

Electromagnetic Emissions Test Report

Application for Grant of Equipment Authorization
pursuant to

FCC Part 15 Subpart C

on the
SDR Electronics
Transmitter

Model: iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238)

FCC ID: VKM1131

GRANTEE: SDR Electronics
1930 Air Lane Drive
Nashville, TN 37210

TEST SITE: Elliott Laboratories
41039 Boyce Road
Fremont, CA. 94538

REPORT DATE: July 24, 2008
REVISION DATE: September 3, 2008

FINAL TEST DATE: July 15, 2008

AUTHORIZED SIGNATORY:



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Testing Cert #2016-01

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REVISION HISTORY

| Rev # | Date | Comments | Modified By |
|-------|-------------------|--|-------------|
| 1 | August 20, 2008 | First Release | NA |
| 2 | September 3, 2008 | Revised to address TCB comments – Clarification of receive mode emissions Clarification of type of audio signal being transmitted Clarification of power configuration | MEH |

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SCOPE

An electromagnetic emissions test has been performed on the SDR Electronics model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) pursuant to the following rules:

FCC Part 15 Subpart C

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in Elliott Laboratories test procedures:

ANSI C63.4:2003

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the SDR Electronics model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) and therefore apply only to the tested sample. The sample was selected and prepared by Jeff Altheide of Griffin Technology.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of SDR Electronics model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) complied with the requirements of the following regulations:

FCC Part 15 Subpart C

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

TEST RESULTS SUMMARY

DEVICES OPERATING IN THE 88-108 MHz FM BAND

| FCC Rule Part | RSS Rule Part | Description | Measured Value / Comments | Limit / Requirement | Result |
|---------------------|------------------|--|-------------------------------|---|----------|
| 15.239 (a) | RSS 210 A2.8 | Bandwidth and operating range | 150 KHz | Bandwidth less than 200kHz contained in the 88 – 108 MHz band | |
| 15.239 (b) | RSS 210 A2.8 (1) | Fundamental Field Strength | 47.8dBuV/m @ 107.9MHz | 250uV/m at 3m (48 dBuV/m) | Complies |
| - | RSS 210 A2.8 (2) | Fundamental Signal Strength - 88.1; 88.3; 88.5; 107.7; 107.9 and MHz | 47.8dBuV/m @ 107.9MHz | 1000uV/m at 3m (60dBuV/m at 3m) | Complies |
| 15.239 (c) / 15.209 | RSS 210 Table 2 | Radiated Spurious Emissions, 30 – 540 MHz | 34.1dBuV/m @ 44.5MHz (-5.9dB) | Refer to table in limits section | Complies |

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

| FCC Rule Part | RSS Rule part | Description | Measured Value / Comments | Limit / Requirement | Result (margin) |
|---------------------------|-----------------------|-----------------------------|-------------------------------|---|-------------------|
| 15.203 | - | RF Connector | Antenna integral to the EUT | | Complies |
| 15.109 | RSS GEN 7.2.3 Table 1 | Receiver spurious emissions | 34.1dBuV/m @ 44.5MHz (-5.9dB) | | Complies – Note 2 |
| 15.207 | RSS GEN Table 2 | AC Conducted Emissions | - | - | N/A – Note 1 |
| 15.247 (b) (5) 15.407 (f) | RSS 102 | RF Exposure Requirements | Refer to RSS 102 | Refer to OET 65, FCC Part 1 and RSS 102 | Complies |

Note 1 – The EUT is powered from a 12VDC automotive cigarette lighter adapter. The iTrip Auto SE (P1131) does pass the power thru to the iPod for charging of the iPod.

Note 2 – Preliminary testing showed that emissions during the receive operation were equal to or less than the emissions during the transmit operation.

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

| Measurement Type | Frequency Range (MHz) | Calculated Uncertainty (dB) |
|---------------------|--------------------------|--------------------------------|
| Conducted Emissions | 0.15 to 30 | ± 2.4 |
| Radiated Emissions | 0.015 to 30 | ± 3.0 |
| Radiated Emissions | 30 to 1000 | ± 3.6 |
| Radiated Emissions | 1000 to 40000 | ± 6.0 |

EQUIPMENT UNDER TEST (EUT) DETAILS**GENERAL**

The SDR Electronics model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) is a portable FM transmitter that is designed to transmit audio information from an iPod or other MP3 players. For this testing, the EUT was placed on a tabletop. The EUT is powered via 12V automobile power outlet.

The sample was received on July 8, 2008 and tested on July 15, 2008. The EUT consisted of the following component(s):

| Manufacturer | Model | Description | Serial Number | FCC ID |
|-----------------|-------|----------------|---------------|---------|
| SDR Electronics | P1131 | FM Transmitter | N/A | VKM1131 |

During the startup of the product, it performs a 20-30 second scan of the FM band to determine the best channel to use. This is the receive mode.

OTHER EUT INFORMATION

The iTrip Auto SE (P1131) and the iTrip Auto Universal Plus SE (P1238) use the same radio circuitry and power configuration. They differ in the way that the audio input comes from the MP3 player. The iTrip Auto SE connects to an Apple iPod via the 30pin connector. The iTrip Auto Universal Plus SE (P1238) connects to any MP3 player via the analog audio output.

ANTENNA SYSTEM

The antenna is integral to the device.

