

FCC REPORT

Applicant: Shenzhen Loftynn Intelligence Co., Ltd.

Address of Applicant: ROOM 812 BLK G PANORAMA, DALANG COMMUNITY XINAN BAOAN, SHENZHEN

Equipment Under Test (EUT)

Product Name: Baby Monitor

Model No.: E722

FCC ID: 2AJD6-722R

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 06 Jan., 2021

Date of Test: 07 Jan., to 19 Jan., 2021

Date of report issued: 10 Mar., 2021

Test Result: PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

Version No.	Date	Description
00	21 Jan., 2021	Original
01	10 Mar., 2021	<ol style="list-style-type: none">Updated operation frequency on page 5.Updated hopping channel numbers on page 19.

Tested by:
Test Engineer**Date:** 10 Mar., 2021**Reviewed by:**
Project Engineer**Date:** 10 Mar., 2021

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
5 GENERAL INFORMATION	5
5.1 CLIENT INFORMATION.....	5
5.2 GENERAL DESCRIPTION OF E.U.T.	5
5.3 TEST ENVIRONMENT AND MODE, AND TEST SAMPLES PLANS	6
5.4 DESCRIPTION OF SUPPORT UNITS	6
5.5 MEASUREMENT UNCERTAINTY.....	6
5.6 ADDITIONS TO, DEVIATIONS, OR EXCLUSIONS FROM THE METHOD	6
5.7 LABORATORY FACILITY.....	6
5.8 LABORATORY LOCATION.....	7
5.9 TEST INSTRUMENTS LIST	7
6 TEST RESULTS AND MEASUREMENT DATA	8
6.1 ANTENNA REQUIREMENT	8
6.2 CONDUCTED EMISSIONS	9
6.3 CONDUCTED OUTPUT POWER	12
6.4 20DB OCCUPY BANDWIDTH.....	14
6.5 CARRIER FREQUENCIES SEPARATION	16
6.6 HOPPING CHANNEL NUMBER	19
6.7 DWELL TIME	21
6.8 PSEUDORANDOM FREQUENCY HOPPING SEQUENCE.....	24
6.9 BAND EDGE	25
6.9.1 Conducted Emission Method	25
6.9.2 Radiated Emission Method	27
6.10 SPURIOUS EMISSION.....	32
6.10.1 Conducted Emission Method.....	32
6.10.2 Radiated Emission Method.....	34
7 TEST SETUP PHOTO	39
8 EUT CONSTRUCTIONAL DETAILS	41

4 Test Summary

Test Items	Section in CFR 47	Result
Antenna Requirement	15.203 & 15.247 (b)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(1)	Pass
Dwell Time	15.247 (a)(1)	Pass
Spurious Emission	15.205 & 15.209	Pass
Band Edge	15.247(d)	Pass
Remark:		
1. Pass: The EUT complies with the essential requirements in the standard.		
2. N/A: Not Applicable.		
3. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).		
Test Method:	ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02	

5 General Information

5.1 Client Information

Applicant:	Shenzhen Loftynn Intelligence Co., Ltd.
Address:	ROOM 812 BLK G PANORAMA, DALANG COMMUNITY XINAN BAOAN, SHENZHEN
Manufacturer/ Factory:	EXVISION INDUSTRIES LIMITED
Address:	3/F, No. 65, Gongye 6th Road, Longyan, Humen, Dongguan, 523925 China, P.R.C

5.2 General Description of E.U.T.

Product Name:	Baby Monitor
Model No.:	E722
Operation Frequency:	2410.875MHz~2471.625MHz
Transfer rate:	1/2/3 Mbits/s
Number of channel:	19
Modulation type:	GFSK
Modulation technology:	FHSS
Antenna Type:	Internal Antenna
Antenna gain:	0 dBi
Power supply:	Rechargeable Li-ion Battery DC3.7V, 1400mAh
AC adapter:	Model:GQ07-075050-AU Input: AC100-240V, 50/60Hz, 0.3A Output: DC 7.5V, 0.5A
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

Operation Frequency each of channel for FSK

Channel	Frequency	Chann el	Frequency	Channel	Frequency	Channel	Frequency
1	2410.875 MHz	6	2427.750	11	2444.625	16	2461.500
2	2414.250 MHz	7	2431.125	12	2448.000	17	2464.875
3	2417.625 MHz	8	2434.500	13	2451.375	18	2468.250
4	2421.000 MHz	9	2437.875	14	2454.750	19	2471.625
5	2424.375 MHz	10	2441.250	15	2458.125		

5.3 Test environment and mode, and test samples plans

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test Modes:	
Non-hopping mode:	Keep the EUT in continuous transmitting mode with worst case data rate.
Hopping mode:	Keep the EUT in hopping mode.
The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.16 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.20 dB (k=2)

5.6 Additions to, deviations from, or exclusions from the method

No

5.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

5.9 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2020	07-21-2021
Loop Antenna	SCHWARZBECK	FMZB1519B	044	03-07-2020	03-06-2021
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-07-2020	03-06-2021
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-07-2020	03-06-2021
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2020	06-21-2021
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-18-2020	11-17-2021
EMI Test Software	AUDIX	E3		Version: 6.110919b	
Pre-amplifier	HP	8447D	2944A09358	03-07-2020	03-06-2021
Pre-amplifier	CD	PAP-1G18	11804	03-07-2020	03-06-2021
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-05-2020	03-04-2021
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-18-2020	11-17-2021
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-05-2020	03-04-2021
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2020	03-06-2021
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2020	03-06-2021
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2020	03-06-2021
RF Switch Unit	MWRFTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTEST	MTS8200		Version: 2.0.0.0	

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-05-2020	03-04-2021
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-05-2020	03-04-2021
LISN	CHASE	MN2050D	1447	03-05-2020	03-04-2021
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2020	07-20-2021
Cable	HP	10503A	N/A	03-05-2020	03-04-2021
EMI Test Software	AUDIX	E3		Version: 6.110919b	

6 Test results and measurement data

6.1 Antenna Requirement

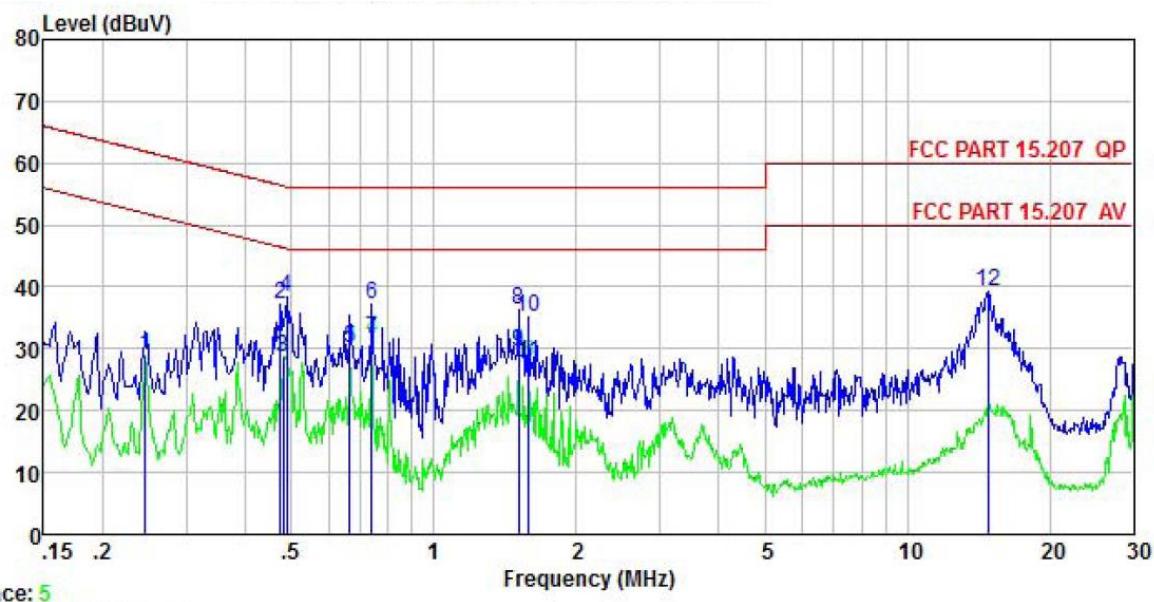
Standard requirement:	FCC Part 15 C Section 15.203 & 247(b)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a 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: (4) 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.	
E.U.T Antenna:	
The Bluetooth antenna is an Internal antenna which permanently attached, and the best case gain of the antenna is 0 dBi.	

