

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
GOOD EVER TRADING LIMITED

True Wireless BT Earbuds

Model No.: CB-TE008, 20248, TBE-8/1751, AA-TWSSE

FCC ID: 2AM7T-CBTE008

Prepared for : GOOD EVER TRADING LIMITED
Address : Rm1701, Zhuoyue Building, Fuhua Yi Rd., Futian Central Zone,
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Report No. : ATE2020200378
Date of Test : May 6-7, 2020
Date of Report : May 8, 2020

TABLE OF CONTENTS

Description	Page
Test Report Certification	
TABLE OF CONTENTS	2
1. GENERAL INFORMATION	5
1.1. Description of Device (EUT)	5
1.2. Accessory and Auxiliary Equipment	5
1.3. Description of Test Facility	6
1.4. Measurement Uncertainty	6
2. MEASURING DEVICE AND TEST EQUIPMENT	7
3. OPERATION OF EUT DURING TESTING	8
3.1. Operating Mode	8
3.2. Configuration and peripherals	8
4. TEST PROCEDURES AND RESULTS	9
5. 20DB BANDWIDTH TEST	10
5.1. Block Diagram of Test Setup	10
5.2. The Requirement For Section 15.247(a)(1)	10
5.3. EUT Configuration on Measurement	10
5.4. Operating Condition of EUT	10
5.5. Test Procedure	10
5.6. Test Result	11
6. CARRIER FREQUENCY SEPARATION TEST	15
6.1. Block Diagram of Test Setup	15
6.2. The Requirement For Section 15.247(a)(1)	15
6.3. EUT Configuration on Measurement	15
6.4. Operating Condition of EUT	15
6.5. Test Procedure	16
6.6. Test Result	16
7. NUMBER OF HOPPING FREQUENCY TEST	20
7.1. Block Diagram of Test Setup	20
7.2. The Requirement For Section 15.247(a)(1)(iii)	20
7.3. EUT Configuration on Measurement	20
7.4. Operating Condition of EUT	20
7.5. Test Procedure	20
7.6. Test Result	21
8. DWELL TIME TEST	23
8.1. Block Diagram of Test Setup	23
8.2. The Requirement For Section 15.247(a)(1)(iii)	23
8.3. EUT Configuration on Measurement	23
8.4. Operating Condition of EUT	23
8.5. Test Procedure	23
8.6. Test Result	24
9. MAXIMUM PEAK OUTPUT POWER TEST	28
9.1. Block Diagram of Test Setup	28

9.2.	The Requirement For Section 15.247(b)(1).....	28
9.3.	EUT Configuration on Measurement	28
9.4.	Operating Condition of EUT	28
9.5.	Test Procedure	28
9.6.	Test Result	29
10.	RADIATED EMISSION TEST	33
10.1.	Block Diagram of Test Setup.....	33
10.2.	The Limit For Section 15.247(d)	34
10.3.	Restricted bands of operation	36
10.4.	Configuration of EUT on Measurement	36
10.5.	Operating Condition of EUT	37
10.6.	Test Procedure	37
10.7.	Data Sample.....	38
10.8.	Tetst Results.....	38
11.	BAND EDGE COMPLIANCE TEST	51
11.1.	Block Diagram of Test Setup.....	51
11.2.	The Requirement For Section 15.247(d)	51
11.3.	EUT Configuration on Measurement	51
11.4.	Operating Condition of EUT	51
11.5.	Test Procedure	52
11.6.	Test Result	52
12.	AC POWER LINE CONDUCTED EMISSION TEST	62
12.1.	Block Diagram of Test Setup.....	62
12.2.	Power Line Conducted Emission Measurement Limits.....	63
12.3.	Configuration of EUT on Measurement	63
12.4.	Operating Condition of EUT	63
12.5.	Test Procedure	63
12.6.	Data Sample.....	64
12.7.	Test Results.....	64
13.	ANTENNA REQUIREMENT.....	67
13.1.	The Requirement	67
13.2.	Antenna Construction	67

Test Report Certification

Applicant : GOOD EVER TRADING LIMITED
Manufacturer : SHENZHEN CLEVER BRIGHT IMP. & EXP. Co., LTD.
EUT : True Wireless BT Earbuds
Model No. : CB-TE008, 20248, TBE-8/1751, AA-TWSSE

Measurement Procedure Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013**

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test : May 6-7, 2020
Date of Report : May 8, 2020

Prepared by :
(Bob Wang, Engineer)

Approved & Authorized Signer :
(Sean Liu, Manager)



1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Model Number	:	CB-TE008, 20248, TBE-8/1751, AA-TWSSE (Note: These samples are same except their appearance is different. So we prepare CB-TE008 for test only.)
Bluetooth version	:	V5.0
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain(Max)	:	-0.58dBi
Antenna type	:	PCB Antenna
Modulation mode	:	GFSK, $\pi/4$ DQPSK
Power Supply	:	DC 3.7V (Powered by Lithium battery) or DC 5.0V (Powered by USB port)
Applicant	:	GOOD EVER TRADING LIMITED
Address	:	Rm1701, Zhuoyue Building, Fuhua Yi Rd., Futian Central Zone, Shenzhen, P.R.China
Manufacturer	:	SHENZHEN CLEVER BRIGHT IMP. & EXP. Co., LTD.
Address	:	Rm1701, Zhuoyue Building, Fuhua Yi Rd., Futian Central Zone, Shenzhen, P.R.China

1.2. Accessory and Auxiliary Equipment

AC/DC Power Adapter (provided by laboratory)	:	Model:BEK-QC-001 INPUT: 120V~60Hz OUTPUT:5V/1A
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1.3. Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISED) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd.
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.4. Measurement Uncertainty

Radiated emission expanded uncertainty (9kHz-30MHz)	:	U=2.66dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	:	U=4.28dB, k=2
Radiated emission expanded uncertainty (1G-18GHz)	:	U=4.98dB, k=2
Radiated emission expanded uncertainty (18G-26.5GHz)	:	U=5.06dB, k=2
Conduction Emission Expanded Uncertainty (Mains ports, 9kHz-30MHz)	:	U=2.72dB, k=2
Conduction Emission Expanded Uncertainty (Telecommunication ports, 150kHz-30MHz)	:	U=2.94dB, k=2
Power disturbance Expanded Uncertainty	:	U=2.92dB, k=2
Harmonic current expanded uncertainty	:	U=0.512%, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 04, 2020	1 Year
EMI Test Receiver	Rohde& Schwarz	ESR	101817	Jan. 04, 2020	1 Year
Spectrum Analyzer	Rohde&Schwarz	FSV40	101495	Jan. 04, 2020	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 04, 2020	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 04, 2020	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 04, 2020	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 04, 2020	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 04, 2020	1 Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 04, 2020	1 Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10S S	N/A	Jan. 04, 2020	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2 375/2510-60/11SS	N/A	Jan. 04, 2020	1 Year
RF COAXIAL CABLE	SUHNER	N-5m(Frequency range:9KHz-26.5GHz)	NO.3	Jan. 04, 2020	1 Year
RF COAXIAL CABLE	SUHNER	N-5m(Frequency range:9KHz-26.5GHz)	NO.4	Jan. 04, 2020	1 Year
RF COAXIAL CABLE	SUHNER	N-1m(Frequency range:9KHz-26.5GHz)	NO.5	Jan. 04, 2020	1 Year
RF COAXIAL CABLE	SUHNER	N-1m(Frequency range:9KHz-26.5GHz)	NO.6	Jan. 04, 2020	1 Year
Temporary antenna connector	NTGS	14AE	N/A	Jan. 20, 2020	N/A

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

3. OPERATION OF EUT DURING TESTING

3.1. Operating Mode

The mode is used: Transmitting mode

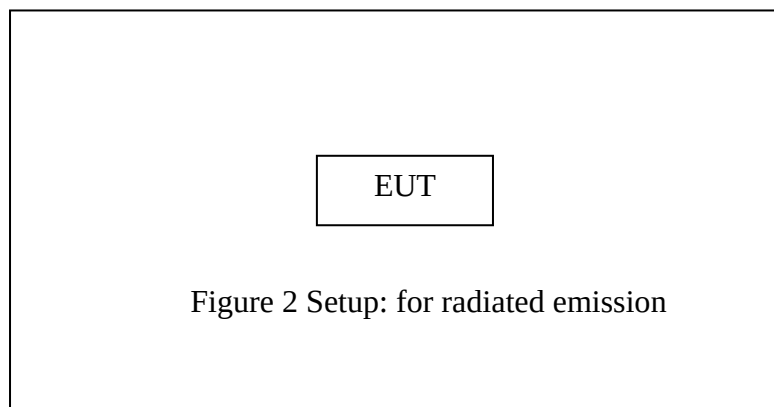
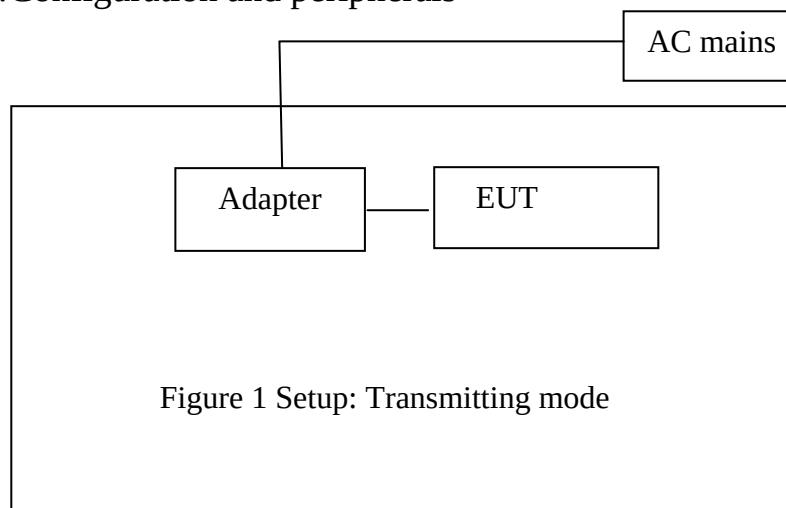
Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

3.2. Configuration and peripherals

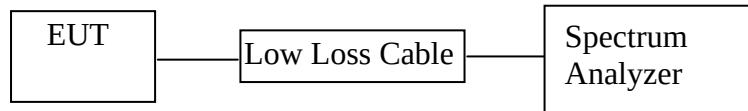


4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	Dwell Time Test	Compliant
Section 15.247(b)(1)	Maximum Peak Output Power Test	Compliant
Section 15.247(d) Section 15.209	Radiated Emission Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.207	AC Power Line Conducted Emissions Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. 20DB BANDWIDTH TEST

5.1. Block Diagram of Test Setup



5.2. The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): 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.

5.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.4. Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

5.5. Test Procedure

5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2. Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz.

5.5.3. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

5.6.Test Result

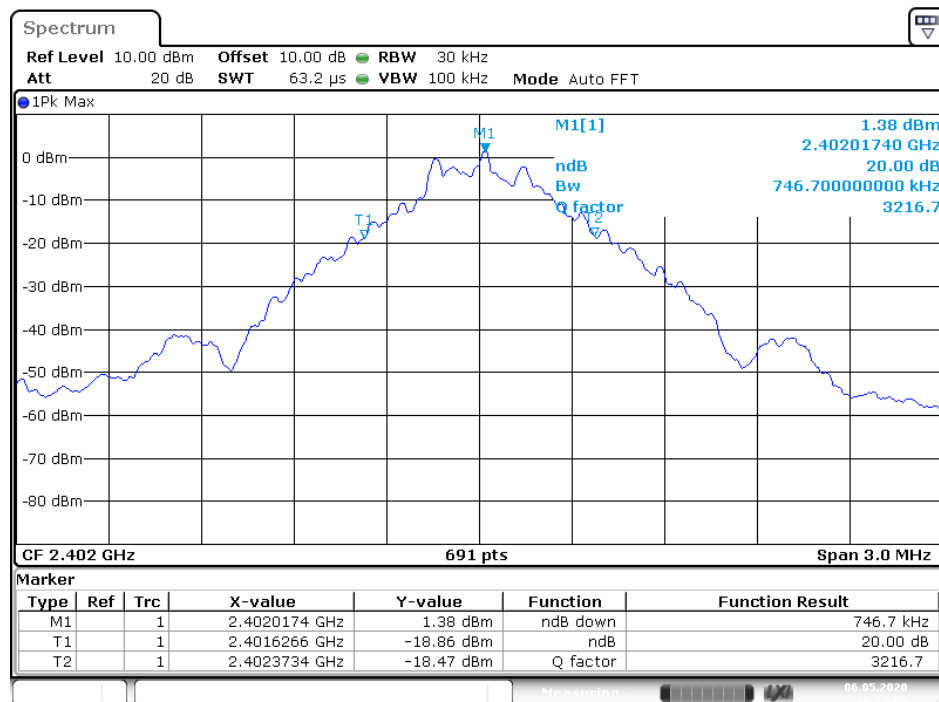
Test Lab: Shielding room

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	$\Pi/4$ -DQPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.7467	1.2069	Pass
Middle	2441	0.7467	1.2069	Pass
High	2480	0.7467	1.2069	Pass

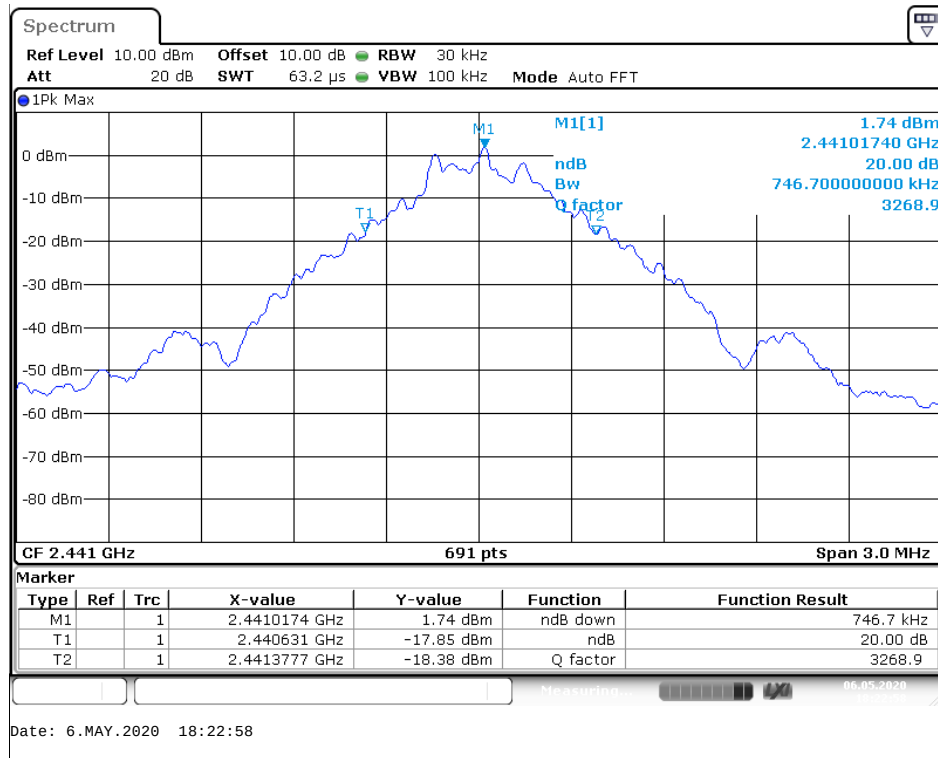
The spectrum analyzer plots are attached as below.

