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FCC CERTIFICATION RADIO MEASUREMENT TECHNICAL REPORT

On Model Name: Audio Bluetooth Set

Model Number: ABT-200 (TX-ABT-210; RX: ABT-220)

Trademark : ZyCast

FCC ID : V6FABT200

Prepared for Zycast Technology Inc.

According to FCC Part 15 (2007), Subpart C

Test Report #:	*ZYC-0803-6822-FCC*
Prepared by:	*Cherry Chang*
Reviewed by:	*Harry Zhao*
QC Manager:	*Paul Chen*

Test Report Released by: Paul J. Chen _____ *2008, May 23*

Paul Chen *Date*

Test Location

Tests performed at Training Research Co., Ltd. in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.

Test Site Location: *Training Research Co., Ltd.*
No.255,Nanyang St., Shijr City,
Taipei Hsien 221,Taiwan
Tel: *886-2-2693-5155*
Fax: *886-2-2693-4440*

FCC Registration Number: *93906*
IC Registration Number: *3148A-2*

Accreditation Bodies

Training Research Co., Ltd. is a fully accredited Test Laboratory for ITE, ISM, MIL-STD and Telecommunications Products.

Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code # 200174-0.

TRC is ECMG's subcontract Lab.
TRC conducts the related EMC/RF test. ECMG collects and generate the report.

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Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EUT). Without the permission of ECMG Worldwide Certification Solution, Inc. Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

Administrative Data

Test Sample : Audio Bluetooth Set

Model Number : ABT-200 (TX:ABT-210; RX-ABT-220)

Trade Mark : Zycast

Date Tested : 2008, February 14th

Applicant : Zycast Technology Inc.
No.33, Lane181, Chung Hwa Road Section 4 Hsin Chu, Taiwan, 30060

Telephone : 886-3-5400-949

Fax : 886-3-5400-413

Manufacturer : Zycast Technology Inc.
No.33, Lane181, Chung Hwa Road Section 4 Hsin Chu, Taiwan, 30060

Telephone : 886-3-5400-949

Fax : 886-3-5400-413

EUT Description

Zycast Technology Inc. Model number ABT-200(TX: ABT-210; RX:ABT-220 (referred to as the EUT in this test report) is a Audio Bluetooth Set.

We tested the EUT with one kind of test Audio Bluetooth Set.

The EUT uses USB port to power and Charged the battery. The test use RS232 port to communicate and set up the EUT. For RF test items, only EUT test data was recorded.

Antenna Statement

The Audio Bluetooth Set has no antenna connector. It has it's integrate PCB antenna.

Test Summary

The Electromagnetic Compatibility requirements on ABT-200 (TX: ABT-210; RX: ABT-220) for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

EMC Test Items Reference FCC Part 15 (2007), Subpart C			
Specification	**Description**	**Test Results**	**Remark**
FCC Part 15.203	Antenna Requirement	Compliance	See the antenna statement.
FCC Part 15.205	Restricted Band of Operation	Compliance	Refer to Attachment 1
FCC Part 15.209	Radiated Emission Limits	Compliance	Attachment 1
FCC Part1.1307(b)(1) &2.1093	RF Exposure	Compliance	Attachment 2
FCC Part 15.207	Conducted Limits	Compliance	Attachment 3
FCC Part 15.247(a)	Bandwidth	Compliance	Attachment 4
FCC Part 15.247 (b) (2)	Maximum Peak Power	Compliance	Attachment 5
FCC Part 15.247(d)	Band Edge	Compliance	Attachment 6
FCC Part 15.247(a) (1) (iii)	Number of Hopping Channels	Compliance	Attachment 7
FCC Part 15.247(a) (1)	Hopping Channel Separation	Compliance	Attachment 8
FCC Part 15.247(a) (1) (iii)	Time of Occupying	Compliance	Attachment 9

Test Mode Justification

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

EUT Exercise Software

Software "CSR Blue Test" was used in during the test.

Equipment Modification

Any modifications installed previous to testing by Zycast Technology Inc. will be incorporated in each production model sold or leased in United States.

There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.

Test System Details

EUT	
Model Number:	**ABT-200 (TX:ABT-210 ; RX:ABT-220)**
Trademark::	**Zycast**
Serial Number:	**Engineering Sample**
Input Voltage:	**3.7 DC battery**
Description:	**Audio Bluetooth Set**
Manufacturer:	**Zycast Technology Inc.**

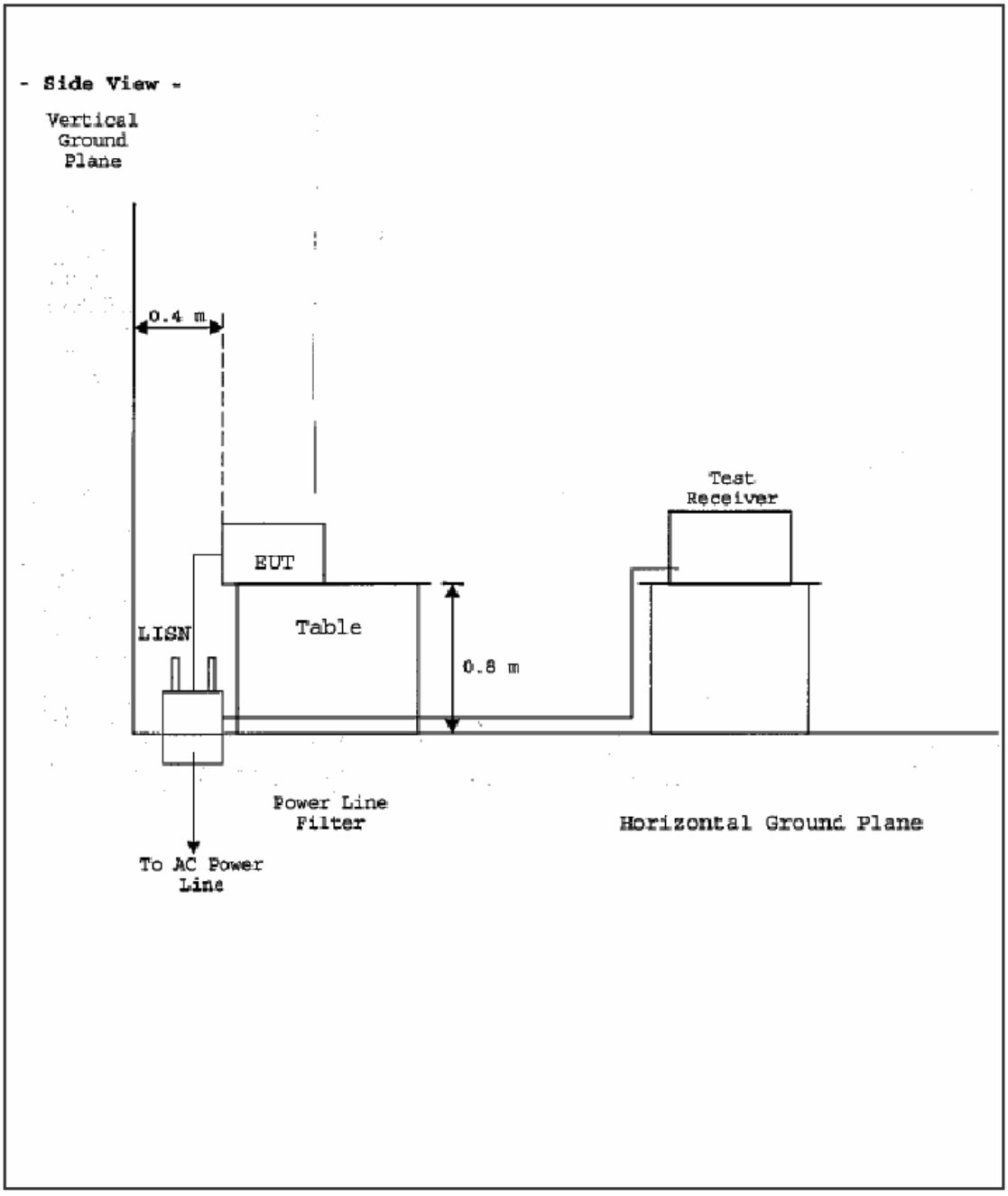
Support Equipment

Description	Model Number	Serial Number	Manufacturer	Power Cable Description (Meters)
Notebook PC	2662-8HT	FX-V365701/11	IBM	1.8M Non-Shielded
Print	B241A	FAPY155090	EPSON	198CM Non-Shielded
Modem	DM-1414	9010583	ACEEX	1.9M Non-Shielded
Test Fixture	EZEV-BC3ME01-2_TEST BOARD_V01	N/A	EnzyTek	By PC
Earphone	SBC-HE033	670904	PHILIPS	By EUT
MAC	VVM-230	N/A	Zycast	By EUT

Cable Description

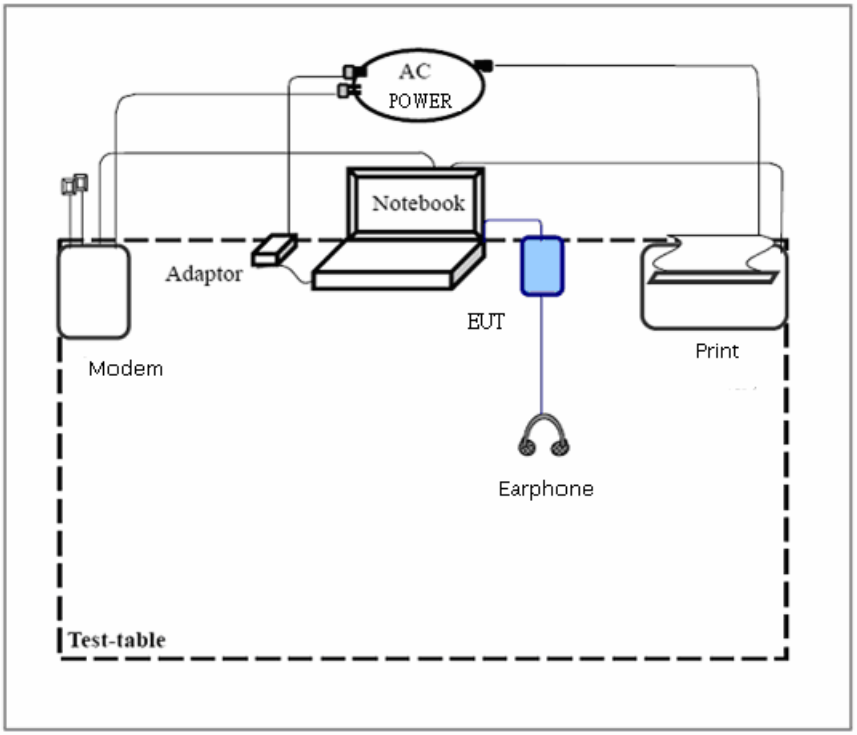
Description	From	To	Length	Ferrite	Shielded
Print Cable	PC	Printer	2.0m	N	Y
RS232 Cable	PC	Modem	1m	N	N
USB Cable	PC	EUT	1.5m	N	N

