TEST REPORT

Product	:	Wireless Sensor T3
Trade mark	:	Testo
Model/Type reference	:	0572 2204 02
Serial Number	:	N/A
Report Number	:	EED32O80116901
FCC ID	:	WAF-0572220402
Date of Issue	:	Jul. 14, 2022
Test Standards	:	47 CFR Part 15 Subpart C
Test result	:	PASS

Prepared for:

Testo SE & Co. KGaA
Celsiusstr. 2, 79822 Titisee-Neustadt, Germany

Prepared by:

Centre Testing International Group Co., Ltd.
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Compiled by: Martin Lee — Martin Lee

Reviewed by: Tom Chen — Tom Chen

Approved by: Aaron Ma — Aaron Ma

Date: Jul. 14, 2022

Check No.: 2512240122

CENTRE TESTING INTERNATIONAL GROUP CO.,LTD. Report Seal

1 Contents

2 Version

Version No.	Date	Description
00	Jul. 14, 2022	Original

3 Test Summary

Test Item	Test Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	N/A
Maximum Conducted Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(2)	PASS
20dB Emission Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	PASS
Carrier Frequency Separation	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	PASS
Number of Hopping Channels	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	PASS
Time of Occupancy	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	PASS
Pseudorandom Frequency Hopping Sequence	47 CFR Part 15, Subpart C Section 15.247(b)(4)	PASS
Band Edge Measurements	47 CFR Part 15, Subpart C Section 15.247(d)	PASS
Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	PASS
Radiated Spurious emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	PASS
Restricted bands around fundamental frequency	47 CFR Part 15, Subpart C Section 15.205/15.209	PASS

N/A: The EUT powered by battery, So Not Applicable.

Remark:
Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

4 General Information

4.1 Client Information

Applicant:	Testo SE & Co. KGaA
Address of Applicant:	Celsiusstr. 2, 79822 Titisee-Neustadt, Germany
Manufacturer:	Testo SE & Co. KGaA
Address of Manufacturer:	Celsiusstr. 2, 79822 Titisee-Neustadt, Germany
Factory:	Testo Instruments (Shenzhen) Co., Ltd
Address of Factory:	Block A, B4 Building, China Merchants Guangming Sci&Tech Park, No.3009 Guan Guang Road, Guangming New District, Shenzhen, Guangdong, China

4.2 General Description of EUT

Product Name:	Wireless Sensor T3
Mode No.:	0572 2204 02
Trade mark:	Testo
Hardware Version:	Main board 2.3 + probe 2.1
Software Version:	V1.12.20
Power Supply:	Lithium battery: DC 3.6V (SL-860), DC 3.7V (HLC-1020L). Note: Battery SL-860 and HLC-1020L are used in parallel, with SL-860 as the power supply and HLC-1020L as the auxiliary.
Operation Frequency:	915MHz to 928MHz
Modulation Technique:	GFSK
Number of Channels:	64
Product Type:	☒ Mobile ☐ Portable ☐ Fix Location
Antenna Type:	PIFA Antenna
Antenna Gain:	-1.13dBi
Test Voltage:	DC 3.6V
Sample Received Date:	Jan. 25, 2022
Sample tested Date:	Apr. 20, 2022 to Jun. 20, 2022

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	915.2MHz	17	918.4MHz	33	921.6MHz	49	924.8MHz
2	915.4MHz	18	918.6MHz	34	921.8MHz	50	925.0MHz
3	915.6MHz	19	918.8MHz	35	922.0MHz	51	925.2MHz
4	915.8MHz	20	919.0MHz	36	922.2MHz	52	925.4MHz
5	916.0MHz	21	919.2MHz	37	922.4MHz	53	925.6MHz
6	916.2MHz	22	919.4MHz	38	922.6MHz	54	925.8MHz
7	916.4MHz	23	919.6MHz	39	922.8MHz	55	926.0MHz
8	916.6MHz	24	919.8MHz	40	923.0MHz	56	926.2MHz
9	916.8MHz	25	920.0MHz	41	923.2MHz	57	926.4MHz
10	917.0MHz	26	920.2MHz	42	923.4MHz	58	926.6MHz
11	917.2MHz	27	920.4MHz	43	923.6MHz	59	926.8MHz
12	917.4MHz	28	920.6MHz	44	923.8MHz	60	927.0MHz
13	917.6MHz	29	920.8MHz	45	924.0MHz	61	927.2MHz
14	917.8MHz	30	921.0MHz	46	924.2MHz	62	927.4MHz
15	918.0MHz	31	921.2MHz	47	924.4MHz	63	927.6MHz
16	918.2MHz	32	921.4MHz	48	924.6MHz	64	927.8MHz

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel	915.2MHz
The Middle channel	921.4MHz
The Highest channel	927.8MHz

4.3 Test Configuration

EUT Test Software Settings:	
Software:	SmartRF studio 7 (manufacturer declare)
Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.	

