



RF Test Report



Report Number : 6128625056401

Applicant : REYAX TECHNOLOGY CO.,
LTD.

Product : 2.4GHz Bluetooth - Low Energy
Module with Integrated Antenna

Model : RYB2340

FCC ID : QLYRYB2340

In accordance with
FCC rule Part §15.247

RESPONSIBLE FOR	NAME	SIGNATURE	DATE
Approved By	Jack Chang		2025.09.19
Prepared By	Ariel Hsu		2025.09.19

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

EXECUTIVE SUMMARY

TÜV SÜD Asia Ltd., reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Asia Ltd. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Asia Ltd. issued reports.

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1 General Information

1.1 Report Modification Record

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

History of this test report

Issue	Description of Change	Date of Issue
1	Initial Issue	2025-09-19

1.2 Introduction

The information contained in this report is intended to show verification of RF qualification approval. The testing requirements of the standards for the tests listed in Section 1.5.

Applicant : REYAX TECHNOLOGY CO., LTD.
Address : 4F.-15, No.26, Ln. 321, Yangguang St., Neihu Dist. Taipei City 11491 Taiwan
Manufacturer : Gershin Electronics Ltd.
Product Name : 2.4GHz Bluetooth - Low Energy Module with Integrated Antenna
Model Number(s) : RYB2340
Date of Receipt of EUT : 2025-08-28
Start of Test : 2025-09-03
Finish of Test : 2025-09-09
Test Laboratory : TÜV SÜD Asia Ltd., Taiwan Branch
Address : 7F., No. 37, Sec. 2, Zhongyang S. Rd., Beitou District, Taipei City 11270, R.O.C. Taiwan
Test Location : TÜV SÜD Asia Ltd., Taiwan Branch, Guishan Laboratory
Address : No. 31, Dinghu Road, Guishan District, Taoyuan City, TAIWAN (R.O.C.)

The test facility is accredited by TAF (member of ILAC), under number 2573 according to ISO/IEC 17025: 2017.

FCC Designation Number No.: TW2573

1.3 Applied Standard

FCC rule Part §15.247 ISED RSS-247
FCC Part 15, Subpart C §15.247 FCC KDB 558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024

1.4 Deviation from standards

None

1.5 List of applied test(s) of the EUT

FCC rule Part §15.247			
FCC Clause	Test item	Result	Remark
§15.207(a)	AC Power Line Conducted Emission	Compliant	
§15.247(b) (3)	Peak Output Power	Compliant	
§15.247(a)(2)	Emission Bandwidth	Compliant	
§15.247(d) §15.205 §15.209	Radiated & Conducted Band Edge and Spurious Emission	Compliant	
§15.247(e)	Peak Power Density	Compliant	
§15.203	Antenna Requirement	Compliant	

2 General EUT Information

All information in this chapter was provided by the applicant.

2.1 Technical Specification of EUT

Items	EUT information
Operating Frequency	2402 ~ 2480 MHz
Channel number	40
Maximum Output Power (dBm)	BLE 125kbps: 7.16dBm BLE 500kbps: 7.23dBm BLE 1Mbps: 7.32dBm BLE 2Mbps: 7.31dBm
Operation Voltage	3.3Vdc
Modulation	GFSK
Test Software Version	TI smartRF studio 8 v1.2.1

2.2 Variation of family model(s)

2.2.1 List of family model(s)

Not applicable

2.2.2 Reason for selection of EUT

Not applicable

2.3 Antenna List

Antenna Type	Brand	Model	Connector	Freq. (MHz)	Peak Antenna Gain (dBi)
PCB	REYAX	RYB2340	Permanently attached antenna	2402 ~ 2483.5	1.16

3 Configuration of Equipment

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

Numbers assigned to equipment on the diagram in "3.3 System configuration" correspond to the list in "3.1 Equipment used" and "3.2 Cable(s) used".

This test configuration is based on the manufacture's instruction.

Cabling and setup(s) were taken into consideration and test data was taken under worse case condition.

The EUT has been tested as an independent unit with other necessary accessories or support units.

3.1 Equipment used

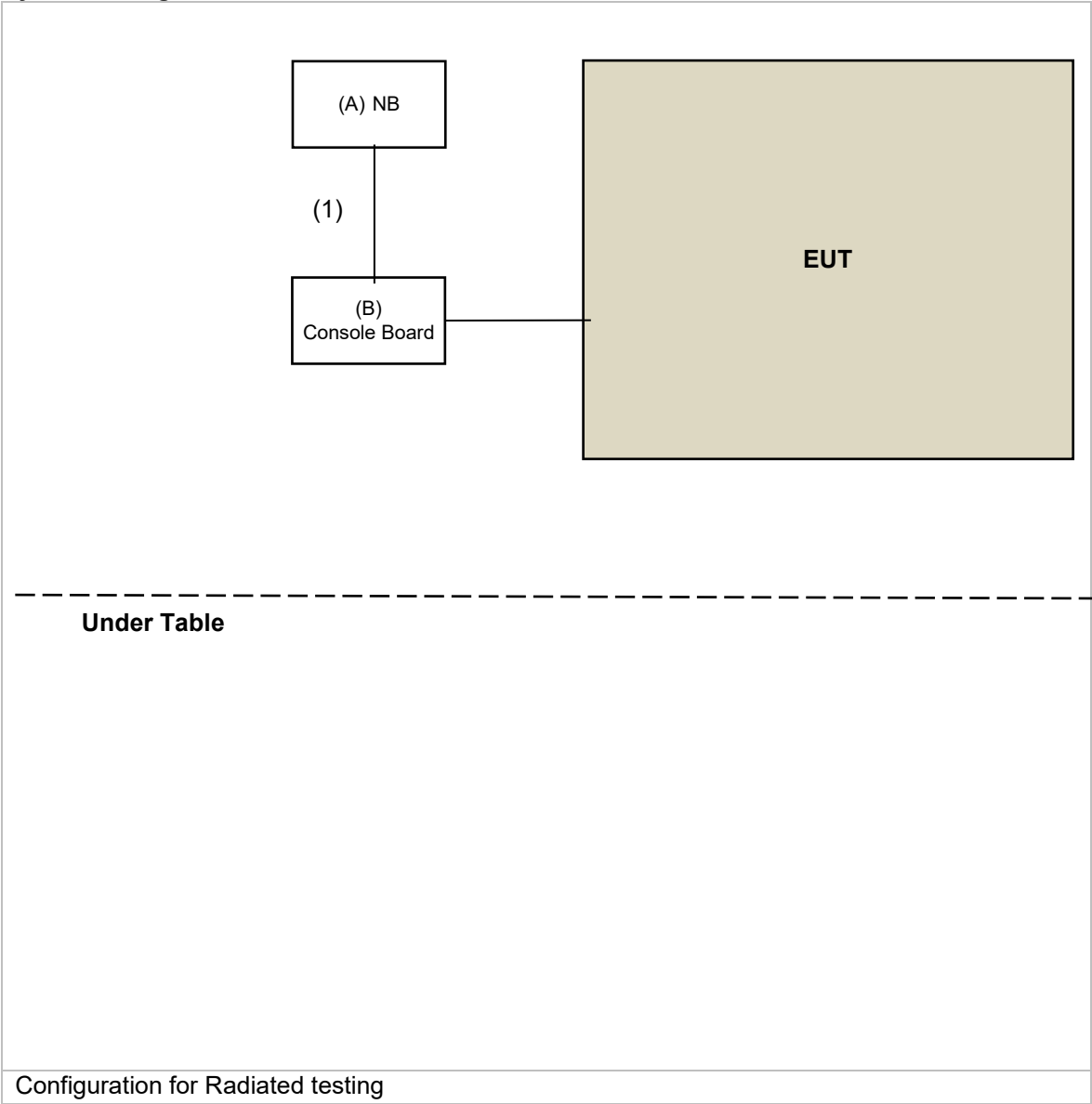
No.	Product	Brand	Model No.	Serial No.	Remarks
A	Laptop	Lenovo	TP00048A	PC-00NQMT	Provided by Lab
B	Console Board	Ghostyu	XDS110	XDS-GY004034	Provided by Client
C	Adapter	Lenovo	ADLX65YAC 3E	8SGX21J755 49A1WH	Provided by Lab

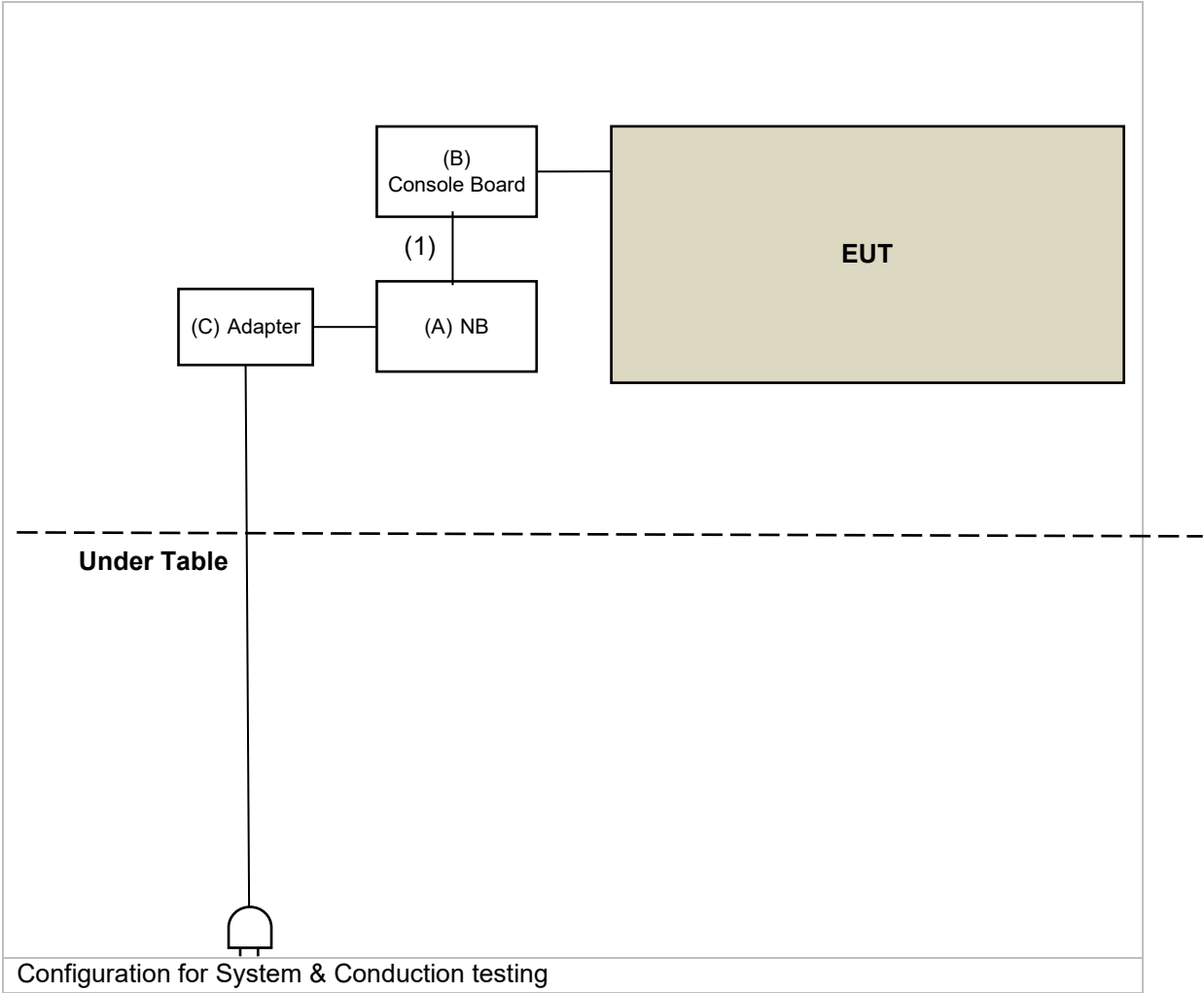
3.2 Cable(s) used

No.	Cable Descriptions	Brand	Model No.	Length(m)	Remarks
1	USB Cable	REYAX	RYLS135	1	Provided by Client



3.3 System configuration





4 General Test Configurations

The EUT has been tested under Transmitting and Receiving condition. And used to control the EUT for staying in engineering mode that enables selectable of channel, and capable of continuous transmitting and constant receiving mode.

Remark: All applicable test items were tested based on the combination of modulation scheme that generates the worst case.

4.1 Operating channels and frequencies

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

4.2 Description of test mode

- 1) The EUT has been tested under operating condition.
- 2) Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
- 3) The field strength of radiation emission was measured as the EUT positioned in different orthogonal planes (X/Y/Z) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.
- 4) Investigation has been done on all the possible configurations for searching the worst case.

RF Output Power

- ☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
-	2402 to 2480	2402, 2440, 2480	0.125
-	2402 to 2480	2402, 2440, 2480	0.5
-	2402 to 2480	2402, 2440, 2480	1
-	2402 to 2480	2402, 2440, 2480	2

6dB & Occupied Channel Bandwidth

- ☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
-	2402 to 2480	2402, 2440, 2480	1
-	2402 to 2480	2402, 2440, 2480	2

Power Spectral Density

- ☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
-	2402 to 2480	2402, 2440, 2480	1
-	2402 to 2480	2402, 2440, 2480	2

Radiated Spurious Emissions (Above 1 GHz)

- ☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
Tx			
-	2402 to 2480	2402, 2440, 2480	1
-	2402 to 2480	2402, 2440, 2480	2

Radiated Spurious Emissions (Below 1 GHz)

- ☐ Pre-scan full test was applied on all test modes, but only the worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
Tx			
-	2402 to 2480	2440	1
-	2402 to 2480	2440	2
Rx			
-	2402 to 2480	2440	1
-	2402 to 2480	2440	2

4.3 Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Conducted Measurement	20-26 °C	50-68 %	Sam Huang
Radiated Spurious Emissions above 1 GHz	20-26 °C	50-68 %	Sam Huang
Radiated Spurious Emissions below 1 GHz	20-26 °C	50-68 %	Sam Huang
Mains Conducted Emission	20-26 °C	50-68 %	Sam Huang

5 Test Result

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Refer to EUT photo for details.

5.2 Peak Output Power

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi. (FCC only)

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi. (FCC only)

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

5.2.1 Measurement procedure

Duty Cycle

- 1) Place the EUT on the table and set it in transmitting mode.
- 2) Set span = Zero
- 3) RBW = 8MHz, VBW = 8MHz,
- 4) Detector = Peak

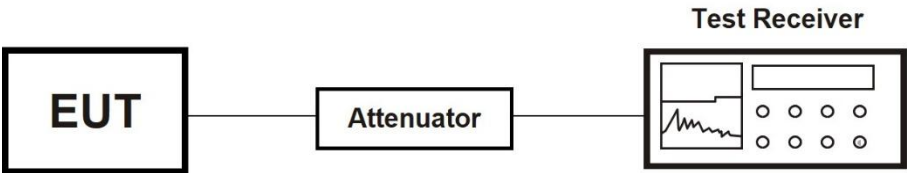
Output Power

- 1) Place the EUT on the table and set it in transmitting mode.
- 2) The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.
- 4) Record the max. Reading as observed from Power Meter.
- 5) Repeat above procedures until all test default channel measured was complete.

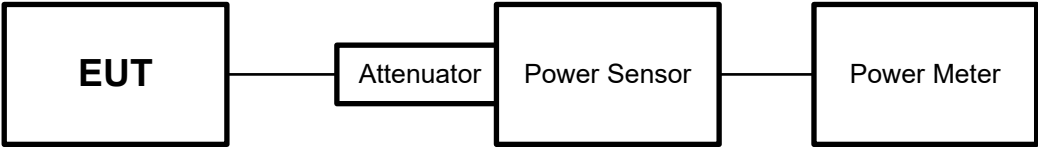


5.2.2 Test Setup

Duty Cycle



Output Power



5.2.3 Limit

1 watt (30 dBm)

5.2.4 Measurement result

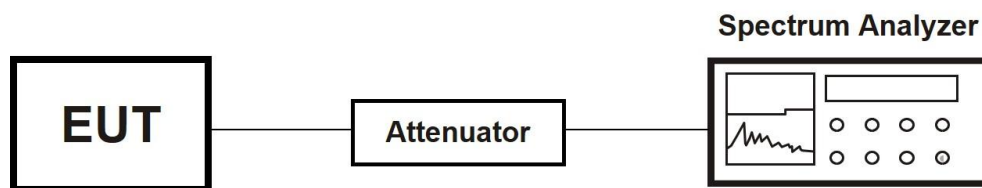
Refer to Appendix C

5.3 6 dB Bandwidth and 99% Occupied Bandwidth

5.3.1 Measurement procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
6. For 99% occupied bandwidth measurement, the transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to PEAK. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

5.3.2 Test Setup



5.3.3 Limit

The minimum 6 dB bandwidth shall be at least 500 kHz

5.3.4 Measurement result

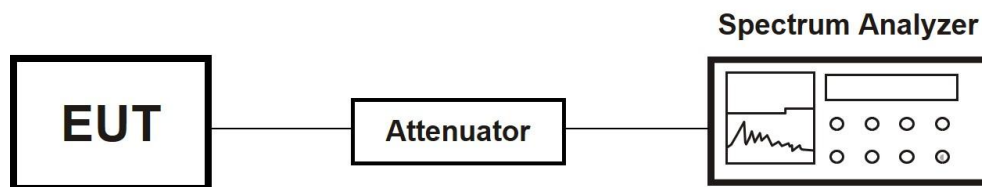
Refer to Appendix D

5.4 Power Spectral Density

5.4.1 Measurement procedure

- 1) Set analyzer center frequency to DTS channel center frequency.
- 2) The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3) Set the span to 1.5 times the DTS channel bandwidth.
- 4) Set the RBW = 3 kHz. & the VBW = 10 kHz
- 5) Detector = peak.
- 6) Sweep time = auto couple.
- 7) Trace mode = max hold.
- 8) Allow trace to fully stabilize.
- 9) Use the peak marker function to determine the maximum amplitude level.

5.4.2 Test Setup



5.4.3 Limit

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

5.4.4 Measurement result

Refer to Appendix E

5.5 Conducted Spurious Emissions and Frequency Band Edges Measured in 100kHz Bandwidth

5.5.1 Measurement procedure

Measurement procedure Reference Level of Emission Limit:

- 1) Set analyzer center frequency to DTS channel center frequency.
- 2) The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3) Set the span to 1.5 times the DTS channel bandwidth.
- 4) Set the RBW = 100kHz & VBW = 300 kHz.
- 5) Detector = peak.
- 6) Sweep time = auto couple.
- 7) Trace mode = max hold.
- 8) Allow trace to fully stabilize.
- 9) Use the peak marker function to determine the maximum amplitude level.

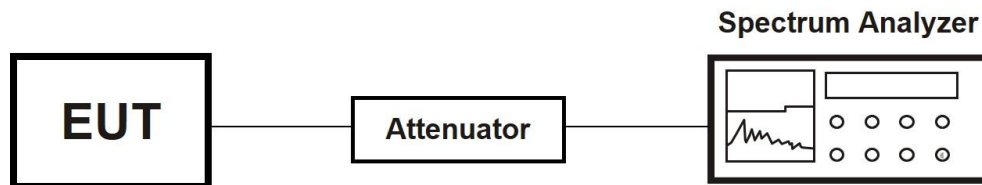
Measurement procedure for Conducted Band Edge

- 1) To connect Antenna Port of EUT to Spectrum.
- 2) The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4) Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 5) Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
- 6) Set DL as the limit = reading on marker of reference level measurement – 20dBm
- 7) Mark the highest readings of the emissions outside of 2400MHz~2483.5MHz.
- 8) Repeat above procedures until all default test channel (low and high) was complete.

Measurement procedure for Conducted Spurious Emission

- 1) To connect Antenna Port of EUT to Spectrum.
- 2) The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3) Set RBW = 100 kHz & VBW=300 kHz, Detector =Peak, Sweep = Auto
- 4) Allow trace to fully stabilize.
- 5) Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- 6) Repeat above procedures until all default test channel measured were complete.

