7.9.802.11n HT40 MODE IN THE 5.6 GHz BAND

7.9.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

RESULTS

CHAIN 1

| Channel | Frequency | 26 dB Bandwidth | 99% Bandwidth |
|---------|-----------|-----------------|---------------|
| | (MHz) | (MHz) | (MHz) |
| Low | 5510 | 51.090 | 36.3021 |
| Middle | 5590 | 71.781 | 36.3436 |
| High | 5670 | 62.033 | 36.1709 |

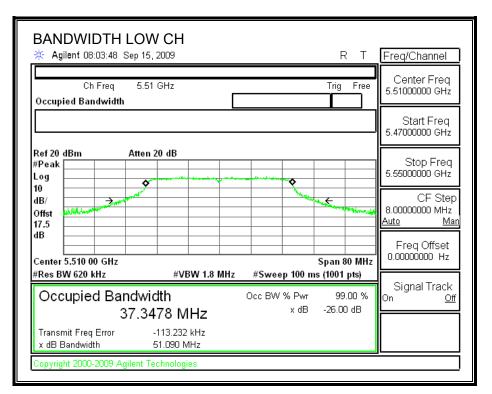
CHAIN 2

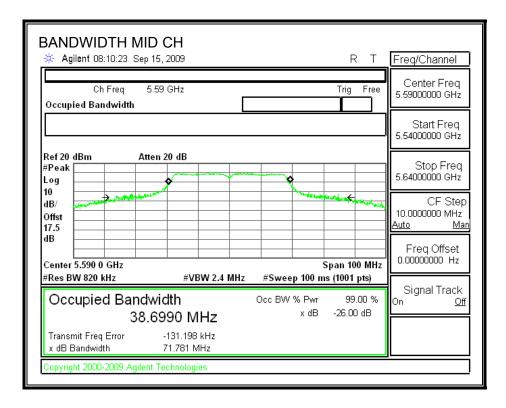
| Channel | Frequency | 26 dB Bandwidth | 99% Bandwidth |
|---------|-----------|-----------------|---------------|
| | (MHz) | (MHz) | (MHz) |
| Low | 5510 | 50.849 | 36.3129 |
| Middle | 5590 | 78.836 | 36.3537 |
| High | 5670 | 67.785 | 36.1777 |

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REPORT NO: 09U12784-2 FCC ID: EW4DWMW034 CHAIN 1

26 dB BANDWIDTH



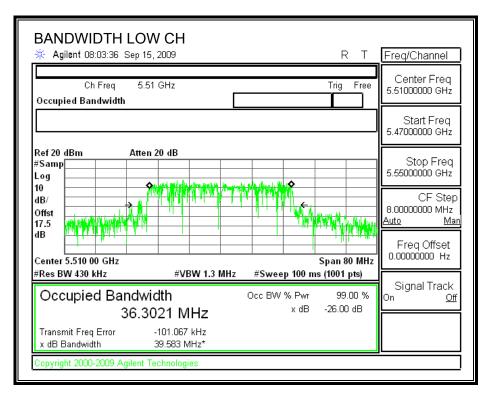


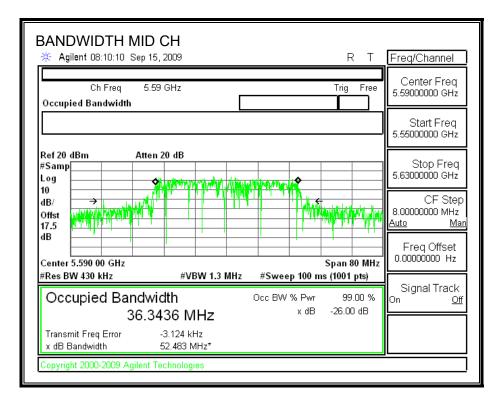
Page 202 of 344

| BANDWIDTH HIC | - | | RТ | Freq/Channel |
|---------------------------------------|--------------------------|----------------------|--|---|
| Ch Freq 5. Occupied Bandwidth | 67 GHz | | Trig Free | Center Freq 5.6700000 GHz |
| | | | | Start Freq 5.6200000 GHz |
| #Peak | en 20 dB | | | Stop Freq 5.7200000 GHz |
| 10 dB/ Offst 17.5 | | | In the state of th | CF Step 10.000000 MHz <u>Auto Man</u> |
| dB Center 5.670 0 GHz | | | Span 100 MHz | Freq Offset 0.00000000 Hz |
| #Res BW 560 kHz | #VBW 1.8 MHz | #Sweep 100 m | s (1001 pts) | Cignel Treek |
| Occupied Bandw 37.3 | vidth 3151 MHz | Occ BW % Pwr x dB | | Signal Track On <u>Off</u> |
| Transmit Freq Error x dB Bandwidth | 29.225 kHz 62.033 MHz | | | |
| Copyright 2000-2009 Agilent | Technologies | | | |

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99% BANDWIDTH





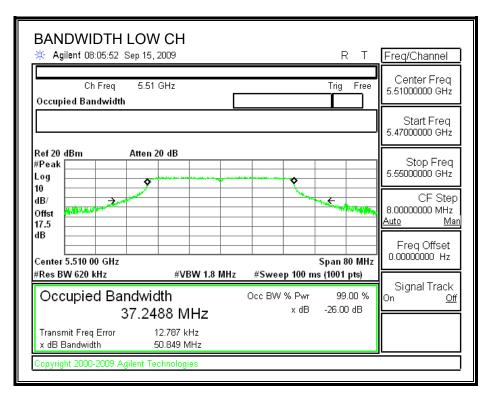
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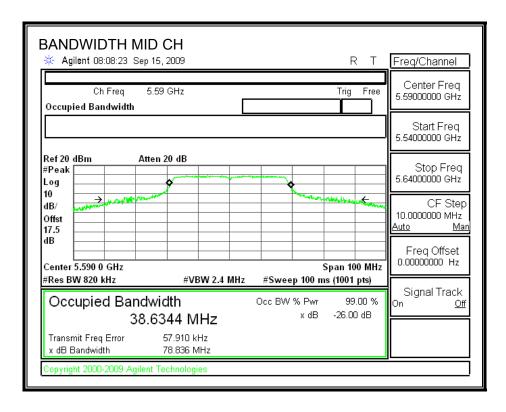
| BANDWIDTH HIGH CH * Agilent 08:11:57 Sep 15, 2009 R T | Freq/Channel |
|---|--|
| Ch Freq 5.67 GHz Trig Free Occupied Bandwidth | Center Freq 5.67000000 GHz |
| | Start Freq 5.63000000 GHz |
| Ref 20 dBm Atten 20 dB #Samp Log | Stop Freq 5.71000000 GHz |
| 10 10 10 10 10 10 10 10 10 10 | CF Step 8.00000000 MHz <u>Auto Man</u> |
| dB Center 5.670 00 GHz Span 80 MHz | Freq Offset 0.00000000 Hz |
| #Res BW 430 kHz #VBW 1.3 MHz #Sweep 100 ms (1001 pts) | Signal Track |
| Occupied Bandwidth Occ BW % Pwr 99.00 % 36.1709 MHz × dB -26.00 dB | On <u>Off</u> |
| Transmit Freq Error -86.076 kHz x dB Bandwidth 45.629 MHz* | |
| Copyright 2000-2009 Agilent Technologies | |

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REPORT NO: 09U12784-2 FCC ID: EW4DWMW034 CHAIN 2

26 dB BANDWIDTH



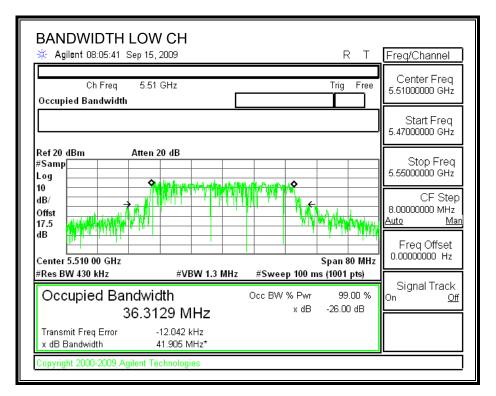


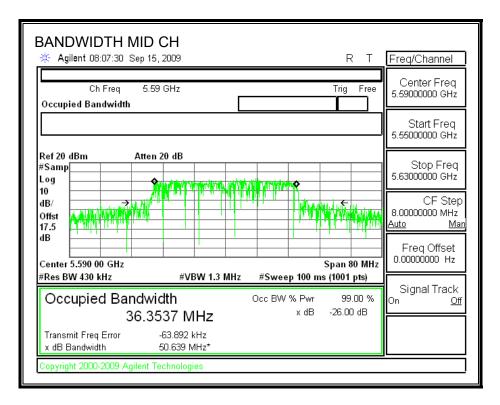
Page 206 of 344

| BANDWIDTH HI | | F | ? Т | Freq/Channel |
|---------------------------------------|---------------------------|--------------------------------|---------------|---|
| Ch Freq Occupied Bandwidth | 5.67 GHz | Trig | Free | Center Freq 5.67000000 GHz |
| | | | | Start Freq 5.6200000 GHz |
| Ref 20 dBm At #Peak Log 10 | ten 20 dB | | | Stop Freq 5.7200000 GHz |
| dB/ Offst 17.5 | | | | CF Step 10.000000 MHz <u>Auto Man</u> |
| dB | | Span 10 | 0 MHz | Freq Offset 0.00000000 Hz |
| #Res BW 750 kHz | #VBW 2.4 MHz | #Sweep 100 ms (1001 | pts) | Signal Track |
| Occupied Band 37 | width .7481 MHz | Occ BW % Pwr 99 x dB -26.00 | .00 %) dB | On <u>Off</u> |
| Transmit Freq Error x dB Bandwidth | -24.474 kHz 67.785 MHz | | | |
| Copyright 2000-2009 Agiler | nt Technologies | | | |

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99% BANDWIDTH





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| BANDWIDTH HIGH CH # Agilent 08:13:52 Sep 15, 2009 | RT | Freq/Channel |
|--|--|---|
| Ch Freq 5.67 GHz Occupied Bandwidth | Trig Free | Center Freq 5.67000000 GHz |
| | | Start Freq 5.63000000 GHz |
| Ref 20 dBm Atten 20 dB #Samp Log | Arild Date of the All of State | Stop Freq 5.71000000 GHz |
| Corp Corp <t< th=""><th></th><th>CF Step 8.0000000 MHz <u>Auto Man</u></th></t<> | | CF Step 8.0000000 MHz <u>Auto Man</u> |
| dB | Span 80 MHz | Freq Offset 0.00000000 Hz |
| #Res BW 430 kHz #VBW 1.3 MH | | Signal Track |
| Occupied Bandwidth 36.1777 MHz | Occ BW % Pwr 99.00 % x dB -26.00 dB | On <u>Off</u> |
| Transmit Freq Error -82.561 kHz x dB Bandwidth 41.660 MHz* | | |
| Copyright 2000-2009 Agilent Technologies | | |

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7.9.2. OUTPUT POWER

<u>LIMITS</u>

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.47-5.725 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

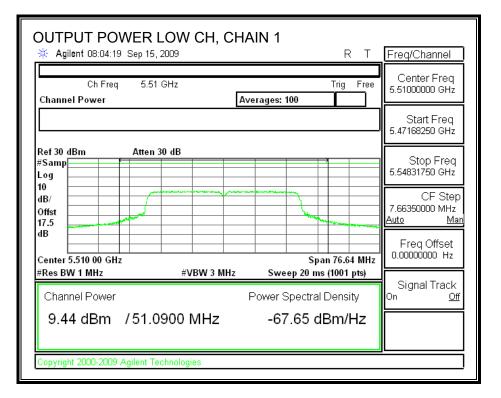
Limit

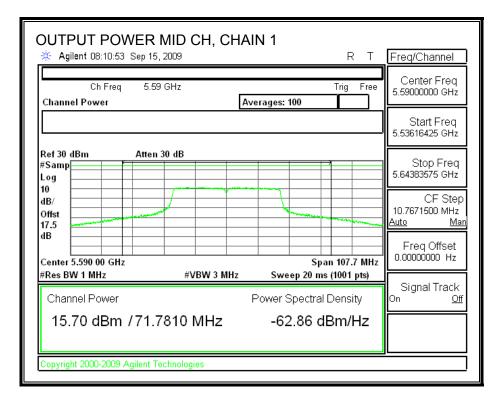
| Channel | Frequency | Fixed | В | 11 + 10 Log B | Antenna | Limit |
|---------|-----------|-------|--------|---------------|---------|-------|
| | | Limit | | Limit | Gain | |
| | (MHz) | (dBm) | (MHz) | (dBm) | (dBi) | (dBm) |
| Low | 5510 | 24 | 51.090 | 28.08 | 2.13 | 24.00 |
| Mid | 5590 | 24 | 71.781 | 29.56 | 2.13 | 24.00 |
| High | 5670 | 24 | 62.033 | 28.93 | 2.13 | 24.00 |

Individual Chain Results

| Channel | Frequency | Chain 1 | Chain 2 | Total | Limit | Margin |
|---------|-----------|---------|---------|-------|-------|--------|
| | | Power | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5510 | 9.44 | 10.20 | 12.85 | 24.00 | -14.56 |
| Mid | 5590 | 15.70 | 15.85 | 18.79 | 24.00 | -8.30 |
| High | 5670 | 13.09 | 13.48 | 16.30 | 24.00 | -10.91 |

CHAIN 1 OUTPUT POWER



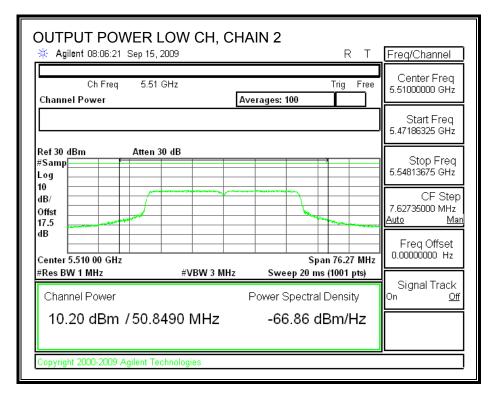


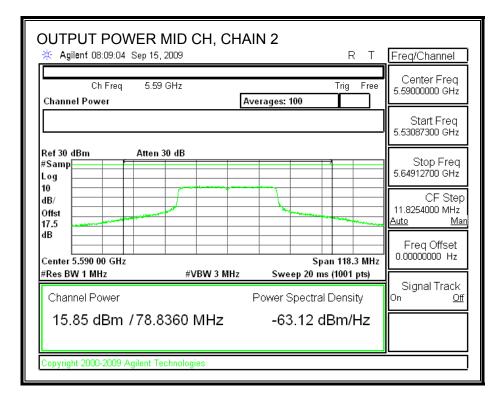
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| Agilent 08:12:49 Sep 15 | , | AIN 1 | RТ | Freq/Channel |
|------------------------------------|-------------|---------------------|-----------|--|
| Ch Freq 5.6 Channel Power | 7 GHz | verages: 100 | Trig Free | Center Freq 5.67000000 GHz |
| | | | | Start Freq 5.62347525 GHz |
| #Samp Log | 30 dB | | | Stop Freq 5.71652475 GHz |
| 10 dB/ Offst 17.5 | | | 14.4 L | CF Step 9.30495000 MHz <u>Auto Mar</u> |
| dB | #VBW 3 MHz | Span Sweep 20 ms | 93.05 MHz | Freq Offset 0.00000000 Hz |
| Channel Power | | Power Spectral D | • • | Signal Track On <u>Off</u> |
| 13.09 dBm /62.0 | 0330 MHz | -64.84 dE | 3m/Hz | |
| L Copyright 2000-2009 Agilent T | echnologies | | | |

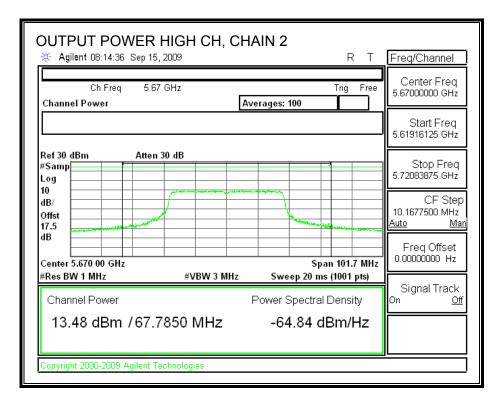
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CHAIN 2 OUTPUT POWER





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7.9.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 17.5 dB (including 10 dB pad and 7.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency | Chain 1 | Chain 2 | Total |
|---------|-----------|---------|---------|-------|
| | | Power | Power | Power |
| | (MHz) | (dBm) | (dBm) | (dBm) |
| Low | 5510 | 10.14 | 10.74 | 13.46 |
| Middle | 5590 | 16.03 | 16.41 | 19.23 |
| High | 5670 | 12.90 | 13.31 | 16.12 |

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7.9.4. PEAK POWER SPECTRAL DENSITY

<u>LIMITS</u>

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.47-5.725 GHz band, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 11 dBm.

TEST PROCEDURE

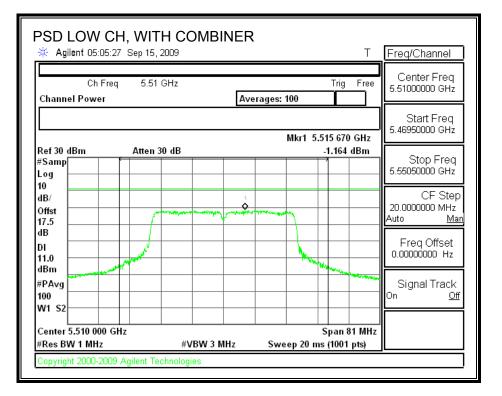
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

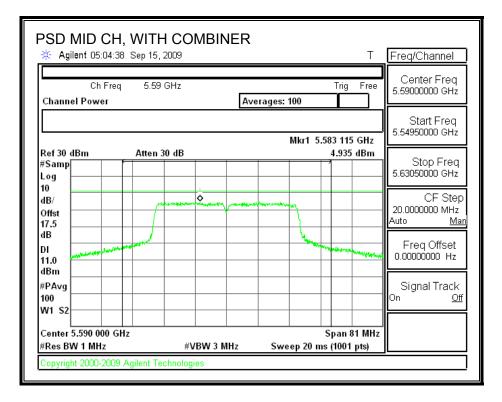
RESULTS

| Channel | Frequency | PPSD With Combiner | Limit | Margin |
|---------|-----------|--------------------|-------|--------|
| | (MHz) | (dBm) | (dBm) | (dB) |
| Low | 5510 | -1.16 | 11 | -12.16 |
| Middle | 5590 | 4.94 | 11 | -6.07 |
| High | 5670 | 1.13 | 11 | -9.87 |

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POWER SPECTRAL DENSITY WITH COMBINER





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| Agilent 05:03:36 Sep 1 | 5,2009 | | | Т | Freq/Channel |
|---------------------------------------|----------|----------|------------|-------------------------|--|
| Ch Freq 5. Channel Power | 67 GHz | Averages | | Trig Fre | Center Freq 5.67000000 GHz |
| | | | | 53 520 GHz | Start Freq 5.62950000 GHz |
| Ref 30 dBm Atte #Samp Log 10 | n 30 dB | | | 1.127 dBm | Stop Freq |
| dB/ Offst 17.5 dB | × * | V | ~ | | CF Step 8.1000000 MHz <u>Auto Ma</u> |
| DI 11.0 dBm | | | | Marriel - | Freq Offset 0.00000000 Hz |
| #PAvg 100 W1 S2 | | | | | Signal Track On <u>Off</u> |
| Center 5.670 000 GHz #Res BW 1 MHz | #VBW 8 I | MH7 Sv | veep 20 ms | pan 81 MH (1001 pts) | IZ |

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7.9.5. PEAK EXCURSION

<u>LIMITS</u>

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner.

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

CHAIN 1

| Channel | Frequency | Peak Excursion | Limit | Margin |
|---------|-----------|----------------|-------|--------|
| | (MHz) | (dB) | (dB) | (dB) |
| Low | 5510 | 10.16 | 13 | -2.84 |
| Middle | 5590 | 10.89 | 13 | -2.11 |
| High | 5670 | 10.59 | 13 | -2.41 |

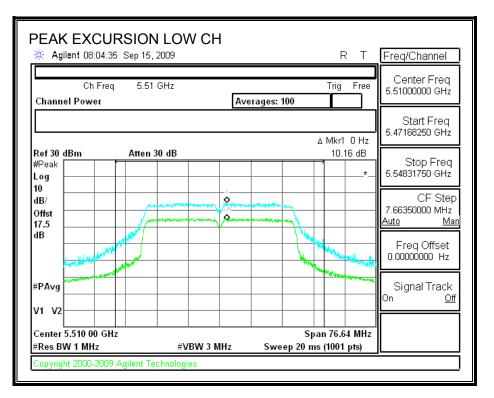
CHAIN 2

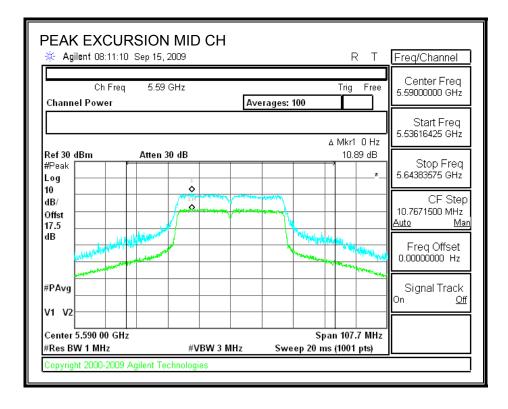
| Channel | Frequency | Peak Excursion | Limit | Margin |
|---------|-----------|----------------|-------|--------|
| | (MHz) | (dB) | (dB) | (dB) |
| Low | 5510 | 9.31 | 13 | -3.69 |
| Middle | 5590 | 9.90 | 13 | -3.10 |
| High | 5670 | 10.04 | 13 | -2.96 |

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REPORT NO: 09U12784-2 FCC ID: EW4DWMW034 CHAIN 1

PEAK EXCURSION





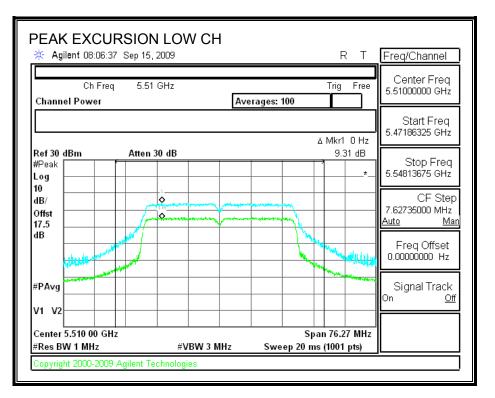
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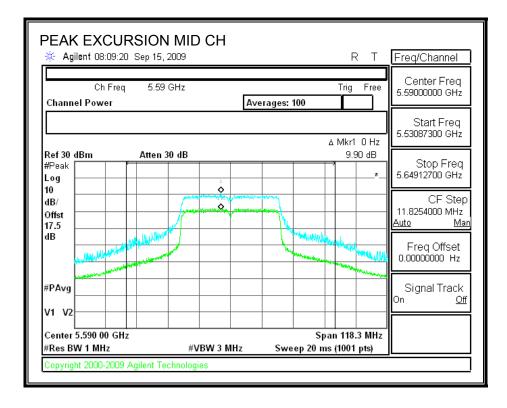
| PEAK EXCURSION | | | RΤ | Freq/Channel |
|--------------------------------------|------------|------------------|---------------------------------|---|
| Ch Freq 5.67 Channel Power | GHz | Averages: 100 | Trig Free | Center Freq 5.67000000 GHz |
| | | - | ∆ Mkr1 0 Hz | Start Freq 5.62347525 GHz |
| Ref 30 dBm Atten #Peak Log | 30 dB | | 10.59 dB | Stop Freq 5.71652475 GHz |
| 10 dB/ Offst 17.5 | | | | CF Step 9.30495000 MHz <u>Auto Ma</u> |
| dB | | | | Freq Offset 0.00000000 Hz |
| #PAvg | | | And the Baland Astrophysics and | Signal Track On <u>Of</u> |
| Center 5.670 00 GHz #Res BW 1 MHz | #VBW 3 MHz | Sp Sweep 20 m | an 93.05 MHz s (1001 pts) | |

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REPORT NO: 09U12784-2 FCC ID: EW4DWMW034 CHAIN 2

PEAK EXCURSION





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| - Agilent 08:14:54 Sep 15 | , 2009 | | | R | 2 T | Freq/Channel |
|---|--------|--------|------------------|--------------------------|--------------|---|
| Ch Freq 5.6. Channel Power | 7 GHz | Averag | es: 100 | Trig | Free | Center Freq 5.67000000 GHz |
| | | | | ∆ Mkr1 | 0 Hz | Start Freq 5.61916125 GHz |
| #Peak | 30 dB | | | 10.0 |)4 dB * | Stop Freq 5.72083875 GHz |
| 10 dB/ Offst 7.5 | | | 7 | | | CF Step 10.1677500 MHz <u>Auto Ma</u> |
| dB | | | | | ulles de lot | Freq Offset 0.00000000 Hz |
| #PAvg | | | | Hill market | Marton Vine | Signal Track On <u>Of</u> t |
| V1 V2 Center 5.670 00 GHz #Res BW 1 MHz | #VBW 3 | MHz | Si Sweep 20 n |) an 101. ns (1001 | | |

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7.9.6. CONDUCTED SPURIOUS EMISSIONS

<u>LIMITS</u>

FCC §15.407 (b) (3)

IC RSS-210 A9.3 (3)

For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

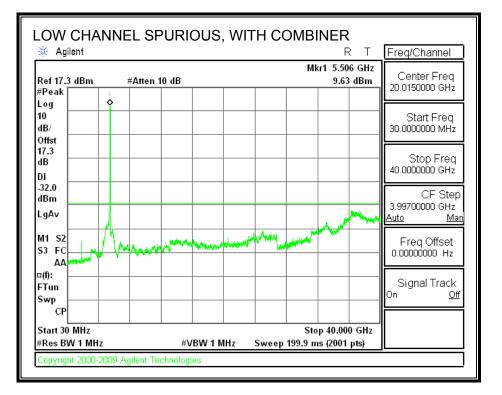
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

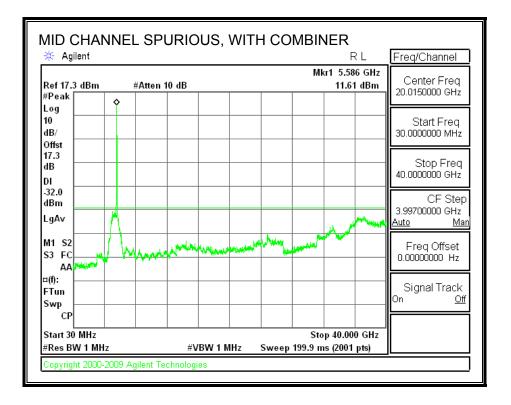
Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

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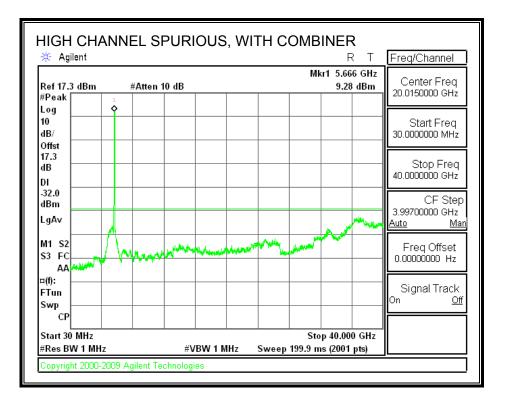
RESULTS

SPURIOUS EMISSIONS WITH COMBINER





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8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

<u>LIMITS</u>

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
|--------------------------|---------------------------------------|---|
| 30 - 88 | 100 | 40 |
| 88 - 216 | 150 | 43.5 |
| 216 - 960 | 200 | 46 |
| Above 960 | 500 | 54 |

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

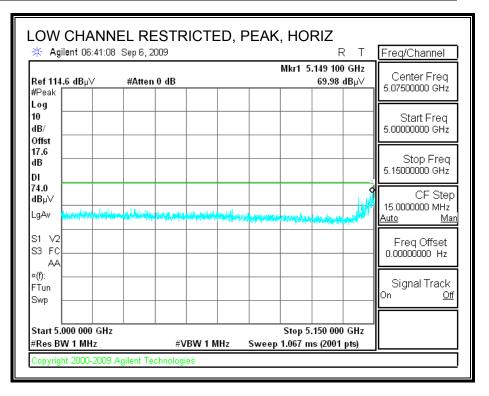
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each appplicable band.

