



<b>Prüfbericht-Nr.:</b> <i>Test report No.:</i>	<b>50308766 001</b>	<b>Auftrags-Nr.:</b> <i>Order No.:</i>	168132923	<b>Seite 1 von 28</b> <i>Page 1 of 28</i>	
<b>Kunden-Referenz-Nr.:</b> <i>Client reference No.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date.:</i>	11.10.2019		
<b>Auftraggeber:</b> <i>Client:</i>	<b>UP Global Sourcing Ltd.</b> UP Global Sourcing, Manor Mill, Victoria Street, Chadderton, Oldham, OL9 0DD, United Kingdom				
<b>Prüfgegenstand:</b> <i>Test item:</i>	Mini Pod Speaker				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	EE2763				
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	FCC approval				
<b>Prüfgrundlage:</b> <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart B Section 15.109 CFR47 FCC Part 2: Section 2.1093				
<b>Wareneingangsdatum:</b> <i>Date of receipt:</i>	11.10.2019	Please refer to photo documents			
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	A001005303-001 to 002 A001000001-015 A001000001-013				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	15.10.2019 - 12.11.2019				
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.				
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass				
<b>geprüft von / tested by:</b>		<b>kontrolliert von / reviewed by:</b>			
					
13.11.2019	Jonathan Li / Project Manager	13.11.2019	Winnie Hou / Technical Certifier		
<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges / Other:</b>					
FCC ID: 2AAR2EE2763					
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>			Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>		
* Legende: 1 = sehr gut      2 = gut      3 = befriedigend      4 = ausreichend      5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n)      F(ail) = entspricht nicht o.g. Prüfgrundlage(n)      N/A = nicht anwendbar      N/T = nicht getestet Legend: 1 = very good      2 = good      3 = satisfactory      4 = sufficient      5 = poor P(ass) = passed a.m. test specifications(s)      F(ail) = failed a.m. test specifications(s)      N/A = not applicable      N/T = not tested					
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b>					
<i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

V04

## Test Summary

**5.1.1 ANTENNA REQUIREMENT***RESULT: Pass***5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER***RESULT: Pass***5.1.3 99% BANDWIDTH***RESULT: Pass***5.1.4 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH***RESULT: Pass***5.1.5 RADIATED SPURIOUS EMISSION***RESULT: Pass***5.1.6 20dB BANDWIDTH***RESULT: Pass***5.1.7 CARRIER FREQUENCY SEPARATION***RESULT: Pass***5.1.8 NUMBER OF HOPPING FREQUENCY***RESULT: Pass***5.1.9 TIME OF OCCUPANCY***RESULT: Pass***5.1.10 CONDUCTED EMISSION ON AC MAINS***RESULT: Pass***5.1.11 RADIATED EMISSION***RESULT: Pass***6.1.1 ELECTROMAGNETIC FIELDS***RESULT: Pass*

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# 1 General Remarks

## 1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of Bluetooth

Appendix C: Test Results of Part 15B

## 2 Test Sites

### 2.1 Test Facilities

**TÜV Rheinland (Shenzhen) Co., Ltd.**

1F East &amp; 2-4F, Cybio Technology Building No. 1, No. 16 Kejibei 2nd Road, High-Tech Industrial Park North Nanshan District, Shenzhen, 518057

FCC accredited testing laboratory: CN1260

ISED wireless device testing laboratory: 25069

### 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**
**TÜV Rheinland (Shenzhen) Co., Ltd.**

<b>Radio Spectrum Testing (TS8997)</b>					
<b>Equip. No.</b>	<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Cal. until</b>
1825795	Signal Analyzer	Rohde & Schwarz	FSV 40	101441	20.08.2020
1825798	OSP	Rohde & Schwarz	OSP 150	101017	20.12.2019
1825799	Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
1825800	Test Software	Rohde & Schwarz	WMS32 (V10.40.10)	N/A	N/A
1825801	Power Meter	Rohde & Schwarz	NRP2	107105	20.12.2019
1825802	Wideband Power Sensor	Rohde & Schwarz	NRP-Z81	105350	20.12.2019
1826431	Shielding Room 8#	Albatross	SR8	APC17151-SR8	23.07.2020
<b>Unwanted Emission Testing (TS9975)</b>					
<b>Equip. No.</b>	<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Cal. until</b>
1826021	EMI Test Receiver	Rohde & Schwarz	ESR 7	102021	19.08.2020
1826023	Signal Analyzer	Rohde & Schwarz	FSV 40	101439	21.08.2020
1826024	System Controller Interface	Rohde & Schwarz	SCI-100	S10010038	N/A
1826025	Filterbank	Rohde & Schwarz	Wlan	100759	21.08.2020
1826026	OSP	Rohde & Schwarz	OSP 120	102040	N/A
1826028	Pre-amplifier	Rohde & Schwarz	SCU08F1	08320031	20.08.2020
1826029	Amplifier	Rohde & Schwarz	SCU-18F	180070	20.08.2020
1826030	Amplifier	Rohde & Schwarz	SCU40A	100475	20.09.2020
1826031	Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	02.09.2020
1826032	Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	02.09.2020
1826033	Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	02.09.2020

1826034	Active Loop Antenna	Schwarzbeck	FMZB 1513	302	01.09.2020
1826035	Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18313	02.09.2020
1826036	Test software	Rohde & Schwarz	V10.40.10-EMC32	N/A	N/A
1826037	Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
1826433	3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	06.07.2020

**Conducted Emission on AC Mains**

Equip. No.	Equipment	Manufacturer	Model	Serial No.	Cal. until
1822625	EMI Test Receiver	R&S	ESR3	102428	03.09.2020
1822627	Artificial Mains Network	R&S	ENV216	102333	19.08.2020
1822626	Artificial Mains Network	R&S	ENV432	101411	19.08.2020
1822629	Attenuator	R&S	ESH2Z31	100300	19.08.2020
1825090	EMC32 test software	R&S	EMC32(Ver.10.50.01)	N/A	N/A

**Radiated Emission (3m chamber)**

Equip. No.	Equipment	Manufacturer	Model No.	Serial No.	Cali. until
1822620	3m SAC	ETS	SAC3	CT001632-Q1362	23.08.2021
1825044	EMI Test Receiver	R&S	ESR7	102111	23.01.2020
1825004	Horn Antenna	R&S	HF907	102706	01.09.2020
1825005	Preamplifier	FIT	SCU-18F	180077	19.08.2020
1825042	Trilog-Broadband antenna	SCHWARZBECK	VULB9168	0945	12.09.2020
1825072	Switching Controller Interface	R&S	OSP 120	102039	N/A
1825090	EMC32 test software	R&S	EMC32(Ver.10.50.01)	N/A	N/A

## 2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
RF Power (conducted)	$\pm 2.5$ dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	$\pm 6$ dB
Radiated Emission of Receiver, valid up to 26.5 GHz	$\pm 6$ dB
Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz)	$\pm 3.70$ dB / $\pm 3.30$ dB
Radiated Emission (3m SAC), 30MHz to 1000MHz	$\pm 4.52$ dB
Radiated Emission (3m SAC), above 1000MHz	$\pm 4.37$ dB
Temperature	$\pm 1$ °C
Humidity	$\pm 5$ %
Voltage (DC)	$\pm 1$ %
Voltage (AC, <10kHz)	$\pm 2$ %

## 2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B & C of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

## 2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 1F East & 2-4F, Cybio Technology Building No. 1, No. 16 Kejibei 2nd Road, High-Tech Industrial Park North Nanshan District, Shenzhen, 518057 is listed on the US Federal Communications Commission list of facilities approved to perform measurements.



### 3 General Product Information

#### 3.1 Product Function and Intended Use

The EUT is a Mini Pod Speaker, which support Bluetooth 5.0 technology.

For details refer to the User Manual, Technical Description and Circuit Diagram.

#### 3.2 Ratings and System Details

**Table 2: Technical Specification of EUT**

General Information of EUT	Value
Kind of Equipment	Mini Pod Speaker
Type Designation	EE2763
FCC ID	2AAR2EE2763
Operating Voltage	DC 5.0V via USB port for charging DC 3.7V via internal rechargeable lithium battery
Battery #1	DC 3.7V@400mAh lithium battery
Technical Specification of Bluetooth	
Operating Frequency	2400 MHz to 2483.5 MHz
Type of Modulation	GFSK, $\pi/4$ DQPSK
Channel Number	BDR & EDR mode:79 channels
Channel Separation	BDR & EDR mode:1MHz;
Antenna Type	PIFA Antenna
Antenna Gain	-0.58 dBi

**Table 3: Operating Frequencies/Channels of EUT**

Operating Mode	Description
Bluetooth <sup>®</sup>	<input checked="" type="checkbox"/> BDR/EDR $f_c = 2402 + k$ MHz, where $k = 0 \sim 78$ <input type="checkbox"/> Low Energy $f_c = 2402 + k*2$ MHz, where $k = 0 \sim 39$

**Table 4: Frequency Hopping Information**

Technical Specification	Description
Hopping Range	Hereby we declare that the frequency range of this device is: 2402-2480MHz. This is according the Bluetooth Core Specification V4.0 + EDR for devices which will be operated in the USA. This was checked during the Bluetooth Qualification tests (Test Case: TRM/CA/04-E).
Hopping Sequence	Example of a 79 hopping sequence in data mode: 33,04,21,44,23,42,53,46,55,48,40,59,72,29,76,31,08,73,07,75,09,45,60,39,58,13,47,11,77,52,35,50,65,54,67,56,69,62,71,64,7,25,27,66,57,70,74,61,78,63,10,41,05,43,15,44,64,68,02,70,06,01,51,03,55,05,03,66,53,49,36,47,
Receiver input bandwidth	<p>The input bandwidth of the receiver is 1MHz. In every connection one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master.</p> <p>Additionally the type of connection is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings.</p> <p>Repeating of a packer has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case.</p> <p>That means a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.</p>

### 3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth transmitting mode (BDR & EDR mode)
  - 1) Low Channel
  - 2) Middle Channel
  - 3) High Channel
- B. On, Transmitting on Hopping channel
- C. On, Bluetooth connecting mode
- D. On, Charging mode
- E. On, Aux in playing mode
- F. On, TF card playing mode
- G. Off

### **3.4 Noise Generating and Noise Suppressing Parts**

Refer to Circuit Diagram for further details.

### **3.5 Submitted Documents**

- Block Diagram
- Schematics
- FCC/IC Label and Location Info
- User Manual

## 4 Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

**Radio Spectrum:** The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

### 4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013 and ANSI C63.4: 2014.

**Table 5: List of Frequencies under Test**

<input checked="" type="checkbox"/> Bluetooth				
Operation mode	Frequencies under Test (MHz)			Power Level setting (dBm)
	CH <sub>Low</sub>	CH <sub>Mid</sub>	CH <sub>High</sub>	
<input checked="" type="checkbox"/> BDR/EDR	2402.0	2441.0	2480.0	10.0

**Table 6: Test Environments**

Environment Parameter	Selected Values During Tests		
	Temperature (°C)	Voltage (V)	Relative Humidity
Normal (NTNV)	23.5°C	DC 3.7V	48%

## 4.3 Special Accessories and Auxiliary Equipment

Table 7: Auxiliary Equipment Used during Test

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	T480	PF-16A6N8	N/A
TF card	N/A	N/A	N/A	N/A
Adapter	N/A	N/A	N/A	DC 5V

## 4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

## 4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

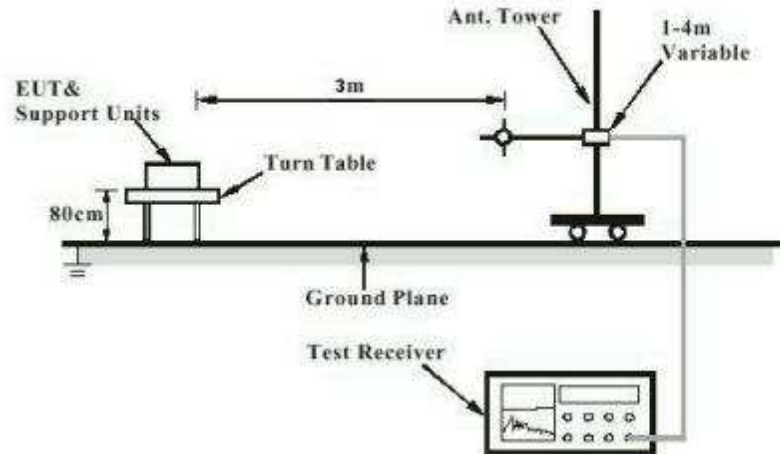


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

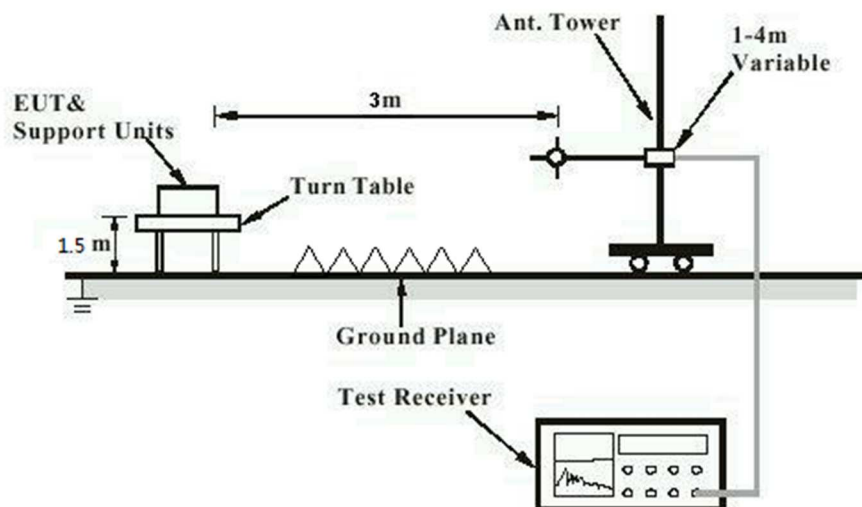


Diagram of Measurement Configuration for Mains Conduction Measurement

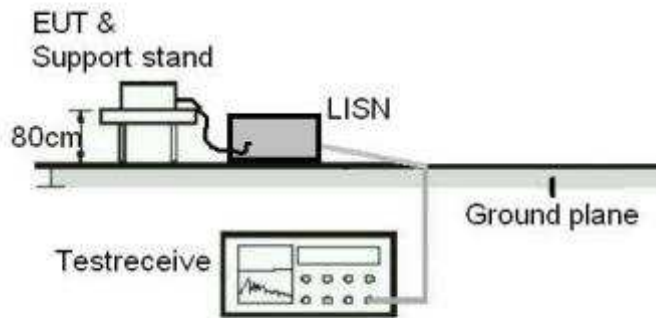
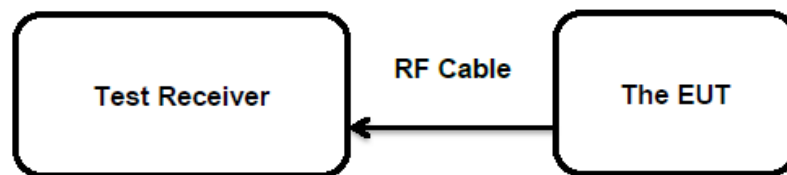


Diagram of Measurement Configuration for Conducted Transmitter Measurement



## 5 Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

RESULT:

Pass

**Test Specification**

Test standard : FCC Part 15.247(b)(4) and Part 15.203

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is -0.58 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.



### 5.1.2 Maximum Peak Conducted Output Power

**RESULT:**
**Pass**
**Test Specification**

Test standard : FCC Part 15.247(b)(1)  
 Basic standard : ANSI C63.10: 2013  
 Limits : DSS < 0.125 Watts  
 Kind of test site : Shielded Room

**Test Setup**

Date of testing : 22.10.2019  
 Input voltage : Fully charged battery  
 Operation mode : A  
 Test channel : Low / Middle / High  
 Ambient temperature : 25 °C  
 Relative humidity : 56 %  
 Atmospheric pressure : 101 kPa

**Table 8: Test Result of Maximum Peak Conducted Output Power, Bluetooth**

Test Mode	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(W)	
GFSK	2402.0	0.40	0.0011	< 0.125
	2441.0	0.85	0.0012	
	2480.0	1.09	0.0013	
<b>Maximum Measured Value</b>		1.09	0.0013	

Test Mode	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(W)	
π/4DQPSK	2402.0	0.28	0.0011	< 0.125
	2441.0	1.28	0.0013	
	2480.0	1.27	0.0013	
<b>Maximum Measured Value</b>		1.28	0.0013	

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G): -0.58 dBi,

The Maximum peak conducted output power (e.i.r.p.)= $P_{(\text{Peak power})} + G$ , which is far below the 4 W

### 5.1.3 99% Bandwidth

**RESULT:****Pass****Test Specification**

Test standard : FCC Part 15.247(a)  
Basic standard : ANSI C63.10: 2013  
Kind of test site : Shielded Room

**Test Setup**

Date of testing : 22.10.2019  
Input voltage : Fully charged battery  
Operation mode : A  
Test channel : Low / Middle / High  
Ambient temperature : 25 °C  
Relative humidity : 56 %  
Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix B.

### 5.1.4 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.247(d)
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

**Test Setup**

Date of testing	: 22.10.2019
Input voltage	: Fully charged battery
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix B.

## 5.1.5 Radiated Spurious Emission

**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	:	3m Semi-anechoic Chamber

**Test Setup**

Date of testing	:	Refer to test result
Input voltage	:	Fully charged battery
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	22 °C
Relative humidity	:	54 %
Atmospheric pressure	:	101 kPa

**Remark:**

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix B.

