



Prüfbericht-Nr.: <i>Test report no.:</i>	60386707 002	Auftrags-Nr.: <i>Order no.:</i>	168277807	Seite 1 von 17 Page 1 of 17
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2020-08-12	
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>	A002887232-001			
Prüfzeitraum: <i>Testing period:</i>	2020-09-08 – 2020-09-14			
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>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i> 2020-09-30		Ausstellungsdatum: <i>Issue date:</i> 2020-09-30		
Stellung / Position	Alex Lan / Senior Project Engineer	Stellung / Position	Winnie Hou / Technical Certifier	
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 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specifications(s) F(ail) = failed a.m. test specifications(s) N/A = not applicable 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

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

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1 General Remarks

1.1 Complementary Materials

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

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of Radiated Testing and conducted emission on AC mains

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd. Testing Center

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	Rohde & Schwarz	CMW270	101375	2021-08-30
Signal Analyzer	Rohde & Schwarz	FSV 40	101441	2021-08-30
Vector Signal Generator	Rohde & Schwarz	SMBV100A	263301	2021-08-30
Signal Generator	Rohde & Schwarz	SMB100A	115186	2021-08-30
OSP	Rohde & Schwarz	OSP 150	101017	2020-12-20
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	Rohde & Schwarz	WMS32 (V10.40.10)	N/A	N/A
Power Meter	Rohde & Schwarz	NRP2	107105	2020-12-20
Unwanted Emission Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Signal Generator	Rohde & Schwarz	SMB100A	180840	2021-08-30
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	165339	2021-08-30
Signal Analyzer	Rohde & Schwarz	FSV 40	101440	2021-08-30
System Controller Interface	Rohde & Schwarz	SCI-100	S10010036	N/A
Filterbank	Rohde & Schwarz	CDMA	100751	2021-08-30
Filterbank	Rohde & Schwarz	GSM	100811	2021-08-30
OSP	Rohde & Schwarz	OSP 120	102041	N/A
OSP	Rohde & Schwarz	OSP 150	101385	N/A
Pre-amplifier	Rohde & Schwarz	SCU08F1	08320030	2021-08-30
Amplifier	Rohde & Schwarz	SCU-18F	180079	2021-08-30
Amplifier	Rohde & Schwarz	SCU40A	100450	2021-09-03
Trilog Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VULB9162	192	2021-09-02
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218719	2021-09-02
Wideband Ridged Horn Antenna (12- 18 GHz)	Steatite	QMS-00208	18312	2021-09-02
Wideband Ridged Horn Antenna (18- 40 GHz)	Steatite	QMS-00880	19066	2021-09-02
Biconical Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VUBA 9117	357	2021-09-02

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 (dB μ V/m)	4.27dB
Radiated Emission (above 1000MHz)	Field strength (dB μ V/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 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. Testing Center 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 and this product has three configurations and details as below:

Configuration:	Crystal	Antenna
1	Crystal 2	Antenna 2
2	Crystal 2	Antenna 1
3	Crystal 1	Antenna 2

Manufacturer of Crystal 1: SIWARD CRYSTAL TECHNOLOGY CO.,LTD
 Manufacturer of Crystal 2: SEIKO EPSON CORPORATION

Antenna 1
 Manufacturer: LEEDARSON LIGHTING CO.,LTD
 Antenna Type: PCB Antenna
 Antenna Gain: 4 dBi

Antenna 2
 Manufacturer: Shenzhen Hongying Communication Technology Co., Ltd.
 Antenna Type: IPEX Antenna
 Antenna Gain: 3.7 dBi

The crystal 1 and antenna 1 are the original certified.

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 configuration 1 & 2, only the worst test data recorded for configuration 3.

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 1GHz)

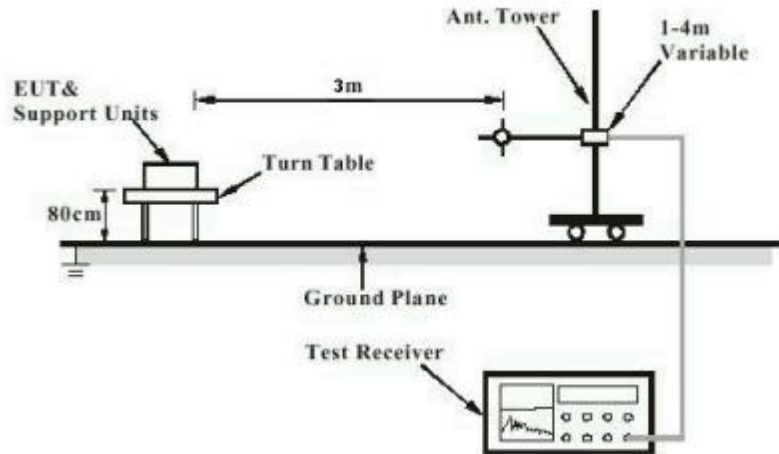


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

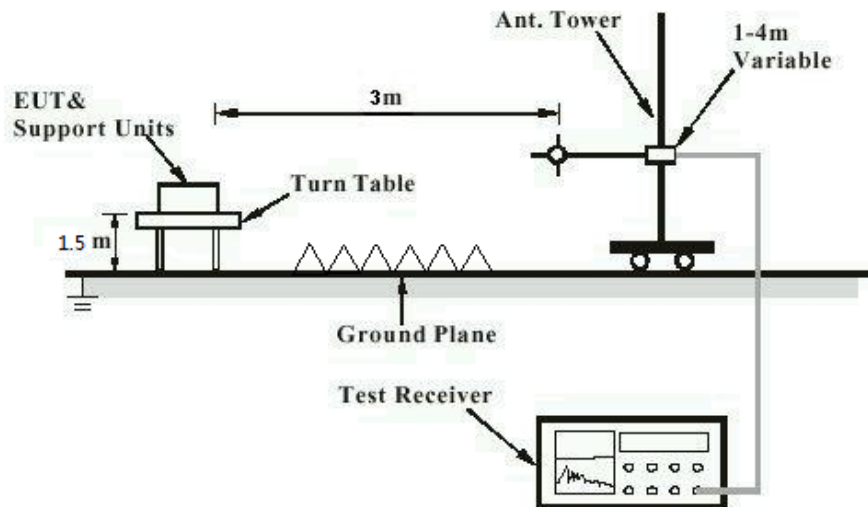
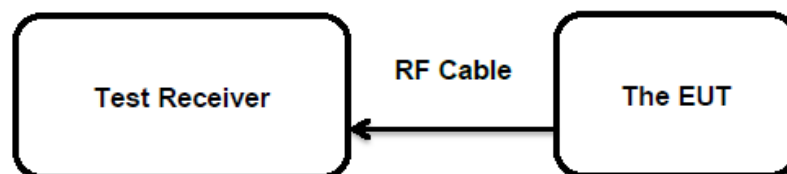


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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 a 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 : 08.09.2020 - 14.09.2020
 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)	20.6	20.6	20.7	21.2	21.1	20.1
Avg. Power (dBm)	19.8	19.3	19.4	18.7	18.7	16.9
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)	20.6	21.6	19.4	16.4	20.3	13.8
Avg. Power (dBm)	17.6	19.2	15.8	14.5	18.7	11.5

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)	7.64	8.53	8.93
Avg. Power (dBm)	5.61	6.42	6.81

Note: The cable loss is taken into account in results and the e.i.r.p. are 25.6 dBm (configuration 2) and 25.3 dBm (configuration 1 & 3) less than 4W (36 dBm).

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	:	08.09.2020 - 14.09.2020
Input voltage	:	DC 5V
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	24°C
Relative humidity	:	47 %
Atmospheric pressure	:	101 kPa

Remark:

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

For the measurement records, refer to the appendix B.

6 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
FCC KDB Publication 865664 D02 v01r02
OET Bulletin 65 (Edition 97-01)
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: 22.00 dBm

BLuetooth Low Energy: 9.00 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: $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.079$ 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

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: $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.074$ 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: 22.00 dBm

BLuetooth Low Energy: 9.00 dBm

EUT with Antenna 1:

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

The Max. e.i.r.p. for 802.11b/g/n: 26.0dBm = 0.398 W

The Max. e.i.r.p. for BLuetooth Low Energy: 13.0dBm = 0.020 W

EUT with Antenna 2:

Antenna Gain: 3.7 dBi 802.11b/g/n and Bluetooth Low Energy

The Max. e.i.r.p. for 802.11b/g/n: 25.7dBm = 0.372 W

The Max. e.i.r.p. for BLuetooth Low Energy: 12.7dBm = 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.

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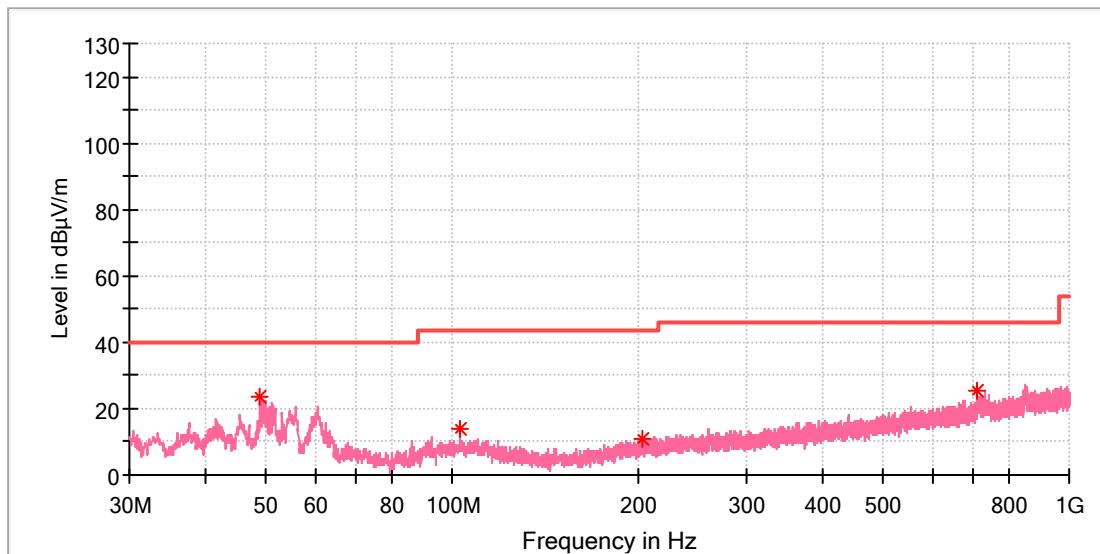
Note 1: Testing was carried out within frequency range 9 kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

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
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



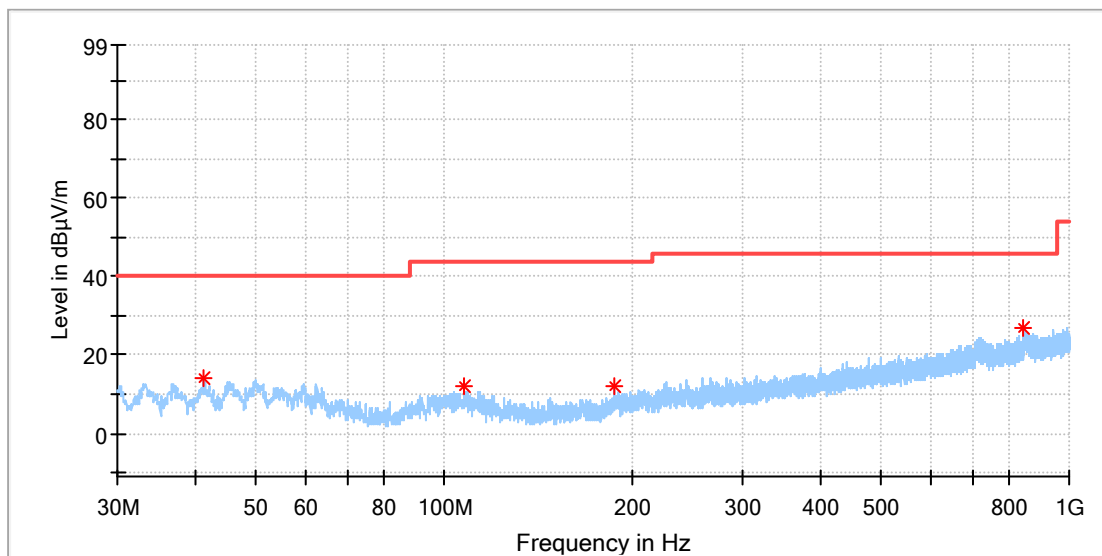
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
48.866500	23.45	---	40.00	16.55	100.0	V	288.0	-18.6
103.089500	13.63	---	43.50	29.87	100.0	V	355.0	-19.2
204.066500	10.95	---	43.50	32.55	100.0	V	129.0	-19.3
709.824500	25.59	---	46.00	20.41	100.0	V	49.0	-8.3

Produkte
 Products

EUT Information

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

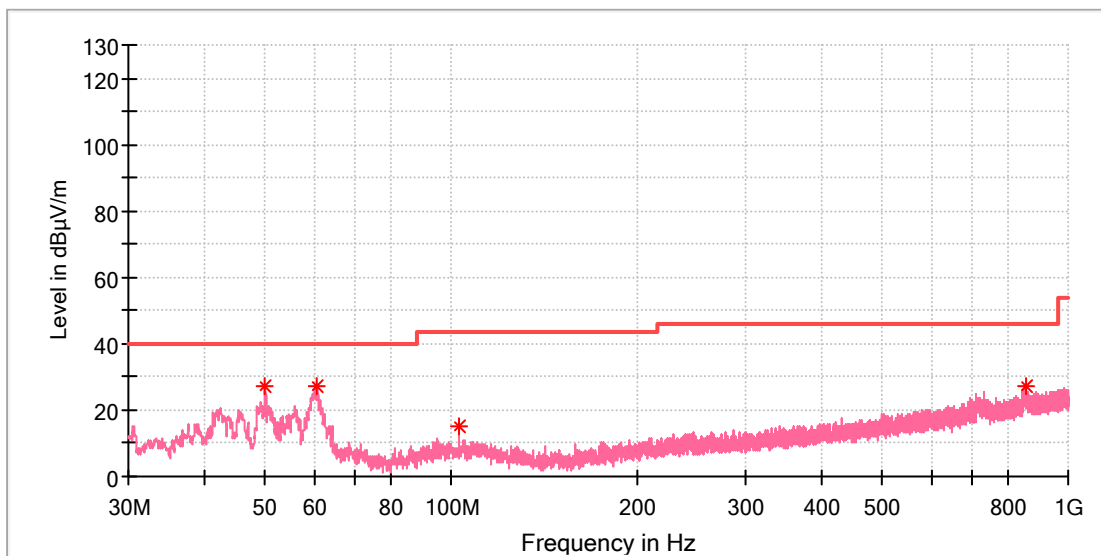


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
41.203500	14.08	---	40.00	25.92	100.0	H	175.0	-20.1
107.794000	12.26	---	43.50	31.24	100.0	H	0.0	-19.3
186.655000	11.84	---	43.50	31.66	100.0	H	286.0	-20.2
845.042500	26.95	---	46.00	19.05	100.0	H	145.0	-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
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



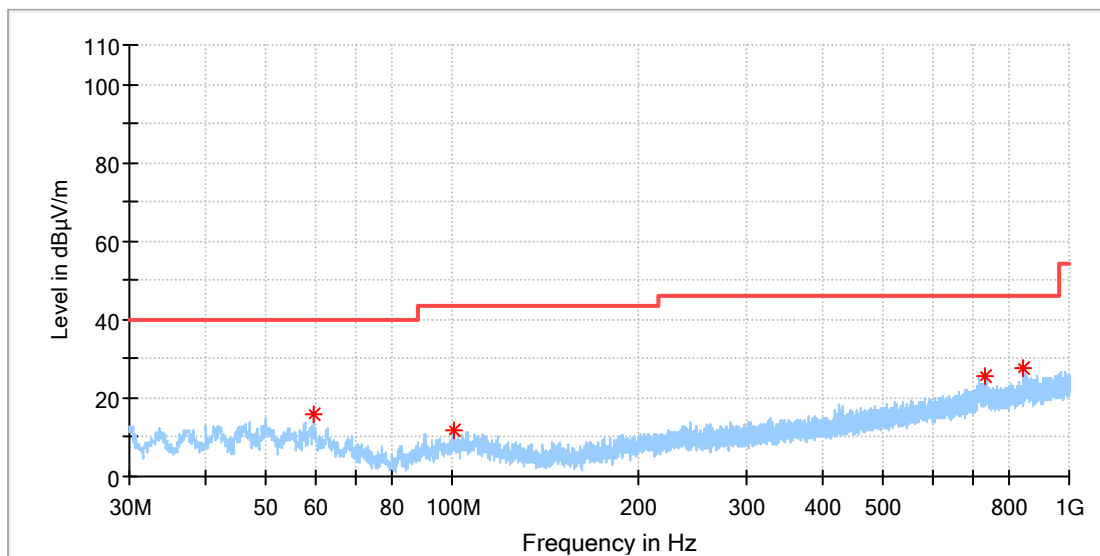
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.982000	27.47	---	40.00	12.53	100.0	V	271.0	-18.6
60.797500	27.11	---	40.00	12.89	100.0	V	169.0	-19.5
103.089500	14.83	---	43.50	28.67	100.0	V	328.0	-19.2
854.500000	27.02	---	46.00	18.98	100.0	V	85.0	-5.9