Configuration of Tested System

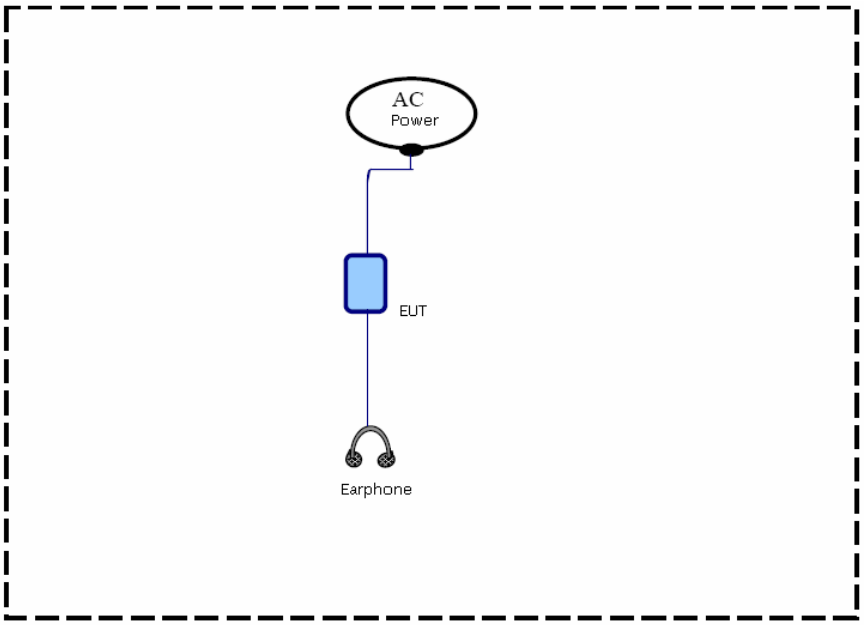


TX: ABT-210

1. Battery charged through PC USB Port:

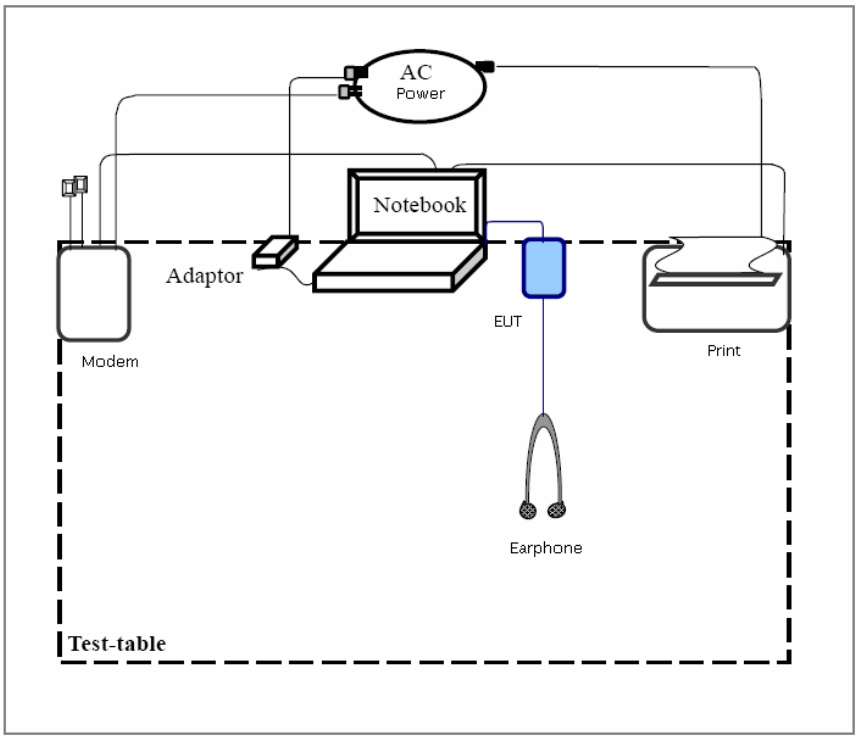


2. Battery charged through Power Adapter:

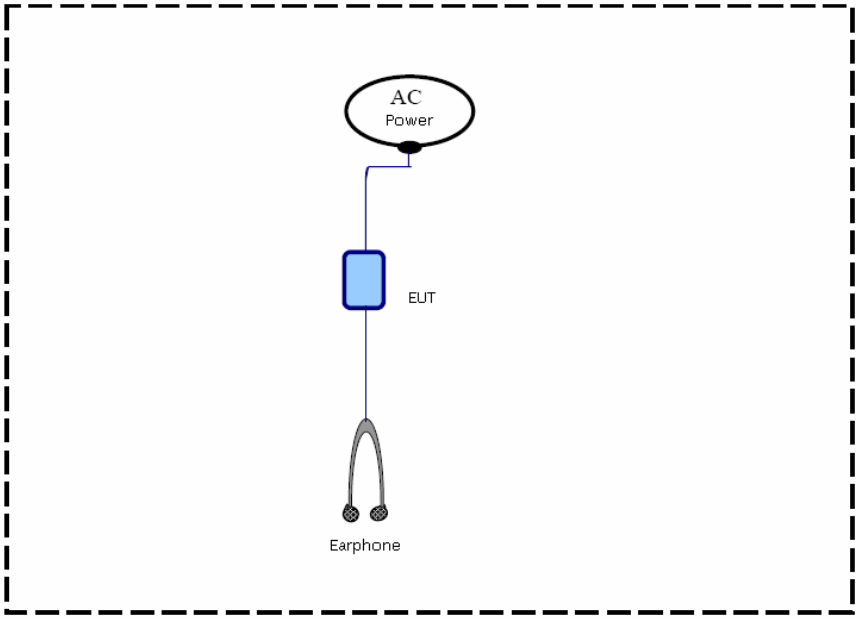


RX: ABT-220

1. Battery charged through PC USB Port:



2. Battery charged through Power Adapter:



ATTACHMENT 1 - Radiated Spurious Emissions

CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC Part 15.209 FCC Part 15.205
MODEL NUMBER:	ABT-200 (TX:ABT-210; RX:ABT-220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.win	**DATE OF TEST:**	2008, February 14

SETUP METHOD:	ANSI C63.4 : 2003
TEST PROCEDURE:	a. The EUT was placed on a rotatable table with 0.8 meters above ground. b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower. c. The antenna was varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna were set to make measurement. EUT rotated through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit, (the attitude and equipment arrangment that produces the highest emission relative to the limit shall be used in marking final radiated emission measurements. d. For each suspected emission the EUT was arranged to its worst case and then change the antenna tower height (from 1m to 4m) and turn table (from 0 degree to 360 degree) to find the maximum reading. e. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported. f. Broadband antenna (Calibrated antenna) was used as receiving antenna below 1000MHz. Horn antenna were used as receiving antenna above 1000MHz. g. The bandwidth is 120 kHz below 1000 MHz, and 1 MHz above 1000 MHz Explanation of the Correction Factor are given as follows: FS= RA + AF + CF - AG - DC Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain DC = Duty Cycle Correction Factor

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TESTED RANGE:	30MHz to 24,000MHz
TEST VOLTAGE:	3.7V Li-ion battery
TEST STATUS:	Keep Tx in continuous transmission mode, GFSK modulated.
RESULTS:	The EUT meets the requirements of field strength test. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

For Test ABT-200(TX:ABT-210;RX:ABT-220)
For Channel 0
Test Results (30MHz~1GHz)-H

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
143.97	**21.88**	**1.00**	**278**	**-3.83**	**18.05**	**43.50**	**-25.45**
209.45	**24.97**	**1.00**	**136**	**-3.69**	**21.28**	**43.50**	**-22.22**
322.21	**22.60**	**1.00**	**139**	**-2.62**	**19.98**	**46.00**	**-26.02**
478.62	**20.98**	**1.00**	**357**	**1.50**	**22.48**	**46.00**	**-23.52**
631.40	**20.49**	**1.00**	**253**	**7.43**	**27.92**	**46.00**	**-18.08**
791.45	**19.29**	**1.00**	**218**	**11.36**	**30.65**	**46.00**	**-15.35**

Test Results (30MHz~1GHz)-V

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
124.57	**21.09**	**1.00**	**0**	**-2.68**	**18.41**	**43.50**	**-25.09**
250.67	**24.29**	**1.00**	**282**	**-3.20**	**21.09**	**46.00**	**-24.91**
289.47	**34.25**	**1.00**	**292**	**-3.38**	**30.87**	**46.00**	**-15.13**
330.70	**19.00**	**1.00**	**241**	**2.51**	**21.51**	**46.00**	**-24.49**
660.50	**20.78**	**1.00**	**343**	**8.33**	**29.11**	**46.00**	**-16.89**
941.80	**21.20**	**1.00**	**84**	**15.52**	**36.72**	**46.00**	**-9.28**

Note:

1. **Margin = Amplitude – limit, *if margin is minus means under limit.***
2. **Corrected Amplitude = Reading Amplitude + Correction Factors**
3. **Correction factor = Antenna factor + (Cable Loss – Amplitude gain) + Switching Box Loss**

For Channel 0

Test Results (1GHz~26.5GHz)-H

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
2145.83	39.50	1.00	250	8.50	48.00	-6.97	41.03	53.96	-12.93
4805.00	53.94	1.00	286	3.69	57.63	-6.97	50.66	53.96	-3.30
7230.54	38.61	1.00	295	9.91	48.52	-6.97	41.55	53.96	-12.41
19214.79	47.49	1.00	74	1.60	49.09	-6.97	42.12	53.96	-11.84
21619.58	47.49	1.00	230	2.79	50.28	-6.97	43.31	53.96	-10.65
24020.83	46.66	1.00	334	3.14	49.80	-6.97	42.83	53.96	-11.13