### 5.1.6 20dB Bandwidth

**RESULT:****Pass****Test Specification**

Test standard : FCC Part 15.247(a)(1)  
Basic standard : ANSI C63.10: 2013  
Kind of test site : Shielded Room

**Test Setup**

Date of testing : 22.10.2019  
Input voltage : Fully charged battery  
Operation mode : A  
Test channel : Low / Middle / High  
Ambient temperature : 25 °C  
Relative humidity : 56 %  
Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix B.

### 5.1.7 Carrier Frequency Separation

**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.247(a)(1)
Basic standard	: ANSI C63.10: 2013
Limits	: $\geq 25\text{kHz}$ or 2/3 of 20dB bandwidth, whichever is greater
Kind of test site	: Shielded Room

**Test Setup**

Date of testing	: 22.10.2019
Input voltage	: Fully charged battery
Operation mode	: B
Test channel	: Low / Middle / High
Ambient temperature	: 25 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix B.

### 5.1.8 Number of Hopping Frequency

**RESULT:****Pass****Test Specification**

Test standard	:	FCC part 15.247(a)(1)(iii)
Basic standard	:	ANSI C63.10: 2013
Limits	:	≥ 15 non-overlapping channels
Kind of test site	:	Shielded Room

**Test Setup**

Date of testing	:	22.10.2019
Input voltage	:	Fully charged battery
Operation mode	:	B
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

### 5.1.9 Time of Occupancy

**RESULT:****Pass****Test Specification**

Test standard	:	FCC part 15.247(a)(1)(iii)
Basic standard	:	ANSI C63.10: 2013
Limits	:	< 0.4s
Kind of test site	:	Shielded Room

**Test Setup**

Date of testing	:	22.10.2019
Input voltage	:	Fully charged battery
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 °C
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

## Note:

Dwell time = Pulse width x Number of channels in Period

Period = 0.4 (seconds/ channel) x 79 (channel) = 31.6 seconds

For the measurement records, refer to the appendix B.



**5.1.10 Conducted Emission on AC Mains****RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.207(a) & FCC Part 15.201(a)
Basic standard	:	ANSI C63.10: 2013 & ANSI C63.4: 2014
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a) & FCC Part 15.201(a)
Kind of test site	:	Shielded Room

**Test Setup**

Date of testing	:	Refer to test result
Input voltage	:	DC 5V input by the micro USB port
Operation mode	:	E+D,F+D
Earthing	:	Not connected
Ambient temperature	:	22 °C
Relative humidity	:	64 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B and C.

**5.1.11 Radiated Emission****RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.109(a)
Basic standard	:	ANSI C63.4: 2014
Frequency range	:	30 - 6000MHz
Classification	:	Class B
Limits	:	FCC Part 15.109(a)
Kind of test site	:	3m Semi-anechoic Chamber

**Test Setup**

Date of testing	:	Refer to test result
Input voltage	:	DC 5V input by the micro USB port
Operation mode	:	C, D
Earthing	:	Not connected
Ambient temperature	:	24 °C
Relative humidity	:	50 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix C.

## 6 Safety Human Exposure

### 6.1 Radio Frequency Exposure Compliance

#### 6.1.1 Electromagnetic Fields

RESULT:

Pass

**Test Specification**

Test standard

: CFR47 FCC Part 2: Section 2.1093

FCC KDB Publication 447498 D01 V06

**FCC requirements**

For 100 MHz to 6 GHz and *test separation distances*  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)  $\cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0$  for 1-g SAR, and  $\leq 7.5$  for 10-g extremity SAR,<sup>30</sup> where

- $f_{(\text{GHz})}$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) below

The test exclusions are applicable only when the minimum *test separation distance* is  $\leq 50$  mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is  $< 5$  mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

**Calculated result**

The maximum peak output power of the transmitter is 1.28dBm and minimum *test separation distance* is 5mm, SAR test exclusion thresholds=0.422<3.0, So the SAR test is not required.

## 7 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

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## Appendix B: Test Results of Bluetooth

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## Appendix B.1: Test Results of 99% Bandwidth

### B.1.1 Test Results of GFSK

Low Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

#### Occupied Channel Bandwidth 99% (2402 MHz; 10.000 dBm; 1 MHz; Test Mode)

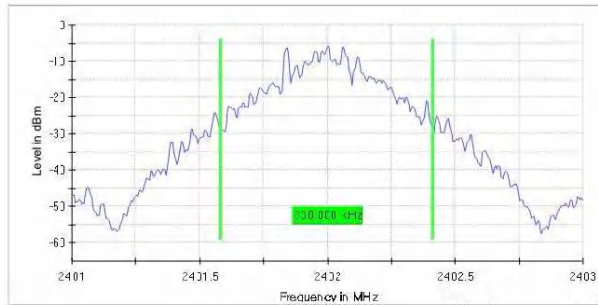
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### 99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.830000	—	—	2401.582500	2402.412500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	500	500
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	7 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.14 dB	0.30 dB

Middle Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Occupied Channel Bandwidth 99% (2441 MHz; 10.000 dBm; 1 MHz; Test Mode)**

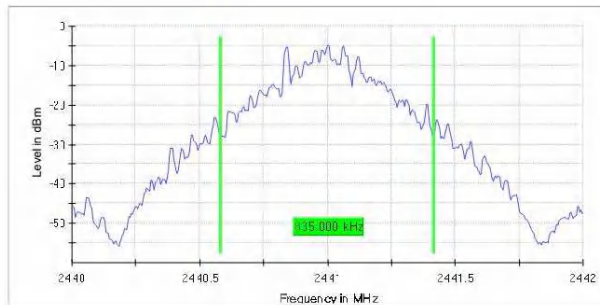
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**99 % Bandwidth**

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2441.000000	0.835000	—	—	2440.582500	2441.417500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2441.000000	PASS



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	500	500
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.19 dB	0.30 dB



High Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Occupied Channel Bandwidth 99% (2480 MHz; 10.000 dBm; 1 MHz; Test Mode)**

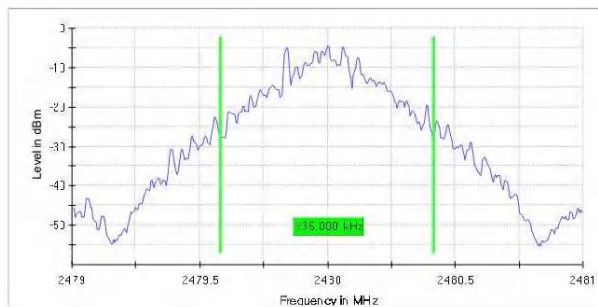
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**99 % Bandwidth**

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.835000	---	---	2479.582500	2480.417500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	500	500
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.15 dB	0.30 dB

### B.1.2 Test Results of $\pi/4$ DQPSK

Low Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

#### Occupied Channel Bandwidth 99% (2402 MHz; 10.000 dBm; 1 MHz; Test Mode)

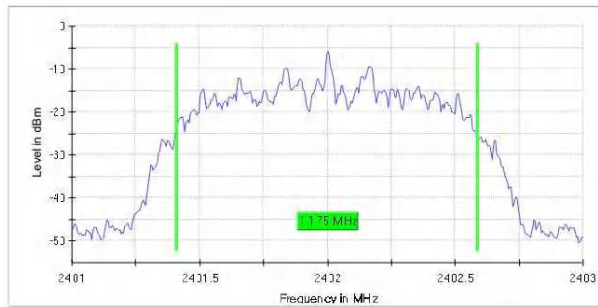
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### 99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.175000	—	—	2401.412500	2402.587500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 $\mu$ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	500	500
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	6 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.14 dB	0.30 dB

Middle Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Occupied Channel Bandwidth 99% (2441 MHz; 10.000 dBm; 1 MHz; Test Mode)**

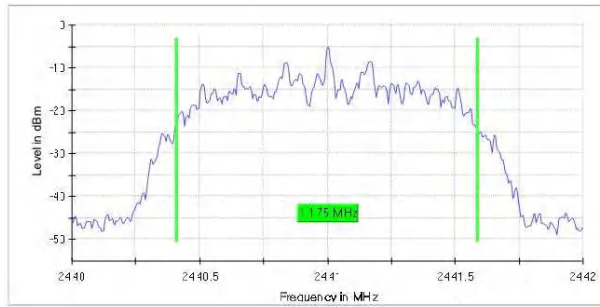
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**99 % Bandwidth**

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2441.000000	1.175000	---	---	2440.412500	2441.587500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2441.000000	PASS



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
Sweeptime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	500	500
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	6 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.17 dB	0.30 dB

High Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Occupied Channel Bandwidth 99% (2480 MHz; 10.000 dBm; 1 MHz; Test Mode)**

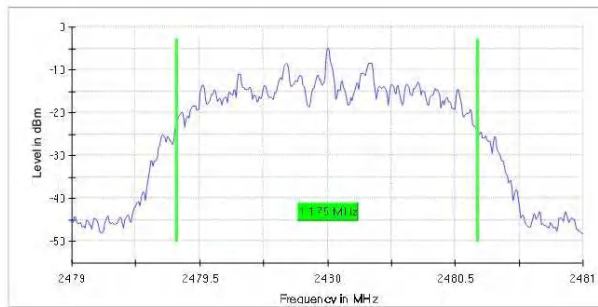
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**99 % Bandwidth**

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.175000	---	---	2479.412500	2480.587500

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
Sweeptime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	500	500
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.06 dB	0.30 dB

## Appendix B.2: Test Results of 20dB Bandwidth

### B.2.1 Test Results of GFSK

Low Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Emission Bandwidth 20 dB (2402 MHz; 10.000 dBm; 1 MHz; Test Mode)

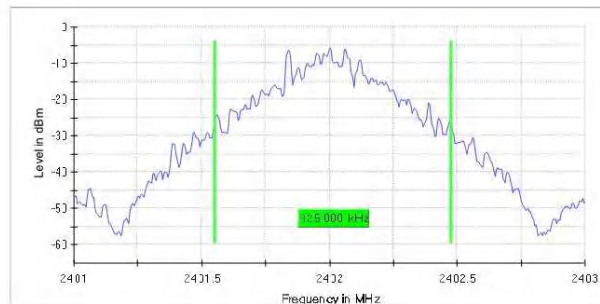
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### 20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.925000	--	--	2401.552500	2402.477500

(continuation of the "20 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	-5.8	PASS



#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.15 dB	0.50 dB

Middle Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Emission Bandwidth 20 dB (2441 MHz; 10.000 dBm; 1 MHz; Test Mode)**

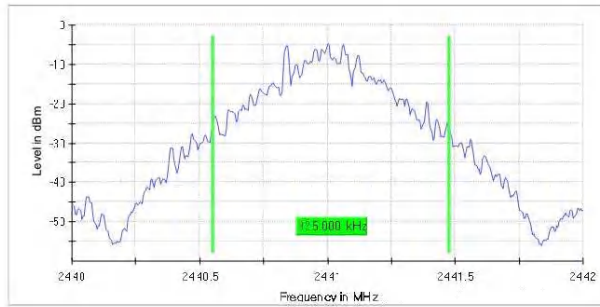
Test according to FCC title 47 part 15 § 15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**20 dB Bandwidth**

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2441.000000	0.925000	---	---	2440.552500	2441.477500

(continuation of the "20 dB Bandwidth" table from column 6...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2441.000000	-4.8	PASS



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
Sweeptime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.27 dB	0.50 dB

High Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Emission Bandwidth 20 dB (2480 MHz; 10.000 dBm; 1 MHz; Test Mode)**

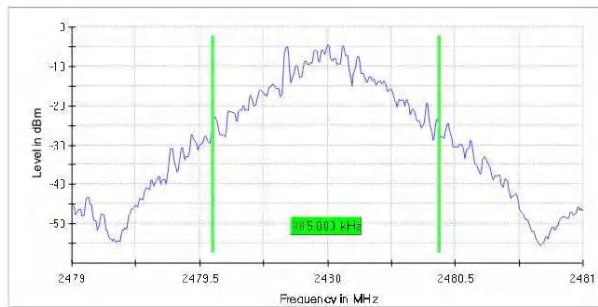
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**20 dB Bandwidth**

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.885000	---	---	2479.552500	2480.437500

(continuation of the "20 dB Bandwidth" table from column 6...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	-4.4	PASS



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
StableValue	0.50 dB	0.50 dB
Run	10 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.16 dB	0.50 dB

### B.2.2 Test Results of $\pi/4$ DQPSK

#### Low Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Emission Bandwidth 20 dB (2402 MHz; 10.000 dBm; 1 MHz; Test Mode)

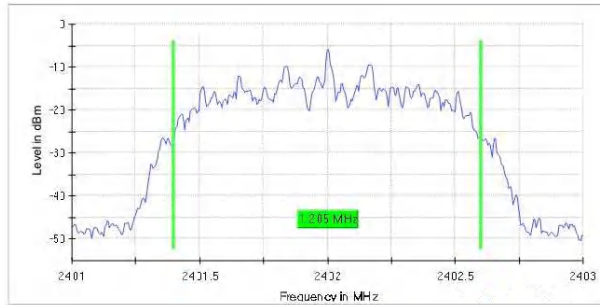
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### 20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.205000	—	—	2401.397500	2402.602500

(continuation of the "20 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	-5.9	PASS



#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 $\mu$ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.19 dB	0.50 dB



Middle Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Emission Bandwidth 20 dB (2441 MHz; 10.000 dBm; 1 MHz; Test Mode)**

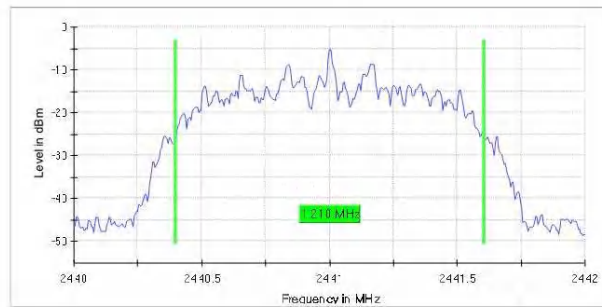
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**20 dB Bandwidth**

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2441.000000	1.210000	---	---	2440.397500	2441.607500

(continuation of the "20 dB Bandwidth" table from column 6...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2441.000000	-5.1	PASS



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
Sweeptime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.08 dB	0.50 dB

High Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Emission Bandwidth 20 dB (2480 MHz; 10.000 dBm; 1 MHz; Test Mode)**

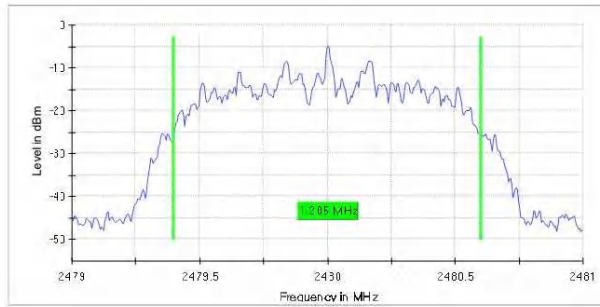
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**20 dB Bandwidth**

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.205000	---	---	2479.397500	2480.602500

(continuation of the "20 dB Bandwidth" table from column 6...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	-4.8	PASS



**Measurement**

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	189.648 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	11 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.07 dB	0.50 dB

## Appendix B.3: Test Results of Carrier Frequency Separation

### B.3.1 Test Results of GFSK

Low Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Carrier Frequency Separation (2402 MHz; 10.000 dBm; 1 MHz; Test Mode)

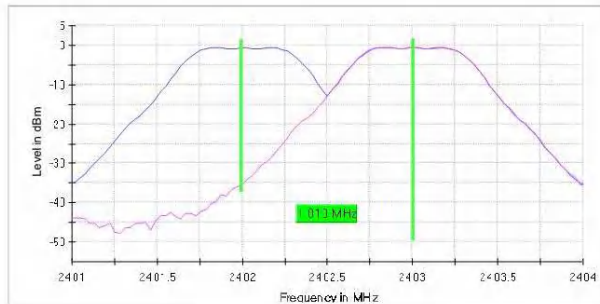
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Result

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)
2402.000000	1.009900	0.616667	---	2401.995050	2403.004950

(continuation of the "Result" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



#### Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
StableValue	0.50 dB	0.50 dB
Run	15 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.02 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	11 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.00 dB	0.50 dB

Middle Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Carrier Frequency Separation (2441 MHz; 10.000 dBm; 1 MHz; Test Mode)**

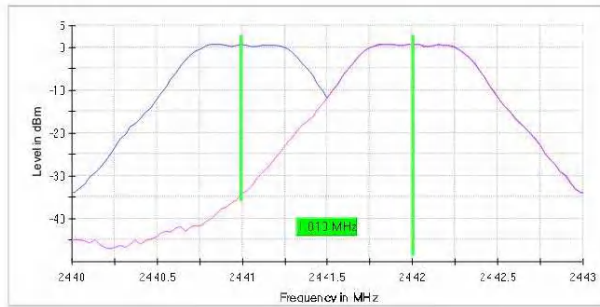
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**Result**

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)
2441.000000	1.009900	0.616667	---	2440.995050	2442.004950

(continuation of the "Result" table from column 6 ...)

