



中认信通
CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: Signify (China) Investment Co., Ltd.

Address: Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai,
200233, China.

FCC ID: 2AGBW9290036670X

Product Name: LED lamp

**Standard(s): 47 CFR Part 15, Subpart C(15.247)
ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02**

The above device has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: CR231058896-00

Date Of Issue: 2024/1/25

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

Declarations

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR231058896-00	Original Report	2024/1/25

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	LED lamp
EUT Model:	9290036670
Operation Frequency:	BLE: 2402-2480MHz ZigBee: 2405-2480 MHz
Maximum Peak Output Power (Conducted):	BLE: 10.7dBm ZigBee: 10.71 dBm
Modulation Type:	BLE: GFSK ZigBee: O-QPSK
Rated Input Voltage:	120V/60Hz
Serial Number:	2C3V-2 (for AC Line Conducted Emission Test and Radiated Spurious Emissions Test) 2C3V-3(for RF Conducted Test)
EUT Received Date:	2023/10/13
EUT Received Status:	Good

Operation Frequency Detail: For BLE:

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

Per section 15.31(m), the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	2402
Middle	2440
Highest	2480

For ZigBee:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440	26	2480

Per section 15.31(m), the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	2405
Middle	2440
Highest	2480

Antenna Information Detail ▲:

Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
PCB	50	2.4~2.5GHz	-0.9 dBi

The Method of §15.203 Compliance:

- Antenna was permanently attached to the unit.
 Antenna use a unique type of connector to attach to the EUT.
 Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

For BLE:

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.		
Equipment Modifications:	No		
EUT Exercise Software:	Hue Approbation Tool.exe		
The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲:			
Test Modes	Power Level Setting		
	Lowest Channel	Middle Channel	Highest Channel
BLE 125kbps	10	10	10
BLE 500kbps	10	10	10
BLE 1Mbps	10	10	10
BLE 2Mbps	10	10	10
ZigBee	10	10	10

1.2.2 Support Equipment List and Details

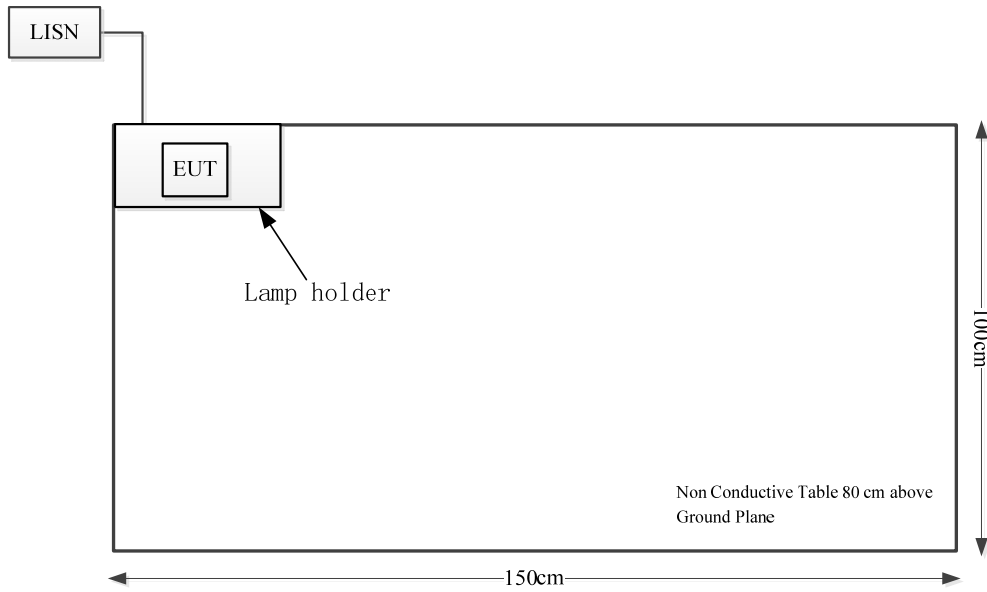
Manufacturer	Description	Model	Serial Number
BULL	Lamp holder	Unknown	Unknown

1.2.3 Support Cable List and Details

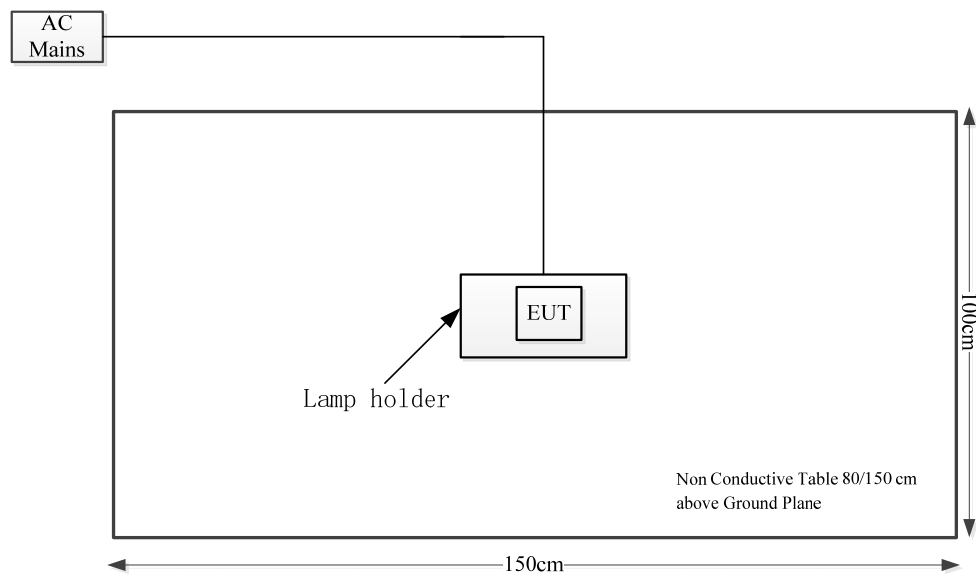
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Power Cable	No	No	1.2	Lamp holder	LISN

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



Radiated Spurious Emissions:



1.3 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	9kHz~30MHz: 4.12 dB 30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Unwanted Emissions, conducted	±1.26 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

2. SUMMARY OF TEST RESULTS

Standard(s) Section	Test Items	Result
§15.207(a)	AC line conducted emissions	Compliant
§15.205, §15.209, §15.247(d)	Radiated Spurious Emissions	Compliant
§15.247 (a)(2)	Minimum 6 dB Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.203	Antenna Requirement	Compliant
FCC§15.247 (i) & §1.1307	RF Exposure Evaluation	Compliant

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μ V within the frequency band 535-1705 kHz, as measured using a 50 μ H/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

3.1.2 EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

3.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

3.1.4 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

3.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

3.2 Radiation Spurious Emissions

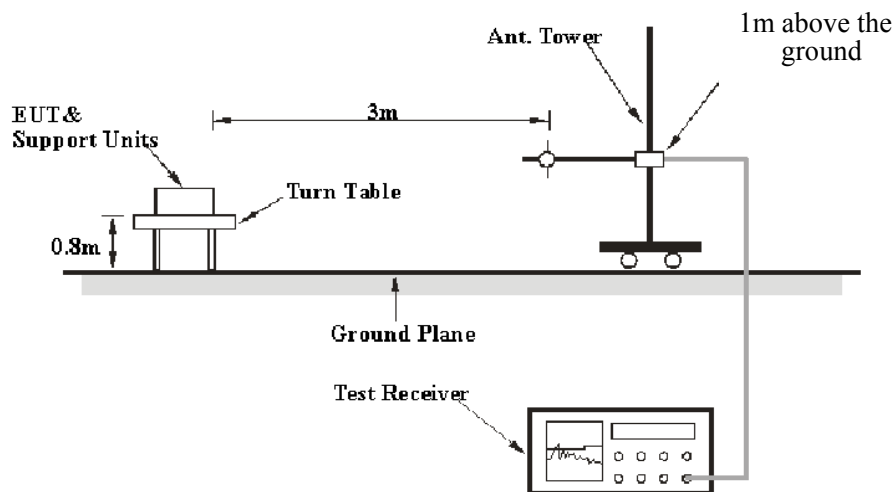
3.2.1 Applicable Standard

FCC §15.247 (d);

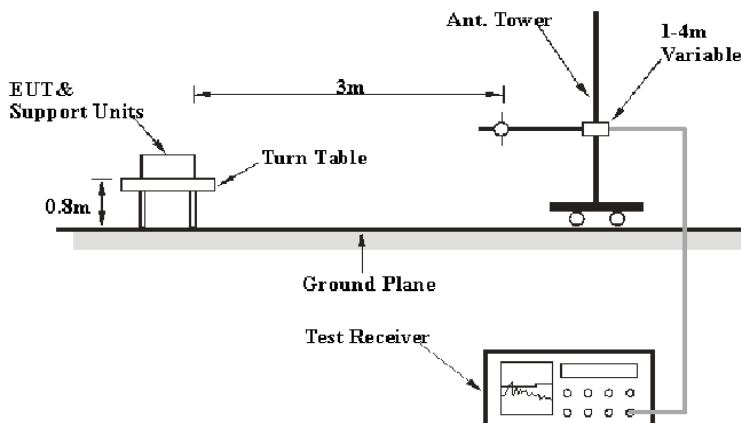
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

3.2.2 EUT Setup

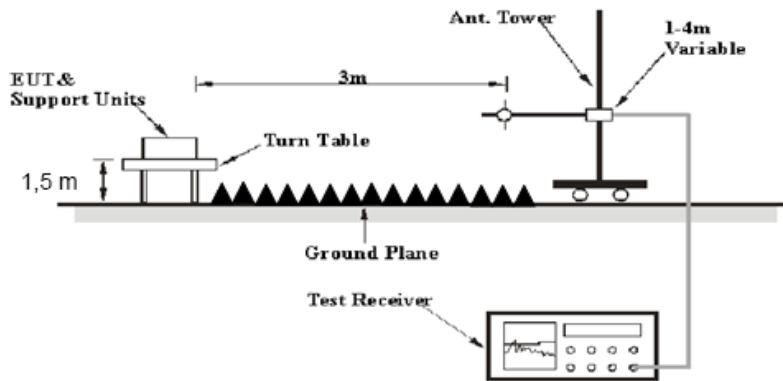
9kHz-30MHz:



30MHz-1GHz:



Above 1GHz:



The radiated emissions were performed in the 3 meters distance, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

3.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

9 kHz-1000 MHz

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	300 Hz	1 kHz	/	PK
	/	/	200 Hz	QP/AV
150 kHz – 30 MHz	10 kHz	30 kHz	/	PK
	/	/	9 kHz	QP/AV
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP

1GHz- 25GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	≥1/T

Note: T is minimum transmission duration

If the maximized peak measured value is under the QP/Average limit by more than 6dB, then it is unnecessary to perform an QP/Average measurement.

The spurious emissions which below the limit more than 20dB was not be recorded.

3.2.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz-1 GHz except 9–90 kHz, 110–490 kHz, employing an average detector, peak and Average detection modes for frequencies above 1 GHz.

All emissions under the average limit and under the noise floor have not recorded in the report.

3.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss- Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

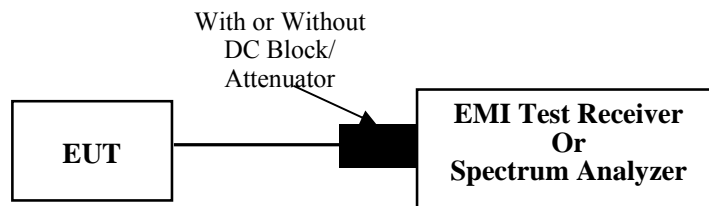
3.3 Minimum 6 dB Bandwidth

3.3.1 Applicable Standard

FCC §15.247 (a)(2)

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

3.3.2 EUT Setup



3.3.3 Test Procedure

According to ANSI C63.10-2013 Section 11.8

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

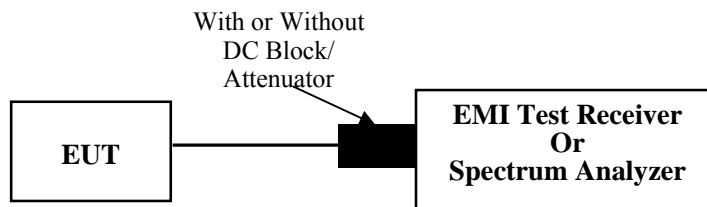
3.4 Maximum Conducted Output Power

3.4.1 Applicable Standard

FCC §15.247 (b)(3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

3.4.2 EUT Setup



3.4.3 Test Procedure

According to ANSI C63.10-2013 Section 11.9.1.1

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- a) Set the RBW \geq DTS bandwidth.
- b) Set VBW \geq $[3 \times \text{RBW}]$.
- c) Set span \geq $[3 \times \text{RBW}]$.
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

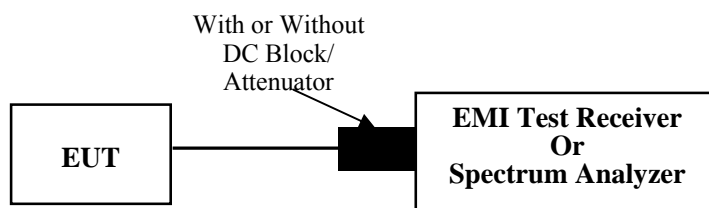
3.5 Maximum power spectral density

3.5.1 Applicable Standard

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

3.5.2 EUT Setup



3.5.3 Test Procedure

According to ANSI C63.10-2013 Section 11.10.2

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set the VBW $\geq [3 \times \text{RBW}]$.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

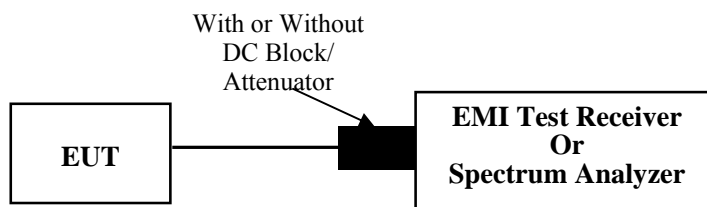
3.6 100 kHz Bandwidth of Frequency Band Edge

3.6.1 Applicable Standard

FCC §15.247 (d);

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

3.6.2 EUT Setup



3.6.3 Test Procedure

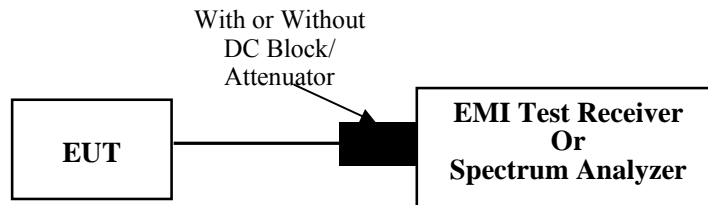
According to ANSI C63.10-2013 Section 11.11

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW $\geq [3 \times \text{RBW}]$.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

3.7 Duty Cycle

3.7.1 EUT Setup



3.7.2 Test Procedure

According to ANSI C63.10-2013 Section 11.6

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

- 1) Set the center frequency of the instrument to the center frequency of the transmission.
- 2) Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value.
- 3) Set $VBW \geq RBW$. Set detector = peak or average.
- 4) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if $T \leq 16.7 \mu s$.)

3.8 Antenna Requirement

3.8.1 Applicable Standard

FCC §15.203

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

3.8.2 Judgment

Compliant. Please refer to the Antenna Information detail in Section 1.