Produkte
Products

EUT Information

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



Critical_Freqs

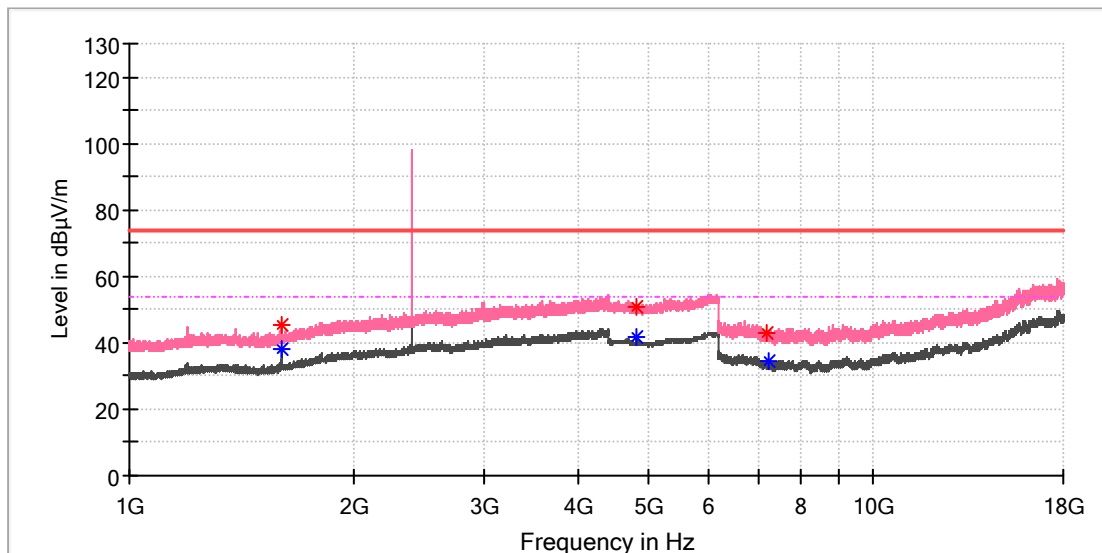
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.730500	15.61	---	40.00	24.39	100.0	H	183.0	-19.3
100.470500	11.68	---	43.50	31.82	100.0	H	327.0	-19.3
729.661000	25.51	---	46.00	20.49	100.0	H	218.0	-7.9
845.042500	27.38	---	46.00	18.62	100.0	H	238.0	-6.0

Produkte
Products

1GHz - 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
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



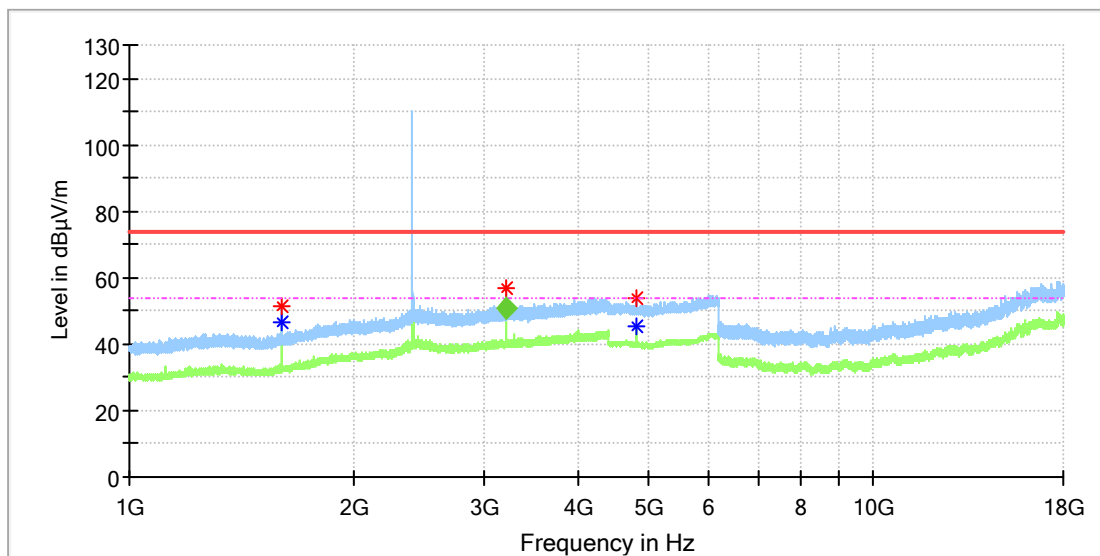
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1598.400000	45.25	---	74.00	28.75	100.0	V	352.0	2.1
1601.375000	---	38.22	54.00	15.78	100.0	V	59.0	2.1
4803.500000	---	41.51	54.00	12.49	100.0	V	52.0	13.6
4807.500000	50.63	---	74.00	23.37	100.0	V	137.0	13.6
7209.883333	42.98	---	74.00	31.02	100.0	V	216.0	8.7
7212.341667	---	34.25	54.00	19.75	100.0	V	229.0	8.7

Produkte
Products

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Low channel
 Test Voltage: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

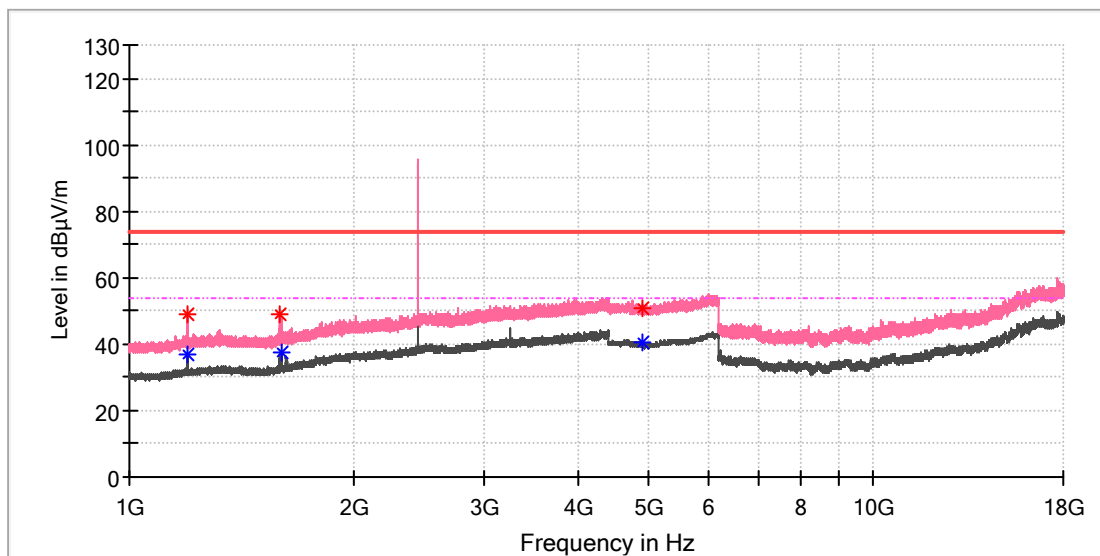


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1600.737500	51.21	---	74.00	22.79	100.0	H	99.0	2.1
1601.587500	---	46.83	54.00	7.17	100.0	H	99.0	2.1
3202.562500	56.83	---	74.00	17.17	100.0	H	11.0	8.6
4803.500000	---	45.20	54.00	8.80	100.0	H	147.0	13.6
4804.000000	53.56	---	74.00	20.44	100.0	H	131.0	13.6

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Mid channel
 Test Voltage: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



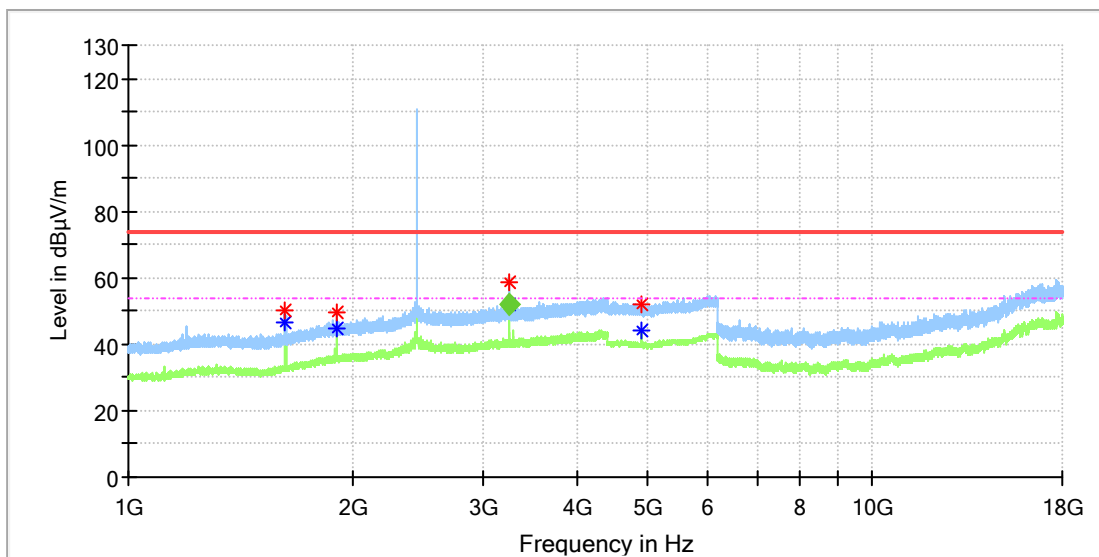
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.137500	49.01	---	74.00	24.99	100.0	V	308.0	1.1
1199.750000	---	36.75	54.00	17.25	100.0	V	308.0	1.1
1596.275000	49.13	---	74.00	24.87	100.0	V	276.0	2.0
1598.612500	---	37.38	54.00	16.62	100.0	V	236.0	2.1
4880.500000	---	40.73	54.00	13.27	100.0	V	237.0	13.4
4882.000000	50.63	---	74.00	23.37	100.0	V	143.0	13.4

Produkte
Products

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Mid channel
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

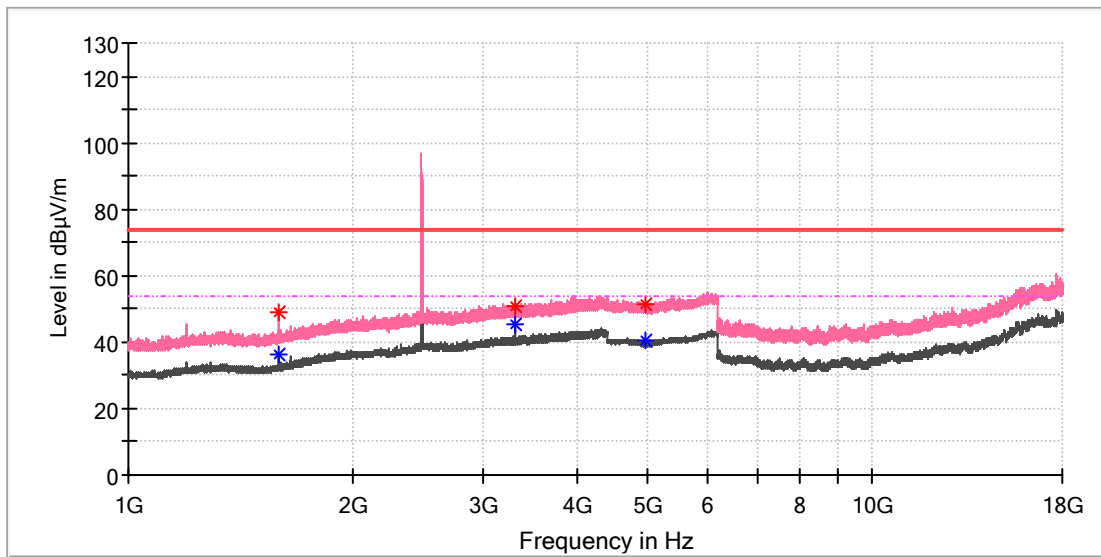


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1626.662500	---	46.30	54.00	7.70	100.0	H	97.0	2.4
1626.875000	50.22	---	74.00	23.78	100.0	H	97.0	2.4
1900.787500	---	44.72	54.00	9.28	100.0	H	85.0	5.6
1901.212500	49.81	---	74.00	24.19	100.0	H	85.0	5.6
3253.250625	58.47	---	74.00	15.53	100.0	H	202.0	8.5
3253.255000	---	51.93	54.00	2.07	100.0	H	204.0	8.5
4879.500000	51.77	---	74.00	22.23	100.0	H	68.0	13.4
4880.000000	---	43.87	54.00	10.13	100.0	H	33.0	13.4

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

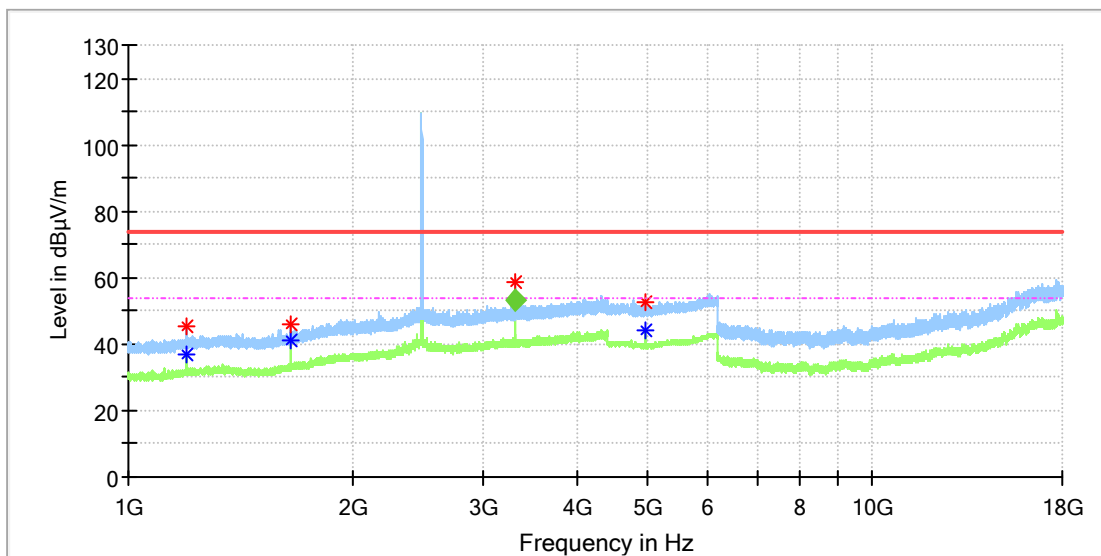


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1596.062500	---	36.10	54.00	17.90	100.0	V	279.0	2.0
1596.062500	48.83	---	74.00	25.17	100.0	V	279.0	2.0
3306.475000	50.98	---	74.00	23.02	100.0	V	67.0	8.6
3306.475000	---	45.37	54.00	8.63	100.0	V	67.0	8.6
4959.500000	---	40.72	54.00	13.28	100.0	V	219.0	13.2
4964.000000	51.10	---	74.00	22.90	100.0	V	359.0	13.2

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 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)
1198.900000	45.26	---	74.00	28.74	100.0	H	128.0	1.1
1198.900000	---	36.83	54.00	17.17	100.0	H	128.0	1.1
1653.012500	---	40.84	54.00	13.16	100.0	H	349.0	2.6
1653.862500	46.20	---	74.00	27.80	100.0	H	349.0	2.6
3306.687500	58.80	---	74.00	15.20	100.0	H	114.0	8.6
4954.500000	52.77	---	74.00	21.23	100.0	H	55.0	13.2
4960.000000	---	44.05	54.00	9.95	100.0	H	46.0	13.2

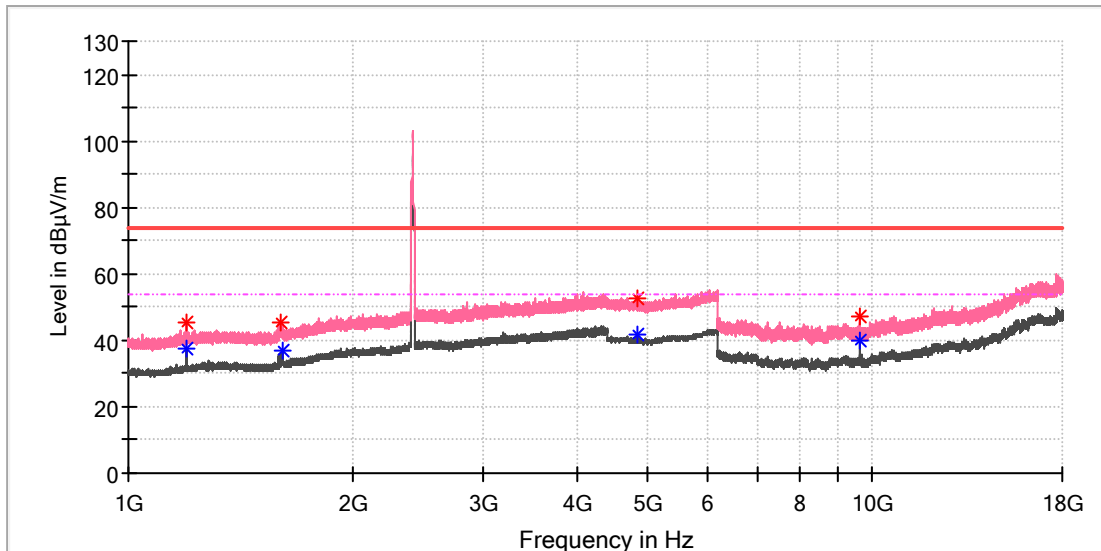
Final Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3306.625625	53.19	54.00	0.81	100.0	H	123.0	8.6

**Wi-Fi 802.11 b mode, 1 Mbps
1GHz - 18GHz**

EUT Information

EUT Name:	LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11b_Low CH
Test Voltage::	DC 3.3V From USB
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

