FCC Part 15 TEST REPORT

For

Bluetooth Speakerphone

Model Name: KBT-520, KBT-521, KBT-530, KBT-531, KBT-540, KBT-550, KBT-551, KBT-560, KBT-561, KBT-580, KBT-581

Brand Name: Komkia

FCC ID: WQ9KBT-520

Report No.: GZAGC306080945E6

Date of Issue: Sep.24, 2008

Prepared For

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VERIFICATION OF COMPLIANCE

| Applicant: | Shenzhen Komkia Technology Co., Ltd. 3/F, Building 5, Haosan Linpokeng Industrial Park, Shajing Town, Baoan Dis Shenzhen City, China | | | | | |
|---|---|--|--|--|--|--|
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| Product Description: | Bluetooth Speakerphone | | | | | |
| Brand Name: | Komkia | | | | | |
| Model Number: | KBT-520, KBT-521, KBT-530, KBT-531, KBT-540, KBT-550, KBT-551, KBT-560, KBT-561, KBT-580, KBT-581 | | | | | |
| Model Difference: | All the same except exterior appearance | | | | | |
| FCC ID | WQ9KBT-520 | | | | | |
| Report Number: | GZAGC306080945E6 | | | | | |
| Date of Test: | Sep.18, 2008-Sep.23, 2008 | | | | | |

WE HEREBY CERTIFY THAT:

The above equipment was tested by **Shenzhen Attestation of Global Compliance Science & Technology Co., Ltd.** The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Tested By:

Tony Tian Sep.24, 2008

Checked By:

Randy He

Sep.24, 2008

Authorized By

King Zhang Sep.24, 2008

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

The EUT is a short range, lower power; **Bluetooth Speakerphone** designed as an "Communication Device". It is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following:

| Operation Frequency | 2.402 GHz to 2.480 GHz |
|---------------------|---------------------------------------|
| Rated Output Power | -1.11 dBm |
| Modulation | FHSS |
| Number of channels | 79 |
| Antenna Designation | Integrated Antenna with Maximum 2 dBi |
| Power Supply | DC 3.7V Power by Battery |

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: **WQ9KBT-520** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

1.3 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 TEST FACILITY

All measurement facilities used to collect the measurement data are located at World Standardization Certification & Testing Co., Ltd. 1-2/F, Dachong Keji Building, No.28 of Tonggu Road, Nanshan District, Shenzhen, China

FCC Registration Number: 989301

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

1.5 SPECIAL ACCESSORIES

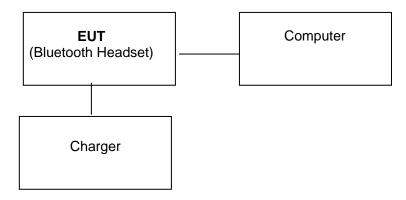
Not available for this EUT intended for grant.

1.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 CONFIGURATION OF TESTED SYSTEM



2.2 EQUIPMENT USED IN TESTED SYSTEM

| Item | Equipment | Mfr/Brand | Model/Type No. | FCC ID | Series No. |
|------|------------------------|-----------|----------------|------------|------------|
| 1 | Bluetooth Speakerphone | Bluedio | KBT-520 | WQ9KBT-520 | |
| 2 | | | | | |
| 3 | | | | | |

3. SUMMARY OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST | RESULT |
|-----------|-----------------------------|-----------|
| §15.207 | Conduction Emission | N/A |
| §15.209 | Radiated Emission | Compliant |
| §15.247 | Maximum Output Power | Compliant |
| §15.247 | 20 dB Bandwidth | Compliant |
| §15.247 | Band Edges | Compliant |
| §15.247 | Spurious Emission | Compliant |
| §15.247 | Frequency Separation | Compliant |
| §15.247 | Number of Hopping Frequency | Compliant |
| §15.247 | Time of Occupancy | Compliant |
| §15.247 | Peak Power Density | Compliant |

4. DESCRIPTION OF TEST MODES

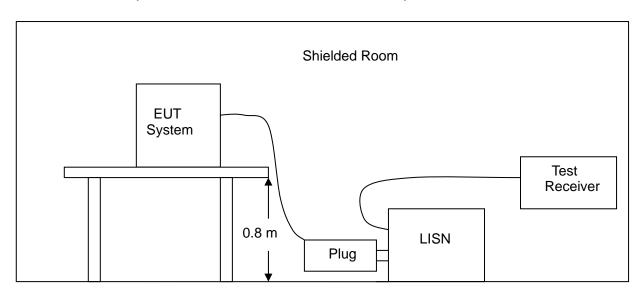
- 1. The EUT has been set to operate continuously on the lowest, the middle and the highest operation frequency individually.
- 2. The EUT stays in continuous transmitting mode on the operation frequency being set.
- 3. The EUT is tested in charging mode.

