Shenzhen Asia Bright Co., Ltd

TEST REPORT

SCOPE OF WORK
FCC TESTING–RF01

REPORT NUMBER
241101034SZN-001

ISSUE DATE **[REVISED DATE]**

21 January 2025 [----------]

PAGES
26

DOCUMENT CONTROL NUMBER
FCC ID 249_C

Shenzhen Asia Bright Co., Ltd

Application
For
Certification

FCC ID: 2BM3CRF01

wireless 2.4G module

Model: RF01

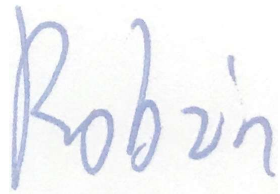
Brand Name: iPuray, ABRT, Asia Bright

2.4GHz Transceiver

Report No.: 241101034SZN-001

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-23]

Prepared and Checked by:



Robin Zhou
Senior Project Engineer

Approved by:

Johnny Wang
Project Engineer
Date: 21 January 2025

Intertek Testing Services Shenzhen Ltd. Longhua Branch
101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen, P.R. China
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MEASUREMENT/TECHNICAL REPORT

This report concerns (check one:) Original Grant X Class II Change _____

Equipment Type: DXX - Part 15 Low Power Communication Device Transmitter

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Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes _____ No X

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date
of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No X

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-1-23 Edition] provision.

Report prepared by:

Robin Zhou
Intertek Testing Services Shenzhen Ltd. Longhua Branch
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Table of Contents

1.0 Summary of Test Result

Applicant: Shenzhen Asia Bright Co., Ltd
Applicant Address: Floor 2nd-3rd, Building E, North Area No.2 of Shangxue Science Park Bantian, Shenzhen, Guangdong, China
Manufacturer: Shenzhen Asia Bright Co., Ltd
Manufacturer Address: Floor 2nd-3rd, Building E, North Area No.2 of Shangxue Science Park Bantian, Shenzhen, Guangdong, China

MODEL: RF01

FCC ID: 2BM3CRF01

Test Specification	Reference	Results
Transmitter Radiated Emission	15.249 &15.209 &15.205	Pass
Conducted Emission	15.207	Pass
Band edge	15.249 &15.209 &15.205	Pass
20dB Bandwidth	15.215(c)	Pass

Notes: The EUT uses a PCB antenna on board which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

2.0 General Description

2.1 Product Description

The equipment under test (EUT) is a wireless 2.4G module/RF01 with 2.4GHz function operating in 2410-2470MHz. The EUT is powered by 1.9-3.6VDC. For more details information pls. refer to the user manual.

Antenna Type: PCB antenna on board
Modulation Type: GFSK
Antenna Gain: 0dBi Max (This information is provided by applicant, and the applicant is responsible for the authenticity of the provided information.)

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Related Submittal(s) Grants

Not Applicable

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst-case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Justification Section" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Longhua Branch** and located at 101, 201, Building B, No. 308 Wuhe Avenue, Zhangkengjing Community, GuanHu Subdistrict, LongHua District, ShenZhen, P.R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: CN1188).

3.0 System Test Configuration

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.10 (2013).

The EUT is powered by 1.9-3.6VDC during the test, only the worst data was reported in this report.

For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the centre of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Section 4.

The EUT and transmitting antenna was centered on the turntable.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on a turn table, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during testing was designed to exercise the various system components in a manner similar to a typical use.

3.3 Special Accessories

No special accessories used.

3.4 Equipment Modification

Any modifications installed previous to testing by Shenzhen Asia Bright Co., Ltd will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Longhua Branch.

3.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

3.6 Support Equipment List and Description

Description	Manufacturer	Remark
Portable Netbook Computer (Provided by Intertek)	DELL	Latitude 5420
USB cable (Provided by Intertek)	/	Unshielded without ferrite core, 1.0m

4.0 Emission Results

Data is included worst-case configuration (the configuration which resulted in the highest emission levels).

4.1 Radiated Test Results

A sample calculation, configuration photographs and data tables of the emissions are included.