GFSK Mode

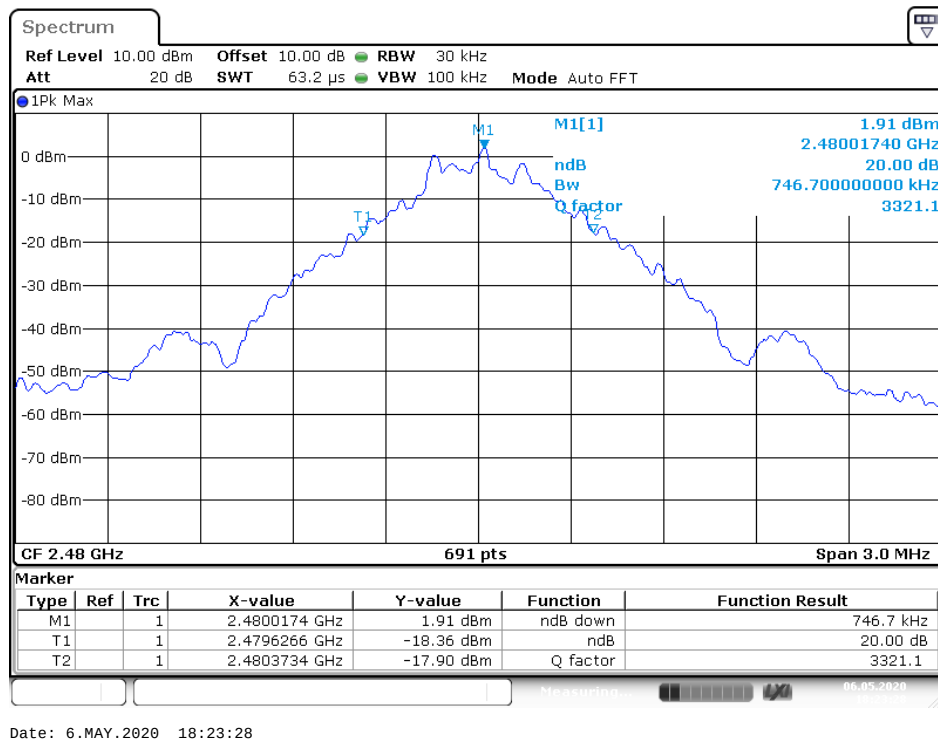
Low channel



Middle channel

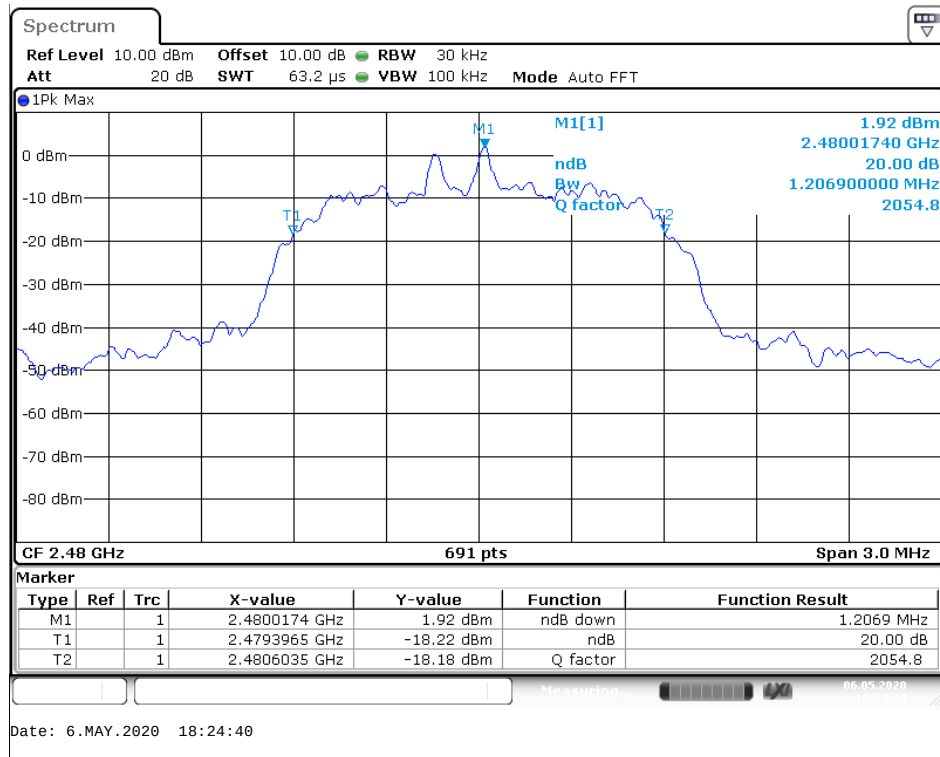


High channel

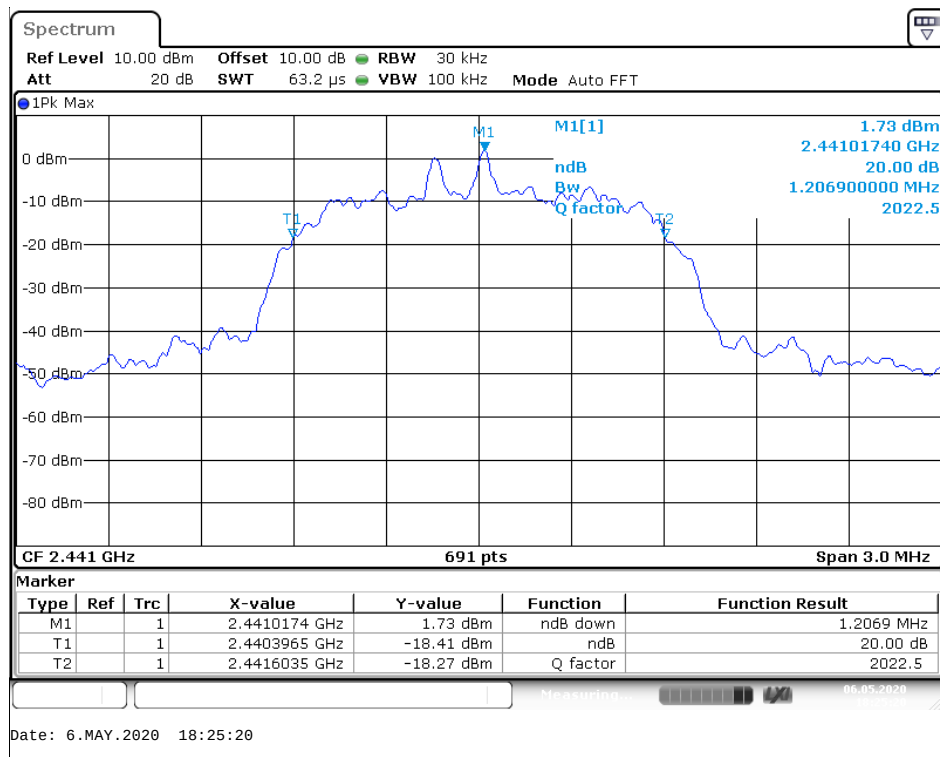


Π/4-DQPSK Mode

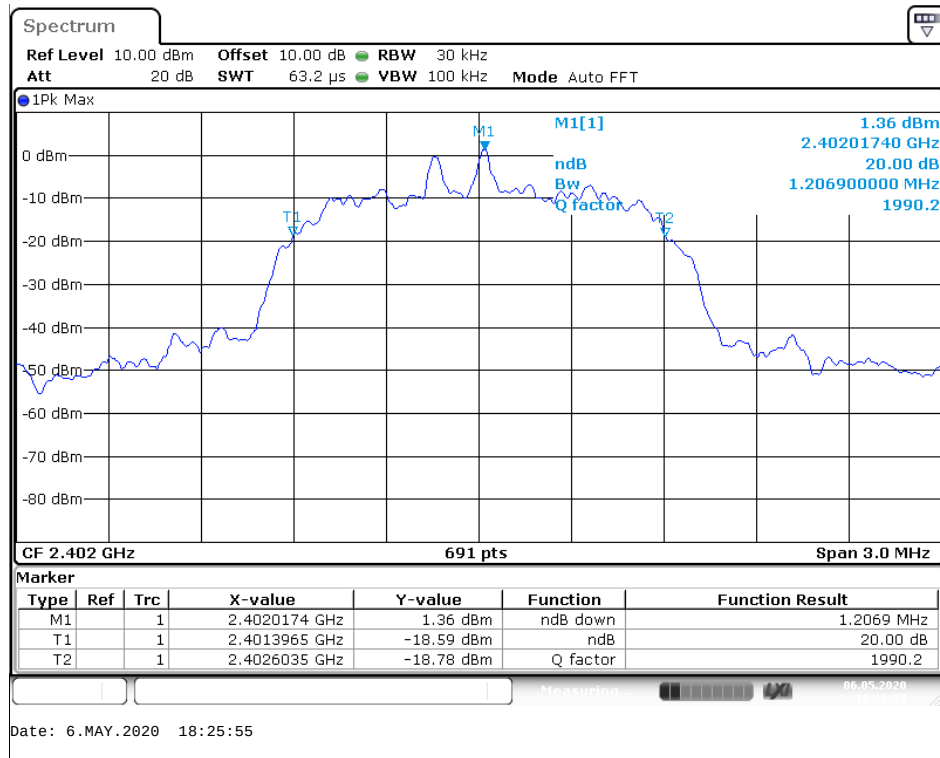
Low channel



Middle channel

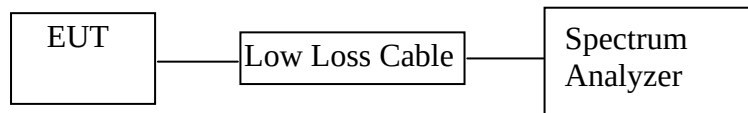


High channel



6. CARRIER FREQUENCY SEPARATION TEST

6.1. Block Diagram of Test Setup



6.2. The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): 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. 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 pseudo randomly 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.

6.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

6.5. Test Procedure

6.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

6.5.2. Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz. Adjust Span to 3 MHz.

6.5.3. Set the adjacent channel of the EUT Maxhold another trace.

6.5.4. Measurement the channel separation

6.6. Test Result

Test Lab: Shielding room

GFSK

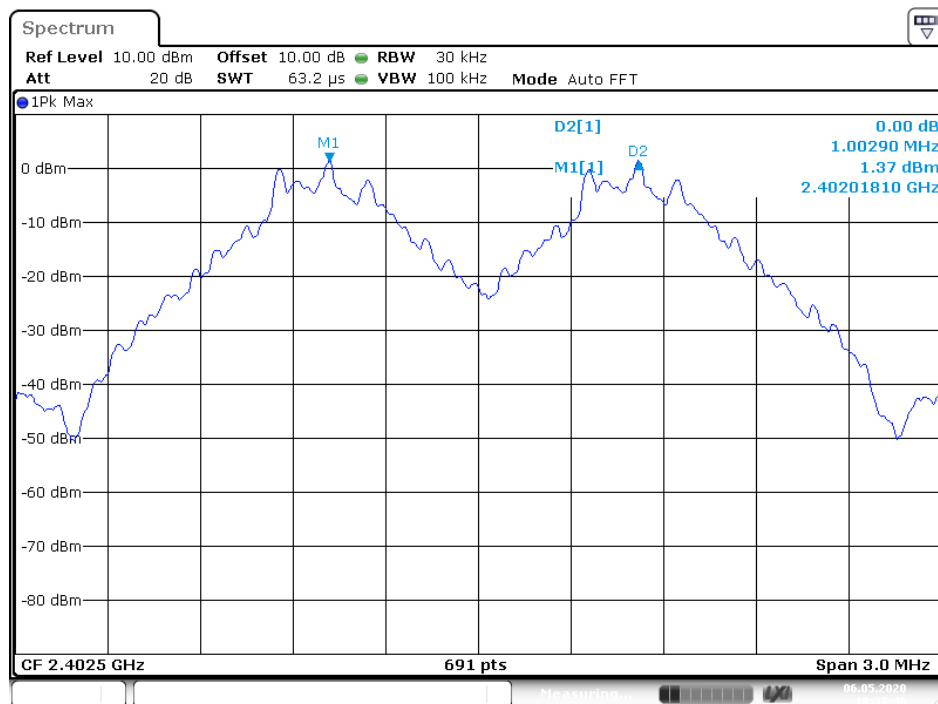
Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2440	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2441			
High	2479	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2480			

Π/4-DQPSK

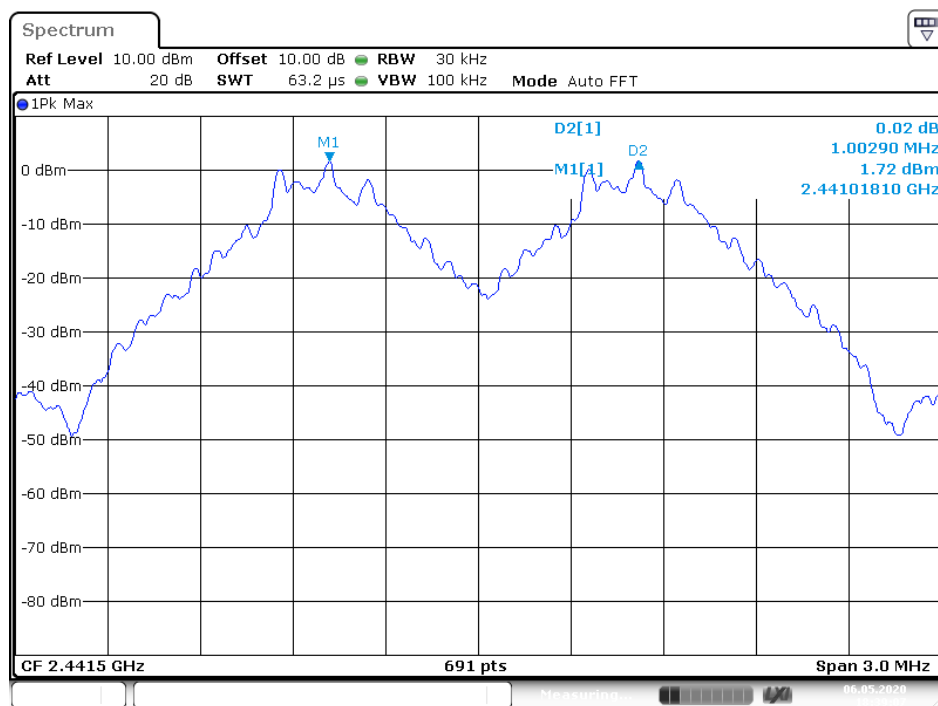
Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2403			
Middle	2440	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2441			
High	2479	1.0029	25KHz or 2/3*20dB bandwidth	Pass
	2480			

GFSK Mode

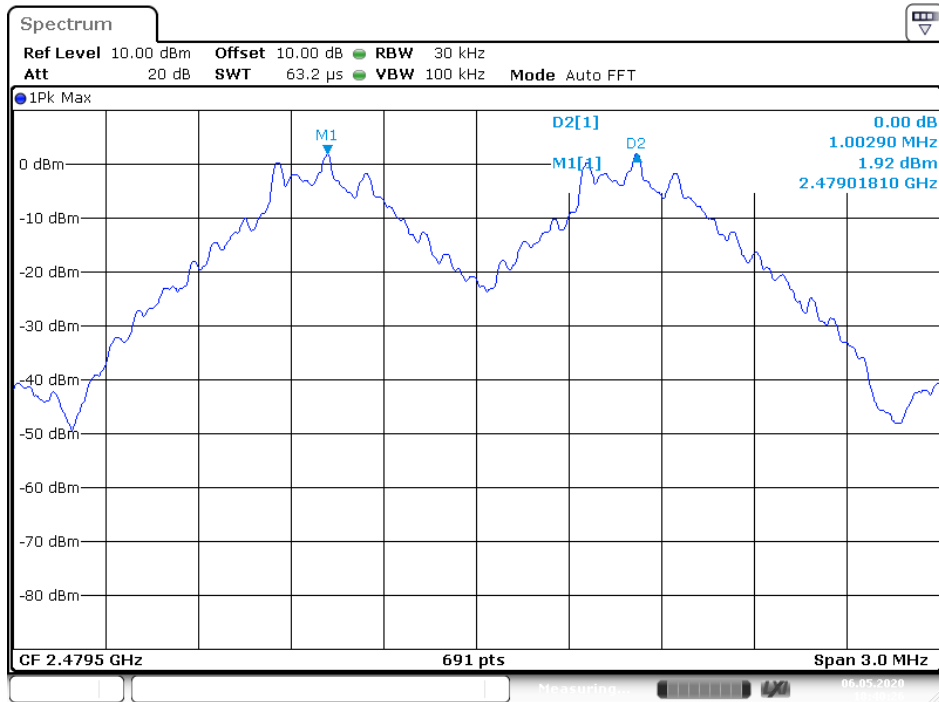
Low channel



Middle channel



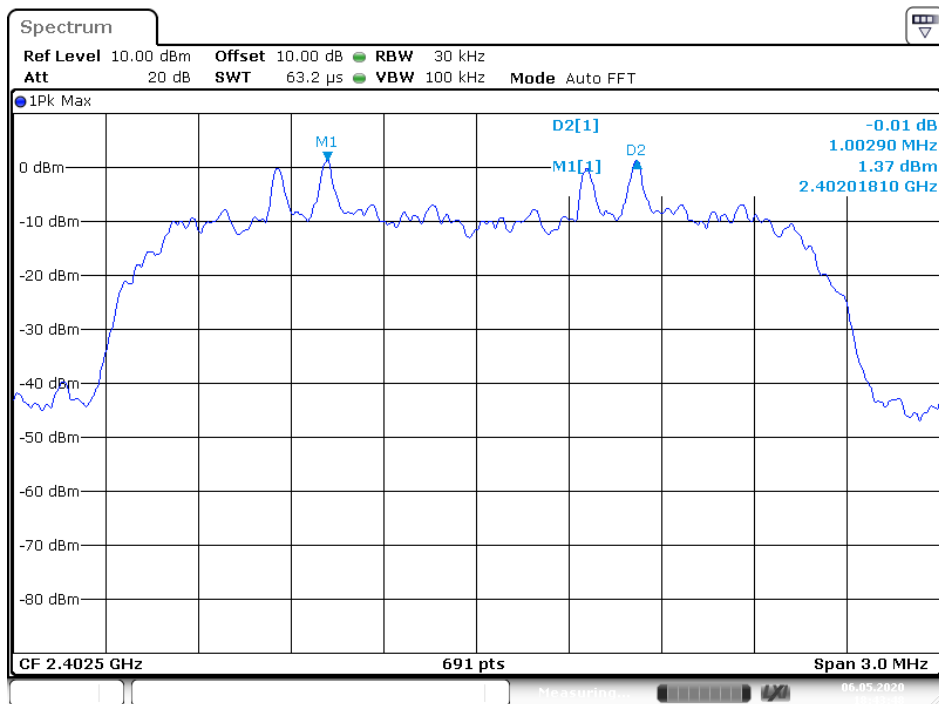
High channel



Date: 6.MAY.2020 18:40:27

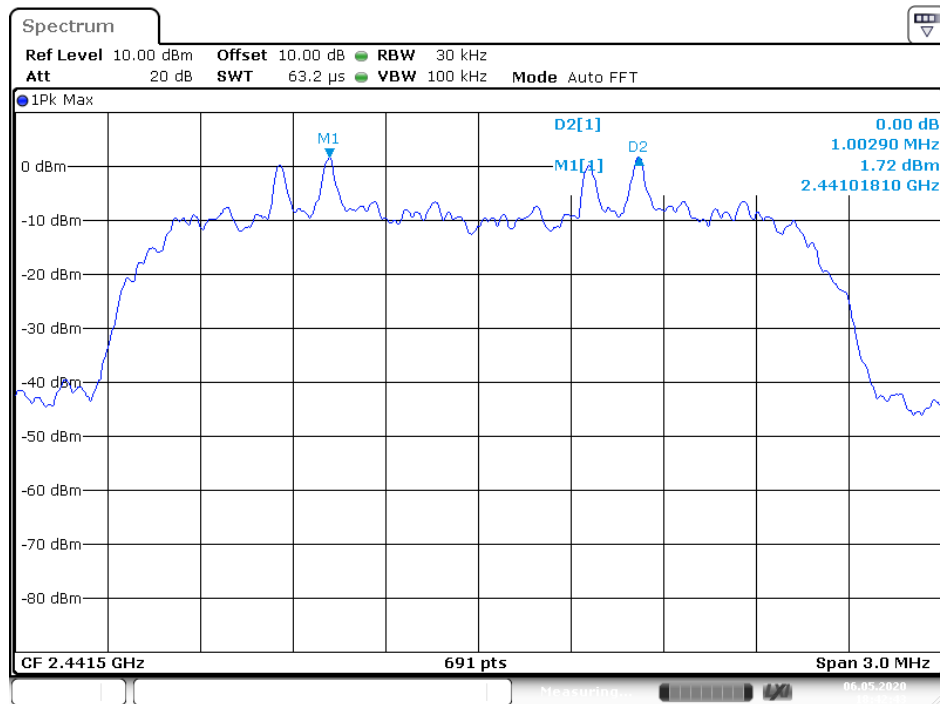
Π/4-DQPSK Mode

Low channel



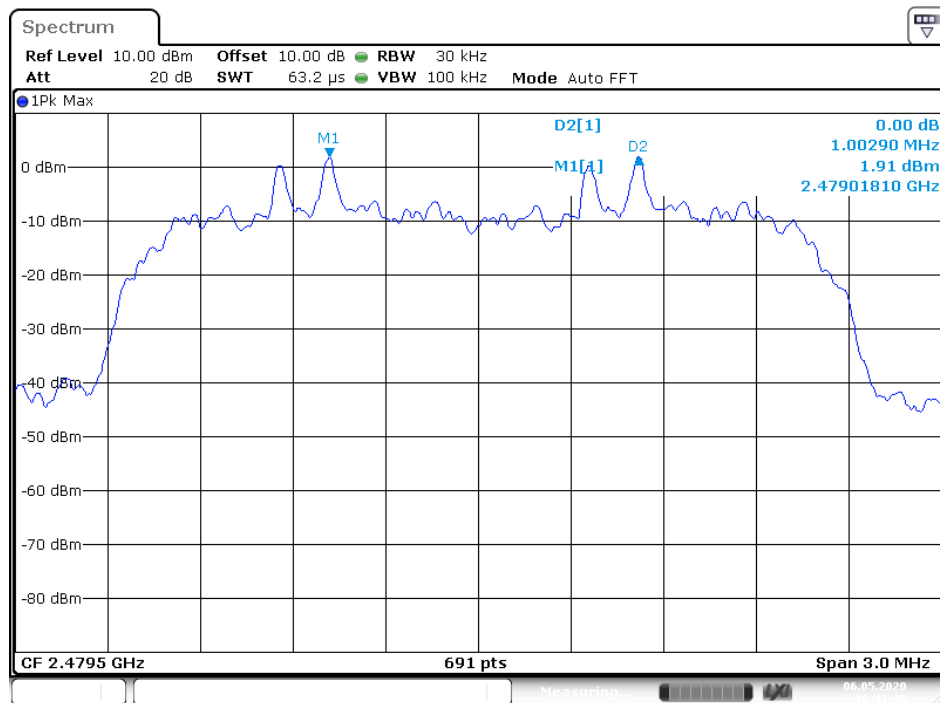
Date: 6.MAY.2020 18:43:49

Middle channel



Date: 6.MAY.2020 18:42:43

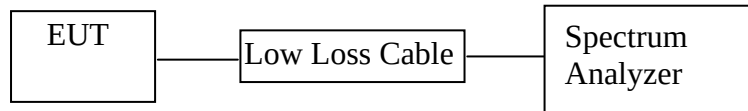
High channel



Date: 6.MAY.2020 18:41:35

7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Block Diagram of Test Setup



7.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

7.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.4. Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in TX (Hopping on) modes measure it.