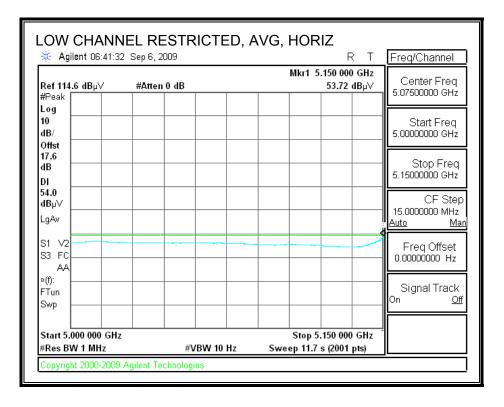
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

BAND

8.2. TRANSMITTER ABOVE 1 GHz 8.2.1. 802.11a DUAL CHAIN LEGACY MODE IN THE LOWER 5.2 GHz

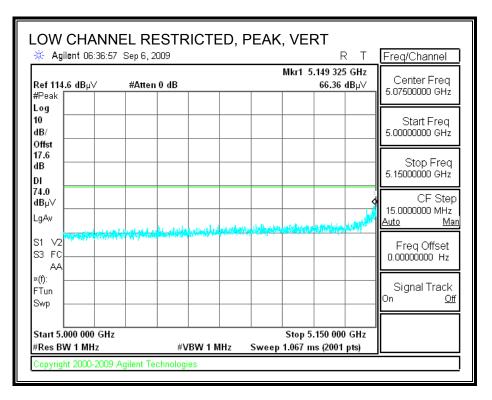
DIPOLE ANTENNA - RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

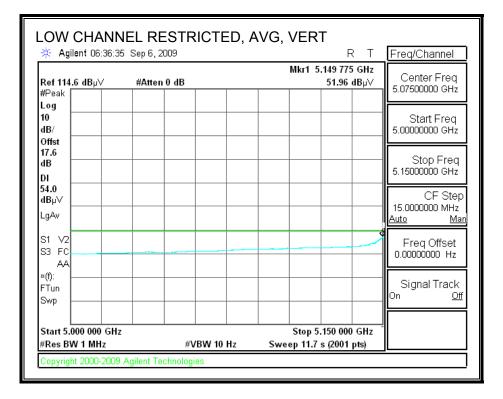




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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





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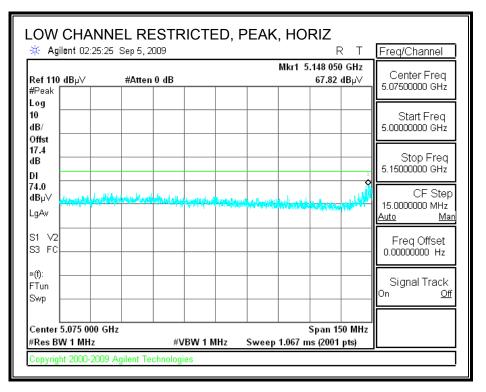
HARMONICS AND SPURIOUS EMISSIONS

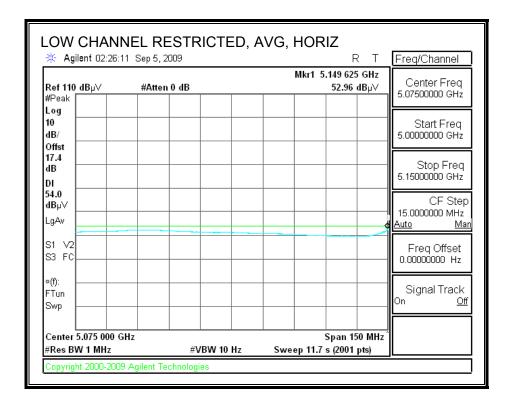
| F | | D | | | | | | | | | | | |
|--|--------------------------|----------------------|--------------|-------------|----------------|--|------------|--------------|--------------|---------------|--------------|--------|-------|
| Test Engr: | | Devin Cl 09/07/08 | - | | | | | | | | | | |
| Date: | | | | | | | | | | | | | |
| Project #: | | 09J12784 | | | | | | | | | | | |
| Company: | | Mitsumi | | | | | | | | | | | |
| EUT Descri | - | | | nna) i | with La | ptop | | | | | | | |
| Mode Oper | | Tx_a mo | | | | | | | | | | | |
| | | | | | - | Preamp Gain Average Field Strength Limit | | | | | | | |
| | | | | | | Distance | | | | | ld Strength | | |
| | Read | Analyzer | - | | Avg | - | | trength @ | | _ | s. Average | | |
| | AF | Antenna | | | Peak | | | Field Stre | ength | Margin v | rs. Peak Lis | nit | |
| | CL | Cable Los | 55 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| CHz | (m) | dBuV | dB/m | dB | dB | dB | dB | | dBuV/m | dB | V/H | P/A/QP | |
| 5180MHz | | | | | | | | | | | | - | |
| 10.360 | 3.0 | 44.5 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 57.0 | 74.0 | -17.0 | н | P | |
| 10.360 | 3.0 | 32.0 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 44.6 | 54.0 | -9.4 | H | A | |
| 15.540 | 3.0 | 40.8 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 59.5 | 74.0 | -14.5 | H | P | |
| 15.540 | 3.0 | 27.3 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 45.9 | 54.0 | - 8.1 | H | Α | |
| 10.360 | 3.0 | 49.9 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 62.4 | 74.0 | - 11.6 | V | P | |
| 10.360 | 3.0 | 36.1 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 48.6 | 54.0 | -5.4 | V | A | |
| 15.540 | 3.0 | 44.3 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 62.9 | 74.0 | -11.1 | V | P | |
| 15.540 | 3.0 | 30.4 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 49.1 | 54.0 | -4.9 | V | A | |
| 5200MHz | | ļ | | | | ļ | | | | | | | |
| 10.400 | 3.0 | 43.8 | 37.5 | 8.9 | -34.6 | 0.0 | 0.8 | 56.4 | 74.0 | - 17.6 | H | P | |
| 10.400 | 3.0 | 32.2 | 37.5 | 8.9 | -34.6 | 0.0 | 0.8 | 44.8 | 54.0 | -9.2 | H | A | |
| 15.600 | 3.0 | 41.2 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 59.7 | 74.0 | -14.3 | H | P | |
| 15.600 | 3.0 | 27.8 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 46.4 | 54.0 | -7.6 | H | A | |
| 10.400 | 3.0 | 49.4 | 37.5 | 8.9 | -34.6 | 0.0 | 0.8 | 62.0 | 74.0 | -12.0 | V | P | |
| 10.400 | 3.0 | 35.8 | 37.5 | 8.9 | -34.6 | 0.0 | 0.8 | 48.4 | 54.0 | -5.6 | V | A | |
| 15.600 | 3.0 | 44.8 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 63.4 | 74.0 | -10.6 | V | P | |
| 15.600 5240MHz | 3.0 | 31.2 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 49.8 | 54.0 | -4.2 | V | A | |
| | 20 | 44.9 | 37.5 | 0.0 | 24 = | 0.0 | 0.0 | | 74.0 | 16.4 | ŢŢ | D | |
| | 3.0 | 44.8 33.3 | 37.5 | 9.0 9.0 | -34.5 -34.5 | 0.0 | 0.8 0.8 | 57.6 46.0 | 74.0 54.0 | -16.4 -8.0 | H H | P A | |
| 10.480 | 20 | | 37.5 | 9.0 11.4 | -34.5 | 0.0 | 0.8 | 46.0 59.4 | 54.0 74.0 | -8.0 -14.6 | н Н | A P | |
| 10.480 10.480 | 3.0 | | | 11.4 | -32.3 | 0.0 | 0.7 | 59.4 45.8 | 74.0 54.0 | -14.0 -8.2 | н Н | A | |
| 10.480 10.480 15.720 | 3.0 | 41.1 | 384 | | | : U.U | · • • / | : 10.0 | 0-h.U | -0.4 | | | |
| 10.480 10.480 15.720 15.720 | 3.0 3.0 | 27.5 | 38.4 | ¢ | | ¢ | 0.8 | 64.0 | 74.0 | -10.0 | V | P | |
| 10.480 10.480 15.720 15.720 10.480 | 3.0 3.0 3.0 | 27.5 51.2 | 37.5 | 9.0 | -34.5 | 0.0 | 0.8 | 64.0 50.9 | 74.0 54.0 | -10.0 | v v | P | |
| 10.480 10.480 15.720 15.720 10.480 10.480 | 3.0 3.0 3.0 3.0 | 27.5 51.2 38.1 | 37.5 37.5 | 9.0 9.0 | -34.5 -34.5 | 0.0 0.0 | 0.8 | 50.9 | 54.0 | - 3.1 | V | A | |
| 10.480 10.480 15.720 15.720 10.480 | 3.0 3.0 3.0 | 27.5 51.2 | 37.5 | 9.0 | -34.5 | 0.0 | | | | | | | |

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PIFA ANTENNA

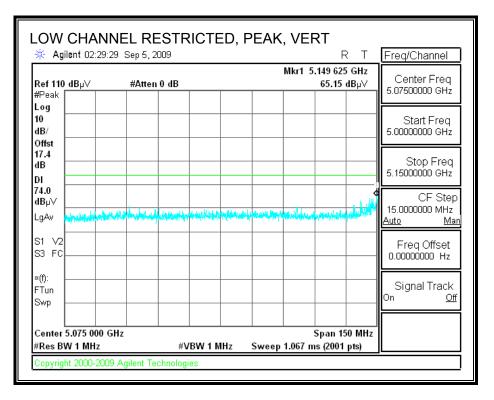
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

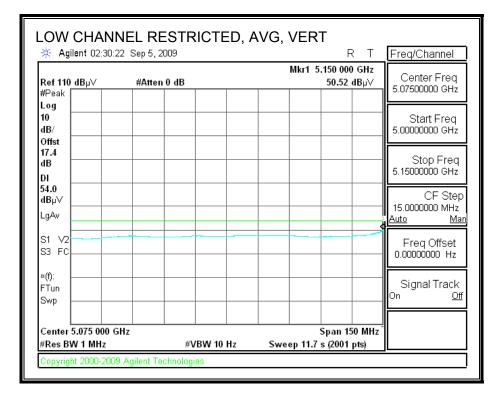




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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





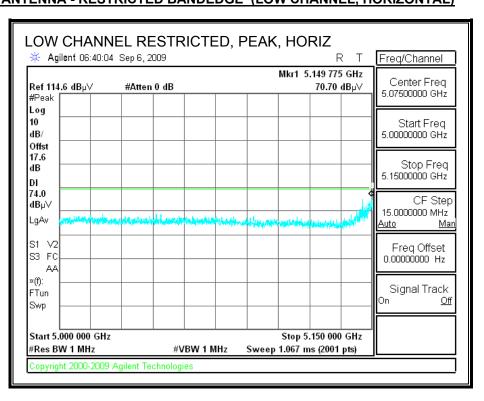
Page 232 of 344

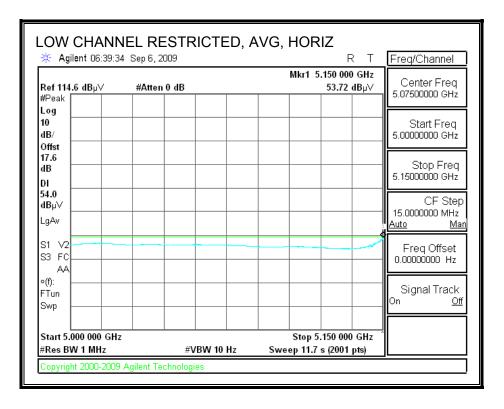
HARMONICS AND SPURIOUS EMISSIONS

| Test Engr | | Devin C | hang | | | | | | | | | | |
|-------------------|---|--------------|--------------|-------------|--|------------|------------|--------------|--------------|--|------------|--------|--------|
| Date: | | 09/09/08 | | | | | | | | | | | |
| Project # | : | 09J1278 | | | | | | | | | | | |
| Company | | Mitsumi | | | | | | | | | | | |
| | - | EUT(PIF. | | na) wi | ith Lapt | ор | | | | | | | |
| Mode Op | | Tx_a mo | | | | _ | | | | | | | |
| | f | Measuren | | - | Preamp Gain Average Field Strength Limit Distance Correct to 3 meters Peak Field Strength Limit | | | | | | | | |
| | Dist | | | | | | | | | | | | |
| | Read Analyzer Reading Avg AF Antenna Factor Peak | | | Avg Peak | _ | | trength @ | | _ | Average Destation | | | |
| | AF CL | Cable Lo | | | HPF | High Pas | | : Field Stre | engtn | Margin V | s. Peak Li | mit | |
| | CL | Cable Lo | 55 | | TIFT . | riigh Fas | s rute | | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | | dBuV/m | | V/H | P/A/QP | 110120 |
| 5180MHz | | | | | | | | | | | | | |
| 10.360 | 3.0 | 41.9 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 54.4 | 68.2 | -13.8 | н | Р | |
| 15.540 | 3.0 | 38.9 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 57.6 | 74.0 | - 16.4 | H | P | |
| 15.540 | 3.0 | 25.8 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 44.5 | 54.0 | - 9.5 | H | A | |
| 10.360 | 3.0 | 47.9 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 60.4 | 68.2 | - 7.8 | V | P | |
| 15.540 | 3.0 | 42.2 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 60.9 | 74.0 | -13.1 | <u>v</u> | P | |
| 15.540 5200MHz | 3.0 | 28.4 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 47.1 | 54.0 | - <mark>6.9</mark> | V | A | |
| 5200MH2 | 3.0 | 42.4 | 37.5 | 8.9 | -34.6 | 0.0 | 0.8 | 55.0 | 68.2 | -13.2 | н | Р | |
| 15.600 | 3.0 | 38.3 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 56.9 | 74.0 | -17.1 | H | P | |
| 15.600 | 3.0 | 25.9 | | 11.4 | -32.3 | 0.0 | 0.7 | 44.4 | 54.0 | -9.6 | H | Ā | |
| 10.400 | 3.0 | 47.6 | 37.5 | 8.9 | -34.6 | 0.0 | 0.8 | 60.2 | 68.2 | - <mark>8.0</mark> | V | P | |
| 15.600 | 3.0 | 41.3 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 59.9 | 74.0 | -14.1 | V | Р | |
| 15.600 | 3.0 | 28.2 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 46.7 | 54.0 | -7.3 | V | A | |
| 5240MHz | | 40.0 | | | 24.5 | | | 0 | <i>(</i> 0.0 | 12.0 | | | |
| 10.480 15.720 | 3.0 | 42.2 39.4 | 37.5 38.4 | 9.0 11.4 | -34.5 -32.3 | 0.0 0.0 | 0.8 0.7 | 55.0 57.7 | 68.2 74.0 | -13.2 -16.3 | H H | P P | |
| 15.720 | 3.0 | 26.3 | | 11.4 | -32.3 | 0.0 | 0.7 | 44.6 | 54.0 | -10.5 | H | A | |
| 10.480 | 3.0 | 48.7 | 37.5 | 9.0 | -34.5 | 0.0 | 0.8 | 61.5 | 68.2 | -6.7 | v | P | |
| 15.720 | 3.0 | 39.4 | 38.4 | 11.4 | -32.3 | 0.0 | 0.7 | 57.7 | 74.0 | -16.3 | V | P | |
| | 3.0 | 27.2 | 38.4 | 11.4 | -32.3 | 0.0 | 0.7 | 45.5 | 54.0 | - 8.5 | V | A | |
| 15.720 | | | | Į | | ļ | | | | | | | |

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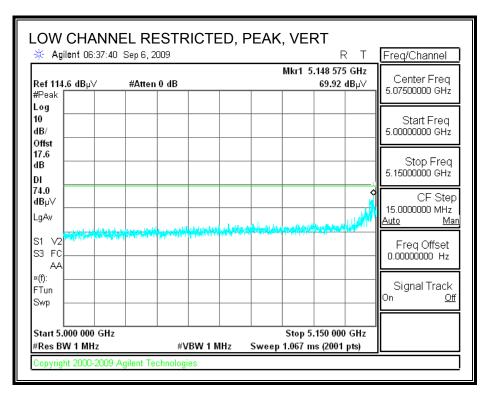
8.2.2. 802.11n HT20 MODE IN THE LOWER 5.2 GHz BAND DIPOLE ANTENNA - RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

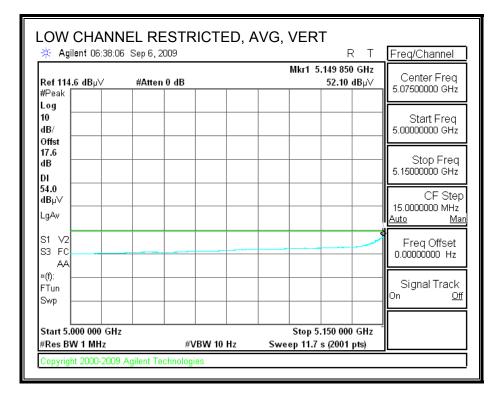




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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





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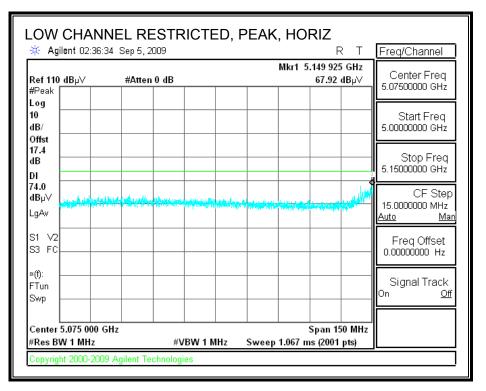
HARMONICS AND SPURIOUS EMISSIONS

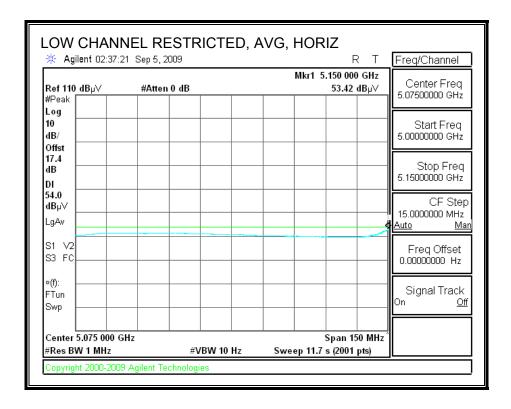
| Test Engr | | Devin C | hang | | | | | | | | | | |
|------------------|------------|--------------|--------------|-------------|----------------|------------|------------|--------------|-----------------|--------------------|------------------|----------------|-------|
| Date: | | 09/13/08 | | | | | | | | | | | |
| Project # | : | 09J1278 | 4 | | | | | | | | | | |
| Company | 7 : | Mitsumi | i | | | | | | | | | | |
| EUT Desc | ription: | EUT(Dip | ole ante | enna) i | with La | ptop | | | | | | | |
| Mode Op | er: | Tx_HT20 |) | | | | | | | | | | |
| | f | Measuren | | | - | Preamp (| | | | _ | Field Stren | - | |
| | Dist | | | | | Distance | | | | Peak Fiel | | | |
| | | | Reading | | Avg | _ | | trength @ | | _ | s. Average | | |
| | AF | Antenna | | | Peak | | | Field Stre | ength | Margin v | s. Peak Lis | mit | |
| | CL | Cable Lo | 55 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | | | D Corr | 171. | Corr. | T 1 1 | | A | Det. | Notes |
| GHz | (m) | dBuV | Ar dB/m | CL dB | Amp dB | dB | Fltr dB | | Limit dBuV/m | | Ant. Pol. V/H | Det. P/A/QP | Notes |
| 5180MH2 | | abuv | ub/m | ab | ab | <u>ab</u> | ab | abuv/m | abuv/m | an | V/11 | ringr | |
| 10.360 | 3.0 | 44.3 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 56.8 | 68.2 | -11.4 | н | P | |
| 15.540 | 3.0 | 40.5 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 59.2 | 74.0 | -14.8 | H | P | |
| 15.540 | 3.0 | 26.8 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 45.5 | 54.0 | -8.5 | H | Ā | |
| 10.360 | 3.0 | 46.5 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 59.0 | 68.2 | - 9.2 | V | P | |
| 15.540 | 3.0 | 41.8 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 60.5 | 74.0 | -13.5 | V | P | |
| 15.540 | 3.0 | 28.4 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 47.1 | 54.0 | - <mark>6.9</mark> | V | A | |
| 5200MH2 | | | | | | ļ | | | | | | _ | |
| 10.400 | 3.0 | 42.2 39.4 | 37.5 38.7 | 8.9 11.4 | -34.6 -32.3 | 0.0 0.0 | 0.8 0.7 | 54.8 | 68.2 74.0 | -13.4 -16.1 | H H | P | |
| 15.600 15.600 | 3.0 | 26.4 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 57.9 45.0 | 74.0 54.0 | -10.1 -9.0 | H | P A | |
| 10.400 | 3.0 | 46.9 | 37.5 | 8.9 | -34.6 | 0.0 | 0.8 | 59.5 | 68.2 | -8.7 | v | P | |
| 15.600 | 3.0 | 43.1 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 61.7 | 74.0 | -12.3 | V | P | |
| 15.600 | 3.0 | 29.9 | 38.7 | ¢ | -32.3 | 0.0 | 0.7 | 48.4 | 54.0 | - 5.6 | V | A | |
| 5240MH2 | 5 | | | | | ļ | | | | ĮĮ | | | |
| 10.480 | 3.0 | 45.6 | 37.5 | 9.0 | -34.5 | 0.0 | 0.8 | 58.4 | 68.2 | - <mark>9.8</mark> | H | Р | |
| 15.720 | 3.0 | 42.6 | 38.4 | 11.4 | -32.3 | 0.0 | 0.7 | 60.9 | 74.0 | -13.1 | H | P | |
| 15.720 | 3.0 | 28.6 | | 11.4 | -32.3 | 0.0 | 0.7 | 46.9 | 54.0 | -7.1 | H V | A | |
| 10.480 15.720 | 3.0 | 47.8 45.5 | 37.5 38.4 | 9.0 11.4 | -34.5 -32.3 | 0.0 0.0 | 0.8 0.7 | 60.6 63.8 | 68.2 74.0 | -7.6 -10.2 | v | P P | |
| | 3.0 | 31.4 | | 11.4 | -32.3 | 0.0 | 0.7 | 49.6 | 54.0 | -4.4 | v | A | |
| 15.720 | | | | | | | | | - | 11 | | | |

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PIFA ANTENNA

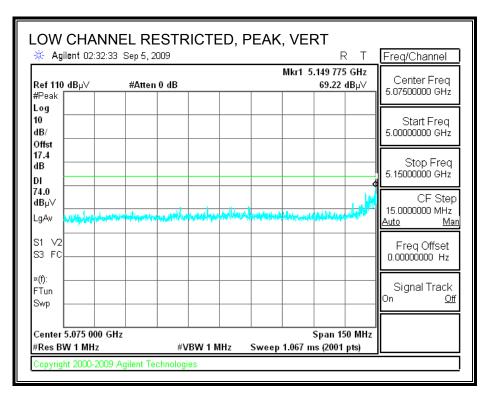
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

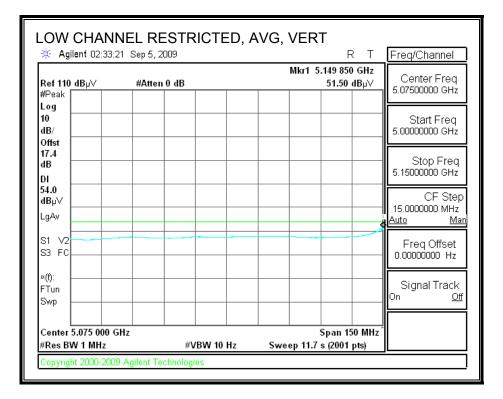




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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



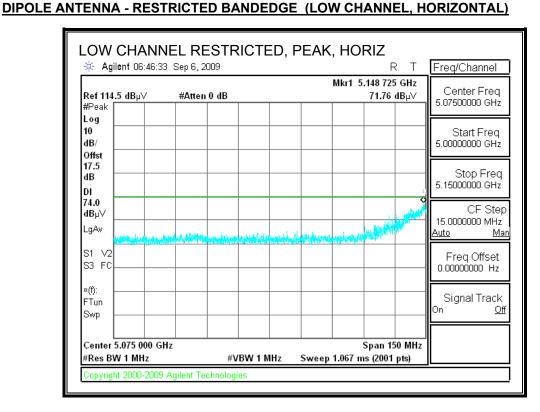


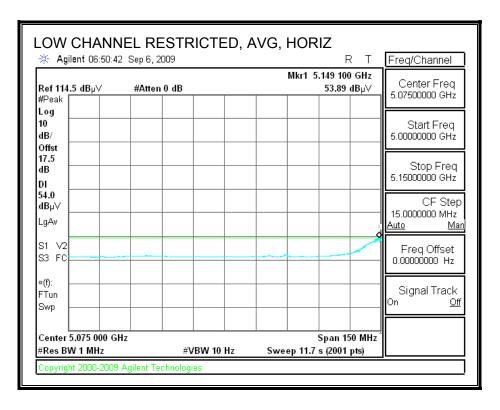
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| Fest Engr | | Devin C | hang | | | | | | | | | | |
|------------------|------------|--------------|--------------|-------------|----------------|------------|------------|--------------|--------------|--------------------|------------------|----------------|-------|
| Date: | | 09/09/08 | | | | | | | | | | | |
| Project # | | 09J1278 | 4 | | | | | | | | | | |
| Company | 7 1 | Mitsumi | i i | | | | | | | | | | |
| EUT Desc | ription: | EUT(PIF. | A anten | na) wi | th Lapt | ор | | | | | | | |
| Mode Op | er: | Tx_HT20 |) | | | | | | | | | | |
| | f | Measuren | | • | • | Preamp (| | | | _ | Field Stren | - | |
| | Dist | Distance | | | | Distance | | | | | ld Strength | | |
| | Read | Analyzer | - | | Avg | | | trength @ | | | s. Average | | |
| | AF | Antenna | | | Peak | | | c Field Str | ength | Margin v | s. Peak Li | mit | |
| | CL | Cable Los | 38 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | CL | | D Corr | Fltr | Corr. | Limit | . · | A | Det. | Notes |
| GHz | (m) | dBuV | Ar dB/m | dB | Amp dB | dB | dB | | dBuV/m | | Ant. Pol. V/H | Det. P/A/QP | Notes |
| 5180MHz | | abuv | ub/m | ab | ab | ab | ab | abuv/m | dDuv/m | an | V/11 | ringr | |
| 10.360 | 3.0 | 39.9 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 52.4 | 68.2 | -15.8 | H | Р | |
| 15.540 | 3.0 | 38.1 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 56.8 | 74.0 | -17.2 | H | P | |
| 15.540 | 3.0 | 25.6 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 44.3 | 54.0 | - 9.7 | H | A | |
| 10.360 | 3.0 | 46.4 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 58.9 | 68.2 | - 9.3 | V | P | |
| 15.540 | 3.0 | 43.9 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 62.5 | 74.0 | -11.5 | V | P | |
| 15.540 | 3.0 | 28.7 | 38.9 | 11.3 | -32.3 | 0.0 | 0.7 | 47.4 | 54.0 | - <mark>6.6</mark> | V | A | |
| 5200MHz | | | ~ ~ ~ | | | | | | | | | _ | |
| 10.400 15.600 | 3.0 3.0 | 43.3 38.0 | 37.5 38.7 | 8.9 11.4 | -34.6 -32.3 | 0.0 0.0 | 0.8 0.7 | 55.9 56.5 | 68.2 74.0 | -12.3 | H H | P | |
| 15.600 | 3.0 | 38.0 25.5 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 44.0 | 74.0 54.0 | -17.5 -10.0 | н Н | P A | |
| 10.400 | 3.0 | 47.1 | 37.5 | 8.9 | -34.6 | 0.0 | 0.8 | 59.7 | 68.2 | -10.0 | v | P | |
| 15.600 | 3.0 | 41.6 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 60.1 | 74.0 | -13.9 | V | P | |
| 15.600 | 3.0 | 28.6 | 38.7 | 11.4 | -32.3 | 0.0 | 0.7 | 47.2 | 54.0 | - 6.8 | V | A | |
| 5240MHz | : | | | | | ļ | | | | | | | |
| 10.480 | 3.0 | 40.7 | 37.5 | 9.0 | -34.5 | 0.0 | 0.8 | 53.5 | 68.2 | -14.7 | H | Р | |
| 15.720 | 3.0 | 38.4 | 38.4 | 11.4 | -32.3 | 0.0 | 0.7 | 56.7 | 74.0 | -17.3 | H | Р | |
| 15.720 | 3.0 | 25.3 | | 11.4 | -32.3 | 0.0 | 0.7 | 43.6 | 54.0 | -10.4 | H | A | |
| 10.480 | 3.0 3.0 | 47.3 41.2 | 37.5 38.4 | 9.0 11.4 | -34.5 -32.3 | 0.0 0.0 | 0.8 0.7 | 60.0 59.5 | 68.2 74.0 | -8.2 -14.5 | v v | P P | |
| | 3.0 | 41.2 27.5 | 38.4 | 11.4 | -32.3 | 0.0 | 0.7 | 45.8 | 74.0 54.0 | -14.5 | v | A | |
| 15.720 15.720 | | | | | | | ~ | | - 110 | | * | | |

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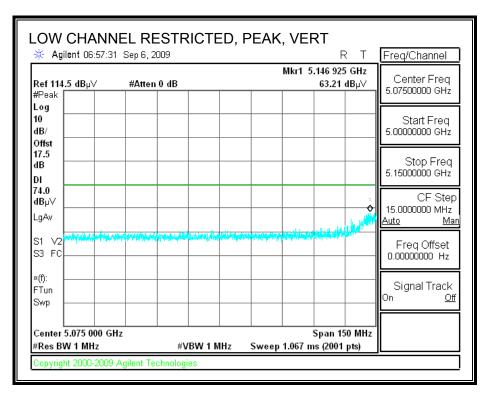
8.2.3. 802.11n HT40 MODE IN THE LOWER 5.2 GHz BAND

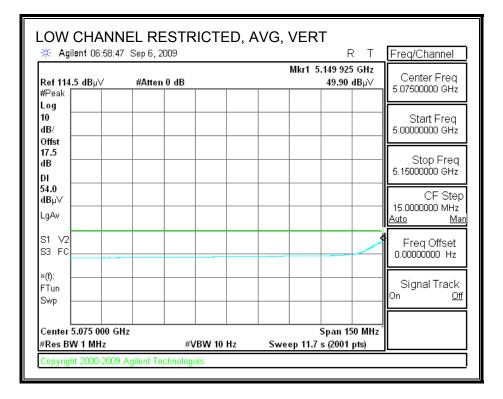




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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





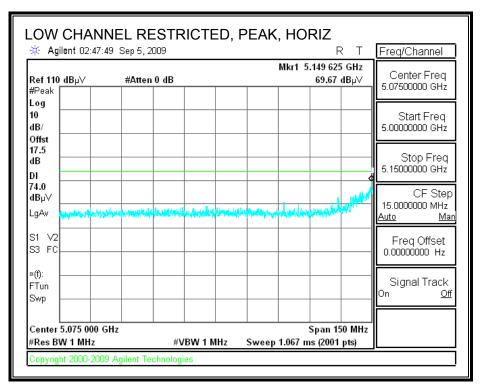
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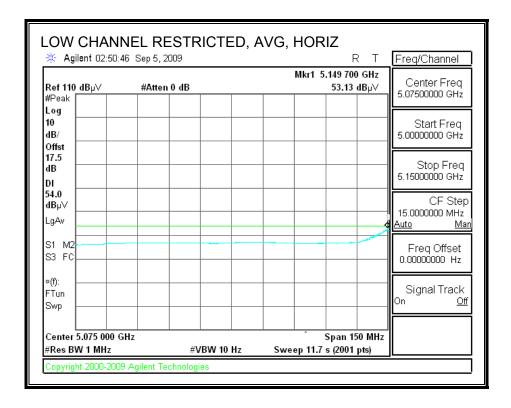
| - | | Measuren tification | | s, Frei | mont 5n | n Chamb | er | | | | | | |
|----------------|------------|------------------------|--------------|-------------|----------------|--------------|---------------|--------------|--------------|--------------------|--------------|------------|-------|
| - | | | | | | | | | | | | | |
| est Engr | : | Devin C | _ | | | | | | | | | | |
|)ate: | | 09/13/08 | | | | | | | | | | | |
| roject #: | | 09J1278 | 4 | | | | | | | | | | |
| Company | | Mitsumi | | | | | | | | | | | |
| UT Desc | ription: | EUT(Dip | ole ante | nna) i | with Lap | ptop | | | | | | | |
| lode Op | er: | Tx_HT40 | | | | | | | | | | | |
| | f | Measuren | | | Amp | Preamp (| Jain | | | _ | Field Stren | - | |
| | Dist | Distance | to Anter | na | D Corr | Distance | Correc | t to 3 me | ters | Peak Fie | ld Strength | Limit | |
| | Read | Analyzer | | | Avg | Average | Field St | trength @ | 3 m | Margin v | s. Average | Limit | |
| | AF | Antenna | Factor | | Peak | Calculate | d Peak | Field Stre | ength | Margin v | rs. Peak Lis | mit | |
| | CL | Cable Los | is | | HPF | High Pas | s Filter | | | | | | |
| | . D | | 47 | 01 | | D.C. | 771. | | | | A (D 1 | D (| N. (|
| f CH- | Dist | Read | AF | CL dB | • | D Corr dB | | Corr. | | | Ant. Pol. | | Notes |
| GHz | (m) | dBuV | dB/m | aß | dB | ab | aB | abuV/m | dBuV/m | dB | V/H | P/A/QP | |
| 190MHz | | 20.0 | 27 / | | 34.6 | | 0.0 | 50 7 | (0.0 | 17.0 | TT | n | |
| 0.380 | 3.0 | 38.2 | 37.4 | 8.9 | -34.6 | 0.0 | 0.8 | 50.7 | 68.2 | -17.5 | H | P | |
| 5.570 5.570 | 3.0 3.0 | 34.8 22.4 | 38.8 38.8 | | -32.3 -32.3 | 0.0 0.0 | 0.7 0.7 | 53.4 41.0 | 74.0 | -20.6 | H H | P | |
| .380 | 3.0 | 36.6 | 37.4 | 11.4 8.9 | -34.6 | 0.0 | 0.7 | 41.0 | 54.0 68.2 | -13.0 -19.1 | л V | A | |
| 5.570 | 3.0 | 35.3 | 38.8 | | -34.0 | 0.0 | 0.8 | 49.1 53.9 | 08.2 74.0 | -19.1 | v | P P | |
| .570 | 3.0 | 22.3 | 38.8 | | o | 0.0 | 0.7 | 40.9 | 54.0 | -13.1 | v | A | |
| 230MHz | | | 20.0 | 11.7 | -04-0 | 0.0 | V./ | 40.2 | 24.0 | -10.1 | | | |
| .460 | 3.0 | 42.8 | 37.5 | 9.0 | -34.5 | 0.0 | 0.8 | 55.5 | 68.2 | -12.7 | H | Р | |
| 5.690 | 3.0 | 39.0 | 38.5 | | o | \$< | 0.7 | 57.3 | 74.0 | -16.7 | H | P | |
| 5.690 | 3.0 | 25.9 | 38.5 | | -32.3 | 0.0 | 0.7 | 44.3 | 54.0 | -9.7 | H | Ā | |
| 0.460 | 3.0 | 45.7 | 37.5 | 9.0 | -34.5 | 0.0 | 0.8 | 58.4 | 68.2 | - 9.8 | V | P | |
| 5.690 | 3.0 | 39.8 | 38.5 | 11.4 | -32.3 | 0.0 | 0.7 | 58.2 | 74.0 | - 15.8 | v v | P | |
| 5.690 | 3.0 | 27.7 | 38.5 | 11.4 | -32.3 | 0.0 | 0.7 | 46.0 | 54.0 | - <mark>8.0</mark> | V | Α | |
| | | | | | | | | | | | | | |
| ev. 4.1.2 | | | | | | | | | | | | | |
| ote: No | other e | <u>missions</u> | were de | tected | l above 1 | the system | <u>n nois</u> | e floor. | | | | | |