DUT Frequency (MHz)	Result
2441.000000	PASS



**Measurement 1**

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
StableValue	0.50 dB	0.50 dB
Run	12 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.06 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	11 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.22 dB	0.50 dB

High Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Carrier Frequency Separation (2480 MHz; 10.000 dBm; 1 MHz; Test Mode)**

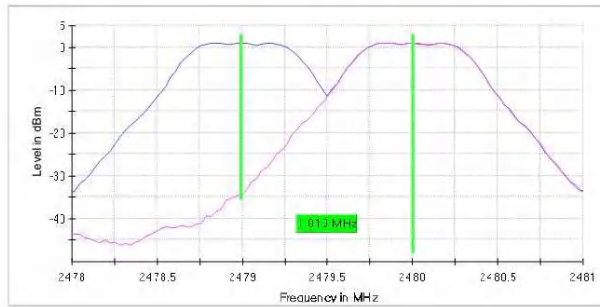
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**Result**

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)
2480.000000	1.009900	0.590000	---	2478.995050	2480.004950

(continuation of the "Result" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



**Measurement 1**

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	17 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.02 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	11 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.08 dB	0.50 dB



### B.3.2 Test Results of $\pi/4$ DQPSK

Low Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

#### Carrier Frequency Separation (2402 MHz; 10.000 dBm; 1 MHz; Test Mode)

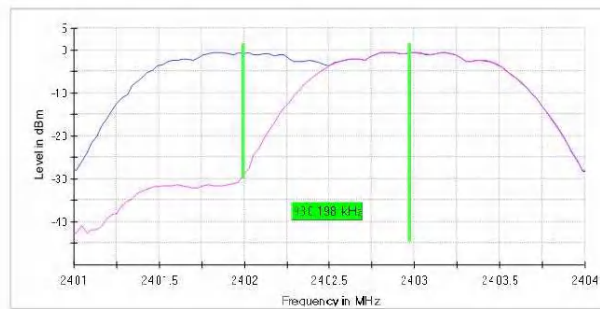
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Result

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)
2402.000000	0.980198	0.803333	---	2401.995050	2402.975248

(continuation of the "Result" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



#### Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	15 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.04 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	13 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.06 dB	0.50 dB

Middle Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Carrier Frequency Separation (2441 MHz; 10.000 dBm; 1 MHz; Test Mode)**

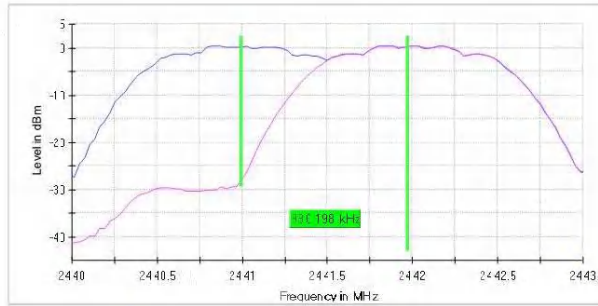
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**Result**

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)
2441.000000	0.980198	0.806667	---	2440.995050	2441.975248

(continuation of the "Result" table from column 6 ...)

DUT Frequency (MHz)	Result
2441.000000	PASS



**Measurement 1**

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	14 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.03 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	15 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.11 dB	0.50 dB

High Channel

FCC Part 47 §15.247 2400-2483.5 MHz 2017

**Carrier Frequency Separation (2480 MHz; 10.000 dBm; 1 MHz; Test Mode)**

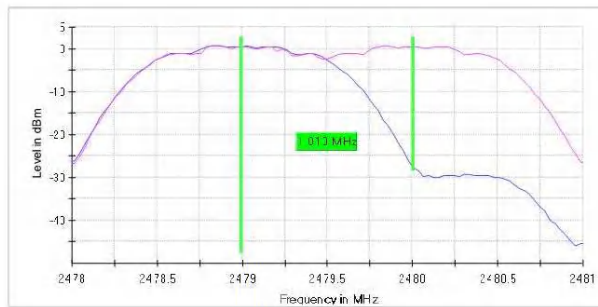
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

**Result**

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)
2480.000000	1.009900	0.803333	---	2478.995050	2480.004950

(continuation of the "Result" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



**Measurement 1**

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	13 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.03 dB	0.50 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	14 / max. 150	max. 150
Stable	10 / 10	10
Max Stable Difference	0.03 dB	0.50 dB

## Appendix B.4: Test Results of Number of Hopping Frequency

### B.4.1 Test Results of GFSK

All hopping channels

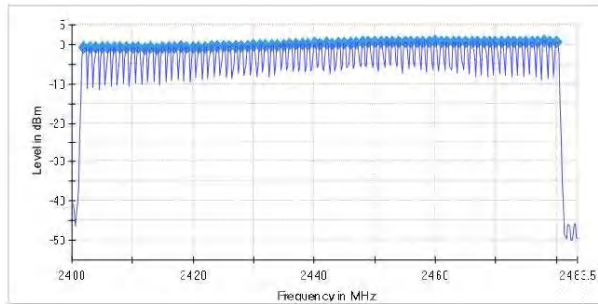
FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Hopping Frequencies (frequency independent; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a),(g), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Channels

Channels	Limit Min	Limit Max	Result
79	15	---	PASS



#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	200.000 kHz	<= 299.000 kHz
VBW	200.000 kHz	>= 200.000 kHz
SweepPoints	418	~ 418
SweepTime	1.060 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	66 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.11 dB	0.50 dB

### B.4.2 Test Results of $\pi/4$ DQPSK

All hopping channels

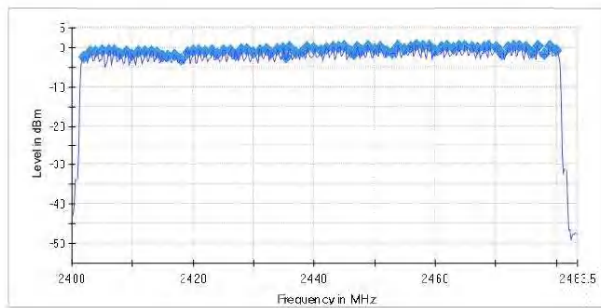
FCC Part 47 §15.247 2400-2483.5 MHz 2017

#### Hopping Frequencies (frequency independent; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a),(g), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Channels

Channels	Limit Min	Limit Max	Result
79	15	--	PASS



#### Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	200.000 kHz	<= 299.000 kHz
VBW	200.000 kHz	>= 200.000 kHz
SweepPoints	418	~ 418
SweepTime	1.060 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	117 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.21 dB	0.50 dB



## Appendix B.5: Test Results of Time of Occupancy

### B.5.1 Test Results of GFSK

FCC Part 47 §15.247 2400-2483.5 MHz 2017

#### Time of Channel Occupancy (2441 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Result

DUT Frequency (MHz)	Result	Number of Hops	Average time of occupancy (ms)	Threshold (dBm)
2441.000000	PASS	319	123.720	-10.0

#### Periode

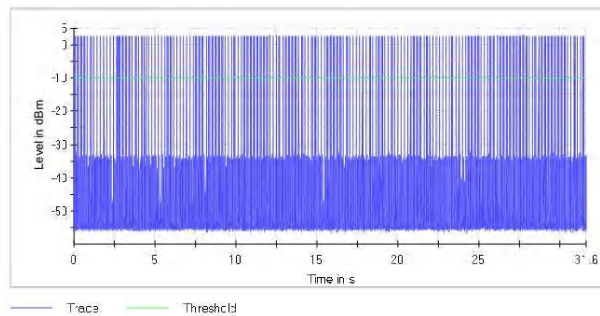
Min (ms)	Max (ms)	Mean (ms)
2.500	198.740	98.771

#### Transmit Time per Hop

Min (ms)	Max (ms)	Limit Max for Max (ms)	Limit Min for Max (ms)	Mean (ms)
0.38	0.39	400.000	0.000	0.387

#### DwellTime

Min (ms)	Max (ms)	Mean (ms)
0.380	0.390	0.387



FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
SweepTime	31.600 s	31.600 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off
Trigger	External	External
Trigger Offset	0.000 s	0.000 s

### OSP

Setting	Instrument Value	Target Value
Measurement Time	31.600 s	31.600 s
Tracepoints	31600000	31600000
Time resolution	1.000 µs	1.000 µs
Detector	RMS	RMS

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Time of Channel Occupancy(2) (2441 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Result

DUT Frequency (MHz)	Result	Number of Hops	Average time of occupancy (ms)	Threshold (dBm)
2441.000000	PASS	96	159.330	-10.0

#### Periode

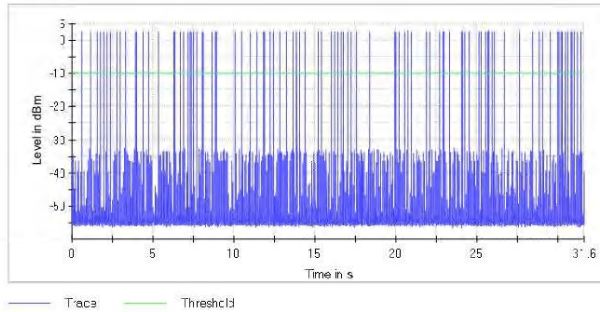
Min (ms)	Max (ms)	Mean (ms)
7.500	1571.220	321.940

#### Transmit Time per Hop

Min (ms)	Max (ms)	Limit Max for Max (ms)	Limit Min for Max (ms)	Mean (ms)
1.640	1.650	400.000	0.000	1.643

#### DwellTime

Min (ms)	Max (ms)	Mean (ms)
1.640	1.650	1.643



FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
SweepTime	31.600 s	31.600 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off
Trigger	External	External
Trigger Offset	0.000 s	0.000 s

### OSP

Setting	Instrument Value	Target Value
Measurement Time	31.600 s	31.600 s
Tracepoints	31600000	31600000
Time resolution	1.000 µs	1.000 µs
Detector	RMS	RMS

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Time of Channel Occupancy(3) (2441 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Result

DUT Frequency (MHz)	Result	Number of Hops	Average time of occupancy (ms)	Threshold (dBm)
2441.000000	PASS	68	199.420	-10.0

#### Periode

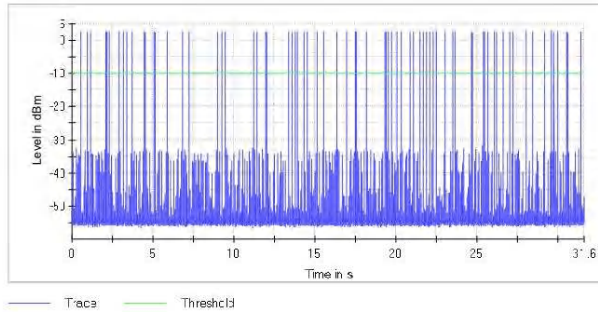
Min (ms)	Max (ms)	Mean (ms)
18.750	1768.710	447.565

#### Transmit Time per Hop

Min (ms)	Max (ms)	Limit Max for Max (ms)	Limit Min for Max (ms)	Mean (ms)
2.890	2.900	400.000	0.000	2.890

#### DwellTime

Min (ms)	Max (ms)	Mean (ms)
2.890	2.900	2.890



FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
SweepTime	31.600 s	31.600 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off
Trigger	External	External
Trigger Offset	0.000 s	0.000 s

### OSP

Setting	Instrument Value	Target Value
Measurement Time	31.600 s	31.600 s
Tracepoints	31600000	31600000
Time resolution	1.000 µs	1.000 µs
Detector	RMS	RMS

### B.5.2 Test Results of $\pi/4$ DQPSK

FCC Part 47 §15.247 2400-2483.5 MHz 2017

#### Time of Channel Occupancy (2441 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Result

DUT Frequency (MHz)	Result	Number of Hops	Average time of occupancy (ms)	Threshold (dBm)
2441.000000	PASS	320	123.000	-10.0

#### Periode

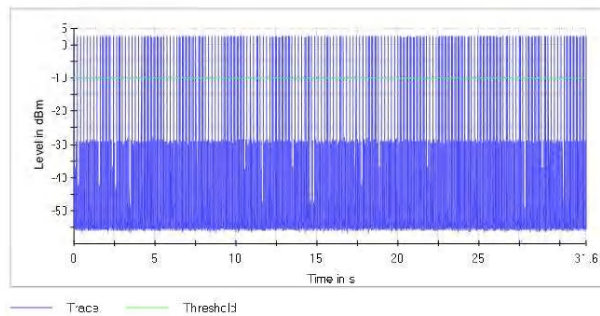
Min (ms)	Max (ms)	Mean (ms)
7.500	196.250	98.556

#### Transmit Time per Hop

Min (ms)	Max (ms)	Limit Max for Max (ms)	Limit Min for Max (ms)	Mean (ms)
0.35	0.40	400.000	0.000	0.383

#### DwellTime

Min (ms)	Max (ms)	Mean (ms)
0.380	0.400	0.395



FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
SweepTime	31.600 s	31.600 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off
Trigger	External	External
Trigger Offset	0.000 s	0.000 s

### OSP

Setting	Instrument Value	Target Value
Measurement Time	31.600 s	31.600 s
Tracepoints	31600000	31600000
Time resolution	1.000 µs	1.000 µs
Detector	RMS	RMS



FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Time of Channel Occupancy(2) (2441 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Result

DUT Frequency (MHz)	Result	Number of Hops	Average time of occupancy (ms)	Threshold (dBm)
2441.000000	PASS	111	180.320	-10.0

#### Periode

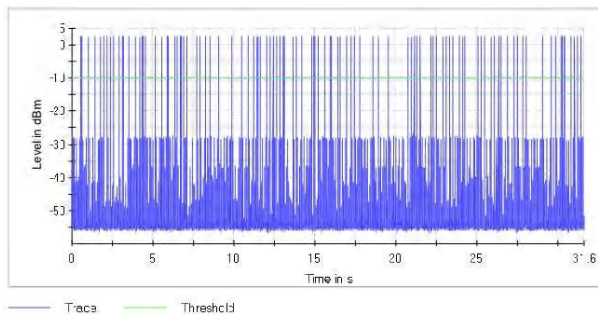
Min (ms)	Max (ms)	Mean (ms)
15.000	1162.480	278.517

#### Transmit Time per Hop

Min (ms)	Max (ms)	Limit Max for Max (ms)	Limit Min for Max (ms)	Mean (ms)
1.560	1.650	400.000	0.000	1.610

#### DwellTime

Min (ms)	Max (ms)	Mean (ms)
1.640	1.650	1.648



FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
SweepTime	31.600 s	31.600 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off
Trigger	External	External
Trigger Offset	0.000 s	0.000 s

### OSP

Setting	Instrument Value	Target Value
Measurement Time	31.600 s	31.600 s
Tracepoints	31600000	31600000
Time resolution	1.000 µs	1.000 µs
Detector	RMS	RMS

FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Time of Channel Occupancy(3) (2441 MHz; 10.000 dBm; 1 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

#### Result

DUT Frequency (MHz)	Result	Number of Hops	Average time of occupancy (ms)	Threshold (dBm)
2441.000000	PASS	71	203.710	-10.0

#### Periode

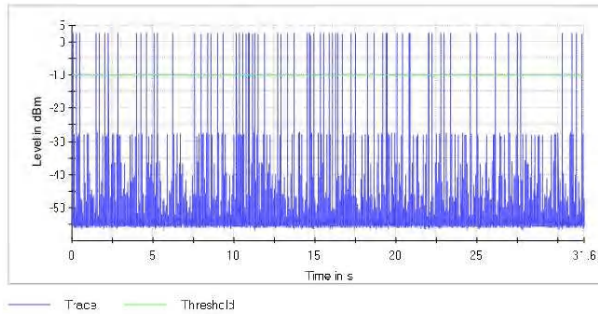
Min (ms)	Max (ms)	Mean (ms)
12.500	2574.940	443.830

#### Transmit Time per Hop

Min (ms)	Max (ms)	Limit Max for Max (ms)	Limit Min for Max (ms)	Mean (ms)
2.770	2.890	400.000	0.000	2.829

#### DwellTime

Min (ms)	Max (ms)	Mean (ms)
2.890	2.900	2.897



FCC Part 47 §15.247 2400-2483.5 MHz 2017

### Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
SweepTime	31.600 s	31.600 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off
Trigger	External	External
Trigger Offset	0.000 s	0.000 s

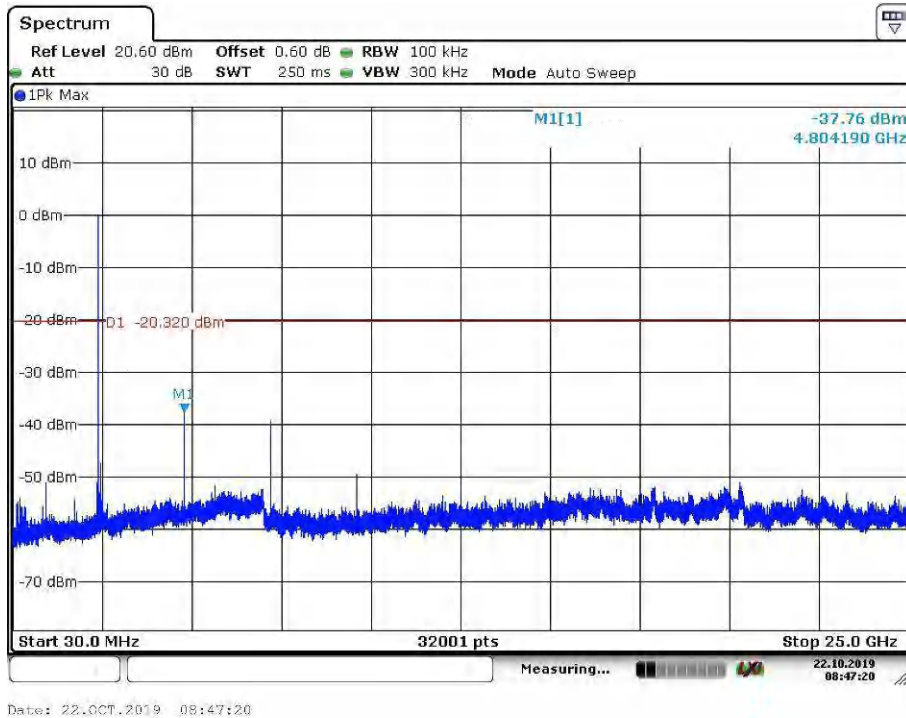
### OSP

Setting	Instrument Value	Target Value
Measurement Time	31.600 s	31.600 s
Tracepoints	31600000	31600000
Time resolution	1.000 µs	1.000 µs
Detector	RMS	RMS