ENCLOSURE

The EUT enclosure is primarily constructed of plastic. It measures approximately 6.6cm wide by 1.2cm deep by 2.9cm high.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with emissions specifications.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for emissions testing:

| Manufacturer | Model | Description | Serial Number | FCC ID |
|--------------|------------|-----------------------|---------------|--------|
| Apple | iTrip Nano | Portable Music Player | N/A | - |
| | - | DC Power Supply | - | - |

No support equipment was used during emissions testing.

EUT INTERFACE PORTS

The I/O cabling configuration during emissions testing was as follows:

| Port | Connected To | Cable(s) | | |
|---|-----------------|----------------|------------------------|-----------|
| | | Description | Shielded or Unshielded | Length(m) |
| DC Power In - Cigarette Lighter Adapter | DC Power Supply | Multiconductor | Unshielded | 0.5 |
| 30pin Adapter | iPod | Multiconductor | Unshielded | 0.5 |

EUT OPERATION

During emissions testing the EUT was configured to play an audio file in a continuous loop. The audio file was comprised of instrumental music.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on July 15, 2008 at the Elliott Laboratories semi anechoic chamber #3 located at 41039 Boyce Road, Fremont, California. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission.

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4:2003. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.4:2003 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

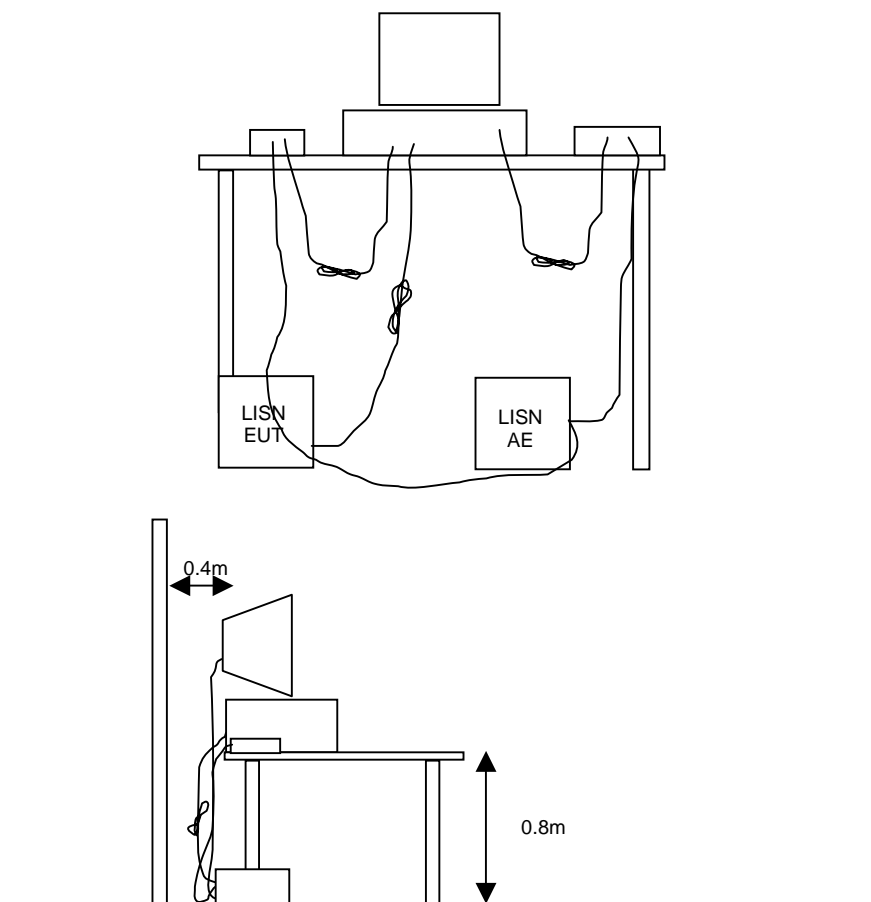
All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4:2003, and the worst-case orientation is used for final measurements.

RADIATED EMISSIONS

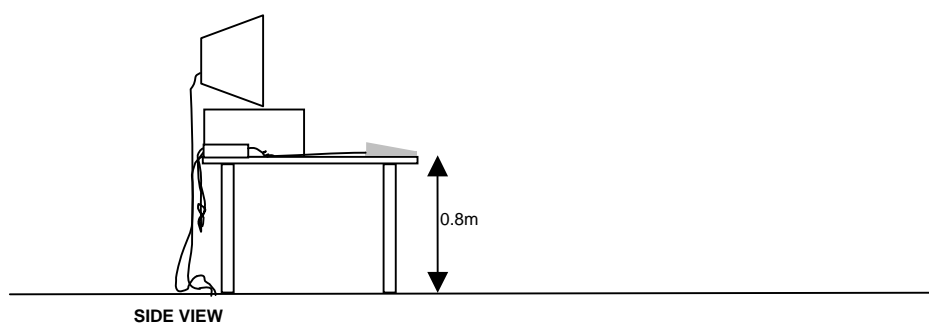
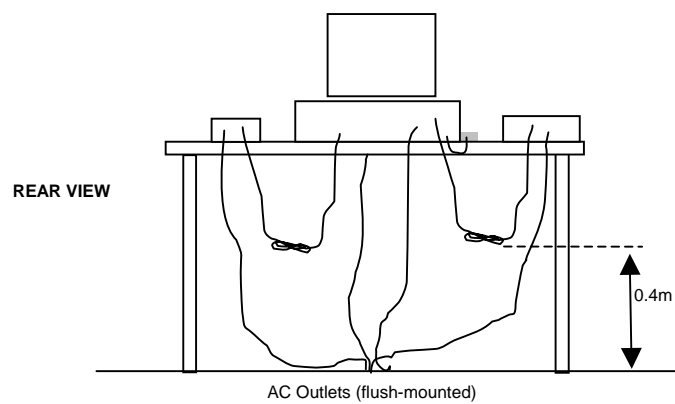