4.1.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

Where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB/m
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

Assume a receiver reading of 62.0 dBµV is obtained. The antenna factor of 7.4 dB/m and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 62.0 dBµV
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB
AV = -10 dB
FS = 62 + 7.4 + 1.6 - 29 + 0 = 42 dBµV/m

Level in µV/m = Common Antilogarithm [(42 dBµV/m)/20] = 125.9 µV/m

4.1.2 Radiated Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos. pdf.

4.1.3 Radiated Emissions

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Worst Case Radiated Emission
at
196.872333 MHz

Judgement: Passed by 13.2 dB

TEST PERSONNEL:

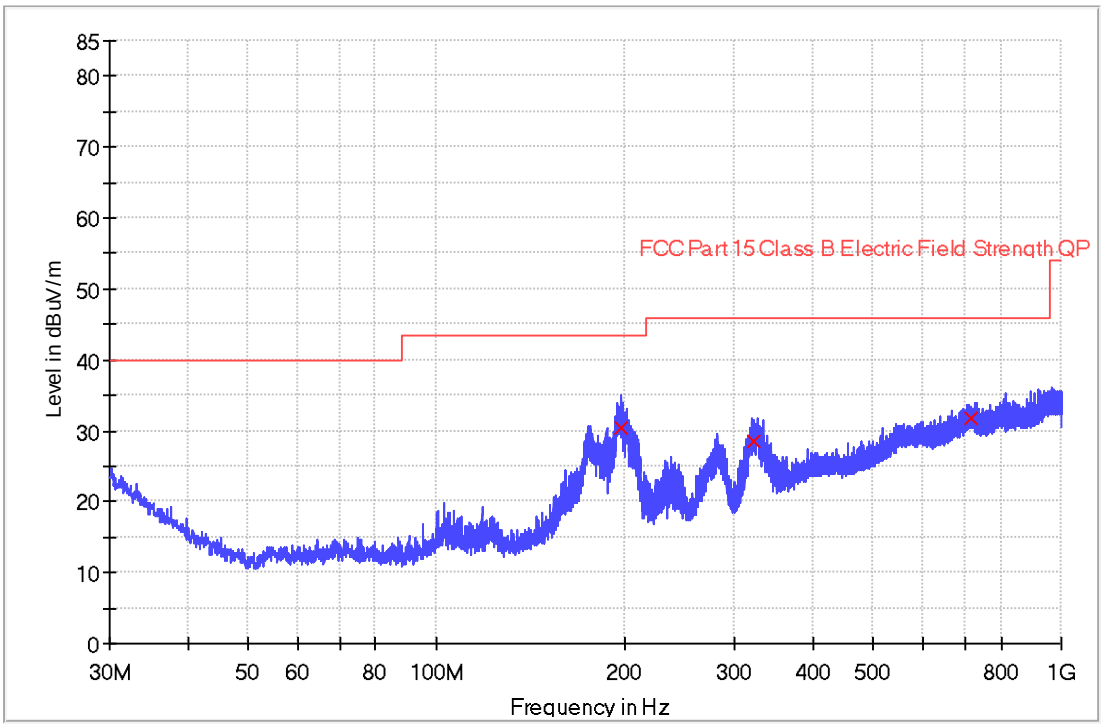
Sign on file

Robin Zhou, Senior Project Engineer
Typed/Printed Name

13 December 2024
Date

Applicant: Shenzhen Asia Bright Co., Ltd
Date of Test: 13 December 2024 Model: RF01
Worst Case Operating Mode: Transmitting

