

MOBILE DEVICES BUSINESS

PRODUCT SAFETY AND COMPLIANCE EMC LABORATORY

EMC TEST REPORT

Test Report Number – 24229-1 BT

<u>Report Date</u> – December 1, 2010

The test results contained herein relate only to the model(s) identified. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Engineer, I hereby declare that the equipment tested as specified in this report conforms to the requirements indicated.

Signature:

Name: Albert J. Patapack

Title: EMC Engineer

Date: December 1, 2010

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THIS REPORT MUST NOT BE USED TO CLAIM PRODUCT ENDORSEMENT BY UKAS OR ANY AGENCY OF THE U.S. GOVERNMENT.

UKAS Certificate Number: 2404

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Test Report Details

| Tests Performed By: | ADR Testing Service Location Code: ADR LV Motorola Mobility Inc Product Safety and Compliance Group 600 North US Hwy 45 Libertyville, IL 60048 PH (847) 523-6167 Fax (847) 523-4538 FCC Registration Number: 316588 Industry Canada Number: 109O-1 |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tests Requested By: | Motorola Mobility Inc. 600 North US Hwy 45 Libertyville, IL 60048 |
| Product Type: | Cellular Phone |
| Signaling Capability: | WCDMA 850/1900, GSM 850/900/1800/1900, HSDP, EDGE, Bluetooth, 802.11a/b/g/n |
| FCC ID: | IHDP56LS1 |
| Serial Numbers: | LOLAAD0021 |
| Testing Complete Date: | December 1, 2010 |

Applicable Standards

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

<u>X</u> Part 15 Subpart C – Intentional Radiators

Applicable Standards: ANSI 63.4 2003, RSS-210 Issue 7

DA 00-705, "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems" published by the Federal Communications Commission was also used in the testing of this product.

Summary of Testing

| Test | Test Name | Pass/Fail |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 1 2 3 4 5 | Carrier Frequency Separation Number of Hopping Frequencies Time of Occupancy (Dwell Time) 20 dB Bandwidth Spurious RF Conducted Emissions | Pass Pass Pass Pass Pass |
| 6 | Max Power | N/A |
| 7 | Band Edges | Pass |
| 8 | AC Line Conducted Spurious Emissions | Pass |
| Test | Test Name | Results |
| 1 | Carrier Frequency Separation | See plots |
| 2 | Number of Hopping | See plots |
| 3 | Time of Occupancy (Dwell Time) | See plots |
| 4 | 20 dB Bandwidth | See plots |
| 5 | Spurious RF Conducted Emissions | See plots |
| 6 | Max Power | See plots |
| 7 | Band Edges | See plots |
| 8 | AC Line Conducted Spurious Emissions | See plots |

General and Special Conditions

All testing for this report was performed with a fully charged Model SNN5880A 1880mAH Battery.

All testing was done in an indoor controlled environment. The temperature and the relative humidity were maintained within the ANSI C63.4 2003 Standard requirements during the entire duration of testing.

Equipment and Cable Configurations

The EUT was tested in a stand-alone configuration that is representative of typical use.

| Manufacturer | Equipment Type | Model No. | Serial Number | Calibration Due Date |
|-----------------|-----------------|-----------|---------------|-------------------------|
| Rohde & Schwarz | Receiver | ESI26 | 100001 | 9/23/2011 |
| Agilent | Signal Analyzer | N9020A | US46470586 | 12/18/2010 |
| Attenuator | Weinschel | AS-6 | 6675 | NCR |
| Attenuator | Weinschel | AS-6 | 6677 | NCR |
| ETS | LISN | 3810/2 | 00062907 | 9/08/2011 |
| ETS | LISN | 3810/2 | 00062912 | 9/08/2011 |

Measuring Equipment and Calibration Information

All test equipment was within their calibration date during the time of testing. When equipment went out of calibration during testing it was replaced using a similar piece of calibrated equipment. All these equipments are listed in the equipment list. All equipment is on a one-year calibration cycle.

Description of Bluetooth Transmitter

The EUT offers Bluetooth as a feature. The Bluetooth spread-spectrum, frequency hopping transceiver is designed to operate between 2402 and 2480 MHz. The Bluetooth antenna is mounted inside of the EUT. The antenna installation is permanent. For a more thorough description of the functionality please refer to Exhibit 12 of this package.

As a Bluetooth transmitter, it is designed operate with other Bluetooth devices as defined by the industrial standard. In this application, the device is battery operated. The Bluetooth transmitter supports Bluetooth version 2.1+EDR.

De Facto EIRP Limit – Pursuant 47 CFR 15.247(b)(4); RSS-210 Section A8.4.

Criterion: The conducted output power limit of 1-watt is based on the use of antennas with directional gains that do not exceed 6 dB_i. If transmitting antennas of directional gain greater than 6 dB_i are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB_i.

The antenna employed by this transmitter is intended to be omni-directional, and thus will not exhibit directional gain in excess of 6 dB_i. The conducted power is less than the limits set forth (see elsewhere in this report for details).