4. Test DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	2C3V-2	Test Date:	2024/1/18
Test Site:	CE	Test Mode:	Transmitting
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.8	Relative Humidity: (%)	50	ATM Pressure: (kPa)	101.8
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2023/3/31	2024/3/30
R&S	EMI Test Receiver	ESR3	102726	2023/3/31	2024/3/30
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2023/8/6	2024/8/5
Audix	Test Software	E3	190306 (V9)	N/A	N/A

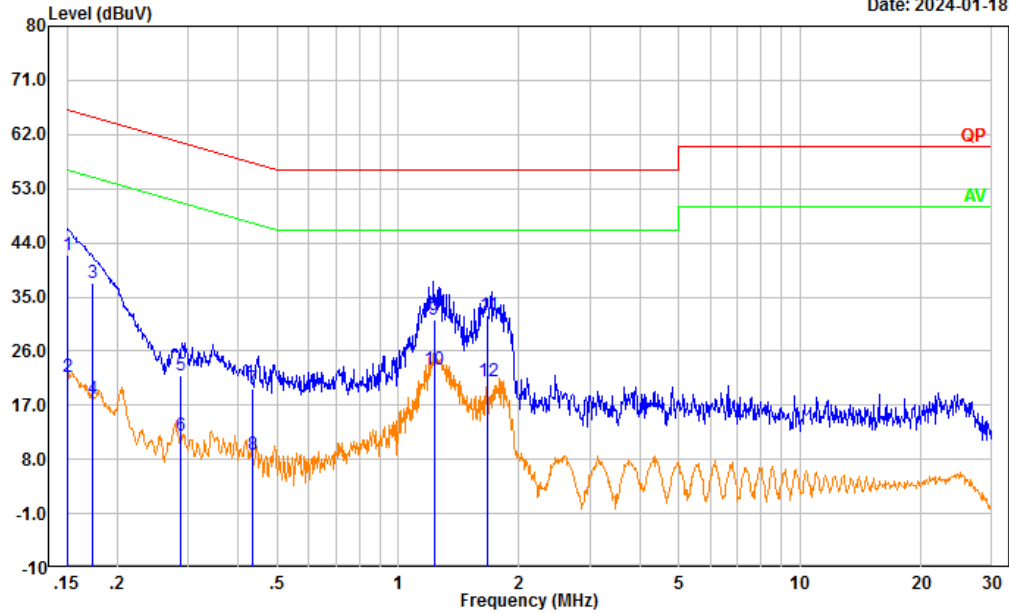
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

BLE(maximum output power mode, 1Mbps, Low channel):

Project No.: CR231058896-RF
 Tester: David Huang
 Port: Line
 Note: Transmitting(BLE)

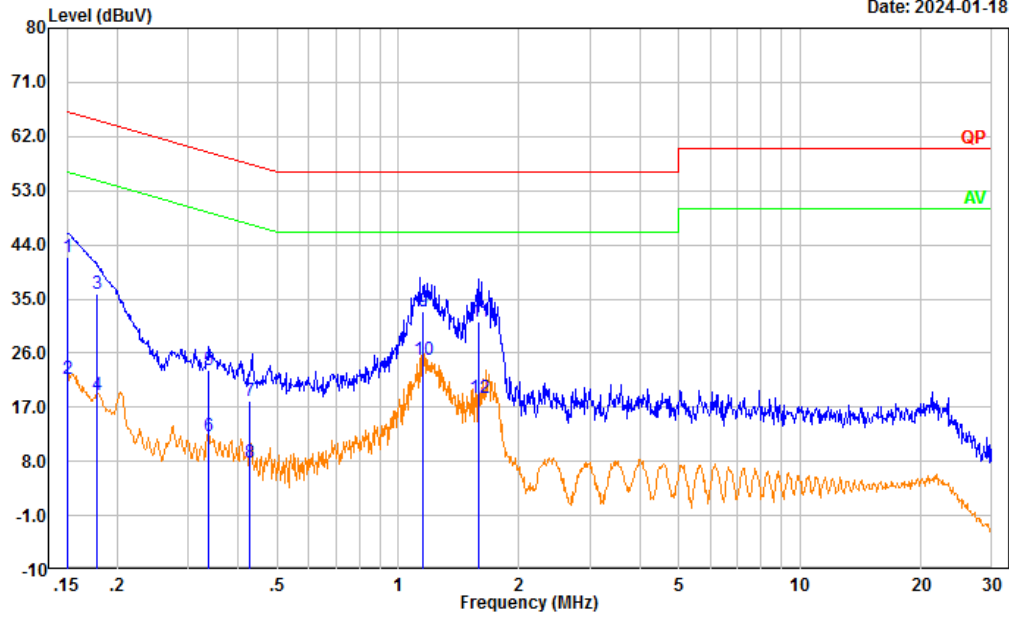
Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.151	32.46	9.61	42.07	65.94	23.87	QP
2	0.151	12.10	9.61	21.71	55.94	34.23	Average
3	0.173	27.67	9.61	37.28	64.81	27.53	QP
4	0.173	8.36	9.61	17.97	54.81	36.84	Average
5	0.288	12.23	9.61	21.84	60.57	38.73	QP
6	0.288	2.25	9.61	11.86	50.57	38.71	Average
7	0.436	10.19	9.61	19.80	57.14	37.34	QP
8	0.436	-0.79	9.61	8.82	47.14	38.32	Average
9	1.228	21.49	9.62	31.11	56.00	24.89	QP
10	1.228	13.41	9.62	23.03	46.00	22.97	Average
11	1.672	22.21	9.63	31.84	56.00	24.16	QP
12	1.672	11.42	9.63	21.05	46.00	24.95	Average

Project No.: CR231058896-RF
 Tester: David Huang
 Port: neutral
 Note: Transmitting(BLE)

Date: 2024-01-18

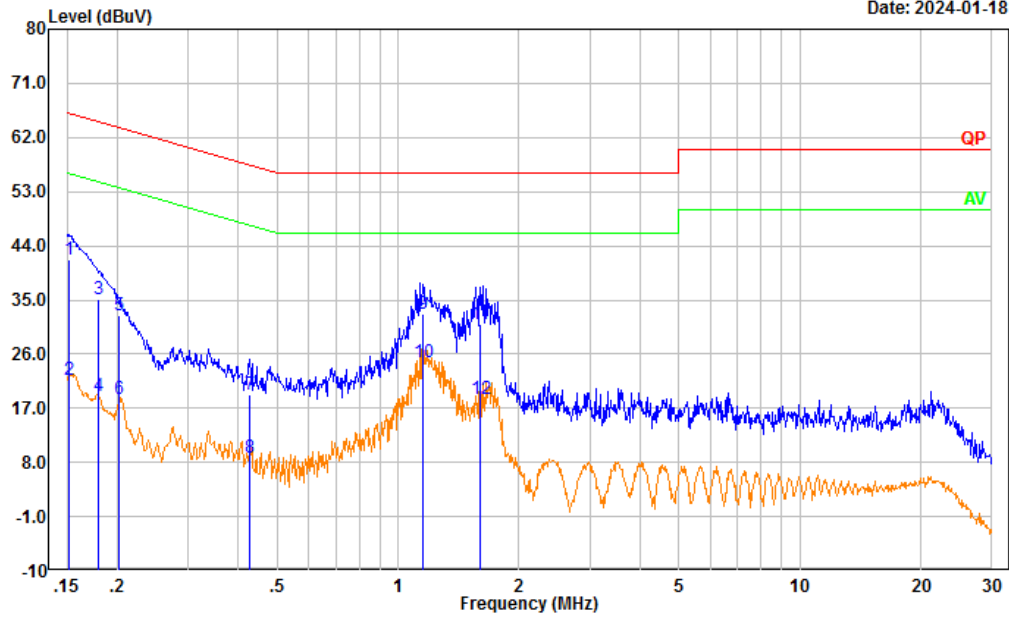


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.151	32.27	9.61	41.88	65.94	24.06	QP
2	0.151	12.03	9.61	21.64	55.94	34.30	Average
3	0.178	26.28	9.61	35.89	64.58	28.69	QP
4	0.178	9.37	9.61	18.98	54.58	35.60	Average
5	0.338	13.59	9.61	23.20	59.26	36.06	QP
6	0.338	2.66	9.61	12.27	49.26	36.99	Average
7	0.427	8.53	9.61	18.14	57.31	39.17	QP
8	0.427	-1.70	9.61	7.91	47.31	39.40	Average
9	1.157	23.29	9.62	32.91	56.00	23.09	QP
10	1.157	15.21	9.62	24.83	46.00	21.17	Average
11	1.589	21.64	9.63	31.27	56.00	24.73	QP
12	1.589	8.82	9.63	18.45	46.00	27.55	Average

ZigBee(maximum output power mode, Low channel):

Project No.: CR231058896-RF
 Tester: David Huang
 Port: Line
 Note: Transmitting(Zigbee)

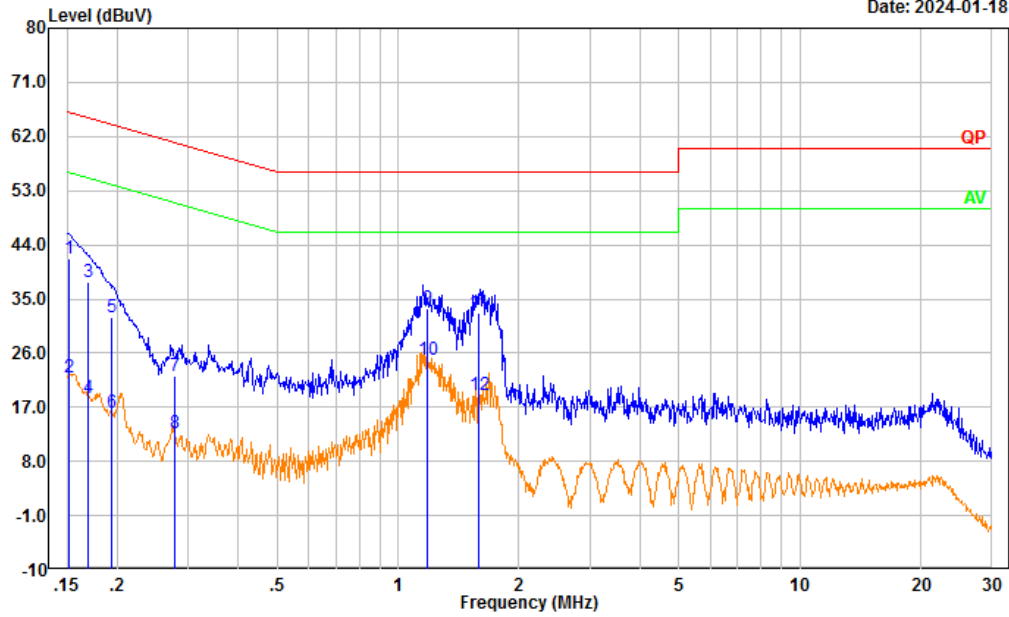
Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.151	32.18	9.61	41.79	65.93	24.14	QP
2	0.151	12.17	9.61	21.78	55.93	34.15	Average
3	0.180	25.55	9.61	35.16	64.47	29.31	QP
4	0.180	9.30	9.61	18.91	54.47	35.56	Average
5	0.203	22.79	9.61	32.40	63.50	31.10	QP
6	0.203	8.83	9.61	18.44	53.50	35.06	Average
7	0.428	9.58	9.61	19.19	57.29	38.10	QP
8	0.428	-0.89	9.61	8.72	47.29	38.57	Average
9	1.157	22.95	9.62	32.57	56.00	23.43	QP
10	1.157	15.09	9.62	24.71	46.00	21.29	Average
11	1.602	21.31	9.63	30.94	56.00	25.06	QP
12	1.602	8.82	9.63	18.45	46.00	27.55	Average

Project No.: CR231058896-RF
 Tester: David Huang
 Port: neutral
 Note: Transmitting(Zigbee)

Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.152	31.99	9.61	41.60	65.87	24.27	QP
2	0.152	12.33	9.61	21.94	55.87	33.93	Average
3	0.169	28.31	9.61	37.92	65.01	27.09	QP
4	0.169	8.96	9.61	18.57	55.01	36.44	Average
5	0.193	22.45	9.61	32.06	63.90	31.84	QP
6	0.193	6.53	9.61	16.14	53.90	37.76	Average
7	0.278	12.52	9.61	22.13	60.88	38.75	QP
8	0.278	3.18	9.61	12.79	50.88	38.09	Average
9	1.179	23.75	9.62	33.37	56.00	22.63	QP
10	1.179	15.26	9.62	24.88	46.00	21.12	Average
11	1.589	23.06	9.63	32.69	56.00	23.31	QP
12	1.589	9.47	9.63	19.10	46.00	26.90	Average

4.2 Radiation Spurious Emissions

Serial Number:	2C3V-2	Test Date:	Below 1GHz: 2024/1/18 Above 1GHz: 2023/11/12
Test Site:	966-2,966-1	Test Mode:	Transmitting
Tester:	Carl Xue, coco Tian	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.4~25.5	Relative Humidity: (%)	40~65	ATM Pressure: (kPa)	101.5~101.8
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Below 1GHz					
Sunol Sciences	Antenna	JB6	A082520-5	2023/12/1	2026/11/30
BACL	Loop Antenna	1313-1A	3110611	2023/12/4	2026/12/3
Daruikang	Coaxial Cable	BNC-JJ-RG58	C-0300-01	2024/1/11	2025/1/10
Daruikang	Coaxial Cable	BNC-JJ-RG58	C-0500-01	2024/1/11	2025/1/10
R&S	EMI Test Receiver	ESR3	102724	2023/3/31	2024/3/30
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2023/7/16	2024/7/15
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2023/7/16	2024/7/15
Sonoma	Amplifier	310N	186165	2023/7/16	2024/7/15
Audix	Test Software	E3	201021 (V9)	N/A	N/A
Above 1GHz					
AH	Double Ridge Guide Horn Antenna	SAS-571	1394	2023/2/22	2026/2/21
R&S	Spectrum Analyzer	FSV40	101591	2023/3/31	2024/3/30
MICRO-COAX	Coaxial Cable	UFA210A-1-1200- 70U300	217423-008	2023/8/6	2024/8/5
MICRO-COAX	Coaxial Cable	UFA210A-1-2362- 300300	235780-001	2023/8/6	2024/8/5
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2023/11/8	2024/11/7
Audix	Test Software	E3	201021 (V9)	N/A	N/A
PASTERNAK	Horn Antenna	PE9852/2F-20	112002	2021/2/5	2024/2/4
Quinstar	Preamplifier	QLW-18405536-JO	15964001005	2023/9/15	2024/9/14
MICRO-COAX	Coaxial Cable	UFB142A-1-2362- 200200	235772-001	2023/8/6	2024/8/5
E-Microwave	Band Rejection Filter	2400-2483.5MHz	OE01902424	2023/8/6	2024/8/5
Mini Circuits	High Pass Filter	VHF-6010+	31119	2023/8/6	2024/8/5

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

Please refer to the below table and plots.

After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

For 9kHz-30MHz, The amplitude of spurious emissions attenuated more than 20 dB below the limit was not be reported.

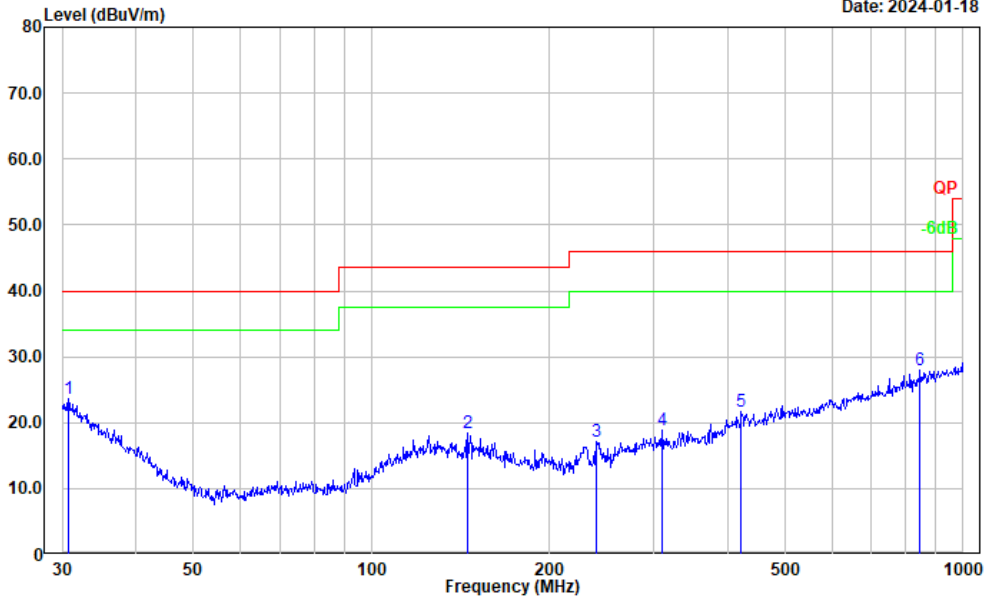
1) 30MHz-1GHz

BLE(maximum conducted output power, 1Mbps)

Low Channel:

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: horizontal
 Note: Transmitting BLE

