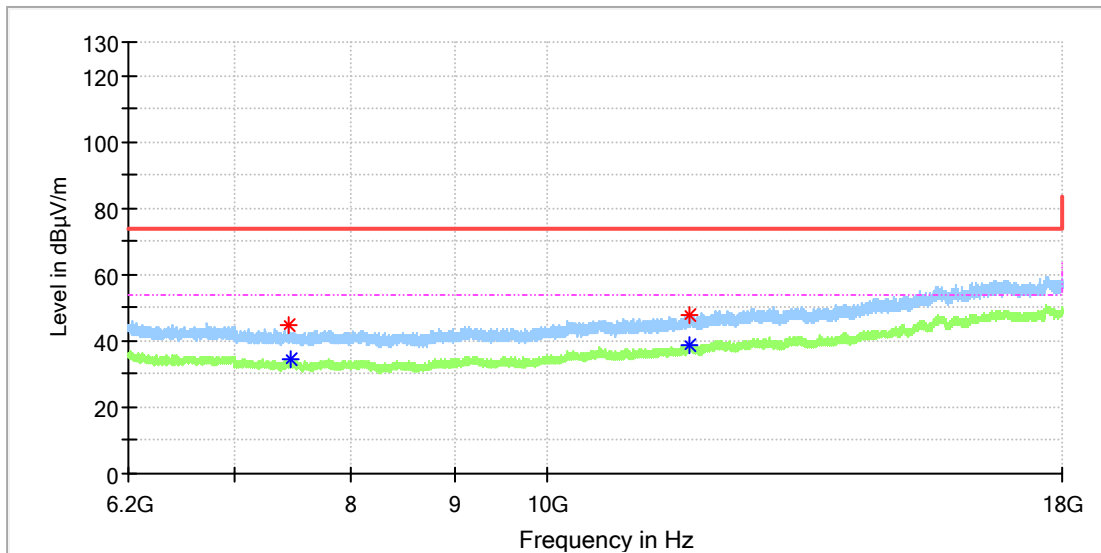


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4953.000000	---	39.63	54.00	14.37	150.0	V	6.0	11.8
4965.500000	50.82	---	74.00	23.18	150.0	V	0.0	11.8

### EUT Information

EUT Name: Bluetooth Module  
 Model: QCC5181  
 Test Mode: BLE 1M\_Low channel  
 Order No/Sample No: A003599668  
 Test Voltage:: DC 5V  
 Remark: Temp 23 Humi:56%  
 Test Standard: FCC 15.247  
 Tested By: Kei Zhang  
 Reviewed By: Terry Yin