5.5.2 Test Setup



5.5.3 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

5.5.4 Measurement result

Refer to Appendix F

5.6 Radiated Spurious Emissions and Band Edges

5.6.1 Measurement procedure

For Radiated Emissions below 30 MHz

- 1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
- 4) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated Emissions above 30 MHz

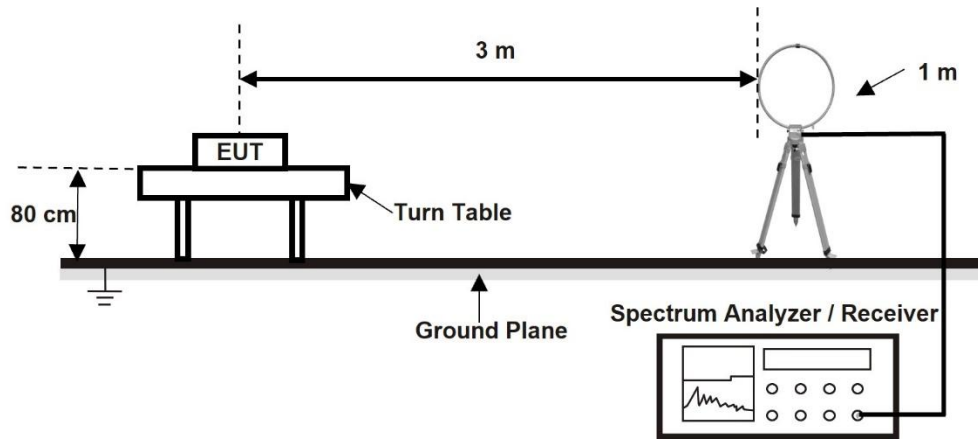
- 1) The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- 6) The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

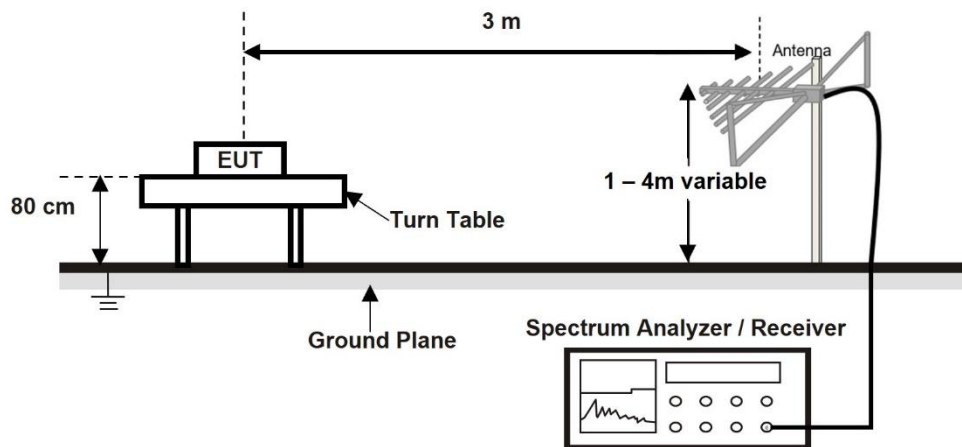
- 1) The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
- 2) The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
- 3) The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- 4) All modes of operation were investigated and the worst-case emissions are reported.
- 5) The Radiated Emissions testing was performed in the X, Y and Z axis orientation. The worst-case Axis orientation is recorded in this test report.

5.6.2 Test Setup

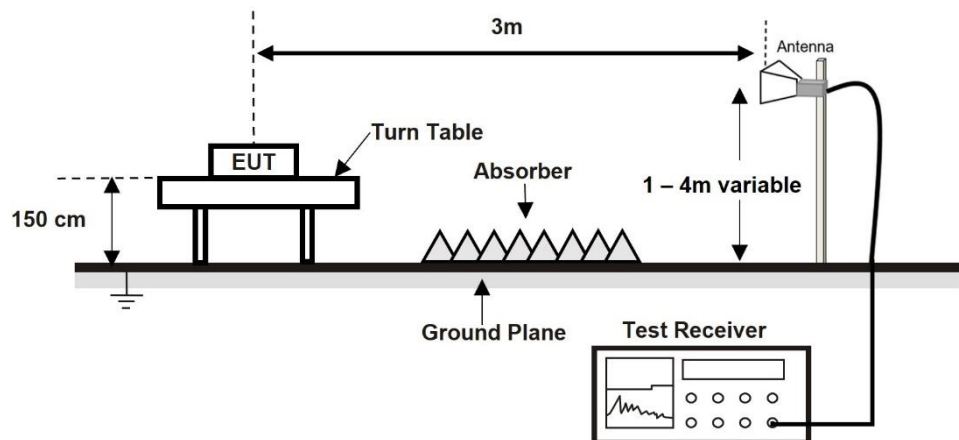
Radiated Emission Test Set-Up, Frequency Below 30MHz.



Radiated Emission Test Set-Up, Frequency From 30MHz to 1000MHz.



Radiated Emission Test Set-Up, Frequency Above 1GHz.



For the actual test configuration, please refer to the attached file (Test Setup Photo).

5.6.3 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1) for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

5.6.4 Measurement result

Please refer to Appendix G

Remark:

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)

Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

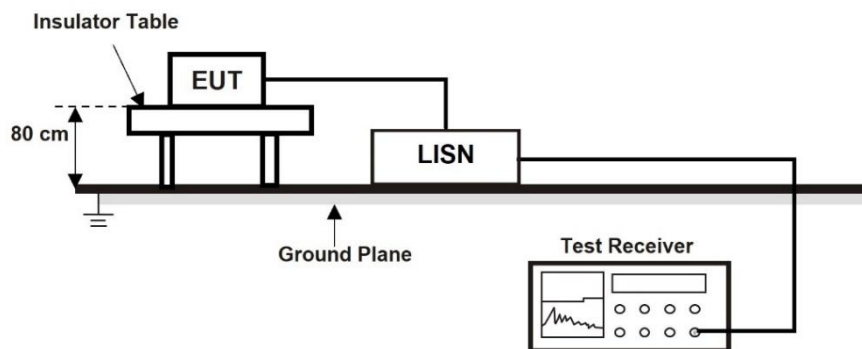
5.7 AC Mains Conducted Emission

5.7.1 Measurement procedure

1. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50μH of coupling impedance for the measuring instrument.
2. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
3. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

5.7.2 Test Setup



5.7.3 Limit

Frequency range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Notes:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

5.7.4 Measurement result

Please refer to Appendix H

6 Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

Radiated Spurious Emission Measurement Uncertainty		
Frequency	Polarization	Measurement uncertainty
9kHz~30MHz	Vertical	± 2.8 dB
30MHz - 1000MHz		± 4.82 dB
1GHz - 18GHz		± 4.37 dB
18GHz - 40GHz		± 4.21 dB
9kHz~30MHz	Horizontal	± 2.8 dB
30MHz - 1000MHz		± 4.54 dB
1GHz - 18GHz		± 4.37 dB
18GHz - 40GHz		± 4.21 dB

Test Items	Measurement uncertainty
AC Power Line Conducted Emission	$\pm X.7$ dB
Output Power measurement	± 1 dB
Emission Bandwidth	± 1.53 Hz
Undesignable radiated emission measurement	$\pm xx$ dB
Peak Power Density	$\pm xx$ dB
Temperature	± 4.4 °C
Humidity	± 6.4 %
DC / AC Power Source	± 5 %

7 Photographs of the Test Set-Up

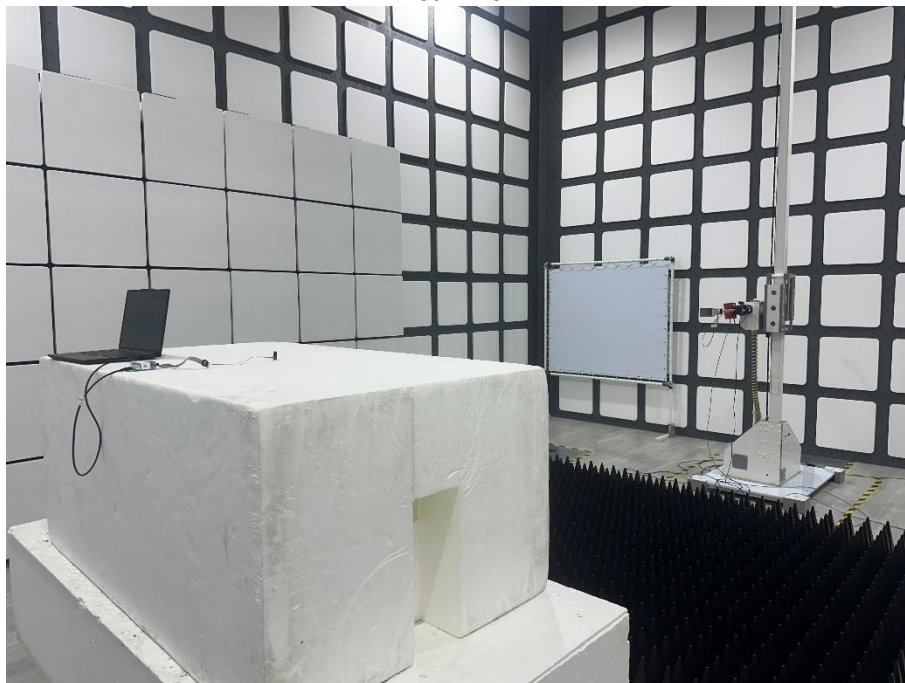
**Set-up for Spurious Emissions
Front View**



**Set-up for Spurious Emissions
Rear View**



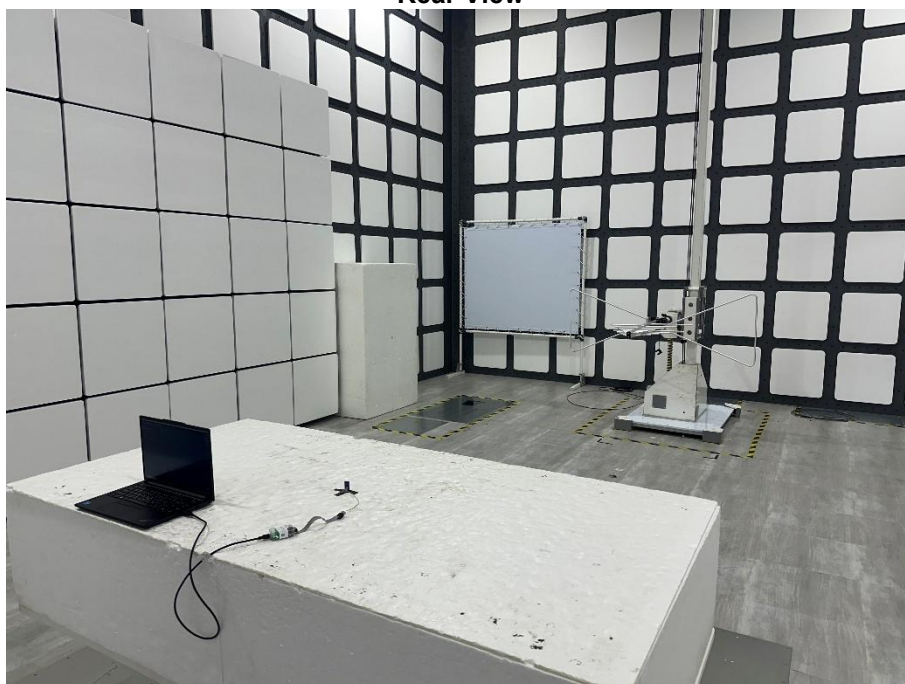
Set-up for Spurious Emissions
Rear View



Set-up for Spurious Emissions
Front View



**Set-up for Spurious Emissions
Rear View**



**Set-up for Spurious Emissions
Rear View**



**Set-up for Conduction
Front View**



**Set-up for Conduction
Rear View**



Appendix A. Test Equipment

Test Software	Manufacturer	Model No.	Version	Remark
Test Software	Keysight	IOT0047A	224.11.25.17	Conducted
Test Software	Audix	e3	V9	Radiation/Conduction

Test Equipment Used (spurious emission)

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSV3044	101347	Jul. 10, 2025	Jul. 09, 2026
Spectrum Analyzer	R&S	ESR 7	102599	Aug. 11, 2025	Aug. 10, 2026
Horn(18-40G)	RF SPIN	DRH0844	LE2C01A0844	Nov. 18, 2024	Nov. 17, 2025
Horn(1-18G)	RF SPIN	DRH18-E	211219A18EN	Oct. 25, 2024	Oct. 24, 2025
Bi-log	Schwarzbeck&EMEC	VULB 9168	01500	Nov. 29, 2024	Nov. 28, 2025
Preamplifier(1-18G)	SGH	SGH118-HS	20221230-2	Apr. 24, 2025	Apr. 23, 2026
Preamplifier(18-40G)	SGH	SGH184	20230214-9	Apr. 24, 2025	Apr. 23, 2026
Preamplifier(30M-1G)	SGH	SGH0301	20230214-1	Jun. 23, 2025	Jun. 22, 2026
Loop Antenna	TESEQ	HLA-6121	64165	Mar. 27, 2025	Mar. 26, 2026

Test Equipment Used (RF output power)

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Power Sensor	Keysight	2063XA	MY58000436	Oct. 18, 2024	Oct. 17, 2025

Test Equipment Used (Mains conduction)

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
EMI Receiver	R&S	ESR 7	102600	Aug. 22, 2025	Aug. 21, 2026
LISN	R&S	ENV216	101517	Oct. 22, 2024	Oct. 21, 2025

**Test Equipment Used (Power Density/Emission Bandwidth/in of Band Emission)**

Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9010B	MY63440384	Jul. 11, 2025	Jul. 10, 2026

*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.



Appendix B. Duty Cycle

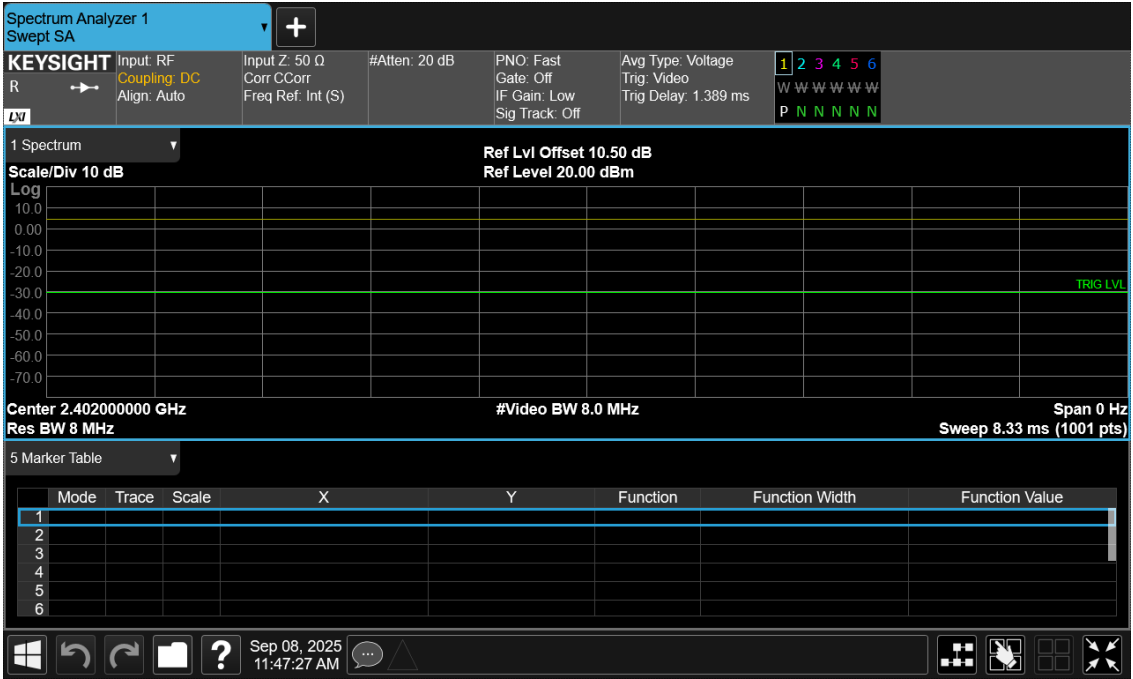
BLE 1M

1Mbps		
Duty On (ms):	-	Duty Cycle = Ton / (Ton + Toff)
Duty OnOff (ms):	-	
Duty Cycle (%):	100	
VBW (Hz):	10	

*Duty cycle = 1

*If duty cycle of test signal is ≥ 98%, duty factor is not required.

*If duty cycle of test signal is < 98%, duty factor shall be considered.





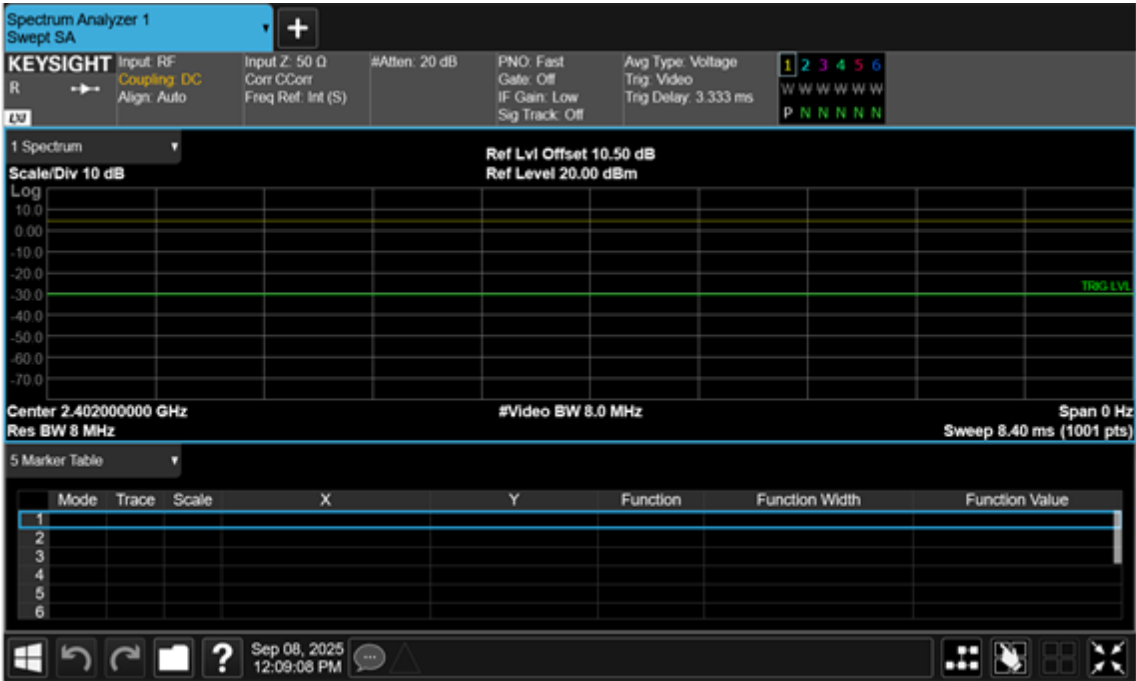
BLE 2M

2Mbps		
Duty On (ms):	-	Duty Cycle = Ton / (Ton + Toff)
Duty OnOff (ms):	-	
Duty Cycle (%):	100	
VBW (Hz):	10	

*Duty cycle = 1

*If duty cycle of test signal is ≥ 98%, duty factor is not required.

*If duty cycle of test signal is < 98%, duty factor shall be considered.



Appendix C. Peak Output Power

Peak Output Power

<1Mbps>

Channel	Channel Frequency	Peak Output Power		Power Setting	Limit (dBm)
	(MHz)	(dBm)	(mW)		
Low Channel	2402	7.32	5.395106	6	30
Middle Channel	2440	7.12	5.152286	6	30
High Channel	2480	6.79	4.775293	6	30

<2Mbps>

Channel	Channel Frequency	Peak Output Power		Power Setting	Limit (dBm)
	(MHz)	(dBm)	(mW)		
Low Channel	2402	7.31	5.382698	6	30
Middle Channel	2440	7.09	5.116818	6	30
High Channel	2480	6.76	4.742420	6	30

Peak Output Power**<125kbps>**

Channel	Channel Frequency	Peak Output Power		Power Setting	Limit (dBm)
	(MHz)	(dBm)	(mW)		
Low Channel	2402	7.16	5.199960	6	30
Middle Channel	2440	7.01	5.023426	6	30
High Channel	2480	6.65	4.623810	6	30

<500kbps>

Channel	Channel Frequency	Peak Output Power		Power Setting	Limit (dBm)
	(MHz)	(dBm)	(mW)		
Low Channel	2402	7.23	5.284453	6	30
Middle Channel	2440	7.09	5.116818	6	30
High Channel	2480	6.68	4.655861	6	30

Appendix D. 6dB Bandwidth & 99% Bandwidth

6dB Bandwidth

<1Mbps>

Channel	Channel Frequency	6dB Bandwidth	Limit (MHz)
	(MHz)	(MHz)	
Low Channel	2402	0.762	0.5
Middle Channel	2440	0.765	0.5
High Channel	2480	0.766	0.5





6dB Bandwidth

<2Mbps>

Channel	Channel Frequency	6dB Bandwidth	Limit (MHz)
	(MHz)	(MHz)	
Low Channel	2402	1.414	0.5
Middle Channel	2440	1.410	0.5
High Channel	2480	1.412	0.5