6.2 Conducted Emissions

Test Requirement:	FCC Part 15 C Section 15.207		
Test Frequency Range:	150 kHz to 30 MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto		
Limit:	Frequency range (MHz)		Limit (dBuV)
			Quasi-peak Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:	<p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>		
Test procedure:	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10(latest version) on conducted measurement. 		
Test Instruments:	Refer to section 5.9 for details		
Test mode:	Hopping mode		
Test results:	Pass		

Measurement Data:

Product name:	Baby Monitor	Product model:	E722
Test by:	Yaro	Test mode:	BT Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Huni: 55%

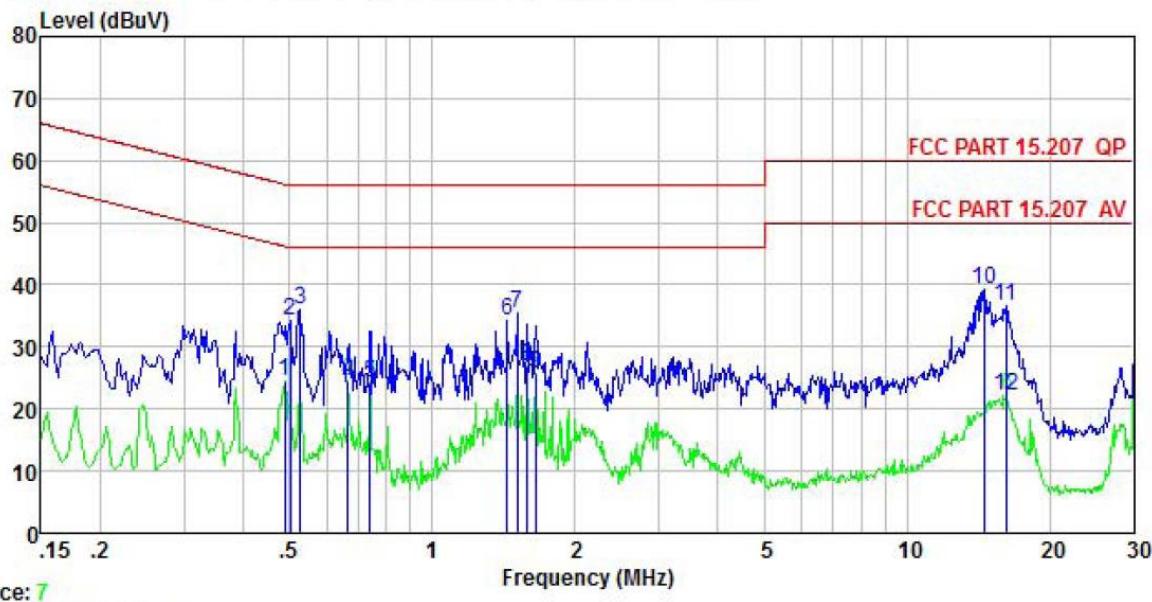


Freq	Read	LISN	Aux	Cable	Limit	Over	Remark
	Level	Factor	Factor	Loss			
MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB
1	0.246	18.89	-0.57	-0.21	10.75	28.86	51.91 -23.05 Average
2	0.474	27.21	-0.44	-0.18	10.75	37.34	56.45 -19.11 QP
3	0.481	18.57	-0.44	-0.24	10.75	28.64	46.32 -17.68 Average
4	0.489	28.33	-0.44	-0.26	10.76	38.39	56.19 -17.80 QP
5	0.665	20.13	-0.51	-0.39	10.77	30.00	46.00 -16.00 Average
6	0.739	27.26	-0.54	-0.28	10.79	37.23	56.00 -18.77 QP
7	0.739	21.75	-0.54	-0.28	10.79	31.72	46.00 -14.28 Average
8	1.511	25.91	-0.55	-0.01	10.92	36.27	56.00 -19.73 QP
9	1.511	19.26	-0.55	-0.01	10.92	29.62	46.00 -16.38 Average
10	1.585	24.75	-0.55	-0.05	10.93	35.08	56.00 -20.92 QP
11	1.585	17.55	-0.55	-0.05	10.93	27.88	46.00 -18.12 Average
12	14.828	25.39	-0.69	3.54	10.90	39.14	60.00 -20.86 QP

Notes:

- An initial pre-scan was performed on the line and neutral lines with peak detector.
- Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

Product name:	Baby Monitor	Product model:	E722
Test by:	Yaro	Test mode:	BT Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5°C Huni: 55%

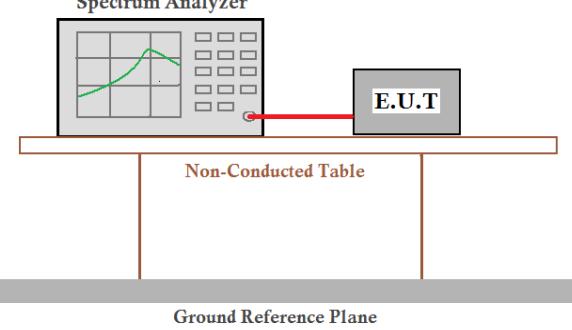


Freq	Read	LISN	Aux	Cable	Limit	Over	Remark	
	Freq	Level	Factor	Factor				
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB
1	0.489	14.47	-0.65	0.02	10.76	24.60	46.19	-21.59 Average
2	0.502	23.96	-0.65	0.03	10.76	34.10	56.00	-21.90 QP
3	0.527	26.00	-0.65	0.03	10.76	36.14	56.00	-19.86 QP
4	0.665	14.35	-0.64	0.04	10.77	24.52	46.00	-21.48 Average
5	0.739	13.97	-0.65	0.05	10.79	24.16	46.00	-21.84 Average
6	1.441	24.00	-0.70	0.13	10.92	34.35	56.00	-21.65 QP
7	1.511	24.98	-0.70	0.13	10.92	35.33	56.00	-20.67 QP
8	1.585	16.36	-0.70	0.14	10.93	26.73	46.00	-19.27 Average
9	1.654	15.42	-0.70	0.15	10.94	25.81	46.00	-20.19 Average
10	14.594	26.25	-0.81	2.98	10.90	39.32	60.00	-20.68 QP
11	16.140	24.29	-0.93	2.38	10.91	36.65	60.00	-23.35 QP
12	16.226	9.81	-0.93	2.38	10.91	22.17	50.00	-27.83 Average

Notes:

- An initial pre-scan was performed on the line and neutral lines with peak detector.
- Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- Final Level =Receiver Read level + LISN Factor + Aux Factor + Cable Loss.

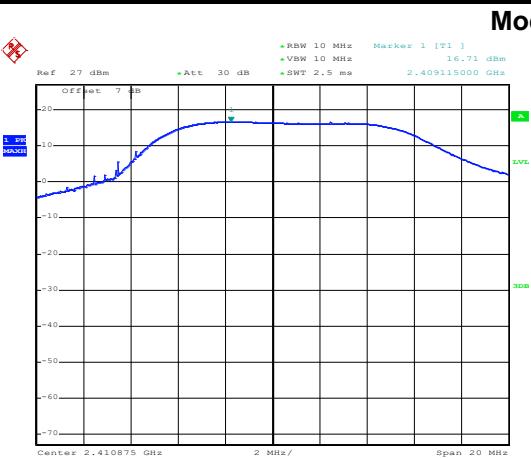
6.3 Conducted Output Power

Test Requirement:	FCC Part 15 C Section 15.247 (b)(1)
Receiver setup:	RBW=1MHz, VBW=3MHz, Detector=Peak (If 20dB BW ≤1 MHz) RBW=3MHz, VBW=10MHz, Detector=Peak (If 20dB BW > 1 MHz and < 3MHz)
Limit:	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
Test setup:	<p style="text-align: center;">Spectrum Analyzer</p> 
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass

Measurement Data:

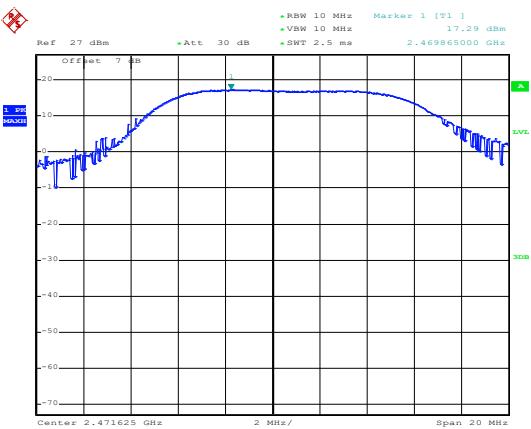
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
FSK mode			
Lowest channel	16.71	21.00	Pass
Middle channel	16.96	21.00	Pass
Highest channel	17.29	21.00	Pass

