CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

Application No. : LU026845(3)

Applicant : SDI Technologies Inc.
1299 Main Street, Rahway,
New Jersey 07065, United States

Factory : Arts Electronics Co., Ltd.
NO. 1, SHANGXING LU, SHANGJIAO COMMUNITY, CHANGAN TOWN,
DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

Sample Description : One(1) item of submitted sample stated to be:

Brand name	Sample description	Model number
iHome	Bedside Sleep Therapy Machine	iZBT10

Sample registration No. : RU032582-001
Radio Frequency : 2402MHz – 2480 MHz Transceiver
Rating : AC 100-240V to DC 12V adaptor, 1 x 3V button cell
No. of submitted sample : Two (2) piece (s)

Date Received : 20 Jun 2016

Test Period : 30 Jun 2016 to 04 Jul 2016.

Test Requested : FCC Part 15 Certificate (15.247), FCC Part 15 Verification Procedure
Industry Canada Interference Causing Equipment Standard RSS-247 Issue 1
Industry Canada Interference Causing Equipment Standard RSS-Gen Issue 4
Industry Canada Interference Causing Equipment Standard ICES-003 Issue 6

Test Method : 47 CFR Part 15 (10-1-15 Edition), ANSI C63.4 – 2014, ANSI C63.10 – 2013,
FCC Public Notice DA 00-705, KDB 558074 D01 DTS Meas Guidance v03r05

Test Engineer : Mr. LEUNG Shu-kan, Ken

Test Result : See attached sheet(s) from page 2 to 75.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15 Subpart B and C, RSS-247 Issue 1 and ICES-003 Issue 6.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Mr. WONG Lap-pong, Andrew
Manager
Electrical Division

FCC ID: EMOIZBT10
IC: 986B-IZBT10

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

Table of Contents

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

1 General Information

1.1 General Description

The equipment under test (EUT) is a bluetooth speaker. The EUT is power by AC 100-240 to DC 12V adaptor. The EUT has two operating modes. The first operating mode is Bluetooth mode. It receives digital audio signal from other wireless device and playback the audio signal. The second mode is Aux mode. An Aux input terminal supports audio input by 3.5 mm terminal. The third mode is FM radio receiving.

For the Bluetooth mode, it supports standard Bluetooth V4.2 or below revision protocol for data synchronization. After paring with other standard Bluetooth device, it can play the music.

A non standardized Bluetooth protocol or other Gaussian frequency-shift keying (GFSK) digital modulation signal was unable to synchronize the Bluetooth speaker.

A Bluetooth trademark was printed on the speaker enclosure to indicate it communicate with Bluetooth protocol only.

Pseudorandom frequency hopping sequence
The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF Channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master. The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1600 hops/s.
Example of a 79 hopping sequence in data mode: 40, 21, 44, 23, 42, 53, 46, 55, 48, 33, 52, 35, 50, 65, 54…

Equal Hopping Frequency Use
All Bluetooth units participating in the piconet are time and hop-synchronized to the channel.

System Receiver Input Bandwidth
The input bandwidth of the receiver is 1 MHz. In every connection one Bluetooth device is the master and the other one is slave. The aster 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. Additionally the type of connection (e.g. single multisport (packet) 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. Repeating of a packet

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has no influence on the hopping sequence.. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

Equipment Description

15.247(g): In accordance with the Bluetooth Industry Standard, the system is designed to comply With all of The regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.

15.247(h): In accordance with the Bluetooth Industry Standard, the system does not coordinate it channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

The brief circuit description is listed as follows:

- BT and its associated circuit act as bluetooth module
- Y1 and its associated circuit act as oscillator
- U701 and its associated circuit act as audio amplifier
- U4, U6, U11 and its associated circuit act as voltage regulator

Antenna type : PCB Antenna
Antenna gain : 0dBi
Modulation technique : GFSK
Number of channel : 79 channels (Bluetooth 3.0)
: 40 channels (Bluetooth 4.0)

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

1.2 Location of the test site

FCC Registered Test Site Number: 552221
Industry Canada Registered Test Site Number: 4093A

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.10 – 2013. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	R&S	ESCI	100152	27 Sep 2016	1Year
Spectrum Analyzer	R&S	FSV40	100628	09 Feb 2017	1Year
Broadband Antenna	Schaffner	CBL6112B	2718	15 Mar 2017	2Years
Loop Antenna	EMCO	6502	00056620	25 Jan 2018	2Years
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	24 Nov 2016	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9718	9718-119	24 Nov 2016	2Years
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170442	02 Aug 2017	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9719	9719-010	02 Aug 2017	2Years
Coaxial Cable	Schaffner	RG 213/U	N/A	18 May 2017	1Years
Coaxial Cable	Suhner	RG 214/U	N/A	18 May 2017	1Years
Coaxial Cable	Suhner	Sucoflex_104	N/A	13 Dec 2016	1Years
LISN	R&S	ENV216	101323	21 Oct 2016	1Year
Coaxial Cable	Tyco Electronics	RG 58C/U	N/A	01 Nov 2016	1Year

Support equipment:

iPod 8GB
S/N: YM9312JE2ME

5Ω dummy load

Supply by CMA

FCC ID: EMOIZBT10
IC: 986B-IZBT10

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

1.4 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.83dB
30MHz ~ 200MHz (Vertical)	4.84dB
200MHz ~1000MHz (Horizontal)	4.87dB
200MHz ~1000MHz (Vertical)	5.94dB
1GHz ~6GHz	4.41dB
6GHz ~18GHz	4.64dB

Conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz~30MHz	2.64dB

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

2 Description of the radiated emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2014, C63.10 – 2013 and DA 00-705.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground (below 1GHz) and 1.5 high above the ground (above 1GHz). 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

For 30MHz to 1GHz, broadband antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. And the reference point of antenna shall be 1 m above the ground.

For above 1GHz, horn antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. Preamplifier and High Pass filter was used for measurements. The reference point of antenna shall be 1 m above the ground.

The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement for Radiated Emission measurement.

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

2.2 Test Result

Summary

Section in FCC part 15 and RSS	Description	Result
15.205(a), 15.209, 15.247(d), RSS-Gen	Transmitter radiated spurious field strength and other emissions	Page 12, 13
15.209, RSS-Gen	Receiver emissions	Page 14, 15
15.209, RSS-Gen	Voltage disturbance	Page 17, 40, 41
15.247 (a)(1), Part 2.1 and DA-00705, RSS-247 5.1 (1)	Hopping sequence	Page 42, 43
15.247 (a)(1), RSS-247 5.1 (2)	20dB bandwidth and 99% bandwidth	Page 44, 45, 48-51
15.247 (a)(2), RSS-247 5.2 (1)	6dB bandwidth	Page 46, 47
15.247 (a)(1), RSS-247 5.1 (2)	Channel Spacing (Frequency separation)	Page 52, 53
15.247 (a)(1)(iii)), RSS-247 5.1 (4)	Number of hopping frequency	Page 54
15.247 (d), RSS-247 5.5	Band Edge	Page 55-60
15.247 (a)(1)(iii), RSS-247 5.1 (4)	Dwell Time (Bluetooth Average On Time)	Page 61-69
15.247 (e) , RSS-247 5.2 (2)	Power Spectral Density	Page 70, 71
15.247 (b)(1), RSS-247 5.4 (2)	Maximum Peak output power	Page 11, 72-75

Subpart C, RSS-247:
Peak Detector data were measured unless otherwise stated.

"#" means emissions appear within the restricted bands shall follow the requirement of section 15.205 and RSS-Gen 8.10.

The Frequencies from fundamental up to that tenth harmonics were investigated, and emissions more than 20dB below limited were not report. Thus, those higher emissions were presented in next page (section 2.3)

Subpart B:

FCC ID: EMOIZBT10
IC: 986B-IZBT10

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

The emissions meet the requirement of section 15.109 and RSS-Gen 7.1 are based on measurements employing the CISPR quasi-peak detector below 1000MHz and average detector for frequencies above 1000MHz.

The frequencies from 30MHz to 1000MHz were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next page (section 2.3).

It was found that the EUT meet the FCC and RSS requirement.

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

2.3 Maximum peak output power

Conductive measurements

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	29	° C
Relative humidity:	65	%

Mode: Bluetooth 3.0

Frequency (MHz)	Reading (dBm)	Reading (mW)	Limit (mW)	Margin (mW)
2401.660	- 2.25	0.596	1000.0	- 999.404
2439.658	- 0.25	0.944	1000.0	- 999.006
2479.650	- 0.23	0.948	1000.0	- 999.052

Mode: Bluetooth 4.0

2401.536	- 2.23	0.598	1000.0	- 999.402
2439.568	- 0.16	0.963	1000.0	- 999.037
2479.550	- 0.04	0.991	1000.0	- 999.009

The plots in Appendices A16 show the transmission power was less than 1 watt.

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

2.4 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	29	° C
Relative humidity:	65	%

Measurement: Peak RBW: 1MHz VBW: 3MHz
Testing frequency range: 9kHz to 25GHz Operation Mode: Transmission (Bluetooth 3.0)

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBµV)	Transducer Factor (dB/m)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
2401.662	H	94.2	- 4.2	90.0	114.0	- 24.0
#4803.414	V	36.3	3.7	40.0	74.0	- 34.0
#4804.913	H	35.8	3.7	39.5	74.0	- 34.5
2439.654	H	96.3	- 4.2	92.1	114.0	- 21.9
#4879.292	H	35.7	3.7	39.4	74.0	- 34.6
#4880.679	V	35.2	3.7	38.9	74.0	- 35.1
2479.628	H	97.9	- 4.3	93.6	114.0	- 20.4
#4959.812	H	35.5	4.0	39.5	74.0	- 34.5
#4960.363	V	35.6	4.0	39.6	74.0	- 34.4

Remark: Other emissions more than 20dB below the limit are not reported.
Peak measurement values are lower than average limit, therefore average measurement is not necessary

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

2.4 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	29	° C
Relative humidity:	65	%

Measurement: Peak RBW: 1MHz VBW: 3MHz
Testing frequency range: 9kHz to 25GHz Operation Mode: Transmission (Bluetooth 4.0)

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBµV)	Transducer Factor (dB/m)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
2401.560	H	94.4	- 4.2	90.2	114.0	-23.8
#4803.848	V	36.4	3.7	40.1	74.0	-33.9
#4804.369	H	36.1	3.7	39.8	74.0	-34.2
2439.558	H	96.6	- 4.2	92.4	114.0	-21.6
#4879.474	H	34.8	3.7	38.5	74.0	-35.5
#4879.558	V	34.7	3.7	38.4	74.0	-35.6
2479.542	H	98.1	- 4.3	93.8	114.0	-20.2
#4959.156	H	35.8	4.0	39.8	74.0	-34.2
#4959.796	V	35.8	4.0	39.8	74.0	-34.2

Remark: Other emissions more than 20dB below the limit are not reported.
Peak measurement values are lower than average limit, therefore average measurement is not necessary

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

2.4 Radiated Emission Measurement Data (Con't)

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	29	° C
Relative humidity:	65	%

Detector: Quasi-peak
RBW: 120kHz VBW: 300kHz
Operation Mode: Receiving mode (Bluetooth 3.0)
Testing frequency range: 9kHz to 25GHz

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
68.388	H	8.3	7.6	15.9	40.0	- 24.1
101.851	H	8.5	12.2	20.7	43.5	- 22.8
157.394	H	6.4	14.1	20.5	43.5	- 23.0
203.769	H	8.4	12.0	20.4	43.5	- 23.1
239.358	H	9.3	13.2	22.5	46.0	- 23.5
280.961	H	9.0	15.4	24.4	46.0	- 21.6
326.122	H	8.9	16.8	25.7	46.0	- 20.3

Remark: Other emissions more than 20dB below the limit are not reported.

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

2.4 Radiated Emission Measurement Data (Con't)

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	29	° C
Relative humidity:	65	%

Detector: Quasi-peak
RBW: 120kHz VBW: 300kHz
Operation Mode: Receiving (Bluetooth 4.0)
Testing frequency range: 9kHz to 25GHz

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
30.075	H	9.1	21.2	30.3	40.0	- 9.7
85.994	H	10.0	9.1	19.1	40.0	- 20.9
127.423	H	9.0	14.2	23.2	43.5	- 20.3
185.015	H	9.5	11.6	21.1	43.5	- 22.4
248.831	H	11.8	12.8	24.6	46.0	- 21.4
291.738	H	9.8	15.5	25.3	46.0	- 20.7
356.753	H	11.7	16.7	28.4	46.0	- 17.6

Remark: Other emissions more than 20dB below the limit are not reported.

FCC ID: EMOIZBT10
IC: 986B-IZBT10

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

2.4 Radiated Emission Measurement Data (Con't)

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart B

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	29	° C
Relative humidity:	65	%

Detector: Quasi-peak
RBW: 120kHz VBW: 300kHz
Operation Mode: Aux-in, Charging
Testing frequency range: 9kHz to 25GHz

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
181.999	H	30.6	11.2	41.8	43.5	- 1.7
182.002	V	32.0	11.2	43.2	43.5	- 0.3
311.997	H	23.7	16.8	40.5	46.0	- 5.5
389.993	H	25.7	16.8	42.5	46.0	- 3.5
493.985	V	23.2	20.6	43.8	46.0	- 2.2
493.998	H	20.9	20.6	41.5	46.0	- 4.5
545.978	V	18.6	22.2	40.8	46.0	- 5.2

Remark: Other emissions more than 20dB below the limit are not reported.

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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.10 – 2013. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

The EUT is connected to adaptor.

It was found that the EUT met the FCC and RSS requirement.

3.3 Graph and Table of Conducted Emission Measurement Data

The plots in Appendices A6 show the graph and data of conducted emission.

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conducted Emission

For electronic filing, the photos are saved with filename EMOIZBT10 TSup.pdf.

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename EMOIZBT10 ExPho.pdf and EMOIZBT10 InPho.pdf.

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5 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
User Manual	UserMan.pdf
Operational Description	OpDes.pdf

5.1 Bandwidth

Bluetooth 3.0:

The plot in Appendices A8 and A10 shows the 20dB bandwidth and 99% bandwidth:

Frequency Channel (MHz)	20dB bandwidth (kHz)	99% bandwidth (kHz)
2402	1123.9	959.0
2440	1123.9	964.0
2480	1123.9	964.0

The plot in Appendices A11 shows the channel spacing has minimum 25 kHz or two-third of 20dB bandwidth of hopping channel.

Frequency (MHz)	Channel spacing (kHz)	Two-third of 20dB bandwidth (kHz)	Minimum bandwidth (kHz)
2402	1004.0	749.3	25
2440	1074.9	749.3	25
2480	1007.0	749.3	25

The plot in Appendices A12 shows the frequency hopping channel over 75 hopping frequency.

The plot in Appendices A13 shows the fundamental emission is confined in the specified band. It shows the 20dB bandwidth and band edge meet the 15.247(d) and 15.205 requirement.

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Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

Bluetooth 4.0:

The plot in Appendices A13 shows the band edge is fulfil 15.205 restricted band, 15.247(d) requirement.

The plot in Appendices A9 shows the 6dB bandwidth has minimum 500kHz for frequency channel 2402MHz, 2440MHz and 2480MHz. It fulfils the section 15.247(a)(2) requirement.

5.2 Hopping sequence

The plot in Appendices A7 shows the hopping sequence is pseudorandom randomly distributed. Four example of continuous fundamental frequency hopping pattern was as below:

The 1st example of fundamental frequency = 2.447673GHz
The 2nd example of fundamental frequency = 2.446004GHz
The 3rd example of fundamental frequency = 2.456014GHz
The 4th example of fundamental frequency = 2.423649GHz

Result:
Fc 1 – Fc 2 = +1.667MHz
Fc 2 – Fc 3 = -10.010MHz
Fc 3 – Fc 4 = +32.365MHz

It was found the hopping pattern is pseudorandom random.

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5.3 Average on time

The plot in Appendices A14 shows the average on time for frequency hopping channel is within 0.4 seconds.

The calculation for average on time as below:

Average hopping channel = Number of transmitted carrier / Sweep time

Average on time = Packet on time x Average hopping channel

Dwell time = Average on time x Total frequency hopping channel x 0.4

Test result:

Frequency Channel (MHz)	Packet	Dwell Time (Seconds)	Limit (Seconds)	Margin (Seconds)
2402	DH1	0.121	0.4	- 0.279
2402	DH3	0.218	0.4	- 0.182
2402	DH5	0.365	0.4	- 0.035
2440	DH1	0.116	0.4	- 0.284
2440	DH3	0.270	0.4	- 0.130
2440	DH5	0.274	0.4	- 0.126
2480	DH1	0.118	0.4	- 0.282
2480	DH3	0.228	0.4	- 0.172
2480	DH5	0.311	0.4	- 0.089

5.4 Power Spectral Density

The plot in Appendices A14 shows the frequency channel 2402MHz, 2440MHz and 2480MHz were not excess 8dBm for 3kHz bandwidth. It fulfils the section 15.247(e) requirement.

