



FCC Test Report

FCC Part 15.225

FOR:

CDMA W63H

FCC ID: TYKNX6440

TEST REPORT #: EMC_CET10_038_15.225_Rev2

DATE: 2008-9-02



Certificate # 2135.01



**Bluetooth
Qualification Test
Facility
(BQTF)**



**FCC listed
A2LA Accredited**

**IC recognized #
3462B**

CETECOM Inc.

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CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686

Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Part 15.225 of the Code of Federal Regulations.

| Company | Description | Model # |
|---|--|-----------|
| Casio Hitachi Mobile Communications Co., Ltd. | The cellular phone for the global roaming of the CDMA method of 3G equipped with the Bluetooth function and the FeliCa function sold in Japan. | CDMA W63H |

This report is reviewed by:

Satya Radhakrishna
(EMC Project Engineer)

2008-9-02 EMC & Radio

| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

This report is prepared by:

Marc Douat
(EMC Project Engineer)

2008-9-02 EMC & Radio

| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

| | |
|-------------------------------|---|
| Company Name: | CETECOM Inc. |
| Department: | EMC |
| Address: | 411 Dixon Landing Road Milpitas, CA 95035 U.S.A. |
| Telephone: | +1 (408) 586 6200 |
| Fax: | +1 (408) 586 6299 |
| Responsible Test Lab Manager: | Lothar Schmidt |
| Responsible Project Leader: | Marc Douat |
| Date of test: | 2008-8-08 to 2008-8-25 |

2.2 Identification of the Client

| APPLICANT | |
|---------------------------------|--|
| Applicant (Company Name) | Casio Hitachi Mobile Communications Co., Ltd. |
| Street Address | 2-229-1, Sakuragaoka |
| City/Zip Code | Higashiyamato-shi, Tokyo 207-8501 |
| Country | Japan |
| Contact Person | Toshiaki Otsuka |
| Telephone | +81-42-516-2184 |
| Fax | +81-42-516-2505 |
| e-mail | otsuka@ch-mobile.co.jp |

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

| | |
|-----------------|---|
| Marketing Name: | CDMA W63H |
| Description: | The cellular phone for the global roaming of the CDMA method of 3G equipped with the Bluetooth function and the FeliCa function sold in Japan. |

| | |
|---|---|
| Model No: | CDMA W63H |
| Antenna Type: | Integral |
| Type(s) of Modulation: | ASK |
| Frequency of Operation: | 13.56MHz |
| Field Strength at 13.56MHz at a distance of 30 meters | 8.64 dB μ V/m |
| Numbers of Channels: | 1 |
| Equipment Classification: (CLASS) | <input type="checkbox"/> FIXED <input type="checkbox"/> VEHICULAR <input checked="" type="checkbox"/> PORTABLE <input type="checkbox"/> MODULE |
| Equipment Classification: (POWER(AC MAINS)) | <input type="checkbox"/> 110VAC (<i>GROUND</i>) <input checked="" type="checkbox"/> 110VAC (<i>NO GROUND</i>) <input type="checkbox"/> 12VDC <input checked="" type="checkbox"/> 3.0/3.8/4.2VDC Li battery |

3.2 Identification of the Equipment Under Test (EUT)

| EUT # | TYPE | MODEL | SERIAL # | HW Version |
|-------|------|-----------|-------------|------------------|
| 1 | EUT | CDMA W63H | SHIDE000091 | PWB-6440-MAIN20S |

SW version: v008a

3.3 Identification of Accessory equipment

| AE # | TYPE | MODEL |
|------|------------|---------|
| 1 | AC Adapter | 0203PQA |
| 2 | Cradle | 63HIPUA |
| 3 | USB Cable | N/A |
| 4 | Headset | N/A |



4 Subject Of Investigation

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Part 15.225 of Title 47 of the Code of Federal Regulations. The maximization of portable equipment is conducted in accordance with ANSI C63.4.

All testing was performed on the product referred to in Section 3 as EUT.

Measurements below 30MHz were performed with a loop antenna at 3 meters then extrapolated to the appropriate measurement distance.

5 Measurements (Radiated)

5.1 TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.225/15.209

5.1.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2690 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | (²) |
| 13.36 - 13.41 | | | |

*PEAK LIMIT= 74dBuV/m

*AVG. LIMIT= 54dBuV/m

NOTE:

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels.