Measurement Procedures and Data

CARRIER FREQUENCY SEPARATION

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment Under Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

The Bluetooth transmitter of the EUT had its hopping function enabled. The following spectrum analyzer settings were used:

- 1. Span = wide enough to capture the peaks of two adjacent channels
- 2. Resolution (or IF) Bandwidth (RBW) $\geq 1\%$ of the span
- 3. Video (or Average) Bandwidth (VBW) \geq RBW
- 4. Sweep = auto
- 5. Detector function = peak
- 6. Trace = max hold

The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.

Measurement Results

See attached.

FCC ID: IHDP56LS1

| Ref Offset 14.7 dB Avg Hold>20/20 Avg Hold>20/20 Avg Hold>20/20 0 dMkr1 1.000 -0.124 0 dMkr1 1.000 -0.124 0 d -0.124 | XI XI | 50 Ω | MOT:EMC 24229-1 | | SENSE:EXT | ALIG | IN AUTO | | 11:52:2 | 8 PMNov 11, 20: |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------|------------------|-------------------------|-----------|------|---------|-----|----------------------------|--------------------------------------------|
| 100 BUdiv Ref 15.00 dBm -0.124 500 1/Δ2 -500 1/Δ2 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 -500 -0.124 < | Display Li | ine -11.50 | dBm Input: RF | PNO: Fast IFGain:Low | | | | | T | RACE 1 2 3 4 5 TYPE MWWWM DET PINNNN |
| | 10 dB/div | | | | | | | | ΔMkr1 1. | .000 MH •0.124 di |
| | | | | | X | | | | 1∆2 | |
| | | | | | / | 12 | | | | - Andrew Market |
| 35.0 | | | | | | | | | | |
| 15.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 25.0 | | | | | | | | | |
| | 5.0 | | | | | | | | | |
| | 5.0 | | | | | | | | | |
| 5.0 | 5.0 | | | | | | | | | |
| | 5.0 | | | | | | | | | |
| enter 2 444000 CHr Ener 2 000 | 5.0 | | | | | | | | | |
| Res BW 300 kHz #VBW 300 kHz Sweep 1.00 ms (100' | | 41000 GHz 300 kHz | | #VB | W 300 kHz | | | Swe | Span ep 1.00 <u>m</u> s | 3.000 Mi s (1001 pt |

Carrier Frequency Separation

NUMBER OF HOPPING FREQUENCIES

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment Under Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

- 1. Span = the frequency band of operation
- 2. RBW $\geq 1\%$ of the span
- 3. $VBW \ge RBW$
- 4. Sweep = auto
- 5. Detector function = peak
- 6. Trace = max hold

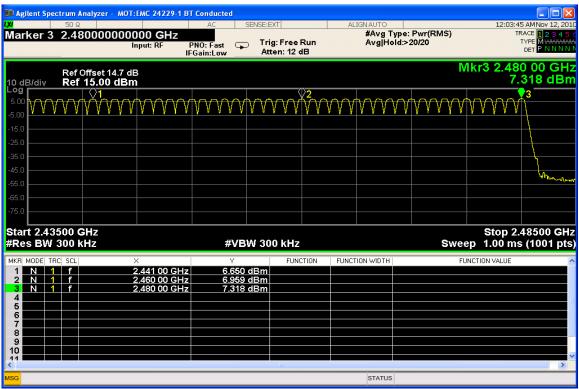
The trace was allowed to stabilize.

Measurement Results

See attached.

| 📕 Agilent Spectrum Analyzer - MOT:EMC 24229-1 E | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------|
| | AC SENSE:EXT PNO: Fast IFGain:Low Atten: 12 dB | ALIGNAUTO #Avg Type: Pwr(RMS) Avg Hold:>20/20 | 12:01:43 AMNov 12, 201 TRACE 1 2 3 4 5 TYPE M WWWW DET P N N N N |
| Ref Offset 14.7 dB 10 dB/div Ref 15.00 dBm | | N | 1kr3 2.441 000 GH 6.883 dBn |
| Log 5.00 -5.00 -5.00 -5.00 -25.0 -35.0 -45.0 -65.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 -75.0 | <u>vvvvvvv</u> vv ² vv | | |
| Start 2.39800 GHz #Res BW 300 kHz | #VBW 300 kHz | Sw | Stop 2.44700 GH eep 1.00 ms (1001 pts |
| MKR MODE TRC SCL X 1 N 1 f 2.402.000 GHz 2 N 1 f 2.402.000 GHz 3 N 1 f 2.421.000 GHz 3 N 1 f 2.421.000 GHz 5 5 5 5 5 6 6 6 6 6 9 9 9 9 10 10 11 11 11 11 | 6.440 dBm | FUNCTION WIDTH | FUNCTION VALUE |
| < | | STATUS | > |





Number of Hopping Frequencies (Channels 39 – 78)

TIME OF OCCUPANCY (DWELL TIME)

CFR47 Part 15.247

Measurement Procedure

The RF output port of the Equipment Under Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

- 1. Span = zero span, centered on a hopping channel
- 2. RBW = 1 MHz
- 3. VBW \geq RBW
- 4. Sweep = as necessary to capture the entire dwell time per hopping channel
- 5. Detector function = peak
- 6. Trace = max hold

The marker-delta function was used to determine the dwell time.