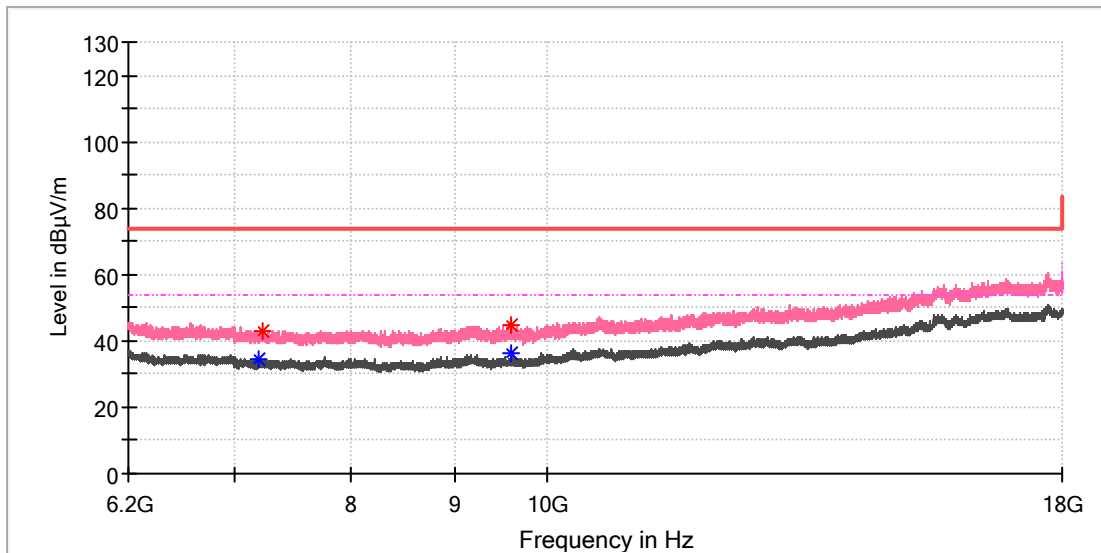


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7446.866667	44.67	---	74.00	29.34	150.0	H	170.0	8.5
7464.075000	---	34.50	54.00	19.50	150.0	H	287.0	8.6
11768.125000	47.70	---	74.00	26.30	150.0	H	64.0	13.4
11775.500000	---	38.98	54.00	15.02	150.0	H	87.0	13.4

### EUT Information

EUT Name: Bluetooth Module  
 Model: QCC5181  
 Test Mode: BLE 1M\_Low channel  
 Order No/Sample No: A003599668  
 Test Voltage:: DC 5V  
 Remark: Temp 23 Humi:56%  
 Test Standard: FCC 15.247  
 Tested By: Kei Zhang  
 Reviewed By: Terry Yin

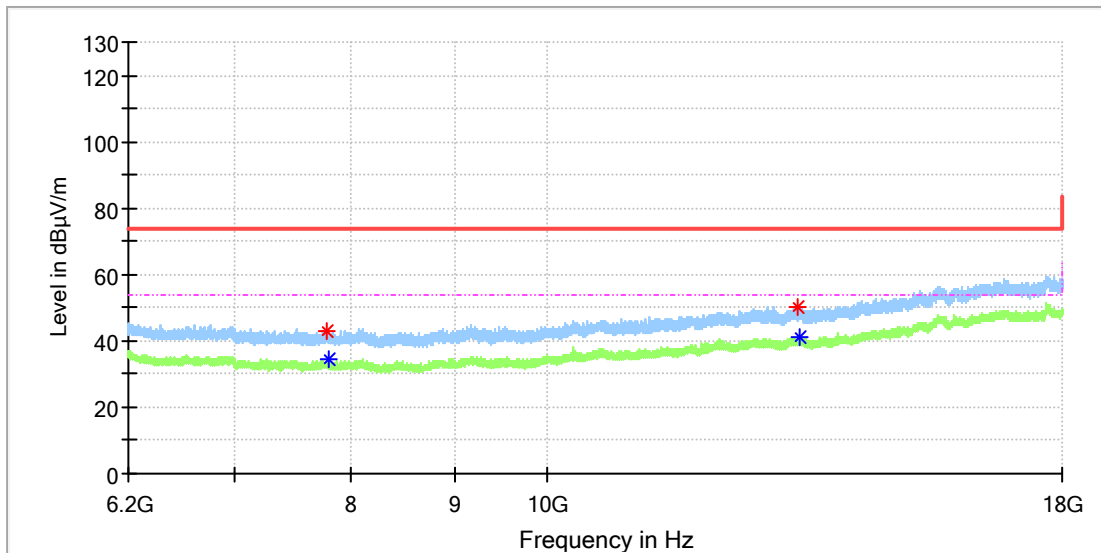


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7200.050000	---	34.62	54.00	19.38	150.0	V	346.0	8.8
7225.616667	43.15	---	74.00	30.85	150.0	V	287.0	8.7
9606.758333	44.48	---	74.00	29.52	150.0	V	346.0	10.4
9607.250000	---	36.16	54.00	17.84	150.0	V	0.0	10.4