2. All measurements are done in peak mode using an average limit , unless specified with the plots.

5.1.2 RESULTS

9kHz to 490kHz

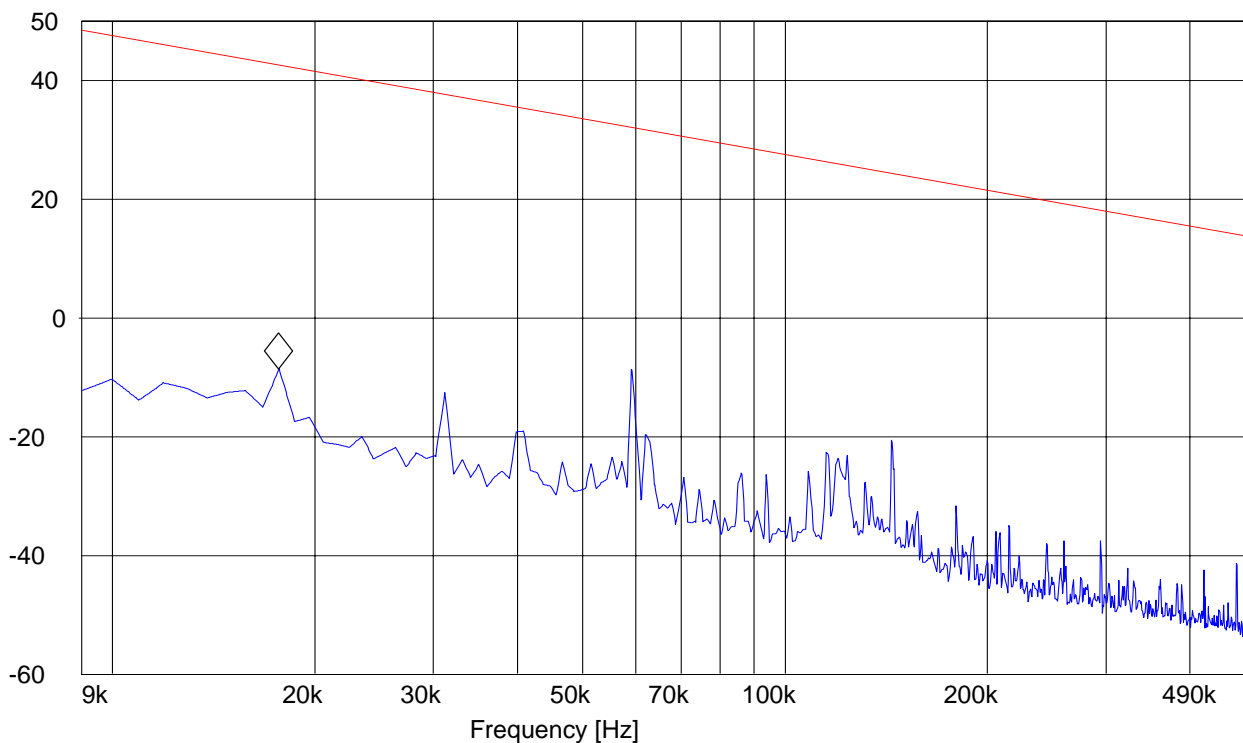
EUT: W63H
Customer:: Casio Hitachi
Test Mode: RFID
ANT Orientation: Loop
EUT Orientation: V
Test Engineer: Marc
Voltage: Battery and AC
Comments:

SWEEP TABLE: "FCC15.209<490k_Loop"

| Start | Stop | Detector | Meas. | IF | Transducer |
|-----------|-----------|----------|---------|--------|------------|
| Frequency | Frequency | | Time | Bandw. | |
| 9.0 kHz | 490.0 kHz | MaxPeak | Coupled | 200 Hz | Loop 6512E |

Marker: 17.675 kHz -8.52 dB μ V/m

Level [dB μ V/m]