A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

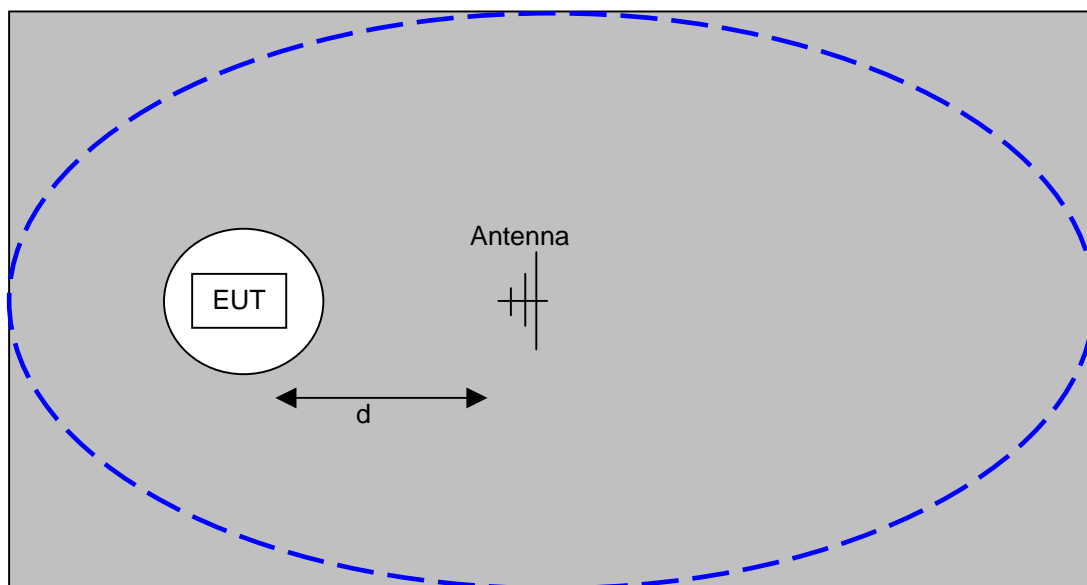
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

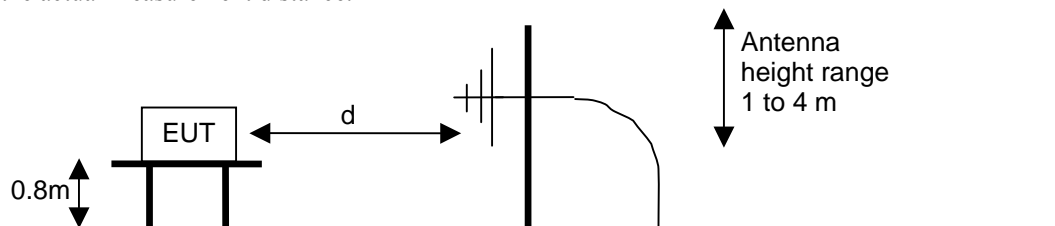
When testing above 18 GHz, the receive antenna is located at 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



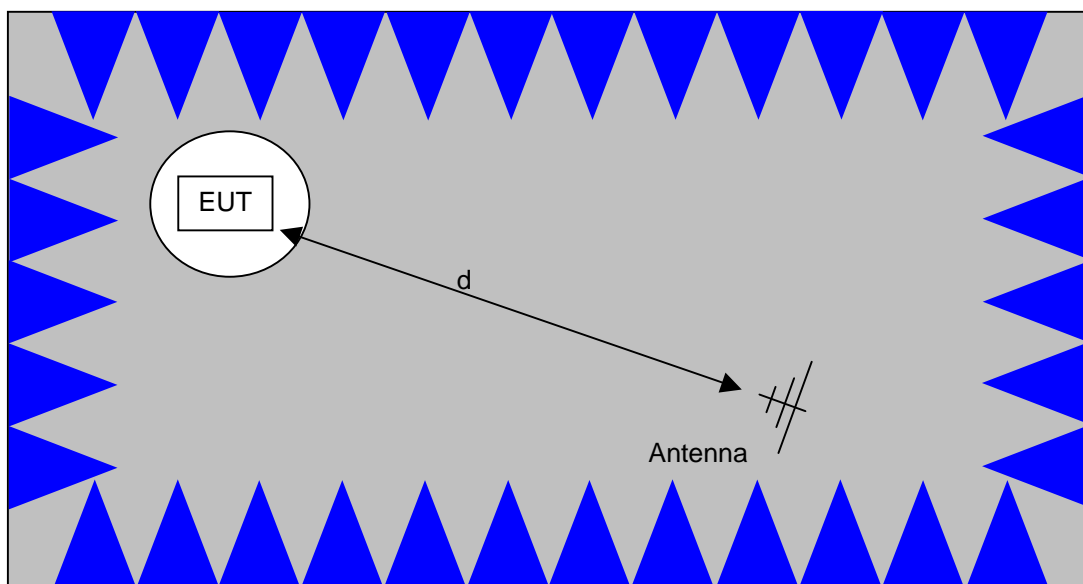
Typical Test Configuration for Radiated Field Strength Measurements



The ground plane extends beyond the ellipse defined in CISPR 16 / CISPR 22 / ANSI C63.4 and is large enough to accommodate test distances (d) of 3m and 10m. Refer to the test data tables for the actual measurement distance.