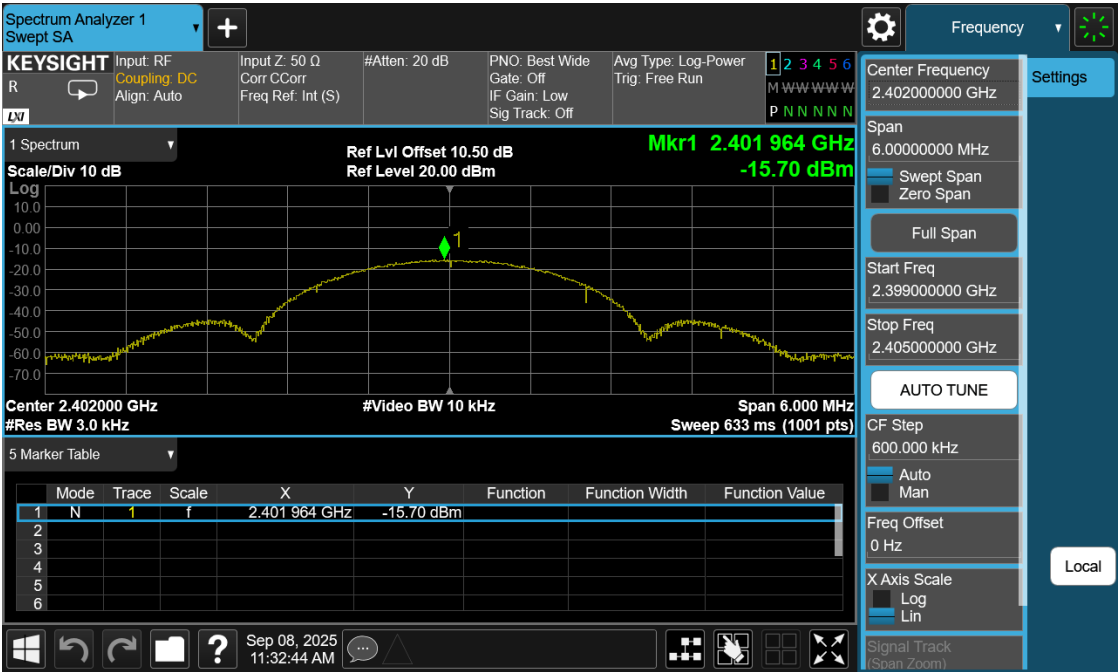




Power Density

<2Mbps>

Channel	Channel Frequency	Power Density	Limit (dBm/3kHz)
	(MHz)	(dBm/3kHz)	
Low Channel	2402	-15.699	8
Middle Channel	2440	-15.770	8
High Channel	2480	-15.684	8

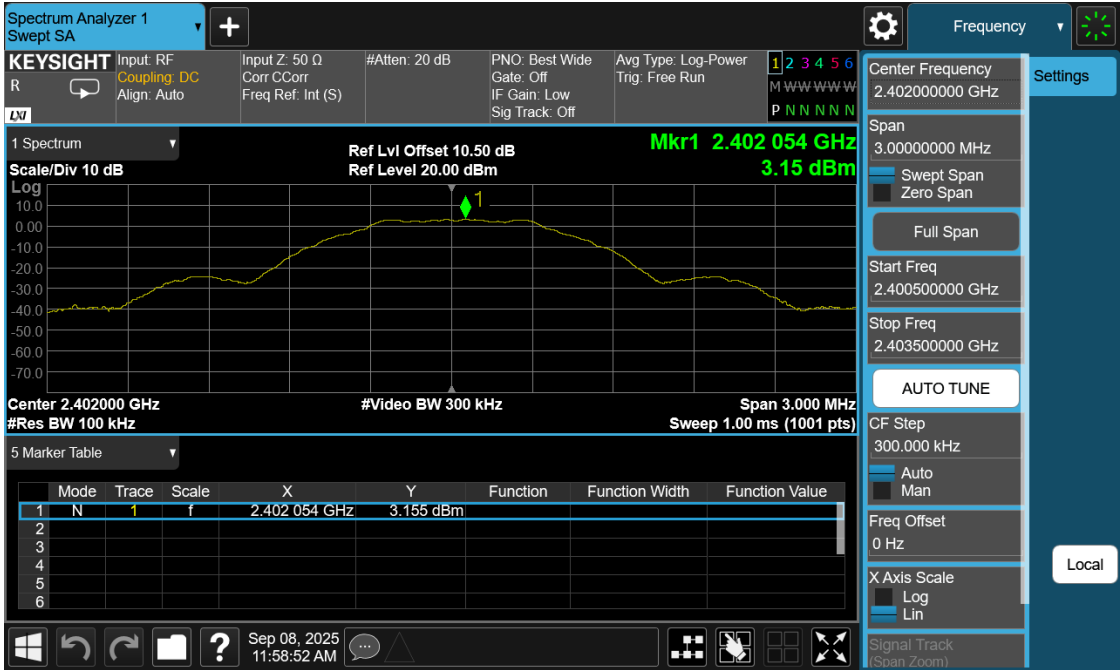




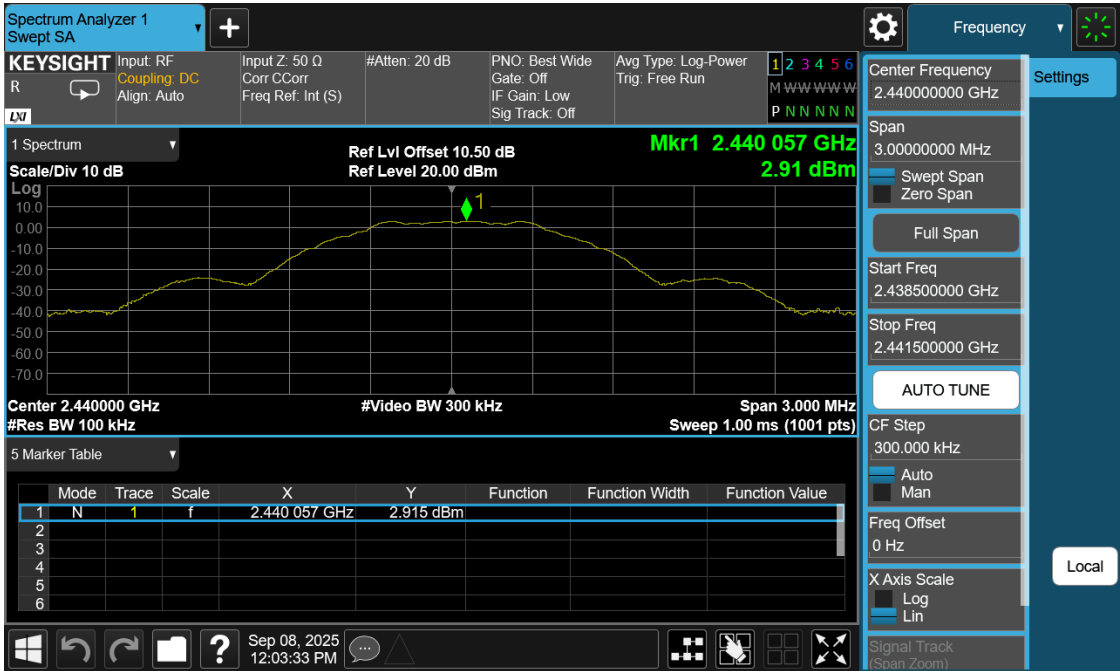
Appendix F. Conducted Spurious Emissions and Frequency Band Edges Measured in 100kHz Bandwidth

Reference <1Mbps>

<Lowest Channel>



<Middle Channel>





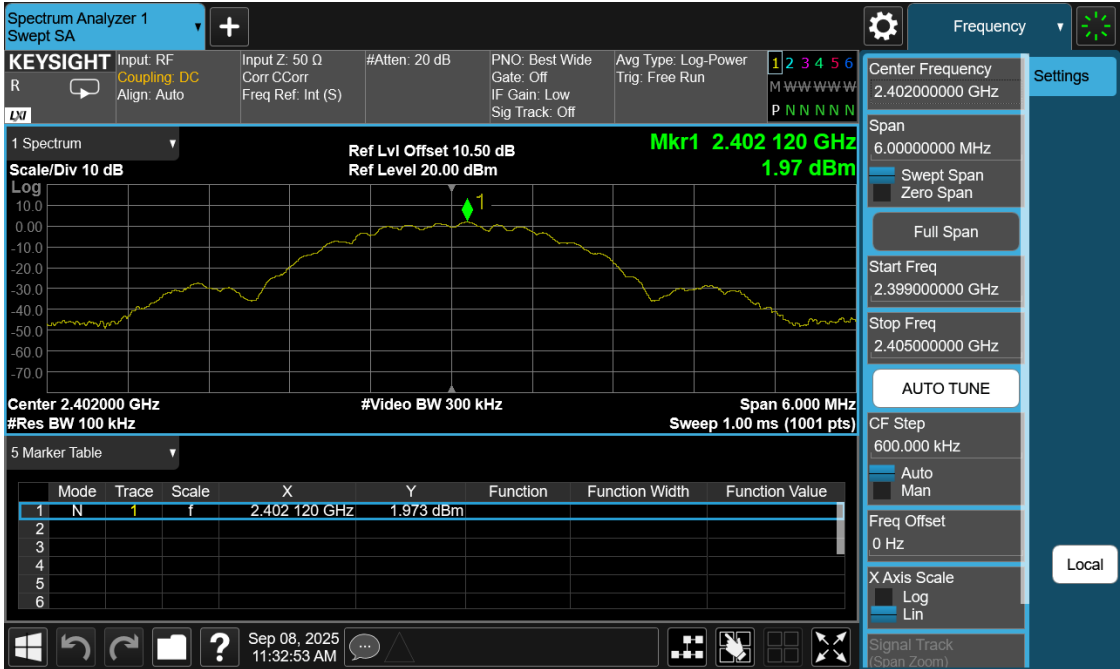
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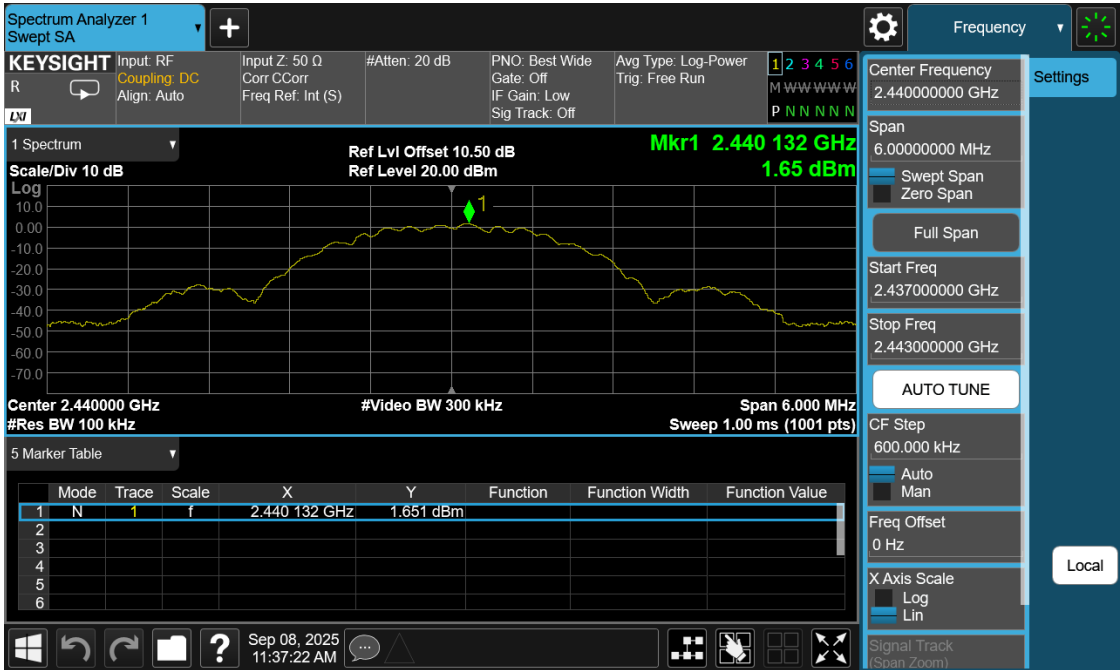


Reference <2Mbps>

<Lowest Channel>

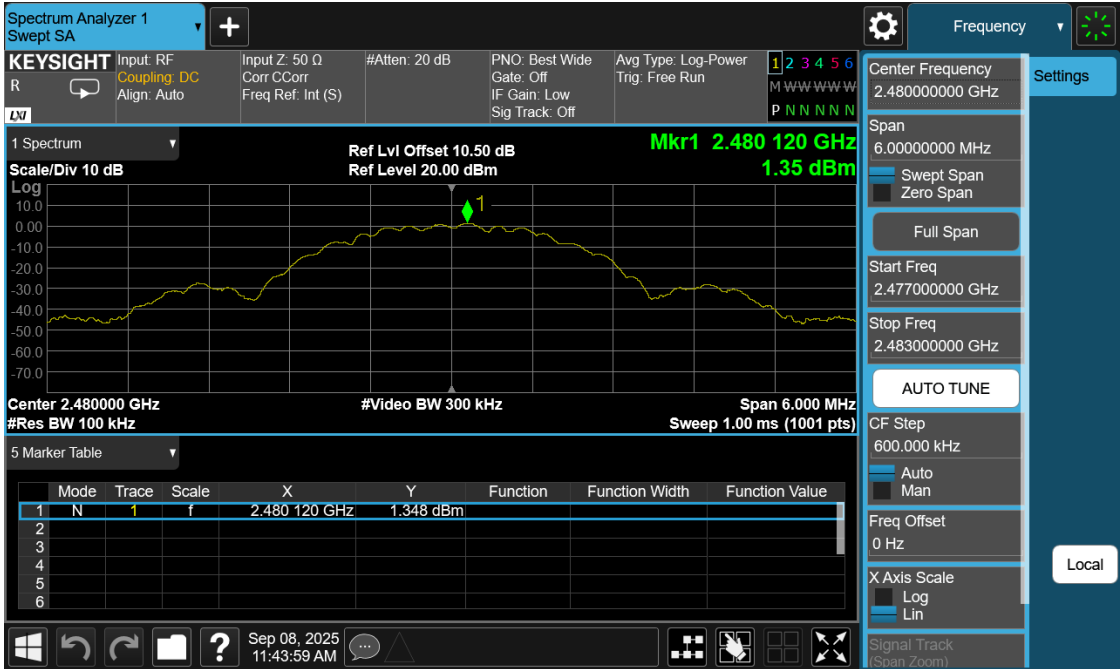


<Middle Channel>





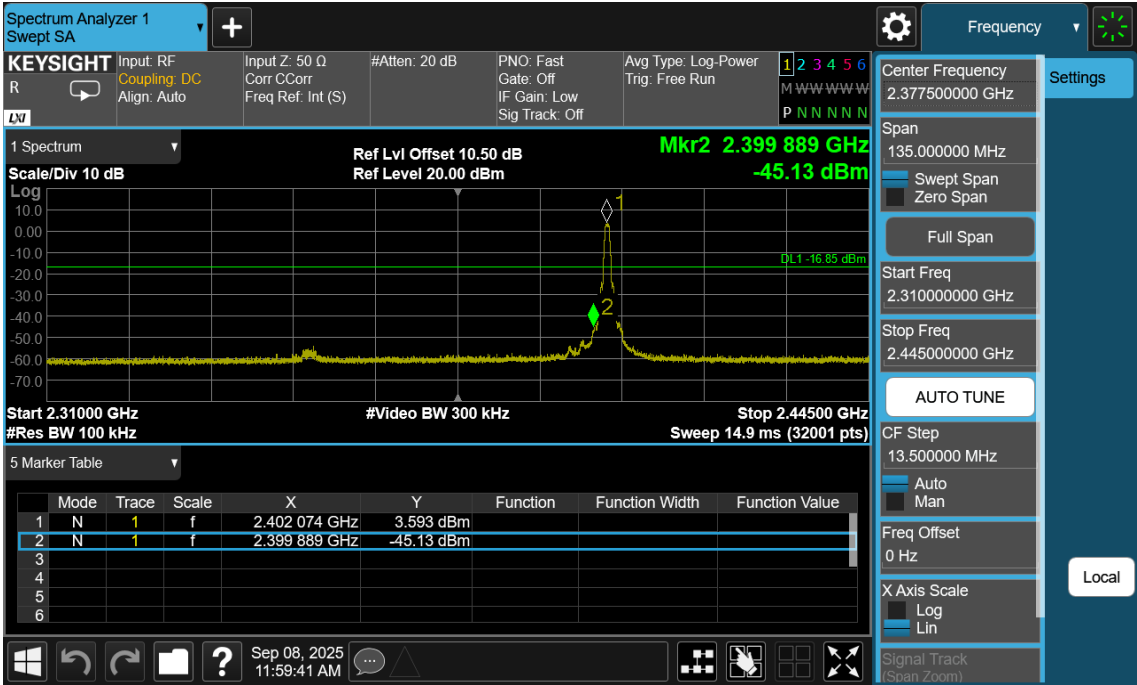
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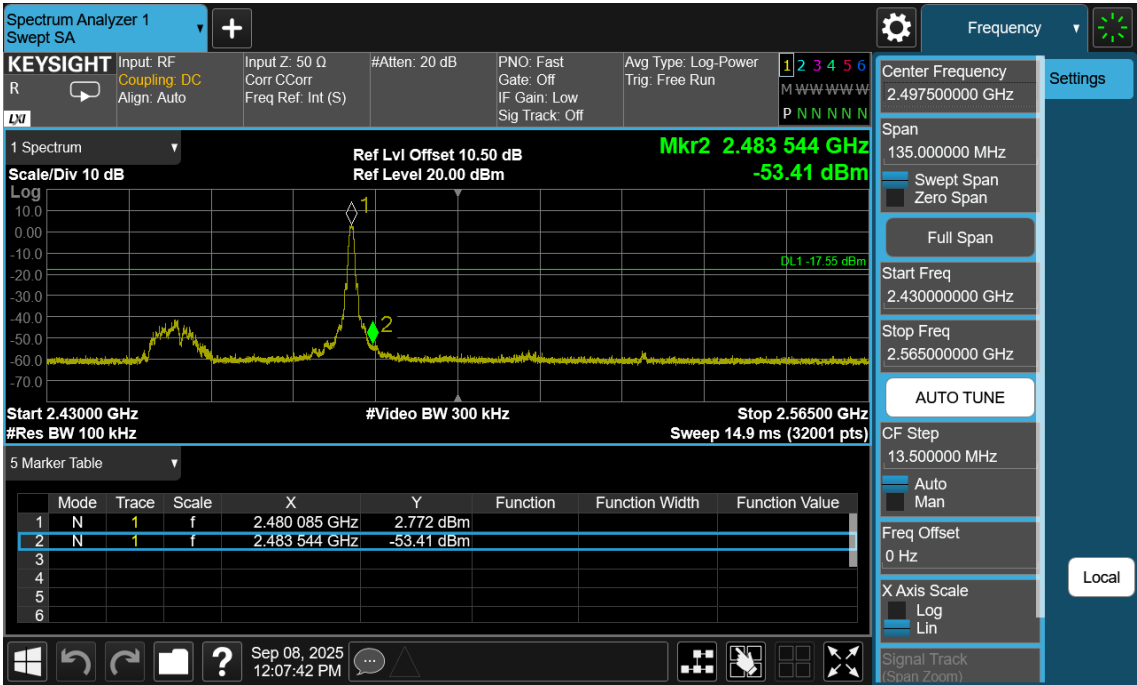


Band Edges<1Mbps>

<Lowest Channel>



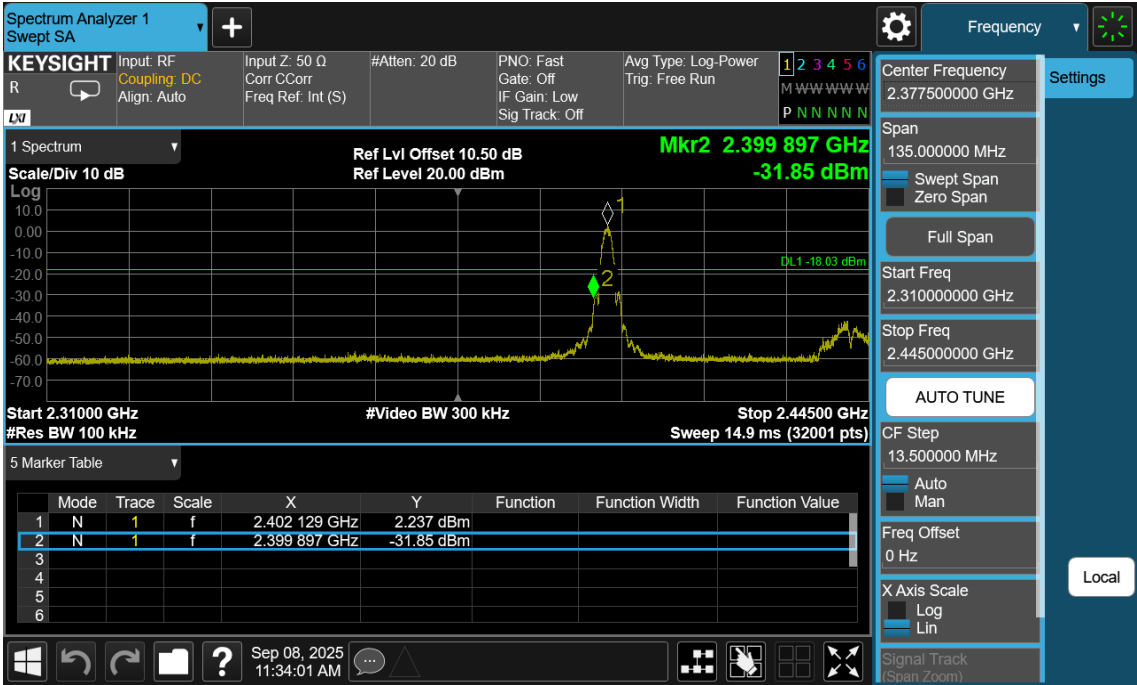
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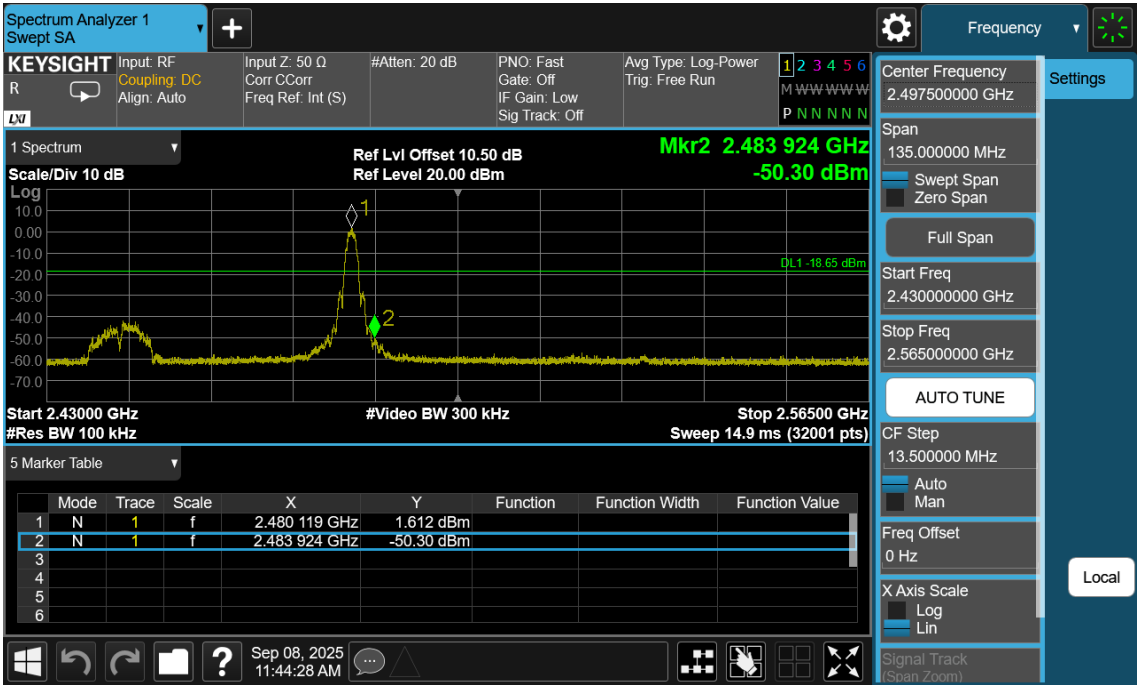