Measurement Results

See attached

| Agilent Spectrum | | EMC 24229-1 BT | | | | | | | | |
|-----------------------------------|-------------------------------|-----------------------------|-----------------------------|------------------------------------------|-------------|-------------------------------------|-----------|-------------------|-------------|------------------------------------------------------------------|
| xu 50 Marker 1 Δ 2 | 2.88000 ms | nput: RF 🛛 🛛 🛛 🛛 | AC PNO: Fast Gain:Low | SENSE:EXT Trig: Free I Atten: 12 c | Run | IGN AUTO #Avg Type: | Pwr(RMS) | | т | 1 AMNov 12, 201 RACE 1 2 3 4 5 TYPE WWWWW DET P N N N N |
| Ref 10 dB/div Re Log | Offset 14.7 dE f 15.00 dBm | 3 1 | | | | | | Δ | Mkr1 | 2.880 ms 0.36 dB |
| 5.00 | | | | | | | | | | |
| -5.00 | | | | | | | . 1 | Δ2 | | |
| -15.0 | www.www.angararvar | <mark>huhvarderatede</mark> | | | ᡊᡟ᠆ᠰ᠊᠋ᠴ᠁ᡔᡨᡀ | <u>∼∼∼</u> ₽≈ <mark>⊢</mark> ∩∧₽№°₩ | · · · · · | | | |
| -25.0 | | | | | | | | | | |
| -35.0 | | | | | | | | | | |
| -45.0 | | | | | | | | la b derte | 14.1.1 avla | |
| -65.0 | | | | | | | | | . 1.11 | |
| -75.0 | | | | | | | | | | |
| Center 2.4410 | | | | | | | | | | Span 0 H |
| Res BW 3.0 M | Hz | | #VB | W 3.0 MHz | | CTATUS | Sw | eep 4 | .000 m | s (1001 pts |
| | | | | | | STATUS | | | | |

Dwell Time

| Packet type | Hop rate | Time slot | Dwell time | Limit | Conclusion |
|-------------|----------|-------------|------------|-------|------------|
| | (1/s) | Length (ms) | (ms) | (ms) | |
| DH5 | 320 | 2.880 | 369 | 400 | Pass |

Note: Hop rate = 1600/5 * 1/s for DH5 packets =320 Dwell time = time slot length * hop rate * 0.4s

20dB Bandwidth

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

The Bluetooth frequency hopping function of the EUT was disabled. The spectrum analyzer used the following settings:

- 1. Span = 2MHz, centered on the center channel frequency
- 2. RBW \geq 1% of the 20dB span
- 3. $VBW \ge RBW$
- 4. Sweep = auto
- 5. Detector function = peak
- 6. Trace = max hold

The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20dB bandwidth of the emission.

Measurement Results

See attached

| Channel | Frequency (Mhz) | 20dB Bandwidth (Khz) |
|----------|-----------------|----------------------|
| 39 | 2441 | 1034 |
| 39 (EDR) | 2441 | 1430 |

FCC ID: IHDP56LS1



20dB Bandwidth



20dB Bandwidth EDR Mode

PEAK OUTPUT POWER

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The peak output power was measured with the Hopping mode disabled.

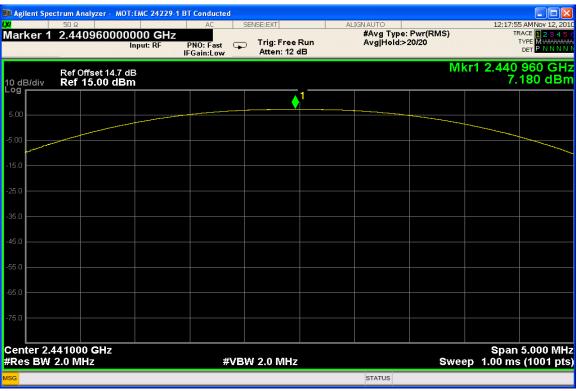
Measurement Results

See Attached

FCC ID: IHDP56LS1

| ilent Spectrum Analyzer - MOT:EMC 24 50 Ω | | SENSE:EXT | ALIGN AUTO | 12:16:34 AMNov 12, |
|----------------------------------------------|-----|--------------------------------|----------------------------------------|------------------------------------|
| ker 1 2.401950000000 G | iHz | Trig: Free Run Atten: 12 dB | #Avg Type: Pwr(RMS) Avg Hold:>20/20 | TRACE 1234 TYPE MWAA DET PNN |
| Ref Offset 14.7 dB B/div Ref 15.00 dBm | | | Ν | 1kr1 2.401 950 G 6.000 dE |
| | | 1 | | |
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| | | | | |
| | | | | |
| ter 2.402000 GHz s BW 2.0 MHz | #VB | W 2.0 MHz | Sw | Span 5.000 M eep 1.00 ms (1001 |