7.5. Test Procedure

7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz.

7.5.3. Max hold, view and count how many channel in the band.

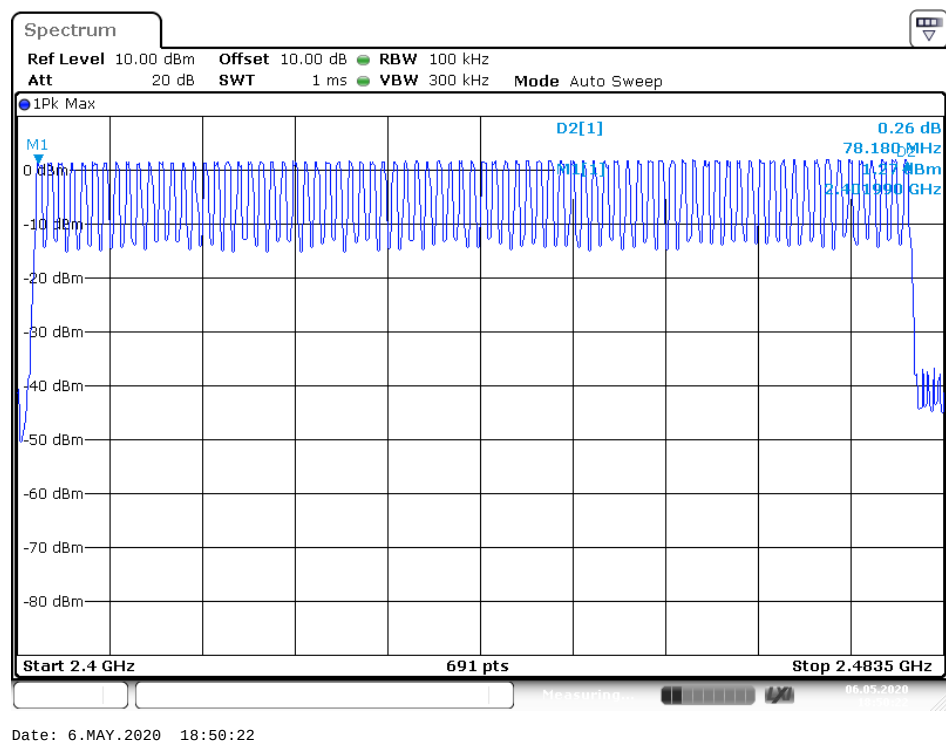
7.6. Test Result

Test Lab: Shielding room

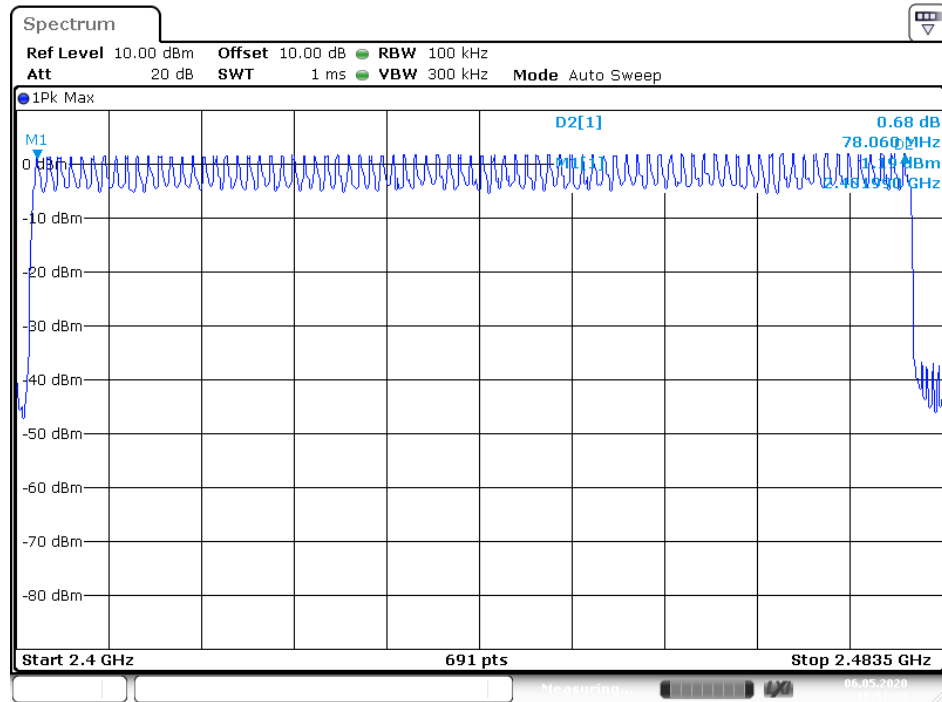
Total number of hopping channel	Measurement result(CH)	Limit(CH)	Result
	79	≥ 15	Pass

The spectrum analyzer plots are attached as below.

Number of hopping channels (GFSK Mode)



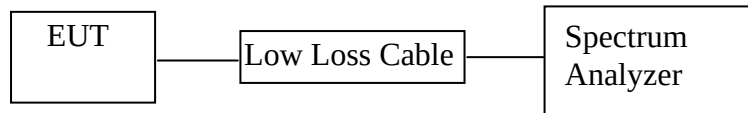
Number of hopping channels ($\Pi/4$ -DQPSK Mode)



Date: 6.MAY.2020 18:51:23

8. DWELL TIME TEST

8.1. Block Diagram of Test Setup



8.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

8.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4. Operating Condition of EUT

8.4.1. Setup the EUT and simulator as shown as Section 8.1.

8.4.2. Turn on the power of all equipment.

8.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

8.5. Test Procedure

8.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.2. Set center frequency of spectrum analyzer = operating frequency.

8.5.3. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=5ms, 10ms, 15ms. Get the pulse time.

8.5.4. Repeat above procedures until all frequency measured were complete.

8.6.Test Result

Test Lab: Shielding room

GFSK Mode (Worse case)

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2441	0.442	141.44	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$				
DH3	2441	1.710	273.60	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$				
DH5	2441	2.978	317.65	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

Π/4-DQPSK (Worse case)

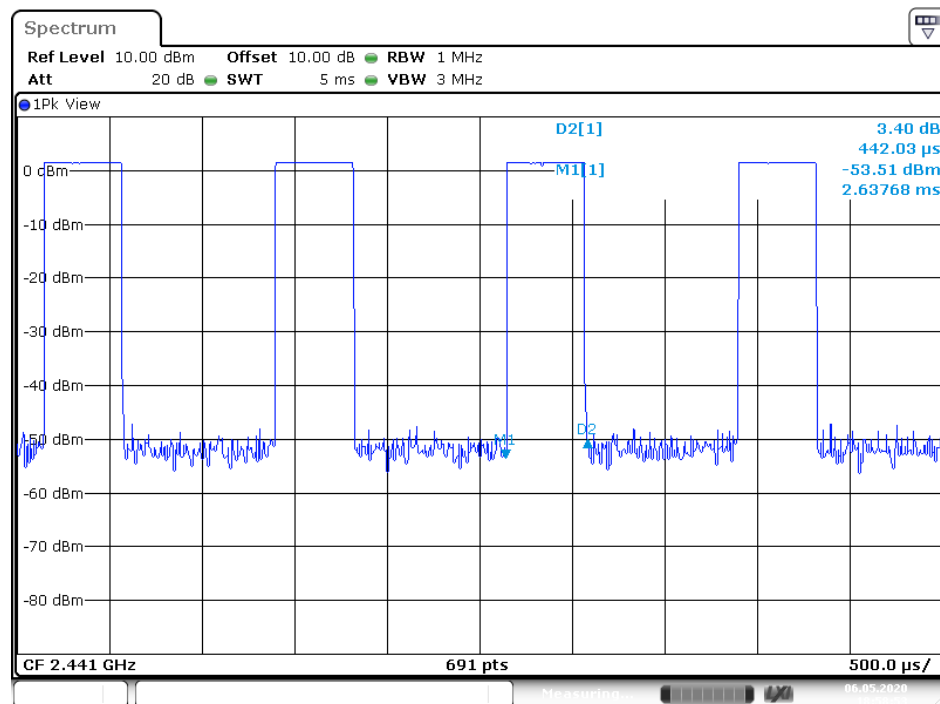
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2441	0.449	143.68	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$				
DH3	2441	1.725	276.00	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$				
DH5	2441	2.978	317.65	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$				

Note: We tested GFSK mode and Π/4-DQPSK mode the low, middle and high channel and recorded the Worse case data for all test mode.

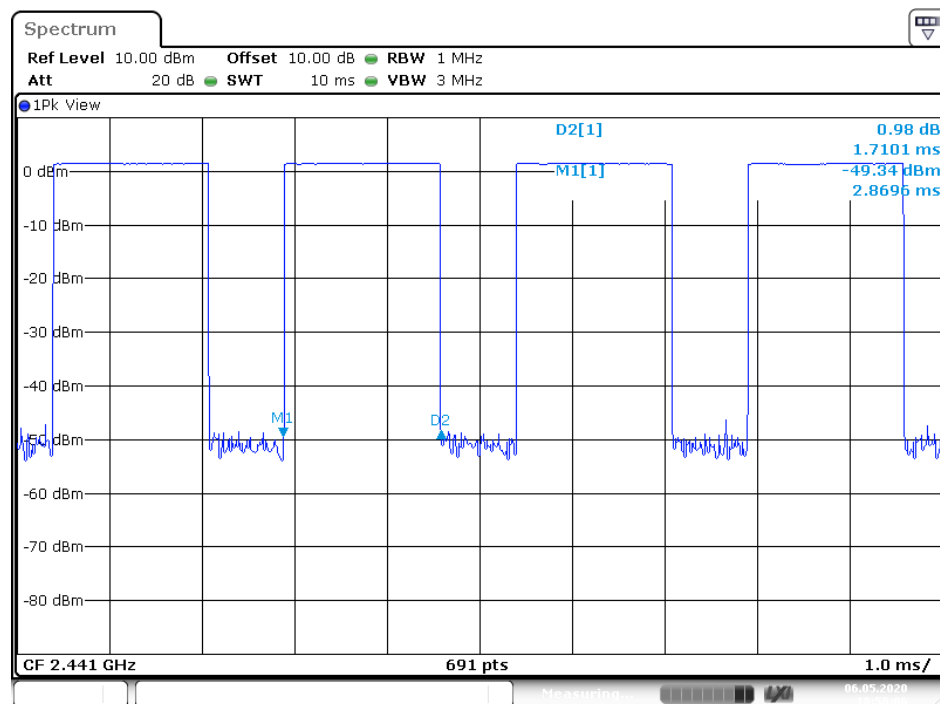
The spectrum analyzer plots are attached as below.

GFSK Mode

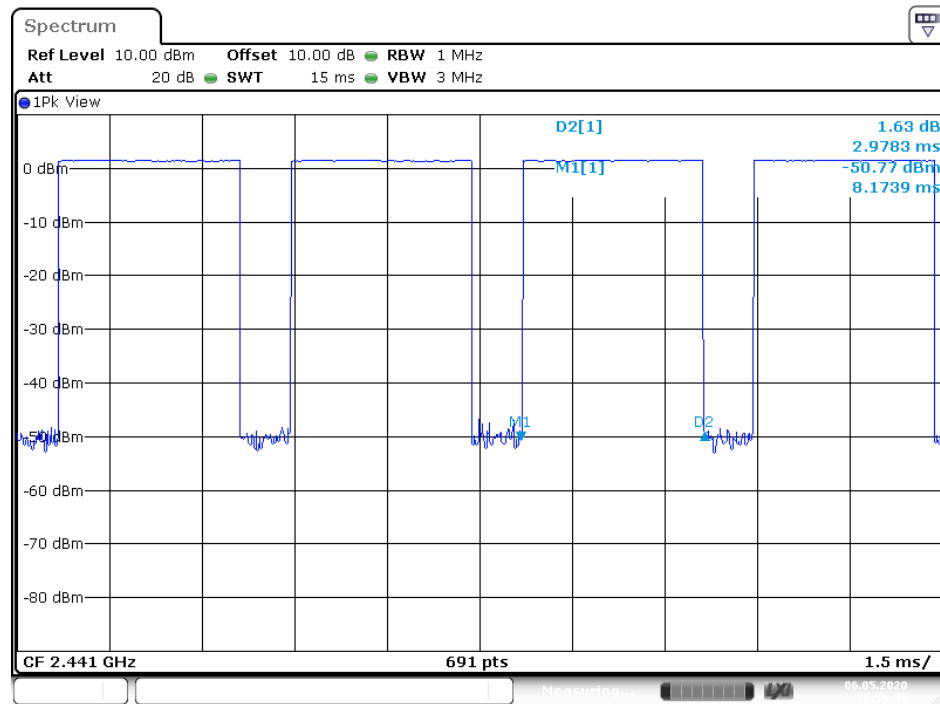
DH1 Middle channel



DH3 Middle channel



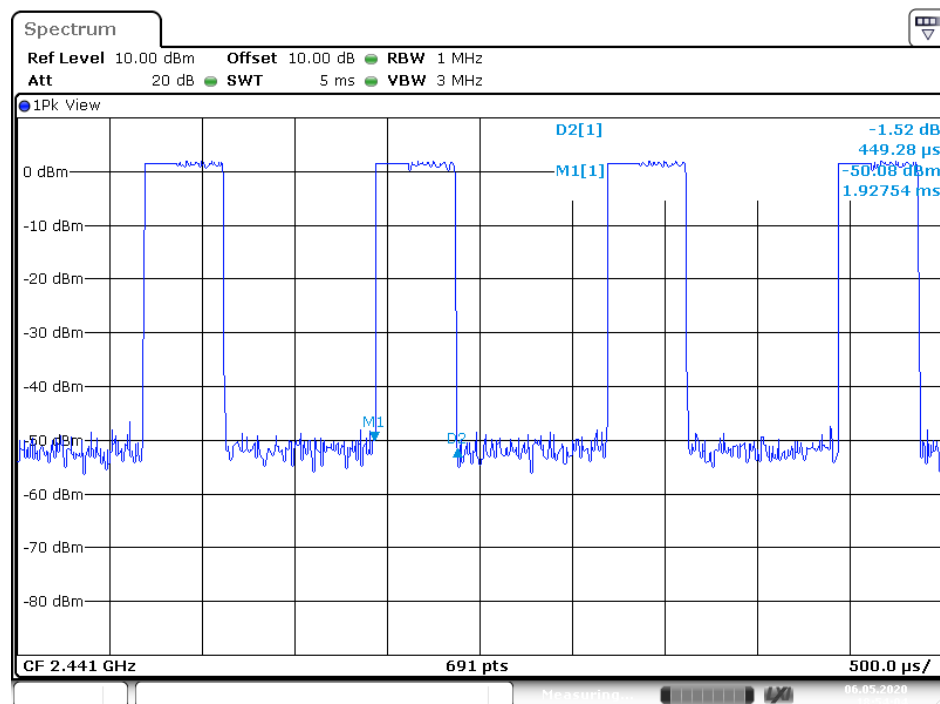
DH5 Middle channel



Date: 6.MAY.2020 18:56:50

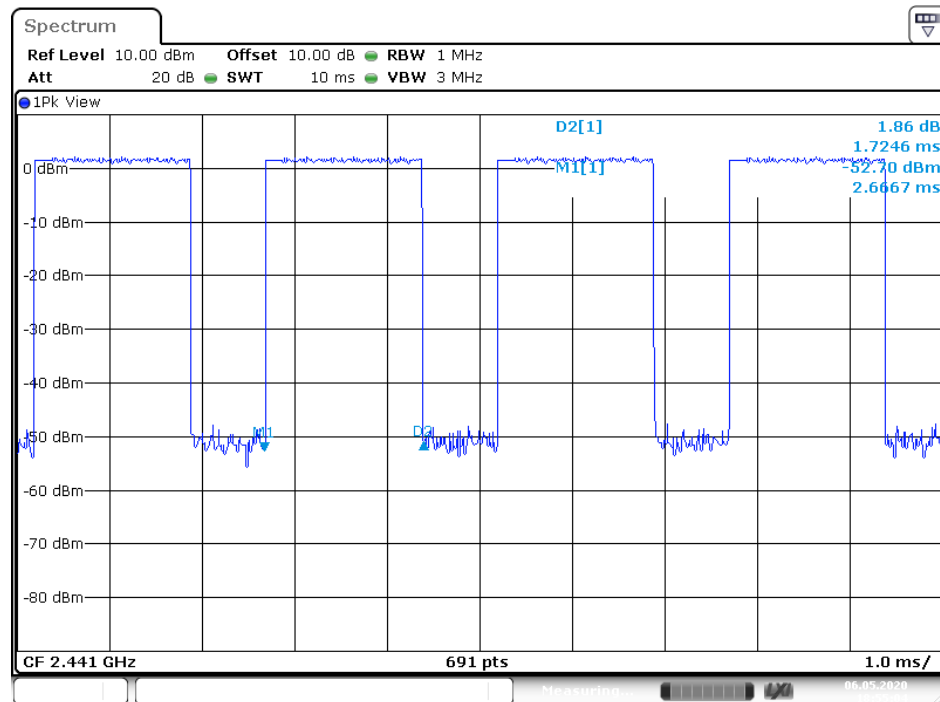
Π/4-DQPSK Mode

2DH1 Middle channel



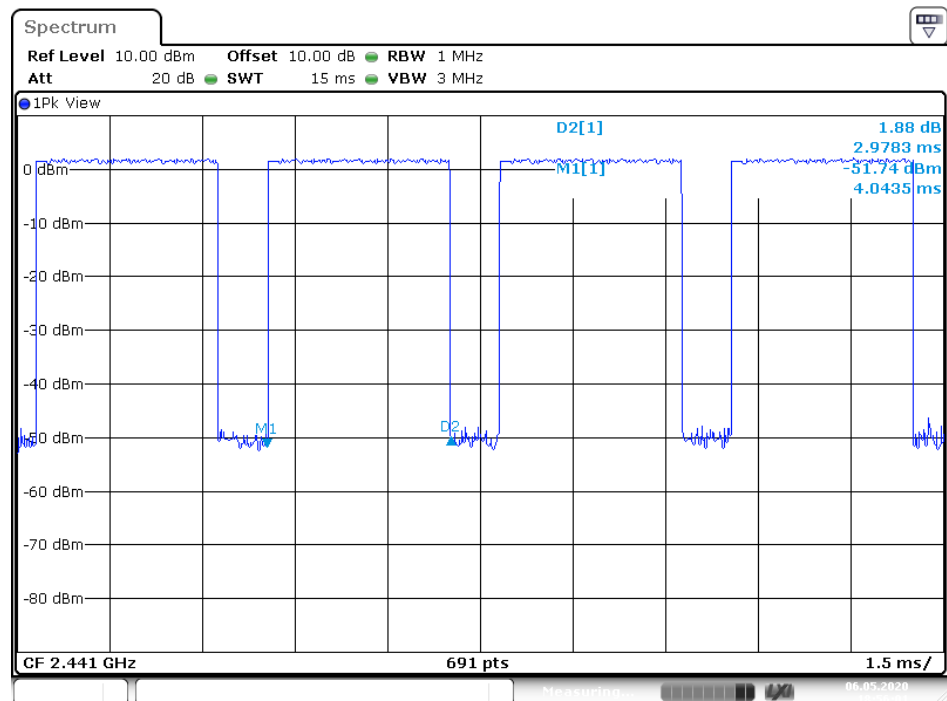
Date: 6.MAY.2020 18:54:05

2DH3 Middle channel



Date: 6.MAY.2020 18:55:04

2DH5 Middle channel



Date: 26.JUN.2019 18:36:54

9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Block Diagram of Test Setup



9.2. The Requirement For Section 15.247(b)(1)

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

9.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4. Operating Condition of EUT

9.4.1. Setup the EUT and simulator as shown as Section 9.1.

9.4.2. Turn on the power of all equipment.

9.4.3. Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

9.5. Test Procedure

9.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2. Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz & 3MHz and VBW to 10MHz.