4.4 Test Environment

Operating Environment:	
Radiated Spurious Emissions:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
RF Conducted:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar

4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Notebook	DELL	DELL 3490	FCC ID and DOC	CTI

4.6 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

4.7 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	3.3dB (9kHz-30MHz)
		4.3dB (30MHz-1GHz)
		4.5dB (1GHz-18GHz)
		3.4dB (18GHz-40GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

5 Equipment List

RF test system					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Spectrum Analyzer	Keysight	N9010A	MY54510339	12-24-2021	12-23-2022
Signal Generator	Keysight	N5182B	MY53051549	12-24-2021	12-23-2022
Spectrum Analyzer	R&S	FSV40	101200	08-26-2021	08-25-2022
Signal Generator	Agilent	N5181A	MY46240094	12-24-2021	12-23-2022
DC Power	Keysight	E3642A	MY56376072	12-24-2021	12-23-2022
Power unit	R&S	OSP120	101374	12-24-2021	12-23-2022
RF control unit	JS Tonscend	JS0806-2	158060006	12-24-2021	12-23-2022
Communication test set	R&S	CMW500	120765	08-04-2021	08-03-2022
high-low temperature test chamber	Dong Guang Qin Zhuo	LK-80GA	QZ20150611879	12-24-2021	12-23-2022
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	06-23-2021	06-22-2022
BT&WI-FI Automatic test software	JS Tonscend	JS1120-3	2.6.77.0518	---	---

3M Semi/full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-24-2019 05-23-2022	05-23-2022 05-22-2025
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	05-16-2021 05-15-2022	05-15-2022 05-14-2023
Receiver	R&S	ESCI7	100938-003	10-15-2021	10-14-2022
Multi device Controller	maturo	NCD/070/10711112	---	---	---
Horn Antenna	ETS-LINGREN	BBHA 9120D	9120D-1869	04-15-2021	04-14-2024
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-15-2021	04-14-2024
Microwave Preamplifier	Agilent	8449B	3008A02425	06-23-2021	06-22-2022

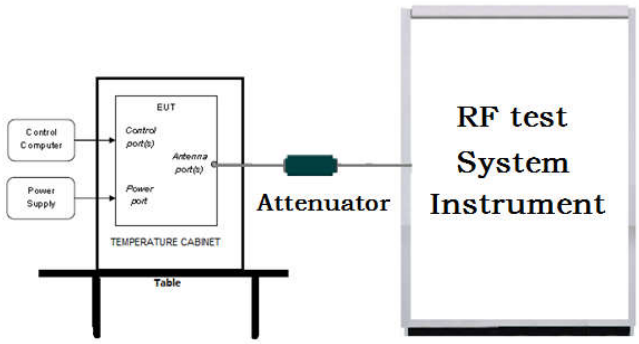
3M full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	---	---
Receiver	Keysight	N9038A	MY57290136	03-01-2022	02-28-2023
Spectrum Analyzer	Keysight	N9020B	MY57111112	02-23-2022	02-22-2023
Spectrum Analyzer	Keysight	N9030B	MY57140871	02-23-2022	02-22-2023
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-28-2021	04-27-2024
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-15-2021	04-14-2024
Horn Antenna	ETS-LINDGREN	3117	57407	07-04-2021	07-03-2024
Preamplifier	EMCI	EMC184055SE	980597	05-20-2021 05-19-2022	05-19-2022 05-18-2023
Preamplifier	EMCI	EMC001330	980563	04-01-2022	03-31-2023
Preamplifier	JS Tonscend	980380	EMC051845SE	12-24-2021	12-23-2022
Communication test set	R&S	CMW500	102898	12-24-2021	12-23-2022
Temperature/ Humidity Indicator	biaozhi	GM1360	EE1186631	04-11-2022	04-10-2023
Fully Anechoic Chamber	TDK	FAC-3	---	01-09-2021	01-08-2024
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	---	---
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	---	---
Cable line	Times	EMC104-NMNM-1000	SN160710	---	---
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	---	---
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	---	---
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	---	---
Cable line	Times	HF160-KMKM-3.00M	393493-0001	---	---

6 Test results and Measurement Data

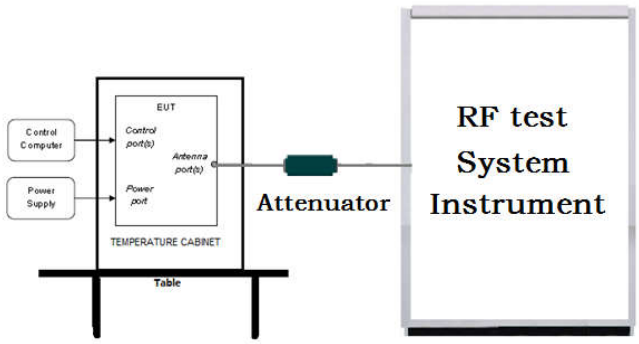
6.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
15.203 requirement: 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, 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. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
EUT Antenna:	Please see Internal photos
The antenna is PIFA Antenna. The best case gain of the antenna is -1.13dBi.	