Peak Output Power – Low Channel

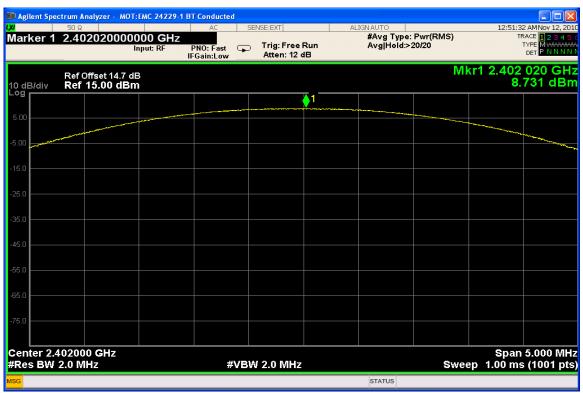


Peak Output Power – Mid Channel

FCC ID: IHDP56LS1

| 50 Ω | AC SENSE: | EXT | ALIGNAUTO | 12:20:25 AM Nov |
|-------------------------------------------|------------------|-----------------------------|--------------------------------------|----------------------------------|
| (er 1 2.48001000000 (Input: R | E PNO: East 😱 Tr | ig: Free Run tten: 12 dB | #Avg Type: Pwr(RM Avg Hold:>20/20 | |
| Ref Offset 14.7 dB B/div Ref 15.00 dBm | | | | Mkr1 2.480 010 7.726 c |
| | | ¹ | | |
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| | | | | |
| | | | | |
| | | | | |
| | | | | |
| ter 2.480000 GHz s BW 2.0 MHz | #VBW 2 | 0 MHz | | Span 5.000 Sweep 1.00 ms (100 |

Peak Output Power – High Channel



Peak Output Power EDR Mode – Low Channel

FCC ID: IHDP56LS1

| | 50 Ω | | AC | SENSE:EXT | | ALIGNAUTO | | 12:50:2 | 5 AMNov 12, |
|-----------------------|---------------------------------|-----------------------|---------------------------|-----------------------------|------------|--------------------------|-------|-------------------|--------------------------------|
| arker 1 2 | 2.44108000 | 00000 GH Input: RF | Z PNO: Fast IFGain:Low | D Trig: Free Atten: 12 o | | #Avg Type: Avg Hold:> | 20/20 | | ACE 123 TYPE MWW DET PNN |
| | Ref Offset 14.7 Ref 15.00 dl | | | | | | Mk | r1 2.441 9. | 080 G 864 dl |
| | | | | | \ 1 | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| nter 2 44 | 1000 GHz | | | | | | | Snan | 5.000 F |
| nter 2.44 es BW 2. | | | #VE | 3W 2.0 MHz | | | Swee | span p 1.00 ms | 5.000 P |

Peak Output Power EDR Mode – Mid Channel



Peak Output Power EDR Mode – High Channel

BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

See Attached:

FCC ID: IHDP56LS1

| | 50 Ω | | | -1 BT Conducted | SENSE:EXT | AL | IGNAUTO | | 12:31:5 | |
|--------------------|----------------------------------------|----------------------------------------|-----------|----------------------------------------|---------------------------|----|--------------------------|--------------------------------------------------|-------------------|------------------------------------|
| | | | Input: RF | PNO: Far G | Trig: Free Atten: 12 d | | #Avg Type: Avg Hold:> | | | RACE 1234 TYPE MWWW DET PNNN |
| dB/div | | Offset 14.7 15.00 dl | | | | | | | ΔMkr1 : 5 | 2.00 MH 9.722 d |
| .00 | | | | | | | | 1Δ2 | | |
| .00 | | | | | | | | $\left[\begin{array}{c} \\ \end{array} \right]$ | | |
| | | | | | | | | | | -14.48 |
| .0 | | | | | | | | | | |
| .0 | | | | | | | N | | 1 | |
| .0 | | | | | | | | | | |
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| .0 | | | | | | | | | | |
| 5.0 | | | | | | | | | | |
| enter 2. Res BW | | | | #VE | SW 100 kHz | | | Swee | Span p 1.27 ms | 10.00 M s (1001 p |
| 3 | | | | | | | STATUS | | | |





Low Band Edge with Hopping Enabled

FCC ID: IHDP56LS1

| 💴 Agilent Spe | | - MOT:EMC 24229- | | | | | | | |
|-----------------------|---------------------------|------------------|------------|-----------------------------|------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------|
| Marker 1 | 50 Ω Δ 2.0000 | 00000 MHz | AC | SENSE:EXT | | IGNAUTO #Avg Type: | | TF | 4 AMNov 12, 2010 RACE <mark>1 2 3 4 5</mark> (|
| | | Input: RF | PNO: Far G | Trig: Free F Atten: 12 d | | Avg Hold:>: | 20/20 | | |
| 10 dB/div Log | Ref Offset 7 Ref 15.00 | | | | | | | ΔMkr1 2 5 | 2.00 MHz 3.385 dE |
| 5.00 | | | | | | | 1∆2 | | |
| | | | | | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | and the second s | | |
| -5.00 | | | | | | | | | -14.61 dBr |
| -15.0 | | | | | | | | | |
| -25.0 | | | | | | ~ ~ | `~ | | |
| -35.0 | | | | | | | | - And Market | n |
| -45.0 | | | Amar | Cannon | (<u>x</u> | | | - WWW | w long |
| | ᠁ᡣᡐᡎᢧᢇᠰ | wmmwYwWwA | Amaria | | | | | | |
| -65.0 | | | | | | | | | |
| -75.0 | | | | | | | | | |
| Center 2.4 #Res BW | 400000 GH 100 kHz | Z | #VE | W 100 kHz | | | Swee | Span sp 1.27 ms | 10.00 MHz (1001 pts |
| MSG | | | | | | STATUS | | | |