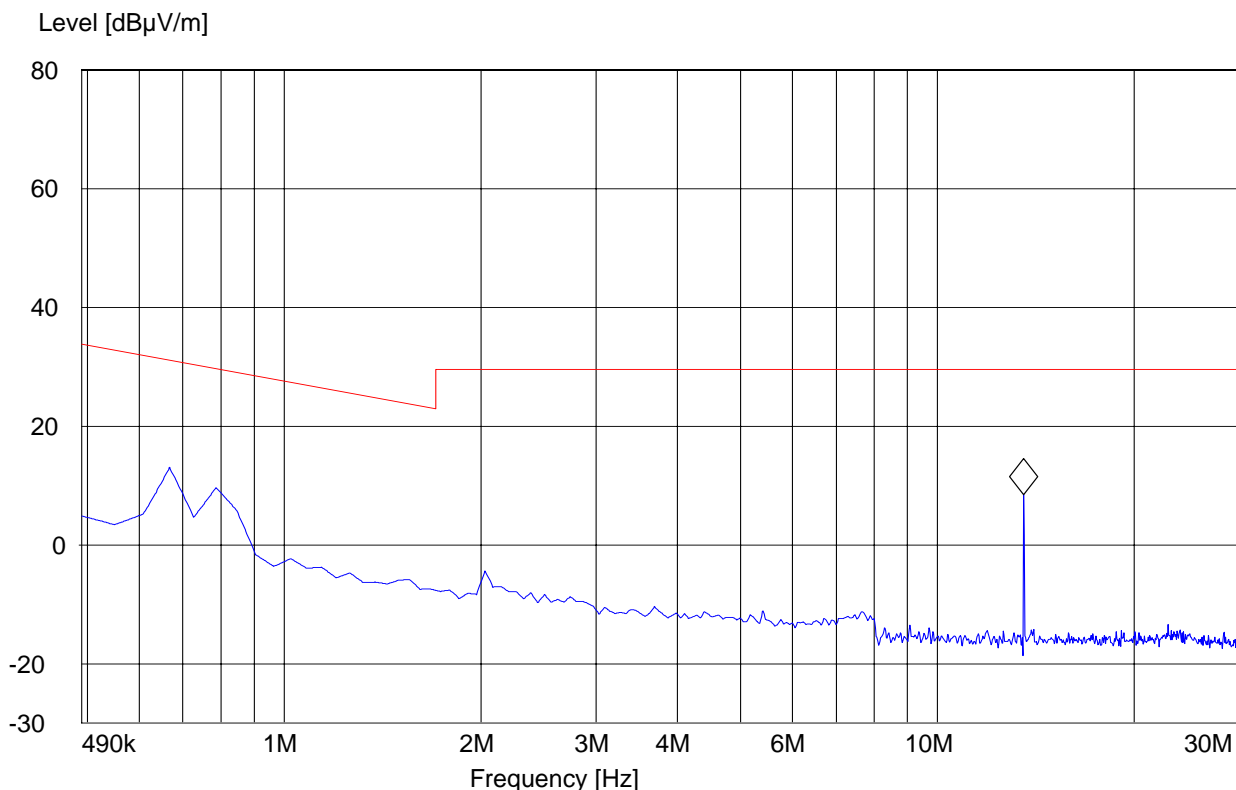
490kHz to 30MHz

EUT: W63H
Customer:: Casio Hitachi
Test Mode: RFID
ANT Orientation: Loop
EUT Orientation: V
Test Engineer: Marc
Voltage: Battery and AC
Comments:

SWEEP TABLE: "FCC15.209>490k_Loop"

| Start | Stop | Detector | Meas. | IF | Transducer |
|-----------|-----------|----------|---------|--------|------------|
| Frequency | Frequency | | Time | Bandw. | |
| 490.0 kHz | 30.0 MHz | MaxPeak | Coupled | 10 kHz | Loop 6512E |