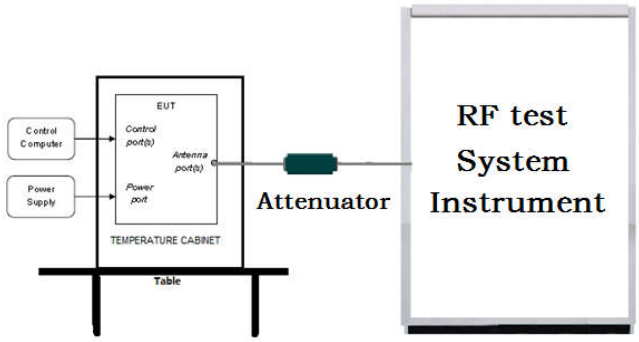
6.2 Maximum Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(2)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	Use the following spectrum analyzer settings: Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel RBW > the 20 dB bandwidth of the emission being measured VBW ≥ RBW Sweep = auto Detector function = peak Trace = max hold Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission.
Limit:	30dBm
Exploratory Test Mode:	Non-hopping transmitting mode at the lowest, middle, highest channel.
Test Results:	Refer to Appendix A

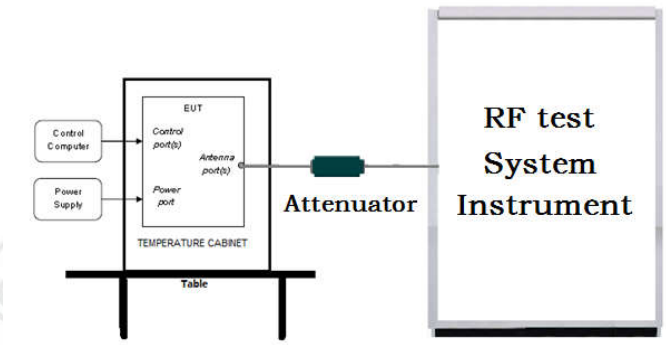
6.3 20dB Emission Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement. Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel; 1%≤RBW ≤5% of the 20 dB bandwidth; VBW≥3RBW; Sweep = auto; Detector function = peak; Trace = max hold. 4. Measure and record the results in the test report.
Limit:	NA
Exploratory Test Mode:	Non-hopping transmitting mode at the lowest, middle, highest channel.
Test Results:	Refer to Appendix A

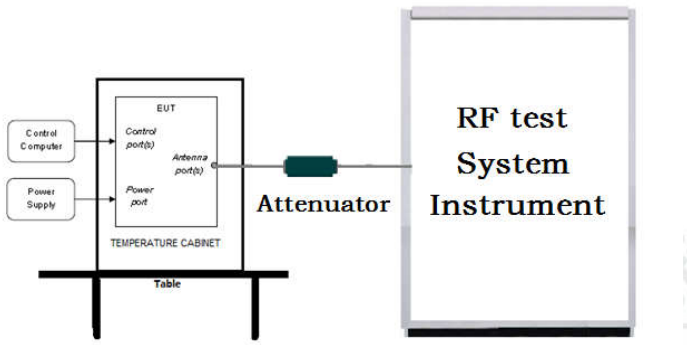
6.4 Carrier Frequency Separation

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Enable the EUT hopping function. 4. Use the following spectrum analyzer settings: Span = wide enough to capture the peaks of two adjacent channels; RBW is set to approximately 30% of the channel spacing, adjust as necessary to best identify the center of each individual channel; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold. 5. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Record the value in report.
Limit:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
Exploratory Test Mode:	Hopping transmitting mode at the lowest, middle, highest channel.
Test Results:	Refer to Appendix A

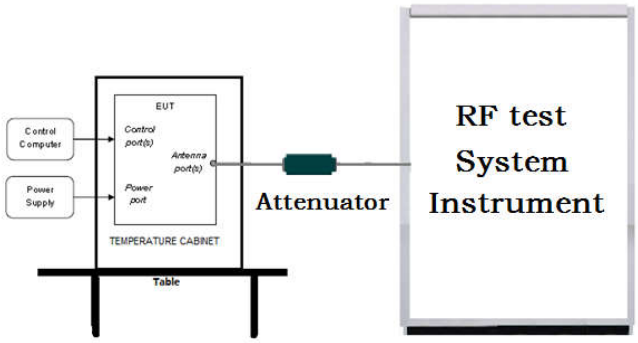
6.5 Number of Hopping Channel

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Enable the EUT hopping function. 4. Use the following spectrum analyzer settings: Span = the frequency band of operation; set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller; VBW≥RBW; Sweep= auto; Detector function = peak; Trace = max hold. 5. The number of hopping frequency used is defined as the number of total channel. 6. Record the measurement data in report.
Limit:	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies
Test Mode:	Hopping transmitting
Test Results:	Refer to Appendix A

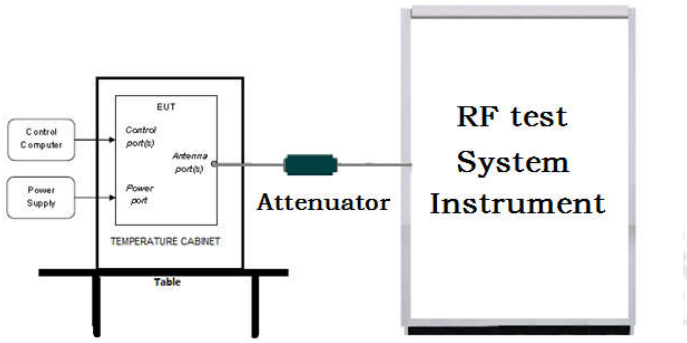
6.6 Time of Occupancy

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Enable the EUT hopping function. 4. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel; VBW≥RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold. 5. Measure and record the results in the test report.
Limit:	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.
Test Mode:	Hopping transmitting mode at the lowest, middle, highest channel.
Test Results:	Refer to Appendix A

