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

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 6356.01

TEST REPORT

Applicant: **VTech Telecommunications Ltd**

Address: 23/F Tai Ping Ind Center Block 1 57 Ting Kok Rd Tai Po NT, Hong Kong

FCC ID: **EW780-S108-00**

Product Name: **SIP Phone**

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: **CR230850551-00B**

Date Of Issue: **2023/12/7**

Reviewed By: **Calvin Chen**

Title: RF Engineer

Approved By: **Sun Zhong**

Title: Manager

Test Laboratory: **China Certification ICT Co., Ltd (Dongguan)**
No. 113, Pingkang Road, Dalang Town, Dongguan,
Guangdong, China
Tel: +86-769-82016888

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

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

This report cannot be reproduced except in full, without prior written approval of the Company.

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk "★".

CONTENTS

DOCUMENT REVISION HISTORY 5

1. GENERAL INFORMATION 6

1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 6

1.2 DESCRIPTION OF TEST CONFIGURATION 8

1.2.1 EUT Operation Condition: 8
1.2.2 Support Equipment List and Details 8
1.2.3 Support Cable List and Details 8
1.2.4 Block Diagram of Test Setup 9

1.3 MEASUREMENT UNCERTAINTY 10

2. SUMMARY OF TEST RESULTS 11

3. REQUIREMENTS AND TEST PROCEDURES 12

3.1 AC LINE CONDUCTED EMISSIONS 12

3.1.1 Applicable Standard 12
3.1.2 EUT Setup 13
3.1.3 EMI Test Receiver Setup 13
3.1.4 Test Procedure 14
3.1.5 Corrected Amplitude & Margin Calculation 14

3.2 RADIATION SPURIOUS EMISSIONS 15

3.2.1 Applicable Standard 15
3.2.2 EUT Setup 15
3.2.3 EMI Test Receiver & Spectrum Analyzer Setup 16
3.2.4 Test Procedure 17
3.2.5 Corrected Amplitude & Margin Calculation 17

3.3 6 DB EMISSION BANDWIDTH: 18

3.3.1 Applicable Standard 18
3.3.2 EUT Setup 18
3.3.3 Test Procedure 18

3.4 MAXIMUM CONDUCTED OUTPUT POWER: 19

3.4.1 Applicable Standard 19
3.4.2 EUT Setup 19
3.4.3 Test Procedure 19

3.5 MAXIMUM POWER SPECTRAL DENSITY: 20

3.5.1 Applicable Standard 20
3.5.2 EUT Setup 20
3.5.3 Test Procedure 20

3.6 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE: 21

3.6.1 Applicable Standard 21
3.6.2 EUT Setup 21
3.6.3 Test Procedure 21

3.7 DUTY CYCLE: 22

3.7.1 EUT Setup 22
3.7.2 Test Procedure 22

3.8 ANTENNA REQUIREMENT 23
3.8.1 Applicable Standard 23
3.8.2 Judgment 23
4. Test DATA AND RESULTS 24
4.1 AC LINE CONDUCTED EMISSIONS 24
4.2 RADIATION SPURIOUS EMISSIONS 27
4.3 MINIMUM 6 DB BANDWIDTH: 42
4.4 MAXIMUM CONDUCTED OUTPUT POWER: 45
4.5 MAXIMUM POWER SPECTRAL DENSITY: 48
4.6 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE: 51
4.7 DUTY CYCLE: 54
5. RF EXPOSURE EVALUATION 56
5.1 MAXIMUM PERMISSIBLE EXPOSURE (MPE) 56
5.1.1 Applicable Standard 56
5.1.2 Result 56
6. EUT PHOTOGRAPHS 58
7. TEST SETUP PHOTOGRAPHS 59

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230850551-00B	Original Report	2023/12/7

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	SIP Phone
EUT Model:	D895M
Multiple Model(s):	D895
Trade Name:	SNOM
Operation Frequency:	2402-2480MHz
Maximum Peak Output Power (Conducted):	16.9dBm
Modulation Type:	GFSK
Rated Input Voltage:	DC5V from adapter or DC48V from PoE
Serial Number:	RF Conducted:2AQA-3 RSE/CE:2AQA-4
EUT Received Date:	2023/8/31
EUT Received Status:	Good
Note: The Multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

Operation Frequency Detail:
For BLE:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	21	2444
…	…	…	…
…	…	…	…
…	…	…	…
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

Antenna Information Detail▲:

Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
Monopole Antenna	50	2.4~2.5GHz	1dBi

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
Adapter	Mass Power Electronic Limited	NBS12E050200UV
Adapter	/	VT07EUS05200

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. The EUT can be powered by two different adapters and PoE. According to the test data of AC line conducted emission and radiated emission below 1GHz in the DSS report, the worst case is powered by the adapter NBS12E050200UV. So this adapter was chosen for the full test.
Equipment Modifications:	No
EUT Exercise Software:	RTLBTAPP.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
1Mbps	0X27	0X27	0X27
2Mbps	0X3F	0X3F	0X3F

1.2.2 Support Equipment List and Details

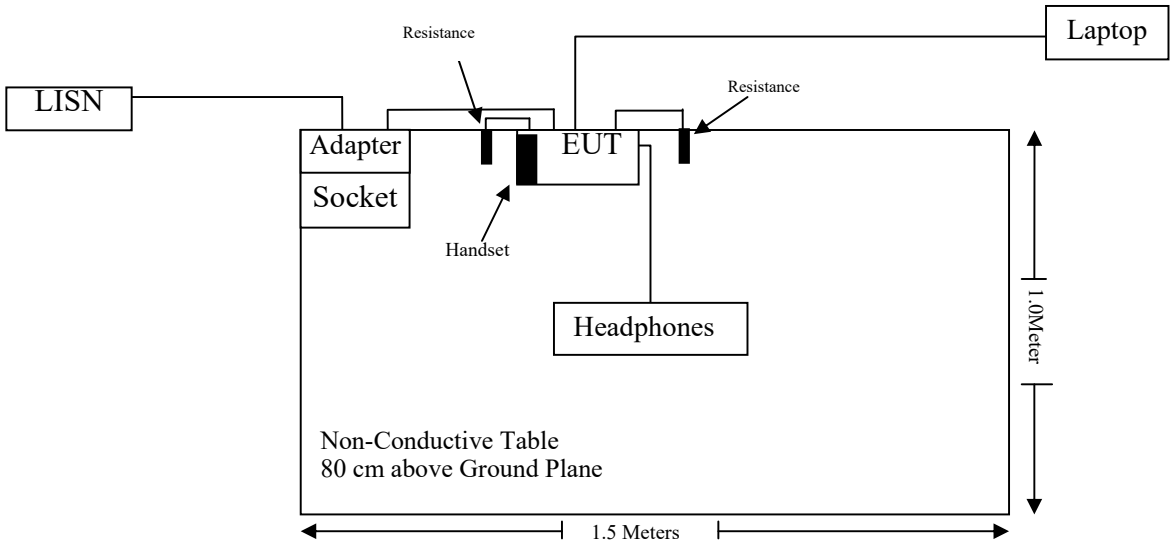
Manufacturer	Description	Model	Serial Number
Unknown	Resistance*2	Unknown	Unknown
DELL	Laptop	E6410	GYXJ3 A00 JSD2
DIGITAL	PoE	G0720-480-050	3TV4E338182
Unknown	Headphones	Unknown	Unknown
VTech	Handset	D8M	Unknown

1.2.3 Support Cable List and Details

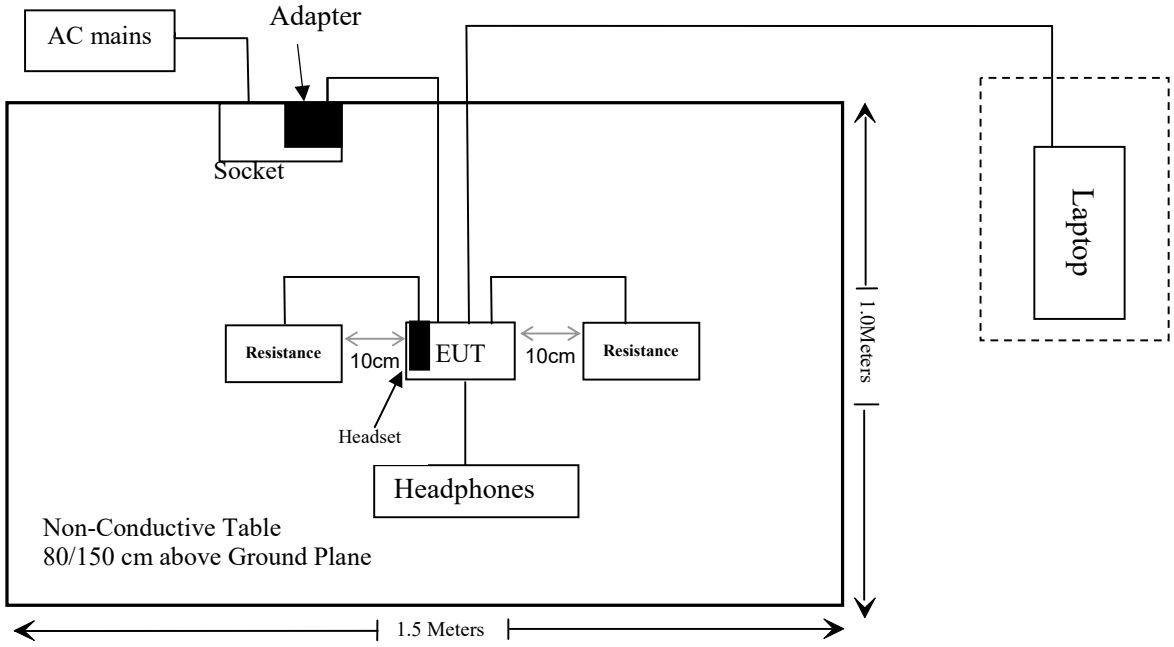
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
AC cable	No	No	1.2	LISN/AC mains	Socket
DC cable	No	No	2.0	Adapter	EUT
USB cable	No	No	0.3	EUT	Resistance
RJ45 cable	No	Yes	8.0	EUT	Laptop
AC cable	No	No	1.2	LISN/AC mains	PoE
RJ45 cable	No	Yes	10	PoE	EUT
RJ11 cable	No	Yes	1.5	EUT	Headphones