Band Edges<2Mbps>

<Lowest Channel>



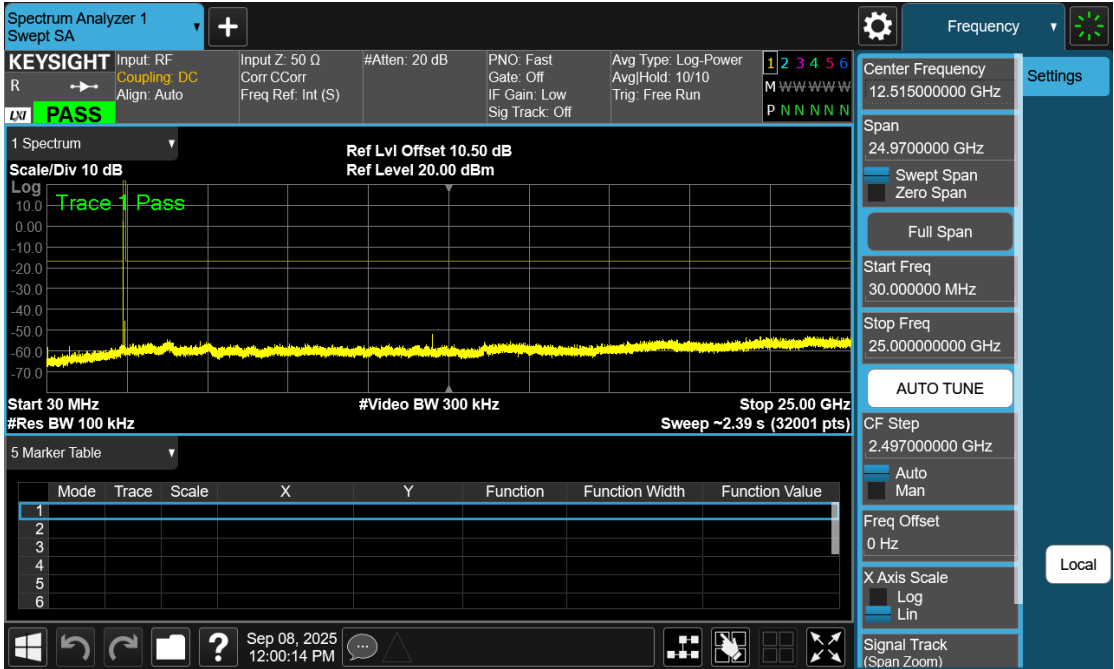
<Highest Channel>



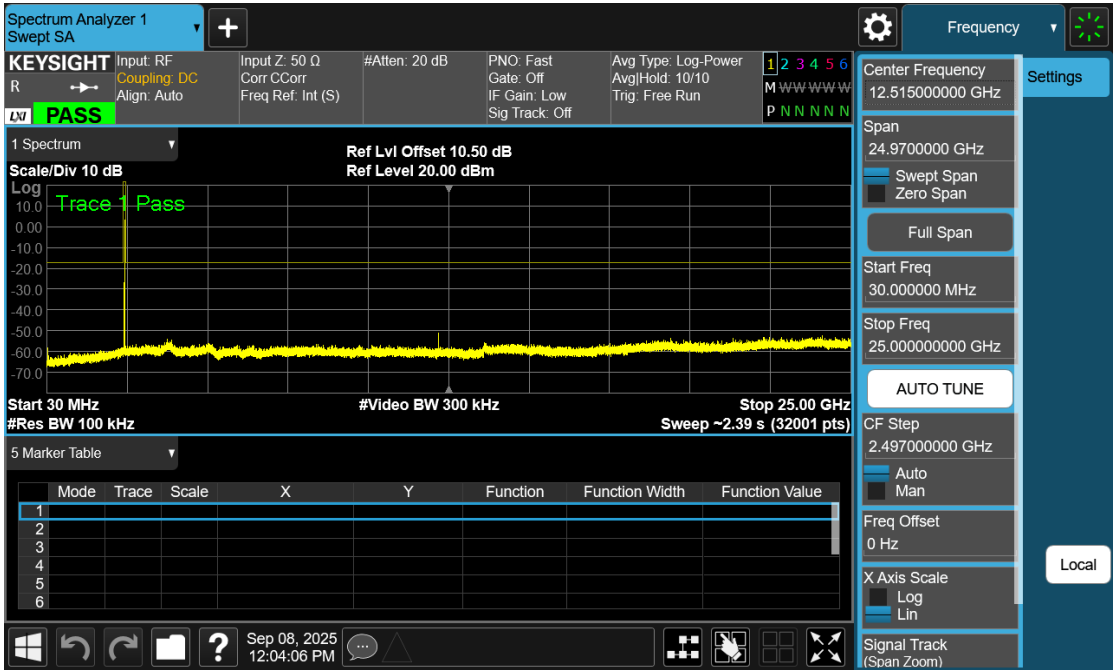


Conducted Spurious Emissions <1Mbps>

<Lowest Channel>

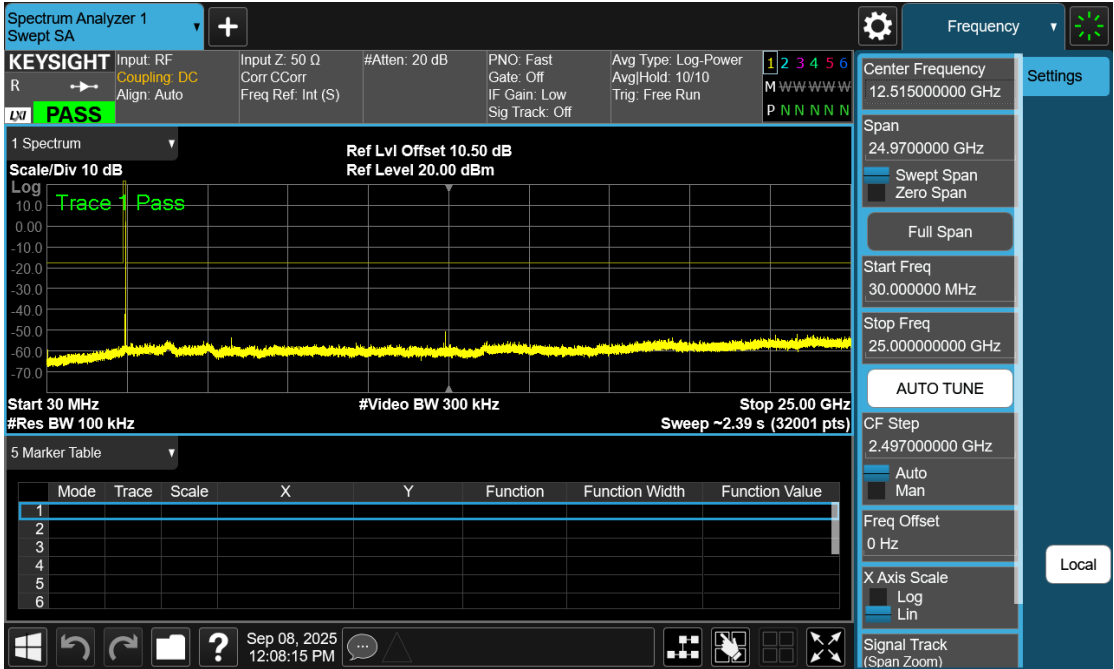


<Middle Channel>





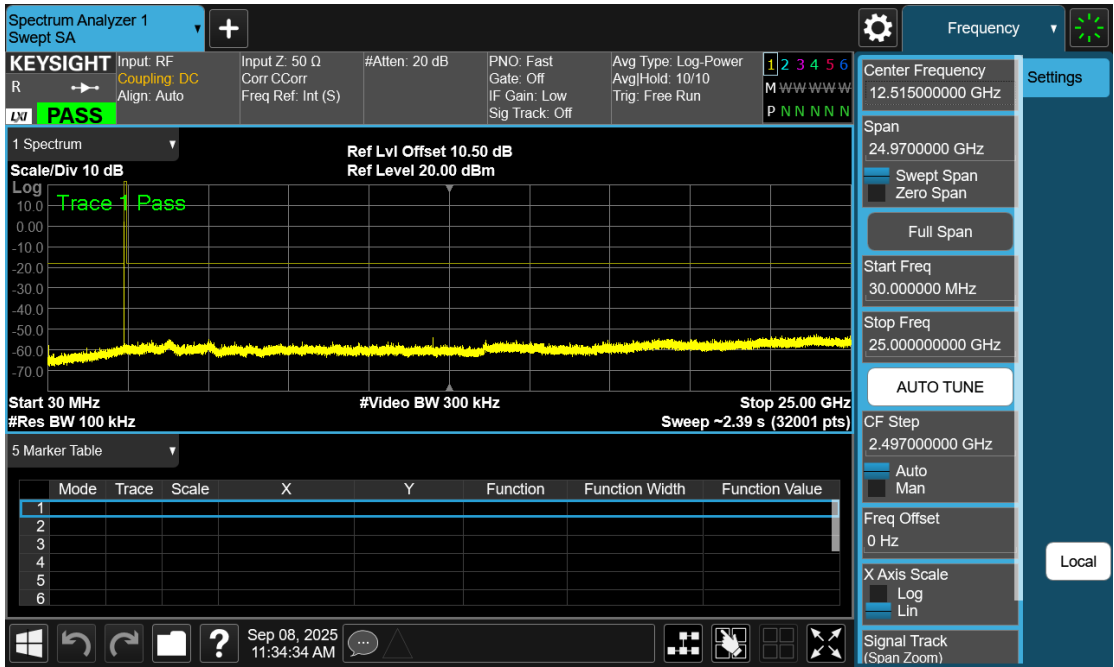
< Highest Channel >



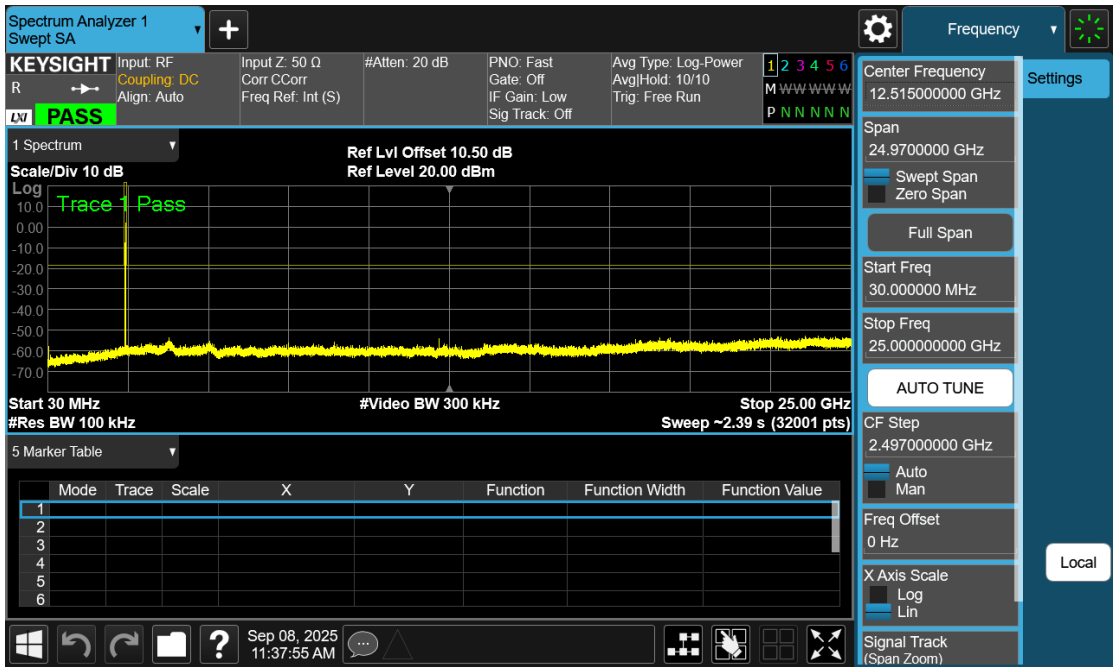


Conducted Spurious Emissions <2Mbps>

<Lowest Channel>

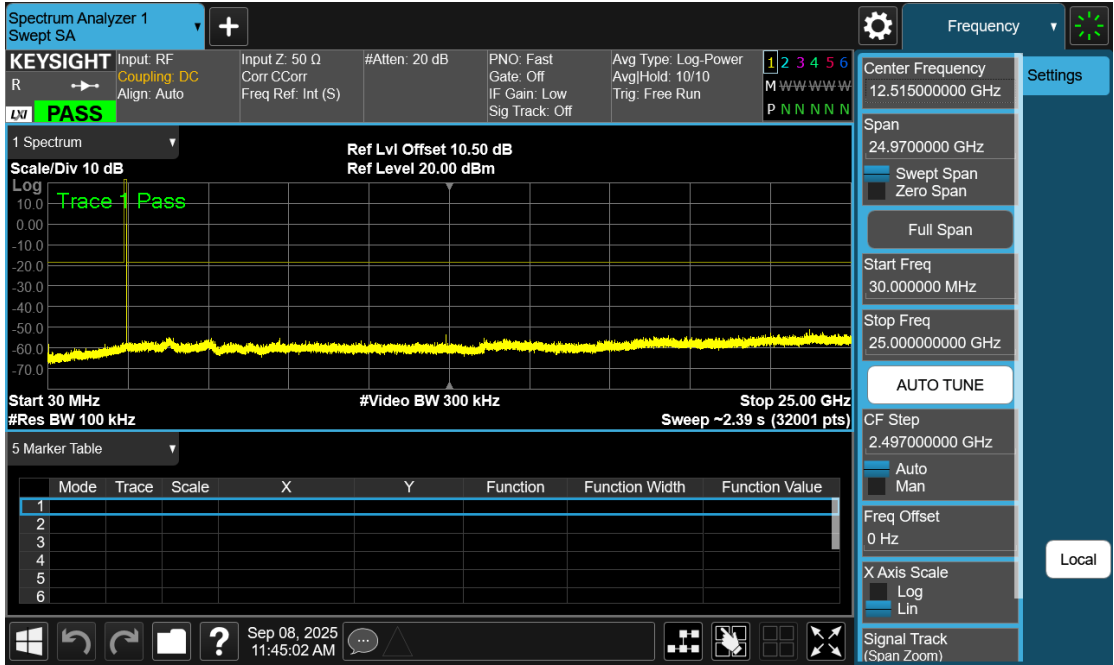


<Middle Channel>



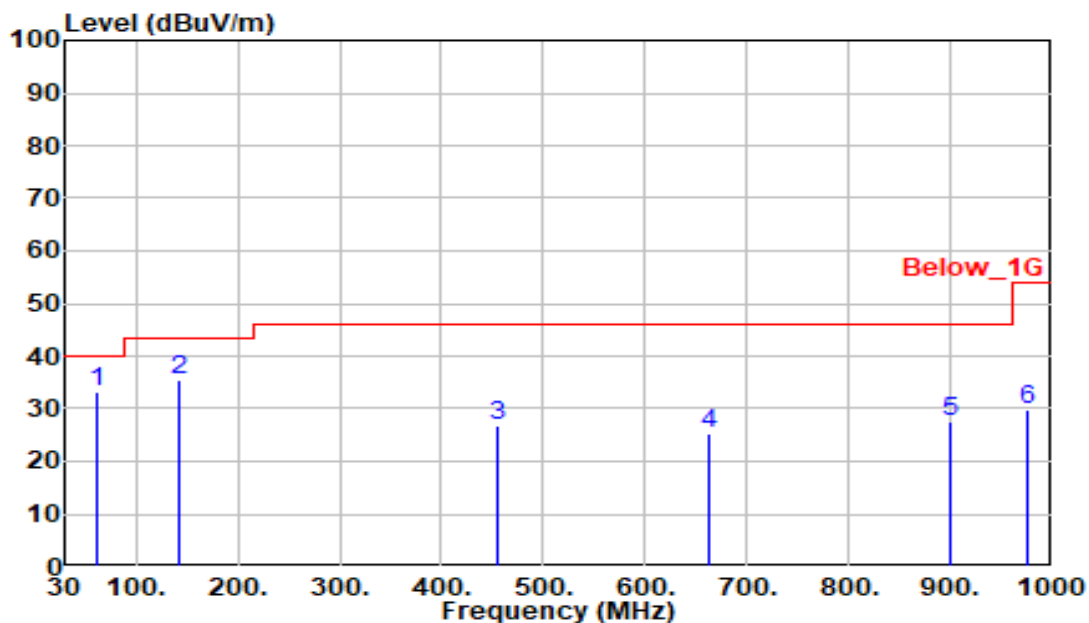


< Highest Channel >



Appendix G. Radiated Spurious Emissions and Band Edges

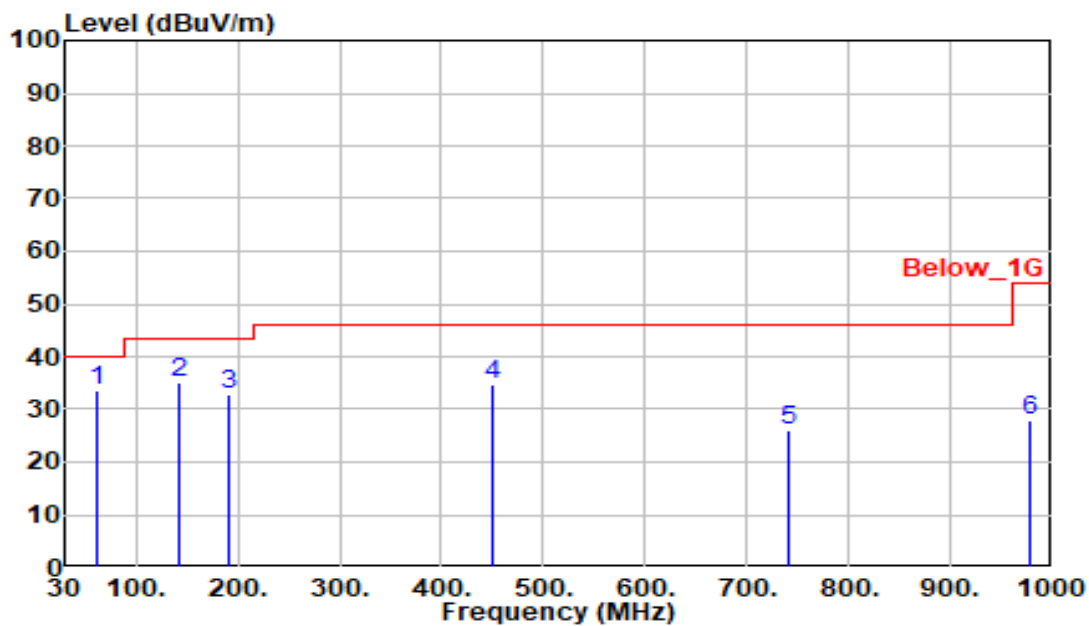
Report No.	:6128625056401	Test Date	:2025-09-03
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE 1M	Temp/Humi	:22.7C/55%
Channel	:2440 MHz	Antenna Pol	:Vertical
Mode	:Tx	Test Engineer	:Sam Haung
Power Setting	:6	Test Site	:chamber A
Plane	:X Plane	Voltage	:3.3Vdc From Test Kit
Note	:		