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

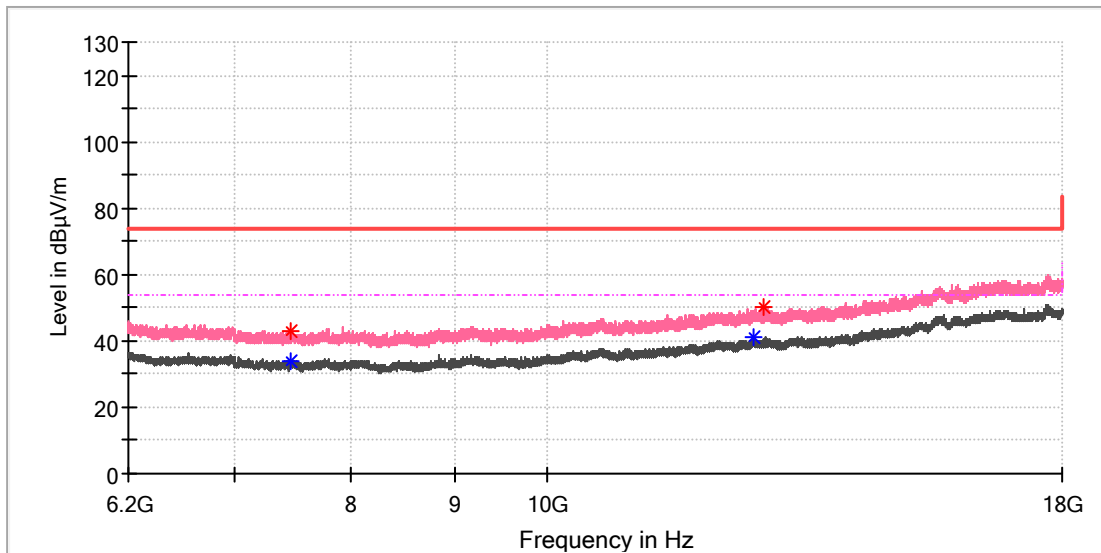


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7777.758333	42.85	---	74.00	31.15	150.0	H	202.0	8.9
7791.033333	---	34.23	54.00	19.77	150.0	H	11.0	8.9
13295.733333	50.11	---	74.00	23.90	150.0	H	226.0	15.5
13324.741667	---	41.19	54.00	12.81	150.0	H	2.0	15.5

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

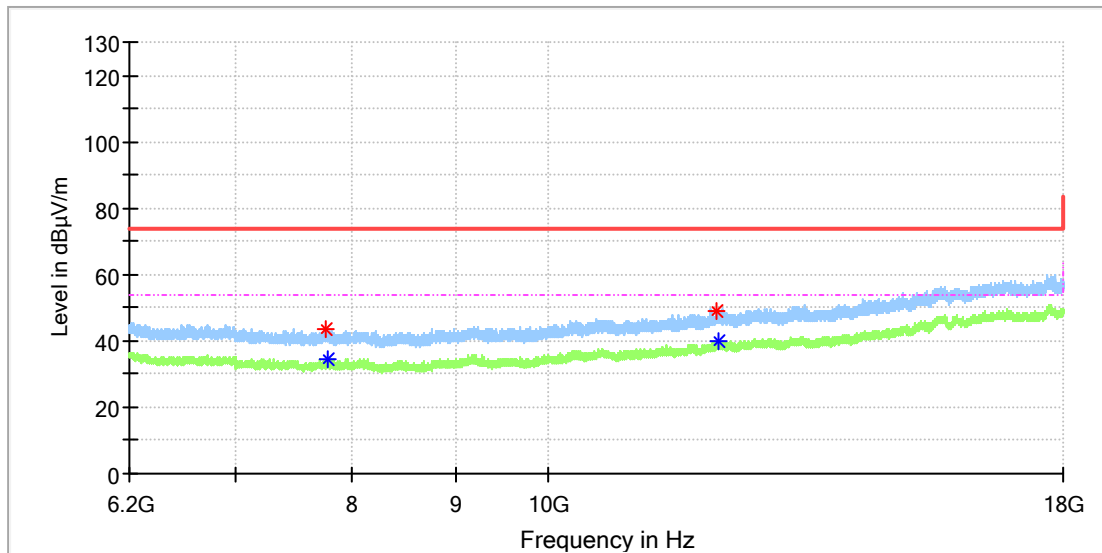


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7453.750000	42.65	---	74.00	31.35	150.0	V	169.0	8.5
7458.175000	---	34.00	54.00	20.00	150.0	V	359.0	8.5
12658.533333	---	41.27	54.00	12.73	150.0	V	341.0	15.0
12810.458333	50.20	---	74.00	23.80	150.0	V	292.0	15.3