Test Results (1GHz~26.5GHz)-V

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
2156.25	40.50	1.00	341	8.53	49.03	-6.97	42.06	53.96	-11.90
4805.00	55.44	1.00	219	3.69	59.13	-6.97	52.16	53.96	-1.80
7203.54	46.11	1.00	178	9.91	56.02	-6.97	49.05	53.96	-4.91
12012.71	40.60	1.00	262	10.01	50.61	-6.97	43.64	53.96	-10.32
19214.79	47.99	1.00	288	1.60	49.59	-6.97	42.62	53.96	-11.34
24020.83	46.66	1.00	152	3.14	49.80	-6.97	42.83	53.96	-11.13

Following is the test result, which produce maximum duty cycle:
Total on interval in a complete pulse train
= 564μs
Length of a complete pulse train
= 1.260ms
Duty Cycle (%) = 0.564ms / 1.26ms * 100% = 0.448
Duty Cycle Correction Factor (dB) = 20 * Log (0.448) = -6.97

For Channel 39

Test Results (30MHz~1GHz)-H

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
200.96	**23.19**	**1.00**	**350**	**-3.34**	**19.85**	**43.50**	**-23.65**
209.45	**23.55**	**1.00**	**126**	**-3.69**	**19.86**	**43.50**	**-23.64**
288.26	**23.38**	**1.00**	**282**	**-3.42**	**19.96**	**46.00**	**-26.04**
308.87	**22.76**	**1.00**	**353**	**-2.79**	**19.97**	**46.00**	**-26.03**
467.71	**21.64**	**1.00**	**170**	**1.38**	**23.02**	**46.00**	**-22.98**
767.20	**20.65**	**1.00**	**63**	**10.59**	**31.24**	**46.00**	**-14.76**

Test Results (30MHz~1GHz)-V

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
39.70	**24.12**	**1.00**	**148**	**5.21**	**29.33**	**40.00**	**-10.67**
250.67	**23.69**	**1.00**	**336**	**-3.20**	**20.49**	**46.00**	**-25.51**
288.26	**33.27**	**1.00**	**347**	**-3.42**	**29.85**	**46.00**	**-16.15**
330.70	**24.02**	**1.00**	**34**	**-2.51**	**21.51**	**46.00**	**-24.49**
482.26	**21.49**	**1.00**	**98**	**1.54**	**23.03**	**46.00**	**-22.97**
718.70	**20.44**	**1.00**	**164**	**9.72**	**30.16**	**46.00**	**-15.84**

Note:

1. **Margin = Amplitude – limit*, if margin is minus means under limit.***
2. **Corrected Amplitude = Reading Amplitude + Correction Factors**
3. **Correction factor = Antenna factor + (Cable Loss – Amplitude gain) + Switching Box Loss**

For Channel 39

Test Results (1GHz~26.5GHz)-H

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
4883.54	48.77	1.00	355	3.99	52.76	-6.97	45.79	53.96	-8.17
7324.37	40.60	1.00	174	10.33	50.93	-6.97	43.96	53.96	-10.00
12206.04	41.11	1.00	247	9.79	50.90	-6.97	43.93	53.96	-10.03
19526.46	47.32	1.00	180	1.70	49.02	-6.97	42.05	53.96	-11.91
21970.21	47.82	1.00	66	2.95	50.77	-6.97	43.80	53.96	-10.16
24410.42	46.82	1.00	176	3.10	49.92	-6.97	42.95	53.96	-11.01

Test Results (1GHz~26.5GHz)-V

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
4883.54	50.94	1.00	54	3.99	54.93	-6.97	47.96	53.96	-6.00
7324.37	41.60	1.00	175	10.33	51.93	-6.97	44.96	53.96	-9.00
12206.04	41.28	1.00	279	9.79	51.07	-6.97	44.10	53.96	-9.86
19526.46	49.82	1.00	353	1.70	51.52	-6.97	44.55	53.96	-9.41
21970.21	46.49	1.00	22	2.95	49.44	-6.97	42.47	53.96	-11.49
24410.42	48.65	1.00	99	3.10	51.75	-6.97	44.78	53.96	-9.18

Following is the test result, which produce maximum duty cycle:
Total on interval in a complete pulse train
= 564μs
Length of a complete pulse train
= 1.260ms
Duty Cycle (%) = 0.564ms / 1.26ms * 100% = 0.448
Duty Cycle Correction Factor (dB) = 20 * Log (0.448) = -6.97

For Channel 78

Test Results (30MHz~1GHz)-H

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
210.66	**24.25**	**1.00**	**262**	**-3.71**	**20.54**	**43.50**	**-22.96**
297.96	**27.56**	**1.00**	**84**	**-3.00**	**24.56**	**46.00**	**-21.44**
313.72	**28.09**	**1.00**	**84**	**-2.73**	**25.36**	**46.00**	**-20.64**
363.44	**25.63**	**1.00**	**347**	**-1.95**	**23.68**	**46.00**	**-22.32**
436.19	**23.06**	**1.00**	**135**	**0.56**	**23.62**	**46.00**	**-22.38**
809.64	**20.47**	**1.00**	**168**	**11.95**	**32.42**	**46.00**	**-13.58**

Test Results (30MHz~1GHz)-V

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
38.49	**24.42**	**1.00**	**336**	**5.43**	**29.85**	**40.00**	**-10.15**
250.67	**24.31**	**1.00**	**7**	**-3.20**	**21.11**	**46.00**	**-24.89**
288.26	**32.57**	**1.00**	**37**	**-3.42**	**29.15**	**46.00**	**-16.85**
330.70	**24.28**	**1.00**	**78**	**-2.51**	**21.77**	**46.00**	**-24.23**
443.46	**30.67**	**1.00**	**292**	**0.98**	**31.65**	**46.00**	**-14.35**
896.94	**20.52**	**1.00**	**98**	**15.04**	**35.56**	**46.00**	**-10.44**

Note:

1. **Margin = Amplitude – limit*, if margin is minus means under limit.***
2. **Corrected Amplitude = Reading Amplitude + Correction Factors**
3. **Correction factor = Antenna factor + (Cable Loss – Amplitude gain) + Switching Box Loss**

For Channel 78

Test Results (1GHz~26.5GHz)-H

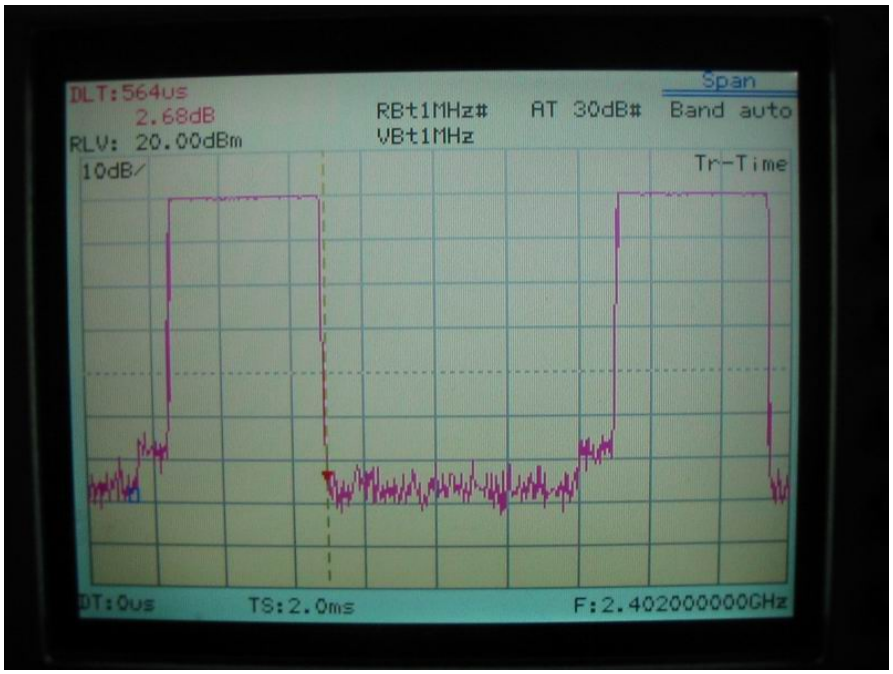
Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
4962.08	47.44	1.00	331	4.25	51.69	-6.97	44.72	53.96	-9.24
7439.17	38.11	1.00	294	10.33	48.44	-6.97	41.47	53.96	-12.49
9922.29	36.44	1.00	207	11.66	48.10	-6.97	41.13	53.96	-12.83
19799.17	1.90	1.00	347	48.32	50.22	-6.97	43.25	53.96	-10.71
22320.83	3.33	1.00	322	46.16	49.49	-6.97	42.52	53.96	-11.44
24800.00	2.22	1.00	112	47.99	50.21	-6.97	43.24	53.96	-10.72

Test Results (1GHz~26.5GHz)-V

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
4962.08	46.78	1.00	220	4.25	51.03	-6.97	44.06	53.96	-9.90
7439.17	39.11	1.00	154	10.33	49.44	-6.97	42.47	53.96	-11.49
12399.37	39.10	1.00	100	9.02	48.12	-6.97	41.15	53.96	-12.81
19799.17	47.49	1.00	304	1.90	49.39	-6.97	42.42	53.96	-11.54
22320.83	45.99	1.00	215	3.33	49.32	-6.97	42.35	53.96	-11.61
24800.00	47.82	1.00	219	2.22	50.04	-6.97	43.07	53.96	-10.89

Following is the test result, which produce maximum duty cycle:
Total on interval in a complete pulse train
= 564μs
Length of a complete pulse train
= 1.260ms
Duty Cycle (%) = 0.564ms / 1.26ms * 100% = 0.448
Duty Cycle Correction Factor (dB) = 20 * Log (0.448) = -6.97