Freq MHz	Read LV. dBUV	Factor dB/m	Emission LV dBUV/m	Limit dBUV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
61.040	57.64	-24.31	33.33	40.00	-6.67	Peak	275	232
143.490	60.00	-24.56	35.44	43.50	-8.06	Peak	210	311
454.860	45.84	-18.91	26.93	46.00	-19.07	Peak	296	200
662.440	40.06	-14.82	25.24	46.00	-20.76	Peak	318	233
900.090	39.42	-11.79	27.63	46.00	-18.37	Peak	118	110
975.750	40.64	-10.76	29.88	54.00	-24.12	Peak	315	273

Report No.	:6128625056401	Test Date	:2025-09-03
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE 1M	Temp/Humi	:22.7C/55%
Channel	:2440 MHz	Antenna Pol	:Horizontal
Mode	:Tx	Test Engineer	:Sam Haung
Power Setting	:6	Test Site	:chamber A
Plane	:X Plane	Voltage	:3.3Vdc From Test Kit

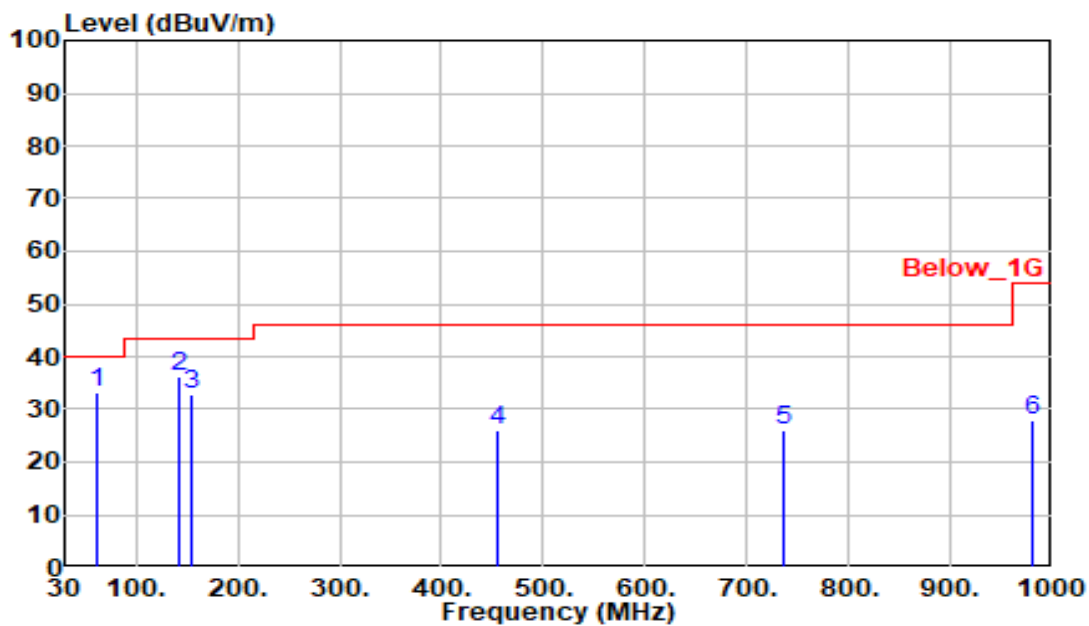
Note :



Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
62.010	57.93	-24.50	33.43	40.00	-6.57	Peak	172	289
143.490	59.64	-24.56	35.08	43.50	-8.42	Peak	186	93
191.990	59.62	-26.70	32.92	43.50	-10.58	Peak	163	198
450.010	53.57	-18.97	34.60	46.00	-11.40	Peak	348	264
740.040	39.59	-13.38	26.21	46.00	-19.79	Peak	254	100
977.690	38.73	-10.75	27.98	54.00	-26.02	Peak	128	48

Report No.	:6128625056401	Test Date	:2025-09-03
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE 2M	Temp/Humi	:22.7C/55%
Channel	:2440 MHz	Antenna Pol	:Vertical
Mode	:Tx	Test Engineer	:Sam Haung
Power Setting	:6	Test Site	:chamber A
Plane	:X Plane	Voltage	:3.3Vdc From Test Kit

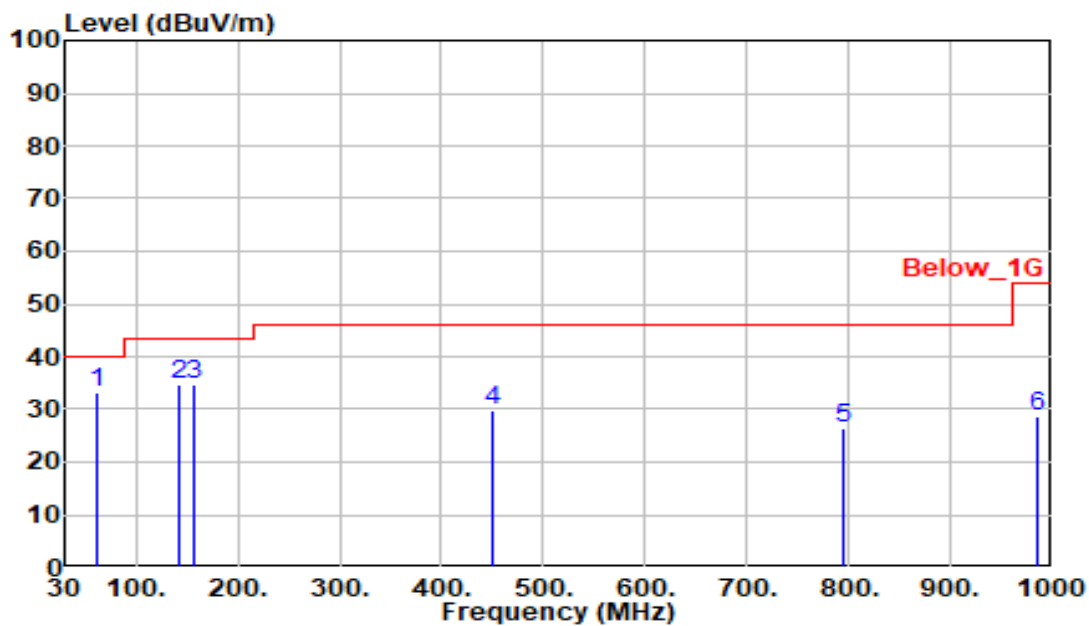
Note :



Freq MHz	Read LV. dBUV	Factor dB/m	Emission LV dBUV/m	Limit dBUV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
62.010	57.81	-24.50	33.31	40.00	-6.69	Peak	267	200
143.490	60.67	-24.56	36.11	43.50	-7.39	Peak	141	112
155.130	56.84	-23.98	32.86	43.50	-10.64	Peak	145	34
454.860	44.76	-18.91	25.85	46.00	-20.15	Peak	108	49
737.130	39.50	-13.44	26.06	46.00	-19.94	Peak	288	194
981.570	38.78	-10.73	28.05	54.00	-25.95	Peak	104	77

Report No.	:6128625056401	Test Date	:2025-09-03
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE 2M	Temp/Humi	:22.7C/55%
Channel	:2440 MHz	Antenna Pol	:Horizontal
Mode	:Tx	Test Engineer	:Sam Haung
Power Setting	:6	Test Site	:chamber A
Plane	:X Plane	Voltage	:3.3Vdc From Test Kit

Note :



Freq MHz	Read LV. dBuV	Factor dB/m	Emission LV dBuV/m	Limit dBuV/m	Margin dB	Detector PK/QP/AV	Apos CM	TPos DEG
61.040	57.65	-24.31	33.34	40.00	-6.66	Peak	179	152
143.490	59.44	-24.56	34.88	43.50	-8.62	Peak	143	28
156.100	58.65	-23.97	34.68	43.50	-8.82	Peak	240	27
450.980	48.60	-18.96	29.64	46.00	-16.36	Peak	185	273
794.360	39.38	-12.82	26.56	46.00	-19.44	Peak	121	243
984.480	39.57	-10.72	28.85	54.00	-25.15	Peak	257	156



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

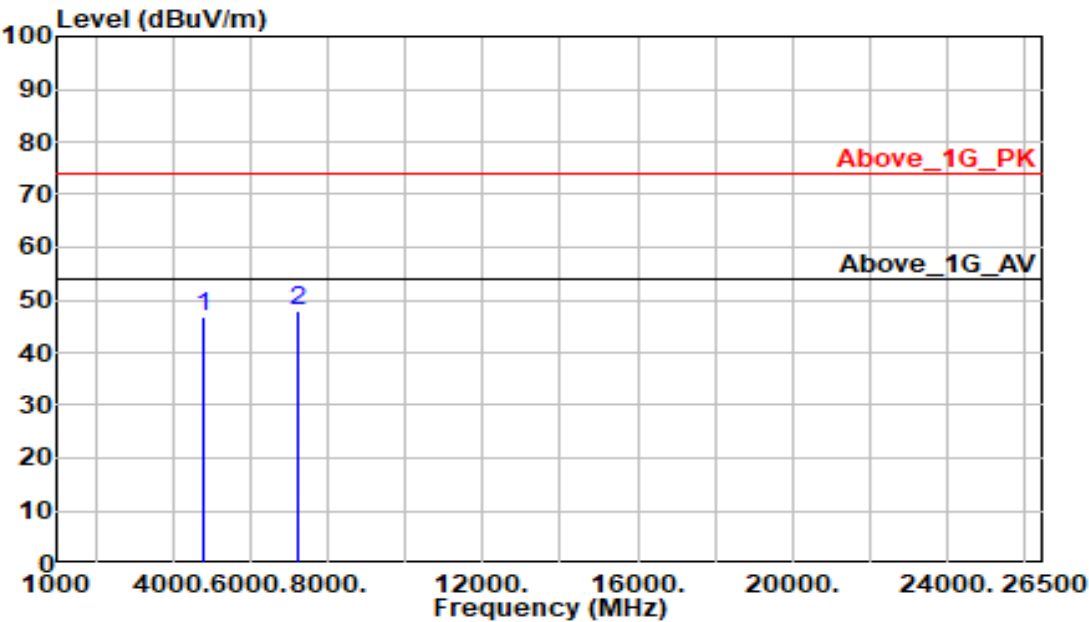
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2402 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4804.000	46.84	-0.05	46.79	74.00	-27.21	Peak	261	123
7206.000	41.11	6.85	47.96	74.00	-26.04	Peak	198	94



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

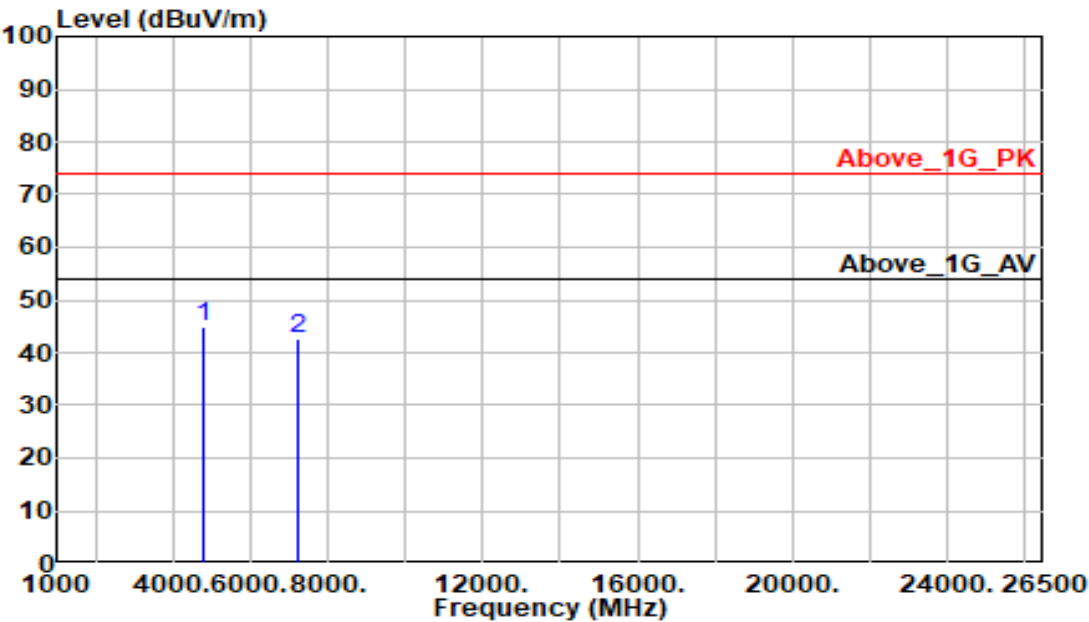
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2402 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4804.000	48.21	-3.46	44.75	74.00	-29.25	Peak	243	148
7206.000	39.18	3.62	42.80	74.00	-31.20	Peak	166	195



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

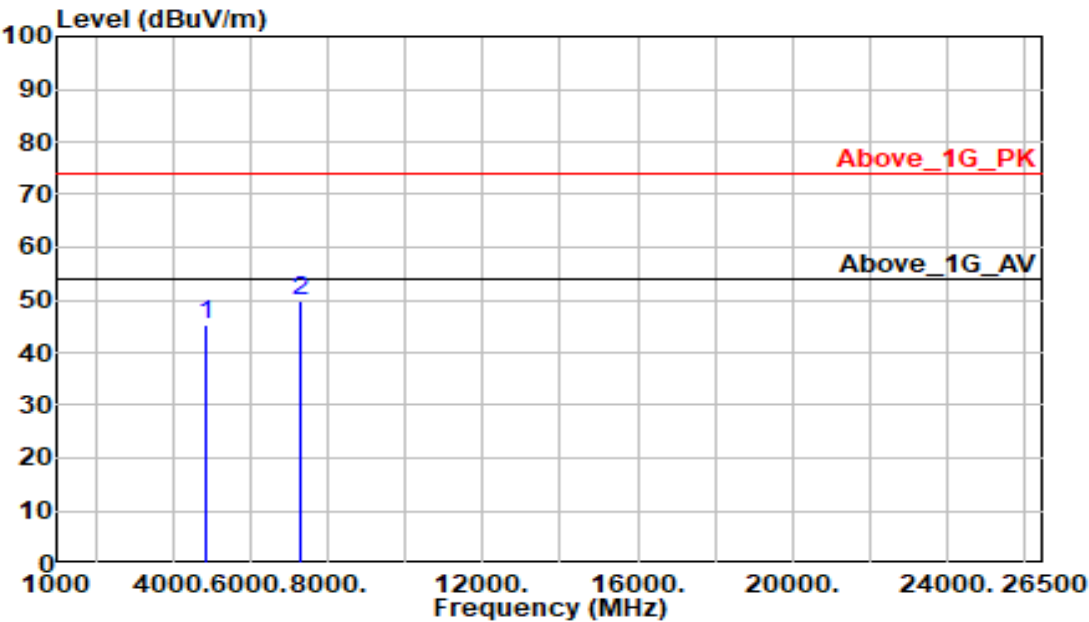
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2440 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV. dBuV	dB/m	LV dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4880.000	48.37	-3.19	45.18	74.00	-28.82	Peak	237	142
7320.000	45.82	3.87	49.69	74.00	-24.31	Peak	309	150



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

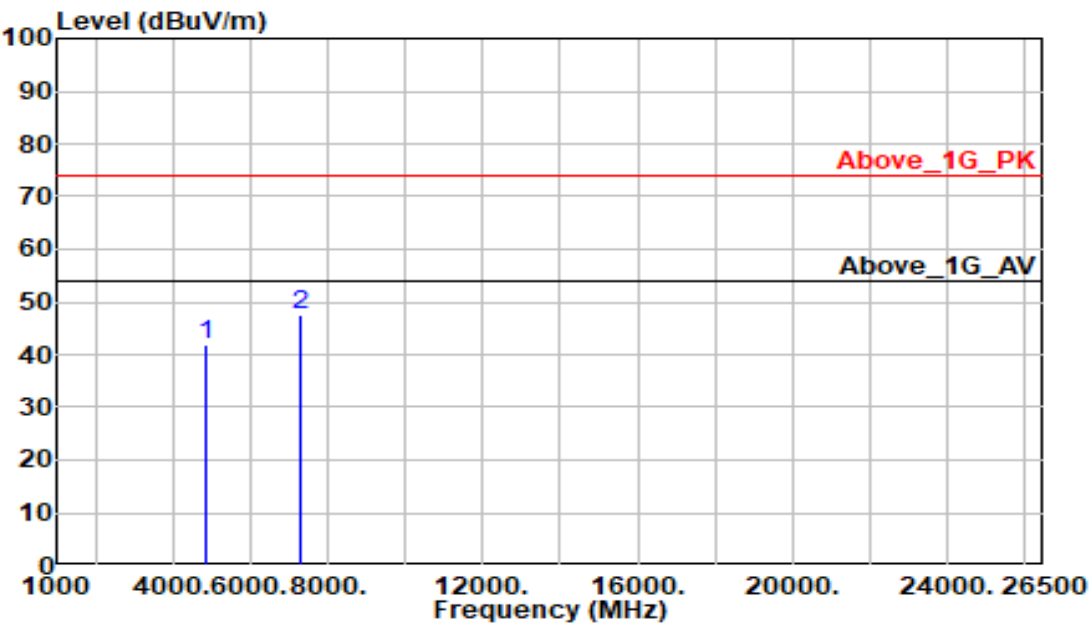
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2440 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

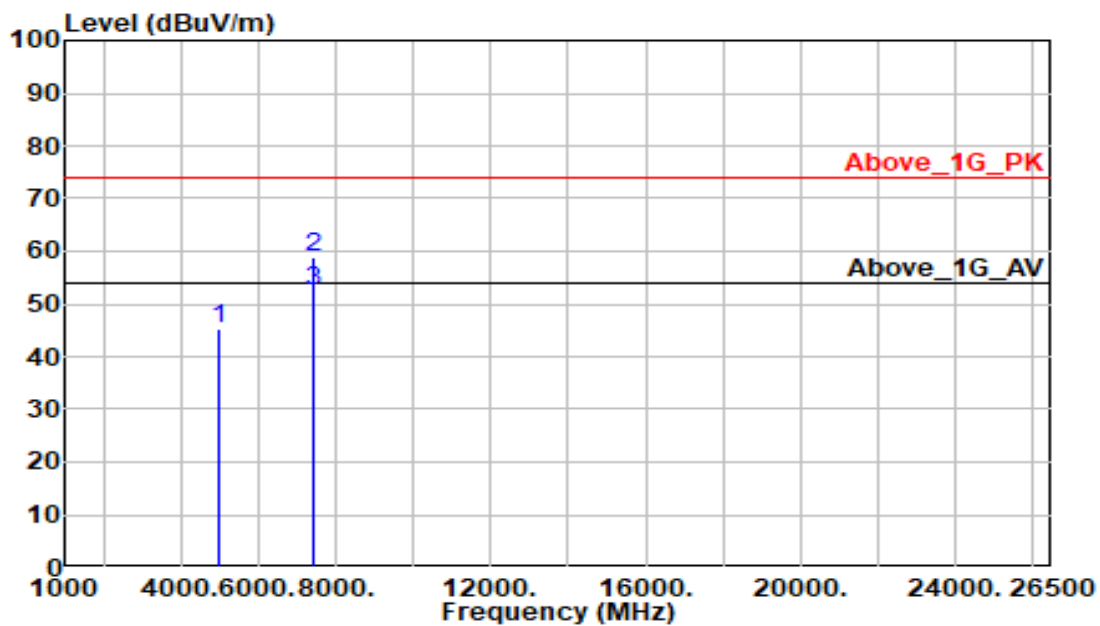
Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4880.000	45.10	-3.19	41.91	74.00	-32.09	Peak	161	267
7320.000	43.49	3.87	47.36	74.00	-26.64	Peak	155	247

Report No.	:6128625056401	Test Date	:2025-09-03
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE 1M	Temp/Humi	:22.7C/55%
Channel	:2480 MHz	Antenna Pol	:Vertical
Mode	:Tx	Test Engineer	:Sam Haung
Power Setting	:6	Test Site	:chamber A
Plane	:X Plane	Voltage	:3.3Vdc From Test Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4960.000	48.02	-2.90	45.12	74.00	-28.88	Peak	155	161
7440.000	54.64	4.13	58.77	74.00	-15.23	Peak	256	318
7440.000	48.17	4.13	52.30	54.00	-1.70	Average	256	318



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

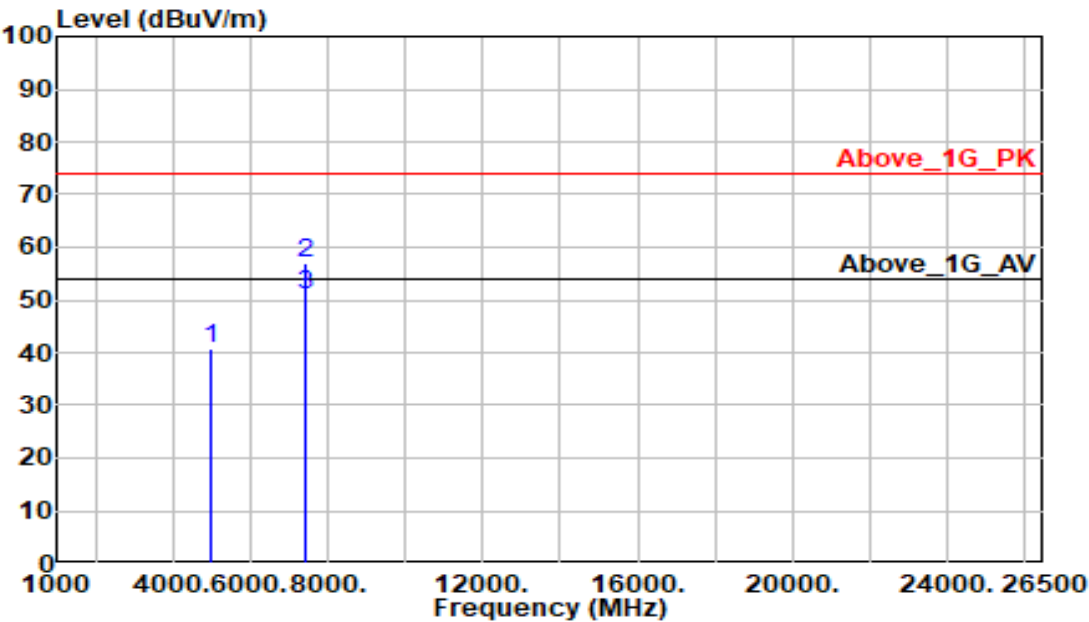
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2480 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4960.000	43.65	-2.90	40.75	74.00	-33.25	Peak	186	181
7440.000	52.88	4.13	57.01	74.00	-16.99	Peak	301	316
7440.000	46.82	4.13	50.95	54.00	-3.05	Average	301	316