ANT Polarity: Horizontal

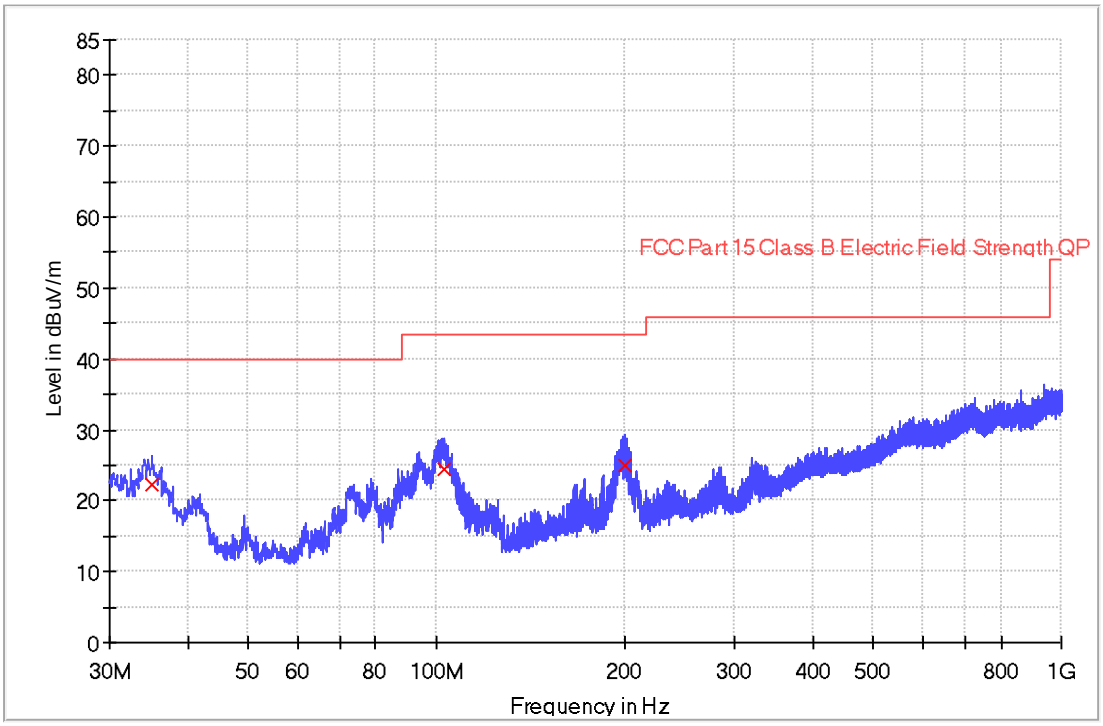


Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit – QPK (dBµV/m)
196.872333	30.3	1000.0	120.000	0.0	H	17.1	13.2	43.5
322.746000	28.7	1000.0	120.000	0.0	H	21.4	17.3	46.0
718.118000	31.7	1000.0	120.000	0.0	H	31.0	14.3	46.0

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin-QPK (dB) = Limit-QPK (dBµV/m) – Quasi Peak (dBµV/m)

Applicant: Shenzhen Asia Bright Co., Ltd
Date of Test: 13 December 2024 Model: RF01
Worst Case Operating Mode: Transmitting

ANT Polarity: Vertical



Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Corr. (dB/m)	Margin - QPK (dB)	Limit – QPK (dBµV/m)
35.011667	22.3	1000.0	120.000	0.0	V	19.8	17.7	40.0
103.041000	24.4	1000.0	120.000	0.0	V	14.9	19.1	43.5
200.041000	25.1	1000.0	120.000	0.0	V	17.3	18.4	43.5

Remark:
1. Corr. (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
2. Quasi Peak (dBµV/m) = Corr. (dB/m) + Read Level (dBµV)
3. Margin-QPK (dB) = Limit-QPK (dBµV/m) – Quasi Peak (dBµV/m)

4.1.4 Transmitter Spurious Emissions (Radiated)

Worst Case Radiated Emission
at
4880.000 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos. pdf.

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 5.8 dB

TEST PERSONNEL:

Sign on file

Robin Zhou, Senior Project Engineer
Typed/Printed Name

13 December 2024
Date

Applicant: Shenzhen Asia Bright Co., Ltd
Date of Test: 13 December 2024 Model: RF01
Worst Case Operating Mode: Transmitting

Table 1

Radiated Emissions

(2410MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	2410.000	106.3	36.7	28.1	97.7	114.0	-16.3
Horizontal	4820.000	60.5	36.7	35.5	59.3	74.0	-14.7
Horizontal	7230.000	53.6	36.1	36.5	54.0	74.0	-20.0
Horizontal	9640.000	48.5	36.2	37.0	49.3	74.0	-24.7

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m	Margin (dB)
Horizontal	2410.000	85.7	36.7	28.1	77.1	94.0	-16.9
Horizontal	4820.000	38.7	36.7	35.5	37.5	54.0	-16.5
Horizontal	7230.000	39.0	36.1	36.5	39.4	54.0	-14.6
Horizontal	9640.000	39.1	36.2	37.0	39.9	54.0	-14.1

Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Applicant: Shenzhen Asia Bright Co., Ltd
Date of Test: 13 December 2024 Model: RF01
Worst Case Operating Mode: Transmitting

Table 2

Radiated Emissions

(2440MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	2440.000	108.7	36.7	28.1	100.1	114.0	-13.9
Horizontal	4880.000	69.4	36.7	35.5	68.2	74.0	-5.8
Horizontal	7320.000	56.7	36.1	37.2	57.8	74.0	-16.2
Horizontal	9760.000	57.5	36.2	37.0	58.3	74.0	-15.7

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	2440.000	87.4	36.7	28.1	78.8	94.0	-15.2
Horizontal	4880.000	38.8	36.7	35.5	37.6	54.0	-16.4
Horizontal	7320.000	41.0	36.1	37.2	42.1	54.0	-11.9
Horizontal	9760.000	40.4	36.2	37.0	41.2	54.0	-12.8

Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

Applicant: Shenzhen Asia Bright Co., Ltd
Date of Test: 13 December 2024 Model: RF01
Worst Case Operating Mode: Transmitting