### EUT Information

EUT Name: Bluetooth Module  
 Model: QCC5181  
 Test Mode: BLE 1M\_High channel  
 Order No/Sample No: A003599668  
 Test Voltage:: DC 5V  
 Remark: Temp 23 Humi:56%  
 Test Standard: FCC 15.247  
 Tested By: Kei Zhang  
 Reviewed By: Terry Yin



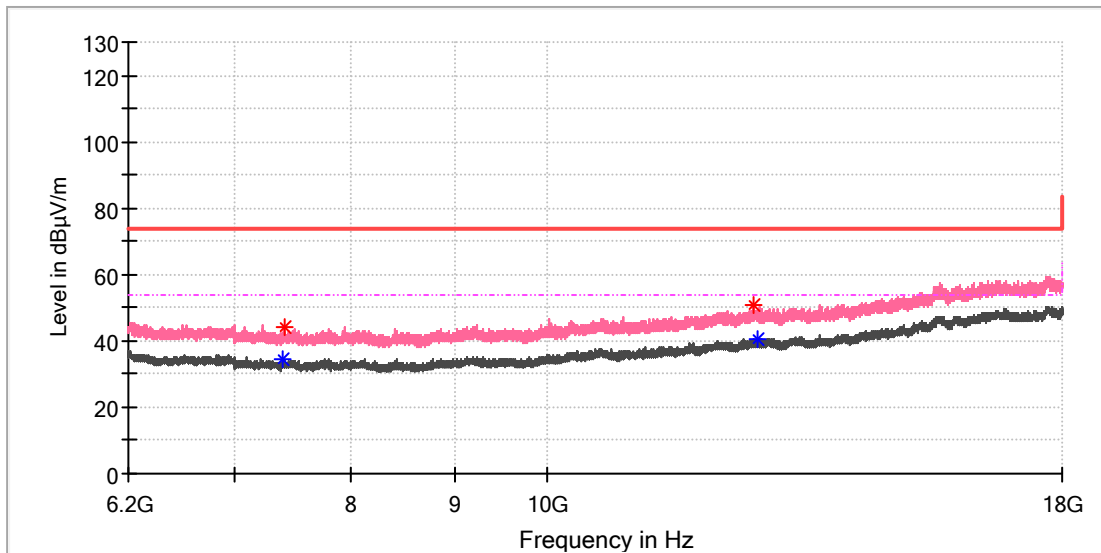
### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7760.550000	43.41	---	74.00	30.59	150.0	H	240.0	8.8
7769.891667	---	34.52	54.00	19.48	150.0	H	278.0	8.9
12116.716667	49.12	---	74.00	24.88	150.0	H	301.0	14.2
12145.233333	---	39.69	54.00	14.31	150.0	H	336.0	14.4



### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_High channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



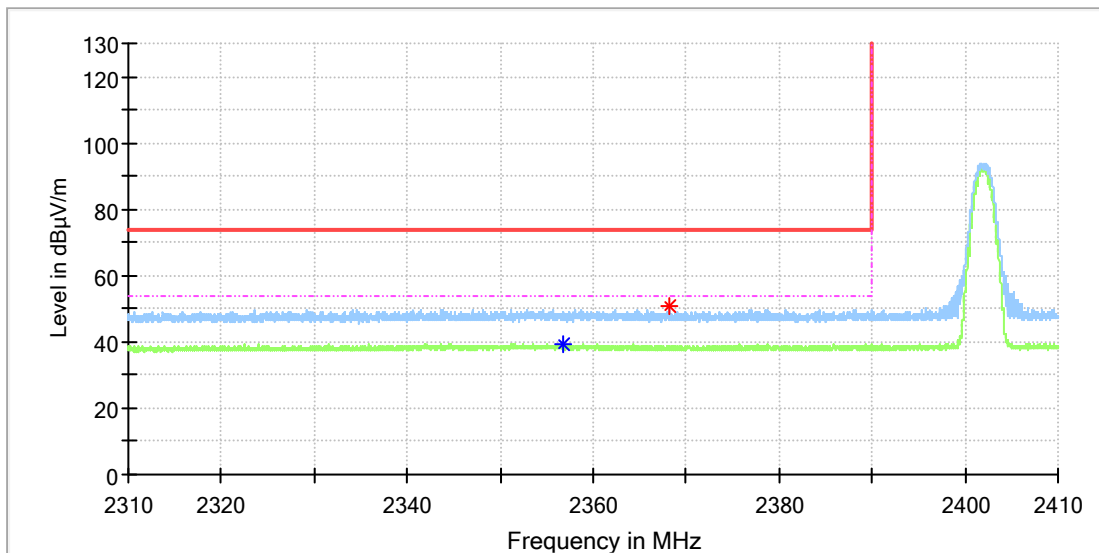
### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7401.633333	---	34.56	54.00	19.44	150.0	V	226.0	8.3
7402.616667	43.86	---	74.00	30.14	150.0	V	0.0	8.3
12642.308333	50.52	---	74.00	23.48	150.0	V	41.0	15.0
12722.941667	---	40.81	54.00	13.19	150.0	V	327.0	15.2

