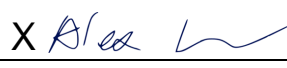



Prüfbericht-Nr.: <i>Test report no.:</i>	60386707 003	Auftrags-Nr.: <i>Order no.:</i>	168309039	Seite 1 von 18 Page 1 of 18
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2021-03-10	
Auftraggeber: <i>Client:</i>	LEEDARSON LIGHTING CO., LTD. Xingtai Industrial Zone, Economic Development Zone, Changtai County, Zhangzhou City, Fujian Province, P.R. China			
Prüfgegenstand: <i>Test item:</i>	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	LA02301 (Trademark: LEEDARSON)			
Auftrags-Inhalt: <i>Order content:</i>	FCC & IC approval			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 2: Section 2.1091	RSS-247 Issue 2 February 2017 RSS-Gen Issue 5 March 2019 RSS-102 Issue 5 March 2015		
Wareneingangsdatum: <i>Date of sample receipt:</i>	2020-08-13	Please refer to photo documents		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003013080-001 to 003			
Prüfzeitraum: <i>Testing period:</i>	2021-03-08 – 2020-03-24			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	<input checked="" type="checkbox"/> 	genehmigt von: <i>authorized by:</i>	<input checked="" type="checkbox"/> 	
Datum: <i>Date:</i>	2021-04-12	Ausstellungsdatum: <i>Issue date:</i>	2021-04-12	
	<small>Signed by: Alex Lan</small>		<small>Signed by: Sam Lin</small>	
Stellung / Position	Senior Project Engineer	Stellung / Position	Department Manager	
Sonstiges / Other: This test report is based on original 60386707 001 for alternative components. FCC ID: 2AB2Q-LA02301 IC: 10256A-LA02301; HVIN: LA02301				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet
Legend:	1 = very good P(ass) = passed a.m. test specifications(s)	2 = good F(ail) = failed a.m. test specifications(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
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. <i>This test report only relates to the a. m. 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.</i>				

V05

Prüfbericht - Nr.: 60386707 003
Test report no.

Seite 2 von 18
Page 2 of 18

Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 RADIATED SPURIOUS EMISSION

RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS

RESULT: Pass

Contents

1	GENERAL REMARKS	4
1.1	COMPLEMENTARY MATERIALS	4
2	TEST SITES	4
2.1	TEST FACILITIES	4
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	5
2.3	TRACEABILITY	6
2.4	CALIBRATION	6
2.5	MEASUREMENT UNCERTAINTY.....	6
2.6	LOCATION OF ORIGINAL DATA.....	6
2.7	STATUS OF FACILITY USED FOR TESTING.....	6
3	GENERAL PRODUCT INFORMATION	7
3.1	PRODUCT FUNCTION AND INTENDED USE.....	7
3.2	RATINGS AND SYSTEM DETAILS	7
3.3	INDEPENDENT OPERATION MODES	9
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS.....	9
3.5	SUBMITTED DOCUMENTS.....	9
4	TEST SET-UP AND OPERATION MODES	10
4.1	PRINCIPLE OF CONFIGURATION SELECTION	10
4.2	TEST OPERATION AND TEST SOFTWARE.....	10
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT.....	10
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE.....	10
4.5	TEST SETUP DIAGRAM.....	11
5	TEST RESULTS	13
5.1	TRANSMITTER REQUIREMENT & TEST SUITES	13
<i>5.1.1</i>	<i>Antenna Requirement</i>	<i>13</i>
<i>5.1.2</i>	<i>Maximum Peak Conducted Output Power.....</i>	<i>14</i>
<i>5.1.3</i>	<i>Radiated Spurious Emission</i>	<i>15</i>
6	SAFETY HUMAN EXPOSURE	16
6.1	RADIO FREQUENCY EXPOSURE COMPLIANCE	16
<i>6.1.1</i>	<i>Electromagnetic Fields.....</i>	<i>16</i>
7	PHOTOGRAPHS OF THE TEST SET-UP.....	18
8	LIST OF TABLES.....	18

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 of New Crystal.

Appendix C: Test Results of New Antenna.

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China

FCC Registration No.: 694916

IC Registration No.: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wireless Connectivity Tester	R&S	CMW270	101375	10.08.2021
Signal Analyzer	R&S	FSV 40	101441	10.08.2021
OSP	R&S	OSP 150	101017	10.12.2021
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	10.12.2021
Power Sensor	R&S	NRP-Z81	105677	10.09.2021
Shielding Room 8#	Albatross	SR8	APC17151-SR8	23.07.2021
Unwanted Emission Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR 7	102021	11.08.2021
Signal Analyzer	R&S	FSV 40	101439	10.08.2021
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	10.08.2021
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	10.08.2021
Amplifier	R&S	SCU-18F	180070	10.08.2021
Amplifier	R&S	SCU40A	100475	10.09.2021
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	08.08.2022
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	08.08.2022
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	08.08.2022
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	13.09.2022
Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18313	02.09.2021
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	06.07.2021

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.

Item	Extended Uncertainty
Conducted Emission	± 2.74 dB
Radiated Emission (30-1000MHz)	Field strength (dBµV/m) 4.27dB
Radiated Emission (above 1000MHz)	Field strength (dBµV/m) 4.46dB
Radio Spectrum	± 1.5 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B & C 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 Road Middle, Longhua District, Shenzhen 518110, People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module, it supports Wi-Fi 802.11 b/g/n and Bluetooth Low Energy wireless technology.

Wi-Fi and Bluetooth Low Energy share one antenna and can't transmitting simultaneously.

This test report is based on original 60386707 001 for alternative components: crystal oscillator and external antenna.

Manufacturer of Crystal: H&SHighTech Corp.

Antenna
Manufacturer: LEEDARSON LIGHTING CO.,LTD
Antenna Type: integral antenna
Antenna Gain: 4 dBi

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Type Designation	LA02301
Trade Mark	LEEDARSON
FCC ID	2AB2Q-LA02301
IC	10256A-LA02301
HVIN	LA02301
Operating Voltage	DC 5V via USB interface
Testing Voltage	DC 5V via USB interface

Technical Specification of Wi-Fi 802.11 b/g/n	
Operating Frequency	2412 - 2462 MHz for 802.11b/g/n(HT20) 2422 - 2452 MHz for 802.11n(HT40)
Type of Modulation	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 for 802.11n
Channel Number	11 channels for 802.11b/g/n(HT20) 7 channels for 802.11n(HT40)
Channel Separation	5 MHz
Technical Specification of Bluetooth Low Energy	
Operating Frequency	2402 – 2480 MHz
Bluetooth Core Version	4.2
Channel Number	40 channels
Channel separation	2MHz
Modulation	GFSK

Table 3: RF Channel and Frequency of Wi-Fi 802.11 b/g/n

RF Channel	802.11 b/g/n(HT20)	802.11 n(HT40)
	Frequency (MHz)	Frequency (MHz)
01	2412	/
02	2417	/
03	2422	2422
04	2427	2427
05	2432	2432
06	2437	2437
07	2442	2442
08	2447	2447
09	2452	2452
10	2457	/
11	2462	/

Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)

Test frequencies are lowest channel: 2422 MHz, middle channel: 2437 MHz and highest channel: 2452 MHz for 802.11n(HT40)

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)
00	2402.00	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	19	2440.00	29	2460.00	39	2480.00

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Wi-Fi 802.11 b/g/n wireless transmitting
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. On, Bluetooth Low Energy wireless transmitting
 - 4. Low channel
 - 5. Middle channel
 - 6. High channel
- 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

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, the Radiated Spurious Emissions were arranged retest with new antenna and crystal oscillator.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Notebook	Lenovo	ThinkPad X260	N/A

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)

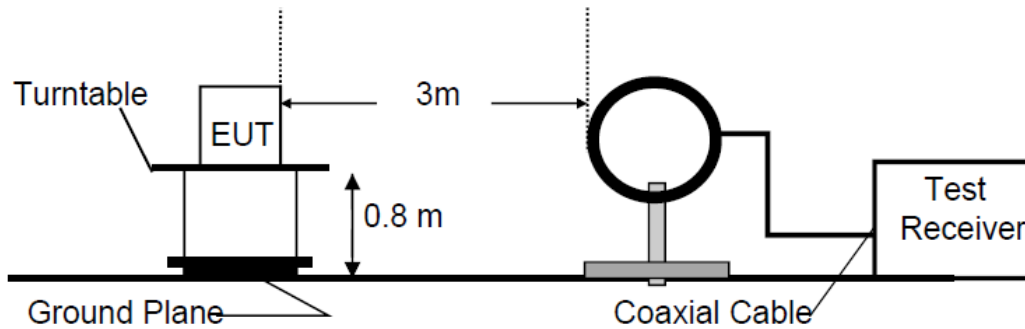


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

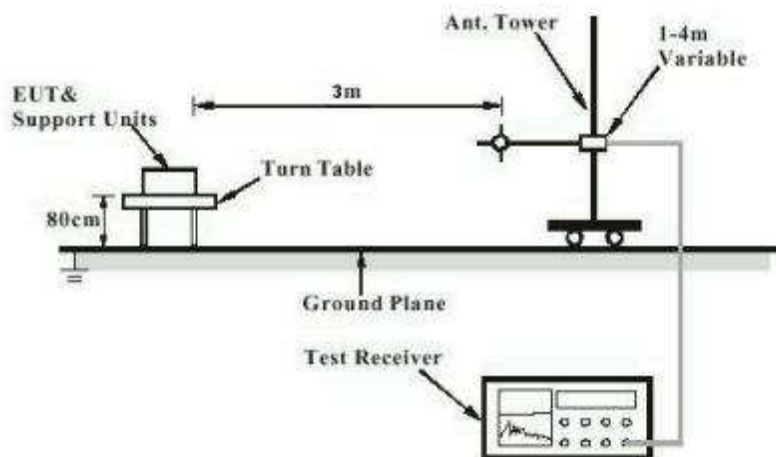


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

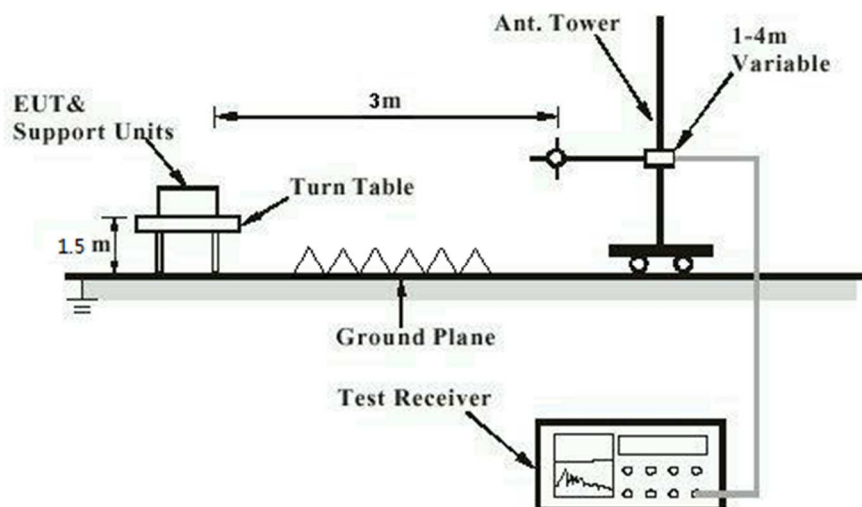
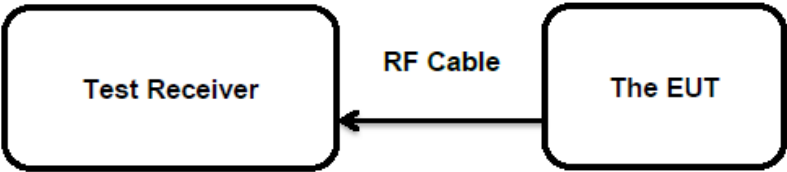


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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
Limit : the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has a PCB antenna and an IPEX antenna, the directional gain of antenna is 4 dBi for PCB antenna and 3.7 dBi for IPEX antenna, 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.

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(2)&(4)
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	: 24.03.2021
Input voltage	: DC 5V
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 24°C
Relative humidity	: 47 %
Atmospheric pressure	: 101 kPa

For details refer to following test result.

Table 6: Test Result of Maximum Peak Conducted Output Power, Wi-Fi 802.11 b/g/n

Mode	802.11b			802.11g		
Data Rate	1Mbps			6Mbps		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak. Power (dBm)	18.6	17.8	18.3	15.8	18.2	17.2
Avg. Power (dBm)	17.3	16.7	17.1	12.7	15.3	14.2
Mode	802.11n HT20			802.11n HT40		
Data Rate	MCS0 6.5Mbps			MCS0 13.5Mbps		
Channel	1	6	11	3	6	9
Frequency(MHz)	2412	2437	2462	2422	2437	2452
Peak. Power (dBm)	16.9	18.3	18.7	15.2	16.8	14.6
Avg. Power (dBm)	13.7	15.2	15.8	13.6	15.3	13.0

Table 7: Test Result of Maximum Peak Conducted Output Power, Bluetooth Low Energy

Mode	Bluetooth Low Energy		
Channel	1	19	39
Frequency (MHz)	2402	2440	2480
Peak. Power (dBm)	7.61	8.55	8.87
Avg. Power (dBm)	5.58	6.45	6.74

Note: The cable loss is taken into account in results and the e.i.r.p. are 22.7 dBm less than 4W (36 dBm).

Prüfbericht - Nr.: 60386707 003
Test report no.

Seite 15 von 18
Page 15 of 18

5.1.3 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 : 08.03.2021 - 23.03.2021
Input voltage : DC 5V
Operation mode : A, B
Test channel : Low / Middle / High
Ambient temperature : 23°C
Relative humidity : 55 %
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 & C.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:

Pass

Test Specification

Test standard : CFR47 FCC Part 2: Section 2.1091
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498 v06
RSS-102 Issue 5 March 2019

FCC requirement: Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20cm normally can be maintained between the user and the device.

MPE Calculation Method according to OET Bulletin 65

Power Density: $S_{(mW/cm^2)} = PG/4\pi R^2$ or $EIRP/4\pi R^2$

Where:

S = power density (mW/cm²)

P = power input to the antenna (mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (cm)

The nominal maximum conducted output power specified:

802.11b/g/n: 18.70 dBm

BLuetooth Low Energy: 8.87 dBm

EUT with Antenna 1:

From the peak RF output power, the minimum mobile separation distance, d=20 cm, as well as the antenna gain (4.0 dBi 802.11b/g/n and Bluetooth Low Energy), the RF power density can be calculated as below:

For 802.11b/g/n: $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.037$ mW/cm²

For BLuetooth Low Energy: $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.004$ mW/cm²

Limits for Maximum Permissible Exposure (MPE) according to FCC Part 1.1310: 1.0 mW/cm²

Prüfbericht - Nr.: 60386707 003

Test report no.

Seite 17 von 18

Page 17 of 18

EUT with Antenna 2:

From the peak RF output power, the minimum mobile separation distance, $d=20$ cm, as well as the antenna gain (3.7 dBi 802.11b/g/n and Bluetooth Low Energy), the RF power density can be calculated as below:

For 802.11b/g/n: $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.035$ mW/cm²

For BLuetooth Low Energy: $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.004$ mW/cm²

Limits for Maximum Permissible Exposure (MPE) according to FCC Part 1.1310: 1.0 mW/cm²

➤ **IC requirements:** The EUT shall comply with the requirement of RSS-102 section 2.5.2.

Exemption from Routine Evaluation Limits – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

- RF exposure evaluation exempted power for 2.4G DTS: 2.676 W

The nominal maximum conducted output power specified:

802.11b/g/n: 18.70 dBm

BLuetooth Low Energy: 8.87 dBm

Antenna Gain: 4.0 dBi 802.11b/g/n and Bluetooth Low Energy

The Max. e.i.r.p. for 802.11b/g/n: 22.7dBm = 0.186 W

The Max. e.i.r.p. for BLuetooth Low Energy: 12.8dBm = 0.019 W

Both e.i.r.p. for the 802.11b/g/n and BLuetooth Low Energy are less than the RF exposure evaluation exempted power. So RF exposure evaluation is not required.

“RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.”

7 Photographs of the Test Set-Up

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

8 List of Tables

Table 1: List of Test and Measurement Equipment.....	5
Table 2: Technical Specification of EUT	7
Table 3: RF Channel and Frequency of Wi-Fi 802.11 b/g/n	8
Table 4: RF Channel and Frequency of Bluetooth Low Energy	9
Table 5: List of Accessories and Auxiliary Equipment.....	10
Table 6: Test Result of Maximum Peak Conducted Output Power, Wi-Fi 802.11 b/g/n.....	14
Table 7: Test Result of Maximum Peak Conducted Output Power, Bluetooth Low Energy	14

Appendix B: Test Results of Radiated Testing for new crystal oscillator

APPENDIX B: TEST RESULTS OF RADIATED TESTING FOR NEW CRYSTAL OSCILLATOR.....	1
APPENDIX B.1: TEST RESULTS OF RADIATED SPURIOUS EMISSIONS, CONFIGURATION 1	2
<i>Bluetooth Low Energy</i>	<i>2</i>
<i>Wi-Fi 802.11 b mode, 1 Mbps.....</i>	<i>18</i>
<i>Wi-Fi 802.11 g mode, 6Mbps.....</i>	<i>34</i>
<i>Wi-Fi 802.11 n(HT20) mode, MCS0.....</i>	<i>46</i>
<i>Wi-Fi 802.11 n(HT40) mode, MCS0.....</i>	<i>58</i>
APPENDIX B.2: TEST RESULTS OF RADIATED EMISSIONS IN RESTRICTED BANDS, CONFIGURATION 170	
<i>Bluetooth Low Energy</i>	<i>70</i>
<i>Wi-Fi 802.11 b mode, 1 Mbps.....</i>	<i>74</i>
<i>Wi-Fi 802.11 g mode, 6 Mbps.....</i>	<i>78</i>
<i>Wi-Fi 802.11 n(HT20) mode, MCS0.....</i>	<i>82</i>
<i>Wi-Fi 802.11 n(HT40) mode, MCS0.....</i>	<i>86</i>

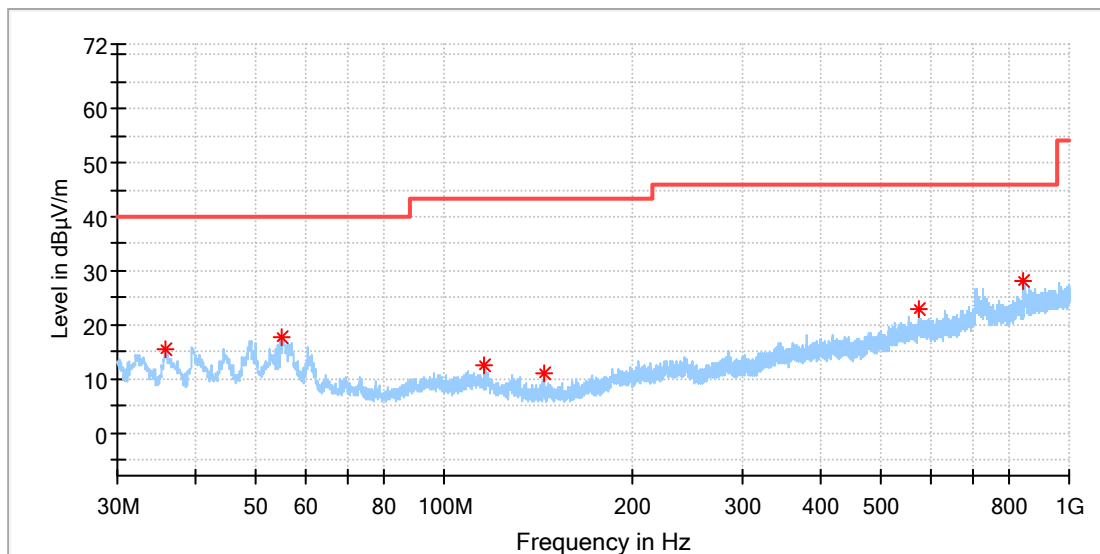
Note 1: Testing was carried out within frequency range 9 kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Appendix B.1: Test Results of Radiated Spurious Emissions, configuration 1

Bluetooth Low Energy
30MHz - 1GHz

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	BLE_Low channel
Test Voltage::	DC 5V From USB
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Terry Yin
Reviewed By:	Terry Yin

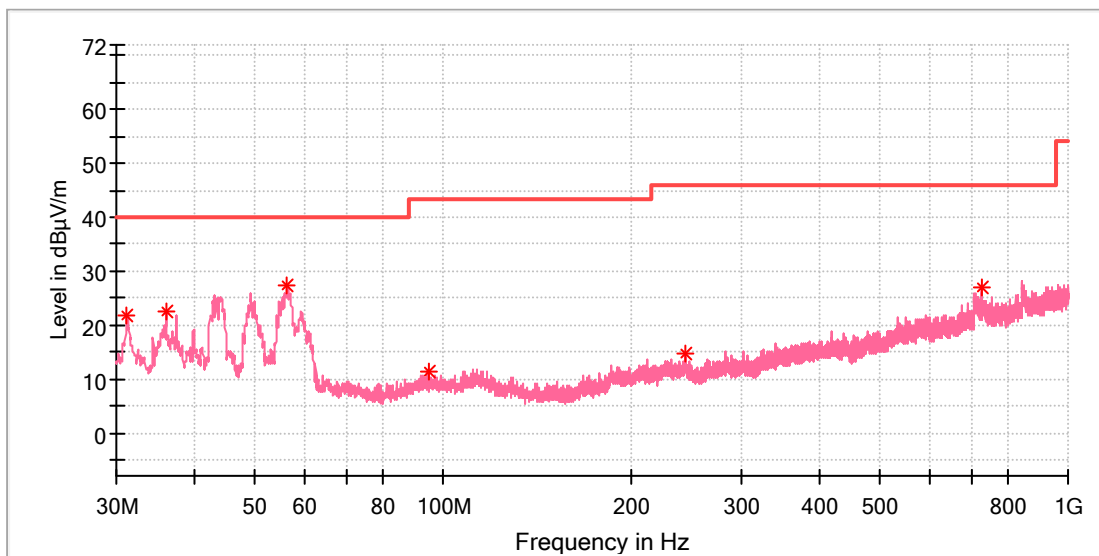


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.771500	15.57	40.00	24.43	100.0	H	31.0	-21.9
54.977500	17.68	40.00	22.32	100.0	H	188.0	-18.7
115.602500	12.34	43.50	31.16	100.0	H	297.0	-20.2
144.217500	10.82	43.50	32.68	100.0	H	278.0	-22.6
573.539500	22.91	46.00	23.09	100.0	H	261.0	-10.7
844.897000	28.26	46.00	17.74	100.0	H	269.0	-6.0

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Low channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

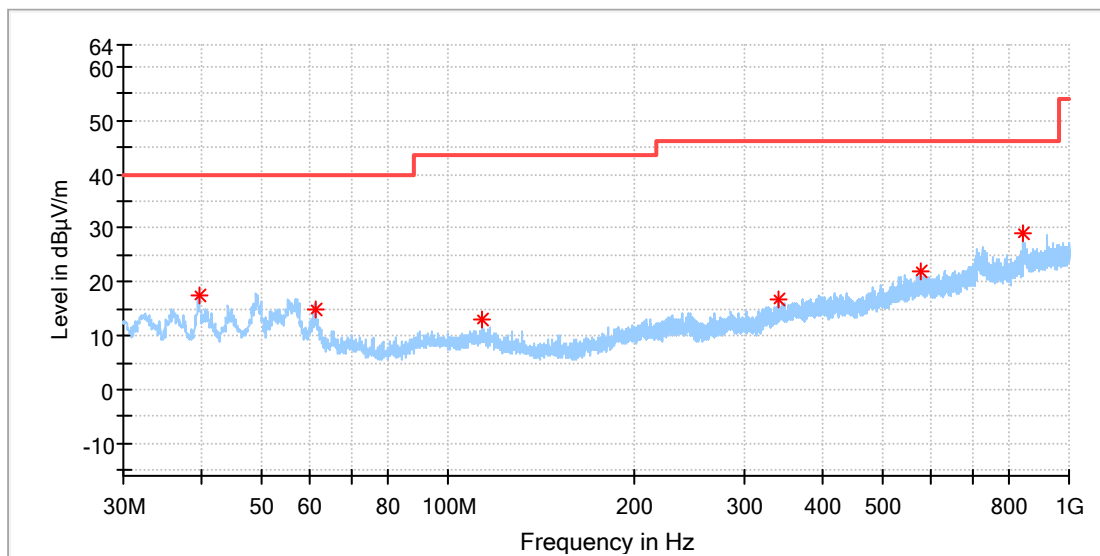


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.212500	21.80	40.00	18.20	100.0	V	12.0	-23.1
36.062500	22.51	40.00	17.49	100.0	V	189.0	-21.8
56.335500	27.38	40.00	12.62	100.0	V	347.0	-18.9
94.553500	11.19	43.50	32.31	100.0	V	347.0	-20.2
243.933500	14.54	46.00	31.46	100.0	V	338.0	-17.9
728.885000	26.84	46.00	19.16	100.0	V	209.0	-7.9