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PIFA ANTENNA

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

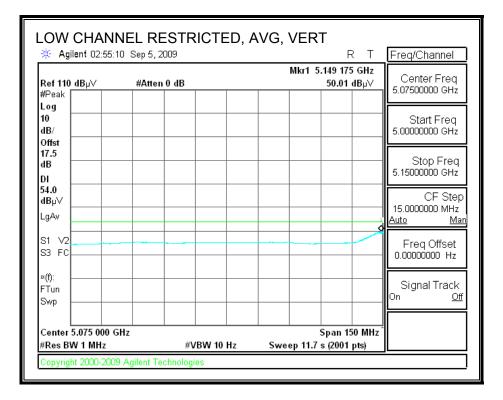




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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

| | | EL RESTR | RICTED, | PEAK, V | | |
|---------------------------|---|---------------------------|--|--|---------------------------------|---|
| 🔆 Agi | lent 02:54:22 | Sep 5, 2009 | | | RT | Freq/Channel |
| Ref 110 #Peak | dBµ∀ | #Atten 0 dB | | Mkr | 1 5.147 150 GHz 64.75 dBµ∨ | Center Freq 5.07500000 GHz |
| Log 10 dB/ Offst | | | | | | Start Freq 5.0000000 GHz |
| 17.5 dB DI | | | | | | Stop Freq 5.1500000 GHz |
| 74.0 dBµ∨ LgAv | Albert ver Andreweit | riteriti yili wa na misin | leadered and a line of the line of the | All and a second se | | CF Step 15.000000 MHz <u>Auto Man</u> |
| S1 V2 S3 FC | The second se | | | | | Freq Offset 0.00000000 Hz |
| ×(f): FTun Swp - | | | | | | Signal Track On <u>Off</u> |
| | 5.075 000 GH N 1 MHz | - | /BW 1 MHz | Sweep 1.06 | Span 150 MHz 7 ms (2001 pts) | |
| Copyrigh | nt 2000-2009 / | Agilent Technolog | ies | | | |



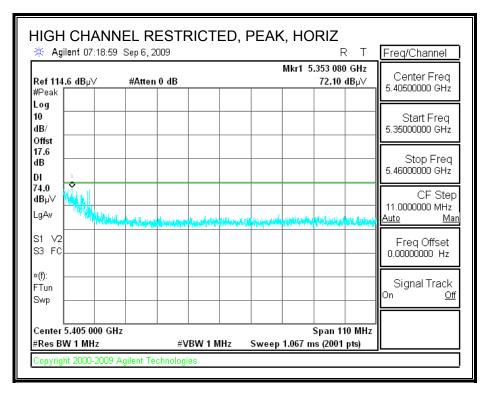
Page 244 of 344

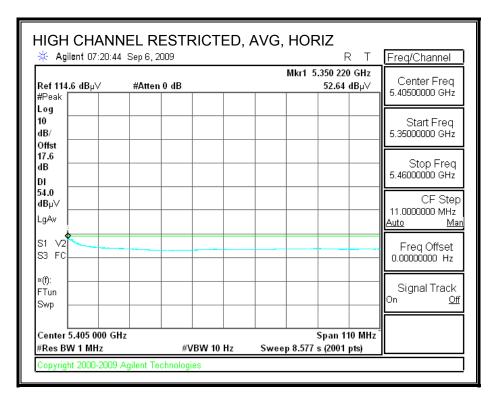
| - | | Measuren tification | | s, Frei | mont 5n | a Chamb | er | | | | | | |
|-----------------------|-------------|------------------------|--------------|------------|----------------|------------|------------|--------------|-----------------|----------------|------------------|----------------|--------|
| - | | | | | | | | | | | | | |
| est Engr | | Devin Cl | _ | | | | | | | | | | |
| ate: | | 09/09/08 | | | | | | | | | | | |
| roject #: | | 09J1278 | | | | | | | | | | | |
| ompany | | Mitsumi | | | | | | | | | | | |
| | - | EUT(PIF | | na) wi | ith Lapt | ор | | | | | | | |
| lode Op | | Tx_HT40 | | | | _ | | | | | | | |
| | f | Measuren | | | | Preamp (| | | | _ | Field Stren | - | |
| | Dist | Distance | | | | Distance | | | | | ld Strength | | |
| | Read | Analyzer | | | Avg | _ | | trength @ | | - | s. Average | | |
| | AF | Antenna | | | Peak | Calculate | | | ength | Margin v | rs. Peak Lir | nit | |
| | CL | Cable Los | is | | HPF | High Pas | s Filter | | | | | | |
| f | Dist | Read | AF | CL | A | D Corr | E14 | Corr. | Limit | March | Ant. Pol. | Det. | Notes |
| t GHz | Dist (m) | Kead dBuV | | dB | Amp dB | dB | | | Limit dBuV/m | Margin dB | Ant. Pol. V/H | Det. P/A/QP | Inotes |
| | | abuv | ab/m | ab | db | ab | ab | abuv/m | abuv/m | ab | v/n | PINIQP | |
| 190MHz | | 20.0 | 274 | 00 | 246 | 0.0 | 0.0 | en e | 20.1 | 15.7 | TT | D | |
| 0.380 5.570 | 3.0 | 39.9 36.6 | 37.4 38.8 | 8.9 | -34.6 -32.3 | 0.0 0.0 | 0.8 0.7 | 52.5 55.2 | 68.2 74.0 | -15.7 -18.8 | H H | P | |
| 5.570 5.570 | 3.0 | 30.0 24.6 | 38.8 | | -32.3 | 0.0 | 0.7 | 43.2 | 74.0 54.0 | -10.8 | п Н | P A | |
| 0.380 | 3.0 | 41.4 | 37.4 | 8.9 | -34.6 | 0.0 | 0.7 | 43.2 53.9 | 54.0 68.2 | -10.8 | v V | P | |
| 5.570 | 3.0 | 38.2 | 38.8 | | -34.0 | 0.0 | 0.8 | 56.8 | 74.0 | -14.5 | v | P | |
| 5.570 | 3.0 | 26.0 | 38.8 | | o | 0.0 | 0.7 | 44.6 | 54.0 | -9.4 | v | A | |
| 230MHz | | | | | | | | | ~ 114 | | | | |
| 0.460 | 3.0 | 37.7 | 37.5 | 9.0 | -34.5 | 0.0 | 0.8 | 50.5 | 68.2 | -17.7 | H | P | |
| 5.690 | 3.0 | 35.7 | 38.5 | | o | \$< | 0.7 | 54.1 | 74.0 | -19.9 | H | P | |
| 5.690 | 3.0 | 23.4 | 38.5 | | -32.3 | 0.0 | 0.7 | 41.8 | 54.0 | -12.2 | H | Α | |
| 0.460 | 3.0 | 44.3 | 37.5 | 9.0 | -34.5 | 0.0 | 0.8 | 57.0 | 68.2 | -11.2 | V | P | |
| 5. 69 0 | 3.0 | 38.1 | 38.5 | | -32.3 | 0.0 | 0.7 | 56.5 | 74.0 | - 17.5 | v v | P | |
| 5.690 | 3.0 | 25.1 | 38.5 | 11.4 | -32.3 | 0.0 | 0.7 | 43.4 | 54.0 | - 10.6 | V | A | |
| | | ļ | | | | ļ | | | | ļ | | | |
| ev. 4.1.2 fote: No | | missions | were de | tected | above t | the system | m nois | e floor. | | | | | |

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8.2.4. 802.11a DUAL CHAIN LEGACY MODE IN THE UPPER 5.2 GHz BAND

DIPOLE ANTENNA - RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

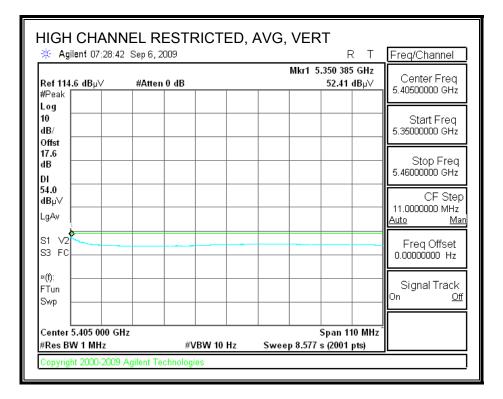




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RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

| HIGH CHANNEL | RESTRICTE | ED, PEAK, ' | VERT | |
|---------------------------------------|---|--|-----------------------------------|--|
| 🔆 🔆 Agilent 07:27:38 Sep | 6,2009 | | RT | Freq/Channel |
| Ref 114.6 dBµ∨ #At #Peak | ten 0 dB | Mk | r1 5.350 165 GHz 67.75 dBµ∨ | Center Freq 5.40500000 GHz |
| Log 10 dB/ Offst | | | | Start Freq 5.35000000 GHz |
| 17.6 dB DI | | | | Stop Freq 5.46000000 GHz |
| 74.0 dBµ∨ LgAv | where the management of the matching of the | an the state of the | rilmanirantahiranasi ayanyingi at | CF Step 11.0000000 MHz <u>Auto Man</u> |
| S1 V2 S3 FC | | | | Freq Offset 0.00000000 Hz |
| ×(f): FTun Swp | | | | Signal Track On <u>Off</u> |
| Center 5.405 000 GHz #Res BW 1 MHz | #VBW 1 M | Hz Sweep 1.0 | Span 110 MHz 67 ms (2001 pts) | |
| Copyright 2000-2009 Agilent | : Technologies | | | |



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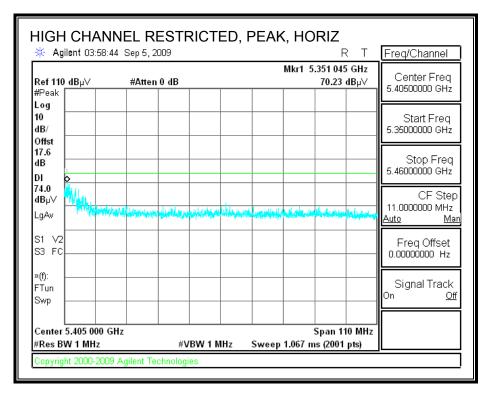
| Date: | | Devin C | hang | | | | | | | | | | |
|-------------------|------------|--------------|--------------|-------------|----------------|-----------|------------|--------------|--------------|----------------------|-------------|-----------|-------|
| | | 09/13/08 | | | | | | | | | | | |
| Project #: | | 09J1278 | 4 | | | | | | | | | | |
| Company | | Mitsumi | l | | | | | | | | | | |
| EUT Descr | iption: | EUT(Dip | ole ante | enna) 1 | with La | ptop | | | | | | | |
| Mode Ope | r: | Tx_a mo | de | | | | | | | | | | |
| | f | Measuren | nent Freq | quency | Amp | Preamp (| Gain | | | Average | Field Stren | gth Limit | |
| | Dist | Distance | to Anter | ina | D Corr | Distance | Correc | et to 3 me | eters | Peak Fiel | ld Strength | Limit | |
| | Read | Analyzer | Reading | | Avg | Average | Field S | trength @ | 3 m | Margin v | s. Average | Limit | |
| | AF | Antenna | Factor | | Peak | Calculate | d Peak | Field Str | ength | Margin v | s. Peak Li | mit | |
| | CL | Cable Los | 88 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | dBuV/m | dBuV/m | dB | V/H | P/A/QP | |
| 5260MHz | | | | | | | | | | | | | |
| 10.520 | 3.0 | 45.2 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 58.0 | 68.2 | -10.2 | H | P | |
| 15.780 | 3.0 | 41.7 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 59.9 | 74.0 | -14.1 | H | P | |
| 15.780 | 3.0 | 28.2 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 46.4 | 54.0 | - 7.6 | H | A | |
| 10.520 | 3.0 | 47.8 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 60.7 | 68.2 | -7.5 | V | Р | |
| 15.780 | 3.0 | 44.2 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 62.4 | 74.0 | -11.6 | V | P | |
| 15.780 | 3.0 | 30.6 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 48.8 | 54.0 | - 5.2 | V | A | |
| 5300MHz 10.600 | 2.0 | 50.2 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 63.2 | 74.0 | 10.0 | TT | | |
| 10.600 | 3.0 3.0 | 37.3 | 37.5 | 9.0 9.0 | -34.3 -34.3 | 0.0 | 0.8 | 50.3 | 74.0 54.0 | -10.8 -3.7 | H H | P A | |
| 15.900 | 3.0 | 40.9 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 58.9 | 74.0 | -15.1 | H | P | |
| 15.900 | 3.0 | 28.0 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 45.9 | 54.0 | -8.1 | H | Ā | |
| 10.600 | 3.0 | 50.7 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 63.7 | 74.0 | -10.3 | V | P | |
| 10.600 | 3.0 | 37.7 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 50.8 | 54.0 | -3.2 | V | A | |
| 15.900 | 3.0 | 45.0 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 62.9 | 74.0 | -11.1 | V | P | |
| 15.900 | 3.0 | 32.0 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 49.9 | 54.0 | -4.1 | V | A | |
| 5320MHz | | | | | | | | | | | | | |
| 10.640 | 3.0 | 50.5 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 63.6 | 74.0 | -10.4 | H | P | |
| 10.640 | 3.0 | 36.0 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 49.1 | 54.0 | -4.9 | H | A | |
| 15.960 | 3.0 3.0 | 41.9 28.8 | 37.7 37.7 | 11.5 | -32.2 -32.2 | 0.0 | 0.7 0.7 | 59.7 46.6 | 74.0 54.0 | -14.3 | H | P | |
| 15.960 10.640 | 3.0 | 28.8 52.8 | 37.6 | 11.5 9.1 | -34.2 | 0.0 | 0.7 | 46.6 | 54.0 74.0 | -7.4 -8.1 | H V | A P | |
| 10.640 | 3.0 | 37.9 | 37.6 | 9.1 9.1 | -34.2 | 0.0 | 0.8 | 51.0 | 74.0 54.0 | - 0.1 -3.0 | v | A | |
| 15.960 | 3.0 | 47.0 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 64.8 | 74.0 | -9.2 | v | P | |
| | 3.0 | 30.9 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 48.7 | 54.0 | -5.3 | v | Ā | |
| 15.960 | | | | | | . | | | | 1 | | | |

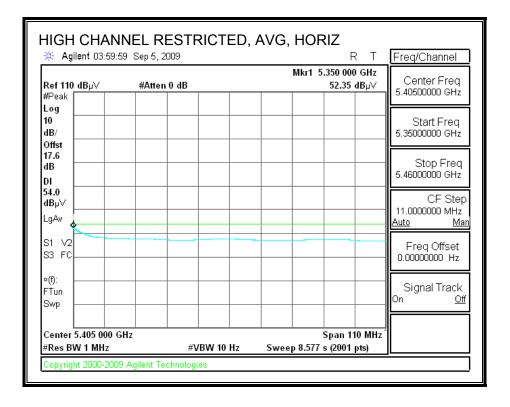
COMPLIANCE CERTIFICATION SERVICES FORM NO: CCSUP4701C 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661 This report shall not be reproduced except in full, without the written approval of CCS. FAX: (510) 661-0888

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PIFA ANTENNA

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

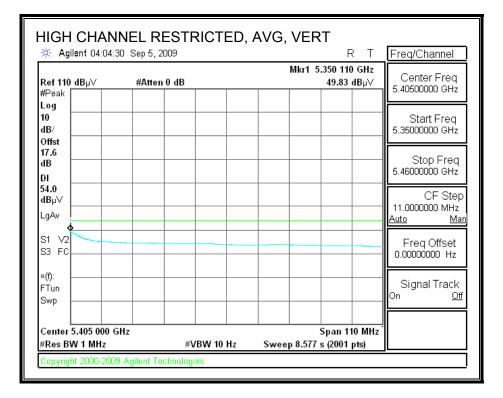




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RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

| HIGH CHANN | Sep 5, 2009 | TED, PEAK, V | ′ERT кт | Freq/Channel |
|--------------------------------------|---------------------------------|--|---------------------------------|--|
| Ref 110 dBµ∀ #Peak | #Atten 0 dB | Mkr1 | I 5.350 000 GHz 68.55 dBµ∀ | Center Freq 5.40500000 GHz |
| Log 10 dB/ Offst | | | | Start Freq 5.3500000 GHz |
| 17.6 dB DI | | | | Stop Freq 5.4600000 GHz |
| 74.0 dBµ∨ LgAv | n intritudentition teamperative | lin and a sector and a state of the state of | المطأم المجاري بغرام المراجع | CF Step 11.0000000 MHz <u>Auto Man</u> |
| S1 V2 S3 FC | | | | Freq Offset 0.00000000 Hz |
| ×(f): FTun Swp | | | | Signal Track On <u>Off</u> |
| Center 5.405 000 GH #Res BW 1 MHz | z #VBW 1 | MHz Sweep 1.06 | Span 110 MHz 7 ms (2001 pts) | |
| Copyright 2000-2009 . | Agilent Technologies | | | |



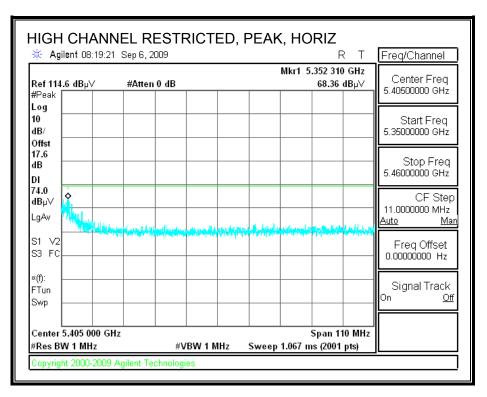
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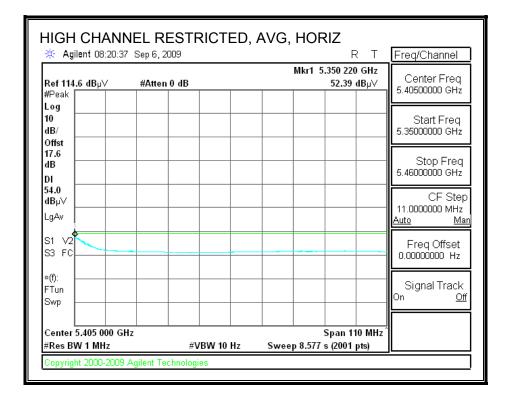
| Date: Project #: | | Devin C | hang | | | | | | | | | | |
|---------------------|------------|--------------|--------------|-------------|----------------|------------|------------|--------------|--------------|--------------------|-------------|-----------|-------|
| D | | 09/09/08 | | | | | | | | | | | |
| Project #: | | 09J1278 | 4 | | | | | | | | | | |
| Company | | Mitsumi | i i | | | | | | | | | | |
| EUT Desci | ription: | EUT(PIF. | A anten | na) wi | th Lapt | ор | | | | | | | |
| Mode Ope | er: | Tx_a mo | de | | | | | | | | | | |
| | f | Measuren | nent Fred | quency | Amp | Preamp (| Gain | | | Average | Field Stren | gth Limit | |
| | Dist | Distance | to Anter | ina | D Corr | Distance | Correc | et to 3 me | ters | Peak Fie | ld Strength | Limit | |
| | Read | Analyzer | Reading | | Avg | Average | Field S | trength @ | 3 m | Margin v | s. Average | Limit | |
| | AF | Antenna | Factor | | Peak | Calculate | d Peak | Field Str | ength | Margin v | s. Peak Li | mit | |
| | CL | Cable Los | 35 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | | dBuV/m | | V/H | P/A/QP | |
| 5260MHz | | | | | | | | | | | | - | |
| 10.520 | 3.0 | 39.9 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 52.7 | 68.2 | -15.5 | H | Р | |
| 15.780 | 3.0 | 37.7 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 55.9 | 74.0 | -18.1 | H | P | |
| 15.780 | 3.0 | 25.8 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 44.0 | 54.0 | -10.0 | H | A | |
| 10.520 | 3.0 | 47.7 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 60.5 | 68.2 | -7.7 | V | P | |
| 15.780 | 3.0 | 39.7 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 57.9 | 74.0 | - 16.1 | V | Р | |
| 15.780 | 3.0 | 26.8 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 45.0 | 54.0 | - <mark>9.0</mark> | V | A | |
| 5300MHz | | | | | | | | | | | | | |
| 10.600 | 3.0 | 44.8 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 57.9 | 74.0 | -16.1 | H | P | |
| 10.600 15.900 | 3.0 3.0 | 32.7 36.6 | 37.5 37.9 | 9.0 11.5 | -34.3 -32.2 | 0.0 0.0 | 0.8 0.7 | 45.7 54.5 | 54.0 74.0 | -8.3 | H | A | |
| 15.900 | 3.0 | 24.4 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 42.3 | 74.0 54.0 | -19.5 -11.7 | H H | P A | |
| 10.600 | 3.0 | 50.1 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 63.1 | 74.0 | -10.9 | V | P | |
| 10.600 | 3.0 | 38.5 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 51.6 | 54.0 | -2.4 | v | Ā | |
| 15.900 | 3.0 | 39.8 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 57.7 | 74.0 | -16.3 | v | P | |
| 15.900 | 3.0 | 26.6 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 44.5 | 54.0 | -9.5 | V | Ā | |
| 5320MHz | | | | | | | | | | 1 | | | |
| 10.640 | 3.0 | 45.7 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 58.9 | 74.0 | - 15.1 | H | P | |
| 10.640 | 3.0 | 33.5 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 46.7 | 54.0 | -7.3 | H | A | |
| 15.960 | 3.0 | 39.2 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 57.0 | 74.0 | -17.0 | H | Р | |
| 15.960 | 3.0 | 26.2 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 44.0 | 54.0 | -10.0 | H | A | |
| 10.640 | 3.0 | 50.2 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 63.3 | 74.0 | -10.7 | V | P | |
| 10.640 | 3.0 3.0 | 38.2 42.3 | 37.6 | 9.1 11.5 | -34.2 | 0.0 | 0.8 0.7 | 51.3 | 54.0 | -2.7 | V V | A | |
| 15.960 15.960 | 3.0 | 42.3 | 37.7 37.7 | 11.5 | -32.2 -32.2 | 0.0 | 0.7 | 60.1 46.3 | 74.0 54.0 | -13.9 -7.7 | v | P A | |
| 0.200 | 5.0 | 40.3 | 31.1 | 11.5 | -04.4 | 0.0 | 0.7 | 40.3 | 24.0 | -/./ | • | A | |
| | | : | 1 | i | | | | | | | | | |

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8.2.5. 802.11n HT20 MODE IN THE UPPER 5.2 GHz BAND

DIPOLE ANTENNA - RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

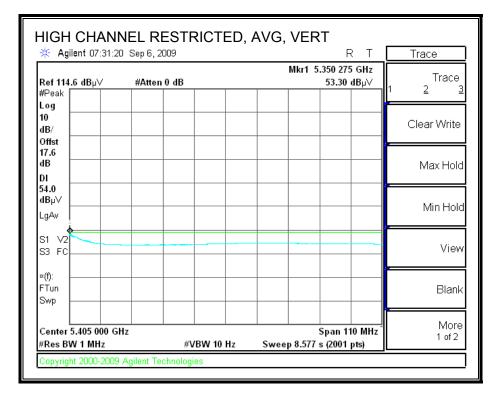




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RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

| HIGH CHANNEL R | ESTRICTED | , PEAK, VE | RT | |
|---------------------------------------|--|----------------------|-------------------------------|-----------------------|
| 🔆 Agilent 07:30:16 Sep 6, 2 | 2009 | | RT | Trace |
| Ref 114.6 dBµ∨ #Atten #Peak | 0 dB | Mkr1 5. | .350 660 GHz 69.62 dBµ∨ | Trace 1 <u>2 3</u> |
| Log 10 dB/ Offst | | | | Clear Write |
| 17.6 dB DI | | | | Max Hold |
| 74.0 b dBµ∨ u LgAv | and a second and a state of the second s | as burged in the set | haimadharidhai | Min Hold |
| S1 V2 S3 FC | | | | View |
| ×(f): FTun Swp | | | | Blank |
| Center 5.405 000 GHz #Res BW 1 MHz | #VBW 1 MHz | Sweep 1.067 m | Span 110 MHz is (2001 pts) | More 1 of 2 |
| Copyright 2000-2009 Agilent Te | chnologies | | | |



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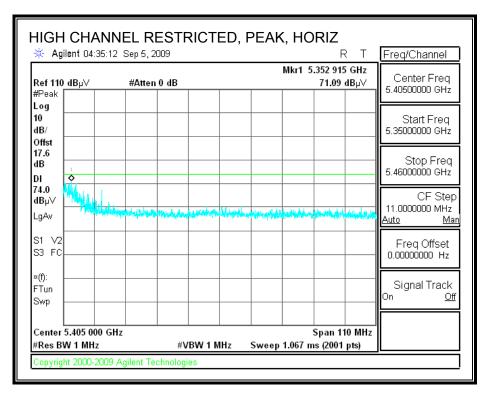
| Date: Project #: | | Devin Cl | hang | | | | | | | | | | |
|---------------------|------------|--------------|--------------|-------------|----------------|------------|------------|--------------|--------------|--------------------|--|-----------|-------|
| Duntant H. | | 09/13/08 | | | | | | | | | | | |
| rroject #: | | 09J1278 | 4 | | | | | | | | | | |
| Company | | Mitsumi | l | | | | | | | | | | |
| EUT Descr | iption: | EUT(Dip | ole ante | enna) 1 | with La | ptop | | | | | | | |
| Mode Ope | r: | Tx_HT20 |) | | | | | | | | | | |
| | f | Measuren | nent Freq | quency | Amp | Preamp (| Gain | | | Average | Field Stren | gth Limit | |
| | Dist | Distance | to Anter | ina | D Corr | Distance | Correc | ct to 3 me | ters | Peak Fiel | ld Strength | Limit | |
| | Read | Analyzer | Reading | | Avg | Average | Field S | trength @ | 3 m | Margin v | s. Average | Limit | |
| | AF | Antenna | Factor | | Peak | Calculate | d Peak | Field Str | ength | Margin v | s. Peak Lis | mit | |
| | CL | Cable Los | 88 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | | dBuV/m | | V/H | P/A/QP | |
| 5260MHz | | | | | | | | | | | | - | |
| 10.520 | 3.0 | 44.7 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 57.6 | 68.2 | -10.6 | H | Р | |
| 15.780 | 3.0 | 41.2 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 59.4 | 74.0 | -14.6 | н | P | |
| 15.780 | 3.0 | 27.7 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 45.9 | 54.0 | - <mark>8.1</mark> | H | A | |
| 10.520 | 3.0 | 48.3 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 61.2 | 68.2 | -7.0 | V | P | |
| 15.780 | 3.0 | 44.8 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 63.0 | 74.0 | -11.0 | V | Р | |
| 15.780 | 3.0 | 31.5 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 49.6 | 54.0 | -4.4 | V | A | |
| 5300MHz | | | | | | | | | | | | _ | |
| 10.600 | 3.0 | 47.9 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 61.0 | 74.0 | -13.0 | H | P | |
| 10.600 15.900 | 3.0 3.0 | 35.7 40.6 | 37.5 37.9 | 9.0 11.5 | -34.3 -32.2 | 0.0 0.0 | 0.8 0.7 | 48.8 58.5 | 54.0 | -5.2 | H | A | |
| 15.900 | 3.0 | 27.7 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 45.6 | 74.0 54.0 | -15.5 -8.4 | H H | P A | |
| 10.600 | 3.0 | 52.1 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 65.1 | 74.0 | -8.9 | v | P | |
| 10.600 | 3.0 | 37.8 | 37.5 | 9.0 | -34.3 | 0.0 | 0.8 | 50.8 | 54.0 | -3.2 | v | Ā | |
| 15.900 | 3.0 | 45.8 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 63.7 | 74.0 | -10.3 | V | P | |
| 15.900 | 3.0 | 31.7 | 37.9 | 11.5 | -32.2 | 0.0 | 0.7 | 49.7 | 54.0 | -4.3 | V | A | |
| 5320MHz | | | | | | ļ | | | | ļ | | | |
| 10.640 | 3.0 | 47.6 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 60.7 | 74.0 | -13.3 | H | P | |
| 10.640 | 3.0 | 34.6 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 47.7 | 54.0 | - 6.3 | H | A | |
| 15.960 | 3.0 | 38.2 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 56.0 | 74.0 | -18.0 | H | P | |
| 15.960 | 3.0 | 25.0 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 42.8 | 54.0 | -11.2 | H | A | |
| 10.640 10.640 | 3.0 3.0 | 50.4 37.7 | 37.6 37.6 | 9.1 9.1 | -34.2 -34.2 | 0.0 | 0.8 0.8 | 63.6 50.9 | 74.0 54.0 | -10.4 -3.1 | v v | P | |
| 10.640 15.960 | 3.0 | 37.7 42.9 | 37.6 | 9.1 11.5 | -34.2 | 0.0 | 0.8 | 60.7 | 54.0 74.0 | -3.1 -13.3 | •••••••••••••••••••••••••••••••••••••• | A P | |
| 15.960 | 3.0 | 29.1 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 46.9 | 74.0 54.0 | -13.3 | v | A | |
| | | | | | | | ••• | 1012 | | | • | ** | |
| | | | | ۵ | | | | | | | | i | |

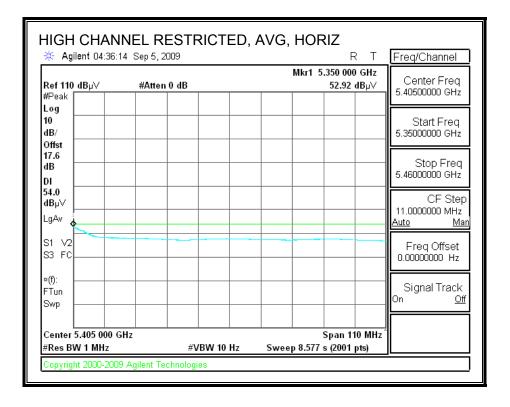
COMPLIANCE CERTIFICATION SERVICESFORM NO: CCSUP4701C47173 BENICIA STREET, FREMONT, CA 94538, USATEL: (510) 771-1000FAX: (510) 661-0888This report shall not be reproduced except in full, without the written approval of CCS.