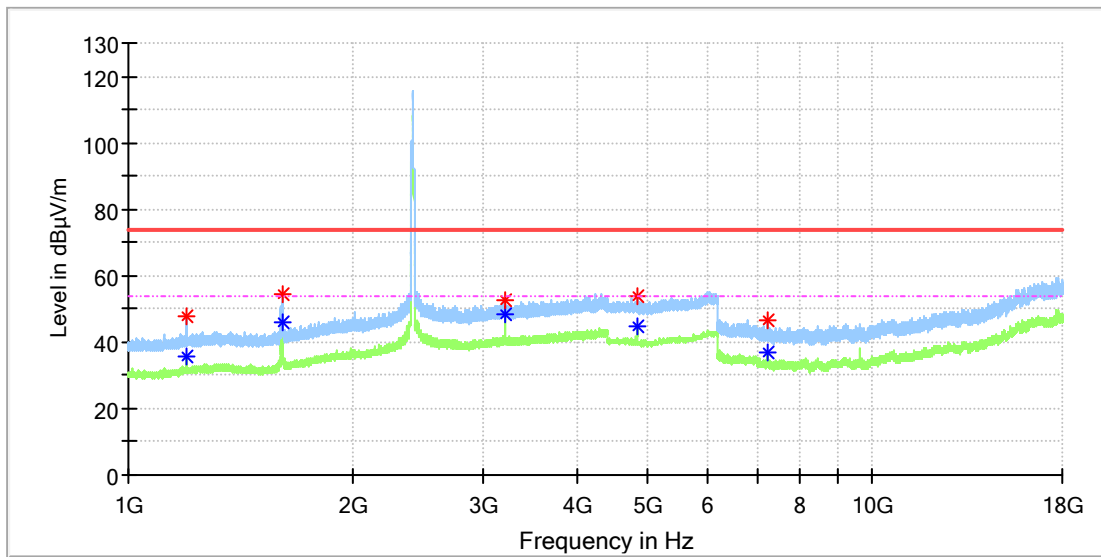


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1198.900000	---	37.58	54.00	16.42	100.0	V	314.0	1.1
1198.900000	45.46	---	74.00	28.54	100.0	V	314.0	1.1
1605.837500	45.48	---	74.00	28.52	100.0	V	260.0	2.2
1608.387500	---	37.10	54.00	16.90	100.0	V	355.0	2.2
4824.500000	---	41.63	54.00	12.37	100.0	V	239.0	13.5
4827.000000	52.73	---	74.00	21.27	100.0	V	122.0	13.5
9647.566667	---	39.76	54.00	14.24	100.0	V	171.0	10.4
9648.058333	47.03	---	74.00	26.97	100.0	V	68.0	10.4

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Low CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

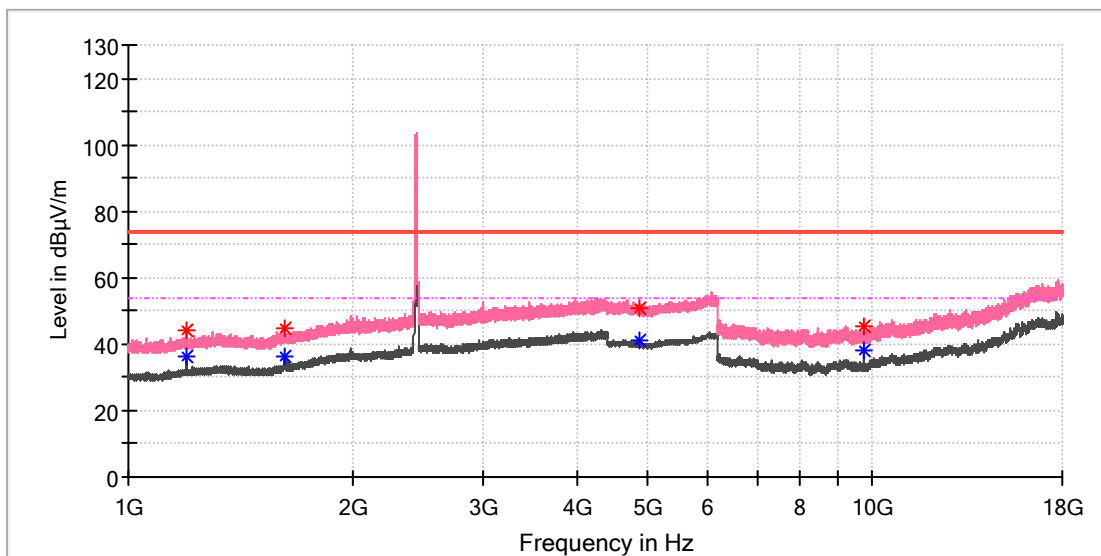


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1194.225000	---	35.91	54.00	18.09	100.0	H	127.0	1.1
1194.225000	47.71	---	74.00	26.29	100.0	H	127.0	1.1
1607.962500	54.41	---	74.00	19.59	100.0	H	24.0	2.2
1608.600000	---	45.73	54.00	8.27	100.0	H	24.0	2.2
3216.162500	---	48.51	54.00	5.49	100.0	H	290.0	8.6
3216.162500	52.89	---	74.00	21.11	100.0	H	290.0	8.6
4823.000000	---	44.61	54.00	9.39	100.0	H	107.0	13.5
4823.500000	53.88	---	74.00	20.12	100.0	H	107.0	13.5
7235.450000	46.40	---	74.00	27.60	100.0	H	262.0	8.6
7235.450000	---	36.71	54.00	17.29	100.0	H	262.0	8.6

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11b_Mid CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

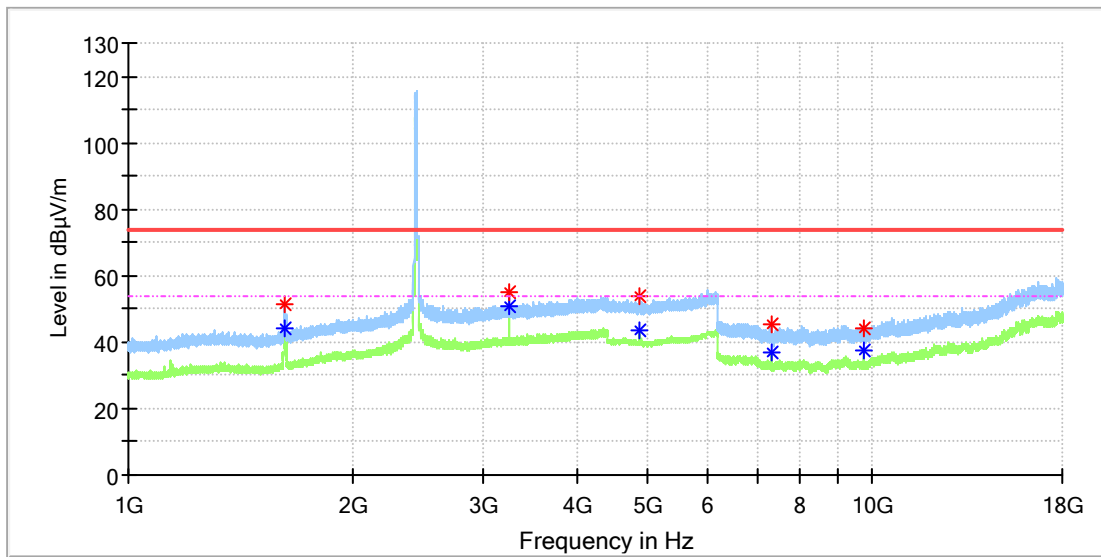


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.562500	43.93	---	74.00	30.07	100.0	V	302.0	1.1
1198.050000	---	36.14	54.00	17.86	100.0	V	302.0	1.1
1624.112500	---	36.08	54.00	17.92	100.0	V	191.0	2.3
1624.750000	44.70	---	74.00	29.30	100.0	V	66.0	2.3
4869.500000	51.05	---	74.00	22.95	100.0	V	156.0	13.4
4873.500000	---	40.84	54.00	13.16	100.0	V	247.0	13.4
9747.866667	45.08	---	74.00	28.92	100.0	V	78.0	10.4
9747.866667	---	38.39	54.00	15.61	100.0	V	78.0	10.4

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Mid CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

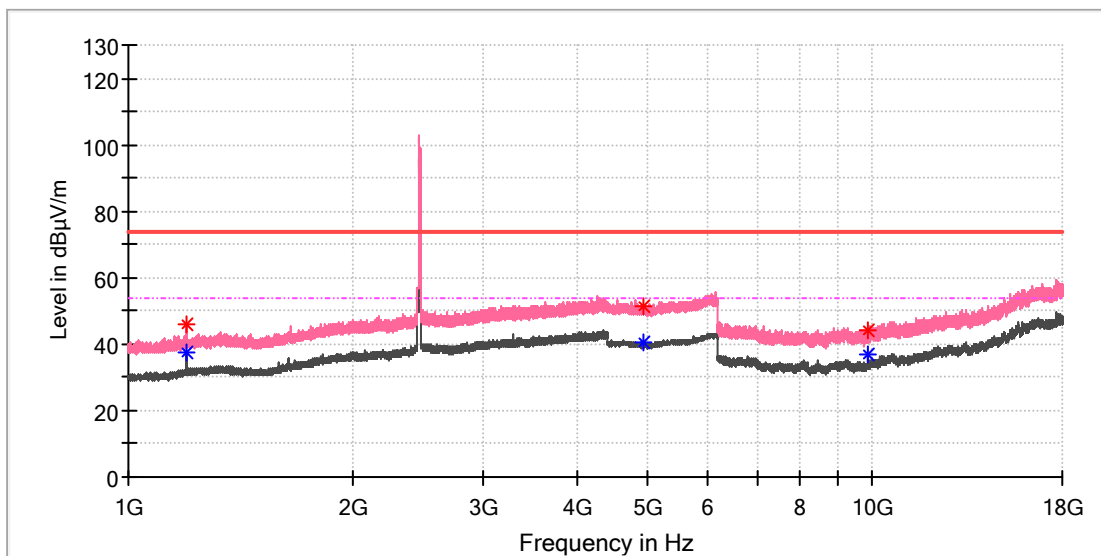


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1624.112500	---	44.21	54.00	9.79	100.0	H	17.0	2.3
1624.750000	51.34	---	74.00	22.66	100.0	H	17.0	2.3
3249.312500	---	50.66	54.00	3.34	100.0	H	208.0	8.5
3249.312500	54.76	---	74.00	19.24	100.0	H	208.0	8.5
4873.500000	53.70	---	74.00	20.30	100.0	H	173.0	13.4
4874.500000	---	43.37	54.00	10.63	100.0	H	173.0	13.4
7303.300000	45.35	---	74.00	28.65	100.0	H	265.0	8.3
7309.200000	---	37.13	54.00	16.87	100.0	H	265.0	8.2
9747.866667	---	37.34	54.00	16.66	100.0	H	355.0	10.4
9748.358333	44.28	---	74.00	29.72	100.0	H	228.0	10.4

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

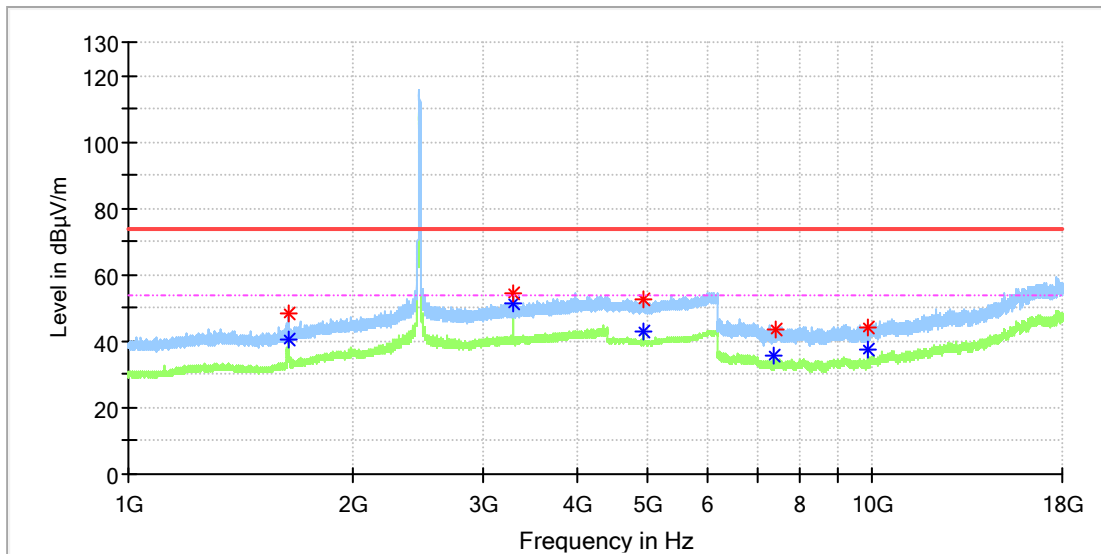


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1195.500000	---	37.48	54.00	16.52	100.0	V	232.0	1.1
1195.500000	45.78	---	74.00	28.22	100.0	V	232.0	1.1
4923.000000	---	40.70	54.00	13.30	100.0	V	99.0	13.3
4929.500000	51.15	---	74.00	22.85	100.0	V	38.0	13.3
9847.675000	---	37.08	54.00	16.92	100.0	V	291.0	10.6
9848.166667	44.19	---	74.00	29.81	100.0	V	86.0	10.6

EUT Information

EUT Name:	LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11b_High CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



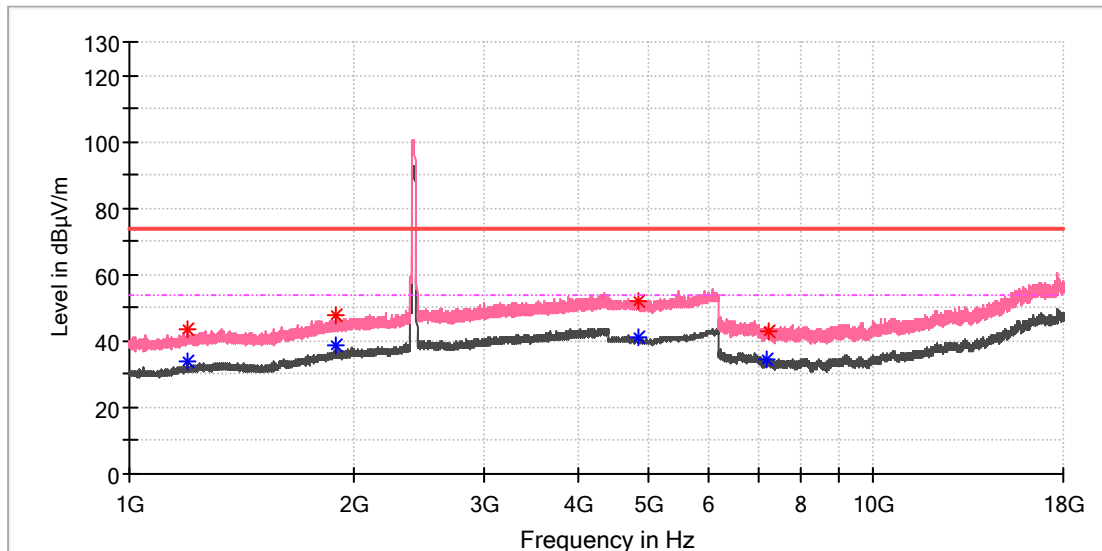
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1640.687500	---	40.52	54.00	13.48	100.0	H	29.0	2.5
1641.325000	48.67	---	74.00	25.33	100.0	H	29.0	2.5
3282.462500	54.58	---	74.00	19.42	100.0	H	124.0	8.5
3282.675000	---	51.42	54.00	2.58	100.0	H	106.0	8.5
4923.000000	---	42.79	54.00	11.21	100.0	H	268.0	13.3
4923.000000	52.76	---	74.00	21.24	100.0	H	268.0	13.3
7384.425000	---	35.96	54.00	18.04	100.0	H	4.0	8.2
7393.766667	43.82	---	74.00	30.18	100.0	H	269.0	8.3
9847.675000	44.07	---	74.00	29.93	100.0	H	37.0	10.6
9848.166667	---	37.61	54.00	16.39	100.0	H	143.0	10.6

Wi-Fi 802.11 g mode, 6Mbps
1GHz - 18GHz

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11g_Low CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

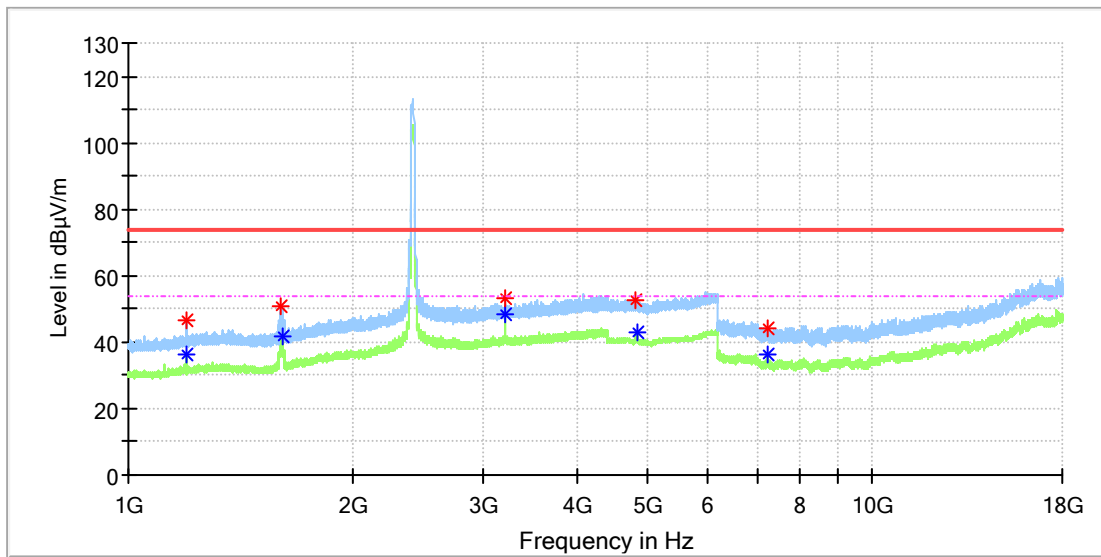


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1194.862500	43.45	---	74.00	30.55	100.0	V	324.0	1.1
1194.862500	---	33.91	54.00	20.09	100.0	V	324.0	1.1
1900.150000	---	38.97	54.00	15.03	100.0	V	303.0	5.6
1900.150000	48.04	---	74.00	25.96	100.0	V	303.0	5.6
4820.500000	---	40.89	54.00	13.11	100.0	V	231.0	13.5
4832.000000	52.16	---	74.00	21.84	100.0	V	182.0	13.5
7208.900000	---	34.48	54.00	19.52	100.0	V	142.0	8.8
7215.291667	42.87	---	74.00	31.13	100.0	V	45.0	8.7

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_Low CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