Table 3

Radiated Emissions

(2470MHz)

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	2470.000	109.1	36.7	28.1	100.5	114.0	-13.5
Horizontal	4940.000	62.7	36.7	35.5	61.5	74.0	-12.5
Horizontal	7410.000	57.8	36.1	37.2	58.9	74.0	-15.1
Horizontal	9880.000	47.5	36.3	38.9	50.1	74.0	-23.9

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB/m)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	2470.000	87.5	36.7	28.1	78.9	94.0	-15.1
Horizontal	4940.000	41.4	36.7	35.5	40.2	54.0	-13.8
Horizontal	7410.000	41.2	36.1	37.2	42.3	54.0	-11.7
Horizontal	9880.000	39.9	36.3	38.9	42.5	54.0	-11.5

Notes:
1. Peak detector is used for the emission measurement (RBW=1MHz / VBW=3MHz for Peak value, and RBW=1MHz / VBW=10Hz for Average value; RBW=3MHz is used for fundamental emission measurement).

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

4.2 Conducted Emission Configuration Photograph

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: conducted photos.pdf.

4.2.1 Conducted Emission

Worst Case Conducted Configuration
at
0.154000MHz

Judgement: Passed by 18.2dB margin

TEST PERSONNEL:

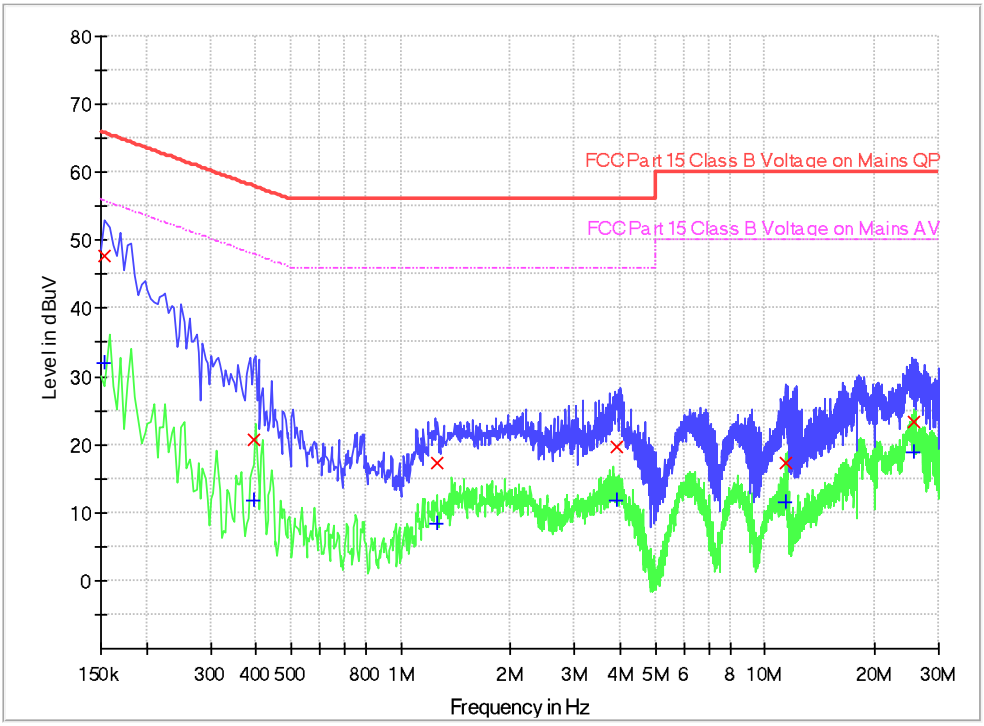
Sign on file

Robin Zhou, Senior Project Engineer
Typed/Printed Name

13 December 2024
Date

Applicant: Shenzhen Asia Bright Co., Ltd
Date of Test: 13 December 2024 Model: RF01
Worst Case Operating Mode: Transmitting
Phase: Live

Graphic / Data Table
Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154000	47.6	9.000	L1	9.6	18.2	65.8
0.394000	20.6	9.000	L1	9.6	37.4	58.0
1.254000	17.4	9.000	L1	9.6	38.6	56.0
3.938000	19.6	9.000	L1	9.7	36.4	56.0
11.442000	17.2	9.000	L1	10.1	42.8	60.0
25.526000	23.3	9.000	L1	10.7	36.7	60.0