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PIFA ANTENNA

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

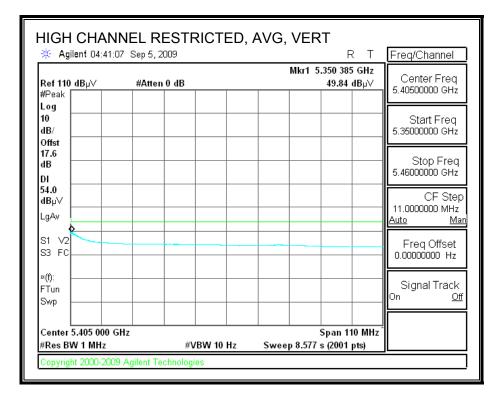




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RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

| | | ED, PEAK, VE | | |
|---------------------------------------|---------------------------|-----------------------------------|-------------------------------|--|
| 🔆 Agilent 04:39:48 | Sep 5, 2009 | | RT | Freq/Channel |
| Ref 110 dBµ∨ #Peak | #Atten 0 dB | Mkr1 5 | 6.350 440 GHz 66.23 dBµ∀ | Center Freq 5.40500000 GHz |
| Log 10 dB/ Offst | | | | Start Freq 5.3500000 GHz |
| 17.6 dB | | | | Stop Freq 5.4600000 GHz |
| 74.0 dBµ∀ du LgAv | Contraction of the second | hermacher allocitation reasons as | وسعاريهم والمعرفية والمعرفية | CF Step 11.0000000 MHz <u>Auto Man</u> |
| S1 V2 S3 FC | | | | Freq Offset 0.00000000 Hz |
| ×(f): FTun Swp | | | | Signal Track On <u>Off</u> |
| Center 5.405 000 GHz #Res BW 1 MHz | #VBW 1 | | Span 110 MHz ns (2001 pts) | |
| Copyright 2000-2009 A | gilent Technologies | | | |



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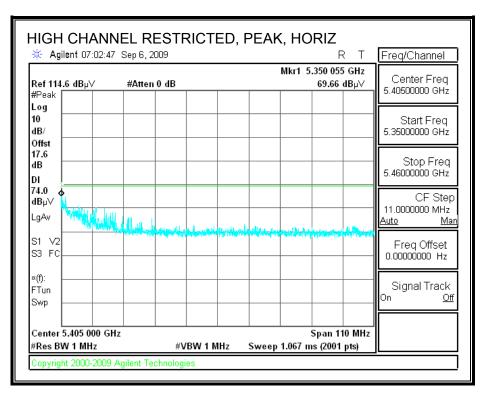
| Avg Average Field Strength @ 3 m Margin vs. Average Limit Peak Calculated Peak Field Strength Margin vs. Peak Limit m dB dB dB dB Corr. Limit Margin vs. Peak Limit n dB dB dB dB Corr. Limit Margin vs. Peak Limit n dB dB dB dB Corr. Limit Margin vs. Peak Limit s 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -18.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -19.7 V P 2 11.5 -32.2 0.0 0.7 54.0 -7.3 H A | Test Engr: Date: | | Devin C | hang | | | | | | | | | | |
|--|---|---|------------------------------|------------------------------|--|---|--|--|--|--|---|---------------------------------|-----------|--------------------------------------|
| requency Amp Preamp Gain Average Field Strength Limit tenna D Corr Distance Correct to 3 meters Peak Field Strength Limit ng Avg Average Field Strength @ 3 m Margin vs. Average Limit ng Avg Average Field Strength Margin vs. Average Limit Peak Calculated Peak Field Strength Margin vs. Peak Limit HPF High Pass Filter Margin vs. Peak Limit a dB dB dB dB V/H P/A/QP s 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 | | • | 09/09/08 | - | | | | | | | | | | |
| requency Amp Preamp Gain Average Field Strength Limit tenna D Corr Distance Correct to 3 meters Peak Field Strength Limit ng Avg Average Field Strength @ 3 m Margin vs. Average Limit ng Avg Average Field Strength Margin vs. Average Limit HPF High Pass Filter Margin vs. Peak Limit Margin vs. Peak Limit n dB dB dB corr Limit Margin V/m Ant. Pol. Det. Notes s 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -15.9 H P 2 11.5 -32.2 0. | Project #: | | 09J1278 | | | | | | | | | | | |
| requency Amp Preamp Gain Average Field Strength Limit tenna D Corr Distance Correct to 3 meters Peak Field Strength Limit ng Avg Average Field Strength @ 3 m Margin vs. Average Limit ng Avg Average Field Strength Margin vs. Average Limit HPF High Pass Filter Margin vs. Peak Limit Margin vs. Peak Limit n dB dB dB corr Limit Margin V/m Ant. Pol. Det. Notes s 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -15.9 H P 2 11.5 -32.2 0. | Company | | Mitsumi | - | | | | | | | | | | |
| requency Amp Preamp Gain Average Field Strength Limit tenna D Corr Distance Correct to 3 meters Peak Field Strength Limit ng Avg Average Field Strength @ 3 m Margin vs. Average Limit ng Avg Average Field Strength Margin vs. Average Limit HPF High Pass Filter Margin vs. Peak Limit Margin vs. Peak Limit n dB dB dB corr Limit Margin vs. Peak Limit s 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 54.6 <td< th=""><th></th><th></th><th></th><th></th><th>na) wi</th><th>ith Lant</th><th>on</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<> | | | | | na) wi | ith Lant | on | | | | | | | |
| tenna D Corr Distance Correct to 3 meters Peak Field Strength Limit ng Avg Average Field Strength @ 3 m Margin vs. Average Limit Peak Calculated Peak Field Strength Margin vs. Average Limit HPF High Pass Filter Margin vs. Peak Limit CL Amp D Corr Fltr Corr. Limit Margin vs. Peak Limit n dB dB dB dB dB V/H P/A/QP 5 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 58.1 74.0 | Mode Ope | • | Tx HT20 | | | un zupi | - P | | | | | | | |
| tenna D Corr Distance Correct to 3 meters Peak Field Strength Limit ng Avg Average Field Strength @ 3 m Margin vs. Average Limit ng Avg Average Field Strength @ 3 m Margin vs. Average Limit Peak Calculated Peak Field Strength Margin vs. Peak Limit Margin vs. Peak Limit m dB dB dB dB Margin V/m Margin Ant. Pol. Det. Notes n dB dB dB dB dB dB V/m P/A/QP 5 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 54.0 -9.1 V A 5 | | f | _ | | mency | Amp | Preamp (| Gain | | | Average | Field Stren | eth Limit | |
| Avg Average Field Strength @ 3 m Margin vs. Average Limit Peak Calculated Peak Field Strength Margin vs. Peak Limit MPF High Pass Filter Margin vs. Peak Limit CL Amp D Corr Fltr Corr. Limit Margin Ant. Pol. Det. Notes dB dB dB dB dB dB Margin Ant. Pol. Det. Notes 5 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 54.5 74.0 -15.9 H P 5 9.0 -34.3 | | Dist | Distance | | | | | | ct to 3 me | ters | _ | | - | |
| Peak HPF Calculated Peak Field Strength High Pass Filter Margin vs. Peak Limit Margin vs. Peak Limit CL Amp dB D Corr dB Filtr dB Corr. dB Limit dB Margin dB Ant. Pol. dB Det. P/A/QP Notes 5 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 58.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.8 54.0 -7.3 H A 9 | | Read | Analyzer | | | | | | | | | - | | |
| HPF High Pass Filter CL Amp D Corr Fltr Corr. Limit Margin Ant. Pol. Det. Notes n dB dB dB dB dB dB BUV/m dB V/H P/A/QP Notes 5 9.0 -34.4 0.0 0.8 \$2.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 \$5.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 \$5.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 \$7.3 74.0 -16.7 V P 11.5 -32.2 0.0 0.7 \$7.3 74.0 -16.7 V P 11.5 -32.2 0.0 0.7 \$4.9 \$54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 | | AF | Antenna | - | | _ | _ | | | | - | _ | | |
| n dB dB dB dB dB dB dB V/m dB V/H P/A/QP 5 9.0 -34.4 0.0 0.8 \$2.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 \$5.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 43.0 54.0 -11.0 H A 5 9.0 -34.4 0.0 0.8 \$9.4 68.2 -8.8 V P 2 11.5 -32.2 0.0 0.7 \$7.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 \$4.9 \$54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 \$85.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.7 \$45.5 74.0 -1 | | CL | Cable Los | | | | | | | | | | | |
| n dB dB dB dB dB dB dB dB V/m dB V/H P/A/QP 5 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 43.0 54.0 -11.0 H A 5 9.0 -34.4 0.0 0.8 59.4 68.2 -8.8 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 44.9 54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 58.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.7 54.5 74.0 <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>D.C.</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>N7</th> | | | | | | | D.C. | | | | | | | N7 |
| 5 9.0 -34.4 0.0 0.8 52.6 68.2 -15.6 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 55.5 74.0 -18.5 H P 2 11.5 -32.2 0.0 0.7 43.0 54.0 -11.0 H A 5 9.0 -34.4 0.0 0.8 59.4 68.2 -8.8 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 11.5 -32.2 0.0 0.7 54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 58.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.8 46.7 54.0 -7.3 H A 9 | f GHz | Dist (m) | Read dBuV | AF dB/m | | • | | | | | | | | Notes |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 5260MHz | | | uu/m | | | | - 00 | | ana v/m | | 1/11 | THE QE | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 10.520 | 3.0 | 39.8 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 52.6 | 68.2 | -15.6 | н | P | |
| 11.5 -32.2 0.0 0.7 43.0 54.0 -11.0 H A 5 9.0 -34.4 0.0 0.8 59.4 68.2 -8.8 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 44.9 54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 58.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.8 46.7 54.0 -7.3 H A 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 41.9 54.0 -12.1 H A 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 | 15.780 | 3.0 | 37.4 | 38.2 | | | | | - • | | | | | |
| 5 9.0 -34.4 0.0 0.8 59.4 68.2 -8.8 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 44.9 54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 58.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.8 58.1 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 54.5 74.0 -12.1 H A 5 9.0 -34.3 0.0 0.8 62.3 74.0 -11.7 V P 5 9.0 -34.3 0.0 0.8 50.0 54.0 | 15.780 | 3.0 | 24.8 | 38.2 | | | | | - • • • • • • • • • • • • • • • • • • • | | | | | |
| 2 11.5 -32.2 0.0 0.7 57.3 74.0 -16.7 V P 2 11.5 -32.2 0.0 0.7 44.9 54.0 -9.1 V A 5 9.0 -34.3 0.0 0.8 58.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.8 46.7 54.0 -7.3 H A 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 41.9 54.0 -12.1 H A 5 9.0 -34.3 0.0 0.8 62.3 74.0 -11.7 V P 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 V A 9 11.5 -32.2 0.0 0.7 58.8 74.0 | 10.520 | 3.0 | 46.5 | 37.5 | | | | | | | | | | |
| 5 9.0 -34.3 0.0 0.8 58.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.8 58.1 74.0 -15.9 H P 5 9.0 -34.3 0.0 0.8 46.7 54.0 -7.3 H A 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 41.9 54.0 -12.1 H A 9 11.5 -32.2 0.0 0.8 62.3 74.0 -11.7 V P 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 V A 9 11.5 -32.2 0.0 0.7 58.8 74.0 -15.2 V P | 15.780 | 3.0 | 39.1 | 38.2 | •••••••••••••• | -32.2 | 0.0 | 0.7 | 57.3 | | | | | |
| 5 9.0 -34.3 0.0 0.8 46.7 54.0 -7.3 H A 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 41.9 54.0 -12.1 H A 5 9.0 -34.3 0.0 0.8 62.3 74.0 -11.7 V P 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 V A 9 11.5 -32.2 0.0 0.7 58.8 74.0 -15.2 V P | 15.780 | 3.0 | 26.7 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 44.9 | 54.0 | - 9.1 | V | A | |
| 5 9.0 -34.3 0.0 0.8 46.7 54.0 -7.3 H A 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 9 11.5 -32.2 0.0 0.7 41.9 54.0 -12.1 H A 5 9.0 -34.3 0.0 0.8 62.3 74.0 -11.7 V P 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 V A 9 11.5 -32.2 0.0 0.7 58.8 74.0 -15.2 V P | 5300MHz | | | | | | | | | | | | | |
| 0 11.5 -32.2 0.0 0.7 54.5 74.0 -19.6 H P 0 11.5 -32.2 0.0 0.7 41.9 54.0 -12.1 H A 5 9.0 -34.3 0.0 0.8 62.3 74.0 -11.7 V P 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 V A 9 11.5 -32.2 0.0 0.7 58.8 74.0 -15.2 V P | 10.600 | 3.0 | 45.1 | 37.5 | | | | | · | | | | ······ | |
| 9 11.5 -32.2 0.0 0.7 41.9 54.0 -12.1 H A 5 9.0 -34.3 0.0 0.8 62.3 74.0 -11.7 V P 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 V A 9 11.5 -32.2 0.0 0.7 58.8 74.0 -15.2 V P | 10.600 | 3.0 | 33.6 | 37.5 | | | | | | | | | | |
| 5 9.0 -34.3 0.0 0.8 62.3 74.0 -11.7 V P 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 V A 9 11.5 -32.2 0.0 0.7 58.8 74.0 -15.2 V P | 15.900 | 3.0 | 36.5 | 37.9 | | | | | • | | | | | |
| 5 9.0 -34.3 0.0 0.8 50.0 54.0 -4.0 V A 9 11.5 -32.2 0.0 0.7 58.8 74.0 -15.2 V P | 15.900 | 3.0 | 24.0 | 37.9 | | | | | | | | | | |
| 9 11.5 -32.2 0.0 0.7 58.8 74.0 -15.2 V P | 10.600 | 3.0 | 49.2 | 37.5 | | | | | | | | | | |
| ······································ | | · • | | ¢ | | | | | | | | | | |
| | | ••• | | ¢ | | | | | · • • • • • • • • • • • • • • • • • • • | | | | | |
| | | | - / | 57.3 | | | 0.0 | v. / | | | -0.7 | * | | |
| 5 9.1 -34.2 0.0 0.8 58.7 74.0 -15.3 H P | | | 45.6 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 58.7 | 74.0 | -15.3 | Н | P | |
| | | 3.0 | 33.4 | 37.6 | | | | | - • | | | | | |
| | | 3.0 | 37.8 | 37.7 | ••••••••••••••• | | | | - • | | | | | |
| ······································ | | 3.0 | 24.7 | | ••••••••••••• | -32.2 | 0.0 | 0.7 | 42.5 | 54.0 | -11.5 | H | A | |
| ALIO - CANA - UIU - UII - UIU - UIU - II - A | 10.640 | 3.0 | 48.4 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 61.6 | 74.0 | -12.4 | V | P | |
| φ | 10.640 | 3.0 | 35.4 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 48.5 | 54.0 | - 5.5 | V | A | |
| 5 9.1 -34.2 0.0 0.8 61.6 74.0 -12.4 V P | 15.960 | 3.0 | 42.5 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 60.3 | 74.0 | -13.7 | V | P | |
| 5 9.1 -34.2 0.0 0.8 61.6 74.0 -12.4 V P 5 9.1 -34.2 0.0 0.8 48.5 54.0 -5.5 V A 7 11.5 -32.2 0.0 0.7 60.3 74.0 -13.7 V P | 15.960 | 3.0 | 28.3 | 37.7 | 11.5 | -32.2 | 0.0 | 0.7 | 46.1 | 54.0 | - 7.9 | V | A | |
| 5 9.1 -34.2 0.0 0.8 46.5 54.0 -7.5 H 7 11.5 -32.2 0.0 0.7 55.6 74.0 -18.4 H | 10.600 15.900 15.900 5320MHz 10.640 10.640 15.960 15.960 10.640 10.640 15.960 | 3.0 3.0 3.0 3.0 3.0 3.0 3.0 | 37.8 24.7 48.4 35.4 | 37.7 37.7 37.6 37.6 | 11.5 11.5 9.1 9.1 11.5 11.5 9.1 9.1 | -32.2 -32.2 -34.2 -34.2 -32.2 -32.2 -32.2 -34.2 -34.2 | 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 | 0.7 0.7 0.8 0.8 0.7 0.7 0.8 0.8 | 58.8 45.3 58.7 46.5 55.6 42.5 61.6 48.5 | 74.0 54.0 74.0 54.0 74.0 54.0 74.0 54.0 | -15.2 -8.7 -15.3 -7.5 -18.4 -11.5 -12.4 -5.5 | V V H H H V V | | P A P A P A P A |
| ALL C | 640 | 3.0 | 48.4 | 37.6 | 9.1 | -34.2 | 0.0 | 0.8 | 61.6 | 74.0 | -12.4 | V | P | |
| 5 9.1 -34.2 0.0 0.8 61.6 74.0 -12.4 V P | | ••• | • | \$ | | | | | | | | | | |
| 5 9.1 -34.2 0.0 0.8 61.6 74.0 -12.4 V P 5 9.1 -34.2 0.0 0.8 48.5 54.0 -5.5 V A | | · | | * | | | | | | | | | | |
| 5 9.1 -34.2 0.0 0.8 61.6 74.0 -12.4 V P 5 9.1 -34.2 0.0 0.8 48.5 54.0 -5.5 V A 7 11.5 -32.2 0.0 0.7 60.3 74.0 -13.7 V P | | 0.0 | 40.0 | 31.1 | 11.0 | | 0.0 | v./ | 70.1 | 04.0 | -/12 | • | | |

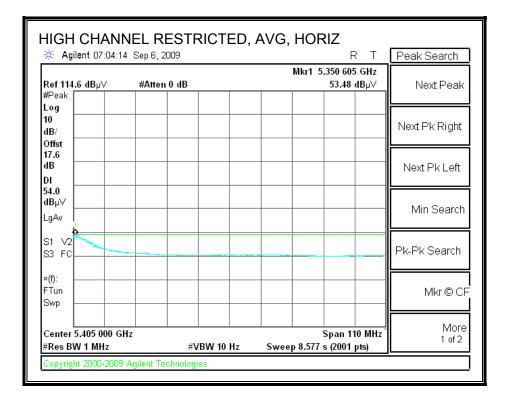
COMPLIANCE CERTIFICATION SERVICES 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of CCS.

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8.2.6. 802.11n HT40 MODE IN THE UPPER 5.2 GHz BAND

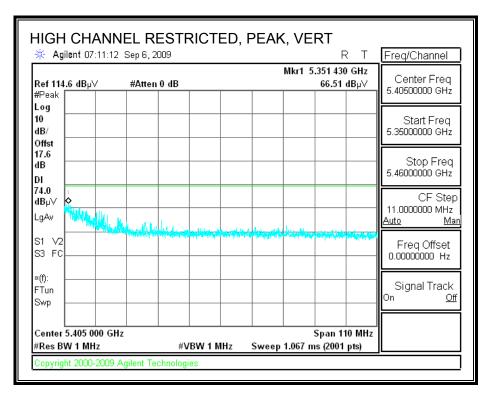
DIPOLE ANTENNA - RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

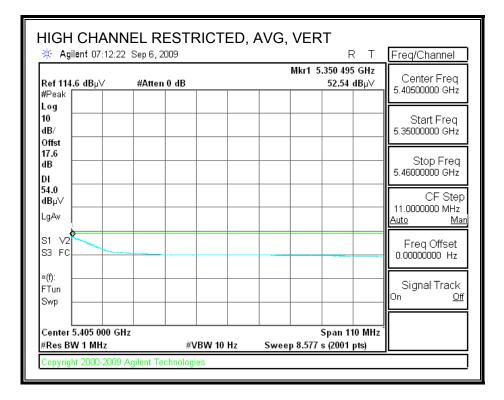




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RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





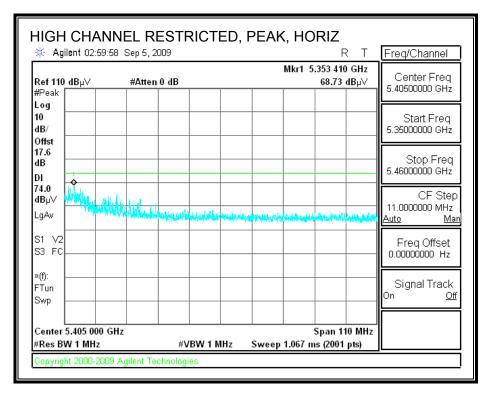
Page 259 of 344

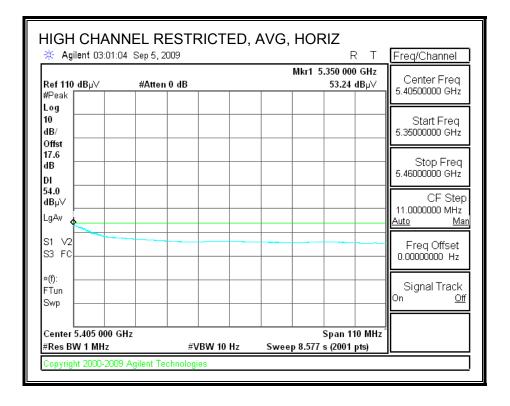
| - | | ification | | | | | | | | | | | |
|------------------------|------------|--------------|----------|--------|----------------|--|------------|--------------|--------------|----------------|--------------|----------|-------|
| est Engr | | Devin C | - | | | | | | | | | | |
|)ate: | | 09/13/08 | | | | | | | | | | | |
| roject #: | | 09J1278 | 4 | | | | | | | | | | |
| Company | | Mitsumi | | | | | | | | | | | |
| | - | EUT(Dip | ole ante | nna) 1 | vith Laj | ptop | | | | | | | |
| fode Op | er: | Tx_HT40 | | | | | | | | | | | |
| | f | Measuren | | | - | Preamp Gain Average Field Strength Limit | | | | | | | |
| | Dist | Distance | | | | Distance | | | | | eld Strength | | |
| | Read | Analyzer | - | | Avg | _ | | trength @ | | - | vs. Average | | |
| | AF | Antenna | | | Peak | Calculate | d Peak | Field Stre | ength | Margin | vs. Peak Lis | nit | |
| | CL | Cable Los | 15 | | HPF | High Pas | s Filter | | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | | | dBuV/m | | V/H | P/A/QP | |
| 270MHz | | | | | | | | | | | | <u>-</u> | |
| 0.540 | 3.0 | 43.5 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 56.5 | 68.2 | -11.7 | H | P | |
| 5.810 | 3.0 | 37.2 | | | -32.2 | 0.0 | 0.7 | 55.4 | 74.0 | -18.6 | H | P | |
| 5.810 | 3.0 | 24.8 | | | -32.2 | 0.0 | 0.7 | 42.9 | 54.0 | -11.1 | H | A | |
| 0.540 | 3.0 | 42.6 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 55.6 | 68.2 | -12.7 | V | P | |
| 5.810 | 3.0 | 43.2 | | | -32.2 | 0.0 | 0.7 | 61.3 | 74.0 | -12.7 | V | P | |
| 5.810 | 3.0 | 29.6 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 47.7 | 54.0 | - 6.3 | V | A | |
| 310MHz | | ļ | | | | | | | | | | | |
| 0.620 | 3.0 | 40.8 | 37.5 | 9.1 | -34.3 | 0.0 | 0.8 | 53.9 | 74.0 | -20.1 | H | P | |
| 0.620 | 3.0 | 28.5 | 37.5 | | -34.3 | 0.0 | 0.8 | 41.5 | 54.0 | -12.5 | H | A | |
| 5.930 | 3.0 | 35.1 | 37.8 | | -32.2 | 0.0 | 0.7 | 53.0 | 74.0 | -21.0 | H | P | |
| 5.930 0.620 | 3.0 3.0 | 22.2 42.4 | 37.8 | | -32.2 -34.3 | 0.0 0.0 | 0.7 0.8 | 40.1 55.5 | 54.0 74.0 | -13.9 -18.5 | H | A P | |
| 0.620 | 3.0 | 29.4 | 37.5 | | -34.3 | 0.0 | 0.8 | 42.5 | 74.0 54.0 | -10.5 | V V | A | |
| 5.930 | 3.0 | 35.0 | | | -32.2 | 0.0 | 0.7 | 52.8 | 74.0 | -21.2 | v | P | |
| 5.930 | 3.0 | 23.0 | | | -32.2 | 0.0 | 0.7 | 40.8 | 54.0 | -13.2 | v | Ā | |
| | | | | | | | | | | | ······ | | |
| Rev. 4.1.2 Note: No | | missions | were de | tected | above t | the system | m nois | e floor. | | | | | |

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PIFA ANTENNA

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

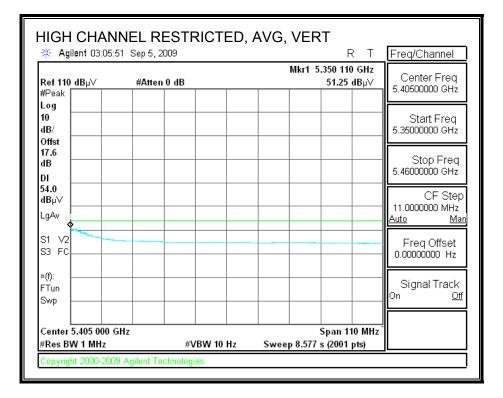




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RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

| | | NEL F :37 Sep 5 | | RICTI | ED, F | PEAK | , VE | RT _F | ? Т | Freq/Channel |
|---------------------------|----------------------|--------------------|----------------------|----------------------|--|----------------|--|---------------------|-------|--|
| Ref 110 #Peak | | | en 0 dB | | | | Mkr1 5 | | 5 GHz | Center Freq 5.40500000 GHz |
| Log 10 dB/ Offst | | | | | | | | | | Start Freq 5.3500000 GHz |
| 17.6 dB DI | 1 | | | | | | | | | Stop Freq 5.4600000 GHz |
| 74.0 dBµ∨ LgAv | | Nalhalan baliak | entre landerer farse | al piere travite (1) | an a | and the second | Andre for the state of the st | - | | CF Step 11.0000000 MHz <u>Auto Man</u> |
| S1 V2 S3 FC | | | | | | | | | | Freq Offset 0.00000000 Hz |
| ×(f): FTun Swp ∘ | | | | | | | | | | Signal Track ^{On <u>Off</u>} |
| | 5.405 000 N 1 MHz | GHz | #V | BW 1 M | IHz | Sweep | | Span 11 is (2001 | | |
| Copyrigh | nt 2000-200 | 09 Agilent 1 | Technologi | es | | | | | | |



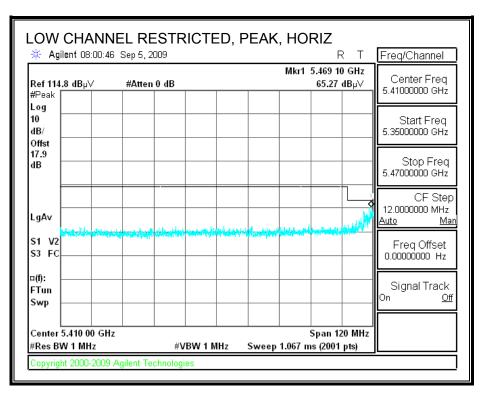
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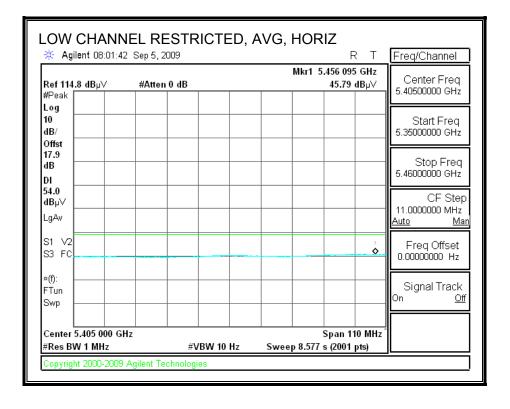
| - | | tification | | | | | | | | | | | |
|------------------------|------------|-------------------------------|---------|--------|----------------|------------|------------|--------------|--------------|----------------|--------------|--------|-------|
| est Engr | | Devin C | _ | | | | | | | | | | |
| Date: | | 09/09/08 | | | | | | | | | | | |
| Project #: | | 09J1278 | | | | | | | | | | | |
| Company | | | Mitsumi | | | | | | | | | | |
| | | EUT(PIFA antenna) with Laptop | | | | | | | | | | | |
| fode Op | | Tx_HT40 | | | | | | | | | | | |
| | f | Measuren | | | - | Preamp (| | | gth Limit | | | | |
| | Dist | Distance | | | | Distance | | | | | ld Strength | | |
| Read | | Analyzer | - | | Avg | Average | | | | - | /s. Average | | |
| | AF | Antenna | | | Peak | Calculate | | | ength | Margin v | rs. Peak Lis | mit | |
| | CL | Cable Los | 8 | | HPF | High Pas | s Filter | | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | | | dBuV/m | dB | V/H | P/A/QP | |
| 270MHz | | | | | _ | | | | | | | | |
| 0.540 | 3.0 | 42.5 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 55.4 | 68.2 | -12.8 | H | Р | |
| 5.810 | 3.0 | 36.7 | 38.2 | | -32.2 | 0.0 | 0.7 | 54.8 | 74.0 | -19.2 | H | P | |
| 5.810 | 3.0 | 23.5 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 41.6 | 54.0 | -12.4 | H | A | |
| 0.540 | 3.0 | 43.3 | 37.5 | 9.0 | -34.4 | 0.0 | 0.8 | 56.3 | 68.2 | -11.9 | V | P | |
| 5.810 | 3.0 | 37.5 | | 11.5 | -32.2 | 0.0 | 0.7 | 55.6 | 74.0 | - 18.4 | V | P | |
| 5.810 | 3.0 | 24.6 | 38.2 | 11.5 | -32.2 | 0.0 | 0.7 | 42.7 | 54.0 | -11.3 | V | A | |
| 310MHz | | | | | | ļ | | | | | | | |
| 0.620 | 3.0 | 43.6 | 37.5 | 9.1 | -34.3 | 0.0 | 0.8 | 56.7 | 74.0 | -17.3 | H | P | |
| 0.620 | 3.0 | 30.7 | 37.5 | | -34.3 | 0.0 | 0.8 | 43.8 | 54.0 | -10.2 | H | A | |
| 5.930 5.930 | 3.0 3.0 | 37.3 23.7 | 37.8 | | -32.2 -32.2 | 0.0 0.0 | 0.7 0.7 | 55.1 41.5 | 74.0 54.0 | -18.9 -12.5 | H H | P | |
| 0.620 | 3.0 | 46.5 | 37.5 | 9.1 | -34.3 | 0.0 | 0.8 | 59.6 | 74.0 | -14.4 | V | A P | |
| 0.620 | 3.0 | 32.9 | 37.5 | 9.1 | -34.3 | 0.0 | 0.8 | 46.0 | 54.0 | -8.0 | v | Ā | |
| 5.930 | 3.0 | 38.8 | | | -32.2 | 0.0 | 0.7 | 56.6 | 74.0 | -17.4 | v | P | |
| 5.930 | 3.0 | 25.5 | | | -32.2 | 0.0 | 0.7 | 43.4 | 54.0 | -10.6 | V | A | |
| | | | | | | •••••• | | | | • | | | |
| Rev. 4.1.2 Note: No | | <u>missions</u> | were de | tected | above (| the system | m nois | e floor. | | | | | |

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8.2.7. 802.11a DUAL CHAIN LEGACY MODE IN THE 5.6 GHz BAND

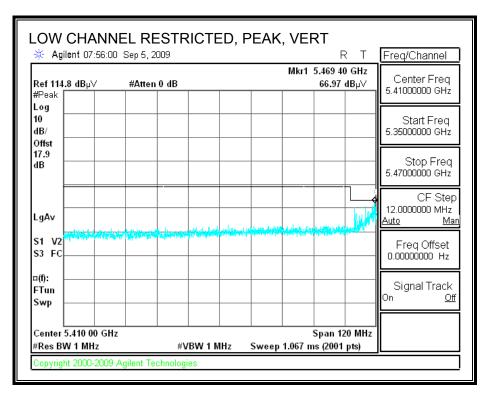
DIPOLE ANTENNA - RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

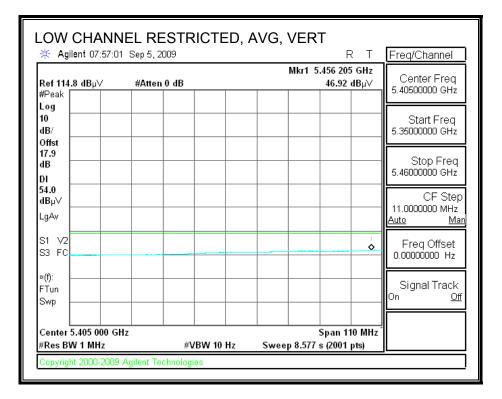




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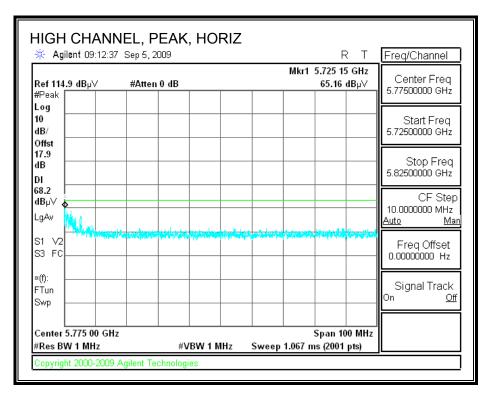
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

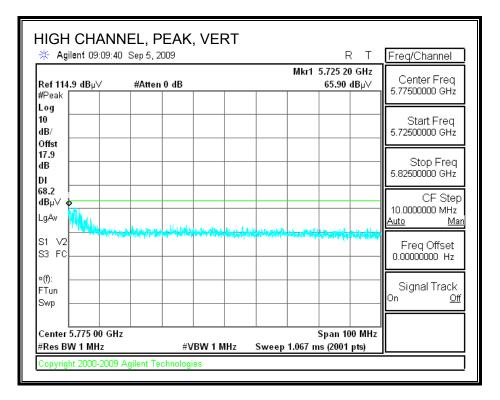




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AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