5.5 Antenna requirement

Appendices A4 shows the antenna is permanently attached and cannot be changed. Therefore it fulfils the section 15.203 requirement

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TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

6 Appendices

A1	Photos of the set-up of Radiated Emissions	4	pages
A2	Photos of the set-up of Conducted Emissions	2	pages
A3	Photos of External Configurations	3	pages
A4	Photos of Internal Configurations	7	pages
A5	ID Label/Location	1	page
A6	Conducted Emission Measurement Data	2	pages
A7	Hopping sequence	2	pages
A8	20dB bandwidth	2	pages
A9	6dB bandwidth	2	pages
A10	99% bandwidth	4	pages
A11	Bluetooth Channel Spacing	2	pages
A12	Bluetooth Hopping Channel	1	page
A13	Band Edge	6	pages
A14	Bluetooth Average on time	9	pages
A15	Power Spectral Density	2	pages
A16	Transmission Power	4	pages

FCC ID: EMOIZBT10
IC: 986B-IZBT10

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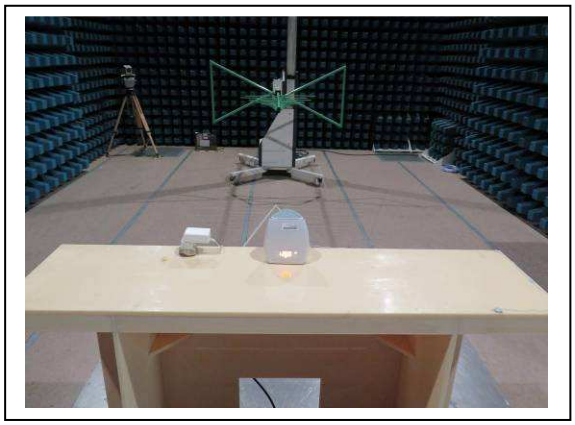
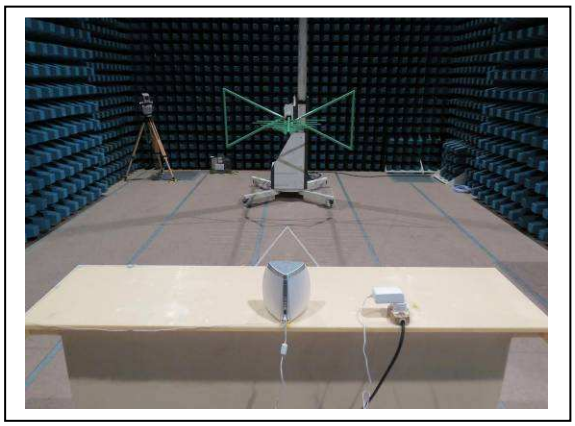
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A1. Photos of the set-up of Radiated Emissions



(Front view, 30MHz – 1GHz)



(Back view, 30MHz – 1GHz)

Tested by: Mr. LEUNG Shu-kan, Ken

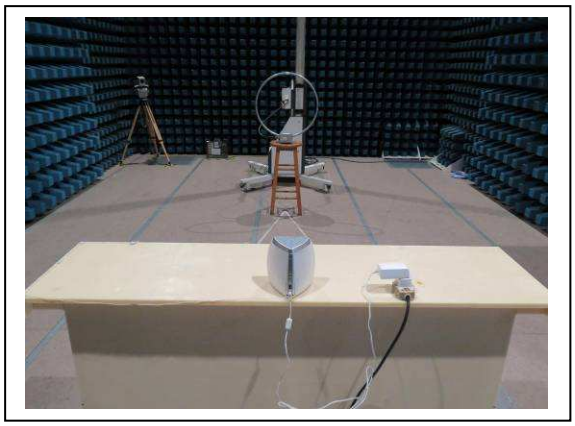
Reviewed by: Mr. WONG Lap-pong, Andrew

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A1. Photos of the set-up of Radiated Emissions

(Front view, 9KHz – 30MHz)



(Back view, 9KHz – 30MHz)

Tested by: Mr. LEUNG Shu-kan, Ken

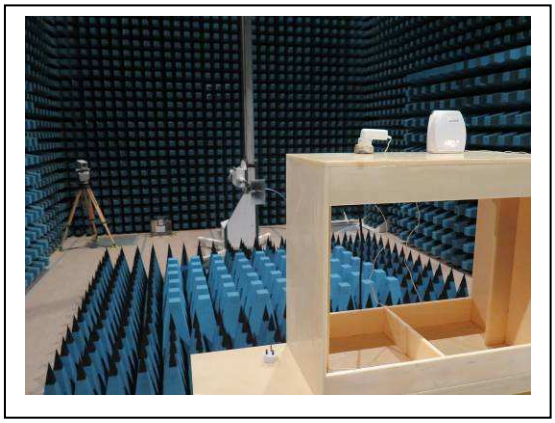
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

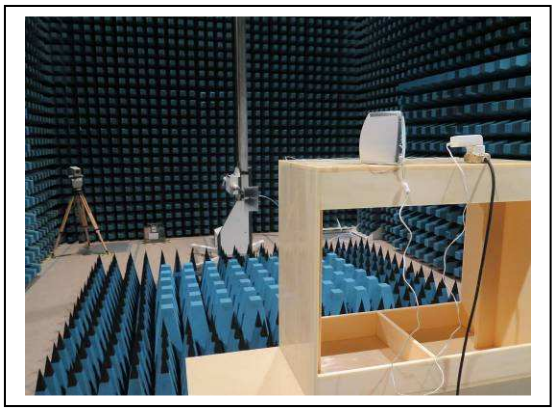
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A1. Photos of the set-up of Radiated Emissions



(front view, 1GHz – 25GHz)



(rear view, 1GHz – 25GHz)

Tested by: Mr. LEUNG Shu-kan, Ken

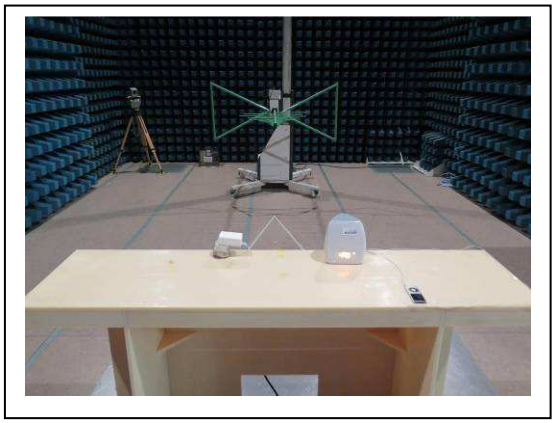
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

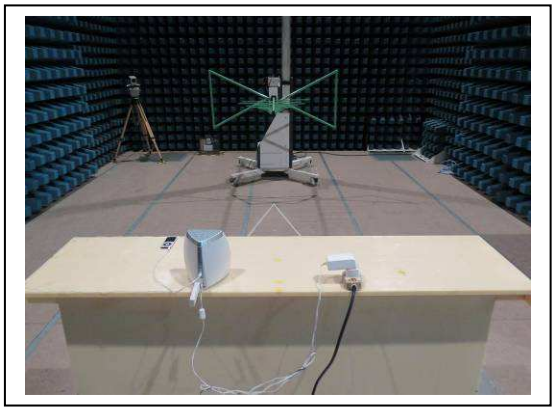
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A1. Photos of the set-up of Radiated Emissions



(front view, Aux-in + charging)



(rear view, Aux-in + charging)

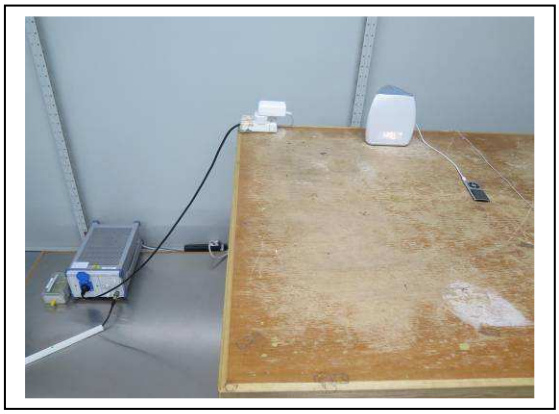
Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

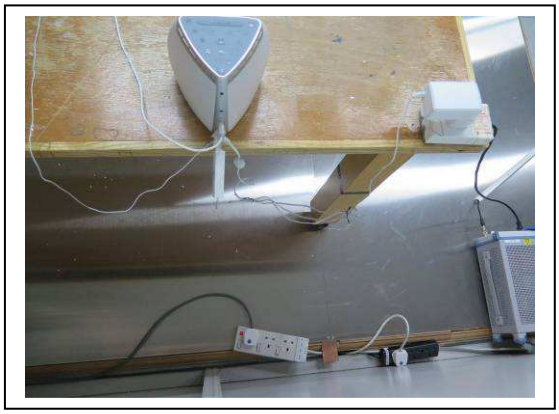
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A2 Photos of the set-up of Conducted Emission



(front view)



(rear view)

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A2 Photos of the set-up of Conducted Emission

(side view)

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Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A3. Photos of External Configurations

External Configuration 1

External Configuration 2

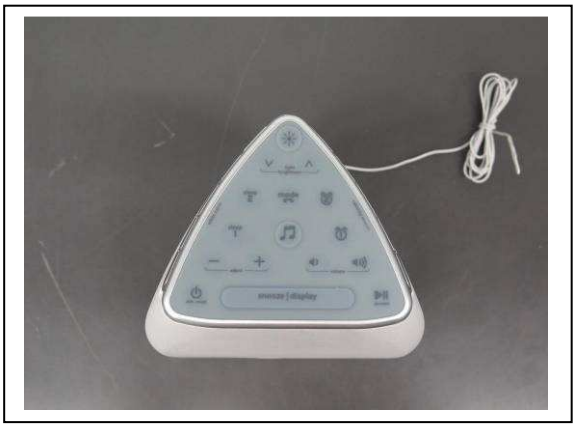
Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A3. Photos of External Configurations



External Configuration 3

External Configuration 4

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A3. Photos of External Configurations

External Configuration 5

Tested by: Mr. LEUNG Shu-kan, Ken

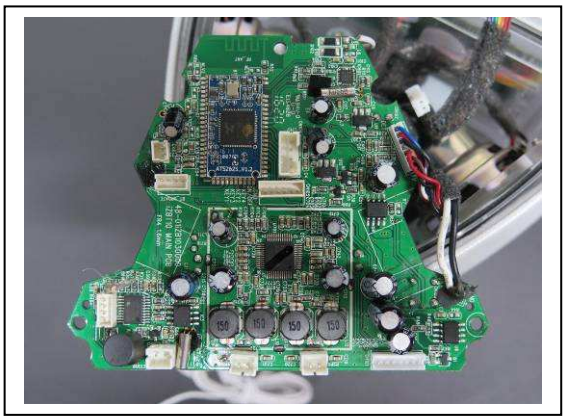
Reviewed by: Mr. WONG Lap-pong, Andrew

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A4. Photos of Internal Configurations

Internal Configuration 1



Internal Configuration 2

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A4. Photos of Internal Configurations

Internal Configuration 3

Internal Configuration 4

Tested by: Mr. LEUNG Shu-kan, Ken

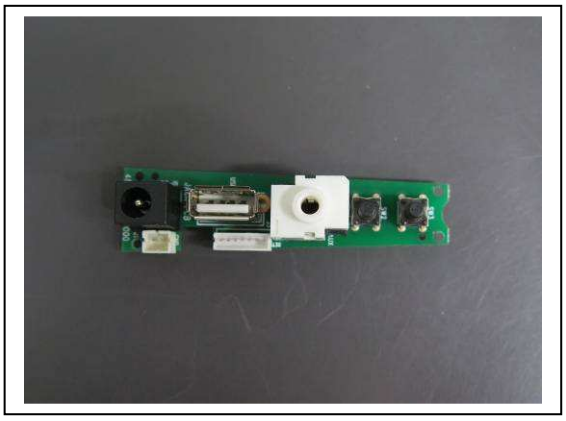
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

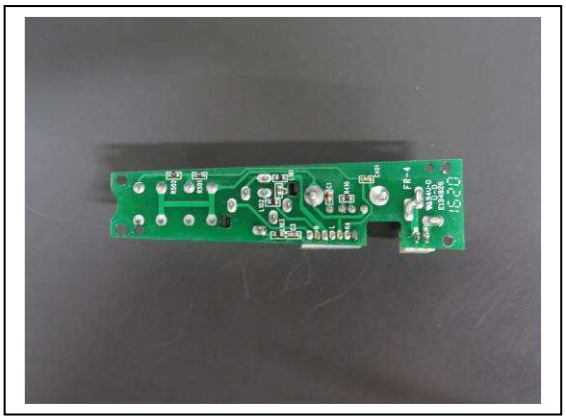
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A4. Photos of Internal Configurations



Internal Configuration 5



Internal Configuration 6

Tested by: Mr. LEUNG Shu-kan, Ken

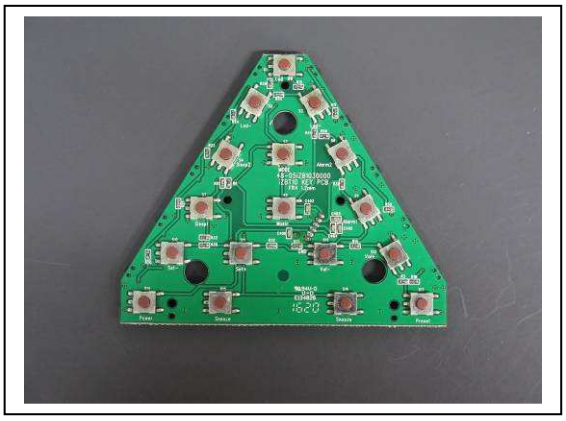
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

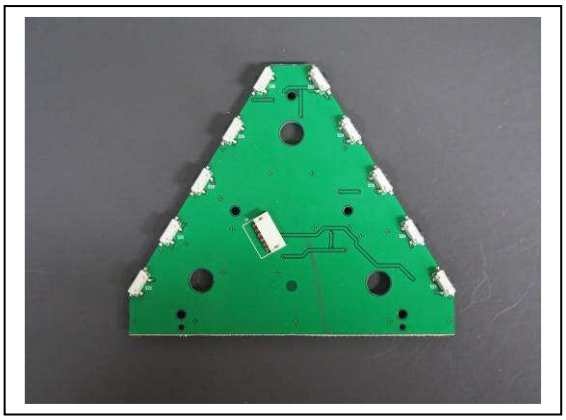
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A4. Photos of Internal Configurations



Internal Configuration 7



Internal Configuration 8

Tested by: Mr. LEUNG Shu-kan, Ken

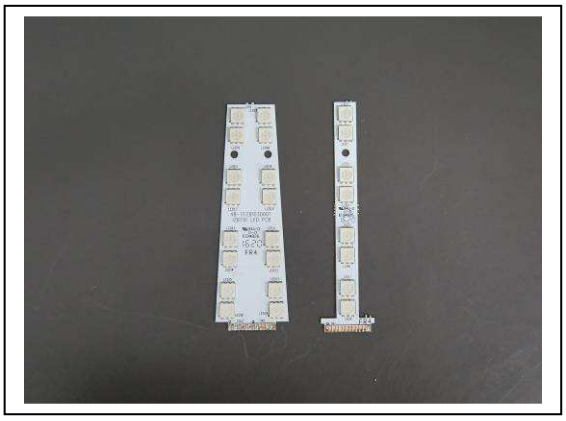
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

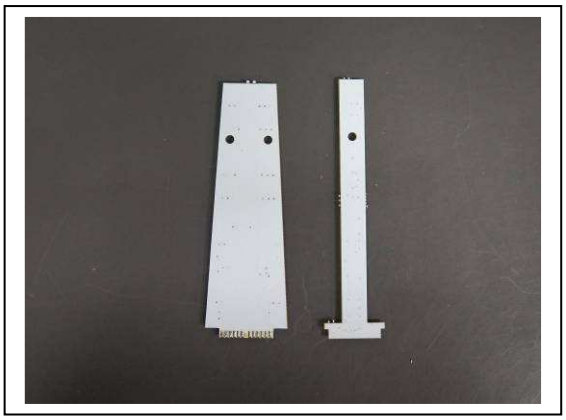
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A4. Photos of Internal Configurations