9.5.3. Measurement the maximum peak output power.

9.6. Test Result

Test Lab: Shielding room

GFSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	1.51/0.0014	21 / 0.125
Middle	2441	1.85/0.0015	21 / 0.125
High	2480	2.08/0.0016	21 / 0.125

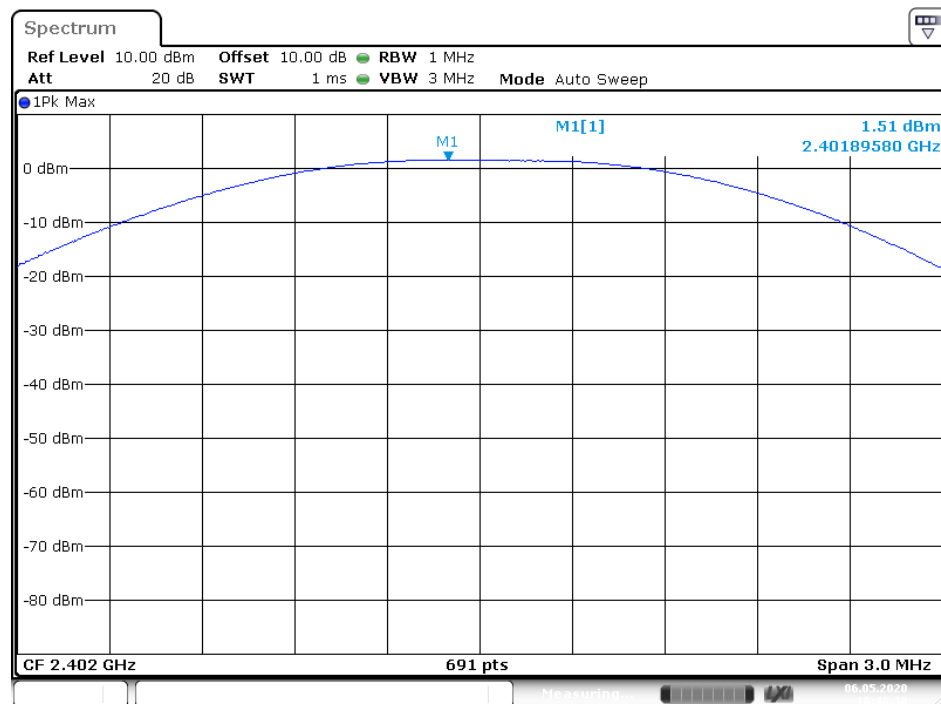
II/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	2.34/0.0017	21 / 0.125
Middle	2441	2.69/0.0019	21 / 0.125
High	2480	2.84/0.0019	21 / 0.125

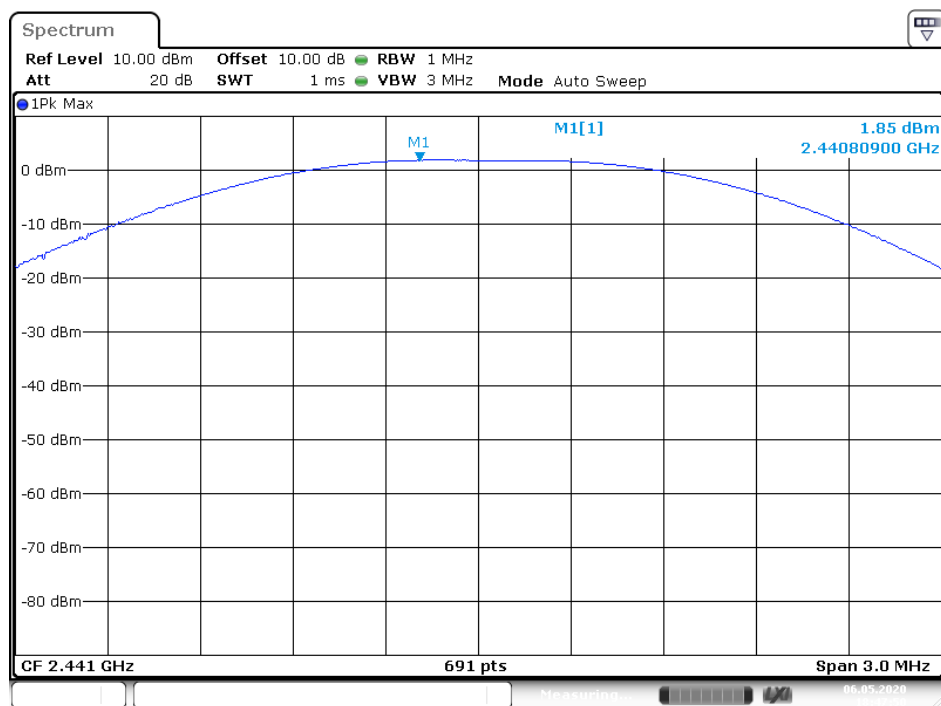
The spectrum analyzer plots are attached as below.

GFSK Mode

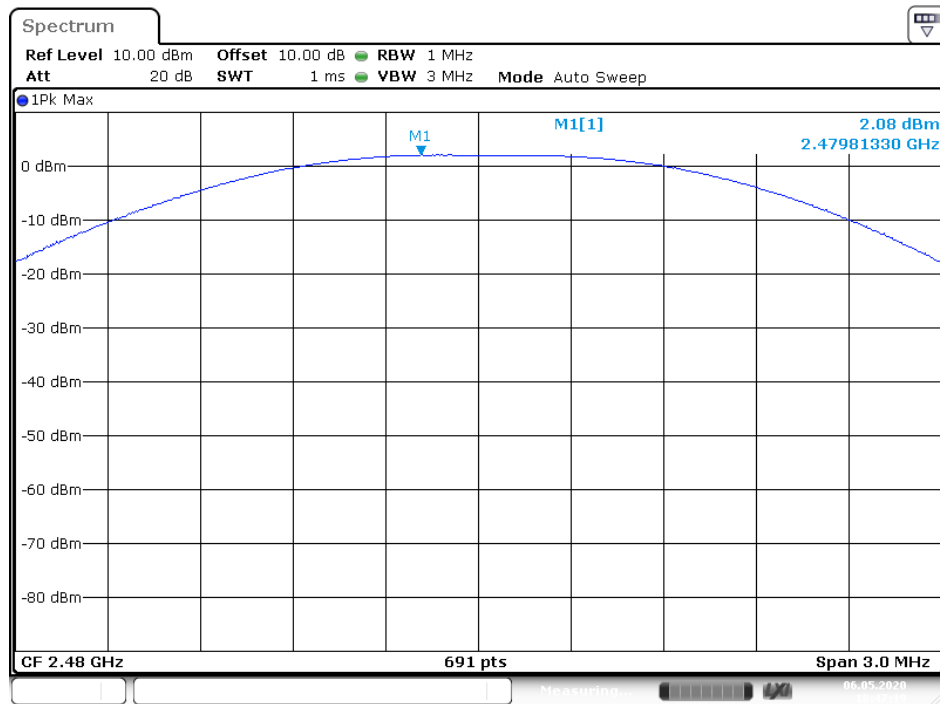
Low channel



Middle channel



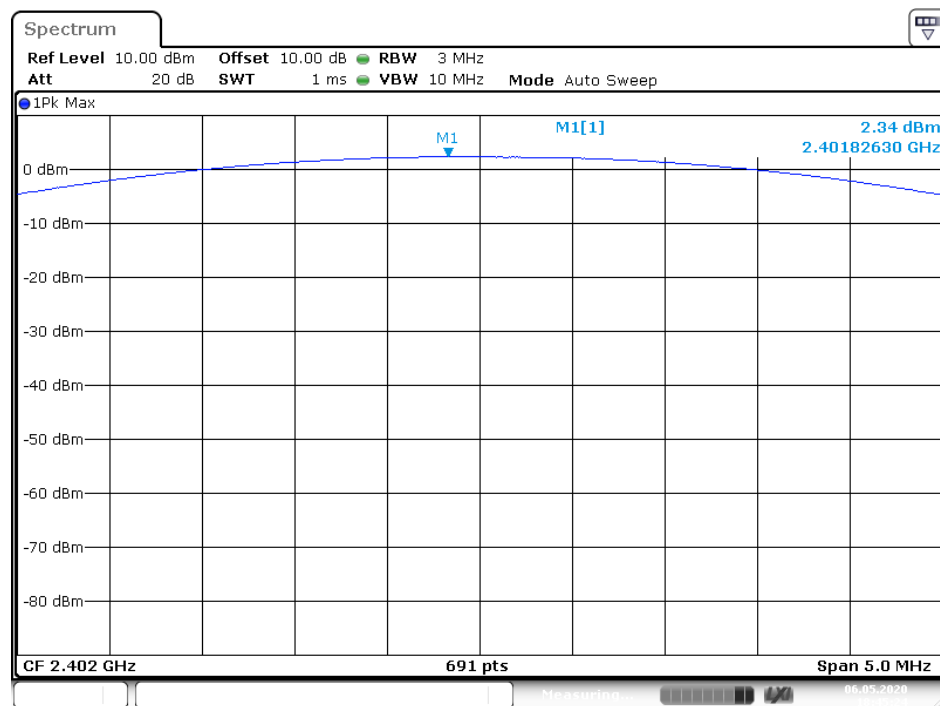
High channel



Date: 6.MAY.2020 18:47:19

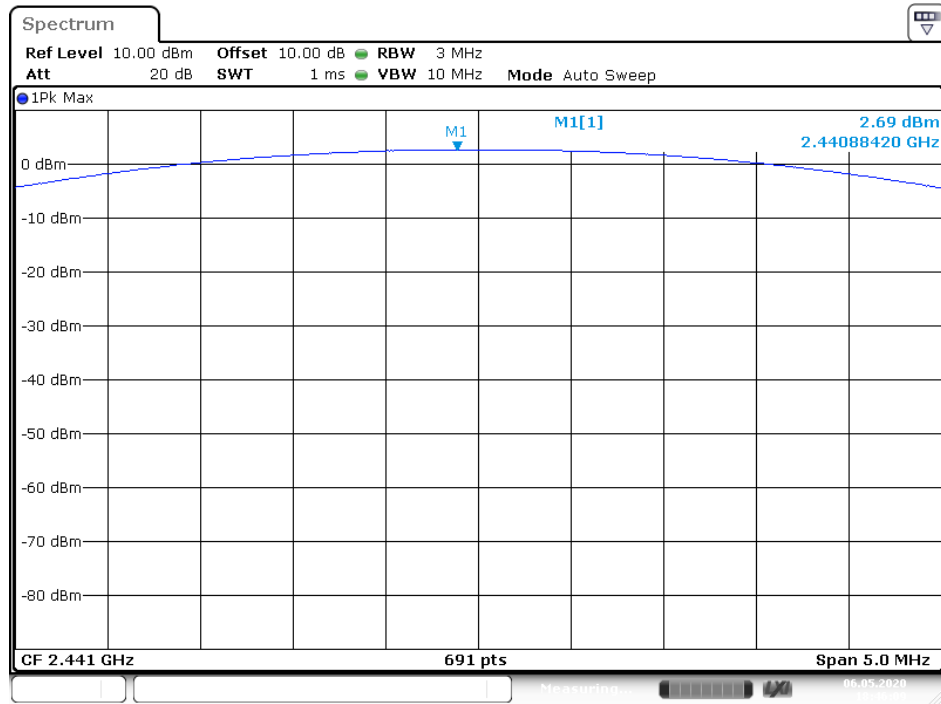
Π/4-DQPSK Mode

Low channel



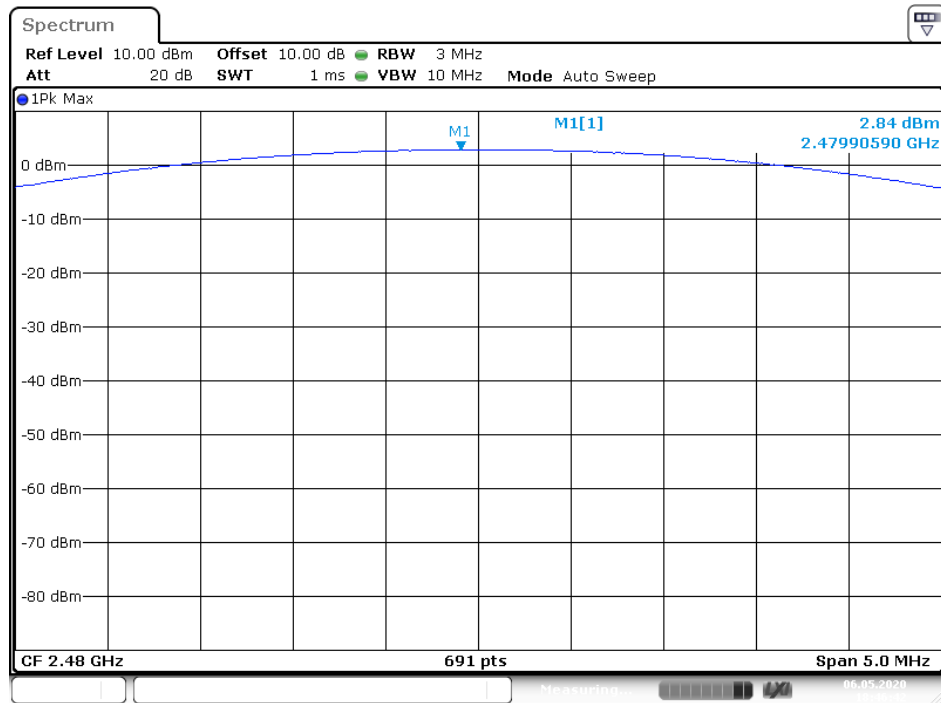
Date: 6.MAY.2020 18:45:25

Middle channel



Date: 6.MAY.2020 18:46:09

High channel

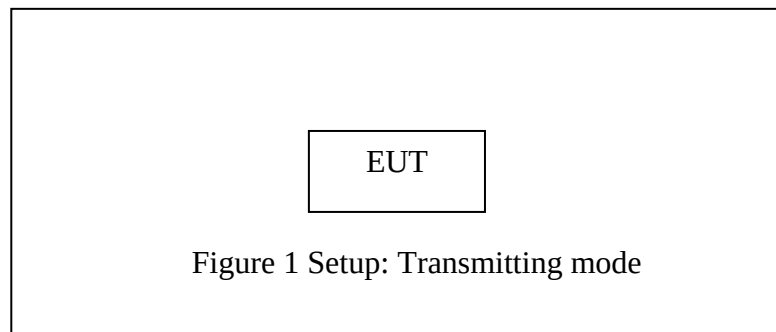


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10. RADIATED EMISSION TEST

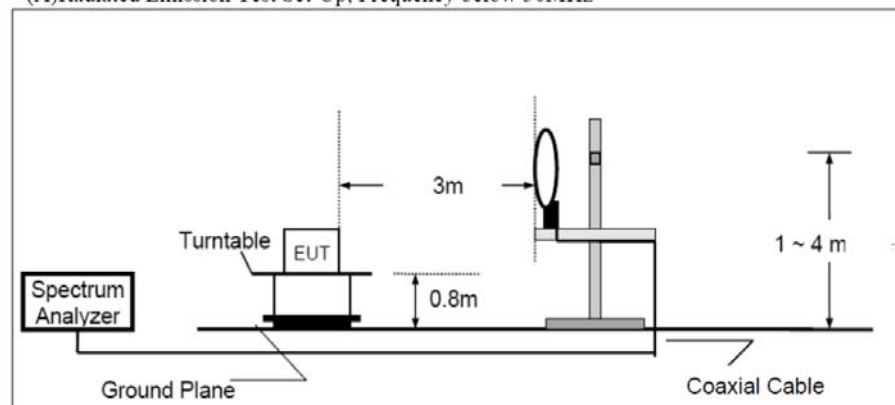
10.1. Block Diagram of Test Setup

10.1.1. Block diagram of connection between the EUT and peripherals

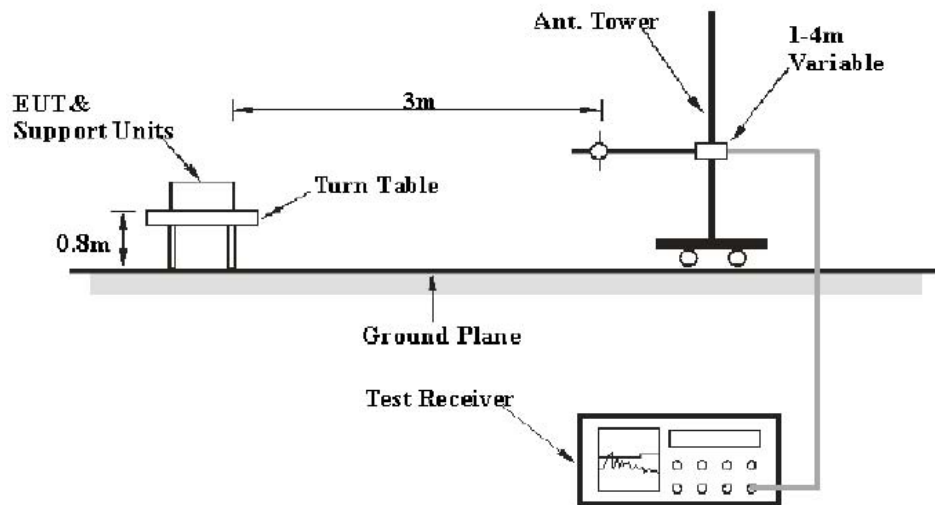


10.1.2. Semi-Anechoic Chamber Test Setup Diagram

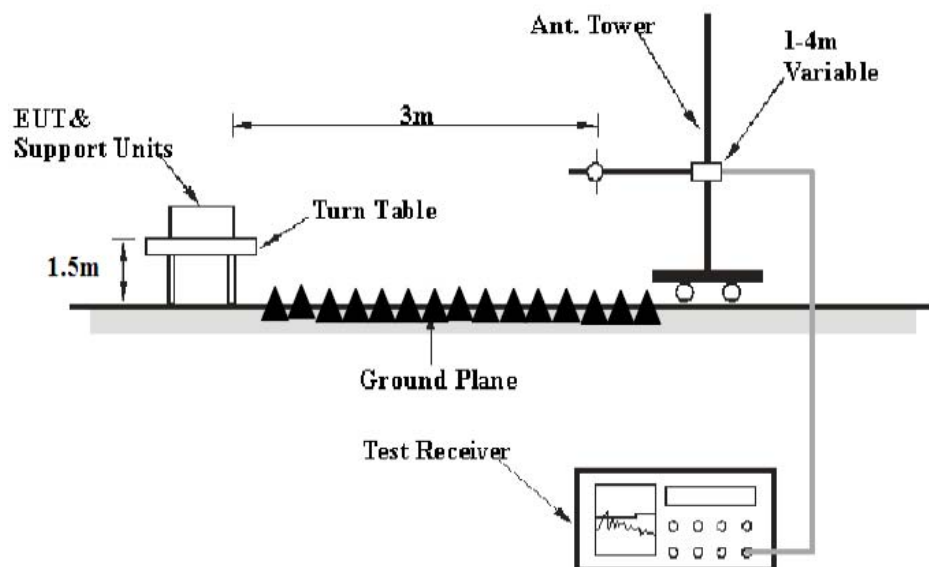
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



10.2. The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the

general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.Restricted bands of operation

10.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious 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
¹ 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	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.4.Configuration of EUT on Measurement

The equipment is installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.5. Operating Condition of EUT

10.5.1. Setup the EUT and simulator as shown as Section 10.1.

10.5.2. Turn on the power of all equipment.

10.5.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

10.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground (Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground (Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. This EUT was tested in 3 orthogonal positions and the Worst case position data was reported.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

10.7.Data Sample

Frequency (MHz)	Reading (dB μ v)	Factor (dB/m)	Result (dB μ v/m)	Limit (dB μ v/m)	Margin (dB)	Remark
X.XX	28.66	-15.19	13.47	40.0	-26.53	QP

Frequency(MHz) = Emission frequency in MHz

Reading(dB μ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain

Result(dB μ v/m) = Reading(dB μ v) + Factor(dB/m)

Limit (dB μ v/m) = Limit stated in standard

Margin (dB) = Result(dB μ v/m) - Limit (dB μ v/m)

QP = Quasi-peak Reading

Calculation Formula:

Margin(dB) = Result (dB μ V/m)–Limit(dB μ V/m)

Result(dB μ V/m)= Reading(dB μ V)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

10.8.Tetst Results

Pass.