## Appendix B.7: Test Results of Radiated Emissions in Restricted Bands

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

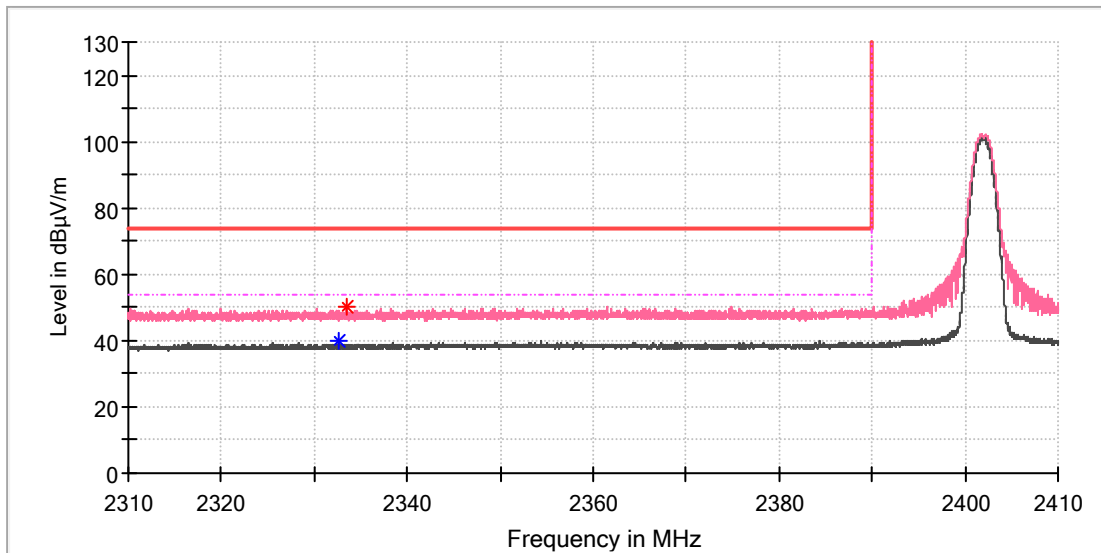


### Critical\_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2356.750000	---	39.10	54.00	14.90	150.0	H	199.0	6.9
2368.117647	50.55	---	74.00	23.45	150.0	H	36.0	6.9