Internal Configuration 9



Internal Configuration 10

Tested by: Mr. LEUNG Shu-kan, Ken

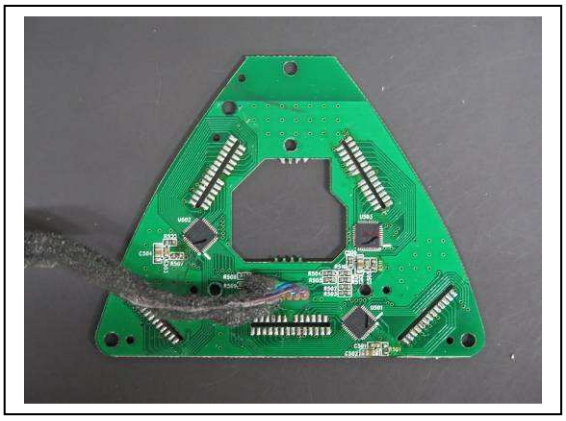
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

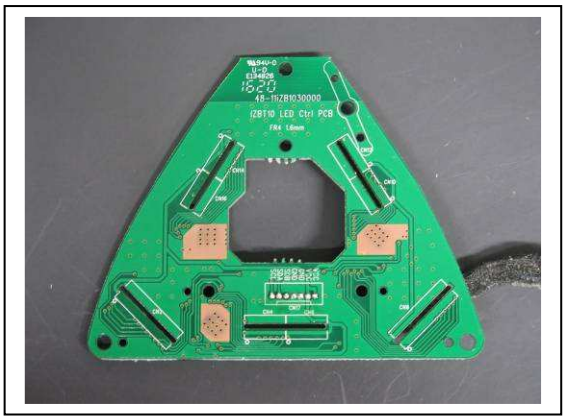
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A4. Photos of Internal Configurations



Internal Configuration 11



Internal Configuration 12

Tested by: Mr. LEUNG Shu-kan, Ken

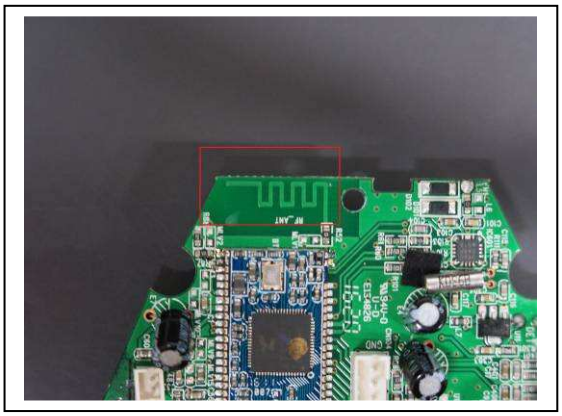
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A4. Photos of Internal Configurations



EUT antenna

Tested by: Mr. LEUNG Shu-kan, Ken

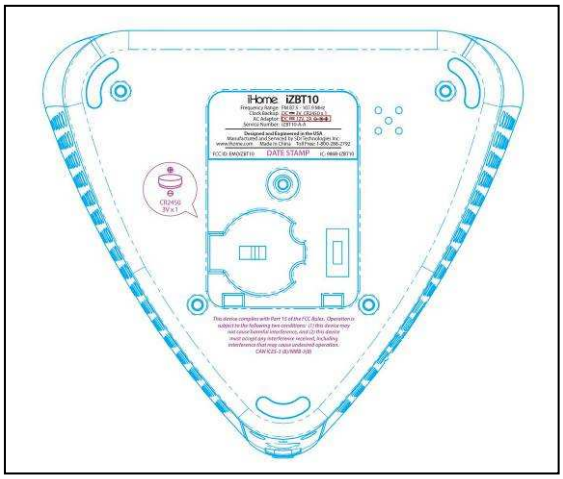
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A5. ID Label / Location



ID Label 1

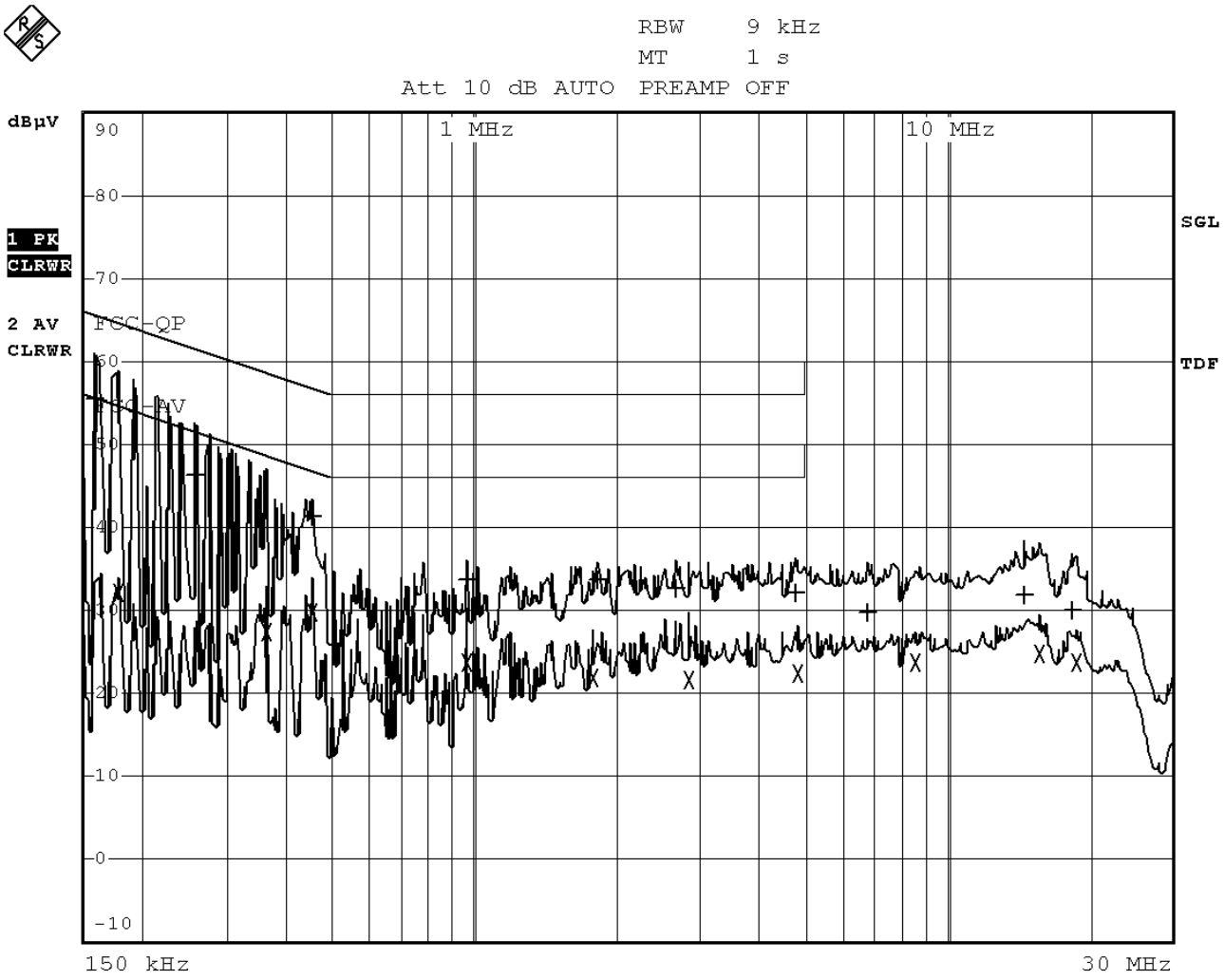
Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A6 Conducted Emission Measurement Date



Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A6 Conducted Emission Measurement Date

EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC-QP		
Trace2:	FCC-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	159 kHz	55.44 L1 gnd	-10.07
2 Average	177 kHz	32.11 N gnd	-22.50
1 Quasi Peak	258 kHz	46.40 L1 gnd	-15.09
2 Average	366 kHz	27.37 L1 gnd	-21.22
1 Quasi Peak	456 kHz	41.38 L1 gnd	-15.38
2 Average	456 kHz	29.89 L1 gnd	-16.87
1 Quasi Peak	959 kHz	33.71 L1 gnd	-22.28
2 Average	959 kHz	23.80 L1 gnd	-22.19
2 Average	1.7915 MHz	21.87 L1 gnd	-24.12
1 Quasi Peak	1.8185 MHz	33.66 L1 gnd	-22.33
1 Quasi Peak	2.678 MHz	32.63 L1 gnd	-23.36
2 Average	2.8535 MHz	21.72 L1 gnd	-24.27
1 Quasi Peak	4.802 MHz	32.08 L1 gnd	-23.91
2 Average	4.8335 MHz	22.50 L1 gnd	-23.49
1 Quasi Peak	6.7685 MHz	29.74 L1 gnd	-30.25
2 Average	8.618 MHz	23.62 L1 gnd	-26.37
1 Quasi Peak	14.5715 MHz	31.91 L1 gnd	-28.08
2 Average	15.7685 MHz	24.89 L1 gnd	-25.11
1 Quasi Peak	18.4955 MHz	29.99 L1 gnd	-30.00
2 Average	18.7475 MHz	23.70 L1 gnd	-26.30

Tested by: Mr. LEUNG Shu-kan, Ken

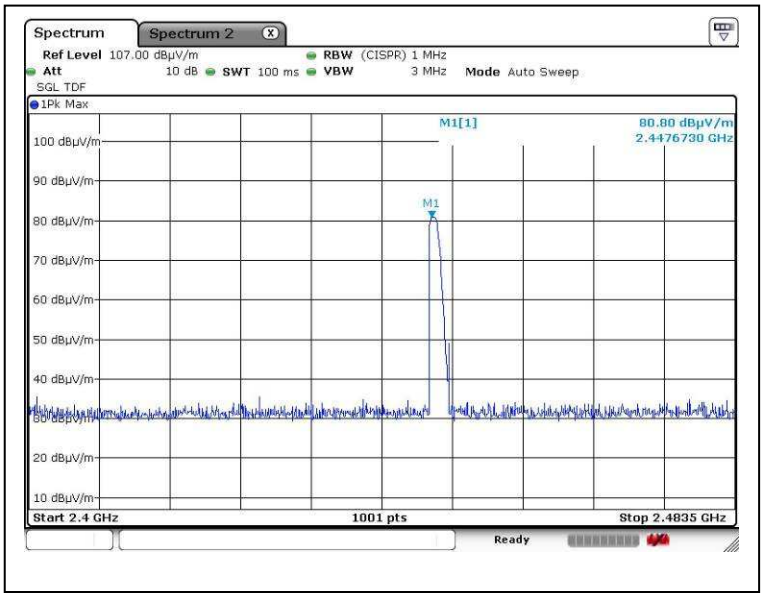
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

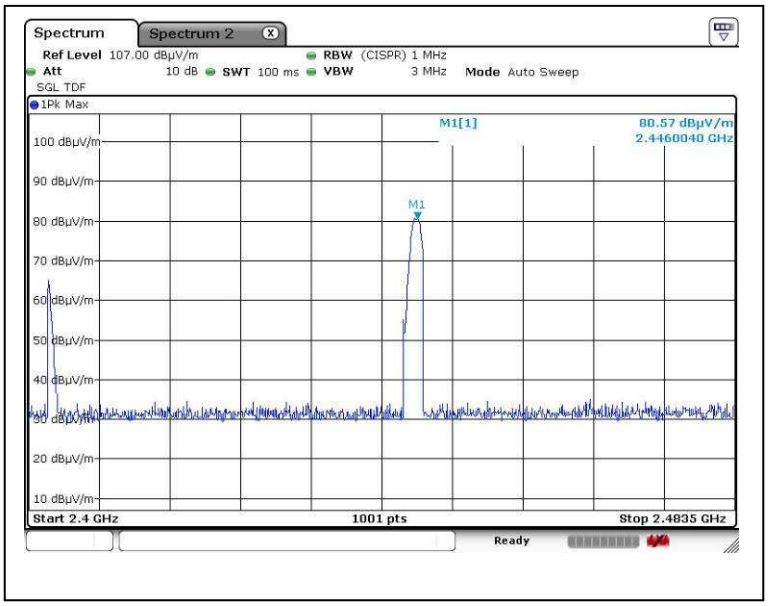
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A7. Hopping sequence



1st example of fundamental frequency



2nd example of fundamental frequency

Tested by: Mr. LEUNG Shu-kan, Ken

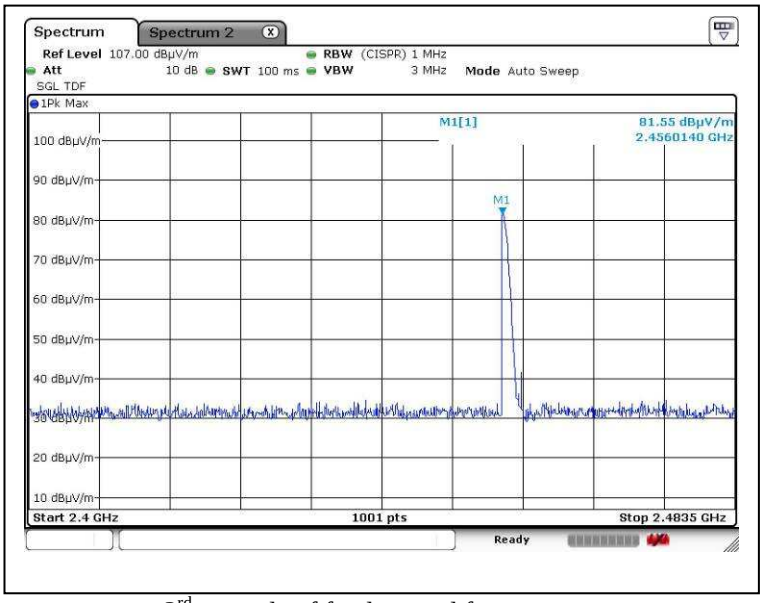
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

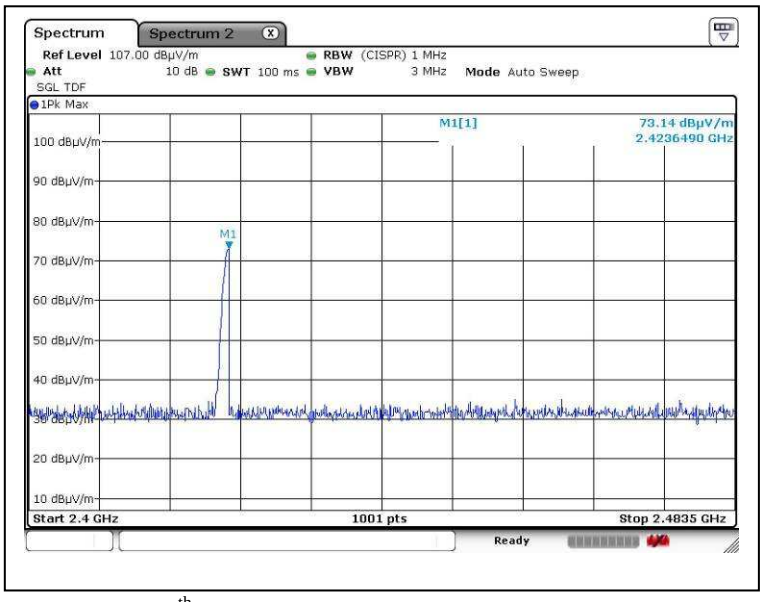
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A7. Hopping sequence



3rd example of fundamental frequency



4th example of fundamental frequency

Tested by: Reviewed by:

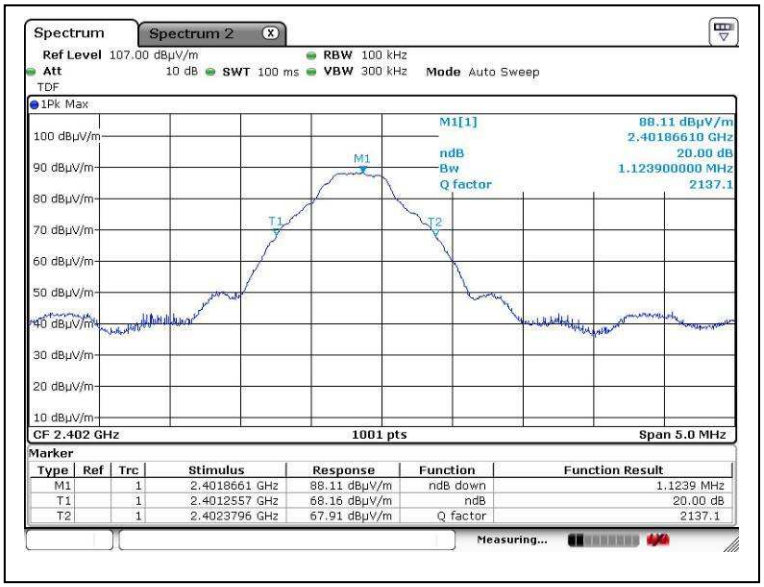
Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