Duty Cycle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RLV: 20.00dBm
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VBt1MHz
AT 30dB#
Span
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10dB/
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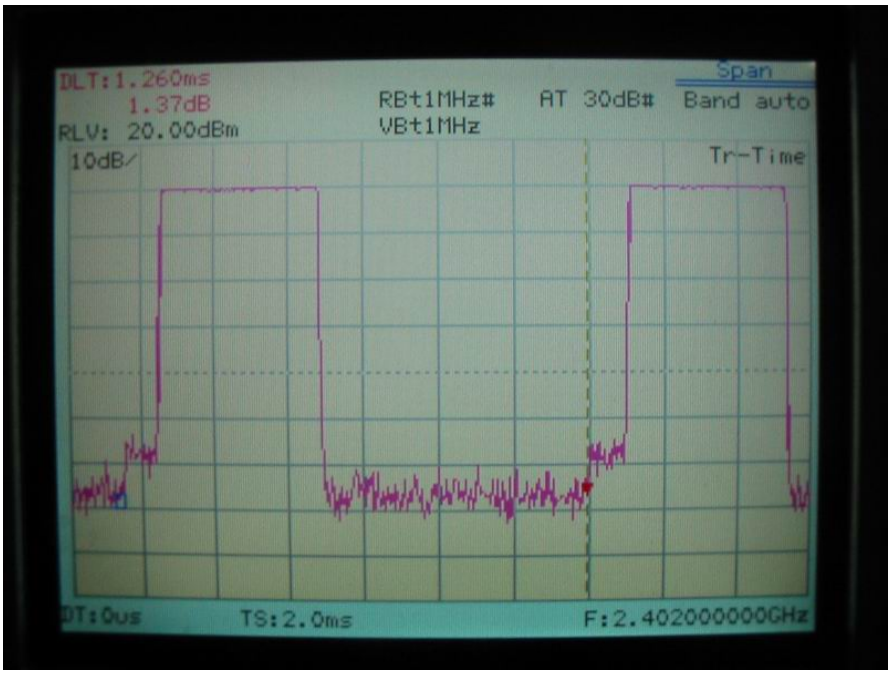
TS:2.0ms
F:2.402000000GHz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1.37dB
RLV: 20.00dBm
RBt1MHz#
VBt1MHz
AT 30dB#
Span
Band auto
Tr-Time
10dB/
DT:0us
TS:2.0ms
F:2.402000000GHz

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
EMI Receiver	HP	8546A	3520A00242	09/06/06	03/05/08
RF Filter Section	HP	85460A	3448A00217	09/06/06	03/05/08
Small Biconical Antenna	Schwarzeck	UBAA9114 & BBVU9135	127	12/07/06	03/06/08
Pre-amplifier	TRC	PA1F	1FAC	04/10/07	04/10/08
Coaxial Cable (Double shielded,15 meter)	Jyebao	A30A30-0058-50FS-15M	SMA-01	04/10/07	04/10/08
Coaxial Cable (1.1 meter)	Jyebao	A30A30-0058-50FS-1M	SMA-02	04/10/07	04/10/08
Spectrum Analyzer	HP	8564E	3720A00840	12/11/06	03/10/08
Microwave Preamplifier	HP	84125C	US36433002	04/20/07	04/19/08
Horn Antenna	EMCO	3115	9104-3668	02/05/07	02/05/08
Stand Guide Horn Antenna	HP	84125-80008	18-26.5GHz	12/14/07	12/13/08
Stand Guide Horn Antenna	HP	84125-80001	26.5-40GHz	12/14/07	12/14/08
Horn Antenna	HP(EMCO)	1196E (3115)	9704-5178	02/12/07	05/12/08
Pre-amplifier	TRC	PA2F	2F1GZ	04/10/07	04/10/08
Coaxial Cable(3 meter)	Jyebao	A30A30-0058-50FST118	MSA-05	04/10/07	04/10/08
Coaxial Cable(1 meter)	Jyebao	A30A30-0058-50FST118	MSA-04	04/10/07	04/10/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Naing.win **REVIEWED BY:**

ENGINEER **SENIOR ENGINEER**

ATTACHMENT 2 - RF EXPOSURE CALCULATION

CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC 1.1307(b)(1) FCC 2.1093
MODEL NUMBERS:	ABT-200 (TX:ABT-210; RX:ABT-220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.win	**DATE OF TEST:**	2008, February 14

SETUP METHOD:	N/A
TEST PROCEDURE:	According to § 15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter. According to § 1.1310 and § 2.1093 RF exposure is calculated. Limits for General Population/Uncontrolled Exposure

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

MPE PREDICTION:

The maximum power of the EUT is 11.15 dBm =13.03mW is less than low threshold power of TCB exclusion list.

So no RF exposure evaluation is required.

ATTACHMENT 3 - CONDUCTED EMISSION TEST RESULTS

CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC 15.107/207
MODEL NUMBER:	ABT-200 (TX:ABT-210; RX:ABT-220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	23°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.win	**DATE OF TEST:**	2008 February 14

SETUP METHOD:	ANSI C63.4 : 2003, FCC 15.107/207
TEST PROCEDURE:	a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface. b. Connect EUT to the power mains through a line impedance stabilization network (LISN) c. The LISN provides 50ohm coupling impedance for the measuring instrument d. Both sides of AC line were checked for maximum conduced interference. e. The frequency range from 150KHz to 30MHz was searched. f. Set the test-receiver system to Peak Detect Function and Specified bandwidth. g. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.
TESTED RANGE:	0.15MHz-30MHz
TEST VOLTAGE:	3.7V Li-ion Battery
TEST STATUS:	Keep Tx in continuous transmission mode, GFSK modulated.
RESULTS:	The EUT meets the requirements of test reference for Conducted Emissions on line1 by 22.48 dB of AVG detector (ch0) and on line2 by 3.66 dB of AVG detector (ch39) and on line1 by 3.12 dB of AVG detector (ch78). The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB

For Model ABT-200(TX:ABT-210;RX:ABT-220)

Ch 0:

Line L1(Hot Lead)								
Signal	**Frequency (KHz)**	**Read (dBuV)**	**QP (dBuV)**	**AVG (dBuV)**	**QP_Limit**	**AVG_Limit**	**AVG_ Margin**	**CF**
1	179.245	56.82	50.69	32.98	65.46	55.46	-22.48	3.30
2	202.125	56.89	45.39	26.99	64.29	54.29	-27.3	3.23
3	233.655	53.87	48.95	26.64	63.69	53.69	-27.05	3.19
4	353.910	52.26	45.07	26.89	60.43	50.43	-23.54	2.98
5	410.750	50.16	39.53	18.76	58.49	48.49	-29.73	2.85
6	526.550	51.09	42.23	21.58	56.00	46.00	-24.42	2.79
7	627.990	48.42	43.25	22.89	56.00	46.00	-23.11	2.80
8	839.425	47.10	40.26	20.17	56.00	46.00	-25.83	2.82
9	1201.870	43.68	38.07	18.33	56.00	46.00	-27.67	2.84
10	2284.870	46.47	38.92	16.15	56.00	46.00	-29.58	2.86
Line2 (Neutral Lead)								
Signal	**Frequency (KHz)**	**Read (dBuV)**	**QP (dBuV)**	**AVG (dBuV)**	**QP_Limit**	**AVG_Limit**	**AVG_ Margin**	**CF**
1	207.045	52.60	41.64	16.96	64.11	54.11	-37.15	3.21
2	232.145	51.27	45.01	18.64	63.63	53.63	-34.99	3.18
3	356.730	51.97	45.15	20.53	60.34	50.34	-29.81	2.97
4	378.110	53.66	49.29	25.89	59.43	49.43	-23.54	2.91
5	536.685	49.25	43.02	18.05	56.00	46.00	-27.95	2.79
6	630.690	48.98	41.56	14.88	56.00	46.00	-31.12	2.80
7	732.595	52.70	44.15	19.92	56.00	46.00	-26.08	2.81
8	884.460	46.61	40.03	15.61	56.00	46.00	-30.39	2.83
9	1119.615	46.76	36.42	15.29	56.00	46.00	-30.71	2.84
10	1302.335	43.26	33.24	12.97	56.00	46.00	-33.03	2.84
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.								

Ch39:

Line L1(Hot Lead)								
Signal	**Frequency (KHz)**	**Read (dBuV)**	**QP (dBuV)**	**AVG (dBuV)**	**QP_Limit**	**AVG_Limit**	**AVG_ Margin**	**CF**
1	171.315	56.45	53.14	34.18	65.51	55.51	-21.33	3.31
2	207.725	58.61	56.62	40.61	64.49	54.49	-13.88	3.24
3	232.885	59.11	56.19	36.22	63.83	53.83	-17.61	3.20
4	314.245	53.42	49.47	29.38	60.74	50.74	-21.36	3.00
5	409.500	55.23	41.01	21.65	58.71	48.71	-27.06	2.86
6	508.860	54.80	47.19	23.02	56.00	46.00	-22.98	2.79
7	622.435	56.12	45.67	25.99	56.00	46.00	-20.01	2.80
8	842.080	56.24	48.60	30.14	56.00	46.00	-15.86	2.82
9	1025.415	51.55	41.92	16.78	56.00	46.00	-29.22	2.84
10	1223.095	51.93	44.80	24.11	56.00	46.00	-21.89	2.84
Line2 (Neutral Lead)								
Signal	**Frequency (KHz)**	**Read (dBuV)**	**QP (dBuV)**	**AVG (dBuV)**	**QP_Limit**	**AVG_Limit**	**AVG_ Margin**	**CF**
1	213.550	55.77	53.80	33.81	64.43	54.43	-20.62	3.23
2	2321.520	56.38	51.37	29.40	63.74	53.74	-24.34	3.19
3	340.570	53.00	45.33	19.16	60.74	50.74	-31.58	3.00
4	417.640	54.75	40.69	16.30	58.60	48.60	-32.3	2.86
5	444.620	54.72	45.10	16.17	57.37	47.37	-31.2	2.78
6	621.445	48.73	42.13	15.74	56.00	46.00	-30.26	2.80
7	838.840	44.92	38.42	13.21	56.00	46.00	-32.79	2.82
8	1025.300	43.96	35.42	12.04	56.00	46.00	-33.96	2.84
9	1195.100	42.27	32.91	11.62	56.00	46.00	-34.38	2.84
10	1871.000	42.34	__	__	56.00	46.00	-3.66	2.84
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.								