5. CONDUCTION EMISSIONS

5.1 MEASUREMENT PROCEDURE:

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
- 2. Support equipment, if needed, was placed as per ANSI C63.4.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4. The EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5. All support equipments received AC power from a second LISN, if any.
- 6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.

5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



5.3 MEASUREMENT EQUIPMENT USED:

| CONDUCTED EMISSION TEST SITE | | | | | | | |
|------------------------------|-----|------------------|--------------------------|--------------|----------|--|--|
| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. | | |
| EMI TEST RECEIVER | HP | 8546A/8546 0A | 3625A00349 3448A00325 | 2007/10 | 2009/08 | | |
| LISN | AFJ | LS16 | 16010222119 | 2007/04 | 2009/04 | | |

| F 4 | LIBRITO | AND | B 4 E A | | ACLIT | DECLUIT. |
|-----|---------|-----|---------|-------|-------|----------|
| ວ.4 | LIMI 12 | AND | WEA | SUKEI | VIENI | RESULT: |

N/A

6. MAXIMUM OUTPUT POWER

MEASUREMENT PROCEDURE:

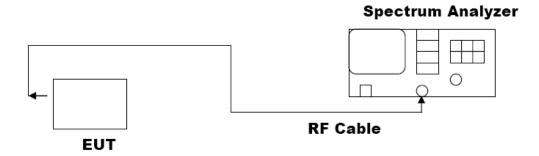
CONDUCTED METHOD

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 4. Set SPA Centre Frequency = Operation Frequency, RBW= 1 MHz, VBW= 1 MHz.
- 5. Set SPA Trace 1 Max hold, then View.

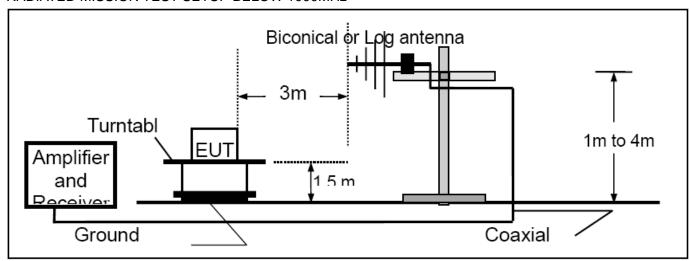
RADIATED METHOD According to ANSI C63.4:2003

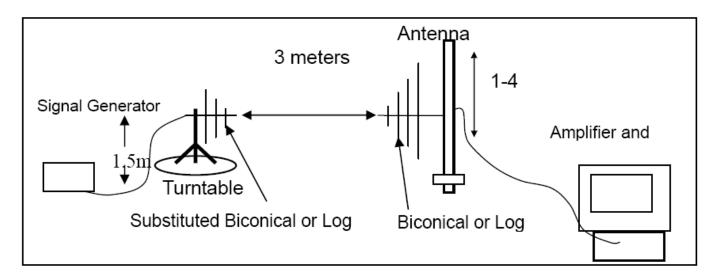
TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

CONDUCTED METHOD

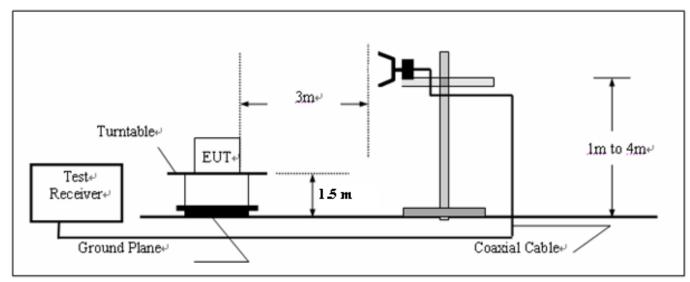


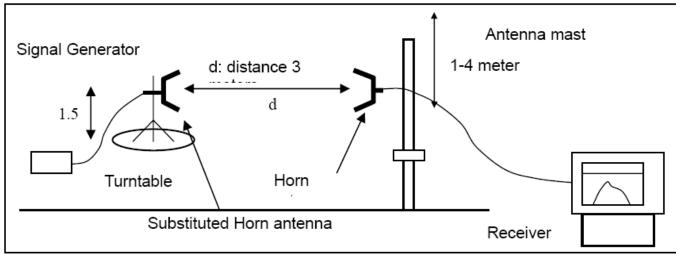
RADIATED METHOD RADIATED MISSION TEST SETUP BELOW 1000MHz





RADIATED EMISSION TEST SETUP UP ABOVE 1000MHz





MEASUREMENT EQUIPMENT USED:

| 3M ANECHOIC CHAMBER RADIATION TEST SITE | | | | | | | | |
|---|-------------------------|----------|------------|------------|------------|--|--|--|
| EQUIPMENT TYPE | LAST CAL. | CAL DUE. | | | | | | |
| EMI Test Receiver | R&S | ESCS30 | 100343 | 04/16/2008 | 04/15/2009 | | | |
| AMPLIFIER | HP | HP8447E | 2945A02715 | 04/16/2008 | 04/15/2009 | | | |
| ANTENNA | Sunol Sciences Corp. | JB3 | A021907 | 04/16/2008 | 04/15/2009 | | | |
| ANTENNA | Sunol Sciences Corp. | JB3 | A021907 | 04/16/2008 | 04/15/2009 | | | |
| Spectrum Analyzer | Agilent | E4440A | US41421290 | 04/16/2008 | 04/15/2009 | | | |