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



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: 4.12dB,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℃
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)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.203	Antenna Requirement	Compliant
FCC §2.1091	Maximum Permissible exposure	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 μH/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.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	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:

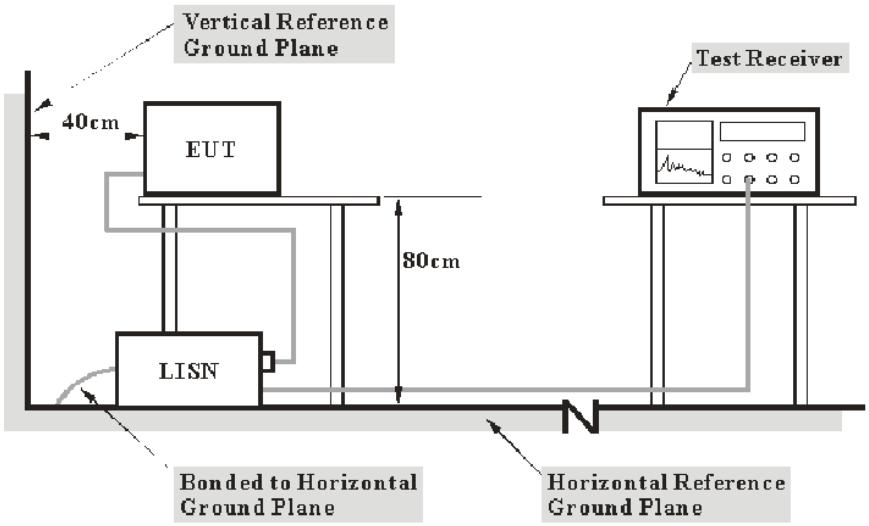
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/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, obtainig 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.

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

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

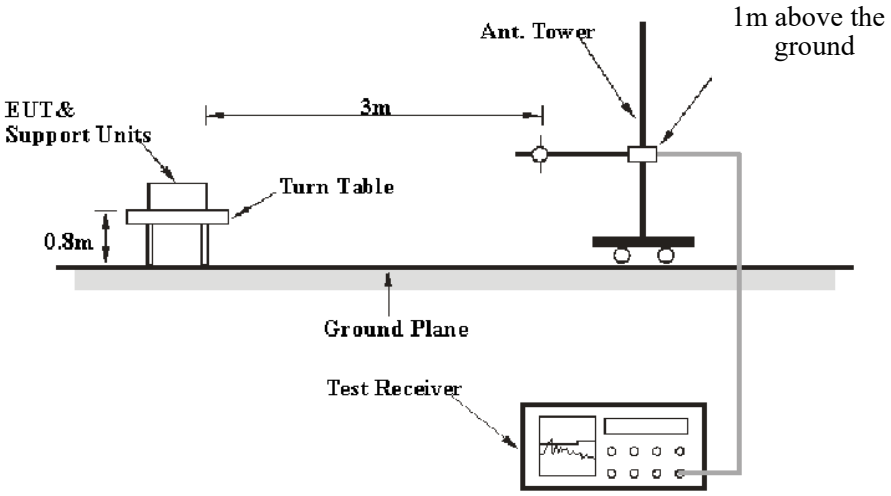
3.2.1 Applicable Standard

FCC §15.247 (d);

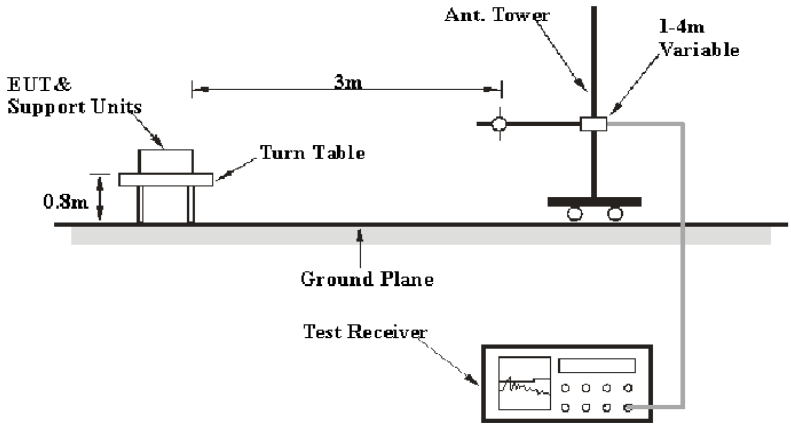
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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

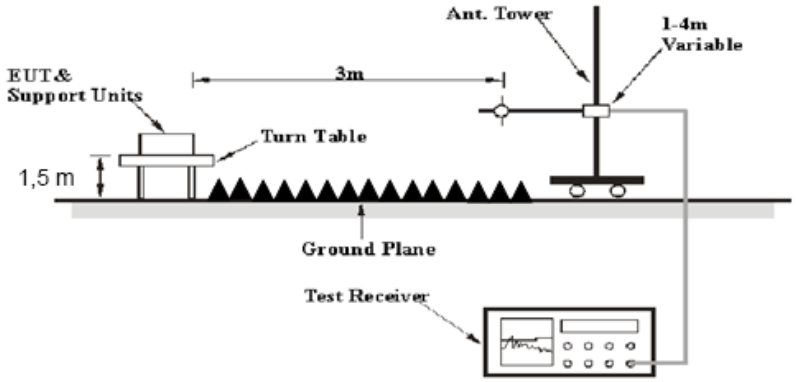
9 kHz-30MHz:



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.

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-30MHz:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	200 Hz	1 kHz	/	QP
150 kHz – 30 MHz	9 kHz	30 kHz	/	QP

30-1000MHz:

Detector	RBW	Video B/W	IF B/W
QP	100 kHz	300 kHz	120kHz

1GHz- 25GHz:

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

Note: T is minimum transmission duration

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

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, peak and Average detection modes for frequencies above 1 GHz.

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

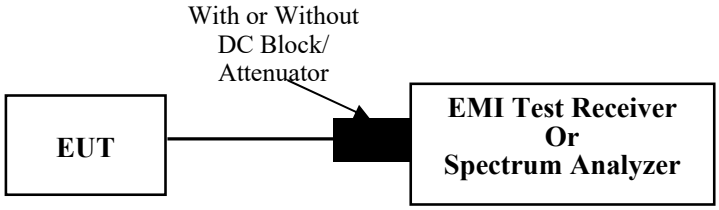
3.3 6 dB Emission Bandwidth:

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) ≥ 3×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.

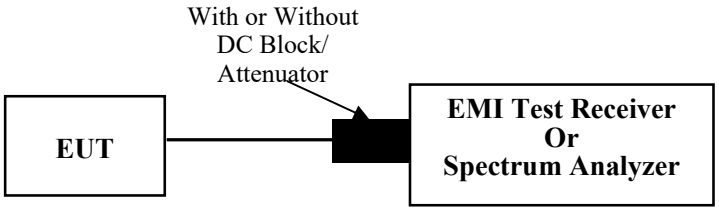
3.4 Maximum conducted output power:

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 ≥ DTS bandwidth.
b) Set VBW ≥ [3 × RBW].
c) Set span ≥ [3 × 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.

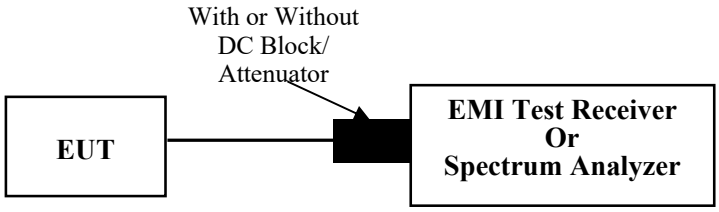
3.5 Maximum power spectral density:

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 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ [3 × 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.

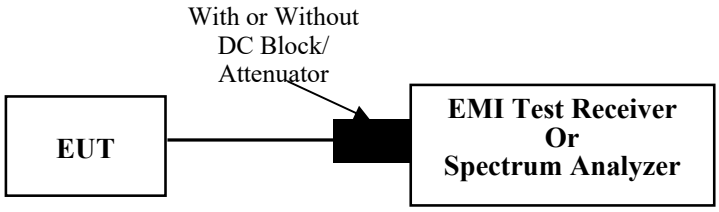
3.6 100 kHz Bandwidth of Frequency Band Edge:

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



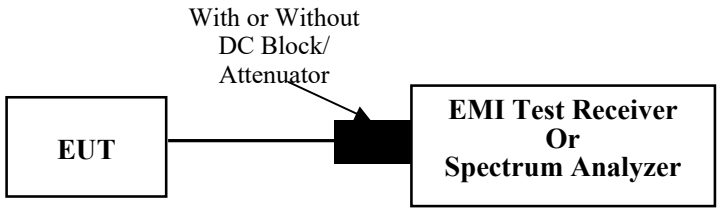
3.6.3 Test Procedure

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 ≥ [3 × 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 ≥ OBW if possible; otherwise, set RBW to the largest available value.
3) Set VBW ≥ 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 ≤ 16.7 μs.)