Ch78:

Line L1(Hot Lead)								
Signal	**Frequency (KHz)**	**Read (dBuV)**	**QP (dBuV)**	**AVG (dBuV)**	**QP_Limit**	**AVG_Limit**	**AVG_ Margin**	**CF**
1	302.475	52.67	48.93	29.36	61.71	51.71	-22.35	3.06
2	463.875	54.97	52.85	33.19	57.26	47.26	-14.07	2.78
3	667.535	55.24	51.21	30.29	56.00	46.00	-15.71	2.80
4	785.950	55.49	51.91	32.71	56.00	46.00	-13.29	2.82
5	895.790	55.48	51.37	32.02	56.00	46.00	-13.98	2.83
6	1105.735	55.16	47.85	29.18	56.00	46.00	-16.82	2.84
7	1682.095	52.30	47.21	27.19	56.00	46.00	-18.81	2.84
8	2131.665	48.98	43.68	23.45	56.00	46.00	-22.55	2.85
9	2465.915	46.51	41.04	20.28	56.00	46.00	-25.72	2.87
10	3858.000	42.88	__	__	56.00	46.00	-3.12	3.68
Line2 (Neutral Lead)								
Signal	**Frequency (KHz)**	**Read (dBuV)**	**QP (dBuV)**	**AVG (dBuV)**	**QP_Limit**	**AVG_Limit**	**AVG_ Margin**	**CF**
1	229.000	48.67	__	__	63.74	53.74	-5.07	3.19
2	417.230	53.94	49.22	26.25	58.49	48.49	-22.24	2.85
3	467.300	55.36	52.72	30.76	57.11	47.11	-16.35	2.78
4	612.160	54.19	48.81	26.32	56.00	46.00	-19.68	2.80
5	675.420	54.95	51.44	26.61	56.00	46.00	-19.39	2.81
6	789.685	54.53	49.50	26.40	56.00	46.00	-19.6	2.82
7	1041.260	54.11	50.58	28.68	56.00	46.00	-17.32	2.84
8	1226.085	50.77	45.36	23.27	56.00	46.00	-22.73	2.84
9	1455.230	47.14	41.40	22.67	56.00	46.00	-23.33	2.84
10	2094.000	42.81	__	__	56.00	46.00	-3.19	2.85
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.								

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
EMI Receiver	HP	8546A	3520A00242	09/06/06	03/05/08
RF Filter Section	HP	85460A	3448A00217	09/06/06	03/05/08
LISN(EUT)	TRC	LISN-01	99-05	05/10/07	05/10/08
LISN (Support E.)	TRC	LISN-01	9912-03,04	06/22/07	06/22/08
Pre-amplifier	Mini-Circuits	15542 ZFL-500	00117	04/10/07	05/04/08
6dB Attenuator	Mini-Circuits	MCL BW-S6W2	9915-Conducted	04/10/07	05/04/08
10dB Attenuator	Mini-Circuits	A5542 VAT010	0215-Conducted	04/10/07	05/04/08
Coaxial Cable (2meter)	Jyebao	A30A30-0058-50FS-2M	SMA-08	04/10/07	05/04/08
Coaxial Cable (1.1meter)	Jyebao	A30A30-0058-50FS-1M	SMA-09	04/10/07	05/04/08
Coaxial Cable (20 meter)	Jyebao	RG-214/U	NP-01	04/10/07	05/04/08
Coaxial Cable (20 meter)	Jyebao	RG-214/U	NP-02	04/10/07	05/04/08
Auto Switch Box (<30MHz)	TRC	ASB-01	9904-01	04/10/07	05/04/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Naing.win **REVIEWED BY:**

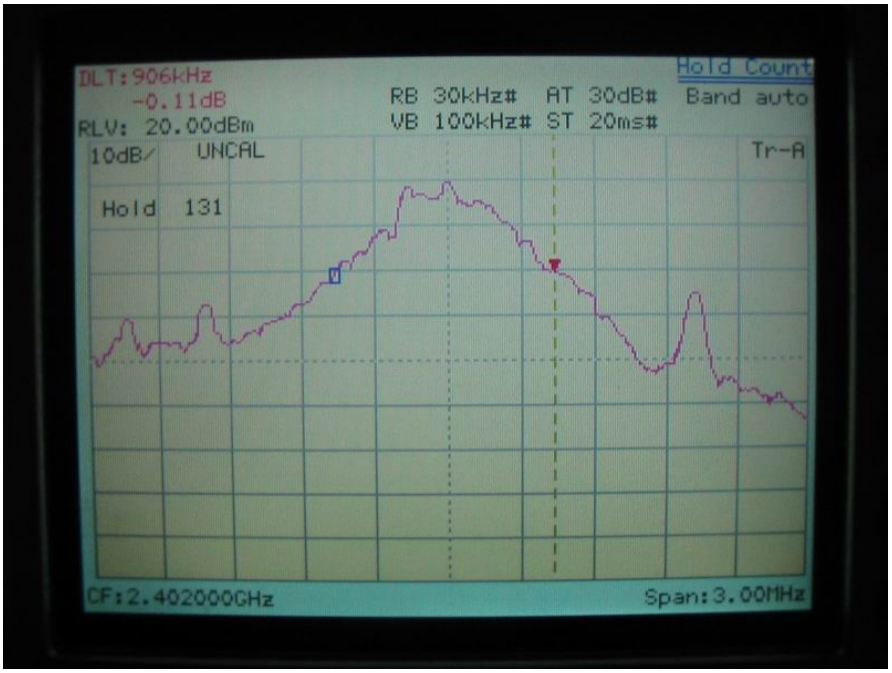
ENGINEER **SENIOR ENGINEER**

ATTACHMENT 4 - BANDWIDTH

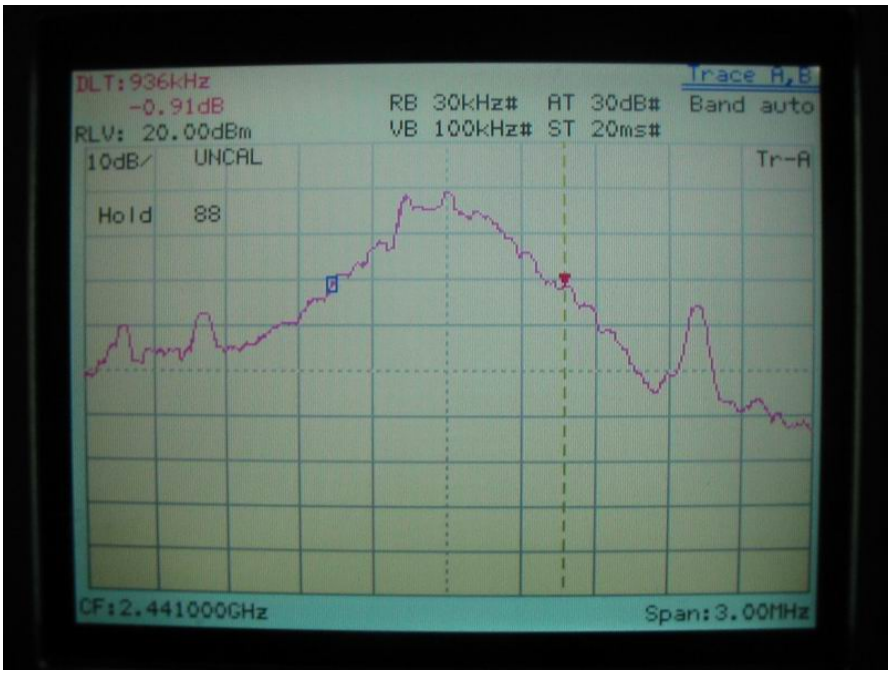
CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC Part 15.247 (a)
MODEL NUMBER:	ABT-200 (TX:ABT-210;RX:ABT-220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.win	**DATE OF TEST:**	2008, February 14

SETUP METHOD:	ANSI C63.4 - 2003
BANDWIDTH REQUIREMENT:	FCC 15.247 (a) (1) For frequency hopping system operating in the 2400-2483.5MHz, if the 20dB bandwidth of hopping channel is greater than 25kHz, two-thirds 20dB bandwidth of hopping channel shall be a minimum limit for the hopping channel separation.
TEST PROCEDURE:	Set the spectrum as follow: Span=approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel; RBW=1% of the 20dB bandwidth; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Use the search peak function to set the marker to the peak of the emission; Use the delta-mark function to measure 20dB down to both sides of the emission; The 20dB BW is the delta reading between two 20dB down marker.
TEST VOLTAGE:	3.7V Li-ion battery
TEST STATUS:	Hopping at channel 0, channel 38, channel 79
RESULTS:	The EUT meets the bandwidth requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB

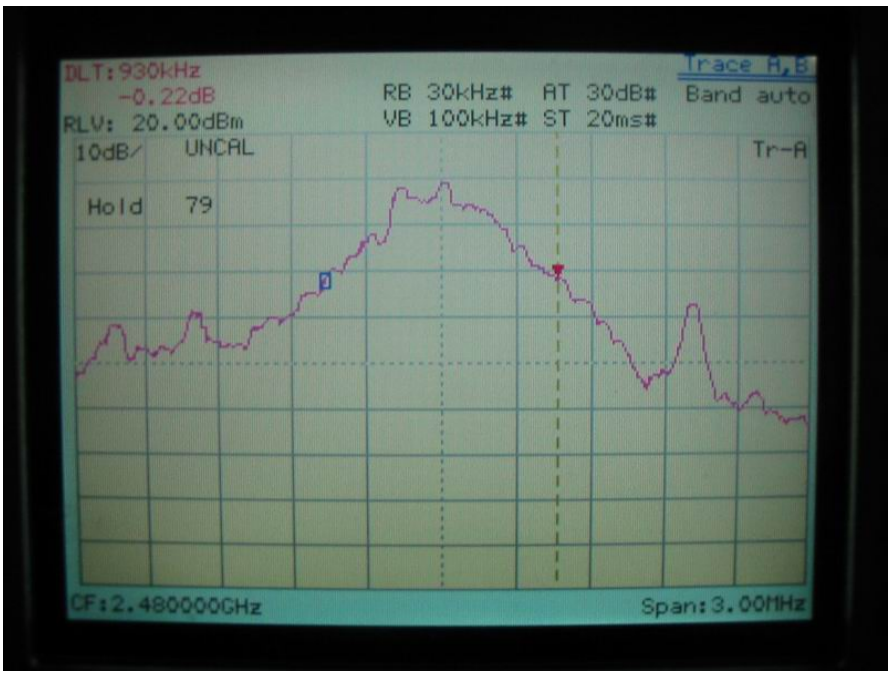
For standard mode of Model ABT-200(TX:ABT-210;RX:ABT-220)



