6.3 Maximum Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)								
Test Method:	ANSI C63.10 2013								
Test Setup:	Control Control Power Supply Table RF test System Instrument								
	Remark: Offset=Cable loss+ attenuation factor.								
Test Procedure:	 a) Set the RBW ≥ DTS bandwidth. b) Set VBW ≥ 3 x RBW. c) Set span ≥ 3 x 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. 								
Limit:	30dBm								
Test Mode:	Refer to clause 5.3								
Test Results:	Refer to Appendix A								

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)								
Test Method:	ANSI C63.10 2013								
Test Setup:	RF test System Instrument Remark: Offset=Cable loss+ attenuation factor.								
Test Procedure:	 a) Set RBW = 100 kHz. b) Set the 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. 								
Limit:	≥ 500 kHz								
Test Mode:	Refer to clause 5.3								
Test Results:	Refer to Appendix A								

Limit:

Test Mode:

Test Results:

47 CFR Part 15C Section 15.247 (e) Test Requirement: Test Method: ANSI C63.10 2013 Test Setup: EII RF test Control Computer ortés) System Power Supply Powe port Attenuator Instrument TEMPERATURE CABINET Remark: Offset=Cable loss+ attenuation factor. Test Procedure: 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 \leq RBW \leq 100 kHz. d) Set the VBW \geq [3 \times RBW]. e) Detector = peak. f) Sweep time = auto couple.

i) Use the peak marker function to determine the maximum amplitude level

j) If measured value exceeds requirement, then reduce RBW (but no less

g) Trace mode = max hold.h) Allow trace to fully stabilize.

within the RBW.

≤8.00dBm/3kHz

Refer to clause 5.3

Refer to Appendix A

than 3 kHz) and repeat.

6.5 Maximum Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (d)						
Test Method:	ANSI C63.10 2013						
Test Setup:	RF test Control Con						
Test Procedure:	 a) Set RBW =100KHz. b) Set VBW = 300KHz. c) Sweep time = auto couple. d) Detector = peak. e) Trace mode = max hold. f) Allow trace to fully stabilize. 						
Limit:	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, based on either an RE conducted or a radiated measurement						
Test Mode:	Refer to clause 5.3						
Test Results:	Refer to Appendix A						

6.6 Band Edge measurements and Conducted Spurious Emission

6.7 Radiated Spurious Emission & Restricted bands

Test Requirement:	47 CFR Part 15C Secti	on 1	5.209 and 15	.205	47 CFR Part 15C Section 15.209 and 15.205									
Test Method:	ANSI C63.10 2013													
Test Site:	Measurement Distance	: 3n	n (Semi-Anecł	noic Cham	be	r)								
Receiver Setup:	Frequency		Detector	RBW		VBW	Remark							
	0.009MHz-0.090MH	z	Peak	10kHz	z	30kHz	Peak							
	0.009MHz-0.090MH	z	Average	10kHz	z	30kHz	Average							
	0.090MHz-0.110MH	z	Quasi-peak	10kHz	z	30kHz	Quasi-peak							
	0.110MHz-0.490MH	z	Peak	10kHz	z	30kHz	Peak							
	0.110MHz-0.490MH	z	Average	10kHz	2	30kHz	Average							
	0.490MHz -30MHz		Quasi-peak	10kHz	2	30kHz	Quasi-peak							
	30MHz-1GHz	30MHz-1GHz Quasi-peak				300kHz	Quasi-peak							
	Above 1GHz		Peak	1MHz	<u>.</u>	3MHz	Peak							
			Peak	1MHz	2	10kHz	Average							
Limit:	Frequency	Fie (mic	eld strength crovolt/meter)	Limit (dBuV/m)		Remark	Measurement distance (m)							
	0.009MHz-0.490MHz	2	400/F(kHz)	-		-	300							
	0.490MHz-1.705MHz	24	4000/F(kHz)	-		-	30							
	1.705MHz-30MHz		30	-		-	30							
	30MHz-88MHz		100	40.0	Q	uasi-peak	3							
	88MHz-216MHz		150	43.5	Q	uasi-peak	3							
	216MHz-960MHz		200	46.0	Q	uasi-peak	3							
	960MHz-1GHz		500	54.0	Q	uasi-peak	3							
	Above 1GHz		500	54.0		Average	3							
	Note: 15.35(b), Unless otherwise specified, the limit on peak rate frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the peak emission level radiated by the device.													