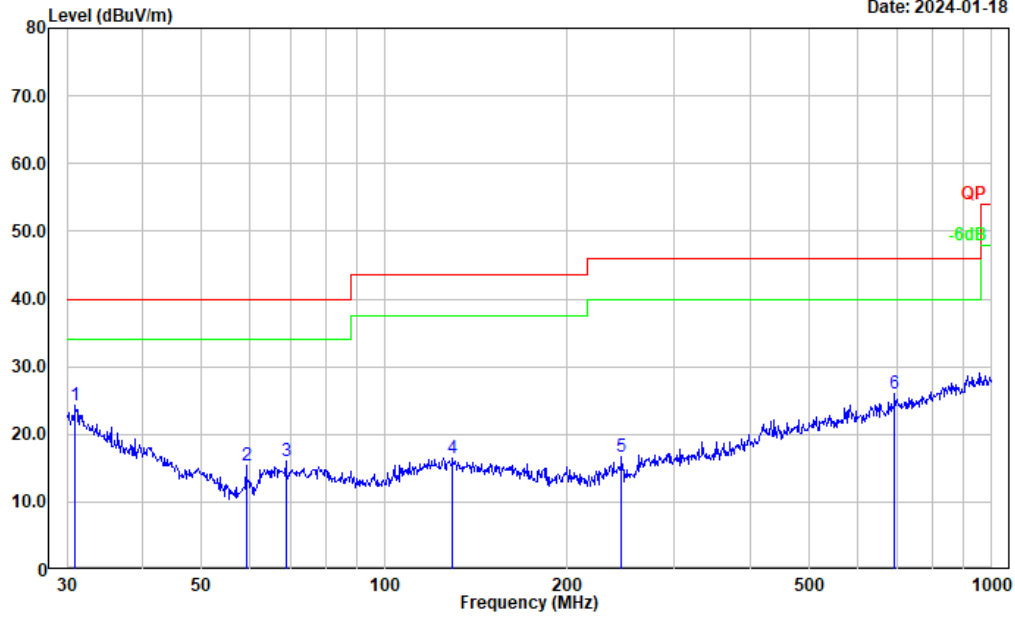
Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.745	27.91	-4.31	23.60	40.00	16.40	Peak
2	145.351	30.53	-12.09	18.44	43.50	25.06	Peak
3	239.987	29.91	-12.80	17.11	46.00	28.89	Peak
4	309.998	29.11	-10.20	18.91	46.00	27.09	Peak
5	422.058	29.41	-7.62	21.79	46.00	24.21	Peak
6	845.088	28.73	-0.68	28.05	46.00	17.95	Peak

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: vertical
 Note: Transmitting BLE

Date: 2024-01-18

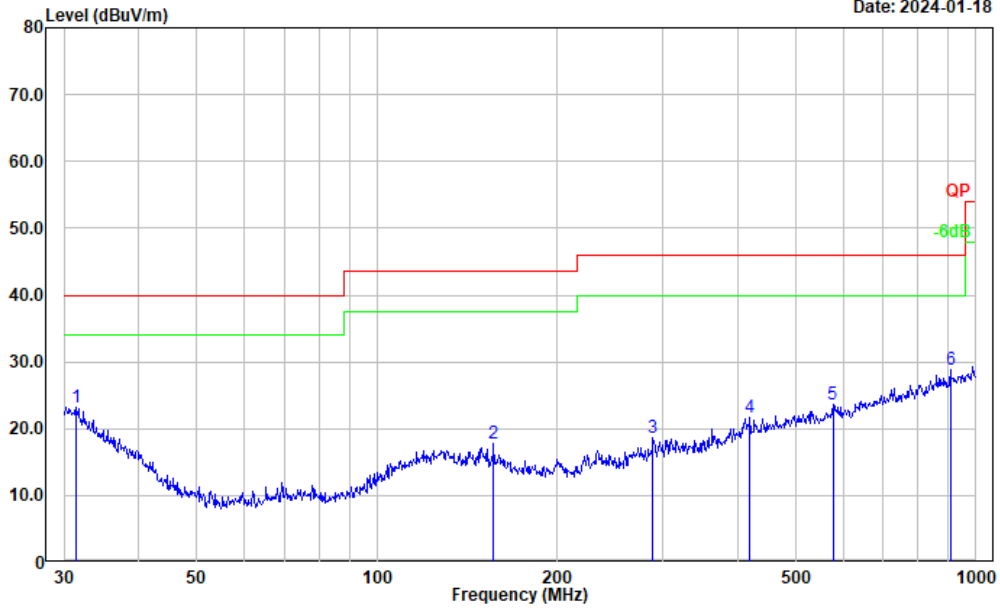


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.962	28.75	-4.44	24.31	40.00	15.69	Peak
2	59.232	33.16	-17.66	15.50	40.00	24.50	Peak
3	68.872	33.34	-17.20	16.14	40.00	23.86	Peak
4	129.468	27.69	-11.22	16.47	43.50	27.03	Peak
5	245.951	29.57	-12.90	16.67	46.00	29.33	Peak
6	691.987	29.28	-3.28	26.00	46.00	20.00	Peak

Middle channel:

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: horizontal
 Note: Transmitting BLE

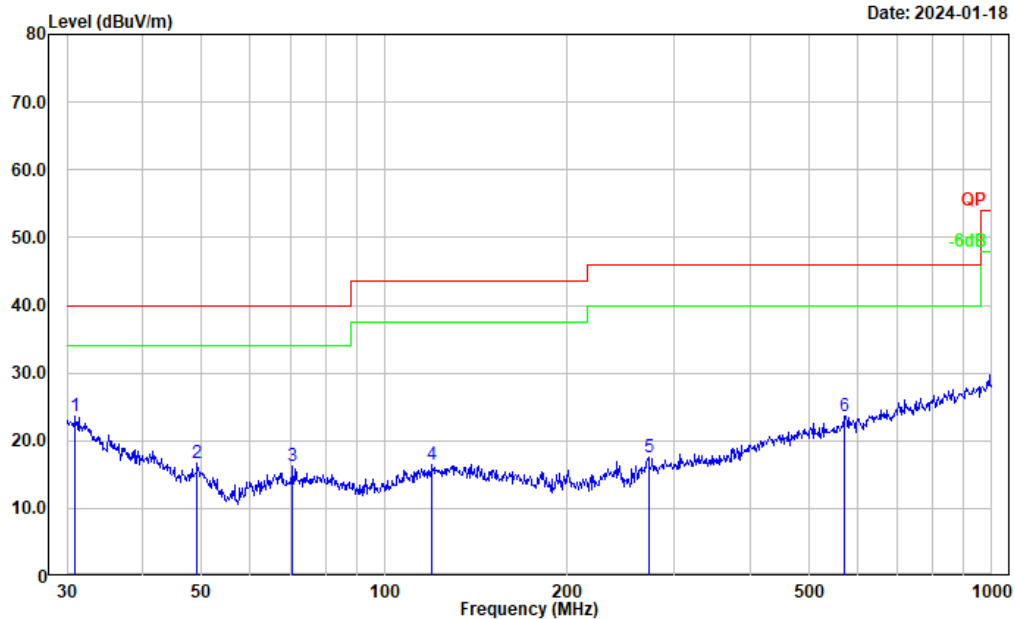
Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	31.399	27.91	-4.78	23.13	40.00	16.87	Peak
2	156.458	29.66	-11.87	17.79	43.50	25.71	Peak
3	289.002	28.90	-10.33	18.57	46.00	27.43	Peak
4	419.108	29.32	-7.74	21.58	46.00	24.42	Peak
5	576.644	28.17	-4.58	23.59	46.00	22.41	Peak
6	906.482	28.57	0.30	28.87	46.00	17.13	Peak

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: vertical
 Note: Transmitting BLE

Date: 2024-01-18

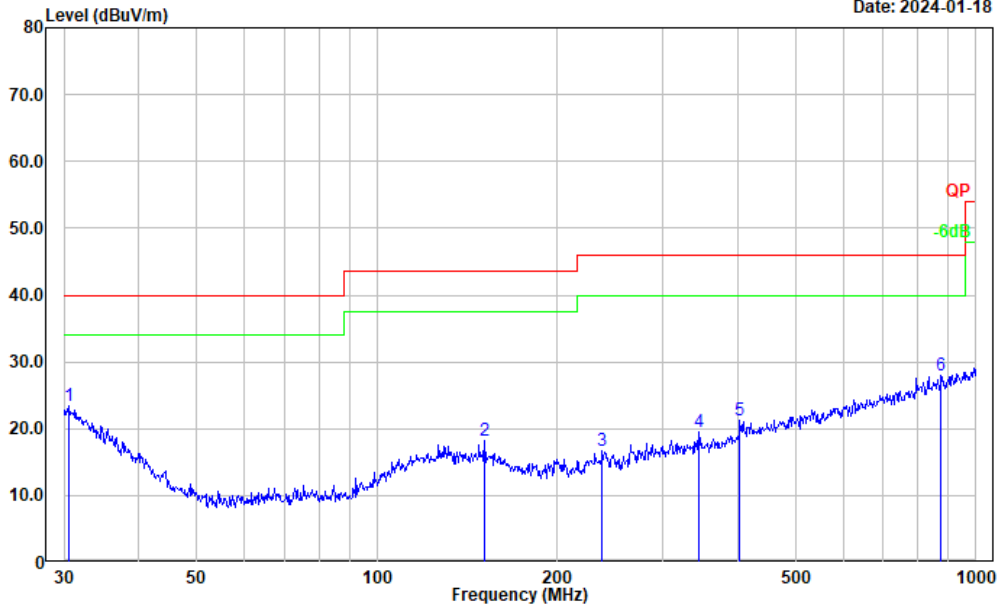


No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	30.962	28.14	-4.44	23.70	40.00	16.30	Peak
2	49.187	33.34	-16.74	16.60	40.00	23.40	Peak
3	70.584	33.43	-17.19	16.24	40.00	23.76	Peak
4	119.856	27.69	-11.24	16.45	43.50	27.05	Peak
5	272.278	28.40	-10.89	17.51	46.00	28.49	Peak
6	570.610	28.52	-4.80	23.72	46.00	22.28	Peak

High channel:

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: horizontal
 Note: Transmitting BLE

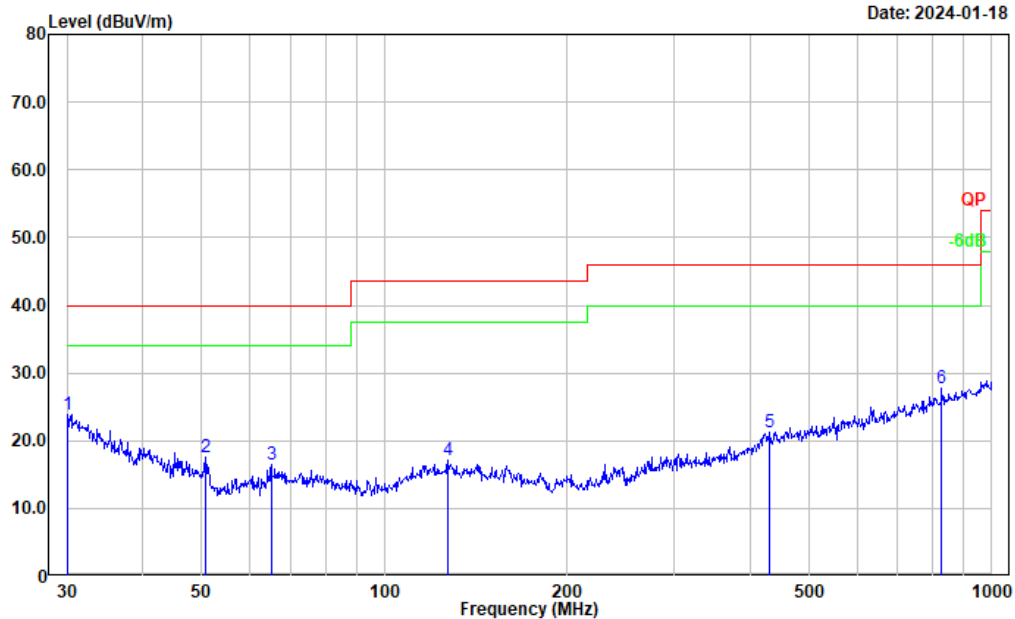
Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.638	27.74	-4.24	23.50	40.00	16.50	Peak
2	151.067	30.35	-12.18	18.17	43.50	25.33	Peak
3	237.476	29.63	-12.91	16.72	46.00	29.28	Peak
4	344.386	29.25	-9.70	19.55	46.00	26.45	Peak
5	403.250	29.23	-8.06	21.17	46.00	24.83	Peak
6	875.247	28.51	-0.48	28.03	46.00	17.97	Peak

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: vertical
 Note: Transmitting BLE

Date: 2024-01-18

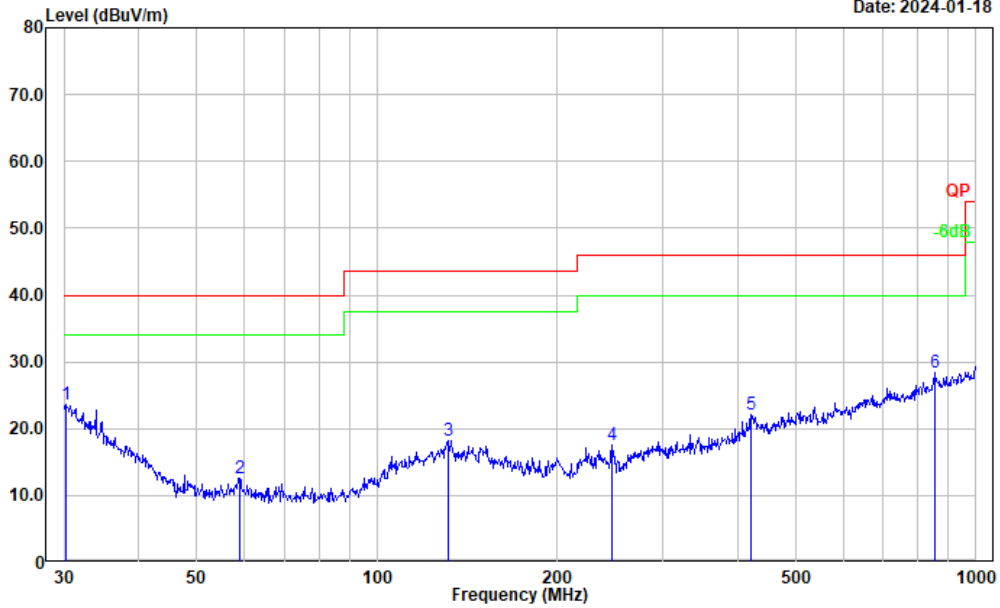


No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	30.105	27.81	-3.93	23.88	40.00	16.12	Peak
2	50.764	34.82	-17.20	17.62	40.00	22.38	Peak
3	65.114	33.89	-17.50	16.39	40.00	23.61	Peak
4	127.218	28.12	-11.10	17.02	43.50	26.48	Peak
5	431.032	28.58	-7.26	21.32	46.00	24.68	Peak
6	827.493	28.78	-1.06	27.72	46.00	18.28	Peak

ZigBee Low channel:

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: horizontal
 Note:

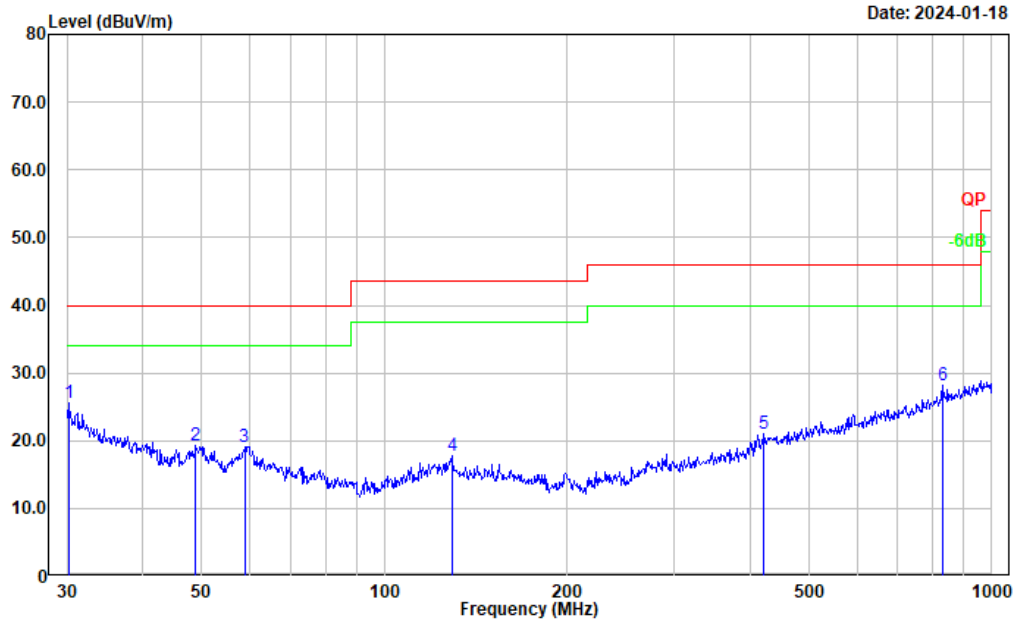
Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.211	27.59	-4.00	23.59	40.00	16.41	Peak
2	59.025	30.30	-17.64	12.66	40.00	27.34	Peak
3	131.297	29.62	-11.36	18.26	43.50	25.24	Peak
4	246.815	30.49	-12.92	17.57	46.00	28.43	Peak
5	420.580	29.90	-7.69	22.21	46.00	23.79	Peak
6	854.025	28.99	-0.62	28.37	46.00	17.63	Peak

