



Test Report No.:
FCC2025-0063-RF

TEST REPORT

FCC ID : 2AGOFRC421H
Applicant : HCS (Suzhou) Limited
Product Name : Remote Control
Model No. : RC4213409/01BR,RC4213802/01BR,
RC4213404/01BR,RC4213405/01BR,
RC4213406/01BR,RC4213803/01BR,
RC4213804/01BR,RC4213407/01BR,
RC4213408/01BR,RC4213410/01BR,
Babylon RCU,RC421XXXX/XXR,RC421XXXX/XXBR
(‘X’=0-9,‘B’ means packed with battery)

CVC Testing Technology Co., Ltd.

Product Name	Remote Control	Trade Mark	—
Type/Model	RC4213409/01BR,RC4213802/01BR, RC4213404/01BR,RC4213405/01BR, RC4213406/01BR,RC4213803/01BR, RC4213804/01BR,RC4213407/01BR, RC4213408/01BR,RC4213410/01BR, Babylon RCU,RC421XXXX/XXR, RC421XXXX/XXBR ('X'=0-9,'B' means packed with battery)	Sample Status	—
Applicant	HCS (Suzhou) Limited		
Applicant Address	19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, P.R.China		
Manufacturer	HCS (Suzhou) Limited		
Manufacturer Address	19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, P.R.China		
Factory	Himit (Yueyang) Technology Ltd.		
Factory Address	Building 4, Lingang High-tech Industrial Park, Yueyang Area, China (Hunan) Free Trade Pilot Zone		
Sample Identification	1-1	Test Item	See page 8
Tested According To	FCC CFR47 Part 15C Radio Frequency Devices ANSI C63.10-2020 KDB 447498 D01 General RF Exposure Guidance v06		
Receiving Date	2025.08.08	Completing Date	2025.08.12-2025.09.05
Test conclusion	The equipment under test was found to comply with the requirements of the standards applied. Final Verdict: Pass. Seal of CVC Date of issue: 2025-09-08		
Abbreviations: / Pass= passed Fail = failed N/A= not applicable			
This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.			

Approved by:

Chen Huawen



Reviewed by:

Xu Zhenfei



Tested by:

Lu Weiji



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCC2025-0063-RF	Original release	2025-09-08

1. General Product Information

1.1 General information

Product Name	Remote Control
Model No.	RC4213409/01BR
Additional model	RC4213802/01BR,RC4213404/01BR,RC4213405/01BR, RC4213406/01BR,RC4213803/01BR,RC4213804/01BR, RC4213407/01BR,RC4213408/01BR,RC4213410/01BR, Babylon RCU,RC421XXXX/XXR,RC421XXXX/XXBR ('X'=0-9,'B' means packed with battery)
Power Supply	DC 3.0V
Serial Number(SN)	/
Hardware Version	V04
Software Version	V2.11
Bluetooth Version	5.0
Specific power settings	Bluetooth(LE_1M,2M), ZIGB(RF4CE): Default
Antenna Type	PCB antenna
Antenna Gain	Bluetooth: 1.13 dBi (provided by client) ZIGB(RF4CE): 1.13 dBi (provided by client)
Beamforming gain	Unsupported (provided by client)
Frequency Range	Bluetooth(LE_1M,2M): 2402~2480MHz ZIGB(RF4CE): 2405~2480MHz
Channel Number	Bluetooth(LE_1M,2M):40 Channels ZIGB(RF4CE):5 Channels
Type of Modulation	Bluetooth(LE_1M,2M): GFSK ZIGB(RF4CE): OQPSK
Max. Conducted Power	Bluetooth: 9.18 dBm ZIGB(RF4CE): 8.01 dBm
Operate Temp.Range	0°C~45°C

Note:

1. The information of the EUT is declared by the manufacturer.
2. The laboratory is not responsible for the product technical specification provided by the client.
3. EUT photo refer to report (Report NO.:FCC2025-0063-EUT).
4. The EUT have SISO function, provides 1 completed transmitter and 1 receiver.
5. The remote control product of the covered model has the same electrical and mechanical structure as the EUT of the main inspection model. There are only cosmetic differences (color/painting/printing). The basic software architecture remains the same. Full tests were performed on the model: RC4213409/01BR.The test result covers other models.
6. Manufacturer's statement, LGI's RF4CE implementation uses 2 additional RF4CE channels, in addition to the 3 standard RF4CE channels, for a total of 5 channels. The 5 channels are CH11(2405MHz),CH15(2425MHz),CH20(2450MHz),CH25 (2475MHz) and CH26 (2480MHz).

2. Test Sites

2.1 Test Facilities

The tests and measurements refer to this report were performed by RF testing Lab. of CVC Testing Technology Co., Ltd.

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FCC(Test firm designation number: CN1282)

IC(Test firm CAB identifier number: CN0103)

CNAS(Test firm designation number: L0095)

2.2 Description of Non-standard Method and Deviations

The testing and measurement methods used in this report are applied by all standard methods. Not any non-standard method or deviation from the used standards was used.

2.3 List of Test and Measurement Instruments

Refer to **Appendix X**.

3. Test Configuration

3.1 Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Test Mode	Antenna Delivery	Test Channel
Bluetooth(LE_1M,2M)	1TX / 1RX	0,19,39
ZIGB(RF4CE)	1TX / 1RX	11,20,26

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate and different channels. Preliminary tests have been done on all the configurations for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates and channels are shown as following table.

Test Mode	Data Rate		
	Antenna 1	Antenna 2	MIMO
Bluetooth(LE_1M,2M)	1	/	/
ZIGB(RF4CE)	1	/	/

Test Items	Test Antennas	Test Modes	Test Channels
Radiated Emissions	Antenna 1	Bluetooth(LE_2M)	0,19,39
		ZIGB(RF4CE)	11,20,26
Radiated Emissions (Band Edge)	Antenna 1	Bluetooth(LE_2M)	0,39
		ZIGB(RF4CE)	11,26
Maximum conducted output power	Antenna 1	Bluetooth(LE_1M,2M)	0,19,39
		ZIGB(RF4CE)	11,20,26
Minimum 6 dB bandwidth	Antenna 1	Bluetooth(LE_1M,2M)	0,19,39
		ZIGB(RF4CE)	11,20,26
Occupied Channel Bandwidth	Antenna 1	Bluetooth(LE_1M,2M)	0,19,39
		ZIGB(RF4CE)	11,20,26
Band Edge Measurement	Antenna 1	Bluetooth(LE_1M,2M)	0,39
		ZIGB(RF4CE)	11,26
Maximum Power spectral density	Antenna 1	Bluetooth(LE_1M,2M)	0,19,39
		ZIGB(RF4CE)	11,20,26
Spurious RF Conducted Emissions	Antenna 1	Bluetooth(LE_1M,2M)	0,19,39
		ZIGB(RF4CE)	11,20,26

3.2 Duty cycle

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
BLE_1M	Ant1	2402	0.00	0.00	100	---	---
		2440	0.00	0.00	100	---	---
		2480	0.00	0.00	100	---	---
BLE_2M	Ant1	2402	0.00	0.00	100	---	---
		2440	0.00	0.00	100	---	---
		2480	0.00	0.00	100	---	---
ZIGB(RF4CE)	Ant1	2405	0.00	0.00	100	---	---
		2450	0.00	0.00	100	---	---
		2480	0.00	0.00	100	---	---