Marker: 13.559559 MHz 8.46 dB μ V/m



13MHz to 14MHz

EUT: W63H

Customer:: Casio Hitachi

Test Mode: RFID

ANT Orientation: Loop

EUT Orientation: V

Test Engineer: Marc

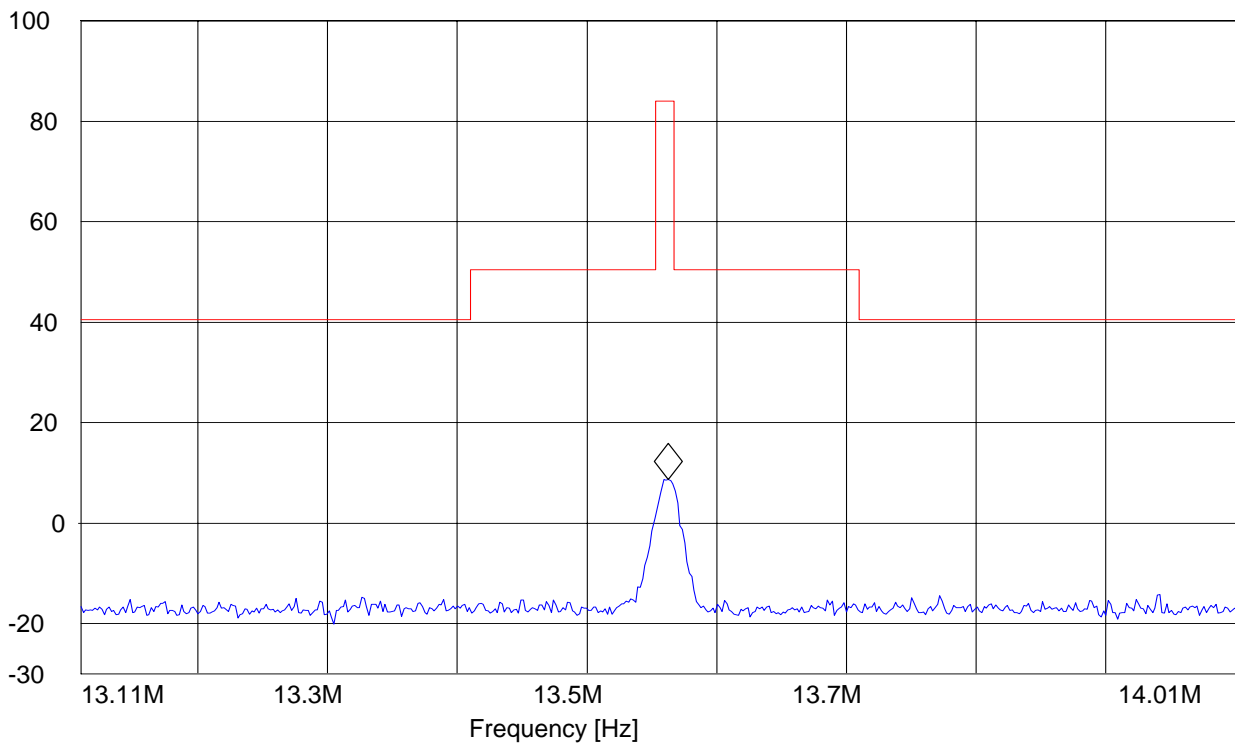
Voltage: Battery and AC

Comments:

SWEEP TABLE: "FCC15.225-13M_Loop"

| Start | Stop | Detector | Meas. | IF | Transducer |
|-----------|-----------|----------|---------|--------|------------|
| Frequency | Frequency | | Time | Bandw. | |
| 13.1 MHz | 14.0 MHz | MaxPeak | Coupled | 10 kHz | Loop 6512E |

Marker: 13.562705 MHz

8.64 dB μ V/mLevel [dB μ V/m]