Test plot as follows:



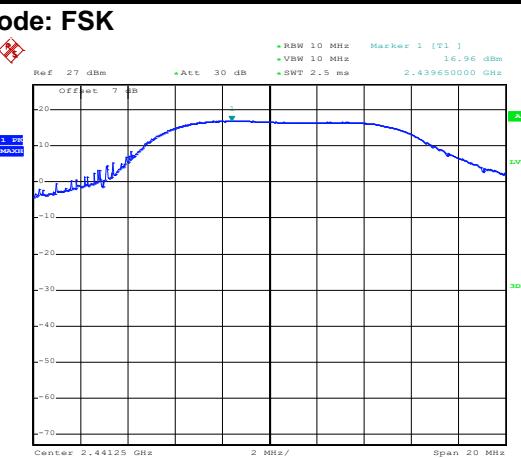
Date: 13.JAN.2021 09:41:15

Lowest channel



Date: 13.JAN.2021 09:42:55

Highest channel

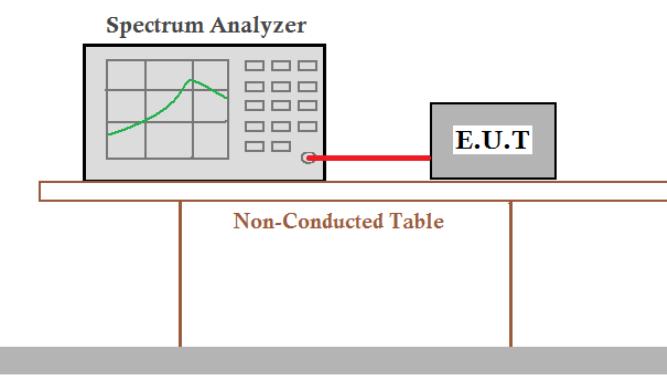


Date: 13.JAN.2021 09:42:18

Middle channel



6.4 20dB Occupy Bandwidth

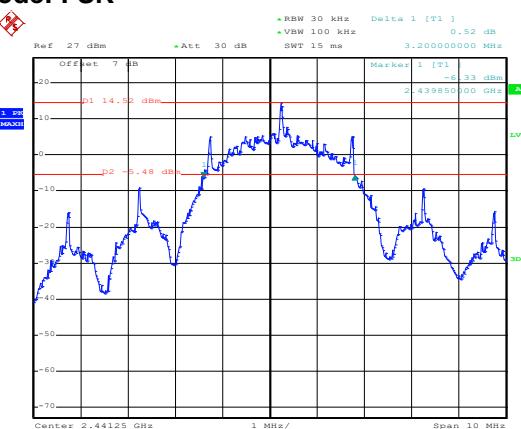
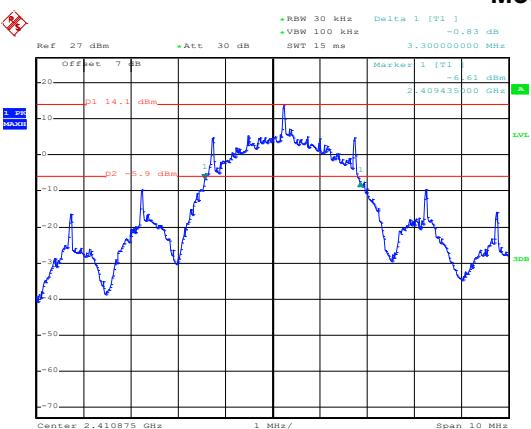
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Receiver setup:	RBW=30 kHz, VBW=100 kHz, detector=Peak
Limit:	N/A
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass

Measurement Data:

Test channel	20dB Occupy Bandwidth (kHz)
Lowest	3300
Middle	3200
Highest	3160

Test plot as follows:

Modulation mode: FSK

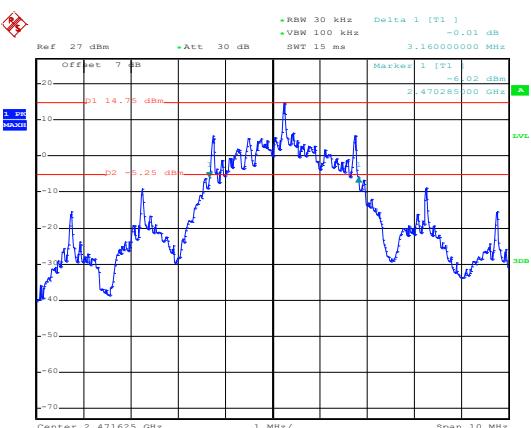


Date: 13.JAN.2021 09:57:38

Date: 13.JAN.2021 09:55:24

Lowest channel

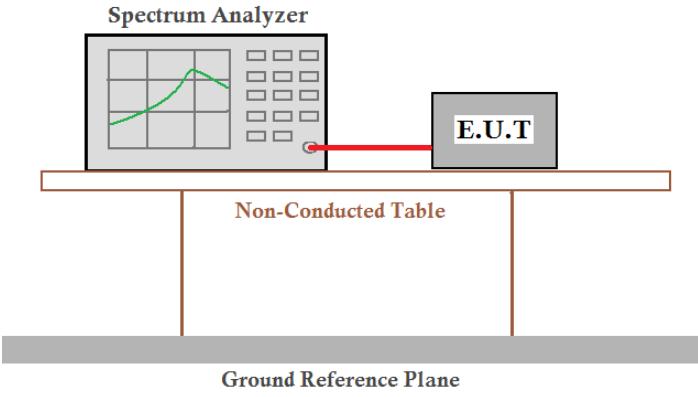
Middle channel



Date: 13.JAN.2021 09:54:18

Highest channel

6.5 Carrier Frequencies Separation

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Receiver setup:	RBW=100 kHz, VBW=300 kHz, detector=Peak
Limit:	a) 0.025MHz or the 20dB bandwidth (whichever is greater) b) 0.025MHz or two-thirds of the 20dB bandwidth (whichever is greater)
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Hopping mode
Test results:	Pass

Measurement Data:

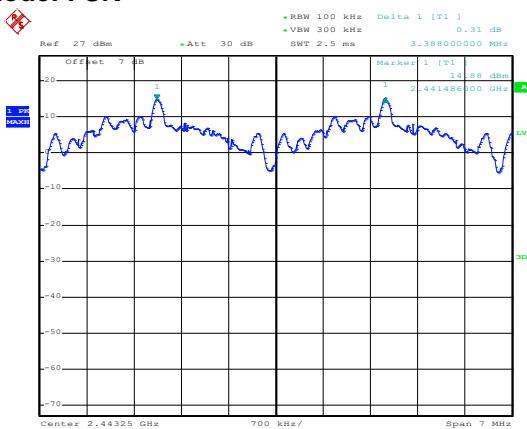
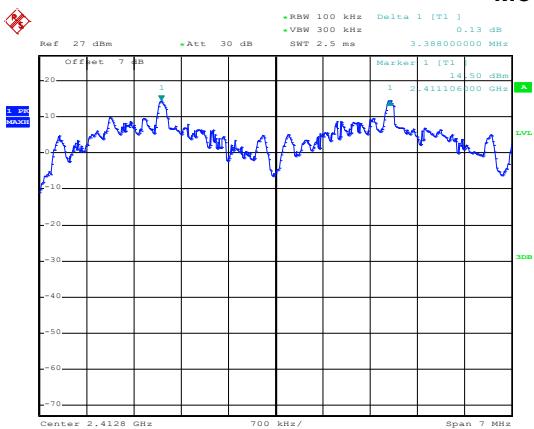
Test channel	Carrier Frequencies Separation (kHz)	Limit (kHz)	Result
Lowest	3388	2200	Pass
Middle	3388	2200	Pass
Highest	3374	2200	Pass

Note: According to section 6.4

20dB bandwidth (kHz) (worse case)	Limit (kHz) (Carrier Frequencies Separation)
3300	2200

Test plot as follows:

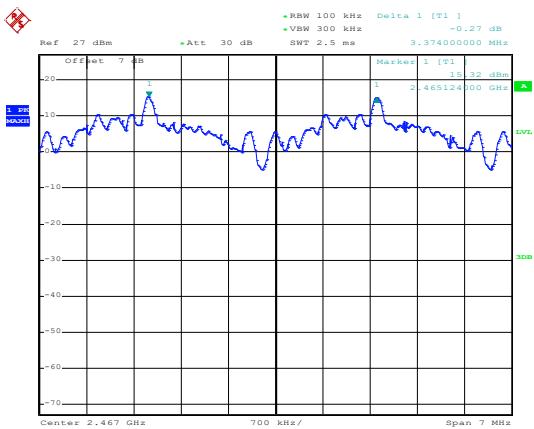
Modulation mode: FSK



Date: 13.JAN.2021 10:11:58

Date: 13.JAN.2021 10:20:37

Lowest channel

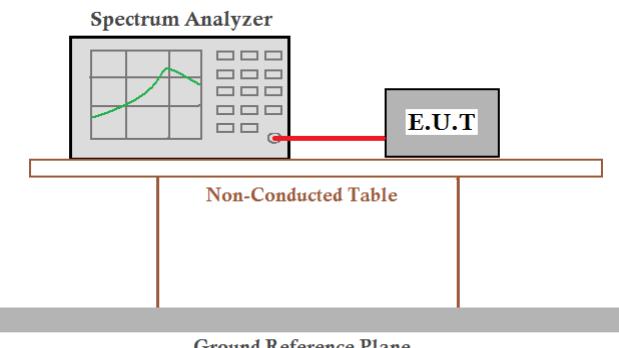


Middle channel

Date: 13.JAN.2021 10:27:58

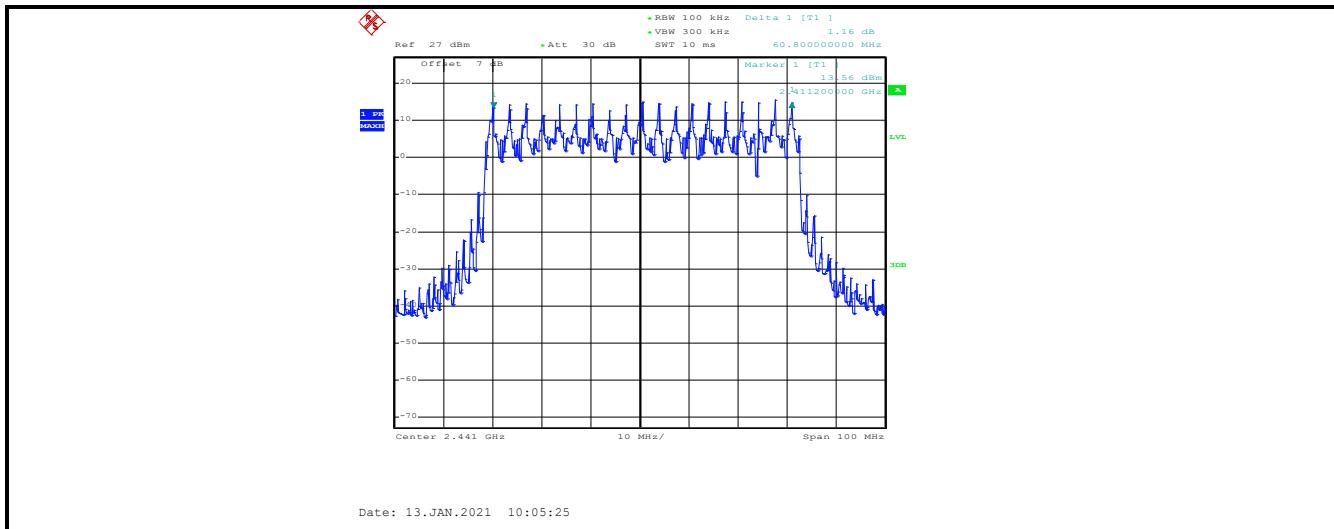
Highest channel

6.6 Hopping Channel Number

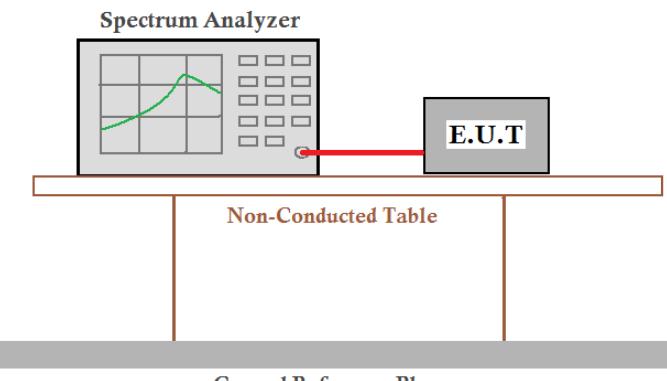
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)	
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Center Frequency=2441MHz, Span= 100MHz, Detector=Peak	
Limit:	15 channels	
Test setup:		
Test Instruments:	Refer to section 5.9 for details	
Test mode:	Hopping mode	
Test results:	Pass	

Measurement Data:

Hopping channel numbers	Limit	Result
19	15	Pass

Test plot as follows:

6.7 Dwell Time

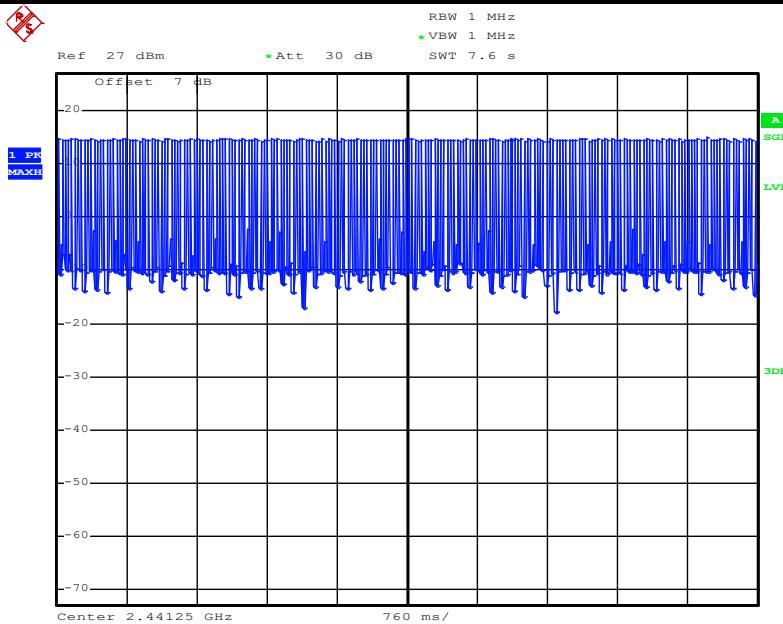
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Receiver setup:	RBW=1 MHz, VBW=1 MHz, Span=0 Hz, Detector=Peak
Limit:	0.4 Second
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Hopping mode
Test results:	Pass

Measurement Data (Worse case):

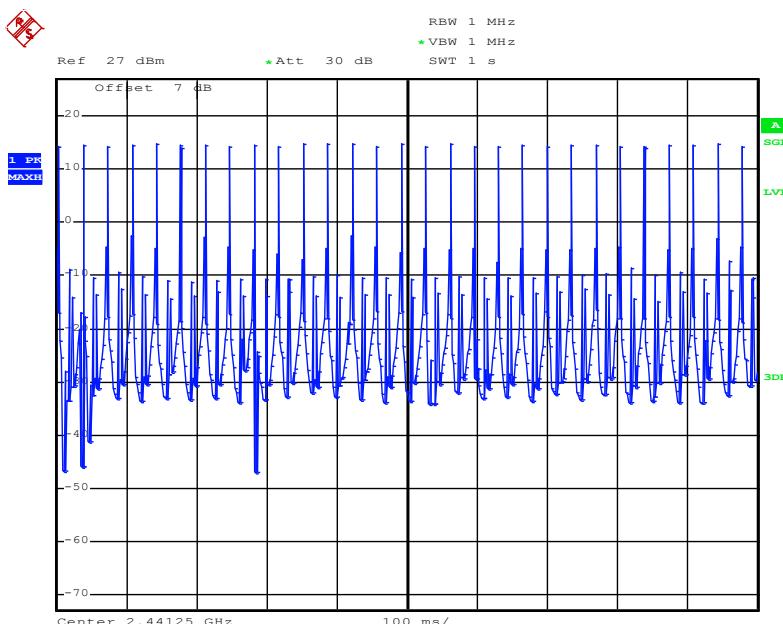
Dwell time per hop (Second)	Hopping numbers	Dwell time (second)	Limit (second)	Result
0.00022	213	0.0469	0.4	Pass