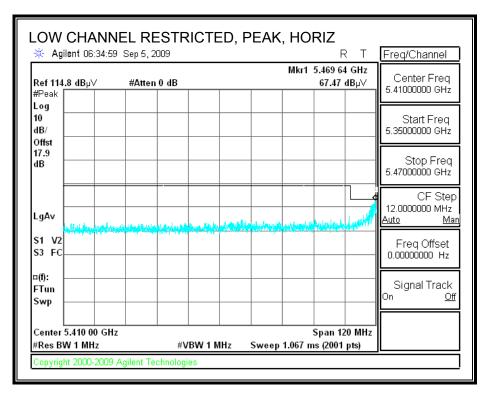
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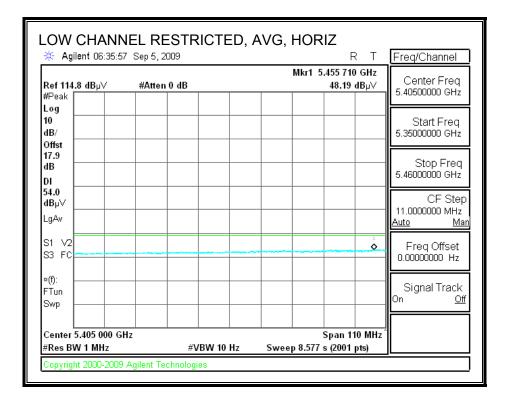
| Fest Engr | | Devin C | hang | | | | | | | | | | |
|------------------|------------|--------------|--------------|-------------|----------------|------------|------------|--------------|--------------|--------------------|-------------|-----------|-------|
| Date: | | 09/13/08 | | | | | | | | | | | |
| Project # | | 09J1278 | 4 | | | | | | | | | | |
| Company | 74 | Mitsumi | | | | | | | | | | | |
| EUT Desc | ription: | EUT(Dip | | | | | | | | | | | |
| Mode Op | er: | Tx_a mo | de | | | | | | | | | | |
| | f | Measuren | nent Freq | quency | Amp | Preamp (| Gain | | | Average | Field Stren | gth Limit | |
| | Dist | Distance | D Corr | Distance | Correc | ct to 3 me | ters | Peak Fie | ld Strength | Limit | | | |
| Read | | Analyzer | Avg | _ | | trength @ | | _ | s. Average | | | | |
| | AF | Antenna | Factor | | Peak | Calculate | d Peak | Field Stre | ength | Margin v | s. Peak Lis | nit | |
| | CL | Cable Los | 88 | | HPF | High Pas | | | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | | dBuV/m | | V/H | P/A/QP | |
| 5500MHz | | | | | | | | | | | | | |
| 1.000 | 3.0 | 43.8 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 57.7 | 74.0 | -16.3 | H | P | |
| 11.000 | 3.0 | 31.3 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 45.2 | 54.0 | - <mark>8.8</mark> | H | A | |
| 16.500 | 3.0 | 35.4 | 39.7 | 11.8 | -32.1 | 0.0 | 0.7 | 55.5 | 68.2 | -12.7 | H | P | |
| 11.000 | 3.0 | 46.4 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 60.3 | 74.0 | -13.7 | V | P | |
| 11.000 | 3.0 | 34.2 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 48.1 | 54.0 | - 5.9 | V | A | |
| 16.500 | 3.0 | 37.2 | 39.7 | 11.8 | -32.1 | 0.0 | 0.7 | 57.3 | 68.2 | -10.9 | V | Р | |
| 5600MHz | | | | | | | | | | | | _ | |
| 11.200 | 3.0 | 45.2 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 59.6 | 74.0 | -14.4 | H | P | |
| 11.200 16.800 | 3.0 3.0 | 33.7 | 37.9 40.9 | 9.3 | -33.5 -32.0 | 0.0 | 0.7 | 48.1 58.2 | 54.0 68.2 | -5.9 -10.0 | H | A P | |
| 11.200 | 3.0 | 36.7 46.5 | 40.9 37.9 | 12.0 9.3 | -32.0 | 0.0 0.0 | 0.7 0.7 | 58.2 60.9 | 68.2 74.0 | -10.0 | H V | P P | |
| 11.200 | 3.0 | 35.5 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 49.9 | 54.0 | -4.1 | v | A | |
| 16.800 | 3.0 | 37.0 | 40.9 | 12.0 | -32.0 | 0.0 | 0.7 | 58.5 | 68.2 | -9.7 | v | P | |
| 5700MHz | | | | | | | | | | | | - | |
| 11.400 | 3.0 | 36.8 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 51.8 | 74.0 | -22.2 | Н | P | |
| 11.400 | 3.0 | 25.7 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 40.6 | 54.0 | - 13.4 | H | A | |
| 17.100 | 3.0 | 33.9 | 42.2 | 12.1 | -32.0 | 0.0 | 0.7 | 56.8 | 68.2 | -11.4 | H | P | |
| 11.400 | 3.0 | 40.0 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 54.9 | 74.0 | - 19.1 | V | P | |
| | 3.0 | 26.9 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 41.8 | 54.0 | -12.2 | V | A | |
| 11.400 17.100 | 3.0 | 33.3 | 42.2 | 12.1 | -32.0 | 0.0 | 0.7 | 56.2 | 68.2 | -12.0 | V | P | |

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PIFA ANTENNA

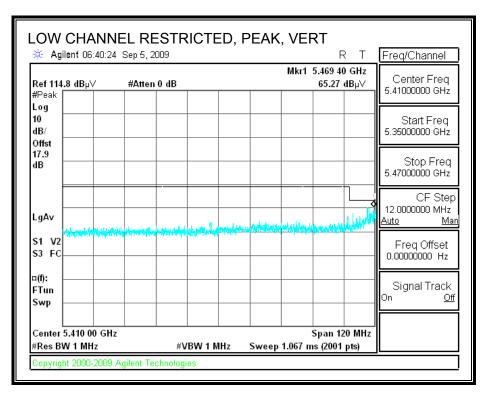
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

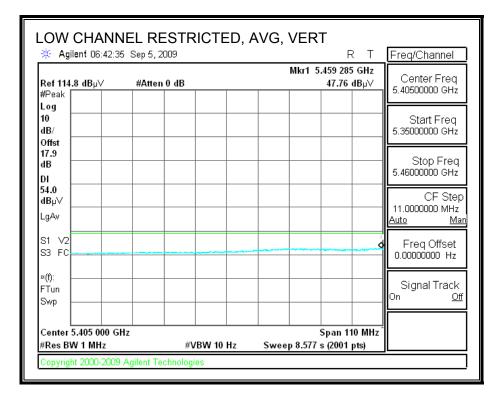




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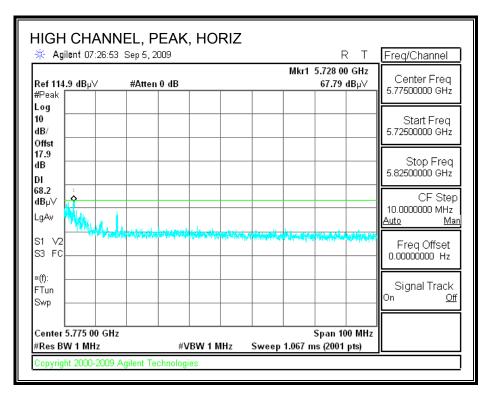
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

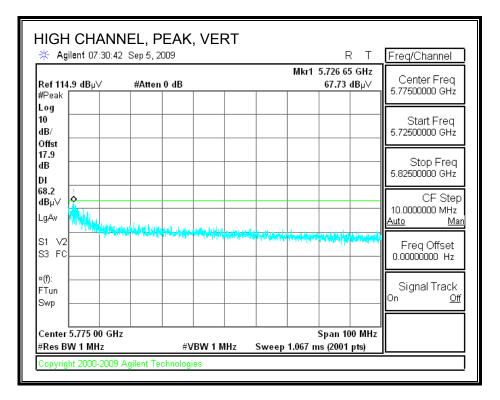




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AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





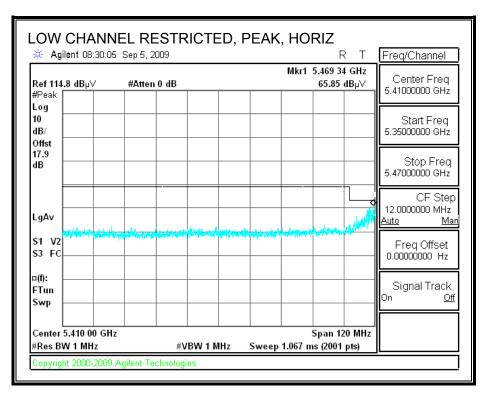
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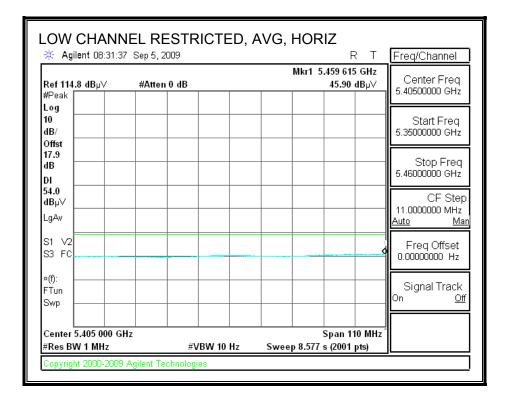
| Test Engr | | Devin C | hang | | | | | | | | | | | |
|------------------|------------|--------------|-------------------------------|-------------|----------------|------------|------------|--------------|--------------|----------------|-------------|-----------|-------|--|
| Date: | | 09/13/08 | - | | | | | | | | | | | |
| Project # | | 09J1278 | 4 | | | | | | | | | | | |
| Company | | Mitsumi | i | | | | | | | | | | | |
| EUT Desc | ription: | EUT(PIF. | EUT(PIFA antenna) with Laptop | | | | | | | | | | | |
| Mode Op | er: | Tx_a mo | de | | | | | | | | | | | |
| | f | Measuren | nent Freq | quency | Amp | Preamp (| Gain | | | Average | Field Stren | gth Limit | | |
| | Dist | Distance | | | D Corr | Distance | Correc | et to 3 me | ters | Peak Fiel | ld Strength | Limit | | |
| Read | | Analyzer | Avg | Average | Field S | trength @ | 3 m | Margin v | s. Average | Limit | | | | |
| | AF | Antenna | Factor | | Peak | Calculate | d Peak | Field Stre | ength | Margin v | s. Peak Lis | nit | | |
| | CL | Cable Lo | 88 | | HPF | High Pas | s Filter | r | | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Mangin | Ant. Pol. | Det. | Notes | |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | | dBuV/m | | V/H | P/A/QP | Hotes | |
| 5500MH2 | | | | | | | | | | | | | | |
| 11.000 | 3.0 | 40.2 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 54.1 | 74.0 | -19.9 | Н | P | | |
| 11.000 | 3.0 | 28.7 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 42.7 | 54.0 | -11.3 | Н | A | | |
| 16.500 | 3.0 | 34.7 | 39.7 | 11.8 | -32.1 | 0.0 | 0.7 | 54.8 | 68.2 | -13.4 | H | P | | |
| 11.000 | 3.0 | 45.6 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 59.6 | 74.0 | -14.4 | V | P | | |
| 11.000 | 3.0 | 32.7 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 46.7 | 54.0 | -7.3 | V | A | | |
| 16.500 | 3.0 | 37.9 | 39.7 | 11.8 | -32.1 | 0.0 | 0.7 | 58.0 | 68.2 | -10.2 | V | Р | | |
| 5600MH2 | | | | | | | | | | | | _ | | |
| 11.200 | 3.0 | 45.6 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 60.0 46.1 | 74.0 | -14.0 | H | P | | |
| 11.200 16.800 | 3.0 3.0 | 31.6 35.3 | 37.9 40.9 | 9.3 12.0 | -33.5 -32.0 | 0.0 0.0 | 0.7 0.7 | 46.1 | 54.0 68.2 | -7.9 -11.4 | H H | A P | | |
| 11.200 | 3.0 | 44.7 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 59.2 | 74.0 | -11.4 -14.8 | v | P | | |
| 11.200 | 3.0 | 32.9 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 47.3 | 54.0 | -6.7 | v | A | | |
| 16.800 | 3.0 | 36.1 | 40.9 | 12.0 | -32.0 | 0.0 | 0.7 | 57.6 | 68.2 | -10.6 | v | P | | |
| 5700MH2 | | | | | | | | | | 1 | | | | |
| 11.400 | 3.0 | 36.3 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 51.2 | 74.0 | -22.8 | H | P | | |
| 11.400 | 3.0 | 24.8 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 39.7 | 54.0 | -14.3 | H | Α | | |
| 17.100 | 3.0 | 33.9 | 42.2 | 12.1 | -32.0 | 0.0 | 0.7 | 56.9 | 68.2 | -11.3 | H | P | | |
| 11.400 | 3.0 | 39.9 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 54.8 | 74.0 | -19.2 | V | P | | |
| | 3.0 | 28.4 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 43.3 | 54.0 | -10.7 | V | A | | |
| 11.400 17.100 | 3.0 | 33.6 | 42.2 | 12.1 | -32.0 | 0.0 | 0.7 | 56.6 | 68.2 | - 11.6 | V | Р | | |

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8.2.8. 802.11n HT20 MODE IN THE 5.6 GHz BAND

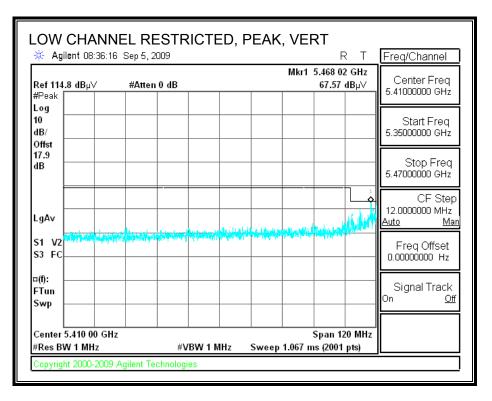
DIPOLE ANTENNA - RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

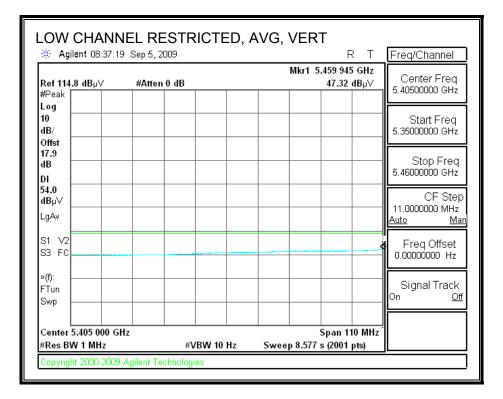




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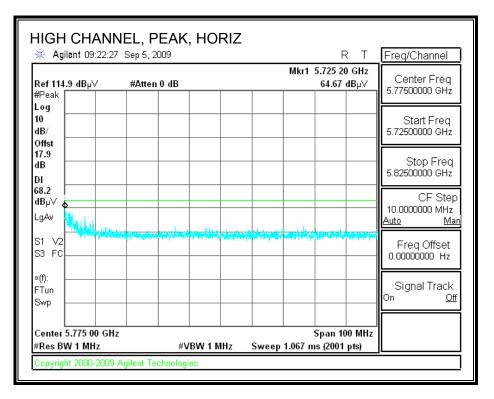
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

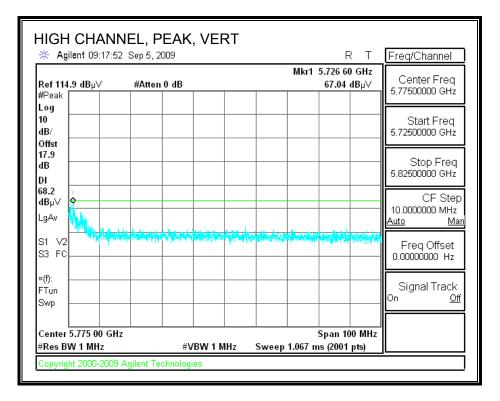




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AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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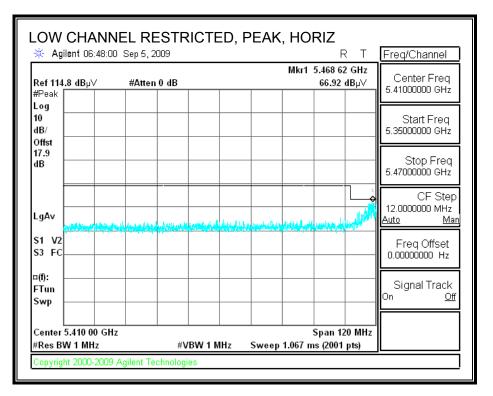
HARMONICS AND SPURIOUS EMISSIONS

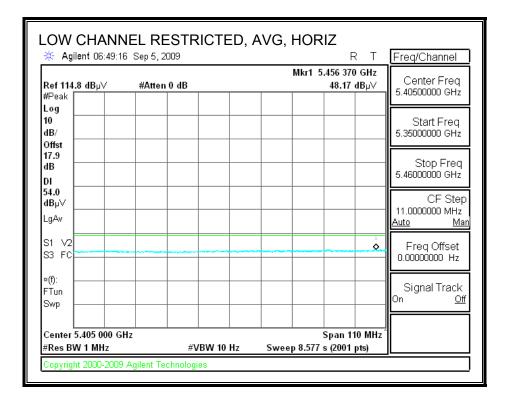
| Test Engr | | Devin C | hang | | | | | | | | | | |
|------------------|------------|--------------|--------------|------------|----------------|------------|------------|--------------|-----------------|----------------|------------------|----------------|-------|
| Date: | | 09/13/08 | - | | | | | | | | | | |
| Project # | : | 09J1278 | 4 | | | | | | | | | | |
| Company | 7 : | Mitsumi | i | | | | | | | | | | |
| EUT Desc | ription: | EUT(Dip | ole ante | nna) 1 | with Lag | ptop | | | | | | | |
| Mode Op | er: | Tx_HT20 |) | | | | | | | | | | |
| | f | Measuren | | | - | Preamp (| | | | _ | Field Stren | - | |
| | Dist | Distance | | | | Distance | | | | | ld Strength | | |
| | Read | Analyzer | | | Avg | _ | | trength @ | | _ | s. Average | | |
| | AF | Antenna | | | Peak | | | Field Stre | ength | Margin v | s. Peak Lis | mit | |
| | CL | Cable Lo | 55 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | CL | | D Corr | 171. | Corr. | T 1 1 1 | N | A | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | Amp dB | dB | Fltr dB | | Limit dBuV/m | | Ant. Pol. V/H | Det. P/A/QP | Notes |
| 5500MH2 | | abuv | ub/m | <u>an</u> | ab | ab | ab | abuv/m | abuv/m | | V/11 | ringr | |
| 11.000 | 3.0 | 39.1 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 53.0 | 74.0 | -21.0 | н | Р | |
| 11.000 | 3.0 | 27.2 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 41.2 | 54.0 | -12.8 | H | Ā | |
| 16.500 | 3.0 | 33.8 | 39.7 | 11.8 | -32.1 | 0.0 | 0.7 | 53.9 | 68.2 | -14.3 | H | P | |
| 11.000 | 3.0 | 44.7 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 58.6 | 74.0 | -15.4 | V | P | |
| 11.000 | 3.0 | 32.3 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 46.2 | 54.0 | - 7.8 | V | A | |
| 16.500 | 3.0 | 36.6 | 39.7 | 11.8 | -32.1 | 0.0 | 0.7 | 56.7 | 68.2 | -11.5 | V | Р | |
| 5600MH2 | | | | | | | | | | | | _ | |
| 11.200 11.200 | 3.0 3.0 | 46.1 33.6 | 37.9 | 9.3 9.3 | -33.5 -33.5 | 0.0 0.0 | 0.7 0.7 | 60.5 48.1 | 74.0 54.0 | -13.5 | H H | P | |
| 16.800 | 3.0 | 36.5 | 37.9 40.9 | 9.5 | -33.5 | 0.0 | 0.7 | 40.1 58.1 | 54.0 68.2 | -5.9 -10.1 | H | A P | |
| 11.200 | 3.0 | 46.1 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 60.5 | 74.0 | -13.5 | v | P | |
| 11.200 | 3.0 | 34.5 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 48.9 | 54.0 | -5.1 | V | A | |
| 16.800 | 3.0 | 37.8 | 40.9 | 12.0 | -32.0 | 0.0 | 0.7 | 59.3 | 68.2 | - 8.9 | V | P | |
| 5700MH2 | 5 | | ļ | | | | | ļ | | | | | |
| 11.400 | 3.0 | 39.4 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 54.3 | 74.0 | - 19.7 | H | Р | |
| 11.400 | 3.0 | 27.0 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 42.0 | 54.0 | -12.0 | H | A | |
| 17.100 | 3.0 | 33.1 | 42.2 | 12.1 | -32.0 | 0.0 | 0.7 | 56.1 | 68.2 | -12.1 | H V | P | |
| 11.400 11.400 | 3.0 3.0 | 38.7 26.7 | 38.0 38.0 | 9.4 9.4 | -33.2 -33.2 | 0.0 | 0.7 0.7 | 53.6 41.7 | 74.0 54.0 | -20.4 -12.3 | v | P A | |
| 17.100 | 3.0 | 33.3 | · | 12.1 | -32.0 | 0.0 | 0.7 | 56.3 | 68.2 | -11.9 | v | P | |
| | | | | | | 010 | | | | | • | • | |

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PIFA ANTENNA

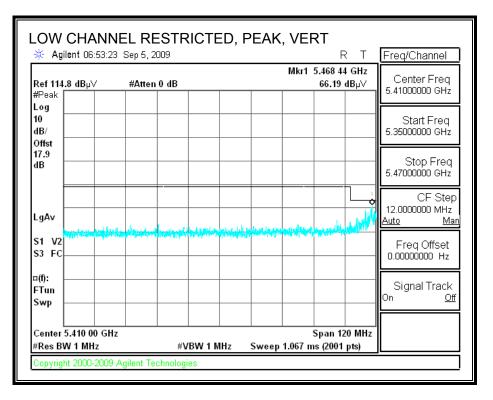
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

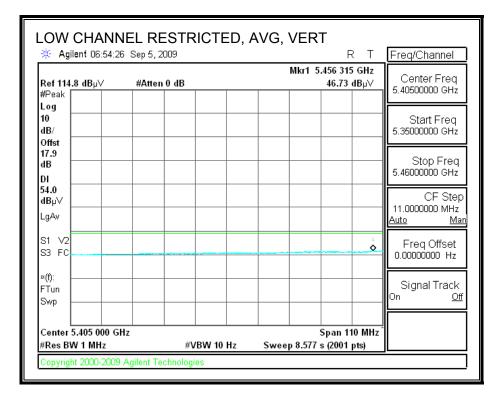




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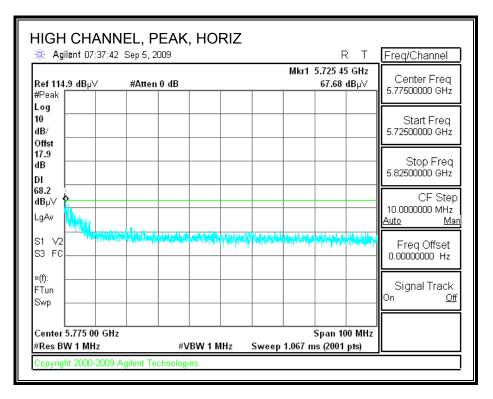
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

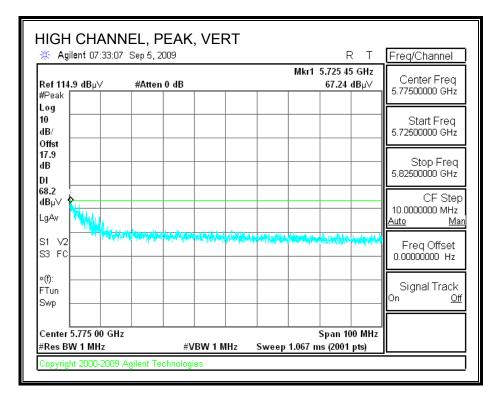




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AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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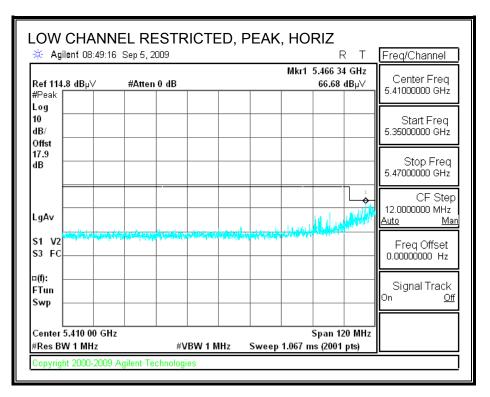
HARMONICS AND SPURIOUS EMISSIONS

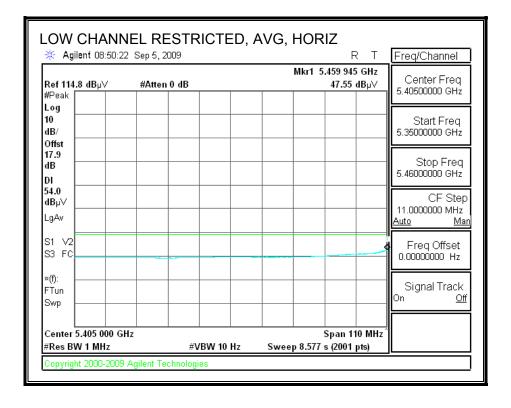
| Test Engr | | Devin C | hang | | | | | | | | | | |
|------------------|------------|--------------|--------------|------------|----------------|--------------|------------|--------------|-----------------|--------------------|------------------|----------------|-------|
| Date: | | 09/13/08 | - | | | | | | | | | | |
| Project # | : | 09J1278 | 4 | | | | | | | | | | |
| Company | | Mitsumi | i | | | | | | | | | | |
| EUT Desc | ription: | EUT(PIF. | A anten | na) wi | ith Lapt | ор | | | | | | | |
| Mode Op | er: | Tx_HT20 |) | | | | | | | | | | |
| | f | Measuren | nent Free | quency | Amp | Preamp (| Gain | | | Average | Field Stren | gth Limit | |
| | Dist | Distance | | | D Corr | Distance | | | | | ld Strength | | |
| | Read | Analyzer | | | Avg | _ | | trength @ | | _ | s. Average | | |
| | AF | Antenna | | | Peak | | | Field Stre | ength | Margin v | s. Peak Li | mit | |
| | CL | Cable Lo | 55 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | CT | | D.C. | 171. | Corr. | T 1 1 | | A | D | Notes |
| GHz | (m) | dBuV | Ar dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | | Limit dBuV/m | | Ant. Pol. V/H | Det. P/A/QP | Notes |
| 5500MH2 | | abuv | db/m | <u>an</u> | <u>an</u> | <u>ab</u> | w | abuv/m | abuv/m | ab | V/11 | ringr | |
| 11.000 | 3.0 | 41.4 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 55.3 | 74.0 | -18.7 | н | P | |
| 11.000 | 3.0 | 29.3 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 43.2 | 54.0 | -10.7 | H | A | |
| 16.500 | 3.0 | 35.5 | 39.7 | 11.8 | -32.1 | 0.0 | 0.7 | 55.6 | 68.2 | -12.6 | H | P | |
| 11.000 | 3.0 | 44.4 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 58.3 | 74.0 | -15.7 | V | P | |
| 11.000 | 3.0 | 32.1 | 37.7 | 9.2 | -33.8 | 0.0 | 0.7 | 46.0 | 54.0 | - <mark>8.0</mark> | V | A | |
| 16.500 | 3.0 | 36.9 | 39.7 | 11.8 | -32.1 | 0.0 | 0.7 | 57.0 | 68.2 | -11.2 | V | Р | |
| 5600MH2 | | | | | | | | | | | | _ | |
| 11.200 11.200 | 3.0 3.0 | 43.6 30.1 | 37.9 | 9.3 9.3 | -33.5 -33.5 | 0.0 0.0 | 0.7 0.7 | 58.0 44.5 | 74.0 54.0 | -16.0 | H H | P | |
| 16.800 | 3.0 | 35.4 | 37.9 40.9 | 9.5 | -33.5 | 0.0 | 0.7 | 57.0 | 54.0 68.2 | -9.5 -11.2 | H | A P | |
| 11.200 | 3.0 | 42.9 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 57.3 | 74.0 | -16.7 | v | P | |
| 11.200 | 3.0 | 30.4 | 37.9 | 9.3 | -33.5 | 0.0 | 0.7 | 44.8 | 54.0 | -9.2 | V | A | |
| 16.800 | 3.0 | 35.4 | 40.9 | 12.0 | -32.0 | 0.0 | 0.7 | 56.9 | 68.2 | -11.3 | V | P | |
| 5700MH2 | 5 | | | | (| ļ | | | | ĮĮ | | | |
| 11.400 | 3.0 | 36.3 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 51.2 | 74.0 | - 22.8 | H | Р | |
| 11.400 | 3.0 | 24.2 | 38.0 | 9.4 | -33.2 | 0.0 | 0.7 | 39.2 | 54.0 | -14.8 | H | A | |
| 17.100 | 3.0 | 32.5 | 42.2 | 12.1 | -32.0 | 0.0 | 0.7 | 55.4 | 68.2 | -12.8 | H | P | |
| 11.400 11.400 | 3.0 | 39.3 27.4 | 38.0 38.0 | 9.4 9.4 | -33.2 -33.2 | 0.0 0.0 | 0.7 0.7 | 54.2 42.3 | 74.0 54.0 | -19.8 -11.7 | v v | P A | |
| | 3.0 | 33.3 | 42.2 | 12.1 | -32.0 | 0.0 | 0.7 | 56.2 | 68.2 | -11.7 | v | P | |
| 17.100 | | | | | | | ~~~ | | | | * | • | |

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8.2.9. 802.11n HT40 MODE IN THE 5.6 GHz BAND

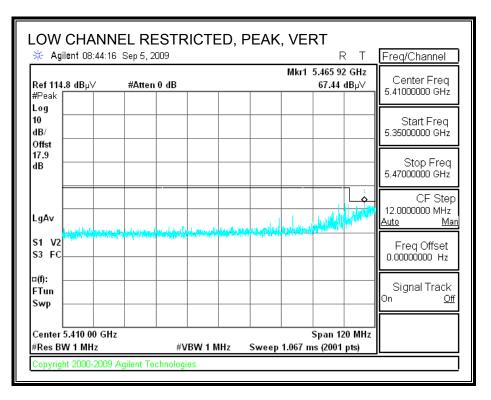
DIPOLE ANTENNA - RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

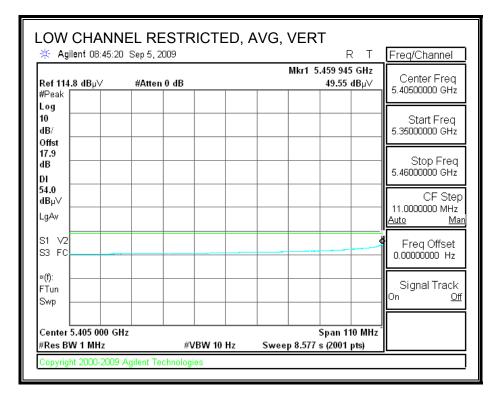




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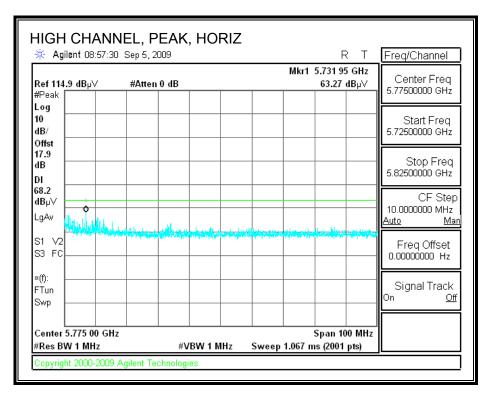
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

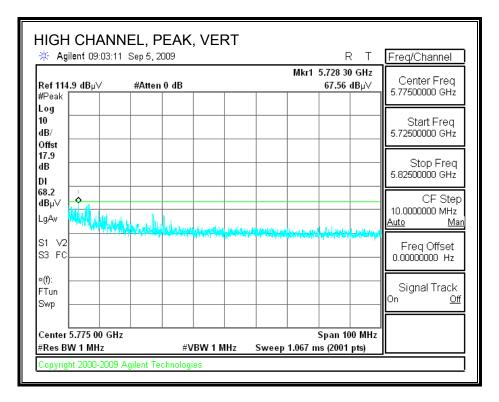




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AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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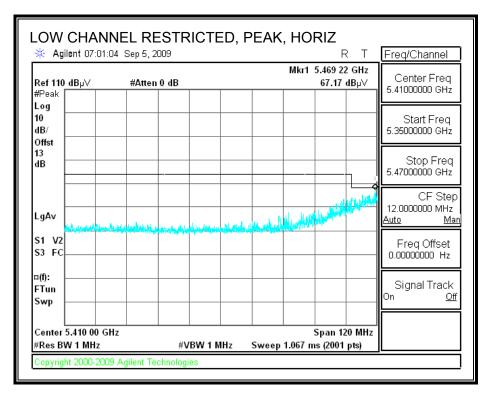
HARMONICS AND SPURIOUS EMISSIONS