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:	2AQA-4	Test Date:	2023/11/01
Test Site:	CE	Test Mode:	Transmitting(Maximum output power: BLE 2M Low Channel)
Tester:	David Huang	Test Result:	Pass

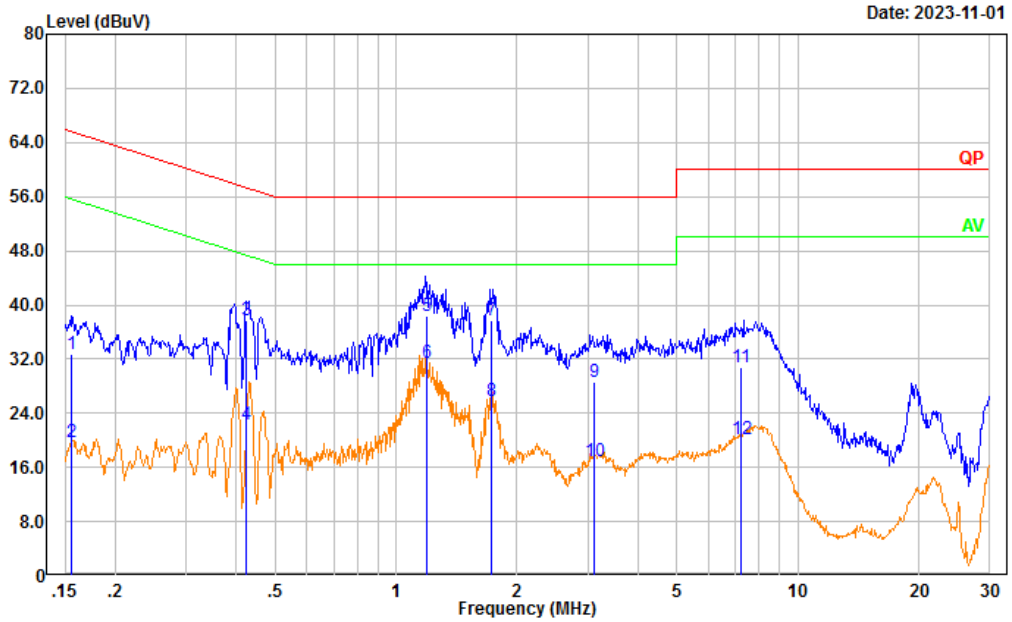
Environmental Conditions:					
Temperature: (℃)	26.8	Relative Humidity: (%)	55	ATM Pressure: (kPa)	101.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2023/03/31	2024/03/30
R&S	EMI Test Receiver	ESR3	102726	2023/03/31	2024/03/30
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2023/08/06	2024/08/05
Audix	Test Software	E3	190306 (V9)	N/A	N/A

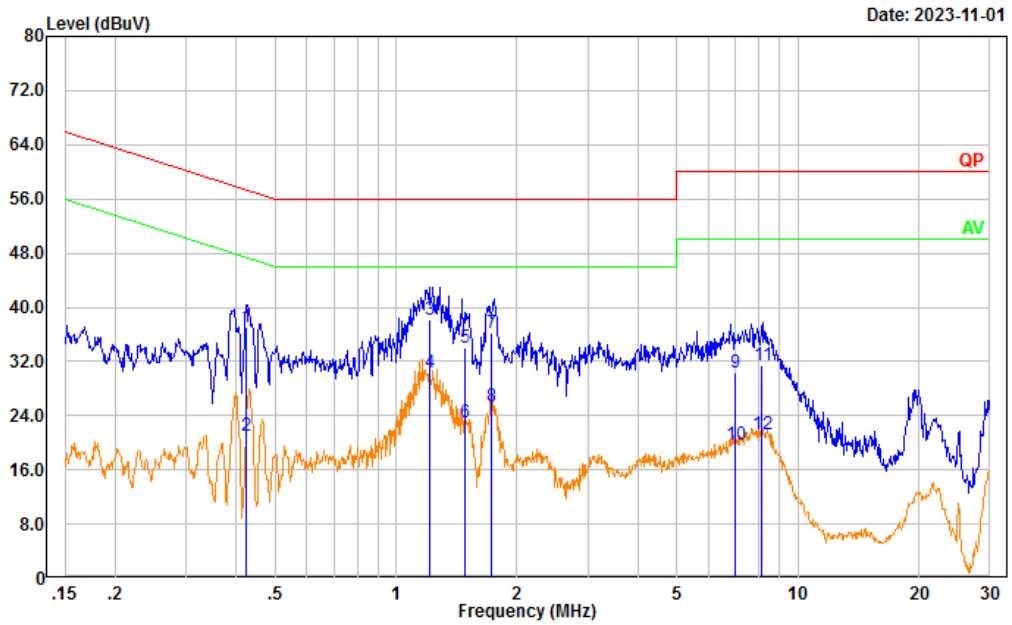
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Project No.: CR230850551-RF
Tester: David Huang
Port: Line
Note: Transmitting(BLE)



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.155	23.10	9.61	32.71	65.71	33.00	QP
2	0.155	10.22	9.61	19.83	55.71	35.88	Average
3	0.425	28.10	9.61	37.71	57.34	19.63	QP
4	0.425	12.78	9.61	22.39	47.34	24.95	Average
5	1.189	28.84	9.62	38.46	56.00	17.54	QP
6	1.189	21.89	9.62	31.51	46.00	14.49	Average
7	1.732	28.02	9.63	37.65	56.00	18.35	QP
8	1.732	16.11	9.63	25.74	46.00	20.26	Average
9	3.115	19.01	9.65	28.66	56.00	27.34	QP
10	3.115	7.34	9.65	16.99	46.00	29.01	Average
11	7.203	21.03	9.66	30.69	60.00	29.31	QP
12	7.203	10.57	9.66	20.23	50.00	29.77	Average

Project No.: CR230850551-RF
Tester: David Huang
Port: neutral
Note: Transmitting(BLE)



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.424	27.37	9.61	36.98	57.38	20.40	QP
2	0.424	11.44	9.61	21.05	47.38	26.33	Average
3	1.215	28.59	9.62	38.21	56.00	17.79	QP
4	1.215	20.80	9.62	30.42	46.00	15.58	Average
5	1.479	24.35	9.62	33.97	56.00	22.03	QP
6	1.479	13.37	9.62	22.99	46.00	23.01	Average
7	1.721	26.62	9.63	36.25	56.00	19.75	QP
8	1.721	15.73	9.63	25.36	46.00	20.64	Average
9	6.992	20.72	9.66	30.38	60.00	29.62	QP
10	6.992	10.04	9.66	19.70	50.00	30.30	Average
11	8.138	21.67	9.67	31.34	60.00	28.66	QP
12	8.138	11.49	9.67	21.16	50.00	28.84	Average

4.2 Radiation Spurious Emissions

Serial Number:	2AQA-4	Test Date:	Below 1G: 2023/11/2 Above 1G: 2023/10/10
Test Site:	966-1, 966-2	Test Mode:	Transmitting
Tester:	Vic Du, Tao Zhu	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	26.1~26.2	Relative Humidity: (%)	53~57	ATM Pressure: (kPa)	100.9~101

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Below 1G					
Sunol Sciences	Antenna	JB6	A082520-6	2023/9/18	2026/9/17
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
EMCO	Passive Loop Antenna	6512	9706-1209	2023/2/15	2026/2/14
Audix	Test Software	E3	201021 (V9)	N/A	N/A
Above 1G					
AH	Double Ridge Guide Horn Antenna	SAS-571	1394	2023/2/22	2025/2/23
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	2022/11/9	2023/11/8
Audix	Test Software	E3	201021 (V9)	N/A	N/A
PASTERNACK	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

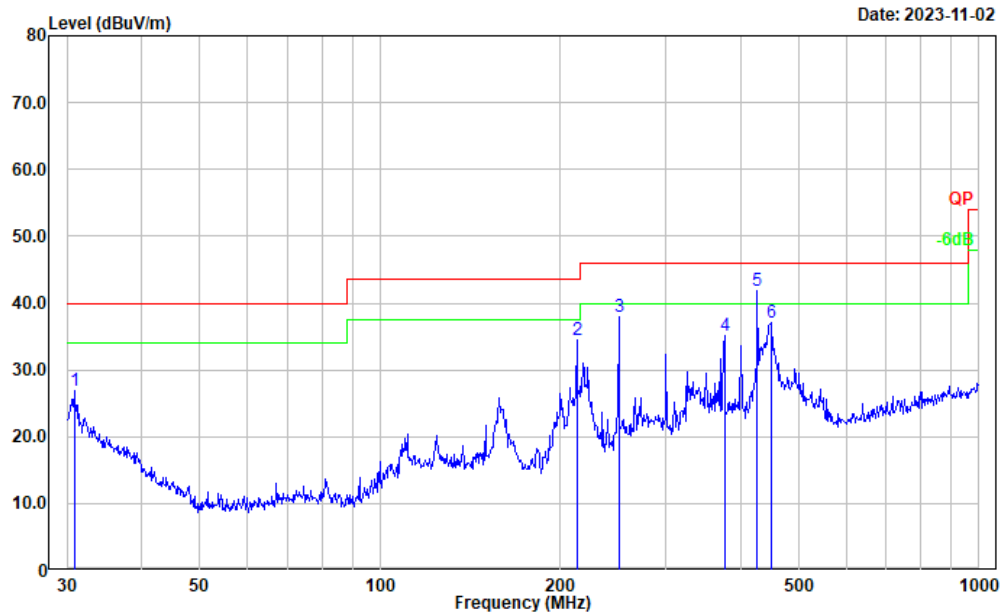
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

For 9kHz-30MHz, the amplitude of spurious emissions attenuated more than 20 dB below the limit was not be recorded.
(Maximum output power mode BLE 2Mbps, Adapter NBS12E050200UV)

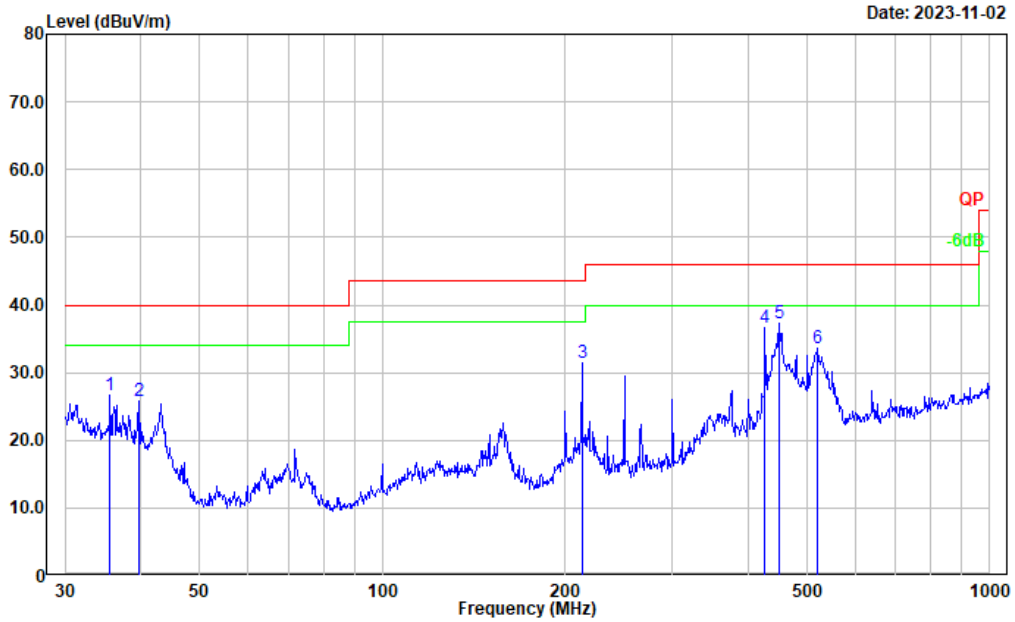
1) 30MHz-1GHz: Transmitting (Maximum output power mode BLE 2Mbps, Adapter NBS12E050200UV)
Low Channel