30MHz to 1GHz Vertical

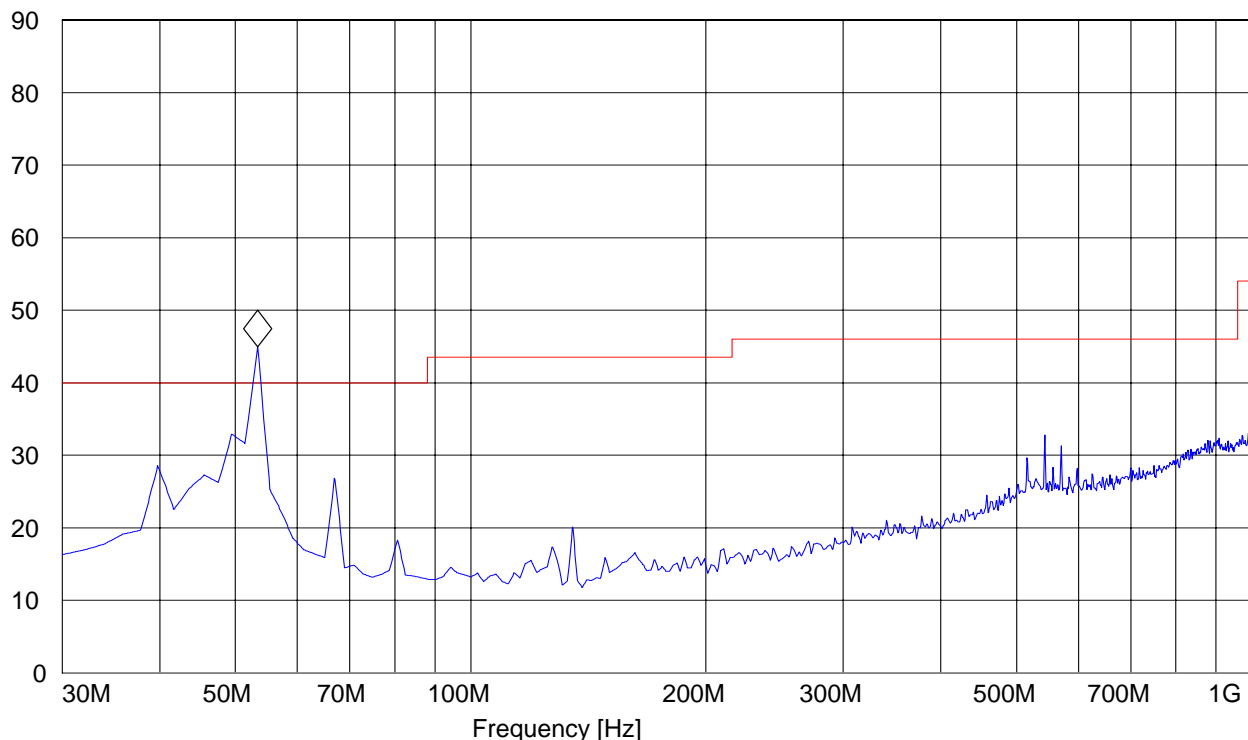
EUT: W63H
Customer:: Casio Hitachi
Test Mode: RFID
ANT Orientation: V
EUT Orientation: V
Test Engineer: Marc
Voltage: Battery and AC
Comments: QP at 53.33MHz is 38.7 dBuV/m

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

| Start | Stop | Detector | Meas. | IF | Transducer |
|-----------|-----------|----------|---------|---------|-----------------|
| Frequency | Frequency | | Time | | Bandw. |
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | 3141-#1186_Vert |

Marker: 53.326653 MHz 44.93 dBuV/m

Level [dBuV/m]



30MHz to 1GHz Horizontal

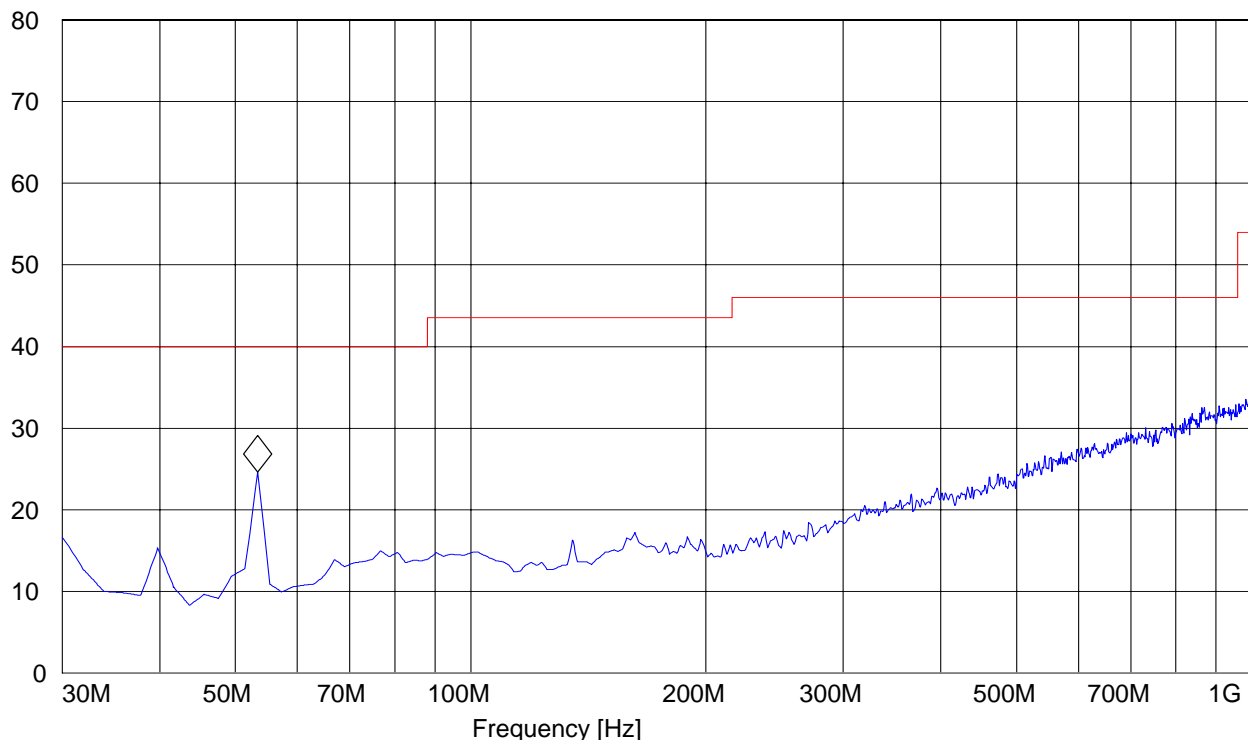
EUT: W63H
Customer:: Casio Hitachi
Test Mode: RFID
ANT Orientation: H
EUT Orientation: V
Test Engineer: Marc
Voltage: Battery and AC
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