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

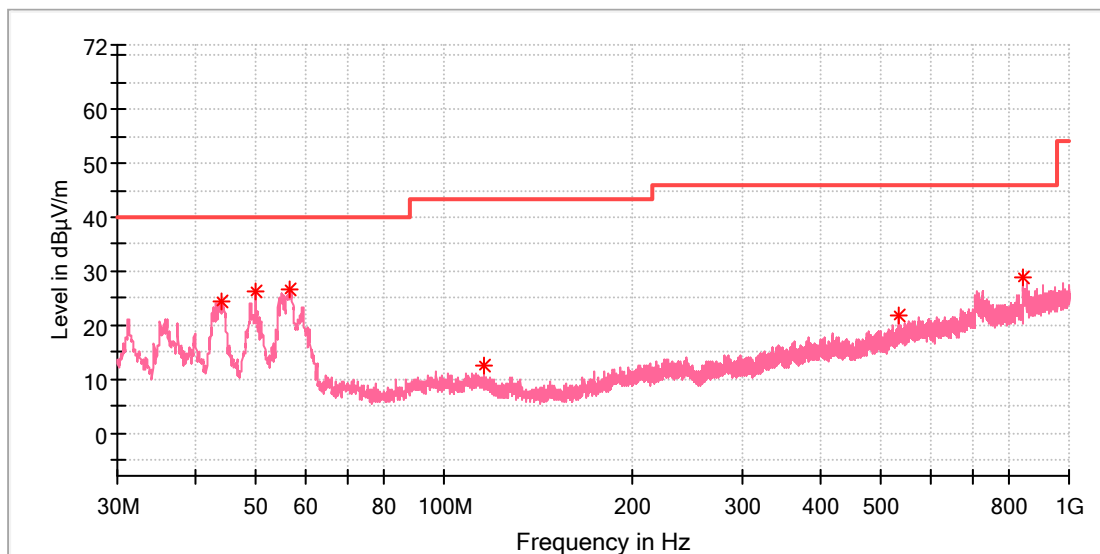


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.651500	17.41	40.00	22.59	100.0	H	219.0	-20.5
61.040000	14.87	40.00	25.13	100.0	H	191.0	-19.5
113.371500	13.16	43.50	30.34	100.0	H	258.0	-19.8
340.448500	16.65	46.00	29.35	100.0	H	1.0	-15.4
578.826000	22.01	46.00	23.99	100.0	H	343.0	-10.6
845.139500	28.93	46.00	17.07	100.0	H	48.0	-6.0

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin



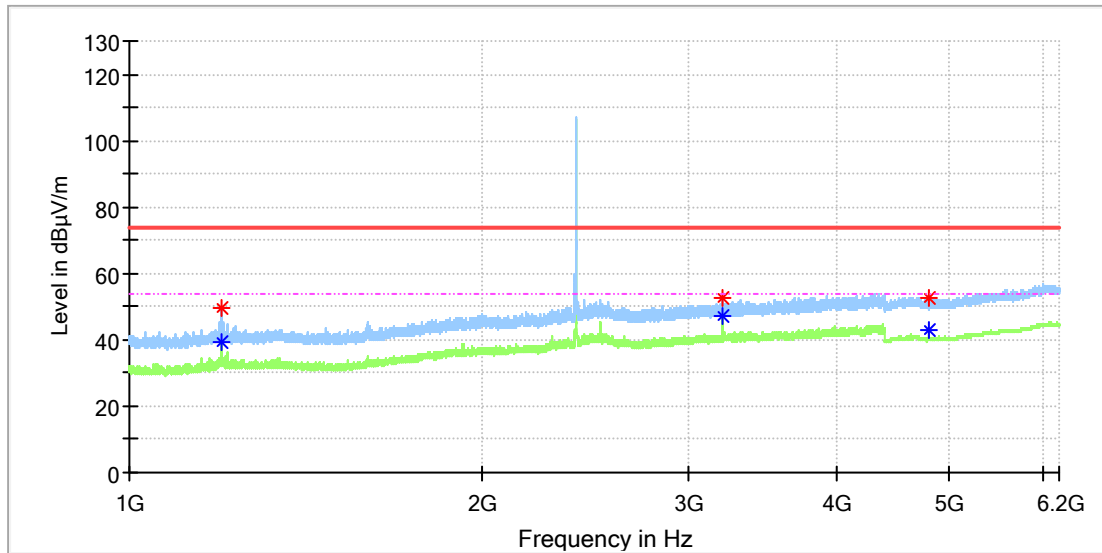
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.162000	24.20	40.00	15.80	100.0	V	52.0	-19.3
49.982000	26.20	40.00	13.80	100.0	V	353.0	-18.6
56.772000	26.60	40.00	13.40	100.0	V	12.0	-18.9
115.602500	12.58	43.50	30.92	100.0	V	260.0	-20.2
534.836500	21.74	46.00	24.26	100.0	V	271.0	-11.5
845.382000	28.72	46.00	17.28	100.0	V	335.0	-6.0

1GHz - 6.2GHz

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Low channel
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

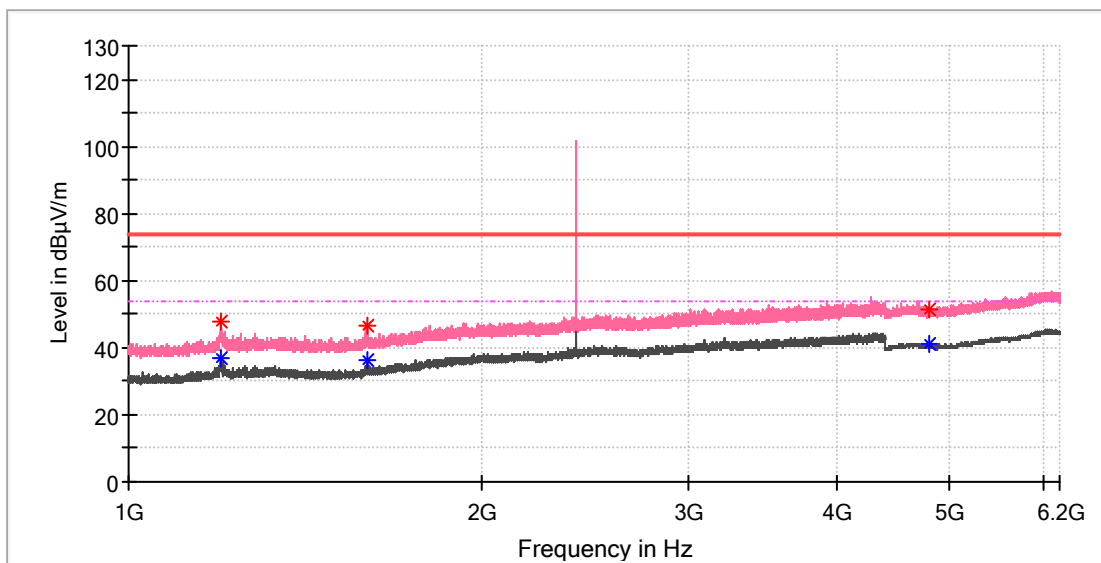


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1197.370000	---	39.37	54.00	14.63	100.0	H	63.0	1.1
1200.090000	49.75	---	74.00	24.25	100.0	H	97.0	1.1
3202.520000	52.36	---	74.00	21.64	100.0	H	331.0	8.6
3202.860000	---	47.02	54.00	6.98	100.0	H	331.0	8.6
4803.500000	---	43.15	54.00	10.85	100.0	H	134.0	11.8
4804.000000	52.80	---	74.00	21.20	100.0	H	140.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Low channel
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

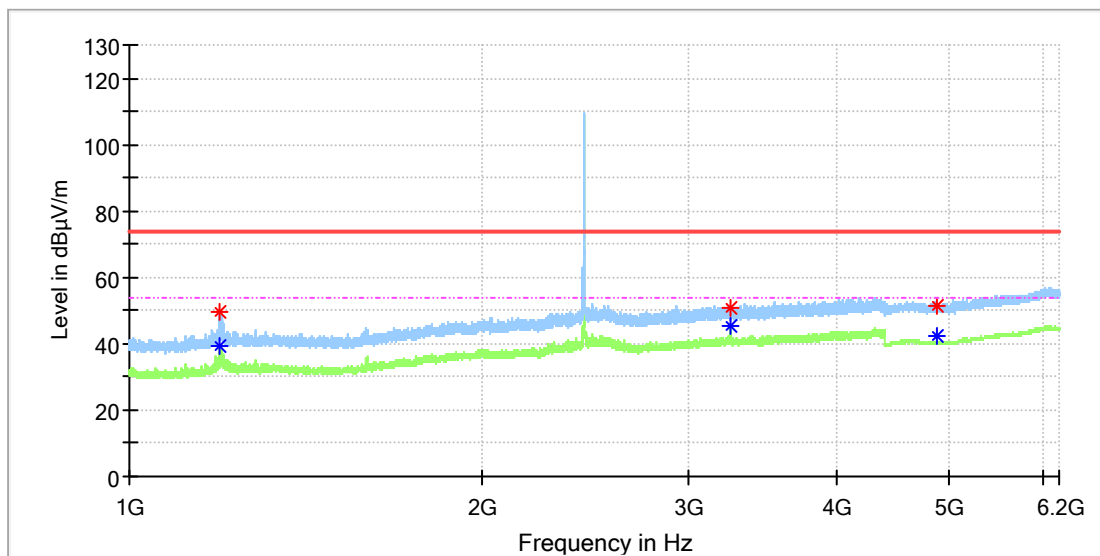


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1197.030000	---	36.79	54.00	17.21	100.0	V	134.0	1.1
1199.750000	47.57	---	74.00	26.43	100.0	V	49.0	1.1
1596.360000	46.38	---	74.00	27.62	100.0	V	311.0	2.1
1596.360000	---	36.57	54.00	17.43	100.0	V	311.0	2.1
4803.000000	51.64	---	74.00	22.36	100.0	V	41.0	11.8
4804.000000	---	41.17	54.00	12.83	100.0	V	41.0	11.8

EUT Information

EUT Name:	LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	BLE_Mid channel
Test Voltage::	DC 5V From USB
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Terry Yin
Reviewed By:	Terry Yin

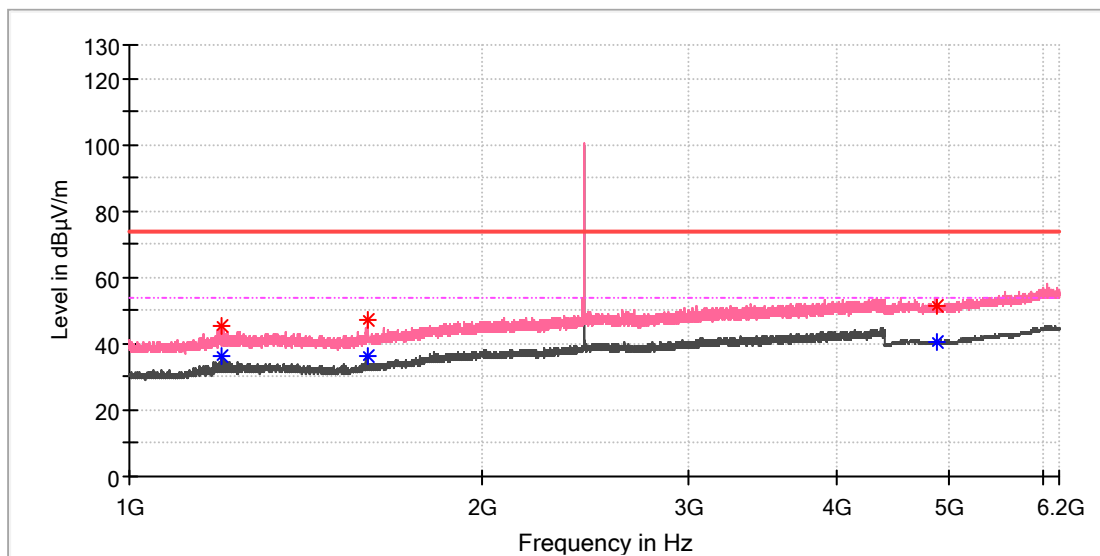


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1193.970000	49.42	---	74.00	24.58	100.0	H	74.0	1.1
1193.970000	---	39.12	54.00	14.88	100.0	H	74.0	1.1
3253.010000	51.01	---	74.00	22.99	100.0	H	316.0	8.5
3253.180000	---	45.42	54.00	8.58	100.0	H	316.0	8.5
4869.000000	51.43	---	74.00	22.57	100.0	H	108.0	11.8
4880.000000	---	42.06	54.00	11.94	100.0	H	49.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Mid channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

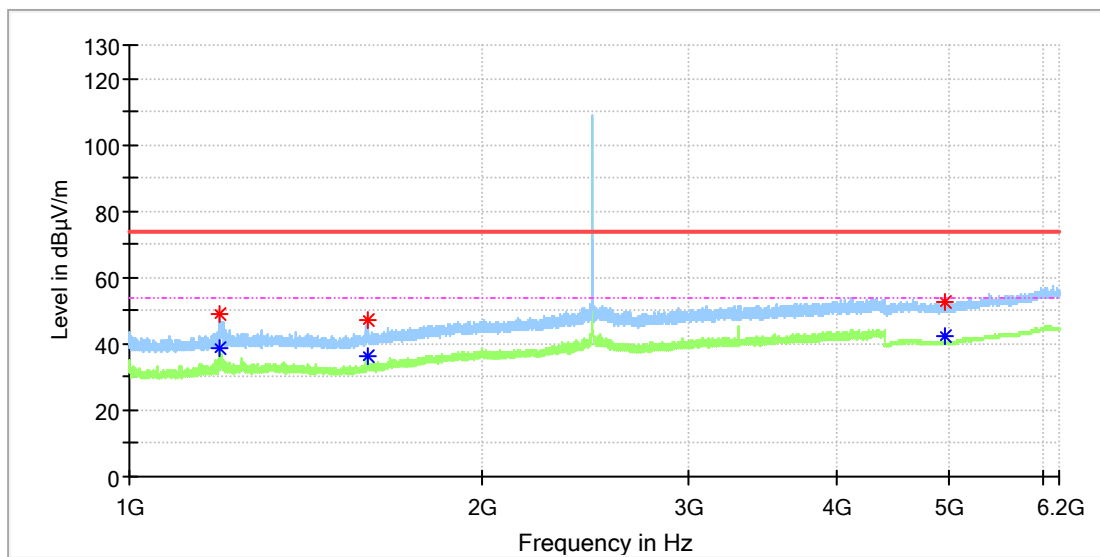


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.690000	45.35	---	74.00	28.65	100.0	V	79.0	1.1
1199.750000	---	36.41	54.00	17.59	100.0	V	31.0	1.1
1595.680000	47.20	---	74.00	26.80	100.0	V	0.0	2.0
1599.420000	---	36.38	54.00	17.62	100.0	V	19.0	2.1
4879.500000	---	40.42	54.00	13.58	100.0	V	41.0	11.8
4879.500000	51.69	---	74.00	22.31	100.0	V	41.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

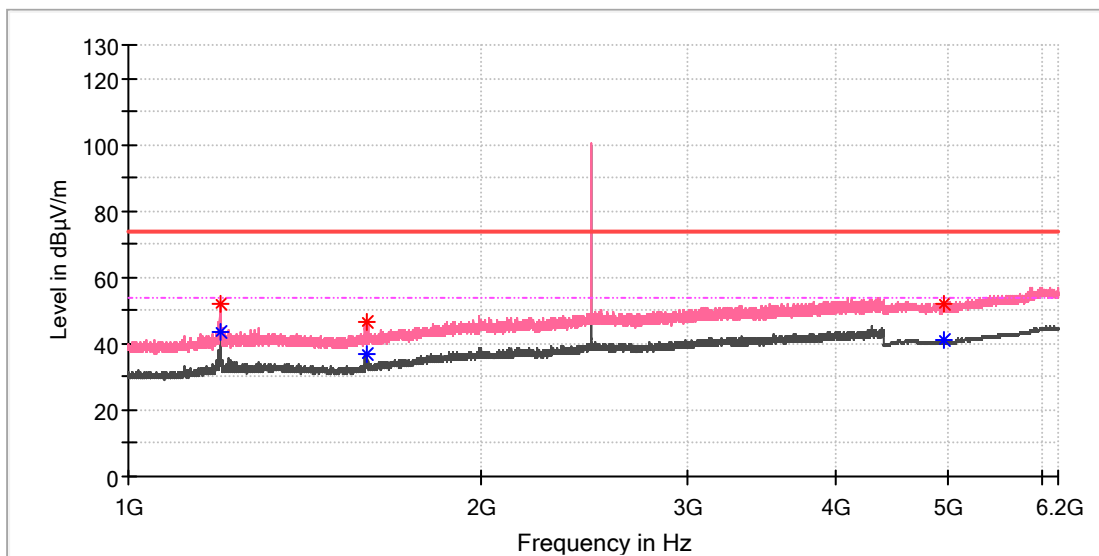


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1194.820000	48.77	---	74.00	25.23	100.0	H	94.0	1.1
1195.500000	---	38.75	54.00	15.25	100.0	H	0.0	1.1
1595.340000	47.00	---	74.00	27.00	100.0	H	94.0	2.0
1598.400000	---	36.17	54.00	17.83	100.0	H	94.0	2.1
4959.500000	---	42.31	54.00	11.69	100.0	H	279.0	11.8
4961.000000	52.58	---	74.00	21.42	100.0	H	42.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin



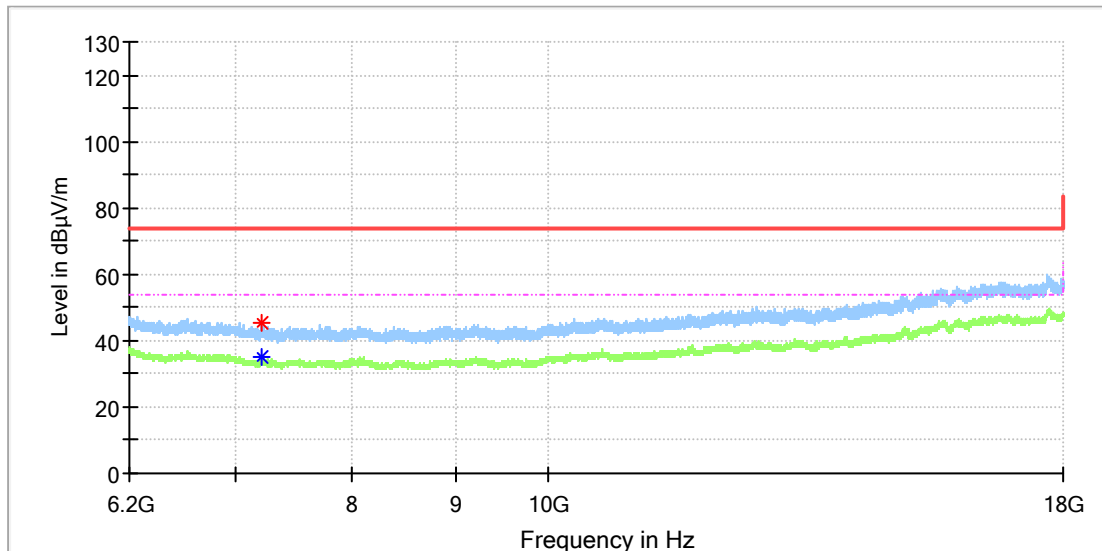
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.520000	51.94	---	74.00	22.06	100.0	V	49.0	1.1
1196.690000	---	43.83	54.00	10.17	100.0	V	49.0	1.1
1595.680000	46.40	---	74.00	27.60	100.0	V	148.0	2.0
1598.060000	---	37.15	54.00	16.85	100.0	V	39.0	2.1
4957.000000	52.23	---	74.00	21.77	100.0	V	78.0	11.8
4959.000000	---	40.87	54.00	13.13	100.0	V	165.0	11.8

6.2GHz - 18GHz

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Low channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

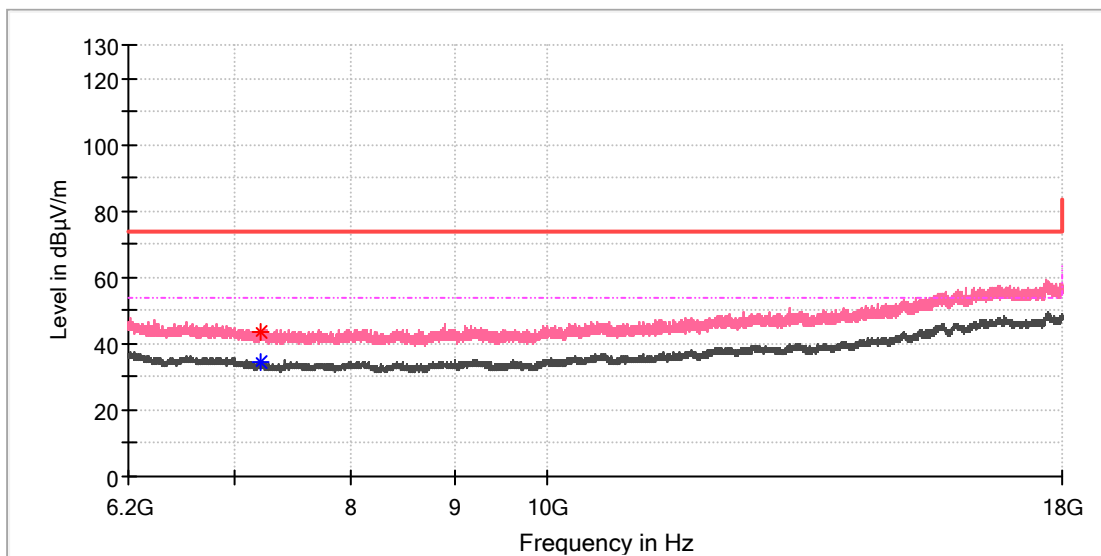


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7204.966667	45.05	---	74.00	28.95	100.0	H	167.0	8.8
7205.458333	---	35.22	54.00	18.78	100.0	H	195.0	8.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Low channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

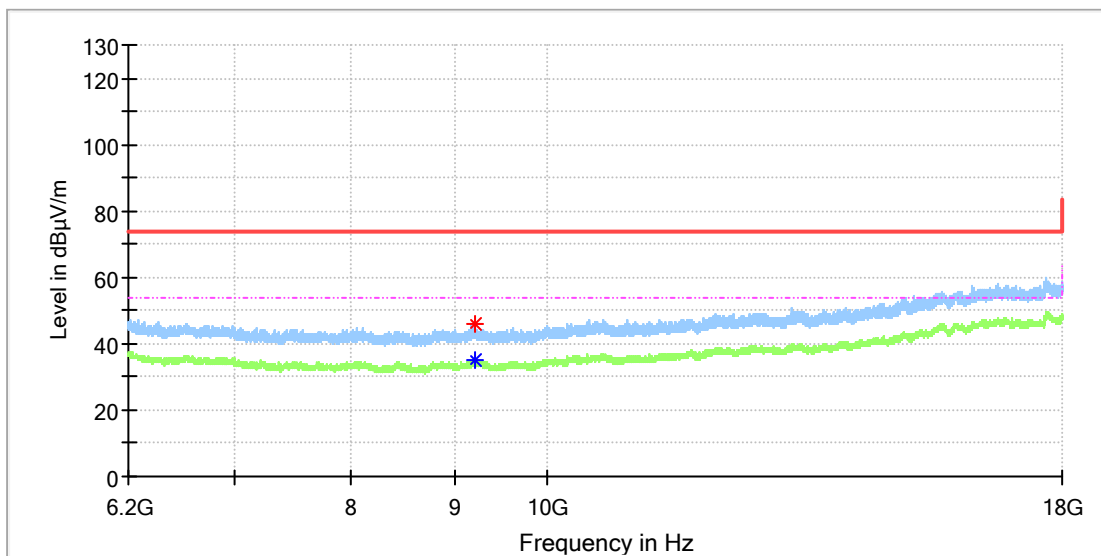


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7204.966667	43.31	---	74.00	30.69	100.0	V	109.0	8.8
7204.966667	---	34.45	54.00	19.55	100.0	V	109.0	8.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Mid channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