Low Band Edge with Hopping Disabled (EDR MODE)



Low Band Edge with Hopping Enabled (EDR MODE)



High Band edge with Hopping Disabled



High Band edge with Hopping Enabled

FCC ID: IHDP56LS1

APPLICANT: MOTOROLA MOBILITY, INC



High Band Edge with Hopping Disabled (EDR MODE)



High Band Edge with Hopping Enabled (EDR MODE)

SPURIOUS RF CONDUCTED EMISSIONS

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

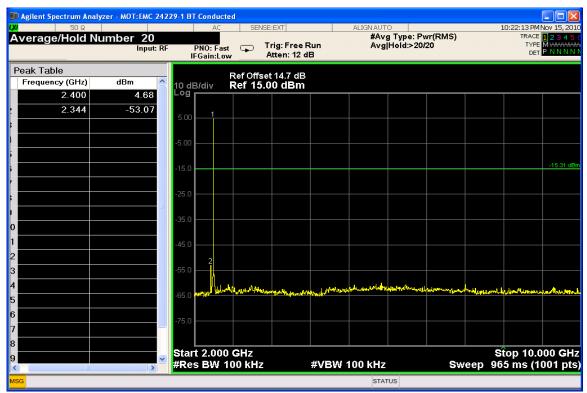
Measurement Results

See attached:

FCC ID: IHDP56LS1

| Agilent Spectrum Analyzer - MOT: EMC 242 | | | | | | | |
|------------------------------------------|-------------------------------------|---------------------------|--------------------------------------------|-------------------------------------------------------------|------------------------------------------|--|--|
| μ 50 Ω | AC SENSE:E | XT | ALIGNAUTO #Avg Type: Pv | | 10:19:25 PMNov 15, 2010 | | |
| Display Line -15.31 dBm Input: RF | | g: Free Run :en: 12 dB | Avg Hold:>100 | 0/100 | TRACE 12345 TYPE MWWWWWW DET PNNNN | | |
| Peak Table | Def Offeret | | | | | | |
| Frequency (GHz) dBm 🔦 | Ref Offset 1 10 dB/div Ref 15.00 | dBm | | | | | |
| 1 2.403 4.69 | Log | | | | | | |
| 2 | 5.00 | | | | 1 | | |
| 3 | 3.00 | | | | | | |
| 4 | -5.00 | | | | | | |
| 5 | | | | | | | |
| 6 | -15.0 | | | | -15.31 dBm | | |
| 7 | | | | | | | |
| 8 | -25.0 | | | | | | |
| 9 | -35.0 | | | | | | |
| 10 | 66.6 | | | | | | |
| 11 | -45.0 | | | | | | |
| 12 | | | | | | | |
| 13 | -55.0 | | | | A | | |
| 14 | -65.0 July Asolum million | in the second and the | ويطويه طوياره أنيامهم ميداوا مقاميه المؤني | مرجعه المريد المجموع المريد المريد المريد المريد المريد الم | hounder and the second | | |
| 15 | -0010 | | | | | | |
| 16 | -75.0 | | | | | | |
| 17 | | | | | | | |
| 18 | Start 30 MHz | | | | Stop 3.000 GHz | | |
| 19 | #Res BW 100 kHz | #VBW | 100 kHz | Sweep 3 | 58 ms (1001 pts) | | |
| MSG | | | STATUS | | | | |
| | | | 2 | | | | |

Conducted Spurious Emissions 30-3000MHz (Low Channel Enabled)

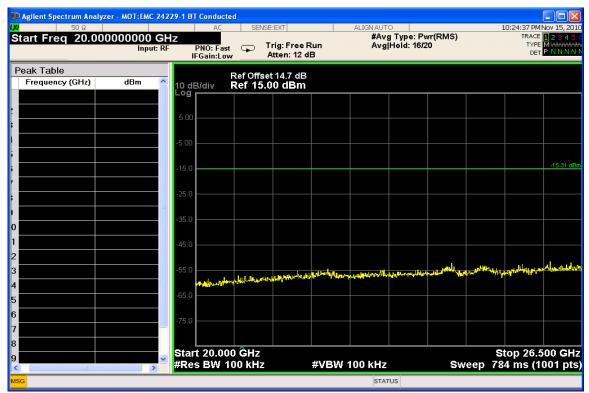


Conducted Spurious Emissions 2-10GHz (Low Channel Enabled)