| Start | Stop | Detector | Meas. | IF | Transducer |
|-----------|-----------|----------|---------|---------|-----------------|
| Frequency | Frequency | | Time | | Bandw. |
| 30.0 MHz | 1.0 GHz | MaxPeak | Coupled | 100 kHz | 3141-#1186_Horz |

Marker: 53.326653 MHz 24.64 dB μ V/m

Level [dB μ V/m]



5.2 FREQUENCY TOLERANCE § 15.225

5.2.1 LIMITS

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.2.2 RESULTS

| Voltage (V) | Freq (MHz) | Error (%) |
|-----------------|-------------|-----------|
| Low vol.: 3.4V | 13.56005971 | 0.0004% |
| High vol.: 4.2V | 13.56005971 | 0.0004% |

§2.1055 (A)(1)

AFC FREQ ERROR vs. TEMPERATURE

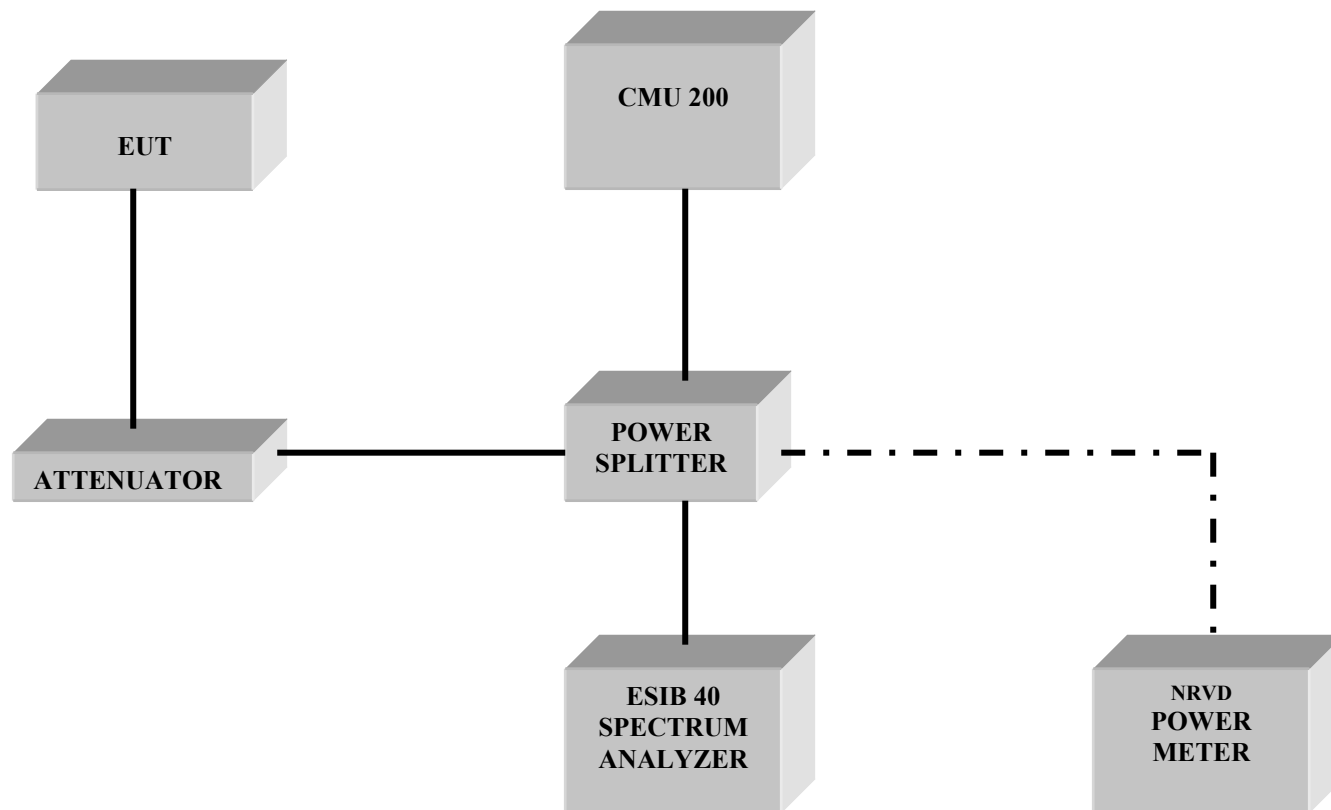
| Temperature (°C) | Freq (MHz) | Error (%) |
|------------------|-------------|-----------|
| -20 | 13.55997346 | -0.0002% |
| -10 | 13.56006634 | 0.0005% |
| 0 | 13.56009288 | 0.0007% |
| +10 | 13.56009288 | 0.0007% |
| +20 | 13.56005971 | 0.0004% |
| +30 | 13.56002654 | 0.0002% |
| +35 | 13.56 | 0.0000% |
| +50 | 13.55998673 | -0.0001% |

6 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

| No | Instrument/Ancillary | Type | Manufacturer | Serial No. | Cal Due | Interval |
|----|------------------------------|--------------|-----------------|--------------|-----------|----------|