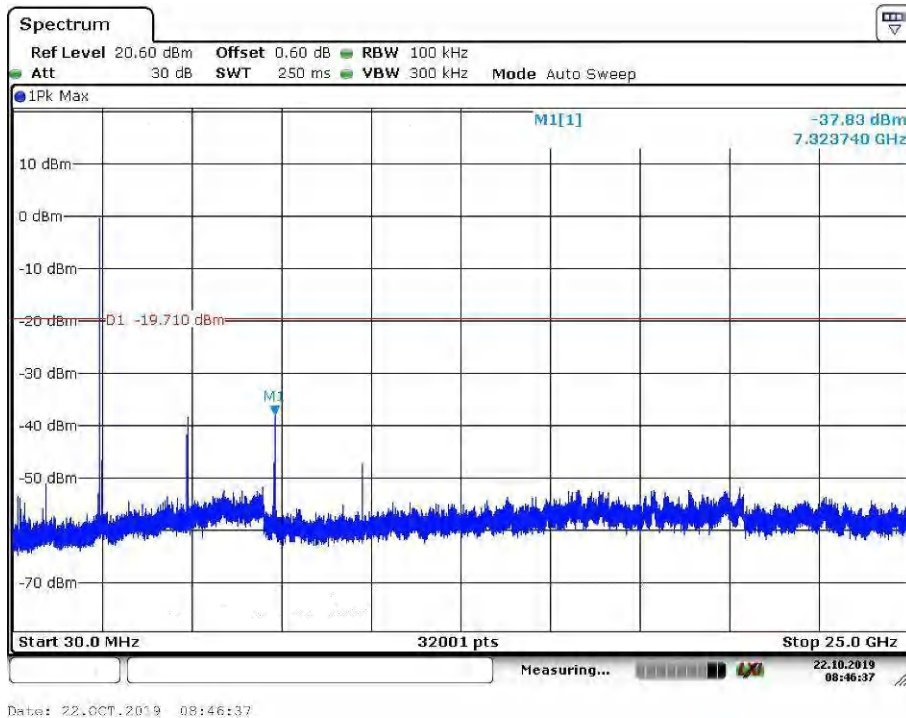
## Appendix B.6: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