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: vertical
 Note:

Date: 2024-01-18

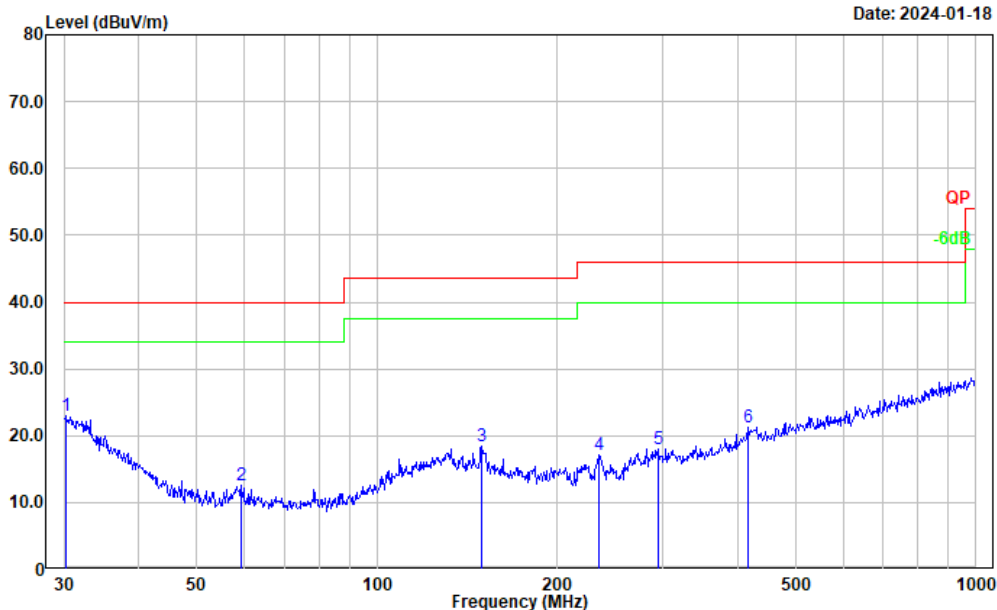


No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	30.211	29.52	-4.00	25.52	40.00	14.48	Peak
2	48.843	35.92	-16.63	19.29	40.00	20.71	Peak
3	58.819	36.81	-17.66	19.15	40.00	20.85	Peak
4	129.015	28.88	-11.17	17.71	43.50	25.79	Peak
5	422.058	28.64	-7.62	21.02	46.00	24.98	Peak
6	830.400	29.24	-0.97	28.27	46.00	17.73	Peak

ZigBee Middle channel:

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: horizontal
 Note:

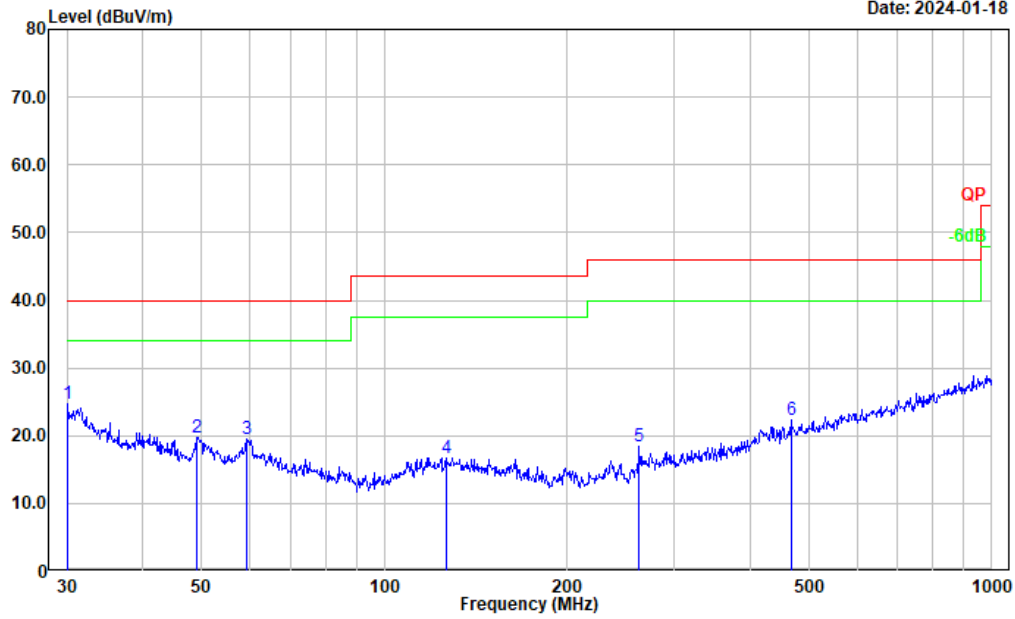
Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.317	26.95	-4.06	22.89	40.00	17.11	Peak
2	59.441	30.29	-17.68	12.61	40.00	27.39	Peak
3	149.486	30.63	-12.14	18.49	43.50	25.01	Peak
4	234.168	30.24	-13.05	17.19	46.00	28.81	Peak
5	294.114	28.58	-10.49	18.09	46.00	27.91	Peak
6	416.179	29.05	-7.81	21.24	46.00	24.76	Peak

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: vertical
 Note:

Date: 2024-01-18

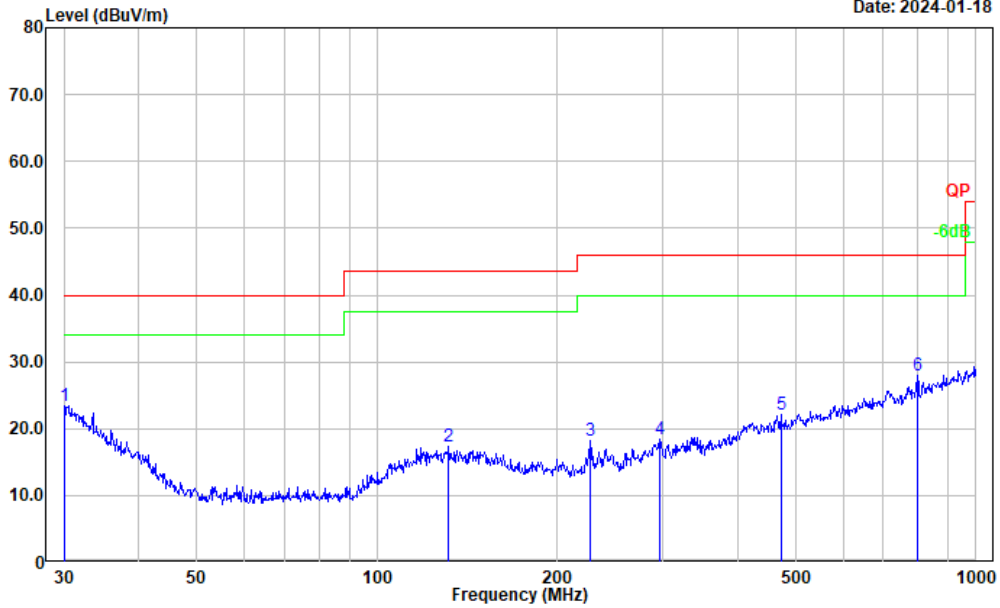


No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	30.105	28.70	-3.93	24.77	40.00	15.23	Peak
2	49.187	36.54	-16.74	19.80	40.00	20.20	Peak
3	59.441	37.11	-17.68	19.43	40.00	20.57	Peak
4	126.329	27.84	-11.09	16.75	43.50	26.75	Peak
5	262.896	29.73	-11.41	18.32	46.00	27.68	Peak
6	467.235	28.67	-6.31	22.36	46.00	23.64	Peak

ZigBee High channel:

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: horizontal
 Note:

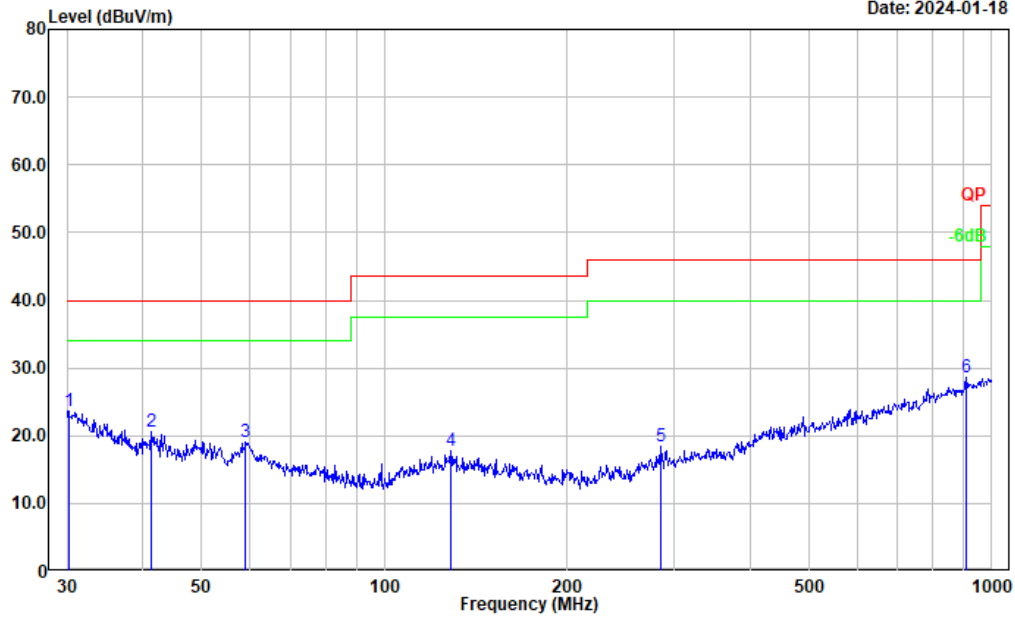
Date: 2024-01-18



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.105	27.42	-3.93	23.49	40.00	16.51	Peak
2	131.758	28.79	-11.35	17.44	43.50	26.06	Peak
3	226.894	31.48	-13.37	18.11	46.00	27.89	Peak
4	297.224	28.91	-10.50	18.41	46.00	27.59	Peak
5	472.176	28.27	-6.19	22.08	46.00	23.92	Peak
6	798.980	29.30	-1.32	27.98	46.00	18.02	Peak

Project No.: CR2301058896-RF
 Tester: Carl Xue
 Polarization: vertical
 Note:

Date: 2024-01-18



No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	30.211	27.72	-4.00	23.72	40.00	16.28	Peak
2	41.277	32.81	-12.20	20.61	40.00	19.39	Peak
3	59.025	36.81	-17.64	19.17	40.00	20.83	Peak
4	128.563	28.92	-11.17	17.75	43.50	25.75	Peak
5	284.977	29.16	-10.65	18.51	46.00	27.49	Peak
6	909.667	28.17	0.42	28.59	46.00	17.41	Peak

2) 1-25GHz:**BLE 125kbps:**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	Detector					
Low Channel: 2402 MHz							
2390.000	26.53	PK	H	31.71	58.24	74.00	15.76
2390.000	13.64	AV	H	31.71	45.35	54.00	8.65
2390.000	26.80	PK	V	31.71	58.51	74.00	15.49
2390.000	13.95	AV	V	31.71	45.66	54.00	8.34
4804.000	35.64	PK	H	11.19	46.83	74.00	27.17
4804.000	22.29	AV	H	11.19	33.48	54.00	20.52
4804.000	35.67	PK	V	11.19	46.86	74.00	27.14
4804.000	22.71	AV	V	11.19	33.90	54.00	20.10
7206.000	41.64	PK	H	15.03	56.67	74.00	17.33
7206.000	31.79	AV	H	15.03	46.82	54.00	7.18
7206.000	41.88	PK	V	15.03	56.91	74.00	17.09
7206.000	32.03	AV	V	15.03	47.06	54.00	6.94
Middle Channel: 2440 MHz							
4880.000	35.25	PK	H	11.48	46.73	74.00	27.27
4880.000	22.15	AV	H	11.48	33.63	54.00	20.37
4880.000	35.64	PK	V	11.48	47.12	74.00	26.88
4880.000	22.47	AV	V	11.48	33.95	54.00	20.05
7320.000	42.56	PK	H	15.58	58.14	74.00	15.86
7320.000	32.87	AV	H	15.58	48.45	54.00	5.55
7320.000	42.86	PK	V	15.58	58.44	74.00	15.56
7320.000	33.11	AV	V	15.58	48.69	54.00	5.31
High Channel: 2480 MHz							
2483.500	26.89	PK	H	32.19	59.08	74.00	14.92
2483.500	13.75	AV	H	32.19	45.94	54.00	8.06
2483.500	26.91	PK	V	32.19	59.10	74.00	14.90
2483.500	14.02	AV	V	32.19	46.21	54.00	7.79
4960.000	36.21	PK	H	11.77	47.98	74.00	26.02
4960.000	23.33	AV	H	11.77	35.10	54.00	18.90
4960.000	36.09	PK	V	11.77	47.86	74.00	26.14
4960.000	22.98	AV	V	11.77	34.75	54.00	19.25
7440.000	42.50	PK	H	15.98	58.48	74.00	15.52
7440.000	32.88	AV	H	15.98	48.86	54.00	5.14
7440.000	44.09	PK	V	15.98	60.07	74.00	13.93
7440.000	34.20	AV	V	15.98	50.18	54.00	3.82

BLE 500kbps:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	Detector					
Low Channel: 2402 MHz							
2390.000	26.85	PK	H	31.71	58.56	74.00	15.44
2390.000	13.76	AV	H	31.71	45.47	54.00	8.53
2390.000	26.64	PK	V	31.71	58.35	74.00	15.65
2390.000	13.77	AV	V	31.71	45.48	54.00	8.52
4804.000	35.78	PK	H	11.19	46.97	74.00	27.03
4804.000	22.32	AV	H	11.19	33.51	54.00	20.49
4804.000	35.69	PK	V	11.19	46.88	74.00	27.12
4804.000	22.17	AV	V	11.19	33.36	54.00	20.64
7206.000	42.27	PK	H	15.03	57.30	74.00	16.70
7206.000	32.89	AV	H	15.03	47.92	54.00	6.08
7206.000	42.67	PK	V	15.03	57.70	74.00	16.30
7206.000	33.21	AV	V	15.03	48.24	54.00	5.76
Middle Channel: 2440 MHz							
4880.000	35.64	PK	H	11.48	47.12	74.00	26.88
4880.000	22.47	AV	H	11.48	33.95	54.00	20.05
4880.000	35.85	PK	V	11.48	47.33	74.00	26.67
4880.000	22.45	AV	V	11.48	33.93	54.00	20.07
7320.000	42.01	PK	H	15.58	57.59	74.00	16.41
7320.000	32.75	AV	H	15.58	48.33	54.00	5.67
7320.000	42.53	PK	V	15.58	58.11	74.00	15.89
7320.000	32.97	AV	V	15.58	48.55	54.00	5.45
High Channel: 2480 MHz							
2483.500	26.70	PK	H	32.19	58.89	74.00	15.11
2483.500	13.79	AV	H	32.19	45.98	54.00	8.02
2483.500	26.85	PK	V	32.19	59.04	74.00	14.96
2483.500	13.57	AV	V	32.19	45.76	54.00	8.24
4960.000	34.97	PK	H	11.77	46.74	74.00	27.26
4960.000	22.12	AV	H	11.77	33.89	54.00	20.11
4960.000	35.61	PK	V	11.77	47.38	74.00	26.62
4960.000	22.55	AV	V	11.77	34.32	54.00	19.68
7440.000	41.68	PK	H	15.98	57.66	74.00	16.34
7440.000	32.00	AV	H	15.98	47.98	54.00	6.02
7440.000	43.62	PK	V	15.98	59.60	74.00	14.40
7440.000	34.04	AV	V	15.98	50.02	54.00	3.98