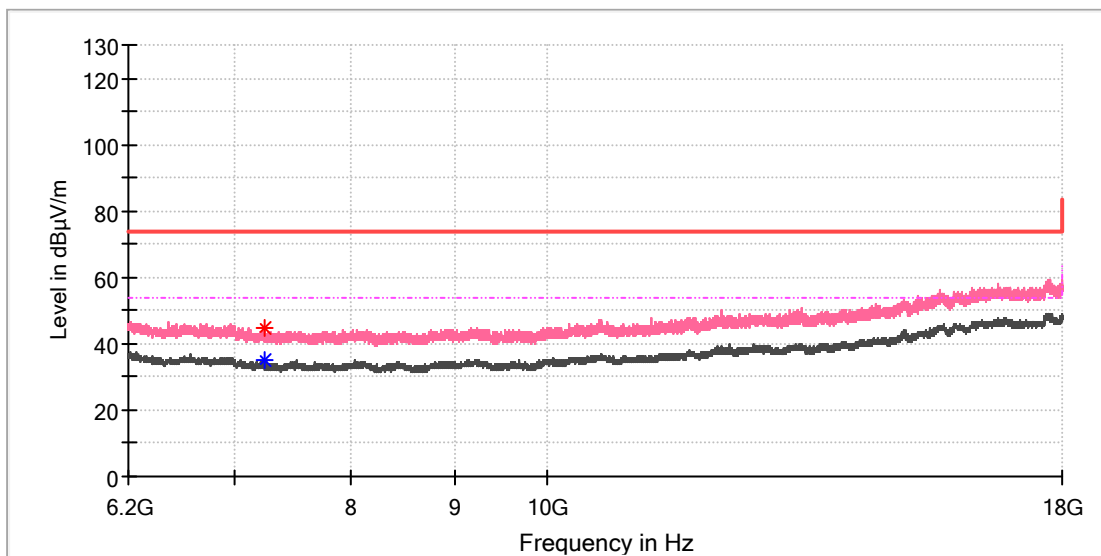


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9205.066667	---	34.88	54.00	19.12	100.0	H	210.0	10.6
9215.391667	45.68	---	74.00	28.32	100.0	H	154.0	10.7

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Mid channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

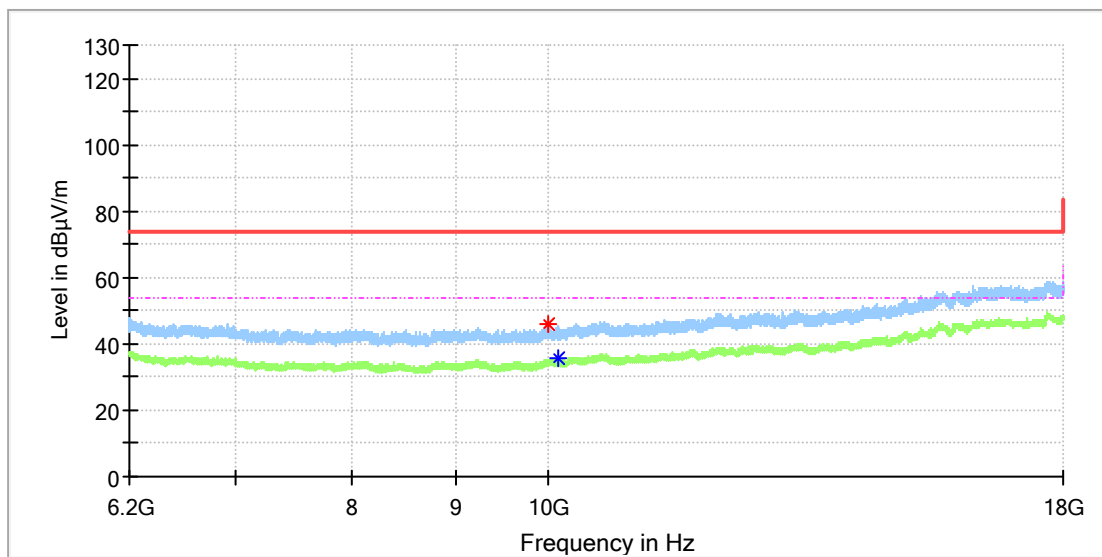


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7238.891667	---	35.29	54.00	18.71	100.0	V	150.0	8.6
7241.350000	44.87	---	74.00	29.13	100.0	V	266.0	8.6

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

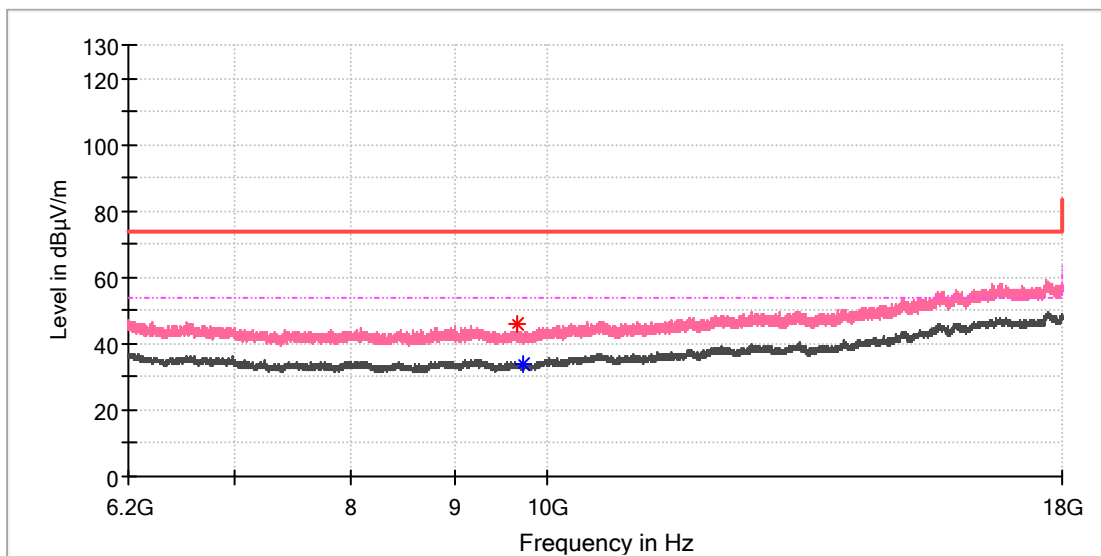


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
10010.908333	45.85	---	74.00	28.15	100.0	H	0.0	11.1
10111.208333	---	35.51	54.00	18.49	100.0	H	164.0	11.0

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin



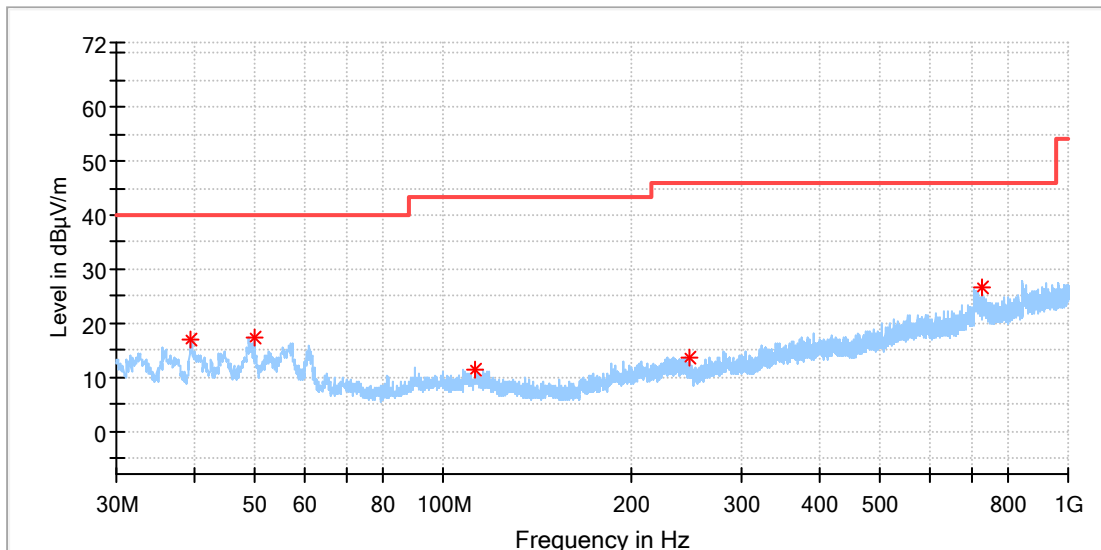
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9655.925000	45.87	---	74.00	28.13	100.0	V	344.0	10.4
9720.333333	---	33.87	54.00	20.13	100.0	V	356.0	10.4

**Wi-Fi 802.11 b mode, 1 Mbps
30MHz - 1GHz**

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WIFI2.4G_11b_CH 1
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

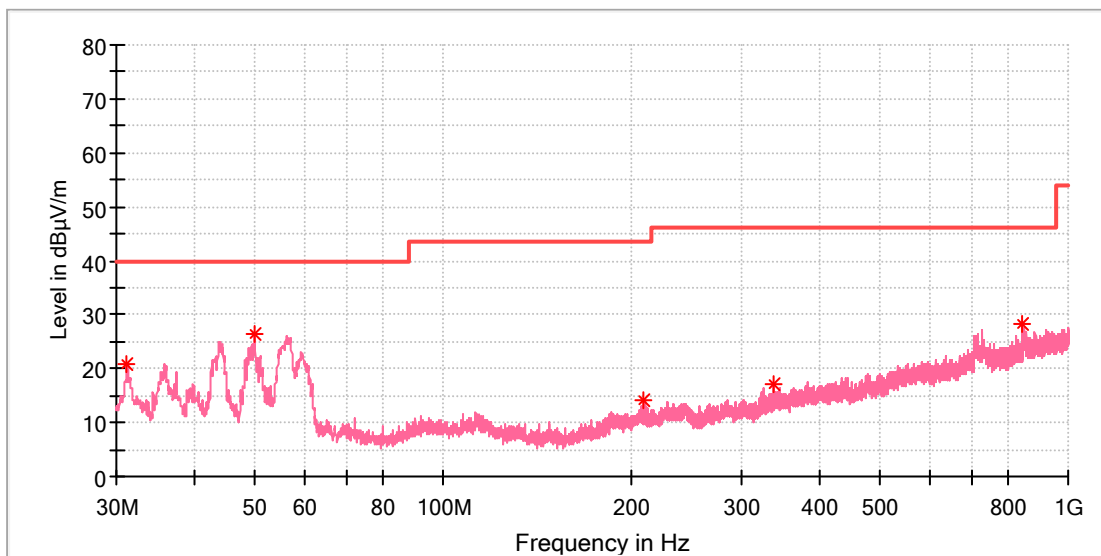


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.554500	16.99	40.00	23.01	100.0	H	55.0	-20.6
49.982000	17.37	40.00	22.63	100.0	H	251.0	-18.6
112.644000	11.42	43.50	32.08	100.0	H	100.0	-19.7
246.989000	13.76	46.00	32.25	100.0	H	346.0	-17.8
728.642500	26.69	46.00	19.31	100.0	H	336.0	-7.9

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WIFI2.4G_11b_CH 1
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

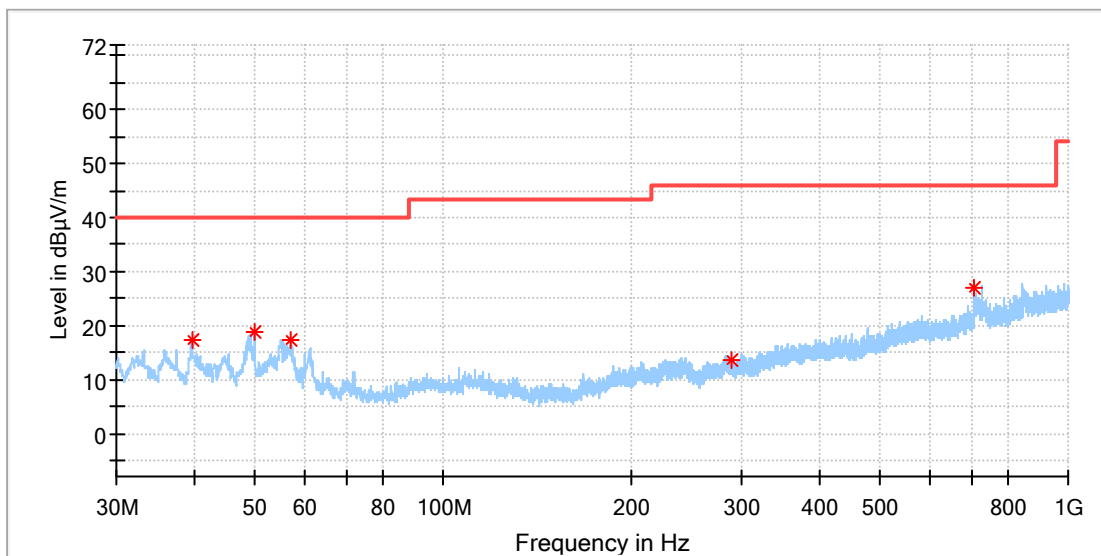


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.212500	20.85	40.00	19.15	100.0	V	264.0	-23.1
49.982000	26.28	40.00	13.72	100.0	V	327.0	-18.6
209.838000	14.11	43.50	29.39	100.0	V	283.0	-19.2
338.945000	17.03	46.00	28.97	100.0	V	355.0	-15.4
844.897000	28.15	46.00	17.85	100.0	V	291.0	-6.0

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WIFI2.4G_11b_CH 11
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

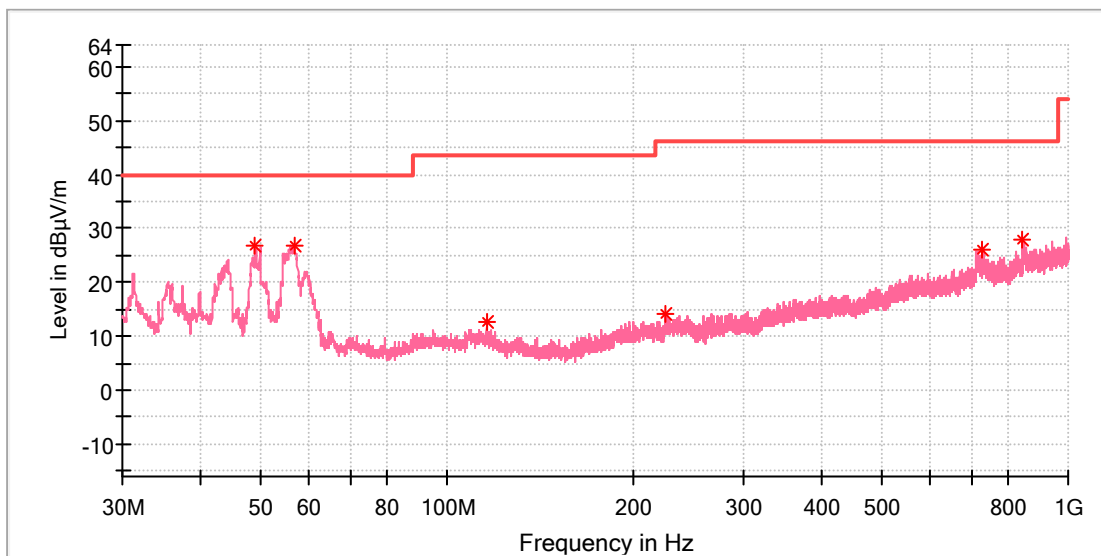


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.603000	17.26	40.00	22.74	100.0	H	218.0	-20.5
49.982000	18.62	40.00	21.38	100.0	H	144.0	-18.6
57.111500	17.46	40.00	22.54	100.0	H	218.0	-19.0
290.105500	13.73	46.00	32.27	100.0	H	95.0	-16.9
709.000000	26.98	46.00	19.02	100.0	H	359.0	-8.3

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WIFI2.4G_11b_CH 11
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin



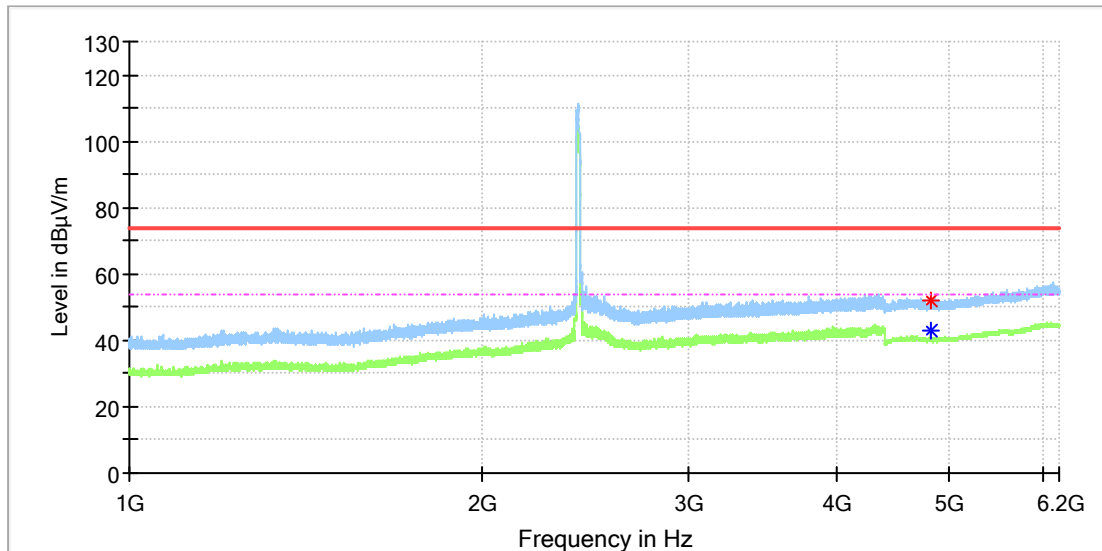
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.060500	26.89	40.00	13.11	100.0	V	307.0	-18.6
56.723500	26.65	40.00	13.35	100.0	V	247.0	-18.9
115.602500	12.53	43.50	30.97	100.0	V	256.0	-20.2
224.582000	14.23	46.00	31.77	100.0	V	296.0	-18.7
728.497000	26.06	46.00	19.94	100.0	V	108.0	-7.9
845.964000	27.80	46.00	18.20	100.0	V	167.0	-6.0

1GHz - 6.2GHz

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

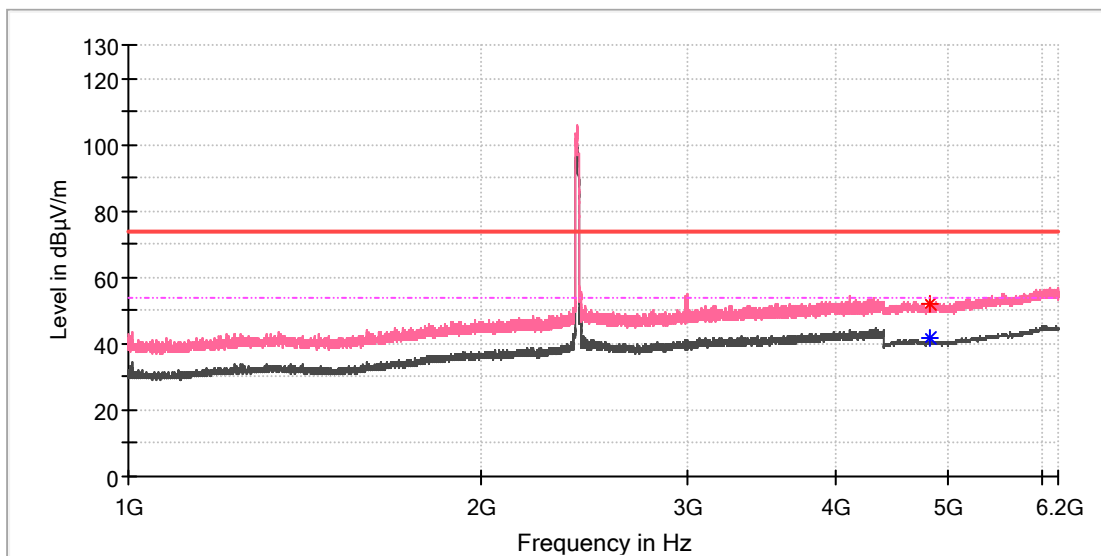


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4823.000000	---	42.88	54.00	11.12	100.0	H	42.0	11.8
4823.500000	52.17	---	74.00	21.83	100.0	H	310.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Low channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

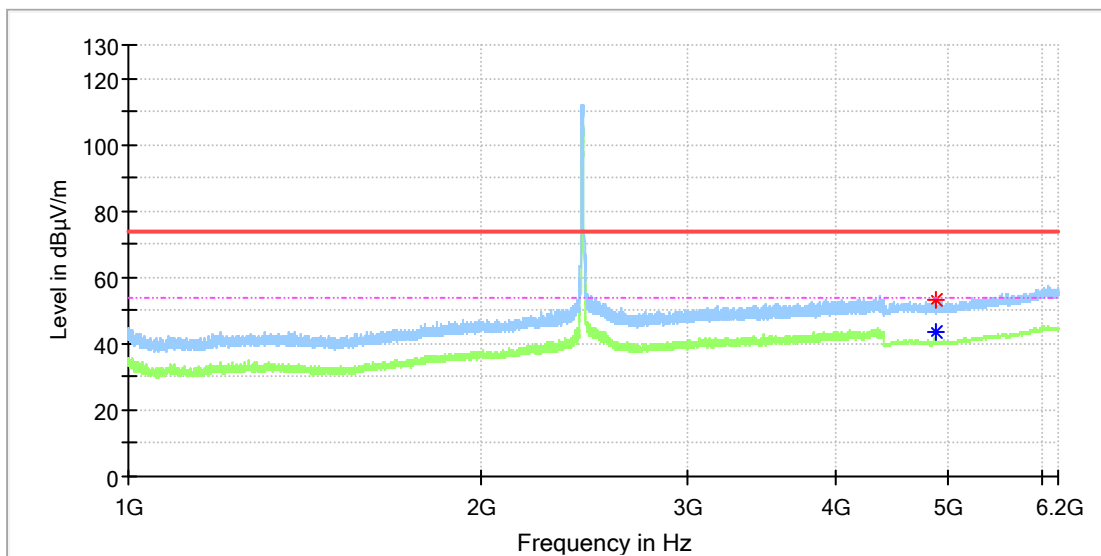


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4819.000000	52.26	---	74.00	21.74	100.0	V	108.0	11.8
4823.000000	---	41.81	54.00	12.19	100.0	V	108.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Mid channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