6.7 Band edge Measurements

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1. Set to the maximum power setting and enable the EUT transmit continuously. 2. Set RBW = 100 kHz, VBW = 300 kHz (≥RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used. 3. Enable hopping function of the EUT and then repeat step 2 and 3. 4. Measure and record the results in the test report.
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 RF conducted or a radiated measurement.
Exploratory Test Mode:	Hopping and Non-hopping transmitting at the lowest, middle, highest channel.
Final Test Mode:	Hopping transmitting mode at the lowest, middle, highest channel.
Test Results:	Refer to Appendix A

6.8 Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. 4. Measure and record the results in the test report. 5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
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 RF conducted or a radiated measurement.
Exploratory Test Mode:	Non-hopping transmitting at the lowest, middle, highest channel.
Test Results:	Refer to Appendix A

6.9 Pseudorandom Frequency Hopping Sequence

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1), (h) requirement:

The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

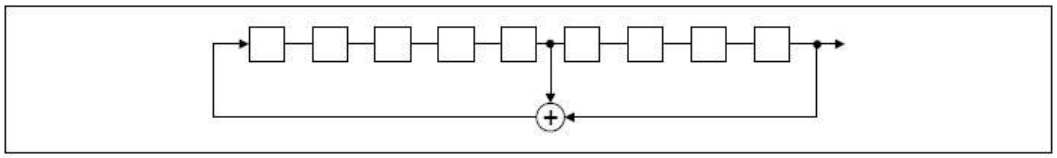
Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Compliance for section 15.247(a)(1)

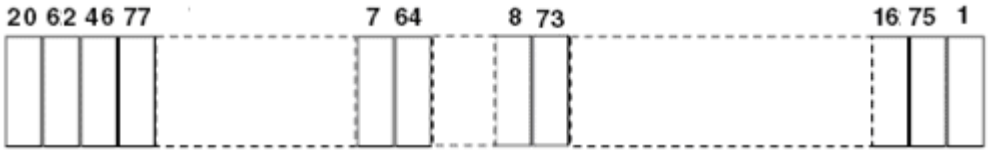
According to Bluetooth Core Specification, the pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage
outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: 2^9 -1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.
According to Bluetooth Core Specification, Bluetooth receivers are designed to have input and IF bandwidths that match the hopping channel bandwidths of any Bluetooth transmitters and shift frequencies in synchronization with the transmitted signals.

Compliance for section 15.247(g)

According to Bluetooth Core Specification, the Bluetooth system transmits the packet with the pseudorandom hopping frequency with a continuous data and the short burst transmission from the Bluetooth system is also transmitted under the frequency hopping system with the pseudorandom hopping frequency system.

Compliance for section 15.247(h)
According to Bluetooth Core specification, the Bluetooth system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels. According to the Bluetooth Core specification, the Bluetooth system is designed not have the ability to coordinated with other FHSS System in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitter.

6.10 Radiated Spurious Emission & Restricted bands

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013</td></tr>
<tr><td>Test Site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr>
<tr><td>0.090MHz-0.110MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr>
<tr><td>0.490MHz -30MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr>
<tr><td>30MHz-1GHz</td><td>Peak</td><td>100 kHz</td><td>300kHz</td><td>Peak</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10kHz</td><td>Average</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Field strength (microvolt/meter)</th><th>Limit (dBuV/m)</th><th>Remark</th><th>Measurement distance (m)</th></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(kHz)</td><td>-</td><td>-</td><td>300</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(kHz)</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>40.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>43.5</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>46.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>54.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>Above 1GHz</td><td>500</td><td>54.0</td><td>Average</td><td>3</td></tr>
</table>
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.
</td></tr>
</table>

Test Setup:	