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

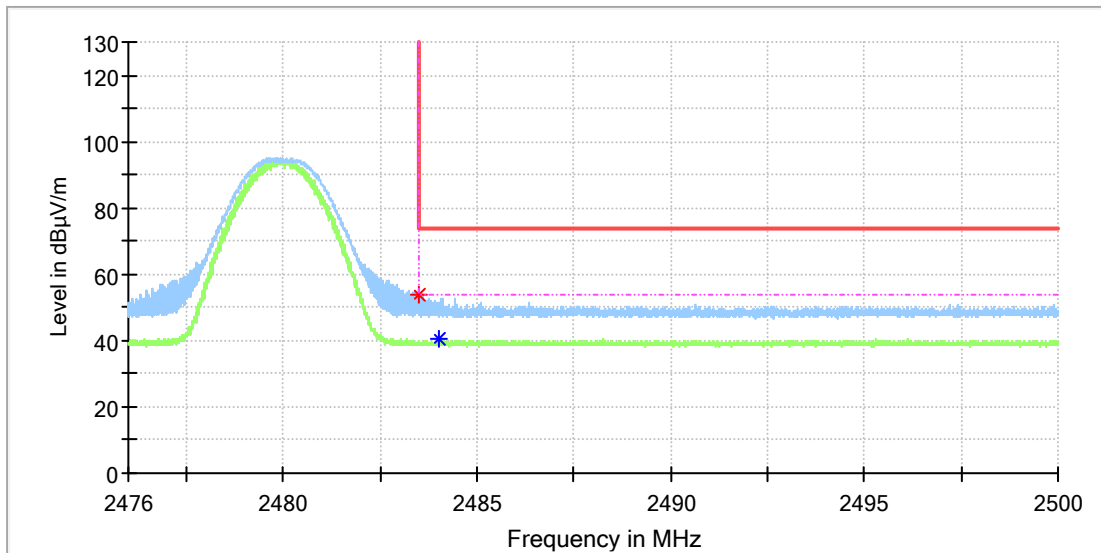


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2332.573530	---	39.78	54.00	14.22	150.0	V	0.0	6.7
2333.544118	50.08	---	74.00	23.92	150.0	V	190.0	6.7

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_High channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

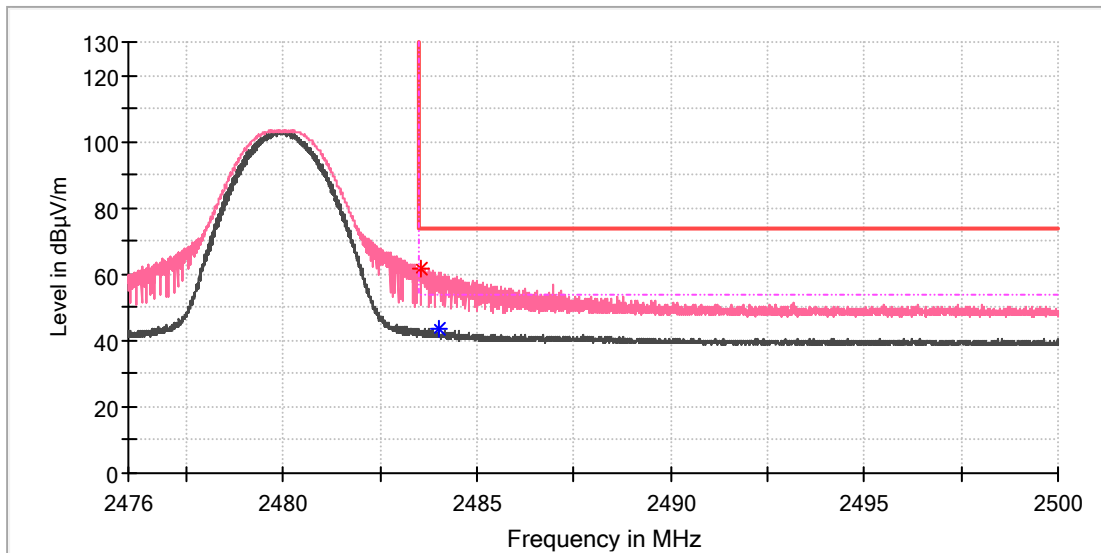


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.517647	53.97	---	74.00	20.03	150.0	H	294.0	7.4
2484.036471	---	40.22	54.00	13.78	150.0	H	77.0	7.4

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 1M_High channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