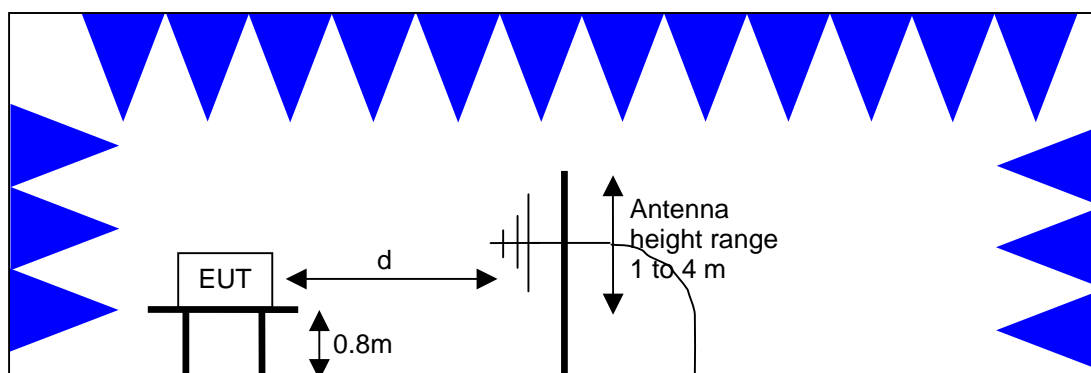


Test Configuration for Radiated Field Strength Measurements
OATS- Plan and Side Views



The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used.

Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



Test Configuration for Radiated Field Strength Measurements
Semi-Anechoic Chamber, Plan and Side Views

BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹ (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

| Frequency Range (MHz) | Limit (uV/m) | Limit (dBuV/m @ 3m) |
|-----------------------|------------------------------|--|
| 0.009-0.490 | 2400/F _{KHz} @ 300m | 67.6-20*log ₁₀ (F _{KHz}) @ 300m |
| 0.490-1.705 | 24000/F _{KHz} @ 30m | 87.6-20*log ₁₀ (F _{KHz}) @ 30m |
| 1.705 to 30 | 30 @ 30m | 29.5 @ 30m |
| 30 to 88 | 100 @ 3m | 40 @ 3m |
| 88 to 216 | 150 @ 3m | 43.5 @ 3m |
| 216 to 960 | 200 @ 3m | 46.0 @ 3m |
| Above 960 | 500 @ 3m | 54.0 @ 3m |

RADIATED FUNDAMENTAL & SPURIOUS EMISSIONS SPECIFICATION LIMITS – 15.239 and RSS 210 A2.9

| Frequency Range (MHz) | Limit for Fundamental @ 3m | Limit for all signals outside of the occupied bandwidth @ 3m |
|--|----------------------------|--|
| 88 - 108 | 250 uV/m 48 dBuV/m | General limits apply |
| The occupied bandwidth is limited to 200kHz. RSS 210 allows the fundamental field strength to be 1000uV/m at 30m at these specific frequencies 88.1; 88.3; 88.5; 107.7; 107.9 MHz is 1000uV/m at 30m for FM devices. | | |

¹ The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20 * \log_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40 * \log_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

$$E = \frac{1000000 \sqrt{30 P}}{3} \quad \text{microvolts per meter}$$

where P is the eirp (Watts)

EXHIBIT 1: Test Equipment Calibration Data

1 Page

Radiated Emissions, 30 - 1,000 MHz, 08-Jul-08 thru 15-Jul-08
Engineer: rvarelas

| <u>Manufacturer</u> | <u>Description</u> | <u>Model #</u> | <u>Asset #</u> | <u>Cal Due</u> |
|---------------------|--------------------------------|----------------|----------------|----------------|
| Rohde & Schwarz | EMI Test Receiver, 20 Hz-7 GHz | ESIB7 | 1538 | 25-Aug-08 |
| Com-Power Corp. | Preamplifier, 30-1000 MHz | PA-103 | 1543 | 12-Nov-08 |
| Sunol Sciences | Biconilog, 30-3000 MHz | JB3 | 1548 | 13-Jun-09 |

EXHIBIT 2: Test Measurement Data

11 Pages

| | | | |
|-----------------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | Test-Log Number: | T72266 |
| Contact: | Jeff Altheide | Project Manager: | Sheareen |
| Emissions Spec: | FCC 15.239 | Class: | B |
| Immunity Spec: | - | Environment: | - |

EMC Test Data

For The

SDR Electronics

Model

**iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE
(P1238)**

Date of Last Test: 7/17/2008

| | | | |
|-----------------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | Test-Log Number: | T72266 |
| Contact: | Jeff Altheide | Project Manager: | Sheareen |
| Emissions Spec: | FCC 15.239 | Class: | B |
| Immunity Spec: | - | Environment: | - |

EUT INFORMATION

The following information was collected during the test sessions(s).