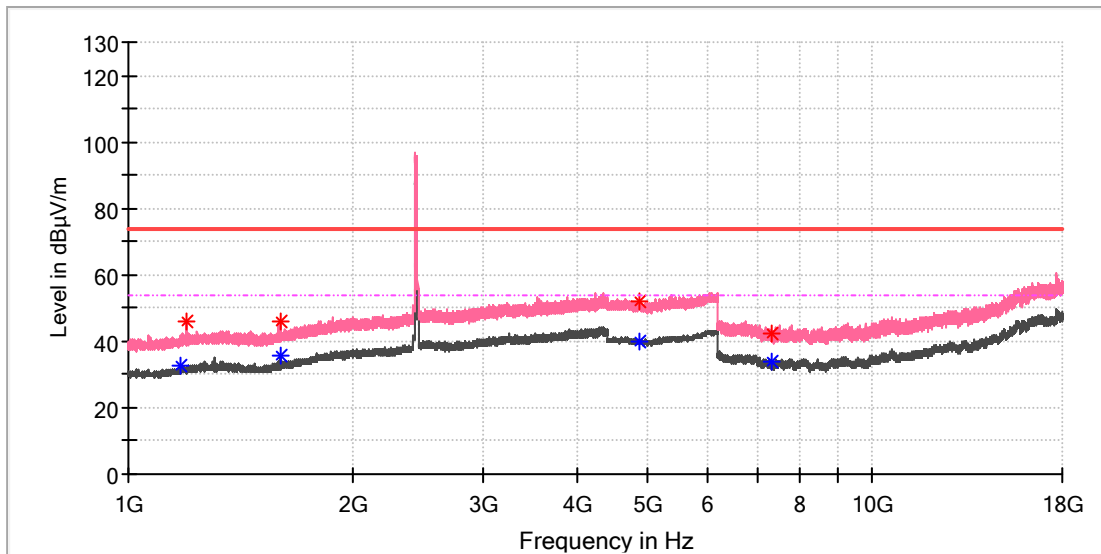


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1197.412500	---	36.18	54.00	17.82	100.0	H	87.0	1.1
1197.412500	46.57	---	74.00	27.43	100.0	H	87.0	1.1
1606.262500	50.49	---	74.00	23.51	100.0	H	18.0	2.2
1609.450000	---	41.70	54.00	12.30	100.0	H	18.0	2.2
3215.950000	53.10	---	74.00	20.90	100.0	H	294.0	8.6
3215.950000	---	48.22	54.00	5.78	100.0	H	294.0	8.6
4811.000000	52.90	---	74.00	21.10	100.0	H	64.0	13.6
4819.500000	---	42.92	54.00	11.08	100.0	H	107.0	13.5
7231.025000	44.14	---	74.00	29.86	100.0	H	265.0	8.6
7237.908333	---	36.27	54.00	17.73	100.0	H	248.0	8.6

EUT Information

EUT Name:	LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11g_Mid CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

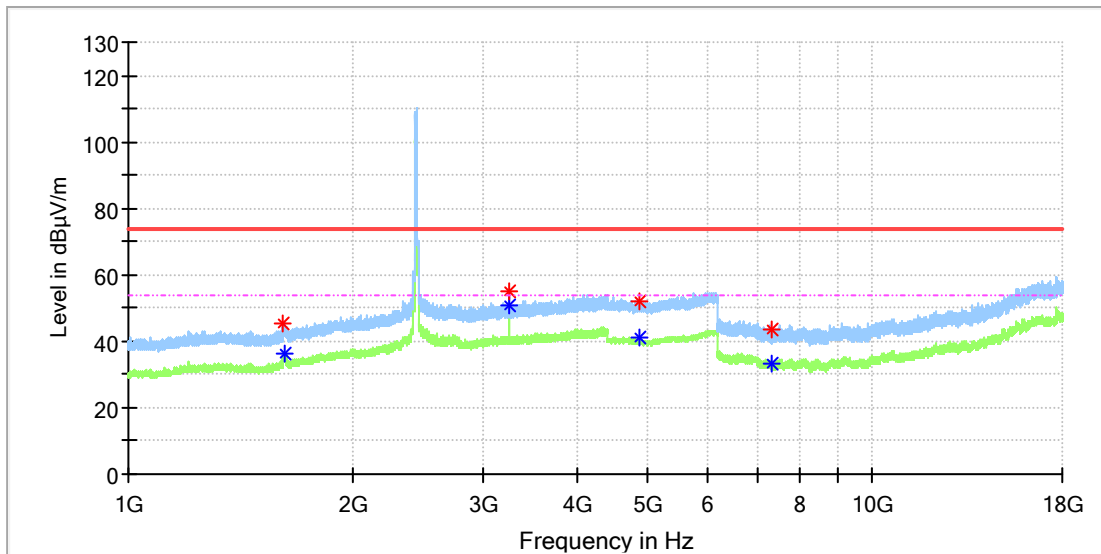


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1176.587500	---	32.80	54.00	21.20	100.0	V	256.0	1.0
1196.775000	45.77	---	74.00	28.23	100.0	V	276.0	1.1
1598.612500	---	35.55	54.00	18.45	100.0	V	194.0	2.1
1598.825000	45.74	---	74.00	28.26	100.0	V	194.0	2.1
4871.000000	---	39.98	54.00	14.02	100.0	V	218.0	13.4
4872.500000	51.72	---	74.00	22.28	100.0	V	233.0	13.4
7306.250000	---	33.89	54.00	20.11	100.0	V	115.0	8.3
7309.691667	42.56	---	74.00	31.44	100.0	V	174.0	8.2

EUT Information

EUT Name:	LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11g_Mid CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

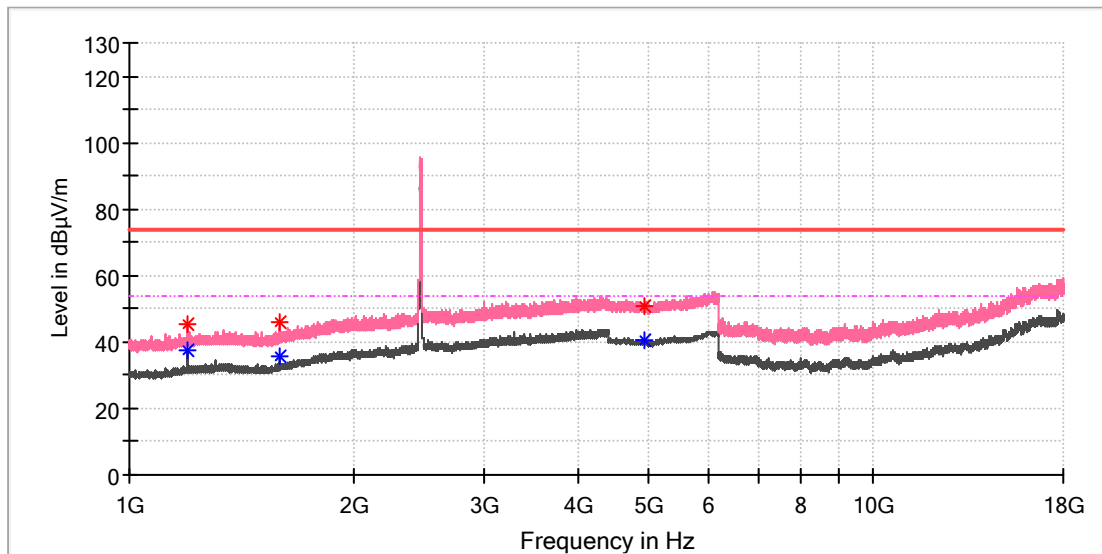


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1615.825000	45.12	---	74.00	28.88	100.0	H	56.0	2.3
1620.075000	---	36.42	54.00	17.58	100.0	H	84.0	2.3
3249.312500	55.00	---	74.00	19.00	100.0	H	314.0	8.5
3249.312500	---	50.95	54.00	3.05	100.0	H	314.0	8.5
4866.000000	51.85	---	74.00	22.15	100.0	H	96.0	13.4
4872.000000	---	40.85	54.00	13.15	100.0	H	107.0	13.4
7312.641667	43.30	---	74.00	30.70	100.0	H	305.0	8.2
7315.591667	---	33.55	54.00	20.45	100.0	H	355.0	8.2

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11g_High CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

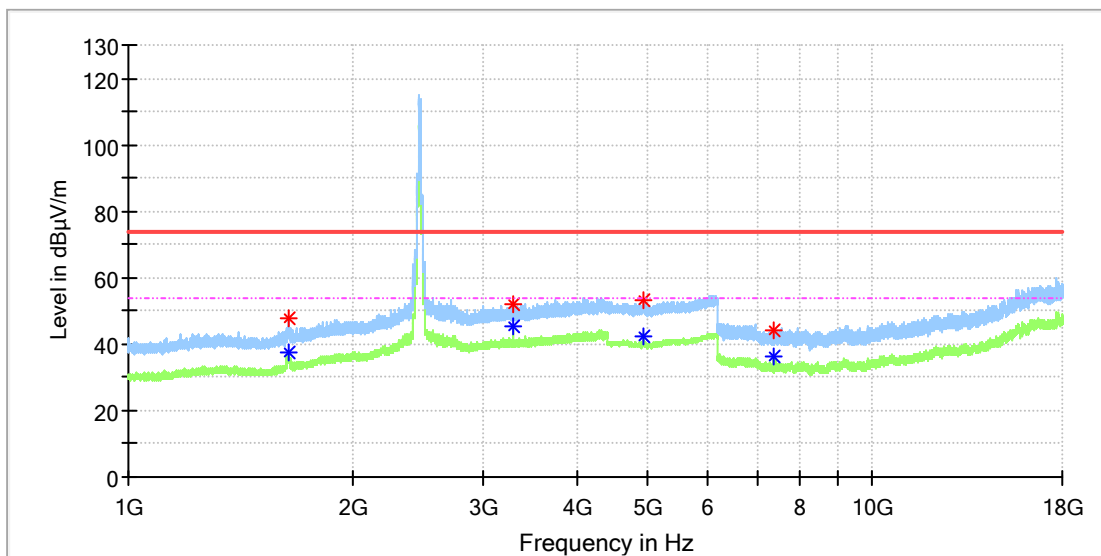


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1198.050000	45.58	---	74.00	28.42	100.0	V	332.0	1.1
1198.050000	---	37.27	54.00	16.73	100.0	V	332.0	1.1
1593.937500	46.16	---	74.00	27.84	100.0	V	191.0	2.0
1593.937500	---	35.42	54.00	18.58	100.0	V	191.0	2.0
4924.000000	---	40.29	54.00	13.71	100.0	V	188.0	13.3
4924.500000	50.99	---	74.00	23.01	100.0	V	146.0	13.3

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11g_High CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



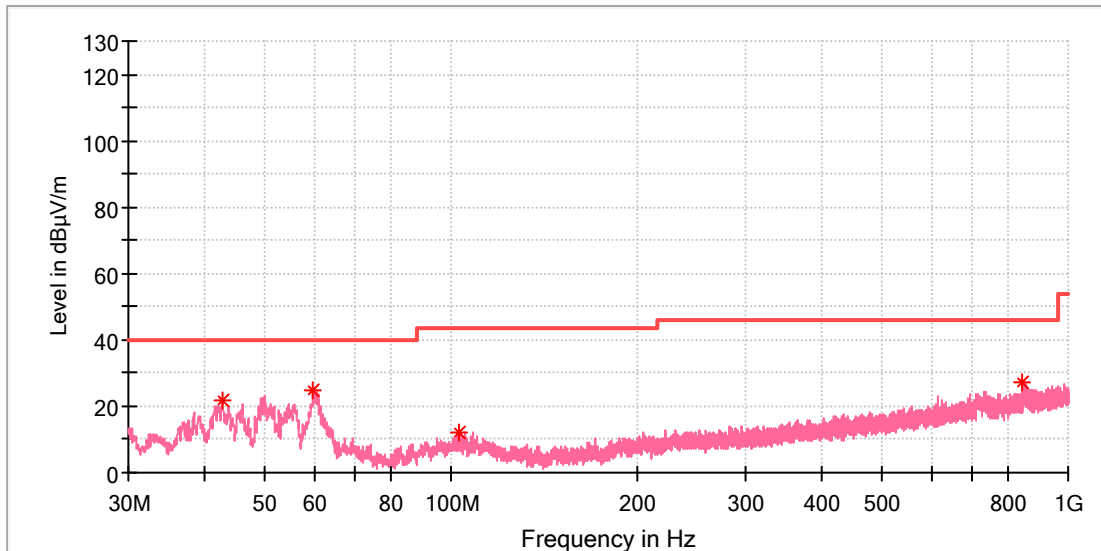
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1641.537500	47.57	---	74.00	26.43	100.0	H	227.0	2.5
1644.300000	---	37.22	54.00	16.78	100.0	H	138.0	2.5
3282.250000	51.73	---	74.00	22.27	100.0	H	138.0	8.5
3282.462500	---	45.05	54.00	8.95	100.0	H	153.0	8.5
4917.500000	---	42.47	54.00	11.53	100.0	H	185.0	13.3
4925.000000	53.42	---	74.00	20.58	100.0	H	185.0	13.3
7380.983333	44.35	---	74.00	29.65	100.0	H	308.0	8.2
7381.966667	---	36.04	54.00	17.96	100.0	H	289.0	8.2

**Wi-Fi 802.11 n(HT20) mode, MCS0
30MHz - 1GHz**

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11n 20M_Low CH
Test Voltage::	DC 5V
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

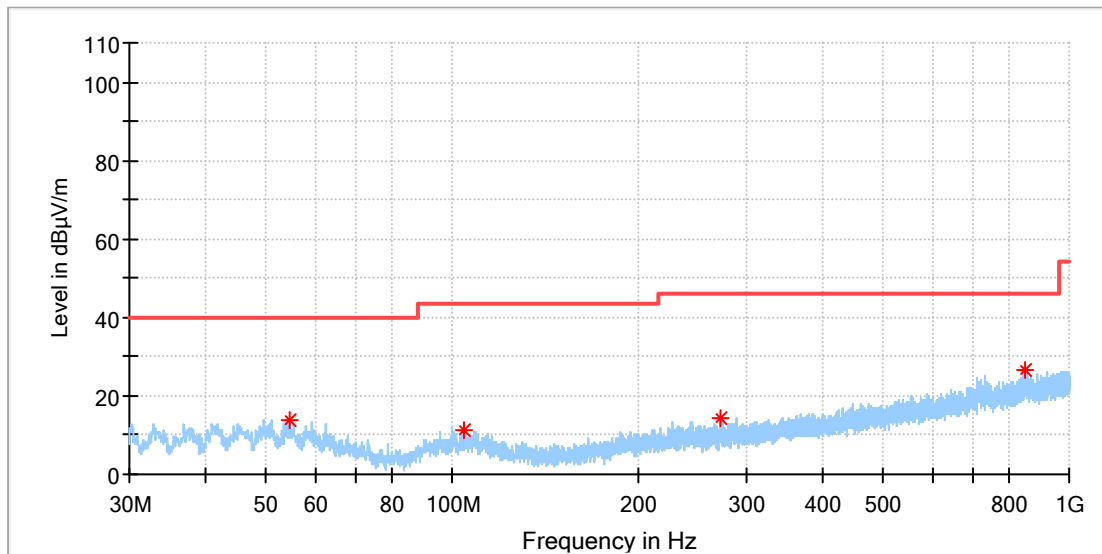


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.561500	21.58	---	40.00	18.42	100.0	V	146.0	-19.7
59.827500	24.74	---	40.00	15.26	100.0	V	53.0	-19.3
103.089500	12.36	---	43.50	31.14	100.0	V	256.0	-19.2
844.848500	27.22	---	46.00	18.78	100.0	V	0.0	-6.0

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 20M_Low CH
 Test Voltage:: DC 5V
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

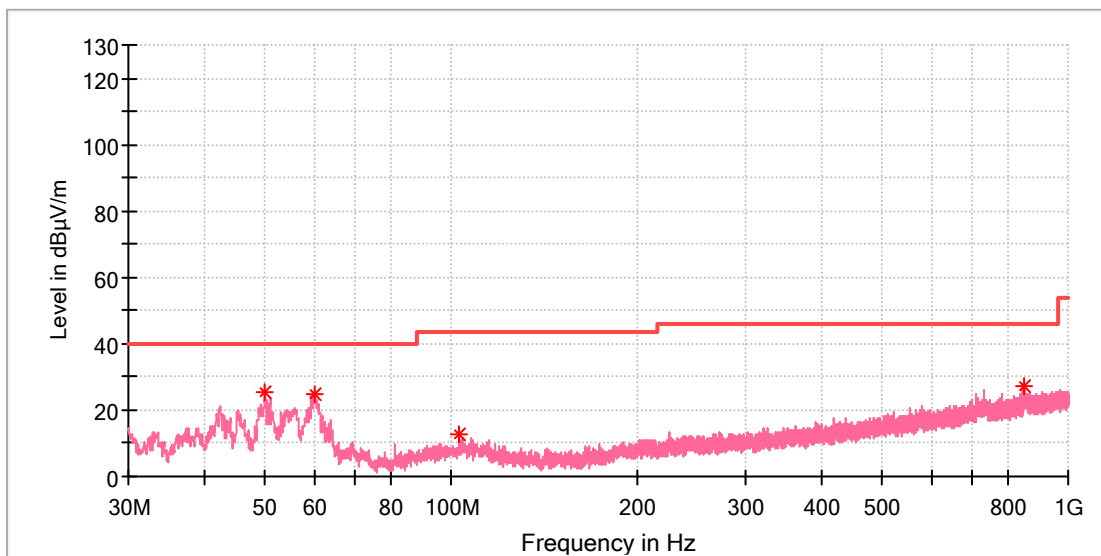


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
54.589500	13.94	---	40.00	26.06	100.0	H	167.0	-18.7
104.932500	11.42	---	43.50	32.08	100.0	H	297.0	-19.1
271.869500	14.54	---	46.00	31.46	100.0	H	249.0	-17.2
845.236500	26.55	---	46.00	19.45	100.0	H	39.0	-6.0

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 20M_High CH
 Test Voltage:: DC 5V
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