Channel 0



Channel 39



Channel 78

Test Result

Channel	***Frequency***	***20dB Bandwidth***
0	*2402MHz*	*906kHz*
39	*2441MHz*	*936kHz*
78	*2480MHz*	*930kHz*

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	ANRITSU	MS2665C	6200175476	12/11/07	12/10/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Naing.win **REVIEWED BY:**

ENGINEER **SENIOR ENGINEER**

ATTACHMENT 5 - Maximum Peak Output Power Test

CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC Part 15.247 (b) (2)
MODEL NUMBER:	ABT-200(TX:ABT-210;RX:ABT-220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.win	**DATE OF TEST:**	2008 February 14

SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (b) (2) For frequency hopping systems operating in the 2400-2483.5MHz band employing at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems in the 2400-2483.5MHz band: 0.125 watts.
TEST PROCEDURE:	Connect the antenna port to the spectrum with a short cable and set the spectrum as follow: Span=5MHz, centered on a hopping channel; RBW=1MHz; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and use the search peak function to set the marker to the peak of the emission.
TEST VOLTAGE:	3.7V Li-ion battery
TEST STATUS:	Hopping at channel 0, channel 39, channel 78
RESULTS:	The EUT meets the maximum peak conducted output power requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB

Test Result

Formula:

RF output power of EUT + |Cable loss| = Output peak power

Channel	RF Output	Cable Loss	Output Peak Power	
	dBm	dBm	**dBm**	**mW**
CH0	**10.15**	**1.0**	**11.15**	**13.03**
CH39	**9.82**	**1.0**	**10.82**	**12.07**
CH78	**9.50**	**1.0**	**10.50**	**11.22**

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
RF Power Meter	BOONTON	4532	117501	06/11/08	06/10/09
Peak Power Sensor	BOONTON	57340	2696	06/11/08	06/10/09
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

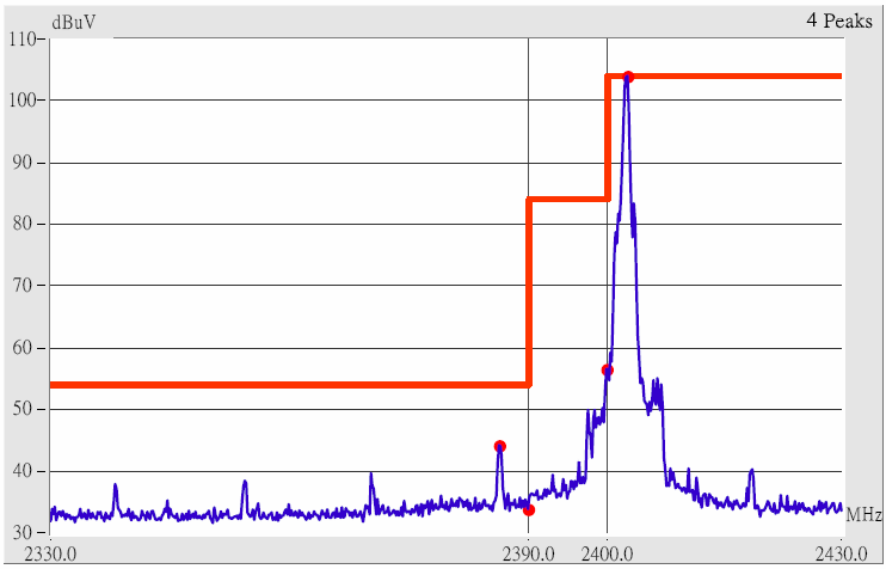
SIGNED BY: Naing.win **REVIEWED BY:**

ENGINEER **SENIOR ENGINEER**

ATTACHMENT 6 - Band Edge Test

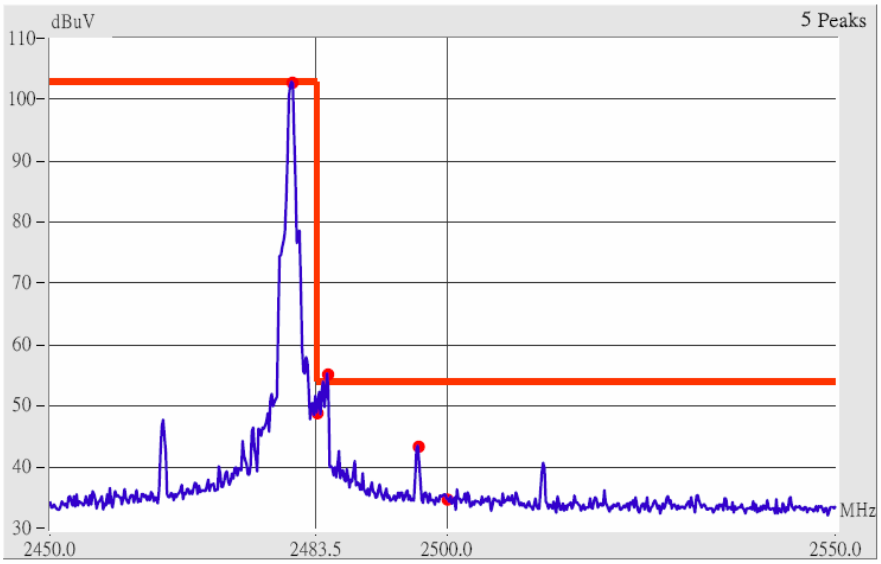
CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC Part 15.247 (d)
MODEL NUMBERS:	ABT-200(TX:ABT-210;RX:ABT-220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.Win	**DATE OF TEST:**	2008 February 14

SETUP METHOD:	ANSI C63.4 - 2003
BANDEDGE REQUIREMENT:	FCC 15.247 (d) In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiators shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.
TEST PROCEDURE:	Set the spectrum as follow: Span=wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation. RBW=100kHz; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and use the search peak function to set the marker to the peak of the useful emission, then use delta-mark function to mark the maximum emission outside of the band, record the delta level to see if it's more than 20dB.
TEST VOLTAGE:	3.7V Li-ion battery
TEST STATUS:	Hopping at channel 0, channel 78
RESULTS:	The EUT meets band edge requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



Ch 0

RBW:100KHZ VBW:100KHZ



Ch 78

RBW:100KHZ VBW:100KHZ

For test data in chamber

For Channel 0

Test Results

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Ant. P.	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
2353.94	Hor	1.00	299	9.08	48.58	-6.97	41.61	53.96	-12.35
2386.44	Hor	1.00	184	9.17	51.51	-6.97	44.54	53.96	-9.42
2390.02	Hor	1.00	192	9.18	45.35	-6.97	38.38	53.96	-15.58
2370.08	Ver	1.00	100	9.13	47.29	-6.97	40.32	53.96	-13.64
2386.17	Ver	1.00	100	9.17	50.17	-6.97	43.20	53.96	-10.76
2390.02	Ver	1.00	94	9.18	46.02	-6.97	39.05	53.96	-14.91

For Channel 78

Test Results

Radiated Emission				CF	Peak Value	Duty Cycle	True Value	FCC Class B	
Frequency (MHz)	Ant. P.	Ant. H. (m)	Angle	(dB)	(dBμV/m)	(dB)	(dBμV/m)	Limit (Avg.) (dBμV/m)	Margin (dB)
2483.50	Hor	1.00	290	9.44	59.78	-6.97	52.81	53.96	-1.15
2484.55	Hor	1.00	284	9.45	58.11	-6.97	51.14	53.96	-2.82
2500.01	Hor	1.00	244	9.49	44.99	-6.97	38.02	53.96	-15.94
2511.79	Hor	1.00	286	9.51	48.01	-6.97	41.04	53.96	-12.92
2483.50	Ver	1.00	233	9.44	42.78	-6.97	35.81	53.96	-18.15
2490.73	Ver	1.00	246	9.46	45.46	-6.97	38.49	53.96	-15.47
2500.01	Ver	1.00	203	9.49	42.82	-6.97	35.85	53.96	-18.11
2508.53	Ver	1.00	190	9.51	44.34	-6.97	37.37	53.96	-16.59

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	ANRITSU	MS2665C	6200175476	12/11/07	12/10/08
Spectrum Analyzer	HP	8564E	3720A00840	12/11/07	12/10/08
Microwave Preamplifier	HP	84125C	US36433002	11/18/07	11/17/08
Horn Antenna	EMCO	3115	9104-3668	02/05/08	02/06/09
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

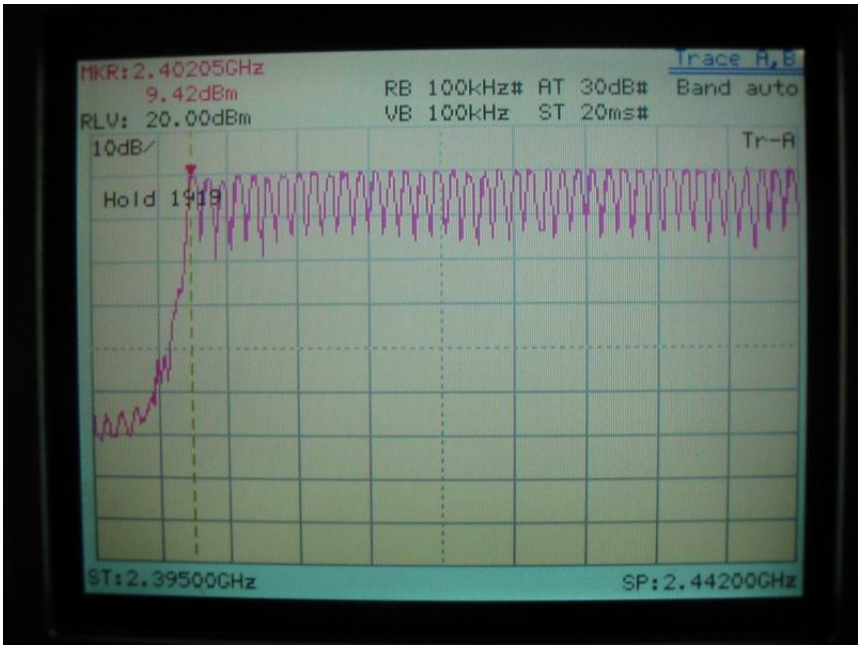
SIGNED BY: Naing.win **REVIEWED BY:** Hang Zhao