Project No.: CR230850551-RF
Tester: Vic Du
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	30.853	31.42	-4.45	26.97	40.00	13.03	Peak
2	213.015	46.95	-12.57	34.38	43.50	9.12	Peak
3	250.301	51.15	-13.18	37.97	46.00	8.03	Peak
4	375.939	44.31	-9.29	35.02	46.00	10.98	Peak
5	426.521	49.42	-7.65	41.77	46.00	4.23	QP
6	449.556	44.15	-6.97	37.18	46.00	8.82	Peak

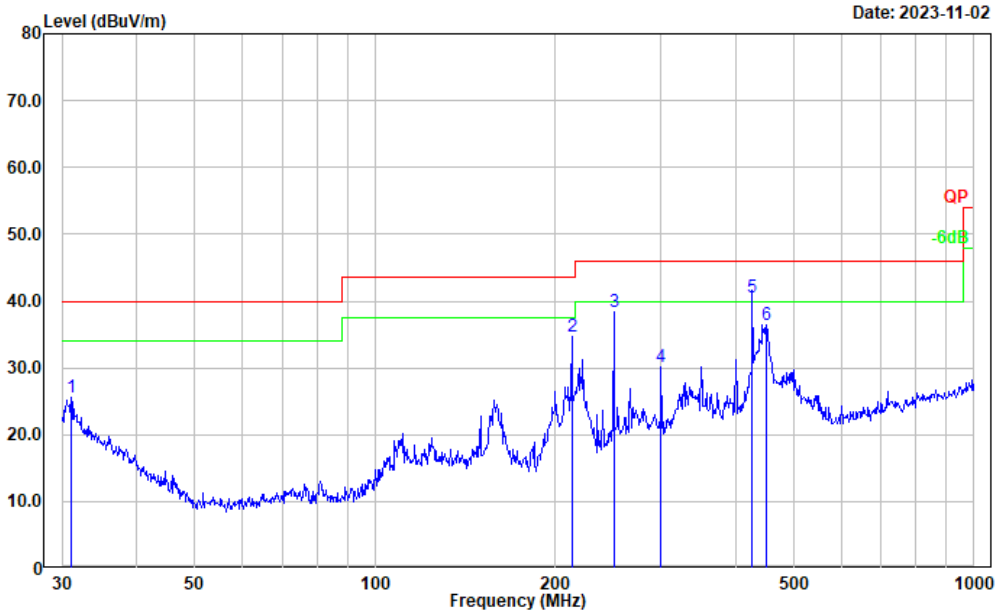
Project No.: CR230850551-RF
Tester: Vic Du
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	35.624	34.85	-8.10	26.75	40.00	13.25	Peak
2	39.715	36.98	-11.19	25.79	40.00	14.21	Peak
3	213.015	44.10	-12.57	31.53	43.50	11.97	Peak
4	426.521	44.34	-7.65	36.69	46.00	9.31	Peak
5	451.135	44.13	-6.91	37.22	46.00	8.78	Peak
6	520.888	39.55	-5.85	33.70	46.00	12.30	Peak

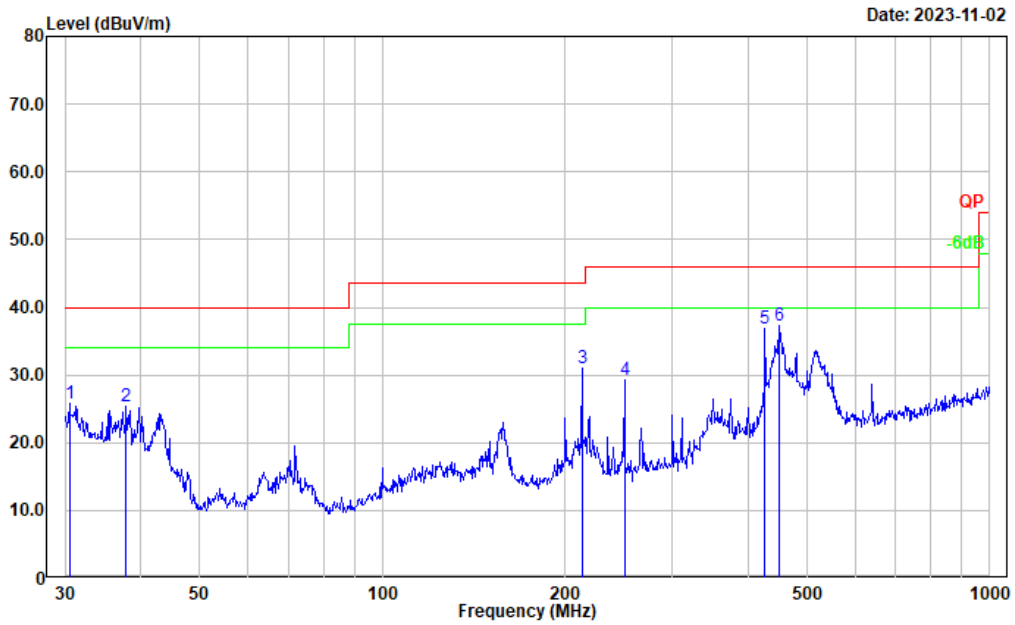
Middle Channel

Project No.: CR230850551-RF
Tester: Vic Du
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	31.071	30.11	-4.61	25.50	40.00	14.50	Peak
2	213.015	47.27	-12.57	34.70	43.50	8.80	Peak
3	250.301	51.51	-13.18	38.33	46.00	7.67	Peak
4	300.367	40.76	-10.63	30.13	46.00	15.87	Peak
5	426.521	48.17	-7.65	40.52	46.00	5.48	QP
6	451.135	43.37	-6.91	36.46	46.00	9.54	Peak

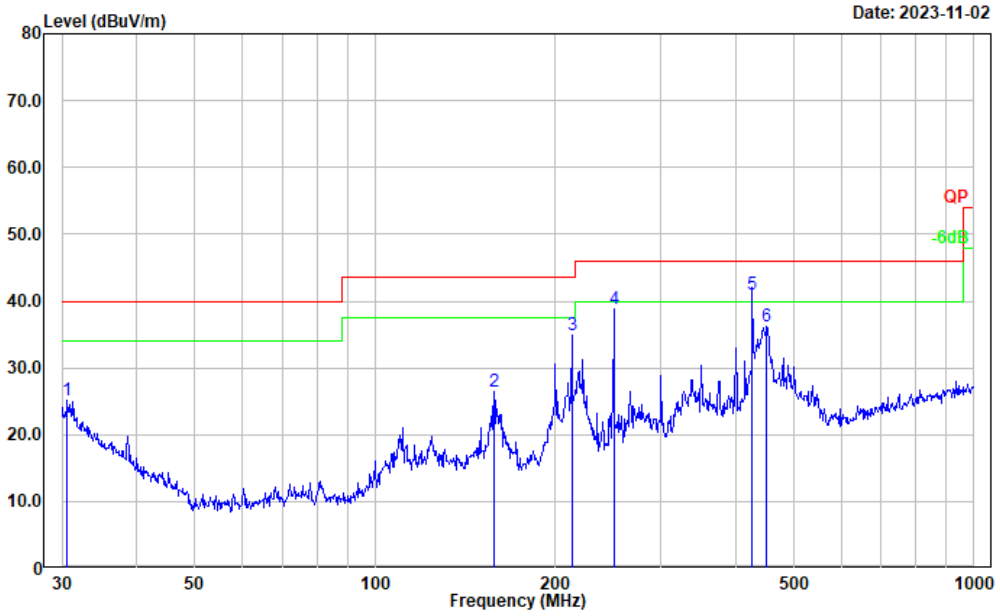
Project No.: CR230850551-RF
Tester: Vic Du
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	30.531	30.00	-4.20	25.80	40.00	14.20	Peak
2	37.812	35.02	-9.72	25.30	40.00	14.70	Peak
3	213.015	43.56	-12.57	30.99	43.50	12.51	Peak
4	250.301	42.37	-13.18	29.19	46.00	16.81	Peak
5	426.521	44.46	-7.65	36.81	46.00	9.19	Peak
6	451.135	44.27	-6.91	37.36	46.00	8.64	Peak

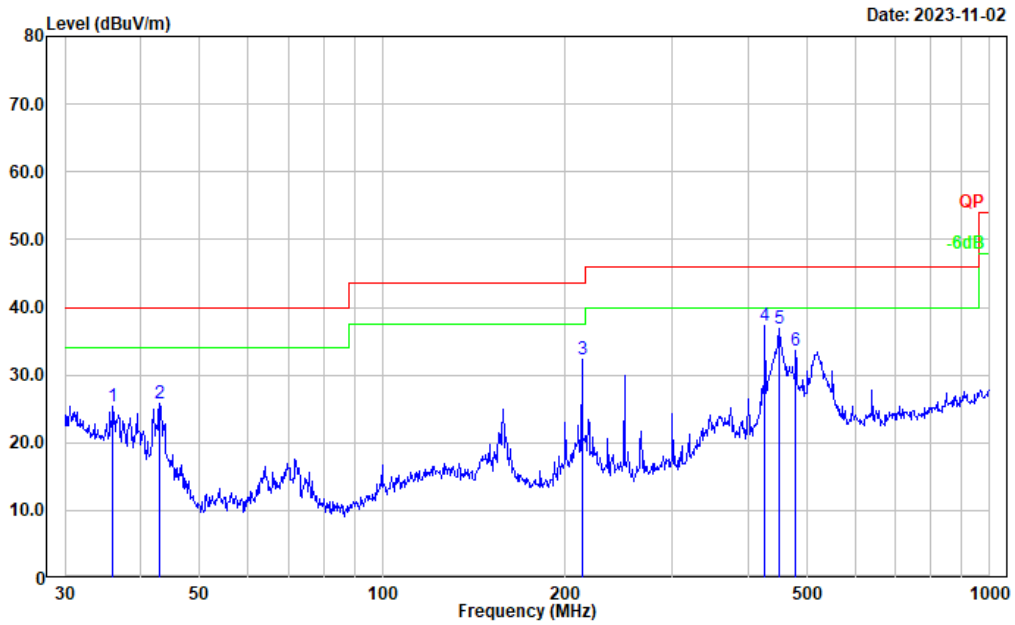
High Channel

Project No.: CR230850551-RF
Tester: Vic Du
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	30.638	29.40	-4.28	25.12	40.00	14.88	Peak
2	158.112	38.38	-11.96	26.42	43.50	17.08	Peak
3	213.015	47.47	-12.57	34.90	43.50	8.60	Peak
4	250.301	51.90	-13.18	38.72	46.00	7.28	Peak
5	426.521	48.62	-7.65	40.97	46.00	5.03	QP
6	451.135	43.10	-6.91	36.19	46.00	9.81	Peak