General Description

The EUT is a portable FM transmitter that is designed to transmit audio information from an iPod or a computer. For this testing, the EUT was placed on a table-top. The EUT is powered via 12V automobile power outlet.

Equipment Under Test

| Manufacturer | Model | Description | Serial Number | FCC ID |
|-----------------|-------|----------------|---------------|---------|
| SDR Electronics | P1131 | FM Transmitter | N/A | VKM1131 |

Other EUT Information

The iTrip Auto SE (P1131) and the iTrip Auto Universal Plus SE (P1238) use the same radio circuitry and power configuration. They differ in the way that the audio input comes from the MP3 player. The iTrip Auto SE connects to an Apple iPod via the 30pin connector. The iTrip Auto Universal Plus SE (P1238) connects to any MP3 player via the analog audio output. Preliminary testing showed no difference in the fundamental and spurious emissions levels.

EUT Antenna (Intentional Radiators Only)

The antenna is integral to the device.

EUT Enclosure

The EUT enclosure is primarily constructed of plastic. It measures approximately 6.6cm wide by 1.2cm deep by 2.9cm high.

Modification History

| Mod. # | Test | Date | Modification |
|--------|------|------|--------------|
| 1 | | | |
| 2 | | | |
| 3 | | | |

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

| | | | |
|-----------------|---|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: | T72266 |
| Contact: | Jeff Altheide | Project Manager: | Sheareen |
| Emissions Spec: | FCC 15.239 | Class: | B |
| Immunity Spec: | - | Environment: | - |

Test Configuration #1

The following information was collected during the test sessions(s).

Local Support Equipment

| Manufacturer | Model | Description | Serial Number | FCC ID |
|--------------|------------|-----------------------|---------------|--------|
| Apple | iTrip Nano | Portable Music Player | N/A | - |
| - | - | DC Power Supply | - | - |

Remote Support Equipment

| Manufacturer | Model | Description | Serial Number | FCC ID |
|--------------|-------|-------------|---------------|--------|
| - | - | - | - | - |

Cabling and Ports

| Port | Connected To | Cable(s) | | |
|--|-----------------|----------------|------------------------|-----------|
| | | Description | Shielded or Unshielded | Length(m) |
| DC Power In - Cigarette Lighter Adapter | DC Power Supply | Multiconductor | Unshielded | 0.5 |
| 30pin Adapter | iPod | Multiconductor | Unshielded | 0.5 |

EUT Operation During Emissions Tests

During emissions testing the EUT was configured to play an audio file in a continous loop.

| | | | |
|-----------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: | T72266 |
| Contact: | Jeff Altheide | Account Manager: | Sheareen |
| Standard: | FCC 15.239 | Class: | B |

Radiated Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 7/8/2008
Test Engineer: Rafael Varelas
Test Location: Fremont Chamber #4

Config. Used: 1
Config Change: None
EUT Voltage: 12Vdc

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions: Temperature: 20.3 °C
Rel. Humidity: 41 %

Summary of Results

| Run # | Test Performed | Limit | Result | Margin |
|-------|------------------------|------------|--------|--------|
| 3 | Bandwidth Measurements | FCC 15.239 | Pass | 150kHz |

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

| Frequency Range | Test Distance | Limit Distance | Extrapolation Factor |
|-----------------|---------------|----------------|----------------------|
| 30 - 1000 MHz | 3 | 3 | 0.0 |

| | |
|---|---------------------------|
| Client: SDR Electronics | Job Number: J72225 |
| Model: iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: T72266 |
| Contact: Jeff Altheide | Account Manager: Sheareen |
| Standard: FCC 15.239 | Class: B |

Run #3: Bandwidth Measurements



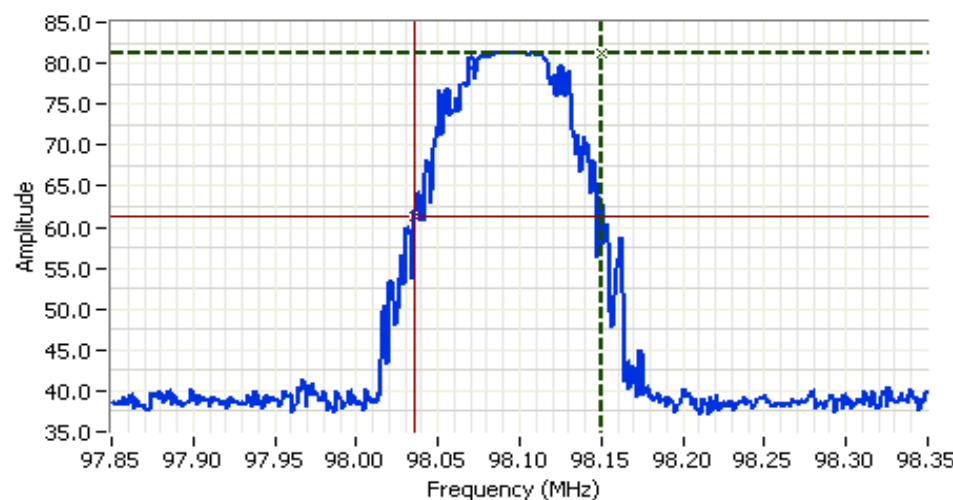
Analyzer Settings

Rohde&Schwarz, ESI 7
CF: 88.100 MHz
SPAN: 500 kHz
RB 10.00 kHz
VB 30.0 kHz
Detector POS
Att 10
RL Offset 0.00
Sweep Time 15.0ms
Ref Lvl: 87.00DBUV