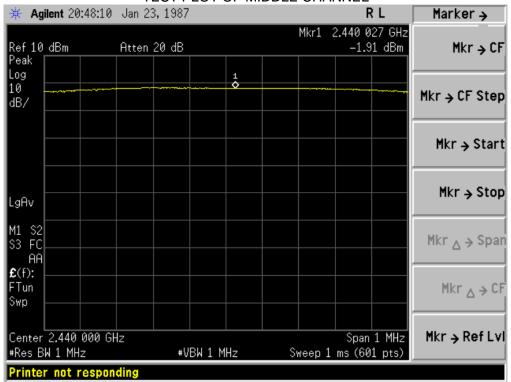
LIMITS AND MEASUREMENT RESULT:

| LIMITS AND MEASUREMENT RESULT | | | | | | | |
|-------------------------------|-----------|------------|-----------------|----------|--|--|--|
| Applicable | | | Measurement Res | sult | | | |
| Limits | Frequency | EIRP (dBm) | Conducted (dBm) | Criteria | | | |
| 30 dBm | 2.402GHz | -3.07 | -1.11 | PASS | | | |
| 30 dBm | 2.441GHz | -3.57 | -1.91 | PASS | | | |
| 30 dBm | 2.480GHz | -4.13 | -2.16 | PASS | | | |

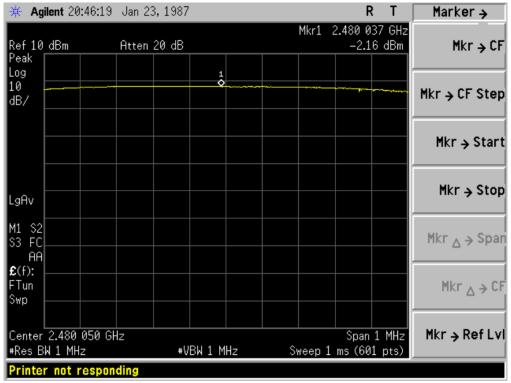
TEST PLOT OF BOTTOM CHANNEL



TEST PLOT OF MIDDLE CHANNEL



TEST PLOT OF TOP CHANNEL



7. 20 DB BANDWIDTH

MEASUREMENT PROCEDURE

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 3, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW= 100 KHz.
- 4. Set SPA Trace 1 Max hold, then View.

TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

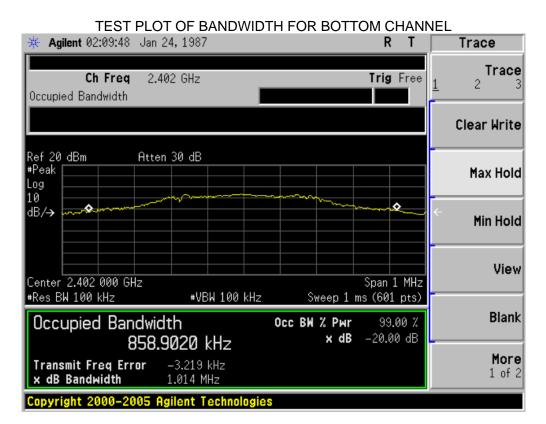
The Same as described in Section 6.2

MEASUREMENT EQUIPMENT USED:

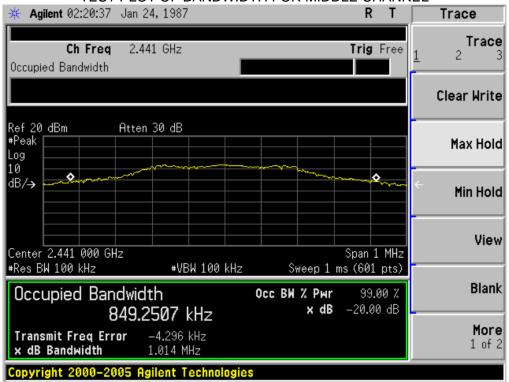
The same as described in Section 6.3

LIMITS AND MEASUREMENT RESULTS:

| LIMITS AND MEASUREMENT RESULT | | | | | | |
|-------------------------------|----------------|--------------------|------|--|--|--|
| Applicable Limits | | Measurement Result | | | | |
| Applicable Limits | Test Da | Criteria | | | | |
| | Bottom Channel | 1.014 | PASS | | | |
| | Middle Channel | 1.014 | PASS | | | |
| | Top Channel | 0.998 | PASS | | | |