4. Summary of measurement results

Summary of measurements of results	Clause in FCC rules	Verdict	Note
Conducted Emissions	15.207	N/A	See note 2
Radiated spurious emission and band edge radiated	15.247(d), 15.205, 15.209	PASS	—
Maximum conducted output power	15.247(b)(3)	PASS	Appendix C of BLE_ diagram and Appendix C of ZIGB(RF4CE)_ diagram
Minimum 6 dB bandwidth	15.247(a)(2)	PASS	Appendix A of BLE_ diagram and Appendix A of ZIGB(RF4CE)_ diagram
Occupied Channel Bandwidth	15.247(a)(2)	PASS	Appendix B of BLE_ diagram and Appendix B of ZIGB(RF4CE)_ diagram
Conducted band edge	15.247(d)	PASS	Appendix E of BLE_ diagram and Appendix E of ZIGB(RF4CE)_ diagram
Maximum Power spectral density	15.247(e)	PASS	Appendix D of BLE_ diagram and Appendix D of ZIGB(RF4CE)_ diagram
Spurious RF Conducted Emissions	15.247(d)	PASS	Appendix F of BLE_ diagram and Appendix F of ZIGB(RF4CE)_ diagram
Antenna Requirement	15.203	PASS	See note 1

Note 1: According to 15.203, it is considered sufficient to comply with the provisions of this section.

Note 2: Not applicable to battery powered devices.

5. Measurement procedure

5.1 Conducted Emission

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was setup according to ANSI C63.10-2020 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

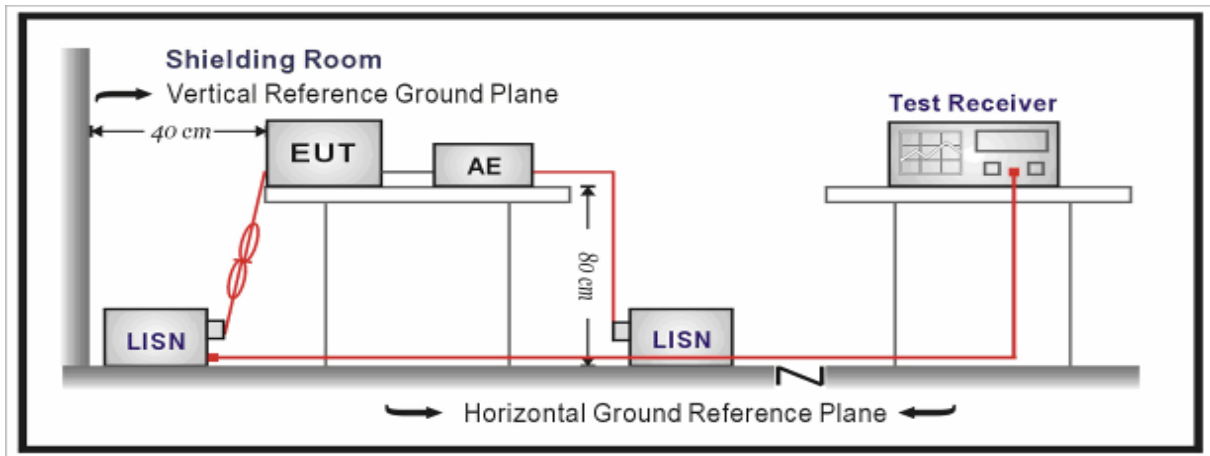
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

Limits:

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
Note 1: The lower limit shall apply at the transition frequencies.		
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

Test Setup:



Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Level = Reading + Factor.

Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 3.12$ dB.

Test Results:

Conducted Emission applies to an intentional radiator that is designed to be connected to the public utility (AC) power line. 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.

5.2 Radiated Emission

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was setup and tested according to ANSI C63.10-2020.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from Antenna to the EUT was 3 meters.

The Antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2020 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn Antenna will be bended down a little (as horn Antenna has the narrow beamwidth) in order to keeping the Antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

Limits:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Frequency	Limit ($\mu\text{V/m}$)	Limit (dB $\mu\text{V/m}$ @3m)	Remark
0.009MHz-0.490MHz	2400/F(kHz)@300m	20lg(24000000/F(kHz))	Quasi-peak Level
0.490MHz~1.705MHz	24000/F(kHz)@30m	20lg(2400000/F(kHz))	Quasi-peak Level
1.705MHz~30.0MHz	30@30m	69.54	Quasi-peak Level
30MHz-88MHz	100@3m	40.0	Quasi-peak Level
88MHz-216MHz	150@3m	43.5	Quasi-peak Level
216MHz-960MHz	200@3m	46.0	Quasi-peak Level
960MHz-1GHz	500@3m	54.0	Quasi-peak Level

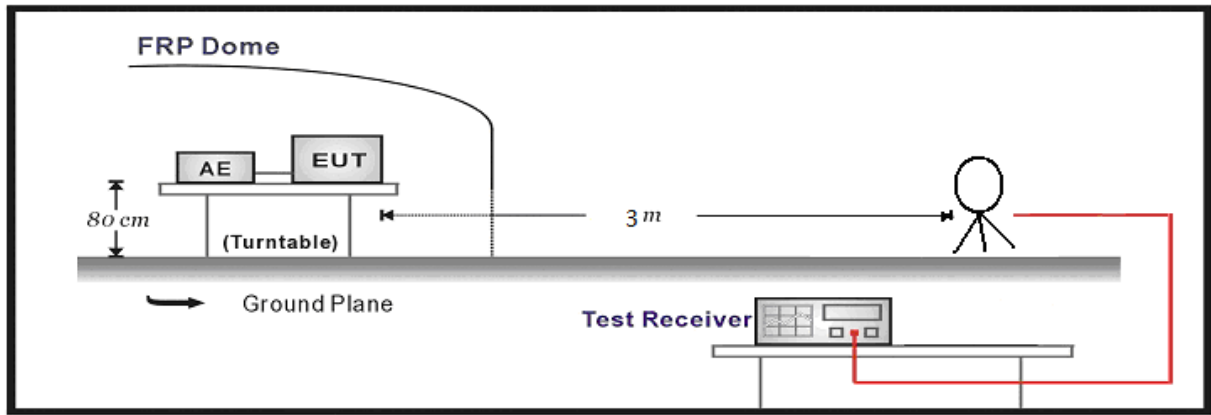
Above 1GHz	500@3m	54.0	Average Level
	5000@3m	74.0	Peak Level