BLE 1Mbps:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	Detector					
Low Channel: 2402 MHz							
2390.000	26.40	PK	H	31.71	58.11	74.00	15.89
2390.000	13.49	AV	H	31.71	45.20	54.00	8.80
2390.000	26.69	PK	V	31.71	58.40	74.00	15.60
2390.000	13.50	AV	V	31.71	45.21	54.00	8.79
4804.000	34.63	PK	H	11.19	45.82	74.00	28.18
4804.000	21.96	AV	H	11.19	33.15	54.00	20.85
4804.000	34.75	PK	V	11.19	45.94	74.00	28.06
4804.000	21.90	AV	V	11.19	33.09	54.00	20.91
7206.000	43.03	PK	H	15.03	58.06	74.00	15.94
7206.000	32.89	AV	H	15.03	47.92	54.00	6.08
7206.000	43.34	PK	V	15.03	58.37	74.00	15.63
7206.000	32.87	AV	V	15.03	47.90	54.00	6.10
Middle Channel: 2440 MHz							
4880.000	34.69	PK	H	11.48	46.17	74.00	27.83
4880.000	22.08	AV	H	11.48	33.56	54.00	20.44
4880.000	34.97	PK	V	11.48	46.45	74.00	27.55
4880.000	22.18	AV	V	11.48	33.66	54.00	20.34
7320.000	42.83	PK	H	15.58	58.41	74.00	15.59
7320.000	32.79	AV	H	15.58	48.37	54.00	5.63
7320.000	44.03	PK	V	15.58	59.61	74.00	14.39
7320.000	33.83	AV	V	15.58	49.41	54.00	4.59
High Channel: 2480 MHz							
2483.500	27.20	PK	H	32.19	59.39	74.00	14.61
2483.500	14.09	AV	H	32.19	46.28	54.00	7.72
2483.500	27.15	PK	V	32.19	59.34	74.00	14.66
2483.500	14.22	AV	V	32.19	46.41	54.00	7.59
4960.000	35.63	PK	H	11.77	47.40	74.00	26.60
4960.000	22.34	AV	H	11.77	34.11	54.00	19.89
4960.000	35.15	PK	V	11.77	46.92	74.00	27.08
4960.000	22.06	AV	V	11.77	33.83	54.00	20.17
7440.000	42.25	PK	H	15.98	58.23	74.00	15.77
7440.000	32.33	AV	H	15.98	48.31	54.00	5.69
7440.000	43.88	PK	V	15.98	59.86	74.00	14.14
7440.000	33.76	AV	V	15.98	49.74	54.00	4.26

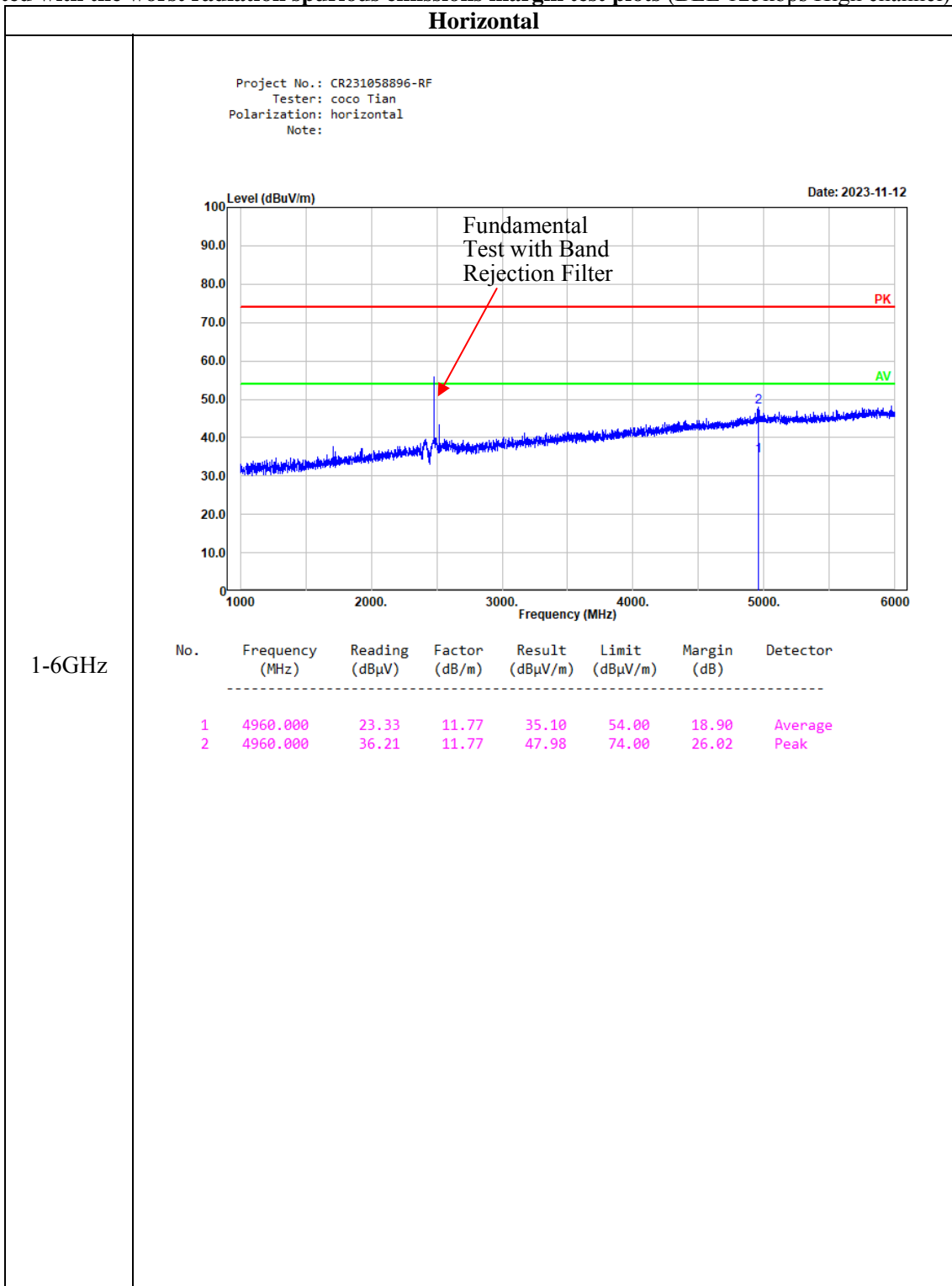
BLE 2Mbps:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	Detector					
Low Channel: 2402 MHz							
2390.000	26.30	PK	H	31.71	58.01	74.00	15.99
2390.000	13.45	AV	H	31.71	45.16	54.00	8.84
2390.000	26.69	PK	V	31.71	58.40	74.00	15.60
2390.000	13.57	AV	V	31.71	45.28	54.00	8.72
4804.000	36.57	PK	H	11.19	47.76	74.00	26.24
4804.000	23.54	AV	H	11.19	34.73	54.00	19.27
4804.000	36.47	PK	V	11.19	47.66	74.00	26.34
4804.000	23.52	AV	V	11.19	34.71	54.00	19.29
7206.000	42.57	PK	H	15.03	57.60	74.00	16.40
7206.000	32.69	AV	H	15.03	47.72	54.00	6.28
7206.000	43.52	PK	V	15.03	58.55	74.00	15.45
7206.000	33.03	AV	V	15.03	48.06	54.00	5.94
Middle Channel: 2440 MHz							
4880.000	36.10	PK	H	11.48	47.58	74.00	26.42
4880.000	23.38	AV	H	11.48	34.86	54.00	19.14
4880.000	35.42	PK	V	11.48	46.90	74.00	27.10
4880.000	22.40	AV	V	11.48	33.88	54.00	20.12
7320.000	42.10	PK	H	15.58	57.68	74.00	16.32
7320.000	32.32	AV	H	15.58	47.90	54.00	6.10
7320.000	43.34	PK	V	15.58	58.92	74.00	15.08
7320.000	34.38	AV	V	15.58	49.96	54.00	4.04
High Channel: 2480 MHz							
2483.500	26.89	PK	H	32.19	59.08	74.00	14.92
2483.500	13.78	AV	H	32.19	45.97	54.00	8.03
2483.500	26.80	PK	V	32.19	58.99	74.00	15.01
2483.500	14.18	AV	V	32.19	46.37	54.00	7.63
4960.000	36.30	PK	H	11.77	48.07	74.00	25.93
4960.000	23.11	AV	H	11.77	34.88	54.00	19.12
4960.000	35.89	PK	V	11.77	47.66	74.00	26.34
4960.000	23.02	AV	V	11.77	34.79	54.00	19.21
7440.000	41.22	PK	H	15.98	57.20	74.00	16.80
7440.000	31.85	AV	H	15.98	47.83	54.00	6.17
7440.000	43.66	PK	V	15.98	59.64	74.00	14.36
7440.000	34.02	AV	V	15.98	50.00	54.00	4.00

ZigBee:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	Detector					
Low Channel: 2405 MHz							
2390.000	26.53	PK	H	31.71	58.24	74.00	15.76
2390.000	14.02	AV	H	31.71	45.73	54.00	8.27
2390.000	26.78	PK	V	31.71	58.49	74.00	15.51
2390.000	14.11	AV	V	31.71	45.82	54.00	8.18
4810.000	34.26	PK	H	11.21	45.47	74.00	28.53
4810.000	21.58	AV	H	11.21	32.79	54.00	21.21
4810.000	35.35	PK	V	11.21	46.56	74.00	27.44
4810.000	22.23	AV	V	11.21	33.44	54.00	20.56
7215.000	40.64	PK	H	15.10	55.74	74.00	18.26
7215.000	31.02	AV	H	15.10	46.12	54.00	7.88
7215.000	42.35	PK	V	15.10	57.45	74.00	16.55
7215.000	32.98	AV	V	15.10	48.08	54.00	5.92
Middle Channel: 2440 MHz							
4880.000	35.26	PK	H	11.48	46.74	74.00	27.26
4880.000	22.45	AV	H	11.48	33.93	54.00	20.07
4880.000	35.49	PK	V	11.48	46.97	74.00	27.03
4880.000	22.62	AV	V	11.48	34.10	54.00	19.90
7320.000	42.11	PK	H	15.58	57.69	74.00	16.31
7320.000	32.88	AV	H	15.58	48.46	54.00	5.54
7320.000	42.76	PK	V	15.58	58.34	74.00	15.66
7320.000	33.40	AV	V	15.58	48.98	54.00	5.02
High Channel: 2480 MHz							
2483.500	27.33	PK	H	32.19	59.52	74.00	14.48
2483.500	14.25	AV	H	32.19	46.44	54.00	7.56
2483.500	27.03	PK	V	32.19	59.22	74.00	14.78
2483.500	14.25	AV	V	32.19	46.44	54.00	7.56
4960.000	35.81	PK	H	11.77	47.58	74.00	26.42
4960.000	22.55	AV	H	11.77	34.32	54.00	19.68
4960.000	35.78	PK	V	11.77	47.55	74.00	26.45
4960.000	22.47	AV	V	11.77	34.24	54.00	19.76
7440.000	42.22	PK	H	15.98	58.20	74.00	15.80
7440.000	32.77	AV	H	15.98	48.75	54.00	5.25
7440.000	42.72	PK	V	15.98	58.70	74.00	15.30
7440.000	33.34	AV	V	15.98	49.32	54.00	4.68

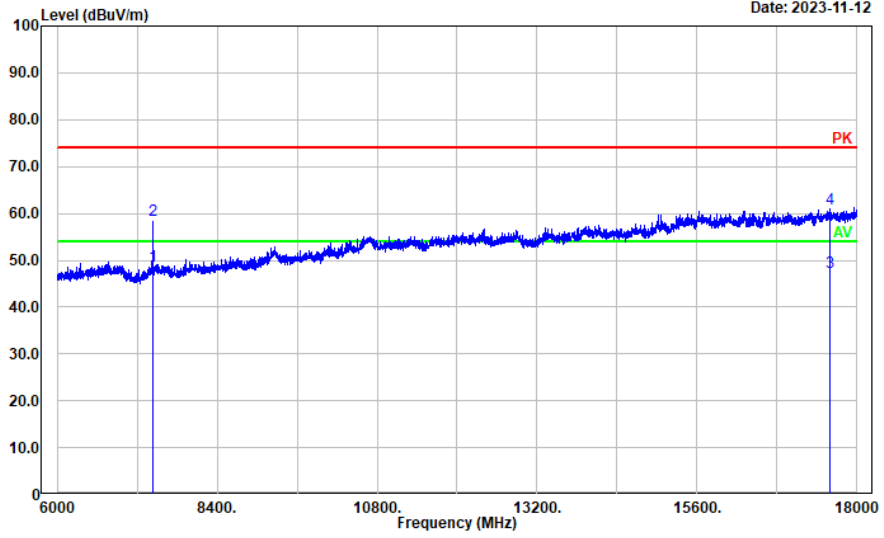
Listed with the worst radiation spurious emissions margin test plots (BLE 125kbps High channel)



Horizontal

Project No.: CR231058896-RF
 Tester: coco Tian
 Polarization: horizontal
 Note:

Date: 2023-11-12



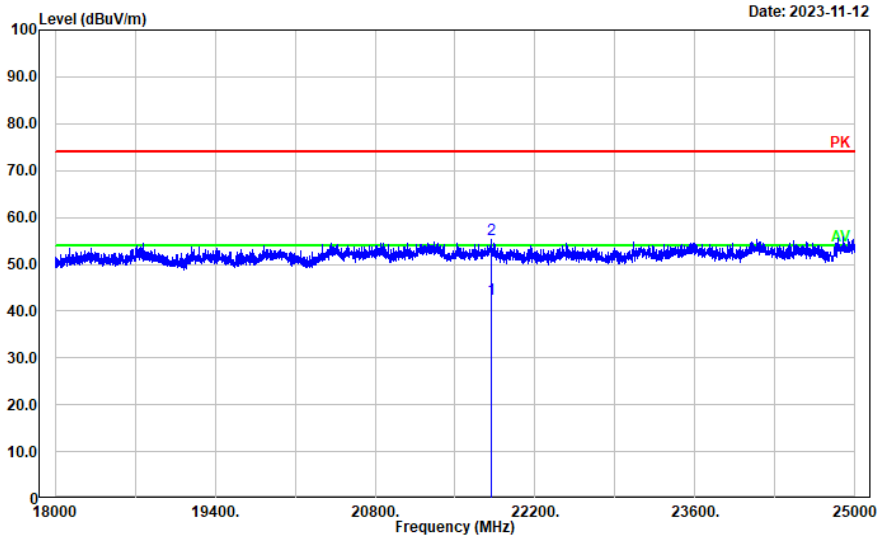
6-18GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	7440.000	32.88	15.98	48.86	54.00	5.14	Average
2	7440.000	42.50	15.98	58.48	74.00	15.52	Peak
3	17601.520	16.91	30.62	47.53	54.00	6.47	Average
4	17601.520	30.26	30.62	60.88	74.00	13.12	Peak

Horizontal

Project No.: CR231058896-RF
 Tester: coco Tian
 Polarization: Horizontal
 Note:

Date: 2023-11-12



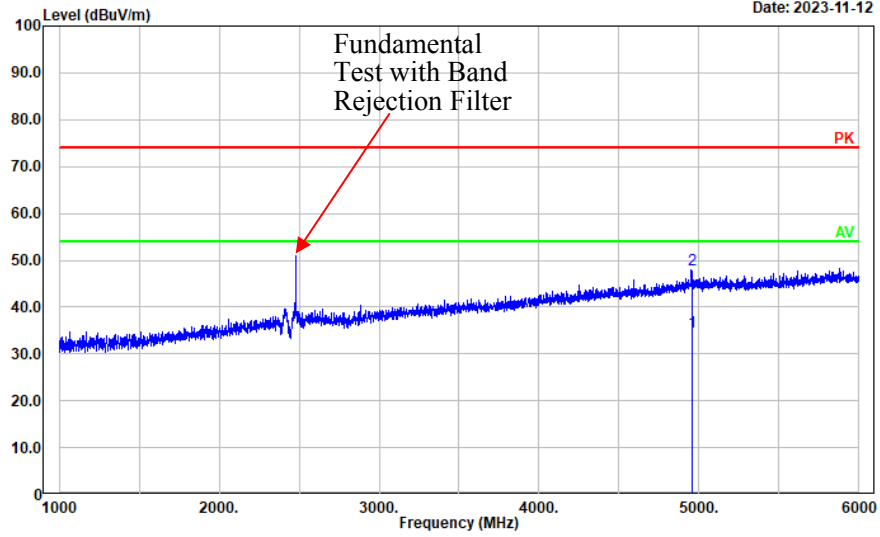
18-25GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	21818.560	37.63	4.90	42.53	54.00	11.47	Average
2	21818.560	50.29	4.90	55.19	74.00	18.81	Peak

Vertical

Project No.: CR231058896-RF
 Tester: coco Tian
 Polarization: vertical
 Note:

Date: 2023-11-12



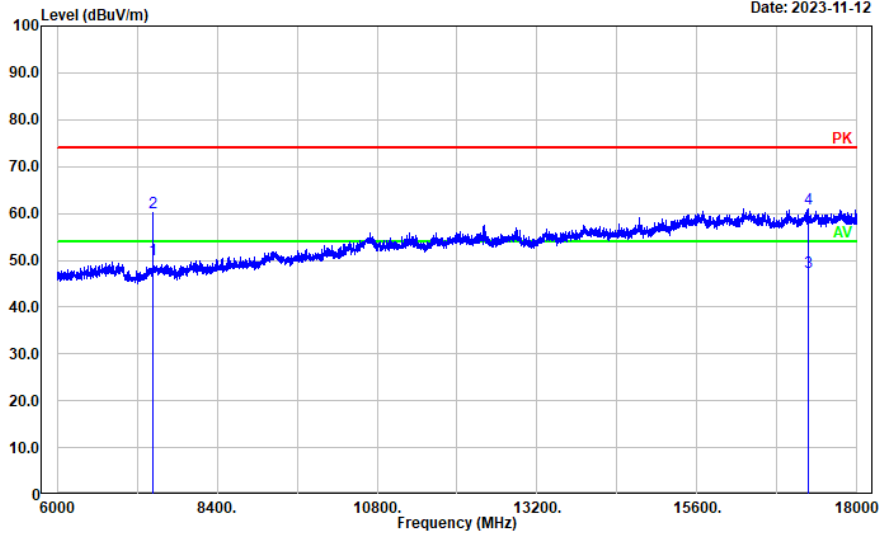
1-6GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	4960.000	22.98	11.77	34.75	54.00	19.25	Average
2	4960.000	36.09	11.77	47.86	74.00	26.14	Peak

Vertical

Project No.: CR231058896-RF
 Tester: coco Tian
 Polarization: vertical
 Note:

Date: 2023-11-12



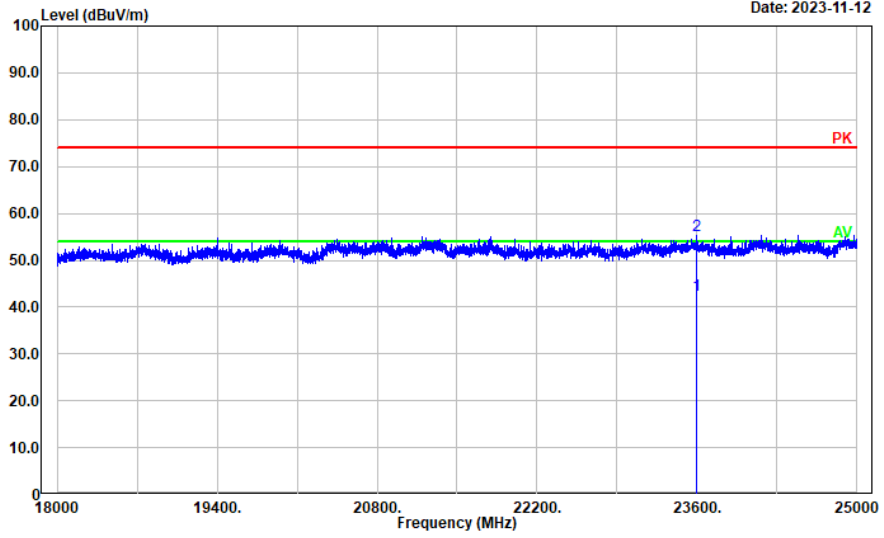
6-18GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	7440.000	34.20	15.98	50.18	54.00	3.82	Average
2	7440.000	44.09	15.98	60.07	74.00	13.93	Peak
3	17260.650	18.73	28.79	47.52	54.00	6.48	Average
4	17260.650	32.09	28.79	60.88	74.00	13.12	Peak

Vertical

Project No.: CR231058896-RF
 Tester: coco Tian
 Polarization: vertical
 Note:

Date: 2023-11-12



18-25GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	23591.320	37.56	5.09	42.65	54.00	11.35	Average
2	23591.320	50.23	5.09	55.32	74.00	18.68	Peak

4.3 6 dB Emission Bandwidth

Serial Number:	2C3V-3	Test Date:	2023/11/7
Test Site:	RF	Test Mode:	Transmitting
Tester:	Arthur Su	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.1	Relative Humidity: (%)	56	ATM Pressure: (kPa)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

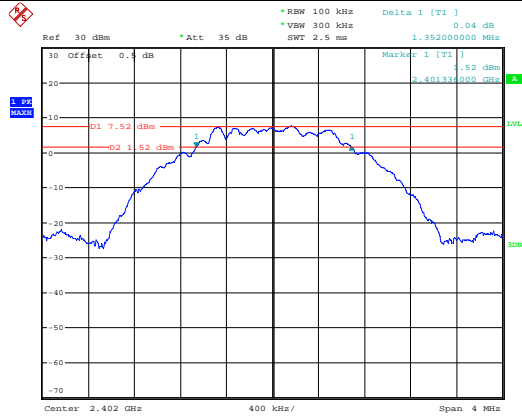
Test Data:

Test Modes	Test Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
BLE 125kbps	2402	0.680	≥ 0.5
	2440	0.680	≥ 0.5
	2480	0.680	≥ 0.5
BLE 500kbps	2402	0.692	≥ 0.5
	2440	0.684	≥ 0.5
	2480	0.672	≥ 0.5
BLE 1Mbps	2402	0.684	≥ 0.5
	2440	0.680	≥ 0.5
	2480	0.676	≥ 0.5
BLE 2Mbps	2402	1.352	≥ 0.5
	2440	1.352	≥ 0.5
	2480	1.352	≥ 0.5
ZigBee	2405	1.632	≥ 0.5
	2440	1.632	≥ 0.5
	2480	1.632	≥ 0.5

6dB Emission Bandwidth	
BLE 1Mbps Lowest Channel	<p> *RBW 100 kHz Delta 1 [T1] 0.14 dB *VBW 300 kHz *Att 35 dB SWF 2.5 ms 684.00000000 kHz Ref 30 dBm Offset 0.1 dB Marker 1 [T1] -1.78 dBm 2.40165000 GHz D1 9.75 dBm D2 1.75 dBm Center 2.402 GHz 200 kHz/ Span 2 MHz </p> <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:02:00</p>
BLE 1Mbps Middle Channel	<p> *RBW 100 kHz Delta 1 [T1] 0.01 dB *VBW 300 kHz *Att 35 dB SWF 2.5 ms 660.00000000 kHz Ref 30 dBm Offset 0.1 dB Marker 1 [T1] -1.62 dBm 2.43866000 GHz D1 9.68 dBm D2 1.68 dBm Center 2.44 GHz 200 kHz/ Span 2 MHz </p> <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:03:20</p>
BLE 1Mbps Highest Channel	<p> *RBW 100 kHz Delta 1 [T1] 0.02 dB *VBW 300 kHz *Att 35 dB SWF 2.5 ms 676.00000000 kHz Ref 30 dBm Offset 0.1 dB Marker 1 [T1] -1.49 dBm 2.47866000 GHz D1 9.49 dBm D2 1.49 dBm Center 2.48 GHz 200 kHz/ Span 2 MHz </p> <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:04:19</p>

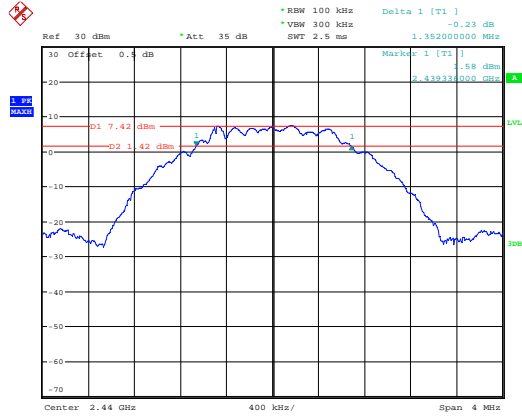
6dB Emission Bandwidth

BLE 2Mbps
Lowest Channel



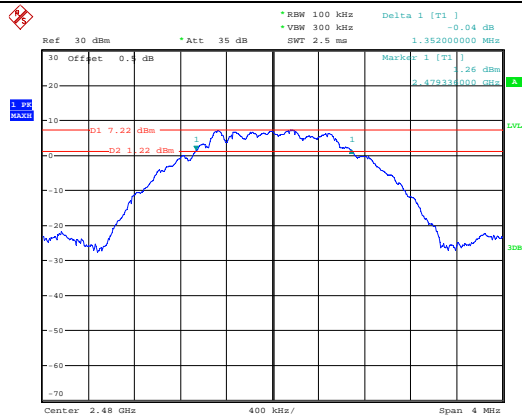
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Date: 7.NOV.2023 20:05:42

BLE 2Mbps
Middle Channel



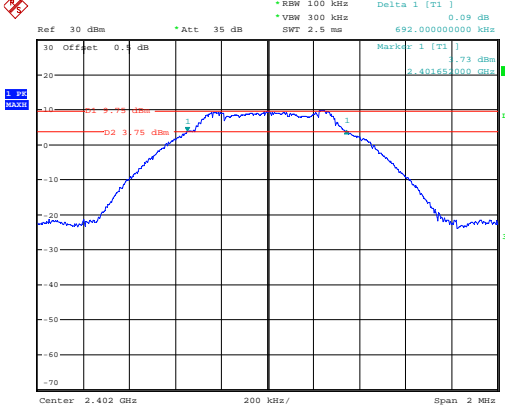
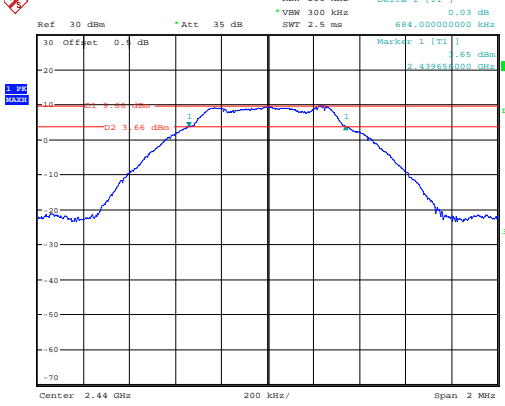
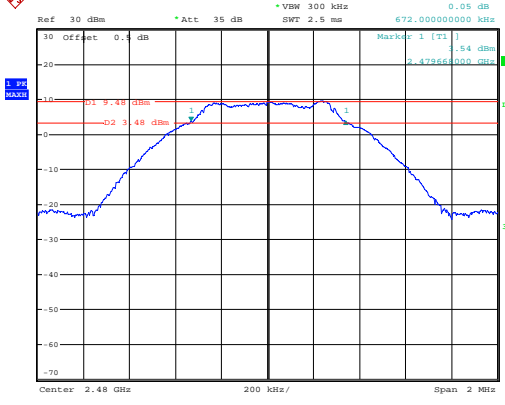
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:06:54

BLE 2Mbps
Highest Channel



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:08:01

6dB Emission Bandwidth	
BLE 125kpbs Lowest Channel	<p style="font-size: small;"> ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:16:37 </p>
BLE 125kpbs Middle Channel	<p style="font-size: small;"> ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:17:52 </p>
BLE 125kpbs Highest Channel	<p style="font-size: small;"> ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:18:52 </p>

6dB Emission Bandwidth	
BLE 500kpbs Lowest Channel	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:11:17</p>
BLE 500kpbs Middle Channel	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:12:44</p>
BLE 500kpbs Highest Channel	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:13:57</p>

6dB Emission Bandwidth	
ZigBee Lowest Channel	<p style="font-size: small;"> *RBW 100 kHz Delta 1 [T1] -0.24 dB *VBW 300 kHz *Att 35 dB SWT 2.5 ms 1.632000000 MHz Ref 30 dBm Offset 0.1 dB Marker 1 [T1] 1.24 dBm 2.405130000 GHz </p> <p style="font-size: small;"> Center 2.405 GHz 600 kHz/ Span 6 MHz </p> <p style="font-size: x-small;"> ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:58:52 </p>
ZigBee Middle Channel	<p style="font-size: small;"> *RBW 100 kHz Delta 1 [T1] 0.44 dB *VBW 300 kHz *Att 35 dB SWT 2.5 ms 1.632000000 MHz Ref 30 dBm Offset 0.1 dB Marker 1 [T1] 0.42 dBm 2.442180000 GHz </p> <p style="font-size: small;"> Center 2.44 GHz 600 kHz/ Span 6 MHz </p> <p style="font-size: x-small;"> ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:57:58 </p>
ZigBee Highest Channel	<p style="font-size: small;"> *RBW 100 kHz Delta 1 [T1] -0.14 dB *VBW 300 kHz *Att 35 dB SWT 2.5 ms 1.632000000 MHz Ref 30 dBm Offset 0.1 dB Marker 1 [T1] 0.81 dBm 2.478190000 GHz </p> <p style="font-size: small;"> Center 2.48 GHz 600 kHz/ Span 6 MHz </p> <p style="font-size: x-small;"> ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:56:43 </p>

4.4 Maximum Conducted Output Power

Serial Number:	2C3V-3	Test Date:	2023/11/7
Test Site:	RF	Test Mode:	Transmitting
Tester:	Arthur Su	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.1	Relative Humidity: (%)	56	ATM Pressure: (kPa)	101
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Test Equipment List and Details:

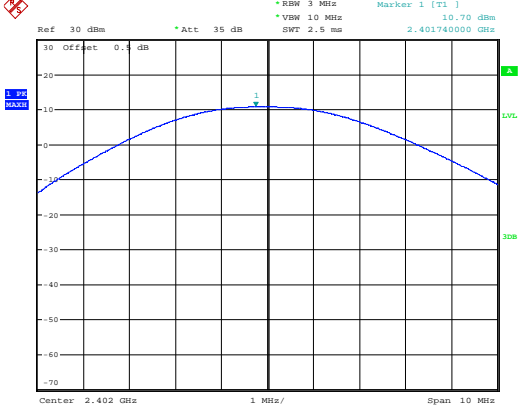
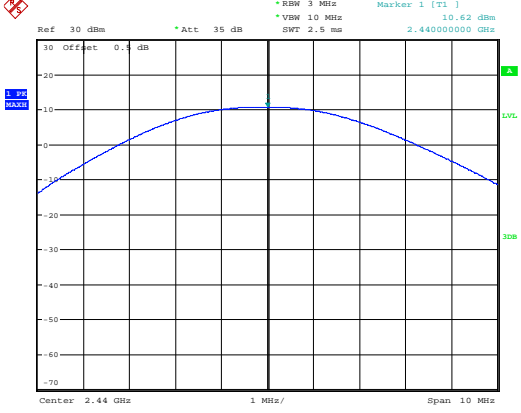
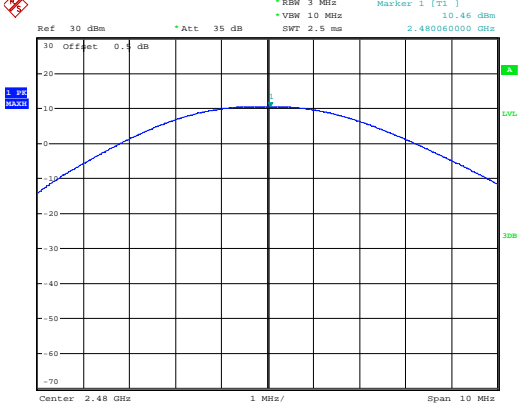
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

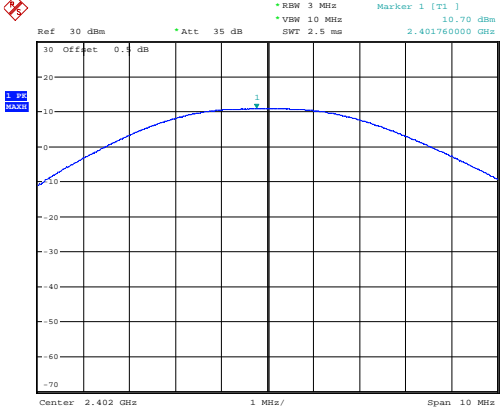
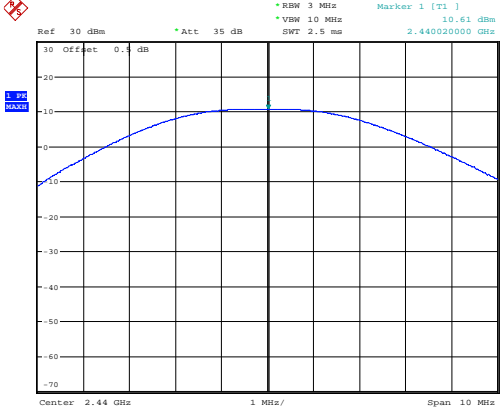
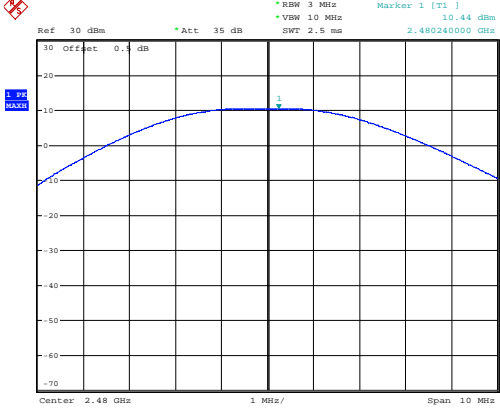
Test Data:

Test Modes	Test Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)
BLE 125kbps	2402	10.68	≤30
	2440	10.57	≤30
	2480	10.41	≤30
BLE 500kbps	2402	10.67	≤30
	2440	10.60	≤30
	2480	10.43	≤30
BLE 1Mbps	2402	10.70	≤30
	2440	10.62	≤30
	2480	10.46	≤30
BLE 2Mbps	2402	10.70	≤30
	2440	10.61	≤30
	2480	10.44	≤30
ZigBee	2405	10.71	≤30
	2440	10.62	≤30
	2480	10.44	≤30

Maximum Conducted Peak Output Power

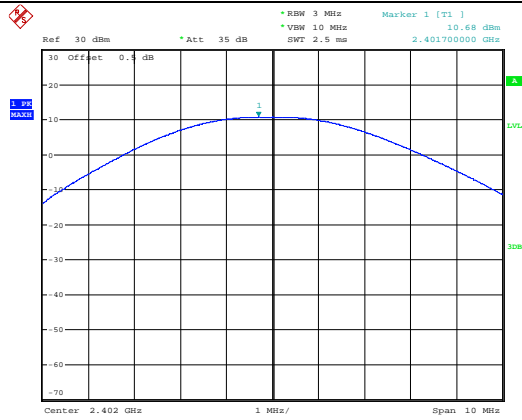
<p>BLE 1Mbps Lowest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:02:27</p>
<p>BLE 1Mbps Middle Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:03:48</p>
<p>BLE 1Mbps Highest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:04:44</p>

Maximum Conducted Peak Output Power

<p>BLE 2Mbps Lowest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:06:07</p>
<p>BLE 2Mbps Middle Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:07:18</p>
<p>BLE 2Mbps Highest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:08:25</p>

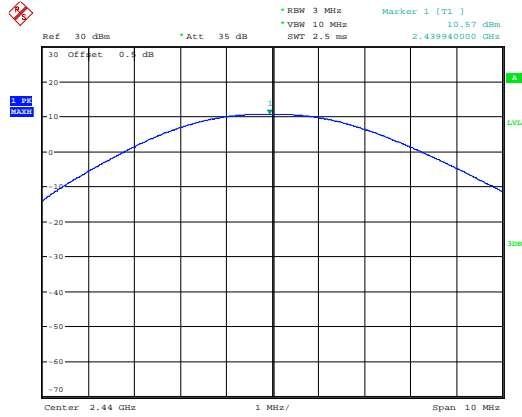
Maximum Conducted Peak Output Power

BLE 125kpbs
Lowest Channel



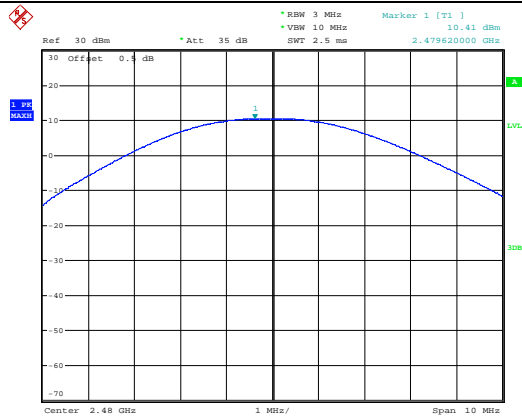
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:17:05

BLE 125kpbs
Middle Channel



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:18:20

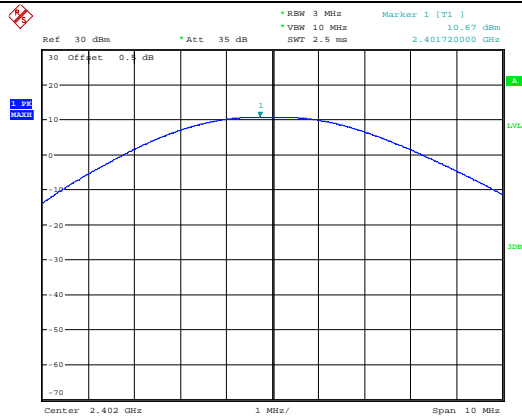
BLE 125kpbs
Highest Channel



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:19:20

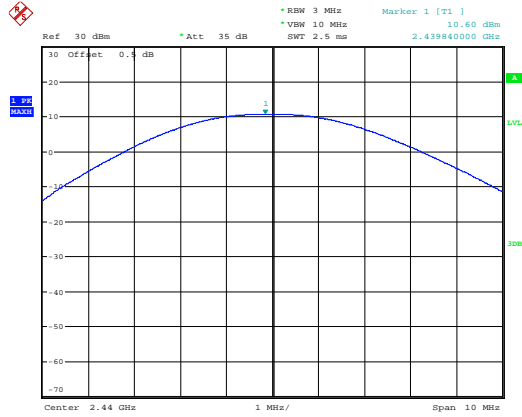
Maximum Conducted Peak Output Power

BLE 500kpbs
Lowest Channel



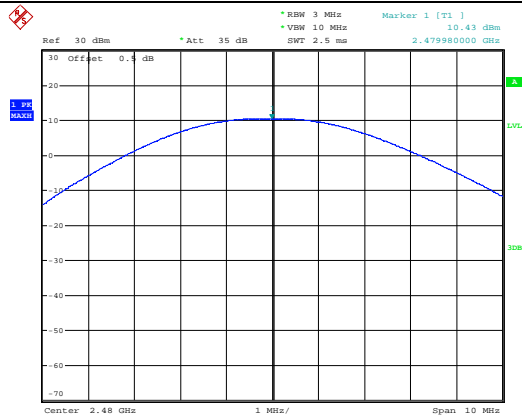
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:11:42

BLE 500kpbs
Middle Channel



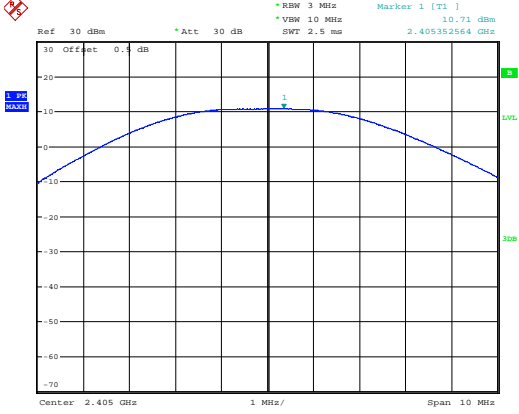
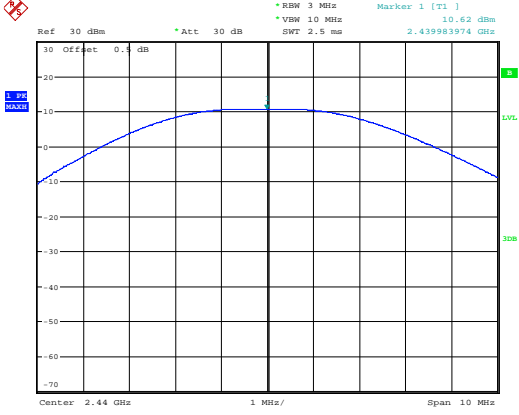
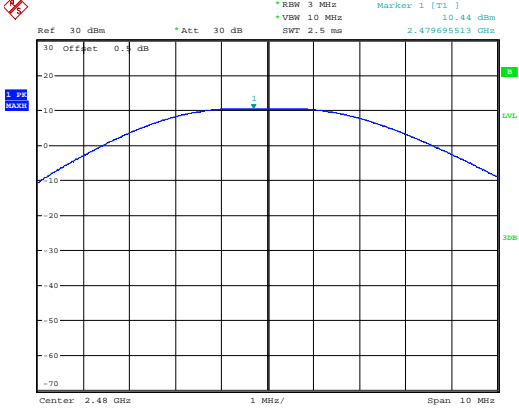
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:13:09

BLE 500kpbs
Highest Channel



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:14:25

Maximum Conducted Peak Output Power

<p>ZigBee Lowest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:32:23</p>
<p>ZigBee Middle Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:32:46</p>
<p>ZigBee Highest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:33:12</p>

4.5 Maximum power spectral density

Serial Number:	2C3V-3	Test Date:	2023/11/7
Test Site:	RF	Test Mode:	Transmitting
Tester:	Arthur Su	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.1	Relative Humidity: (%)	56	ATM Pressure: (kPa)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

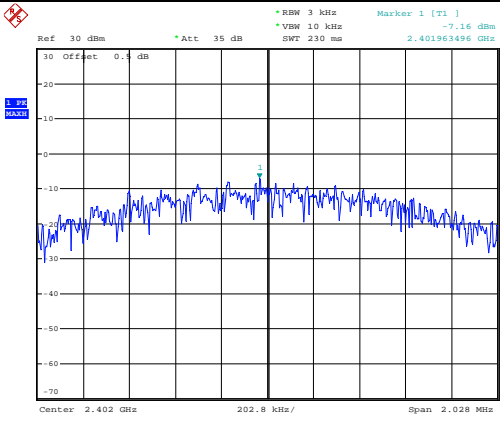
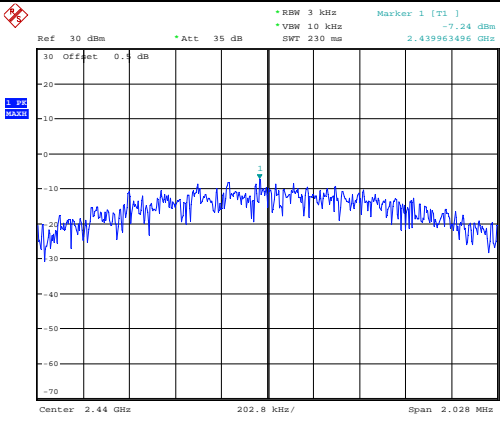
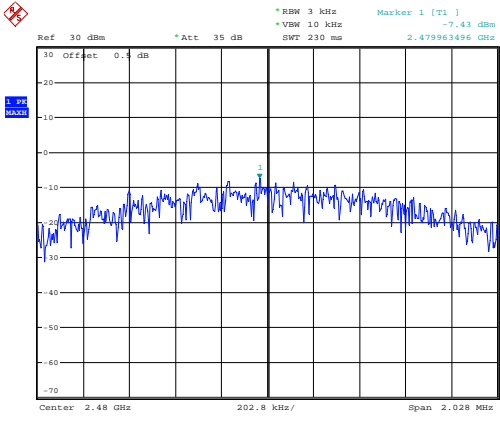
Test Data:

Test Modes	Test Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
BLE 125kbps	2402	4.36	≤8.00
	2440	4.24	≤8.00
	2480	4.06	≤8.00
BLE 500kbps	2402	-4.94	≤8.00
	2440	-4.94	≤8.00
	2480	-5.16	≤8.00
BLE 1Mbps	2402	-4.89	≤8.00
	2440	-4.94	≤8.00
	2480	-5.13	≤8.00
BLE 2Mbps	2402	-7.16	≤8.00
	2440	-7.24	≤8.00
	2480	-7.43	≤8.00
ZigBee	2405	-4.59	≤8.00
	2440	-5.11	≤8.00
	2480	-4.84	≤8.00

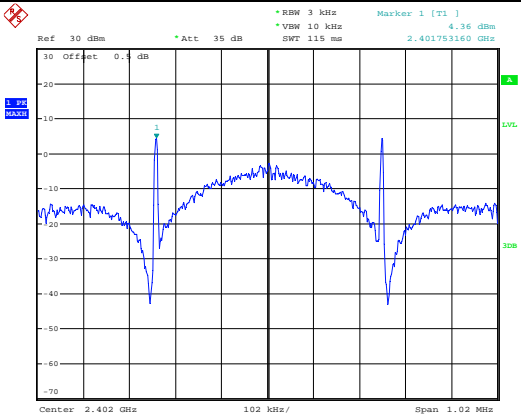
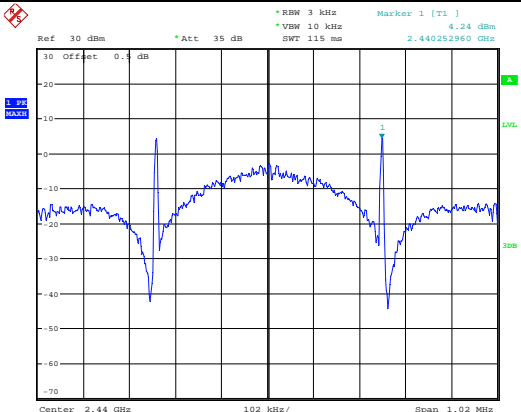
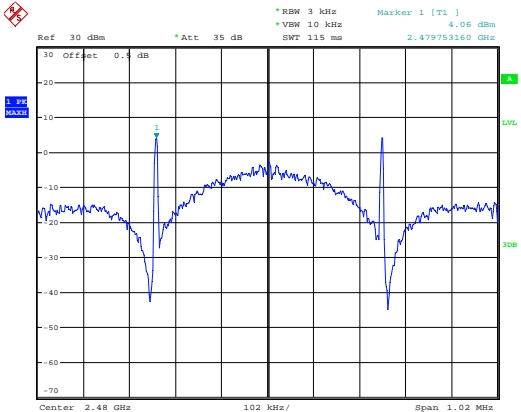
Maximum power spectral density

<p>BLE 1Mbps Lowest Channel</p>	<p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:02:37</p>
<p>BLE 1Mbps Middle Channel</p>	<p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:03:57</p>
<p>BLE 1Mbps Highest Channel</p>	<p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:04:53</p>

Maximum power spectral density

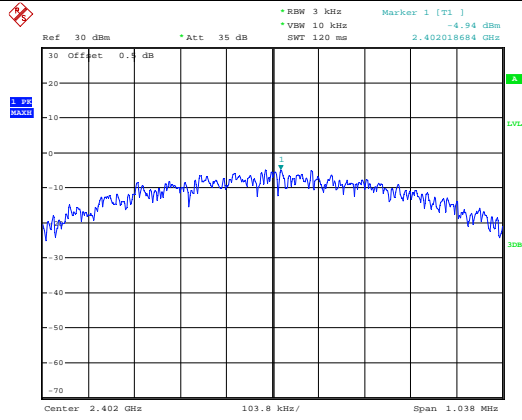
<p>BLE 2Mbps Lowest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:06:15</p>
<p>BLE 2Mbps Middle Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:07:28</p>
<p>BLE 2Mbps Highest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:08:34</p>

Maximum power spectral density

<p>BLE 125kpbs Lowest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:17:14</p>
<p>BLE 125kpbs Middle Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:18:32</p>
<p>BLE 125kpbs Highest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 20:19:33</p>

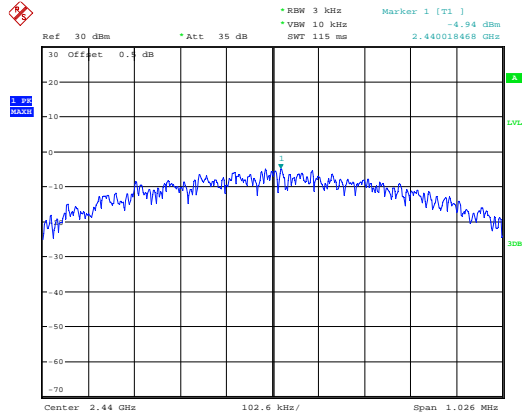
Maximum power spectral density

BLE 500kpbs
Lowest Channel



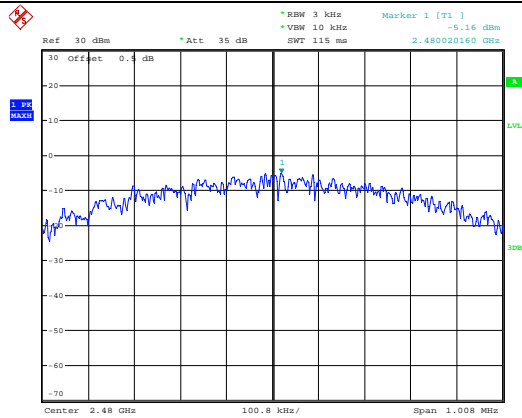
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:11:51