Comments

20dB BW: 150 kHz
88.1 MHz

| | | | | | |
|----------|---------|-------|--|-----------------|---------|
| Cursor 1 | 88.1736 | 73.30 | | Delta Freq. | 150 kHz |
| Cursor 2 | 88.0233 | 53.30 | | Delta Amplitude | 20.00 |



Analyzer Settings

Rohde&Schwarz, ESI 7
CF: 98.100 MHz
SPAN: 500 kHz
RB 10.00 kHz
VB 30.0 kHz
Detector POS
Att 10
RL Offset 0.00
Sweep Time 15.0ms
Ref Lvl: 87.00DBUV

Comments

20dB BW: 115 kHz
98.1 MHz

| | | | | | |
|----------|---------|-------|--|-----------------|---------|
| Cursor 1 | 98.1506 | 81.26 | | Delta Freq. | 115 kHz |
| Cursor 2 | 98.0354 | 61.26 | | Delta Amplitude | 20.00 |



| | | | |
|-----------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: | T72266 |
| Contact: | Jeff Altheide | Account Manager: | Sheareen |
| Standard: | FCC 15.239 | Class: | B |









Analyzer Settings

Rohde&Schwarz, ESI 7
 CF: 107.900 MHz
 SPAN: 500 kHz
 RB 10.00 kHz
 VB 30.0 kHz
 Detector POS
 Att 10
 RL Offset 0.00
 Sweep Time 15.0ms
 Ref Lvl: 87.00 DBUW

Comments

20dB BW: 141 kHz

107.9 MHz

| | | | | | |
|----------|----------|-------|---|---|---|
| Cursor 1 | 107.9616 | 80.51 |  |  |  |
| Cursor 2 | 107.8203 | 60.51 |  |  |  |

Delta Freq. 141 kHz

Delta Amplitude 20.00



| | | | |
|-----------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: | T72266 |
| Contact: | Jeff Altheide | Account Manager: | Sheareen |
| Standard: | FCC 15.239 | Class: | B |

Radiated Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 7/15/2008

Test Engineer: rvarelas

Test Location: Fremont Chamber #4

Config. Used: 1

Config Change: None

EUT Voltage: 12Vdc

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

| | |
|----------------|---------|
| Temperature: | 20.8 °C |
| Rel. Humidity: | 39 % |

Summary of Results

| Run # | Test Performed | Limit | Result | Margin |
|-------|--|------------|--------|-----------------------------------|
| 1 | RE, Fundamental Measurements | FCC 15.239 | Pass | 47.8dBuV/m @ 107.9MHz (-0.2dB) |
| 2 | RE, 30 - 1000 MHz (Transmit and Receive) | FCC 15.239 | Pass | 34.1dBuV/m @ 44.5MHz (-5.9dB) |

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

| Frequency Range | Test Distance | Limit Distance | Extrapolation Factor |
|-----------------|---------------|----------------|----------------------|
| 30 - 1000 MHz | 3 | 3 | 0.0 |

| | | | |
|-----------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: | T72266 |
| Contact: | Jeff Altheide | Account Manager: | Sheareen |
| Standard: | FCC 15.239 | Class: | B |

Run #1: Fundamental

EUT and Test Configuration Details:

EUT configured to transmit a song and volume was set to maximum.

FCC Sample, Elliott tag 2008-2480

| Frequency | Level | Pol | FCC 15.239 | | Detector | Azimuth | Height | Comments |
|-----------------|--------------|-----|------------|--------|-----------|---------|--------|-----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| EUT Flat | | | | | | | | |
| 88.100 | 47.8 | H | 48.0 | -0.2 | AVG | 168 | 2.5 | Setting 3 |
| 88.100 | 43.3 | V | 48.0 | -4.7 | AVG | 265 | 1.0 | Setting 3 |
| 93.100 | 47.3 | H | 48.0 | -0.7 | AVG | 155 | 3.2 | Setting 4 |
| 93.100 | 39.7 | V | 48.0 | -8.3 | AVG | 91 | 3.1 | Setting 4 |
| 98.100 | 47.5 | H | 48.0 | -0.5 | AVG | 161 | 1.9 | Setting 5 |
| 98.100 | 39.1 | V | 48.0 | -8.9 | AVG | 94 | 1.0 | Setting 5 |
| 103.100 | 47.8 | H | 48.0 | -0.2 | AVG | 0 | 2.9 | Setting 6 |
| 103.100 | 42.6 | V | 48.0 | -5.4 | AVG | 84 | 2.6 | Setting 6 |
| 107.900 | 47.8 | H | 48.0 | -0.2 | AVG | 137 | 2.9 | Setting 7 |
| 107.900 | 42.6 | V | 48.0 | -5.4 | AVG | 80 | 2.8 | Setting 7 |

| | | | |
|-----------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: | T72266 |
| Contact: | Jeff Altheide | Account Manager: | Sheareen |
| Standard: | FCC 15.239 | Class: | B |

Run #2: Radiated Spurious Emissions, 30 - 1000 MHz

Note - A preliminary test showed there was no difference in the spurious emissions of the EUT, when transmitting and when in receive mode. Therefore all final spurious measurements were taken in transmit mode.