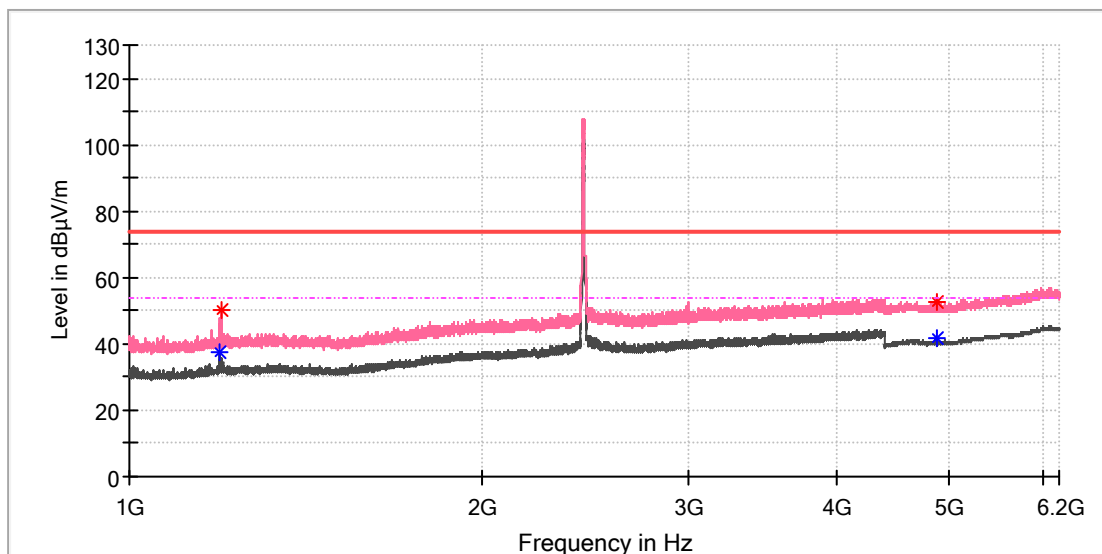


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4873.500000	---	43.47	54.00	10.53	100.0	H	301.0	11.8
4875.000000	53.30	---	74.00	20.70	100.0	H	294.0	11.8

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Mid channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

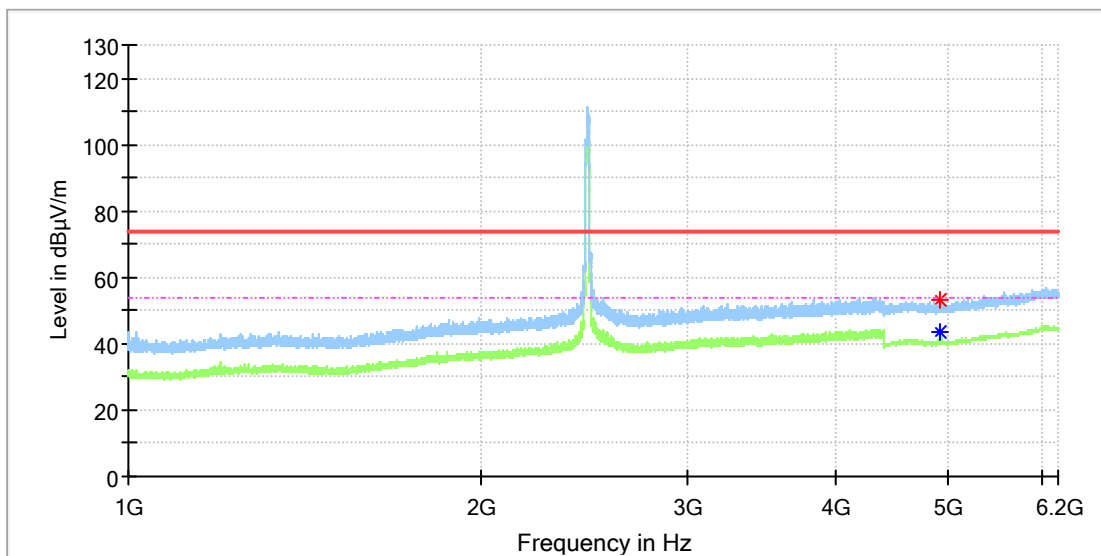


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1193.460000	---	37.29	54.00	16.71	100.0	V	190.0	1.1
1198.050000	50.14	---	74.00	23.86	100.0	V	190.0	1.1
4873.500000	---	41.94	54.00	12.06	100.0	V	117.0	11.8
4874.000000	52.86	---	74.00	21.14	100.0	V	138.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

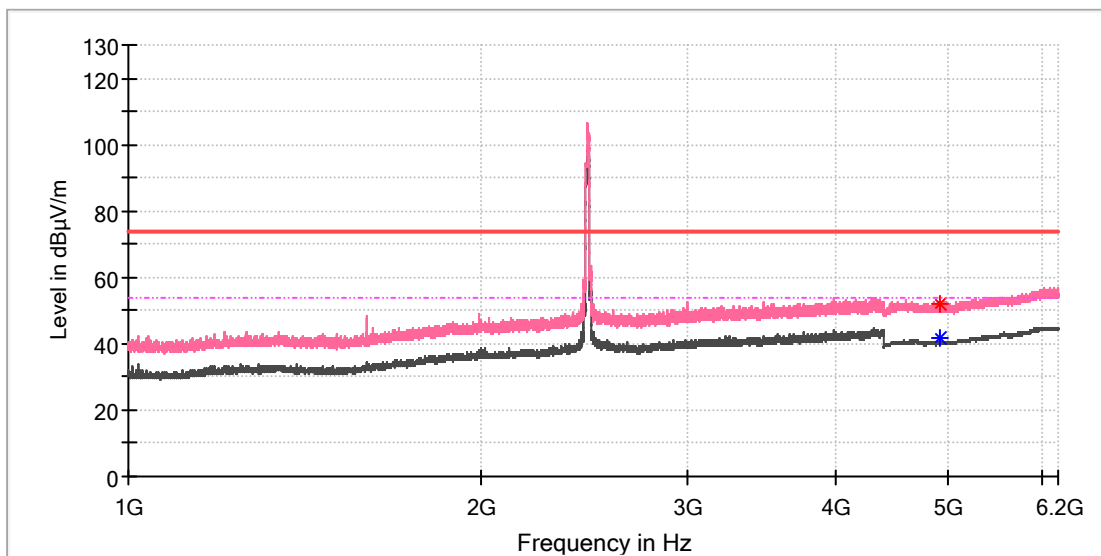


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4923.000000	53.32	---	74.00	20.68	100.0	H	307.0	11.8
4923.500000	---	43.58	54.00	10.42	100.0	H	307.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



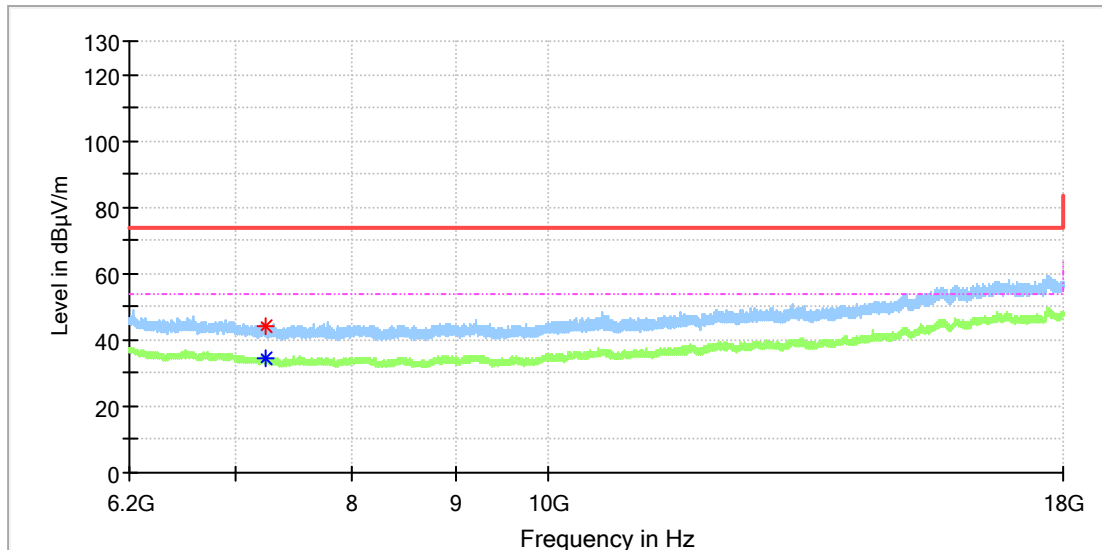
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.000000	---	41.49	54.00	12.51	100.0	V	107.0	11.8
4924.500000	51.83	---	74.00	22.17	100.0	V	99.0	11.8

6.2GHz - 18GHz

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

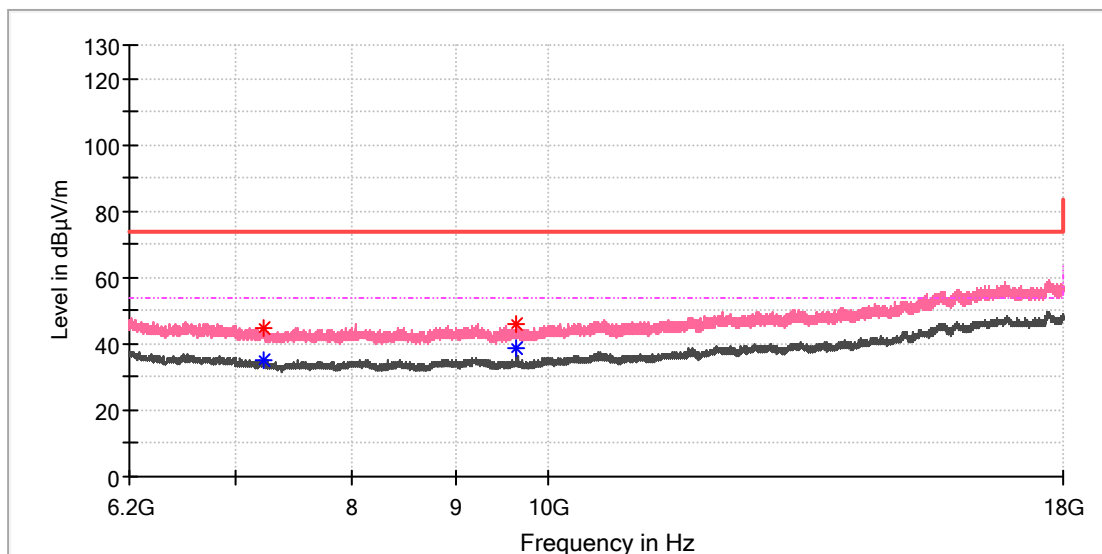


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7237.908333	43.89	---	74.00	30.11	100.0	H	254.0	8.6
7237.908333	---	34.55	54.00	19.45	100.0	H	254.0	8.6

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

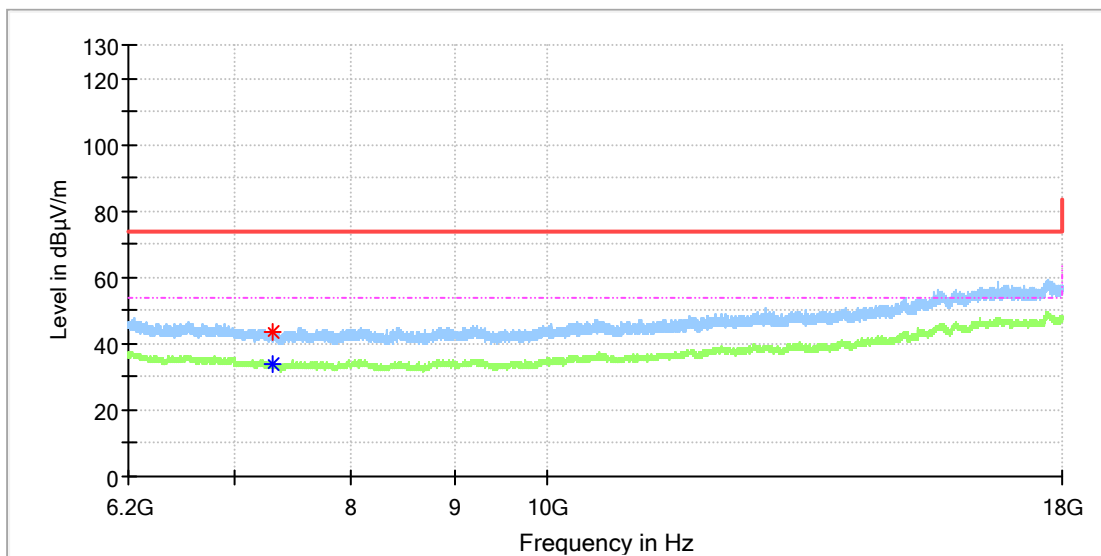


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7233.483333	44.91	---	74.00	29.09	100.0	V	103.0	8.6
7233.483333	---	35.14	54.00	18.86	100.0	V	103.0	8.6
9647.566667	45.83	---	74.00	28.17	100.0	V	204.0	10.4
9648.058333	---	38.96	54.00	15.04	100.0	V	175.0	10.4

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Mid channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

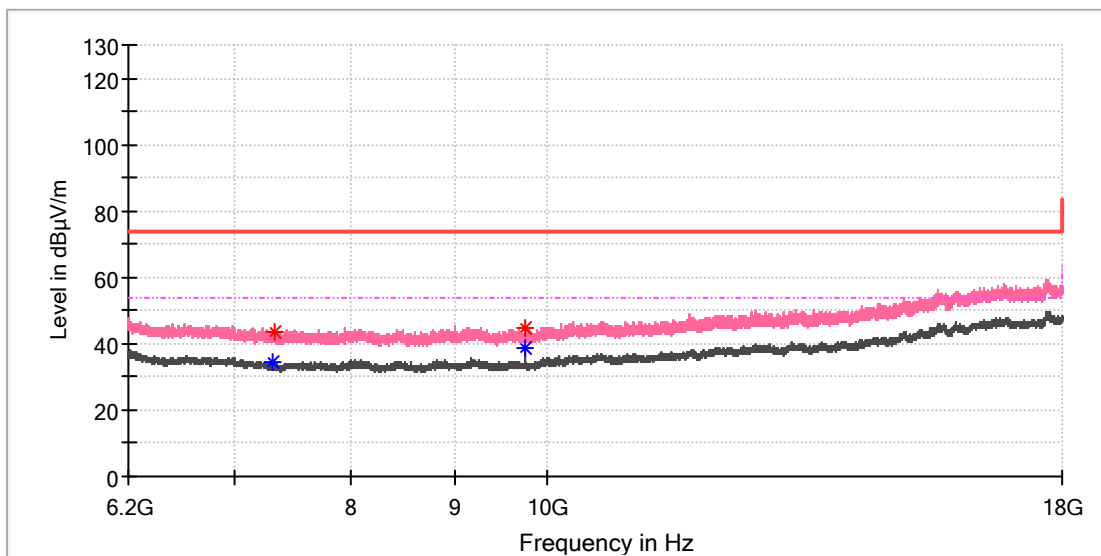


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7311.658333	---	34.12	54.00	19.88	100.0	H	168.0	8.2
7312.641667	43.55	---	74.00	30.45	100.0	H	126.0	8.2

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Mid channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

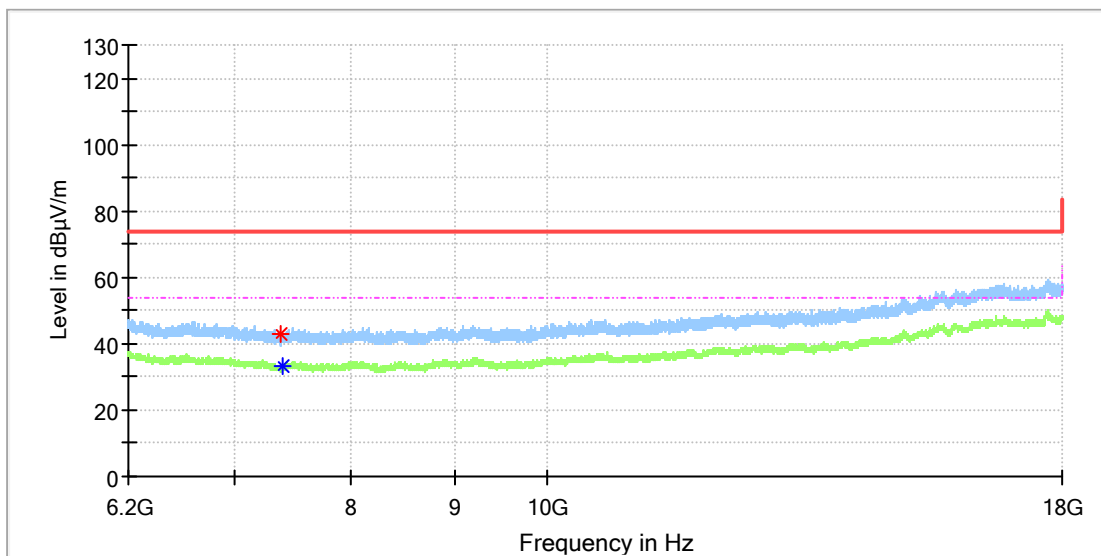


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7316.575000	---	34.17	54.00	19.83	100.0	V	144.0	8.2
7318.541667	43.64	---	74.00	30.36	100.0	V	2.0	8.2
9747.866667	44.68	---	74.00	29.32	100.0	V	157.0	10.4
9747.866667	---	38.91	54.00	15.09	100.0	V	157.0	10.4

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

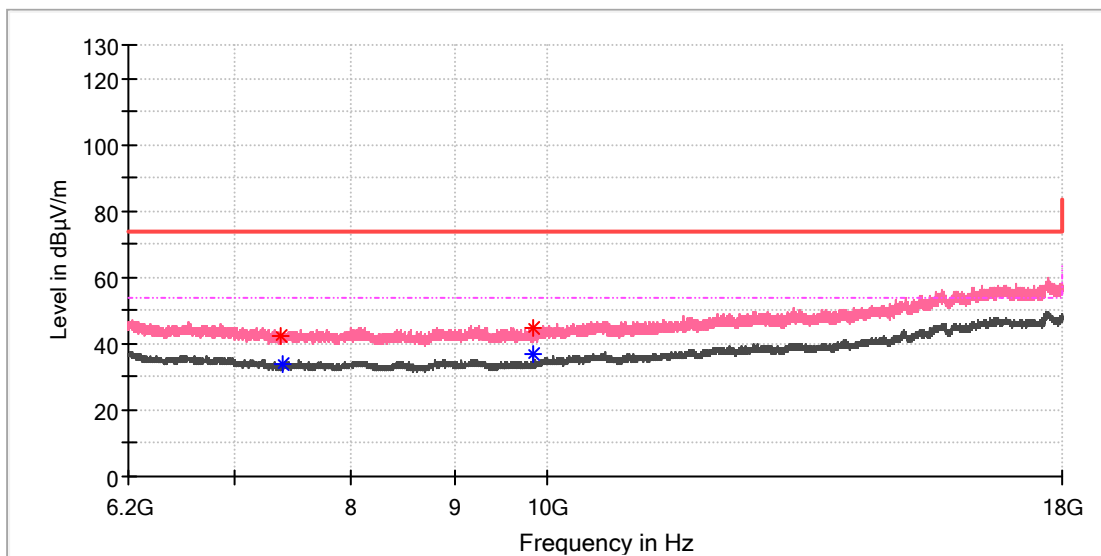


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7382.950000	42.87	---	74.00	31.13	100.0	H	309.0	8.2
7393.766667	---	33.51	54.00	20.49	100.0	H	124.0	8.3

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



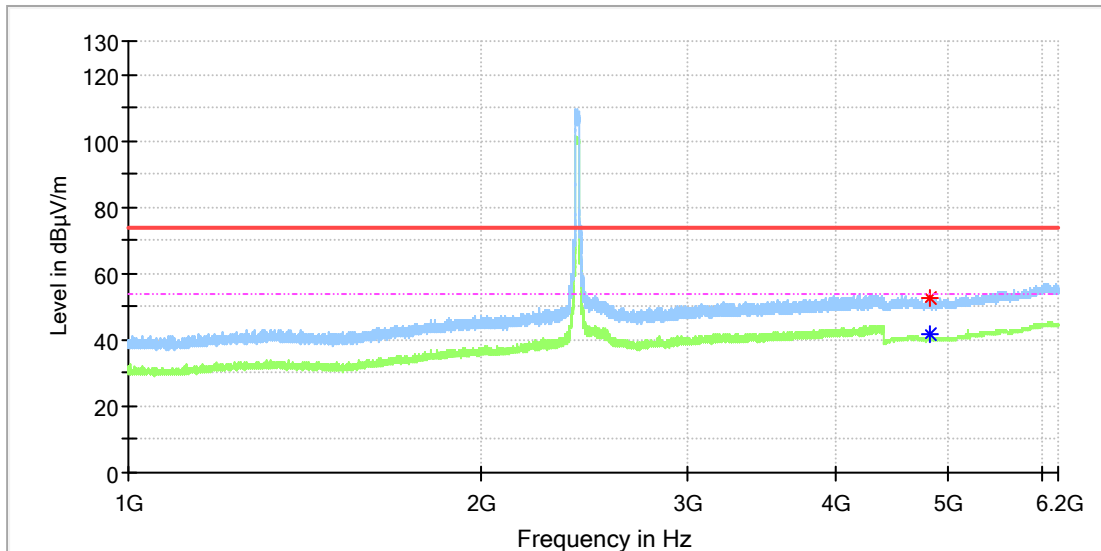
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7385.408333	42.44	---	74.00	31.56	100.0	V	209.0	8.2
7387.375000	---	33.95	54.00	20.05	100.0	V	223.0	8.2
9848.166667	44.81	---	74.00	29.19	100.0	V	180.0	10.6
9848.166667	---	37.17	54.00	16.83	100.0	V	180.0	10.6

**Wi-Fi 802.11 g mode, 6Mbps
1GHz - 6.2GHz**

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11g_Low channel
Test Voltage::	DC 5V from USB
Remark:	Temp 23 Humi:48%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

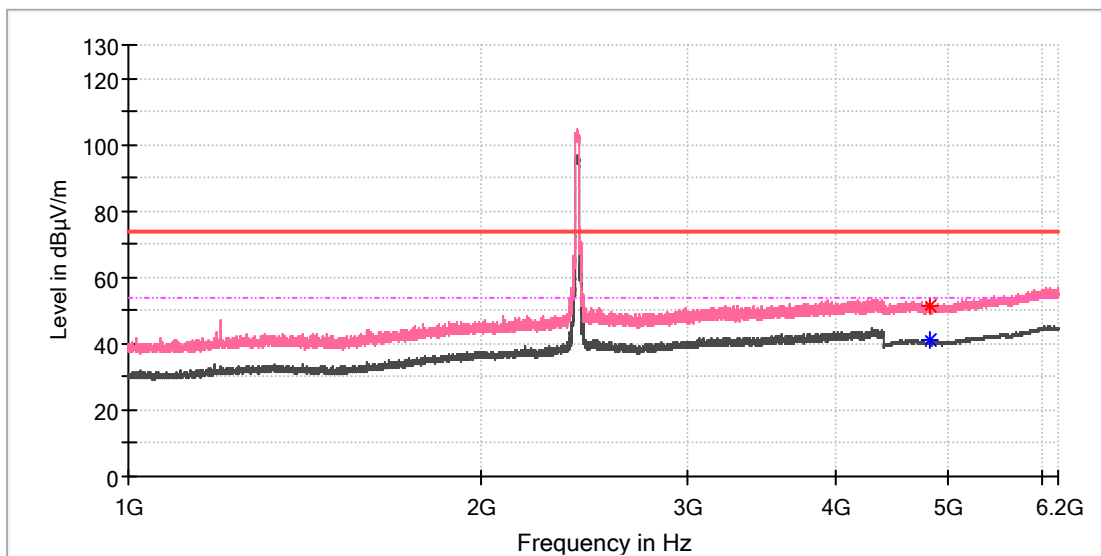


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4825.000000	---	41.83	54.00	12.17	100.0	H	292.0	11.8
4827.000000	52.59	---	74.00	21.41	100.0	H	314.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