FCC ID: IHDP56LS1

| 💭 Agilent Spectrum Analyze | er - MOT:EMC 2422 | 9-1 BT Co | | | m m | | | | | | | |
|----------------------------|-------------------|------------------|--------------------------|--------------------|-------------------------------------|-------------|----------------------|--------------------------------|---|----------|----------------------|--------------------------------------------------|
| Χ Ι 50 Ω | Input: RF | | AC O: Fast ain:Low | | :EXT rig: Free R atten: 12 dl | | | о g Type: Ри Hold: 12/2 | | | TYPE | 107 15, 201 1 2 3 4 5 M WWWWW P N N N N |
| Peak Table | | | R | ef Offset | :14.7 dB | | | | | | | |
| Frequency (GHz) | dBm 🛆 | 10 dB/d Log | liv R | ef 15.0 | 0 dBm | | | | | | | |
| | | | | | | | | | | | | |
| | | 5.00 | | | | | | | | | | |
| | | -5.00 | | | | | | | | | | |
| | | | | | | | | | | | | -15.31 dB |
| | | -15.0 | | | | | | | | | | -15151 GE |
| | | -25.0 | | | | | | | | | | |
| | ===== | | | | | | | | | | | |
| D | | -35.0 | | | | | | | | | | |
| | | -45.0 | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | -55.0 — | | | | | and a state | and the relationships | | handrate | which was the states | habbla |
| 4 | | -65.0 a.L | Mary Junes, | paper and pression | enerson like | Lingenturio | and all states and a | | | | | |
| 6 | | 75.0 | | | | | | | | | | |
| 7 | | -75.0 | | | | | | | | | | |
| 8 | | Start 1 | 0.000 | CH2 | | | | | | | tôp 20.0 | |
| 9 | | #Res E | | | | #VBW 1 | 100 kHz | | S | weep_1 | .21 s (10 | 00 GH |
| MSG | | | | | | | STAT | rus | | | | |

Conducted Spurious Emissions 10-20GHz (Low Channel Enabled)

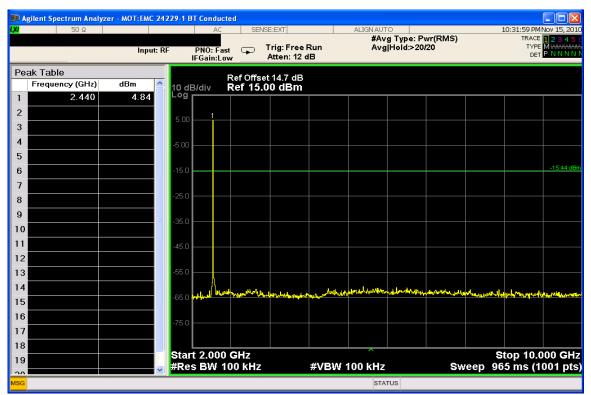


Conducted Spurious Emissions 20-26.5GHz (Low Channel Enabled)

FCC ID: IHDP56LS1

| Agilent Spectrum Analyzer - MOT: EMC 242 | | | | | | |
|------------------------------------------|-------------------------------------------|-------------------------------|--------------------------------------|------------------------------------------------|----------------|---------------------------------------|
| μ 50 Ω | AC SENSE | EXT | ALIGNAUTO | Dum(DMC) | 10:28:25 PMN | |
| Display Line -15.44 dBm Input: RF | | rig: Free Run Atten: 12 dB | #Avg Type: Avg Hold:>2 | | TYPE | 123456 M wwww PNNNNN |
| Peak Table | Ref Offset | 14.7 dB | | | | |
| Frequency (GHz) dBm 🛆 | 10 dB/div Ref 15.00 | 0 dBm | | | | |
| 2.442 4.56 | Log | | | | | |
| | 5.00 | | | | 1 | |
| | 3,00 | | | | | |
| | -5.00 | | | | | |
| | | | | | | |
| | -15.0 | | | | | -15.44 dBm |
| | | | | | | |
| | -25.0 | | | | | |
| | | | | | | |
| 0 | -35.0 | | | | | |
| 1 | -45.0 | | | | | |
| 2 | 45.0 | | | | | |
| 3 | -55.0 | | | | | |
| 4 | | | | مى مەرىپىلىرى ئىلىلىرى بىرىلىرى بىرىلىرى بىرىي | and Walkington | ale al and a second |
| 5 | -65.0 angenterminen angeneter allaher and | ana and the second second | ┙ <u>╡</u> ┫╏╗┙╞╅╶┶╼┥╾╍┪┝┫╖╡╖╎┶╺┝┙╝┙ | | | |
| 6 | | | | | | |
| 7 | -75.0 | | | | | |
| 8 | | | | | | |
| | Start 30 MHz | | | | Stop 3.0 | 00 GHz |
| | #Res BW 100 kHz | #VBW | 100 kHz | Sweep | 358 ms (10 | 001 pts) |
| MSG | | | STATUS | | | |

Conducted Spurious Emissions 30-3000MHz (Mid Channel Enabled)

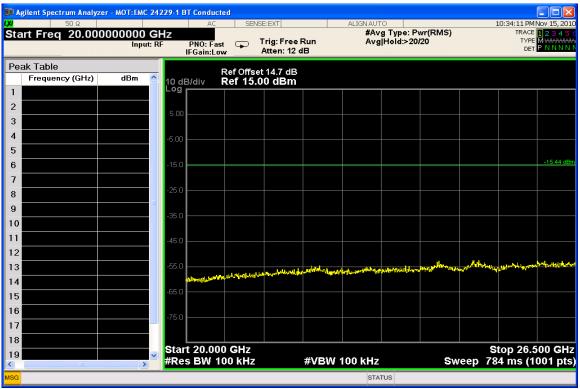


Conducted Spurious Emissions 2-10GHz (Mid Channel Enabled)