Run #2a: Radiated Emissions, 30 - 1000 MHz, EUT Flat

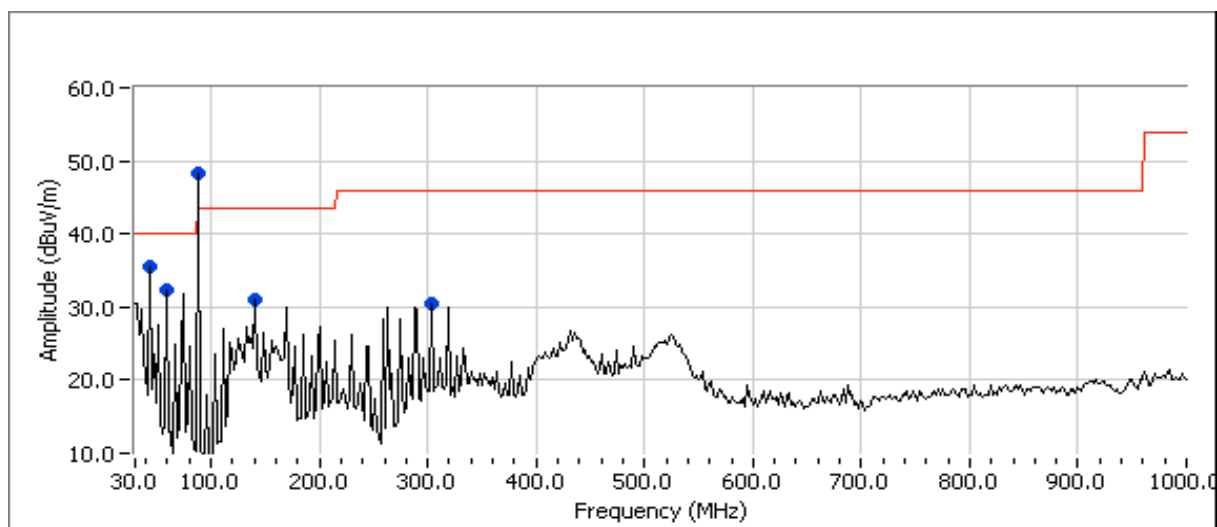
Low Channel at 88.1 MHz

EUT and Test Configuration Details:

EUT configured to transmit a song and volume was set to maximum.

FCC Sample, Elliott tag 2008-2480

Setting = 3



| Frequency | Level | Pol | FCC 15.239 | | Detector | Azimuth | Height | Comments |
|-----------|--------|-----|------------|--------|-----------|---------|--------|-------------|
| MHz | dBuV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 88.093 | 48.4 | H | - | - | Peak | 164 | 2.5 | Fundamental |
| 141.045 | 31.0 | H | 43.5 | -12.5 | Peak | 220 | 2.0 | |
| 304.292 | 30.5 | H | 46.0 | -15.5 | Peak | 172 | 1.0 | |
| 59.420 | 30.7 | V | 40.0 | -9.3 | QP | 0 | 1.0 | |
| 44.550 | 34.0 | V | 40.0 | -6.0 | QP | 35 | 1.0 | |

| | | | |
|-----------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: | T72266 |
| Contact: | Jeff Altheide | Account Manager: | Sheareen |
| Standard: | FCC 15.239 | Class: | B |

Run #2b: Radiated Emissions, 30 - 1000 MHz, EUT Flat

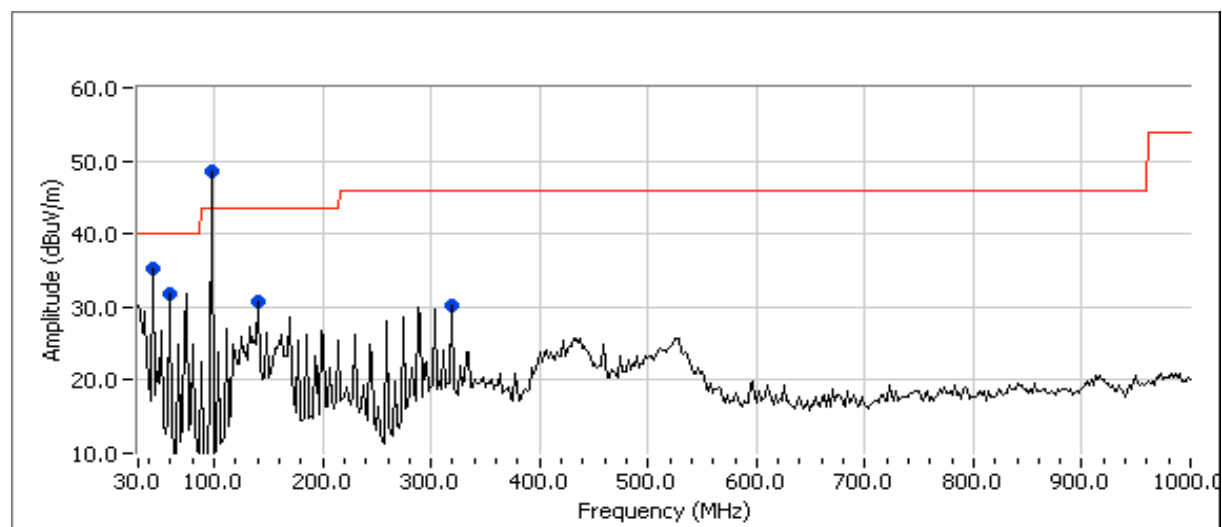
Middle Channel at 98.1 MHz

EUT and Test Configuration Details:

EUT configured to transmit a song and volume was set to maximum.