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR TOP CHANNEL

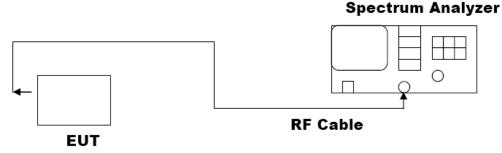


8. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

MEASUREMENT PROCEDURE:

- (1). The EUT was placed on a turn table which is 0.8m above ground plane.
- (2). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (3), Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (4). Set SPA Centre Frequency = Operation Frequency, RBW= 3 KHz, VBW= 10 KHz., Sweep time= Auto
- (5). Set SPA Trace 1 Max hold, then View.

TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



MEASUREMENT EQUIPMENT USED:

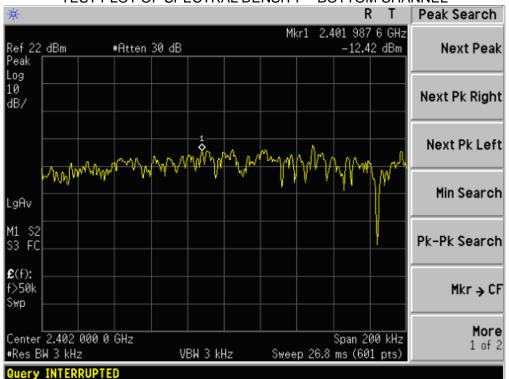
| SHIELDING ROOM | | | | | | | |
|-------------------|---------|-----------------|------------------|--------------|------------|--|--|
| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. | | |
| Spectrum Analyzer | Agilent | E4440A | US41421290 | 04/16/2007 | 04/15/2009 | | |

LIMITS AND MEASUREMENT RESULT:

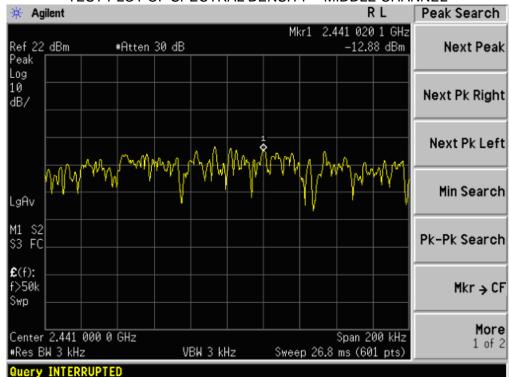
| LIMITS AND MEASUREMENT RESULT | | | | |
|-------------------------------|----------------|----------------------|------|--|
| Applicable Limite | | Measurement Result | | |
| Applicable Limits | Test Data (d | Test Data (dBm/3KHz) | | |
| | Bottom Channel | -12.42 | PASS | |
| 8 dBm / 3KHz | Middle Channel | -12.88 | PASS | |
| | Top Channel | -13.82 | PASS | |

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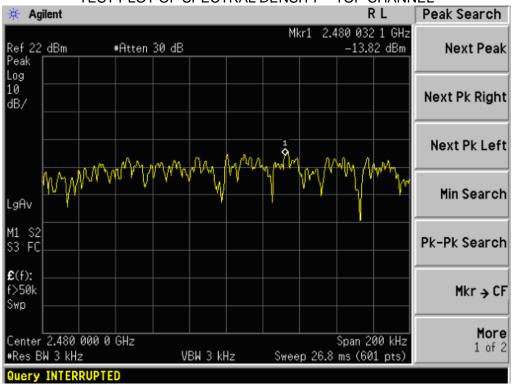
TEST PLOT OF SPECTRAL DENSITY - BOTTOM CHANNEL



TEST PLOT OF SPECTRAL DENSITY - MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY - TOP CHANNEL



9. OUT OF BAND EMISSION

MEASUREMENT PROCEDURE:

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 3, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW= 100 KHz.
- 4. Set SPA Trace 1 Max hold, then View.

TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The Same as described in section 6.2

MEASUREMENT EQUIPMENT USED:

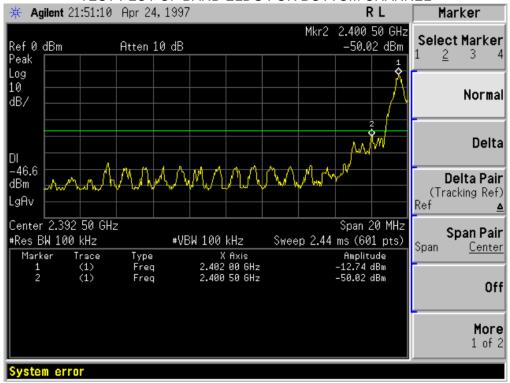
The Same as described in section 6.3

LIMITS AND MEASUREMENT RESULT:

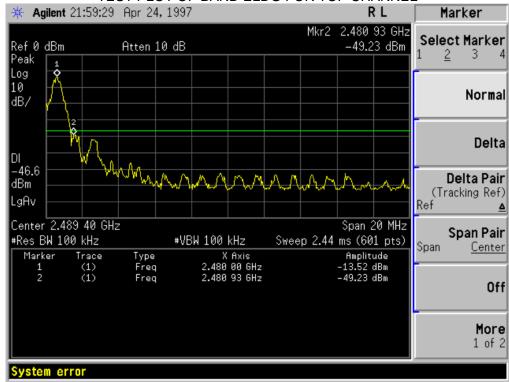
| LIMITS AND MEASUREMENT RESULT | | | |
|---|--|----------|--|
| Applicable Limits | Measurement Result | | |
| Applicable Littles | Test Data | Criteria | |
| In any 100 KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in | At least -20dBc than the limit Specified on the BOTTOM Channel | PASS | |
| 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a)) | At least -20dBc than the limit | PASS | |

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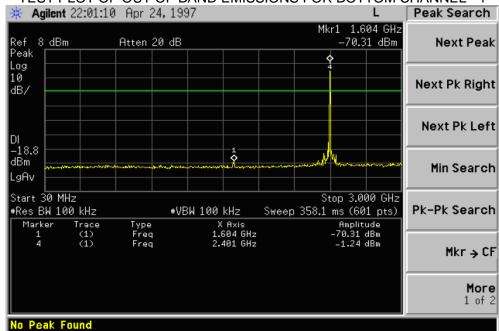
TEST PLOT OF BAND ELDG FOR BOTTOM CHANNEL



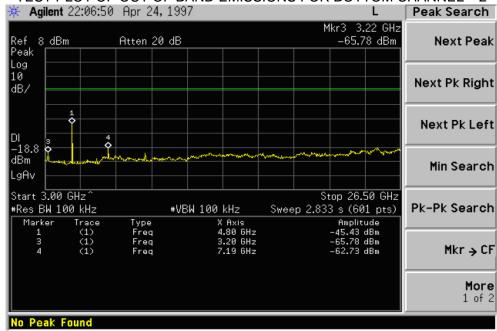
TEST PLOT OF BAND ELDG FOR TOP CHANNEL



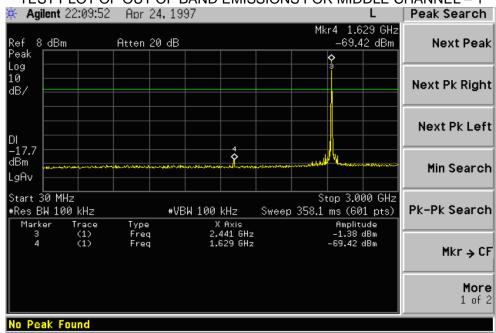
TEST PLOT OF OUT OF BAND EMISSIONS FOR BOTTOM CHANNEL - 1



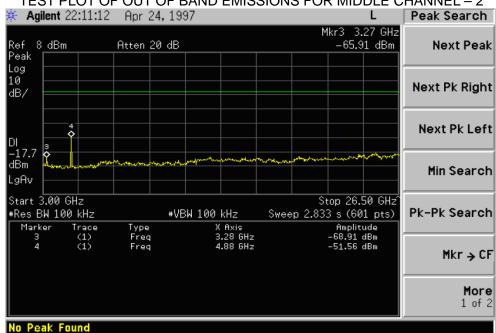
TEST PLOT OF OUT OF BAND EMISSIONS FOR BOTTOM CHANNEL - 2



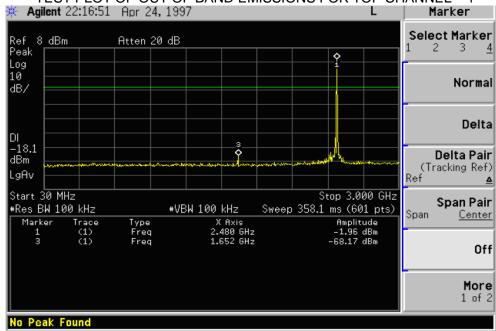
TEST PLOT OF OUT OF BAND EMISSIONS FOR MIDDLE CHANNEL - 1



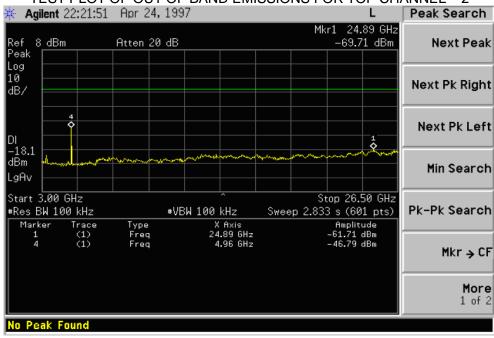
TEST PLOT OF OUT OF BAND EMISSIONS FOR MIDDLE CHANNEL - 2



TEST PLOT OF OUT OF BAND EMISSIONS FOR TOP CHANNEL - 1



TEST PLOT OF OUT OF BAND EMISSIONS FOR TOP CHANNEL - 2



RADIATED EMISSION TEST RESULT:

| Emission | Emission for Bottom/Middle/Top Channel Below 1GHz Charging mode & Transmitting | | | | | |
|-----------|--|----------------|----------------|------------|------------|--------|
| Frequency | Antenna Pol. | Field Strength | Field Strength | Limit (PK) | Limit (AV) | Memo |
| MHz | H/V | dBuV/m (PK) | dBuV/m (AV) | dBuV/m | dBuV/m | MEITIO |
| | H/V | | | | | * |
| | H/V | | | | | * |
| | H/V | | | | | * |
| | H/V | | | | | * |

| | Band Edge Emission for Bottom Channel | | | | | |
|-----------|---------------------------------------|----------------|----------------|------------|------------|----------|
| Frequency | Antenna Pol. | Field Strength | Field Strength | Limit (PK) | Limit (AV) | Memo |
| GHz | H/V | dBuV/m (PK) | dBuV/m (AV) | dBuV/m | dBuV/m | IVIEITIO |
| 2.386 | Н | 42.19 | 38.28 | 74 | 54 | * |
| 2.400 | Н | 53.39 | 48.89 | 74 | 54 | * |
| 2.386 | V | 47.09 | 36.02 | 74 | 54 | * |
| 2.400 | V | 53.36 | 47.47 | 74 | 54 | * |

| | Band Edge Emission for Top Channel | | | | | |
|-----------|------------------------------------|----------------|-----------------|------------|------------|--------|
| | | Band Edge E | mission for Top | Channel | | |
| Frequency | Antenna Pol. | Field Strength | Field Strength | Limit (PK) | Limit (AV) | Memo |
| GHz | H/V | dBuV/m (PK) | dBuV/m (AV) | dBuV/m | dBuV/m | MEITIO |
| 2.483 | Н | 51.87 | 47.76 | 74 | 54 | * |
| 2.484 | Н | 50.27 | 45.53 | 74 | 54 | * |
| 2.496 | Н | 47.67 | 39.09 | 74 | 54 | * |
| 2.483 | V | 50.36 | 44.61 | 74 | 54 | * |
| 2.484 | V | 49.82 | 43.17 | 74 | 54 | * |
| 2.496 | V | 42.28 | 34.29 | 74 | 54 | * |

| | Restricted Band Emission for Bottom Channel | | | | | |
|-----------|---|----------------|----------------|------------|------------|----------|
| Frequency | Antenna Pol. | Field Strength | Field Strength | Limit (PK) | Limit (AV) | Memo |
| GHz | H/V | dBuV/m (PK) | dBuV/m (AV) | dBuV/m | dBuV/m | IVIEITIO |
| 4.81 | Н | 56.13 | 44.18 | 74 | 54 | * |
| 4.81 | V | 55.22 | 43.24 | 74 | 54 | * |
| Above | Н | | | 74 | 54 | * |
| 4.81 GHz | V | | | 74 | 54 | * |

| | Restricted Band Emission for Middle Channel | | | | | |
|-----------|---|----------------|----------------|------------|------------|------|
| Frequency | Antenna Pol. | Field Strength | Field Strength | Limit (PK) | Limit (AV) | Memo |
| GHz | H/V | dBuV/m (PK) | dBuV/m (AV) | dBuV/m | dBuV/m | Memo |
| 4.88 | Н | 52.16 | 42.03 | 74 | 54 | * |
| 4.88 | V | 53.37 | 41.16 | 74 | 54 | * |
| Above | Н | | | 74 | 54 | * |
| 4.88 GHz | V | | | 74 | 54 | * |

| | Restricted Band Emission for Top Channel | | | | | |
|-----------|--|----------------|----------------|------------|------------|------|
| Frequency | Antenna Pol. | Field Strength | Field Strength | Limit (PK) | Limit (AV) | Memo |
| GHz | H/V | dBuV/m (PK) | dBuV/m (AV) | dBuV/m | dBuV/m | Memo |
| 4.95 | Н | 55.49 | 43.69 | 74 | 54 | * |
| 4.95 | V | 53.27 | 41.66 | 74 | 54 | * |
| Above | Н | | | 74 | 54 | * |
| 4.95GHz | V | | | 74 | 54 | * |

Note: "--" Indicated the test value is much lower to limit.