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

Operation Band
Channel
Mode
Power Setting
Plane

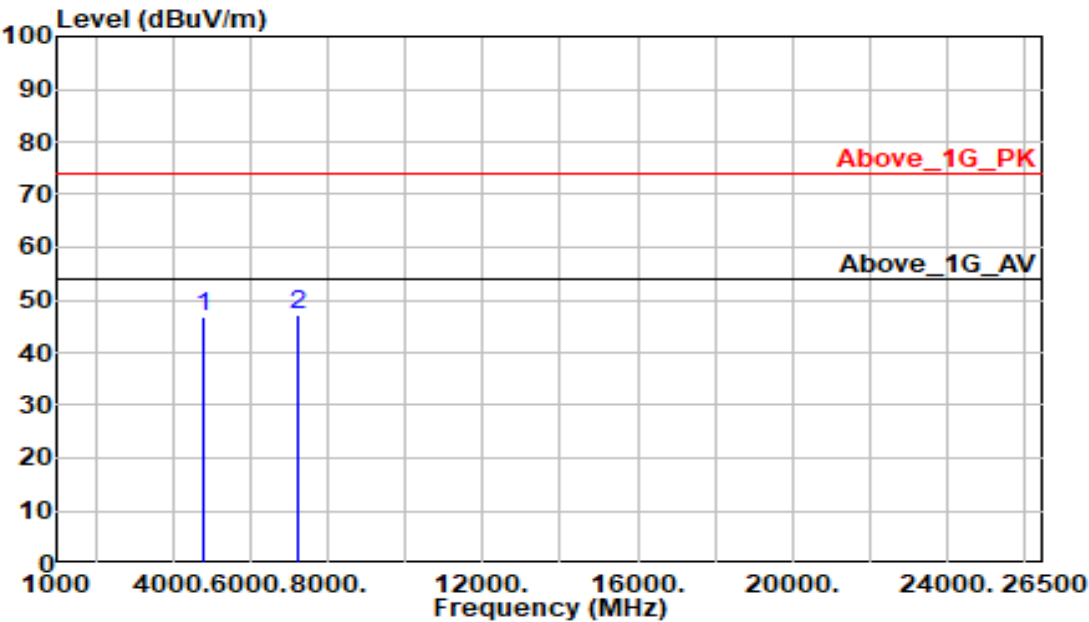
:BLE 2M
:2402 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note

:



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4804.000	46.87	-0.05	46.82	74.00	-27.18	Peak	209	70
7206.000	40.50	6.85	47.35	74.00	-26.65	Peak	192	304



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

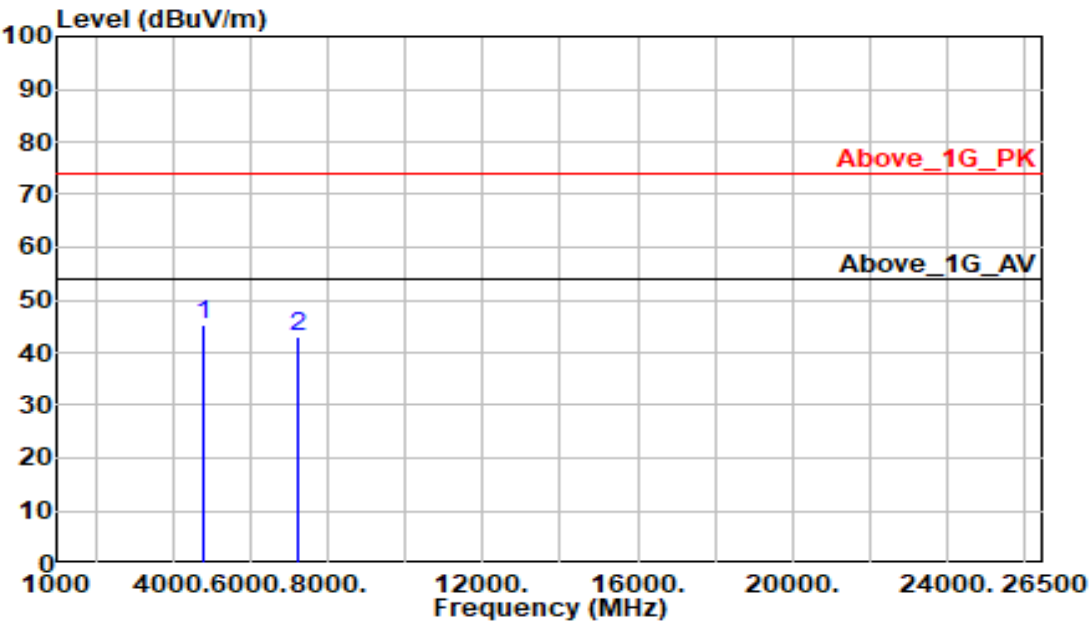
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 2M
:2402 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

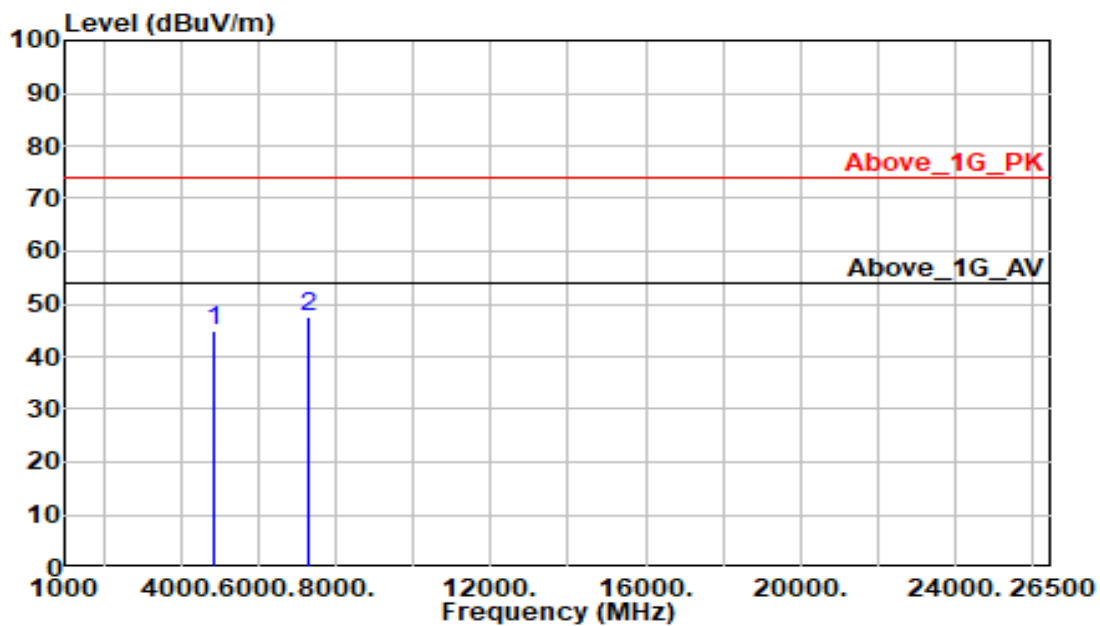
Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4804.000	48.68	-3.46	45.22	74.00	-28.78	Peak	103	20
7206.000	39.24	3.62	42.86	74.00	-31.14	Peak	150	257

Report No.	:6128625056401	Test Date	:2025-09-03
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE 2M	Temp/Humi	:22.7C/55%
Channel	:2440 MHz	Antenna Pol	:Vertical
Mode	:Tx	Test Engineer	:Sam Haung
Power Setting	:6	Test Site	:chamber A
Plane	:X Plane	Voltage	:3.3Vdc From Test Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV. dBuV	dB/m	LV dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4880.000	48.09	-3.19	44.90	74.00	-29.10	Peak	269	341
7320.000	43.56	3.87	47.43	74.00	-26.57	Peak	203	101



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

Operation Band
Channel
Mode
Power Setting
Plane

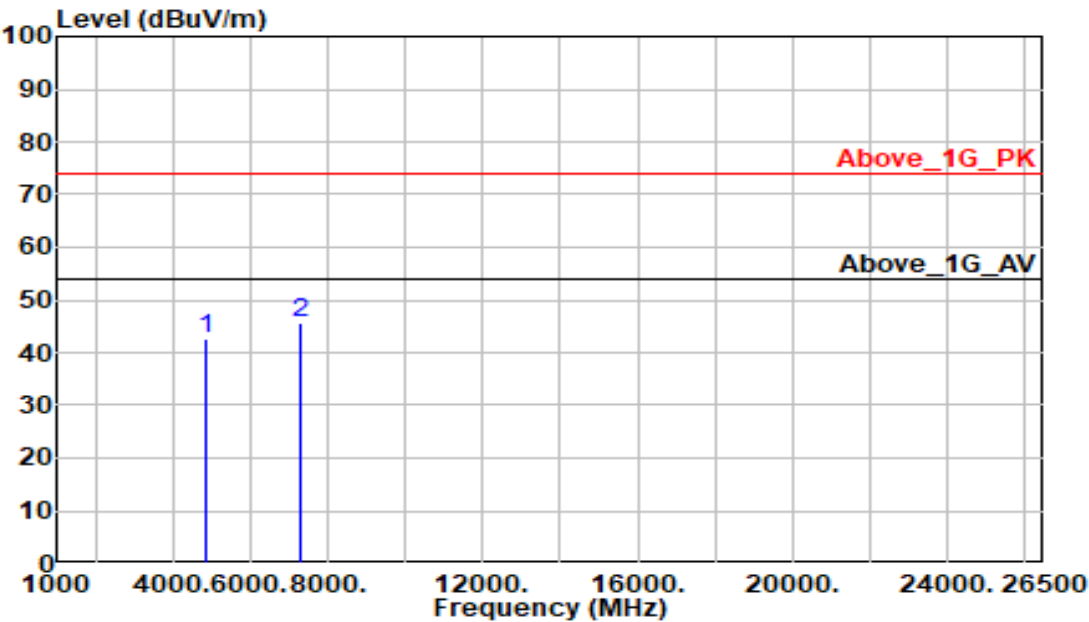
:BLE 2M
:2440 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note

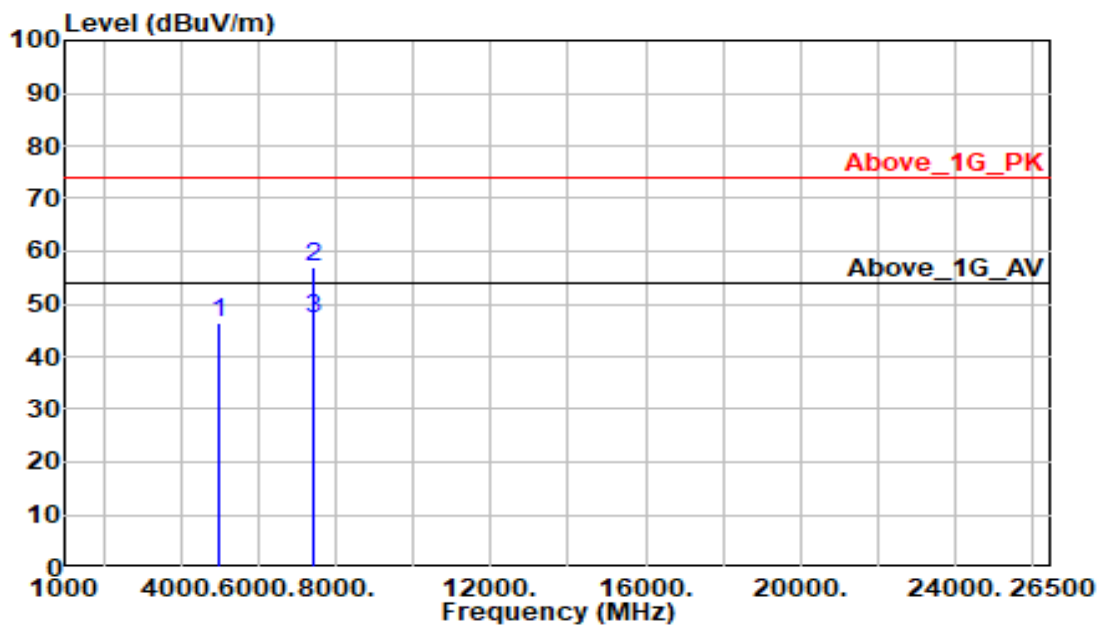
:



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4880.000	45.71	-3.19	42.52	74.00	-31.48	Peak	281	39
7320.000	41.65	3.87	45.52	74.00	-28.48	Peak	171	150

Report No.	:6128625056401	Test Date	:2025-09-03
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE 2M	Temp/Humi	:22.7C/55%
Channel	:2480 MHz	Antenna Pol	:Vertical
Mode	:Tx	Test Engineer	:Sam Haung
Power Setting	:6	Test Site	:chamber A
Plane	:X Plane	Voltage	:3.3Vdc From Test Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4960.000	49.20	-2.90	46.30	74.00	-27.70	Peak	294	66
7440.000	53.02	4.13	57.15	74.00	-16.85	Peak	285	160
7440.000	43.08	4.13	47.21	54.00	-6.79	Average	285	160



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

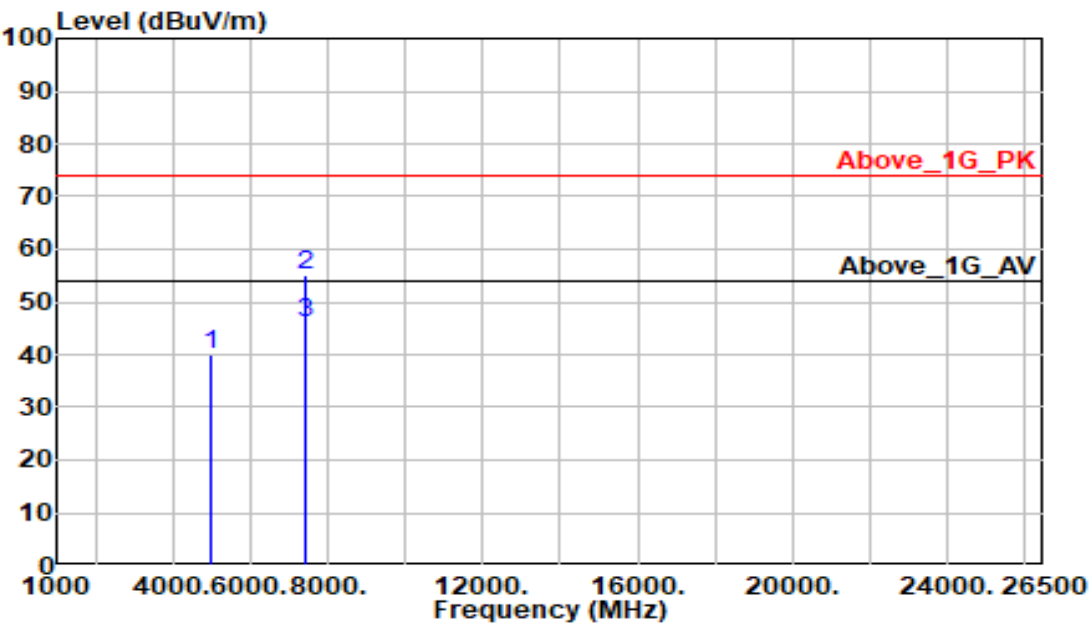
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 2M
:2480 MHz
:Tx
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
4960.000	42.82	-2.90	39.92	74.00	-34.08	Peak	332	49
7440.000	50.85	4.13	54.98	74.00	-19.02	Peak	324	200
7440.000	41.85	4.13	45.98	54.00	-8.02	Average	324	200



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

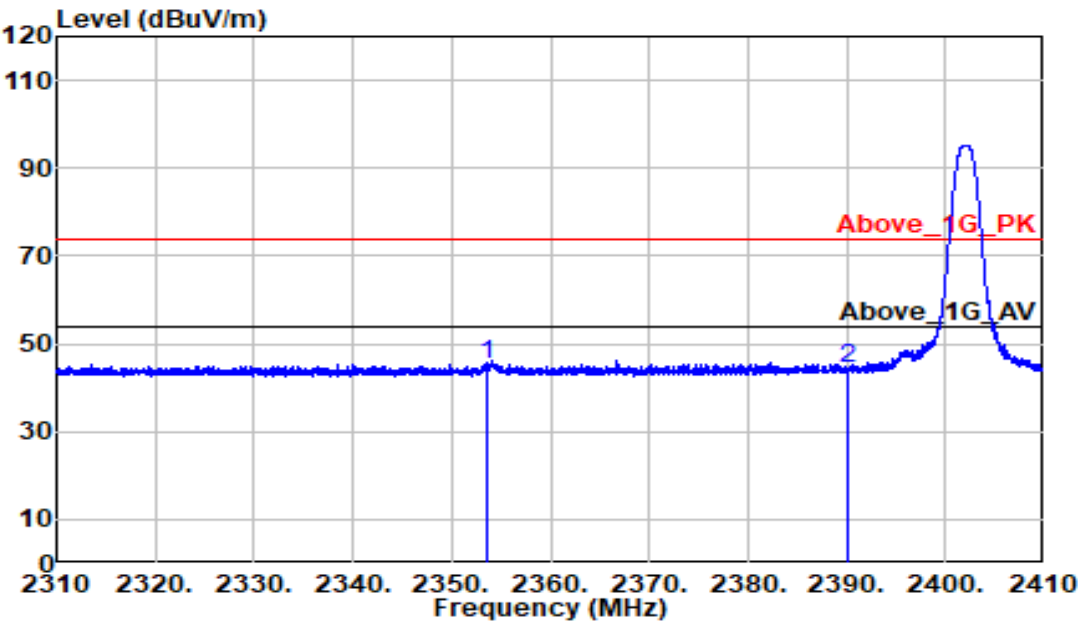
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2402 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note
:



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2353.675	56.77	-11.55	45.22	74.00	-28.78	Peak	121	68
2390.000	55.81	-11.47	44.35	74.00	-29.65	Peak	121	68



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

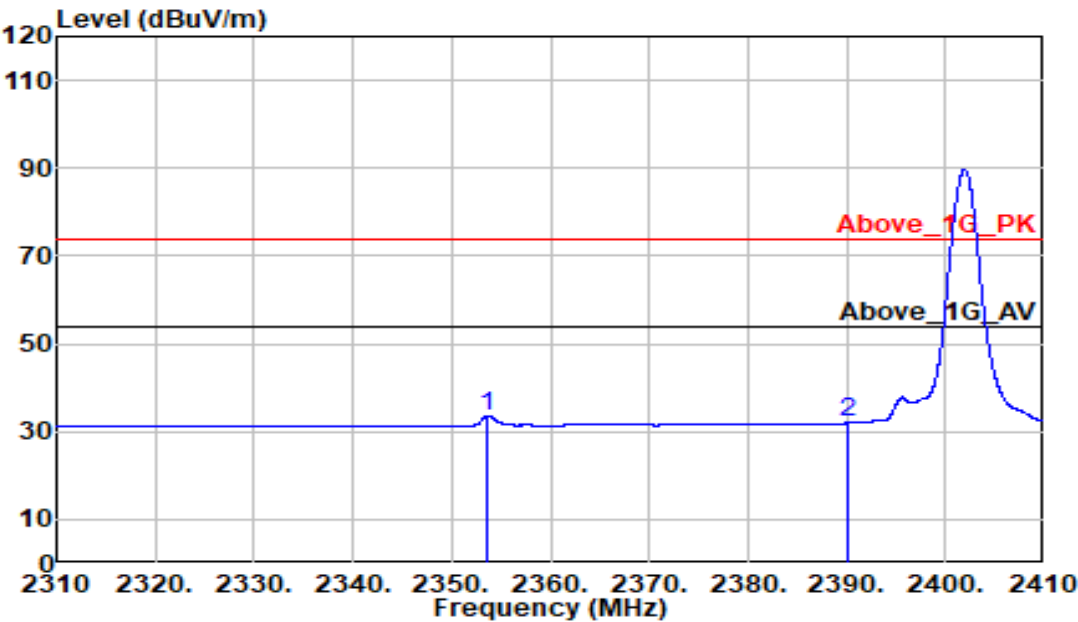
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2402 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2353.675	45.14	-11.55	33.60	54.00	-20.40	Average	121	68
2390.000	43.42	-11.47	31.95	54.00	-22.05	Average	121	68



Report No.