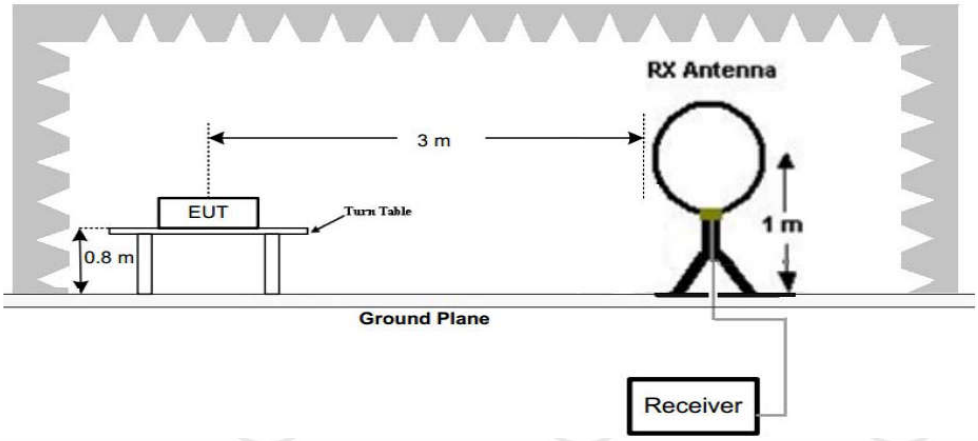


Figure 1. Below 30MHz

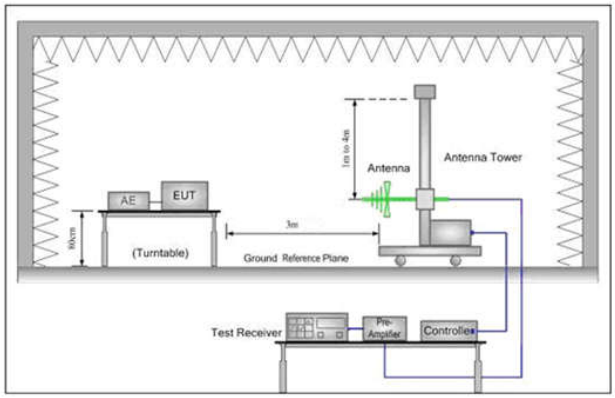


Figure 2. 30MHz to 1GHz

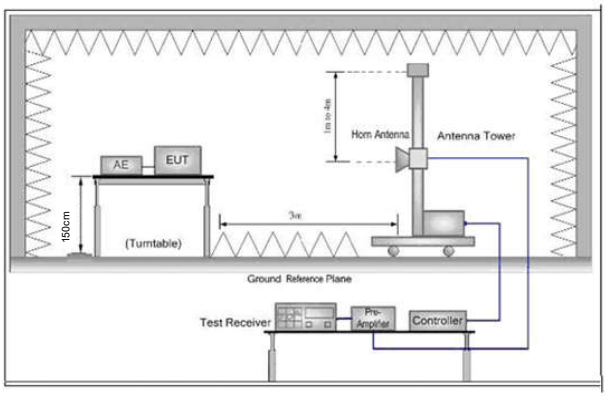


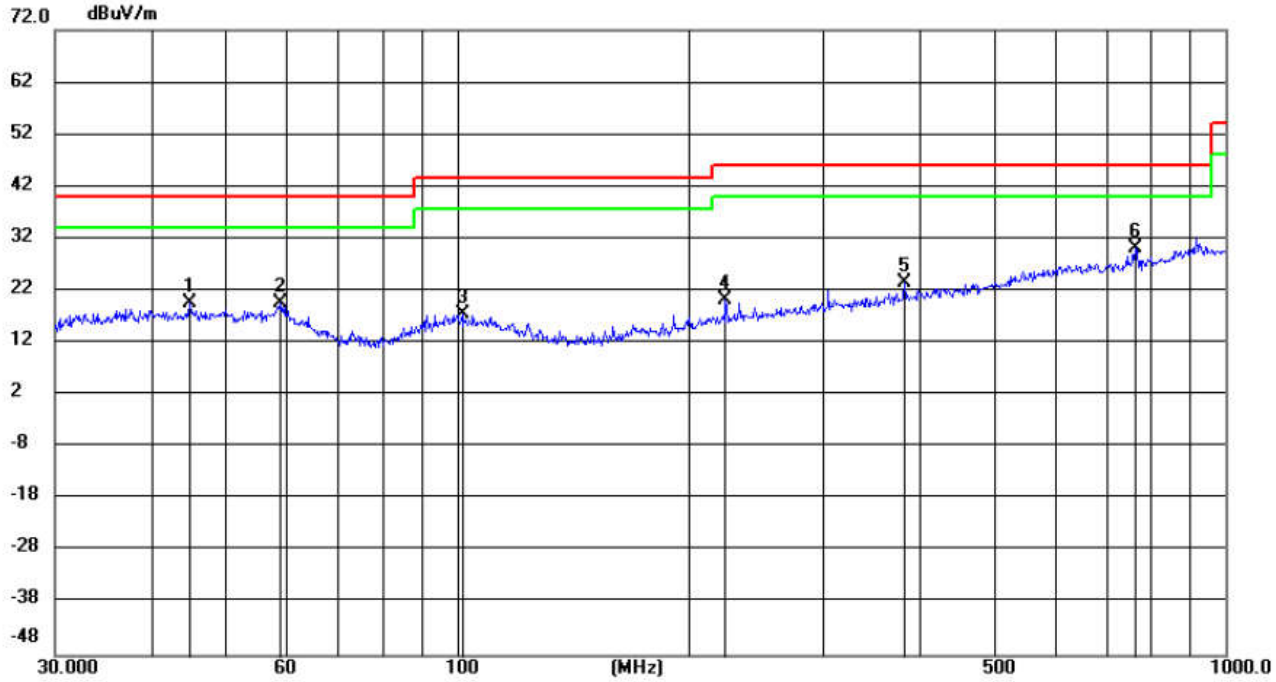
Figure 3. Above 1 GHz

Test Procedure:	a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 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 (2441MHz),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.
Exploratory Test Mode:	Non-hopping transmitting at the lowest, middle, highest channel.
Final Test Mode:	Pretest the EUT at Transmitting mode, For below 1GHz part, through pre-scan, the worst case is the lowest channel. Only the worst case is recorded in the report.
Test Results:	Pass

Radiated Spurious Emission below 1GHz:

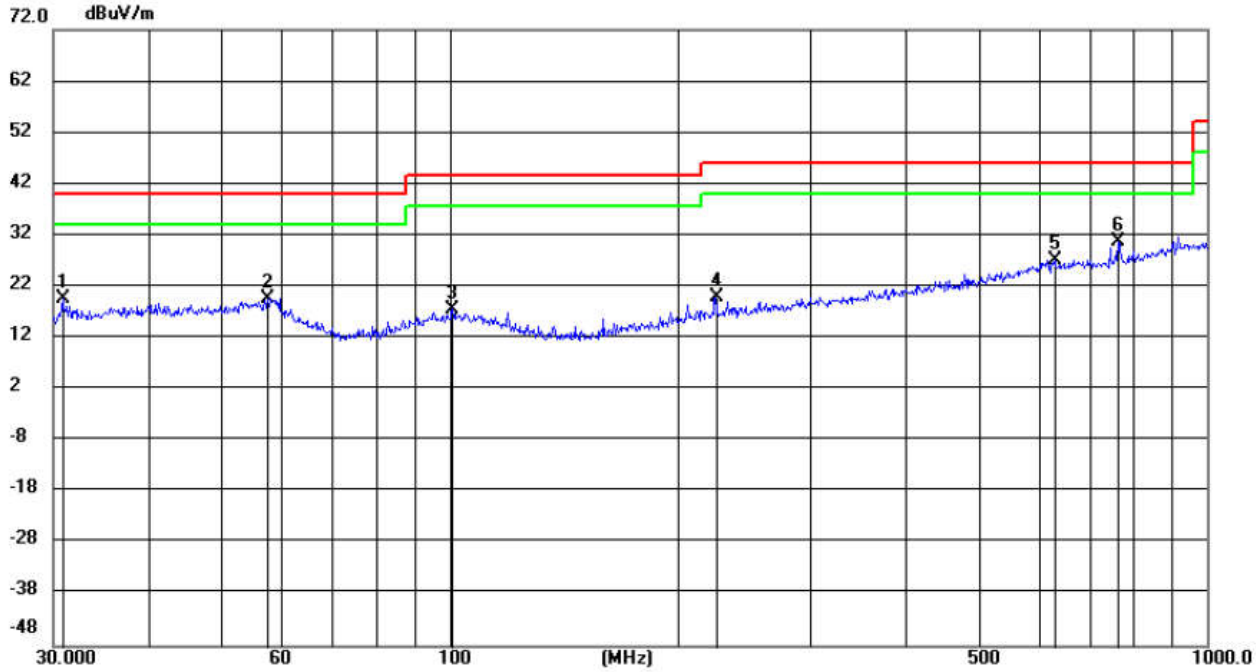
Test Graph

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		44.9006	6.19	13.41	19.60	40.00	-20.40	peak	200	4	
2		59.0251	6.94	12.61	19.55	40.00	-20.45	peak	200	4	
3		101.6443	4.95	12.47	17.42	43.50	-26.08	peak	100	235	
4		223.7333	7.71	12.65	20.36	46.00	-25.64	peak	200	4	
5		382.5878	7.16	16.45	23.61	46.00	-22.39	peak	100	122	
6	*	763.3757	8.32	21.82	30.14	46.00	-15.86	peak	200	125	

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.8535	7.63	12.11	19.74	40.00	-20.26	peak	100	356	
2		57.5939	7.09	12.70	19.79	40.00	-20.21	peak	100	4	
3		100.9339	5.18	12.52	17.70	43.50	-25.80	peak	200	348	
4		224.5193	7.23	12.68	19.91	46.00	-26.09	peak	200	219	
5		629.4772	6.50	20.73	27.23	46.00	-18.77	peak	100	229	
6	*	763.3757	8.90	21.82	30.72	46.00	-15.28	peak	200	243	

Radiated Spurious Emission above 1GHz:

Mode:		Transmitting				Channel:		915.2 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1201.0134	-26.59	62.33	35.74	74.00	38.26	Pass	H	PK
2	1830.4554	-24.54	62.95	38.41	74.00	35.59	Pass	H	PK
3	2745.5164	-22.08	75.65	53.57	74.00	20.43	Pass	H	PK
4	4281.6188	-17.29	55.65	38.36	74.00	35.64	Pass	H	PK
5	5929.9287	-13.46	53.24	39.78	74.00	34.22	Pass	H	PK
6	7909.4606	-11.30	51.93	40.63	74.00	33.37	Pass	H	PK
7	1198.0132	-26.59	66.63	40.04	74.00	33.96	Pass	V	PK
8	2745.5164	-22.08	73.60	51.52	74.00	22.48	Pass	V	PK
9	3660.5774	-20.33	59.64	39.31	74.00	34.69	Pass	V	PK
10	4575.6384	-16.87	55.68	38.81	74.00	35.19	Pass	V	PK
11	5759.5173	-13.51	57.26	43.75	74.00	30.25	Pass	V	PK
12	8399.6933	-11.01	52.00	40.99	74.00	33.01	Pass	V	PK