Note:
The test period = 0.4 Second/Channel x 19 Channel = 7.6 s
Dwell time = Dwell time per hop x Hopping numbers

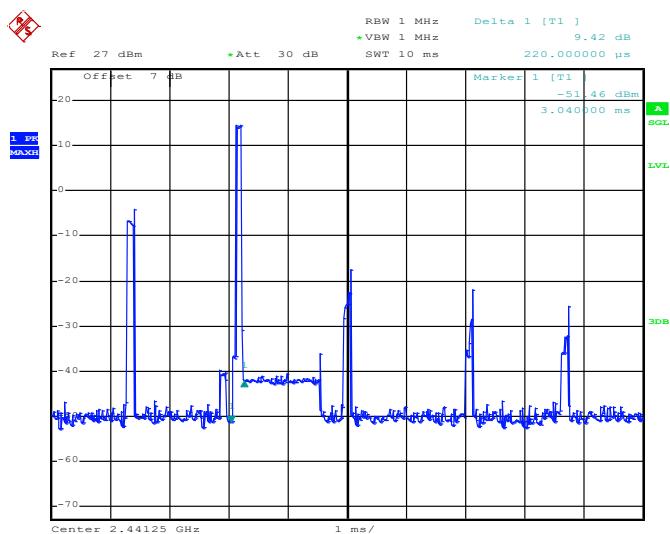
Test plot as follows:



Date: 13.JAN.2021 10:51:54

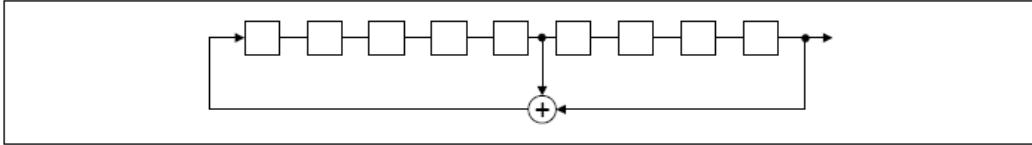


Date: 13.JAN.2021 10:52:28



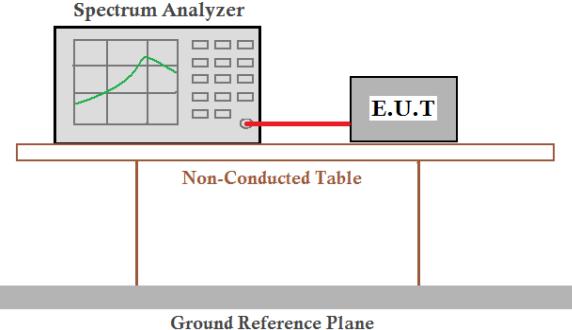
Date: 13.JAN.2021 10:54:45

6.8 Pseudorandom Frequency Hopping Sequence

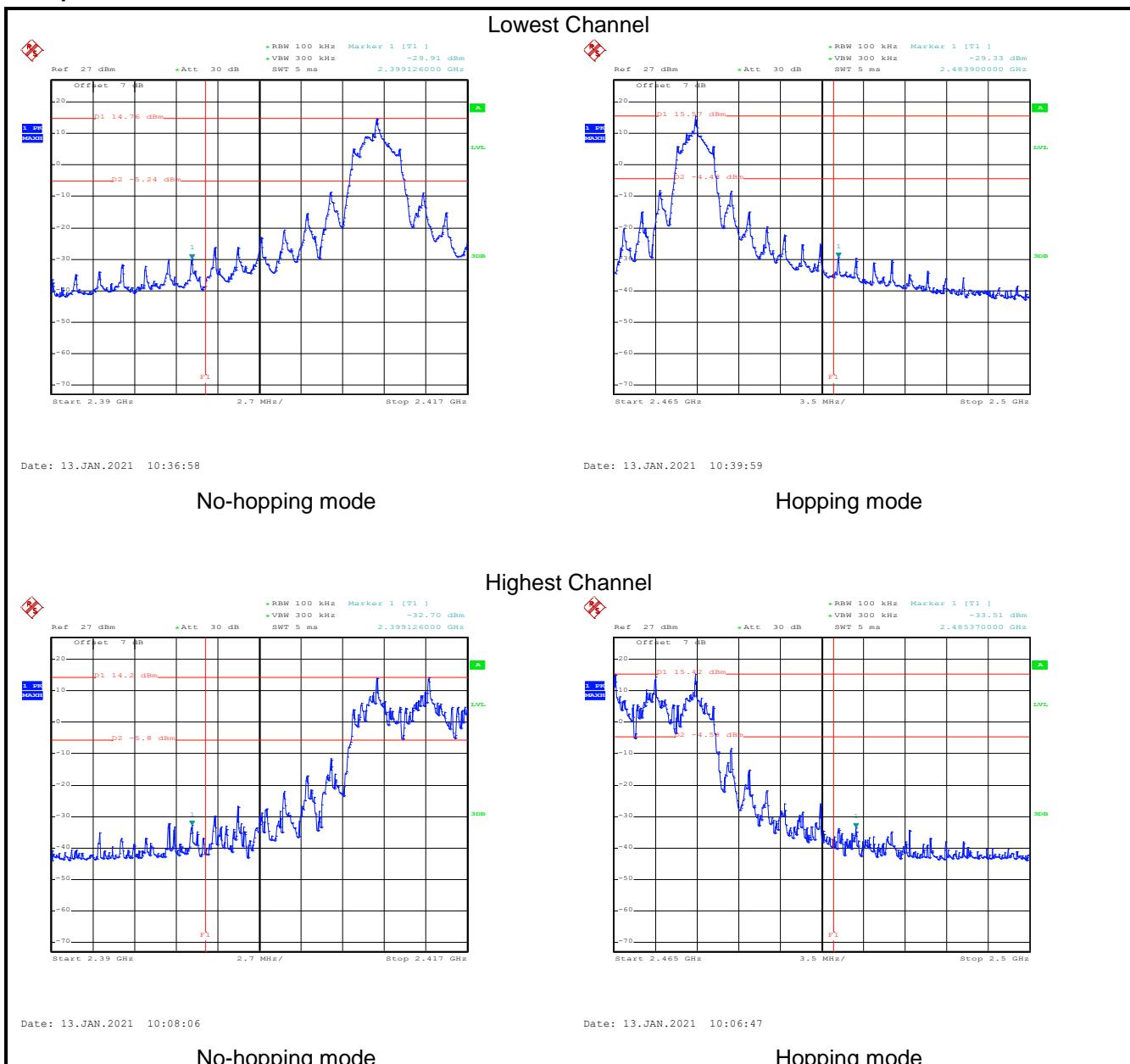
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1) requirement:																						
	<p>Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.</p> <p>Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. 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.</p>																						
EUT Pseudorandom Frequency Hopping Sequence																							
<p>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.</p> <ul style="list-style-type: none"> • Number of shift register stages: 9 • Length of pseudo-random sequence: $2^9 - 1 = 511$ bits • Longest sequence of zeros: 8 (non-inverted signal)  <p><i>Linear Feedback Shift Register for Generation of the PRBS sequence</i></p> <p>An example of Pseudorandom Frequency Hopping Sequence as follow:</p> <table border="1"> <tr> <td>0</td> <td>2</td> <td>4</td> <td>6</td> <td>62</td> <td>64</td> <td>78</td> <td>1</td> <td>73</td> <td>75</td> <td>77</td> </tr> <tr> <td> </td> </tr> </table> <p>Each frequency used equally on the average by each transmitter.</p> <p>The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.</p>		0	2	4	6	62	64	78	1	73	75	77											
0	2	4	6	62	64	78	1	73	75	77													

6.9 Band Edge

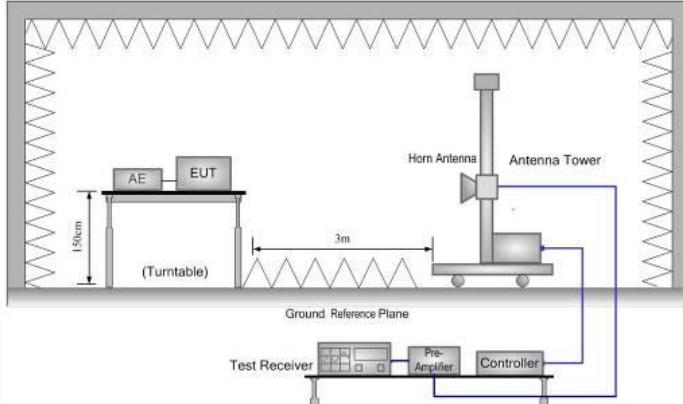
6.9.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Detector=Peak
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.
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode and hopping mode
Test results:	Pass