Project No.: CR230850551-RF
Tester: Vic Du
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	36.001	33.75	-8.38	25.37	40.00	14.63	Peak
2	42.900	38.95	-13.05	25.90	40.00	14.10	Peak
3	213.015	44.93	-12.57	32.36	43.50	11.14	Peak
4	426.521	44.99	-7.65	37.34	46.00	8.66	Peak
5	451.135	43.79	-6.91	36.88	46.00	9.12	Peak
6	478.846	39.78	-6.26	33.52	46.00	12.48	Peak

1) 1-25GHz:

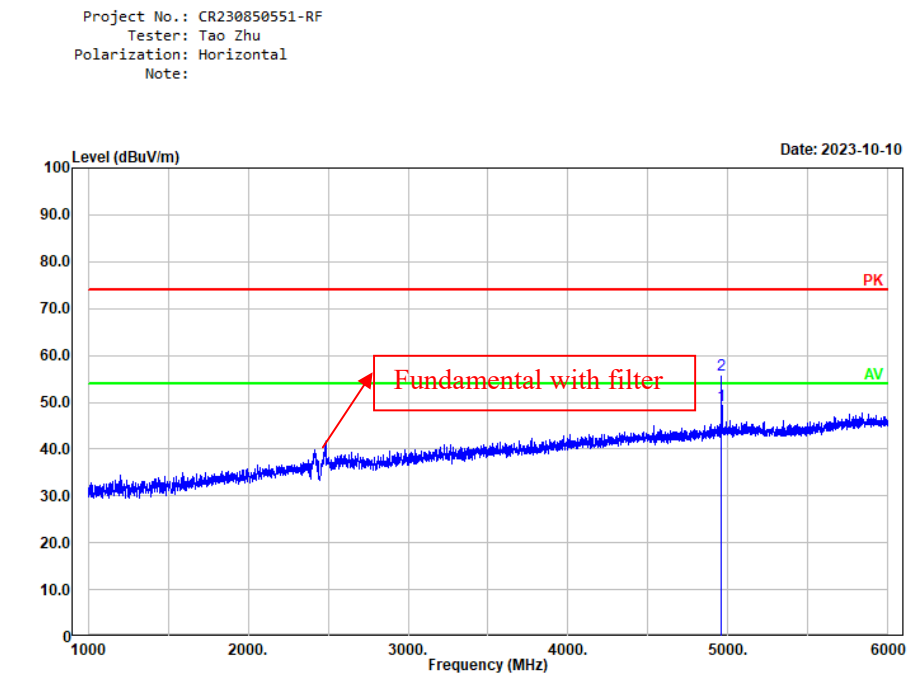
BLE 1Mbps:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2402 MHz							
2390.000	27.30	PK	H	31.71	59.01	74.00	14.99
2390.000	14.34	AV	H	31.71	46.05	54.00	7.95
2390.000	27.44	PK	V	31.71	59.15	74.00	14.85
2390.000	14.46	AV	V	31.71	46.17	54.00	7.83
4804.000	39.86	PK	H	11.19	51.05	74.00	22.95
4804.000	33.74	AV	H	11.19	44.93	54.00	9.07
4804.000	40.32	PK	V	11.19	51.51	74.00	22.49
4804.000	34.65	AV	V	11.19	45.84	54.00	8.16
Middle Channel: 2440 MHz							
4880.000	41.15	PK	H	11.48	52.63	74.00	21.37
4880.000	35.44	AV	H	11.48	46.92	54.00	7.08
4880.000	41.87	PK	V	11.48	53.35	74.00	20.65
4880.000	35.68	AV	V	11.48	47.16	54.00	6.84
High Channel: 2480 MHz							
2483.500	27.65	PK	H	32.19	59.84	74.00	14.16
2483.500	14.19	AV	H	32.19	46.38	54.00	7.62
2483.500	27.66	PK	V	32.19	59.85	74.00	14.15
2483.500	14.20	AV	V	32.19	46.39	54.00	7.61
4960.000	44.06	PK	H	11.77	55.83	74.00	18.17
4960.000	37.65	AV	H	11.77	49.42	54.00	4.58
4960.000	44.31	PK	V	11.77	56.08	74.00	17.92
4960.000	37.52	AV	V	11.77	49.29	54.00	4.71

BLE 2Mbps:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2402 MHz							
2390.000	27.45	PK	H	31.71	59.16	74.00	14.84
2390.000	14.28	AV	H	31.71	45.99	54.00	8.01
2390.000	27.65	PK	V	31.71	59.36	74.00	14.64
2390.000	14.57	AV	V	31.71	46.28	54.00	7.72
4804.000	39.75	PK	H	11.19	50.94	74.00	23.06
4804.000	33.62	AV	H	11.19	44.81	54.00	9.19
4804.000	40.22	PK	V	11.19	51.41	74.00	22.59
4804.000	34.71	AV	V	11.19	45.90	54.00	8.10
Middle Channel: 2440 MHz							
4880.000	41.13	PK	H	11.48	52.61	74.00	21.39
4880.000	35.42	AV	H	11.48	46.90	54.00	7.10
4880.000	41.57	PK	V	11.48	53.05	74.00	20.95
4880.000	35.47	AV	V	11.48	46.95	54.00	7.05
High Channel: 2480 MHz							
2483.500	27.33	PK	H	32.19	59.52	74.00	14.48
2483.500	14.32	AV	H	32.19	46.51	54.00	7.49
2483.500	27.68	PK	V	32.19	59.87	74.00	14.13
2483.500	14.63	AV	V	32.19	46.82	54.00	7.18
4960.000	42.94	PK	H	11.77	54.71	74.00	19.29
4960.000	35.82	AV	H	11.77	47.59	54.00	6.41
4960.000	43.67	PK	V	11.77	55.44	74.00	18.56
4960.000	36.71	AV	V	11.77	48.48	54.00	5.52

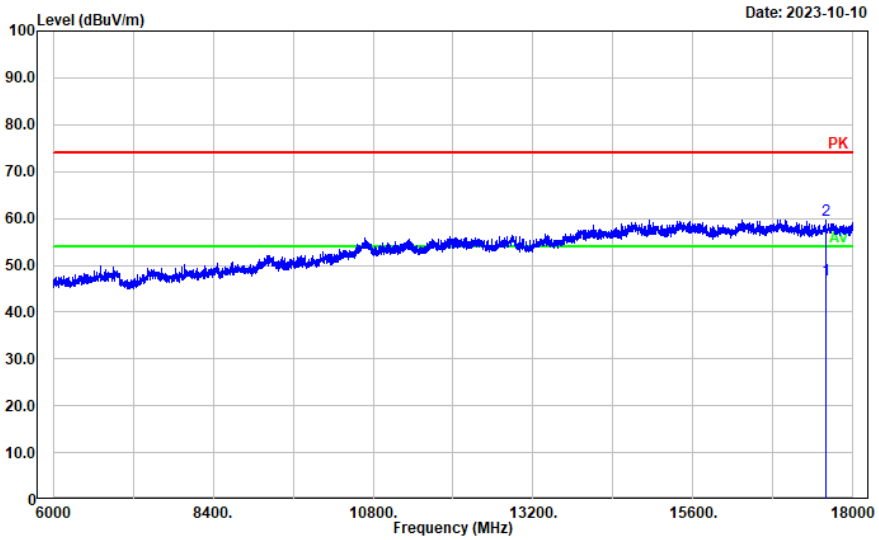
The worst harmonic margin test plots (BLE 1M High Channel)

Horizontal	
1-6GHz	

No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	4960.000	37.65	11.77	49.42	54.00	4.58	Average
2	4960.000	44.06	11.77	55.83	74.00	18.17	Peak

6-18GHz

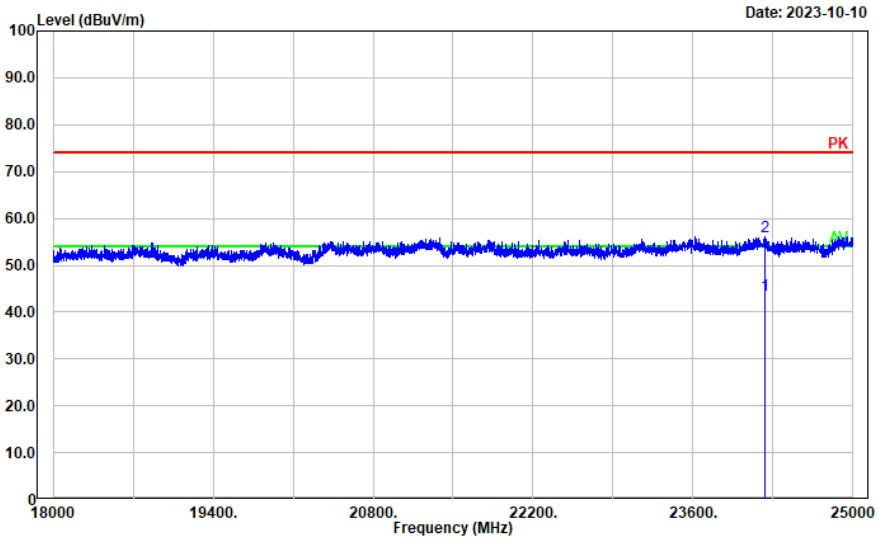
Project No.: CR230850551-RF
Tester: Tao Zhu
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	17594.320	16.28	30.57	46.85	54.00	7.15	Average
2	17594.320	29.04	30.57	59.61	74.00	14.39	Peak