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

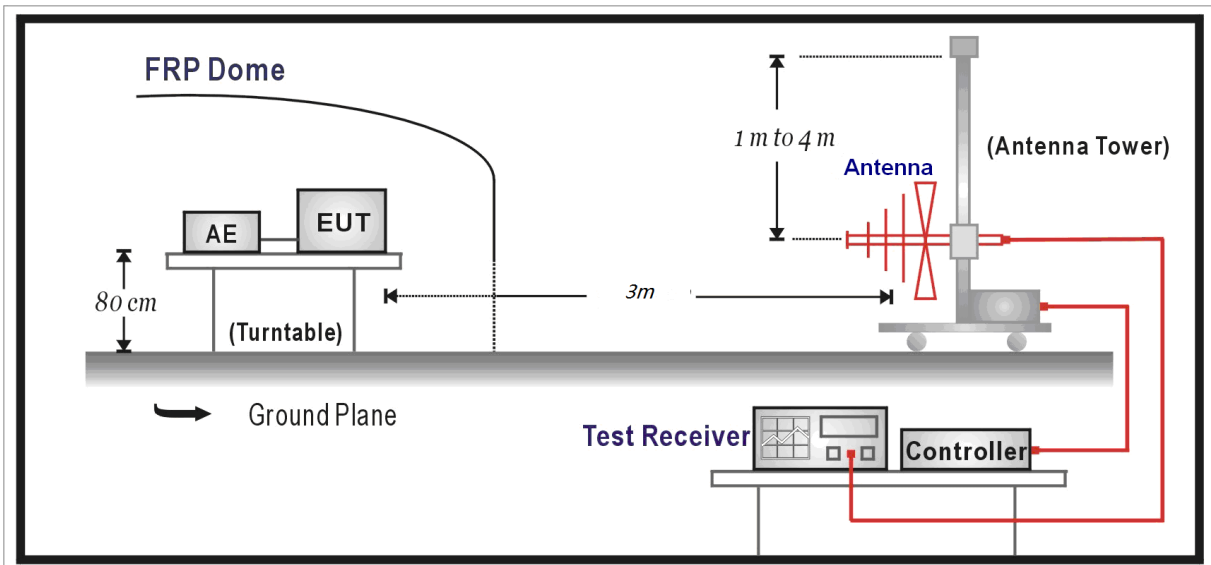
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.
12.57675-12.57725	322-335.4	3600-4400	/
13.36-13.41	/	/	/

Test Setup:

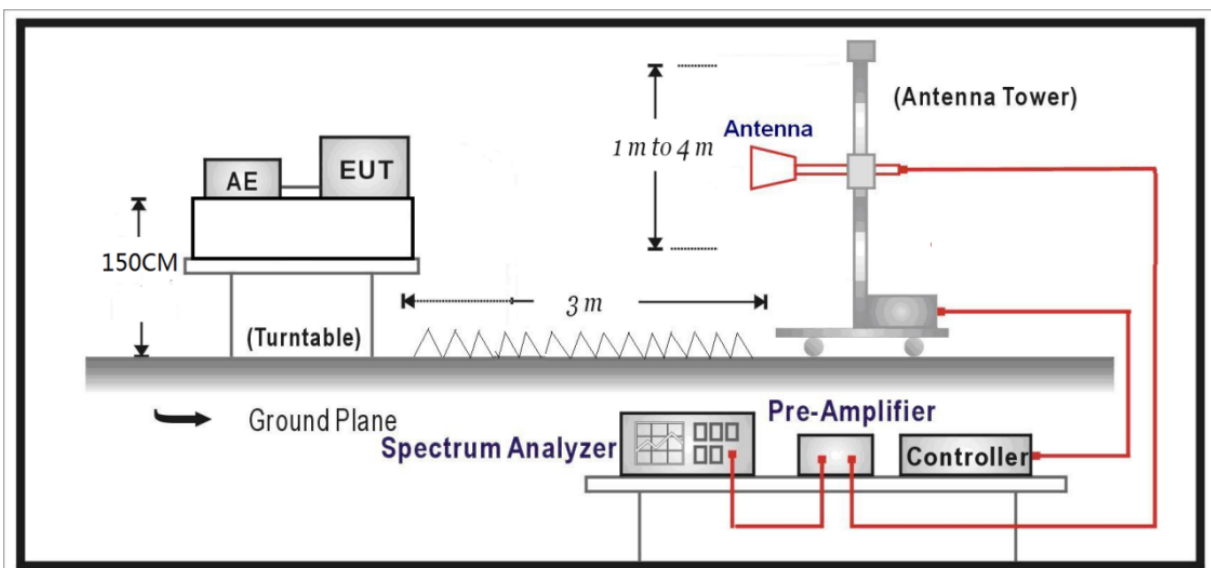
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



Measurement Data:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Level = Reading - Factor

Factor = Preamplifier Factor – Antenna Factor–Cable Loss

Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
Above 1GHz	3.68 dB

Test Results:

SPURIOUS EMISSIONS:

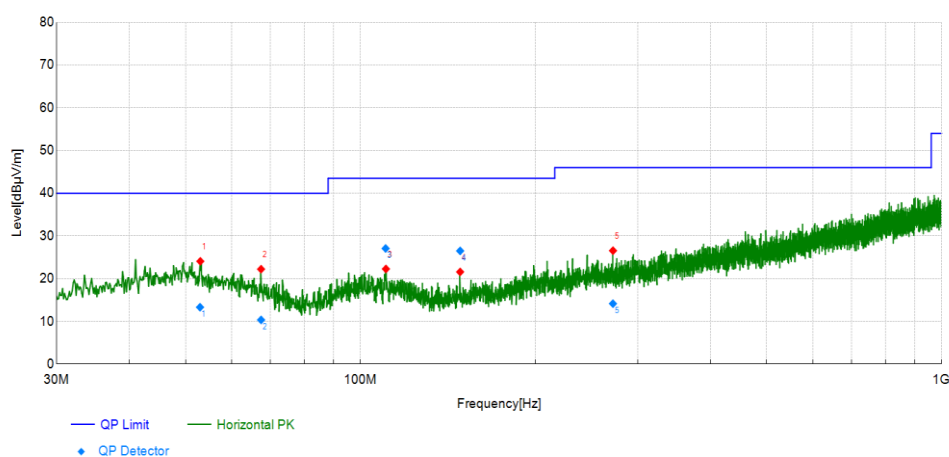
Bluetooth(Low Energy):

During the test, the Radiates Emission from 9kHz to 1GHz was performed in Bluetooth(Low Energy) all modes with all channels and all antennas. BLE(2Mbps), channel 0, antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emission			9k~1G							
Test channel			Worst-Case							
Suspected List										
Frequency [MHz]	Polarity	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle [°]	Pass/Fail
53.04	Horizontal	-17.48	41.56	24.08	40.00	15.92	PK	100.0	224	PASS
67.47	Horizontal	-20.74	42.97	22.23	40.00	17.77	PK	100.0	349	PASS
110.63	Horizontal	-19.50	41.79	22.29	43.50	21.21	PK	100.0	39	PASS
148.46	Horizontal	-22.30	43.89	21.59	43.50	21.91	PK	100.0	0	PASS
272.02	Horizontal	-16.87	43.43	26.56	46.00	19.44	PK	100.0	278	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

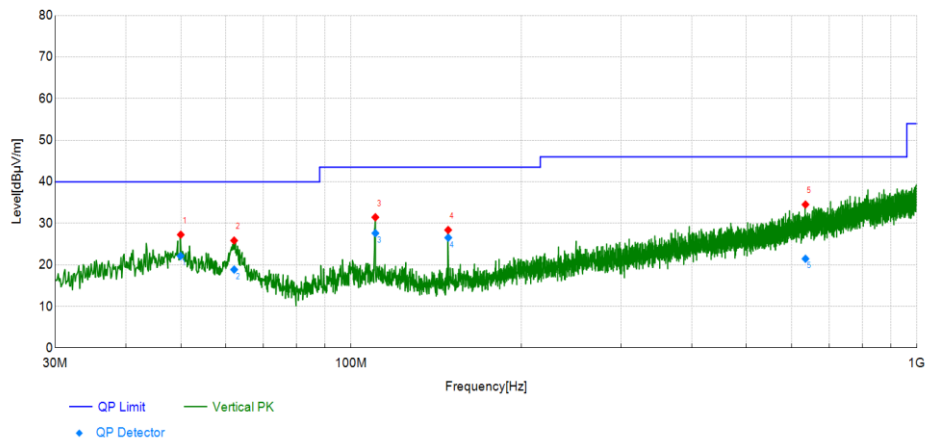
Final Data List								
Frequency [MHz]	Polarity	Factor [dB]	QP Value [dB μ V/m]	QP Limit [dB μ V/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
52.97	Horizontal	-17.48	13.33	40.00	26.67	160.3	224	PASS
67.47	Horizontal	-20.74	10.36	40.00	29.64	100.0	349	PASS
110.52	Horizontal	-19.50	27.08	43.50	16.42	400.0	39	PASS
148.48	Horizontal	-22.30	26.51	43.50	16.99	316.9	0	PASS
271.97	Horizontal	-16.87	14.16	46.00	31.84	136.4	278	PASS