Test Lab: 3m Anechoic chamber

Note: 1.We tested GFSK mode, $\Pi/4$ -DQPSK Mode and recorded the Worse case data (GFSK mode) for all test mode.

2. Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 3th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

The measurements greater than 20dB below the limit from 9kHz to 30MHz and 18 to 26.5GHz.

The spectrum analyzer plots are attached as below.

Below 1GHz



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Job No.: LGW2020 #238

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2402MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

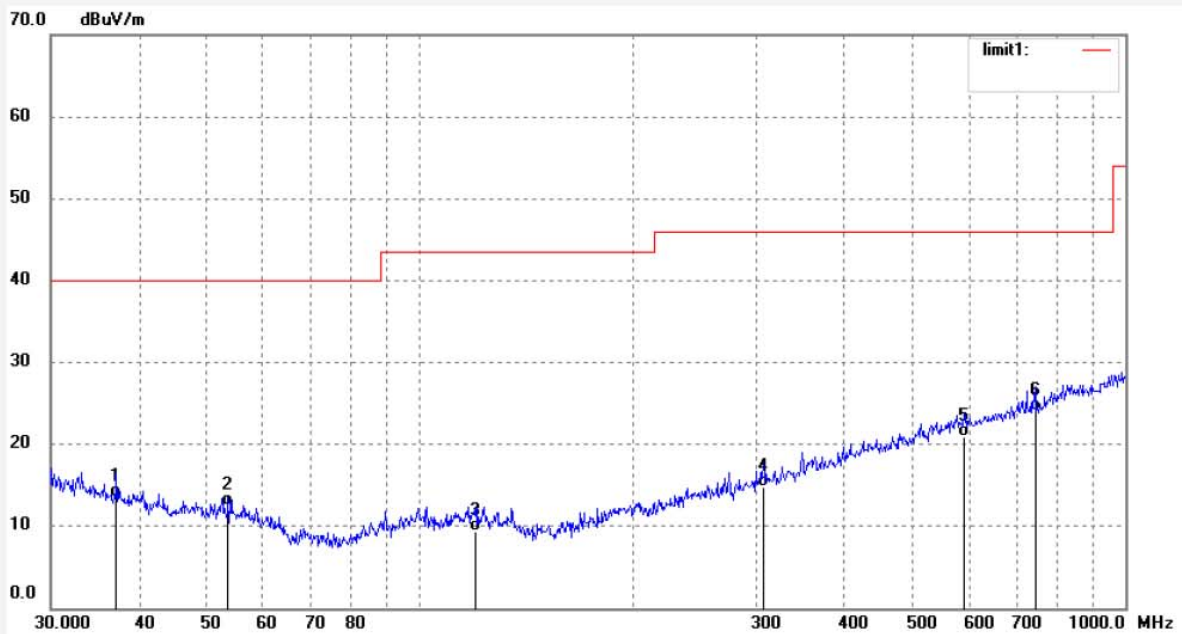
Date: 20/05/06/

Time: 9/48/42

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	37.1550	25.47	-11.90	13.57	40.00	-26.43	QP	100	147	
2	53.5052	26.41	-13.87	12.54	40.00	-27.46	QP	100	258	
3	119.8555	23.55	-14.15	9.40	43.50	-34.10	QP	100	124	
4	306.7536	24.89	-10.14	14.75	46.00	-31.25	QP	100	24	
5	590.9737	25.00	-4.05	20.95	46.00	-25.05	QP	100	236	
6	744.8660	26.12	-2.11	24.01	46.00	-21.99	QP	100	64	



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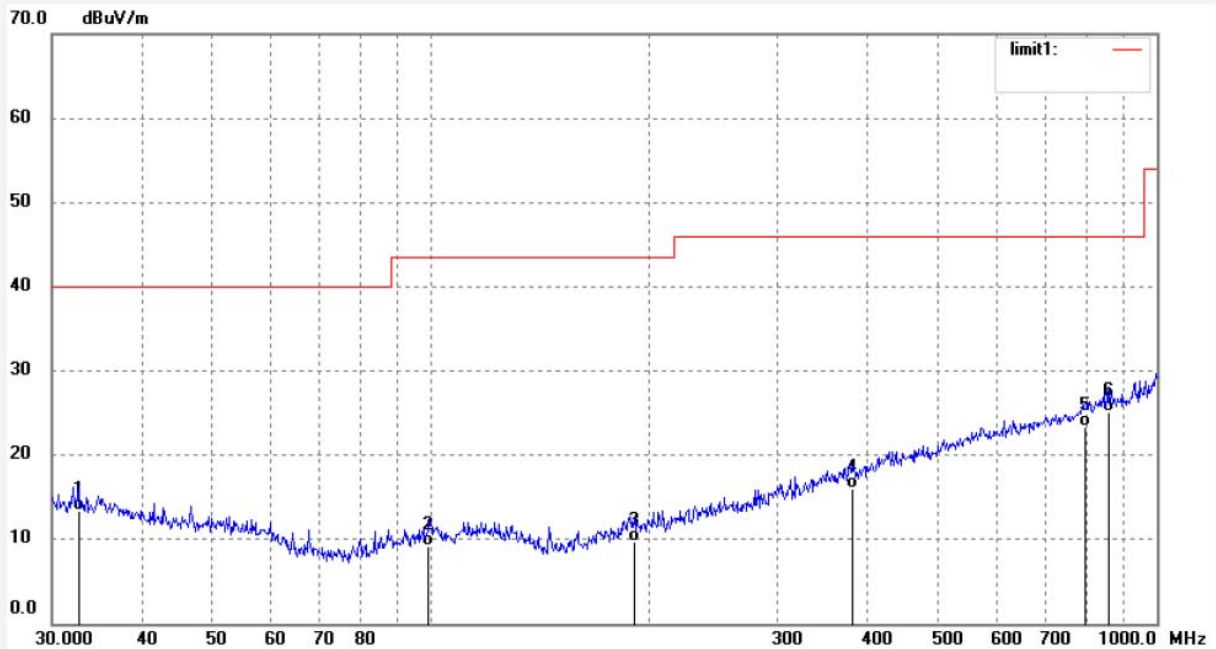
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: LGW2020 #239
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: True Wireless BT Earbuds
Mode: TX 2402MHz
Model: CB-TE008
Manufacturer: CLEVER

Polarization: Horizontal
Power Source: DC 3.7V
Date: 20/05/06/
Time: 9/50/04
Engineer Signature: WADE
Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.6340	24.52	-11.19	13.33	40.00	-26.67	QP	200	21	
2	99.1796	23.66	-14.40	9.26	43.50	-34.24	QP	200	23	
3	190.4050	23.32	-13.64	9.68	43.50	-33.82	QP	200	354	
4	381.2485	24.36	-8.32	16.04	46.00	-29.96	QP	200	68	
5	796.1829	24.44	-1.06	23.38	46.00	-22.62	QP	200	128	
6	857.0247	25.25	-0.20	25.05	46.00	-20.95	QP	200	139	



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Job No.: LGW2020 #240

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2441MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Horizontal

Power Source: DC 3.7V

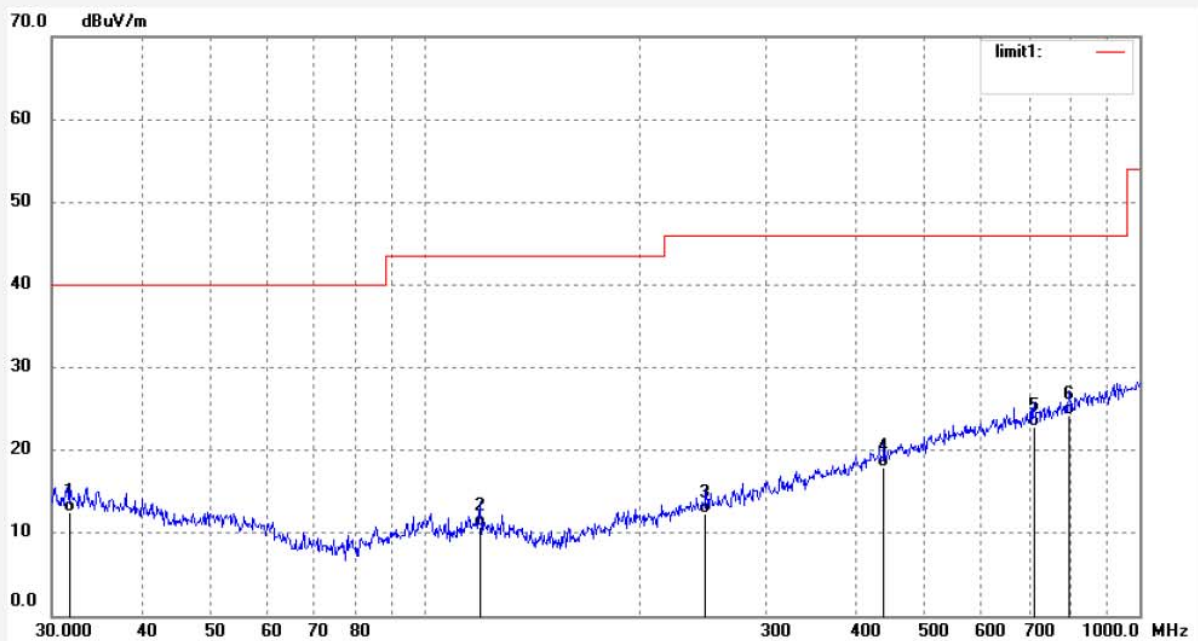
Date: 20/05/06/

Time: 9/51/13

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.8427	23.69	-11.10	12.59	40.00	-27.41	QP	100	35	
2	119.4360	24.86	-14.15	10.71	43.50	-32.79	QP	100	235	
3	246.8148	24.08	-11.80	12.28	46.00	-33.72	QP	100	68	
4	438.6553	24.91	-6.92	17.99	46.00	-28.01	QP	100	39	
5	711.6734	25.48	-2.59	22.89	46.00	-23.11	QP	100	123	
6	796.1829	25.22	-1.06	24.16	46.00	-21.84	QP	100	56	



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Job No.: LGW2020 #241

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2441MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

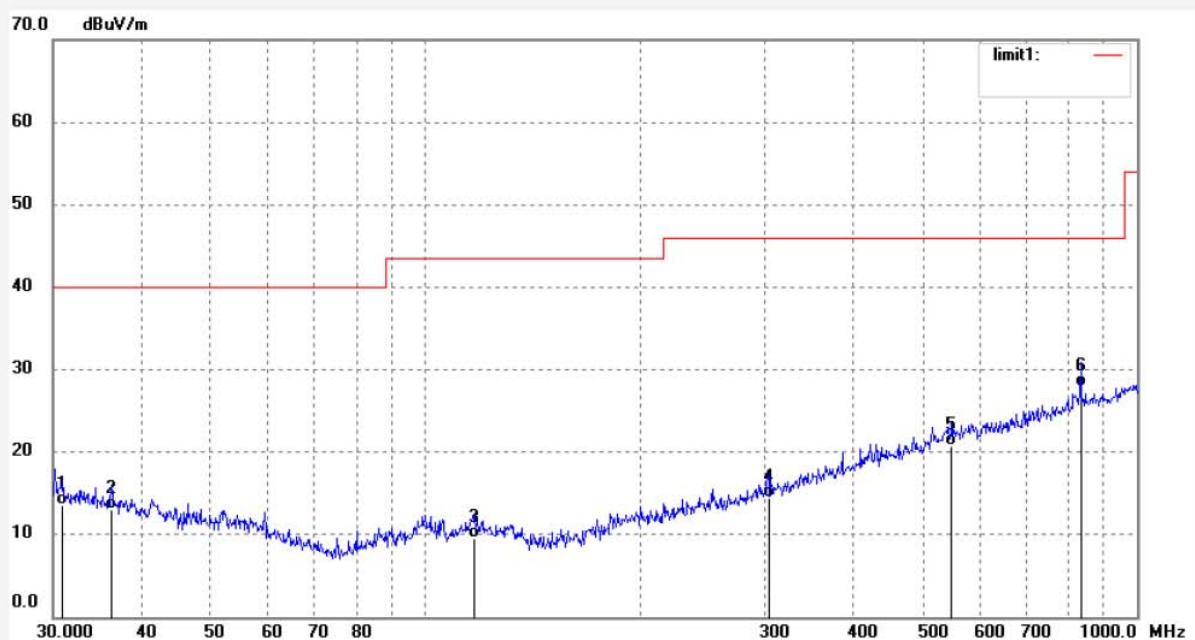
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Time: 9/52/33

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	30.9618	23.74	-10.21	13.53	40.00	-26.47	QP	100	39	
2	36.2541	24.78	-11.71	13.07	40.00	-26.93	QP	100	24	
3	116.9495	23.66	-14.15	9.51	43.50	-33.99	QP	100	254	
4	303.5437	24.69	-10.24	14.45	46.00	-31.55	QP	100	245	
5	549.0193	25.43	-4.65	20.78	46.00	-25.22	QP	100	235	
6	833.3170	28.26	-0.41	27.85	46.00	-18.15	QP	100	354	



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Job No.: LGW2020 #242

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2480MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

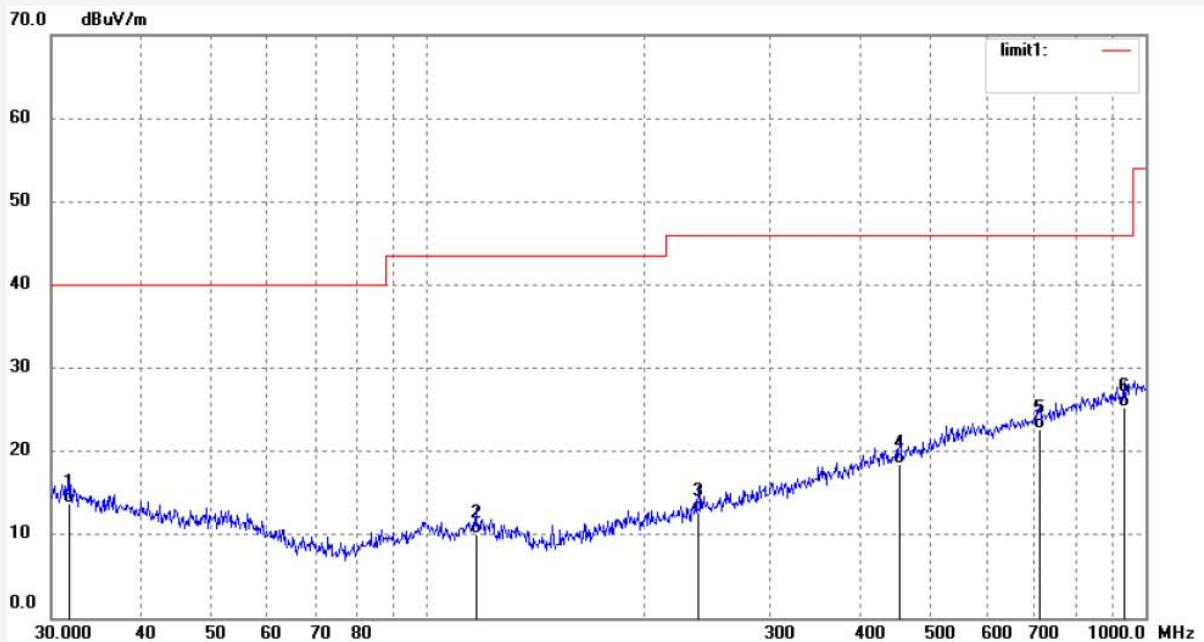
Date: 20/05/06/

Time: 9/53/52

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.8427	24.18	-10.47	13.71	40.00	-26.29	QP	200	38	
2	116.9495	24.30	-14.15	10.15	43.50	-33.35	QP	200	234	
3	238.3102	24.68	-11.91	12.77	46.00	-33.23	QP	200	265	
4	454.3100	25.23	-6.72	18.51	46.00	-27.49	QP	200	34	
5	711.6734	25.21	-2.59	22.62	46.00	-23.38	QP	200	247	
6	932.2714	24.51	0.85	25.36	46.00	-20.64	QP	200	79	



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Job No.: LGW2020 #243

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2480MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Horizontal

Power Source: DC 3.7V

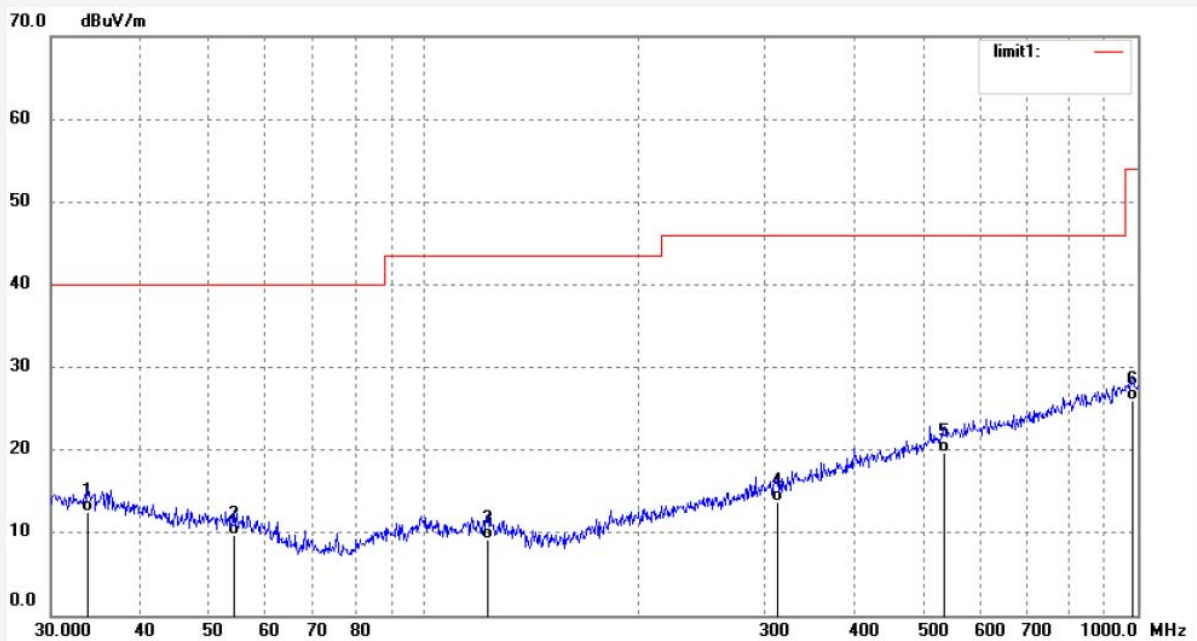
Date: 20/05/06/

Time: 9/55/00

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.7986	23.78	-11.30	12.48	40.00	-27.52	QP	100	224	
2	54.0711	23.61	-13.91	9.70	40.00	-30.30	QP	100	242	
3	122.8340	23.67	-14.47	9.20	43.50	-34.30	QP	100	356	
4	313.2760	23.72	-9.93	13.79	46.00	-32.21	QP	100	98	
5	535.7073	24.69	-4.92	19.77	46.00	-26.23	QP	100	75	
6	982.6200	24.30	1.63	25.93	54.00	-28.07	QP	100	52	