### B.6.1 Test Results of GFSK

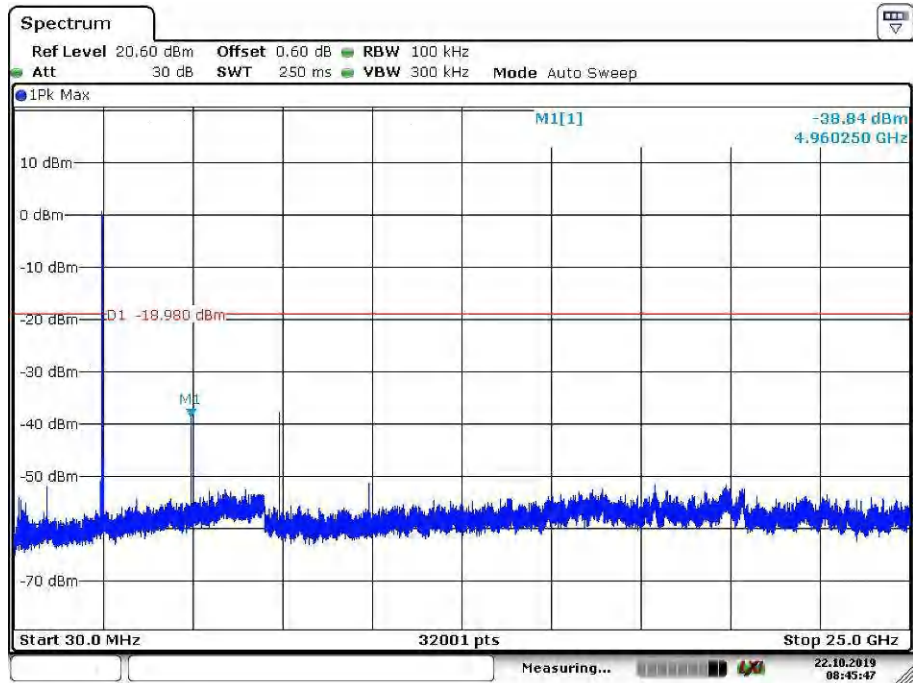
#### Low Channel



#### Middle Channel

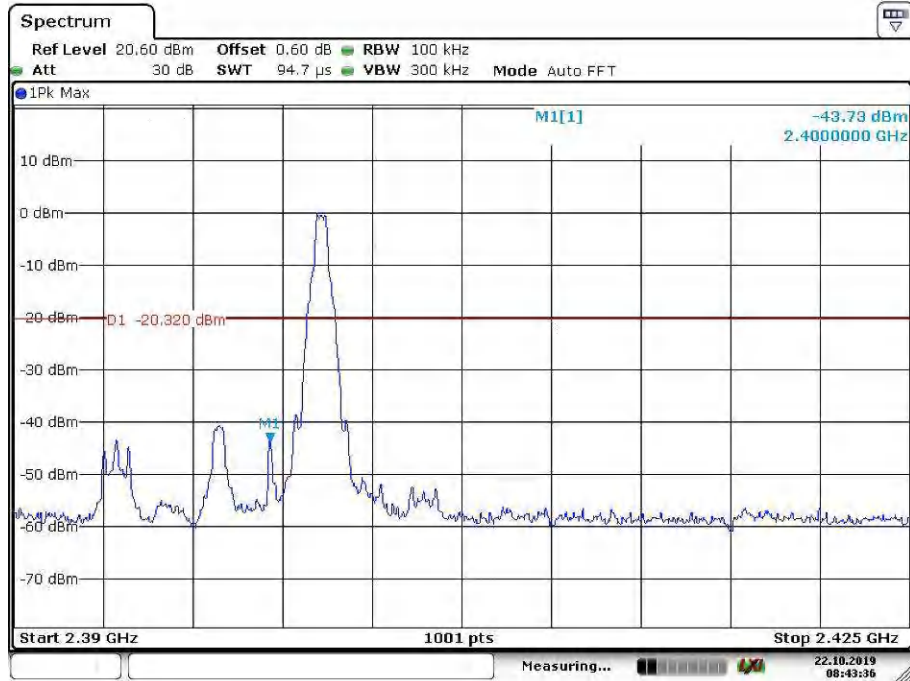


High Channel



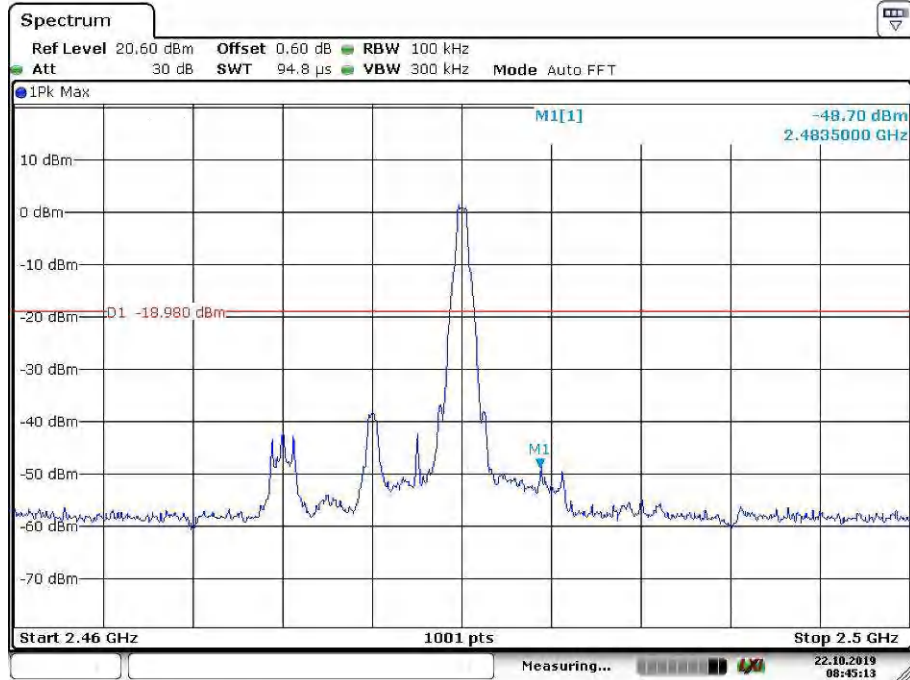
Date: 22.OCT.2019 08:45:47

### Band Edge, Low Channel



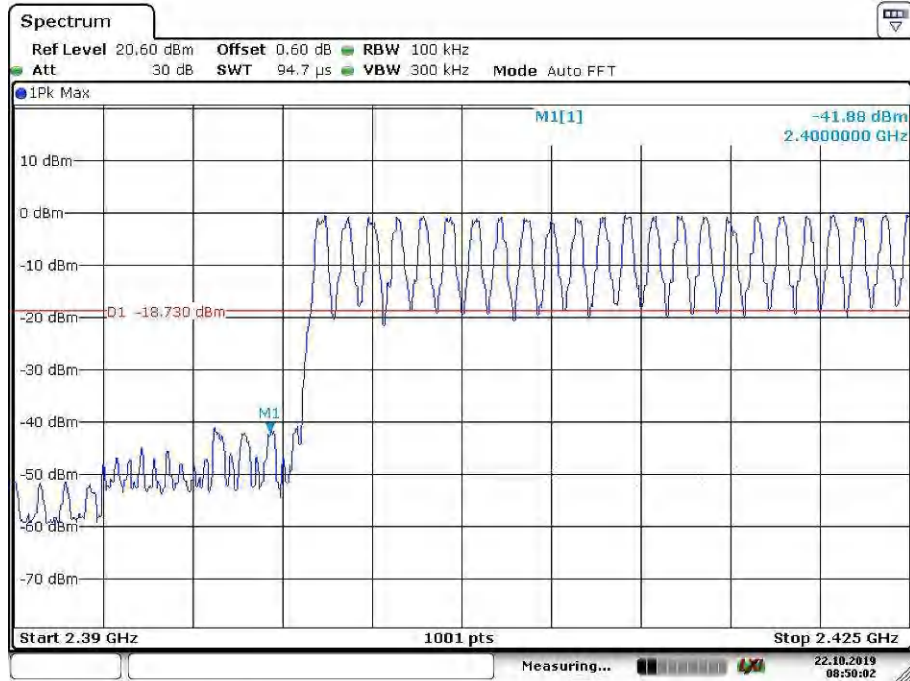
Date: 22.OCT.2019 08:43:36

### Band Edge, High Channel



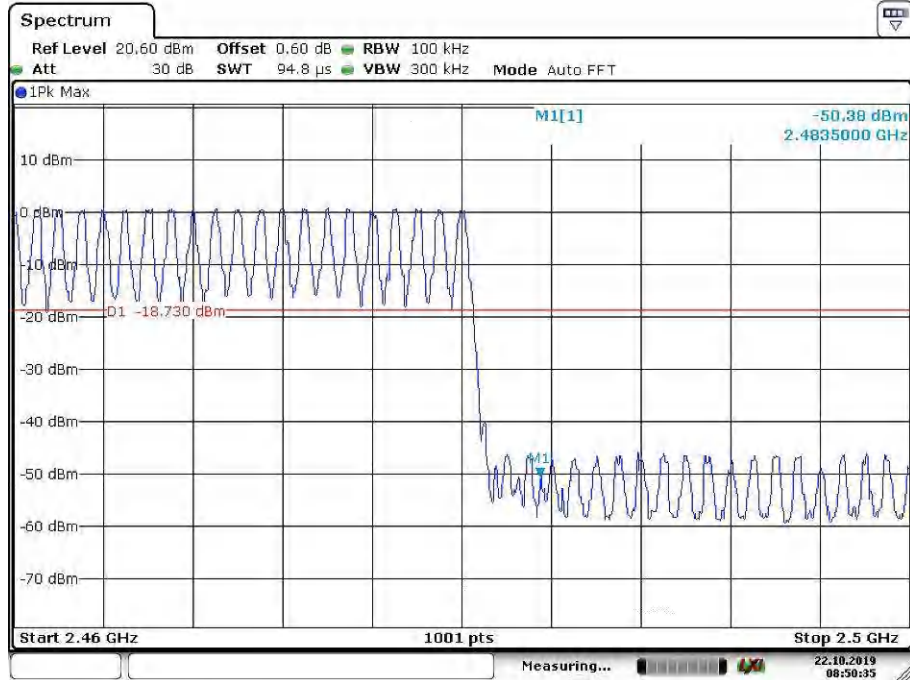
Date: 22.OCT.2019 08:45:13

Band Edge, Hopping Mode, Low Channel



Date: 22.OCT.2019 08:50:02

Band Edge, Hopping Mode, High Channel

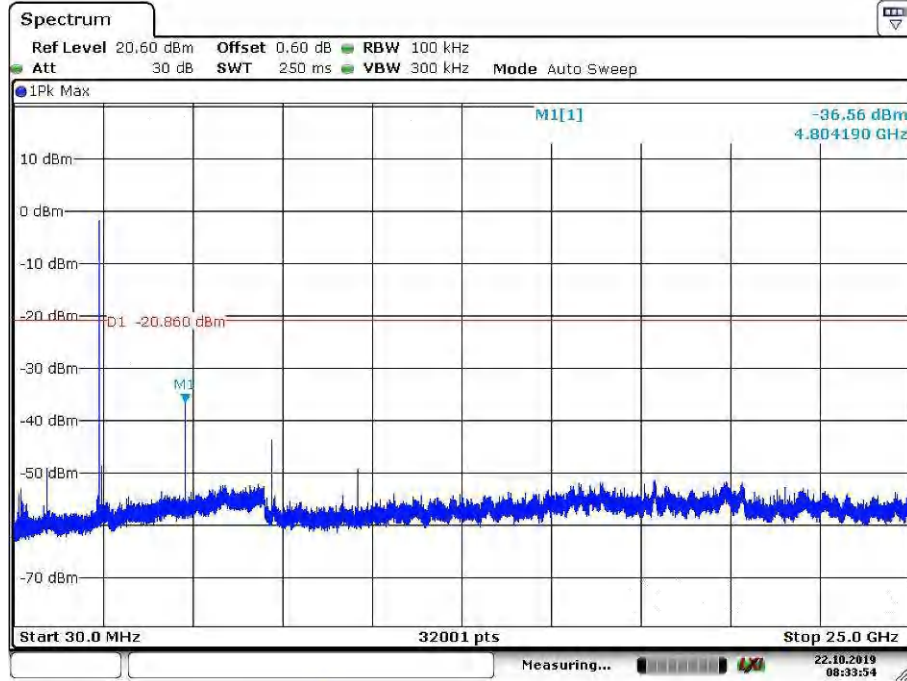


Date: 22.OCT.2019 08:50:35



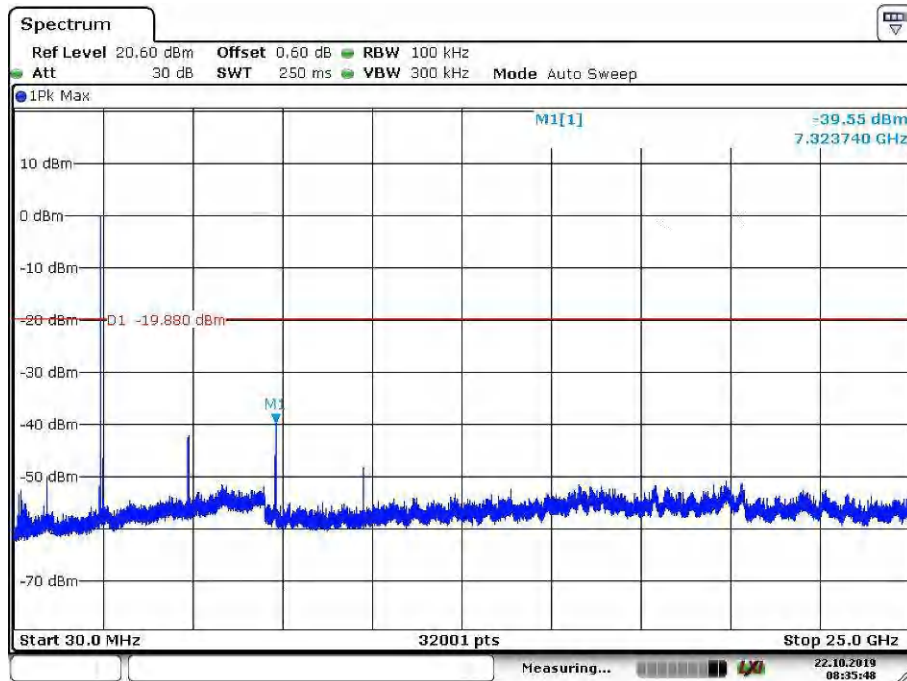
### B.6.2 Test Results of $\pi/4$ DQPSK

#### Low Channel



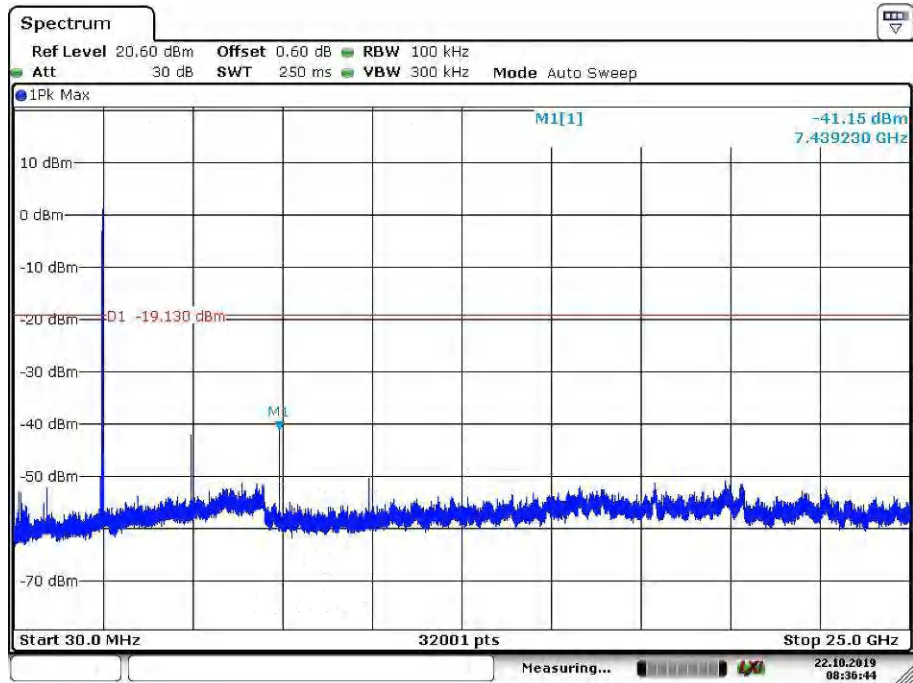
Date: 22.OCT.2019 08:33:54

#### Middle Channel



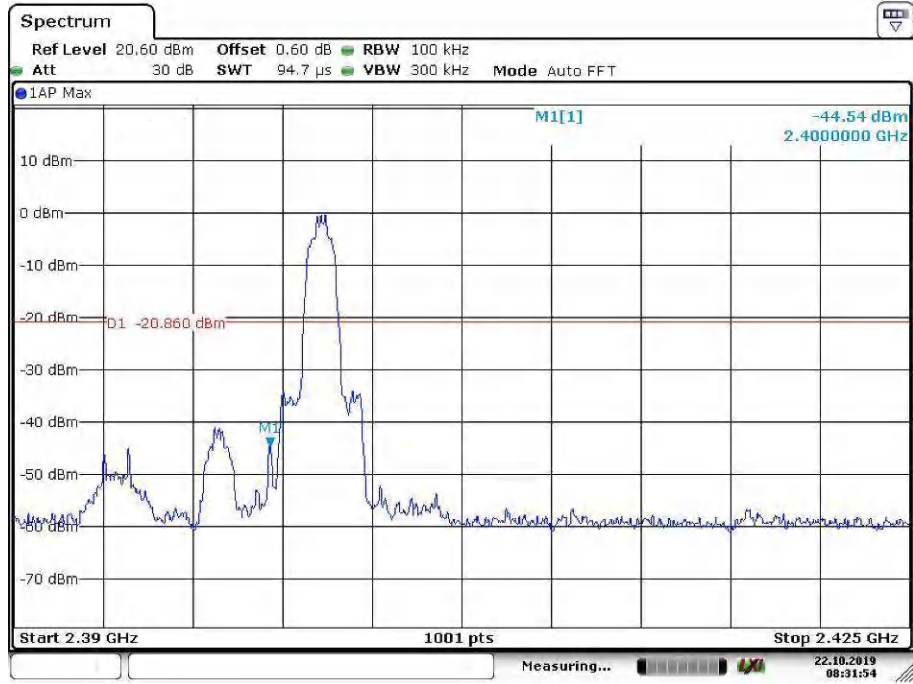
Date: 22.OCT.2019 08:35:48

High Channel

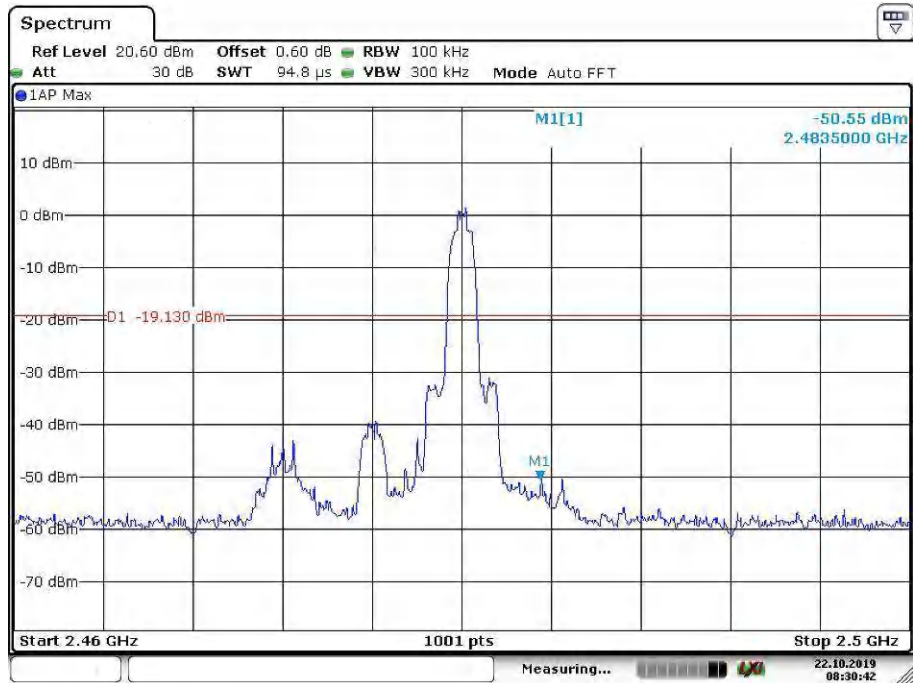


Date: 22.OCT.2019 08:36:44

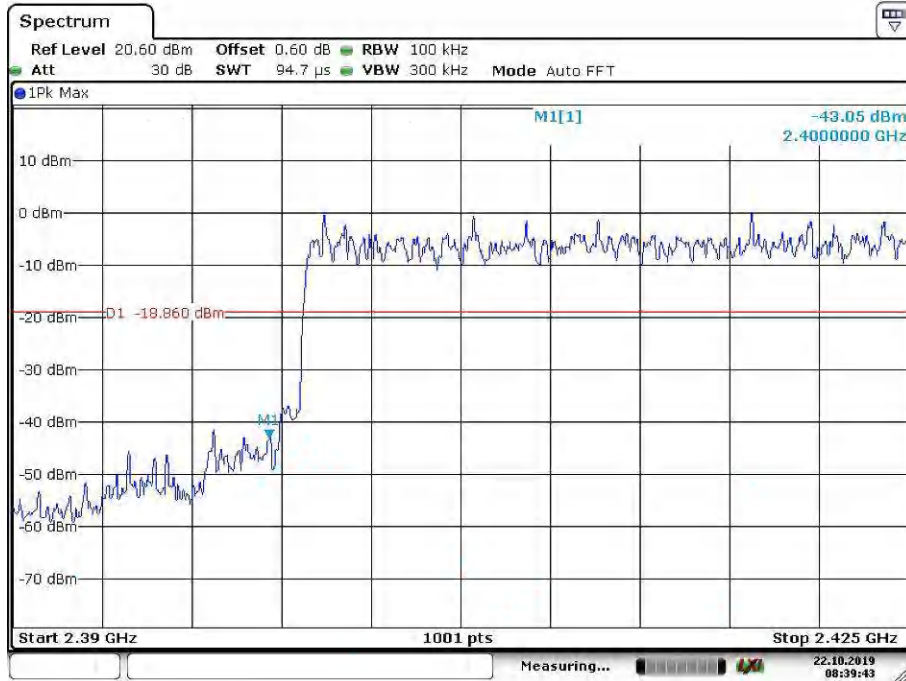
### Band Edge, Low Channel



### Band Edge, High Channel

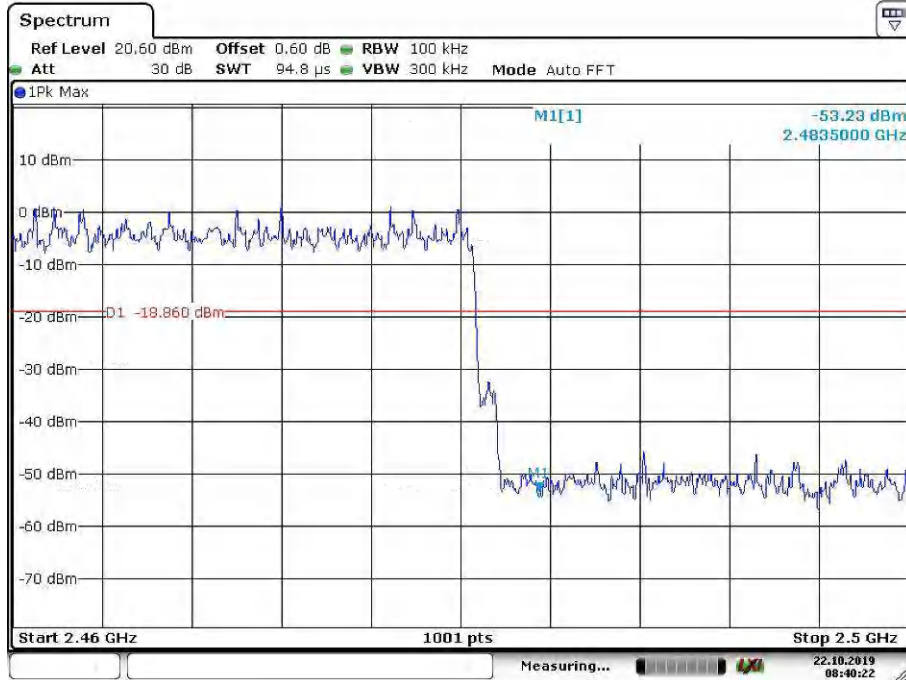


Band Edge, Hopping Mode, Low Channel



Date: 22.OCT.2019 08:39:43

Band Edge, Hopping Mode, High Channel



Date: 22.OCT.2019 08:40:22

Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

### Appendix B.7: Test Results of Radiated Spurious Emissions

30MHz - 1GHz (Worst case)

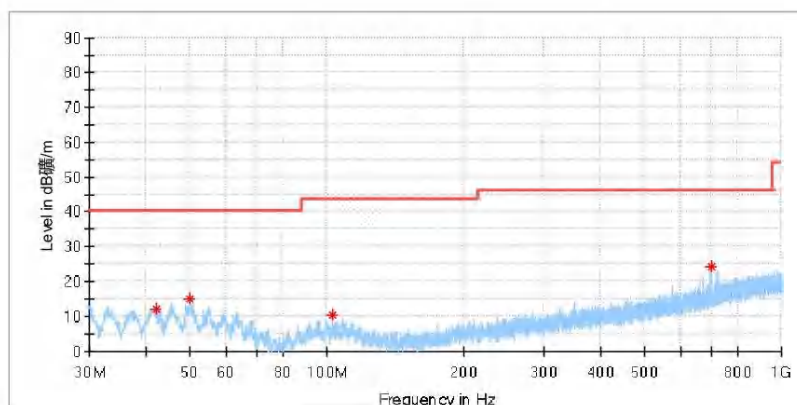
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Low Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.028000	12.30	---	40.00	27.70	100.0	H	140.0	-19.9
49.982000	14.97	---	40.00	25.03	100.0	H	43.0	-18.6
103.089500	10.38	---	43.50	33.12	100.0	H	0.0	-19.2
704.004500	24.42	---	46.00	21.58	100.0	H	222.0	-8.3

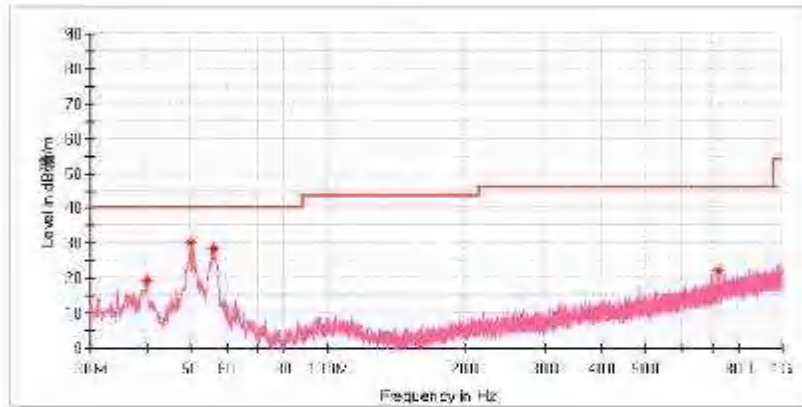
Test

1/1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Low Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	Max Peak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.991000	19.40	---	40.00	20.60	100.0	V	168.0	-20.4
49.982000	30.07	---	40.00	9.93	100.0	V	340.0	-18.6
56.141500	28.42	---	40.00	11.58	100.0	V	151.0	-18.9
726.009500	21.98	---	46.00	24.02	100.0	V	151.0	-8.1

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5:33:37 PM

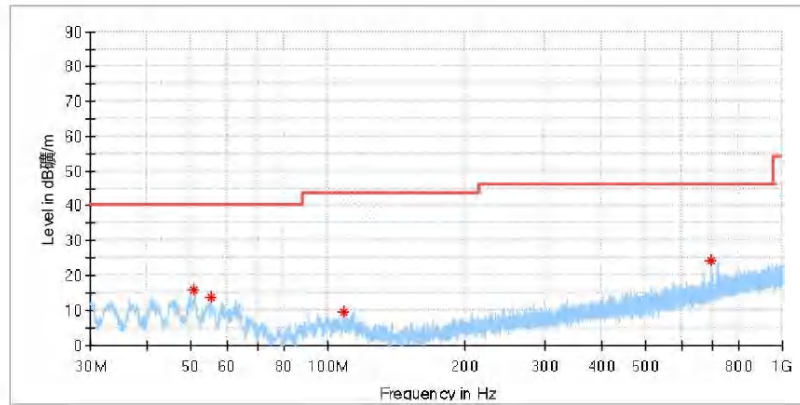
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Low Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
50.855000	15.80	---	40.00	24.20	100.0	H	0.0	-18.6
55.462500	13.80	---	40.00	26.20	100.0	H	229.0	-18.8
108.618500	9.52	---	43.50	33.98	100.0	H	237.0	-19.3
696.002000	24.29	---	46.00	21.71	100.0	H	229.0	-8.5

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5:40:03 PM

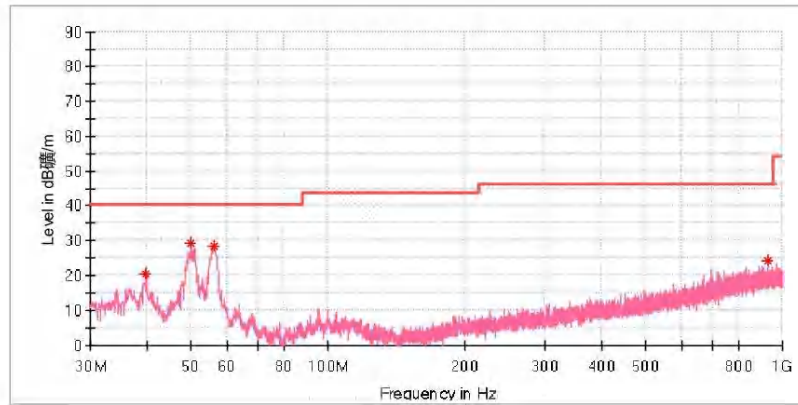
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Low Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.845500	20.63	---	40.00	19.37	100.0	V	149.0	-20.5
49.982000	29.39	---	40.00	10.61	100.0	V	313.0	-18.6
56.093000	28.48	---	40.00	11.52	100.0	V	0.0	-18.9
930.257000	24.11	---	46.00	21.89	100.0	V	297.0	-5.1

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5:36:52 PM



1GHz - 18GHz  
Low Channel

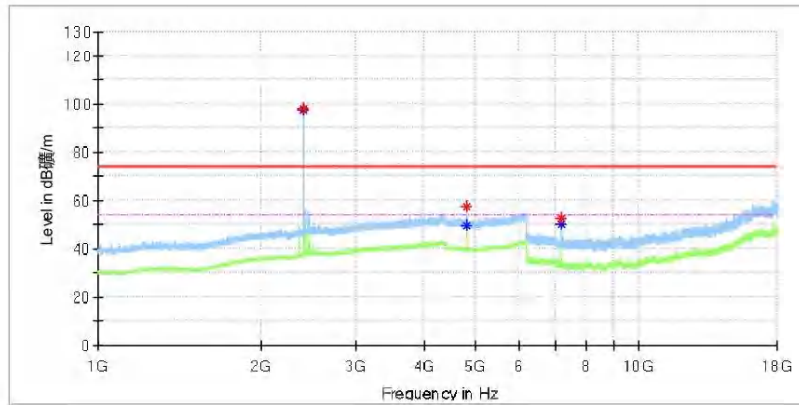
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Low Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2402.000000	98.06	---	74.00	-24.06	100.0	H	162.0	7.0
2402.000000	---	97.52	54.00	-43.52	100.0	H	162.0	7.0
4803.500000	57.14	---	74.00	16.86	100.0	H	311.0	13.6
4804.500000	---	49.73	54.00	4.27	100.0	H	304.0	13.6
7205.950000	---	50.24	54.00	3.76	100.0	H	59.0	8.8
7205.950000	52.69	---	74.00	21.31	100.0	H	59.0	8.8