Radiates Emission			9k~1G							
Test channel			Worst-Case							
Suspected List										
Frequency [MHz]	Polarity	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
50.01	Vertical	-16.98	44.26	27.28	40.00	12.72	PK	100.0	224	PASS
62.13	Vertical	-19.22	45.08	25.86	40.00	14.14	PK	100.0	126	PASS
110.39	Vertical	-19.47	50.93	31.46	43.50	12.04	PK	100.0	349	PASS
148.46	Vertical	-22.30	50.70	28.40	43.50	15.10	PK	100.0	349	PASS
635.40	Vertical	-9.05	43.57	34.52	46.00	11.48	PK	100.0	207	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List								
Frequency [MHz]	Polarity	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fa il
49.98	Vertical	-16.98	22.15	40.00	17.85	109.3	224	PASS
62.13	Vertical	-19.22	18.88	40.00	21.12	117.3	126	PASS
110.41	Vertical	-19.47	27.62	43.50	15.88	109.3	349	PASS
148.51	Vertical	-22.30	26.55	43.50	16.95	109.3	349	PASS
635.43	Vertical	-9.05	21.48	46.00	24.52	323.7	207	PASS



During the test, the Radiates Emission from Above 1G was performed in Bluetooth(Low Energy) all modes with all channels and all antennas. BLE(2Mbps), Highest, medium, lowest channels, antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emission		Above 1G							
Test channel		Lowest channel							
polarization		Horizontal							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1265.00	-6.07	42.03	35.96	74.00	38.04	PK	150	316	PASS
1773.00	-5.24	45.29	40.05	74.00	33.95	PK	150	117	PASS
3161.00	-4.32	42.30	37.98	74.00	36.02	PK	150	201	PASS
4074.00	-1.62	38.99	37.37	74.00	36.63	PK	150	101	PASS
1264.00	-6.07	29.87	23.80	54.00	30.20	AV	150	0	PASS
1772.00	-5.24	34.42	29.18	54.00	24.82	AV	150	117	PASS
3161.00	-4.32	29.13	24.81	54.00	29.19	AV	150	275	PASS
4073.00	-1.62	25.91	24.29	54.00	29.71	AV	150	258	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Lowest channel							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1274.00	-6.06	41.98	35.92	74.00	38.08	PK	150	2	PASS
1785.00	-5.21	42.67	37.46	74.00	36.54	PK	150	292	PASS
3005.00	-4.49	42.07	37.58	74.00	36.42	PK	150	169	PASS
3848.00	-2.47	39.85	37.38	74.00	36.62	PK	150	54	PASS
1274.00	-6.06	29.29	23.23	54.00	30.77	AV	150	292	PASS
1785.00	-5.21	32.36	27.15	54.00	26.85	AV	150	300	PASS
3005.00	-4.49	29.73	25.24	54.00	28.76	AV	150	193	PASS
3847.00	-2.48	26.02	23.54	54.00	30.46	AV	150	169	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Medium channel							
polarization		Horizontal							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1229.00	-6.09	42.01	35.92	74.00	38.08	PK	150	75	PASS
1770.00	-5.25	45.47	40.22	74.00	33.78	PK	150	117	PASS
3585.00	-3.44	41.17	37.73	74.00	36.27	PK	150	336	PASS
1229.00	-6.09	30.02	23.93	54.00	30.07	AV	150	141	PASS
1770.00	-5.25	35.06	29.81	54.00	24.19	AV	150	125	PASS
3584.00	-3.44	27.50	24.06	54.00	29.94	AV	150	343	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Medium channel							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1667.00	-5.46	53.26	47.8	74.00	26.20	PK	150	240	PASS
1846.00	-5.10	47.09	41.99	74.00	32.01	PK	150	330	PASS
2153.00	-4.61	50.77	46.16	74.00	27.84	PK	150	130	PASS
3299.00	-4.12	43.15	39.03	74.00	34.97	PK	150	130	PASS
1668.00	-5.46	43.15	37.69	54.00	16.31	AV	150	240	PASS
1847.00	-5.10	37.47	32.37	54.00	21.63	AV	150	70	PASS
2153.00	-4.61	41.16	36.55	54.00	17.45	AV	150	340	PASS
3300.00	-4.12	31.53	27.41	54.00	26.59	AV	150	130	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Highest channel							
polarization		Horizontal							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1262.00	-6.07	42.49	36.42	74.00	37.58	PK	150	25	PASS
1790.00	-5.21	45.37	40.16	74.00	33.84	PK	150	117	PASS
3034.00	-4.47	41.78	37.31	74.00	36.69	PK	150	340	PASS
4790.00	-0.16	38.00	37.84	74.00	36.16	PK	150	356	PASS
5696.00	1.74	38.50	40.24	74.00	33.76	PK	150	2	PASS
1261.00	-6.07	30.01	23.94	54.00	30.06	AV	150	58	PASS
1790.00	-5.21	34.70	29.49	54.00	24.51	AV	150	108	PASS
3034.00	-4.47	29.77	25.30	54.00	28.70	AV	150	100	PASS
4790.00	-0.16	24.73	24.57	54.00	29.43	AV	150	17	PASS
5695.00	1.73	24.04	25.77	54.00	28.23	AV	150	82	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Highest channel							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1258.00	-6.08	41.13	35.05	74.00	38.95	PK	150	44	PASS
1779.00	-5.23	46.28	41.05	74.00	32.95	PK	150	168	PASS
3108.00	-4.39	41.93	37.54	74.00	36.46	PK	150	110	PASS
4024.00	-1.71	39.26	37.55	74.00	36.45	PK	150	143	PASS
1257.00	-6.09	29.80	23.71	54.00	30.29	AV	150	339	PASS
1779.00	-5.23	31.96	26.73	54.00	27.27	AV	150	168	PASS
3108.00	-4.39	29.85	25.46	54.00	28.54	AV	150	151	PASS
4024.00	-1.71	26.19	24.48	54.00	29.52	AV	150	151	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