Above 1GHz



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Job No.: LGW2020 #220

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2402MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Horizontal

Power Source: DC 3.7V

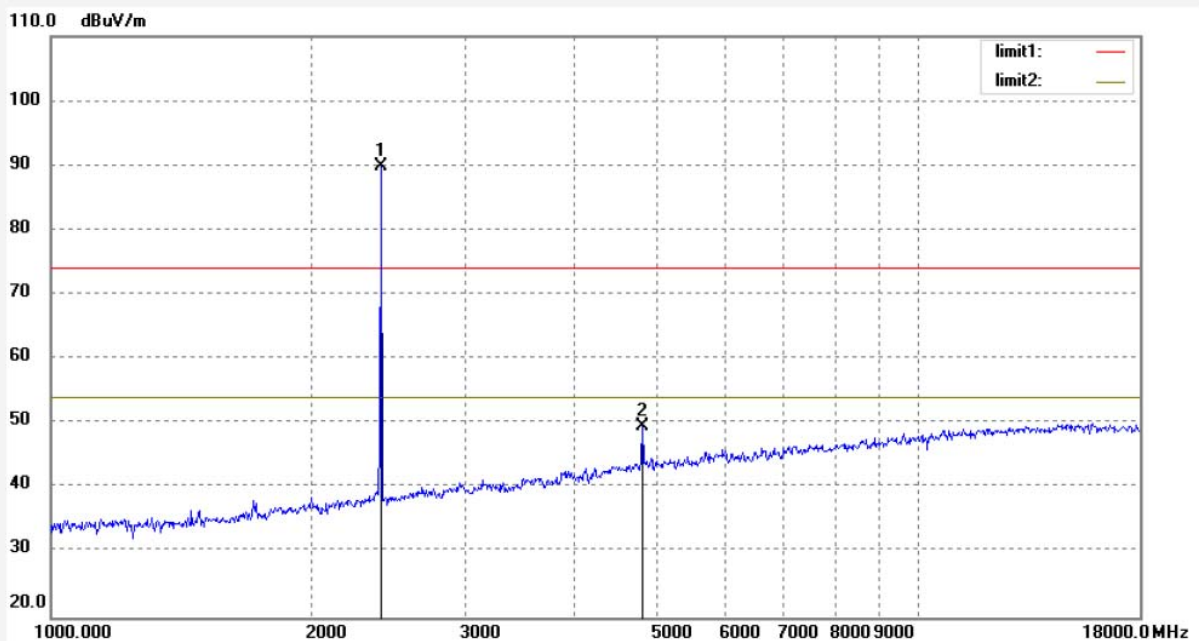
Date: 20/05/06/

Time: 9/13/11

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	88.97	0.89	89.86			peak	150	351	
2	4804.000	42.12	7.40	49.52	74.00	-24.48	peak	150	241	



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Job No.: LGW2020 #221

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2402MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

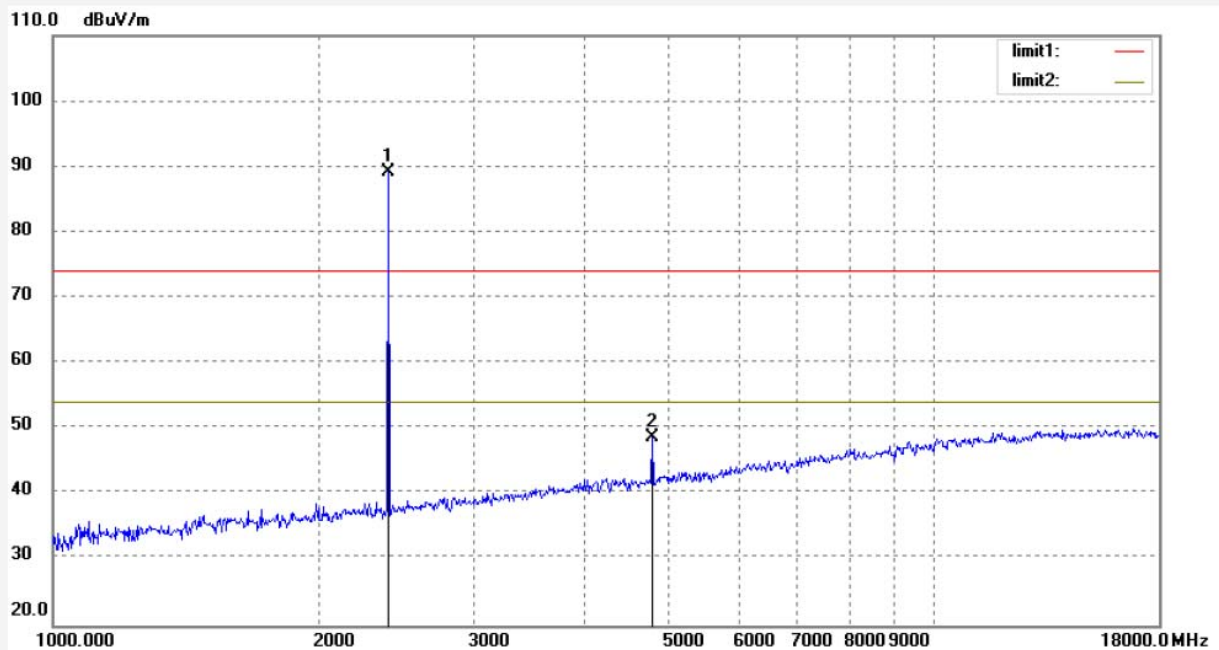
Date: 20/05/06/

Time: 9/14/23

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	88.22	0.89	89.11			peak	200	347	
2	4804.000	41.39	7.40	48.79	74.00	-25.21	peak	200	24	



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Fax:+86-0755-26503396

Job No.: LGW2020 #222

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2441MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

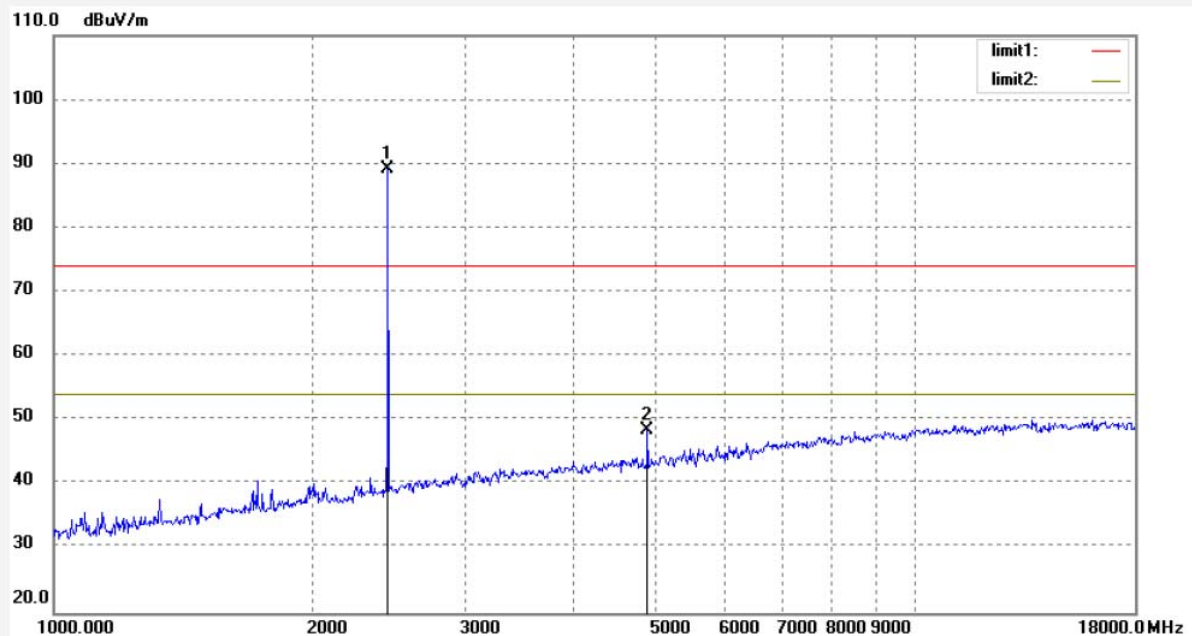
Date: 20/05/06/

Time: 9/16/53

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	88.06	1.06	89.12			peak	150	12	
2	4882.000	40.25	8.11	48.36	74.00	-25.64	peak	150	234	



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Job No.: LGW2020 #223

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2441MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Horizontal

Power Source: DC 3.7V

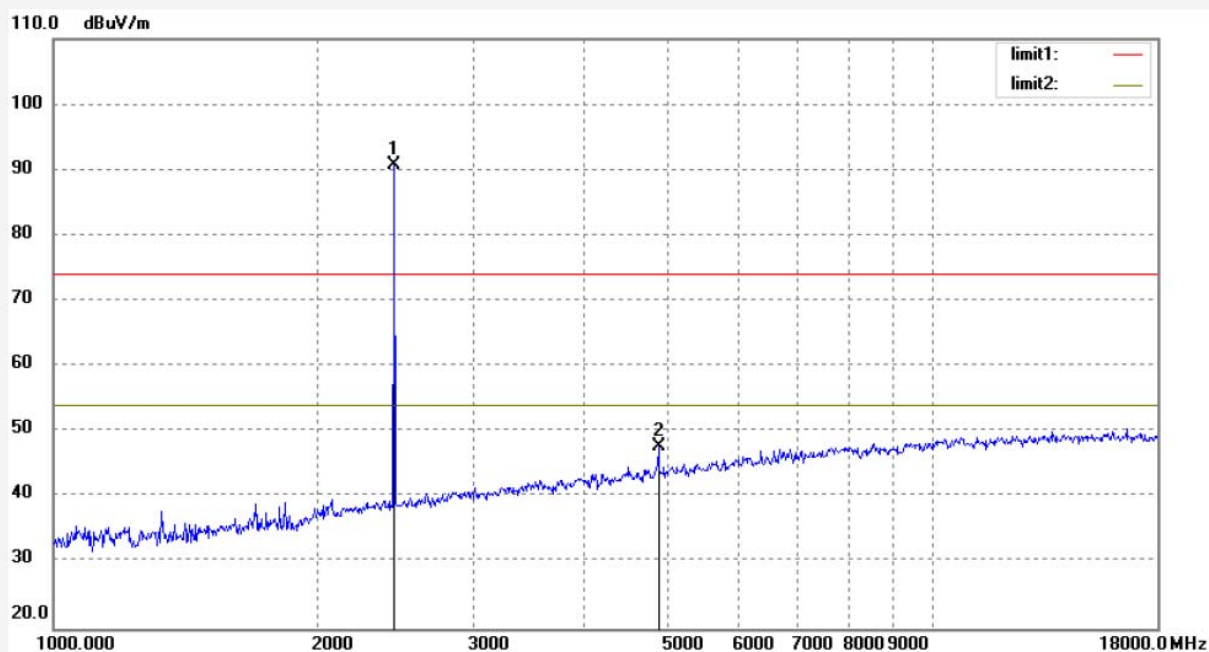
Date: 20/05/06/

Time: 9/18/00

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	89.81	1.06	90.87			peak	250	231	
2	4882.000	39.59	8.11	47.70	74.00	-26.30	peak	250	241	



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Job No.: LGW2020 #224

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2480MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Horizontal

Power Source: DC 3.7V

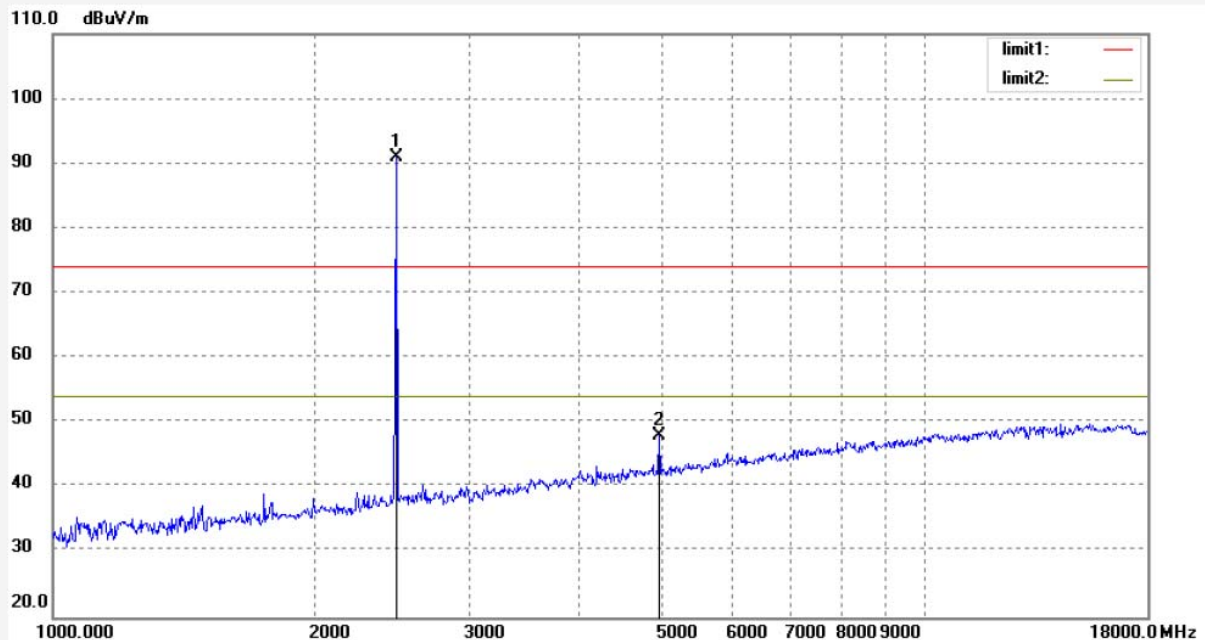
Date: 20/05/06/

Time: 9/19/44

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	89.96	1.10	91.06			peak	250	124	
2	4960.000	39.48	8.60	48.08	74.00	-25.92	peak	250	341	



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Job No.: LGW2020 #225

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2480MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

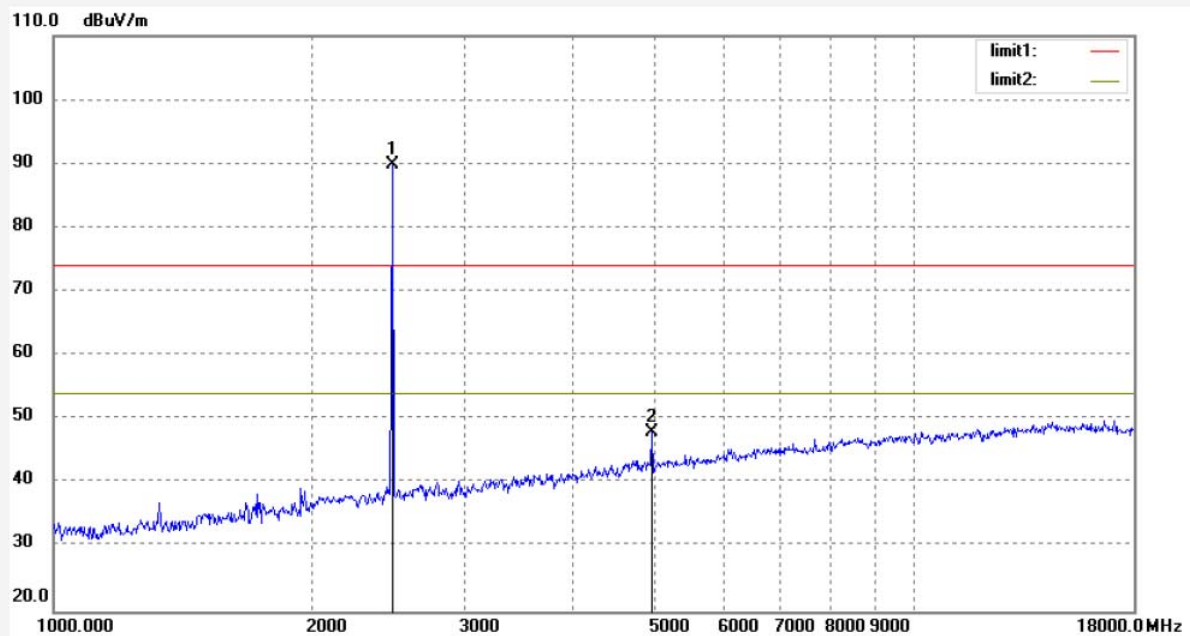
Date: 20/05/06/

Time: 9/20/55

Engineer Signature: WADE

Distance: 3m

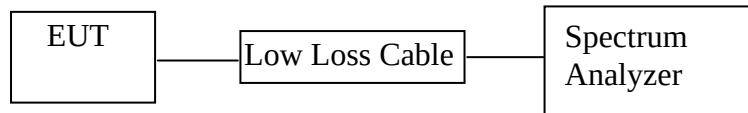
Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	88.87	1.10	89.97			peak	200	31	
2	4960.000	39.50	8.60	48.10	74.00	-25.90	peak	200	214	

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



11.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

11.5. Test Procedure

11.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

11.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3. The band edges was measured and recorded.

11.6. Test Result

Test Lab: Shielding room

Note: Both hopping-on mode and hopping-off mode had been pre-tested, and only the Worse case was recorded in the test report.