FCC ID: IHDP56LS1

| 📁 Agilent Spectrum Analyzer - MOT:EMC 242 | | | | | | | |
|-------------------------------------------|-------------------------------|-----------------------------------|------------------------------------------|--------------------|-------------------------------------------|--|--|
| μ 50 Ω | | SE:EXT | ALIGN AUTO | | 10:33:05 PM Nov 15, 2010 | | |
| Start Freq 10.00000000 GH | IZ PNO: Fast IFGain:Low | Trig: Free Run Atten: 12 dB | #Avg Type: P Avg Hold: 20/ | | TRACE 123456 TYPE MWWWWM DET PNNNNN | | |
| Peak Table | Ref Offse | +147 40 | | | | | |
| Frequency (GHz) dBm 🔷 | 10 dB/div Ref 15.0 | | | | | | |
| 1 | Log | | | | | | |
| 2 | 5.00 | | | | | | |
| 3 | | | | | | | |
| 5 | -5.00 | | | | | | |
| 6 | -15.0 | | | | -15.44 dBm | | |
| 7 | -15.5 | | | | | | |
| 8 | -25.0 | | | | | | |
| 9 | | | | | | | |
| 10 | -35.0 | | | | | | |
| 11 | -45.0 | | | | | | |
| 12 | | | | | | | |
| 13 | -55.0 | | | uselling | ر د مالیر د . | | |
| 14 | -65.0 Marthanna Marthanna | الملسج مهدوية وإماله المصغ العطاي | and the state of the second state of the | Andrew Whiteharist | ware and sealing and the deal | | |
| 15 | | | | | | | |
| 16 | -75.0 | | | | | | |
| 17 | | | | | | | |
| 10 | Start 10.000 GHz | | | | Stôp 20.000 GHz | | |
| × × × | #Res BW 100 kHz | #VBW | 100 kHz | Sweep | 1.21 s (1001 pts) | | |
| MSG | | | STATUS | | | | |

Conducted Spurious Emissions 10-20GHz (Mid Channel Enabled)

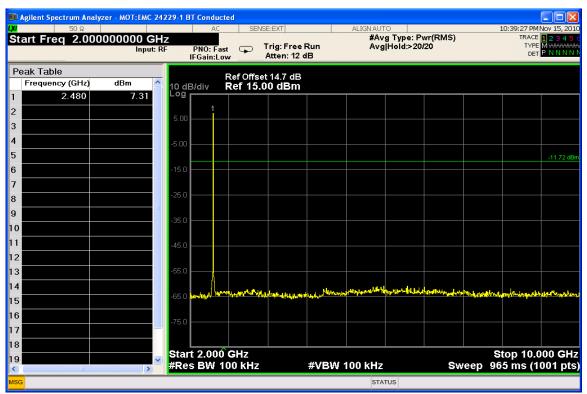


Conducted Spurious Emissions 20-26.5GHz (Mid Chan Enabled)

FCC ID: IHDP56LS1

| Agilent Spectrum Analyzer - MOT: EMC 242 | | | | | | |
|------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|----------------------------|---------------------------|
| 50 Ω | AC SENS | E:EXT | ALIGN AUTO | - (- 140) | 10:38:30 PM Not | |
| Display Line -11.72 dBm Input RF | | Trig: Free Run Atten: 12 dB | #Avg Type: Avg Hold:>2 | | TRACE 1 TYPE M DET P | 23456 WWWWWW NNNNN |
| Peak Table | D.(05) | | | | | |
| Frequency (GHz) dBm 🛆 | Ref Offse 10 dB/div Ref 15.0 | | | | | |
| 1 2.480 8.28 | | | | | | |
| 2 | 5.00 | | | | | |
| 3 | 3.00 | | | | | |
| 4 | -5.00 | | | | | |
| 5 | | | | | | -11.72 dBm |
| 6 | -15.0 | | | | | |
| 7 | | | | | | |
| 8 | -25.0 | | | | | |
| 9 | -35.0 | | | | | |
| 10 | 00.0 | | | | | |
| 11 | -45.0 | | | | | |
| 12 | | | | | | |
| 13 | -55.0 | | | | | |
| 14 | -65.0 manut | and the second states a | harder and a second second | and the barrent to a second | mural University | Alexander |
| 15 | -00.0 0 17 | | | | | |
| 16 | -75.0 | | | | | |
| 17 | | | | | | |
| 18 | Start 30 MHz | | | | Stop 2.00 | |
| | #Res BW 100 kHz | #VBW | 100 kHz | Sweep | Stop 3.00 358 ms (100 | 0 GH2 01 pt <u>s</u>) |
| MSG | | | STATUS | | | |

Conducted Spurious Emissions 30-3000MHz (High Channel Enabled)