Product Name

Operation Band

Channel

Mode

Power Setting

Plane

:6128625056401

:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

:BLE 1M

:2402 MHz

:Bandedge

:6

:X Plane

Test Date

Model Name

Temp/Humi

Antenna Pol

Test Engineer

Test Site

Voltage

:2025-09-03

:RYB2340

:22.7C/55%

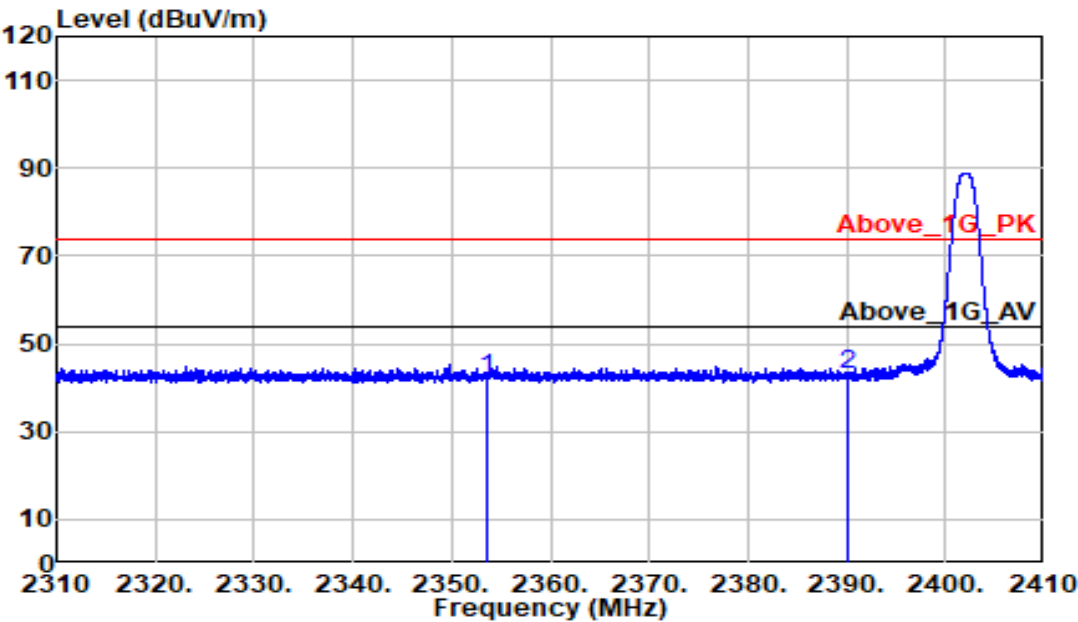
:Horizontal

:Sam Haung

:chamber A

:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2353.625	53.53	-11.55	41.99	74.00	-32.01	Peak	133	181
2390.000	54.31	-11.47	42.85	74.00	-31.15	Peak	133	181



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

Operation Band
Channel
Mode
Power Setting
Plane

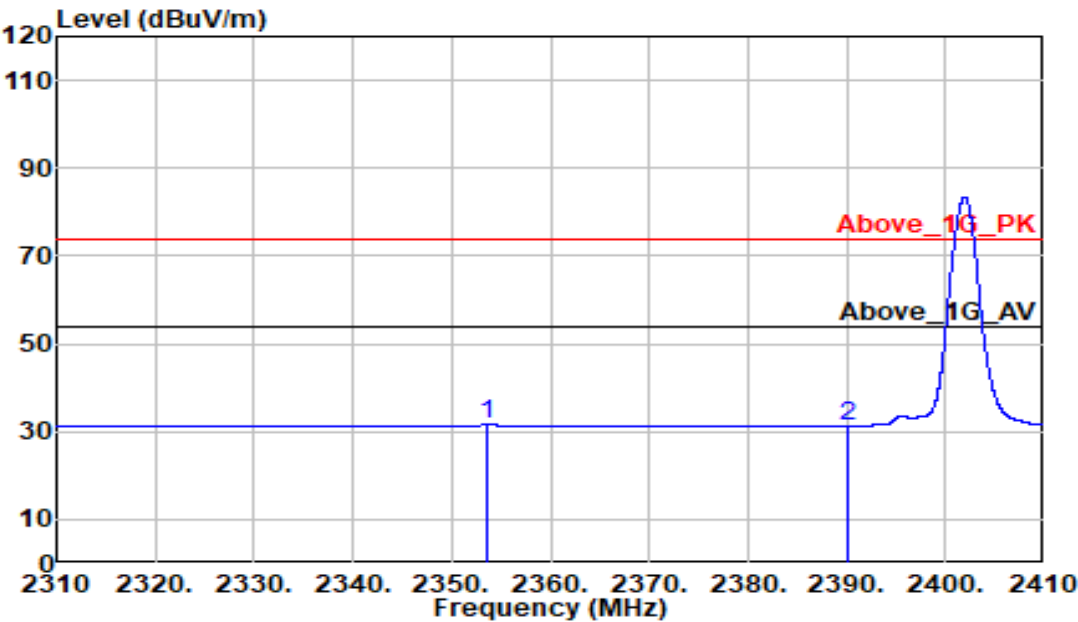
:BLE 1M
:2402 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note

:



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2353.625	43.33	-11.55	31.78	54.00	-22.22	Average	133	181
2390.000	42.84	-11.47	31.37	54.00	-22.63	Average	133	181



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

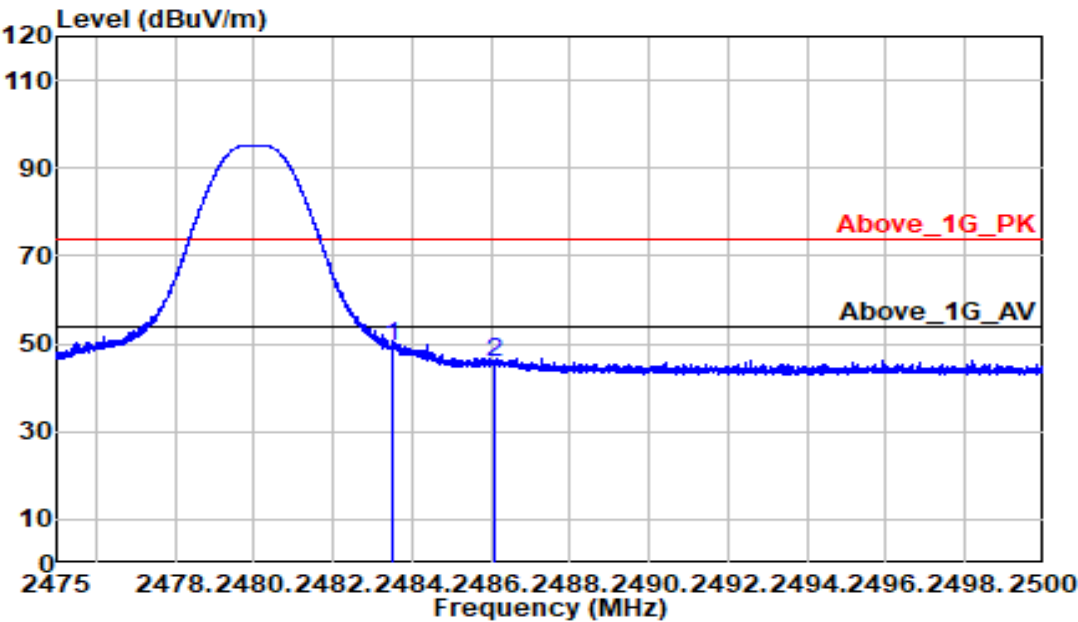
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2480 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV. dBuV	dB/m	LV dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2483.500	60.80	-11.27	49.53	74.00	-24.47	Peak	175	88
2486.056	56.78	-11.26	45.52	74.00	-28.48	Peak	175	88



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

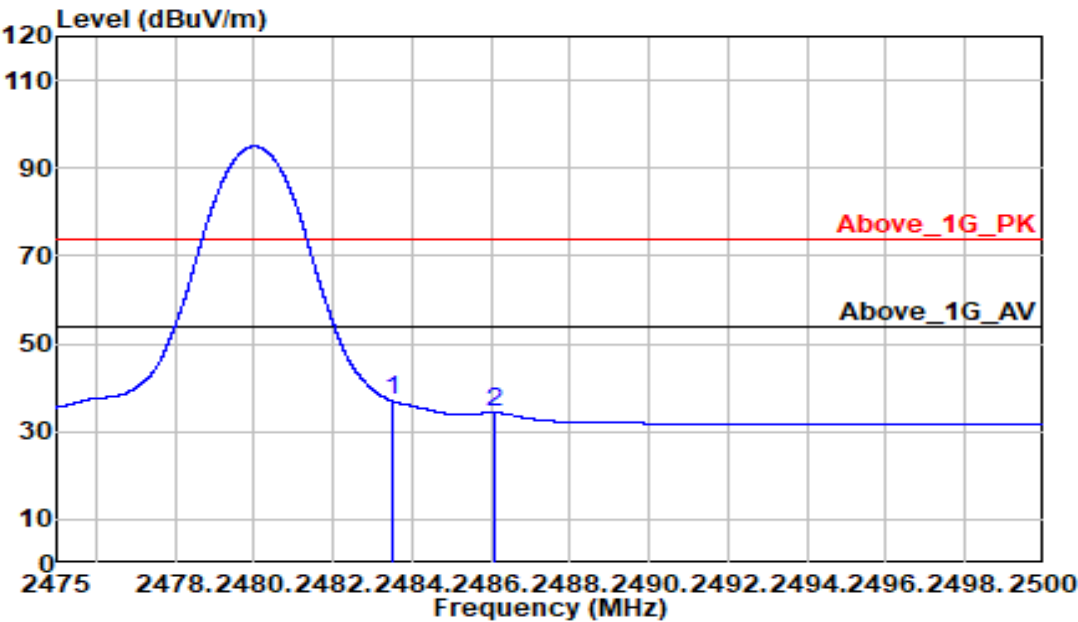
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2480 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV. dBuV	dB/m	LV dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2483.500	48.29	-11.27	37.02	54.00	-16.98	Average	175	88
2486.056	45.56	-11.26	34.30	54.00	-19.70	Average	175	88



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

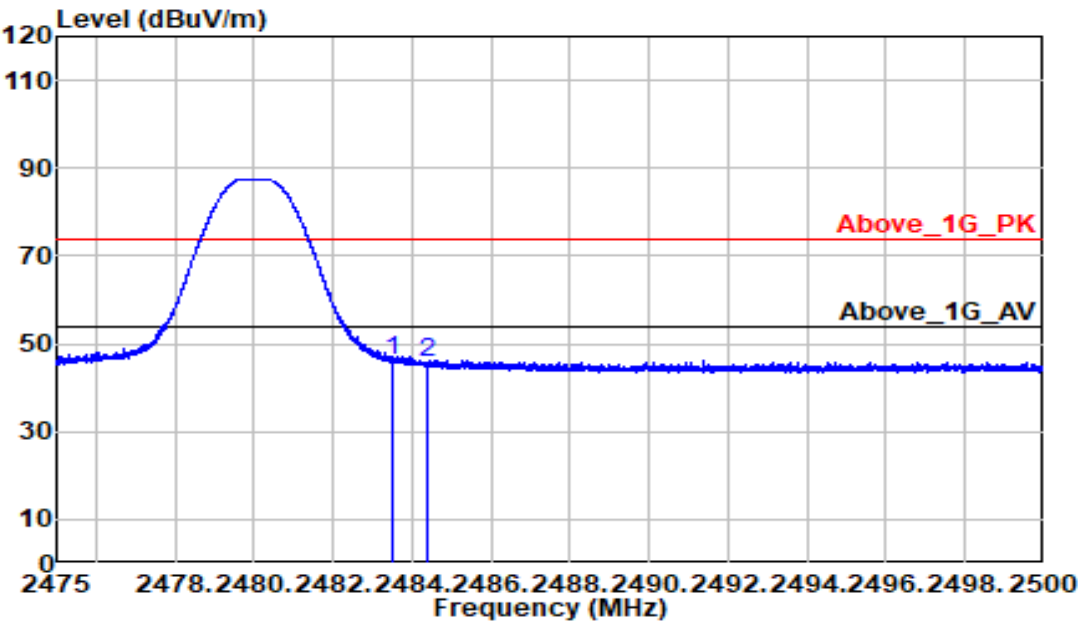
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2480 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV. dBuV	dB/m	LV dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2483.500	57.29	-11.27	46.02	74.00	-27.98	Peak	100	210
2484.369	56.95	-11.26	45.69	74.00	-28.31	Peak	100	210



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

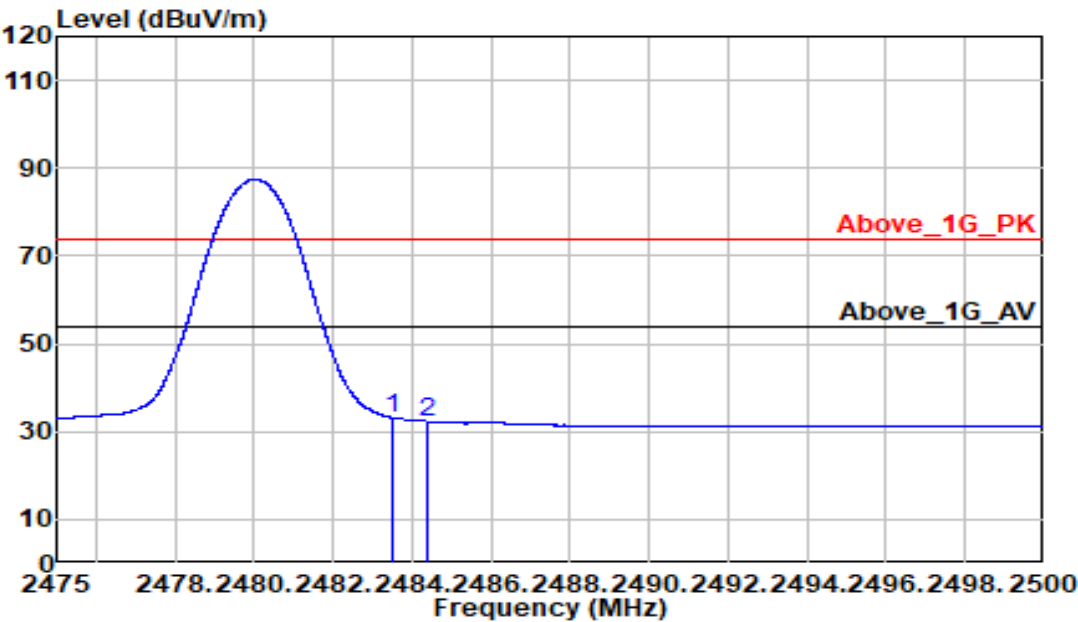
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 1M
:2480 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.	dB/m	LV		dB	PK/QP/AV	CM	DEG
	dBuV		dBuV/m	dBuV/m				
2483.500	44.43	-11.27	33.17	54.00	-20.83	Average	100	210
2484.369	43.63	-11.26	32.37	54.00	-21.63	Average	100	210



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

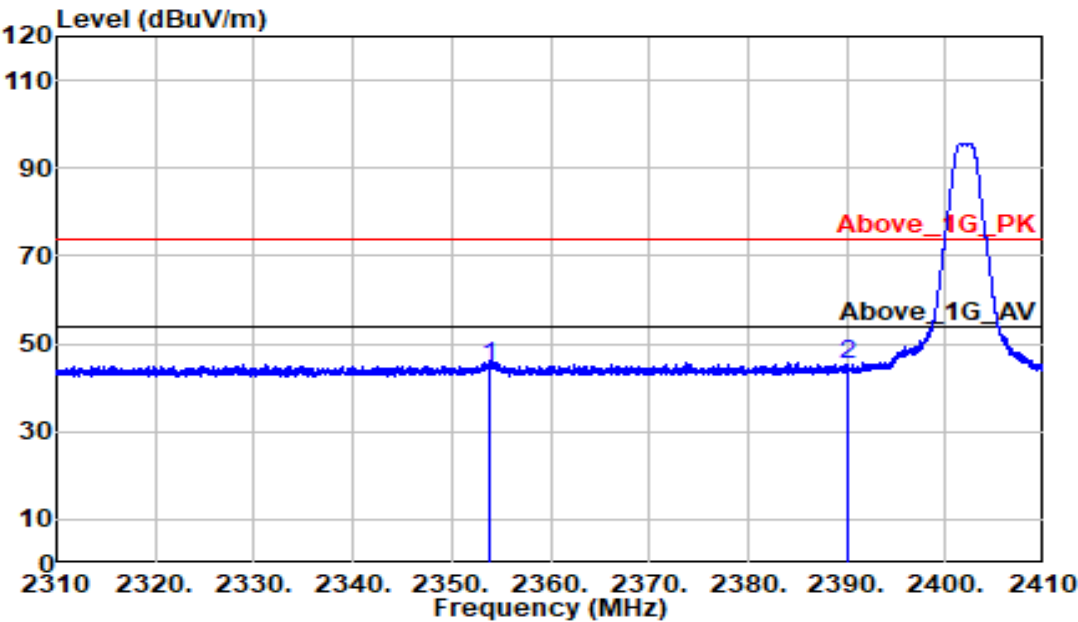
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 2M
:2402 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2353.725	56.47	-11.55	44.93	74.00	-29.07	Peak	115	66
2390.000	56.83	-11.47	45.36	74.00	-28.64	Peak	115	66



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

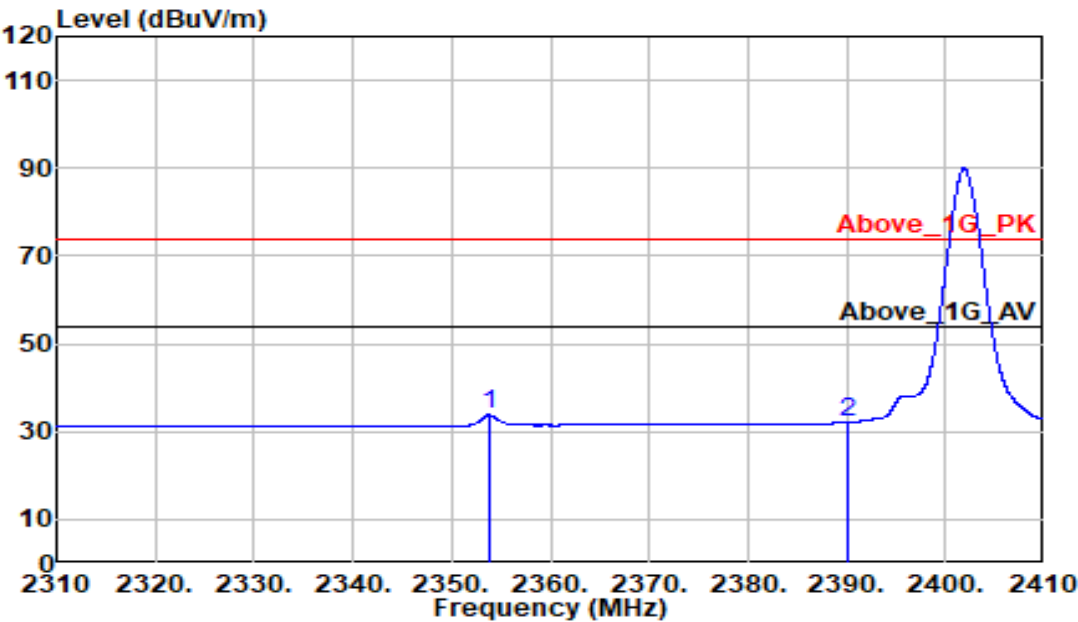
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 2M
:2402 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV. dBuV	dB/m	LV dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2353.725	45.33	-11.55	33.79	54.00	-20.21	Average	115	66
2390.000	43.49	-11.47	32.02	54.00	-21.98	Average	115	66



Report No.