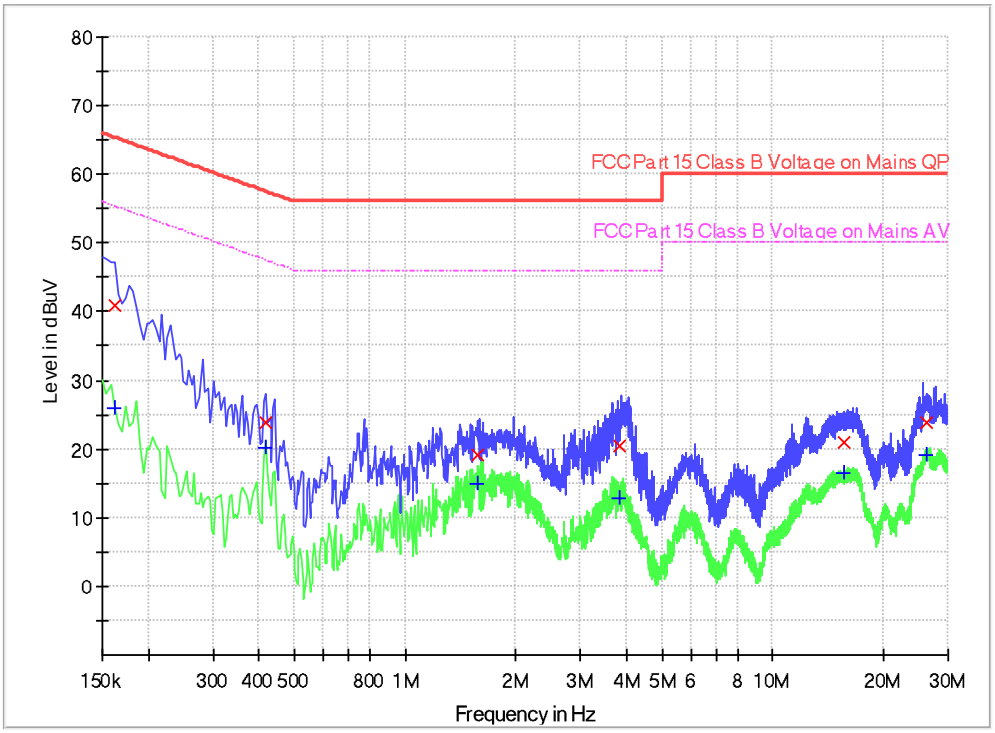
Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154000	32.0	9.000	L1	9.6	23.8	55.8
0.394000	11.8	9.000	L1	9.6	36.2	48.0
1.254000	8.3	9.000	L1	9.6	37.7	46.0
3.938000	11.8	9.000	L1	9.7	34.2	46.0
11.442000	11.4	9.000	L1	10.1	38.6	50.0
25.526000	18.9	9.000	L1	10.7	31.1	50.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBµV) – Level (dBµV)

Applicant: Shenzhen Asia Bright Co., Ltd
Date of Test: 13 December 2024 Model: RF01
Worst Case Operating Mode: Transmitting
Phase: Neutral

Graphic / Data Table
Conducted Emissions
Pursuant to FCC 15.207: Emissions Requirement



Limit and Margin QP

Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.162000	40.9	9.000	N	9.6	24.5	65.4
0.418000	23.7	9.000	N	9.6	33.8	57.5
1.570000	19.3	9.000	N	9.7	36.7	56.0
3.814000	20.5	9.000	N	9.7	35.5	56.0
15.646000	21.0	9.000	N	10.4	39.0	60.0
26.150000	23.8	9.000	N	10.9	36.2	60.0

Limit and Margin AV

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.162000	26.0	9.000	N	9.6	29.4	55.4
0.418000	20.1	9.000	N	9.6	27.4	47.5
1.570000	15.0	9.000	N	9.7	31.0	46.0
3.814000	12.8	9.000	N	9.7	33.2	46.0
15.646000	16.4	9.000	N	10.4	33.6	50.0
26.150000	19.2	9.000	N	10.9	30.8	50.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBµV) – Level (dBµV)

5.0 Equipment Photographs

For electronic filing, the photographs of the tested EUT are saved with filename: external photos.pdf & internal photos.pdf.

6.0 Product Labelling

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

7.0 Technical Specifications

For electronic filing, the block diagram and schematics of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

9.0 Miscellaneous Information

This miscellaneous information includes details of the measured bandedge, 20dB Bandwidth, the test procedure and calculation of factor such as pulse desensitization.

9.1 Bandedge Plot

The test plots are attached as below. From the below plots, the field strength of any emissions outside of the specified frequency band are attenuated to the general radiated emission limits in section 15.209. It fulfils the requirement of 15.249(d).