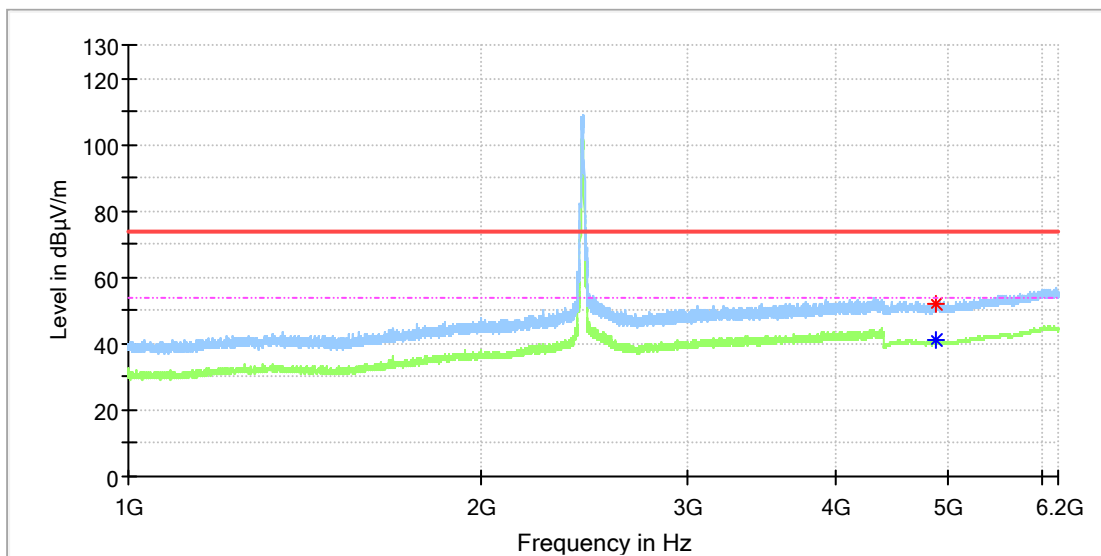


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4819.000000	51.56	---	74.00	22.44	100.0	V	185.0	11.8
4820.000000	---	40.92	54.00	13.08	100.0	V	121.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Mid channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

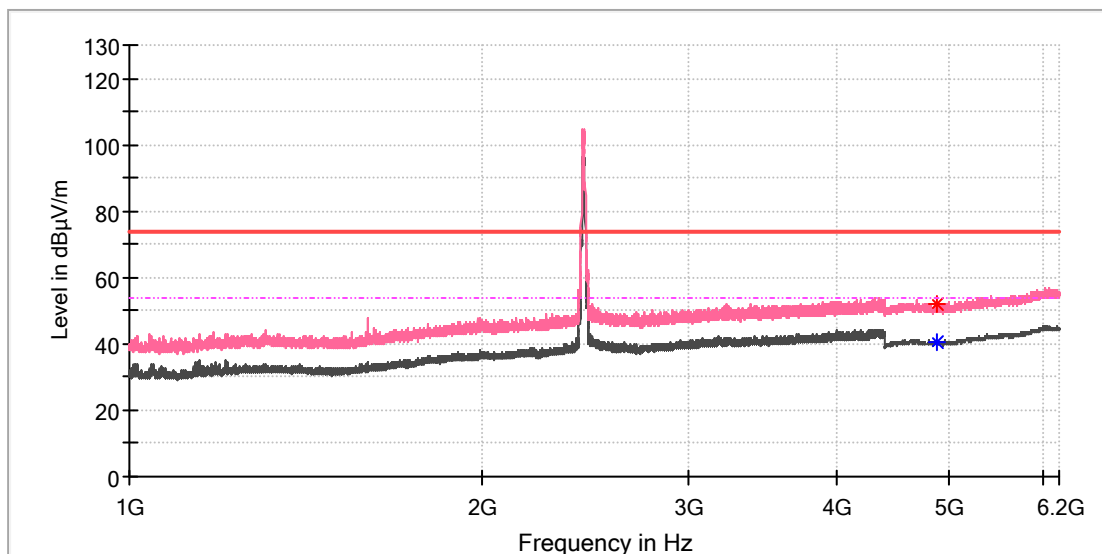


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4873.500000	51.84	---	74.00	22.16	100.0	H	308.0	11.8
4875.000000	---	41.36	54.00	12.64	100.0	H	302.0	11.8

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Mid channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

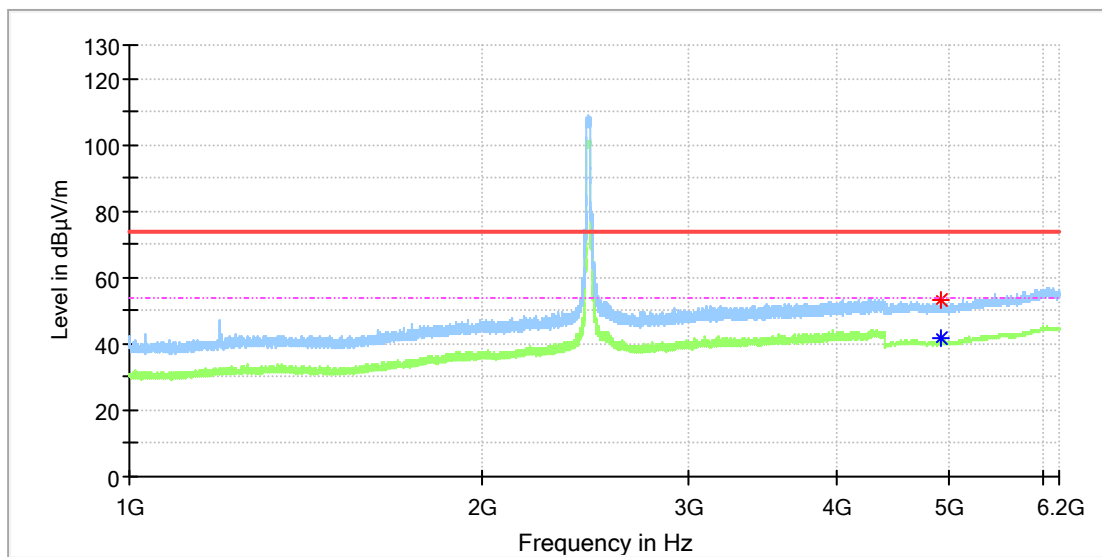


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4869.000000	---	40.62	54.00	13.38	100.0	V	73.0	11.8
4871.000000	51.70	---	74.00	22.30	100.0	V	341.0	11.8

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

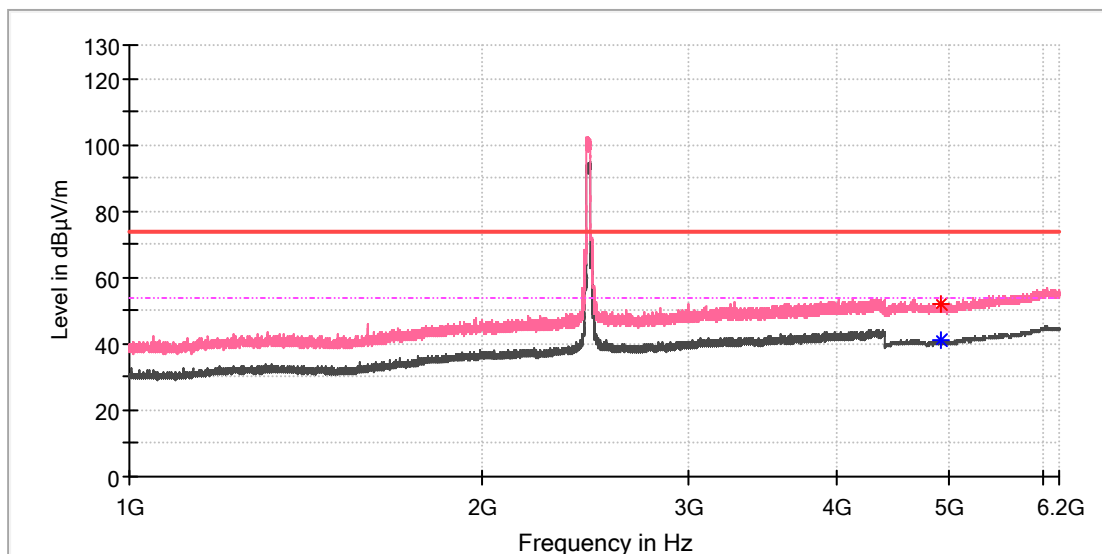


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4919.500000	52.91	---	74.00	21.09	100.0	H	292.0	11.8
4925.500000	---	41.98	54.00	12.02	100.0	H	299.0	11.8

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



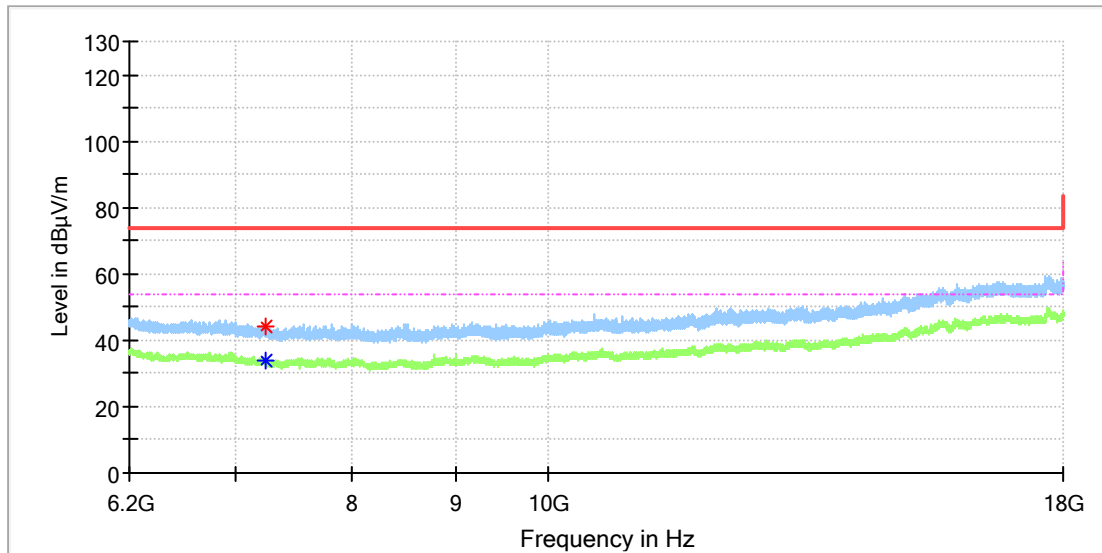
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.000000	52.06	---	74.00	21.94	100.0	V	180.0	11.8
4924.000000	---	41.09	54.00	12.91	100.0	V	180.0	11.8

6.2GHz - 18GHz

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

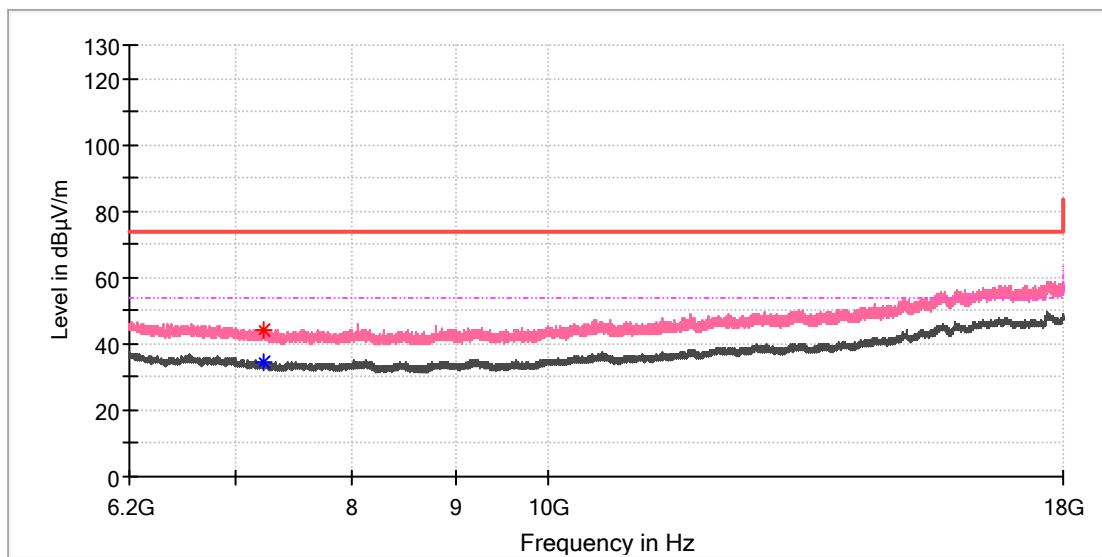


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7235.450000	44.03	---	74.00	29.97	100.0	H	307.0	8.6
7235.941667	---	34.06	54.00	19.94	100.0	H	320.0	8.6

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

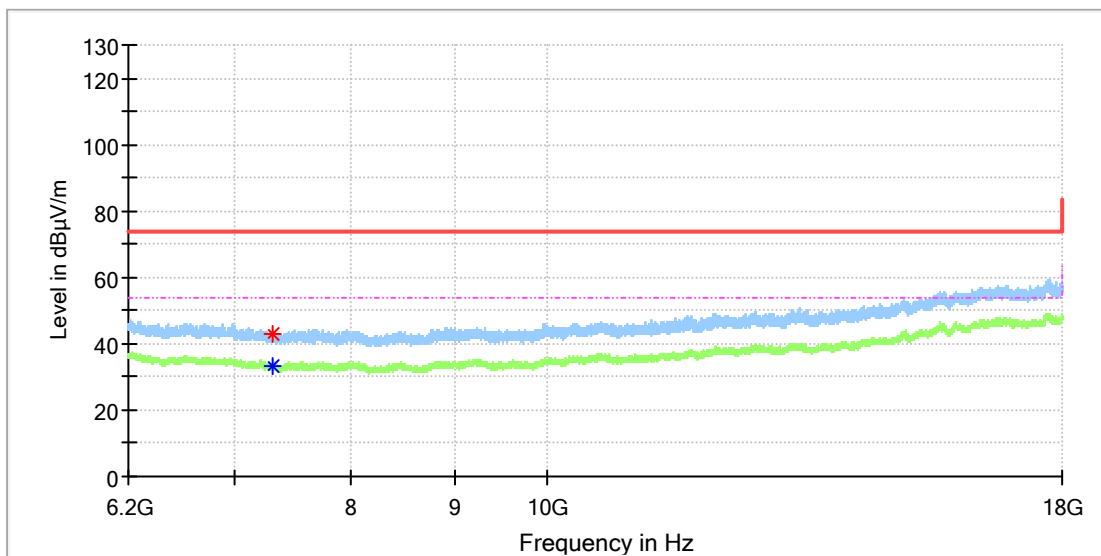


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7230.041667	44.33	---	74.00	29.67	100.0	V	0.0	8.6
7234.466667	---	34.26	54.00	19.74	100.0	V	122.0	8.6

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Mid channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

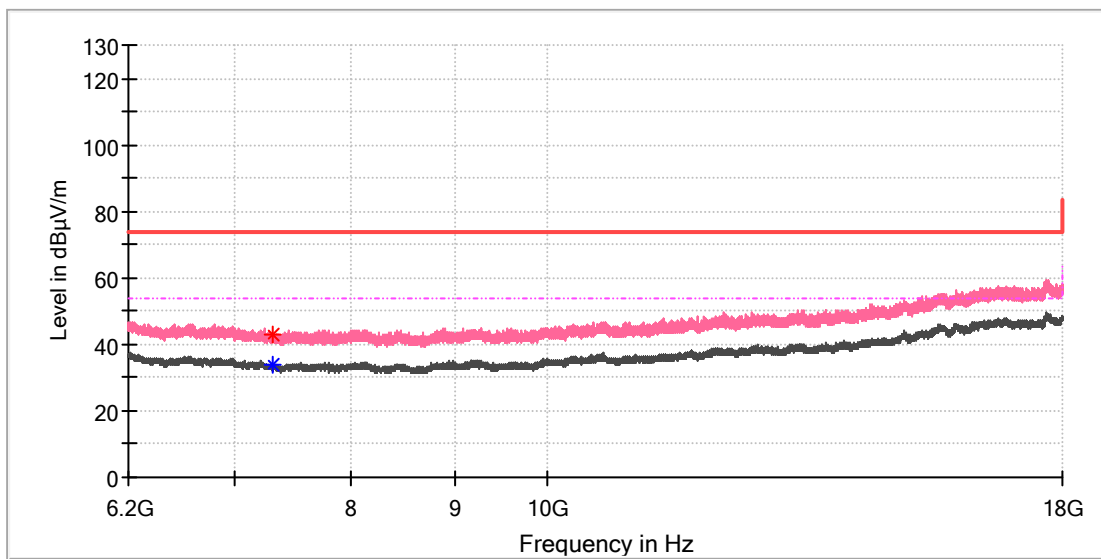


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7309.200000	---	33.39	54.00	20.61	100.0	H	113.0	8.2
7310.675000	43.13	---	74.00	30.87	100.0	H	84.0	8.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Mid channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

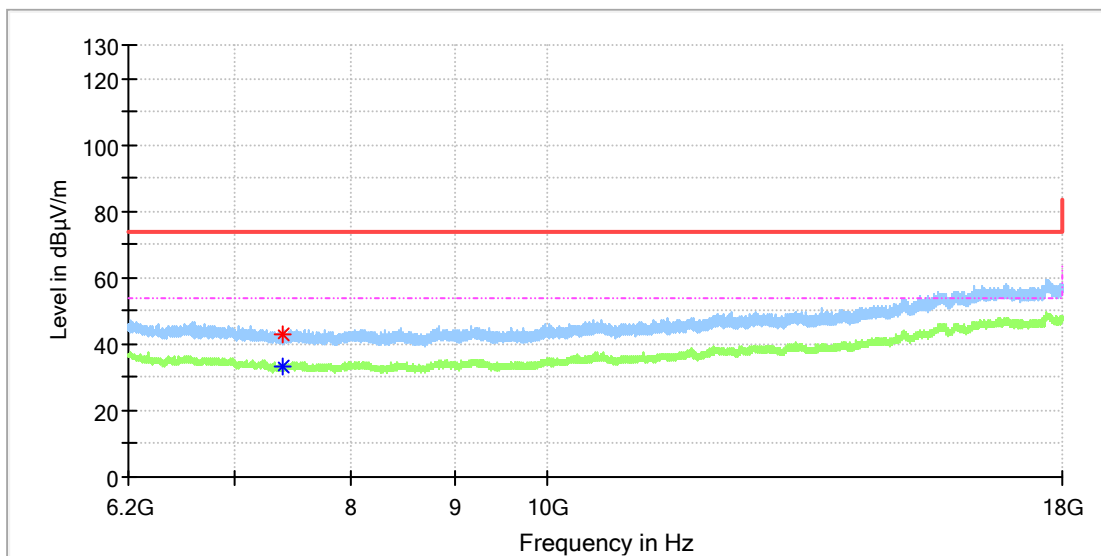


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7313.133333	43.04	---	74.00	30.96	100.0	V	335.0	8.2
7317.066667	---	33.87	54.00	20.13	100.0	V	0.0	8.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_High channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

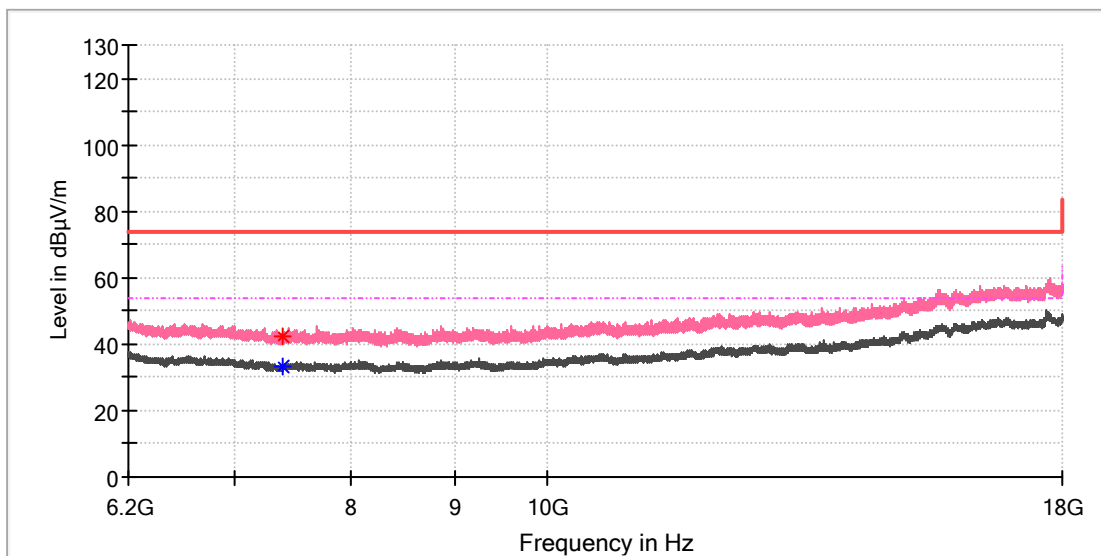


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7385.900000	---	33.09	54.00	20.91	100.0	H	345.0	8.2
7389.341667	42.79	---	74.00	31.21	100.0	H	358.0	8.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



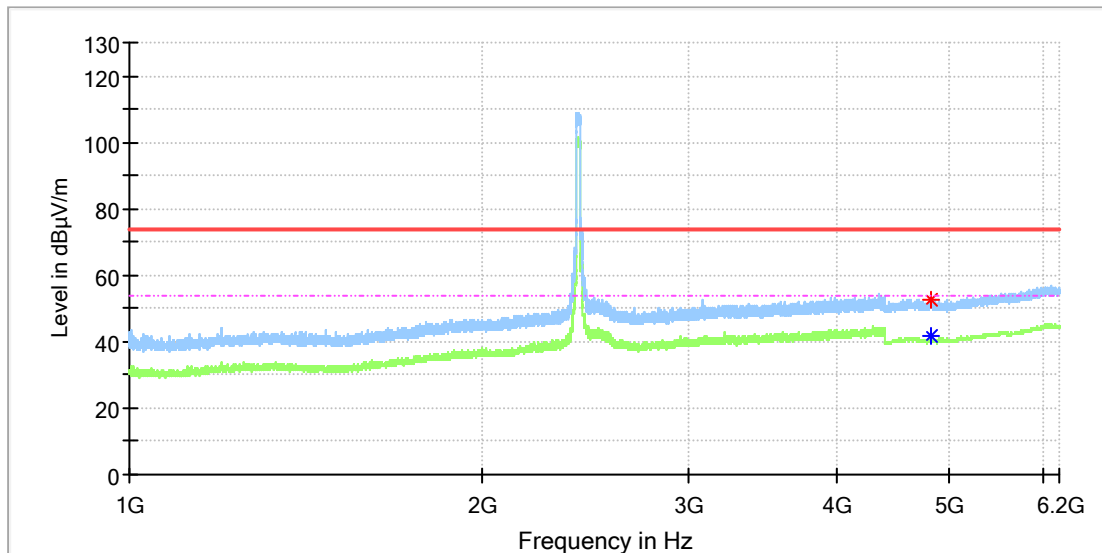
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7388.850000	---	33.12	54.00	20.88	100.0	V	98.0	8.2
7389.833333	42.40	---	74.00	31.60	100.0	V	293.0	8.2

**Wi-Fi 802.11 n(HT20) mode, MCS0
1GHz - 6.2GHz**

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

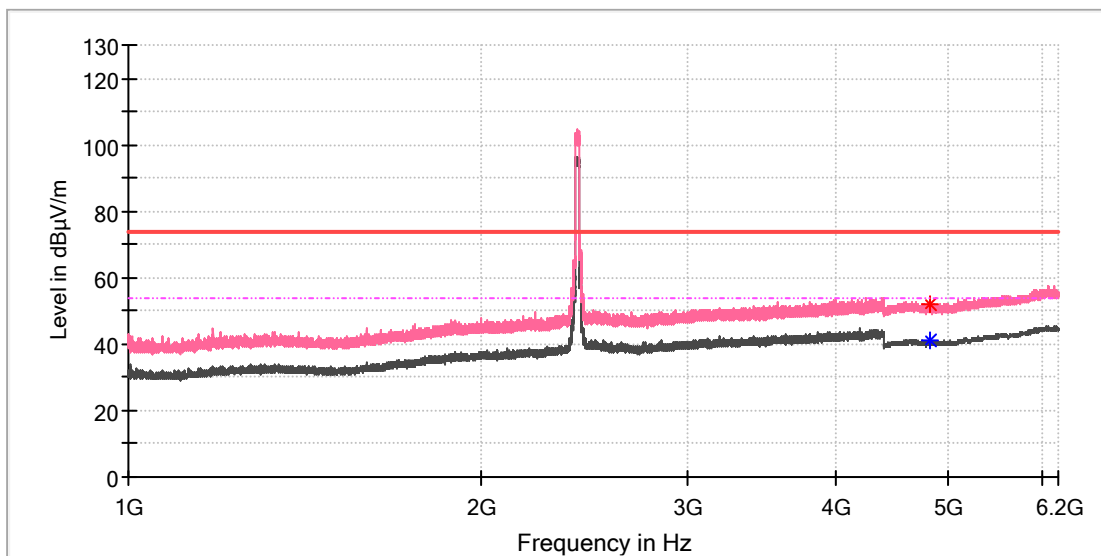


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4826.000000	---	41.42	54.00	12.58	100.0	H	36.0	11.8
4826.500000	52.38	---	74.00	21.62	100.0	H	315.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