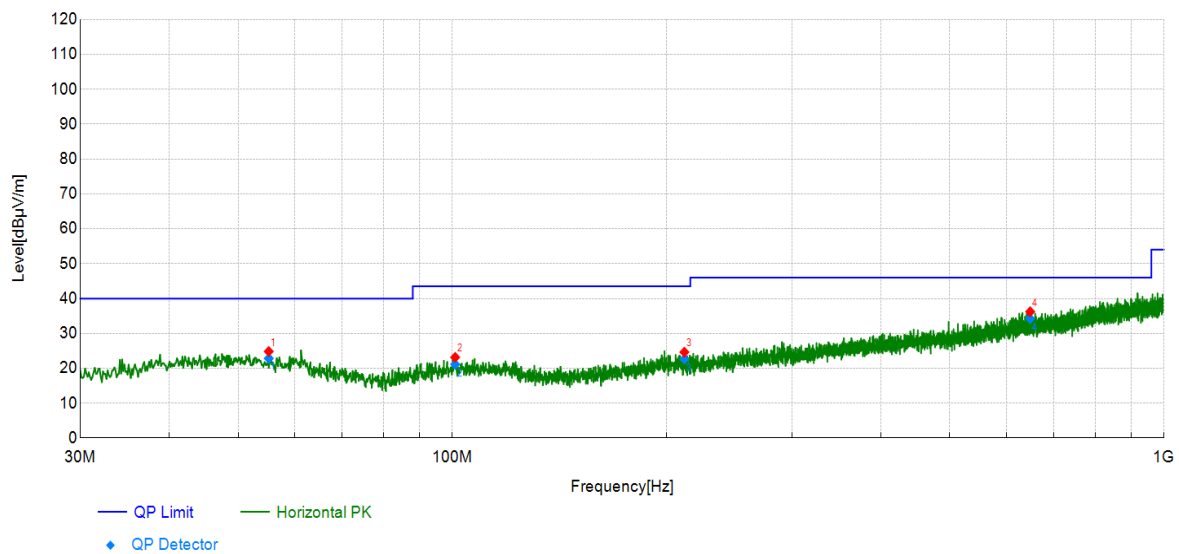
ZIGB(RF4CE):

During the test, the Radiates Emission from 9kHz to 40GHz was performed in ZIGB(RF4CE). Channel 11, antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emission			9k~1G							
Test channel			Worst-Case							
Suspected List										
Frequency [MHz]	Polarity	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
55.22	Horizontal	-17.83	42.68	24.85	40.00	15.15	PK	100	0	PASS
100.93	Horizontal	-18.98	42.14	23.16	43.50	20.34	PK	100	63	PASS
211.88	Horizontal	-18.74	43.39	24.65	43.50	18.85	PK	100	0	PASS
648.50	Horizontal	-8.89	45.13	36.24	46.00	9.76	PK	100	47	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

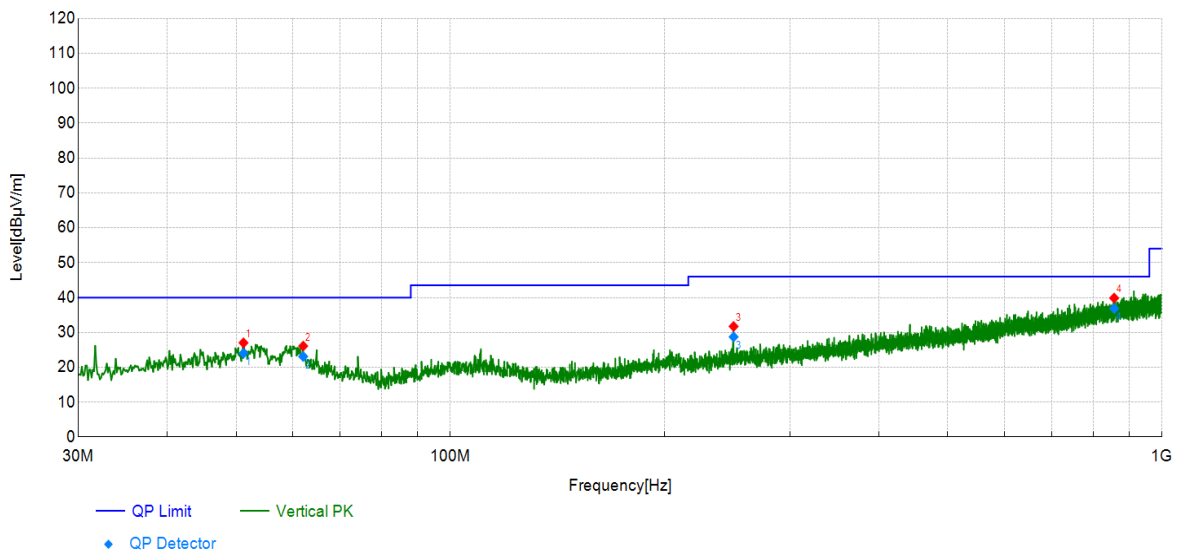
Final Data List								
Frequency [MHz]	Polarity	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
55.22	Horizontal	-17.83	22.85	40.00	17.15	134	0	PASS
100.93	Horizontal	-18.98	21.16	43.50	22.34	261	63	PASS
211.88	Horizontal	-18.74	22.65	43.50	20.85	185	0	PASS
648.50	Horizontal	-8.89	34.24	46.00	11.76	223	47	PASS



Radiates Emission			9k~1G							
Test channel			Worst-Case							
Suspected List										
Frequency [MHz]	Polarity	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
51.22	Vertical	-17.18	44.22	27.04	40.00	12.96	PK	100	48	PASS
62.13	Vertical	-19.22	45.34	26.12	40.00	13.88	PK	100	187	PASS
250.07	Vertical	-17.23	48.96	31.73	46.00	14.27	PK	100	86	PASS
856.56	Vertical	-5.57	45.43	39.86	46.00	6.14	PK	100	233	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List								
Frequency [MHz]	Polarity	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
51.22	Vertical	-17.18	24.04	40.00	15.96	132	48	PASS
62.13	Vertical	-19.22	23.12	40.00	16.88	141	187	PASS
250.07	Vertical	-17.23	28.73	46.00	17.27	231	86	PASS
856.56	Vertical	-5.57	36.86	46.00	9.14	351	233	PASS