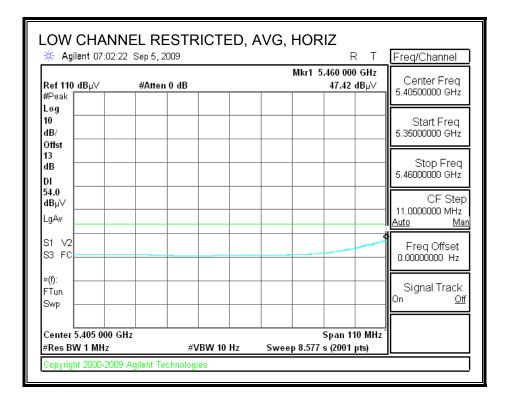
| Test Engr | | Devin C | . | | | | | | | | | | |
|--------------------|------------|--------------|--------------|-------------|----------------|------------|------------|--------------|--------------|---------------|------------------|----------------|-------|
| Test Engr Date: | • | 09/13/08 | - | | | | | | | | | | |
| Project # | | 09J1278 | | | | | | | | | | | |
| Company | | Mitsumi | | | | | | | | | | | |
| | | EUT(Dip | | | rith I a | nton | | | | | | | |
| Mode Op | - | Tx HT40 | | inna) (| with La | prop | | | | | | | |
| atoue Op | f. | Measuren | | money | Amo | Preamp (| Cain | | | Average | Field Stren | eth Limit | |
| | Dist | Distance | | | - | Distance | | t to 3 ma | tors | _ | ld Strength | - | |
| | Read | Analyzer | | | Avg | | | trength @ | | | s. Average | | |
| | AF | Antenna | | | Peak | _ | | Field Stre | | _ | s. Peak Lis | | |
| | CL | Cable Los | | | HPF | High Pas | | | mgtm | iviaigii v | o. I Car Lu | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Manala | Ant Dal | Det. | Notes |
| GHz | (m) | Kead dBuV | dB/m | dB | Amp dB | dB | dB | | dBuV/m | | Ant. Pol. V/H | Det. P/A/QP | notes |
| 5510MHz | | | | | | | | | | | | - | |
| 11.020 | 3.0 | 44.6 | 37.7 | 9.2 | -33.7 | 0.0 | 0.7 | 58.6 | 74.0 | -15.4 | H | Р | |
| 11.020 | 3.0 | 32.5 | 37.7 | 9.2 | -33.7 | 0.0 | 0.7 | 46.5 | 54.0 | -7.5 | H | A | |
| 16.530 | 3.0 | 33.7 | 39.8 | 11.8 | -32.1 | 0.0 | 0.7 | 53.9 | 68.2 | -14.3 | H | P | |
| 11.020 | 3.0 | 45.7 | 37.7 | 9.2 | -33.7 | 0.0 | 0.7 | 59.7 | 74.0 | -14.3 | V | Р | |
| 11.020 | 3.0 | 34.2 | 37.7 | 9.2 | -33.7 | 0.0 | 0.7 | 48.2 | 54.0 | - 5.8 | V | A | |
| 16.530 | 3.0 | 38.3 | 39.8 | 11.8 | -32.1 | 0.0 | 0.7 | 58.6 | 68.2 | -9.7 | V | Р | |
| 5590MHz | | | | | | | ~ - | | | | | _ | |
| 11.180 11.180 | 3.0 | 44.4 32.2 | 37.8 37.8 | 9.3 | -33.5 | 0.0 0.0 | 0.7 | 58.8 46.6 | 74.0 | -15.2 | H H | P | |
| 16.770 | 3.0 3.0 | 32.2 | | 9.3 11.9 | -33.5 -32.1 | 0.0 | 0.7 0.7 | 40.0 57.5 | 54.0 68.2 | -7.4 -10.7 | н Н | A P | |
| 11.180 | 3.0 | 41.8 | 37.8 | 9.3 | -33.5 | 0.0 | 0.7 | 56.2 | 74.0 | -10.7 | v | P P | |
| 11.180 | 3.0 | 28.4 | 37.8 | 9.3 | -33.5 | 0.0 | 0.7 | 42.8 | 54.0 | -11.2 | v | Ā | |
| 16.770 | 3.0 | 36.4 | 40.8 | \$¢ | -32.1 | 0.0 | 0.7 | 57.7 | 68.2 | -10.5 | V | P | |
| 5670MHz | | | | | | | | | | 1 | | | |
| 11.340 | 3.0 | 37.4 | 38.0 | 9.4 | -33.3 | 0.0 | 0.7 | 52.1 | 74.0 | -21.9 | H | P | |
| 11.340 | 3.0 | 25.2 | 38.0 | 9.4 | -33.3 | 0.0 | 0.7 | 40.0 | 54.0 | -14.0 | H | Α | |
| 17.010 | 3.0 | 34.0 | 41.8 | 12.1 | -32.0 | 0.0 | 0.7 | 56.6 | 68.2 | -11.6 | H | Р | |
| 11.340 | 3.0 | 37.7 | 38.0 | 9.4 | -33.3 | 0.0 | 0.7 | 52.5 | 74.0 | -21.5 | V | P | |
| 11.340 17.010 | 3.0 | 25.1 | 38.0 | 9.4 | -33.3 | 0.0 | 0.7 | 39.8 | 54.0 | -14.2 | <u>v</u> | A | |
| | 3.0 | 33.9 | 41.8 | 12.1 | -32.0 | 0.0 | 0.7 | 56.4 | 68.2 | -11.8 | V | P | |

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PIFA ANTENNA

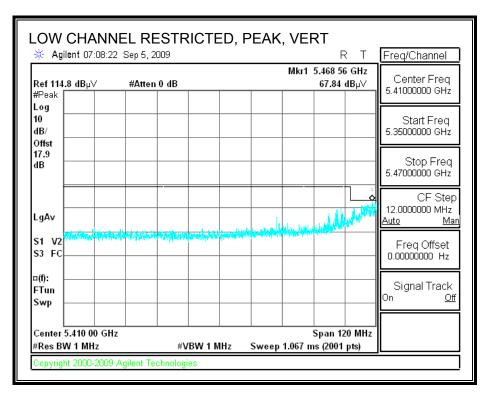
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

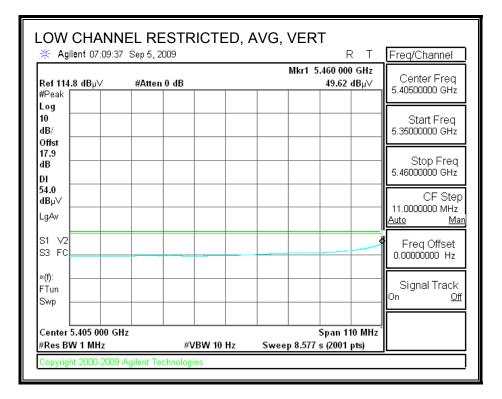




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RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

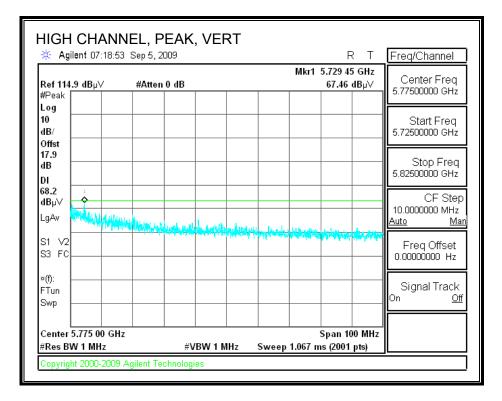




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AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

| HIGH CHANNEL, P | - | | |
|--------------------------------------|------------------------|--|----------------|
| 🔆 🔆 Agilent 07:15:24 Sep 5, 2 | 109 | RT | Peak Search |
| Ref 114.9 dBµ∨ #Atten #Peak | 0 dB | Mkr1 5.725 15 GHz 66.62 dBµ∨ | Next Peak |
| Log 10 dB/ Offst | | | Next Pk Right |
| 17.9 dB DI | | | Next Pk Left |
| 68.2 dBμ√ LgAv | kilikus kasus setula a | nite and the fact large spin being the | Min Search |
| S1 V2 S3 FC | | augu garra jurgan gara gara gara gara gara gara gara | Pk-Pk Search |
| *(f): FTun Swp | | | Mkr © CF |
| Center 5.775 00 GHz #Res BW 1 MHz | | Span 100 MHz eep 1.067 ms (2001 pts) | More 1 of 2 |
| Copyright 2000-2009 Agilent Ter | cnnologies | | |



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HARMONICS AND SPURIOUS EMISSIONS

| Test Engr | | Devin C | hang | | | | | | | | | | |
|-------------------|------------|--------------|--------------|-------------|----------------|------------|------------|--------------|--------------|---------------|-------------|--------|-------|
| Date: | | 09/13/08 | | | | | | | | | | | |
| Project # | | 09J1278 | 4 | | | | | | | | | | |
| Company | 7 1 | Mitsumi | i | | | | | | | | | | |
| EUT Desc | ription: | EUT(PIF. | A anten | na) wi | th Lapt | op | | | | | | | |
| Mode Op | | Tx_HT40 | | | | | | | | | | | |
| | f | Measuren | | • | • | Preamp (| | | | _ | Field Stren | - | |
| | Dist | Distance | | | | Distance | | | | | ld Strength | | |
| | Read | Analyzer | - | | Avg | | | trength @ | | | s. Average | | |
| | AF | Antenna | | | Peak | | | Field Stre | ength | Margin v | s. Peak Li | mit | |
| | CL | Cable Los | 15 | | HPF | High Pas | s Filter | r | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | | dBuV/m | | V/H | P/A/QP | notes |
| 5670MH2 | | | | | | | | | | | | | |
| 11.340 | 3.0 | 36.4 | 38.0 | 9.4 | -33.3 | 0.0 | 0.7 | 51.2 | 74.0 | -22.8 | H | Р | |
| 11.340 | 3.0 | 23.7 | 38.0 | 9.4 | -33.3 | 0.0 | 0.7 | 38.5 | 54.0 | -15.5 | H | A | |
| 17.010 | 3.0 | 33.1 | 41.8 | 12.1 | -32.0 | 0.0 | 0.7 | 55.7 | 68.2 | - 12.5 | H | P | |
| 11.340 | 3.0 | 38.5 | 38.0 | 9.4 | -33.3 | 0.0 | 0.7 | 53.3 | 74.0 | -20.7 | V | Р | |
| 11.340 | 3.0 | 26.2 | 38.0 | 9.4 | -33.3 | 0.0 | 0.7 | 41.0 | 54.0 | -13.0 | <u>v</u> | A | |
| 17.010 | 3.0 | 34.0 | 41.8 | 12.1 | -32.0 | 0.0 | 0.7 | 56.6 | 68.2 | - 11.6 | v | P | |
| 5510MHz 11.020 | 3.0 | 39.2 | 37.7 | 9.2 | -33.7 | 0.0 | 0.7 | 53.1 | 74.0 | -20.9 | н | P | |
| 11.020 | 3.0 | 26.4 | 37.7 | 9.2 | -33.7 | 0.0 | 0.7 | 40.4 | 54.0 | -13.6 | H | A | |
| 16.530 | 3.0 | 33.9 | | 11.8 | -32.1 | 0.0 | 0.7 | 54.2 | 68.2 | -14.0 | H | P | |
| 11.020 | 3.0 | 42.0 | 37.7 | 9.2 | -33.7 | 0.0 | 0.7 | 56.0 | 74.0 | - 18.0 | V | P | |
| 11.020 | 3.0 | 29.9 | 37.7 | 9.2 | -33.7 | 0.0 | 0.7 | 43.8 | 54.0 | -10.2 | V | A | |
| 16.530 | 3.0 | 33.9 | 39.8 | 11.8 | -32.1 | 0.0 | 0.7 | 54.2 | 68.2 | -14.0 | V | Р | |
| 5590MHz | | | | | | | | | | | | _ | |
| 11.180 11.180 | 3.0 3.0 | 42.1 29.8 | 37.8 37.8 | 9.3 9.3 | -33.5 -33.5 | 0.0 0.0 | 0.7 0.7 | 56.5 44.2 | 74.0 54.0 | -17.5 | H H | P | |
| 16.770 | 3.0 | 29.8 33.6 | | 9.3 11.9 | -33.5 | 0.0 | 0.7 | 44.2 55.0 | 54.0 68.2 | -9.8 -13.2 | H H | A P | |
| 11.180 | 3.0 | 42.5 | 37.8 | 9.3 | -33.5 | 0.0 | 0.7 | 56.9 | 74.0 | -17.1 | v | P | |
| 11.180 | 3.0 | 30.2 | 37.8 | 9.3 | -33.5 | 0.0 | 0.7 | 44.6 | 54.0 | -9.4 | v | Ā | |
| | 3.0 | 34.3 | 40.8 | 11.9 | -32.1 | 0.0 | 0.7 | 55.7 | 68.2 | -12.5 | V | P | |
| 16.770 | | | | | | | | | | | | | |

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8.3. RECEIVER ABOVE 1 GHz

8.3.1. 20 MHz BANDWIDTH IN THE 5.2 GHz BAND

DIPOLE ANTENNA

| Cest Engr: Date: Project #: Company: CUT Descripti | | Devin C 09/04/08 09J1278 Mitsumi | - | | | | | | | | | | |
|--|-------------|---|---------|-------|-----------|-------------|--------|--------------|--------|---------------|---------------|-----------|-------|
| Date: Project #: Company: EUT Descripti | | 09/04/08 09J1278 | - | | | | | | | | | | |
| Company: CUT Descripti | | | 4 | | | | | | | | | | |
| Company: CUT Descripti | | Mitaumi | | | | | | | | | | | |
| UT Descripti | | | | | | | | | | | | | |
| - | ion: | | | nna) | with La | nton | | | | | | | |
| Mode Oper: | | Rx BW= | | | | | | | | | | | |
| f | | Measuren | | | Amo | Preamp (| Gain | | | Average | Field Stren | eth Limit | |
| Di | st | Distance | | | - | Distance | | nt to 3 me | ters | _ | ld Strength | - | |
| | ad | Analyzer | | | Avg | | | trength @ | | | vs. Average | | |
| AF | | Antenna | _ | | Peak | - | | c Field Stre | | _ | /s. Peak Lir | | |
| CL | | Cable Los | | | HPF | High Pas | | | | inargin V | S. I Cak Lill | | |
| CL | - | Cable LO | | | | 111511 1.43 | sinte | | | | | | |
| f D | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| | m) | dBuV | dB/m | | dB | dB | dB | : | dBuV/m | | V/H | P/A/QP | |
| | 3.0 | 57.6 | 25.2 | | | | 0.0 | 49.6 | 74.0 | -24.4 | V | Р | |
| | 3.0 | 44.1 | 25.2 | ¢ | -35.9 | 0.0 | 0.0 | 36.1 | 54.0 | -17.9 | v | Ā | |
| | 3.0 | 59.4 | 26.4 | ¢ | -35.6 | 0.0 | 0.0 | 53.3 | 74.0 | -20.7 | v | P | |
| | 3.0 | 43.4 | 26.4 | ¢ | -35.6 | 0.0 | 0.0 | 37.3 | 54.0 | -16.7 | V | Ā | |
| L.994 3 | 3.0 | 54.1 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 49.8 | 74.0 | -24.2 | V | P | |
| 1.994 3 | 3.0 | 37.3 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 33.0 | 54.0 | -21.0 | V | A | |
| 1.330 3 | 3.0 | 55.5 | 25.2 | 2.7 | -35.9 | 0.0 | 0.0 | 47.5 | 74.0 | -26.5 | H | P | |
| 1.330 3 | 3 .0 | 42.2 | 25.2 | | -35.9 | 0.0 | 0.0 | 34.2 | 54.0 | - 19.8 | H | Α | |
| | 3.0 | 55.5 | 26.4 | | -35.6 | 0.0 | 0.0 | 49.4 | 74.0 | -24.6 | H | P | |
| | 3.0 | 40.2 | 26.4 | ¢ | -35.6 | 0.0 | 0.0 | 34.0 | 54.0 | -20.0 | H | A | |
| | 3.0 | 49.3 | 27.6 | o | ¢ | 0.0 | 0.0 | 44.9 | 74.0 | - 29.1 | H | P | |
| 1.994 3 | 3.0 | 34.0 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 29.7 | 54.0 | -24.3 | H | A | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Rev. 4.1.2.7 Note: No oth | er ei | missions | were de | tecte | l above 1 | he syster | m noi: | se floor. | | | | | |

8.3.2. 20 MHz BANDWIDTH IN THE 5.2 GHz BAND

PIFA ANTENNA

| - | | Measuren tification | | s, Fre | mont 5n | n Chamb | er | | | | | | |
|-------------------------------|------------|------------------------|--------------|------------|----------------|------------|------------|--------------|--------------|----------------|-------------|-----------|-------|
| Test Engr | | Devin C | hang | | | | | | | | | | |
| Date: | | 09/04/08 | - | | | | | | | | | | |
| Project #: | | 09J1278 | 4 | | | | | | | | | | |
| Company | | Mitsumi | L | | | | | | | | | | |
| EUT Desc | ription: | EUT(PIF. | A anten | na) w | ith Lapt | ор | | | | | | | |
| Mode Op | er: | Rx_BW= | =20MHz | | | | | | | | | | |
| | f | Measuren | nent Freq | pency | Amp | Preamp (| Gain | | | Average | Field Stren | gth Limit | |
| | Dist | Distance | to Anter | ina | D Corr | Distance | Correc | et to 3 me | eters | Peak Fie | ld Strength | Limit | |
| | Read | Analyzer | Reading | | Avg | Average | Field S | trength @ |) 3 m | Margin v | s. Average | Limit | |
| | AF | Antenna | Factor | | Peak | Calculate | d Peak | Field Str | ength | Margin v | s. Peak Lis | nit | |
| | CL | Cable Los | 35 | | HPF | High Pas | s Filter | r | | | | | |
| | | | - | | | | | | - | | | | |
| f | Dist | Read | AF | CL | | D Corr | | : | : | | Ant. Pol. | | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | • | dBuV/m | | V/H | P/A/QP | |
| 1.330 | 3.0 | 57.6 | 25.2 | 2.7 | -35.9 | 0.0 | 0.0 | 49.6 | 74.0 | -24.4 | V | P | |
| 1.330 | 3.0 | 44.0 | 25.2 | 2.7 | -35.9 | 0.0 | 0.0 | 36.0 | 54.0 | -18.0 | V | A | |
| 1.662 | 3.0 | 59.0 | 26.4 | 3.1 | -35.6 | 0.0 | 0.0 | 52.8 | 74.0 | -21.2 | V | P | |
| 1.662 1.994 | 3.0 3.0 | 43.1 52.5 | 26.4 27.6 | 3.1 3.5 | -35.6 -35.4 | 0.0 0.0 | 0.0 0.0 | 36.9 48.1 | 54.0 74.0 | -17.1 -25.9 | V | A | |
| 1.994 1.994 | 3.0 | 36.4 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 32.0 | 74.0 54.0 | -23.9 | V V | P A | |
| 1.330 | 3.0 | 54.2 | 25.2 | 2.7 | -35.9 | 0.0 | 0.0 | 46.2 | 74.0 | -27.8 | H | P | |
| 1.330 | 3.0 | 41.0 | 25.2 | 2.7 | -35.9 | 0.0 | 0.0 | 33.0 | 54.0 | -21.0 | H | Ā | |
| 1.662 | 3.0 | 54.9 | 26.4 | 3.1 | -35.6 | 0.0 | 0.0 | 48.8 | 74.0 | -25.2 | H | P | |
| 1.662 | 3.0 | 39.7 | 26.4 | 3.1 | -35.6 | 0.0 | 0.0 | 33.5 | 54.0 | -20.5 | H | A | |
| 1.994 | 3.0 | 50.3 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 46.0 | 74.0 | - 28.0 | H | P | |
| 1.994 | 3.0 | 34.9 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 30.5 | 54.0 | -23.5 | H | A | |
| | | | | | | ļ | | | | ļ | | | |
| Rev. 4.1.2 <u>Note: No</u> | | missions | were de | tecte | l above t | the system | m noi: | se floor. | | | | | |

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8.3.3. 40 MHz BANDWIDTH IN THE 5.2 GHz BAND

DIPOLE ANTENNA

| est Engr | | Devin Cl | - | | | | | | | | | | |
|------------------------|------------|----------------------|--------------|------------|----------------|------------|----------|--------------|--------------|----------------|--------------|--------|-------|
| Date: | | 09/04/08 | | | | | | | | | | | |
| Project #: | | 09J1278 | | | | | | | | | | | |
| Company | | Mitsumi | | | | | | | | | | | |
| | | EUT(Dip | | | with Laj | ptop | | | | | | | |
| Mode Op | | Rx_BW= | | | | | | | | | T: 110 | 4.1.1 | |
| | f | Measuren | | | | Preamp (| | | | _ | Field Stren | - | |
| | Dist | Distance | | | | Distance | | | | | ld Strength | | |
| | Read | Analyzer | _ | | Avg | _ | | trength @ | - | - | s. Average | | |
| | AF | Antenna Cable Los | | | Peak HPF | | | Field Str | ength | Margin V | rs. Peak Lir | nit | |
| | CL | Cable Los | 5 | | nrr | High Pas | s Filter | ſ | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Fltr | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| GHz | (m) | dBuV | dB/m | dB | dB | dB | dB | dBuV/n | dBuV/m | dB | V/H | P/A/QP | |
| 1.330 | 3.0 | 58.6 | 25.2 | 2.7 | -35.9 | 0.0 | 0.0 | 50.6 | 74.0 | -23.4 | V | P | |
| 1.330 | 3.0 | 44.1 | 25.2 | 2.7 | -35.9 | 0.0 | 0.0 | 36.1 | 54.0 | - 17.9 | V | Α | |
| 1.662 | 3.0 | 59.3 | 26.4 | 3.1 | -35.6 | 0.0 | 0.0 | 53.2 | 74.0 | -20.8 | V | P | |
| 1.662 | 3.0 | 43.2 | 26.4 | 3.1 | -35.6 | 0.0 | 0.0 | 37.1 | 54.0 | -16.9 | V | A | |
| 1.994 | 3.0 | 53.7 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 49.4 | 74.0 | -24.6 | V | P | |
| L.994 | 3.0 | 37.1 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 32.8 | 54.0 | -21.2 | V | A | |
| 1.330 1.330 | 3.0 3.0 | 55.6 42.2 | 25.2 25.2 | 2.7 | -35.9 -35.9 | 0.0 0.0 | 0.0 | 47.6 34.2 | 74.0 54.0 | -26.4 | H H | P | |
| 1.550 | 3.0 | 42.2 55.5 | 25.2 | 2.7 3.1 | -35.9 | 0.0 | 0.0 | 34.2 49.3 | 54.0 74.0 | -19.8 -24.7 | н Н | A P | |
| 1.662 | 3.0 | 40.1 | 26.4 | 3.1 | -35.6 | 0.0 | 0.0 | 33.9 | 74.0 54.0 | -24.7 | H | A | |
| 1.994 | 3.0 | 49.9 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 45.5 | 74.0 | -28.5 | H | P | |
| 1.994 | 3.0 | 34.6 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 30.2 | 54.0 | -23.8 | H | Ā | |
| | | • | | | | | | | | - | | | |
| Rev. 4.1.2 Note: No | | missions | were de | tected | l above t | the system | m noi: | se floor. | | | | | |

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8.3.4. 40 MHz BANDWIDTH IN THE 5.2 GHz BAND

PIFA ANTENNA

| Date: 09/04/08 Droject #: 09/12784 Company: Mitzumi UT Description: EUT(PIFA antenna) with Laptop Mode Oper: Rx_BW=40MHz f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit CL Cable Loss HPF High Pass Filter T Dist Read AF CL Amp D Corr Fitr Corr. Limit Margin Ant. Pol. Det. Notes GHz (m) dBuV dB/m dB dB dB dB dB dB dB v/H P/A/QP 1.330 3.0 57.7 25.2 2.7 35.9 0.0 0.0 49.7 74.0 -24.3 V P | Project #: 09J12784 Company: Mitsumi UTD Description: EUT(PIFA antenna) with Laptop Mode Oper: Rx_BW=40MHz f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit CL Cable Loss HPF High Pass Filter Vith P/AQP M330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 49.7 74.0 -24.3 V P 330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 35.9 54.0 -18.1 V A 662 3.0 59.2 2.6.4 3.1 -35.6 0.0 0.0 35.9 54.0 -18.1 V A 662 3.0 53.3 25.2< | roject #: Company: UT Descri Íode Oper | i ption: r: f Dist | 09J12784 Mitsumi | 4 | | | | | | | | | | |
|---|--|---|------------------------------------|---------------------|-----------|--------|----------|-----------|----------|------------|-------|---------------|-------------|-----------|-------|
| Company: Mitsumi UT Description: EUT(PIFA antenna) with Laptop Mode Oper: Rx_BW=40MHz f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit CL Cable Loss HPF High Pass Filter Margin vs. Peak Limit Margin vs. Peak Limit f Dist Read AF CL Amp D Corr Fltr Corr. Limit Margin vs. Peak Limit dcf Dist Read AF CL Amp D Corr Fltr Corr. Limit Margin vs. Peak Limit dcf Dist Read AF CL Amp D Corr Fltr Corr. Limit Margin vs. Peak Limit dside Dist | Company: Mitzumi UT Description: EUT(PIFA antenna) with Laptop Mode Oper: Rx_BW=40MHz f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit CL Cable Loss HPF High Pass Filter Margin vs. Peak Limit Notes f Dist Read AF CL Amp D Corr Fltr Corr. Limit Margin vs. Peak Limit GHz (m) dBuV dB dB dB dB dB V/H P/A/QP .330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 45.0 -18.1 V A .662 3.0 53.3 27.6 3.5 <t< th=""><th>Company: UT Descri fode Oper</th><th>iption: r: f Dist</th><th>Mitsumi</th><th>-</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<> | Company: UT Descri fode Oper | i ption: r: f Dist | Mitsumi | - | | | | | | | | | | |
| EUT Description: EUT(PIFA antenna) with Laptop Mode Oper: Rx_BW=40MHz f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit Read Analyzer Reading Average Field Strength @ 3 m Margin vs. Average Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit Det. Notes GHz (m) dBuV dB dV/m P/M / QP | EUT Description: EUT(PIFA antenna) with Laptop Mode Oper: Rx_BW=40MHz Average Field Strength Limit f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit Read Analyzer Reading Avy Average Field Strength @ 3 m Margin vs. Average Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit CL Cable Loss HPF High Pass Filter Margin vs. Peak Limit Notes f Dist Read AF CL Amp D Corr Fltr Corr. Limit Margin vs. Peak Limit 1330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 49.7 74.0 -24.3 V P .330 3.0 43.1 26.4 3.1 -35.6 0.0 0.0 49.7 74.0 -24.3 V P .330 3.0 43.1 26.4 3.1 -35.6 0.0 0.0 43.9 | UT Descri Iode Oper | i ption: r: f Dist | | | | | | | | | | | | |
| Mode Oper: Rx_BW=40MHz Preamp Gain Average Field Strength Limit f Measurement Frequency Amp Distance to Antenna D Corr Distance Correct to 3 meters Average Field Strength Q 3 m Margin vs. Average Limit AF Analyzer Reading AF Avg Average Field Strength Q 3 m Margin vs. Average Limit CL Cable Loss HPF High Pass Filter Margin vs. Peak Limit f Dist Read AF CL Amp D Corr Fltr Corr. Limit Margin vs. Peak Limit CL Cable Loss HPF High Pass Filter Margin vs. Peak Notes Notes GHz (m) dBuV dB/m dB dB dB dBuV/m dB V/H P/A/QP .330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 35.0 74.0 -24.3 V P .330 3.0 53.3 27.6 3.5 -0.0 0.0 37.0 54.0 -18.1 V A .662 3.0 43.1 -35.6 0.0 0.0 32. | Mode Oper: Rx_BW=40MHz Preamp Gain Average Field Strength Limit f Measurement Frequency Amp Preamp Gain Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Margin vs. Average Limit AF Antenna Factor Peak Calculated Peak Field Strength Margin vs. Peak Limit CL Cable Loss HPF High Pass Filter Margin vs. Peak Limit Notes f Dist Read AF CL Amp D Corr Flt Corr. Limit Margin vs. Peak Limit GHz (m) dBuV dB/m dB dB dB dBuV/m dB V/H P/A/QP .330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 35.0 74.0 -24.3 V P .330 3.0 53.3 27.6 3.5 -0.0 0.0 37.0 54.0 -17.0 V A .994 3. | íode Oper | r: f Dist | EUT(PIFA | | | | | | | | | | | |
| f Measurement Frequency Amp Dist Preamp Gain Average Field Strength Limit Dist Distance to Antenna Read D Corr Distance Correct to 3 meters Arerage Field Strength @ 3 m Margin vs. Average Limit AF Antenna Factor CL Peak Field Strength @ 3 m Margin vs. Average Field Strength Margin vs. Average Limit Margin vs. Average Limit CL Cable Loss HPF Peak Calculated Peak Field Strength Margin vs. Peak Limit Margin vs. Peak MB MB MB MB MB Margin vs. Peak Notes GHz (m) dBuV dB dB dB Corr Limit Margin vs. Peak Notes 1.330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 35.9 54.0 -18.1 V A .662 3.0 59.2 26.4 3.1 -35.6 0.0 0.0 37.0 54.0 -18.1 V A .994 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 32.5 54.0 <th>f Measurement Frequency Amp Dist Preamp Gain Average Field Strength Limit Dist Distance to Antenna Read Analyzer Reading Ar Average Field Strength @ 3 m Arenap Field Strength Margin vs. Average Limit Margin vs. Average Limit AF Antenna Factor CL Peak Field Strength Margin vs. Average Limit Margin vs. Average Field Strength Margin vs. Average Limit Margin vs. Average Limit Margin vs. BuV dBuV dB dB Clover Filt Corr. Limit Margin vs. Peak Limit Margin vs. Peak GB dB dB Corr Fltr Corr. Limit Margin vs. Peak Limit Margin vs. Peak GB dB Corr Fltr Corr. Limit Margin vs. Peak Notes 642 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 37.0 54.0 -18.1 V A .662 3.0 53.3 27.6 3.5 -35.4 0.0 0.0 37.0 54.0 -18.1 V A .994 3.0<</th> <th></th> <th>f Dist</th> <th></th> <th>A anten:</th> <th>na) wi</th> <th>ith Lapt</th> <th>ор</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> | f Measurement Frequency Amp Dist Preamp Gain Average Field Strength Limit Dist Distance to Antenna Read Analyzer Reading Ar Average Field Strength @ 3 m Arenap Field Strength Margin vs. Average Limit Margin vs. Average Limit AF Antenna Factor CL Peak Field Strength Margin vs. Average Limit Margin vs. Average Field Strength Margin vs. Average Limit Margin vs. Average Limit Margin vs. BuV dBuV dB dB Clover Filt Corr. Limit Margin vs. Peak Limit Margin vs. Peak GB dB dB Corr Fltr Corr. Limit Margin vs. Peak Limit Margin vs. Peak GB dB Corr Fltr Corr. Limit Margin vs. Peak Notes 642 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 37.0 54.0 -18.1 V A .662 3.0 53.3 27.6 3.5 -35.4 0.0 0.0 37.0 54.0 -18.1 V A .994 3.0< | | f Dist | | A anten: | na) wi | ith Lapt | ор | | | | | | | |
| Dist Read Distance to Antenna Analyzer Reading AF D Corr Antenna Factor CL D Corr Peak Distance Correct to 3 meters Average Field Strength @ 3 m Calculated Peak Field Strength Peak Field Strength Limit Margin vs. Average Limit Margin vs. Average Limit f Dist CL Read Calbe Loss AF CL Amp MB D Corr MB Fltr Calculated Peak Field Strength Margin vs. Average Limit Margin vs. Peak Limit f Dist CHz Read (m) AF CL Amp MB D Corr MB Fltr MB Corr. MB Limit Margin vs. Peak Limit Notes 330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 49.7 74.0 -24.3 V P .330 3.0 43.9 25.2 2.7 -35.9 0.0 0.0 35.9 54.0 -18.1 V A .662 3.0 53.3 27.6 3.5 -35.4 0.0 0.0 37.0 54.0 -18.1 V A .994 3.0 55.3 25.2 2.7 -35.9 0.0 0.0< | Dist Read Aralyzer Reading AF CL D Corr Antenna Factor CL D Corr Cable Loss D Corr Peak HPF Dist Average Field Strength (2) 3 m Calculated Peak Field Strength Peak Field Strength Margin vs. Average Limit Margin vs. Average Limit f Dist CL Read Cable Loss AF CL Amp B D Corr B Fltr CB Corr. Corr. Limit Margin vs. Peak Limit Det. Peak Notes f Dist CHz MaBu MB dB dB Corr. Limit Margin vs. Peak Limit Notes 1330 3.0 57.7 25.2 2.7 -35.9 0.0 0.0 49.7 74.0 -24.3 V P .330 3.0 43.9 25.2 2.7 -35.9 0.0 0.0 37.0 54.0 -18.1 V A .662 3.0 53.3 27.6 3.5 -35.4 0.0 0.0 37.0 54.0 -18.1 V A .994 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 33.3 <td< th=""><th>1</th><th>Dist</th><th>Rx_BW=</th><th>40MHz</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<> | 1 | Dist | Rx_BW= | 40MHz | | | | | | | | | | |
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| 1.994 3.0 53.3 27.6 3.5 -35.4 0.0 0.0 48.9 74.0 -25.1 V P 1.994 3.0 36.9 27.6 3.5 -35.4 0.0 0.0 32.5 54.0 -21.5 V A 1.330 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P .330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P .330 3.0 41.9 25.2 2.7 -35.6 0.0 0.0 48.1 74.0 -20.1 H A .662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -20.9 H A .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 <t< td=""><td>1.994 3.0 53.3 27.6 3.5 -35.4 0.0 0.0 48.9 74.0 -25.1 V P 1.994 3.0 36.9 27.6 3.5 -35.4 0.0 0.0 32.5 54.0 -21.5 V A 1.330 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P 1.330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P 1.330 3.0 41.9 25.2 2.7 -35.6 0.0 0.0 48.1 74.0 -26.7 H P 1.662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -20.9 H A .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 45.9 74.0 -28.1</td><td></td><td></td><td>¢</td><td></td><td>¢</td><td>¢</td><td>\$<</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<> | 1.994 3.0 53.3 27.6 3.5 -35.4 0.0 0.0 48.9 74.0 -25.1 V P 1.994 3.0 36.9 27.6 3.5 -35.4 0.0 0.0 32.5 54.0 -21.5 V A 1.330 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P 1.330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P 1.330 3.0 41.9 25.2 2.7 -35.6 0.0 0.0 48.1 74.0 -26.7 H P 1.662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -20.9 H A .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 45.9 74.0 -28.1 | | | ¢ | | ¢ | ¢ | \$< | | | | | | | |
| 1994 3.0 36.9 27.6 3.5 -35.4 0.0 0.0 32.5 54.0 -21.5 V A 1.330 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P 1.330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P 1.330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 33.9 54.0 -20.1 H A .662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -20.9 H A .662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -20.9 H A .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -28.1 H P .994 3.0 34.7 27.6 3.5 -35.4 | 1994 3.0 36.9 27.6 3.5 -35.4 0.0 0.0 32.5 54.0 -21.5 V A 1.330 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P 1.330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P 1.330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 33.9 54.0 -20.1 H A 1.662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P 1.662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A .994 3.0 34.7 27.6 3.5 -35.4 | | | ¢ | | ¢ | ¢ | \$< | | | | \$Q | | | |
| .330 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P .330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 33.9 54.0 -20.1 H A .662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P .662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A .662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A .994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A .994 3.0 34.7 27.6 3.5 -35.4 <td< td=""><td>.330 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P .330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 33.9 54.0 -20.1 H A .662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P .662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P .662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A .994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A .994 3.0 34.7 27.6 3.5 -35.4 <td< td=""><td></td><td></td><td>\$i</td><td></td><td>¢</td><td>¢</td><td>\$<</td><td></td><td></td><td></td><td>\$Q</td><td></td><td></td><td></td></td<></td></td<> | .330 3.0 55.3 25.2 2.7 -35.9 0.0 0.0 47.3 74.0 -26.7 H P .330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 33.9 54.0 -20.1 H A .662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P .662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P .662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A .994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A .994 3.0 34.7 27.6 3.5 -35.4 <td< td=""><td></td><td></td><td>\$i</td><td></td><td>¢</td><td>¢</td><td>\$<</td><td></td><td></td><td></td><td>\$Q</td><td></td><td></td><td></td></td<> | | | \$i | | ¢ | ¢ | \$< | | | | \$Q | | | |
| .330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 33.9 54.0 -20.1 H A 662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P 662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H P 662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A 994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 45.9 74.0 -28.1 H P 994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A 994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A 994 3.0 34.7 27.6 3.5 -35.4 | .330 3.0 41.9 25.2 2.7 -35.9 0.0 0.0 33.9 54.0 -20.1 H A 662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P 662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H P 662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A 994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 45.9 74.0 -28.1 H P 994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A 994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A 994 3.0 34.7 27.6 3.5 -35.4 | | | \$i | | \$ | ¢ | \$< | | | | \$Q | | | , |
| 1.662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P 1.662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A 1.994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 45.9 74.0 -28.1 H P 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A | 1.662 3.0 54.3 26.4 3.1 -35.6 0.0 0.0 48.1 74.0 -25.9 H P 1.662 3.0 39.3 26.4 3.1 -35.6 0.0 0.0 33.1 54.0 -20.9 H A 1.994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 45.9 74.0 -28.1 H P 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A | | | \$ | | | | \$< | | | | Q | | ······ | |
| .994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 45.9 74.0 -28.1 H P .994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A .994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A Rev. 4.1.2.7 | 1.994 3.0 50.2 27.6 3.5 -35.4 0.0 0.0 45.9 74.0 -28.1 H P 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -28.1 H P 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A Rev. 4.1.2.7 | .662 | 3.0 | 54.3 | 26.4 | | o | 0.0 | 0.0 | 48.1 | 74.0 | | H | | |
| 1.994 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A | <u>1.994</u> 3.0 34.7 27.6 3.5 -35.4 0.0 0.0 30.4 54.0 -23.6 H A Rev. 4.1.2.7 | | | o | | ۵ | ¢ | \$< | | | | oo | | A | |
| Rev. 4.1.2.7 | Rev. 4.1.2.7 | | | \$ | | ۵ | ¢ | \$< | | | | oo | | | |
| | | .994 | 3.0 | 34.7 | 27.6 | 3.5 | -35.4 | 0.0 | 0.0 | 30.4 | 54.0 | - 23.6 | H | A | |
| | | | | | | | | | | | | | | | |
| | | ev. 41.2.7 | 7 | | | | | | | : | | | | | |
| tore, the other emissions were detected doore the system noise moor. | tore, ito other emissions were deletted above the system noise noor. | | | niccione | wara da | tected | ahove | he eveter | m noi | e floor | | | | | |
| | | 1016:140.0 | uler e | 115510115 | were de | rected | auovei | me syster | n nor | se 1100f. | | | | | |
| | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |

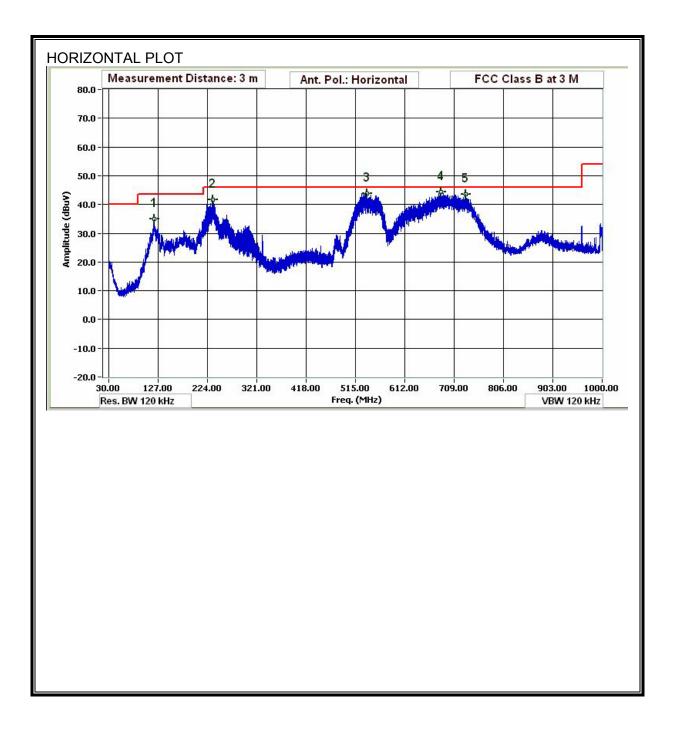
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REPORT NO: 09U12784-2 FCC ID: EW4DWMW034

8.4. WORST-CASE BELOW 1 GHz

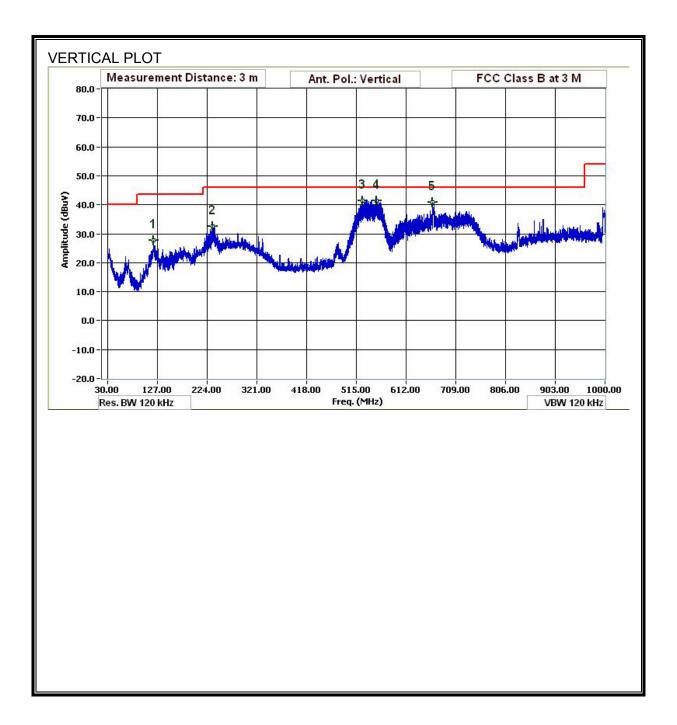
DIPOLE ANTENNA

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



Page 292 of 344

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



COMPLIANCE CERTIFICATION SERVICES FORM NO: CCSUP4701C 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of CCS.

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REPORT NO: 09U12784-2 FCC ID: EW4DWMW034

DATA

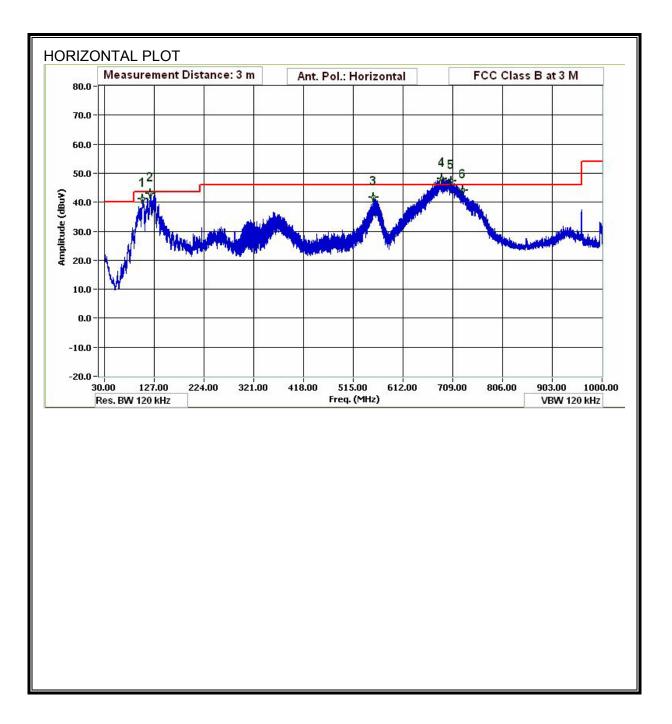
| Test Engr: Date: Project #: Company: EUT Descri Mode Ope | ption: | Ekta Budi 09/20/08 09J12784 Mitsumi EUT(Dipo Tx mode | | .na)wi | th Lapto | P | | | | | | | |
|---|---------------------------------|---|------------------------------|--------------------------|----------------------|-------------------|-------------------|----------------------|----------------------|---|-------------|--------------|-------|
| - | f | Measureme | | | Amp | Preamp (| | | | Margin | Margin vs. | Limit | |
| | Dist | Distance to | | ıa | | | | to 3 meters | | | | | |
| | Read | Analyzer F | - | | Filter | Filter Ins | | | | | | | |
| | AF | Antenna F | | | Corr. | Calculate | | | | | | | |
| | CL | Cable Loss | | | Limit | Field Stre | ength Lir | nit | | | | | |
| f | Dist | Read | AF | CL | Атр | D Corr | Filter | Corr. | Limit | Margin | Ant. Pol. | Det. | Notes |
| MHz | (m) | dBuV | dB/m | dB | dB | dB | dB | dBuV/m | dBuV/m | dB | V/H | P/A/QP | |
| 120.004 | 3.0 | 48.5 | 13.6 | 1.0 | 28.3 | 0.0 | 0.0 | 34.9 | 43.5 | - 8.6 | H | Р | |
| 234.848 | 3.0 | 56.8 | 11.9 | 1.3 | 28.2 | 0.0 | 0.0 | 41.8 | 46.0 | -4.2 | H | P | |
| | | | 17.4 | 2.1 | 27.7 | 0.0 | 0.0 | 41.7 | 46.0 | -4.3 | H | QP | |
| 537.021 | 3.0 | 50.0 | | | | | | | | -4.0 | TT | | |
| 537.021 683.547 | 3.0 | 49.9 | 19.4 | 2.4 | 27.2 | 0.0 | 0.0 | 42.0 | 46.0 | • | H | QP | |
| 537.021 | | | | | 27.2 27.3 | 0.0 0.0 | 0.0 0.0 | 42.0 41.4 | 46.U 46.0 | -4.0 -4.6 | п Н | QP QP | |
| 537.021 683.547 | 3.0 | 49.9 | 19.4 | 2.4 | | | 0.0 | 41.4 | | -4.6 | H | QP | |
| 537.021 683.547 731.309 120.004 | 3.0 3.0 | 49.9 46.1 | 19.4 20.0 | 2.4 2.5 | 27.3 | 0.0 | | å | 46.0 | • | | QP P | |
| 537.021 683.547 731.309 120.004 234.608 | 3.0 3.0 3.0 | 49.9 46.1 41.3 | 19.4 20.0 13.6 | 2.4 2.5 1.0 | 27.3 28.3 | 0.0 0.0 | 0.0 0.0 | 41.4 27.7 | 46.0 43.5 | -4.6 -15.8 | H V | QP | |
| 537.021 683.547 731.309 | 3.0 3.0 3.0 3.0 3.0 | 49.9 46.1 41.3 47.5 | 19.4 20.0 13.6 11.9 | 2.4 2.5 1.0 1.3 | 27.3 28.3 28.2 | 0.0 0.0 0.0 | 0.0 0.0 0.0 | 41.4 27.7 32.5 | 46.0 43.5 46.0 | -4.6 -15.8 -13.5 | H V V | QP P P | |

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REPORT NO: 09U12784-2 FCC ID: EW4DWMW034

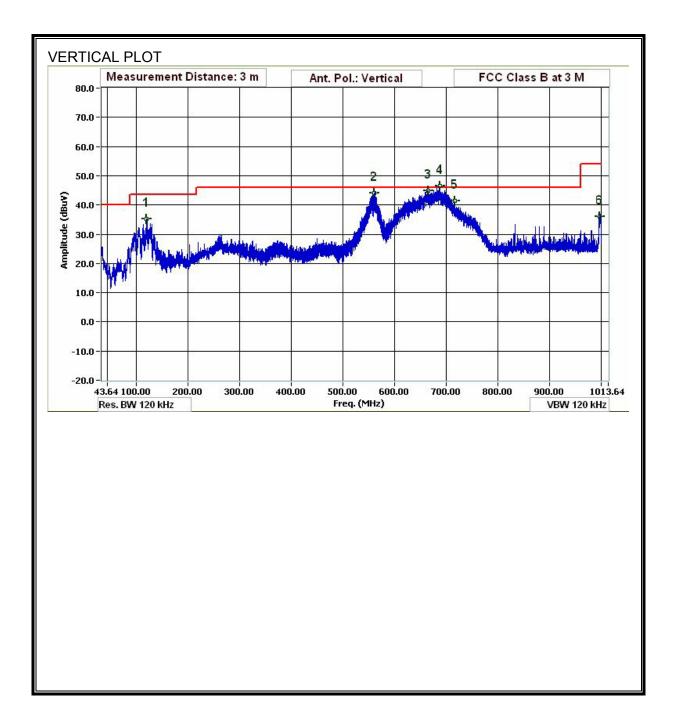
PIFA ANTENNA

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



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SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



COMPLIANCE CERTIFICATION SERVICES FORM NO: CCSUP4701C 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888 This report shall not be reproduced except in full, without the written approval of CCS.

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REPORT NO: 09U12784-2 FCC ID: EW4DWMW034

DATA

| lest Engr: Date: Project #: Company: EUT Descriptic Mode Oper: | | Ekta Budi 09/20/08 09J12784 | Joynanti | | | | | | | | | | |
|---|------------|-----------------------------------|--------------|------------|--------|------------|------------|--------------|--------------|--------------|------------|----------|-------|
| Project #: Company: EUT Descriptic | | | | | | | | | | | | | |
| Company: EUT Descriptio | | | L | | | | | | | | | | |
| EUT Descriptio | | Mitsumi | | | | | | | | | | | |
| - | | EUT(PIFA | antenn | a`) with | Lanton | | | | | | | | |
| | | Tx mode | | -, | | | | | | | | | |
| f | | Measurem | ent Fregu | ency | Amp | Preamp (| Gain | | | Margin | Margin vs. | Limit | |
| Di | ist | Distance to | o Antenn | ia - | D Corr | Distance | Correct | to 3 meters | | ÷ | - | | |
| Re | ead | Analyzer H | Reading | | Filter | Filter Ins | ert Loss | | | | | | |
| Al | F | Antenna F | 'actor | | Corr. | Calculate | d Field St | trength | | | | | |
| CI | L | Cable Loss | i | | Limit | Field Stre | ngth Lin | nit | | | | | |
| | | | | | | | | | | | | | |
| | Dist | Read | AF | CL | Amp | D Corr | | Corr. | Limit | | Ant. Pol. | Det. | Notes |
| | (m) | dBuV | dB/m | dB | dB | dB | dB | dBuV/m | | dB | V/H | P/A/QP | |
| ····· | 3.0 | 50.7 | 10.6 | 0.9 | 28.3 | 0.0 | 0.0 | 34.0 | 43.5 | -9.5 | H | QP | |
| | 3.0 | 50.1 | 13.6 | 1.0 | 28.3 | 0.0 | 0.0 | 36.5 | 43.5 | -7.0 | H | QP | |
| ····· | 3.0 3.0 | 49.5 48.3 | 17.6 19.4 | 2.1 2.4 | 27.7 | 0.0 0.0 | 0.0 0.0 | 41.6 42.9 | 46.0 46.0 | -4.4 -3.1 | H H | EP QP | |
| | 3.0 | 47.8 | 19.4 | 2.5 | 27.2 | 0.0 | 0.0 | 42.7 | 46.0 | -3.1 | H | QP | |
| | 3.0 | 46.5 | 20.0 | 2.5 | 27.3 | 0.0 | 0.0 | 41.7 | 46.0 | -4.3 | H | QP QP | |
| | | | | | | | | | | | | | |
| 120.004 | 3.0 | 48.9 | 13.6 | 1.0 | 28.3 | 0.0 | 0.0 | 35.3 | 43.5 | - 8.2 | V | EP | |
| ····· | 3.0 | 45.5 | 17.7 | 2.2 | 27.6 | 0.0 | 0.0 | 37.8 | 46.0 | - 8.2 | V | QP | |
| | 3.0 | 47.1 | 19.2 | 2.4 | 27.3 | 0.0 | 0.0 | 41.3 | 46.0 | -4.7 | V | QP | |
| | 3.0 | 48.1 | 19.4 | 2.4 | 27.2 | 0.0 | 0.0 | 42.7 | 46.0 | - 3.3 | V | QP | |
| | 3.0 | 46.3 | 19.8 | 2.5 | 27.2 | 0.0 | 0.0 | 41.4 | 46.0 | -4.6 | V | EP | |
| 997.000 | 3.0 | 38.5 | 22.4 | 3.0 | 27.9 | 0.0 | 0.0 | 36.0 | 46.0 | -10.0 | V | EP | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Rev. 1.27.09 | | | | <u> </u> | | | | | | | | | |

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9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

| Frequency of Emission (MHz) | Conducted I | Limit (dBuV) |
|-----------------------------|-------------|--------------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56 | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

Decreases with the logarithm of the frequency.

TEST PROCEDURE

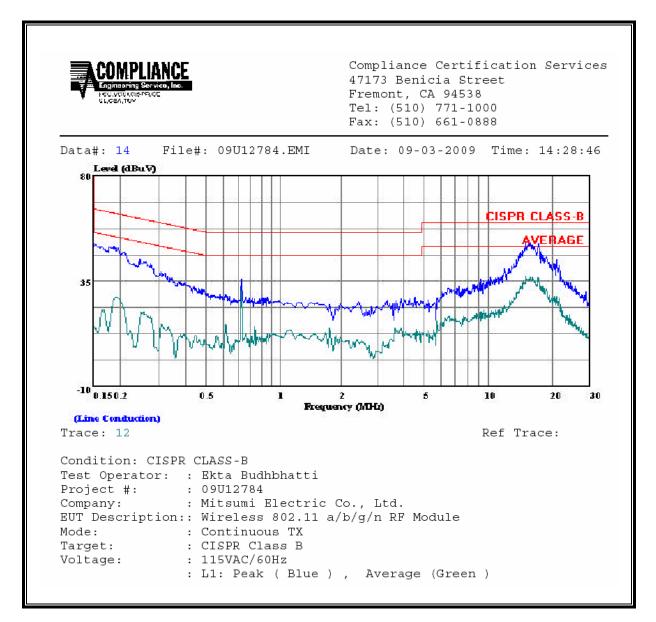
ANSI C63.4

RESULTS

6 WORST EMISSIONS

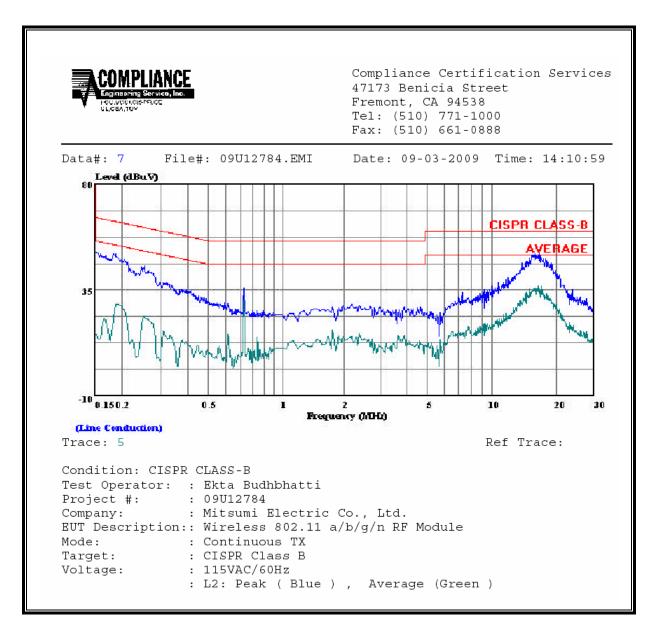
| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | | |
|--|-----------|-----------|-----------|-------|-------|-------|---------|---------|---------|--|
| Freq. | Reading | | | Closs | Limit | EN_B | Margin | | Remark | |
| (MHz) | PK (dBuV) | QP (dBuV) | AV (dBuV) | (dB) | QP | AV | QP (dB) | AV (dB) | L1 / L2 | |
| 0.19 | 49.81 | | 27.03 | 0.00 | 64.26 | 54.26 | -14.45 | -27.23 | L1 | |
| 15.89 | 51.70 | | 36.13 | 0.00 | 60.00 | 50.00 | -8.30 | -13.87 | L1 | |
| 17.38 | 51.20 | | 31.38 | 0.00 | 60.00 | 50.00 | -8.80 | -18.62 | L1 | |
| 0.19 | 50.29 | | 27.99 | 0.00 | 64.26 | 54.26 | -13.97 | -26.27 | L2 | |
| 0.25 | 45.37 | | 23.92 | 0.00 | 61.66 | 51.66 | -16.29 | -27.74 | L2 | |
| 16.75 | 50.71 | | 35.62 | 0.00 | 60.00 | 50.00 | -9.29 | -14.38 | L2 | |
| 6 Worst I | Data | | | | | | | | | |

LINE 1 RESULTS



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LINE 2 RESULTS



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10. DYNAMIC FREQUENCY SELECTION

10.1. OVERVIEW

10.1.1. LIMITS

INDUSTRY CANADA

IC RSS-210 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-210 Issue 7 A9.4 (b) (ii) Channel Availability Check Time: ...

Additional requirements for the band 5600-5650 MHz: Until further notice, devices subject to this Section shall not be capable of transmitting in the band 5600-5650 MHz, so that Environment Canada weather radars operating in this band are protected.

RSS-210 Issue 7 A9.4 (b) (iv) **Channel closing time:** the maximum channel closing time is 260 ms.

FCC

§15.407 (h) and FCC 06-96 APPENDIX "COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVCIES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION".

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Table 1: Applicability of DFS requirements prior to use of a channel

| Requirement | Operatio | nal Mode | | | | |
|---------------------------------|----------|----------------------------------|-------------------------------|--|--|--|
| | Master | Client (without radar detection) | Client (with radar detection) | | | |
| Non-Occupancy Period | Yes | Not required | Yes | | | |
| DFS Detection Threshold | Yes | Not required | Yes | | | |
| Channel Availability Check Time | Yes | Not required | Not required | | | |
| Uniform Spreading | Yes | Not required | Not required | | | |

Table 2: Applicability of DFS requirements during normal operation

| Requirement | Operational Mode | | | | |
|-----------------------------------|------------------|-------------------------|----------------------|--|--|
| | Master | Client (without DFS) | Client (with DFS) | | |
| DFS Detection Threshold | Yes | Not required | Yes | | |
| Channel Closing Transmission Time | Yes | Yes | Yes | | |
| Channel Move Time | Yes | Yes | Yes | | |

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Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

| Maximum Transmit Power | Value |
|--|---|
| | (see note) |
| ≥ 200 milliwatt | -64 dBm |
| < 200 milliwatt | -62 dBm |
| Note 1: This is the level at the input of the receiver ass Note 2: Throughout these test procedures an addition of the test transmission waveforms to account for varia will ensure that the test signal is at or above the detect response. | al 1 dB has been added to the amplitude ations in measurement equipment. This |

Parameter Value Non-occupancy period 30 minutes Channel Availability Check Time 60 seconds Channel Move Time 10 seconds Channel Closing Transmission Time 200 milliseconds + approx. 60 milliseconds over remaining 10 second period 10 second

Table 4: DFS Response requirement values

The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

For the Short pulse radar Test Signals this instant is the end of the Burst.

For the Frequency Hopping radar Test Signal, this instant is the end of the last radar burst generated.

For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Table 5 – Short Pulse Radar Test Waveforms

| Radar | Pulse Width | PRI | Pulses | Minimum | Minimum | | |
|--------------|---------------------------------|----------------|--------|---------------|---------|--|--|
| Туре | (Microseconds) | (Microseconds) | | Percentage of | Trials | | |
| | | | | Successful | | | |
| | | | | Detection | | | |
| 1 | 1 | 1428 | 18 | 60% | 30 | | |
| 2 | 1-5 | 150-230 | 23-29 | 60% | 30 | | |
| 3 | 6-10 | 200-500 | 16-18 | 60% | 30 | | |
| 4 | 11-20 | 200-500 | 12-16 | 60% | 30 | | |
| Aggregate (F | Aggregate (Radar Types 1-4) 80% | | | | | | |

Table 6 – Long Pulse Radar Test Signal

| Radar | Bursts | Pulses | Pulse | Chirp | PRI | Minimum | Minimum |
|----------|--------|--------|--------|-------|--------|---------------|---------|
| Waveform | | per | Width | Width | (µsec) | Percentage | Trials |
| | | Burst | (µsec) | (MHz) | | of Successful | |
| | | | | | | Detection | |
| 5 | 8-20 | 1-3 | 50-100 | 5-20 | 1000- | 80% | 30 |
| | | | | | 2000 | | |

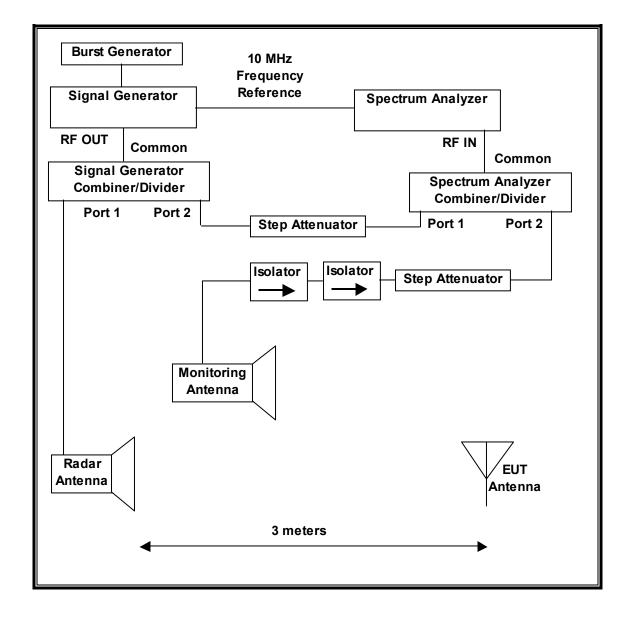
Table 7 – Frequency Hopping Radar Test Signal

| Radar Waveform | Pulse Width (µsec) | PRI (µsec) | Burst Length (ms) | Pulses per Hop | Hopping Rate (kHz) | Minimum Percentage of Successful Detection | Minimum Trials |
|-------------------|--------------------------|---------------|-------------------------|----------------------|--------------------------|---|-------------------|
| 6 | 1 | 333 | 300 | 9 | .333 | 70% | 30 |

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10.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



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SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at runtime.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

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ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

Establish a link between the Master and Slave, adjusting the distance between the units as needed to provide a suitable received level at the Master and Slave devices. Stream the video test file to generate WLAN traffic. Confirm that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

TEST AND MEASUREMENT EQUIPMENT

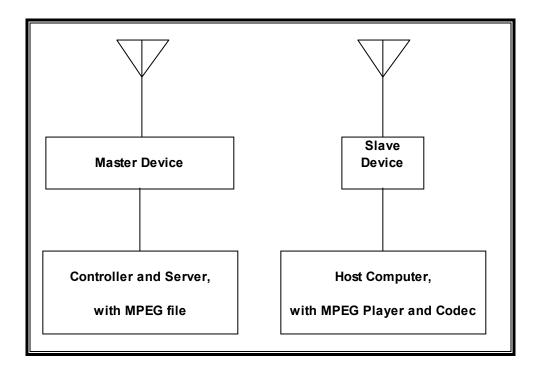
The following test and measurement equipment was utilized for the DFS tests documented in this report:

| TEST EQUIPMENT LIST | | | | | | | | |
|--|--------------|--------|--------|----------|--|--|--|--|
| Description Manufacturer Model Serial Number Cal Due | | | | | | | | |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C01069 | 01/20/10 | | | | |
| Vector signal generator, 20GHz | Agilent / HP | E8267C | C01066 | 11/16/09 | | | | |

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10.1.3. SETUP OF EUT

RADIATED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

| PERIPHERAL SUPPORT EQUIPMENT LIST | | | | | | | | | |
|--|-----------------------------|-----------------------|-----------------------------|-----------|--|--|--|--|--|
| Description | Manufacturer | Model | Serial Number | FCC ID | | | | | |
| Wireless Access Point (Master Device) | Cisco | AIR-AP1252AG- A-K9 | FTX120690N2 | LDK102061 | | | | | |
| AC Adapter (AP) | Delta Electronics | EADP-45BB B | DTH112490BD | DoC | | | | | |
| Notebook PC (Host) | Dell | PP18L | 10657517255 | DoC | | | | | |
| AC Adapter (Host PC) | Lite On Technology Corp. | LA65SN0-00 | CN-ODF263-71615- 687-49E | DoC | | | | | |
| Notebook PC (Client) | HP | Presario F700 | CNF7458G3Q | DoC | | | | | |
| AC Adapter (Client PC) | Hipro Electronics | PPP009H | F3-07091411250E | DoC | | | | | |

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10.1.4. DESCRIPTION OF EUT

The EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

The EUT is a Slave Device without Radar Detection.