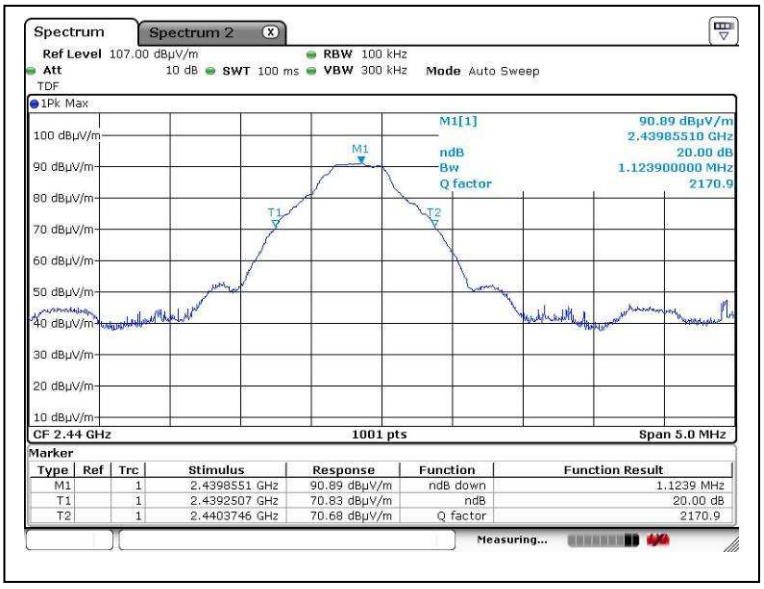
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A8. 20dB bandwidth



Lower channel (Bluetooth 3.0)



Middle channel (Bluetooth 3.0)

Tested by: Reviewed by:

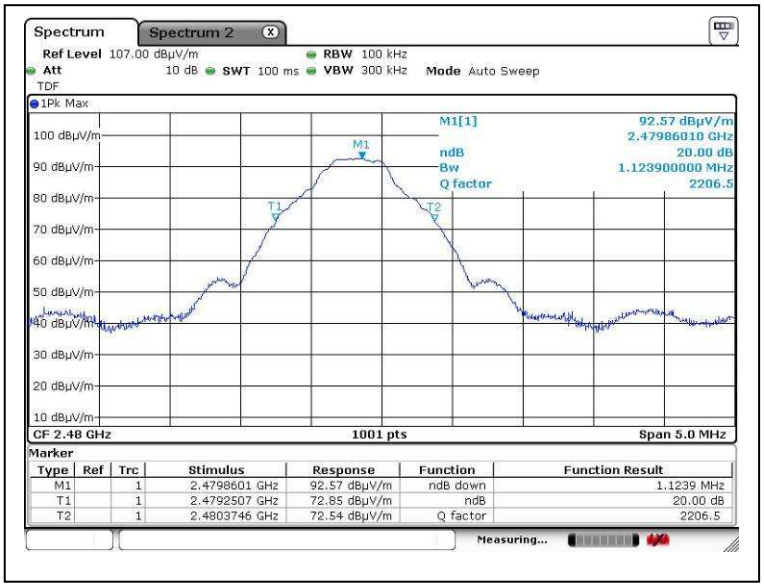
Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A8. 20dB bandwidth



Higher channel (Bluetooth 3.0)

Tested by: Mr. LEUNG Shu-kan, Ken

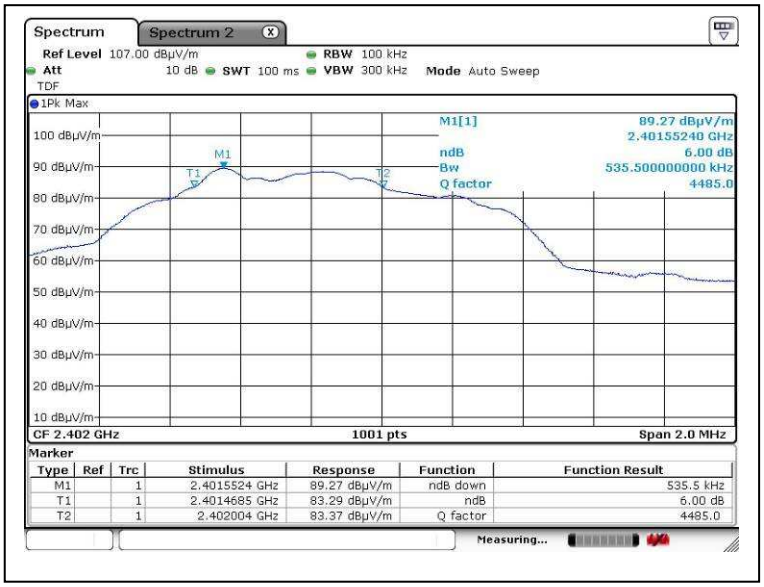
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

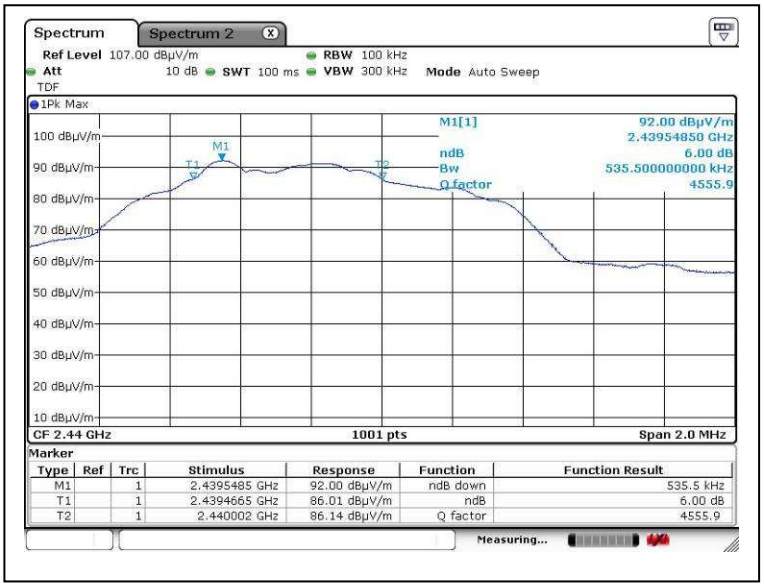
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A9. 6dB bandwidth



Lower channel (Bluetooth 4.0)



Middle channel (Bluetooth 4.0)

Tested by: Reviewed by:

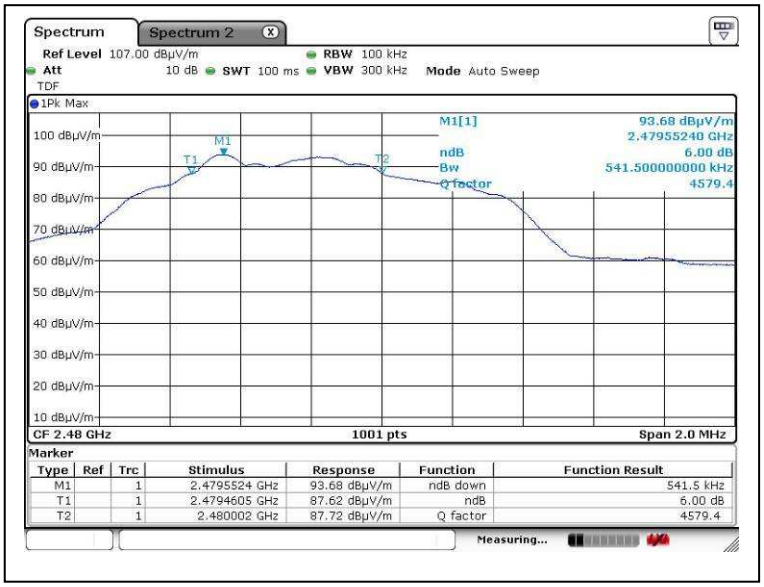
Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A9. 6dB bandwidth



Higher channel (Bluetooth 4.0)

Tested by: Mr. LEUNG Shu-kan, Ken

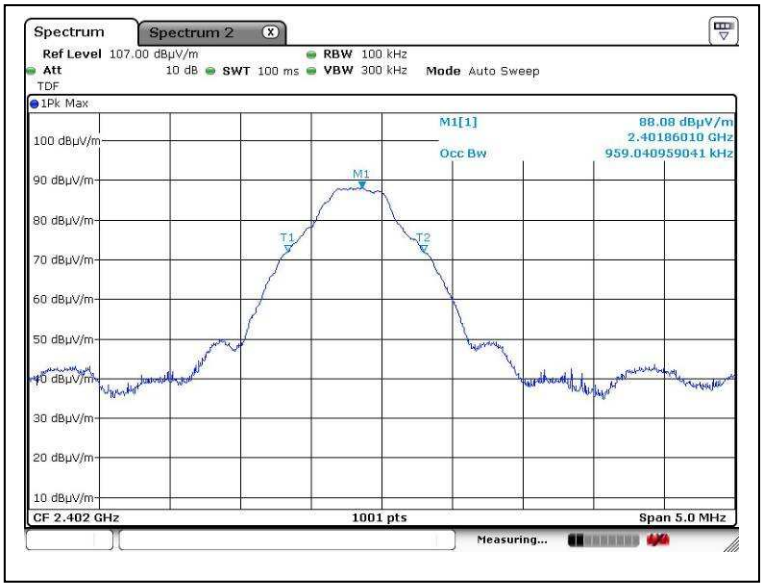
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

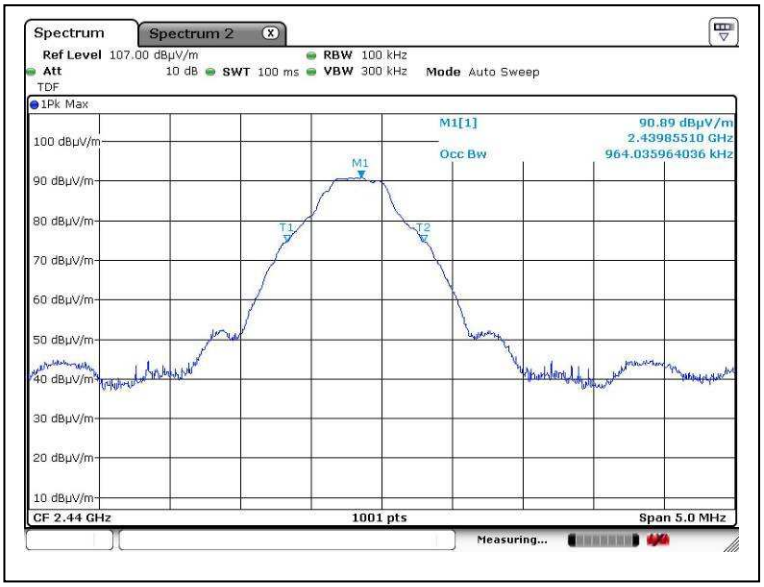
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A10. 99% bandwidth



Lower channel (Bluetooth 3.0)



Middle channel (Bluetooth 3.0)

Tested by: Mr. LEUNG Shu-kan, Ken

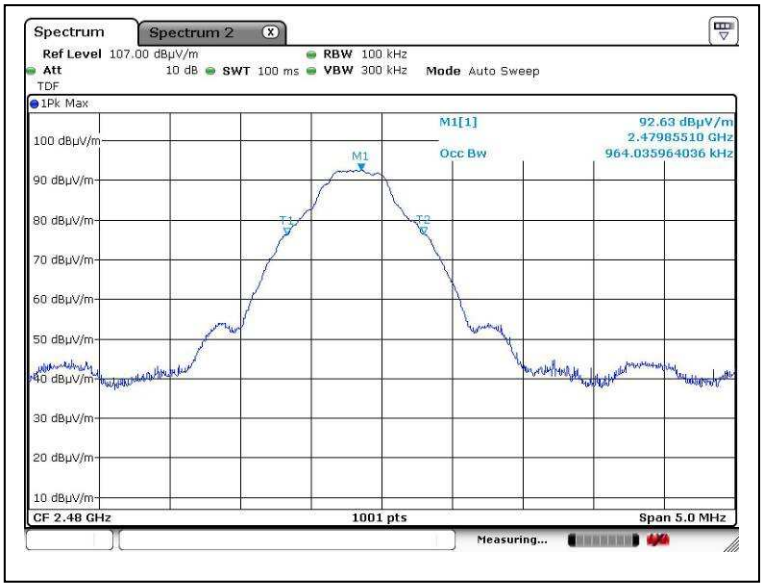
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A10. 99% bandwidth



Higher channel (Bluetooth 3.0)

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A10. 99% bandwidth

Lower channel (Bluetooth 4.0)

Middle channel (Bluetooth 4.0)

Tested by: Mr. LEUNG Shu-kan, Ken

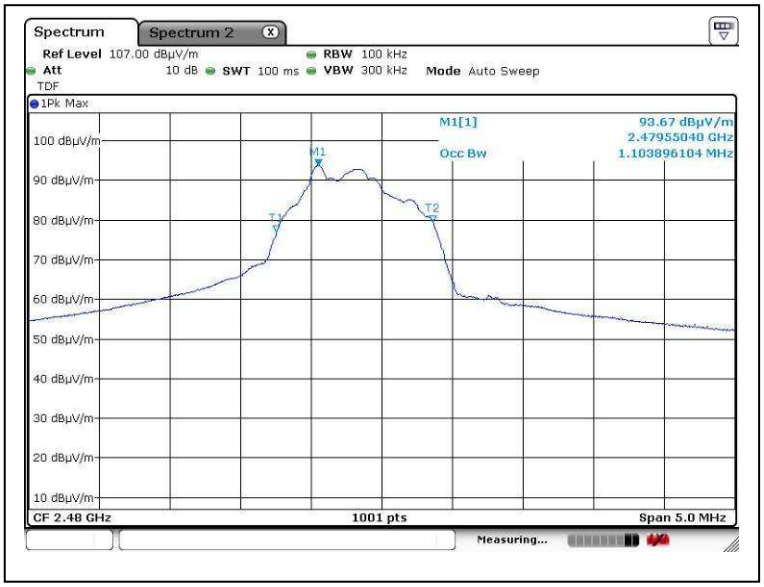
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A10. 99% bandwidth



Higher channel (Bluetooth 4.0)

Tested by: Mr. LEUNG Shu-kan, Ken

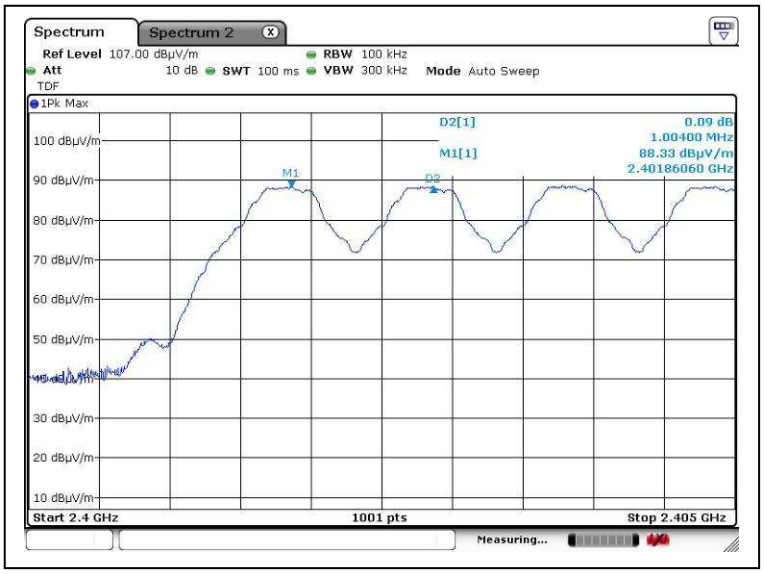
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