Test plot as follows:

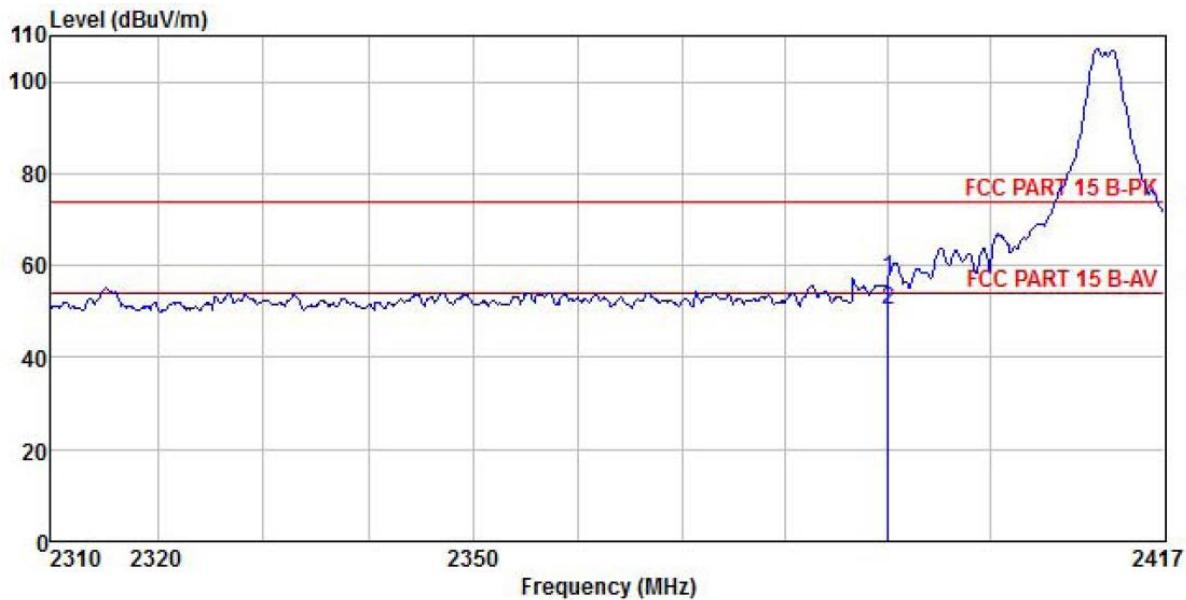


6.9.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205								
Test Frequency Range:	2310 MHz to 2390 MHz and 2483.5 MHz to 2500 MHz								
Test Distance:	3m								
Receiver setup:	Frequency	Detector	RBW	VBW	Remark				
	Above 1GHz	Peak	1MHz	3MHz	Peak Value				
		RMS	1MHz	3MHz	Average Value				
Limit:	Frequency	Limit (dBuV/m @3m)		Remark					
	Above 1GHz	54.00		Average Value					
		74.00		Peak Value					
Test setup:									
Test Procedure:	<ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 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. 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 and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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. 								
Test Instruments:	Refer to section 5.9 for details								
Test mode:	Non-hopping mode								
Test results:	Passed								

FSK Mode:

Product Name:	Baby Monitor	Product Model:	E722
Test By:	Yaro	Test mode:	DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%

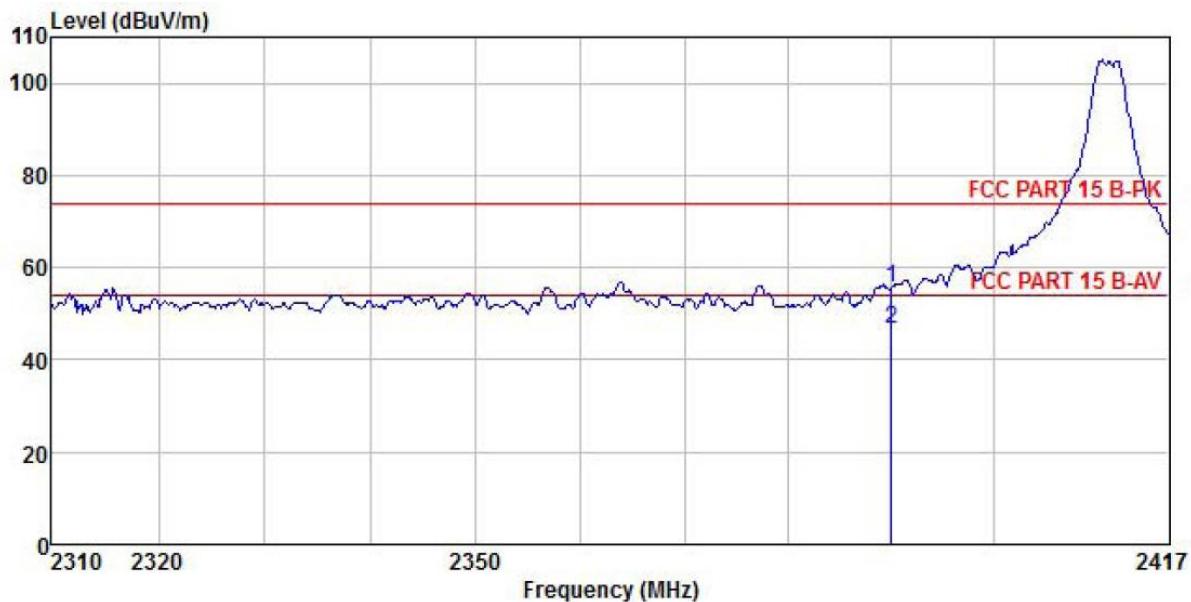


Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Aux Factor dB	Preamplifier Factor dB	Limit Line dBuV/m	Over Line dBuV/m	Over Limit dB	Remark
	MHz	dBuV/m	dB	dB	dB	dBuV/m	dBuV/m	dB	
1 2390.000	24.22	27.03	4.28	1.68	0.00	57.21	74.00	-16.79	Peak
2 2390.000	17.40	27.03	4.28	1.68	0.00	50.39	54.00	-3.61	Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Baby Monitor	Product Model:	E722
Test By:	Yaro	Test mode:	DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%

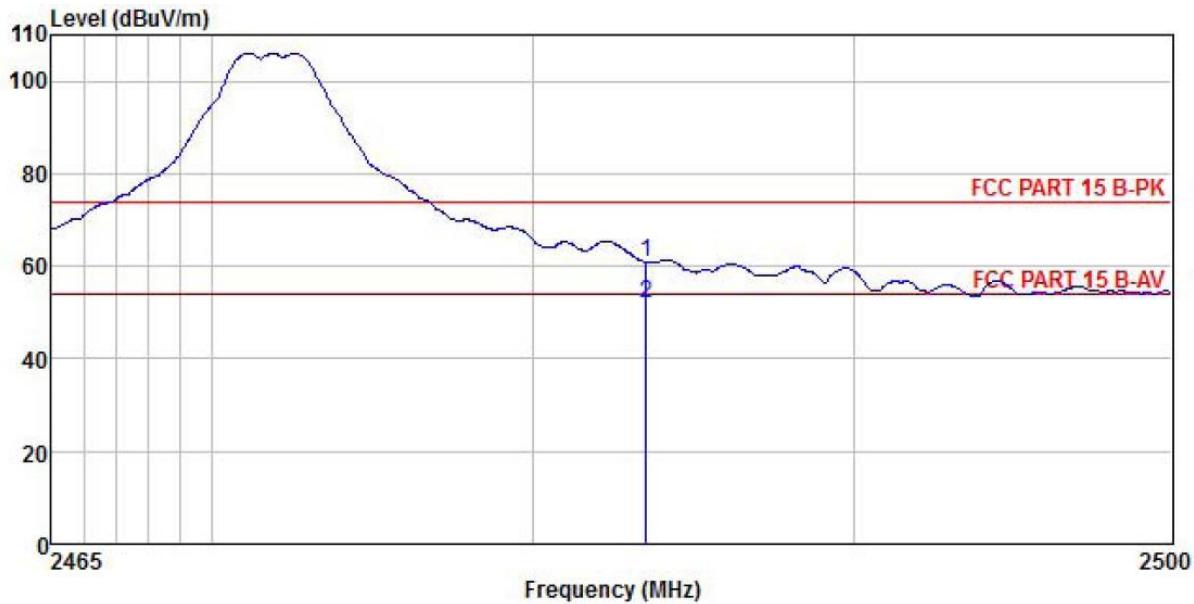


Freq	Read	Antenna	Cable	Aux	Preamp	Limit	Over	Over	
	Level	Level	Loss	Factor	Factor				Remark
	MHz	dBuV	dB/m	dB	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	22.64	27.03	4.28	1.68	0.00	55.63	74.00	-18.37 Peak
2	2390.000	13.66	27.03	4.28	1.68	0.00	46.65	54.00	-7.35 Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Baby Monitor	Product Model:	E722
Test By:	Yaro	Test mode:	DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%