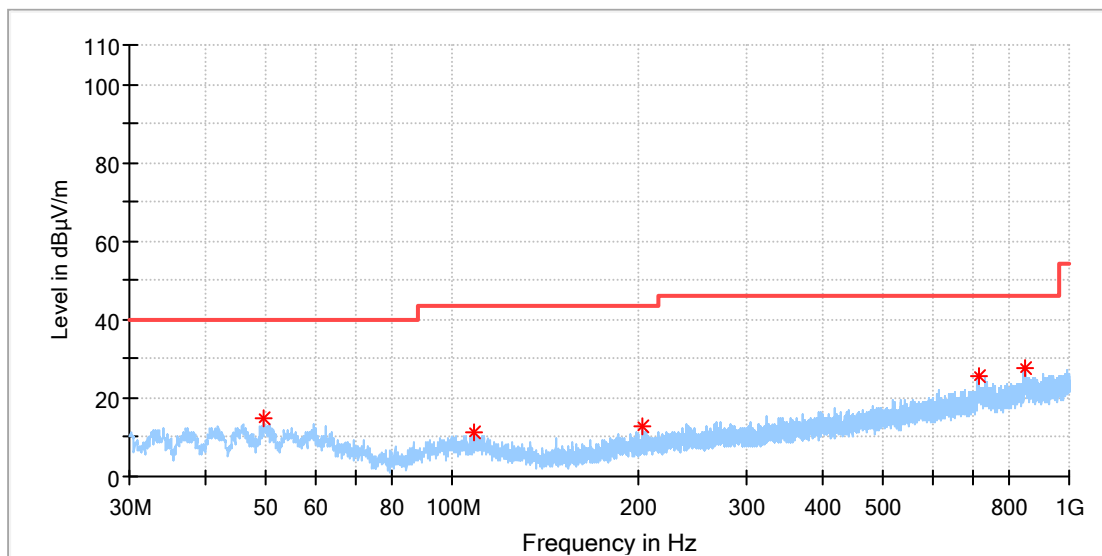


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.982000	25.27	---	40.00	14.73	100.0	V	327.0	-18.6
59.973000	24.64	---	40.00	15.36	100.0	V	347.0	-19.3
103.089500	12.80	---	43.50	30.70	100.0	V	0.0	-19.2
848.971000	26.98	---	46.00	19.02	100.0	V	274.0	-5.9

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 20M_High CH
 Test Voltage:: DC 5V
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



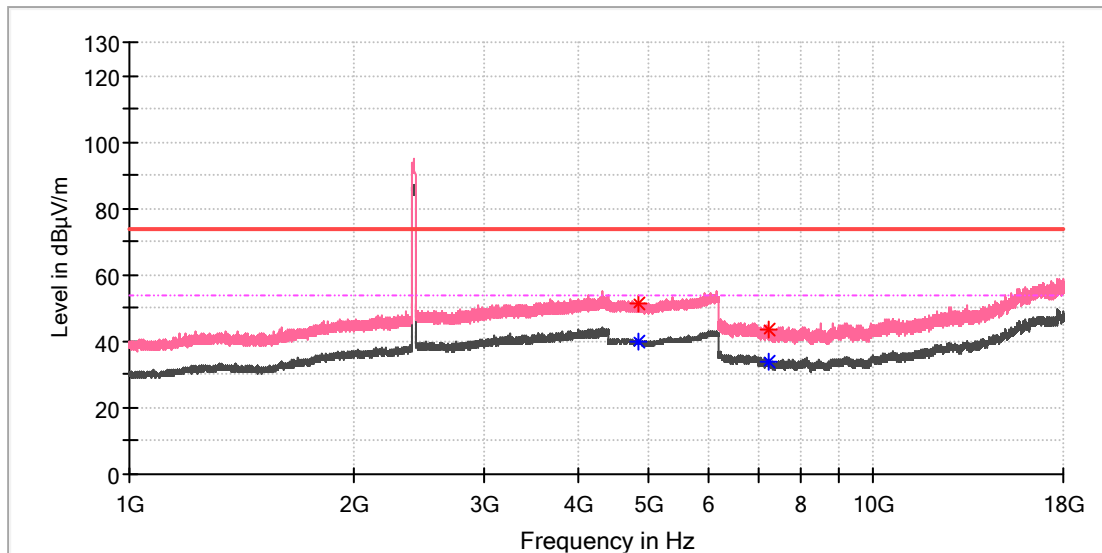
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.642500	14.94	---	40.00	25.06	100.0	H	119.0	-18.6
108.473000	11.28	---	43.50	32.22	100.0	H	110.0	-19.3
203.727000	12.82	---	43.50	30.68	100.0	H	110.0	-19.3
713.268000	25.76	---	46.00	20.24	100.0	H	188.0	-8.2
847.516000	27.40	---	46.00	18.60	100.0	H	188.0	-6.0

1GHz - 18GHz

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 20M_Low CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

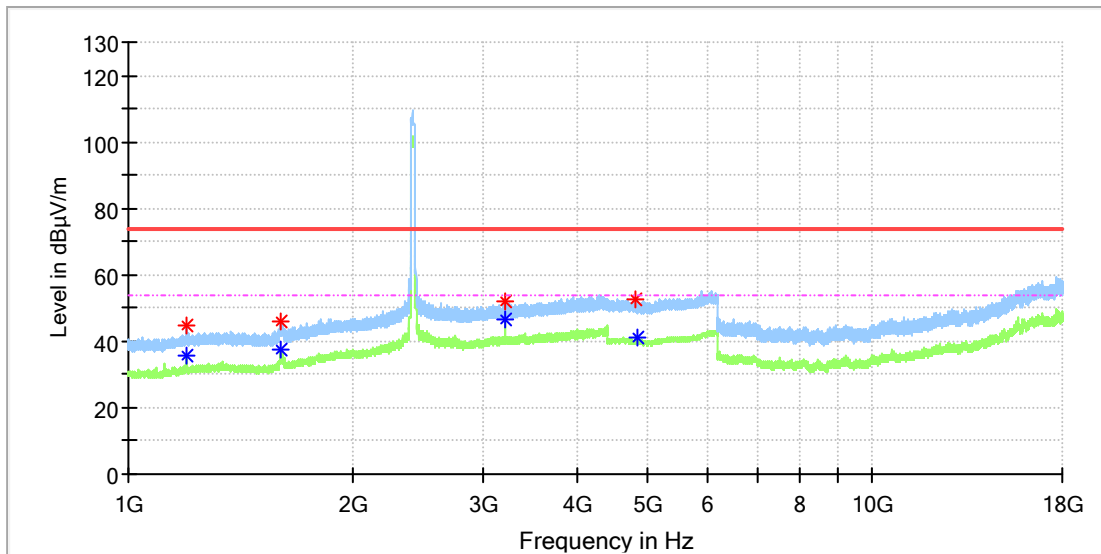


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4819.000000	51.42	---	74.00	22.58	100.0	V	352.0	13.5
4822.500000	---	40.10	54.00	13.90	100.0	V	118.0	13.5
7236.925000	43.37	---	74.00	30.63	100.0	V	224.0	8.6
7239.875000	---	33.93	54.00	20.07	100.0	V	28.0	8.6

EUT Information

EUT Name:	LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11n 20M_Low CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

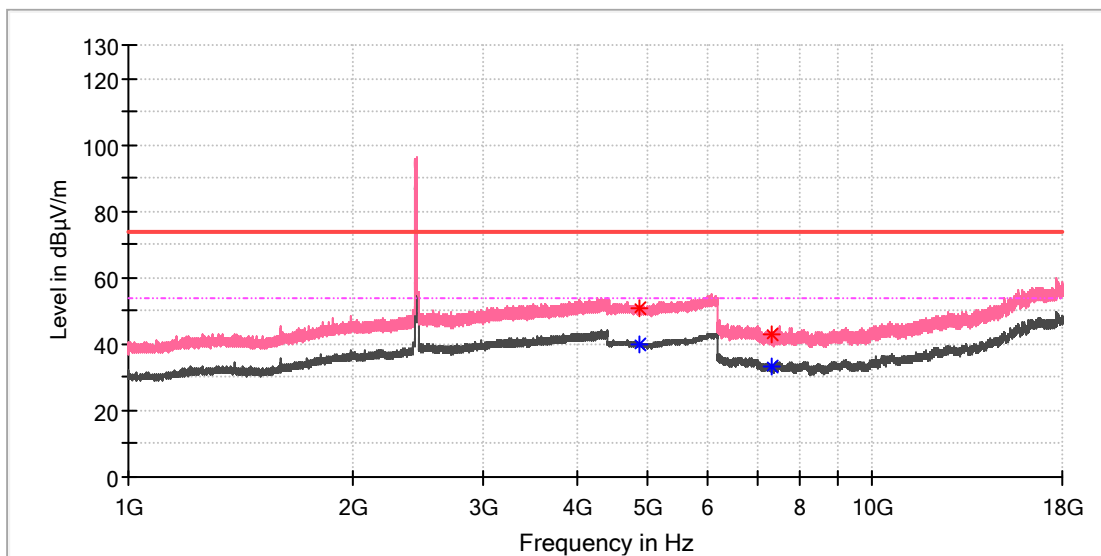


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1198.475000	44.56	---	74.00	29.44	100.0	H	155.0	1.1
1198.475000	---	35.52	54.00	18.48	100.0	H	155.0	1.1
1605.837500	45.73	---	74.00	28.27	100.0	H	31.0	2.2
1605.837500	---	37.41	54.00	16.59	100.0	H	31.0	2.2
3215.950000	---	46.33	54.00	7.67	100.0	H	320.0	8.6
3216.162500	51.99	---	74.00	22.01	100.0	H	307.0	8.6
4815.000000	52.79	---	74.00	21.21	100.0	H	110.0	13.5
4820.000000	---	41.41	54.00	12.59	100.0	H	101.0	13.5

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 20M_Mid CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

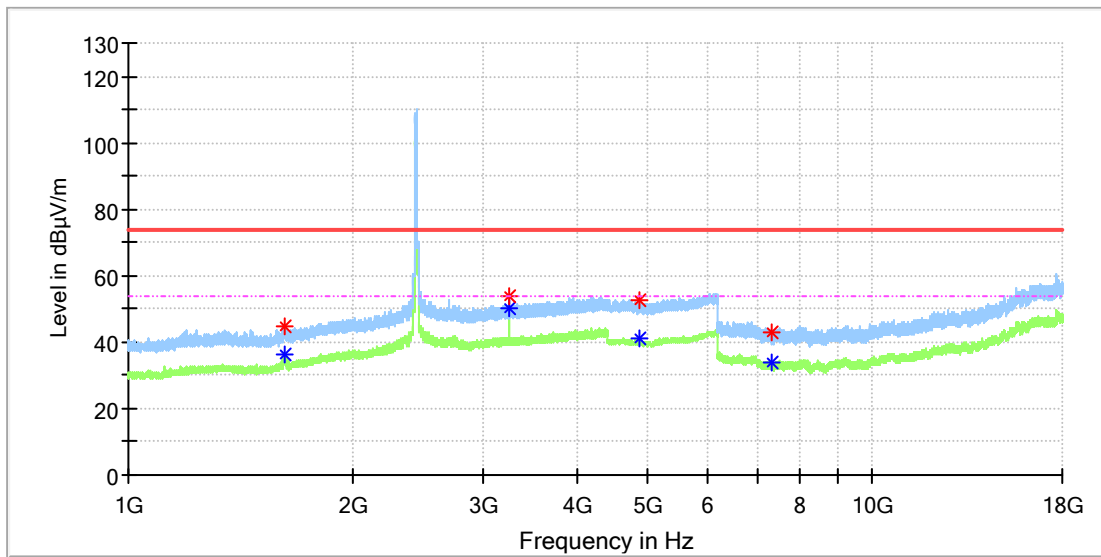


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4873.500000	---	39.87	54.00	14.13	100.0	V	279.0	13.4
4875.500000	51.00	---	74.00	23.00	100.0	V	0.0	13.4
7310.183333	42.65	---	74.00	31.35	100.0	V	306.0	8.2
7311.166667	---	33.47	54.00	20.53	100.0	V	142.0	8.2

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 20M_Mid CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

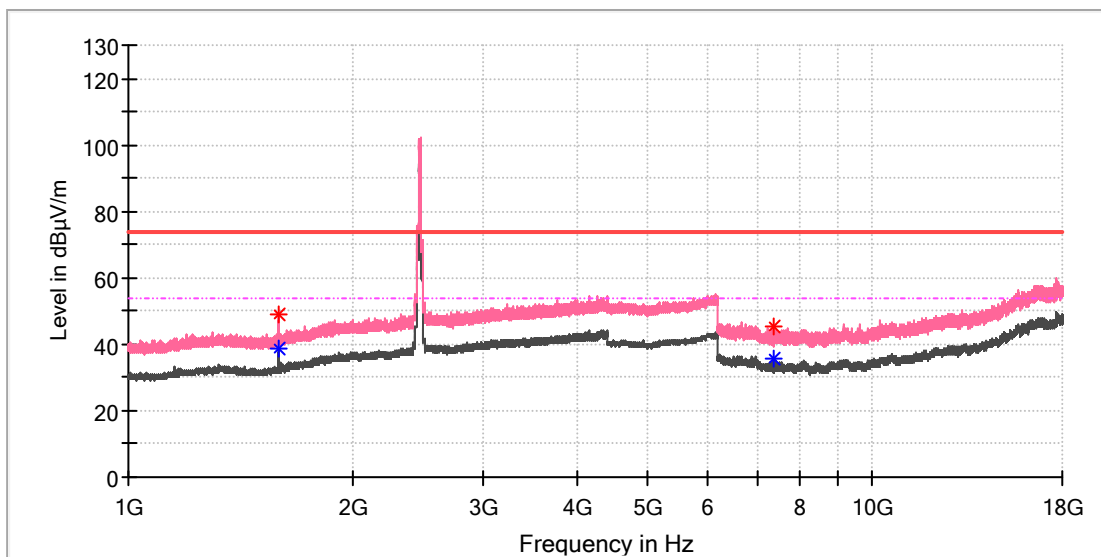


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1618.162500	45.03	---	74.00	28.97	100.0	H	32.0	2.3
1622.625000	---	36.51	54.00	17.49	100.0	H	235.0	2.3
3249.312500	53.69	---	74.00	20.31	100.0	H	130.0	8.5
3249.312500	---	50.19	54.00	3.81	100.0	H	130.0	8.5
4867.000000	52.40	---	74.00	21.60	100.0	H	65.0	13.4
4868.500000	---	40.89	54.00	13.11	100.0	H	248.0	13.4
7310.675000	42.90	---	74.00	31.10	100.0	H	321.0	8.2
7322.475000	---	33.85	54.00	20.15	100.0	H	286.0	8.2

EUT Information

EUT Name:	LA02301 Wi-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11n20_High CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

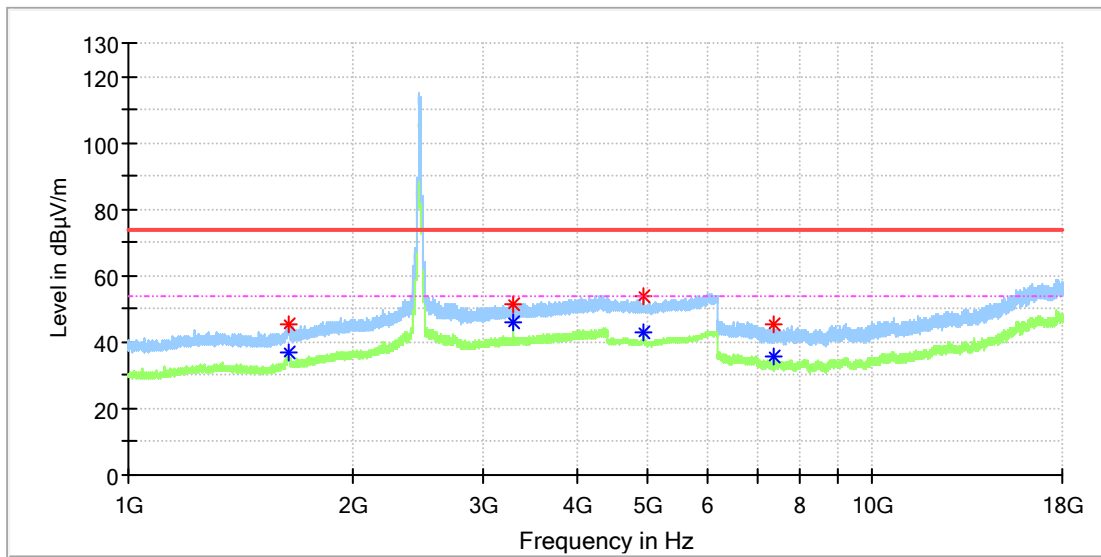


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1593.512500	48.97	---	74.00	25.03	100.0	V	249.0	2.0
1593.512500	---	38.99	54.00	15.01	100.0	V	249.0	2.0
7385.900000	---	35.61	54.00	18.39	100.0	V	179.0	8.2
7389.341667	45.53	---	74.00	28.47	100.0	V	179.0	8.2

EUT Information

EUT Name: LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n20_High CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



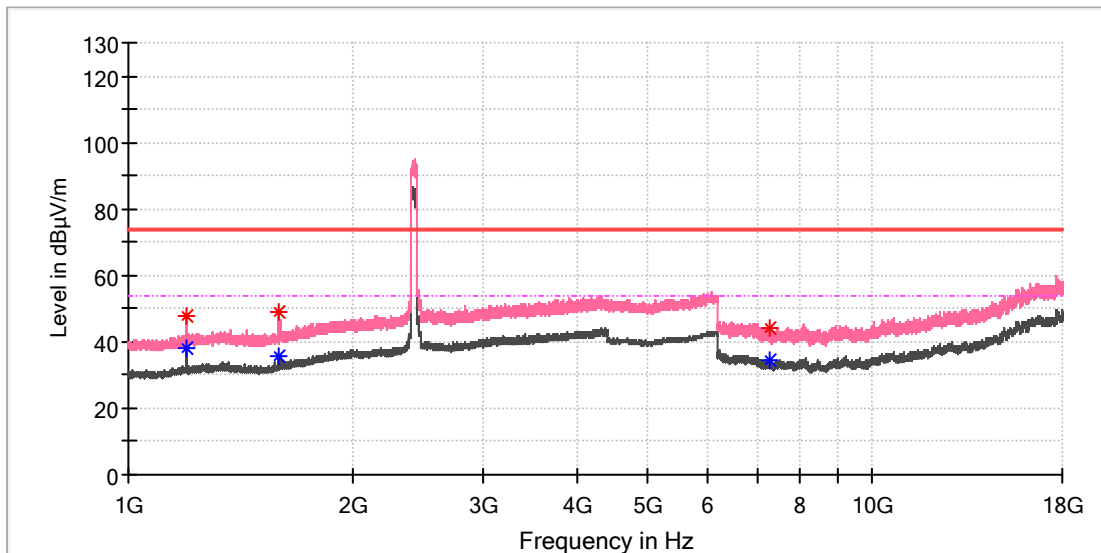
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1638.987500	---	36.69	54.00	17.31	100.0	H	221.0	2.5
1644.937500	45.35	---	74.00	28.65	100.0	H	262.0	2.5
3282.462500	---	45.76	54.00	8.24	100.0	H	139.0	8.5
3282.675000	51.45	---	74.00	22.55	100.0	H	152.0	8.5
4923.000000	---	42.99	54.00	11.01	100.0	H	189.0	13.3
4927.000000	53.92	---	74.00	20.08	100.0	H	189.0	13.3
7384.425000	---	35.73	54.00	18.27	100.0	H	335.0	8.2
7386.391667	45.29	---	74.00	28.71	100.0	H	335.0	8.2