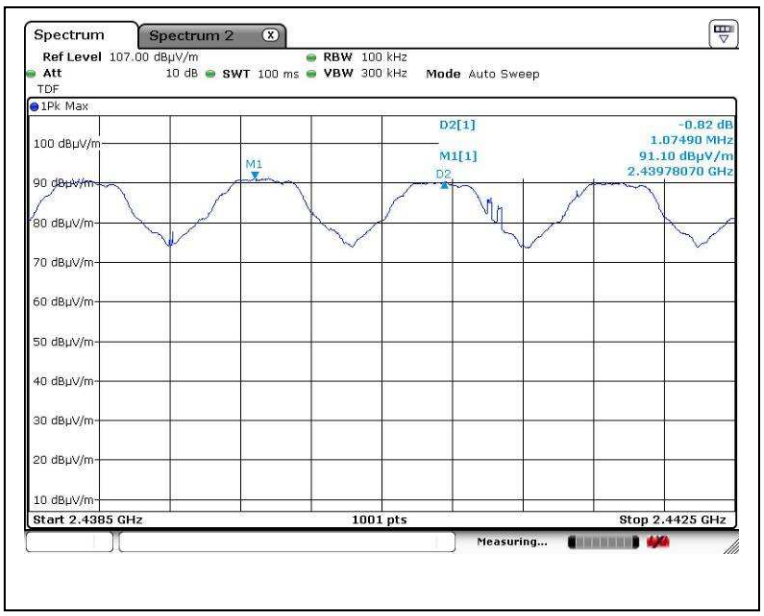
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A11. Bluetooth Channel Spacing



CH00-CH01 (Bluetooth 3.0)



CH39-CH40 (Bluetooth 3.0)

Tested by: Reviewed by:

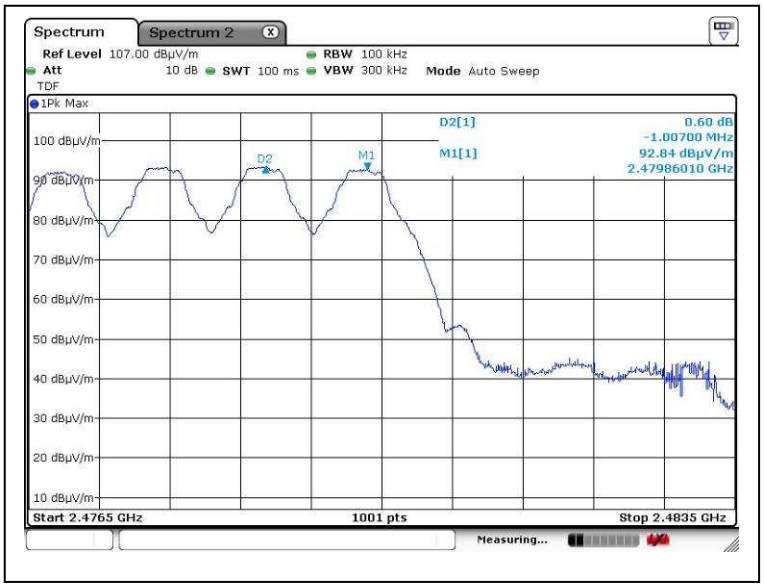
Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A11. Bluetooth Channel Spacing



CH77-CH78 (Bluetooth 3.0)

Tested by: Mr. LEUNG Shu-kan, Ken

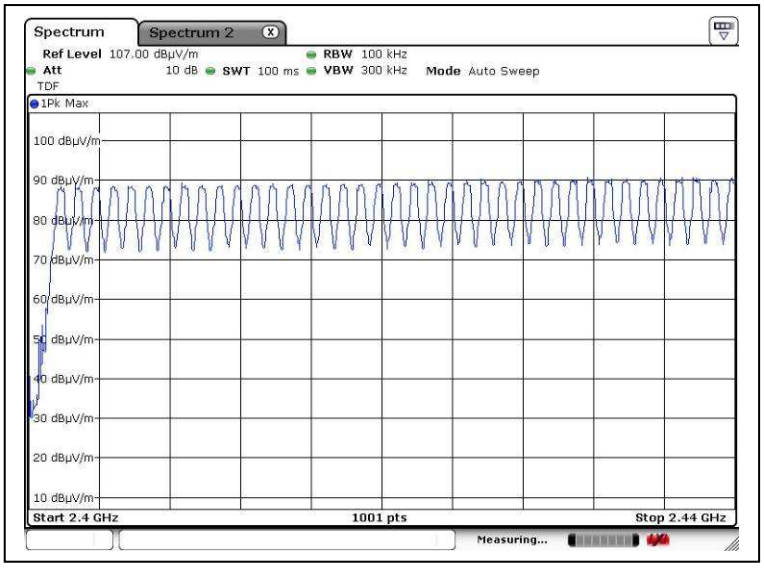
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

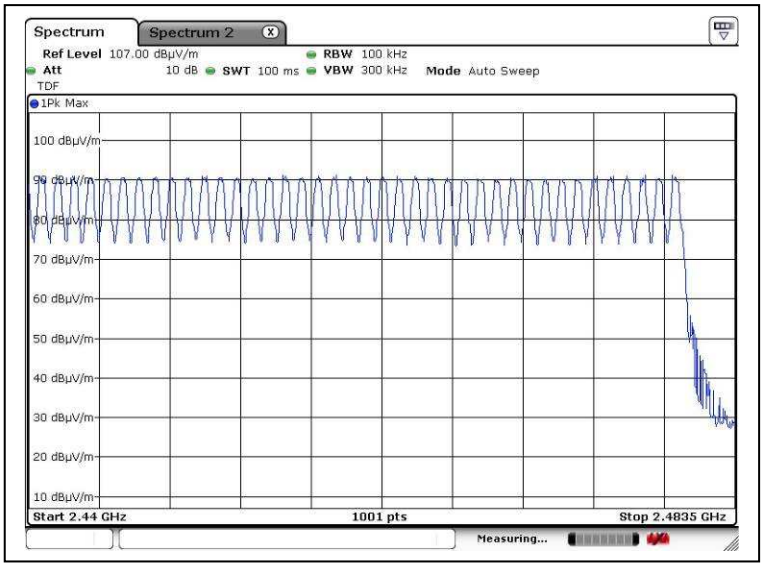
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A12. Bluetooth Hopping Channel



CH00-CH39 (Bluetooth 3.0)



CH39-CH78 (Bluetooth 3.0)

Tested by: Reviewed by:

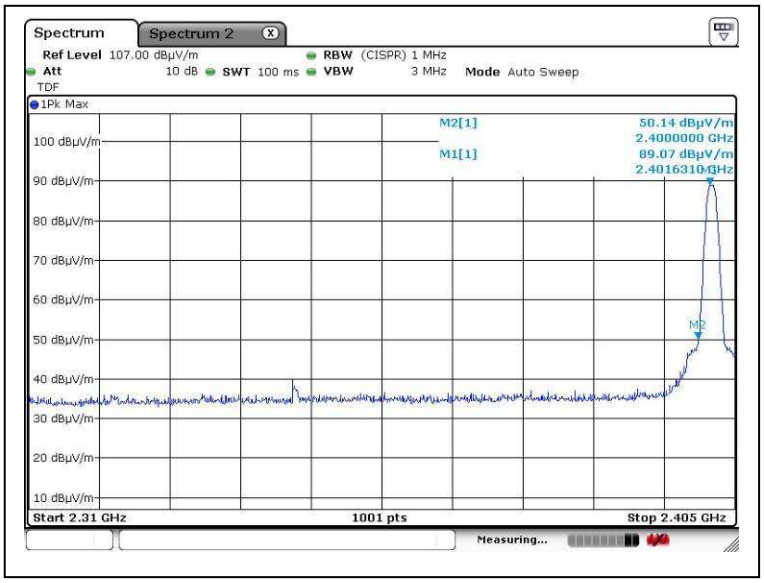
Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

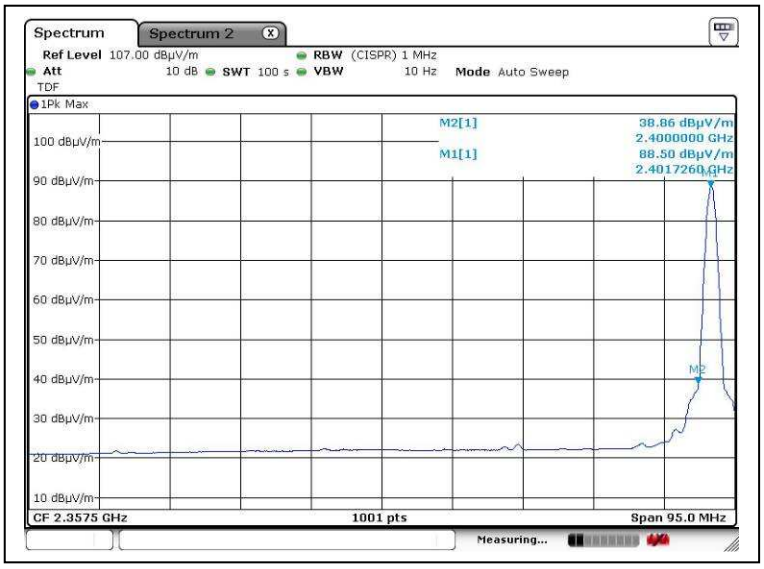
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A13. Band Edge



Lower edge (Bluetooth 3.0, Peak measurement, non-hopping mode)



Lower edge (Bluetooth 3.0, Average measurement, non-hopping mode)

Tested by: Mr. LEUNG Shu-kan, Ken

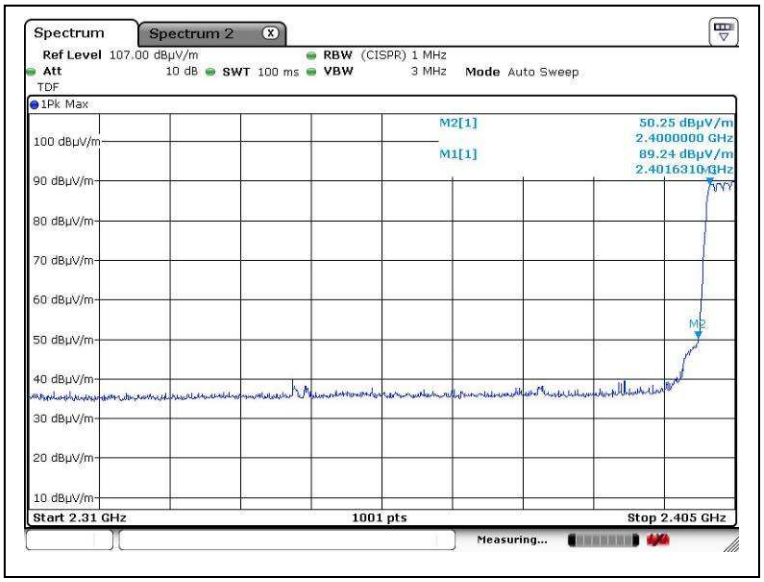
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

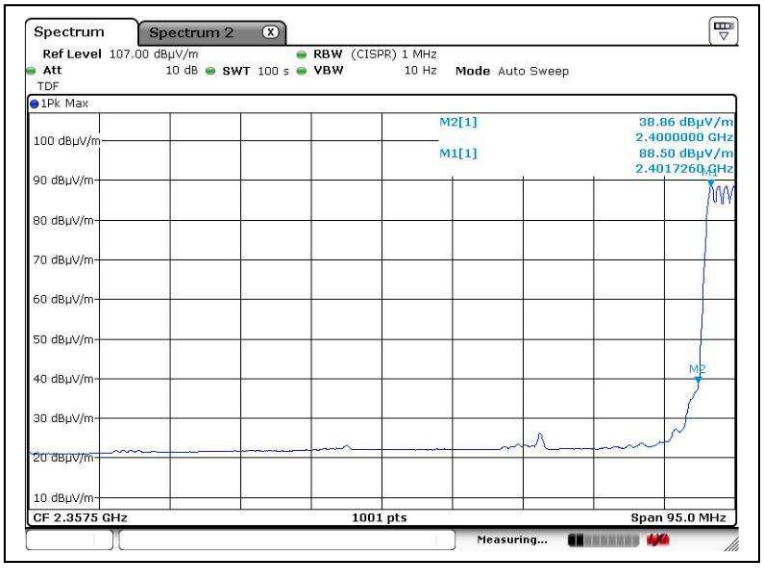
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A13. Band Edge



Lower edge (Bluetooth 3.0, Peak measurement, hopping mode)



Lower edge (Bluetooth 3.0, Average measurement, hopping mode)

Tested by: Reviewed by:

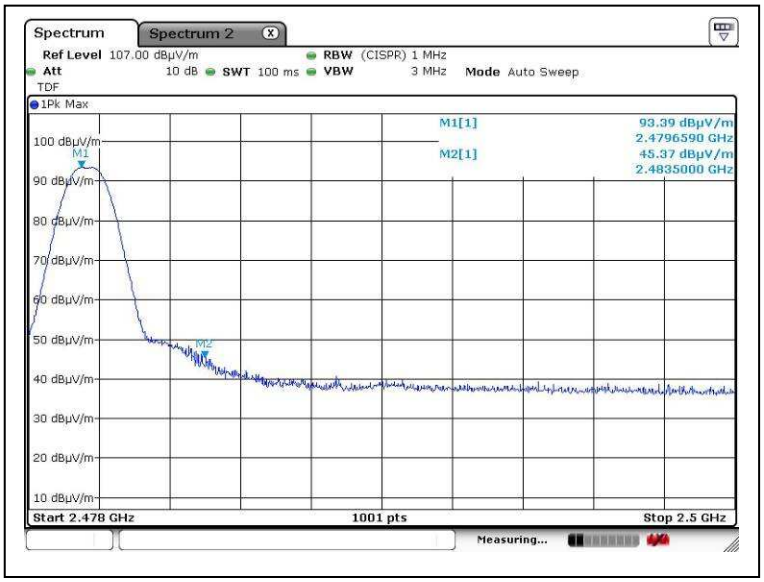
Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

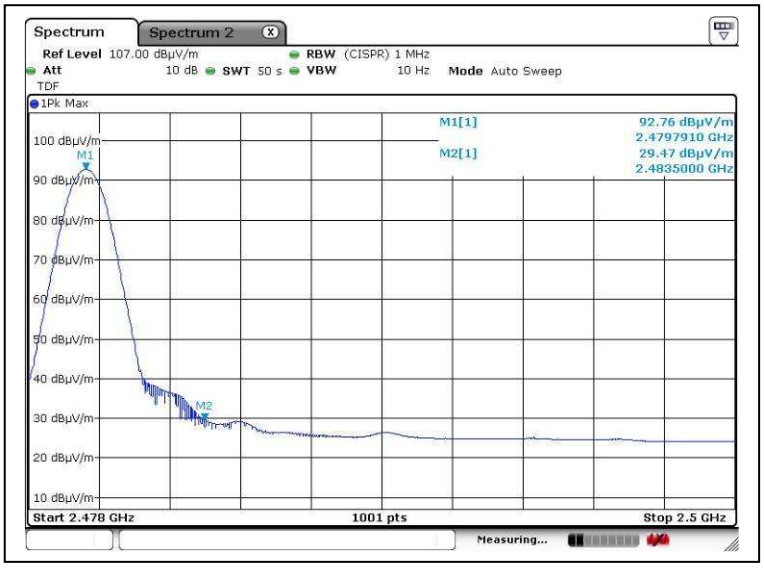
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A13. Band Edge



Higher edge (Bluetooth 3.0, Peak measurement, non-hopping mode)



Higher edge (Bluetooth 3.0, Average measurement, non-hopping mode)

Tested by: Mr. LEUNG Shu-kan, Ken

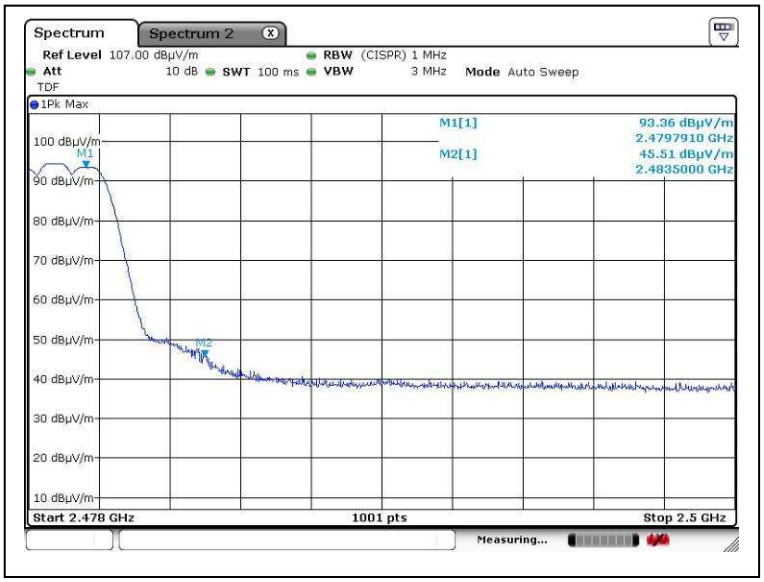
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