	horizontal and vertical polarizations of the antenna are set to make the
	 d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
	f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
	g. Test the EUT in the lowest channel (2402MHz),the middle channel (2440MHz),the Highest channel (2480MHz)
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
	i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Refer to clause 5.3
Test Results:	Pass

Radiated Spurious Emission below 1GHz:

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes, only the worst case highest channel of GFSK 1M was recorded in the report. Horizontal:



No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1 !	144.0061	28.93	9.16	38.09	43.50	-5.41	QP	100	162	
2 !	192.0141	27.01	12.03	39.04	43.50	-4.46	QP	100	7	
3 !	228.0102	26.65	13.44	40.09	46.00	-5.91	QP	100	27	
4 !	276.0267	25.27	15.25	40.52	46.00	-5.48	QP	100	7	
5 !	324.0013	24.18	16.60	40.78	46.00	-5.22	QP	100	27	
6 *	396.0331	24.37	17.96	42.33	46.00	-3.67	QP	100	193	

Vertical:



No	. Mł	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	144.0062	29.86	9.16	39.02	43.50	-4.48	QP	100	63	
2	*	168.0009	28.37	10.99	39.36	43.50	-4.14	QP	100	146	
3		252.0186	22.13	14.34	36.47	46.00	-9.53	QP	100	146	
4	!	324.0581	23.77	16.60	40.37	46.00	-5.63	QP	100	52	
5		348.0274	22.00	17.06	39.06	46.00	-6.94	QP	100	21	
6	!	516.0704	20.36	20.23	40.59	46.00	-5.41	QP	100	301	

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Mode	:	Bl	uetooth LE G	FSK Transmit	ting	Channel:		2402 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1135.3424	9.93	38.03	47.96	74.00	26.04	Pass	Н	PK
2	1552.4368	10.99	37.72	48.71	74.00	25.29	Pass	Н	PK
3	3369.2246	-12.90	54.22	41.32	74.00	32.68	Pass	Н	PK
4	5806.8871	-7.47	49.24	41.77	74.00	32.23	Pass	Н	PK
5	7824.6216	-3.16	46.78	43.62	74.00	30.38	Pass	Н	PK
6	10892.1761	5.40	44.07	49.47	74.00	24.53	Pass	Н	PK
7	1382.9589	10.45	38.42	48.87	74.00	25.13	Pass	V	PK
8	1816.9878	14.58	35.03	49.61	74.00	24.39	Pass	V	PK
9	3352.9735	-12.61	53.48	40.87	74.00	33.13	Pass	V	PK
10	5847.1898	-7.16	48.02	40.86	74.00	33.14	Pass	V	PK
11	8750.9334	-0.83	44.86	44.03	74.00	29.97	Pass	V	PK
12	11256.8505	5.46	44.81	50.27	74.00	23.73	Pass	V	PK

Radiated Spurious Emission above 1GHz:

Mode	Mode:		uetooth LE	FSK Transmi	tting	Channel:		2440 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1153.6102	10.29	38.12	48.41	74.00	25.59	Pass	Н	PK
2	1554.9703	11.02	37.12	48.14	74.00	25.86	Pass	Н	PK
3	3351.0234	-12.57	53.79	41.22	74.00	32.78	Pass	Н	PK
4	5373.9583	-8.34	49.52	41.18	74.00	32.82	Pass	Н	PK
5	7383.2422	-4.42	46.96	42.54	74.00	31.46	Pass	Н	PK
6	10604.857	5.33	42.79	48.12	74.00	25.88	Pass	Н	PK
7	1303.4869	9.62	37.38	47.00	74.00	27.00	Pass	V	PK
8	1653.3769	12.08	37.12	49.20	74.00	24.80	Pass	V	PK
9	3713.7476	-12.72	53.73	41.01	74.00	32.99	Pass	V	PK
10	6403.6269	-5.40	47.50	42.10	74.00	31.90	Pass	V	PK
11	8745.083	-0.89	45.10	44.21	74.00	29.79	Pass	V	PK
12	11353.0569	5.09	44.53	49.62	74.00	24.38	Pass	V	PK