FCC Sample, Elliott tag 2008-2480

Setting = 5



| Frequency | Level | Pol | FCC 15.239 | | Detector | Azimuth | Height | Comments |
|-----------|--------|-----|------------|--------|-----------|---------|--------|-------------|
| MHz | dBμV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 98.085 | 48.5 | H | - | - | Peak | 153 | 3.0 | Fundamental |
| 141.064 | 30.7 | H | 43.5 | -12.8 | Peak | 221 | 2.0 | |
| 319.241 | 30.2 | H | 46.0 | -15.8 | Peak | 164 | 1.0 | |
| 59.401 | 31.4 | V | 40.0 | -8.6 | QP | 19 | 1.0 | |
| 44.569 | 33.7 | V | 40.0 | -6.3 | QP | 350 | 1.0 | |

| | | | |
|-----------|--|------------------|----------|
| Client: | SDR Electronics | Job Number: | J72225 |
| Model: | iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE (P1238) | T-Log Number: | T72266 |
| Contact: | Jeff Altheide | Account Manager: | Sheareen |
| Standard: | FCC 15.239 | Class: | B |

Run #2c: Radiated Emissions, 30 - 1000 MHz, EUT Flat

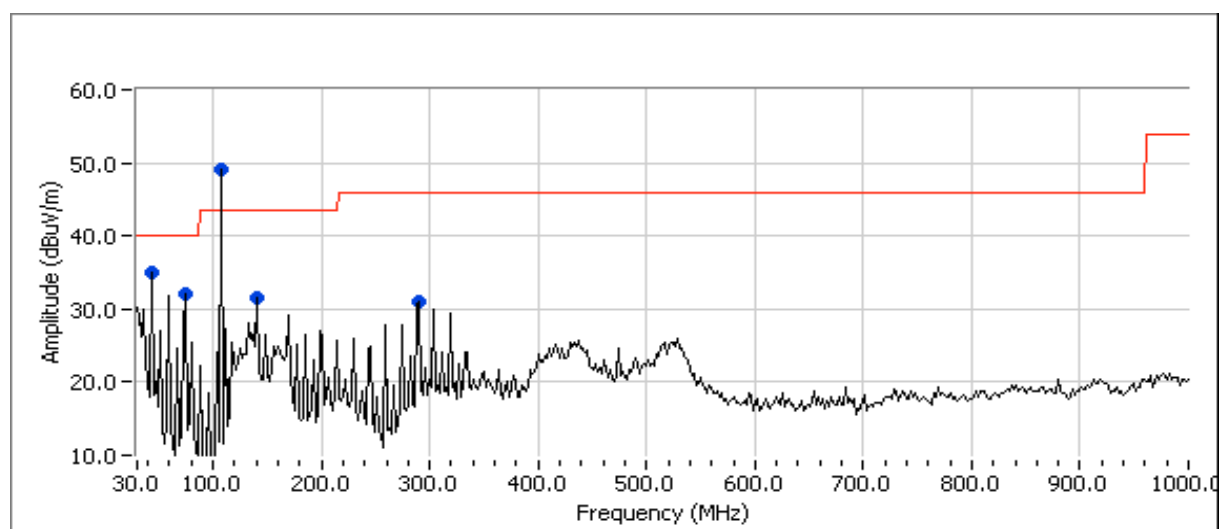
High Channel at 107.9 MHz

EUT and Test Configuration Details:

EUT configured to transmit a song and volume was set to maximum.

FCC Sample, Elliott tag 2008-2480

Setting = 7



| Frequency | Level | Pol | FCC 15.239 | | Detector | Azimuth | Height | Comments |
|-----------|--------|-----|------------|--------|-----------|---------|--------|-------------|
| MHz | dBuV/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 107.882 | 49.1 | H | - | - | Peak | 138 | 3.0 | Fundamental |
| 141.084 | 31.5 | H | 43.5 | -12.0 | Peak | 231 | 2.0 | |
| 289.558 | 31.1 | H | 46.0 | -14.9 | Peak | 173 | 1.0 | |
| 44.550 | 34.1 | V | 40.0 | -5.9 | QP | 12 | 1.0 | |
| 74.233 | 31.9 | V | 40.0 | -8.1 | QP | 142 | 1.0 | |

EXHIBIT 3: Photographs of Test Configurations

EXHIBIT 4: Proposed FCC ID Label & Label Location

*EXHIBIT 5: Detailed Photographs
of SDR Electronics Model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE
(P1238) Construction*

***EXHIBIT 6: Operator's Manual
for SDR Electronics Model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE
(P1238)***

*EXHIBIT 7: Block Diagram
of SDR Electronics Model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE
(P1238)*

***EXHIBIT 8: Schematic Diagrams
for SDR Electronics Model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE
(P1238)***

***EXHIBIT 9: Theory of Operation
for SDR Electronics Model iTrip Auto SE (P1131) & iTrip Auto Universal Plus SE
(P1238)***