Wi-Fi 802.11 n(HT40) mode, MCS0
1GHz - 18GHz

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11n 40M_Low CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

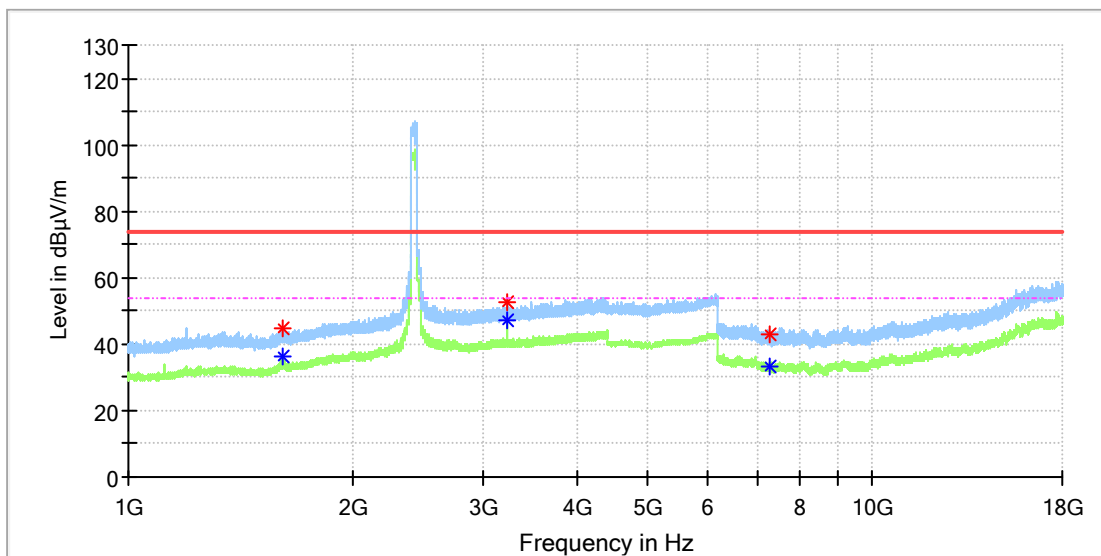


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1195.287500	47.81	---	74.00	26.19	100.0	V	345.0	1.1
1195.287500	---	37.87	54.00	16.13	100.0	V	345.0	1.1
1593.087500	---	35.71	54.00	18.29	100.0	V	233.0	2.0
1594.575000	48.93	---	74.00	25.07	100.0	V	300.0	2.0
7262.000000	43.87	---	74.00	30.13	100.0	V	166.0	8.5
7262.983333	---	34.39	54.00	19.61	100.0	V	320.0	8.5

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 40M_Low CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

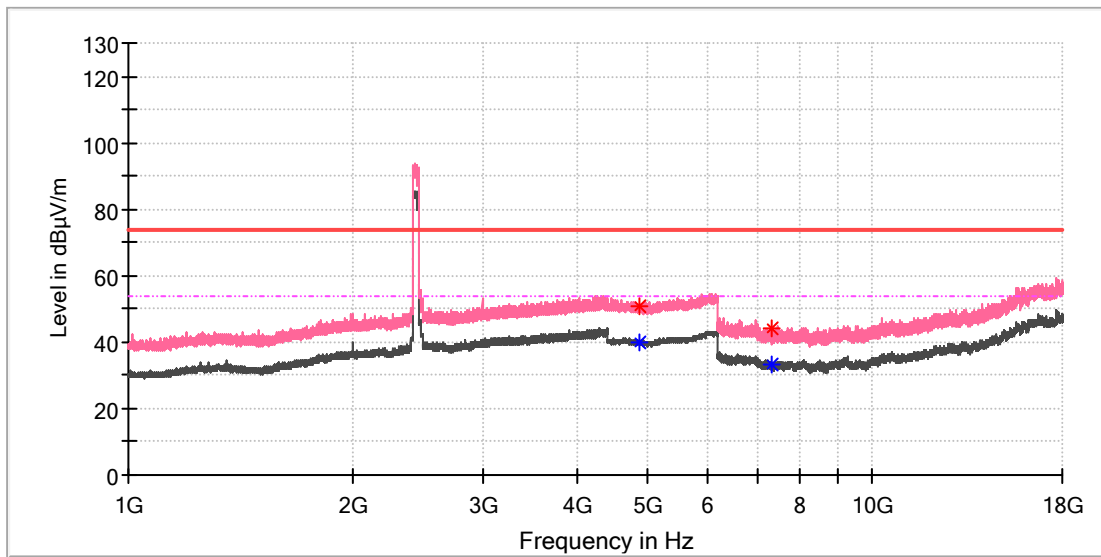


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1614.762500	---	36.36	54.00	17.64	100.0	H	40.0	2.2
1614.762500	44.95	---	74.00	29.05	100.0	H	40.0	2.2
3229.550000	---	47.03	54.00	6.97	100.0	H	323.0	8.5
3229.762500	52.42	---	74.00	21.58	100.0	H	253.0	8.5
7265.933333	43.06	---	74.00	30.94	100.0	H	179.0	8.5
7266.425000	---	33.47	54.00	20.53	100.0	H	104.0	8.5

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 40M_Mid CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

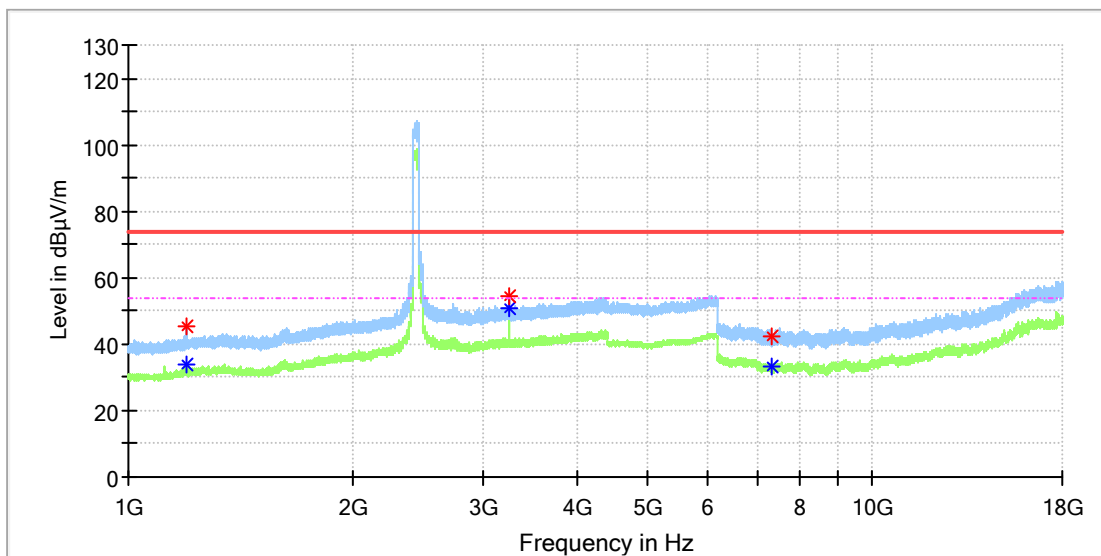


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4873.500000	---	40.00	54.00	14.00	100.0	V	120.0	13.4
4877.500000	50.66	---	74.00	23.34	100.0	V	192.0	13.4
7309.200000	---	33.38	54.00	20.62	100.0	V	95.0	8.2
7311.166667	44.24	---	74.00	29.76	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_11n 40M_Mid CH
 Test Voltage: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

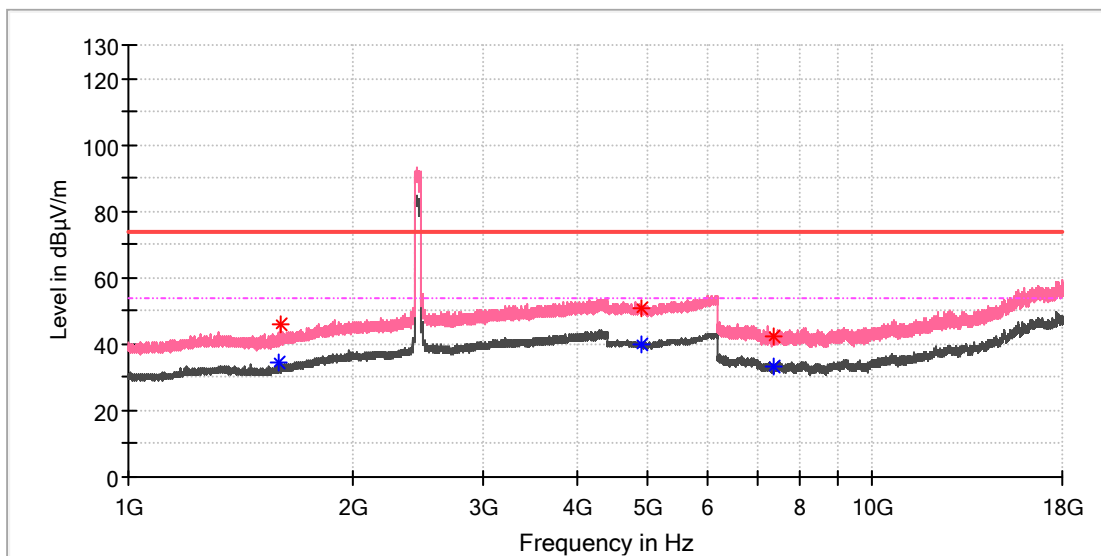


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.137500	45.43	---	74.00	28.57	100.0	H	205.0	1.1
1196.137500	---	34.06	54.00	19.94	100.0	H	205.0	1.1
3249.312500	54.12	---	74.00	19.88	100.0	H	153.0	8.5
3249.312500	---	51.00	54.00	3.00	100.0	H	153.0	8.5
7309.200000	---	33.51	54.00	20.49	100.0	H	227.0	8.2
7313.625000	42.56	---	74.00	31.44	100.0	H	170.0	8.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 40M_High CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

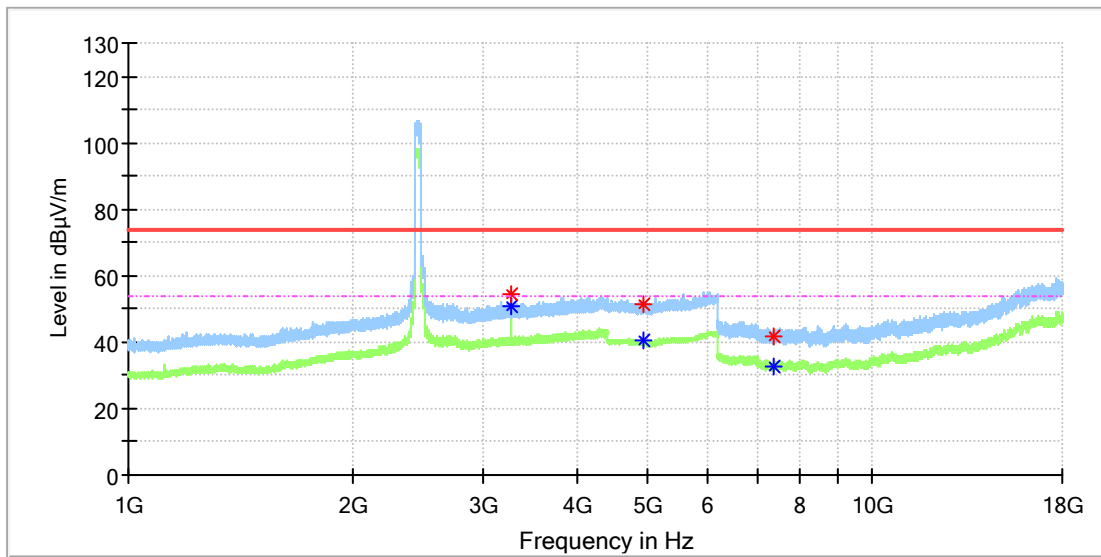


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1595.000000	---	34.74	54.00	19.26	100.0	V	323.0	2.0
1598.612500	45.71	---	74.00	28.29	100.0	V	343.0	2.1
4903.500000	---	40.20	54.00	13.80	100.0	V	129.0	13.3
4906.000000	51.05	---	74.00	22.95	100.0	V	250.0	13.3
7356.400000	42.44	---	74.00	31.56	100.0	V	343.0	8.1
7359.841667	---	33.37	54.00	20.63	100.0	V	101.0	8.1

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11n 40M_High CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical Freqs

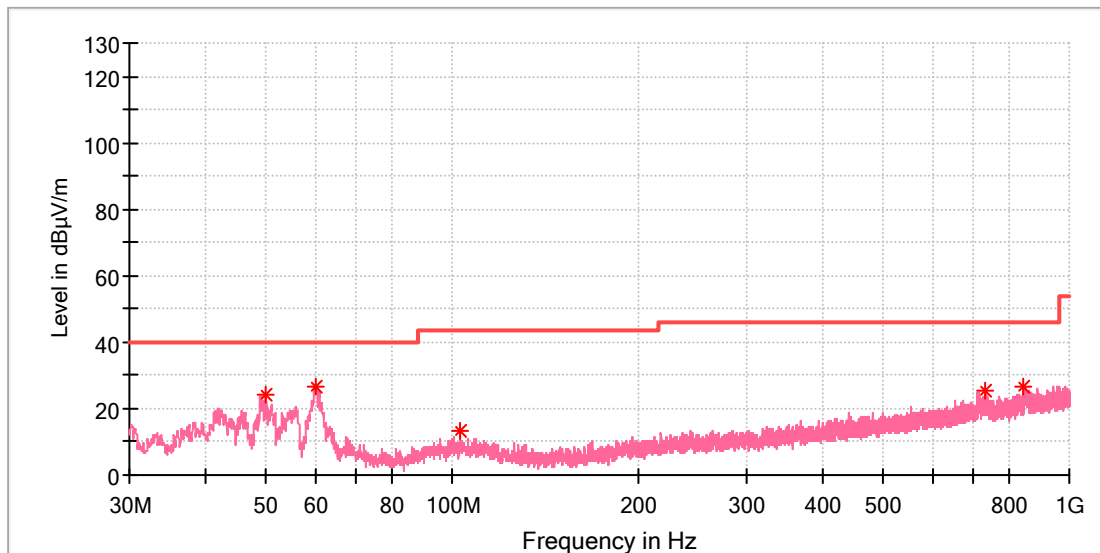
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3269.287500	54.27	---	74.00	19.73	100.0	H	250.0	8.5
3269.287500	---	50.88	54.00	3.12	100.0	H	250.0	8.5
4909.000000	---	40.42	54.00	13.58	100.0	H	263.0	13.3
4909.500000	51.47	---	74.00	22.53	100.0	H	357.0	13.3
7353.941667	41.53	---	74.00	32.47	100.0	H	163.0	8.1
7354.433333	---	32.83	54.00	21.17	100.0	H	55.0	8.1

Appendix B.2: Test Results of Radiated Spurious Emissions, configuration 2

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
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

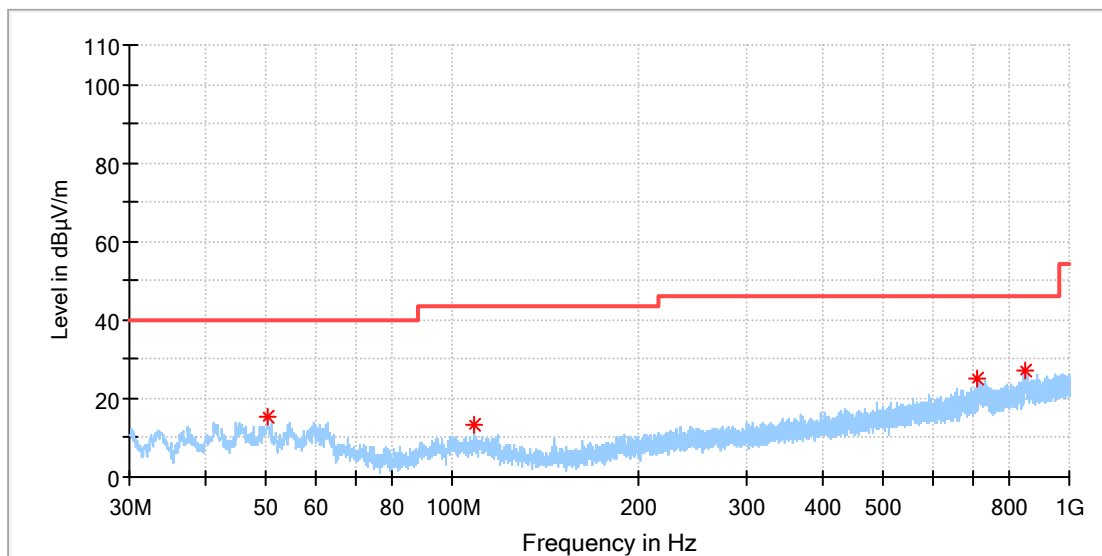


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.982000	24.10	---	40.00	15.90	100.0	V	223.0	-18.6
60.312500	26.54	---	40.00	13.46	100.0	V	20.0	-19.4
103.089500	13.18	---	43.50	30.32	100.0	V	281.0	-19.2
728.497000	25.57	---	46.00	20.43	100.0	V	111.0	-7.9
844.848500	26.38	---	46.00	19.62	100.0	V	252.0	-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
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