18-25GHz

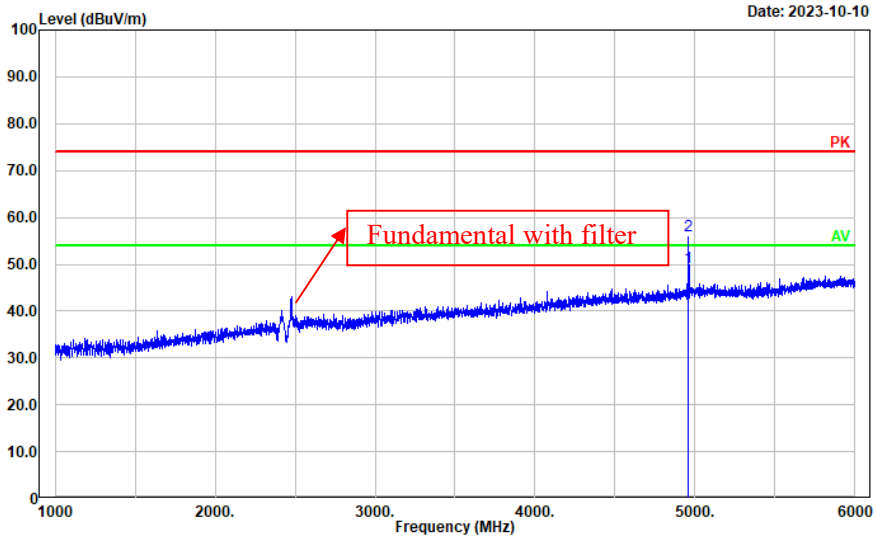
Project No.: CR230850551-RF
Tester: Tao Zhu
Polarization: Horizontal
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	24225.640	38.61	4.99	43.60	54.00	10.40	Average
2	24225.640	51.17	4.99	56.16	74.00	17.84	Peak

Vertical	
1-6GHz	

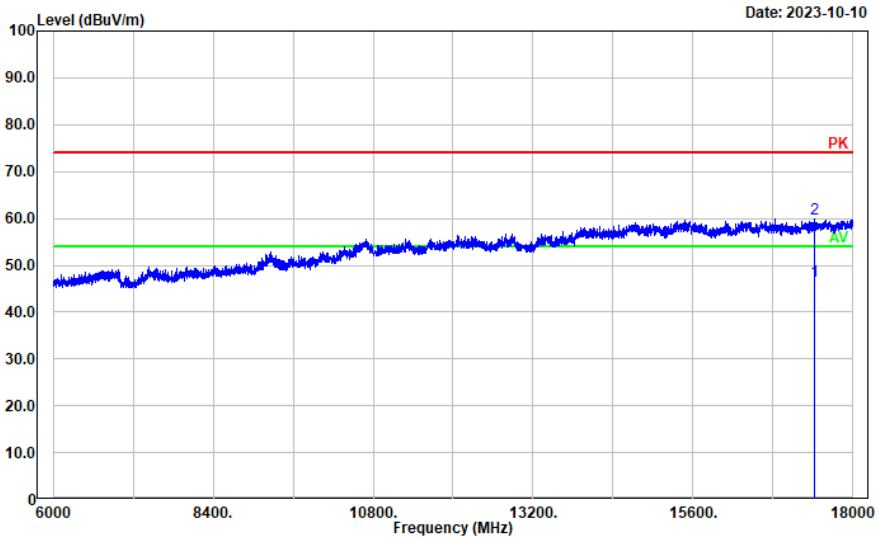
Project No.: CR230850551-RF
Tester: Tao Zhu
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	4960.000	37.52	11.77	49.29	54.00	4.71	Average
2	4960.000	44.31	11.77	56.08	74.00	17.92	Peak

6-18GHz

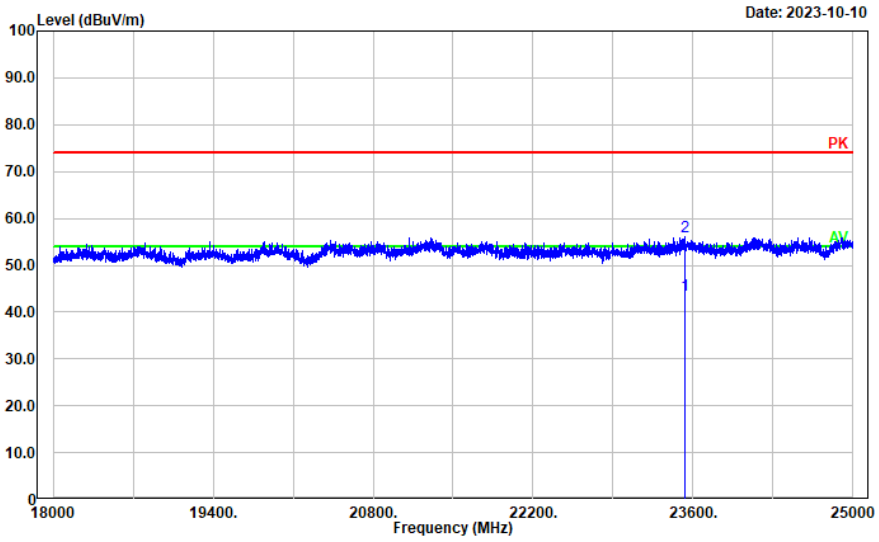
Project No.: CR230850551-RF
Tester: Tao Zhu
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	17423.880	16.81	29.77	46.58	54.00	7.42	Average
2	17423.880	30.15	29.77	59.92	74.00	14.08	Peak

18-25GHz

Project No.: CR230850551-RF
Tester: Tao Zhu
Polarization: Vertical
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	23525.510	38.20	5.30	43.50	54.00	10.50	Average
2	23525.510	50.88	5.30	56.18	74.00	17.82	Peak

4.3 Minimum 6 dB Bandwidth:

Serial Number:	2AQA-3	Test Date:	2023/9/26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	25	Relative Humidity: (%)	53	ATM Pressure: (kPa)	101

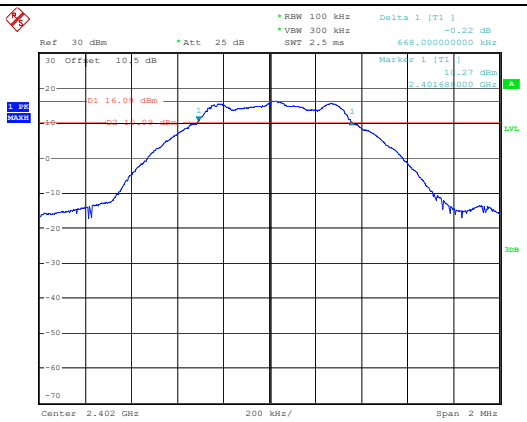
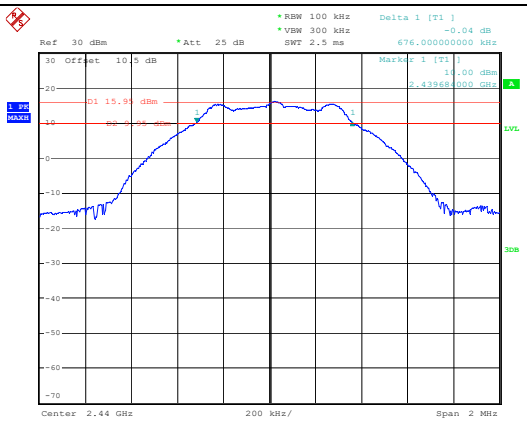
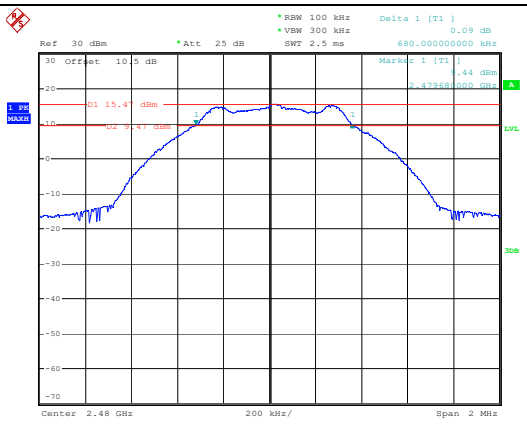
Test Equipment List and Details:

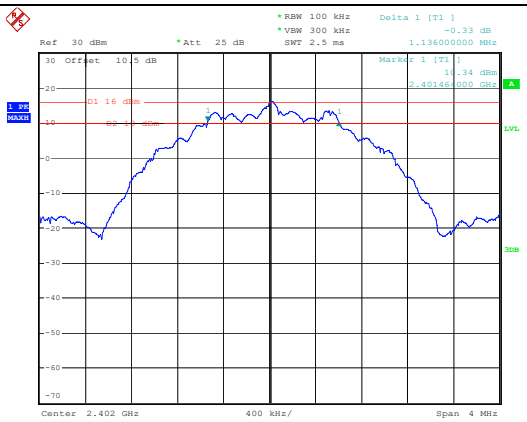
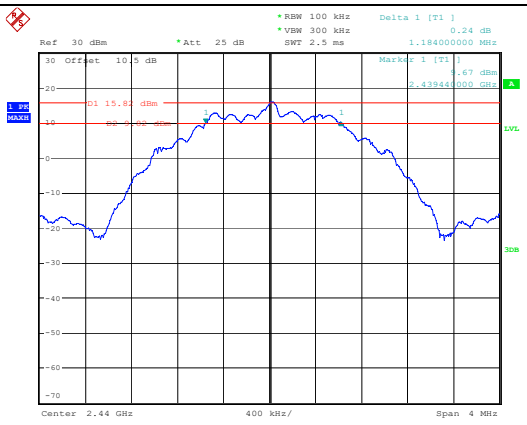
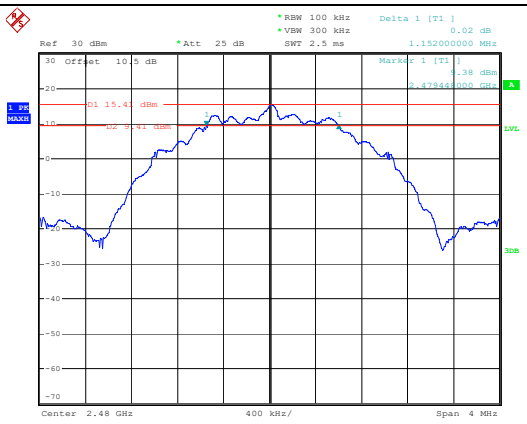
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200120	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A