Mode	Mode:		uetooth LE	FSK Transmi	tting	Channel:		2480 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1301.7534	9.61	37.00	46.61	74.00	27.39	Pass	Н	PK
2	1776.7184	13.67	35.66	49.33	74.00	24.67	Pass	Н	PK
3	3421.8781	-13.10	54.46	41.36	74.00	32.64	Pass	Н	PK
4	4960.5307	-13.18	58.58	45.40	74.00	28.60	Pass	Н	PK
5	7439.1459	-4.55	48.18	43.63	74.00	30.37	Pass	Н	PK
6	11235.399	5.45	44.53	49.98	74.00	24.02	Pass	Н	PK
7	1148.4099	10.36	37.50	47.86	74.00	26.14	Pass	V	PK
8	1440.5627	10.62	37.95	48.57	74.00	25.43	Pass	V	PK
9	3452.4302	-12.72	54.08	41.36	74.00	32.64	Pass	V	PK
10	4960.5307	-13.18	58.61	45.43	74.00	28.57	Pass	V	PK
11	7439.1459	-4.55	48.18	43.63	74.00	30.37	Pass	V	PK
12	10299.3366	3.85	44.46	48.31	74.00	25.69	Pass	V	PK

Remark:

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

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) Scan from 9kHz to 25GHz, the disturbance above 10GHz and below 30MHz was very low. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

Test plot as follows:

EUT_Name		Test_Model	
Test_Mode	BLE 1M GFSK Transmitting	Test_Frequency	2402Mhz
Tset_Engineer	chenjun	Test_Date	2025/03/05
Remark			





Suspecte	Suspected List											
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark			
1	2390	15.31	33.91	49.22	74.00	24.78	PASS	Horizontal	PK			
2	2390	15.31	18.65	33.96	54.00	20.04	PASS	Horizontal	AV			

EUT_Name		Test_Model	
Test_Mode	BLE 1M GFSK Transmitting	Test_Frequency	2402Mhz
Tset_Engineer	chenjun	Test_Date	2025/03/05
Remark			



- PK Limit	- AV Limit	Vertical PK	Vertical AV
+ PK Detector	· AV Detector		

Suspecte	d List								
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390	15.31	32.89	48.20	74.00	25.80	PASS	Vertical	PK
2	2390	15.31	18.73	34.04	54.00	19.96	PASS	Vertical	AV

EUT_Name		Test_Model	
Test_Mode	BLE 1M GFSK Transmitting	Test_Frequency	2480Mhz
Tset_Engineer	chenjun	Test_Date	2025/03/05
Remark			



- PK Limit	- AV Limit	Horizontal PK	Horizontal AV
* AV Detector			

Suspecte	d List								
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5	15.16	33.85	49.01	74.00	24.99	PASS	Horizontal	PK
2	2483.5	15.16	23.19	38.35	54.00	15.65	PASS	Horizontal	AV

EUT_Name		Test_Model	
Test_Mode	BLE 1M GFSK Transmitting	Test_Frequency	2480Mhz
Tset_Engineer	chenjun	Test_Date	2025/03/05
Remark			

Test Graph



 AV Detector		

Suspecte	d List								
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5	15.16	35.05	50.21	74.00	23.79	PASS	Vertical	PK
2	2483.5	15.16	23.89	39.05	54.00	14.95	PASS	Vertical	AV

Note:

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

Final Test Level =Receiver Reading -Correct Factor

Correct Factor = Preamplifier Factor – Antenna Factor – Cable Factor

7 Appendix A

Refer to Appendix: Bluetooth LE of EED32R80031001

Statement

1. This report is considered invalid without approved signature, special seal and the seal on the perforation;

2. The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified;

3. The result(s) shown in this report refer(s) only to the sample(s) tested;

4. Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule stated in ILAC-G8:09/2019/CNAS-GL015:2022;

5. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***