ENGINEER **SENIOR ENGINEER**

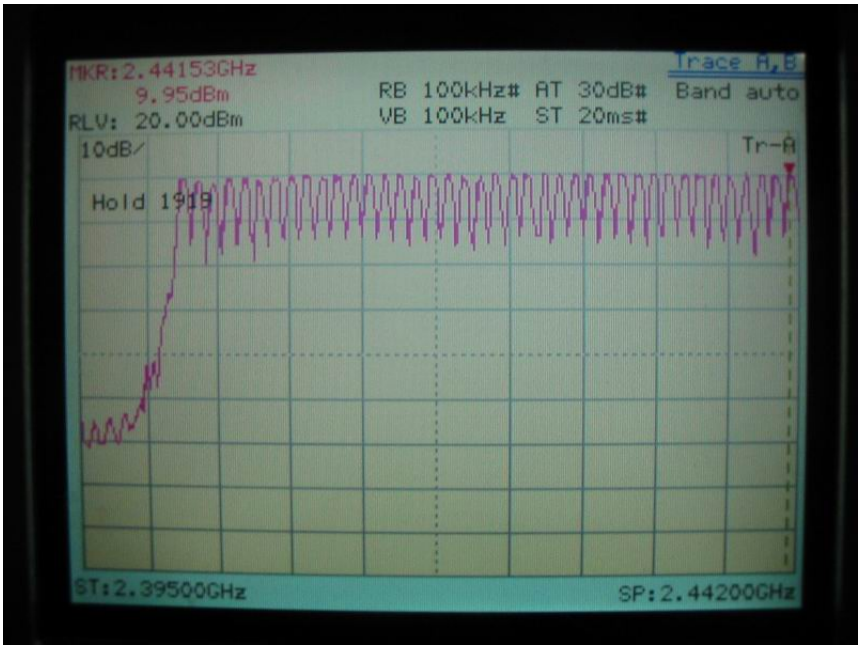
ATTACHMENT 7 - Number of Hopping Channels

CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC Part 15.247 (a) (1) (iii)
MODEL NUMBER:	ABT-200(TX:ABT-210;RX:220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.win	**DATE OF TEST:**	2008 February 14

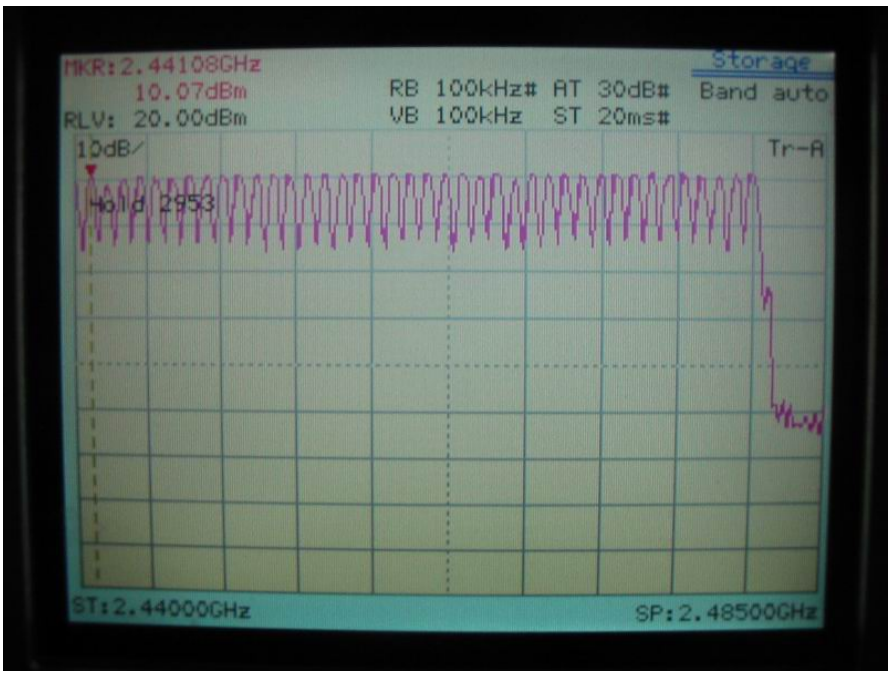
SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (a) (1) (iii) Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.
TEST PROCEDURE:	Set the spectrum as follow: Span=the frequency band of operation RBW=1% of the span; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and count the number of hopping channels.
TEST VOLTAGE:	3.7V Li-ion battery
TEST STATUS:	Hopping enable
RESULTS:	The EUT has 79 hopping numbers, it meets number of hopping channels requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. $\pm$ $2x10^{-7}$ x Center Freq., Amp $\pm$ 2.6 dB



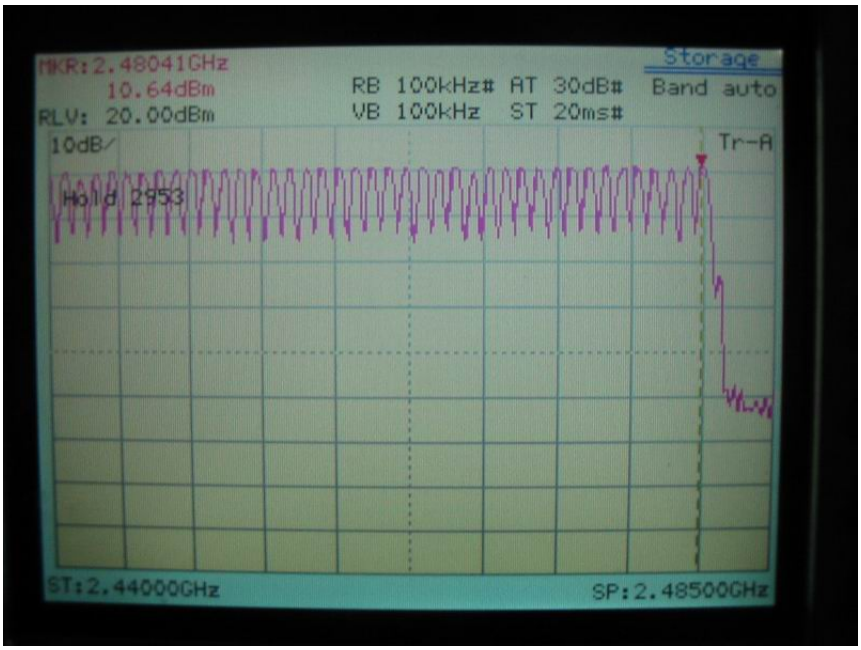
2395MHz-2442MHz



2395MHz-2442MHz



2440MHz-2485MHz



2440MHz-2485MHz

Result: Total 79 Channels

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	ANRITSU	MS2665C	6200175476	12/11/07	12/10/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Naing.win **REVIEWED BY:**

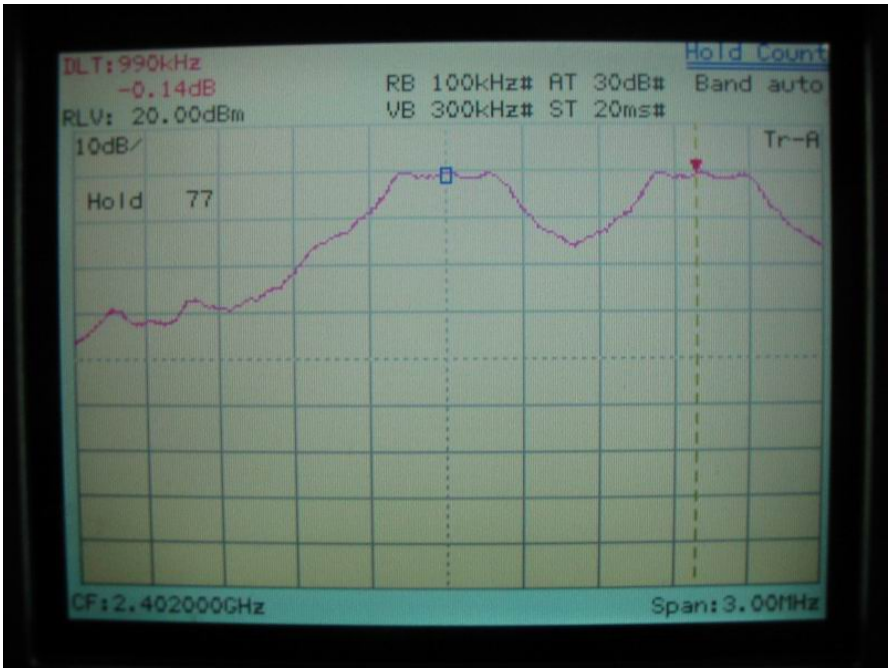
ENGINEER **SENIOR ENGINEER**

ATTACHMENT 8 - Hopping Channels Separation

CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC Part 15.247 (a) (1)
MODEL NUMBER:	ABT-200(TX:ABT-210;RX:ABT-220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.win	**DATE OF TEST:**	2008 February 14