** 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 1Mbps	2402	0.668	≥0.5
	2440	0.676	≥0.5
	2480	0.680	≥0.5
BLE 2Mbps	2402	1.136	≥0.5
	2440	1.184	≥0.5
	2480	1.152	≥0.5

6dB Emission Bandwidth	
BLE 1Mbps Lowest Channel	 ProjectNo.:CR230850551 Tester:Rod Luo Date: 26.SEP.2023 17:08:40
BLE 1Mbps Middle Channel	 ProjectNo.:CR230850551 Tester:Rod Luo Date: 26.SEP.2023 17:10:18
BLE 1Mbps Highest Channel	 ProjectNo.:CR230850551 Tester:Rod Luo Date: 26.SEP.2023 17:11:51

6dB Emission Bandwidth	
BLE 2Mbps Lowest Channel	 ProjectNo.:CR230850551 Tester:Rod Luo Date: 26.SEP.2023 17:15:35
BLE 2Mbps Middle Channel	 ProjectNo.:CR230850551 Tester:Rod Luo Date: 26.SEP.2023 17:17:06
BLE 2Mbps Highest Channel	 ProjectNo.:CR230850551 Tester:Rod Luo Date: 26.SEP.2023 17:18:18

4.4 Maximum Conducted Output Power:

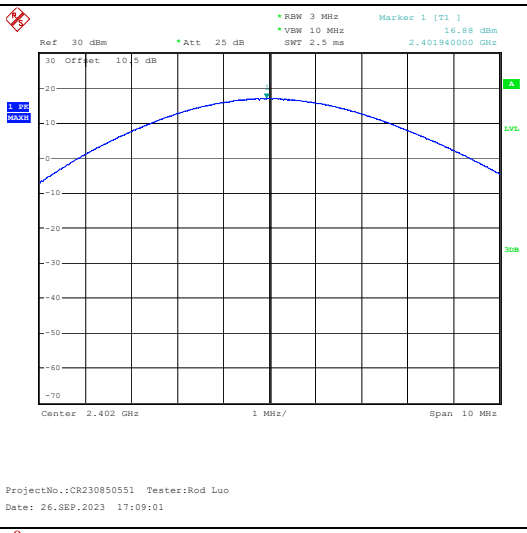
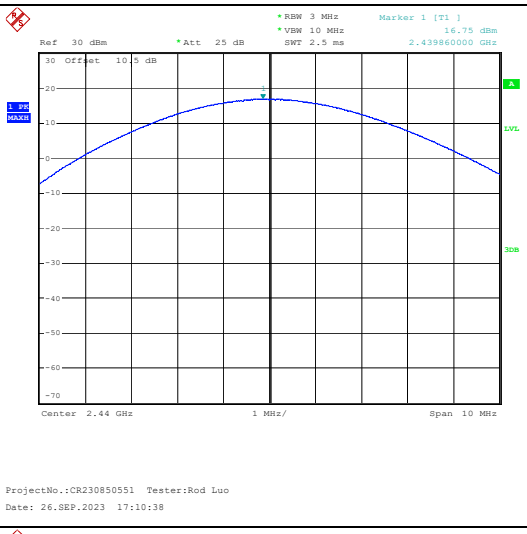
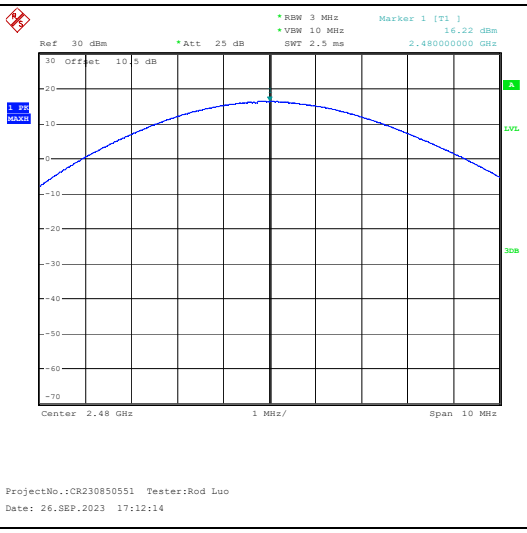
Serial Number:	2AQA-3		Test Date:	2023/9/26	
Test Site:	RF		Test Mode:	Transmitting	
Tester:	Rod Luo		Test Result:	Pass	
Environmental Conditions:					
Temperature: (℃)	25	Relative Humidity: (%)	53	ATM Pressure: (kPa)	101
Test Equipment List and Details:					

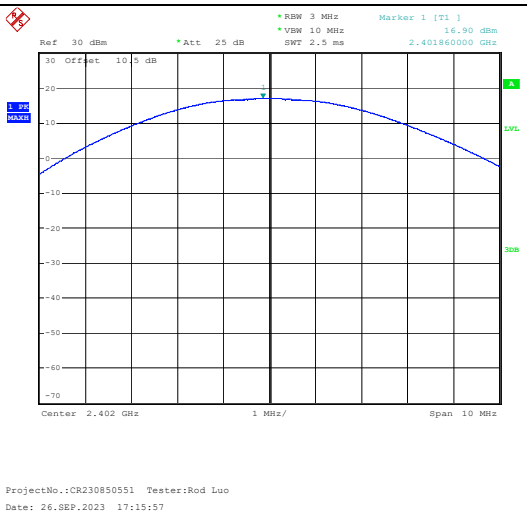
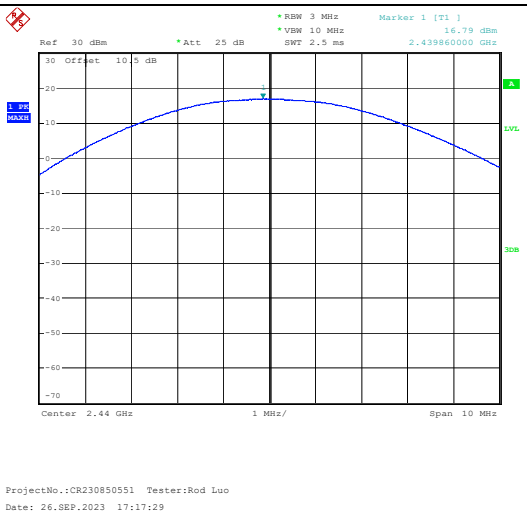
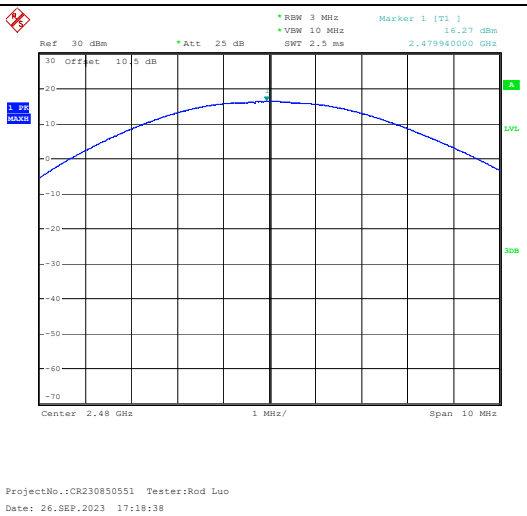
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200120	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A

** 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 1Mbps	2402	16.88	≤30
	2440	16.75	≤30
	2480	16.22	≤30
BLE 2Mbps	2402	16.90	≤30
	2440	16.79	≤30
	2480	16.27	≤30

Maximum Conducted Peak Output Power	
BLE 1Mbps Lowest Channel	
BLE 1Mbps Middle Channel	
BLE 1Mbps Highest Channel	

Maximum Conducted Peak Output Power	
BLE 2Mbps Lowest Channel	
BLE 2Mbps Middle Channel	
BLE 2Mbps Highest Channel	

4.5 Maximum power spectral density:

Serial Number:	2AQA-3	Test Date:	2023/9/26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	25	Relative Humidity: (%)	53	ATM Pressure: (kPa)	101

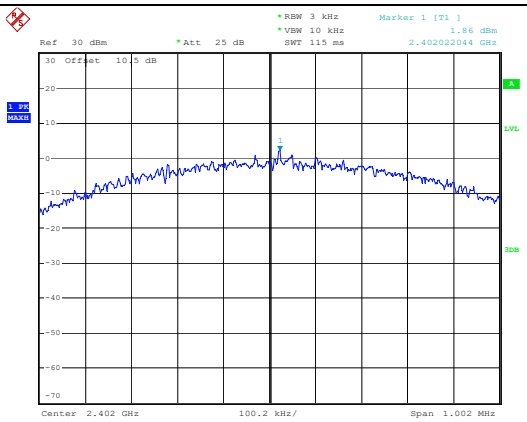
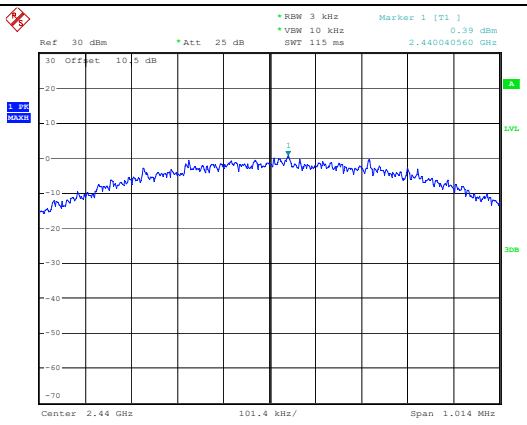
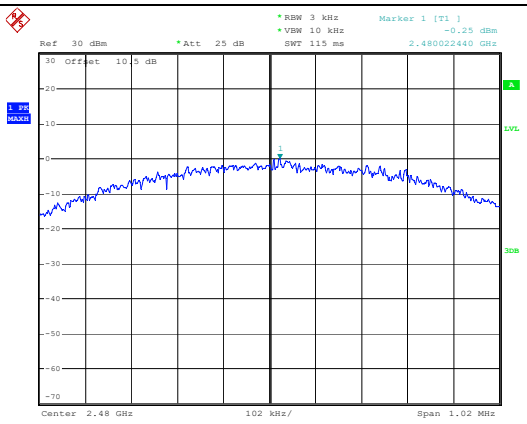
Test Equipment List and Details:

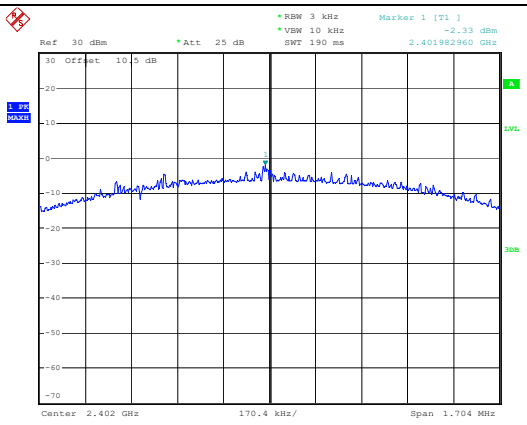
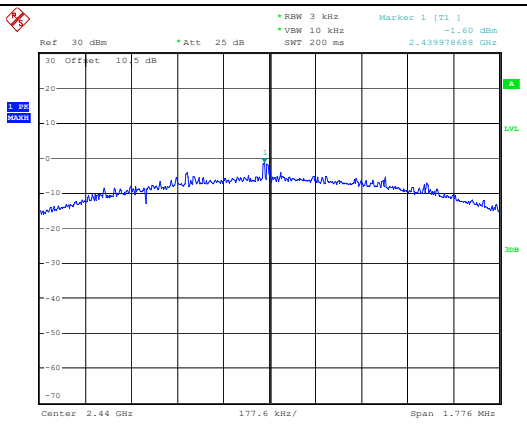
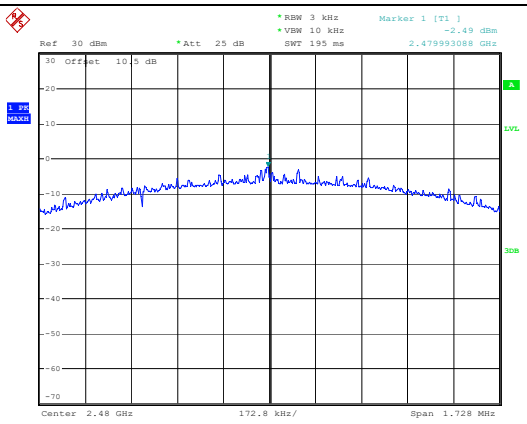
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200120	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A

** 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 1Mbps	2402	1.86	≤8.00
	2440	0.39	≤8.00
	2480	-0.25	≤8.00
BLE 2Mbps	2402	-2.33	≤8.00
	2440	-1.60	≤8.00
	2480	-2.49	≤8.00

Maximum power spectral density	
BLE 1Mbps Lowest Channel	
BLE 1Mbps Middle Channel	
BLE 1Mbps Highest Channel	

Maximum power spectral density	
BLE 2Mbps Lowest Channel	
BLE 2Mbps Middle Channel	
BLE 2Mbps Highest Channel	

4.6 100 kHz Bandwidth of Frequency Band Edge:

Serial Number:	2AQA-3	Test Date:	2023/9/26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	Pass

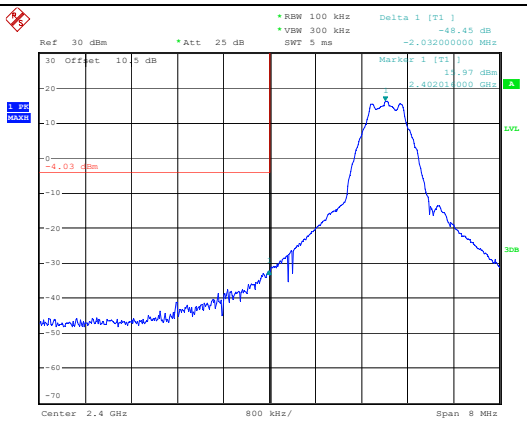
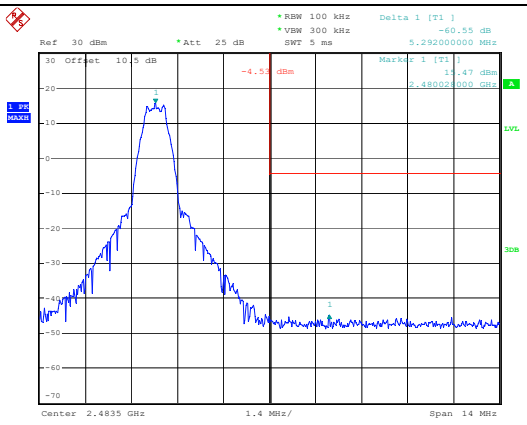
Environmental Conditions:					
Temperature: (℃)	25	Relative Humidity: (%)	53	ATM Pressure: (kPa)	101

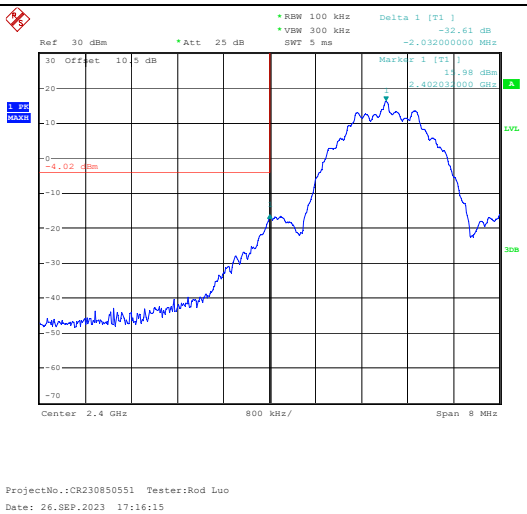
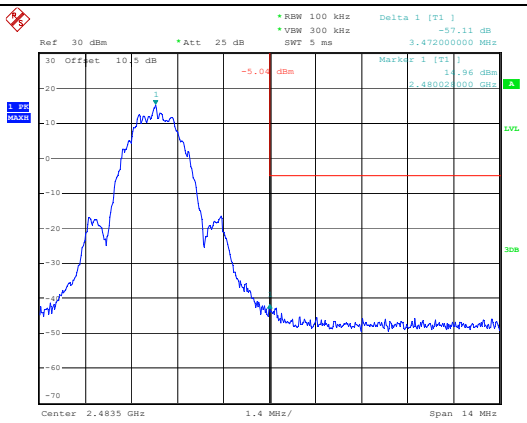
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200120	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	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	
BLE 1Mbps Highest Band edge	

100 kHz Bandwidth of Frequency Band Edge	
BLE 2Mbps Lowest Band edge	
BLE 2Mbps Highest Band edge	

4.7 Duty Cycle:

Serial Number:	2AQA-3	Test Date:	2023/9/26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rod Luo	Test Result:	N/A

Environmental Conditions:					
Temperature: (℃)	25	Relative Humidity: (%)	53	ATM Pressure: (kPa)	101

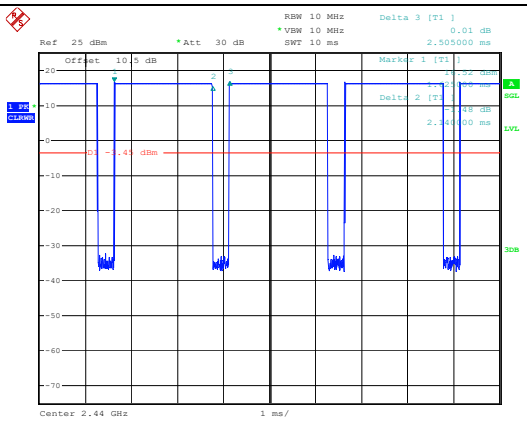
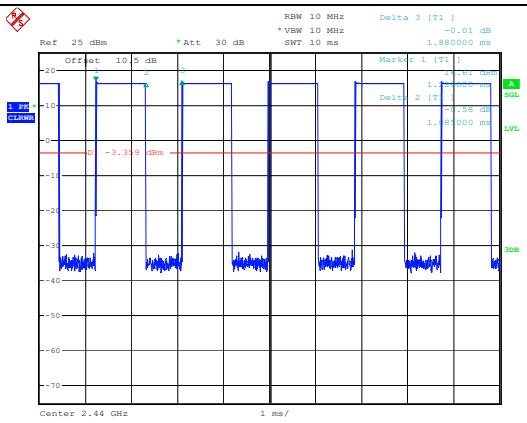
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200120	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	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)	Ton (ms)	Ton+off (ms)	Duty Cycle (%)	1/T (Hz)	VBW Setting (Hz)
BLE 1Mbps	2440	2.14	2.505	85.43	467.29	500
BLE 2Mbps	2440	1.085	1.88	57.71	921.66	1000

Duty Cycle	
BLE 1Mbps	
BLE 2Mbps	

5. RF EXPOSURE EVALUATION

5.1 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

5.1.1 Applicable Standard

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (Minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

5.1.2 Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

Mode	Frequency (MHz)	Tune Up Conducted Power (dBm)	Antenna Gain (dBi)	Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
Bluetooth	2402-2480	7.0	1.0	20	0.001	1.0
BLE	2402-2480	17.0	1.0	20	0.013	1.0
2.4G Wi-Fi	2412-2462	26.5	0	20	0.089	1.0
5G Wi-Fi	5180-5240	20.5	2.0	20	0.035	1.0
	5260-5320	20.0	2.0	20	0.032	1.0
	5500-5700	20.0	2.0	20	0.032	1.0
	5745-5825	21.5	2.0	20	0.045	1.0
DECT	1921.536 - 1928.448	20.0	0	20	0.020	1.0
NFC	13.56	/	/	20	＜0.0001	0.98

Note:

1) The tune up conducted power was declared by the applicant.

2) NFC field strength is 67.49dBuV/m@3m= -27.7dBm (0.0017mW)

3) The Bluetooth, NFC, Wi-Fi and DECT can transmit simultaneously. The 2.4G Wi-Fi can't transmit with 5G Wi-Fi at the same time.

The ratio=$MPE_{Bluetooth}$/limit+$MPE_{2.4G\ Wi\text{-}Fi}$/limit+MPE_{DECT}/limit
=0.013+0.089+0.020=0.122＜1.0, simultaneous exposure is not required.

4) The power of the NFC and WPT is extreme low, which not affect the simultaneous exposure evaluation result.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

6. EUT PHOTOGRAPHS

Please refer to the attachment CR230850551-EXP EUT EXTERNAL PHOTOGRAPHS and CR230850551-INP EUT INTERNAL PHOTOGRAPHS.

7. TEST SETUP PHOTOGRAPHS

Please refer to the attachment CR230850551-00B-TSP TEST SETUP PHOTOGRAPHS.

===== END OF REPORT =====