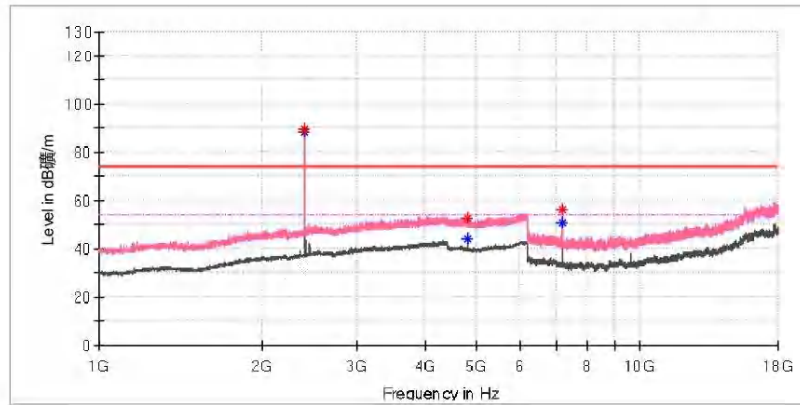
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Low Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2402.000000	---	88.26	54.00	-34.26	100.0	V	128.0	7.0
2402.000000	89.22	---	74.00	-15.22	100.0	V	128.0	7.0
4804.000000	---	44.21	54.00	9.79	100.0	V	320.0	13.6
4804.000000	52.58	---	74.00	21.42	100.0	V	320.0	13.6
7204.966667	---	50.99	54.00	3.01	100.0	V	267.0	8.8
7205.458333	56.01	---	74.00	17.99	100.0	V	267.0	8.8

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5:00:56 PM

Middle Channel

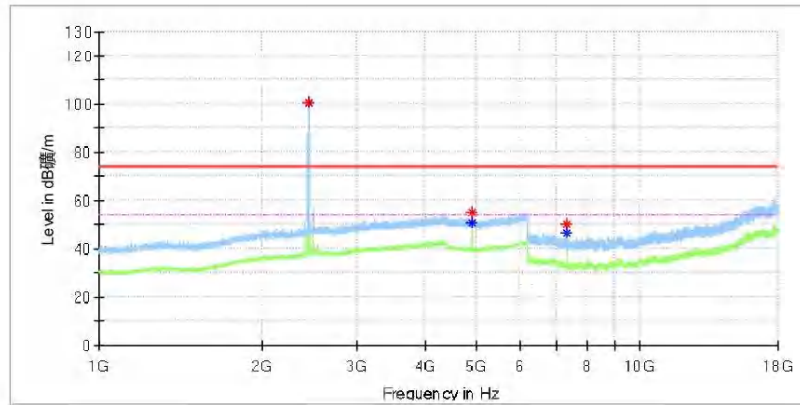
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Mid Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2441.000000	---	100.11	54.00	-46.11	100.0	H	162.0	7.4
2441.000000	100.54	---	74.00	-26.54	100.0	H	162.0	7.4
4881.500000	55.07	---	74.00	18.93	100.0	H	350.0	13.4
4882.000000	---	50.57	54.00	3.43	100.0	H	0.0	13.4
7322.966667	---	46.85	54.00	7.15	100.0	H	22.0	8.2
7322.966667	50.38	---	74.00	23.62	100.0	H	22.0	8.2

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4:35:09 PM

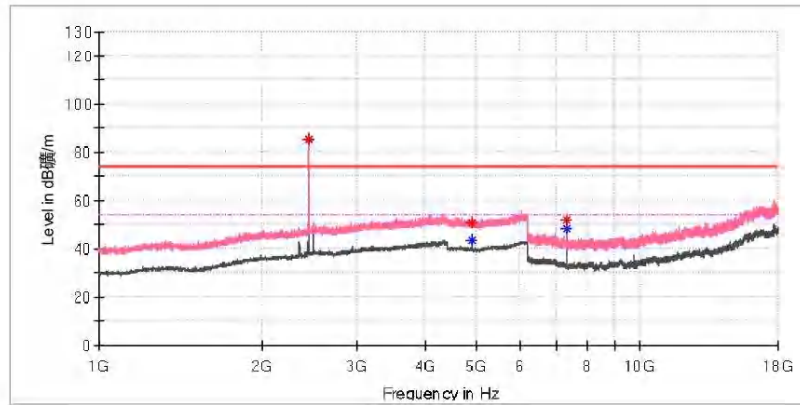
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Mid Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2441.000000	---	85.08	54.00	-31.08	100.0	V	207.0	7.4
2441.000000	85.50	---	74.00	-11.50	100.0	V	207.0	7.4
4880.000000	50.96	---	74.00	23.04	100.0	V	80.0	13.4
4882.000000	---	43.42	54.00	10.58	100.0	V	311.0	13.4
7322.966667	---	48.59	54.00	5.41	100.0	V	262.0	8.2
7322.966667	51.70	---	74.00	22.30	100.0	V	262.0	8.2

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4:44:06 PM

High Channel

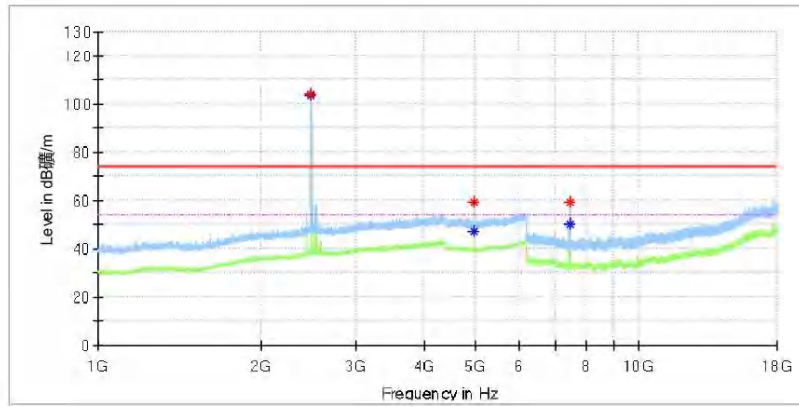
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT High Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2480.000000	104.02	---	74.00	-30.02	100.0	H	169.0	7.4
2480.000000	---	103.62	54.00	-49.62	100.0	H	169.0	7.4
4959.500000	59.30	---	74.00	14.70	100.0	H	339.0	13.2
4961.000000	---	46.87	54.00	7.13	100.0	H	339.0	13.2
7439.491667	59.02	---	74.00	14.98	100.0	H	86.0	8.4
7440.475000	---	50.23	54.00	3.77	100.0	H	55.0	8.4

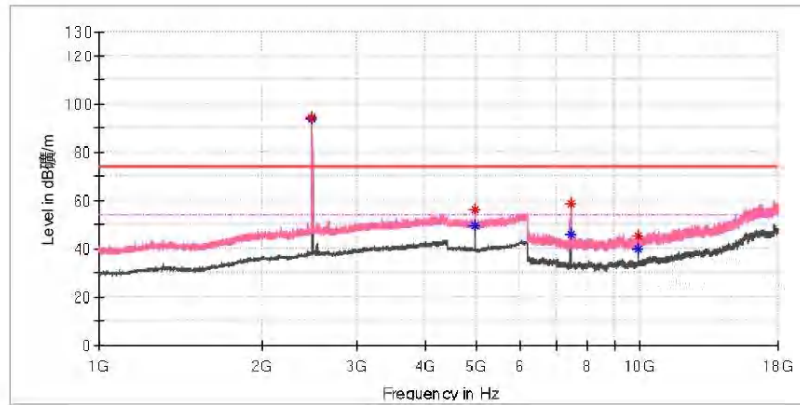
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT High Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2480.000000	---	93.66	54.00	-39.66	100.0	V	141.0	7.4
2480.000000	94.18	---	74.00	-20.18	100.0	V	141.0	7.4
4959.500000	---	49.69	54.00	4.31	100.0	V	272.0	13.2
4959.500000	56.15	---	74.00	17.85	100.0	V	272.0	13.2
7439.491667	58.64	---	74.00	15.36	100.0	V	32.0	8.4
7440.966667	---	45.66	54.00	8.34	100.0	V	16.0	8.4
9912.083333	---	39.76	54.00	14.24	100.0	V	356.0	10.8
9912.083333	45.31	---	74.00	28.69	100.0	V	356.0	10.8

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4:00:20 PM

## Appendix B.8: Test Results of Radiated Emissions in Restricted Bands

Low channel

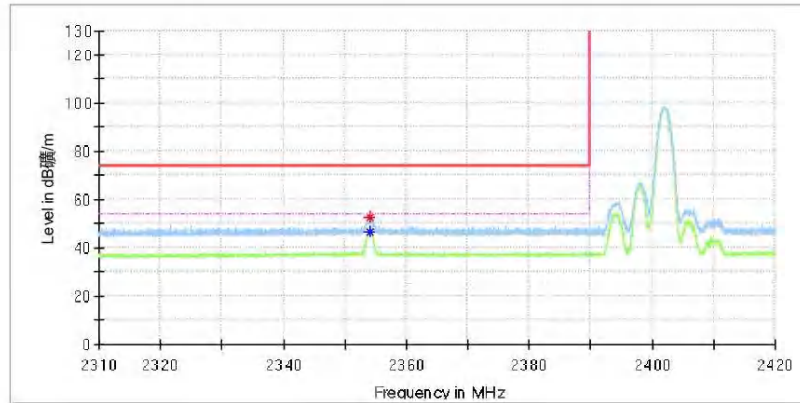
Test

1 / 1

### Test Report

#### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Low Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



#### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Poi	Azimuth (deg)	Corr. (dB/m)
2354.064706	---	46.79	54.00	7.21	100.0	H	172.0	6.9
2354.194118	52.35	---	74.00	21.65	100.0	H	172.0	6.9

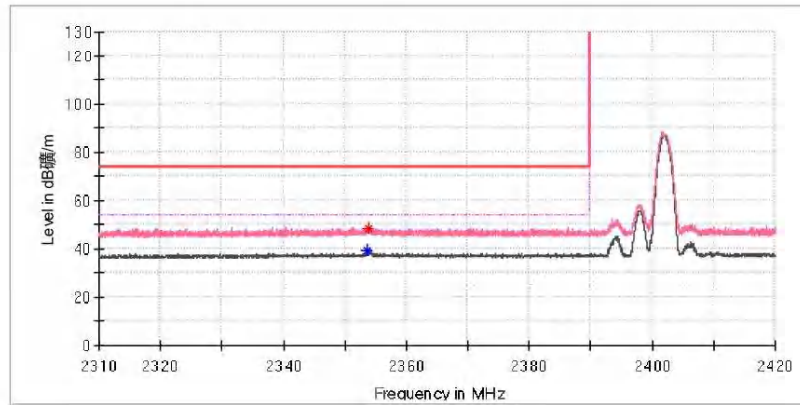
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT Low Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2353.708824	—	39.47	54.00	14.53	100.0	V	207.0	6.9
2353.805882	48.18	—	74.00	25.82	100.0	V	214.0	6.9

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5:07:55 PM



High channel

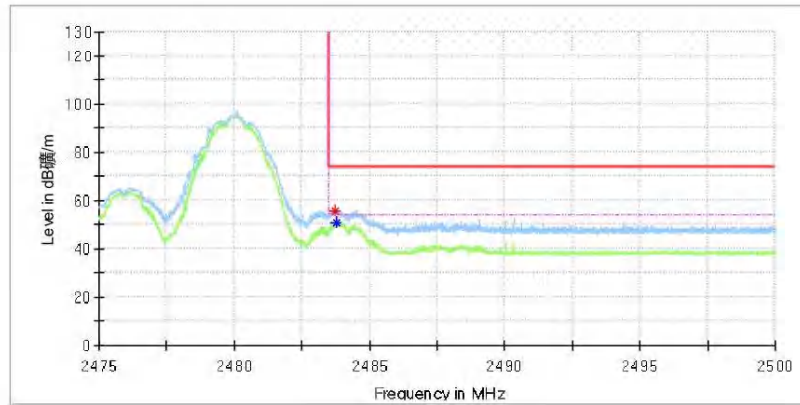
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT High Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.735294	55.65	—	74.00	18.35	100.0	H	160.0	7.4
2483.757353	—	50.96	54.00	3.04	100.0	H	160.0	7.4

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4:31:53 PM

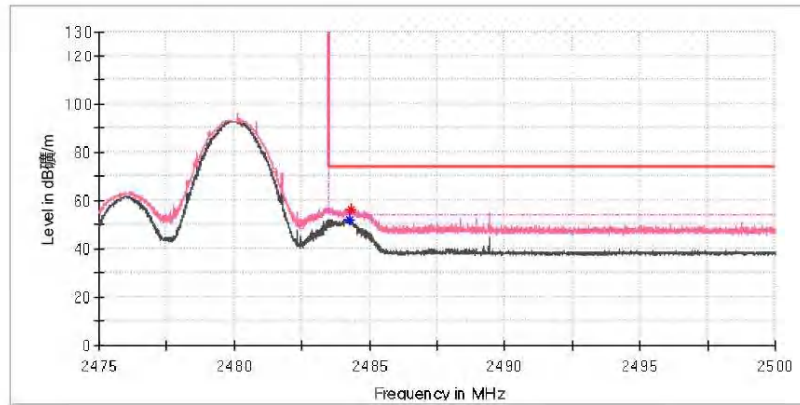
Test

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Test Mode:	TX BT High Channel
Test Voltage:	Fully charged battery
Remark:	Temp:22; Humi:54%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2484.290441	—	50.97	54.00	3.03	100.0	V	114.0	7.4
2484.308824	56.48	—	74.00	17.53	100.0	V	114.0	7.4

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4:07:32 PM

## Appendix B.9: Test Results of Conducted Emission on AC Mains

Bluetooth connecting mode +charging mode

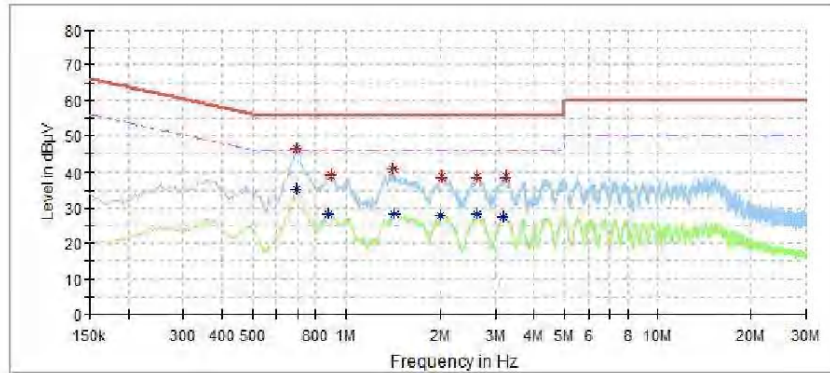
L

1 / 1

### Test Report

#### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	Bluetooth connecting + Charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	L



#### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.692000	46.44	---	56.00	9.56	---	---	L1	9.7
0.692000	---	35.30	46.00	10.70	---	---	L1	9.7
0.876000	---	28.30	46.00	17.70	---	---	L1	9.7
0.904000	38.99	---	56.00	17.01	---	---	L1	9.7
1.412000	40.65	---	56.00	15.35	---	---	L1	9.7
1.428000	---	28.26	46.00	17.74	---	---	L1	9.7
2.008000	---	28.03	46.00	17.97	---	---	L1	9.8
2.012000	38.36	---	56.00	17.64	---	---	L1	9.8
2.628000	38.74	---	56.00	17.26	---	---	L1	9.8
2.632000	---	28.40	46.00	17.60	---	---	L1	9.8
3.164000	---	27.50	46.00	18.50	---	---	L1	9.8
3.240000	38.40	---	56.00	17.60	---	---	L1	9.8

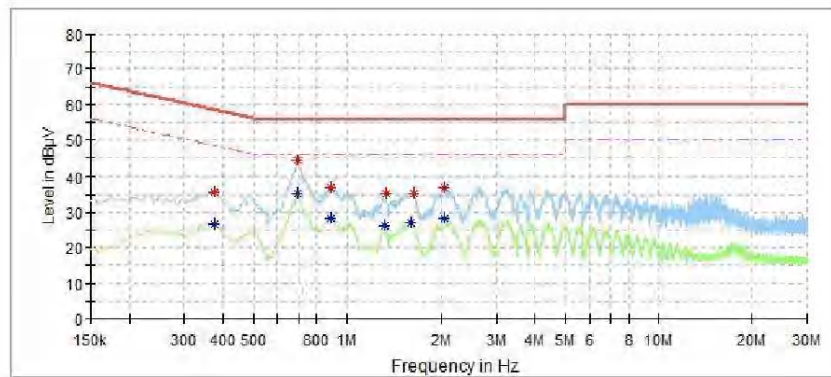
N

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## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	Bluetooth connecting + Charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	N



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.374000	---	26.62	48.41	21.79	---	---	N	9.7
0.374000	35.51	---	58.41	22.90	---	---	N	9.7
0.692000	---	35.27	46.00	10.73	---	---	N	9.7
0.696000	44.25	---	56.00	11.75	---	---	N	9.7
0.888000	---	28.29	46.00	17.71	---	---	N	9.7
0.892000	37.04	---	56.00	18.96	---	---	N	9.7
1.332000	---	26.30	46.00	19.70	---	---	N	9.7
1.336000	35.34	---	56.00	20.66	---	---	N	9.7
1.588000	---	27.17	46.00	18.83	---	---	N	9.7
1.624000	35.29	---	56.00	20.71	---	---	N	9.7
2.032000	---	28.23	46.00	17.77	---	---	N	9.7
2.044000	36.72	---	56.00	19.28	---	---	N	9.7

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9:30:32 AM

Aux in playing +charging mode

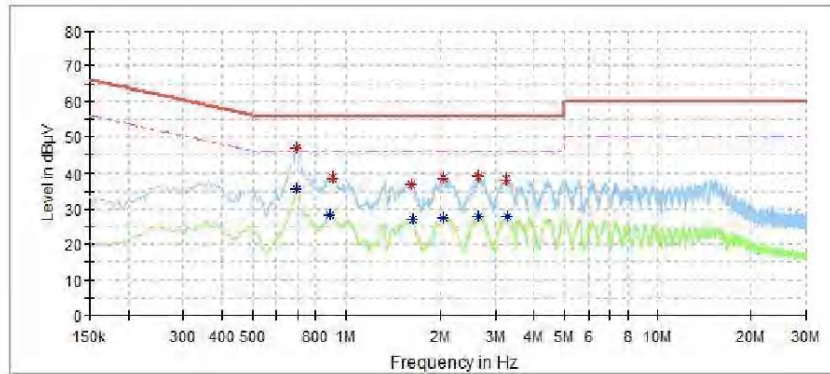
L

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	Aux in playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	L