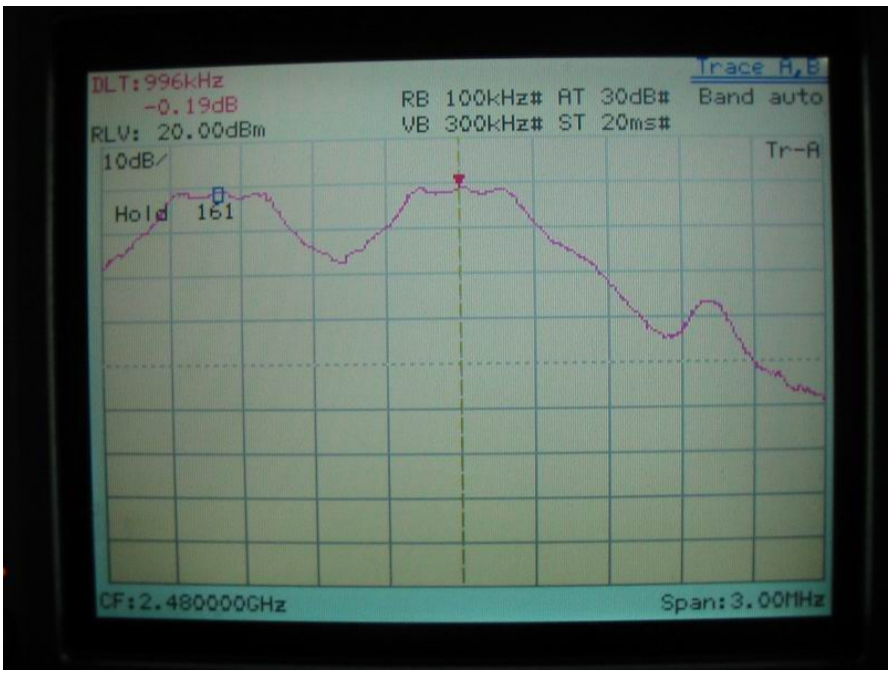
SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (a) (1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the system operate with an output power no greater than 125mw.
TEST PROCEDURE:	Set the spectrum as follow: Span=wide enough to capture the peaks of two adjacent channels; RBW=1% of the span; VBW≧RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold; Allow the trace to stabilize and delta mark two channels peak emission, then record the frequency separation.
TEST VOLTAGE:	3.7V Li-ion battery
TEST STATUS:	Hopping enable
RESULTS:	The EUT meets the hopping channels separation requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB

For standard mode of Model ABT-200(TX: ABT-210;RX:ABT-220)



Near Channel 0

Near Channel 39



Near Channel 78

Test Result:

Channel	*Channel Separation*	*Limit*	*Result*
Near 0	*990kHz*	*25kHz or 2/3*20dB Bandwidth=2/3*917.7kHz =611.8kHz*	*Pass*
Near 39	*996kHz*		*Pass*
Near 78	*996kHz*		*Pass*

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	ANRITSU	MS2665C	6200175476	12/11/07	12/10/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

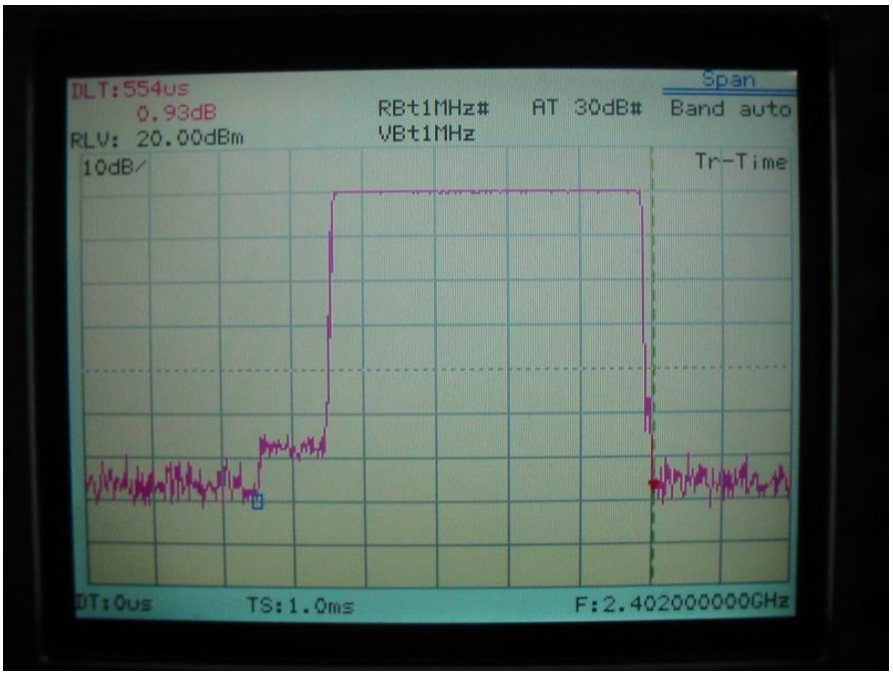
SIGNED BY: Naing.win **REVIEWED BY:**

ENGINEER **SENIOR ENGINEER**

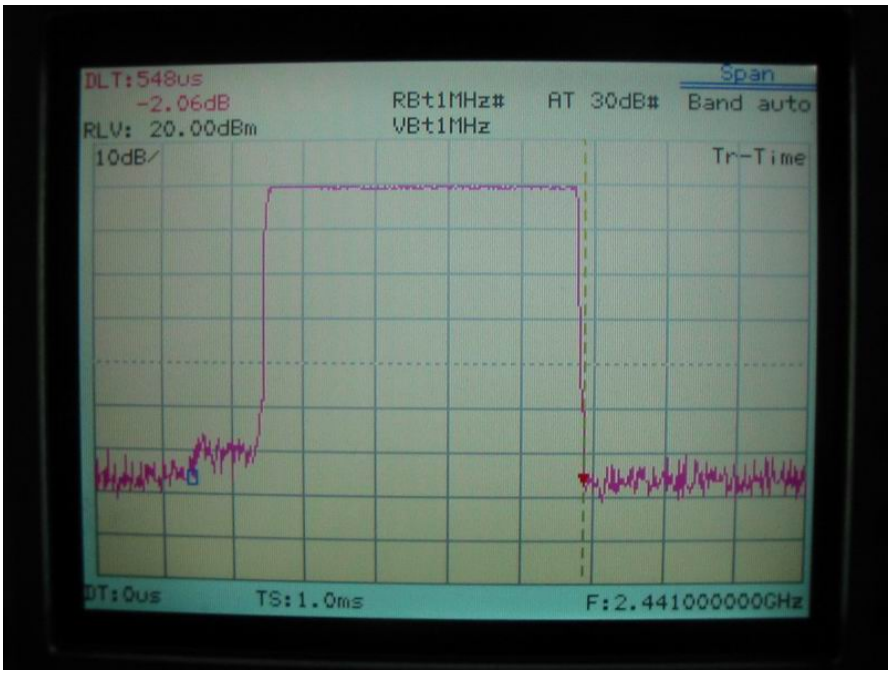
ATTACHMENT 9 - Time of Occupying Test

CLIENT:	Zycast Technology Inc.	**TEST STANDARD:**	FCC Part 15.247 (a) (1) (iii)
MODEL NUMBER:	ABT-200(TX:ABT-210;RX:ABT-220)	**PRODUCT:**	Audio Bluetooth Set
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	RF Equipment
TEMPERATURE:	21°C	**HUMIDITY:**	53%RH
ATM PRESSURE:	101.6 kPa	**GROUNDING:**	Through USB cable
TESTED BY:	Naing.win	**DATE OF TEST:**	2008 February 14

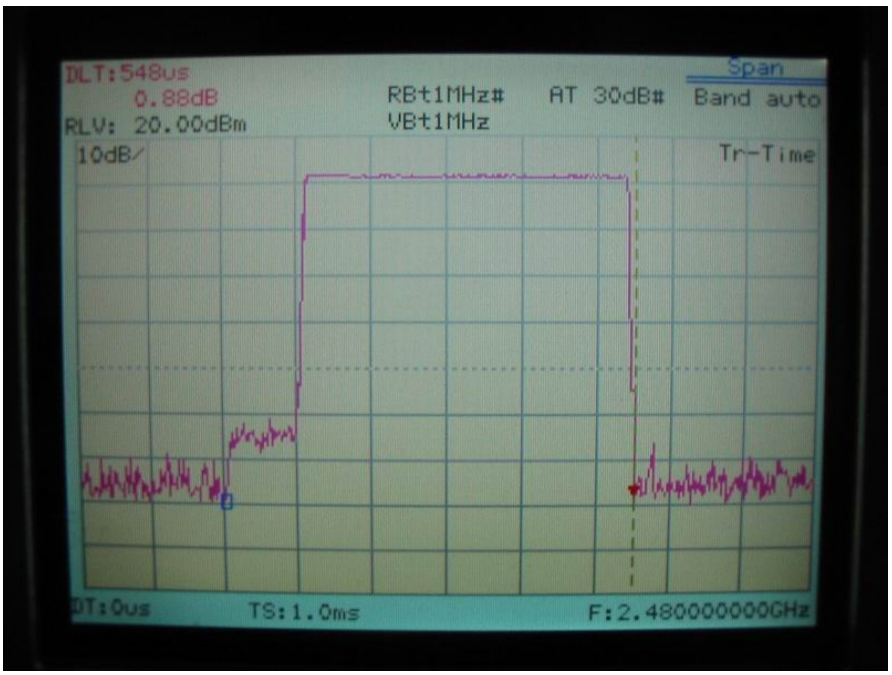
SETUP METHOD:	ANSI C63.4 - 2003
TEST REQUIREMENT:	FCC 15.247 (a) (1) (iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
TEST PROCEDURE:	Set the spectrum as follow: Span=0Hz center on the hopping channel; RBW=100kHz; VBW≧RBW; Sweep=as necessary to capture the entire dwell time per hopping channel; Detector=Peak; Trace=Maxhold; Let the EUT transmit at its maximum data rate and allow the trace to stabilize ; record the total dwell time within the specified tiem.
TEST VOLTAGE:	3.7V Li-ion battery
TEST STATUS:	Hopping enable
RESULTS:	The EUT meets the time of occupying requirement. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB



Channel 0 Single Occupying Time



Channel 39 Single Occupying Time



Channel 78 Single Occupying Time

Test Result:

Channel	*Packet (ms)*	*Limit*	*Result*
0	*0.554x31.6x10.12= 177.16*	*0.4s within 31.6s*	*Pass*
39	*0.548 x31.6x10.12=175.24*	*0.4s within 31.6s*	*Pass*
78	*0.548 x31.6x10.12=175.24*	*0.4s within 31.6s*	*Pass*

Note: $1600 \div 79 \div 2 = 10.12$ *ms*

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	ANRITSU	MS2665C	6200175476	12/11/07	12/10/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Naing.win **REVIEWED BY:**

ENGINEER **SENIOR ENGINEER**