Radiates Emission		Above 1G							
Test channel		Lowest channel							
polarization		Horizontal							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1235.00	-6.09	42.35	36.26	74.00	37.74	PK	150	191	PASS
1769.00	-5.25	45.79	40.54	74.00	33.46	PK	150	118	PASS
3596.00	-3.41	47.80	44.39	74.00	29.61	PK	150	60	PASS
1235.00	-6.09	30.06	23.97	54.00	30.03	AV	150	289	PASS
1768.00	-5.26	34.55	29.29	54.00	24.71	AV	150	118	PASS
3596.00	-3.41	28.60	25.19	54.00	28.81	AV	150	60	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Lowest channel							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1244.00	-6.09	41.90	35.81	74.00	38.19	PK	150	1	PASS
1762.00	-5.26	42.46	37.20	74.00	36.80	PK	150	300	PASS
3178.00	-4.31	41.28	36.97	74.00	37.03	PK	150	87	PASS
4056.00	-1.65	38.87	37.22	74.00	36.78	PK	150	210	PASS
1244.00	-6.09	29.77	23.68	54.00	30.32	AV	150	219	PASS
1761.00	-5.26	31.17	25.91	54.00	28.09	AV	150	292	PASS
3178.00	-4.31	28.33	24.02	54.00	29.98	AV	150	234	PASS
4055.00	-1.65	26.91	25.26	54.00	28.74	AV	150	136	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Medium channel							
polarization		Horizontal							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1252.00	-6.09	41.15	35.06	74.00	38.94	PK	150	93	PASS
1779.00	-5.23	45.91	40.68	74.00	33.32	PK	150	183	PASS
2450.00	-4.28	104.52	100.24	---	---	PK	150	290	---
3016.00	-4.48	41.24	36.76	74.00	37.24	PK	150	360	PASS
3883.00	-2.31	39.34	37.03	74.00	36.97	PK	150	331	PASS
4901.00	-0.07	66.54	66.47	74.00	7.53	PK	150	297	PASS
1251.00	-6.09	29.95	23.86	54.00	30.14	AV	150	290	PASS
1778.00	-5.23	34.86	29.63	54.00	24.37	AV	150	183	PASS
2450.00	-4.28	94.28	90.00	---	---	AV	150	290	---
3016.00	-4.48	29.91	25.43	54.00	28.57	AV	150	248	PASS
3883.00	-2.31	27.19	24.88	54.00	29.12	AV	150	322	PASS
4900.00	-0.07	52.89	52.82	54.00	1.18	AV	150	290	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Medium channel							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1239.00	-6.09	41.83	35.74	74.00	38.26	PK	150	260	PASS
1765.00	-5.26	43.48	38.22	74.00	35.78	PK	150	15	PASS
2449.00	-4.28	92.43	88.15	---	---	PK	150	226	---
3741.00	-2.98	39.72	36.74	74.00	37.26	PK	150	210	PASS
4901.00	-0.07	60.23	60.16	74.00	13.84	PK	150	333	PASS
1238.00	-6.09	29.70	23.61	54.00	30.39	AV	150	177	PASS
1764.00	-5.26	31.92	26.66	54.00	27.34	AV	150	8	PASS
2449.00	-4.28	64.66	60.38	---	---	AV	150	333	---
3020.00	-4.48	29.98	25.50	54.00	28.50	AV	150	144	PASS
3741.00	-2.98	27.57	24.59	54.00	29.41	AV	150	234	PASS
4900.00	-0.07	52.32	52.25	54.00	1.75	AV	150	341	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Highest channel							
polarization		Horizontal							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1406.00	-5.90	40.66	34.76	74.00	39.24	PK	150	217	PASS
2481.00	-4.25	104.60	100.35	---	---	PK	150	233	---
3012.00	-4.49	42.06	37.57	74.00	36.43	PK	150	14	PASS
4317.00	-1.09	38.62	37.53	74.00	36.47	PK	150	68	PASS
4961.00	-0.01	66.48	66.47	74.00	7.53	PK	150	242	PASS
1405.00	-5.90	29.17	23.27	54.00	30.73	AV	150	68	PASS
2481.00	-4.25	95.51	91.26	---	---	AV	150	233	---
3012.00	-4.49	29.90	25.41	54.00	28.59	AV	150	135	PASS
4317.00	-1.09	26.72	25.63	54.00	28.37	AV	150	4	PASS
4960.00	-0.02	49.61	49.59	54.00	4.41	AV	150	250	PASS

Note: The emission levels of other frequencies were greater than 20dB margin.

Radiates Emission		Above 1G							
Test channel		Highest channel							
polarization		Vertical							
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/ m]	Level [dBμV/ m]	Limit [dBμV/ m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
1410.00	-5.90	40.60	34.70	74.00	39.30	PK	150	356	PASS
1945.00	-4.93	39.91	34.98	74.00	39.02	PK	150	258	PASS
2480.00	-4.25	90.60	86.35	---	---	PK	150	291	---
4078.00	-1.61	39.34	37.73	74.00	36.27	PK	150	126	PASS
4959.00	-0.02	60.43	60.41	74.00	13.59	PK	150	284	PASS
1409.00	-5.90	29.37	23.47	54.00	30.53	AV	150	353	PASS
1945.00	-4.93	28.12	23.19	54.00	30.81	AV	150	183	PASS
2480.00	-4.25	82.05	77.80	---	---	AV	150	291	---
4077.00	-1.61	27.23	25.62	54.00	28.38	AV	150	35	PASS
4959.00	-0.02	44.20	44.18	54.00	9.82	AV	150	291	PASS

Band Edge:

During the test, the Band Edge was performed in BLE all modes with all channels and all antennas.

BLE(2Mbps), Highest and lowest channels, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Test mode			BLE(2Mbps)						
Test channel			Lowest channel						
polarization			Horizontal						
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
2389.00	-4.34	37.23	32.89	74.00	41.11	PK	150	336	PASS
2402.00	-4.32	95.30	90.98	---	----	PK	150	288	---
2416.00	-4.31	37.71	33.40	74.00	40.60	PK	150	35	PASS
2426.00	-4.31	44.18	39.87	74.00	34.13	PK	150	280	PASS
2388.00	-4.34	27.42	23.08	54.00	30.92	AV	150	280	PASS
2402.00	-4.32	79.37	75.05	---	---	AV	150	280	---
2416.00	-4.31	27.52	23.21	54.00	30.79	AV	150	35	PASS
2426.00	-4.31	31.90	27.59	54.00	26.41	AV	150	288	PASS
Test mode			BLE(2Mbps)						
Test channel			Lowest channel						
polarization			Vertical						
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
2390.00	-4.33	36.63	32.30	74.00	41.70	PK	150	193	PASS
2398.00	-4.33	38.72	34.39	74.00	39.61	PK	150	169	PASS
2402.00	-4.32	87.77	83.45	---	---	PK	150	217	---
2410.00	-4.31	36.37	32.06	74.00	41.94	PK	150	152	PASS
2421.00	-4.30	37.26	32.96	74.00	41.04	PK	150	152	PASS
2390.00	-4.33	26.19	21.86	54.00	32.14	AV	150	103	PASS
2398.00	-4.33	26.18	21.85	54.00	32.15	AV	150	169	PASS
2402.00	-4.32	71.71	67.39	---	---	AV	150	226	---
2409.00	-4.31	28.09	23.78	54.00	30.22	AV	150	144	PASS
2421.00	-4.30	26.67	22.37	54.00	31.63	AV	150	152	PASS

The signal beyond the limit is carrier.

Test mode			BLE(2Mbps)						
Test channel			Highest channel						
polarization			Horizontal						
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
2336.00	-4.38	41.31	36.93	74.00	37.07	PK	150	268	PASS
2390.00	-4.33	37.46	33.13	74.00	40.87	PK	150	11	PASS
2480.00	-4.25	95.83	91.58	---	---	PK	150	284	---
2483.50	-4.25	66.56	62.31	74.00	11.69	PK	150	284	PASS
2336.00	-4.38	28.57	24.19	54.00	29.81	AV	150	284	PASS
2390.00	-4.33	26.75	22.42	54.00	31.58	AV	150	284	PASS
2480.00	-4.25	74.62	70.37	---	---	AV	150	268	---
2483.50	-4.25	34.42	30.17	54.00	23.83	AV	150	284	PASS
Test mode			BLE(2Mbps)						
Test channel			Highest channel						
polarization			Vertical						
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
2472.00	-4.26	37.59	33.33	74.00	40.67	PK	150	4	PASS
2479.00	-4.25	90.33	86.08	---	---	PK	150	263	---
2483.50	-4.25	50.94	46.69	74.00	27.31	PK	150	263	PASS
2492.00	-4.24	38.68	34.44	74.00	39.56	PK	150	27	PASS
2501.00	-4.23	38.93	34.70	74.00	39.30	PK	150	329	PASS
2471.00	-4.25	27.16	22.91	54.00	31.09	AV	150	166	PASS
2479.00	-4.25	57.23	52.98	---	---	AV	150	263	---
2483.50	-4.25	30.02	25.77	54.00	29.23	AV	150	263	PASS
2491.00	-4.24	27.04	22.80	54.00	31.20	AV	150	320	PASS
2501.00	-4.23	27.12	22.89	54.00	31.11	AV	150	142	PASS

The signal beyond the limit is carrier.