Product Name

Operation Band

Channel

Mode

Power Setting

Plane

:6128625056401

:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

:BLE 2M

:2402 MHz

:Bandedge

:6

:X Plane

Test Date

Model Name

Temp/Humi

Antenna Pol

Test Engineer

Test Site

Voltage

:2025-09-03

:RYB2340

:22.7C/55%

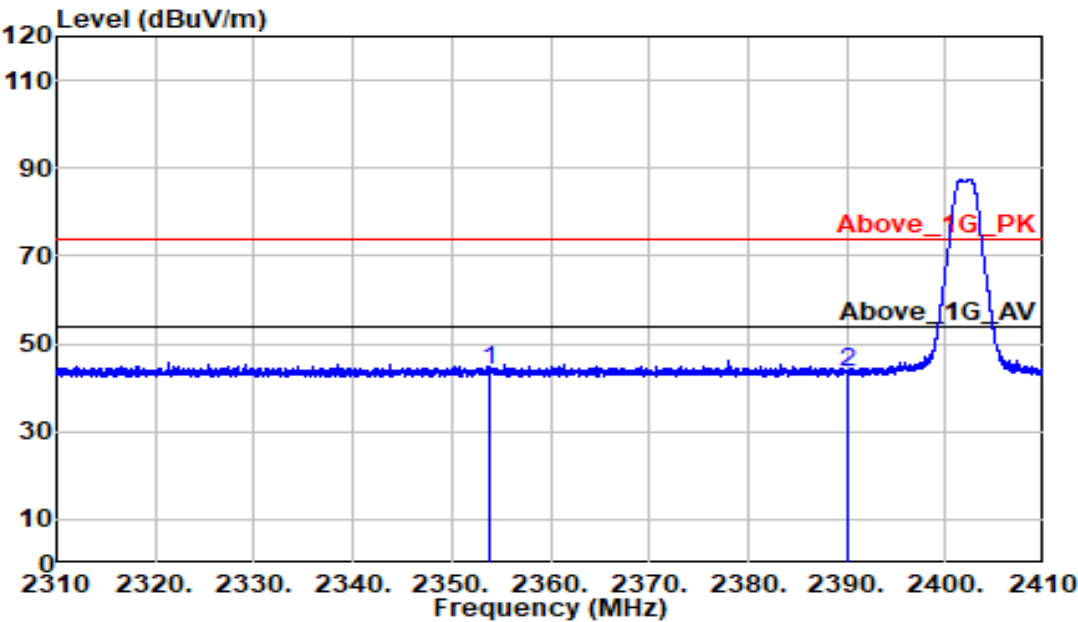
:Horizontal

:Sam Haung

:chamber A

:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2353.925	55.29	-11.55	43.74	74.00	-30.26	Peak	100	208
2390.000	55.04	-11.47	43.57	74.00	-30.43	Peak	100	208



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

Operation Band
Channel
Mode
Power Setting
Plane

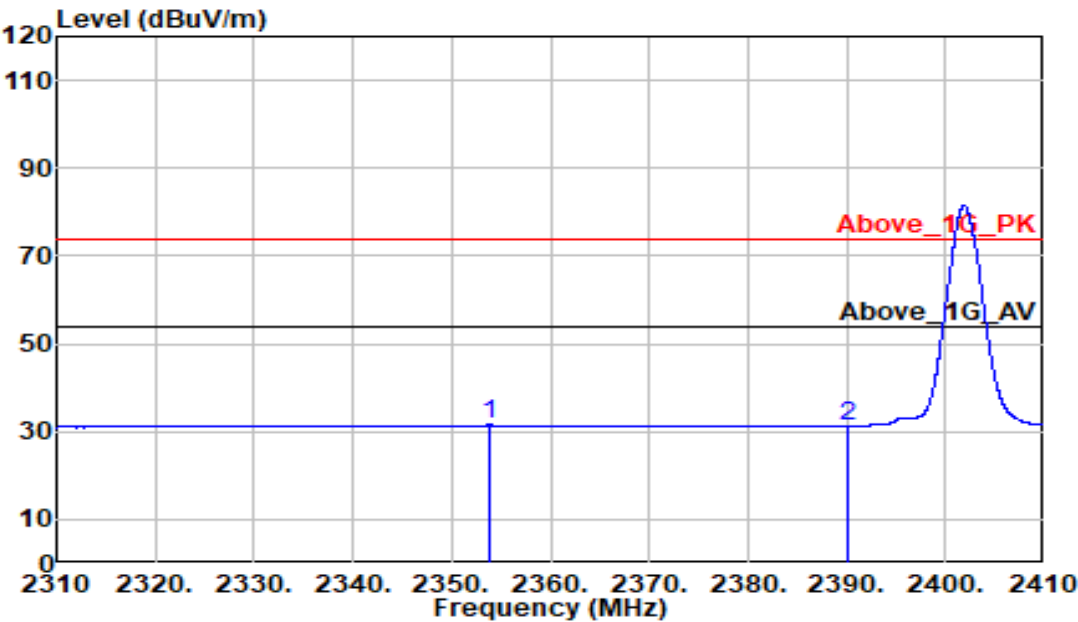
:BLE 2M
:2402 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note

:



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2353.925	43.03	-11.55	31.49	54.00	-22.51	Average	100	208
2390.000	42.84	-11.47	31.37	54.00	-22.63	Average	100	208



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

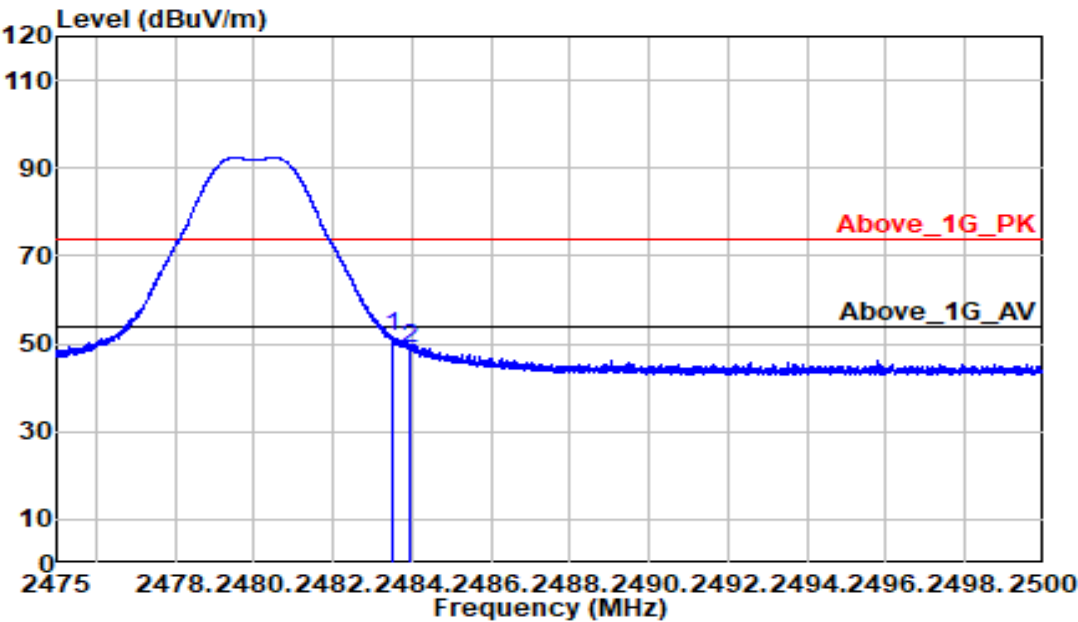
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 2M
:2480 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2483.500	63.08	-11.27	51.81	74.00	-22.19	Peak	100	345
2483.925	60.15	-11.26	48.89	74.00	-25.11	Peak	100	345



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

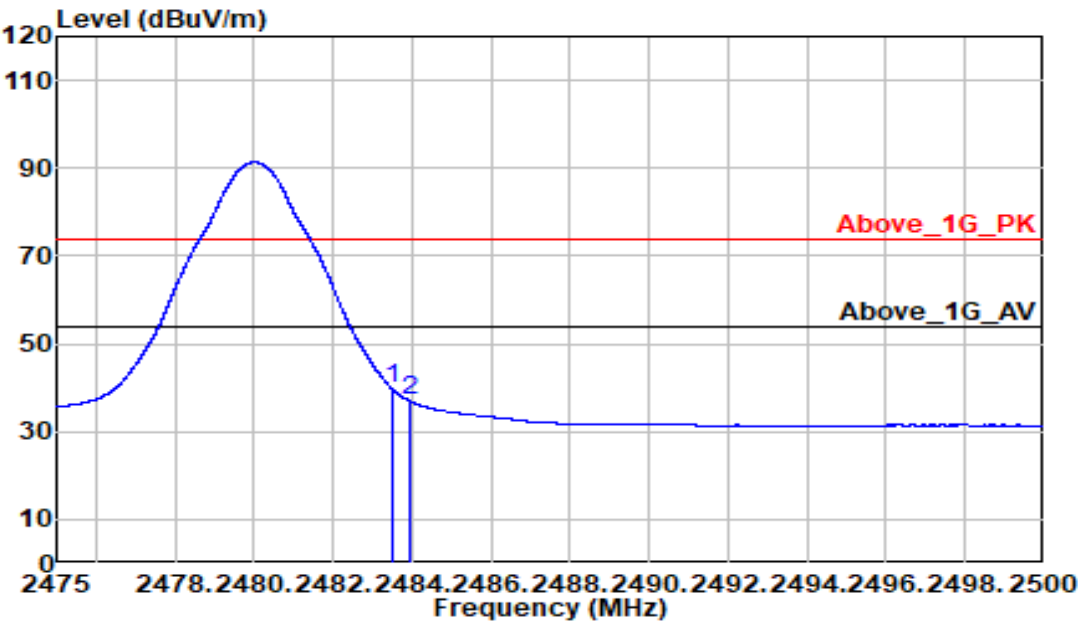
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 2M
:2480 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Vertical
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV. dBuV	dB/m	LV dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2483.500	50.98	-11.27	39.72	54.00	-14.28	Average	100	345
2483.925	48.33	-11.26	37.07	54.00	-16.93	Average	100	345



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

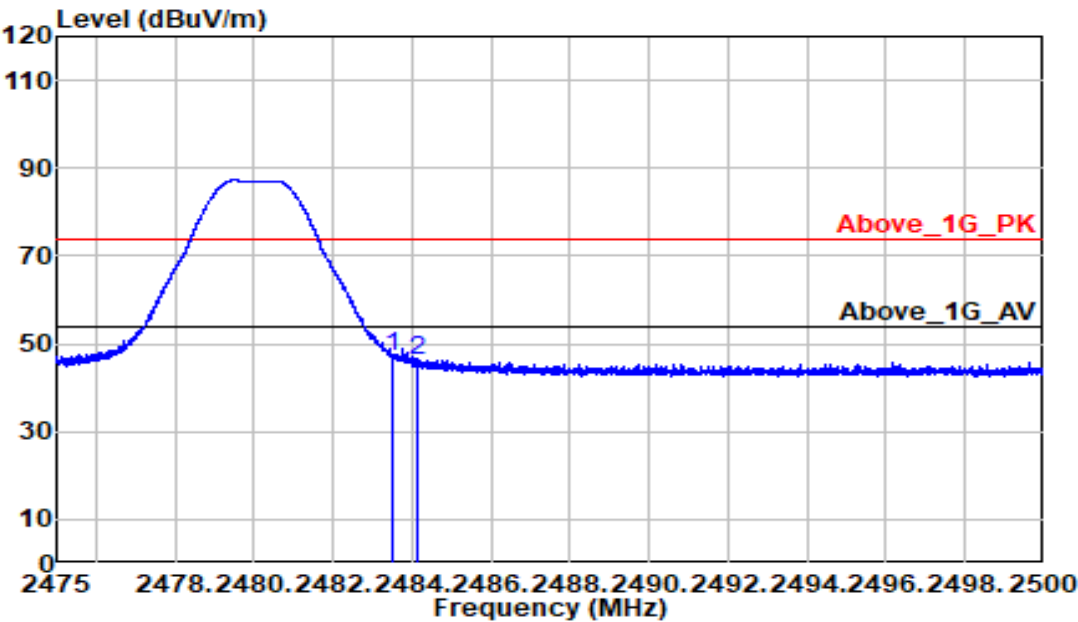
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 2M
:2480 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV. dBuV	dB/m	LV dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2483.500	58.52	-11.27	47.25	74.00	-26.75	Peak	104	205
2484.106	57.56	-11.26	46.29	74.00	-27.71	Peak	104	205



Report No.
Product Name

:6128625056401
:2.4GHz Bluetooth
- Low Energy
Module with
Integrated
Antenna

Test Date
Model Name

:2025-09-03
:RYB2340

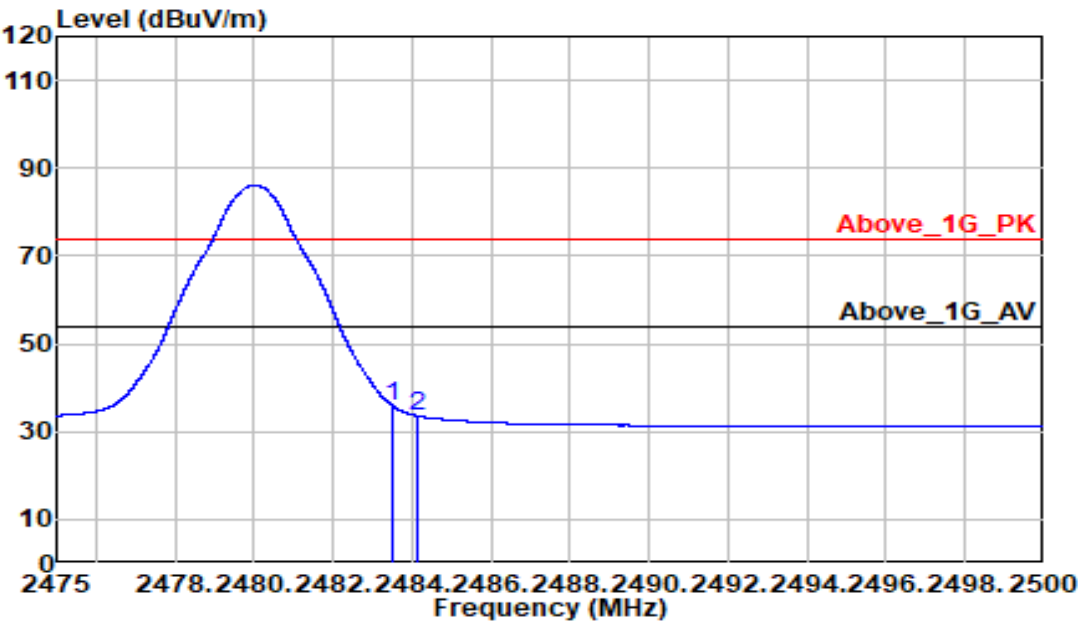
Operation Band
Channel
Mode
Power Setting
Plane

:BLE 2M
:2480 MHz
:Bandedge
:6
:X Plane

Temp/Humi
Antenna Pol
Test Engineer
Test Site
Voltage

:22.7C/55%
:Horizontal
:Sam Haung
:chamber A
:3.3Vdc From Test
Kit

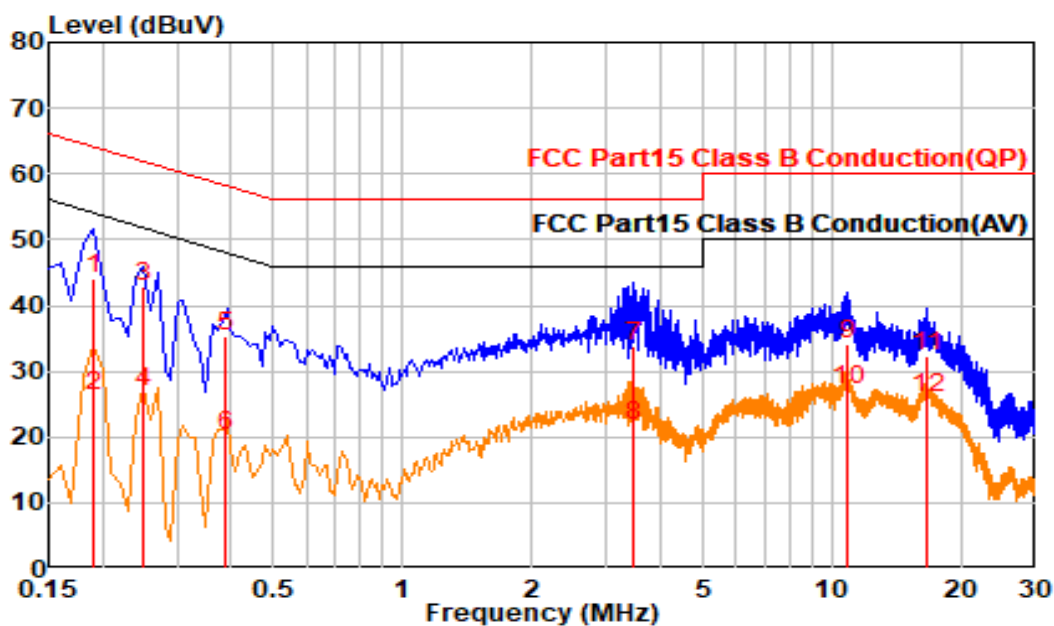
Note :



Freq	Read	Factor	Emission	Limit	Margin	Detector	Apos	TPos
MHz	LV.		LV					
	dBuV	dB/m	dBuV/m	dBuV/m	dB	PK/QP/AV	CM	DEG
2483.500	47.16	-11.27	35.89	54.00	-18.11	Average	104	205
2484.106	44.89	-11.26	33.62	54.00	-20.38	Average	104	205

Appendix H. AC Mains Conducted Emissions

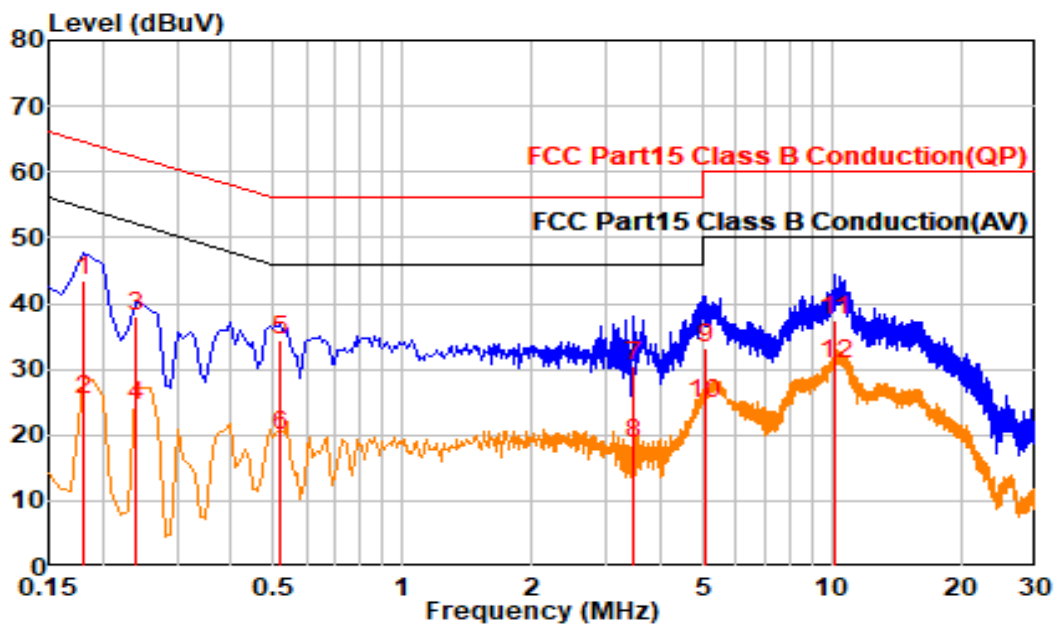
Report No.	:6128625056401	Test Date	:2025-09-09
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE	Temp/Humi	:24.4C 58%
Mode	:Tx	Test Engineer	:Sam Huang
Power	:120V/60Hz	Test Site	:Shielded Room A
Condition	:Line	Note	:



Trace: 1

Freq	Read LV.	Factor	Cable Loss	LISN Factor	Emission LV	Limit	Margin	Detect
MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	QP/AV
0.190	34.39	9.62	0.01	9.61	44.01	64.04	-20.02	QP
0.190	16.73	9.62	0.01	9.61	26.35	54.04	-27.69	Average
0.250	33.25	9.62	0.01	9.61	42.87	61.75	-18.87	QP
0.250	17.38	9.62	0.01	9.61	27.00	51.75	-24.75	Average
0.389	25.57	9.62	0.01	9.61	35.19	58.08	-22.89	QP
0.389	10.66	9.62	0.01	9.61	20.28	48.08	-27.79	Average
3.463	24.18	9.67	0.03	9.64	33.85	56.00	-22.15	QP
3.463	12.12	9.67	0.03	9.64	21.79	46.00	-24.21	Average
10.827	24.35	9.71	0.05	9.65	34.06	60.00	-25.94	QP
10.827	17.40	9.71	0.05	9.65	27.11	50.00	-22.89	Average
16.607	22.50	9.69	0.06	9.62	32.19	60.00	-27.81	QP
16.607	16.28	9.69	0.06	9.62	25.97	50.00	-24.03	Average

Report No.	:6128625056401	Test Date	:2025-09-09
Product Name	:2.4GHz Bluetooth - Low Energy Module with Integrated Antenna	Model Name	:RYB2340
Operation Band	:BLE	Temp/Humi	:24.4C 58%
Mode	:Tx	Test Engineer	:Sam Huang
Power	:120V/60Hz	Test Site	:Shielded Room A
Condition	:Neutral	Note	:



Trace: 1

Freq	Read LV.	Factor	Cable Loss	LISN Factor	Emission LV	Limit	Margin	Detect
MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	QP/AV
0.180	34.00	9.62	0.01	9.61	43.62	64.48	-20.86	QP
0.180	15.86	9.62	0.01	9.61	25.48	54.48	-28.99	Average
0.240	28.41	9.62	0.01	9.61	38.03	62.10	-24.07	QP
0.240	14.98	9.62	0.01	9.61	24.60	52.10	-27.50	Average
0.519	24.75	9.62	0.01	9.61	34.37	56.00	-21.63	QP
0.519	10.41	9.62	0.01	9.61	20.03	46.00	-25.97	Average
3.468	20.71	9.66	0.03	9.63	30.37	56.00	-25.63	QP
3.468	8.96	9.66	0.03	9.63	18.62	46.00	-27.38	Average
5.054	23.53	9.68	0.04	9.64	33.21	60.00	-26.79	QP
5.054	15.11	9.68	0.04	9.64	24.79	50.00	-25.21	Average
10.193	27.83	9.72	0.05	9.67	37.55	60.00	-22.45	QP
10.193	21.13	9.72	0.05	9.67	30.85	50.00	-19.15	Average