Mode:		Transmitting				Channel:		921.4 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1209.4140	-26.60	61.72	35.12	74.00	38.88	Pass	H	PK
2	1843.0562	-24.47	62.06	37.59	74.00	36.41	Pass	H	PK
3	2764.1176	-22.01	73.86	51.85	74.00	22.15	Pass	H	PK
4	4101.6068	-18.51	55.08	36.57	74.00	37.43	Pass	H	PK
5	6055.9371	-13.17	53.01	39.84	74.00	34.16	Pass	H	PK
6	7366.4244	-11.61	53.86	42.25	74.00	31.75	Pass	H	PK
7	1592.8395	-26.16	65.52	39.36	74.00	34.64	Pass	V	PK
8	2764.1176	-22.01	72.50	50.49	74.00	23.51	Pass	V	PK
9	3685.7791	-20.22	58.26	38.04	74.00	35.96	Pass	V	PK
10	4606.8405	-16.75	55.99	39.24	74.00	34.76	Pass	V	PK
11	5760.1173	-13.51	56.77	43.26	74.00	30.74	Pass	V	PK
12	7626.2417	-11.20	52.92	41.72	74.00	32.28	Pass	V	PK

Mode:		Transmitting				Channel:		927.8 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1217.8145	-26.61	61.71	35.10	74.00	38.90	Pass	H	PK
2	1855.6570	-24.41	63.87	39.46	74.00	34.54	Pass	H	PK
3	2783.3189	-21.93	74.12	52.19	74.00	21.81	Pass	H	PK
4	3710.9807	-20.09	58.18	38.09	74.00	35.91	Pass	H	PK
5	5424.6950	-14.36	53.44	39.08	74.00	34.92	Pass	H	PK
6	7689.8460	-10.95	52.71	41.76	74.00	32.24	Pass	H	PK
7	1396.6264	-26.81	67.68	40.87	74.00	33.13	Pass	V	PK
8	1999.0666	-23.62	68.96	45.34	74.00	28.66	Pass	V	PK
9	2783.3189	-21.93	73.04	51.11	74.00	22.89	Pass	V	PK
10	3710.9807	-20.09	59.27	39.18	74.00	34.82	Pass	V	PK
11	5760.1173	-13.51	57.27	43.76	74.00	30.24	Pass	V	PK
12	7799.0533	-11.53	53.12	41.59	74.00	32.41	Pass	V	PK

Remark:

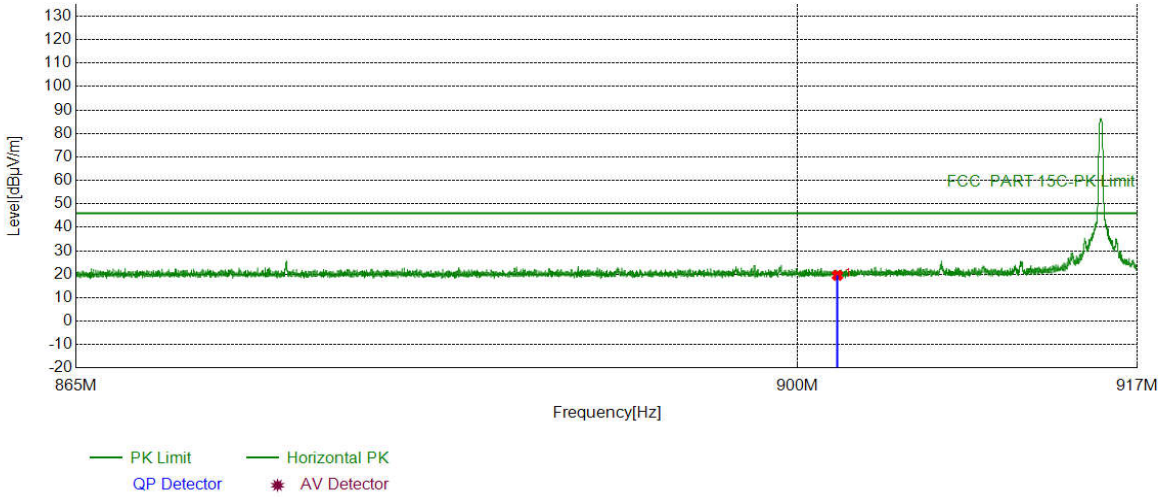
1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
2) Scan from 9kHz to 25GHz, the disturbance above 18GHz 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.

Restricted bands:

Test plot as follows:

Mode:	Transmitting	Channel:	915.2 MHz
Remark:			

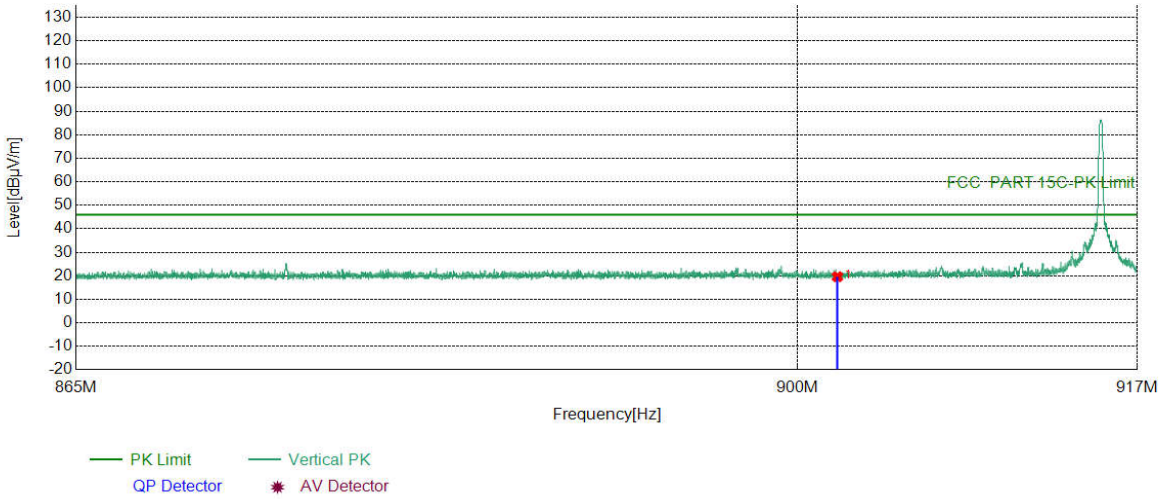
Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	902.0000	-4.96	24.48	19.52	46.00	26.48	PASS	Horizontal	PK