| 01 | Spectrum Analyzer | ESIB 40 | Rohde & Schwarz | 100107 | May 2009 | 1 year |
| 02 | Spectrum Analyzer | FSEM 30 | Rohde & Schwarz | 100017 | May 2009 | 1 year |
| 03 | Signal Generator | SMY02 | Rohde & Schwarz | 836878/011 | May 2009 | 1 year |
| 04 | Power-Meter | NRVD | Rohde & Schwarz | 0857.8008.02 | May 2009 | 1 year |
| 05 | Biconilog Antenna | 3141 | EMCO | 0005-1186 | June 2009 | 1 year |
| 06 | Horn Antenna (1-18GHz) | SAS-200/571 | AH Systems | 325 | June 2009 | 1 year |
| 07 | Horn Antenna (18-26.5GHz) | 3160-09 | EMCO | 1240 | June 2009 | 1 year |
| 08 | Power Splitter | 11667B | Hewlett Packard | 645348 | n/a | n/a |
| 09 | Climatic Chamber | VT4004 | Voltsch | G1115 | May 2009 | 1 year |
| 10 | High Pass Filter | 5HC2700 | Trilithic Inc. | 9926013 | n/a | n/a |
| 11 | High Pass Filter | 4HC1600 | Trilithic Inc. | 9922307 | n/a | n/a |
| 12 | Pre-Amplifier | JS4-00102600 | Miteq | 00616 | May 2009 | 1 year |
| 13 | Power Sensor | URV5-Z2 | Rohde & Schwarz | DE30807 | May 2009 | 1 year |
| 14 | Digital Radio Comm. Tester | CMD-55 | Rohde & Schwarz | 847958/008 | May 2009 | 1 year |
| 15 | Universal Radio Comm. Tester | CMU 200 | Rohde & Schwarz | 832221/06 | May 2009 | 1 year |
| 16 | LISN | ESH3-Z5 | Rohde & Schwarz | 836679/003 | May 2009 | 1 year |
| 17 | Loop Antenna | 6512 | EMCO | 00049838 | July 2010 | 2 years |