10. NUMBER OF HOPPING FREQUENCY

MEASUREMENT PROCEDURE

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer Start = 2.4GHz Stop = 2.4835GHz, Sweep = Auto
- 4. Set the Spectrum Analyzer as RBW = VBW = 330 KHz

TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

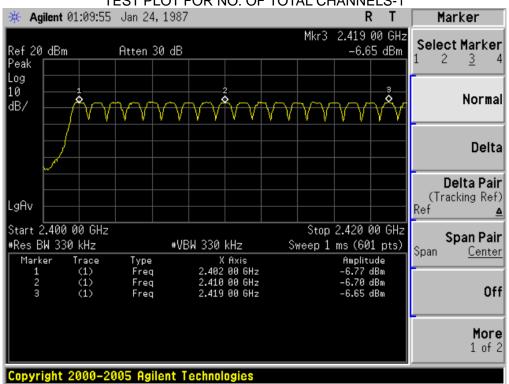
MEASUREMENT EQUIPMENT USED

The Same as described in section 6.3

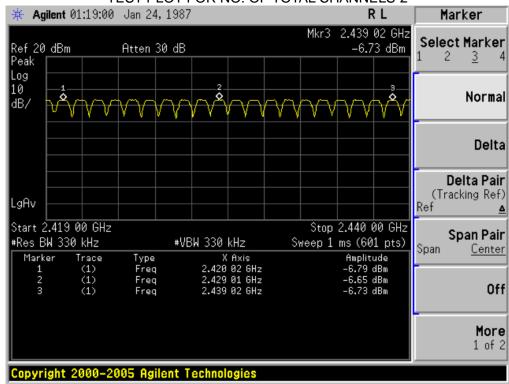
LIMITS AND MEASUREMENT RESULT:

| TOTAL NO. OF | LIMIT (NO. OF CH) | MEASUREMENT (NO. OF CH) | RESULT |
|-----------------|-------------------|----------------------------|--------|
| HOPPING CHANNEL | >=15 | 79 | PASS |

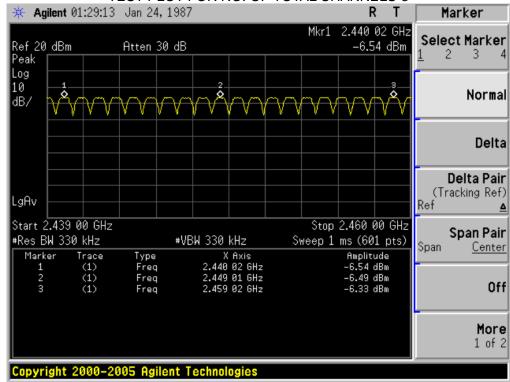




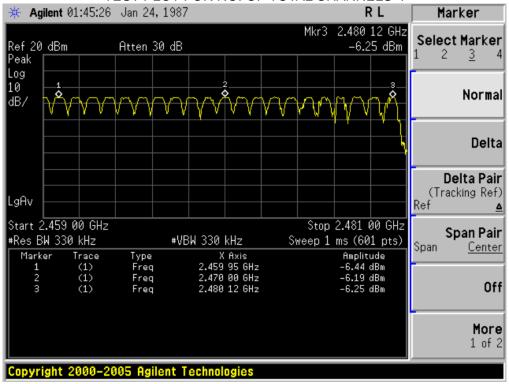
TEST PLOT FOR NO. OF TOTAL CHANNELS-2



TEST PLOT FOR NO. OF TOTAL CHANNELS-3



TEST PLOT FOR NO. OF TOTAL CHANNELS-4



11. TIME OF OCCUPANCY (DWELL TIME)

MEASUREMENT PROCEDURE

- 1. Place the EUT on the table and set it in transmitting mode
- 2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
- 3. Set center frequency of spectrum analyzer = Operating frequency
- 4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0 Hz,

TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

MEASUREMENT EQUIPMENT USED

The same as described in section 6.3

LIMITS AND MEASUREMENT RESULT

The dwell time = Time Slot Length * Hop Rate / Number of Hopping Channels * 0.4 * 79

L-CH:

DH1 Time Slot = 0.377 (ms) * (1600/(2*79))*31.6 = 120.6 (ms)

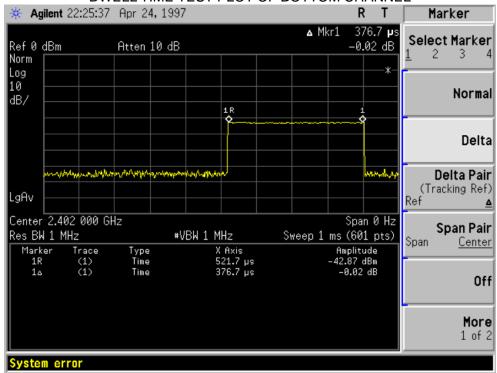
M-CH:

DH1 Time Slot = 0.388 (ms) * (1600/(2*79))*31.6 = 124.2 (ms)

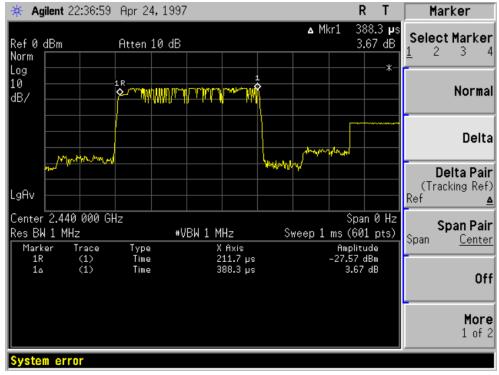
H-CH:

DH1 Time Slot = 0.377 (ms) * (1600/(2*79))*31.6 = 120.6 (ms)

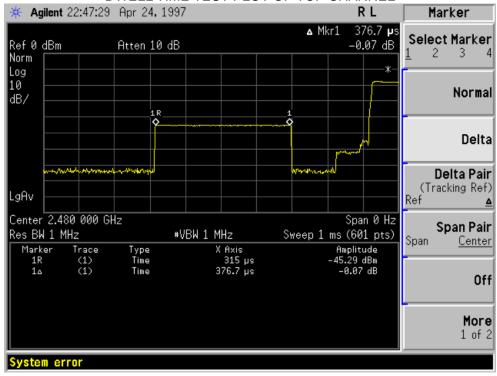
DWELL TIME TEST PLOT OF BOTTOM CHANNEL



DWELL TIME TEST PLOT OF MIDDLE CHANNEL



DWELL TIME TEST PLOT OF TOP CHANNEL



12. FREQUENCY SEPARATION MEASUREMENT PROCEDURE

- 1. Place the EUT on the table and set it in transmitting mode
- 2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
- 3. Set center frequency of spectrum analyzer = Middle of Operating frequency
- 4. Set the spectrum analyzer as RBW, VBW=330KHz, Span = 6 MHz,

TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)

Same as described in section 6.2

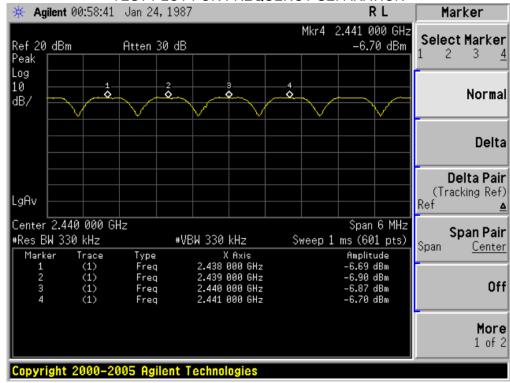
MEASUREMENT EQUIPMENT USED

The same as described in section 6.3

LIMITS AND MEASUREMENT RESULT

| CHANNEL SEPARATION | LIMIT | RESULT |
|-----------------------|--------------------------|---------|
| KHz | KHz | Pass |
| 1000 | >=25 KHz or 2/3 20 dB BW | F d 5 5 |

TEST PLOT FOR FREQUENCY SEPARATION



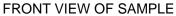
APPENDIX 1

PHOTOGRAPHS OF SETUP



APPENDIX 2

PHOTOGRAPHS OF EUT

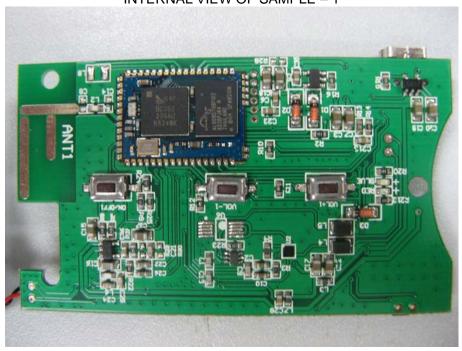




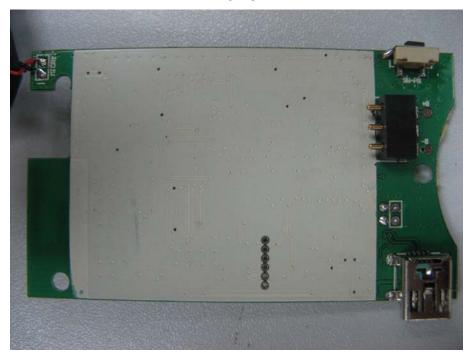
BOTTOM VIEW OF EUT



INTERNAL VIEW OF SAMPLE – 1



INTERNAL VIEW OF SAMPLE – 2



----END OF REPORT----