During the test, the Band Edge was performed in ZIGB(RF4CE). Antenna 1, Highest and lowest channels are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Test mode			ZIGB(RF4CE)						
Test channel			Lowest channel						
polarization			Horizontal						
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
2390.00	-4.33	42.22	37.89	74.00	36.11	PK	150	281	PASS
2404.00	-4.32	96.28	91.96	---	---	PK	150	289	---
2428.00	-4.30	45.23	40.93	74.00	33.07	PK	150	281	PASS
2453.00	-4.28	49.86	45.58	74.00	28.42	PK	150	281	PASS
2463.00	-4.26	50.58	46.32	74.00	27.68	PK	150	351	PASS
2390.00	-4.33	33.02	28.69	54.00	25.31	AV	150	289	PASS
2404.00	-4.32	78.72	74.40	---	---	AV	150	273	---
2427.00	-4.30	30.08	25.78	54.00	28.22	AV	150	289	PASS
2453.00	-4.28	39.81	35.53	54.00	18.47	AV	150	273	PASS
2463.00	-4.26	34.34	30.08	54.00	23.92	AV	150	351	PASS
Test mode			ZIGB(RF4CE)						
Test channel			Lowest channel						
polarization			Vertical						
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
2382.00	-4.34	38.43	34.09	74.00	39.91	PK	150	285	PASS
2390.00	-4.33	37.13	32.80	74.00	41.20	PK	150	56	PASS
2405.00	-4.31	89.12	84.81	---	---	PK	150	244	---
2422.00	-4.31	38.77	34.46	74.00	39.54	PK	150	56	PASS
2427.00	-4.30	59.43	55.13	74.00	18.87	PK	150	357	PASS
2382.00	-4.34	27.39	23.05	54.00	30.95	AV	150	24	PASS
2390.00	-4.33	26.17	21.84	54.00	32.16	AV	150	195	PASS
2405.00	-4.31	77.69	73.38	---	---	AV	150	268	---
2422.00	-4.31	26.90	22.59	54.00	31.41	AV	150	31	PASS
2426.00	-4.31	26.92	22.61	54.00	31.39	AV	150	179	PASS

Test mode			ZIGB(RF4CE)						
Test channel			Highest channel						
polarization			Horizontal						
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
2389.00	-4.34	37.10	32.76	74.00	41.24	PK	150	143	PASS
2456.00	-4.27	42.46	38.19	74.00	35.81	PK	150	233	PASS
2483.50	-4.25	69.02	64.77	74.00	9.23	PK	150	233	PASS
2505.00	-4.23	43.10	38.87	74.00	35.13	PK	150	233	PASS
2388.00	-4.34	27.99	23.65	54.00	30.35	AV	150	233	PASS
2456.00	-4.27	32.17	27.90	54.00	26.10	AV	150	233	PASS
2483.00	-4.25	46.40	42.15	54.00	11.85	AV	150	242	PASS
2505.00	-4.23	37.46	33.23	54.00	20.77	AV	150	242	PASS
Test mode			ZIGB(RF4CE)						
Test channel			Highest channel						
polarization			Vertical						
Suspected List									
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Height [cm]	Angle [°]	Pass/ Fail
2389.00	-4.34	36.61	32.27	74.00	41.73	PK	150	85	PASS
2432.00	-4.29	40.08	35.79	74.00	38.21	PK	150	85	PASS
2483.50	-4.25	63.35	59.10	74.00	14.90	PK	150	291	PASS
2490.00	-4.23	39.76	35.53	74.00	38.47	PK	150	291	PASS
2388.00	-4.34	26.73	22.39	54.00	31.61	AV	150	249	PASS
2432.00	-4.29	28.97	24.68	54.00	29.32	AV	150	291	PASS
2482.00	-4.25	51.79	47.54	54.00	6.46	AV	150	291	PASS
2489.00	-4.24	33.64	29.40	54.00	24.60	AV	150	249	PASS

5.3 Maximum conducted output power

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

a.A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor and set the detector to PEAK. Record the power level.

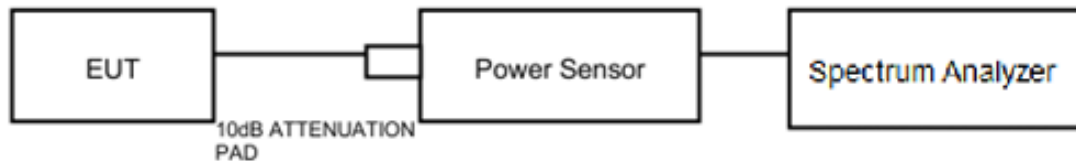
Limits:

Average Output Power	$\leq 1\text{W}$ (30dBm)
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Note: the conducted output power limit specified above is based on the use the antennas with directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated Levels above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Test Setup:



Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.44$ dB.

Test Results:

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	9.18	≤30.00	PASS
		2440	8.99	≤30.00	PASS
		2480	9.12	≤30.00	PASS
BLE_2M	Ant1	2402	9.16	≤30.00	PASS
		2440	8.88	≤30.00	PASS
		2480	9.13	≤30.00	PASS
ZIGB(RF4CE)	Ant1	2405	7.40	≤30.00	PASS
		2450	7.23	≤30.00	PASS
		2480	8.01	≤30.00	PASS

5.4 Minimum 6 dB Bandwidth

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz; VBW is set to greater than 3 times RBW on spectrum analyzer.

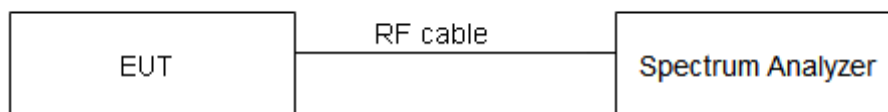
Detector=Peak, Trace mode=Max hold.

Limits:

Rule Part 15.247 (a) (2) specifies that “Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

Minimum 6dB Bandwidth	≥ 500 kHz
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Test Setup:



Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936$ Hz.

Test Results:

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.68	2401.66	2402.34	0.5	PASS
		2440	0.67	2439.66	2440.33	0.5	PASS
		2480	0.67	2479.66	2480.33	0.5	PASS
BLE_2M	Ant1	2402	1.38	2401.32	2402.70	0.5	PASS
		2440	1.44	2439.28	2440.72	0.5	PASS
		2480	1.40	2479.27	2480.66	0.5	PASS
ZIGB(RF4CE)	Ant1	2405	1.53	2404.24	2405.77	0.5	PASS
		2450	1.52	2449.23	2450.75	0.5	PASS
		2480	1.56	2479.20	2480.76	0.5	PASS

5.5 Occupied Channel Bandwidth

Ambient condition:

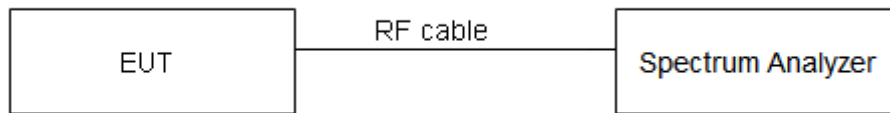
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 1% to 5% of the OBW; video bandwidth (VBW) shall be at least three times RBW on spectrum analyzer.

Detector=Peak, Trace mode=Max hold.

Test Setup:



Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 936$ Hz.