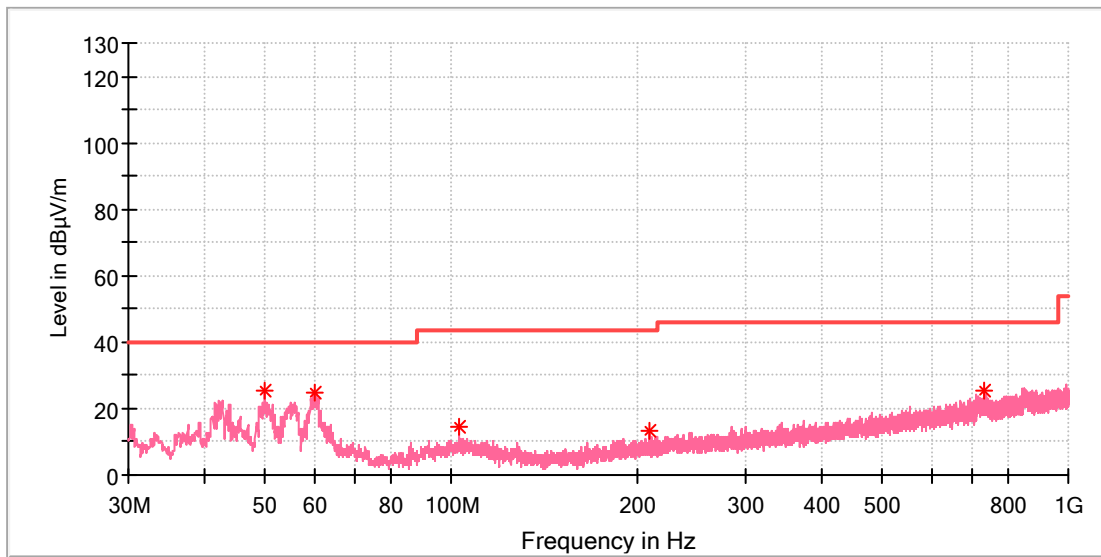


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
50.321500	15.25	---	40.00	24.75	100.0	H	289.0	-18.6
108.424500	13.10	---	43.50	30.40	100.0	H	0.0	-19.3
710.358000	24.82	---	46.00	21.18	100.0	H	37.0	-8.2
845.285000	27.03	---	46.00	18.97	100.0	H	10.0	-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
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

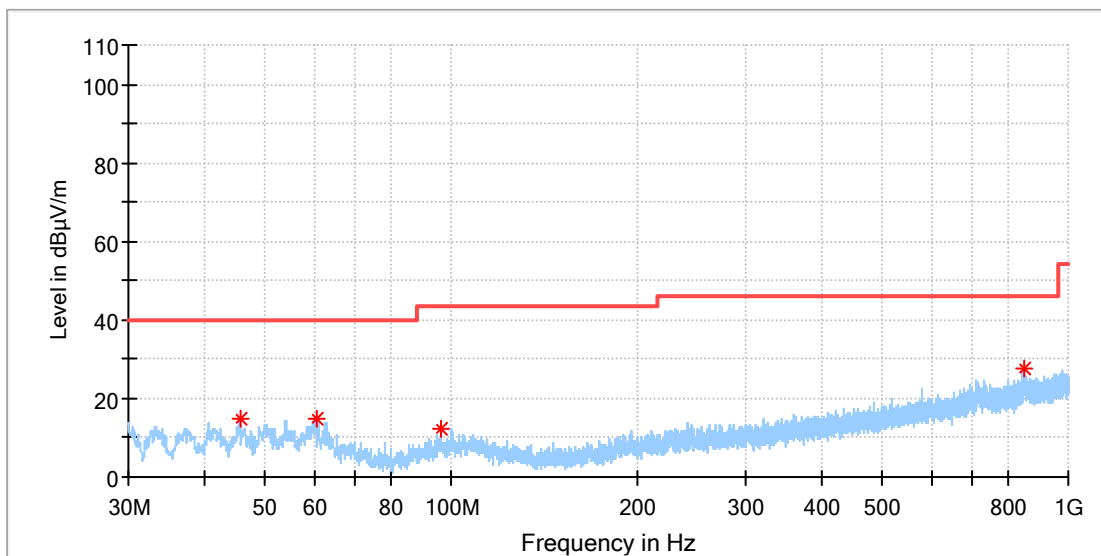


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.933500	25.43	---	40.00	14.57	100.0	V	281.0	-18.6
59.924500	24.68	---	40.00	15.32	100.0	V	331.0	-19.3
103.089500	14.22	---	43.50	29.28	100.0	V	249.0	-19.2
209.159000	13.13	---	43.50	30.37	100.0	V	311.0	-19.2
729.806500	25.13	---	46.00	20.87	100.0	V	34.0	-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
 Remark: Temp 23 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical Freqs

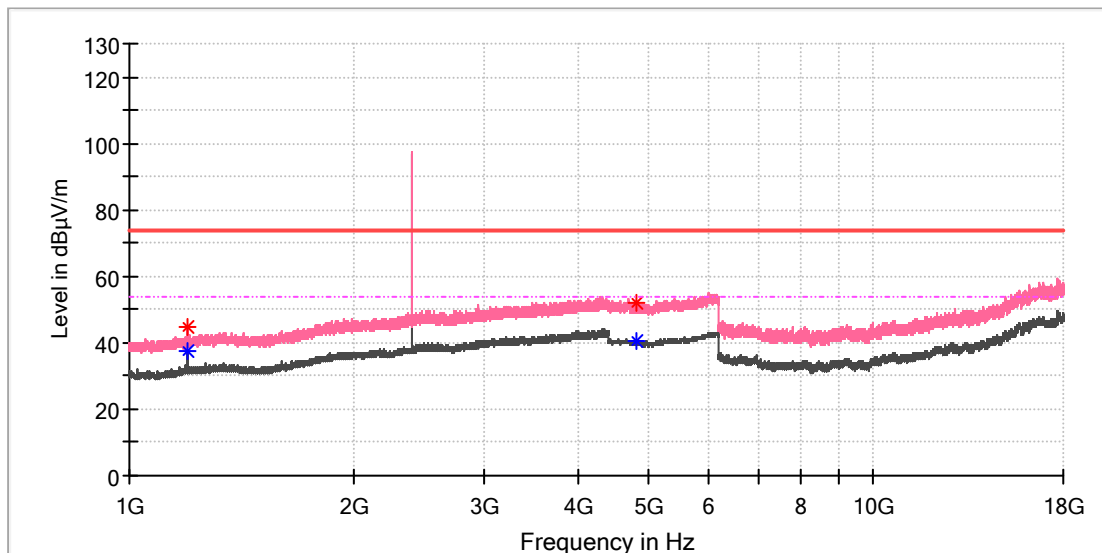
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
45.471500	15.00	---	40.00	25.00	100.0	H	154.0	-19.1
60.409500	15.02	---	40.00	24.98	100.0	H	163.0	-19.4
96.105500	12.20	---	43.50	31.30	100.0	H	331.0	-19.9
846.885500	27.41	---	46.00	18.59	100.0	H	194.0	-6.0

Produkte
 Products

1GHz - 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
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

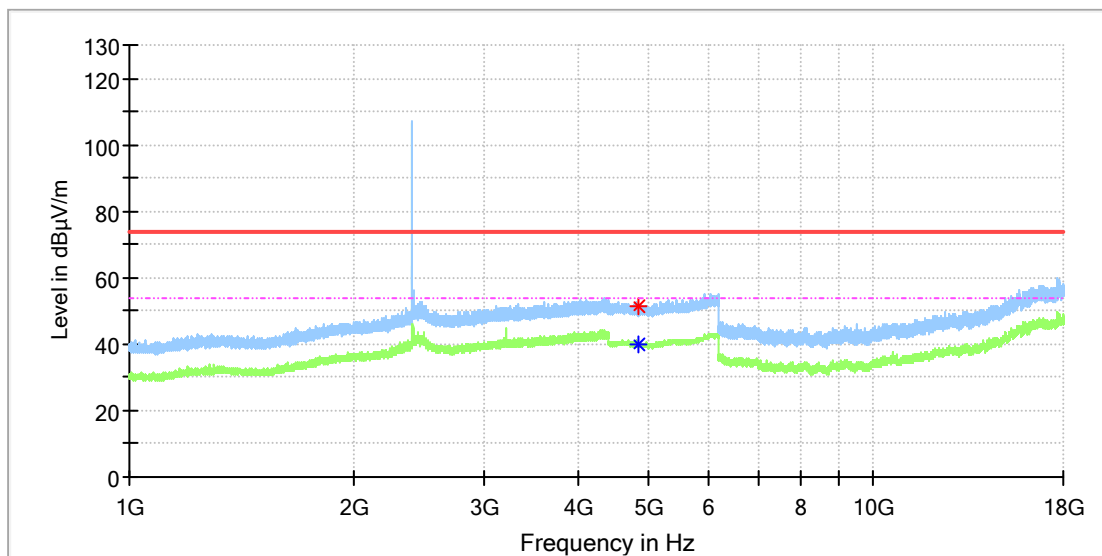


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1198.900000	44.79	---	74.00	29.21	100.0	V	262.0	1.1
1198.900000	---	37.70	54.00	16.30	100.0	V	262.0	1.1
4805.000000	51.87	---	74.00	22.13	100.0	V	71.0	13.6
4808.500000	---	40.58	54.00	13.42	100.0	V	341.0	13.6

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Low channel
 Test Voltage: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

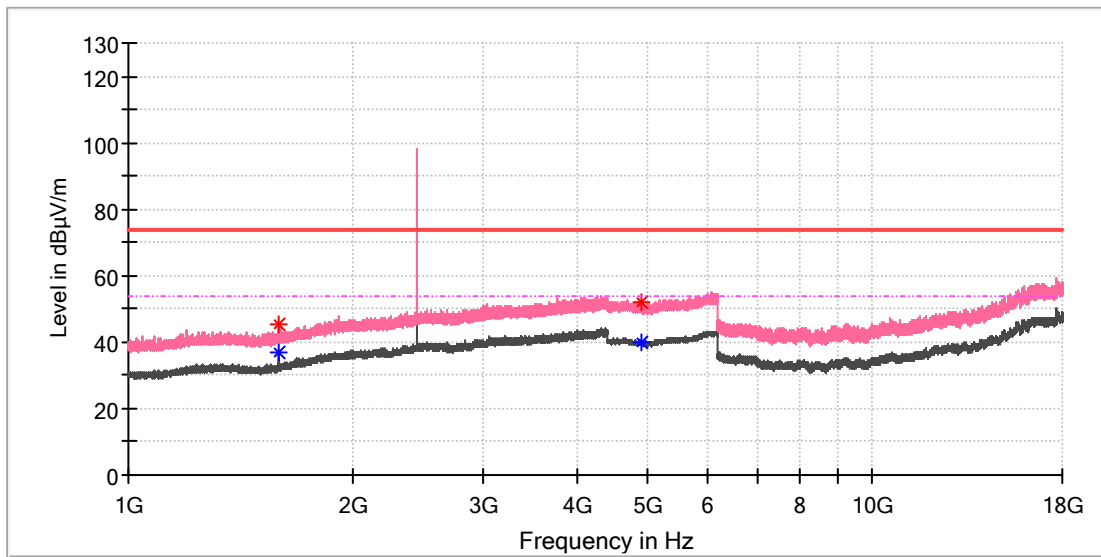


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	51.13	---	74.00	22.87	100.0	H	290.0	13.5
4806.500000	---	39.74	54.00	14.26	100.0	H	290.0	13.5

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Mid channel
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

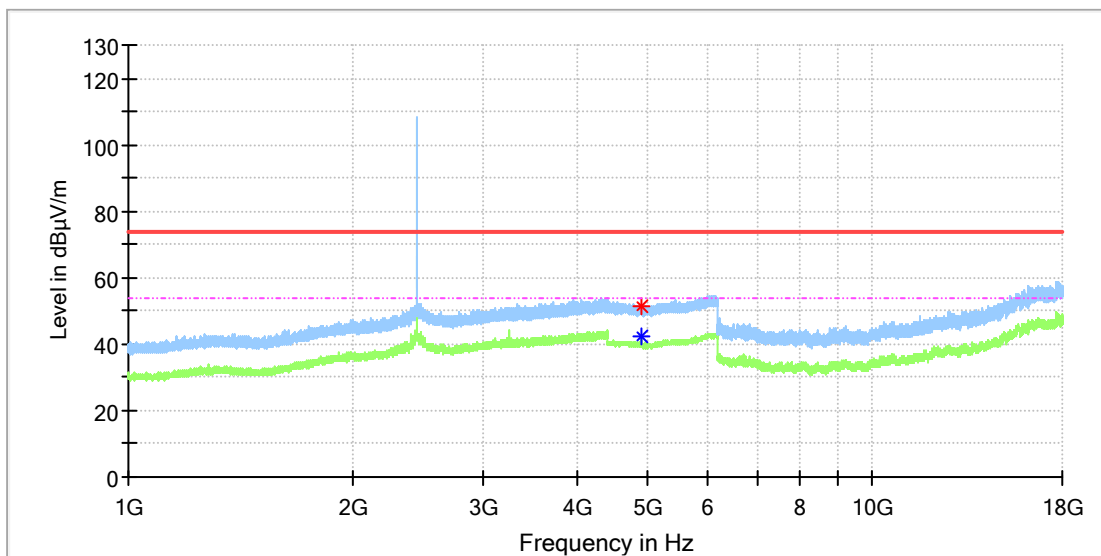


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1593.087500	---	36.70	54.00	17.30	100.0	V	283.0	2.0
1593.087500	45.64	---	74.00	28.36	100.0	V	283.0	2.0
4880.000000	---	39.91	54.00	14.09	100.0	V	217.0	13.4
4880.500000	51.74	---	74.00	22.26	100.0	V	217.0	13.4

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_Mid channel
 Test Voltage: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

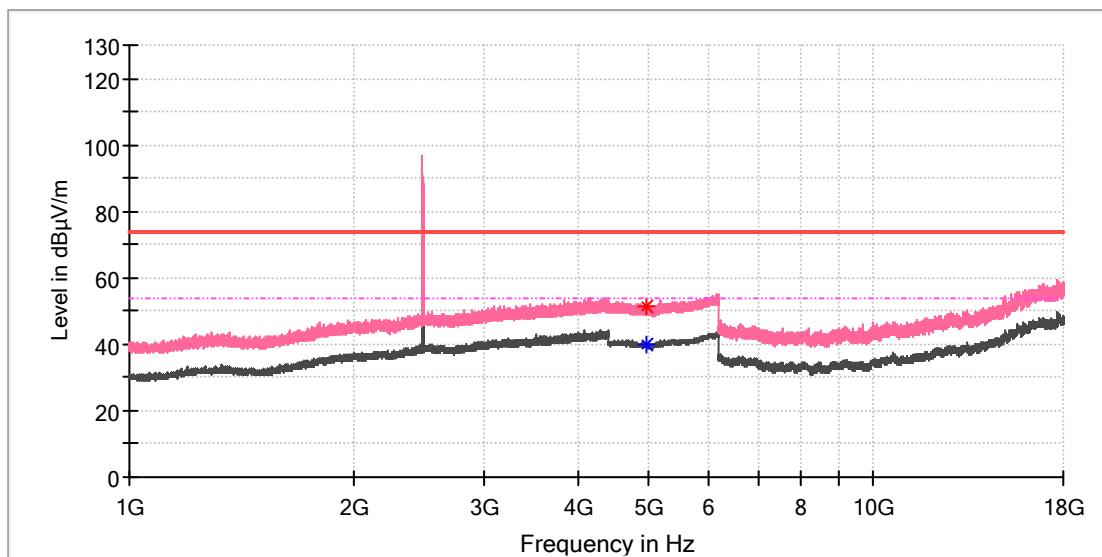


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.500000	---	42.53	54.00	11.47	100.0	H	80.0	13.4
4884.500000	51.58	---	74.00	22.42	100.0	H	127.0	13.4

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	BLE_High channel
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

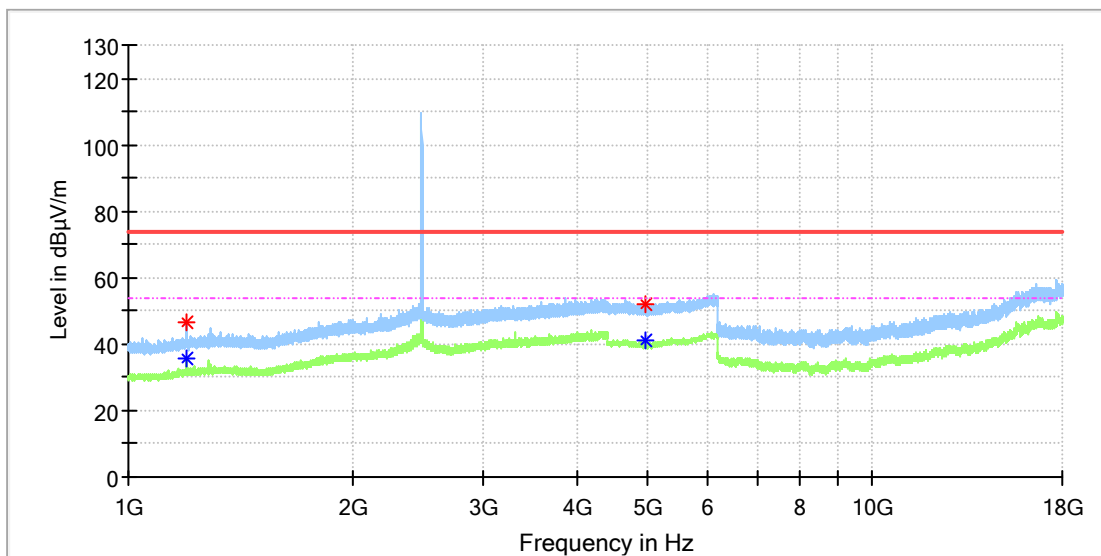


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.500000	51.28	---	74.00	22.72	100.0	V	152.0	13.2
4964.500000	---	40.17	54.00	13.83	100.0	V	310.0	13.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: BLE_High channel
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