Peak Measurement

Bandedge compliance is determined by applying marker-delta method, i.e (Bandedge Plot).

(i) Lowest frequency channel (2410MHz):

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the bandedge plot

= 97.7 dBµv/m-49.82 dB
= 47.88 dBµv/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the bandedge plot

= 77.1 dBµv/m-49.82 dB
= 27.28 dBµv/m

(ii) Highest frequency channel (2470MHz):

Peak Resultant field strength = Fundamental emissions (peak value) – delta from the bandedge plot

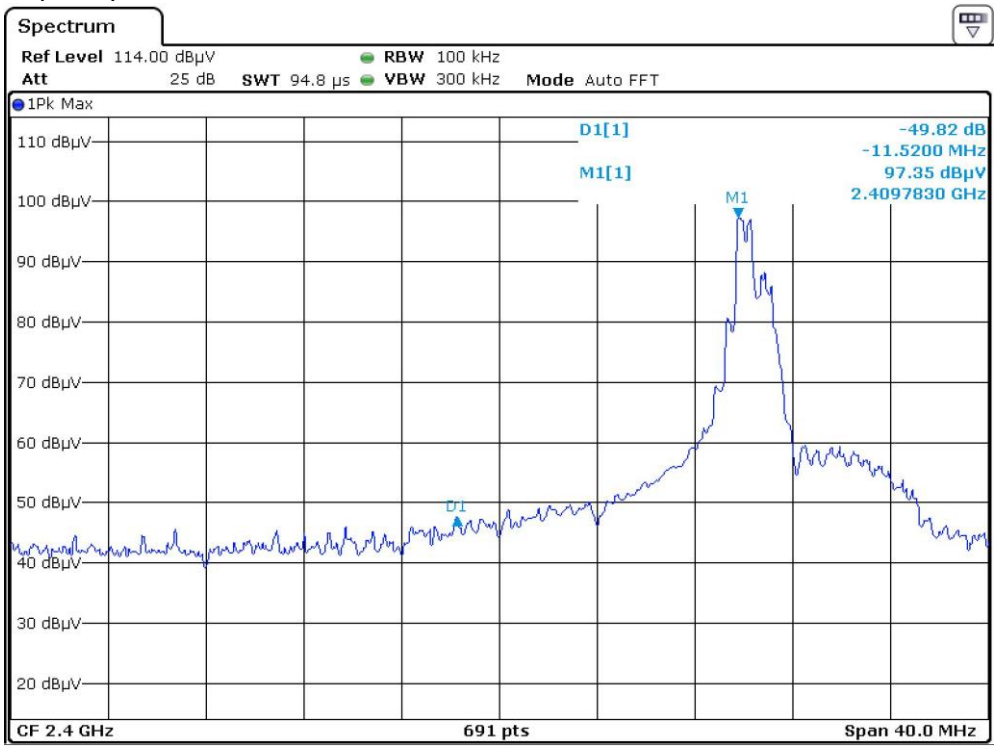
= 100.5 dBµv/m-51.76 dB
= 48.74 dBµv/m

Average Resultant field strength = Fundamental emissions (average value) – delta from the bandedge plot