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.692000	46.72	---	56.00	9.28	---	---	L1	9.7
0.692000	---	35.70	46.00	10.30	---	---	L1	9.7
0.892000	---	28.36	46.00	17.64	---	---	L1	9.7
0.912000	38.53	---	56.00	17.47	---	---	L1	9.7
1.608000	36.72	---	56.00	19.28	---	---	L1	9.7
1.624000	---	27.17	46.00	18.83	---	---	L1	9.7
2.044000	38.36	---	56.00	17.64	---	---	L1	9.8
2.048000	---	27.60	46.00	18.40	---	---	L1	9.8
2.652000	---	27.98	46.00	18.02	---	---	L1	9.8
2.652000	38.85	---	56.00	17.15	---	---	L1	9.8
3.260000	38.32	---	56.00	17.68	---	---	L1	9.8
3.276000	---	27.71	46.00	18.29	---	---	L1	9.8

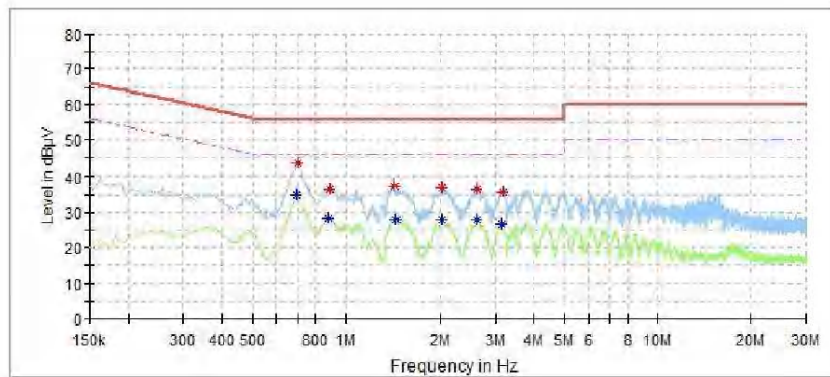
N

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	Aux in playing + charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	N



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.696000	---	34.67	46.00	11.33	---	---	N	9.7
0.700000	43.52	---	56.00	12.48	---	---	N	9.7
0.876000	---	28.20	46.00	17.80	---	---	N	9.7
0.892000	36.39	---	56.00	19.61	---	---	N	9.7
1.424000	37.16	---	56.00	18.84	---	---	N	9.7
1.444000	---	27.85	46.00	18.15	---	---	N	9.7
2.012000	---	27.83	46.00	18.17	---	---	N	9.7
2.024000	36.96	---	56.00	19.04	---	---	N	9.7
2.608000	---	27.94	46.00	18.06	---	---	N	9.8
2.624000	36.64	---	56.00	19.36	---	---	N	9.8
3.136000	---	26.76	46.00	19.24	---	---	N	9.8
3.184000	35.83	---	56.00	20.17	---	---	N	9.8

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2:08:22 PM

TF card playing +charging mode

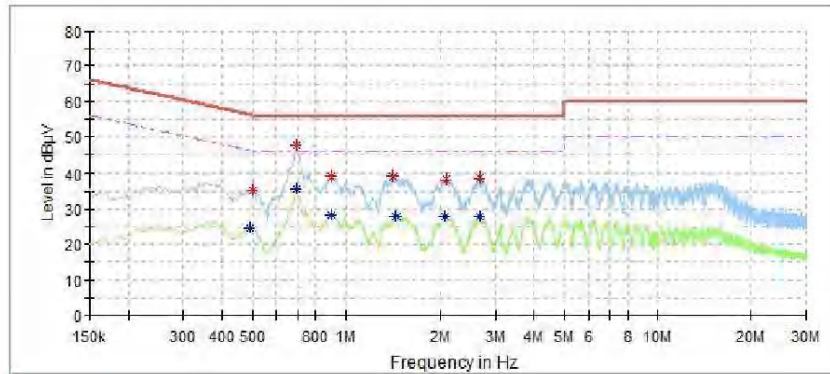
L

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## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	TF card playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	L



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.494000	---	24.65	46.10	21.45	---	---	L1	9.7
0.500000	35.41	---	56.00	20.59	---	---	L1	9.7
0.692000	47.60	---	56.00	8.40	---	---	L1	9.7
0.696000	---	35.63	46.00	10.37	---	---	L1	9.7
0.896000	38.83	---	56.00	17.17	---	---	L1	9.7
0.900000	---	28.27	46.00	17.73	---	---	L1	9.7
1.412000	38.88	---	56.00	17.12	---	---	L1	9.7
1.444000	---	28.07	46.00	17.93	---	---	L1	9.7
2.056000	---	27.80	46.00	18.20	---	---	L1	9.8
2.080000	37.99	---	56.00	18.01	---	---	L1	9.8
2.664000	38.39	---	56.00	17.61	---	---	L1	9.8
2.668000	---	27.92	46.00	18.08	---	---	L1	9.8

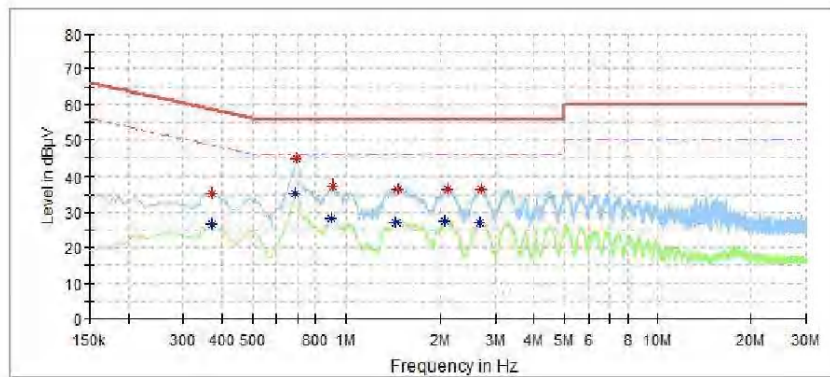
N

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## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	TF card playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	N



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.370000	---	26.47	48.50	22.03	---	---	N	9.7
0.370000	35.29	---	58.50	23.22	---	---	N	9.7
0.688000	---	35.11	46.00	10.89	---	---	N	9.7
0.692000	44.64	---	56.00	11.36	---	---	N	9.7
0.900000	---	28.30	46.00	17.70	---	---	N	9.7
0.912000	37.46	---	56.00	18.54	---	---	N	9.7
1.452000	---	27.26	46.00	18.74	---	---	N	9.7
1.456000	36.69	---	56.00	19.31	---	---	N	9.7
2.064000	---	27.36	46.00	18.64	---	---	N	9.7
2.120000	36.39	---	56.00	19.61	---	---	N	9.7
2.664000	---	27.14	46.00	18.86	---	---	N	9.8
2.692000	36.71	---	56.00	19.29	---	---	N	9.8

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2:27:19 PM



## Appendix C: Test Results of FCC 15B

<b>APPENDIX C: TEST RESULTS OF FCC 15B</b> .....	<b>1</b>
<b>APPENDIX C.1: TEST PLOTS OF CONDUCTED EMISSION ON AC MAINS</b> .....	<b>2</b>
<i>C+D, Bluetooth connecting mode +charging mode</i> .....	<i>2</i>
<i>E+D, Aux in playing +charging mode</i> .....	<i>4</i>
<i>F+D, TF card playing +charging mode</i> .....	<i>6</i>
<b>APPENDIX C.2: TEST PLOTS OF RADIATED EMISSION, BELOW 1GHZ</b> .....	<b>8</b>
<i>E+D, Aux in playing +charging mode</i> .....	<i>8</i>
<i>F+D, TF card playing +charging mode</i> .....	<i>10</i>
<b>APPENDIX C.3: TEST PLOTS OF RADIATED EMISSION, ABOVE 1GHZ</b> .....	<b>12</b>
<i>E+D, Aux in playing +charging mode</i> .....	<i>12</i>
<i>F+D, TF card playing +charging mode</i> .....	<i>14</i>

## Appendix C.1: Test Plots of Conducted Emission on AC Mains

C+D, Bluetooth connecting mode +charging mode

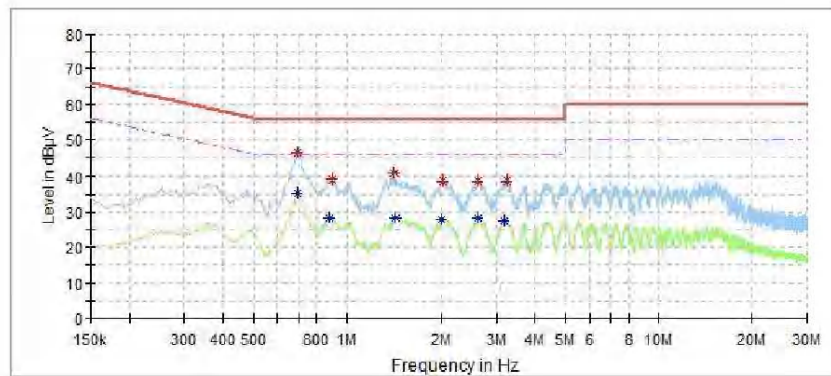
L

1 / 1

### Test Report

#### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	Bluetooth connecting + Charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	L



#### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.692000	46.44	---	56.00	9.56	---	---	L1	9.7
0.692000	---	35.30	46.00	10.70	---	---	L1	9.7
0.876000	---	28.30	46.00	17.70	---	---	L1	9.7
0.904000	38.99	---	56.00	17.01	---	---	L1	9.7
1.412000	40.65	---	56.00	15.35	---	---	L1	9.7
1.428000	---	28.26	46.00	17.74	---	---	L1	9.7
2.008000	---	28.03	46.00	17.97	---	---	L1	9.8
2.012000	38.36	---	56.00	17.64	---	---	L1	9.8
2.628000	38.74	---	56.00	17.26	---	---	L1	9.8
2.632000	---	28.40	46.00	17.60	---	---	L1	9.8
3.164000	---	27.50	46.00	18.50	---	---	L1	9.8
3.240000	38.40	---	56.00	17.60	---	---	L1	9.8

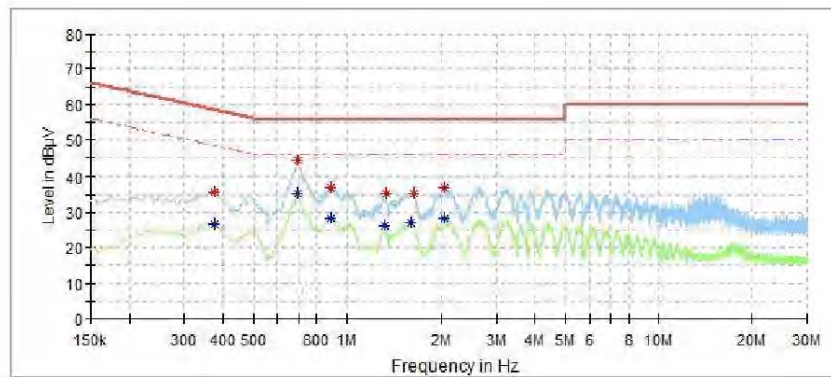
N

1 / 1

## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	Bluetooth connecting + Charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	N



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.374000	---	26.62	48.41	21.79	---	---	N	9.7
0.374000	35.51	---	58.41	22.90	---	---	N	9.7
0.692000	---	35.27	46.00	10.73	---	---	N	9.7
0.696000	44.25	---	56.00	11.75	---	---	N	9.7
0.888000	---	28.29	46.00	17.71	---	---	N	9.7
0.892000	37.04	---	56.00	18.96	---	---	N	9.7
1.332000	---	26.30	46.00	19.70	---	---	N	9.7
1.336000	35.34	---	56.00	20.66	---	---	N	9.7
1.588000	---	27.17	46.00	18.83	---	---	N	9.7
1.624000	35.29	---	56.00	20.71	---	---	N	9.7
2.032000	---	28.23	46.00	17.77	---	---	N	9.7
2.044000	36.72	---	56.00	19.28	---	---	N	9.7

10/30/2019

9:30:32 AM

E+D, Aux in playing +charging mode

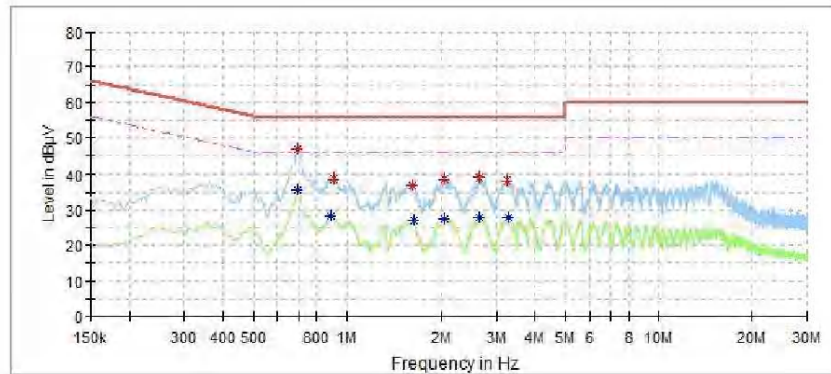
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## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	Aux in playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	L



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.692000	46.72	---	56.00	9.28	---	---	L1	9.7
0.692000	---	35.70	46.00	10.30	---	---	L1	9.7
0.892000	---	28.36	46.00	17.64	---	---	L1	9.7
0.912000	38.53	---	56.00	17.47	---	---	L1	9.7
1.608000	36.72	---	56.00	19.28	---	---	L1	9.7
1.624000	---	27.17	46.00	18.83	---	---	L1	9.7
2.044000	38.36	---	56.00	17.64	---	---	L1	9.8
2.048000	---	27.60	46.00	18.40	---	---	L1	9.8
2.652000	---	27.98	46.00	18.02	---	---	L1	9.8
2.652000	38.85	---	56.00	17.15	---	---	L1	9.8
3.260000	38.32	---	56.00	17.68	---	---	L1	9.8
3.276000	---	27.71	46.00	18.29	---	---	L1	9.8

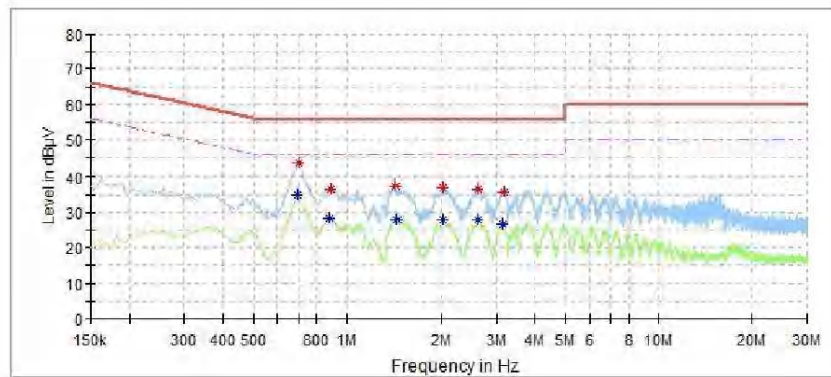
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## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	Aux in playing + charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	N



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.696000	---	34.67	46.00	11.33	---	---	N	9.7
0.700000	43.52	---	56.00	12.48	---	---	N	9.7
0.876000	---	28.20	46.00	17.80	---	---	N	9.7
0.892000	36.39	---	56.00	19.61	---	---	N	9.7
1.424000	37.16	---	56.00	18.84	---	---	N	9.7
1.444000	---	27.85	46.00	18.15	---	---	N	9.7
2.012000	---	27.83	46.00	18.17	---	---	N	9.7
2.024000	36.96	---	56.00	19.04	---	---	N	9.7
2.608000	---	27.94	46.00	18.06	---	---	N	9.8
2.624000	36.64	---	56.00	19.36	---	---	N	9.8
3.136000	---	26.76	46.00	19.24	---	---	N	9.8
3.184000	35.83	---	56.00	20.17	---	---	N	9.8

10/30/2019

2:08:22 PM

F+D, TF card playing +charging mode

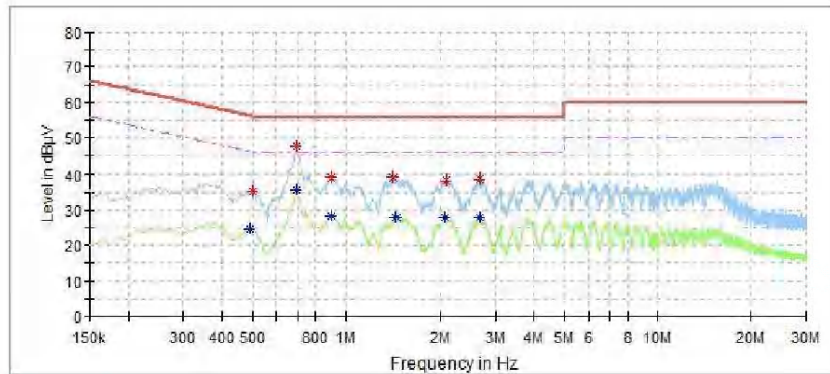
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## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	TF card playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	L