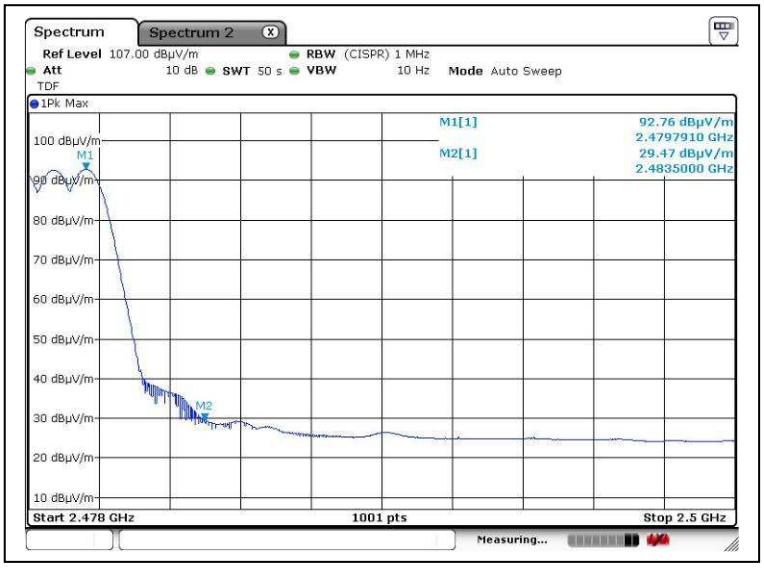
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A13. Band Edge



Higher edge (Bluetooth 3.0, Peak measurement, hopping mode)



Higher edge (Bluetooth 3.0, Average measurement, hopping mode)

Tested by: Reviewed by:

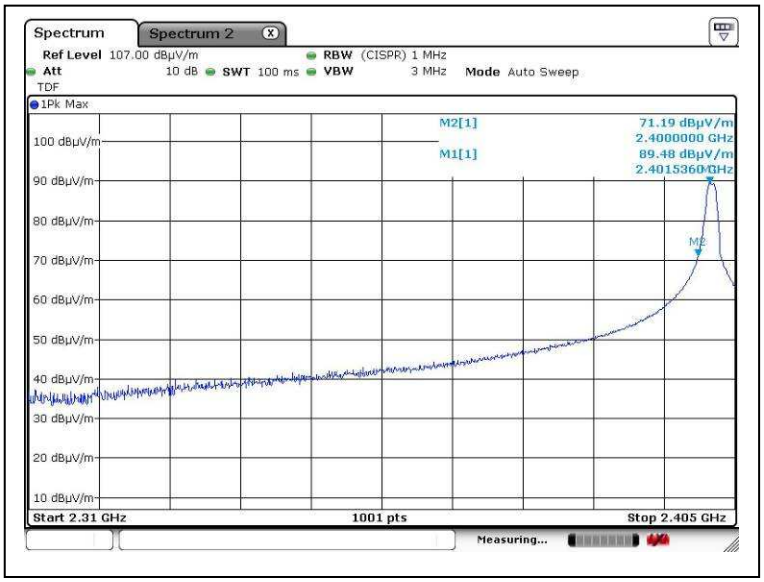
Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

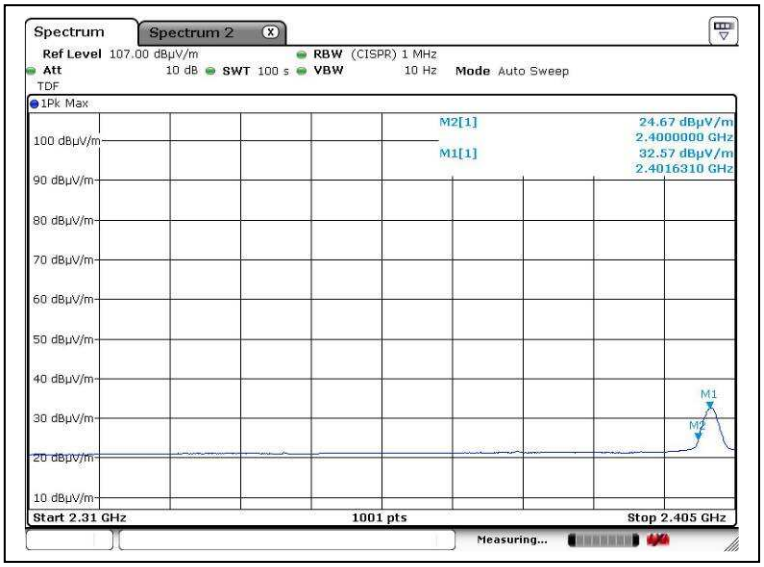
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A13. Band Edge



Lower edge (Bluetooth 4.0, Peak measurement)



Lower edge (Bluetooth 4.0, Average measurement)

Tested by: Mr. LEUNG Shu-kan, Ken

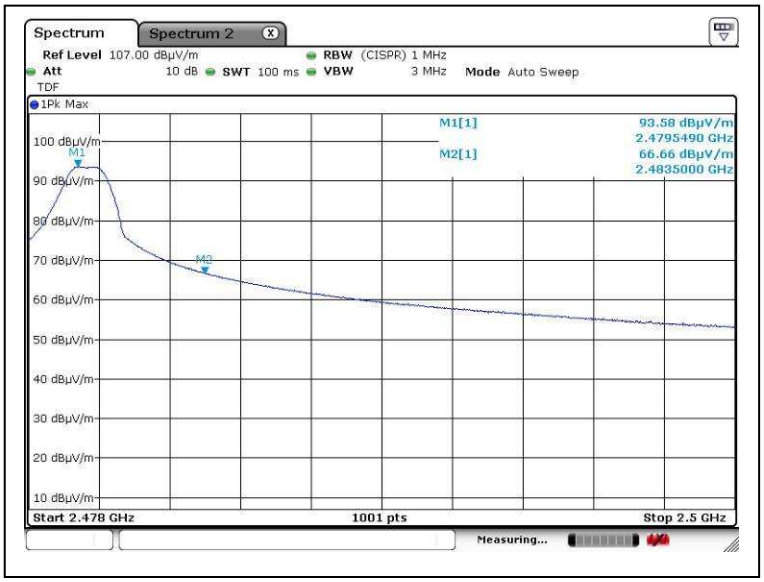
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

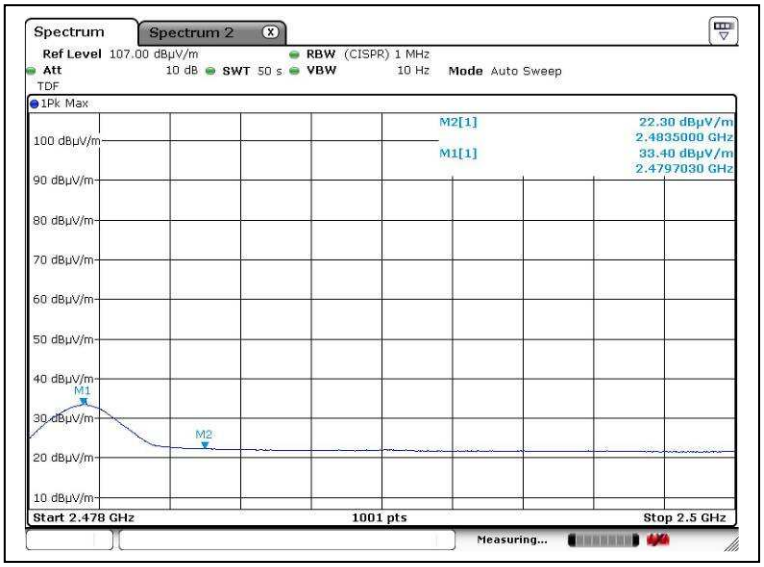
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A13. Band Edge



Higher edge (Bluetooth 4.0, Peak measurement)



Higher edge (Bluetooth 4.0, Average measurement)

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

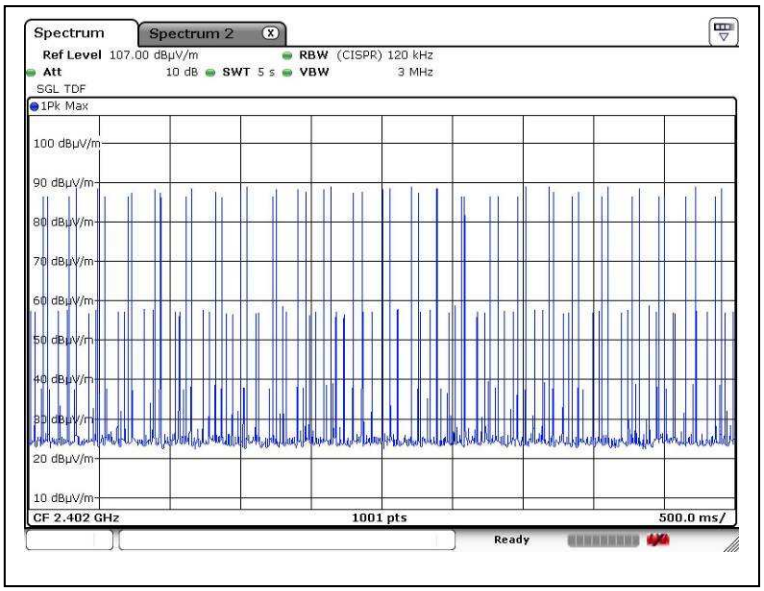
FCC ID: EMOIZBT10
IC: 986B-IZBT10

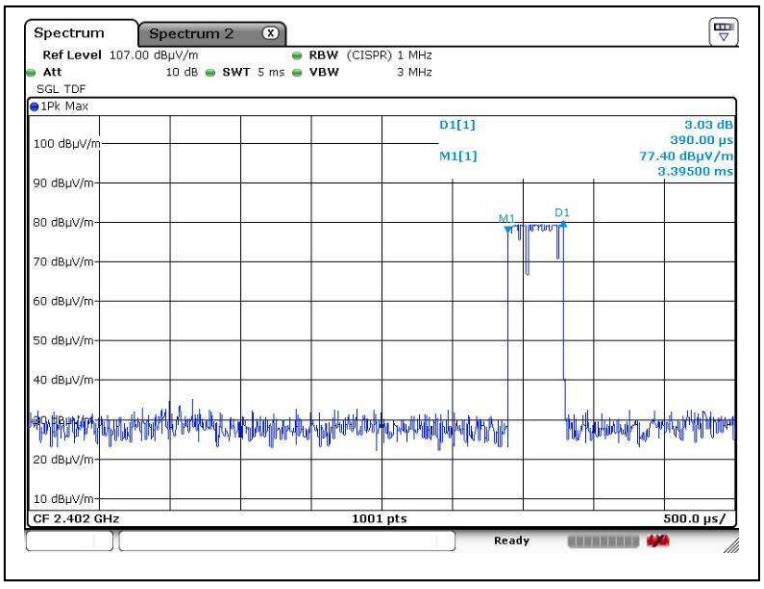
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Lower
Packet: DH1





Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

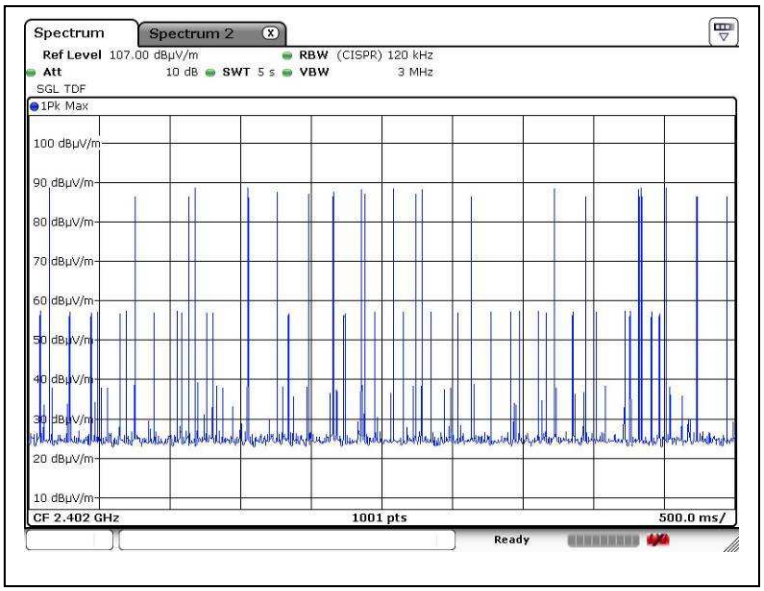
FCC ID: EMOIZBT10
IC: 986B-IZBT10

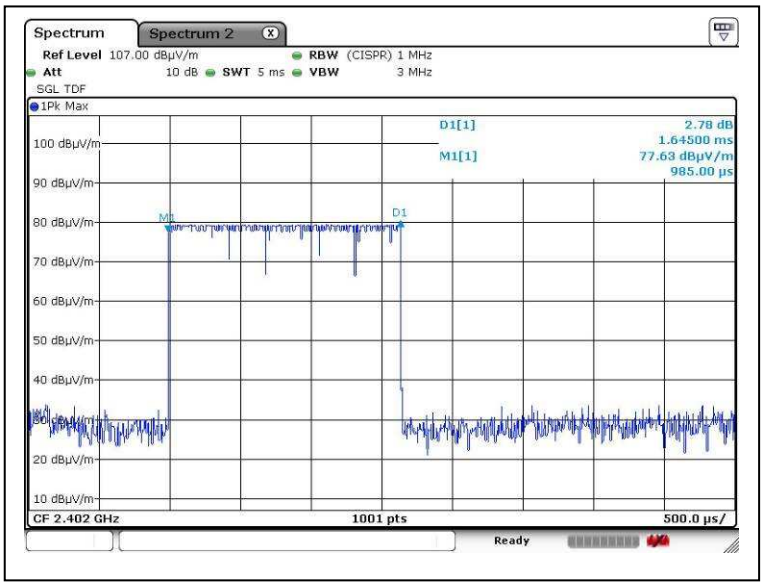
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Lower
Packet: DH3





Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

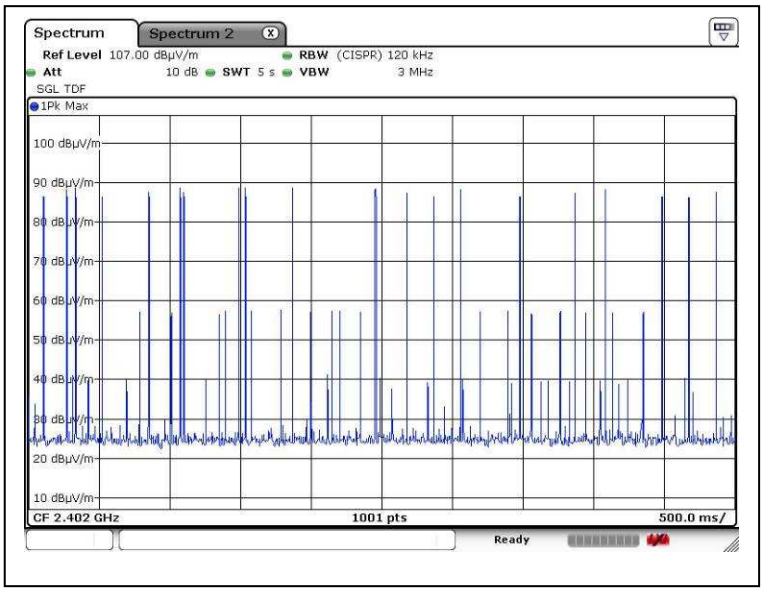
FCC ID: EMOIZBT10
IC: 986B-IZBT10

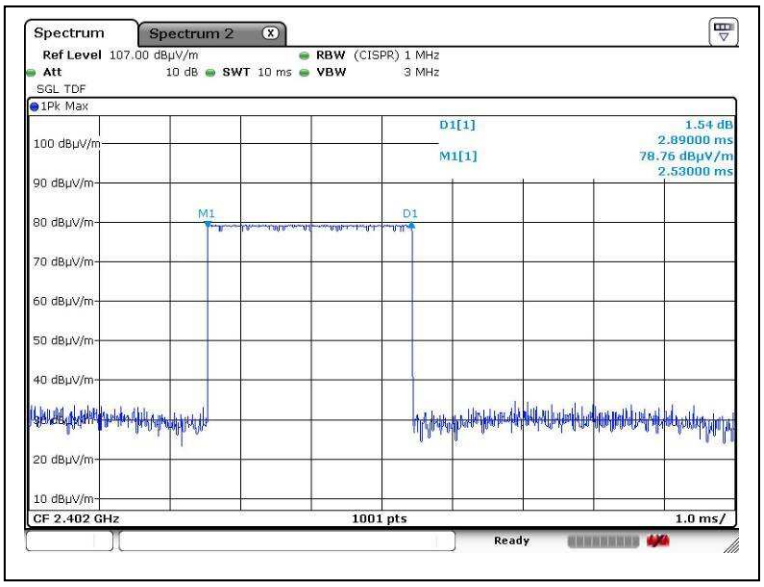
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Lower
Packet: DH5





Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

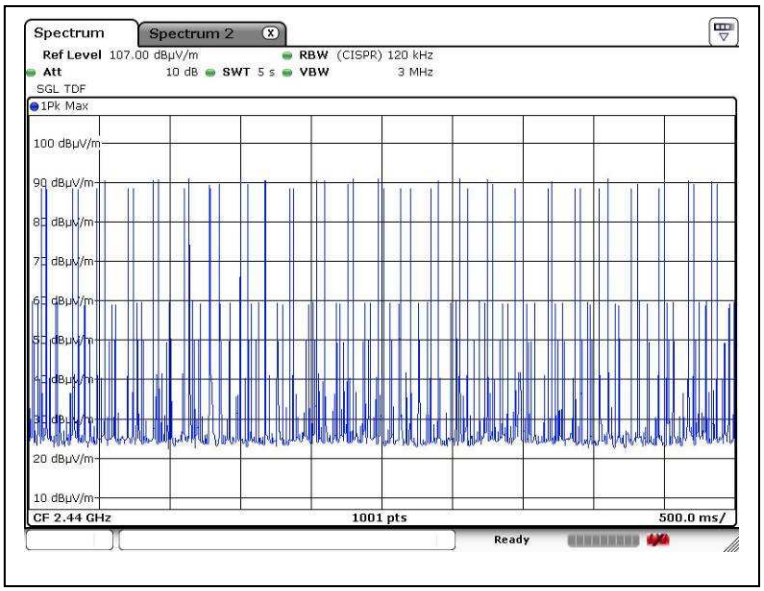
FCC ID: EMOIZBT10
IC: 986B-IZBT10

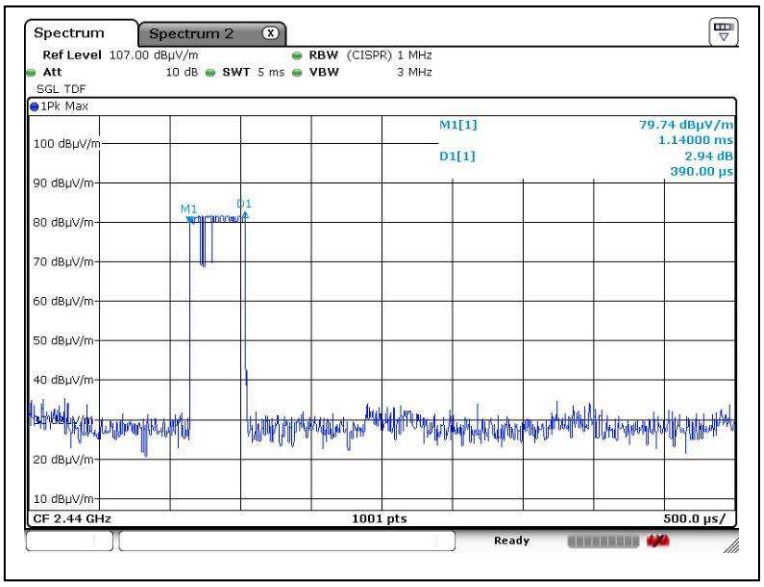
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Middle
Packet: DH1





Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

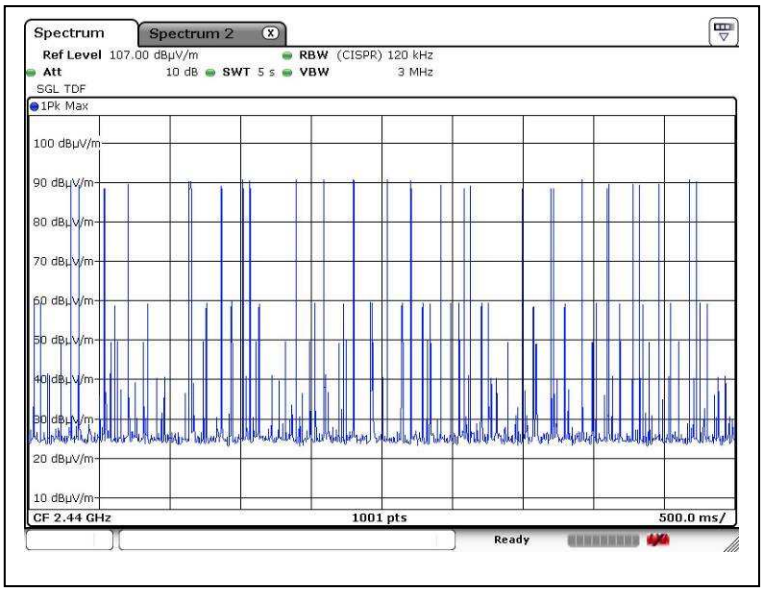
FCC ID: EMOIZBT10
IC: 986B-IZBT10

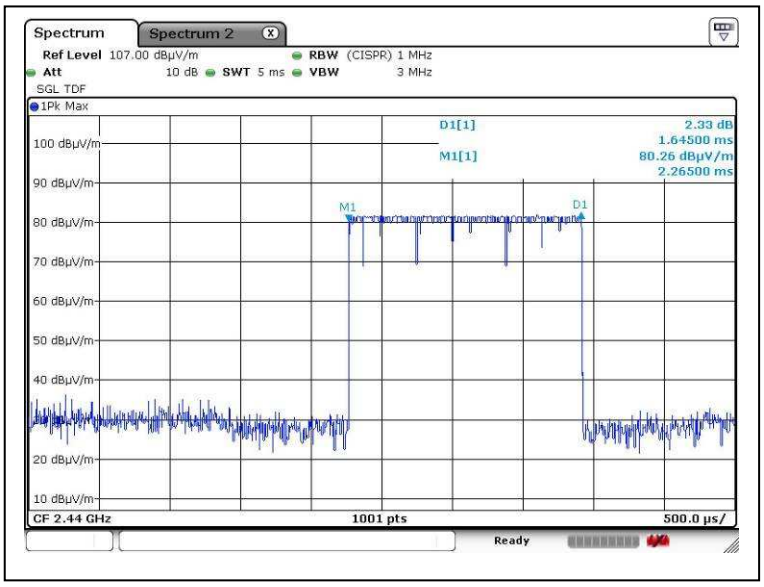
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Middle
Packet: DH3





Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

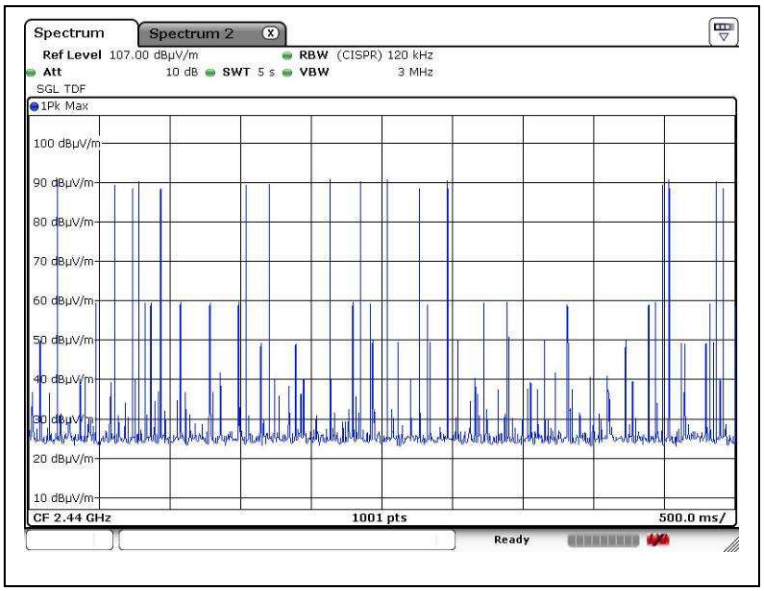
FCC ID: EMOIZBT10
IC: 986B-IZBT10

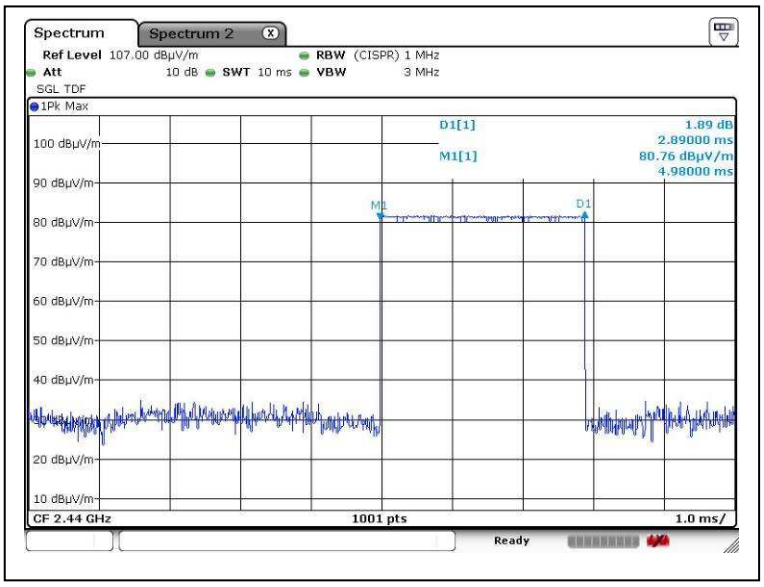
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Middle
Packet: DH5





Tested by: Reviewed by:

Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

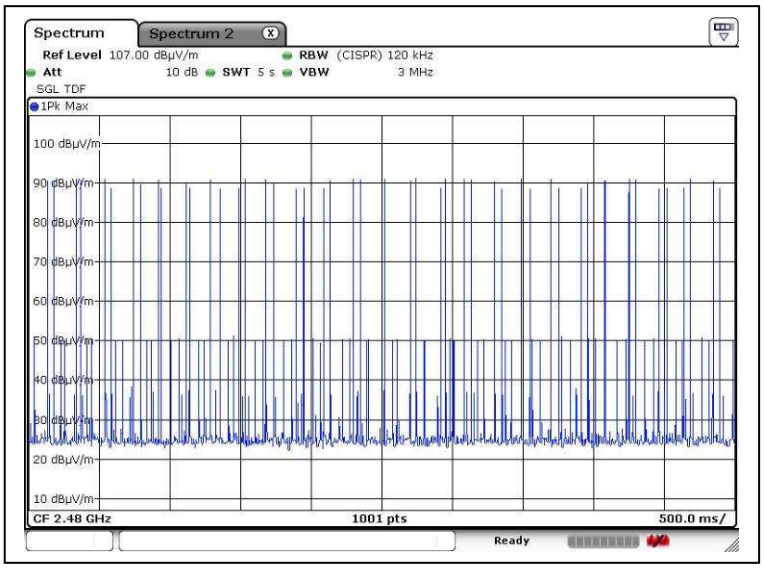
FCC ID: EMOIZBT10
IC: 986B-IZBT10

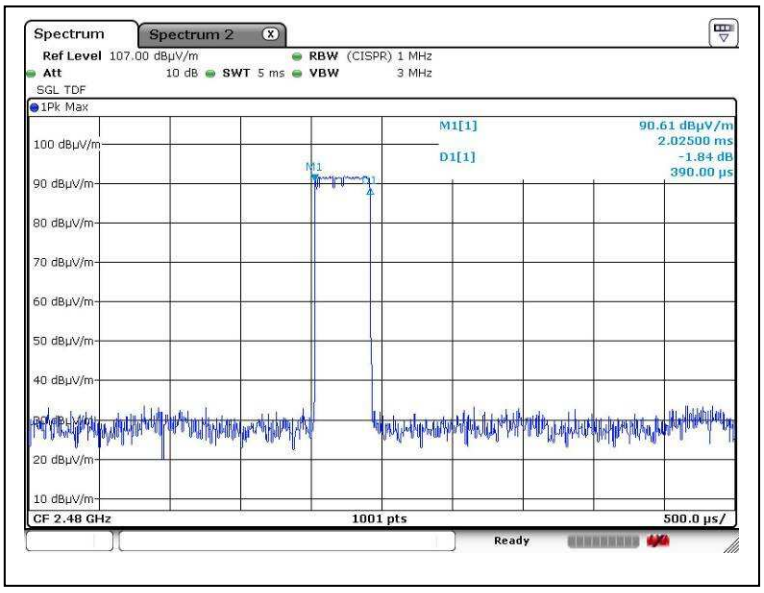
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Higher
Packet: DH1





Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

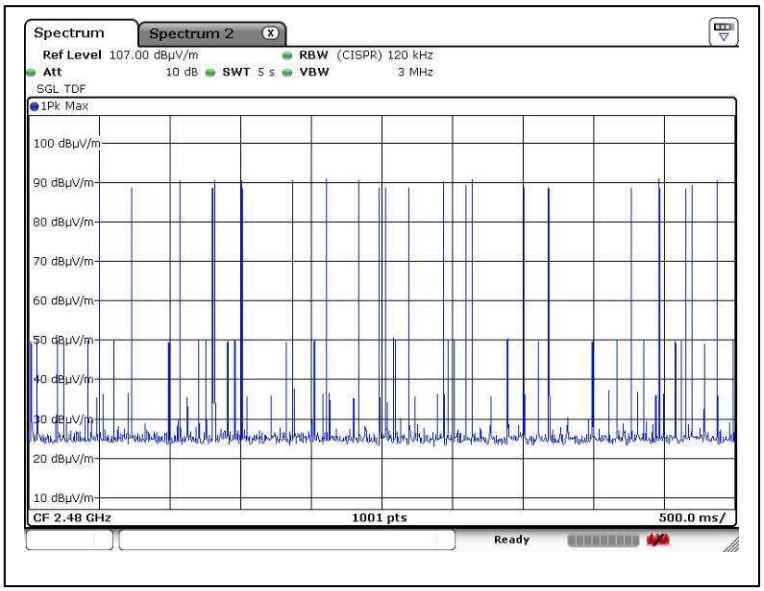
FCC ID: EMOIZBT10
IC: 986B-IZBT10

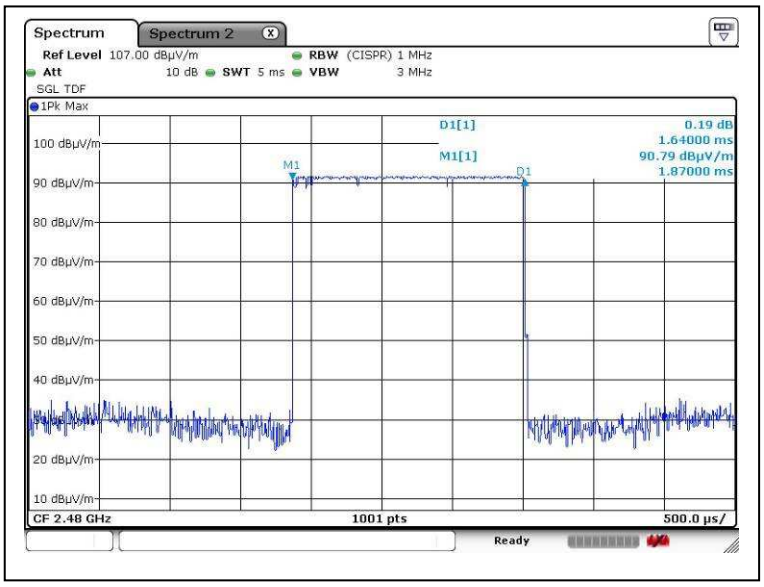
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Higher
Packet: DH3





Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

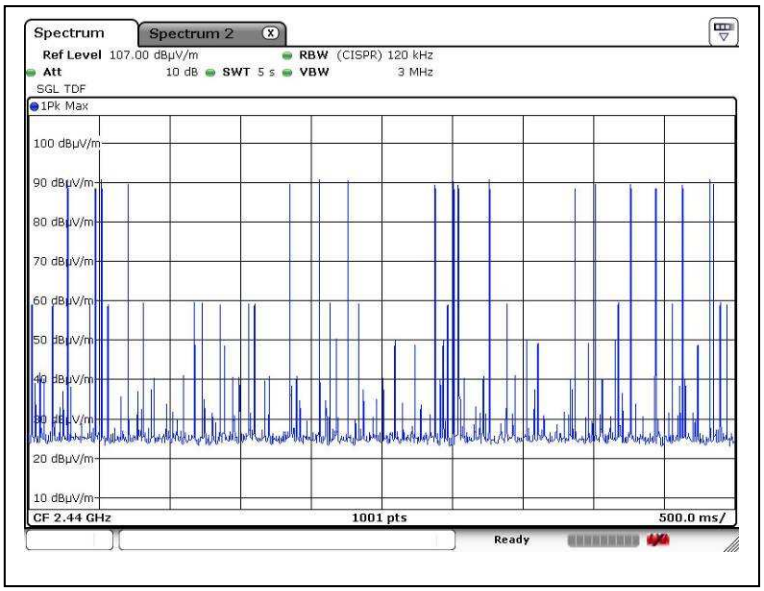
FCC ID: EMOIZBT10
IC: 986B-IZBT10

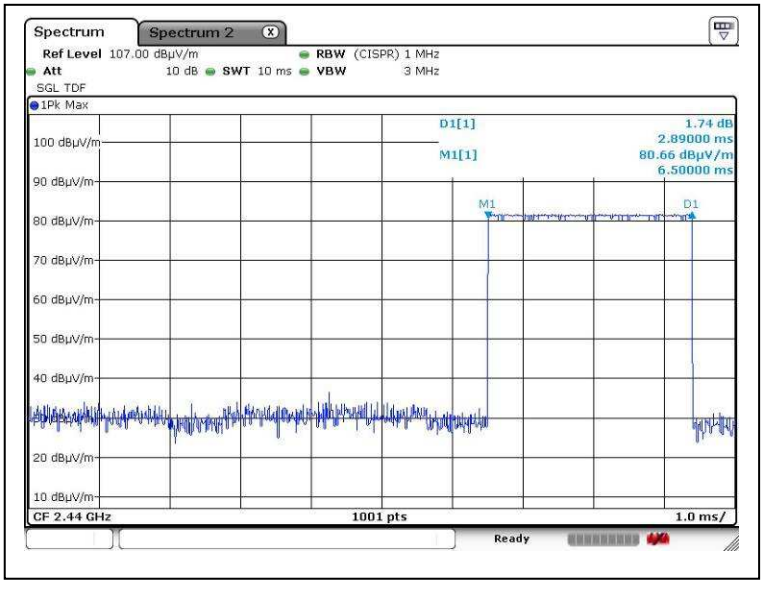
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A14. Bluetooth Average On Time

Channel: Higher
Packet: DH5





Tested by: Mr. LEUNG Shu-kan, Ken

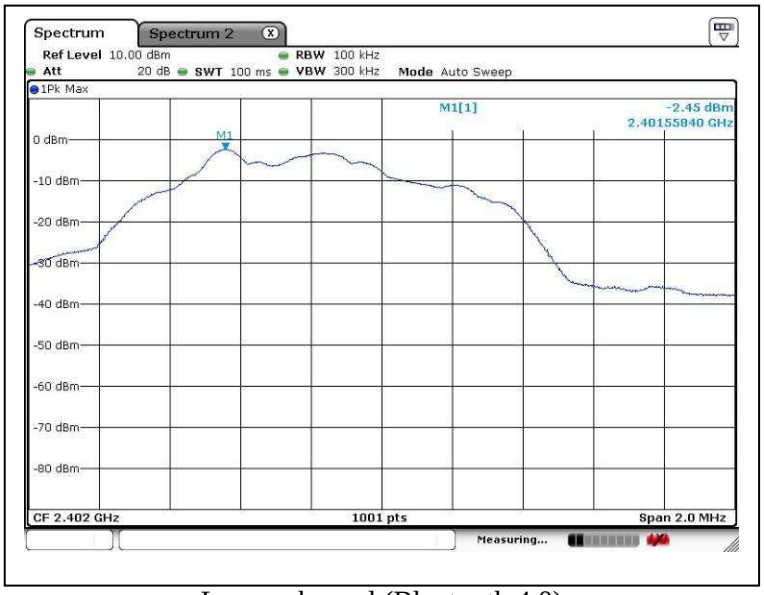
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

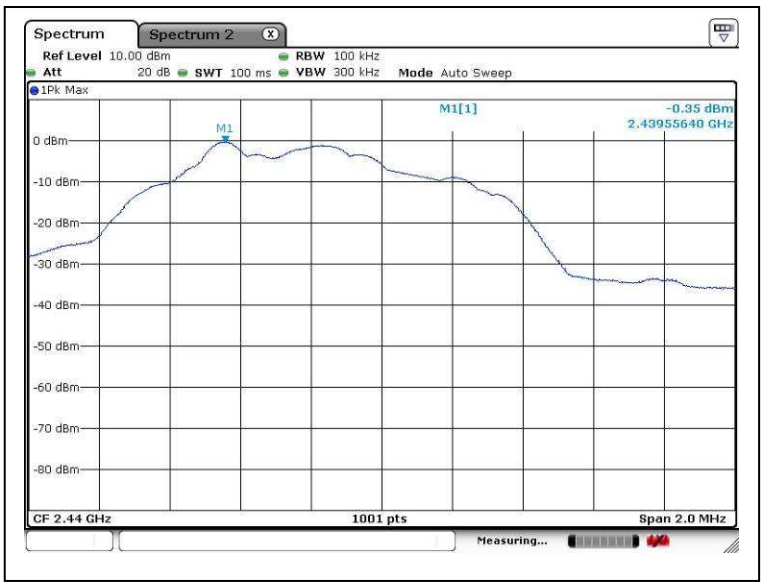
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A15. Power Spectral Density



Lower channel (Bluetooth 4.0)



Middle channel (Bluetooth 4.0)

Tested by: Mr. LEUNG Shu-kan, Ken

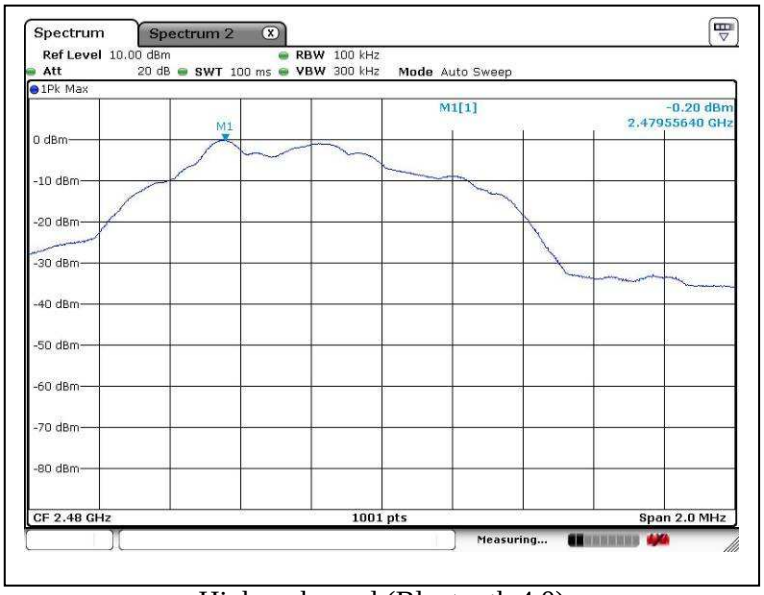
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A15. Power Spectral Density



Higher channel (Bluetooth 4.0)

Tested by: Mr. LEUNG Shu-kan, Ken

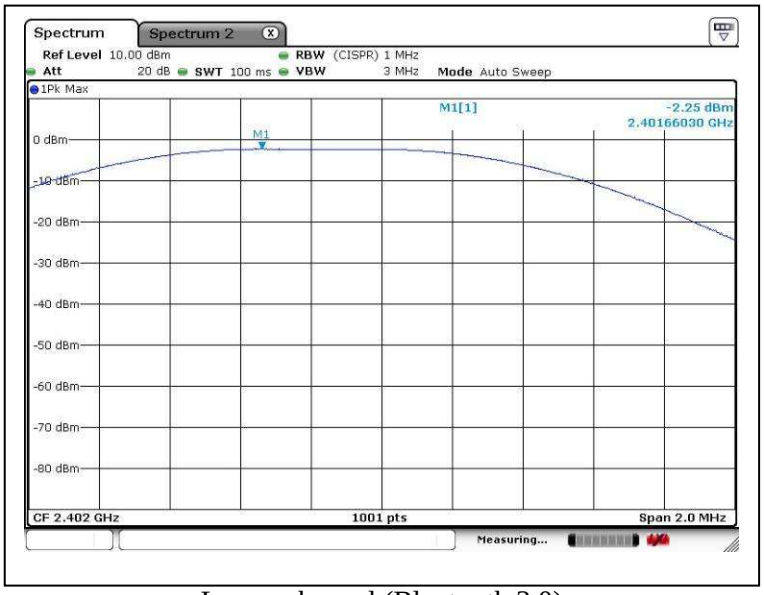
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

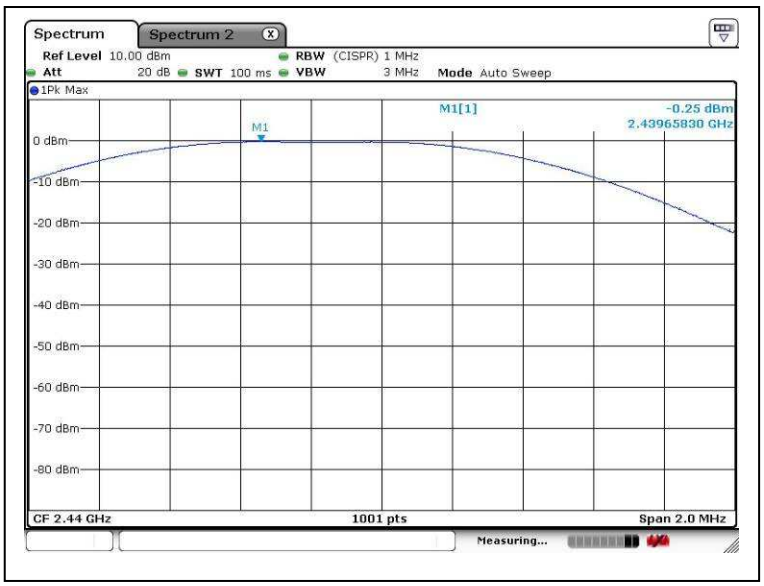
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A16. Transmission Power



Lower channel (Bluetooth 3.0)



Middle channel (Bluetooth 3.0)

Tested by: Mr. LEUNG Shu-kan, Ken

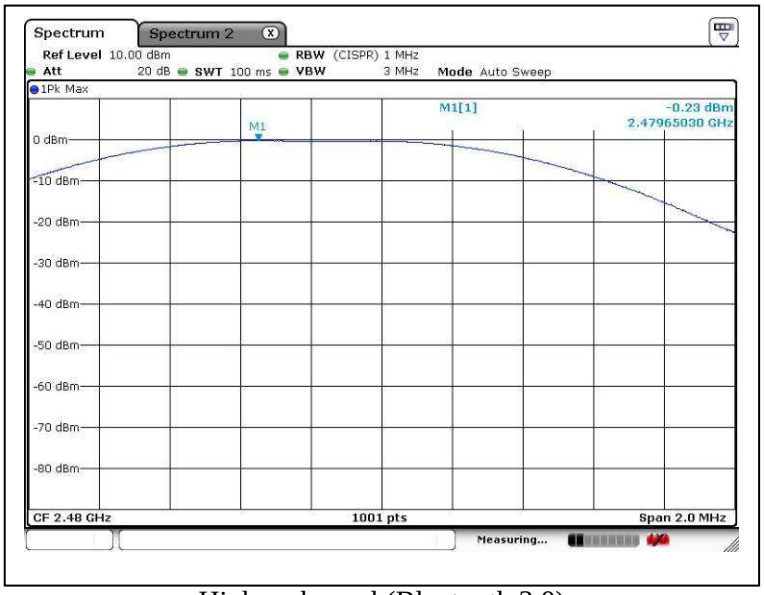
Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A16. Transmission Power



Higher channel (Bluetooth 3.0)

Tested by: Reviewed by:

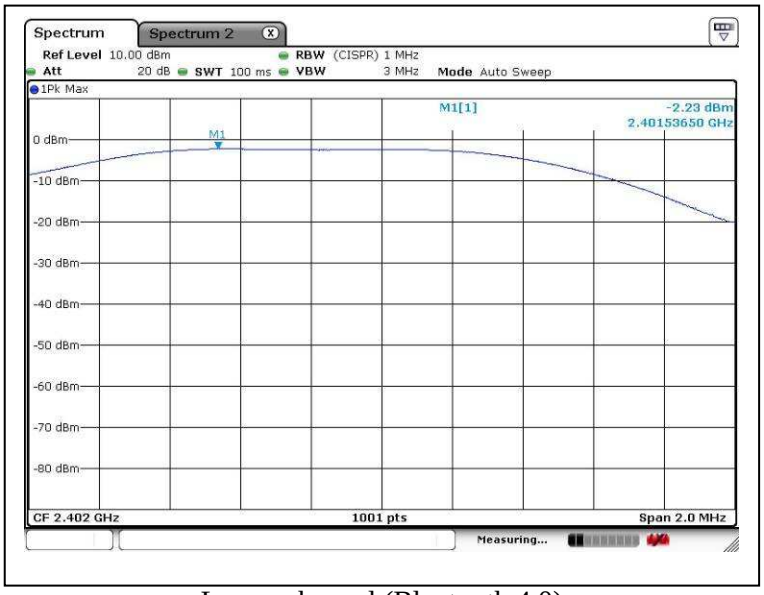
Mr. LEUNG Shu-kan, Ken Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10

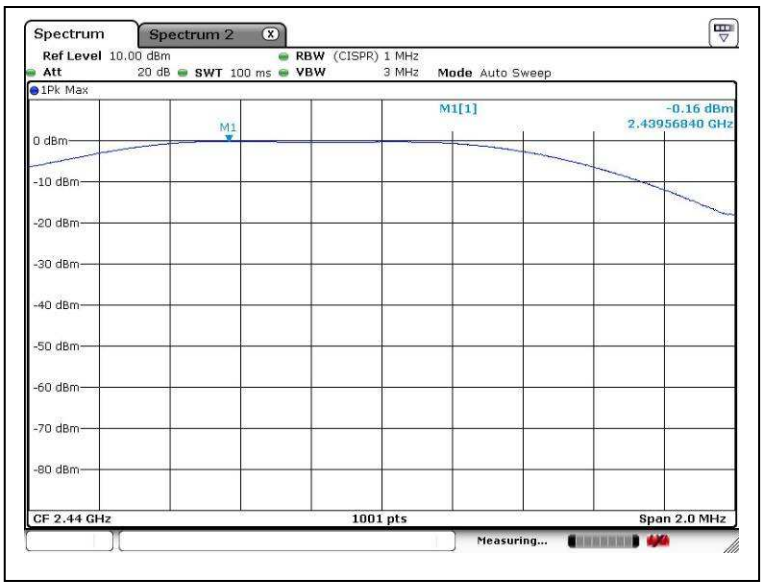
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A16. Transmission Power



Lower channel (Bluetooth 4.0)



Middle channel (Bluetooth 4.0)

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
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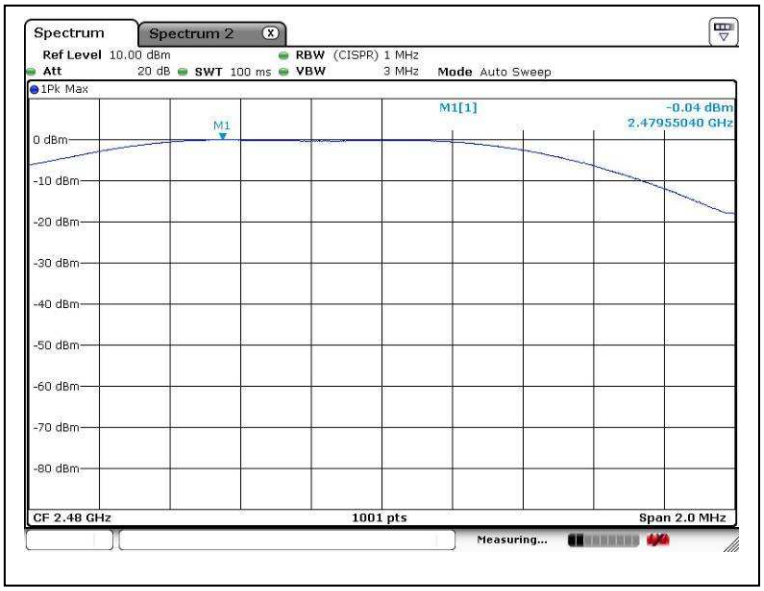
TEST REPORT

Report No. : AU0045807(2) Date : 11 Jul 2016

A16. Transmission Power



Higher channel (Bluetooth 4.0)

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

Tested by: Mr. LEUNG Shu-kan, Ken

Reviewed by: Mr. WONG Lap-pong, Andrew

FCC ID: EMOIZBT10
IC: 986B-IZBT10