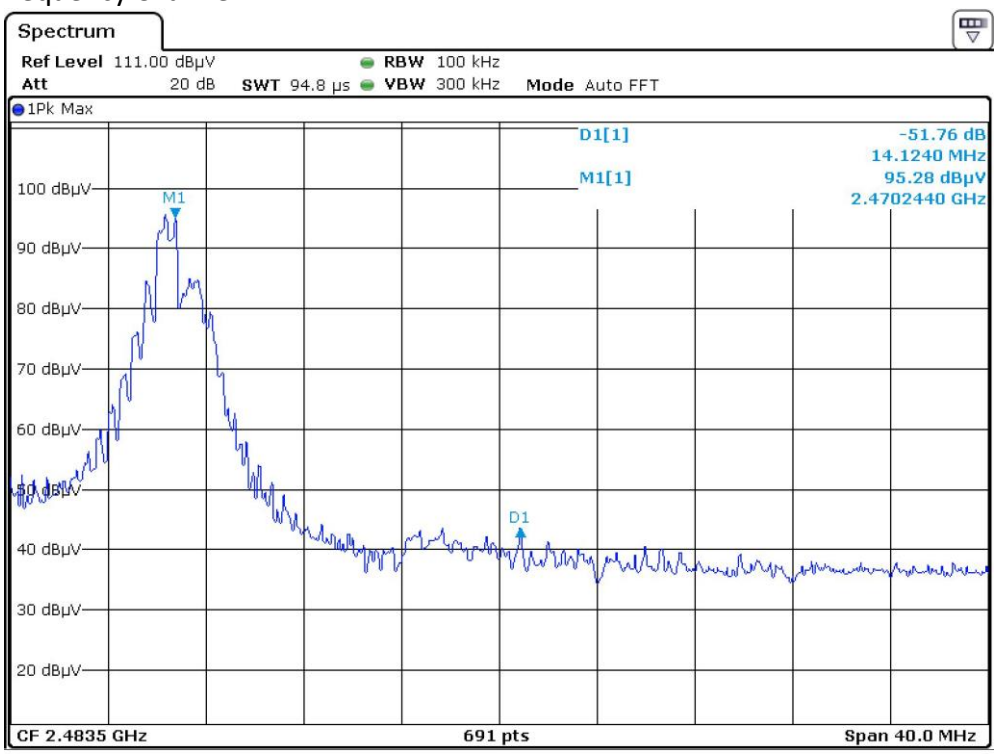
= 78.9 dBµv/m-51.76 dB
= 27.14 dBµv/m

The resultant field strength meets the general radiated emission limit in section 15.209, which does not exceed 74dBµv/m (Peak Limit) and 54dBµv/m (Average Limit).

Lowest frequency Channel



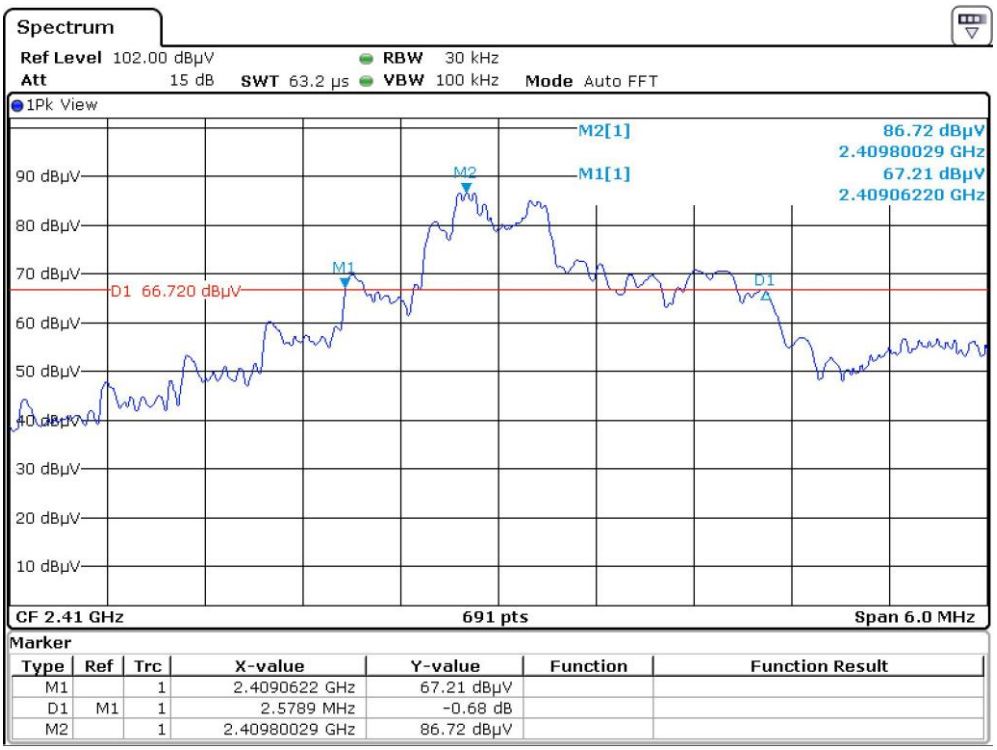
Highest frequency Channel



9.2 20dB bandwidth

Pursuant to FCC part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered. The test plots are reported as below.