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.494000	---	24.65	46.10	21.45	---	---	L1	9.7
0.500000	35.41	---	56.00	20.59	---	---	L1	9.7
0.692000	47.60	---	56.00	8.40	---	---	L1	9.7
0.696000	---	35.63	46.00	10.37	---	---	L1	9.7
0.896000	38.83	---	56.00	17.17	---	---	L1	9.7
0.900000	---	28.27	46.00	17.73	---	---	L1	9.7
1.412000	38.88	---	56.00	17.12	---	---	L1	9.7
1.444000	---	28.07	46.00	17.93	---	---	L1	9.7
2.056000	---	27.80	46.00	18.20	---	---	L1	9.8
2.080000	37.99	---	56.00	18.01	---	---	L1	9.8
2.664000	38.39	---	56.00	17.61	---	---	L1	9.8
2.668000	---	27.92	46.00	18.08	---	---	L1	9.8

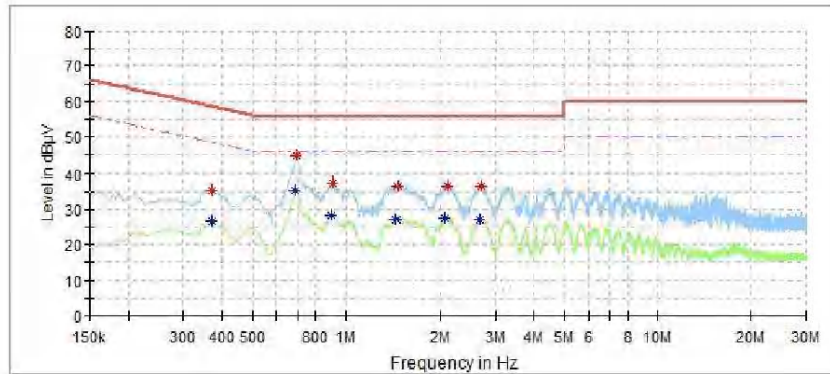
N

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## Test Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No.:	168132923
Test Mode:	TF card playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	N



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.370000	---	26.47	48.50	22.03	---	---	N	9.7
0.370000	35.29	---	58.50	23.22	---	---	N	9.7
0.688000	---	35.11	46.00	10.89	---	---	N	9.7
0.692000	44.64	---	56.00	11.36	---	---	N	9.7
0.900000	---	28.30	46.00	17.70	---	---	N	9.7
0.912000	37.46	---	56.00	18.54	---	---	N	9.7
1.452000	---	27.26	46.00	18.74	---	---	N	9.7
1.456000	36.69	---	56.00	19.31	---	---	N	9.7
2.064000	---	27.36	46.00	18.64	---	---	N	9.7
2.120000	36.39	---	56.00	19.61	---	---	N	9.7
2.664000	---	27.14	46.00	18.86	---	---	N	9.8
2.692000	36.71	---	56.00	19.29	---	---	N	9.8

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## Appendix C.2: Test Plots of Radiated Emission, Below 1GHz

E+D, Aux in playing +charging mode

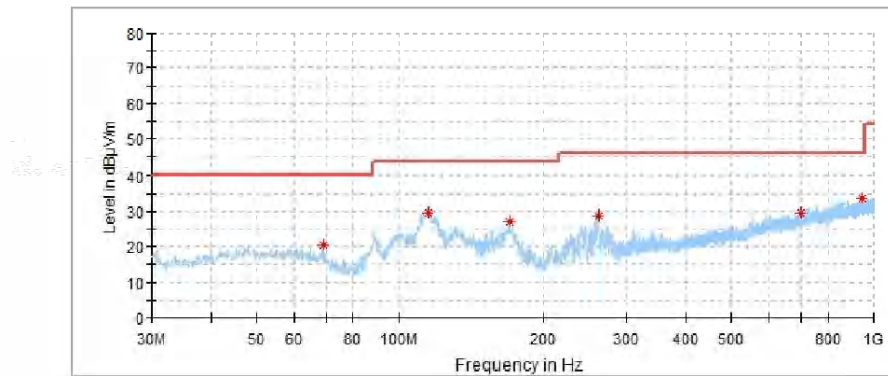
FCC H

1 / 1

### EMC32 Report

#### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No:	168132923
Test Mode:	Aux in playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	3M Chamber



#### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
943.449000	33.76	46.00	12.24	---	---	100.0	H	241.0
261.830000	28.80	46.00	17.20	---	---	100.0	H	276.0
169.777000	27.05	43.50	16.45	---	---	200.0	H	4.0
115.360000	29.70	43.50	13.80	---	---	300.0	H	3.0
702.889000	29.60	46.00	16.40	---	---	300.0	H	210.0
68.994000	20.52	40.00	19.48	---	---	300.0	H	329.0



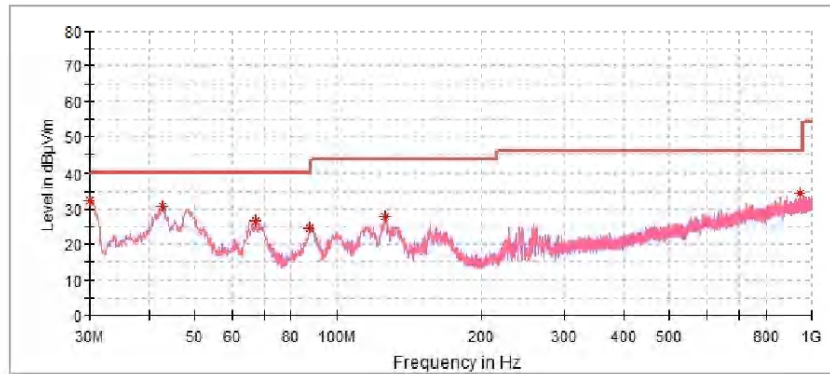
FCC V

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## EMC32 Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No:	168132923
Test Mode:	Aux in playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	3M Chamber



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
126.612000	27.99	43.50	15.51	---	---	100.0	V	32.0
30.097000	32.45	40.00	7.55	---	---	100.0	V	55.0
87.715000	24.46	40.00	15.54	---	---	200.0	V	126.0
942.188000	34.29	46.00	11.71	---	---	200.0	V	142.0
42.610000	30.68	40.00	9.32	---	---	200.0	V	240.0
67.248000	26.79	40.00	13.21	---	---	200.0	V	308.0

F+D, TF card playing +charging mode

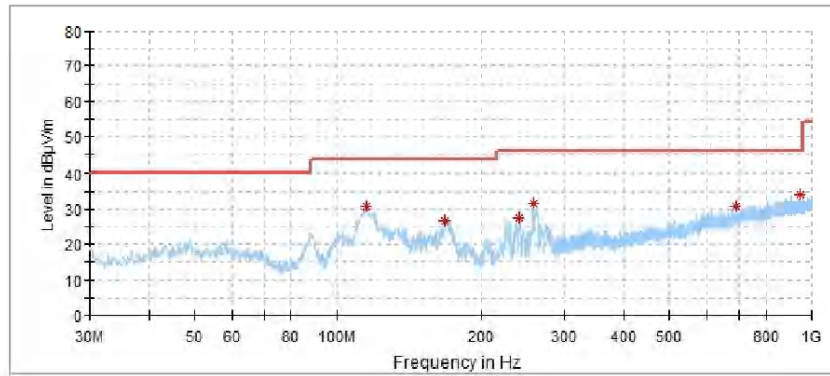
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## EMC32 Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No:	168132923
Test Mode:	TF card playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	3M Chamber



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
258.241000	31.61	46.00	14.39	---	---	100.0	H	264.0
241.363000	27.65	46.00	18.35	---	---	100.0	H	310.0
167.740000	26.74	43.50	16.76	---	---	200.0	H	29.0
115.360000	30.75	43.50	12.75	---	---	200.0	H	200.0
947.620000	33.96	46.00	12.04	---	---	200.0	H	332.0
691.540000	30.68	46.00	15.32	---	---	300.0	H	145.0

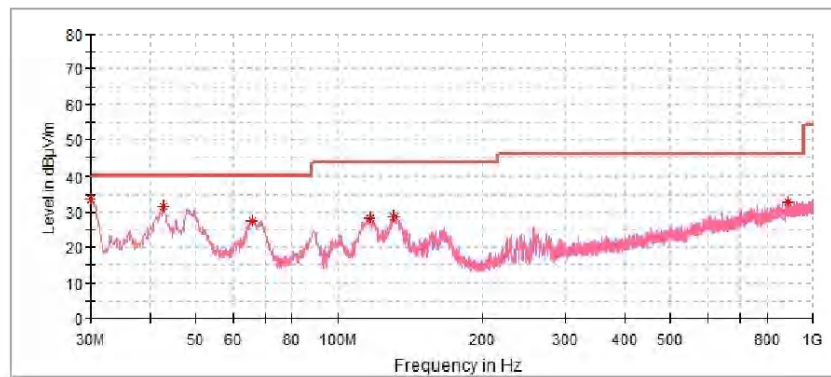
FCC V

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## EMC32 Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No:	168132923
Test Mode:	TF card playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	3M Chamber



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
66.084000	27.56	40.00	12.44	---	---	100.0	V	0.0
130.880000	28.63	43.50	14.87	---	---	100.0	V	0.0
30.097000	33.55	40.00	6.45	---	---	100.0	V	86.0
887.965000	32.94	46.00	13.06	---	---	100.0	V	98.0
42.610000	31.64	40.00	8.36	---	---	100.0	V	158.0
116.718000	28.23	43.50	15.27	---	---	100.0	V	273.0

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EMC32V10.50.0

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### Appendix C.3: Test Plots of Radiated Emission, Above 1GHz

E+D, Aux in playing +charging mode

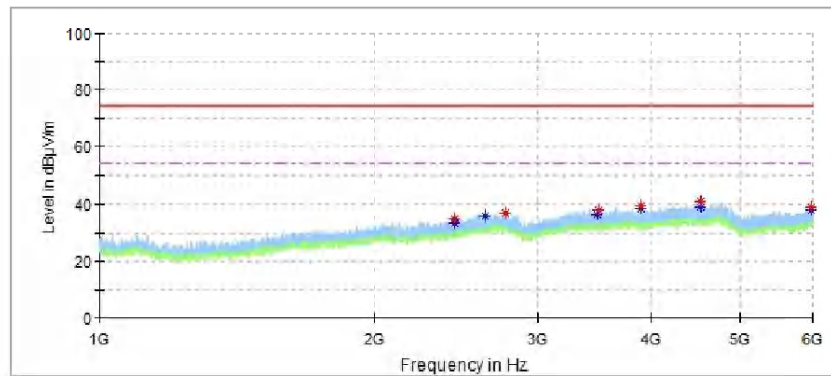
FCC H

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## EMC32 Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No:	168132923
Test Mode:	Aux in playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	3M Chamber



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
5978.500000	39.04	---	74.00	34.96	---	---	100.0	H
5978.500000	---	37.95	54.00	16.05	---	---	100.0	H
4520.000000	---	39.15	54.00	14.85	---	---	100.0	H
4520.000000	40.89	---	74.00	33.11	---	---	100.0	H
3495.500000	37.92	---	74.00	36.08	---	---	100.0	H
3895.500000	39.72	---	74.00	34.28	---	---	100.0	H
3895.500000	---	38.69	54.00	15.31	---	---	100.0	H
2633.000000	---	35.69	54.00	18.31	---	---	100.0	H
2773.000000	37.15	---	74.00	36.85	---	---	100.0	H
3491.500000	---	36.38	54.00	17.62	---	---	100.0	H
2439.500000	---	33.30	54.00	20.70	---	---	100.0	H
2440.000000	34.85	---	74.00	39.15	---	---	100.0	H

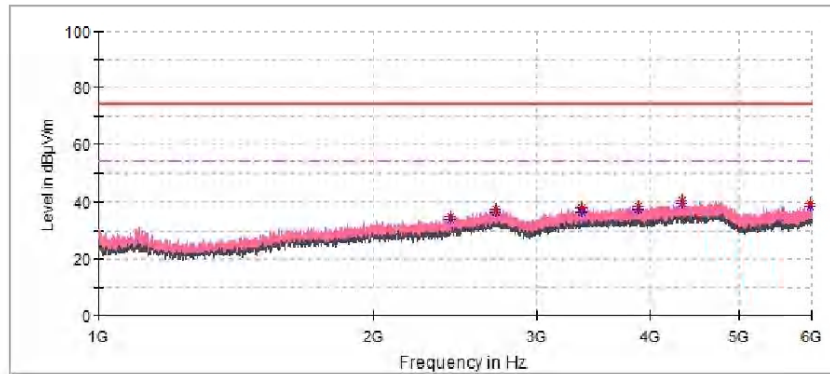
FCC V

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## EMC32 Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No:	168132923
Test Mode:	Aux in playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	3M Chamber



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
2417.000000	---	33.85	54.00	20.15	---	---	100.0	V
2417.000000	34.88	---	74.00	39.12	---	---	100.0	V
2709.000000	---	36.63	54.00	17.37	---	---	100.0	V
2709.000000	37.52	---	74.00	36.48	---	---	100.0	V
3357.000000	---	36.17	54.00	17.83	---	---	100.0	V
3357.000000	37.88	---	74.00	36.12	---	---	100.0	V
5988.000000	---	38.50	54.00	15.50	---	---	100.0	V
5988.000000	39.30	---	74.00	34.70	---	---	100.0	V
3885.000000	---	37.51	54.00	16.49	---	---	100.0	V
3885.000000	38.67	---	74.00	35.33	---	---	100.0	V
4324.500000	---	39.60	54.00	14.40	---	---	100.0	V
4324.500000	40.43	---	74.00	33.57	---	---	100.0	V

F+D, TF card playing +charging mode

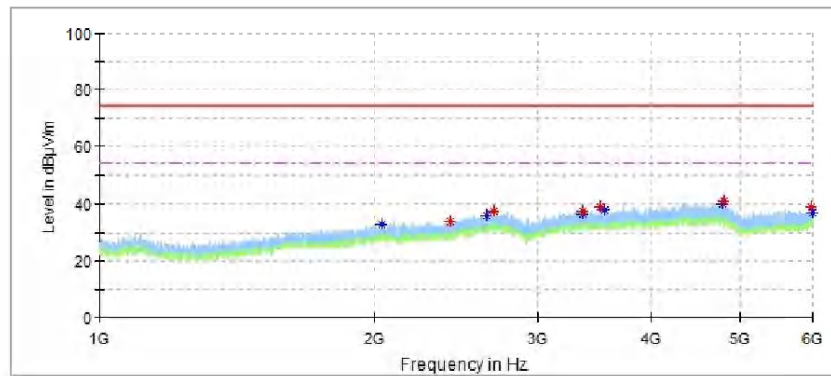
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1 / 1

## EMC32 Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No:	168132923
Test Mode:	TF card playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	3M Chamber



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
5996.000000	---	37.17	54.00	16.83	---	---	100.0	H
3366.500000	37.64	---	74.00	36.36	---	---	100.0	H
3366.500000	---	36.61	54.00	17.39	---	---	100.0	H
3514.000000	39.08	---	74.00	34.92	---	---	100.0	H
4787.500000	---	39.84	54.00	14.16	---	---	100.0	H
2639.000000	---	36.08	54.00	17.92	---	---	100.0	H
3553.000000	---	37.84	54.00	16.16	---	---	100.0	H
4798.000000	41.11	---	74.00	32.89	---	---	100.0	H
2038.500000	---	32.73	54.00	21.27	---	---	100.0	H
5979.500000	38.74	---	74.00	35.26	---	---	100.0	H
2685.000000	37.43	---	74.00	36.57	---	---	100.0	H
2408.000000	34.02	---	74.00	39.98	---	---	100.0	H

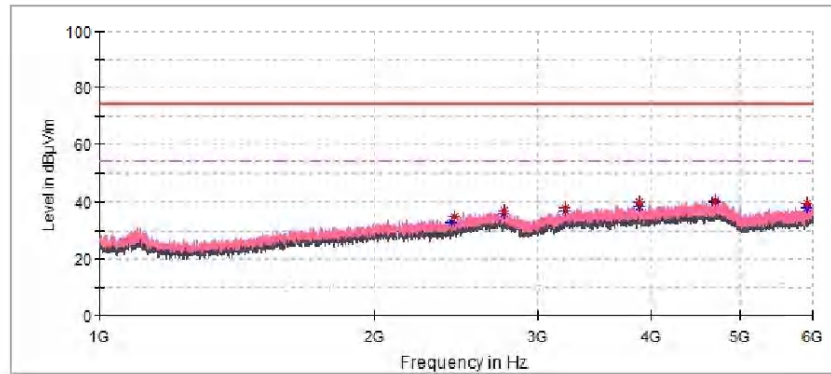
FCC V

1 / 1

## EMC32 Report

### EUT Information

EUT Name:	Mini Pod Speaker
Model:	EE2763
Order No:	168132923
Test Mode:	TF card playing +charging mode
Test Voltage:	DC 5V
Test By:	Charlie Wang
Review By:	Gary Chen
Remark:	3M Chamber



### Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
2420.500000	---	32.59	54.00	21.41	---	---	100.0	V
4691.500000	40.76	---	74.00	33.24	---	---	100.0	V
4691.500000	---	40.07	54.00	13.93	---	---	100.0	V
5913.500000	---	37.82	54.00	16.18	---	---	100.0	V
5913.500000	39.27	---	74.00	34.73	---	---	100.0	V
2763.500000	36.86	---	74.00	37.14	---	---	100.0	V
2763.500000	---	36.07	54.00	17.93	---	---	100.0	V
2440.000000	34.90	---	74.00	39.10	---	---	100.0	V
3217.500000	---	36.99	54.00	17.01	---	---	100.0	V
3217.500000	38.11	---	74.00	35.89	---	---	100.0	V
3880.000000	39.80	---	74.00	34.20	---	---	100.0	V
3880.000000	---	38.65	54.00	15.35	---	---	100.0	V