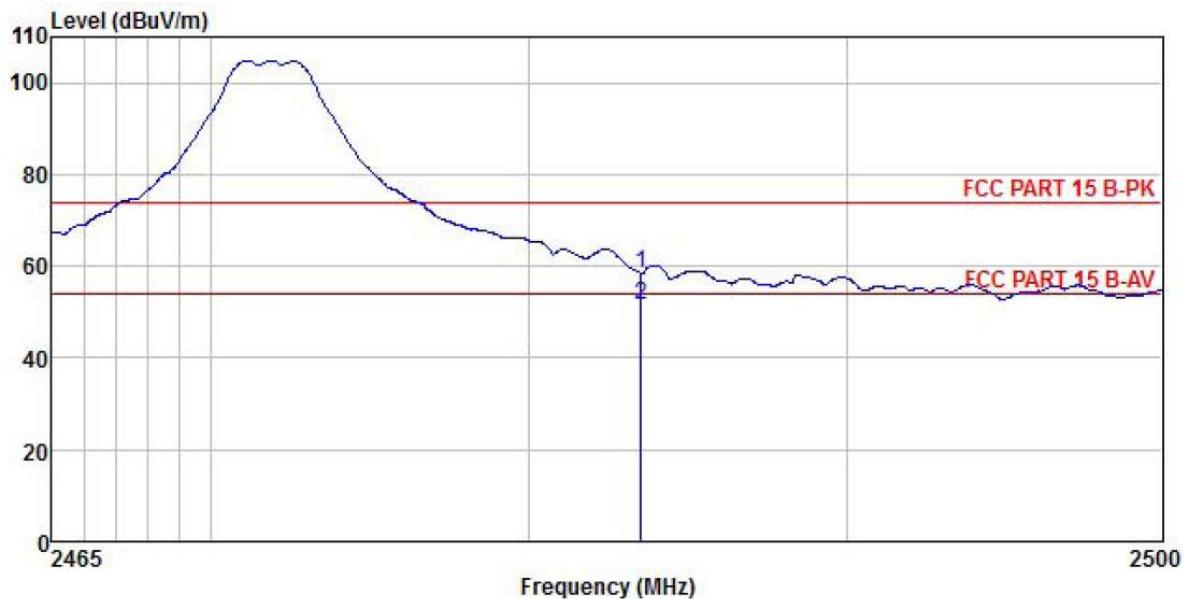


Freq	Read	Antenna	Cable	Aux	Preamp	Limit	Over	Remark
	Level	Factor	Loss	Factor	Factor			
MHz	dBuV	dB/m	dB	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	27.57	27.27	4.38	1.70	0.00	60.92	74.00
2	2483.500	18.53	27.27	4.38	1.70	0.00	51.88	54.00
								-13.08 Peak
								-2.12 Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product Name:	Baby Monitor	Product Model:	E722
Test By:	Yaro	Test mode:	DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



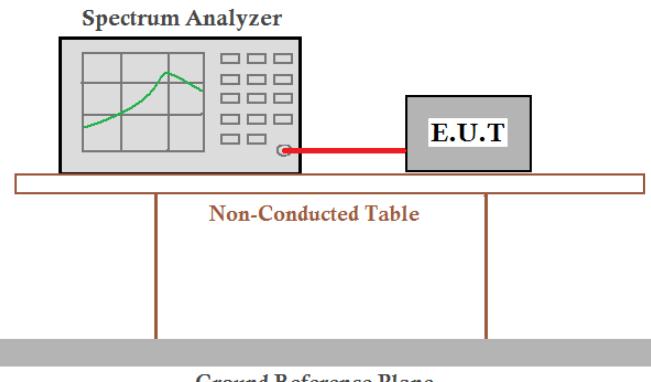
Freq	Read		Antenna	Cable	Aux	Preamp	Limit	Over	Line	Limit	Remark
	Level	Factor	Loss	Factor	Factor	Level					
MHz	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	dB	
1	2483.500	25.28	27.27	4.38	1.70	0.00	58.63	74.00	-15.37	Peak	
2	2483.500	18.35	27.27	4.38	1.70	0.00	51.70	54.00	-2.30	Average	

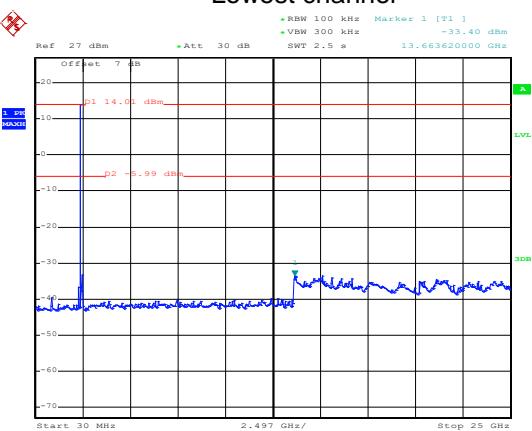
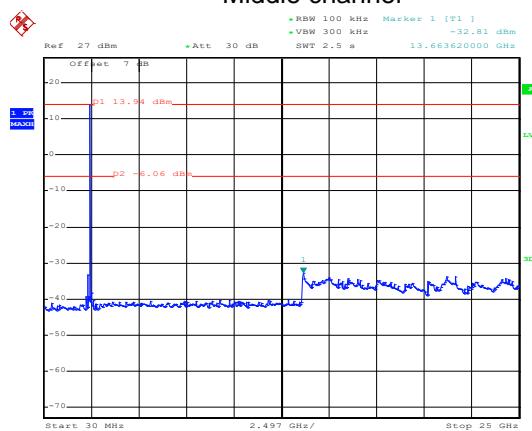
Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

6.10 Spurious Emission

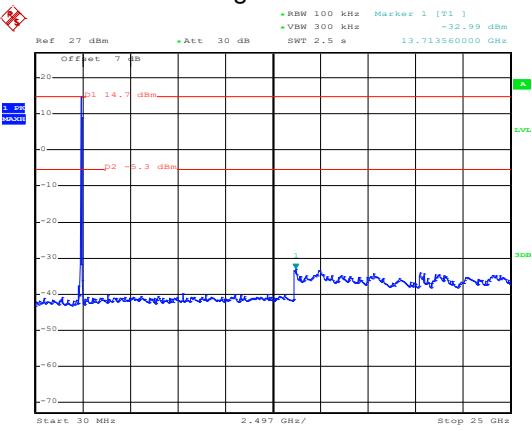
6.10.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)
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.
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass

Test plot as follows:
Lowest channel

Middle channel


Date: 13.JAN.2021 10:47:36

Date: 13.JAN.2021 10:45:49

Highest channel


Date: 13.JAN.2021 10:43:20

6.10.2 Radiated Emission Method

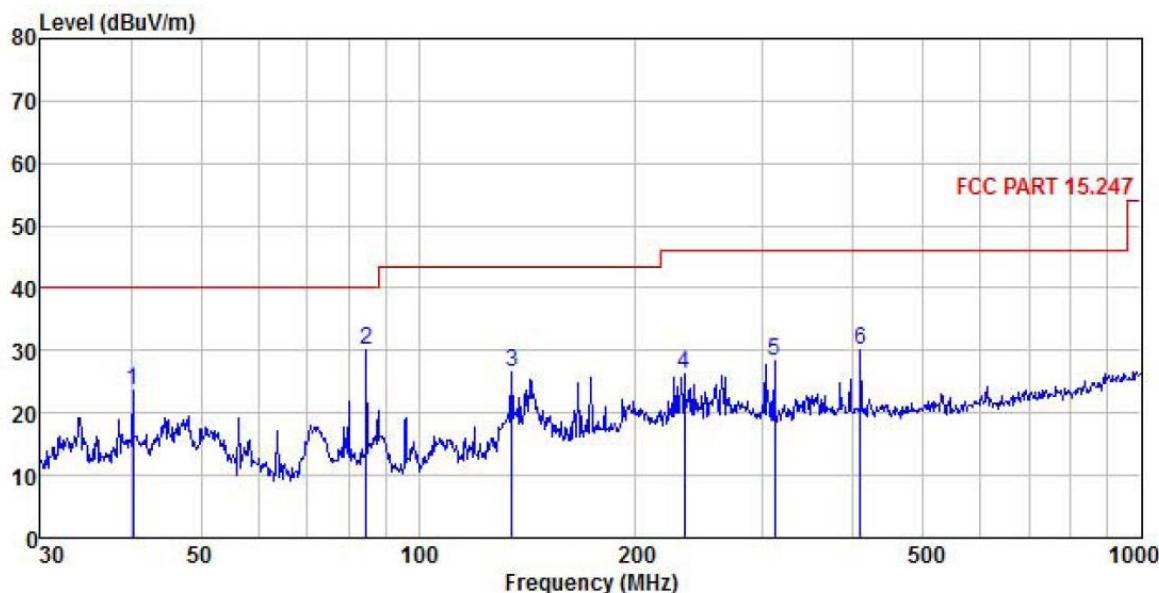
Test Requirement:	FCC Part 15 C Section 15.209								
Test Frequency Range:	9 kHz to 25 GHz								
Test Distance:	3m								
Receiver setup:	Frequency	Detector	RBW	VBW	Remark				
Receiver setup:	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value				
	Above 1GHz	Peak	1MHz	3MHz	Peak Value				
		RMS	1MHz	3MHz	Average Value				
Limit:	Frequency	Limit (dBuV/m @3m)		Remark					
Limit:	30MHz-88MHz	40.0		Quasi-peak Value					
	88MHz-216MHz	43.5		Quasi-peak Value					
	216MHz-960MHz	46.0		Quasi-peak Value					
	960MHz-1GHz	54.0		Quasi-peak Value					
	Above 1GHz	54.0		Average Value					
		74.0		Peak Value					
Test setup:	Below 1GHz								
	Above 1GHz								
Test Procedure:	<ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8m(below 1GHz) /1.5m(above 1GHz) above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna 								

	<p>tower.</p> <p>3. 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.</p> <p>4. 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 and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>6. 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.</p>
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass
Remark:	<ol style="list-style-type: none">1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.2. 9 kHz to 30 MHz is noise floor and lower than the limit 20dB, so only shows the data of above 30MHz in this report.

Measurement Data (worst case):

Below 1GHz:

Product Name:	Baby Monitor	Product Model:	E722
Test By:	Yaro	Test mode:	BT Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%

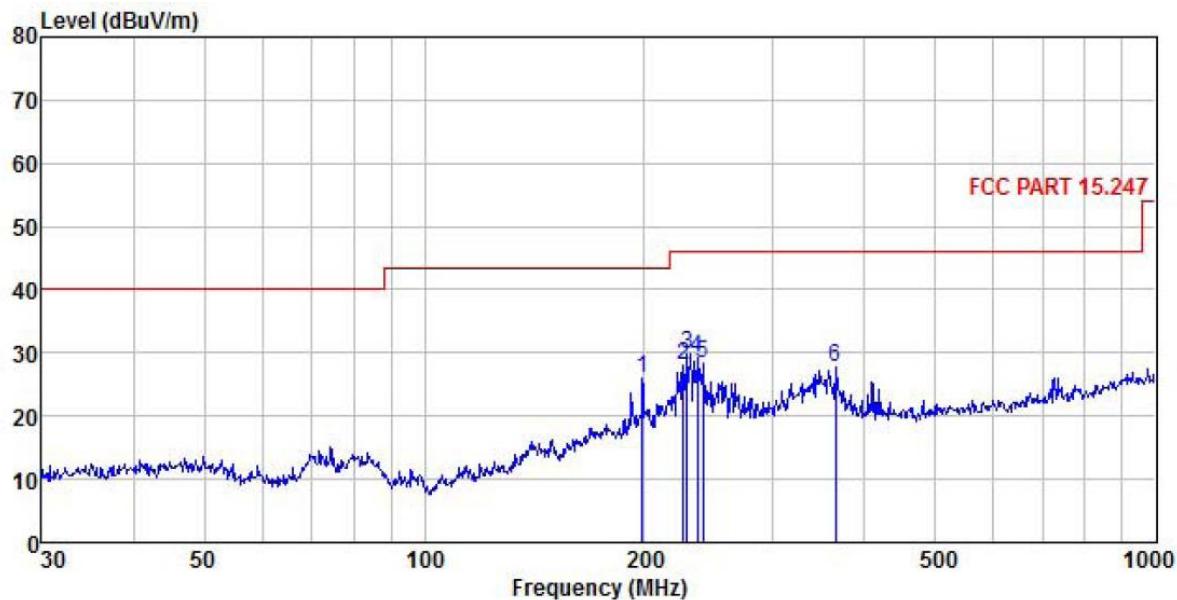


Freq MHz	Read Level	Antenna Factor	Cable Loss	Aux Factor	Preamplifier Factor	Limit Level dBuV/m	Over Line dBuV/m	Over Limit dB	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	40.276	40.48	12.81	0.35	0.00	29.90	23.74	40.00	-16.26 QP
2	84.702	47.47	11.67	0.48	0.00	29.60	30.02	40.00	-9.98 QP
3	134.559	41.84	13.35	0.59	0.00	29.30	26.48	43.50	-17.02 QP
4	233.349	35.72	18.44	0.75	0.00	28.63	26.28	46.00	-19.72 QP
5	311.087	37.19	18.72	0.88	0.00	28.48	28.31	46.00	-17.69 QP
6	408.946	38.68	19.12	1.00	0.00	28.80	30.00	46.00	-16.00 QP

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.
- The Aux Factor is a notch filter switch box loss, this item is not used.

Product Name:	Baby Monitor	Product Model:	E722
Test By:	Yaro	Test mode:	BT Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



Freq MHz	Read	Antenna	Cable	Aux	Preampl	Limit Line dBuV/m	Over Line dBuV/m	Over Limit dB	Remark
	Freq	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	198.588	36.06	18.16	0.72	0.00	28.84	26.10	43.50	-17.40 QP
2	226.099	37.66	18.41	0.75	0.00	28.67	28.15	46.00	-17.85 QP
3	228.490	39.31	18.42	0.75	0.00	28.66	29.82	46.00	-16.18 QP
4	235.816	38.76	18.45	0.76	0.00	28.62	29.35	46.00	-16.65 QP
5	239.987	37.77	18.46	0.76	0.00	28.59	28.40	46.00	-17.60 QP
6	364.260	36.41	18.89	0.95	0.00	28.62	27.63	46.00	-18.37 QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.
3. The Aux Factor is a notch filter switch box loss, this item is not used.

Above 1GHz (GFSK is Worst case):

Test channel: Lowest channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4821.75	54.56	30.84	6.42	2.46	41.82	52.46	74.00	-21.54	Vertical
4821.75	53.62	30.84	6.42	2.46	41.82	51.52	74.00	-22.48	Horizontal
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4821.75	44.92	30.84	6.42	2.46	41.82	42.82	54.00	-11.18	Vertical
4821.75	43.91	30.84	6.42	2.46	41.82	41.81	54.00	-12.19	Horizontal
Test channel: Middle channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4882.50	57.03	30.96	6.47	2.47	41.84	55.09	74.00	-18.91	Vertical
4882.50	53.59	30.96	6.47	2.47	41.84	51.65	74.00	-22.35	Horizontal
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4882.50	47.15	30.96	6.47	2.47	41.84	45.21	54.00	-8.79	Vertical
4882.50	44.18	30.96	6.47	2.47	41.84	42.24	54.00	-11.76	Horizontal
Test channel: Highest channel									
Detector: Peak Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4943.25	56.29	31.08	6.51	2.49	41.86	54.51	74.00	-19.49	Vertical
4943.25	53.02	31.08	6.51	2.49	41.86	51.24	74.00	-22.76	Horizontal
Detector: Average Value									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4943.25	46.91	31.08	6.51	2.49	41.86	45.13	54.00	-8.87	Vertical
4943.25	43.91	31.08	6.51	2.49	41.86	42.13	54.00	-11.87	Horizontal

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss + Aux Factor – Preamplifier Factor.
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.