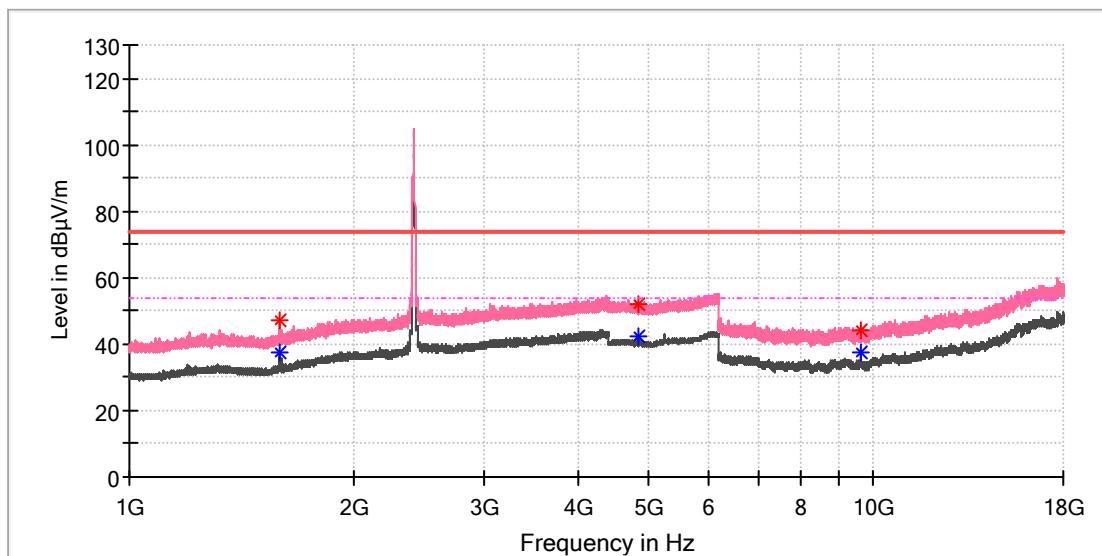
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1194.437500	46.72	---	74.00	27.28	100.0	H	107.0	1.1
1196.137500	---	35.75	54.00	18.25	100.0	H	172.0	1.1
4956.500000	51.75	---	74.00	22.25	100.0	H	322.0	13.2
4960.000000	---	41.17	54.00	12.83	100.0	H	65.0	13.2

Wi-Fi 802.11 b mode, 1 Mbps
1GHz - 18GHz

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11b_Low CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

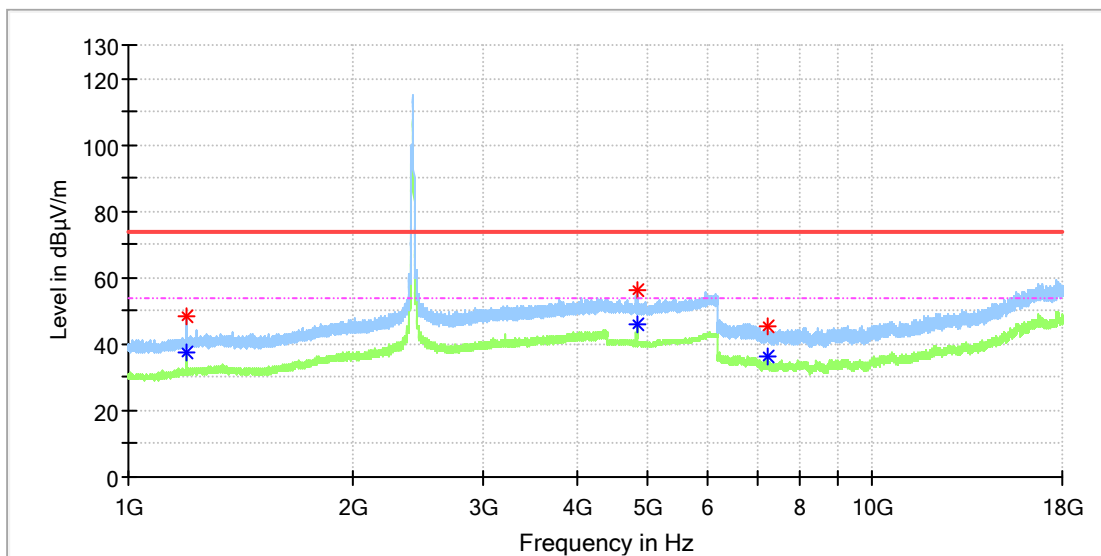


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1593.300000	47.24	---	74.00	26.76	100.0	V	324.0	2.0
1593.725000	---	37.38	54.00	16.62	100.0	V	150.0	2.0
4823.000000	---	42.38	54.00	11.62	100.0	V	298.0	13.5
4824.000000	52.24	---	74.00	21.76	100.0	V	123.0	13.5
9647.566667	---	37.64	54.00	16.36	100.0	V	338.0	10.4
9648.550000	44.27	---	74.00	29.73	100.0	V	297.0	10.4

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Low CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

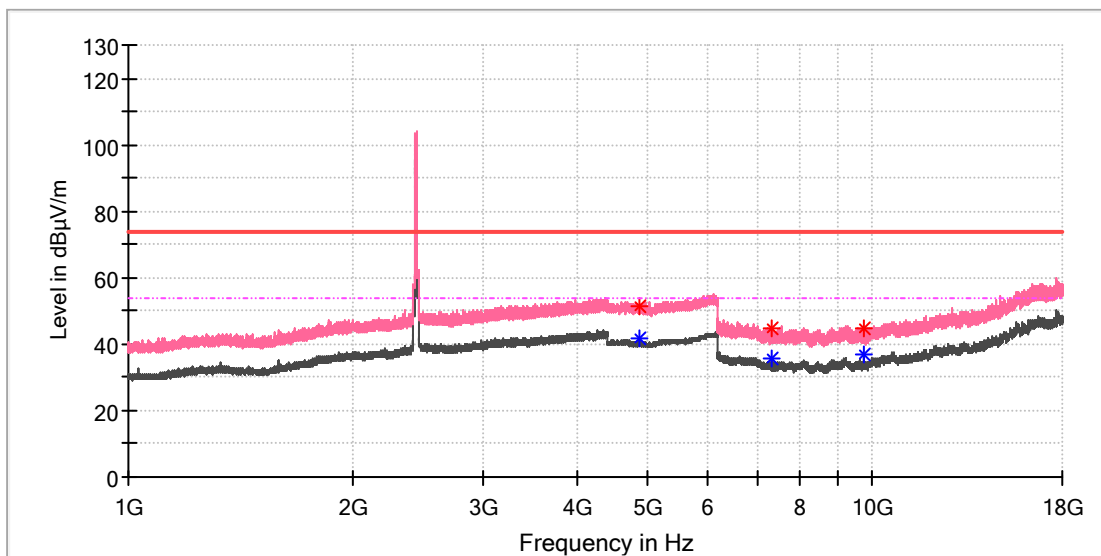


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.962500	48.31	---	74.00	25.69	100.0	H	249.0	1.1
1199.962500	---	37.55	54.00	16.45	100.0	H	249.0	1.1
4823.000000	---	46.20	54.00	7.80	100.0	H	13.0	13.5
4824.000000	56.31	---	74.00	17.69	100.0	H	13.0	13.5
7234.958333	---	36.00	54.00	18.00	100.0	H	3.0	8.6
7236.925000	45.27	---	74.00	28.73	100.0	H	3.0	8.6

EUT Information

EUT Name:	LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11b_Mid CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

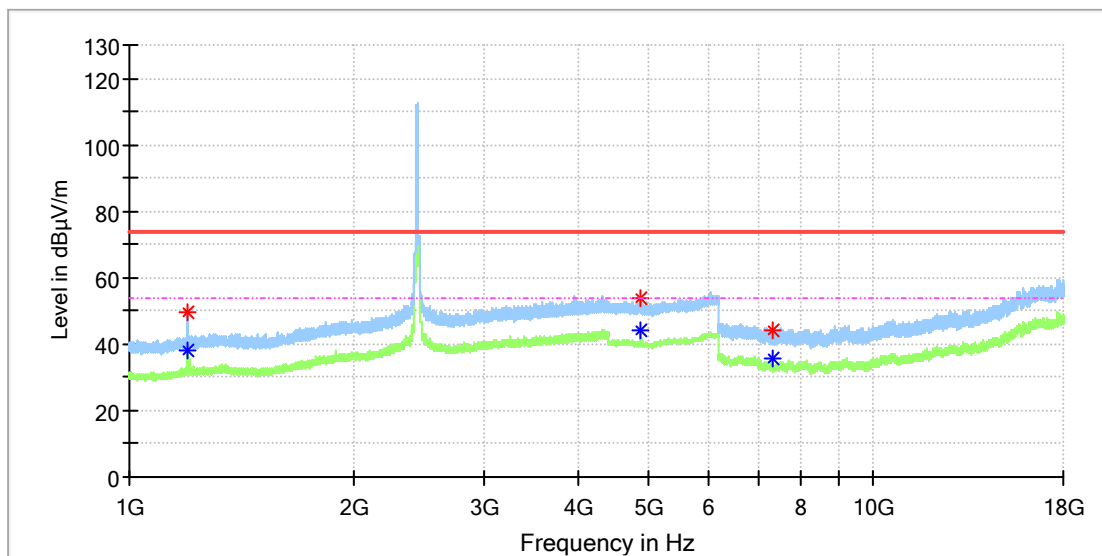


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4873.000000	51.66	---	74.00	22.34	100.0	V	116.0	13.4
4874.500000	---	41.77	54.00	12.23	100.0	V	296.0	13.4
7307.233333	44.83	---	74.00	29.17	100.0	V	319.0	8.3
7309.691667	---	35.45	54.00	18.55	100.0	V	357.0	8.2
9744.916667	44.77	---	74.00	29.23	100.0	V	162.0	10.4
9747.866667	---	37.09	54.00	16.91	100.0	V	129.0	10.4

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_Mid CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

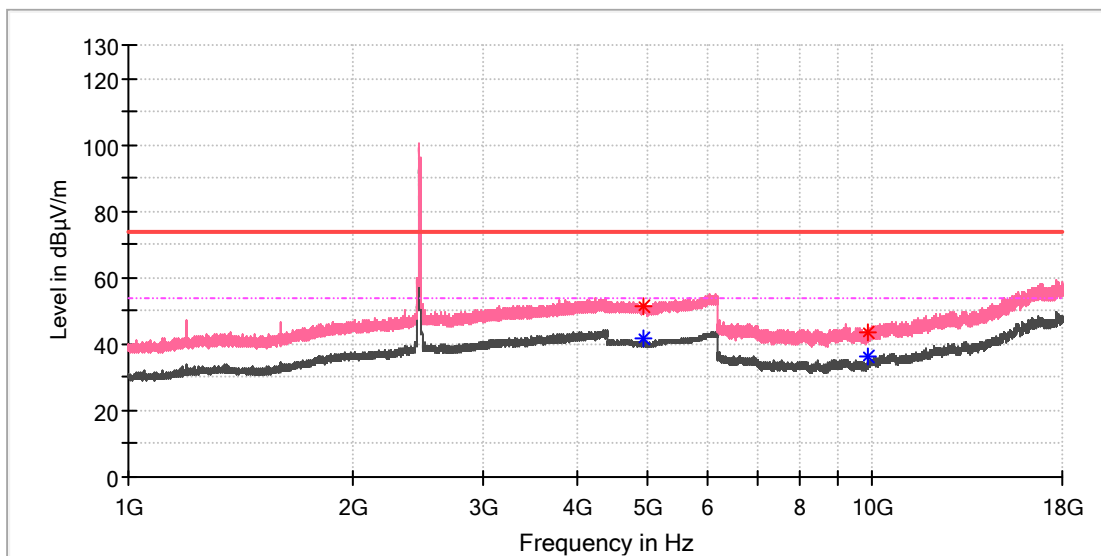


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.987500	49.61	---	74.00	24.39	100.0	H	171.0	1.1
1196.987500	---	38.07	54.00	15.93	100.0	H	171.0	1.1
4873.500000	53.59	---	74.00	20.41	100.0	H	13.0	13.4
4873.500000	---	44.43	54.00	9.57	100.0	H	13.0	13.4
7308.708333	---	35.76	54.00	18.24	100.0	H	6.0	8.2
7310.675000	44.31	---	74.00	29.69	100.0	H	6.0	8.2

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

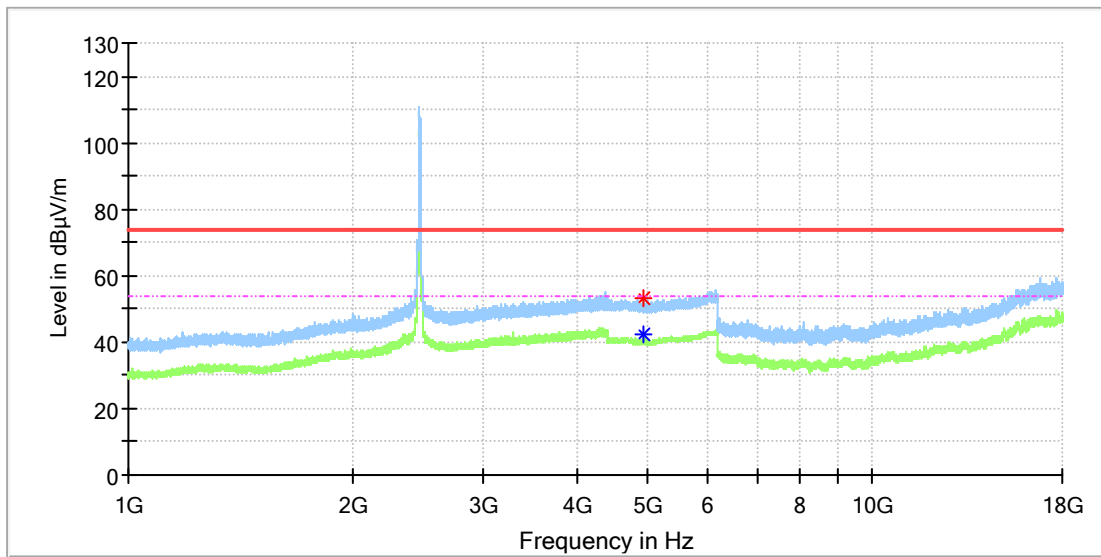


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.500000	---	41.42	54.00	12.58	100.0	V	295.0	13.3
4925.000000	51.28	---	74.00	22.72	100.0	V	309.0	13.3
9847.675000	---	36.10	54.00	17.90	100.0	V	105.0	10.6
9848.166667	43.25	---	74.00	30.75	100.0	V	134.0	10.6

EUT Information

EUT Name: LA02301 WI-Fi and Bluetooth SMART (BLE) Combo Module
 Model: LA02301
 Test Mode: WiFi 2.4G_11b_High CH
 Test Voltage:: DC 5V
 Remark: Temp 24 Humi:47%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



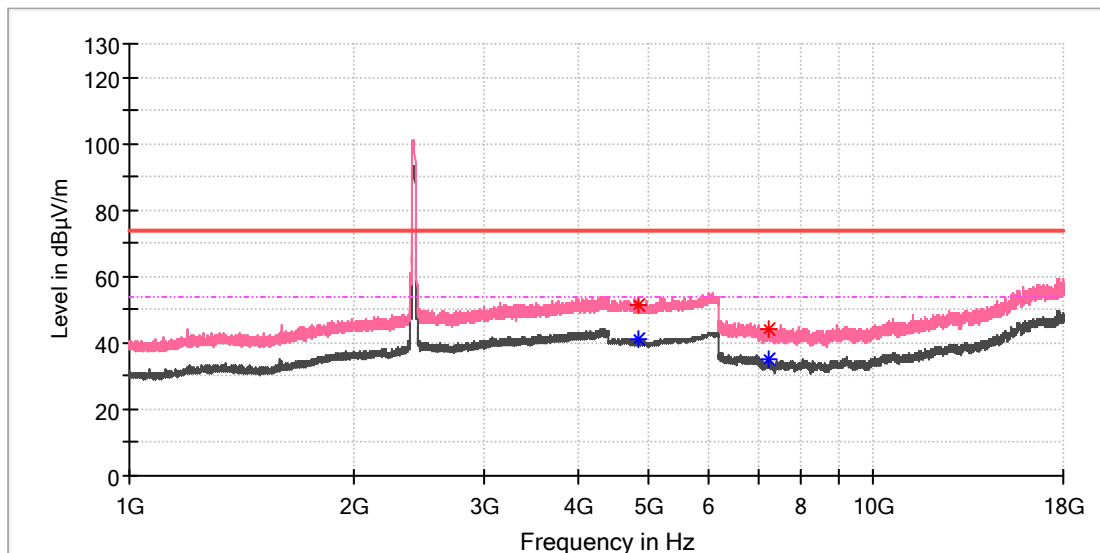
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4923.500000	53.24	---	74.00	20.76	100.0	H	81.0	13.3
4923.500000	---	42.06	54.00	11.94	100.0	H	81.0	13.3

Wi-Fi 802.11 g mode, 6Mbps
1GHz - 18GHz

EUT Information

EUT Name:	LA02301 WI-FI and Bluetooth SMART (BLE) Combo Module
Model:	LA02301
Test Mode:	WiFi 2.4G_11g_Low CH
Test Voltage::	DC 5V
Remark:	Temp 24 Humi:47%
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	---	41.11	54.00	12.89	100.0	V	287.0	13.5
4824.500000	51.64	---	74.00	22.36	100.0	V	295.0	13.5
7233.975000	---	35.06	54.00	18.94	100.0	V	30.0	8.6
7235.450000	44.02	---	74.00	29.98	100.0	V	231.0	8.6