Mode:	Transmitting	Channel:	915.2 MHz
Remark:			

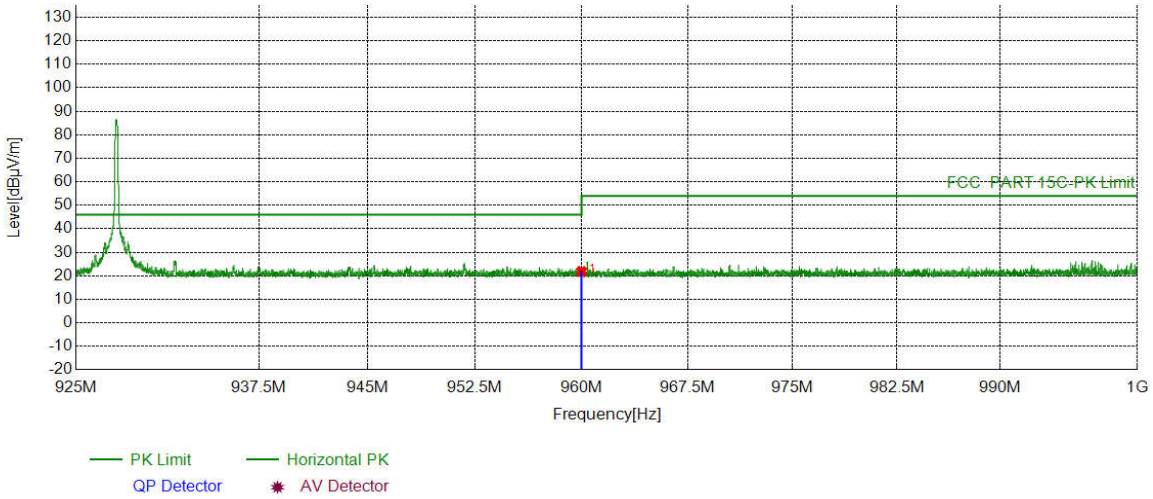
Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	902.0000	-4.96	24.57	19.61	46.00	26.39	PASS	Vertical	PK

Mode:	Transmitting	Channel:	927.8 MHz
Remark:			

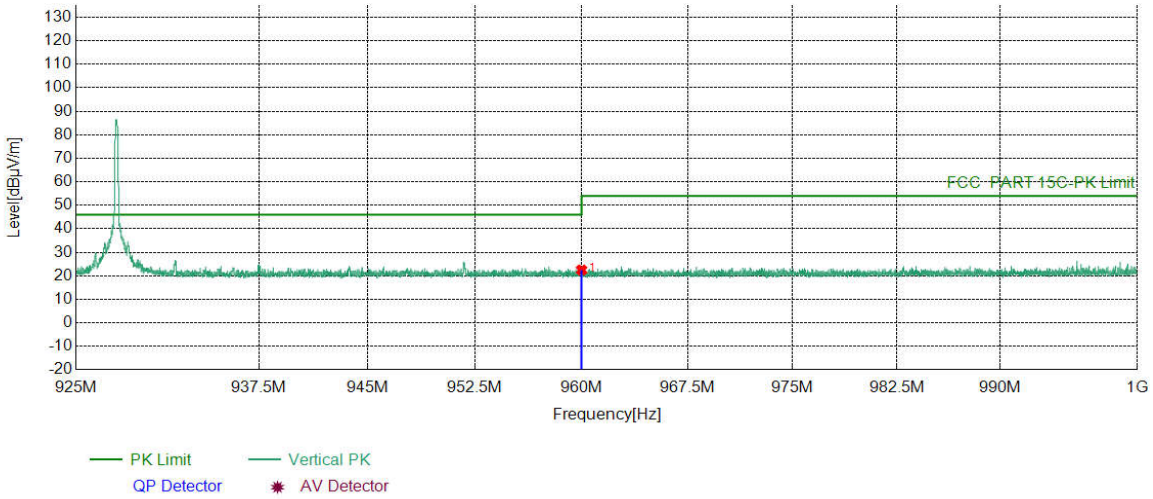
Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	960.0000	-4.37	26.24	21.87	54.00	32.13	PASS	Horizontal	PK

Mode:	Transmitting	Channel:	927.8 MHz
Remark:			

Test Graph



NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	960.0000	-4.37	26.86	22.49	54.00	31.51	PASS	Vertical	PK

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 Classic of EED32O80116901.