Test Results:

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.019	2401.4885	2402.5075	---	---
		2440	1.019	2439.4885	2440.5075	---	---
		2480	1.015	2479.4925	2480.5075	---	---
BLE_2M	Ant1	2402	2.046	2400.9690	2403.0150	---	---
		2440	2.034	2438.9850	2441.0190	---	---
		2480	2.042	2478.9770	2481.0190	---	---
ZIGB(RF4CE)	Ant1	2405	2.388	2403.8012	2406.1888	---	---
		2450	2.388	2448.8012	2451.1888	---	---
		2480	2.378	2478.8012	2481.1788	---	---

5.6 Band Edge Measurement

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

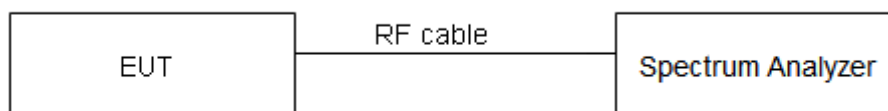
Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer.

Limits:

Rule Part 15.247(d) specifies that “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.

Test Setup:



Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 936 \text{ Hz}$, $2 \text{ GHz} - 3 \text{ GHz} = 1.407 \text{ dB}$.

Test Results:

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	7.59	-48.77	≤ -12.41	PASS
		High	2480	6.94	-47.34	≤ -13.06	PASS
BLE_2M	Ant1	Low	2402	6.10	-26.76	≤ -13.90	PASS
		High	2480	5.14	-48.2	≤ -14.86	PASS
ZIGB(RF4CE)	Ant1	Low	2405	4.55	-39.11	≤ -15.45	PASS
		High	2480	5.18	-33.03	≤ -14.82	PASS

5.7 Maximum Power Spectral Density

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

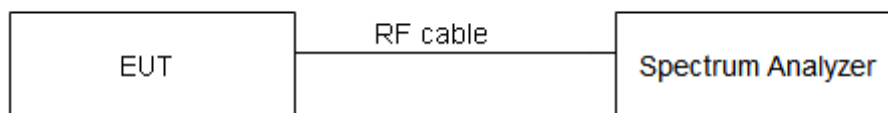
During the process of the testing, The EUT was connected to Spectrum Analyzer with a known loss. The EUT is max power transmission with proper modulation. The Average detector is used. We use Method AVGPSD-2 in KDB 558074 D01 for this test.

Limits:

Rule Part 15.247(e) specifies that" 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.

Maximum Power Spectral Density	$\leq 8 \text{ dBm} / 3\text{kHz}$
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Test Setup:



Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.75\text{dB}$.

Test Results:

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-1.57	≤8.00	PASS
		2440	-1.56	≤8.00	PASS
		2480	-2.75	≤8.00	PASS
BLE_2M	Ant1	2402	-6.12	≤8.00	PASS
		2440	-6.36	≤8.00	PASS
		2480	-3.72	≤8.00	PASS
ZIGB(RF4CE)	Ant1	2405	-6.66	≤8.00	PASS
		2450	-6.50	≤8.00	PASS
		2480	-6.97	≤8.00	PASS

5.8 Spurious RF Conducted Emissions

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW to 100kHz and VBW to 300 kHz, Sweep is set to AUTO .The test is in transmitting mode.

Limits:

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

Test Setup:



Measurement Uncertainty:

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

Test Results:

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	7.60	7.60	---	PASS
			30~1000	7.60	-58.18	≤-12.4	PASS
			1000~26500	7.60	-41.38	≤-12.4	PASS
		2440	Reference	7.58	7.58	---	PASS
			30~1000	7.58	-58.86	≤-12.42	PASS
			1000~26500	7.58	-42.31	≤-12.42	PASS
		2480	Reference	7.37	7.37	---	PASS
			30~1000	7.37	-40.3	≤-12.63	PASS
			1000~26500	7.37	-41.64	≤-12.63	PASS
BLE_2M	Ant1	2402	Reference	6.30	6.30	---	PASS
			30~1000	6.30	-40.56	≤-13.7	PASS
			1000~26500	6.30	-42.44	≤-13.7	PASS
		2440	Reference	6.10	6.10	---	PASS
			30~1000	6.10	-44.78	≤-13.9	PASS
			1000~26500	6.10	-44.14	≤-13.9	PASS
		2480	Reference	5.86	5.86	---	PASS
			30~1000	5.86	-41.54	≤-14.14	PASS
			1000~26500	5.86	-43.09	≤-14.14	PASS
ZIGB(RF4CE)	Ant1	2405	Reference	5.01	5.01	---	PASS
			30~1000	5.01	-44.77	≤-14.99	PASS
			1000~26500	5.01	-42.52	≤-14.99	PASS
		2450	Reference	5.55	5.55	---	PASS
			30~1000	5.55	-44.76	≤-14.45	PASS
			1000~26500	5.55	-44.22	≤-14.45	PASS
		2480	Reference	6.09	6.09	---	PASS
			30~1000	6.09	-58.65	≤-13.91	PASS
			1000~26500	6.09	-44.85	≤-13.91	PASS

6. Appendix X

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. Due
Communication Shielded Room 2	4m*3m*3m	CRTDSWKS44301	/	CRT	2027/04/22
Spectrum Analyzer	FSV40	101580	DZ-000238-3	R&S	2026/03/27
Power Meter	JS0806-2	19H9080187	DZ-000241	Tonscend	2026/03/27
Programmable DC Power Supply	E3644A	MY58036222	DZ-000178	KEYSIGHT	2026/04/10
5m Semi-Anechoic Chamber	SAC-5	SAC-5-2.0	EM-000557	COMTEST	2027/02/01
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	2026/01/01
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	2025/12/26
EMI Test Receiver	ESR7	102235	EM-000574	R&S	2026/01/05
loop antenna	HLA 6121	540046	EM-000546	TESEQ	2026/06/02
Broadband Antenna	VULB 9163	530	EM-000342	SCHWARZBECK	2026/06/02
Waveguide Horn Antenna	HF906	360306/008	EM-000093	R&S	2025/12/26
Waveguide Horn Antenna	BBHA9170	00949	DZ-000209-2	SCHWARZBECK	2026/08/02
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	2026/06/02
2.4GHz band stop	ZBSF6-C2400-2483.5-543	1232723	DZ-000399-1	Tonscend	2026/06/10
5.8GHz band resistance	ZBSF6-C5725-5850-1627	1232740	DZ-000399-2	Tonscend	2026/06/10
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	2026/06/02
Temperature and humidity meter	UT330THC	C231446122	DZ-000249-2	UNI-T	2026/07/24
Temperature and humidity meter	UT330THC	C231446087	DZ-000249-5	UNI-T	2026/07/24

Dynacomm	Software Release	Software Developer
TS1120-3 Test System(Conduction test)	3.3.38	Tonscend
TS+ (5m,Radiation test)	JS32-RE 5.0.0	Tonscend

————— No Body Text Below —————

Important

1. The test report is invalid without the official stamp of CVC;
2. Any part photocopies of the test report are forbidden without the written permission from CVC;
3. The test report is invalid without the signatures of Author and Reviewer;
4. The test report is invalid if altered;
5. Objections to the test report must be submitted to CVC within 15 days;
6. Generally, commission test is responsible for the tested samples only;
7. As for the test result, “—” or “ N/A” means “not applicable”, “ / ”means “not testing”, “P” means “pass” and “F” means “fail”.

Address: No.3,Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China (Test location)

Post Code: 510663 Tel: 020-32293888

FAX: 020 32293889 E-mail: office@cvc.org.cn