The highest power level within these bands is 24.44 dBm EIRP in the 5250-5350 MHz band and 24.28 dBm EIRP in the 5470-5725 MHz band.

The highest gain antenna assembly utilized with the EUT has a gain of 1.98 dBi in the 5250-5350 MHz band and 2.13 dBi in the 5470-5725 MHz band. The lowest gain antenna assembly utilized with the EUT has a gain of -8.62 dBi in the 5250-5350 MHz band and -7.76 dBi in the 5470-5725 MHz band.

Two antennas are utilized to meet the diversity and MIMO operational requirements.

The EUT uses two transmitter/receiver chains, each connected to a 50-ohm coaxial antenna port. All antenna ports are connected to antennas to perform radiated tests.

WLAN traffic is generated by streaming the video file TestFile.mp2 "6 ½ Magic Hours" from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

The EUT utilizes the 802.11a/n architecture. Two nominal channel bandwidths are implemented: 20 MHz and 40 MHz.

The driver installed in the EUT when configured for a Linux Operating System is 2.6.15-CR-LSDK-2.0.0.107.

The driver installed in the EUT when configured for a Windows Operating System is 7.7.0.62 date code 09/09/2009.

OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS

The Master Device is a Cisco Access Point, FCC ID: LDK102061. The minimum antenna gain for the Master Device is 3.5 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is -64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides margin to the limit.

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10.2. RESULTS FOR 20 MHz BANDWIDTH

10.2.1. TEST CHANNEL AND RADAR WAVEFORM

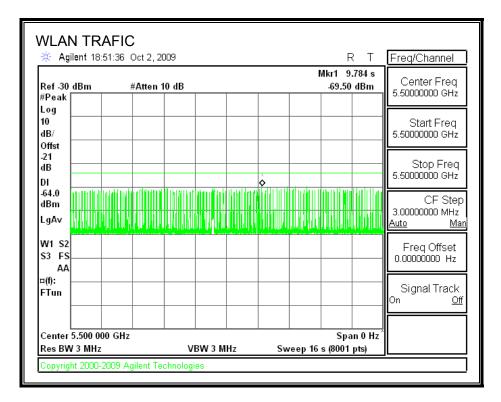
All tests were performed at a channel center frequency of 5500 MHz.

PLOT OF RADAR WAVEFORM

| Agilent 15:11: | | | | | М | Gr1 6.7 | | Freq/Channel |
|----------------------------------|--|---------|-----|-------|----------|---------|----------------|---|
| ef -30 dBm 'eak | Atten 10 | dB | | | | -63.99 | dBm | Center Freq 5.50000000 GHz |
| g | | | | | | | | Start Freq 5.5000000 GHz |
| | 1 | | | | | | | Stop Fred 5.5000000 GHz |
| 1.0 Bm Av | | | | | | | | CF Ste 3.00000000 MH; <u>Auto M</u> |
| 1 62 | aing ing a pasa kata a ng maliti <mark>ng g</mark> ak ikata n | | | | | | | II |
|): iun | | | | | | | | Signal Tracl On <u>C</u> |
| enter 5.500 000 (es BW 3 MHz | GHz | VBW 3 M | /H7 | Sweer | o 30.4 m | - | n 0 Hz nts) | |

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10.2.2. WLAN TRAFFIC WITH LINUX OPERATING SYSTEM



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10.2.3. MOVE AND CLOSING TIME WITH LINUX OPERATING SYSTEM

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time = (Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

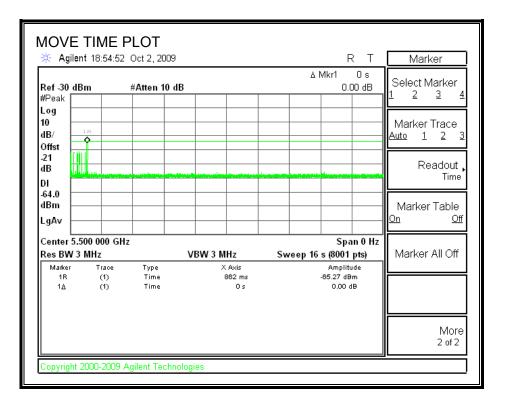
RESULTS

| Agency | Channel Move Time | Limit |
|----------|-------------------|-------|
| | (sec) | (sec) |
| FCC / IC | 0.000 | 10 |

| Agency | Aggregate Channel Closing Transmission Time | Limit |
|--------|---|--------|
| | (msec) | (msec) |
| FCC | 0.0 | 60 |
| IC | 0.0 | 260 |

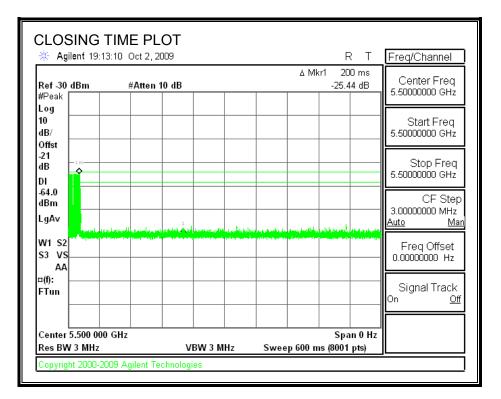
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MOVE TIME



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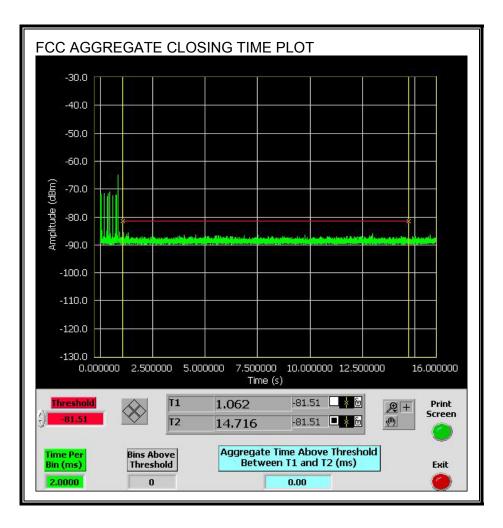
CHANNEL CLOSING TIME



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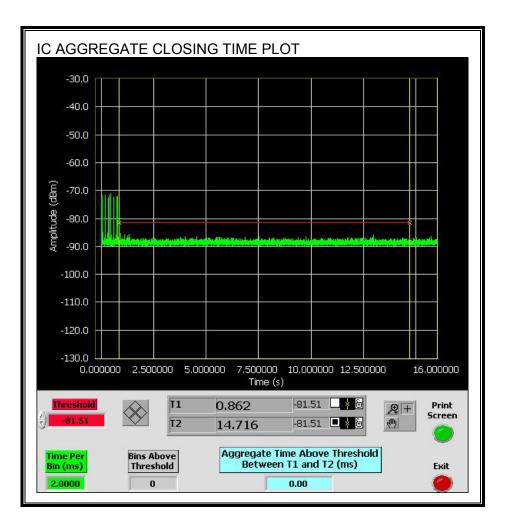
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the FCC aggregate monitoring period.



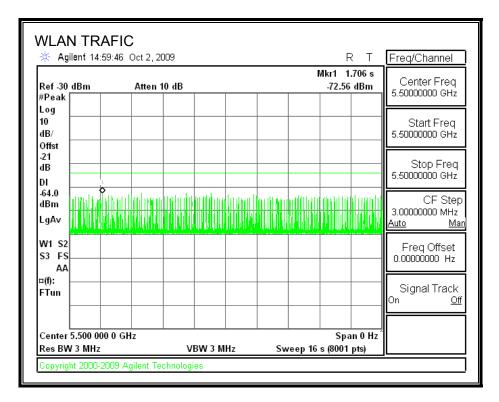
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Only intermittent transmissions are observed during the IC aggregate monitoring period.



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10.2.4. WLAN TRAFFIC WITH WINDOWS OPERATING SYSTEM



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10.2.5. MOVE AND CLOSING TIME WITH WINDOWS OPERATING SYSTEM

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time = (Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

| Agency | Channel Move Time | Limit |
|----------|-------------------|-------|
| | (sec) | (sec) |
| FCC / IC | 0.532 | 10 |

| Agency | Aggregate Channel Closing Transmission Time | Limit |
|--------|---|--------|
| | (msec) | (msec) |
| FCC | 8.0 | 60 |
| IC | 14.0 | 260 |

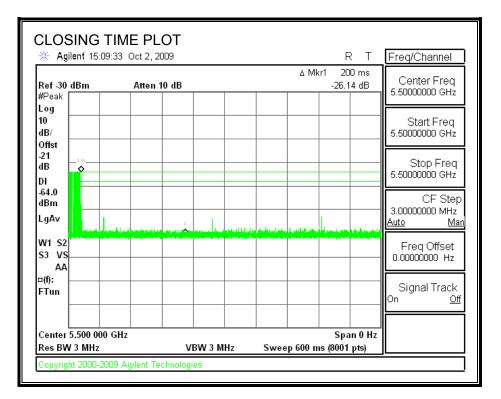
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MOVE TIME

| Agilent 1 | 5:01:09 | Atten 10 (| | | | ∆ Mkr1 | R T 532 ms 18.52 dB | Freq/Ch Cente | |
|-----------------------------|--------------|--------------|----------------------|------------------|------|-----------|---------------------------|-------------------------|--------------------------|
| #Peak | | Allen ID (| | | | | | 5.500000 | 00 GHż |
| Log 10 dB/ Offst | 1R • | | | | | | | Star 5.500000 | t Freq 00 GHz |
| -21 dB DI | | | m dia dia management | | | | | Sto 5.500000 | p Freq 00 GHz |
| -64.0 dBm LgAv | | | | | | | | 3.000000 <u>Auto</u> | CF Step 00 MHz Mai |
| Center 5.500 Res BW 3 MH | z | z | VBW 3 N | IHz | Swee | p 16 s (8 | • / | | Offset 100 Hz |
| Marker 1B | Trace (1) | Type Time | | (Axis 1.584 s | | | nplitude 27 dBm | | |
| 1Δ | ő | Time | | 532 ms | | | .52 dB | Signal On | l Track <u>Off</u> |
| | | | | | | | | | |

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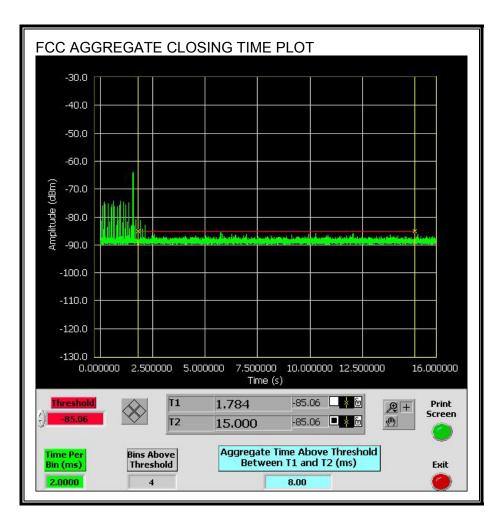
CHANNEL CLOSING TIME



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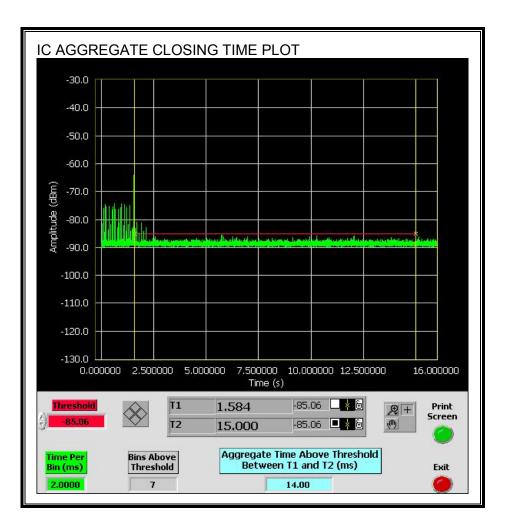
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the FCC aggregate monitoring period.



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Only intermittent transmissions are observed during the IC aggregate monitoring period.



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10.3. RESULTS FOR 40 MHz BANDWIDTH

10.3.1. TEST CHANNEL AND RADAR WAVEFORM

All tests were performed at a channel center frequency of 5510 MHz.

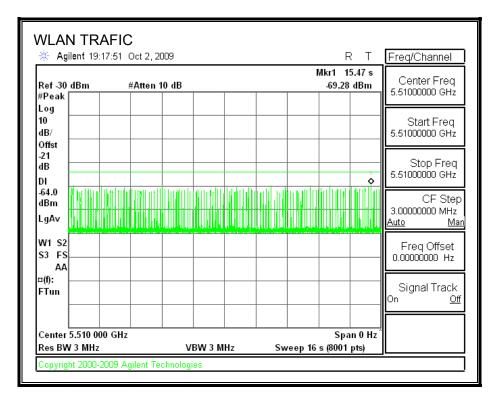
PLOTS OF RADAR WAVEFORM

| Agilent 15:12 | .21 OCT 2, 2 | 009 | | | | F | • • | Freq/Channel |
|------------------------------|--------------|--|-----|-------|--------|-------------------|----------------|---|
| f-30 dBm eak | Atten | 10 dB | | | M | cr1 995 -63.97 | | Center Freq 5.51000000 GHz |
| g | | | | | | | | Start Freq 5.51000000 GH; |
| | | | | | | | | Stop Free 5.51000000 GH; |
| l.0 im Av | | | | | | | | CF Ste 3.00000000 MH; <u>Auto M</u> |
| 1 62 | | h in sei in sei i dinnikko nyelen kolmalyeline in i | | | | | | Freq Offset 0.00000000 Hz |
|): un | | | | | | | | Signal Tracl On <u>C</u> |
| nter 5.510 000 s BW 3 MHz | GHz | VBW 3 | MHz | Sweet | 30.4 m | | n 0 Hz nts) | |

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10.3.2. WLAN TRAFFIC WITH LINUX OPERATING SYSTEM

PLOT OF WLAN TRAFFIC



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10.3.3. MOVE AND CLOSING TIME WITH LINUX OPERATING SYSTEM

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time = (Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

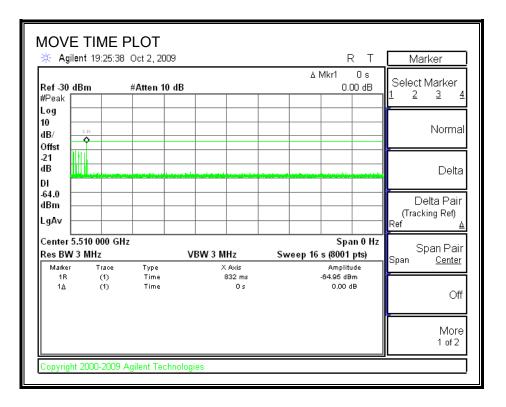
RESULTS

| Agency | Channel Move Time | Limit |
|----------|-------------------|-------|
| | (sec) | (sec) |
| FCC / IC | 0.000 | 10 |

| Agency | Aggregate Channel Closing Transmission Time | Limit |
|--------|---|--------|
| | (msec) | (msec) |
| FCC | 0.0 | 60 |
| IC | 0.0 | 260 |

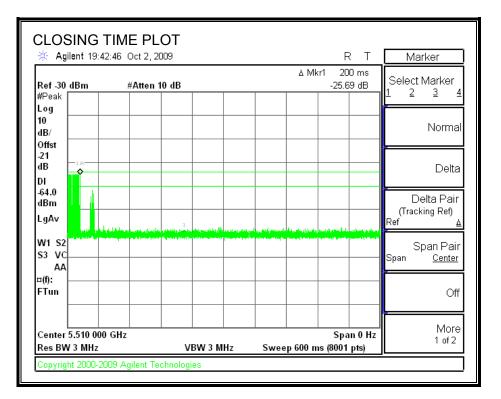
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MOVE TIME



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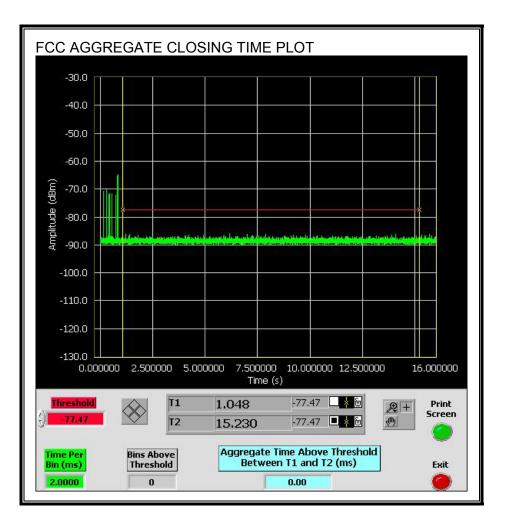
CHANNEL CLOSING TIME



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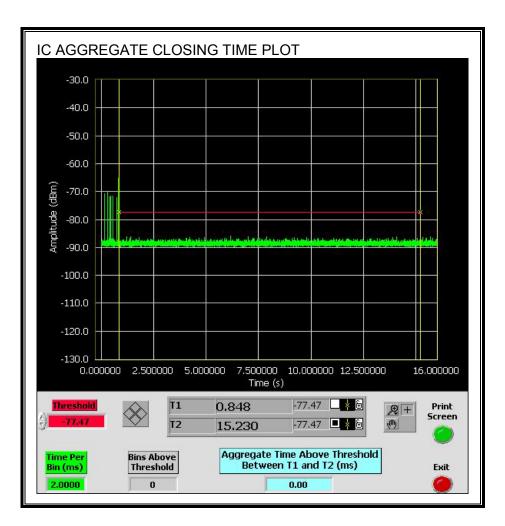
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



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Only intermittent transmissions are observed during the IC aggregate monitoring period.



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10.3.4. NON-OCCUPANCY WITH LINUX OPERATING SYSTEM

TEST RESULTS

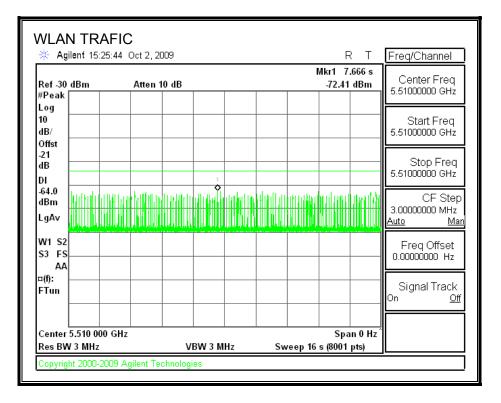
No EUT transmissions were observed on the test channel during the 30-minute observation time.

| Agilent 20:24:38 | Oct 2, 2009 | | | | ₹Т | Freq/Channel |
|---------------------------------|---------------|-----|---------|---|-----------------|--|
| ef-30 dBm | #Atten 10 dB | | Δ | | .8 ks 58 dB | Center Fred 5.51000000 GH |
| g | | | | | | Start Frec 5.51000000 GH: |
| 1R | | | | | | Stop Free 5.51000000 GH: |
| I.0 Im Av | | | | | 1 \$ | CF Ste 3.00000000 MH <u>Auto M</u> |
| I S2 FS AA | | | | | | Freq Offset 0.00000000 Hz |
|): un | | | | | | Signal Tracl On <u>(</u> |
| nter 5.510 000 GH s BW 3 MHz | lz VBW 3 I | MHz | Sweep 2 | - | an 0 Hz pts) | |

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10.3.5. WLAN TRAFFIC WITH WINDOWS OPERATING SYSTEM

PLOT OF WLAN TRAFFIC



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10.3.6. MOVE AND CLOSING TIME WITH WINDOWS OPERATING SYSTEM

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time = (Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

| Agency | Channel Move Time | Limit |
|----------|-------------------|-------|
| | (sec) | (sec) |
| FCC / IC | 0.035 | 10 |

| Agency | Aggregate Channel Closing Transmission Time | Limit |
|--------|---|--------|
| | (msec) | (msec) |
| FCC | 0.0 | 60 |
| IC | 2.0 | 260 |

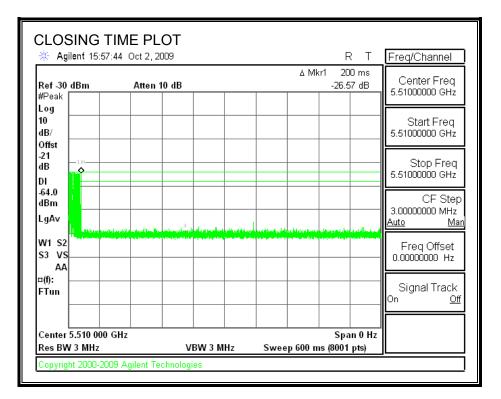
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MOVE TIME

| 🔆 Agilent | | Oct 2, 2009 | | | | ∆ Mkr1 | R T 36 ms | Freq/Channel | |
|--------------------------------------|------------|--------------|-------|-----------------|------|------------|----------------------------------|--|-------------------|
| Ref -30 dBm #Peak | 1 | Atten 10 d | IB | | | | 13.26 dB | Center Free 5.51000000 GH | 4 Z |
| Log 10 dB/ Offst | | | | | | | | Start Fred 5.51000000 GH | |
| -21 dB DI | | | | | | | | Stop Fre 5.51000000 GH | |
| -64.0 dBm LgAv | | | | | | | | CF Sta 3.00000000 MH <u>Auto M</u> | |
| Center 5.510 Res BW 3 M Marker | | Z Type | VBW 3 | MHz X Axis | Swee | p 16 s (80 | Span 0 Hz)01 pts) plitude | Freq Offse 0.00000000 H; | t z |
| 1R 1 <u>∆</u> | (1) (1) | Time Time | | 1.58 s 36 ms | | -64.6 | 4 dBm 26 dB | Signal Trac On <u>(</u> | :k <u>Of</u> f |
| | | | | | | | | | |

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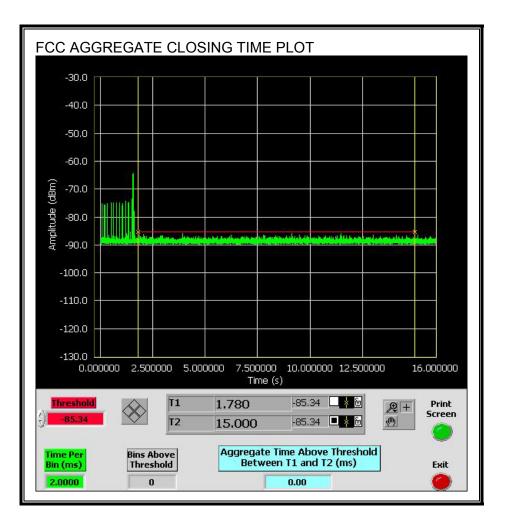
CHANNEL CLOSING TIME



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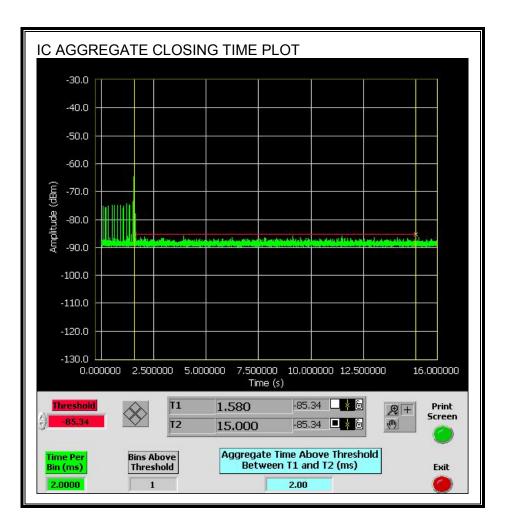
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



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Only intermittent transmissions are observed during the IC aggregate monitoring period.



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10.3.7. NON-OCCUPANCY WITH WINDOWS OPERATING SYSTEM

TEST RESULTS

No EUT transmissions were observed on the test channel during the 30-minute observation time.

| NON-OCCU Agilent 16:40: | PANCY PERIOD 45 Oct 2, 2009 | R T | Freq/Channel |
|------------------------------------|--------------------------------|------------------------------------|---|
| Ref -30 dBm #Peak | Atten 10 dB | ∆ Mkr1 1.8 ks -22.57 dB | Center Freq 5.51000000 GHz |
| Log 10 dB/ Offst | | | Start Freq 5.5100000 GHz |
| -21 dB DI | | | Stop Freq 5.5100000 GHz |
| -64.0 ₩ dBm LgAv | | | CF Step 3.0000000 MHz <u>Auto Man</u> |
| W1 S2 S3 FS AA | | | Freq Offset 0.00000000 Hz |
| ¤(f): FTun | | | Signal Track On <u>Off</u> |
| Center 5.510 000 0 Res BW 3 MHz | GHz VBW 3 MHz | Span 0 Hz Sweep 2 ks (8001 pts) | |
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11. MAXIMUM PERMISSIBLE EXPOSURE

FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

| TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE) | | | | | | | | |
|---|-------------------------------------|-------------------------------------|--|-----------------------------|--|--|--|--|
| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm²) | Averaging time (minutes) | | | | |
| (A) Limits for Occupational/Controlled Exposures | | | | | | | | |
| 0.3-3.0 3.0-30 30-300 300-1500 1500-100,000 | 614 1842/f 61.4 | 1.63 4 <i>.89/</i> f 0.163 | *(100) *(900/f²) 1.0 f/300 5 | 6 6 6 6 | | | | |
| (B) Limits for General Population/Uncontrolled Exposure | | | | | | | | |
| 0.3–1.34 1.34–30 | 614 824 <i>/</i> f | 1.63 2.19/f | *(100) *(180/f²) | 30 30 | | | | |

TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)-Continued

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm²) | Averaging time (minutes) | |
|------------------------------------|-------------------------------------|-------------------------------------|---------------------------|-----------------------------|--|
| 30–300 300–1500 1500–100,000 | 27.5 | 0.073 | 0.2 f/1500 1.0 | 30 30 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 exposure also 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.

exposure or can not exercise control over their exposure.

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IC RULES

IC Safety Code 6, Section 2.2.1 (a) A person other than an RF and microwave exposed worker shall not be exposed to electromagnetic radiation in a frequency band listed in Column 1 of Table 5, if the field strength exceeds the value given in Column 2 or 3 of Table 5, when averaged spatially and over time, or if the power density exceeds the value given in Column 4 of Table 5, when averaged spatially and over time.

Table 5

| Exposure Limits for Persons Not Classed As RF and Microwave Ex- |
|---|
| posed Workers (Including the General Public) |

| 1 Frequency (MHz) | 2 Electric Field Strength; rms (V/m) | 3 Magnetic Field Strength; rms (A/m) | 4 Power Density (W/m ²) | 5 Averaging Time (min) |
|-------------------------|---|---|--|---------------------------------|
| 0.003–1 | 280 | 2.19 | | 6 |
| 1–10 | 280/f | 2.19/ <i>f</i> | | 6 |
| 10–30 | 28 | 2.19/ <i>f</i> | | 6 |
| 30–300 | 28 | 0.073 | 2* | 6 |
| 300–1 500 | 1.585 <i>f</i> ^{0.5} | 0.0042f ^{0.5} | f/150 | 6 |
| 1 500–15 000 | 61.4 | 0.163 | 10 | 6 |
| 15 000–150 000 | 61.4 | 0.163 | 10 | 616 000 /f ^{1.2} |
| 150 000–300 000 | 0.158 <i>f</i> ^{0.5} | 4.21 x 10 ⁻⁴ f ^{0.5} | 6.67 x 10 ⁻⁵ f | 616 000 /f ^{1.2} |

* Power density limit is applicable at frequencies greater than 100 MHz.

Notes: 1. Frequency, f, is in MHz.

- A power density of 10 W/m² is equivalent to 1 mW/cm².
 A magnetic field strength of 1 A/m corresponds to 1.257 microtesla (μT) or 12.57 milligauss (mG).

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EQUATIONS

Power density is given by:

S = EIRP / (4 * Pi * D^2)

where

S = Power density in W/m² EIRP = Equivalent Isotropic Radiated Power in W D = Separation distance in m

Power density in units of W/m² is converted to units of mWc/m² by dividing by 10.

In the table(s) below, Power and Gain are entered in units of dBm and dBi respectively and conversions to linear forms are used for the calculations.

LIMITS

From FCC §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm²

From IC Safety Code 6, Section 2.2 Table 5 Column 4, S = 10 W/m²

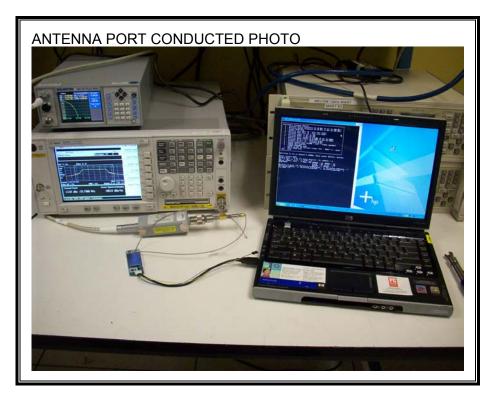
RESULTS

| Band | Mode | Separation | Output | Antenna | IC Power | FCC Power |
|-------------|--------|------------|--------|---------|----------|-----------|
| | | Distance | Power | Gain | Density | Density |
| | | (m) | (dBm) | (dBi) | (W/m^2) | (mW/cm^2) |
| 5180 - 5240 | a mode | 0.20 | 13.87 | 4.96 | 0.15 | 0.015 |
| 5180 - 5240 | HT20 | 0.20 | 14.28 | 2.05 | 0.09 | 0.009 |
| 5190 - 5230 | HT40 | 0.20 | 16.95 | 2.05 | 0.16 | 0.016 |
| 5260 - 5320 | a mode | 0.20 | 19.48 | 4.96 | 0.55 | 0.055 |
| 5260 - 5320 | HT20 | 0.20 | 19.44 | 1.98 | 0.28 | 0.028 |
| 5270 - 5310 | HT40 | 0.20 | 19.08 | 1.98 | 0.25 | 0.025 |
| 5500 - 5700 | a mode | 0.20 | 19.28 | 5.00 | 0.53 | 0.053 |
| 5500 - 5700 | HT20 | 0.20 | 19.28 | 2.13 | 0.28 | 0.028 |
| 5510 - 5670 | HT40 | 0.20 | 18.79 | 2.13 | 0.25 | 0.025 |

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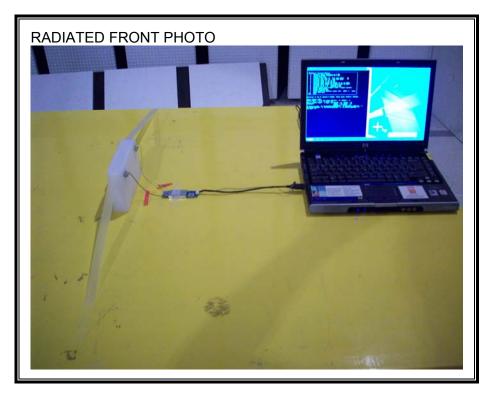
12. SETUP PHOTOS

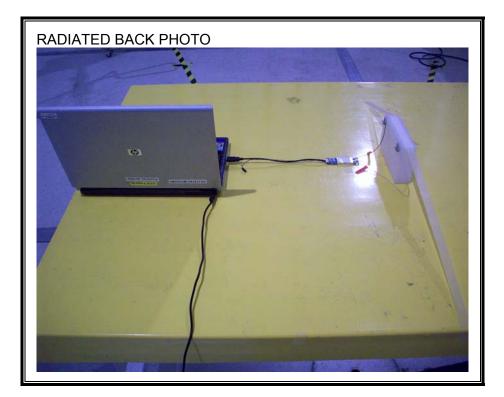
ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



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RADIATED RF MEASUREMENT SETUP





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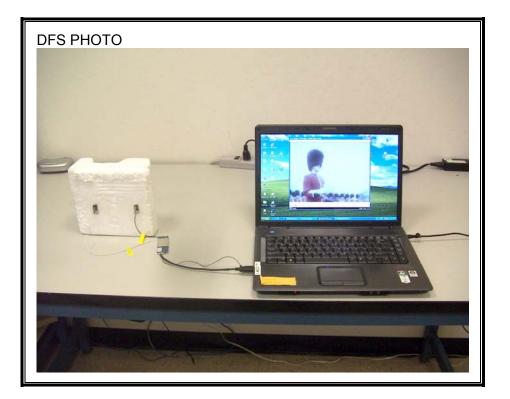
POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP





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DYNAMIC FREQUENCY SELECTION



END OF REPORT

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