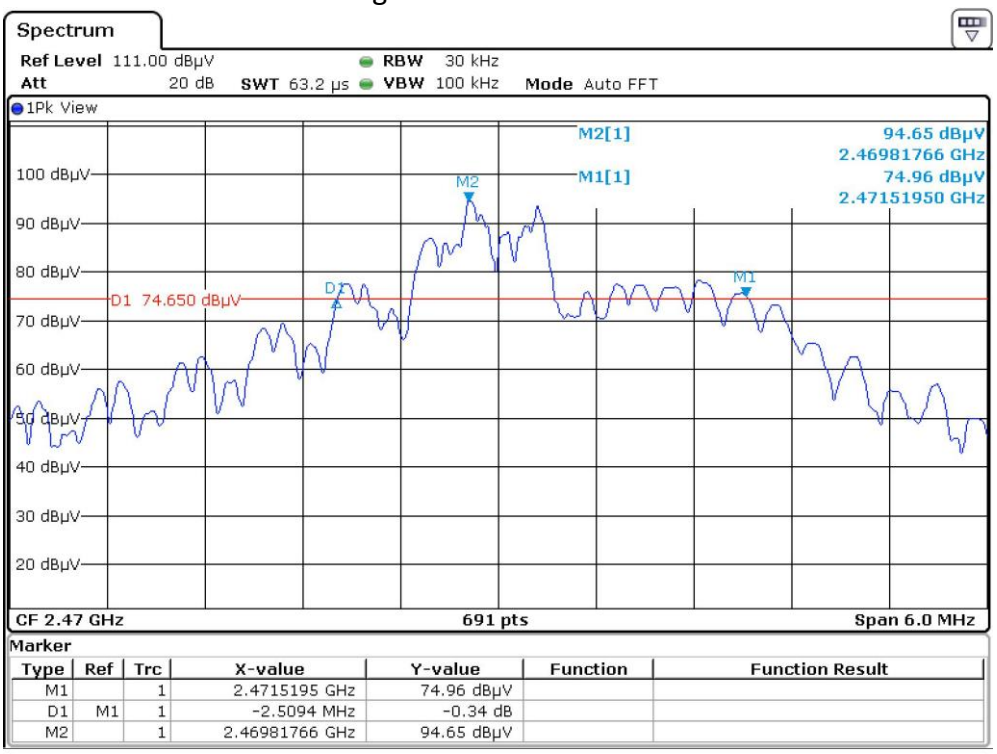
Low Channel: 2410MHz



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4090622 GHz	67.21 dBµV		
D1	M1	1	2.5789 MHz	-0.68 dB		
M2		1	2.40980029 GHz	86.72 dBµV		

High Channel: 2470MHz



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4715195 GHz	74.96 dBµV		
D1	M1	1	-2.5094 MHz	-0.34 dB		
M2		1	2.46981766 GHz	94.65 dBµV		

9.3 Discussion of Pulse Desensitization

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

9.4 Transmitter Duty Cycle Calculation, FCC Rule 15.35(b, c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
x	Not applicable, duty cycle was not used.

9.5 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of transmitters operating under Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.10 - 2013.

The transmitting equipment under test (EUT) is placed on a styrene turntable which is four feet in diameter and approximately 0.8 meter up to 1GHz and 1.5 meter above 1GHz in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjust through all three orthogonal axes to obtain maximum emission levels. The antenna height and polarization are varied during the testing to search for maximum signal levels.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in section 9.4.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

Detector function for conducted emissions is in QP & AV mode and IFBW setting is 9 kHz from the frequency band 150 kHz to 30MHz.

9.5 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements are made as described in ANSI C63.10 - 2013.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. Above 1000 MHz, a resolution bandwidth of 1 MHz is used (RBW 3MHz used for fundamental emission).

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the restricted bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, but those measurements taken at a closer distance are so marked.

10.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-13	Biconilog Antenna	ETS	3142E	00217919	2022-07-13	2025-07-13
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	2024-05-05	2027-05-05
SZ061-08	Horn Antenna	ETS	3115	00092346	2024-09-13	2027-09-13
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	2022-08-31	2025-08-31
SZ056-03	Spectrum Analyzer	R&S	FSP30	101148	2024-04-22	2025-04-22
SZ185-03	EMI Receiver	R & S	ESR7	101975	2024-04-23	2025-04-23
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	2024-04-22	2025-04-22
SZ188-05	Anechoic Chamber	ETS	FACT 3-2.0	CT001880-Q1391	2021-05-25	2026-05-25
SZ062-40	RF Cable	Talent Microwave	A50-3.5M3.5M-4.5M	22012932	2024-09-30	2025-09-30
SZ062-41	RF Cable	Talent Microwave	A50-3.5M3.5M-8M	22012931	2024-09-30	2025-09-30
SZ062-34	RF Cable	Talent Microwave	A50-3.5M3.5M-1M	19100799	2024-09-30	2025-09-30
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	015	2024-04-23	2025-04-23
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	2024-07-09	2025-07-09
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	2024-04-23	2025-04-23
SZ188-03	Shielding Room	ETS	RFD-100	4100	2022-12-20	2025-12-20
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	2024-07-10	2025-07-10

********** End of Report**********