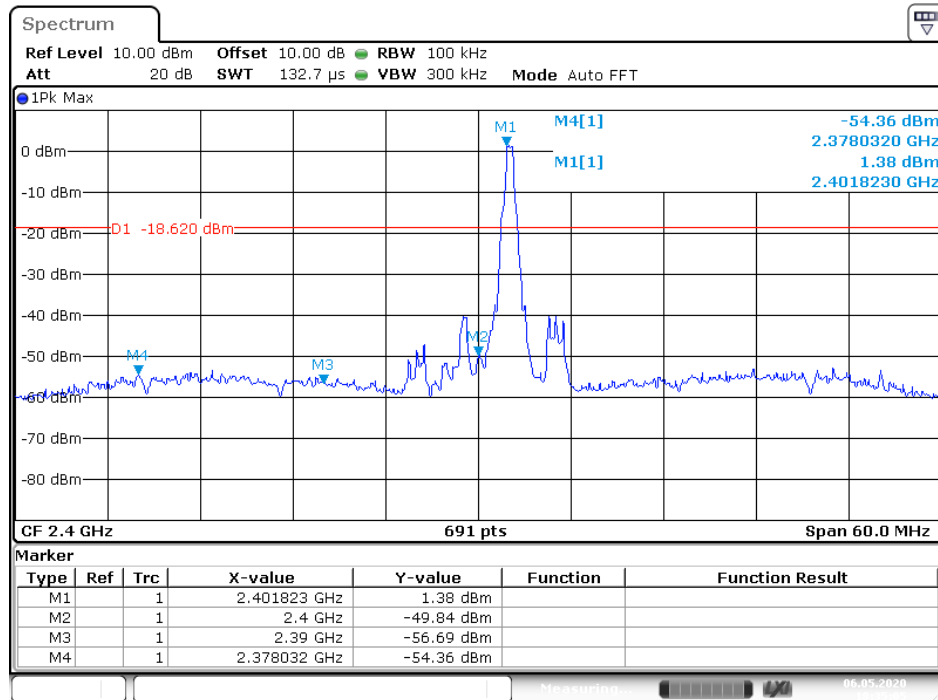
Conducted Band Edge Result

Non-hopping mode

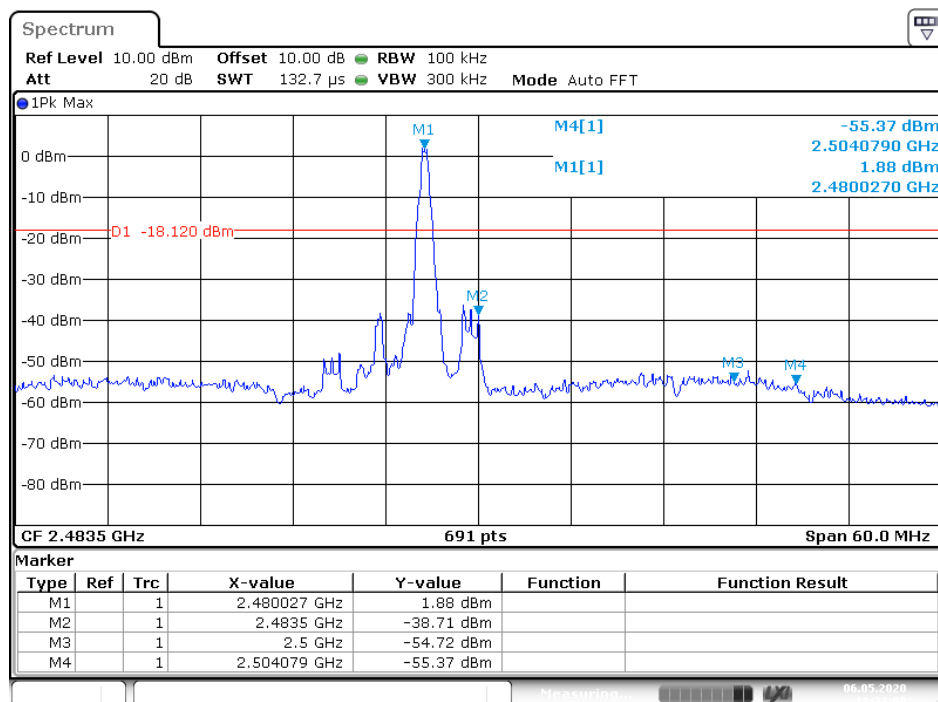
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)	Result
GFSK Mode			
2400.00	51.22	> 20dBc	Pass
2483.50	40.59	> 20dBc	Pass
Π/4-DQPSK Mode			
2400.00	52.46	> 20dBc	Pass
2483.50	43.42	> 20dBc	Pass

The spectrum analyzer plots are attached as below.

GFSK Mode

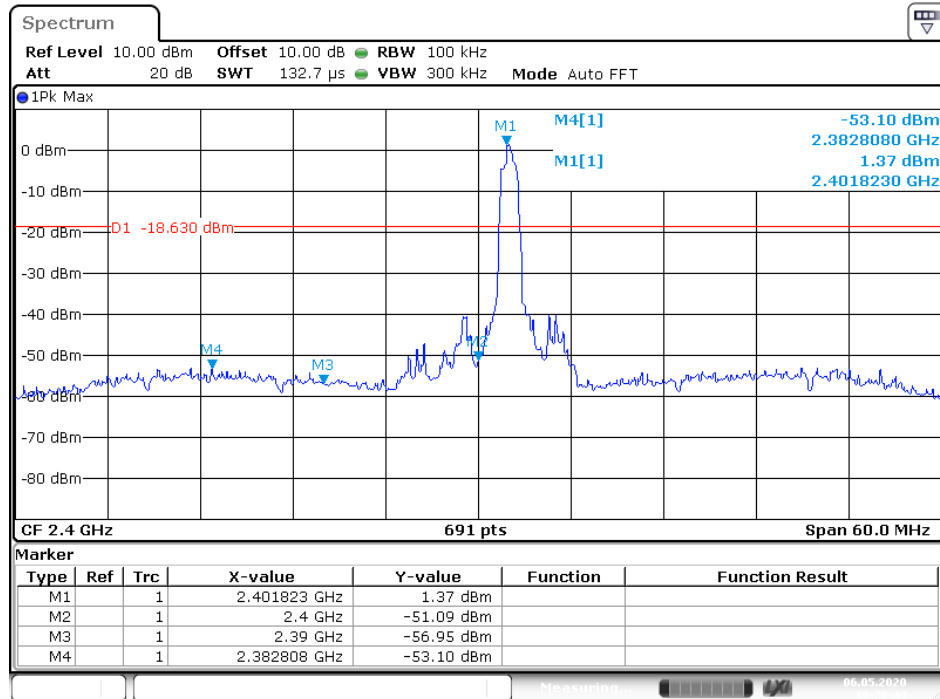


Date: 6.MAY.2020 18:35:05

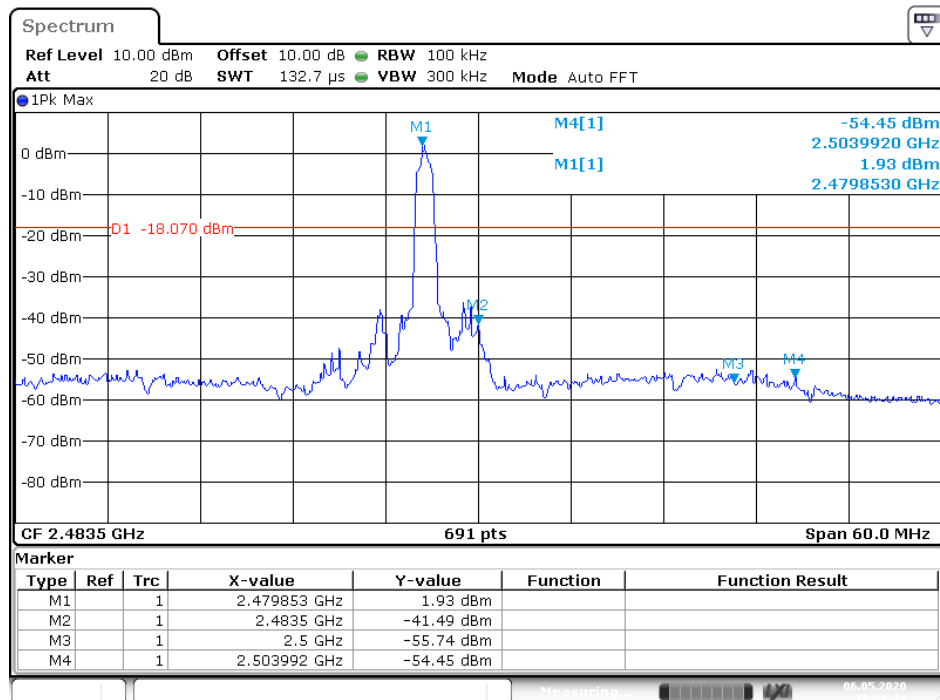


Date: 6.MAY.2020 18:33:10

Π/4-DQPSK Mode



Date: 6.MAY.2020 18:28:44



Date: 6.MAY.2020 18:31:14

Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX (Hopping off, Hopping on) modes measure it.
We select 2402MHz, 2480MHz TX frequency to transmit(Hopping off mode).
We select 2402-2480MHz TX frequency to transmit(Hopping on mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:

- 1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
- 2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- 3.All modes of operation were investigated and the worse case (GFSK Mode) emissions are reported.

Test Lab: 3m Anechoic chamber

The spectrum analyzer plots are attached as below.

Non-hopping mode



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Job No.: LGW2020 #226

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2402MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

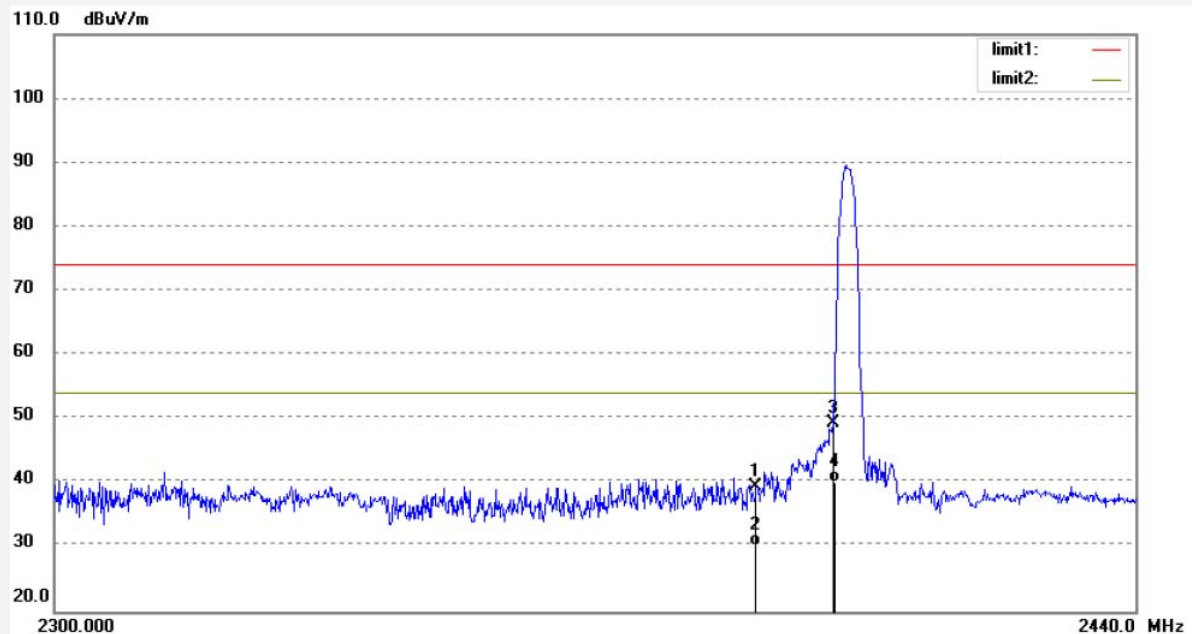
Date: 20/05/06/

Time: 9/22/54

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	38.59	0.79	39.38	74.00	-34.62	peak	200	234	
2	2390.000	29.45	0.79	30.24	54.00	-23.76	AVG	200	34	
3	2400.000	48.50	0.88	49.38	74.00	-24.62	peak	200	254	
4	2400.000	39.36	0.88	40.24	54.00	-13.76	AVG	200	124	

Note: Average measurement with peak detection at No.2&4



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Job No.: LGW2020 #227

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2402MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Horizontal

Power Source: DC 3.7V

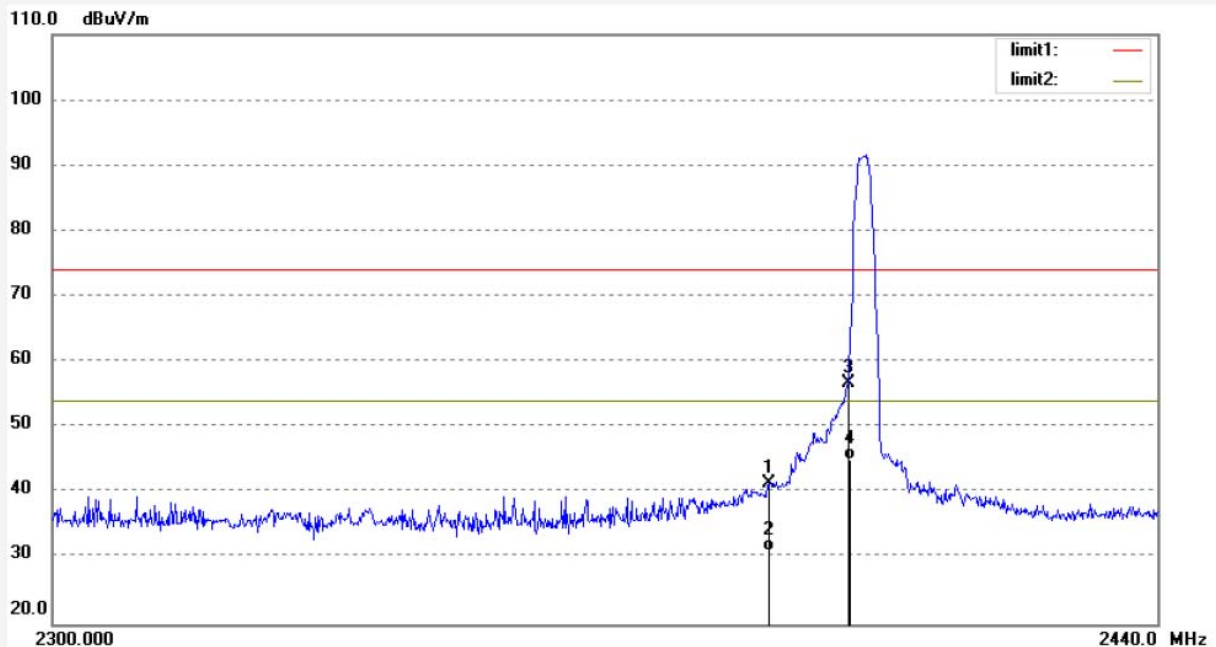
Date: 20/05/06/

Time: 9/24/07

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	40.67	0.79	41.46	74.00	-32.54	peak	150	241	
2	2390.000	30.42	0.79	31.21	54.00	-22.79	AVG	150	123	
3	2400.000	55.81	0.88	56.69	74.00	-17.31	peak	150	147	
4	2400.000	44.13	0.88	45.01	54.00	-8.99	AVG	150	258	

Note: Average measurement with peak detection at No.2&4



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Job No.: LGW2020 #234

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2480MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

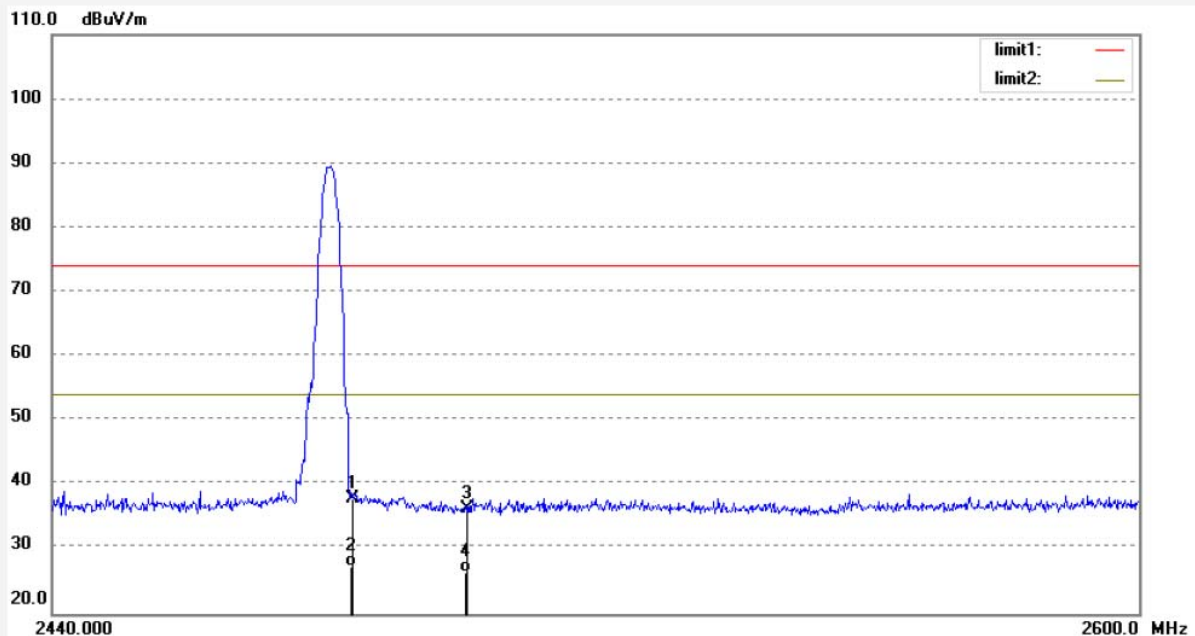
Date: 20/05/06/

Time: 9/35/42

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	36.89	1.10	37.99	74.00	-36.01	peak	200	12	
2	2483.500	26.21	1.10	27.31	54.00	-26.69	AVG	200	352	
3	2500.000	35.22	1.10	36.32	74.00	-37.68	peak	200	241	
4	2500.000	25.24	1.10	26.34	54.00	-27.66	AVG	200	123	

Note: Average measurement with peak detection at No.2&4



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Job No.: LGW2020 #235

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: TX 2480MHz

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Horizontal

Power Source: DC 3.7V

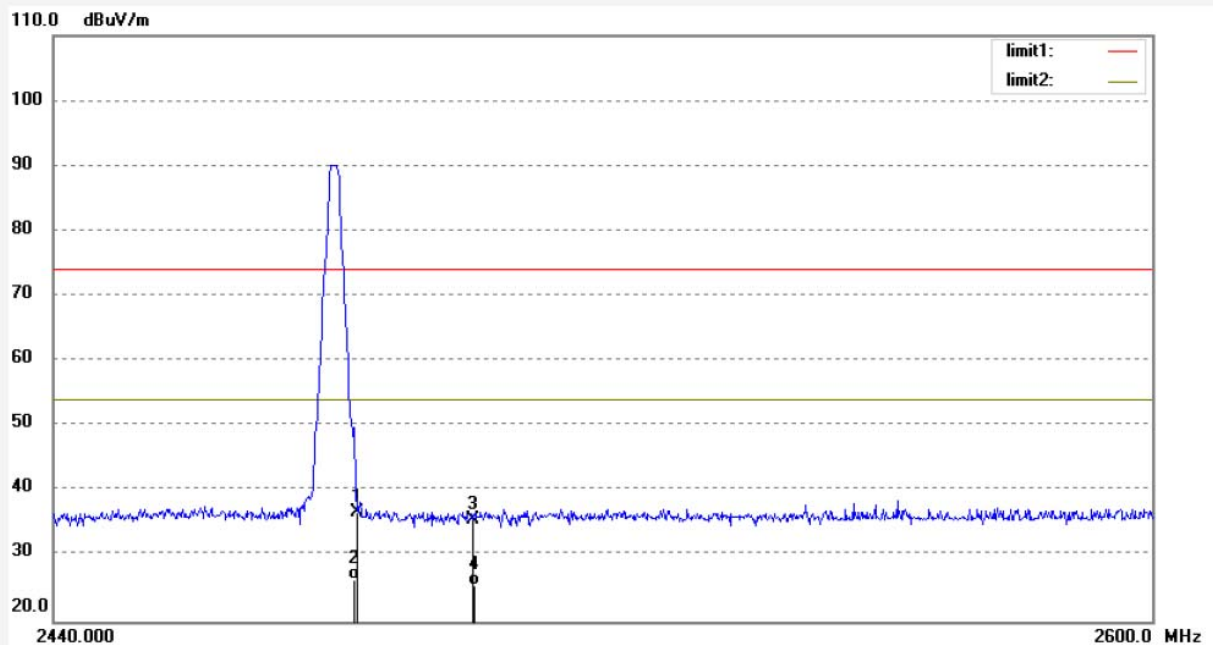
Date: 20/05/06/

Time: 9/36/28

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	35.65	1.10	36.75	74.00	-37.25	peak	250	35	
2	2483.500	25.21	1.10	26.31	54.00	-27.69	AVG	250	235	
3	2500.000	34.56	1.10	35.66	74.00	-38.34	peak	250	125	
4	2500.000	24.31	1.10	25.41	54.00	-28.59	AVG	250	123	