BLE 500kpbs
Middle Channel



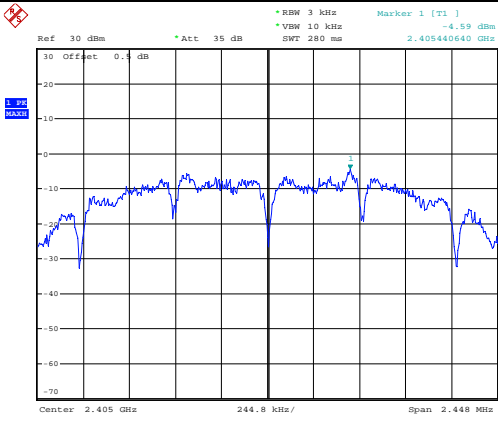
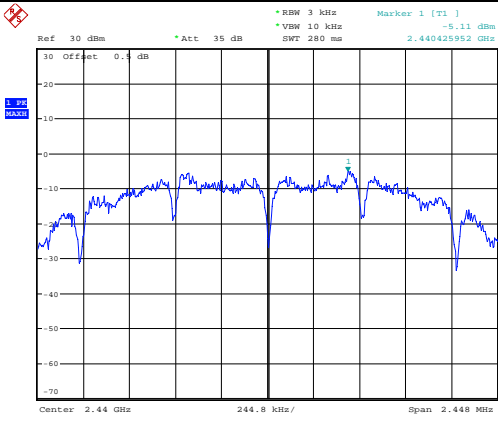
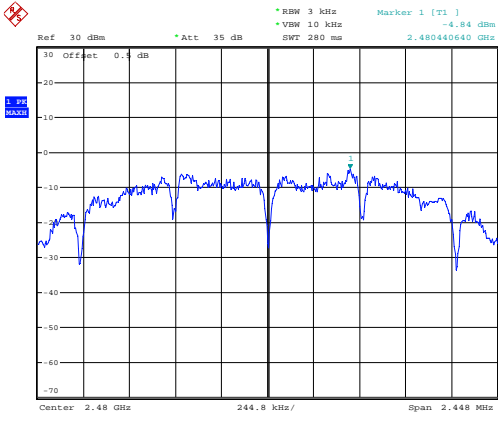
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:13:18

BLE 500kpbs
Highest Channel



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:14:34

Maximum power spectral density

<p>ZigBee Lowest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:59:21</p>
<p>ZigBee Middle Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:58:27</p>
<p>ZigBee Highest Channel</p>	 <p>ProjectNo.:CR231058896-RF Tester:Arthur Su Date: 7.NOV.2023 19:57:15</p>

4.6 100 kHz Bandwidth of Frequency Band Edge

Serial Number:	2C3V-3	Test Date:	2023/11/7
Test Site:	RF	Test Mode:	Transmitting
Tester:	Arthur Su	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.1	Relative Humidity: (%)	56	ATM Pressure: (kPa)	101
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Test Equipment List and Details:

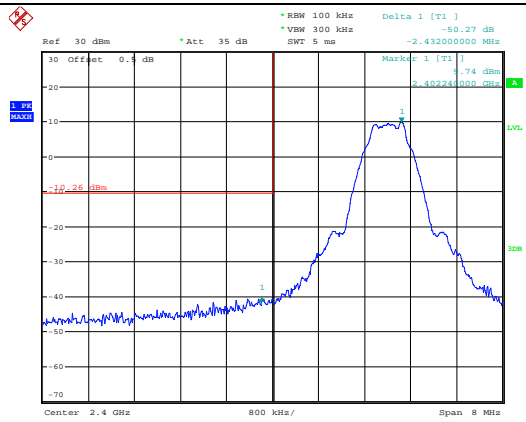
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

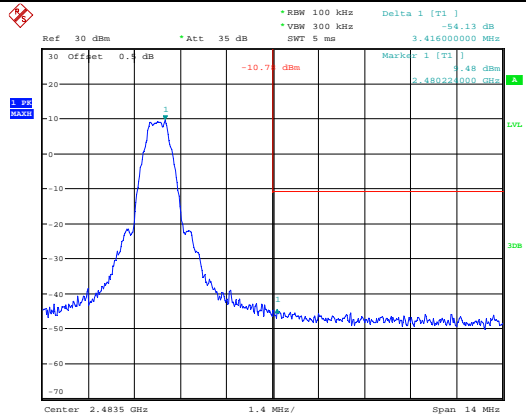
100 kHz Bandwidth of Frequency Band Edge

BLE 1Mbps
Lowest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:02:53

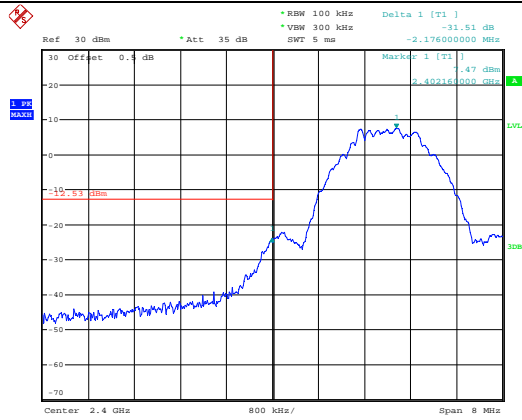
BLE 1Mbps
Highest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:05:10

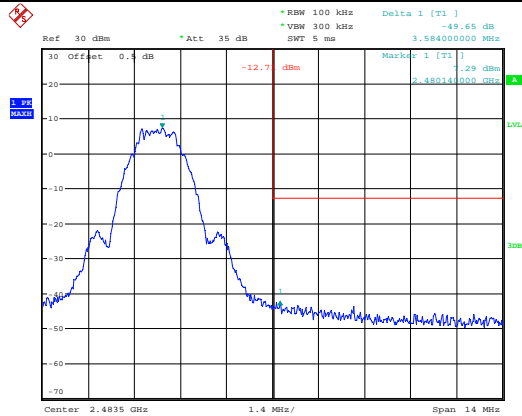
100 kHz Bandwidth of Frequency Band Edge

BLE 2Mbps
Lowest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
 Date: 7.NOV.2023 20:06:29

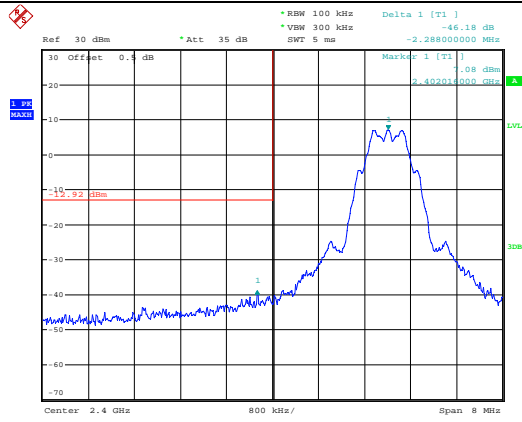
BLE 2Mbps
Highest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
 Date: 7.NOV.2023 20:08:48

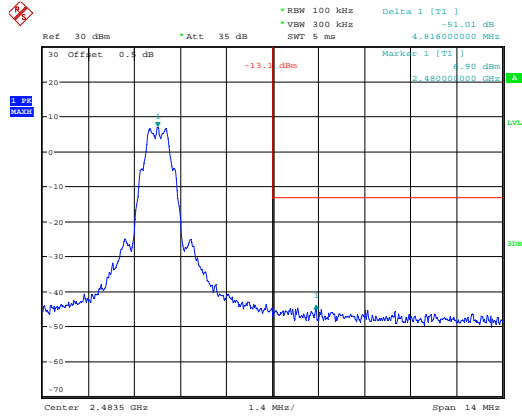
100 kHz Bandwidth of Frequency Band Edge

BLE 125kpbs
Lowest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
 Date: 7.NOV.2023 20:17:27

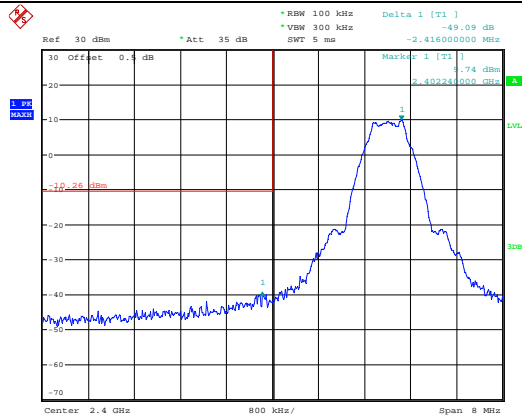
BLE 125kpbs
Highest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
 Date: 7.NOV.2023 20:19:49

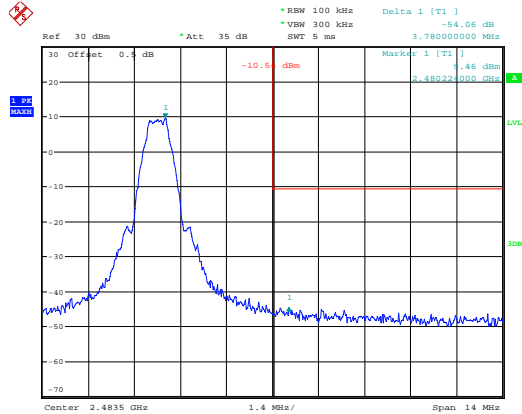
100 kHz Bandwidth of Frequency Band Edge

BLE 500kpbs
Lowest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:12:04

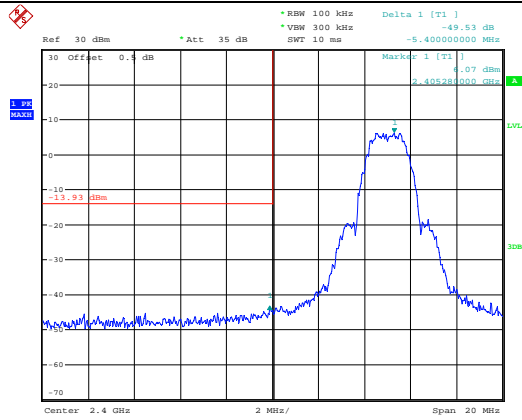
BLE 500kpbs
Highest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 20:14:48

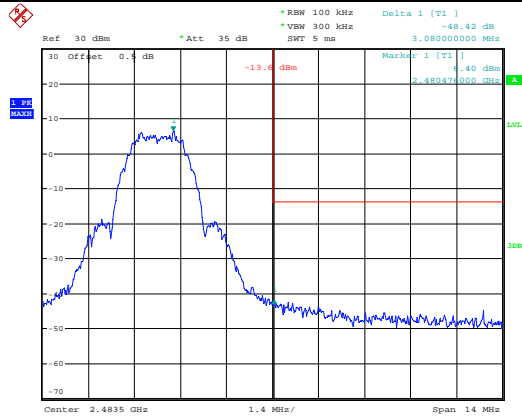
100 kHz Bandwidth of Frequency Band Edge

ZigBee
Lowest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 19:59:35

ZigBee
Highest Band edge



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 19:57:29

4.7 Duty Cycle

Serial Number:	2C3V-3	Test Date:	2023/11/7
Test Site:	RF	Test Mode:	Transmitting
Tester:	Arthur Su	Test Result:	N/A

Environmental Conditions:

Temperature: (°C)	25.1	Relative Humidity: (%)	56	ATM Pressure: (kPa)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A

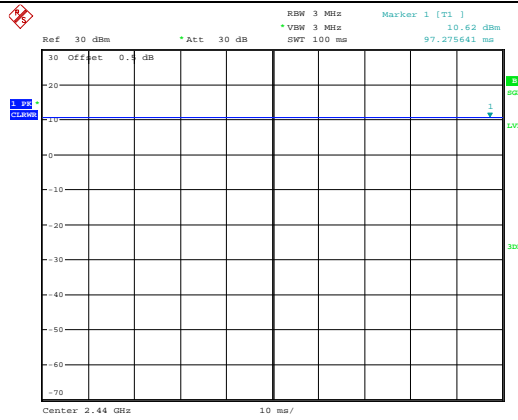
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

Test Modes	Ton (ms)	Ton+off (ms)	Duty cycle (%)	1/T (Hz)	VBW Setting (kHz)
BLE 125kbps	100	100	100.00	/	0.01
BLE 500kbps	100	100	100.00	/	0.01
BLE 1Mbps	100	100	100.00	/	0.01
BLE 2Mbps	100	100	100.00	/	0.01
ZigBee	100	100	100.00	/	0.01

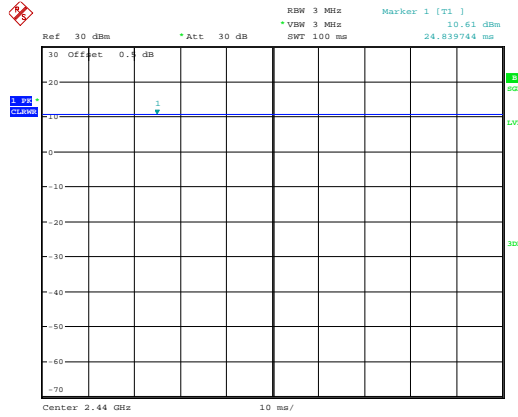
Duty Cycle

BLE 1Mbps



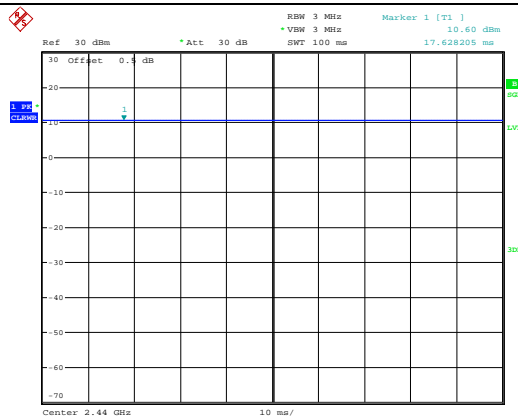
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 19:28:57

BLE 2Mbps



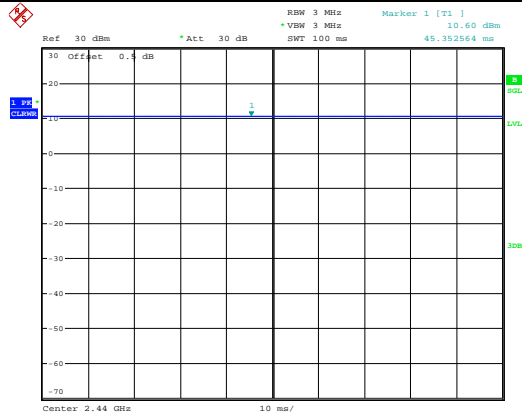
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 19:29:53

BLE 125kpbs



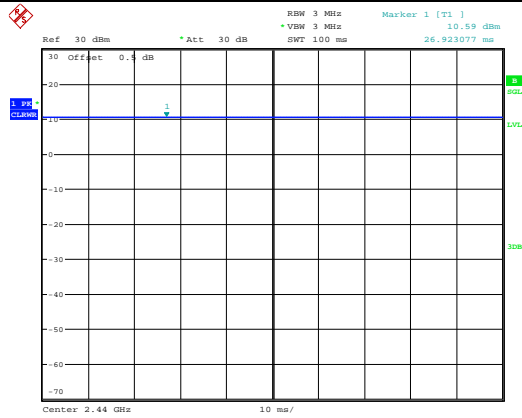
ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 19:31:01

BLE 500kpbs



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 19:30:27

ZigBee



ProjectNo.:CR231058896-RF Tester:Arthur Su
Date: 7.NOV.2023 19:31:28

5. RF EXPOSURE EVALUATION

5.1 Applicable Standard

FCC §15.247 (i) and subpart §1.1307

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 of the Commission's guidelines.

5.2 Procedure

According to §1.1307(b)(3)(i)

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$.
1.34-30	$3,450 R^2/f^2$.
30-300	$3.83 R^2$.
300-1,500	$0.0128 R^2 f$.
1,500-100,000	$19.2R^2$.

5.3 Measurement Result

Radio	Frequency (MHz)	$\lambda / 2\pi$ (mm)	Distance (mm)	Exemption ERP (mW)	Maximum Conducted Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	ERP	
							dBm	mW
Zigbee	2405-2480	19.87	200	768	11	-0.90	7.95	6.24
BLE	2402-2480	19.88	200	768	11	-0.90	7.95	6.24

Note:

The Maximum Conducted Power including Tune-up Tolerance was declared by manufacturer.

The ZigBee and BLE can't transmission simultaneously.

Result: The device compliant the MPE-Based Exemption at 20cm distances.

6. EUT PHOTOGRAPHS

Please refer to the attachment CR231058896-EXP EUT EXTERNAL PHOTOGRAPHS and CR231058896-INP EUT INTERNAL PHOTOGRAPHS

7. TEST SETUP PHOTOGRAPHS

Please refer to the attachment CR231058896-00-TSP TEST SETUP PHOTOGRAPHS.

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