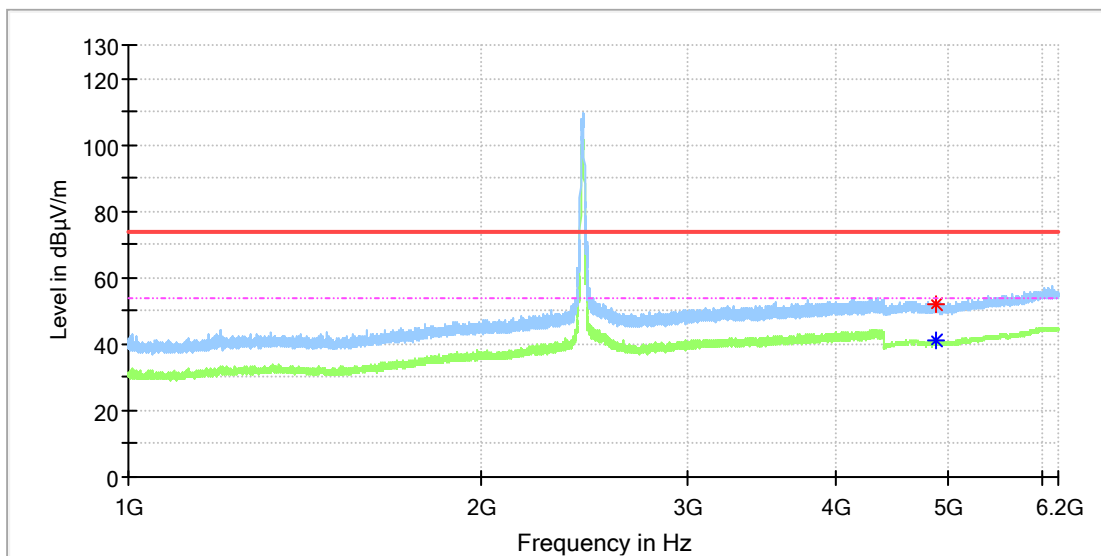


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4821.000000	---	41.37	54.00	12.63	100.0	V	122.0	11.8
4823.500000	51.73	---	74.00	22.27	100.0	V	58.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_Mid channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

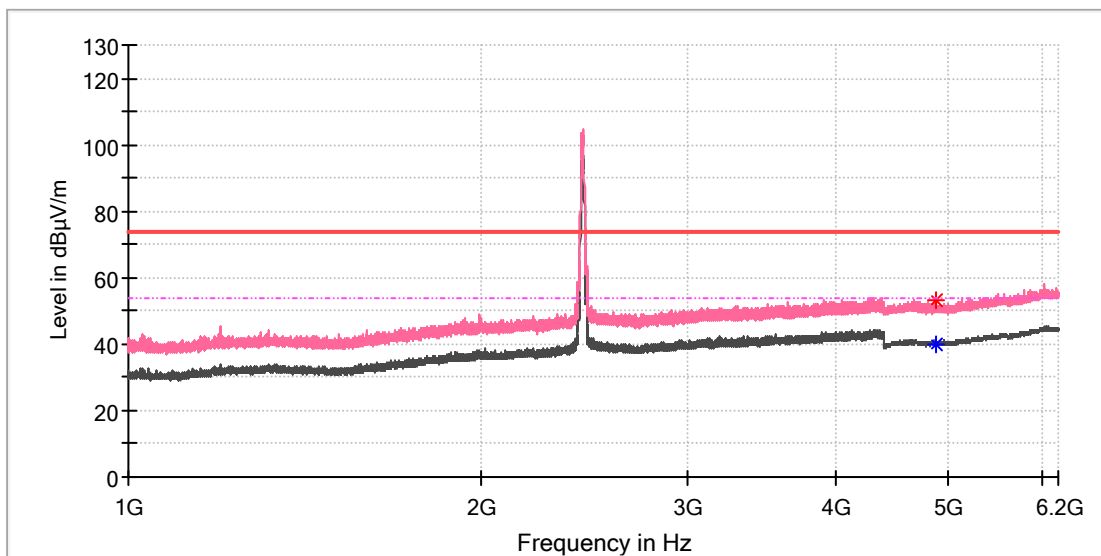


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4878.000000	51.84	---	74.00	22.16	100.0	H	33.0	11.8
4882.000000	---	40.98	54.00	13.02	100.0	H	311.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_Mid channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

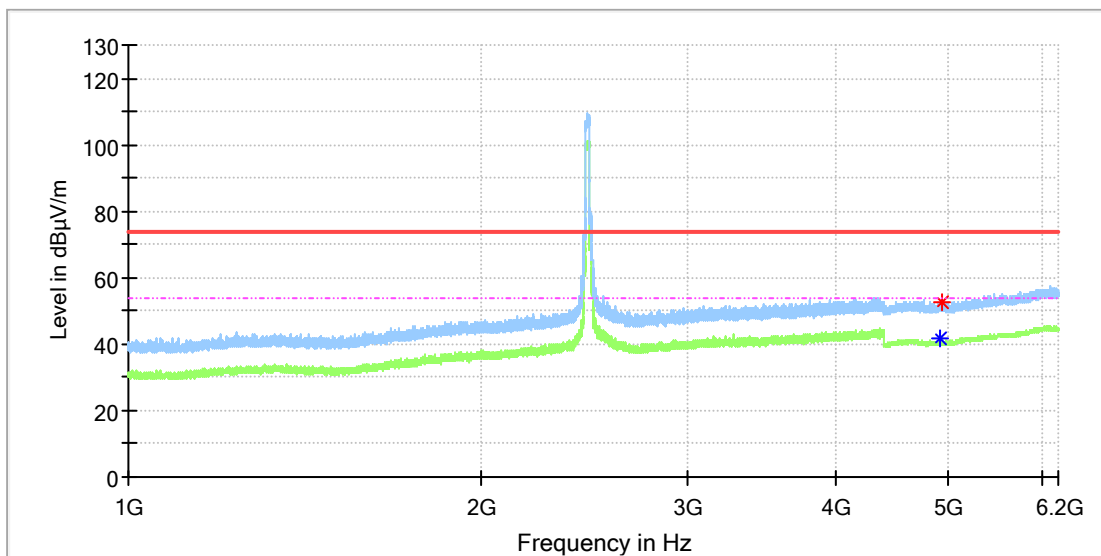


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4885.000000	---	40.16	54.00	13.84	100.0	V	7.0	11.8
4886.500000	53.07	---	74.00	20.93	100.0	V	111.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

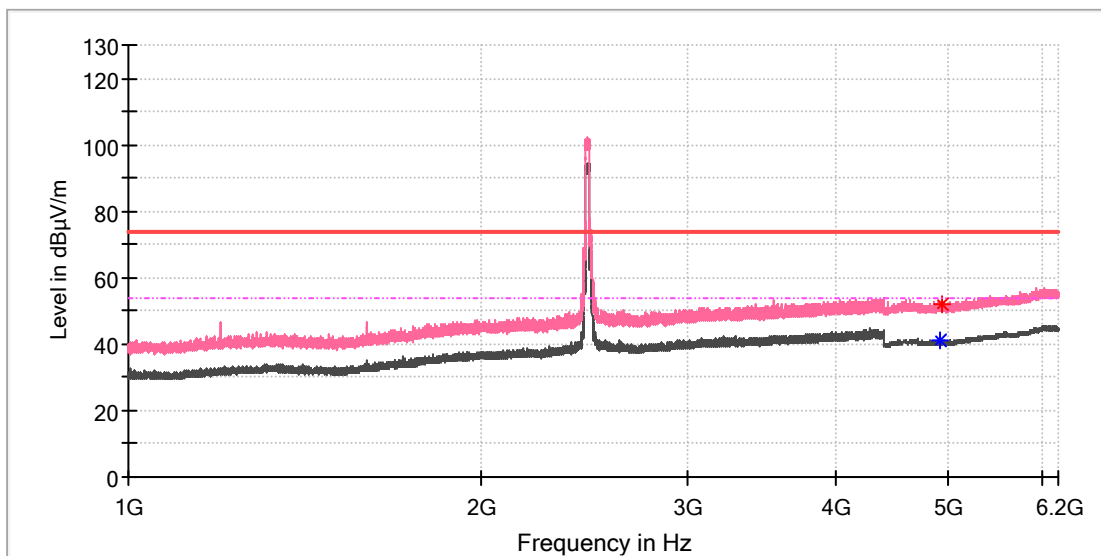


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4919.000000	---	41.91	54.00	12.09	100.0	H	55.0	11.8
4928.500000	52.31	---	74.00	21.69	100.0	H	314.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_High channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



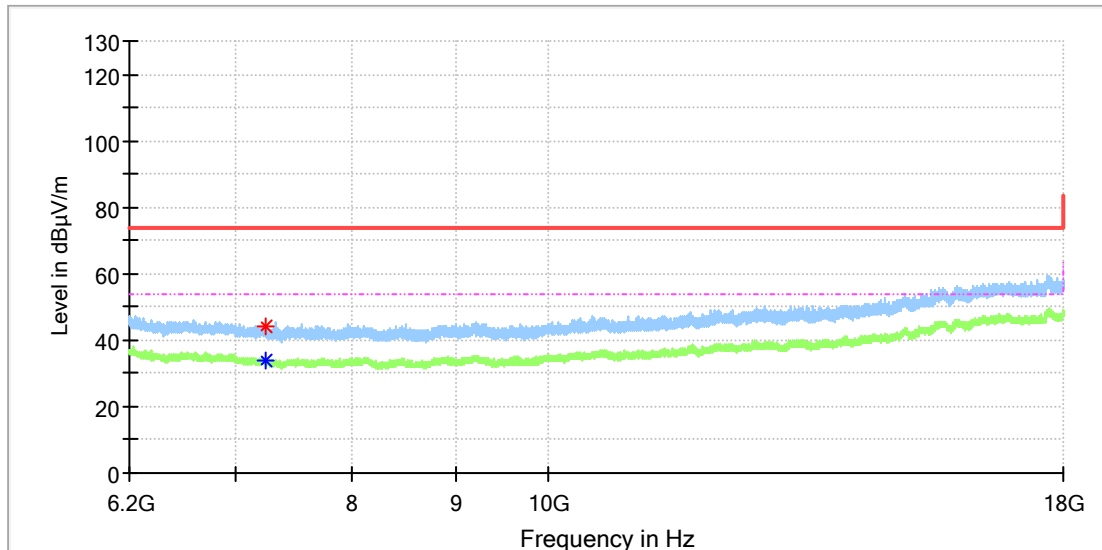
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4919.500000	---	40.91	54.00	13.09	100.0	V	302.0	11.8
4926.000000	52.04	---	74.00	21.96	100.0	V	101.0	11.8

6.2GHz - 18GHz

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

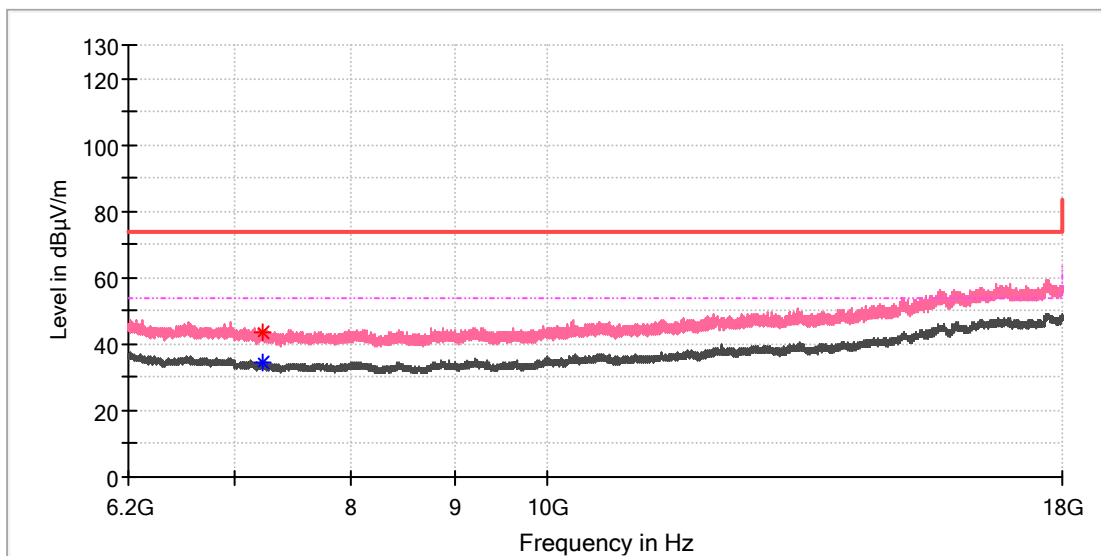


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7235.941667	---	34.13	54.00	19.87	100.0	H	166.0	8.6
7236.925000	44.42	---	74.00	29.58	100.0	H	31.0	8.6

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

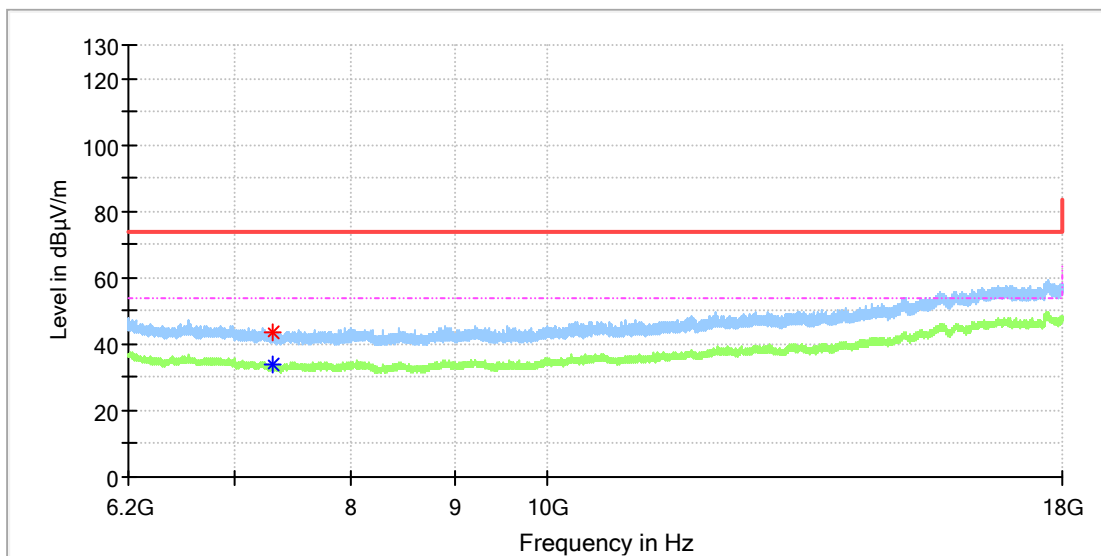


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7234.958333	43.50	---	74.00	30.50	100.0	V	329.0	8.6
7234.958333	---	34.59	54.00	19.41	100.0	V	329.0	8.6

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_Mid channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

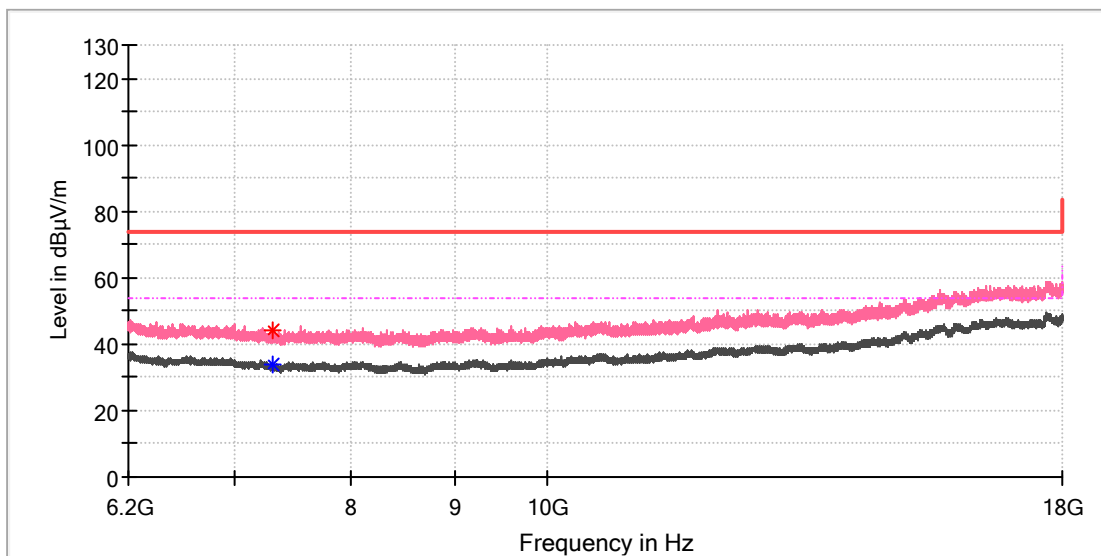


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7310.183333	43.54	---	74.00	30.46	100.0	H	258.0	8.2
7310.183333	---	33.57	54.00	20.43	100.0	H	258.0	8.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_Mid channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

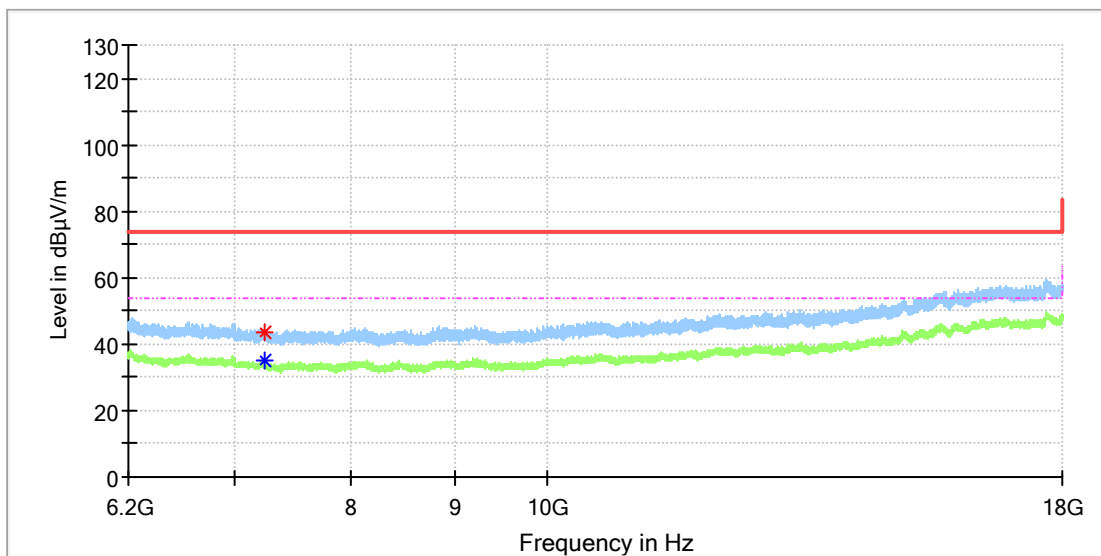


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7304.283333	43.94	---	74.00	30.06	100.0	V	354.0	8.3
7309.691667	---	33.61	54.00	20.39	100.0	V	100.0	8.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_High channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

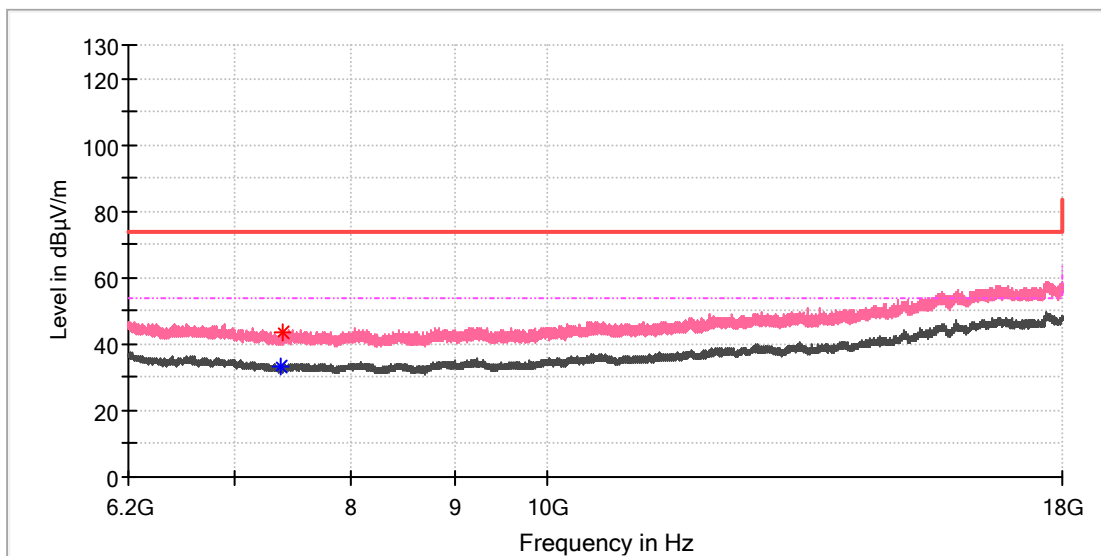


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7238.891667	43.30	---	74.00	30.70	100.0	H	188.0	8.6
7238.891667	---	35.26	54.00	18.74	100.0	H	188.0	8.6

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_High channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



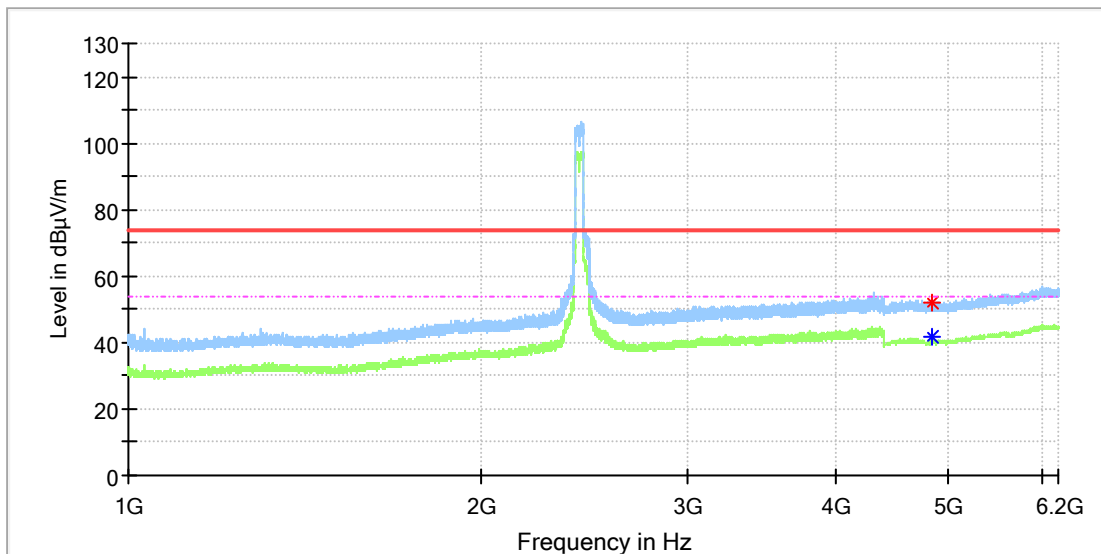
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7374.591667	---	33.34	54.00	20.66	100.0	V	124.0	8.2
7392.783333	43.23	---	74.00	30.77	100.0	V	111.0	8.3