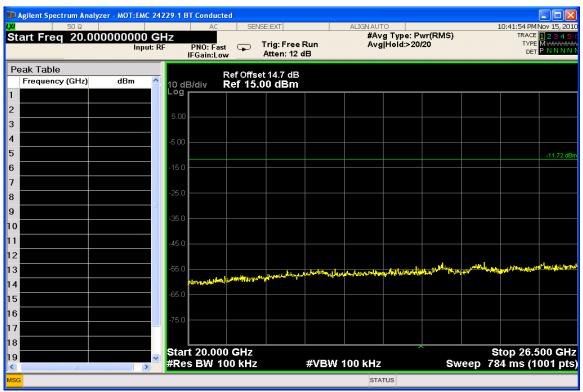


Conducted Spurious Emissions 2-10GHz (High Channel Enabled)

FCC ID: IHDP56LS1

| Agilent Spectrum Analyzer - MOT: EMC 242 | 29-1 BT Conducte | | | | | | | | |
|------------------------------------------|-------------------------------|--------------------|-----------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------|----------------|---------------|---------------------------------------|
| [Χ/] 50 Ω | AC | SENSE:EXT | | ALIGN AUT | | (=====) | | 10:40:31 PMI | |
| Start Freq 10.00000000 GH | IZ PNO: Fast IFGain:Low | | | | g Type: Pi Hold:>20 | | | TYPE | 123456 M wwww PNNNNN |
| Peak Table | | tef Offset 14.7 d | | | | | | | |
| Frequency (GHz dBm 🔷 | 10 dB/div | tef 15.00 dBr | | | | | | | |
| 1 | Log | | | | | | | | |
| 2 | 5.00 | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | -5.00 | | | | | | | | |
| 5 | | | | | | | | | -11.72 dBm |
| 6 | -15.0 | | | | | | | | |
| 7 | -25.0 | | | | | | | | |
| 8 | -23.0 | | | | | | | | |
| 9 | -35.0 | | | | | | | | |
| 10 | | | | | | | | | |
| 11 | -45.0 | | | | | | | | |
| 12 | -55.0 | | | | | | | | |
| 13 | -35.0 | | he later manager | b | outelles | | "Laure laket a | And the state | Wal-hershlatenth |
| 15 | -65.0 Manhara da | Hannesellerineerie | the man in the second | And Alabert Part | te strange | and the second | | | |
| 16 | | | | | | | | | |
| 17 | -75.0 | | | | | | | | |
| 18 | | | | | | | | | |
| 19 | Start 10.000 | | | | | | S | top 20.0 | 00 GHz |
| <> | #Res BW 10 | 0 kHz | #VBW | 100 kHz | | S | weep 1 | .21 s (1 | 001 pts) |
| MSG | | | | STA | rus | | | | |

Conducted Spurious Emissions 10-20GHz (High Channel Enabled)



Conducted Spurious Emissions 20-26.5GHz (High Chan Enabled)

AC LINE CONDUCTED

CFR 47 Part 15.207

Measurement Procedure

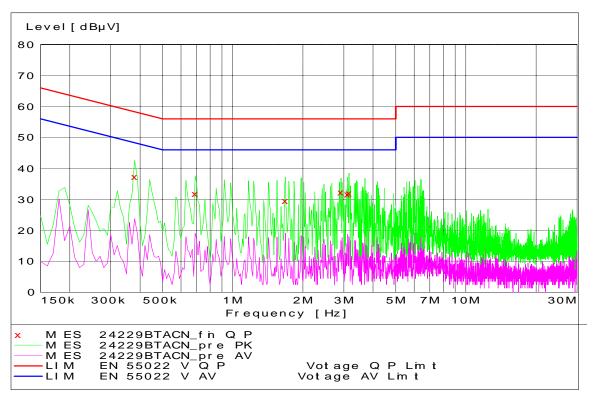
Measured levels of ac power line conducted emission shall be the radio-noise voltage from the line probe or across the 50 Ω LISN port, where permitted, terminated into a 50 Ω noise meter, or where permitted or required, the radio-noise current on the power line sensed by a current probe.

All radio-noise voltage and current measurements shall be made on each currentcarrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN. Equipment shall be tested with power cords that are normally supplied using an LISN, the 50 Ω measuring port is terminated by a 50 Ω radio-noise meter or a 50 Ω resistive load. All other ports are terminated in 50 Ω .

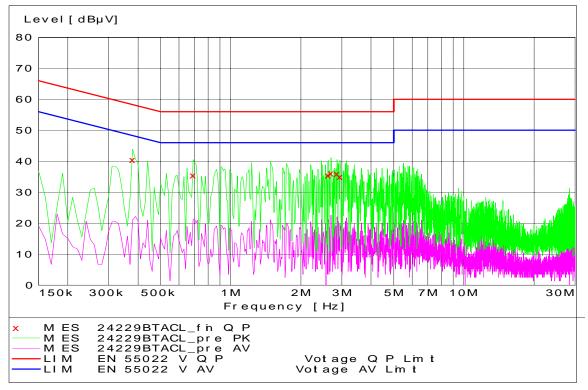
Detectors – Quasi Peak and Average Detector.

Measurement Results

See attached:







Bluetooth – Hopping - Tx Mode - Line Coupling

End of Test Report