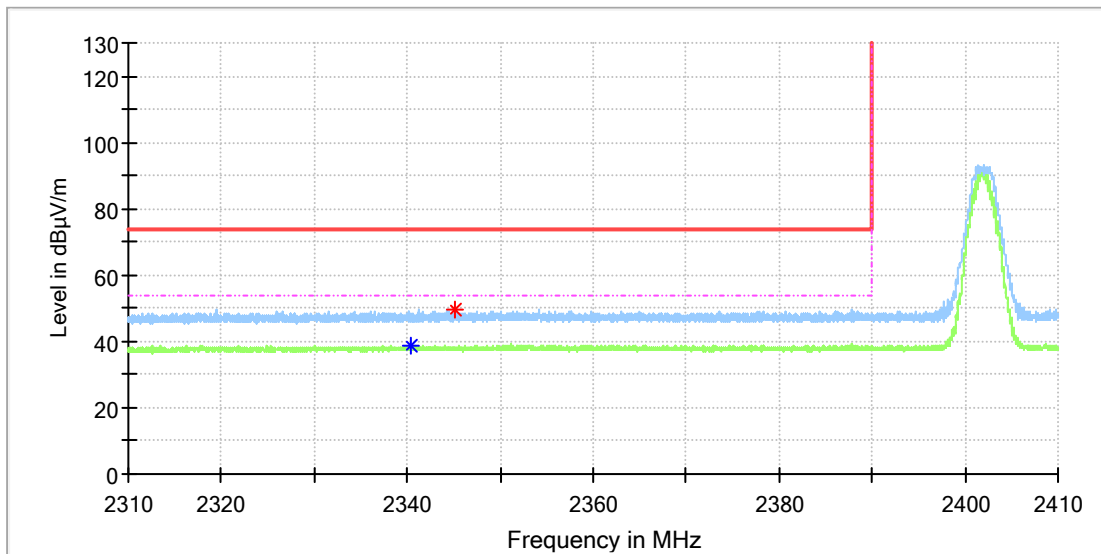


### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.563530	61.69	---	74.00	12.31	150.0	V	121.0	7.4
2484.018824	---	43.60	54.00	10.40	150.0	V	285.0	7.4

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 2M_Low channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

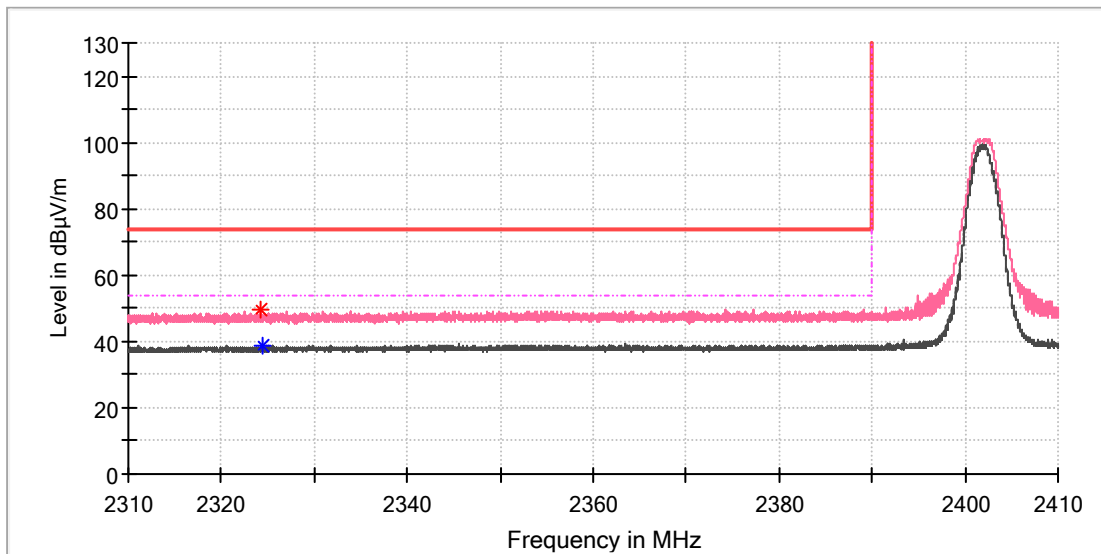


### Critical\_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2340.397059	---	38.71	54.00	15.29	150.0	H	344.0	6.8
2345.058824	49.53	---	74.00	24.47	150.0	H	0.0	6.9

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 2M_Low channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