**Wi-Fi 802.11 n(HT40) mode, MCS0
1GHz - 6.2GHz**

EUT Information

EUT Name:	LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11n40_Low channel
Test Voltage::	DC 5V from USB
Remark:	Temp 23 Humi:48%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

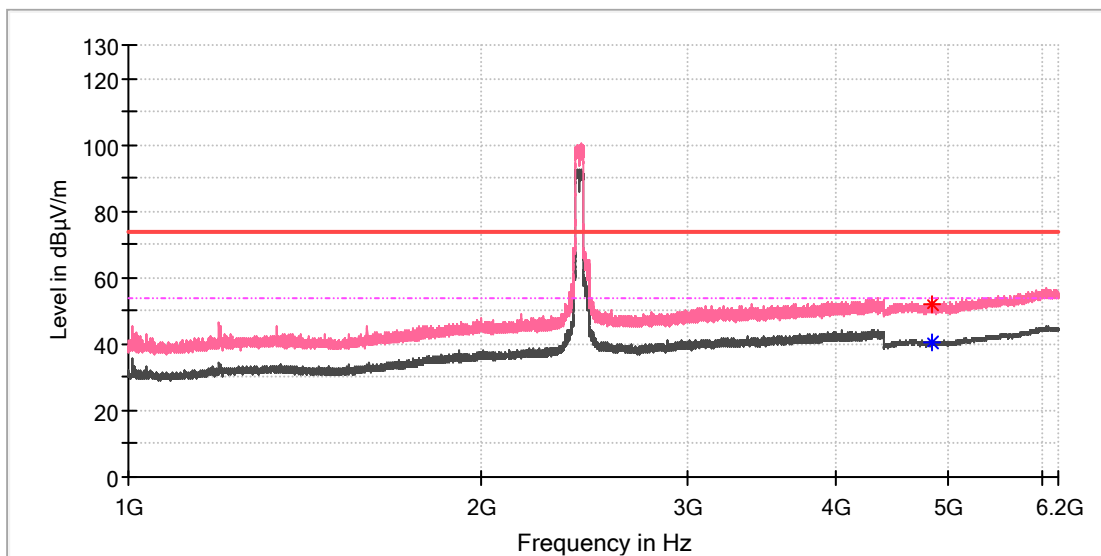


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4843.500000	---	41.67	54.00	12.33	100.0	H	299.0	11.8
4844.000000	52.03	---	74.00	21.97	100.0	H	299.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

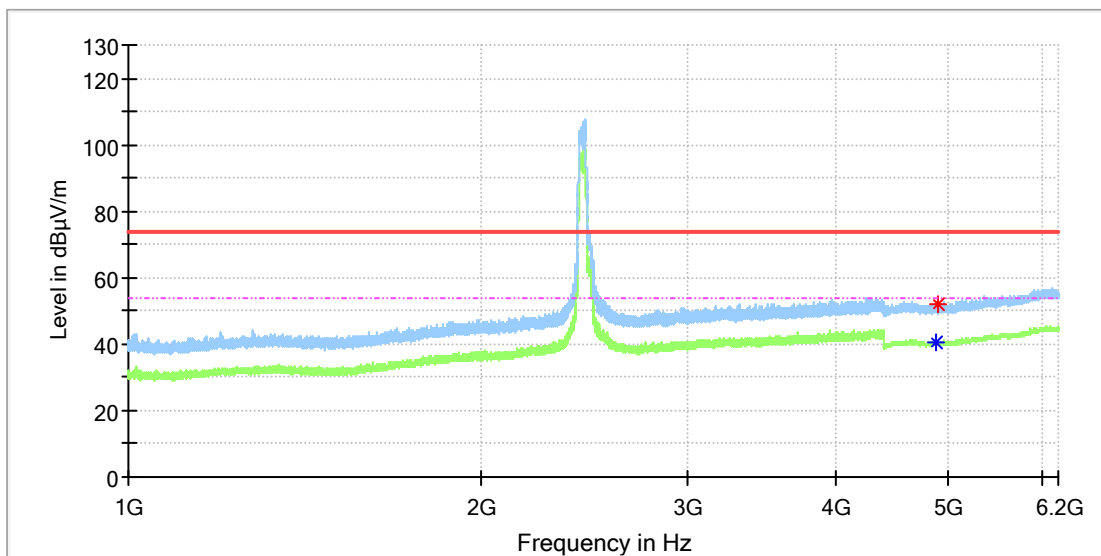


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4841.500000	51.71	---	74.00	22.29	100.0	V	114.0	11.8
4845.000000	---	40.37	54.00	13.63	100.0	V	121.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_Mid channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

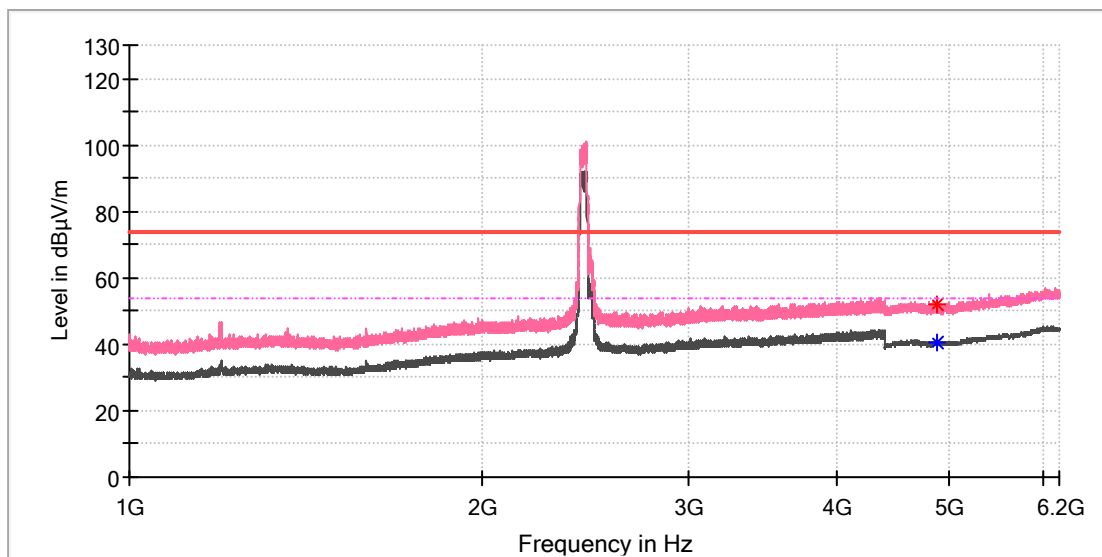


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4885.000000	---	40.49	54.00	13.51	100.0	H	108.0	11.8
4890.000000	51.71	---	74.00	22.29	100.0	H	214.0	11.8

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_Mid channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

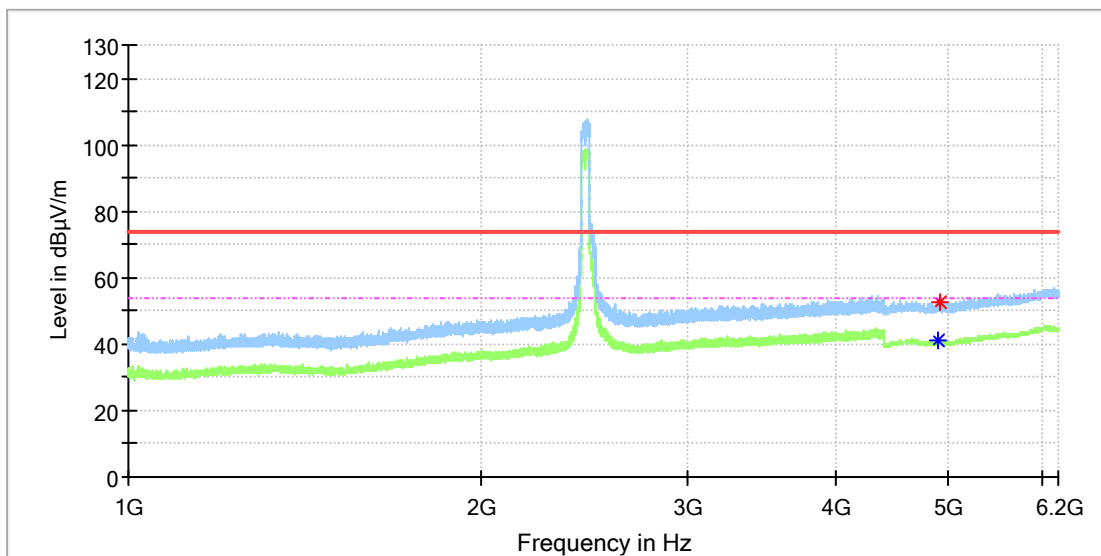


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	---	40.34	54.00	13.66	100.0	V	115.0	11.8
4887.000000	51.98	---	74.00	22.02	100.0	V	233.0	11.8

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_High channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

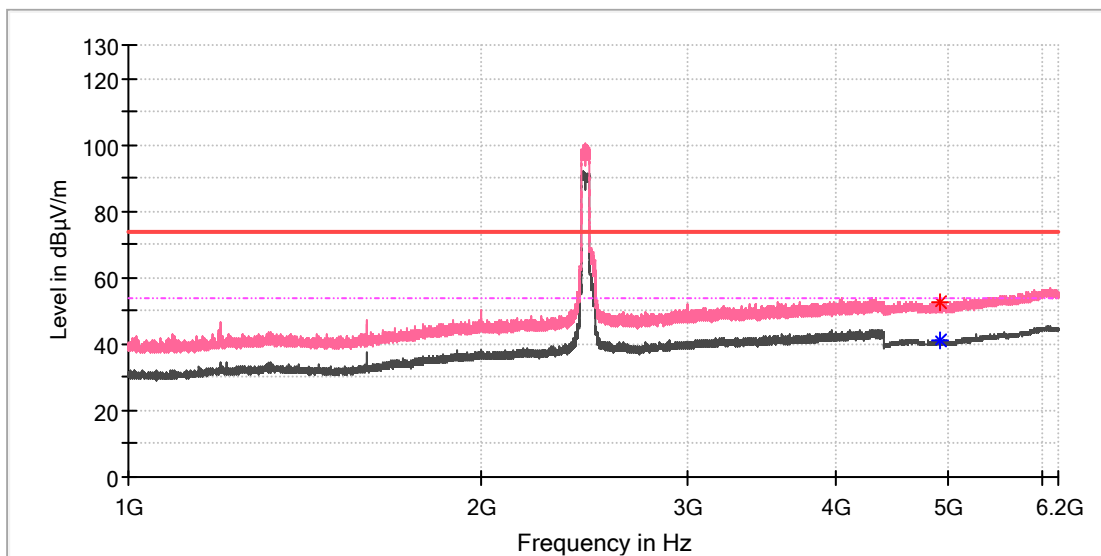


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4903.000000	---	41.34	54.00	12.66	100.0	H	195.0	11.8
4922.000000	52.51	---	74.00	21.49	100.0	H	45.0	11.8

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



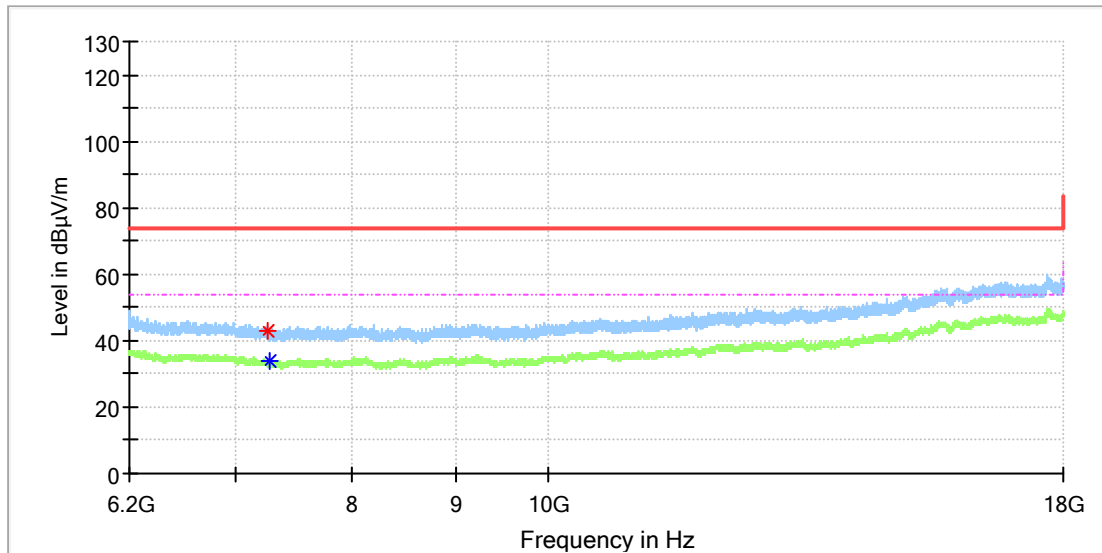
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4909.000000	---	40.85	54.00	13.15	100.0	V	109.0	11.8
4909.500000	52.33	---	74.00	21.67	100.0	V	183.0	11.8

6.2GHz - 18GHz

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

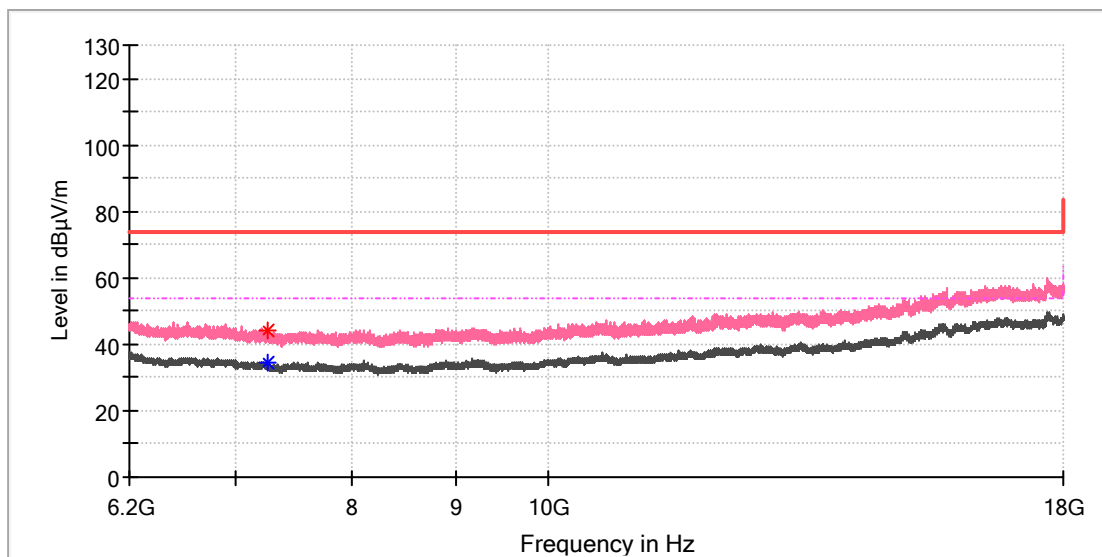


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7262.491667	43.01	---	74.00	30.99	100.0	H	96.0	8.5
7273.800000	---	33.84	54.00	20.16	100.0	H	180.0	8.4

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

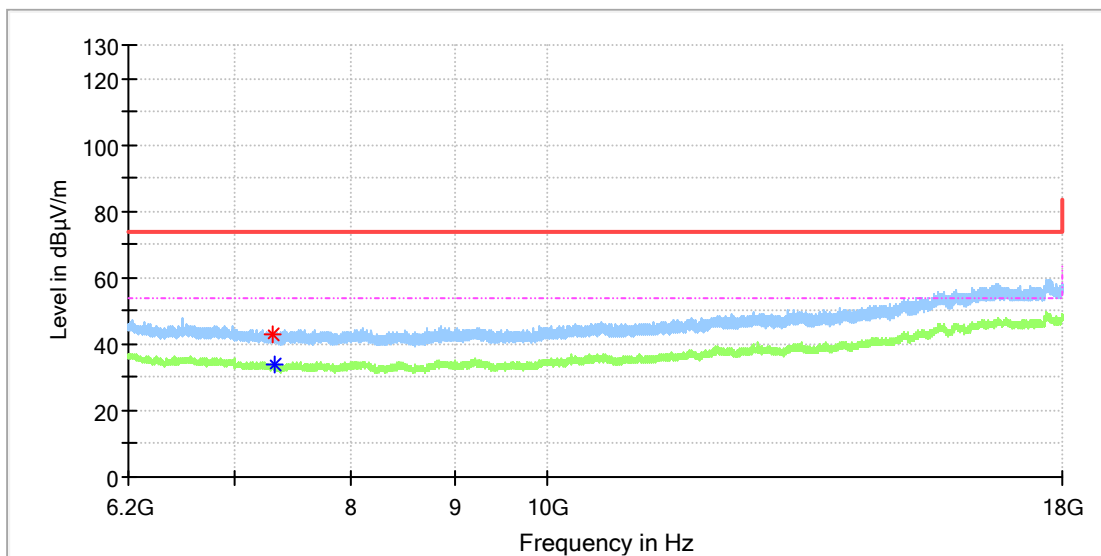


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7263.475000	44.29	---	74.00	29.71	100.0	V	277.0	8.5
7263.475000	---	34.37	54.00	19.63	100.0	V	277.0	8.5

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_Mid channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

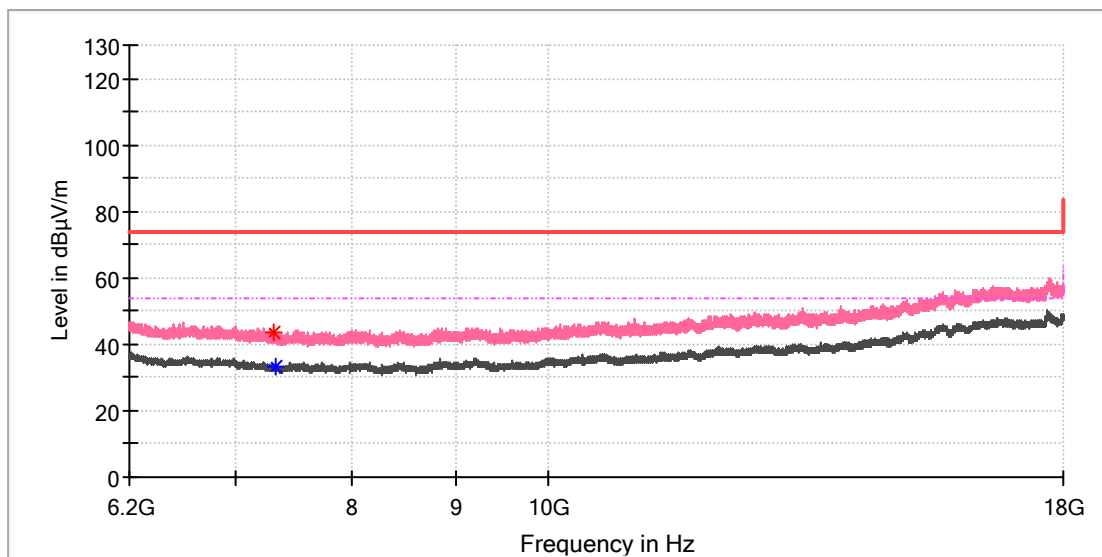


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7312.150000	42.83	---	74.00	31.17	100.0	H	22.0	8.2
7319.033333	---	33.79	54.00	20.21	100.0	H	318.0	8.2

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_Mid channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

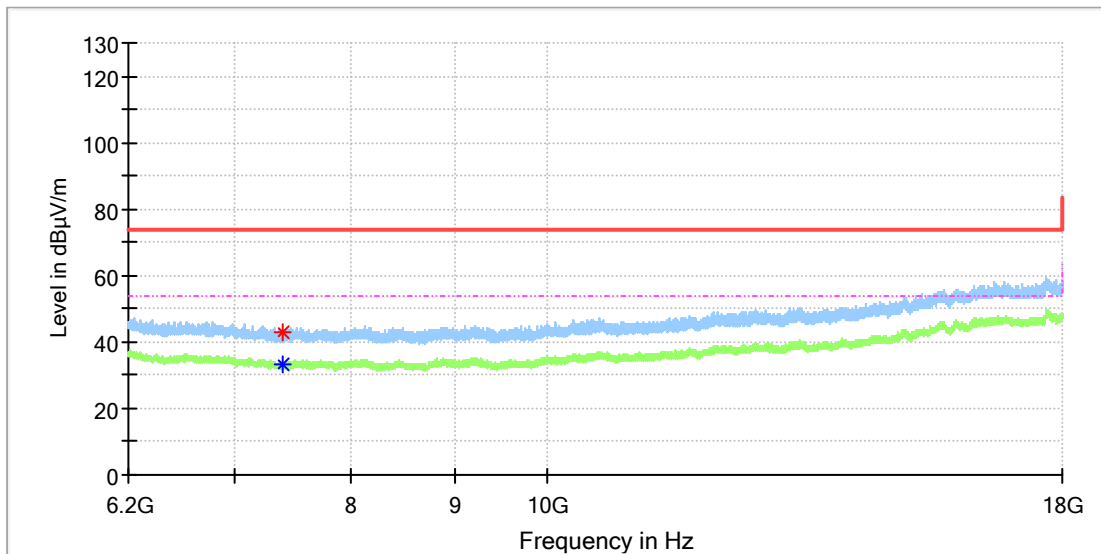


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7302.316667	43.44	---	74.00	30.56	100.0	V	123.0	8.3
7319.525000	---	33.41	54.00	20.59	100.0	V	195.0	8.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

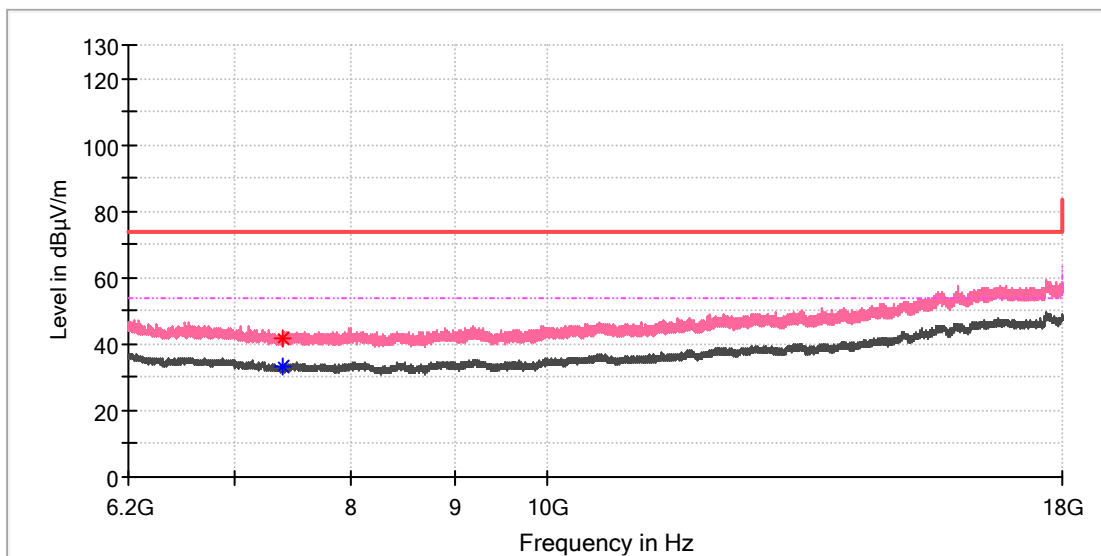


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7385.900000	42.90	---	74.00	31.10	100.0	H	111.0	8.2
7389.341667	---	33.55	54.00	20.45	100.0	H	16.0	8.2

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n40_High channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical Freqs