Note: Average measurement with peak detection at No.2&4

Hopping mode



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Job No.: LGW2020 #236

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: Hopping

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Horizontal

Power Source: DC 3.7V

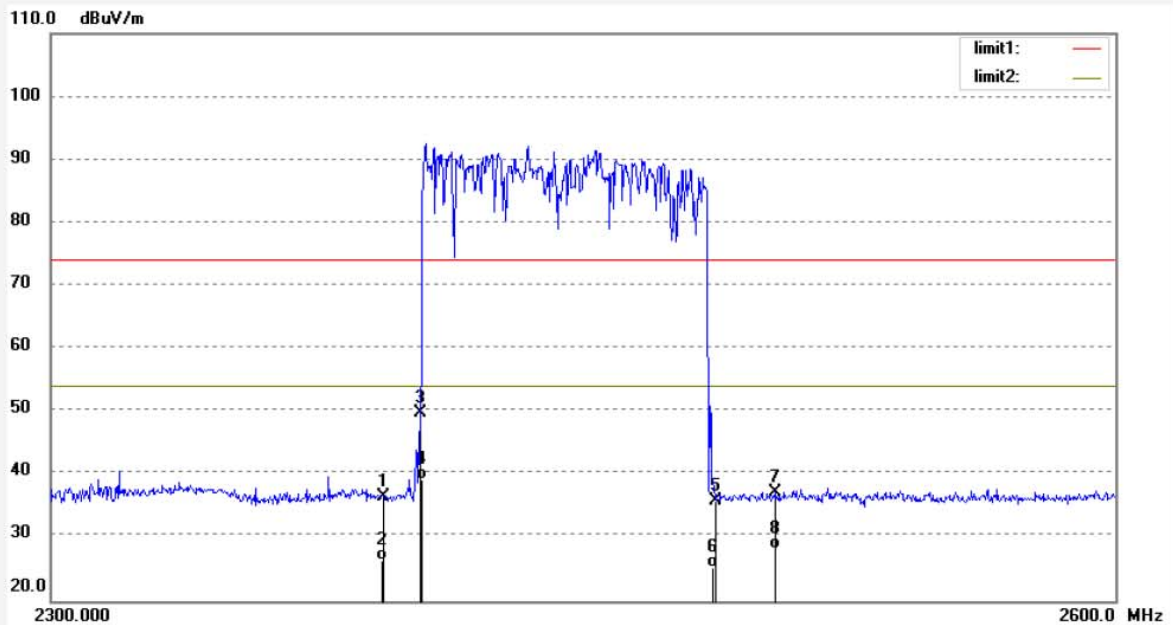
Date: 20/05/06/

Time: 9/39/18

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	35.86	0.79	36.65	74.00	-37.35	peak	200	121	
2	2390.000	25.53	0.79	26.32	54.00	-27.68	AVG	200	65	
3	2400.000	48.91	0.88	49.79	74.00	-24.21	peak	200	248	
4	2400.000	38.36	0.88	39.24	54.00	-14.76	AVG	200	233	
5	2483.500	34.77	1.10	35.87	74.00	-38.13	peak	200	334	
6	2483.500	24.24	1.10	25.34	54.00	-28.66	AVG	200	235	
7	2500.000	36.09	1.10	37.19	74.00	-36.81	peak	200	24	
8	2500.000	27.14	1.10	28.24	54.00	-25.76	AVG	200	231	

Note: Average measurement with peak detection at No.2&4&6&8



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Job No.: LGW2020 #237

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: True Wireless BT Earbuds

Mode: Hopping

Model: CB-TE008

Manufacturer: CLEVER

Polarization: Vertical

Power Source: DC 3.7V

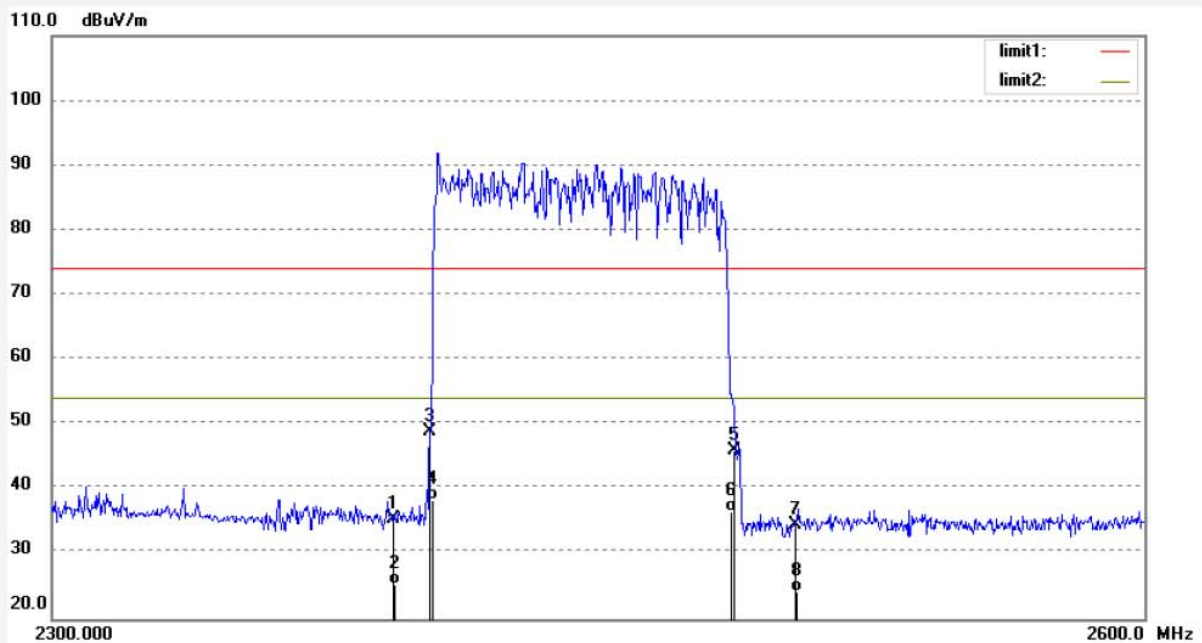
Date: 20/05/06/

Time: 9/41/25

Engineer Signature: WADE

Distance: 3m

Note: Report No.:ATE20200378



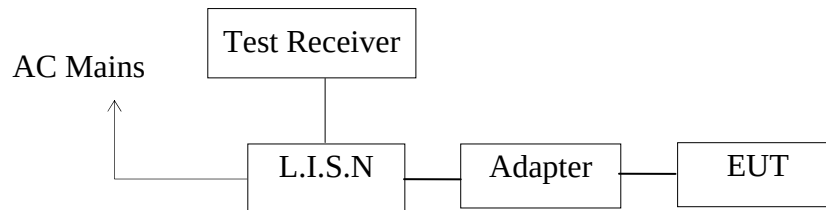
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	34.64	0.79	35.43	74.00	-38.57	peak	150	245	
2	2390.000	24.45	0.79	25.24	54.00	-28.76	AVG	150	242	
3	2400.000	48.04	0.88	48.92	74.00	-25.08	peak	150	25	
4	2400.000	37.53	0.88	38.41	54.00	-15.59	AVG	150	35	
5	2483.500	44.93	1.10	46.03	74.00	-27.97	peak	150	344	
6	2483.500	35.42	1.10	36.52	54.00	-17.48	AVG	150	257	
7	2500.000	33.51	1.10	34.61	74.00	-39.39	peak	150	234	
8	2500.000	23.11	1.10	24.21	54.00	-29.79	AVG	150	133	

Note: Average measurement with peak detection at No.2&4&6&8

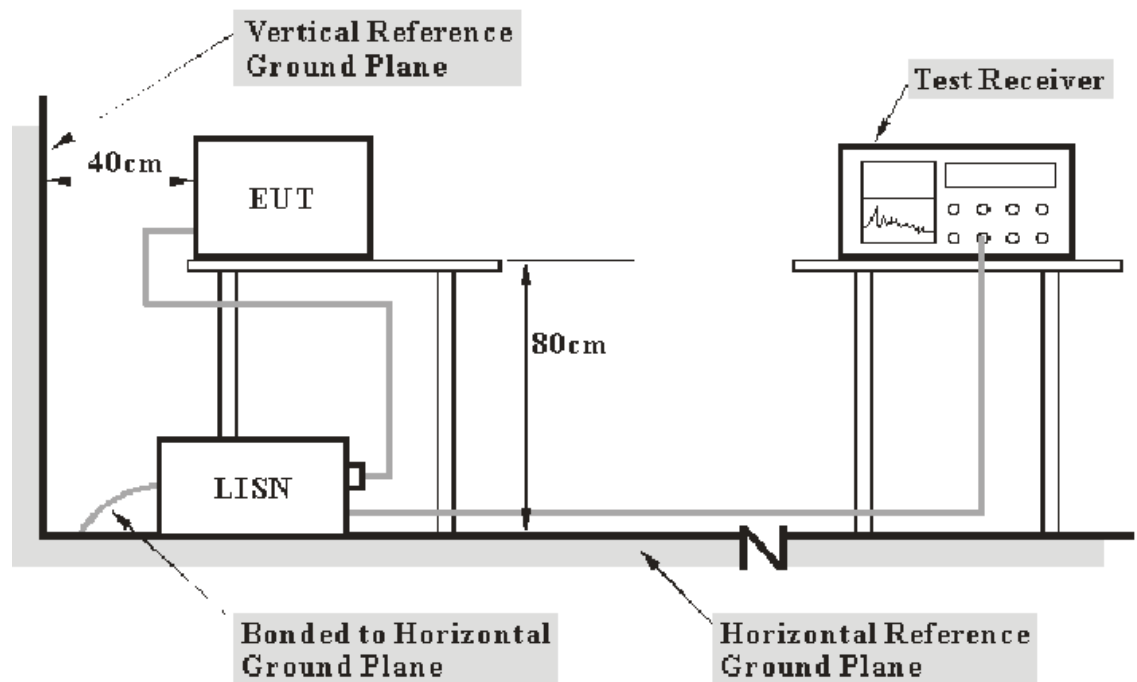
12.AC POWER LINE CONDUCTED EMISSION TEST

12.1.Block Diagram of Test Setup

12.1.1.Block diagram of connection between the EUT and simulators



12.1.2.Test System Setup



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

12.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies.		
NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

12.3.Configuration of EUT on Measurement

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

12.4.Operating Condition of EUT

12.4.1.Setup the EUT and simulator as shown as Section 12.1.

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in test mode and measure it.

12.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

12.6.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.6	25.3	17.0	59.0	49.0	33.4	31.7	Pass

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dBμV) = Limit stated in standard

Margin = Limit (dBμV) - Level (dBμV)

Calculation Formula:

Margin = Limit (dBμV) - Level (dBμV)

12.7.Test Results

Pass.

Test Lab: 3m Anechoic chamber

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.
Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

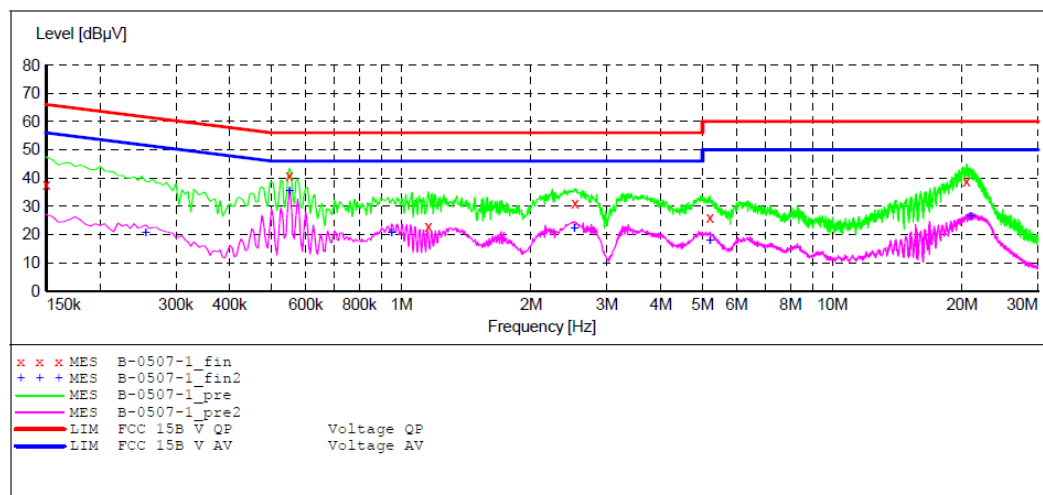
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: True Wireless BT Earbuds M/N:CB-TE008
 Manufacturer: CLEVER
 Operating Condition: BT Communication
 Test Site: 1#Shielding Room
 Operator: WADE
 Test Specification: N 120V/60Hz
 Comment: Report No.:ATE20200378
 Start of Test: 5/7/2020 / 8:42:55AM

SCAN TABLE: "V 9K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz NSLK8126 2008
 Average
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "B-0507-1_fin"

5/7/2020 8:46AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	37.70	10.5	66	28.3	QP	N	GND
0.550000	40.60	10.7	56	15.4	QP	N	GND
1.155000	22.80	10.9	56	33.2	QP	N	GND
2.530000	31.20	11.0	56	24.8	QP	N	GND
5.200000	26.10	11.2	60	33.9	QP	N	GND
20.500000	39.00	11.4	60	21.0	QP	N	GND

MEASUREMENT RESULT: "B-0507-1_fin2"

5/7/2020 8:46AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.255000	20.60	10.6	52	31.0	AV	N	GND
0.550000	35.40	10.7	46	10.6	AV	N	GND
0.950000	20.60	10.8	46	25.4	AV	N	GND
2.520000	22.20	11.0	46	23.8	AV	N	GND
5.200000	17.70	11.2	50	32.3	AV	N	GND
20.920000	26.50	11.4	50	23.5	AV	N	GND

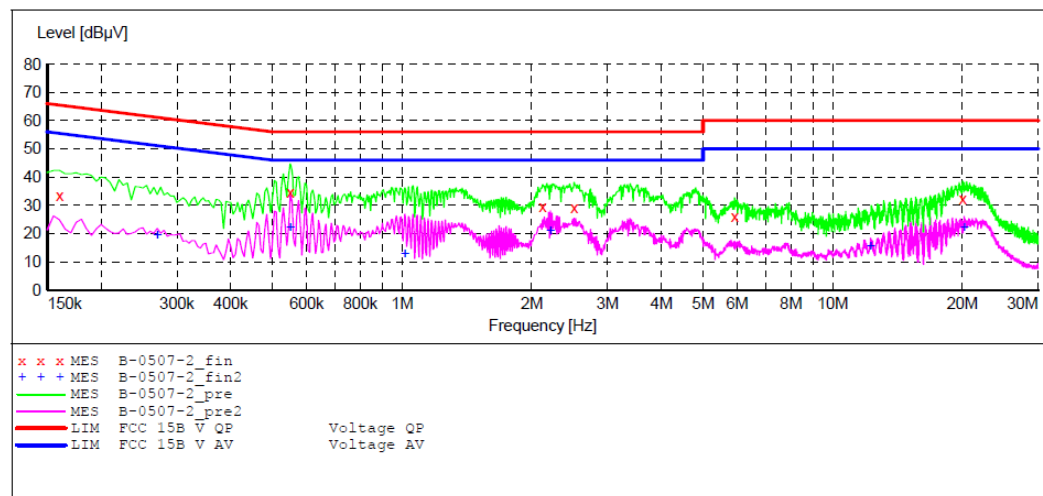
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: True Wireless BT Earbuds M/N:CB-TE008
 Manufacturer: CLEVER
 Operating Condition: BT Communication
 Test Site: 1#Shielding Room
 Operator: WADE
 Test Specification: L 120V/60Hz
 Comment: Report No.:ATE20200378
 Start of Test: 5/7/2020 / 8:47:01AM

SCAN TABLE: "V 9K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz NSLK8126 2008
 Average
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "B-0507-2_fin"

5/7/2020 8:50AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.160000	33.40	10.5	66	32.1	QP	L1	GND
0.550000	34.70	10.7	56	21.3	QP	L1	GND
2.120000	29.50	11.0	56	26.5	QP	L1	GND
2.510000	29.00	11.0	56	27.0	QP	L1	GND
5.920000	26.10	11.2	60	33.9	QP	L1	GND
20.050000	32.30	11.4	60	27.7	QP	L1	GND

MEASUREMENT RESULT: "B-0507-2_fin2"

5/7/2020 8:50AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.270000	19.50	10.6	51	31.6	AV	L1	GND
0.550000	22.20	10.7	46	23.8	AV	L1	GND
1.015000	12.90	10.8	46	33.1	AV	L1	GND
2.210000	21.00	11.0	46	25.0	AV	L1	GND
12.250000	15.60	11.3	50	34.4	AV	L1	GND
20.200000	22.00	11.4	50	28.0	AV	L1	GND

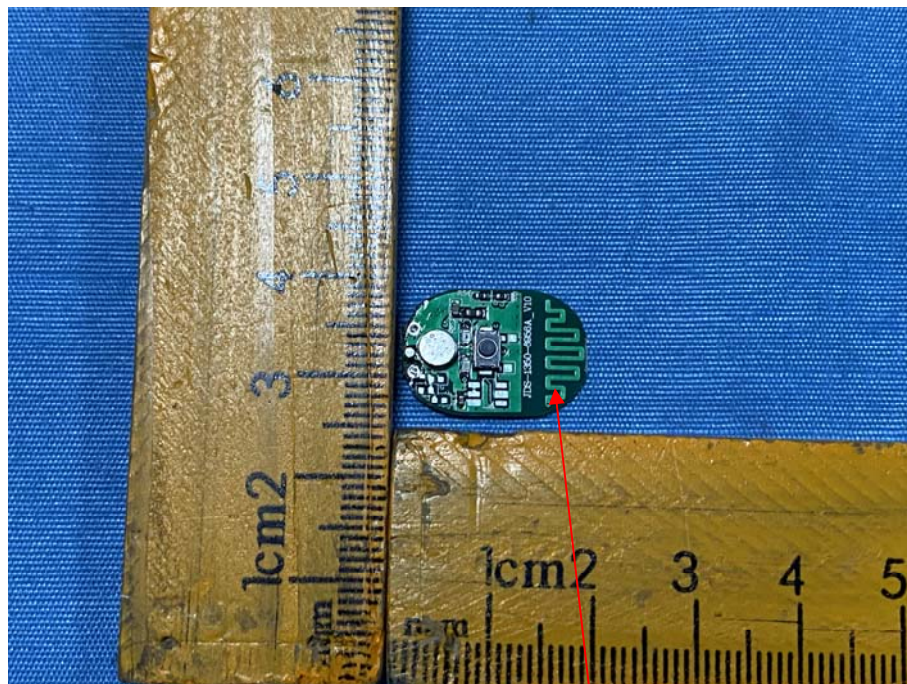
13.ANTENNA REQUIREMENT

13.1.The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

13.2.Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is -0.58dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

***** End of Test Report *****