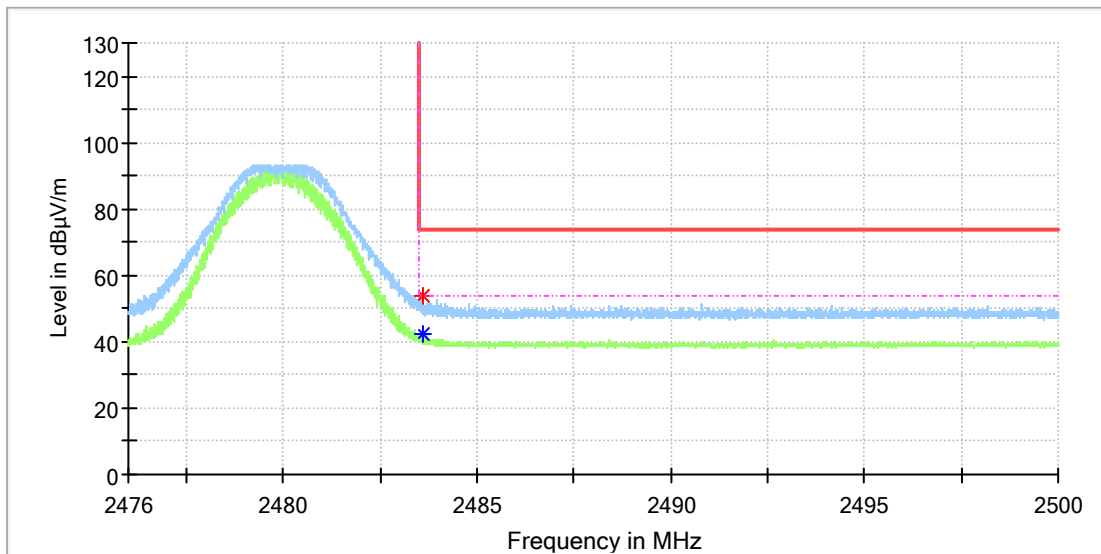


### Critical\_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2324.250000	49.34	---	74.00	24.66	150.0	V	24.0	6.6
2324.455882	---	38.43	54.00	15.57	150.0	V	130.0	6.6

### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 2M_High channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



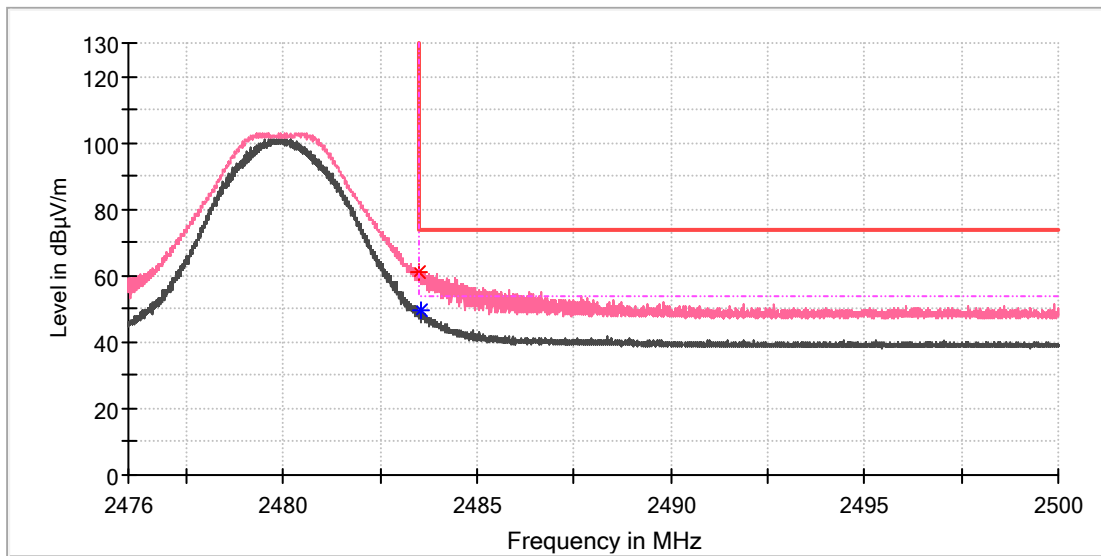
### Critical\_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.609412	53.61	---	74.00	20.39	150.0	H	77.0	7.4
2483.623530	---	42.22	54.00	11.78	150.0	H	70.0	7.4



### EUT Information

EUT Name:	Bluetooth Module
Model:	QCC5181
Test Mode:	BLE 2M_High channel
Order No/Sample No:	A003599668
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical\_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.524706	61.14	---	74.00	12.86	150.0	V	277.0	7.4
2483.545882	---	49.65	54.00	4.35	150.0	V	125.0	7.4