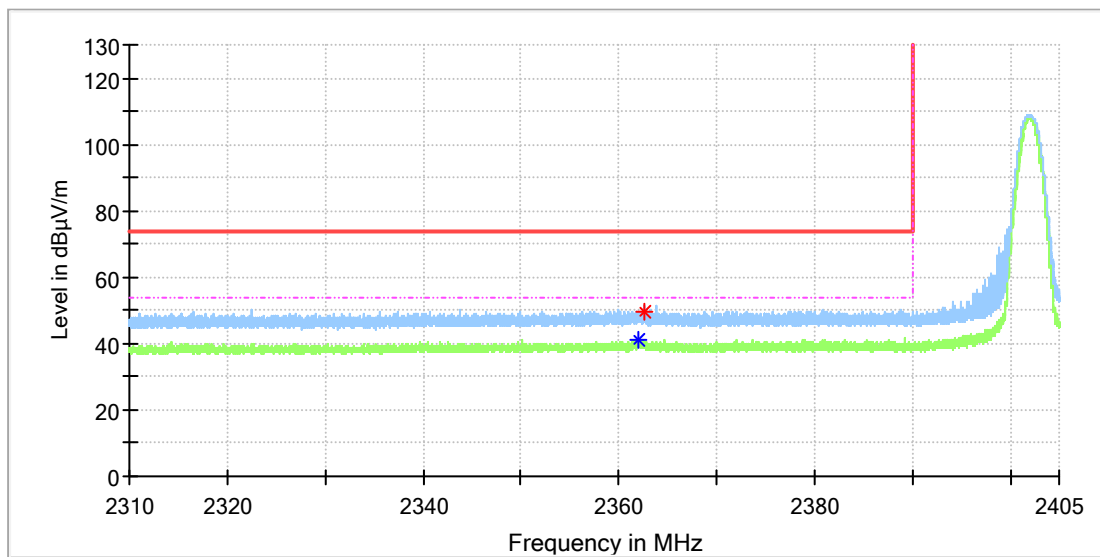
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7387.866667	---	33.18	54.00	20.82	100.0	V	110.0	8.2
7392.783333	41.93	---	74.00	32.07	100.0	V	153.0	8.3

Appendix B.2: Test Results of Radiated Emissions in Restricted Bands, configuration 1

Bluetooth Low Energy
Low channel

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	BLE_Low channel
Test Voltage::	DC 5V From USB
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Terry Yin
Reviewed By:	Terry Yin

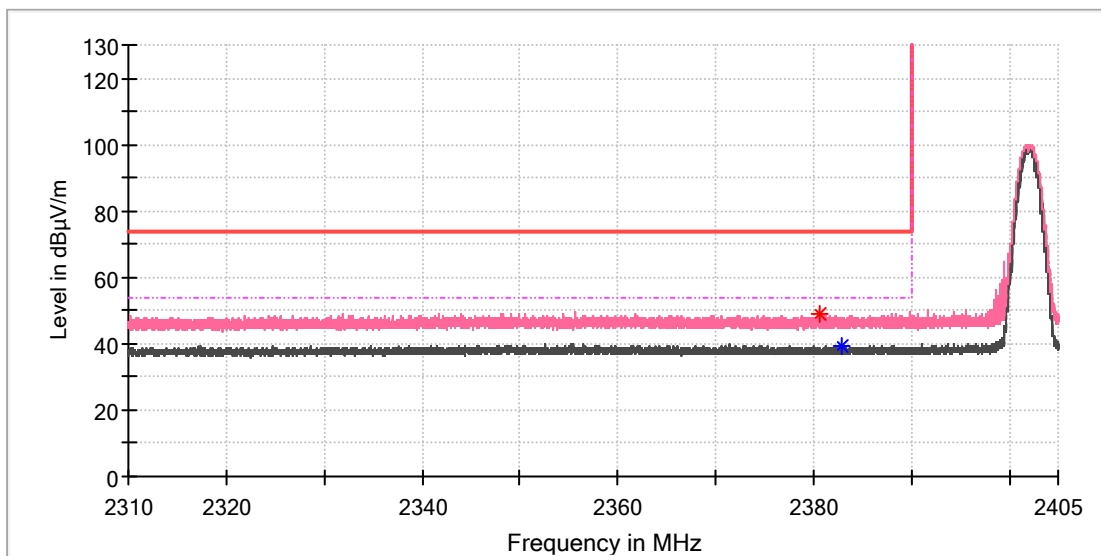


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2362.079000	---	41.24	54.00	12.76	100.0	H	150.0	6.9
2362.639500	49.41	---	74.00	24.59	100.0	H	292.0	6.9

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Low channel
 Test Voltage: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin



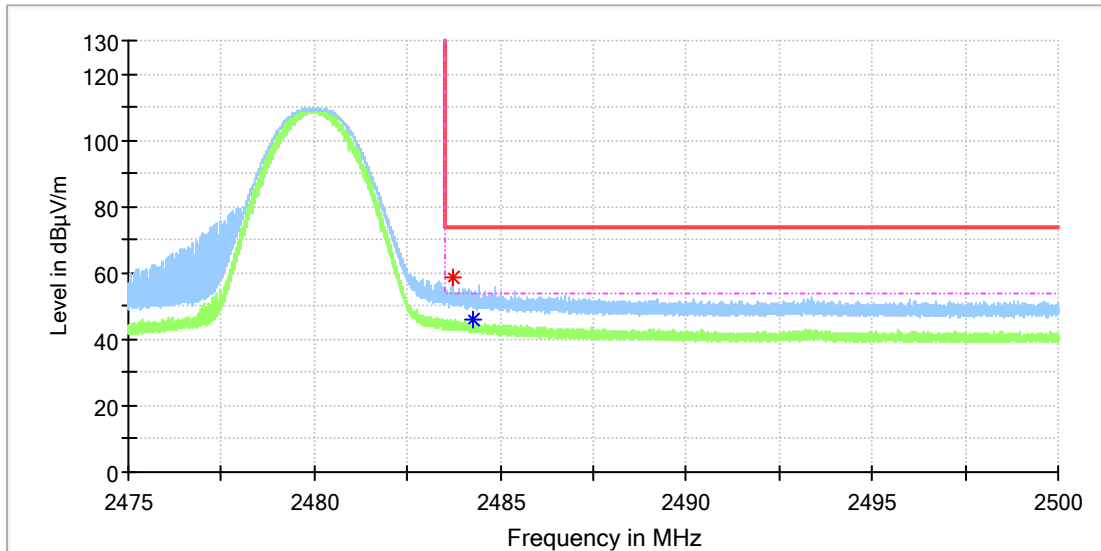
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2380.556500	49.25	---	74.00	24.75	100.0	V	47.0	7.0
2382.793750	---	39.35	54.00	14.65	100.0	V	150.0	7.0

High channel

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin

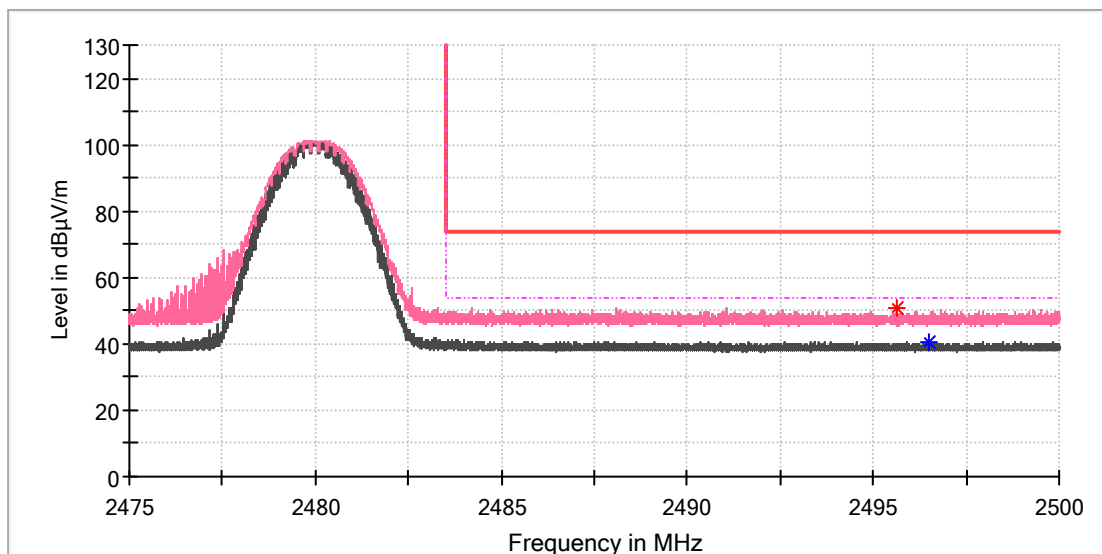


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.702500	58.40	---	74.00	15.60	100.0	H	170.0	7.4
2484.270000	---	46.07	54.00	7.93	100.0	H	170.0	7.4

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Terry Yin
 Reviewed By: Terry Yin



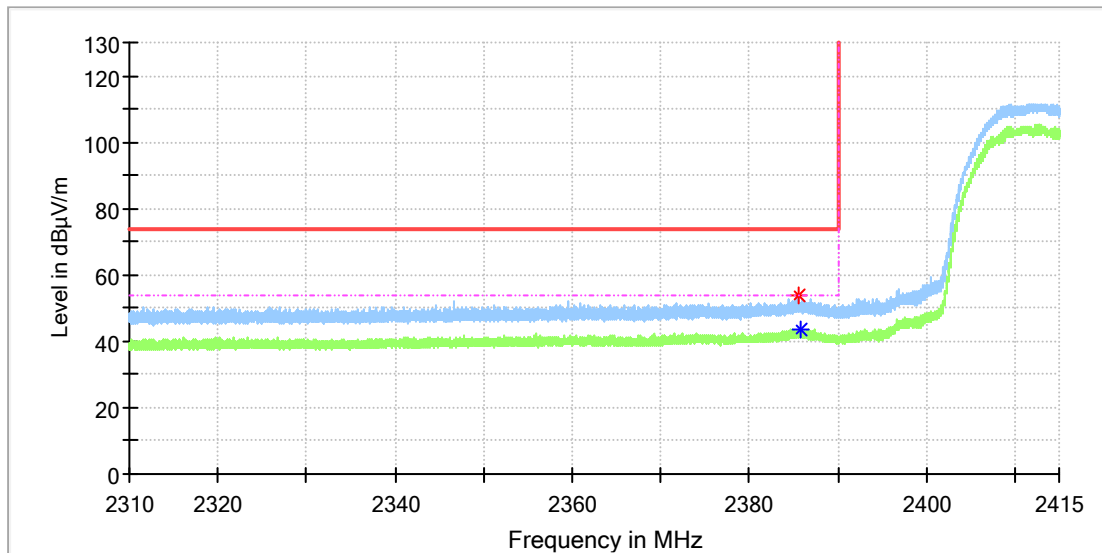
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2495.625000	51.05	---	74.00	22.95	100.0	V	0.0	7.4
2496.510000	---	40.68	54.00	13.32	100.0	V	23.0	7.4

**Wi-Fi 802.11 b mode, 1 Mbps
Low channel**

EUT Information

EUT Name:	LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11b_Low channel
Test Voltage::	DC 5V from USB
Remark:	Temp 23 Humi:48%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

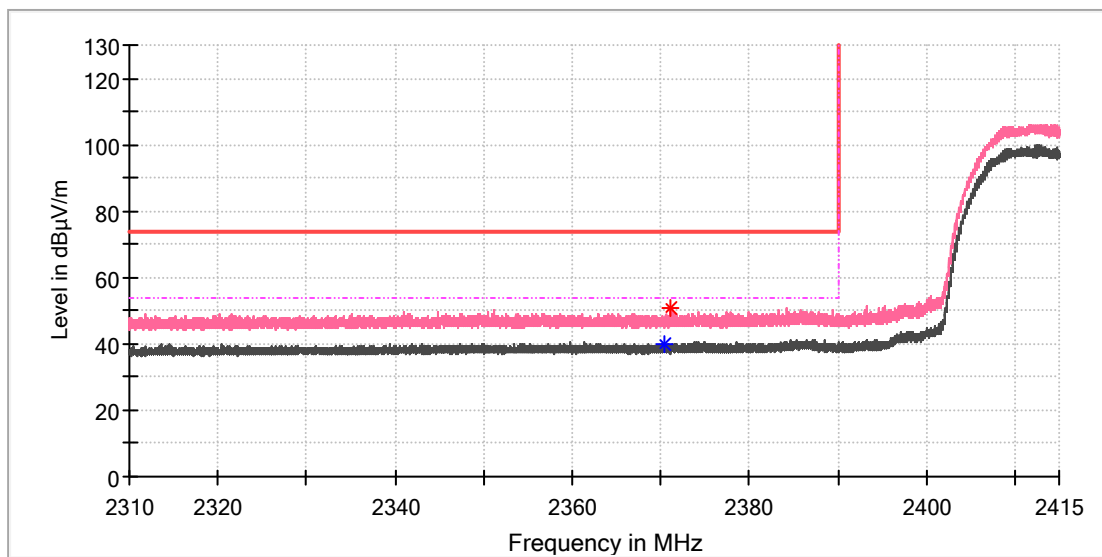


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2385.568500	53.86	---	74.00	20.14	100.0	H	184.0	7.0
2385.778500	---	43.68	54.00	10.32	100.0	H	184.0	7.0

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



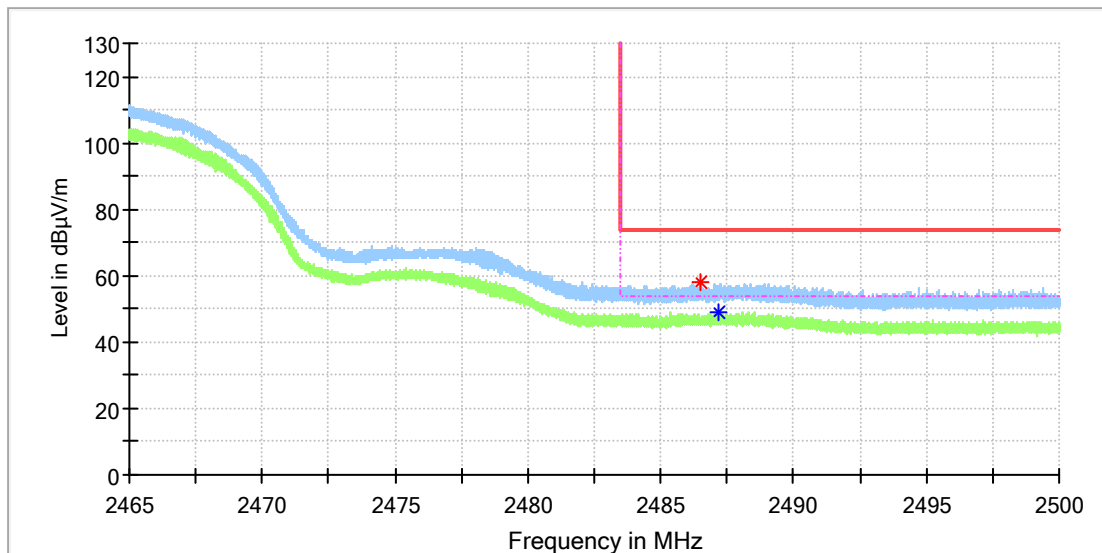
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2370.459000	---	40.12	54.00	13.88	100.0	V	131.0	6.9
2371.178250	50.62	---	74.00	23.38	100.0	V	84.0	6.9

High channel

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

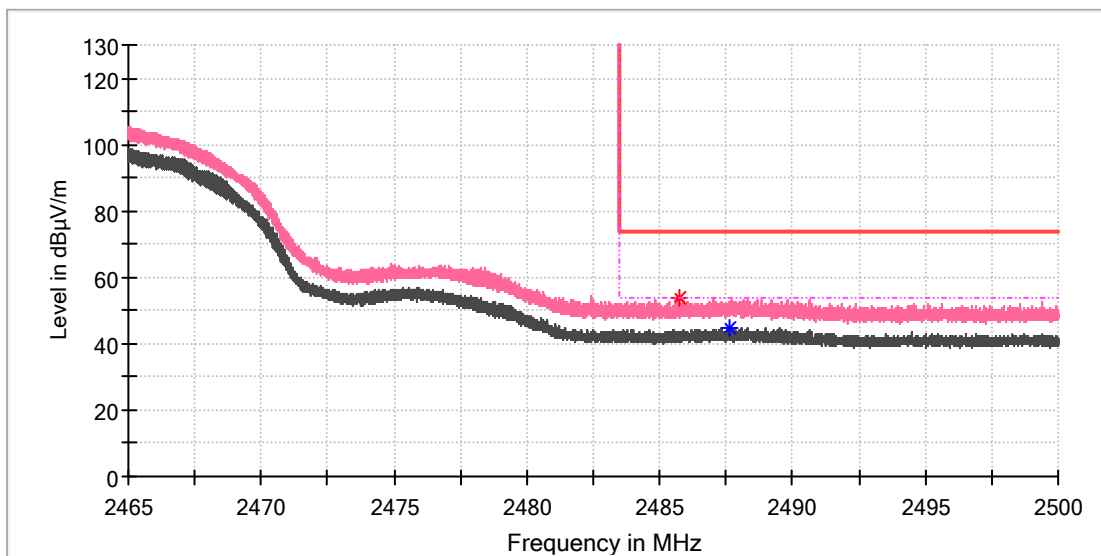


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2486.514500	57.98	---	74.00	16.02	100.0	H	239.0	7.4
2487.200500	---	48.96	54.00	5.04	100.0	H	239.0	7.4

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High channel
 Test Voltage: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



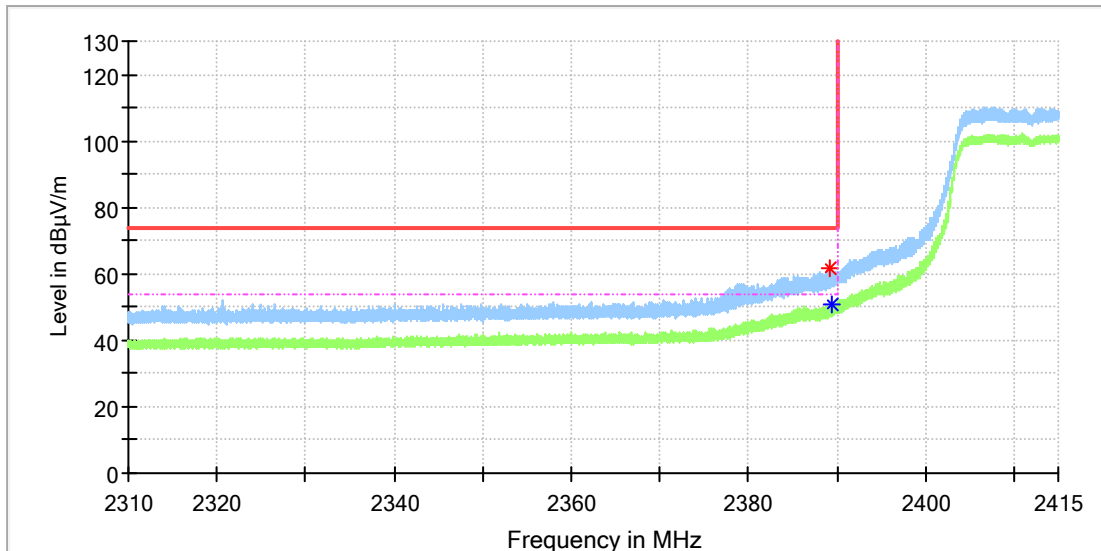
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2485.706000	53.60	---	74.00	20.40	100.0	V	121.0	7.4
2487.604750	---	45.04	54.00	8.96	100.0	V	121.0	7.4

**Wi-Fi 802.11 g mode, 6 Mbps
Low channel**

EUT Information

EUT Name:	LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11g_Low channel
Test Voltage::	DC 5V from USB
Remark:	Temp 23 Humi:48%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

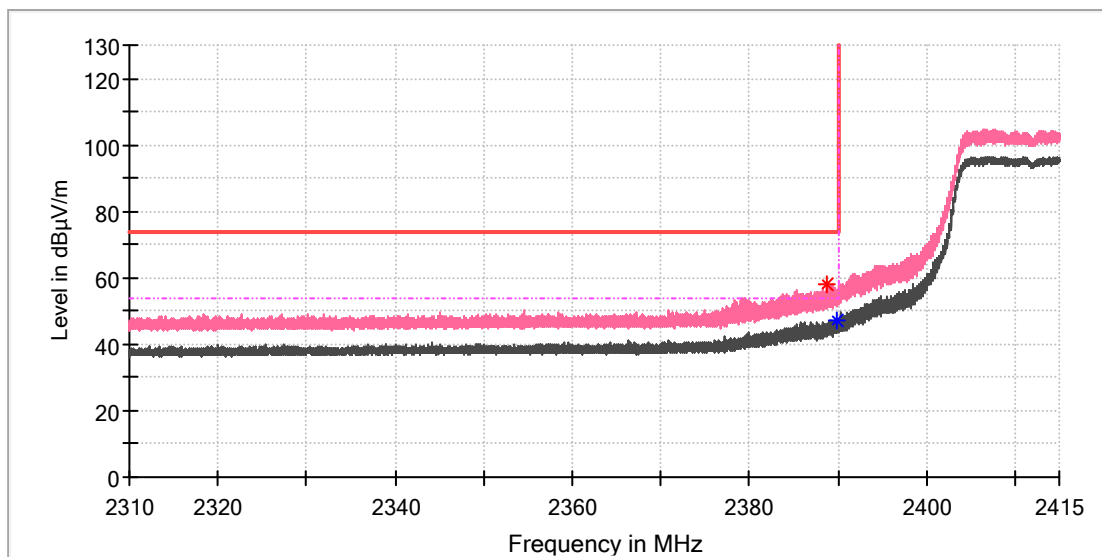


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.269750	61.46	---	74.00	12.54	100.0	H	205.0	7.0
2389.537500	---	50.72	54.00	3.28	100.0	H	242.0	7.0

EUT Information

EUT Name: LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Low channel
 Test Voltage:: DC 5V from USB
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



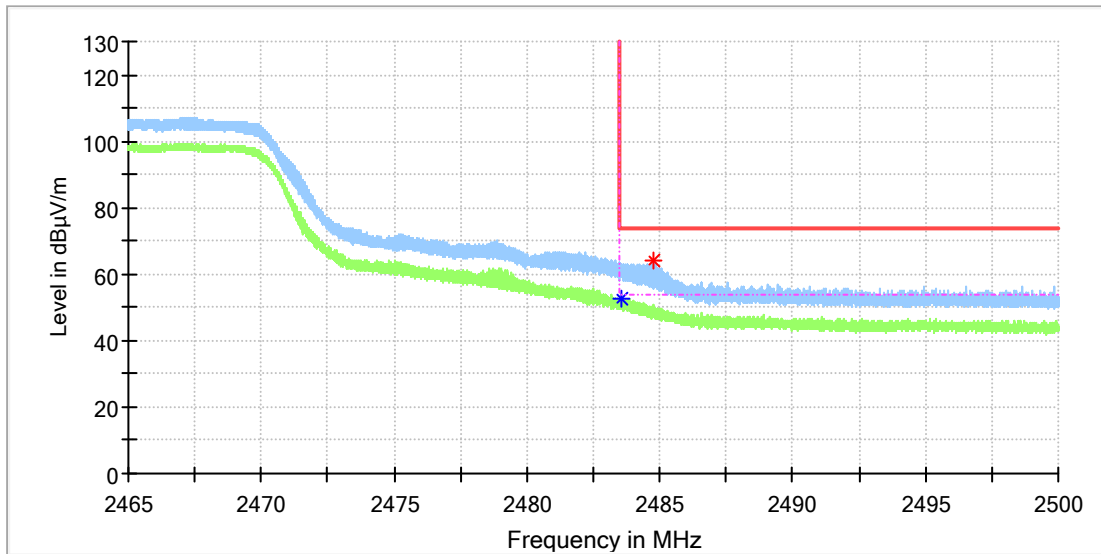
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2388.849750	58.09	---	74.00	15.91	100.0	V	121.0	7.0
2389.915500	---	47.34	54.00	6.66	100.0	V	121.0	7.0

High channel

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11g_High channel
Test Voltage::	DC 5V from USB
Remark:	Temp 23 Humi:48%
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)
2483.592000	---	52.62	54.00	1.38	100.0	H	243.0	7.4
2484.747000	63.82	---	74.00	10.18	100.0	H	243.0	7.4