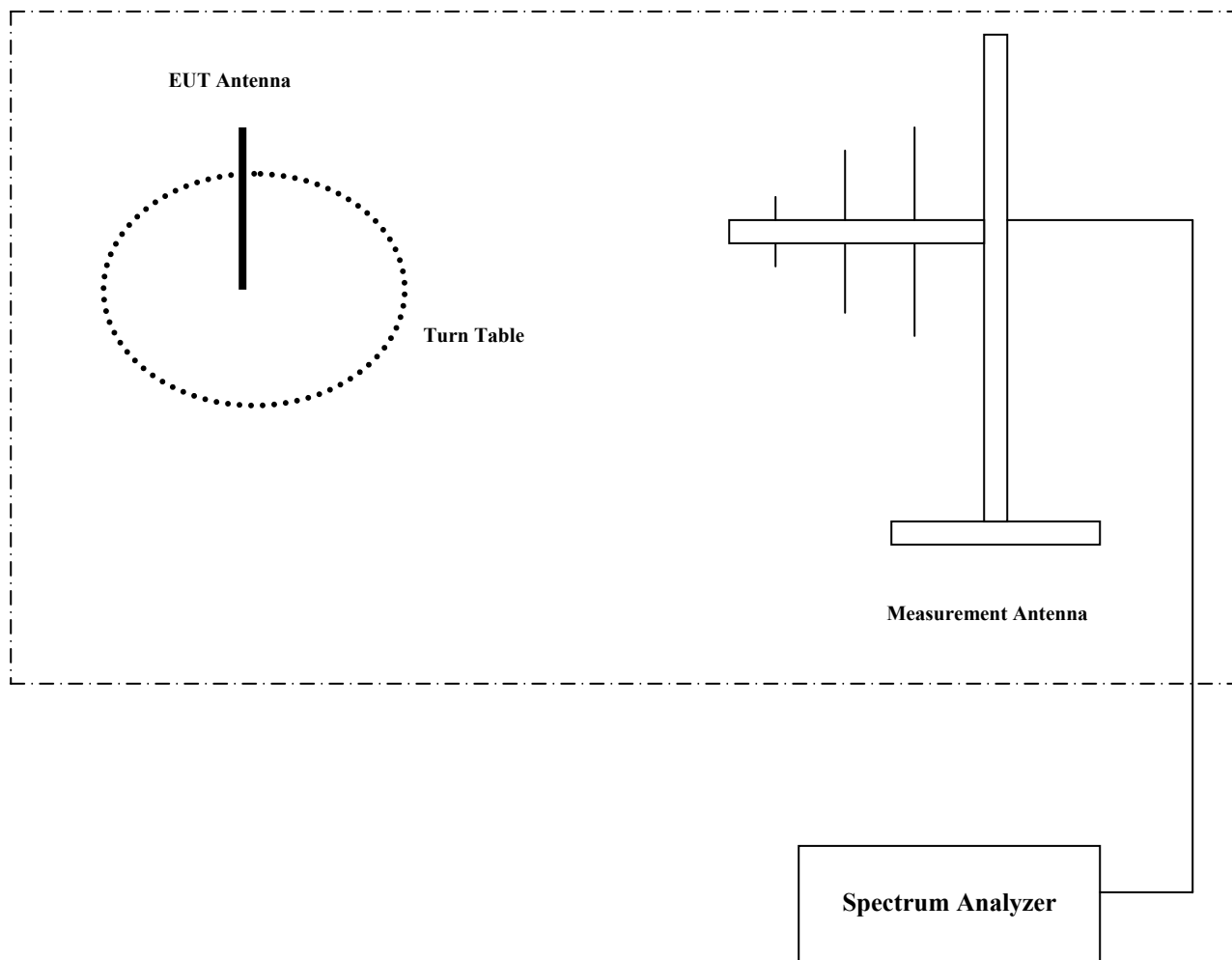
7 BLOCK DIAGRAMS

Conducted Testing



Radiated Testing

ANECHOIC CHAMBER



Test Report #: **EMC_CET10_038_15.225_Rev2**

Date of Report : 2008-9-02

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8 Report History

2008-8-26 Original Report

2008-8-29 Corrected testing dates, updated report number and report date.

2008-9-02 Corrected types of modulation and channel numbers, updated report number and report date.